

# JAPANESE 20mm

With typical W.W.II confusion the Japanese produced a series of 20mm cartridges for use in the following weapons.

## Japanese Army:

Type 94 Aircraft cannon

Type 94 Anti-Aircraft cannon

Type 97 Anti-Tank Gun

Type 98 Cannon (Anti-Tank gun employed as AA)

HO-1 Aircraft Gun (Fixed)

HO-3 Aircraft Gun (Flexible)

HO-5 Aircraft cannon

## Japanese Navy:

KEI Type 20mm MK I

Type 99 20MM MK II

Throw in the fact that the projectiles were interchangeable between the cartridges and the system (?) begins to get a little difficult to sort out. I believe the following to be accurate.

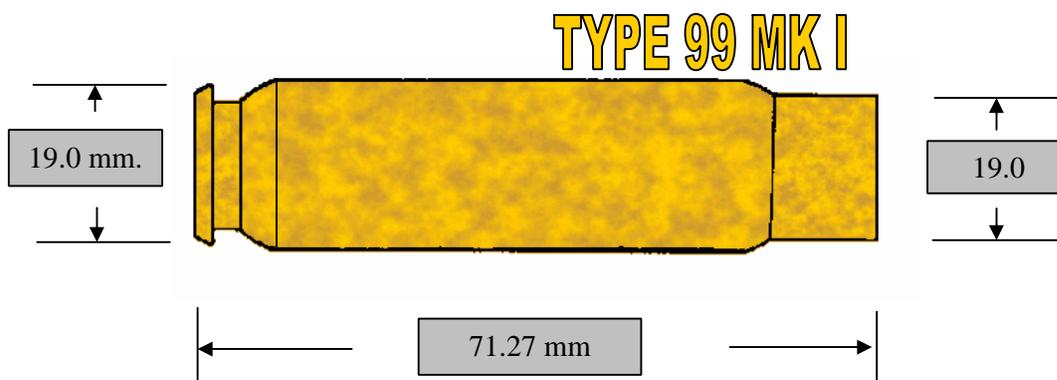
| WEAPON        | CASE LENGTH | RIM |
|---------------|-------------|-----|
| TYPE 94 AAA   | 158?        | ?   |
| TYPE 94 A/C   | 159         | 34  |
| TYPE 97 ATK   | 125         | 28  |
| HO-1 Flex A/C | 125         | 34  |
| HO-3 Fix A/C  | 125         | 34  |
| TYPE 98 A/C   | 144         | 33  |
| HO-5          | 94          | 25  |
| 20mm Mk I     | 72          | 20  |
| TYPE 99 Mk II | 101         | 20  |

ARMY

NAVY

# JAPANESE NAVY 20 mm CARTRIDGES

The Japanese Navy adopted this cartridge in 1939. It is an Oerlikon cartridge in origin. The short case originally adopted gave some inadequate ballistics and volume of fire consequently the Japanese upgraded the case length and carried out some modifications on the weapon to increase the rate of fire. The modified version is the next cartridge in this series.

