## **TECHNICAL MANUAL**

#### **OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL**

FOR

ELECTRO-OPTICAL TARGET DESIGNATOR SET AN/TVQ-2 (G/VLLD) (1260-01-122-5234) (EIC: QLE)

EQUIPMENT SET, NIGHT VISION SIGHT INFRARED, AN/UAS-12D

(5855-01-316-6572) (EIC: N/A)

AND

## G/VLLD M113A1 VEHICLE ADAPTER KIT

(1260-01-0824981) (EIC: QLB)

G/VLLD M981

HEADQUARTERS, DEPARTMENT OF THE ARMY

**JANUARY 1982** 

HEADQUARTERS DEPARTMENT OF THE ARMY Washington, DC., 31 March 1997

#### TECHNICAL MANUAL

# OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL FOR ELECTRO-OPTICAL TARGET DESIGNATOR SET AN/TVQ-2 (G/VLLD) (1260-01-122-5234) (EIC: QLE) EQUIPMENT SET, NIGHT VISION SIGHT INFRARED, AN/UAS-12D (5855-01-316-6572) (EIC: N/A) AND G/VLLD M113A1 VEHICLE ADAPTER KIT (1260-01-082-4981) (EIC: QLB) G/VLLD M981

TM 9-1260-477-12, 23 January 1982, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is Indicated by a vertical bar in the margin of the page. Added or completely revised paragraphs or tables, etc., are indicated by a vertical bar in the margin of the page. New or revised illustrations are indicated by a letter suffix and a vertical bar adjacent to the illustration identification number.

<u>Remove Pages</u>	Insert Pages
A/(B blank)	A and B
i and ii	i and ii
1-1 thru 1-4	1-1 thru 1-4
1-4.1/(1-4.2 blank)	1-4.1 and 1-4.2
1-5 thru 1-8	1-5 thru 1-8
1-23 thru 1-26	1-23 thru 1-26
1-28.5 thru 1-26.8	1-26.5 thru 1-26.8
1-27 thru 1-30	1-27 thru 1-30
1-33 thru 1-36	1-33 thru 1-36
1-36.1 thru 1-36.6	1-36.1 thru 1-36.6
1-36.9 and 1-36.1 0	1-36.9 and 1-36.10
None	1-36.11 thru 1-36.20
2-3 thru 2-S/(2-6 blank)	2-3 thru 2-5/(2-8 blank)
2-8.3/(2-8.4 blank)	2-8.3/(2-8.4 blank)
2-21 and 2-22	2-21 and 2-22
2-28.3 thru 2-28.8	2-28.3 thru 2-28.6
2-29 and 2-30	2-29 and 2-30
2-35 thru 2-38	2-35 thru 2-38
2-47 and 2-48	2-47 and 2-48
2-48.1 thru 2-48.3/(2-48.4 blank)	248.1 thru 2-48.3/(2-48.4 blank)
None	2-48.5 thru 2-48.31/(2-48.32 blank)

Change

No.10

Remove Pages	Insert Pages
2-49 and 2-50	2-49 and 2-50
2-61 and 2-62	2-61 and 2-62
2-74.3 thru 2-74.14	2-74.3 thru 2-74.14
None	2-74.15 and 2-74.16
2-84.1 and 2-84.2	2-84.1 and 2-84.2
2-85 and 2-86	2-85 and 2-86
2-86.1 and 2-86.2	2-86.1 and 2-86.2
2-87 and 2-88	2-87 and 2-88
2-93 and 2-94	2-93 and 2-94
2-94.1/(2-94.2 blank)	2-94.1/(2-94.2 blank)
3-8.3 and 3-8.4	3-8.3 and 3-8.4
3-21 and 3-22	3-21 and 3-22
3-59 thru 3-64	3-59 thru 3-64
B-1 thru B-4	B-1 thru B-4
B-9 and B-10	B-9 and B-10
B-13/(B-14 blank)	B-13/(B-14 blank)
C-3 and C-4	C-3 and C-4
D-5/(D-6 blank)	D-5 and D-6
E-1 and E-2	E-1 and E-2
Cover	Cover

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

By Order of the Secretary of the Army:

Official: B Hul J JOEL B. HUDSON b

Administrative Assistant to the Secretary of the Army 03419

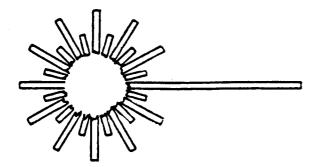
Distribution:

To be distributed in accordance with the initial distribution number (IDN) 321483, requirements for TM 9-1260-477-12.

DENNIS J. REIMER General, United States Army Chief of Staff

# WARNINGS

LASER LIGHT - INVISIBLE



LASER BEAM IS DANGEROUS AND CAN CAUSE BLINDNESS IF IT ENTERS THE EYE --EITHER DIRECTLY OR REFLECTED FROM A SHINY SURFACE.

- ▶ TREAT THE G/VLLD AS A DIRECT FIRE WEAPON, LIKE A RIFLE. Unless you have a backstop it can be hazardous as far as 80 km.
- ▶ NEVER LOOK INTO LASER; assume it is always dangerous.
- DO NOT AIM LASER at unprotected people, animals, or flat reflective surfaces.
- WARN PERSONNEL before firing laser or operating your G/VLLD set.
- OPERATE ONLY ON APPROVED LASER RANGES which have been cleared of reflective objects.
- DO NOT RELY SOLELY ON WINDOW COVER to stop laser beam.
- ALLOW ONLY TRAINED PERSONNEL to operate the G/VLLD, unless properly supervised.
- ALWAYS FOLLOW THE LASER RANGE SAFETY PROCEDURES OF AR 385-63 and TB MED 524.
- APPROVED LASER GOGGLES are required ONLY for people who may be exposed to direct laser beam or its reflection from a flat shiny surface. Goggles should have a density of 5.5 at 1064 nm.
- REPORT TO YOUR COMMANDER IF YOU THINK YOU HAVE BEEN HIT BY THE LASER BEAM. You may need an eye examination.
- A laser attenuator filter is available for use on the G/VLLD to reduce emission hazards. Even when using the attenuator filter a potential eye hazard still exists. See AR 385-63 for operating limitations.

LASER WEAPON - DISCIPLINE

LASER IS A TACTICAL WEAPON AND COUNTER-ORDNANCE CAN FOLLOW IT TO YOUR POSITION.

NON-TACTICAL USE IS STRICTLY FORBIDDEN.

DESIGNATE ONLY ON COMMAND to reduce your vulnerability and extend battery operating time to a maximum.

MECHANICAL

A FALLING OBJECT CAN CAUSE INJURY.

- POSITION TRIPOD HEIGHT AT DETENTS OR ABOVE to prevent your G/VLLD from falling over.
- PLACE TRIPOPD/TU in backpack properly to prevent head injury.

CHEMICAL

CLEANING SOLVENTS ARE EXTREMELY FLAMMABLE AND TOXIC. THEY CAN CAUSE DEATH IF FUMES ARE INHALED. WORK AREAS SHOULD BE WELL-VENTILATED.

ACCUMULATION OF FLAMMABLE GASES MAY RESULT IN AN EXPLOSION.

- ► IKEEP OPEN FLAMES AWAY when using flammable cleaning solutions.
- BATTERIES MAY EXPLODE if completely discharged too rapidly or improperly charged.
- CHARGE BATTERIES ONLY in a well-ventilated area.

# SAFETY

IN CASE OF AN ACCIDENT -- NOTIFY YOUR SUPERVISOR IMMEDIATELY AND OBTAIN MEDICAL TREATMENT FOR ALL INJURIES.

- SEE FM 21-11 for general first aid data.
- CONSULT MEDICAL OFFICER for TB MED 524 data concerning laser medical practices.

## INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

LIST OF EFFECTIVE PAGES

NOTE:

E: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and change pages are:

Original 0	23Jan 82	Change 6	23Dec86
Change 1	24Sep82	Change 7	30May88
Change2	31Aug83	Change 8	30Sep88
Change 3	20June4	Change 9	15Aug90
Change 4	28 Aug84	Change 10	31May97
Change 5	28 Mar85		

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 336 CONSISTING OF THE FOLLOWING:

Page	*Change	Page	Change	Page	Change
No.	No.	No.	No.	No.	No.
a - b	7	1-26.6-1-2	26.7 10	2-20.1	9
c deleted			8	2-20.2 blar	
A - B		1-27-1-29	10	2-21	
i		1-30-1-32	7	2 - 2 2	
ii-v	8	1-33		2 - 2 3 - 2 - 2 6	
vi-vii		1-34			8
1-0	-	1-35-1-36	10	2-26.2 blar	1k 8
1-1	10	1-36.1-1-3	6.3 10	2 - 27 - 2 - 28	8
1-2	7	1-36.4-1-3	6.5 7	2-28.1 - 2-2	28.2 7
1-2.1 - 1-2.2 (	deleted 7	1-36.6	10	2-28.3 - 2-2	28.6 10
1-3	8	1-36.7-1-3	6.8 7	2 - 29	7
1-4	10	1-36.9-1-3	6.20 10	2-30	10
1-4.1 - 1-4.2	10		7	2-31 -2-34	0
1-5-1-7	10	1-41	2	2 - 3 5 - 2 - 3 7	10
1-8-1-9	8	1-42	0	2 - 38 - 2 - 42	8
l-10	0	1-43	7	2-43	7
1-11	6	1-44 blank	7	2-44	
1-12-1-13 .	8	2 - 1 - 2 - 2 .		2 - 4 5 - 2 - 4 6	8
1-14	9	2-3	6	2-47	4
1-15	7	2 - 4 - 2 - 5 .	10	2-48	10
1-16	0	2-6 blank .		2-48.1 - 2-4	48.31 10
1-17-1-19 .	7	2-7 - 2-8 d	eleted 7	2-48.32 bla	nk 10
1-20	0	2-8.1-2-8.3	10	2-49	10
1-21	7	2-8.4 blank	10	2-50	7
1-22	0	2 - 9 - 2 - 1 4	8	2-51 -2-52	8
1-23	7	2 - 1 5 - 2 - 1 6	7	2 - 5 3 - 2 - 5 4	7
1 - 24 - 1 - 26.	10	2 - 1 7 - 2 - 1 9	8	2-55	6
1-26.1-1-26.5	8	2-20	9	2-56	9

Zero in this column indicates an original page.

# LIST OF EFFECTIVE PAGES - Continued

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Chan No
2-56.1	9	3-8.2 blank .	7	B-14 blank .	
2-56.2 blank	9	3-8.3		C-1 -C-2	
2-57	2	3-8.4	10		10
2-58	7	0 0	7	~ ~ ~ ~	
2-59-2-60			0	D-1	
2-61	. 10		7	D-2 - D-4	
2-62-2-63	7	0.17 0.00	8	D-5-D-6	
2-64-2-66		3-21 -3-22 .	10	E-1	'
2-67-2-73	7	3-23-3-24.	7	E-2	1
2-74 blank	7	3-25	1		
2-74.1-2-74.2	6	3-26	2		
2-74.3- 2-74.16 .	. 10	3-27-3-39.	0		
2-75	7	3-40	2		
2-76 -2-78	8	3-41	7		
2-79 - 2-81	7	3-42	2		
2-82	0	3-43	6		
2-83 -2-84		3-94	7		
2-84.1 - 2-84.2	. 10	3-45 - 3-46 .	0		
2-85	. 10	3-47	7		
2-86	7	3-48	0		
2-86.1	4	3-48.1 - 3-48.2	2 8		
2-86.2	. 10		8		
2-87		3-50.1 - 3-50.2			
2-88	7		7		
2-89 - 2-90			8		
2-90.1 - 2-90.4	9	3-54.1 - 3-54.2	2 8		
2-91 - 2-92	7	3-55 - 3-59 .	4		
2-93-2-94	. 10		10		
2-94.1 Deleted	. 10		6		
2-94.2 blank Delet	ed 10	3-65-3-68.	9		
2-95 -2-96			8		
2-97 - 2-98	7		9		
2-98.1	7	3-72 blank .			
2-98.2 blank		A-1	7		
2-99-2-100		A-2 blank	7		
2-101 - 2-102	8	B-1	6		
2-103	7	B-2-B4	10		
2-104 blank		B-5-B-6	6		
3-1 - 3-2		B-7-B-9			
3-3-3-4		B-10			
3-5-3-6	8	B-11			
3-7 - 3-8	7	B-12	6		
3-8.1	7	B-13	10		

\*Zero in this column indicates an original page.

#### TECHNICAL MANUAL

No. 9-1260-477-12

HEADQUARTERS DEPARTMENT OF THE ARMY Washington. D.C., 23 January 1982

#### **OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL**

FOR

#### ELECTRO-OPTICAL TARGET DESIGNATOR SET AN/TVQ-2 (G/VLLD)

#### (12600142245234) (EIC: QLE)

#### EQUIPMENT SET, NIGHT VISION SIGHT INFRARED, AN/UAS-12D

#### (5855-01-318-6572) (EIC: N/A)

### AND

## G/VLLD M1113A1 VEHICLE ADAPTER KIT

#### (1260-01-082-4981) (EIC: QLB)

#### G/VLLD M981

#### **REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any errors, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual, direct to: Commander, U.S. Army Missile Command, ATTN: AMSMI-MMC-LS-LP, Redstone Arsenal, AL 35898-5238. A reply will be furnished to you. You may also send in your comments electronically to our e-mail address: Is-lp@redstone-emh2.army.mil or by fax 205-842-6546/DSN 788-6546.

#### TABLE OF CONTENTS

#### Page

	WARNINGS	а
	HOW TO USE THIS MANUAL.	vi
CHAPTER 1	INTRODUCTION	1-1
SECTION I	GENERAL INFORMATION	1-2
	SCOPE	1-2
	MAINTENANCE FORMS AND RECORDS	1-3
	HAND RECEIPT MANUALS	1-3
	REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)	1-3
	DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE	1-3

# **TABLE OF CONTENTS** - Continued

# Page

	ADMINISTRATIVE STORAGE	1-4
	NOMENCLATURE CROSS-REFERENCE	1-4
SECTION II	EQUIPMENT DESCRIPTION	1-6
	SYSTEM FUNCTIONS	1-6
	SYSTEM DESCRIPTION	1-7
	LOCATION AND DESCRIPTION OF MAJOR G/VLLD UNITS	1-10
	G/VLLD LASER DESIGNATOR/RANGEFINDER	
	DESCRIPTION	1-14
	TRAVERSING UNIT DESCRIPTION	1-16
	TRIPOD DESCRIPTION	1-18
	BATTERY DESCRIPTION	1-19
	BACKPACKS DESCRIPTION	1-20
	ANCILLARY EQUIPMENT TRANSIT ASSEMBLY CASE	
	DESCRIPTION	1-24
	OTHER ANCILLARY EQUIPMENT DESCRIPTION	1-26.4
	EQUIPMENT SET AN/UAS-12 DESCRIPTION	1-27
	EQUIPMENT SET AN/UAS-12B DESCRIPTION	1-36.1
	EQUIPMENT SET AN/UAS-12D DESCRIPTION	1-36.3

# PAGE

SECTION II	EQUIPMENT DESCRIPTION (CONT)
	DIGITAL MESSAGE DEVICE DESCRIPTION
CHAPTER 2	OPERATING INSTRUCTIONS
SECTION I	DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS
SECTION II	OPERATION UNDER USUAL CONDITIONS
	ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE 2-8.3
	ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE 2-30
	INITIAL CHECKOUT
	OPERATING PROCEDURES 2-74.14
	PREPARATION FOR MOVEMENT IN GROUND MODE
	PREPARATION FOR MOVEMENT IN VEHICLE MODE
	USE OF LASER TRAINING KIT
SECTION III	OPERATION UNDER UNUSUAL CONDITIONS
	G/VLLD OPERATION UNDER UNUSUAL CONDITIONS 2-101
CHAPTER 3	MAINTENANCE
SECTION I	REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT 3-3
	SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT
	REPAIR PARTS
SECTION II	SERVICES UPON RECEIPT OF MATERIEL
	GENERAL
	DUTIES OF USING ORGANIZATION
SECTION III	PREVENTIVE MAINTENANCE CHECKS AND SERVICES
	GENERAL
	PREVENTIVE MAINTENANCE CHECKS AND SERVICES

I

	TABLE OF CONTENTS (CONTINUED)	PAGE
SECTION IV	TROUBLESHOOTING	3-10
	GENERAL	3-10
	SYMPTOM/DESCRIPTIVE NAMES INDEX	3-10
	TROUBLESHOOT DISPLAY AZ, RNG, EL READOUT FAULT	. 3-11
	TROUBLESHOOT DISPLAY GREEN, AMBER, RED INDICATOR FAULT	3-14
	TROUBLESHOOT DISPLAY RETICLE FAULT	. 3-16
	TROUBLESHOOT EMI FILTER/NATO CONNECTOR/SLAVE CABLE/ VEHICLE POWER CABLE	3-17
SECTION V	CORRECTIVE MAINTENANCE PROCEDURES	. 3-19
	GENERAL	3-19
	CLEANING	3-19
	PAINTNG	3-23
	BORESIGHT TEST	3-24
	REMOVAL/REPLACEMENT OF LD/R	3-41
	REMOVAL/REPLACEMENT OF TU	3-45
	REMOVAL/REPLACEMENT OF TRIPOD	3-47
	REMOVAL/REPLACEMENT OF BATTERY	. 3-48.1
	REMOVAL/REPLACEMENT OF PROTECTIVE SHROUD	3-50.1
	REMOVAL/REPLACEMENT OF LD/R WINDOW COVER	3-51
	REMOVAL/REPLACEMENT OF BATTERY O-RING	. 3-53
	REMOVAL/REPLACEMENT OF LD/R EYESHEILD	3-54.1
	REMOVAL/REPLACEMENT OF NIGHT SIGHT	. 3-55
	REMOVAL/REPLACEMENT OF EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE	3-65
APPENDIX A	REFERENCES	A-1
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1

				PA6E
SE	ECTION I	INTRODU	CTION	B-1
		GENE	RAL	B-1
		MAIN	TENANCE FUNCTIONS         .          .         .	B-1
		EXPL	ANATION OF FORMAT	B-2
SE	ECTION II		ANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV JRATION)	B-4
SE	ECTION III	TOOLS A	ND TEST EQUIPMENT REQUIREMENTS	B-13
APPEN	NDIX C	COMPONEN	TS OF END ITEM AND BASIC ISSUE ITEMS LISTS	C-1
SE	ECTION I	INTRODU	CTION	C-1
		SCOPI	Ξ	C-1
		GENE	RAL	C-1
		EXPL	ANATION OF COLUMNS	C-1
SE	ECTION II	COMPON	ENTS OF END ITEM	C-3
SE	ECTION III	BASIC IS	SUE ITEMS	C-8
APPE	NDIX D	ADDITIONAL	AUTHORIZATION LIST	D-1
SE	ECTION I	INTRODU		D-1
		SCOP	Ξ	D-1
		GENE	RAL	D-1
		EXPL	ANATION OF LISTING	D-1
SE	ECTION II A		AUTHORIZATION LIST FOR AN/TVQ-2 (G/VLLD)	D-2
APPEN	NDIX E	EXPENDABL	E/DURABLE SUPPLIES AND MATERIALS LIST	E-1
SE	ECTION I	INTRODU	CTION	E-1
		SCOP	Ε	E-1
		EXPI	ANATION OF COLUMNS	E-1
SI	ECTION II		ABLE/DURABLE SUPPLIES AND MATERIALS LIST FOR 2 (G/VLLD)	E-2

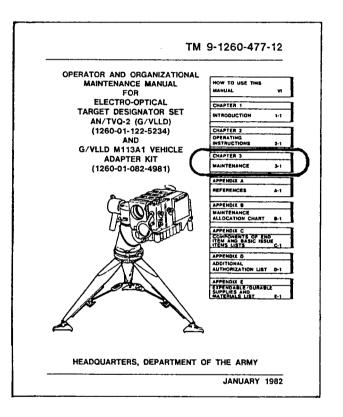
# HOW TO USE THIS MANUAL

If you spend a few minutes looking through this manual, you'll see that it has a new look that is very different from the manuals you have been using. The new look is not just to make this manual look good, but to make it easier for you to read and use so you can do your job right. We got rid of as many big words as we could. Each chapter is set up to lead you through it step by step for ease of understanding. Now check out the front cover and you'll see the black bars on the right-hand edge with chapter titles next to them. So HOW DO YOU USE THIS MANUAL?

Like This:

- Suppose you want to know the duties you perform upon receipt of your G/VLLD set.
- 2. Look at the cover, and you'll see the chapter titles listed top to bottom. Find "MAINTE-NANCE".
- 3. Bend the pages a bit and look at the edges. You'll see black bars on some of the pages that are in line with the bars on the cover.

		(F. 9-1	260-477-12
	CHAPTER	3 3	
	MAINTENA	NCE	
Section	Paragreph Content		Page
SECTION I	Repair Parts, Special Tools, 1 Diagnostic Equipment (THOE), a		3-3
	3-1. Special Tools, TMDE, an	d Support Equipment	3-3
	3-2. Repair Parts		1-1
SECTION II	Services Upon Receipt of Mater	1e1	)
	3-3. General		3-4
	3-4. Duties of the Using Org	antzation	3-4
SECTION III	Preventive Maintenance Checks	and Services	3-8
	3-5. General	••••	3-8
	3-6. Preventive Maintenance	Checks and Services	3-8
SECTION IN	Troubleshoating	••••••	3-10
	3-7. General		3-10
	3-8. Symptom/Descriptive Nam	es index	3-10
	3-9. Troubleshoot Display AZ	, RNG, EL Readout Fault	3-11
	3-10. Troubleshoot Display Gr Fault	ween, Amber, Red Indicator	3-14
	3-11. Troubleshoot Display Re	sticle Fault	3-16
	3-12. Troubleshoot Vehicle Ca	ble/EML Filter	3-17
SECTION V	Corrective Maintenance Procedu	ires	3-18
	3-13. General	•••••	3-18
	3-14. Cleaning	• • • • • • • • • • • • • • • • • • •	3-18
	3-15. Painting	•••••	· · · 3-23
	3-16. Boresight Test	•••••	3-24
	3-17. Removal/Replacement of	LD/R	3-41
		Chande	7 3-1
			• • •



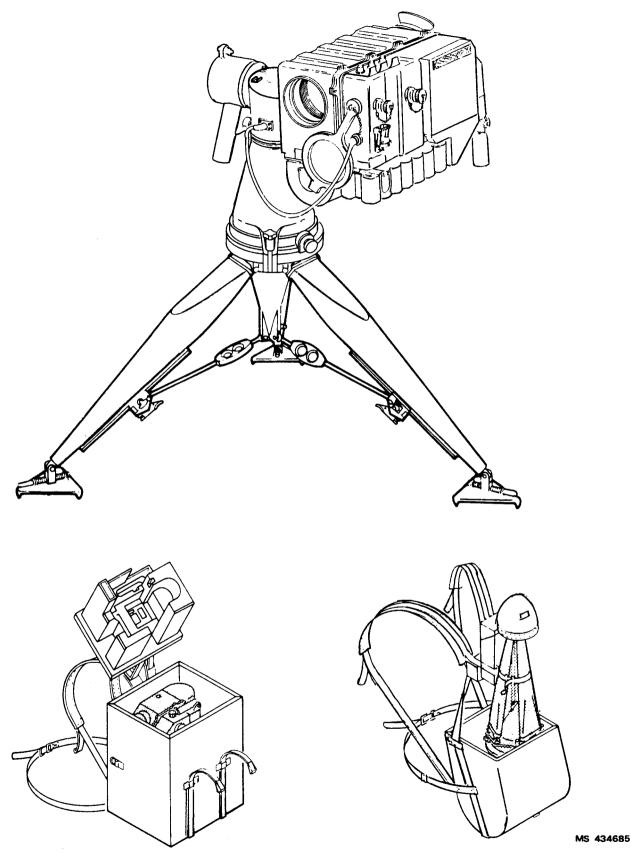
- 4. If you put your thumbnail on the black bar that is aligned with the one on the cover for MAINTENANCE you'll find the beginning of Chapter 3.
- 5. Right under the chapter title you'll see a list of all the sections by title and page number.
- Look down the list until you come to Section II, "Services Upon Receipt of Materiel".

GO TO NEXT PAGE

- 7. Now that you have reached the section you want you'll see the title of each paragraph, the paragraph number and the page number.
- 8. Now look down the list until you come to DUTIES OF THE USING ORGANIZATION. The information you want is located in paragraph 3-4 on page 3-4. Now flip to page 3-4.

TM 9-1260-477-12	
SERVICE	SECTION II ES UPON RECEIPT OF MATERIAL
3-3. GENERAL	
This section contains receiving G/VLLD sets	procedures to be used by maintenance personnel upon
3-4. DUTIES OF USING C	DRGANIZATION
General:	The components of your G/VLLD set are packed as a system with a vehicle cable and with four spare batteries. Refer to paragraph 1-9 for identification.
Administrative Storage Exceptions:	The LD/R battery and/or EMI filter must be removed from the LD/R before placing the LD/R in the shipping container for administrative storage or evacuating the LD/R to Direct Support Maintenance for repair.
Duties:	Organizational Maintenance personnel will:
	Perform the receiving inspection,
	Determine if the equipment is complete,
	Determine if the equipment is in operating condition per chapter 2, and
	Verify that all Modification Work Orders (MAOs) have been implemented.
	Observe the following procedures when handling, inspecting, and maintaining your G/VLLO set:
	Handle components with care; rough handling could damage optical components.
	Do not force levers, knobs, switches, or controls past mechanical stops.
	Perform only those maintenance actions listed in the Maintenance Allocation Chart (MAC) which are authorized for your maintenance level. (See appendix B.)
	Refer equipment to Direct Support Maintenance if it cannot be adjusted or repaired per the MAC.
	Use only those paints, solvents, cleaning fluids, and other materials which are specfically autho- rized or recommended for particular operations.
3-4 Change 7	

- 9. You can find procedures in other sections in the same way. First, find the section you think the procedures should be in, open the manual to that section, and find the page number of the procedure from the list at the beginning of the section.
- 10. You can also use the table of contents on page ii in the front of this manual.



Electro-Optical Target Designator Set. AN/TVQ-2 (G/VLLD)

# CHAPTER 1

#### **INTRODUCTION**

<u>Section</u>	<u>Paragraph</u>	<u>Content</u>	<u>Page</u>	
Section I	General Information			
	1-1	Scope	1-2	
	1-2	Maintenance Forms and Records	1-3	
	1-2.1	Hand Receipt Manuals	1-3	
	1-3	Reporting Equipment Improvement Recommendations (EIR)	1-3	
	1-4	Destruction of Army Materiel to Prevent Enemy Use	1-3	
	1-5	Administrative Storage	1-4	
	1-6	Nomenclature Cross-Reference	1-4	
Section II	Equipment	Description	. 1-6	
	1-7	System Functions	1-6	
	1-8	System Description	1-7	
	1-9	Location and Description of Major G/VLLD Units	1-10	
	1-10	G/VLLD Laser Designator/Rangefinder Description	1-14	
	1-11	Traversing Unit Description	1-1 6	
	1-12	Tripod Description	1-1 8	
	1-13	Battery Description	1-1 9	
	1-14	Backpacks Description	1-20	
	1-15	Ancillary Equipment Transit Assembly Case Description	1-24	
	1-16	Other Ancillary Equipment Description	1-26.4	
	1-17	Equipment Set AN/UAS-12 Description	1-27	
	1-17.1	Equipment Set AN/UAS-126 Description	1-36.1	
	1-17.2	Equipment Set AN/UAS-12D Description	1-36.3	
	1-18	Digital Message Device Description	1-37	

1-1. SCOPE

# SECTION I GENERAL INFORMATION

Manual:	Operator and Organizational Maintenance
Equipment Type:	G/VLLD is a category IV laser designator
Equipment Nomenclature:	Target Designator Set, Electro-Optical, AN/TVQ-2, Ground/Vehicular Laser Locator Designator (G/VLLD).
Equipment Purpose:	a. Locates target coordinates by measuring distance, vertical angle (elevation), and horizon- tal angle (azimuth) to aimpoint with respect to G/VLLD for remote non-laser-seeking ordnance.
	b. Designates stationary/moving targets for la- ser-seeking ordnance which are also called pre- cision guided munitions (PGM).
Special Equipment Limitations:	Never open Laser Designator/Rangefinder (LD/R) or Traversing Unit (TU) except for au- thorized maintenance, and then only in the Semi-Trailer Mounted Electronic Shop AN/ASM-146C.
Type of Personnel:	Operator and Maintenance.
Contents:	information for safe, efficient operation of your equipment.
	a. Provides a general knowledge of equipment, characteristics, and usual/unusual operation procedures.
	b. Provides authorized maintenance proce- dures to keep your equipment operating.
	c. Provides the best possible instructions un- der most circumstances. Adverse weather, terrain, etc., may require modification of proce- dures.
	d. Provides a positive approach and states only what you can do.

#### **1-2. MAINTENANCE FORMS AND RECORDS**

Department of the Army (DA) forms and procedures you are to use for equipment maintenance are those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

#### **1-2.1. HAND RECEIPT MANUALS**

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). TM 9-1260-477-10-HR consists of preprinted hand receipts (DA Form 2062) that list end-item-related equipment (i.e., COEI, B11, and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following sources in accordance with procedures in chapter 3, AR 310-2:

The US Army Adjutant General Publications Center ATTN: AGLD-OD 1655 Woodson Road St. Louis, MO 63114

#### **1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)**

If your G/VLLD set needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let US know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to the address stated in DA PAM 738-750.

#### **1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE**

- Authorization: Demolition of the G/VLLD set within the combat zone to prevent enemy capture and use is done <u>only upon orders of</u> the unit commander.
- **Priorities:** EVACUATION rather than destruction whenever possible is first priority.

**Evacuation:** Equipment that would provide the most intelligence to the enemy or that would be difficult to replace should be selected. Priority of evacuation is:

- (1) Laser designator/rangefinder (LD/R)
- (2) Traversing unit (TU)
- (3) Tripod
- (4) Batteries
- (5) Backpacks

#### 1-4. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE (CONT)

Destruction Each using organization and/or installation having custody of G/VLL sets should have a standing operating procedure for G/VLLD set destruction including:

> Priorities of demolition Method of demolition Quantities of explosives Complete instructions for demolition

#### **1-5. ADMINISTRATIVE STORAGE**

Refer to chapter 3, paragraph 3-4.

## **1-6. NOMENCLATURE CROSS-REFERENCE**

<u>Common Name</u>	Official <u>Nomenclature</u>	Type Designation	<u>Part Number</u> <u>NSN</u>
Ancillary Equipment Bag	Bag/Shroud Assembly		$\frac{10679791}{1440-00-078-1641}$
Ancillary Equipment Transit Assembly Case	Ancillary Equipment Transit Assy.		<u>11508270</u> 1260-01-073-5878
Batteries (3)	Batteries, Storage, BB-704/U	BB-704/U	$\frac{11507792}{6140-01-046-4286}$
Attenuator Filter	Attenuator Filter Assy.		$\frac{11508070}{1260-01-102-9226}$
Night Sight Mount	Adapter, Traversing Unit to AN/TAS-4		$\frac{11559730}{1260-01-075-5711}$
Protective Shroud	Shroud, Protective- Removable		$\frac{11559552}{5340-01-134-8634}$
Shorting Plug	Plug, Laser Inhibit		$\frac{11508090}{1260-01-102-9227}$
Battery	Battery, Storage, BB-704/U	BB-704/U	$\frac{11507792}{6140-01-046-4286}$
Digital Message Device (DMD)	Message Device, Digital, AN/PSG-2	AN/PSG-2	DL-SM-B-875319 7025-01-044-3824

<u>Common Name</u>	Official	Type	<u>Part Number</u>
	<u>Nomenclature</u>	Designation	<u>NSN</u>
EMI Filter	EMI Filter Assembly		<u>11559640</u> 5915-01-073-5879
Ground Vehicular Laser Locator or G/VLLD Set	Target Designator Set, Electra-Optical, AN/TVQ-2	AN/TVQ-2	<u>13090500</u> 1260-01-1 22-5234
Laser Designator/ Rangefinder (LD/R)	Rangefinder-Target Designator, Laser, MX- 9759/TVQ-2	MX-9759/-TVQ-2	<u>13090510</u> 1270-01-1 42-9546
LD/R Backpack	Backpack, Laser Designator		<u>13090504</u> 1260-01-1 26-4478
Lens Cleaning Kit	Kit, Cleaning, External Optics		5952355 NSNL
NATO Connector	NATO Connector		$\frac{11509166}{5935-01-253-5599}$
Night Sight with	Equipment Set	AN/UAS-12	SM-A-808744
Accessories	AN/UAS-12		5855-01-083-9053
Boresight	Collimator, Boresight		<u>SM-C-775002</u>
Collimator	Assy.		5855-01-1 09-6433
Coolant	Pack, Cartridge,		<u>SM-C-804439</u>
Cartridge	Coolant		5855-01-047-2136
Night Sight	Night Vision Sight Infrared, AN/TAS-4	AN/TAS-4	<u>SM-C-772000</u> 5855-01-037-7339
Night Sight	Pack, Battery		SM-C-804438
Battery	Night Sight		NSNL
Power	Vehicle Power		SM-D-772049-1
Conditioner	Conditioner Assy.		NSNL
Night Sight	Equipment Set	AN/UAS-12B	<u>13220200</u>
with Accessories	AN/UAS-12B		5855-01- 73-0808
Boresight	Collimator, Boresight		SM-C-775002
Collimator	Assy.		5955-01-1 09-6433
Night Sight	Night Vision Sight Infrared, AN/TAS4B	AN/TAS4B	<u>13220201</u> 5855-01-1 54-1402

## TM 9-1260-477-12

Common Name	Official	Type	<u>Part_Number</u>
	<u>Nomenclature</u>	<u>Designation</u>	NSN
Battery Power	Battery Power Condi-		<u>SM-D-969</u> 142
Conditioner	tioner		6135-01-143-4470
Vehicle Power	Vehicle Power Condi-		<u>SM-D-969172</u>
Conditioner	tioner Assy.		5895-01-143-3181
Night Sight	Equipment Set	AN/UAS-12D	<u>13314213</u>
with Accessories	AN/UAS-12D		5855-01-316-6572
Boresight Collimator	<sup>.</sup> Collimator, Boresight Assy.		<u>SM-C-775002</u> 5855-01-1 09-6433
Night Sight	Night Vision Sight Infrared, AN/TAS-4D	AN/TAS-4D	<u>13314217</u> 5855-01-318-5173
Battery Power	Battery Power Condi-		SM-D-969142
Conditioner	tioner Assy.		6135-01-1 43-4470
Vehicle Power	Vehicle Power Condi-		<u>SM-D-969172</u>
Conditioner	tioner Assy.		5395-01-1 43-3181

# **1-6. NOMENCLATURE CROSS-REFERENCE (CONT)**

<u>Common Name</u>	Official <u>Nomenclature</u>	Type <u>Designation</u>	<u>Part Number</u> NSN
Tripod	Tripod Unit		$\frac{11507967}{1260-01-046-2838}$
Tripod/TU Backpack	Backpack, Tripod/TU		$\frac{11508073}{1260-01-046-2840}$
Vehicle Adapter Assembly	G/VLLD M1 13A1 Vehi- cle Adapter Kit		<u>5952328</u> 1260-01-082-4981
Power Conditioner Cable for M1 13A1	Cable Assy., APC		$\frac{11572724}{4935\text{-}01\text{-}078\text{-}5429}$
Vehicle Adapter Cable or Slave Cable	Adapter, Cable Assy.		<u>11508891</u> 6 1 5 0 - 0 1 - 0 9 9 - 2 4 1 9
Vehicle Power Cable	Cable, Vehicle W2	W2	$\frac{13033956}{6150\text{-}01\text{-}071\text{-}3822}$

## SECTION II EQUIPMENT DESCRIPTION

#### **1-7. SYSTEM FUNCTIONS**

**Transportation** Requirements: Two men afoot or with vehicle. (Night sight requires additional man.) **Operational Requirements:** Operator: One man; kneeling or sitting position Visibility: Line of sight (LOS) -- daylight. LOS with AN/TAS-4, AN/TAS-4B or AN/TAS-4D night sight darkness **Operational Modes:** AZ ZERO Mode Sets RNG 1/RNG 2 mode azimuth position reference with respect to G/VLLD position to allow triangulation of G/VLLD position with respect to grid north, etc. + Operator visually locates reference. + Operator acquires and tracks reference on crosshairs. + Operator turns TU AZ ZERO ADJ knob until AZ readout equals desired reference heading. RNG 1/RNG 2 Mode Determines target polar (azimuth, range, elevation) coordinates with respect to G/VLLD location. + Operator visually locates target. + Operator acquires and tracks target with LD/R crosshairs. Operator triggers LD/R. + LD/R receives reflected pulse and calculates range. + Polar coordinate data is provided to: DMD radio data link. Operator reading display.

#### **Operational Modes (continued):**



DES Mode

Designates target with laser spot for laserseeking ordnance.

- + Operator visually locates target.
- + Operator acquires and tracks target with LD/R crosshairs.
- + Operator receives command to designate target:

From DMD radio data link

Relayed verbally.

- + Operator triggers LD/R continuous laser pulse train.
- + Laser-seeking ordnance homes in on reflection of laser spot on target.
- + Operator releases trigger immediately upon ordnance impact.

#### **1-8. SYSTEM DESCRIPTION**

Purpose: G/VLLD set provides accurate target location data to support conventional ordnance delivery, and designates targets for laserseeking ordnance.

Capabilities RNG 1/RNG 2 mode operation is virtually undetectable. Rangefinding operation allows direct radio tie-in with field communication network using Digital Message Device (DMD) to (1) transmit target polar coordinates and (2) receive designate commands.

G/VLLD set can operate with AN/TAS-4, AN/TAS-4B or AN/TAS-4D night sight for 24 hours a day effectiveness.

G/VLLD set can operate from a rechargeable 24 V battery or from 24V dc vehicle power using a vehicle power cable.

#### **1-8. SYSTEM DESCRIPTION (CONT)**

Features:

#### **OPERATIONAL**

Power required is a self-contained rechargeable 24 V battery or 24 V dc vehicle source.

Vehicle power setup requires use of EMI filter, NATO connector, slave cable, and vehicle power cable.

Support tripod is adjustable to accommodate terrain with 0 to 20° slope.

Azimuth locator coordinate is adjustable to any reference value.

G/VLLD set and spare battery are portable in two backpacks:

Backpack Laser designator/rangefinder (LD/R) with battery and lens cleaning kit.

Backpack -Tripod/traversing unit (TU) (attached) and spare battery.

Build-in laser light filter allows operator to use G/VLLD set without goggles.

Built-in continuous monitor measures laser performance and battery level.

Night sight interface is only alignment required (chapter 2, section II).

Ancillary equipment transit assembly case provides storage for three batteries, laser training kit, night sight mount, and protective shroud.

## MAINTENANCE

Separates into four replaceable major units:

- Battery
- LD/R
- Ž TU
- Ž Tripod

and two minor assemblies.

- LD/R backpack with lens cleaning kit
- Ž Tripod/TU backpack with spare battery

Requires organizational maintenance ancillary items.

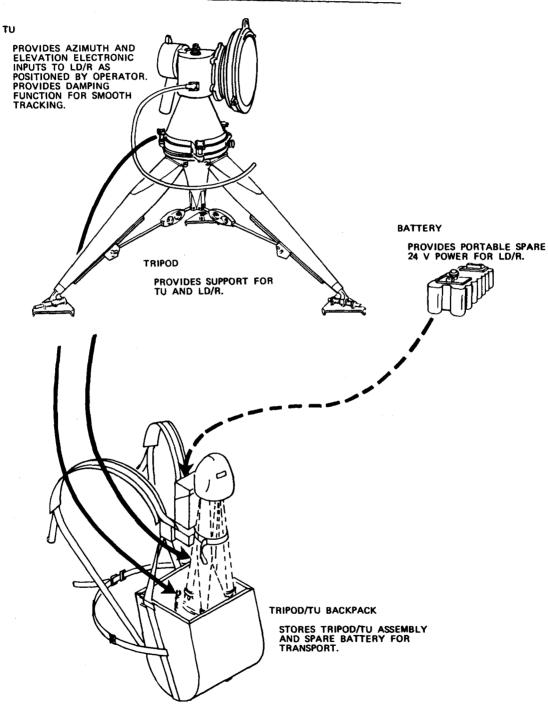
Ž EMI filter, NATO connector, slave cable, and vehicle power cable to operate LD/R without battery by using an alternate 24 V dc source.

LD/R has built-in test for major operating functions:

- Display test
- Laser output energy
- Laser temperature
- Battery charge level

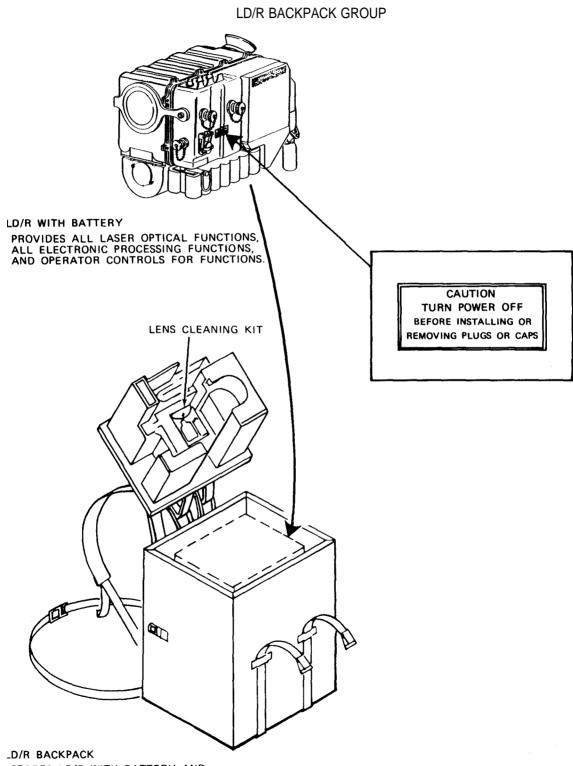
Logistical	Data:	Operating Environment Temperature Humidity Altitude	-25 to +125 °F (-32 to +52 °C) 0 to 100 percent at +80 °F (+27 °C) 10,000 feet maximum
		Power	
		Voltage	24 V dc
		Service	Battery
			External using vehicle power cable (filter)
		Battery Life	10 minutes of continuous designa-
		(Minimum)	tion at +32 to +125 $^{\circ}$ F
			(0 to +52 °C) 7 minutes of continuous designation
			at 0 to $+32$ °F (-18 to 0 °C)
			3 minutes of continuous designation
			at -25 to 0 °F (-32 to -18 °C)
		Storage Requirements	
		Temperature	-50 to +160 $^{\circ}$ F (-46 to +71 $^{\circ}$ C)
		Humidity Altitude	0 to 100 percent at +80 °F (+27 °C) 10,000 feet maximum
		Annual	

# 1-9. LOCATION AND DESCRIPTION OF MAJOR G/VLLD UNITS



TRIPOD/TU BACKPACK GROUP

MS 420739A

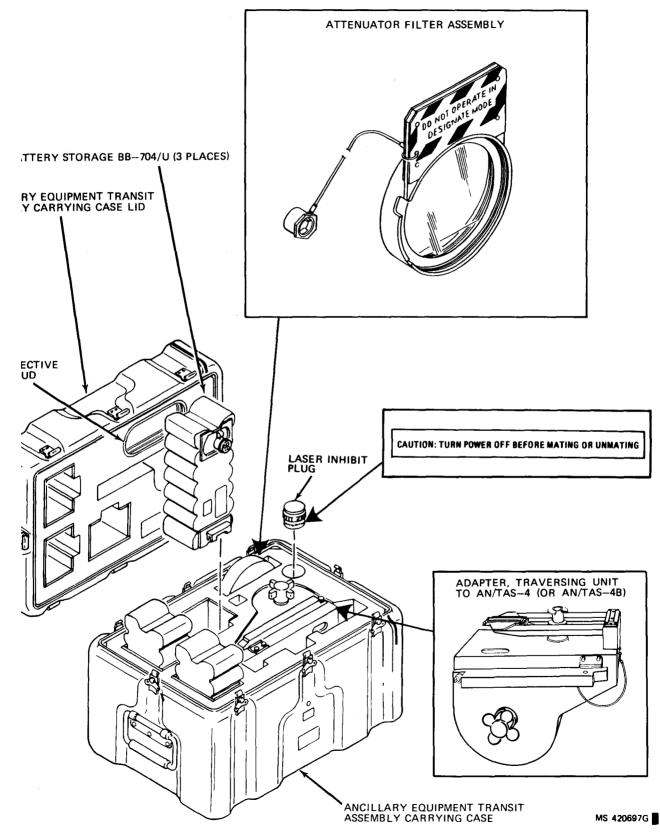


STORES LD/R WITH BATTERY AND LENS CLEANING KIT FOR TRANSPORT.

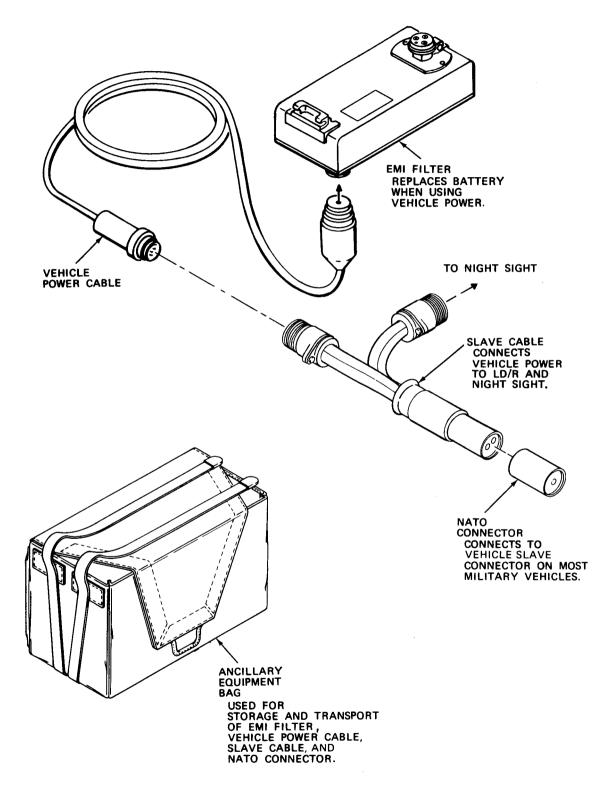
MS 434650A

# 1-9. LOCATION AND DESCRIPTION OF MAJOR G/VLLD UNITS (CONT)

#### **ORGANIZATIONAL ANCILLARY UNITS**

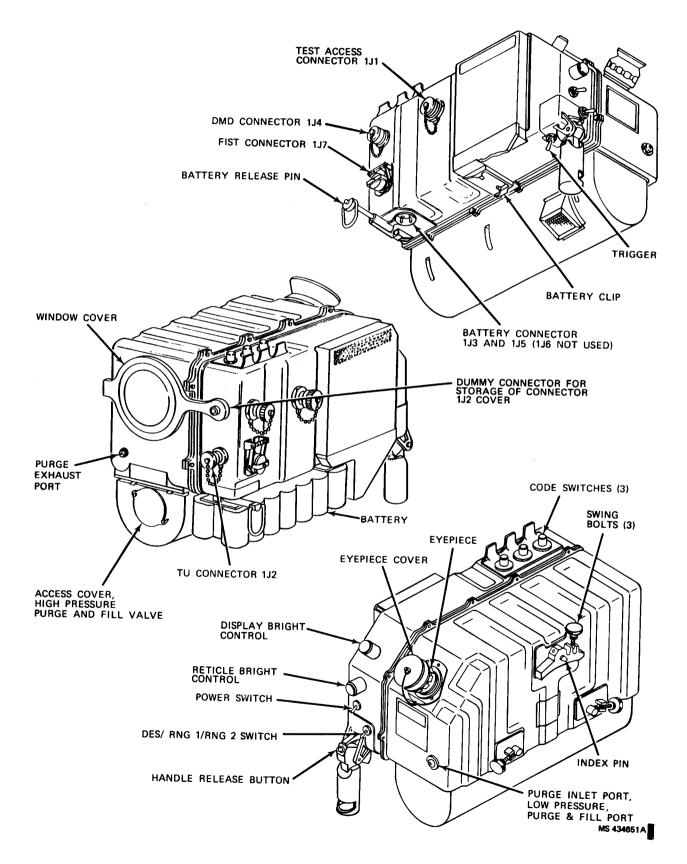


ORGANIZATIONAL ANCILLARY UNITS - CONTINUED



MS 420698D

# 1-10. G/VLLD LASER DESIGNATOR/RANGEFINDER DESCRIPTION



#### SPECIFICATIONS:

Weight	28.9	pounds
--------	------	--------

Dimensions

Length	17.4 inch	es
Width	10.3 inch	es
Height	12.9 inch	nes

Field of View 3° to 4°

Magnification 13X (power) visual

Effective Ranging Capability

Moving Target	3 km (G/VLLD only)
Stationary Target	5 km (G/VLLD only)

Communication Link Interface for digital message device and voice

# OPERATING CHARACTERISTICS:

Pulse-Repetition Frequency (PRF)

RNG 1/RNG 2 Mode	Single pulse (one burst of energy)
DES Mode	Continuous series of pulses

Input Voltage 24 V dc

FEATURES:

Reticle pattern and data display are both visible through eyepiece.

Safety laser filter in eyepiece optics protects operator from eye damage.

Quick-change release pin and swing bolts at all connecting points for other units.

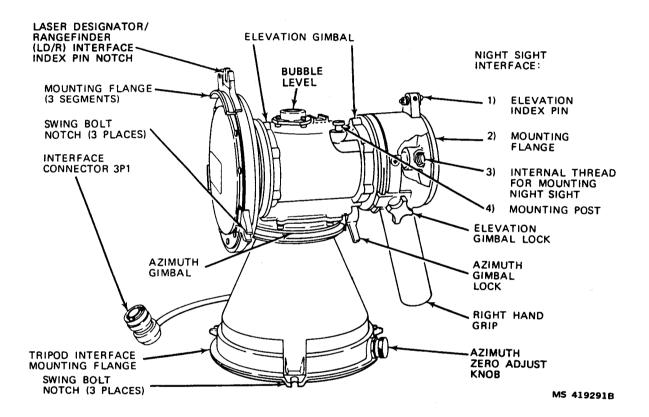
Forced-air heat exchanger cooling.

Built-in test

Display test and continuous monitor of battery charge level, laser output energy, and temperature.

I

# 1-11. TRAVERSING UNIT DESCRIPTION



ł

#### SPECIFICATION:

Weight	9.7 pounds
Dimensions	
Length Width Height Diameter	<ul><li>8.6 inches</li><li>7.8 inches</li><li>12.1 inches</li><li>9.5 inches</li></ul>
Azimuth Movement	360° (1 to 6400 mil)
Elevation Movement	LOS - up 25° (0 to 444 mil) LOS - down 22.5° (0 to -400 mil)

#### FEATURES:

Fluid-damped for manual tracking accuracy.

Locks for elevation and azimuth gimbals.

Azimuth zero adjustment rotates to any reference point.

Bubble level for setup.

Interface index pin and notch, and mounting flanges for easy setup with  $\mbox{LD/R}.$ 

Measures azimuth and elevation position.

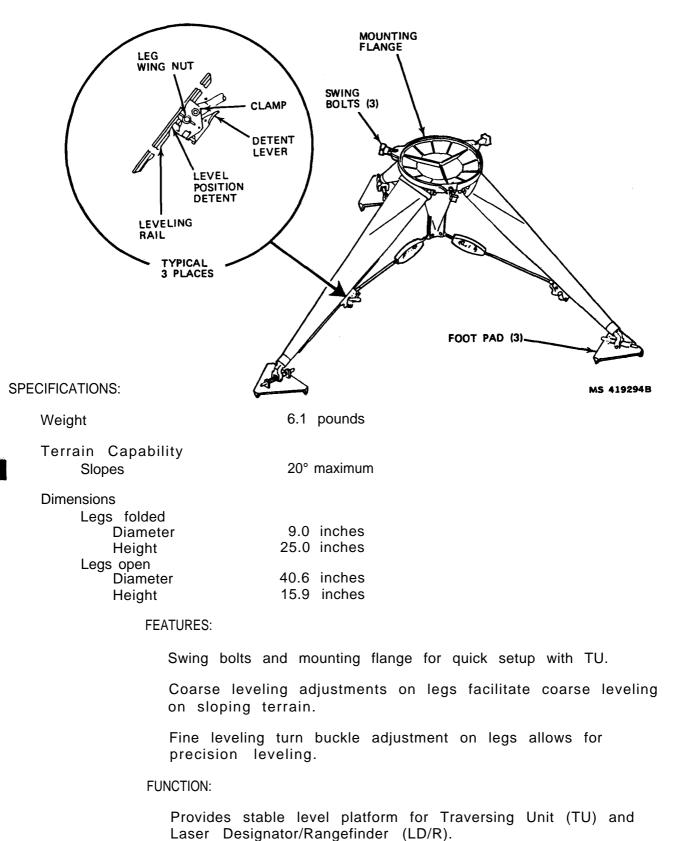
## FUNCTION:

Mechanical interface between LD/R and tripod.

