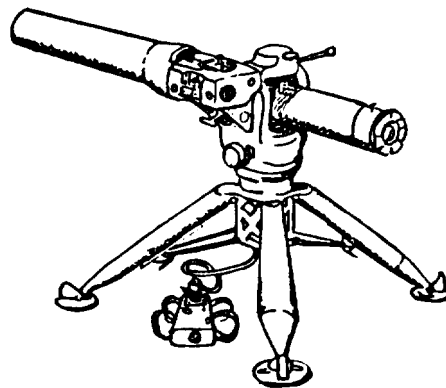


OPERATOR'S MANUAL
MULTIPLE INTEGRATED LASER
ENGAGEMENT SYSTEM
(MILES)
SIMULATOR SYSTEM, FIRING LASER: M64
(NSN 1265-01-077-6083),

FOR

TOW STANDARD
TOW LONG RANGE
TOW II
TOW II EXTENDED

WEAPON SYSTEMS



DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

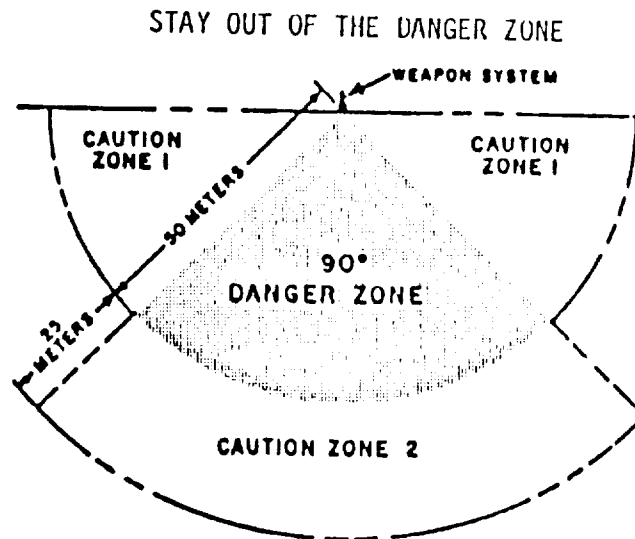
HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1988



WARNING

**CAUTION 1:
Ear Damage**



**CAUTION 2:
Flying Debris**

NEVER STAND WITHIN THE DANGER ZONE WHILE LOADING THE ATWESS. ALWAYS STAND TO THE RIGHT SIDE OF THE REAR OF THE LAUNCHER. AFTER THE CARTRIDGE IS INSERTED INTO THE CHAMBER, KEEP HANDS, ARMS, AND OTHER PORTIONS OF THE BODY AWAY FROM THE HOLE IN THE CENTER OF THE BREECH DOOR. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN PERSONNEL BEING BURNED BY THE BACKBLAST ESCAPING THROUGH THE HOLE IN THE CENTER OF THE BREECH DOOR.

NEVER ARM AN ATWESS UNTIL YOU ARE READY TO FIRE.

TREAT THE TOW/MILES AS YOU WOULD ANY LOADED AND ARMED WEAPON. DO NOT DROP TOW/MILES WHEN ATWESS IS LOADED AND ARMED. A STRONG JOLT MAY SET OFF THE ATWESS.

HANDLE ATWESS CARTRIDGES WITH THE SAME CARE YOU USE WITH ANY LIVE AMMUNITION.

ALWAYS WEAR EARPLUGS WHEN FIRING THE TOW/MILES.

ALTHOUGH THE LASER LIGHT EMITTED BY MILES LASER TRANSMITTERS IS CONSIDERED EYE SAFE BY THE BUREAU OF RADIOLOGICAL HEALTH, SUITABLE PRECAUTIONS MUST BE TAKEN TO AVOID POSSIBLE DAMAGE TO THE EYE FROM OVEREXPOSURE TO THIS RADIATED ENERGY. TAKE THE FOLLOWING PRECAUTIONS:

- o NEVER LOOK AT THE LASER EMITTER AT CLOSE RANGE (LESS THAN 12 METERS).
- o NEVER LOOK AT THE LASER EMITTER THROUGH OPTICS SUCH AS BINOCULARS, TELESCOPES, OR WEAPON SIGHTS AT RANGES LESS THAN 75 METERS.
- o NEVER LOOK AT THE LASER EMITTER DIRECTLY ALONG THE AXIS OF THE BORE OF THE WEAPON.

TAPE MOUNTING PRIMER IS HIGHLY FLAMMABLE. DO NOT SPRAY NEAR HEAT, SPARKS, OR OPEN FLAME. NO SMOKING. USE ONLY IN WELL-VENTILATED AREAS.

FOR INFORMATION ON FIRST AID, SEE FM 21-11.

TECHNICAL MANUAL

TM 9-1265-368-10-2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 JULY 1988

**OPERATOR'S MANUAL
MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES)
SIMULATOR SYSTEM, FIRING, LASER: M64
NSN 1265-01-077-6083
FOR
TOW STANDARD
TOW LONG RANGE
TOW II
TOW II EXTENDED
WEAPON SYSTEMS**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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* Supersedes TM 9-1265-368-10-2 dated 22 January 1982, including all changes.

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Storage Instructions

The MILES equipment for the TOW/MILES is shown in Task 1 of this Technical Manual (TM). Use the picture with Task 1 as a guide for equipment distribution. Be sure to issue a copy of this TM along with the MILES equipment.

Equipment Return and Storage:

CAUTION

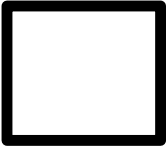
MAKE CERTAIN THAT THE MWLD TORSO AND HELMET HARNESS ARE COMPLETELY DRY BEFORE STORAGE IN TRANSIT CASE.

When receiving equipment for storage, always inspect the returned equipment using Task 18 in this TM for guidance.

Return all MILES equipment and the TMs to their transit cases.

Special Instructions for Infrequently Used Equipment:

If TOW/MILES equipment is unused for 60 days, remove from transit case and perform Tasks 1, 2, 3, 8, and 18 in this TM.

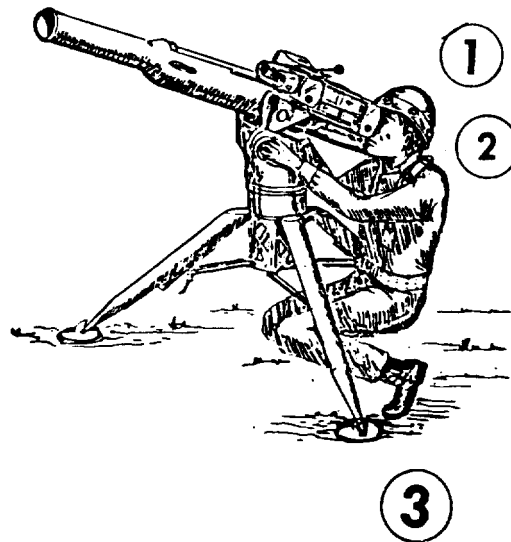


Skills Needed To Use This Manual

TO USE THIS MANUAL, YOU MUST BE ABLE TO:

1. Set up a TOW weapon system for firing (See TM 9-1425-470-12, or TM 9-1425450 for TOW II.)
2. Aim, fire, and track a TOW.
3. Complete DA Form 2402.

IF YOU CAN NOT DO THESE TASKS, ASK YOUR NCO OR INSTRUCTOR-TO SHOW YOU HOW. WHEN YOU CAN DO ALL THE TASKS, GO ON WITH THIS MANUAL.



1. REPORT AGENCY SYMBOL		2. DATE	
3. ORGANIZATION SYMBOL		4. <input type="checkbox"/> NEW ENTRY <input type="checkbox"/> CHANGE	
5. NAME		6. NEIGHBOR SIGNATURE	
7. PO	8. PO AFFIRMATION		
9. DTD 10. IDENTIFIER		11. DTD 12. SERIAL NO.	
13. RESPONSIBILITY OR OFFICE			
14. DATE ACCEPTED		16. SIGNATURE	15. DTD
17. JOB		19. INITIALS	18. DTD
20. DATE RELEASED		21. INITIALS	

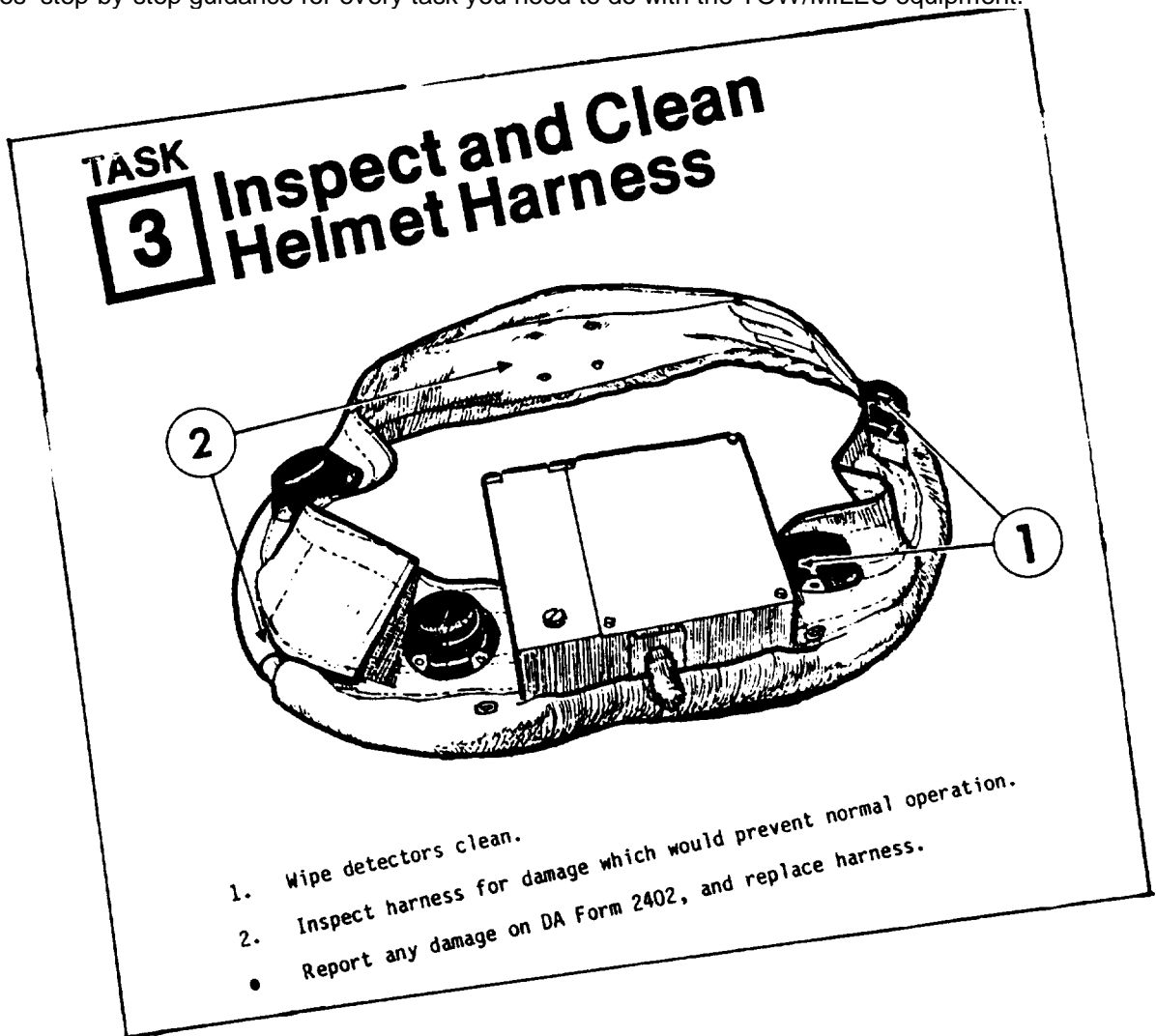
TASK



How to Use This Manual

Before you use any TOW/MILES equipment, read this manual.

- The first part of the manual briefly explains the purpose of the equipment and how it is used.
- Then comes step-by-step guidance for every task you need to do with the TOW/MILES equipment.



- The task pages look like this. Some longer tasks run more than one page. Before you begin a task, read all of the steps in that task and look at each drawing carefully. To help perform the task, some steps have matching numbers in the drawings. Do each step just the way you are instructed.

HOW TO USE THIS MANUAL. CONTINUED:

- Do each task in the order it occurs in the manual.

- DON'T JUMP AHEAD - DON'T SKIP ANY STEPS -

- If your equipment has a problem you can't fix using this manual, report it on DA Form 2402. To get a replacement, turn in the faulty equipment and the completed DA Form 2402 to your NCOIC.
- In the back of this manual is a list of abbreviations and an explanation of terms (Glossary) used in this manual. If you read a word you don't understand, check the list of abbreviations and glossary for an explanation.



