

JAPANESE AMMUNITION



1 JULY 1945

RESTRICTED

U. S. NAVY BOMB DISPOSAL SCHOOL
Washington 15, D. C.

1 July 1945

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EXPLANATORY NOTES

A. Japanese Weapons

1. Japanese Army Weapons are generally copies of German or French designs or are developed following their customs.
2. Japanese Navy Weapons are generally copies of British Navy Weapons or are designed in keeping with the principles established by the early British influence.
3. The bore diameters of Japanese Army weapons measure an even number of millimeters (metric system).
4. The bore diameter of Japanese Navy Weapons quite often measures to an even inch in keeping with the English system, though some common Navy guns are designed with a bore diameter in an even number of millimeters.
5. Both Japanese services designate their guns by nominal sizes, usually to the nearest even centimeter. Hence, an Army 75 mm gun may be designated "7 cm", and a Navy 3-inch (76.2 mm) gun, "8 cm". Both services designate the size of guns under 5 cm. by the actual size in millimeters, e.g. 47 mm, 40 mm, 30 mm, 20 mm.

To avoid confusion, ammunition is classified in this book by the nominal bore size of the weapon according to Japanese nomenclature with the actual size given in parenthesis. In Navy ammunition above 5 cm. the actual size is given in both metric and English measurement.

B. Classification of Projectiles

1. Army Projectiles

In the Army section the Japanese nomenclature for projectiles is followed as far as practicable. The Japanese Army terminology is self-explanatory and conforms fairly well with U. S. custom.

Needing some explanation are the terms A.P. and A.P.-H.E.

"A.P." indicates a projectile intended for piercing heavy armor, for example, armor plate of thickness equal to or greater than the caliber of the projectile.

Japanese "A.P." projectiles have an H.E. bursting charge.

"A.P.-H.E." indicates a solid-nosed projectile in general similar to the "A.P.", but designed for much lighter penetration. These carry an H.E. charge approaching that of a standard "H.E." projectile. Hence, the term "A.P.-H.E." is intended to indicate its intermediate status between an "H.E." projectile and a heavy armor-piercing projectile.

"A.P.-H.E." projectiles are painted like "H.E." projectiles, but obviously may be differentiated by their form.

2. Navy Projectiles

The classification and designation of Navy projectiles by the Japanese is highly irregular and cumbersome. Complete and accurate identification of a projectile requires (a) identification of the gun, (b) descriptive nomenclature of the projectile, and (c) mark (or type) and modification number.

Example: 14 cm/50	Ordinary	Type O
(gun)	(General type of Projectile)	(Design number)

For this reason an arbitrary system of nomenclature is used in this book. Japanese Navy nomenclature is given as a sub-title where known.

In Japanese Navy nomenclature all projectiles with a relatively high explosive charge (including light armor-piercing types) are designated TSUJODAN (通常彈) which may be translated either "Ordinary

Projectile" or "Common Projectile". Since this is a composite group including standard High Explosive projectiles as well as light penetrating types, the translation "Ordinary" is used in this book for Japanese designations and the term "Common" is reserved for specific use as a descriptive title for light penetrating types of projectiles (solid nose, base-fuzed) in accordance with the U. S. meaning of "Common".

SECTION I

IDENTIFICATION OF JAPANESE AMMUNITION BY PROPELLANT CASE

A.

6.5 MM. - 20 MM.

ARMY AND NAVY

— ARMY —

6.5MM
SEMI-RIMMED

7.7MM
RIMLESS

7.7MM
SEMI-RIMMED

7.9MM
RIMLESS

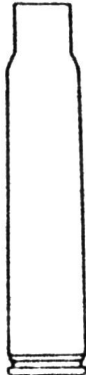
U.S. CAL.30

12.7MM



LGTH=2"
BASE=17/32"

6.5 mm Inf. Rifles
6.5 mm LMGs



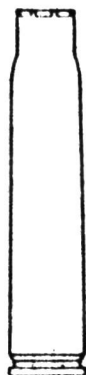
LGTH=2 9/32"
BASE=15/32"

7.7 mm Inf. Rifles
7.7 mm LMGs
7.7 mm FMGs (Alternate)



LGTH=2 1/4"
BASE=1/2"

7.7 mm Type 92 HMG (Standard)
7.7 mm ACMGs



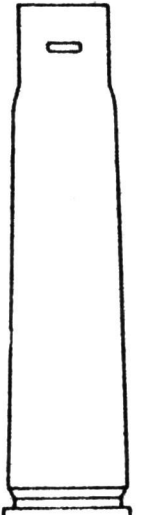
LGTH=2 1/4"
BASE=15/32"

7.9 mm ACMGs



LGTH=2 1/2"
BASE=17/32"

U.S. Fits no Japanese weapon



LGTH=3 3/8"
BASE=3/4"

12.7 mm ACMG

— NAVY —

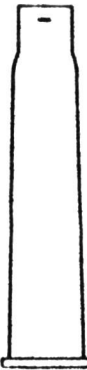
7.7 MM
RIMMED

7.9MM
RIMLESS

13MM

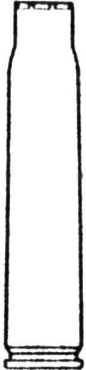
13.2MM

U.S. CAL. 50



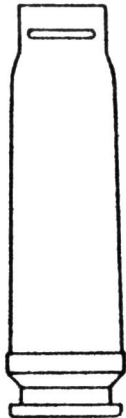
LGTH=2 7/32"
BASE=17/32"

7.7 mm ACMGs



LGTH=2 1/4"
BASE=15/32"

7.9 mm ACMG



LGTH=2 1/2"
BASE=11/16"

13 mm ACMG



LGTH=3 7/8"
BASE=25/32"

13.2 mm Type 3 ACMG
13.2 mm Type 93 AAMG
13.2 mm Type 96 AAMG
Army 13.2 known, but not recovered.



LGTH=3 7/8"
BASE=25/32"

U.S. - Not Interchangeable with Japanese 13.2 mm

— ARMY —
20MM

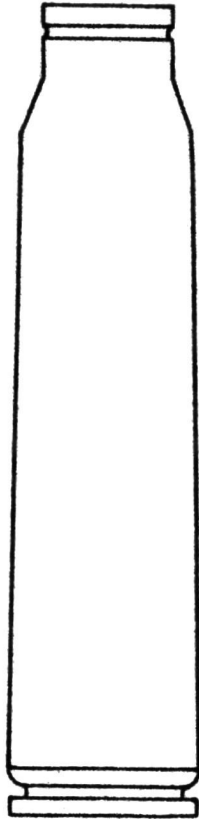
TYPE 98 A.A./ATK. GUN

TYPE 97 ANTI-TANK GUN
FIXED AND FLEX. A.C. CANNON
(HO-1 AND HO-3)

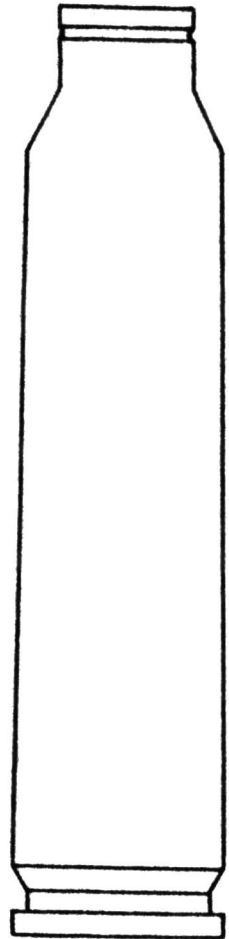
HO-5 A.C. CANNON



LENGTH = 3 11/16"
DIA. OF BASE = 31/32"



LENGTH = 4 29/32"
DIA. OF BASE = 1 1/8"

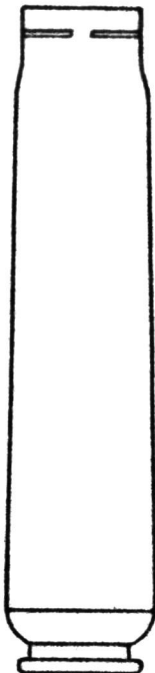


LENGTH = 5 19/32"
DIA. OF BASE = 1 5/16"

— NAVY —
20MM

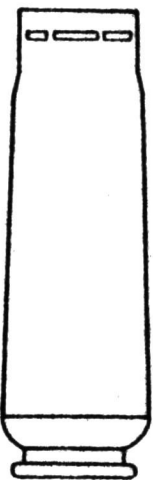
— U.S. —
FOR COMPARISON

TYPE 99 MK. 2
A.C. CANNON

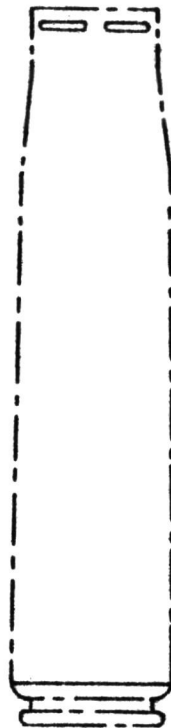


LENGTH = 4"
DIA. OF BASE = 3/4"

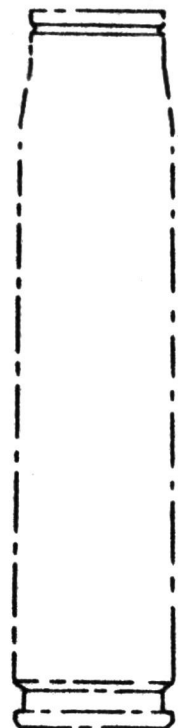
TYPE 99 MK. 1
A.C. CANNON



LENGTH = 2 13/16"
DIA. OF BASE = 3/4"



OERLIKON AA



HISPANO AC

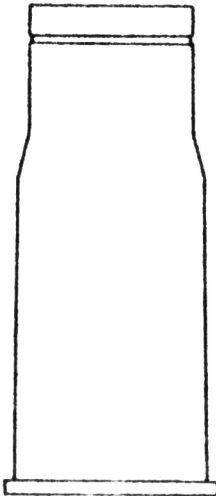
U.S. 20 MM GUNS

B.

ARMY 37 MM. - 30 CM.

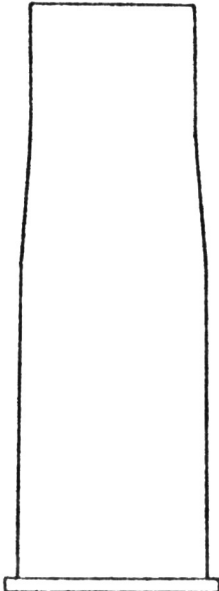
— ARMY —
37MM

TYPE I IYR. INF. GUN
HO 203 A C CANNON



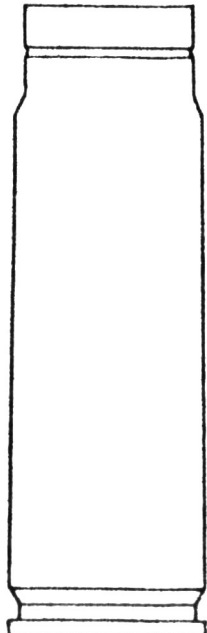
LENGTH = 4 3/8"
DIA. OF BASE = 1 27/32"

TYPE 94 TANK GUN



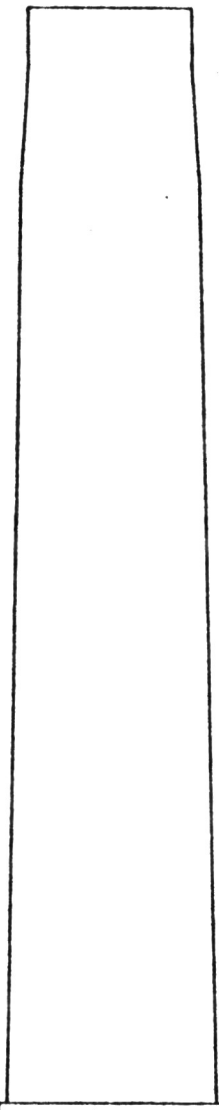
LENGTH = 5 1/4"
DIA. OF BASE = 1 27/32"

HO 204 AC CANNON



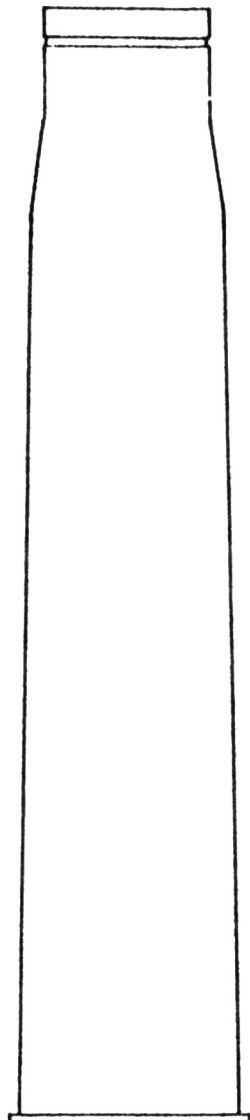
LENGTH = 5 21/32"
DIA. OF BASE = 1 1/2"

TYPE 97 ANTI-TANK GUN
(GERMAN COPY)



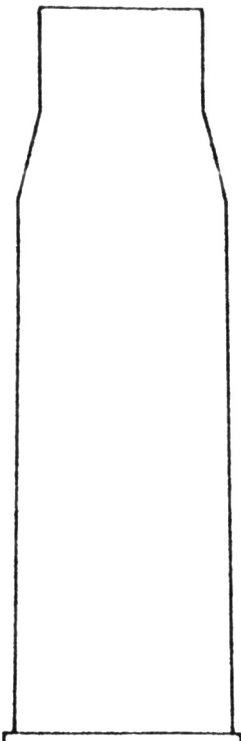
LENGTH = 9 7/8"
DIA. OF BASE = 2 1/32"

TYPE 1 TANK GUN



LENGTH = 9 27/32"
DIA. OF BASE = 2 1/8"

TYPE 94 ANTI-TANK GUN
EXP. TYPE 98 TANK GUN
EXP. TYPE 100 TANK GUN

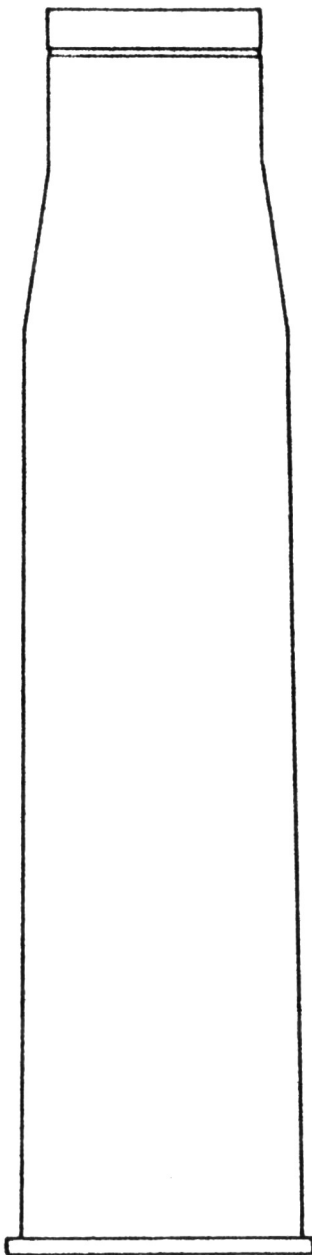


LENGTH = 6 1/2"
DIA. OF BASE = 2 1/8"

— ARMY —

47MM.

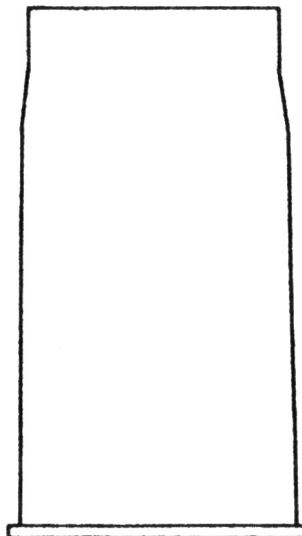
TYPE 1 TANK GUN
TYPE 1 ANTI-TANK GUN



LENGTH = 11 1/8"
DIA. OF BASE = 2 27/32"

57MM.

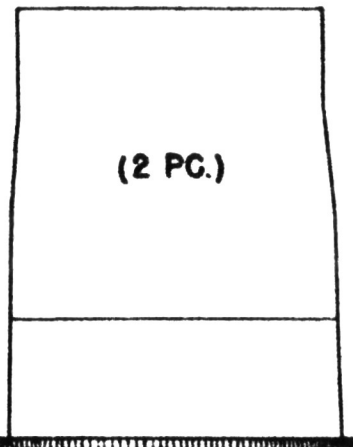
TYPE 90 TANK GUN
TYPE 97 TANK GUN



LENGTH = 4 3/4"
DIA. OF BASE = 2 23/32"

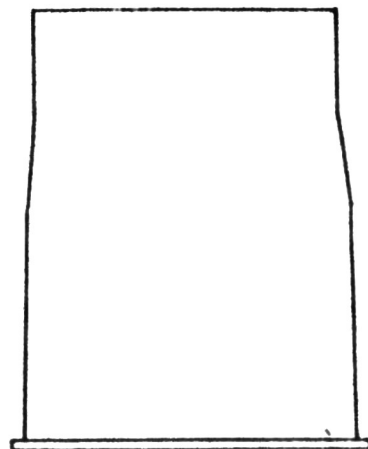
70MM.

TYPE 92 INF. GUN CASE "A"



LENGTH = 3 31/32"
DIA. OF BASE = 3 3/16"

TYPE 92 INF. GUN CASE "B"
TYPE 94 TANK GUN CASE "B"



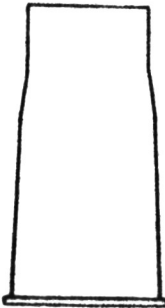
LENGTH = 3 31/32"
DIA. OF BASE = 3 3/16"

— ARMY —

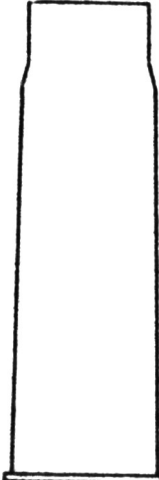
75MM

- TYPE 94 MOUNTAIN GUN
- TYPE 38 FIELD GUN
- MODIFIED TYPE 38 FIELD GUN
- TYPE 41 CAVALRY GUN
- TYPE 95 FIELD GUN
- TYPE 11 YR FIELD/AA GUN

TYPE 41 MOUNTAIN GUN



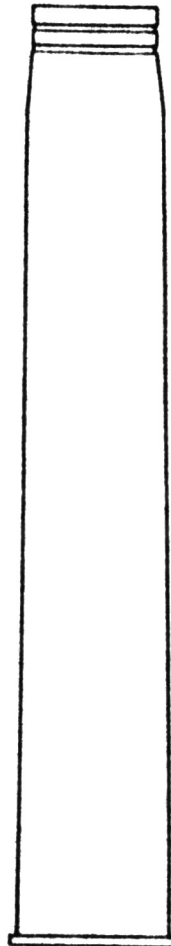
LENGTH = 7 1/4"
 DIA. OF BASE = 3 9/16"



LENGTH = 11 9/16"
 DIA. OF BASE = 3 11/16"

88MM

TYPE 99 AA GUN



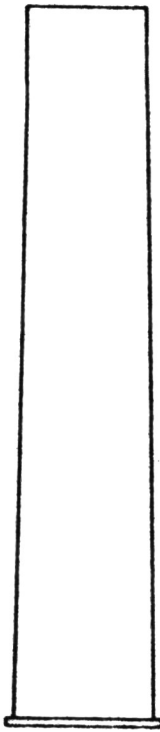
LENGTH = 22 3/8"
 DIA OF BASE = 4"

TYPE 88 FIELD/AA GUN
 TYPE 88 SPECIAL
 FIELD/AA GUN



LENGTH = 19 9/16"
 DIA. OF BASE = 3 11/16"

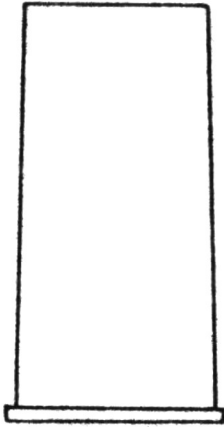
TYPE 90 FIELD GUN



LENGTH = 16 11/16"
 DIA. OF BASE = 3 11/16"

ARMY
105MM

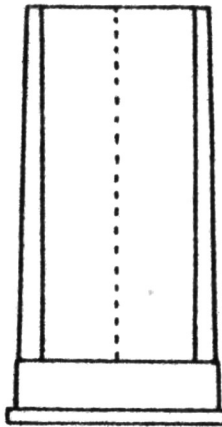
TYPE 91 HOWITZER



BRASS

LENGTH = 9 9/16"
DIA. OF BASE = 4 13/16"

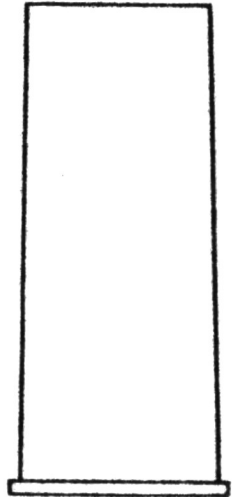
TYPE 91 HOWITZER



STEEL (SECTIONED)

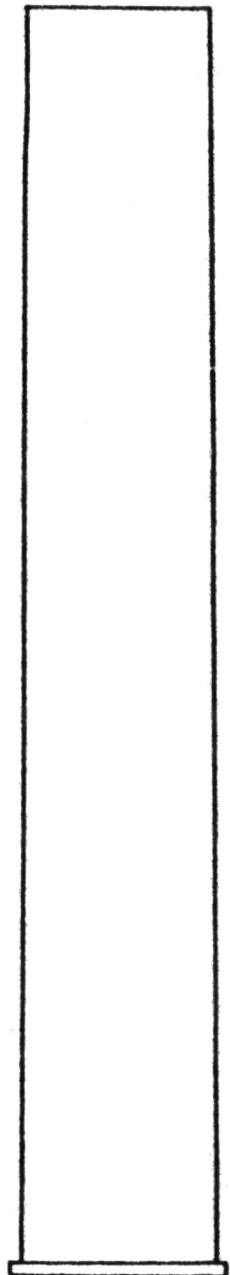
LENGTH = 9 9/16"
DIA. OF BASE = 4 13/16"

TYPE 38 GUN



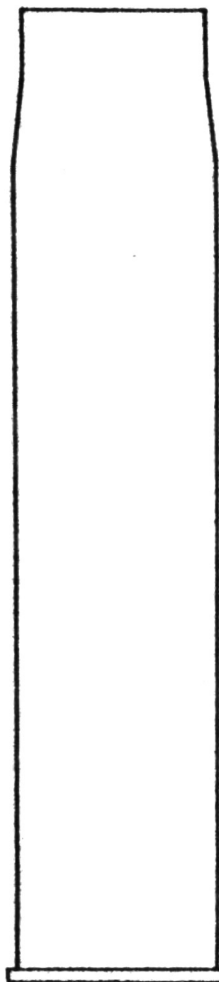
LENGTH = 11 1/8" (APPROX.)
DIA. OF BASE = 4 13/16" (APPROX.)

TYPE 92 GUN



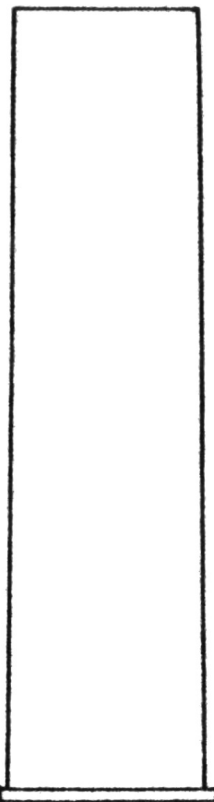
LENGTH = 29"
DIA OF BASE = 4 15/16"

TYPE 14 YR. A A GUN



LENGTH = 22 1/4"
DIA OF BASE = 4 15/16"
(APPROX.)

TYPE 14 YR. GUN

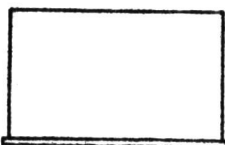


LENGTH = 18 1/8"
(APPROX.)
DIA. OF BASE = 4 15/16"
(APPROX.)

ARMY

120MM

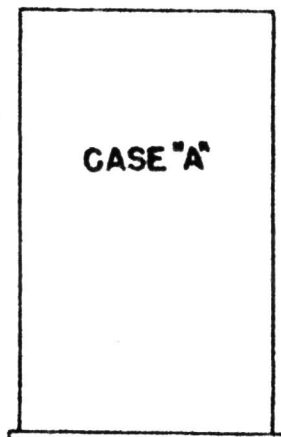
TYPE 38 HOWITZER



LENGTH=3 1/4"
DIA OF BASE = 5 1/2"

TYPE 45 GUN
TYPE 7YR GUN
TYPE 90 GUN

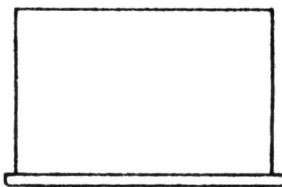
TYPE 4YR. HOWITZER



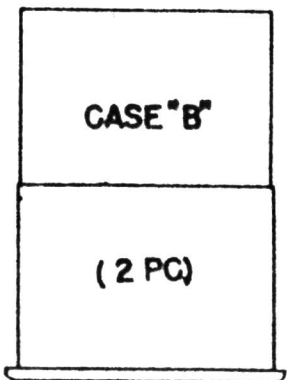
CASE "A"

150MM

TYPE 38 HOWITZER



LENGTH= 4 1/8"
DIA. OF BASE = 6 1/16"

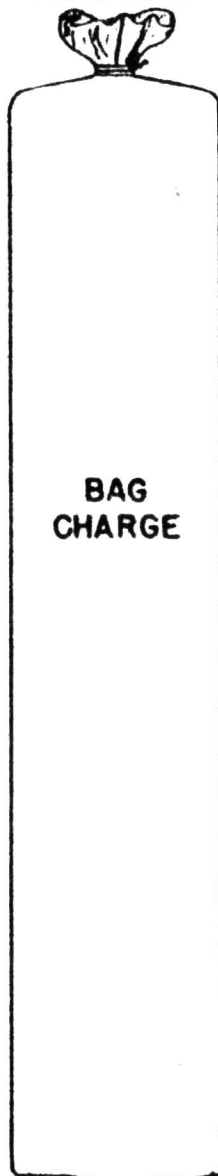


CASE "B"

(2 PC)

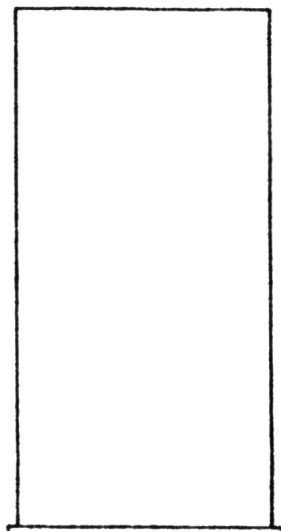
LENGTH= 10 3/16"
DIA. OF BASE = 6 11/16"

TYPE 89 GUN



BAG
CHARGE

TYPE 96 HOWITZER



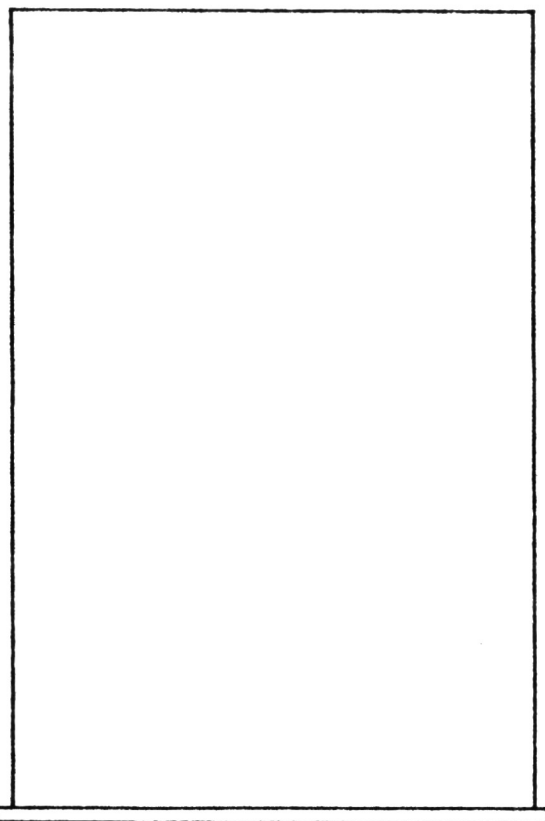
LENGTH=12 5/8"
DIA. OF BASE=6 11/16"

LENGTH=26"(APPROX.)
DIA. OF BASE= 5 1/8"

LENGTH= 47 5/16"
DIA. OF BASE = 7 1/8"(APPROX.)

— ARMY —
30 CM.

TYPE 7 YR. HOWITZER



LENGTH = 19 1/2"
DIA OF BASE = 13 3/16"

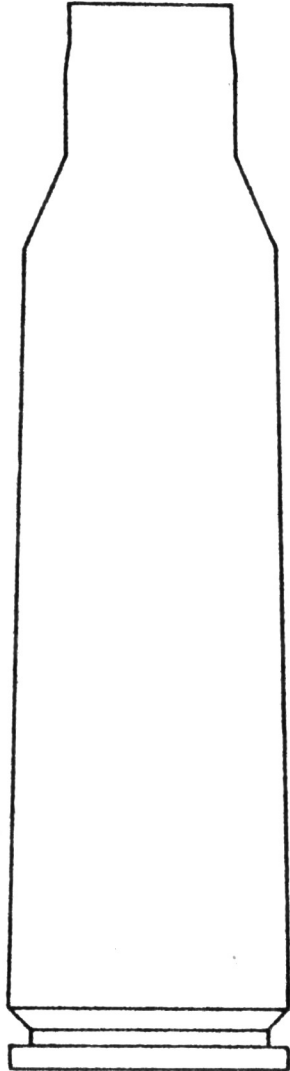
C.

NAVY 25 MM. - 20 CM.

NAVY

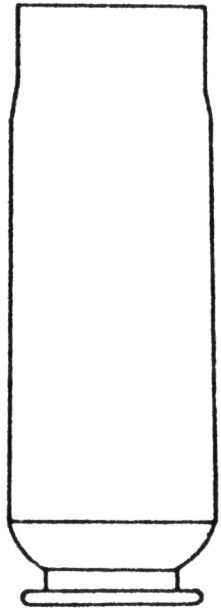
25 MM

TYPE 96 A.A GUN
LENGTH = 6 7/16"
DIA. OF BASE = 1 11/16"



30MM

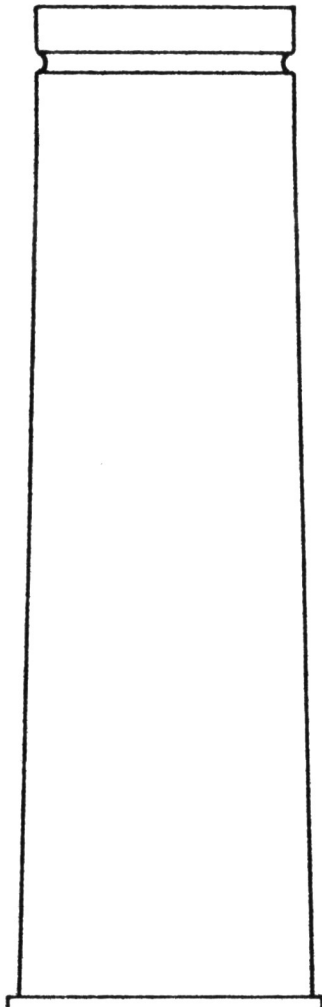
TYPE 2 A.C. CANNON



LENGTH = 3 5/8"
DIA. OF BASE = 1 1/8"

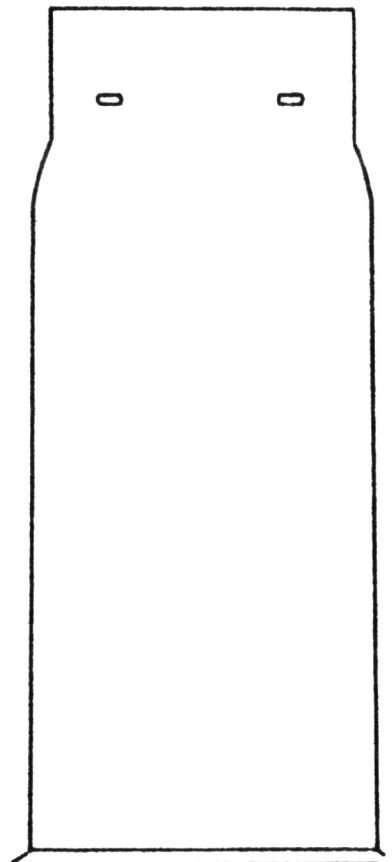
40MM

40MM AUTO AA
(BRITISH COPY)
LENGTH = 6 1/8"
DIA. OF BASE = 1 7/8"



5CM.(47MM)

SHORT 5 CM. GUN

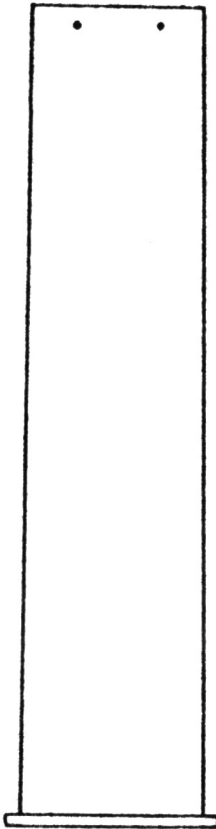


LENGTH = 5 3/32"
DIA OF BASE = 2 3/8"

—NAVY—

8CM.(3 INCH)
SEMI-FIXED

BRITISH ARMSTRONG GUN
(BRITISH OR JAPANESE MANUFACTURE)



LENGTH = 15 1/16"
DIA. OF BASE = 4 1/8"

10CM.(3.9 INCH)
FIXED

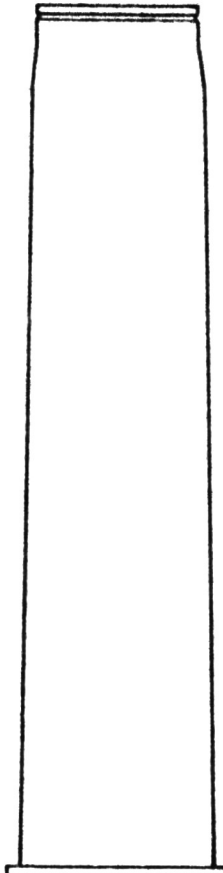
TYPE 98 HIGH ANGLE (AA) GUN



LENGTH = 32 7/8" (APPROX.)
DIA. OF BASE = 6 13/16"

8CM.(3 INCH) FIXED

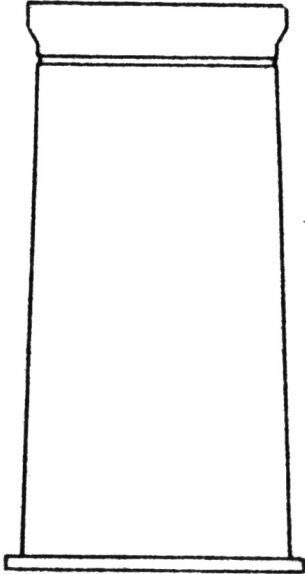
TYPE 3YR. HIGH ANGLE (AA) GUN



LENGTH = 16 1/16"
DIA. OF BASE = 4 1/8"

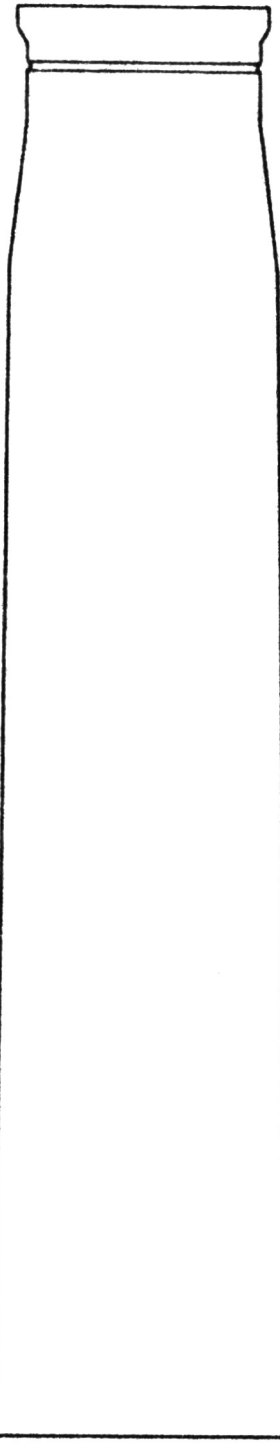
NAVY

12CM.
SHORT FIXED
SHORT 12CM.GUN



LENGTH = 11 3/16"
DIA. OF BASE = 5 13/16"

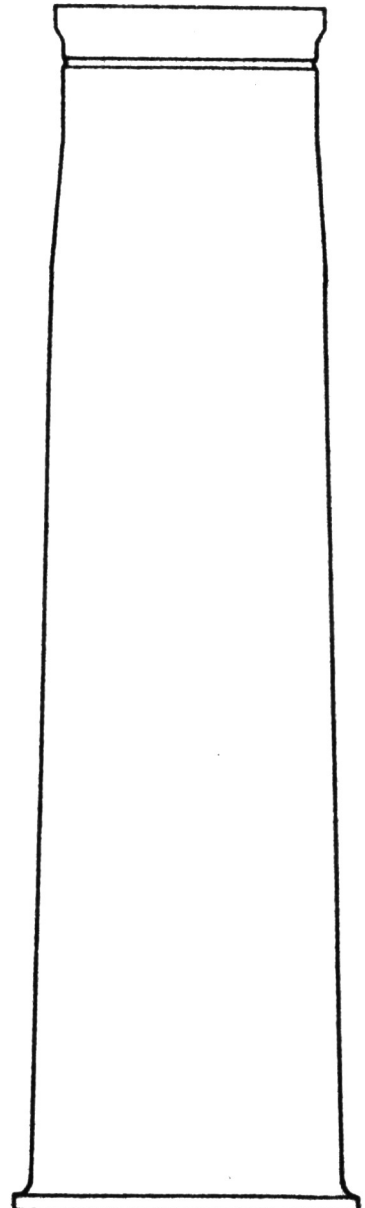
12CM.
FIXED-A.A.
TYPE 10YR.HIGH
ANGLE(AA)GUN



LENGTH = 26 15/16"
DIA. OF BASE = 6 1/4"

12.7CM.(5 INCH)
FIXED

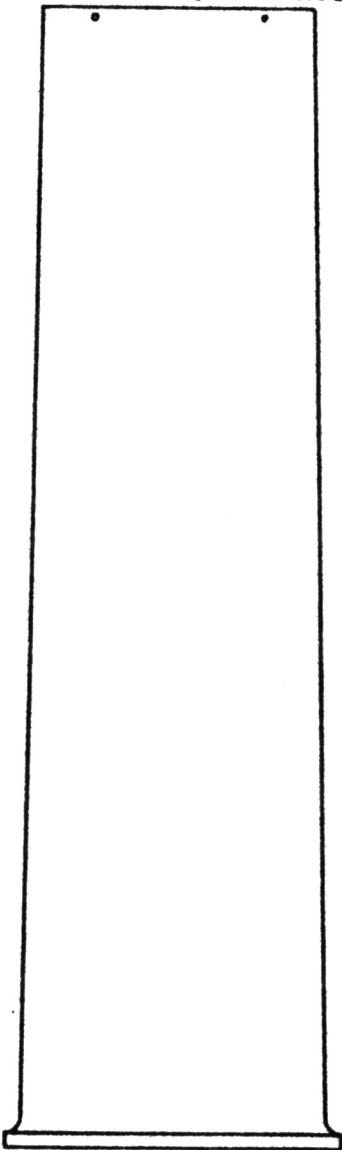
TYPE 89 HIGH
ANGLE(AA)GUN



LENGTH = 22 7/8"
DIA. OF BASE = 6 21/32"

SEMI-FIXED

BRITISH ARMSTRONG TYPE
TYPE 3 YR GUN (LOW ANGLE)



LENGTH = 21 5/8"
DIA. OF BASE = 6 3/8"

14 CM. BAG

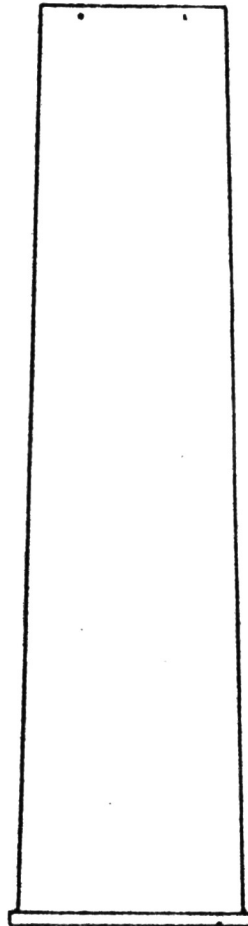
TYPE 3YR 14CM/50 GUN
(LOW ANGLE)



LENGTH = 28"
DIA. OF BASE = 5"

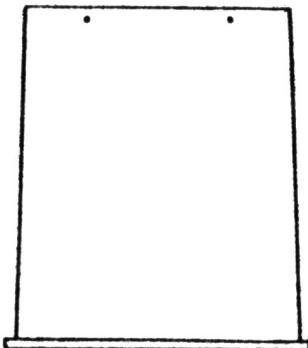
15 CM. SEMI-FIXED

TYPE 4I (MEIJI) 15 CM/40 GUN
(LOW ANGLE)



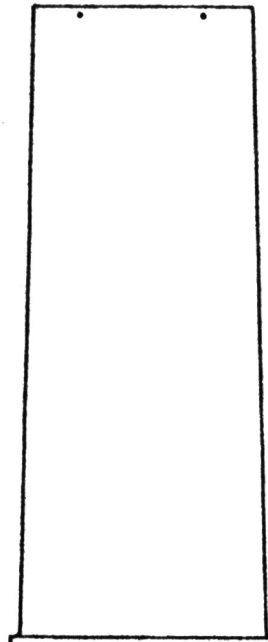
LENGTH = 29 1/2"
DIA. OF BASE = 7 3/4"

SHORT 20 CM.
SEMI-FIXED
SHORT 20 CM. GUN



LENGTH = 11"
DIA. OF BASE = 9"

UNIDENTIFIED
SEMI-FIXED



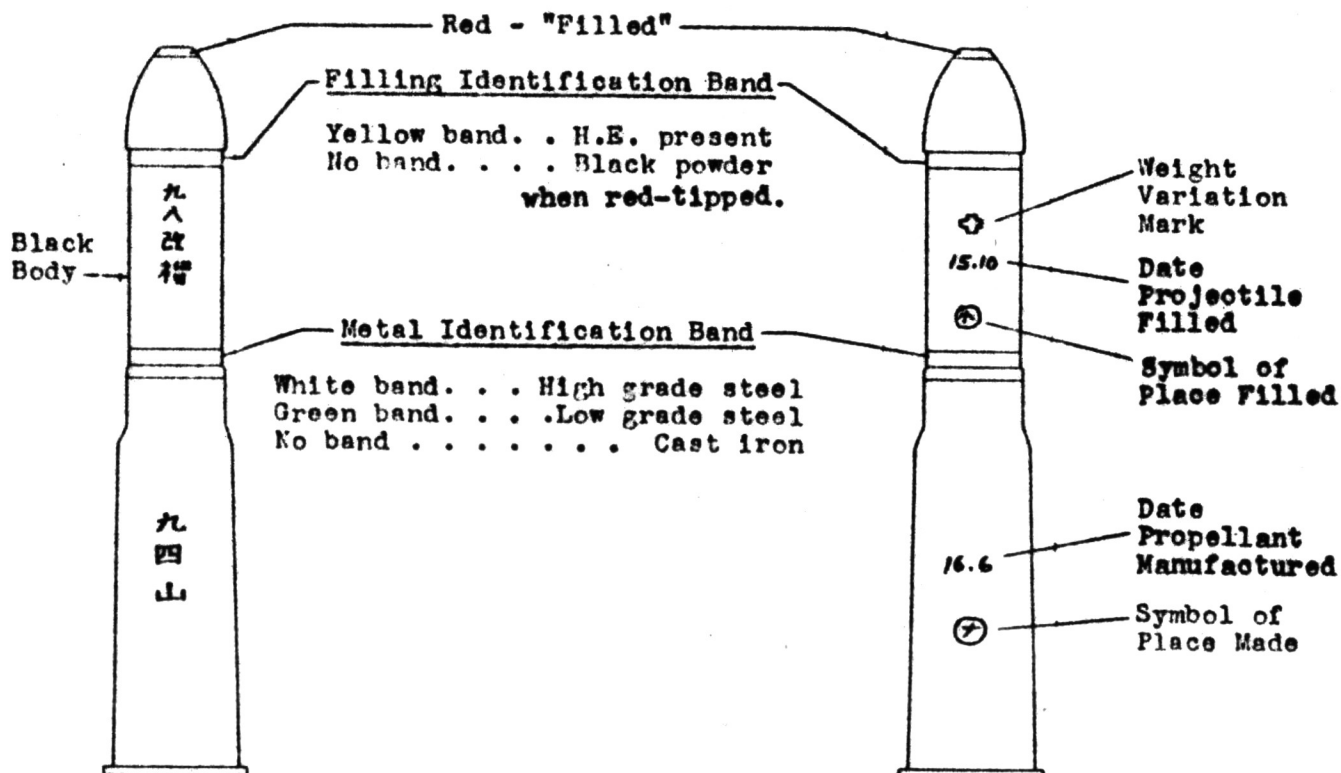
LENGTH = 20 1/2"
DIA. OF BASE = 7 1/2"

SECTION II

JAPANESE ARMY AMMUNITION

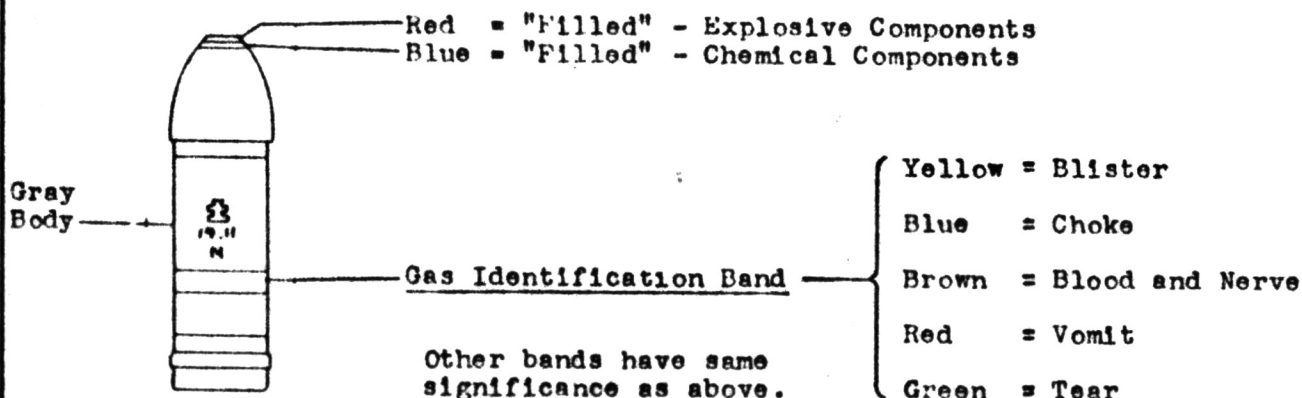
ARMY - OLD COLOR SYSTEM

COMMON EXPLOSIVE TYPES



Japanese characters giving the type number of the projectile (painted on projectile) and type number of the gun (painted on the case) appear only when there is chance of confusion with similar projectiles or cases.

CHEMICAL (GAS OR LIQUID FILLED) PROJECTILES



SPECIAL PURPOSE PROJECTILES

Information is lacking on the painting of special purpose projectiles in the old system. It is believed that these do not follow the same body color code that is known for the new system. A recovered 150 mm Smoke (W.P.) projectile painted according to the old system had a body color of black whereas in the new system this type is painted white.

WEIGHT VARIATION MARKING

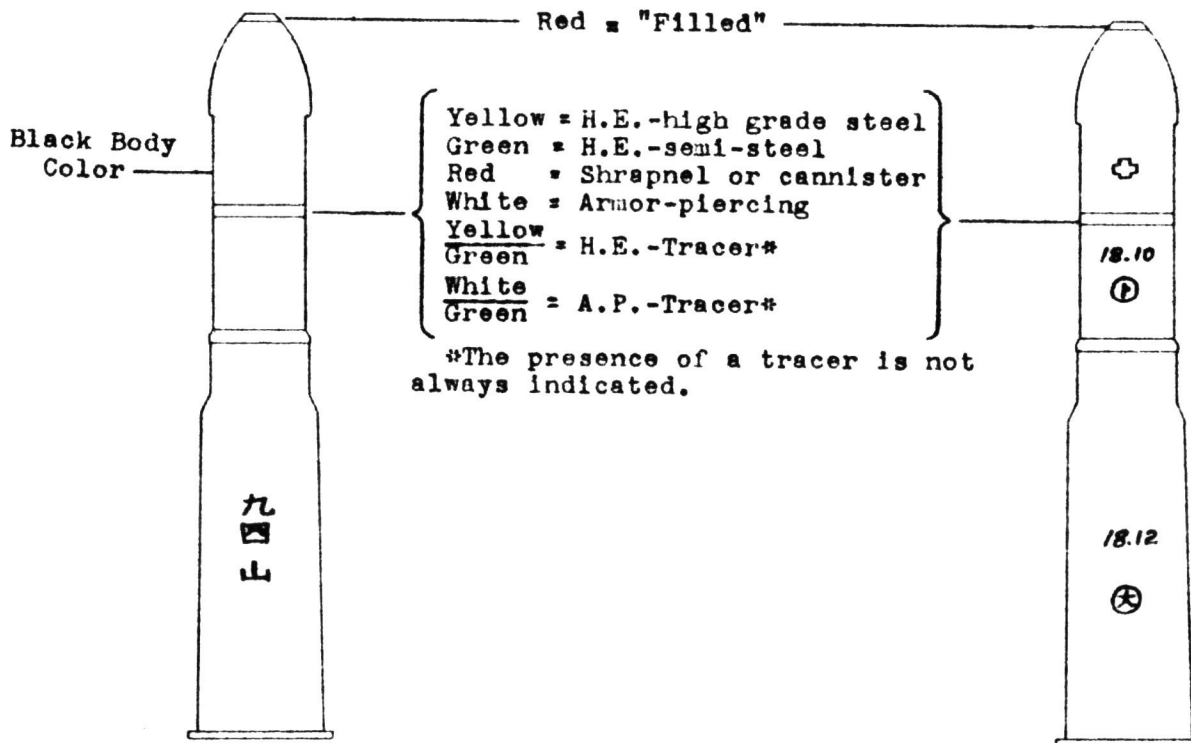
The variation of individual projectiles from standard weight is important in the ballistics problem and can be corrected for in setting sights. The variation is therefore indicated by plus or minus signs painted on the projectile.

Over weight	++	-----	1.5% to 2.5% overweight
	+	-----	0.5% to 1.5% overweight
Standard weight	±	-----	0.5% plus or minus
	-	-----	0.5% to 1.5% underweight
Under weight	--	-----	1.5% to 2.5% underweight

ARMY - NEW COLOR SYSTEM

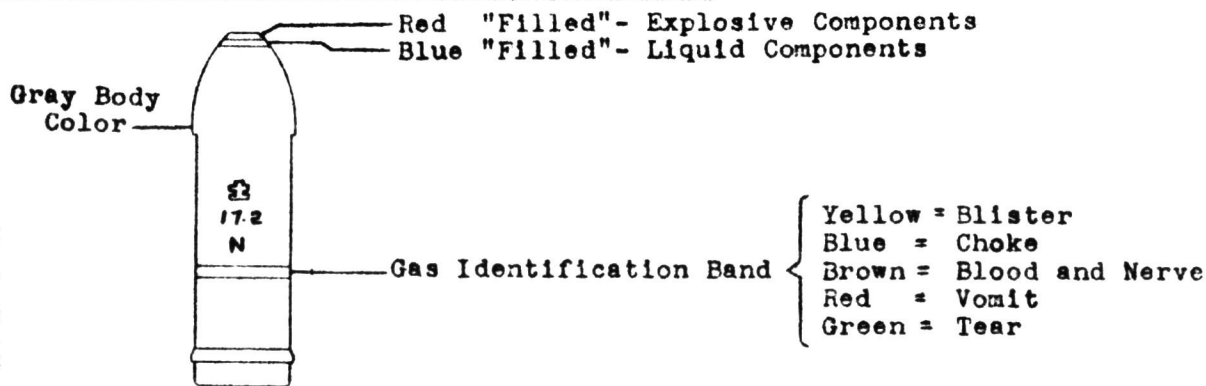
The new system is based on the old system, but is designed as a simplification in which fewer color bands are used. Body color of projectiles distinguishes broad groups. Color bands designate more specific features. The use of accessory markings such as type numbers, weight marks, dates, and arsenal symbols is the same in both systems.

COMMON EXPLOSIVE TYPES



Hollow charge ammunition is distinguished from other types in the H.E.-high grade steel (yellow band) group by the presence of the symbol "夕".

CHEMICAL (GAS OR LIQUID FILLED) PROJECTILES



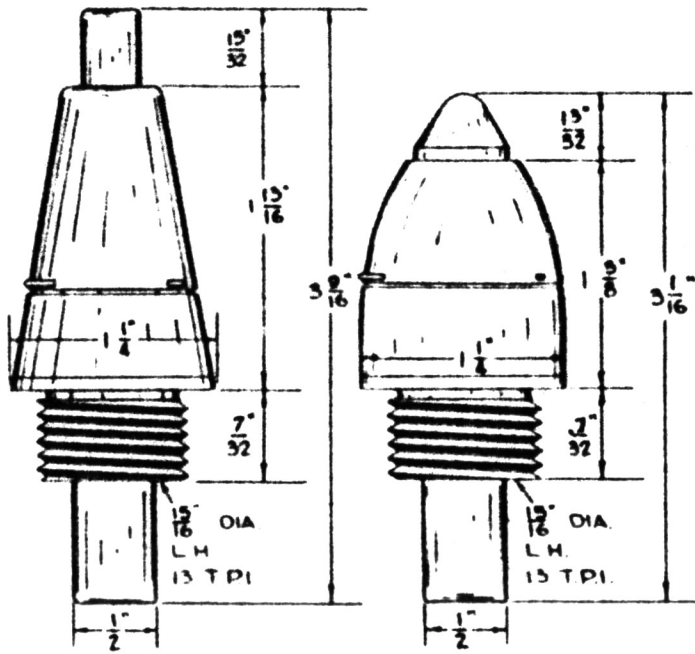
SPECIAL PURPOSE PROJECTILES

Projectiles designed for special purposes as listed below are identified by the overall body color and by a special symbol stencilled near the middle of the body.

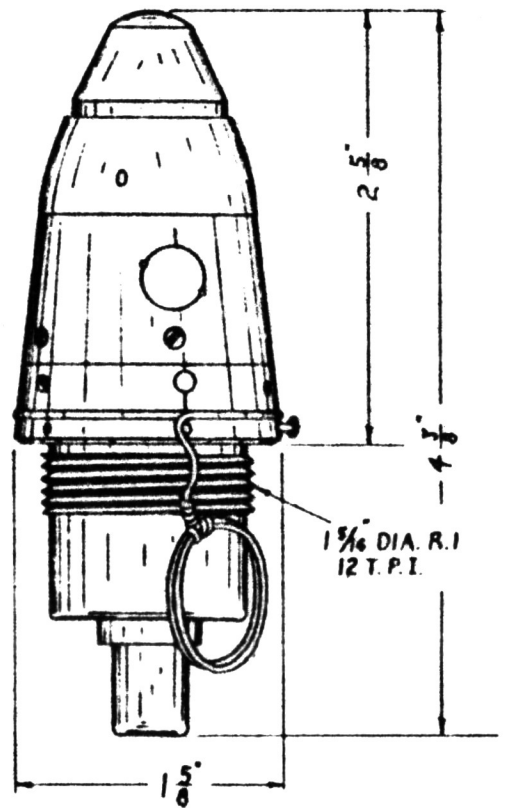
PROJECTILE	COLOR OF BODY	SYMBOL
Smoke (Signal or Screening)	White	夕
Incendiary (Non-Liquid)	Yellow	ヤ
Illuminating	Red	ア
Target	Black	モ
Sand-filled	Black	ス

JAPANESE ARMY PROJECTILE NOSE FUZES

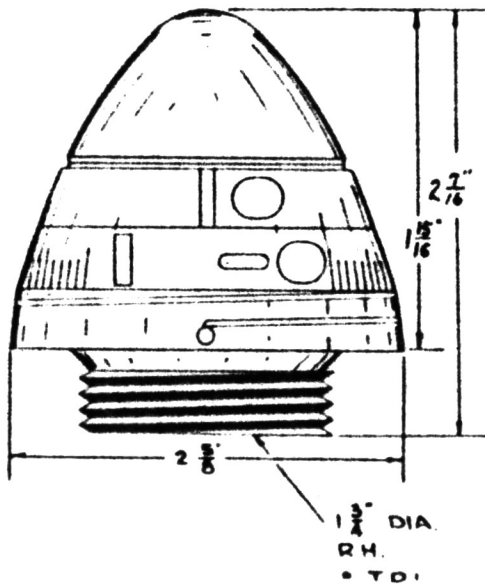
TYPE 88
INSTANTANEOUS DELAY



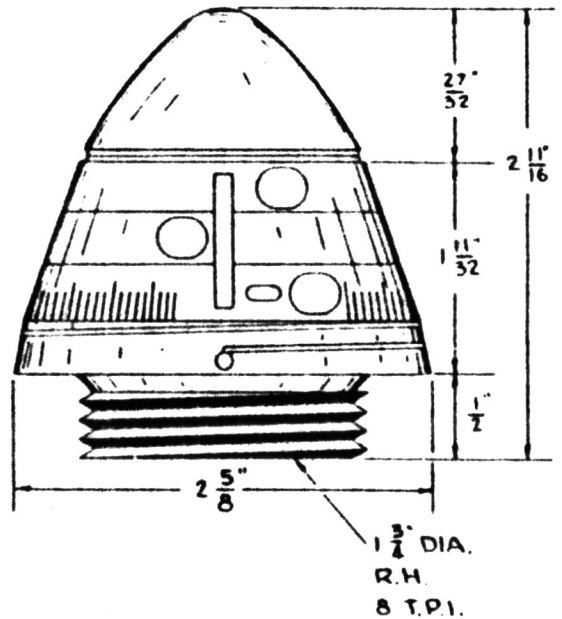
TYPE 90 SELECTIVE FUZE



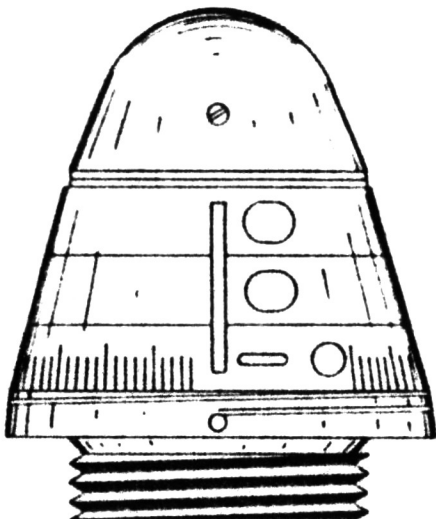
TYPE 3 YR.—COMBINATION
(22 SEC)



TYPE 5 YR.—COMBINATION
(36 SEC.)



TYPE 10 YR.—POWDER TIME



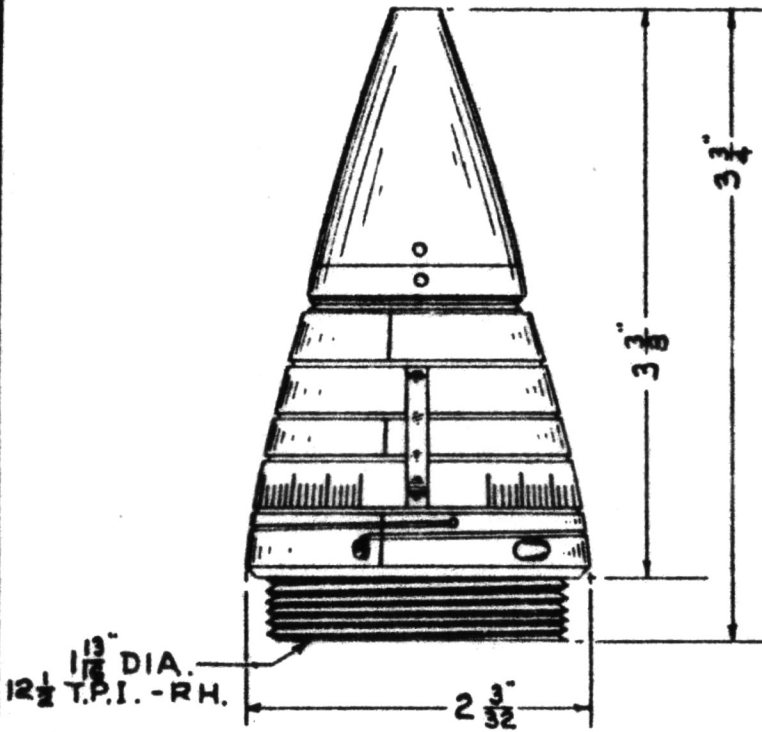
Provisional Drawing
No dimensions available.

