TECHNICAL MANUAL

OPERATOR'S MANUAL

FOR

MULTIPLE INTEGRATED LASER

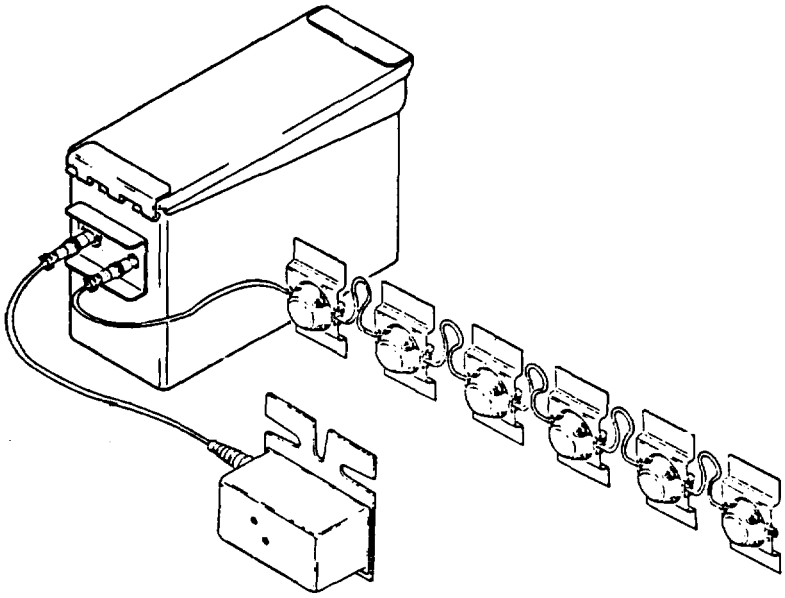
ENGAGEMENT SYSTEM

(MILES)

INDICATOR, SIMULATOR SYSTEM,

LASER TARGET INTERFACE DEVICE (LTID)

(NSN 1265-01-221-9438)



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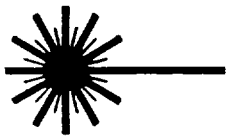
DECEMBER 1989



WARNING

Although laser light emitted by MILES laser transmitters is considered eye safe by the U.S. ARMY Environmental Hygiene Agency, Aberdeen Proving Grounds, MD, you should take suitable precautions to prevent eye damage from overexposure to this radiated energy. Take the following precautionary measures:

- NEVER look at a laser emitter at close range (less than 12 meters). Increasing eye-to-laser distance greatly reduces the risk of overexposure.
- NEVER look at a laser emitter directly along the optical axis of the radiated beam.
- NEVER look along the axis of a laser emitter through magnifying optics such as binoculars, telescopes, or weapon sights (especially if they are on a tripod or attached to a vehicle) at engagement ranges of less than 75 meters.

WARNING

Primer is highly flammable. Do not spray near heat, sparks, or open flame. NO SMOKING. Use only in well ventilated area.

Vapor harmful, causes eye irritation.

For information on FIRST AID, see FM 21-11.

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HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC 6 December 1989

OPERATOR'S MANUAL
FOR
MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES)
INDICATOR, SIMULATOR SYSTEM
LASER TARGET INTERFACE DEVICE (LTID)
NSN 1265-01-221-9438

REPORTING OF ERRORS

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, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMCMAS, Rock Island, Illinois, 61299-000. A reply will be furnished to you.

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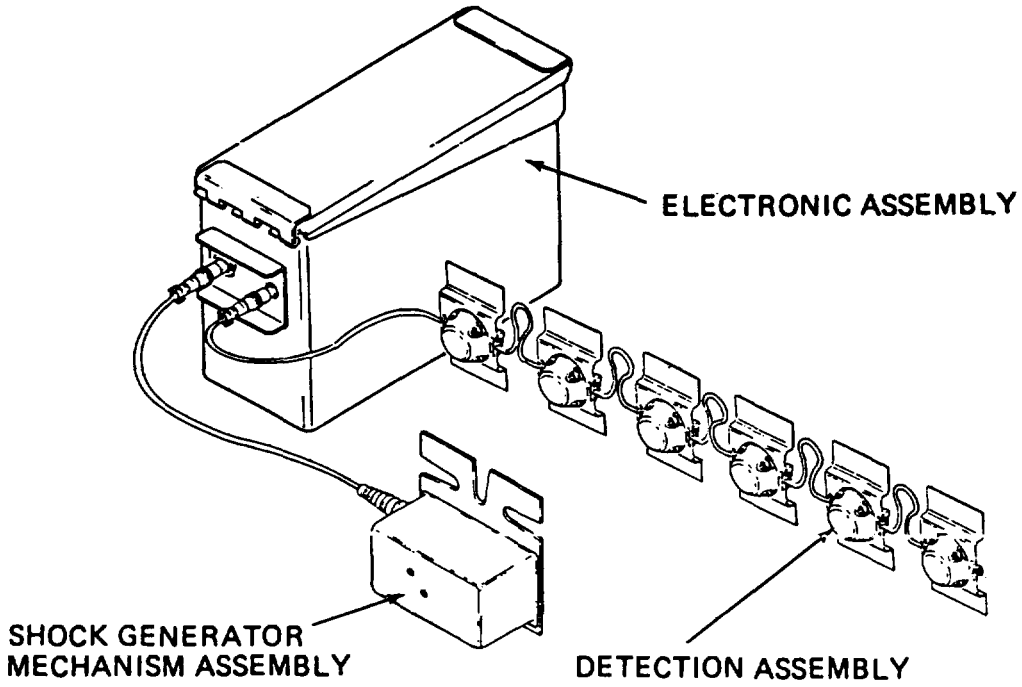
CHAPTER 1

INTRODUCTION

SECTION I. GENERAL INFORMATION



SCOPE

TYPE OF MATERIAL. This manual shows you how to install and operate the Laser Target Interface Device (LTID) which is part of the Multiple Integrated Laser Engagement System (MILES). The LTID, 12629853, comprises the following units:

- Laser Target Interface Electronic Assembly, 12629861.
- Detection Assembly, 12629862.*
- Shock Generator Mechanism Assembly, 12629863.*

* Stored in a separate container.

NOTE

TO USE THIS MANUAL, YOU SHOULD BE ABLE TO:

- Aim and fire a Controller's gun (ref. TM 9-1265-371-14&P).
- Set up range targets.
- Complete DA Form 2402 and 2404.

PURPOSE OF EQUIPMENT. The LTID permits effective target practice using tank, vehicular, or infantry weapons equipped with MILES without the hazards associated with live ammunition.

LIMITATION OF EQUIPMENT. The LTID has the same operational capabilities as other MILES devices equipped with laser detectors.

MAINTENANCE FORMS AND RECORDS. 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).

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRS). If your MILES equipment for the LTID 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 the Quality Deficiency Report to us at Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAD, Rock Island, IL 61299-6000. We'll send you a reply.

CORROSION PREVENTION AND CONTROL. Corrosion Prevention and Control (CPC) of Army material is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using Standard Form 368, Quality Deficiency Report. Use of key words such as "corrosion', 'rust', 'deterioration' or "cracking' will assure that the information is identified as a CPC problem.

The form should be submitted to:

Commander
U.S. Army Armament, Munitions and Chemical Command
ATTN: AMSMC-AD/Customer Feedback Center
Rock Island. Illinois 61299-6000"

REFERENCE INFORMATION

This listing includes a List of Abbreviations and Glossary defining terms used in this Technical Manual.

LIST OF ABBREVIATIONS

LTID	Laser Target Interface Device.
MILES	Multiple Integrated Laser Engagement System.

GLOSSARY

Controller Gun	Device used to check operation of MILES detector systems.
Detection Assembly	Device that senses a laser beam directed at target.
Fastener Tape	Hook-and-pile tape. Used to hold detection assembly on target.
Hit	A transmitter laser beam encounter with detector as indicated when target is knocked down or when shock generator mechanism responds.
Laser Beam	Invisible beam of light which simulates weapon fire in MILES.
Laser Transmitter	Device that sends the laser beam to target silhouette.
	SimulatorTraining device which takes the place of real equipment and which has many of its characteristics.

SECTION II EQUIPMENT DESCRIPTION AND DATA.

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

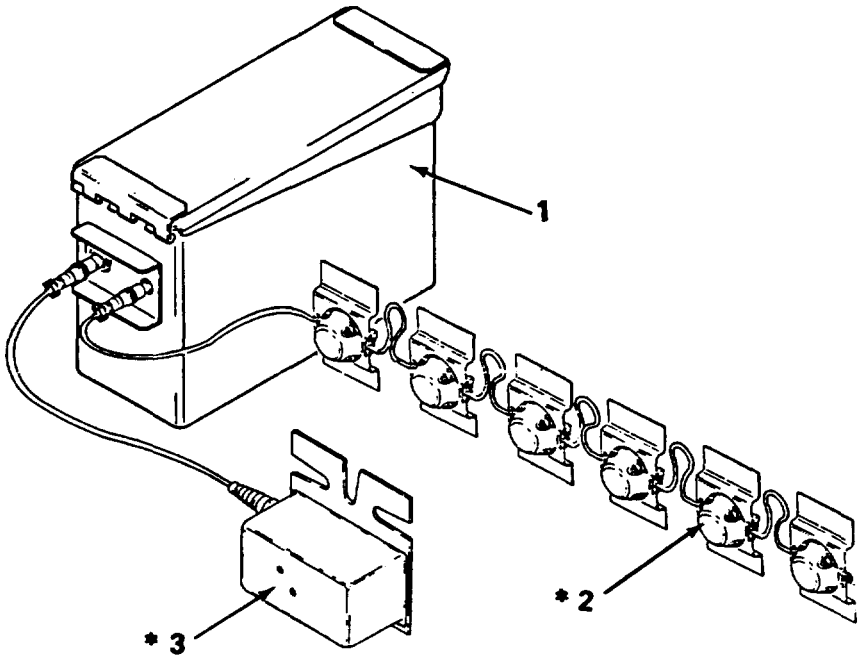
PURPOSE OF MILES SIMULATOR SYSTEM, LASER TARGET INTERFACE DEVICE (LTID).

The LTID, when attached to man or tank targets, enables the user to engage these targets with MILES laser transmitter systems. Target hierarchy is preserved by strategically locating the detectors on the target in vulnerable zones of the target represented. Detection sensitivity is adjustable to allow engagements at any range from 50 to 4000 meters.

PERFORMANCE CAPABILITIES

- Easily installed and removed.
- Detects attacking weapons.
- Compatible with all MILES transmitters.
- Operates in temperatures ranging from -35 to +160 degrees fahrenheit.
- Operates on two 6-volt batteries.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



* These components are stored in a separate container (Ref. Appendix B, Section II).

Laser Target Interface Electronic Assembly, 12629861 (1). **Amplifies laser** beam signals hitting target detector and compares signals to a preset sensitivity level. If the code produced corresponds to a valid code of a particular weapon, the shock generator mechanism assembly is activated - indicating a "HIT".

Detection Assembly, 12629862 (2). Converts laser signals hitting target to electrical pulses and relays them to the electronic assembly.

Shock Generator Mechanism Assembly, 12629863 (3). Responds to an electrical impulse from the electronic assembly by transmitting a vibration to the shock sensor. The shock sensor then triggers the target lift mechanism into lowering the target.

