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BY *Anna Koppas*
ON *7 Sep 76*

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ROCKETS

Inclosure 1

Plans Letter 45-3-6

Instructors Reading this Document

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FOREWORD

THIS BOOK provides essential data concerning the most important rockets and rocket launchers in current use by the Army, or under advanced development by the Research and Development Service, Ordnance Department. Complete and factual data, including photographs, may not be available on all items described in the book, especially those still in the development stage. Estimates and sketches are given, when possible, where factual data and photographs are lacking.

Generally speaking, the rocket consists of two major units, the shell or head unit and the motor or propulsive unit. The shell unit carries the "pay load"—the high explosive or chemical charge to be directed to the target, and also the fuze which controls the detonation or ignition of the charge. The shell unit is usually assembled to the forward part of the rocket.

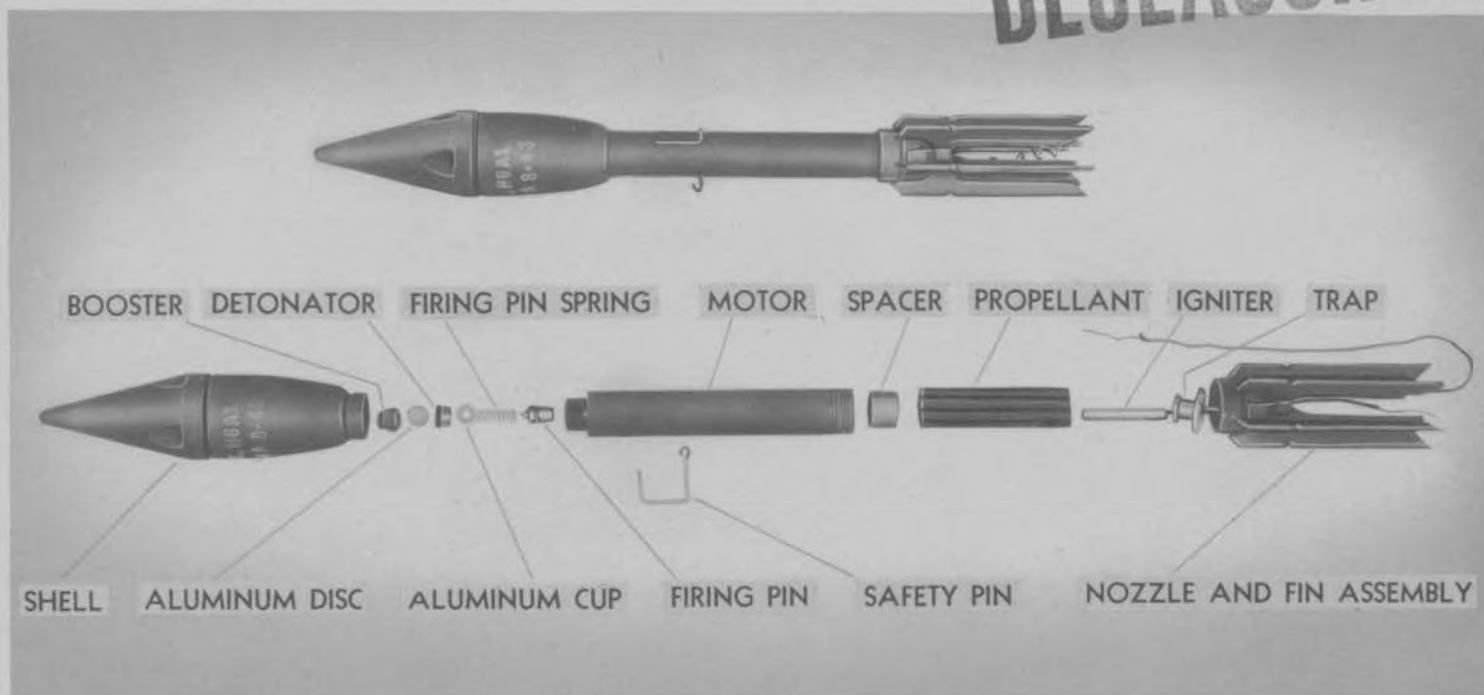
The motor or propulsive unit contains all of the propellant and stabilizing components to carry the explosive charge to the target. Generally, the components include a charge of propellant powder arranged and secured in a prescribed fashion by a trap inside the motor tube proper, an igniter to ignite the propellant powder, a nozzle through which the exhaust gases are expelled to the rear, and a means for stabilizing the complete round during flight. Stabilization may be accomplished by fixed or folding fins attached to the rear of the motor body, or by the rotation of the round during flight. In the latter case rotation results from the exhaust of the gases through a multi-nozzle plate with angled jets.

Items classified as standard types are designated by M numbers; limited procurement and development types are designated by T numbers. If an item is classified in a standard category (limited standard, substitute standard, or standard), it may be available for service issue through regular distribution channels in accordance with priorities established by higher authority. Limited procurement and development items are generally not available for issue.

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2.36 INCH H.E.A.T. ROCKET M6A1—LIMITED STANDARD

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2.36 INCH H.E.A.T. ROCKET, M6A1

The 2.36 inch H.E.A.T. Rocket, M6A1, with shaped-charge loading is fired from a Bazooka-type launcher at ground targets. The rocket is effective against the armor plate of tanks and armored vehicles. After penetration it has the effect of throwing a white hot metal spray.

This round is a modification of the original M6 rocket, now obsolete. Changes were made as follows: improved ignition, involving removal of the contact ring from the ogive, reduced powder charge, and inserted obturator disc.

The practice round, inert loaded to conform to the live round, is the 2.36 inch Practice Rocket, M7A1.

CHARACTERISTICS

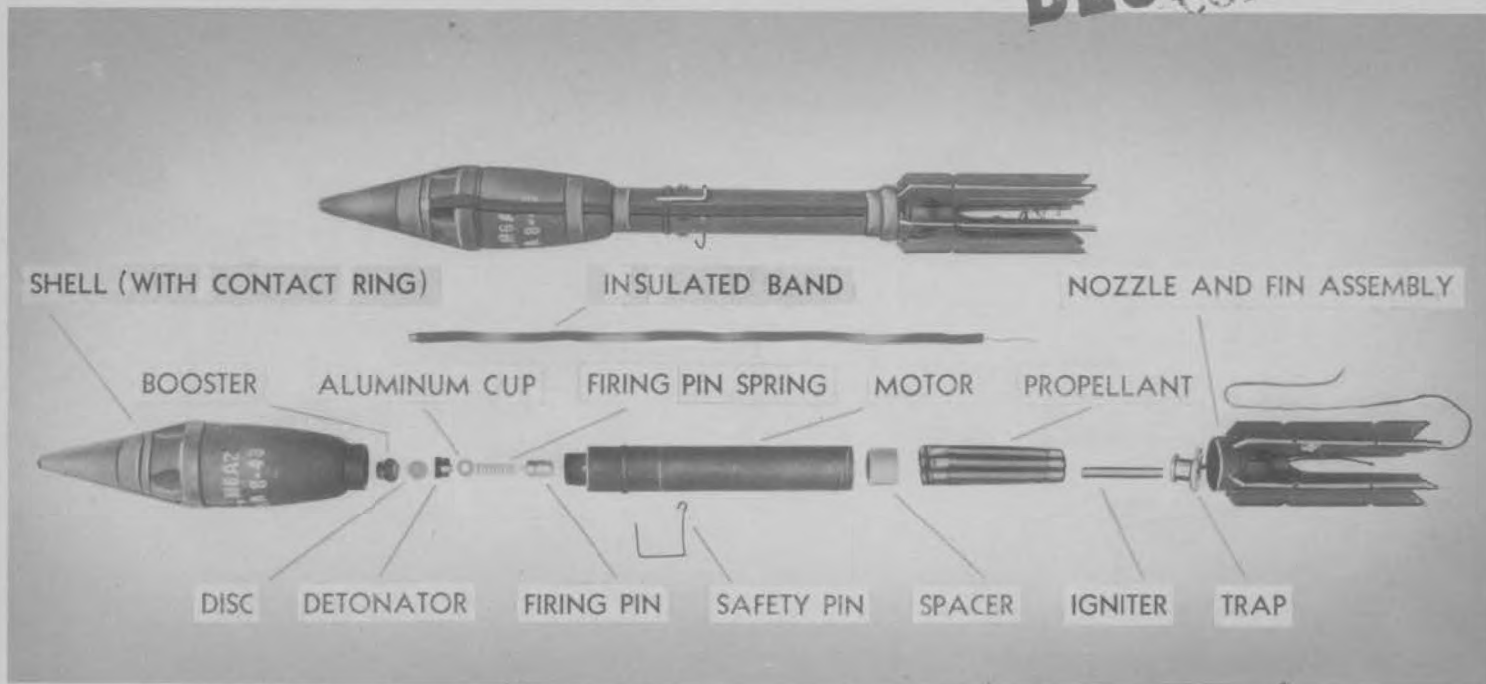
Range.....	600 yd.
Dispersion.....	8.5 mils
Velocity.....	265 f/s
Service temperature limits.....	0° to 120° F.
Burning time:	
At 0° F.....	0.08 sec.
At 120° F.....	0.03 sec. (estimated)
Type of stabilization.....	Fixed fins
Length, overall.....	21.6 in.
Weight of round, loaded.....	3.4 lb.
Fuze.....	B.D.—simple impact type
Motor assembly:	
Diameter, outside.....	1.25 in.
Length.....	8.32 in.
Weight (less propellant).....	1.82 lb. w/ fuze and fins
Material.....	WD 1025 or WD X1025 C.D. steel

Propellant.....	0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Type of loading.....	Five sticks held by pulpit trap and cardboard spacer
Shell assembly:	
Caliber.....	2.36 in.
Length.....	8.8 in.
Filler.....	Pentolite
Weight, filler.....	0.5 lb.
Weight, total.....	1.57 lb.
Type of ignition.....	Electric squib in aluminum case, centered in motor
Launchers.....	M1A1, M9, M9A1
Packaging.....	Packed fuze, one per fiber container, 20 containers per wooden box

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2.36 INCH H.E.A.T. ROCKET M6A2—LIMITED STANDARD

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2.36 INCH H.E.A.T. ROCKET, M6A2

The 2.36 inch H.E.A.T. Rocket, M6A2, with shaped-charge loading is fired from a Bazooka-type launcher at ground targets. The rocket is effective against the armor plate of tanks and armored vehicles. After penetration it has the effect of throwing a white hot metal spray.

This round is a modification of the original M6 rocket, now obsolete. Except that the contact ring was not removed from the ogive, the changes are the same as for the M6A1. This modification was performed in a Theater of Operations, and the designation M6A2 was applied to distinguish it from the M6A1 modification performed at arsenals in the Zone of the Interior.

The practice round, inert loaded to conform to the live round, is the 2.36 inch Practice Rocket, M7A2.

CHARACTERISTICS

Range.....	600 yd.	Propellant.....	0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Dispersion.....	8.5 mils	Type of loading..	Five sticks held by pulpit trap and cardboard spacer
Velocity.....	265 f/s	Shell assembly:	
Service temperature limits.....	0° to 120° F.	Caliber.....	2.36 in.
Burning time:		Length.....	8.8 in.
At 0° F.....	0.08 sec.	Filler.....	Pentolite
At 120° F.....	0.03 sec. (estimated)	Weight, filler.....	0.5 lb.
Type of stabilization.....	Fixed fins	Weight, total.....	1.57 lb.
Length, overall.....	21.6 in.	Type of ignition.....	Electric squib in aluminum case, centered in motor
Weight of round, loaded.....	3.4 lb.	Launchers.....	M1, M1A1, M9, M9A1
Fuze.....	B.D.—simple impact type	Packaging.....	Packed fuzed, one per fiber container, 20 containers per wooden box
Motor assembly:			
Diameter, outside.....	1.25 in.		
Length.....	8.32 in.		
Weight (less propellant).....	1.82 lb. w/fuze and fins		
Material.....	WD1025 or WD X1025 C.D. steel		

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2.36 INCH H.E.A.T. ROCKET M6A3—STANDARD ~~CONFIDENTIAL~~ **DECLASSIFIED**



2.36 INCH H.E.A.T. ROCKET, M6A3

The 2.36 inch H.E.A.T. Rocket, M6A3, with shaped-charge is fired from a Bazooka-type launcher at ground targets. The rocket is effective against the armor plate of tanks and armored vehicles. After penetration it has the effect of throwing a white hot metal spray.

This round is the same as the M6A1 rocket except for a hemispherical ogive and cylindrical fins.

The practice round, inert loaded to conform to the live round, is the 2.36 inch Practice Rocket, M7A3.

CHARACTERISTICS

Range.....600 yd.
Dispersion.....6 mils
Velocity.....265 f/s

Service temperature limits.....0° to 120° F.

Burning time:

At 0° F.....0.08 sec.

At 120° F.....0.03 sec. (estimated)

Type of stabilization.....Fixed ring shroud fin

Length, overall.....19.4 in.

Weight of round, loaded.....3.4 lb.

Fuze.....B.D.—simple impact type

Motor assembly:

Diameter, outside.....1.25 in.

Length.....8.32 in.

Weight (less propellant).....1.74 lb. w/ fuze and fins

Material.....WD X4130 or WD 8630 steel tubing

Propellant.....0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long

Type of loading...Five sticks held by pulpit trap and cardboard spacer

Shell assembly:

Caliber.....2.36 in.

Length.....8.8 in.

Filler.....Pentolite

Weight, filler.....0.5 lb.

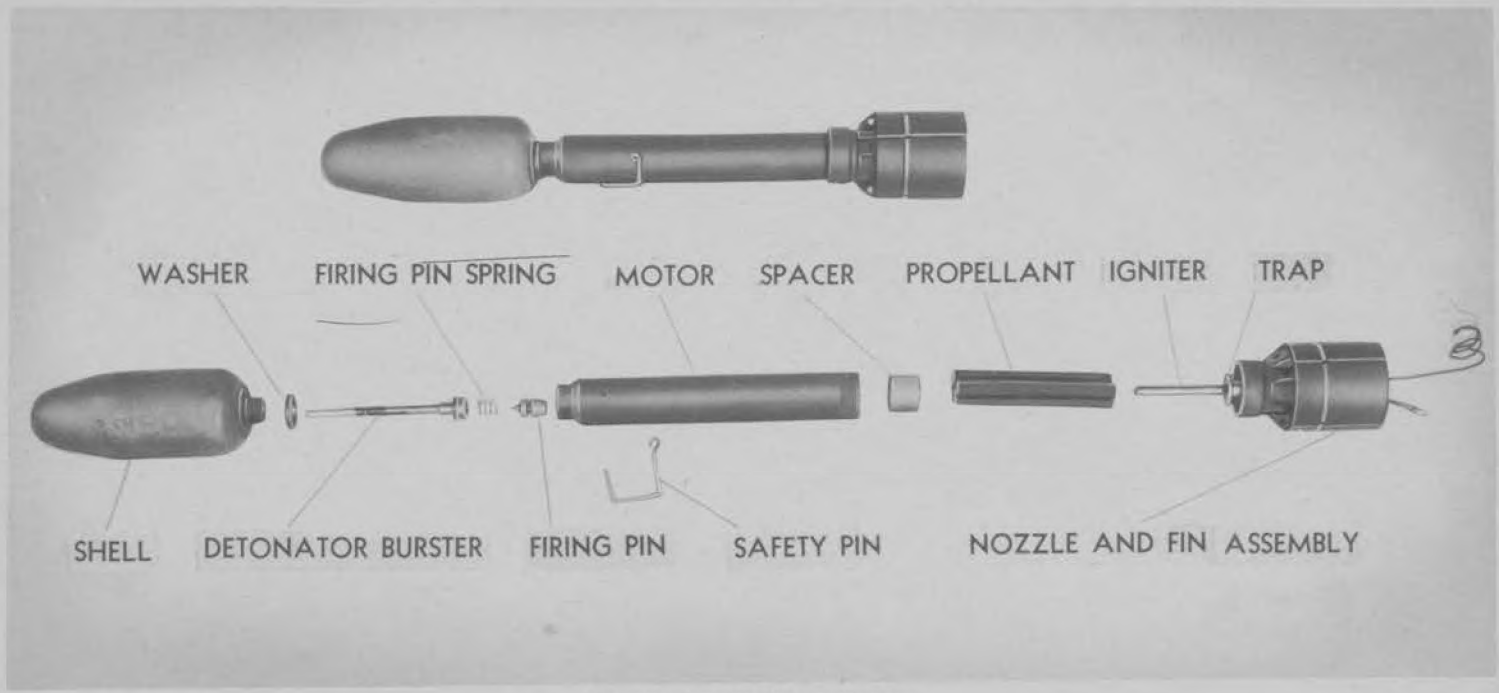
Weight, total.....1.64 lb.

Type of ignition.....Electric squib in aluminum case, centered in motor

Launchers.....M1A1, M9, M9A1

Packaging.....Packed fuze, one per fiber container, 20 containers per wooden box or one per fiber container, 10 containers per wooden box

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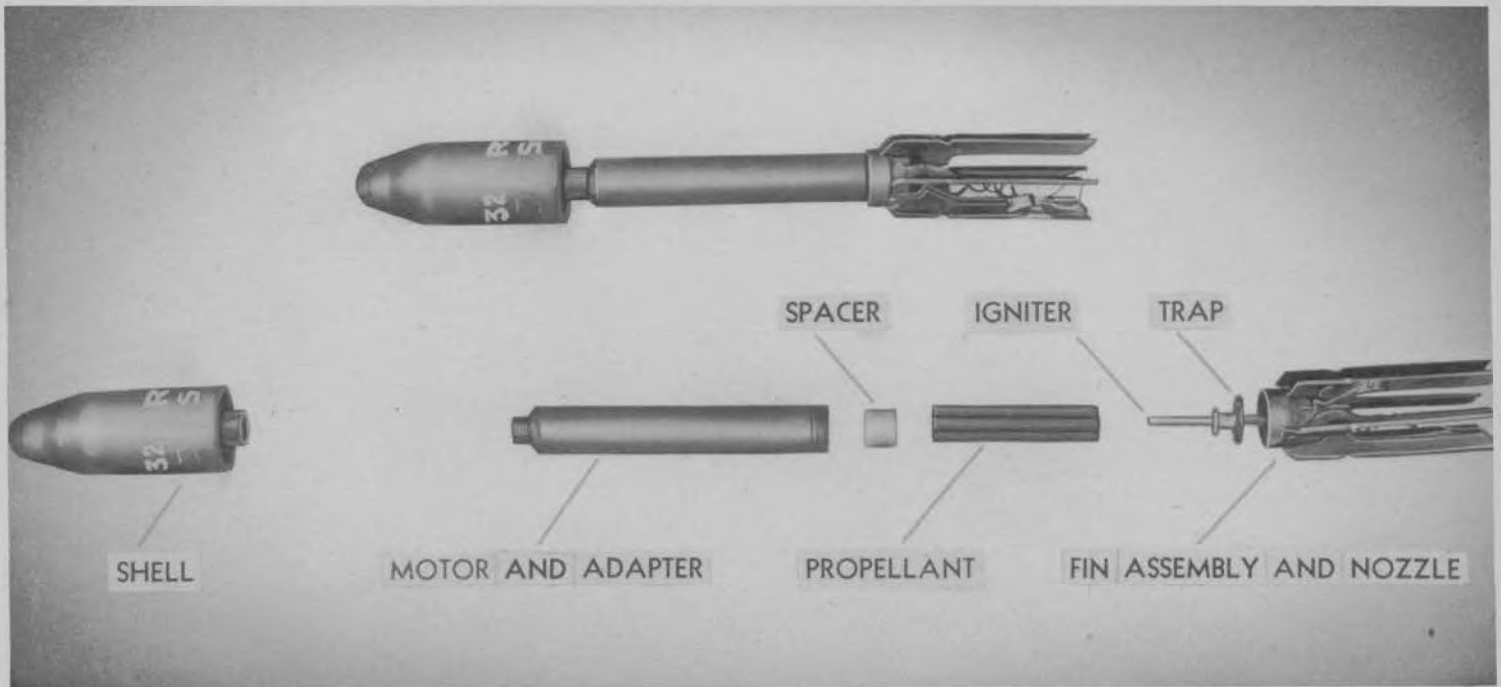
2.36-INCH WP SMOKE ROCKET M10

The 2.36-Inch WP Smoke Rocket M10 (formerly the T26E2) is a WP filled shell with the M6A3 rocket motor. It embodies a special burster assembly not present in the T26 and T26E1 rockets and supersedes and cancels these two former developmental rockets. The rocket is used for laying down smoke screens and as an effective casualty producing weapon against enemy personnel in foxholes, trenches, pillboxes, etc.

CHARACTERISTICS

Range.....	600 yd.	Propellant.....	0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Dispersion.....	6 mils	Type of loading.....	Five sticks held by pulpit trap and cardboard spacer
Velocity.....	265 f/s	Shell assembly:	
Service temperature limits.....	0° to 120° F.	Caliber.....	2.36 in.
Burning time:		Length.....	5.9 in.
At 0° F.....	0.08 sec.	Filler.....	WP
At 120° F.....	0.03 sec. (estimated)	Weight, filler.....	0.9 lb.
Type of stabilization.....	Fixed ring shroud fin	Weight, total.....	1.64 lb.
Length, overall.....	17.1 in.	Type of ignition.....	Electric squib in aluminum case, centered in motor
Weight of round, loaded.....	3.4 lb.	Launchers.....	M1A1, M9, M9A1
Fuze.....	B.D.—simple impact type	Packaging.....	Packed fuzed, one per fiber container, 12 containers per wooden box
Motor assembly:			
Diameter, outside.....	1.25 in.		
Length.....	8.32 in.		
Weight (less propellant).....	1.74 lb. w/fuze and fins		
Material.....	WD X41 30 or WD 8630 steel tubing		

2.36 B.E. COLORED SMOKE ROCKET T32—DEVELOPMENT TYPE



2.36 B.E. COLORED SMOKE ROCKET, T32

The 2.36 inch B.E. (Base Emission) Colored Smoke Rocket, T32, is a rocket shell with colored smoke filling adapted to the M6A1 rocket motor. It is designed for ground to ground and ground to air signaling.

CHARACTERISTICS

Range.....600 yd. (from M6A1)
 Dispersion.....6 mils (from M6A1)
 Velocity.....265 f/s (from M6A1)
 Service temperature limits.....0° to 120° F.

Burning time:
 At 0° F.....0.08 sec.
 At 120° F.....0.03 sec. (estimated)
 Type of stabilization.....Fixed ring shroud fin
 Length, overall.....19 1/8 in.
 Weight of round, loaded.....3.4 lb.
 Fuze.....No fuze—ignition of shell to be by motor flash through small orifice in motor head

Motor assembly:
 Diameter, outside.....1.25 in.
 Length.....8.32 in.
 Weight (less propellant).....1.74 lb. w/fuze and fins
 Material.....WD X4130 or WD 8630 steel tubing

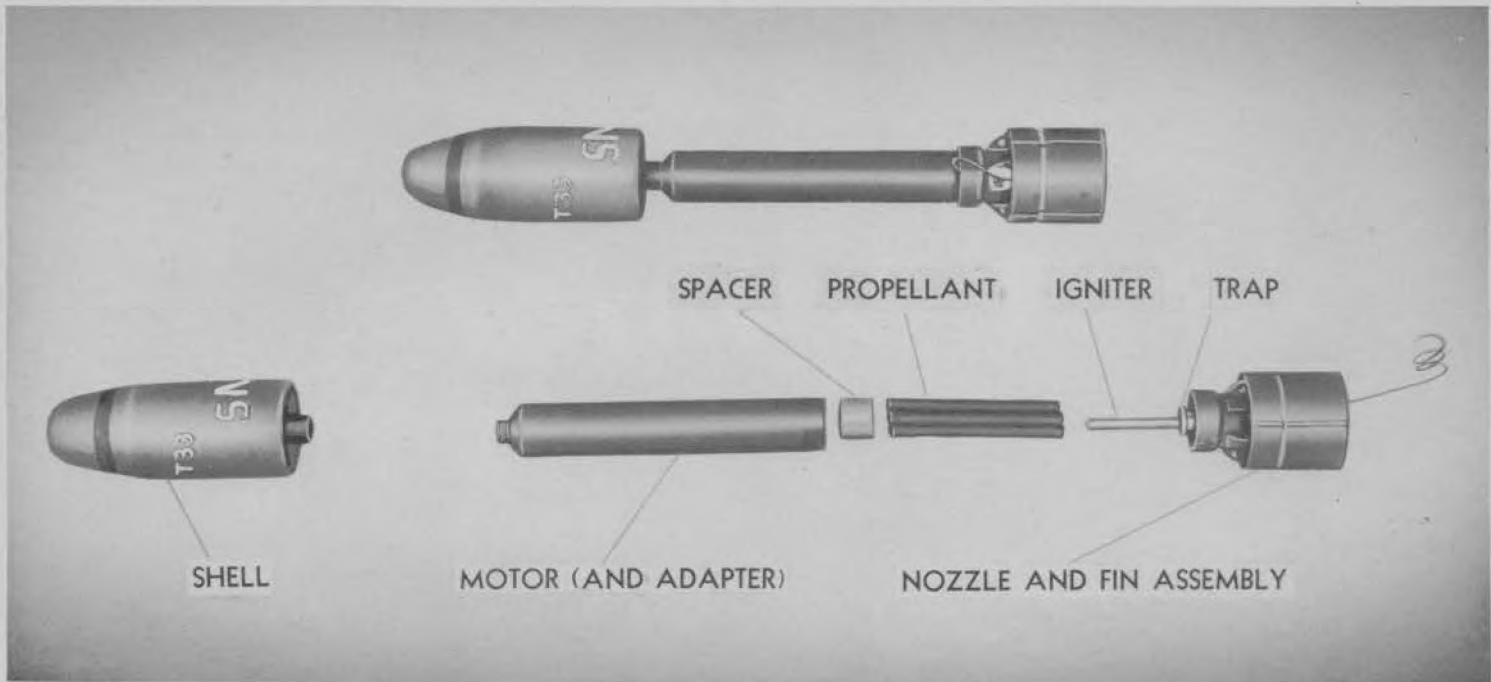
Propellant.....0.136 lb. solvent extruded double base powder 0.375 in. O.D. and 0.08 in. I.D. by 4.15 in. long
 Type of loading.....Five sticks held by pulpit trap and cardboard spacer

Shell assembly:
 Caliber.....2.36 in.
 Length.....6 3/8 in.
 Filler.....Smoke, colored
 Weight, filler.....1 lb. (estimated)
 Weight, total.....1.64 lb.
 Type of ignition.....Electric squib in aluminum case, centered in motor

Launchers.....M1A1, M9, M9A1
 Packaging.....Probably similar to T26

2.36 INCH SMOKE ROCKET T33—DEVELOPMENT TYPE

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2.36 INCH SMOKE ROCKET, T33

The 2.36 inch Smoke Rocket, T33, combines a colored smoke filled shell with an M6A3 rocket motor. The shell is designed to burst in the air through control by a powder train time fuze. The purpose of the rocket is ground to ground and ground to air signaling.

CHARACTERISTICS

Range 600 yd. (from M6A3)
 Dispersion 8 mils (from M6A3)
 Velocity 265 f/s (from M6A3)

Service temperature limits 0° to 120° F.
 Burning time:
 At 0° F. 0.08 sec.
 At 120° F. 0.03 sec. (estimated)
 Type of stabilization Fixed ring shroud fin
 Length, overall 16.9 in.
 Weight of round, loaded 3.4 lb.
 Fuze Powder train initiated by motor blast
 Motor assembly:
 Diameter, outside 1.25 in.
 Length 8.32 in.
 Weight (less propellant) 1.74 lb.
 Material WD X4130 or WD 8630 steel tubing

Propellant 0.136 lb. solvent extruded double base powder 0.375 in. O.D. and 0.08 in. I.D. by 4.15 in. long
 Type of loading Five sticks held by pulpit trap and cardboard spacer
 Shell assembly:
 Caliber 2.36 in.
 Length 6.6 in.
 Filler Smoke, colored
 Weight, filler 1 lb. (estimated)
 Weight, total 1.64 lb.
 Type of ignition Electric squib in aluminum case centered in motor
 Launchers M1A1, M9, M9A1
 Packaging Probably similar to T26

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2.36 INCH H.E.A.T. ROCKET T59—DEVELOPMENT TYPE

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The 2.36 inch H.E.A.T. Rocket, T59, is designed to produce an increased velocity with a heavier charge thus increasing its effectiveness against armor plate of tanks and armored vehicles.

The practice round, inert loaded to conform to the live round, is the 2.36 inch Practice Rocket, T60.

CHARACTERISTICS

Range 1,000 yd. at 15° elevation (estimated)
Dispersion 1.5 mils (estimated)
Velocity 540 f/s (estimated)

Service temperature limits -20° to +130° F.

Burning time:

At -20° F. 0.01 sec. (estimated)

At +130° F. 0.01 sec. (estimated)

Type of stabilization Folding fins with kick springs

Length, overall 21.8 in. (preliminary design)

Weight of round, loaded 6.2 lb. (estimated)

Fuze Probably point initiating, base detonating

Motor assembly:

Diameter, outside 2.36 in.

Length 11.8 in.

Weight (less propellant) 2.15 lb. w/fins

Material WD X4130 steel tubing

Propellant 0.4 lb. solvent center-drilled wafers

Type of loading On rod in motor. Metal washers and sleeves used to space propellant on rod

Shell assembly:

Caliber 2.36 in.

Length 8.1 in.

Filler Pentolite

Weight, filler 1 lb. (estimated)

Weight, total 2.5 lb. (estimated)

Type of ignition Special electric igniter molded to trap rod

Launchers M1A1, M9, M9A1

Packaging To be developed

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2.36 INCH CHEMICAL ROCKET T70—DEVELOPMENT TYPE **DECLASSIFIED**

The 2.36 inch Chemical Rocket, T70, is an "H" filled shell, designed by the Chemical Warfare Service, with a 2.36 inch M6A3 rocket motor. A detonator burster assembly will be used to release the filler on impact.

