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JAPANESE AMMUNITION—EXPLANATORY NOTES

Japanese Weapons

1. The bore diameter of Japanese Army weapons measures an even number of millimeters (metric system). However, the guns are designated by their nominal sizes, usually to the nearest even centimeter.

2. 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. The Navy also designates its guns by nominal sizes, usually to the nearest even centimeter.

3. To avoid confusion, ammunition is classified in this book by the nominal bore size of the weapon according to the 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.

4. 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.

Classification of Projectiles

1. Army Projectiles

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. These 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 they 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 identification of the gun, descriptive nomenclature of the projectile,

and mark (or type) and modification number.

Example: 14 cm/50 Ordinary
(Gun) (General type of projectile)

Type 0
(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 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 projectile (solid nose, base-fuzed) in accordance with the U. S. meaning of "Common." Projectiles having a point detonating fuze are designated "High Explosive" to conform with U. S. terminology.

Abbreviations

The following abbreviations will be used in this section:

A. A. M. G.	Antiaircraft Machine Gun.
A. C.	Aircraft Cannon.
A. C. M. G.	Aircraft Machine Gun.
A. P.	Armor-Piercing.
A. P. I.	Armor-Piercing Incendiary.
A. P. T.	Armor-Piercing Tracer.
A. TK.	Anti-tank.
H. E.	High-Explosive.
H. E. A. T.	High-Explosive Anti-tank (Hollow Charge).
H. E. I.	High-Explosive Incendiary.
H. E. I. T.	High-Explosive Incendiary Tracer.
H. E. T.	High-Explosive Tracer.
H. M. G.	Heavy Machine Gun.
I.	Incendiary.
I. T.	Incendiary Tracer.
L. M. G.	Light Machine Gun.
MK	Mark.
MOD	Modification.
S. D.	Self-Destroying.
TK.	Tank.
W. P.	White Phosphorus.

ARMY AMMUNITION

INTRODUCTION

Japanese Army weapons are generally copies of German or French designs or are developed following their customs. In comparison with weapons used by other countries in the past few years, the Japanese weapons appear to be outmoded and ineffective.

This is particularly true in considering small arms for if the Japanese ever made any serious attempt to standardize small arms and small arm ammunition there is little evidence of it in the many different calibers and types in use by them. The standard weapon prior to 1930 was 6.5 mm, but shortly thereafter this was superseded by 7.7 mm weapons. However, this change was never complete and 6.5 mm weapons were used extensively in the last war. The foreign influence is apparent particularly after 1939 when aircraft machine guns of German and Italian design were copied.

The earlier aircraft machine guns and aircraft cannon were either modifications of Japanese ground mounts or copies of foreign guns. In more recent years, however, the Japanese designed aircraft cannon as large as 120 mm, but nothing larger than 57 mm was ever put in service use.

Most Japanese artillery weapons were characterized by their immobility as very few of them were designed for rapid motor transport. Although 105 mm and 150 mm weapons were frequently encountered, the standard field piece was 75 mm.

One outstanding characteristic of Japanese Army ammunition is the large variety of types and sizes of mortars which were in use. Mortars were used not only as infantry support weapons but also as artillery pieces. They ranged in size from the 50-mm Grenade Discharger to the 320-mm Spigot Mortar.

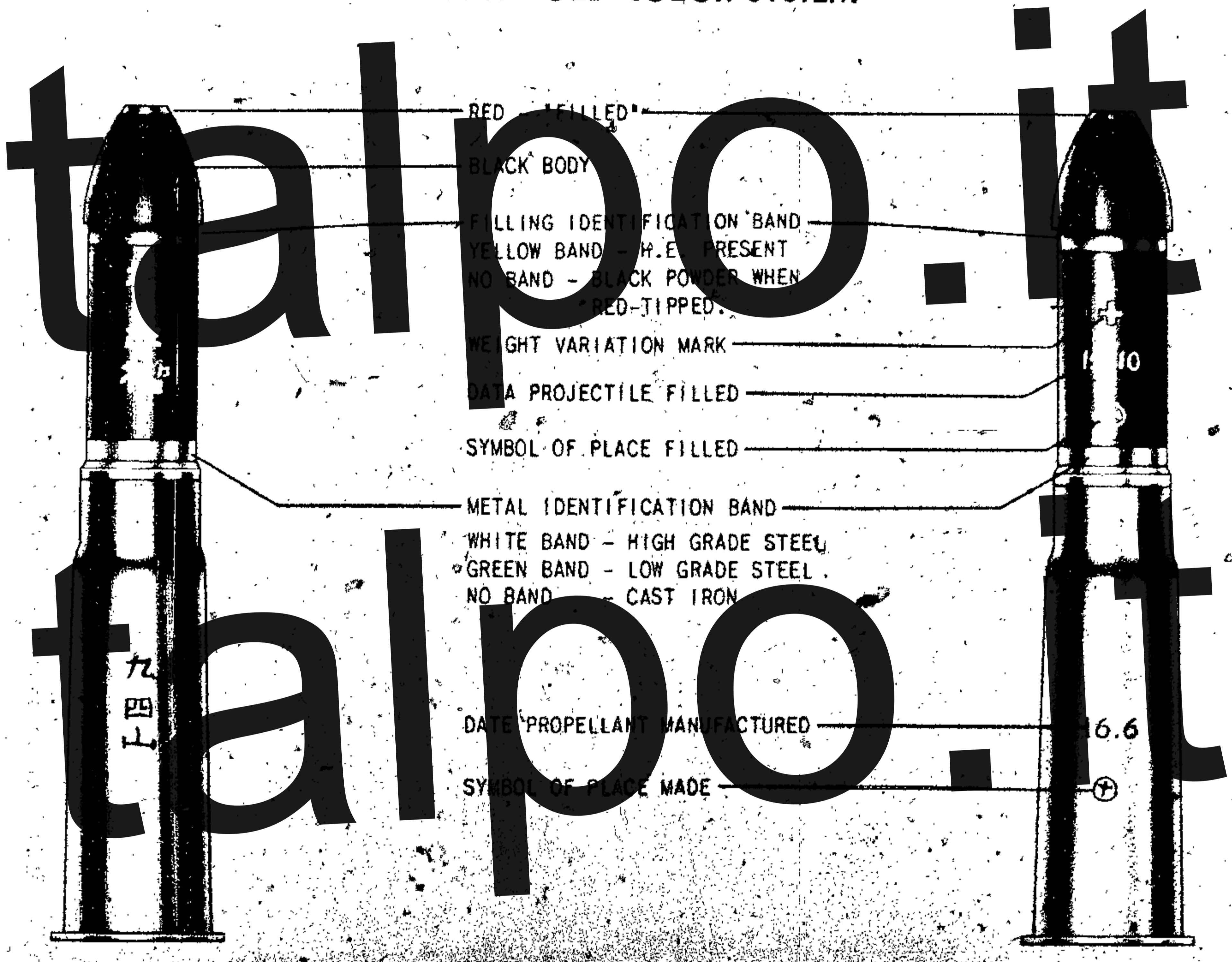
The standard Antiaircraft Gun was a 75-mm gun but there was also an 88-mm Antiaircraft Gun which was one of their most effective artillery pieces and a 105-mm A. A. gun. The Japanese has designed a 150-mm Antiaircraft Gun for the defense of the home islands but this was used only in the last few months of the war.