Weights:

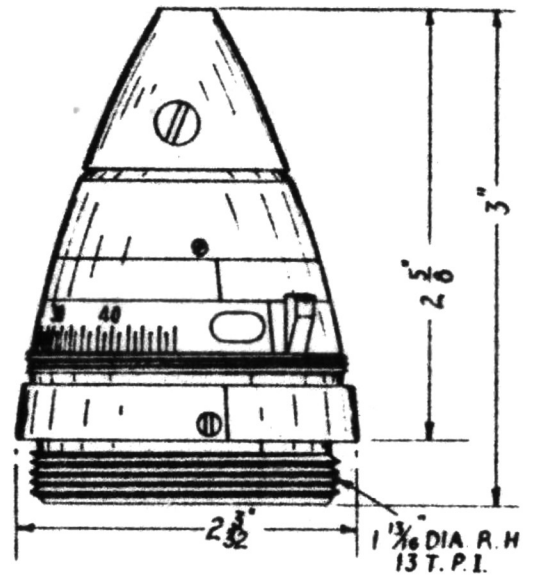
- Type 88 Instantaneous....170 grams (.39 lb.)
- Type 88 Delay.....177 grams (.41 lb.)
- Type 3 Yr. Combination...565 grams (1.25 lb.)
- Type 5 Yr. Combination...805 grams (1.77 lb.)
- Type 10 Yr. Powder Time..No data
- Type 90 selective.....468 grams (1.03 lb.)

JAPANESE ARMY PROJECTILE NOSE FUZES

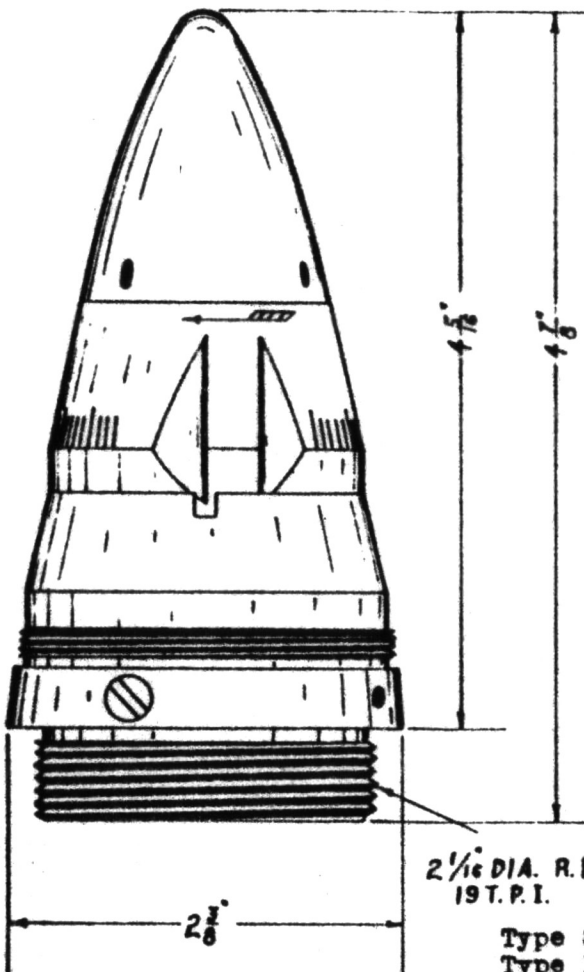
**TYPE 89 - POWDER TIME
(30 SEC.)**



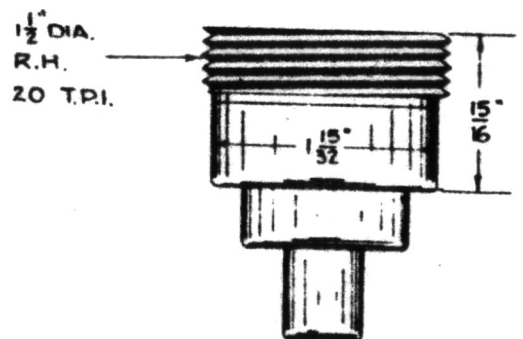
**TYPE 2 POWDER TIME
AND IMPACT**



**TYPE 100 MECHANICAL
TIME AND IMPACT**



**AUXILIARY DETONATING
FUZE**



**THIS FUZE IS USED
IN CONJUNCTION
WITH THE THREE
FUZES SHOWN**

Weights

- Type 89 Powder Time.....681 grams (1.75 lb.)
- Type 100 Mechanical.....524 grams (1.16 lb.)
- Type 2 Powder Time.....553 grams (1.22 lb.)
- Auxiliary for Type 89.....No data

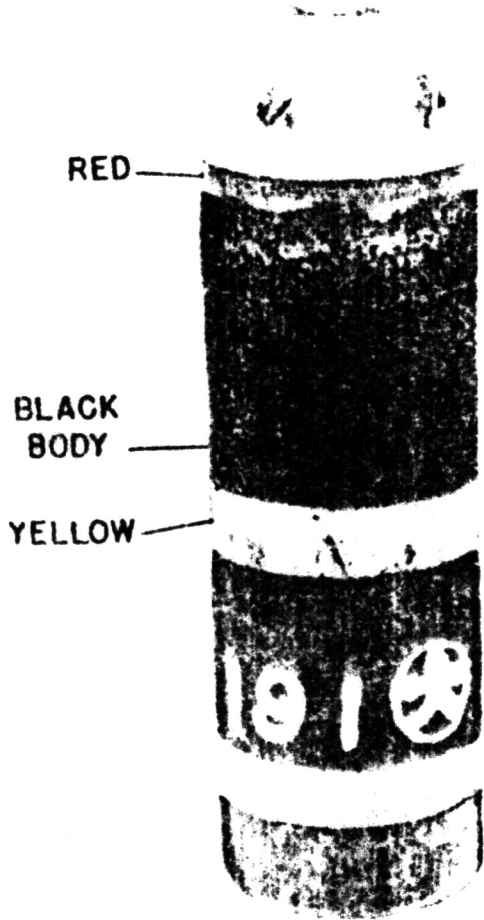
Pages 23 - 100 (inclusive) are omitted in the initial publication of "Japanese Ammunition" to allow for the inclusion at a later date of further general information on Army Ammunition and for treatment of sizes under 40 mm.

ARMY

40 MM. AND ABOVE

ARMY 40 MM. HIGH EXPLOSIVE

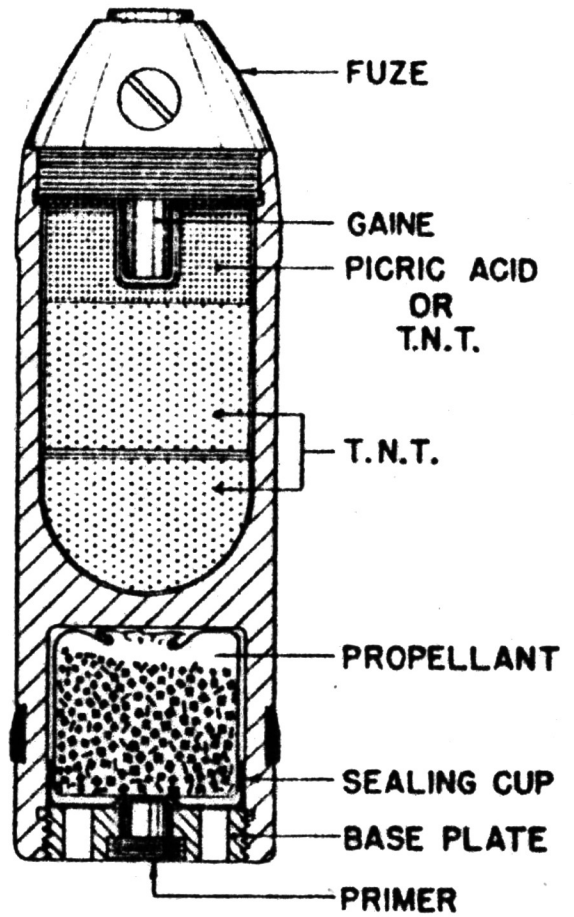
COMPLETE ROUND FOR A. C. CANNON HO-301



RED

BLACK
BODY

YELLOW



FUZE

GAINE
PICRIC ACID
OR
T.N.T.

T.N.T.

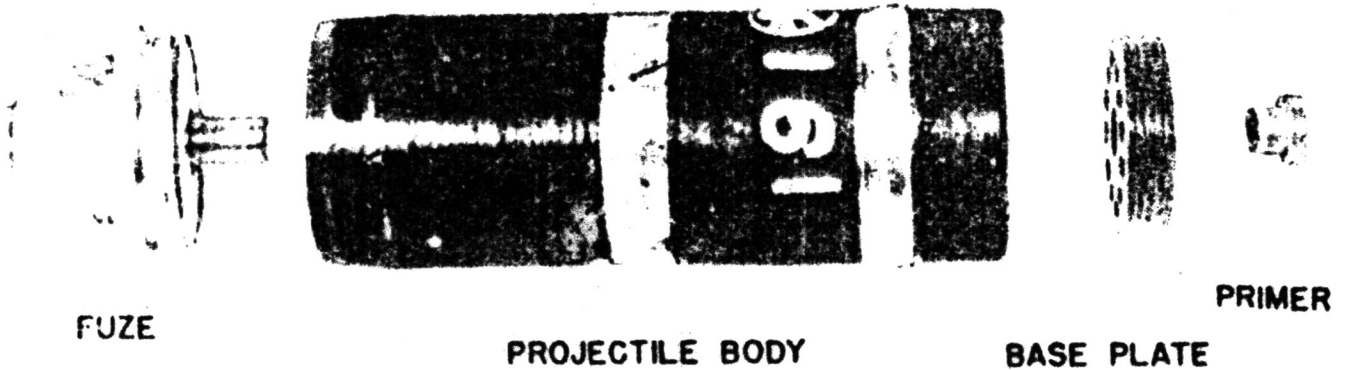
PROPELLANT

SEALING CUP

BASE PLATE

PRIMER

COMPLETE ROUND



FUZE

PROJECTILE BODY

BASE PLATE

PRIMER

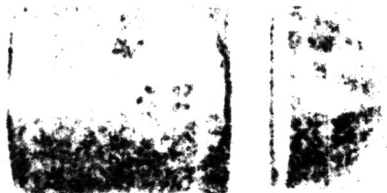
SHIPPING PLUG

HIGH EXPLOSIVE CHARGE

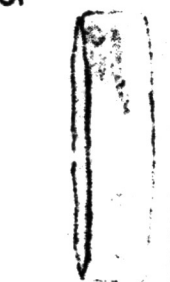
SEALING CUP



PAPER
DISCS



PROPELLANT



MOISTURE
PROOF
CAP

HIGH EXPLOSIVE

ARMY
40 MM.
HO-301

WEIGHTS:

Weight complete round fuzeed	1 lb. 4.7 oz.
Weight H.E. charge	2 oz.
Weight propellant	0.4 oz. (10 grams)
Weight of primer	0.1 oz.
Weight of fuze, with gaine	2.1 oz.
Weight of gaine	0.2 oz.

PROJECTILE DIMENSIONS:

Length of projectile fuzeed	5-3/32 in.
Length of projectile w/o fuze	4-1/4 in.
Distance base to rotating band (lower edge)	19/32 in.
Width of rotating band	5/16 in.
Diameter of rotating band	1-5/8 in.
Diameter of body	1-17/32 in.
Diameter of bourrelet	1-9/16 in. (39.5 mm)
Width of bourrelet	1/4 in.
Distance base to bourrelet (lower edge)	3-19/32 in.
Wall thickness (propellant chamber)	13/64 in.
Wall thickness (H.E. chamber)	9/64 in.

PRIMER DIMENSIONS:

Primer length	11/32 in.
Primer diameter (threads)	15/32 in.
Primer T.P.I.	34 L.H.

FILLING:

The high explosive charge consists of two paper-wrapped units. The forward unit is composed of two pellets: a ring pellet surrounding the gaine and a solid pellet below the ring pellet. The after unit consists of a single hemispherical pellet. Some of the pellets appear to have been pressed or poured in a graphited mold and as a result bear a heavy coat of graphite on the surface of the explosive. The paper wrappers on the explosive charge are marked "T.N.T." (Chakatsu). In some specimens the whole charge was T.N.T., but in others, the ring pellet around the gaine was found to be picric acid. The use of picric acid may be a modification made to insure complete detonation of the projectile.

PROPELLANT:

The propellant consists of small, greenish-gray, square flakes of smokeless powder (approx. 1 mm sq.) enclosed in a silk bag which is inserted in the after cavity of the projectile. A sealing cup of thin aluminum fits around the after end of the propellant bag and the charge and cup are held in by a perforated base plate which screws (L.H.) into the base of the cavity. The base plate has an outer ring of twelve 3/16-inch holes and a central hole threaded (L.H.) to receive the small flush primer. The aluminum sealing cup is perforated by a single hole in the center to permit the flash from the primer to reach the propellant. The force of the propellant gases blows thru the aluminum cup to open the main series of holes.

FUZE:

This is a simple direct-acting nose fuze with a central axial striker held in the unarmed condition by a slotted safety block which in turn is held by two spring-loaded detents. On firing, both detents and slide move outward due to centrifugal force leaving the striker free to drive into the primer of the gaine on impact.
Fuze threads 1-11/32 R.H. 26 T.P.I.

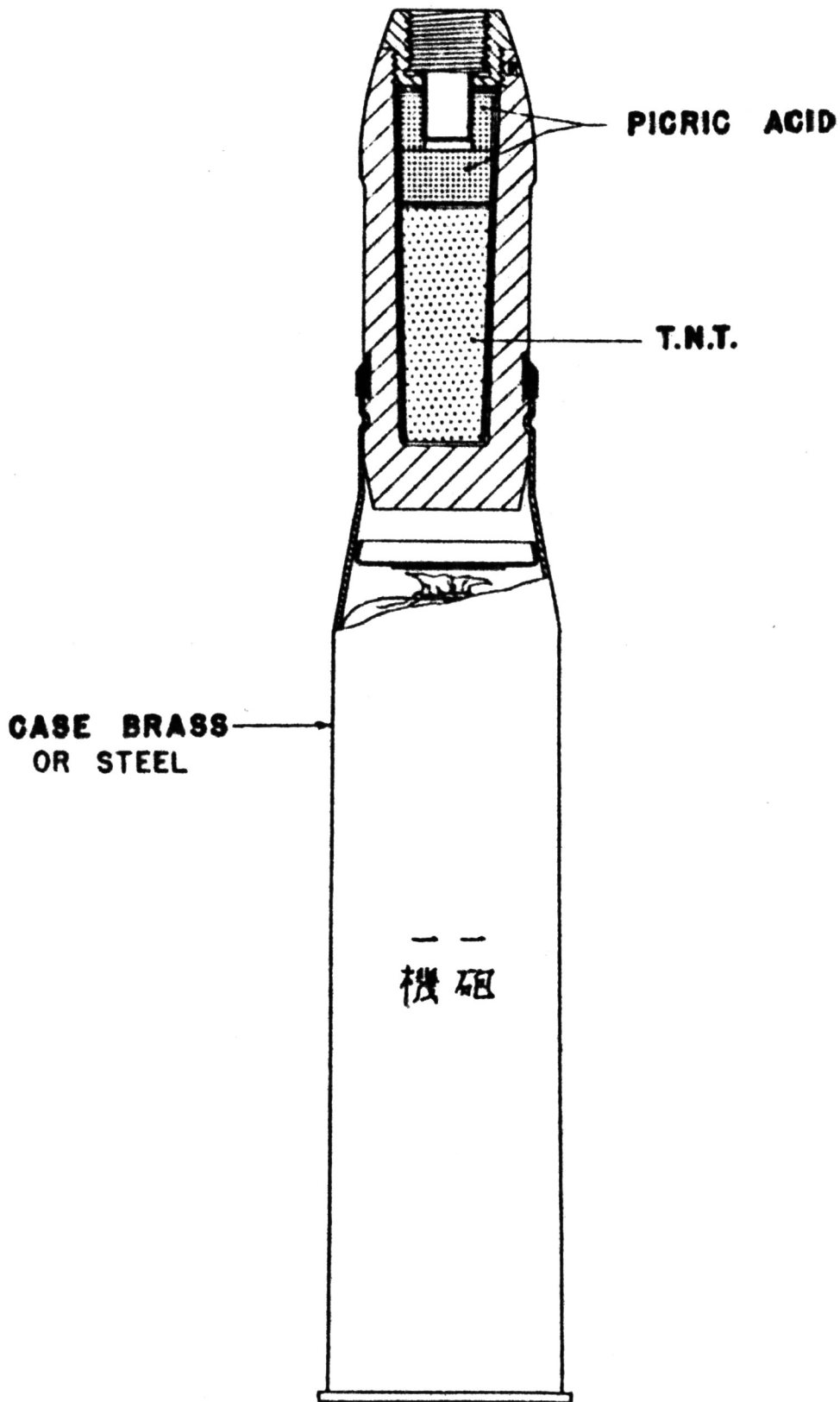
WEAPON:

HO-301 40 mm Aircraft Cannon

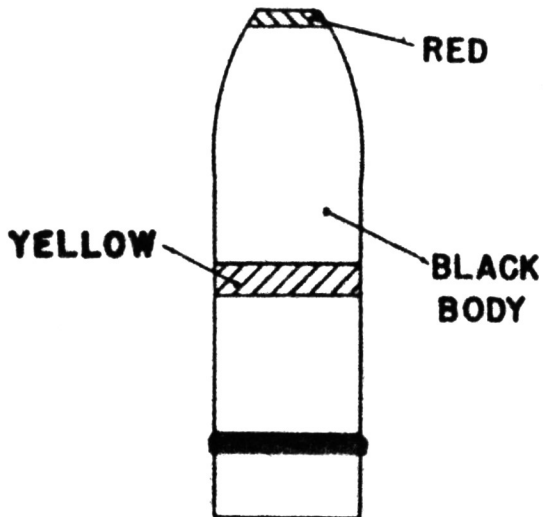
This is an unusual weapon similar in design to an Oerlikon blow-back operated cannon, but with the head of the bolt machined as a piston which closes the breech at the forward end of its stroke.

ARMY 47 MM

HIGH EXPLOSIVE



NEW COLOR SYSTEM



OLD COLOR SYSTEM

NEW AMMUNITION. OLD COLOR SCHEME NEVER OBSERVED.

HIGH EXPLOSIVE

ARMY
47 MM

Type 1 Anti-Tank Gun
Type 1 Tank Gun

WEIGHT OF COMPLETE ROUND 2.44 Kg. (5.4 lb.)
WEIGHT OF PROJECTILE, w/o FUZE 1.15 Kg. (2.5 lb.)
WEIGHT OF FILLING 0.087 Kg. (0.2 lb.)

FILLING:

Two preformed paper-wrapped blocks taped together and waxed. The forward block consists of two pellets of picric acid - a ring pellet around the gaine and a solid pellet beneath the gaine. The after block is one piece of cast T.N.T.

DIMENSIONS:

Diameter at bourrelet 47 mm (minus tolerance)
Length of projectile w/o fuze 140 mm (5-1/2 in.)
Length of propellant case 283 mm (11-1/8 in.)
Length of assembled round w/o fuze 389 mm (15-5/16 in.)
Diameter of base of case 72 mm (2-13/16 in.)

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type).
Type 88 Short Delay Nose Fuze (Gun Type).

PROPELLANT:

Weight 0.398 Kg. (0.9 lb.)
Single-perforated cylindrical grains (7/16" long, 5/32" diameter) of a graphited double-base powder of the following composition:

Nitrocellulose 60.0%
Nitroglycerine 34.5%
Ethyl centralite 3.0%
Diphenyl formamide 2.5%



PROJECTILE



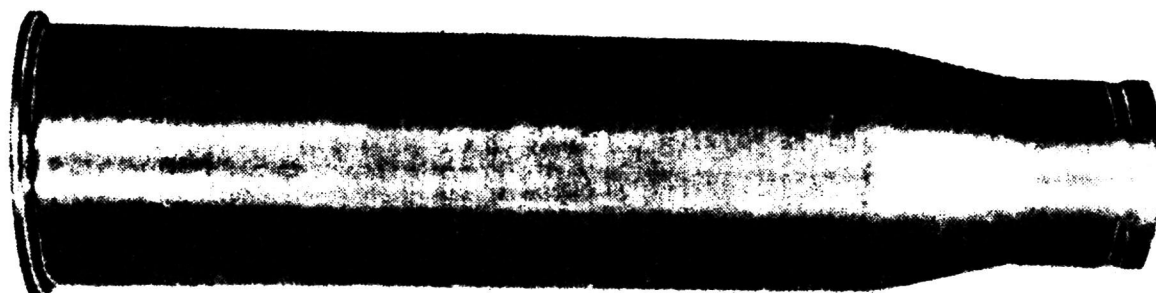
ADAPTER



SHIPPING PLUG



PRIMER

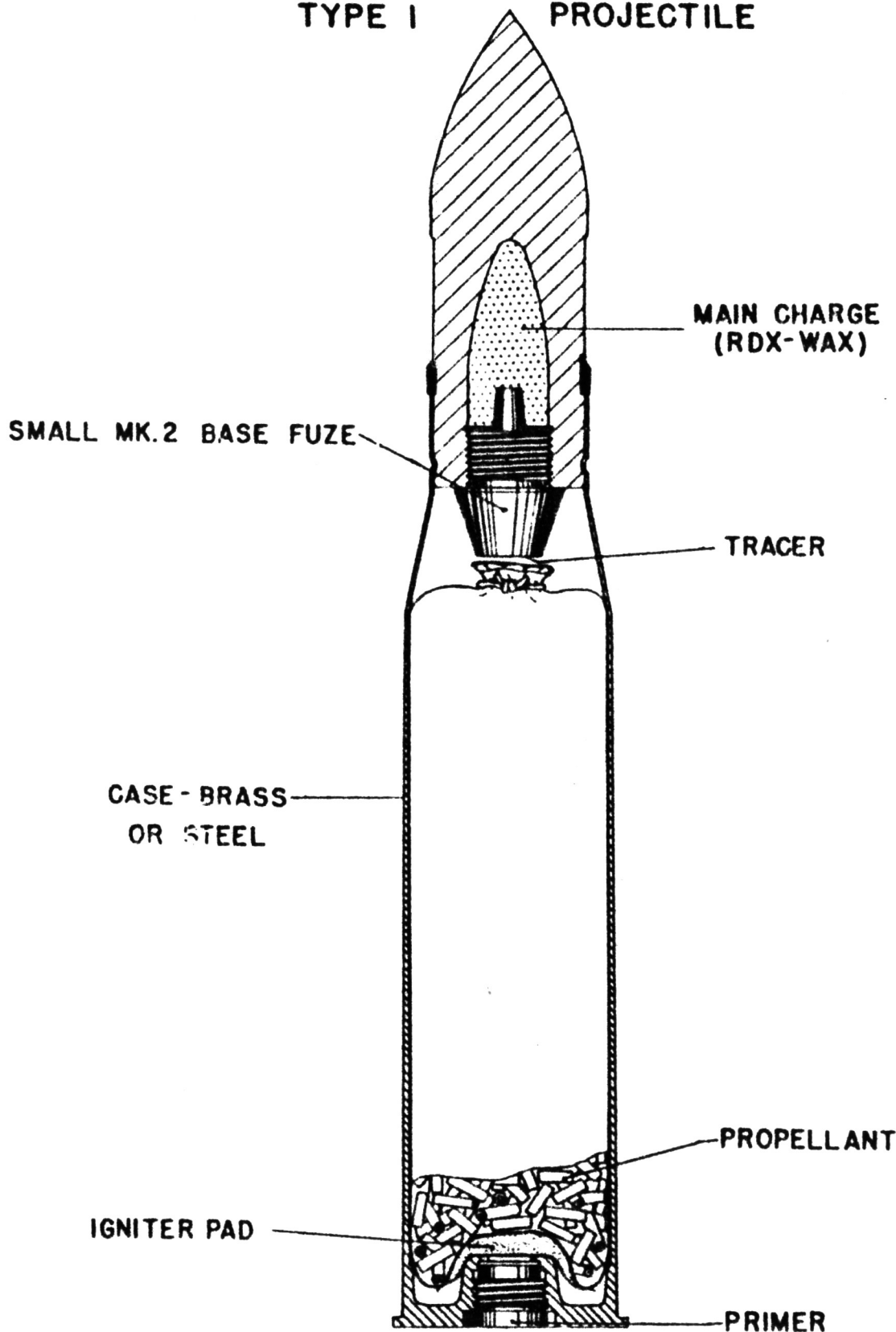


CASE

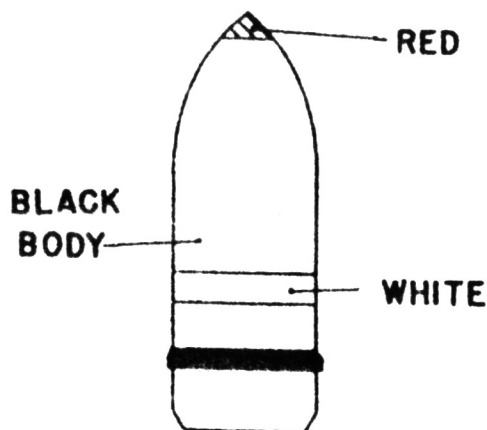
ARMY 47 MM.

ARMOR PIERCING

TYPE I PROJECTILE



NEW COLOR SYSTEM



OLD COLOR SYSTEM

NEW AMMUNITION. OLD COLOR SCHEME NEVER OBSERVED.

**ARMOR PIERCING
TYPE I PROJECTILE**

**ARMY
47 MM**

Type 1 Anti-Tank Gun
Type 1 Tank Gun

WEIGHT OF COMPLETE ROUND	2.75 kg. (6.1 lb.)
WEIGHT OF PROJECTILE, FUZED	1.38 kg. (3.0 lb.)
WEIGHT OF PROJECTILE, w/o FUZE	1.27 kg. (2.8 lb.)
WEIGHT OF MAIN CHARGE	0.018 Kg. (0.04 lb.)

FILLING:

R.D.X. - 90%; Paraffin - 10%.

DIMENSIONS:

Diameter at bourrelet	47 mm (minus tolerance)
Length of projectile w/o fuze	143 mm (5-5/8 in.)
Length of propellant case	283 mm (11-1/8 in.)
Length of assembled round	398 mm (15-5/8 in.)
Diameter of base of case	72 mm (2-13/16 in.)
Width of rotating band	12 mm

FUZING:

Small Mk 2 Base Fuze (Short Delay). A movable primer carrier is separated from a fixed striker by a coil spring. The fuze is always armed. Tracer composition is pressed in a cavity in the protruding after body of the fuze.

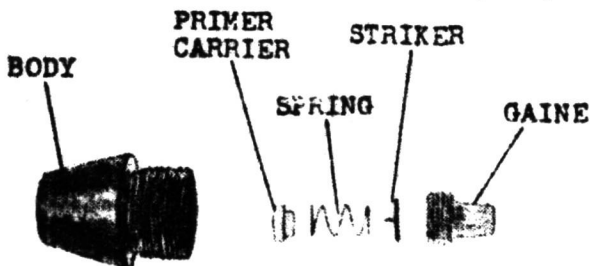
TRACER:

Yellow 5 grams

PROPELLANT:

Weight 0.398 Kg. (0.9 lbs.)
Single-perforated cylindrical grains (7/16" long, 5/32" diameter) of a graphited double-base powder of the following composition:

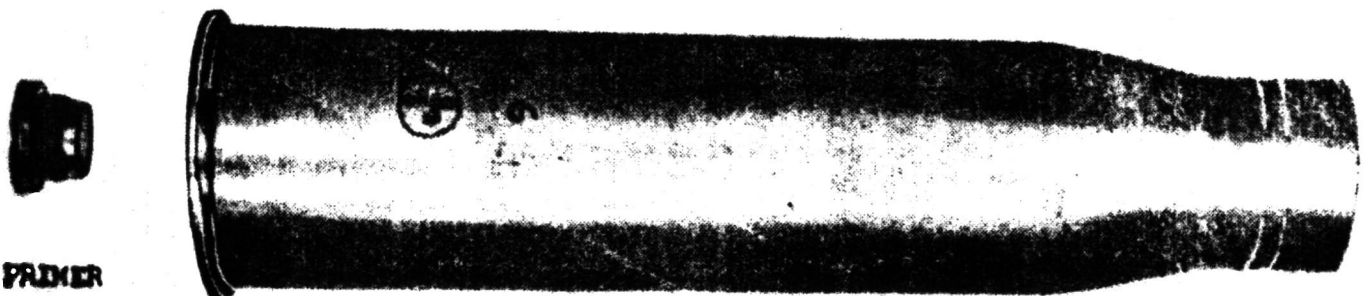
Nitrocellulose	60.0%
Nitroglycerine	34.5%
Ethyl centralite	3.0%
Diphenyl formamide	2.5%



SMALL MK. 2 FUZE



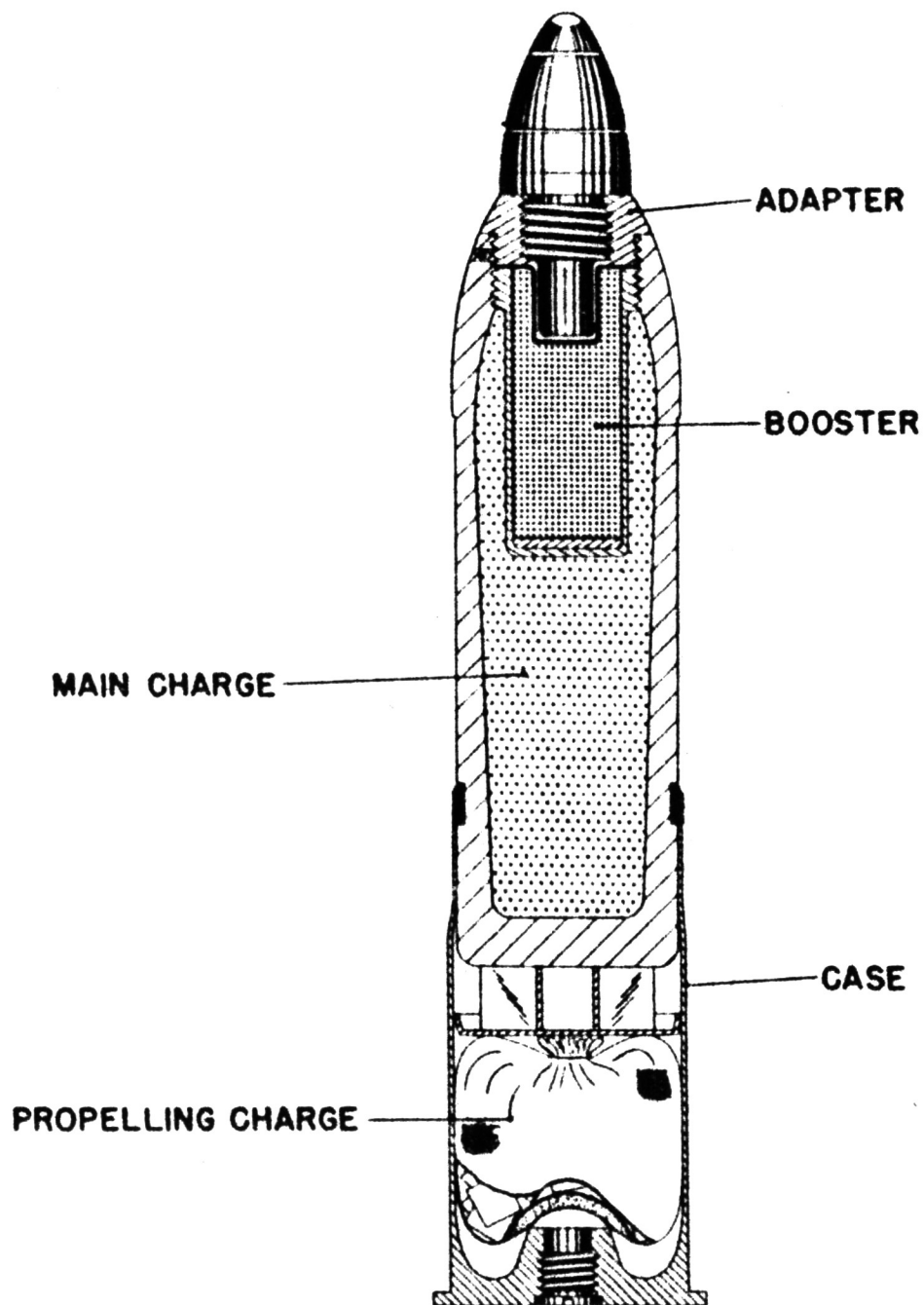
PROJECTILE



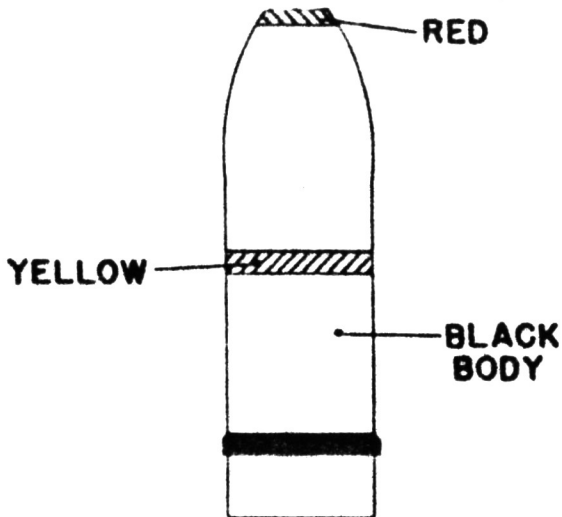
CASE

ARMY 5.7 CM (57 MM) HIGH EXPLOSIVE

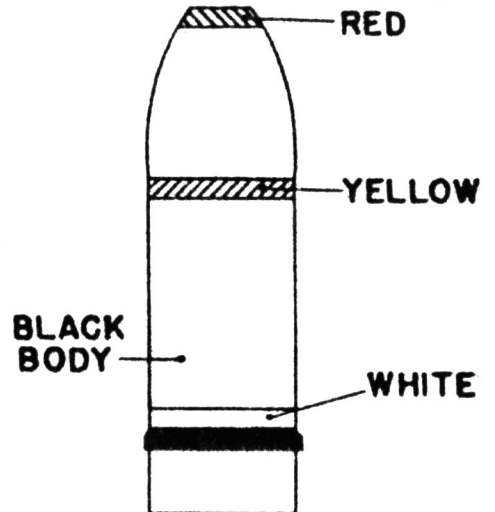
COMPLETE ROUND FOR TYPES 90 & 97 TANK GUNS
PROJECTILE TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



HIGH EXPLOSIVE TYPE 90 PROJECTILE

ARMY 57 CM (57 MM)

Type 90 Tank Gun
Type 97 Tank Gun

WEIGHT OF COMPLETE ROUND 2.91 Kg. (6.40 lbs.)
WEIGHT OF PROJECTILE, FILLED (FUZED) 2.36 Kg. (5.18 lbs.)
WEIGHT OF FILLING 0.25 Kg.

FILLING:

T.N.T.

DIMENSIONS:

Diameter at bourrelet 57 mm (minus tolerance)
Length of projectile w/o fuze 181 mm (7-1/8 in.)
Length of propellant case 121 mm (4-3/4 in)
Length of assembled round
(w/o fuze & adapter) 280 mm (11 in.)
Width of rotating band 9.5 mm

FUZING:

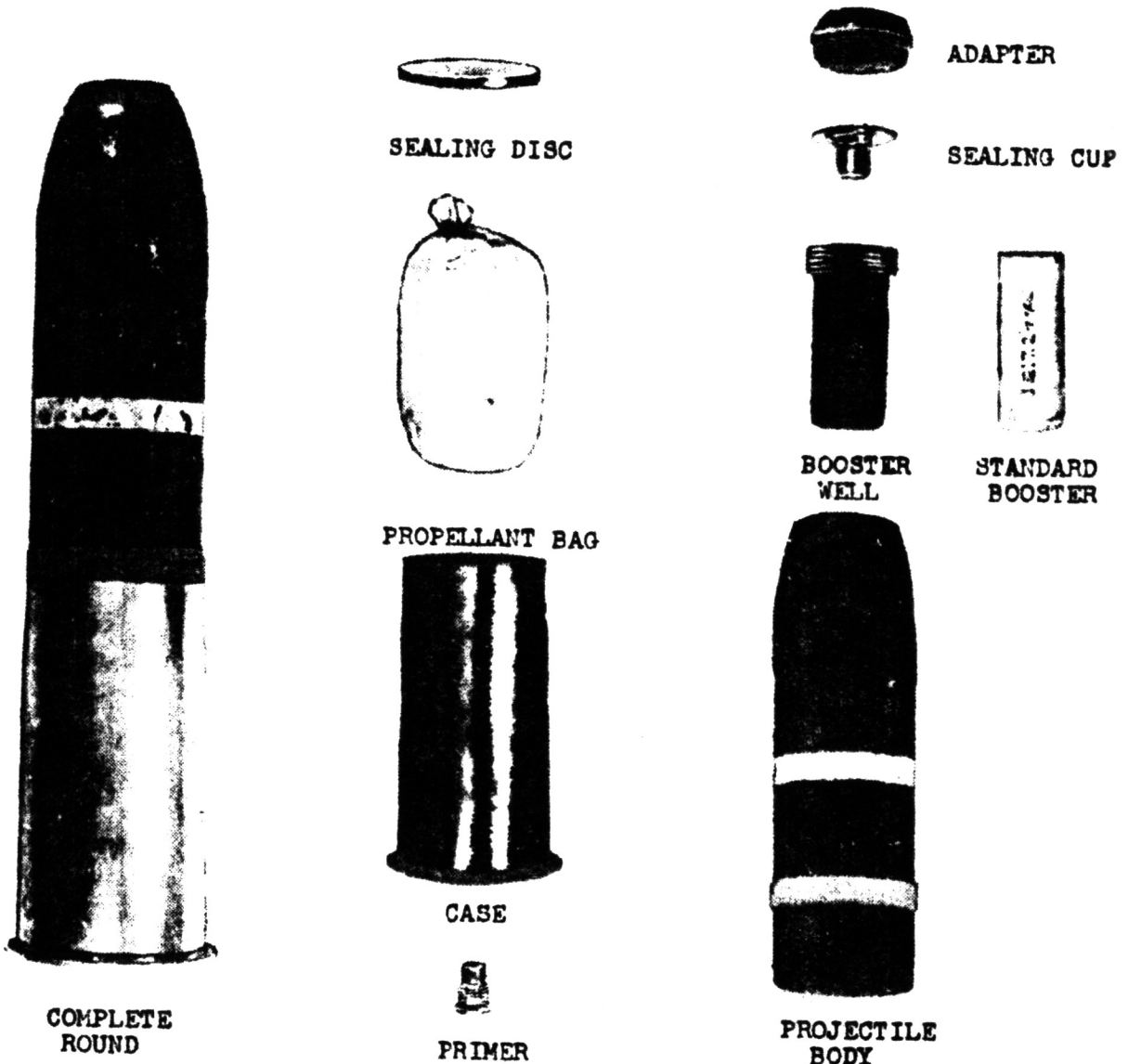
Type 88 Short Delay Fuze

PROPELLANT:

Mk 1 square grain (medium) - 113 grams.

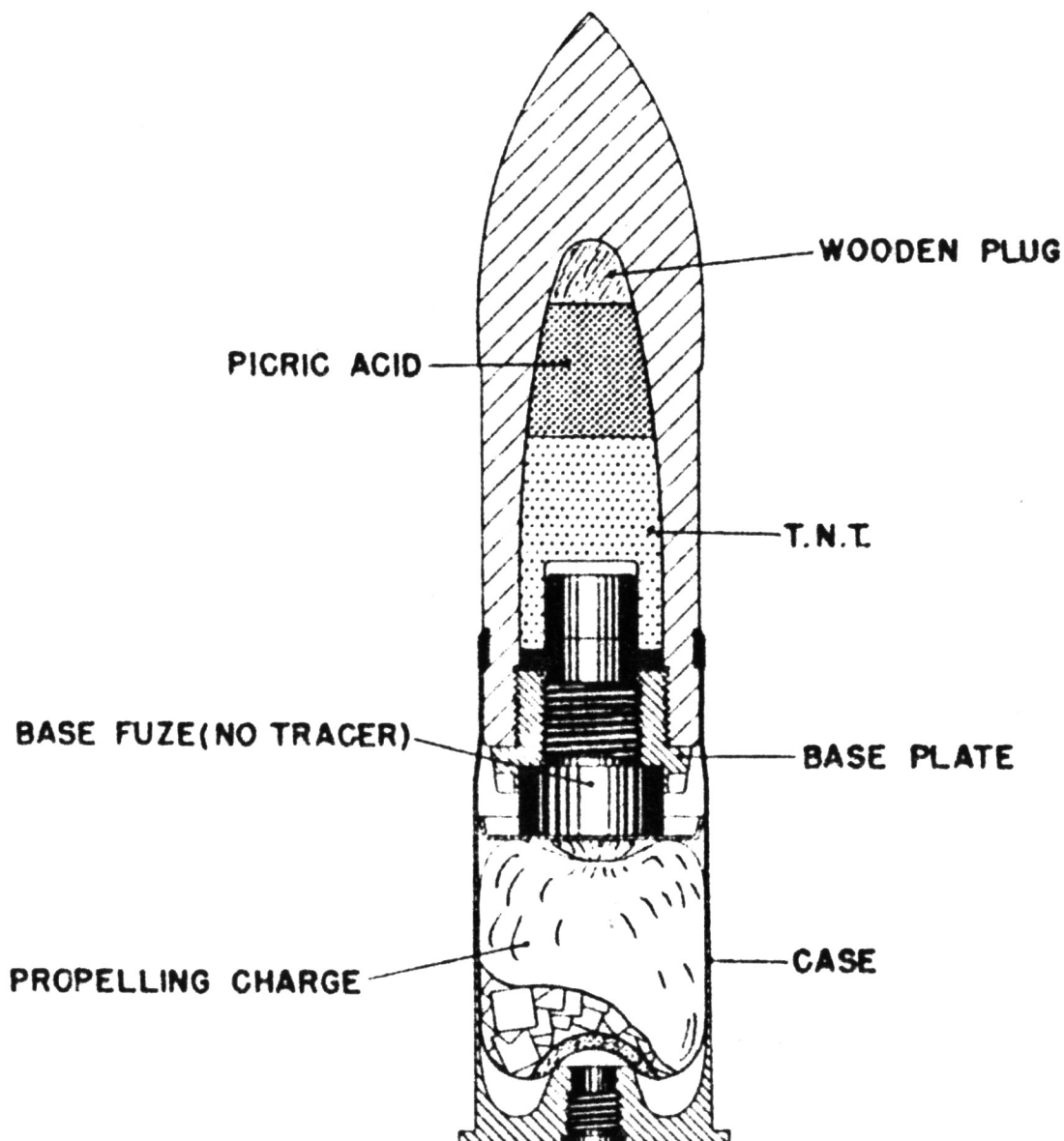
REMARKS:

Complete rounds of this ammunition have been recovered for use in the Type 97 Tank Gun. It may also be used in the Type 90 Tank Gun, as shown in captured documents.

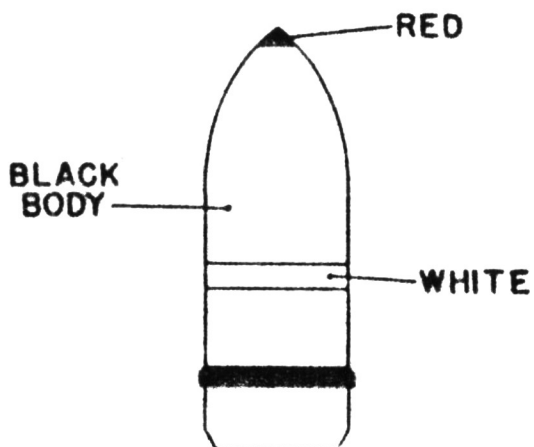


ARMY 5.7 CM (57 MM) ARMOR PIERCING

COMPLETE ROUND FOR TYPES 90 & 97 TANK GUNS
PROJECTILE TYPE 92



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**ARMOR PIERCING
TYPE 92 PROJECTILE**

**ARMY
5.7 CM (57 MM)**

Type 90 Tank Gun
Type 97 Tank Gun

WEIGHT OF COMPLETE ROUND 3.13 Kg. (6.89 lbs.)
WEIGHT OF PROJECTILE, FILLED (FUZED) 2.58 Kg. (5.68 lbs.)
WEIGHT OF FILLING 0.10 Kg.

FILLING:

Two sections of explosive, individually wrapped in paper.
Upper section - pressed picric acid and wax.
Lower section - cast T.N.T.

DIMENSIONS:

Diameter at bourrelet 57 mm (minus tolerance)
Length of projectile (w/o fuze adapter) 181 mm (7-1/4 in.)
Length of propellant case 121 mm (4-3/4 in.)
Length of assembled round 280 mm (11-1/16 in.)
Width of rotating band 10 mm

FUZING:

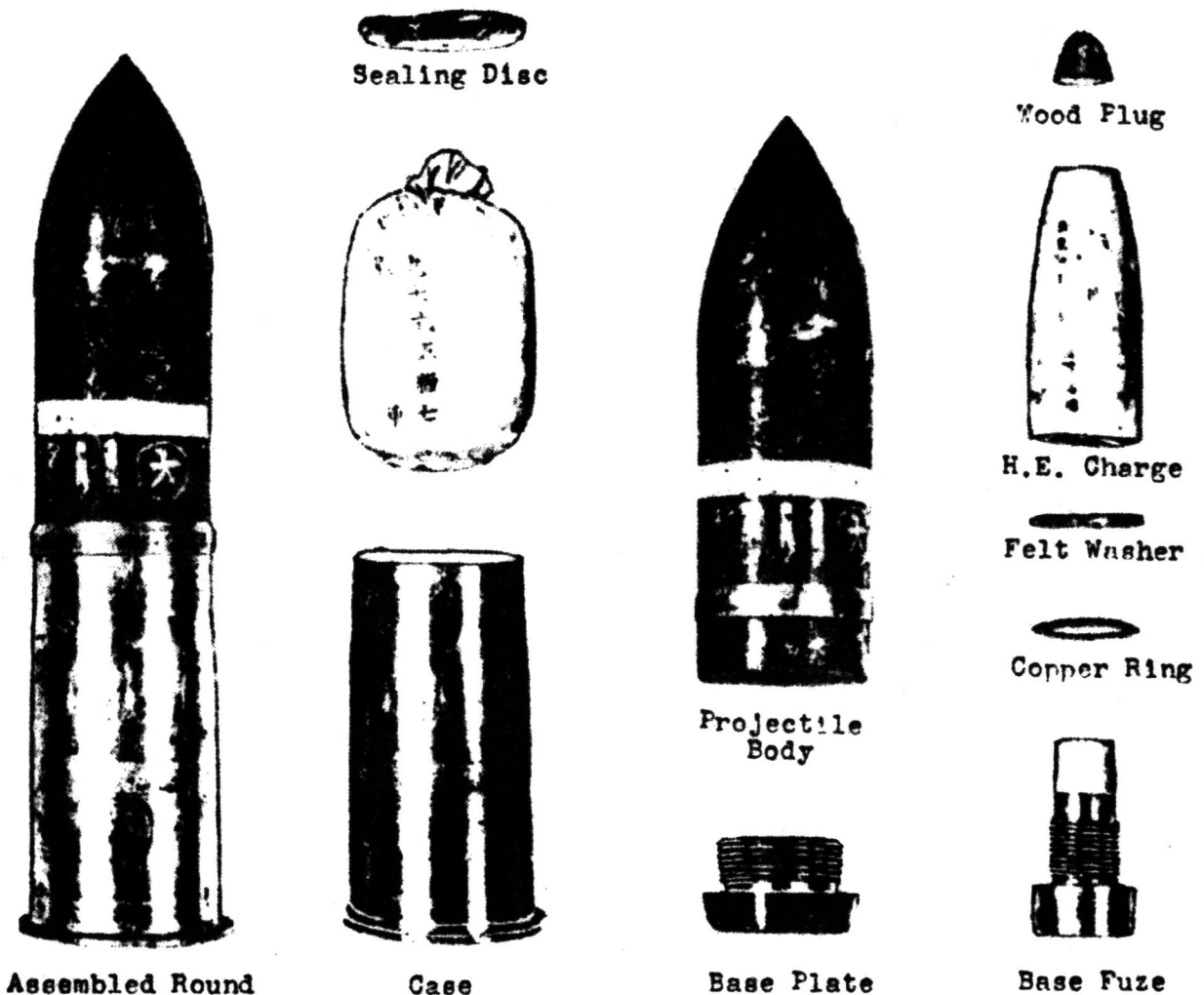
Type 92 Small Base Fuze

PROPELLANT:

Mk 1 square grain (medium) - 113 grams.

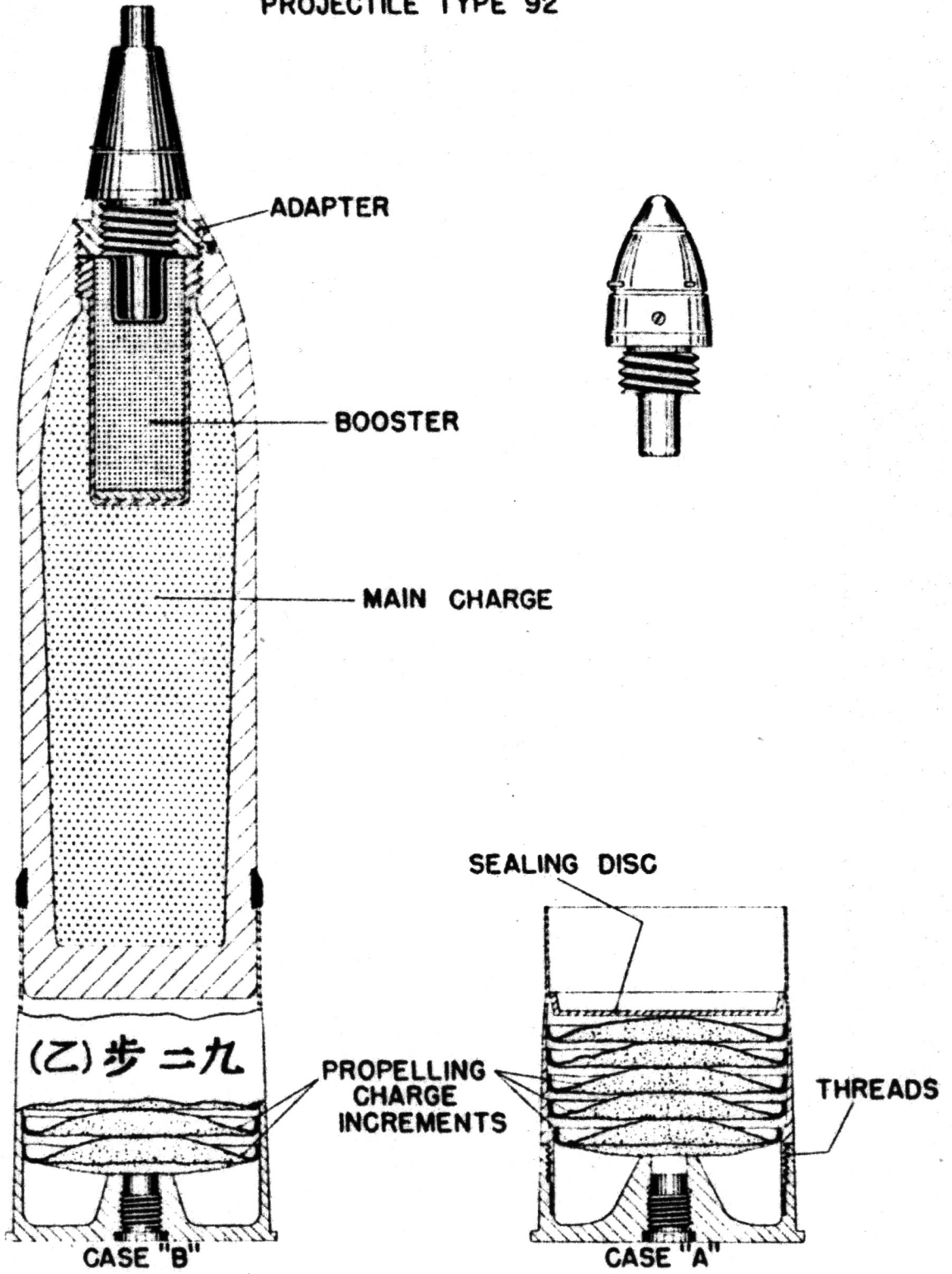
REMARKS:

Complete rounds of this ammunition have been recovered with designation for use in the Type 97 Tank Gun. Captured documents have revealed its use also in the Type 90 Tank Gun.

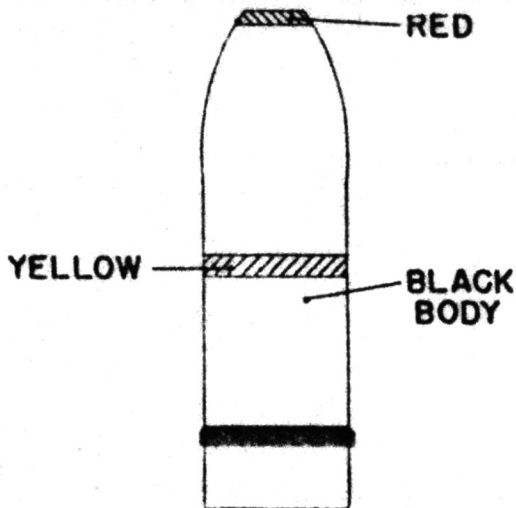


ARMY 7CM. (70 MM.) HIGH EXPLOSIVE

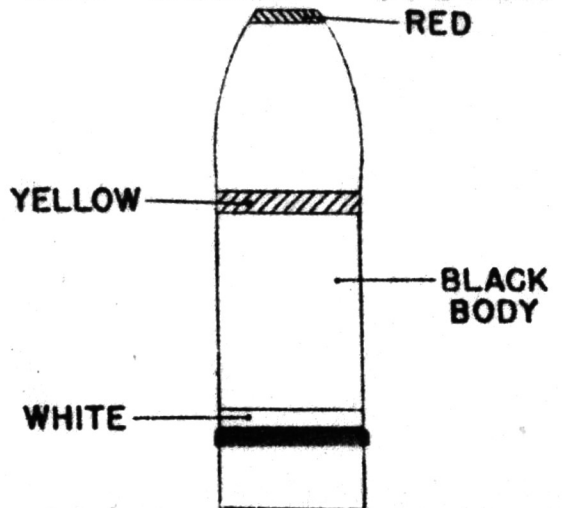
COMPLETE ROUND FOR TYPE 92 INFANTRY GUN (HOWITZER)
PROJECTILE TYPE 92



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**HIGH EXPLOSIVE
TYPE 92 PROJECTILE**

**ARMY
7 CM (70 MM)**

Type 92
Infantry Gun (Howitzer)

WEIGHT OF COMPLETE ROUND 4.48 Kg. (9.90 lb.)
 WEIGHT OF PROJECTILE FUZED 3.81 Kg. (8.38 lb.)
 WEIGHT OF FILLING 0.59 Kg.

FILLING:

Standard - Cast T.N.T.
 Alternate- Pressed mixture of RDX and Ammonium Nitrate

DIMENSIONS:

Diameter at bourrelet 70 mm (minus tolerance)
 Length of projectile w/o fuze 234 mm (9-1/4 in.)
 Length of propellant case 101 mm (4 in.)
 Length of assembled round w/o fuze 306 mm (12-1/16 in.)
 Diameter of base of case 81 mm (3-3/16 in.)
 Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous nose fuze (Howitzer - Mortar Type).
 Type 88 Short Delay nose fuze (Howitzer - Mortar Type).

PROPELLANT:

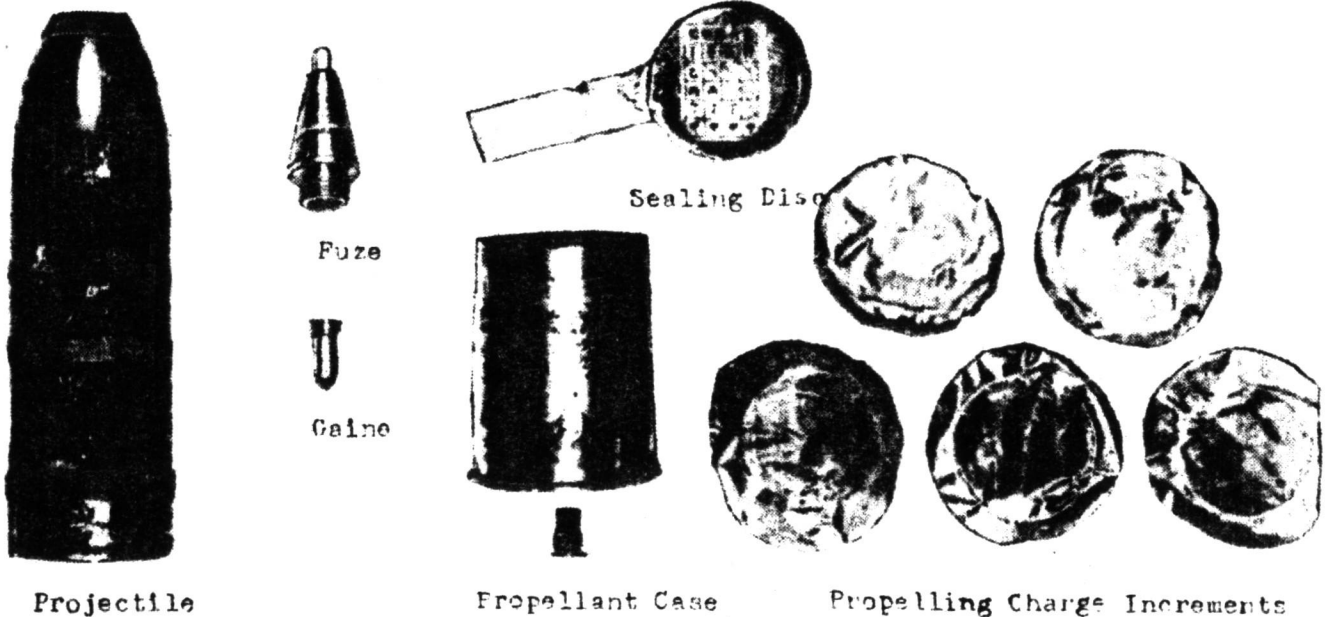
50 grams of smokeless powder in 0.5 mm square flakes. This powder is contained in four pads made by sewing portions of the powder between two dark blue silk discs. The discs are not of uniform size, holding 5.4, 8.9, 16.8, and 18.7 grams of powder each. A fifth disc, light blue in color, contains a 3.1 gram black powder ignition charge.

The propellant cases are of two designs. The newer type, designated "B" (OTSU) by the Japanese, is one piece and slips off of the projectile to change the propellant charge. An older design, presumably "A" has a threaded base which may be unscrewed to vary the charge.

REMARKS:

The projectile is the same as the H.E., Type 92, used in the Type 94 Tank Gun.