SECTION III. PRINCIPLES OF OPERATION

FUNCTIONAL DESCRIPTION. A successful, simulated weapon engagement takes place when a MILES transmitter laser aimed at an LTID-equipped target encounters one of the detectors on the target. The coded laser signal hitting a target detector is sent to the LTID electronic assembly where it is amplified and compared to a preset threshold level. If the laser pulse exceeds the threshold level, a bit is registered in the detection logic. If the arrangement of bits produced corresponds to a valid code of a particular weapon, the decoder determines whether the laser impingement is a "HIT" or not. If a "HIT" occurs, the LTID activates the shock generator mechanism assembly which transmits a vibration to the shock sensor; simulating a live round impact on the target. The impact is received by the shock sensor which activates the mechanism that lowers the target.

Since weapon hierarchy is preserved, the codes received from an M16A1 rifle will knock down a man target but will not affect a vehicle target. Whereas, the codes received from either a vehicle weapon or M16A1 rifle will knock down a man target.

The six detector elements of the detection assembly are arranged differently for the various targets. The different detector arrangements are necessary in order to simulate the hit profile of each type of target.

Target limitations can be preset by setting the LTID Electronic Assembly TARGET TYPE and RANGE switches to the type of target and the range at which the target is used.

Battery power can be turned off by setting the RANGE Select Switch in the OFF position. This action will extend the operating life of the batteries without removing them from the system.

The condition of the batteries can be checked by setting the RANGE Select Switch to the BATTERY TEST position. If the batteries are capable of operating the LTID for more than approximately 8 hours, the LOW BATTERY INDICATOR will not light. If the batteries are depleted to a level whereby they are unable to sustain LTID operation for approximately 8 hours, the red LED indicator will light. This will indicate that a battery change is required.

CHAPTER 2
OPERATING INSTRUCTIONS

SCOPE. This chapter provides instructions needed to inspect, install, checkout, operate, and remove MILES LTID.

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

LTID CONTROLS AND INDICATORS. The MILES LTID controls and indicator consist of an LED indicator and two mode selector switches that control all LTID functions. These controls and indicators are listed in table 2-1. All other controls and indicators used with the MILES LTID are those actually associated with the weapons being used to engage the silhouette target equipped with LTID components.

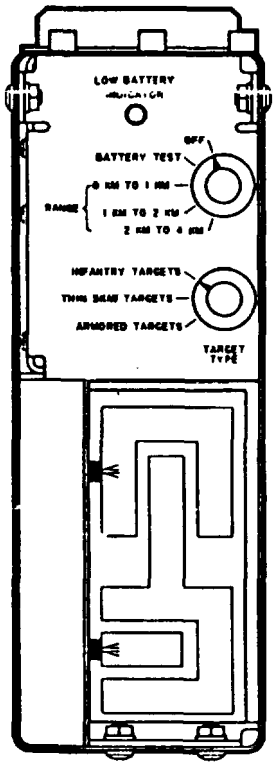
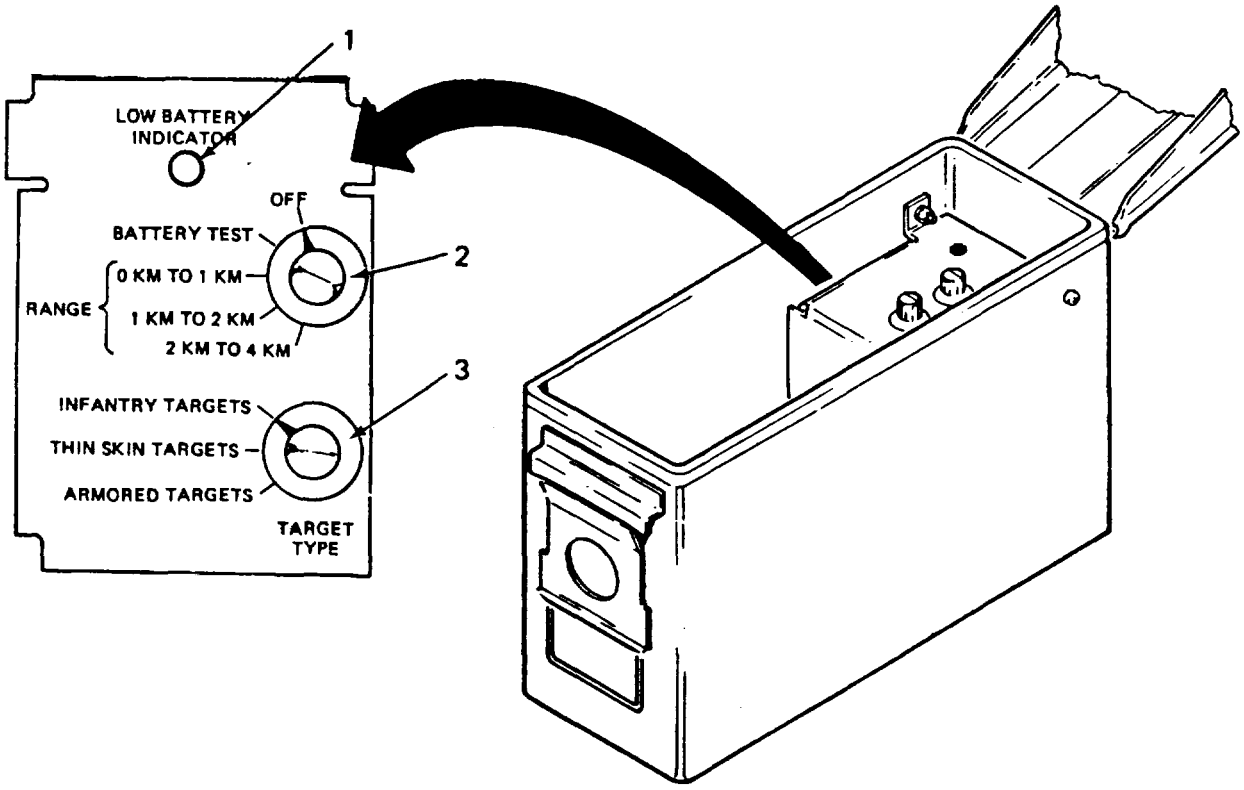


Table 2-1. LTIDS Controls and Indicators

KEY	NOMENCLATURE (DESCRIPTION)	FUNCTION	OPERATING POSITION
1	LOW BATTERY INDICATOR (Red LED)	Indicates battery status when RANGE switch is set to BATTERY TEST position.	N/A
2	RANGE, Select (Rotary switch)	Selects battery power and various ranges	OFF BATTERY TEST 0 KM TO 1 KM 1 KM TO 2 KM 2 KM TO 4 KM
3	TARGET TYPE (Rotary switch)	Selects various targets	INFANTRY TARGETS THIN SKIN TARGETS ARMORED TARGETS



LTID Controls and Indicators

SECTION II PREVENTIVE MAINTENANCE CHECKS AND SERVICES

GENERAL. Preventive Maintenance Checks and Services (PMCS) ensure that MILES equipment will always be ready for use and will perform satisfactorily throughout an assigned mission. Preventive maintenance checks consist of systematically inspecting MILES equipment to discover defects before they result in operational failure of the equipment. Defects or malfunctions discovered by the crew while using MILES equipment, or resulting from maintenance checks and services, should be reported using the proper forms (refer to DA PAM 738-750). PMCS for the LTID components are listed in table 2-2. When assigned to perform PMCS, be sure to carry out the following steps:

a. Before you Operate: always pay attention to, and remember, the CAUTIONS and WARNINGS. Perform your "before" (B) PMCS.

b. While you Operate: always pay attention to, and remember, the CAUTIONS and WARNINGS. Perform your "during" (D) PMCS.

c. After you Operate: be sure to perform your "after" (A) PMCS.

d. If your equipment fails to operate, troubleshoot with the proper equipment. Ask your Controller to check your equipment. Report any discrepancies using the proper forms. See DA PAM 738-750.

Table 2-2. Operator/Crew Preventive Maintenance Checks and Services

NOTE

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

Item No.	Interval					Item to be Inspected	Procedures - Check for and have repaired or adjusted as necessary	Equipment Is Not Ready/ Available if:
	B	D	A	W	M			
1	●		●			Batteries	Inspect for acid leakage.	Acid is present.
2	●		●			Electronic Assembly	Inspect for evidence of switch damage.	Switch is damaged.
	●		●				Inspect for evidence of indicator LED damage.	LED is damaged.
	●		●				Inspect for damaged connectors. Check that connectors and interior battery contacts are serviceable.	Connectors are broken or contacts are rusted or damaged.
	●		●				Inspect for foam attached to cover.	Foam is damaged or missing.
3	●		●			Detection Assembly	Look for loose or damaged detectors.	Detectors are damaged or loose.
	●		●				Inspect cable for broken connectors and cut, worn, or bare wiring.	Connectors are broken or wiring is cut or bare.
4	●		●			Shock Generator Mechanism Assembly.	Inspect for damage that would prevent normal operation.	Connector is broken or wiring is cut or bare.

SECTION III. OPERATION UNDER USUAL CONDITIONS.

GENERAL. Before the MILES LTID equipment can be used, it must be properly installed upon a target. To speed up task procedures, work has been organized so that some personnel may perform one set of tasks while others are performing another set of tasks.

Before you begin, READ ALL STEPS IN A TASK AND LOOK AT EACH ILLUSTRATION ASSOCIATED WITH A SPECIFIC TASK STEP. Task steps are keyed to the associated illustration with numbers placed in brackets, thus: (). Do each step as you are instructed and in the order in which it occurs in this manual.

NOTE

Don't jump ahead. Don't skip any steps.

If your MILES equipment gives you any trouble that you cannot fix using this manual, report it on DA Form 2404. To get a replacement, turn in the faulty equipment with the completed forms (DA Form 2402 and 2404).

TASK ASSIGNMENT. Turn to the appropriate section of this manual and perform the task in the order in which it appears.

INSTALLATION TASKS LIST

NOTE

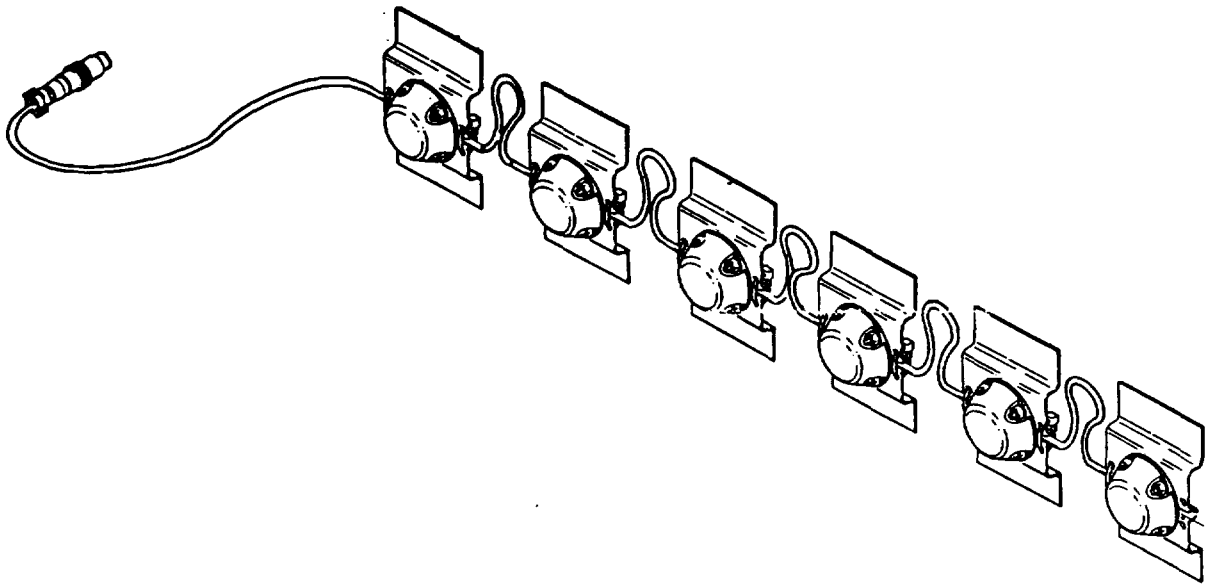
Perform these tasks in the order given.