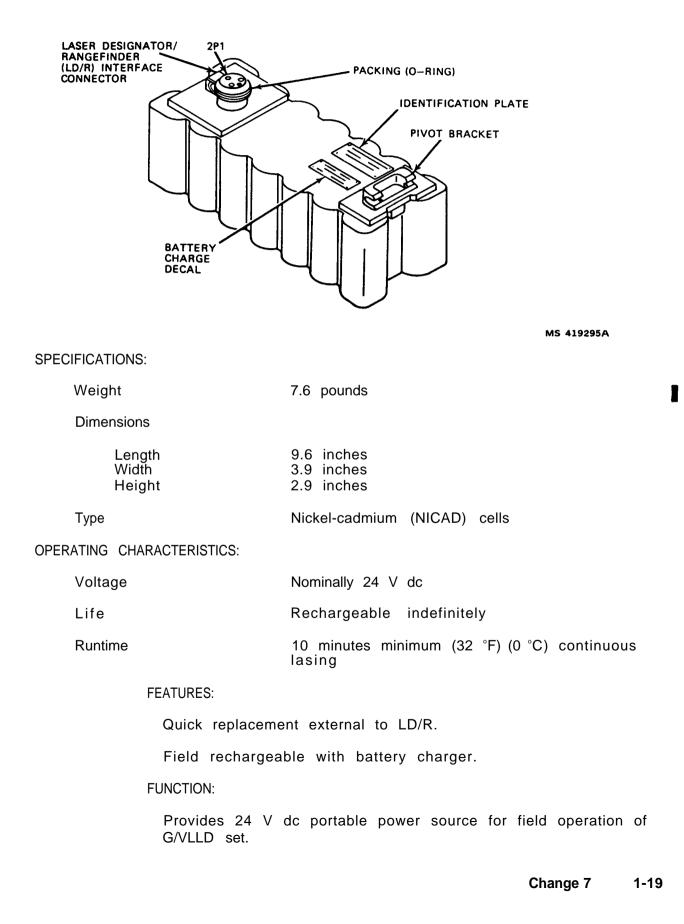
Permits rotation of LD/R in azimuth and elevation.

Outputs azimuth and elevation data to LD/R for display.

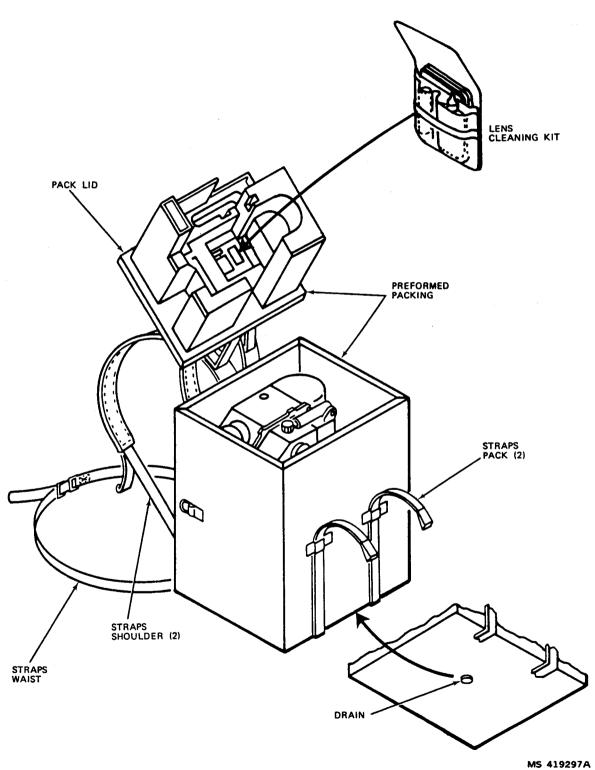
# **1-12. TRIPOD DESCRIPTION**



# **1-13. BATTERY DESCRIPTION**



# 1-14. BACKPACKS DESCRIPTION



### SPECIFICATIONS:

Weight

Empty Loaded		pounds pounds
Loaded	41.4	poun

Dimensions

Length	15.5	inches
Width	13.0	inches
Height	20.3	inches

#### FEATURES:

Prefitted case for easy packing.

Quick-release buckles allow rapid packing/unpacking of LD/R and lens cleaning kit.

Provides storage for lens cleaning kit that contains materials used to clean LD/R external optics. Kit includes screw cap bottle, cleaning solution, lens cleaning tissue, lens dusting brush, and a plastic bag.

FUNCTION:

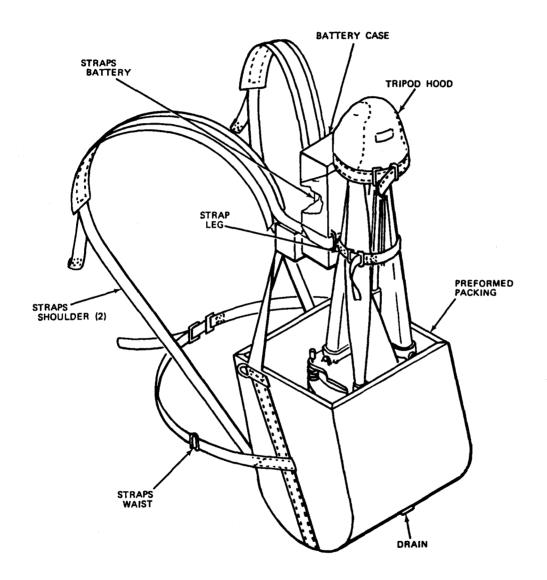
Provides protective cover for storage and for field (short distance) transporation by two men.

Whenever feasible, use LD/R container (item 1, appendix C) for transporting the LD/R. The container should always be used for evacuating the LD/R to Direct Support for repair.

I

# 1-14. BACKPACKS DESCRIPTION (CONT)

# TRIPOD/TU BACKPACK



MS 419299A

#### **SPECIFICATIONS:**

Weight	
Empty	3.1 pounds
Loaded	26.4 pounds
Dimensions	
Length	12.0 inches
Width	11.0 inches
Height	39.0 inches

## FEATURES:

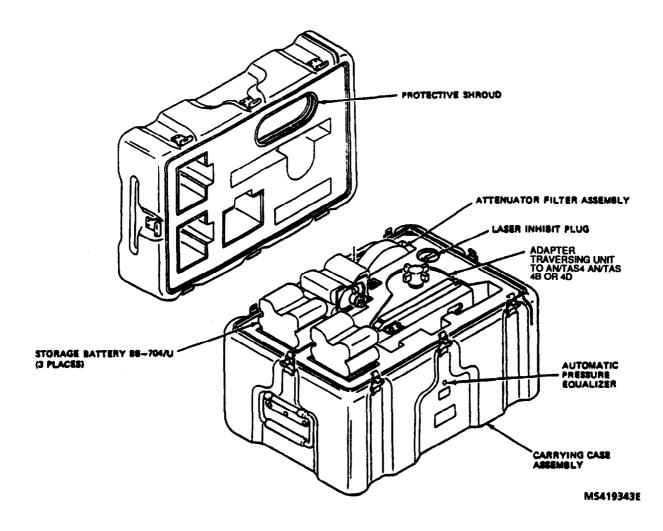
Prefitted case for easy packing.

Quick-release buckles allow rapid packing/unpacking of tripod/TU field assembly and spare battery.

FUNCTION:

Provides protective cover for storage, for field (short distance) transportation by two men, and for evacuation to Direct Support unit for repair.

# 1-15. ANCILLARY EQUIPMENT TRANSIT ASSEMBLY CASE DESCRIPTION



#### **SPECIFICATIONS:**

Weight	
Empty	23.1 pounds
Loaded	37.7 pounds
Dimensions	
Length	20.0 inches
Width	16.7 inches
Height	16.0 inches to 16.7 inches

FEATURES:

Prefitted case for easy packing.

Quick-release latches allow rapid packing/unpacking.

Automatic pressure equalizer keeps air pressure inside case the same as air pressure outside case.

# FUNCTION:

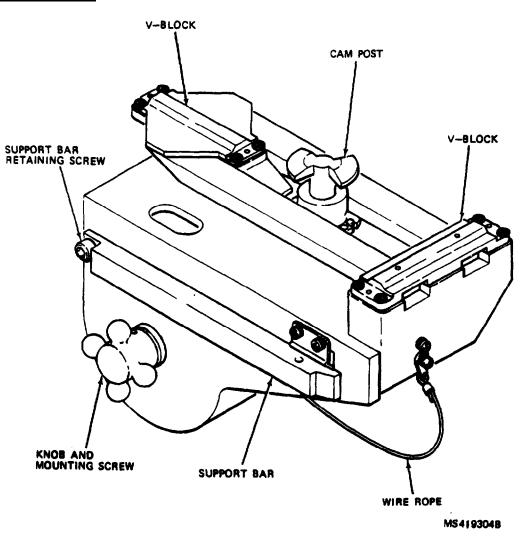
Used for storage and transport of three batteries, attenuator filter assembly, laser inhibit plug, traversing unit to AN/TAS-4,. AN/TAS-48 or AN/TAS-4D) adapter, and protective shroud.

#### NOTE

Items contained in ancillary equipment transit assembly case (except for batteries) are described in the remainder of this paragraph. For description of batteries, refer to paragraph 1-13.

# 1-15. ANCILLARY EQUIPMENT TRANSIT ASSEMBLY CASE DESCRIPTION (CONT)

# TRAVERSING UNIT TO AN/TAS-4 (AN/TAS-4B OR AN/TAS4D) ADAPTER (NIGHT SIGHT MOUNT)



#### FEATURES:

Attaches to G/VLLD TU by means of a hand-tightened knob and mounting screw.

V-blocks and cam post interface with night sight.

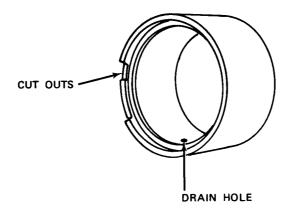
Support bar used during night sight boresight alignment.

Support bar retaining screw holds support bar in storage position.

# FUNCTION:

Used to mount night sight onto G/VLLD set.

PROTECTIVE SHROUD



MS 544168

FEATURES:

Drain hole prevents rain water from collecting inside protective shroud.

Flexible for easy storage.

Cut outs for interface with LD/R window.

FUNCTION:

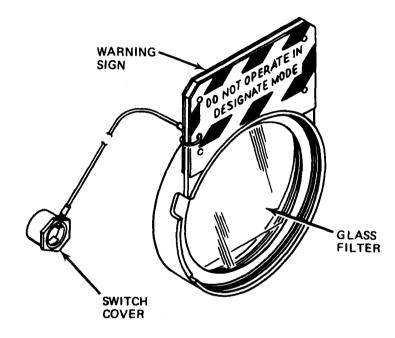
Protects LD/R window from rain, snow, dust, or sand while allowing laser operation.

TM 9-1260-477-12

ł

# 1-15. ANCILLARY EQUIPMENT TRANSIT ASSEMBLY CASE DESCRIPTION

ATTENUATOR FILTER ASSEMBLY



MS 544179

FEATURES:

Glass filter reduces laser output energy.

Switch cover prevents operation of LD/R in designate mode.

Warning sign reminds operator not to operate LD/R in designate mode.

FUNCTION:

Used in training situation to reduce laser hazard in range mode.

TM 9-1260-477-12

LASER INHIBIT PLUG

CAUTION: TURN POWER OFF BEFORE MATING OR UNMATING



MS 544166

FEATURES:

CAUTION label alerts operator to turn LD/R power off before mating or unmating laser inhibit plug.

Polarized connector.

FUNCTION:

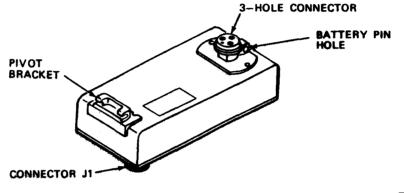
Used in training situations to disable LD/R laser. When laser inhibit plug is installed, LD/R laser output is inhibited.

Mates with LD/R connector 1J1.

TM 9-1260-477-12

# **1-16. OTHER ANCILLARY EQUIPMENT DESCRIPTION**

EMI FILTER



MS 544161

#### FEATURES:

3-hole connector mates with LD/R power connector.

Connector J1 mates with vehicle power cable.

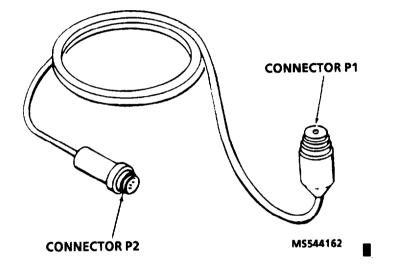
Pivot bracket and battery pin hole allow mounting on LD/R in same way as battery.

# FUNCTION:

Filters power supplied from vehicle source.

Filters out high voltage spikes to protect LD/R circuitry. Replaces battery when operating from vehicle power source.

# VEHICLE POWER CABLE



FEATURES:

Connector P1 mates with EMI filter.

Connector P2 mates with slave cable.

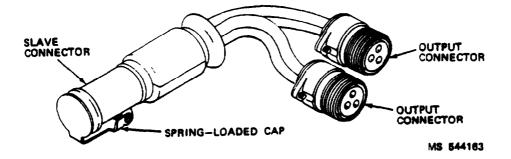
# FUNCTION:

Used with EMI filter, NATO connector, and slave cable to connect vehicle power source to  $\ensuremath{\text{LD/R}}$ 

Change 8 1-26.5

# 1-16. OTHER ANCILLARY EQUIPMENT DESCRIPTION (CONT)

## SLAVE CABLE



## FEATURES:

Slave connector mates with NATO connector for connection to vehicle power source.

Two identical output connectors mate with vehicle power cable and/or night sight power cable 2W1.

Spring-loaded cap protects slave connector during storage.

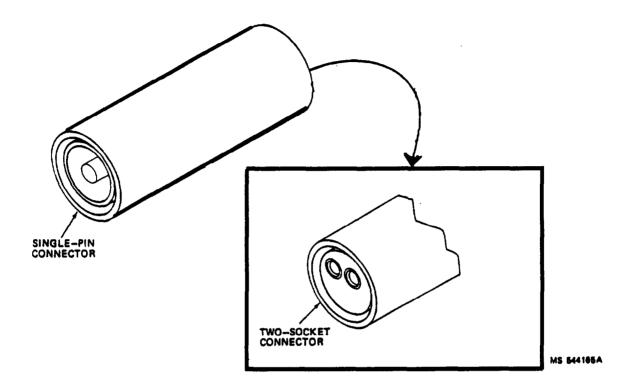
## FUNCTION:

Used with EMI filter, NATO connector, and vehicle power cable to connect vehicle power source to  $\mbox{LD/R}$ 

Used with night sight power cables (2W1 and 2W2) and vehicle power conditioner to connect vehicle power to AN/TAS-4 (AN/TAS-46 or AN/TAS-4D) night sight.

1-26.6 Change 10

# NATO CONNECTOR



## FEATURES:

Single-pin connector mates with vehicle slave connector on most military vehicles.

Two-socket connector mates with slave cable.

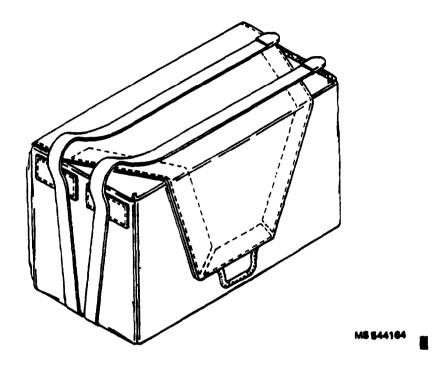
## FUNCTION:

Used with EMI filter, slave cable, and vehicle power cable to connect vehicle power source to LD/R

Used with night sight power cables (2W1 and 2W2), slave cable, and vehicle power conditioner to connect vehicle power to AN/TAS-4 (AN/TAS-4B or AN/TAS-4D) night sight.

# 1-16. OTHER ANCILLARY EQUIPMENT DESCRIPTION (CONT)

### ANCILLARY EQUIPMENT BAG



#### **SPECIFICATIONS:**

Weight

2 pounds approximately

Dimensions

Length	20.0	inches
Width	9.5	inches
Height	13.5	inches

# FEATURES:

Velcro fasteners

Straps and buckles

# FUNCTION:

Storage and transport of EMI filter, NATO connector, slave cable, and vehicle power cable.

1-26.8 Change 8

## 1-17. EQUIPMENT SET AN/UAS-12 DESCRIPTION

The night sight mount (part of G/VLLD) provides the interface between the night sight and traversing unit for attaching the night sight.	handling ditioner boresigh battery	ent Set AN/UAS-12 includes the AN/TAS-4 field g case, AN/TAS-4 night sight, vehicle power con- r, input power cable 2W1, output power cable 2W2 nt collimator carrying case, boresight collimator, case, coolant cartridge case, block and plunger, raning kit, plastic bag, and an equipment cover.
--	---	---

- Purpose: Equipment Set AN/UAS-12 is used with G/VLLD to locate and designate targets in total darkness and/or poor visibility conditions.
- Capabilities: Can operate with G/VLLD for 24 hours-a-day effectiveness. Can operate from a portable rechargeable battery or vehicle power conditioner.

# FEATURES: Power required is self-contained or from vehicle source.

Converts infrared (IR) energy entering front lens to a visible image viewed through the night sight eyepiece.

AN/TAS-4 night sight is cooled by a rechargeable coolant cartridge.

Wide field of view (WFOV) or narrow field of view (NFOV) is selected depending on target distance.

Boresight collimator is used to align the night sight with the G/VLLD.

# AN/TAS-4 NIGHT SIGHT LOGISTICAL DATA:

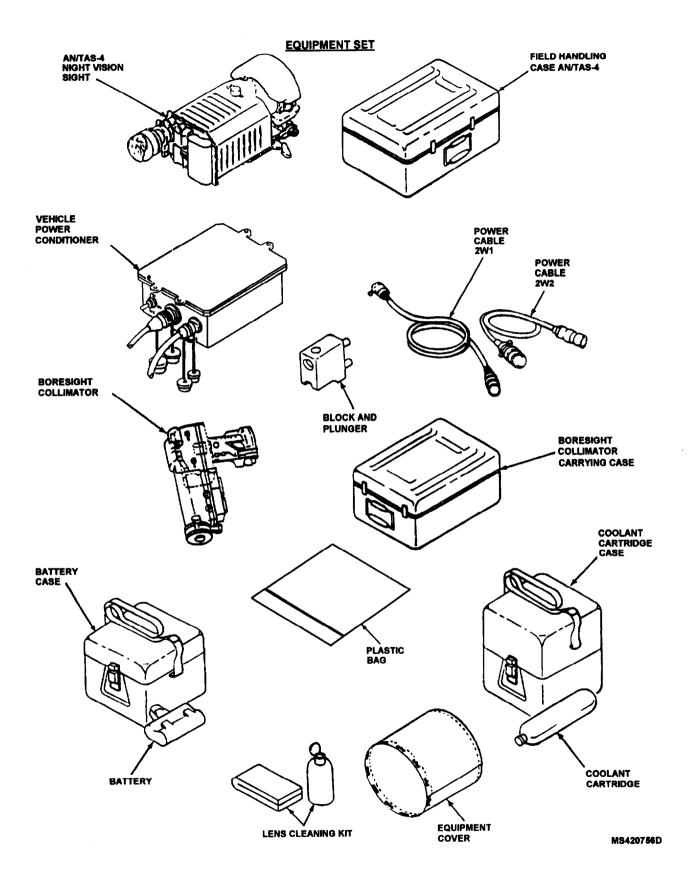
Operating Er	nvironment
--------------	------------

Temperature	-25 to + 125 °F (-32 to + 52 °C)
Power	
Voltage	4.8 V dc

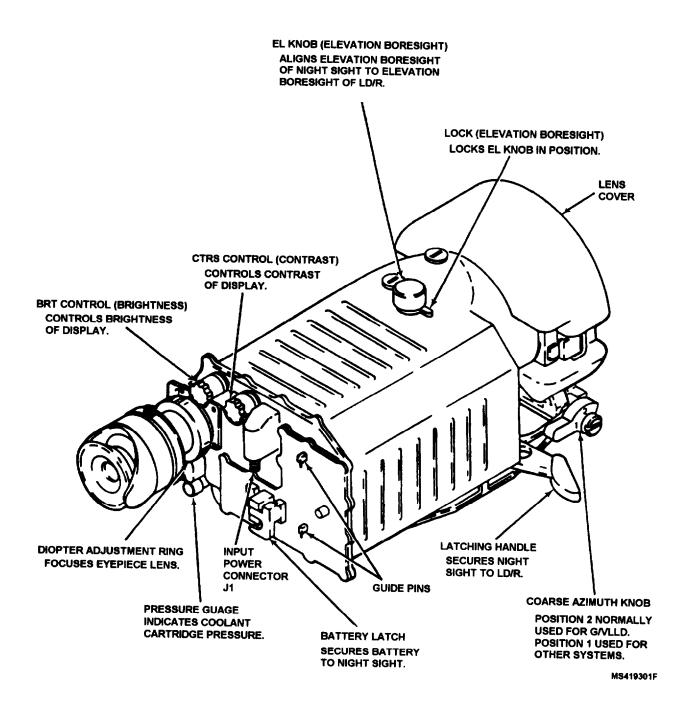
Battery Operating	2 hours minimum at -5 to + 125 °F (-21 to + 52 °C).
Time per charge	1 hour minimum at -25 °F (-32 °C).

# 1-17. EQUIPMENT SET AN/UAS-12 DESCRIPTION (CONT)

AN/TAS-4 Night Sight Coo	ling	
Cooldown Time	15 seconds maximum	n at 6000 psi.
Pressure Range	1000 to 6000 psi.	
Operating Time per Charge	2 hours minimum at	+ 125 °F ( + 52 °C)
AN/TAS-4 NIGHT SIGHT SF	PECIFICATIONS:	
Weight (with field handling	g case)	29 pounds
Dimensions (of field hand)	ling case)	
Length Width Height		19.70 inches 19.25 inches 12.40 inches
Optical Characteristics		
Field of View		
WFOV NFOV		3.3° by 6.6° (h x w) 1 .1° by 2.2° (h x w)
Magnification		
WFOV NFOV		4 x 1 2 x
Operating Characteristics		
Voltage Required		4.8 V dc
Input Illumination		Infrared



#### 1-17. EQUIPMENT SET AN/UAS-12 DESCRIPTION (CONT)



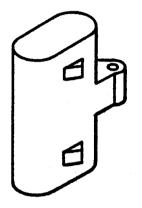
# FIELD OF VIEW SELECTOR SELECTS FIELD OF VIEW. LOCK (AZIMUTH BORESIGHT) WFOV POSITION SELECTS LOCKS AZ KNOB IN POSITION. WIDE FIELD OF VIEW. AZ KNOB (AZIMUTH BORESIGHT) NFOV POSITION SELECTS ALIGNS AZIMUTH BORESIGHT OF NIGHT SIGHT TO NARROW AZIMUTH BORESIGHT OF LD/R. FIELD OF LENS VIEW. COVER COOLANT CARTRIDGE CARTRIDGE RETAINER CLIP HOLDS COOLANT CARTRIDGE IN PLACE. AIR/BATT \_OFF/LOCK CHECK . ON RELEASE ACTUATOR SWITCH (APPEARANCE VARIES AMONG MODELS) RANGE FOCUS KNOB FOCUSES IR ENERGY OPENS AND CLOSES COOLANT VALVES. SWITCHES ELECTRICAL POWER ON RETICLE. ON AND OFF. SECURES COOLANT CARTRIDGE IN PLACE. COOLANT OFF, ELECTRICAL POWER OFF, COOLANT CARTRIDGE RELEASED. RELEASE POSITION OFF/LOCK POSITION COOLANT OFF, ELECTRICAL POWER OFF, COOLANT CARTRIDGE SECURED. COOLANT TO GAUGE ONLY, ELECTRICAL POWER ON, COOLANT CARTRIDGE AIR/BATT CHECK POSITION SECURED. COOLANT TO GAUGE AND SYSTEM, ELECTRICAL POWER ON, COOLANT CARTRIDGE SECURED. ON POSITION

#### AN/TAS-4 NIGHT SIGHT

MS 419302E

# 1-17. EQUIPMENT SET, AN/UAS-12 DESCRIPTION (CONT)

NIGHT SIGHT BATTERY



MS 420420

## SPECIFICATIONS:

Weight

1.7 pounds

Dimensions Length Width

Length	5.0	inches
Width Height		inches inches
5		

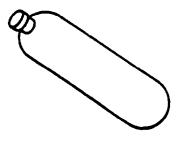
# FEATURES:

Rechargeable, portable, and attaches to the AN/TAS-4 night sight.

# FUNCTION:

The battery is used to power the AN/TAS-4 night sight when vehicle power is not available.

### COOLANT CARTRIDGE



MS 420421

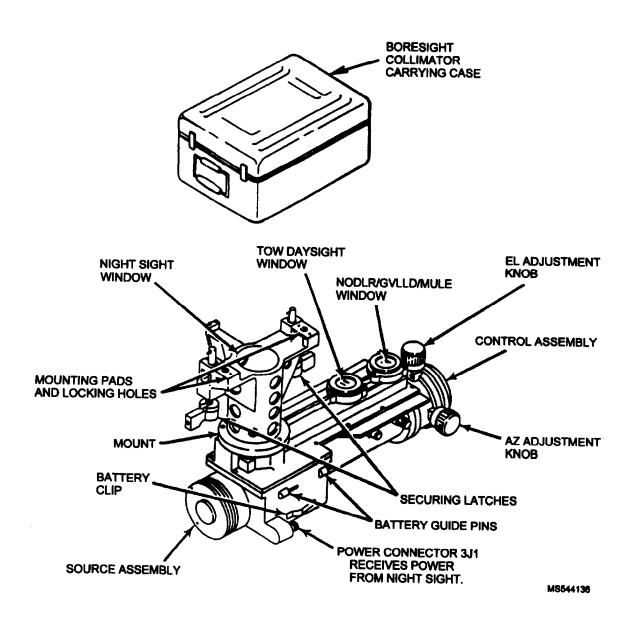
#### **SPECIFICATIONS:**

Weight1.4 poundsDimensions<br/>Length<br/>Diameter8.12 inches<br/>2.12 inchesOperational Characteristics2.12 inchesPressure Range1000 to 6000 psiOperating Time<br/>per Recharge2.0 hours minimum at + 125 °F ( + 52 °C )FEATURES:<br/>Rechargeable.

#### FUNCTION:

Used to cool the AN/TAS-4 night sight infrared detectors.

# 1-17. EQUIPMENT SET AN/UAS-12 DESCRIPTION (CONT)



# **SPECIFICATIONS:**

25 pounds

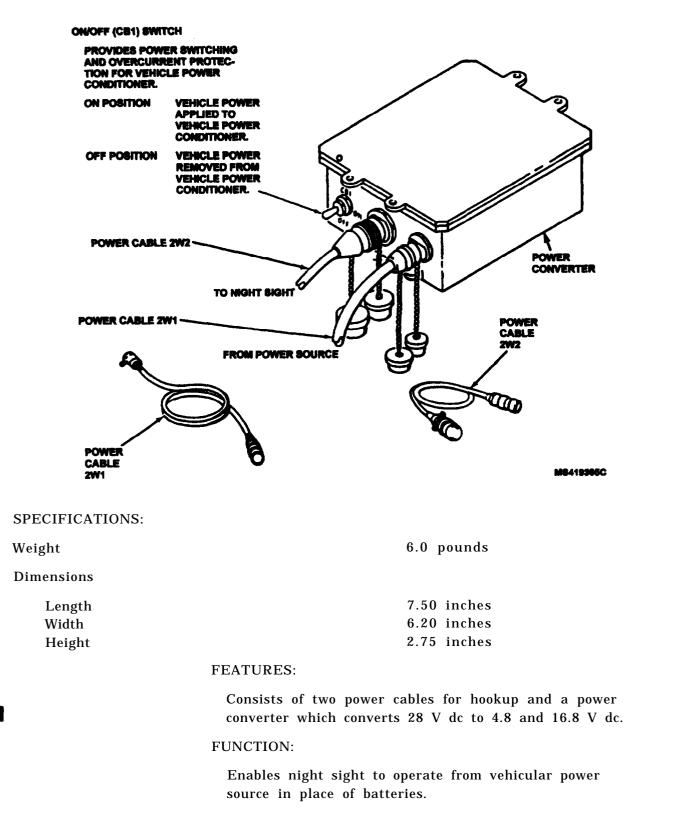
Dimensions (of carrying case) Length Width Height

20.80 inches15.10 inches10.50 inches

# FUNCTION:

Used to align the night sight with G/VLLD optical system.

## 1-17. EQUIPMENT SET AN/UAS-12 DESCRIPTION (CONT)



#### 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION

- SYSTEM DESCRIPTION: Equipment Set AN/UAS-12B includes the AN/TAS-4B field handling case, AN/TAS-4B night sight, vehicle power conditioner, input power cable 2W1, output power cable 2W2, boresight collimator carrying case, boresight collimator, boresight collimator power cable 3W1, night sight battery power conditioner, output cable 8W1, night sight spare battery pack, block and plunger, lens cleaning kit, plastic bag, and an equipment cover. The night sight mount (part of G/VLLD) provides the interface between the night sight and traversing unit for attaching the night sight.
  - Purpose: Night Sight AN/TAS-4B is used with G/VLLD to locate and designate targets in total darkness and/or poor visibility conditions.
  - Capabilities: Can operate with G/VLLD for 24 hours-a-day effectiveness. Can operate from a portable battery power conditioner or vehicle power conditioner.
- FEATURES: Power is obtained from battery power conditioner or from vehicle source.

Converts infrared (IR) energy entering front lens to a visible image viewed through the night sight eyepiece.

AN/TAS4B night sight has an internal closed-cycle cooling system to cool the IR detectors.

Wide field of view (WFOV) or narrow field of view (NFOV) is selected depending on target distance.

Boresight collimator is used to align the night sight with the G/VLLD.

#### AN/TAS-4B NIGHT SIGHT LOGISTICAL DATA:

Operating Environment	
Temperature	-20 to +125 °F (-29 to +52 °C)
Power	
Voltage Power	4.8 V dc, 16.8 Vdc 20 W
AN/TAS-AB Night Sight Cooling	
Cooldown Time Refrigeration Capacity	6.5 minutes maximum 300 mW at -316 °F (-193 °C) (80 K)

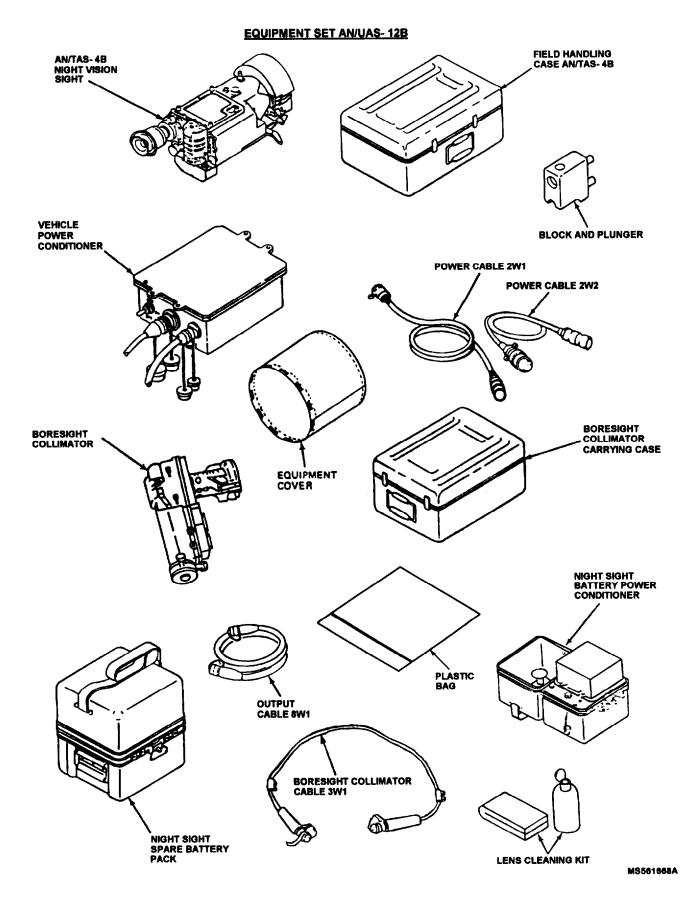
Change 10 1-36.1

# 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION (CONT)

AN/TAS-4B NIGHT SIGHT SPECIFICATIONS:

Weight (with Field Handling Case)	29.5 pounds
Dimensions (of Field Handling Case)	
Length	20.00 inches
Width	13.00 inches
Height	10.00 inches
Optical Characteristics	
Field of View	
WFOV	3.4° by 6.8° (h x w)
NFOV	1.1° by 2.2° (h x w)
Magnification	
WFOV	4 x
NFOV	12x
Operating Characteristics	
Voltage Required	4.8 V dc, 16.8 V dc
Input Illumination	Infrared

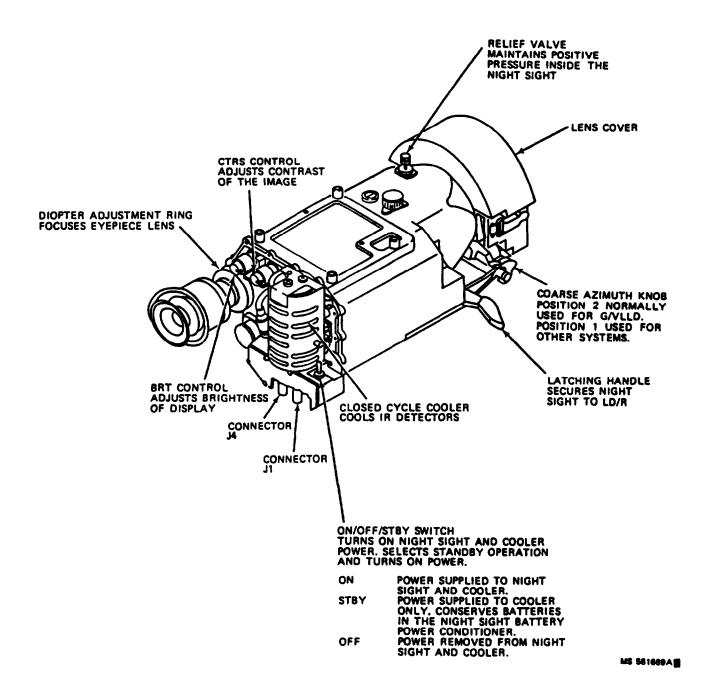
1-36.2 Change 10



Change 10 1-36.3

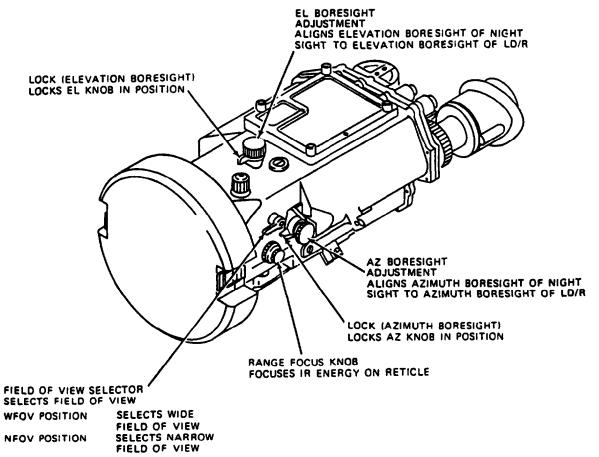
# 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION (CONT)

AN/TAS-4B NIGHT SIGHT



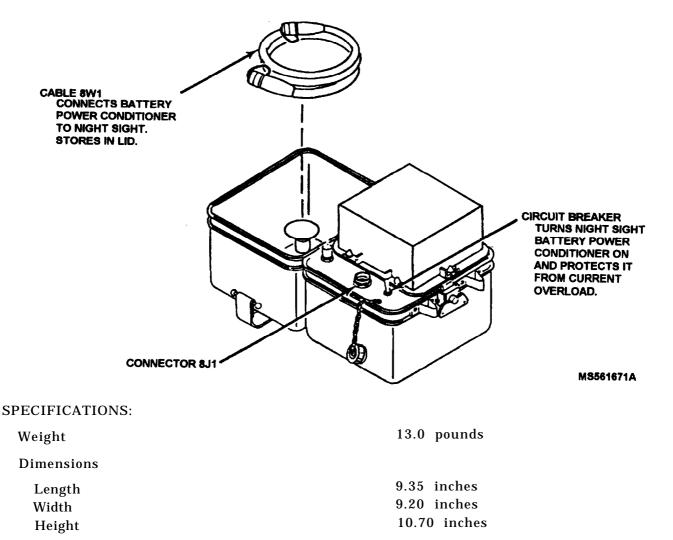
**1-36.4 Change** 7

# AN/TAS-4B NIGHT SIGHT



MS 561670A

# 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION (CONT)



#### FEATURES:

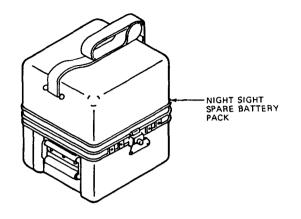
Has an operating time of approximately 5 hours at temperatures between -20 and + 69  $^{\circ}$ F (-29 to + 21  $^{\circ}$ C) and 10 hours between + 70 and + 125  $^{\circ}$ F ( + 21 to + 52  $^{\circ}$ C).

The battery power conditioner has two night sight batteries.

#### FUNCTION:

Powers the AN/TAS-4B night sight when vehicle power is not available.

# NIGHT SIGHT SPARE BATTERY PACK



MS 561672

SPECIFICATIONS:

Weight

Dimensions Length Width Height 2.5 pounds

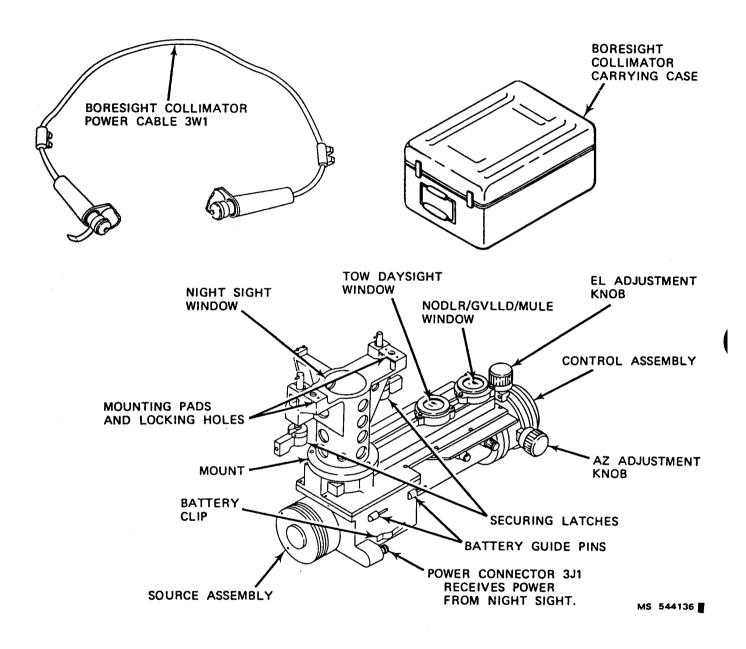
4.50 inches2.25 inches5.00 inches

FUNCTION:

The battery pack contains two spare lithium batteries for the night sight battery power conditioner.

# 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION (CONT)

BORESIGHT COLLIMATOR



# **SPECIFICATIONS:**

25 pounds
20.80 inches
15.10 inches
10.50 inches

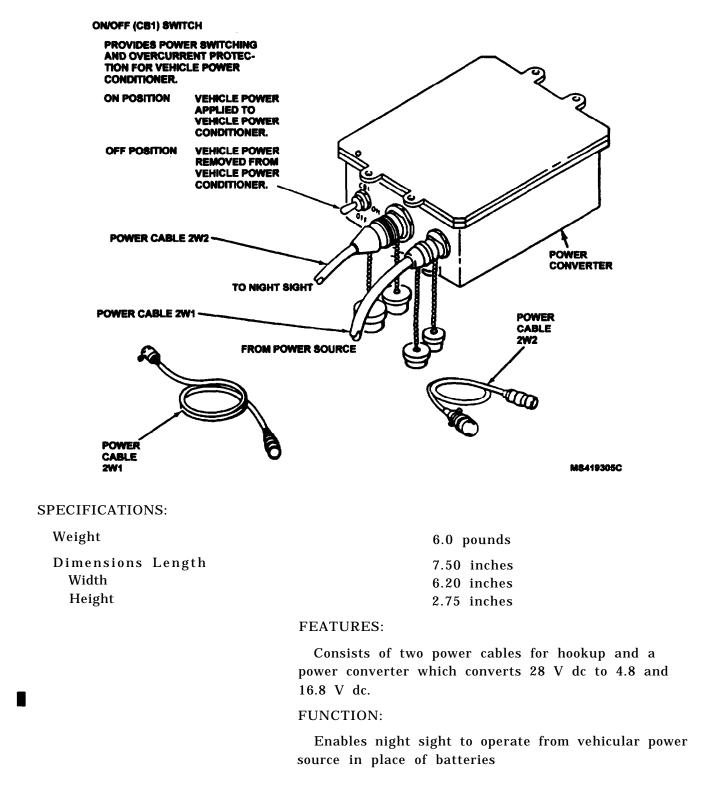
# FUNCTION:

Used to align the night sight with G/VLLD optical system.

Power cable 3W1 connects night sight power to boresight collimator.

# 1-17.1. EQUIPMENT SET AN/UAS-12B DESCRIPTION (CONT)

VEHICLE POWER CONDITIONER



# 1-17.2. EQUIPMENT SET AN/UAS-12D DESCRIPTION

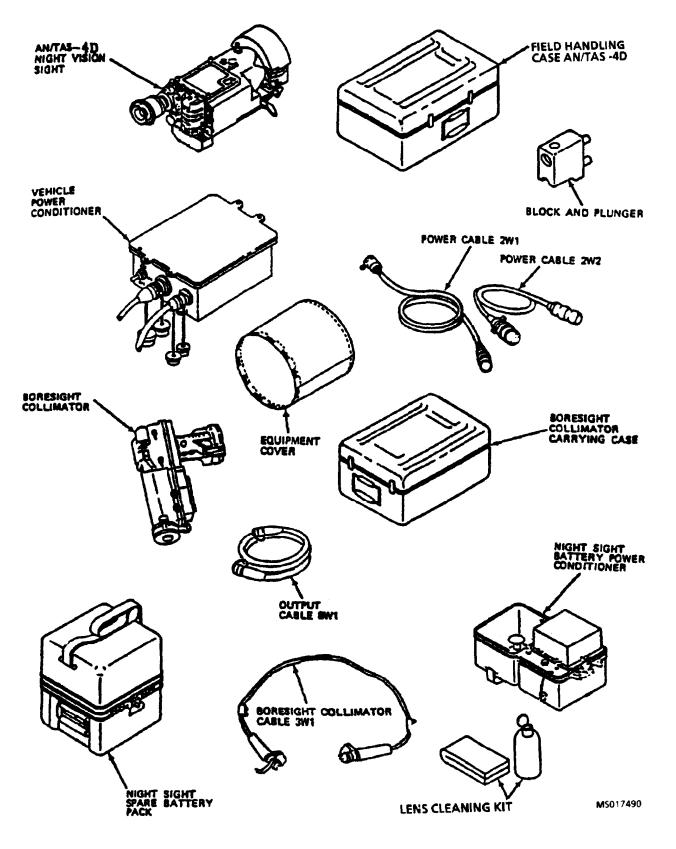
SYSTEM DESCRIPTION:	Equipment Set AN/UAS-12D includes the AN/TAS-4D field handling case, AN/TAS4D night sight, vehicle power con- ditioner, input power cable 2W1, output power cable 2W2, boresight collimator carrying case, boresight collimator, boresight collimator power cable 3W1, night sight battery power conditioner, output cable 8W1, night sight spare battery pack, block and plunger, lens cleaning kit, and an equipment cover. The night sight mount (part of G/VLLD) provides the interface between the night sight and travers- ing unit for mounting the night sight.	
Purpose:	Night Sight AN/TAS-4D is used with G/VLLD to locate and designate targets in total darkness and/or poor visibility conditions.	
Capabilities:	Can operate with G/VLLD for 24 hours-a-day effectiveness. Can operate from a portable battery power conditioner or vehicle power conditioner.	
FEATURES:	Power is obtained from battery power conditioner or from vehicle source.	
	Converts infrared (IR) energy entering front lens to a visible image viewed through the night sight eyepiece.	
	AN/TAS-4D night sight has an internal closed-cycle cooling system to cool the IR detectors.	
	Wide field of view (WFOV) or narrow field of view (NFOV) is selected depending on target distance.	
	AN/TAS-4D night sight has an Operator Selectable Filter (OSF) capability.	
	Boresight collimator is used to align the night sight with the G/VLLD.	
AN/TAS-4D NIGHT SIGHT	LOGISTICAL DATA:	
Operating Environment		
Temperature	-20 to +125 °F (-29 to +52 °C)	
Power		
Voltage Power	4.8 V dc, 16.8 Vdc 20 W	
AN/TAS-4D Night Sight	Cooling	
Cooldown Time Refrigeration Capacity	6.5 minutes maximum 300 mW at -316 °F (-193 °C) (80 K)	

# 1-17.2. EQUIPMENT SET AN/UAS-12D DESCRIPTION (CONT)

AN/TAS-4D NIGHT SIGHT SPECIFICATIONS:

Weight (with Field Handling Case)	29.5 pounds
Dimensions (of Field Handling Case)	
Length Width Height	20.00 inches 13.00 inches 10.00 inches
Optical Characteristics	
Field of View	
WFOV NFOV	3.4° by 6.8° (h x w) 1.1° by 2.2° (h x w)
Magnification	
WFOV NFOV	4 x 1 2 x
Operating Characteristics	
Voltage Required Input Illumination	4.8 V dc, 16.8 V dc Infrared
OPERATOR SELECTABLE FILTER	
THREE FILTER POSITIONS RESET POSITION	

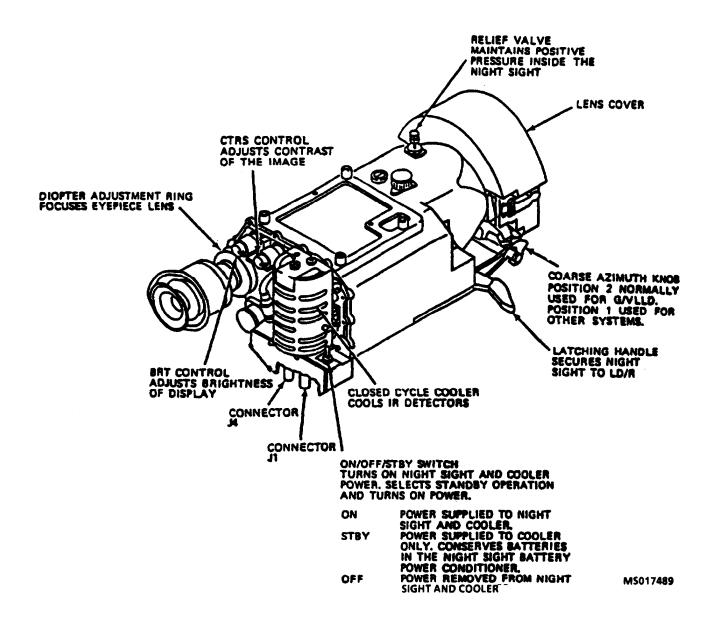
# EQUIPMENT SET AN/UAS 12D



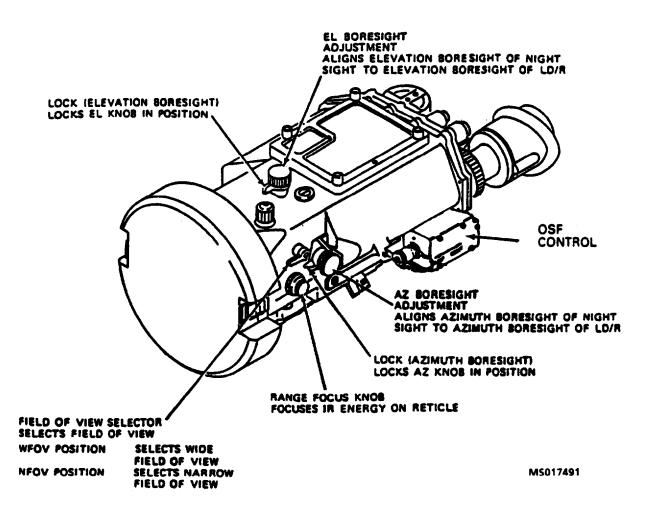
Change 10 1-36.13

# **1-17.2. EQUIPMENT SET AN/UAS-12D DESCRIPTION (CONT)**

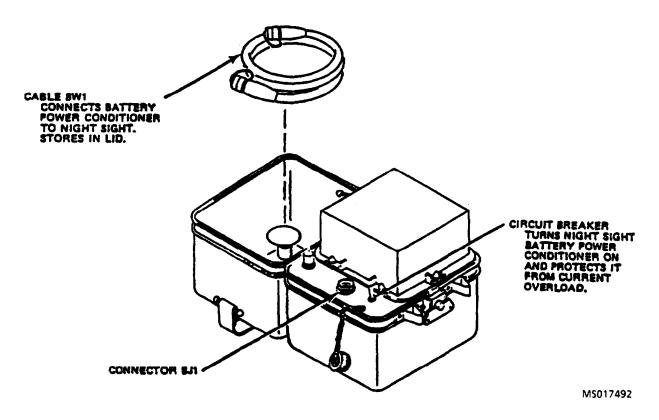
AN/TAS-4D NIGHT SIGHT



#### AN/TAS-4D NIGHT SIGHT



# 1-17.2. EQUIPMENT SET AN/UAS-12D DESCRIPTION (CONT) <u>NIGHT SIGHT BATTERY POWER CONDITIONER</u>



#### **SPECIFICATIONS:**

Weight	13.0 pounds
Dimensions	
Length	9.35 inches
Width	9.20 inches
Height	10.70 inches

#### FEATURES:

Has an operating time of approximately 10 hours at temperatures between -5 and + 125 °F (-21 to + 52 °C).

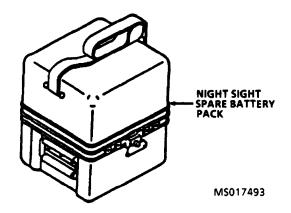
The battery power conditioner has two night sight batteries.

## FUNCTION:

Powers the AN/TAS-4D night sight when vehicle power is not available.

## 1-36.16 Change 10

## NIGHT SIGHT SPARE BATTERY PACK



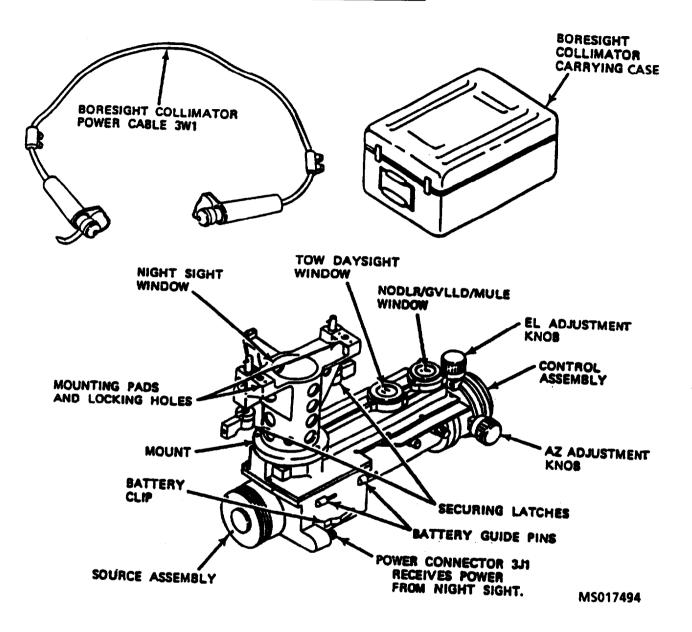
2.5 pounds
4.50 inches
2.25 inches
5.00 inches

## FUNCTION:

The battery pack contains two spare lithium batteries for the night sight battery power conditioner.