CHARACTERISTICS

Range.....600 yd. (estimated)
Dispersion.....6 mils (estimated)
Velocity.....265 f/s

Service temperature limits.....0° to 120° F.
Burning time:
At 0° F.....0.08 sec.
At 120° F.....0.03 sec. (estimated)
Type of stabilization.....Fixed ring shroud fin
Length, overall.....17.5 in. (estimated)
Weight of round, loaded.....3.4 lb.
Fuze.....B.D.—simple impact type
Motor assembly:
Diameter, outside.....1.25 in.
Length.....8.22 in.
Weight (less propellant).....1.74 lb. w/fuze and fins
Material.....WD X4130 or WD 8630
steel tubing

Propellant.....0.136 lb. solvent extruded double powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Type of loading.....5 sticks held by pulp trap and cardboard spacer
Shell assembly:
Caliber.....2.36 in.
Length.....6⁵/₁₆ in.
Filler.....H
Weight, filler.....0.85 lb. (estimated)
Weight, total.....1.6 lb. (estimated)
Type of ignition.....Electric squib in aluminum case centered in motor
Launchers.....M1A1, M9, M9A1
Packaging.....Probably similar to T26 and T27

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2.36 INCH CHEMICAL ROCKET T71—DEVELOPMENT TYPE

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The 2.36 inch Chemical Rocket, T71, is a "CG" filled shell, designed by the Chemical Warfare Service, with a 2.36 inch M6A3 rocket motor. A detonator burster assembly will be used to release the filler on impact.

CHARACTERISTICS

Range.....600 yd. (estimated)
Dispersion.....6 mils (estimated)
Velocity.....265 f/s
Service temperature limits.....0° to 120° F.

Burning time:
At 0° F.....0.08 sec.
At 120° F.....0.03 sec. (estimated)
Type of stabilization.....Fixed ring shroud fin
Length, overall.....17.5 in. (estimated)
Weight of round, loaded.....3.4 lb.
Fuze.....B.D.—simple impact type
Motor assembly:
Diameter, outside.....1.25 in.
Length.....8.32 in.
Weight (less propellant).....1.74 lb. w/fuze and fins
Material.....WD X4130 or WD 8630 steel tubing
Propellant.....0.136 lb. solvent extruded double
base powder, 0.375 in. O.D. by
0.08 in. I.D. by 4.15 in. long

Type of loading.....5 sticks held by
pulpit trap and
cardboard spacer
Shell assembly:
Caliber.....2.36 in.
Length.....6⁷/₁₆ in.
Filler.....CG
Weight, filler.....0.85 lb. (estimated)
Weight, total.....1.6 lb. (estimated)
Type of ignition.....Electric squib in aluminum case
centered in motor
Launchers.....M1A1, M9, M9A1
Packaging.....Probably similar to T26
and T27

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2.36 INCH CHEMICAL ROCKET T72—DEVELOPMENT TYPE

The 2.36 inch Chemical Rocket, T72, is an "AC" filled shell, designed by the Chemical Warfare Service, with a 2.36 inch M6A3 rocket motor. A detonator burster assembly will be used to release the filler on impact.

CHARACTERISTICS

Range.....500 yd. (estimated)
Dispersion.....8 mils (estimated)
Velocity.....265 f/s

Service temperature limits.....0° to 120° F.
Burning time:
At 0° F.....0.08 sec.
At 120° F.....0.03 sec. (estimated)
Type of stabilization.....Fixed ring shroud fin
Length, overall.....20.3 in. (estimated)
Weight of round, loaded.....3.4 lb.
Fuze.....B.D.—simple impact type
Motor assembly:
Diameter, outside.....1.25 in.
Length.....8.32 in.
Weight (less propellant).....1.74 lb. w/fuze and fins
Material.....WD X4130 or WD 8630 steel tubing

Propellant.....0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Type of loading.....5 sticks held by pulpit trap and cardboard spacer
Shell assembly:
Caliber.....2.36 in.
Length.....9 1/8 in.
Filler.....AC
Weight, filler.....0.6 lb. (estimated)
Weight, total.....1.6 lb. (estimated)
Type of ignition.....Electric squib in aluminum case centered in motor
Launchers.....M1A1, M9, M9A1
Packaging.....Probably similar to T26 and T27

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2.36 INCH CHEMICAL ROCKET T73—DEVELOPMENT TYPE

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The 2.36 inch Chemical Rocket, T73, is a "CC" filled shell, designed by the Chemical Warfare Service, with a 2.36 inch M6A3 rocket motor. A detonator burster assembly will be used to release the filler on impact.

CHARACTERISTICS

Range..... 550 yd. (estimated)
Dispersion..... 6-8 mils (estimated)

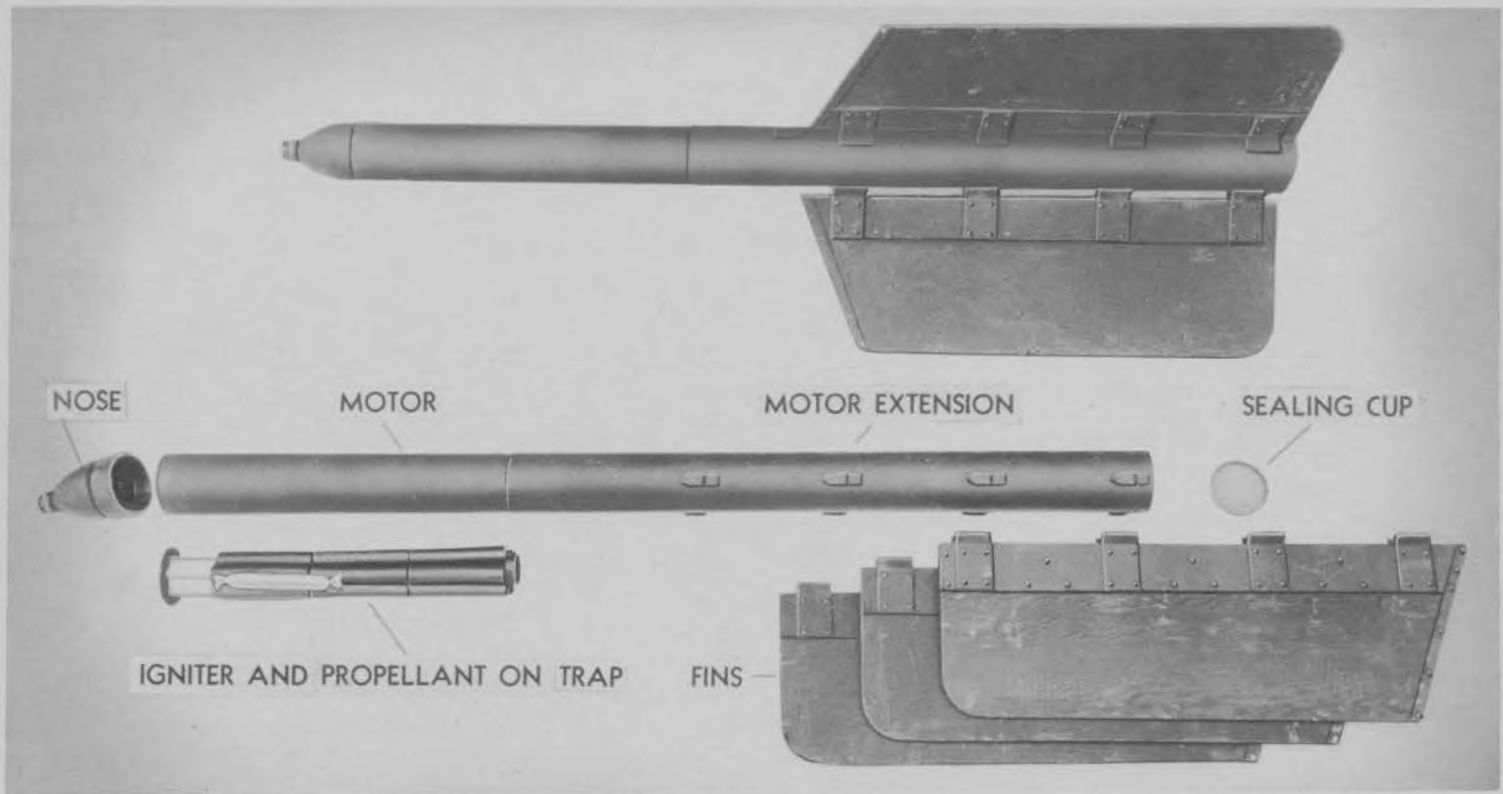
Velocity..... 265 f/s
Service temperature limits..... 0° to 120° F.
Burning time:
 At 0° F..... 0.08 sec.
 At 120° F..... 0.03 sec. (estimated)
Type of stabilization..... Fixed ring shroud fin
Length, overall..... 18.3 in. (estimated)
Weight of round, loaded..... 3.4 lb.
Fuze..... B.D.—simple impact type
Motor assembly:
 Diameter, outside..... 1.25 in.
 Length..... 8.32 in.
 Weight (less propellant)..... 1.74 lb. w/fuze and fins
 Material..... WD X4130 or WD 8630 steel tubing

Propellant..... 0.136 lb. solvent extruded double base powder, 0.375 in. O.D. by 0.08 in. I.D. by 4.15 in. long
Type of loading..... 5 sticks held by pulpit trap and cardboard spacer
Shell assembly:
 Caliber..... 2.36 in.
 Length..... 7 1/16 in.
 Filler..... CC
 Weight, filler..... 0.8 lb. (estimated)
 Weight, total..... 1.6 lb. (estimated)
Type of ignition..... Electric squib in aluminum case centered in motor
Launchers..... M1A1, M9, M9A1
Packaging..... Probably similar to T26 and T27

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3.25-INCH A.A. TARGET ROCKET M2—LIMITED STANDARD

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3.25-INCH A.A. TARGET ROCKET M2

The 3.25-Inch A.A. Target Rocket M2 is designed to simulate low flying aircraft in the training of antiaircraft gun crews. The large fins act as a target.

This rocket has not been fired for specific data on range and dispersion.

CHARACTERISTICS

Range 1,700 yd. (estimated)
 Dispersion No data
 Velocity 530 f/s (estimated)
 Service temperature limits 30° to 120° F.

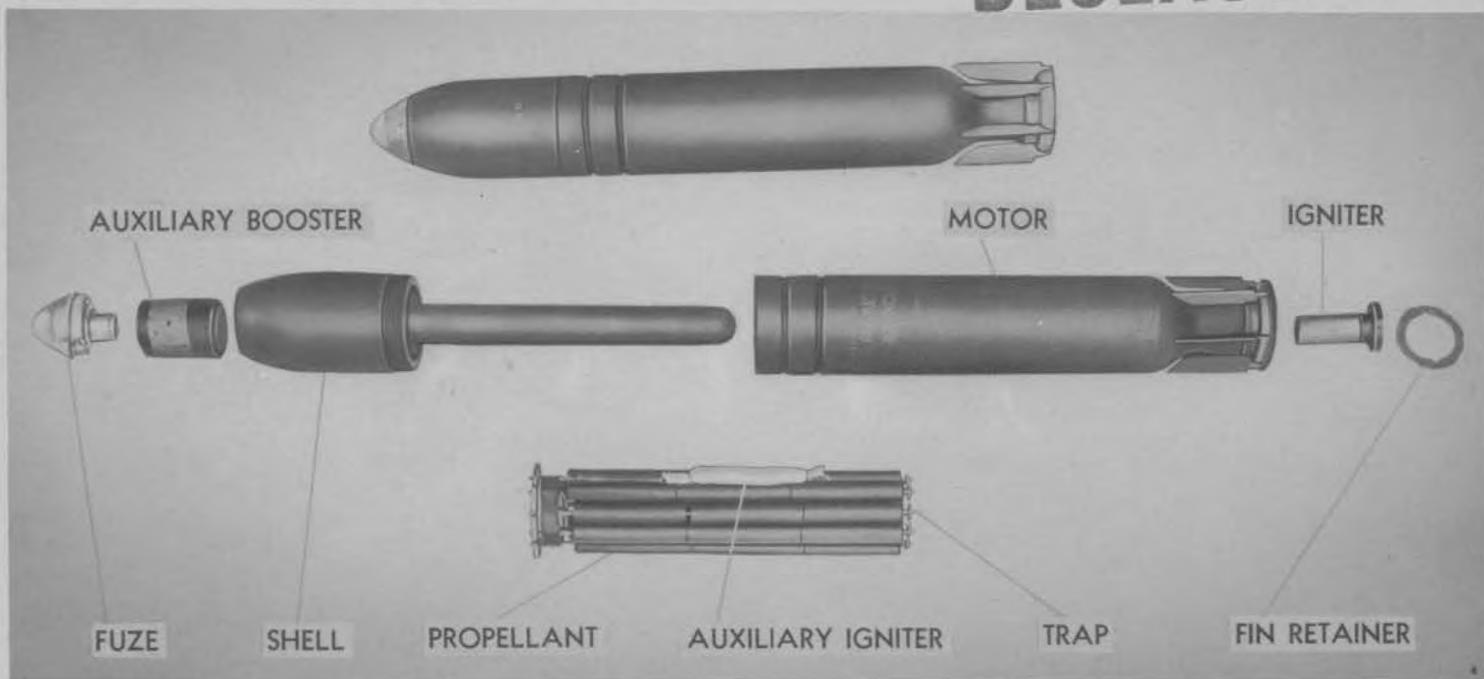
Burning time:
 At 30° F. 0.25 sec. (estimated)
 At 120° F. 0.10 sec. (estimated)
 Type of stabilization Fixed fins
 Length, overall 59.1 in.
 Weight of round, loaded 35.1 lb.
 Fuze No fuze
 Motor assembly:
 Diameter, outside 3.25 in.
 Length 25.25 in.
 Weight (less propellant) 8.44 lb.
 Material WD 1010 to WD 1025 steel tubing
 Propellant 3.2 lb. solvent extruded double
 base powder, 0.875 in. O.D. by
 0.281 in. I.D. by 5 in. long

Type of loading . . . 18 sticks strung on a 6-wire cage
 Shell assembly:
 Caliber 3.25 in.
 Length 4.1 in.
 Filler Solid cast nose except for 1 1/8 in.
 axial hole
 Weight, filler None
 Weight, total 5.83 lb.
 Type of ignition Electric squib contained in
 cardboard cartridge in nose.
 Ignition aided by auxiliary
 igniter bag tied to cage
 Launchers Target Rocket Projector M1
 Packaging Either two or three rounds per
 wooden box

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4.5 INCH H.E. ROCKET M8—LIMITED STANDARD

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4.5 INCH H.E. ROCKET, M8

The 4.5 inch H.E. Rocket, M8, is used for attacking lightly fortified ground targets and against personnel from aircraft or ground launchers.

The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, M9.

CHARACTERISTICS

Range.....4,000 yd.
 Dispersion.....15 mils
 Velocity:
 Full charge.....850 f/s
 Reduced charge.....760 f/s
 Service temperature limits:
 20° to 90° F.—Full Charge
 50° to 130° F.—Reduced Charge
 Burning time:
 At 20° F.....0.3 sec. (estimated)
 At 130° F.....0.12 sec. (estimated)

Type of stabilization.....Folding fins opened by acceleration

Length, overall.....31.1 in. w/o fuze
 Weight of round, loaded.....38.1 lb.
 Fuze.....P.D. M4, M4A1, M4A2, selective SQ or delay, P.D. T4

Motor assembly:

Diameter, outside.....4.5 in.
 Length.....23.29 in.
 Weight (less propellant).....11.65 lb.
 Material.....WD 1025 welded steel tubing

Propellant:

Full charge...4.65 lb. solvent extruded double base powder $\frac{7}{8}$ in. O.D. by $\frac{9}{32}$ in. I.D. by 5 in. long
 Reduced charge.....4.2 lb. solvent extruded double base powder $\frac{7}{8}$ in. O.D. by $\frac{9}{32}$ in. I.D. by 5 in. long

Type of loading:

Full charge...30 sticks strung on 10-wire cage
 Reduced charge...27 sticks strung on 10-wire cage

Shell assembly:

Caliber.....4.5 in.
 Length.....7.5 in.
 Filler.....TNT
 Weight, filler.....4.3 lb.
 Weight, total.....14.5 lb. to 15.25 lb.

Type of ignition.....Cardboard igniter cartridge containing electric squib and backed by plastic cup pressed into motor venturi. Two auxiliary ignition bags tied to wire cage

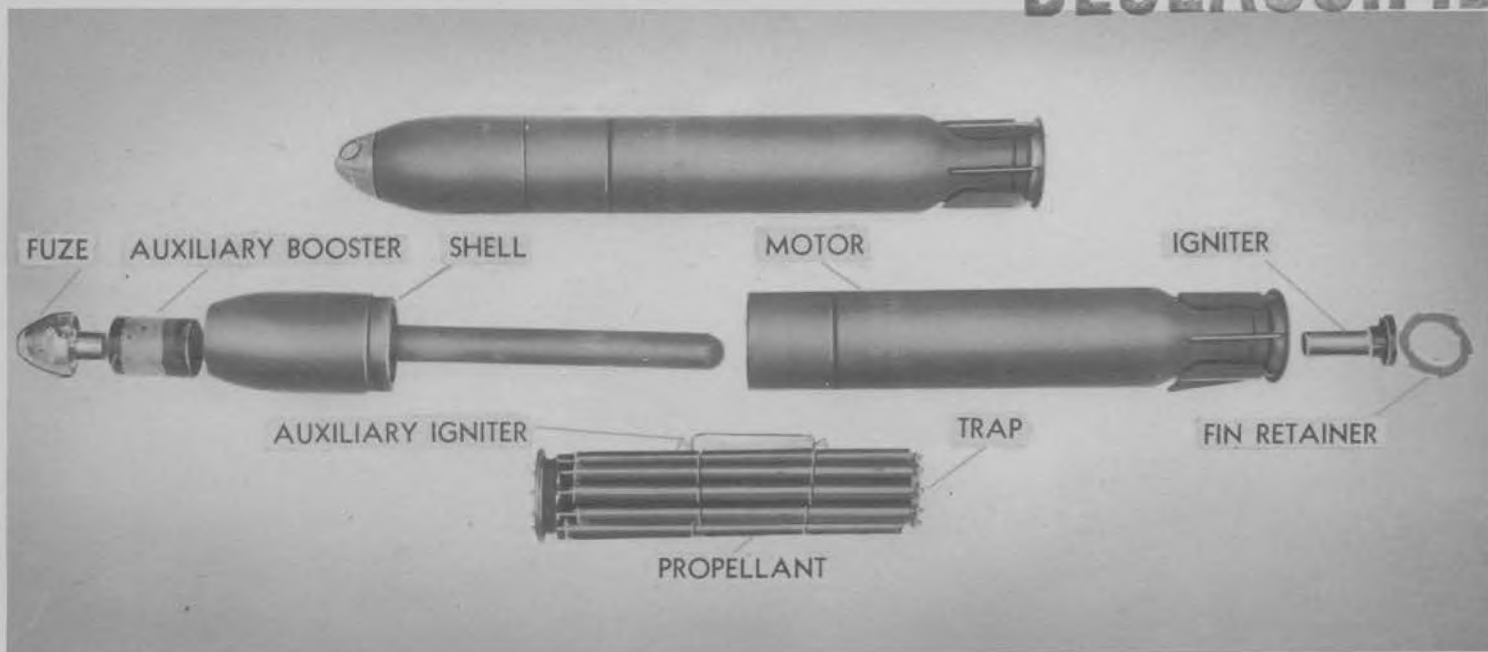
Launchers...M10, M12, M14, T27, T27E1, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61

Packaging.....Packed unfuzed, one per fiber container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box

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4.5 INCH H.E. ROCKET M8A1—LIMITED STANDARD

DECLASSIFIED



4.5 INCH H.E. ROCKET, M8A1

The 4.5 inch H.E. Rocket, M8A1, is used for attacking lightly fortified ground targets and against personnel from aircraft or ground launchers.

This rocket differs from the M8 by an increased thickness at the threaded end of the rocket motor, use of a rocket motor steel with greater yield point strength, and coarser threads remachined in the base of the rocket shell.

The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, M9A1.

CHARACTERISTICS

Range.....4,000 yd.
Dispersion.....15 mils
Velocity.....840 f/s

Service temperature limits.....-10° to +105° F.

Burning time:
At -10° F.....0.3 sec.
At +105° F.....0.13 sec.

Type of stabilization.....Folding fins opened by acceleration

Length, overall.....31.5 in. w/o fuze

Weight of round, loaded.....38.8 lb.

Fuze....P.D. M4, M4A1, M4A2, selective SQ or delay; P.D. T4

Motor assembly:

Diameter, outside.....4.5 in.

Length.....23.49 in.

Weight (less propellant).....13.2 lb.

Material.....WD 1025 to WD 1030 welded steel tubing

Propellant.....4.65 lb. solvent extruded double base powder, 7/8 in. O.D. by 3/2 in. I.D. by 5 in. long

Type of loading...30 sticks strung on 10-wire cage

Shell assembly:

Caliber.....4.5 in.

Length.....7.5 in.

Filler.....TNT

Weight, filler.....4.3 lb.

Weight, total.....15.7 to 16.1 lb.

Type of ignition...Cartridge igniter containing electric squib backed by plastic cup is pressed into venturi. Ignition aided by two auxiliary bags tied to cage

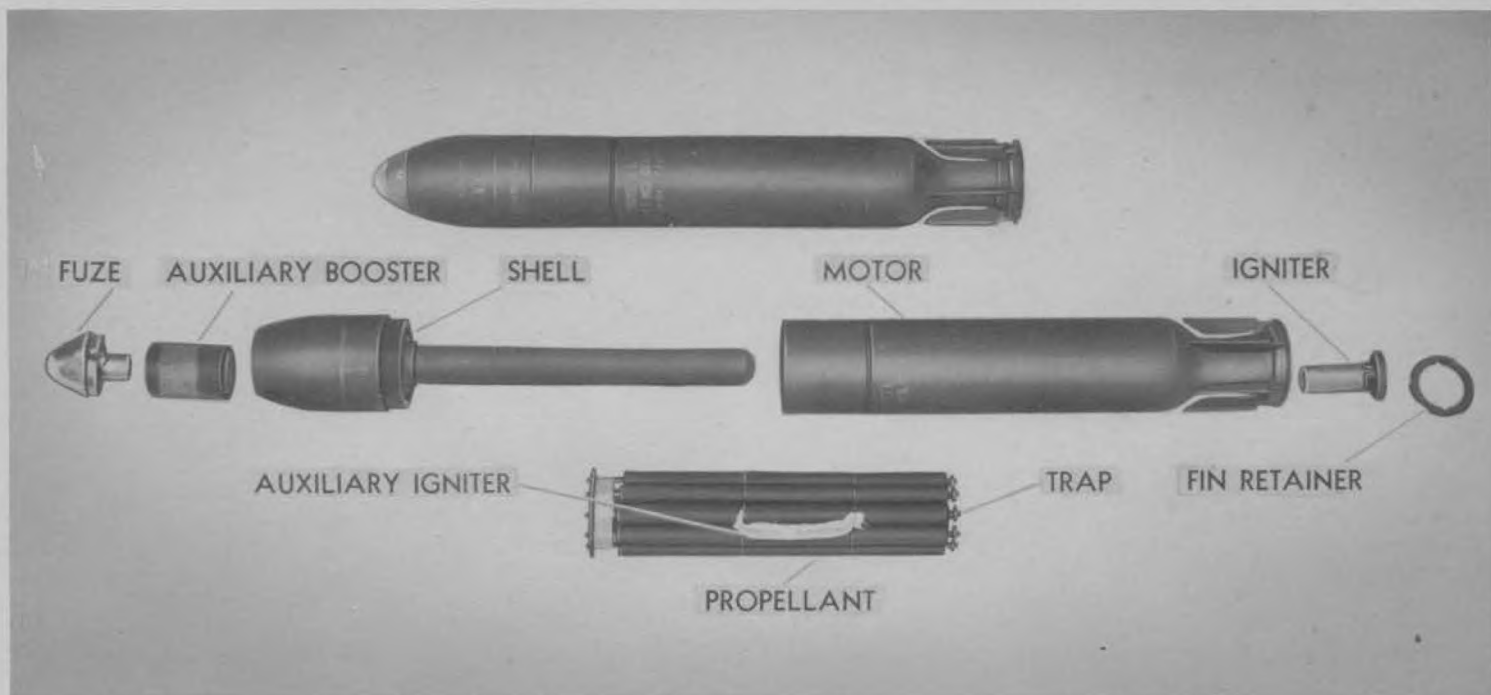
Launchers...M10, M12, M14, T27, T27E1, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61

Packaging...Packed unfuzed, one per fiber or metal container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box

DECLASSIFIED

4.5 INCH H.E. ROCKET M8A2—LIMITED STANDARD

DECLASSIFIED



4.5 INCH H.E. ROCKET, M8A2

The 4.5 inch H.E. Rocket, M8A2, is used for attacking lightly fortified ground targets and against personnel from aircraft or ground launchers.

This rocket represents a change from the M8A1 as the strength of the rocket shell was increased at the base to prevent deflection of the metal under pressure of the burning propellant gases. The length of the rocket shell and rocket motor thread engagement is greater than in the M8A1 rocket.

The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, M9A2.

CHARACTERISTICS

Range 4,000 yd.
Dispersion 15 mils
Velocity 840 f/s

Service temperature limits -10° to +105° F.

Burning time:
At -10° F. 0.3 sec.
At +105° F. 0.13 sec.

Type of stabilization Folding fins opened by acceleration

Length, overall 30.5 in. w/o fuze

Weight of round, loaded 38.2 lb.

Fuze P.D. M4, M4A1, M4A2, selective SQ or delay; P.D. T4

Motor assembly:

Diameter, outside 4.5 in.
Length 23.49 in.
Weight (less propellant) 13.2 lb.
Material WD 1025 to WD 1030 steel—both welded and seamless tubing used

Propellant 4.65 lb. solvent extruded double base powder, 7/8 in. O.D. by 3/4 in. I.D. by 5 in. long

Type of loading 30 sticks strung on a 10-wire cage

Shell assembly:

Caliber 4.5 in.
Length 7.4 in.
Filler TNT
Weight, filler 4.3 lb.
Weight, total 15.7 lb. to 16.1 lb.

Type of ignition Cartridge igniter containing electric squib backed by plastic cup pressed into venturi. Ignition aided by two auxiliary bags tied to cage

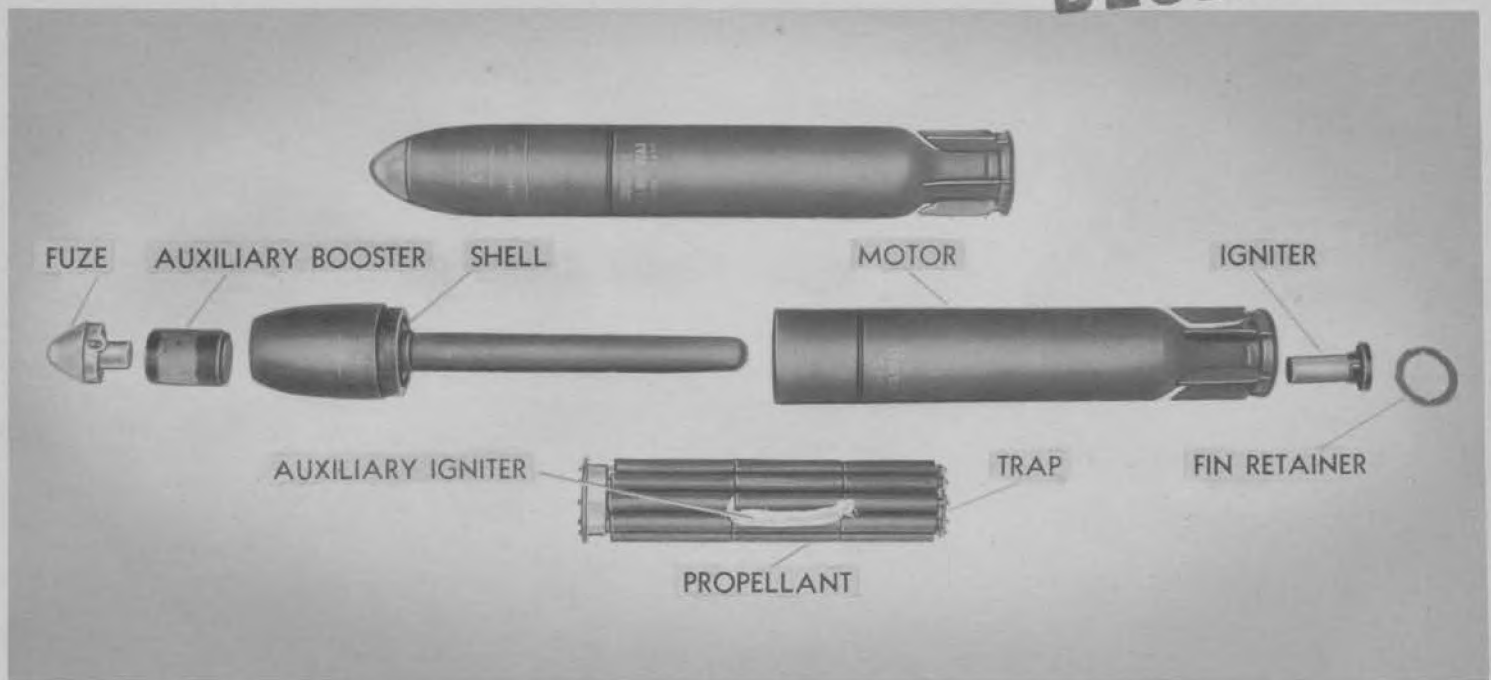
Launchers M10, M12, M14, T27, T27E1, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61

Packaging Packed unfuzed, one per fiber or metal container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box.