General Information

This manual shows you how to operate and maintain the TOW/MILES laser simulator equipment. The operator and maintenance tasks are listed in the Table of Contents on Pages i and ii.

Purpose of Equipment:

MILES equipment for the TOW consists of a laser transmitter and a laser detector system. The simulator system allows realistic combat training without the hazards of using live ammunition.

Forms and Records:

- a. Reports of Maintenance or Equipment Replacement.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

- b. Reporting Equipment Improvement Recommendations (EIRs).

EIRs can and must be submitted by, anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. EIRs may be submitted on SF 368. Mail directly to: Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAD, Rock Island, IL 61299-6000. A reply will be furnished to you.

c. Hand Receipts Manual.

Hand receipts for Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorizational List (AAL) items are published in a Hand Receipt manual, TM 9-1265-368-10-2-HR. This manual is published to aid in property accountability and is available through: Commander, the U.S. Army Adjutant General Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220.



Equipment Description

Capabilities and Features:

Major components of the TOW/MILES are:

- a. Man-Worn Laser Detector Assemblies (MWLD) worn by individual crew members, each consisting of a helmet harness and a torso harness.
- b. Eye-safe laser transmitter mounted in simulated TOW Daysight Tracker.
- b. Anti-tank Weapon Effects Signature Simulator (ATWESS) mounted inside of simulated TOW launch tube.

The TOW/MILES can be operated in temperatures from -35°C (-31°F) to 62° (144°F). It permits tactical skills to be practiced under realistic conditions.

The laser transmitter sends harmless, invisible laser (light) beams toward the target. If the laser beam hits the target, detector assemblies on the target sense the beam and cause an alarm to sound. In addition, if the target is a vehicle, an externally-mounted light on the vehicle will flash.

The ATWESS device provides a realistic weapon signature, including muzzle flash, noise, and backblast smoke.

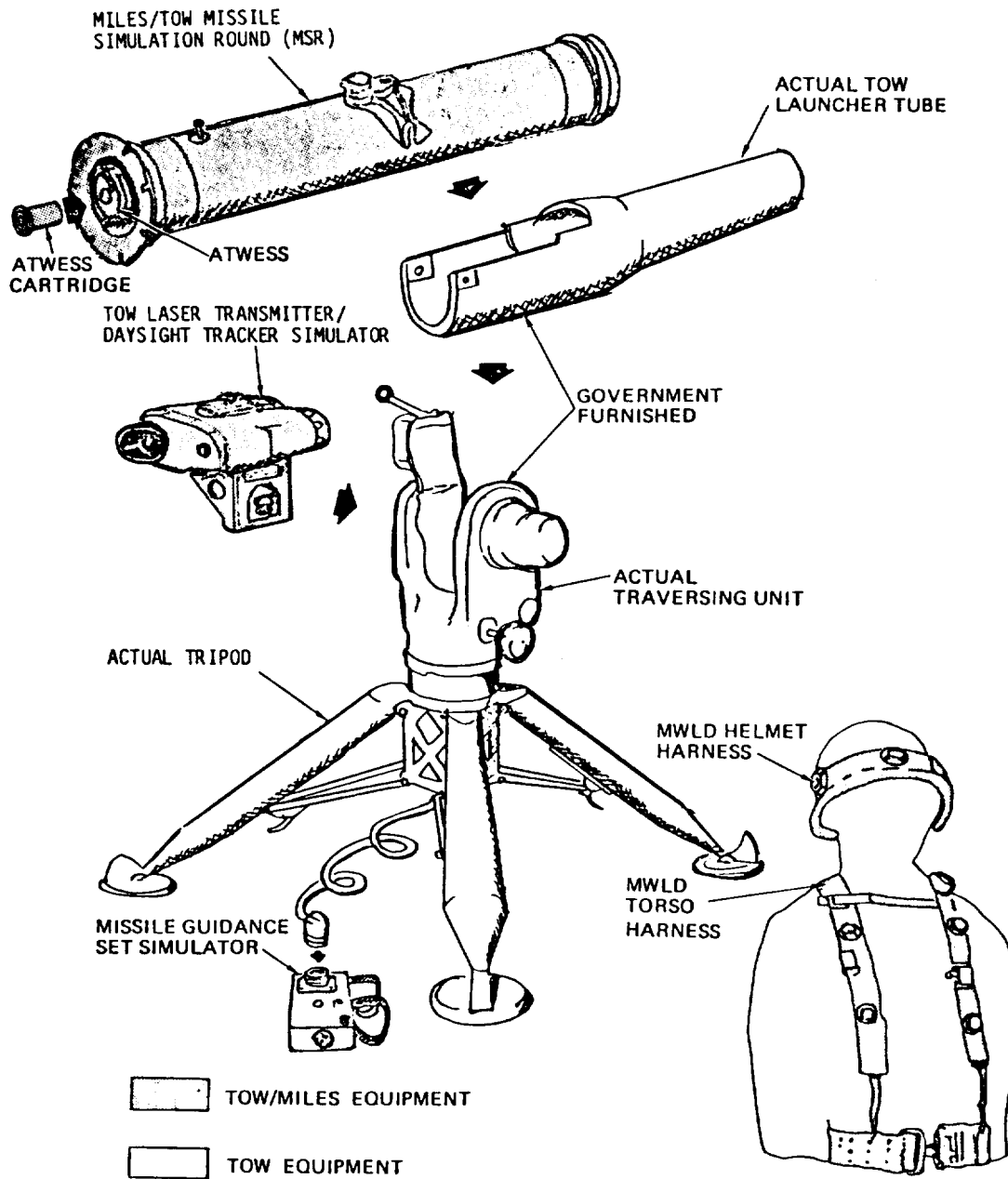
MILES simulator systems for TOW weapons come equipped with transmitters for either a 3000 or 3750 meter range. Also, two versions of MILES MGS boxes are used, one for basic TOW and another for TOW II weapons. These weapons are covered in this manual. The version you have will depend on the weapon application. Installation and operation for these versions are identical.

Minor part differences for TOW/MILES systems are shown in Components of End Item Lists in Appendix B.

Battery Information:

The TOW/MILES uses a BA-3090/U, 9-volt alkaline battery which provides approximately 100 hours of power.

LOCATION OF COMPONENTS:



How it Works:

MILES-equipped weapons work much like the real weapons. However, instead of firing TOW missiles, the MILES-equipped weapons fire harmless laser light beams at targets. To make the MILES-equipped weapon simulation as realistic as possible, the TOW missile launcher uses the ATWESS device. The ATWESS provides the same kind of backblast as does the actual missile.

How the MILES Equipment is Used:

- After the equipment has been inspected and tested, you will be ready for the exercise.
- To operate the MILES-equipped TOW:
 - Load an ATWESS cartridge into the REAR of the TOW/ATWESS tube assembly.
 - Fire the weapon. The ATWESS fires immediately, providing backblast and smoke to simulate a missile launch.
 - Continue tracking the target. One second after firing, the laser fires a beam and keeps the beam on for 10 seconds. So the total tracking time for firing is 11 seconds.
 - You may fire a round every 15 seconds.

Since the Improved TOW Vehicle (ITV) has the capability of carrying 12 missiles, the TOW/MILES rounds remaining counter will initially display a 12.

- Because you must use the ATWESS when firing the TOW, you need sufficient ATWESS cartridges for each exercise, based on the missile carrying capability of your unit.
- After firing the TOW, you can check to see how many "rounds" the MILES system says you have left. This is done by pressing the Press-to-Read button on the MGS Simulator Box and reading the display.
- The TOW/MILES also has a dry-fire (Non-ATWESS) mode. To fire the transmitter without using an ATWESS cartridge, a Controller key must be inserted in the MGS Box and turned to the dry-fire mode. Normally, this mode is used only for testing the equipment.

- If any one of the six laser detectors on the TOW tracker head are hit by laser fire, one of two things will happen.
 1. The alarm on the MGS Box will beep one time. This indicates a "near miss".
 2. The alarm will beep continuously. This indicates a "kill". The TOW transmitter is automatically disabled and can no longer fire until reset by the Controller.
- To turn off the alarm following a "kill", unplug the MGS Box from the coil cord or ask the Controller to reset the TOW/MILES system.

The TOW Miles/operator wears the MWLD: a harness equipped with a laser detector assembly and alarm. If opposing forces fire a MILES-equipped weapon at the TOW/MILES operator, one of two things may happen:

- Your alarm beeps for one second. Take cover . . . the enemy scored a near miss.

Or
- Your alarm beeps continuously. You have been "killed" use a yellow weapon key to shut-off the alarm.

Once the alarm sounds, the weapon key must remain in the detector assembly harness. Removal of the weapon key from the harness will cause the alarm to sound again. This "Killed" condition can only be cleared by a Controller with the Controller key.

Equipment Limitations:

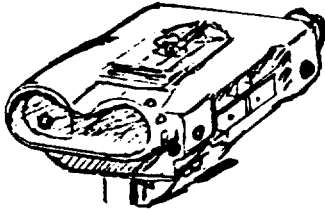
CAUTION
NEVER PLUG A TOW/MILES DAYSIGHT TRACKER SIMULATOR INTO ACTUAL TO&E MISSILE GUIDANCE SET (MGS). YOU WILL DAMAGE THE TOW/MILES EQUIPMENT.

The TOW/MILES system has the same range, operational capabilities, and limitations as the regular TOW weapons system. Factors which may reduce the effective range of a TOW/MILES system are a dirty laser transmitter lens and nearly-exhausted batteries.

