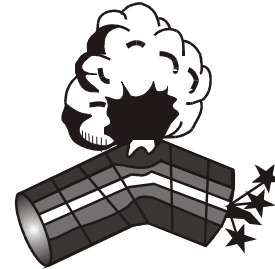


# TM 9-1370-207-10

---

TECHNICAL MANUAL  
OPERATOR'S MANUAL  
**PYROTECHNIC SIMULATORS**



Supersedes TM 9-1370-207-10, 30 December 1983.

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

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---

**31 MARCH 1991**

## **WARNINGS**

PYROTECHNICS CONTAIN HAZARDOUS MATERIALS.

DON'T HANDLE IF DAMAGED.

HANDLE CAREFULLY AND, IF SITUATION PERMITS, WEAR FULL HELMET AND GLOVES.

KEEP AWAY FROM FIRE AND HOT SURFACES.

AIM AWAY FROM FACE, BODY, AND FRIENDLY TROOPS.

CHECK WIND DIRECTION TO AVOID FIRE, SMOKE INHALATION OR IRRITATION, WITH ALL PYROTECHNIC ITEMS.

THE M30 MGSS POSES A HEARING HAZARD WITHIN 26 METERS, A FRAGMENTATION HAZARD WITHIN 5 METERS, AND A VISUAL/FLASH HAZARD WITHIN 2 METERS. WHEN FIRING THE M30 MGSS, ALL VEHICLE HATCHES WILL BE CLOSED.

**Change 4**

CHANGE )  
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for  
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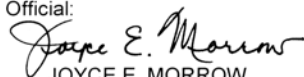
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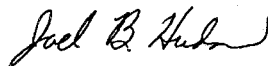
1 and 2  
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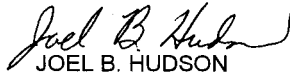
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46.3 and 46.4

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FOR  
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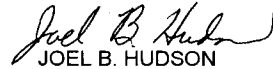
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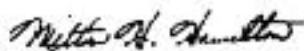
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Change . . . . . 2 . . . . .	15 January 1992	Change . . . . . 6 . . . . .	26 January 2004
Change . . . . . 3 . . . . .	5 November 1992	Change . . . . . 7 . . . . .	14 September 2006

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**TECHNICAL MANUAL**

**No. TM 9-1370-207-10**

**HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 31 March 1991**

**Operator's Manual  
for  
Pyrotechnic Simulators**

**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 or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Logistics Research and Engineering Directorate (AMSRD-AAL-AIL-LS), U.S. Army RDECOM, Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ 07806-5000. You may also send in your recommended changes via electronic mail or by fax. Our e-mail address is LSB@PICA.ARMY.MIL. Our fax number is DSN 880-4633, Commercial (973) 724-4633. A reply will be furnished to you.

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**DISPOSING  
OF  
DUDS**

**FOLLOW PRESCRIBED WAITING TIME OUTLINED  
IN PARAGRAPH CONCERNING ITEM IN USE.**

DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EXPLOSIVE  
ORDNANCE DISPOSAL (EOD) PERSONNEL.  
CALL EOD FOR DISPOSAL.

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**Change 4 2.1**

# **DISPOSING OF DUDS**

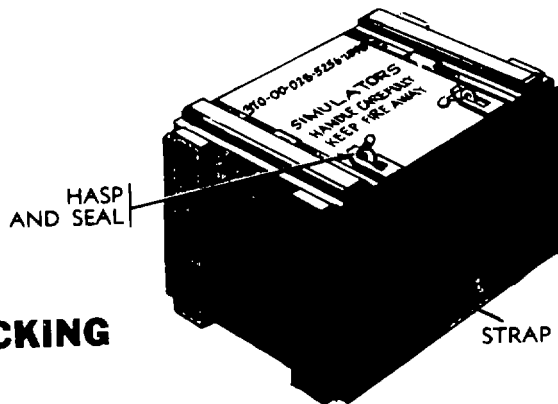
**FOLLOW PRESCRIBED WAITING TIME OUTLINED  
IN PARAGRAPH CONCERNING ITEM IN USE.**

**DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EXPLOSIVE  
ORDNANCE DISPOSAL (EOD) PERSONNEL.  
CALL EOD FOR DISPOSAL.**

**2.2 Change 4**



## UNPACKING



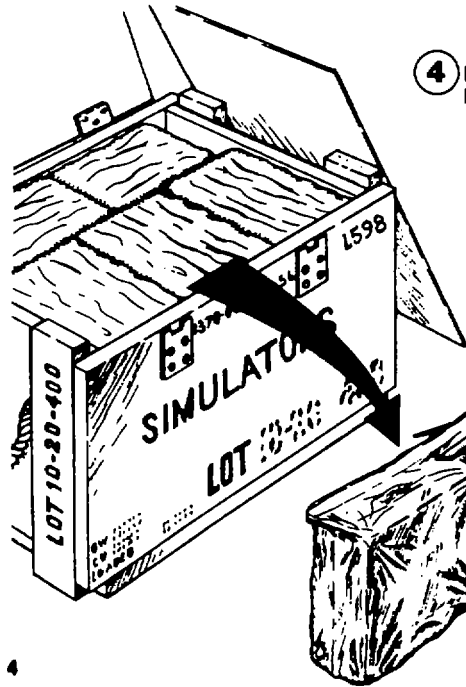
### CHAPTER I

#### CAUTIONS KEEP BOXES SEALED.

DUDS OR IMPROPER FUNCTIONING  
COULD OCCUR IF EXPOSED TO  
MOISTURE.

OPEN JUST BEFORE USE.

- (1) Cut steel strapping carefully with metal shears to avoid springback. Remove and dispose of metal straps.
- (2) Cut metallic seal with pliers. Discard seal.
- (3) Turn hasp catch and open hasps on hinge-and-hasps boxes, or pull out on spring-latch to release on spring-latch boxes.



4 LIFT BOX TOP AND REMOVE TOP FILLER. REMOVE BARRIER BAG.

5 CUT BARRIER BAG OPEN ALONG THE EDGE WITH MOST FREE AREA, CUTTING AS CLOSE TO SEALED EDGE AS POSSIBLE.

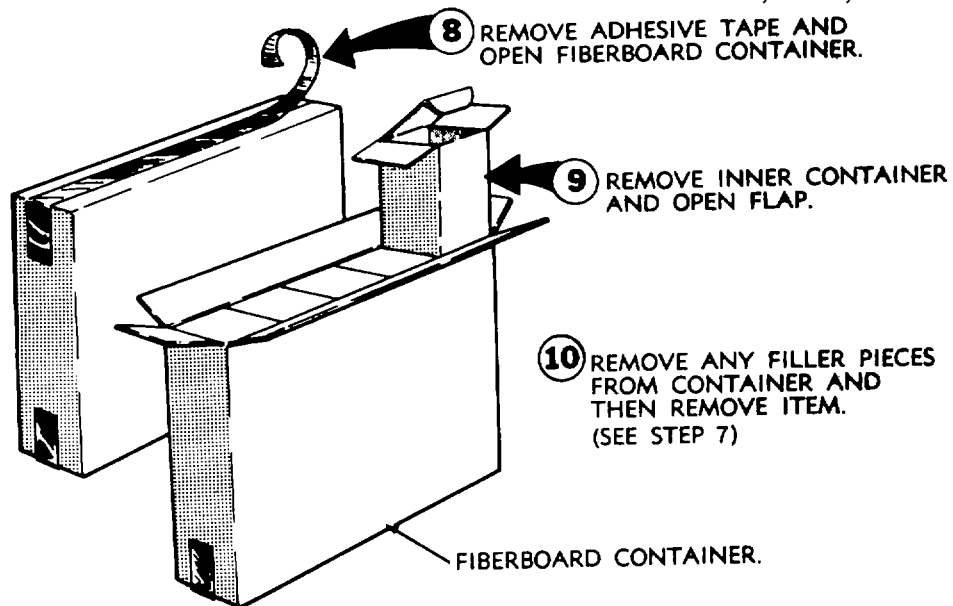
6 REMOVE AND OPEN PAPERBOARD CARTON.

7 REMOVE ITEMS. IF ALL ITEMS ARE NOT REMOVED, CLOSE AND RESEAL CARTON WITH ADHESIVE TAPE.

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AR 5258

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CONTINUE WITH FOLLOWING STEPS FOR BOOBY-TRAP SIMULATORS M117, M118, AND M119 ONLY



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CHAPTER II

SECTION (1)

EXPLOSIVE DETONATION SIMULATOR M80

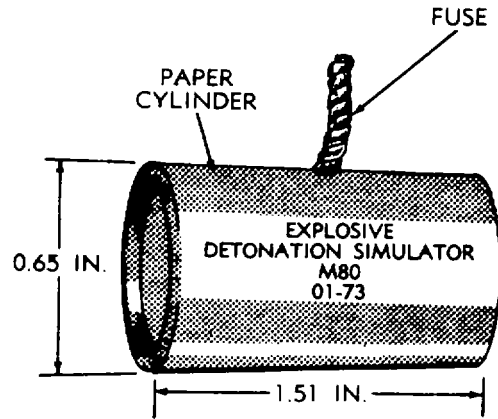
WARNINGS

DON'T

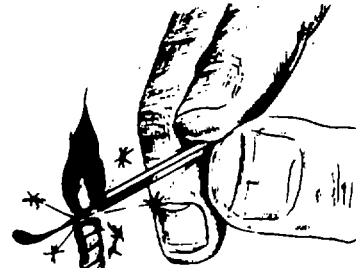
- TAMPER WITH FUSE.
- USE M1 OR M2 BLASTING FUSE IGNITERS WITH M80 SIMULATOR.
- TAMPER WITH ANY SIMULATOR. AR 5260 7

## DESCRIPTION

THE M80 SIMULATOR IS A PAPER CYLINDER CONTAINING THE CHARGE COMPOSITION AND IS USED TO SIMULATE RIFLE OR ARTILLERY FIRE, HAND GRENADES, BOOBYTRAPS, OR LAND MINES.



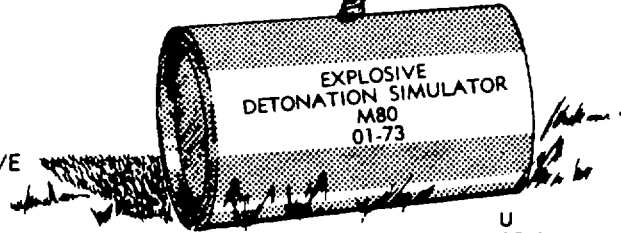
# OPERATION



## TO IGNITE IN PLACE

①  
PLACE SIMULATOR  
ON CLEARED GROUND.

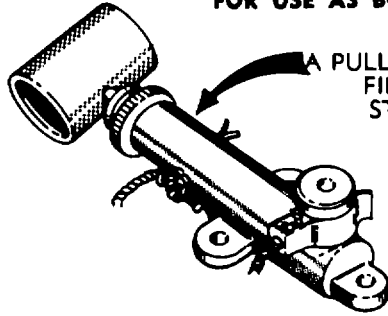
②  
IGNITE WITH MATCH, MOVE  
15 FEET AWAY FROM  
SIMULATOR, AND FALL  
TO GROUND.



U  
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1

**FOR USE AS BOOBYTRAP OR LANDMINE SIMULATORS**



A PULL-TYPE, PULL-RELEASE TYPE, OR PRESSURE-TYPE FIRING DEVICE (TM9-1375-213-12) MAY BE SUBSTITUTED FOR FUSE. INSERT COUPLING BASE NIPPLE OR FIRING DEVICE INTO FUSE HOLE.