The newest trend in research and development in ammunition was along the line of rockets. Very few types of Japanese rockets were used during the war but there were many experimental models of antitank and artillery rockets in development, ranging in size from 75 mm to 60 cm.

Research was also being conducted on smooth-bore and recoilless weapons but this was a relatively new program and none of these weapons was ever developed beyond the experimental stage.

JAPANESE EXPLOSIVE ORDNANCE

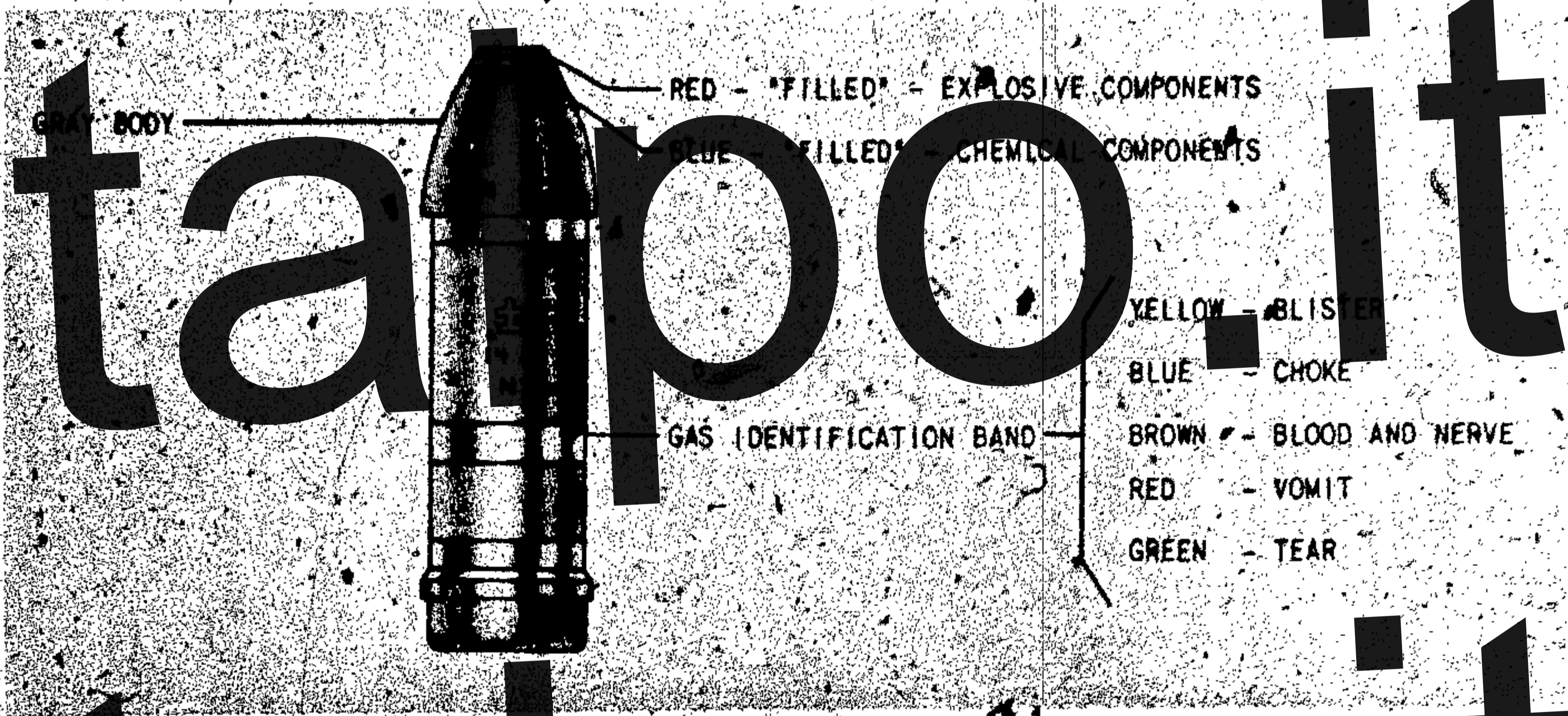
ARMY—OLD COLOR SYSTEM



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

Projectiles designed for special purposes are painted black over all and are identified by a special symbol stenciled near the middle of the body. For a list of these projectiles and symbols, refer to the new color system.

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.

Overweight	1.5 to 2.5 percent overweight.	++
	0.5 to 1.5 percent overweight.	+
Standard weight	0.5 percent plus or minus.	±
	0.5 to 1.5 percent underweight.	-
Underweight	1.5 to 2.5 percent 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.