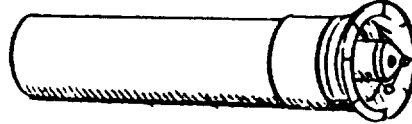
TASK

1

Get This Equipment From Your NCOIC



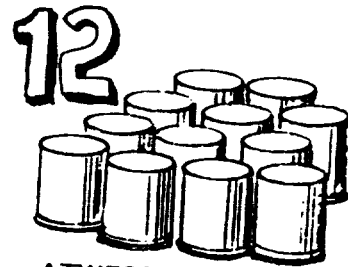
TOW/MILES DAYSIGHT TRACKER



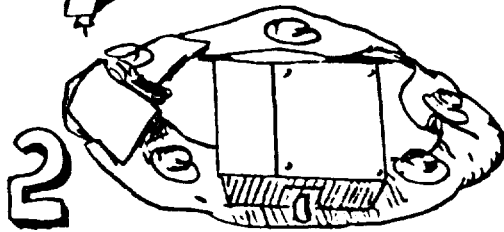
TOW/ATWESS MISSILE SIMULATION ROUND



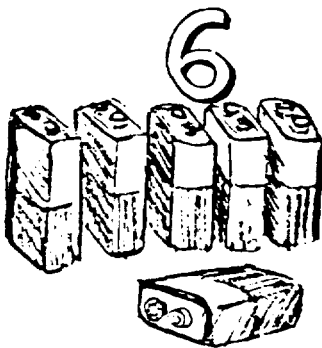
2 MULD TORSO HARNESS



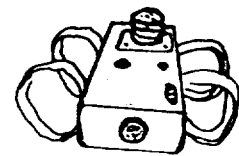
12 ATWESS CARTRIDGES



2 MULD HELMET HARNESS



6 9-VOLT BATTERIES



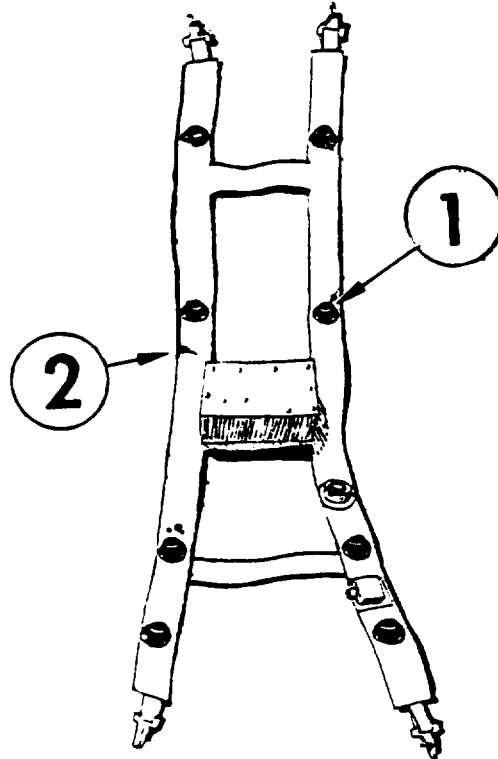
MGS SIMULATOR

TASK

Inspect and Clean Torso Harness

2

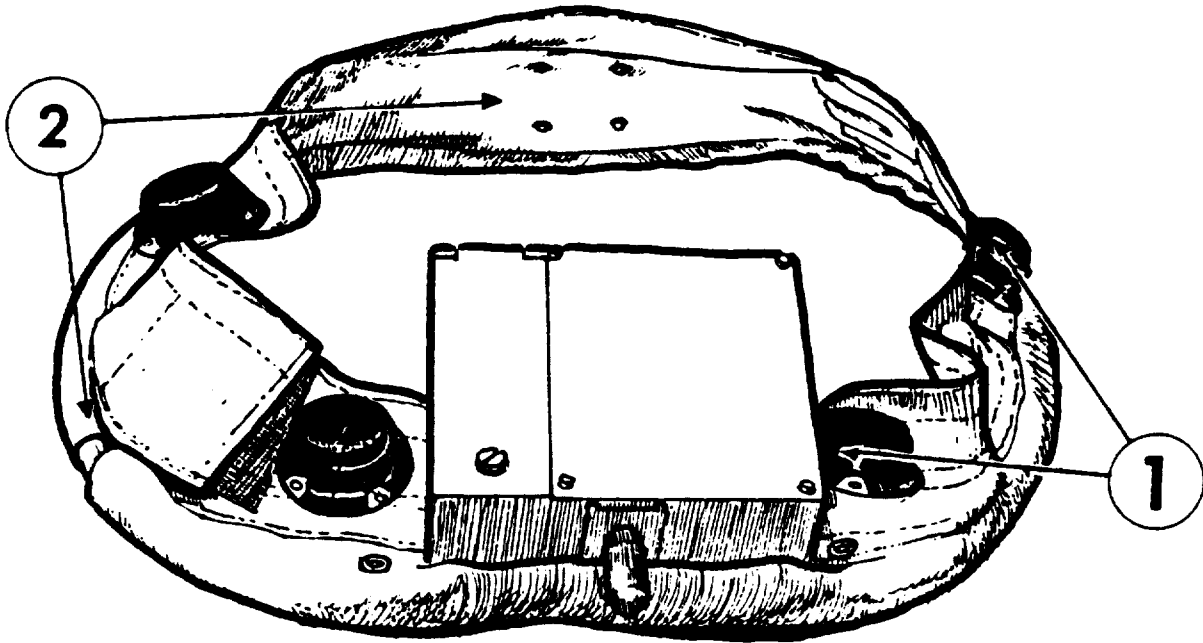
1. Wipe detectors clean.
 2. Inspect harness for damage which would prevent normal operation.
- Report any damage on DA Form 2402, and replace torso harness if inoperable.



TASK

Inspect and Clean Helmet Harness

3

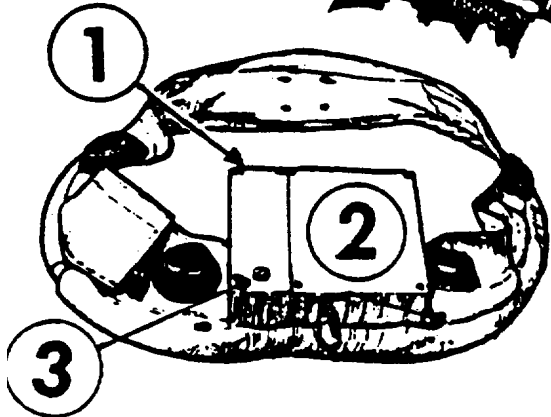
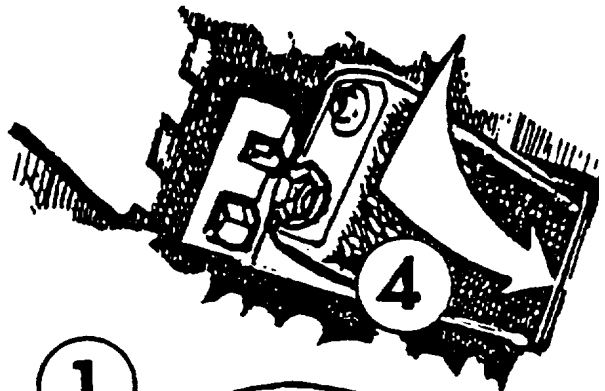
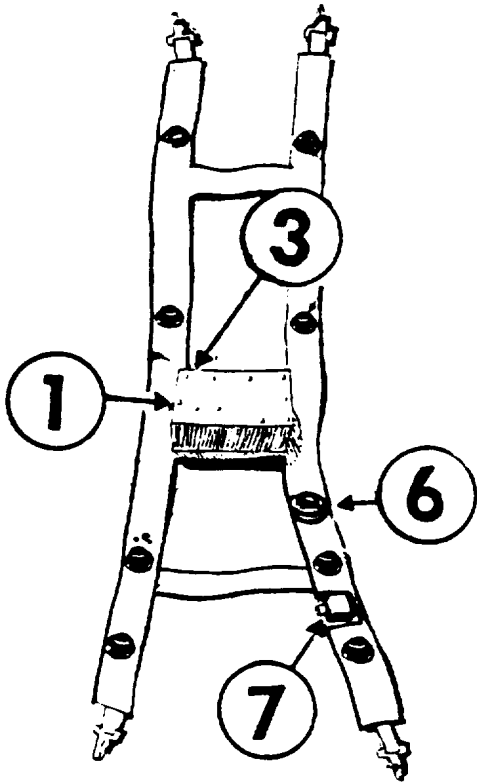


1. Wipe detectors clean.
 2. Inspect harness for damage which would prevent normal operation.
- Report any damage on DA Form 2402, and replace harness.

TASK

Install Batteries in MWLD Harnesses

4



Ask your NCOIC to call the Controller.

1. Locate battery boxes on both MWLD helmet and torso harnesses.
2. First, put a battery in the helmet harness.
3. Loosen thumbscrew and open door.
4. Insert battery as shown.
5. Close door and tighten thumbscrew.
6. Put battery in torso harness, repeating steps 3, 4, and 5.

When you insert a battery in the torso harness, an alarm should sound. If no alarm, remove and reinsert the same battery. If still no alarm, get a new battery from your NCOIC and try again. If still no alarm, report on DA Form 2402, and replace torso harness.

7. Ask Controller to insert his green key in key receptacle and turn off alarm.

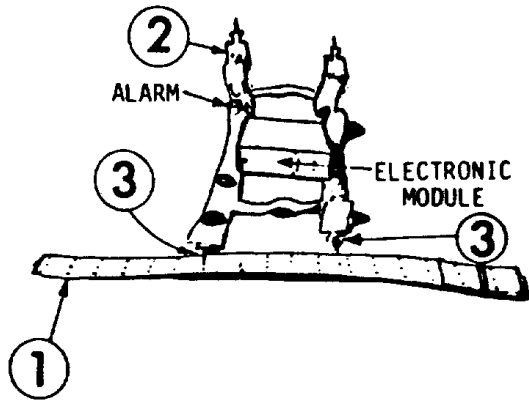
NOTE

Be sure to insert batteries in both the helmet and torso harnesses.

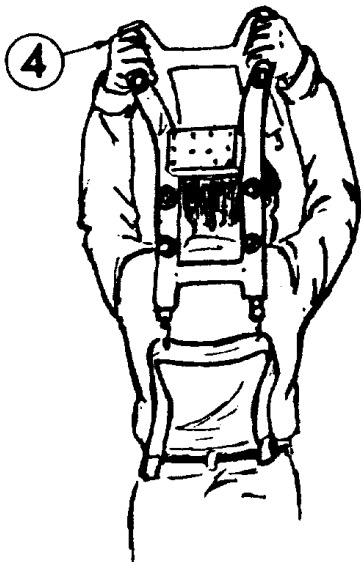
TASK

5

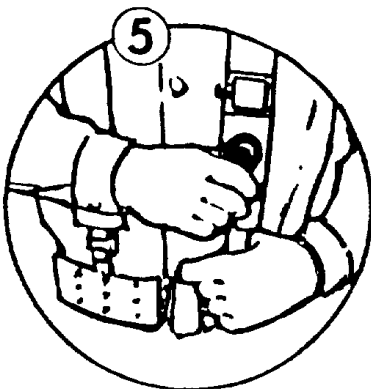
Put on Torso Harness



- If you are wearing them, remove the suspenders from your web gear.
1. Remove your web belt and lay it next to the harness as shown.
 2. The harness should be laid out with the alarm positioned above the electronics unit.
 3. Fasten both clips to the belt.



4. With your web belt at the bottom, raise the harness and then lower it over your head.



5. Fasten your web belt and connect the harness to the belt. Adjust harness so battery box is at the back of your collar, at the collar line.

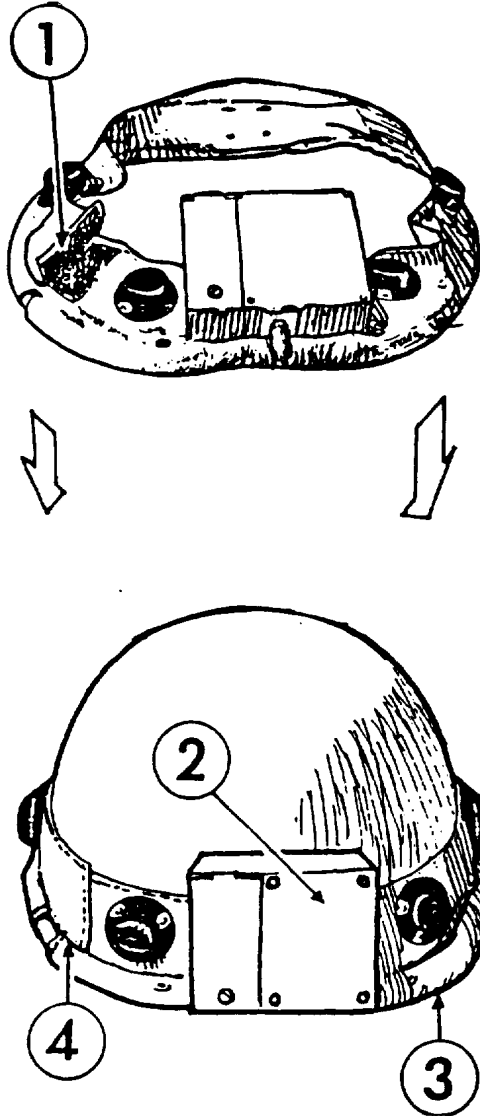
TASK

6

Put Helmet Harness on Helmet

NOTE

If you have the Steel Ground Troop Helmet, M1, follow the instructions on this page. If you have the PASGT Helmet, follow the instructions on page 18.



- Make sure the chin strap on your steel helmet is hanging loose.

1. Pull back flap to loosen helmet harness.

2. Place harness over helmet with electronic module at rear.
3. Be sure that the thick bottom edge of the harness completely covers and overhangs the rim of the helmet.
4. Pull the flap tight and fasten it.
5. Now put on helmet. Wear helmet with chin strap fastened. The added weight of the harness makes this necessary.

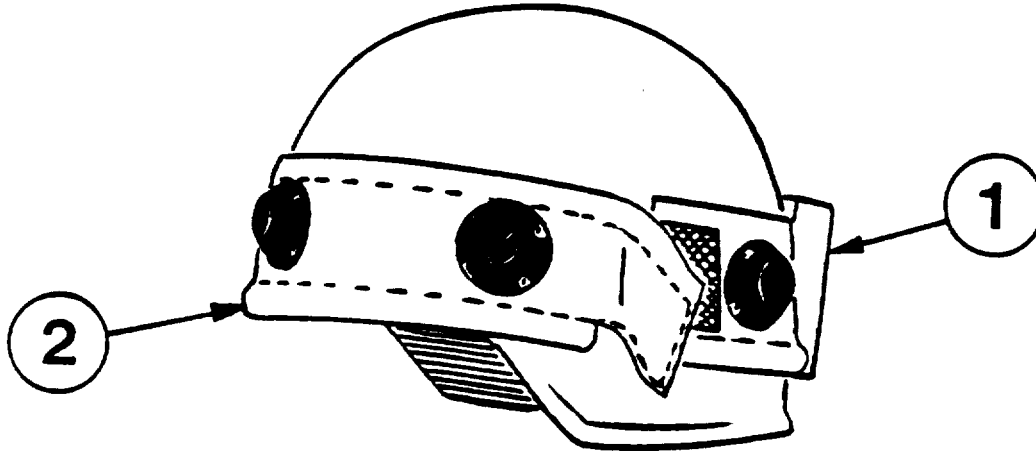
TASK

Install Velcro[®] Tape on PASGT Helmet

6

NOTE

These instructions pertain only to the PASGT Helmet. If you have the Steel Ground Troop Helmet, M1, use the instructions on page 17.



NOTE

If your PASGT Helmet already has five patches of Velcro installed, skip to the instructions on page 19.

PASGT Helmets require five patches of Velcro, glued to the outside to hold the MWLD helmet harness in place. The Velcro patches must be attached in the proper position on the helmet so that they will mate with the five patches of Velcro which are attached to the harness.