FOR LAND MINE SIMULATION INVOLVING PRESSURE-TYPE FIRING DEVICES, TRAINEES **MUST WEAR COMBAT BOOTS.**

**WARNING** IF M80 DOES NOT FIRE, WAIT 5 MINUTES.

**DUD** - DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EOD PERSONNEL.  
CALL EOD FOR DISPOSAL.

# BOOBY TRAP SIMULATORS

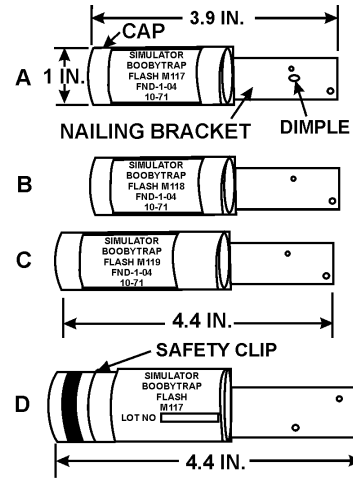
## DESCRIPTION

- A: FLASH, M117 (FLASH AND BANG) (M117 HAS DIMPLE IN BRACKET FOR NIGHT IDENTIFICATION)
- B: ILLUMINATING, M118 (28-SECOND DURATION FLAME)
- C: WHISTLING, M119 (2.5- TO 5-SECOND WHISTLE)
- D: GENERAL BOOBY TRAP SIMULATOR WITH SAFETY CLIP

ALL FOUR TYPES HAVE A TUBULAR BODY

EACH TYPE IS ISSUED WITH A ROLL OF TRIP-WIRE, STAPLES, NAILS, AND EXTENSION SPRING

## SECTION ②



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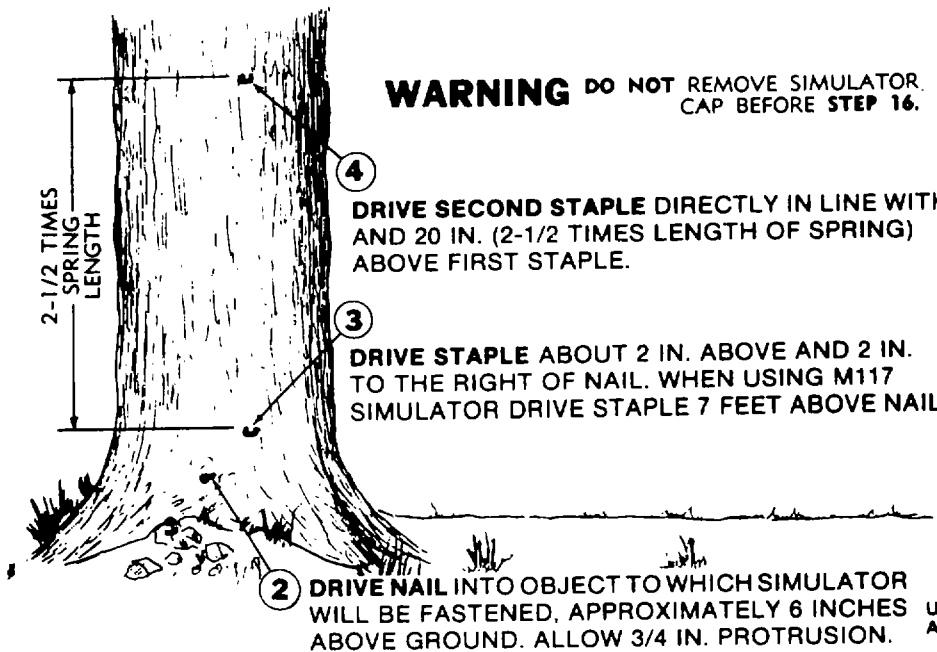
## OPERATION

- 1 **TO INSTALL...SELECT TWO WOODEN OBJECTS** INTO WHICH NAILS MAY BE DRIVEN, SUCH AS TREES, FENCES, OR WOODEN POSTS AT LEAST 2 BY 4 INCHES IN CROSS SECTION, EMBEDDED IN THE GROUND AT LEAST 3 FEET. OBJECT TO WHICH SIMULATOR IS TO BE FASTENED MUST BE AT LEAST 5-1/2 FEET HIGH. WHEN USING M117, OBJECT MUST BE 10 FEET HIGH.

## WARNING

**DO NOT** ATTEMPT TO USE M117 SIMULATOR BY TAPING OR WIRING IT TO MOUNTING SURFACE.

OBJECTS MUST BE LOCATED ON EACH SIDE OF PATH TO BE BOOBYTRAPPED, IN A MANNER WHICH WILL ALLOW A TRIPWIRE TO BE STRETCHED BETWEEN THEM AND BE CONCEALED AS MUCH AS POSSIBLE.



**WARNING** DO NOT REMOVE SIMULATOR. CAP BEFORE STEP 16.

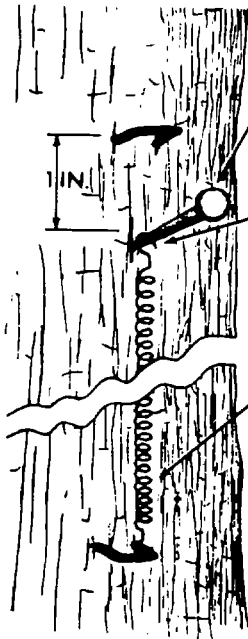
**4** DRIVE SECOND STAPLE DIRECTLY IN LINE WITH AND 20 IN. (2-1/2 TIMES LENGTH OF SPRING) ABOVE FIRST STAPLE.

**3** DRIVE STAPLE ABOUT 2 IN. ABOVE AND 2 IN. TO THE RIGHT OF NAIL. WHEN USING M117 SIMULATOR DRIVE STAPLE 7 FEET ABOVE NAIL.

**2** DRIVE NAIL INTO OBJECT TO WHICH SIMULATOR WILL BE FASTENED, APPROXIMATELY 6 INCHES ABOVE GROUND. ALLOW 3/4 IN. PROTRUSION.

U  
AR 5266

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5

**DRIVE TEMPORARY NAIL APPROX. 1 INCH BELOW TOP STAPLE. (THIS NAIL WILL BE REMOVED LATER.)**

1 IN.

6

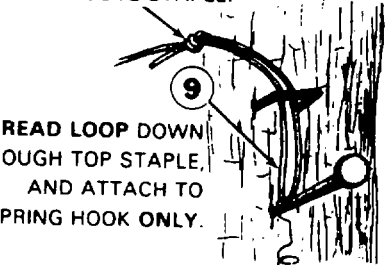
**HOOK ONE END OF SPRING TO TEMPORARY NAIL.**

7

**EXTEND SPRING, AND HOOK OTHER END TO BOTTOM STAPLE.**

8

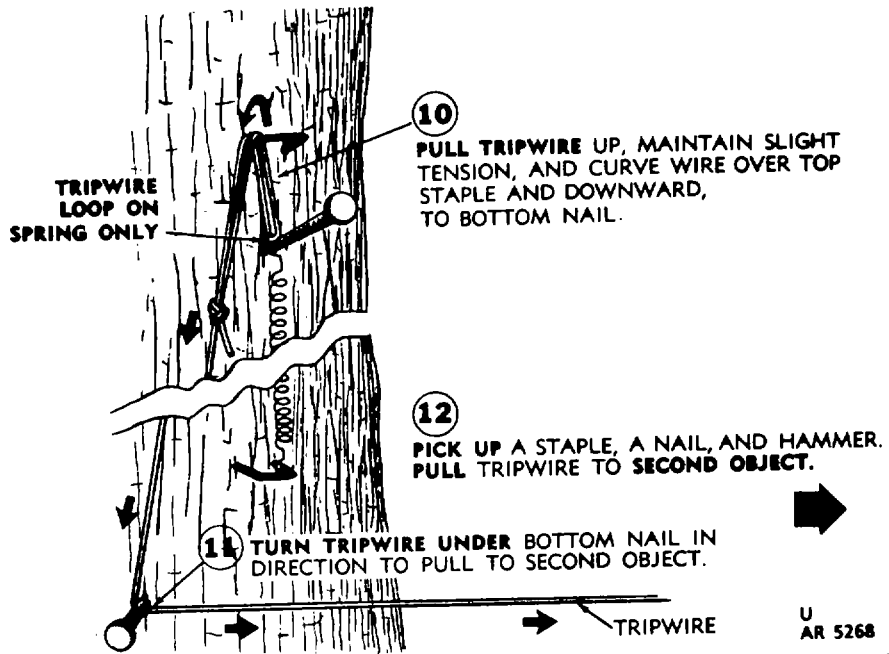
**MAKE A 6-IN. LOOP IN ONE END OF TRIPWIRE AND TIE WITH A DOUBLE KNOT. KEEP KNOT ABOVE STAPLE.**



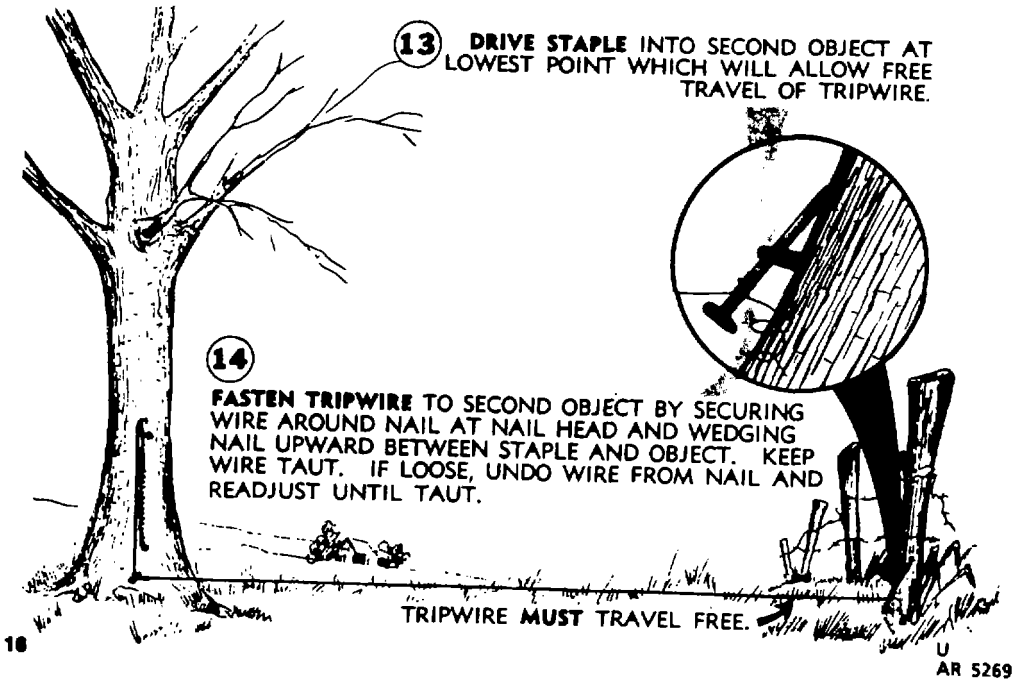
9

**THREAD LOOP DOWN THROUGH TOP STAPLE AND ATTACH TO SPRING HOOK ONLY.**





15



15

**RETURN** TO FIRST OBJECT AND GRADUALLY WORK TEMPORARY NAIL FREE WHILE CAREFULLY ALLOWING THE EXTENDED SPRING TO COMPRESS AGAINST THE TRIPWIRE LOOP ALONE.

**THEN.....**

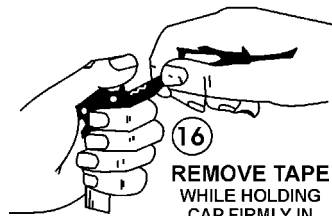
**CHECK** ENTIRE SYSTEM...

EXTENDED SPRING SHOULD NOW KEEP TRIPWIRE TAUT. MAKE SURE TRIPWIRE IS CONCEALED.

**CLEAN** GENERAL AREA. WHEN USING M117 SIMULATOR, MAKE SURE THERE IS A 3-FOOT RADIUS CLEAR AREA AROUND SIMULATOR. PERSONNEL ARE SAFE AT A DISTANCE OF 6 FEET.