Installation Task 1: Inspect Detection Assembly. Inspect detection assembly. Look for any damage that would prevent normal use of detection assembly.

Wipe detectors clean.

Replace detection assembly only if damaged.

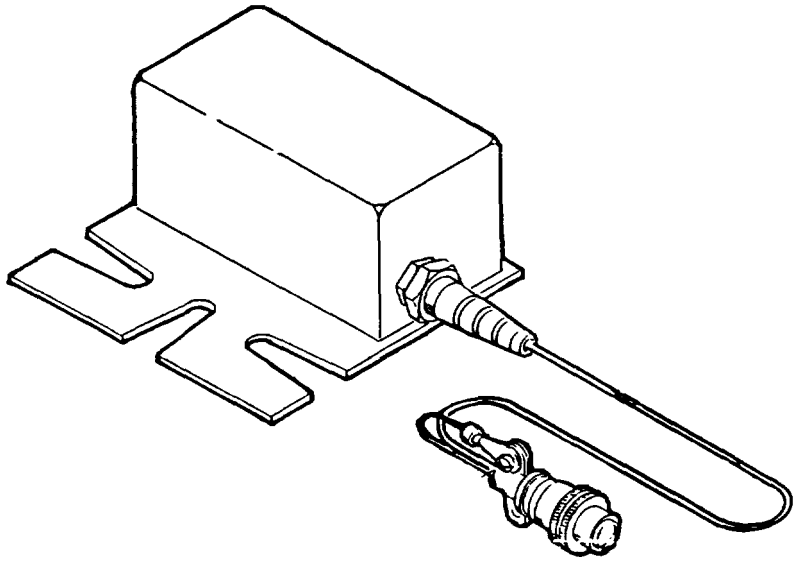
Report any damage on DA Form 2404.



Installation Task 2: Inspect Shock Generator Mechanism. Inspect shock generator mechanism for broken wire or bent or broken connector pins that would prevent normal operation.

Replace shock generator assembly if damaged.

Report any damage on DA Form 2404.



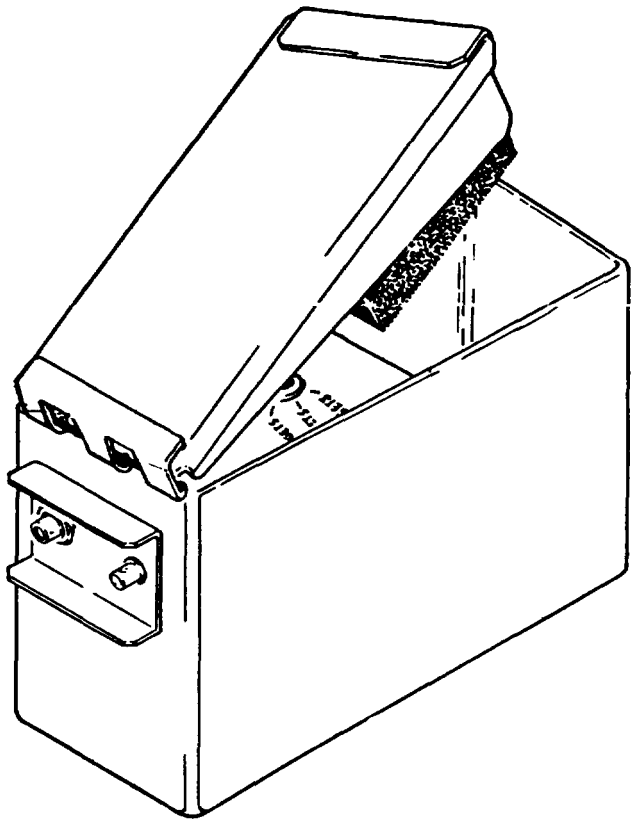
Installation Task 3: Inspect Electronic Assembly. Inspect electronic assembly. Look for any damage that would prevent normal use of electronic assembly.

Wipe assembly clean.

Replace electronic assembly only if damaged.

Inspect for any corrosion in battery compartment.

Report any damage on DA Form 2404.



Installation Task 4: Clean and Prime Target, Electronic Assembly, and Target Carrier. Hook fastener tape must be installed on target and target carriers as a base for mounting detectors on target and for mounting electronic assembly on target carrier. Pile fastener tape must be installed on electronic assemblies being mounted on target carriers.

NOTE

Obtain Pile fastener tape from CLS Maintenance.

Fastener tape (1) (Ref. Item 2, Appendix D), tape primer (2) (Ref. Item 3, Appendix D), and fastener tape, Pile (3) (Ref. Item 8, Appendix D) are required to complete this task. Target, Electronic Assembly, and Carriers must be cleaned and primed before applying tape.

NOTE

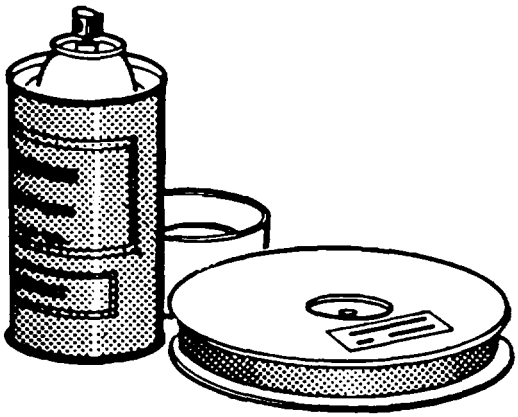
Minimum temperature for cleaning and priming is approximately 320F.

Before applying tape primer to target, be sure you know where to mount the tape. Actual location of tape is shown in installation Task 6 illustrations.

NOTE

Tape will not stick to dirty or greasy surfaces.

Tape primer and fastener tape.



WARNING

Primer is highly flammable. Do not spray near heat, sparks, or open flame. NO SMOKING. Use only in well ventilated area. Vapor is harmful; causes eye irritation.

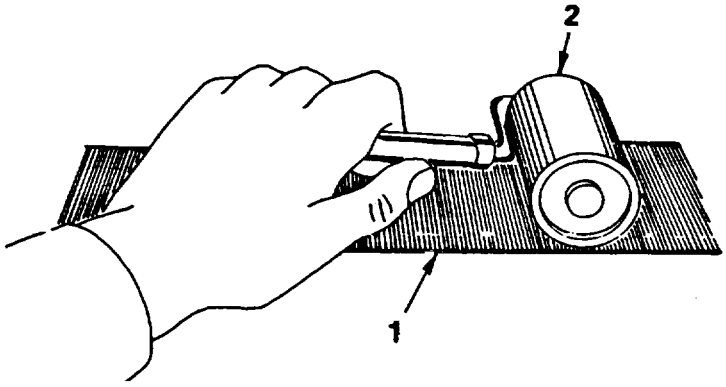
Clean areas where tape will be installed. Use water, brush (Ref. Item 5, Appendix D), and rags (Item 4, Appendix D).

Spray a heavy coat of tape primer on cleaned areas.

Allow primer to dry 3 to 5 minutes before applying fastener tape.

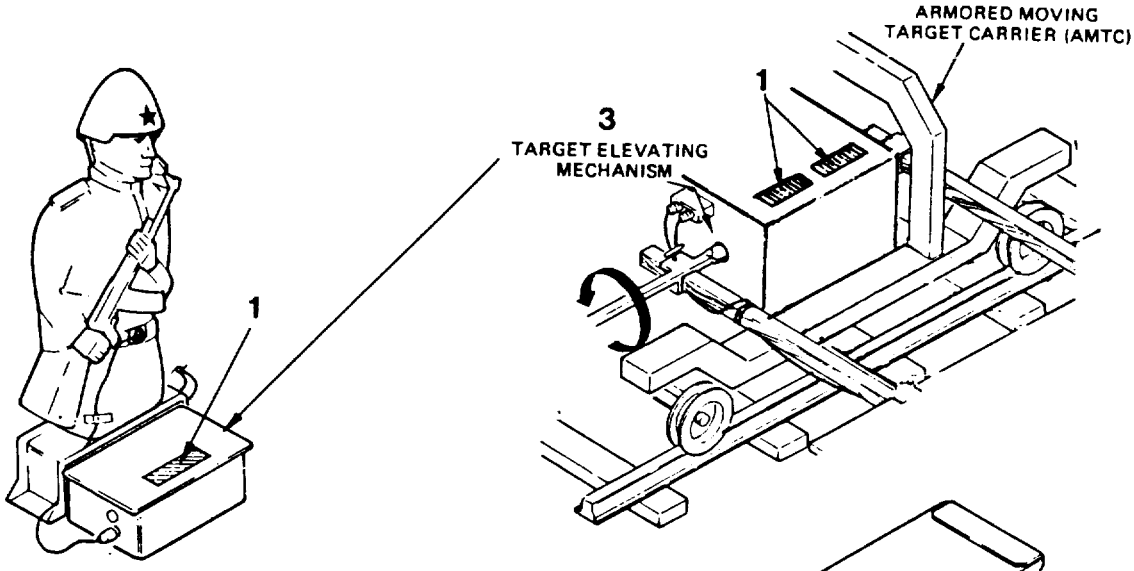
Installation Task 5: Install Fastener Tape on Target, Electronic Assembly, and Target Carrier. The tape has a protective paper backing which must be removed before installing. The entire backing may be removed before installing tape.

After tape (1) has been applied to primed areas, it must be pressed firmly with hand roller (2). Use roller (Ref. Item 2, Appendix C) as shown.

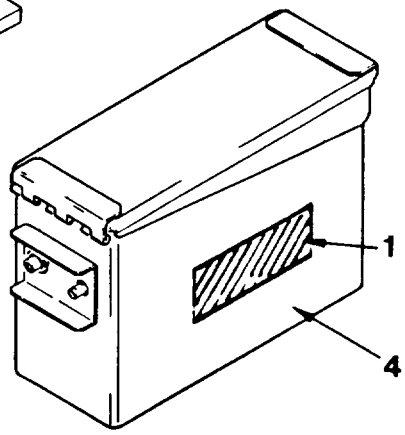


Cut tape into 3-inch strips. Locate strips of fastener tape on target according to location and dimensions given (refer to installation task 6) for the type of target being used.

Apply hook fastener tape to target lifting mechanisms (3).



Apply pile fastener tape to electronics assembly (4).