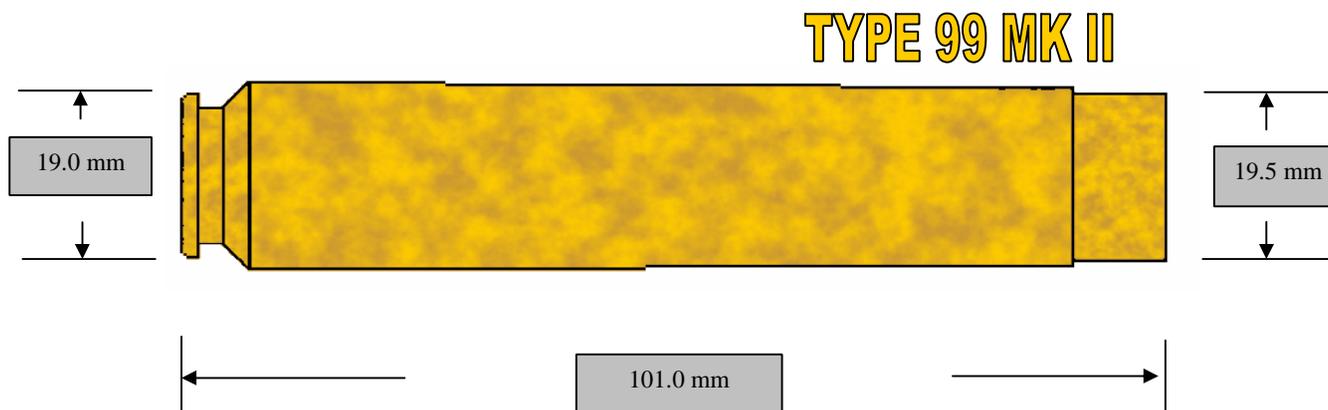


## THE CARTRIDGE CASE.

The case was a direct copy of the Oerlikon and Japan during WWII in addition to making her own ammunition used quite large amounts of Swiss ammunition. It is a rebated case and the designation for it is 20x72RB. It weighed 57 gms and was usually made of brass.

The propellant used was a graphited, tubular NC. The Swiss ammunition used a flaked NC propellant. The case was loaded with 13.6 gms of propellant.

The primer is quite large being 16.3mm wide with a copper cap. The samples examined have all been made from gilding metal. The primer was filled?



As the need for more muzzle velocity became apparent the Japanese quickly modified the case of the Type 99 by lengthening it but using the same projectiles. Because of the earlier introduction of the Type 99 Mk I there are more types and mods associated with that model.

The length was increased to 101 mm and the weight to 71 gms, but all other things remained the same.



20mm Type 99 Mk 1  
HE/T (SD)



20mm Type 99 Mk 2  
TP/T

# THE PROJECTILES FOR TYPE 99

Ammunition supplied by Oerlikon was obviously loaded to a different density, as the HE content was slightly higher than similar projectiles of Japanese origin.

## 1. HE.

82 mm in length. Filled 9.9 gms of Pentolite

## 2.PRAC.

This projectile was empty and weighed 126 gms and was 82mm long.

## 3.TRACER

This projectile was usually loaded first in Navy A/C belts to clear gun port closures. Any variations in this projectile were simply differences in tracer composition weight.

## 4.AP/I

The 3.4 gm incendiary mixture in this 80-mm long projectile was as follows:

77.7% Nitrocellulose

11.3% Sodium Nitrate

11.2% Aluminium

## 5. HE/T

The body of all these projectiles including the mods was made with two cavities separated by a steel septum. The tracer element filled the lower cavity. The 5 gm HE filling was Pentolite. The projectile was 78.7 mm long with fuze. The self-destruct version has a GP transfer element in a hole through the septum this element leads to the base of the fuze magazine.

## 6 HE/I

This projectile is filled with 5 gms of TNT and 3 gms of WP. The TNT is pressed into the base and the WP is contained in an aluminium canister that is surrounded by 1 gm of flaked, graphited Nitro-cellulose.

# TYPE 99 MKI & MKII



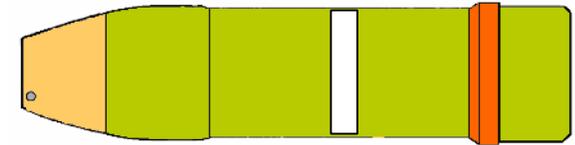
Prac.



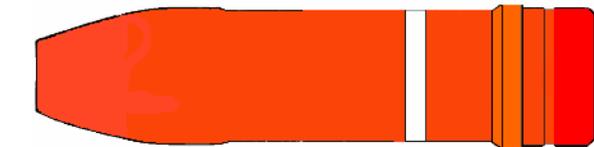
HE/T (SD) White bands indicate mods.



HE. White bands indicate mods



HE/I White bands indicate mods.



Tracer.



API.



HE. Swiss ammunition used by the Japanese.