RED - "FILLED"

BLACK BODY COLOR

- YELLOW - H.E.-HIGH GRADE STEEL
- GREEN - H.E.-SEMI-STEEL
- RED - SHRAPNEL OR CANNISTER
- WHITE - ARMOR-PIERCING
- YELLOW - H.E.-TRACER*
- GREEN - H.E.-TRACER*
- WHITE - A.P.-TRACER*
- GREEN - A.P.-TRACER*

*THE PRESENCE OF A TRACER IS NOT ALWAYS INDICATED.



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

Chemical (Gas or Liquid Filled) Projectiles



RED "FILLED" - EXPLOSIVE COMPONENTS
 BLUE "FILLED" - LIQUID COMPONENTS

GAS IDENTIFICATION BAND

YELLOW - BLISTER
 BLUE - CHOKE
 BROWN - BLOOD AND NERVE
 RED - VOMIT
 GREEN - TEAR

Special-Purpose Projectiles

Projectiles designed for special purposes as listed below are identified by the over-all body color and by a special symbol stenciled near the middle of the body.

Projectile	Color of body	Symbol
Smoke (signal or screening).	White	カ
Incendiary (nonliquid)	Yellow	ヤ
Illuminating	Red	ア
Target	Black	モ
Sand-filled	Black	ス

JAPANESE EXPLOSIVE ORDNANCE

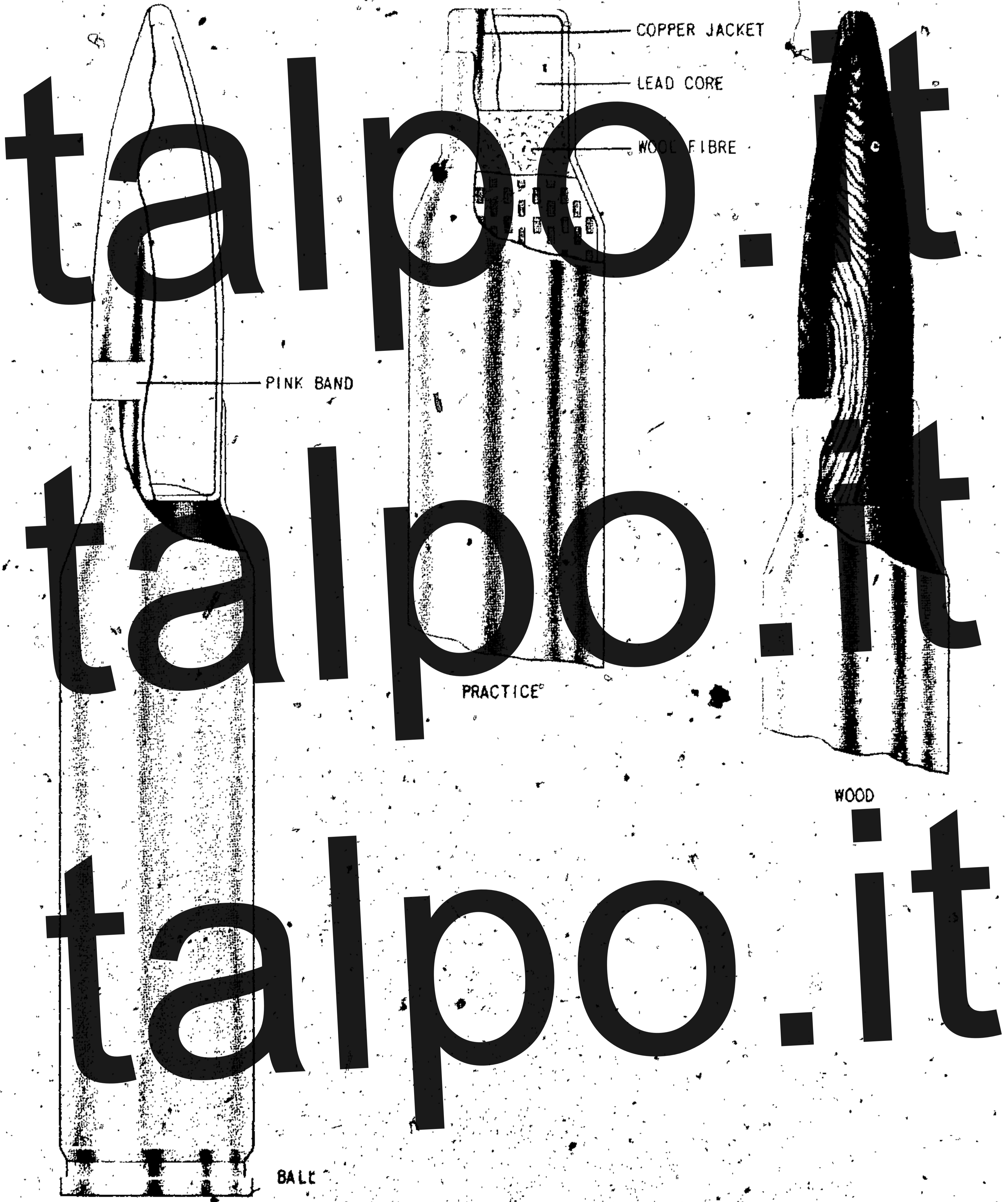


Figure 201—Type 38 8.5-mm Ammunition.

Chapter 4—Section 1

ARMY PROJECTILES

Type 38 6.5-mm Ammunition

	Ball	Training	Wooden
Over-all length	3 inches	2 3/4 inches	2 1/2 inches
Length of case	2 inches	2 inches	2 inches
Length of projectile	1 1/4 inches	1/2 inch	1 1/4 inches
Weight of projectile	138 grams	34 grams	5 grams

Construction:

Type	Projectile Jacket	Projectile Core
Ball	CuNi or steel	Lead
Tracer	CuNi	Lead
Blank	Projectile of wood.	
Blank	Projectile of paper	
Practice ball (snub nose)	Copper	Lead

Weapons in which used:

Rifle	L. M. G.	A. A. M. G.
Type 38 rifle	Type 11 yr. L. M. G.	Type 3 yr. A. A. M. G.
Type 38 snipers rifle	Type 91 Vehicle L. M. G.	Type 38 A. A. M. G.
Type E rifle	Type 96 L. M. G.	
Type 38 carbine.		
Type 44 carbine.		