Installation Task 6: Install Detector Assembly onto Target. Install detectors at locations indicated on specific target you have selected (see following instructions).

Install detectors onto fastener tape patches installed on target.

NUMBER OF DETECTION ASSEMBLIES PER TARGET

TARGET TYPE	ONE DETECTION ASSEMBLY	TWO DETECTION ASSEMBLIES
E KNEELING	X	
F PRONE	X	
3-D	X	
T-72 (front)	X	
T-72 (flank)		X
T-72 (partial defilade)	X	
T-72 (turret)	X	
Hind		X
BMD (front)	X	
BMD (flank)		X
BRDM (front)	X	
BRDM (flank)		X
ZSU-23/4 (front)	X	
ZSU-23/4 (flank)		X
BTR Series (front)	X	
Truck U-375 (front)	X	
Truck U-375 (flank)		X
BMP 1981 (front)	X	
BMP 1981 (flank)		X
Anti-tank Gun T-12(front)	X	

Installation Task 6: Install Detector Assembly onto Target - Continued.

Install last detector (6) at location marked by solid dot on applicable illustration. Install remaining detectors on other fastener tape patches.

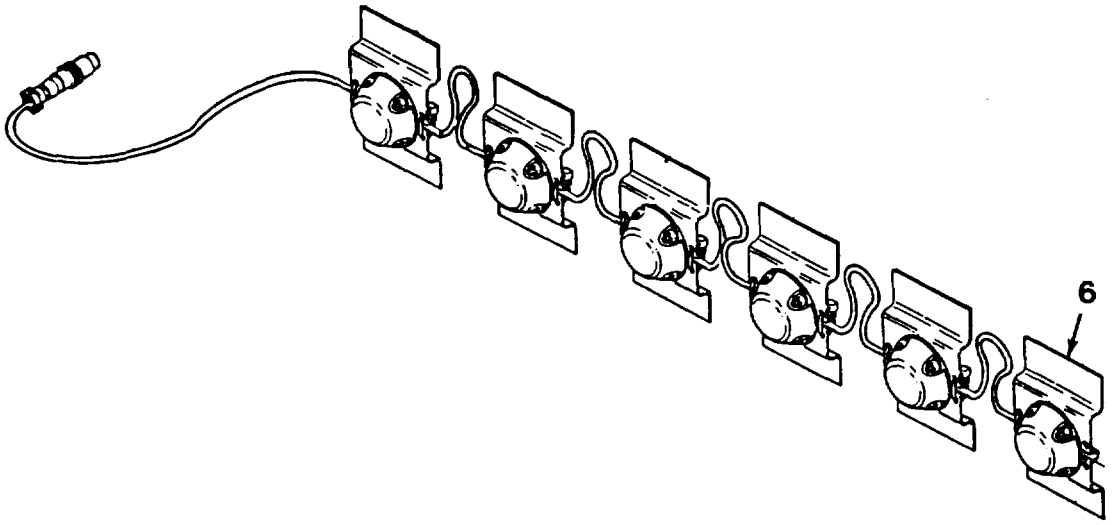
Carefully secure unused detectors to target after locating active detectors.

Cover unused detectors with all purpose duct tape to shield them from transmitter laser beams directed at target.

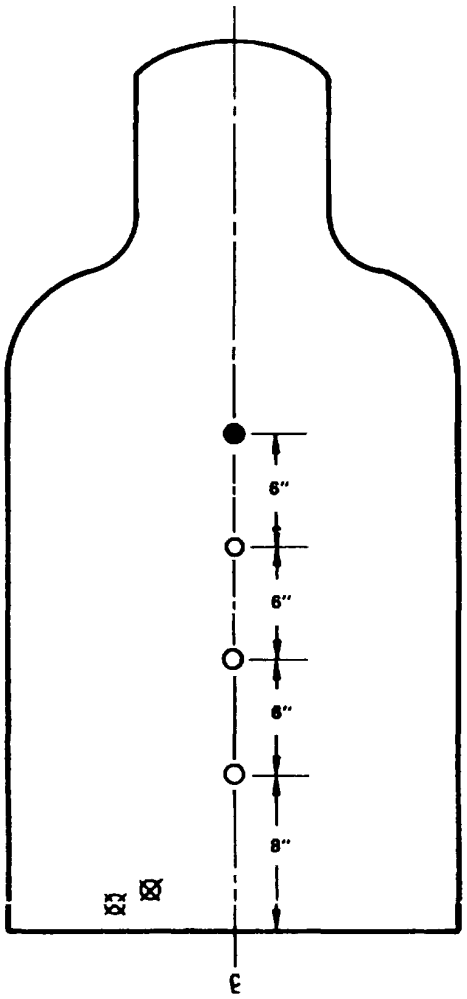
Route surplus detectors and cable to a convenient place on target (such as rear or lower corner of target) and carefully secure in place. Ensure that such installation is clear of moving parts of target lowering mechanism.

CAUTION

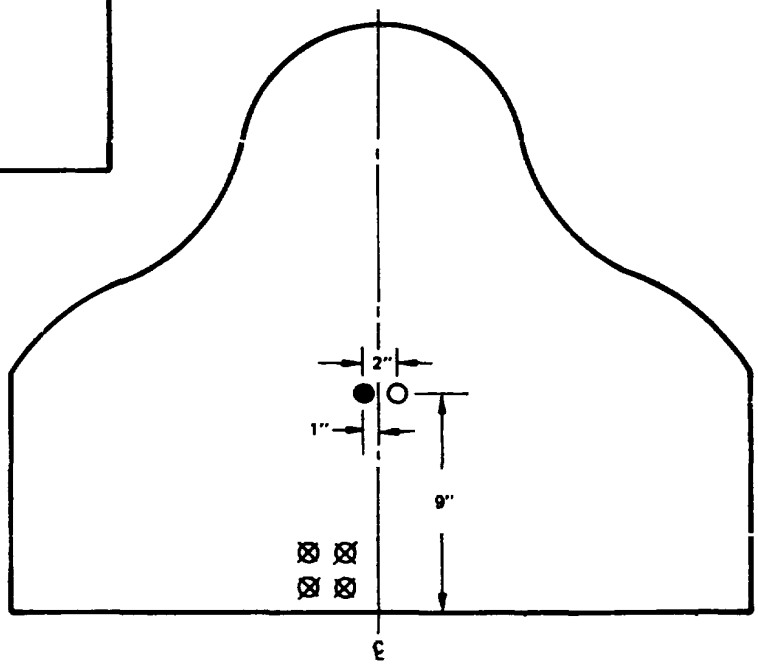
Tape up any dangling detector assembly cable that could become entangled in moving target carriers used on rails.



NOTE
Solid black dot shown on each of the following target illustration represent detector No. 6 on the detection assembly.



Detector Locations for Target, Type "E" Kneeling.

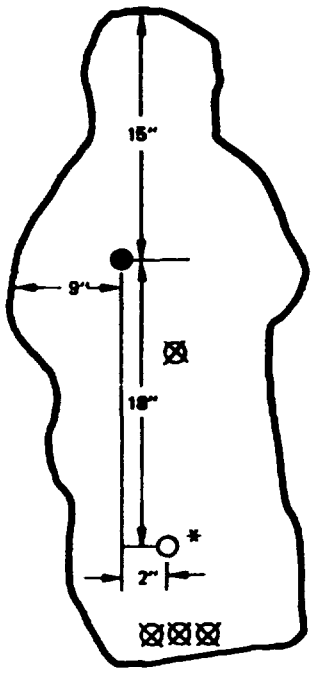


Detector Locations for Target, Type "F" Prone.

⊠ **symbol denotes unused detector that must be covered.**

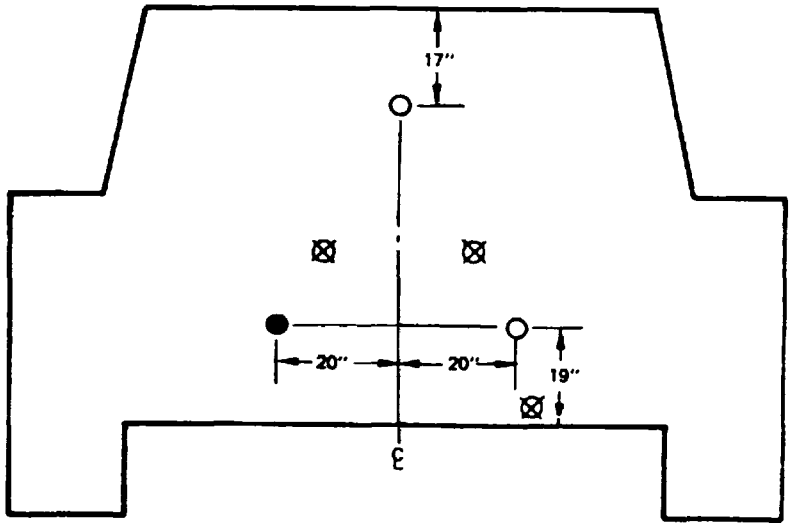
℄ **symbol denotes center line.**

Installation Task 6: Install Detector Assembly onto Target - Continued.



Detector Locations for Target, Type 3-D.

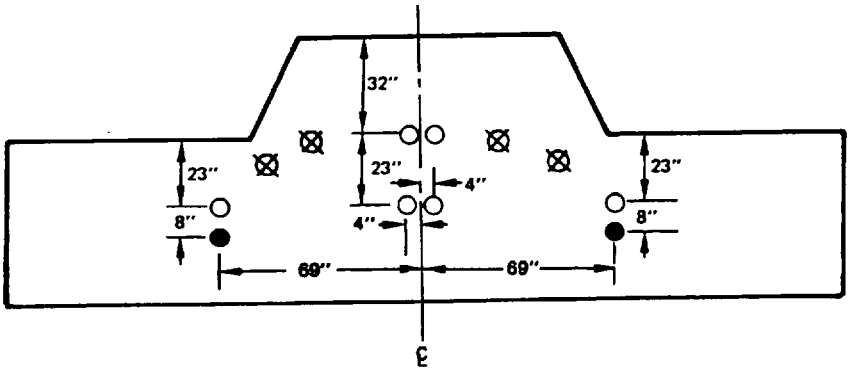
* Install detector vertically.



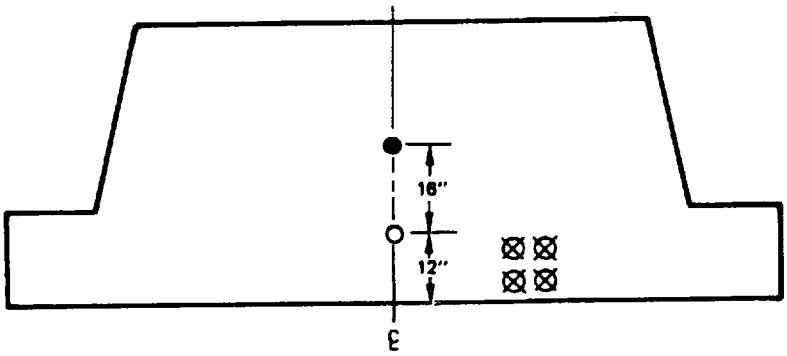
Detector Locations for Target, Type T-72 (front).

⊠ symbol denotes unused detector that must be covered.