1. Slip the MWLD helmet harness over the PASGT helmet so that the electronics box is at the rear.
2. Make sure the thick bottom edge of the harness completely covers and overhangs the rim of the helmet in the front portion of the helmet.
3. Pull the harness tight and mark the areas of the helmet where the five Velcro patches on the harness touch the helmet. Remove the harness.
4. Cut five patches of Velcro, each approximately 2 inches long.

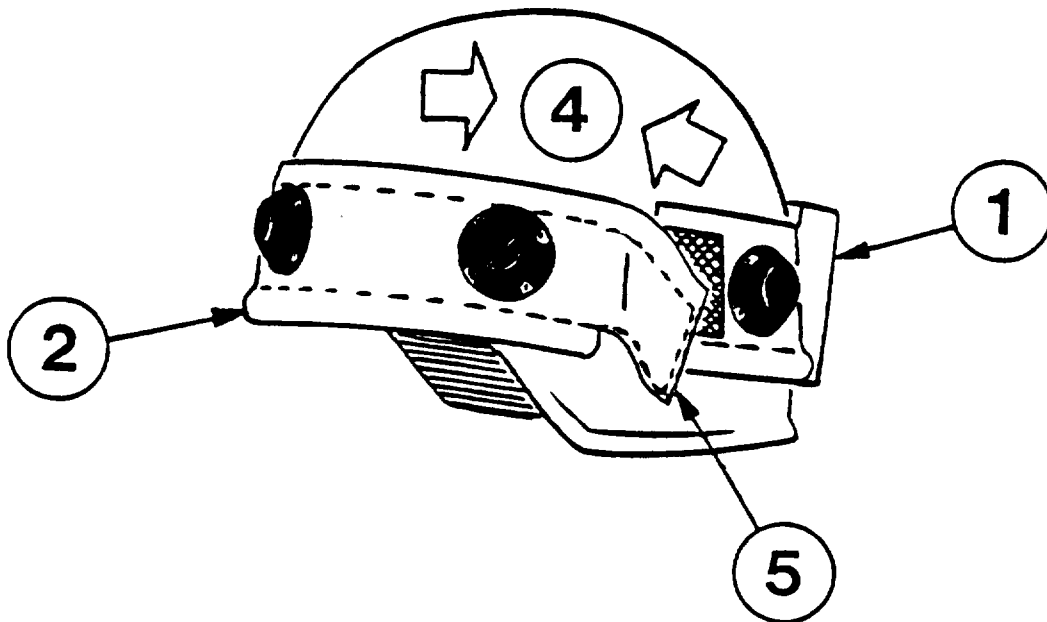
TASK

6

WARNING

Tape mounting primer is highly flammable. Do not spray near heat, sparks, or open flame. No smoking. Use only in well-ventilated areas.

5. Spray tape mounting primer over the marked areas where the Velcro will be attached. Allow spray to dry for at least 5 minutes.
6. Remove backing paper from patches of Velcro and firmly press the patches onto the helmet.



- Your PASGT Helmet must have five patches of Velcro installed on the outside. If you do not have any Velcro on your helmet, turn to page 18 for instructions on installing the Velcro.
1. Slip harness over helmet so that the electronics box is at the rear.
 2. Make sure the heavy cable overhangs the lip of the helmet in the front of the helmet.

TASK

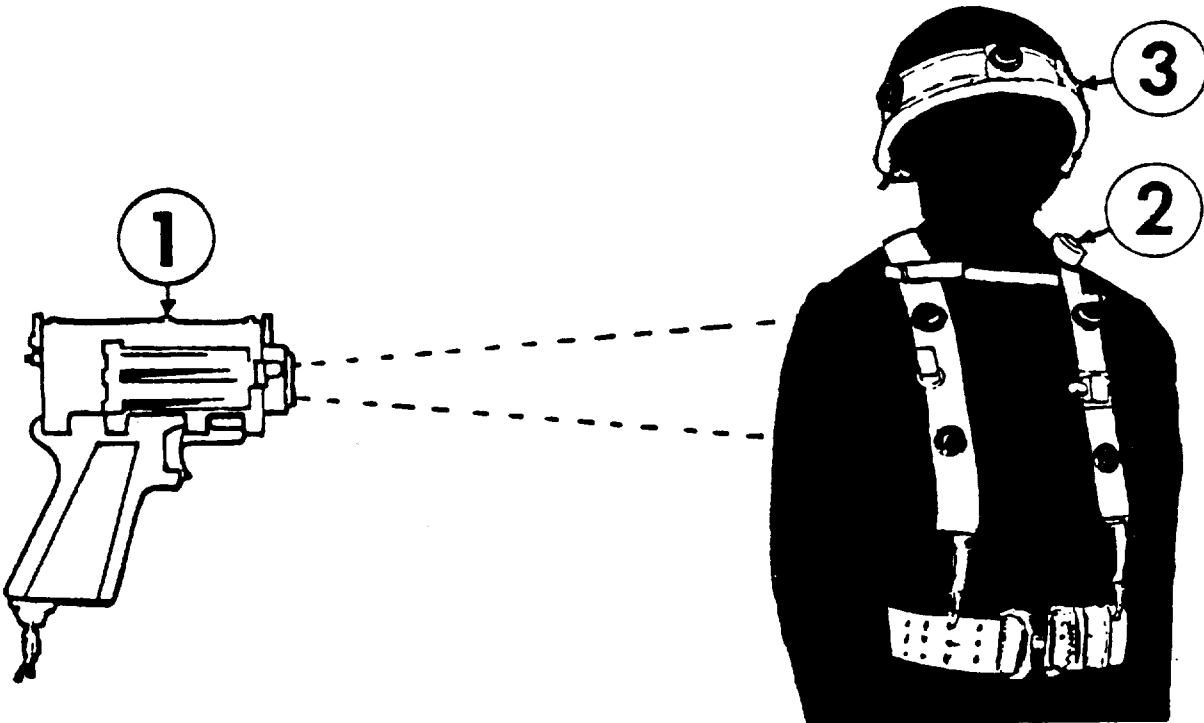
6

3. Adjust the harness so that the five pieces of Velcro on the inside of the harness line up with the Velcro pieces attached to the outside of your helmet.
 4. Pull the harness ends in the direction of the arrow to tighten the harness.
 5. Fasten the Velcro flaps tightly.
- When you wear your helmet, fasten the chinstrap. The added weight of the harness makes this necessary.

TASK

Test Operation of MWLD

7

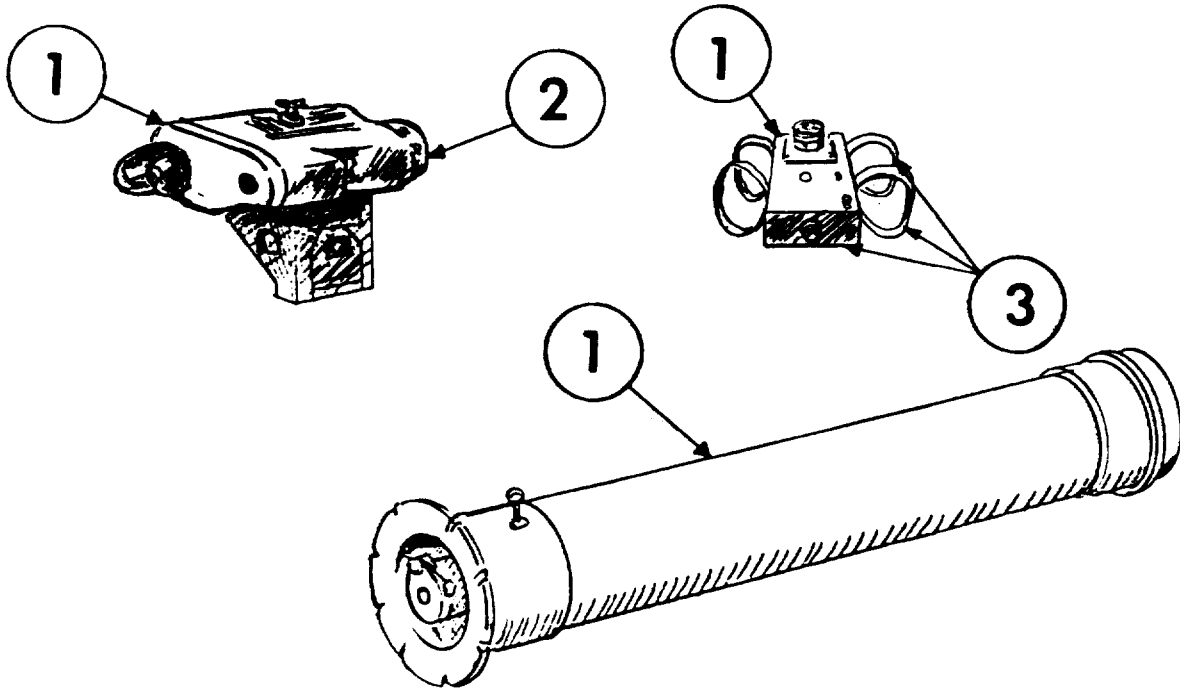


1. Ask the Controller to test your torso harness. Ask him to fire his controller gun using "near miss".
2. When he fires, your alarm should briefly sound. If you do not hear an alarm, remove and reinsert the same battery in the torso harness and test again. If still no alarm, replace the battery in the torso harness with a new battery (see MWLD Task 3) and test again. If still no alarm, report on DA Form 2404, and replace the MWLD.
3. Ask the Controller to test your helmet harness for an alarm. You must be wearing your helmet during this test. If you do not hear an alarm, make sure that the bottom of the helmet harness overhangs the entire rim of the helmet and test again. If still no alarm, remove and reinsert the same battery and test again. If still no alarm, replace the battery in the helmet harness with a new battery (see MWLD Task 3) and test again. If still no alarm, find a soldier whose MWLD has already been checked and is working properly, and ask him to put on your helmet and test again. If still no alarm, report on DA Form 2404, and replace the helmet harness. If the alarm sounds, report on DA Form 2404, and replace your torso harness.

TASK

Inspect and Clean TOW/MILES Tracker Head, MGS and ATWESS

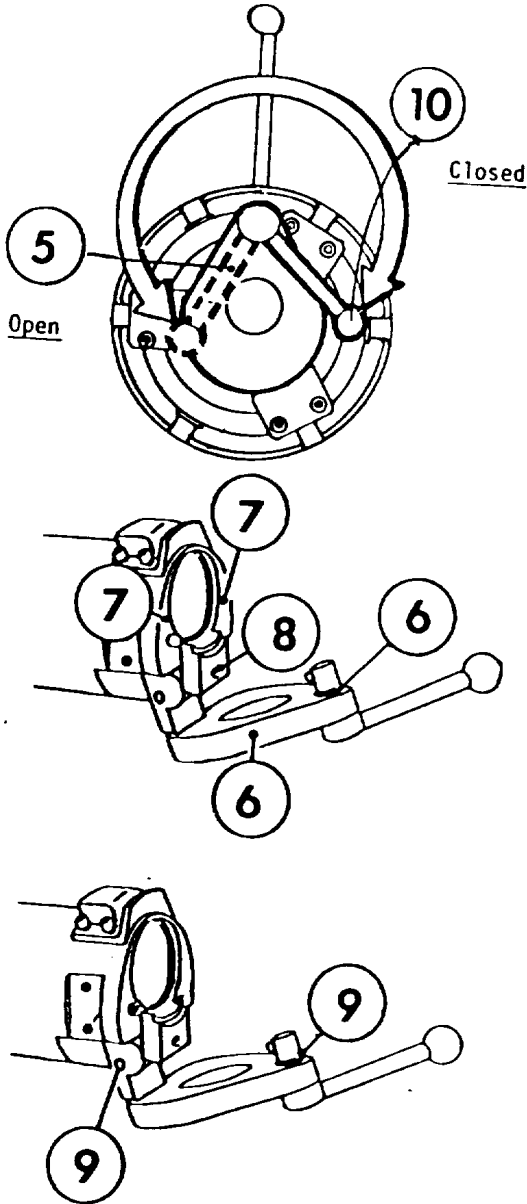
8



1. Inspect TOW/MILES daysight tracker, MGS, and MSR for any damage that would prevent normal operation.
2. Gently rub a lens paper (see page 42) or a clean, soft cloth on lenses to remove any dirt or oil.
3. Check that two Velcro pads are attached to the bottom of the MGS and that four Velcro straps are attached to the sides.
4. Follow the steps on the next page to inspect and service the ATWESS device.