# 1-17.2. EQUIPMENT SET AN/UAS-12D DESCRIPTION (CONT)

#### BORESIGHT COLLIMATOR



## **SPECIFICATIONS:**

Weight (with carrying case)	25 pounds
Dimensions (of carrying case)	
Length	20.80 inches
Width	15.10 inches
Height	10.50 inches

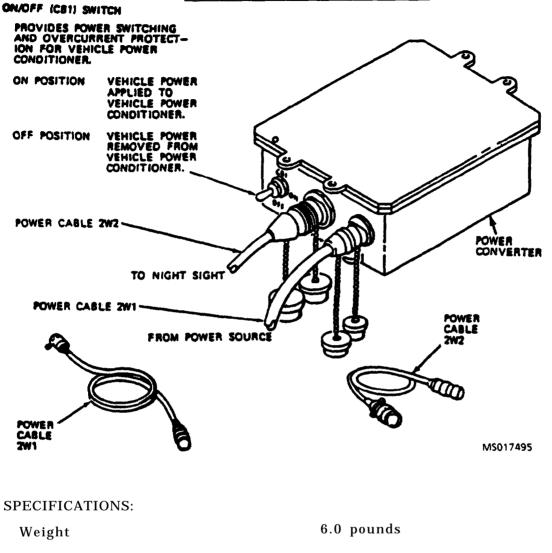
FUNCTION:

Used to align the night sight with G/VLLD optical system.

Power cable 3W1 connects night sight power to boresight collimator.

# ■1-17.2. EQUIPMENT SET AN/UAS-120 DESCRIPTION (CONT)

## VEHICLE POWER CONDITIONER



Dimensions		
Length	7.50	inches
Width	6.20	inches
Height	2.75	inches

## FEATURES:

Consists of two power cables for hookup and a power converter which converts 28 V dc to 4.8 and 16.8 V dc.

#### FUNCTION:

Enables night sight to operate from vehicular power source in place of batteries.

# 1-18. DIGITAL MESSAGE DEVICE DESCRIPTION

SYSTEM DESCRIPTION:

- Purpose: Digital Message Device AN/PSG-2 is a small, lightweight, portable, battery powered, two-way communication terminal. The AN/PSG-2 is used by field artillery forward observers to send and receive digital information to the Tactical Fire Direction System (TACFIRE) and other AN/PSG-2's through standard Army communication radios.
- Capabilities: Can operate across entire G/VLLD environmental range. Can operate on rechargeable battery or vehicle power.

Features:

OPERATIONAL

Power is self-contained or from vehicle source.

Rechargeable battery pack. Vehicular radio mount receptacle cable assembly (24/28 V dc) or 24 V dc vehicle battery.

Fifty-six character keyboard and digital display permits the operator to enter, review, and edit (through the use of fixed format messages or composed freetext messages) the messages before transmitting. Incoming messages will also appear on the display panel.

Connected by 12-foot cable assembly to G/VLLD.

Keyboard and message volume adjustable from full off to maximum loudness.

Display lighting adjustable from off (dark) to maximum brightness.

Transmission and reception of digital information.

256 characters.8 message lines each containing a maximum of 32 character positions.Selectable 600 or 1200 bits per second.

# 1-18. DIGITAL MESSAGE DEVICE DESCRIPTION (CONT)

Features - Continued

MAINTENANCE

1

Separates into nine replaceable units.

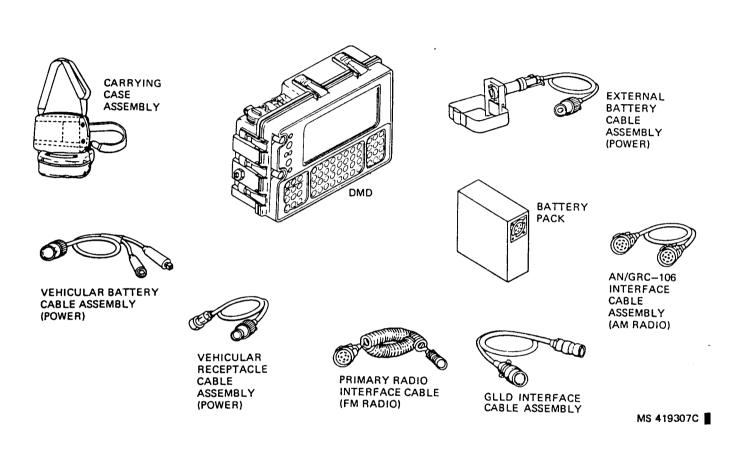
Digital Message Device AN/PSG-2 Battery Pack Primary Radio Interface Cable Assembly External Battery Cable Assembly AN/GRC-106 Interface Cable Assembly Vehicular Receptacle Cable Assembly Vehicular Battery Cable Assembly GLLD Interface Cable Assembly Carrying Case Assembly

Logistical Data

## OPERATING ENVIRONMENT

Temperature	-25 to +125 °F (-32 to +52 °C)
POWER	
Voltage (Internal)	Battery pack, 24 V dc (nominal), 0.45 amp-hours at 0.5 amp.
Voltage (External)	Vehicle battery 24 V dc (nominal) or vehicular radio mount receptacle 24/28 V dc (nominal).
Input Voltage Limits	DMD will operate on input voltages from 20 to 32 V dc.

DIGITAL MESSAGE DEVICE



# 1-18. DIGITAL MESSAGE DEVICE DESCRIPTION (CONT)

## DIGITAL MESSAGE DEVICE

#### SPECIFICATIONS:

Weight	
Dimensions	
Width	
Height	
Depth	
Volume	

10.66 inches 7.20 inches

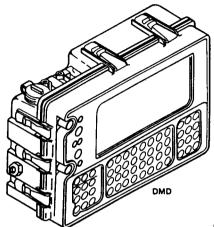
10 pounds

3.57 inches 274.16 cubic inches

Transmission/Reception Characteristics

Selectable 600 or Single Block 1200 bits per second.

> Selectable 600 or 1200 bits per second.



MS 419308

#### **Operating Characteristics**

Single Block

Voltage Required	24 V dc
Keyboard Design	Operator reviews,
	edits, and enters
	message on
	56-character
	keyboard.

#### BATTERY PACK

#### SPECIFICATIONS:

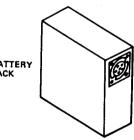
Weight Dimensions	1.9 pounds	$\sim$
Width	3.94 inches	
Height	4.13 inches	BATTERY PACK
Depth	1.44 inches	FAUN
Volume	23.34 cubic inches	

#### FEATURES:

Rechargeable, portable, and attaches with recessed electrical connector which mates with a plug located inside the DMD battery compartment.

#### FUNCTIONS:

Provides 24 V dc to the DMD.



# PRIMARY RADIO INTERFACE CABLE ASSEMBLY

SPECIFICATIONS:

Weight Dimensions Length 0.5 Pounds 96.0 Inches

## FEATURES:

Can be used with VRC-12, PRC-25, PRC-77, or GRA-39.

#### FUNCTIONS:

The interface cable is used to connect the DMD to an FM radio set.

## AN/GRC-106 INTERFACE CABLE ASSEMBLY

#### SPECIFICATIONS:

Weight
Dimensions
Length

0.5 Pounds 48.0 Inches

#### FEATURES:

Attaches by means of two connector plugs to the DMD and AM radio set.

#### FUNCTIONS:

Used to connect DMD to AM radio sets (GRC-106 or GRA-6).



PRIMARY RADIO INTERFACE CABLE (FM RADIO)

MS419310



AN/GRC--106 INTERFACE CABLE ASSEMBLY (AM RADIO)

# 1-18. DIGITAL MESSAGE DEVICE DESCRIPTION (CONT)

# EXTERNAL BATTERY CABLE ASSEMBLY

# SPECIFICATIONS:

Weight Dimensions Length

0.8 Pounds

36.0 Inches

# FEATURES:

Two power connectors attach DMD to external battery power.

# FUNCTIONS:

Used to connect DMD to external battery during arctic-type weather conditions.

# VEHICULAR BATTERY CABLE ASSEMBLY

## SPECIFICATIONS:

Weight
Dimensions
Length

0.8 Pounds

144.0 Inches

FEATURES:

Electrical plug and two battery clips attach DMD to 24 VDC vehicle power.

# FUNCTIONS:

Permits DMD to operate from 24 VDC vehicle battery.

# VEHICULAR RECEPTACLE CABLE ASSEMBLY

#### SPECIFICATIONS:

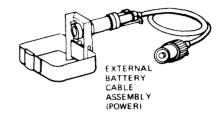
Weight	0.5 Pounds
Dimensions	
Length	144.0 Inches

## FEATURES:

Two plug-in connectors attach DMD to vehicle power.

## FUNCTIONS:

Provides input power to DMD from 24/28 volt vehicle radio mount receptacle.



MS 419313



VEHICULAR BATTERY CABLE ASSEMBLY (POWER)

MS 419314



#### CARRYING CASE ASSEMBLY

## FEATURES:

Prefitted packing for easy installation. Shoulder pads and back pad reduce fatigue.

#### FUNCTIONS:

Provides large pocket for the DMD unit and a smaller pocket for the Primary Radio Interface Cable Assembly and spare battery packs.

# GLLD INTERFACE CABLE ASSEMBLY

SPECIFICATIONS:

Weight Dimensions Length

0.5 pound 144.0 inches

# FEATURES:

Two plug-in connectors attach the DMD to the G/VLLD LD/R.

#### FUNCTIONS:

Connects the DMD to the G/VLLD LD/R.



MS 419316



GLLD INTERFACE CABLE ASSEMBLY

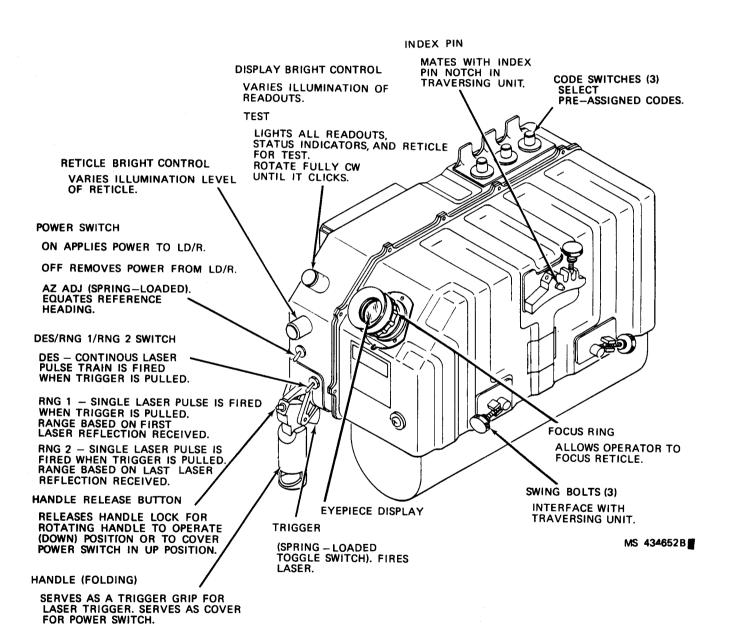
# CHAPTER 2

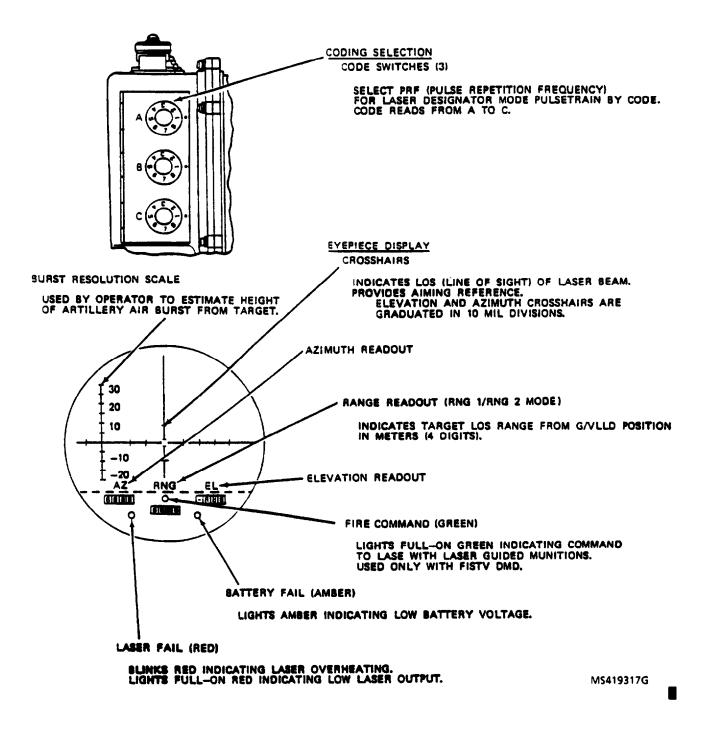
# OPERATING INSTRUCTIONS

Section	Paragraph Content	<u>Page</u>
SECTION I	Description and Use of Operator's Controls and Indicators.	2-2
SECTION II	Operation Under Usual Conditions	2-8.3
	2-1. Assembly and Preparation For Use in Ground Mode	2-8.3
	2-2. Assembly and Preparation For Use in Vehicle Mode	2-30
	2-3. Initial Checkout	2-49
	2-4. Operating Procedures	2-74.14
	2-5. Preparation For Movement in Ground Mode	2-85
	2-6. Preparation For Movement in Vehicle Mode	2-95
	2-7. Use of Laser Training Kit	2-97
SECTION III	ECTION III Operation Under Unusual Conditions	
	2-8. G/VLLD Operation Under Unusual Conditions	2-101

# SECTION I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

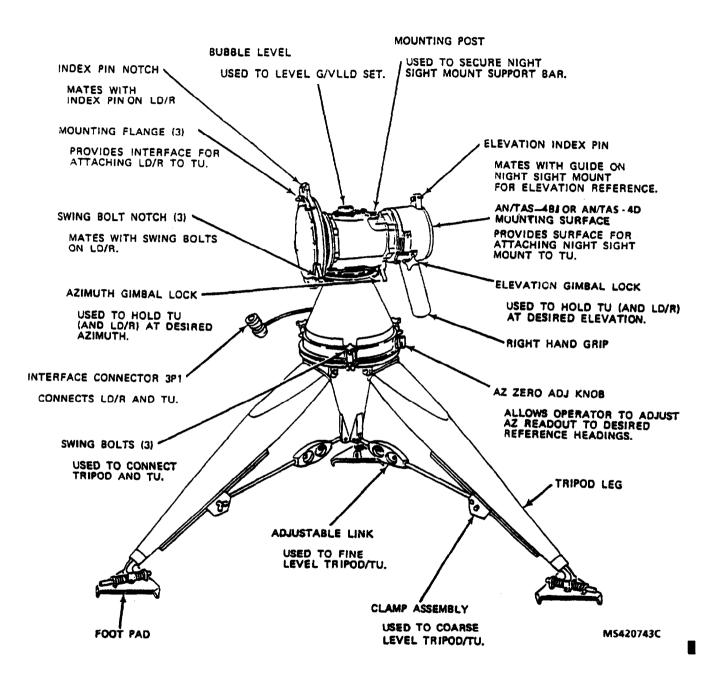
LASER DESIGNATOR/RANGEFINDER (LD/R)





#### DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS (CONT)

#### TRIPOD/TRAVERSING UNIT



#### BORESIGHT COLLIMATOR

Refer to paragraph 1-17.

### AN/TAS-4 NIGHT SIGHT

Refer to paragraph 1-17.

### AN/TAS-4B NIGHT SIGHT

Refer to paragraph 1-17.1.

#### AN/TAS-4D NIGHT SIGHT

Refer to paragraph 1-17.2.

# DIGITAL MESSAGE DEVICE AN/PSG-2

Refer to TM 11-7440-281-12&P, Operator's, Organizational, and Direct Support Maintenance Manual including Repair Parts and Special Tools List for Digital Message Device AN/PSG-2.

# SECTION III OPERATION UNDER USUAL CONDITIONS

# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE

#### NOTE

If you are using Equipment Set, AN/UAS-12 (with night sight, AN/TAS-4) perform operations 1 through 12, and 16. If you are using Equipment Set, AN/UAS-12B (with night sight, AN/TAS-4B), or AN/UAS-12D (with night sight, AN/TAS-4D), perform operations 1 through 9, and 13 through 16.

- Your Task: This procedure consists of the following operations for assembling your G/VLLD set:
  - 1. Unpack Tripod/TU
  - 2. Set up Tripod/TU
  - 3. Coarse Level
  - 4. Unpack LD/R and Battery
  - 5. Install LD/R
  - 6. Check Batteries
  - 7. Fine Level
  - 8. Provide Alternate G/VLLD Power Source
  - 9. Install Night Sight Mount

- 10. Install AN/TAS-4 Night Sight
- 11. Install AN/TAS-4 Night Sight Battery
- 12. Provide Alternate AN/TAS-4 Night Sight Power Source
- 13. Install AN/TAS-4B or AN/TAS-4D Night Sight
- 14. Connect Battery Power Conditioner to AN/TAS-4B or AN/TAS-4D Night Sight
- 15. Provide Alternate AN/TAS-4B or AN/TAS-4D Night Sight Power Source
- 16. Connect Digital Message Device (DMD)

# 1. UNPACK TRIPOD/TU

LOCATION

ITEM ACTION

Tripod/TU Backpack

- a. Hood strap (3). Unbuckle.
- b. Leg strap (5).Remove from tripod legs (2).
- c. Hood (4).

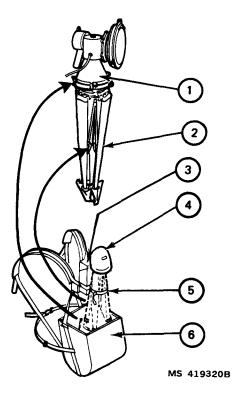
Remove from tripod legs (2).

d. Tripod/TU (1).

Remove from backpack (6).

e. Tripod/TU (1).

Place in upright position.



# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

## 2. SET UP TRIPOD/TU

## LOCATION

ITEM

ACTION

# Tripod/TU

a. Three wingnuts (4).

Loosen ccw.

b. Legs (2).

Pull each leg outward until leg clamp (3) locks into position.

c. Tripod.

Position on ground with footpads down, downhill leg pointed downrange, and AZ ZERO ADJ knob (1) on opposite side of downhill leg.

d. Elevation gimbal lock (5).

Loosen ccw.

e. Hand grip (6).

Point downward.

f. Elevation gimbal lock (5).

Tighten cw.

g. Azimuth gimbal lock (7).

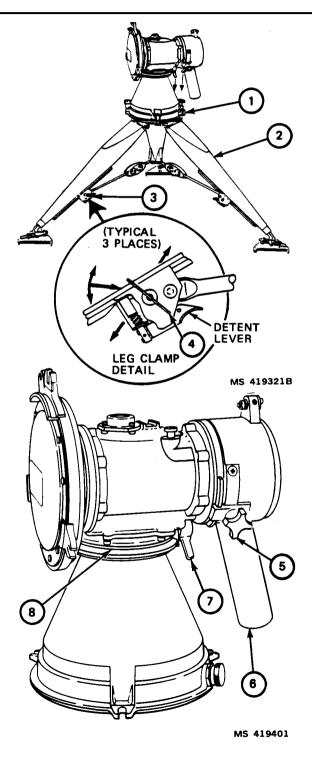
Loosen ccw.

h. Azimuth gimbal (8).

Rotate so that handle is opposite downhill leg.

i. Azimuth gimbal lock (7).

Tighten cw.



# 3. COARSE LEVEL

LOCATION ITEM

ACTION

#### NOTE

Center turnbuckle assemblies (4) before coarse leveling to ensure adequate turnbuckle adjustment during fine leveling.

Tripod Legs

a. Three detent levers (5).

Press and hold while adjusting each leg.

NOTE

Always adjust leg nearest bubble position (1).

b. Either uphill leg.

Adjust to free bubble from wall and center bubble on scribe line pointing to downhill leg.

c. Downhill leg.

Adjust to roughly center bubble.

d. Three clamp wingnuts (6).

Tighten cw.

e. Elevation gimbal lock (2).

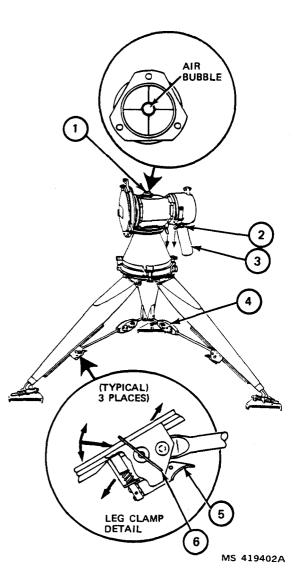
Loosen ccw.

f. Hand grip (3).

Point downward.

g. Elevation gimbal lock (2).

Tighten cw.



# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

#### 4. UNPACK LD/R AND BATTERY

LOCATION

ITEM ACTION

LD/R Backpack (2)

a. Two pack straps (3).

Unbuckle.

b. Backpack lid (4).

Lift and rotate open.

c. LD/R (1).

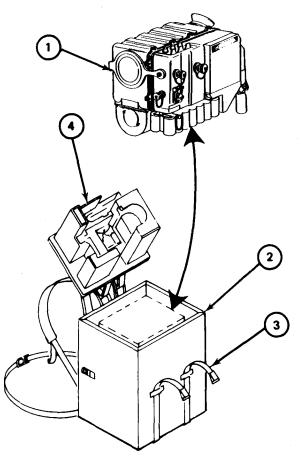
# WARNING

It is possible to fire laser in following step. Do not pull trigger while removing LD/R from backpack.

CAUTION

Do not use eyepiece as a handle to lift LD/R.

Reach into backpack, press handle release button, pull handle out and snap into down position. Grasp handle with left hand and pull LD/R upward until you can get your right hand under right front edge of LD/R. Using both hands, lift LD/R out of backpack.



# 5. INSTALL LD/R

#### LOCATION

ITEM

ACTION

# LD/R

a. Index pin (1).

Engage with TU index pin notch (2).

b. Mounting flange (3).

Place LD/R lips on upper segment of TU mounting flange.

c. Three swing bolts (5).

Rotate into TU notches (4) and tighten c w.

d. Connector 1J2 cover (8).

Remove (turn ccw) and stow on dummy connector (6).

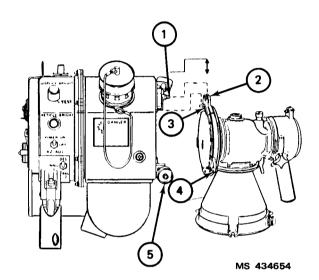
# Tripod/TU

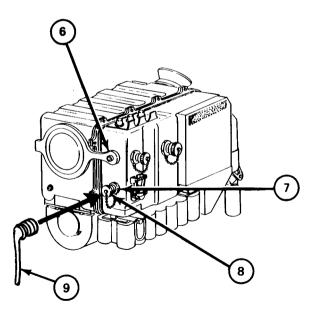
e. Interface cable connector 3P1 (9).

## NOTE

Check for missing, bent, or broken cable connector and pins.

Connect to LD/R connector 1J2 (7).





# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

5. INSTALL LD/R (CONT)

# LOCATION

ITEM ACTION

## Tripod/TU

f. Azimuth gimbal lock (4).

Loosen ccw.

## G/VLLD Set

NOTE

If conditions require protective shroud, install per paragraph 3-20.1.

g. LD/R (1).

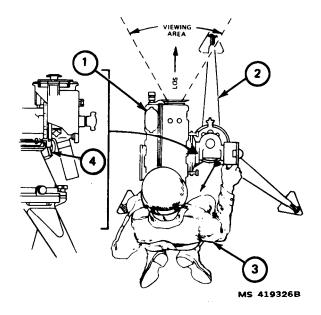
Rotate LD/R until Line of Sight (LOS) points along downhill leg (2).

h. Azimuth gimbal lock (4).

Tighten cw.

i. Operator (3).

Kneel or sit so that eyepiece and sight picture are at comfortable height.



# 6. CHECK BATTERIES

LOCATION ITEM

ACTION

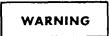
Tripod/TU Backpack

a. Battery case strap (2).

Unbuckle.

b. Battery (1).

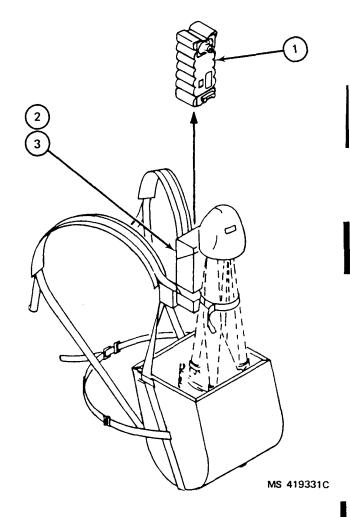
Remove from case (3). Check battery to see if it has been charged per NOTE below. Check battery charge label date. Check battery for missing, bent, or broken connector, release pin, or pivot bracket. Check battery for swelling. Make sure battery has an O-ring on connector.



Do not vent battery gas bubbles.

#### NOTE

Charged NICAD batteries will discharge during storage. The rate of discharge varies from battery to battery and varies with storage temperature. The storage time (time since last charge) must be verified when the battery is No battery should be issued issued. which has been stored for more than 10 If storage temperatures were days. above 70 °F (21.1 °C), batteries should not be issued which have been stored for more than 5 days. Ensure battery has no bubbles larger than 2.0 inches in diameter or over 0.2 inches in height. Return battery to Direct Support maintenance, as required.



# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

# 6. CHECK BATTERIES (CONT)

# LOCATION

ITEM

ACTION

#### LD/R

c. Handle (2).

Ensure handle is in down position.

d. POWER switch (8).

Verify OFF.

e. Battery release pin (7).

Pull and hold.

# CAUTION

Battery pivot brackets are fragile. Do not force battery into position.

f. Battery clip (1).

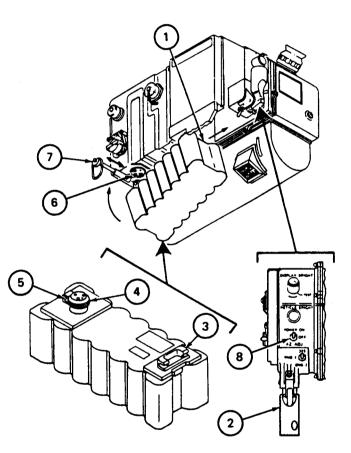
Engage battery pivot bracket (3).

g. Battery connector (4).

Rotate upward into LD/R connector 1J3 (6).

h. Battery release pin (7).

Push through hole in battery connector (5).



MS 434656A

# 7. FINE LEVEL

LOCATION ITEM

ACTION

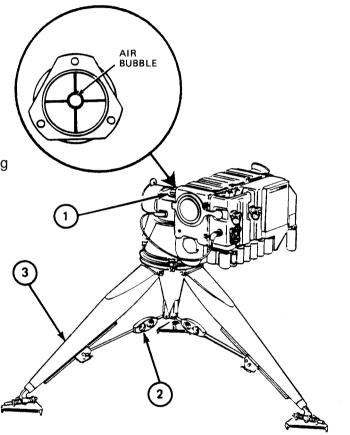
NOTE

Fine leveling is not required for DES mode, only for RNG 1 or RNG 2 mode. Turnbuckle on downhill leg (3) should be adjusted first.

Tripod/TU

Three turnbuckles (2).

Adjust to center bubble in ring on bubble level (1).



# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

8. PROVIDE ALTERNATE G/VLLD POWER SOURCE

# LOCATION

ITEM

ACTION

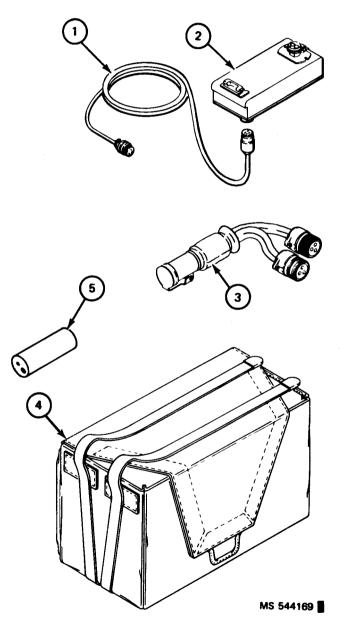
NOTE

EMI filter, NATO connector, slave cable, and vehicle power cable must be used if ambient temperature is below 32  $^{\circ}F$  (0  $^{\circ}C$ ).

Ancillary Equipment Bag

a. Ancillary equipment bag (4).

Remove EMI filter (2), NATO connector (5), slave cable (3), and vehicle power cable (1).



### 8. PROVIDE ALTERNATE G/VLLD POWER SOURCE (CONT)

# LOCATION

ITEM

ACTION

#### LD/R

b. Battery.

Remove per paragraph 2-1, step 6.

c. Battery release pin (1).

Pull and hold.

CAUTION

EMI filter pivot brackets are fragile. Do not force EMI filter into position.

EMI Filter

d. Pivot bracket (6).

Engage.

e. Connector (5).

Rotate upward into LD/R connector 1J3 (2).

LD/R

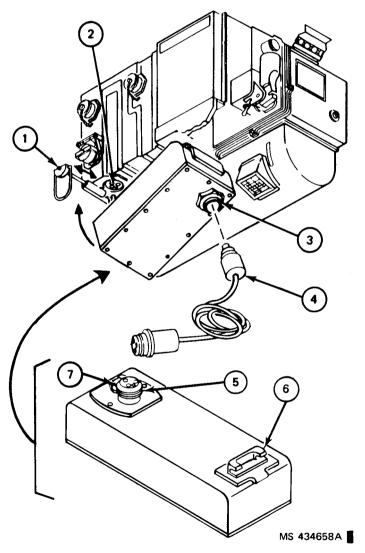
f. Battery release pin (1).

Push through hole (7) in EMI filter connector (5).

# Vehicle Power Cable

g. Connector P1 (4).

Connect to EMI filter connector J1 (3).



8. PROVIDE ALTERNATE G/VLLD POWER SOURCE (CONT)

#### LOCATION

ITEM ACTION

Vehicle Power Cable (7)

h. Connector P2 (6).

Connect slave cable connector (5).



Ensure power is off at vehicle slave connector before connecting slave cable to vehicle slave connector.

#### NOTE

Vehicle slave connector on most Army vehicles has a single socket in the center. Some vehicles have a twosocket connector. If your vehicle has a single-socket connector, skip steps i, j, and k, and go to step l.

Vehicle with Vehicle Slave Connector (1)

i. Cap (2).

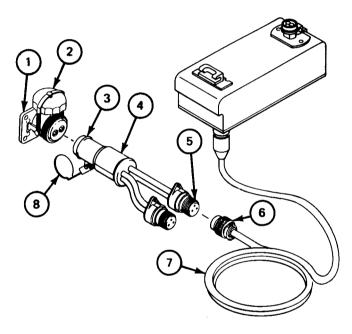
Unscrew and pull up and out of the way.

Slave Cable (4)

j. Connector (3).

Pull back spring-loaded cover (8) and push connector (3) into vehicle slave connector (1) until seated. Release cover.

k. Go to step o.



MS 544251

#### 8. PROVIDE ALTERNATE G/VLLD POWER SOURCE (CONT)

LOCATION

ITEM ACTION

Slave Cable (4)

I. Connector (3).

Pull back spring-loaded cover (8) and push connector (3) into NATO connector (9). Release cover.

# WARNING

Ensure power is off at vehicle slave connector before connecting NATO connector to vehicle slave connector.

Vehicle with Vehicle Slave Connector (1)

m. Cap (2).

Unscrew and pull up and out of the way.

Vehicle with Vehicle Slave Connector (1)

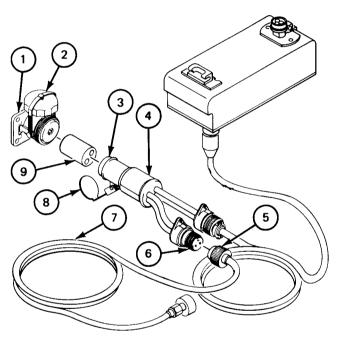
n. Vehicle slave connector (1).

Push NATO connector (9) into vehicle slave connector (1) until seated.

Night Sight Power Cable (7)

o. Connector (5).

If night sight is being used, connect other slave cable connector (6).



MS 419354C

# 9. INSTALL NIGHT SIGHT MOUNT

# LOCATION

ITEM ACTION



The night sight is a precision electro-optical instrument and must be handled carefully.

Keep protective cap on front lens and use canvas equipment cover to protect the night sight when not in use.

#### NOTE

The following procedures are used only if the night sight is required.

Night Vision Sight, Infrared AN/TAS-4, AN/TAS-4B or AN/TAS-4D may be tested or used in day-light without damage.

Ensure right hand grip of TU points down and that elevation gimbal is locked.

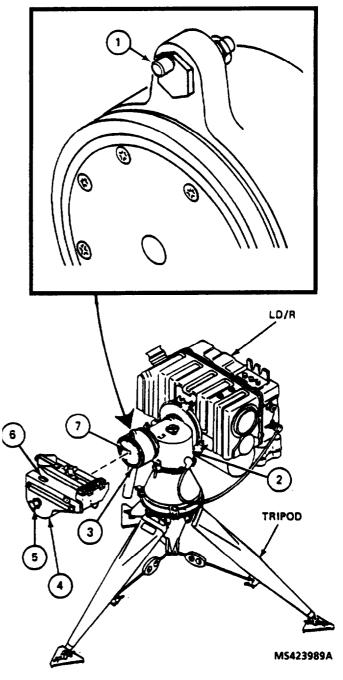
#### Tripod/TU

a. Circular mounting surface (3) and locating pin (1).

> Coat lightly with lubricant to allow proper seating of night sight mount (4).

b. Night sight mount (4).

Position against circular mounting surface (3) and engage locating pin (1) into locating block on night sight mount.



#### 9. INSTALL NIGHT SIGHT MOUNT (CONT)

#### LOCATION

ITEM

ACTION

#### Tripod/TU

c. Locating pin (1) (see illustration on preceding page).

ensure locating pin (1) is engaged by viewing through hole (6).

Night Sight Mount (See illustration on preceding page.)

# CAUTION

Be careful not to cross-thread mounting screw when tightening knob. If mounting screw begins to bind, remove night sight mount and start over at step a.

d. Knob and mounting screw (5)

Engage in hole (7) in TU (2) then tighten cw until the night sight mount is firmly seated on the mounting surface.

#### 10. INSTALL AN/TAS-4 NIGHTSIGHT

LOCATION

ITEM ACTION

Night Sight (2)

a. Latch handle (1).

Move to unlocked position (rearward ).

b. Coarse azimuth knob (3).

Move to position 2.

NOTE

After completion of next step, ensure inside edge of coarse azimuth knob (3) is in contact with shoulder of V-bloc (5) before night sight latch is in place.

Night Sight Mount (6)

c. Night sight (2).

Align with V-blocks (5) and (7) and engage keyed hole (4) with cam post (8) on top of mount.

Night Sight (2)

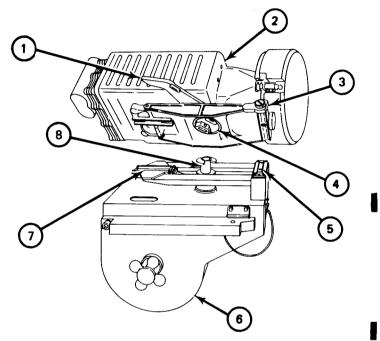
d. Latch handle (1).

Move to forward position to secure night sight.

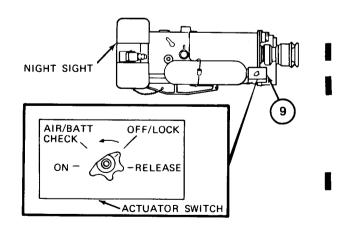
#### NOTE

Ensure rollers visible at (4) engage detent on underside of cam on cam post (8) when latch handle (1) is moved to forward position.

Check level bubble on TU. If necessary, relevel per paragraph 2-1, step 7.



MS 419387B



MS 420753

10. INSTALL AN/TAS-4 NIGHT SIGHT (CONT)

LOCATION ITEM ACTION	
NOTE Appearance of actuator switch varies among models.	
Night Sight	
e. Actuator switch (9). (See illustration on preceding page.)	)
Set to OFF/LOCK.	
11. INSTALL AN/TAS-4 NIGHT SIGHT BATTERY	
Night Sight	A I I I I I I I I I I I I I I I I I I I
a. Battery latch (1).	
Pull out to open position.	
	MS 419397
Night Sight Battery Case (3)	
b. Battery (2).	
Open case and remove battery.	
	3
	MS 419398A

# 11. INSTALL AN/TAS-4 NIGHT SIGHT BATTERY (CONT)

#### LOCATION

ITEM

ACTION

## Night Sight

c. Battery (5).

Line up two guide holes (6) on battery with guide pins (2) on night sight.

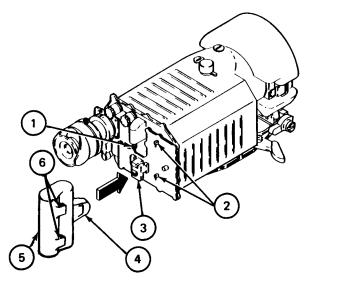
#### Battery

d. Battery connector (4).

Slide battery into position on night sight to mate battery connector with night sight input power connector J1 (1).

e. Battery latch (3).

Push into closed position.



MS 419399A

12. PROVIDE ALTERNATE AN/TAS-4 NIGHT SIGHT POWER SOURCE

#### LOCATION ITEM

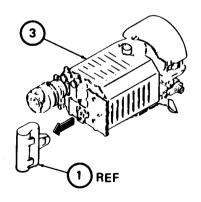
ACTION

# Night Sight

a. Battery (1).

Remove as follows: Hold battery and at the same time pull battery latch (2) out to open position.

Slide battery (1) slightly downward and free of night sight (3).



MS 419392A

REF

1

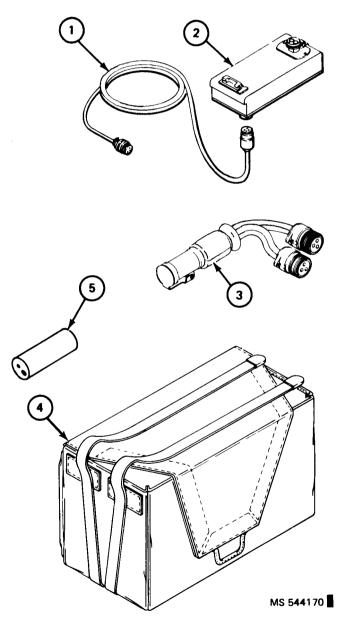
### 12. PROVIDE ALTERNATE AN/TAS-4NIGHT SIGHT POWER SOURCE (CONT)

LOCATION ITEM ACTION

Ancillary Equipment Bag

b. Ancillary equipment bag (4).

Remove EMI filter (2), NATO connector (5), slave cable (3) and vehicle power cable (1).



### 12. PROVIDE ALTERNATE AN/TAS-4 NIGHT SIGHT POWER SOURCE (CONT)

LOCATION ITEM

ACTION

CAUTION

Cables look alike. To avoid electrical damage, ensure proper cables are used in following connections.

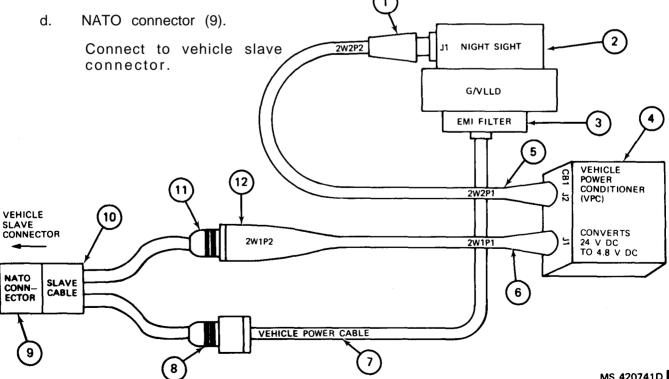
Vehicle

Slave cable (10). c.

Connect to NATO connector (9).

WARNING

Ensure power is off at vehicle slave connector before connecting NATO connector to vehicle slave connector.



MS 420741D

12. PROVIDE ALTERNATE AN/TAS-4NIGHT SIGHT POWER SOURCE (CONT)

LOCATION ITE	
Vehicle	
e.	Cable connector 2W1P2 (12). (See illustration on preceding page.)
	Connect to either connector (8 or 11) on slave cable (10).
f.	Vehicle power cable (7).
	Connect to other connector (11 or 8) on slave cable (10).
	Connect other end of vehicle power cable (7) to EMI filter (3).
g.	Vehicle power conditioner (4).
	Set CB1 to OFF.
h.	Cable connector 2W1P1 (6).
	Connect to J1 on vehicle power conditioner (4).
i.	Cable connector 2W2P1 (5).
	Connect to J2 on vehicle power conditioner (4).
j.	Cable connector 2W2P2 (1).
	Connect to battery connector J1 on night sight (2).
k.	Vehicle power conditioner (4).
	Set CB1 to ON.

### 13. INSTALL AN/TAS-4B NIGHT SIGHT

LOCATION ITEM

ACTION

Night Sight (2)

a. Latch handle (1).

Move rearward to unlocked position.

b. Coarse azimuth knob (3).

Move to position 2.

#### NOTE

After completing step c, ensure inside edge of coarse azimuth knob (3) is in contact with shoulder of V-block (5) before moving latch handle forward.

Night Sight Mount (6)

c. Night sight.

Align with V-blocks (5 and 7) and engage keyed hole (4) with cam post (8) on top of night sight mount.

Night Sight (2)

d. Latch handle (1).

Move forward to secure night sight.

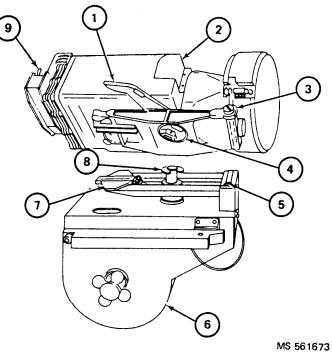
NOTE

Ensure rollers visible at hole (4) engage detent on underside of cam on cam post (8) when latch handle (1) is moved to the forward position.

Check bubble on TU. If necessary, relevel per paragraph 2-1, step 7.

e. ON/OFF/STBY switch (9).

Set to OFF.



14. CONNECT BATTERY POWER CONDITIONER TO AN/TAS-4B NIGHT SIGHT

LOCATION	
ITEM	

ACTION

Battery Power Conditioner (5)

a. Output cable (4).

Connect output cable connector 8W1P2 (6) to connector 8J1 (8) on battery power conditioner (5).

AN/TAS-4B Night Sight (1)

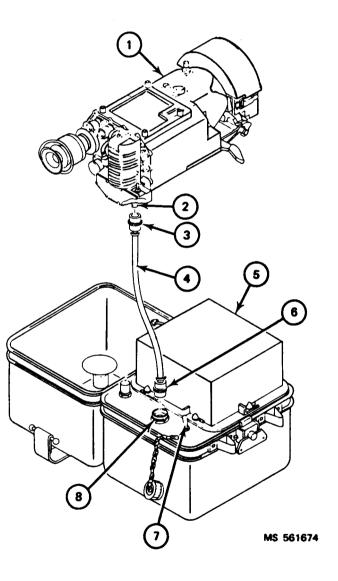
b. Output Cable (4).

Connect output cable connector 8W1P1 (3) to night sight input power connector J1 (2).

Battery Power Conditioner (5)

c. Circuit breaker (7).

Set to ON.



#### 15. PROVIDE ALTERNATE AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT POWER SOURCE

#### LOCATION ITEM

ACTION

Battery Power Conditioner (5)

a. Circuit breaker (7).

Set to OFF.

AN/TAS-4B or AN/TAS4D Night Sight (1)

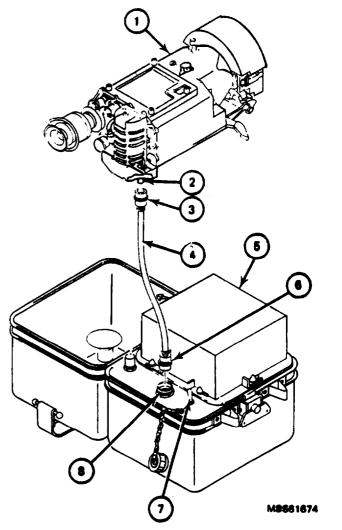
b. Output cable (4).

Disconnect battery power conditioner output cable connector 8W1P1 (3) from night sight input power connector J1 (2).

Battery Power Conditioner (5)

c. Output cable (4).

Disconnect output cable connector 8W1P2 (6) from connector 8J1 (8) on battery power conditioner (5).



#### TM 9-1260-477-12

#### 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

### 15. PROVIDE ALTERNATE AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT POWER SOURCE

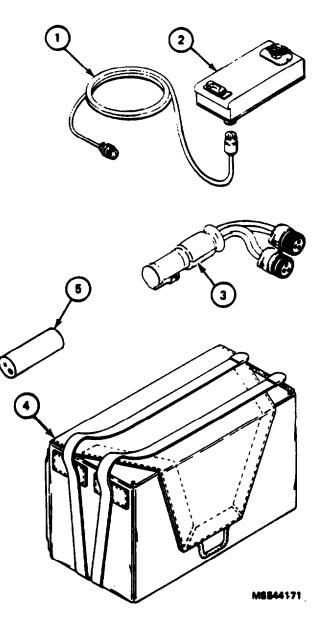
#### LOCATION ITEM ACTION

Ancillary Equipment Bag (4)

d. Ensure pwr of G/VLLD is off. Disconnect vehicle pwr cable from the pwr source. Disconnect cable from EMI filter.

Ancillary equipment bag (4).

Remove EMI filter (2) NATO connector (5) slave cable (3) and vehicle power cable (1).



15. PROVIDE ALTERNATE AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT POWER SOURCE

# LOCATION ITEM

ACTION

# CAUTION

Cables look alike. To avoid electrical damage, ensure proper cables are used in following connections.

Vehicle

e. Slave cable (10).

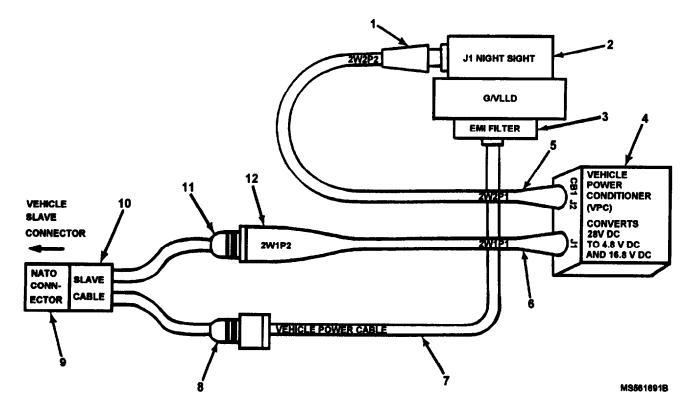
Connect to NATO connector (9).

WARNING

Ensure power is off at vehicle slave connector before connecting NATO connector to vehicle slave connector.

f. NATO connector (9).

Connect to vehicle slave connector.



Change 10 2-28.5

#### TM 9-1260-477-12

# 2-1. ASSEMBLY AND PREPARATION FOR USE IN GROUND MODE (CONT)

■ 15. PROVIDE ALTERNATE AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT POWER SOURCE

LOCATI( IT	ON EM ACTION	
/ehicle		
g.	Cable connector 2W1P2 (12). (See il- lustration on preceding page.)	
	Connect to either connector (8 or 11) on slave cable (10).	
h.	Vehicle power cable (7).	
	Connect to other connector (11 or 8) on slave cable (10).	
	Connect other end of vehicle power cable (7) to EMI filter (3).	
i.	Vehicle power conditioner (4).	
	Set CB1 to OFF.	
<b>j</b> .	Cable connector 2W1P1 (6).	
	Connect to J1 on vehicle power con- ditioner (4).	
k.	Cable connector 2W2P1 (5).	
	Connect to J2 on vehicle power con- ditioner (4).	
I.	Cable connector 2W2P2 (1).	
	Connect to battery connector J1 on night sight (2).	
m.	. Vehicle power conditioner (4).	
	Set CB1 to ON.	

# 2-28.6 Change 10

# LOCATION ITEM ACTION

#### DMD (3)

a. PWR EXT/OFF/INT switch (4).

Set to OFF (center) position.

b. GLLD connector (2).

Pull off rubber dust cover.

c. GLLD interface cable assembly (8)

Connect plug labeled DMD (1) to GLLD connector (2).

LD/R

# CAUTION

Ensure LD/R POWER switch is OFF.

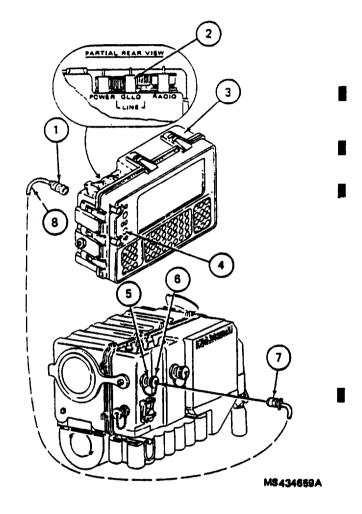
d. 1J4 (DMD) connector cover (6).

Unscrew ccw to remove.

e. 1J4 (DMD) connector (5).

Connect cable plug labeled GLLD (7).

**NOTE** Go to paragraph 2-3 for Initial Checkout.



### 16. CONNECT DIGITAL MESSAGE DEVICE (DMD)

Change 7 2-29

#### 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE

#### NOTE

If you are using Equipment Set AN/UAS-12 (with the AN/TAS-4 night sight), perform steps 1 thru 8, and 11. If you are using Equipment Set AN/UAS-128 (with the AN/TAS-4B night sight), or AN/UAS-12D (with the AN/TAS-4D night sight), perform steps 1 thru 6, and 9 thru 11.

YourTask: To install G/VLLD set into machine gun mount on top of M113A1 personnel carrier. This procedure is accomplished by performing the following steps:

- 1. Remove .50 cal Machine Gun from Machine Gun Mount
- 2. Install .50 cal Machine Gun into Stowage Mount
- 3. Unload G/VLLD Set from Ml 13A1 Personnel Carrier
- 4. Install Vehicle Adapter Assembly
- 5. Install G/VLLD Set into Vehicle Adapter Assembly
- 6. Provide Alternate G/VLLD Power Sources
- 7. Install AN/TAS-4 Night Sight on G/VLLD Set
- 8. Provide Alternate AN/TAS-4 Night Sight Power Sources
- 9. Install AN/TAS-4B or AN/TAS-4D Night Sight on G/VLLD Set
- 10. Provide Alternate AN/TAS-4B or AN/TAS-4D Night Sight Power Sources
- 11. Connect Digital Message Device (DMD)

#### INITIAL SETUP

General Safety:	Be sure to use two men, one to pass equipment up and one on top to receive equipment.
Equipment Required:	G/VLLD vehicle power cable with EMI filter and night sight power cable.
Prerequisites:	G/VLLD set must be stored in the designated locations inside the Ml 13A1 personnel carrier.

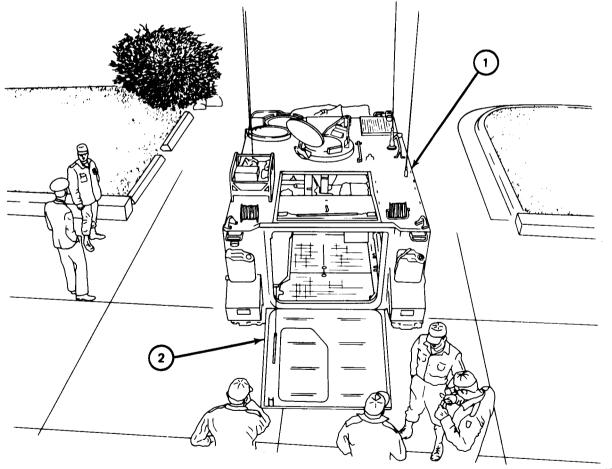
#### 1. REMOVE .50 CAL MACHINE GUN FROM MACHINE GUN MOUNT

LOCATION	
ITEM	
	ACTION

M113A1 Personnel Carrier (1)

a. Rear door (2).