DECLASSIFIED

4.5 INCH H.E. ROCKET M8A3—LIMITED STANDARD

DECLASSIFIED



4.5 INCH H.E. ROCKET, M8A3

The 4.5 inch H.E. Rocket, M8A3, is used for attacking lightly fortified ground targets and against personnel from aircraft or ground launchers.

This rocket is a modification of the M8A2 rocket by the addition of a locking burr to each fin blade to assist in rigidly maintaining the fin in full open position during flight.

The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, M9A3.

CHARACTERISTICS

Range.....4,000 yd.
Dispersion.....15 mils
Velocity.....840 f/s

Service temperature limits.....-10° to +105° F.
Burning time:
At -10° F.....0.3 sec.
At 105° F.....0.13 sec.
Type of stabilization.....Folding fins opened by acceleration
Length, overall.....30.5 in. w/o fuze
Weight of round, loaded.....38.2 lb.
Fuze.....P.D. M4, M4A1, M4A2, selective SQ or delay; P.D. T4
Motor assembly:
Diameter, outside.....4.5 in.
Length.....23.49 in.
Weight (less propellant).....13.2 lb.
Material.....WD 1025 to WD 1030 steel—Both welded and seamless tubing used
Propellant.....4.65 lb. solvent extruded double base powder, 7/8 in. O.D. by 3/2 in. I.D. by 5 in. long
Type of loading.....Thirty sticks strung on 10-wire cage

Shell assembly:

Caliber.....4.5 in.
Length.....7.4 in.
Filler.....TNT
Weight, filler.....4.3 lb.
Weight, total.....15.7 lb. to 16.1 lb.

Type of ignition:

Cartridge igniter containing electric squib backed by plastic cup. Assembly pressed into venturi. Ignition aided by two auxiliary bags tied to cage

Launchers:

M10, M12, M14, T27, T27E1, T27E2, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61

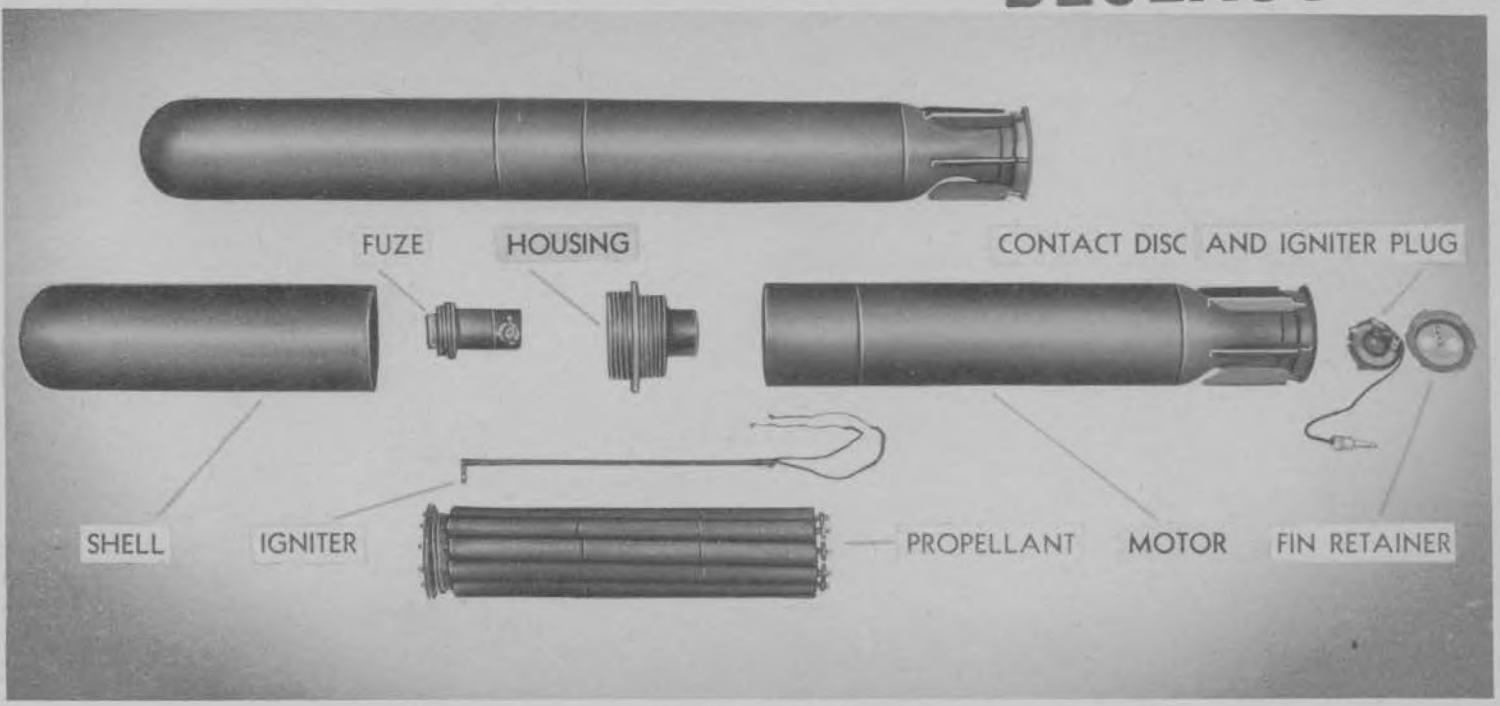
Packaging:

Packed unfuzed, one per fiber or metal container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box

DECLASSIFIED

4.5 INCH H.E.A.T. ROCKET T3—DEVELOPMENT TYPE

DECLASSIFIED



4.5 INCH H.E.A.T. ROCKET, T3

The 4.5 inch H.E.A.T. Rocket, T3, has a shaped-charge loading for attacking armored vehicles and fortifications. The loading is designed for penetration. The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, T56.

CHARACTERISTICS

Range.....4,600 yd.
 Dispersion.....No data
 Velocity.....865 f/s
 Service temperature limits.....-20° to +120° F.

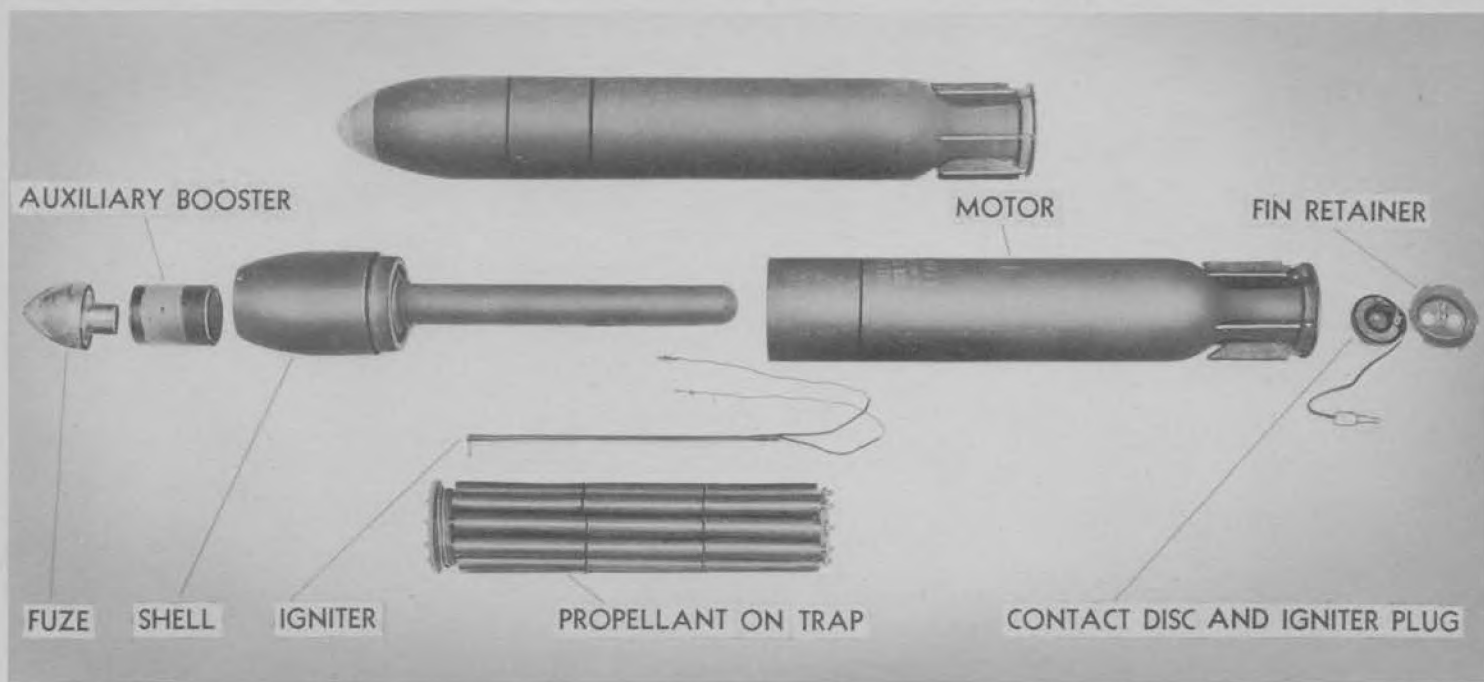
Burning time:
 At -20° F.....0.36 sec.
 At +120° F.....0.13 sec.
 Type of stabilization.....Folding fins opened by acceleration
 Length, overall.....39.8 in.
 Weight of round, loaded.....38.3 lb.
 Fuze.....B.D. M5, T16, or T17
 Motor assembly:
 Diameter, outside.....4.5 in.
 Length.....23.49 in.
 Weight (less propellant).....13.4 lb.
 Material.....WD 8630 or WD X4130 seamless steel tubing
 Propellant.....4.75 lb. solvent extruded double base powder, 7/8 in. O.D. by 3/32 in. I.D. by 5 1/4 in. or 5 1/2 in. long

Type of loading.....Same as T22 Rocket
 Shell assembly:
 Caliber.....4.5 in.
 Length.....15.5 in.
 Filler.....Pentolite
 Weight, filler.....4.0 lb.
 Weight, total.....12.9 lb.
 Type of ignition.....Bayonet type igniter consisting of black powder and electric squib inclosed in ethyl cellulose envelope anchored to cage holding propellant
 Launchers.....M10, M12, M14, T27, T27E1, T33, T34, T34E1, T36, T38, T47, T57, T58, T60, T61, T65
 Packaging.....Probably similar to M8

DECLASSIFIED

4.5 INCH H.E. ROCKET T22—LIMITED PROCUREMENT

DECLASSIFIED



4.5 INCH H.E. ROCKET, T22

The 4.5 inch H.E. Rocket, T22, is used for attacking lightly fortified ground targets and against personnel from aircraft or ground launchers.

This rocket has a new high strength rocket motor body. It is capable of withstanding higher working pressures than the M8, M8A1, and M8A2 rockets, thus providing for an increased powder charge with a greater factor of safety. The igniter is a different type from that used in the M8 series.

CHARACTERISTICS

Range.....4,600 yd.
Dispersion.....12 mils (estimated)
Velocity.....865 f/s
Service temperature limits.....-20° to +120° F.

Burning time:
At -20° F.....0.36 sec.
At +120° F.....0.1 sec.
Type of stabilization.....Folding fins opened by acceleration
Length, overall.....30.5 in. w/o fuze
Weight of round, loaded.....39.2 to 40 lb.
Fuze.....P.D. M4A1, M4A2, selective SQ or delay, P.D. T4, T5, and T6
Motor assembly:
Diameter, outside.....4.5 in.
Length.....23.49 in.
Weight (less propellant).....13.4 lb.
Material.....WD 8630 or WD X4130 seamless steel tubing
Propellant.....4.75 lb. solvent extruded double base powder 7/8 in. O.D. by 3/32 I.D. by 5 1/4 in. or 5 1/2 in. long
Type of loading.....Twenty 5 1/2 in. sticks and ten 5 1/4 in. sticks strung on 10-wire cage

Shell assembly:
Caliber.....4.5 in.
Length.....7.4 in.
Filler.....TNT
Weight, filler.....4.3 lb.
Weight, total.....15.7 lb. to 16 lb.

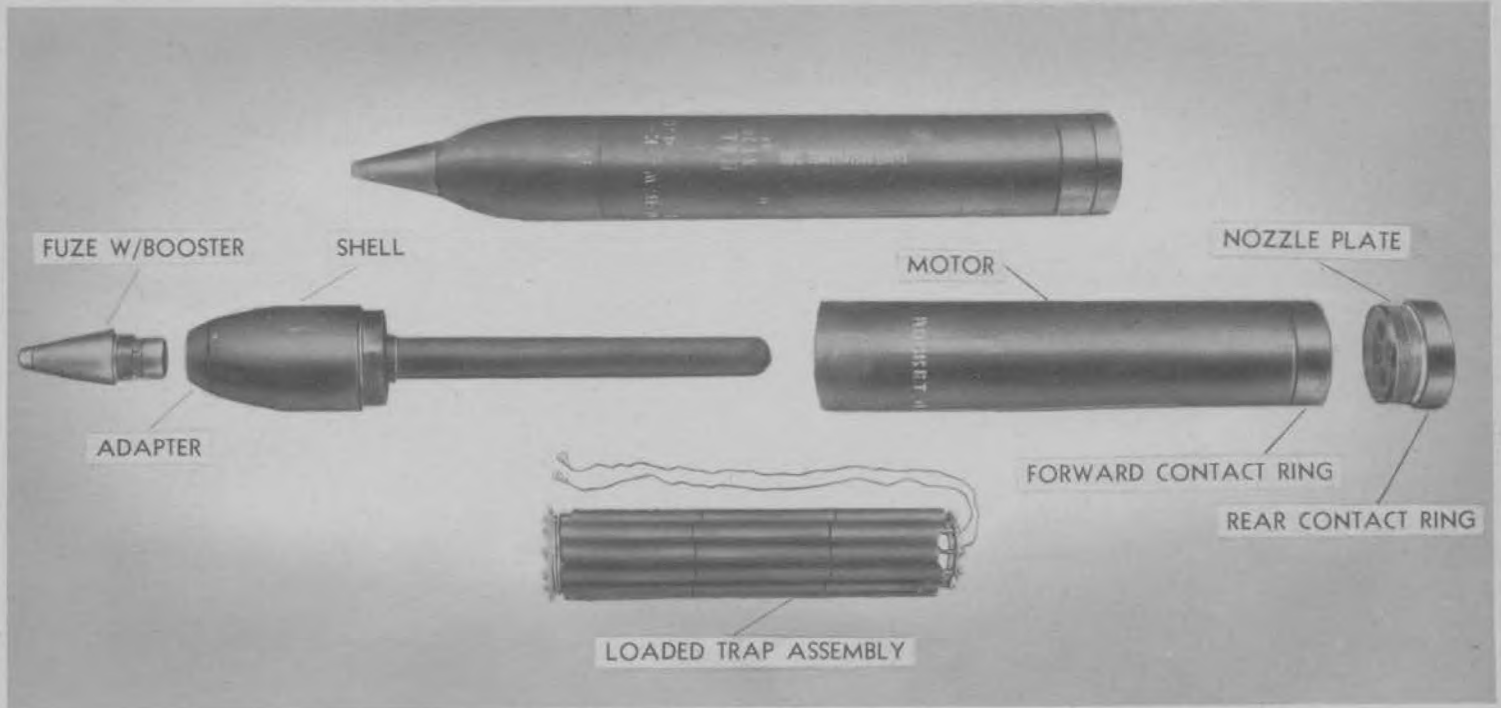
Type of ignition.....Bayonet type igniter, consisting of black powder and electric squib in ethyl cellulose envelope anchored to cage holding propellant

Launchers.....M10, M12, M14, T27, T27E1, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61

Packaging.....Packed unfuzed, one per fiber or metal container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box

DECLASSIFIED

4.5-INCH H.E. ROCKET T38E3—LIMITED PROCUREMENT **DECLASSIFIED**



4.5-INCH H.E. ROCKET T38E3

The 4.5-Inch H.E. Rocket T38E3 is a spin-stabilized rocket designed for firing from ground launchers. It is intended for use against personnel and lightly fortified ground targets.

The practice round, inert loaded to conform to the live round, is the 4.5-Inch Practice Rocket T39E3.

CHARACTERISTICS

Range.....5,250 yd.
Dispersion.....9 mils
Velocity.....830 f/s
Service temperature limits.....-20° to +120° F.

Burning time:
At -20° F.....0.34 sec.
At +120° F.....0.1 sec.
Type of stabilization.....Rotational—180 r.p.s.—
by use of nozzle plate
with 8 angled jets
Length, overall.....28.7 in. w/o fuze
Weight of round, loaded.....40.5 lb. w/o fuze
Fuze.....P.D. M48A2 (0.05 sec. delay) with
Booster M21A1
Motor assembly:
Diameter, outside.....4.5 in.
Length.....20 in.
Weight (less propellant).....12 lb.
Material.....WD 8630 or WD 4130 seamless
steel tubing
Propellant.....4.75 lb. solvent extruded double base
powder, 0.875 in. O.D. by 0.281 in.
I.D. by 5.25 in. and 5.5 in. long

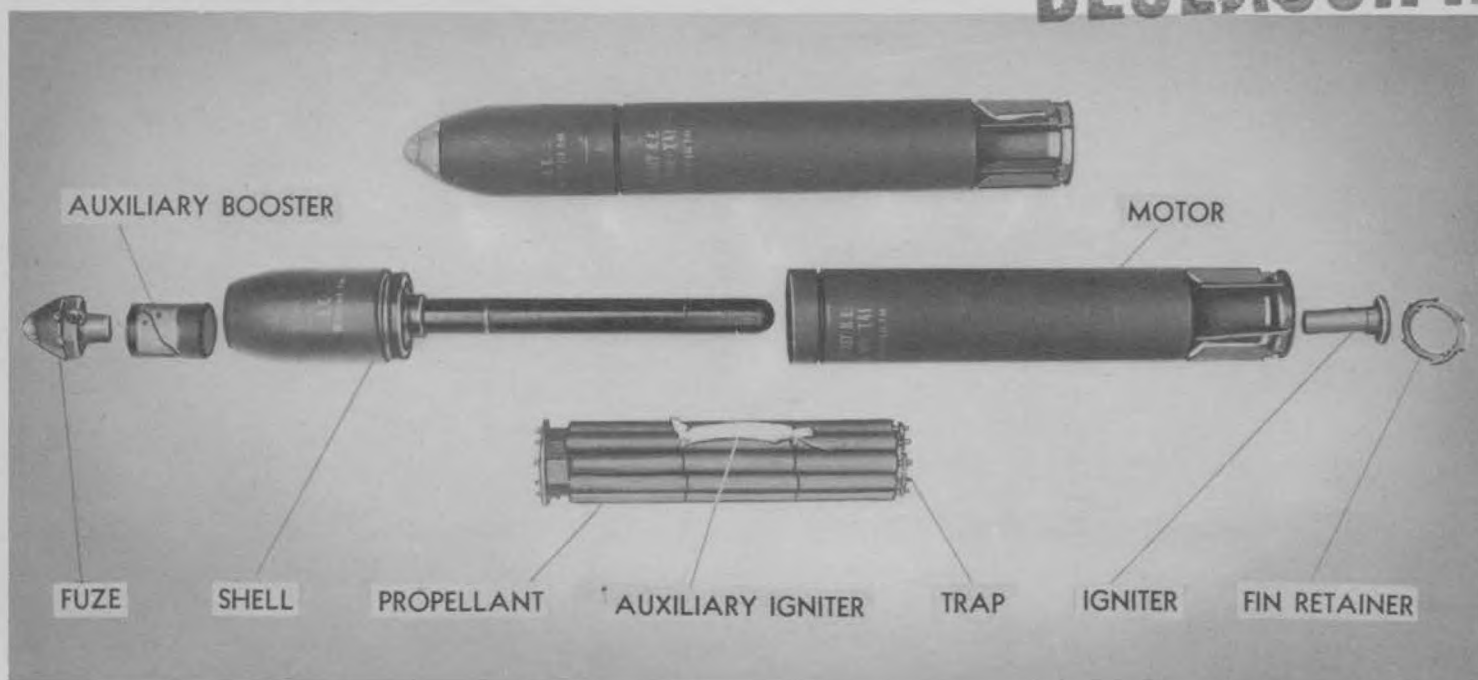
Type of loading.....Twenty 5.5 in. sticks and ten
5.25 in. sticks strung on a
10-wire cage

Shell assembly:
Caliber.....4.5 in.
Length.....9.4 in.
Filler.....TNT
Weight, filler.....5.2 lb.
Weight, total.....17 lb.

Type of ignition.....Bayonet type igniter consisting
of black powder and electric
squib in ethyl cellulose en-
velope anchored to cage hold-
ing propellant. Ignition system
contact by contact rings instead
of plug type ignition

Launchers.....T62, T63E1, T66, T72
Packaging.....Probably similar to M8

DECLASSIFIED



4.5 INCH H.E. ROCKET, T41

The 4.5 inch H.E. Rocket, T41, is designed for attacking personnel or lightly fortified ground targets from ground or aircraft launchers. It is similar to the T22 rocket except that the motor is constructed of seamless steel tubing with a modified venturi.

The practice round, inert loaded to conform to the live round, is the 4.5 inch Practice Rocket, T42.

CHARACTERISTICS

Range.....4,500 yd.
Dispersion.....14 mils
Velocity.....860 f/s (estimated)
Service temperature limits.....-10° to +105° F.

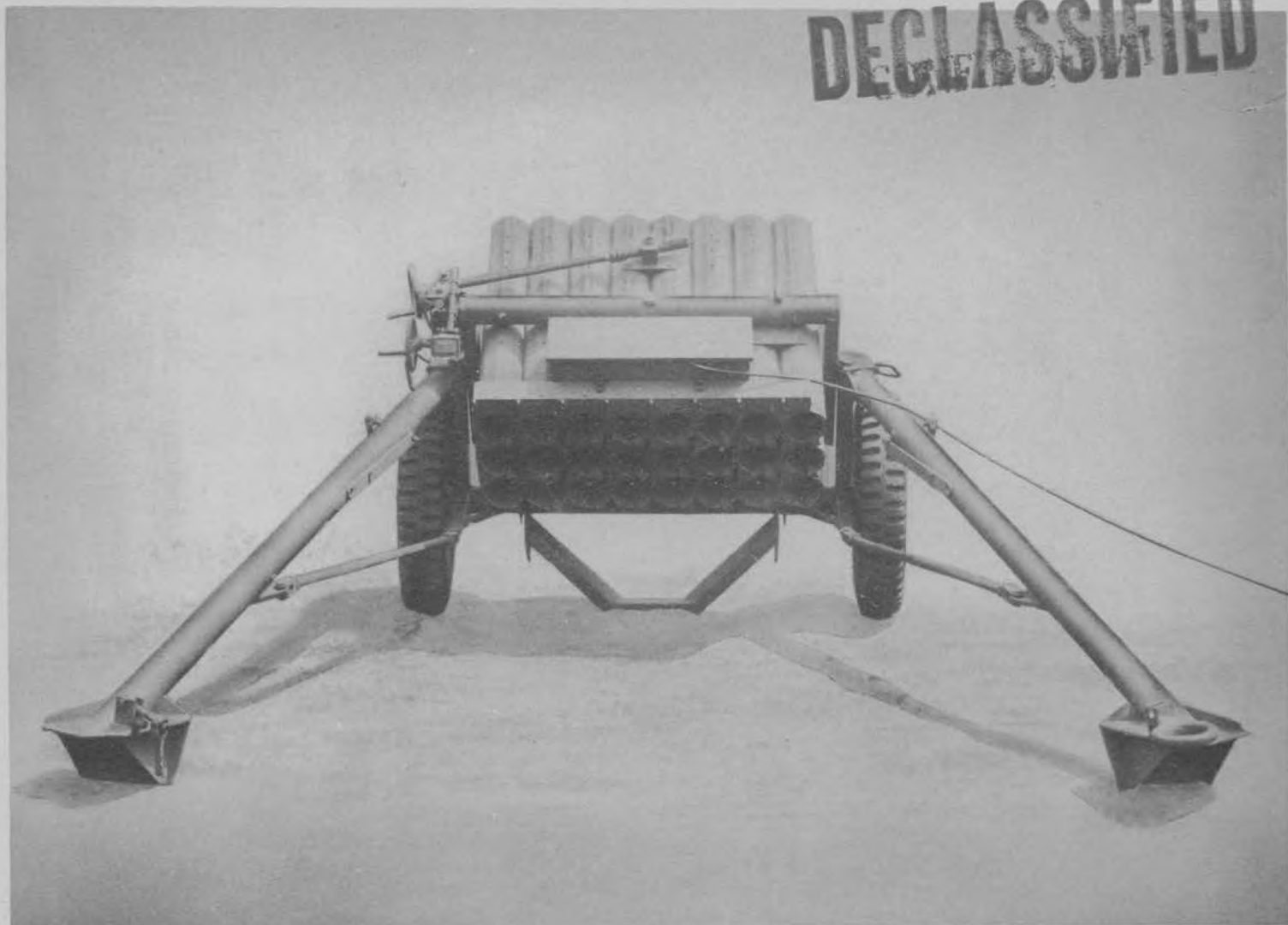
Burning time:
At -10° F.....0.3 sec.
At +105° F.....0.13 sec.
Type of stabilization.....Folding fins opened by acceleration
Length, overall.....31.2 in. w/o fuze
Weight of round, loaded.....39.9 lb. to 40.6 lb.
Fuze.....P.D. M4A1, M4A2, selective SQ and delay, P.D. T4
Motor assembly:
Diameter, outside.....4.5 in.
Length.....23.28 in.
Weight (less propellant).....13.4 lb.
Material.....A.I.S.I. C-1035 seamless steel tubing
Propellant.....4.65 lb. (approximately) solvent extruded double base powder 7/8 in. O.D. by 3/2 in. I.D. by 5 in. (approximately) long
Type of loading.....Thirty sticks strung on a 10-wire cage

Shell assembly:
Caliber.....4.5 in.
Length.....8.94 in.
Filler.....TNT
Weight, filler.....5 lb.
Weight, total.....18.87 lb.
Type of ignition.....Cartridge igniter containing electric squib, backed by plastic cup pressed into motor venturi. Ignition aided by two auxiliary bags tied to cage
Launchers.....M10, M12, M14, T27, T27E1, T27E2, T31, T33, T34, T36, T38, T46, T46E1, T47, T57, T58, T60, T61
Packaging.....Packed unfuzed, one per fiber or metal container, two containers per wooden box. One fuze and one auxiliary booster per fiber container or metal can, 15 containers or cans per metal box

DECLASSIFIED

4.5-INCH MULTIPLE ROCKET LAUNCHER T66—LIMITED PROCUREMENT

DECLASSIFIED



4.5-INCH MULTIPLE ROCKET LAUNCHER T66—REAR VIEW

The 4.5-Inch Multiple Rocket Launcher T66 is a mobile weapon for use in laying down a barrage with the 4.5-Inch spin-stabilized rockets, T38 series. It is mounted on a two wheel trailer type mount with split trails and a firing platform.

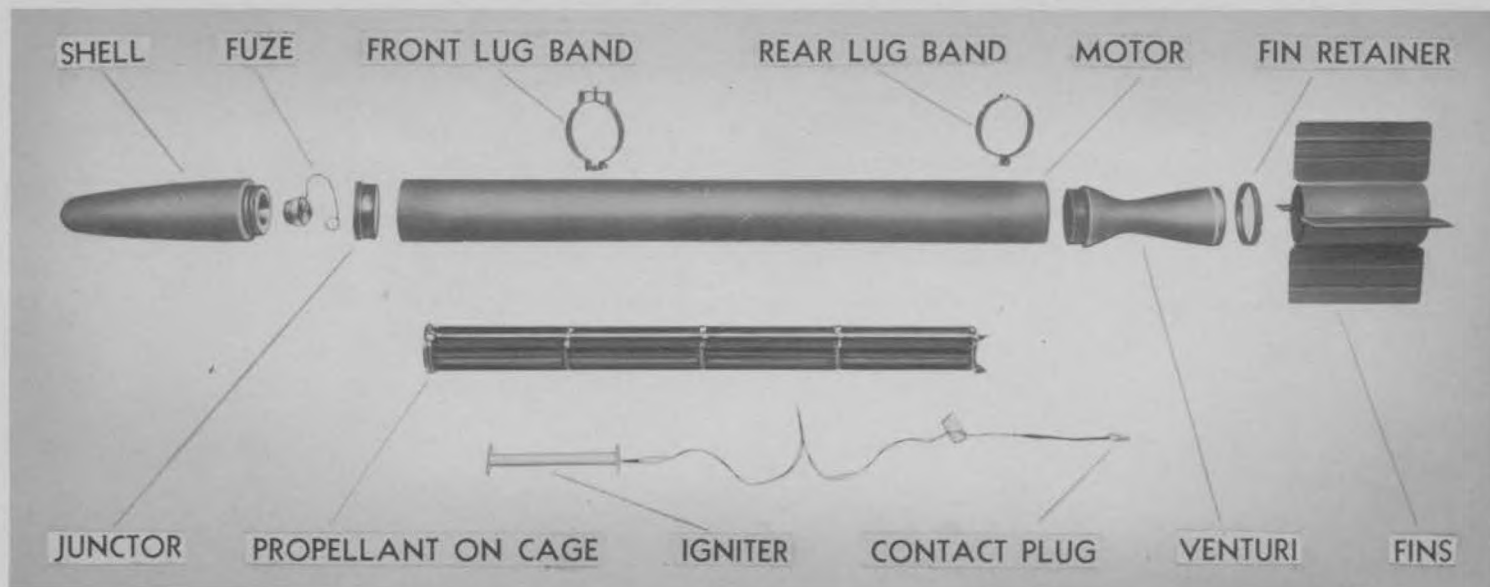
CHARACTERISTICS

Weight, total.....	1,050 lb.
Rails or tubes:	
Length.....	36 in.
Number and arrangement.....	24 tubes in three 8-tube banks
Composition.....	Aluminum
Mounting.....	2-wheel split trail carriage for ground firing
Elevation.....	0° to 45°
Traverse.....	20° (10° R—10° L)
Rate of fire.....	Ripple fire at 0.5 sec. interval
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	M4 mortar sight and quadrant



DECLASSIFIED

4.5-INCH MULTIPLE ROCKET LAUNCHER T66



EXPLODED VIEW OF 4.5-INCH SAP ROCKET T78

This semi-armor-piercing rocket is designed for forward firing from aircraft only against submarines, surface ships, and various armored vehicles and ground installations.