TASK

8

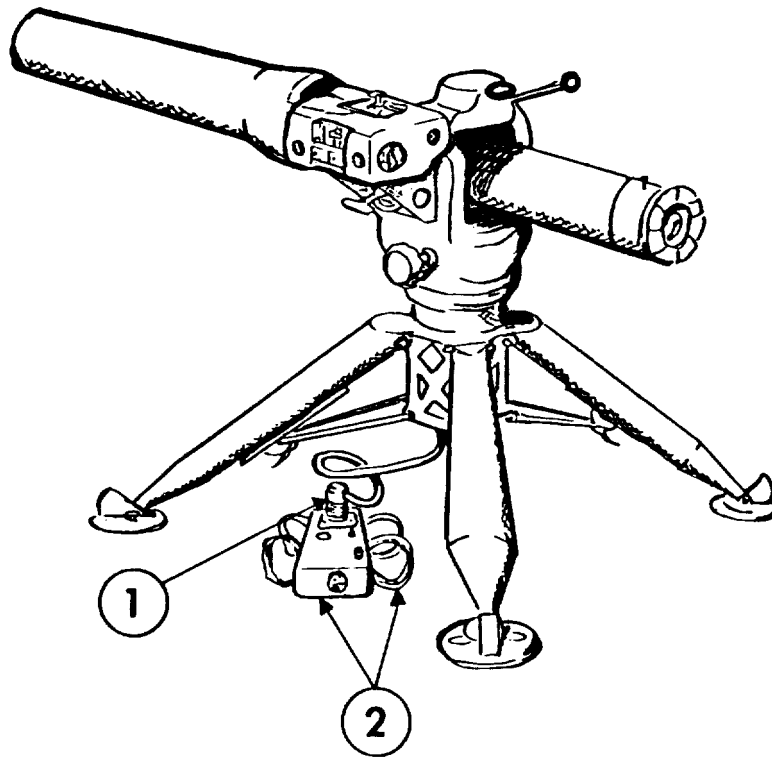


5. Check that breech lock lever will move from closed position to open position.
6. Use CLP (see page 42) to clean powder from the breech door, breech lock lever, and contacts in the door.
7. Use CLP to clean powder from contacts in the breech block. Also, clean the entire breech block.
8. Use CLP to clean powder from the cartridge extractor.
9. Put a drop of CLP at each point shown here.
10. Close the breech door and move lever to the closed position.
11. Report any damage on DA Form 2402, and replace daysight tracker, MGS, or MILES/TOW if inoperable.

TASK

9

Connect MGS Simulator



CAUTION

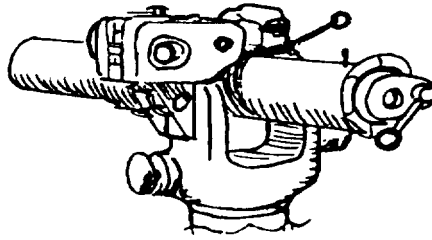
Never attach the TOW/MILES Tracker head or Missile Guidance Set (MGS) simulator when any of the standard (Live) TOW equipment is connected to the J1 cable. Disconnect both the live MGS w/battery, and Day Sight Tracker prior to mounting any TOW/MILES equipment.

1. Plug connector on coil cord into receptacle on MGS box.
2. Use the Velcro pads and straps to attach the box to a tripod leg.

TASK

10

Attach TOW/MSR

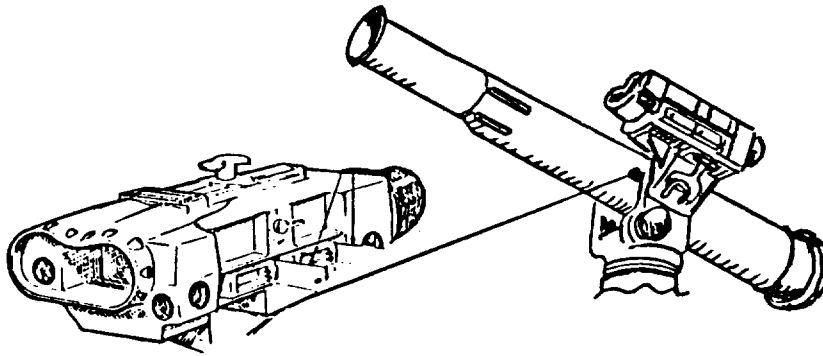


Load the MILES/TOW MSR the same way as you would a standard TOW round.

TASK

11

Attach TOW MILES Daysight Tracker



CAUTION

Never attach the TOW/MILES Tracker head or Missile Guidance Set (MGS) simulator when any of the standard (Live) TOW equipment is connected to the J1 cable. Disconnect both the live MGS w/battery, and Day Sight Tracker prior to mounting any TOW/MILES equipment.

NOTE

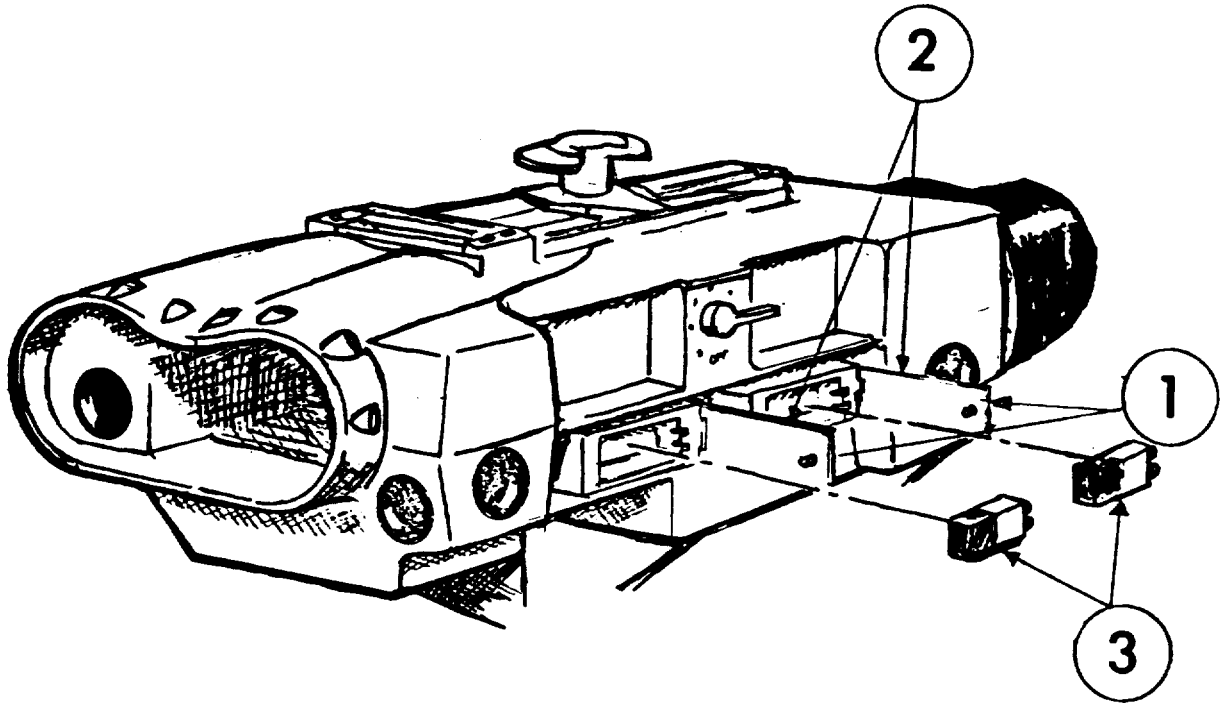
Prior to installing daysight tracker, ensure that the plastic dust cover over the electrical connector on the bottom of the tracker has been removed.

Attach the TOW/MILES daysight tracker the same way you attach the standard TOW daysight tracker.

TASK

Install Batteries in Daysight Tracker

12



Two batteries are required.

1. Loosen thumbscrews.
2. Open covers.
3. Put in batteries as shown.
4. Close cover and tighten thumbscrews.
5. Buzzer in MGS box should sound when batteries are installed. To silence buzzer, proceed to Step 1 on next page. If buzzer does not sound, go to page 30.

TASK

Test TOW System

13

Test Transmitter and MGS Box:

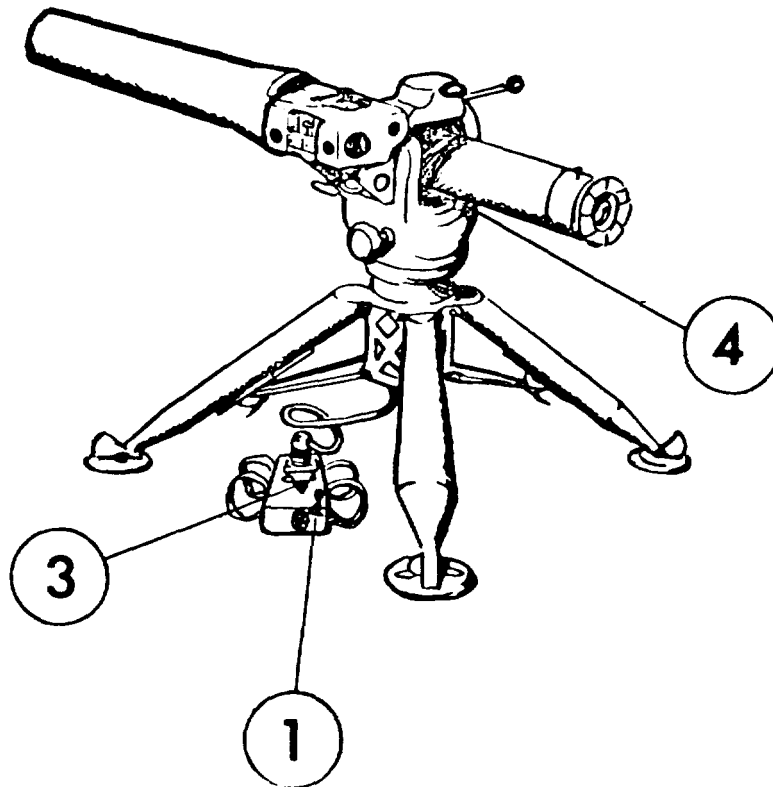
1. Ask Controller to insert his green key into the MGS box receptacle and turn it to SET position.
2. Turn key to position 3 and remove key.
 - TOW is now in the DRY FIRE mode.
3. Press "PRESS-TO-READ" button on MGS box. Display should show a "1" and then a "2". This indicates there are 12 rounds remaining.

If display does not show a "1" and then a "2", report on DA FORM 2402, and replace the TOW/MILES MGS.

4. Fire the TOW in the normal manner used for a real weapon. Wait 15 seconds; proceed to Step 5.

TASK

13



5. Press the "PRESS-TO-READ" button on the MGS box. The display should read "1" and then another "1" indicating 11 rounds remaining.

If display does not show 11, report on DA Form 2402, and replace the TOW/MILES system.

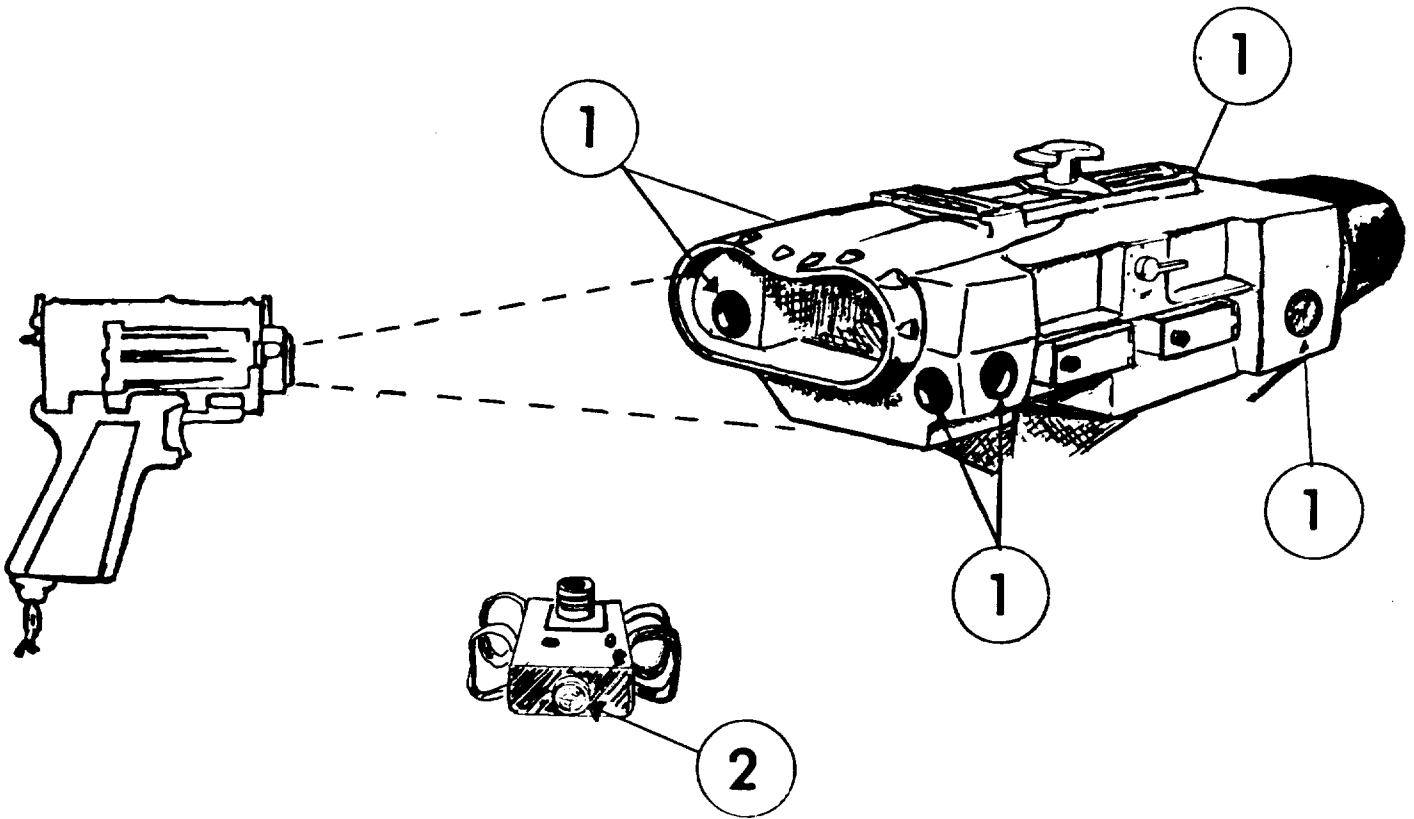
6. Test the TOW transmitter by firing at a man or vehicle target equipped with an operating MILES detector system. Observe a "kill" or "near miss" indication.