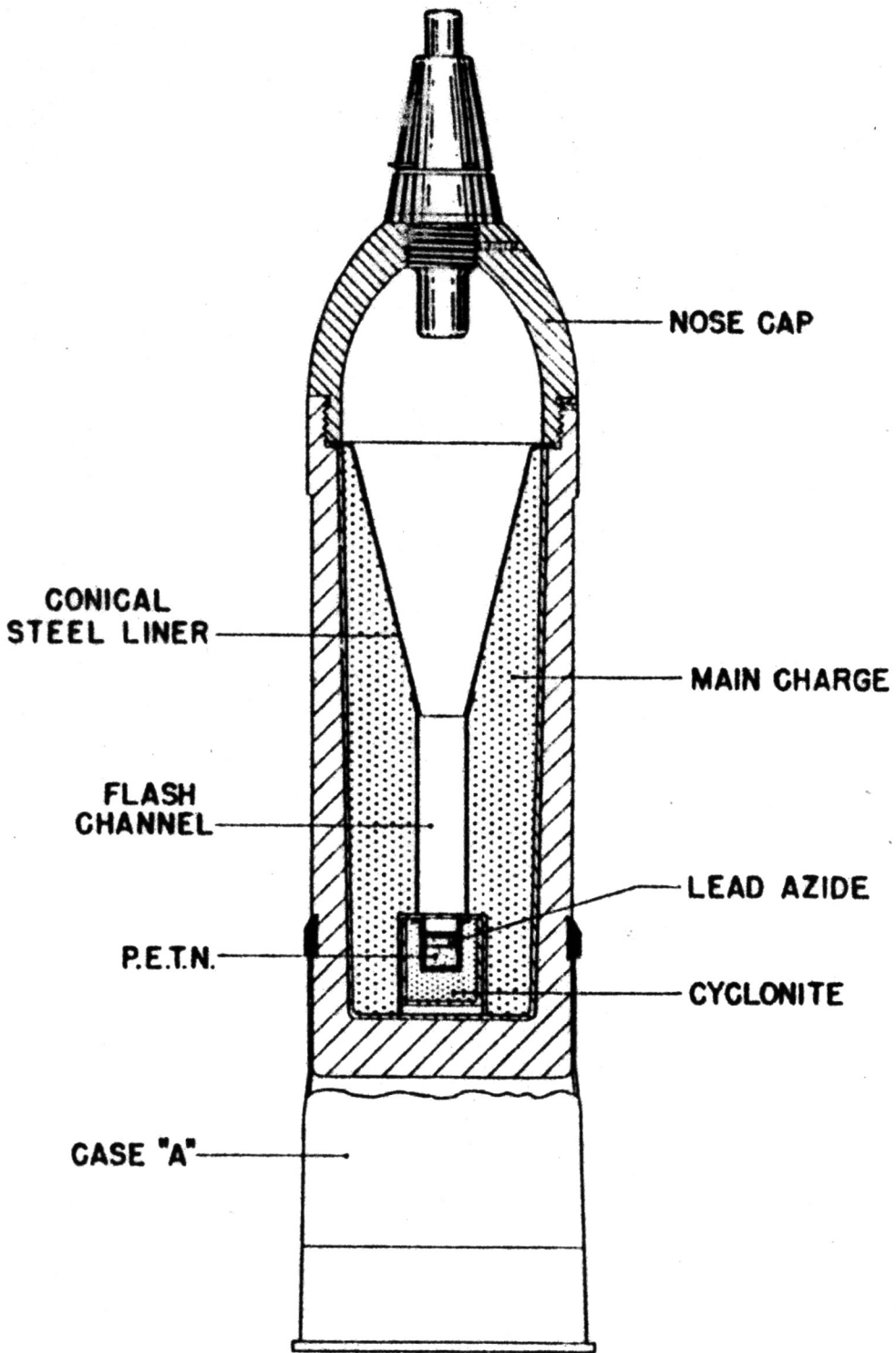
Complete rounds of this ammunition have been recovered.



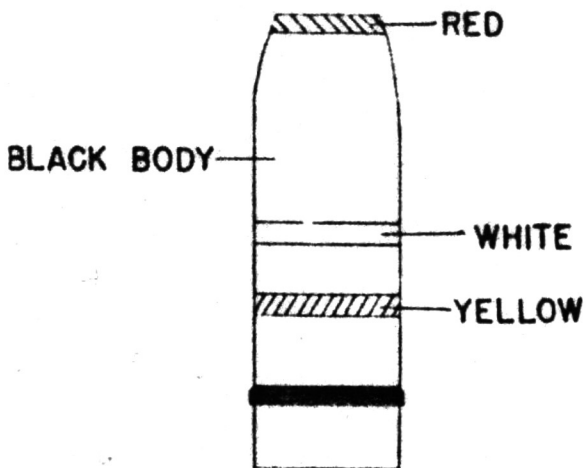
Component Parts For Type 92 Infantry Gun (Howitzer) Round

ARMY 7 CM. (70 MM.) HOLLOW CHARGE

COMPLETE ROUND FOR TYPE 92 INFANTRY GUN
TYPE 3 PROJECTILE



NEW COLOR SYSTEM



OLD COLOR SYSTEM

NEW AMMUNITION. OLD COLOR
SCHEME NEVER OBSERVED.

**HOLLOW CHARGE
TYPE 3 PROJECTILE**

**ARMY
7CM. (70MM.)**

Type 92
Infantry gun (Howitzer)

WEIGHT OF COMPLETE ROUND
WEIGHT OF PROJECTILE (w/o Fuze) (2.80 kg.) 6 lbs. 4.75 oz.
WEIGHT OF FILLING (.99 kg.) 1 lb.

FILLING:

A cast mixture of T.N.T. and Cyclonite (R.D.X.) wrapped in varnished paper.

DIMENSIONS:

Diameter at Bourrelet (69.5 mm) 2.8 in.
Length Overall w/o Fuze 9.0 in.
Length Protruding From Case 7.3 in.
Length of Projectile Body w/o Nose Cap 6.7 in.
Width of Rotating Band4 in.

FUZING:

Type 88 - Instantaneous Nose Fuze (Howitzer - Mortar Type)

OPERATION & EMPLOYMENT:

This round is used principally as an anti-tank weapon.

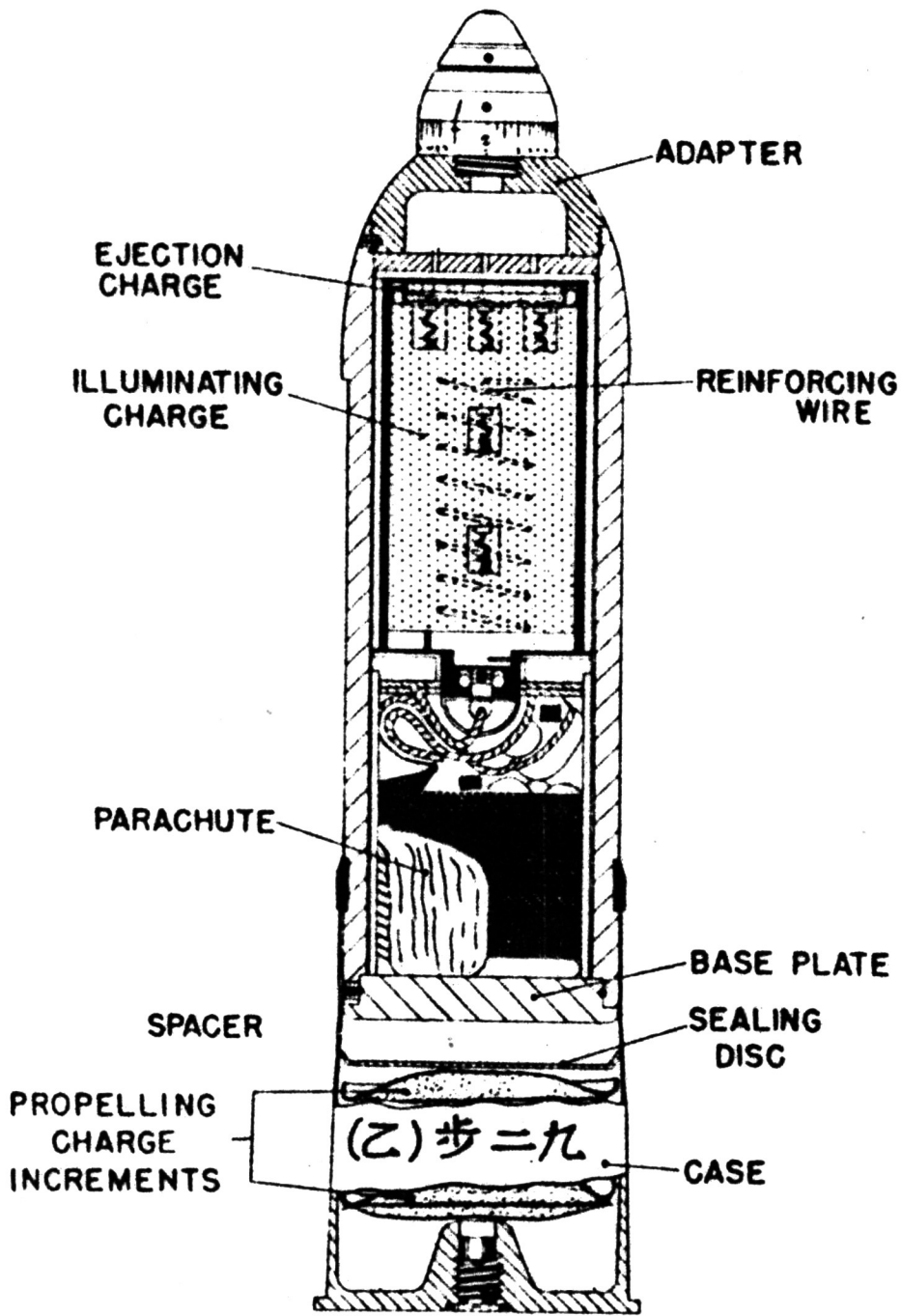
REMARKS:

The use of a white band above a yellow band to identify hollow charge projectiles is assumed to be a combination of the use of white band for Armor-Piercing and yellow band for High Explosive in the new color system. Both bands are near the middle of the projectile.

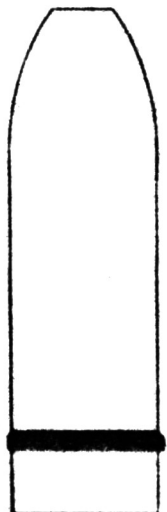
This arrangement is not to be confused with the combination of yellow band above white band to identify High Explosive projectiles in the old color system, in which case the yellow band is at the bourrelet and the white band just above the rotating band.

ARMY 7CM. (70 MM.) ILLUMINATING

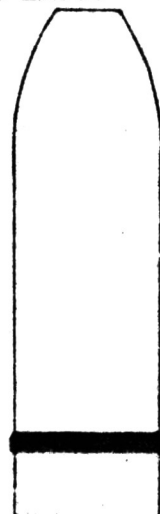
COMPLETE ROUND FOR TYPE 92 INFANTRY GUN (HOWITZER)
PROJECTILE TYPE 95



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**ILLUMINATING
TYPE 95 PROJECTILE**

ARMY
7 CM (70 MM)
Type 92
Infantry Gun (Howitzer)

WEIGHT OF COMPLETE ROUND 4.20 Kg. (9.24 lb.)
WEIGHT OF PROJECTILE, FUZED 3.50 Kg. (7.70 lb.)
WEIGHT OF FILLING No data

FILLING:

Ejection Charge - Probably black powder
Illuminating Composition - Not known. It is probably a mixture of magnesium, aluminum, and barium nitrate, which is used commonly by the Japanese for illuminating charges.

DIMENSIONS:

Diameter at Bourrelet 70 mm (minus tolerance)
Length of projectile w/o fuze No data
Length of propellant case 101 mm (4 in.)
Length of assembled round w/o fuze 292 mm (11-1/2 in.)
Diameter of base of case 81 mm (3-3/16 in.)
Width of rotating band No data

FUZING:

Type 89 Small Time Fuze

PROPELLANT:

0.6 mm square flakes - 50 grams. Either of the propellant cases discussed for the H.E. round may be used for this round.

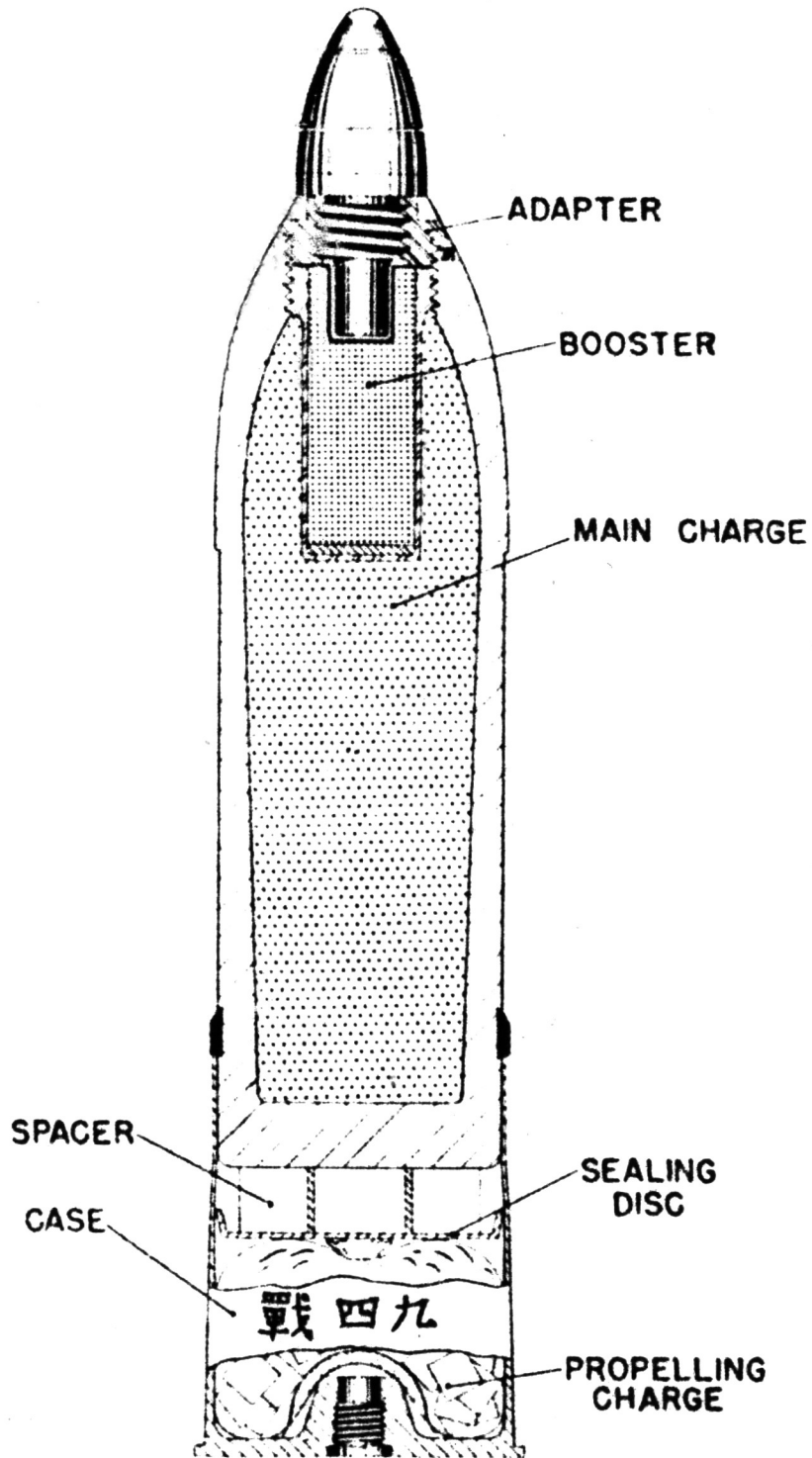
REMARKS:

The illuminating charge burns for approximately 20 seconds with an intensity of about 90,000 candlepower. This round has not been recovered. The above data are derived from documents.

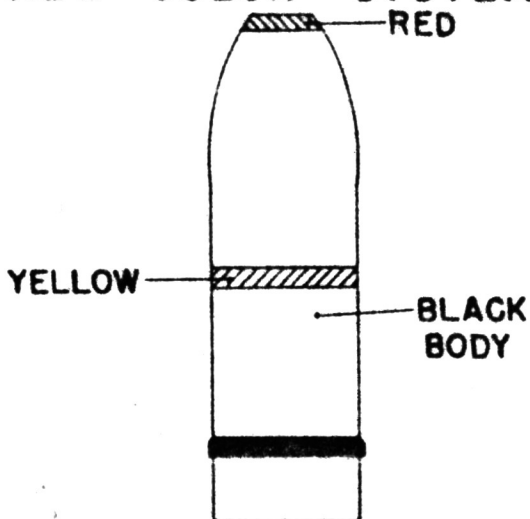
ARMY 7CM.(70MM) HIGH EXPLOSIVE

COMPLETE ROUND FOR TYPE 94 TANK GUN

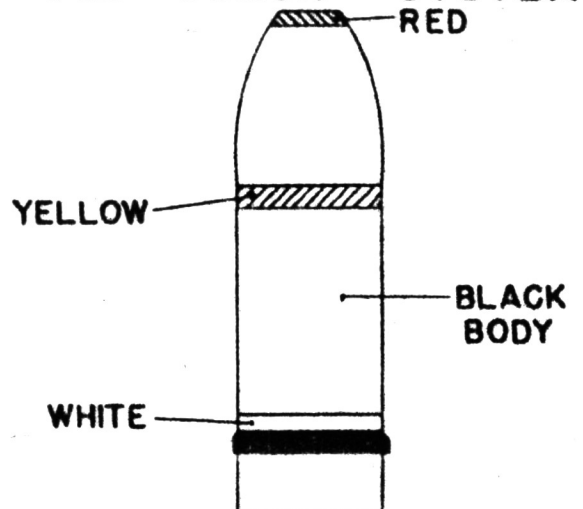
PROJECTILE TYPE 92



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**HIGH EXPLOSIVE
TYPE 92 PROJECTILE**

**ARMY
7 CM (70 MM)**

Type 94
Tank Gun

WEIGHT OF COMPLETE ROUND 4.42 Kg. (9.72 lb.)
 WEIGHT OF PROJECTILE FUZED 3.81 Kg. (8.38 lb.)
 WEIGHT OF FILLING 0.590 Kg.

FILLING:

Standard - Cast T.N.T.
 Alternate - Pressed mixture of RDX and Ammonium Nitrate

DIMENSIONS:

Diameter at Bourrelet 70mm (minus tolerance)
 Length of projectile w/o fuze 234 mm (9-1/4 in.)
 Length of propellant case 101 mm (4 in.)
 Length of assembled round w/o fuze 306 mm (12-1/16 in.)
 Diameter of base of case 81 mm (3-3/16 in.)
 Width of rotating band 10 mm

FUZING:

Type 88 Short Delay nose fuze (Gun Type).

PROPELLANT:

138 grams of 5 mm square grain (medium) smokeless powder.

REMARKS:

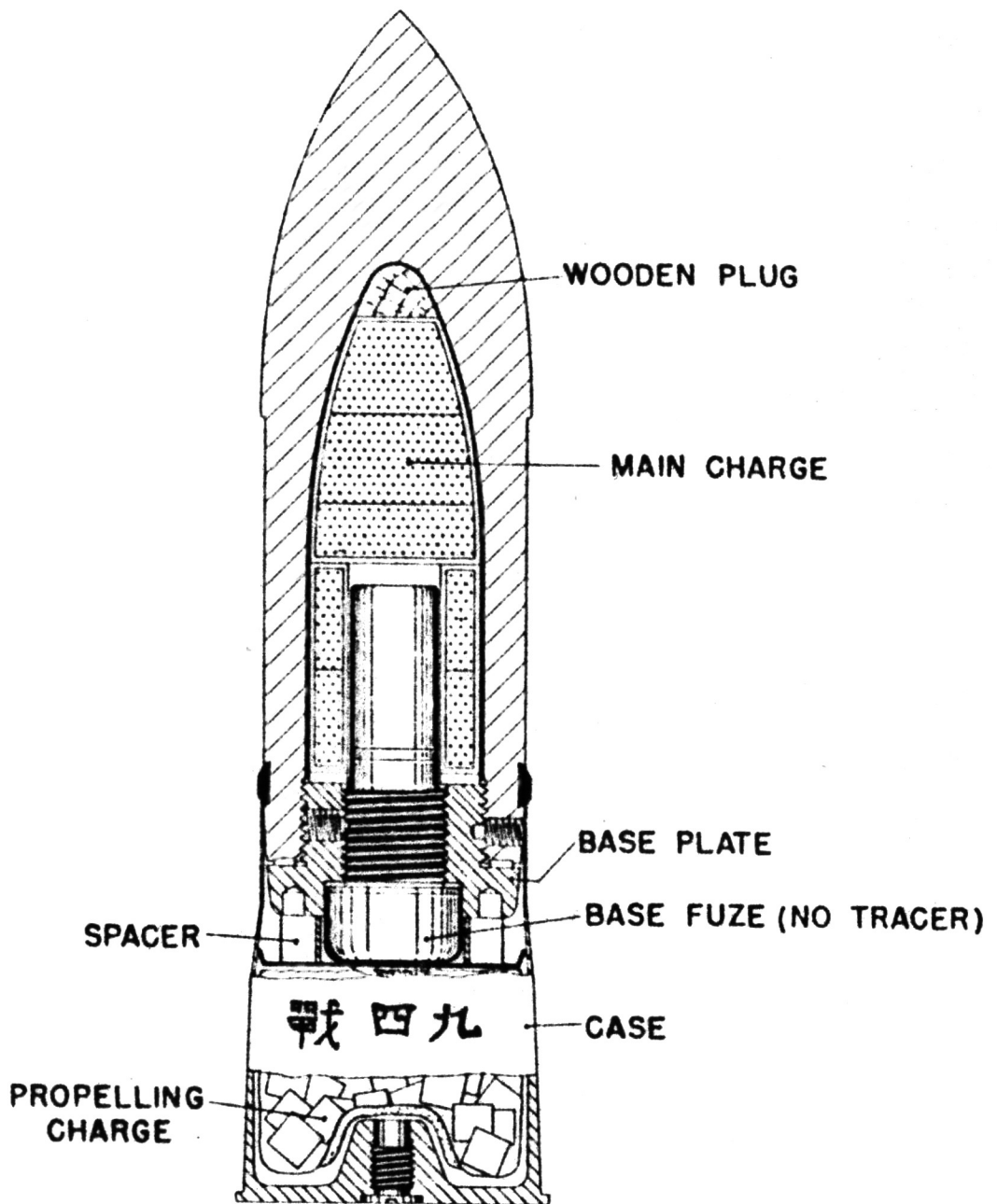
The projectile is the same as the Type 92 H.E. projectile used in the Type 92 Infantry Howitzer.

No specimens of this round have been recovered or observed, but the projectile has been recovered cased for the Type 92 Infantry Howitzer.

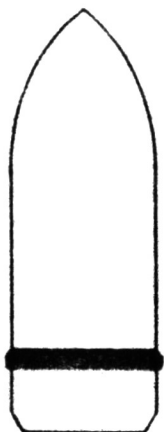
ARMY 7CM.(70 MM.)ARMOR PIERCING

COMPLETE ROUND FOR TYPE 94 TANK GUN

PROJECTILE TYPE 95



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**ARMOR PIERCING
TYPE 95 PROJECTILE**

**ARMY
7 CM (70 MM)**

Type 94
Tank Gun

WEIGHT OF COMPLETE ROUND 5.04 Kg. (11.10 lb.)
 WEIGHT OF PROJECTILE, FUZED 4.45 Kg. (9.80 lb.)
 WEIGHT OF FILLING 0.170 Kg.

FILLING:

Preformed, paper-wrapped filling.
 Forward portion "OSHIYAKU"
 (Picric Acid 90%, paraffin 10%)
 After portion T.N.T.

DIMENSIONS:

Diameter at Bourrolet 70 mm (minus tolerance)
 Length of projectile w/o fuze mm (in.)
 Length of propellant case 101 mm (4 in.)
 Length of assembled round 307 mm (12-1/16 in.)
 Diameter of base of case 81 mm (3-3/16 in.)
 Width of rotating band 10 mm

FUZING:

Type 95 Small A.P. Base Fuze.

PROPELLANT:

5 mm square grain (medium) - 120 grams.

REMARKS:

No specimens of this round have been recovered. It is derived from documents.

ARMY 7 CM. (75 MM)-INTRODUCTION

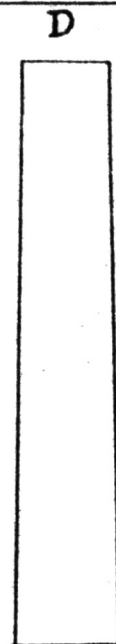
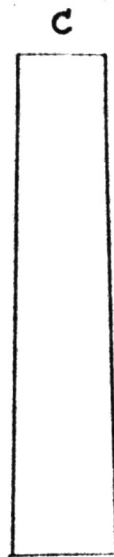
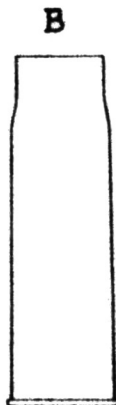
There are ten or more 75 mm guns in current use in the Japanese Army. Though the weapons vary considerably in design, length of bore, and employment, the bore diameter (75 mm) is held constant and in large part the projectiles are designed to be interchangeable for numerous guns. In this way, identical projectiles may be assembled with different sizes of case and propellant charge to fit the various weapons.

For this reason the cases and propellant charges for the different weapons will be treated separately and the projectiles will be presented as a group of designs which are potentially interchangeable for all Army 75 mm guns. The specific purpose of a given projectile or a given gun will limit the occurrence of many of the possible combinations.

Ammunition for Japanese Navy guns designated "8 cm" is comparable in size to Army 7 cm, but the Navy guns have a bore diameter of three inches (76.2 mm) and Army and Navy projectiles and ammunition are not interchangeable. Navy guns as well as Army guns are found commonly in shore defenses, but the identity of the installations, weapons, and ammunition remains distinctly Army or Navy.

CLASSIFICATION OF JAPANESE ARMY 75 mm GUNS BY SIZE OF CHAMBER (SIZE OF PROPELLANT CASE)

Size of Case	Weapon	Marking on Case
A	Type 41 Mountain Gun (Regimental Gun)	四一山 (Rare) Written vertically
B	Type 94 Mountain Gun	九四山 Written vertically
	Type 38 Field Gun	九改四三 造一八 野野騎野 Appears as Shown*
	Type 41 Cavalry Gun	
	Type 38 Improved Field	
Type 95 Field Gun		
	Type 11 Yr. Field/AA Gun	No marking known.
C	Type 90 Field Gun	九〇 Written vertically
D	Type 88 Field/AA Gun	八八式七高 Written vertically
	Type 88 Field/AA Gun (Special)	



LGTH: 184 MM. (7 $\frac{1}{2}$ ')

LGTH: 294 MM. (11 $\frac{1}{2}$ ')

LGTH: 424.4 MM. (16 $\frac{5}{8}$ ')

LGTH: 497 MM. (19 $\frac{3}{4}$ ')

*For convenience in reference, this group, in which the propellant case bears the multiple designation for four weapons, will be termed "Type 38 Field Gun Group".

ARMY 7CM.(75MM) COMPLETE ROUNDS

Projectile	Propellant Charge Used For Various Guns						
	Type 41 Mountain	Type 94 Mountain	Type 38 Group	Type 90 Field	Type 88 Field-AA	Type 88 Special	Type 11 Yr Field-AA
H.E.A.A. (?)	- -	- -	- -	- -	- -	- -	Mk. 1 Flat Strip 600 g.
H.E.A.A. (L.P.) Type 90	- -	- -	- -	- -	(Sing. perf cyl. sticks 1474 g.) *	Mk. 3 Flat Strip 390 g.	Mk. 1 Flat Strip 600 g.
H.E. (L.P.) Type 90	- -	No data	Mk. 1 Flat Strip 600 g.	Mk. 3 Med. Flat Strip 200 g.	- -	Mk. 2 Flat Strip 260 g.	- -
H.E. Type 94	Mk. 1 Sq. Grain 265 g.	Sq. Grain 492 g.	Mk. 1 Flat Strip 600 g.	Mk. 1 Flat Strip 655g.	- -	Mk. 1 Flat Strip 675 g.	- -
H.E. Design "A"	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Flat Strip 600 g.	- -	- -	- -	- -
H.E. Design "B"	Mk. 1 Sq. Grain 265g.	No data	Mk. 1 Flat Strip 600 g.	- -	- -	- -	- -
H.E. (conv't'd) Type 98 (Modif)	No data	- -	No data	- -	- -	- -	- -
H.E. Semi-St. Type 90	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Flat Strip 600 g.	No data	- -	- -	- -
H.E. Semi-St. Type Undet.	Mk. 1 Sq. Grain 265 g.	No data	- -	- -	- -	- -	- -
Hollow Charge Type 2	(Sq. Grain 227 g.) *	No data	- -	- -	- -	- -	- -
A.P.H.E. Type 95	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Flat Strip 600 g.	No data	- -	- -	- -
A.P. Type Undet.	Mk. 1 Sq. Grain 265 g.	No data	- -	- -	- -	- -	- -
Shrapnel Type 38	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Flat Strip 600 g.	Mk. 1 Flat Strip 655 g.	- -	No data	- -
Shrapnel Type 90	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Flat Strip 600 g.	Mk. 1 Flat Strip 655 g.	- -	- -	- -
Smoke (WP) Type Undet.	- -	- -	- -	- -	- -	- -	- -
Smoke (WP) Type 90	Mk. 1 Sq. Grain 265 g.	(Sq. Grain 320 g.) *	Mk. 1 Flat Strip 600 g.	Mk. 1 Flat Strip 655 g.	- -	- -	- -
Incendiary (Non-liquid) Type 90	No data	No data	No data	No data	- -	- -	- -
Illuminating Type 90	Mk. 1 Sq. Grain 265 g.	No data	Mk. 1 Med. Flat Strip 410 g.	Mk. 1 Med. Flat Strip 435 g.	- -	No data	- -
Target Type 11Yr(?)	- -	- -	- -	- -	No data	- -	Mk. 1 Med. Sq. Grain 160 g.
Incendiary (Liquid) Type Undet.	(Sq. Grain 265 g.) *	- -	- -	- -	- -	- -	- -
Vomit Gas Type Undet.	No data	No data	- -	- -	- -	- -	- -

K.Y: Blank (--): signifies that the indicated combination of projectile and propellant case has neither been recovered nor found listed in Japanese documents.

"No data" : indicates that this combination is listed in documents or has been recovered, but that no information on the propellant is available.

Asterisk : signifies that the indicated combination of projectile and propellant case has been recovered or specimens have been observed in the field.

This chart is based primarily on Japanese documentary information. Data derived from recovered specimens are entered in parentheses.

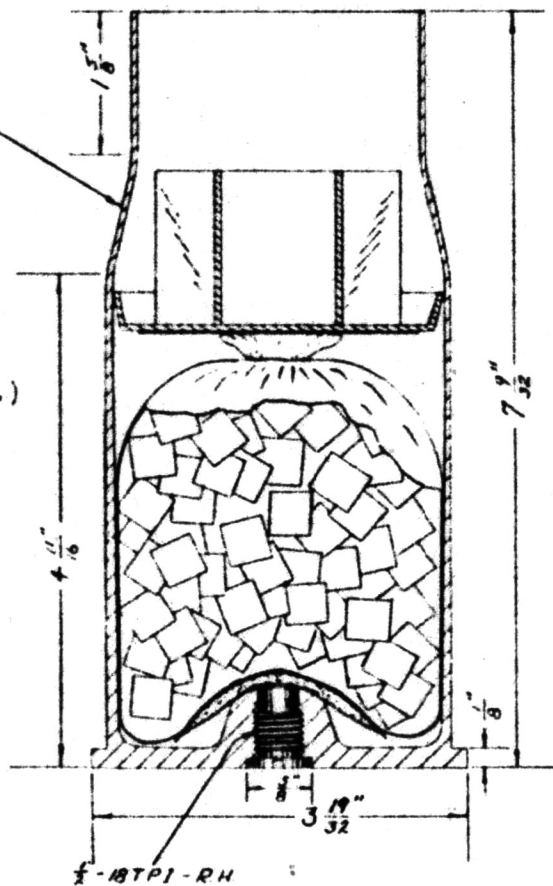
ARMY

7 CM. (75MM.)

PROPELLANT CASES
TYPE 41 MOUNTAIN GUN (REGIMENTAL GUN)

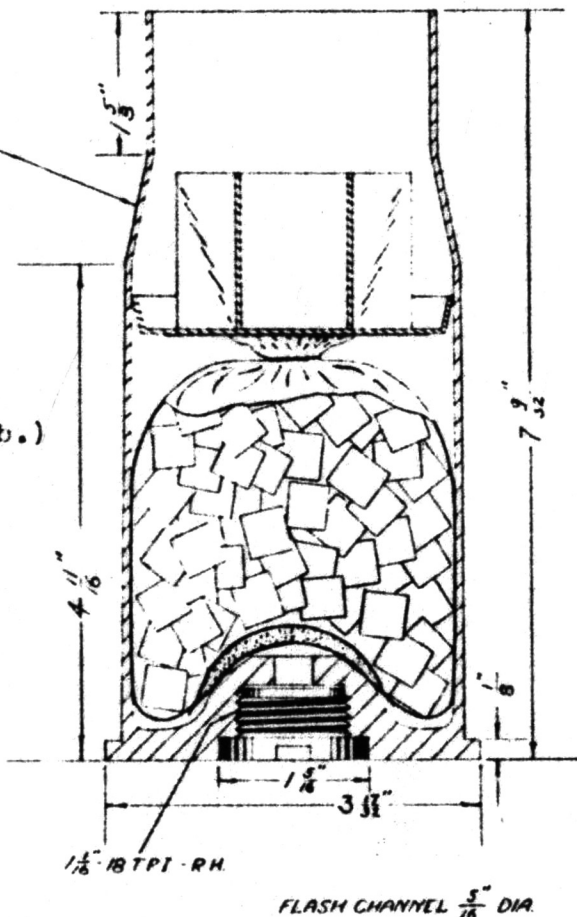
CASE:
DRAWN BRASS

Weight of Case:
822 grams (1.7 lb.)



CASE:
DRAWN BRASS
OR
DRAWN STEEL

Weight of Case (Brass):
947 grams (2.02 lb.)



PROPELLANT CASE

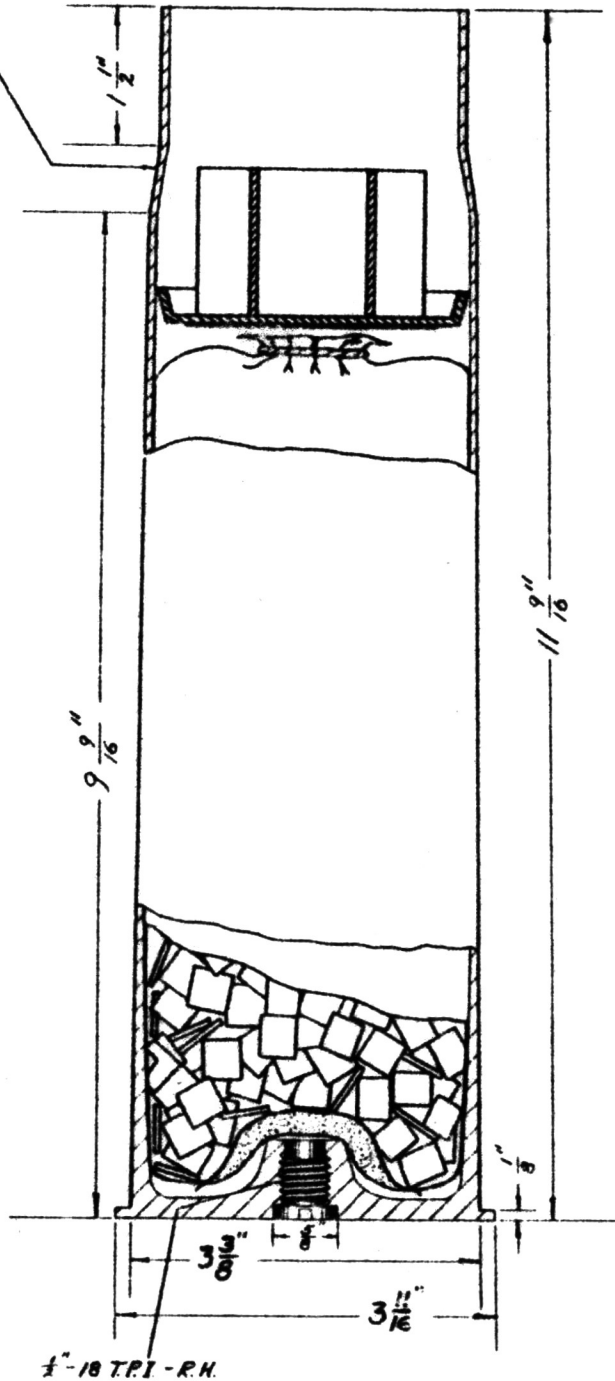
TYPE 94 MOUNTAIN GUN
 TYPE 38 FIELD GUN GROUP
 TYPE II YR. FIELD - A.A. GUN

ARMY

7 CM. (75MM.)

CASE :

DRAWN BRASS



Weight of Case 1250 grams (2.75 lb.)

This case has been recovered both with large and with small type primer.

PROPELLANT CASE
TYPE 90 FIELD GUN

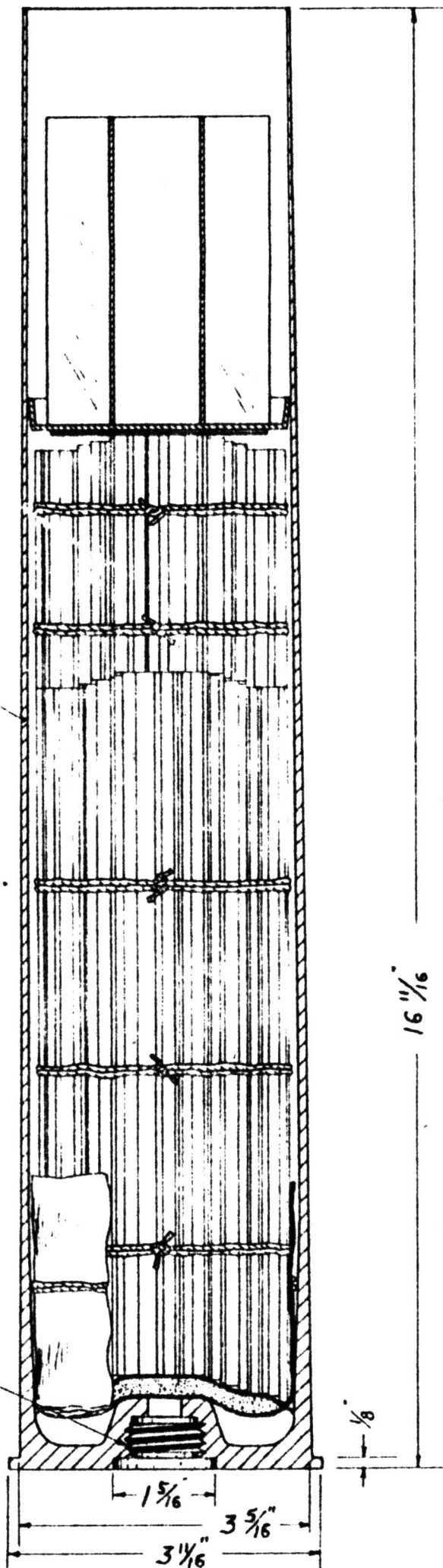
ARMY
7 CM. (75MM.)

CASE:
DRAWN BRASS

This case has been
recovered both with large
and with small type primer.

Height of Case: 3.87 lb.

1 1/16" 18 T.P.I.-R.H.



PROPELLANT CASE

TYPE 88 FIELD-A.A. GUN

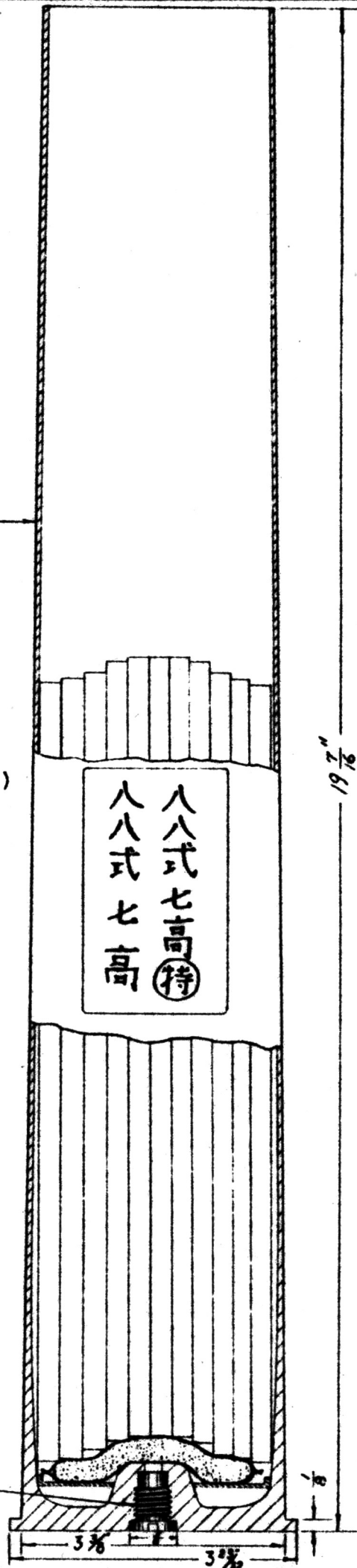
TYPE 88 FIELD-A.A. GUN (SPECIAL)

ARMY

7 CM. (75 MM.)

CASE :
DRAWN BRASS

Weight of Case:
1800 grams (4 lb.)

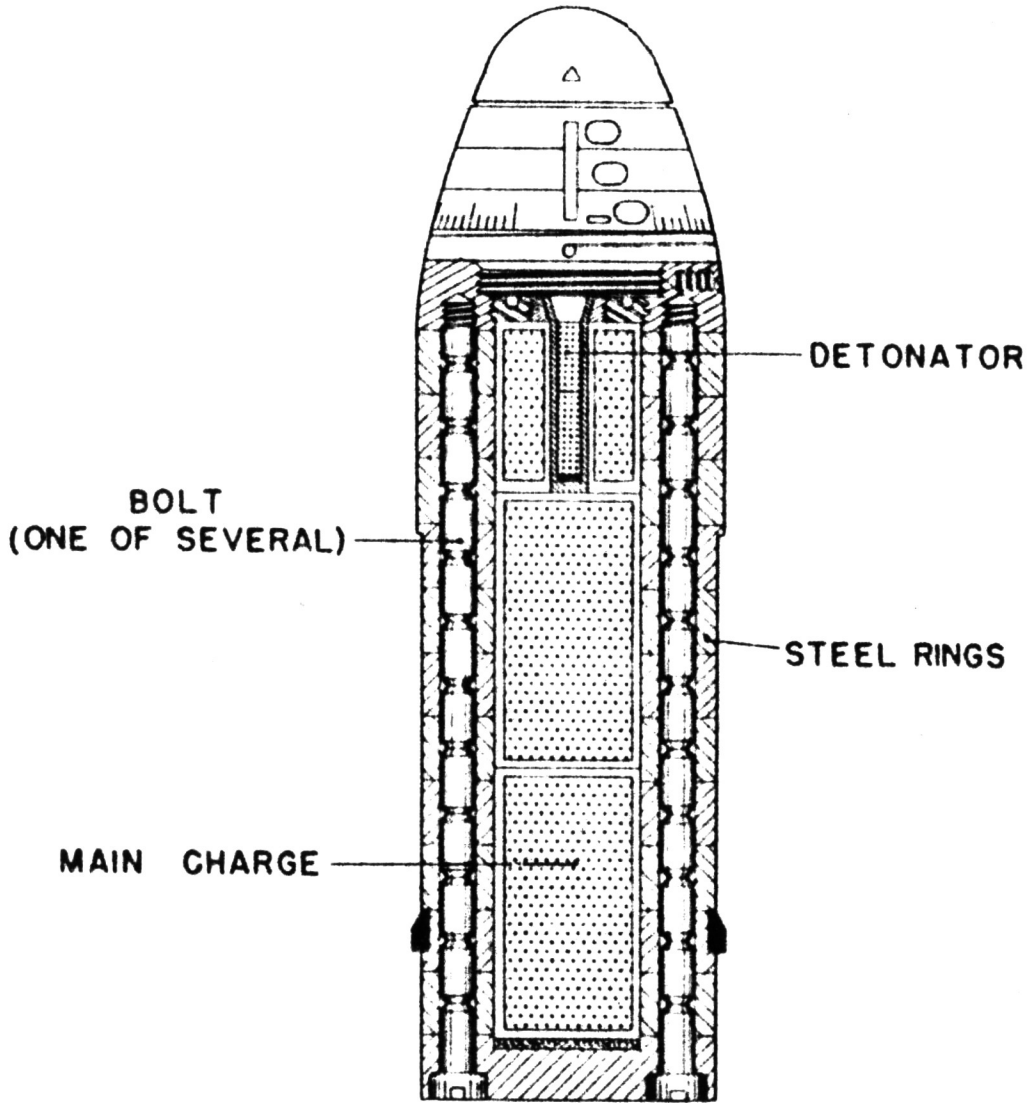


FLASH CHANNEL 1/4" DIA.

1/2" - 18 T.P.I. - R.H.

ARMY 7 CM (75MM.) H.E. - A.A. (?)

Type Undetermined



NEW COLOR SYSTEM



OLD COLOR SYSTEM



H.E.-A.A. (?)

Type Undetermined

ARMY**7 CM. (75MM.)****NOTE:**

The drawing given here is based on a Japanese drawing labelled only "Circular-layered projectile". The projectile is of apparent 75 mm size and the body appears to be made up of numerous steel rings bolted together with several bolts which are grooved at intervals to produce better fragmentation.

This projectile is believed to be the same referred to in other documents as "H.E.-A.A. Projectile" for the Type 11th Year Field A.A. Gun. The following applies only if this presumption is correct.

WEIGHT OF PROJECTILE, FILLED (Fuzed) 6.60 Kg. (14.52 lb.)

FILLING:

"ONA" - a mixture of picric acid and dinitronapthalene.

FUZING:

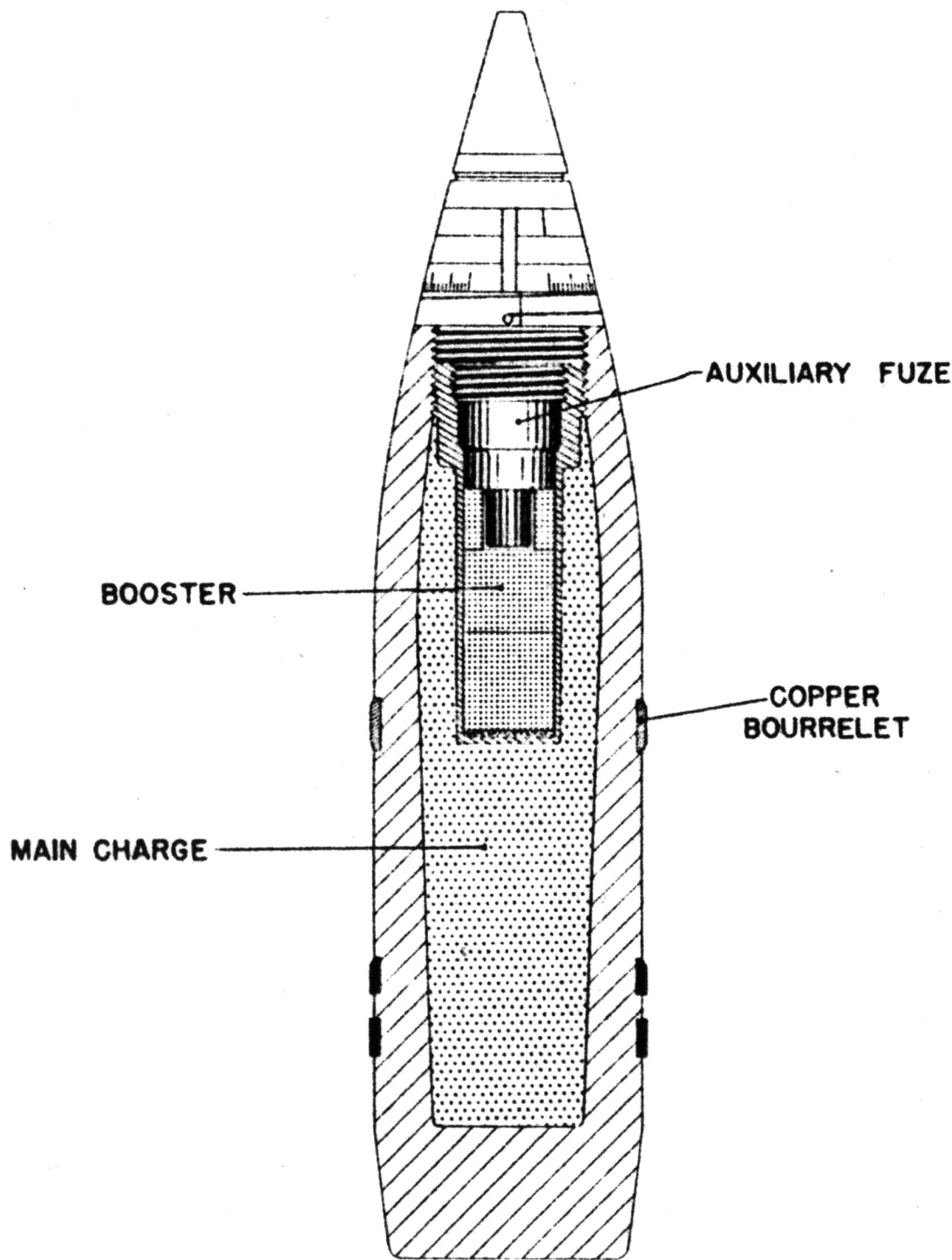
Type 10 Yr. A.A. Powder Time Fuze

WEAPONS IN WHICH USED:

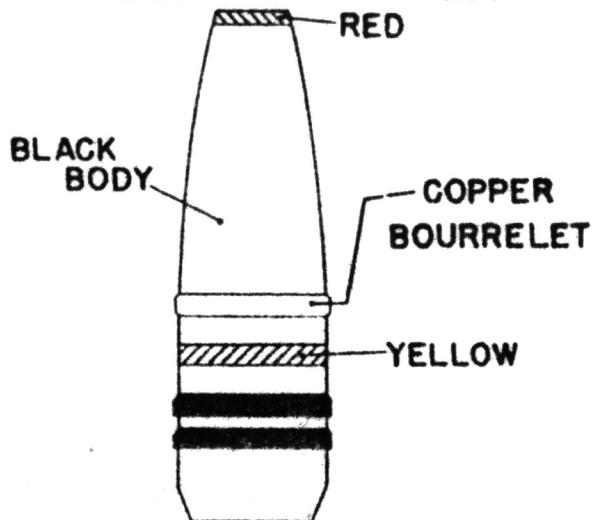
Type 11 Yr. Field A.A. Gun.

ARMY 7 CM.(75 MM.) H.E.-A.A. LONG-POINTED

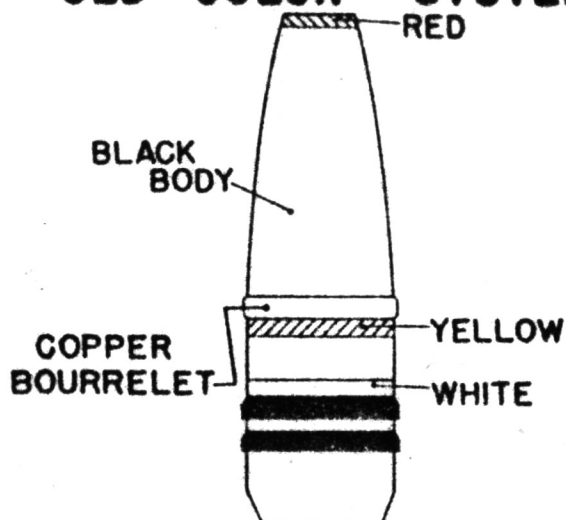
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



H.E.-A.A. LONG POINTED TYPE 90

ARMY 7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED (TNT) 6.53 Kg. (14.37 lb.)
WEIGHT OF FILLING 0.385 Kg. (0.85 lb.)

FILLING:

Standard: T.N.T. cast directly into lacquered cavity (recovered).
Alternate: Picric acid (documentary evidence).

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 257 mm (10-1/8 in.)
Length projecting from case 202 mm (7-15/16 in.)
Width of forward rotating band 9.5 mm
Width of after rotating band 9.5 mm
Width of space between rotating bands 6.5 mm
Width of copper bourrelet 14 mm
Distance from base to after edge of
bourrelet 140 mm

FUZING:

Type 89 Long-Pointed Powder Time Fuze in nose.
An auxiliary fuze armed by setback and centrifugal force is used
immediately below the time fuze.

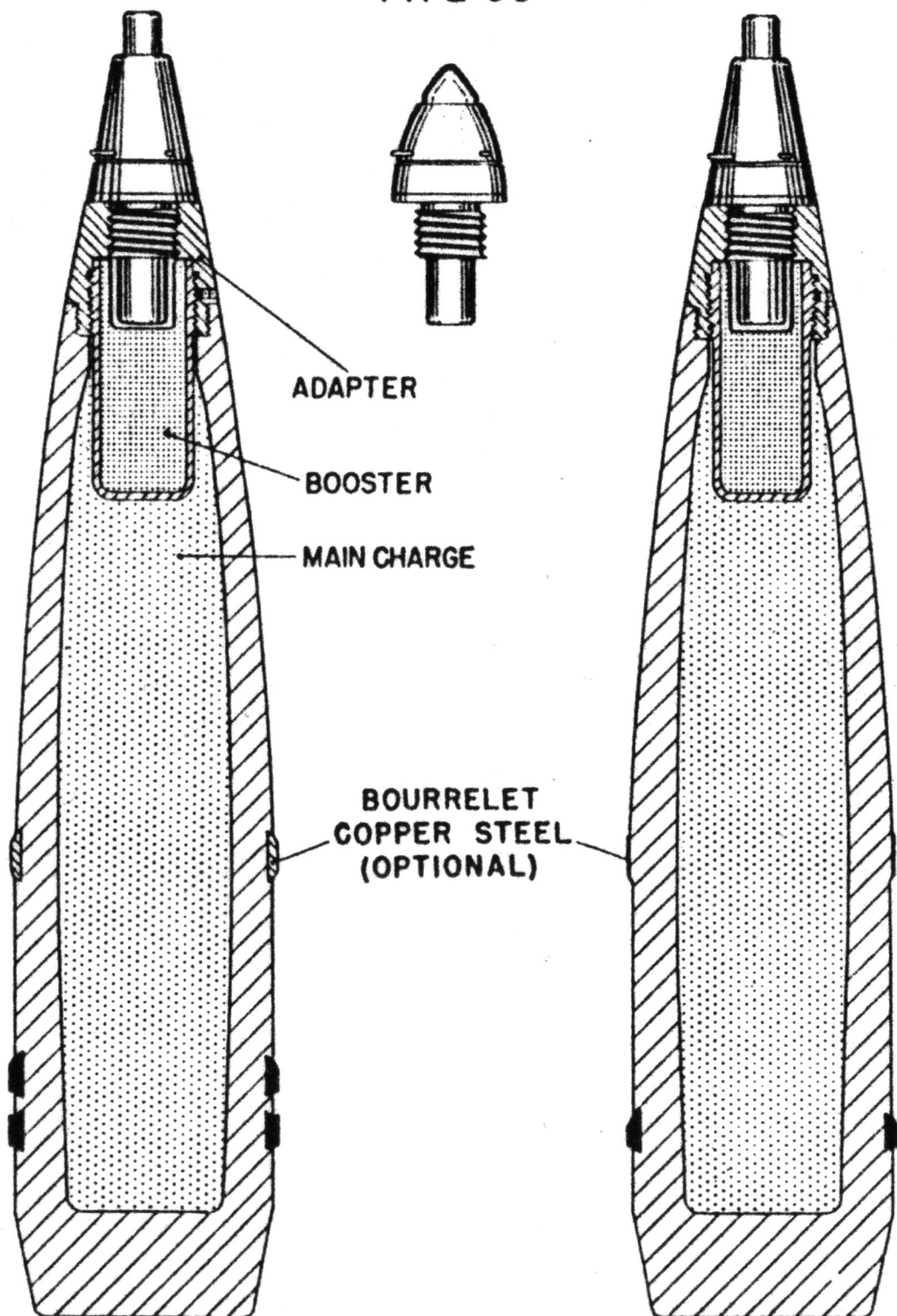
WEAPONS IN WHICH USED:

Type 11th Year 7.5 cm Field A.A. gun
*Type 88 7 cm Field A.A. Gun Case, 19-9/16 in.
Type 88 7 cm Field A.A. Gun (Special). Case, 19-9/16 in.

Asterisk indicates weapon for which complete rounds have been
observed or recovered. Others are derived from documents.

ARMY 7 CM.(75 MM.) H.E. LONG-POINTED

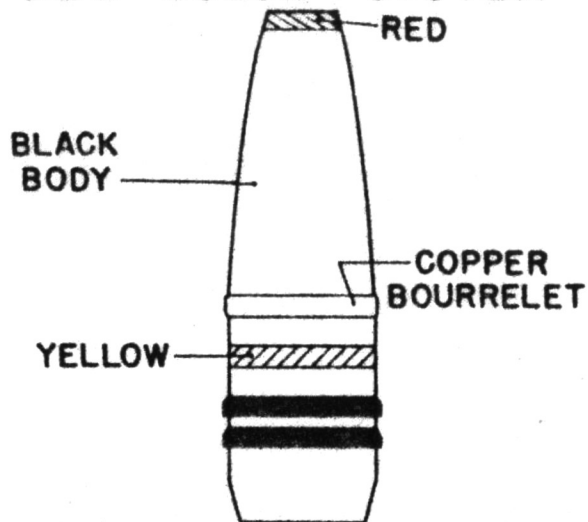
TYPE 90



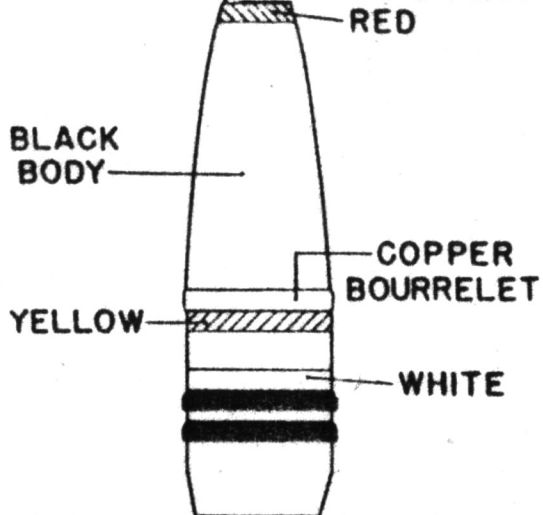
FOR GUNS WITH HIGH MUZZLE VELOCITY

FOR GUNS WITH LOW MUZZLE VELOCITY

NEW COLOR SYSTEM



OLD COLOR SYSTEM



**H.E. LONG-POINTED
TYPE 90**

**ARMY
7 CM. (75 MM.)**

WEIGHT OF PROJECTILE, FILLED (w/o fuze)(T.N.P.) . . . 6.17 Kg. (13.62 lb.)
WEIGHT OF FILLING 0.49 Kg. (1.08 lb.)

FILLING:

Standard: TNT cast directly into a lacquered cavity.(Documentary).
Alternate: "HEINEI" Trinitrophenotole.(Recovered).

Indicated by " 平等 " painted on body.

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus toler-
ance).
Length overall w/o fuze 317.5 mm (12-1/2 in.)
Length protruding from case 267.0 mm (10-1/2 in.)
Width of rotating bands:
Upper 10.6 mm
Lower 9.6 mm

FUZING:

Type 88 Instantaneous (Gun)
Type 88 Delay (Gun)

OPERATION AND EMPLOYMENT:

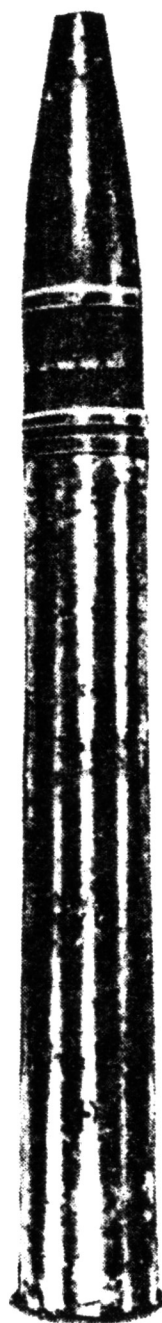
It is believed this projectile was designed primarily to adapt the Type 88, 75 mm, high velocity-A.A. gun to a dual purpose field gun. (i.e., for air and ground targets). The ballistic form of this projectile approximates that of the Type 90 long-pointed A.A. projectile, when the A.A. time fuze is installed. The projectile is also used for other weapons, as shown below.

WEAPONS IN WHICH USED:

- * Type 88 Field A.A. (Special)
Case, 19-9/16 in.
 - * Type 38 Field Gun Group (four weapons)
Case, 11-9/16 in.
Type 90 Field Gun
Case, 16-11/16 in.
 - * Type 94 Mountain Gun
- Asterisk indicates weapon for which complete rounds have been recovered. Others are derived from documents.