Color and markings:

Type	Bands
Ball	Pink.
Tracer	Green.
Blank	Wood.
Blank	Paper (purple).
Practice ball	Pink.

Remarks: Ammunition when used in rifles and light machine guns will be found in clips of 5 rounds each. When used in the heavy machine guns it will be found in feeder strips of 30 rounds each. The wooden bullet round is used with the rifle to launch the rifle smoke grenade. The paper bullet round is used to launch rifle grenades. The propelling powder used in the blank rounds is nitro-cellulose while in the other rounds it is graphite-coated nitro-cellulose.



Figure 202—Type 99 (Rimless) 7.7-mm Ammunition.

Type 99 (Rimless) 7.7-mm Ammunition

	Ball	A. P. (Inch)	Tracer (Inch)	Wooden
Over-all length	3 3/4 inches	3 3/4	3 3/4	3 3/4 inches
Length of case	2 1/4 inches	2 1/4	2 1/4	2 1/4 inches
Length of projectile	2 1 3/4 inches	2 1 3/4	2 1 3/4	2 1 3/4 inches
Weight of projectile	181 grams			5 grams

Construction:

Type	Projectile Jacket	Projectile core
Ball	CuNi	Lead.
Tracer	CuNi	Lead.
A. P.	CuNi	Hard steel.
Blank	Projectile of wood.	
Blank	Projectile of paper.	

Weapons in which used:

Rifle	L. M. G.	H. M. G.
Type 99 rifle	Type 99 L. M. G.	Type 92 H. M. G.
Type 99 modified rifle	Type 97 TK. M. G.	Type 1 H. M. G.
Type 2 rifle.		

Color and markings:

Type	Bands
Ball	Pink.
Tracer	Green.
A. P.	Black.
Blank	Wood.
Blank	Paper (purple).

Remarks: The heavy machine guns use feed strips of 30 rounds. When used in light machine guns and the rifle, this ammunition is packed in 5-round clips.

In addition to the usual brass cartridge cases, ammunition with a steel case has been found.

JAPANESE EXPLOSIVE ORDNANCE

ARMOR PIERCING

INCENDIARY

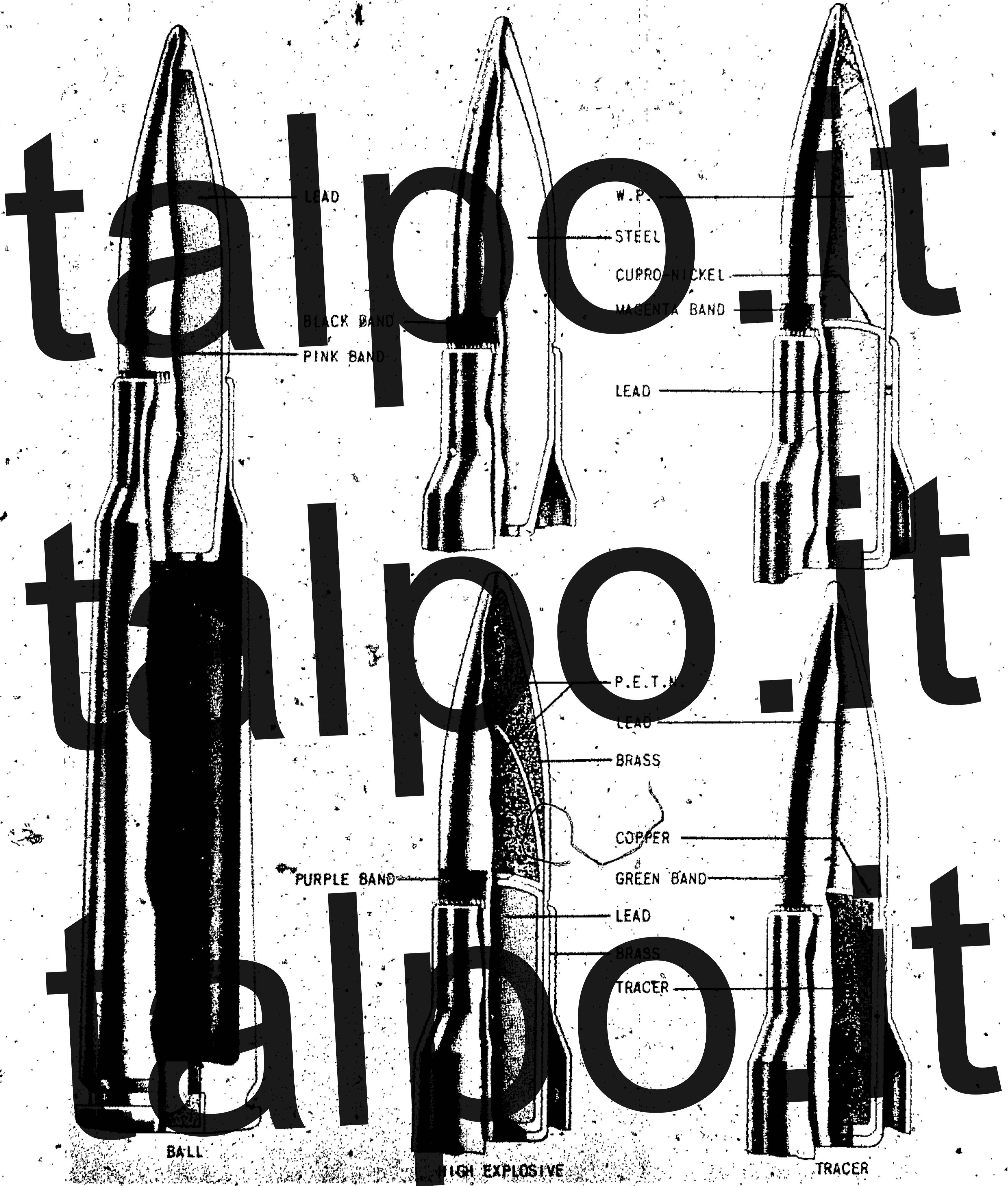


Figure 203—Type 92 (Semirimmed) 7.7-mm Ammunition.