# WARNING

DO NOT INITIATE ANY BOOBYTRAP  
SIMULATOR WHILE HOLDING IN HAND



16  
REMOVE TAPE  
WHILE HOLDING  
CAP FIRMLY IN  
PLACE.



17  
REMOVE CAP CAREFULLY AND MAKE  
SURE PULL-CORD IS FREE OF CAP.

18  
NAIL SIMULATOR IN POSITION  
ABOVE SPRING SO THAT  
PULL-CORD MAY BE  
TIED TO SPRING.

20  
PULL SAFETY CLIP  
TOWARDS YOU 90  
DEGREES AND PULL  
OUT FROM  
SIMULATOR  
(IF PRESENT).

19  
CAREFULLY TIE PULL-CORD  
SECURELY TO SPRING.

SIMULATOR IS NOW ARMED

AR15512

**DON'TS**

DON'T USE SIMULATOR WITH POWDER LEAKAGE.

DON'T USE SIMULATOR WITH SAFETY FUSE PULLED OUT OF SIMULATOR.

DON'T USE SIMULATOR WITH SAFETY CLIP MISSING OR OUT OF POSITION.

THE ABOVE AND OTHERWISE DEFECTIVE SIMULATORS SHOULD BE FORWARDED TO AUTHORIZED DISPOSAL PERSONNEL

**WARNINGS**

THE M115A2 GROUND BURST PROJECTILE SIMULATOR IS MORE POWERFUL THAN THE M1 16A1 HAND GRENADE SIMULATOR. IT IS NOT TO BE USED NEAR PERSONNEL DUE TO POTENTIAL HAZARD FROM FRAGMENTATION. DO NOT THROW M115A2 SIMULATORS WITHIN 35 METERS OF UNPROTECTED PERSONNEL. WHEN USING THE M1 15A2 SIMULATOR, THE THROWER SHOULD TURN AWAY FROM THE SIMULATOR AND GET INTO A PROTECTIVE STANCE AFTER THROWING. THE SAFETY RADIUS OF THE M1 16A1 SIMULATOR IS 15 METERS.

DO NOT WAIT FOR WHISTLE BEFORE THROWING M 115A2 SIMULATOR.

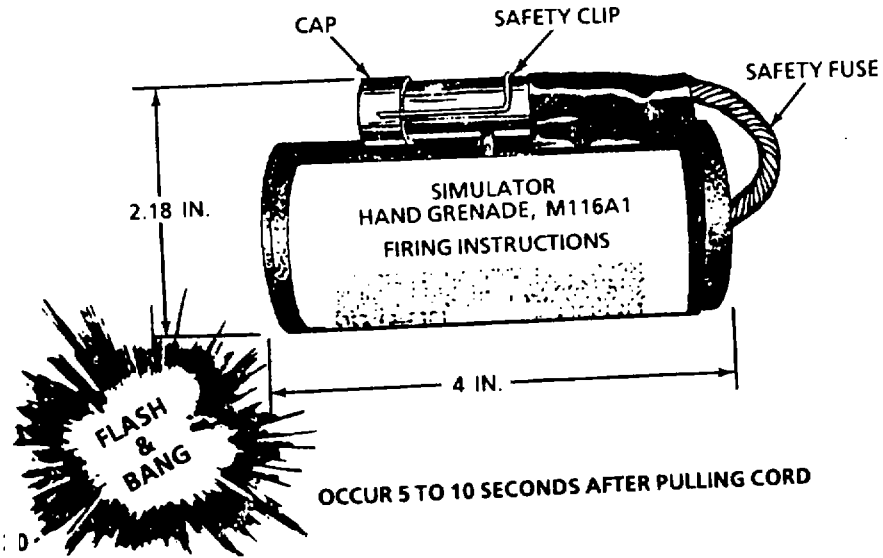
DO NOT PICK UP ANY SIMULATOR DROPPED AFTER PULL CORD HAS BEEN PULLED.

**BEFORE FIRING, READ INSTRUCTIONS ON ITEM. WEAR STANDARD ISSUE LEATHER GLOVE ON FIRING HAND.**

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AR 5272-A

DESCRIPTION

HAND GRENADE SIMULATOR, M116A1



U  
AR 5273

## OPERATION

### HAND GRENADE SIMULATOR, M116A1

#### UNPACK

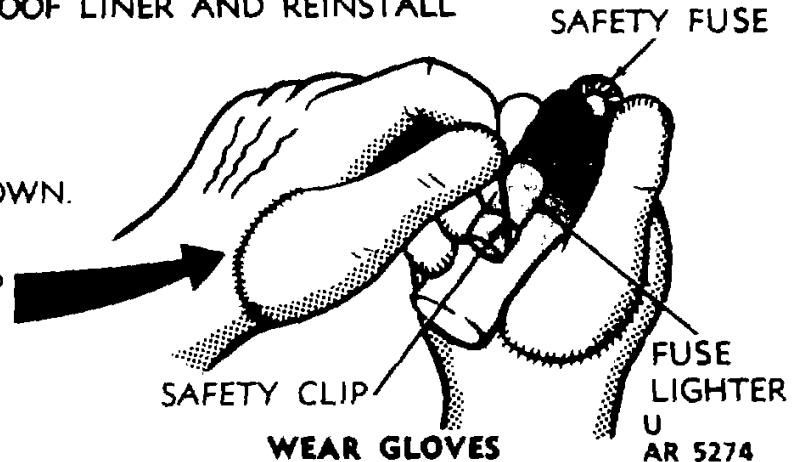
- 1 REMOVE COVER FROM PACKING BOX AND CAREFULLY OPEN WATERPROOF LINING (LINING MUST BE RESEALED).
- 2 REMOVE DESIRED NUMBER OF SIMULATORS.
- 3 BALANCE REMAINING SIMULATORS IN BOX BY INSERTING FILLER MATERIAL.

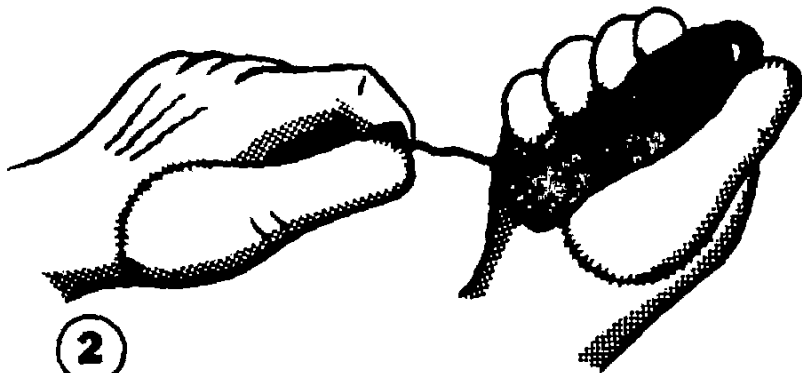
#### 4 CAREFULLY REFOLD WATERPROOF LINER AND REINSTALL BOX COVER.

#### TO THROW ..

FOLLOW LABEL AS SHOWN.

- 1 REMOVE SAFETY CLIP FROM FUSE LIGHTER.





2

GRASP SIMULATOR IN THROWING HAND.  
**CAREFULLY** REMOVE CAP UNTIL  
FREE OF IGNITER AND CORD IS  
PARTIALLY EXTENDED.

3

ASSUME THROWING POSITION. **JERK** THE PULL-CORD  
ONCE, **THEN THROW IMMEDIATELY.**



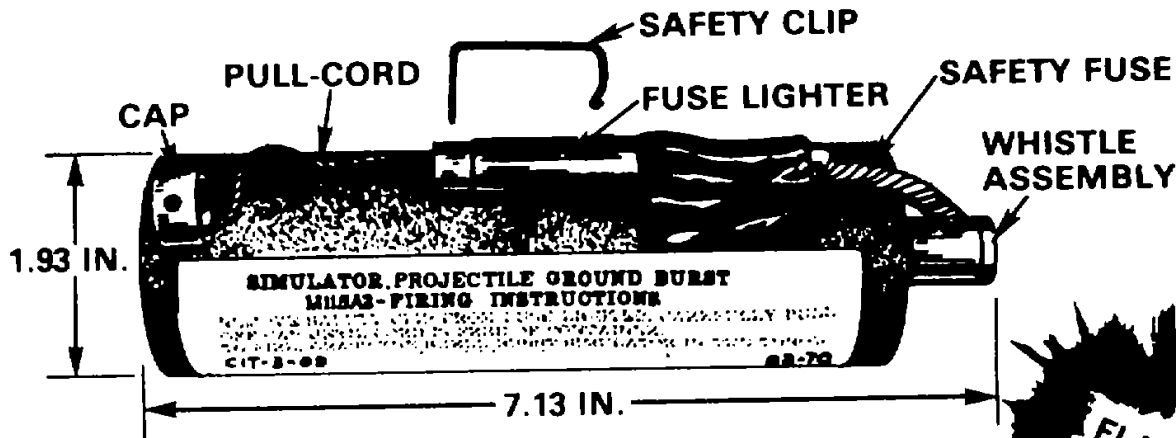
**D U D** -DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EOD PERSONNEL.  
CALL EOD FOR OISPOSAL.

U  
AR 5275

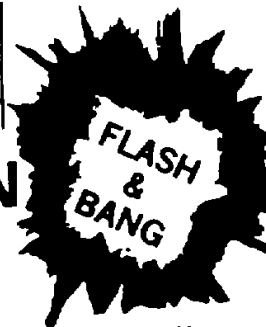


DESCRIPTION

GROUND BURST SIMULATOR, M115A2



WHISTLE STARTS 6 TO 10 SECONDS AFTER PULLING CORD AND LASTS 2 TO 4 SECONDS **THEN**

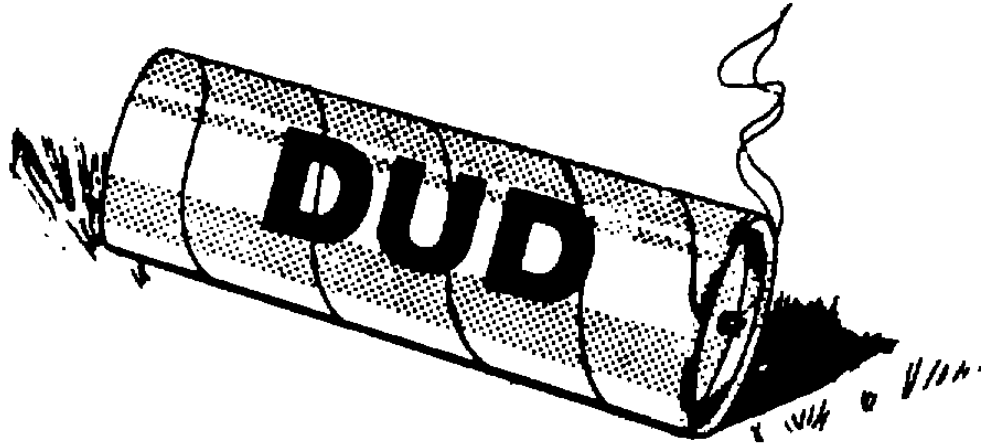


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AR 5276

**OPERATION**

\* SAME AS HAND GRENADE SIMULATOR M116A1.

