

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

OPERATOR/MAINTENANCE INFORMATION
ON CARTRIDGE, 105MM: APFSDS-T, M900

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Headquarters, Department of the Army, Washington, DC

2 June 1992

REPORTING OF ERRORS

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SECTION I. INTRODUCTION

1. Purpose. The purpose of this bulletin is to provide supplemental operator/maintenance level information on Cartridge, 105MM: APFSDS-T, M900. This round is designed for firing in the 105MM, M68 series gun mounted on M1 tanks only.

2. General. This bulletin contains data that will be incorporated into the following ammunition and weapon technical manuals:

a. TM 43-0001-28 - Army Ammunition Data Sheets, Artillery Ammunition for Guns, Howitzers, Mortars, Recoilless Rifles, Grenade Launchers, and Artillery Fuzes.

b. TM 9-1300-251-20 - Unit Maintenance Manual (Including Repair Parts and Special Tools List): Artillery Ammunition for Guns, Howitzers, Mortars, Recoilless Rifles, and 40MM Grenade Launchers.

c. TM 9-1300-251-34 - Direct Support and General Support Maintenance (Including Repair Parts and Special Tools List): Artillery Ammunition for Guns, Howitzers, Mortars, Recoilless Rifles, and 40MM Grenade Launchers.

* This publication supersedes TB 9-2350-356-14, dated 1 December 1991.

d. TM 9-2350-215-10-3 - Operator's Manual for Tank, Combat, Full-Track: 105MM Gun M60A1.

e. TM 9-2350-253-10 - Operator's Manual for Tank, Combat, Full-Track: 105MM Gun M60A3.

f. TM 9-2350-255-10-3 - Operator's Manual for Tank, Combat, Full-Track: 105MM Gun M1.

TM 9-2350-257-10-3 - Operator's Manual for Tank Combat, Full-Track: 105MM Gun M60A1 (RISE).

h. TM 9-2350-258-10 - Operator's Manual for Tank, Combat, Full-Track: 105MM Gun M48A5.

i. TM 9-2350-260-10-3 - Operator's Manual for Tank, Combat, Full-Track: 105MM Gun M60.

SECTION II. INFORMATION AND PROCEDURES TO BE INCORPORATED INTO OPERATOR/MAINTENANCE TECHNICAL MANUALS

3. General. The information in the following paragraphs will be incorporated as changes to the ammunition chapter of the effected manuals.

4. Description and Tabulated Data.

a. **Description.** The M900 is a U.S. designed and developed 105MM APFSDS-T cartridge (fig. 1). The complete round contains a propulsion system consisting of an M148A1B1 Steel Cartridge Case, M43 LOVA Propellant, M128 Primer, and a gun tube wear-reducing titanium-dioxide liner which is assembled to the interior wall of the cartridge case. The projectile portion of the round consists of subprojectile and a sabot. The subprojectile is made up of a monolithic depleted uranium (DU) penetrator, which is fitted with an aluminum windshield, steel tip, and an aluminum fin assembly. DU is a low level radioactive material. There is no external radiation hazard from normal handling and on-board stowage of the cartridge. The sabot is comprised of three 120 degree aluminum sections, which are assembled around the subprojectile. A steel bourrelet, containing three shear cuts, is screwed to the sabot forward face. A nylon obturator and polypropylene seal is assembled around the sabot, and a silicone rubber seal is applied over the rear face of the sabot. An M13 Tracer is assembled to the fin and is held in place by a threaded plug and disc assembly. A sticker is applied to the cartridge case which indicates for M1 tank use only.

(1) Use. This is a Kinetic Energy armored-piercing antitank round intended for use with the 105MM, M68 series gun against armored targets (M1 tank only).

(2) Functioning. The M900 is loaded and fired from the M68 series, 105MM gun in the normal manner. Initiation of the electric primer ignites the propelling charge generating gases which drive the projectile from the gun and ignite the tracer. The silicone seal at the rear of the sabot prevents gas leakage between the sabot segments and the driving forces (gas) propelling the subprojectile down-bore. Upon leaving the gun, aerodynamic forces cause the sabot to separate from the subprojectile allowing the subprojectile to continue on a true course to target while the sabot segments fall quickly to earth. Target penetration is effected strictly by the high kinetic energy of the subprojectile impacting the target.

b. Tabulated Data.

