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12 CM MULTIPLE MOUNT ROCKET LAUNCHER
Issued by YOKOSUKA Naval Gunnery School, date unknown.
Captured on OKINAWA.

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EDITOR'S NOTE

This document describes the 12 cm Multiple (28 tubes) Mount Rocket Launcher which is a shipborne rocket launcher for antiaircraft use. This is the first reported documentary evidence on the launcher.

A number of penciled marginal notations which appeared in the document are reproduced here, and are so indicated.

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YOKOSUKA Naval Gunnery School
Antiaircraft Dept
Special Gunnery Section

12 cm Multiple (TN: 28 tubes) Mount Rocket Launcher

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I General Explanation

A The Principle of the Rocket

As in the case of ships and planes which push the water or air backward with their propellers and move forward from the reaction, in rocket guns the projectile is propelled in flight by reaction to the backward expulsion through orifices of high pressure gases from the burning of the propellant.

II Essential Characteristics and Capabilities

A Essential Characteristics:

Gun	Barrel	Number	28 tubes
		Caliber	120 mm (TN: 4.68 in.)
		Length of bore	1500 mm (TN: 58.50 in)
	Weight of parts	Tube	395 kg (TN: 869 lbs)
		Mount	1500 kg (TN: 3300 lbs)
	Principal dimensions	Height	1350 mm (TN: 52.65 in)
		Width	2400 mm (TN: 93.60 in)
Projectile	Projectile's outside diameter		120 mm (TN: 4.68 in)
	Length of projectile		730 mm (TN: 28.47 in)
	Complete weight		220 kg (TN: 48.5 lbs)
	Amount of bursting charge		200 grams(TN: 7.054 ounces)
	Pellets		60 Special phosphorus incendiary pellets
	Amount of propellent		3560 grams(TN: 7.85 lbs)
	Amount of booster charge		Black powder--35 grams (TN: 1.234 ounces)
	Average internal pressure		85 grams/cm.^{2} (TN: 1.208 lbs/inch^2)(TN:sic)
	Incendiary charge		440 grams(TN: 15.518 ounces)
Complete weight			2 tons 494 kg (with 28 rounds loaded) (TN: 5499.27 lbs)
Note: 1. Uses the 25 mm triple mount MG mount. 2. An anti-flash shield is attached.			

B Capabilities

Gun	Elevation	10° - 80°; No depression		
	Traverse	Complete revolution		
	Elevating speed	Loaded	About 12°/sec	
		Empty	Electric	About 10°/sec
			Manual	About 9°/sec
	Traverse speed	Loaded	About 12°/sec	
		Empty	Electric	About 18°/sec
			Manual	About 12°/sec
	Maximum Range	Elevation, 50° - 4500 m (TN: 4921.20 yds)		
	Maximum Height	Elevation, 80° - About 2600 m (TN: 2843.36 yds)		
	Loading time	About 3 to 5 minutes (estimate)		
Projectile	Rate of fire	From 15 to 20 rounds		
	Maximum initial velocity	About 240 m/sec (787.39 ft/sec)		
	Delay	8 sec (1500 m) (1640.40 yds) 5.5 sec (1050 m) (1148.28 yds).		

Notes: 1. With its present construction, a 28 round salvo is difficult.
2. Operation radius about 2 m (2.18 yds); traversing radius--1.37 m (1.49 yds).

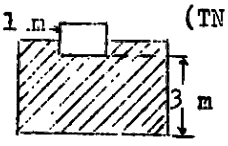
III Precautions for Handling

A General

1. Upon firing, there is violent flame and blast, especially near the breech; hence, it is important not to permit personnel to be there, especially after the breech switch is "on". When firing by direct aiming, avoid hard, uniform firing (ie, from the 28 tubes). The "firer" and "azimuth trainer", in addition to staying behind the anti-flash shield, must wear adequate protective clothing (flying suits or fire-proof garment and flying shoes, flying gloves, and gas mask).

2. The interval for continuous uniform firing is limited to a minimum of 0.2 seconds. When the relay is turned hastily by hand, the firing becomes practically instantaneous, causing breakdowns in the weapon and unforseen fire damage to the area. Therefore, caution in turning the relay is essential.

Flash - - - - 1 m (TN: Drawn with pencil)



3. Precautions in loading:

a. Do not mistake the loading positions of the red and blue shells (TN: See handwritten notes on Diagram 2).
b. Do not load in reverse.
c. Do not load doubly.
d. Avoid excessive jarring.
e. Be certain that the firing plugs are tight.