Type 92 (Semi-rimmed) 7.7-mm Ammunition

	Ball	A. P.	Tracer	Incendiary	H. E.
Over-all length	3 ³ / ₄	3 ³ / ₄	3 ³ / ₄	3 ³ / ₄	3 ³ / ₄
Length of case	2 ¹ / ₄	2 ¹ / ₄	2 ¹ / ₄	2 ¹ / ₄	2 ¹ / ₄
Length of projectile	1 ² / ₄	1 ² / ₄	1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂
Weight of projectile	203	162	155	162	162

Construction:

Type	Projectile jacket	Projectile core
Ball	CuNi	Lead.
Tracer	CuNi	Lead.
A. P.	CuNi	Hard steel.
Incendiary	CuNi	W. P. and lead.
H. E.	CuNi	P. E. T. N. and lead.

Weapons in which used:

- Type 89 Flexible A. C. M. G.
- Type 89 Flexible A. C. M. G. (special).
- Type 89 Fixed A. C. M. G.
- Type 92 H. M. G.

Color and markings:

Type	Band
Ball	Pink.
Tracer	Green.
A. P.	Black.
Incendiary	Magenta.
H. E.	Purple.

Remarks: The type 92 heavy machine gun uses feed strips of 30 rounds. When used for aircraft flexible machine guns, this ammunition is packed in 5-round clips in a manner corresponding to the packing of rimless, rifle ammunition, but the

clip is of larger size to accommodate the larger bore of the semirimmed type.

The P. E. T. N. in the H. E. round is set off by the heat of impact.

JAPANESE EXPLOSIVE ORDNANCE



Figure 204—7.92-mm Aircraft Machine Gun Ammunition.

7.92-mm Aircraft Machine Gun Ammunition

Construction:

	Ball	A. P.	Incendiary	H. E.
Over-all length (inch)	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{4}$
Length of case do.	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Length of projectile.	1 $\frac{1}{8}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	
Weight of projectile.	180	182	182	

Type	Projectile jacket	Projectile core
Ball	Gilding metal	Lead
A. P.	CuNi	Hard steel
Incendiary	CuNi	W. P. and lead
H. E.	CuNi	P. E. T. N. and lead

Weapons in which used:

- Bren type L. M. G.
- Type 98 flexible A. C. M. G.
- Type 100 flexible A. C. M. G.

Color and markings:

Type	Bands
A. P.	Black
Incendiary ...	Magenta
H. E.	White

Remarks: The Bren type L. M. G. uses a box-type magazine similar to the U. S. B. A. R. The type 98 and type 100 A. C. M. G. use a saddle type magazine.

8-mm Pistol Ammunition

Over-all length: 1 1/4 inches.
 Length of case: 1 1/2 inch.
 Length of projectile: 1 1/2 inch.
 Weight of projectile: 102 grams.

Construction:

Type: Ball.
 Projectile jacket: CuNi.
 Projectile core: Lead.

Weapons in which used:

- Nambu pistol.
- Type 14 pistol.
- Type 94 pistol.
- "Solothurn" submachine gun.
- "Bren Type" submachine gun.
- Type 100 submachine gun.

Remarks: The propelling case is rimless and made of brass. There is a tear-gas round, but specifications indicate that this is a relatively large missile and it is probably launched from the pistol somewhat in the manner of launching grenades from a rifle.

9-mm Pistol Ammunition

Over-all length: 1 1/4 inches.
 Length of case: 2 1/2 inch.
 Length of projectile: 3/4 inch.
 Weight of projectile: 150 grams.



Figure 205—8-mm Pistol Ammunition.

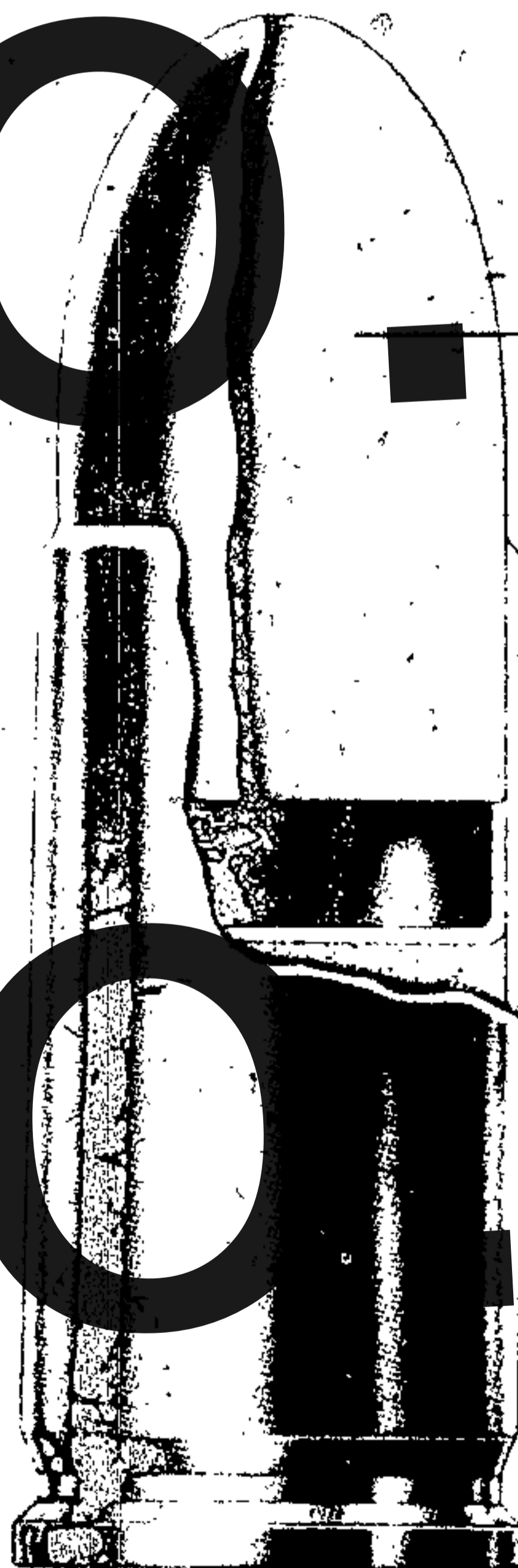


Figure 206—9-mm Pistol Ammunition.