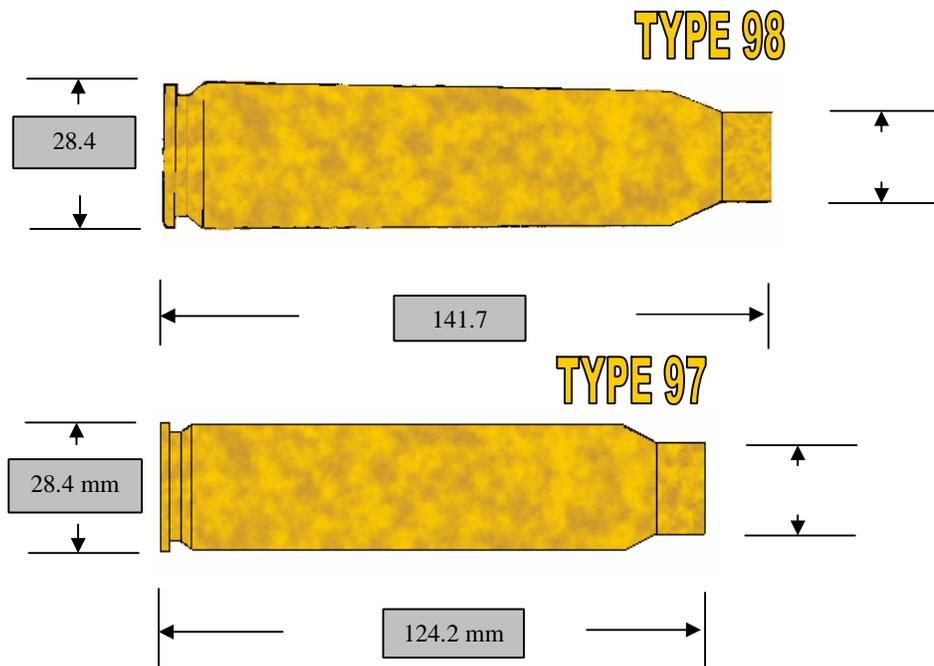
HE/T (SD) Swiss version.

# JAPANESE ARMY 20mm CARTRIDGES

Japanese Army 20 mm cartridges encompassed four case types. Type 97 and 98 were used in land applications, while HO-1, HO-3 and HO-5 were used in Army Aircraft. The fourth case type is a bit of a mystery case as very few of them exist.

The Type 97 was used in three Army weapons. The Type 99 Atk gun, the HO-1 flexible A/C gun and the fixed A/C HO-3. The cartridge was usually made from brass and weighed 129.9 gms. It is of the rimless type and was filled with 35.8 gms of tubular NC propellant.

The Type 98 was used in only one weapon and that was employed in two roles. The weapon was the Type 98 Anti-tank and Anti-Aircraft gun. The case was usually made from brass and weighed 208.3 gms. It was filled with 58.9 gms of tubular NC propellant. The propellant loading information is marked on the side of the case in purple dye.