The practice round is the 4.5-Inch Practice Rocket T86.



4.5-INCH SAP ROCKET T78

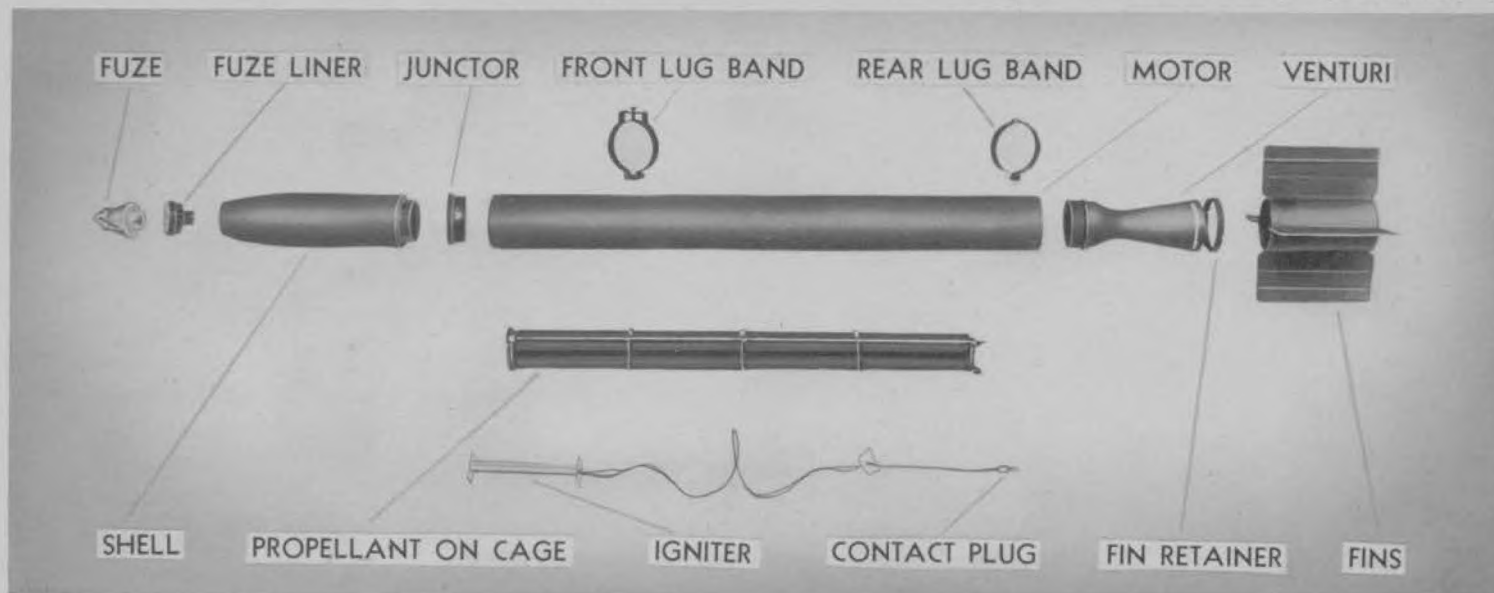
CHARACTERISTICS

Range.....1,500 yds. (from aircraft)
 Dispersion (lateral, due to ammunition) . . . 5 mils P.E.
 Velocity.....1,000 f/s (relative to aircraft)
 Service temperature limits.....-40° to +130°F.
 Burning time:
 At -40° F.....0.7 sec.
 At +130° F.....0.3 sec. (estimated)
 Type of stabilization.....Four-bladed fixed fin
 Length, overall.....74 in.
 Weight of round, loaded.....98 lb.
 Fuze.....B.D. M68 (modified)

Motor assembly:
 Diameter, outside.....4.5 in.
 Length.....56 in.
 Weight (less propellant).....45 lb.
 Material...N.E. 8630 cold drawn steel tubing
 Propellant...14.0 lb. H4 solvent extruded double
 base powder 1.2 in. O.D. by 0.4 in.
 I.D. by 10 in. long
 Type of loading...24 sticks strung on a 6-wire cage

Shell assembly:
 Caliber.....4.5 in.
 Length.....18 in.
 Filler.....TNT
 Weight, filler.....2.8 lb.
 Weight, total.....39 lb.
 Type of ignition...Black powder filled plastic tube
 with an electric contact plug
 Launchers.....Zero length rail
 Packaging.....To be developed

DECLASSIFIED



EXPLODED VIEW OF 4.5-INCH H.E. ROCKET T83

This rocket is designed for forward firing from aircraft only against vehicles and ground installations vulnerable to a general purpose high explosive shell.

The practice round is the 4.5-Inch Practice Rocket T87.

CHARACTERISTICS

Range.....1,500 yds. (from aircraft)
 Dispersion (lateral, due to ammunition) . . . 5 mils P.E.
 Velocity.....1,000 f/s (relative to aircraft)
 Service temperature limits.....-40° to +130° F.

Burning time:
 At -40° F.....0.7 sec.
 At +130° F.....0.3 sec. (estimated)

Type of stabilization..... Four-bladed fixed fin
 Length, overall.....76 in. w/fuze
 Weight of round, loaded.....98 lb.
 Fuze.....P.D. MK 149 (Navy type)

Motor assembly:
 Diameter, outside.....4.5 in.
 Length.....56 in.
 Weight (less propellant).....45 lb.
 Material...N.E. 8630 cold drawn steel tubing



4.5-INCH H.E. ROCKET T83

Propellant...14.0 lb. H4 solvent extruded double base powder 1.2 in. O.D. by 0.4 in. I.D. by 10 in. long

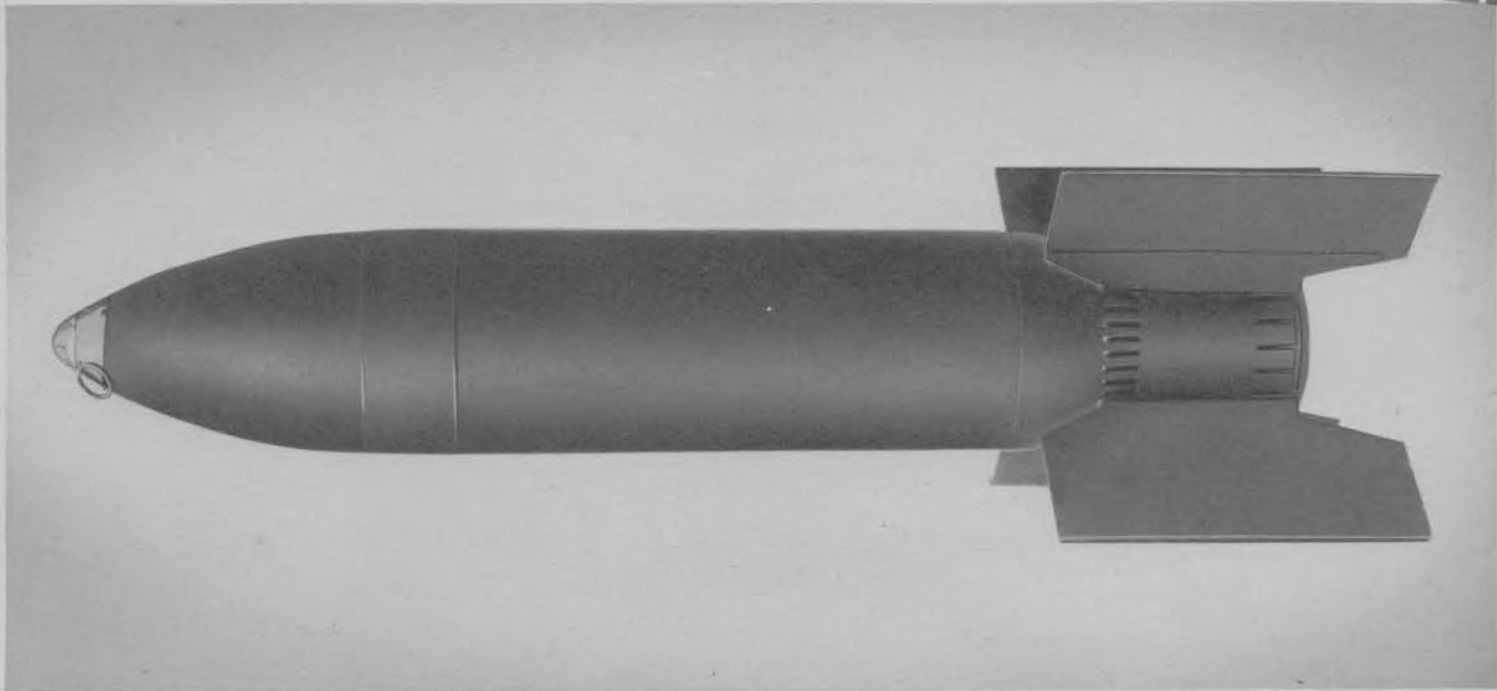
Type of loading...24 sticks strung on a 6-wire cage
 Shell assembly:
 Caliber.....4.5 in.
 Length, w/o fuze.....16 in.
 Length, w/fuze.....20 in.

Filler.....TNT
 Weight, filler.....8.8 lb.
 Weight, total.....39 lb.

Type of ignition...Black powder filled plastic tube with an electric contact plug
 Launchers.....Zero length rail
 Packaging.....To be developed

7.2 INCH H.E. ROCKET T14—LIMITED PROCUREMENT

CONFIDENTIAL
DECLASSIFIED



7.2 INCH H.E. ROCKET, T14

The 7.2 inch H.E. Rocket, T14, is designed for attacking personnel and lightly fortified ground targets.

The practice round, inert loaded to conform to the live round, is the 7.2 inch Practice Rocket, T17.

CHARACTERISTICS

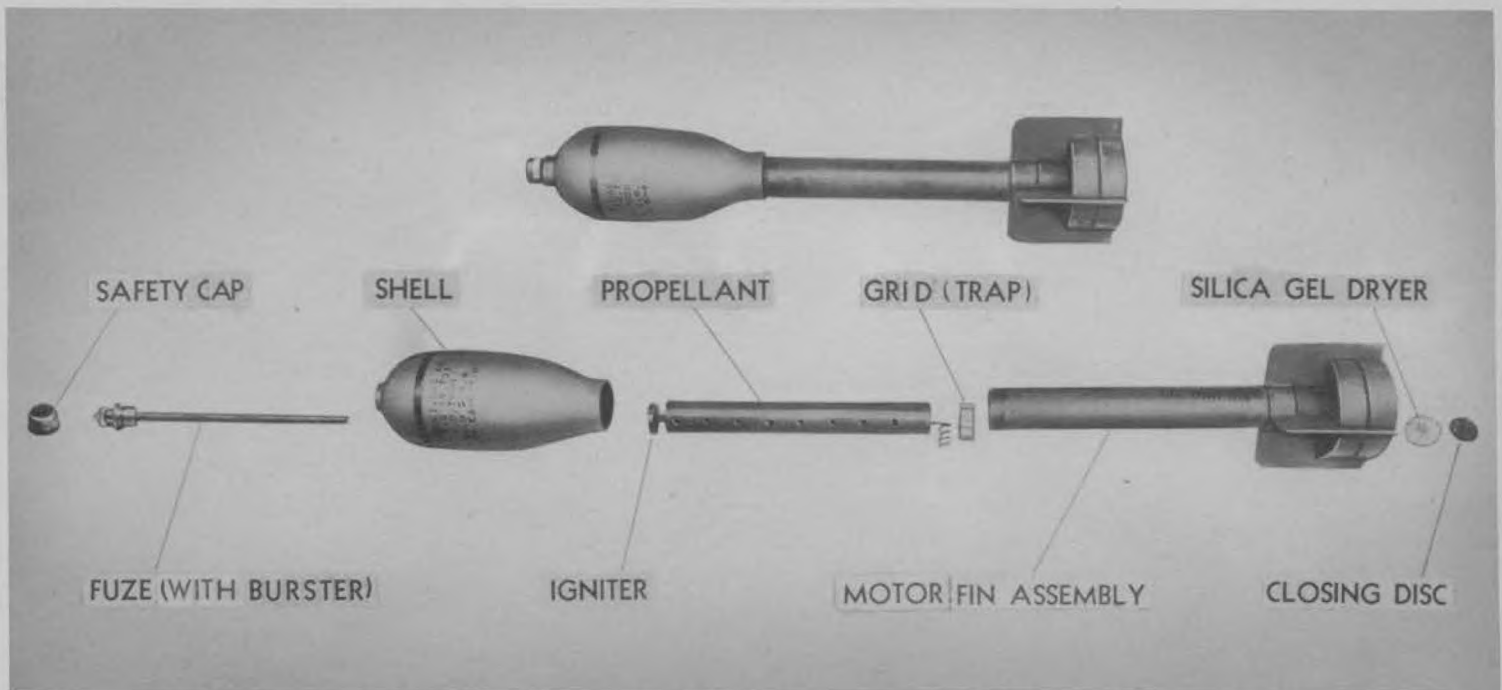
Range..... 5,700 yd. at 32° elevation
6,200 yd. (estimated maximum)
Dispersion..... 10 mils (estimated)
Velocity..... 880 f/s (estimated)
Service temperature limits..... -10° to +30° F.
(estimated)

Burning time:
At -10° F..... 0.25 sec. (estimated)
At 130° F..... 0.09 sec. (estimated)
Type of stabilization..... Fixed fins
Length, overall..... 41.4 in. w/o fuze
Weight of round, loaded..... 115 lb. (estimated)
Fuze..... P.D. M4A1, M4A2, selective SQ
or delay
Motor assembly:
Diameter, outside..... 7.2 in.
Length..... 27.6 in.
Weight (less propellant)..... 41 lb.
Material..... SAE X4130 or equal C.D.
seamless steel tubing
Propellant... 15 lb. solvent extruded double base
powder 7/8 in. O.D. by 0.281 in.
I.D. by 1 in. to 5 in. long

Type of loading... 98.5 sticks strung on 33-wire
cage. Stepdown loading with
central grid in cage. Stick
length is 5 in. with some 4 in.
and 1 in. sticks below the
grid
Shell assembly:
Caliber..... 7.2 in.
Length..... 11.8 in.
Filler..... TNT
Weight, filler..... 12.5 lb.
Weight, total..... 47 lb.
Type of ignition... Present design of igniter is
doughnut shaped plastic car-
tridge placed at front of motor.
Igniter (plus auxiliary) contains
110 grams of black powder and
electric squib
Launchers..... T51, T53, and T56
Packaging..... To be developed

DECLASSIFIED

7.2 INCH CHEMICAL ROCKET T21—LIMITED PROCUREMENT **DECLASSIFIED**



7.2 INCH CHEMICAL ROCKET, T21

The 7.2 inch Chemical Rocket, T21, is a CG gas filled shell adapted to a 3.25 inch rocket motor. It is intended for use against personnel.

CHARACTERISTICS

Range.....3,300 yd.
 Dispersion.....35 mils
 Velocity.....680 f/s
 Service temperature limits.....10° to 120° F.
 Burning time:
 At 10° F.....1 sec. (estimated)
 At 120° F.....0.33 sec. (estimated)

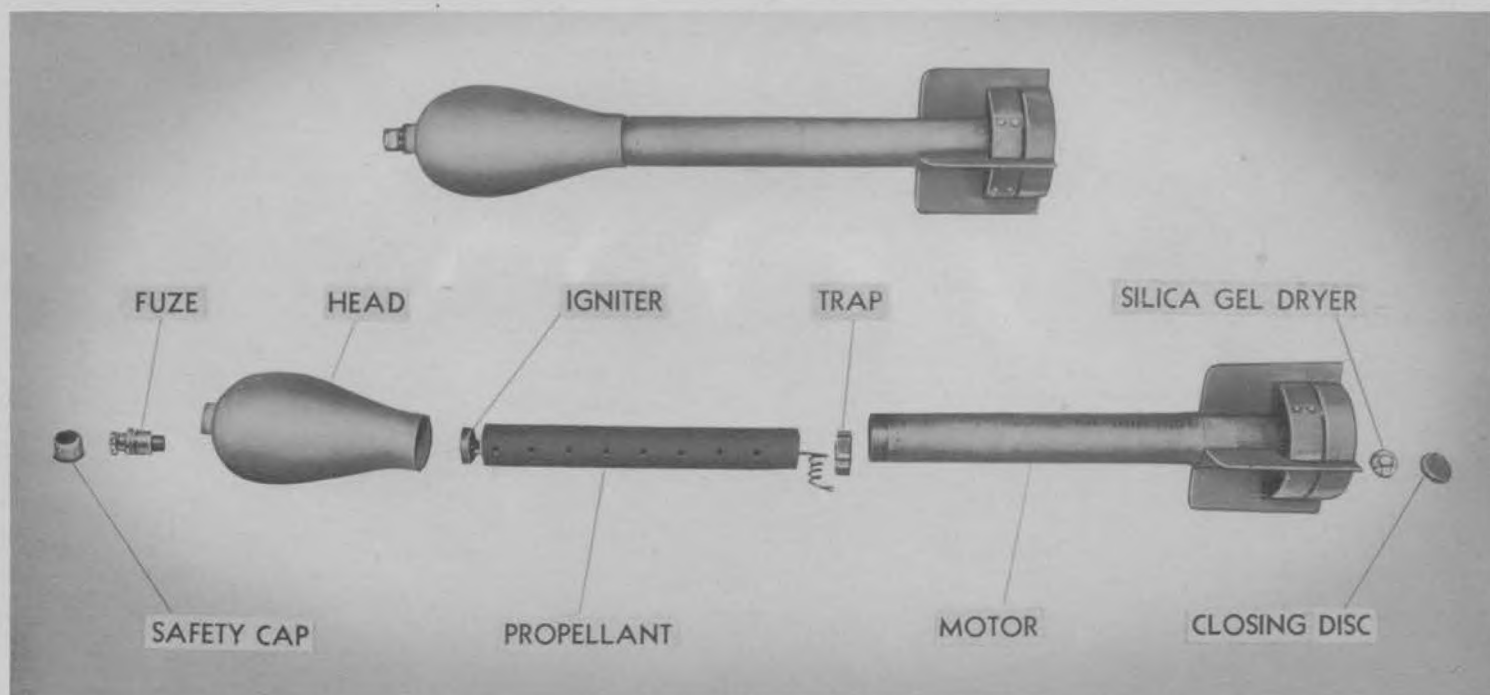
Type of stabilization..... Fixed ring shroud fins.
 Fin assembly includes 4 straight fins attached to ring shroud fin unit
 Length, overall.....47 in. w/o fuze
 Weight of round, loaded.....51.8 lb.
 Fuze.....Mk. 147, Mod. 1 propeller-arming type
 Motor assembly:
 Diameter, outside.....3.25 in.
 Length.....29.2 in.
 Weight (less propellant).....15.5 lb.
 Material.....WD 1020 to 1025 steel tubing
 Propellant.....5.25 lb. solventless powder 2.57 in. O.D. by 1 in. I.D. by 20.06 in. long
 Type of loading.....One stick held in place by grid

Shell assembly:
 Caliber.....7.2 in.
 Length.....17.4 in.
 Filler.....CG
 Weight, filler.....20 lb.
 Weight, total.....31 lb.
 Type of ignition..... Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
 Launchers.....T28, T32, T40, T54, T64
 Packaging..... One round per wooden box. Fuze, including burster, is packed in the same box in a metal container

DECLASSIFIED

7.2 INCH H.E. ROCKET T24—DEVELOPMENT TYPE

DECLASSIFIED



7.2 INCH H.E. ROCKET, T24

The 7.2 inch H.E. Rocket, T24, is similar to the T21 rocket except for the loading of the rocket shell. It is intended for use against personnel and lightly fortified targets.

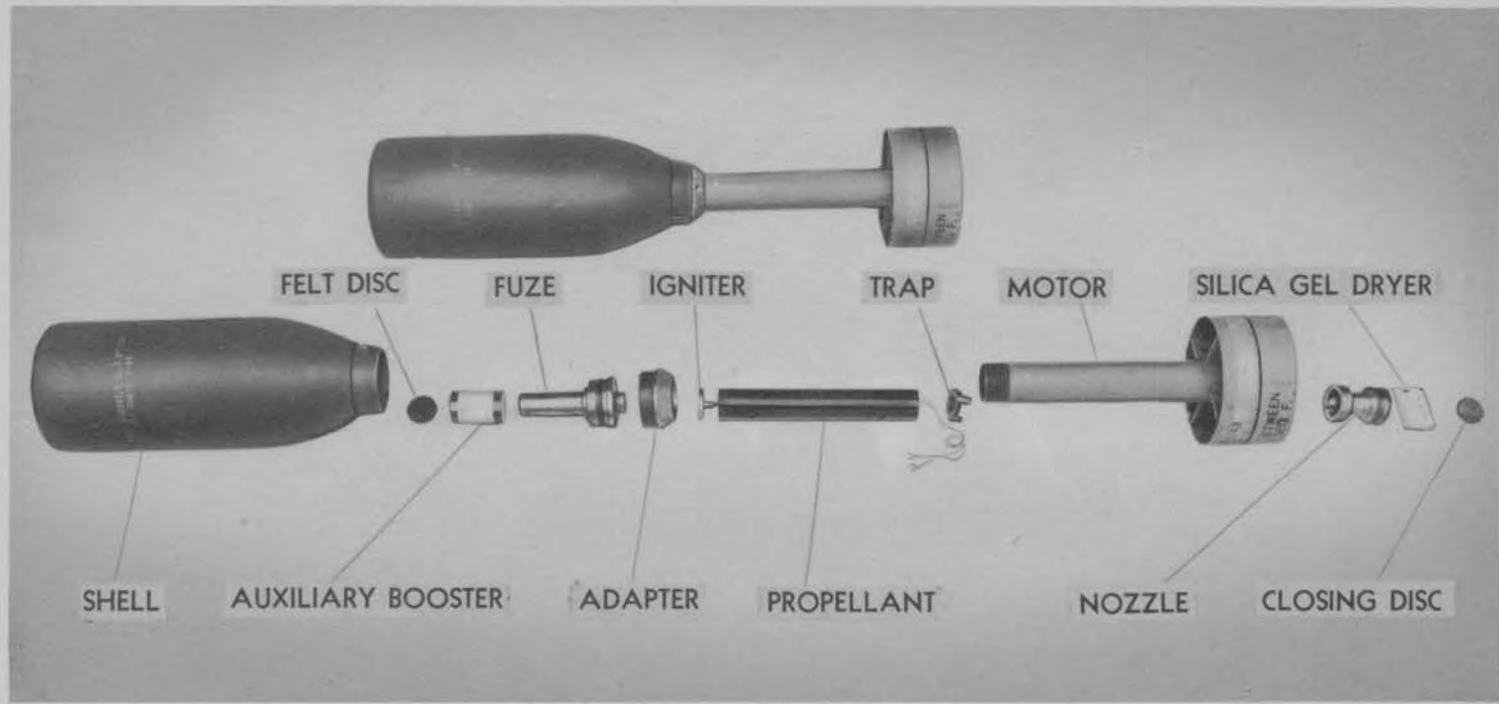
CHARACTERISTICS

Range.....3,300 yd.
 Dispersion.....35 mils
 Velocity.....680 f/s
 Service temperature limits.....10° to 120° F.
 Burning time:
 At 10° F.....1 sec. (estimated)
 At 120° F.....0.33 sec. (estimated)

Type of stabilization...Fixed ring shroud fins.
 Fin assembly includes four straight fins attached to a ring shroud fin unit
 Length, overall.....41.6 in. w/o fuze
 Weight of round, loaded.....50 lb. (estimated)
 Fuze.....Mk. 147, propeller-arming type
 Motor assembly:
 Diameter, outside.....3.25 in.
 Length.....29.2 in.
 Weight (less propellant).....15.5 lb.
 Material.....WD 1020 to 1025 steel tubing
 Propellant.....5.25 lb. solventless powder 2.57 in. O.D. by 1.0 in. I.D. by 20.06 in. long

Type of loading...One stick held in place by grid
 Shell assembly:
 Caliber.....7.2 in.
 Length.....13.7 in.
 Filler.....TNT
 Weight, filler.....21.6 lb.
 Weight, total.....29.4 lb.
 Type of ignition...Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
 Launchers.....T28, T32, T40, T54, T64
 Packaging.....Packing similar to T21

DECLASSIFIED



7.2 INCH H.E. ROCKET, T37

The 7.2 inch H.E. Rocket, T37, is loaded with plastic H.E. and consists of the Navy 2.25 inch Mk. 3 rocket motor and Navy 7.2 inch Mk. 10 shell. It is intended for use in the demolition of fortifications.

The practice rounds, inert loaded to conform to the live round, are the 7.2 inch Practice Rockets, T44 and T44E1.

CHARACTERISTICS

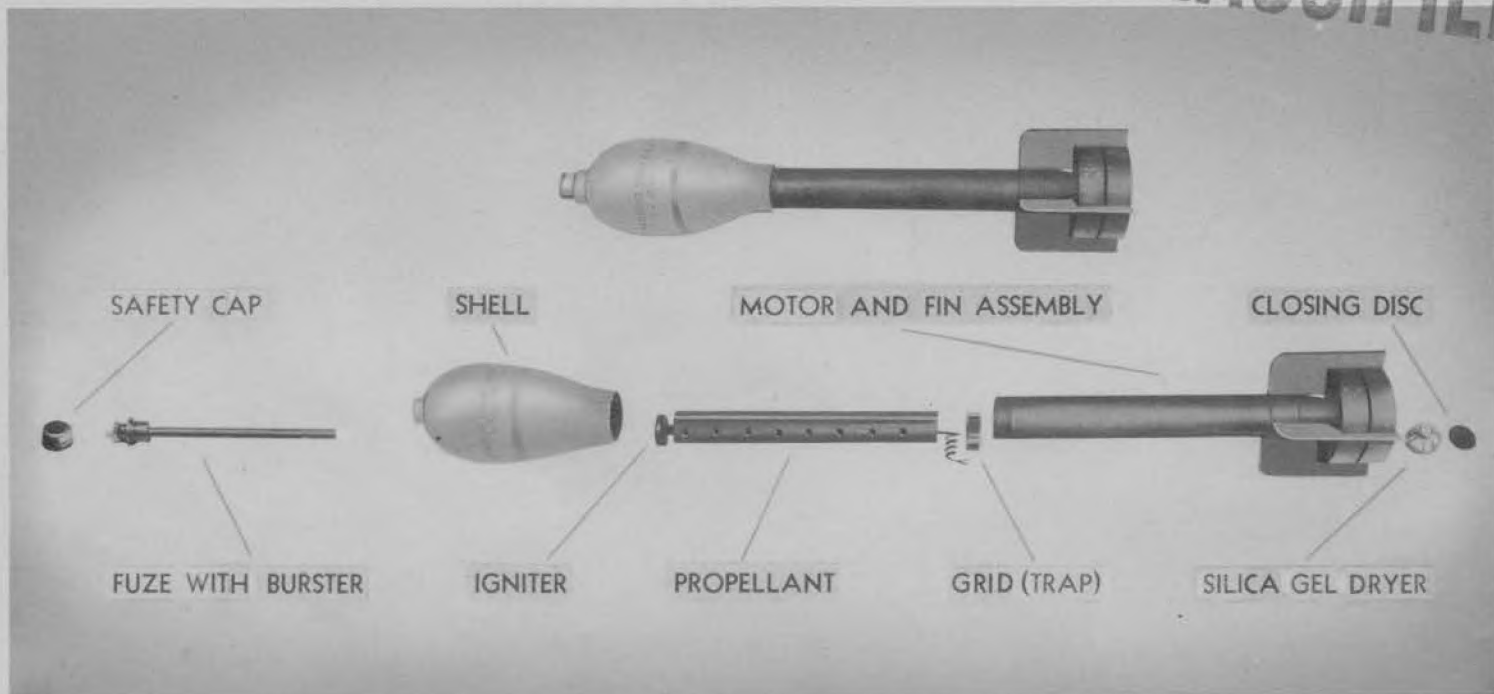
Range 230 yd.
 Dispersion ... 10 mils (average) from 90 in. launcher
 Velocity 160 f/s

Service temperature limits 10° to 120° F.
 Burning time:
 At 10° F. 0.6 sec.
 At 120° F. 0.2 sec.
 Type of stabilization Fixed ring shroud fins
 Length, overall 35 in.
 Weight of round, loaded 61 lb.
 Fuze B.D. Mk. 146, pressure-arming type
 Motor assembly:
 Diameter, outside 2.25 in.
 Length 15.9 in.
 Weight (less propellant) 9.7 lb.
 Material Navy Mk. 3 motor
 Propellant ... 1.5 lb. cruciform solventless powder grain, 1.7 in. O.D. by 0.44 in. I.D. by 11.3 in. long

Type of loading .. One stick held in place by grid
 Shell assembly:
 Caliber 7.2 in.
 Length 19 in.
 Filler C2
 Weight, filler 32 lb.
 Weight, total 48.1 lb.
 Type of ignition ... Flat plastic case containing black powder and electric squib placed at head end of motor
 Launchers T28, T40, T54, T64
 Packaging ... Motor and shell packed separately. Two shells fuze'd, and two motor adapters packed in wooden box. Six motors packed per wooden box

7.2 INCH WP SMOKE ROCKET T50—DEVELOPMENT TYPE

DECLASSIFIED



7.2 INCH WP SMOKE ROCKET, T50

The 7.2 inch WP Smoke Rocket, T50, is a WP filled shell adapted to a 3.25 inch rocket motor. It is intended for firing against personnel.