REMARKS:

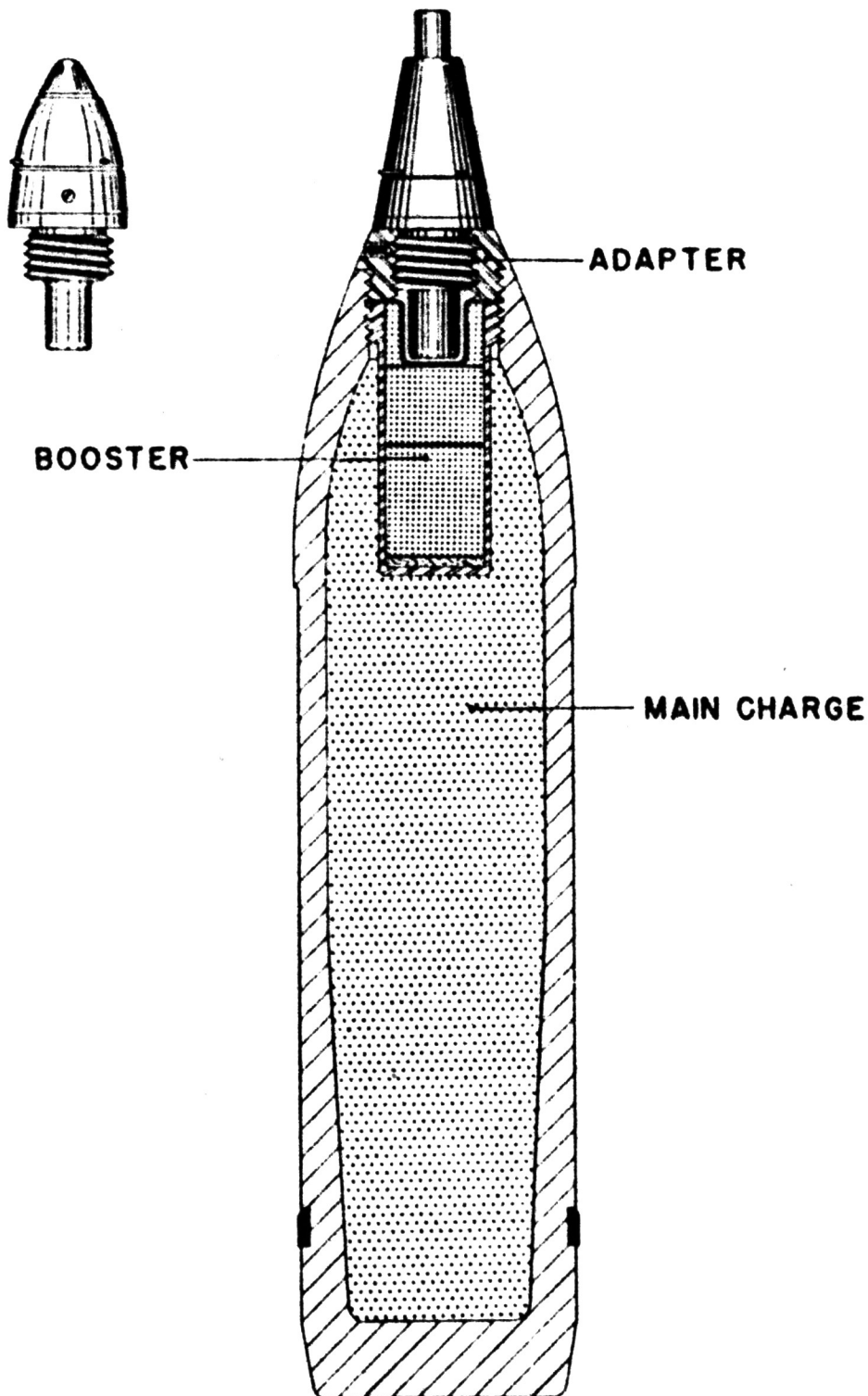
When this projectile is cased for use in the Type 88 Field A.A. gun (special), a reduced propelling charge is used. This reduced charge is indicated by a Roman Numeral II stencilled on the case.



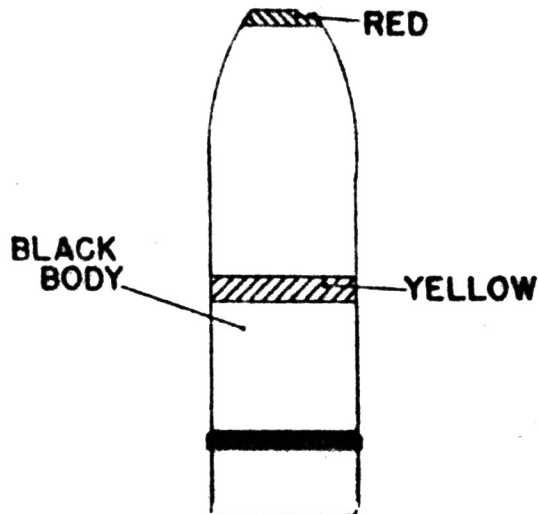
Assembled Round For
Type 88 Gun

ARMY 7 CM. (75 MM.) HIGH EXPLOSIVE

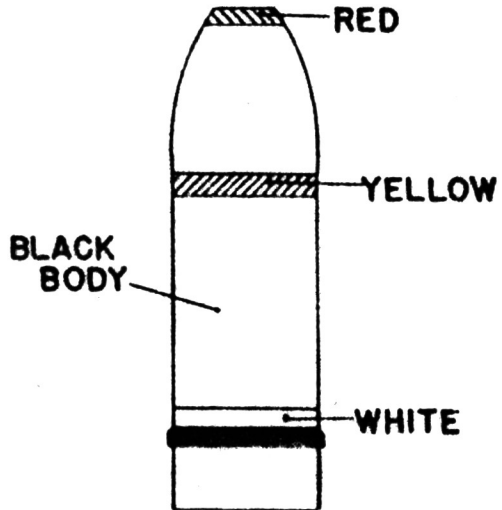
TYPE 94



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**HIGH EXPLOSIVE
TYPE 94**

**ARMY
7 CM. (75MM.)**

WEIGHT OF PROJECTILE, FILLED (TNT) 6.02 Kg. (13.24 lb.)
WEIGHT OF FILLING 0.81 Kg. (1.78 lb.)

FILLING:

Standard: T.N.T. cast directly into lacquered cavity.
Alternate: (1) - "ANGA" (Ammon. nitrate-RDX) (Documentary)
Alternate: (2) - "HEINEI" (Trinitrophenetole). (Recovered).
Indicated by " 安瓦 " on projectile body.
Indicated by " 平等 " on projectile body.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 303 mm (11-15/16 in.)
Length protruding from case 264 mm (10-3/8 in.)
Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type)
Type 88 Short Delay Nose Fuze (Gun Type).

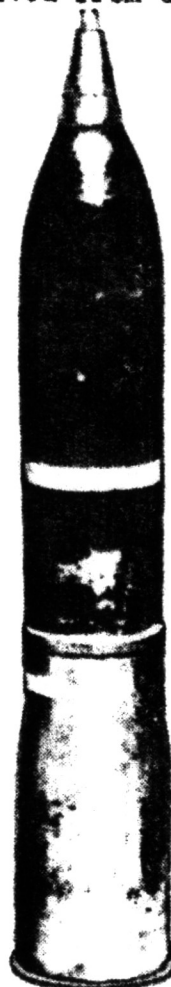
WEAPONS IN WHICH USED:

*Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
*Type 94 Mountain Gun Case, 11-9/16 in.
*Type 38 Field Gun Group Case, 11-9/16 in.
Type 88 Field A.A. Gun Case, 19-9/16 in.
Type 88 Field A.A. (Special) Gun Case, 19-9/16 in.
Type 90 Field Gun. Case, 16-11/16 in.

Asterisks indicate weapons for which complete rounds have been observed or recovered. Others are derived from documents.

REMARKS:

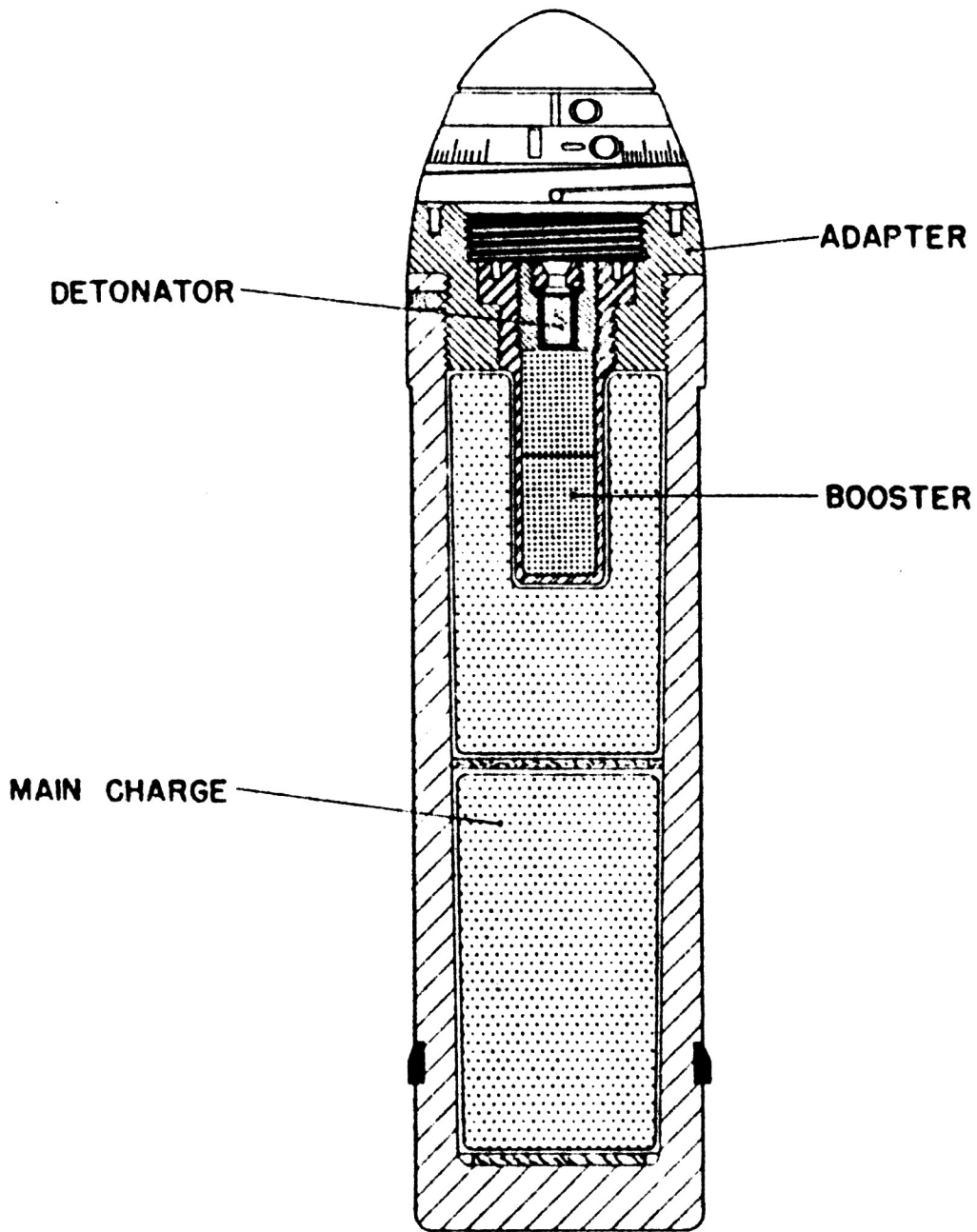
Two other designs essentially the same as the Type 94 are known:
(1) H.E. - Type 10 Yr.
(2) H.E. - Type 90
These have the same overall length as the Type 94, and have the same external form and general construction except for the following features:
(a) The explosive cavity does not taper in the base as in the Type 94, but is straight-sided.
(b) The slight boat-tail present on the Type 94 is absent in the other designs.
(c) Below the rotating band in the Type 10 Yr. design only, there is an annular groove into which the case is crimped.



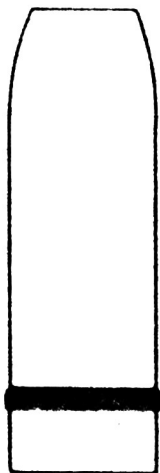
Assembled Round For Type 41 Gun

ARMY 7 CM. (75 MM.) HIGH EXPLOSIVE

DESIGN "A"



NEW COLOR SYSTEM



OLD COLOR SYSTEM



HIGH EXPLOSIVE DESIGN "A"

ARMY 7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED 6.46 Kg. (14.2 lb.)
 WEIGHT OF FILLING 0.625 Kg. (1.38 lb.)

FILLING:

"ONA" - a mixture of picric acid and dinitronaphthalene, in two preformed blocks.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
 Length overall w/o fuze No data
 Length protruding from case No data
 Width of rotating band No data

FUZING:

Type 3rd Yr. combination time and impact fuze.

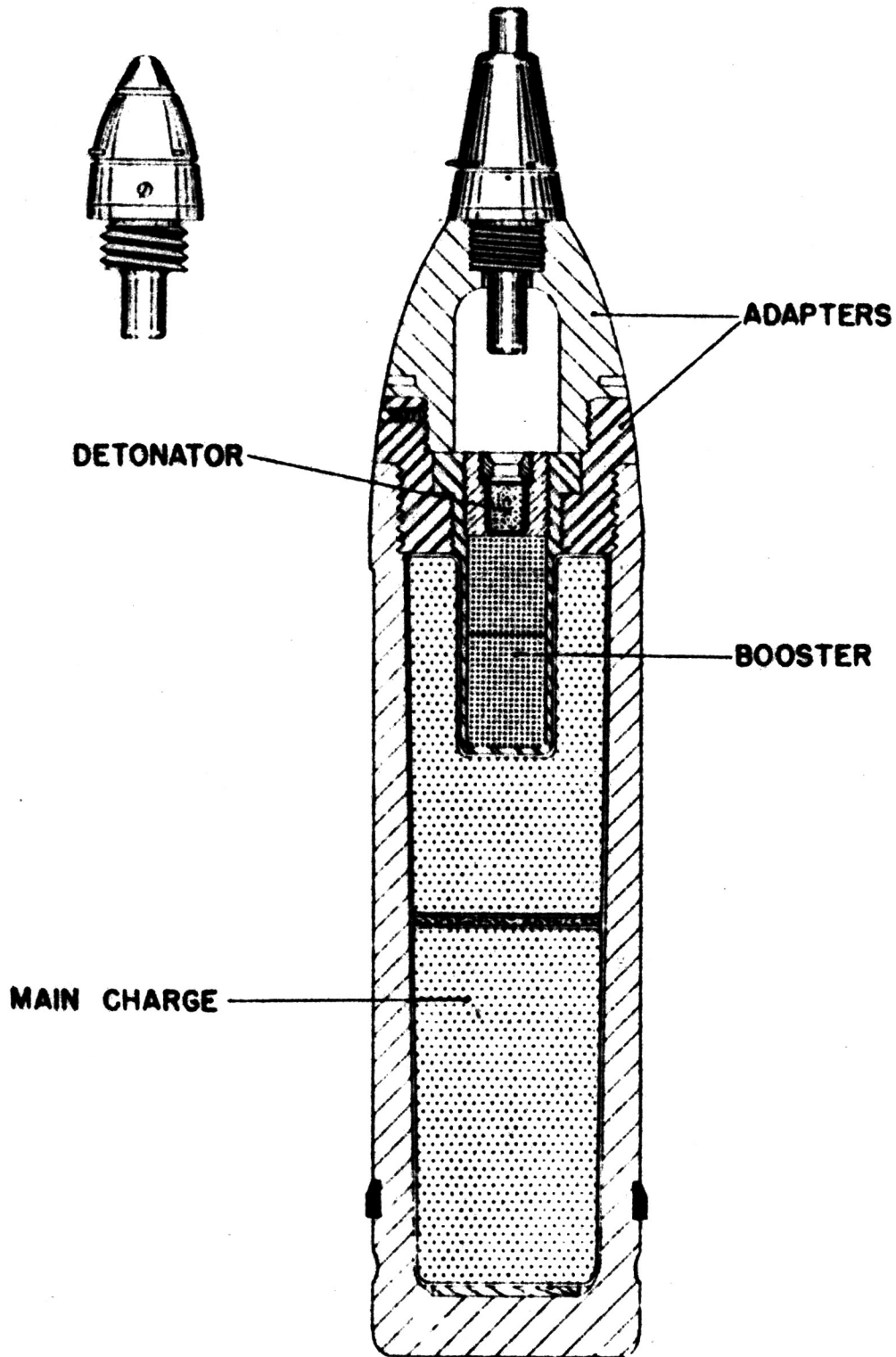
WEAPONS IN WHICH USED:

Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
 Type 94 Mountain Gun Case, 11-9/16 in.
 Type 38 Field Gun Group Case, 11-9/16 in.

This projectile is known only from documents.

ARMY 7 CM. (75MM.) HIGH EXPLOSIVE

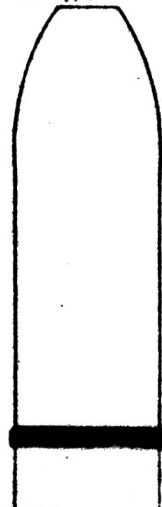
DESIGN "B"



NEW COLOR SYSTEM



OLD COLOR SYSTEM



HIGH EXPLOSIVE DESIGN "B"

ARMY 7 CM. (75 MM.)

WEIGHT OF PROJECTILE, FILLED 6.61 Kg. (14.5 lb.)
WEIGHT OF FILLING 1.24 lb.

FILLING:

"ONA" - a mixture of picric acid and dinitronaphthalene in two preformed blocks wrapped as a single unit.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 12-3/8 in.
Length protruding from case w/o fuze . . . 10-7/8 in.
Width of rotating band No data

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type).
Type 88 Short Delay Nose Fuze (Gun Type).

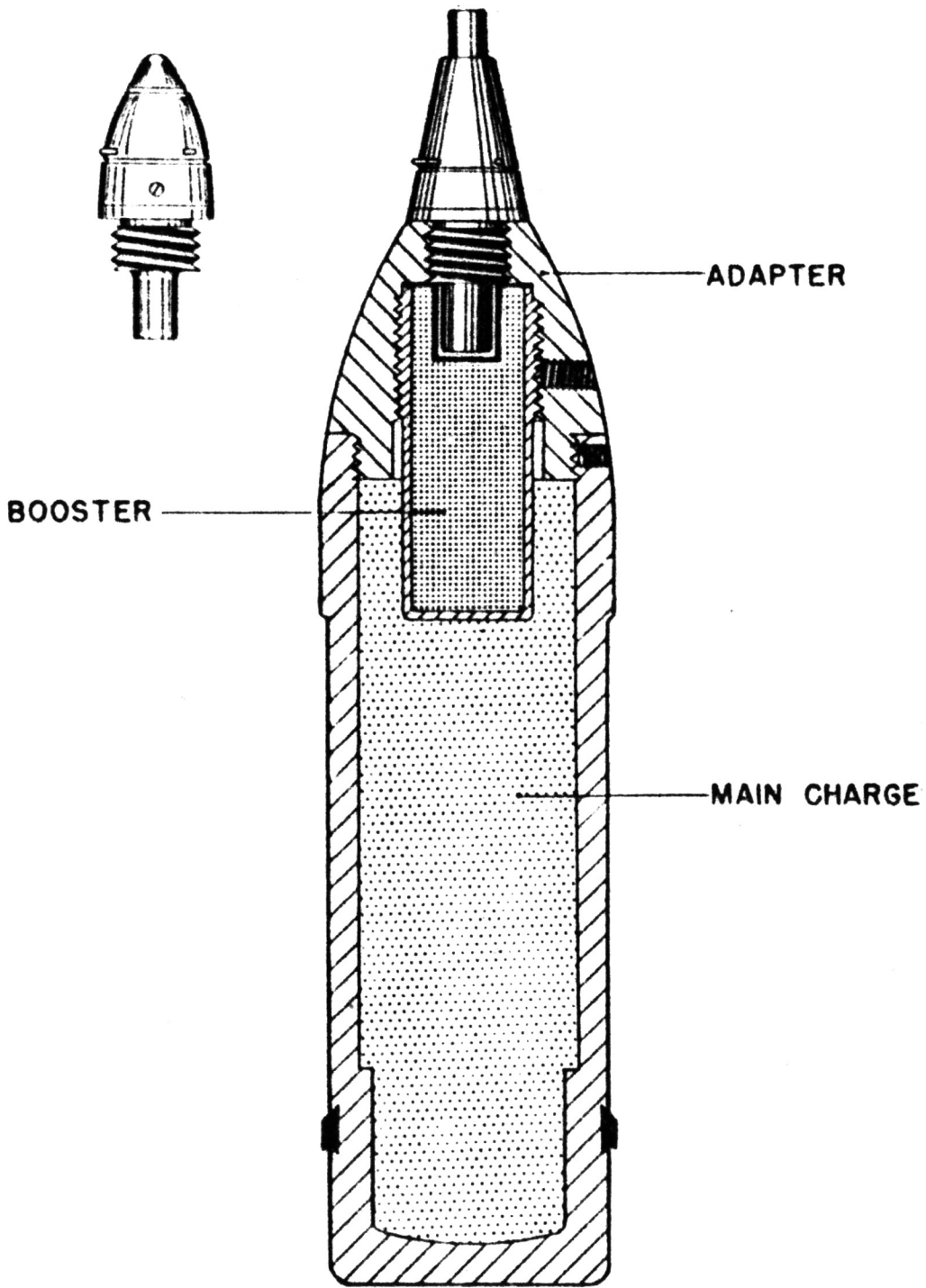
WEAPONS IN WHICH USED:

Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
Type 94 Mountain Gun Case, 11-9/16 in.
* Type 38 Field Gun Group Case, 11-9/16 in.

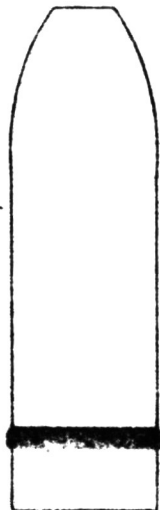
Asterisk indicates recovery.

ARMY 7 CM.(75MM) HIGH EXPLOSIVE (CONVERTED FROM SHRAPNEL)

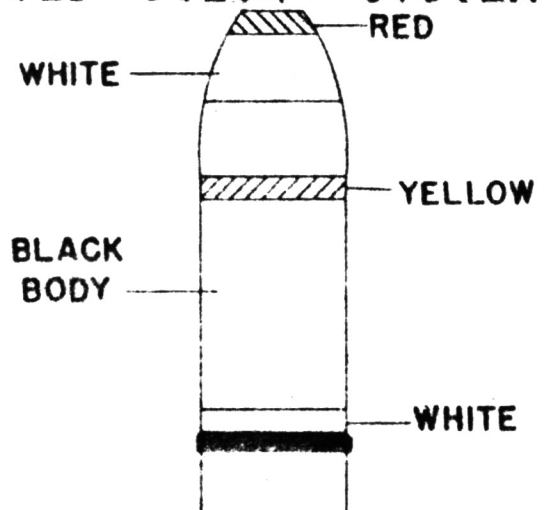
TYPE 98 MODIFIED



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**HIGH EXPLOSIVE (CONVERTED)
TYPE 98 MODIFIED**

**ARMY
7 CM. (75MM.)**

WEIGHT OF PROJECTILE, FILLED 4.5 kg. (9.9 lb.)
WEIGHT OF FILLING 0.95 kg. (2.1 lb.)

FILLING:

T.N.T. cast directly into lacquered cavity.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 279 mm (11 in.)
Length protruding from case 240 mm (9-1/2 in.)
Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type)
Type 88 Short Delay Nose Fuze (Gun Type) has not been recovered in the projectile but is interchangeable with the Type 88 Instantaneous and may be used.

WEAPONS IN WHICH USED:

*Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
Type 38 Field Gun Group Case, 11-9/16 in.

Asterisk indicates weapon for which complete rounds have been recovered or observed. Others are derived from documents.

REMARKS:

The body of this projectile was designed for use as a shrapnel projectile employing a large combination fuze. In the converted form, the projectile is filled with T.N.T. instead of the shrapnel filling of lead balls, and a large ogival adapter permits the use of standard point-detonating fuzes and a standard H.E. booster.

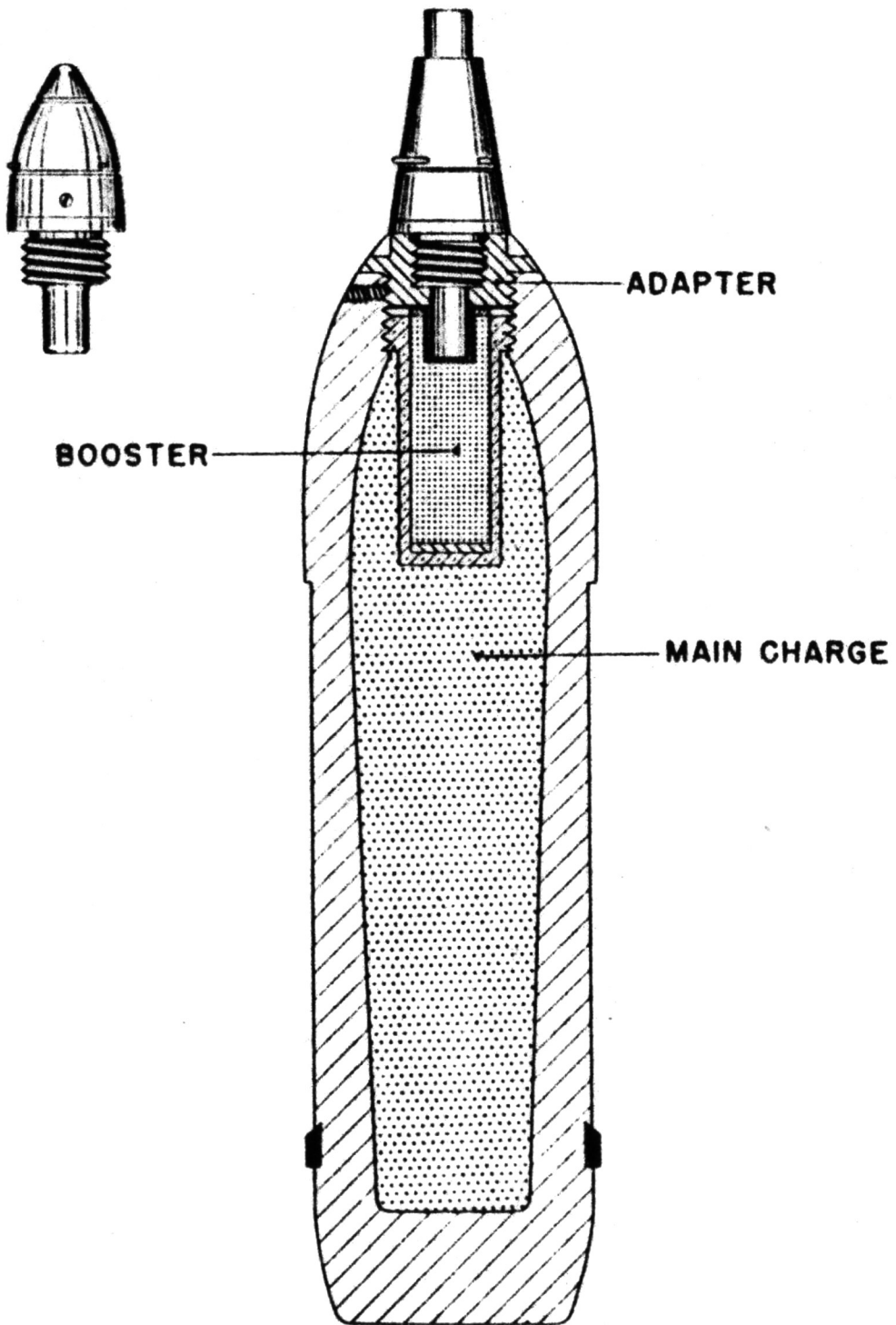
Distinctive marking for this projectile is attained by painting the large adapter white.

Assembled Round For
Type 41 Gun



ARMY 7 CM.(75MM.) H. E. SEMI-STEEL

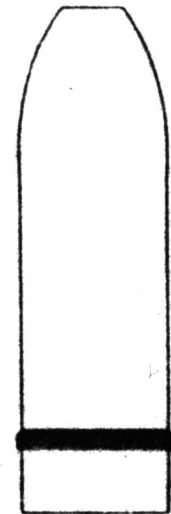
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**H.E. SEMI-STEEL
TYPE 90**

ARMY
7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED 6.18 Kg. (13.7 lb.)
WEIGHT OF FILLING 0.42 Kg. (0.92 lb.)

FILLING:

Cast T.N.T.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze No data
Length protruding from case(w/o fuze). 253 mm (9-15/16 in.)
Width of rotating band No data.

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type)
Type 88 Short Delay Nose Fuze (Gun Type)

WEAPONS IN WHICH USED:

Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.)
Type 94 Mountain Gun Case, 11-9/16 in.)
Type 38 Field Gun Group Case, 11-9/16 in.)
Type 90 Field Gun Case, 16-11/16 in.

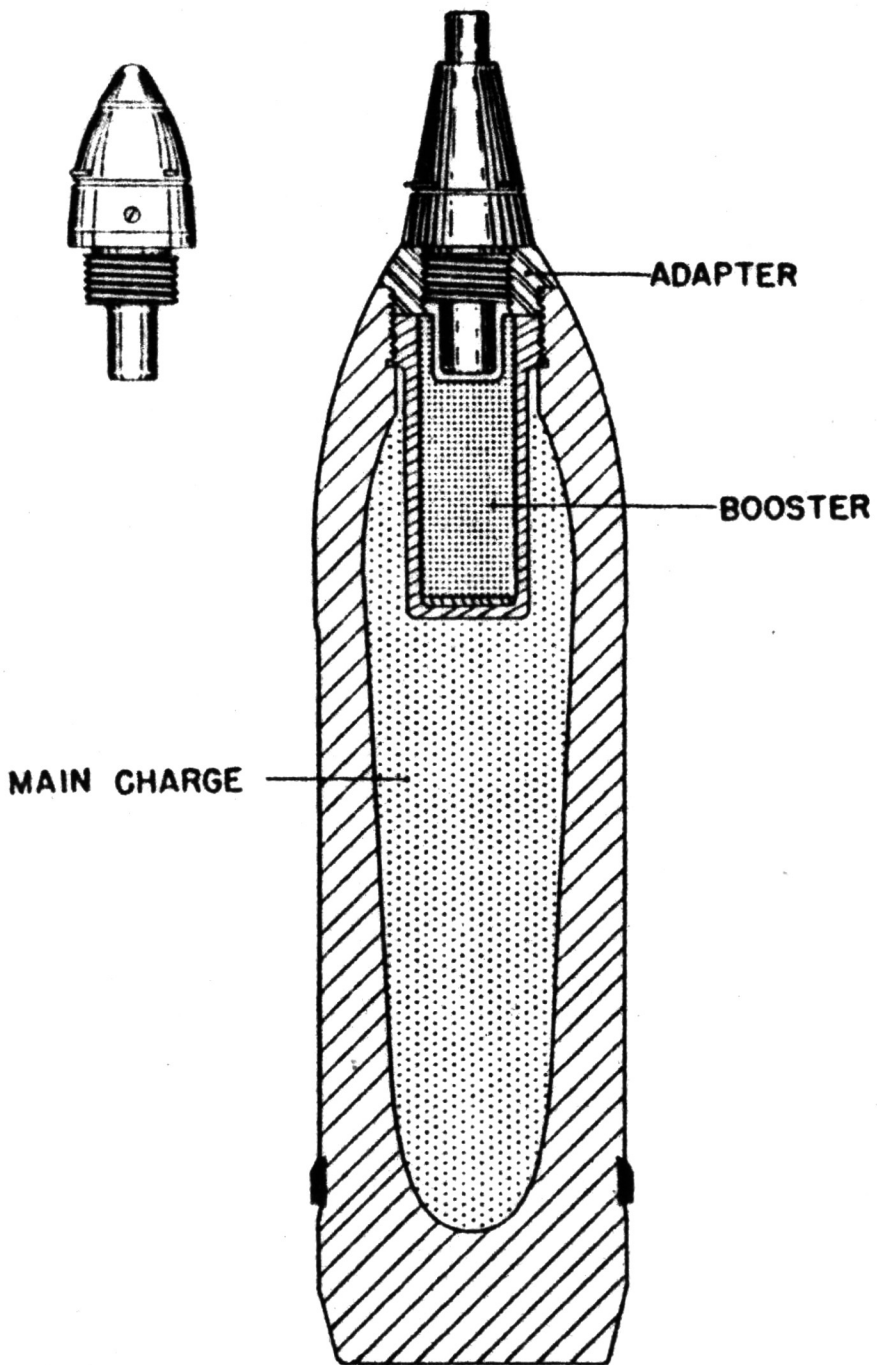
This projectile is known from documents only.

REMARKS:

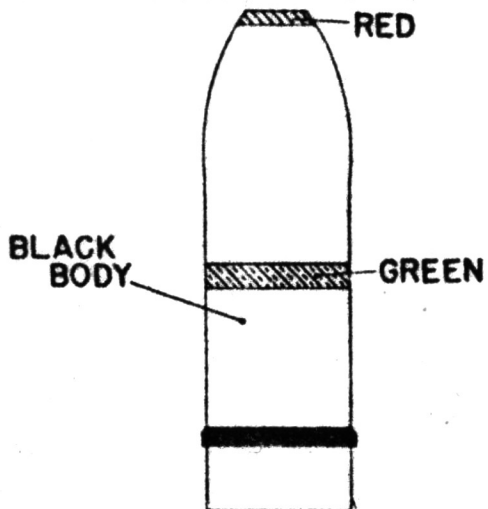
No specimens of this projectile have been recovered. It is presumed that the color marking would be identical to that given for the H.E. Semi-steel Type 97, which follows.

ARMY 7CM (75MM.) H.E. SEMI-STEEL

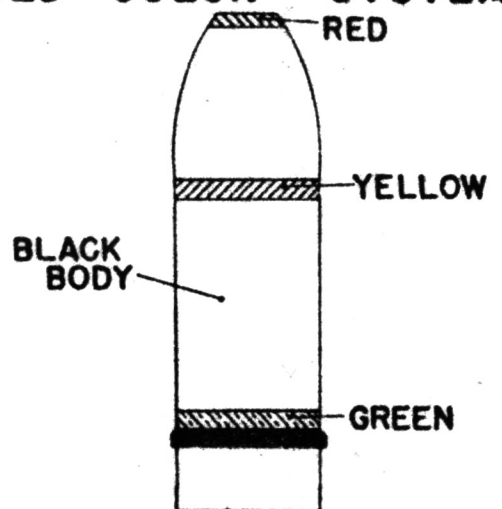
TYPE 97



NEW COLOR SYSTEM



OLD COLOR SYSTEM



H.E. SEMI-STEEL
TYPE 97

ARMY
7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED 5.5 Kg. (12.1 lb.)
WEIGHT OF FILLING 0.45 Kg. (0.99 lb.)

FILLING:

T.N.T. cast directly into lacquered cavity.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 302 mm (11-7/8 in.)
Length protruding from case(w/o fuze). . No data
Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type)
Type 88 Short Delay Nose Fuze (Gun Type)

WEAPONS IN WHICH USED:

* Type 41 Mountain Gun Case, 7-1/4 in.

Asterisk indicates weapon for which complete rounds have been recovered or observed. Others are derived from documents.

REMARKS:

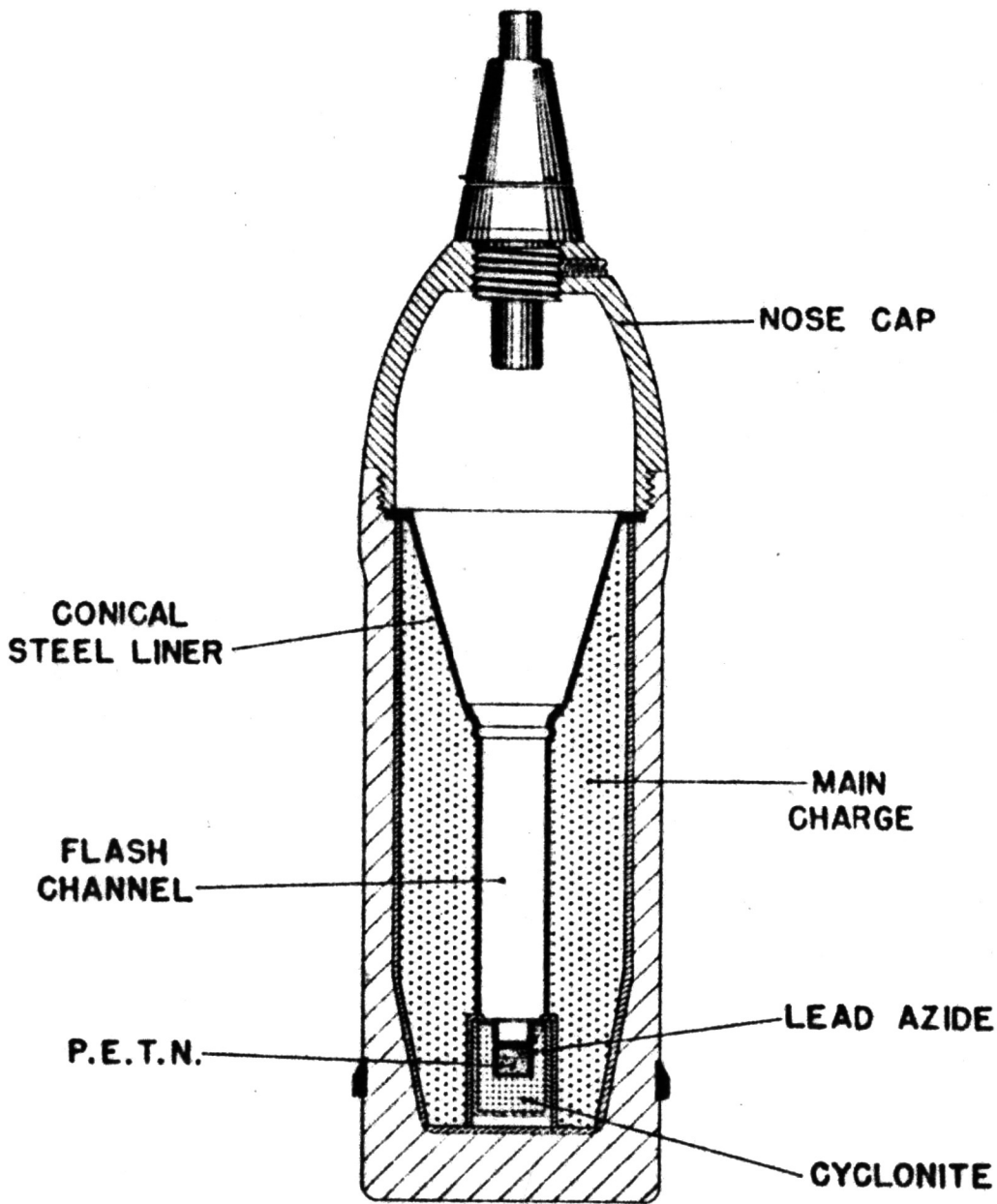
Because of the low tensile strength of the steel employed, the base must be extremely thick to withstand the forces in the gun.



Components of Complete Round For Type 41 Mountain Gun

ARMY 7 CM. (75 MM.) HOLLOW CHARGE

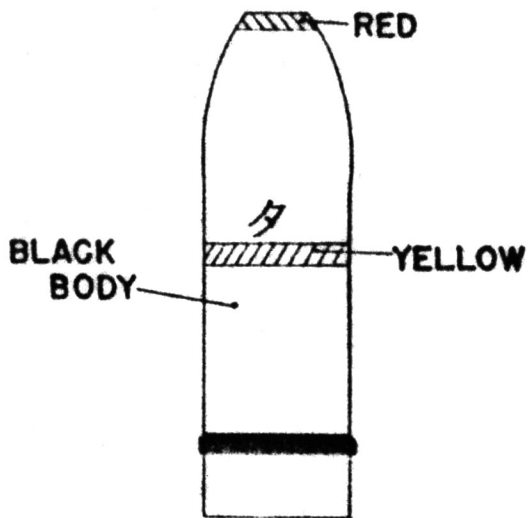
TYPE 2



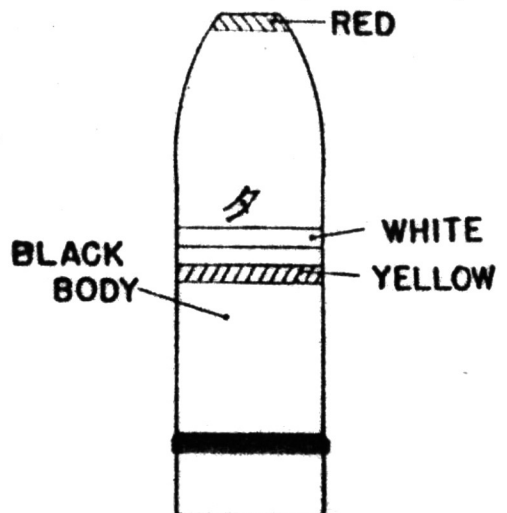
NEW COLOR SYSTEM

NEW AMMUNITION. OLD COLOR SCHEME NEVER OBSERVED.

ALTERNATE "A" (EARLY)



ALTERNATE "B" (RECENT)



HOLLOW CHARGE

TYPE 2

ARMY

7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED (w/o fuze) 3.56 Kg. (7.81 lb.)
 WEIGHT OF FILLING 0.50 Kg. (1.11 lb.)

FILLING:

A cast mixture of 60% T.N.T. and 40% Cyclonite (RDX), wrapped in varnished paper.

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
 Length overall w/o fuze 240.0 mm (9-1/2 in.)
 Length protruding from case 210.0 mm (8-1/4 in.)
 Length of projectile body w/o nose cap. . 183.0 mm (7-3/16 in.)
 Width of rotating band 10.0 mm

FUZING:

Type 88 Instantaneous (Gun Type)

OPERATION AND EMPLOYMENT:


This round is used principally as an anti-tank weapon. In firing tests it penetrated 3 inches of Navy hull plate. (Headquarters USAFISPA, Office of the A.C. of S., G-2, Ordnance Intelligence Unit Report #41, entitled "Firing Tests of Japanese Anti-Tank Weapons").

WEAPONS IN WHICH USED:

*Type 94 Mountain Gun Case, 11-9/16 in.
 *Type 41 Mountain Gun Case, 7-1/4 in.

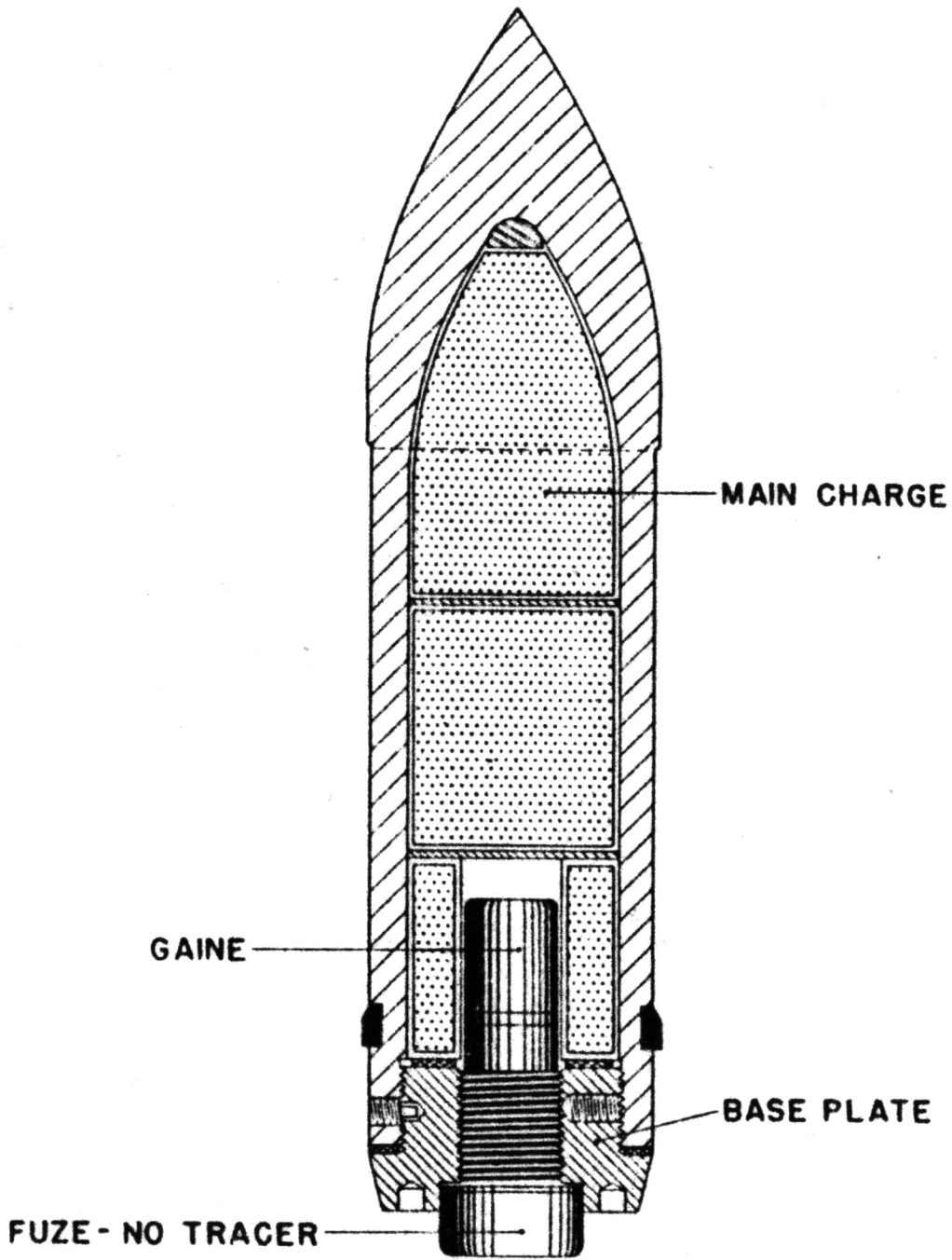
Complete rounds using this projectile have been recovered or observed for both guns listed.

REMARKS:

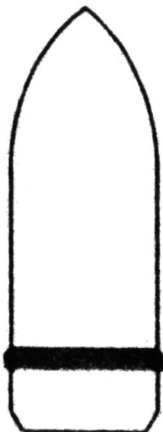
- (1) There is a marked similarity between this projectile and German hollow charge rounds, both in projectile design and explosive filling.
- (2) The symbol TA (), stencilled on this projectile is employed in other Japanese munitions to indicate hollow-charge design.
- (3) In the earliest rounds found, the projectiles were marked by a yellow band around the middle of the body, indicating "High Explosive" according to the new color system. Later recoveries indicate the adoption of the combination of white band, used to indicate "Armor Piercing", together with the yellow band. Both bands appear near the middle of the body. This arrangement is not to be confused with the use, in the old color system, of a yellow band above a white band for marking "High Explosive" projectiles.

ARMY 7 CM. (75MM.) A.P.-H.E.

TYPE 95



NEW COLOR SYSTEM



OLD COLOR SYSTEM



A.P.-H.E.
TYPE 95

ARMY
7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED (Fuzed) 6.21 Kg. (13.66 lb.)
WEIGHT OF FILLING 0.46 Kg. (1.01 lb.)

FILLING:

"ONA" - a mixture of picric acid and dinitronaphthalene.

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
Length overall w/o fuze No data
Length protruding from case 265.5 mm (10-7/16 in.)
Width of rotating band No data

FUZING:

Type 95 Small Base Fuze

WEAPONS IN WHICH USED:

Type 41 Mountain Gun (Regimental Gun). Case, 7-1/4 in.
Type 38 Field Gun Group Case, 11-9/16 in.
Type 90 Field Gun Case, 16-11/16 in.
Type 94 Mountain Gun Case, 11-9/16 in.
Type 88 7 cm Field A.A. Gun (Special). Case, 19-9/16 in.

PENETRATING POWER:

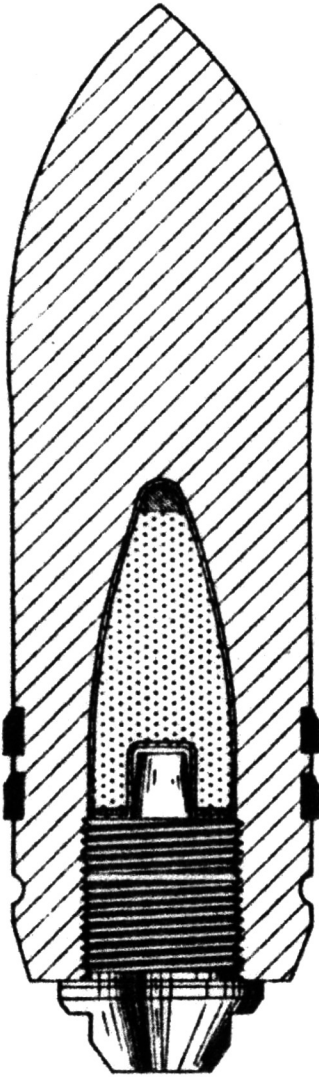
Documentary evidence indicates that when used in the Type 41 Mountain Gun this projectile is designed to penetrate 20 mm of steel plate at a maximum range of 3000 meters.

REMARKS:

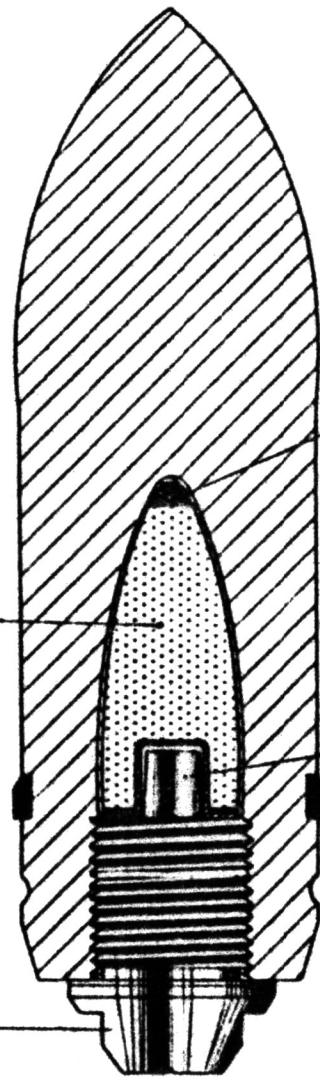
This projectile is known only from documents. By design it is intended for a function intermediate between that of H.E. projectiles and true armor-piercing types. For this reason the Japanese designate it "A.P.-H.E." Documents indicate that A.P.-H.E. projectiles are painted like the H.E. rather than the A.P. class.

ARMY 7CM.(75MM) ARMOR PIERCING

TYPE I



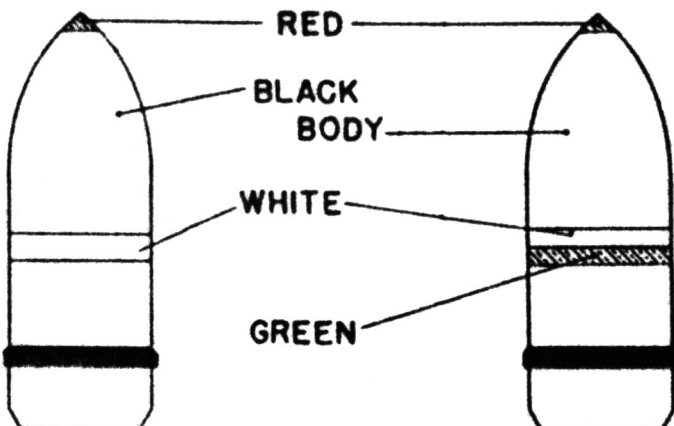
FOR GUNS WITH HIGH MUZZLE VELOCITY



FOR GUNS WITH LOW VELOCITY

WOODEN PLUG
 MAIN CHARGE
 FUZE WITH BUILT-IN TRACER
 GAINE

NEW COLOR SYSTEM



OLD COLOR SYSTEM

NEW AMMUNITION. OLD COLOR SCHEME NEVER OBSERVED.

**ARMOR-PIERCING
TYPE I**

**ARMY
7 CM. (75MM.)**

WEIGHT OF PROJECTILE, FILLED (Fuzed) 6.56 Kg. (14.4 lb.)
 WEIGHT OF PROJECTILE, EMPTY (w/o fuze & gains) . 6.14 Kg. (13.5 lb.)
 WEIGHT OF FILLING 0.053 Kg. (0.12 lb.)

FILLING:

A mixture of 90% Cyclonite (RDX) and 10% paraffin, coated with graphite and packed in an aluminum foil wrapper.

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
 Length overall w/o fuze 240.0 mm (9-7/16 in.)
 Length protruding from case 200.0 mm (7-13/16 in.)
 Width of rotating band 10.0 mm

FUZING:

Medium Mk I Base Fuze (short delay) with red tracer.

OPERATION AND EMPLOYMENT:

This projectile was evidently developed to adapt the Type 41 and Type 94 Guns for use as anti-tank weapons.

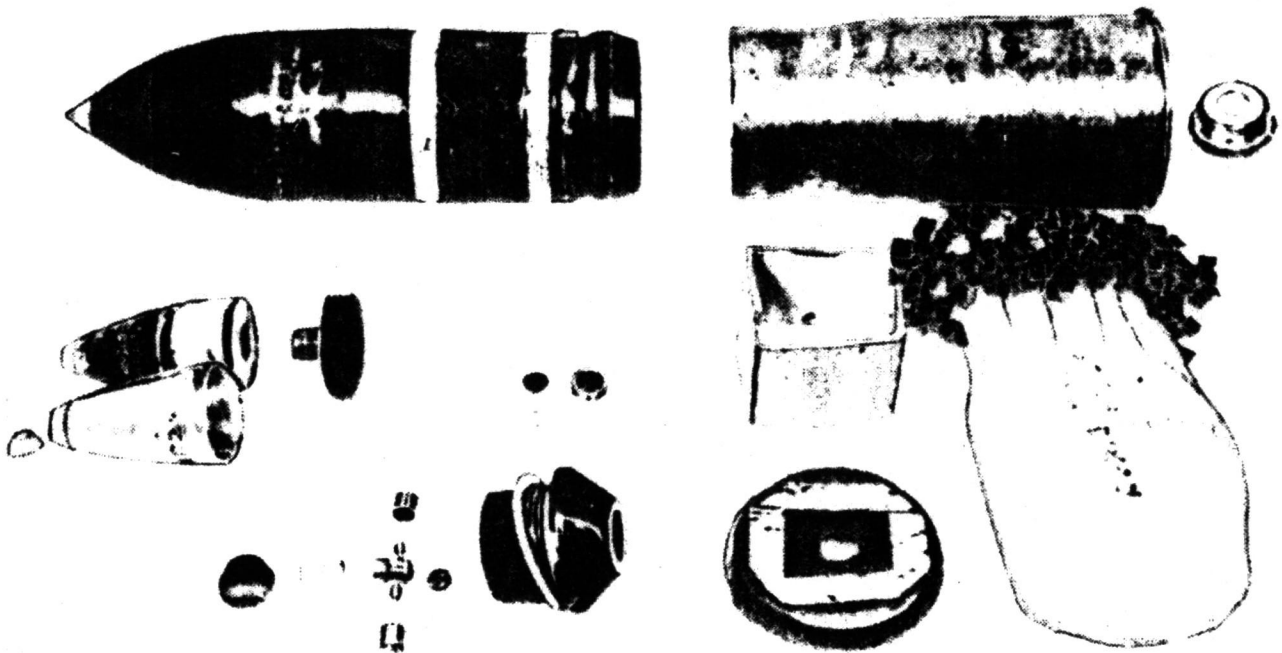
WEAPONS IN WHICH USED:

- *Type 94 Mountain Gun Case, 11-9/16 in.
- *Type 41 Mountain or Regimental Gun Case, 7-1/4 in.
- *Type 90 Field Gun Case, 16-11/16 in.

Complete rounds using this projectile have been recovered for all guns listed.

REMARKS:

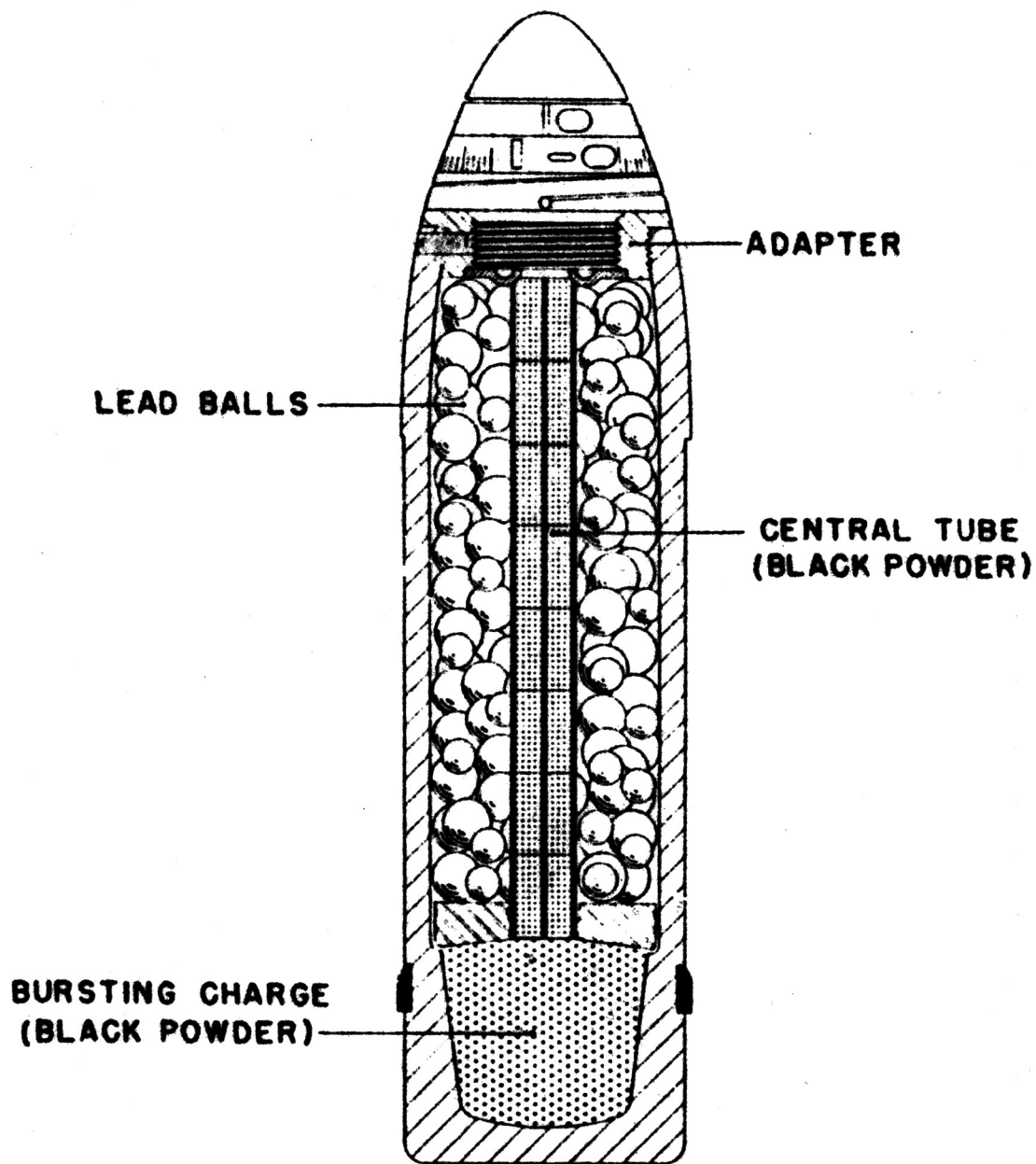
Identical projectiles, all with tracer, have been found marked with either a single white band near the middle of the body or with white-and-green double band (green in conjunction with another band indicates presence of tracer). It is believed that this represents optional marking in the new system rather than old and new marking.



Components of Complete Round For Type 41 Mountain Gun

ARMY 7 CM. (75MM.) SHRAPNEL

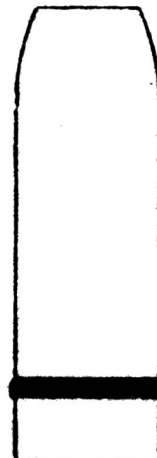
TYPE 38



NEW COLOR SYSTEM



OLD COLOR SYSTEM



SHRAPNEL TYPE 38

ARMY

7 CM. (75 MM.)

WEIGHT OF PROJECTILE 6.83 Kg. (15.0 lb.)
BURSTING CHARGE: 0.10 Kg. (0.22 lb.)

Black powder contained in the base of the projectile and in a central brass tube.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 250 mm (9-3/4 in.)
Length protruding from case w/o fuze. . 188 mm (7-3/8 in.)
Width of rotating band No data.

FUZING:

Type 3rd Year combination time and impact fuze.
Type 5th Year combination time and impact fuze.