B The Gun

The gun mount is a standard Type 96, 25 mm Automatic Cannon, triple mount. In addition, note the following:

1. The launcher rails must be handled properly and kept smooth, but oil and inflammable coating must be avoided.

2. It is important before and after firing to inspect the firing plugs to determine whether they are secure (about 6 mm in firing) and are clean.

3. Since electric circuit firing is the only method of firing for this gun, it is necessary to make advance preparations.

4. Since at the time of firing the anti-flash shield and the deck become hot because of the flames, water should be sprinkled to cool them. However, as the electric circuit is not waterproof, caution must be used by all means to prevent water from getting into it.

C The Projectile

1. The motor body contains the propellant (identical with smokeless powder in composition) and the booster charge (black powder). Therefore, high temperature and great humidity must be avoided, and the body must be kept in a cool and dry place. (Temperature should be kept below 40°. The booster charge may misfire if it absorbs moisture). Fire is, of course, forbidden.

2. In the shell body is a cannister containing the special phosporus incendiary. Heat in excess of 100° or rough handling may cause the special phosporus to leak. Hence, it is necessary to handle gently.

3. A temporary cover is attached to the bottom of the motor base plate. It is for protection and water-proofing and should not be removed without cause. However, before firing takes place, it must be removed without fail. The primer may be inserted and firing done without also removing the water-proofing paper, pasted under the temporary cover. (TN: Handwritten note says the water-proofing paper is "cellophane"). (TN: Second handwritten note: The powder with primer attached is fired as is.)

4. The various connections are screwed together. They must be sufficiently tight to avoid disturbance in flight.

5. In case the shell is exposed to rain or falls into water, inspect the inside of the propellant tube; and if there is moisture, it will be necessary to wipe and dry the propellant and the inside of the motor body. However, at this time it is necessary to be careful that the delay element cylinder is screwed tight and does not receive a jolt. (A copper washer is attached to prevent penetration of fire to the bursting charge through the delay element cylinder threads.)

IV Methods of Instruction and Training

A Instruction and training are based on a minutely detailed plan and on the commanding officer's perseverance and spirit. The gun crew, under the officer in charge, and the piece are a unit. The aim should be to achieve the weapon's best combat performance. It is also necessary to cultivate a very vigorous war-like spirit and a steadfast and immovable belief in ultimate victory.

B Concerning plans for instruction, the rocket gun's special characteristics should be made known, and the basic instruction should progress, by degrees, from instruction on each part to that covering the whole plan.

C Training should be based on combat-like conditions. First of all, it is necessary that training be repetitious. Training with actual targets (planes, etc) should be regarded with great importance, and, furthermore, night training should be carried out. In order to get the most out of training, observation of demonstrations and investigation of results should be carried out.

D Training concerning emergency measures to be taken for damage or defects occurring in ordnance should be related to battle experience, so that should such conditions develop in reality, they could be dealt with thoroughly. Further, these measures must become so familiar that they can be carried out quickly and effectively.

V Items to be Observed in Training (TN: This section has been omitted)

Suitable Standard for Method of Firing:

Appropriate Time	Firing Officer's Command	Essentials of Control	Name of Firing Method
Dive Bombing (Small number of planes)	"Diving 'A' Method"	(a) Adjust sight at fixed setting. (b) Correct sighting. (c) When it is ascertained that the enemy planes have begun their dive, track the 2nd or 3rd plane from the leading plane; usually 3 or 4 salvos are fired against each plane. (d) Carry on salvo fire.	Diving 'A' Method
Dive Bombing (Many planes at once)	"Diving 'B' Method"	(a) Follow the "Diving 'A' Method". (b) Continue firing in the neighborhood of the enemy planes' diving point.	Diving 'B' Method
Torpedo Bombing (Small number of planes)	"Torpedo 'A' Method"	(a) Adjust sight at fixed setting. (b) Sight on enemy planes. (c) Carry on salvo fire.	Torpedo 'A' Method
Torpedo Bombing (Many planes)	"Torpedo 'B' Method"	(a) Follow the "Torpedo 'A' Method. (b) Turn to the vicinity of point of enemy torpedo firing; and sight on a horizontal line, firing at about 15° elevation.	Torpedo 'B' Method

(TN: The following is a translation of handwritten notes.)