No tests of this rocket have been made, but performance should be similar to the T21 rocket.

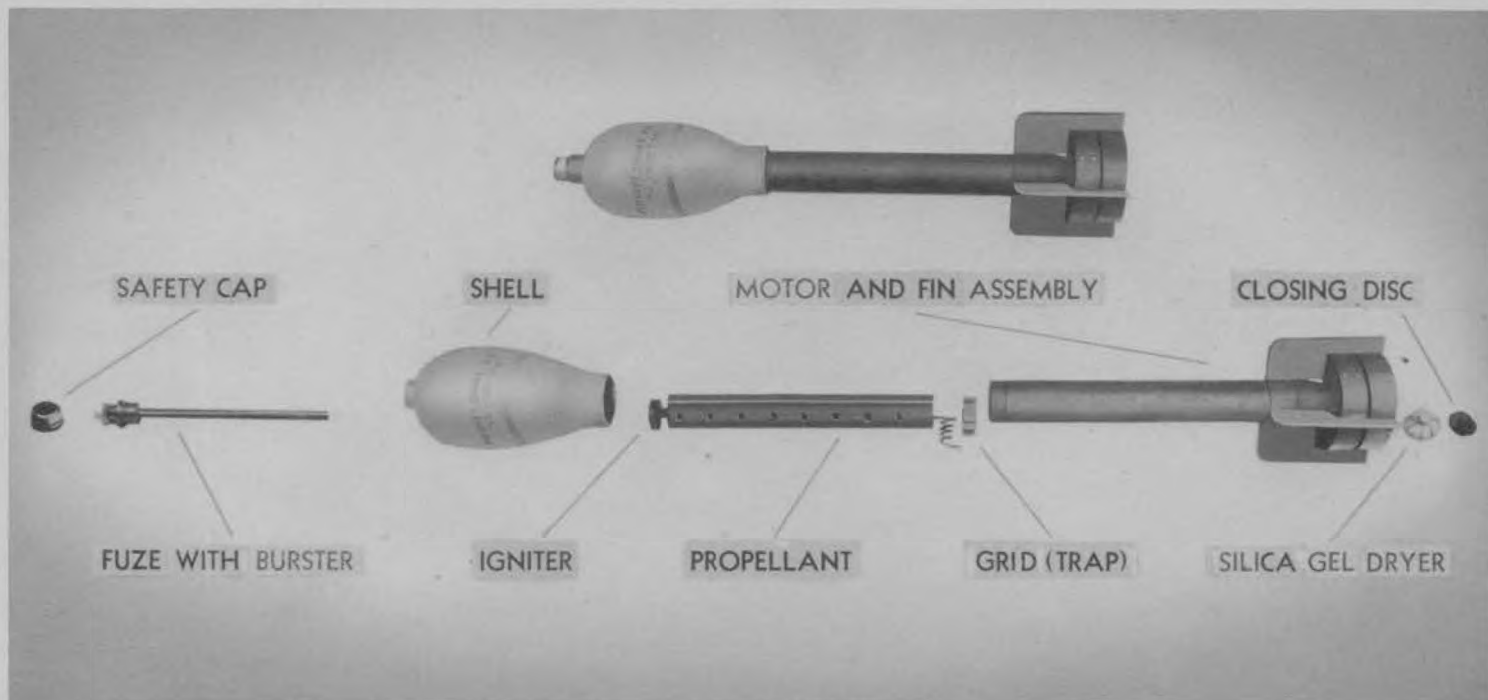
CHARACTERISTICS

Range.....3,300 yd.
Dispersion.....35 mils
Velocity.....680 f/s

Service temperature limits.....10° to 120° F.
Burning time:
At 10° F.....1 sec. (estimated)
At 120° F.....0.33 sec. (estimated)
Type of stabilization: Fixed ring shroud fins. Fin assembly includes four straight fins attached to ring shroud fin unit
Length, overall.....44.1 in.
Weight of round, loaded.....51.75 lb.
Fuze.....Mk. 147 Mod. 1 propeller-arming type
Motor assembly:
Diameter, outside.....3.25 in.
Length.....29.2 in.
Weight (less propellant).....15.5 lb.
Material.....WD 1020 to 1025 steel tubing

Propellant...5.25 lb. solventless powder 2.57 in. O.D. by 1.0 in. I.D. by 20.06 in. long
Type of loading...One stick held in place by grid
Shell assembly:
Caliber.....7.2 in.
Length.....15 in.
Filler.....WP
Weight, filler.....21 lb.
Weight, total.....31 lb.
Type of ignition...Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
Launchers.....T28, T32, T40, T54, T64
Packaging.....Probably similar to T21

DECLASSIFIED



7.2 INCH FS SMOKE ROCKET, T51

The 7.2 inch FS Smoke Rocket, T51, is a FS filled shell adapted to a 3.25 inch rocket motor. It is intended for laying down smoke screens and for anti-personnel effect.

No tests of this rocket have been made but performance should be similar to the T21 rocket.

CHARACTERISTICS

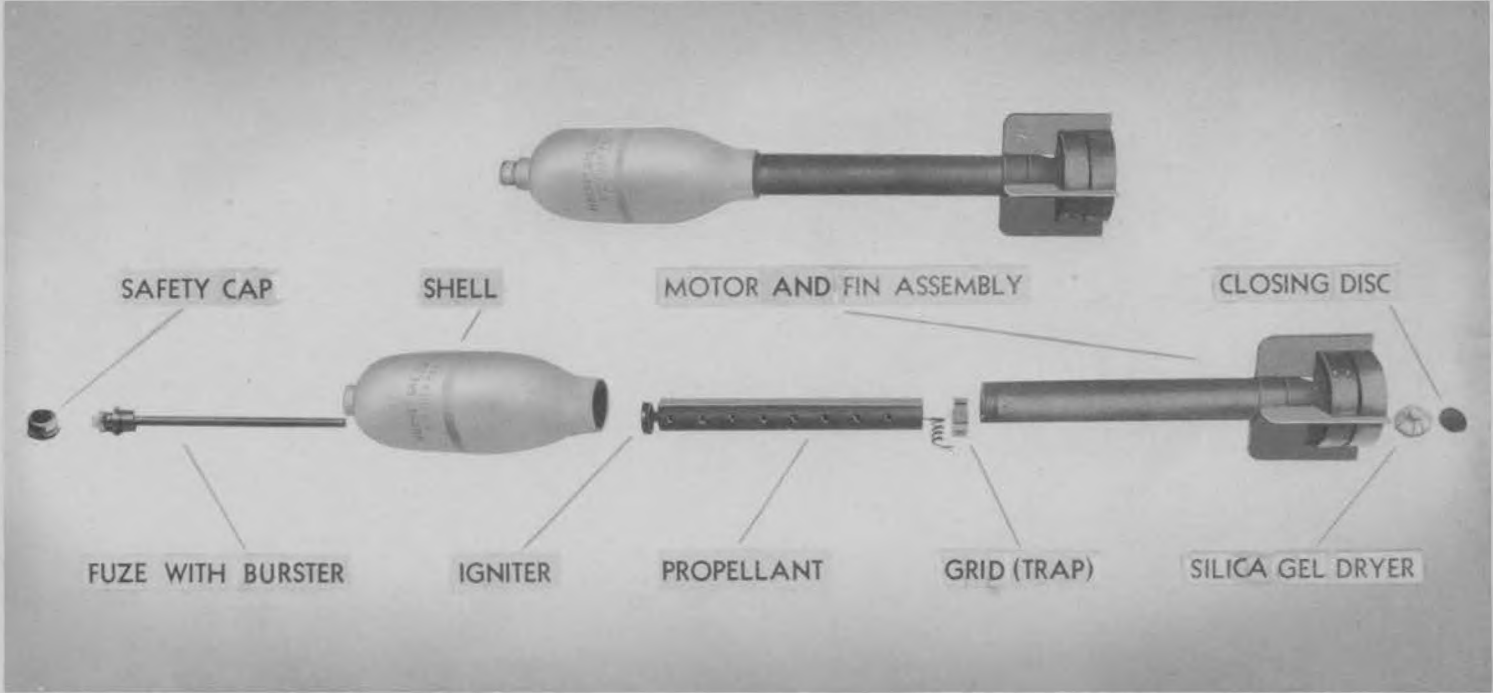
Range 3,300 yd.
 Dispersion 35 mils
 Velocity 680 f/s

Service temperature limits 10° to 120° F.
 Burning time:
 At 10° F. 1 sec. (estimated)
 At 120° F. 0.33 sec. (estimated)
 Type of stabilization . . . Fixed ring shroud fins. Fin assembly includes 4 straight fins attached to ring shroud fin unit
 Length, overall 44.1 in.
 Weight of round, loaded 51.75 lb.
 Fuze Mk. 147 Mod. 1 propeller-arming type
 Motor assembly:
 Diameter, outside 3.25 in.
 Length 29.2 in.
 Weight (less propellant) 15.5 lb.
 Material WD 1020 to 1025 steel tubing

Propellant 5.25 lb. solventless powder, 2.57 in. O.D. by 1.0 in. I.D. by 20.06 in. long
 Type of loading . . One stick held in place by grid
 Shell assembly:
 Caliber 7.2 in.
 Length 15 in.
 Filler FS smoke
 Weight, filler 21 lb.
 Weight, total 31 lb.
 Type of ignition . . Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
 Launchers T28, T32, T40, T54, T64
 Packaging Probably similar to T21

CONFIDENTIAL
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7.2 INCH CHEMICAL ROCKET T52—DEVELOPMENT TYPE



7.2 INCH CHEMICAL ROCKET, T52

The 7.2 inch Chemical Rocket, T52, is a CC filled shell adapted to a 3.25 inch rocket motor. It is intended for laying down smoke screens and for anti-personnel effect.

No tests of this rocket have been made but performance should be similar to the T21 Rocket.

CHARACTERISTICS

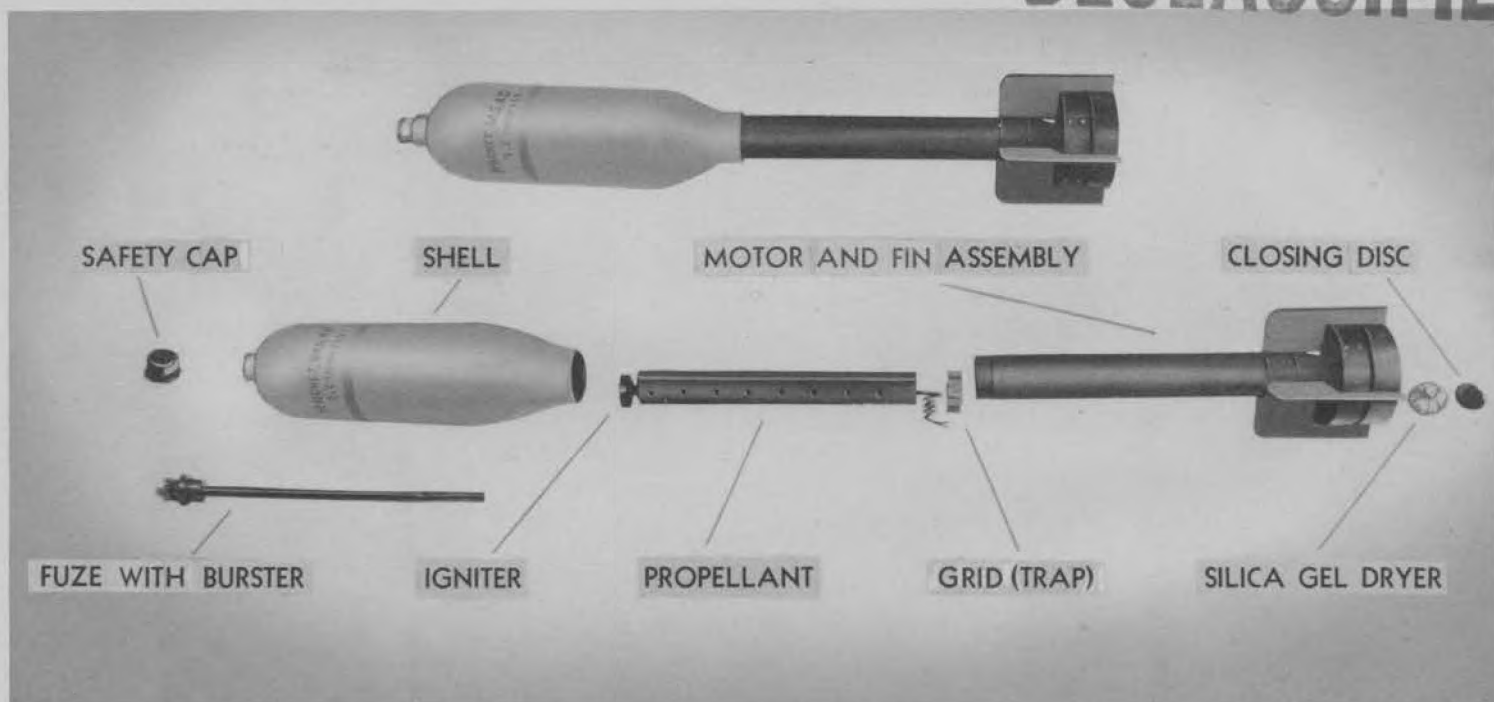
Range 3,300 yd.
 Dispersion 35 mils
 Velocity 680 f/s
 Service temperature limits 10° to 120° F.

Burning time:
 At 10° F. 1.0 sec. (estimated)
 At 120° F. 0.33 sec. (estimated)
 Type of stabilization ... Fixed ring shroud fins. Fin assembly includes 4 straight fins attached to a ring shroud fin unit
 Length, overall 48.8 in.
 Weight of round, loaded 51.75 lb.
 Fuze Mk. 147 Mod. 1 propeller-arming type
 Motor assembly:
 Diameter, outside 3.25 in.
 Length 29.2 in.
 Weight (less propellant) 15.5 lb.
 Material WD 1020 to 1025 steel tubing

Propellant ... 5.25 lb. solventless powder 2.57 in. O.D. by 1.0 in. I.D. by 20.06 in. long
 Type of loading ... One stick held in place by grid
 Shell assembly:
 Caliber 7.2 in.
 Length 19.6 in.
 Filler CC
 Weight, filler 18.5 lb.
 Weight, total 31 lb.
 Type of ignition ... Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
 Launchers T20, T32, T41, T54, T64
 Packaging Probably similar to T21

7.2 INCH CHEMICAL ROCKET T53—DEVELOPMENT TYPE

DECLASSIFIED



7.2 INCH CHEMICAL ROCKET, T53

The 7.2 inch Chemical Rocket, T53, is an AC gas filled shell adapted to a 3.25 inch rocket motor. It is intended for use against personnel.

No tests of this rocket have been made but performance should be similar to the T21 rocket.

CHARACTERISTICS

Range.....3,300 yd.
Dispersion.....35 mils
Velocity.....680 f/s
Service temperature limits.....10° to 120° F.

Burning time:
At 10° F.....1 sec. (estimated)
At 120° F.....0.33 sec. (estimated)
Type of stabilization...Fixed ring shroud fins. Fin assembly includes 4 straight fins attached to a ring shroud fin unit
Length, overall.....55.9 in. w/o fuze
Weight of round, loaded.....51.75 lb.
Fuze.....Mk. 147, Mod. 1 propeller-arming type
Motor assembly:
Diameter, outside.....3.25 in.
Length.....29.2 in.
Weight (less propellant).....15.5 lb.
Material.....WD 1020 to 1025 steel tubing

Propellant...5.25 lb. solventless powder 2.57 in. O.D. by 1.0 in. I.D. by 20.06 in. long
Type of loading...One stick held in place by grid
Shell assembly:
Caliber.....7.2 in.
Length.....26.7 in.
Filler.....AC gas
Filler weight.....14.9 lb.
Total weight.....31 lb.
Type of ignition...Flat cellulose acetate igniter containing black powder and electric squib installed at front of motor
Launchers.....T28, T32, T40, T54, T64
Packaging.....Probably similar to T21

DECLASSIFIED

7.2 INCH H.E. ROCKET T69—DEVELOPMENT TYPE

DECLASSIFIED
Type of loading Single stick held in place by grid

The 7.2 inch H.E. Rocket, T69, like the 7.2 inch T37 rocket, has a 7.2 inch shell adapted to a 2.25 inch motor. The shaped-charge loading is intended to produce an increased demolition effect.

CHARACTERISTICS

Range 230 yd. (estimated)
Dispersion 10 mils from 90 in. launcher (estimated)
Velocity 160 f/s (estimated)
Service temperature limits 10° to 120° F.

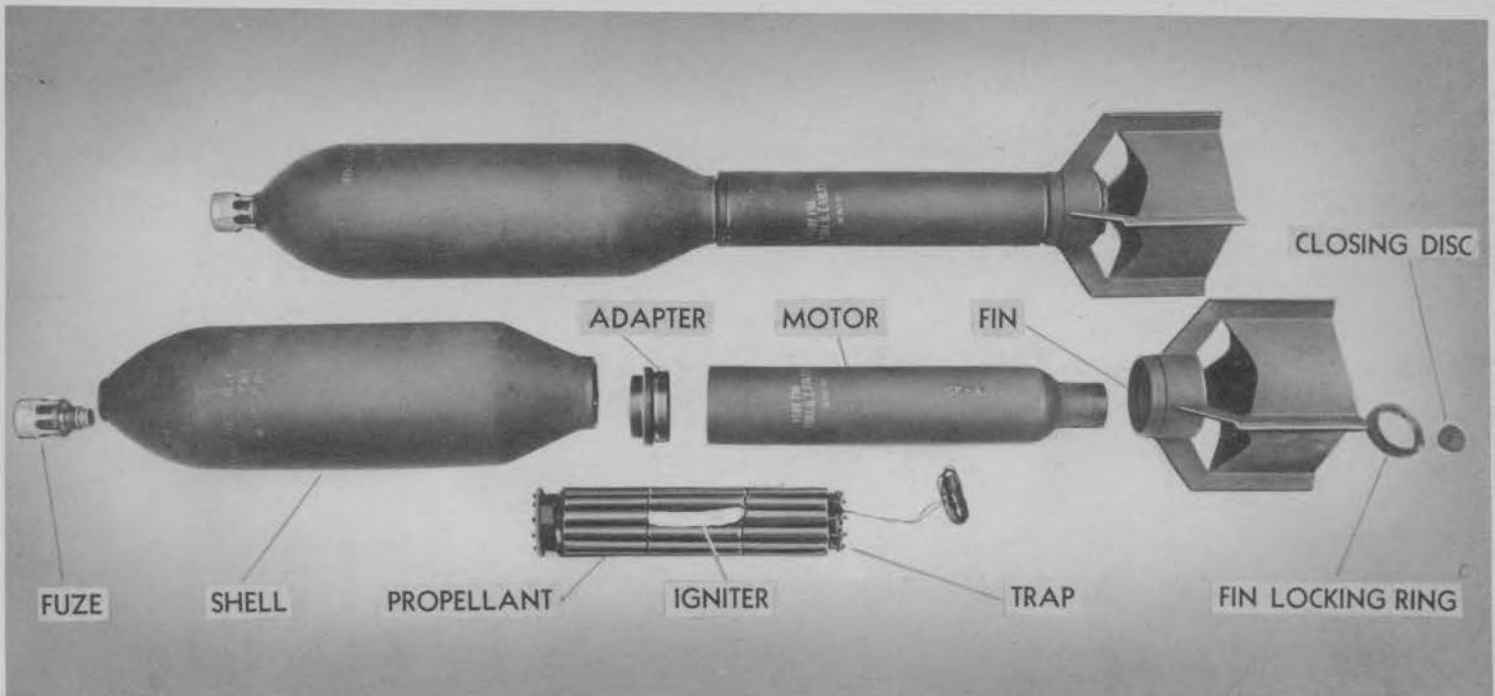
Burning time:
At 10° F. 0.6 sec.
At 120° F. 0.2 sec.
Type of stabilization Fixed ring shroud fin
Length, overall 45 in. (estimated)
Weight of round, loaded 61 lb. (estimated)
Fuze B.D. MK 146
Motor assembly:
Diameter, outside 2.25 in.
Length 15.9 in.
Weight (less propellant) 9.7 lb.
Material Navy Mk. 3 motor
Propellant 1.5 lb. single cruciform grain powder
1.7 in. O.D. by 0.44 in. I.D. by 11.3 in. long

Shell assembly:
Caliber 7.2 in.
Length 25.5 in.
Filler Pentolite
Weight, filler 15 lb. (estimated)
Weight, total 48 lb. (estimated)
Type of ignition Flat plastic case containing black powder and electric squib at front of powder stick
Launchers T28, T40, T54, T64
Packaging Probably similar to T37

DECLASSIFIED

8 INCH H.E. ROCKET T25—DEVELOPMENT TYPE

REF ID: A66507
DECLASSIFIED



8 INCH H.E. ROCKET, T25

The 8 inch H.E. Rocket, T25, is a 100-lb. AN—M30, G.P., H.E. Bomb, adapted to a 4.5 inch rocket motor. It is intended for use in the demolition of dugouts and concrete obstacles.

CHARACTERISTICS

Range 550 yd.
Dispersion 10-12 mils
Velocity 220 f/s
Service temperature limits -10° to +105° F.

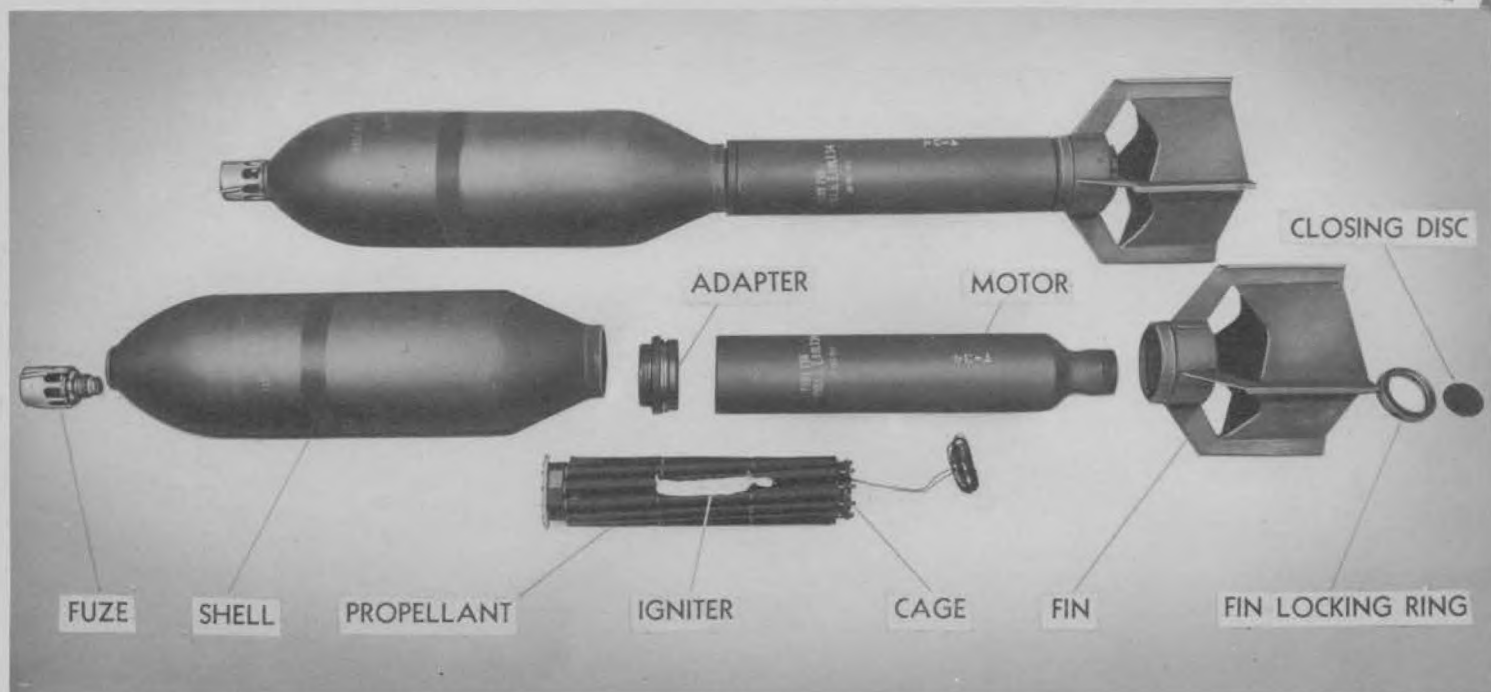
Burning time:
At -10° F. 0.3 sec.
At 105° F. 0.12 sec.
Type of stabilization Fixed box fin
Length, overall 60 1/4 in. w/fuze
Weight of round, loaded 137 lb. (estimated)
Fuze P.D. T20, propeller-arming type, SQ
Motor assembly:
Diameter, outside 4.5 in.
Length 23.28 in.
Weight (less propellant) 13 lb.
Material A.I.S.I. #C-1035 seamless steel tubing
Propellant 4.65 lb. solvent double base powder
7/8 in. O.D. by 9/32 in. I.D. by 5 in. long

Type of loading 30 sticks strung on 10-wire cage
Shell assembly:
Caliber 8 in.
Length 27 1/2 in.
Filler TNT
Weight, filler 58 lb.
Weight, total 100 to 107 lb.
Type of ignition Black powder igniter bag containing electric squib tied to cage holding propellant
Launchers T37, T53
Packaging Transported in expendable packing crate launcher T53. Also packed in four separate boxes for field assembly, one box each for fuze, shell, motor, and fins

DECLASSIFIED

8 INCH INCENDIARY ROCKET T34—DEVELOPMENT TYPE

DECLASSIFIED



8 INCH INCENDIARY ROCKET, T34

The 8 inch Incendiary Rocket, T34, is an incendiary bomb adapted to a 4.5 inch rocket motor. The rocket shell is the 100-lb. AN—M30, G.P. bomb loaded with an incendiary mix. It is intended for incendiary use.

CHARACTERISTICS

Range 550 yd. (estimated)
 Dispersion 10-12 mils (estimated)
 Velocity 220 f/s (estimated)
 Service temperature limits -10° to +105° F.

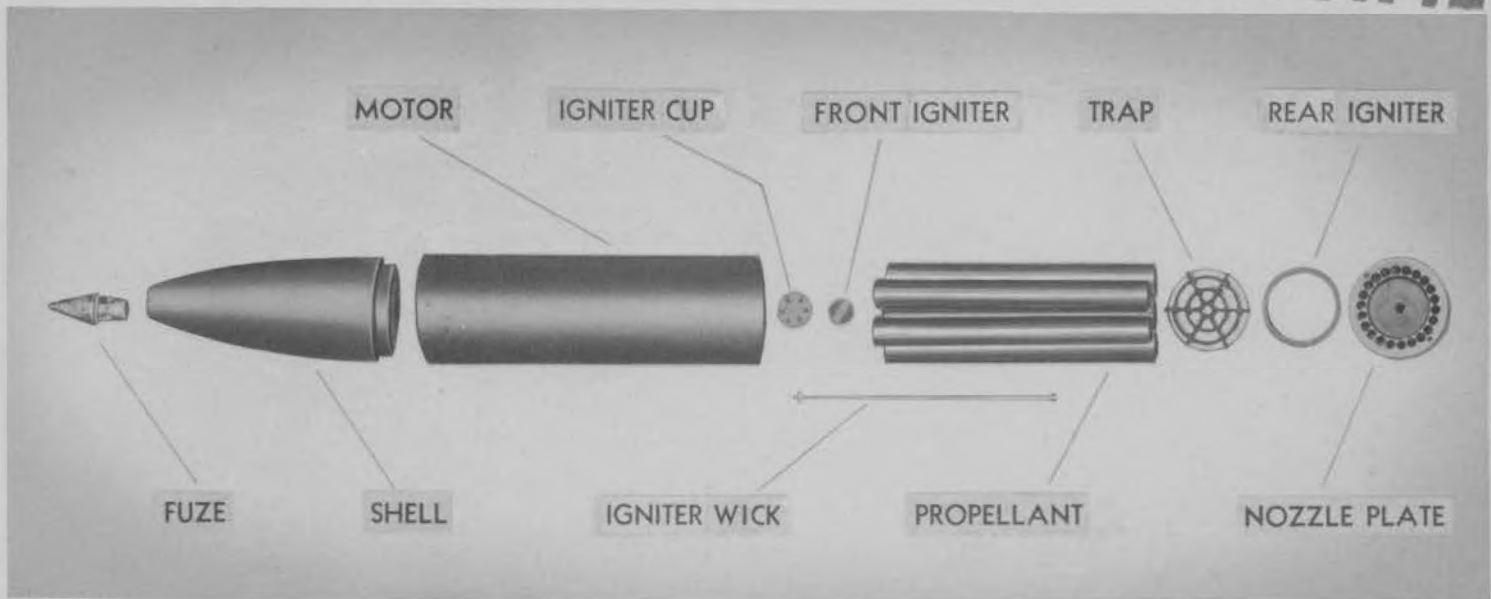
Burning time:
 At -10° F. 0.3 sec.
 At 105° F. 0.12 sec.
 Type of stabilization Fixed box fin
 Length, overall 61 1/4 in. w/fuze
 Weight of round, loaded 120 lb. (estimated)
 Fuze P.D. T-20, propeller-arming type, SQ
 Motor assembly:
 Diameter, outside 4.5 in.
 Length 23.28 in.
 Weight (less propellant) 13.4 lb.
 Material A.I.S.I. #C-1035 seamless steel tubing
 Propellant 4.65 lb. solvent double base powder
 7/8 in. O.D. by 9/32 in. I.D. by 5 in. long

Type of loading . 30 sticks strung on a 10-wire cage
 Shell assembly:
 Caliber 8 in.
 Length 27 1/2 in.
 Filler Incendiary mix
 Weight, filler 38 lb.
 Weight, total 85 lb.
 Type of ignition Black powder igniter bag containing electric squib tied to cage holding propellant
 Launchers T37 and T53
 Packaging Transported in expendable packing crate launcher, T53. Also packed in four separate boxes for field assembly, one box each for fuze, shell, motor and fins

DECLASSIFIED

21 CM H.E. ROCKET T36—DEVELOPMENT TYPE

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EXPLODED VIEW OF 21 CM H.E. ROCKET, T36

The 21 cm H.E. Rocket, T36, is patterned after the 21 cm German rocket. It is intended for firing from ground and aircraft launchers in the attack of personnel and other ground targets.