WEAPONS IN WHICH USED:

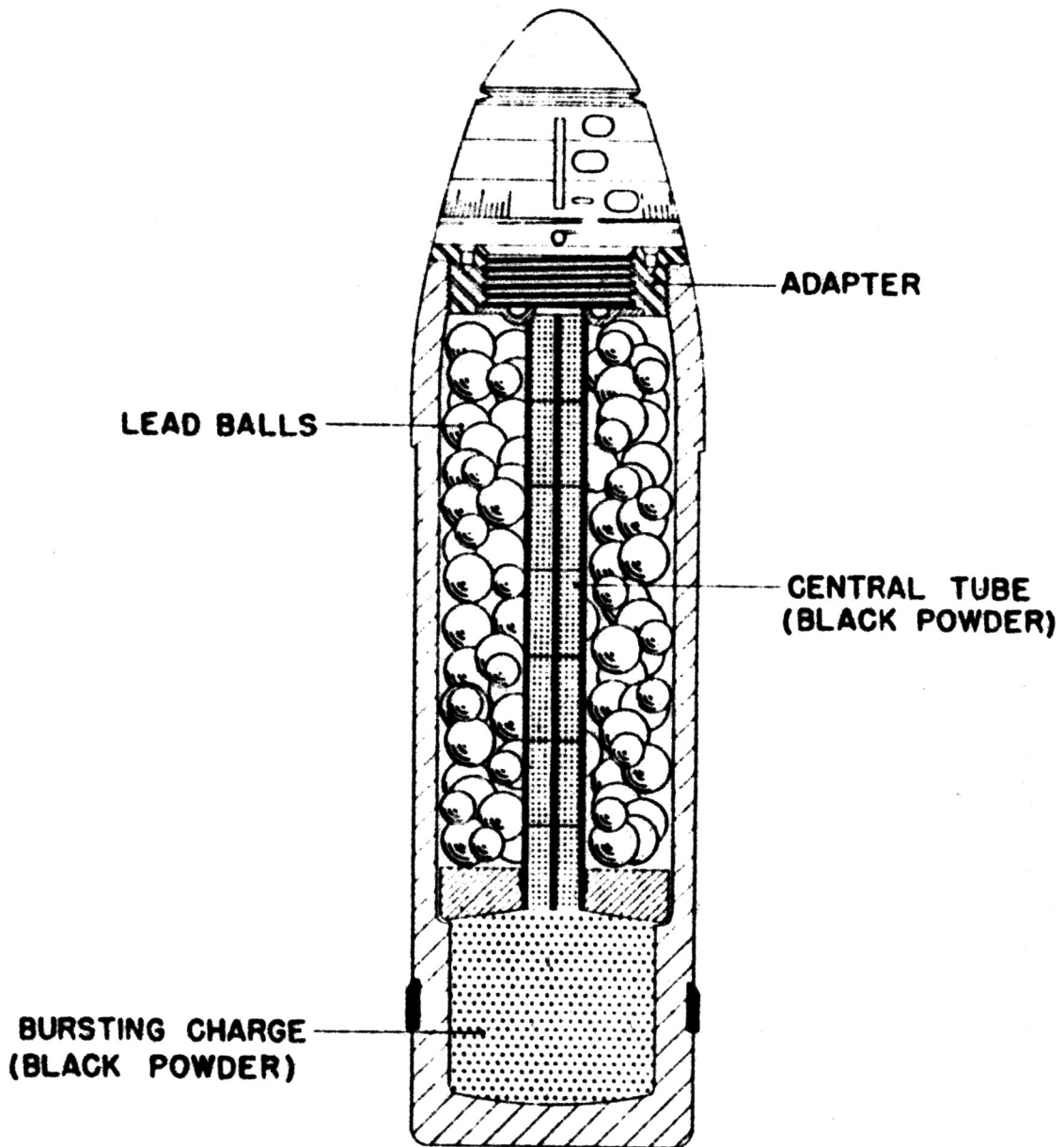
Type 41 Mountain Gun (Regimental Gun) . Case, 7-1/4 in.
Type 94 Mountain Gun Case, 11-2/16 in.
Type 38 Field Gun Group Case, 11-9/16 in.
Type 90 Field Gun Case, 16-11/16 in.

According to documentary evidence, all guns except Type 90 Field Gun and Type 94 Mountain Gun use the Type 3rd Year fuze in this projectile. Type 90 Field Gun uses Type 5th Year fuze only; Type 94 Mountain Gun uses either fuze.

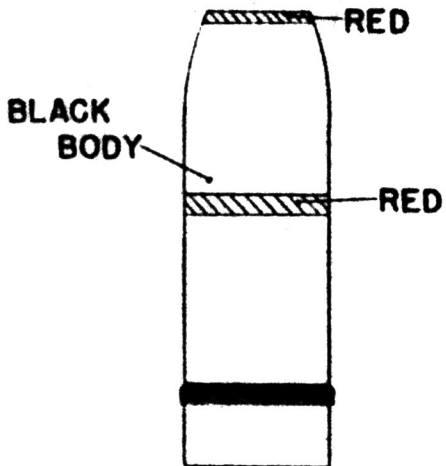
No specimens of this projectile have been observed or recovered. It is derived from documents.

ARMY 7 CM. (75MM.) SHRAPNEL

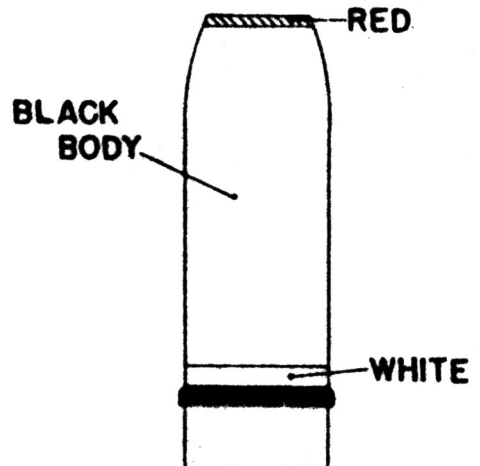
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**SHRAPNEL
TYPE 90**

**ARMY
7 CM. (75 MM.)**

WEIGHT OF PROJECTILE, FILLED 7.00 Kg. (15.4 lb.)
BURSTING CHARGE 0.100 Kg. (0.22 lb.)

Black powder contained in base of the projectile and in a central brass tube.

SHRAPNEL FILLING:

Approximately 272 lead balls (10.5 grams each) packed in a rosin matrix. The balls are separated from the bursting charge in the base by a steel disc which rests on a shoulder in the projectile cavity.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
Length overall w/o fuze 235 mm (9-1/4 in.)
Length protruding from case w/o fuze . . 197 mm (7-3/4 in.)
Width of rotating band 10 mm

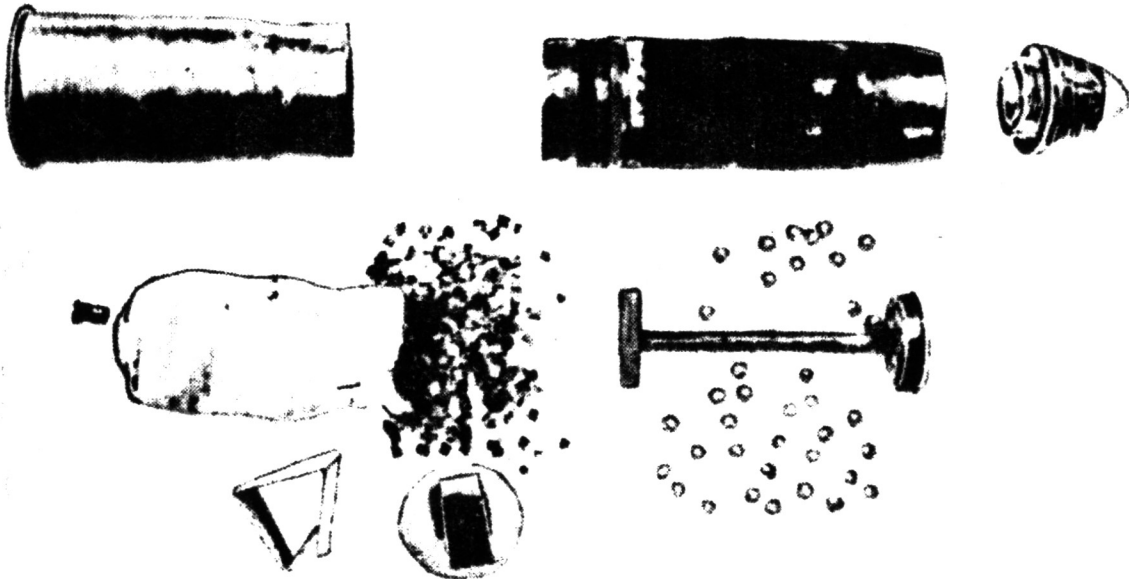
FUZING:

Type 5th Year combination time and impact fuze.

WEAPONS IN WHICH USED:

- *Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
- *Type 94 Mountain Gun Case, 11-9/16 in.
- Type 38 Field Gun Group Case, 11-9/16 in.
- Type 90 Field Gun Case, 16-11/16 in.

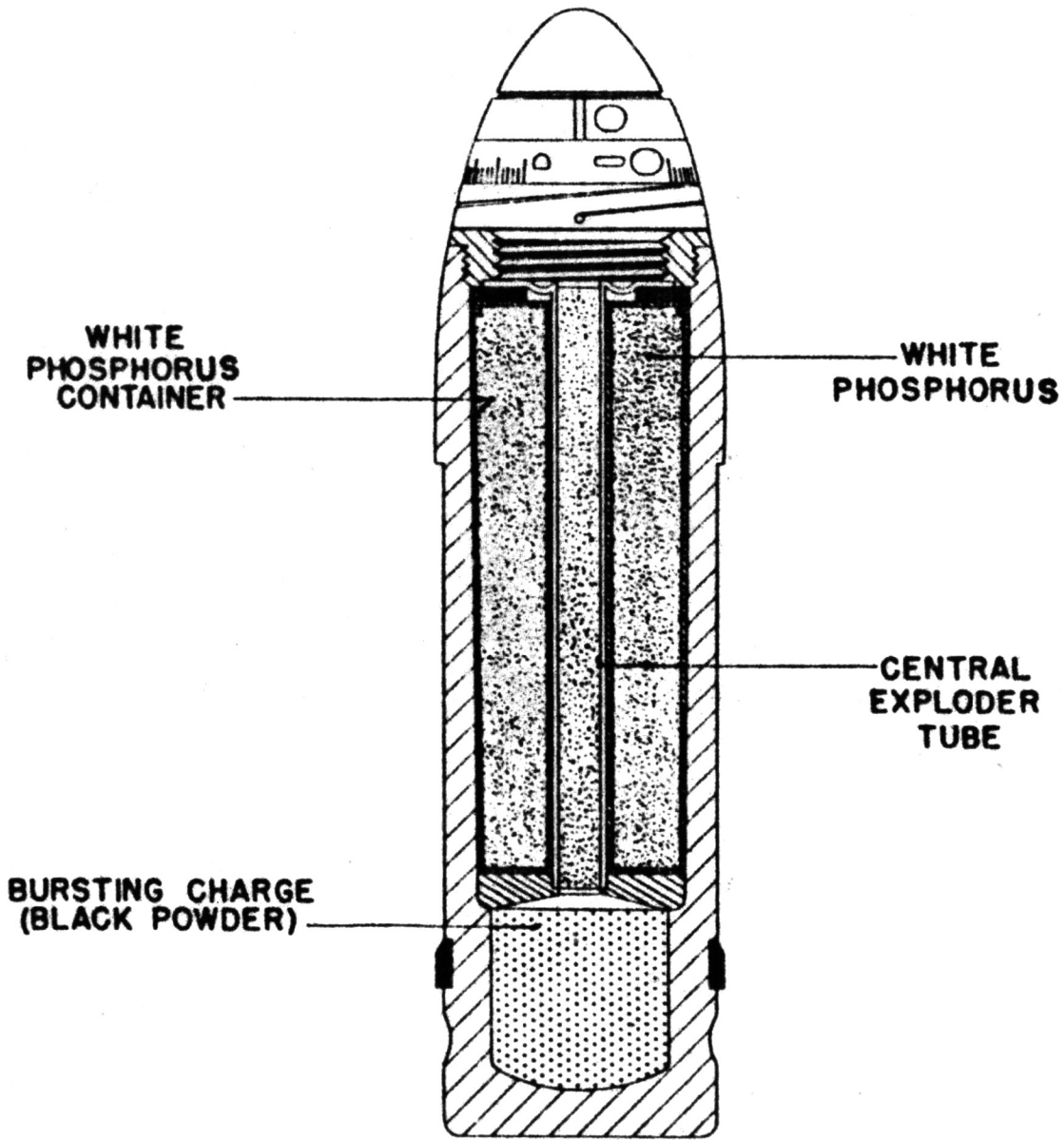
Asterisks indicate weapons for which complete rounds have been recovered or observed. Others are derived from documents.



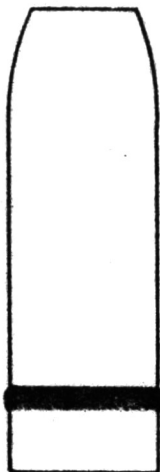
Components of Complete Round For Type 41 Mountain Gun

ARMY 7 CM. (75MM) SMOKE (W.P.)

Type Undetermined



NEW COLOR SYSTEM



OLD COLOR SYSTEM



SMOKE (W.P.)

Type Undetermined

ARMY**7 CM. (75MM.)**

WEIGHT OF PROJECTILE, FILLED No data
 WEIGHT OF BURSTING CHARGE No data

BURSTING CHARGE:

Black powder in base of projectile. Filling of central
 exploder tube is probably also black powder.

CHEMICAL AGENT:

White phosphorus in a sealed can which slips into the
 cavity of the projectile and through which passes the
 exploder tube.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus toler-
 ance)
 Length overall w/o fuze No data
 Length protruding from case w/o fuze. . . No data
 Width of rotating band No data

FUZING:

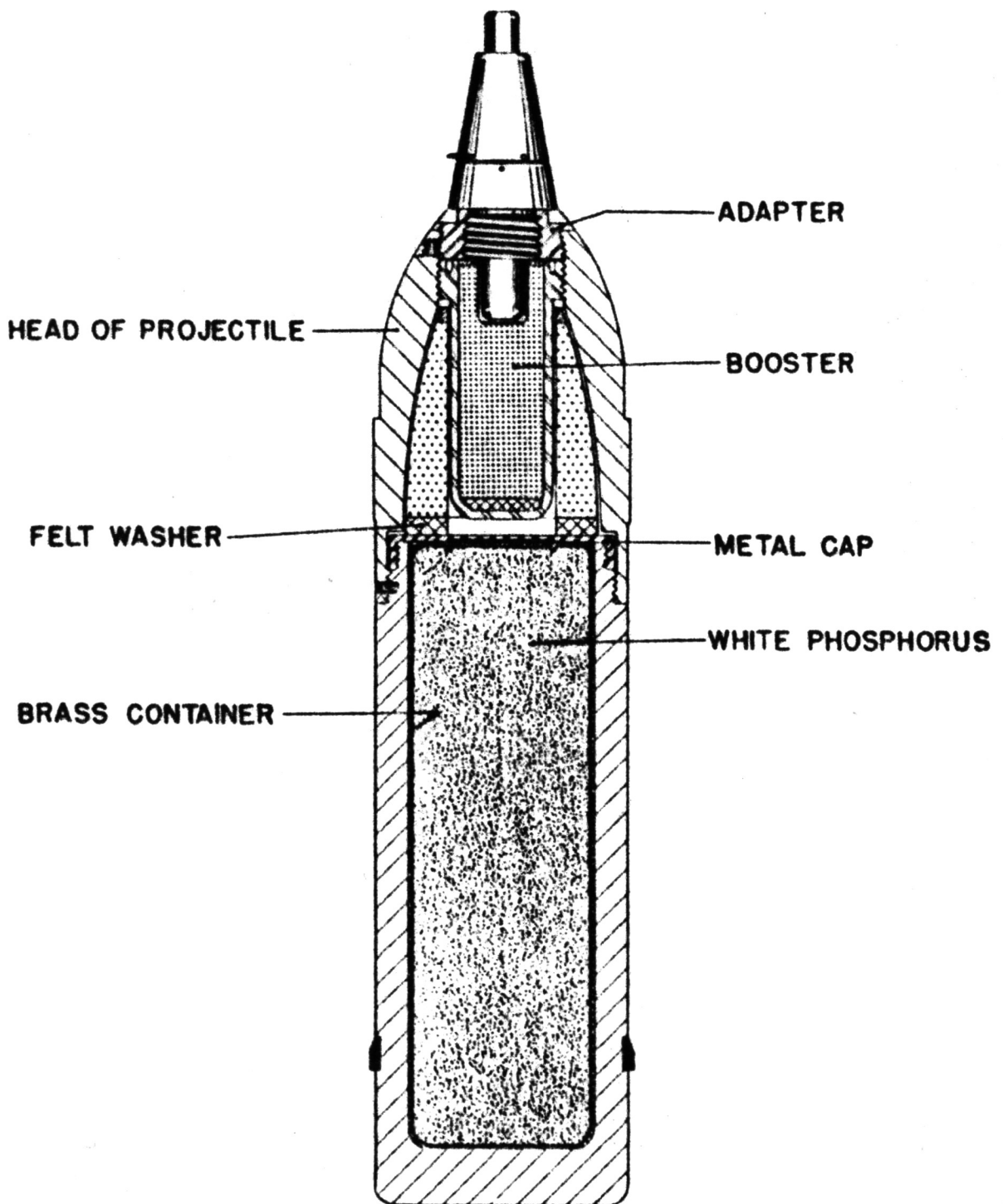
Type 3rd Year combination time and impact fuze.

REMARKS:

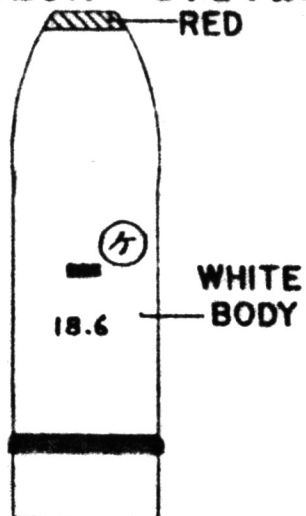
This projectile is known only in captured documents. It
 appears to be a converted Type 90 Shrapnel projectile.

ARMY 7 CM. (75MM.) SMOKE (W.P.)

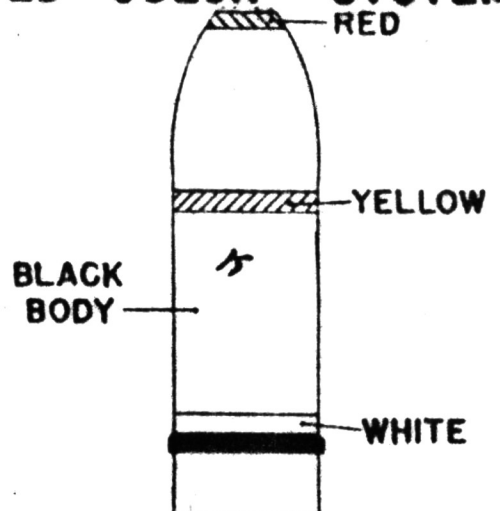
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



SMOKE (W.P.)

TYPE 90

ARMY

7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED 5.72 Kg. (12.60 lb.)

BURSTING CHARGE 0.10 Kg. (0.22 lb.)

"ONA" - a 50-50 mixture of picric acid and dinitronaphthalene in a preformed, paper-wrapped block.

CHEMICAL AGENT 700 grams

White Phosphorus sealed in a soldered brass can which fits into the lacquered cavity below the bursting charge.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
 Length overall w/o fuze 292 mm (11-1/2 in.)
 Length projecting from case w/o fuze 253 mm (10 in.)
 Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous Nose Fuze (Gun Type)

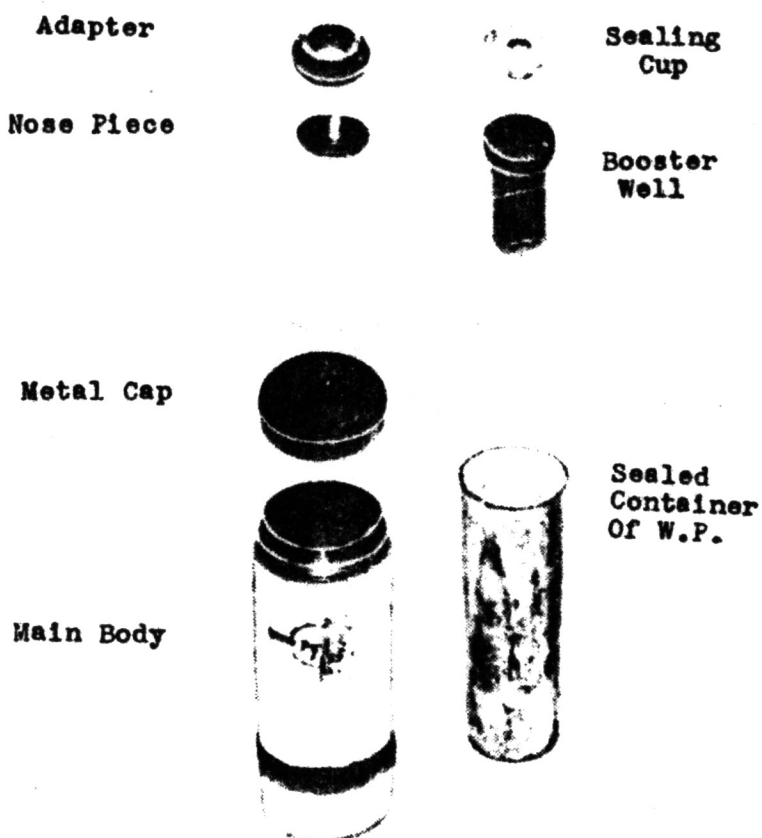
WEAPONS IN WHICH USED:

Type 41 Mountain Gun (Regimental Gun) . . Case, 7-1/4 in.
 *Type 94 Mountain Gun Case, 11-9/16 in.
 Type 38 Field Gun Group Case, 11-9/16 in.
 Type 90 Field Gun Case, 16-11/16 in.

Asterisk indicates weapon for which complete rounds have been recovered or observed. Others are derived from documents.

SCREENING CAPACITY: (Japanese figures)

Height - 20 meters
 Width - 20 meters
 Duration - one to two minutes

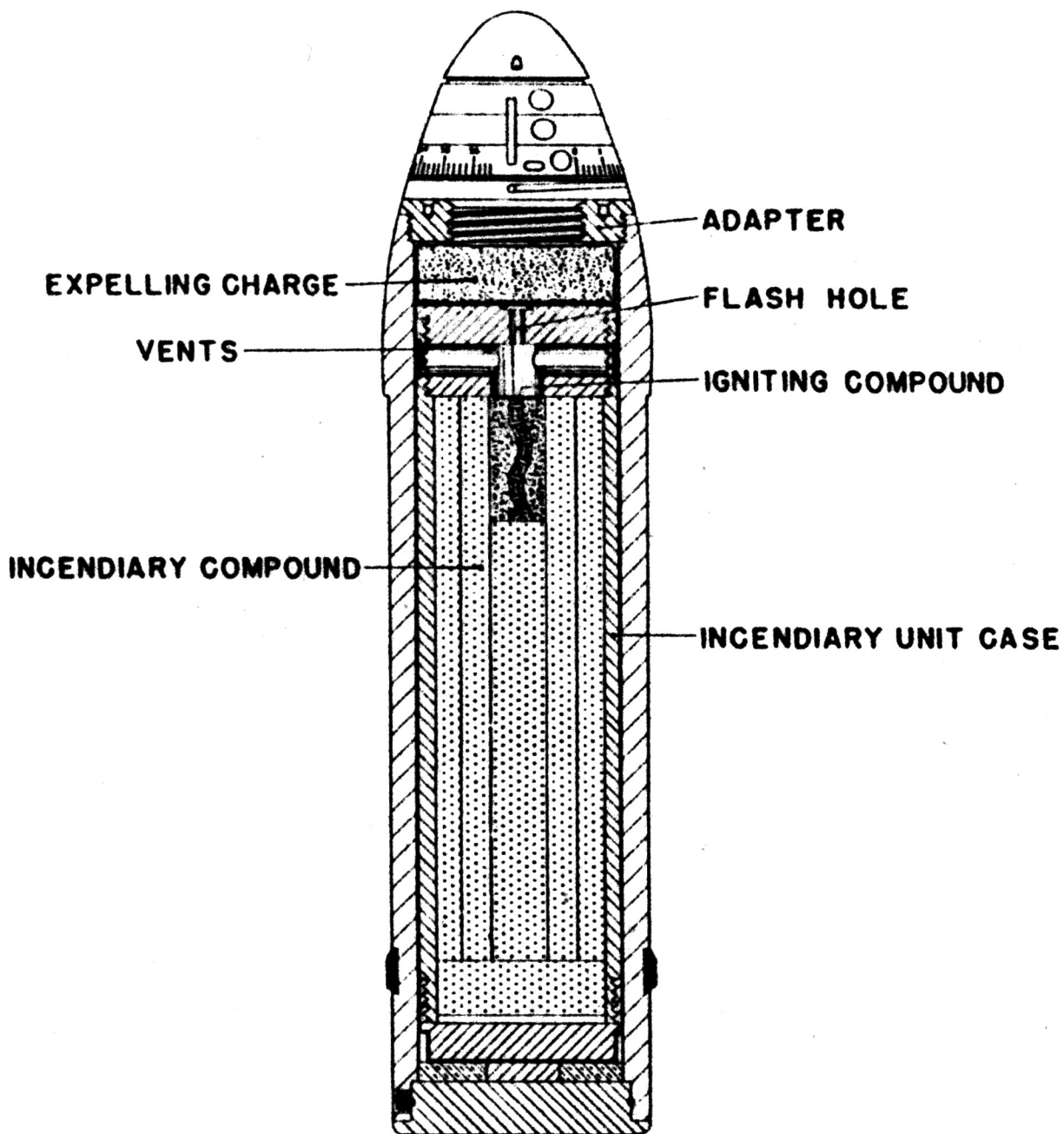


Components Of Projectile

Assembled Round For Type 94 Gun

ARMY 7 CM. (75MM.) INCENDIARY (NON-LIQUID)

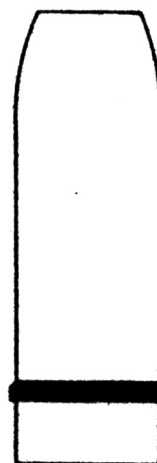
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



INCENDIARY TYPE 90

ARMY 7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED, with fuze 6.94 Kg. (15.3 lb.)
 WEIGHT OF EXPELLING CHARGE 20 grams
 WEIGHT OF INCENDIARY COMPOSITION 530 grams

EXPELLING CHARGE: Black Powder

INCENDIARY COMPOSITION: Not determined.

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
 Length of projectile w/o fuze No data
 Length protruding from case (w/o fuze) 213 mm (8-3/8 in.)
 Width of rotating band No data

FUZING:

Type 5th Year modified combination fuze (gun)

WEAPONS USED IN:


Type 41 Mountain Gun Case, 7-1/4 in.
 Type 94 Mountain Gun Case, 11-9/16 in.
 Type 38 Field Gun Group Case, 11-9/16 in.
 Type 90 Field Gun. Case, 16-11/16 in.

This projectile is known only from captured drawings and documents.

OPERATION:

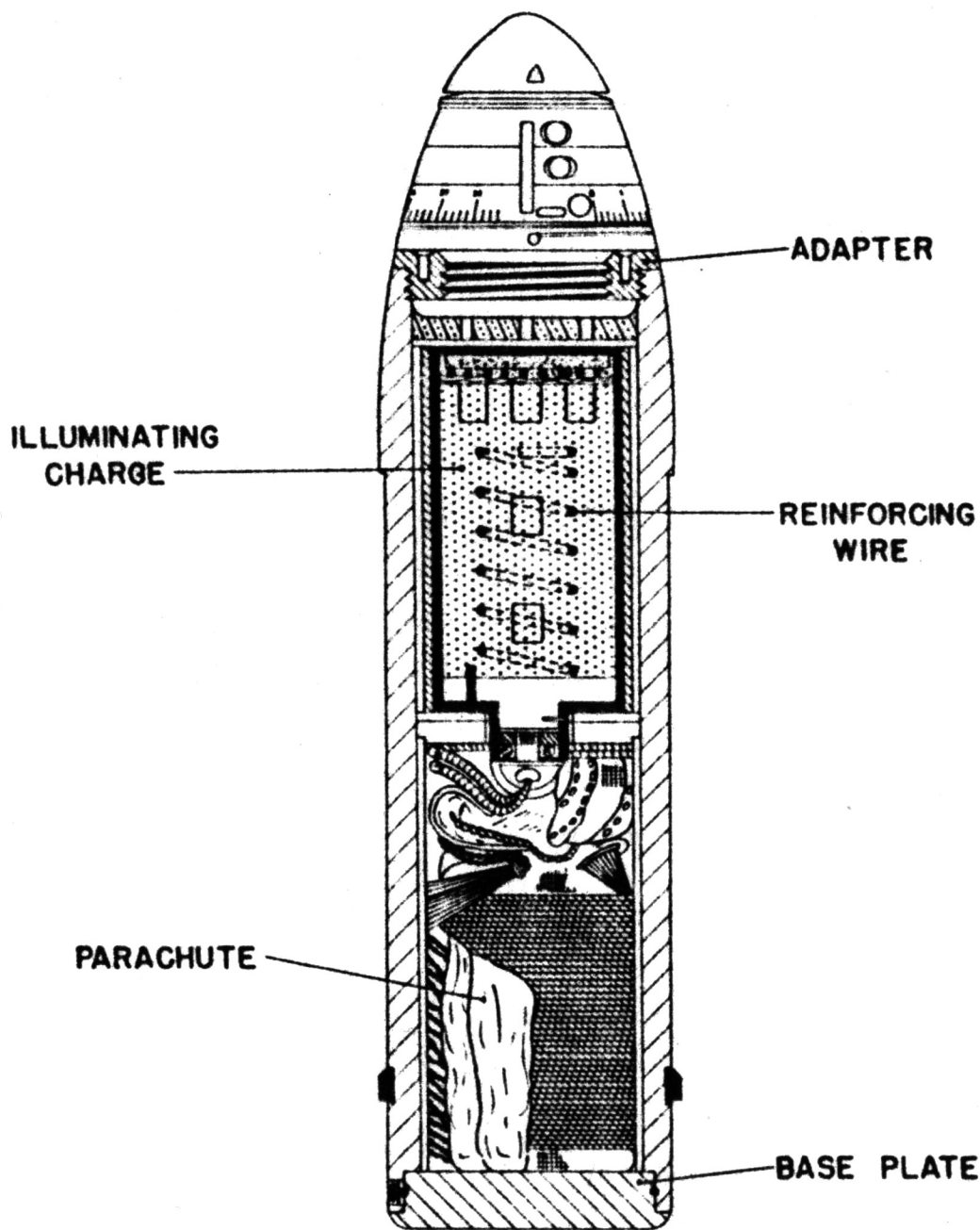
After a pre-set time or on impact, the combination fuze fires the expelling charge. This forces the incendiary unit out the base of the projectile and at the same time ignites it. Information pertaining to the incendiary unit is lacking, but the burning compound is apparently a dry composition.

REMARKS:

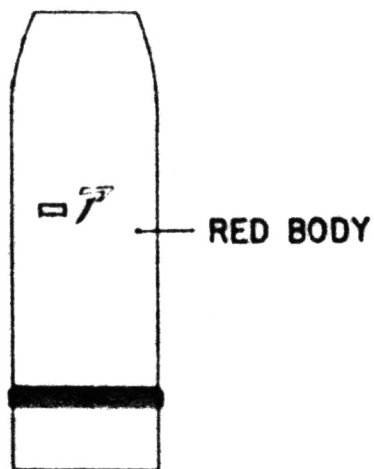
No projectiles of this type have been recovered. According to the new marking system, outlined in captured documents, this projectile may be expected to be painted as follows: Yellow body with the symbol  stencilled near the middle.

ARMY 7 CM. (75 MM.) ILLUMINATING

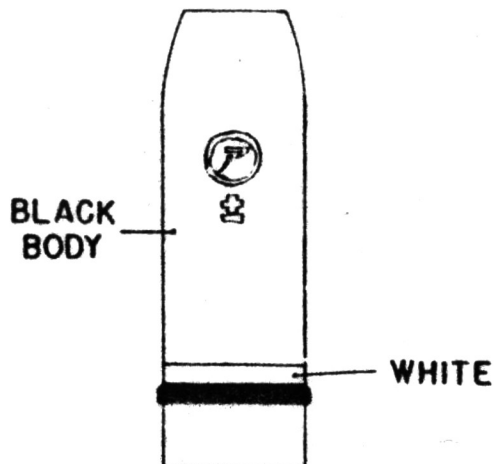
TYPE 90



NEW COLOR SYSTEM



OLD COLOR SYSTEM



**ILLUMINATING
TYPE 90**

**ARMY
7 CM.(75MM.)**

WEIGHT OF PROJECTILE, FILLED (Fuzed) 5.65 Kg. (12.44 lb.)
 WEIGHT OF ILLUMINATING COMPOUND 0.25 Kg. (0.55 lb.)

FILLING:

Expelling Charge - Black Powder.
 Illuminating Compound - Not known. (A common illuminating compound used by the Japanese is a mixture of barium nitrate, magnesium and aluminum.)

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
 Length overall w/o fuze No data
 Length protruding from case 210.0 mm (8-1/4 in.)
 Width of rotating band No data


FUZING:

Type 5th Year combination fuze

WEAPONS IN WHICH USED:

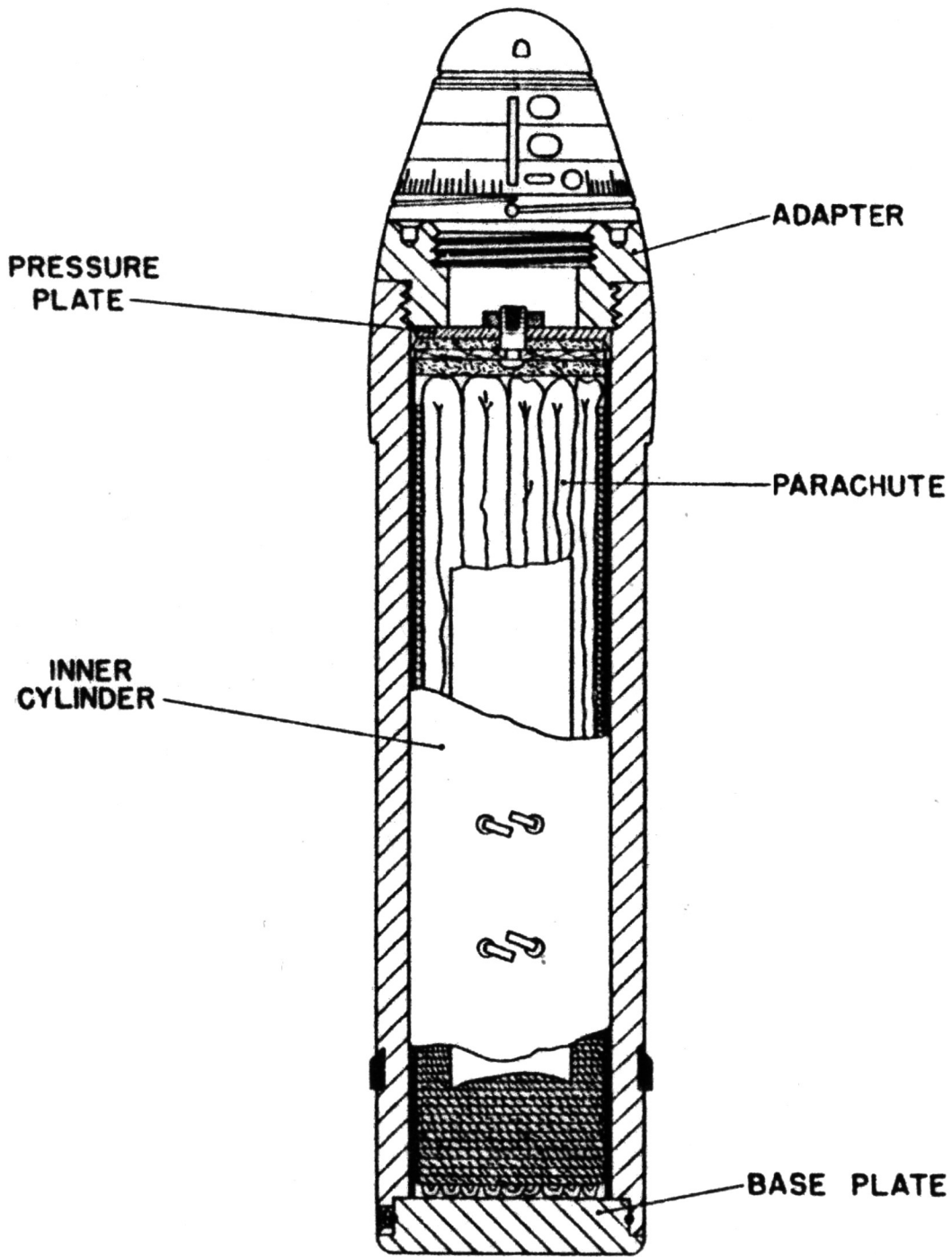
Type 41 Mountain Gun Case, 7-1/4 in.
 Type 38 Field Gun Group Case, 11-9/16 in.
 Type 90 Field Gun Case, 16-11/16 in.
 Type 94 Mountain Gun Case, 11-9/16 in.

REMARKS:

- (1) Japanese figures state that this illuminating charge burns with an intensity of approximately 90,000 candle-power, for a period of 20 seconds.
- (2) No projectiles of this type have been recovered. According to the new marking system, outlined in captured documents, this projectile may be expected to be painted as follows:
 Red body with the symbol  stencilled near the middle.

ARMY 7 CM. (75 MM) TARGET

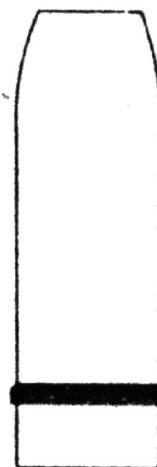
TYPE II YR. (?)



NEW COLOR SYSTEM



OLD COLOR SYSTEM



TARGET
TYPE II YR. (?)

ARMY
7 CM. (75MM.)

WEIGHT OF PROJECTILE, FILLED (Fuzed) 5.04 Kg. (11.10 lb.)

FILLING:

Folded parachute and shrouds in cardboard cylinder.

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
 Length overall w/o fuze No data
 Length protruding from case No data
 Width of rotating band No data

FUZING:

Type 10th Year A.A. time (weak)

WEAPONS IN WHICH USED:

Type 11 Yr. Field A.A. Gun Case length not known
 Type 88 Field A.A. Gun Case, 19-9/16 in.

REMARKS:

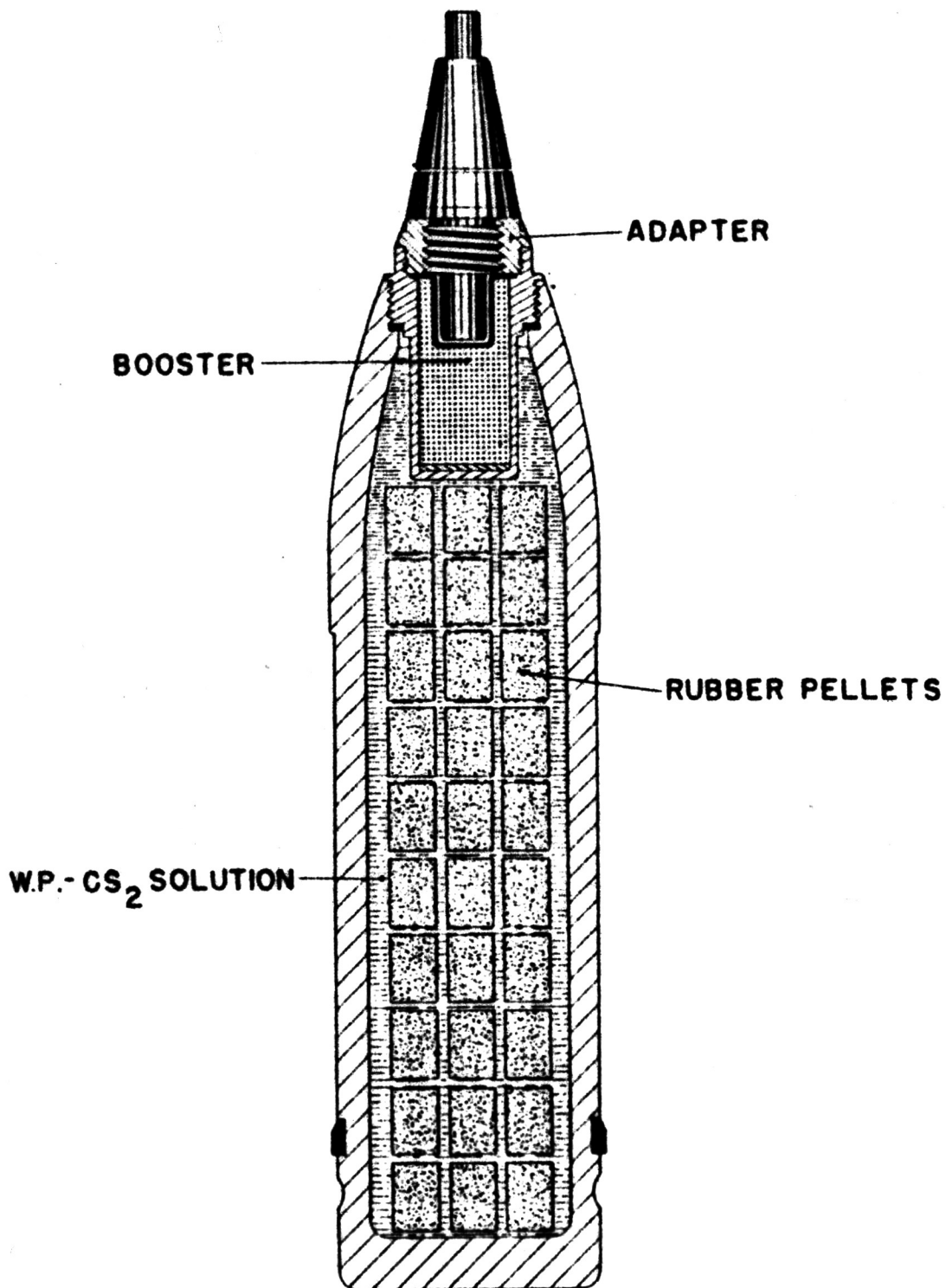
Projectiles designated "Target" in Japanese Army nomenclature are believed to be actual parachute-suspended aerial targets for anti-aircraft practice. The drawing and the data given here are from captured documents. Though operation was not described, it is presumed that the time fuze ejects the parachute at the desired altitude and that the projectile body remains attached as a weight. The descending parachute then serves as a target for A.A. fire. No ejection charge other than the magazine charge in the fuze is indicated in the document, and the fuze is designated as "weak". It is assumed that this arrangement is intended to decrease the force of explosion to the minimum necessary to eject the parachute.

COLOR MARKING:

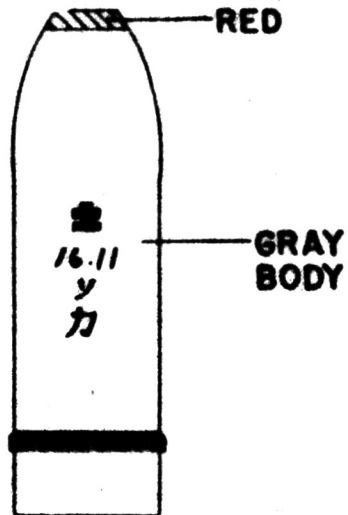
No projectiles of this type have been recovered. According to the new marking system, outlined in captured documents, this projectile may be expected to be painted as follows: Black body, no color bands, the symbol (E) stencilled near the middle of the body.

ARMY 7 CM. (75MM.) LIQUID INCENDIARY

Type Undetermined



NEW COLOR SYSTEM



OLD COLOR SYSTEM



LIQUID INCENDIARY

Type Undetermined

ARMY

7 CM. (75 MM.)

WEIGHT OF PROJECTILE, FILLED (Fuzed) 5.36 Kg. (11.75 lb.)

BURSTING CHARGE:

A standard 40-gram booster (fine granular picric acid in paper container) serves as the only bursting charge.

INCENDIARY FILLING:

A solution of White Phosphorus (WP) and rubber pellets in carbon disulphide (CS₂).

Liquid 0.30 Kg. (0.66 lb.)
 Rubber Pellets 0.32 Kg. (0.70 lb.)

DIMENSIONS:

Diameter at bourrelet 75 mm (minus tolerance)
 Length overall w/o fuze and adapter . . . 300 mm (11-13/16 in.)
 Length protruding from case 242 mm (9-1/2 in.)
 Width of rotating band 10 mm

FUZING:

Type 88 Instantaneous Fuze (Gun Type)

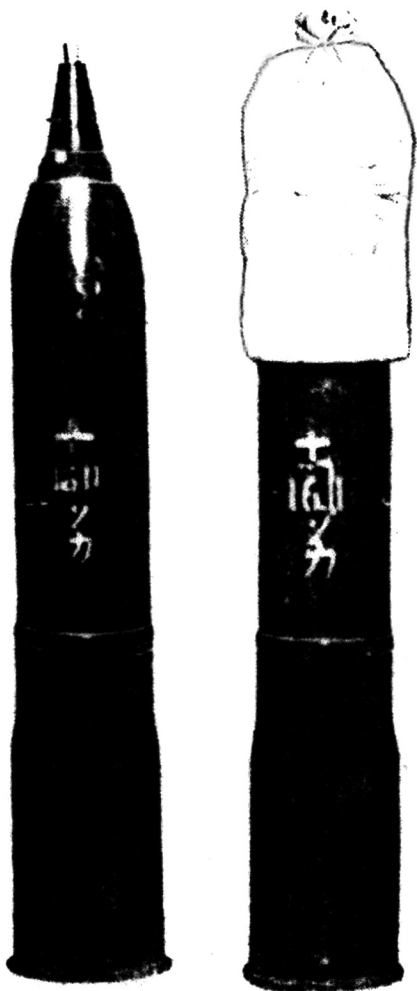
WEAPON IN WHICH USED:

*Type 41 Mountain Gun or Regimental Gun . . Case, 7-1/4 in.

This projectile has been found in ammunition for the gun indicated.

REMARKS:

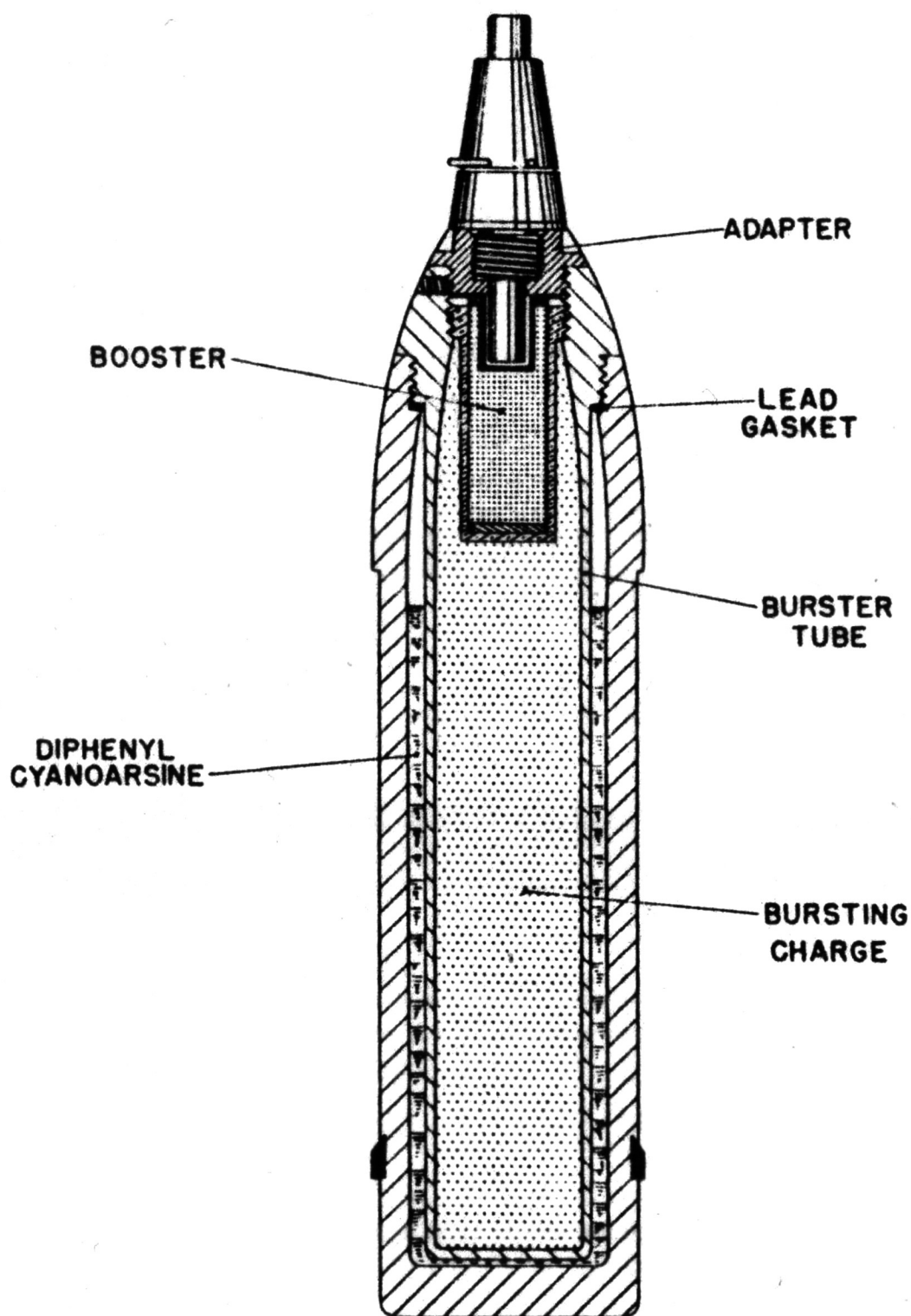
Because of the danger of leaking phosphorus solution, these projectiles are shipped with a bag of clay-like, diatomaceous earth tied around the nose end. It is presumed that this is intended as an absorbant should leakage occur.



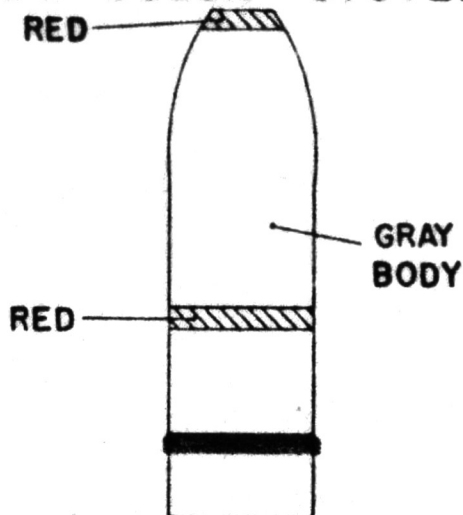
Assembled Round For
Type 41 Gun

ARMY 7 CM. (75 MM) VOMIT GAS

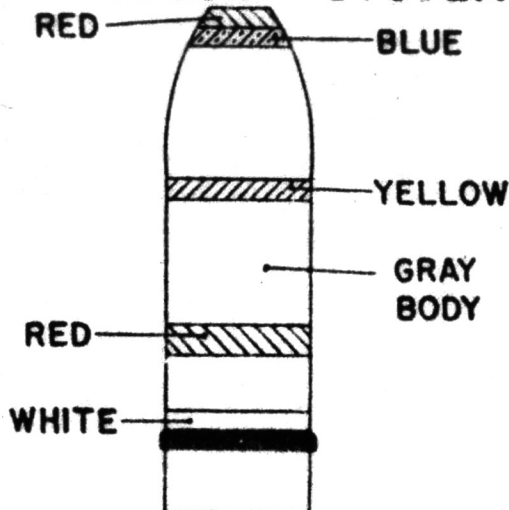
Type Undetermined



NEW COLOR SYSTEM



OLD COLOR SYSTEM



VOMIT GAS

Type Undetermined

ARMY**7 CM. (75MM.)**

WEIGHT OF PROJECTILE, FILLED (w/o fuze) . . . 6.00 Kg. (13.25 lb.)

BURSTING CHARGE:

A mixture of 70% trinitrotoluene and 30% naphthalene.
 (Naphthalene is probably used to decrease sensitivity of
 T.N.T.) 0.46 Kg. (1.02 lb.)

Liquid Filling:
 Crude diphenylcyanarsine 0.17 Kg. (0.37 lb.)

DIMENSIONS:

Diameter at bourrelet 75.0 mm (minus tolerance)
 Length overall (w/o fuze) 305.0 mm (12 in.)
 Length protruding from case 265.0 mm (10-7/16 in.)
 Width of rotating band 9.0 mm (3/8 in.)

FUZING:

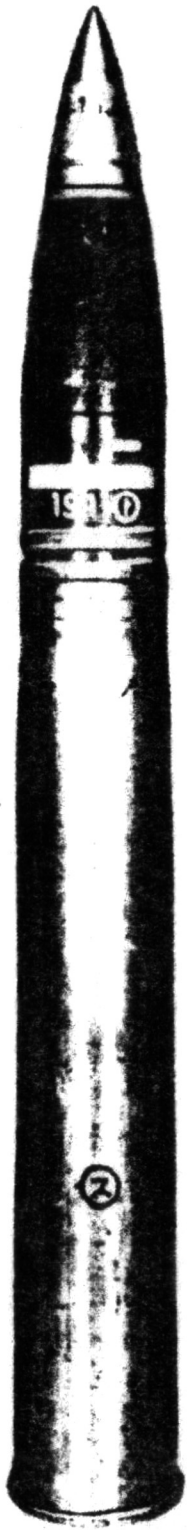
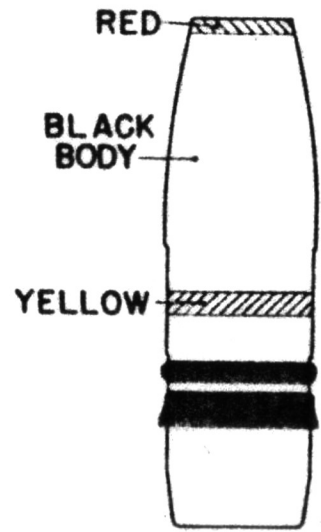
Presumably Type 88 Instantaneous Fuze

WEAPON IN WHICH USED:

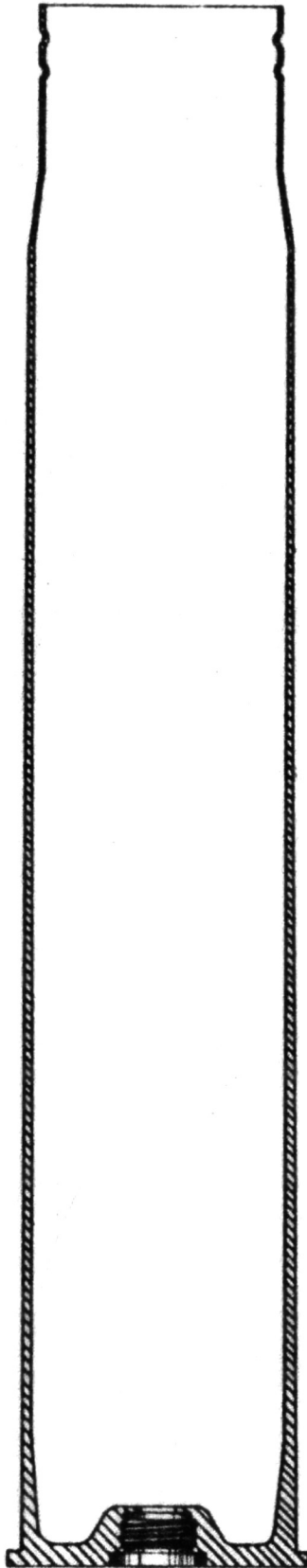
Type 41 Regimental or Mountain Gun . . Case, 7-1/4 in.

ARMY 8 CM. (88MM.) H.E.-A.A. LONG POINTED

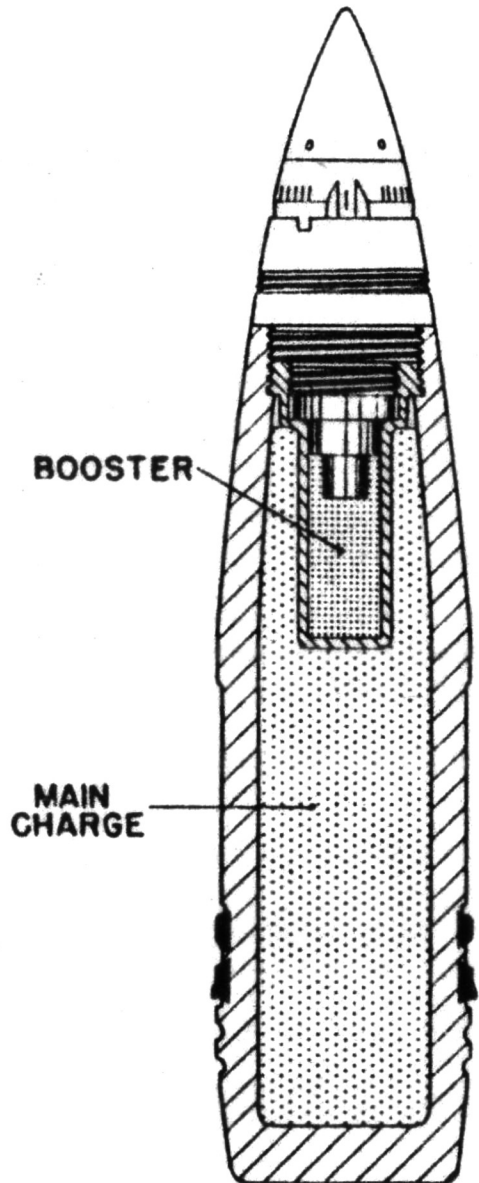
COLOR DIAGRAM
NEW COLOR SYSTEM ONLY



COMPLETE
ROUND



CASE:
DRAWN BRASS



PROJECTILE
TYPE 100

**H.E.-A.A. LONG POINTED
TYPE 100 PROJECTILE**

**ARMY
8 CM* (88MM.)**

WEIGHT OF COMPLETE ROUND Not available.
 WEIGHT OF COMPLETE PROJECTILE, w/ fuze 19.6 lb. (approx.)
 WEIGHT OF EMPTY PROJECTILE (with auxiliary fuze) 7.4 Kg. (16.3 lb.)
 WEIGHT OF FILLING 0.9 Kg. (2 lb.)*
 FILLING T.N.T.*

DIMENSIONS:

Diameter at bourrelet 88 mm (minus tolerance)
 Length of projectile w/o fuze 298 mm (11-11/16 in.)
 Length of propellant case 570 mm (22-3/8 in.)
 Length of assembled round w/o fuze 804 mm (31-9/16 in.)
 Diameter of base of case 100 mm (4 in.)
 Width of rotating band:
 Forward 8 mm (5/16 in.)
 After 8 mm (5/16 in.)
 Distance between rotating bands 6 mm (1/4 in.)

PROPELLANT No. 16 Cylindrical 2330 grams (5.1 lb.)*

FUZING:

Type 100 Mechanical Time Fuze (combination time and impact) with an auxiliary detonating fuze. The auxiliary fuze is the same as that used in the 7 cm (75 mm) H.E.-A.A. Projectile, Type 90.

***REMARKS:**

This ammunition is for a new gun believed to have been modeled after one of the German 88 mm guns. Though the ammunition has been recovered (Saipan), none of the guns have been found. The dimensions of the propellant case correspond closely to the German 88, though it could not be determined that they are identical. The rotating bands and the general form of the projectile also appear to follow German design.

Nomenclature and data marked with asterisks are derived from a Japanese document in which they are listed for a gun designated "Type 99 8 cm. A.A. gun". The remaining information is derived from a recovered specimen which was examined after being inerted. The diameter of the bourrelet of the recovered projectile measures 88 mm (minus tolerance) and would logically be designated "9 cm" in Japanese nomenclature. However, the recovered ammunition is believed to be for the same gun referred to in documents as "8 cm", and the Japanese nomenclature is used in this publication.