JAPANESE EXPLOSIVE ORDNANCE

Construction:

Type: Ball.

Projectile jacket: CuNi,

Projectile core: Lead.

Weapons in which used:

Type 26 revolver (Webley type).

Smith and Wesson pistol.

Remarks: The propelling case is rimless and made of brass. There is a tear-gas round, similar to that mentioned for the 8-mm pistol.

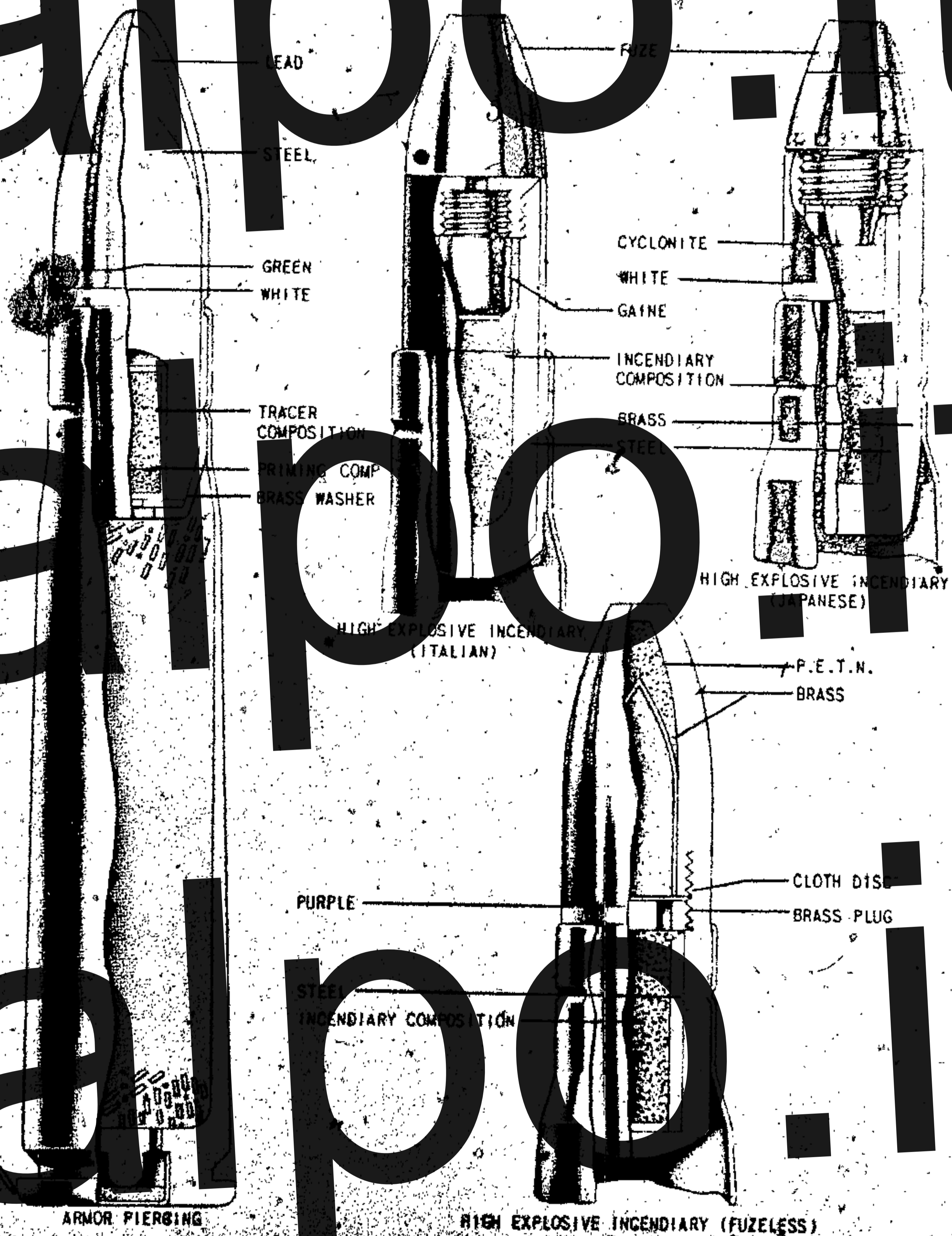


Figure 207—12.7-mm Aircraft Cannon Ammunition.

12.7-mm Aircraft Cannon Ammunition

		A. P. T.	A. P. (Italian)	H. E. I. (Italian)	H. E. I.	H. E. I. (fuzeless)
Over-all length	(inches)	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Length of case	(inches)	3 $\frac{3}{8}$	3 $\frac{3}{8}$	3 $\frac{3}{8}$	3 $\frac{3}{8}$	3 $\frac{3}{8}$
Length of projectile	(inches)	1 $\frac{1}{4}$	2 $\frac{1}{4}$	2	1 $\frac{7}{8}$	2
Weight of projectile	(ounces)	1.25	1.35	1.35	1.21	1.16

Construction:	Type	Projectile jacket	Projectile core
Ball		CuNi	Lead.
A. P. T.		Brass	Steel.
H. E. I. (fuzed Japanese)		Brass	P. E. T. N. incendiary and steel.
H. E. I. (fuzed Italian)		Brass	P. E. T. N. incendiary and steel.
H. E. I. (fuzeless)		Brass	P. E. T. N. incendiary and steel.
Tracer		CuNi	Steel.
A. P. (Italian)		Gilding metal	Lead tip, steel core.

Weapons in which used: HO 103 A. C. M. G.

Color and markings:

Ball	Type	Color Bands
A. P. T.		Red.
H. E. I. fuzed		Black or green and white.
H. E. I. fuzeless		White.
H. E. I. fuzed (Italian)		Purple.
Tracer		Red, blue, or green body.
A. P. (Italian)		Green.
		Black tip on nose.