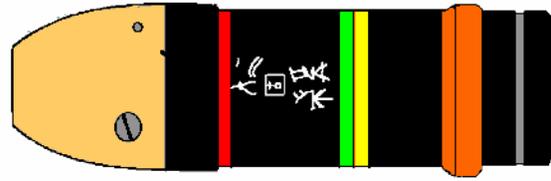
Left AP/T and right HE/T

# THE PROJECTILES FOR TYPE 97 & HO-1, HO-3

## TYPE HO-1 & HO-3



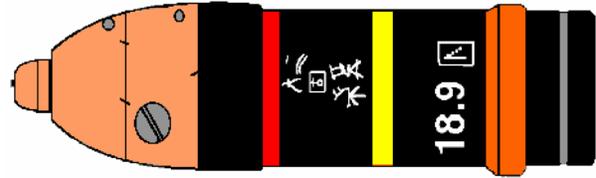
TYPE 100 AP-T



HE-I

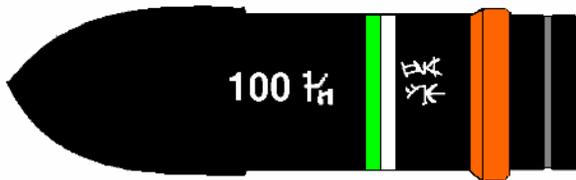


INC Ma 201



HEI-T

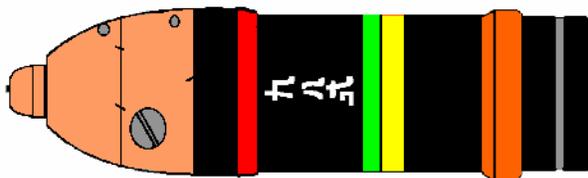
## TYPE 97



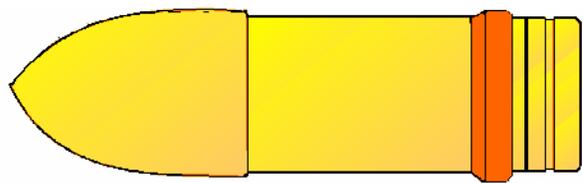
TYPE 100 AP-T



AP-T TYPE 97

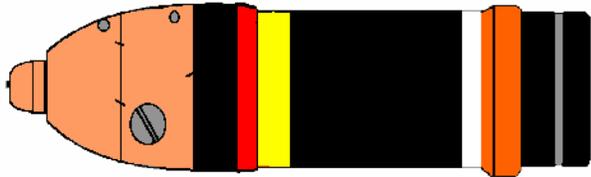


HE-T TYPE 98

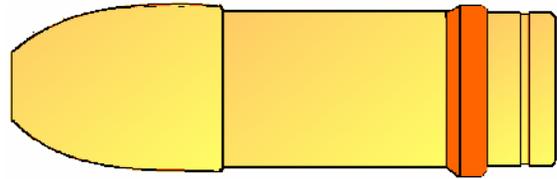


DRILL TYPE 97

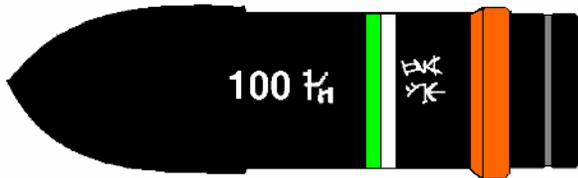
# TYPE 98



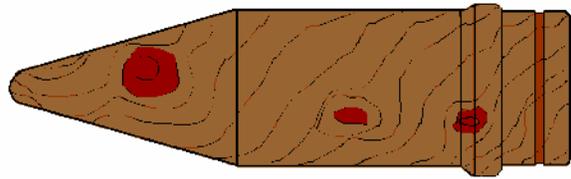
HE-T TYPE 98



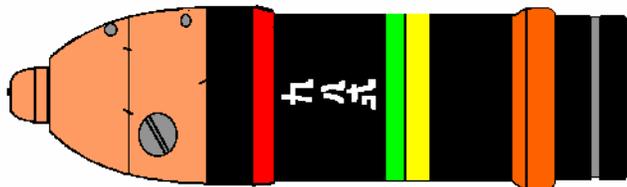
DUMMY TYPE 98



TYPE 100 AP-T



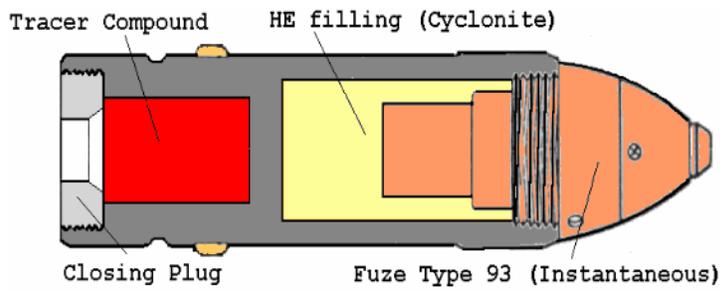
BLANK TYPE 98



HE-T TYPE 98

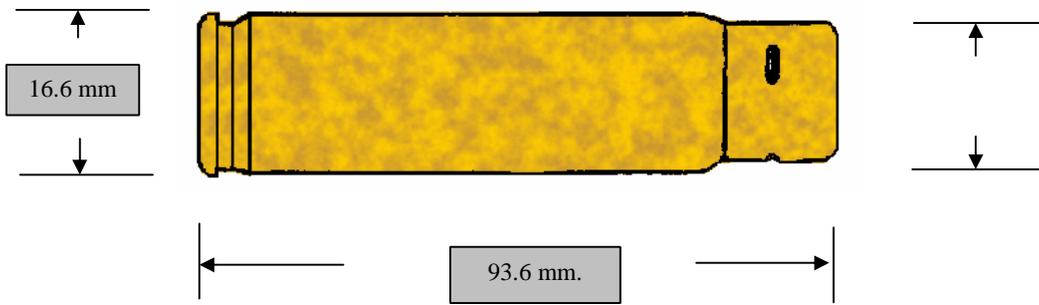


PRAC-T TYPE 98



TYPE .98 HE-T

## TYPE H05



This cartridge was used in weapons developed by Japan as their war experiences taught them what was needed in a weapon and cartridge combination. The case was made from brass and was filled with 21.4 gms of short cord, single-base propellant. It weighed 113.5 gms.