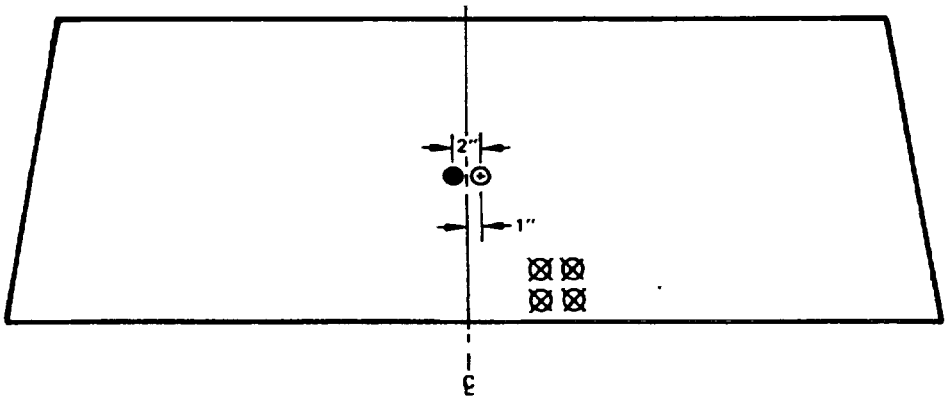
℄ symbol denotes center line.



Detector Locations for Target, Type T-72 (flank).



Detector Locations for Target, Type T-72 (partial defilade).

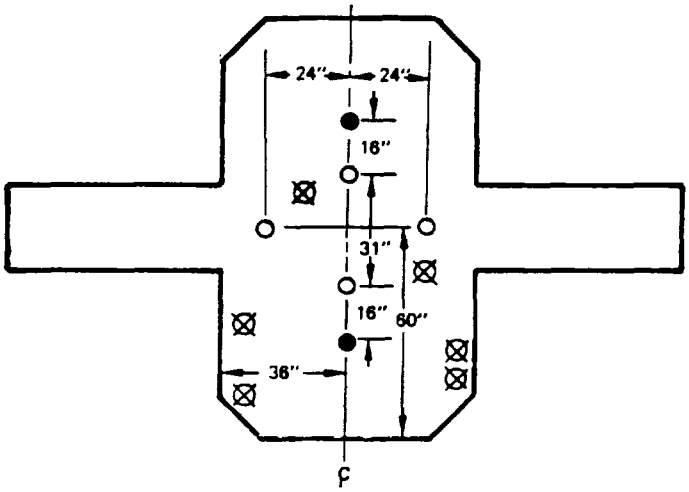


Detector Locations for Target, Type T-72 (turret).

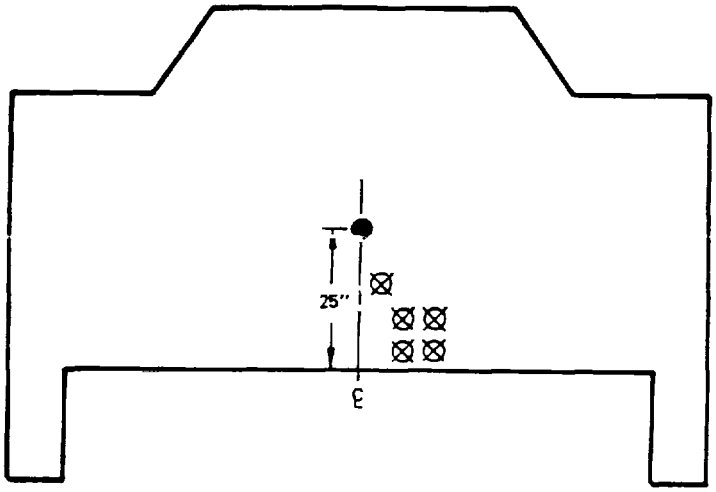
⊠ symbol denotes unused detector that must be covered.

℄ symbol denotes center line.

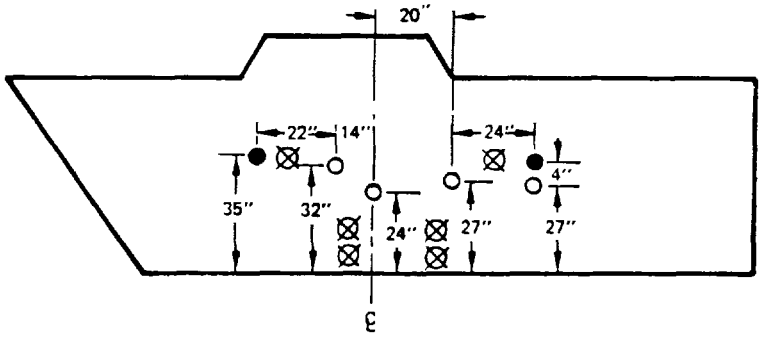
Installation Task 6: Install Detection Assembly onto Target - Continued



Detector Locations for Target, Type Hind.

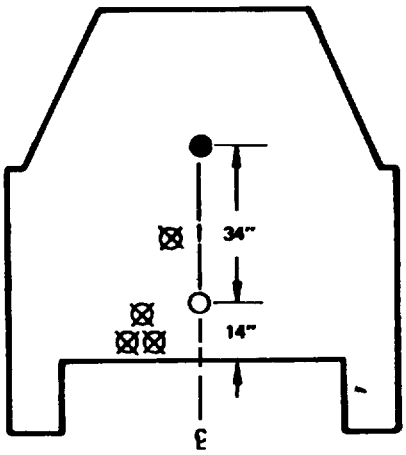


Detector Locations for Target, Type BMD (front).



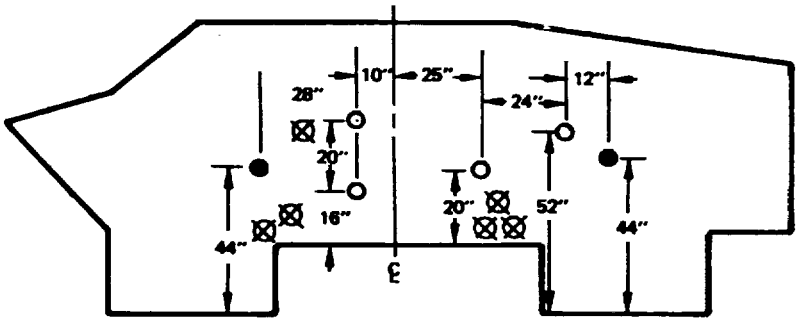
⊠ symbol denotes unused detector that must be covered.

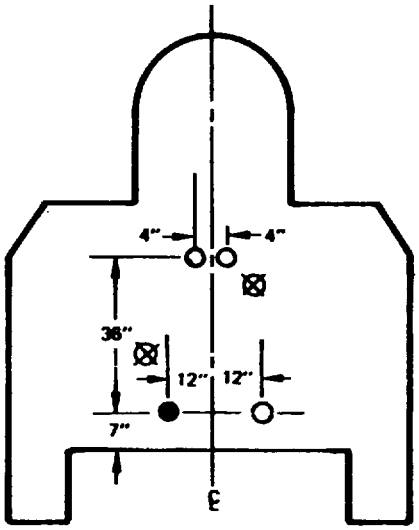
℄ symbol denotes center line.



Detector Locations for Target, Type BRDM (front).

Detector Locations for Target, Type BRDM (flank).





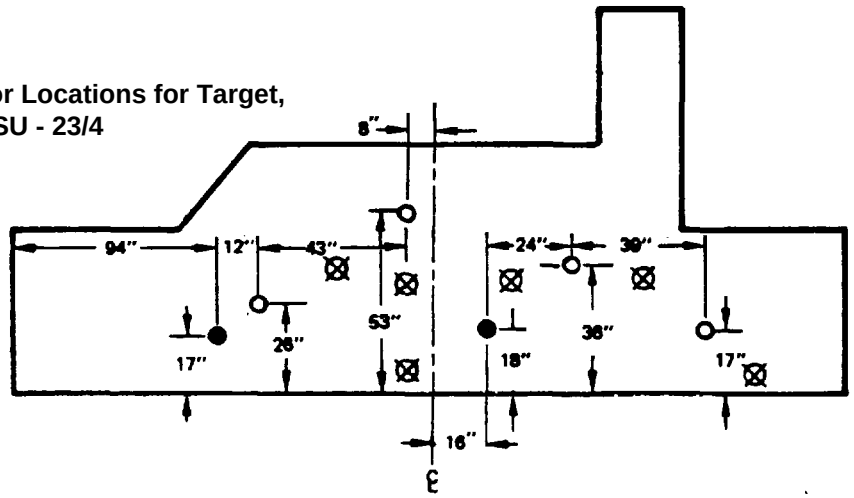
Detector Locations for Target, Type ZSU - 23/4 (front).

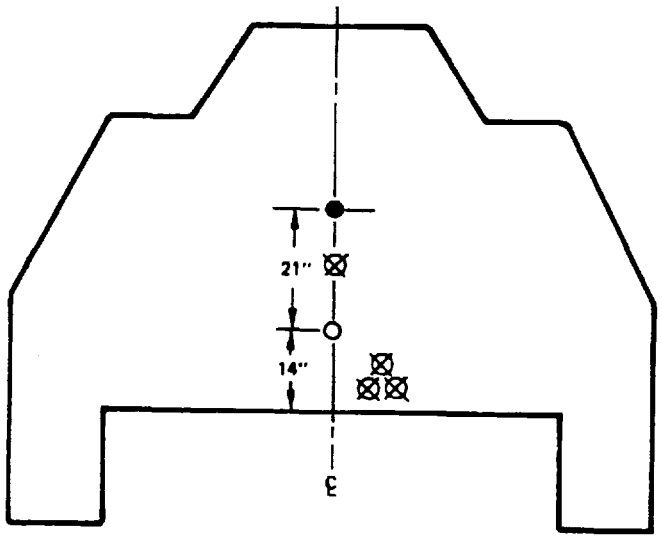
⊠ symbol denotes unused detector that must be covered.

℄ symbol denotes center line.

Installation Task 6: Install Detection Assembly onto Target - Continued

Detector Locations for Target, Type ZSU - 23/4 (flank).

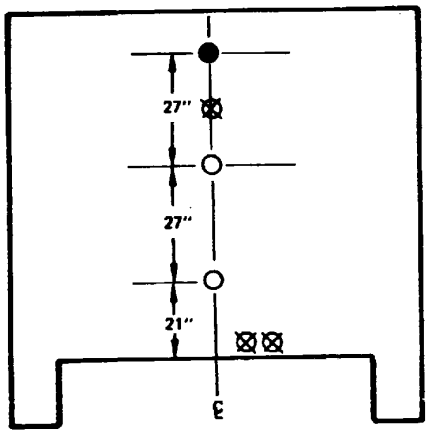




Detector Locations for Target, Type BTR Series (front).

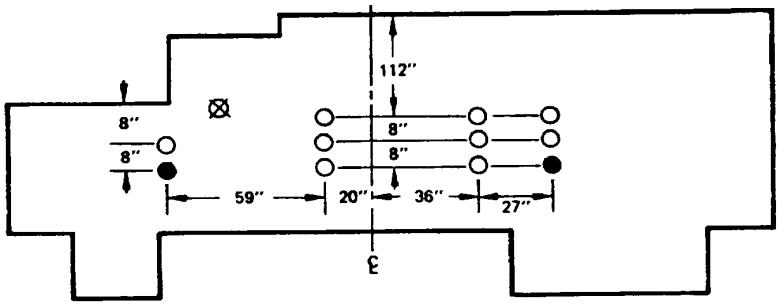
⊠ symbol denotes unused detector that must be covered.