Sight

1. Auxiliary sight - inaccurate. When it is turned, /the movement/ is transmitted to the traversing recorder.

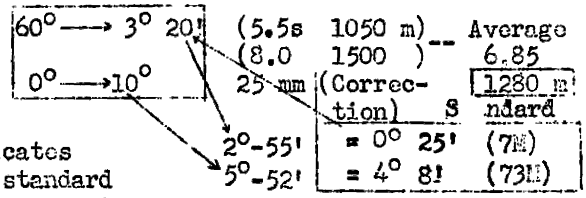
2. Type 4 Auxiliary Director, Model 4

   Characteristics:

   (1) The fuze matcher (TN: match pointer) is not used.
   (2) There is a device for correcting for ship's speed.
   (3) There is a slewing device (TN: ? 土旋加回器)
   (Accelerates traverse and elevation of the launcher.)

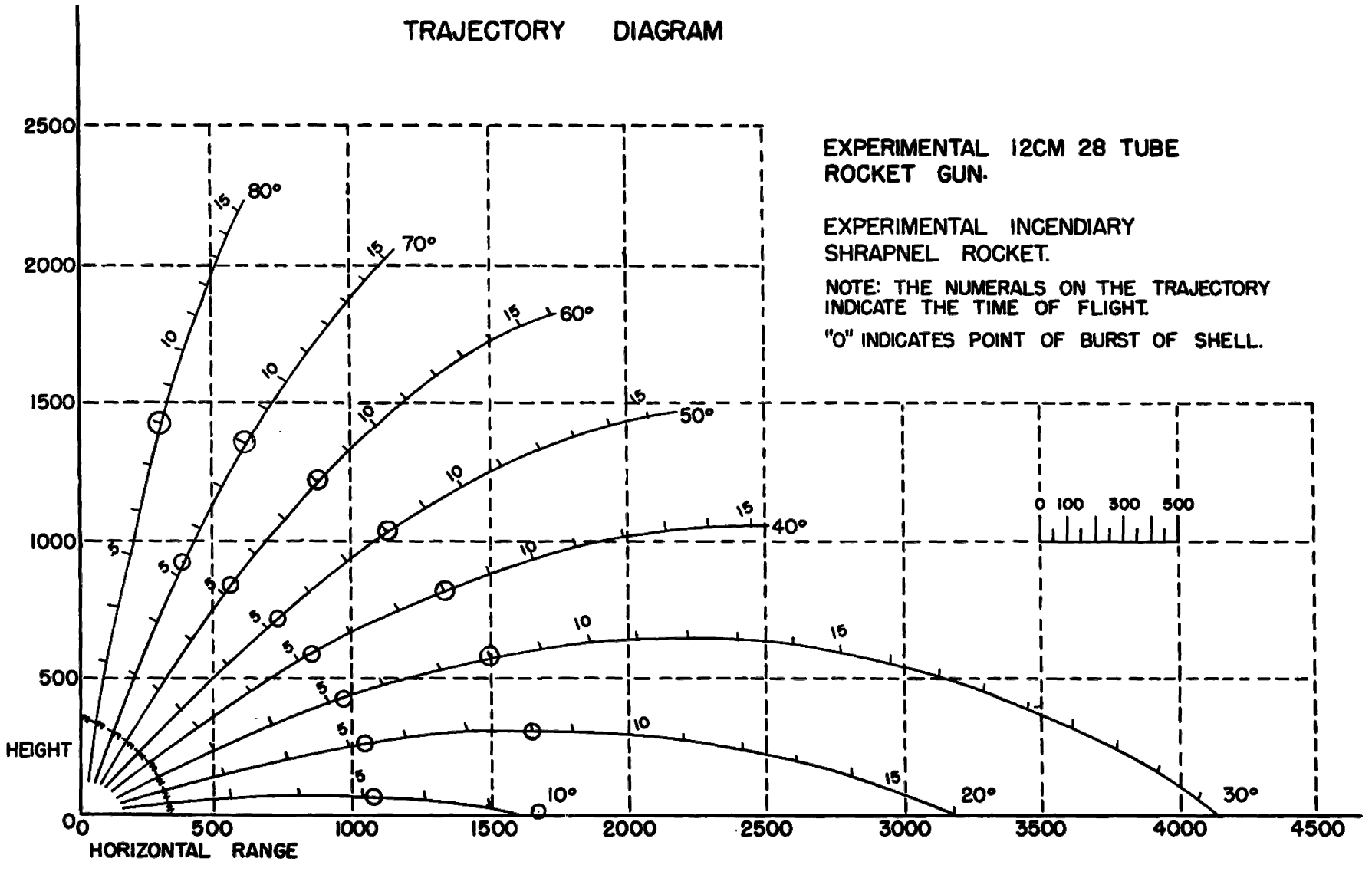
Points of comparison with 25 mm /gun/.