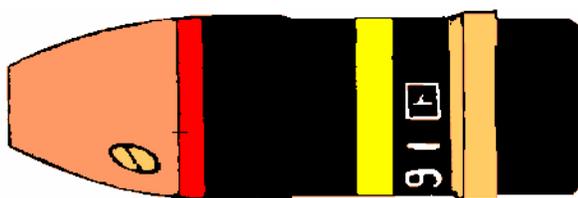
# 20 mm AIRCRAFT CANNON HO-5 PROJECTILES



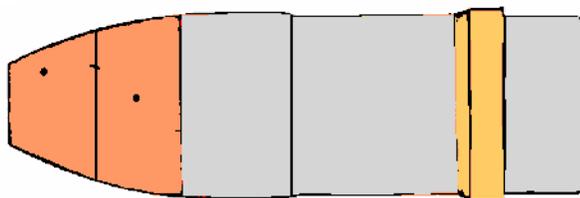
PRACTICE



AP-T



HE TYPE 2

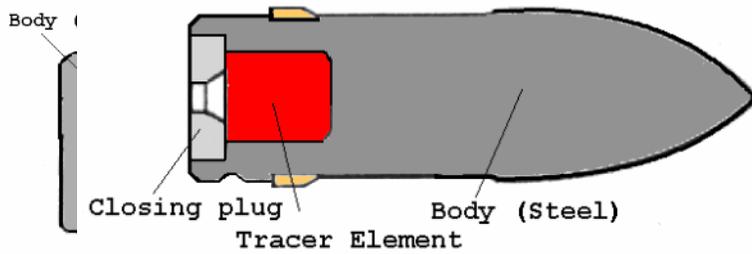


INC Ma 205



INC Ma 202

| ODEL        | FUZE | HE WEIGHT | INCEN WEIGHT | TOTAL WEIGHT |
|-------------|------|-----------|--------------|--------------|
| TYPE 4 HE-I | none | 4 gms     | 4 gms        | 85 gms       |



**TYPE 2 AP-T**  
20 mm TYPE 2 AND 2 MODIFIED HE-I



Hard Body

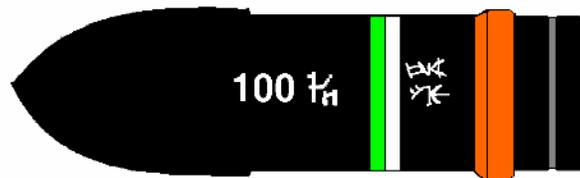


Medium body

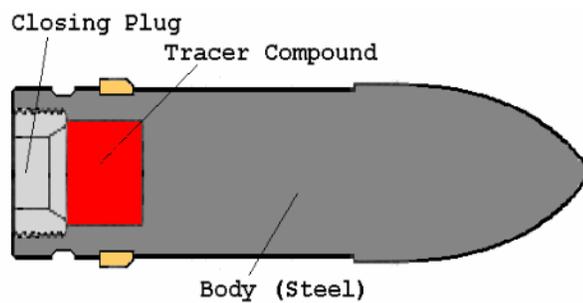


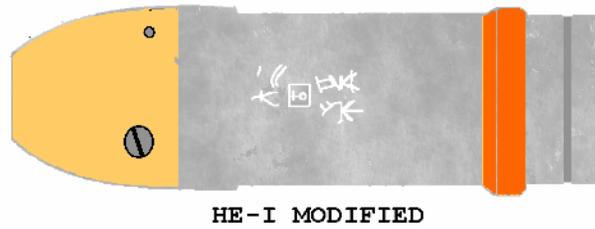
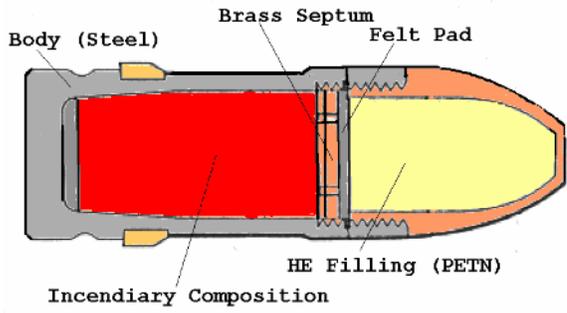
Soft body

| MODEL      | FUZE                 | HE WEIGHT | INCEN WEIGHT | TOTAL WEIGHT |
|------------|----------------------|-----------|--------------|--------------|
| TYPE 2     | SMALL INSTANT TYPE 2 | 2 gms     | 4 gms        | 85 gms       |
| TYPE 2 mod | Super type 4         | 3.5 gms   | 4 gms        | 85 gms       |