℄ symbol denotes center line.



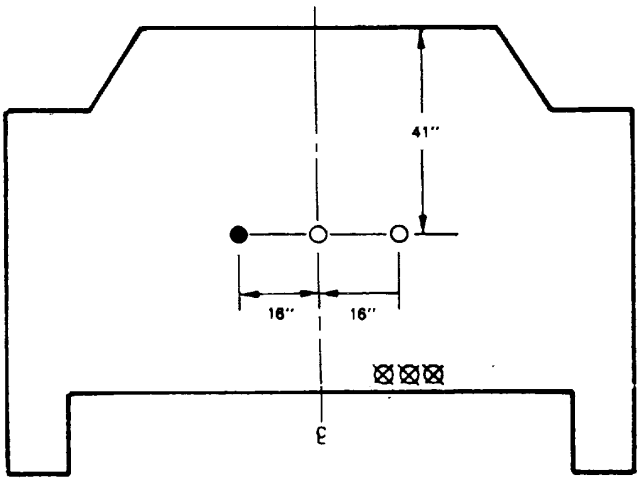
Detector Locations for Target.
Type Truck U-375
(front).

Detector Locations for Target,
Type Truck U-375 (flank).



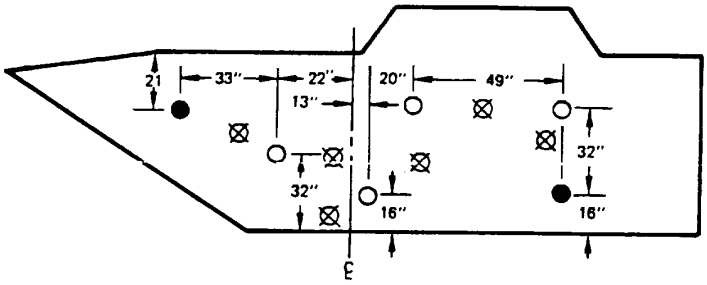
⊗ symbol denotes unused detector that must be covered.

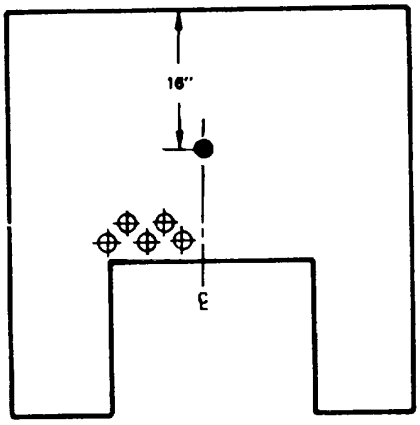
ε symbol denotes center line.



Detector Locations for Target, Type BMP 1981 (front).

Detector Locations for Target, Type BMP 1981 (flank).





Detector Locations for Target, Type Anti-tank Gun T-12 (front).

⊠ symbol denotes unused detector that must be covered.

℄ symbol denotes center line.

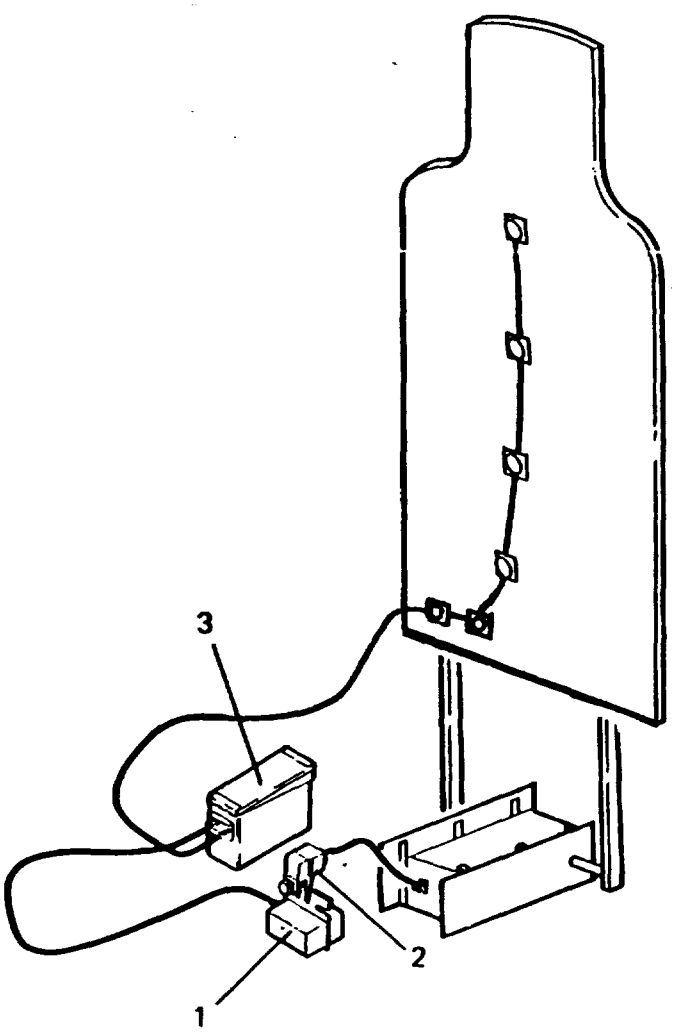
Installation Task 7: Install Shock Generator Mechanism

The mounting plate of the shock generator mechanism has three slots that enable mounting on any type of target using any available fastening hardware.

Man target installation is slightly different from tank target installation, to the following extent:

MAN TARGET INSTALLATION

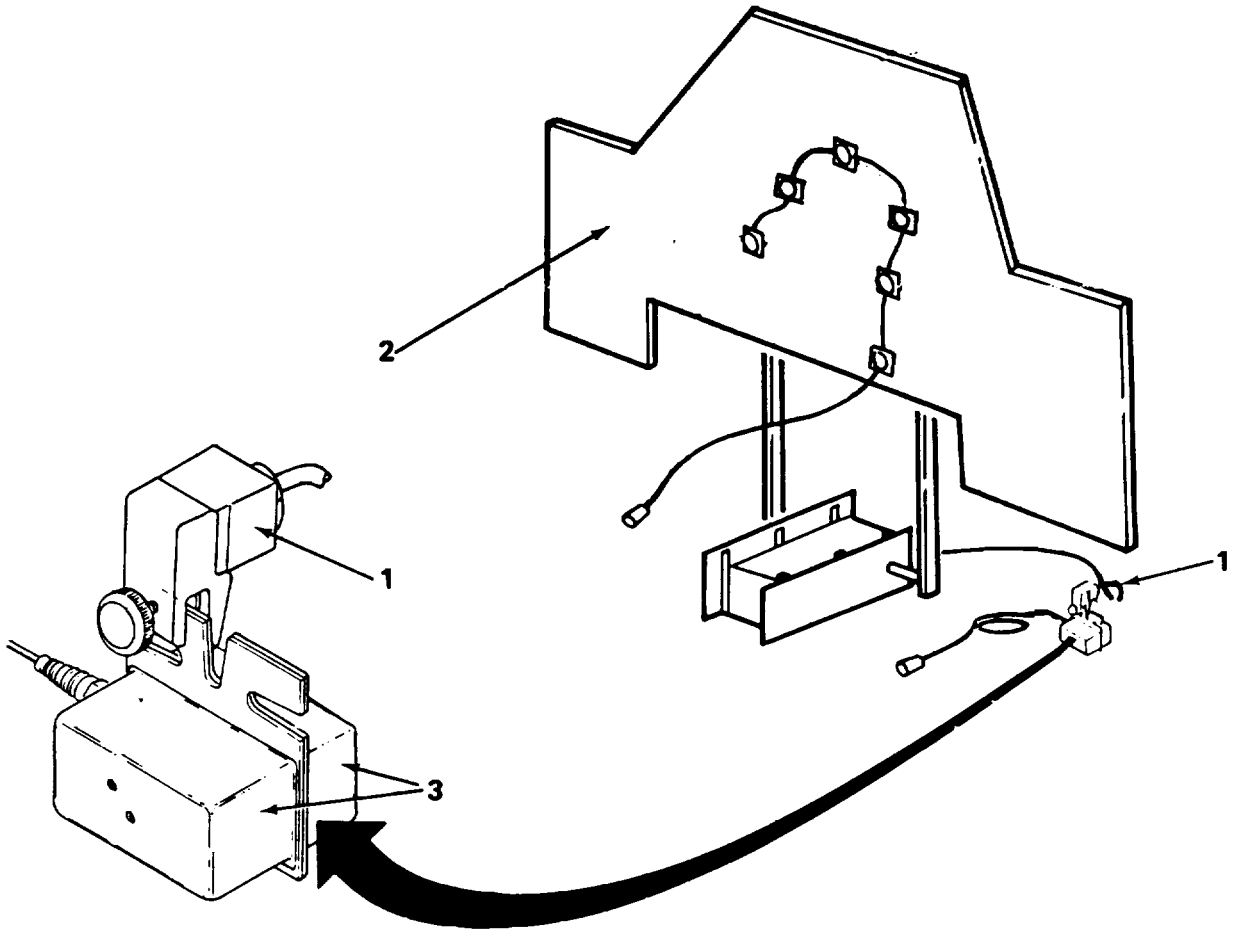
Attach MILES shock generator mechanism (1) to target shock sensor (2), securing with shock sensor fastener. Place electronic assembly (3), shock generator mechanism (2), and target shock sensor (1) close to target but clear of moving parts of target lowering mechanism



TANK TARGET INSTALLATION

Remove target shock sensor (1) from target (2). Attach target shock sensor (1) to the MILES shock generator mechanism (3), securing with shock sensor fasteners. If this cannot be done, carefully secure MILES shock generator mechanism (3) to target and install shock sensor (1) to MILES shock generator mechanism, securing with shock sensor fastener

On targets requiring two detection assemblies place two shock generator mechanism assemblies back-to-back and secure with target shock sensor fastener, as shown below.



Installation Task 8: Install Electronic Assembly.