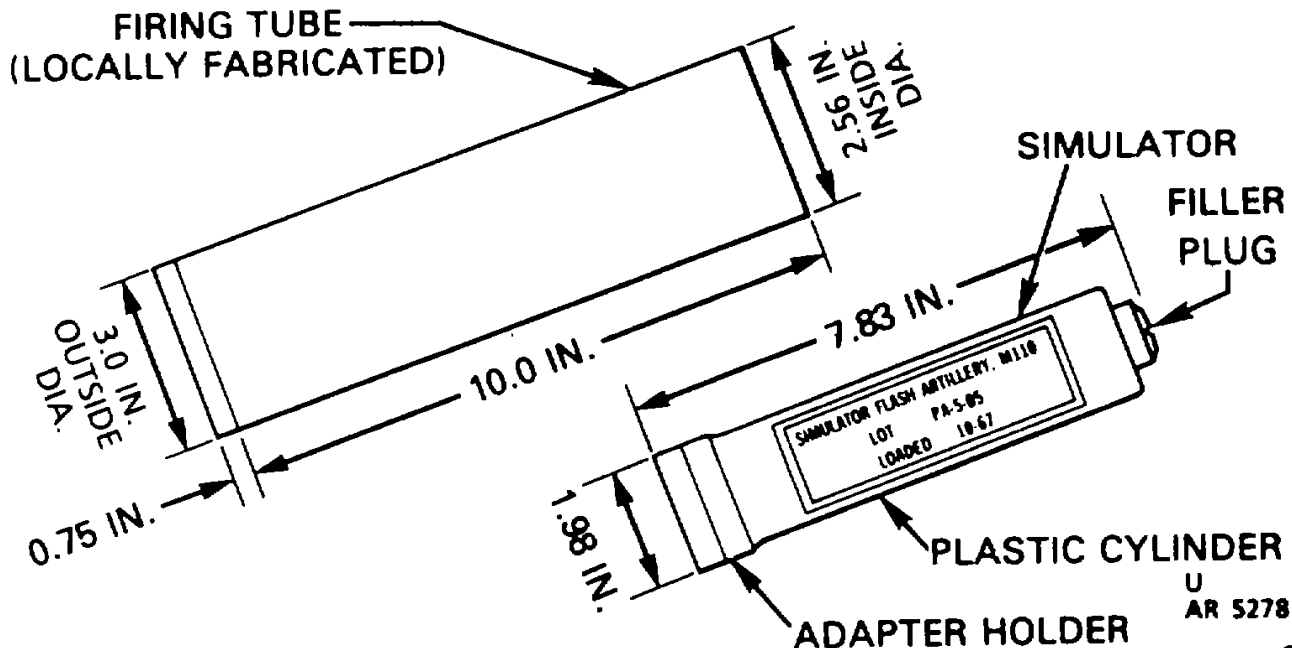
DUD - SEE PAGE 24.



# **WAIT 30 MINUTES**

**DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EOD PERSONNEL.  
CALL EOD FOR DISPOSAL.**

**U  
AR 5277**



**WARNING**  
**DO NOT PULL ON LEAD WIRES. PULLING ON WIRES INITIATES SIMULATOR.**

**DUD - WAIT 30 SECONDS.**

- (1) DISCONNECT BOTH EXTENSION WIRES FROM TERMINALS OF STORAGE BATTERY.
- (2) CHECK BATTERY.
- (3) IF BATTERY IS FOUND TO BE FAULTY, SUBSTITUTE GOOD BATTERY AND TRY AGAIN.
- (4) IF SIMULATOR STILL DOES NOT FUNCTION, DISCONNECT EXTENSION WIRES FROM TERMINALS OF BATTERY.

**WAIT 30 MINUTES.**

- (1) REMOVE SIMULATOR FROM FIRING TUBE. U
- (2) DISCONNECT SQUIB FROM SIMULATOR. AR 5279
- (3) DO NOT TOUCH THE DUD! MARK LOCATION OF DUD FOR EOD PERSONNEL. CALL EOD FOR DISPOSAL.

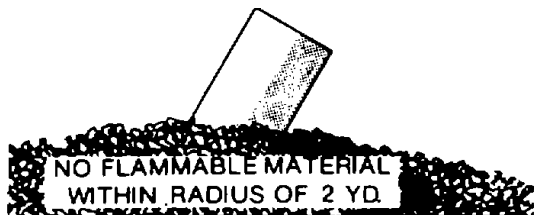
**PREPARED FOR FIRING,**

**BUT NOT FIRED**

- (1) DISCONNECT BOTH EXTENSION WIRES FROM TERMINALS OF STORAGE BATTERY.
- (2) REMOVE SIMULATOR FROM FIRING TUBE.
- (3) DISCONNECT SQUIB FROM SIMULATOR.
- (4) MARK LOCATION FOR EOD PERSONNEL. CALL EOD FOR DISPOSAL.

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AR 5280

## OPERATION

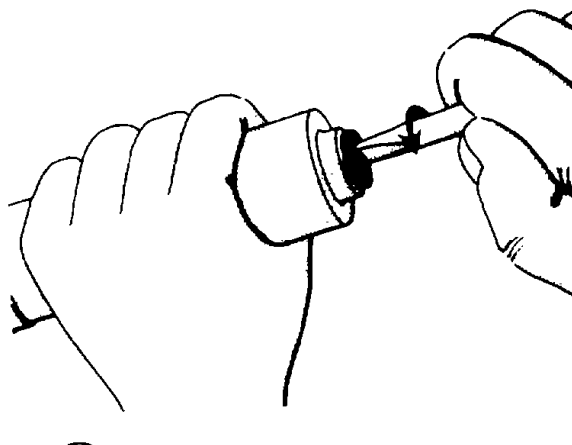


① IMBED FABRICATED FIRING TUBE IN GROUND OR DOUBLE THICKNESS OF SANDBAGS WITH TUBE PROTRUDING ABOUT 4 INCHES.

② REMOVE SIMULATOR FROM FIBER CONTAINER AND INSPECT FOR BROKEN, CRACKED, OR OTHERWISE

DAMAGED SIMULATORS  
THAT SHOW EVIDENCE OF  
28 NOT BEING WATERTIGHT.

(3) CONNECT TERMINAL OF EACH 4-FOOT LEAD WIRE TO AN UNCONNECTED 50-YARD EXTENSION WIRE.



(4) REMOVE FILLER PLUG FROM FILLER HOLE

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AR 5281

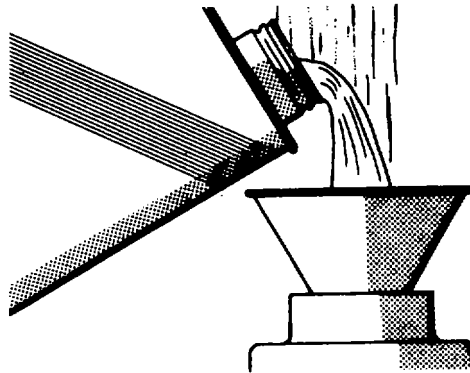
## WARNING

WHEN HANDLING GASOLINE, OBSERVE PRECAUTIONS IN FM 10-69.

FILL ONLY AS MANY SIMULATORS AS WILL BE FIRED DURING DAY'S TRAINING.

FOR SIMULATORS THAT LEAK GASOLINE, DO NOT TOUCH THE DUD!  
MARK LOCATION OF DUD FOR EOD

PERSONNEL. CALL EOD FOR DISPOSAL.

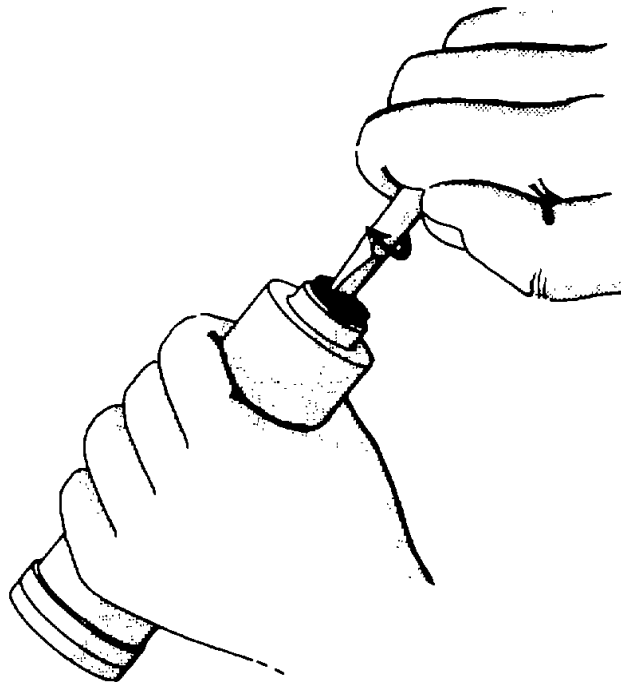


- 5 POUR 2.4 OUNCES LIQUID MEASURE OF AT LEAST 80 OCTANE GASOLINE INTO FILLER HOLE.

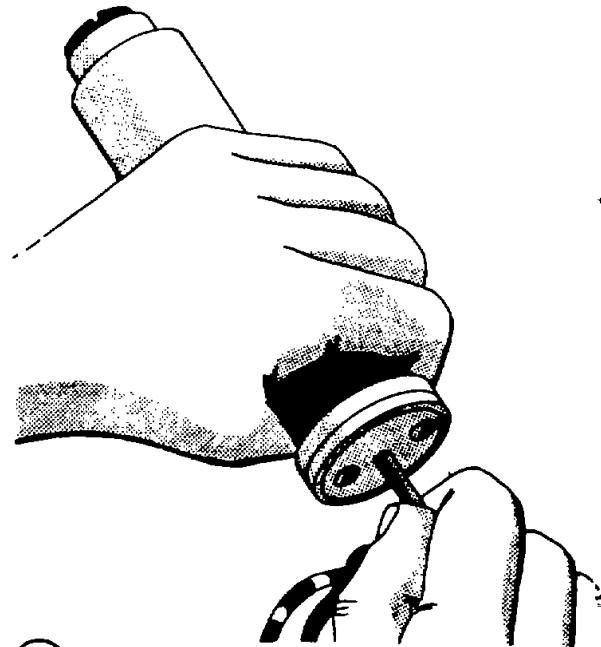
## NOTE

GASOLINE LEVEL SHOULD REACH BOTTOM OF THREADS INSIDE OF FILLER HOLE.

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AR 5282



⑥ SCREW FILLER PLUG BACK INTO FILLER HOLE.

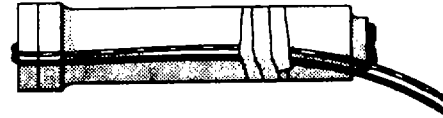


⑦ JUST PRIOR TO FIRING, INSERT ELECTRIC SQUIB INTO HOLE IN BOTTOM OF SIMULATOR

U  
AR 5283



- (8) CARRY LEAD WIRES OF SELECTRIC SQUIB ACROSS BOTTOM AND UPWARDS ALONG BODY OF SIMULATOR TOWARD RED FILLER PLUG, AND ATTACH TO BODY.