**TYPE 100 AP-T**



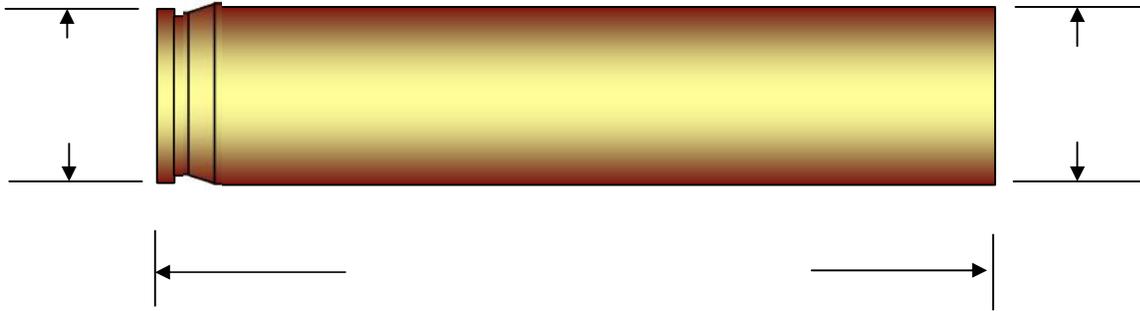


**TYPE 4 HE-I (MA-202)**

| MODEL       | FUZE | HE WGHT | TRACER WEIGHT | TOTAL WEIGHT |
|-------------|------|---------|---------------|--------------|
| TYPE 2 AP-T | none | none    | 7 gms         | 113 gms      |

The dimensions and fillings are approximately the same as the type 2 AP-T.

# TYPE 94



This cartridge has been reported as existing but only in documentation, which was the publication issued by the Mobile Explosives Investigation unit US Navy during World War II. No known examples exist to my knowledge. Reported in the same documentation were the following projectiles:

- Type 94 H.E.
- Type 94 H.E./T
- Type 94 H.E. substitute
- Type 94 Tracer
- Type 94 Tracer substitute

The case is reported as being “Very long, rimless and unnecked” with a very slight taper. Unfortunately no dimensions are available.

Kanji symbols used for tracer colours.