Open and lower.



MS 420705C

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

1. REMOVE .50 CAL MACHINE GUN FROM MACHINE GUN MOUNT (CONT)

LOCATION ITEM ACTION	
Machine Gun Mount on Top of M1 <sup>-</sup> Personnel Carrier	13A1
b. Travel lock pin (6).	
Pull out of upper the securing hole (3).	ravel lock
c. Latch (8).	
Pull back ccw to op	en position.
d. Travel lock pin.	
Push into lower trav securing hole (7).	vel lock
e. Securing lever (4).	
Push cw to release against stop pin (5)	
f. Machine gun (1).	
Lift up out of holdi (2).	ing chamber

5

MS 420727A

6

8)

# 2. INSTALL .50 CAL MACHINE GUN INTO STOWAGE MOUNT

### LOCATION ITEM ACTION

Stowage Mount on Top of M113A1 Personnel Carrier
a. Machine gun (1).

Install in stowage mount (7).

b. Strap (3).

Place thru eyebolt (4) and tighten to secure barrel.

c. Strap (2).

Place thru lug (5) and under tripod (6).
Tighten to secure barrel.

MS 420729

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

2. INSTALL .50 CAL MACHINE GUN INTO STOWAGE MOUNT (CONT)

LOCATION			
ITEM			
AC	TION		

Stowage Mount (8)

d. Strap (7).

Place thru left handle (2) and thru lug (6).

Adjust until snug.

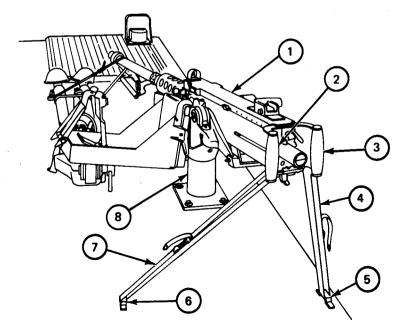
e. Strap (4).

Place thru right handle (3) and thru lug (5).

Adjust until snug.

f. Straps (4 and 7).

Tighten one at a time until machine gun (1) is secure.



MS 420728

3. UNLOAD G/VLLD SET FROM M981 PERSONNEL CARRIER (CONT)

# LOCATION ITEM

ACTION

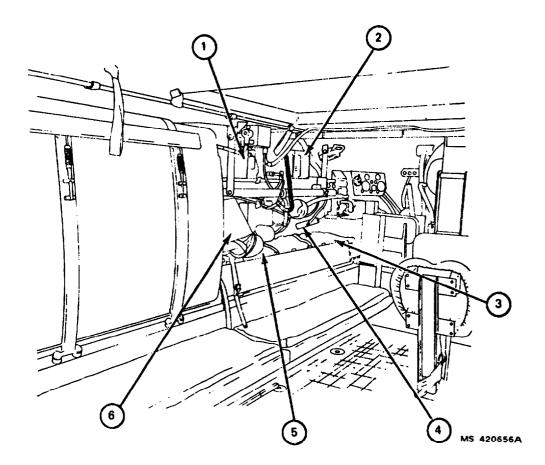
#### Left Side Wall

a. Digital Message Device (DMD) in backpack (6).

Remove

b. AN/VRC-47 Radio (1), KY-38 Speech Secure Equipment (2), AN/GRA-39 Radio (3), GVS-5 Tripod (4), TA-312 Telephones (5), SB-993 Switchboard (5), Binoculars (5).

Remove if necessary.



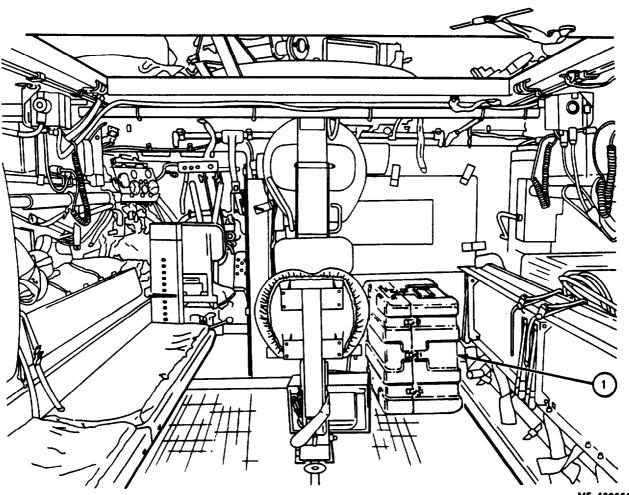
■3 . UNLOAD G/VLLD SET FROM M981 PERSONNEL CARRIER (CONT)

#### LOCATION ITEM ACTION

Front Wall (Rear View)

c. Ancillary Equipment Transit Assembly Case (1).

Remove.



MS 420666A

#### L O C A T I O N ITEM

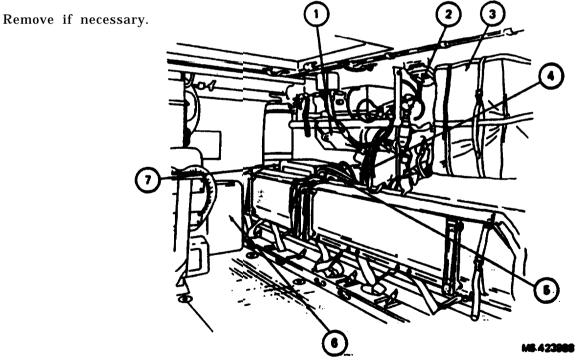
ACTION

#### **Right Side Wall**

d. LD/R in backpack (3) TU and vehicle (pintle) adapter assembly in tripod/TU backpack (4) ANITAS-4 night sight, coolant cartridge case, and battery case (AN/TAS-4B or AN/TAS-4D night sight, battery power conditioner, and spare battery pack), ancillary equipment bag (EMI filter, NATO connector, slave cable, and vehicle power cable) (5) and boresight collimator in case (7).

Remove.

e. Tripod (no backpack) (1) AN/GVS-5, laser rangefinder (6) and two GRC-160 radios (2).



#### 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

4. INSTALL VEHICLE ADAPTER ASSEMBLY

#### LOCATION ITEM ACTION

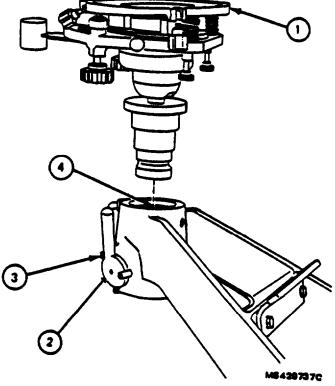
Top of M113A1 Personnel Carrier

a. Vehicle adapter assembly (1).

Place into machine gun mount holding chamber (4).

b. Securing lever (2).

Push ccw to holding position against stop pin (3).



#### 4. INSTALL VEHICLE ADAPTER ASSEMBLY (CONT)

## LOCATION ITEM

ACTION

Top of M113A1 Personnel Carrier

c. Vehicle adapter assembly.

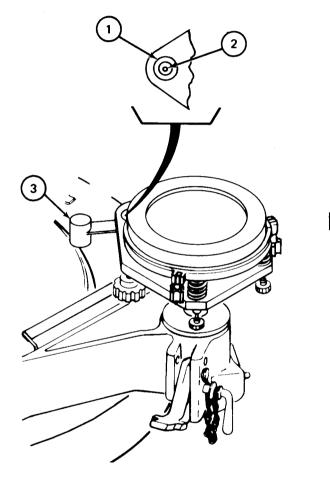
Push locking handle (3) ccw to release lock. With one hand on locking handle and one on vehicle adapter assembly, move up and down and sideways until bubble (2) inside precision level (1) is roughly centered within ring.

d. Locking handle (3).

Push locking handle cw until vehicle adapter assembly is locked in place.

#### NOTE

If vehicle adapter assembly and TU are not already assembled, follow procedures in step 5 to assemble them.



MS 420731B

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

5. INSTALL G/VLLD SET INTO VEHICLE ADAPTER ASSEMBLY

LOCATION
----------

ITEM

ACTION

Vehicle Adapter Assembly

a. TU (2).

Place on top of vehicle adapter assembly (4) so that flanges (5) line up with swing bolts (3).

b. Swing bolts (3).

Rotate up into flange slots (5) and tighten cw.

CAUTION

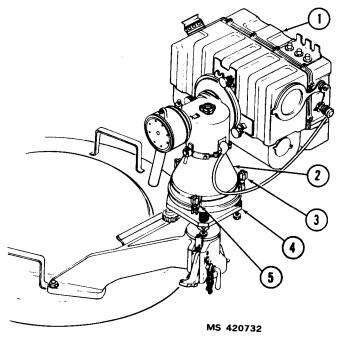
Do not move vehicle with LD/R mounted on machine gun mount. All equipment must be properly stowed inside vehicle prior to vehicle movement.

c. LD/R (1).

Attach to TU per paragraph 2-1, step 5.

# CAUTION

When TU and LD/R are attached to vehicle adapter assembly, ensure that vehicle adapter assembly is securely locked in place. If vehicle adapter assembly does not lock securely in place, refer it to DS maintenance for adjustment.



### 5. INSTALL G/VLLD SET INTO VEHICLE ADAPTER ASSEMBLY (CONT)

LOCATION ITEM

Vehicle Adapter Assembly

ACTION

#### NOTE

Fine leveling is not required for DES mode, only for RNG 1 or RNG 2 mode. When fine leveling, degree of movement of TU is limited by position of locking screws and spring tension on upper flange of vehicle adapter assembly. No tools are required to turn locking or adjusting screws. Should locking screws bind and can not be turned by hand, loosen (ccw) adjusting screws to relieve pressure on locking screws.

d. Locking screws (2) and (3).

Release both locking screws.

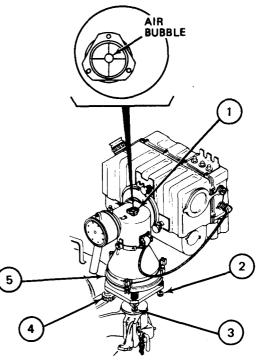
Turn locking screws ccw 3 to 4 turns.

e. Adjusting screws (4) and (5).

Turn adjusting screws cw or ccw one at a time until bubble in precision level (1) on top of TU is centered within ring.

f. Locking screws (2) and (3).

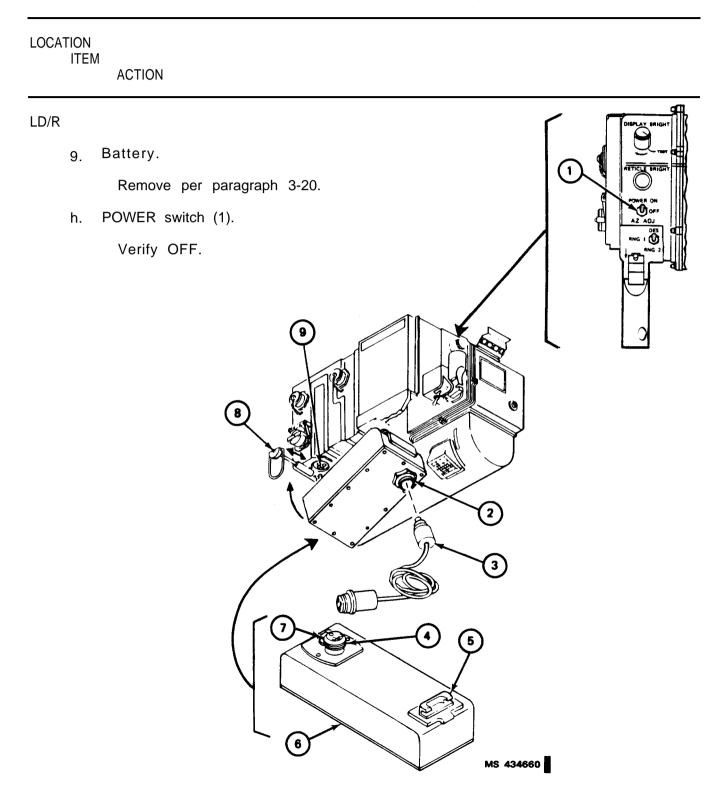
Turn locking screws cw until secure.



MS 420733A

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

5. INSTALL G/VLLD SET INTO VEHICLE ADAPTER ASSEMBLY (CONT)



# 5. INSTALL G/VLLD SET INTO VEHICLE ADAPTER ASSEMBLY (CONT)

# LOCATION

ITEM

ACTION

# LD/R

i. Battery release pin (8). (See illustration on preceding page.)

Pull and hold.

# CAUTION

EMI pivot brackets are fragile. Do not force EMI filter into position.

j. EMI filter (6).

Engage EMI pivot bracket (5).

k. EMI filter connector (4).

Rotate into LD/R 1J3 (9).

I. Battery release pin (8).

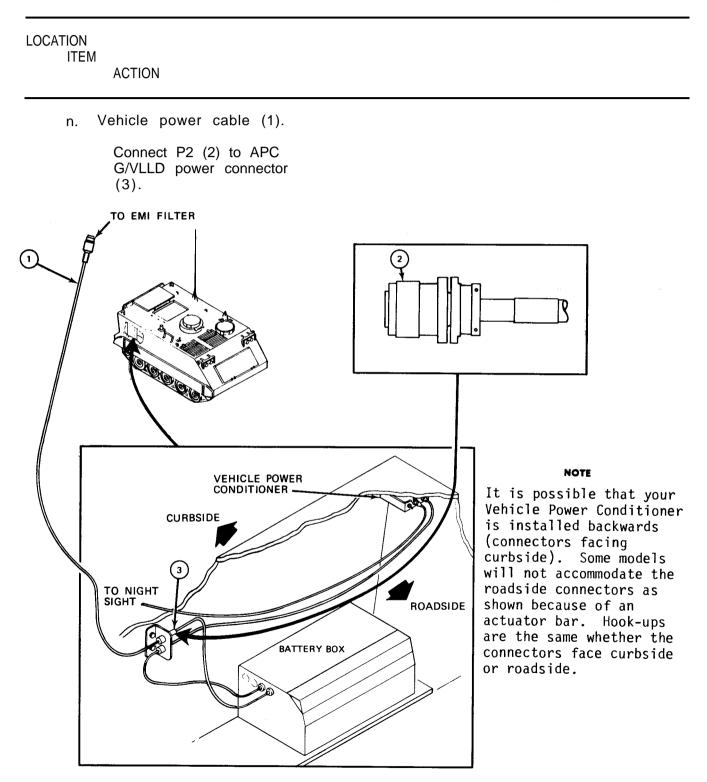
Push through hole (7) in EMI filter connector.

m. Vehicle cable connector P1 (3).

Connect to EMI filter connector J1 (2).

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

5. INSTALL G/VLLD SET INTO VEHICLE ADAPTER ASSEMBLY (CONT)



## 6. PROVIDE ALTERNATE G/VLLD POWER SOURCES

LOCATION ITEM

ACTION

#### NOTE

In the event normal vehicle power source as described in paragraph 2-2, step 5 is not available, two alternate power sources can be used; either step a. or b. below.

LD/R

a. Battery.

Remove EMI filter per paragraph 3-25 and connect battery to LD/R per paragraph 3-20.

b. Slave cable and NATO connector.

Connect LD/R to vehicle power sources per paragraph 2-1, step 8.

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

7. INSTALL AN/TAS-4 NIGHT SIGHT ON G/VLLD SET

#### LOCATION

ITEM ACTION

## G/VLLD Set

a. Night sight mount (2).

Install per paragraph 2-1, step 9.

b. Night sight (1).

Install per paragraph 2-1, step 10.

c. Battery.

Remove per paragraph 2-1, step 12.a.

Inside M113A1 (See illustration on next page.)

#### NOTE

It is possible that vehicle power conditioner is installed backwards (connectors facing curbside). Some models of M113A1 do not accommodate connectors facing roadside because of the presence of an actuator bar. Hookups are the same whether connectors face curbside or roadside.

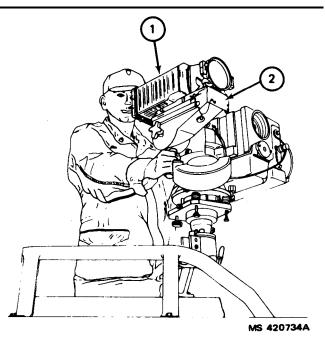
d. Night sight power cable 2W2 (5).

Attach connector 2W2P1 (4) to vehicle power conditioner connector J2 (3).

Night Sight

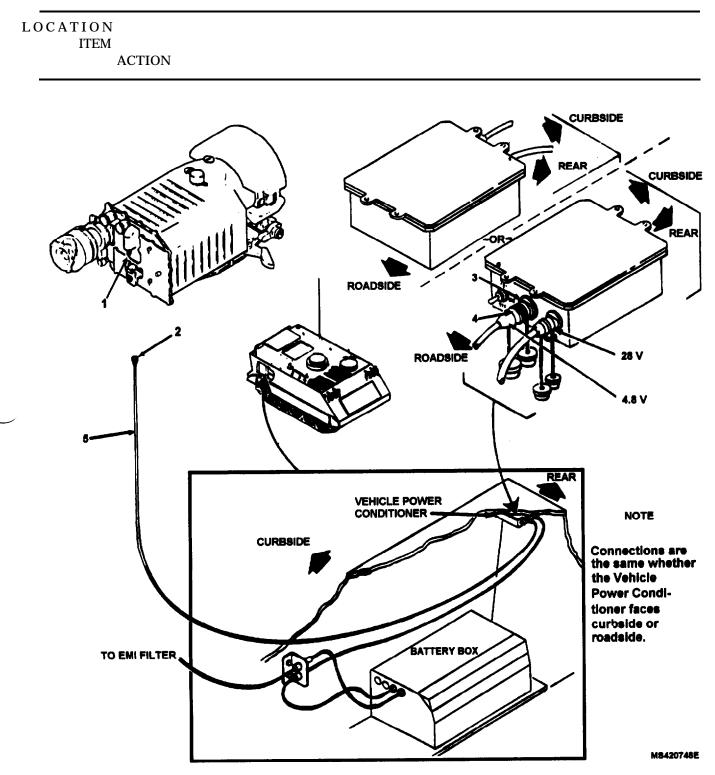
e. Night sight power cable 2W2 (5).

Attach connector 2W2P2 (2) to night sight connector J1 (1).



2-46 Change 8

7. INSTALL AN/TAS-4 NIGHT SIGHT ON G/VLLD SET (CONT)



## TM 9-1260-477-12

#### 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

#### 8. PROVIDE ALTERNATE AN/TAS-4 NIGHT SIGHT POWER SOURCES

# LOCATION ITEM ACTION

# Night Sight

a. Battery.

Connect battery to AN/TAS-4 night sight per paragraph 2-1, step 11.

b. Slave cable and NATO connector,

Connect night sight to vehicle power sources per paragraph 2-1, step 12.

# 9. INSTALL AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT ON G/VLLD SET

## G/VLLD Set

a. Night sight mount (2).

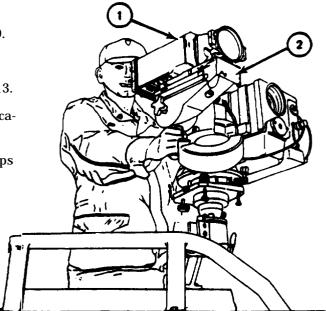
Install per paragraph 2-1, step 9.

b. Night sight (1).

Install per paragraph 2-1, step 13.

c. Battery power conditioner output cable.

Remove per paragraph 2-1, steps 15.a thru 15.c.



MS 561675

## 2-48 Change 10

## LOCATION ITEM

ACTION

Inside M981

(See illustration on the next page.)

#### NOTE

It is possible that your Vehicle Power Conditioner is installed backwards (connectors facing curbside). Some models of the M981 will not accommodate the connectors facing roadside because of the presence of an actuator bar. Hookups are the same whether the connectors face curbside or roadside.

d. Night Sight Power Cable (5).

Attach connector (4) to vehicle power conditioner connector (3).

## Night Sight

e. Power Connector Cable (2).

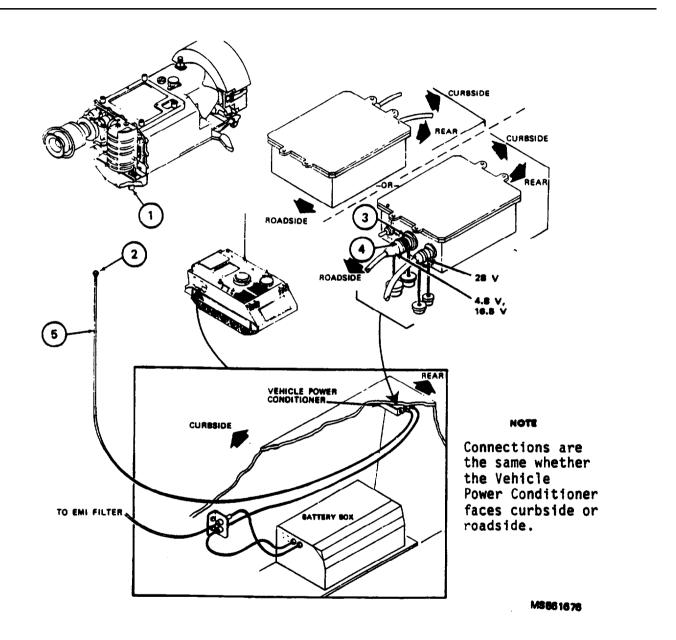
Attach to night sight connector J1 (1).

## TM 9-1260-477-12

# 2-2. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

9. INSTALL AN/TAS4-B OR AN/TAS-4D NIGHT SIGHT ON G/VLLD SET (CONT)





## 10. PROVIDE ALTERNATE AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT POWER SOURCES

LOCATION	
ITEM	
ACTION	
Equipment Set AN/UAS-128 or AN/UAS-12D a. Battery power conditioner.	

Connect to AN/TAS-4B or AN/TAS4D sight per paragraph 2-1, step 14.

Night Sight

b. Slave cable and NATO connector.

Connect night sight to vehicle power sources per paragraph 2-1, step 15.

11. CONNECT DIGITAL MESSAGE DEVICE (DMD)

LD/R

a. Digital message device.

Connect to LD/R per paragraph 2-1, step 16.

## 2-2.1. ASSEMBLY AND PREPARATION FOR USE IN VEHICLE MODE (CONT)

#### WARNING

Laser beam is dangerous and can cause blindness if it enters the eye either directly or reflected from a flat glass or mirror-like surface. Never look into laser. Always assume it is dangerous to you. Read the WARNINGS in the front of this manual.

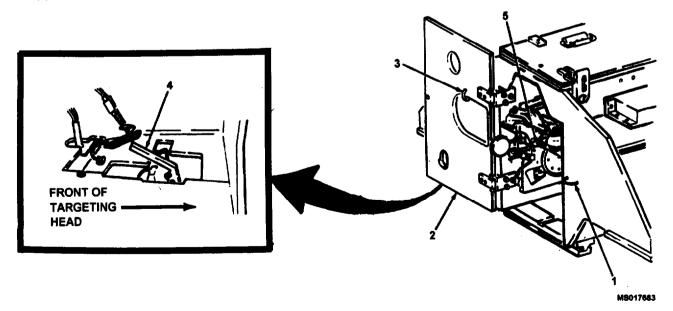
#### NOTE

These procedures are written for Equipment Set AN/UAS-12B or AN/UAS-12D (with the AN/TAS-4B or AN/TAS-4D Night Sight).

#### **INITIAL SETUP**

General Safety	Be sure to use two men, one to pass equipment up and one on top to receive equipment.
Equipment Required:	G/VLLD vehicle power cable with EMI filter and night sight power cable.
Prerequisites:	G/VLLD set must be stored in the designated locations inside the M981 personnel carrier.
Your Task:	To install G/VLLD set on top of the M981 personnel carrier. This procedure is accomplished by performing the following steps.

- 1. Place targeting head in stowed position; set VEHICLE BAT AND EQPT BAT switches to OFF; and pull out GLLD COVER control.
- 2. Pull and turn hook (1) open targeting head front access door (2) and secure open with hook (3).



Change 10 2-48.5

- 3. While facing front of targeting head, reach under left side of targeting head and pull outward on clamp handle (4) to release GLLD carriage.
- 4. Pull carriage (5) to fully extended position.

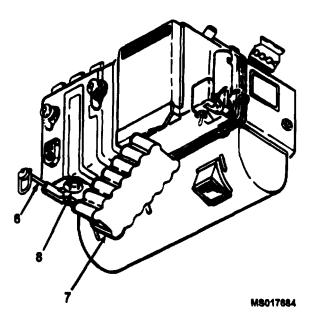
#### CAUTION

#### Never lift LD/R by the eyepiece.

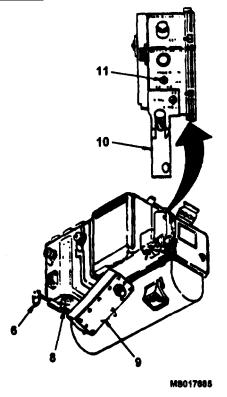
#### NOTE

Perform step 5 only if battery is presently installed on LD/R.

5. Pull and hold battery/EMI filter release pin (6). Pull front of battery (7) down to release from LD/R connector 1J3 (8). Rotate battery outward to disengage from pivot pin.

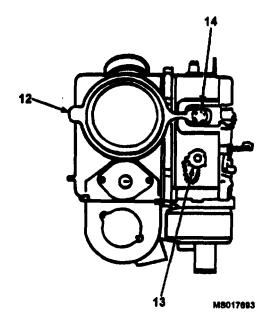


- 6. Pull and hold battery/EMI filter release pin (6). Engage EMI filter pivot bracket on pivot pin. Rotate EMI filter (9) inward and upward into LD/R connector 1J3 (8). Push in release pin. Be sure EMI filter is firmly seated.
- 7. Swing trigger grip handle (10) down until it snaps into locked position.
- 8. Set POWER switch (11) to ON position.



9. Remove LD/R laser aperture dust cover (12) and stow in LD/R backpack.

10. Remove connector 1J2 cover (13) and install cover on dummy connector (14).

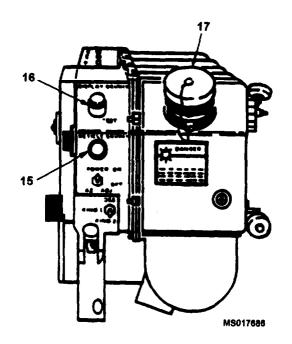


Change 10 2-48.7

## TM 9-1260-477-12

## **INSTALLATION OF LD/R (CONT)**

11. Rotate RETICLE BRIGHT control (15) to the fully ccw position.



Rotate DISPLAY BRIGHT control (16) fully cw; but DO NOT place in TEST (detent) position.
 Remove eyepiece dust cover (17) and let hang by chain.

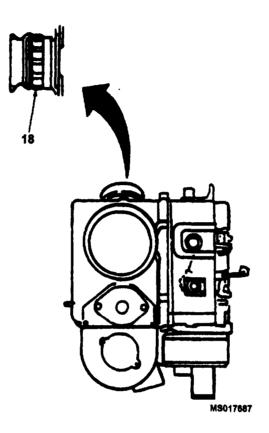
## CAUTION

Improper adjustment of the LD/R focusing (diopter) ring can result in missing the target. Ensure that the focusing ring is properly adjusted as described below before installing the LD/R into the target head.

#### NOTE

The focusing ring has nine white marks around the edge. Hence, there are four white marks on each side of the center (zero) mark.

14. Set LD/R focusing ring (18) to zero by rotating focusing ring until center (fifth) white mark on focusing ring is directly opposite fixed cursor on top side of eyepiece assembly.

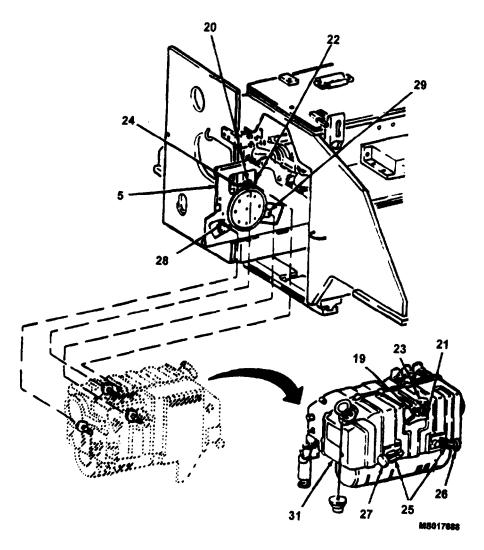


NOTE

Before mounting the LD/R (31) on the carriage (5), check all mating surfaces on both and remove any accumulation of sand or dirt or any foreign objects that could prevent the LD/R from seating properly.

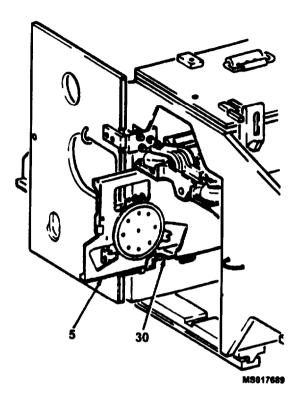
Two people are required to perform the following steps.

15. Using both hands under the LD/R, carefully lift LD/R (31) into position for mounting on carriage (5).



- 16. Position LD/R until LD/R index pin (19) is aligned with carriage index notch (20) and the bottom of mounting lip (21) on LD/R is over mounting flange (22) of carriage. Press LD/R straight in and flush with carriage so LD/R mounting lip (21) is seated on carriage mounting flange (22).
- 17. Rotate top swing bolt (23) downward into top swing bolt notch (24) on carriage and tighten securely. While pushing LD/R against the carriage so the front surface of mounting lip (21) and surfaces (25) of LD/R are in firm contact with carriage, rotate bottom swing bolts (26 and 27) downward into respective notches (28 and 29) on carriage. Tighten swing bolts (26 and 27) securely, and recheck tightness of top swing bolt (23). Try to shake LD/R to ensure it is firmly seated.

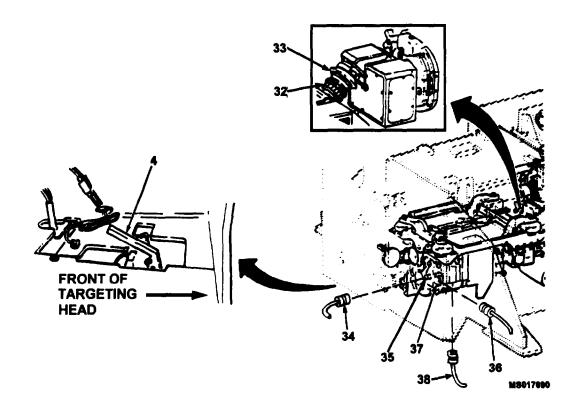
18. Reach behind carriage (5) and press up on lock/release assembly (30).



# CAUTION

Use extreme care when performing the following step. Damage to the LD/R eyepiece or tank periscope optical coupler could result if care is not used.

- 19. Carefully slide LD/R and carriage into targeting head. Be sure LD/R eyepiece (32) mates exactly with optical coupler (33). When in place, push inward on locking clamp handle (4) until it locks.
- 20. Make electrical connection to LD/R as follows:
  - a. Mate cable connector W3P1 (34) with jack 1J2 (35) at front of LD/R.
  - b. Lift spring-loaded dust cover and mate cable connector W3P2 (36) with jack 1J7 (37) on side of LD/R.
  - C. Mate cable connector W22P1 (38) with jack 2J1 (not shown) of EMI filter at bottom of LD/R.





LD/R connectors 1J1 and 1J4 are not used. Do not remove dust covers from these connectors.

21. If nightsight is to be installed, install in accordance with procedures starting on page 2-261 before proceeding to step 22 below.

2-46.12 Change 10

- 22. Perform tank periscope focus and alignment check procedures starting on page 2-48.29.
- 23. Perform nightsight boresight alignment procedures starting on page 2-74.5.
- 24. Close targeting head front access door (2) and secure with hook (1).
- 25. Push in GLLD COVER control.

#### CAUTION

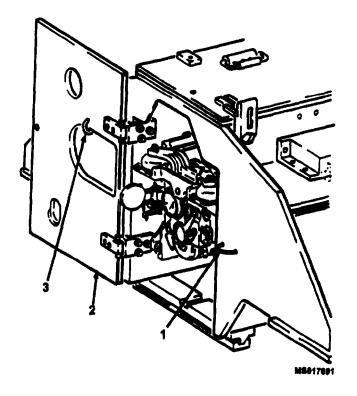
Erroneous target bearings can occur if the LD/R swing bolts loosen. Before each missile, fully extend the LD/R and carriage from the targeting head to check the tightness of the swing bolts. Tighten swing bolts (if loose) and perform the nightsight boresight alignment procedures beginning on page 2-74.5 before continuing with mission.

#### NOTE

The nightsight boresight alignment procedures should be performed each time the LD/R and carriage are extended from the targeting head.

## **REMOVAL AND STORAGE OF LD/R**

- 1. Place targeting head in stowed position: set VEHICLE BAT and EQPT BAT switches to OFF, and pull out GLLD COVER control.
- 2. Pull and turn hook (1) and open targeting head front access door (2). Secure open with hook (3).



3. Disconnect electrical connectors W3P1 (4) W3P2 (5) and W22P1 (6).

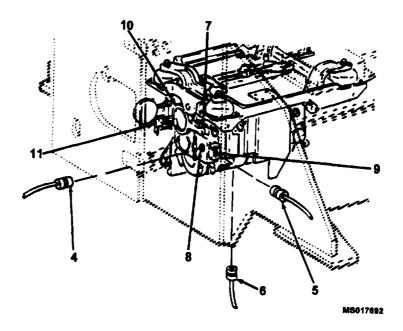
#### NOTE

If LD/R is being removed for an extended period of time, cover cable connectors with insulation tape, item 39, appendix D.

- 4. Remove cover from dummy connector (7) and install on jack 1J2 (8). Close cover (9) for jack 1J7.
- 5. Remove laser aperture dust cover (10) from LD/R backpack. Press small end of cover over dummy connector (7) and snap large end of cover over laser aperture.
- 6. Reach under left side of targeting head and pull outward on clamp handle (11) to release GLLD carriage. Pull carriage and LD/R out to fully extended position.

# 2-48.14 Change 10

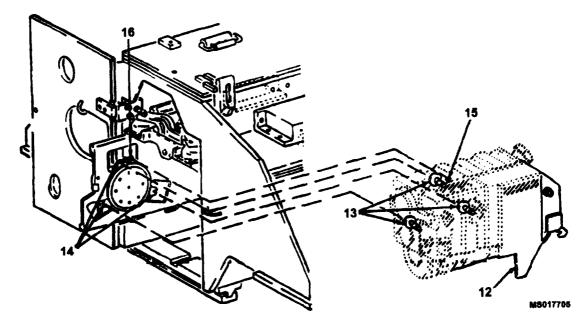
# **REMOVAL AND STORAGE OF LD/R (CONT)**



NOTE

Two people are required to perform the following steps.

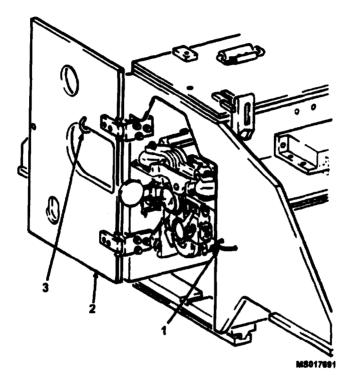
- 7. Support LD/R (12) and loosen three swing bolts (13). Pivot swing bolts out of carriage mounts (14).
- 8. Lift up LD/R (12) so index pin (15) of LD/R is free of carriage index hold (16) and remove LD/R.



Change 10 2-48.15

#### **REMOVAL AND STORAGE OF LD/R (CONT)**

- 9. Stow LD/R with attached EMI filter in assigned stowage location.
- 10. press up on lock release assembly behind carriage and slide carriage into targeting head. When in place, push inward on clamp handle (11) until it locks.
- 11. Pull and turn hook (3) and close targeting head front access door (2). Pull and turn hook (1) to secure door (2).
- 12. Push in GLLD COVER control.



#### **INSTALLATION OF NIGHTSIGHT**

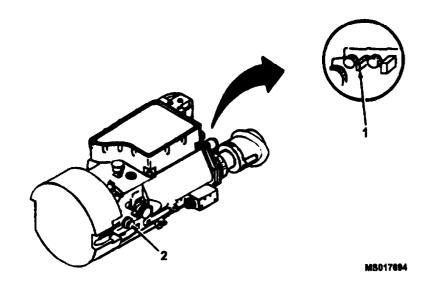
#### WARNING

The anti-reflective coating on all infrared optics contains thorium fluoride which is slightly radioactive. The only potential hazard involves ingestion (swallowing or inhallng) of this coating material. Dispose of broken lenses in accordance with AR 385-11.

#### CAUTION

Do not remove lens protector from front of nightsight except for boresighting, tracking, and firing. It must be on during travel to keep dirt and dust from front lens.

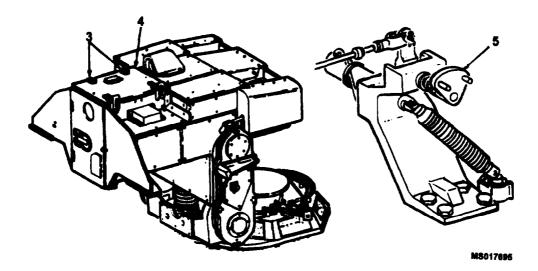
1. Check nightsight to make sure that BRT and CTRS control actuator mounting block (1) and RANGE FOCUS knob (2) (metal knob) are in place. Get another nightsight from supply if they are missing.



#### WARNING

The forward cover assembly does not lock in the open position and could fall, causing injury to personnel.

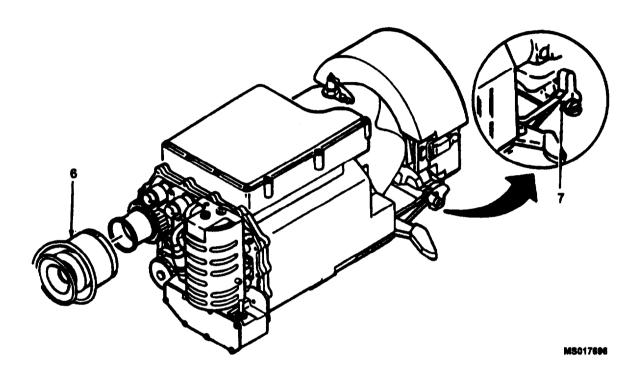
- 2. Place targeting head in stowed position. Unlatch two latches (3) and open targeting head top access door (4).
- 3. Push in spring-loaded FOV actuator (5) and rotate one quarter turn cw for clearance.



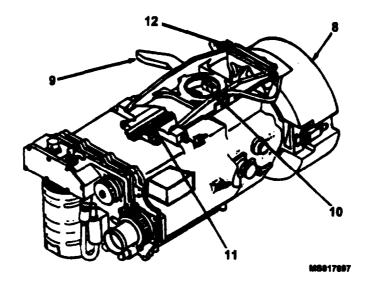
# NOTE

Push in near shaft to avoid binding.

- 4. Remove eyeshield (6) from nightsight and place in nightsight carrying case. Turn diopter ring all the way in for clearance.
- 5. Set coarse azimuth control (7) to position No. 1 (handle points up).



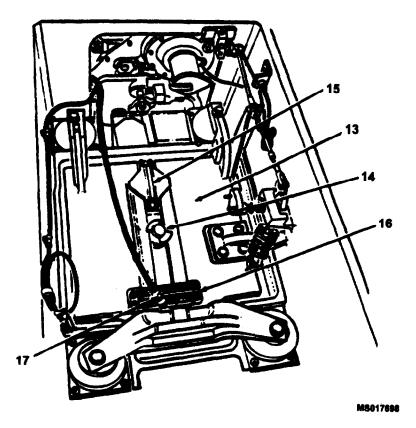
6. Remove front lens cover (6) from nightsight. Place nightsight latching handle (9) in the rear position (toward eyepiece), and mount nightsight on top of platform (13). Make sure platform cam post (14) lines up with nightsight cam opening (10) and V-ways (11 and 12) on bottom of nightsight line up with V-ways (15 and 16) on top of platform. It may be 'necessary to slightly rotate nightsight to get a good fit.



## CAUTION

It is important that the nightsight NOT be used for leverage while locking the latching handle.

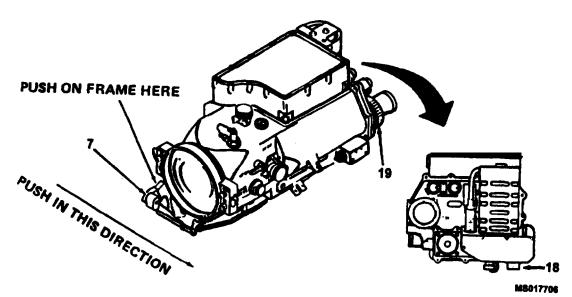
- 7. Connect connector W29P1 (17) to nightsight input power connector J1 18).
- 8. While holding nightsight with one hand, pull forward on latching handle until nightsight latch just engages. Before tightening latching handle further, push on nightsight V-way frame immediately behind coarse azimuth control (7) keeping coarse azimuth control firmly against end of V-way (16) of platform (13). While keeping pressure applied, pull latching handle (9) all the way forward to lock nightsight in place.



CAUTION

Improper adjustment of the nightsight focusing (diopter) ring can result in missing the target.

9. Turn nightsight focusing ring (19) until zero mark is opposite alignment mark on rear of nightsight.

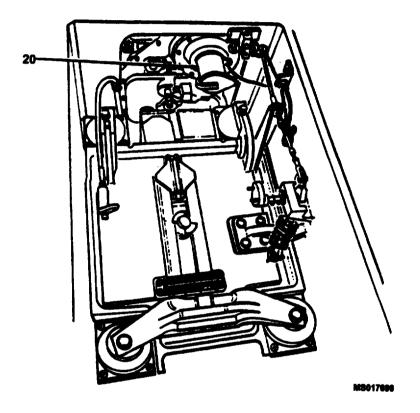


Change 10 2-48.21

#### NOTE

Alignment mark is located on rear of surface of nightsight, directly above eyepiece and is approximately 1/4 inch long.

10. Ensure rubber adapter (20) aligns with eyepiece on nightsight.



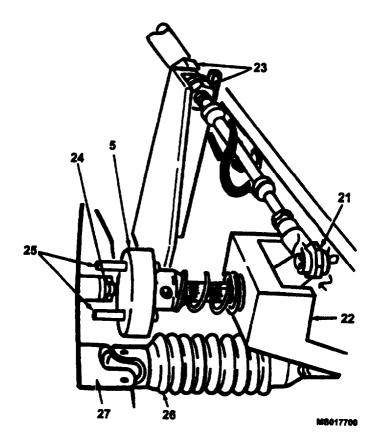
NOTE

Two people are required to accomplish steps 11 and 12; one inside the targeting station and one on the top deck of the vehicle.

- 11. Operate FOV selector a few times from inside targeting station while other person observes that arm (21) contacts one inside edge of bracket (22) at one extreme of travel and the other inside edge at opposite extreme of travel.
- 12. If arm (21) does not contact both inside edges of bracket (22) at extremes of travel, adjust two nuts (23) until arm (21) contacts one inside edge of bracket (22) at each extreme of travel.

# 2-48.22 Change 10

- 13. Release FOV actuator (5) from retracted position and engage with FOV lever (24) on nightsight. When engaged, selector will be positioned between two pins (25) of actuator.
- 14. Remove range focus actuator (26) from stowage clip and connect to range FOCUS knob on nightsight.



Change 10 2-48.23

#### NOTE

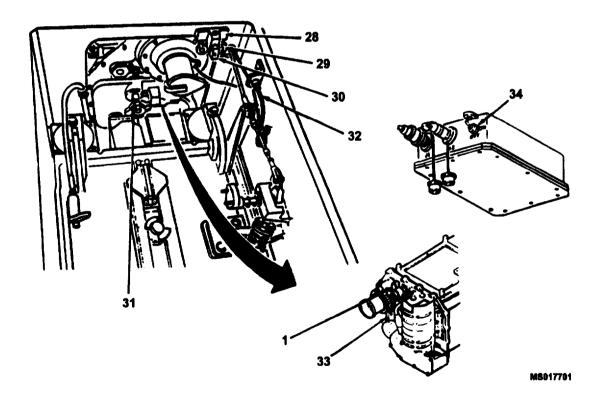
Front U-joint (27) of actuator (26) fits over range FOCUS knob. It may be necessary to turn knob for proper fit.

Remove nightsight, CTRS and BRT control actuator assembly (28) from stowage bracket (29) by depressing lock (30) on bottom of stowage bracket (29). Mount actuator assembly (28) on nightsight mounting block (1) between CTRS and BRT control knobs, Check and make sure it seats properly.

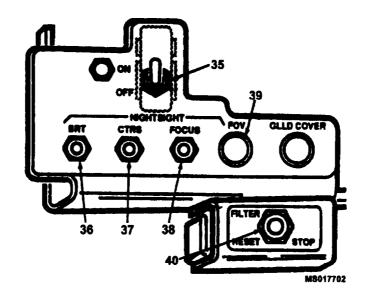
#### CAUTION

While performing the following step make sure cable assembly W29 does not interfere with manual sight select switch (31). Operation of sight select switch on the hand controls with movement of manual sight select switch impeded by cable assembly W29 will damage tank periscope motor and clutch assembly.

- 16. Remove W31P1 connector (32) from receptacle and connect to J3 (33) on nightsight.
- 17. Set circuit breaker (34) on vehicle power conditioner to ON position (up).

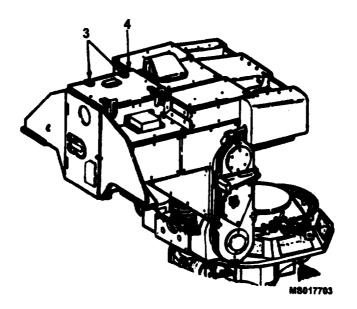


- 18. Set EQPT BAT and TSCD PWR switches to ON.
- 19. Set NIGHTSIGHT ON/OFF switch (35) to ON and operate BRT (36) CTRS (37) and range FOCUS (38) controls from inside targeting station to see if they work. Recheck FOV control (39) for smoothness of travel.
- 20. Operate filter switch (40) and verify that laser filter in the nightsight steps through four filter positions.
- 21. If LD/R is to be installed, refer to procedures on page 2- 48.6 before proceeding to step 22.
- 22. Perform tank periscope focus and alignment check procedures starting on page 2-48.29.
- 23. Perform nightsight boresight alignment procedures starting on page 2-74.5.
- 24. Set NIGHTSIGHT ON/OFF switch (35) to OFF.



25. Set TSCD PWR and EQPT BAT switches to OFF.

26. Close targeting head access door (4) and latch two latches (3).



## **REMOVAL AND STORAGE OF NIGHTSIGHT**

- 1. Open targeting head access door.
- 2. Set nightsight ON/OFF/STBY switch (1) to OFF. Install nightsight lens protector (2).
- 3. Remove BRT and CTRS control actuator by depressing button (3) on top of control actuator and place on stowage bracket.
- 4. Remove W31P1 connector (4) and stow in dummy receptacle.
- 5. Remove and stow focus control actuator.
- 6. Retract FOV actuator. Push in line with actuator shaft, and when fully retracted, turn 1/4 to hold in retracted position.
- 7. Turn focusing ring all the way in for clearance.

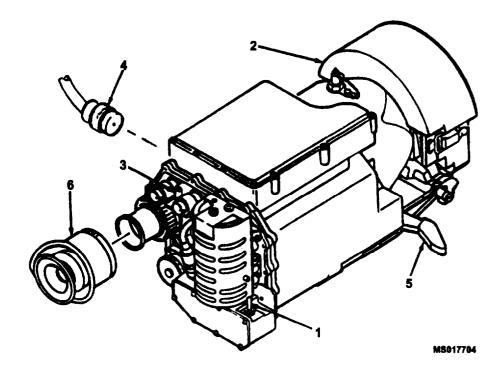
#### CAUTION

Do not lift nightsight by PA cable. Do not lift nightsight more than 4 inches before removing power conditioner cable.

2-48.26 Change 10

# **REMOVAL AND STORAGE OF NIGHTSIGHT (CONT)**

- 8. Grasp nightsight firmly with one hand while pushing latching handle (5) back toward eyepiece.
- 9. Lift up nightsight and disconnect connector W29P1 from nightsight.
- 10. Carefully lift nightsight out of targeting head. Close and latch targeting head access door.
- 11. Replace eyeshield (6).
- 12. Stow nightsight in assigned location.



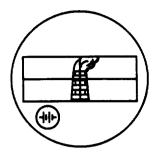
# **OPERATION/DATA ENTRY ERROR MESSAGES**

Error messages are displayed on the TSCD when targeting station operator performs incorrect key operations, exceeds preprogrammed data limits, or a shorted trigger switch is indicated. Error messages may be cleared by pressing and releasing the CLR key.

#### NOTE

The TSCD will display test error messages when the TEST key is used. For more information see EMERGENCY OPERATION OF VEHICLE - TSCD BUILT-IN-TEST ERROR MESSAGES refer to TM9-2350-266-10.

Item	Display	Remarks
1	? V EASTINGS	Operator pressed ENTR key while ve- hicle eastings power-up symbols (#########) were displayed.
2	? V NORTHING	Operator pressed ENTR key while ve- hicle not-things power-up symbols (######) were displayed.



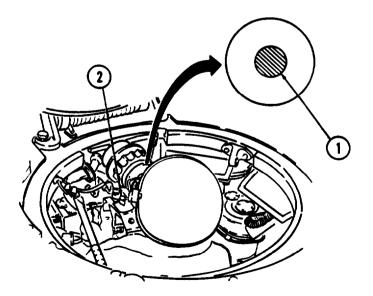
# TANK PERISCOPE FOCUS AND ALIGNMENT CHECK

1. Install LD/R and nightsight in accordance with procedures on pages 2-48.6 and 2-48.17, respectively.

NOTE

Ensure focusing ring on LD/R is set to the fifth index mark (midposition) and nightsight focusing ring is set to zero in accordance with LD/R and nightsight installation procedures referenced above.

2. Turn sight select switch (2) to 13X and adjust tank periscope focusing knob to get a sharp image of LD/R reticle. Look through tank periscope eyepiece from a distance of about 6 to 12 inches for a circular spot of light (1) appearing on tank periscope eyepiece glass. Move your head so light is centered in eyepiece. If spot is not perfectly circular, notify unit maintenance.



Change 10 2-48.29

# TANK PERISCOPE FOCUS AND ALIGNMENT CHECK

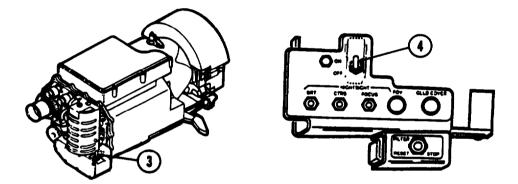
3. Check focus adjustment of 13X an 3X channels by switching sight select switch back and forth from 13X to 3X, noting that, without adjusting tank periscope eyepiece focusing periscope focusing knob must be turned to achieve sharp focus.

#### WARNING

# The forward cover assembly does not lock in the open position and could fall, causing injury to personnel.

4. Open targeting head top access door and set nightsight ON/OFF/STBY switch (3) to ON. Close door.

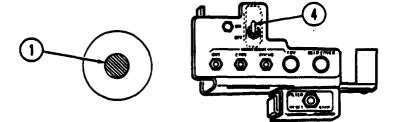
5. Turn sight select switch (2) to NIGHT and set NIGHTSIGHT ON/OFF switch (4) to ON,



#### NOTE

Wait at least 15 seconds or until image is obtained (required by nightsight cooler) before proceeding.

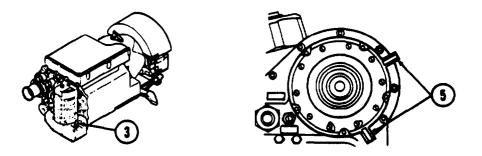
6. Adjust tank periscope eyepiece to get a sharp image of nightsight reticle. Look through tank periscope eyepiece from a distance of about 6 to 12 inches for a circular spot of light (1) appearing on tank periscope eyepiece glass. Move your head so that light is centered in eyepiece.



## NOTE

Alignment tabs (5) are shown set, to mid-position. To change position of tab, lift tab out of detent. Be sure tab engages another detent after if has been moved.