Complete Round:	
Type	Fixed, APFSDS-T
Weight	40.8 lb
Length	39.5 in. (100.4 cm)
Assembly Drawing	12910111
Color	Black w/white markings

Projectile weight as fired (approx)	15.1 lb (6.86 kg)
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Temperature Limits:

Firing:	
Lower limit	-20°F (-28.9°C)
Upper limit	+120°F (+48.9°C)
Storage:	
Lower limit	-50°F (-45.6°C)
Upper limit	+145°F (+62.8°C)

Performance:

Chamber pressure	75KSI@70°F
Velocity	1505 MPS

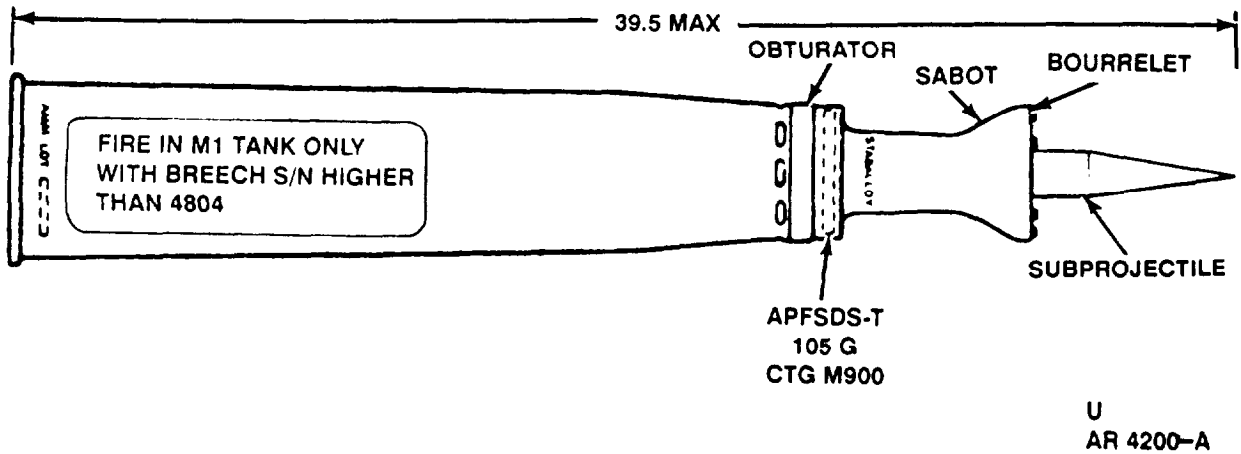


Figure 1. Cartridge, 105 Millimeter: APFSDS-T, M900.

Packaging (light Weight Container):
 Inner pack drawing N/A
 Outer pack drawing 12561500
 Weight (lb) (EMPTY) 17 lb
 Dimensions 6.84 x 6.84 x 44-1/2 in.
 Cube (ft) 1.2 cu ft
 *Packing One round per light weight metal container;
 30 containers per metal pallet

Pallet w/30 Containers:
 Weight (EMPTY) 1033 lb
 Dimensions 44-1/2 x 42 x 39 (in.)
 Cube 42.2 cu ft

*NOTE: See SC for complete packaging data including NSN's.

Shipping and Storage Data:
 DOD Hazard Classification/DIV/SCG: (04) 1.2 C

DOD Storage compatibility group C
 DOT Hazard Classification 1.2C
 DOT Container Marking . . . CARTRIDGES FOR WEAPONS, INERT PROJECTILE AND DOT-E-9649
 NSN 1315-01-324-6633
 DODAC 1315-C543

c. Limitations.

(1) Projectile is not to be disposed of by burning or detonation.

(2) The M900 is a full service round which may only be fired during war emergency. All peacetime firings are prohibited except on ranges which are NRC (Nuclear Regulator Commission) approved and/or have host nation agreement. The M900 will not be fired over the heads of friendly troops, unless troops are protected by adequate cover. Troops may be struck by the discarded sabot.

NOTE: Some quantities of M900 primers are marked XM128. The "X" marking is to be disregarded. XM128 primers are the same as type classified M128 primers.