If no "kill" or "near miss" indication, report on DA Form 2402, and replace the TOW/MILES system.

7. Ask the Controller to insert his green key into MGS box receptacle and turn to SET.
8. Then turn key to position 4 and remove key.
 - TOW is now in the ATWESS-fire mode.

TASK

13



Test Detectors:

1. Ask the Controller to aim and fire his controller gun at each of the six detectors on the tracker head. Each time he fires, the buzzer on the MGS box should beep one time.
2. If the buzzer on the MGS box does not beep, follow the procedure on the next page.

NOTE

The front and left side of the tracker head each contain two detectors. It is OK for one of the detectors on the front and/or one of the detectors on the left side to be bad. The detection system will still function satisfactorily in this condition.

TASK

13

TROUBLESHOOTING PROCEDURES

If no alarm buzzer sounds, perform the following test.

NOTE

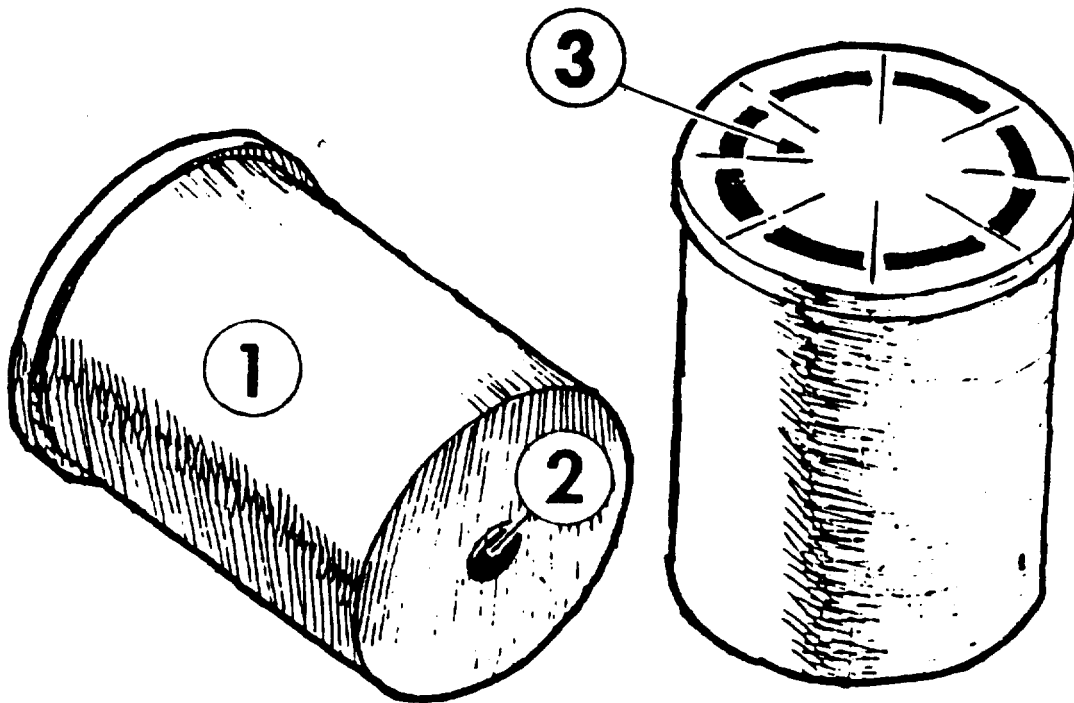
Ensure that the J-1 cable has been connected inside the T/U prior to installing MILES.

1. Replace the- batteries.
 - If alarm buzzer sounds, go to page 25.
2. If alarm buzzer still does not sound, make sure that these cable connections are tight: coil cord to MGS box, and cable connection on bottom of TOW daysight tracker.
3. If still no alarm buzzer, remove and reinstall the TOW daysight tracker, making sure the daysight tracker to traverse unit electrical connection is securely made.
4. If still no alarm, report on DA Form 2402, and replace the TOW/MILES system.

TASK

Inspect ATWESS Cartridges

14



WARNING

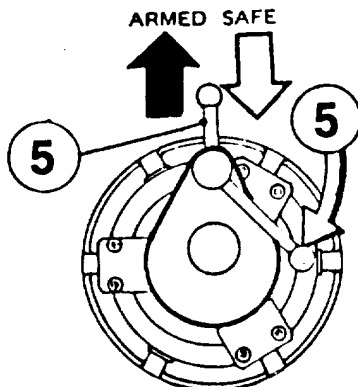
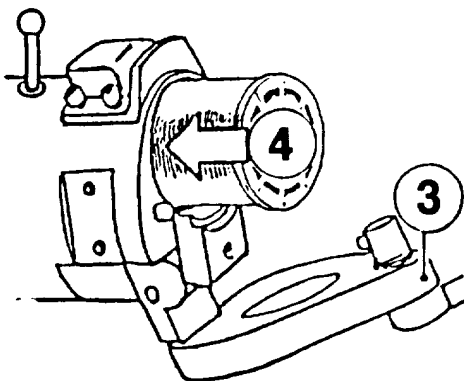
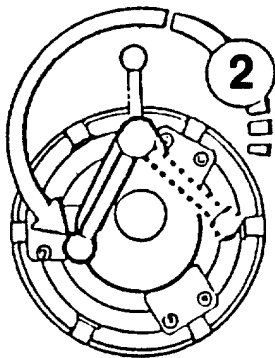
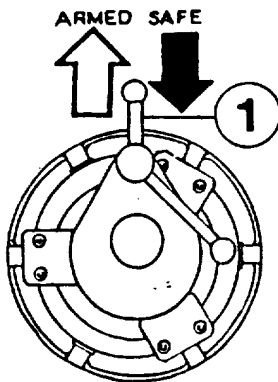
HANDLE ATWESS CARTRIDGES WITH THE SAME CARE YOU USE WITH LIVE AMMUNITION.

1. Look for cracks in the plastic cartridge case.
2. Look for a dented primer.
3. Look for tears or punctures in the copper contact disc.
4. Return damaged cartridges to your NCOIC for disposal. Replace damaged cartridges.

TASK

15

Fire TOW and ATWESS



WARNING

Treat the TOW/MILES as you would any loaded ,and armed weapon. Do not drop TOW when ATWESS is loaded and armed. A strong jolt may set off the ATWESS.

A loaded ATWESS will always fire when the TOW/MILES is fired in the ATWESS mode.

1. Push SAFE/ARM lever to "SAFE" position.
2. Move the breech lock lever to the open position.
3. Open the breech door as far as it goes. This cocks the ATWESS. Visually check to see if the firing pin is protruding. If unsure, use one hand to feel if the firing pin is protruding, or has not retracted to its full length. If the firing pin is protruding, or has not retracted to its full length, tag the weapon as unsafe, and return it to its point of issue.
4. Insert an ATWESS cartridge.

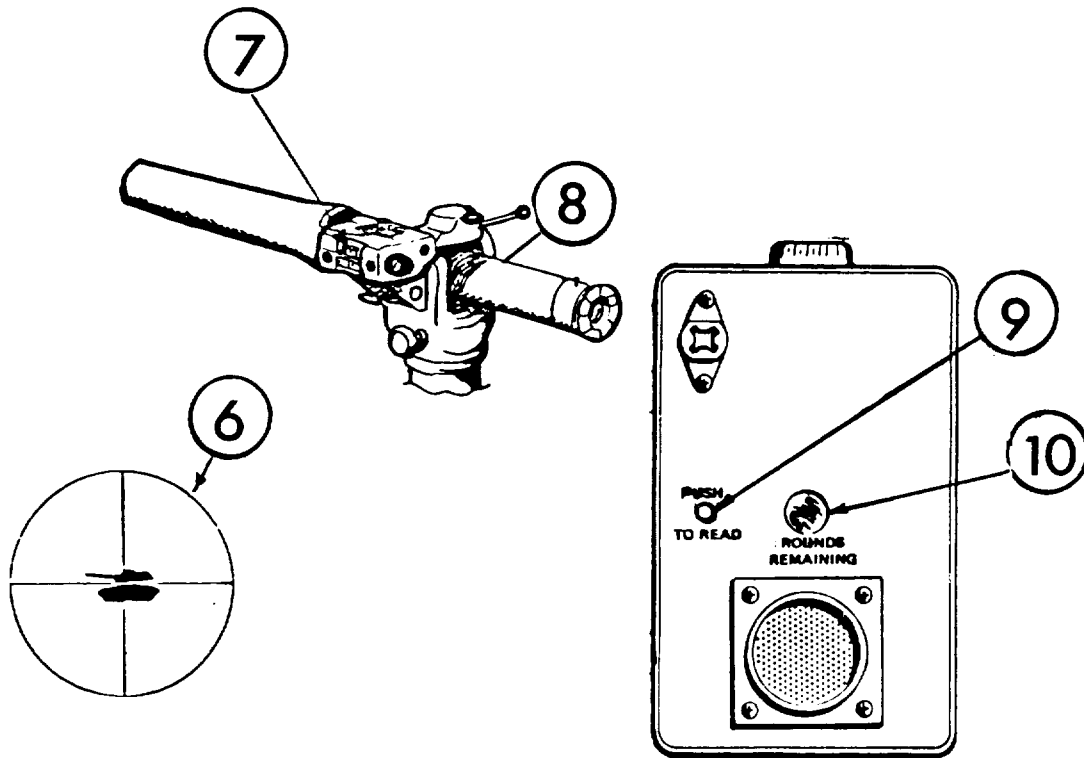
WARNING

Failure to follow these instructions could result in personnel being burned by the backblast escaping through the hole in the center of the breech door.

5. Standing to the right side of the rear of the launcher, face away from the target and, using the right hand, close the breech door and move the breech lock lever to the closed position. Pull SAFE/ARM lever up to the "ARM" position.

TASK

15



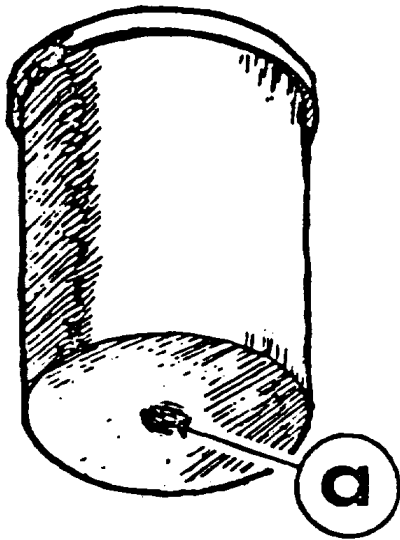
6. Aim TOW at target.
7. If reticle cannot be seen through the sight, use the switch on side of the daysight tracker to turn on reticle light.
8. Fire TOW. The ATWESS will fire. Track your target and count off 11 seconds. The laser starts to transmit 1 second after firing and continues to transmit for 10 seconds.
9. Wait 15 seconds after firing. To see the rounds remaining, switch on MGS box.
10. Rounds remaining will be displayed in the window.

NOTE

To be sure of a "kill," you must track your target for a full 11 seconds. The last few seconds of tracking are the most important.