7. If the spot is not perfectly circular, have someone else move alignment tabs (5) on nightsight objective lens of tank periscope one at a time while noting whether this helps or hurts the circular shape. Move alignment tabs until the spot of light is perfectly circular. If you can't get the spot perfectly circular, notify unit maintenance.



8. Turn nightsight ON/OFF/STBY switch (3) to OFF and NIGHTSIGHT ON/OFF switch (4) to OFF until ready to sue nightsight.

Change 102-48.31/(2-48.32 blank)

#### 2-3. INITIAL CHECKOUT

#### NOTE

If you are using Equipment Set AN/UAS-12 (with AN/TAS-4 night sight), perform tests 1 thru 7 and 10. If you are using Equipment Set AN/UAS-126 (with AN/TAS-4B night sight), perform tests 1 thru 4 and 8 thru 10. If you are using equipment set AN/UAS-12D (with AN/TAS-4D night sight), perform tests 1 thru 4 and 9 thru 11.

Your Task: This procedure contains the tests you perform to verify your G/VLLD set is operating properly:

- 1. Initial Checks
- 2. LD/R Self-Test
- 3. AZ ZERO Mode
- 4. G/VLLD Standby
- Shutdown 5. AN/TAS-4 Night Sight IR System Checkout
- 6. Coolant Cartridge Replacement

- 7. AN/TAS-4 Night Sight Boresight Alignment
- 8. AN/TAS-4B Night Sight IR System Checkout
- 9. AN/TAS-4B or AN/TAS-4D Night Sight Boresight Alignment
- 10. Digital Message Device (DMD) Checkout
- 11. AN/TAS-4D Night Sight IR System Checkout
- General: This procedure is performed in step-by-step sequence until a fault is detected. Then you go directly to the referenced section or paragraph. AFTER YOU CORRECT THE FAULT, YOU RETEST.

This procedure tells you the next paragraph in this manual to read if your G/VLLD set is faulty.

#### **INITIAL SETUP**

General Safety:	Laser light hazard; observe WARNINGS on WARNINGS page.
Equipment Required:	NATO connector, slave cable, and vehicle power cable (optional if battery not available).
Prerequisites:	G/VLLD set is set up per paragraph 2-1 (or 2-2).
Approximate Time Required:	5 minutes.

#### 1. INITIAL CHECKS

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## WARNING

If in troop training environment, be sure to add shorting plug to LD/R See paragraph 2-7.

LD/R

a. Window cover (4).

Press firmly on strap (8). Pull tab (5) to remove window cover (4) from laser window (6).

## WARNING

Never look in through front lens. Assume it is always dangerous to you. Make sure LD/R POWER switch is OFF.

b. Laser window (6).

Inspect from an angle.

Lens (7) is clean.

Clean per paragraph 3-14.

C. Eyepiece cover (3).

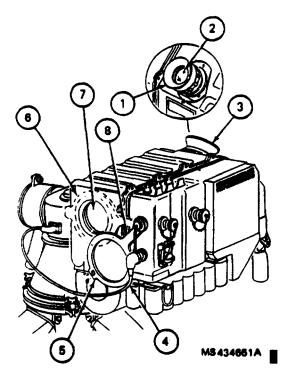
Pull to remove.

d. Eyepiece (1).

Inspect.

Lens (2) is clean.

Clean per paragraph 3-14.



2-50 Change 7

### 1. INITIAL CHECKS (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## LD/R

e. Window cover (4). (See illustration on preceding page.)

Press to install.

### TU

f. Precision level (1).

Inspect.

Bubble is in center ring.

Fine level per paragraph 2-1, step 7.

g. Azimuth gimbal lock (3).

Tighten cw.

G/VLLD set locks in place.

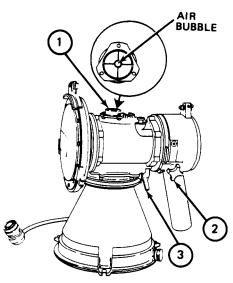
Replace TU per paragraph 3-18.

h. Elevation gimbal lock (2).

Tighten cw.

G/VLLD set locks in place.

Replace TU per paragraph 3-18.



MS 419400B

#### 2. LD\R SELF-TEST

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## LD/R

- a. Handle (3). (See illustration on next page.)
  - Rotate downward until button (4) releases.

Handle locks in down position.

Check for obstruction or damages, remove obstruction and repeat step. Still fails replace LD/R per paragraph 3-17.

b. DES/RNG 1/RNG 2 switch (2).

Set to DES.

#### 2. LD/R SELF-TEST (CONT)

#### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Power is applied in the next step. Make sure front window cover is securely in place to avoid possibility of scattered laser light from output window. Observe WARNINGS on WARNINGS page before proceeding.

LD/R

c. POWER switch (5).

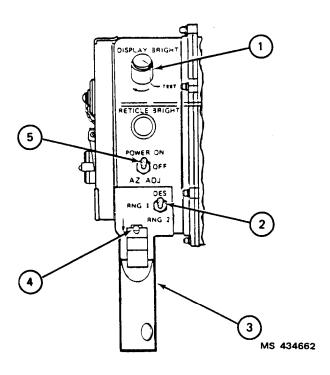
Set to ON.

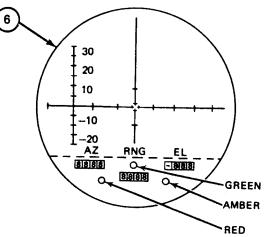
d. DISPLAY BRIGHT (1).

Turn to TEST (detent).

Eyepiece display (6) is shown with indicators lit. Reticle illuminates. (All 8's and minus sign illuminate. Amber, red, and green indicators illuminate.)

> Replace battery per paragraph 3-20 or vehicle cable per paragraph 2-1, step 8. Still fails, replace LD/R per paragraph 3-17. If battery is faulty, send to organizational maintenance for charging.





2 LD/R SELF-TEST (CONT)

#### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### LD/R

e. RETICLE BRIGHT control (4).

Adjust to desired level in eyepiece (1).

Crosshairs, scale, and AZ, RNG, EL legends brighten.

Replace LD/R per paragraph 3-17.

f. Window cover.

Press firmly on strap. Pull tab to remove window cover from laser window.

g. Focus ring (2).

Turn to focus on vehicle.

Reticle and distant objects are in focus.

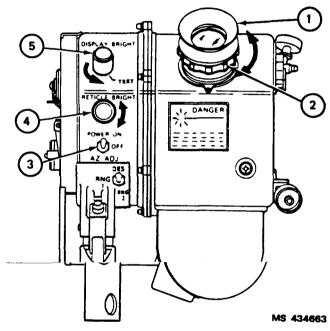
Replace LD/R per paragraph 3-17.

h. DISPLAY BRIGHT control (5).

Turn ccw from TEST position.

Eyepiece display readouts (AZ, EL, RNG) and indicators (red, amber, and green) go off. Reticle remains lit.

Replace LD/R per paragraph 3-17.



## 2. LD/R SELF-TEST (CONT)

LOCATION ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

LD/R (See illustration on preceding page.)

i. DISPLAY BRIGHT control (5).

Adjust cw and ccw while holding POWER switch (3) on AZ ADJ.

AZ, RNG, EL readouts brighten and then dim on eyepiece display.

Replace LD/R per paragraph 3-17.

j. Window cover.

Press on window.

k. POWER switch (3).

Set to ON.

#### 2. LD/R SELF-TEST (CONT)

#### LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired in the next step; observe WARNINGS on WARNINGS pages.

### LD/R

1. Trigger switch.

Pull for a three count and observe eyepiece display.

Green indicator off.

Replace LD/R per paragraph 3-17.

#### NOTE

If laser inhibit (shorting) plug is installed, red indicator will light and remain on when LD/R trigger switch is pulled. Ensure laser inhibit (shorting) plug is used only as prescribed in paragraph 2-7.

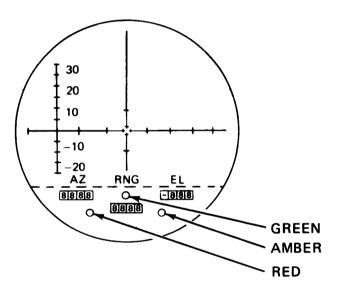
Red indicator off (may flash once at turn-on).

Replace LD/R per paragraph 3-17.

Amber indicator off.

Replace battery per paragraph 3-20.

Still fails, replace LD/R per paragraph 3-17.



#### 2. LD/R SELF-TEST (CONT)

LOCATION ITEM ACTION NORMAL INDICATION CORRECTIVE ACTION

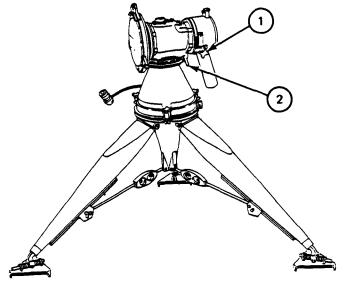
ΤU

m. Azimuth gimbal lock (2).

Loosen ccw.

n. Elevation gimbal lock (1).

Loosen ccw.



MS 419338B

## 3. AZ ZERO MODE

## LOCATION

ITEM

ACTION NORMAL INDICATION

#### CORRECTIVE ACTION

## LD/R

a. POWER switch (3).

AZ ADJ (place in AZ ADJ position and hold).

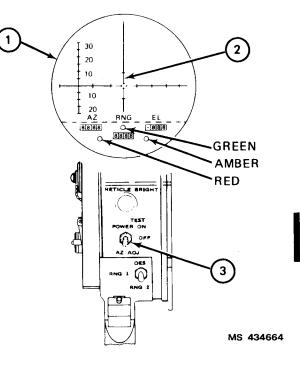
Eyepiece display: AZ digits lit, RNG digits lit, EL digits lit.

Troubleshoot AZ, RNG, EL Readout Fault per paragraph 3-9.

b. Eyepiece (1).

Set crosshairs (2) on reference object.

Crosshairs are centered on aiming point.



#### 3. AZ ZERO MODE (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### TU

c. AZ ZERO ADJ knob (2).

Rotate until eyepiece display (5) AZ readout displays desired reference azimuth.

Eyepiece display: Desired azimuth (AZ) value.

Troubleshoot AZ Readout Fault per paragraph 3-9.

#### NOTE

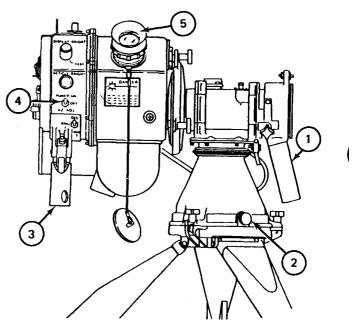
AZ readout values are from 0001 to 6400. EL readout values are from -400 to +444.

LD/R and TU

d. Hand grip (1) and handle (3).

Center crosshairs on a target point. Push POWER switch (4) to AZ ADZ until eypiece display (5) lights.

> Eyepiece display: AZ. (Note AZ value.)



#### 3. AZ ZERO MODE (CONT)

LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

e. Hand grip (1) and handle (3). (See illustration on preceding page.)

Center right 10 MIL mark on same target, push POWER switch (4) to AZ ADJ until eyepiece display (5) lights.

> Eyepiece display: AZ display of step 3.d decreases by 10.

> > Troubleshoot AZ Readout Fault per paragraph 3-9.

f. Hand grip (1) and handle (3).

Center crosshairs on a target point. Push POWER switch (4) to AZ ADJ until eyepiece display (5) lights.

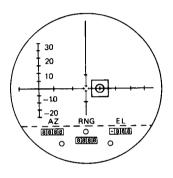
> Eyepiece display: EL. (Note EL value.)

g. Hand grip (1) and handle (3).

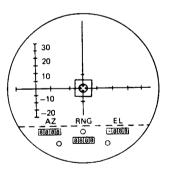
Center upper 10 MIL mark on same target, push POWER switch (4) to AZ ADJ until eyepiece display (5) lights.

Eyepiece display: EL display of step 3.f decreases by 10.

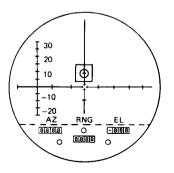
Troubleshoot EL Readout Fault per paragraph 3-9.











#### TM 9-1260-477-12

## 2-3. INITIAL CHECKOUT (CONT)

## 4. G/VLLD STANDBY SHUTDOWN

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### LD/R

a. POWER switch (4).

Set to OFF.

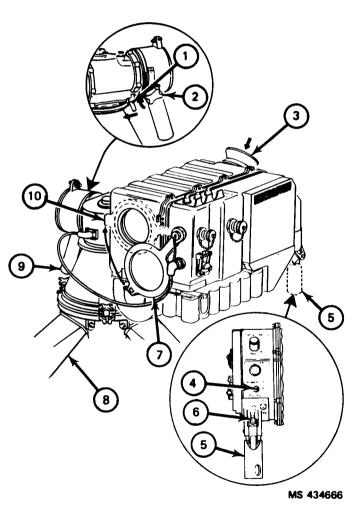
#### LD/R/TU

- b. Hand grip (9) and handle (5).
  - Rotate LD/R over DOWNHILL LEG (8).
- c. Handle release button (6). Press and hold.
- d. Handle (5).

Rotate up.

#### LD/R

- e. Window cover (7). Press onto window (10).
- f. Eyepiece cover (3). Push to install.
- g. Azimuth gimbal lock (1). Tighten cw.
- h. Elevation gimbal lock (2). Tighten cw.



2-60 Change 8

#### 5. AN/TAS-4 NIGHT SIGHT IR SYSTEM CHECKOUT

#### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### NOTE

IF AN/TAS-4 night sight is installed, perform steps 5, 6, and 7 below. If AN/TAS-4B or AN/TAS-4D night sight is installed, perform steps 8 and 9 below.

Night Sight

#### NOTE

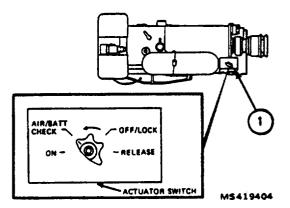
Appearance of actuator switch varies among models.

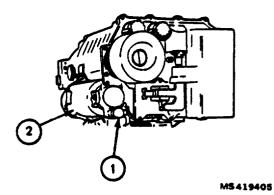
a. Actuator switch (1).

Set to AIR/BATT CHECK.

b. Pressure gauge (1).

Check for indication of 2,500 to 6,000 psi (fully charged). If indication is 2,500 psi or less, replace cartridge (2) per paragraph 2-3, step 6.





#### 5. AN/TAS-4 NIGHT SIGHT IR SYSTEM CHECKOUT (CONT)

## LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

#### NOTE

A security shutter is molded into the eyeshield to prevent detection of stray light by the enemy. The shutter will open when your face presses against the eyeshield.

Night Sight

C. Eyepiece.

Sight through eyepiece. If coolant cartridge monitor is lit, replace coolant cartridge per paragraph 2-3, step 6.

d. Eyepiece.

If battery monitor is lit or if reticle is not lit, replace battery per paragraph 2-1, step 11.

#### NOTE

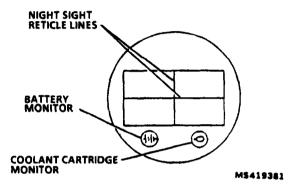
Reticle illumination is not adjustable.

e. Actuator switch (1). (See illustration on next page.)

Set to ON. Allow 15 seconds for cooldown of night sight.

f. Lens cover (4).

Remove.



2-62 Change 7

## 5. AN/TAS-4 NIGHT SIGHT IR SYSTEM CHECKOUT (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

Night Sight

g. Field of view selector (3).

Set to NFOV.

h. BRT control (6). CTRS control (5).

View a suitable scene and adjust for normal viewing.

i. Diopter adjustment ring (7).

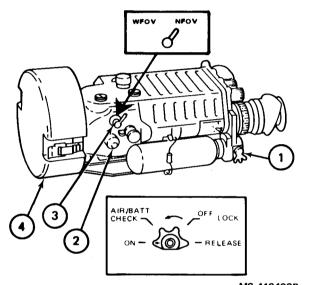
Adjust for best focus of night sight reticle.

j. RANGE FOCUS control (2).

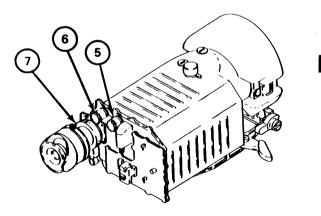
Adjust for clearest image in normal IR viewing.

k. Field of view selector (3).

Set to WFOV. Check for normal IR viewing.



MS 419406B



MS 419407A

#### 6. COOLANT CARTRIDGE REPLACEMENT

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# CAUTION

Do not remove coolant cartridge from night sight unless indicated by operations in step 5 above.

Night Sight

a. Actuator switch (1).

Set to RELEASE position.

b. Coolant cartridge (4).

Pull out of actuator assembly (2) and slide out of cartridge retainer clip (3).

c. Coolant cartridge (4).

Return to Direct Support Maintenance.

d. Coolant cartridge case.

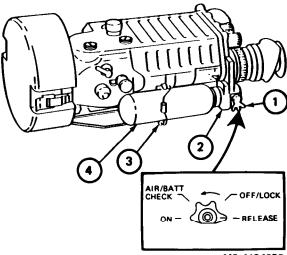
Remove coolant cartridge.

e. Coolant cartridge (4).

Slide through cartridge retainer clip (3) into actuator assembly (2) and turn until it snaps in place.

f. Actuator switch (1).

Set to OFF/LOCK.



MS 419408B

#### 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# CAUTION

Boresight collimator is a precision instrument and must be handled carefully. Do not drop.

NOTE

Checkout of LD/R should be completed prior to boresight alignment of night sight.

Boresight alignment must be performed:

- (1) When night sight is installed in night sight mount.
- (2) When operational temperature changes 40 °F (4 °C) or more from that of last boresighting.
- (3) After equipment has been subjected to rough treatment.
- (4) When LD/R is replaced.

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

#### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

Boresight Collimator

a. Collimator mount (2).

Ensure it is set to GLLD index (1). If not, return to maintenance.

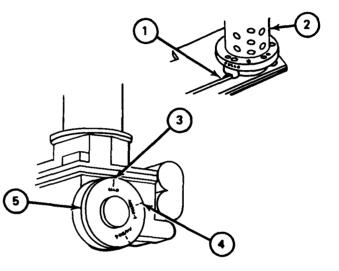
b. Source assembly (5).

Ensure index mark (4) is set GLLD index (3).

Night Sight

c. Boresight Collimator.

Position over locating pins and pads on front of night sight.



### 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

Boresight Collimator

d. Securing latches (1).

Engage and close.

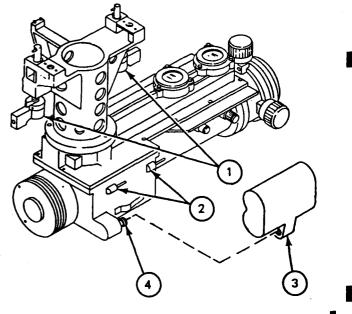
Night Sight (See illustration in chapter 1, section II.)

e. Coarse azimuth knob.

Ensure stop is set to position 2.

- Boresight Collimator
  - f. Battery (3).

Align and install charged battery onto collimator battery guide pins (2). Engage connector 3J1 (4).



## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

Night Sight

Actuator switch (1). g.

Set to ON.

h. Field of view selector (2)

Set to NFOV.

Night Sight Mount

i . Support bar (3).

> Pull free from retaining screw on side of night sight mount. Engage between two notches on top of TU and slide indented end of support bar into mounting post (4) on TU.

#### NOTE

Night sight mount must rest on support bar during boresight alignment.

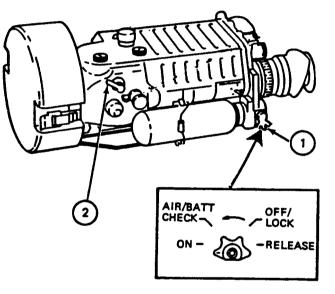
ΤU

Elevation gimbal lock knob (5). ί.

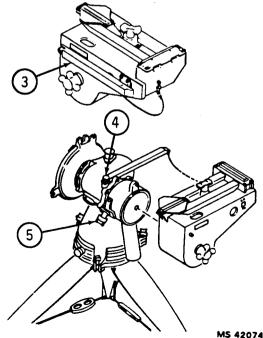
> Turn ccw to loosen. Allow night sight mount to slowly come to rest on support bar.

> > NOTE

Do not relock the elevation gimbal lock. This will affect the accuracy of the boresight procedure.



MS 420701A



MS 420744A

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### Boresight Collimator

k. AZ adjustment knob (2) and EL adjustment knob (1).

Adjust knobs to midpoint of travel before beginning the collimation sequence.

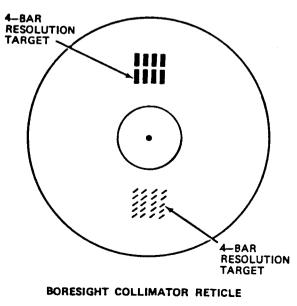
#### LD/R

I. Eyepiece.

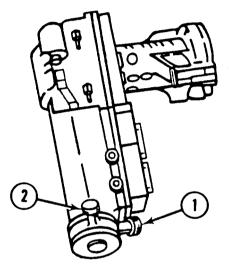
Sight through eyepiece. Boresight collimator and LD/R reticles should be visible.

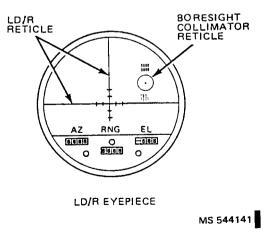
NOTE

If LD/R reticle is not visible, set LD/R POWER switch to ON and adjust RETICLE BRIGHT control on LD/R as necessary.



MS 419383C





#### 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

#### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### Boresight Collimator

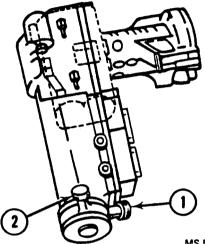
m. AZ adjustment knob (2) and EL adjustment knob (1).

Adjust as necessary to bring the centers of the LD/R and boresight collimator reticles into <u>exact</u> alignment.

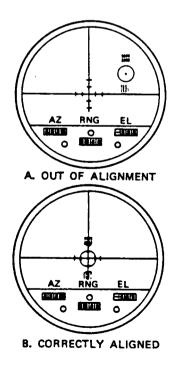
Two reticles are correctly aligned.

If the two retitles cannot be aligned, remove boresight collimator, night sight, and night sight mount. Then perform paragraph 2-1, step 9 and repeat step m.

If reticles still cannot be aligned, replace boresight collimator per paragraph 2-3, step 7.



MS 561696



MS 419384C

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### Night Sight

n. Eyepiece.

With field of view selector set to NFOV, look through eyepiece.

Night sight and boresight collimator reticles should both appear in the display.

o. RANGE FOCUS control (5).

Adjust for best viewing of collimator reticle.

p. AZ adjustment lock (3) and EL adjustment lock (1).

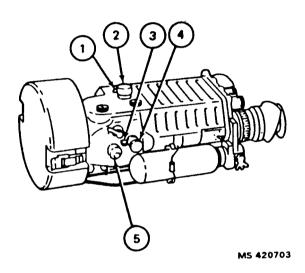
Release.

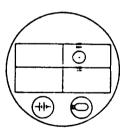
q. AZ boresight adjustment (4) and EL boresight adjustment (2)

> Adjust to bring centers of reticles into exact alignment. Lock each bore-adjustment by turning locks (3 and 1) cw using care not to disturb adjustment settings.

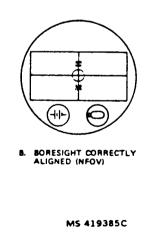
> > Night sight and boresight collimator reticles are correctly aligned.

If reticles will not align, proceed as follows:





BORESIGHT OUT OF



## TM 9-1260-477-12

## 2-3. INITIAL CHECKOUT (CONT)

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

LOCATION ITEM	
ACTION NORMA	AL INDICATION CORRECTIVE ACTION
	<ul> <li>(1) Move night sight         <ul> <li>latch handle (2)</li> <li>to rear (unlocked)</li> <li>position.</li> </ul> </li> </ul>
(	(2) Move coarse azimuth knob (1) to position 1.
(	(3) Return night sight latch handle (2) to forward (locked) position.
(	(4) Repeat step q.
V	If reticles still will not align, proceed as follows:
	<ol> <li>Remove boresight collimator (para 2-3, step 7u).</li> </ol>
	(2) Remove night sight (para 3-24, step 2).
	(3) Remount night sight (para 2-1, step 10).
	<ul><li>(4) Remount boresight collimator (para 2-3, steps 7c and d).</li></ul>
	<ul><li>(5) Position coarse azimuth knob (1) in position 2.</li></ul>
	(6) Repeat step q until reticles are aligned.

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

Night Sight

r. Field of view selector (3)

Set to WFOV.

s. BRT control (2) and CTRS control (1).

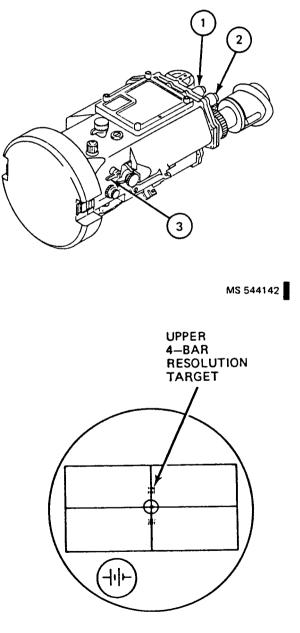
Readjust for best view of boresight collimator reticle. Reticle centers should remain in alignment.

t. Eyepiece.

Observe reticles.

Upper 4-bar resolution target is clearly visible and reticles are still exactly aligned.

> Repeat boresight alignment with a different boresight collimator. If upper 4-bar resolution target is still not visible, replace night sight per paragraph 3-24.



BORESIGHT CORRECTLY ALIGNED (WFOV)

#### 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

- Boresight Collimator
  - u. Securing latches (1).

Remove boresight collimator from night sight by firmly holding the unit and releasing securing latches.

v. Securing latches (1).

Move both securing latches to the locked position.

W. Battery (2).

Remove from boresight collimator. Place in battery case.

x. Boresight collimator.

Repack in carrying case.

## 7. AN/TAS-4 NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## TU

y. Handle (4).

Rotate upward in elevation.

z. EL gimbal lock knob (5).

Turn cw to tighten.

aa. Support bar (2).

Slide free from mounting post (1) on TU.

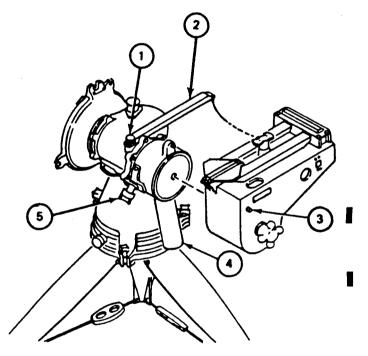
ab. Night sight mount.

Slide indented end of support bar into retaining screw (3) on side of night sight mount (stow position).

Night Sight

ac. Actuator switch.

Set to OFF/LOCK.



MS 420754A

#### 8. AN/TAS-4B NIGHT SIGHT IR SYSTEM CHECKOUT

#### LOCATION

#### ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

#### Night Sight

a. ON/OFF/STBY Switch (4).

Set to STBY.

Cooler runs continuously for 160 seconds then shuts off. Cooler cycles off for 100 seconds then on for 20 seconds.

Night sight can still be operated in the ON position if the standby mode does not work. Continue with the checkout procedure and have the night sight checked by support maintenance at the earliest opportunity.

b. ON/OFF/STBY Switch (4).

Set to ON.

c. Eyepiece (7).

Sight through eyepiece.

Battery monitor is not lit; reticle is lit.

Remove and replace battery per paragraph 3-24, step 5.

d. Diopter Adjustment Ring (1).

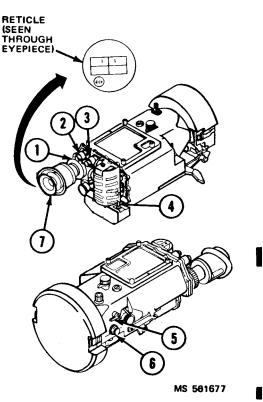
Adjust for best focus of reticle.

Reticle is sharp and clear.

Remove and replace night sight per paragraph 3-24.

e. BRT Control (2).

Adjust for best focus of displayed image.



#### TM 9-1260-477-12

## 2-3. INITIAL CHECKOUT (CONT)

8. AN/TAS-4B NIGHT SIGHT IR SYSTEM CHECKOUT (CONT)

#### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

f. CTRS Control (3, see illustration on previous page).

Adjust for best focus of displayed image.

9. Range Focus Control (6) .

Adjust for best focus of displayed image.

Displayed image is sharp and clear; adjustment of controls affects scene.

Remove and replace night sight per paragraph 3-24.

h. Field of View Selector (5).

Set to WFOV.

Focus of displayed image stays the same; Field of View increases to include more area.

Remove and replace night sight per paragraph 3-24.

#### 8.1 AN/TAS-4D NIGHT SIGHT IR SYSTEM CHECKOUT

#### LOCATION ITEM

-171

ACTION NORMAL INDICATION CORRECTIVE ACTION

Night Sight

a. ON/OFF/STBY Switch (4).

Set to STBY.

Cooler runs continuously for 160 seconds then shuts off. Cooler cycles off for 100 seconds then on for 20 seconds.

> Night sight can still be operated in the ON position if the standby mode does not work. Continue with the checkout procedure and have the night sight checked by support maintenance at the earliest opportunity.

b. ON/OFF/STBY Switch (4).

Set to ON.

c. Eyepiece (7).

Sight through eyepiece.

Battery monitor is not lit; reticle is lit.

Remove and replace battery per paragraph 3-24, step 5.

d. Diopter Adjustment Ring (1).

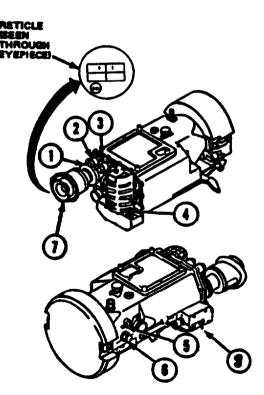
Adjust for best focus of reticle.

Reticle is sharp and clear.

Remove and replace night sight per paragraph 3-24.

e. BRT Control (2).

Adjust for best focus of displayed image.



#### 8.1 AN/TAS-4D NIGHT SIGHT IR SYSTEM CHECKOUT (CONT)

#### LOCATION

#### ITEM ACTION

## NORMAL INDICATION CORRECTIVE ACTION

f. CTRS Control (3, see illustration on previous page).

Adjust for best focus of displayed image.

g. Range Focus Control (6).

Adjust for best focus of displayed image.

Displayed image is sharp and clear: adjustment of controls affects scene.

Remove and replace night sight per paragraph 3-24.

h. Field of View Selector (5).

Set to WFOV.

Focus of displayed image stays the same; Field of View increases to include more area.

Remove and replace night sight per paragraph 3-24.

i. Operator Selectable Filter (OSF) (8).

While looking in the eyepiece, push forward on OSF control switch three separate times.

Does the filter move to all three positions?

If not, remove and replace night sight per paragraph 3-24.

Pull rearward on OSF control switch.

Does the filter move to reset position?

If not, remove and replace night sight per paragraph 3-24.

#### 9. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT

#### LOCATION ITEM

## ACTION NORMAL INDICATION CORRECTIVE ACTION

# CAUTION

Boresight collimator is a precision instrument and must be handled carefully. Do not drop.

#### NOTE

Checkout of LD/R should be completed prior to boresight alignment of night sight.

Boresight alignment must be performed:

- (1) When night sight is installed in night sight mount.
- (2) When operational temperature changes 40 ° F (4 °C) or more from that of last boresighting.
- (3) After equipment has been subjected to rough treatment.
- (4) When LD/R is replaced.

#### 9 . AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### Boresight Collimator

a. Collimator mount (2).

Ensure it is set to GLLD index (1). If not, return to maintenance.

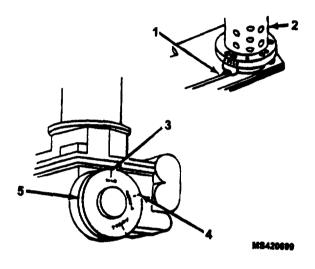
b. Source assembly (5).

Ensure index mark (4) is set to GLLD index (3).

#### Night Sight

c. Boresight Collimator.

Position over locating pins and pads on front of night sight.



### LOCATION ITEM

# ACTION NORMAL INDICATION

### CORRECTIVE ACTION

### Boresight Collimator

d. Securing latches (1).

#### Mount

Push and turn in opposite directions to lock in place (vehicle mode only).

Night Sight

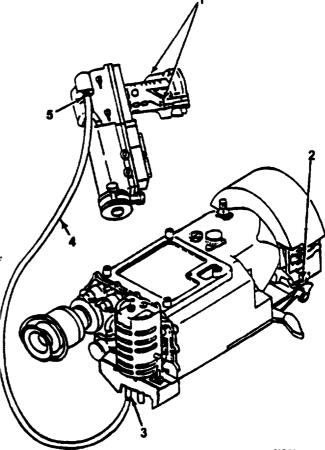
e. Coarse azimuth knob (2).

Ensure knob is set to position 2.

### Boresight Collimator

f. Boresight collimator power cable 3W1 (4).

Connect to boresight collimator connector 3J1 (5) and to night sight connector J4 (3).



M8661699B

### TM 9-1260-477-12

# 2-3. INITIAL CHECKOUT (CONT)

# 9. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# Night Sight

g. ON/OFF/STBY switch (1).

Set to ON.

h. Field of view selector (2).

Set to NFOV.

Night Sight Mount (Gnd Mount)

i. Support bar (3).

Pull free from retaining screw on side of night sight mount. Engage between two notches on top of TU and slide indented end of support bar into mounting post (4) on TU.

#### NOTE

Night sight mount must rest on support bar during boresight alignment.

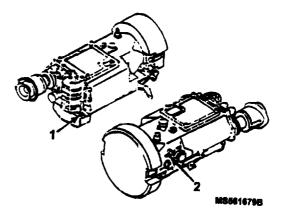
#### TU

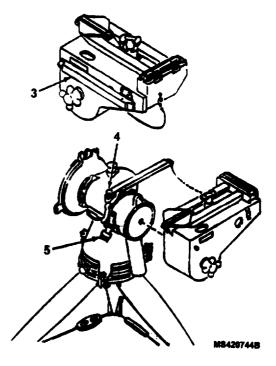
j. Elevation gimbal lock knob (5).

Turn ccw to loosen. Allow night sight mount to slowly come to rest on support bar.

#### NOTE

Do not relock the elevation gimbal lock. This will affect the accuracy of the boresight procedure.





# 9. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

# LOCATION

### ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# Boresight Collimator

k. AZ adjustment knob (2) and EL adjustment knob (1).

Adjust knobs to midpoint of travel before beginning the collimation sequence.

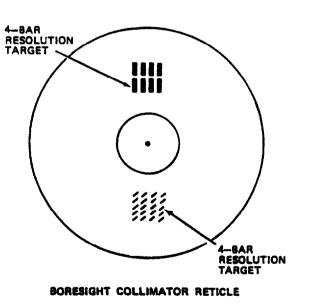
#### LD/R

L Eyepiece.

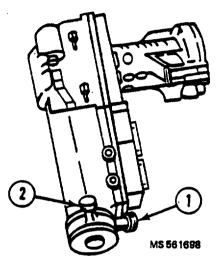
Sight through eyepiece. Boresight collimator and LD/R reticles should be visible.

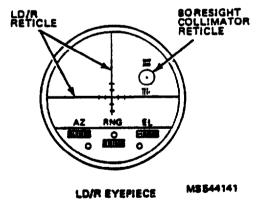
### NOTE

If LD/R reticle is not visible, set LD/R POWER switch to ON and adjust RETICLE BRIGHT control on LD/R as necessary.



MS 419383C





Change 10 2-74.9

### 2-3. INITIAL CHECKOUT (CONT)

### 9. AN/TAS-48 OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

# LOCATION

### ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

Boresight Collimator

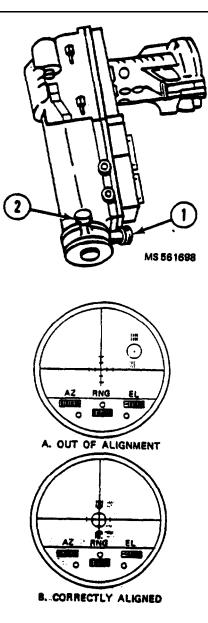
m. AZ adjustment knob (2) and EL adjustment knob (1).

Adjust as necessary to bring the centers of the LD/R and boresight collimator reticles into <u>exact</u> alignment.

Two reticles are correctly aligned.

If the two reticles cannot be aligned,. remove boresight collimator, night sight, and night sight mount. Then perform paragraph 2-1, step 9 and repeat step m.

If reticles still cannot be aligned, replace boresight collimator per paragraph 2-3, step 9.



MS 419384C

# LOCATION

### ITEM

# ACTION NORMAL INDICATION CORRECTIVE ACTION

### Night Sight

n. Eyepiece.

With field of view selector (6) set to NFOV, look through eyepiece.

Night sight and boresight collimator reticles should both appear in the display.

o. RANGE FOCUS control (5).

Adjust for best viewing of collimator reticle.

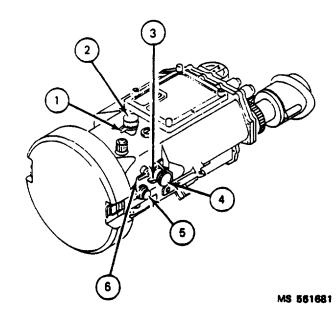
p. AZ adjustment lock (3) and EL adjustment lock (1).

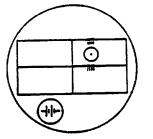
Release.

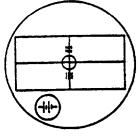
q. AZ boresight adjustment (4) and EL boresight adjustment (2).

Adjust to bring centers of reticles into <u>exact</u> alignment. Lock each boresight adjustment by turning locks (3 and 1) cw using care not to disturb adjustment settings.

> Night sight and boresight collimator reticles are correctly aligned.







- BORESIGHT OUT OF ALIGNMENT
- B. BORESIGHT CORRECTLY ALIGNED (NFOV)

### 2-3. INITIAL CHECKOUT (CONT)

### 9 . AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

### LOCATION

# ITEM

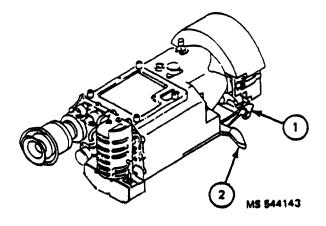
ACTION NORMAL INDICATION CORRECTIVE ACTION

> If reticles will not align, proceed as follows:

- Move night sight latch handle (2) to read (unlocked) position.
- (2) Move coarse azimuth knob (1) to position 1.
- (3) Return night sight latch handle (2) to forward (locked) position.
- (4) Repeat step q.

If reticles still will not align, proceed as follows:

- (1) Remove boresight collimator (para 2-3, step 9u).
- (2) Remove night sight (para 3-24, step 3).
- (3) Remount night sight (para 2-1, step 13).
- (4) Remount boresight collimator (para 2-3, steps 9c and d).
- (5) Position coarse azimuth knob (1) in position 2.
- (6) Repeat step q until reticles are aligned,



#### 2-74.12 Change 10

# LOCATION

# ITEM ACTION NORMAL INDICATION CORRECTIVE ACTION

# Night Sight

r. Field of view selector (3).

Set to WFOV.

s. BRT control (2) and CTRS control (1).

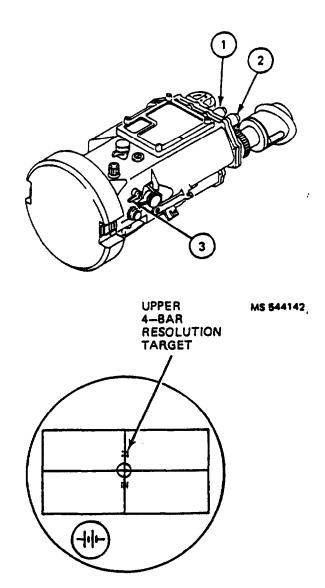
Readjust for best view of boresight collimator reticle.

t. Eyepiece.

Observe reticles.

Upper 4-bar resolution target is clearly visible and reticles are still exactly aligned.

> Repeat boresight alignment with a different boresight collimator. If upper 4-bar resolution target is still not visible, replace night sight per paragraph 3-24.



### 2-3. INITIAL CHECKOUT (CONT)

AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### Boresight Collimator

u. Securing latches (1).

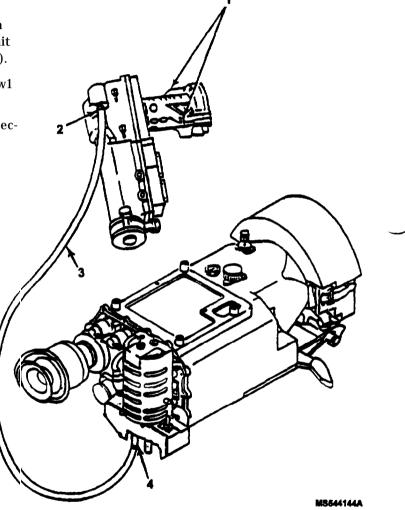
Remove boresight collimator from night sight by firmly holding the unit and releasing securing latches (1).

v. BORESIGHT collimator power cable 3w1(3).

Disconnect from night sight connector J4 (4) and from boresight collimator power connector 2J1. (2).

w. Boresight collimator.

Repack in carrying case.



# 9. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT BORESIGHT ALIGNMENT (CONT)

### LOCATION ITEM

# ACTION NORMAL INDICATION CORRECTIVE ACTION

### TU

y. Handle (4).

Rotate upward in elevation.

z. EL gimbal lock knob (5).

Turn cw to tighten.

aa. Support bar (2).

Slide free from mounting post (1) on TU.

ab. Night sight mount.

Slide indented end of support bar into retaining screw (3) on side of night sight mount (stow position).

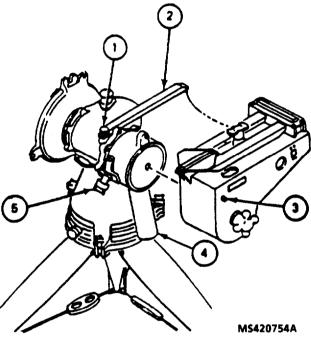
Night Sight

ac. ON/OFF/STBY switch.

Set to OFF.

10. DIGITAL MESSAGE DEVICE (DMD) CHECKOUT

Refer to TM 11-7440-281-12&P.



### **2-4. OPERATING PROCEDURES**

# LOCATION ITEM

# ACTION NORMAL INDICATION CORRECTIVE ACTION

### NOTE

	If you are using Equipment Set AN/UAS-12 (with the AN/TAS-4 night sight) perform tasks 1 thru 6. If you are using Equipment Set AN/UAS-12B (with the AN/TAS-4B night sight) or AN/UAS-12D (with the AN/TAS-4D night sight), perform tasks 1 thru 5 and 7.		
Your Task:	This procedure consists of the tasks you perform to operate your G/VLLD set.		
	1. Turn On 2. Tracking 3. RNG 1/TNG 2 Mode 4. DES Mode 5. Night Sight Operation	<ol> <li>6. Standby Shutdown for LD/R Standby Shutdown for LD/R and AN/TAS-4 Night Sight</li> <li>7. Standby Shutdown for LD/R and AN/TAS-4B Night Sight or</li> </ol>	

General: This procedure tells you the next paragraph in this manual to read if your G/VLLD set develops a fault.

INITIAL SETUP

General Safety:

Laser light hazard; see WARNINGS on WARNINGS page.

AN/TAS-4D Night Sight

**Prerequisites:** 

G/VLLD set checked out per paragraph 2-3.

# 1. TURN-ON

### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# LD/R

a. Eyepiece cover (3).

Pull to remove.

b. Window cover (7).

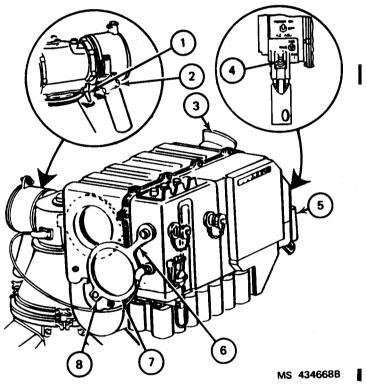
Press firmly on strap (6). Pull tab (8) to remove.

c. Handle (5).

Rotate downward until button (4) releases.

Handle locks in down position.

Check for obstruction and repeat step. Still fails, replace LD/R per paragraph 3-17.



### TM 9-1260-477-12

# 2-4. OPERATING PROCEDURES (CONT)

# 1. TURN-ON (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

ΤU

d. Azimuth gimbal lock (1). (See illustration on preceding page.)

Loosen ccw.

e. Elevation gimbal lock (2).

Loosen ccw.

# WARNING

Laser light hazard, observe WARNINGS on WARNINGS page.

### LD/R

f. POWER switch (1). (See illustration on next page.)

Set to ON.

Eyepiece display (2): reticle is lit; green, red, and amber indicators are off.

> Replace battery per paragraph 3-20 or vehicle power cable per paragraph 2-1, step 8. If battery is faulty, send it to direct support maintenance for charging.

Still fails, replace LD/R per paragraph 3-17.

# 2. TRACKING

#### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

LD/R

a. Target (3).

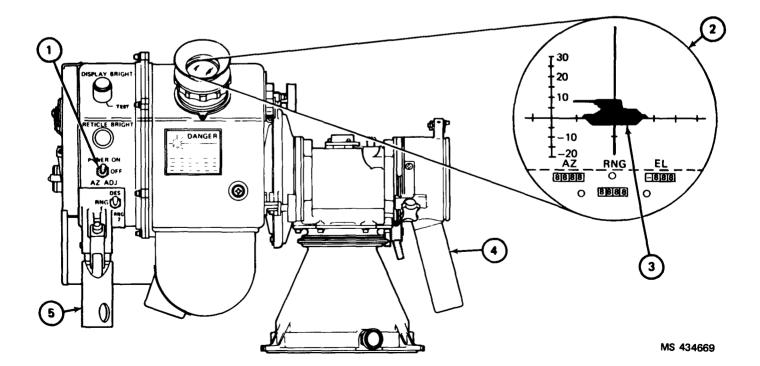
Visually acquire.

Target is in view.

# G/VLLD Set

b. LD/R/TU.

Grasp hand grip (4) and handle (5).



# TM 9-1260-477-12

# 2-4. OPERATING PROCEDURES (CONT)

# 2. TRACKING (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# LD/R/TU

I

C. Hand grip (4) and handle (5). (See illustration on preceding page.)

Rotate LD/R in line with target (3).

# LD/R

d. Eyepiece (2).

Center target (3) on crosshairs (use both hands ).

Target is centered on crosshairs.

Repeat Initial Checkout per paragraph 2-3.

e. Eyepiece (2).

Maintain target (3) on crosshairs.

Target is centered on crosshairs.

NOTE

For RNG 1/RNG 2 mode, proceed directly to step 3a. For DES mode, proceed directly to step 4a. For standby shutdown, proceed directly to step 7 a.

# 3. RNG 1/RNG 2 MODE

#### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### NOTE

Two tactical options are available. Use RNG 1 for soft targets such as munitions bursts; use RNG 2 for hard targets only.

### LD/R

DES/RNG 1/RNG 2 switch (1). a.

> Set to RNG 1 or RNG 2 depending on target.

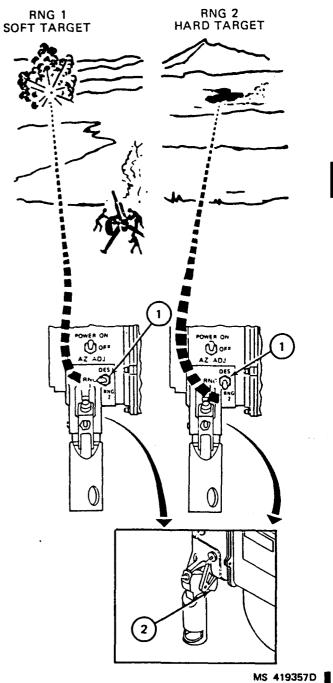
RNG 1 - soft targets OR RNG 2 - hard targets.

b. Eyepiece.

Track target on crosshairs.

Target remains on crosshairs.

> Refer to tracking steps 2 a thru 2 e.



Change 7

# 2-4. OPERATING PROCEDURES (CONT)

# 3. RNG 1/RNG 2 MODE (CONT)

# LOCATION ITEM ACTION NORMAL INDICATION CORRECTIVE ACTION LD/R (See illustration on preceding page.) WARNING Laser will be fired. Observe WARNINGS on WARNINGS page. Trigger switch (2). C. Pull, hold, release after reading eyepiece display. Eyepiece display: AZ, RNG, EL values for target. Repeat this step for updated data or new target. d. Eyepiece display. Relay data for user. 4. DES MODE LD/R DES/RNG 1/RNG 2 switch (2). a. Set to DES 1 NOTE The following step is mission essential. b. Code switches (1). Rotate switches to select required ABC code switch 2 settings. Code numbers are set next to dots. For example, code selected in diagram is 111. Replace LD/R per paragraph 3-17.

MS 419358B

2-80 Change 7

### 4. DES MODE (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

LD/R

c. Eyepiece.

Track target on crosshairs.

Target remains on crosshairs.

Refer to tracking steps 2 a thru 2 e.

# WARNING

Laser will be fired, observe laser WARNINGS on WARNINGS page.

d. Trigger switch.

Pull and hold until round impacts.

NOTE

In an emergency, finish designating even if red or amber indicator lights.

> Target is designated. Eyepiece display: red indicator - off, amber indicator - off.

> > Finish designating if amber indicator lights (less than 20 seconds of useful battery run time remains) and then replace battery per paragraph 3-20. In training situation, stop designating and replace LD/R per paragraph 3-17 if red indicator blinks or lights steady.

# 2-4. OPERATING PROCEDURES (CONT)

# 5. NIGHT SIGHT OPERATION

LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

Night Sight

Field of view selector.

Select desired field of view.

Select a typical scene. Readjust RANGE FOCUS, CTRS, and BRT controls as necessary.

Proceed to use the night sight with the LD/R to locate and track targets.

# 6. STANDBY SHUTDOWN FOR LD/R AND AN/TAS-4 NI GHTSI GHT

#### LOCATI ON I TEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

# LD/R

a. POWER switch (4).

Set to OFF.

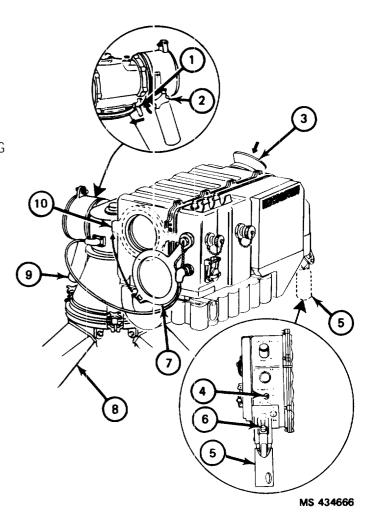
# LD/R/TU

- b. Hand grip (9) and handle (5).
   Rotate LD/R over DOWNHILL LEG (8).
- c. Handle release button (6).Press and hold.
- d. Handle (5).

Rotate up.

# LD/R

- e. Window cover (7). Press onto window (10).
- f. Eyepiece cover (3).Push to install.
- g. Azimuth gimbal lock (I). Tighten cw.
- h. Elevation gimbal lock (2).Tighten cw.



# TM 9-1260-477-12

# 2-4. OPERATING PROCEDURES (CONT)

6. STANDBY SHUTDOWN FOR LD/R AND AN/TAS-4 NIGHT SIGHT (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

**NOTE** If AN/TAS-4 night sight is installed, perform steps i thru k.

Night Sight (1)

i. Actuator switch (2).

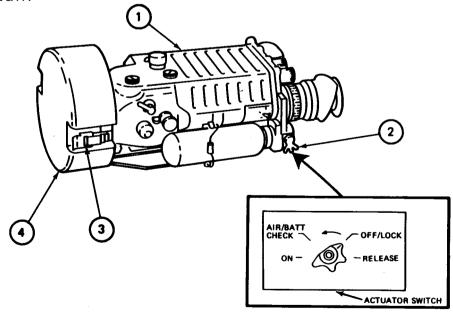
Set to OFF/LOCK.

j. Lens cover (4).

Install and secure with latch (3).

k. Equipment cover.

Install.



MS 420707A

### LOCATION ITEM

# ACTION NORMAL INDICATION CORRECTIVE ACTION

### LD/R

a. POWER switch (4).