Pages 173 - 200 (inclusive)
are omitted in the initial
publication of "Japanese
Ammunition" to allow for the
inclusion at a later date of
sizes of Army ammunition above
88 mm

SECTION III

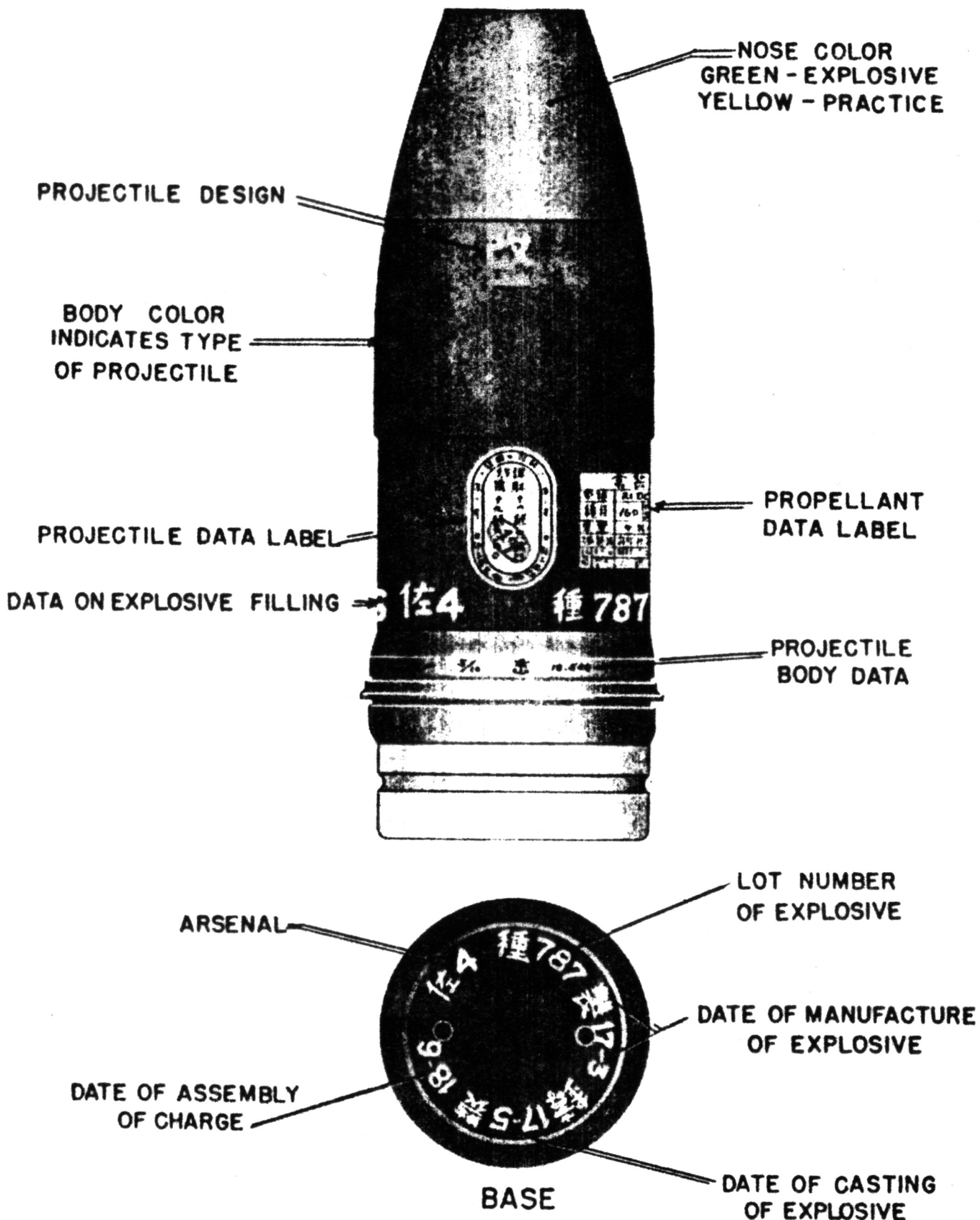
NAVY AMMUNITION

MARKING OF JAPANESE NAVY PROJECTILES

I. LARGE CALIBER SYSTEM - PROJECTILES OVER 40 MM.

The Navy system of marking projectiles for all sizes over 40 mm is relatively simple and reasonably consistent. Some discrepancies still exist between documentary evidence and data from recovered specimens.

The following system applies to projectiles of over 40 mm, but carries over in part into the marking of smaller caliber ammunition.



BODY COLOR

The main color of the projectile body indicates the basic type of shell.

TYPE OF PROJECTILE	PRESCRIBED COLOR (Documentary)	COLOR AS RECOVERED
Japanese "Ordinary" *	Maroon	Maroon
Armor-Piercing	White	White
Illuminating	<u>Blue</u>	<u>Red</u>
Shrapnel	Gray	Not recovered
Target	Green	Not recovered
Smoke Tracer	<u>Red</u>	Not recovered
Practice	<u>Black</u>	Black
Incend.-Shrapnel	Not listed	<u>Red</u> with identifying characters

* Japanese classification "Ordinary" includes common and capped common projectiles as well as various designs of H.E. projectiles.

COLOR OF NOSE

Certain additional information is indicated by the painting of the nose of the projectile as follows:

1. Green Nose - indicates "explosive-filled". Specific identity of explosive is not made. Black Powder as well as H.E. is marked in this way.
2. Red Tip on Green Nose - indicates "base-fuzed", but is not used when ammunition is of the fixed type.

These markings (1 and 2 above) are in the nature of assembly-line features, and if missing may be taken to indicate that the associated operation has not been completed.

3. Yellow Nose - indicates "practice use". This is applied to standard practice projectiles, painted black, and may also be used to indicate projectiles converted from service types. Projectiles converted for practice retain their original painting except for the yellow nose.

Practice projectiles which are to be used with time fuzes are stated to have two rows of white dots around the ogive just below the yellow nose.

The length of the green or yellow tip is 100 mm for 12 cm. gun and larger, 50 mm for 10 and 8 cm. guns, 15 mm for 6 cm. and smaller.

The length of the red tip is exactly half that of the green.

CENTER OF GRAVITY

The center of gravity of larger projectiles is indicated by a color band painted at the appropriate position near the middle of the body. The color of this band is varied to contrast with the color of the projectile body.

COLOR OF PROJECTILE BODY	COLOR OF BAND	WIDTH OF BAND
Maroon or Blue	Yellow	50 mm for projectiles 20 cm and above
White	Red	20 mm for 15.5 (and under)
Black	White	10 mm on all sizes

The center of gravity is not required to be marked on projectiles of 15 cm. and under, but where projectiles of these sizes already bear the color band at the point of balance (apparently from earlier requirements) repainting is not required.

ADDITIONAL FEATURES OF PAINTING

1. A black band painted on the lower edge of a projectile cap indicates a design of cap designated "Type 3 Yr. Cap".
2. Fuzes and rotating bands normally are not painted. The bourrelet is consistently painted.
3. The portion of the body between the rotating band and the base is left unpainted in projectiles of fixed ammunition, but is painted on projectiles of semi-fixed ammunition.
4. Dummy plugs resembling fuzes have the tips painted with black lacquer to distinguish them from fuzes.

ACCESSORY MARKINGS

Type numbers or other characters are sometimes stencilled on the ogival portion of the projectile as a further aid in identification.

Some of these markings are:

- | | | |
|-----|-----|------------------------------------------------------------------------------------------|
| (a) | 九一 | - "91" indicating Type 91 projectile design |
| (b) | 八八 | - "88" indicating Type 88 projectile design |
| (c) | 五号 | - "Mk 5" indicating Mk 5 projectile design |
| (d) | 改一 | - "Modification 1" referring to projectile design, but not a complete identification. |
| (e) | 焼霰 | - "Incendiary Shrapnel" |
| (f) | 乙 | - "B" (rare) indicating a variation in explosive charge - presumably Type "B" explosive. |
| (g) | 教練用 | - "For practice use" |
| (h) | 特減用 | - "For use with special reduced charge" |

FILLING DATA

On Navy projectiles of the larger sizes (8 cm and above), the dates of manufacture and filling are painted or stencilled around the body of the projectile just above the rotating band, and again on the base of the projectile.

This marking usually consists of the following data in sequence as given (beginning at the right of the widest space and reading around the projectile to the right).

- | | | |
|-----|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) | 種 | - LOT - followed by an entry like #72, M24, or 787 indicating the lot of explosive as manufactured. |
| (b) | 製 | - MANUFACTURED - with a date like 17-3 (Showa 17th Year, 3rd month or March 1942). |
| (c) | 鑄 | - CAST - followed by a date as above, presumed to indicate the date the preformed block of explosive was cast. |
| (d) | 裝 | - ASSEMBLED - followed by a date, presumed to indicate the date the block was installed in the projectile.
This entry is sometimes omitted or incorporated into the Arsenal identification (e). |
| (e) | An Arsenal Identification.
This entry is not well standardized. | |

- | | |
|--------|-----------------------------------------------------------------|
| 横5 | - YOKO 5 - Presumed to be a Yokosuka Arsenal |
| 佐4 | - SA 4 - Presumed to be a Sasebo Arsenal |
| 呉18-21 | - KURE Feb. 1943 - Presumed to be the date of assembly at Kure. |

ROTATING BAND MARKING

Certain information pertaining to the manufacture of the projectile body itself is stamped into the rotating band. A typical example follows:

- (a) 改 - (b) 5/16 (c) ㇏ (d) 18.500

- (a) "Modification One" applies to the projectile design but is not a complete designation. This sometimes appears as "㊦".
 (b) 5/16 indicates 5th month, 16th year Showa (May 1941), the date of manufacture of the projectile body.
 (c) ㇏ - symbol of the place of manufacture, in this case Kure. The form of the anchor varies with each factory. The place name or its abbreviation (e.g. 吳 Kure; or 佐 Sa for Sasebo) may also be included.
 (d) 18.500 is the weight of the empty projectile body in kilograms. This may also be written 18 K 500.

PAPER LABELS

Typically, but not without exception, there are two paper labels appearing externally on Navy ammunition, an oval one giving projectile data, and a square one giving propellant data. Both carry valuable information on the ammunition components, and may be read at least partially without knowledge of Japanese.

In fixed ammunition both labels appear on the projectile. In semi-fixed ammunition, the oval label appears on the projectile and the square propellant label is glued to the metal disc in the top of the propellant case. In both types, the propellant label is duplicated by a cloth label sewed to the bag enclosing the powder sticks.

PROJECTILE DATA LABEL

PROJECTILE BODY DATA

FILLED PROJECTILE DATA

DATE OF ASSEMBLING
(Showa 18-9, Sept. 1943)

WEIGHT FILLED
(20.340 Kg.)

WEIGHT VARIATION
Super-imposed in red
Position variable

DATE OF MANUFACTURE
(Showa 16-5, April 1941)

PROJECTILE BODY WEIGHT
(18.500 Kg.)

PLACE OF WEIGHING
(Yokosuka)



PROPELLANT LABEL

NORMAL CHARGE

LOT NUMBER
(99)

DATE OF MANUFACTURE
(Showa 13 -12, Dec. 1938)

KIND OF POWDER
(30 DC)

This entry not understood

WEIGHT OF POWDER
(5.375 Kg.)

常装薬		30 DC	
薬種	種目	99	別 1
薬量	5 K 375		
大薬製造	昭和 13 年 12 月		
製年月日	昭和 14 年 3 月		
場所名番號	佐第 64 號		

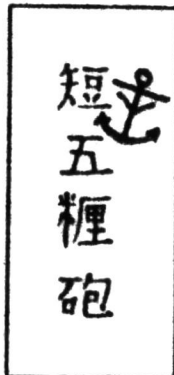
CHARGE ASSEMBLED: DATE- Showa 14-3, Mar. 1939
 PLACE- Sasebo Lot #572

Occasionally the designation of the gun is included on the cloth label which is sewed to the propellant bag or may appear on a separate small label sewed near the propellant label.

Examples:



"40 cal. 12.7 High Angle Gun"
(i.e. A.A.)



"Short 5 cm. Gun"

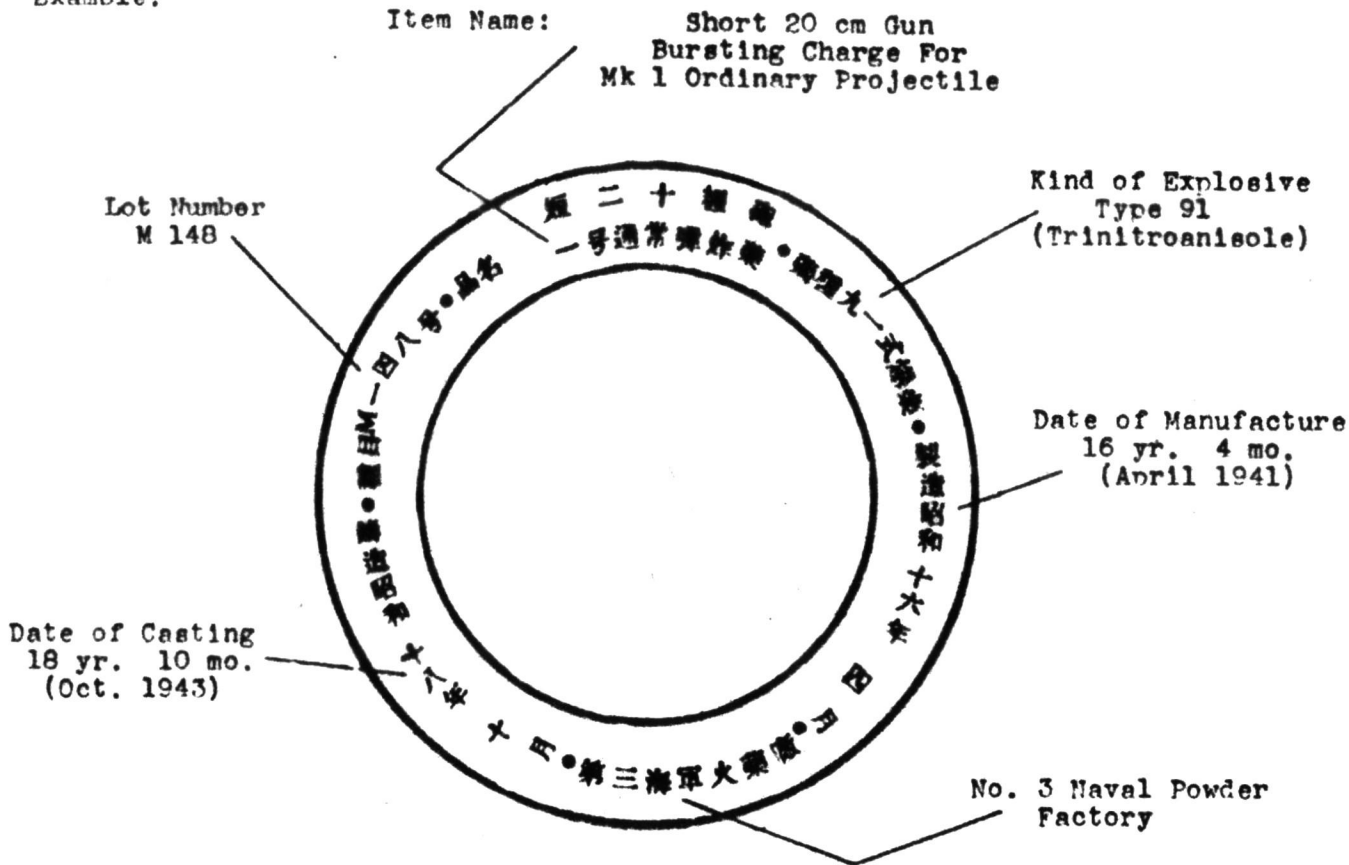
BURSTING CHARGE LABEL

The bursting charge for most Navy projectiles is cast in a paper container and inserted in the projectile as a separate unit and is held in place by paraffin.

A circular label on the bottom of the explosive charge carries the following data:

1. Identification of the gun (Type number, etc.)
2. Identification of the projectile (Type number, etc.)
3. Kind of explosive:
 - (a) Shimose (picric acid) 下瀬爆薬
 - (b) Type 91 Explosive (Trinitroanisole) . . . 九一式爆薬
 - (c) Type 92 Explosive (TNT) 九二式爆薬
4. Lot number of explosive
5. Date of manufacture of explosive
6. Date of casting of the explosive block

Example:



The large black dots on the label separate individual entries.

II. SMALL CALIBER MARKING - 40 MM. AND UNDER

Certain features of marking of large caliber projectiles carry over into the marking of smaller sizes, but in general, sizes of 40 mm and under follow no single standard identification system and are best considered as individual groups.

A. 40 mm - Automatic Anti-Aircraft Weapon

This ammunition follows the large caliber system in general.

MAROON with green tip High Explosive
 WHITE with green tip Armor-Piercing (H.E. filled)
 ORANGE Tracer (blind loaded)

B. 30 mm - Aircraft Cannon

This ammunition follows a system independent of the large caliber code, but common to 20 mm Navy ammunition which is likewise for aircraft cannon. Color of projectile body indicates type of projectile.

*MAROON High Explosive
 *RED H.E. - Tracer
 YELLOW (greenish) H.E.I. (W.P.)
 BLACK WITH RED NOSE, fuzeless. Tracer
 *WHITE Armor-Piercing

* Not recovered

C. 25 mm - Automatic Anti-Aircraft Weapon

This ammunition follows the large caliber system in part. Green tipping to indicate the presence of explosive filling was followed in H.E. and H.E.-Tracer projectiles of earlier manufacture, but apparently has been abandoned in more recent lots.

MAROON (with or without green tip) High Explosive
 RED (with or without green tip) H.E.-Tracer
 Later lots only are self-destroying.
 ORANGE (with or without green tip) H.E.-Tracer
 Identical to red non-S.D. rounds.
 ORANGE (with red paint around the case primer) H.E.-Tracer
 Construction of tracer differs from above.
 GREEN H.E.I. (WP)
 WHITE (with black under coat) A.P.-T.

Projectiles sometimes appear bluish-white, white-tipped, or black due to loss of white paint.

D. 20 mm - Aircraft Cannon Mk 1 and Mk 2

Color of body indicates type of projectile. White bands indicate modifications of basic design.

No bands - un-modified design
 One band - Modification One
 Two bands - Modification Two
 Three bands - Modification Three
 One wide band - Modification Four.

BROWN High explosive
 RED (solid nose) Tracer
 RED (fuzed) H.E.-Tracer
 YELLOW (greenish) H.E.I. (WP)
 WHITE A.P.I. (dry filling)
 BLACK Practice - blind loaded

E. 13 mm - Type 2 Aircraft Machine Gun (Fuzed Ammunition)

Color of body indicates type of projectile; follows aircraft cannon code.

MAROON (fuzed) High Explosive
 RED (fuzed) Brown band H.E.T.
 RED (fuzeless) Tracer
 YELLOW (fuzed) H.E.I. (WP)
 WHITE (fuzeless) A.P.T.
 BLACK (fuzeless) Practice

F. Small Arms - 7.7 mm., 7.9 mm., 13.2 mm

Identifying color is applied around the primer in the base of the case.

BLACK Ball
 RED Tracer
 WHITE Armor-Piercing
 GREEN Incend. Model 1 (WP)
 PURPLE Incend. Model 2 (HE)

JAPANESE NAVY PROJECTILE FUZES-40MM. & OVER

SPECIAL NOSE FUZE

POWDER TIME FUZES



TYPE 1



81MM. MORTAR



40MM. A.A.

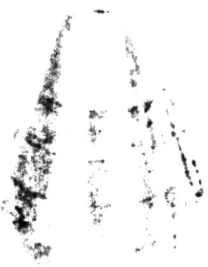


30 SEC. FUZE



ARMY TYPE 89

MECHANICAL TIME FUZES



TYPE 91



TYPE 91
MECH-SET



TYPE 0



TYPE 98

POINT DETONATING FUZES



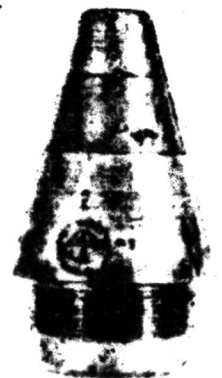
TYPE 5 YR.



TYPE 88



20 CM. ROCKET

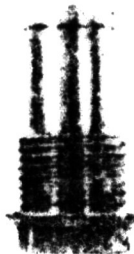


INST-5 SEC.

BASE DETONATING FUZES



40MM. A.P.



5 CM.
"HOTCHKISS"



TYPE 3



TYPE 13 MK.1



TYPE 13 MK.(?)

JAPANESE NAVY PROJECTILE FUZES-40MM.8 OVER**TYPE I SPECIAL NOSE FUZE**

Fraction of second delay. Used in 8 cm Special Common projectile for light penetration. Armed by rotation only, progressive arming system (interlocked pawls). This fuze is fitted into the base of the solid nose-piece.

TYPE 3 81 mm MORTAR

Graduated 5-20. Impact feature incorporated. Used in Navy Type 3 81 mm Mortar.

40 mm A.A. POWDER TIME FUZE

Graduated 0-10, no impact feature. Incorporates gear wheel for automatic fuze-setter. Used in 40 mm A.A. only.

ARMY TYPE 89 POWDER TIME FUZE

Graduated 0-30, no impact feature. Used in 8 cm A.A. only.

30 SECOND POWDER TIME FUZE

Graduated 0-30, no impact feature. Believed used in target, illuminating, shrapnel projectiles.

TYPE 91 MECHANICAL TIME FUZE

Graduated 0-55, no impact feature. Spring driven clock. Prototype of three following fuzes. Used in 14 cm for limited A.A., in 12 cm A.A. guns, and in illuminating projectiles.

TYPE 91 MECHANICAL TIME FUZE - AUTOMATICALLY SET

Graduated 0-55, no impact feature. Developed from Type 91 by addition of gear ring for automatic fuze setter. Used in 12.7 A.A. guns.

TYPE 0 MECHANICAL TIME FUZE

Graduated 0-55, no impact feature. Developed from Type 91 by reduced weight of setback spring and addition of flash shutter in basal portion. Marked by red nose. Used for A.A. in Short 12 cm and Short 20 cm guns.

TYPE 98 MECHANICAL TIME FUZE

Graduated 0-45, no impact feature. Developed from Type 91. Incorporates automatic gear setting and flash shutter in basal portion. Used in Type 98 8 cm (unrecovered) and Type 98 10 cm A.A. guns.

TYPE 5 YR. POINT DETONATING FUZE

Instantaneous. Armed by setback, rotation not required. Recovered in 8 cm, 12 cm, and 14 cm projectiles for use against surface targets.

TYPE 88 POINT DETONATING FUZE

Instantaneous. Armed by setback and rotation by progressive arming system (interlocked pawls). A later variation, Type 88 Model 2 is also known. Interchangeable with mechanical A.A. fuzes for use against surface targets.

20 cm ROCKET P.D.F.

Instantaneous. Armed by rotation. Progressive arming system as in Type 88, but no setback required. Used in 20 cm Spin-stabilized rocket.

INST.-5 SEC. NOSE FUZE

Choice of instantaneous or 5 sec. delay, arms in the same manner as the rocket fuze. Used for surface and anti-submarine fire in Short 12 cm and Short 20 cm guns. Another model, Instantaneous or 8 sec. also known.

40 mm A.P. BASE FUZE

Fraction of second delay. Armed by setback, rotation not required. Used in 40 mm A.A. A.P. Projectile.

5 cm HOTCHKISS BASE FUZE

Non-delay. Armed by setback, rotation not required. No detonating action. Use limited to projectiles with black powder filling - Short 5 cm Gun.

TYPE 3 YR. MK I BASE FUZE

Fraction of second delay. Armed by setback and rotation, eccentric weight threads down striker spindle to arm. Used in 12 cm Common projectile.

TYPE 13 MK I BASE FUZE

Fraction of second delay. Armed by setback and rotation, progressive arming system. Used in 14 cm and 15 cm Common projectiles and similar types.

TYPE 13 MK (?) BASE FUZE

Fraction of second delay. Operation identical to Type 13 Mk I. Fuze is larger and heavier. Used in heavy caliber (e.g. 36 cm-14 inch) base-fuzed projectiles.

KNOWN BUT NOT RECOVERED:

Type 2 P.D.F. - Similar and interchangeable with Type 5 Yr. P.D.F.

Type 3 - Gasless Powder Time Fuze (0-35 sec.) with impact firing feature.

Interchangeability: Model 1 - with Type 89; Model 2 with Type 91 series.

Type 4 - Presumably Mechanical Time Fuze with impact firing feature. Interchangeable with Type 91 series.

NOTES ON INTERCHANGEABILITY OF FUZES

1. The Type 91, the Type 91 Mechanically-set, the Type 98, and the Type 0 fuzes have the same thread size and are limited in interchangeability only by features such as the force of setback necessary for arming and by the fuze-setting equipment used with the gun.

2. The Type 88 P.D.F., the Inst-5 sec. Fuze, and the 20 cm Rocket Fuze are interchangeable by thread size, but are limited in use by arming features and required force of setback. These fuzes may be used in any projectile which will accommodate fuzes of the Type 91 series, but the reverse is not necessarily true since the projectile nose cavity must be threaded deeper to receive the auxiliary gain for the time fuzes.

3. The Type 89 Powder Time Fuze is not interchangeable with the Type 91 series and fits only the 8 cm (76.2 mm) anti-aircraft projectiles. It is identical to the Army fuze except for die-stamped Navy markings.

4. The 30 sec. Powder Time Fuze is not interchangeable with any other known fuze.

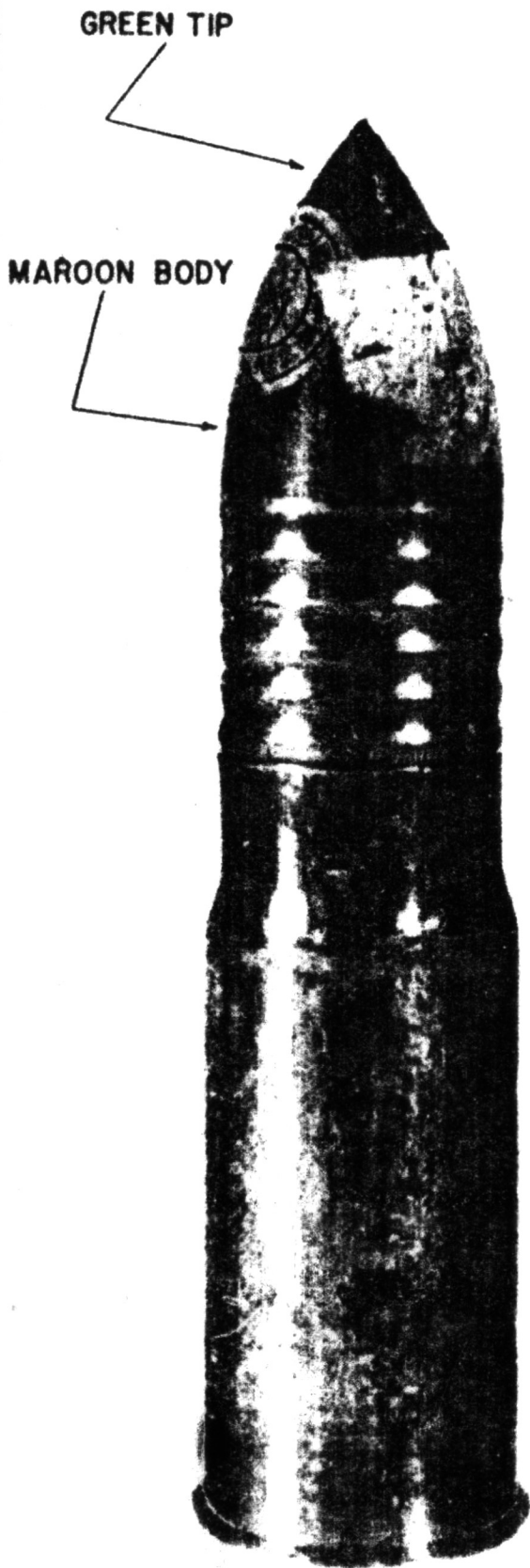
Pages 211 - 248 (inclusive) are omitted in the initial publication of "Japanese Ammunition" to allow for the inclusion at a later date of further general information on Navy ammunition and for treatment of sizes under
5 cm.

NAVY

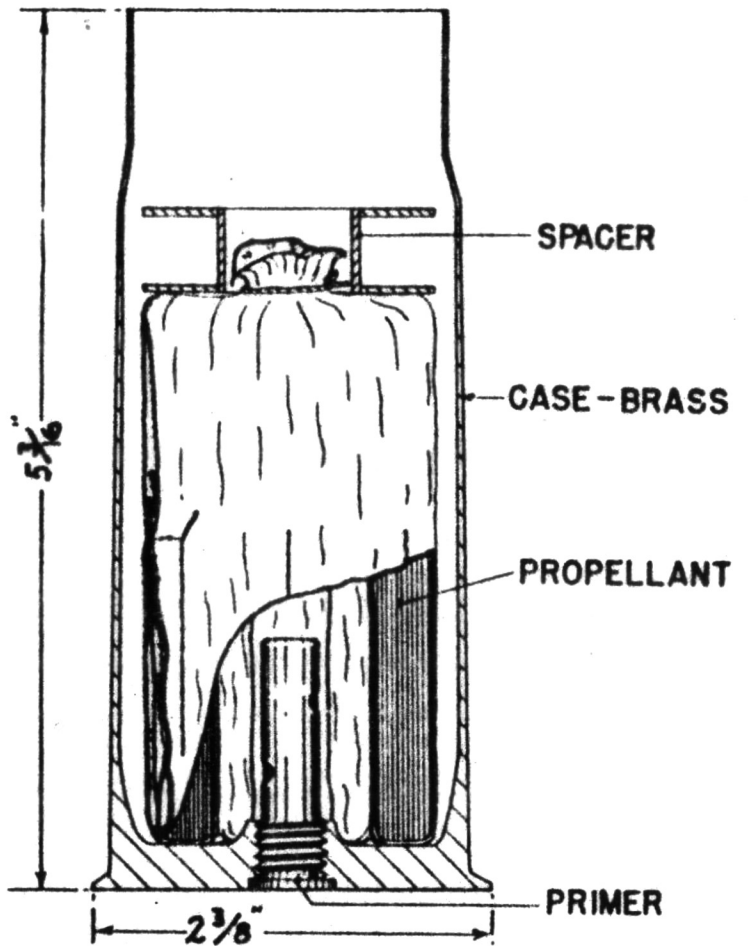
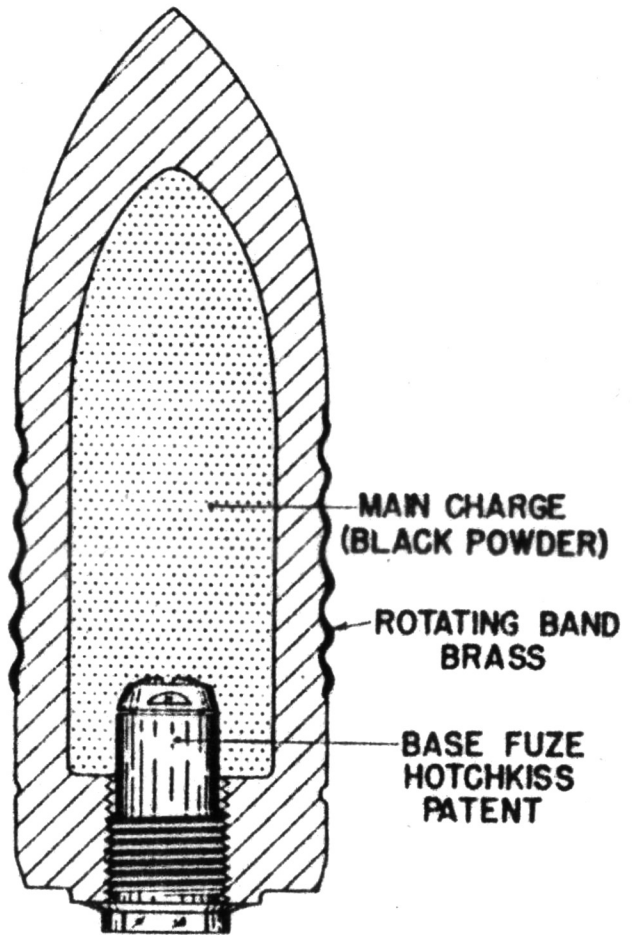
5 CM. AND ABOVE

NAVY 5 CM (47 MM) COMPLETE ROUND

COMMON PROJECTILE



ASSEMBLED ROUND



COMPLETE ROUND

COMMON PROJECTILE

**NAVY
5 CM.
(47 MM.)**

ASSEMBLED ROUND:

Weight of complete round 3.2 lb.
Length of complete round 9.25 in.

PROJECTILE:

Weight of filled projectile, with fuze . . . 2.4 lb.
Weight empty 2.1 lb.

DIMENSIONS:

Length of projectile, w/o fuze 5.31 in.
Diameter at bourrelet 1.84 in. (46.7 mm)
Distance from base to rotating band 1.25 in.
Width of rotating band 1.69 in.

FILLING:

Loose granular black powder 1.8 oz. (50 g.)

FUZING:

Hotchkiss Patent fuze, screwed (RH) into base; a simple setback arming base fuze presumably of British manufacture. The base of the fuze is stamped "Hotchkiss Patent MC". Weight of fuze, 2 oz.

CASE:

Length 5.19 in.
Diameter of Base 2.38 in.
Material Brass (recovered)
Steel (documentary)
Weight (empty) No data

The case is crimped into a groove in the base of the projectile by several short crimps.

PROPELLANT:

5 C2 (Type 2 Yr. Propellant) 2.4 oz. (0.067 kg.)

Unperforated cylindrical sticks, approximately 0.5 mm (1/64-1/32") x 3-3/16", amber colored, double-base powder.

The propellant sticks are enclosed in a compartmented bag of heavy brownish silk.

PRIMER:

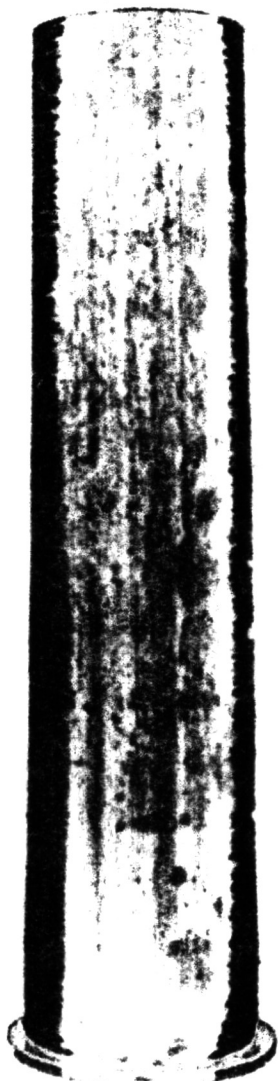
Small flush type (Designation unknown).

WEAPON:

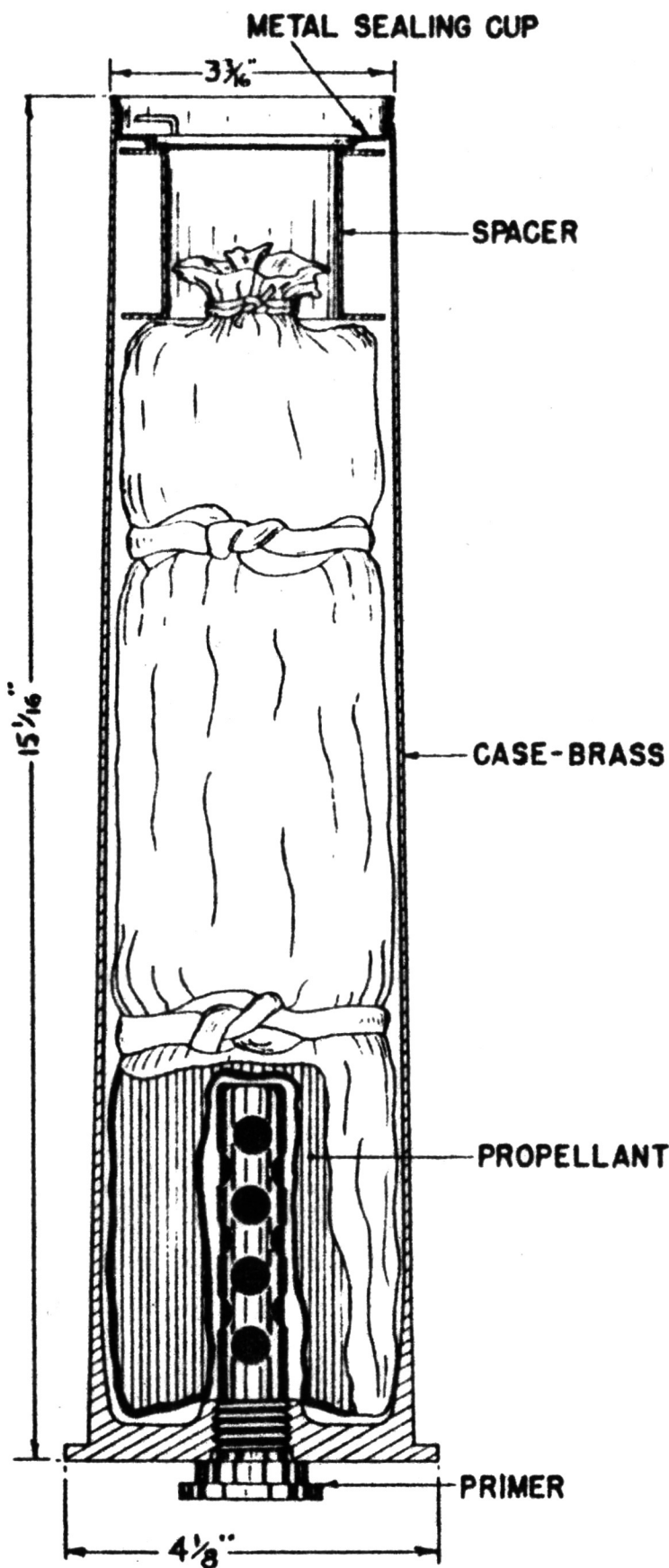
Short 5 cm Gun

This gun, mounted on wooden-spoked wheels as a field piece, corresponds to old U.S. "landing guns" and is probably a copy of an obsolete British gun. The breech block is the vertical sliding type.

NAVY 8 CM (76.2 MM 3 INCH) SEMI-FIXED COMPLETE ROUND



COMPLETE ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
8 CM.(76.2 MM. - 3 INCH)
SEMI-FIXED

CASE:

Length	15.06 in.
Diameter of Base	4.13 in.
Material	Brass (recovered) Steel (documentary)
Weight (empty)	4.97 lb.

PROPELLANT:

20 C3 (Type 89 Propellant) 1.98 lb. (0.900 kg.)

Unperforated cylindrical sticks, approximately 2 mm (1/16-3/32") x 12.75", amber colored, double-base powder.

The propellant sticks are enclosed in a bag of heavy brownish silk.

PRIMER:

Mk I Case Percussion Primer, Model 4.

WEAPON:

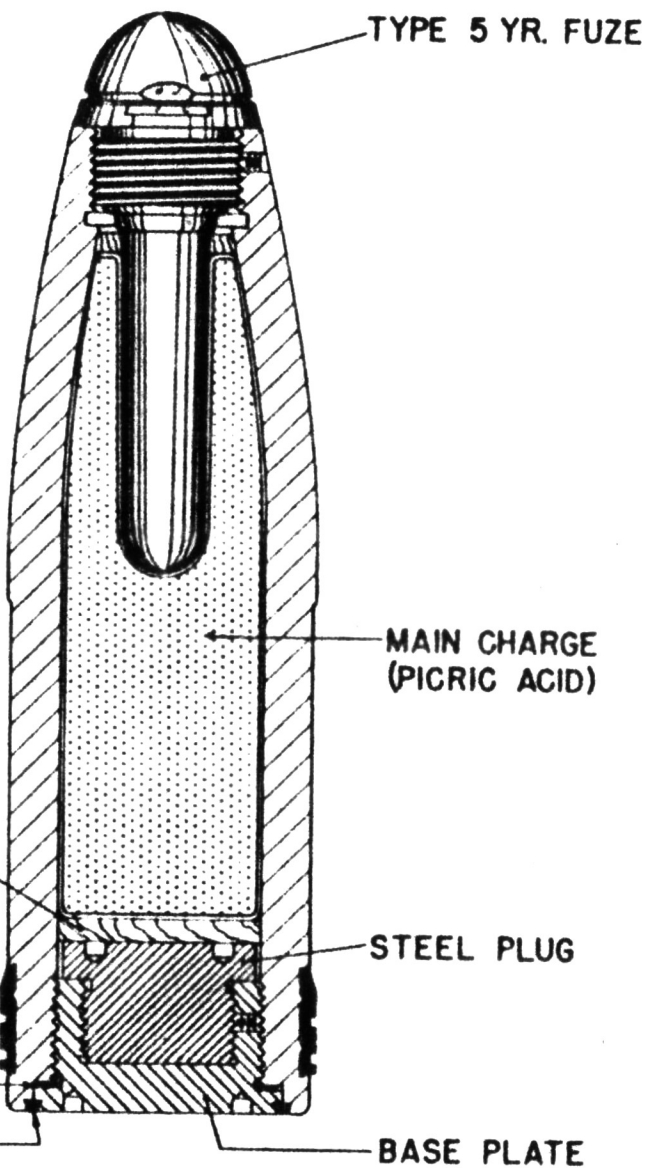
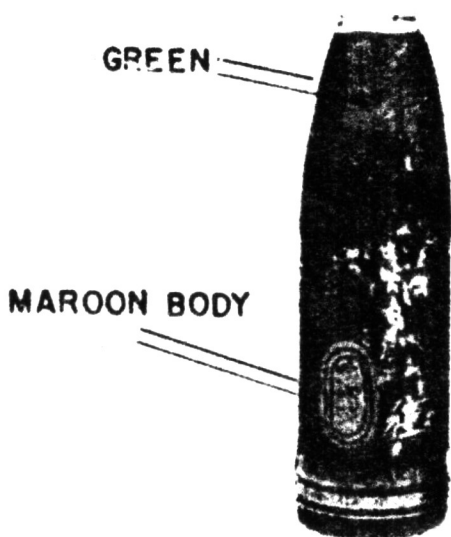
"AN" (Armstrong) Type 8 cm/40 Gun (Low Angle)

Except for minor changes, this is an exact copy of a British naval gun, and guns of both British and Japanese manufacture have been found ashore in Japanese emplacements for coastal defense.

The gun is pedestal-mounted. The breech is closed by a two-step interrupted thread block.

NAVY 8 CM. (76.2 MM) SEMI-FIXED HIGH EXPLOSIVE

8 CM. ORDINARY MK. 2 - MODIF. 2



HIGH EXPLOSIVE

8 CM. ORDINARY MK. 2 - MODIF. 2

**NAVY
8 CM.**

**(76.2 MM. - 3 INCH)
SEMI-FIXED**

WEIGHT OF FILLED PROJECTILE, w/o Fuze 11.46 lb.
 WEIGHT, EMPTY 10.75 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) 4.860 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 9.49 in.
 Diameter at bourrelet 3.0 in. (76.0 mm)
 Distance from base to rotating band44 in.
 Width of rotating band 1.0 in.
 Radius of ogive 6 cal.

FILLING:

Cast picric acid (Shimose)71 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

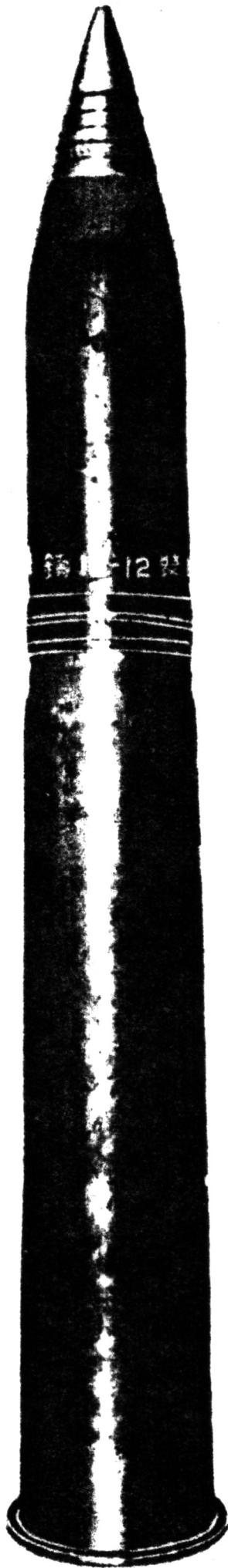
FUZING:

Type 5 Yr. Point Detonating Fuze

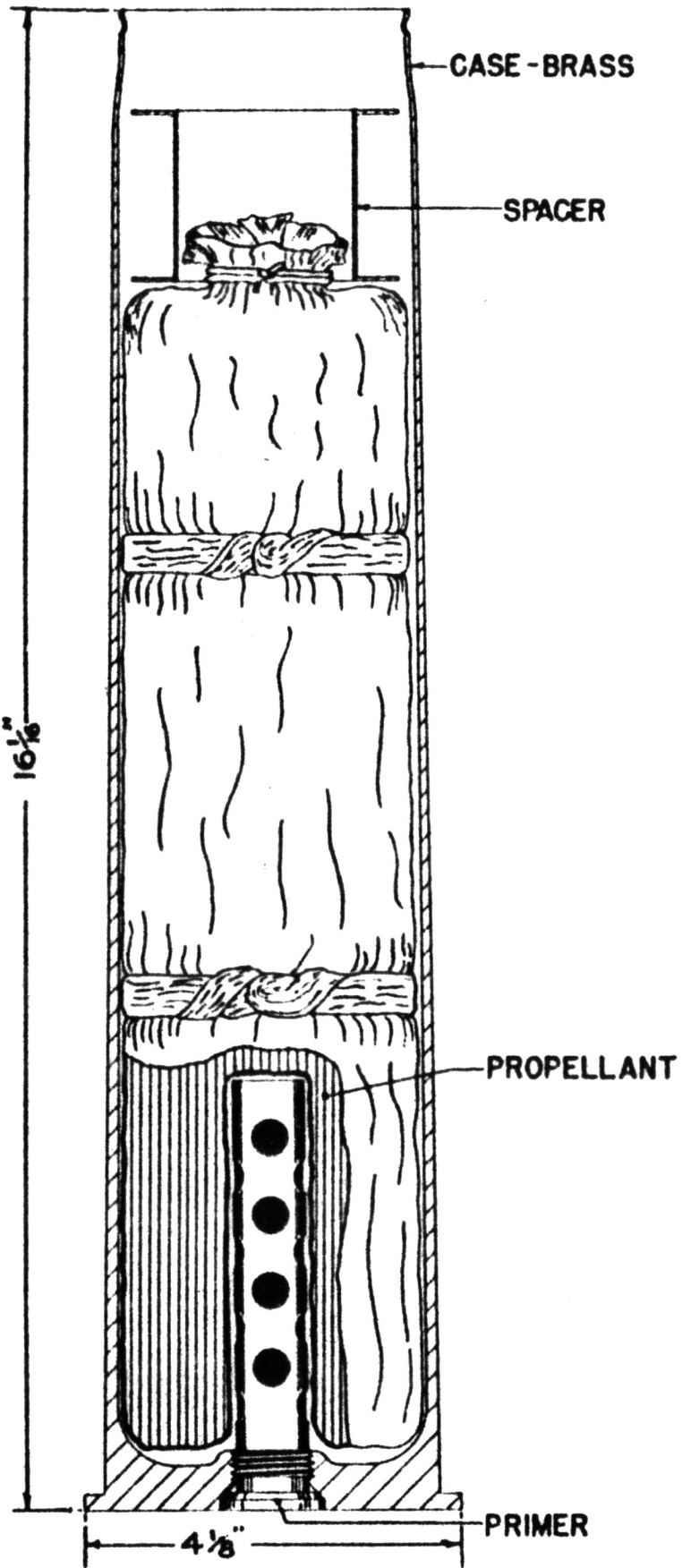
WEAPON:

"AN" (Armstrong) Type 8 cm/40 Gun (Low Angle)

NAVY 8 CM (76.2 MM) FIXED COMPLETE ROUND



ASSEMBLED ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
8 CM.
 (76.2 MM. - 3 INCH)
FIXED

CASE:

Length 16.06 in.
 Diameter of Base 4.13 in.
 Material Brass
 Weight (empty) 6.25 lb.

The case is crimped tightly into a groove in the base of the projectile by a single continuous crimp.

PROPELLANT:

20 G3 (Type 89 Propellant) 2.039 lb. (0.927 kg.)

Unperforated cylindrical sticks, approximately 2 mm (.078") x 12-3/4", amber colored, double-base powder.

The propellant sticks are enclosed in a bag of heavy brownish silk.

PRIMER:

Mk 2 Case Percussion Primer, Model 4

WEAPON:

8 cm/40 Type 3 Yr. High Angle Gun

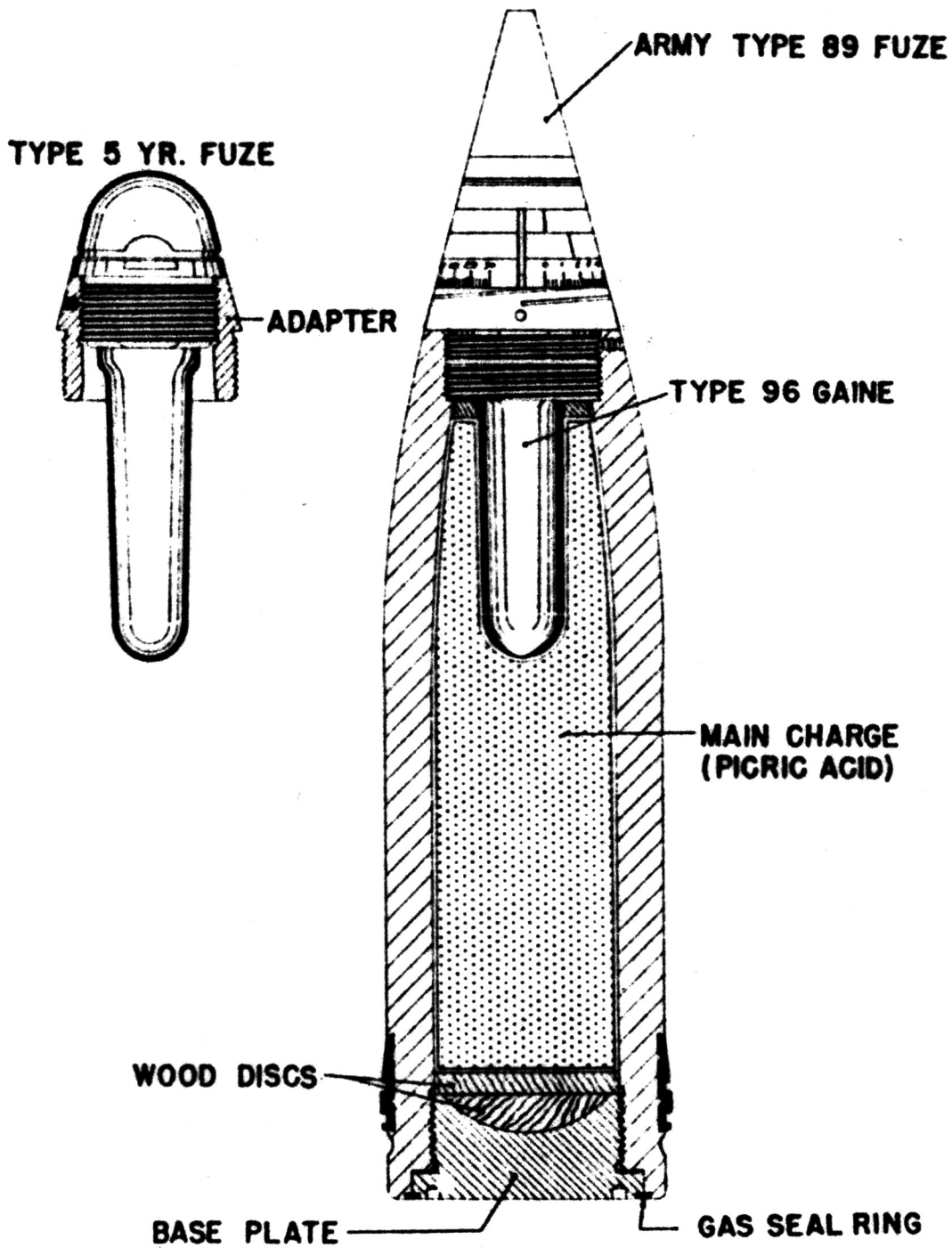
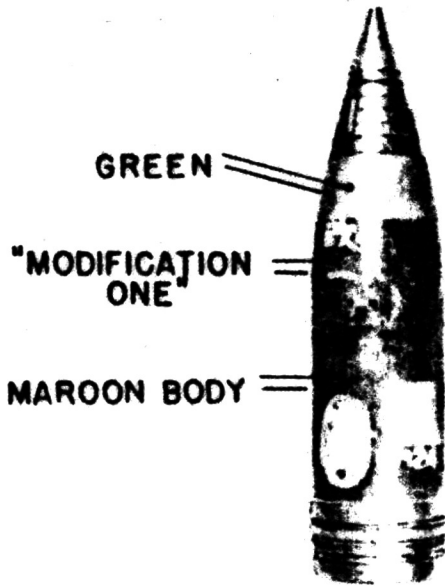
This is a pedestal-mounted gun with a breech block sliding diagonally down to the right. Although designed as a ship-board mount, it is commonly found mounted in fixed emplacements ashore for anti-aircraft and coastal defense.

A similar gun, designated Type 88 (not to be confused with the Army 75 mm Type 88) is also mentioned in Japanese documents.

NAVY 8 CM (76.2 MM.) 3 INCH) FIXED

HIGH EXPLOSIVE

8 CM. ORDINARY MK - MODIF. I



HIGH EXPLOSIVE

8 CM. ORDINARY MK. - MODIF. I

NAVY
8 CM.
 (76.2 MM. - 3 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round 19.25 lb.
 Length of complete round, with Type 89 fuze . 28.25 in.

PROJECTILE:

Weight of filled projectile, w/o fuze 9.5 lb.
 Weight, empty 8.6 lb.
 Weight stamped on rotating band (sample) 4.865 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze or adapter 9.25 in.
 Diameter at bourrelet 2.97 in. (75.5 mm)
 Distance from base to rotating band75 in.
 Width of rotating band 1.0 in.
 Radius of ogive 4 cal.

FILLING:

Cast picric acid (Shimose) 0.9 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

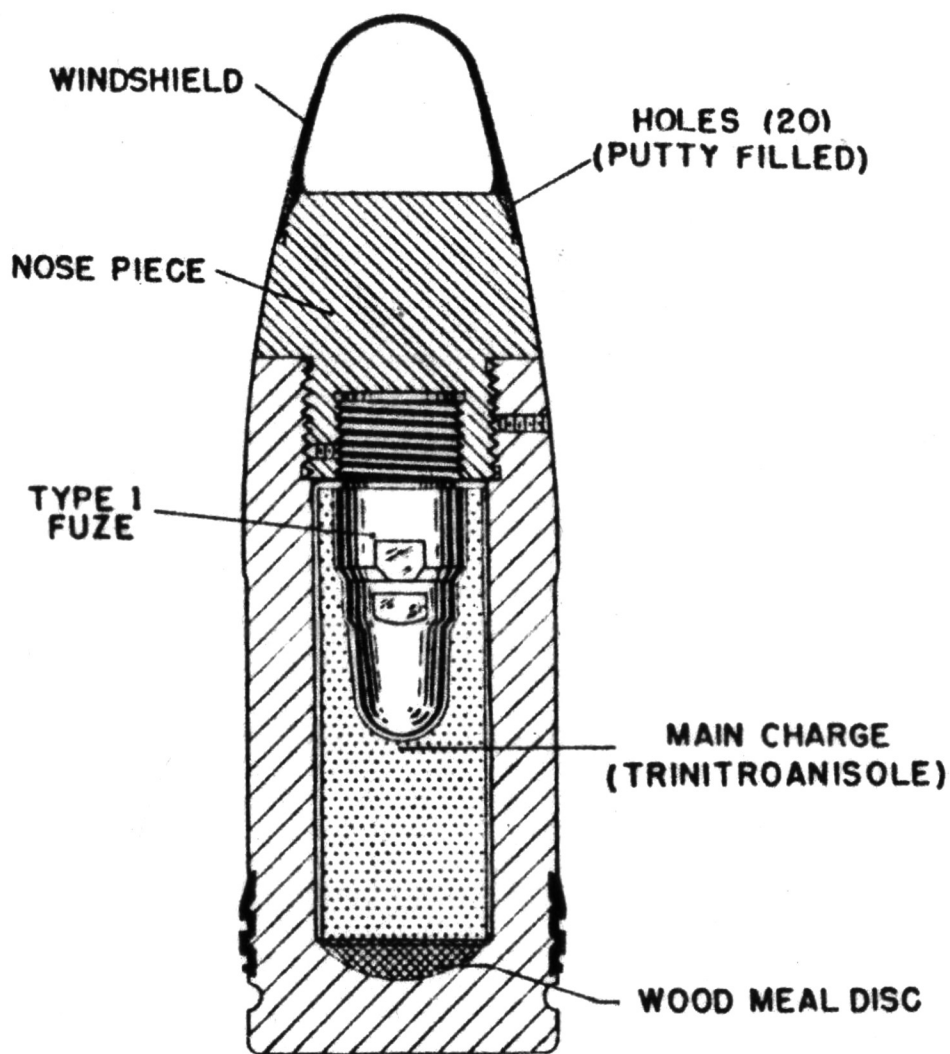
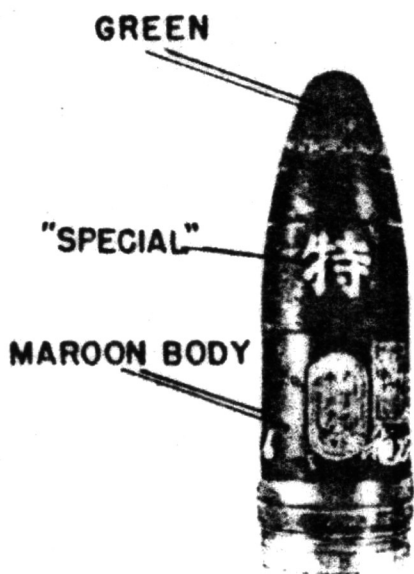
- (a) Army Type 89 Powder Time Fuze (30 sec.)
- (b) Type 5 Yr. Point Detonating Fuze (Inst.)
 (with adapter)

WEAPON:

Type 3 Yr. 8 cm/40 High Angle Gun
 Type 88 8 cm Gun (Documentary)

NAVY 8 CM. (76.2 MM. / 3 INCH) FIXED SPECIAL COMMON

8 CM. ARMOR PIERCING - TYPE 1



SPECIAL COMMON

8 CM. ARMOR PIERCING - TYPE 1

NAVY

8 CM.

(76.2 MM. - 3 INCH)

FIXED

ASSEMBLED ROUND:

Weight of complete round 21.04 lb.
 Length of complete round 25.31 in.

PROJECTILE:

Weight of filled projectile, with fuze 12.70 lb.
 Weight, empty 11.72 lb.
 Weight stamped on rotating band (sample) . . . 5.310 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile 9.875 in.
 Diameter at bourrelet 2.98 in. (76.0 mm)
 Distance from base to rotating band75 in.
 Width of rotating band 1.0 in.
 Radius of ogive 4 cal.

FILLING:

Trinitroanisol (Type 91 Explosive) 0.41 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

Type 1 Nose Fuze

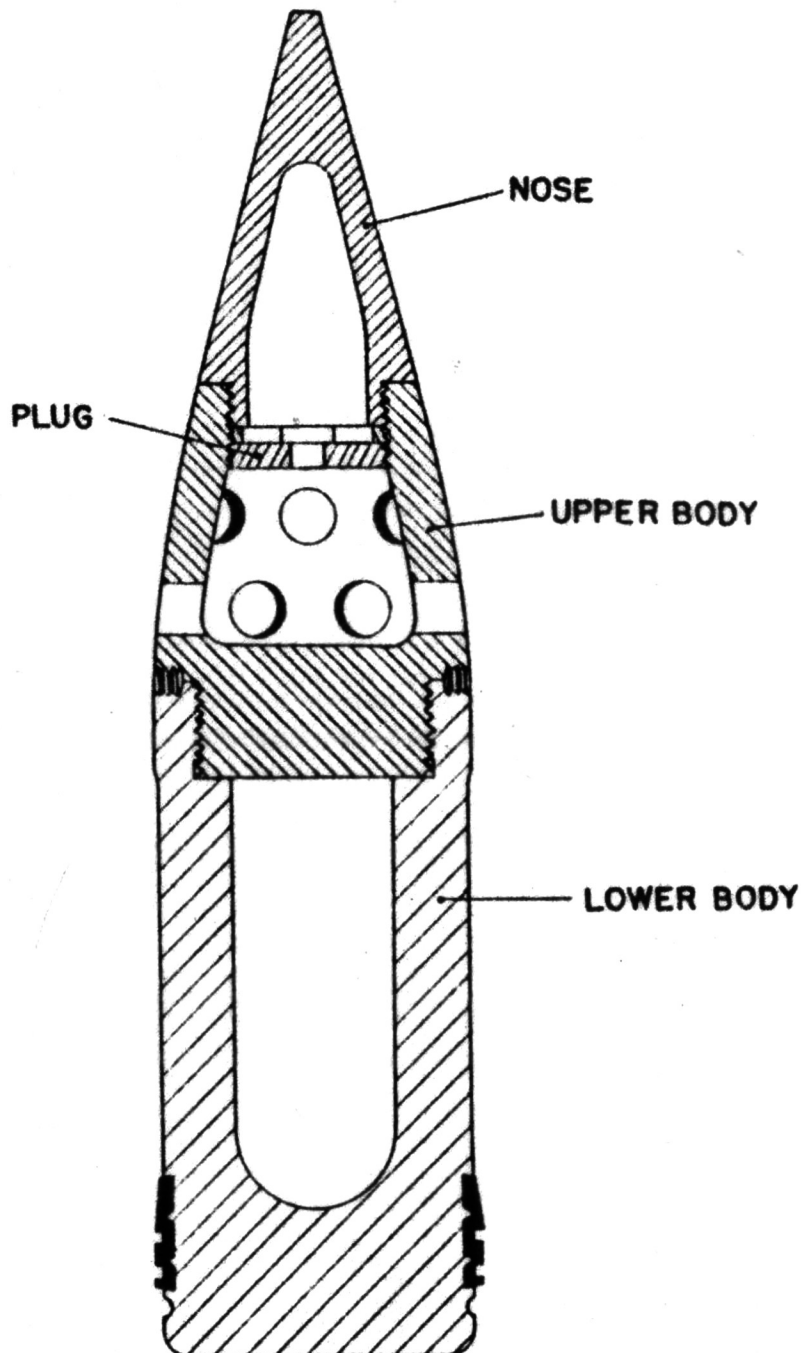
WEAPON:

Type 3 Yr. 8cm/40 High Angle Gun
 Type 88 8 cm Gun (Documentary)

NAVY 8 CM (76.2 MM.
3 INCH) FIXED

UNIDENTIFIED

Color
Scheme
Not
Determined



UNIDENTIFIED

NAVY
8 CM.
 (76.2 MM. - 3 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round No data
 Length of complete round 28.06 in.