(1) Superelevation (Greater ←——— muzzle velocity less)



(TN: This indicates necessity for standard compensation for greater superelevation of rocket when mount and sight for 25 mm Gun are used.)

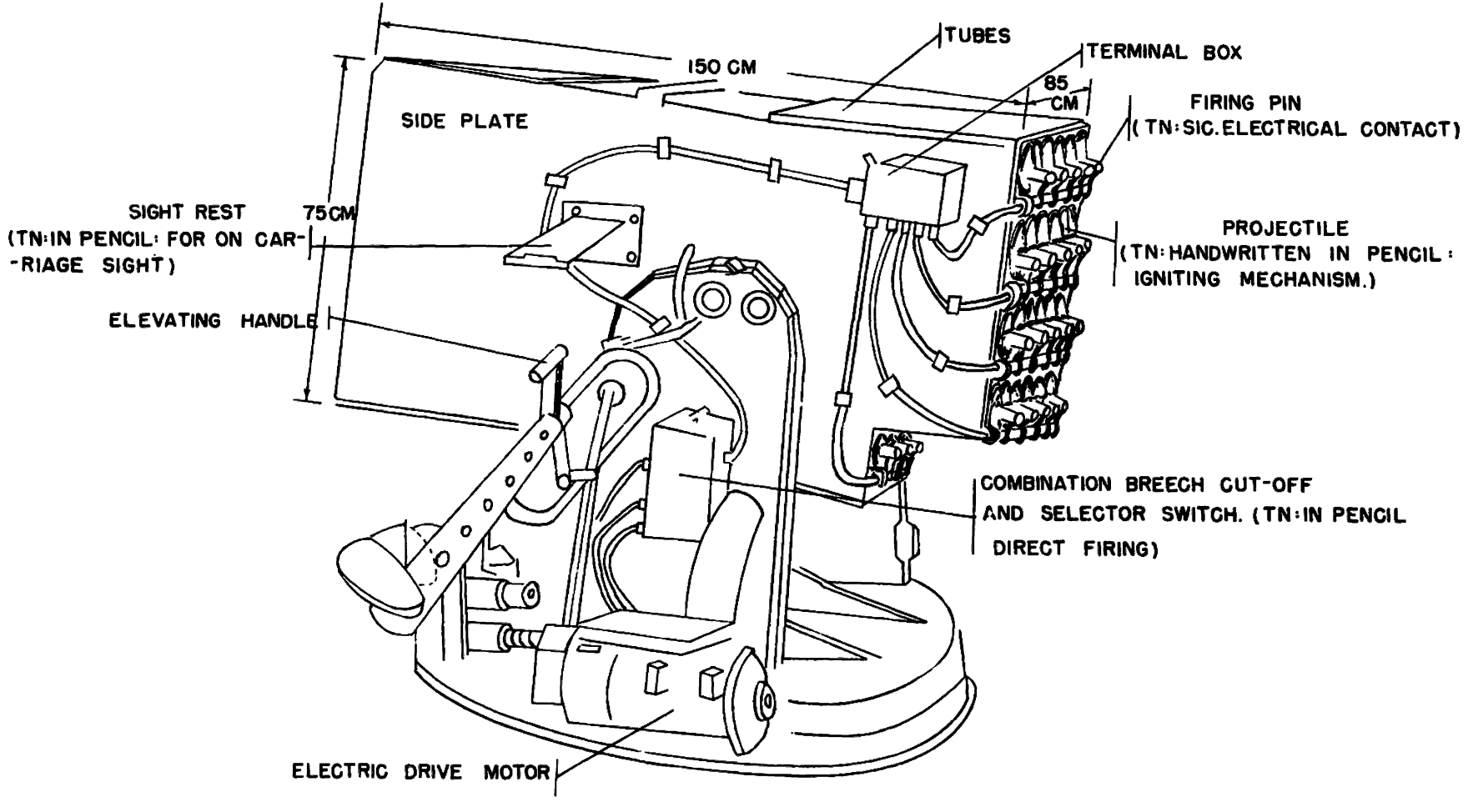
(TN: End of handwritten notes)