WARNINGS

- THE M900 IS AUTHORIZED FOR USE IN M1 TANKS ONLY. FIRING THE M900 FROM ANY OTHER 105MM TANK SYSTEM MAY RESULT IN THE FAILURE OF THE GUN MOUNT. FIRING THE M900 IN UNAUTHORIZED GUN MOUNTS WILL RESULT IN FAILURE OF THE RECOIL MECHANISM HYDRAULIC SEALS.
- DO NOT FIRE THE M900 FROM 105MM, M68 SERIES CANNON EQUIPPED WITH BREECHES HAVING SERIAL NUMBERS LOWER THAN 4804. BREECHES WITH SERIAL NUMBERS LOWER THAN 4804 CAN FAIL CATASTROPHICALLY WITHOUT WARNING. INITIAL QUANTITIES MAY BE STENCILED WITH A NOTE INDICATING A CUTOFF POINT FOR THE BREECHES AT SERIAL NUMBER 6000. THIS NUMBER SHOULD NO LONGER BE CONSIDERED VALID.
- DO NOT FIRE M900 CARTRIDGES WHERE THE PROJECTILE IS LOOSE WITHIN THE CARTRIDGE CASE; I.E., ROTATING, WOBBLING, RATTLING, OR ANY OTHER UNSECURED MANNER THIS CONDITION MAY RESULT IN EXCESSIVE PRESSURE DURING FIRING RESULTING IN CATASTROPHIC BREECH FAILURE.
- HATCHES MUST REMAIN CLOSED AND THE TURRET VENT BLOWER MUST REMAIN ON WHEN FIRING TO PREVENT BUILDUP OF TOXIC GAS (CARBON MONOXIDE). CREW MEMBERS ARE REQUIRED TO WEAR SINGLE HEARING PROTECTION (COMBAT VEHICLE CREWMAN HELMET) DURING ALL M900 FIRING. OBSERVERS ON THE GROUND SHOULD STAY BEHIND THE TANK AND WEAR DOUBLE HEARING PROTECTION DURING MAIN TANK WEAPON FIRING.

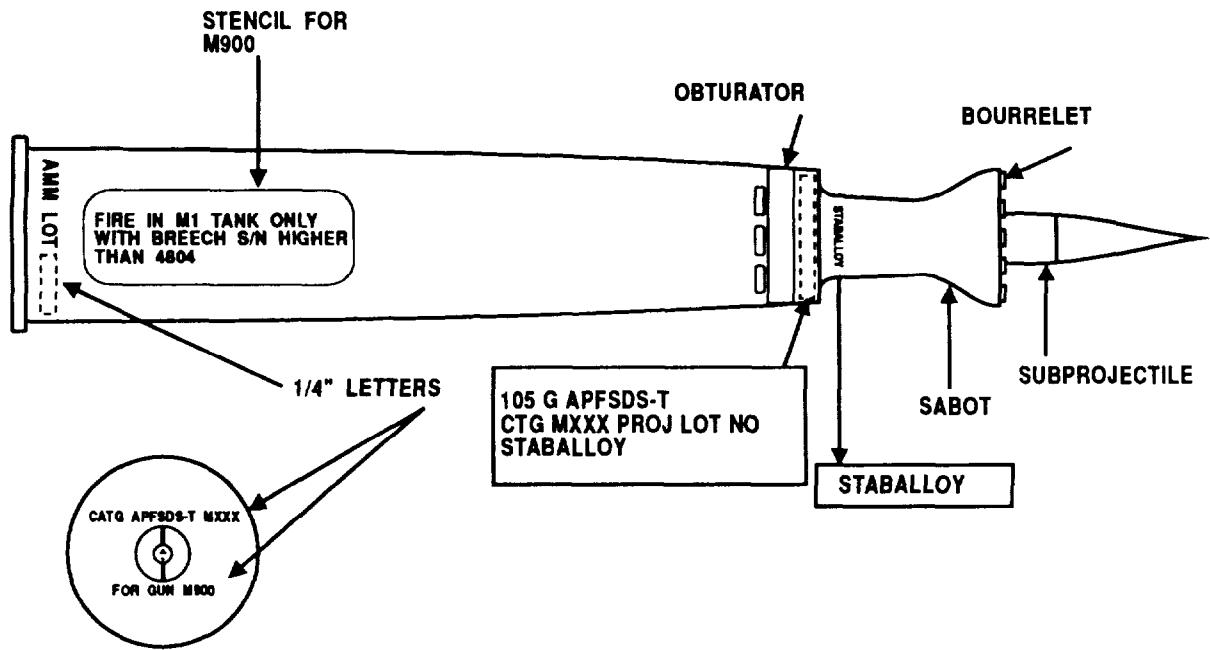
CAUTION

CARE MUST BE TAKEN NOT TO ALLOW PERSONNEL TO COME IN DIRECT CONTACT WITH APFSDS-T AMMUNITION DEPLETED URANIUM (DU) CORROSION. THESE MUNITIONS CONTAIN A PENETRATOR CONSISTING OF DU WHICH IS LOCATED WITHIN THE SUBPROJECTILE. IF THE CARTRIDGE IS LEFT OUT IN THE RAIN, SNOW, MUD, OR IS WATER SOAKED, CORROSION OF THE SUBPROJECTILE WILL INCREASE RESULTING IN OUTWARD MIGRATION OF DU CORROSION PRODUCTS. THESE EVENTS CAN CAUSE DU CONTAMINATION OF OUTER SURFACES OF THE SUBPROJECTILE AND BECOME A HAZARD TO PERSONNEL. EVIDENCE OF DU CORROSION MIGRATION IS VISIBLE IN THE FORM OF A YELLOWISH OR WHITE POWDER OR STAIN SEEN ON THE OUTER SURFACES OF THE SUBPROJECTILE. PERFORMANCE OF APFSDS-T AMMUNITION IS NOT DEGRADED BY THE PRESENCE OF DU CORROSION PRODUCTS.