The practice round, inert loaded to conform to the live round, is the 21 cm Practice Rocket, T45.



21 CM H.E. ROCKET, T36

CHARACTERISTICS

Range 9,000 yd. (estimated)
 Dispersion 12 mils (estimated)
 Velocity 1,200 f/s (estimated)
 Service temperature limits. 0° to 100° F. (estimated)
 Burning time:
 At 70° F. 1.5 sec. (approximately). No data at other temperatures
 At 100° F. No data
 Type of stabilization . . . Rotational—nozzle plate with 22 angled jets
 Length, overall 46.3 in. w/o fuze
 Weight of round, loaded 243 lb.
 Fuze P.D. M51, selective SQ or delay

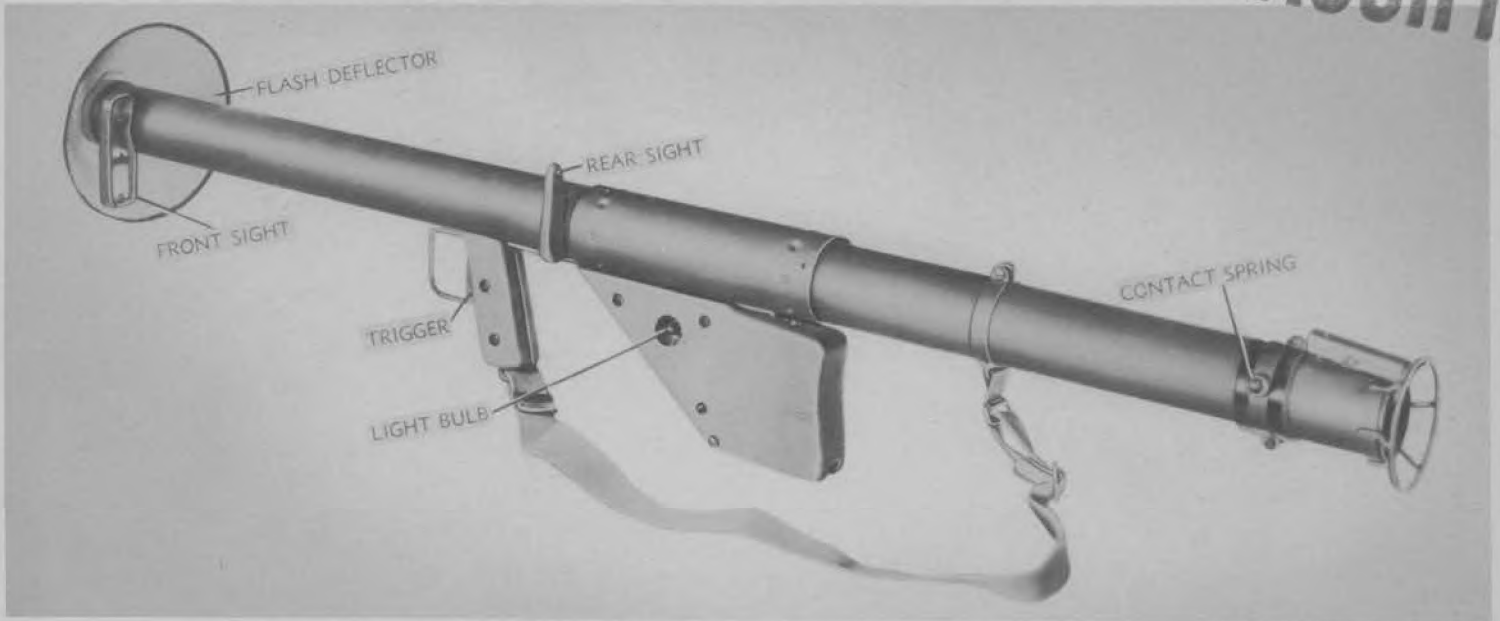
Motor assembly:
 Diameter, outside 8.43 in.
 Length 26.7 in.
 Weight (less propellant) . 87 lb. (approximately)
 Material WD 1335, WD X4130, or WD 8630 carbon or alloy steel
 Propellant 39.55 lb. (maximum) solventless powder 2.49 in. O.D. by 0.30 in. I.D. by 21.6 in. long
 Type of loading Seven sticks (5.65 lb. maximum per stick), held in place by a grid

Shell assembly:
 Caliber 8.25 in.
 Length 19.75 in.
 Filler TNT
 Weight, filler 24 lb.
 Weight, total 95 lb.
 Type of ignition . . . Special dual igniter and special primer with igniter wick in central powder grain
 Launchers T49 and T50
 Packaging To be developed

DECLASSIFIED

DECLASSIFIED
CONFIDENTIAL

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CONFIDENTIAL



2.36 INCH ROCKET LAUNCHER, M1A1—LEFT SIDE

The 2.36 inch Rocket Launcher, M1A1, known as the "Bazooka," is an electrically operated shoulder weapon. It is employed against tanks, armored vehicles, pill-boxes, and emplacements. The launcher is operated normally by two men although it can be handled by one man in an emergency.

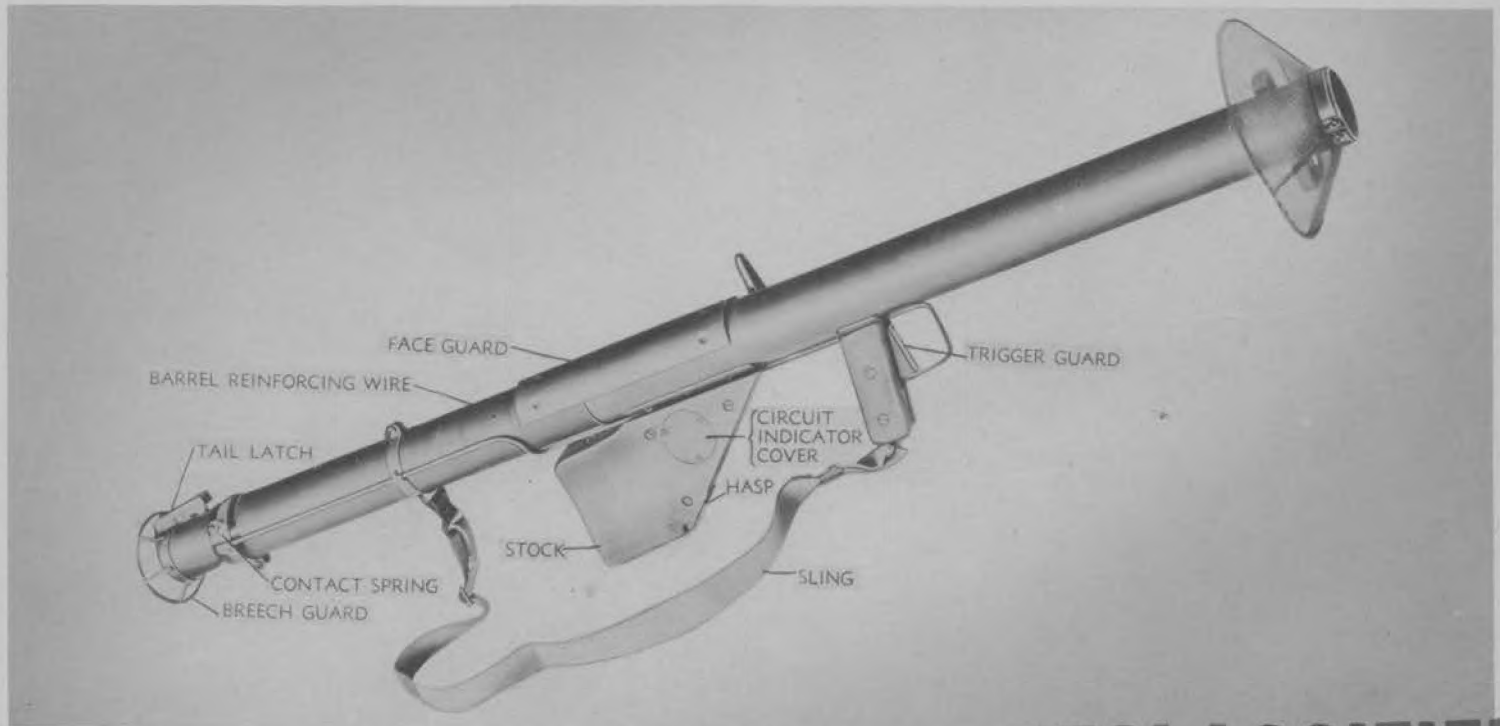
This launcher has a flash deflector to protect the operator from unburned

powder as the rocket leaves the tube. One dry cell firing battery and one spare battery are kept in the wooden stock.

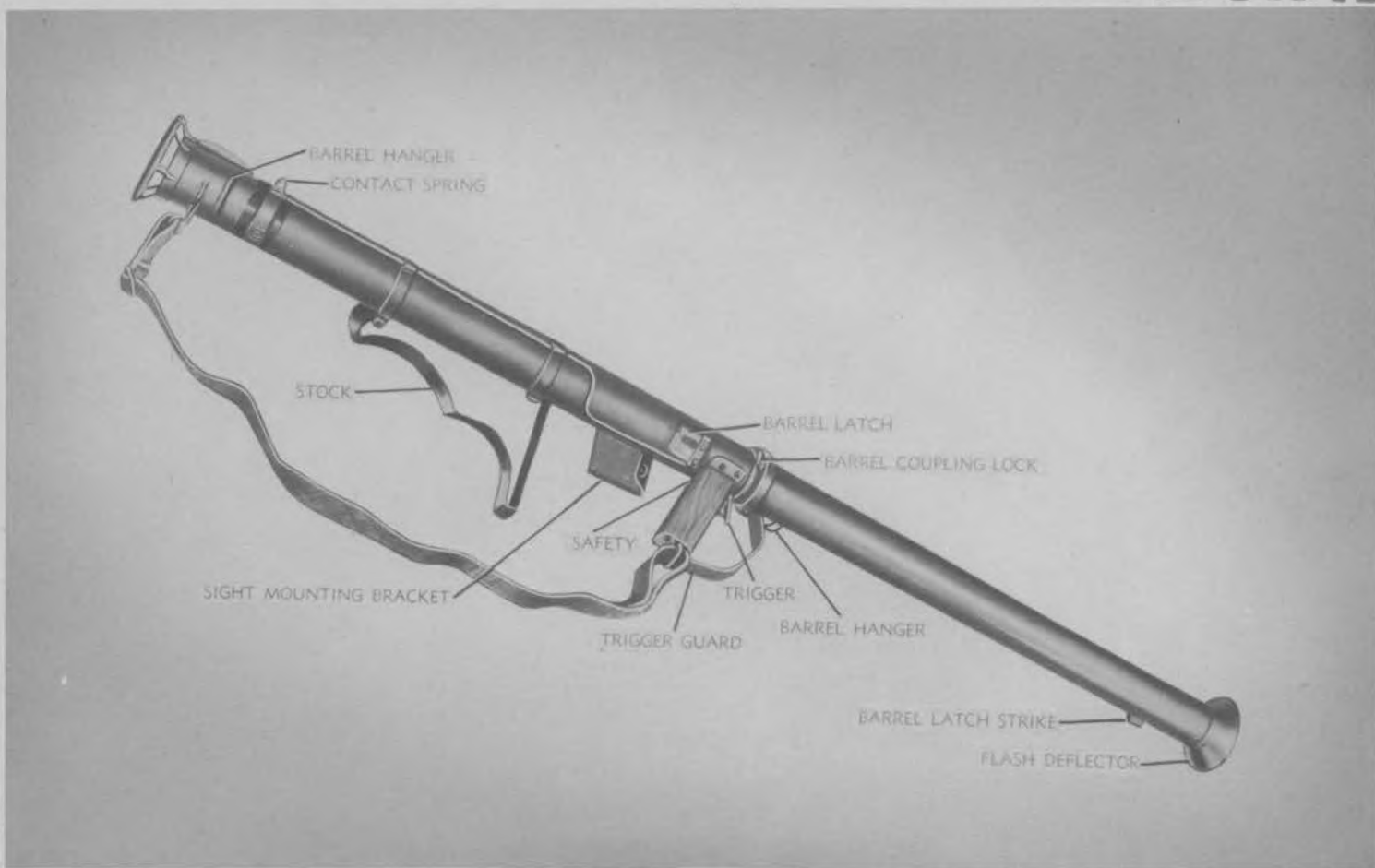
CHARACTERISTICS

Weight, total	13.3 lb.
Rails or tubes:	
Length	54.5 in.
Number and arrangement	Single tube with stock and trigger
Composition	Smooth bore steel tube

Mounting	Fired from shoulder in standing, kneeling, or prone position
Elevation	By operator
Traverse	By operator
Rate of fire	Not specified. Weapon must be sighted before firing each round
Firing mechanism	Electric trigger switch
Fire control equipment	Front stud sights provide for ranges of 100, 200, and 300 yds. Intermediate or greater range must be estimated. Rear sight is a peep sight.



2.36 INCH ROCKET LAUNCHER, M1A1—RIGHT SIDE



THE 2.36 INCH ROCKET LAUNCHER, M9, HAS A TUBE THAT MAY BE UNCOUPLED INTO TWO PIECES

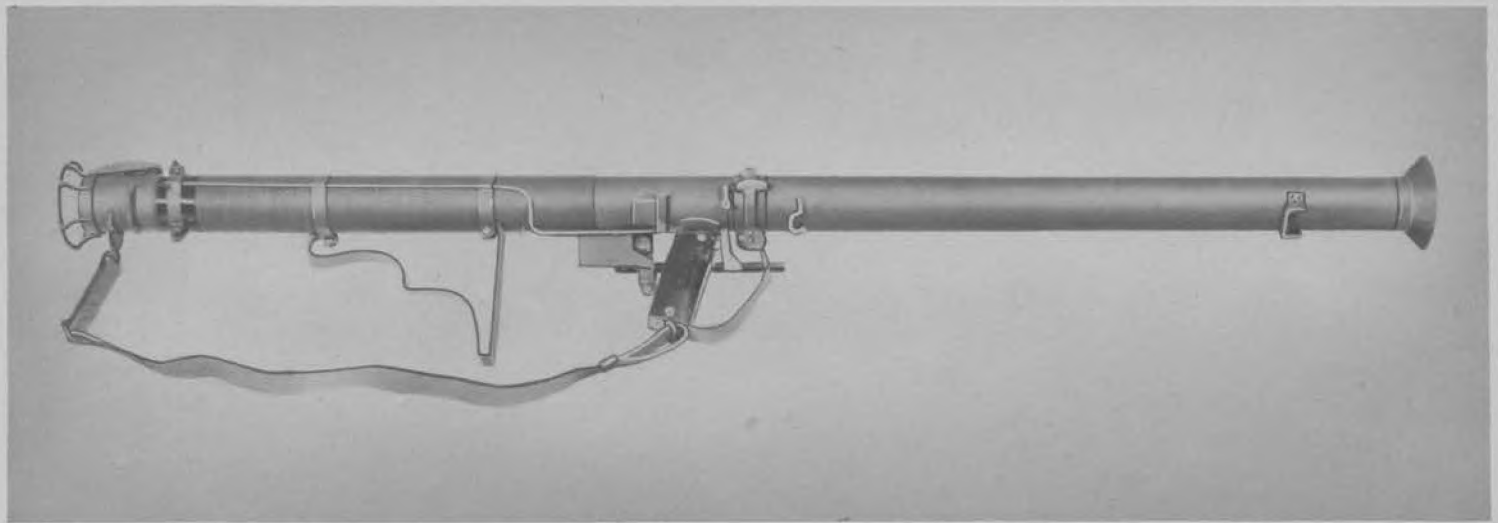


2.36 INCH ROCKET LAUNCHER, M9

The 2.36 inch Rocket Launcher, M9, is an electrically operated shoulder weapon. It is similar to the M1A1 launcher except for improved sighting, a tube that may be uncoupled into two pieces, and a magneto-operated instead of a battery-operated electric firing circuit.

CHARACTERISTICS

- Weight, total.....16 lb.
- Rails or tubes:
 - Length.....60 in.
 - Number and arrangement.....Single tube may be uncoupled into two 31-inch lengths. Stock and trigger assembly attached to rear section
- Composition.....Smooth bore steel tube
- Mounting....Fired from shoulder in standing, kneeling, or prone position
- Elevation.....By operator
- Traverse.....By operator
- Rate of fire.....Not specified. Weapon must be sighted before firing each round
- Firing mechanism.....Pressing trigger generates current to fire the rocket
- Fire control equipment.....Horizontal bar sight with range adjustments from 0 to 700 yd.



2.36 INCH ROCKET LAUNCHER, M9A1—RIGHT SIDE VIEW

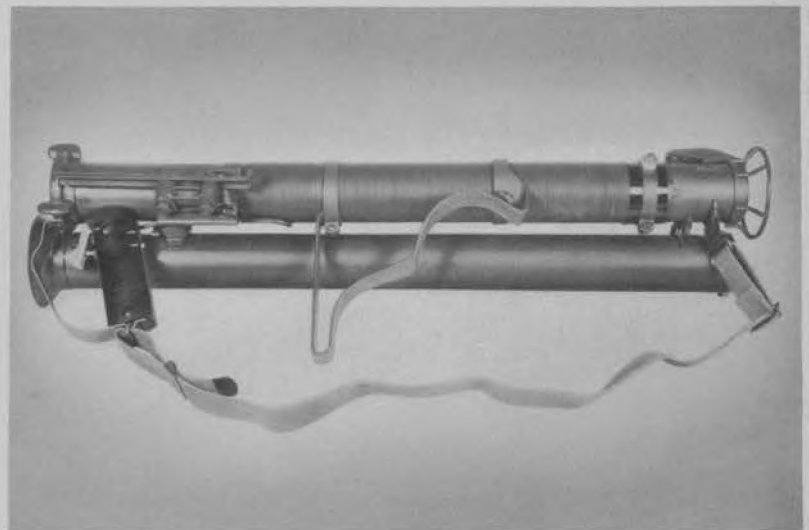


2.36 INCH ROCKET LAUNCHER, M9A1—LEFT SIDE VIEW

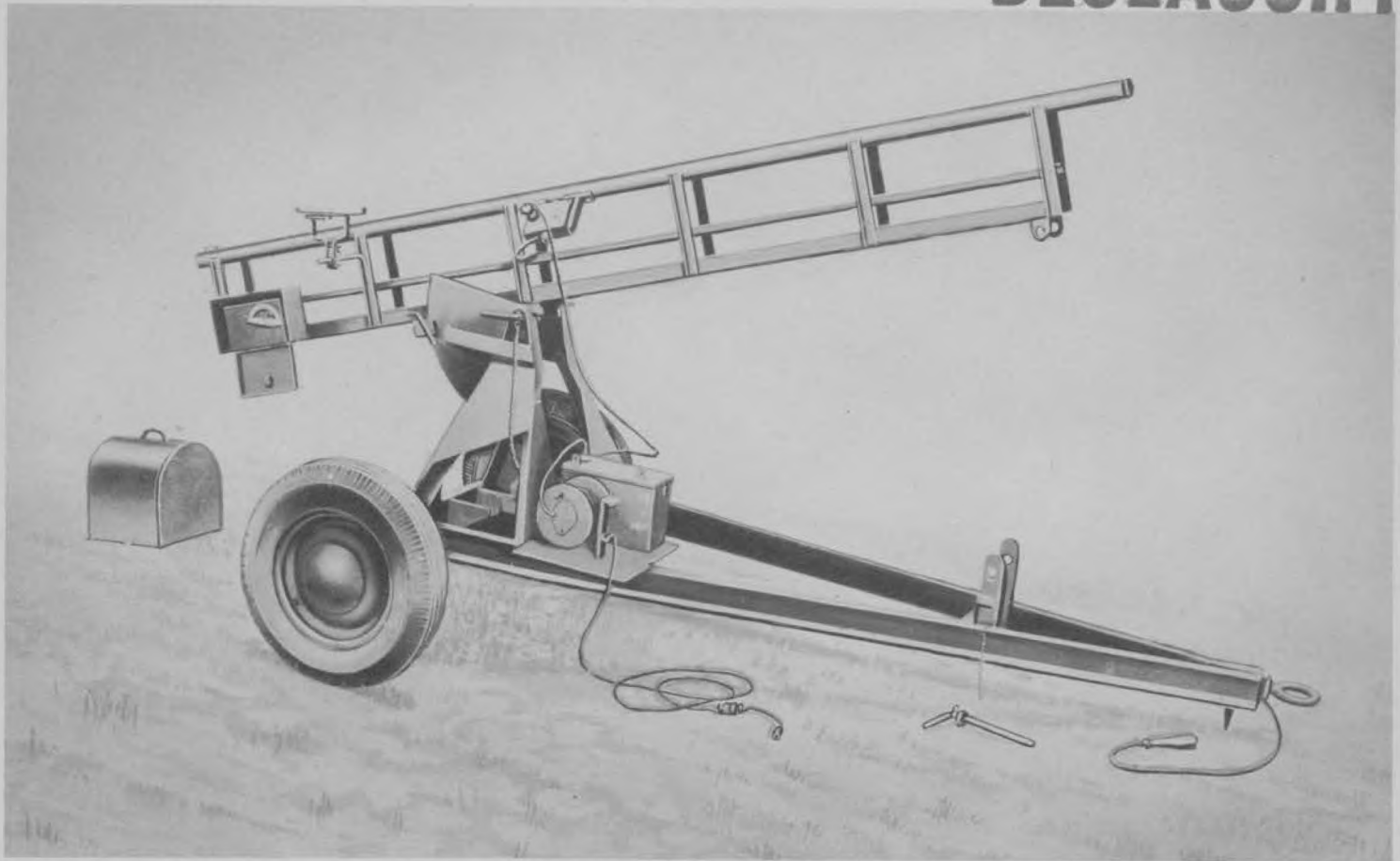
The 2.36 inch Rocket Launcher, M9A1, is an electrically operated shoulder weapon. It is the same as the M9 launcher except for a modified tube coupling better fitted to withstand rough usage.

CHARACTERISTICS

- Weight, total 16 lb.
- Rails or tubes:
 - Length 60 in.
 - Number and arrangement Single tube may be uncoupled into two 31-inch lengths. Stock and trigger assembly attached to rear section
- Composition Smooth bore steel tube
- Mounting Fired from shoulder in standing, kneeling, or prone position
- Elevation By operator
- Traverse By operator
- Rate of fire Not specified. Weapon must be sighted before firing each round
- Firing mechanism Pressing trigger generates current to fire rocket
- Fire control equipment Horizontal bar sight with range adjustments from 0 to 700 yd.



COUPLING FOR M9A1 LAUNCHER TUBE



ROCKET TARGET PROJECTOR, M1, IN FIRING POSITION

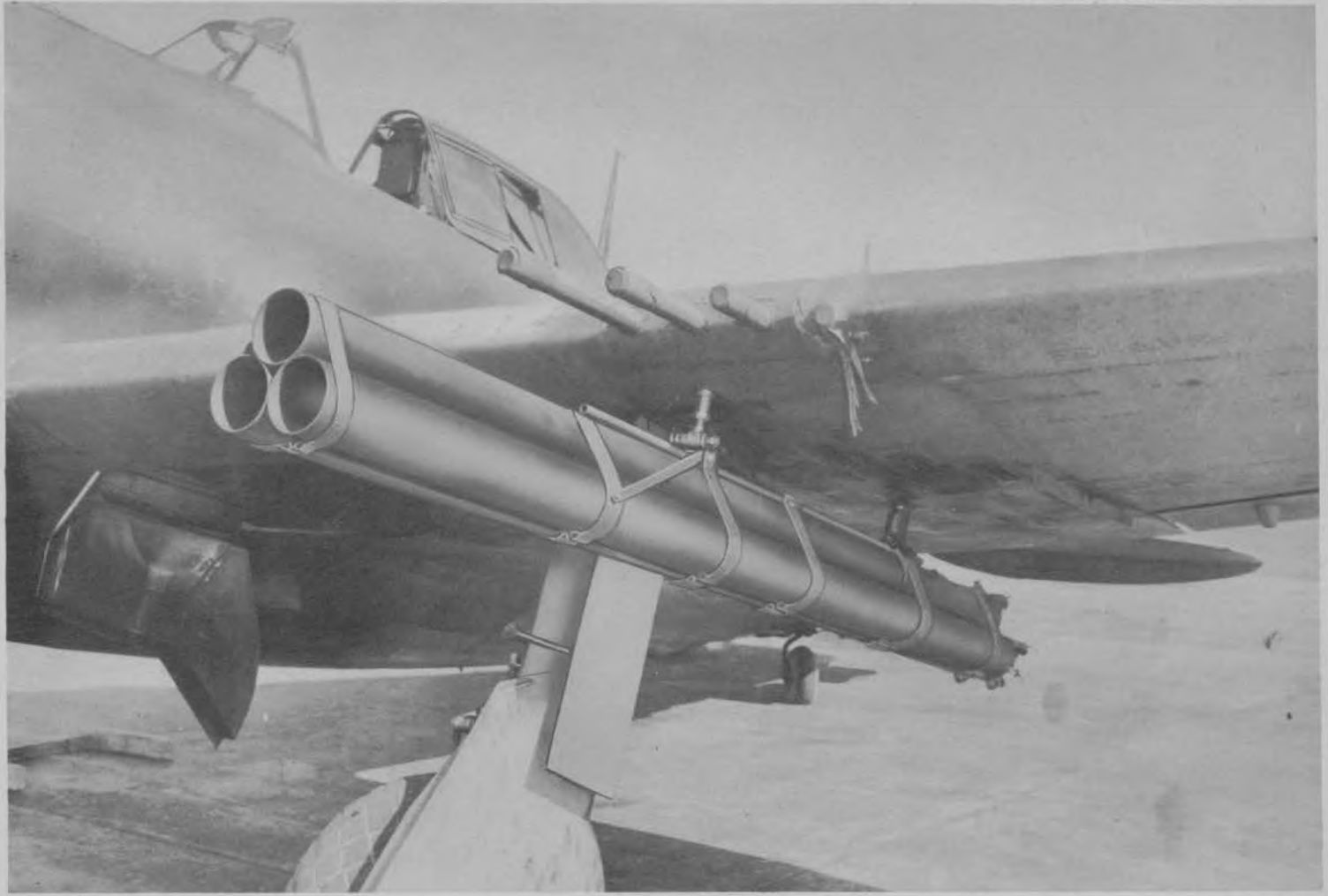


ROCKET TARGET PROJECTOR, M1, IN TRAVELING POSITION

The Rocket Target Projector, M1, is used to launch the 3.25 inch rocket target. The rails are mounted on a two-wheel carriage and are lowered into traveling position for towing. The mobility of this launcher permits firing courses to be set up quickly.