白  
赤  
黄  
緑  
橙

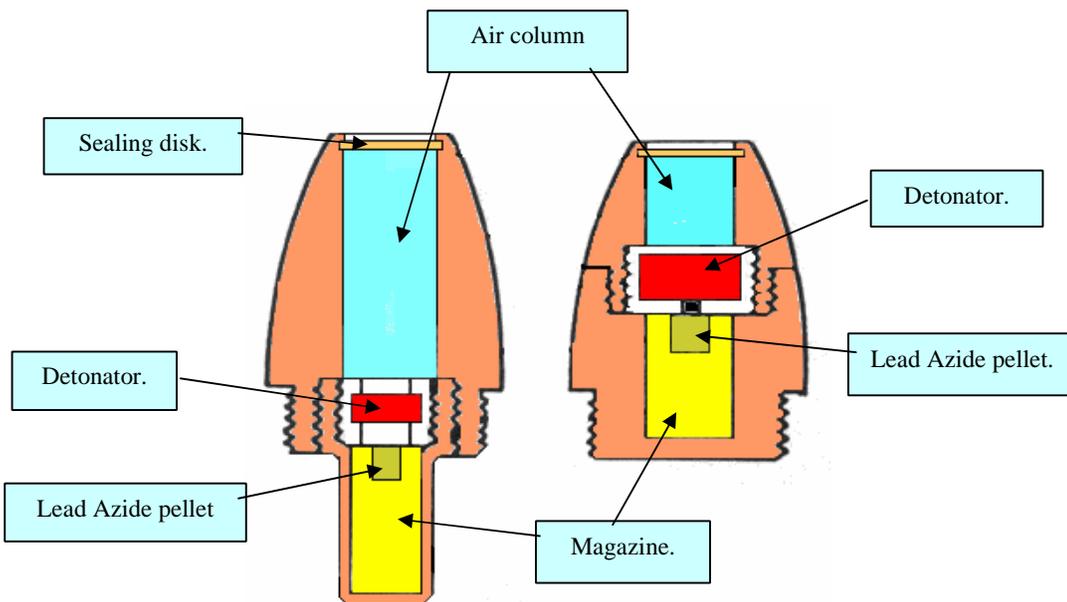
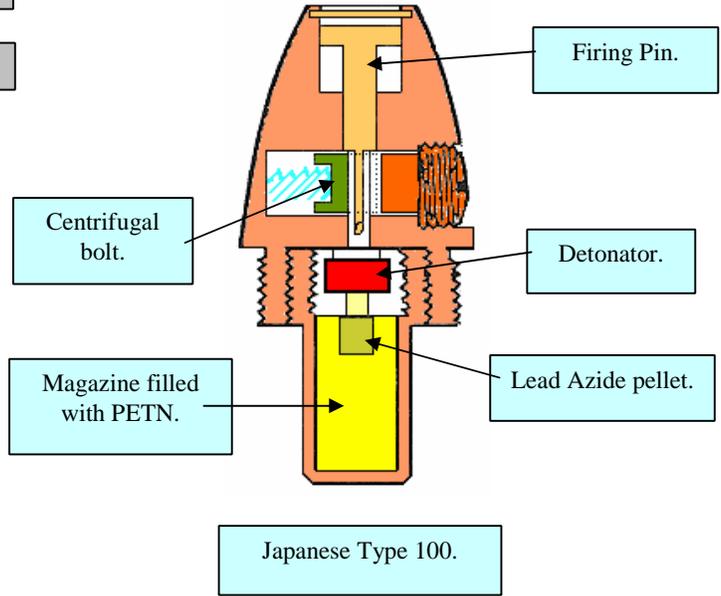
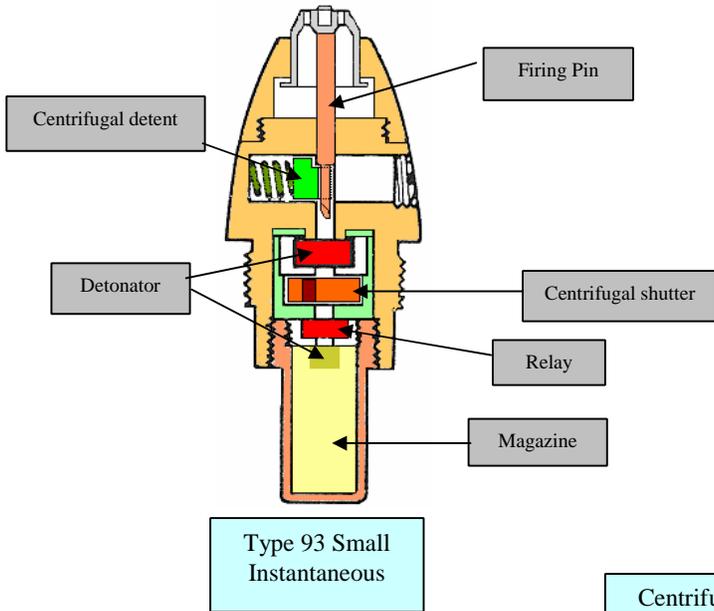
White