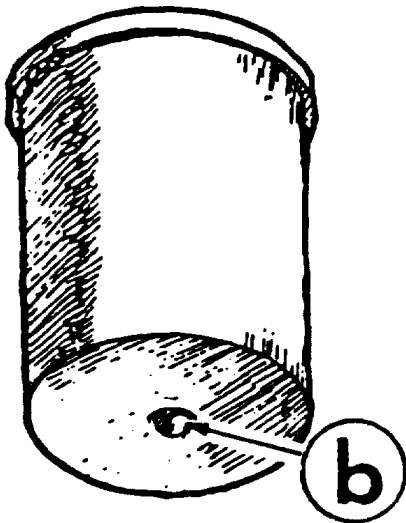
TASK

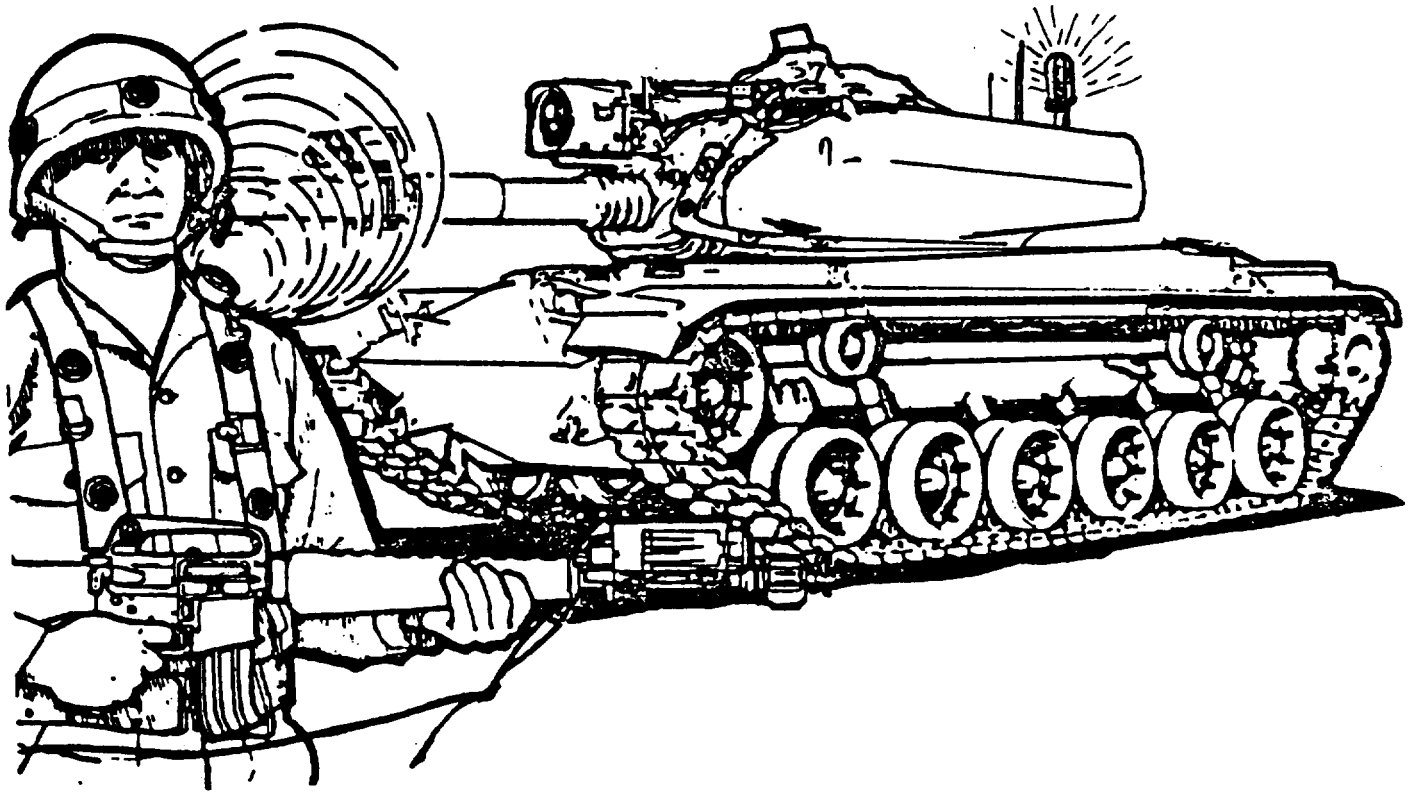
15



IF ATWESS DOES NOT FIRE:

1. Place ATWESS safety lever in SAFE position.
2. Remove ATWESS cartridge from ATWESS.
 - a. INSPECT the cartridge primer. If dented treat the cartridge as a DUD. REPORT THE DUD CARTRIDGE TO YOUR NCOIC FOR DISPOSAL.
 - b. CHECK that connector end of TOW coil cord is tightly plugged into MGS box.
3. Reload ATWESS cartridge and repeat firing sequence. If ATWESS does not fire, report on DA Form 2402 and replace the TOW system.



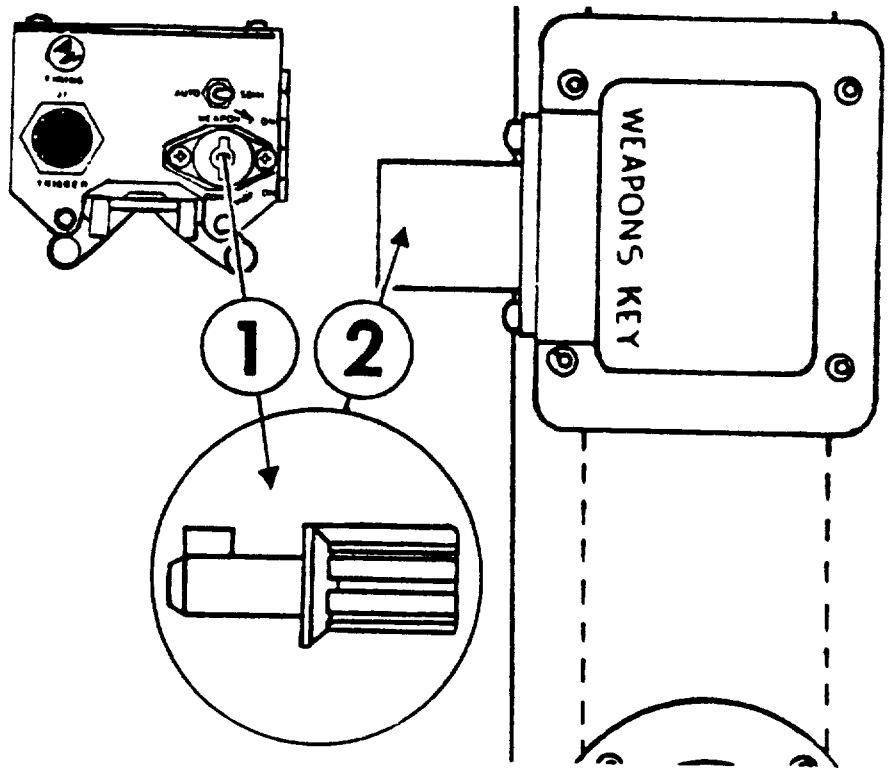


- When detectors are hit by laser fire, the CVKI light on top of vehicles will flash and personnel MWLDs will sound. Usually you will not be close enough to hear the personnel alarms, but you should be able to see the vehicle CVKI lights.
- If shot is a "near miss", the CVKI light flashes 2 or 3 times.
- If a target vehicle is "hit" but not "killed", the CVKI light flashes 4 to 6 times.
- If you "kill" a target vehicle, the CVKI light flashes continuously.
- If you "kill" personnel, the MWLD alarm sounds continuously.

TASK

Reset MWLD and TOW/MILES

17

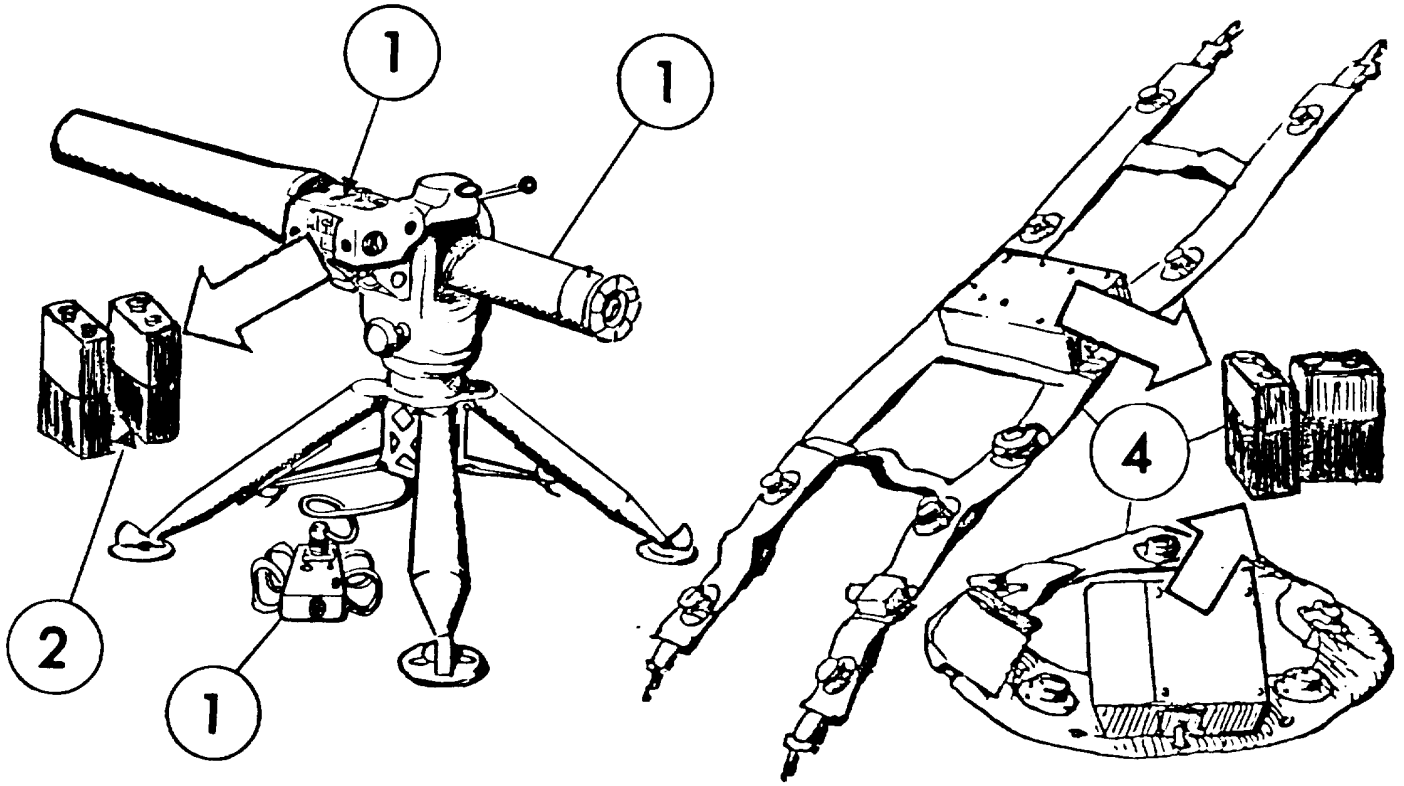


- A. If your alarm on the TOW/MILES system or man-worn harness beeps (sounds for one second), you've been fired on. TAKE COVER.
- B. If the alarm sounds continuously on your man-worn harness, you've been "killed". Use the M16 weapon key to silence your alarm.
- C. If the alarm sounds continuously on the TOW/MILES system, it has been "destroyed" by enemy fire. Disconnect the coil cord from the MGS to silence the alarm.
- D. To reset the MWLD and TOW/MILES system.
 - 1. Ask your NCOIC to call the Controller.
 - 2. Remove key from torso harness. Alarm will sound.
 - 3. Ask Controller to use his green key to silence your MWLD alarm and the alarm on the TOW/MILES system.
 - 4. Put yellow weapon key back in M16 rifle transmitter and turn to WEAPON ON.