**NOTE**  
**BEFORE LOADING, MAKE SURE**  
**FIRING TUBE IS CLEAN OF ALL**  
**RESIDUE.**

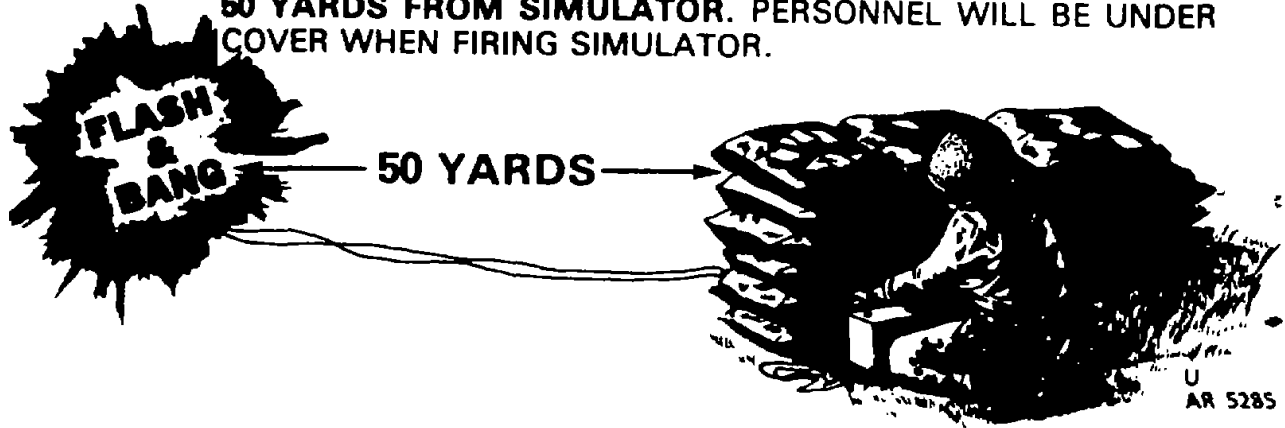
- (9) PLACE SIMULATOR IN FIRING TUBE, FILLER-PLUG END UP, LEAD WIRES EMERGING FROM SPACE BETWEEN SIMULATOR AND FIRING TUBE

U  
AR 5284

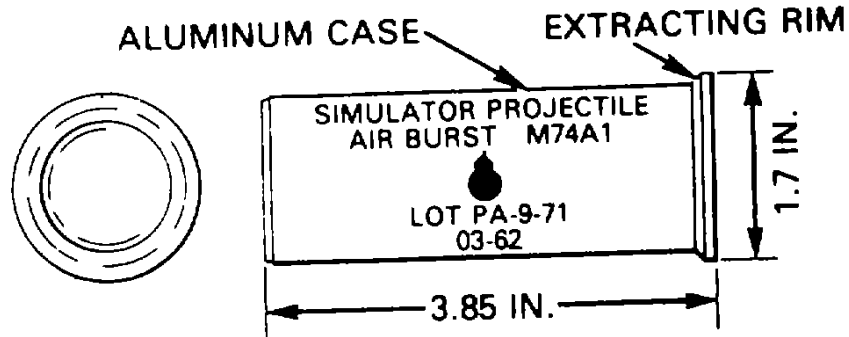
**WARNING**

**TO PREVENT INJURIES FROM FLYING SPARKS AND SPLINTERS AT TIME OF FIRING, ALL PERSONNEL 50 YARDS OR LESS FROM FIRING TUBE WILL BE UNDER COVER.**

- 10** LAY OUT EXTENSION WIRES AND CONNECT TO TERMINALS OF STORAGE BATTERY, ASSURING THAT BATTERY IS AT LEAST **50 YARDS FROM SIMULATOR**. PERSONNEL WILL BE UNDER COVER WHEN FIRING SIMULATOR.



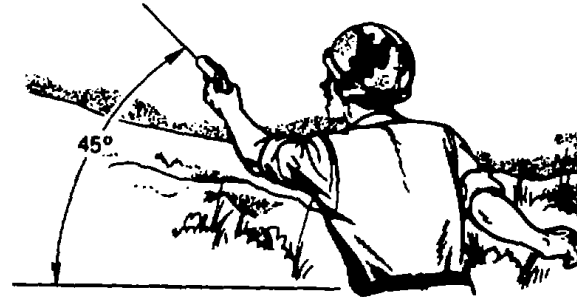
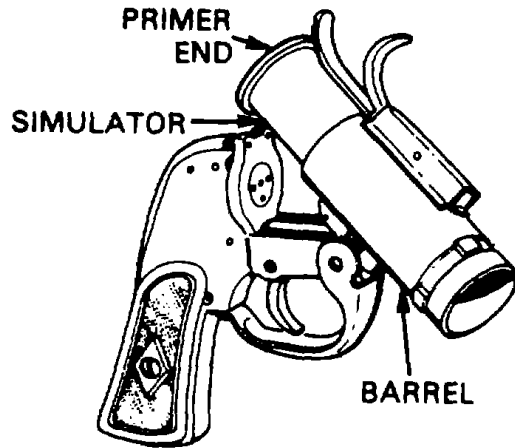
## AIR BURST PROJECTILE SIMULATORS M74 and M74A1



- (A) 2- TO 3-SECOND DELAY.
- (B) 600,000 CANDLEPOWER.
- (C) SIMULATES ARTILLERY FIRE AIR BURSTS.
- (D) FIRED FROM PYROTECHNIC PISTOL AN-MB.

U  
AR 5286

## OPERATION



- (1) WEAR ISSUED GLOVES (ON BOTH HANDS), EYE PROTECTION, EAR PLUS, AND HELMET
- (2) IF WORN, DISCONNECT LANYARD FROM PISTOL
- (3) OPEN BARREL OF PISTOL
- (4) INSERT SIMULATOR INTO BARREL, WITH PRIMER END TOWARD FIRING PIN.
- (5) CLOSE BARREL
- (6) FIRE AT ARM/B LENGTH AT AN UPWARD ANGLE OF 45 DEGREES.

Change 1 34

U  
AR 5257A



**WARNING**

**WAIT 30 SECONDS.**

U  
AR 5288

- (1) IF MISFIRE AFTER 2 SECONDS, PULL TRIGGER AGAIN.
- (2) IF STILL MISFIRES, AIM PISTOL OVERHEAD KEEPING ARM FULLY EXTENDED AND HEAD TURNED AWAY. WAIT 30 SECONDS.
- (3) MANUALLY REMOVE SIMULATOR FROM PISTOL.
- (4) PLACE TAPE ON PRIMER END.
- (5) PLACE MISFIRED ROUND IN A LOCALLY APPROVED EMPTY CONTAINER FOR TRANSPORTING TO DISPOSAL PERSONNEL.
- (6) IF DUD, DO NOT TOUCH THE DUDI MARK LOCATION OF DUD FOR EOD PERSONNEL. CALL EOD FOR DISPOSAL.

**ATOMIC EXPLOSION SIMULATOR M142**

**WARNINGS**

OPERATING PERSONNEL WILL REMAIN BEHIND SHRAPNEL-PROOF WALL  
NO CLOSER THAN **150 FEET** TO POINT OF DETONATION. OBSERVERS  
WILL REMAIN NO CLOSER THAN **450 FEET** TO  
POINT OF DETONATION.

DO NOT LEAVE SOUND-UNIT OR SMOKE-UNIT IN STEEL  
DRUM WHEN SIMULATOR IS TO BE FUNCTIONED.

DO **NOT** APPROACH SIMULATOR WHICH HAS FAILED TO FIRE  
FOR AT LEAST **30 MINUTES** AFTER DISCONNECTING POWER SOURCE.

DO NOT USE POWER SOURCE OTHER THAN FULLY CHARGED  
12- OR 24- VOLT BATTERY.

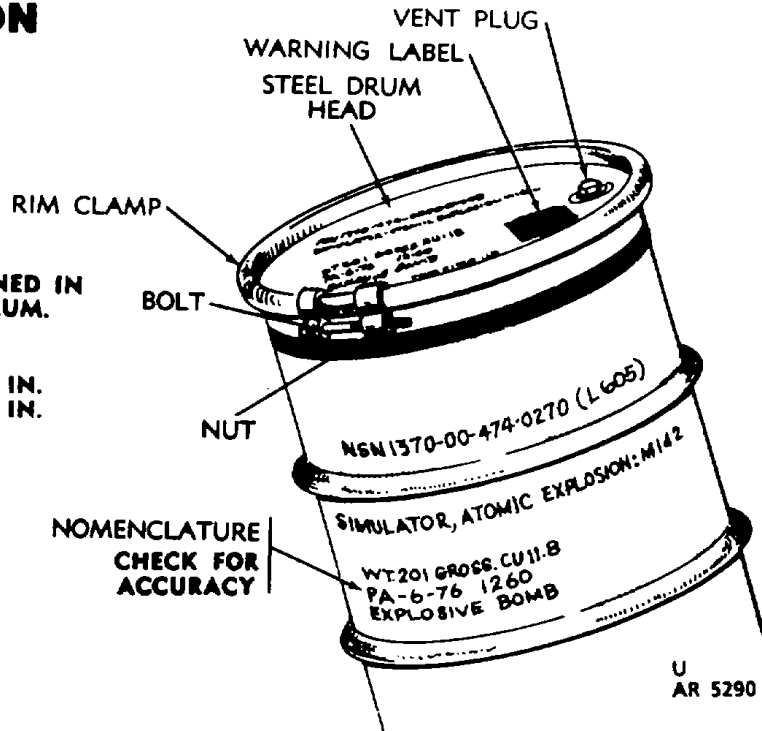
EXTENSION WIRE (i.e., FIRING WIRE, AMMO WIRE) IS **NOT** TO BE  
USED WHEN FUNCTIONING SIMULATOR.

U  
AR 5289

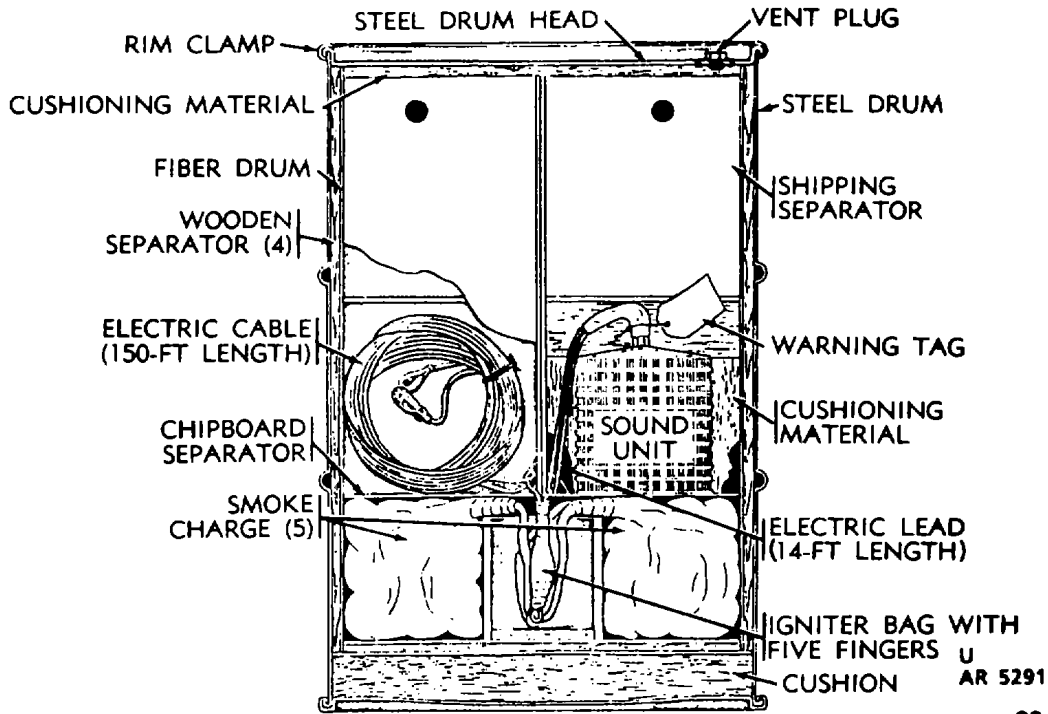
# DESCRIPTION

**SIMULATOR IS CONTAINED IN  
A 55-GALLON STEEL DRUM.**

**HEIGHT APPROX. 36 IN.  
DIAMETER 24 IN.**



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AR 5290



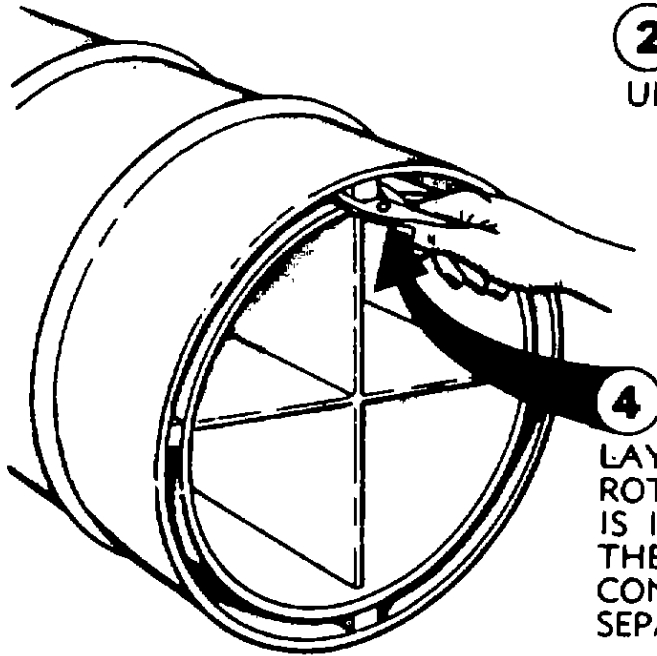
39



## OPERATION

(1)

SELECT A LEVEL FIRING SITE WITH NO OVERHEAD OBSTRUCTIONS, LOOSE ROCKS, OR ANY OTHER OBJECTS WITHIN 5 FEET. THIS SITE MUST BE APPROXIMATELY 140 FEET DOWNWIND OF OPERATOR'S BARRICADE.