Fuzing: Italian 12.7 mm. fuze or Japanese 12.7-mm fuze

Remarks: This ammunition was copied by the Japanese from the Italians. Of the two H. E. I. fuzed rounds, one is Italian and the other is a Japanese copy of it. The Japanese H. E. I. fuzed differs from the Italian round in that the fuze used is of two-piece construction instead of one. This ammunition is packed in 10-round cartons and is reloaded into metal link belts for use.

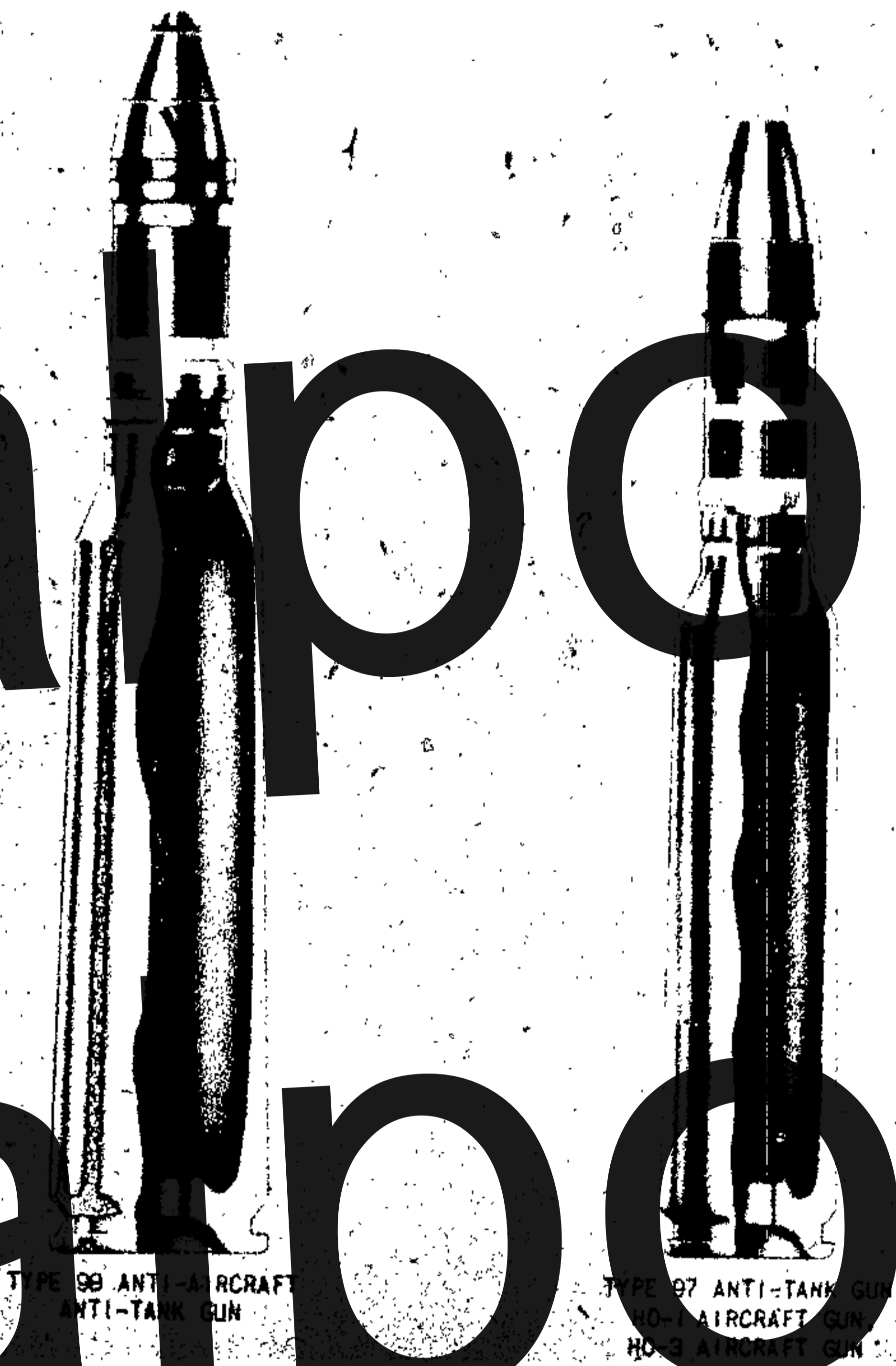


Figure 208—Type 97 and Type 98 20-mm Ammunition.

Type 97 and Type 98 20-mm Ammunition

There are four Army 20-mm guns using similar projectiles and three of these guns use the same cartridge case. The guns using the small size cartridge case are the type 97 antitank gun, the Ho 1 (flexible) and Ho 3 (fixed) aircraft guns. The type 98 antiaircraft/antitank gun uses the large size cartridge case.

Case:	Small	Large
Length	4.89	5.58
Diameter of base	1.12	1.12
Weight (empty) (grams)	129.9	208.3

Both cases are made of drawn brass and are of the rimless type. The case is crimped to the projectile by three long crimps and sealed by a clear lacquer.

Propellant: The propellant is graphited smokeless powder made in single perforated cylindrical grains approximately 1½ mm in diameter and 3 mm in length. The weight of the propellant in the small case is 35.8 grams and, in the large case, 58.9 grams.

20-mm High-Explosive Tracer Projectile

Over-all length: $8\frac{3}{8}$ inches.
 Length of projectile: $3\frac{1}{4}$ inches.
 Weight of projectile: 4.54 ounces.
 Filling: Cyclonite, tracer composition.
 Color and markings: Black body with yellow band just aft of bourrelet and white band forward of rotating band.
 Fuzing: Type 93 small instantaneous fuze.
 Weapons in which used: Type 98 antiaircraft/antitank gun.

Remarks: This projectile is made of steel with two cavities separated by a septum. The round is characterized by a sharp bourrelet.

Type 98 20-mm High-Explosive Tracer Projectile

Over-all length: $7\frac{2}{4}$ inches.
 Length of projectile: $2\frac{1}{2}$ inches.