NOTE

Loss or unauthorized firings of the M900 must be reported to the HQ, AMCCOM RPO within 24 hours of the discovery. Report to:

CDR USA AMCCOM
ATTN: AMSMC-SF (RPO)
Rock Island, IL 61299-6000
Autovon: 793-2969/2964/2965/2966
Commercial: (309) 782-2961/2965
782-2964/2966



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Figure 2. Typical markings for 105MM gun cartridges, M735, M774, M833, and M900.

d. Ammunition Serviceability Criteria. APFSDS-T type ammunition shall be visually inspected for evidence of DU corrosion products during ammunition handling (table 1).

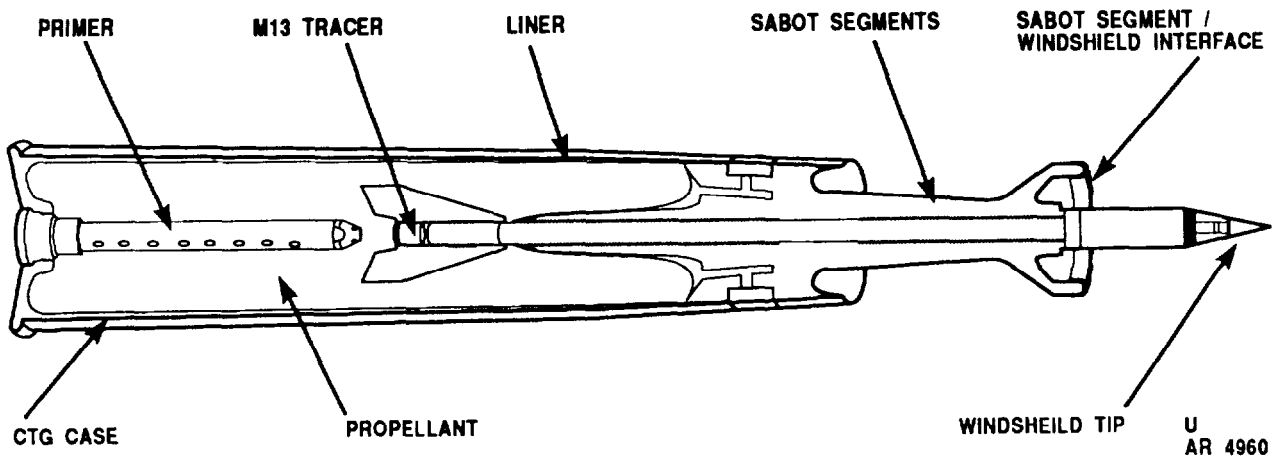


Figure 3. APFSDS-T type ammunition.

Table 1. Ammunition Serviceability Criteria.

Component/ Assembly	Damage	Disposition
Sabot segments; windshield/sabot interface	Possible exterior radioactive DU contamination due to excessive moisture contact with round: corrosion (yellowish or white powder or stain) between sabot segments or penetrator joint.	Do not fire. Contact local radiation protection officer (RPO) and QASAS for instructions. Turn in. Wash hands following the handling of the round. Do not inhale or ingest dust. Use gloves, if available, for any further handling.
Projectile cartridge case interface (M900 only)	Projectile is loose within the cartridge case; i.e. rotating, wobbling, or rattling.	Do not fire. Turn in.

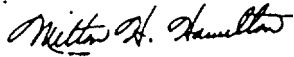
e. Safety Precautions. Certain APFSDS-T ammunition contains Depleted Uranium (DU) penetrators (M774, M833, M900). The DU ammunition is encapsulated within the cartridge and poses no external or internal radiation hazard as long as the round remains intact. If extensive corrosion occurs (see

Ammunition Chapter in Operator's Manual for disposition), or rounds are involved in a fire, radiation contamination will result. Care should be taken to prevent inhalation or ingestion of the DU contamination. The procedures outlined in TB 9-1300-278 should be followed.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:



MILTON H. HAMILTON
*Administrative Assistant to the
Secretary of the Army*
02027

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