2

UNSCREW VENT PLUG UNTIL VACUUM IS RELEASED.

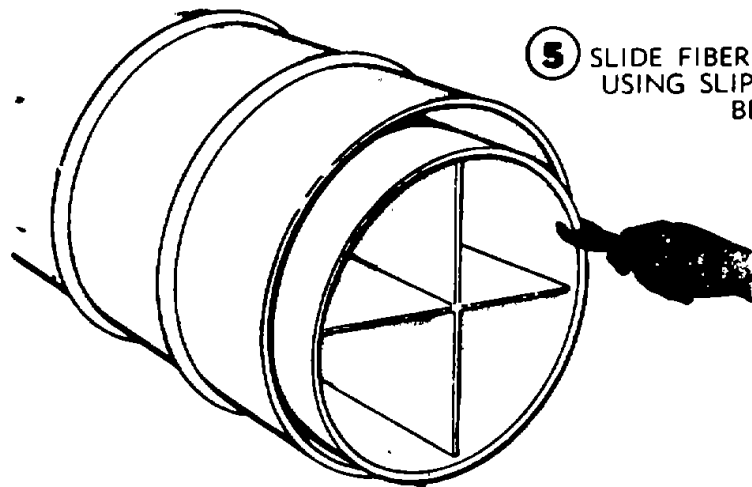
3

REMOVE NUT, BOLT, RIM CLAMP, STEEL DRUM HEAD, AND CUSHIONING MATERIAL FROM DRUM.

4

LAY STEEL DRUM ON ITS SIDE AND ROTATE UNTIL A WOODEN SEPARATOR IS IN AN UPPER POSITION. REMOVE THE SEPARATOR WITH SLIP PLIERS. CONTINUE THIS OPERATION UNTIL ALL SEPARATORS ARE REMOVED.

U  
AR 5292

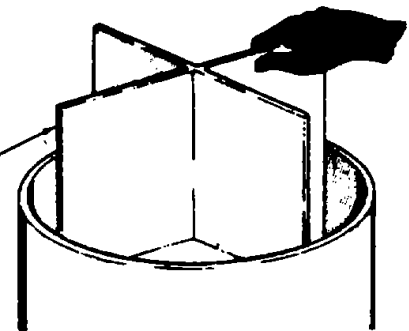


5 SLIDE FIBER CONTAINER FROM STEEL DRUM USING SLIP PLIERS UNTIL CONTAINER CAN BE GRIPPED FIRMLY WITH HANDS. REMOVE THE FIBER CONTAINER COMPLETELY AND CAREFULLY. STAND IT UPRIGHT.

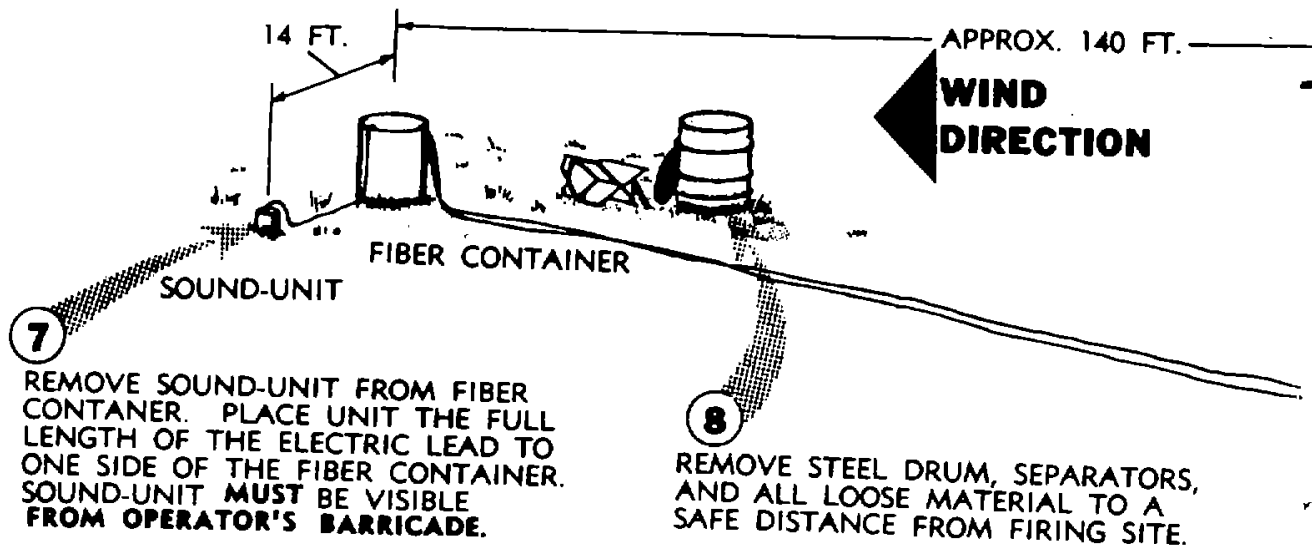
FIBER CONTAINER

6 REMOVE CARDBOARD SHIPPING SEPARATOR.

SHIPPING SEPARATOR



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AR 5293

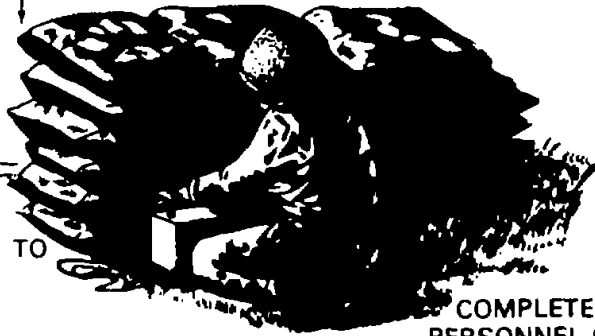


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AR 5294



9

EXTEND ELECTRICAL CABLE TO REAR OF BARRICADE.



10

IF UNPACKED AND SET UP FOR FIRING, BUT NOT FIRED (STEP 10), REPACK BY REVERSING STEPS 2 THROUGH 9.

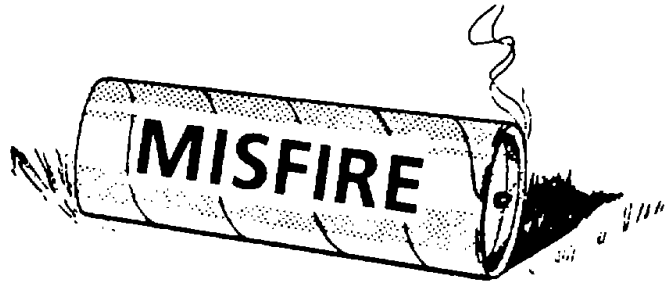
CONNECT ONE ALLIGATOR CLIP AT END OF CABLE TO A TERMINAL OF STORAGE BATTERY. THEN FIRE SIMULATOR BY CONNECTING SECOND CLIP TO OTHER TERMINAL OF BATTERY.

11

FIRING IS NOT COMPLETE UNLESS OPERATING PERSONNEL CAN OBSERVE THAT SOUND-UNIT HAS BEEN DESTROYED.

IF SOUND-UNIT IS NOT DESTROYED, TREAT FIRING AS MISFIRE.  
SEE PAGE 44

U  
AR 5295



- 1 DISCONNECT LEAD WIRES FROM TERMINALS OF STORAGE BATTERY.
- 2 CHECK BATTERY.
- 3 IF BATTERY IS FOUND TO BE FAULTY, SUBSTITUTE GOOD BATTERY AND TRY AGAIN.
- 4 IF SIMULATOR STILL DOES NOT FUNCTION, DISCONNECT LEAD WIRES FROM TERMINALS OF BATTERY.

**WAIT 30 MINUTES**

- 5 REPACK SOUND-UNIT AND ELECTRIC CABLE AND FORWARD DEFECTIVE SIMULATOR TO THE AMMUNITION SUPPLY POINT.

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AR 5296

## SIMULATORS USED IN OTHER SYSTEMS

### SIMULATOR, ARTILLERY FLASH, M21

#### WARNING

THIS SIMULATOR IS NOT AUTHORIZED TO BE FIRED FROM PALADIN OR OTHER UNAUTHORIZED WEAPON SYSTEM.

#### DESCRIPTION

THE M21 ARTILLERY FLASH SIMULATOR IS A PLASTIC CONTAINER WITH OVER AN OUNCE OF FLASH POWDER AND IS ELECTRICALLY INITIATED. IT IS USED TO SIMULATE MAIN GUN TANK FIRE.

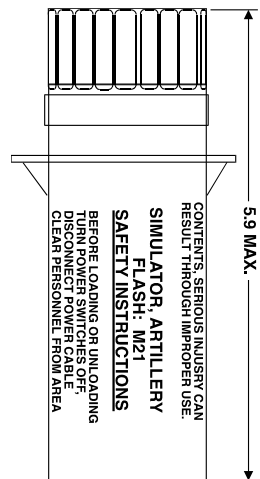
#### USE

REFER TO THE FOLLOWING MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES) OPERATOR'S MANUALS:

TM 9-1265-369-10-1 FOR M60A1/A3 TANKS

TM 9-1265-373-10-1 FOR M1 TANK.

## SECTION 7



AR 4958

Change 7 44.1

## ANTI-TANK WEAPONS EFFECT SIGNATURE SIMULATOR (ATWESS), M22

### DESCRIPTION

THE M22 ATWESS RESEMBLES A SHOTGUN-SHAPED CARTRIDGE WHICH MAKES ELECTRICAL CONTACT WITH THE FIRING DEVICE THROUGH A COPPER RING IN ONE END AND IS INITIATED BY A PERCUSSION PRIMER IN THE OTHER END. IT IS USED WITH THE MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES) IN VARIOUS WEAPONS TO GIVE A REPORT WITH FLASH AND SMOKE.

### USE

REFER TO THE FOLLOWING OPERATOR'S MANUALS:

TM 9-1265-208-10 FOR CHAPARRAL

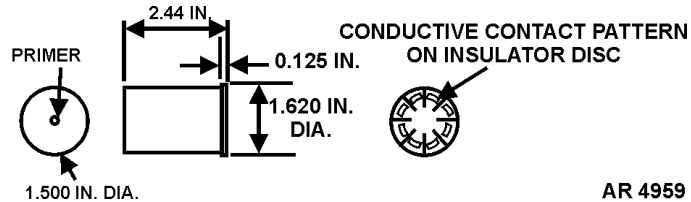
TM 9-1265-209-10 FOR STINGER

TM 9-1265-368-10-1 FOR DRAGON

TM 9-1265-368-10-2 FOR TOW

TM 9-1265-368-10-3 FOR VIPER

TM 9-1270-223-10 FOR AH-1S HELICOPTER.