Set to OFF.

### LD/R/TU

- b. Hand grip (9) and handle (5).
   Rotate LD/R over DOWNHILL LEG (8).
- c. Handle release button (6). Press and hold.
- d. Handle (5).

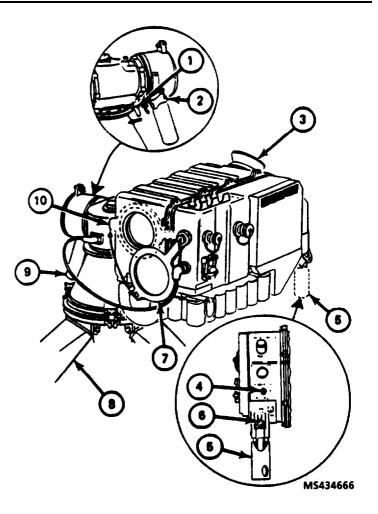
Rotate up.

# LD/R

- e. Window cover (7). Press onto window (10).
- f. Eyepiece cover (3).

Push to install.

- g. Azimuth gimbal lock (1). Tighten cw.
- h. Elevation gimbal lock (2). Tighten cw.



# TM 9-1260-477-12

### 2-4. OPERATING PROCEDURES (CONT)

7 . STANDBY SHUTDOWN FOR LD/R AND AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT (CONT)

# LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### NOTE

If AN/TAS-4B or AN/TAS-4D night sight is installed, perform steps i thru k.

Night Sight (1)

i. ON/OFF/STBY switch (4).

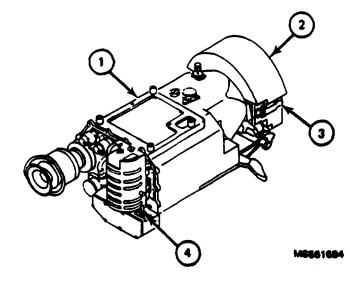
Set to OFF.

j. Lens cover (2).

install and secure with latch (3).

k. Equipment cover.'

Install.



#### 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE

#### NOTE

If you are using Equipment Set AN/UAS-12 (with the AN/TAS-4 night sight), perform operations 1, and 2 thru 6. If you are using Equipment Set AN/UAS-12B (with the AN/TAS-4B night sight), or AN/TAS-12D (with the AN/TAS-4D night sight), perform operations 1.1, 2 thru 5, and 7.

Your Task: This procedure consists of the following operations for preparing your G/VLLD set for movement in the ground mode.

- 1. Remove and Pack AN/TAS-4 Night Sight
- 1.1 Remove and Pack AN/TAS-4B or AN/TAS-4D Night Sight
- 2. Remove Digital Message Device (DMD)
- 3. Remove and Pack LD/R
- 3.1. Remove and Pack EMI Filter, NATO Connector, Slave Cable, and Vehicle Power Cable
- 4. Remove and Pack Tripod/TU
- 5. Stow in 1/4-Ton Trailer
- 6. Stow G/VLLD and Equipment Set AN/UAS-12 in 1/4-Ton Trailer
- 7. Stow G/VLLD and Equipment Set AN/UAS-12B or AN/UAS-12D in 1/4-Ton Trailer

#### INITIAL SETUP

General Safely:

**Prerequisites:** 

**Equipment** Required:

Use caution to prevent tipping of LD/R or tripod/TU; pack tripod/TU as instructed to avoid hitting your head while carrying it.

None.

G/VLLD set in standby shutdown per paragraph 2-3, step 4 or paragraph 2-4, step 6.

1. REMOVE AND PACK AN/TAS-4 NIGHT SIGHT

LOCATION ITEM

ACTION

Night Sight (1) (See illustration on next page.)

a. Actuator switch.

Set to OFF/LOCK.

#### Vehicle Power Conditioner

b. CB1/ON/OFF switch.

If night sight was used with vehicle power conditioner, set CB1 to OFF.

# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

### 1. REMOVE AND PACK AN/TAS-4 NIGHT SIGHT (CONT)

#### LOCATION

### ITEM ACTION

# Night Sight (1)

c. Cable 2W2.

Remove from night sight input power connector J1.

d. Battery.

Install on night sight.

e. Lens cover (2).

Install front lens cover with securing latches.

f. Diopter adjustment ring (6).

Rotate fully cw.

g. Latch handle (5).

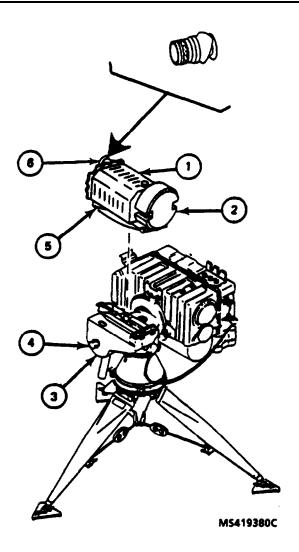
Support night-sight securely and move latch handle rearward to unlocked position. Remove night sight.

Invert night sight and place in field handling case.

### Night Sight Mount (3)

h. Mounting screw (4).

Loosen ccw to disengage night sight mount from TU.

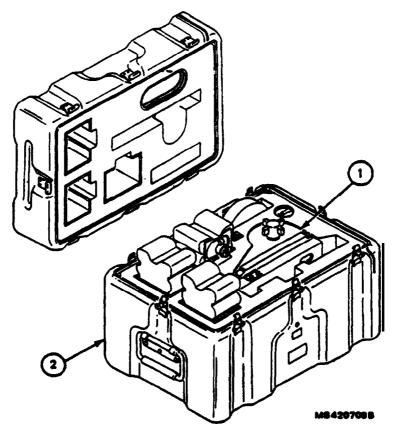


# LOCATION ITEM ACTION

Ancillary Equipment Transit Assembly Case (2)

i. Night sight mount (1).

Return to case.



### 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

1.1 REMOVE AND PACK AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT

# LOCATION ITEM

ACTION

AN/TAS-4B OR AN/TAS-4D Night Sight (1)

a. ON/OFF/STBY switch.

Set to OFF.

Vehicle Power Conditioner

b. CB1 /ON/OFF switch.

If night sight was used with vehicle power conditioner, set CB1 to OFF.

AN/TAS-4B or AN/TAS-4D Night Sight (1)

c. Cable 2W2.

Remove from night sight input' power connector J1 .

d. Lens cover (2).

Install front lens cover with securing latches.

e. Diopter adjustment ring (6).

Rotate fully cw.

f Latch handle (5).

Support night sight securely and move latch handle rearward to unlocked position. Remove night sight.

Invert night sight and place in field handling case.

M\$561685

# LOCATION ITEM

ACTION

Night Sight Mount (3, see illustration on previous page)

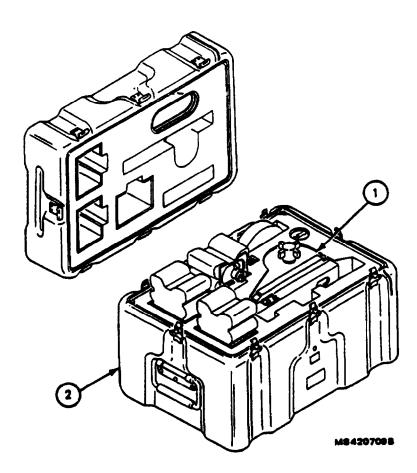
g. Mounting Screw (4).

Loosen ccw to disengage mount from TU.

Ancillary Equipment Transit Assembly Case (2, below)

h. Night Sight Mount (1).

Return to case.



# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

2. REMOVE DIGITAL MESSAGE DEVICE (DMD)

#### LOCATION

ITEM

ACTION

#### **DMD** (3)

a. PWR EXT/OFF/INT switch (4).

Set to OFF (center) position.

b. GLLD interface cable assembly (8).

Disconnect plug labeled DMD (1) from GLLD connector (2).

c. GLLD connector (2).

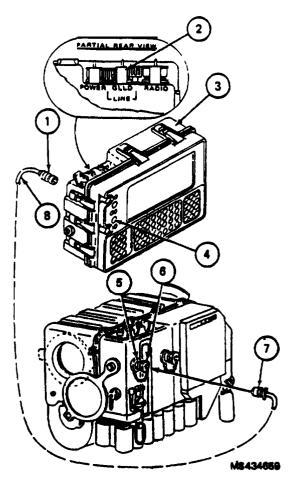
Install rubber dust cover.

# CAUTION

Ensure LD/R POWER switch is OFF.

### LD/R

- d. GLLD interface cable assembly (8).
   Disconnect plug (7) from 1J4 (DMD) connector (5).
- e. 1J4 (DMD) connector cover (6). Install and tighten cw.
- f. Digital message device (3). Return to carrying case.



# 3. REMOVE AND PACK LD/R

LOCATION

ITEM ACTION

### NOTE

LD/R should be transported with battery installed; carry your spare battery in tripod/TU backpack. If EMI filter is installed, remove per paragraph 3-25 and install battery per paragraph 3-20.

### LD/R

a. Protective shroud (1).

If installed, remove and store in ancillary equipment transit assembly case.

b. Window cover (9).

Press onto window (10).

c. Eyepiece cover (2).

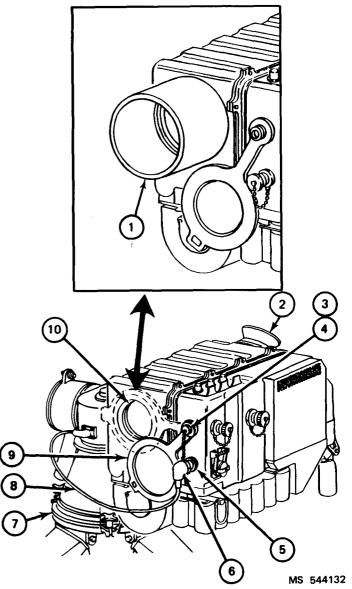
Push to install.

d. TU cable connector 3P1 (6).

Disconnect from connector 1J2 (5) and wrap TU cable (8) around TU base (7).

e. 1J2 cover (3).

Remove from dummy connector (4), install on connector 1J2 (5), and tighten c w.



# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

### 3. REMOVE AND PACK LD\R (CONT)

# LOCATION

LD/R

ITEM ACTION

# f. Three swing bolts (6).

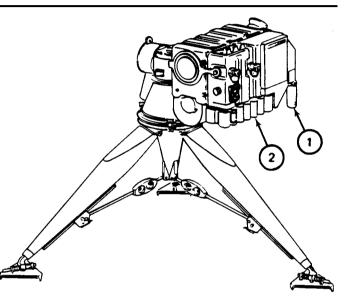
Loosen (top one last) ccw and swing out from TU notches (5).

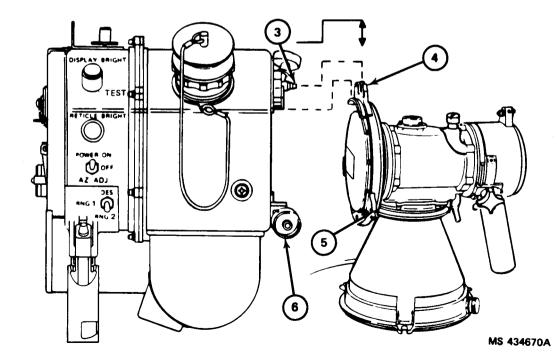


Do not use eyepiece as a handle to lift LD/R.

g. Handle (1) and battery (2).

Rotate bottom of LD/R outward, then lift up until index pin (3) clears index pin notch (4).





# 3. REMOVE AND PACK LD/R (CONT)

LOCATION ITEM

ACTION

LD/R Backpack

h. Interior.

Install LD/R (1) in fitted cutouts and close handle (2).

i. Backpack lid (4).

Ensure lens cleaning kit velcro straps (5) are secure.

j. Backpack lid (4).

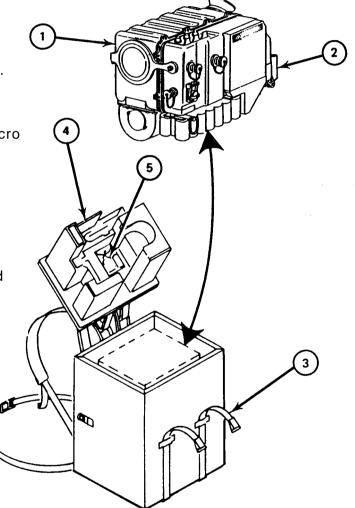
Rotate closed.

CAUTION

Backpack straps must be tight to avoid spilling equipment when you lift backpack.

k. Backpack straps (3).

Buckle and pull tight.



# TM 9-1260-477-12

# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

3.1. REMOVE AND PACK EMI FILTER, NATO CONNECTOR, SLAVE CABLE AND VEHICLE POWER CABLE

### LOCATION

ITEM

ACTION

# WARNING

To prevent electrical shock, ensure power is off at vehicle slave connector and LD/R POWER switch is OFF.

#### LD/R

a. POWER switch.

Set to OFF.

Night Sight Power Cable (6)

b. Connector (4).

If night sight is being used, disconnect slave cable connector (5).

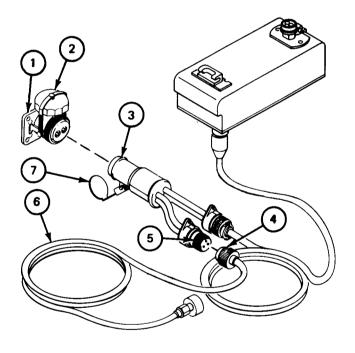
# NOTE

If your vehicle required the use of a NATO connector, skip steps c, d, and e, and go to step f.

Vehicle with Vehicle Slave Connector (1)

c. Vehicle slave connector (1).

Pull back spring-loaded cover (7) and disconnect slave cable connector (3). Release cover.



3.1. REMOVE AND PACK EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE (CONT)

#### LOCATION ITEM

ACTION

d. Cap (2).

Install and screw.

e. Go to step i.

Vehicle with Vehicle Slave Connector (1)

f. Vehicle slave connector (1).

Disconnect NATO connector (11).

g. Cap (2).

Install and screw.

- Slave Cable (4)
  - h. Connector (3).

Pull back spring-loaded cover (10) and disconnect NATO connector (11). Release cover.

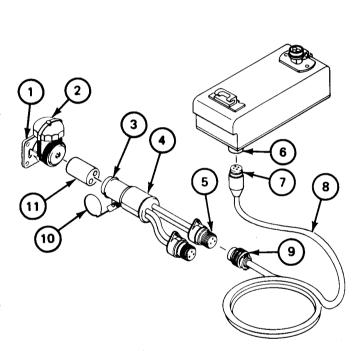
Vehicle Power Cable (8)

i. Connector P2 (9).

Disconnect slave cable connector (5).

j. Connector P1 (7).

Disconnect EMI filter connector J1 (6).



# TM 9-1260-477-12

# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

3.1. REMOVE AND PACK EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE (CONT)

LOCATION ITEM ACTION	
LD/R	
k. Battery release pin (1).	
Pull and hold.	
CAUTION	
EMI filter pivot brackets are fragile. Use caution when rotating EMI filter downward.	
EMI Filter	
I. Connector (4).	
Rotate down from LD/R connector 1J3 (2).	
<sub>m.</sub> Pivot bracket (5).	
Disengage by pulling away from LD/R clip (3).	9
Ancillary Equipment Bag	
n. Ancillary equipment bag (6).	
Install EMI filter (10), NATO connector (9), slave cable (7), and vehicle power cable (8).	

I

# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

## 4. REMOVE AND PACK TRIPOD/TU

# LOCATION

ITEM

ACTION

# Tripod/TU

a. Azimuth gimbal lock (2).

Loosen ccw.

b. Azimuth gimbal (1).

Rotate so handle (3) is over DOWNHILL LEG (4).

c. Azimuth gimbal lock (2).

Tighten cw.

d. 3 wingnuts (6).

Loosen ccw.

e. 3 legs.

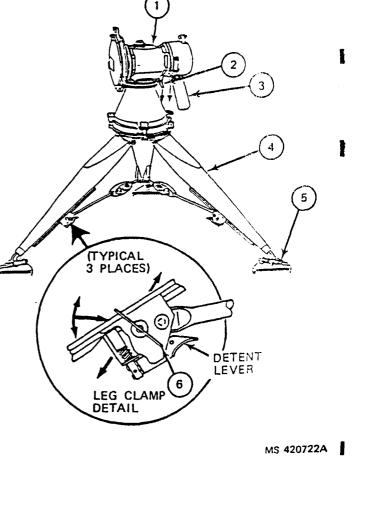
Pull to tripod center to collapse.

f. 3 footpads (5).

Fold so points are along inside of legs.

g. 3 clamp wingnuts (6).

Tighten cw.



# 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

# 4. REMOVE AND PACK TRIPOD/TU (CONT)

LOCATION

ITEM ACTION

.....

Tripod/TU (3) and Backpack (2)

h. Tripod/TU.

Install into backpack fitted cutouts with two legs toward rear of backpack (2).

## Backpack (2)

i. Hood (6).

Install over tripod footpads.

j. Hood strap (5) and leg strap (8).

Buckle.

CAUTION

Backpack straps must be pulled tight to avoid spilling equipment when you lift backpack.

k. Hood strap (5) and leg strap (8).

Pull tight.

I. Battery (1).

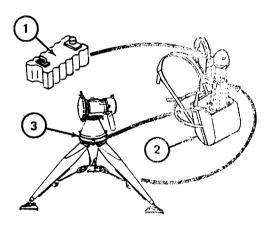
Install in battery case (7).

m. Battery case strap (4).

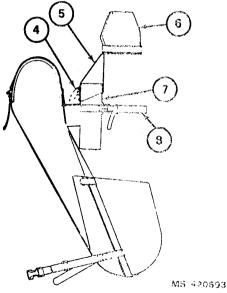
Buckle.

n. Battery case strap (4).

Pull tight.



MS 420723



.

5. STOW in 1/4-TON TRAILER

#### LOCATION ITEM

ACTION

#### NOTE

The trailer stowage configuration for Equipment Set AN/UAS-12, AN/UAS-12B or AN/UAS- 12D are shown in step 6.

The trailer stowage configuration for Equipment Set AN/UAS-12B is shown in step 7.

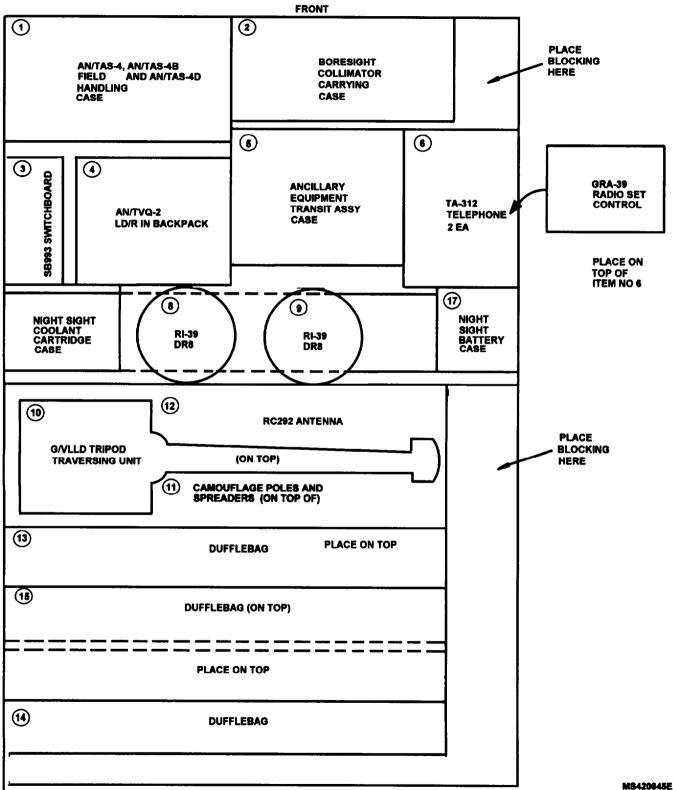
1/4-Ton Trailer

G/VLLD set, Equipment Set AN/UAS-12 (AN/UAS-12B or AN/UAS-12D), and ancillary equipment

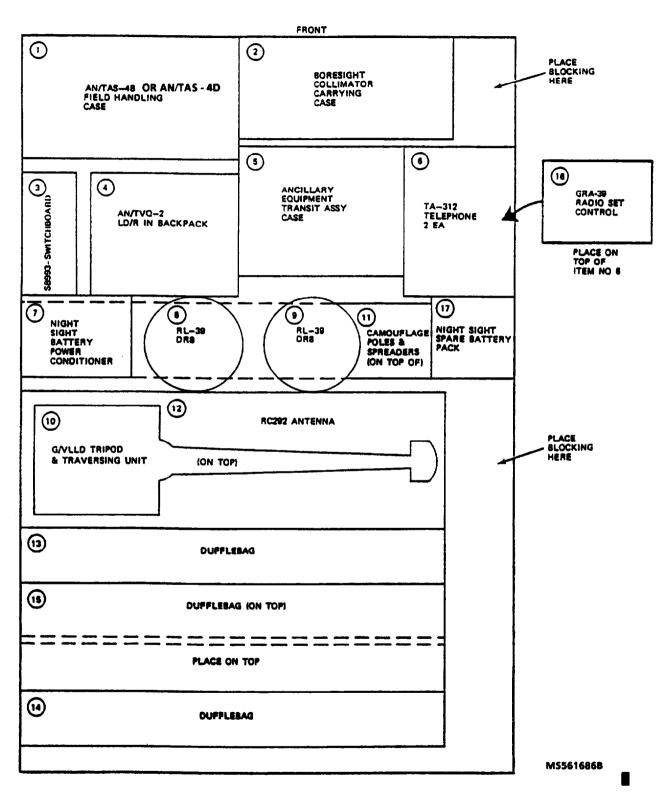
Stow in locations shown in steps 6 and 7.

#### 2-5. PREPARATION FOR MOVEMENT IN GROUND MODE (CONT)

6. STOW G/VLLD AND EQUIPMENT SET AN/UAS-12, AN/UAS-12B or AN/UAS-12D IN 1/4-TON TRAILER







/

#### 2-6. PREPARATION FOR MOVEMENT IN VEHICLE MODE

- Your Task: This procedure consists of the two operations for preparing your G/VLLD set for movement in the vehicle mode.
  - 1. Remove, Pack, and Stow EMI Filter, NATO Connector, Slave Cable, Vehicle Power Cable, LD/R, Night Sight, Power Cable, and DMD.
  - 2. Remove, Pack, and Stow TU and Vehicle Adapter Assembly.
- 1. REMOVE PACK AND STOW EMI FILTER, NATO CONNECTOR, SLAVE CABLE, VEHICLE POWER CABLE, LD/R, NIGHT SIGHT, POWER CABLE, AND DMD

LOCATION

ITEM

ACTION

#### Vehicle

a. EMI filter, NATO connector, slave cable, and vehicle power cable.

Remove and stow in M113A1. (Refer to paragraph 2-5, step 3.1 and paragraph 2-2, step 3.)

b. LD/R.

Remove and stow in M113A1. (Refer to paragraph 2-5, step 3 and paragraph 2-2, step 3.)

c. Night sight and power cable.

Remove and stow in M113A1. (Refer to paragraph 2-5, steps 1 and 1.1 and paragraph 2-2, step 3.)

d. DMD.

Remove and stow in M113A1. (Refer to paragraph 2-5, step 2 and paragraph 2-2, step 3.)

#### TM 9-1260-477-12

## 2-6. PREPARATION FOR MOVEMENT IN VEHICLE MODE (CONT)

2. REMOVE, PACK AND STOW TU AND VEHICLE ADAPTER ASSEMBLY

#### LOCATION

ITEM

ACTION

TU and Vehicle Adapter Assembly

a. Securing lever (4).

Push cw to release position against stop pin (3).

b. Pintle locking assembly (2).

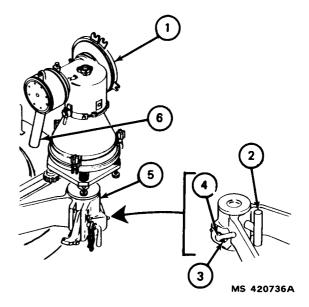
Unscrew ccw until loose.

c. TU and vehicle adapter assembly.

Grasp handle (6) and LD/R mounting plate (1) and pull Straight up and out of machine gun mount (5).

d. TU and vehicle adapter assembly.

Pack in tripod/TU backpack and stow in M113A1. (Refer to paragraph 2-2, step 3.)



#### 2-7. USE OF LASER TRAINING KIT

Your Task: This procedure contains the tasks you perform to install the laser training kit (laser attenuator filter assembly and laser inhibit plug) on the LD/R for use in training exercises. Use of the attenuator filter assembly prevents operation in the DES mode and reduces output power in RNG 1/RNG 2 mode. Use of the laser inhibit plug prevents lasing entirely.

#### INITIAL SETUP

General Safety:

Equipment Required:

Laser light hazard; observe WARNINGS on WARNINGS page.

Laser attenuator filter assembly and laser inhibit (shorting) plug.

Prerequisites:

G/VLLD set is checked out per paragraph 2-3.

#### 1. INSTALL ATTENUATOR FILTER ASSEMBLY

#### LOCATION

ITEM

ACTION



Air inside case may be pressurized. Repressurize case per next step.

Ancillary Equipment Transit Assembly Case (2)

a. Automatic pressure equalizer (3).

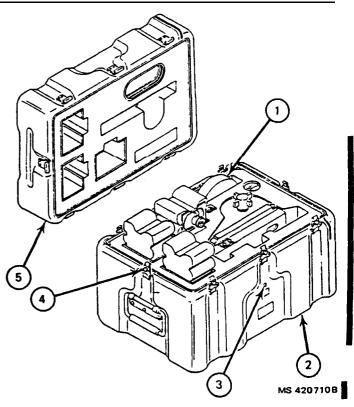
Press to repressurize case (2).

b. Eight latches (4).

Unsnap and remove lid (5).

c. Attenuator filter assembly (1).

Remove from case (2).



#### TM 9-1260-477-12

#### 2-7. USE OF LASER TRAINING KIT (CONT)

#### 1. INSTALL ATTENUATOR FILTER ASSEMBLY (CONT)

LOCATION

ITEM

ACTION

Attenuator Filter Assembly (2)

d. Glass filter (3).

Inspect for cracks or damage.

#### NOTE

If glass filter is cracked or damaged, return it to maintenance.

#### LD/R

Window cover (8). e.

> Press firmly on strap (7). Pull tab (9) to remove window cover (8) from laser window (6).

f. Attenuator filter assembly (2).

Place over laser window with "DO NOT OPERATE IN DESIGNATE MODE" letters (1) facing rear (towards eyepiece). Snap filter into place.

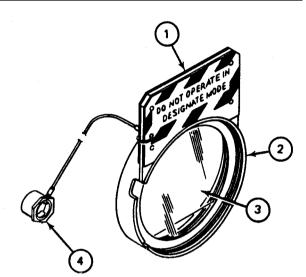
Switch cover (4). g.

> Place over DES/RNG 1/RNG 2 switch (5) with key in keyway of switch and tighten cw.

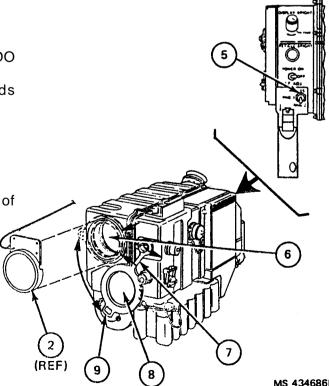
#### NOTE

The switch cover prevents LD/R from being operated in designate mode.

When required, clean attenuator filter assembly using the lens cleaning kit located in the LD/R backpack cover.



MS 420711A



MS 4346868

#### 2. INSTALL LASER INHIBIT (SHORTING)PLUG

#### LOCATION

I TEM

ACTION

# WARNING

Laser shorting plug is to be used only under specific training conditions. Use only when told to do so by the Range Safety Officer.

Air inside case may be pressurized. Depressurize case per next step.

Ancillary Equipment Transit Assembly Case (3)

a. Automatic pressure equalizer (2).

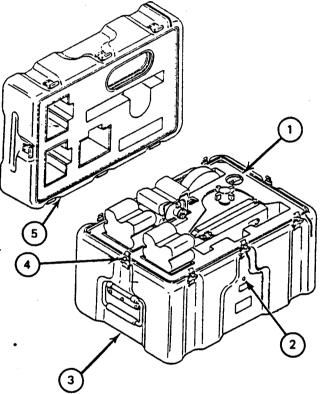
Press to depressurize case (3).

b. Eight latches (4).

Unsnap and remove lid (5).

c. Laser inhibit (shorting) plug (1). .

Remove from case (3).



MS 4207148

## 2-7. USE OF LASER TRAINING KIT (CONT)

2. INSTALL LASER INHIBIT (SHORTING) PLUG (CONT)

#### LOCATION

ITEM

ACTION

LD/R

d. POWER switch (1).

Set to OFF.

e. Test access connector 1J1 (2).

Unscrew cover (3) ccw and remove.

# WARNING

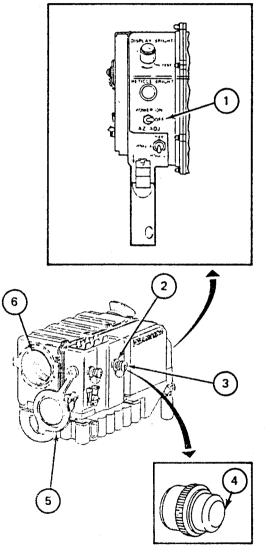
Connector 1J1 is polarized. The laser shorting plug cannot be installed unless it is properly aligned. DO NOT FORCE laser shorting plug. High voltage hazard exists if improperly aligned.

f. Laser shorting plug (4).

Insert into connector 1J1 (2) and tighten cw.

g. Window cover (5).

Press onto laser window (6).



MS 434674C

## 2-7. USE OF LASER TRAINING KIT (CONT)

2. INSTALL LASER INHIBIT (SHORTING) PLUG (CONT)

#### LOCATION

ITEM

ACTION

LD/R (1)

h. POWER switch (6).

Set to ON.

i. Eyepiece cover (4).

Remove from eyepiece (3).

## WARNING

In the next step, laser could accidentally fire if laser inhibit plug was improperly installed or is damaged. Always assume laser is dangerous, even when laser inhibit plug is installed.

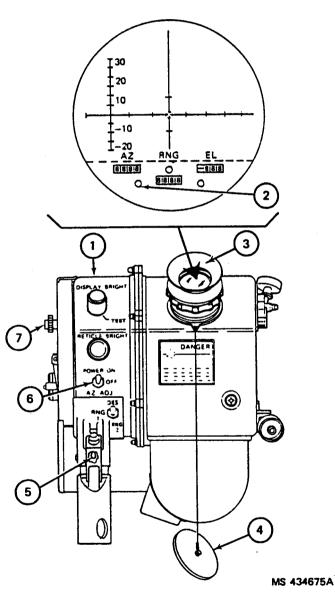
#### NOTE

When trigger is pulled with laser inhibit plug installed, red indicator (2) should light to show low energy output (in this case, no output because laser is inhibitted).

j. Eyepiece (3).

Look into eyepiece and pull trigger (5). Red indicator (2) should be lit.

If red indicator is not lit, return LD/R (1) and shorting plug (7) to maintenance.



## SECTION III

## **OPERATION UNDER UNUSUAL CONDITIONS**

#### 2-8. G/VLLD OPERATION UNDER UNUSUAL CONDITIONS

Your Task: This section consists of recommendations on how to keep your equipment operational, before, during, and after the adverse conditions listed below. The conditions are listed in alphabetical order.

CONDITION ITEM RECOMMENDATION

#### NOTE

LD/R may be operated from either battery or vehicle power. EMI filter, NATO connector, slave cable, and vehicle power cable must be used if ambient temperature is below 32 °F (0 °C). If EMI filter, NATO connector, slave cable, and vehicle power cable are not available, battery may be used, but battery life is much less at temperatures below 32 °F (0 °C).

#### COLD (EXTREME)

#### LD/R battery

Warm battery before installing. For longer battery life, keep batteries warm before using. If available, use vehicle power instead of battery.

Night sight battery

Warm battery before installing. For longer battey life, keep batteries warm before using. If available, use vehicle power instead of battery.

Night sight

Avoid touching or breathing on lenses.

## 2-8. G/VLLD OPERATION UNDER UNUSUAL CONDITIONS (CONT)

CONDITION ITEM

RECOMMENDATION

# WARNING

Isopropyl alcohol is toxic and flammable. Use only in well-ventilated areas away from heat or open flame. Avoid prolonged breathing of vapor and contact with skin.

#### DUST

#### LD/R

Install protective shroud over laser window.

#### Night sight

Keep lens covers installed except during operation. Use lens cleaning kit to flush dust from lenses.

#### FORDING

#### LD/R

Before fording, ensure all covers are tightly in position. After fording, drain all water out and clean lenses before operating.

#### Night sight

Before fording, ensure all covers are tightly in position. After fording, clean lenses before operating.

#### MUD

#### LD/R

Keep lens covers installed except during operation. Avoid clogging air intake under plenum assembly.

#### Night sight

Keep lens covers installed except during operation.

## CONDITION ITEM

RECOMMENDATION

#### RAIN

LD/R

Install protective shroud over laser window.

#### Night sight

Keep lens covers installed except during operation.

#### SAND

#### LD/R

Keep lens covers installed except during operation. Use lens cleaning kit to flush sand from lenses.

#### Night sight

Keep lens covers installed except during operation. Blow sand from around lens covers before removal. Use lens cleaning kit to flush sand from lenses.

#### SNOW

#### LD/R

Install protective shroud over laser window.

#### Night sight

Use lens covers to keep lenses dry.

## CHAPTER 3

## MAINTENANCE

Section	Paragraph	Content	<u>Page</u>
SECTION I		Parts, Special Tools, Test, Measurement, and stic Equipment (TMDE), and Support Equipment	3-3
	3-1.	Special Tools, TMDE, and Support Equipment	3-3
	3-2.	Repair Parts	3-3
SECTION II	Services	s Upon Receipt of Materiel	3-4
	3-3.	General.	3-4
	3-4.	Duties of Using Organization	3-4
SECTION III	Preven	tive Maintenance Checks and Services	3-8
	3-5.	General	3-8
	3-6.	Preventive Maintenance Checks and Services	3-8
SECTION IV	Troubles	shooting	3-10
	3-7.	General.	3-10
	3-8.	Symptom/Descriptive Names Index	3-10
	3-9.	Troubleshoot Display AZ, RNG, EL Readout Fault	3-11
	3-10.	Troubleshoot Display Green, Amber, Red Indicator Fault	.3-14
	3-11.	Troubleshoot Display Reticle Fault	3-16
	3-12.	Troubleshoot EMI Filter/NATO Connector/Slave Cable/ Vehicle Power Cable	3-17
SECTION V	Correcti	ve Maintenance Procedures	3-19
	3-13.	General	.3-19
	3-14.	Cleaning	.3-19
	3-15.	Painting	.3-23
	3-16.	Boresight Test	.3-24
	3-17.	Removal/Replacement of LD/R	3-41

1

# CHAPTER 3 (CONTINUED) MAINTENANCE

Section	Paragraph	Content	Page
SECTION V (CONTINUE	3-18.	Removal/Replacement of TU	3-45
	3-19.	Removal/Replacement of Tripod	3-47
	3-20.	Removal/Replacement of Battery	3-48.1
	3-20.1.	Removal/Replacement of Protective Shroud	3-50.1
	3-21.	Removal/Replacement of LD/R Window Cover	3-51
	3-22.	Removal/Replacement of Battery O-Ring	3-53
	3-23.	Removal/Replacement of LD/R Eyeshield	3-54.1
	3-24.	Removal/Replacement of Night Sight	3-55
	3-25.	Removal/Replacement of EMI Filter, NATO Connector, Slave Cable, and Vehicle Power Cable	3-65

## SECTION I

## REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT

#### 3-1. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

There are no special tools, TMDE, or support equipment required to maintain your G/VLLD Set.

#### **3-2. REPAIR PARTS**

Repair parts covering organizational maintenance are listed and illustrated in the Repair Parts and Special Tools List, TM 9-1260-477-24P.

## SECTION II SERVICES UPON RECEIPT OF MATERIEL

### 3-3. GENERAL

This section contains procedures to be used by maintenance personnel upon receiving G/VLLD sets.

## 3-4. DUTIES OF USING ORGANIZATION

General:	The components of your G/VLLD set are packed as a system with a vehicle cable and with four spare batteries. Refer to paragraph 1-9 for identification.
Administrative Storage Exceptions:	The LD/R battery and/or EMI filter must be removed from the LD/R before placing the LD/R in the shipping container for administrative storage or evacuating the LD/R to Direct Support Maintenance for repair.
Duties:	Organizational Maintenance personnel will:
	Perform the receiving inspection,
	Determine if the equipment is complete,
	Determine if the equipment is in operating condition per chapter 2, and
	Verify that all Modification Work Orders (MWOs) have been implemented.
	Observe the following procedures when handling, inspecting, and maintaining your G/VLLD set:
	Handle components with care; rough handling could damage optical components.
	Do not force levers, knobs, switches, or controls past mechanical stops.
	Perform only those maintenance actions listed in the Maintenance Allocation Chart (MAC) which are authorized for your maintenance level. (See appendix B.)
	Refer equipment to Direct Support Maintenance if it cannot be adjusted or repaired per the MAC.
	Use only those paints, solvents, cleaning fluids, and other materials which are specifically autho- rized or recommended for particular operations.

Your Task: This procedure contains three tasks you perform upon receipt of your G/VLLD set:

- 1. Unpacking
- 2. Initial Inspection
- 3. Servicing

#### INITIAL SETUP

General Safety: Observe normal cautions when using hand tools.

Equipment Required:

Pry bar, sheet metal cutter, and pliers.

#### 1. UNPACKING

LOCATION ITEM

ACTION

#### Shipping Container

a. Exterior.

Inspect for major damage affecting internal cargo packages. Notify your supervisor if damage exists.

b. Lid.

Remove shipping container retaining ring.

c. Equipment.

# CAUTION

Do not use your LD/R eyepiece as a handle; lift the LD/R out by its handle until you can grip it under the right front edge and then remove it with both hands.

Remove and make initial inventory against inventory list or packing slip. Report any discrepancies in accordance with instructions in DA PAM 738-750.

d. Shipping container.

Re-usable. Do not discard. Whenever feasible, use the shipping container (item 1, appendix C) for transporting the LD/R. The shipping container should always be used for evacuating the LD/R to Direct Support for repair.

## 3-4. DUTIES OF THE USING ORGANIZATION (CONT)

#### 1. UNPACKING (CONT)

LOCATION ITEM ACTION

Packages (TU/Tripod, Ancillary Equipment, etc.)

e. Exterior.

Inspect for major damage affecting G/VLLD item. Notify your supervisor if damage exists.

f. Seal on package.

Break and open.

q. Stock numbers and/or serial numbers.

Check to see if proper equipment is received.

#### 2. INITIAL INSPECTION

#### G/VLLD Set

Equipment.

Perform necessary cleaning and inspection per paragraph 3-14.

Perform assembly and preparation for use per chapter 2.

#### 3. SERVICING

#### LOCATION ITEM ACTION

NOTE

Charged NICAD batteries will discharge during storage. The rate of discharge varies from battery to battery and varies with storage temperature. The storage time (time since last charge) must be verified when the battery is issued. No battery should be issued which has been stored for more than 10 days. If storage temperatures were above 70 °F (21.1 °C), batteries should not be issued which have been stored for more than 5 days.

#### G/VLLD Set

Batteries.

For battery charging, refer to TM 11-6130-392-12.

## SECTION III

#### PREVENTIVE MAINTENANCE CHECKS AND SERVICES

#### 3-5. GENERAL

Operator's Preventive Maintenance Checks and Services (PMCS) are the required weekly, monthly, and semi-annual inspections necessary to keep your equipment in good operating condition.

#### 3-6. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

#### Routine Checks

Routine checks like cleaning, dusting, washing, checking for frayed cables, stowing items not in use, covering unused receptacles, and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do anytime you see they must be done.

Explanation of INTERVAL Column of PMCS Chart

#### NOTE

Always keep in mind all WARNINGS and CAUTIONS when PMCS are performed.

Before Operation:	Do your before PMCS to ensure that the G/VLLD is ready to operate before each use.
Weekly Operation:	Do your weekly PMCS to ensure that the G/VLLD is ready to operate each week.
Monthly Operation:	Do your monthly PMCS to ensure that the G/VLLD is functioning properly each month.
Semi-Annual Operation:	Do your semi-annual PMCS to ensure that the G/VLLD is functioning properly after each six months of operation.

#### If Your Equipment Fails to Operate

Refer to the troubleshooting section (section IV) to correct the problem.

Report any deficiencies or failures on DA Form 2404, Equipment Inspection and Maintenance Worksheet. See DA PAM 738-750.

Explanation of Equipment is Not Ready/Available If: Column of PMCS Table

This column tells why your equipment cannot be used to perform its primary combat mission.

			Procedure	Readiness Reporting
tern No.	Interval	Item to be inspected	Check for and have repaired or adjusted as necessary	Equipment is not ready/available if
		Before pe	WARNING erforming next check, remove bat	tery
		firing of	e power to prevent accidental laser. Laser can cause blindn IINGS page.	ess.
1		LD/R		
	Monthly	Optical Lenses	Check for dirt, cracks, scratches, and moisture on inside of lenses. Clean lenses per paragraph 3-14.	Dirt, cracks, or moisture exist.
	Monthly	DA Form 2409	Check expiration date. LD/R should be sent to Direct Support Maintenance for purge and fill every 180 days.	Purge and fill date expired.
			WARNING	
			rent battery gas bubbles. Jas is flammable and explosive.	
2		BATTERY		
	Weekly	Charge Label	Check expiration date on charge labels on all five batteries.	Three or more batteries have charge dates that exceed 10 days. For bat- teries stored at temperatures above 70 °F bat- teries may not exceed 5 days.
	Before	Pivot Brackets, Release Pins, and Connector	Check battery per para- graph 2-1.	Battery will not engage.

Item No.	Interval	Item to be inspected	Procedure Check for and have repaired or adjusted as necessary	Readiness Reporting Equipment is not ready/available if
3	Monthly	BACKPACKS	Check for broken seams and torn material.	Unable to carry equip- ment.
4		EQUIPMENT SET AN/UAS-12		
	Monthly	Coolant Cartridge	Make sure five fully charged coolant cartridges are present.	Less than five fully charged coolant car- tridges are available.
	Weekly	Batteries	Check for five batteries. Check charge dates.	Charge date of any bat- tery exceeds 10 days.
	Semi- annually	AN/TAS-4 Night Sight	Check verification label to make sure semiannual verification is not past due. Notify Direct Sup- port to perform night sight ver- ification. Use TM 9-5855-450-24.	Verification date past due.
	Semi- annually	Boresight Collimator	Check verification label to make sure semiannual verification Is not past due. Notify Direct Sup- port to perform boresight colli- mator verification. Use TM Q-5855-885-24.	Verification date past due.

#### **3-6. PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

			Procedure	Readiness Reporting
Item		Item to be	Check for and have repaired	Equipment is not
No.	Interval	inspected	or adjusted as necessary	ready/available if
4.1		EQUIPMENT SET AN/UAS-12B or AN/UAS-12D	CAUTION	
			be repressurized after being trans aircraft. Failure to do so can caus	
	Semi- annually	AN/TAS-4B or AN/TAS-4D Night Sight	Check verification label to make sure semiannual verification is not past due. Notify Direct Sup- port to perform night sight ver- ification. Use TM 9-5855-882-24.	Verification date past due.
	Semi- annually	Boresight Collimator	Check verification label to make sure semiannual verification is not past due. Notify Direct Sup- port to perform boresight collimater verification. Use TM 9-5855-882-24.	Verification date past due.
	Before	Battery Power Conditioner	Check for two installed batteries.	Two batteries not in- stalled.
	Before	Spare Battery Pack	Check for two spare batteries in unopened overwrap. Check ex- piration date stamped on batter- ies.	Batteries not available or shelf life expired.
5	Monthly	LENS CLEANING KIT	Inventory per appendix E, item 4.	Any item is missing.

## 3-6. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

			Procedure	Readiness Reporting
ltern No.	Interval	Item to be inspected	Check for and have repaired or adjusted as necessary	Equipment is not ready/available if
			NOTE	
			7 and 8 apply to the ground mode tion only.	
6	Monthly	PREOPER- ATIONAL CHECK	Perform paragraphs 2-1 and 2-3.	Fails preoper- ational check (paras 2-1 and 2-3).
7	Semi- annually	BORESIGHT CHECK	Perform paragraph 3-16.	Fails boresight check (para 3-16).
8	Semi- annually	OPERATION	Perform paragraphs 2-1, 2-3, and 2-4.	Fails operational check (paras 2-1, 2-3, and 2-4).
			NOTE	
			10 and 11 apply to the vehicle mo tion only.	de
9	Monthly	PREOPER- ATIONAL CHECK	Perform paragraphs 2-2 and 2-3.	Fails preoper- ational check (paras 2-2 and 2-3).
10	Semi- annually	BORESIGHT CHECK	Perform paragraph 3-16.	Fails boresight check (para 3-16).
11	Semi- annually	OPERATION	Perform paragraphs 2-2, 2-3, and 2-4.	Fails operational check (paras 2-2, 2-3, and 2-4).

## SECTION IV TROUBLESHOOTING

#### 3-7. GENERAL

Your Task: This section contains rapid repair and detailed troubleshooting instructions to enable you to efficiently fault isolate your G/VLLD set with a high degree of certainty.

General: Faults are detected two ways:

- 1. Visual inspection (Chapter 3, Section II).
- 2. Electrical indication or non-operation during initial checkout (paragraph 2-3) or operation (paragraph 2-4).

Replacement procedures are accomplished in two ways:

- 1. By paragraph name.
- 2. By descriptive name.

Replacement procedures are referenced by paragraph number in parentheses ( ).

This procedure is performed in step-by-step sequence until the failing unit is isolated. Then you go directly to the referenced section or paragraph for removal/installation procedures. AFTER YOU CORRECT THE FAULT, YOU RETEST.

## WARNING

Always remove power before removal/ replacement of any unit.

#### 3-8. SYMPTOM/DESCRIPTIVE NAMES INDEX

- AZ, RNG, EL Readout Fault
- Ž Green, Amber, Red (lit or off) Fault
- Display Reticle Fault

Go to paragraph 3-9. Go to paragraph 3-10.

Go to paragraph 3-12.

- Go to paragraph 3-11.
- Ž Vehicle Power Cable/EMI Filter Fault

# 3-9. TROUBLESHOOT DISPLAY AZ, RNG, EL READOUT FAULT

## INITIAL SETUP

				Laser light hazard, observe WARNINGS inside front cover of this manual.			
		Equipment Requ	uired:	Additional Traversing Unit.			
		Equipment Pre	requisities:	G/VLLD set up per paragraph 2-1 (or 2-2) and in operation per paragraphs 2-3 and 2-4 when fault occurred.			
		Approximate Tim	ne Required:	10 M	linutes.		
		Repair Action:		at a	have isolated the fai replace instruction onal steps are refe	after wh	
						Indicati	on Obtained
Lo	cation	Item	Action	]	Indication	Yes	No
1.	1. LAMP TEST WARNING Laser light hazard, observe WARNINGS inside front cover of this manual.						
	LD/R	a. POWER switch	Set to ON.				• • •
		b. DISPLAY BRIGHT control	Turn cw to TEST (d position.	etent)	Eyepiece display: Green - lit. Red - lit. Amber - lit.	•••	
					Blower fans in operation.		Replace battery and repeat test.
					Eyepiece display: Readouts AZ - 8888 RNG - 8888 EL888	Go to next step.	Replace LD/R
		c. DISPLAY BRIGHT control	Turn ccw out of TE (detent) position	ST	Eyepiece display: Green - off Red - off Amber - off	Go to next step.	Go to (3-10).
				NOT	TE		
			Go to step 3.a.	if faul	lt is RNG readout.		
2.	AZ ADJ C	HECK					
	LD/R	a. POWER switch	AZ ADJ (hold).		• • •	• • •	
	TU	b. AZ ZERO ADJ knob	Rotate in each dir	rection.	LD/R eyepiece display: AZ (increases or de- creases with rotation of AZ ZERO ADJ knob).	Go to next step.	Go to step 4.a.
	LD/R/TU	c. Hand grips	Rotate elevation g from upper limit t limit (+25° to -22 rotation).	to lower	Eyepiece display: EL (changes value from approximately +444 to -400 for 47.5° rotation).	Go to next step.	Go to step 4.a.
		d. POWER switch	Release.			•••	

# 3-9. TROUBLESHOOT DISPLAY AZ, RNG, EL READOUT FAULT (CONT)

				Indicatio	on Obtained
Location	Item	Action	Indication	Yes	No
. RANGE R	EADOUT CHECK				
		WARA	ling		
	1.5				
		ser light hazard, observe W this manual. '	ARMINGS INSIGE Front Cover		ı
LD/R	a. POWER SWITCH	Set to ON.			
	b. DES/RNG 1/RNG 2 switch	Set to RNG 1.			• • •
		NO	TE		
	me	e two convenient targets of nded distance approximately om you to closest target.			
	Eyeis	epiece display readouts are pulled and held.	e viewed only while trigger		
	c. Eyepiece	Center closest target on crosshairs.	Target centered on crosshairs.	Go to next step.	Replace LD/R pe (3-17).
		WAR	IING		
	la	ser will be fired, observe		r	
		this manual.			
	d. Trigger switch	Pull, hold, release after viewing eyepiece display.		step.	Replace LD/R pe (3-17).
	e. DES/RNG 1/RNG 2 switch.	Set to RNG 2.			
		WAR			
	La: of	ser will be fired, observe this manual.		r	
	f. Trigger switch	Pull, hold, release after viewing eyepiece display.		Go to next step.	Replace LD/R pe (3-17).
	g. Eyepiece	Center farthest target or crosshairs.	Target centered on crosshairs.	••••	
		WAR	ling		
-		ser will be fired, observe this manual.		r	
	h. Trigger switch	Pull, hold, release after viewing eyepiece display.		e	
				1	

				Indicati	on Obtained
Location	Item	Action	Indication	Yes	No
	i. DES/RNG 1/ RNG 2 switch	Set to RNG 1.			
		WARN	ling		
	L	aser will be fired, observ	e WARNINGS on WARNINGS page	je.	
	j. Trigger switch	Pull, hold, release after viewing eyepiece display.	Eyepiece display: RNG (same value as step 3.h, ±10.).	Go to next step.	Replace LD/R per (3-17).
	•	WAR	ING	1	'
	La	ser will be fired, observe	WARNINGS on WARNINGS page	2.	
	k. Trigger switch	Pull, hold, release rapidly (after viewing range readout) for 30 Seconds.	Eyepiece display: RNG (same value as step 3.j ±10.).	Go to next step.	Replace LD/R per (3-17).
	1. Eyepiece display	Observe.	Eyepiece display: Red - off	Go to next step.	Replace LD/R per (3-17).
	m. POWER switch	Set to OFF.			
	n. LD/R	Return to service.			
4. <u>AZ/EL RE</u>	SOLVER CHANNEL CHECK				
LD/R	a. POWER switch	Set to OFF.		• • •	
	b. Remove 3P1 from 1J2.			• • •	•••
	c. Remove LD/R per paragraph 2-5.3a thru 2-5.3e and install on an alternate TU per paragraph 2-1.5a thru 2-1.5e.				••••
	d. POWER switch	AZ ADJ (hold).			
τυ	e. AZ ZERO ADJ knob.	Rotate.	Eyepiece display: Readout AZ varies with rotation of AZ ZERO ADJ knob.	Replace original TU per (3-18).	Replace LD/R per (3-17).
	f. Hand Grips	Rotate elevation gimbal from upper limit to lower limit (+25° to -22.5° rotation)	Eyepiece display: EL (changes value from approximately 444 to -400 for 47.5 rotation).	Replace original TU per (3-18).	Replace LD/R per (3-17).
	g. POWER switch	Set to OFF.	• • •	• • •	

## 3-10. TROUBLESHOOT DISPLAY GREEN, AMBER, RED INDICATOR FAULT

#### INITIAL SETUP

General Safety:	Laser light hazard. Observe WARNINGS on WARNINGS page.
Equipment Required:	Known good Digital Message Device. Fully charged spare battery.
Equipment Prerequisites:	G/VLLD set up per paragraph 2-1 (or 2-2) and in operation per paragraph 2-3 and 2-4 when fault occurred.
Approximate Time Required:	10 minutes
Repair Action:	You have isolated the failure when you are a

are at a replace instruction after which no additional steps are referenced.