PROJECTILE:

Weight of filled projectile No data
 Weight, empty 12.30 lb.
 Weight stamped on rotating band (sample) 5.200 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile 12.69 in.
 Diameter at bourrelet 2.98 in. (76.0 mm)
 Distance from base to rotating band69 in.
 Width of rotating band 1.0 in.
 Radius of ogive 4 cal.

FILLING:

No data. Possibly smoke compound or spotting dye.

FUZING:

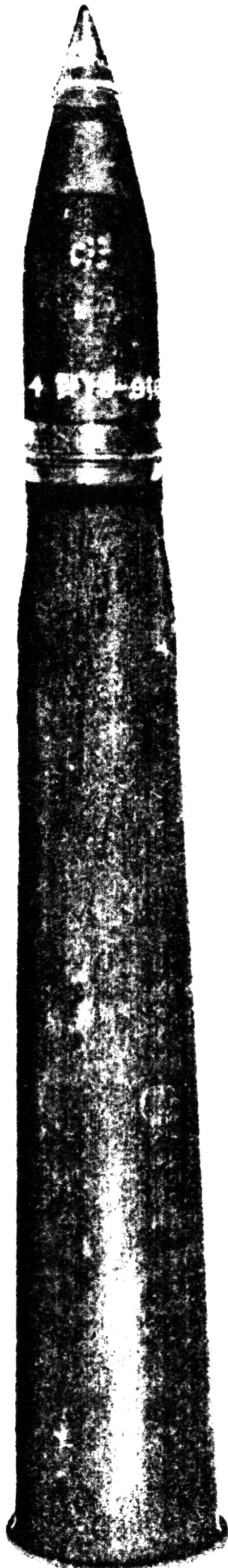
Not known. Probably no fuzes used.

WEAPON:

Type 3 Yr. 8 cm/40 High Angle Gun
 Type 88 8 cm Gun (Documentary)

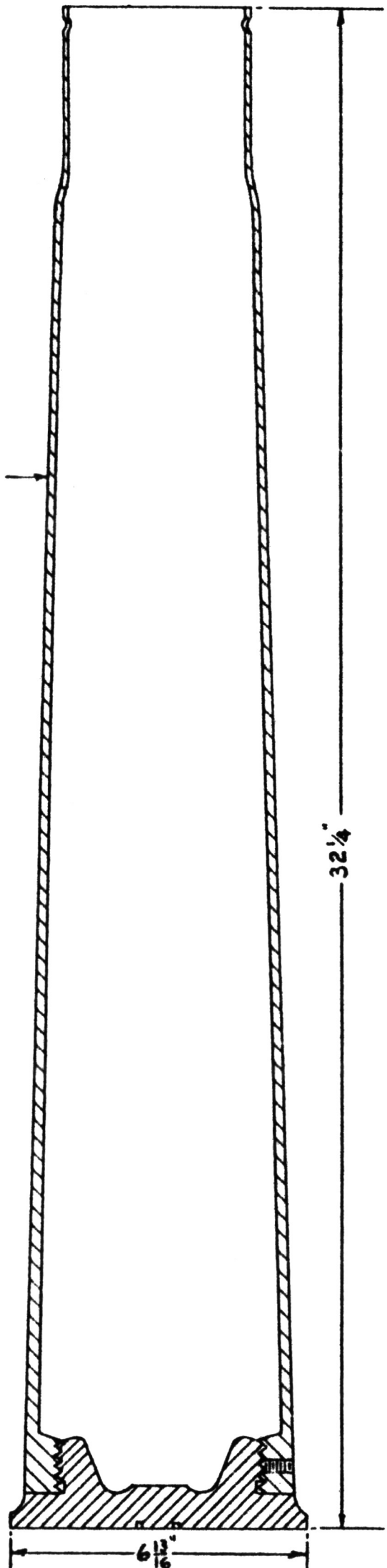
NAVY 10 CM. (100 MM. / 3.9 INCH) FIXED

COMPLETE ROUND



ASSEMBLED ROUND

CASE-STEEL



DUMMY CASE

COMPLETE ROUND

NAVY
10 CM.
 (100 MM. - 3.9 INCH)
FIXED

CASE:

Length	32.25 in.
Diameter of Base	6.81 in.
Material	Presumably brass
Weight (empty)	No data

The case is crimped tightly into a groove in the base of the projectile by a single continuous crimp.

The case from a dummy round recovered was made of steel. The standard case is presumed to be of approximately the same dimensions, but brass.

PROPELLANT:

20 DL2 (Type 93 Mk 2 Propellant) 12.7 lb. (5.750 kg.)

Documentary evidence and relationship to other known propellants indicates that this propellant is a double base powder in the form of flat strips.

PRIMER:

Presumably Mk 2 Case Percussion Primer, Model 4.

WEAPON:

Type 98 10 cm/65 High Angle Gun - Twin.

This is a modern gun, paired in a twin power-driven mount designed especially for anti-aircraft aboard ships. It has been found ashore, unaltered in the characteristic gun-house mount used aboard ship.

Special features of this gun and mount are horizontal opposed sliding breech blocks, full power drive, and automatic fuze setting accomplished as the loading tray moves the round into position to be rammed. The arrangement for loading and fuze setting, and the general plan of the mount corresponds closely to that of the Type 89 12.7 cm/40 twin mount.

A 10cm/50 High Angle Gun (AA) is also listed in Japanese documents.

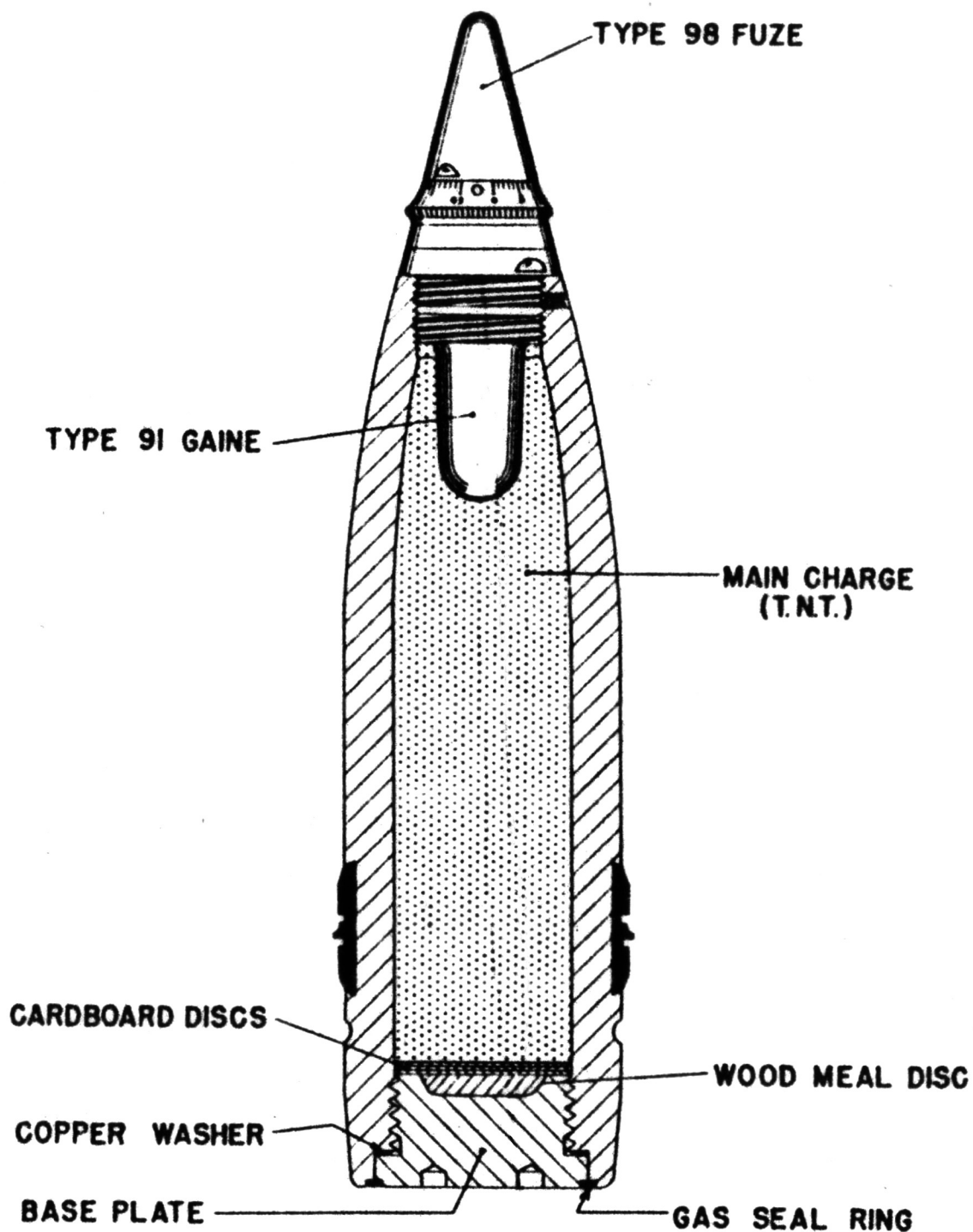
NAVY 10 CM. (100 MM. 3.9 INCH) FIXED HIGH EXPLOSIVE

10 CM. / TYPE 98 ORDINARY



GREEN

MAROON BODY



TYPE 98 FUZE

TYPE 91 GAINE

MAIN CHARGE (T.N.T.)

CARDBOARD DISCS

WOOD MEAL DISC

COPPER WASHER

BASE PLATE

GAS SEAL RING

HIGH EXPLOSIVE

10 CM. / TYPE 98 ORDINARY

NAVY
10 CM.
 (100 MM. - 3.9 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round 62.75 lb.
 Length of complete round, with Type 98 fuze. . 46.0 in.

PROJECTILE:

Weight of filled projectile, w/o fuze 28.19 lb.
 Weight, empty 25.06 lb.
 Weight stamped on rotating band (sample) . . . 10.880 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 12.63 in.
 Diameter at bourrelet 3.94 in. (99 mm)
 Distance from base to rotating band 2.69 in.
 Width of rotating band 1.75 in.
 Radius of ogive No data

FILLING:

T.N.T. (Type 92 Explosive) 3.13 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

Type 98 Mechanical Time Fuze (45 sec.)

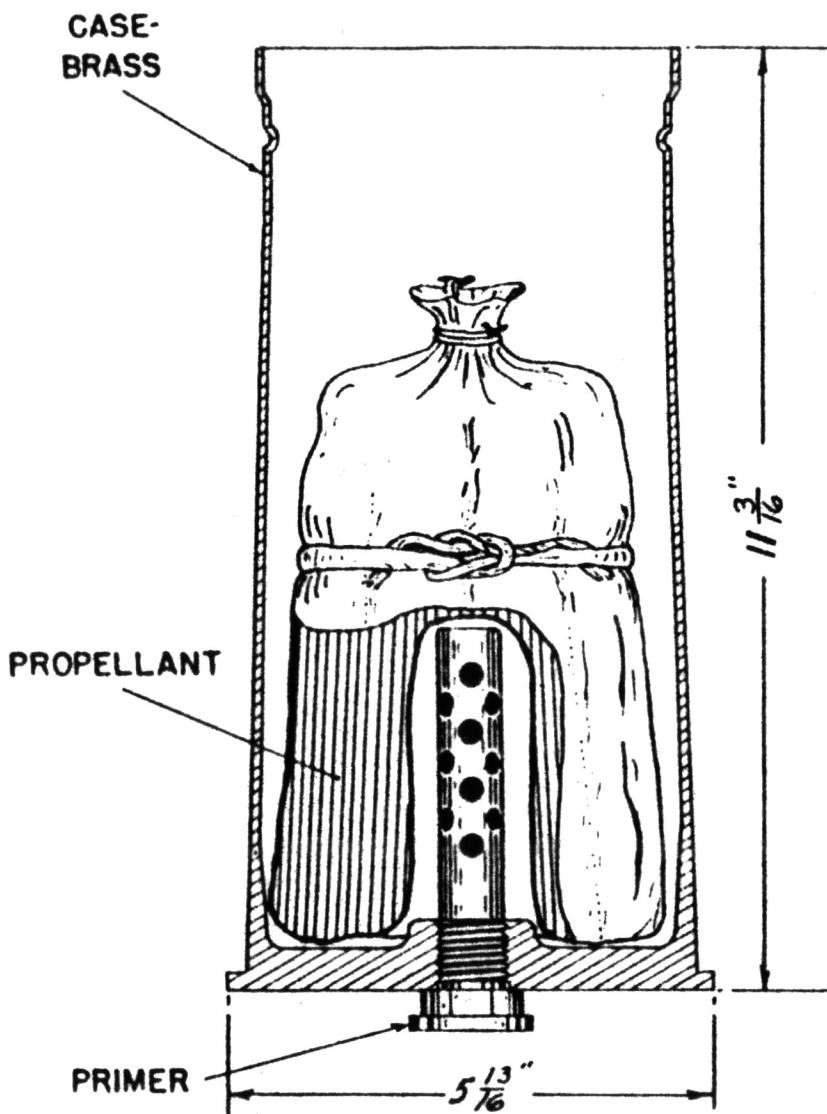
WEAPON:

Type 98 10cm/65 cal. High Angle Gun

NAVY 12 CM. (120 MM.) SHORT FIXED COMPLETE ROUND



COMPLETE ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
12 CM. / SHORT
(120 MM. - 4.7 INCH)
FIXED

CASE:

Length 11.19 in.
Diameter of base 5.91 in.
Material Brass (recovered)
Steel (documentary)
Weight (empty) No data

The case is crimped tightly into a groove in the base of the projectile by a single continuous crimp.

PROPELLANT:

9 C3 (Type 89 Propellant) 1.1 lb. (0.5 kg.)
Unperforated cylindrical sticks, approximately 0.9 mm (1/32")
x 6-7", amber colored, double base powder.

The propellant sticks are enclosed in a compartmented bag of heavy brownish silk.

PRIMER:

Mk 1 Case Percussion Primer, Model 4

WEAPON:

Short 12 cm Gun

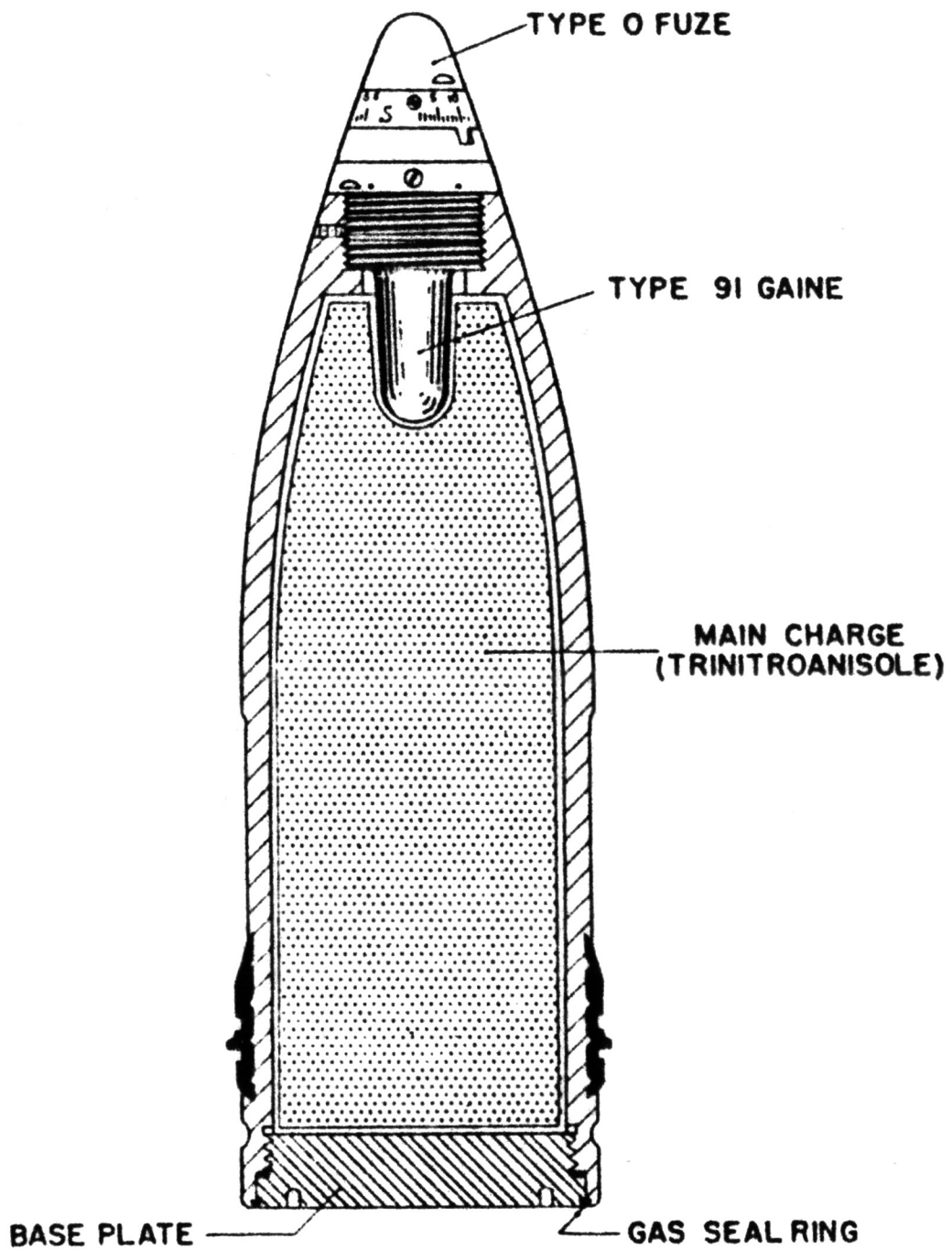
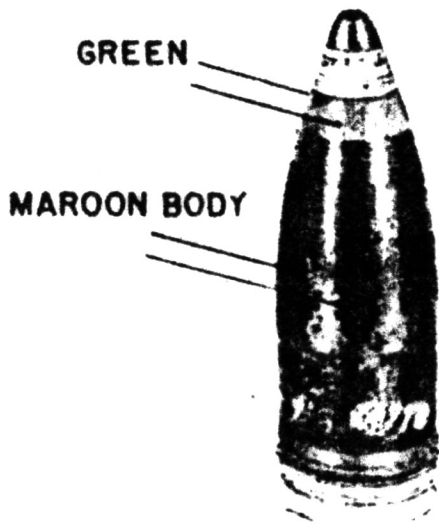
This is a short-barrelled (12 cal.) gun of low muzzle velocity and light construction on a pedestal mount designed originally for use on the light decks of merchant ships. The purpose of this weapon is to deliver a relatively heavy projectile at a limited range for anti-submarine attack and to throw up low level anti-aircraft barrage.

This gun fires fixed ammunition; the breech block is of the interrupted thread type. This gun is the lighter-caliber counterpart of the Short 20 cm Gun, which has been found mounted ashore.

NAVY 12 CM. (120 MM.) (4.7 INCH) SHORT FIXED

HIGH EXPLOSIVE

12 CM. / SHORT ORDINARY



HIGH EXPLOSIVE

12 CM. / SHORT ORDINARY

NAVY
12 CM. / SHORT
(120 MM. - 4.7 INCH)
FIXED**ASSEMBLED ROUND:**

Weight of complete round No data
 Length of complete round, with Type O fuze . . 24.8 in.

PROJECTILE:

Weight of filled projectile, w/o fuze 26.0 lb.
 Weight, empty 20.5 lb.
 Weight stamped on rotating band (sample) . . . 9.340 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 12.6 in.
 Diameter at bourrelet 4.7 in. (119.5 mm)
 Distance from base to rotating band 1.5 in.
 Width of rotating band 1.0 in.
 Radius of ogive No data

FILLING:

Trinitroanisole (Type 91 explosive) 5.5 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZZING:

Type O Mechanical Time Fuze (Red-nosed) for A.A. use.

Inst.-5 Sec. Selective Nose Fuze for anti-sub use.

Type 88 Model 4 Point Detonating Fuze

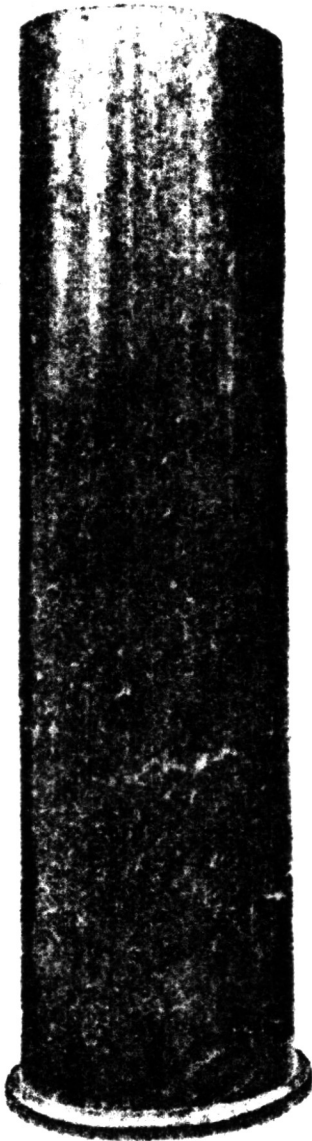
WEAPON:

Short 12 cm Gun

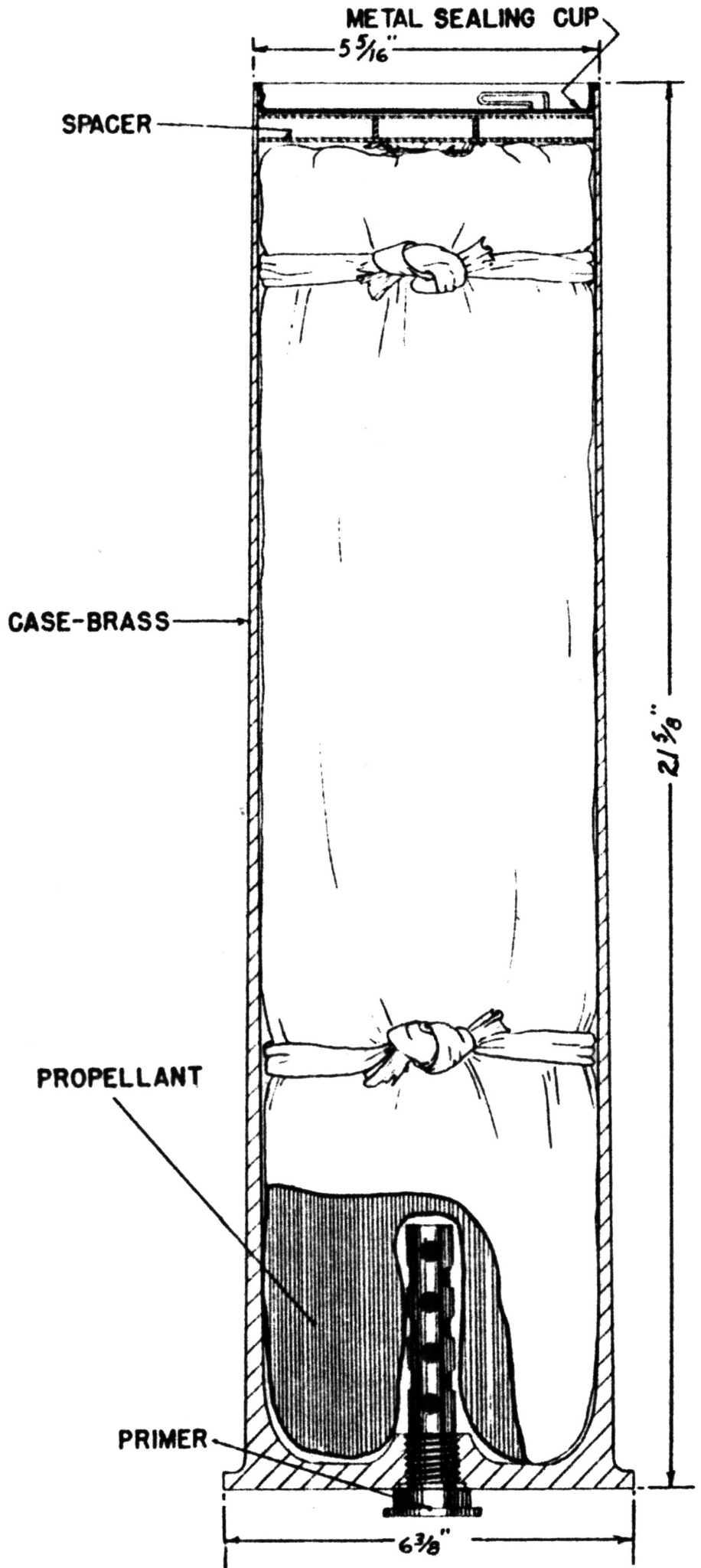
REMARKS:

The extremely thin wall of this projectile is possible only by virtue of the low muzzle velocity of the howitzer-like weapon. The high charge/weight ratio is intended for effectiveness in use as an under-water charge against submarines, though the projectile may also be time-fuzed for anti-aircraft use.

NAVY 12 CM. (120 MM. / 4.7 INCH) SEMI-FIXED COMPLETE ROUND



COMPLETE ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
12 CM.
 (120 MM. - 4.7 INCH)
SEMI-FIXED

CASE:

Length 21.63 in.
 Diameter of base 6.38 in.
 Material Brass
 Weight (empty) 11.13 lb.

PROPELLANT:

30 DC (Type 13 Propellant) 11.88 lb. (5.40 kg.)

Unperforated cylindrical sticks, approximately 3.0 mm (1/8") x 19.4 (long sticks) or 6.4" (short sticks), amber colored, double base powder.

The propellant sticks are enclosed in a bag of heavy brownish silk.

PRIMER:

Mk 1 Case Percussion Primer, Model 4

WEAPONS:

Type 3 Yr. 12 cm/45 Gun (Low Angle)

This is a pedestal-mounted deck gun characterized by having three recoil cylinders, all mounted below the tube. An interrupted thread breech block is hinged to swing horizontally to the right. This gun has been found both with and without an attached splinter shield.

Though positive proof is lacking, it is believed that the same ammunition is used for the following similar gun:

British Type 12 cm/(?) Gun (Low Angle)

This gun is characterized by having no recoil cylinders above the tube. An interrupted thread breech block is hinged to swing horizontally to the right. Guns of original British manufacture as well as Japanese-made copies have been found in Japanese island defenses.

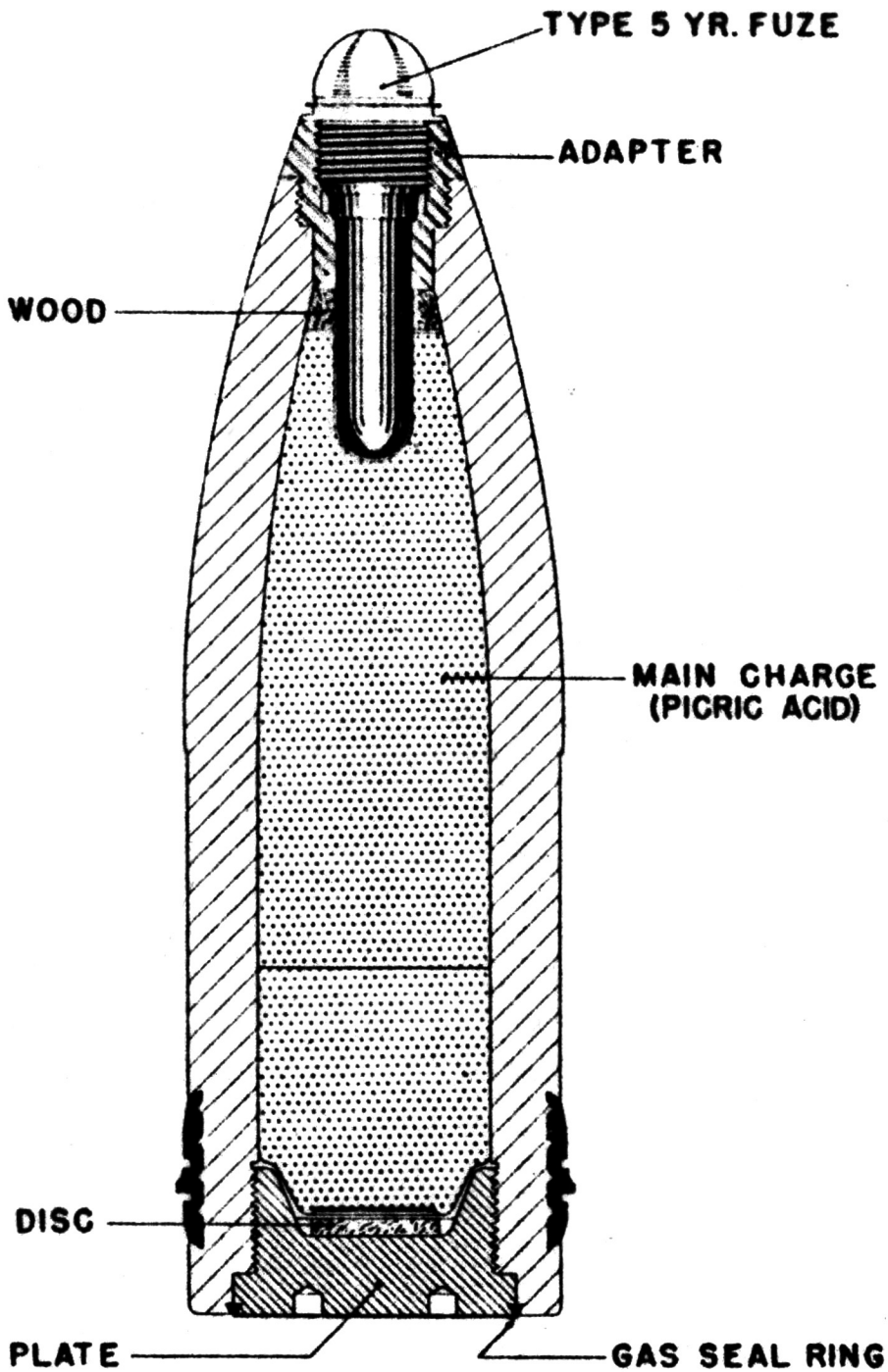
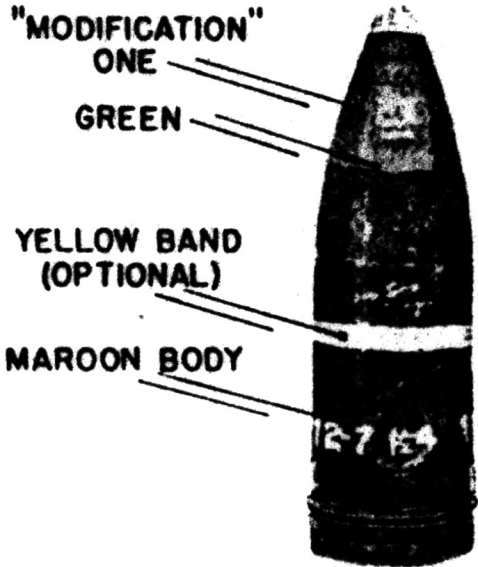
The following gun is known to use semi-fixed ammunition strongly resembling that for the two guns listed above, but exact size and description of propellant case is not available.

Type 11 Yr. 12 cm/45 Gun (Low Angle)

This gun is unique in having two recoil cylinders above the tube and one below. The breech block is the horizontal sliding type.

NAVY 12 CM. (120 MM.) (4.7 INCH) SEMI-FIXED HIGH EXPLOSIVE (I)

12 CM ORDINARY MK 3 MODIF. 1



HIGH EXPLOSIVE (I)

12 CM. ORDINARY MK. 3 MODIF 1

**NAVY
12 CM.**

(120 MM. - 4.7 INCH)

SEMI-FIXED

WEIGHT OF FILLED PROJECTILE, w/o fuze 44.75 lb.
 WEIGHT, empty 41.14 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) 18.520 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze or adapter. . . 14.1 in.
 Diameter at bourrelet 4.7 in. (119.5 mm)
 Distance from base to rotating band78 in.
 Width of rotating band 1.95 in.
 Radius of ogive 4 cal.

FILLING:

Cast picric acid (Shimose) 3.61 lb.

The charge consists of two blocks of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

(a) With adapter:

Type 5 Yr. Point Detonating Fuze

(b) Without adapter:

Type 88 Point Detonating Fuze
 Selective Inst.-5 sec. fuze (possible)

This projectile cannot be fuzed with standard mechanical time fuzes for A.A. use because it will not accommodate the auxiliary gaine used with these fuzes.

WEAPONS:

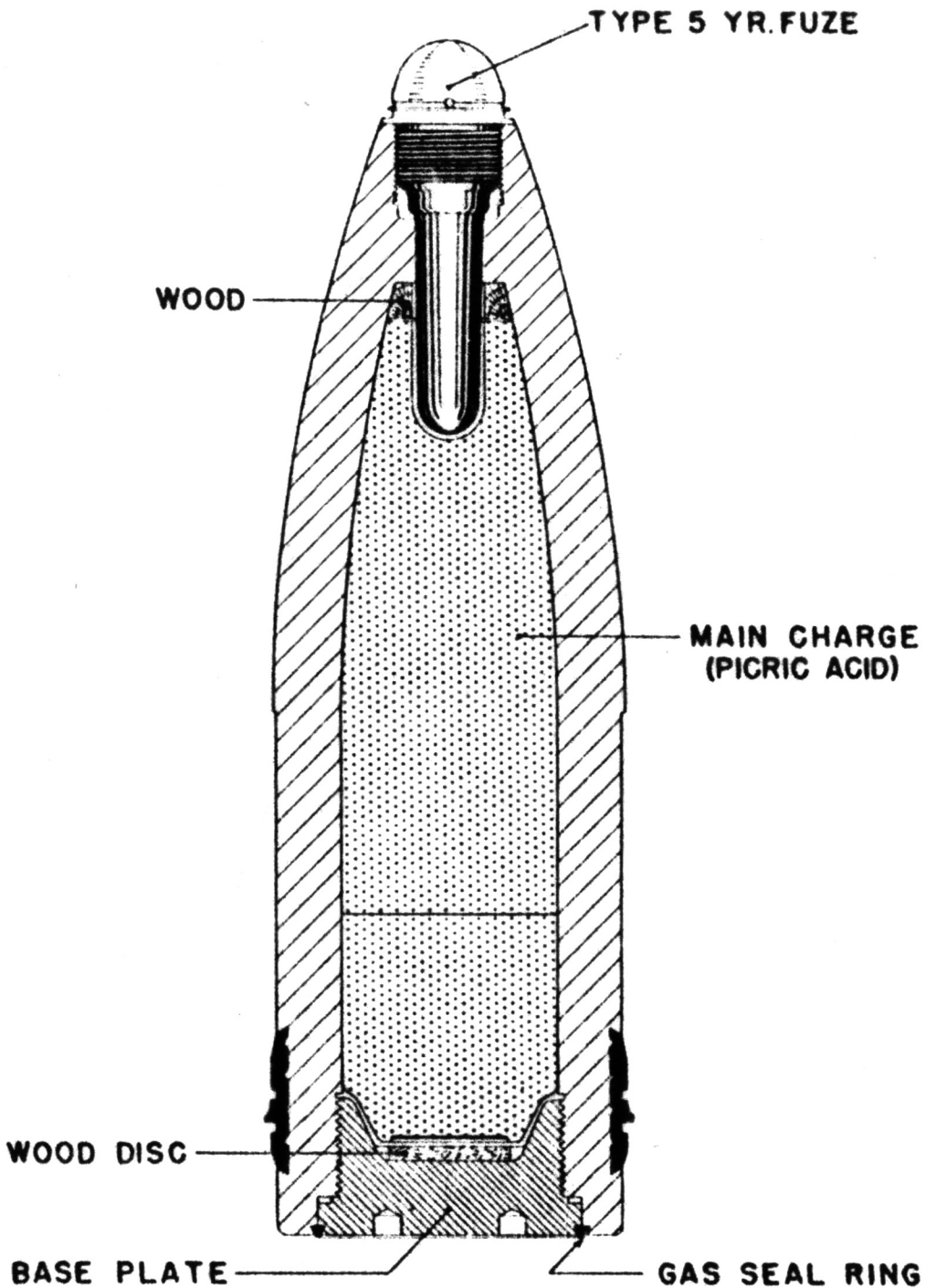
British Type 12 cm Gun (Low Angle)

Type 3 Yr. 12 cm/45 Gun (Low Angle)

Type 11 Yr. 12 cm/45 Gun (Low Angle)

NAVY 12 CM. (120 MM. / 4.7 INCH) SEMI-FIXED HIGH EXPLOSIVE (2)

12 CM ORDINARY MK. 3 MODIF. 1



HIGH EXPLOSIVE (2)

12 CM ORDINARY MK. 3 MODIF. 1

**NAVY
12 CM.**

(120 MM. - 4.7 INCH)

SEMI-FIXED

WEIGHT OF FILLED PROJECTILE, w/o Fuze 44.75 lb.
 WEIGHT, empty 41.14 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) 18.520 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 15.95 in.
 Diameter at bourrelet 4.6 in. (119.0 mm)
 Distance from base to rotating band78 in.
 Width of rotating band 1.95 in.
 Radius of ogive 4 cal.

FILLING:

Cast picric acid (Shimose) 3.61 lb.

The charge consists of two blocks of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

Type 5 Yr. Point Detonating Fuze

WEAPON:

British Type 12 cm Gun (Low Angle)

Type 3 Yr. 12 cm/45 Gun (Low Angle)

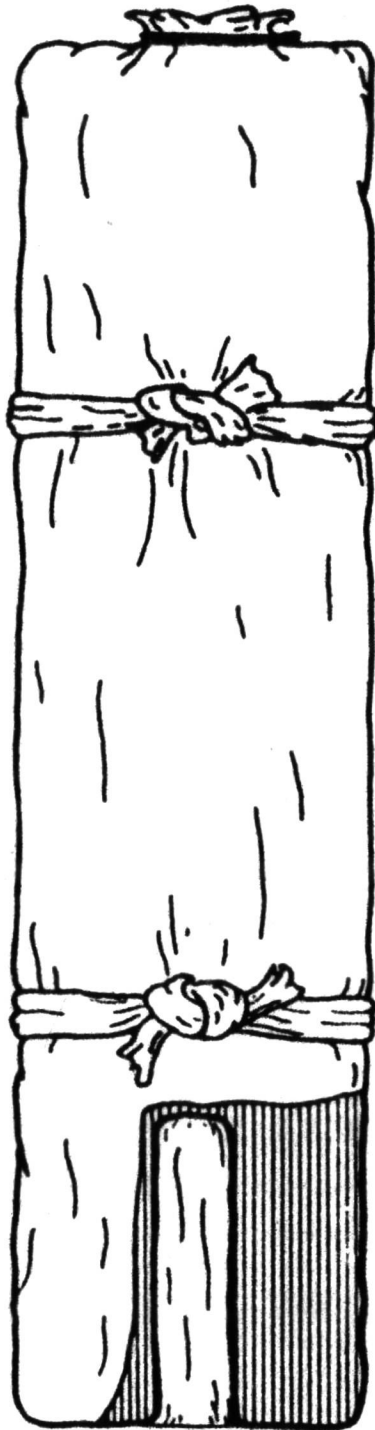
Type 11 Yr. 12 cm/45 Gun (Low Angle)

NAVY 12 CM (120 MM.) FIXED

COMPLETE ROUND



ASSEMBLED ROUND

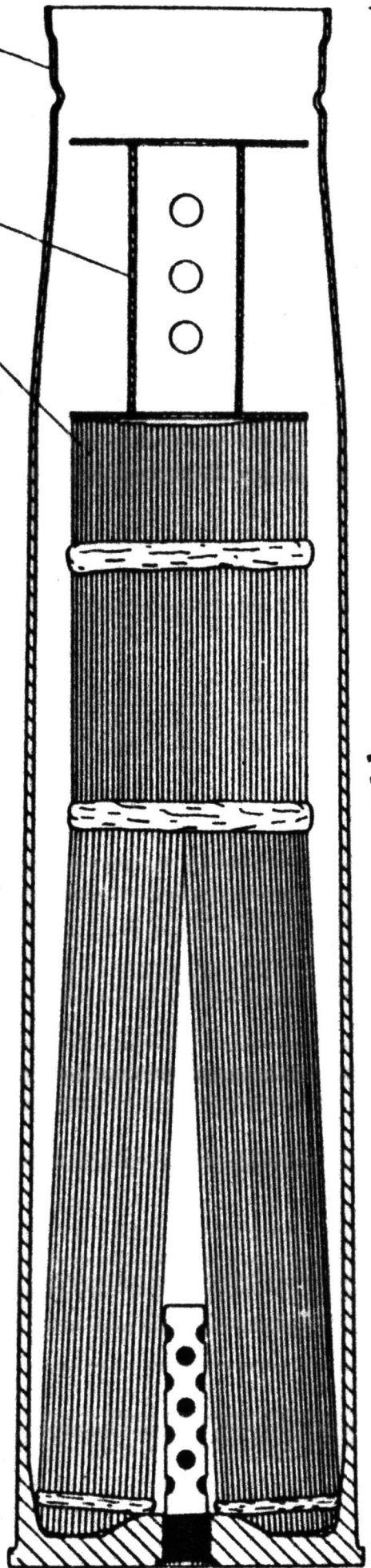


TERNATE PROPELLANT CHARGE IN SILK BAG

CASE - BRASS

SPACER

PROPELLANT



27 5/8

6 1/4" PRIMER

CASE AND PROPELLANT

COMPLETE ROUND

NAVY
12 CM.
 (120MM-4.7 INCH)
FIXED

CASE:

Length 27.63 in.
 Diameter of base 6.25 in.
 Material Brass
 Weight (empty) 18.59 lb.

The case is crimped tightly into a groove in the base of the projectile by a single continuous crimp.

PROPELLANT:

30 DC (Type 13 Propellant) 12.0 lb. (5.50 kg.)

Unperforated cylindrical sticks, approximately 3.0 mm (3/32"-1/8") x 19.8", graphited double base powder.

In the H.E. rounds recovered, the propellant sticks are enclosed in a bag of heavy brownish silk.

In the incendiary shrapnel round the sticks of propellant were tied together and placed in the case without being enclosed in the customary coarse silk bag. The latter arrangement may be a new trend not necessarily limited to the round in which it was first found.

Documentary sources also list the following propellant charge:
 35 DC2 (Type 93 Mk 2 Propellant) . . . 11.09 lb. (5.040 kg.)

PRIMER:

Mk 2 Case Percussion Primer, Model 4

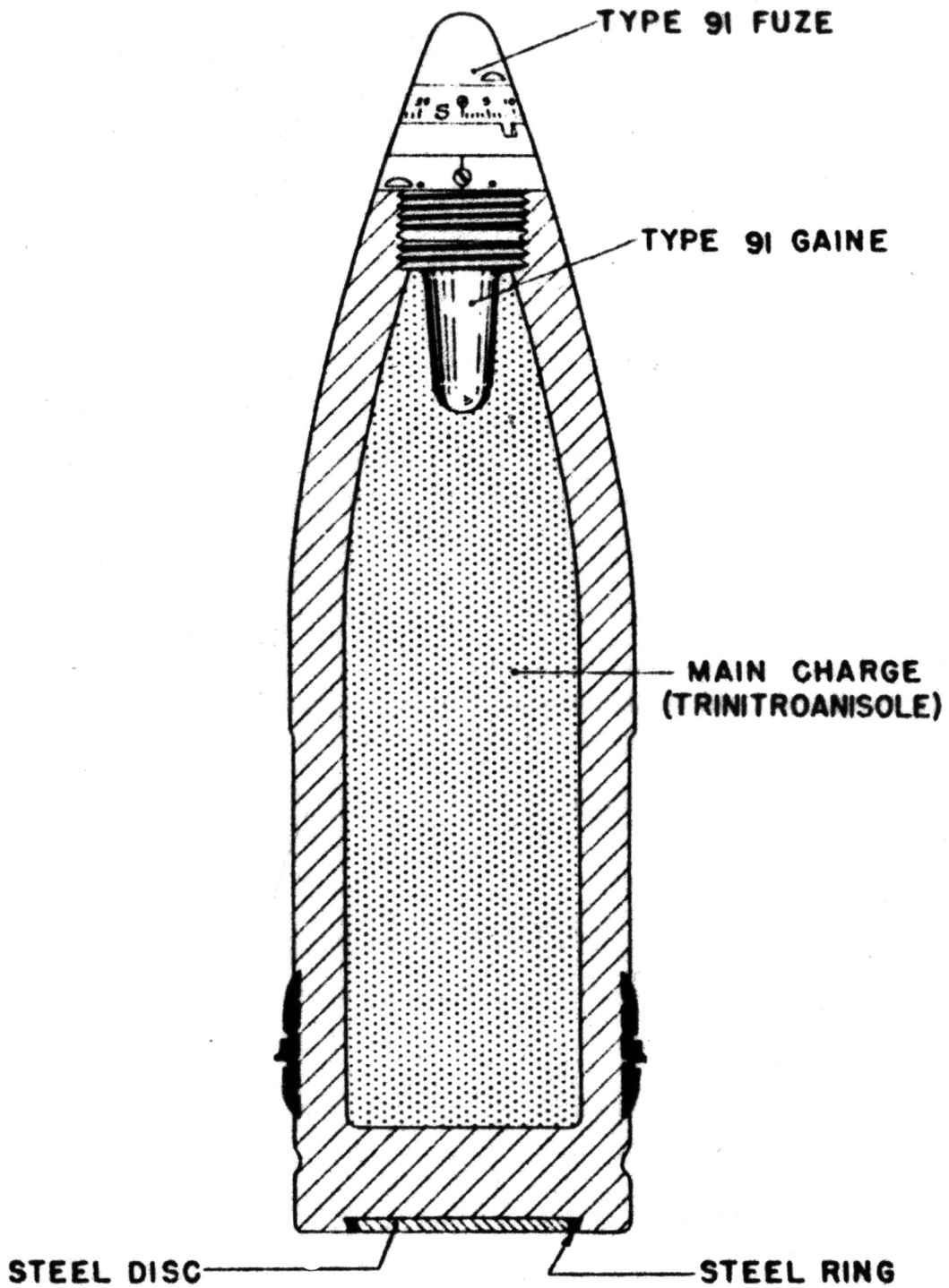
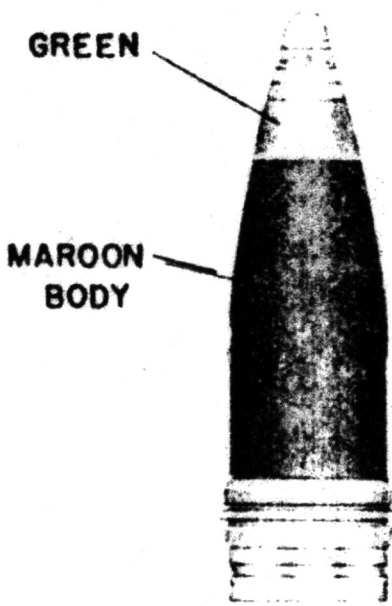
WEAPON:

Type 10 Yr. 12 cm/45 High Angle Gun

This weapon is a pedestal-mounted gun designed for anti-aircraft use aboard ship which has been found ashore either with or without a distinctive gun-house type of shield. The gun is manually controlled. The breech-block is the horizontal type, sliding to the right. This has been one of the most common and most effective Japanese land-based A.A. guns.

NAVY 12 CM (120 MM.) (4.7 INCH) FIXED HIGH EXPLOSIVE (I)

12 CM. ORDINARY (UNDET.) MODIF. I



HIGH EXPLOSIVE (I)
12 CM. ORDINARY (UNDET.) MODIF I

NAVY
12 CM.
(120MM-4.7 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round 74.03 lb.
 Length of complete round, with Type 91 fuze . 41.75 in. (approx.)

PROJECTILE:

Weight of filled projectile, w/o fuze 43.34 lb.
 Weight, empty 39.38 lb.
 Weight stamped on rotating band (sample) . . . 17.9 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 13.95 in.
 Diameter at bourrelet 4.6 in. (119.0 mm)
 Distance from base to rotating band 1.56 in.
 Width of rotating band 1.9 in.
 Radius of ogive 4 cal.

FILLING:

Trinitroanisole (Type 91 explosive) 3.96 lb.

The explosive is cast directly in the projectile body.

FUZING:

Type 91 Mechanical Time Fuze
 Type 88 Point Detonating Fuze

WEAPON:

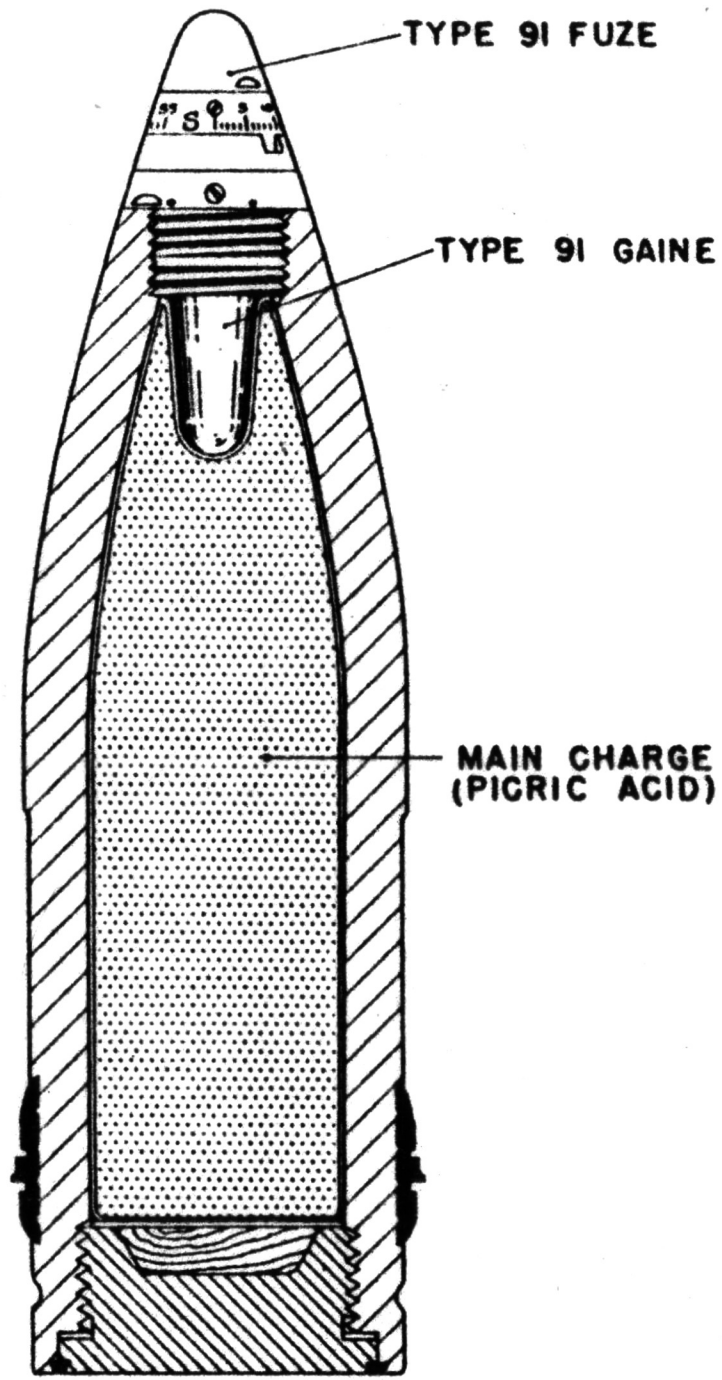
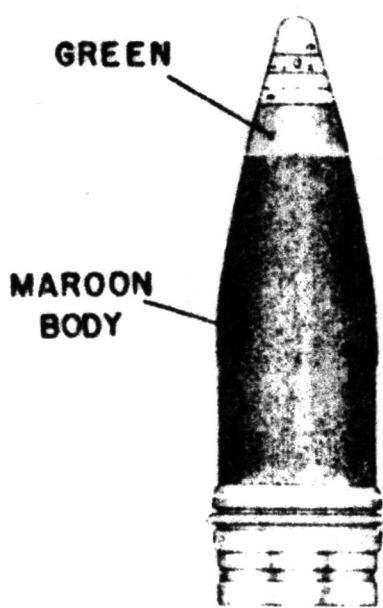
Type 10 Yr. 12 cm/45 High Angle Gun

REMARKS:

The base of the projectile is slightly recessed to receive a steel plate which is locked in by a steel ring. This arrangement is presumed to be a seal to prevent the propellant gases entering possible flaws in the solid base of the projectile. A similar feature is common in U. S. Army projectiles.

NAVY 12 CM (120 MM. / 4.7 INCH) FIXED HIGH EXPLOSIVE (2)

12 CM. ORDINARY (UNDET.) MODIF. 2



HIGH EXPLOSIVE (2)
12 CM. ORDINARY (UNDET.) MODIF. 2

NAVY
12 CM.
(120MM-4.7 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round 72.53 lb.
 Length of complete round, with Type 91 fuze . . 41.75 in. (approx.)

PROJECTILE:

Weight of filled projectile, w/o fuze 41.84 lb.
 Weight, empty 38.41 lb.
 Weight stamped on rotating band (Sample) 17.46 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 13.95 in.
 Diameter at bourrelet 4.6 in. (119 mm)
 Distance from base to rotating band 1.56 in.
 Width of rotating band 1.9 in.
 Radius of ogive 4 cal.

FILLING:

Cast picric acid (Shimose) 3.43 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

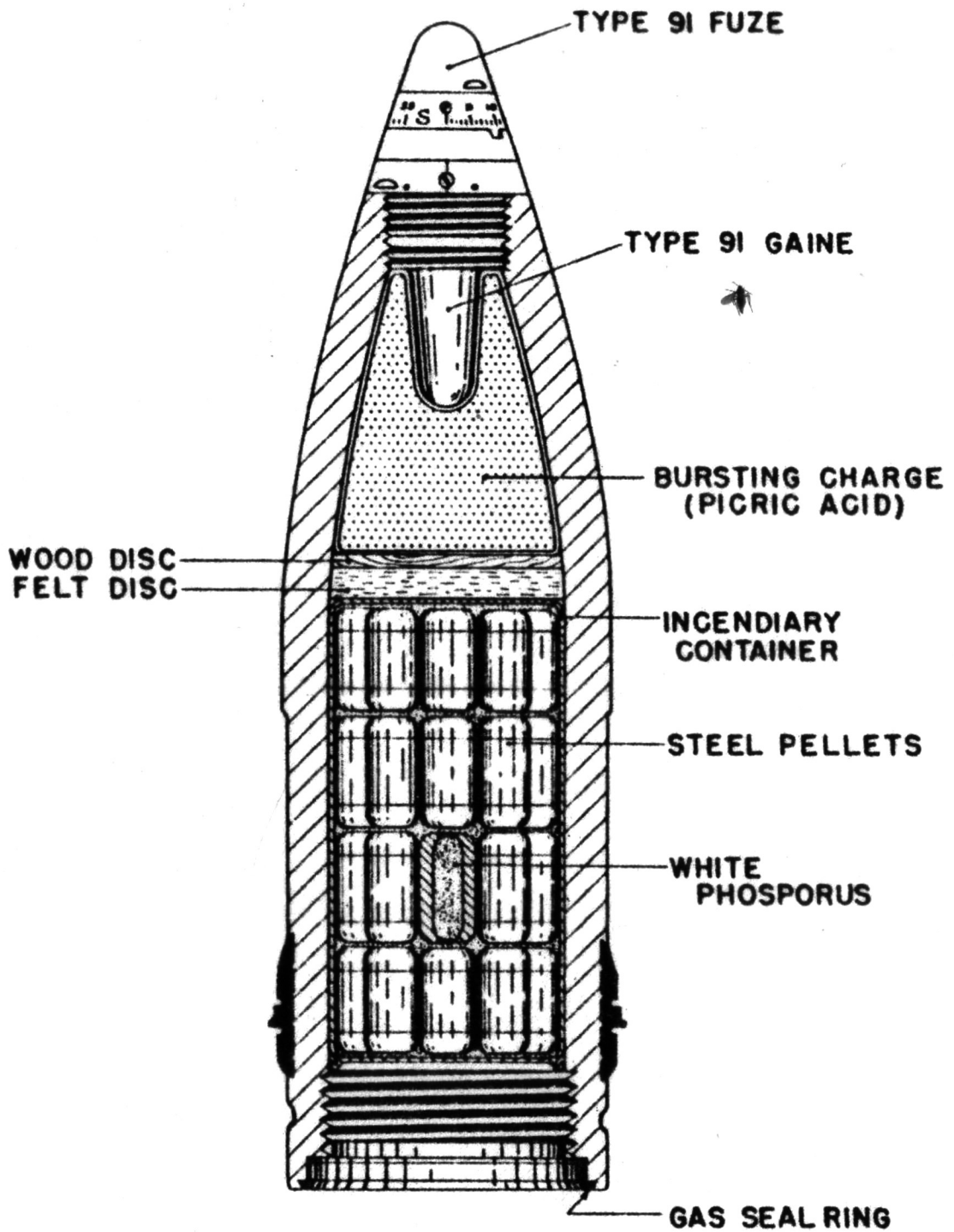
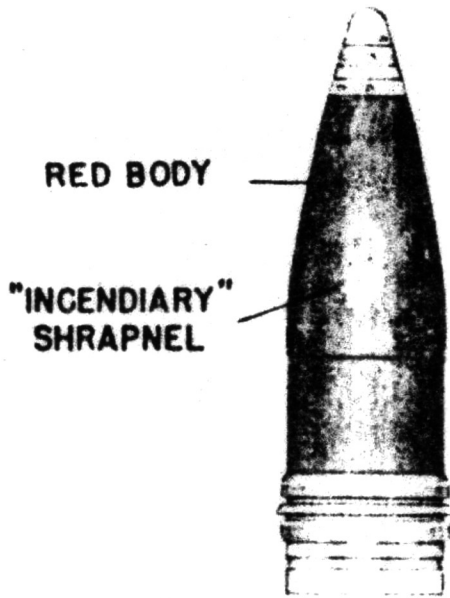
Type 91 Mechanical Time Fuze
 Type 98 Point Detonating Fuze

WEAPON:

Type 10 Yr. 12 cm/45 High Angle Gun

NAVY 12 CM (120 MM.) (4.7 INCH) FIXED INCENDIARY SHRAPNEL

UNDETERMINED



INCENDIARY SHRAPNEL

UNDETERMINED

**NAVY
12 CM.
(120MM-4.7 INCH)
FIXED**

ASSEMBLED ROUND:

Weight of complete round 75.66 lb.
Length of complete round, with Type 91 fuze . 41.15 in. (approx.)

PROJECTILE:

Weight of filled projectile, w/o fuze . . . 44.97 lb.
Weight, empty 33.13 lb.
Weight stamped on rotating band (sample) . . 15.06 kg.
(Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 13.95 in.
Diameter at bourrelet 4.6 in. (119.0 mm)
Distance from base to rotating band 1.56 in.
Width of rotating band 1.9 in.
Radius of ogive 4 cal.

FILLING:

Cast picric acid (Shimose) 1.19 lb.
Incendiary charge (W.P. and 48 steel pellets- 8.55 lb.)

The explosive charge consists of a block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the nose of the projectile with paraffin.