AR 4959

44.2 Change 7

## SIMULATOR, TARGET HIT, M25

### WARNING

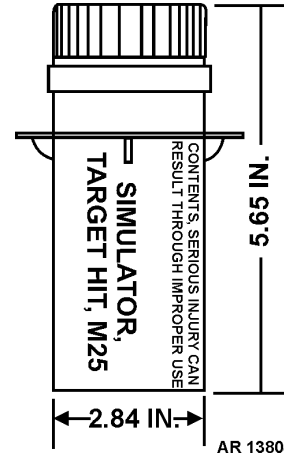
THIS SIMULATOR IS NOT AUTHORIZED TO BE FIRED FROM PALADIN OR OTHER UNAUTHORIZED WEAPON SYSTEM.

### DESCRIPTION

THE M25 TARGET HIT SIMULATOR HAS A PLASTIC CYLINDER BODY WITH A PROTECTIVE CAP THAT COVERS THE PLUG AND LEAD WIRES. THE CAP IS REMOVED SO THE LEAD WIRES CAN BE CONNECTED TO A FIRING DEVICE. THE SIMULATOR IS INITIATED ELECTRONICALLY BY A TRIGGER AND PRODUCES FLASH AND BANG FOR SIMULATION OF MAIN GUN FIRE.

### USE

REFER TO TM 9-6920-742-14-2 FOR OPERATOR PROCEDURES.





## **SIMULATOR, TARGET KILL, M26**

### **WARNING**

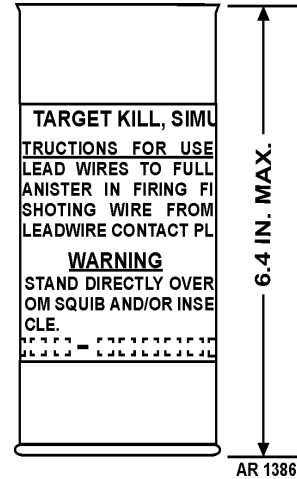
THIS SIMULATOR IS NOT AUTHORIZED TO BE FIRED FROM PALADIN OR OTHER UNAUTHORIZED WEAPON SYSTEM.

### **DESCRIPTION**

THE M26 TARGET KILL SIMULATOR HAS A PLASTIC CYLINDER BODY WITH A PROTECTIVE CAP THAT COVERS THE PLUG AND LEAD WIRES. THE CAP IS REMOVED SO THE LEAD WIRES CAN BE CONNECTED TO A FIRING DEVICE. THE SIMULATOR IS INITIATED ELECTRONICALLY BY A TRIGGER AND PRODUCES BLACK SMOKE WHEN A TARGET IS STRUCK.

### **USE**

REFER TO TM 9-6920-742-14-2 FOR OPERATOR PROCEDURES.



**SIMULATOR, MAIN GUN, SIGNATURE, M30  
(AUDIO VISUAL CUE PYROTECHNIC  
SIMULATOR, MGSS-AVCP)**

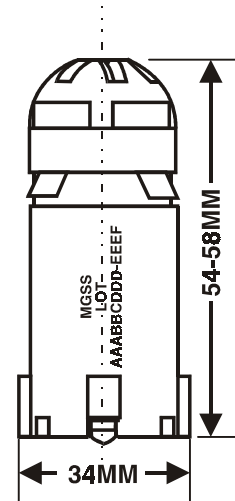
**WARNING**

THE M30 MGSS POSES A HEARING HAZARD WITHIN 26 METERS, A FRAGMENTATION HAZARD WITHIN 5 METERS, AND A VISUAL/FLASH HAZARD WITHIN 2 METERS. WHEN FIRING THE M30 MGSS, ALL VEHICLE HATCHES WILL BE CLOSED.

**DESCRIPTION**

THE M30 IS A POLYETHYLENE CASED CARTRIDGE-TYPE MUNITION CONTAINING 6 GRAMS OF FLASH POWDER. THE M30 IS ELECTRICALLY INITIATED AND IS USED TO SIMULATE TANK MAIN GUN FIRE.

**SECTION ⑧**



AR 7747

Change 4 46.1

**USE**

REFER TO THE FOLLOWING MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES) OPERATOR'S MANUALS:

TM 9-1265-373-10 FOR M1 TANK

TM 9-1265-375-10 FOR M2/M3 BRADLEY

TM 9-1265-369-10 FOR M60A1/A3 TANKS

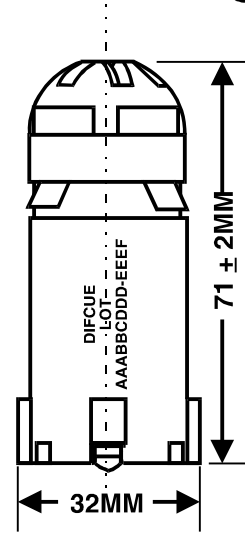
TM 9-2350-261-10 FOR LIGHT ARMORED VEHICLE (LAV)

**SIMULATOR, DIRECT-INDIRECT FIRE,  
M31A1 (AUDIO VISUAL CUE  
PYROTECHNIC SIMULATOR,  
DIFCUE AVCPS)**

**DESCRIPTION**

THE M31A1 IS A POLYPROPYLENE CASED CARTRIDGE-TYPE MUNITION CONTAINING 6 GRAMS OF FLASH AND STARS. THE M31A1 IS ELECTRICALLY INITIATED AND IS USED TO SIMULATE DIRECT OR INDIRECT HITS ON VARIOUS KINDS OF COMBAT MOBILE EQUIPMENT.

**SECTION ⑧**



AR 7750

Change 5 46.3

**USE**

REFER TO THE FOLLOWING MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES) OPERATOR'S MANUALS:

TM 9-1265-373-10-1 FOR M1 TANK

TM 9-1265-375-10 FOR M2/M3 BRADLEY

TM 9-1265-369-10-1 FOR M60A1/A3 TANKS

TM 9-2350-261-10 FOR LIGHT ARMORED VEHICLE (LAVS)

## SECTION 8

### SIMULATOR, ANTITANK GUIDED MISSILE SIGNATURE: M27

#### WARNING

A CLEAR ZONE OF 100 FEET MUST BE ESTABLISHED 360-DEGREES AROUND THE LAUNCH SITE.

A SURFACE DANGER ZONE (SDZ) WILL BE ESTABLISHED TO A RANGE OF 6,560 FEET (2000 METERS).

OPERATOR MUST FIRE THE M27 (SAGGER) SIMULATOR FROM BEYOND THE 100 FOOT CLEAR ZONE OR FROM A PROTECTED POSITION.

FIRE THE M27 SIMULATOR WITH M79 ELECTRIC MATCH IGNITER **ONLY**.

THE M27 SIMULATOR **MUST BE** FIRED FROM AN APPROVED LAUNCH STAND.

**DO NOT** STAND DIRECTLY IN FRONT OF THE LOADED LAUNCH STAND.

THE M27 SIMULATOR IS ONLY ALLOWED TO FIRE AT 15-, 30-, OR 45-DEGREE ANGLES FROM THE HORIZONTAL.

**WARNING - CONTINUED**

**DO NOT** STAND WITHIN 100 FEET IN FRONT OR BEHIND FIRING DEVICE DURING OR AFTER LOADING SIMULATOR.

**DO NOT** FIRE THE M27 SIMULATOR OVER THE HEAD OF UNPROTECTED FRIENDLY TROOPS.

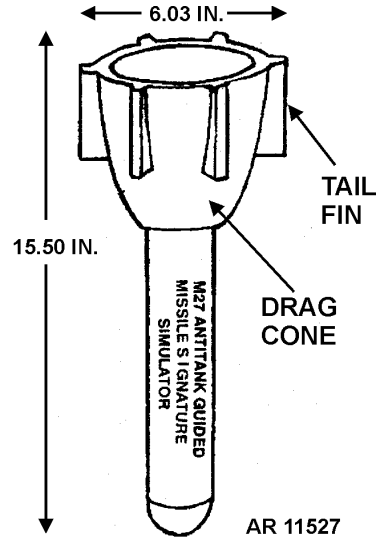
TO ASSURE THAT STATIC ELECTRIC DISCHARGE WILL NOT ACTIVATE THE SIMULATOR, OPERATOR MUST EITHER TOUCH ANY METAL PART OF THE FRAME OF THE LAUNCH PLATFORM BEFORE THE LOADING OPERATION OR BE GROUNDED BEFORE TOUCHING ANY SIMULATOR. THIS IS DONE TO EQUALIZE STATIC ELECTRIC CHARGES BETWEEN THE INDIVIDUAL AND THE LAUNCH PLATFORM.

## DESCRIPTION

### WARNING

FIRE THE M27 SIMULATOR WITH  
M79 ELECTRIC MATCH IGNITER  
**ONLY.**

THE M27 IS A GUIDED MISSILE THAT  
SIMULATES INCOMING ENEMY FIRE.  
IT CONSISTS OF A PAPER TUBE  
BODY WITH A POLYURETHANE  
FOAM NOSE AND TAIL CONE.

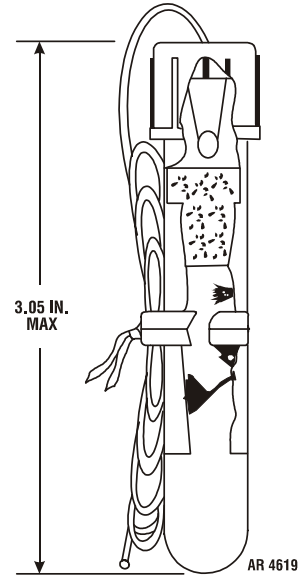


Change 6 46.7



**DESCRIPTION - CONTINUED**

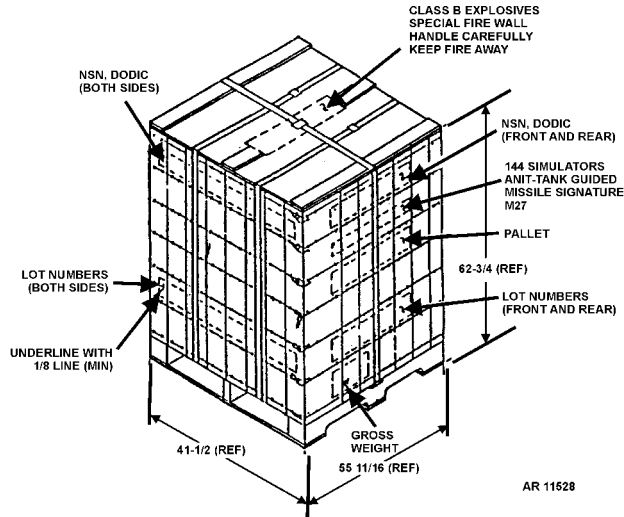
THE M79 ELECTRIC MATCH IGNITER CONSISTS OF A 3-INCH POLYPROPYLENE TUBE AND CAP ASSEMBLY. THERE IS AN ELECTRIC MATCH WITHIN THE CAP.



46.8 Change 6

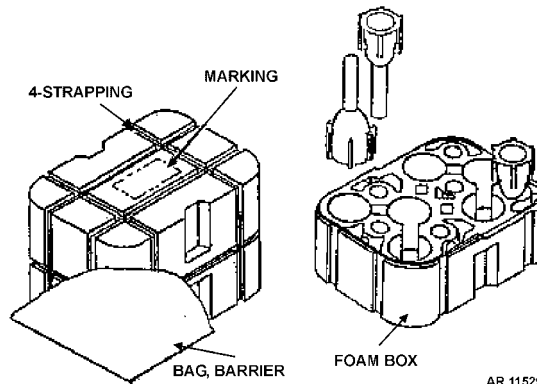
## UNPACKING

1. CUT STEEL STRAPPING WITH METAL SHEARS. REMOVE AND DISPOSE OF METAL STRAPS.
2. CUT METALLIC SEAL WITH PLIERS AND DISCARD SEAL.
3. LIFT BOX TOP AND REMOVE TOP FILLER. REMOVE BARRIER BAG.