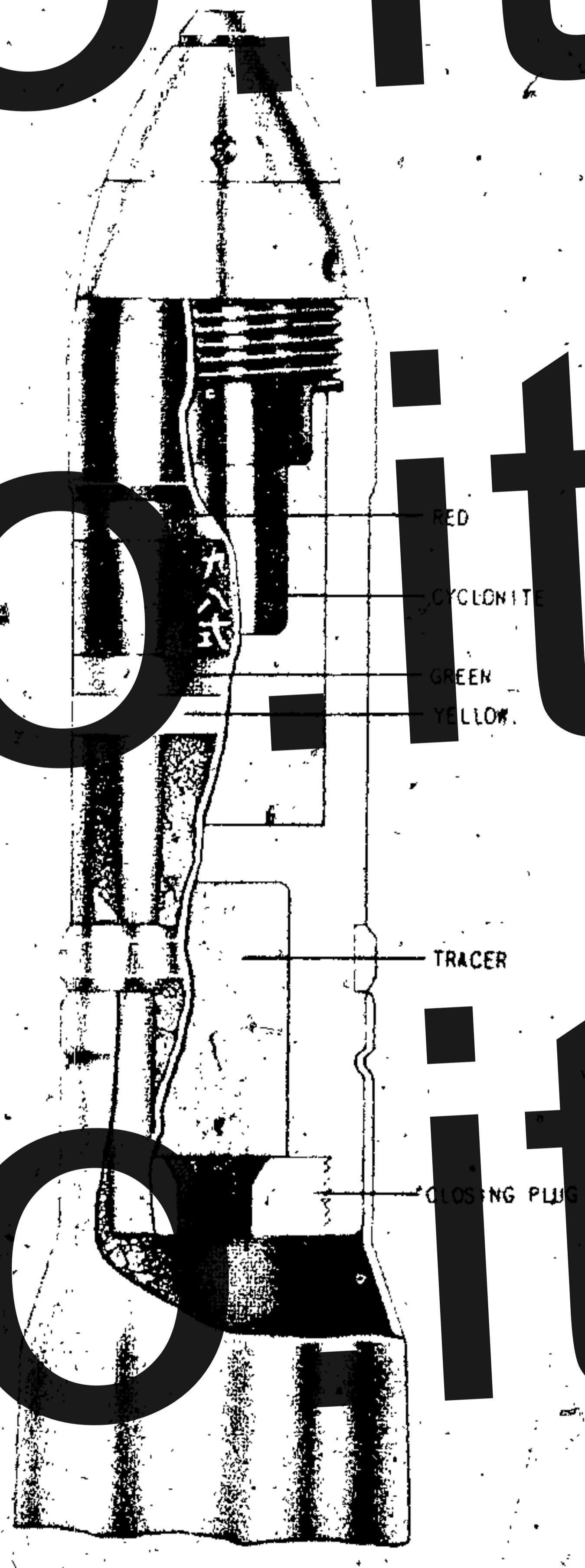
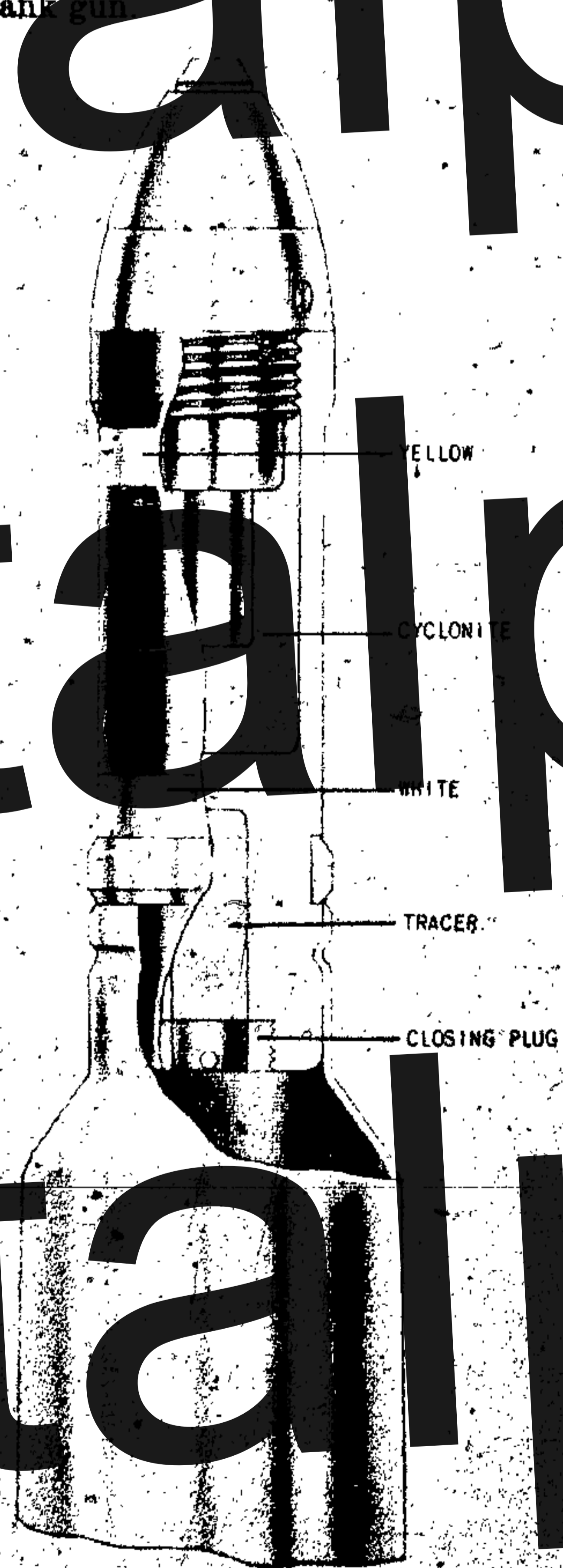


Figure 209—20-mm High-Explosive Tracer Projectile.

Figure 210—Type 98 20-mm High-Explosive Tracer Projectile.