Red

Yellow

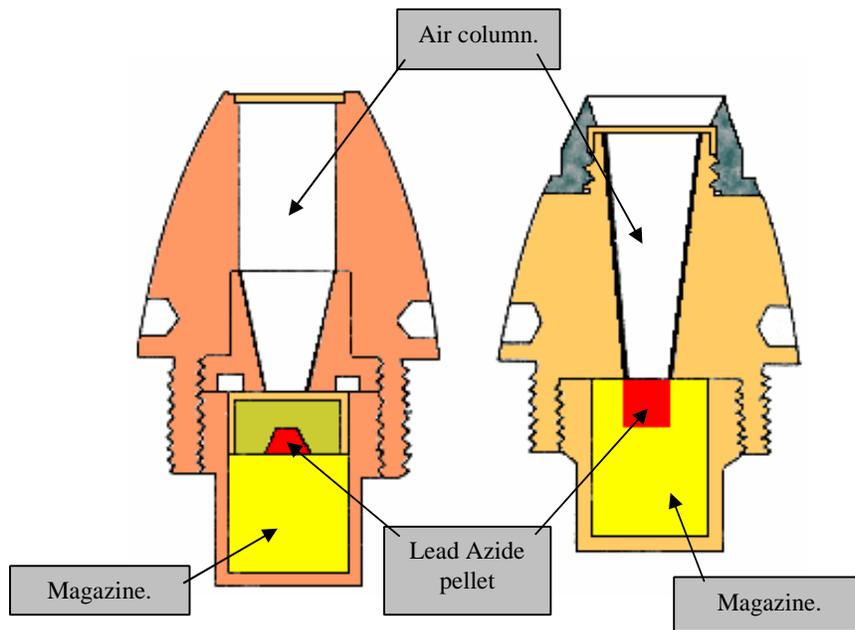
Green

Orange

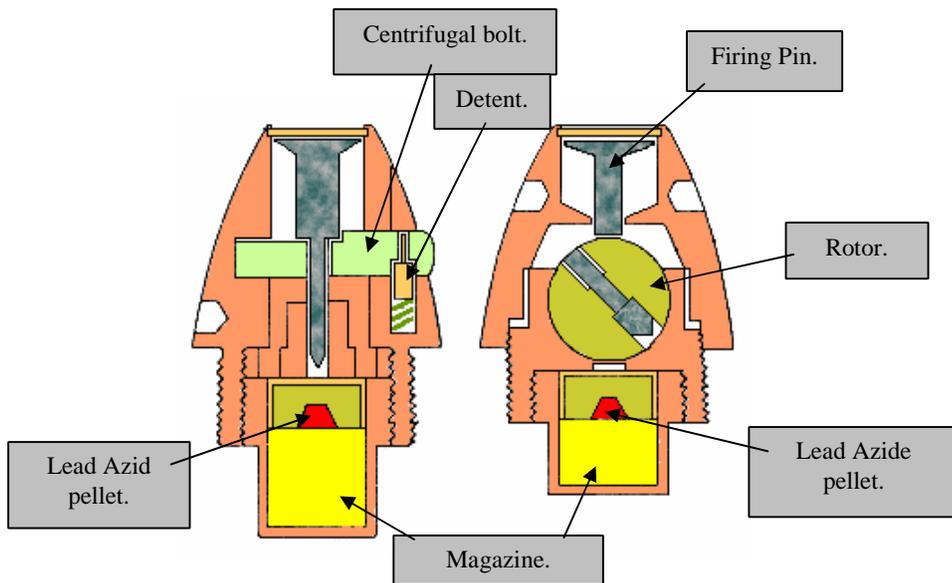


Japanese adiabatic Fuzes, these operate by compressing a column of air so that it heats up to a temperature sufficient to fire a detonator. It is similar in principle to a diesel engine.





Japanese adiabatic fuzes. Left Model III and right Model V. These were used in KEI type and Type 99 HE projectiles.



Japanese fuzes used in KEI type and Type 99 HE projectiles. Both centrifugally armed. The one on the right is interesting as the rotor carries the striker and not the detonator as normal.

# SUMMARY OF 20mm CARTRIDGES

| CARTRIDGE                 | MARKING                                    | FUZE             |
|---------------------------|--|------------------|
| Type 97 APT               | Wide White band above DB.                  |                  |
| Type 98 HE/T              | Red band and Green/yellow bands            | Type 93          |
| Type 100 APT soft steel   | Black body                                 |                  |
| Type 100 APT medium steel | Black body with green band                 |                  |
| Type 100 APT hard steel   | Black body with green and white band       |                  |
| Type 100 HE/T (SD)        | Red band and green and yellow band         | Type 93          |
| Dummy                     | All brass body                             |                  |
| Ma 201 Incendiary         | Black body with 201 in white               | Brass nose piece |
| HE/I                      | Red band with yellow band                  | Type 93          |
| Type 98 HE/T              | Red band w/yellow then white band over DB. |                  |
| Blank                     | Wooden bullet                              |                  |
| Type 2 APT                | As for type 100 APT                        |                  |
| Ma 202                    | Black with 202 in white                    |                  |
| Ma 205                    | Silver grey all over.                      |                  |