1. Set electronic assembly RANGE select switch (8) to OFF.

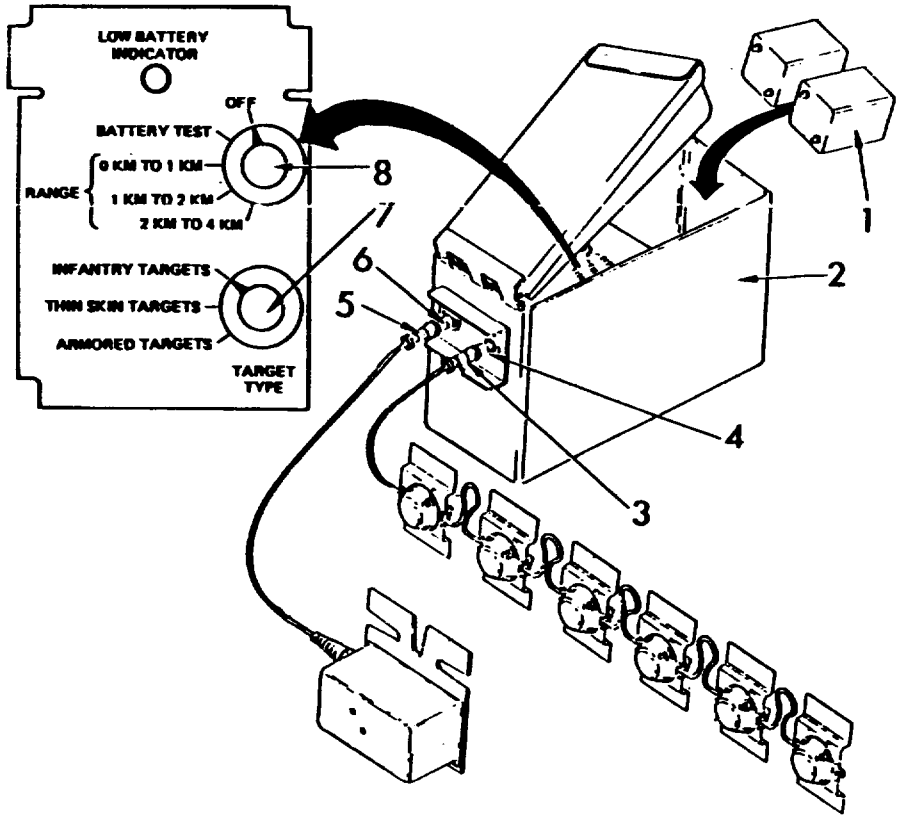
2. Install two 6 V batteries (1) (Ref. Item 1, Appendix D) into battery compartment of each electronic assembly (2). Close and secure electronic assembly lid.

3. Connect detection assembly cable connector (3) to electronic assembly BNC connector J1 (4).

CAUTION

Be careful not to bend connector pins when inserting the detection assembly cable connector into the electronic assembly BNC connector.

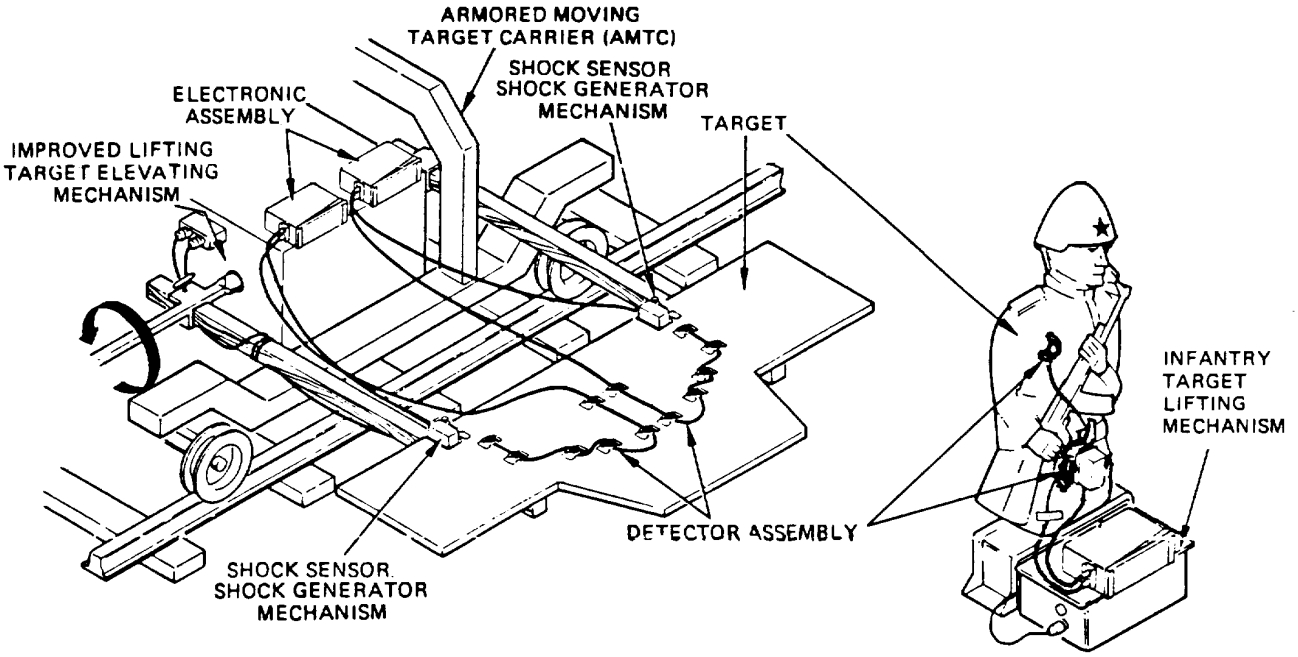
4. Connect shock generator mechanism connector (5) to electronic assembly connector receptacle J2 (6).



5. Install electronic assembly in a convenient location where it will not interfere with target operation.

Installation Task 8: Install Electronic Assembly - Continued.

6. For those targets requiring moving target carriers, install the electronic assemblies with fastener tape on the target lifting mechanism. Install shock generator mechanism to shock sensor on the target



7. Operate target lift mechanism to determine amount of slack cable required for normal use without interference with target operation. Secure cables.

CHECK AND POSTOPERATIONAL TASKS - LIST

Check Task: Operational Check of LTID System.

NOTE

LTID will not operate without batteries, or if batteries are defective or completely dead.

Check electronic assembly to assure that two 6-volt batteries are installed.

Check battery condition by setting RANGE select switch to BATTERY TEST position. If LOW BATTERY INDICATOR is lit, replace batteries.

Check cables and connectors to assure that connections are tight and there is no damage that may impair normal operation.

Check out LTID assembled components using Controller gun as follows:

Set LTID electronic assembly TARGET TYPE selector switch to INFANTRY TARGETS position.

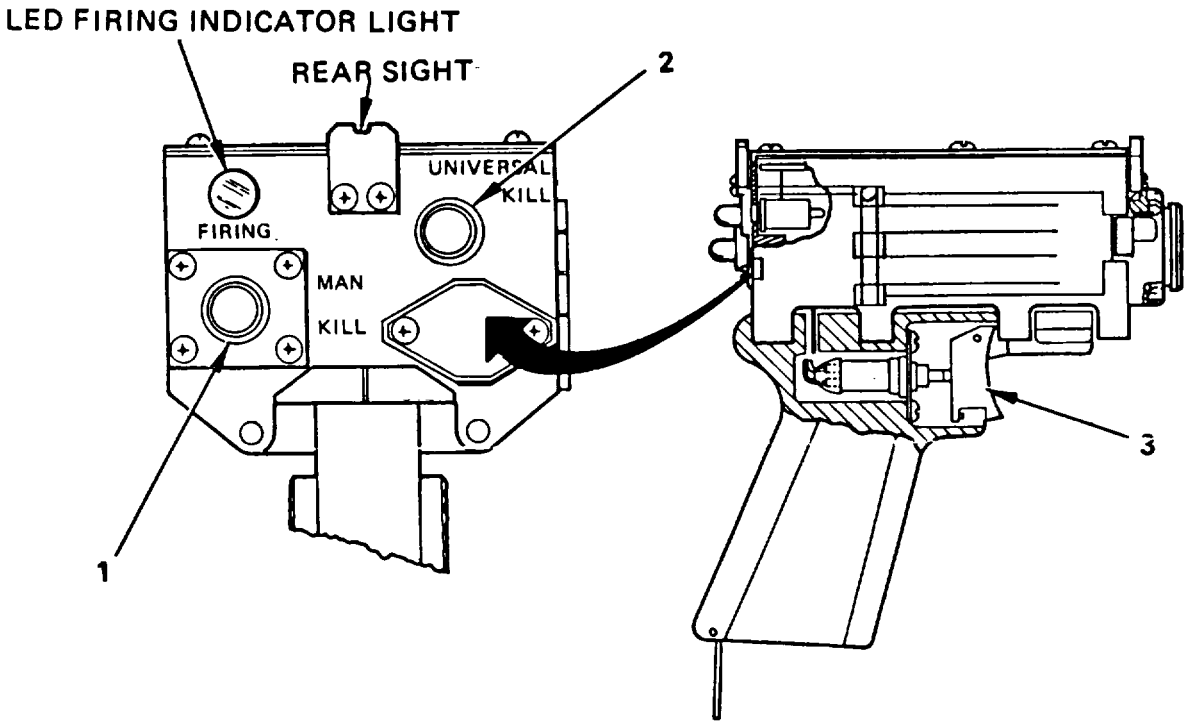
Aim Controller gun at a detection assembly detector and, while pressing controller gun MAN KILL (1) button, squeeze trigger (3). If shock generator mechanism does not respond, replace entire LTID system.

Set LTID electronic assembly TARGET TYPE selector switch to THIN SKIN TARGETS position.

Aim Controller gun at a detection assembly detector and, while pressing controller gun UNIVERSAL KILL (2) button, squeeze trigger. If shock generator mechanism does not respond, replace entire LTID system.

Set LTID electronic assembly TARGET TYPE selector switch to ARMORED TARGETS position.

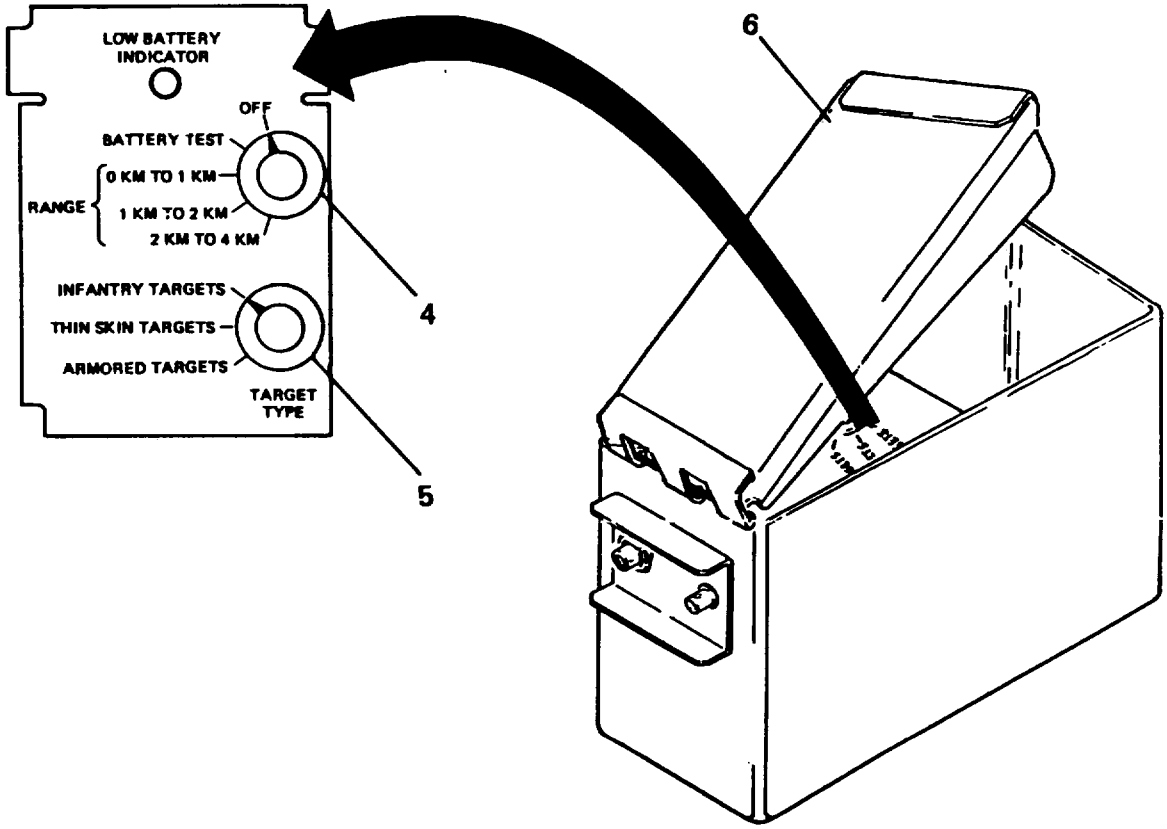
Aim Controller gun at a detection assembly detector and, while pressing controller gun UNIVERSAL KILL (2) button, squeeze trigger. If shock generator mechanism does not respond, replace entire LTID system.