CHARACTERISTICS

Weight, total..... 750 lb.
 Rail or tubes:
 Length..... 132 in.
 Number and arrangement..... Two parallel rails guide single rocket in launching
 Composition..... Steel tubing
 Mounting..... Rails mounted on two-wheel carriage with pneumatic tires
 Elevation..... 0° to 60°
 Traverse..... By moving carriage
 Rate of fire..... One to two rounds per minute (estimated). Rate of fire of secondary importance. After loading personnel take cover at maximum distance permitted by firing cable
 Firing mechanism..... Electric current supplied by dry cells in reel and battery box. Cable on reel permits remote firing
 Fire control equipment..... Direct and indirect laying; sighting and leveling devices provided

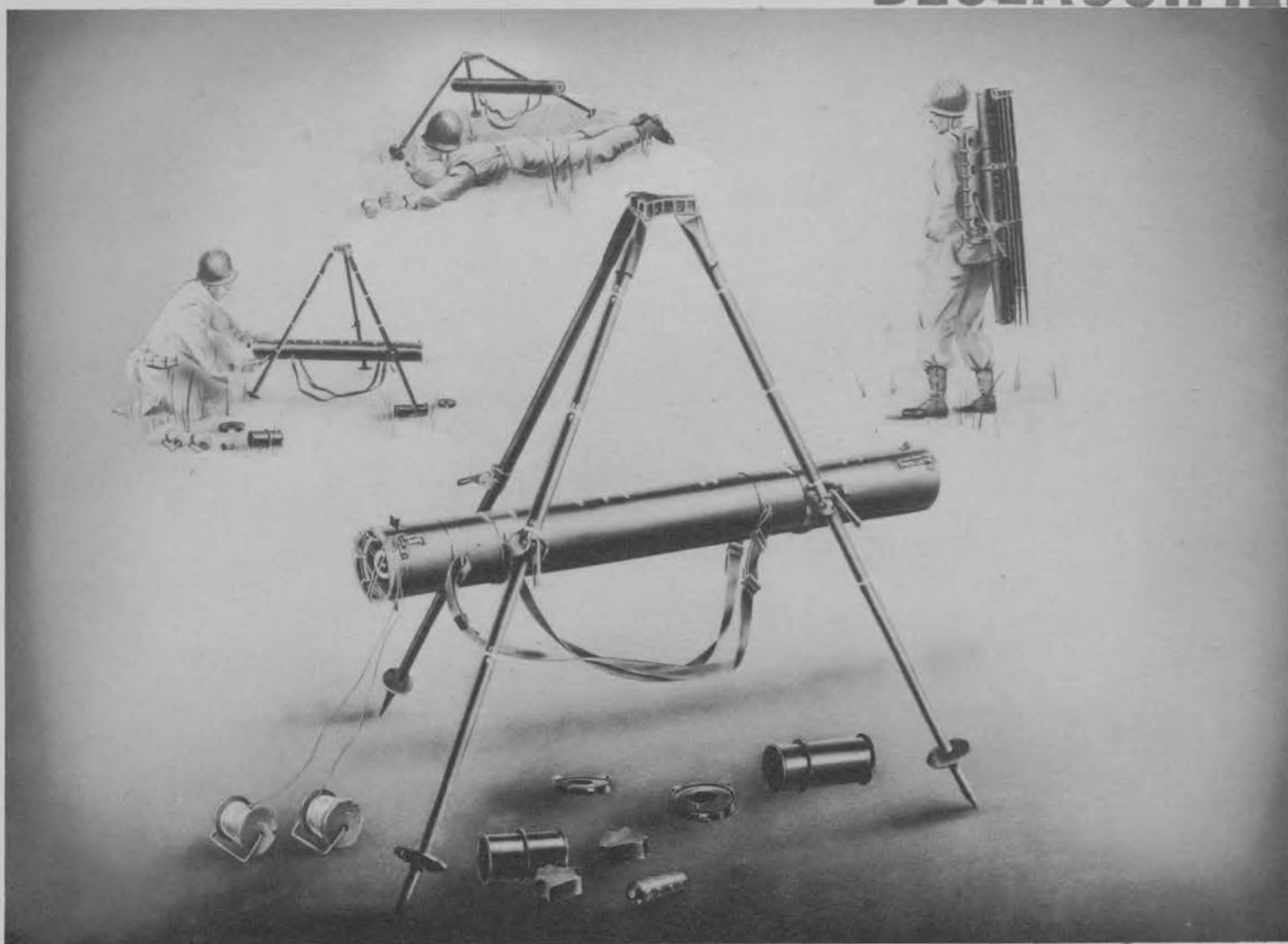


4.5 INCH 3-TUBE A.C. ROCKET LAUNCHER, M10, MOUNTED UNDER WING OF FIGHTER PLANE

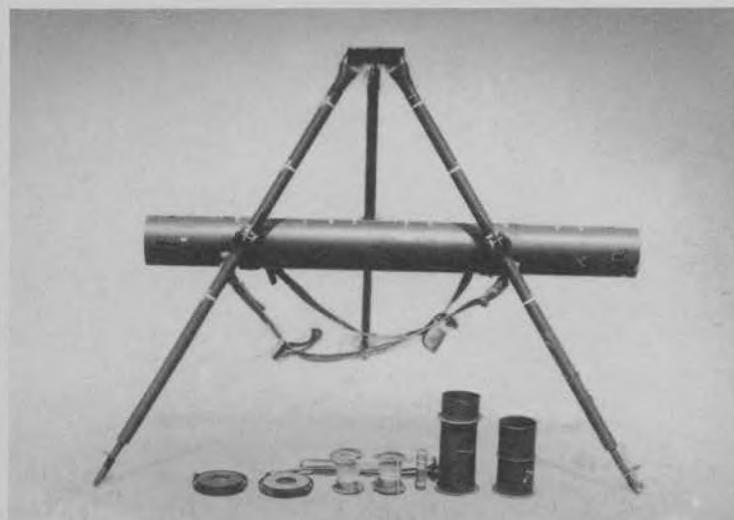
The 4.5 inch 3-Tube A.C. Rocket Launcher, M10, is a cluster of three plastic tubes used for firing rockets from aircraft. One cluster is mounted under each wing of fighter aircraft. The cluster may be jettisoned after the rockets are launched. The fin-stabilized 4.5 inch rockets M8, M8A1, M8A2, M8A3, T22 and T41 may be launched from this cluster.

CHARACTERISTICS

Weight, total.....	82 lb.	Traverse.....	By changing direction of plane
Rail or tubes:		Rate of fire.....	6 rounds released in 0.6 sec. when set for salvo
Length.....	120 in.	Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Number and arrangement.....	3-tube cluster	Fire control equipment.....	No special equipment. Clusters harmonized before takeoff by use of boresight equipment and quadrant of plane
Composition.....	Plastic		
Mounting.....	Clusters mounted on special brackets installed on underside of aircraft wings		
Elevation.....	4° adjustment possible. Clusters harmonized with aircraft machine guns		



4.5 INCH ROCKET LAUNCHER, M12, IS AN EXPENDABLE PACKING CRATE TYPE FOR FIRING SINGLE ROUND



4.5 INCH ROCKET LAUNCHER, M12

The 4.5 inch Rocket Launcher, M12, is an expendable packing crate type of launcher that is loaded and shipped complete with one M8 or M8A1 Rocket with a special igniter. In firing position the launcher is slung under the tripod which accompanies the packed launcher crate.

CHARACTERISTICS

- Weight, total 22 lb.
- Rails or tubes:
 - Length 48 in.
 - Number and arrangement Single tube
 - Composition Plastic
 - Mounting Tripod
- Elevation Fixed
- Traverse By moving tripod
- Rate of fire Discarded after firing one round
- Firing mechanism Battery packed with launcher furnishes electric current.
Ten-cap exploder may be used for salvo release of several rockets at the same time
- Fire control equipment Folding peep sight and front stud sight

4.5 INCH 3-TUBE A.C. ROCKET LAUNCHER M14—STANDARD

DECLASSIFIED



4.5 INCH 3-TUBE A.C. ROCKET LAUNCHER, M14

The 4.5 inch 3-Tube A.C. Rocket Launcher, M14, is a cluster of three steel tubes used for firing rockets from aircraft. One cluster is mounted under each wing of fighter aircraft. The cluster may be jettisoned after the rockets are launched.

This launcher is the same as the 4.5 inch M10 launcher except for steel instead of plastic tubes. This launcher may be used for fin-stabilized or spin-stabilized rockets (after slight modification).

CHARACTERISTICS

Weight, total	210 lb.	Traverse	By changing direction of plane
Rails or tubes:		Rate of fire	6 rounds released in 0.6 sec. when set for salvo
Length	120 in.	Firing mechanism	Selective single round or ripple fire electric firing mechanism
Number and arrangement	3-tube cluster	Fire control equipment	No special equipment. Clusters harmonized before takeoff by use of boresight equipment and quadrant of plane
Composition	Steel		
Mounting	Clusters mounted on special brackets installed on underside of aircraft wing		
Elevation	4° adjustment possible. Clusters harmonized with aircraft machine guns		

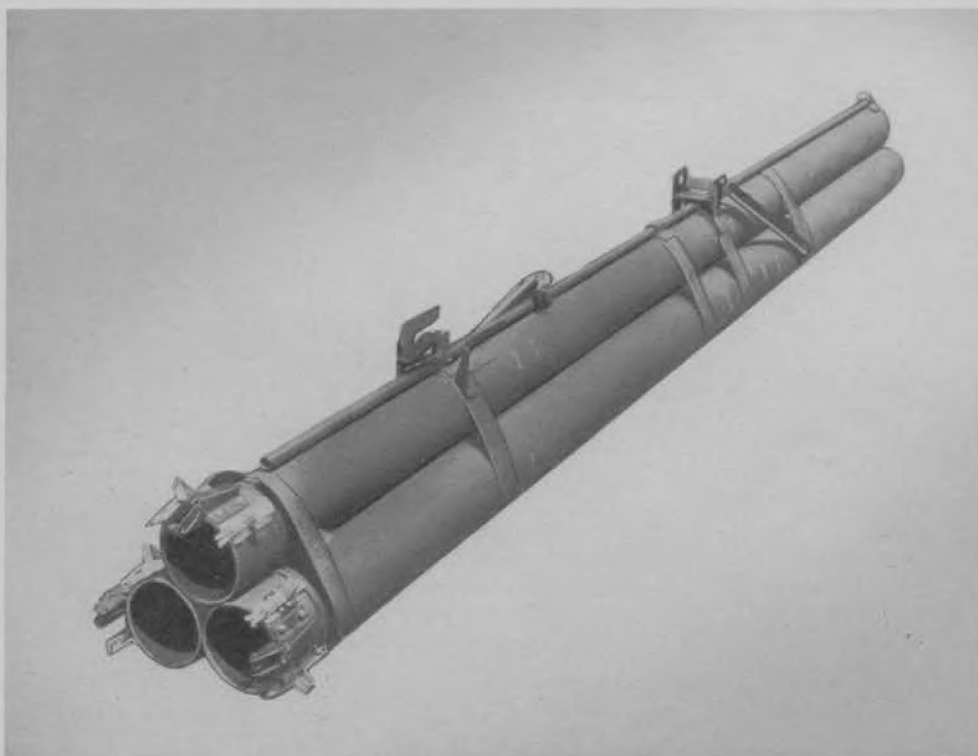
DECLASSIFIED

4.5 INCH 3-TUBE AIRCRAFT ROCKET LAUNCHER M15—STANDARD

DECLASSIFIED



4.5 INCH 3-TUBE AIRCRAFT ROCKET LAUNCHER, M15, MOUNTED ON P-47 PURSUIT PLANE



4.5 INCH 3-TUBE AIRCRAFT ROCKET LAUNCHER, M15

The 4.5 inch 3-tube Aircraft Rocket Launcher, M15, is a cluster of three magnesium tubes used for firing rockets from aircraft. One cluster is mounted under each wing on an aircraft. The cluster may be jettisoned after the rockets are launched. This launcher is identical to the M10 Aircraft Launcher except that it is constructed with magnesium tubing instead of plastic tubing.

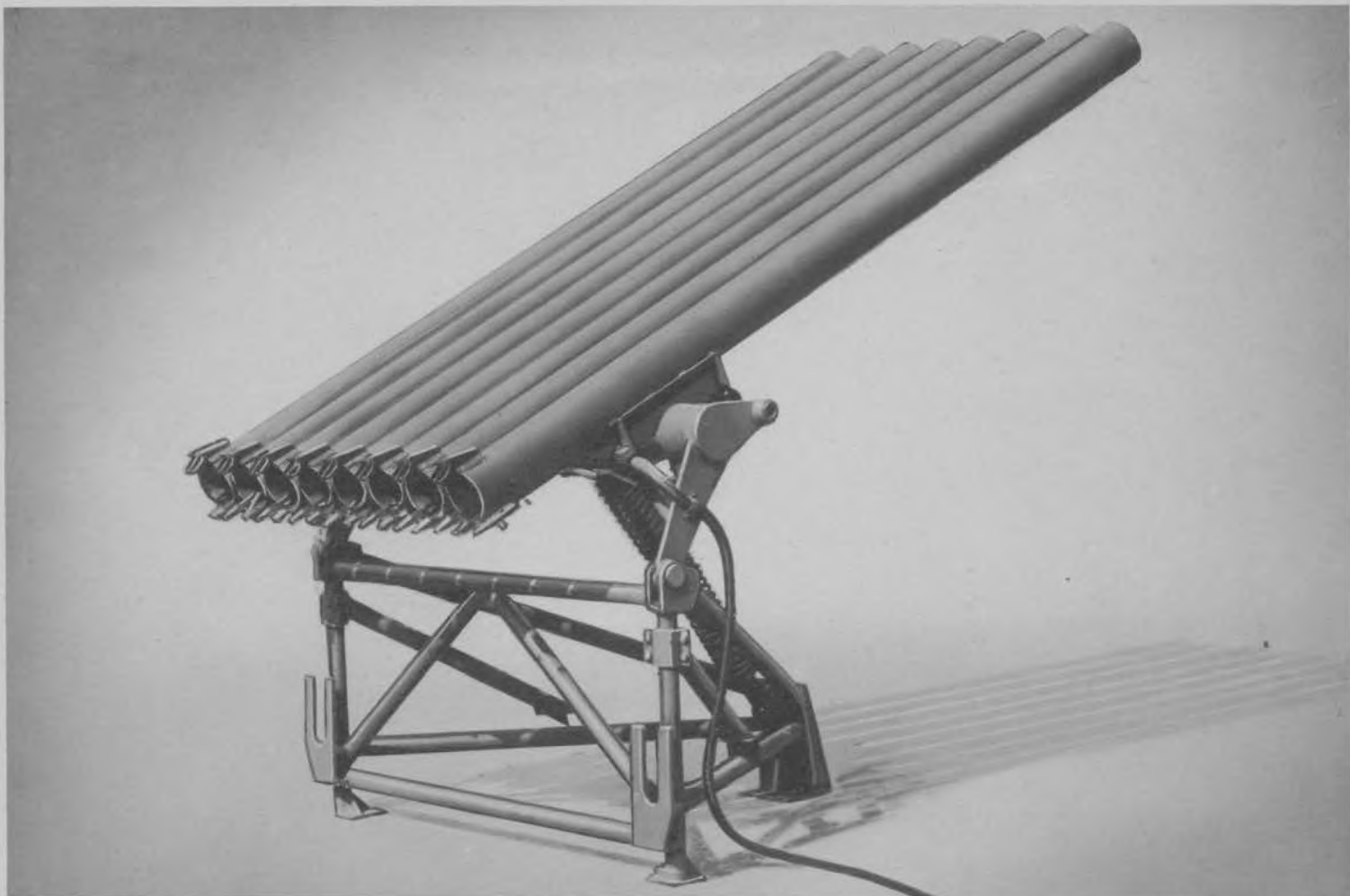
CHARACTERISTICS

Weight, total 82 lb. (estimated)
 Rails or tubes:
 Length 120 in.
 Number and arrangement . . . Three-tube cluster
 Composition Magnesium
 Mounting . . . Clusters mounted on special brackets installed on the underside of aircraft wings
 Elevation . . 4° adjustment possible. Clusters harmonized with aircraft machine guns
 Traverse By changing direction of plane
 Rate of fire . . . 6 rounds released in 0.6 sec. when set for salvo
 Firing mechanism . . . Selective single round or ripple fire electric firing mechanism
 Fire control equipment . . No special fire control equipment. Clusters harmonized before takeoff by use of boresight equipment and quadrant of plane

DECLASSIFIED

4.5 INCH MULTIPLE ROCKET LAUNCHER T27—LIMITED PROCUREMENT

DECLASSIFIED



4.5 INCH MULTIPLE ROCKET LAUNCHER, T27, MAY BE FIRED EITHER FROM THE GROUND OR A MOTOR VEHICLE

The 4.5 inch Multiple Rocket Launcher, T27, is mounted on a special carriage of welded tubular construction and may be fired either from a motor vehicle or the ground.

CHARACTERISTICS

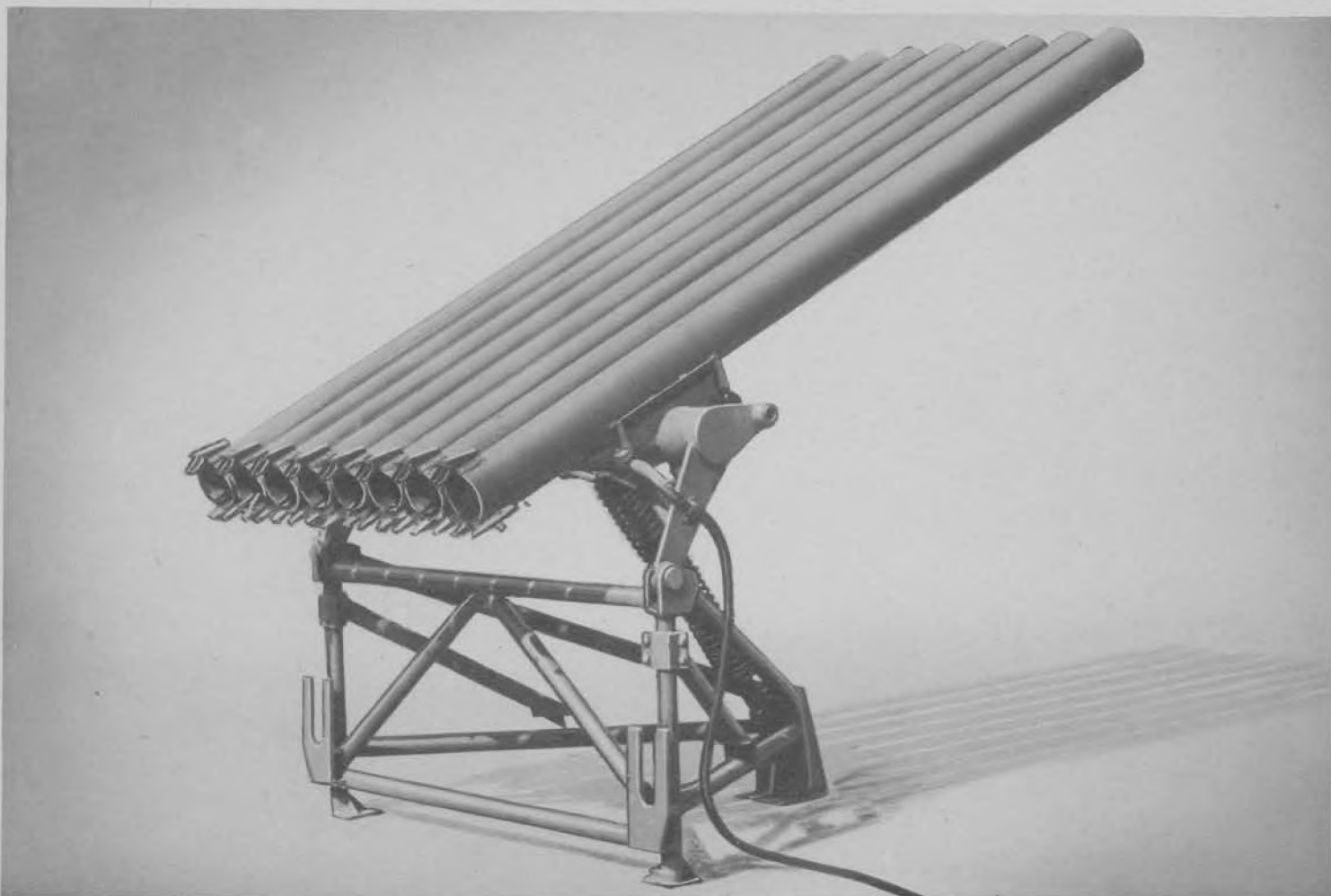
Weight, total.....	823 lb.
Rails or tubes:	
Length.....	90 in.
Number and arrangement.....	8 tubes in single bank
Composition.....	Steel
Mounting.....	Bolted to floor of a 1½- or 2½-ton truck, or fired from the ground. Spades stabilize mount when firing from ground
Elevation.....	5° to 45°
Traverse.....	By moving motor vehicle or by moving assembly when firing from ground
Rate of fire.....	Ripple fire at 0.5 sec. interval
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	Machine gun or gunner's quadrant and M6 telescope



4.5 INCH MULTIPLE ROCKET LAUNCHER, T27

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4.5 INCH MULTIPLE ROCKET LAUNCHER T27E1—LIMITED PROCUREMENT



LEFT FRONT VIEW OF 4.5 INCH ROCKET LAUNCHER, T27E1, MOUNTED ON LVT, T34



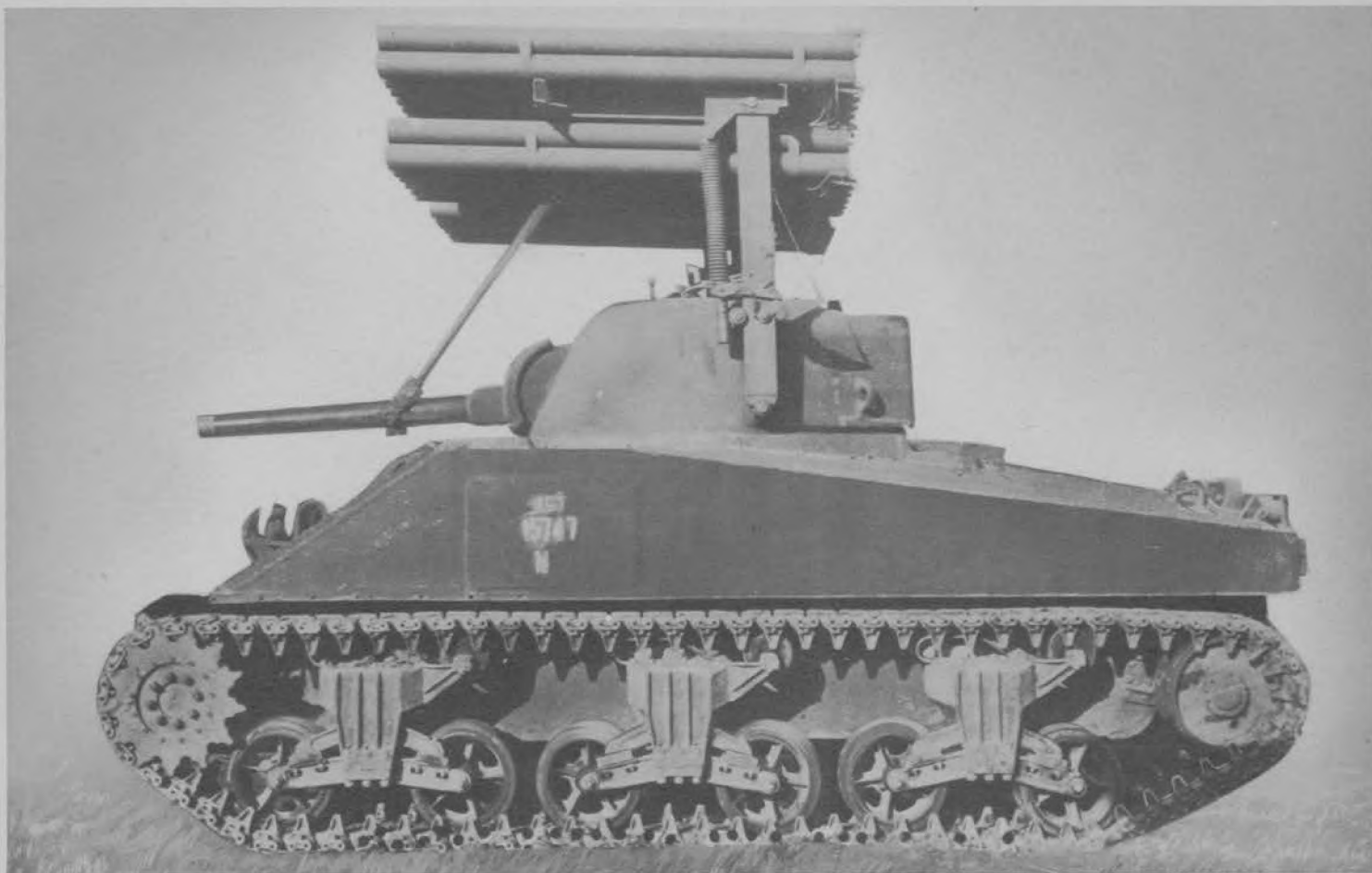
LEFT REAR VIEW OF 4.5 INCH ROCKET LAUNCHER, T27E1

The 4.5 inch Multiple Rocket Launcher, T27E1, may be fired either from a motor vehicle or the ground. It differs from the T27 in that it may be disassembled into two-man loads.

CHARACTERISTICS

Weight, total.....	825 lb.
Rails or tubes:	
Length.....	90 in.
Number and arrangement.....	8 tubes in single bank
Composition.....	Steel
Mounting.....	Bolted to floor of a 1½- or 2½-ton truck, or fired from ground. Spades stabilize mount when firing from ground. May be adapted to an LVT by use of mounting kit
Elevation.....	-5° to +45°
Traverse.....	By moving vehicle or by moving assembly on ground
Rate of fire.....	Ripple fire at 0.5 sec. intervals
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	Machine gun or gunner's quadrant and M6 telescope





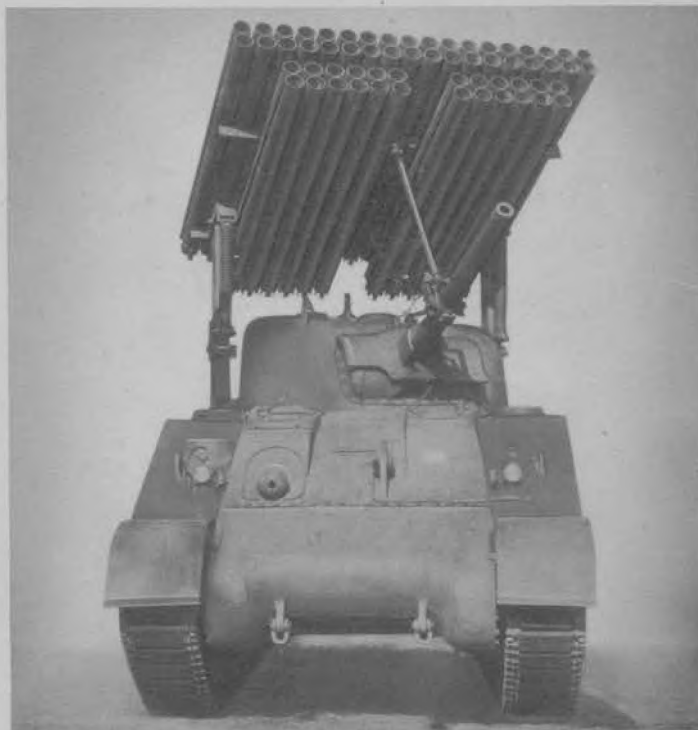
4.5 INCH MULTIPLE ROCKET LAUNCHER, T34, MOUNTED ON MEDIUM TANK

The 4.5 inch Multiple Rocket Launcher, T34, is used to produce a barrage effect by firing a large number of rockets into an area. It is mounted on tanks of the M4 series. After the rockets have been fired the launcher may be jettisoned quickly by the crew from inside the tank so that the tank may proceed on its mission.

Launchers of this type constructed with magnesium tubes will be designated T34E1. The nickname "Calliope" has been given to this launcher.

CHARACTERISTICS

Weight, total.....	1,840 lb.
Rails or tubes:	
Length.....	90 in.
Number and arrangement.....	60 tubes. Two 18-tube and two 12-tube banks
Composition.....	Plastic
Mounting.....	By brackets on tanks of the M4 series
Elevation.....	-5° to +25° (through tank-gun elevating mechanism)
Traverse.....	360° (with turret)
Rate of fire.....	Ripple fire at 0.5 sec. intervals
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	Tank-gun equipment used

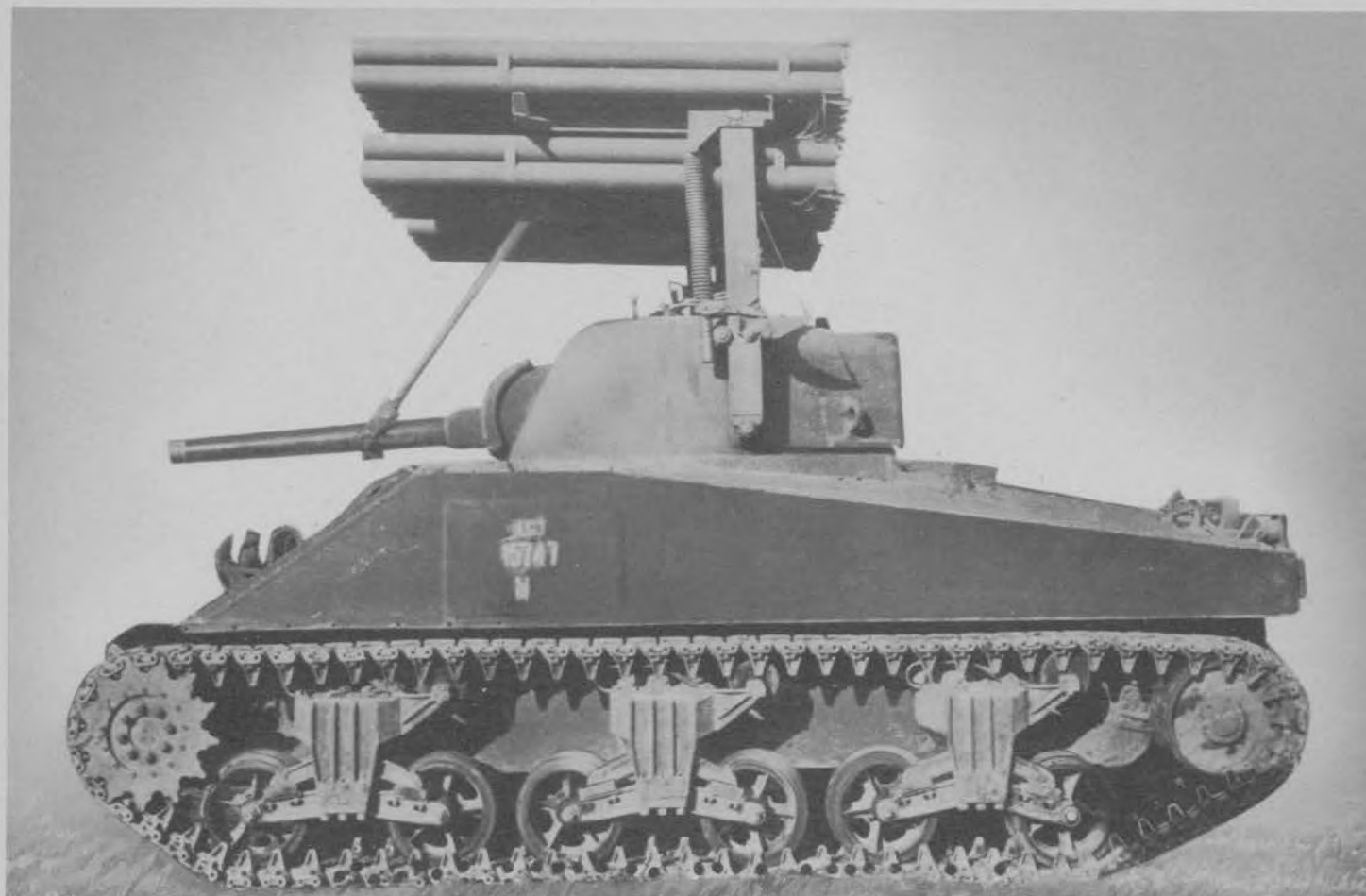


THE T34 LAUNCHER IS KNOWN AS THE "CALLIOPE"



4.5 INCH MULTIPLE ROCKET LAUNCHER T34E1—LIMITED PROCUREMENT

DECLASSIFIED



4.5 INCH MULTIPLE ROCKET LAUNCHER, T34E1, MOUNTED ON MEDIUM TANK

The 4.5 inch Multiple Rocket Launcher, T34E1, is identical to the T34 launcher except that magnesium instead of plastic tubes are used. It is employed to produce a barrage effect by firing a large number of rockets into an area. The launcher is mounted on tanks of the M4 series. After the rockets have been fired the launcher may be jettisoned quickly by the crew inside the tank.