TASK

Inspect, Clean and Return MILES Equipment

18

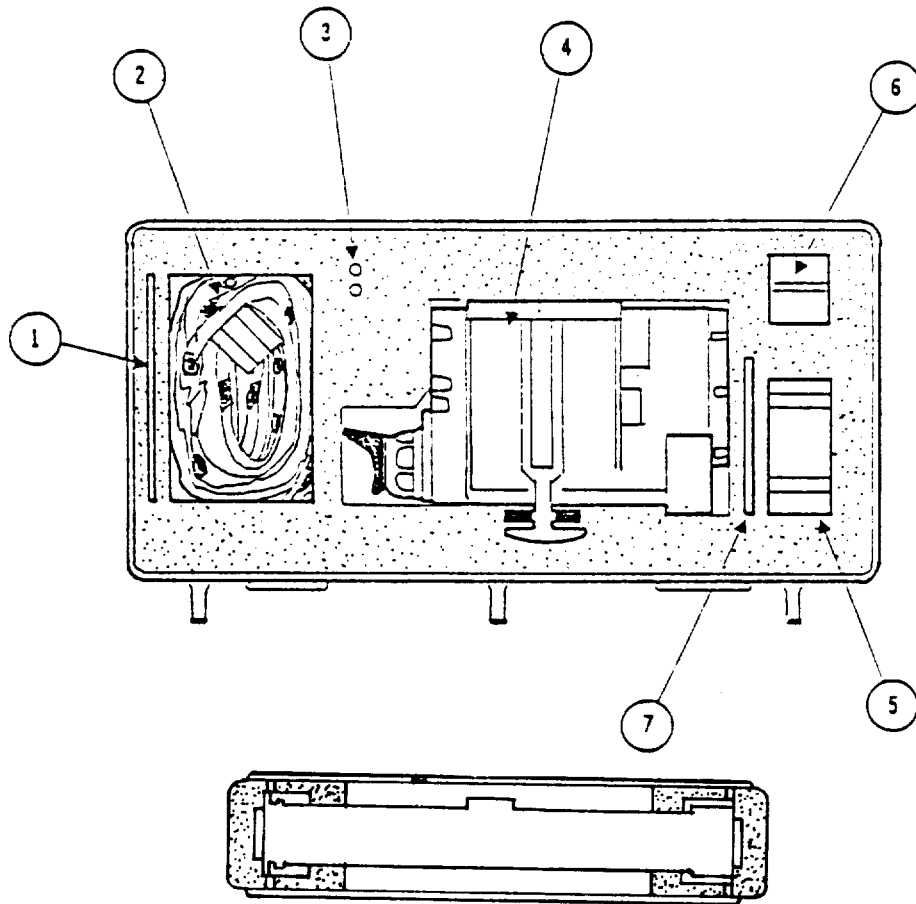


1. Remove and inspect TOW/ATWESS missile simulator round, MGS box, and TOW daysight tracker. (See Task 4)
2. Remove batteries from TOW/MILES and close the door. (See Task 11)
3. Inspect and clean TOW/MILES. (See Task 4)
4. Remove MWLD torso and helmet harnesses. Take out the batteries and close battery doors.
5. Do Tasks 2 and 3: Inspect and service the MWLD.
6. Do Task 1: Check TOW/MILES equipment.

Return all MILES equipment and unused ATWESS cartridges to your NCOIC. You may be asked to return your MILES equipment to its transit case. If so, follow the instructions on the next page.

TASK

18



Transit Case Loading Instructions:

NOTE

The TOW tube assembly is packed in its own separate transit case. Place the tube securely in the foam cushions. The tube assembly may be put in either way.

1. Place the Operator's Manual in the slot provided.
2. Place the MWLD torso harnesses and MWLD helmet harnesses in the slot provided.
3. Place the two MWLD keys into the small holes provided.
4. Place the TOW transmitter in the large space provided.
5. Place the MGS box in the space provided.
6. Place miscellaneous hardware and Velcro pads in the space provided.
7. Slip the control console adapter mounting bracket into the slot provided.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, and technical manuals referenced in this manual.

A-2. FORMS

SF 368	Quality Deficiency Report
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2062	Hand Receipt
DA Form 2402	Exchange Tag
DA Form 2404	Equipment Inspection and Maintenance Work Sheet

A-3. FIELD MANUALS

FM 21-11	Field Manual: First Aid for Soldiers
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A-4. TECHNICAL MANUALS

Operator and Organizational Maintenance Manual for TOW Heavy Anti-tank/ Assault Weapon System	TM 9-1425-470-12
Hand Receipt for Simulator System, Firing Laser: M64 for TOW Weapon System	TM 9-1265-368-10-2-HR

A-5. MISCELLANEOUS PUBLICATIONS

AR 310-2	Identification and Distribution of DA Publications
SB 11-6	Dry Battery Supply Data
DA PAM 738-750	The Army Maintenance Management System (TAMMS)

**APPENDIX B
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS
SECTION I. INTRODUCTION**

This appendix lists integral components of the TOW/MILES system. All of these items must be returned to your NCOIC following a training exercise.

NOTE

Model identification of your TOW will be marked on the outside of your TOW transit case and on a placard inside the case.

Explanation of Columns:

National Stock Number:

Description:

U/M:

Qty:

Illustration Number:

Stock requisition number.

Lines 1 and 2 give a brief item description.

Line 3 lists the Federal Supply Code for Manufacturer (FSCM) and the part number.

Unit of Measure.

Quantity of item.

The number of the illustration.

SECTION II. COMPONENTS OF END ITEM

National Stock Number	Description FSCM & Part Number	U/M	Qty	Illustration
<u>SIMULATOR SYSTEM M64 FOR TOW</u>				
1265-01-075-4893	Man-Worn Laser Detector Assembly 19200-11748808	ea.	2	4
*	TOW Laser Simulator System, Transmitter Assembly 19200-11748818	ea.	1	1
*	TOW Tube Assembly 19200-11749561	ea.	1	2
*	Missile Guidance Set Adapter Assembly 19200-11749482	ea.	1	3
*	Adapter Set (For Vehicle Mounting Only) 19200-1174-8815	ea.	1	-

* Not available at time of publication

Continued on Next Page

SECTION II. COMPONENTS OF END ITEM (CONTINUED)

National Stock Number	Description FSCM & Part Number	U/M	Qty	Illustration
<u>SIMULATOR SYSTEM FOR TOW LONG RANGE</u>				
1265-01-075-4893	Man-Worn Laser Detector Assembly 19200-11748808	ea.	2	4
8	TOW Laser Simulator System, Transmitter Assembly 19200-9358797	ea.	1	1
*	TOW Tube Assembly 19200-11749561	ea.	1	2
*	Missile Guidance Set Adapter Assembly 19200-11749482	ea.	1	3
*	Adapter Set (For Vehicle Mounting Only) 19200-11748815	ea.	1	-
<u>SIMULATOR SYSTEM FOR TOW II</u>				
1265-01-075-4893	Man-Worn Laser Detector Assembly 19200-11748808	ea.	2	4
*	TOW Laser Simulator System, Transmitter Assembly 19200-11748818	ea.	1	1
*	TOW Tube Assembly 19200-11749482	ea.	1	2
*	Missile Guidance Set, Adapter Assembly 19200-9353080	ea.	1	3
*	Adapter Set (For Vehicle Mounting Only) 19200-11748815	ea.	1	-

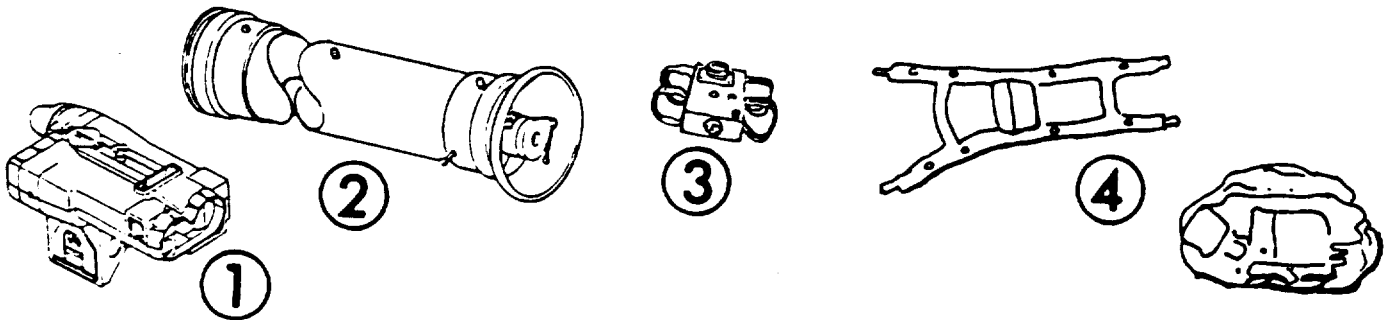
* Not available at time of publication

Continued on next page

SECTION II. COMPONENTS OF END ITEM (CONTINUED)

National Stock Number	Description FSCM & Part Number	U/M	Qty	Illustration
SIMULATOR SYSTEM FOR TOW II EXTENDED RANGE				
1265-01-075-4893	Man-Worn Laser Detector Assembly 19200-11748808	ea.	2	4
*	TOW Laser Simulator System, Transmitter Assembly 19200-9358757	ea.	1	1
*	TOW Tube Assembly 19200-11749561	ea.	1	2
*	Missile Guidance Set Adapter Assembly 19200-9353080	ea.	1	3
*	Adapter Set (For Vehicle Mounting Only) 19200-11748815	ea.	1	-

* Not available at time of publication



SECTION III. BASIC ISSUE ITEMS

1 ea. TM 9-1265-368-10-2

Operator's Manual f/ Simulator System, Firing Laser: M64 f/ Tow Std, Tow Lr, Tow II, Tow II Extended Range

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

This appendix lists additional items you will need to operate the TOW/MILES system.

Explanation of Columns:

National stock numbers, descriptions, units of measure, and quantities are provided to help you identify and request the additional items you will need to operate the TOW/MILES system.

National Stock Number	Description FSCM & Part Number	U/M	Qty	Illustration
6135-01-063-1978	*Battery, 9 volt (80058), BA-3090/U	ea.	6	Task 1

*** Dry battery listed is used with the equipment. It will not be preshipped automatically, but is to be requisitioned in quantities necessary for the particular organization in accordance with SB 11-6.**

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

This appendix lists the expendable supplies and materials you will use to operate and maintain the TOW/MILES system.

Explanation of Columns:

National stock numbers, descriptions, units of measure, and quantities are provided to help you identify and request the expendable supplies and materials you will need to operate and maintain the TOW/MILES system.

National Stock Number	Description FSCM & Part Number	U/M	Qty
9150-01-079-6124	Cleaner, Lubricant and Preservative (27412), CLP-4	oz.	1
1370-01-085-2601	Cartridge, Practice, M22 (19200), 11749630	ea.	12
6640-00-240-5851	Paper, Lens (81349), NNN-P-40	pk.	1
8010-01-040-0947	Primer, Tape (19200), 11749034	cn.	1
8315-01-111-7170	Fastener, Tape, Hook (19200), 11749428	ea.	5

REFERENCE INFORMATION

This section includes the nomenclature cross reference list, list of abbreviations, and explanations of terms (glossary) used in this manual.

A. NOMENCLATURE CROSS REFERENCE LIST

Common Name	Official Nomenclature
Controller Gun	Controller's Gun, Simulator System, Laser
TOW Missile Simulator Round (MSR)	Tube Assembly, Simulator System, Laser: For TOW Missile
TOW Daysight Tracker	Transmitter, Assembly, Simulator System, Laser: For TOW Missile
Helmet Harness	Detector Assembly, Simulator System, Laser: Man-Worn
Torso Harness	Detector Assembly, Simulator System, Laser: Man-Worn

B. LIST OF ABBREVIATIONS

ATWESS	Anti-tank Weapon Effects Signature Simulator
MILES	Multiple Integrated Laser Engagement System
MWLD	Man-Worn Laser Detector

C. GLOSSARY

ATWESS Assembly	A device installed in the rear end of the TOW MSR to provide simulated backblast, noise, and smoke.
ATWESS Cartridge	The explosive round used in the ATWESS device.
Controller	The umpire or referee in a MILES training exercise.
Controller Gun	The device used to test MILES detector systems. May also be used to disqualify soldiers or vehicles from an exercise.

Controller Key	The green key used by the Controller to reset MILES transmitters. Also used to reset the MWLD.
Helmet Harness	The part of the laser detector assembly worn on a combat helmet.
Kill	In a MILES training exercise, a continuous alarm sounds indicating the man-worn detector assembly was hit by a laser beam. The yellow weapon key is removed from an M16A1 rifle transmitter and put in the detector assembly to silence the alarm. The transmitter will not operate with the weapon key removed.
Laser Beam	In the MILES, a harmless invisible beam of light which simulates weapon fire.
Laser Detector Assembly	A device which senses the laser beam directed at it.
Laser Transmitter	A device that sends the laser beam.
Man-Worn Laser Detector	The helmet and torso assembly worn by personnel which senses a laser beam directed at it.
MGS Box	Plugs into the coil card in place of the actual Missile Guidance Set.
Near Miss	A one-second alarm from the MWLD or MGS box indicates laser fire directed toward you.
Simulator	A training device which takes the place of real equipment and which has many of its characteristics.
Torso Harness	The part of the laser detector assembly worn on the upper body.
Velcro Tape	A particular brand name for hook and pile fastener tape. It is used to hold various items of MILES equipment in place.

Weapon Key

This yellow key has two uses:

1. To turn on certain MILES transmitters.
2. To shut off alarm when alarm sounds, remove key from transmitter and insert in MWLD weapon key receptacle.

Weapon Key Receptacle

A small device on the MWLD which receives the yellow weapon key to shut off alarm. Another receptacle on MGS box receives the green controller key for resetting the TOW/MILES.

45/(46 blank)

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-32, Operator's Maintenance requirements for MILES Simulator System, Firing, Laser M64 (for TOW).

☆U.S. GOVERNMENT PRINTING OFFICE: 1992 - 311-831/44808

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigram = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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