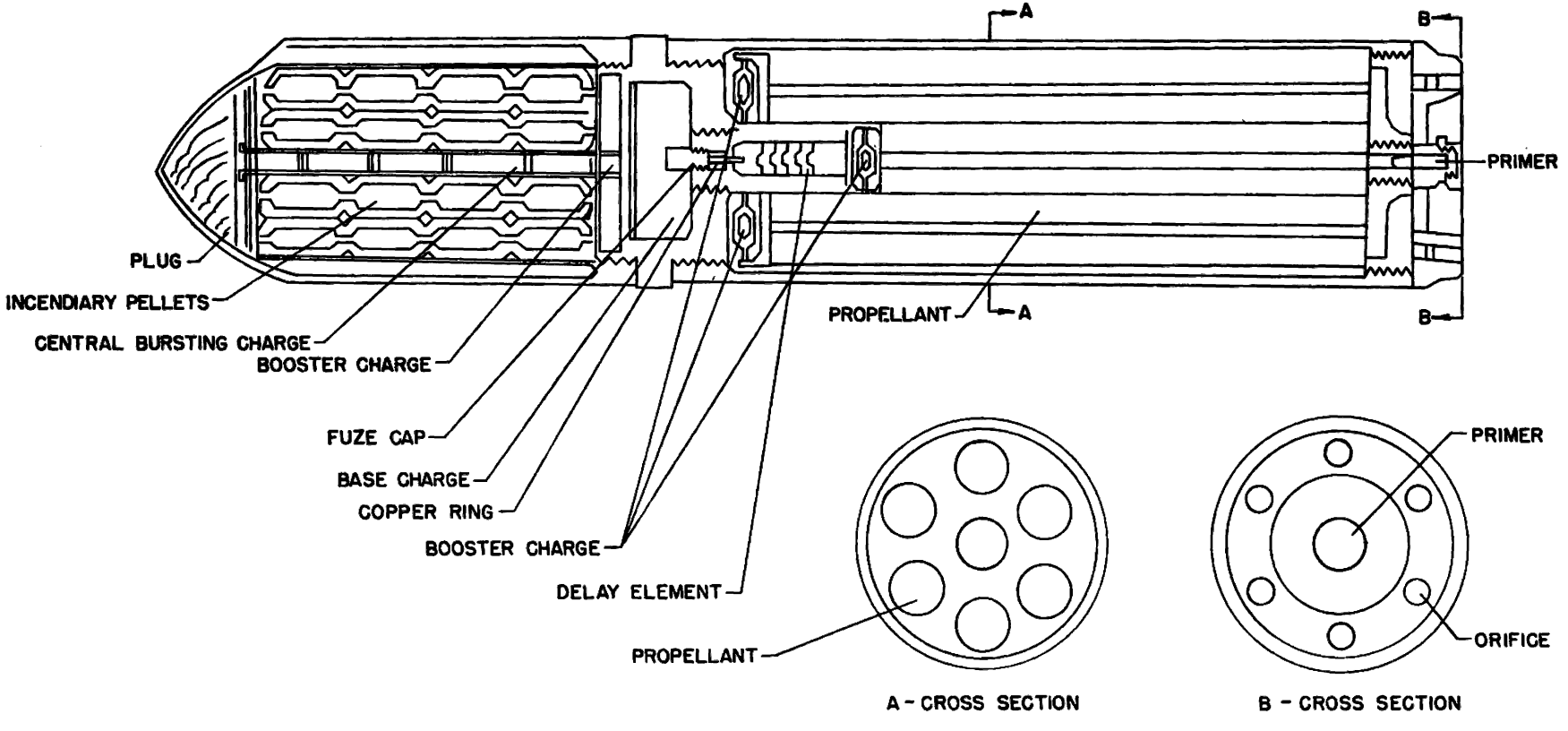
12 CM 28 TUBE ROCKET LAUNCHER

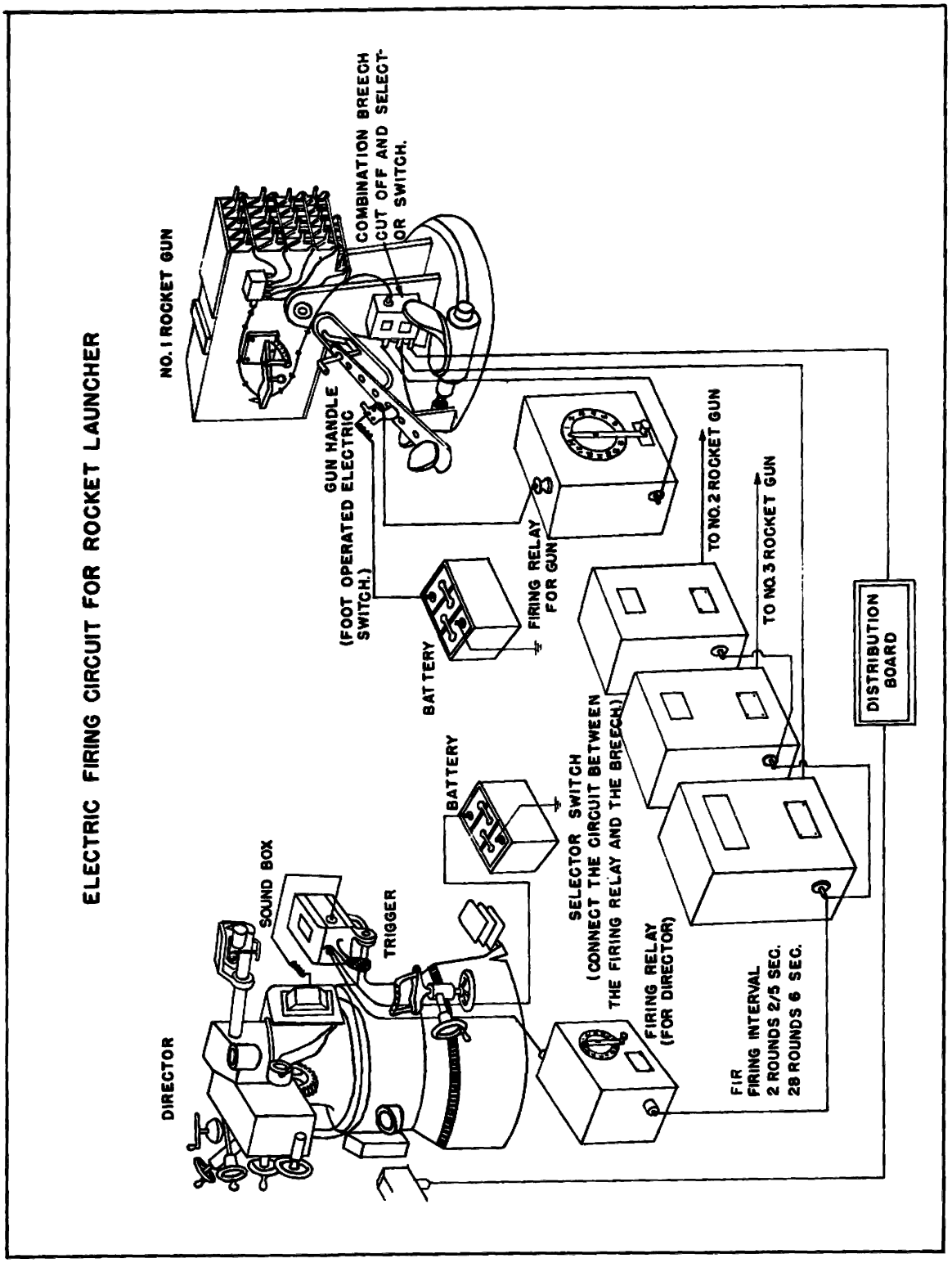
(TN:HANDWRITTEN NOTES: MOUNT FOR 25MM / GUN/ NO RECOIL)

ATTACHED DIAGRAM NO.1



12 CM ROCKET INCENDIARY SHRAPNEL SHELL




ELECTRIC FIRING CIRCUIT FOR ROCKET LAUNCHER
NO. 1 ROCKET GUN
COMBINATION BREECH CUT OFF AND SELECTOR SWITCH.
GUN HANDLE (FOOT OPERATED ELECTRIC SWITCH.)
BATTERY
FIRING RELAY FOR GUN
TO NO. 2 ROCKET GUN
TO NO. 3 ROCKET GUN
DISTRIBUTION BOARD
BATTERY
SELECTOR SWITCH (CONNECT THE CIRCUIT BETWEEN THE FIRING RELAY AND THE BREECH)
FIRING RELAY (FOR DIRECTOR)
FIR
FIRING INTERVAL
2 ROUNDS 2/5 SEC.
28 ROUNDS 6 SEC.
SOUND BOX
TRIGGER
DIRECTOR