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4. CUT BARRIER BAG OPEN ALONG THE EDGE WITH MOST FREE AREA, CUTTING AS CLOSE TO SEALED EDGE AS POSSIBLE.
5. REMOVE FOAM BOX FROM BARRIER BAG.
6. OPEN FOAM BOX TOP.
7. REMOVE ITEMS. IF ALL ITEMS ARE NOT REMOVED, CLOSE THE FOAM BOX.



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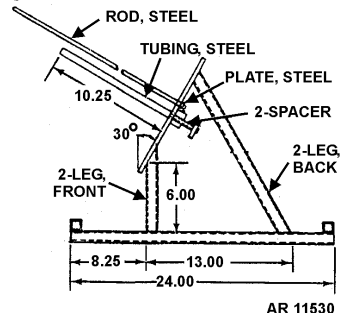
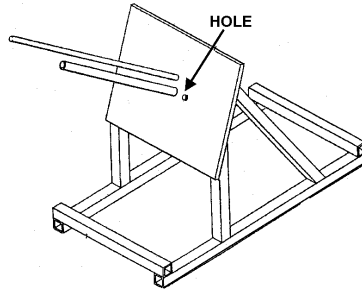
## LOADING AND FIRING PROCEDURES

### WARNING

THE M27 SIMULATOR IS ONLY ALLOWED TO BE FIRED AT 15-, 30-, OR 45-DEGREE ANGLES FROM THE HORIZONTAL.

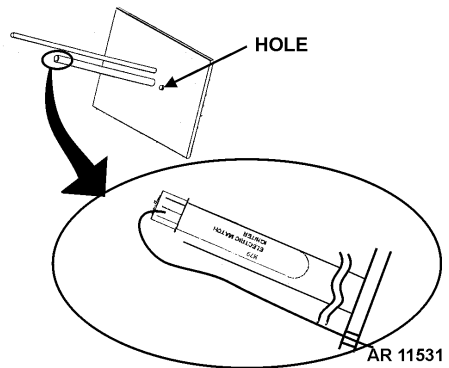
THE M27 SIMULATOR MUST BE FIRED FROM AN APPROVED LAUNCH STAND.

1. SET LOCALLY APPROVED M27 LAUNCH STAND ON LEVEL GROUND.
2. DIRECT THE STAND AT A 15-, 30-, OR 45-DEGREE ANGLE ACROSS THE DOWN RANGE.



Change 6 46.11

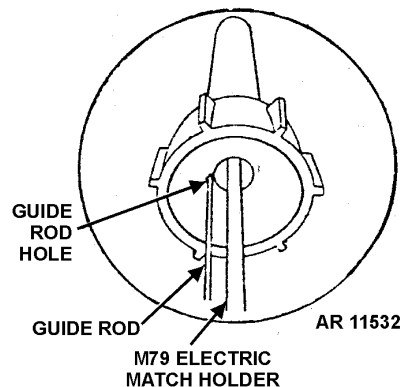
3. RECEIVE M79 ELECTRIC MATCH IGNITER.
4. PLACE THE M79 ELECTRIC MATCH IGNITER INTO THE STEEL TUBING (SHORTER OF TWO TUBES POINTED DOWN RANGE) AND HAVE WIRE RUN OUTSIDE, DOWN THE STEEL TUBING AND THROUGH THE HOLE ON THE STEEL PLATE (AS SHOWN).
5. TOUCH ANY METAL PARTS OF THE FRAME OF THE LAUNCH PLATFORM.
6. CONNECT THE ENDS OF THE LEAD WIRE TO THE SUPPORT LEAD WIRE WHICH THEN WILL BE CONNECTED TO A DETONATION DEVICE.



7. THE M27 SIMULATOR IS THEN INSERTED INTO THE LAUNCHER WITH THE GUIDE ROD OF THE LAUNCHER GOING THROUGH THE TAIL CONE GUIDE ROD HOLE (AS SHOWN).

**WARNING**

OPERATOR MUST FIRE THE M27 (SAGGER) SIMULATOR FROM BEYOND THE 100 FOOT CLEAR ZONE OR FROM A PROTECTED POSITION.



8. ENSURE OPERATOR OF M27 (SAGGER) SIMULATOR IS BEYOND THE 100 FOOT CLEAR ZONE OR IN A PROTECTED POSITION.

**WARNING**

**DO NOT** FIRE THE M27 SIMULATOR OVER THE HEAD OF UNPROTECTED FRIENDLY TROOPS.

9. TO FIRE, ACTIVATE THE DETONATION DEVICE.

## MISFIRE PROCEDURES

### WARNING

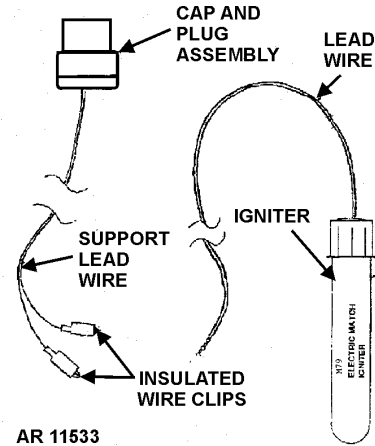
AFTER MISFIRE WAIT 30 MINUTES BEFORE PROCEEDING.

IMMEDIATELY BEFORE ENGAGING IN LOADING OR UNLOADING PYROTECHNIC CHARGES, PERSONNEL SHOULD DISCHARGE ANY STATIC ELECTRICITY FROM THEIR PERSON BY TOUCHING THE FRAME OF THE DETONATION DEVICE.

NEVER BEND OR STAND OVER A LAUNCHER OR ADJACENTLY POSITIONED SIMULATOR WHEN LOADING OR UNLOADING.

1. AFTER MISFIRE, IMMEDIATELY MOVE 100 FEET BEHIND THE LAUNCHER AND WAIT 30 MINUTES. THIS WILL ALLOW ANY SLOW BURNING PYROTECHNIC TO IGNITE FULLY. FAILURE TO DO SO MAY CAUSE BODILY INJURY OR SEVERE BURNS.
2. UPON COMPLETION OF THE FIRING CYCLE, REMOVE THE REMOTE FIRING POWER SOURCE (E.G. CABLE) TO THE DETONATION DEVICE AND INSPECT FOR ANY SAGGERS NOT FIRED.
3. AFTER AT LEAST 30 MINUTE WAIT FROM INITIATION, RECHECK THAT POWER HAS BEEN REMOVED FROM THE DETONATION DEVICE.

4. TOUCH ANY METAL PARTS ON THE DETONATION DEVICE FRAME.
5. PLACE THE DETONATION DEVICE IN THE OFF POSITION.
6. UNPLUG THE SUSPECT ROUND'S IGNITION LEADS FROM THE DETONATION DEVICE.
7. REPLACE SHORTING CAP ON THE SUPPORT LEAD WIRE IGNITION PLUG.
8. IF SHORTING CAP IS NOT AVAILABLE:
  - (a) CUT OFF SIMULATOR PLUG.
  - (b) STRIP ONE INCH OF INSULATION FROM REMAINING LEAD ENDS.
  - (c) TWIST BARE WIRES TOGETHER BY HAND TO PRODUCE A SHORT CIRCUIT.



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9. IMMEDIATELY MOVE 100 FEET TO THE REAR OF THE DETONATION DEVICE AND WAIT 10 MINUTES.

**WARNING**

DO NOT USE EXCESSIVE FORCE TO SEPARATE THE M79 ELECTRIC MATCH IGNITER FROM THE M27 SAGGER AS THEY ARE MATED IN A LOOSE FIT AND SHOULD NORMALLY SEPARATE EASILY.

10. AFTER THE 10 MINUTE WAIT, REMOVE THE UNFIRED SAGGER FROM THE ELECTRIC MATCH AND LAUNCH STAND.
11. TRANSFER SAGGER AND ELECTRIC MATCH TO DUD PIT AND FOLLOW DISPOSAL INSTRUCTIONS ON PAGE 2.

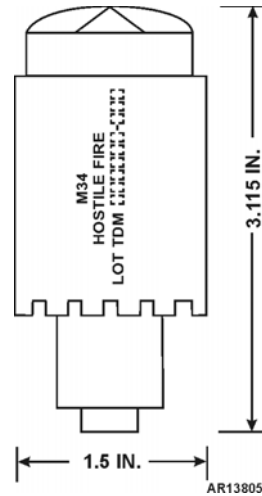
## SIMULATOR, HOSTILE FIRE, M34

### DESCRIPTION

THE M34 HOSTILE FIRE SIMULATOR IS A PLASTIC-TYPE CASED CARTRIDGE CONTAINING 18 GRAMS OF PYROTECHNIC COMPOSITION. IT IS ELECTRICALLY INITIATED AND PRODUCES THE FLASH AND SOUND FOR SIMULATION OF TANK OR LARGE CALIBER GUNFIRE.

### USE

FOR USE IN BATTLEFIELD EFFECTS SIMULATOR (BES) OMEGA 60/B2.



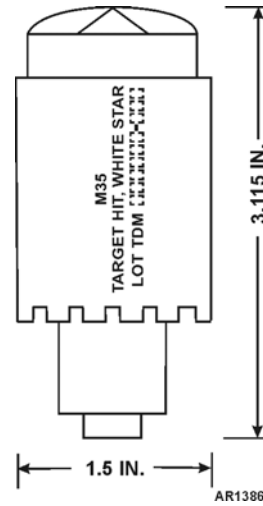
## SIMULATOR, TARGET HIT, WHITE STAR, M35

### DESCRIPTION

THE M35 WHITE STAR TARGET HIT SIMULATOR IS A PLASTIC-TYPE CASED CARTRIDGE CONTAINING 21.6 GRAMS OF PYROTECHNIC COMPOSITION. IT IS ELECTRICALLY INITIATED AND PRODUCES FLASH BANG/STARS SIMULATING THE IMPACT OF A ROUND ON AN ARMOR TARGET.

### USE

FOR USE IN BATTLEFIELD EFFECTS SIMULATOR (BES) OMEGA 60/B2.





# MAINTENANCE

**OPERATOR  
LEVEL**

**ALL REPACKING SHOULD  
BE WATERPROOF, TIGHT,  
AND CLEARLY MARKED**

## **CHAPTER III. MAINTENANCE(OPERATOR LEVEL)**

UNUSED ITEMS SHOULD BE TURNED IN TO AMMUNITION SUPPORT AREA AS SOON AS POSSIBLE. PROVIDE PROTECTION FOR THESE ITEMS BY REPACKING IN ORIGINAL CONTAINERS, IF AVAILABLE, OR EQUIVALENT IMPROVED PACKING. ALL EFFORTS MUST BE MADE TO GET THESE ITEMS TO ORGANIZATIONAL MAINTENANCE IN THE BEST POSSIBLE CONDITION.

**AVOID EXPOSURE TO  
MOISTURE, DENTS, ETC.**

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## **MALFUNCTION REPORTS**

**SUBMIT MALFUNCTION REPORTS IN ACCORDANCE WITH AR 75-1, MALFUNCTIONS INVOLVING AMMUNITION AND EXPLOSIVES.**

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**50 Change 7**

**PYROTECHNIC SIMULATORS**

By Order of the Secretary of the Army:

Official:


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

THOMAS F. SIKORA  
Brigadier General, United States Army  
The Adjutant General

U  
AR 5299

DISTRIBUTION: To be distributed in accordance with DA Form 12-40-E, block 0722,  
Operator Maintenance requirements for Pyrotechnics.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

 <p style="font-size: small;">THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.</p>		SOMETHING WRONG WITH PUBLICATION	
		FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)	
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PUBLICATION NUMBER		PUBLICATION DATE	PUBLICATION TITLE
BE EXACT PIN-POINT WHERE IT IS			
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.			
PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER			SIGN HERE



## 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 decigrams = .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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