CONTROLLER GUN

Check Task: Operational Check of LTID System - Continued

Set RANGE select switch (4) to range being used.



Set TARGET TYPE switch (5) to type of target being used. Close electronic assembly lid (6) and secure latch.

Postoperational Task 1: Disconnect/Inspect LTID Components.

CAUTION

Use extreme care when removing detectors from target. Remove detectors by inserting fingers or suitable tool under detector base and pulling or levering detector element away from installation tape.

Set RANGE select switch to OFF position.

Remove two 6-volt batteries from electronic assembly battery compartment. Inspect electronic assembly per installation task 3. Close and secure lid.

Disconnect detection assembly from electronic assembly and remove detection assembly from target. Inspect detection assembly per installation task 1.

Disconnect shock generator mechanism from electronic assembly and remove shock generator assembly from target. Inspect shock generator assembly per installation task 2.

Postoperational Task 2: Packing Instructions.

Place detection assembly and shock generator mechanism assembly into storage box. Close and secure lid.

Return all LTID equipment.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all Forms, Field Manuals, Technical Manuals and miscellaneous publications referenced in this manual

A-2. FORMS

SF 368	Quality Deficiency Report
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2402	Exchange Tag
DA Form 2404	Equipment Inspection and Maintenance Worksheet

A-3. FIELD MANUAIS

FM 21-11	Field Manual: First Aid for Soldiers

A-. TECHNICAL MANUAILS

TM 9-1265-371-14&P	Operator, Organization, Direct Support, and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Controller's Gun, Simulator System, Laser.

AT. MISCELLANEOUS PUBLICATIONS

AR 25-30	The Army Integrated Publishing and Printing Program
SB 11-6	Dry Battery Supply Data
DA PAM 738-750	The Army Maintenance Management System

APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section L INTRODUCTION

B-1. SCOPE

This appendix lists components of end item and basic issue items for the MILES LTID to help you inventory items required for safe and efficient operation.

B-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 requisition 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 MILES LTID in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the MILES LTID during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item

B-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number. This column indicates the number of the illustration in which the item is shown.

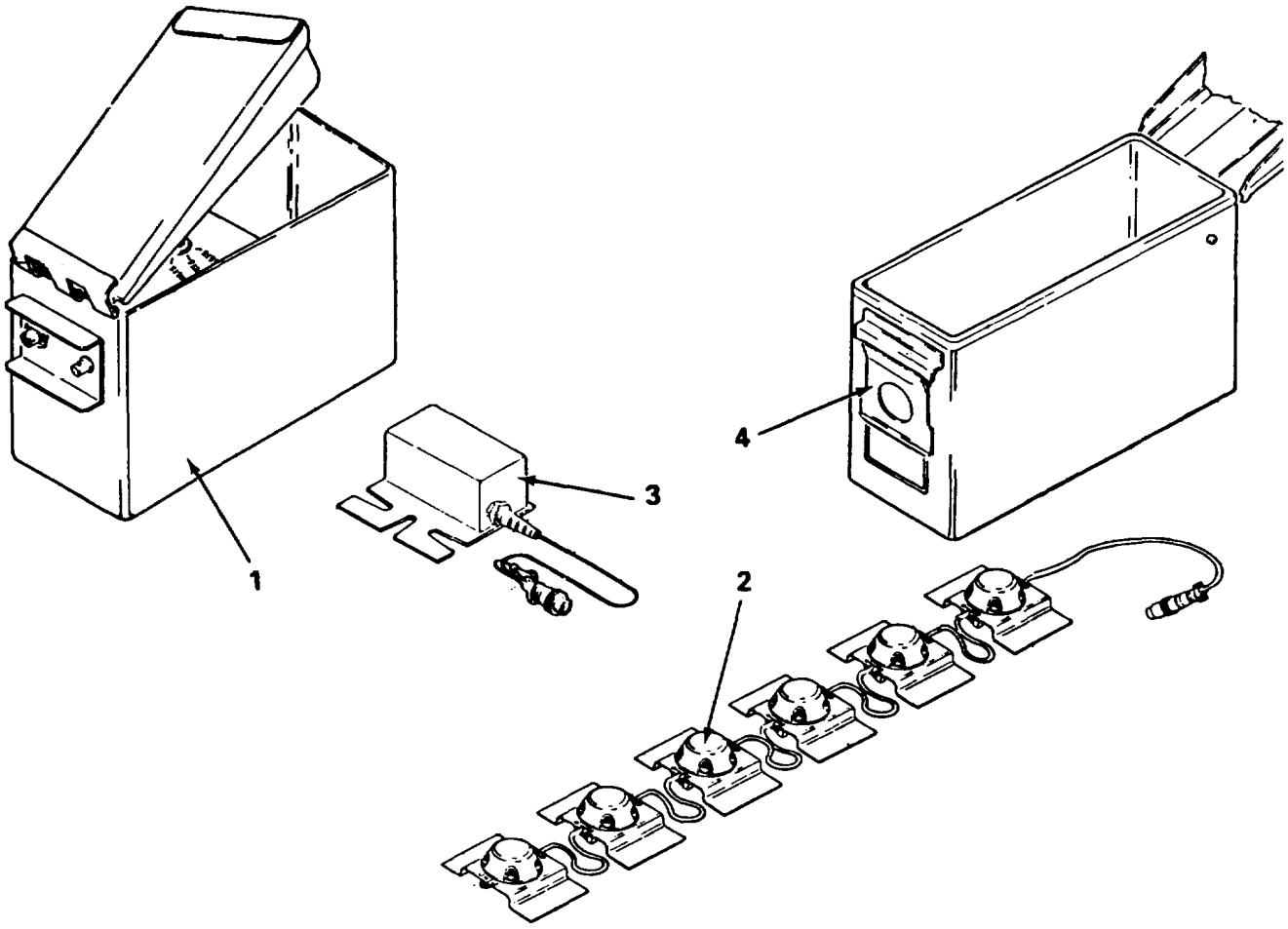
b. Column (2) - National Stock Number. Indicates the National Stock number assigned to the item and will be used for requisitioning purposes.

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 (e.g., ea., in., pr).

E. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

COMPONENTS OF END ITEM



Section IL COMPONENTS OF END ITEM

LASER TARGET INTERFACE DEVICE (LTID)

Illustration Number	National Stock Number	Description FSCM and Part Number	Qty U/M	Rqr
1	N/A	Electronic Assembly, Interface, Laser Target (19200) 12629861	EA	1
2	N/A	Detection Assembly (19200) 12629862	EA	1
3	N/A	Shock Generator Mechanism Assembly(19200) 12629863	EA	1
4	N/A	Storage Container (19200) 12629893	EA	1

SECTION III. BASIC ISSUE ITEMS

1 ea.	TM 9-1265-376-10	Operators Manual for MILES. Indicator, Simulator system, Laser Target Interface Device

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I INTRODUCTION

C-1. SCOPE

This appendix lists additional items you are authorized for the support of the MILES LTID System.

C-2. GENERAL

This list identifies items that do not have to accompany the MILES LTID System and that do not have to be turned in with it. These items are all authorized to you by either CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LSTING

National stock numbers, descriptions, and quantities are provided to help you Identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II ADDITIONAL AUTHORIZATION LIST

National Stock Number	Description FSCM & Part Number	Usable On Code	Qty.	U/,M
1265-01-092-0891	Controller's Gun, Simulator System, Laser		1	EA
	(19200) 11748811			
5110-00-892-5071	Knife, Craftsman, GGG-K-494		1EA	
5120-00-243-9401	Roller, Hand (24617) 6523520		1EA	
5210-00-081-4719	Tape, Measuring, 8-foot, Type V, Style 1, GGG-T-106		1EA	

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LET

Section I INTRODUCTION

D-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the MILES LTID System. 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, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items), or CTA, Army Medical Department Expendable/Durable Items

D-2. EXPLANATION OF COLUMNS

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

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

C - Operator/Crew

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

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

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

Section II EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description FSCM & Part Number	Usable On Code	(5) U/M
1	C	6135-00-050-3280	* Battery, 6-volt (80058) BA-200/U		2 EA
2	C	8315-01-111-7170	Fastener Tape (Velcro) (19200) 11749428		YD
3	C	8010-01-040-0947	Tape Primer (19200) 11749034		CN
4	C	7920-00-205-1711	Rag, Wiping: Cot (81348) DDD-R-30, class 12, group B		LB
5	C	7920-00-255-7536	Brush, Cleaning (81348) H-B-181		EA
6	C	7510-00-890-9875	Tape, Pressure Sensitive: Adhesive (81348) PPP-T-60		RL
7	C	7510-00-223-6706	Chalk, Marking, (58536) A-A-318		BX
8	C	Tape, Fastener, Pile	(19200) 11749431		YD

* 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.

NOTE

Alkaline batteries may be used as a substitute for dry batteries.

By Order of the Secretary of the Army:

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

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches

1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches

1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches

1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet

1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches

1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces

1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

5/9 (°F -32) = °C

212° Fahrenheit is equivalent to 100° Celsius

90° Fahrenheit is equivalent to 32.2° Celsius

32° Fahrenheit is equivalent to 0° Celsius

9/5 C° +32 = F°

WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces

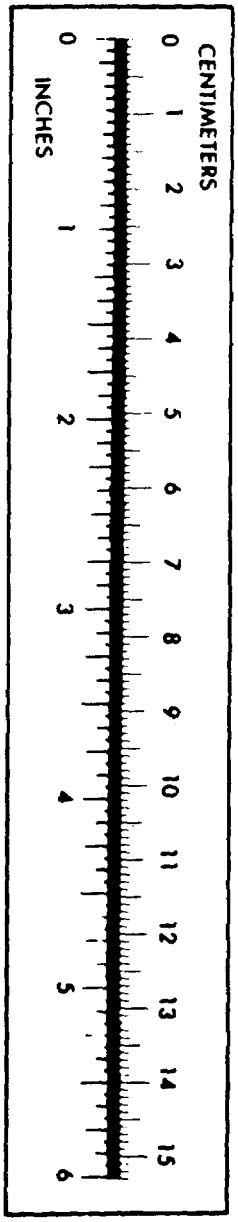
1 Kilogram = 1,000 Grams = 2.2 Lb.

1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



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