1

				Indication	Obtained
Location	Item	Action	Indication	Yes	NO
1. INDIC	ATOR CHECK				
LD/R	a. DISPLAY BRIGHT control	Turn to mid range.			
	control	 	·	l	l

#### WARNING

Laser light hazard, observe WARNINGS on WARNINGS page.

b.	POWER switch	Set to ON.			
c.	E <b>ye</b> piece display	Observe.	Eyepiece display: Amber - off.	Go to next step.	Go to step 2.a.
			Red - off.	Go to next step.	Replace LD/R per (3-17).
	- · · ·		Green - off.	Go to next step.	Go to step 3.a.
d.	DISPLAY BRIGHT control	Turn fully cw to TEST (detent) position.	Eyepiece display: Green - lit.	Go to next step.	Replace LD/R per (3-17).
			Amber - lit.		
			Red - lit.		
			Digits- lit.		
		Turn ccw off TEST (detent) position.	Eyepiece display: All - off.	Go to next step.	Replace LD/R per (3-17).

				Indication Obtained	
Location	Item	Action	Indication	Yes	NO
	e. DES/RNG 1/RNG 2 switch	Set to DES.			• • •
	f. Eyepiece display	Observe while per- forming following step.		•••	• • •
	1	w	ARNING		
	g. Trigger switch	Pull and hold for 30 seconds.	Eyepiece display: Green - off.	Go to next step.	Replace LD/R pe (3-17).
			Amber - off.		
			Red - off.		
	h. LD/R	Return to service.		• • •	
. BATTE	RY CHECK				
LD/R	a. POWER switch	Set to OFF.			
		N	DTE		
	b. Battery (A)/ Battery (B)	Replace battery (A) with known charged battery (B) per (3-20).			
	c. POWER switch	Set to ON.	• • •		
	d. DISPLAY BRIGHT control	Turn fully cw to TEST (detent) position.	Eyepiece display: Green - lit. Amber - lit. Red - lit. Digits- lit.	Go to next step.	Replace LD/R per (3-17).
	e. DISPLAY BRIGHT control	Turn ccw off TEST (detent) position.	Eyepiece display: All - off.	Go to next step.	Replace LD/R per (3-17).
	f. DES/RNG 1/ RNG 2 switch	Set to DES.			

# 3-10. TROUBLESHOOT DISPLAY GREEN, AMBER, RED INDICATOR FAULT

				Indicati	on Obtained
ocation	Item	Action	Indication	Yes	No
	g. Eyepiece display	Observe while performing following step.		•••	·   · · ·
		WARI	NING		
	W/	iser will be fired in next ARNINGS page before proceed over is securely in place t cattered laser light from o	ing. Ensure front window to avoid possibility of	n /	
	h. Trigger switch	Pull and hold for 30 seconds.	Eyepiece display: Green - off. Amber - off. Red - off.	Go to next step.	Replace LD/R per (3-17).
	i. POWER switch	Set to OFF.			
	j. Battery (B)	Remove per (3-20).			
	k. Battery (A)	A less than fully charged battery is indicated. Replace battery.		•••	
	1. LD/R	Return to service.			
DMD CHEC	<u>ck</u>				
LD/R	a. 1J4 connector	Observe if DMD connected.	DMD is connected.	Go to next step.	Replace LD/R per (3-17).
	b. 1J4 connector	Remove DMD cable.			
	c. Eyepiece display	Observe.	Eyepiece display: Green - off.	Go to next step.	Replace LD/R per (3-17).
DMD	d. DMD	Replace with known good DMD.		• • •	•••
	e.DMD	Transmit DES signal to LD/R per TM 11-7440-281- 12+P.	Green DES light on LD/R lights.	Replace DMD Go to step h.	Replace LD/R per (3-17).
LD/R	f. POWER switch	Set to OFF.			
DMD	g. POWER switch	Set to OFF.		• • •	
	h. DMD	Refer to TM 11-7440-281 -12+P for DMD trouble- shooting procedures.			••••
		ļ			1

## 3-11. TROUBLESHOOT DISPLAY RETICLE FAULT

## **INITIAL SETUP**

	General Safety			ght hazard. Obse IINGS page.	rve WARN	NINGS
	Equipment Rec	uired: F	ully ch	arged spare ba	ttery.	
	Equipment Pre	. in	n opera	set up per parag ition per paragra ccurred.		
	Approximate Ti	me Required: 10	0 Minu	tes.		
	Repair Action:	а	replac	ve isolated the f ce instruction af steps are refe	ter which	
<del></del>				· · · · · · · · · · · · · · · · · · ·	Indicati	ion Obtained
Location	Item	Action		Indication	Yes	No
1. DISPLAY	CHECK	<b></b>				
		WA	RNING			
	La	ser light hazard, obser	ve WARNI	NGS on WARNINGS page.		
LD/R	a. POWER switch	Set to ON.			1	ſ
LU/R	b. RETICLE BRIGHT		5	•••		•••
	control	Turn fully cw.	R	piece display: eticle and AZ, RNG nd EL legends lit.	Repeat initial checkout per (2-3).	Go to next step.
2. BATTERY	CHECK					
LD/R	a. POWER switch	Set to OFF.				
		I	NOTE		I	
	Ba ba	ttery (A) is battery bei ttery known to be charge	ing teste ed.	d. Battery (B) is		
	b. Battery (A)/ Battery (B)	Replace battery (A) wi known charged battery per (3-20).	ith (B)			
		WA	RNING			
	La	ser light hazard, obser	ve WARNI	NGS on WARNINGS page.		
-	c. POWER switch	Set to ON.	1			
	d. RETICLE BRIGHT control	Turn fully cw.	R	piece display: eticle and AZ, RNG nd EL legends lit.	Go to next step.	Replace LD/R per (3-17).
	e. POWER switch	Set to OFF.				
	f. Battery (B)	Remove per (3-20).		• • •		
	g. Battery (A)	A less than fully char battery is indicated. Replace battery.	rged		Go to next step.	Replace LD/R per (3-17).
	h. LD/R	Return to service.		•••		

## 3-12. TROUBLESHOOT EMI FILTER/NATO CONNECTOR/SLAVE CABLE/ VEHICLE POWER CABLE

## INITIAL SETUP

General Safety:	Laser light hazard, observe WARNINGS in front of this manual.
Equipment Required:	LD/R and battery.
Equipment Prerequisites:	G/VLLD set up per paragraph 2-1 (or 2-2) and in operation per paragraphs 2-3 and 2-4 when fault occurred.
Approximate Time Required:	3 minutes.
Repair Action:	You have isolated the failure when you are at a replace instruction after which no additional steps are referenced.

## 3-12. TROUBLESHOOT EMI FILTER/NATO CONNECTOR/SLAVE CABLE/ VEHICLE POWER CABLE (CONT)

				Indicati	on Obtained
Location	Item	Action	Indication	Yes	No
		aser light hazard, observe N		5	
	1	1			
1. <u>LD/R</u>	a. POWER switch	Set to ON.			
	b. DISPLAY BRIGHT control	Turn fully cw to TEST (detent) position. Then turn ccw out of TEST.	Eyepiece display: Green - lit Amber - lit Red - lit Digits - lit	Go to paragraph 2-3.	Go to next step
	c. POWER switch	Set to OFF.			
2. <u>LD/R</u>	a. Battery release pin	Pull and hold			
	b. EMI Filter	Rotate down away from 1J3.			
	c. EMI Filter	Slide from LD/R pivot plate.			
	d. Battery	Install known charged battery per (3-20).			
		WARN	ING		
	La mai	ser light hazard, observe WA nual.	RNINGS in front of this		
	e. POWER switch	Set to ON.			
•	f. DISPLAY BRIGHT control	Turn fully cw to TEST (detent) position.	Display readouts (eyepiece) light.	Replace EMI filter/NATO connector/ slave cable/ vehicle power cable with new item.	Replace LD/R pe (3-17) after performing step 2.g. and 2.h.
	g. POWER switch	Set to OFF.			
	h. Battery	Remove battery per (3-20).			

## SECTION V

## CORRECTIVE MAINTENANCE PROCEDURES

## 3-13. GENERAL

Your Task: This section contains the tasks you perform to maintain your G/VLLD set.

## 3-14. CLEANING

## **INITIAL SETUP**

General Safety:	Keep flammable solvents away from open flames.
Materials Required:	Lens cleaning kit (item 4, appendix E). Cotton wiping rags (item 6, appendix E). Acid swabbing brush (item 1, appendix E).
Equipment Prerequisites:	Equipment unpacked from backpacks per paragraph 2-1.
Approximate Time Required:	10 minutes.
Performance Interval:	Before issue, immediately after training or tactical exercise, or as required by paragraph 3-4.

# 3-14. CLEANING (CONT)

	ltern	Inspection/Materials	Action	
1.	flammable. from heat or vapor and c	warning ohol and cleaning solvent Use only in well-ventilated open flame. Avoid prolot ontact with skin. er source before cleaning G Isopropyl alcohol	d areas away onged breathing of	
	<ul> <li>External housings</li> <li>Ž Structural members</li> <li>TU interface</li> <li>Battery connector</li> <li>Ž Precision level</li> <li>LD/R interface</li> <li>Cables and connectors</li> <li>Ž Night sight mount</li> <li>Ž Vehicle adapter assembly</li> <li>NATO connector</li> </ul>	Cotton wiping rags Acid swabbing brush	<ul> <li>of foreign material with fingers or soft instrume that does not cause damagor or scratch paint.</li> <li>b. Using acid swabbing brush and isopropyl alcohol, clean material from surfaces and edges.</li> <li>c. Using cotton wiping rags and isopropyl alcohol, wipe surfaces clean.</li> </ul>	ent ge h

State of State of State

#### WARNING

Dirt or foreign matter on the optical lenses can cause scattering of laser light. G/VLLD external optics should be thoroughly cleaned prior to the G/VLLD being placed in operation.

#### CAUTION

Optical elements are very delicate. Be very careful you do not drop, bump, or scratch them.

Do not use compressed air to clean optical elements.

2. LD/R Lenses

Lens cleaning kit (contained in LD/R backpack lid) a. Blow on lens with your breath to remove dirt

- breath to remove dirt b. Rinse grit off lens using
- solution.
- c. Allow lens to dry.
- d. Gently brush lens with swirling motion to remove lint.

#### CAUTION

Lenses are easily damaged. Ensure lens cleaning solution is applied to cotton pads not directly to lenses. Ensure containers do not contact lenses during cleaning and flushing.

3. Night Sight Lenses	Night sight lens cleaning kit	a. Flush off surface of lens with potable water (clean water, suitable for drink- ing to remove dust and grit.
		b. Thoroughly moisten a pad of cotton from night sight lens cleaning kit with lens cleaning solution.

## 3-14. CLEANING (CONT)

Item	Inspection/Materials	Action
3. Night Sight Lenses (Continued)		c. Apply lens cleaning solu- tion to lens by dabbing lightly (do not rub) until lens surface is evenly covered.
		d. Wait 1 to 3 minutes de- pending on condition for solution to loosen heavy contamination. (Do not al- low solution to dry.)
		e. Flush off solution with po- table water.
		f. Repeat steps b thru d, until heavy contaimination is removed.
		g. Clean lens in small sec- tions by applying cleaning solution and gently wiping with clean pad. Wipe in single direction only. Dis- card pad after use. Do not use again.
		h. Rinse lens with potable water.
		<ul> <li>Dry lens by wiping lightly in a single direction only with clean cotton pad.</li> </ul>
		j. During freezing weather, lenses may be cleaned with a mixture of warn (not hot) potable water and cleaning solution.
4. Tripod/TU Backpack, LD/R Backpack, and Ancillary Equipment Bag	Water Soap Stiff brush	a. Remove dirt with warm soapy water and stiff brush.

## 3-15. PAINTING

Your Task: For painting procedures, refer to TM 43-0139.

## 3-16. BORESIGHT TEST

Your Task: This procedure consists of five tasks to check the boresight alignment of your G/VLLD set:

1. Turn-On

- EL Boresight Check
   Standby Shutdown
- Target Acquisition
   AZ Boresight Check
  - Check
- General: G/VLLD boresight misalignment is an extremely unlikely occurrence. Because this is a delicate test, fail decisions should be carefully rechecked before taking corrective action.

#### **INITIAL SETUP**

General Safety:

Laser light hazard. Observe WARNINGS on WARNINGS page.

Prerequisites:

G/VLLD set checked out per paragraph 2-3.

#### 1. TURN-ON

### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### LD/R

a. Eyepiece cover (1).

Pull to remove.

b. Window cover (4).

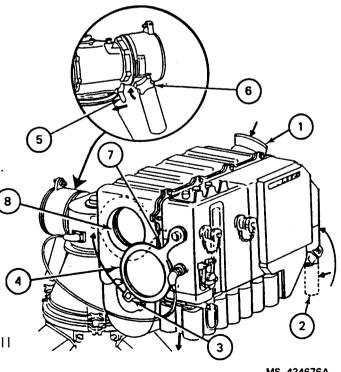
Press firmly on strap (7). Pull tab (3) to remove window cover (4) from laser window (8).

c. Handle (2).

Rotate downward until button releases.

Handle locks in down position.

Check for obstruction and repeat step. Still fails, replace LD/R per paragraph 3-17.



## 1. TURN-ON (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

ΤU

d. Azimuth lock (5). (See illustration on preceding page for d. and e.)

Loosen ccw.

e. Elevation lock (6).

Loosen ccw.



Laser light hazard, observe WARNINGS inside front cover of this manual.

#### LD/R

f. POWER switch (1).

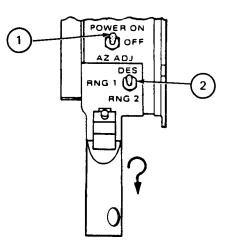
Set to ON.

Eyepiece display: Reticle lit. Green-off. Red-off. Amber-off.

> Replace battery per (3-20). Troubleshoot display reticle fault per (3-11).

g. DES/RNG 1/RNG 2 switch (2).

Set to RNG 1.



MS 419344B

#### TM 9-1260-477-12

### 3-16. BORESIGHT TEST (CONT)

#### 2. TARGET ACQUISITION

LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

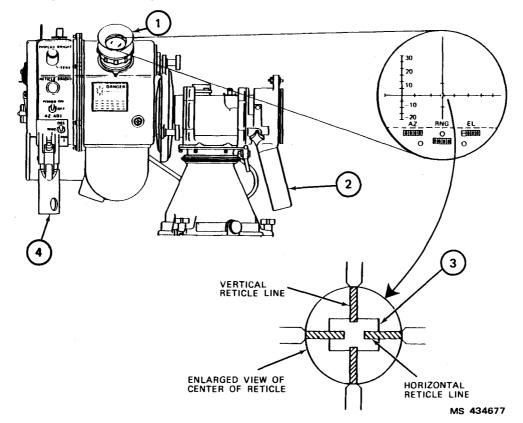
a. Target (3).

Visually acquire.

Target in view.

#### NOTE

Targets for boresight check can be any solid target with distinct edges. Typical target can be telephone poles, tree trunks, or edges of buildings or signs (signs with a shiny surface should not be used). Target ranges should be between 500 and 1000 meters. At least 20 meters should exist between target and background.



### 2. TARGET ACQUISITION (CONT)

## LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## GLLD Set

b. LD/R/TU.

Grasp right-hand handle (2) and left-hand grip (4). (See illustration on preceding page for b. thru d.)

#### TU/LD/R

c. Hand grips.

Rotate LD/R in line with target.

### LD/R

d. Eyepiece (1).

Center target on crosshairs (use both hands).

Target is centered.

Repeat Initial Checkout per paragraph 2-3.

#### TM 9-1260-477-12

## 3-16. BORESIGHT TEST (CONT)

### 2. TARGET ACQUISITION (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

e. Trigger switch.

Pull, hold, release after viewing eyepiece display.

Eyepiece displays RNG values for target.

Repeat this step until consistent range data for target is obtained. (If consistent readouts cannot be obtained, replace the LD/R.)

3. AZ BORESIGHT CHECK

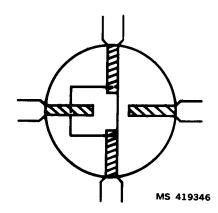
#### NOTE

Steps 3.a thru 3.c should be read carefully before proceeding to the following step.

#### LD/R

a. Eyepiece.

Move LD/R until vertical reticle edge appears at right edge of target.



#### 3. AZ BORESIGHT CHECK (CONT)

LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

#### NOTE

The following step requires that the laser be fired regularly until a target range different from that in step 2.e is obtained. To obtain a correct estimate of boresight error the operator should perform the following step slowly taking care to keep all physical disturbances to the LD/R to a minimum.

b. Eyepiece.

Move LD/R slowly to the right away from target edge. Fire laser repeatedly until new range readout is obtained.

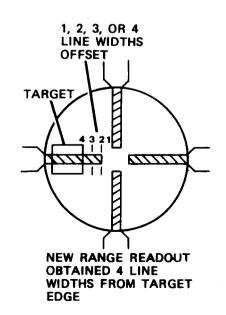
> Eyepiece displays RNG readout different from that obtained in step 2.e.

c. Target.

Estimate and record the number of reticle line widths the LD/R was moved off target edge before obtaining a new range readout.

> Example at right shows new range readout obtained four (4) reticle line widths from right edge of target.

> > Repeat step 3.b until consistent results are obtained.



MS 419347

#### TM 9-1260-477-12

## 3-16. BORESIGHT TEST (CONT)

#### 3. AZ BORESIGHT CHECK (CONT)

## LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

#### NOTE

Steps 3.d through 3.g should be read carefully before proceeding to the following step.

d. Eyepiece.

Move LD/R until vertical reticle edge appears at left edge of target.

# WARNING

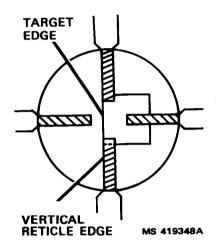
Laser will be fired, observe WARNINGS inside front cover of this manual.

e. Trigger switch.

Pull, hold, release after viewing eyepiece display.

Target range is obtained.

Repeat this step until consistent range readings are obtained.



### 3. AZ BORESIGHT CHECK (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

#### NOTE

The following step requires that the laser be fired regularly until a target range different from that in step 3.e is obtained. To obtain a correct estimate of boresight error, the operator should perform the following step slowly taking care to keep all physical disturbances to the LD/R to a minimum.

f. Eyepiece.

Move LD/R slowly to the left away from target edge. Fire laser repeatedly until new range readout is obtained.

> Eyepiece displays RNG readout different from that obtained in step 3.e.

## 3-16. BORESIGHT TEST (CONT)

### 3. AZ BORESIGHT CHECK (CONT)

#### LOCATION ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### g. Target.

Estimate and record the number of reticle line widths the LD/R was moved off target edge before obtaining a new range readout.

Example at right shows new range readout obtained two (2) reticle line widths from left edge of target.

Repeat step 3.f until consistent results are obtained.

#### EXAMPLE

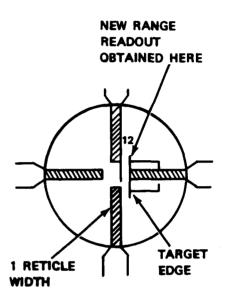
To determine if the AZ boresight is satisfactory perform the following steps:

- 1. Subtract the two numbers recorded in steps 3.c and 3.g.
- 2. The result must be no greater than 3.5.

#### SAMPLE

In the sample above, if the number recorded in step 3.c was four (4) and the number recorded in step 3.g was two (2), the subtraction result is:

- 1. 4 2 = 2.
- Since 2 is less than 3.5, your G/VLLD has passed the AZ boresight check.
- 3. If greater than 3.5, replace LD/R per paragraph 3-17.



MS 419349

### 4. EL BORESIGHT CHECK

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### NOTE

Steps 4.a thru 4.d should be read carefully before proceeding to the following step.

a. Eyepiece.

Move LD/R until horizontal reticle edge appears at top edge of target.

## WARNING

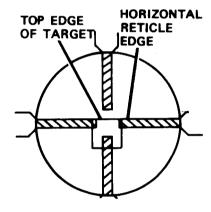
Laser will be fired, observe WARNINGS inside front cover of this manual.

b. Trigger switch.

Pull, hold, release after viewing eyepiece display.

> Target range is obtained. (Background, if it exists, should be greater than 20 meters from target.)

> > Repeat this step until consistent range readings are obtained.



MS 419350

## 3-16. BORESIGHT TEST (CONT)

### 4. EL BORESIGHT CHECK (CONT)

LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

#### NOTE

The following step requires that the laser be fired regularly until a new target range different from that in step 4.b is obtained. To obtain a correct estimate of boresight error the operator should perform the following step slowly taking care to keep all physical disturbances to the LD/R to a minimum.

c. Eyepiece.

Move LD/R slowly above top edge of target. Fire laser repeatedly until new range readout is obtained.

> Eyepiece displays RNG readout different from that obtained in step 4.b.

## 4. EL BORESIGHT CHECK (CONT)

### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

D. Target.

Estimate and record the number of reticle line widths the LD/R was moved above target edge before obtaining new range readout.

Example at right shows new range readout obtained three (3) reticle line widths above edge of target.

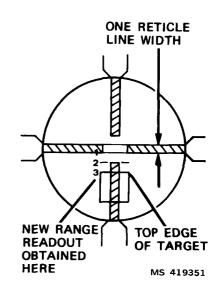
Repeat step 4.c until consistent results are obtained.

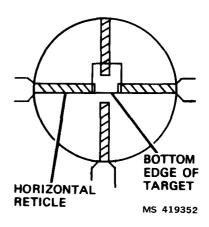
NOTE

Steps 4.e thru 4.h should be read carefully before proceeding to the following step.

e. Eyepiece.

Move LD/R until horizontal reticle edge appears at bottom edge of target.





## 3-16. BORESIGHT TEST (CONT)

## 4. EL BORESIGHT CHECK (CONT)

LOCATION

ITEM ACTION

NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

f. Trigger switch.

Pull, hold, release after viewing eyepiece display.

Target range is obtained. (Background, if it exists, should be greater than 20 meters from target.)

> Repeat this step until consistent range readings are obtained.

#### 4. EL BORESIGHT CHECK (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

## WARNING

Laser will be fired, observe WARNINGS inside front cover of this manual.

#### NOTE

The following step requires that the laser be fired regularly until a target range different from that in step 4.f is obtained. To obtain a correct estimate of boresight error, the operator should perform the following step slowly taking care to keep all physical disturbances to the LD/R to a minimum.

g. Eyepiece.

Move LD/R slowly below bottom edge of target. Fire laser repeatedly until new range readout is obtained.

> Eyepiece displays RNG readout different from that obtained in step 4.b.

#### TM 9-1260-477-12

## 3-16. BORESIGHT TEST (CONT)

#### 4. EL BORESIGHT CHECK (CONT)

#### LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

### h. Target

Estimate and record the number of reticle line widths the LD/R was moved below bottom edge of target before obtaining a new range readout.

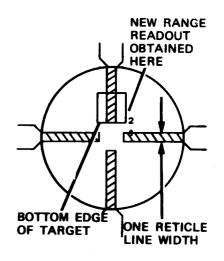
Example at right shows new range readout obtained one (1) reticle line width below bottom edge of target.

Repeat step 4.g until consistent results are obtained.

#### EXAMPLE

To determine if the EL boresight is satisfactory perform the following steps:

- 1. Subtract the two numbers recorded in steps 4.d and 4.h.
- 2. The result must be no greater than 3.5.
- 3. If greater than 3.5, replace LD/R per paragraph 3-17.



MS 419353

## 4. EL BORESIGHT CHECK (CONT)

LOCATION

ITEM

ACTION NORMAL INDICATION CORRECTIVE ACTION

#### SAMPLE

In the sample above if the number recorded in step 4.d was two and the number recorded in step 4.h was one, the subtraction result is:

- 1. 2 1 = 1.
- Since 1 is less than 3.5, your G/VLLD has passed the EL boresight check.
- 5. STANDBY SHUTDOWN

### LD/R

a. POWER switch (4). (See illustration on next page for a. thru d.)

Set to OFF.

### LD/R/TU

b. Handgrips (5 and 9).

Rotate LD/R over DOWNHILL LEG (8).

c. Handle release button (6).

Press and hold.

d. Handle (5).

Rotate up.

## TM 9-1260-477-12

## 3-16. BORESIGHT TEST (CONT)

## 5. STANDBY SHUTDOWN (CONT)

### LOCATION

ITEM

#### ACTION NORMAL INDICATION CORRECTIVE ACTION

#### LD/R

e. Window cover (7).

press onto window (10).

f. Eyepiece cover (3).

Push to install.

g. Azimuth gimbal lock (1).

Tighten cw.

h. Elevation gimbal lock (2).

Tighten cw.

## 3-17. REMOVAL/REPLACEMENT OF LD/R

#### INITIAL SETUP

General Safety:	Laser light hazard and mechanical hazard, observe WARNINGS on WARNINGS page.
Tools Required:	None.
Equipment Prerequisites:	G/VLLD set up per paragraph 2-1 (or 2-2) and in standby shutdown per paragraph 2-4.
Approximate Time Required:	5 minutes maximum.

#### 1. LD/R REMOVAL

#### LOCATION ITEM

ACTION

#### LD/R

a. Battery (4).

Remove battery per paragraph 3-20.



Ensure LD/R POWER switch is OFF.

b. DMD cable (3).

Remove and stow on DMD.

c. 1J4 cover (2).

Tighten cw to install.

#### ΤU

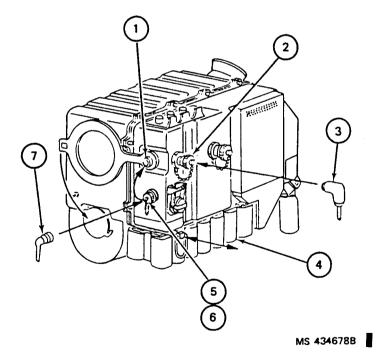
d. 3P1 connector (7).

Remove from LD/R and stow cable on TU.

## LD/R

e. 1J2 cover (5).

Remove from dumny connector (1) and tighten cw on 1J2 (6).

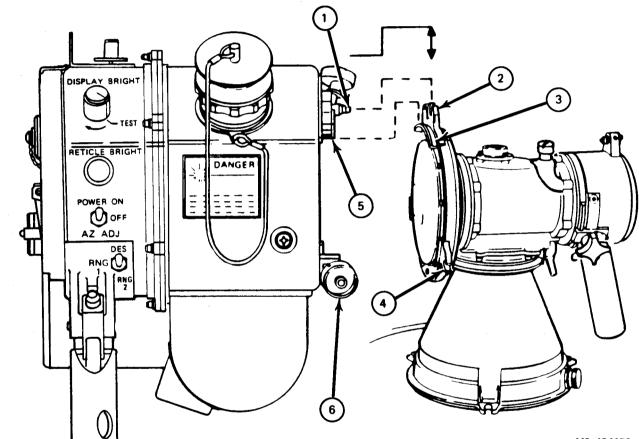


#### TM 9-1260-477-12

## 3-17. REMOVAL/REPLACEMENT OF LD/R (CONT)

#### 1. LD/R REMOVAL (CONT)

LOCATION ITEM ACTION



MS 434679

### LD/R

f. 3 swing bolts (6).

Loosen ccw (top one last) and swing out from TU notches (4).

g. LD/R.

Remove by pulling bottom of LD/R outward, then lift up until index pin (1) clears index pin notches (2).

#### 3-42 Change 2

Ì

## 2. LD/R REPLACEMENT

#### LOCATION ITEM ACTION

LD/R a. thr		ee illustration on preceding page for d.)
а	à.	3 swing bolts (6).
		Rotate against LD/R.
b	).	Index pin (1).
		Engage with TU index pin notch (2).
С	).	Interface bosses (5).
		Place LD/R lips on upper segment of TU mounting flange (3).
d	ł.	3 swing bolts (6).
		Rotate into TU notches (4) and tighten cw.
е	<b>)</b> .	Battery interface.
		Replace battery per paragraph 3-20 if required.

Change 6 3-43

## 3-17. REMOVAL/REPLACEMENT OF LD/R (CONT)

#### 2. LD/R REPLACEMENT (CONT)

#### LOCATION ITEM

ACTION

LD/R

# CAUTION

Ensure LD/R POWER switch is OFF.

f. 1J4 cover (2).

Unscrew ccw to remove, if DMD was used.

g. DMD connector (4).

Connect to LD/R 1J4 (3), if DMD was used.

h. 1J2 cover (5).

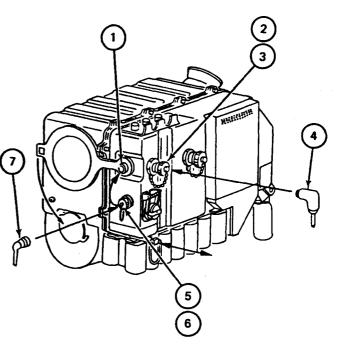
Remove ccw and stow on dummy connector (1).

i. 3P1 connector (7).

Connect to LD/R 1J2 (6).

NOTE

If your G/VLLD set is not level, perform fine level procedure per paragraph 2-1, step 7.



MS 4346808

## 3-18. REMOVAL/REPLACEMENT OF TU

#### INITIAL SETUP

General Safety:	Laser light hazard and mechanical hazard, observe WARNINGS inside front cover of this manual.
Tools Required:	None.
Equipment Prerequisites:	G/VLLD set up per paragraph 2-1 (or 2-2) and in standby shutdown per paragraph 2-4.
Approximate Time Required:	5 Minutes maximum.

#### 1. TU REMOVAL

#### LOCATION ITEM ACTION

LD/R (if installed)

a. LD/R (1).

Remove per paragraph 3-17.

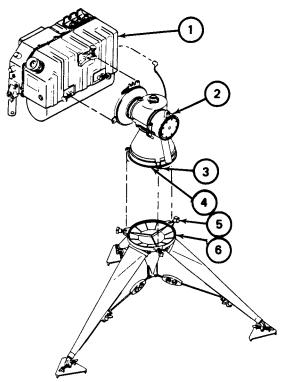
## TU

b. 3 tripod swing bolts (5).

Loosen ccw and swing out from TU notches (3).

c. TU (2).

Remove by lifting straight from tripod interface (6).



MS 420688

## 3-18. REMOVAL/REPLACEMENT OF TU (CONT)

### 2. TU REPLACEMENT

## LOCATION

ITEM ACTION

#### NOTE

AZ ZERO ADJ knob must be in same position (toward you and opposite the downhill leg).

TU (See illustration on preceding page for a. thru c.)  $\label{eq:second}$ 

- a. Mounting flange (4).
  - Engage with tripod interface by lowering straight down.

### Tripod

b. 3 swing bolts.

Rotate into TU notches and tighten cw.

#### LD/R

c. LD/R (if removed in step 1).

Replace per paragraph 3-17.

## 3-19. REMOVAL/REPLACEMENT OF TRIPOD

#### INITIAL SETUP

General Safety:

Tools Required:

Equipment Prerequisites:

Approximate Time Required:

Laser light hazard and mechanical hazard, observe WARNINGS on WARNINGS page.

None.

G/VLLD set up per paragraph 2-1 (or 2-2) and in standby shutdown per paragraph 2-4.

5 minutes maximum.

#### 1. TRIPOD REMOVAL

LOCATION ITEM

ACTION

#### Tripod

a. 3 swing bolts (3).

Loosen ccw and swing out from TU notches (2).

### TU

b. TU/LD/R (1).

Remove by lifting straight up from mounting flange.

### Tripod

c. 3 clamp wingnuts (6).

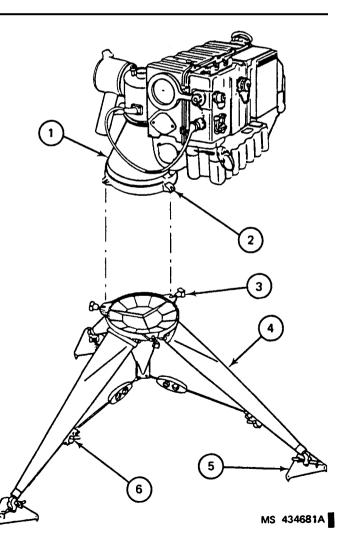
Loosen ccw.

d. Legs (4).

Pull toward center to collapse tripod.

e. 3 clamp wingnuts (6).

Tighten cw to secure collapsed tripod.



### TM 9-1260-477-12

## 3-19. REMOVAL/REPLACEMENT OF TRIPOD (CONT)

## 2. TRIPOD REPLACEMENT

## LOCATION

ITEM ACTION

## Tripod

a. 3 clamp wingnuts.

Loosen ccw to release legs.

b. Footpads (5). (See illustration on preceding page.)

Place in desired position.

c. 3 clamp wingnuts.

Tighten cw.

## 3-20. REMOVAL/REPLACEMENT OF BATTERY

### INITIAL SETUP

General Safety:	Rotate LD/R handle up to avoid accidental laser operation.
Tools Required:	None.
Equipment Prerequisites:	LD/R unpacked per paragraph 2-1.
Approximate Time Required:	1 minute.

#### 1. BATTERY REMOVAL

LOCATION ITEM ACTION

Ensure LD/R POWER switch is OFF before removing battery.

LD/R

a. POWER switch (1).

Set to OFF.

b. Battery release pin (6).

Pull and hold.

CAUTION

Pivot brackets are fragile. Use caution when rotating downward.

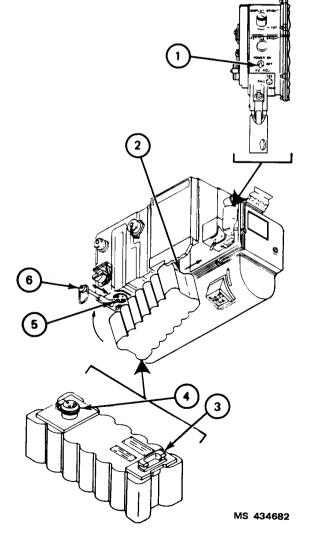
Battery

c. Battery connector 2P1 (4).

Rotate down from LD/R connector 1J3 (5) to disengage.

d. Pivot bracket (3).

Disengage by pulling away from LD/R clip (2).



## 3-20. REMOVAL/REPLACEMENT OF BATTERY (CONT)

## 2. BATTERY REPLACEMENT

### LOCATION

ITEM ACTION

Tripod/TU Backpack

a. Battery case strap (2).

Unbuckle.

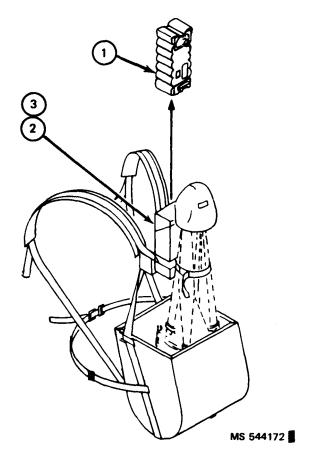
b. Battery (1).

Remove from case (3). Check battery to see if it has been charged per NOTE below. Check battery charge label date. Check battery for missing, bent, or broken connector, release pin, or pivot bracket. Check battery for swelling. Make sure battery has an O-ring on connector.

# WARNING

Do not vent battery gas bubbles.

Electrolyte is potassium hydroxide, a caustic base. Avoid contact with skin and eyes.



## 2. BATTERY REPLACEMENT (CONT)

LOCATION ITEM ACTION

#### ΝΟΤΕ

Charged NICAD batteries discharge during storage. The rate of discharge varies from battery to battery and varies with storage temperature. The storage time (time since last charge) must be verified when the battery is issued. No battery should be issued which has been stored for more than 10 days. If storage temperatures were above 70 °F (21.1 °C), batteries should not be issued which have been stored for more than 5 days. Ensure battery has no bubbles larger than 2.0 inches in diameter or over 0.2 inch in height. Return battery to Direct Support maintenance, as required.

LD/R

c. Handle (2).

Ensure handle is in down position.

d. POWER switch (1).

Verify OFF.

e. Battery release pin (8).

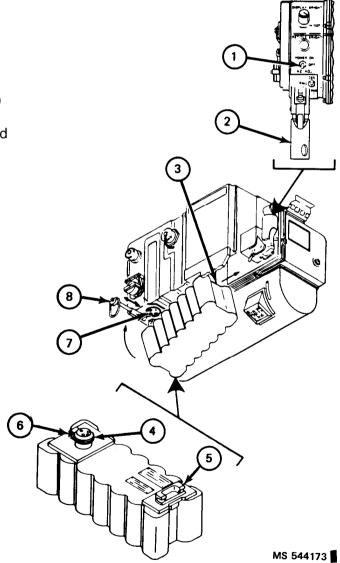
Pull and hold.

# CAUTION

Battery pivot brackets are fragile. Do not force battery into position.

f. Battery clip (3).

Engage battery pivot bracket (5).



# 3-20. REMOVAL/REPLACEMENT OF BATTERY (CONT)

# 2. BATTERY REPLACEMENT (CONT)

LOCATION ITEM

ACTION

#### LD/R

g. Battery connector (4). (See illustration on preceding page.)

Rotate upward into LD/R connector 1J3 (7).

h. Battery release pin (8).

Push through hole in battery connector (6).

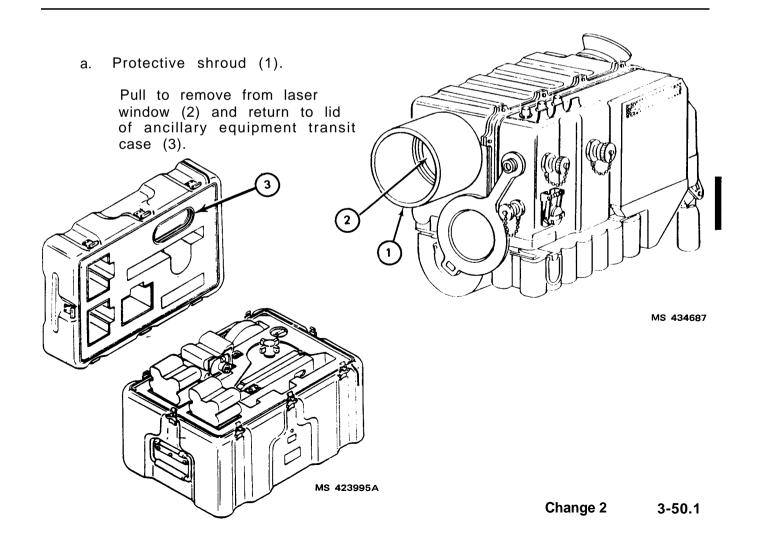
# 3-20.1. REMOVAL/REPLACEMENT OF PROTECTIVE SHROUD

### INITIAL SETUP

General Safety	Laser light hazard, observe WARNINGS inside front cover of this manual.
Tools Required:	None.
Equipment Required:	None.
Equipment Prerequisites:	G/VLLD set in standby shutdown per para- graph 2-4 or unpacked per paragraph 2-1.
Approximate Time Required:	1 Minute.

# 1. PROTECTIVE SHROUD REMOVAL

LOCATION ITEM ACTION



# 3-20.1. REMOVAL/REPLACEMENT OF PROTECTIVE SHROUD (CONT)

## 2. PROTECTIVE SHROUD REPLACEMENT

#### LOCATION ITEM

ACTION

#### LD/R

a. Protective shroud (1).

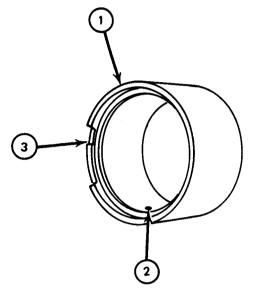
Orient cut out end of shroud (3) toward the laser window with the drain hole (2) at the 6 o'clock position.

#### NOTE

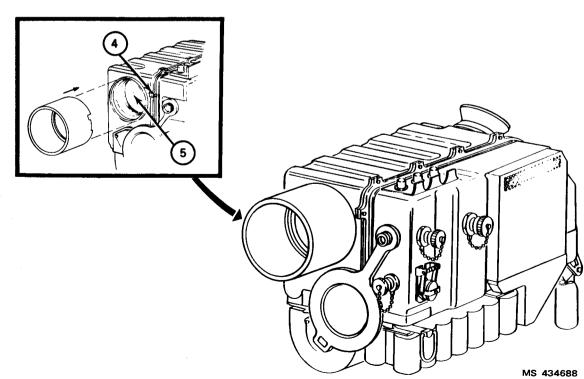
In the following step insure that the cut out portion of the shroud is aligned with the transceiver assembly and electronics assembly mating surfaces (4) on the LD/R.

b. Protective shroud.

Place protective shroud against laser window (5) and press on firmly.



MS 423996



# 3-21. REMOVAL/REPLACEMENT OF LD/R WINDOW COVER

#### **INITIAL SETUP**

General Safety:	Laser light hazard. Observe WARNINGS on WARNINGS page.
Tools Required:	None.
Equipment Required:	None.
Prerequisites:	G/VLLD set in standby shutdown per para- graph 2-4 or unpacked per paragraph 2-1.
Approximate Time Required:	1 minute.

#### 1. WINDOW COVER REMOVAL

#### LOCATION ITEM

ACTION

## LD/R

a. Window cover (6).

Press firmly on strap (4). Pull tab (7) to remove window cover (6) from laser window (1).

b. Connector 1J2 cover (5).

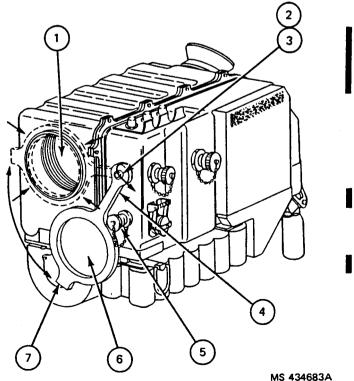
Remove from dummy connector (2) (if attached).

c. Dummy connector (2).

Place thumb on end cap.

d. Window cover (6).

Place fingers of same hand under window cover and pry off.



1000

1

# 3-21. REMOVAL/REPLACEMENT OF LD/R WINDOW COVER (CONT)

# 2. WINDOW COVER REPLACEMENT

LOCATION ITE	
LD/R	
a.	Window cover hole (3). (See illustration on preceding page.)
	Hook over dummy connector (2) with dished side out.
b.	Tab (7).
	Pull up and in while pressing on window cover (6) to seat around dummy connector ridge.
C.	Window cover (6).
	Rotate to laser window (1) and press around rim to snap in place.
d.	Connector 1J2 cover (5).
	Install on dummy connector (2).

# 3-22. REMOVAL/REPLACEMENT OF BATTERY O-RING

#### **INITIAL SETUP**

General Safety:	Battery maintenance should be done only in a well-ventilated area. Be careful not to short across battery terminals.
Tools Required:	None.
Materials Required:	Lubricant (item 5, appendix E). Cotton wiping rags (item 6, appendix E).
Equipment Required:	None.
Equipment Prerequisites:	Battery removed from LD/R per paragraph 3-20 or unpacked per paragraph 2-1.
Approximate Time Required:	1 minute.

## 1. O-RING REMOVAL

# LOCATION

ITEM

ACTION

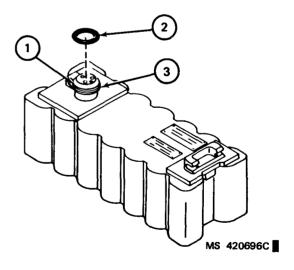
#### NOTE

Removal/replacement procedure for EMI filter O-ring is same as for battery.

## Battery

O-ring (2).

Remove from groove (3) on connector (1).



# 3-22. REMOVAL/REPLACEMENT OF BATTERY O-RING (CONT)

### 2. O-RING REPLACEMENT

## LOCATION

ITEM

ACTION

#### Battery

a. O-ring (2). (See illustration on preceding page.)

Using cotton wiping rags, wipe free of visible dirt and contamination.

b. O-ring (2).

Lubricate and hook in groove (3) on connector (1).

c. O-ring (2).

Stretch over connector (1) and press into groove (3).

# 3-23. REMOVAL/REPLACEMENT OF LD/R EYESHIELD

# **INITIAL SETUP**

General Safety:	Laser light hazard, observe WARNINGS in front of this manual.
Tools Required:	None.
Equipment Required:	None.
Equipment Prerequisites:	G/VLLD set in standby shutdown per paragraph 2-4 or unpacked per paragraph 2-1.
Approximate Time Required:	1 minute.

## 1. LD/R EYESHIELD REMOVAL

#### LOCATION ITEM

ACTION

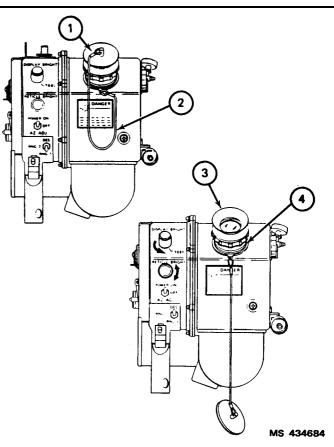
# LD/R

a. Eyepiece cover (1).

Grasp outside edge and pull off. Allow it to hang from cord (2).

b. Eyeshield (3).

Place hand around eyeshield and pull out and sideways until it comes off eyepiece optics (4).



# 3-23. REMOVAL/REPLACEMENT OF LD/R EYESHIELD (CONT)

# 2. LD/R EYESHIELD REPLACEMENT

LOC	ATION ITEI	M ACTION
LD/R	1	
	a.	Eyeshield (3). (See illustration on preceding page.)
		Place bottom edge over eyepiece optics (4) and push into place with a twisting motion.
	b.	Eyepiece cover (1).
		Place over eyeshield (3) and push into place until it fits tightly.

## 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT

# INITIAL SETUP

General Safety:	Laser light hazard and mechanical hazard, observe WARNINGS inside front cover of this manual.
Tools Required:	None.
Equipment Prerequisites:	G/VLLD set up per paragraph 2-1 (or 2-2) and in standby shutdown per paragraph 2-4.
Approximate Time Required:	5 minutes maximum.

## 1. AN/TAS-4 NIGHT SIGHT REMOVAL

# LOCATION

ITEM ACTION

Night Sight (1)

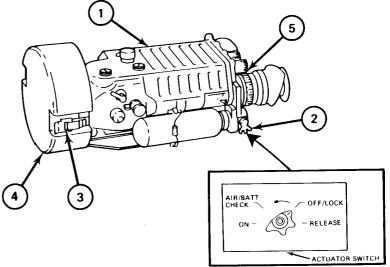
#### NOTE

Appearance of actuator switch varies among models.

- a. Actuator switch (2). Set to OFF/LOCK.
- b. Lens cover (4).

Install front lens cover with securing latches (3).

c. Diopter adjustment ring (5). Rotate fully cw.



MS 561689

# 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT (CONT)

# 1. AN/TAS-4 NIGHT SIGHT REMOVAL (CONT)

LOCATION	
ITEM	
	ACTION

#### Night Sight (1)

d. Latch handle (4).

Support night sight securely; move latch handle rearward to unlocked position.

e. Night sight.

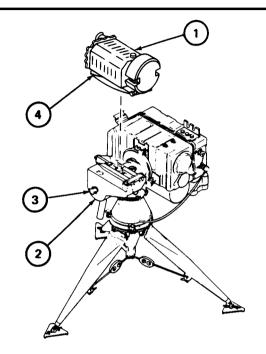
Remove.

f. Latch handle.

Return to forward position.

g. Night sight.

Invert and place in field handling case.



MS 420708

Night Sight Mount (2)

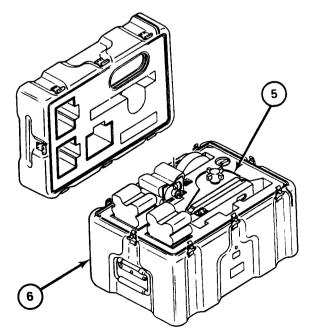
h. Mounting screw (3).

Loosen ccw to disengage mount from TU.

Ancillary Equipment Transit Assembly Case (6)

i. Night sight mount (5).

Return to case.



MS 420747B

#### 2. AN/TAS-4 NIGHT SIGHT REPLACEMENT

#### LOCATION

ITEM

ACTION

#### Tripod/TU

a. Night sight mount (4).

Position against circular mounting surface (3).

b. Locating pin (1).

Look through hole (6) and engage locating pin in locating block.

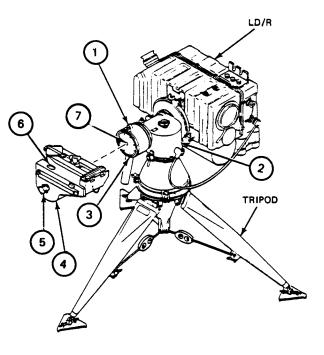
#### Mount

c. Knob and mounting screw (5).

Engage in hole (7) in TU (2), then tighten cw as much as possible.

d. TU.

Move elevation gimbal to position above horizontal; then lock the elevation gimbal.



MS 423989

# 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT (CONT)

2. AN/TAS-4 NIGHT SIGHT REPLACEMENT (CONT)

#### LOCATION

ITEM

ACTION

Night Sight (2)

e. Latch handle (1).

Move to unlocked position (rearward).

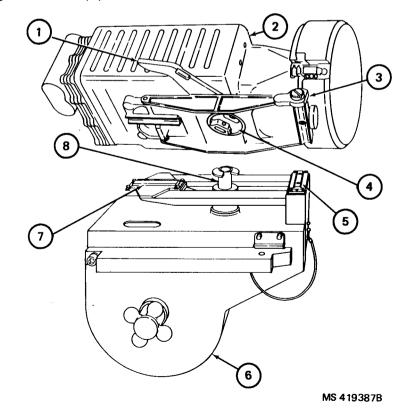
f. Coarse azimuth knob (3).

Move to position 2.

#### Mount

g. Night sight.

Align with the V blocks (5 and 7) and engage keyed hole (4) with cam post (8) on top of night sight mount (6).



#### 2. AN/TAS-4 NIGHT SIGHT REPLACEMENT (CONT)

#### LOCATION ITEM

ACTION

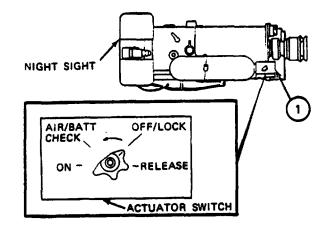
## Night Sight

h. Latch handle.

Move to forward position to secure night sight.

i. Actuator switch (1).

Set to OFF/LOCK.



MS 419388C

#### 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT (CONT)

3. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT REMOVAL

## LOCATION ITEM

ACTION

Night Sight

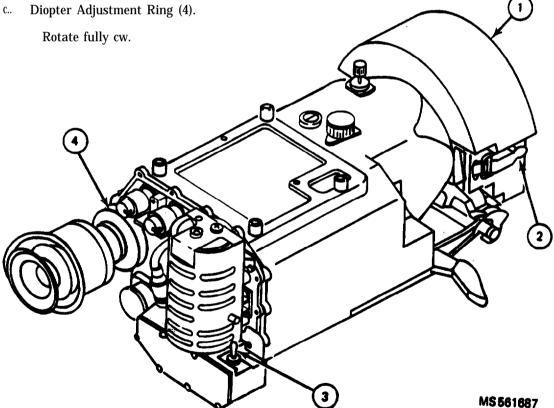
NOTE

Appearance of actuator switch varies among models.

- a. On/OFF/STBY Switch (3). Set to OFF.
- b. Lens Cover (I).

Install front lens cover with securing latches (2).

с.. Diopter Adjustment Ring (4).



## 3. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT REMOVAL (CONT)

#### LOCATION ITEM

ACTION

#### Night Sight (1)

d. Latch Handle (4).

Support night sight securely; move latch handle rearward to unlocked position.

e. Night Sight.

Remove.

f. Latch Handle.

Return to forward position.

g. Night Sight.

Invert and place in field handling case.

## Night Sight Mount (2)

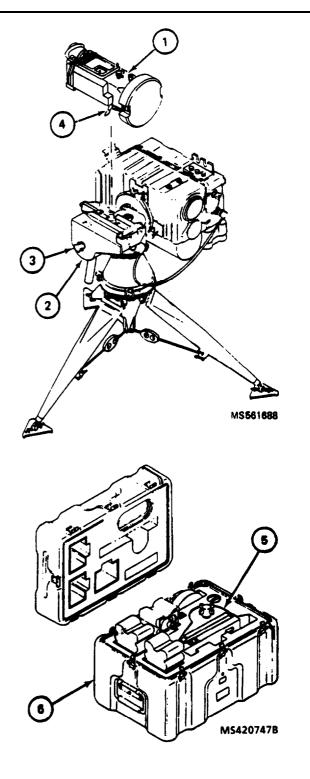
h. Mounting Screw (3).