FUZING:

Type 91 Mechanical Time Fuze
Type 88 Point Detonating Fuze

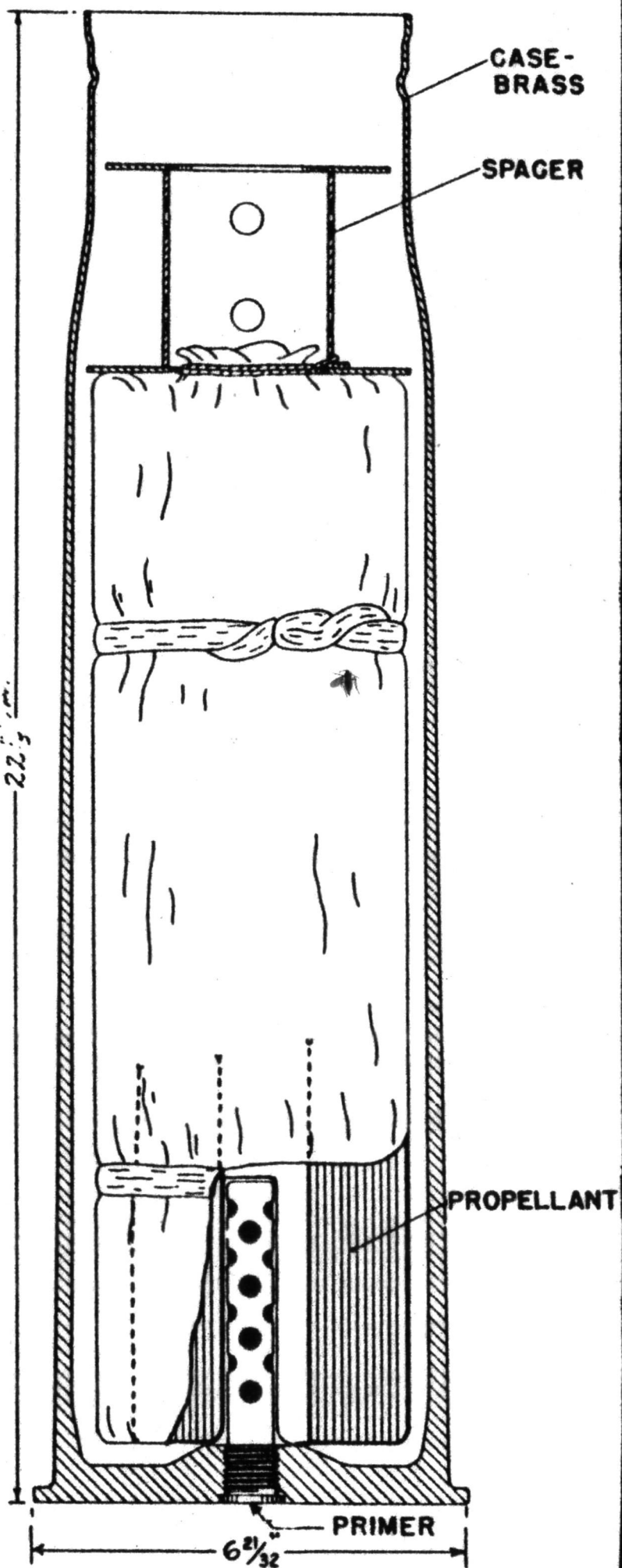
WEAPON:

Type 10 Yr. 12 cm/45 High Angle Gun

NAVY 12.7 CM (127 MM) (5 INCH) FIXED COMPLETE ROUND



ASSEMBLED ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
12.7 CM.
 (127 MM. - 5 INCH)
FIXED

CASE:

Length 22.88 in.
 Diameter of base 6.66 in.
 Material Brass
 Weight (empty) 16.28 lb.

The case is crimped tightly into a groove in the base of the projectile by a single continuous crimp.

PROPELLANT:

21 DC (Type 13 Propellant) 8.87 lb. (4.03 kg.)

Unperforated cylindrical sticks, approximately 2.1 mm (.079") x 15.75", graphited, double base powder.

The propellant sticks are enclosed in a compartmented bag of heavy brownish silk.

PRIMER:

Mk 2 Case Percussion Primer, Model 4

WEAPONS:

Type 89 12.7 cm/40 High Angle Gun Twin

This is a modern gun, paired in a twin power-driven mount designed especially for anti-aircraft aboard ships. It has been found ashore, unaltered, in the characteristic gun-house mount used aboard ship.

Special features of this gun and mount are horizontal opposed sliding breech blocks, full power drive, and automatic fuze-setting accomplished as the loading tray moves the round into position to be rammed. The arrangement for loading and fuze-setting and the general plan of the mount corresponds closely to that of the Type 98 10 cm/65 twin mount.

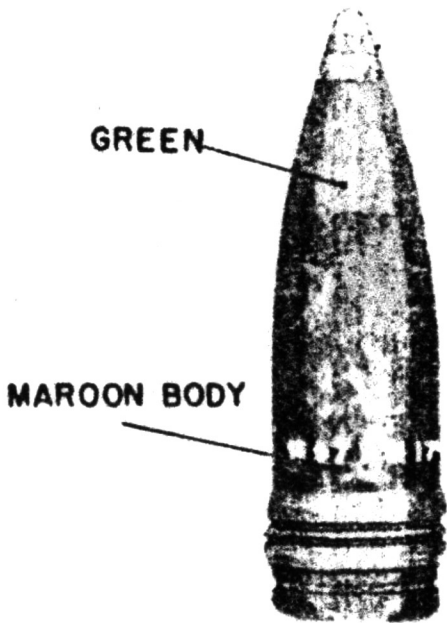
A Type 88 12.7 cm gun is listed in documents together with the Type 89 and is presumed to be closely similar to the Type 89.

Ammunition for the Type 88 and 89 guns is not to be confused with that for an existant 12.7 cm/50 gun. The latter gun is known from documents and the ammunition is indicated to be of the non-fixed type, using separate loading projectiles (probably bag propellant charge).

Also known to have been developed as a shipboard mount is a Type 1 12.7 cm High Angle Gun. The much greater capabilities claimed for this gun indicate the probable use of increased propellant charge and consequently, larger propellant case than that for the Type 88 and 89 guns shown.

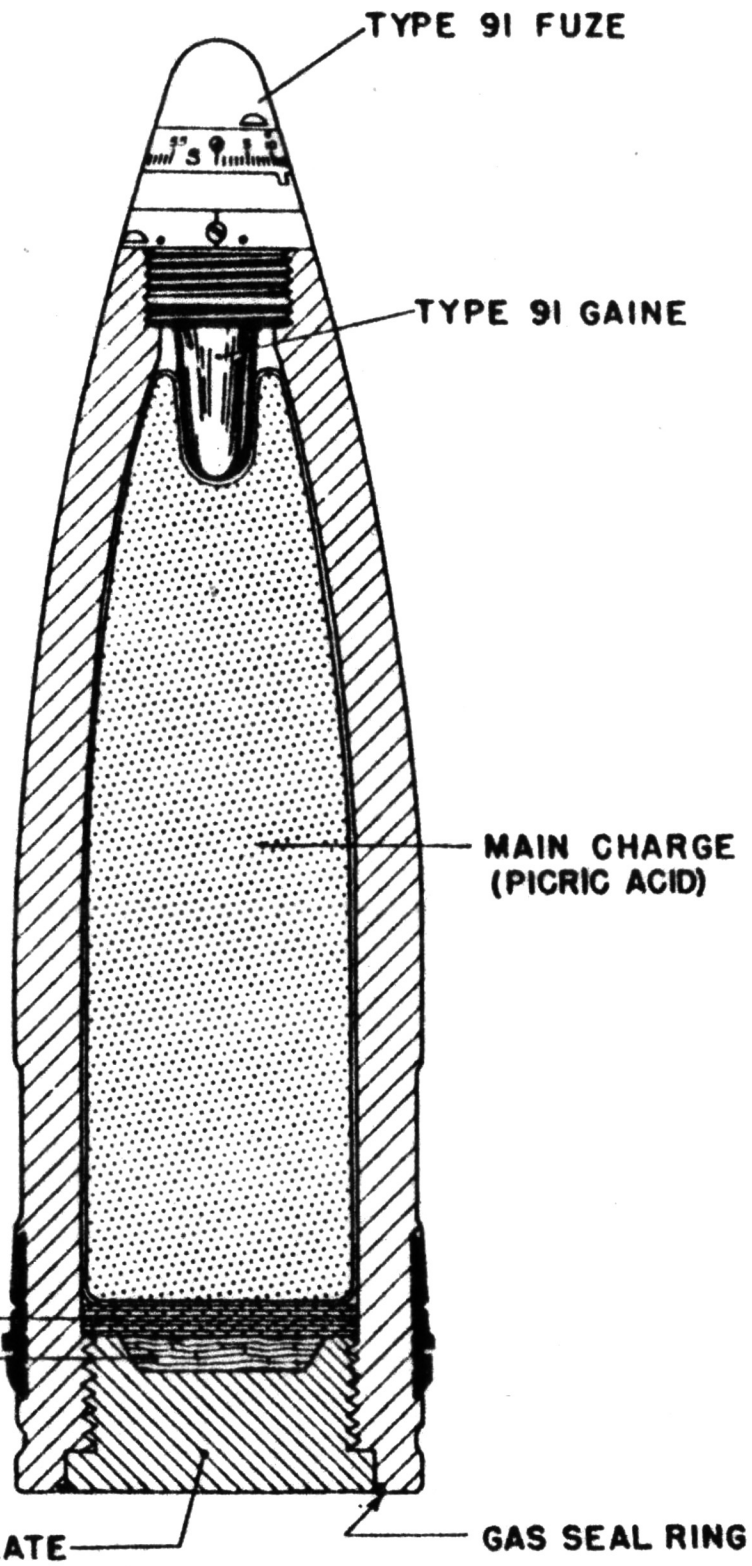
NAVY 12.7 CM (127 MM. / 5 INCH) FIXED HIGH EXPLOSIVE

12.7 CM. / 40 ORDINARY



GREEN

MAROON BODY



TYPE 91 FUZE

TYPE 91 GAINE

MAIN CHARGE
(PICRIC ACID)

CARDBOARD DISC
WOOD DISC

BASE PLATE

GAS SEAL RING

HIGH EXPLOSIVE

12.7 CM/40 ORDINARY

NAVY
12.7 CM.
(127 MM. - 5 INCH)
FIXED

ASSEMBLED ROUND:

Weight of complete round 73.57 lb.
 Length of complete round, with Type 91 fuze. . 36.0 in. (approx.)

PROJECTILE:

Weight of filled projectile, w/o fuze 48.42 lb.
 Weight, empty 44.48 lb.
 Weight stamped on rotating band (sample) . . . 20.170 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 14.9 in.
 Diameter at bourrelet 4.96 in. (126.0 mm)
 Distance from base to rotating band 1.19 in.
 Width of rotating band 1.95 in.
 Radius of ogive 6 cal.

FILLING:

Cast picric acid (Shimose) 3.94 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

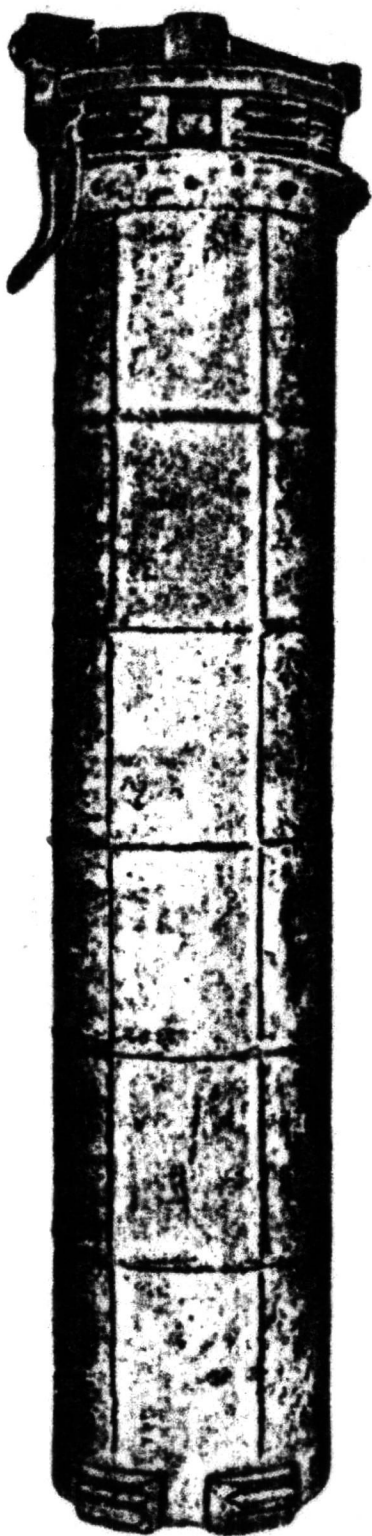
FUZING:

- Type 91 Mechanical Time Fuze
- Type 91 Mechanical Time Fuze with gear ring
- Type 88 Point Detonating Fuze

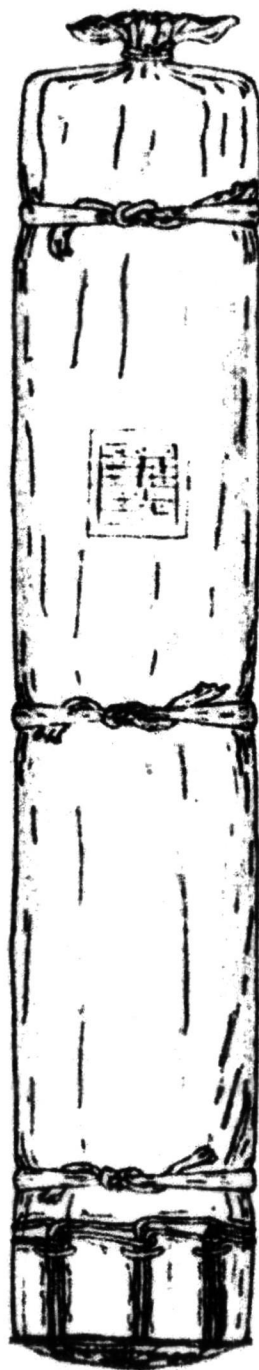
WEAPON:

- Type 89 12.7 cm/40 High Angle Gun
- Type 88 12.7 cm. Similar to above.

NAVY 14 CM. (140 MM.) BAG PROPELLANT AND TANKS



POWDER TANK
CAST STEEL



PROPELLANT



POWDER TANK
SHEET STEEL

PROPELLANT AND TANKS

NAVY
14 CM.
 (140 MM. - 5.5 INCH)
BAG

POWDER TANKS:

For storage purposes, the propellant charges are sealed in water-proof containers commonly known as "powder tanks". Two types of the tanks have been recovered: one is a heavy tank (26.4 lb.) of cast steel and bronze; the other is sheet steel and aluminum and weighs 15.4 lb. Both are well lacquered inside and have the same internal dimensions, 6.2" x 33.4".

PROPELLANT:

37 C 24.51 lb. (11.14 kg.)

Unperforated cylindrical sticks approximately 3.7 mm (.15") x 28" graphited double-base powder.

The propellant sticks are enclosed in a bag of heavy brownish silk.

An ignition pad containing 17.2 grams of granular black powder is laced onto the base of the charge.

PRIMER:

Mk 2 Lock Percussion Primer

WEAPON:

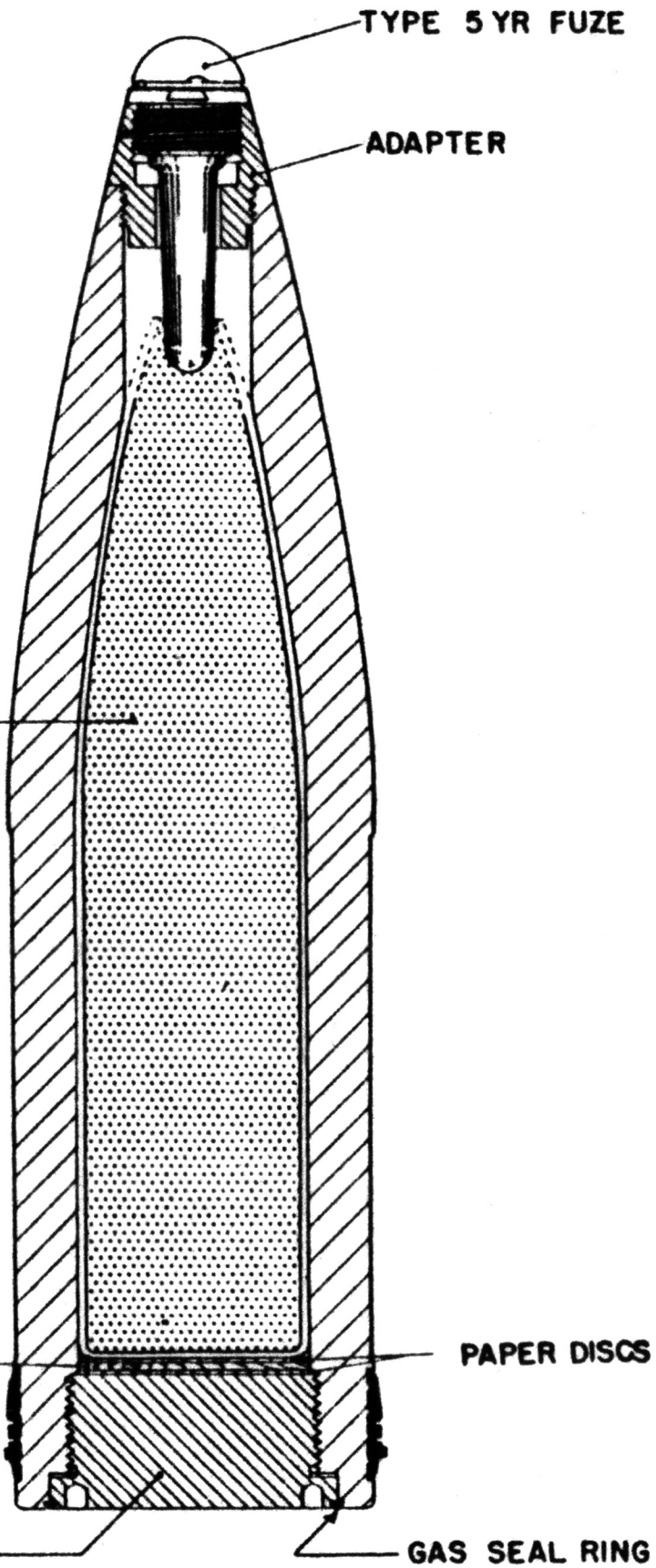
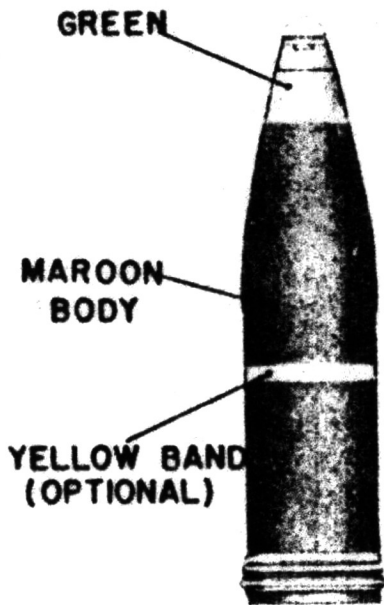
Type 3 Yr. 14 cm/50 Gun (Low Angle)

This is a pedestal-mounted deck gun employing bag ammunition. It is commonly found in shore emplacements for coastal defense and limited anti-aircraft use. Strongly resembling the Type 3 Yr. 12 cm/45 gun in design, this weapon also has three recoil cylinders all mounted above the tube and an interrupted thread breech block hinged on the right. This gun has been found both with a splinter shield attached, and without.

A 14 cm/40 gun is known from documentary sources. It is believed that there is also a 14 cm gun using case ammunition.

NAVY 14 CM (140 MM. / 5.5 INCH) BAG HIGH EXPLOSIVE (I)

UNDETERMINED



HIGH EXPLOSIVE (I)

UNDETERMINED

NAVY
14 CM.
 (140 MM. - 5.5 INCH)
BAG

WEIGHT OF FILLED PROJECTILE, w/o fuze 82.7 lb.
 WEIGHT, empty 74.43 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) No data
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze, with adapter . . . 21.02 in.
 Length of projectile, w/o fuze or adapter . . . 19.75 in.
 Diameter at bourrelet 5.49 in. (139.5 mm)
 Distance from base to rotating band60 in.
 Width of rotating band 1.60 in.
 Radius of ogive 5 cal.

FILLING:

Cast picric acid (Shimose) 7.9 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

Type 5 Yr. Point Detonating Fuze

Removal of the adapter does not permit alternate fuzeing, because the lower threaded portion of the adapter is larger than any known fuze.

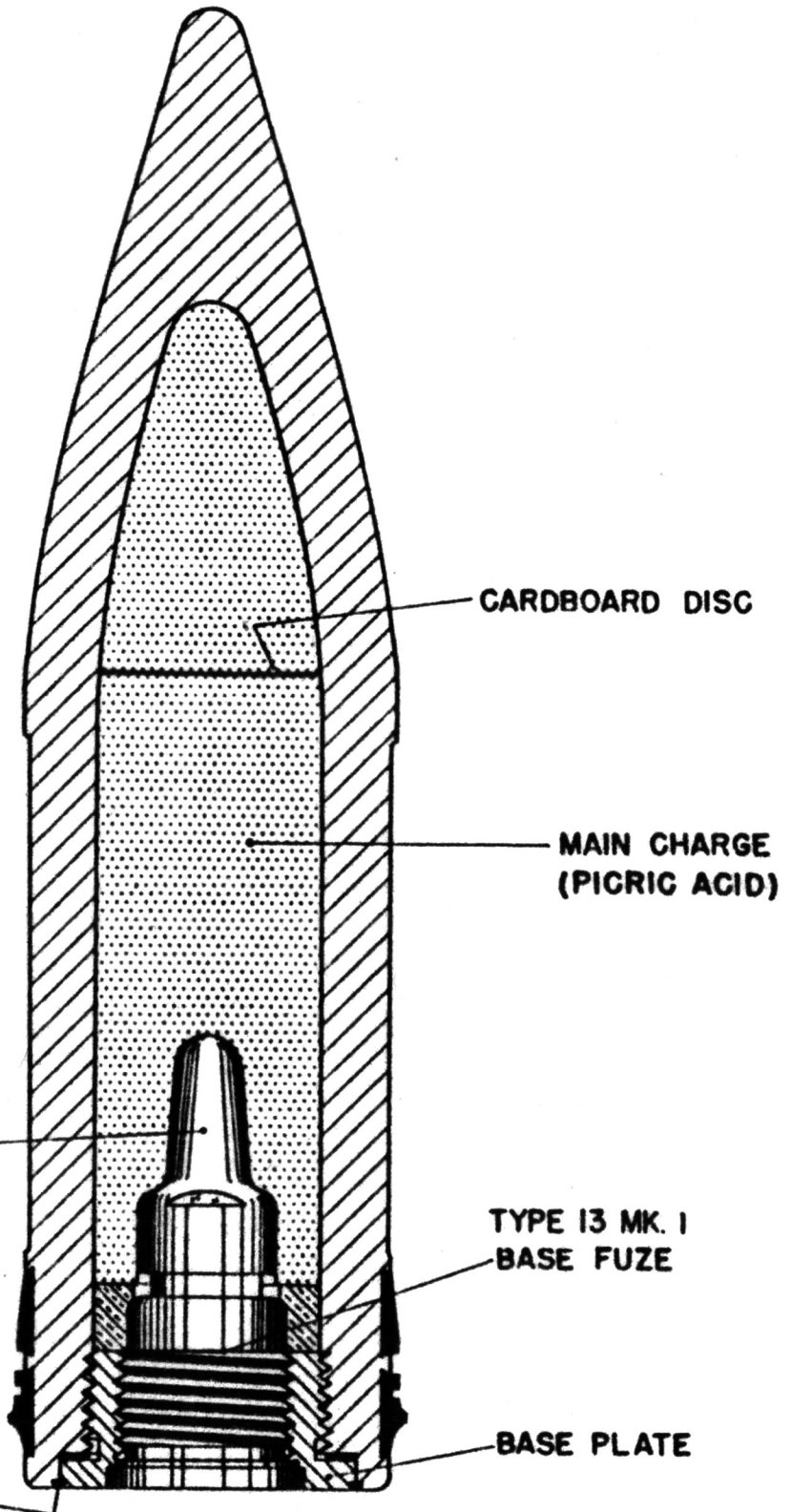
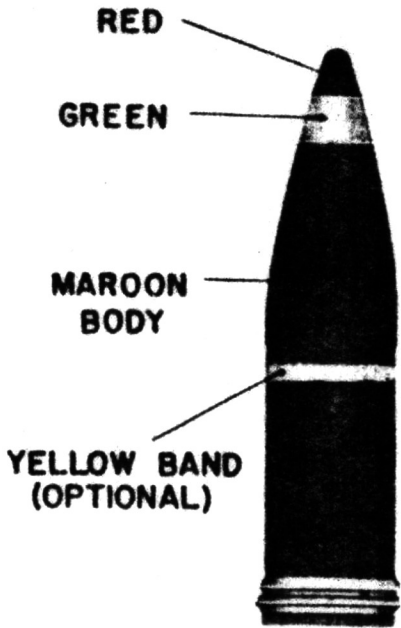
WEAPON:

Type 3 Yr. 14 cm/50 Gun (Low Angle)

NAVY 14 CM. (140 MM.) (5.5 INCH) BAG

COMMON

14 CM. ORDINARY MK. 1



COMMON

14 CM. ORDINARY MK. I

**NAVY
14 CM.**

(140 MM. - 5.5 INCH)

BAG

WEIGHT OF FILLED PROJECTILE, with fuze 83.82 lb.
WEIGHT, empty 77.88 lb.
WEIGHT STAMPED ON ROTATING BAND (Sample) 34.300 kg.
(Varies with individual projectiles)

DIMENSIONS:

Length of projectile 21.70 in.
Diameter at bourrelet 5.49 in. (139.5 mm)
Distance from base to rotating band59 in.
Width of rotating band (Forward) 1.11 in.
(Space)38 in.
(Aft) 1.09 in.
Radius of ogive No data

FILLING:

Cast picric acid (Shimose) 5.94 lb.

The charge consists of two blocks of explosive cast and sealed in waxed paper containers encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

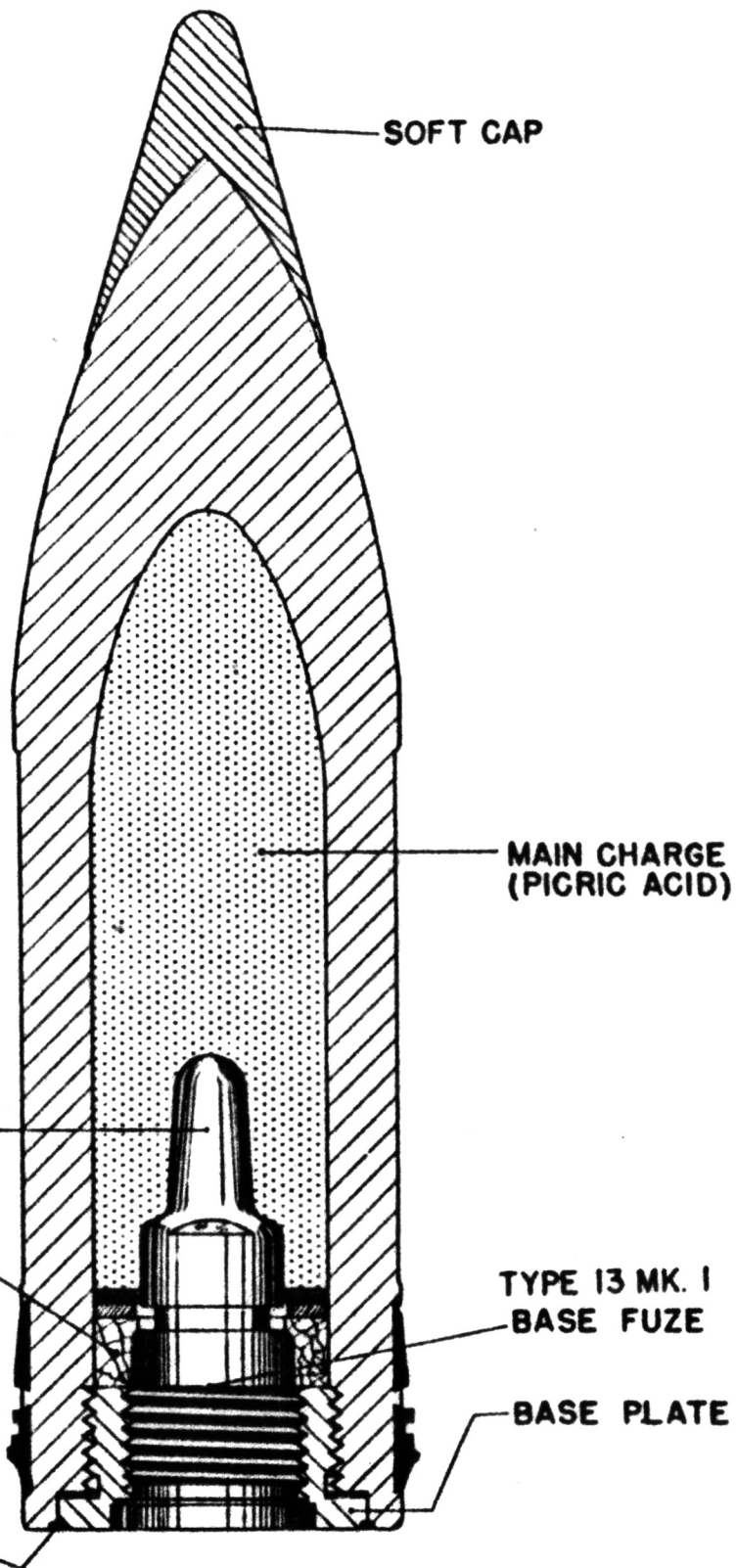
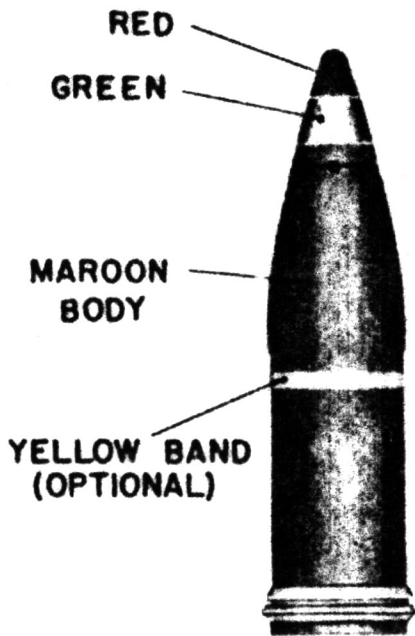
Type 13 Mk 1 Base Fuze

WEAPON:

Type 3 Yr. 14 cm/50 Gun

NAVY 14 CM. (140 MM. 5.5 INCH) BAG COMMON CAPPED

14 CM/50 CAPPED ORDINARY MODIF. I



COMMON CAPPED

14 CM./50 CAPPED ORDINARY MODIF I

**NAVY
14 CM.
(140 MM. - 5.5 INCH)
BAG**

WEIGHT OF FILLED PROJECTILE, with fuze 84.94 lb.
 WEIGHT, empty 80.14 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) 35.800 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile 21.63 in.
 Diameter at bourrelet 5.49 in. (139.5 mm)
 Distance from base to rotating band593 in.
 Width of rotating band (Forward) 1.11 in.
 (Space)38 in.
 (Aft) 1.09 in.
 Radius of ogive Not determined.

FILLING:

Cast picric acid (Shimose) 4.80 lb.

The charge consists of a single block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

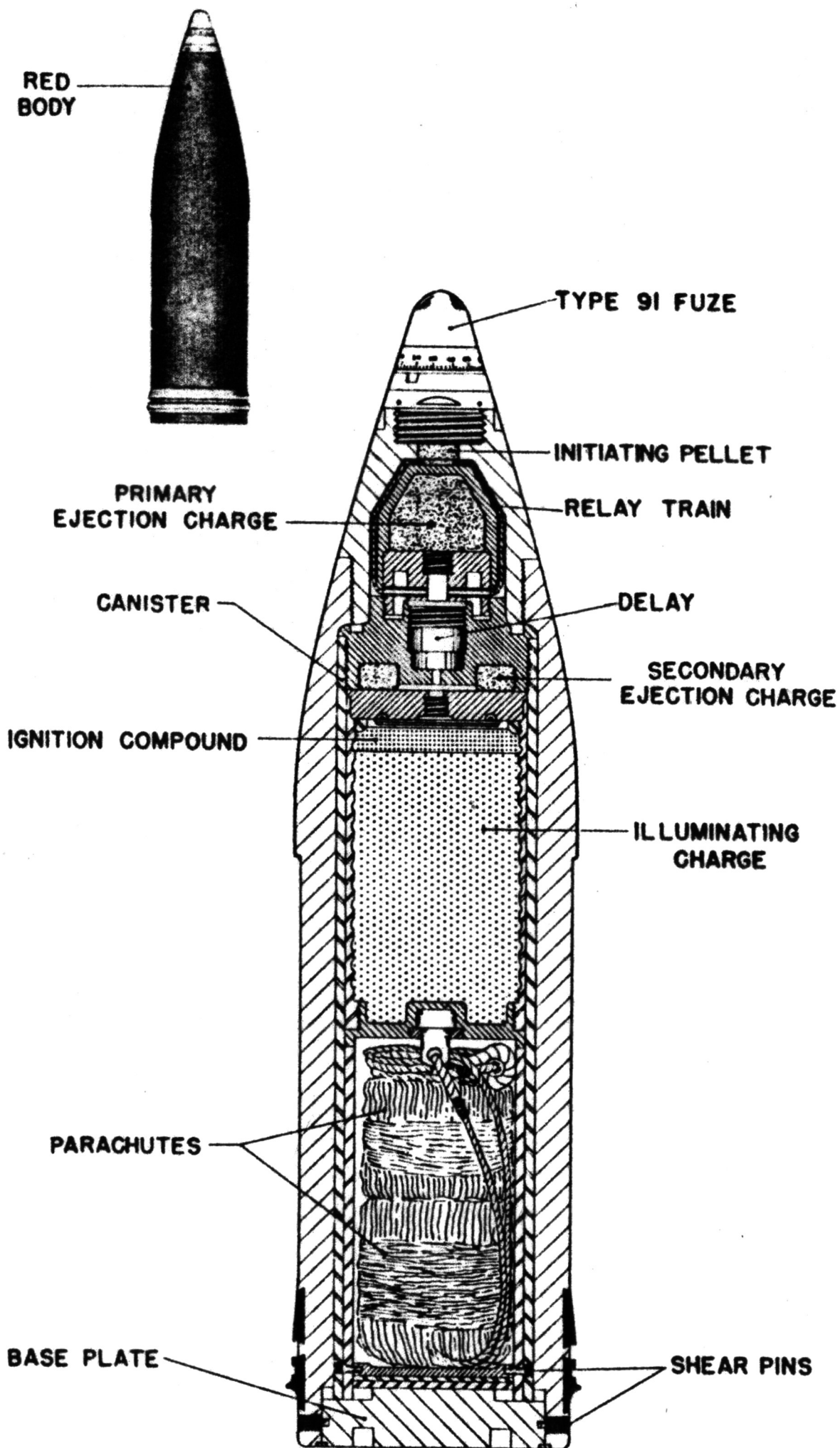
Type 13 Mk 1 Base Detonating

WEAPON:

Type 3 Yr. 14 cm/50 Gun

NAVY 14 CM (140 MM) BAG ILLUMINATING

14 CM / 50 STAR (?)



ILLUMINATING

14 CM / 50 STAR (?)

**NAVY
14 CM.**

(140 MM. - 5.5 INCH)

BAG

WEIGHT OF FILLED PROJECTILE, w/o fuze 87.5 lb.
 WEIGHT, empty 67.46 lb. (approx.)
 WEIGHT STAMPED ON ROTATING BAND (Sample) No data
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 20.3 in.
 Diameter at bourrelet 5.49 in. (139.5 mm)
 Distance from base to rotating band59 in.
 Width of rotating band (Forward) 1.11 in.
 (Space)38 in.
 (Aft) 1.09 in.
 Radius of ogive No data

FILLING:

Primary ejection charge (Black Powder) 100 grams
 Secondary ejection charge (Black Powder) 41 grams

Initiating pellet, relay train, and delay are black powder.

The ignition compound for the illuminant is a mixture of potassium nitrate, iron oxide, aluminum, sulfur, and wax.

The illuminant is a mixture of barium nitrate, magnesium, and wax.
 Weight 3.1 lb.

FUZING:

Type 91 Mechanical Time Fuze

OPERATION:

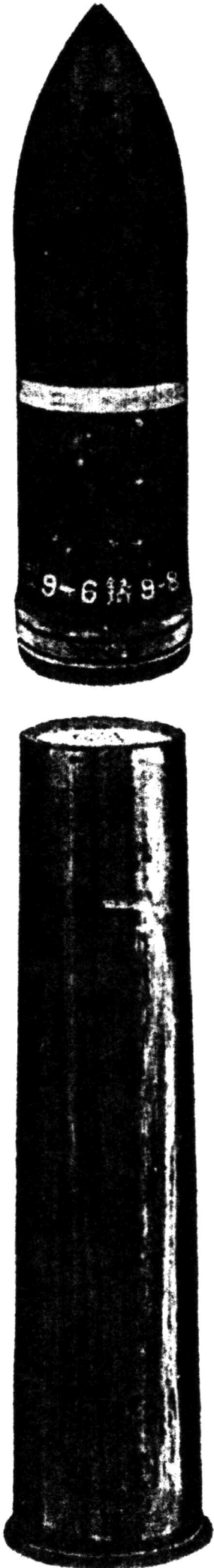
At the end of the time set, the mechanical time fuze fires the initiating pellet. The relay train transmits the flash to the base of the primary ejection charge container and ignites the charge. The primary ejection charge expels the canister containing the illuminating charge and its parachute and also ignites the delay element. A short time after the canister is ejected from the projectile body, the delay element fires the secondary ejection charge which expels the illuminating charge and parachutes and ignites the illuminant. Two parachutes, a large one above a small one, suspend the illuminating unit.

Burning time - not determined.

WEAPON:

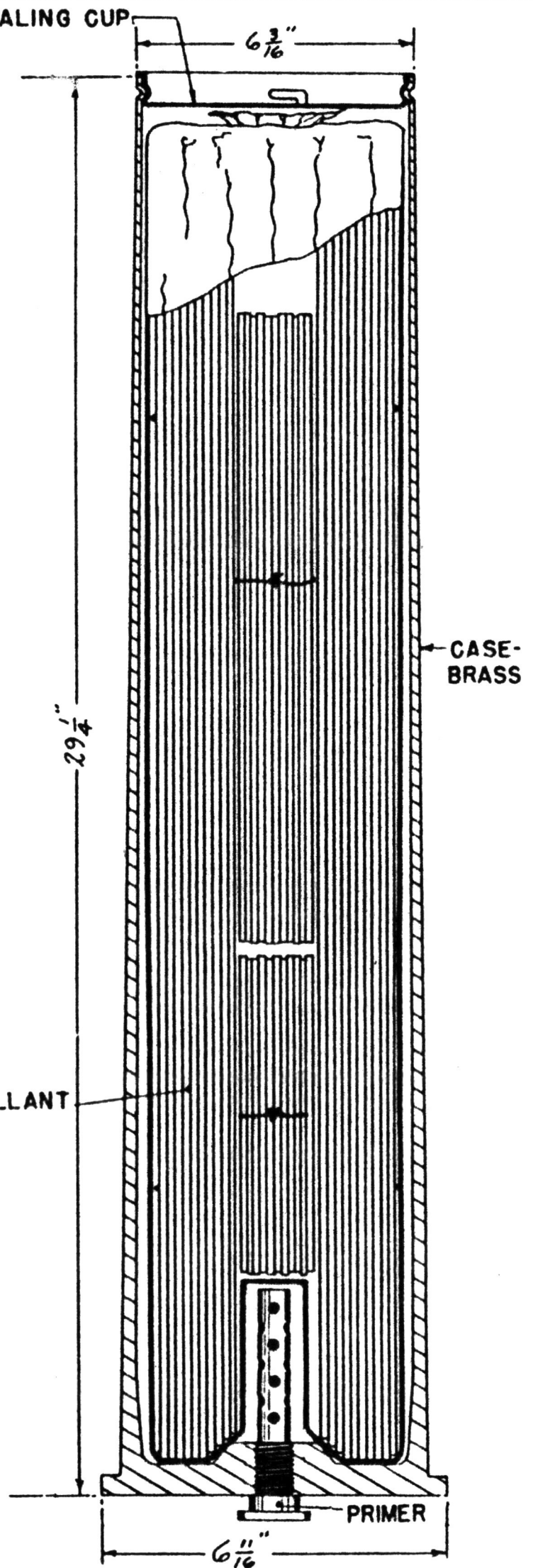
Type 3 Yr. 14 cm/50 Gun

NAVY 15 CM. (152 MM.) SEMI-FIXED COMPLETE ROUND



COMPLETE ROUND

METAL SEALING CUP



PROPELLANT

CASE-BRASS

PRIMER

CASE AND PROPELLANT

COMPLETE ROUND

NAVY
15 CM.
 (152 MM.- 6 INCH)
SEMI-FIXED

CASE:

Length 29.25 in.
 Diameter of base 6.69 in.
 Material Brass
 Weight (empty) 27.0 lb.

PROPELLANT:

No data on identity or weight of propellant. The propellant sticks are enclosed in a bag of heavy brownish silk.

PRIMER:

Mk 1 Case Percussion Primer, Model 4

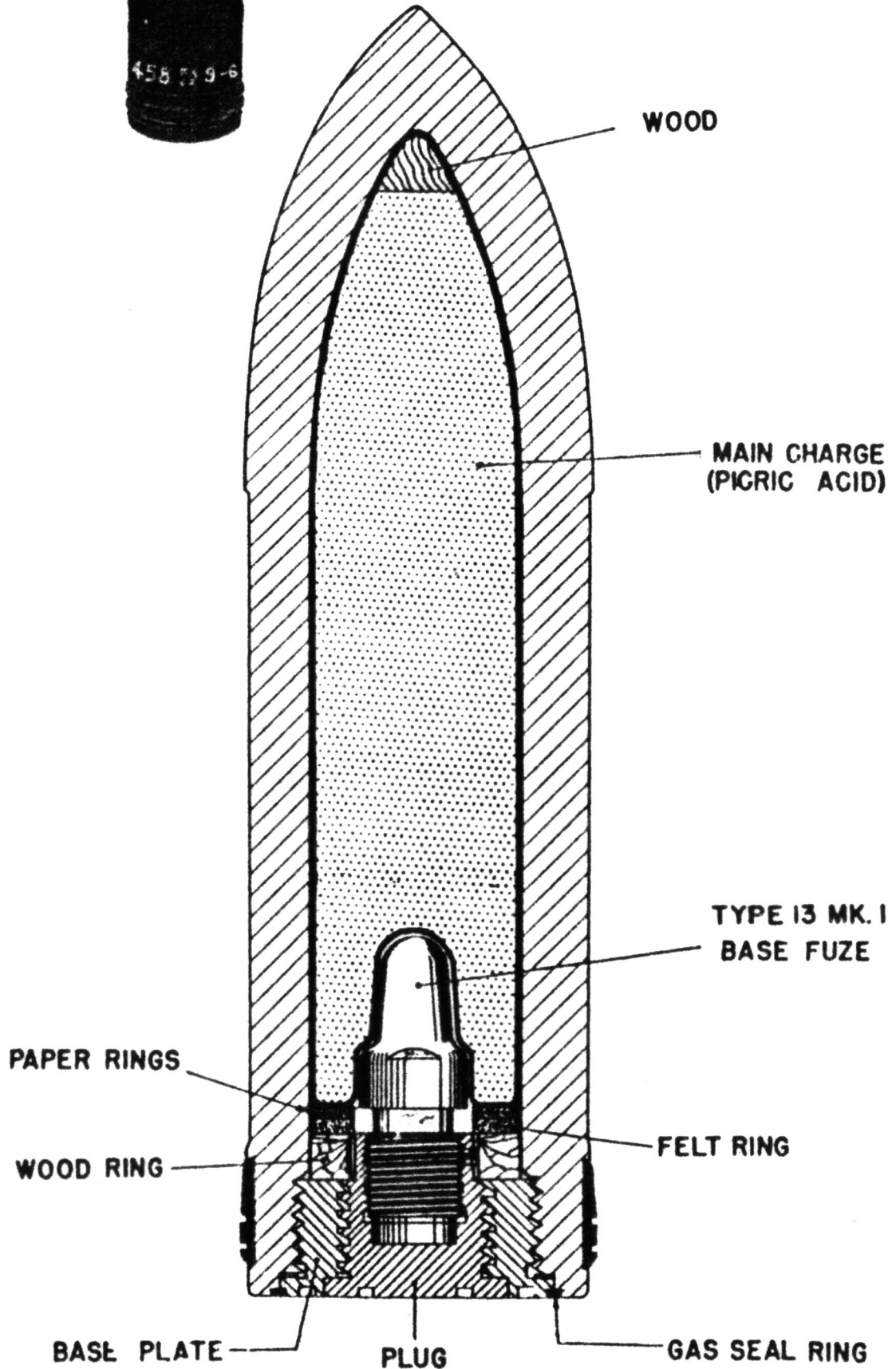
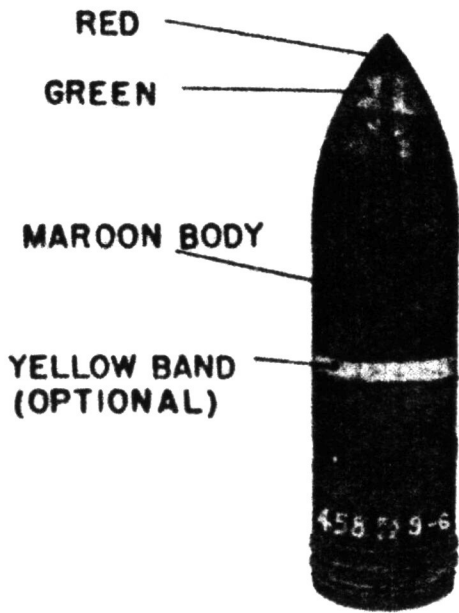
WEAPON:

Type 41 (Meiji) 15 cm/40 Gun(Low Angle)

This, like many other Japanese Navy guns is a copy of a British design, and guns manufactured by Armstrong-Whitworth have been found emplaced together with pieces of Japanese manufacture. It is a pedestal-mounted deck gun, commonly found with a partially enclosing splinter shield attached. The breech block is an interrupted thread plug, mounted to swing to the right.

NAVY 15 CM. (152 MM / 6 INCH) SEMI-FIXED COMMON

15 CM. / 40 ORDINARY MODIF. I



COMMON

15 CM./40 ORDINARY MODIF. I

NAVY
15 CM.
 (152 MM.-6 INCH)
SEMI-FIXED

WEIGHT OF FILLED PROJECTILE No data
 WEIGHT, empty No data
 WEIGHT STAMPED ON ROTATING BAND (Sample) 39.62 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile 22.50 in.
 Diameter at bourrelet 5.98 in. (152.0 mm)
 Distance from base to rotating band66 in.
 Width of rotating band 1.75 in.
 Radius of ogive 2 cal.

FILLING:

Cast picric acid (Shimose) No data

The charge consists of a block of explosive cast and sealed in a waxed paper container, encased in a heavy cotton flannel bag and sealed in the projectile with paraffin.

FUZING:

Type 13 Mk 1 Base Fuze

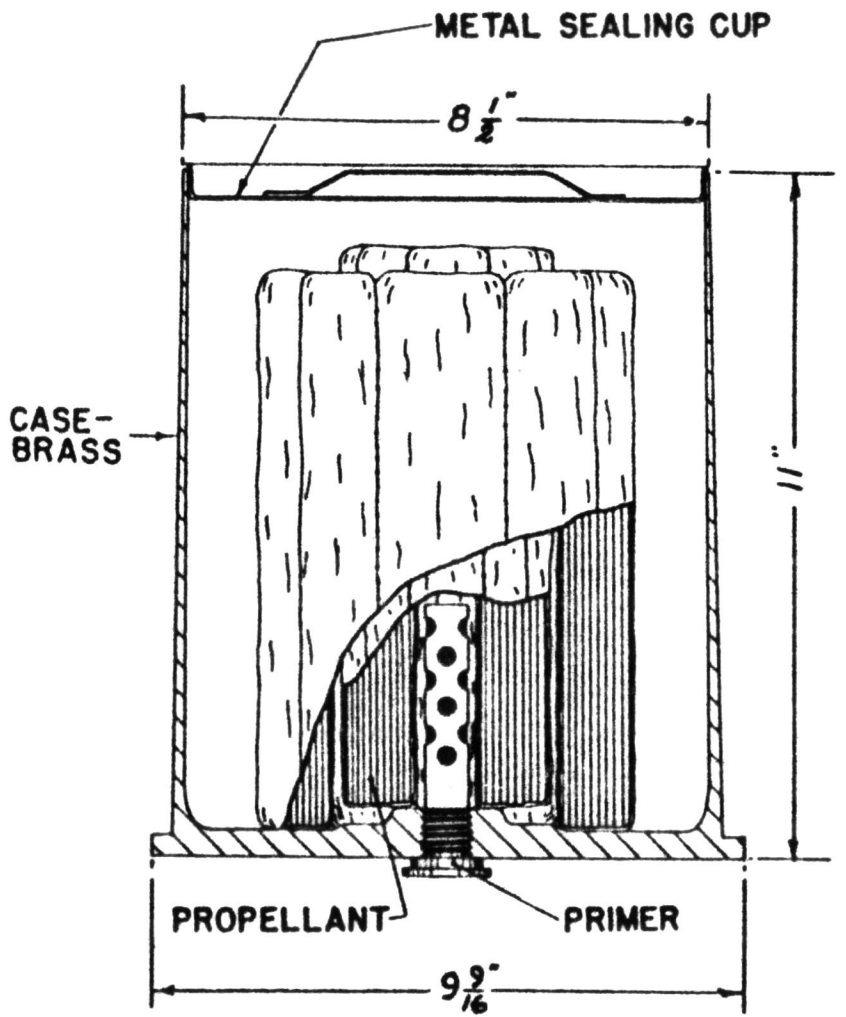
WEAPON:

Type 41 (Meiji) 15 cm/40 Gun or the British prototype.

NAVY 20 CM. (202 MM) SEMI-FIXED COMPLETE ROUND



COMPLETE ROUND



CASE AND PROPELLANT

COMPLETE ROUND

NAVY
20 CM. / SHORT
 (202 MM. - 8 INCH)
SEMI-FIXED

CASE:

Length 11.0 in.
 Diameter of base 9.56 in.
 Material Brass
 Weight (empty) 18.49 lb.

PROPELLANT:

10 G3 (Type 89 Propellant) 4.4 lb. (2.0 kg.)

Unperforated cylindrical sticks, approximately 1 mm (1/32") x 8-1/2-9", amber colored, double base powder.

The propellant sticks are enclosed in two compartmented bags of heavy brownish silk. The inner bag contains 0.960 kg. (2.1 lb.) of propellant. The outer bag contains 1.040 kg. (2.3 lb.) of propellant.

PRIMER:

Mk 1 Case Percussion Primer, Model 4

WEAPON:

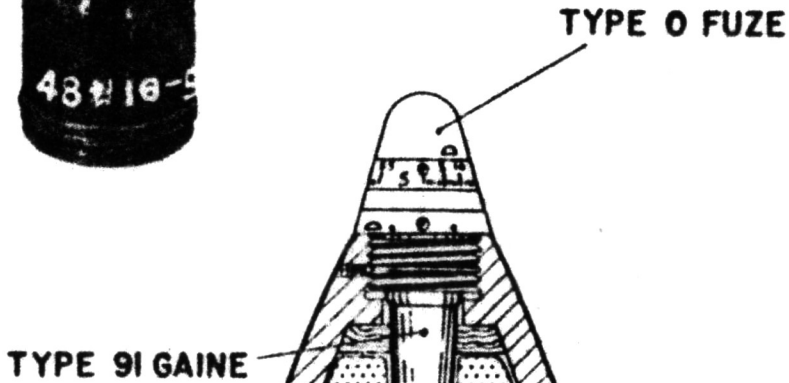
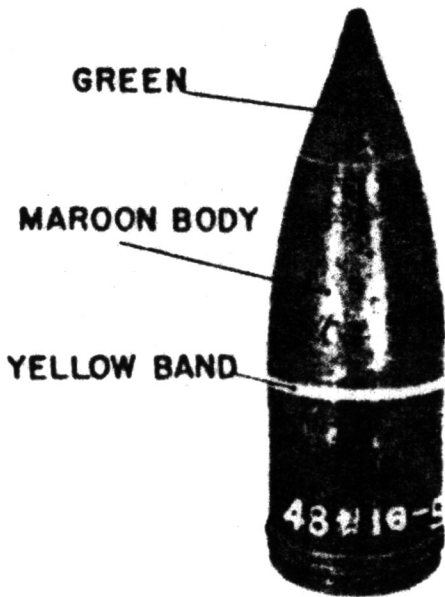
Short 20 cm Gun

This is a short-barrelled (12 cal.) gun of low muzzle velocity and light construction on a pedestal mount designed originally for use on the light decks of merchant ships. The purpose of this weapon is to deliver a relatively heavy projectile at a limited range for anti-submarine attack and to throw up low level anti-aircraft barrage.

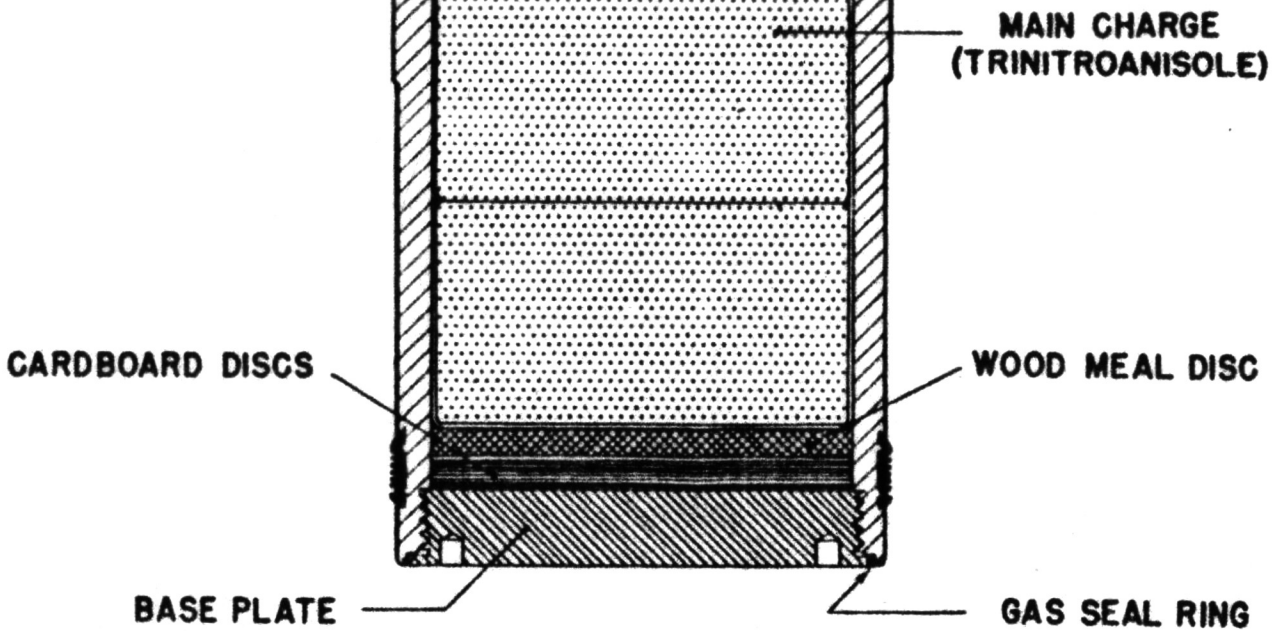
This gun fires semi-fixed ammunition; the breech block is of the interrupted thread type. It has been found mounted in shore emplacements.

NAVY 20 CM. (202 MM.) SEMI-FIXED HIGH EXPLOSIVE

20 CM. / SHORT ORDINARY MK. I



ALTERNATE FUZE INSTANT. - 5 SEC.



HIGH EXPLOSIVE

20 CM. / SHORT ORDINARY MK. I

**NAVY
20 CM. / SHORT
(202 MM. - 8 INCH)
SEMI-FIXED**

WEIGHT OF FILLED PROJECTILE, w/o fuze 111.0 lb.
 WEIGHT, empty 72.50 lb.
 WEIGHT STAMPED ON ROTATING BAND (Sample) 32.42 kg.
 (Varies with individual projectiles)

DIMENSIONS:

Length of projectile, w/o fuze 21.94 in.
 Diameter at bourrelet 7.94 in. (201.5 mm)
 Distance from base to rotating band 1.0 in.
 Width of rotating band 1.0 in.

FILLING:

Trinitroanisole (Type 91 Explosive) 28.50 lb.

The charge consists of three blocks of explosive cast and sealed in a waxed paper container and sealed in the projectile with paraffin.

FUZING:

- Type 0 Mechanical Time Fuze
- Inst.-5 Sec. Selective Nose Fuze
- Type 88 Point Detonating Fuze

APPENDIX

TABLES

JAPANESE AMMUNITION

INCHES TO MILLIMETERS

Basis: 1 inch = 25.4 Millimeters

In.	MM	In.	MM	In	MM	In	MM
1	25.4	26	660.4	51	1295.4	76	1930.4
2	50.8	27	685.8	52	1320.8	77	1955.8
3	76.2	28	711.2	53	1346.2	78	1981.2
4	101.6	29	736.6	54	1371.6	79	2006.6
5	127.0	30	762.0	55	1397.0	80	2032.0
6	152.4	31	787.4	56	1422.4	81	2057.4
7	177.8	32	812.8	57	1447.8	82	2082.8
8	203.2	33	838.2	58	1473.2	83	2108.2
9	228.6	34	863.6	59	1498.6	84	2133.6
10	254.0	35	889.0	60	1524.0	85	2159.0
11	279.4	36	914.4	61	1549.4	86	2184.4
12	304.8	37	939.8	62	1574.8	87	2209.8
13	330.2	38	965.2	63	1600.2	88	2235.2
14	355.6	39	990.6	64	1625.6	89	2260.6
15	381.0	40	1016.0	65	1651.0	90	2286.0
16	406.4	41	1041.4	66	1676.4	91	2311.4
17	431.8	42	1066.8	67	1701.8	92	2336.8
18	457.2	43	1092.2	68	1727.2	93	2362.2
19	482.6	44	1117.6	69	1752.6	94	2387.6
20	508.0	45	1143.0	70	1778.0	95	2413.0
21	533.4	46	1168.4	71	1803.4	96	2438.4
22	558.8	47	1193.8	72	1828.8	97	2463.8
23	584.2	48	1219.2	73	1854.2	98	2489.2
24	609.6	49	1244.6	74	1879.6	99	2514.6
25	635.0	50	1270.0	75	1905.0	100	2540.0

MILLIMETERS TO INCHES

Basis: 1 inch = 25.4 Millimeters

MM	In.	MM	In.	MM	In.	MM	In.
1	0.03937	26	1.023622	51	2.007874	76	2.992126
2	.078740	27	1.062992	52	2.047244	77	3.031496
3	.118110	28	1.102362	53	2.086614	78	3.070866
4	.157480	29	1.141732	54	2.125984	79	3.110236
5	.196850	30	1.181102	55	2.165354	80	3.149606
6	.236220	31	1.220472	56	2.204724	81	3.188976
7	.275591	32	1.259843	57	2.244094	82	3.228346
8	.314961	33	1.299213	58	2.283465	83	3.267717
9	.354331	34	1.338583	59	2.322835	84	3.307087
10	.393701	35	1.377953	60	2.362205	85	3.346457
11	.433071	36	1.417323	61	2.401575	86	3.385827
12	.472441	37	1.456693	62	2.440945	87	3.425197
13	.511811	38	1.496063	63	2.480315	88	3.464567
14	.551181	39	1.535433	64	2.519685	89	3.503937
15	.590551	40	1.574803	65	2.559055	90	3.543307
16	.629921	41	1.614173	66	2.598425	91	3.582677
17	.669291	42	1.653543	67	2.637795	92	3.622047
18	.708661	43	1.692913	68	2.677165	93	3.661417
19	.748031	44	1.732283	69	2.716535	94	3.700787
20	.787402	45	1.771654	70	2.755906	95	3.740157
21	.826772	46	1.811024	71	2.795276	96	3.779528
22	.866142	47	1.850394	72	2.834646	97	3.818898
23	.905512	48	1.889764	73	2.874016	98	3.858268
24	.944882	49	1.929134	74	2.913386	99	3.897638
25	.984252	50	1.968504	75	2.952756	100	3.937008

BINARY FRACTIONS OF AN INCH TO DECIMAL INCHES AND MILLIMETERS

FRACTIONS					DECIMAL	MILLIMETERS			
1	1/2	3/4	7/8	31/32	61/64	.953125	24.209375		
				29/32	59/64	.921875	23.415625		
				27/32	55/64	.890625	22.621875		
				25/32	51/64	.859375	21.828125		
			15/16	49/64	.828125	21.431250			
			13/16	47/64	.796875	20.828125			
			11/16	45/64	.765625	19.446875			
			9/16	43/64	.734375	18.843750			
		5/8	17/32	37/64	.703125	17.959375			
			19/32	39/64	.671875	17.462500			
			21/32	41/64	.640625	16.668750			
			23/32	43/64	.609375	15.875000			
			25/32	45/64	.578125	15.081250			
			27/32	47/64	.546875	14.287500			
			29/32	49/64	.515625	13.493750			
			31/32	51/64	.484375	12.700000			
	1/4	3/8	7/16	15/32	29/64	.453125	11.509375		
				13/32	27/64	.421875	10.715625		
				11/32	23/64	.390625	9.921875		
				9/32	19/64	.359375	9.128125		
			5/16	17/64	17/64	.328125	8.334375		
				15/64	15/64	.296875	7.540625		
				13/64	13/64	.265625	6.746875		
				11/64	11/64	.234375	5.953125		
		1/8	3/16	7/32	7/32	15/64	.203125	5.159375	
					5/32	11/64	.171875	4.365625	
				1/16	3/32	3/32	7/64	.140625	3.571875
						1/32	5/64	.109375	2.778125
			1/8		1/16	1/16	3/64	.078125	1.984375
						1/32	1/64	.046875	1.190625
								1.000000	25.400000