CHARACTERISTICS

- Weight, total.....1,840 lb. (estimated)
- Rails or tubes:
 - Length.....90 in.
 - Number and arrangement...60 tubes in two 18-tube and two 12-tube banks
 - Composition.....Magnesium
 - Mounting.....Mounted by use of brackets on tanks of M4 series
- Elevation.....-5° to +25° (through tank-gun elevating mechanism)
- Traverse.....360° (with turret)
- Rate of fire.....Ripple fire at 0.5 sec. intervals
- Firing mechanism...Selective single round or ripple fire electric firing mechanism
- Fire control equipment.....Tank gun equipment used



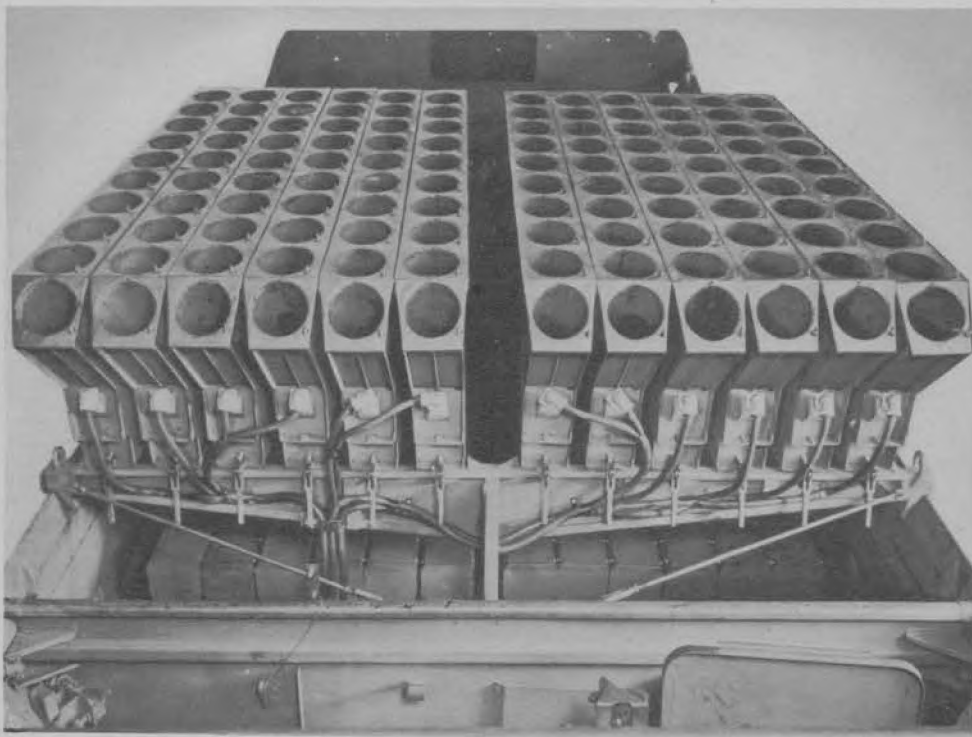
4.5 INCH MULTIPLE ROCKET LAUNCHER, T34E1

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4.5 INCH MULTIPLE ROCKET LAUNCHER T44—LIMITED PROCUREMENT



4.5 INCH MULTIPLE ROCKET LAUNCHER, T44, INSTALLED IN AMPHIBIOUS TRUCK



CLOSE UP VIEW OF 120-TUBE T44 LAUNCHER

The 4.5 inch Multiple Rocket Launcher, T44, is designed for use in landing operations. It is intended for installation in amphibious vehicles like the DUKW or LVT4. This launcher fires the 4.5 inch short range Navy Barrage Rocket.

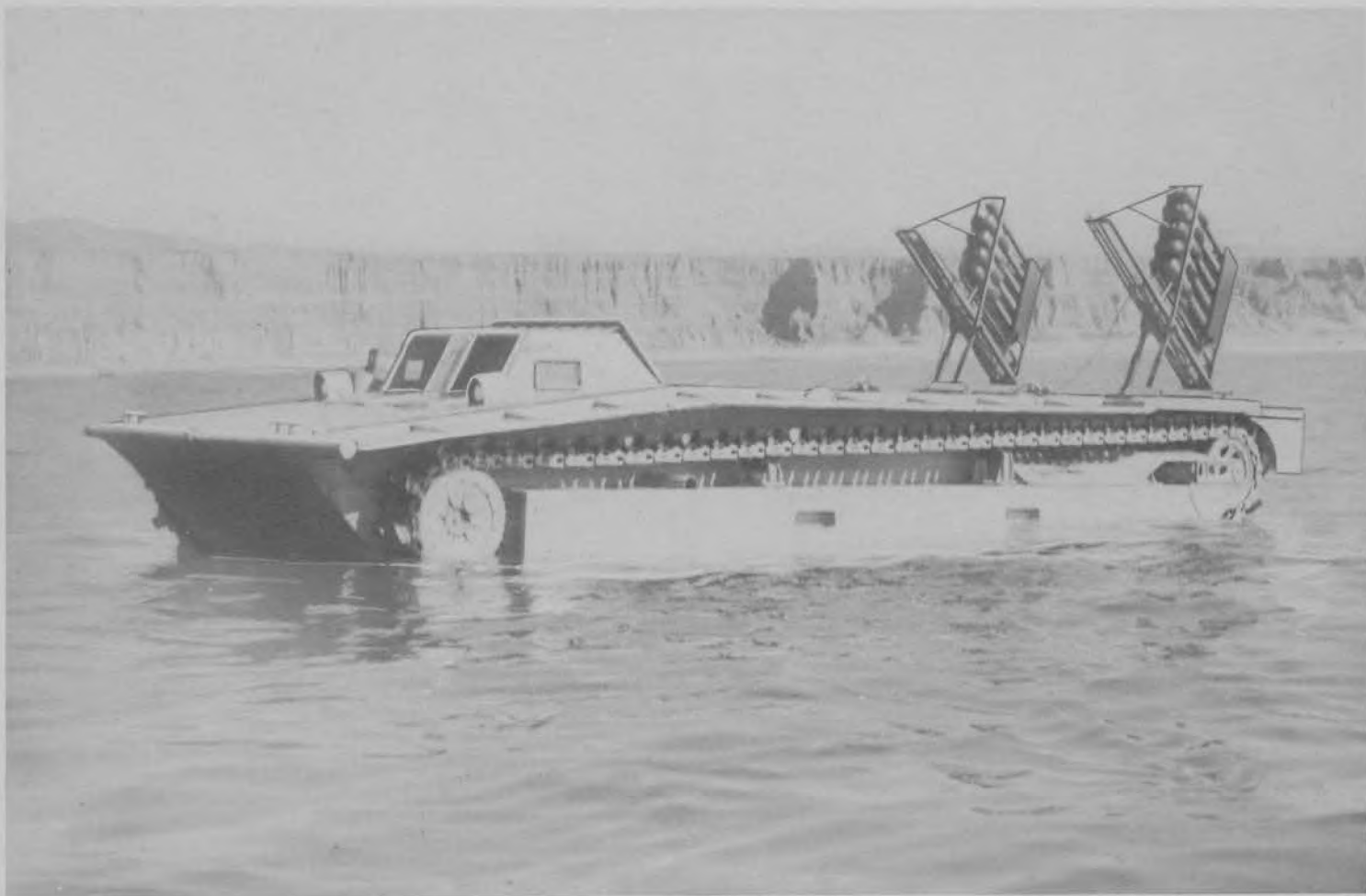
The original model of this launcher was developed by C.I.T.

CHARACTERISTICS

- Weight, total 2,400 lb. (estimated)
- Rails or tubes:
 - Length 60 in.
 - Number and arrangement . . 120 tubes. Twelve 10-tube racks fastened together
- Composition Steel
- Mounting Installed in cargo space of vehicle. Racks supported by cross rails
- Elevation Fixed angle of 45°
- Traverse By turning vehicle
- Rate of fire Ripple fire at 0.5 second intervals
- Firing mechanism Electric firing mechanism for single round or ripple fire
- Fire control equipment No equipment provided. Sighting lines are painted on the bow surf shield and windshield

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4.5 INCH AUTOMATIC ROCKET LAUNCHER T45—LIMITED PROCUREMENT

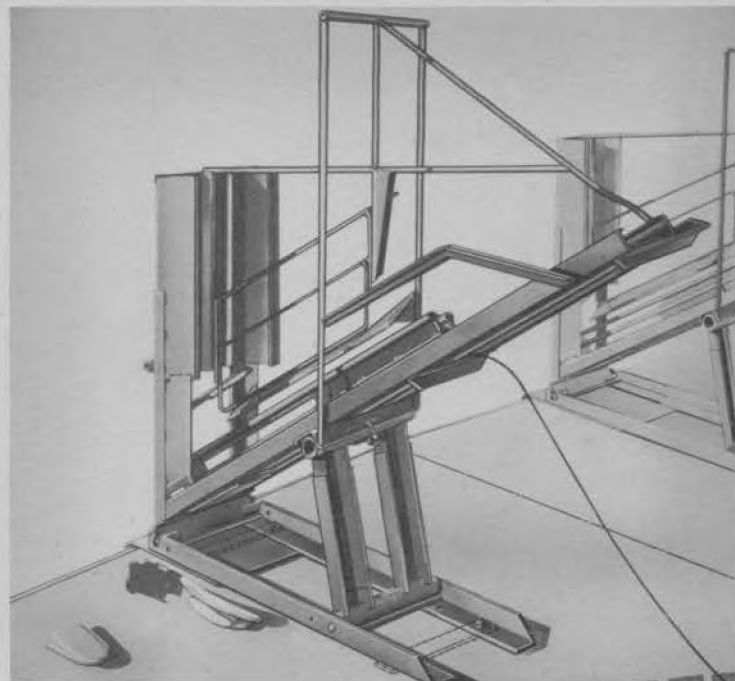


4.5 INCH AUTOMATIC ROCKET LAUNCHER, T45, MOUNTED ON LVT

The 4.5 inch Automatic Rocket Launcher, T45, is designed for installation on landing craft and motor vehicles, namely: the LCV, LCVP, LCM3, LCS, LCI, LVTS, DUKW landing and amphibious craft; $\frac{1}{4}$ -ton 4 x 4 trucks; $\frac{3}{4}$ -ton 4 x 4, 1-ton 4 x 4, $1\frac{1}{2}$ -ton 6 x 6, and $2\frac{1}{2}$ -ton 6 x 6 cargo trucks. The launchers are usually installed in pairs. This gravity-feed automatic launcher is a Navy Standard item developed for firing the 4.5 inch Navy Barrage Rocket.

CHARACTERISTICS

Weight, total.....115 lb.
 Rails or tubes:
 Length.....60 in. firing channel
 Number and arrangement...Steel framework magazine plus firing channel serves as launcher; rockets drop into position by gravity
 Composition.....Steel
 Mounting....Launcher may be mounted on each side of motor vehicle, or on deck of amphibious craft, etc.
 Elevation..... 20° to 45°
 Traverse.....By moving vehicle or craft
 Rate of fire.....Ripple fire at 0.3 sec. intervals
 Firing mechanism....Rounds fired by electric contacts as they drop into position
 Fire control equipment.....No equipment provided



T45 LAUNCHERS ARE USUALLY INSTALLED IN PAIRS

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4.5 INCH AUTOMATIC ROCKET LAUNCHER T47 (AC) — DEVELOPMENT TYPE

CONFIDENTIAL

CHARACTERISTICS

Weight, total.....200 lb. with 5-round magazine (estimated)
Rails or tubes:
Length.....Variable. Will depend on aircraft
Number and arrangement.....Single firing tube with attached magazine
Composition.....Steel
Mounting.....Fixed installation in airplane
Elevation.....Fixed. Sighted by aircraft gun sights
Traverse.....By changing direction of plane
Rate of fire.....120 rounds per minute (estimated cyclic rate)
Firing mechanism.....Automatic electric firing
Fire control equipment.....Aircraft sighting equipment

The 4.5 inch Automatic AC Rocket Launcher, T47, is designed to be a fixed installation on aircraft with a magazine holding from 5 to 15 rounds. It fires 4.5 inch Army rockets.

DECLASSIFIED

DECLASSIFIED

4.5 INCH AUTOMATIC ROCKET LAUNCHER T58—DEVELOPMENT TYPE

CHARACTERISTICS

Weight, total 200 lb. with 5-round magazine (estimated)
 Rails or tubes:
 Length Variable. Depends on the aircraft
 Number and arrangement Single firing tube with attached magazine
 Composition Steel
 Mounting Fixed installation in airplane
 Elevation Fixed
 Traverse By changing the direction of plane
 Rate of fire 100 to 120 rounds per minute (estimated cyclic rate)
 Firing mechanism Automatic electric firing
 Fire control equipment Aircraft sighting equipment

The 4.5 inch Automatic Rocket Launcher, T58, is similar to the 4.5 inch T47 launcher except that individual carrier tubes for the magazine are not used. It is fully automatic with a magazine holding 5 to 15 rounds. This launcher is to be installed in aircraft for firing 4.5 inch Army rockets.

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4.5 INCH MULTIPLE ROCKET LAUNCHER T62—DEVELOPMENT TYPE

CHARACTERISTICS

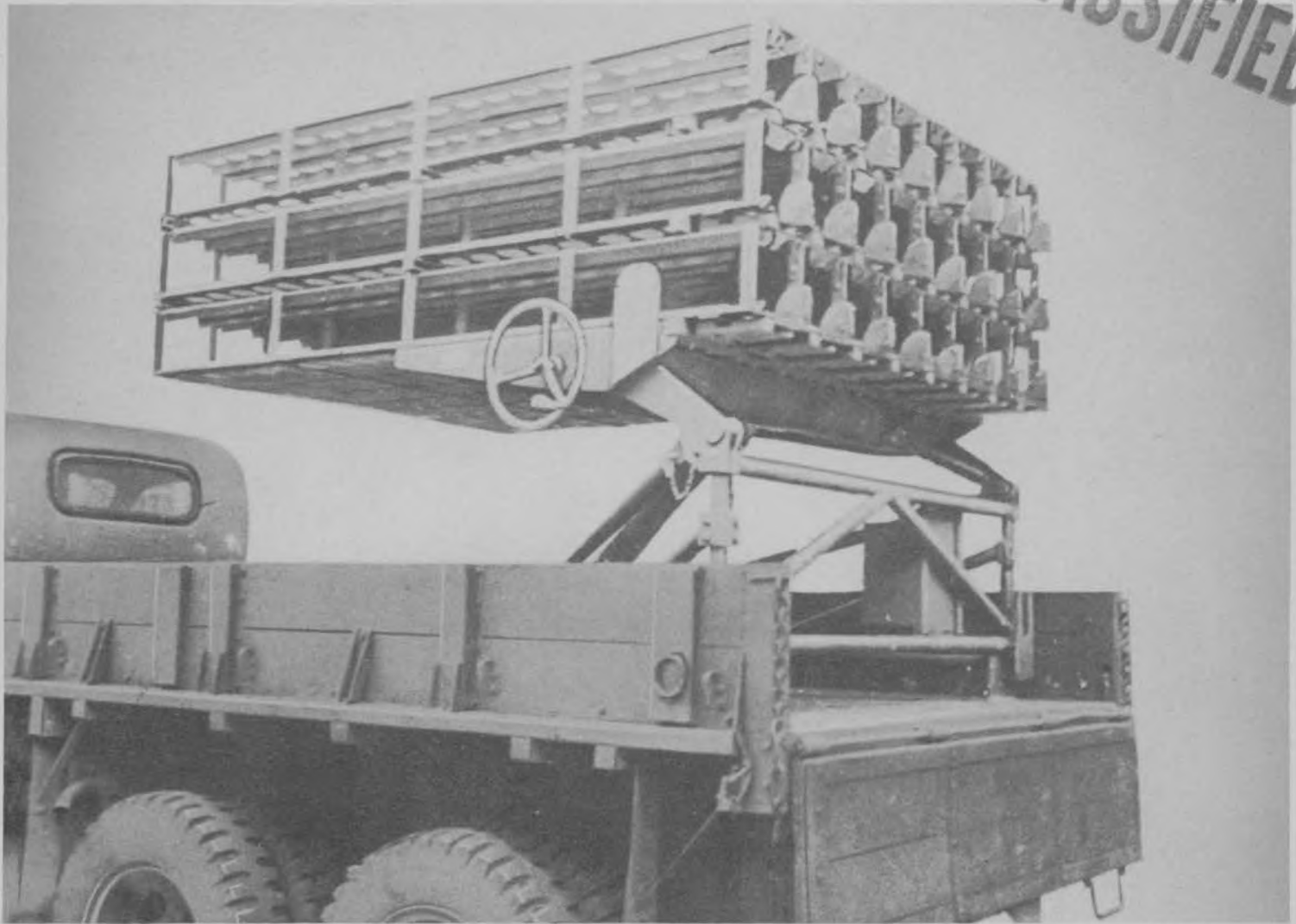
The 4.5 inch Multiple Rocket Launcher, T62, is an expendable packing crate type designed for firing 4.5 inch spin-stabilized rockets, T38 series. It is to be used for ground to ground firing. This launcher will be waterproof and will float.

- Weight, total.....400 lb. (maximum)
- Rails or tubes:
 - Length.....36 in.
 - Number and arrangement.....24 tubes. Arrangement to be determined
 - Composition.....Cyclo-welded aluminum
 - Mounting.....For ground firing only. Supports will probably be packed in the box for field assembly
- Elevation.....1° to 45°
- Traverse.....By moving the launcher assembly
- Rate of fire.....Ripple fire at 0.5 sec. intervals
- Firing mechanism.....Selective single round or ripple fire electric firing mechanism
- Fire control equipment...Simple direct sighting mechanism to be developed

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7.2-INCH MULTIPLE ROCKET LAUNCHER T28—DEVELOPMENT TYPE

CONFIDENTIAL
UNCLASSIFIED



7.2-INCH MULTIPLE ROCKET LAUNCHER T28, MOUNTED ON 2 1/2-TON TRUCK



T28 LAUNCHER AT 45° ELEVATION

The 7.2-Inch Multiple Rocket Launcher T28 is capable of firing rockets with 2.25-inch, and 3.25-inch motors from a motor vehicle or the ground. It is designed for disassembly into two-man loads.

CHARACTERISTICS

Weight, total.....	1,809 lb.
Rails or tubes:	
Length.....	90 in.
Number and arrangement.....	24 sets of guiding rails in three banks of 8 rail sets each
Composition.....	Steel
Mounting.....	Ground mount or 2 1/2-ton 6 x 6 truck
Elevation.....	-5° to +45°
Traverse.....	By moving vehicle or by moving launcher on ground
Rate of fire.....	Ripple fire at 0.5 sec. intervals
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	Gunner's quadrant and peep sight

UNCLASSIFIED

7.2 INCH MULTIPLE ROCKET LAUNCHER T32—LIMITED PROCUREMENT



7.2 INCH MULTIPLE ROCKET LAUNCHER, T32, MOUNTED ON 2 1/2-TON TRUCK

The 7.2 inch Multiple Rocket Launcher, T32, is designed particularly for firing the 7.2 inch T21 chemical rocket with a 7.2 inch shell and a 3.25 inch motor. While it is primarily a weapon for laying down a chemical barrage it may also be used

to launch the 7.2 inch T24 rocket with a 7.2 inch H.E. shell and a 3.25 inch motor.

A 24 round ammunition rack for carrying additional rockets is included with the launcher.

CHARACTERISTICS

- Weight, total.....2,608 lbs. complete with ground support and ammunition storage rack
- Rails or tubes:
 - Length.....120 in.
 - Number and arrangement..24 sets of guiding rails in three banks of 8 rail sets each
- Composition.....Steel
- Mounting.....Bolted to a 2 1/2-ton 6 x 6 truck, or mounted on ground
- Elevation...-6° to +53° on ground
17° to 45° on truck with storage rack
10° to 45° on truck w/o storage rack
- Traverse.....By moving vehicle, or moving launcher on ground
- Rate of fire.....Ripple fire at 0.5 sec. intervals
- Firing mechanism.....Selective single round or ripple fire electric firing mechanism
- Fire control equipment...Gunner's quadrant and dead sight



T32 LAUNCHER IN FIRING POSITION ON GROUND MOUNT

7.2 INCH MULTIPLE ROCKET LAUNCHER T40—LIMITED PROCUREMENT

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7.2 INCH MULTIPLE ROCKET LAUNCHER, T40, ON MEDIUM TANK



THE T40 LAUNCHER IS KNOWN AS THE "WHIZBANG"



LOADING THE T40 LAUNCHER

The 7.2 inch Multiple Rocket Launcher, T40, is designed for point-blank firing at obstacles with demolition rockets. It may also be employed to launch 7.2 inch chemical rockets. The launcher will fire the T21, T24, T50, T51, T52, T53, T28, T37, and T57 rockets.

This launcher carries armor plate to protect its load against small arms fire because of plans to use it at close range. Armor plate doors are operated by hydraulic controls within the tank. The launcher may be jettisoned after the rockets are fired. This launcher has been given the nickname "Whizbang."

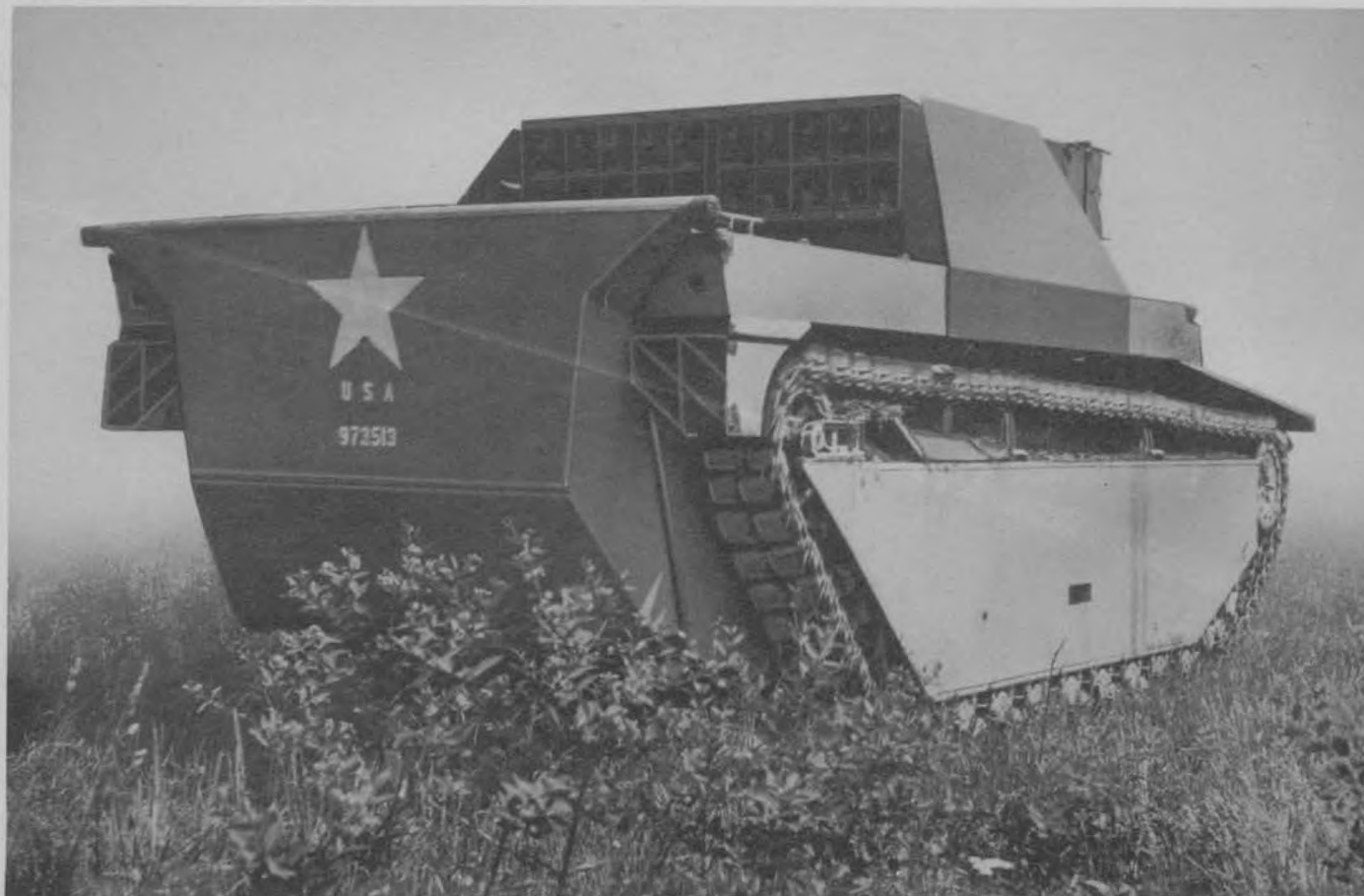
CHARACTERISTICS

- Weight, total 4,100 lb. (estimated)
- Rails or tubes:
 - Length 90 in.
 - Number and arrangement . . . 20 sets of guiding rails in two banks of 10-rail sets each
- Composition Sheet steel
- Mounting On medium tanks of the M4 series by special brackets and an elevation strut
- Elevation 5° to 25°
- Traverse 360° (with gun turret)
- Rate of fire Ripple fire at intervals of 0.5 sec.
- Firing mechanism Selective single round or ripple fire electric firing mechanism
- Fire control equipment Tank gun equipment

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7.2 INCH MULTIPLE ROCKET LAUNCHER T54—DEVELOPMENT TYPE

DECLASSIFIED



7.2 INCH MULTIPLE ROCKET LAUNCHER, T54, MOUNTED ON LVT4

The 7.2 inch Multiple Rocket Launcher, T54, is designed especially to fire the 7.2 inch H.E. T37 rocket for demolition of beach barricades during landing operations. If sufficient blast protection is provided this launcher may be used to fire 7.2 inch rockets, with larger motors such as the T21, T24, T50, T51, T52, T53, T28 and T57 rockets.

The launcher has armor plate protection against small arms fire on the bottom, sides, and front end of the rails. It also has a rack for transporting 40 additional rockets.

CHARACTERISTICS

Weight, total.....	6,000 lb. (estimated)
Rails or tubes:	
Length.....	90 in.
Number and arrangement.....	20 sets of guiding rails, in two banks of 10 rail sets each
Composition.....	Sheet steel
Mounting.....	On channel-iron supports welded to inside walls of cargo space in LVT4 craft
Elevation.....	-5° to 45°
Traverse.....	By changing course of craft
Rate of fire.....	Variable ripple fire from 0.3 sec. to 2 sec. intervals
Firing mechanism.....	Selective single round or ripple fire electric firing mechanism
Fire control equipment.....	Switch controlling elevation of launcher and the quadrant mounted in cab of craft. Periscope with wide field of view used for sighting



T54 LAUNCHER IN ELEVATED POSITION

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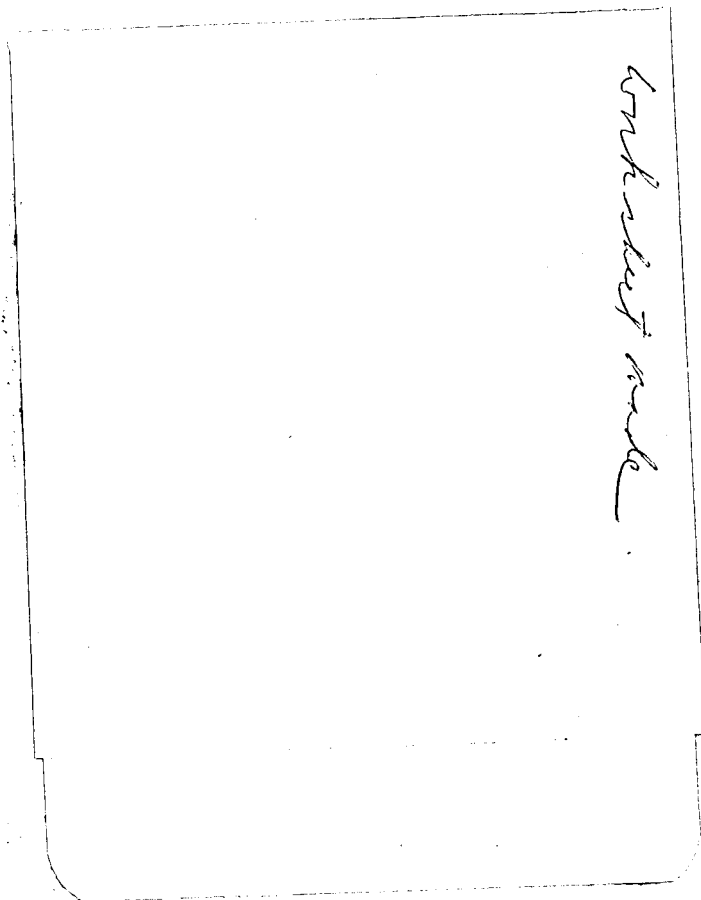
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