Loosen ccw to disengage mount from TU.

Ancillary Equipment Transit Assembly Case (6)

i Night Sight Mount (5).

Return to case.



#### 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT (CONT)

#### 4. AN/TAS-4B OR AN/TAS-4D NIGHT SIGHT REPLACEMENT

# LOCATION ITEM

ACTION

#### Tripod/TU

a. Night Sight Mount (4).

Position against circular mounting surface (3).

b. Locating Pin (1).

Look through hole (6) and engage locating pin in locating block.

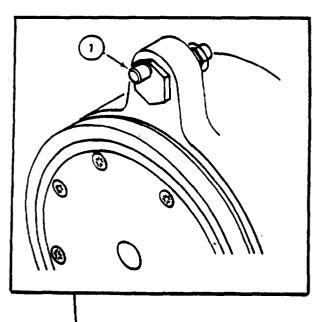
#### Mount

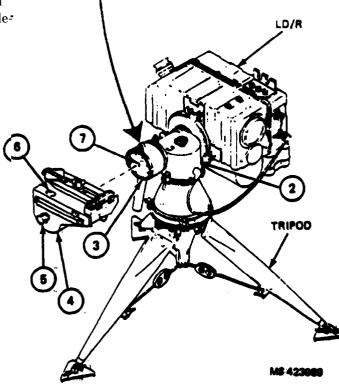
c. Knob and Mounting Screw (5).

Engage in hole (7) in TU (2), then tighten cw as much as possible.

d. TU

Move elevation gimbal to position above horizontal: then lock the elevation gimbal.





#### LOCATION ITEM

# ACTION

#### Night Sight (2)

e. Latch Handle (1).

Move to unlocked position (rearward).

f. Coarse Azimuth Knob (3).

Move to position 2.

#### Mount

g. Night Sight (2).

Align with the V blocks (5 and 7) and engage keyed hole (4) with cam post<sup>†</sup> (8) on top of night sight mount (6).

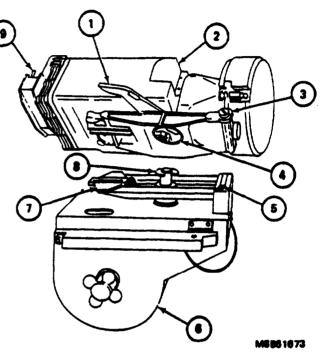
#### Night Sight (2)

h. Latch Handle (1).

Move to forward position to secure night sight.

i. ON/OFF/STBY Switch (9).

Set to OFF.



# 3-24. REMOVAL/REPLACEMENT OF NIGHT SIGHT (CONT)

#### 5. BATTERY POWER CONDITIONER BATTERY REPLACEMENT

# LOCATION ITEM

ACTION

Battery Power Conditioner.

a. Latch (3).

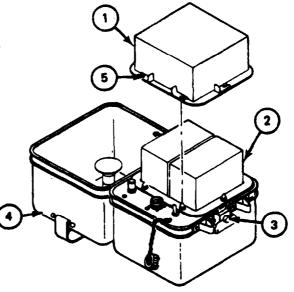
Release and open cover (4).

b. Latches (5).

Release and remove battery cover (1).

C. Battery (2).

Remove and replace two batteries (2).



# 3-25. REMOVAL/REPLACEMENT OF EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE

#### INITIAL SETUP

General Safety:	Rotate LD/R handle up to avoid accidental laser operation.
Tools Required:	None.
Equipment Prerequisites:	LD/R unpacked per paragraph 2-1.
Approximate Time Required:	5 minutes.

1. EMI FILTER, NATO CONNECTOR, SLAVE CABLE AND VEHICLE POWER CABLE REMOVAL

LOCATION ITEM

> To prevent electrical shock, ensure power is off at vehicle slave connector and LD/R POWER switch is OFF.

#### LD/R

a. POWER switch.

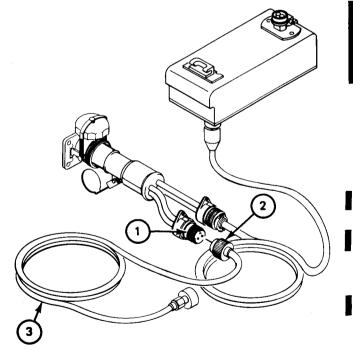
ACTION

Set to OFF.

Night Sight Power Cable (3)

b. Connector (2).

If night sight is being used, disconnect slave cable connector (1).



MS 544174A

# 3-25. REMOVAL/REPLACEMENT OF EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE (CONT)

1. EMI FILTER, NATO CONNECTOR, SLAVE CABLE AND VEHICLE POWER CABLE REMOVAL (CONT)

#### LOCATION ITEM

ACTION

**NOTE** If your vehicle required the use of a NATO connector, skip steps c, d, and e, and go to step f.

Vehicle with Vehicle Slave Connector (1)

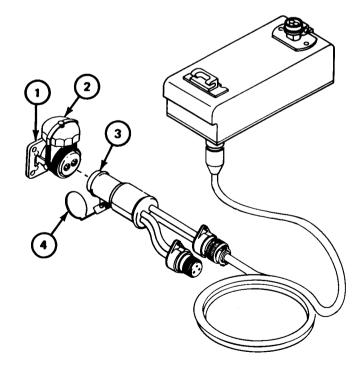
c. Vehicle slave connector (1).

Pull back spring-loaded cover (4) and disconnect slave cable connector (3). Release cover.

d. Cap (2).

Install and screw.

e. Go to step i.



MS 544253

#### 1. EMI FILTER, NATO CONNECTOR, SLAVE AND VEHICLE POWER CABLE REMOVAL (CONT)

LOCATION ITEM				
	ACTION			

Vehicle with Vehicle Slave Connector (1) f. Vehicle slave connector (1). Disconnect NATO connector (11). g. Cap (2). Install and screw. Slave Cable (4) h. Connector (3). Pull back spring-loaded cover 11 (10) and disconnect NATO connector (11). Release cover 10 9 Vehicle Power Cable (8) i. Connector P2 (9). Disconnect slave cable connector (5). MS 544254 Connector P1 (7). j. Disconnect EMI filter connector J1 (6).

# 1. EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE REMOVAL (CONT)

LOCATION ITEM ACTION
k. Battery release pin (1).
Pull and hold.
CAUTION
EMI filter pivot brackets are fragile. Use caution when rotating EMI filter downward.
EMI Filter
I. Connector (4).
Rotate down from LD/R connector 1J3 (2).
m. Pivot bracket (5).
Disengage by pulling away from LD/R clip (3).
Ancillary Equipment Bag
n. Ancillary equipment bag (6).
Install EMI filter (10), NATO connector (9), slave cable (7), and vehicle power cable (8).

# 3-25. REMOVAL/REPLACEMENT OF EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE (CONT)

2. EMI FILTER, NATO CONNECTOR, SLAVE CABLE AND VEHICLE POWER CABLE REPLACEMENT

LOCATION ITEM

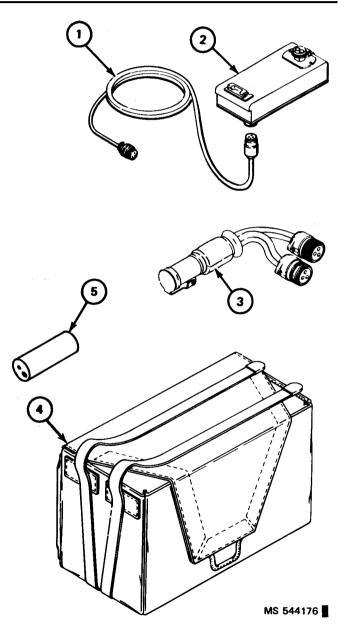
NOTE

EMI filter, NATO connector, slave cable, and vehicle power cable must be used if ambient temperature is below 32  $^{\circ}F$  (0  $^{\circ}C$ ).

Ancillary Equipment Bag

a. Ancillary equipment bag (4).

Remove EMI filter (2), NATO connector (5), slave cable (3), and vehicle power cable (1).



2. EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE REPLACEMENT (CONT)

# LOCATION

ITEM

ACTION

#### LD/R

b. Battery release pin (1).

Pull and hold.

CAUTION

EMI filter pivot brackets are fragile. Do not force EMI filter into position.

# EMI Filter

c. Pivot bracket (6).

Engage.

d. Connector (5).

Rotate upward into LD/R connector 1J3 (2).

# LD/R

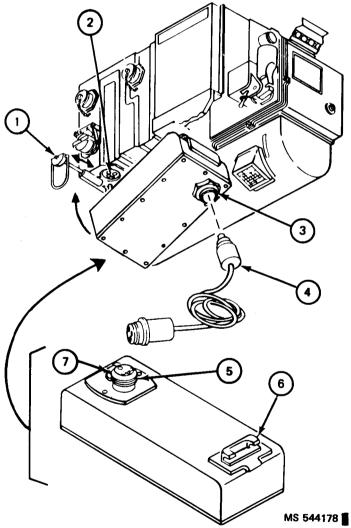
e. Battery release pin (1).

Push through hole (7) in EMI filter connector (5).

## Vehicle Power Cable

f. Connector P1 (4).

Connect to EMI filter connector J1 (3).



# 3-25. REMOVAL/REPLACEMENT OF EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE (CONT)

2. EMI FILTER, NATO CONNECTOR, SLAVE CABLE AND VEHICLE POWER CABLE REPLACEMENT (CONT)

#### LOCATION

ITEM ACTION

Vehicle Power Cable (7)

g. Connector P2 (6).

Connect slave cable connector (5).



Ensure power is off at vehicle slave connector before connecting slave cable to vehicle slave connector.

#### NOTE

Vehicle slave connector on most Army vehicles has a single socket in the center. Some vehicles have a twosocket connector. If your vehicle has a single-socket connector, skip steps h, i, and j, and go to step k.

Vehicle with Vehicle Slave Connector (1)

h. Cap (2).

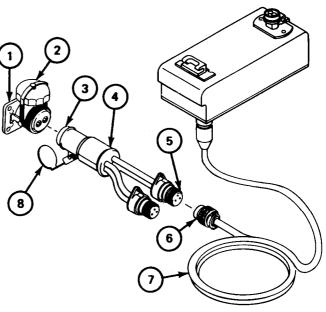
Unscrew and pull up and out of the way.

Slave Cable (4)

i. Connector (3).

Pull back spring-loaded cover (8) and push connector (3) into vehicle slave connector (1) until seated. Release cover.

j. Go to step n.



MS 544177A

2. EMI FILTER, NATO CONNECTOR, SLAVE CABLE, AND VEHICLE POWER CABLE REPLACEMENT (CONT)

#### LOCATION ITEM

ACTION

Slave Cable (4)

k. Connector (3).

Pull back spring-loaded cover (8) and push connector (3) into NATO connector (9). Release cover.



Ensure power is off at vehicle slave connector before connecting NATO connector to vehicle slave connector.

Vehicle with Vehicle Slave Connector (1)

I. Cap (2).

Unscrew and pull up and out of the way.

Vehicle with Vehicle Slave Connector (1)

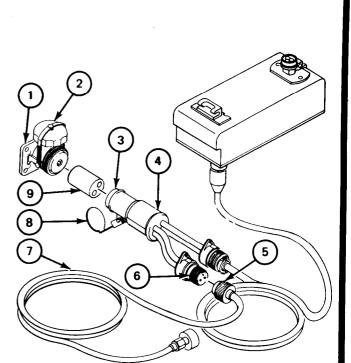
m. Vehicle slave connector (1).

Push NATO connector (9) into vehicle slave connector (1) until seated.

Night Sight Power Cable (7)

n. Connector (5).

If night sight is being used, connect other slave cable connector (6).



MS 544255

# APPENDIX A

# REFERENCES

Refer to TM 9-1260-477-L for publications applicable to the G/VLLD system.

#### **APPENDIX B**

#### MAINTENANCE ALLOCATION CHART

#### SECTION I INTRODUCTION

#### **B-1. GENERAL**

This appendix contains the maintenance allocation chart (MAC) which indicates the lowest level of maintenance authorized to perform particular maintenance operation.

#### **B-2. MAINTENANCE FUNCTIONS**

Maintenance functions shall be limited to and defined as follows:

a. <u>Adjust.</u> Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

b. <u>Align.</u> To adjust specified variable elements of an item to bring about optimum or desired performance.

c. <u>Calibrate</u>. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of 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.

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

e. <u>Remove/Install.</u> To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

f. <u>Overhaul</u>. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition **as** prescribed by maintenance standards in pertinent 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.

#### **B-2. MAINTENANCE FUNCTIONS (CONT)**

g. <u>Rebuild.</u> 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 equipment/components.

h. <u>Repair.</u> The application of maintenance service, including fault location/troubleshooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and 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.

i. <u>Replace.</u> To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the 3d position code of the SMR code.

j. <u>Service.</u> Operations required periodically to keep an item in proper operating condition, i.e., to clean, preserve, drain, paint, or to replenish fuel, lubricants, chemical fluids, or gases.

k. <u>Test.</u> To verify serviceability by measuring the mechanical, pneumatic, hydraulic or electrical characteristics of an item and comparing those characteristics with prescribed standards.

#### **B-3. EXPLANATION OF FORMAT**

a. <u>Column 1, Group Number.</u> Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly and to group associated parts.

b. <u>Column 2, Component/Assembly</u>. Column 2 lists the components, assemblies, -subassemblies, and modules for which maintenance is authorized.

c. <u>Column 3, Maintenance Function.</u> Column 3 lists the functions defined in B-2 above. Each maintenance function required for an item shall be specified by the symbol among those listed in d below which indicates the level responsible for the required maintenance. Under this symbol there shall be listed an appropriate work measurement time value (if available) determined as indicated in e below.

d. <u>Column 4, Maintenance Category.</u> The following symbols shall be used in column 4 to prescribe work function responsibility.

- C Operator/Crew
- 0 Organizational
- F Direct Support
- H General Support
- D Depot

"X" means indeterminate time allotment for checking out maintenance function.

e. <u>Work measurement time.</u> The active repair time required to perform the maintenance function is included directly below the symbol identifying the category of maintenance. The manpower figures were developed under conditions corresponding to the normal conditions for G/VLLD units operating in the field. The skill levels used to obtain the measurement times are approximate to those found in typical G/VLLD units. Active repair time is the average aggregate time required to restore an item (subassembly, assembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, fault isolation diagnostic time, and quality assurance/quality control time in addition to the time required to perform specific maintenance functions identified for the tasks authorized in the maintenance allocation chart. This time is expressed in man-hours and carried to one decimal place (tenths of hours).

f. <u>Column 5, Tools and Equipment</u>. This column is used to specify, by code, those common tools (not individual tools), special tools, TMDE, and support equipment and test equipment required to perform the designated function.

# SECTION II MAINTENANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV CONFIGURATION)

(1)	(2)	(3)	(4)			(5)		
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATH					TOOLS AND
NUMBER		FUNCTION	С	0	F	Η	D	EQUIPMENT
0010	TARGET DESIGNATOR SET, <b>G/VLLD</b>	Inspect Test Service Replace Repair		.2 X .3	x			$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	CABLE, VEHICLE W2	Inspect Replace Repair		.1	x			2, 12
	TRANSIT ASSEMBLY, ANC. EQUIPMENT	Inspect Replace Repair		.1	x			12
	CARRYING CASE, TRANSIT ASSY., ANC. EQUIPMENT	Inspect Replace Repair		.1			x	12
	<b>ATTENUATOR,</b> FILTER ASSEMBLY	Inspect Replace		.1				
	PLUG, LASER INHIBIT	Inspect Replace		.1				
	<b>SHROUD,</b> PROTECTIVE	Inspect Replace		.1 .1				
	KIT, CLEANING, EXTERNAL OPTICS	Inspect Replace Repair		.1 X				

(1)	(2)	(3)	(4)					(5)	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAIN	ITENAN	NCE C	ATEGO	RY**	TOOLS AND EQUIPMENT	
			С	0	F	Н	D		
0010 (CONT)	BATTERY, STORAGE	Inspect Test Replace Service		.1 .1	Х 7.0				
	PACKING, PREFORMED	Inspect Replace		.1 .1				12	
0100	LASER DESIGNATOR RANGEFINDER, LD/R	Inspect Test Adjust Service		.2	X X X			1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16	
		Replace Repair		Х	Х				
	COVER, WINDOW	Inspect Replace		.1 .1				12	
0200	TRANSCEIVER ASSEMBLY, A2	Inspect Test Replace Repair			X X .2 X			1, 2, 3, 4, 5, 8, 9, 10, 11, 12	
	WINDOW	Inspect Replace			X X				
	BOLT, SWING	Inspect Replace			.1 .1				
	EYE SHIELD	Inspect Replace		.1 .1					
	COVER, EYESHIELD	Inspect Replace			.1 .5			12	
	PLENUM ASSEMBLY	Inspect Replace Repair			X .5		Х		

## MAINTENANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV CONFIGURATION) (CONT)

|--|

(2)

(3)

(4)

(5)

GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY**				RY**	TOOLS AND
NUIVIDER		FUNCTION	С	0	F	Н	D	EQUIPMENT
0300	OPTICAL BENCH ASSEMBLY	Inspect Test Replace Repair					X X X X	
0400	TRANSMITTER, HEAT EXCHANGER	Inspect Test Replace Repair					X X X X	
0600	OBJECTIVE LENS ASSEMBLY	Inspect Test Replace Repair					X X X X	
0700	CIRCUIT CARD ASSEMBLY, ENERGY CONTROL	Inspect Test Adjust Replace Repair					X X X X X	
0800	COVER ASSEMBLY, RESONATOR OPTICS	Inspect Test Replace Repair					X X X X	
0900	Q-SWITCH CRYSTAL ASSEMBLY	Inspect Test Replace Repair					X X X X	
1000	BEAM SPLITTER AND RETICLE ASSEMBLY	Inspect Test Replace Repair					X X X X	
1100	HOUSING ASSEMBLY TRANSCEIVER	Inspect Test Replace Repair					X X X X	

(1)	(2)	(3)	(4)				(5)	
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGOR			RY** D	TOOLS AND EQUIPMENT	
1200	FLASHLAMP DISCHARGE ASSEMBLY	Inspect Test Replace Repair		0	F	п	X X X X X	
1300	OPTICAL INSTRUMENT EYEPIECE ASSEMBLY	Inspect Test Adjust Replace Repair			.1 Х		X X X	9, 10, 11, 12
1400	BLOWER ASSEMBLY	Inspect Test Replace Repair			.1 .5		X X	12
1500	RECEIVER CIRCUIT CARD ASSEMBLY	Inspect Test Replace Repair			.1 .4		X X	1, 2, 3, 4, 5, 8, 9, 10, 11, 12
1610	ELECTRONICS ASSEMBLY, A1	Inspect Test Replace Repair			.1 X .2		Х	1, 2, 3, 4, 5, 7, 8, 12
	CONVERTER, RESOLVER TO DIGITAL, A3	Inspect Test Replace Repair			.1 .7		X X	1, 2, 3, 4, 5, 8, 12
1710	CONTROL LOGIC CARD ASSEMBLY, A2	Inspect Test Replace Repair			.1 .7		X X	1, 2, 3, 4, 5, 8, 12
1810	POWER SUPPLY CIRCUIT CARD ASSEMBLY, A1A1	Inspect Test Adjust Replace Repair			.1 .7		X X X	12

# MAINTENANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV CONFIGURATION)\* (CONT)

(1)	(2)	(3)	(4) (5)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE     CATEGORY**     TOOLS AND EQUIPMENT       C     0     F     H     D
1910	ELECTRONICS HOUSING BONDED ASSEMBLY	Inspect Replace Repair	.1 9.0 X
	HANDLE ASSEMBLY	Inspect Replace	.1 X 12
2010	HARNESS, WIRING, ELECTRONIC UNIT, W1	Inspect Replace Repair	.1 .7 χ 2, 12 . χ
	SWITCHES, S5, S6, S7	Inspect Replace	.1 .7
	BANANA PLUG	Inspect Replace	.1 .3
2020	HARNESS, WIRING, SWITCH/RESISTOR, W2	Inspect Replace Repair	.1 X X 2, 12 X
	RESISTOR, VARIABLE R1, R2/SWITCHES S1, S2, S3	Inspect Replace	.1 1.0
	TERMINAL LUGS	Inspect Replace	.1 .3
	CONTAINER ASSEMBLY, LD/R - TRANSCEIVER	Inspect Replace Repair	.1 .1 X
2500	TRAVERSING UNIT	Inspect Test Replace Repair	X X X 12 X X X
	KNOB, AZIMUTH ZERO ADJUST	Inspect Replace	.1 .2 12
	COVER, BASE	Inspect Replace Repair	.1 .1 .1 .1 .1

(1)	(2)	(3)		(4)			(5)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAINTENA CCC		FEGOI H	RY** D	TOOLS AND EQUIPMENT
2500 (CONT)	COVER, DAMPER,	Inspect	.1				12
(0011)	ELEVATION	Replace Repair		.1 X			
	CLAMP, BRAKE, ELEVATION	Inspect Replace	x	.1			
	KNOB, ELEVATION BRAKE	Inspect Replace		.1 .1			12
	KNOB, ASSEMBLY AZIMUTH ADJUST	Inspect Replace	.1	.1			12
	DRIVE, ADJUSTING	Inspect Replace		.1 .1			12
	CABLE ASSEMBLY	Inspect Replace	. 1	.1			12
2600	AZIMUTH GIMBAL ASSEMBLY	Inspect Replace Repair				X X X	
	CLAMP, BRAKE AZIMUTH	Inspect Replace		X .1			12
2700	DAMPER, INERTIA, VISCOUS, AZIMUTH	Inspect Test Replace Repair				X X X X	
2800	DAMPER, INERTIA, VISCOUS, ELEVATION	Inspect Test Replace Repair				X X X X	

## MAINTENANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV CONFIGURATION)\* (CONT)

(1)	(2)	(3)	(4)			(5)		
GROUP			MAIN	ITENA	NCE C	ATEG	ORY**	TOOLS AND
NUMBER	COMPONENT/ASSEMBLY	FUNCTION	С	0	F	Н	D	EQUIPMENT
2900	TRIPOD UNIT	Inspect Test Service Replace Repair		.1 .1 .1 .1	.4			12
	FOOTPAD	Inspect Replace		.1	.5			12
	LINK, ADJUSTABLE	Inspect Replace Repair		.1	.5 X			12
	CLAMP ASSEMBLY	Inspect. Replace Repair			.1 .5 X			12
	LEG, TRIPOD	Inspect Replace		.1	.5			12
	SUPPORT, TU	Inspect Replace		.1	.5			12
	BOLT, ATTACH-SWING	Inspect Replace			.1 .5			12
3000	BACKPACK, LD/R	Inspect Replace Repair		.1 .1			x	
3100	BACKPACK, TRIPOD/TU	Inspect Replace Repair		.1 .1			x	
3200 I	ADAPTER, TRAVERSING UNIT TO ANITAS-4, AN/TAS-4B or AN/TAS-4D	Inspect Replace Repair		.1 .1	х			

B-10 Change 10

(1)	(2)	(3)	(4)				(5)		
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION				ATEGO	RY**	TOOLS AND EQUIPMENT	
_			С	0	F	Н	D		
3300	EMI FILTER ASSEMBLY	Inspect Test Service Replace Repair		.1 .1 .1	X X			2, 12	
	ADAPTER CABLE ASSEMBLY	Inspect Replace		.1 .1					
	CHARGING ASSEMBLY, GAS - G/VLLD	Inspect Replace Repair			.2 .1 .0			12	
	CABLE, POWER MAINTENANCE	Inspect Replace			.1 .1			2, 12	
	CABLE ASSEMBLY, CHARGER, BATTERY	Inspect Replace		.1	.1			2, 12	
	TEST RESOLVER ASSEMBLY	Inspect Replace			.1 .1			2, 12	
	ADAPTER ASSEMBLY, PURGING	Inspect Replace Repair			.1 .1 .5			12	
	EXTENSION, FILL VALVE	Inspect Replace			.1 .1				
	ADAPTER, G/VLLD TO M113A1 VEHICLE	Inspect Service Install Replace Repair		.1 .1 .1 .1	Х			12	
	PINTLE ASSEMBLY	Inspect Replace Repair	.1		X X			12	
	SWING BOLT ASSEMBLY	Inspect Replace Repair	.1		X X			12	

# MAINTENANCE ALLOCATION CHART FOR AN/TVQ-2 (FISTV CONFIGURATION) (CONT)

(1)	(2)	(3)	(4)					(5)
GROUP NUMBER	COMPONENT/ASSEMBLY	MAINTENANCE FUNCTION	MAIN C	MAINTENANCE CATEGORY**			TOOLS AND EQUIPMENT	
3300 (CONT)	ADJUSTING SCREWS	Inspect Replace Repair	.1		X X			12
	LOCKING SCREW ASSEMBLY	Inspect Replace Repair	.1		X X			12
	GIMBAL AND UPPER FLANGE	Inspect Replace Repair	.1		X X			12
	LOCKING CAP, SUPPORT BALL, LOCKING PLATE, AND LOCKING HANDLE	Inspect Replace Repair	.1		Х			12
	MACHINE GUN STOWAGE MOUNT	Inspect Replace Repair	.1		X X			12
	VEHICLE POWER CONDITIONER	Inspect Replace Repair	.1		X X			2, 12

\*\* C -OPERATOR/CREW

**O** - ORGANIZATIONAL

**F** - DIRECT SUPPORT

H -GENERAL SUPPORT

D -DEPOT

SECTION II.I DELETED

				SECTION III		
то	DLS	AND	TEST	EQUIPMENT	REQUIREMENTS	

Tool or Equipment Reference Code	Maintenance Category	Nomenclature	National Stock Number
1	F	Fault Locator, PN 11507815	4931-01-046-2835
2	F	Multimeter, AN/PSM-6B	6625-00-957-4374
3	F	Oscilloscope, Tektronix 7633	6625-01-093-2261
4	F	Plug-in, Digital Multimeter 7D13	6625-00-517-6880
5	F	Plug-in, Dual Trace Amplifier 7A26	6625-00-361-5318
6	F	Plug-in, Dual Time Base 7B53A	6615-00-261-5139
7	F	Universal Counter/Timer, Plug-in	6625-00-392-2604
8	F	Power Supply	6130-00-249-2748
9	F	Gas Charging Assembly	4931-01-107-6889
10	F	Low Pressure Purge Adapter	4931-01-056-7976
11	F	Fill Valve Extension (Hi Pressure)	4931-01-057-2206
12	F	Laser System Field Maintenance Tool Kit	5180-01-048-8570
13	F	Remote Capabilities Tester (RCT), PN 11559500	4931-01-142-1289
14	F	Cable Assembly, Remote Capabilities Test- er, PN 11559506	5955-01-122-5709
15	F	Universal Battery Charger	6130-01-041-3490
16	F	Hewlett-Packard Power Supply Model No. 62688010-026	NSNL

## APPENDIX C

# COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

# SECTION I

# C-1. SCOPE

This appendix lists components of end item and basic issue itens for the G/VLLD to help you inventory items required for safe and efficient operation.

## C-2. GENERAL

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

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

b. Section III. Basic Issue Items. These are the minimum essential items required to place the G/VLLD in operation, to operate it, and Lo perform emergency repairs. Although shipped separately packaged, Basic Issue Items (B11) must be with the G/VLLD during operation and whenever it is transferred between property accounts. The illustrations will assists you with hard-to-identify items. This manual is your authority to request/requisition replacement BI[, based on TOE/MTOE authorization of the end item.

## C-3. EXPLANATION OF COLUMNS

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

Column (1) - Illustration Number (Item Fig. No). Indicates the item and figure number of the illustration in which the item is shown.

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

#### TM 9-1260-477-12

## C-3. EXPLANATION OF COLUMNS (CONT)

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

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

e. Column (5) - Quantity Required (Qty Rqrd). Indicates the quantity of the item authorized to be used with/on the equipment.

	(1)(2)(3)IllustrationNational StockDescription		(4)	(5) Qty	
Item	Fig. No.	Number	FSCM and Part Number	U/M	Rqrd
7	C-1	1260-01-126-4478	Backpack, LD/R (18876)13090504	e a	1
8	C-1	1260-01-046-2840	Backpack, TU/tripod (18876) 11508073	e a	1
12	C-1	8105-00-137-9133	Bag, plastic (26512) GS32A26N3C	e a	1
4	C-1	6140-01-046-4286	Battery, storage (18876) 11507792	e a	2
13	C-1	NSNL	Bottle, screw cap (81348) LB00560	e a	1
10	C-1	7920-00-205-0565	Brush, lens dusting (01122) 15311	e a	1
1	C-1	1260-01-126-4479	Container (18876) 13090502	e a	1
6	C-1	6850-00-127-7193	Kit, antifogging (81361) B5-16-1	kt	1
9	C-1	NSNL	Kit, lens cleaning (18876) 5952355	kt	1
3	C-1	1270-01-142-9546	Laser designator/rangefinder (18876) 13090510	ea	1
11	C-1	6640-00-559-1384	Tissue, lens cleaning (81348) NNN-P-40 TY1, CL2	bk	1
2	C-l	1440-01-046-2837	Traversing unit (18876) 11508020	e a	1
5	C - 1	1260-O l-046-2838	Tripod (18876) 11507967	e a	1

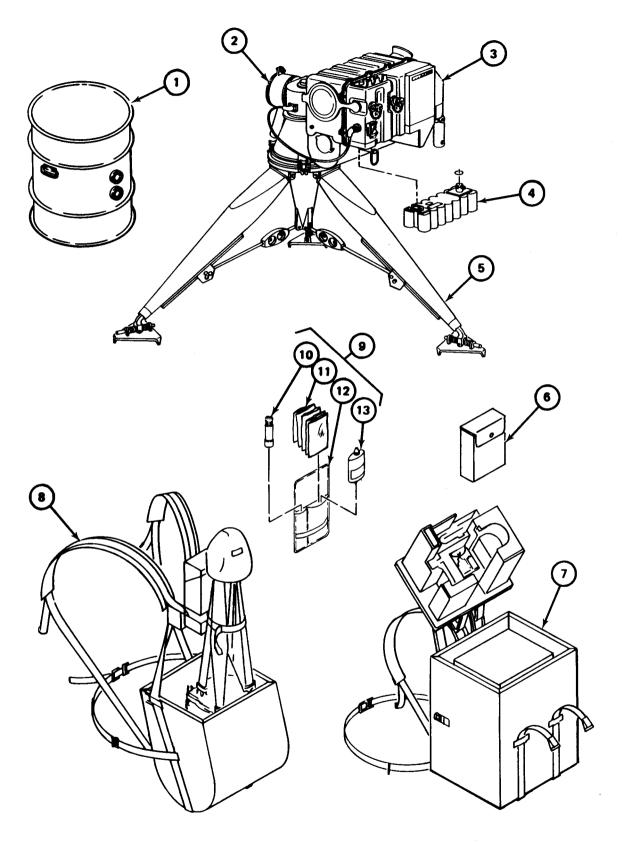
~ ~

## SECTION II COMPONENTS OF END ITEM

Change 10 C-3

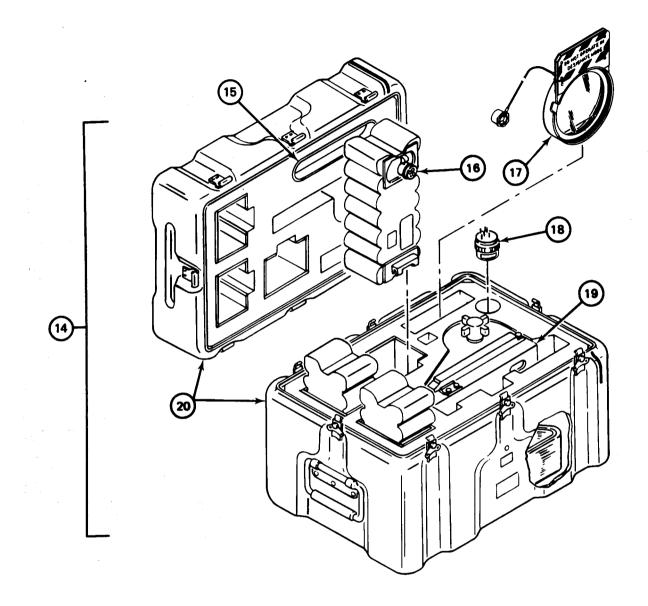
<b>T</b> 11	(1) stration	(2)	(3)	(4)	(5)
Illu Item	Fig. No.	National Stock Number	Description FSCM and Part Number	U/M	Qty Rqrd
14	C-1	1260-01-073-5878	Ancillary equipment transit assembly (18876) 11508270 which consists of:	e a	1
16	C-1	6140-01-046-4286	Battery, storage (18876) 11507792	e a	1
20	C-1	NSNL	Case, carrying (18876) 11559391	e a	1
17	C-1	1260-01-102-9226	Filter, attenuator (18876) 11508070	e a	1
19	C-1	1260-01-075-5711	Mount, night sight (18876) 11559730	e a	1
18	C-1	1260-01-102-9227	Plug, laser inhibit (18876) 11508090	e a	1
15	C-1	5340-01-134-8634	Shroud, protective (18876) 11559552 <u>Other Ancillary Equipment</u>	e a	1
25	C-1	1440-00-078-1641	Bag/shroud assembly (18876) 10679791	e a	1
21	C-1	6150-01-099-2419	Cable, adapter (18876) 11508891	e a	1
24	C-1	5995-01-098-2569	Cable, DMD interface (80063) SM-D-955459	e a	1
27	C-1	4935-01-078-5429	Cable, power conditioner (18876) 11572724	e a	1
22	C-1	6150-01-071-3822	Cable, vehicle, W2 (18876) 13033956	e a	1
26	C-1	5935-01-253-5599	Connector, NATO (18876) 11509166	e a	1
23	C-1	5915-01-073-5879	Filter, EMI (18876) 11559640	e a	1

----

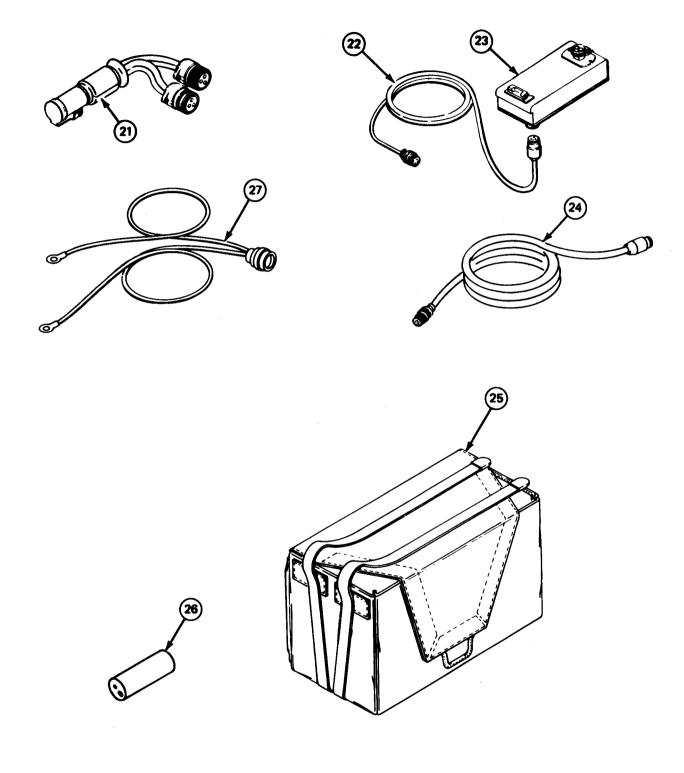


MS 544139

Figure C-1. Components of End Item (Sheet 1 of 3)



MS 544140A

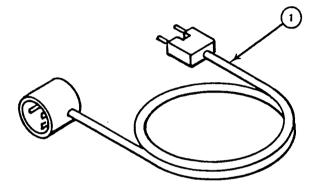


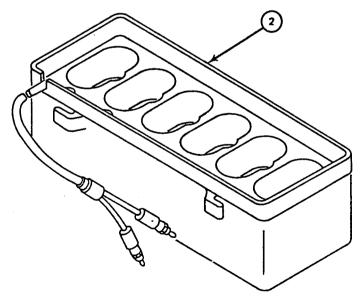
MS 544167

I

		ration Fig. No.	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqrd
I	1	C-2	1420-01-072-1020	Cable, battery charger (18876) 13034390	ea	5
	2	C-2	6130-01-092-6754	Tray, battery charging (80058) MX-10154	ay	1

SECTION III. BASIC ISSUE ITEMS





MS 544141

Figure C-2. Basic Issue Items

## APPENDIX D

## ADDITIONAL AUTHORIZATION LIST

# SECTION I

#### D.1 SCOPE

This appendix lists additional items you are authorized for the support of the G/VLLD set.

#### D-2. GENERAL

This list identifies items that do not have to accompany the G/VLLD 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.

#### D-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. If the item you require differs between serial numbers of the same model, effective serial numbers are shown in the last line of the description.

# SECTION II ADDITIONAL AUTHORIZATION LIST FOR AN/TVQ-2 (G/VLLD)

NATIONAL	DESCRIPTION		OTV
STOCK NUMBER	FSCM & PART NUMBER	U/M	QTY AUTH
7025-01-044-3824	AN/PSG-2A Digital Message Device (80063) DL-SM-B-875319 Which Consists of:	ea	1
5995-01-098-7076	AN/GRC-106 Cable (80063) SM-D-955457	ea	1
7025-01-125-6796	AN/PSG-5 FIST DMD (80058) TBD	ea	1
6140-01-071-5070	Battery Pack (80058) BB-557-U	ea	3
NSNL	Cable Carrying Case (80063) DL-4005067	ea	1
NSNL	DMD Carrying Case (80063) DL-B-4005054	ea	1
NSNL	DMD Mount (80063) A3017147	ea	1
5955-01-098-7312	External Battery Cable (80063) SM-D-955464	ea	1
5955-01-098-2569	GLLD Interface Cable (80063) SM-D-955459	ea	1
5995-01-110-6946	GRA-39 Interface Cable (56996) CX-13162/PSG-2A	ea	1
5995-01-104-0669	Radio Interface Cable (80063) SM-D-875498	ea	4
5955-01-098-2613	Vehicle Battery Cable (80063) SM-D-875489	ea	1
5955-01-098-7077	Vehicle Receptacle Cable (80063) SM-D-917637	ea	1

NATIONAL	DESCRIPTION		
STOCK NUMBER	FSCM & PART NUMBER	U/M	QTY AUTH
5855-01-083-9053	AN/UAS-12 Equipment Set (80063) SM-A-808744 Which Consists of:	ea	1
5855-01-067-8672	AN/TAS-4 Night Sight Handling Case (80063) SM-D-772512-1	ea	1
5855-01-037-7339	AN/TAS-4 Night Vision Sight (80063) SM-C-772000	ea	1
5855-01-118-2226	Block and Plunger (80063) SM-C-771750	ea	1
5855-01-109-6433	Boresight Collimator (80063) SM-C-775002	ea	1
5850-01-076-1337	Boresight Collimator Carrying Case (80063) SM-D-806491-1	ea	1
5855-01-047-2136	Coolant Cartridge Pack (80063) SM-C-804439	ea	3
5855-01-077-4518	Equipment Cover (80063) SM-D-804553-1	ea	1
5855-01-077-4627	Input Cable Assembly W1 (80063) SM-D-771815	ea	1
8120-01-070-3959	Installed Coolant Cartridge Cylinder (80063) SM-C-804790	ea	1
6140-01-056-5321	Installed Storage Battery (80063) SM-C-772052-1	ea	1
5855-01-143-4488	Lens Cleaning Kit (80063) SM-C-804452 Which Consists of:	ea	1
8105-01-071-3658	Bag (80063) SM-C-804737-1	ea	1
6640-01-104-3368	Bottle (80063) SM-C-804739	dz	1
5855-01-072-4276	Pads (80063) SM-C-804738-1	ea	6

NATIONAL	DESCRIPTION		
STOCK NUMBER	FSCM & PART NUMBER	U/M	QTY AUTH
6140-01-049-5342	Night Sight Battery Pack (80063) SM-C-804438	ea	1
5855-01-077-4628	Output Cable Assembly W2 (80063) SM-D-771816-1	ea	1
5855-01-049-5354	Vehicle Power Conditioner (80063) SM-D-772049	ea	1
5999-01-254-2755	VPC Box Assembly (80063) SM-D-772006	ea	1
5855-01-173-0808	AN/UAS-12B Equipment Set (18876) 13220200 Which Consists of:	se	1
5855-01-174-2464	AN/TAS-4B Night Sight Handling Case (80063) SM-D-969618	ea	1
5855-01-154-1402	AN/TAS-4B Night Vision Sight (18876) 13220201	ea	1
5855-01-163-8152	Battery Carrying Case (800631) SM-D-969617	ea	1
6135-01-143-4470	Battery Power Conditioner (80063) SM-D-969142	ea	1
5855-01-157-3093	Battery Power Conditioner Handling Case (80063) SM-D-969143-1	ea	1
5855-01-118-2226	Block and Plunger (80063) SM-C-771750	ea	1
5855-01-109-6433	Boresight Collimator (80063) SM-C-775002	ea	1
5850-01-076-1337	Boresight Collimator Carrying Case (80063) SM-D-806491-1	ea	1
5855-01-077-4518	Equipment Cover (80063) SM-D-804553-1	ea	1
5855-01-077-4627	Input Cable Assembly W1 (80063) SM-D-771815	ea	1

# SECTION II. ADDITIONAL AUTHORIZATION LIST FOR AN/TVQ-2 (G/VLLD) (CONT)

## TM 9-1260-477-12

NATIONAL STOCK NUMBER	DESCRIPTION FSCM & PART NUMBER	U/M	QTY AUTH
5855-01-143-4488	Lens Cleaning Kit (80063) SM-C-804452 Which Consists of:	e a	1
8105-01-071-3659	Bag (80063) SM-C-804737-2	e a	1
6640-01-104-3368	Bottle (80063) SM-C-804739	d z	1
5855-01-072-4276	Pads (80063) SM-C-804738-2 or SM-C-969371	e a	6
6135-01-036-3495	Lithium Battery (80058) BA-5590/U	e a	4
5855-01-144-2920	Output Cable Assembly W2 (80063) SM-C-969173	e a	1
5855-01-143-9399	Output Cable W1 (80063). SM-D-969174	e a	1
5855-01-143-3181	Vehicle Power Conditioner (80063) SM-C-969172	e a	1
5935-01-179-3461	Connector Cover (81349) MIL-C-38999	e a	1
1260-01-106-8498	Modification Kit (18876) 5952326	kt	1
1260-01-141-5191	M113A1 Adapter (18876) 11575880	e a	1
1260-01-082-4981	M113A1 Vehicle Adapter Kit (18876) 5952328	e a	1
1260-01-172-0850	Vehicle Adapter (18876) 11508989	e a	1
5855-01-329-3519	AN/UAS-12D Equipment Set (18876) 13314213 Which Consists of:	s e	1
5855-01-174-2464	AN/TAS-4D Night Sight Handling Case (80063) SM-D-969618	e a	1
5855-01-318-5173	AN/TAS-4D Night Vision Sight (18876) 13314217	e a	1
5855-01-163-8152	Battery Carrying Case (80063) SM-D-969617	e a	1

#### TM 9-1260-477-12

NATIONAL STOCK NUMBER	DESCRIPTION FSCM & PART NUMBER	U/M	QTY AUTH
STOCK NOMBER	FSCM & FART NOWDER	U/IVI	AUTH
6135-01-143-4470	Battery Power Conditioner (80063) SM-D-969142	e a	1
5855-01-157-3093	Battery Power Conditioner Handling Case (80063) SM-D-969143-1	e a	1
5855-01-118-2226	Block and Plunger (80063) SM-C-771750	e a	1
5855-01-109-6433	Boresight Collimator (80063) SM-C-775002	e a	1
5850-01-076-1337	Boresight Collimator Carrying Case (80063) SM-D-806491-1	e a	1
5855-01-077-4518	Equipment Cover (80063) SM-D-804553-1	e a	1
5855-01-077-4627	Input Cable Assembly W1 (80063) SM-D-771815	e a	1
5855-01-143-4488	Lens Cleaning Kit (80063) SM-C-804452 <u>Which Consists of:</u>	e a	1
8105-01-071-3659	Bag (80063) SM-C-804737-2	e a	1
6640-01-104-3368	Bottle (80063) SM-C-804739	dz	1
5855-01-072-4276	Pads (80063) SM-C-804738-2	e a	6
6135-01-036-3495	Lithium Battery (80058) BA-5590/U	e a	4
5855-01-144-2920	Output Cable Assembly W2 (80063) SM-D-969173	e a	1
5855-01-143-9399	Output Cable W1 (80063) SM-D-969174	e a	1
5855-01-143-3181	Vehicle Power Conditioner (80063) SM-C-969172	e a	1

#### APPENDIX E

#### EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

#### SECTION I INTRODUCTION

#### E-1. SCOPE

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the G/VLLD set. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expend-able/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable items.

#### E-2. EXPLANATION OF COLUMNS

a. <u>Column (1)</u> - <u>Item Number</u>. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Using isopropyl alcohol, item 2, appendix E").

b. <u>Column (2). Level.</u> This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

O - Organizational Maintenance

c. <u>Column (3)</u> - <u>National Stock Number</u>. This is the National stock number assigned to the item; use it to request or requisition the item.

d. <u>Column (4)</u> - <u>Description</u>. Indicates the Federal item name and, if required, a description to identify the item.

e. <u>Column (5)</u> - <u>Unit of Measure (U/M)</u>. 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.

(1)	(2)	(3)	(4)	(5)
Item number	Level	National Stock No.	Description	U/M
1	0	7920-00-514-2417	Brush, acid swabbing	e a
2	0	6505-00-261-7256	Isopropyl alcohol	qt
3	С	6850-00-127-7193	Kit, antifogging	kt
4	С	NSNL	Kit, lens cleaning	e a
	С	8105-00-137-9133	a. Bag, plastic	e a
	С	6125-00-824-9058	b. Bottle, screw cap	e a
	С	7920-00-205-0565	c. Brush, lens dusting	e a
	С	6640-00-597-6745	d. Tissue, lens cleaning	bk
5	0	9510-01-076-1817	Lubricant	pt
6	0	7920-00-205-1711	Rags, cotton wiping	e a
7	0	7930-00-880-4454	Solution, cleaning	pt
9	0	6810-00-682-6867	Water, distilled	gal

#### SECTION II EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST FOR AN/TVQ-2 (G/VLLD)

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

Distribution:

To be distributed in accordance with DA Form 12–32, Section II, Organizational Maintenance requirements for GLLD Missile System.

☆U.S. GOVERNMENT PRINTING OFFICE: 1995 - 633-072/20150

	~			RECOM	IENDED CHAI	NGES T	D EQUIPMENT TECHNICAL PUBLICATIONS
$\overline{7}$	5	Ν			SOMET	HONG	WRONG WITH THIS PUBLICATION?
			DOPE A. FORM, C OUT, FO	BOUT IT CAREFUL DLD IT A	WWN THE ON THIS LY TEAR IT ND DROP IT	CDR ATTI Key	(PRINT YOUR UNIT'S COMPLETE ADDRESS) 1st Bn, 65th ADA 1: SP4 John Doe West, FL 33040
		RU	IN THE	MAIL.'	)	DATE	sent January 1979
PUBLICA	TION NUME	BER			PUBLICATION	DATE	PUBLICATION TITLE Unit of Radar Set
	1430-5				7 Sep 7	2	AN/MPQ-50 Tested at the HFC
PAGE NO.	CT. PIN-F PARA- GRAPH	FIGURE	TABLE		S SPACE TELL HAT SHOULD		
9-19		9-5		That	contact wh	ich is	s shown with two #9 contacts. wired to pin 8 of relay K16 contact #10.
21-2	step 1C		21-2	Reads K ohm		ter B	indicates 600 K ohms to 9000
24				Chang minim		Mul	timeter B indicates 600 K ohms
				Reaso Multi corre	meter can	t bein read a	ng checked could measure infinity. above 9000 K ohms and still be
			/	NOTE	TO THE REA	DER:	
	SAMP			respo the r his e the r	nsible for eply that valuation	this is rea of you each d	o directly to the writer manual, and he will prepare curned to you. To help him in ar recommendations, please explain of your recommendations, unless
				immed			appreciated, and will be given Handwritten comments are
				prepr	our conven inted, add is manual.	ience, ressec	blank "tear out" forms, l, and ready to mail, are included
PRINTED N	IAME, GRADI				IEB T	SIGN HE	3E
	hn Doe						
	RM 20	28-2		REVIOUS E RE OBSOL	EDITIONS ETE.	RI	SIF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR COMMENDATION MAKE A CARBON COPY OF THIS ID GIVE IT TO YOUR HEADQUARTERS.

			THEN JO DOPE ABO FORM, CA	DT DOWN THE DUT IT ON THI REFULLY C D IT AND DRO	S UT IT		RONG		PUBLICATION?
BLICATI	ON NUMBER				TION DATE	L	PUBLICATION TITLE		
AGE NO.	PARA- GRAPH	FIGURE NO.	TABLE NO.	IN THE SPACE TE		ABOUT IT:			
		2028		PRE	VIOUS EDITIO			OUR QUITHT WANTS	TO KNOW ABOUT YOUR ARBON COPY OF THIS

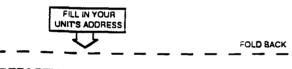


1

I

CUT ALONG THIS LINE

1 1



## DEPARTMENT OF THE ARMY

Commander U.S. Army Missile Command ATTN: AMSMI-MMC-LS-LP Redstone Arsenal, AL 35898-5238

			THEN JO DOPE ABO FORM, CA	SOMETH DUT IT ON THE REFULLY CUT DIT AND DROP IT IL!	IT	RINT YOUR UNIT'S COM	WITH THIS PUBLICATION
JBLICATK	ON NUMBER			PUBLICATION	DATE	PUBLICATION TITLE	
PAGE NO.	PARA- GRAPH	FIGURE NO.	TABLE NO.	AND WHAT SHOULD BE			
PRINTED	NAME, GRAC	DE OR TITLE, A	ND TELEPHON	ENUMBER	SIGN HERE		<u>.</u>

1

CUT ALONG THIS LINE

т | |

ł

| | | | |

1



1

¥.

.....

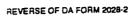
a the the first of the first of

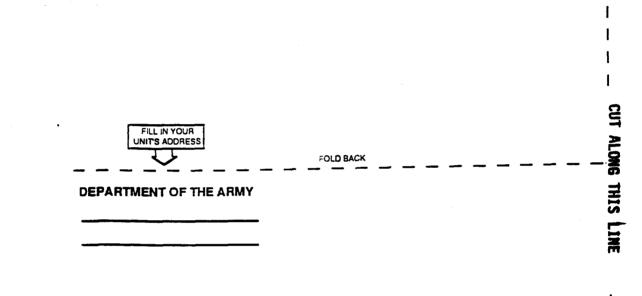
FOLD BACK

#### DEPARTMENT OF THE ARMY

Commander U.S. Army Missile Command ATTN: AMSMI-MMC-LS-LP Redstone Arsenal, AL 35898-5238

7,							RONG	WITH THIS PU	BLICATION?
			DOPE ABO FORM, CL	OT DOWN OUT IT ON REFULL D IT AND	<i>THIS</i> Y CUT IT	DATE SEN			
BLICATI	ON NUMBER		N THE M	A/L!	BLICATION DAT		PUBLICATION TITLE	<u> </u>	
	PIN-POINT				CE TELL WHAT SHOULD BE DO				
PAGE NO.	PARA- GRAPH	FIGURE NO.	TABLE NO.						
	Į			}					
		ľ							
	[	[	[						
	{	{		]					
			]	]					
	]		]	]					
			{						
				[					1
	<b>[</b>			1					
		l							
	ł								
			]						
				}					
			1	1					
	{	}	}						
		1	]	1					
	l	}	}						
PRINTED	NAME. GRAC	E OR TITLE, AN	D TELEPHO	IE NUMBER		SIGN HERE			
								~	
ר ר	FORM	2028-	<b>^</b>		ARE OBSOLE			JR OUTFIT WANTS TO KN IDATION MAKE A CARBO	





Commander U.S. Army Missile Command ATTN: AMSMI-MMC-LS-LP Redstone Arsenal, AL 35898-5238

PIN: 050573-000