

THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION C.

LEAFLET C 1.

## INTRODUCTION

This Section on grenades, hand and discharger types, is intended to cover all H. E. and incendiary grenades, which are thrown by hand, projected by a launcher attached to a rifle, or projected from a projectile discharger. In addition certain smoke grenades, which are projected from rifles or dischargers similar to H. E. and incendiary types, have been included.

2. The following division of this Section has been arranged tentatively:—

- C. 1—Introduction.
- C. 2—Grenade, Hand or Discharger, H.E., Type '91 and Grenade, Hand, H.E., Type '97.
- C. 3—Grenade, Hand or Discharger, Incendiary (W.P.)  $\frac{1}{2}$  Kg.
- C. 4—Grenade, Hand or Rifle, H.E., Type '99-A.
- C. 5—Grenade, Hand, H.E., Type '99-B.
- C. 6—Grenade, Hand, H.E., Stick, Type '98 (and Incendiary version).
- C. 7—Grenade, Hand, H.E., Pull Type (Believed to be Type 2 or 3).
- C. 8—Reserved.
- C. 9—Reserved.
- C. 10—Reserved.
- C. 11—Grenade, Hand, H.E., Anti-Tank, Hollow Charge (Type 3).
- C. 12—Grenade, H.E., Anti-Tank (Hollow Charge) for 30-mm. Rifled Discharger Cup and its adaptation as a  $\frac{1}{2}$  Kg. H.E. Aircraft (Hollow Charge) Bomb.
- C. 13—Reserved.
- C. 14—Reserved.
- C. 15—Grenade, Rifle, H.E., (Instantaneous Action), believed to be Type 3 Modification.
- C. 16—Grenade, Rifle, Smoke.
- C. 17—Grenade, 50-mm. Discharger, Smoke.
- C. 18—Grenade, Hand, H.E., Ceramic (Pottery).
- C. 19—Grenade, Hand, Flash.
- C. 20—Reserved.
- C. 21—Reserved.
- C. 22—Grenade, Hand, Incendiary (Molotov Cocktail).

*Note.*—The "Magnetized Anti-Tank Mine Type '93'" which is sometimes regarded as a grenade, is described under Mines in J. A. L. F. 4.

## IDENTIFICATION

3. To assist quick identification of the many different types of Japanese grenades, a summary of all grenades known at the time of issue of this Leaflet is included at the end. Some brief details are given for quick reference and, for the sake of completeness, smoke and gas grenades have been also included; these will be dealt with later in detail in Section J.

4. Those items marked with a "V" in the remarks column have been critically examined at Kirkee, and the details given are definitely correct. Details of other items have been based on various American and Australian reports which have been carefully cross-checked for correctness.

Charts of comparative illustrations of all types of grenades used by the Japanese are attached at the end of this leaflet.

## STANDARDIZATION AND TYPES

5. Although the Japanese use a number of different grenades, the Type '97 H.E. hand grenade (time percussion) appears to be the most widely used and might be regarded as the standard hand grenade; their Service equivalent of our No. 36.

There are in addition, however, a number of other hand grenades of both time percussion and time friction types. The reasons for the introduction of the various types are not very clear. The old stick grenade (Serial 6), for instance, is probably retained because manufacturing facilities exist and it meets certain requirements. The type '99-B (Serial 5) and, to some extent, the '99-A (Serial 4) can be regarded as high H.E. capacity (low fragmentation) type grenades probably intended for offensive roles. The "pull-type" grenade (Serial 7) will give good fragmentation effect (similar to Type '97) and, owing to the anchoring rings and light pull of the friction igniter, it should be particularly suitable in both offensive as well as a defensive hand grenade.

6. The development of the Type '91 and '97 H.E. grenades appears to have been on the following lines. The Type '91 was evolved about 1931 as a hand and discharger grenade. The firing of a grenade from a rifle is generally regarded as something of a make-shift and the trend of Japanese service opinion at the time was probably that grenades should be fired from a Discharger. The Type '91 grenade could be fired, with its propellant attachment, from the Type Taisho 10, (1922), 50-mm. smooth bore Discharger and also from the Type '89 (1929) 50-mm. Rifled Discharger. The 50-mm. smooth bore discharger was probably designed initially as a flare discharger, while the 50 mm. rifled discharger was designed to throw a H.E. or smoke shell (spin stabilized) about 600 yards. The range from the Discharger with the Type '91 grenades is of the order of about 175 yards. The time of delay in the grenade being 7 to 9 seconds, it could be used equally well as a hand grenade, although the delay is a little too long.

A W. P. (incendiary) fired version of the Type '91 grenade also existed for some time (Serial 3) and recently a more modern version has been reported (Serial No. 14).

7. Although the Type '91 grenade appears to be designed primarily for projection from a discharger it is also fired (not very widely) from a spigot type launcher (or projector) attached to a rifle. To do this a tail unit is screwed into the base of the grenade to replace the propellant attachment and a bulletted base round used as a rifle grenade cartridge. The grenade is heavy and with the rifle grenade cartridge used the range must be short. No figures are available but, it is thought, it cannot be much more than 100 yards.

8. Subsequently the Type '89 discharger with its long range and more efficient ammunition presumably became available in adequate quantities and the need for projecting grenades declined. During operations in Assam and Burma 1942-45 comparatively few Type '91 grenades were found and it is thought that they must now be largely obsolescent if not obsolete.

9. About 1937 a modified version of the Type '91 grenade was introduced as the Type '97 hand grenade. The screwed cavity in the base of the grenade for the propellant attachment was omitted and the delay was reduced to 4-5 seconds. The grenade appears to have been intended only as a hand grenade initially and is probably standardized as their service hand grenade.

10. Nevertheless the use of rifle grenades was not entirely abandoned and in 1939 the '99A grenade (Serial No. 4) was introduced which could be used as a hand grenade and also as a rifle grenade by the use of a cup type launcher, see para. 11 (b) below.

11. A 50-mm. cup type launcher (rifle discharger cup) fits the Japanese Service 6.5-mm. rifle and it is thought that Type '97 grenades (despite short delay) may be fired, using the normal rifle grenade cartridge. As the result of an examination of numerous Type '97 grenades some remarks to account for differences found are given briefly below:—

(a) Some Type '97 grenades (4-5 seconds delay) were made from Type '91 grenade bodies, i.e. with the recess in the base. These grenades are naturally weak in the base and are not suitable for firing from a discharger cup. They have been found with the base portion painted white and studs of solder round the flanges, presumably to prevent accidental loading in a discharger cup. The usual label indicating 4-5 seconds delay fuze is pasted in the recess in the base which is not screw-threaded.

\*A somewhat similar position existed in the British Army before the present war. The No. 36 grenade was used as a hand and rifle grenade and the long delay time 7-9.4 seconds accepted. The 2 in. Mortar (equivalent role to the 50-mm. discharger) was introduced later.

(b) Certain Type '97 grenades are made to the same external dimensions as the Type '91 and are suitable for firing from a discharger cup. Those with a defective base, e.g. blow holes, have also studs of solder on the flanges to prevent accidental loading in a discharger cup.

(c) Other Type '97 grenades have been manufactured as hand grenades only i.e., the flanges are approximately 53-mm. in diameter and the grenade cannot therefore be loaded in the discharger cup.

(d) Certain grenades manufactured as at (c) above, have had the flanges machined down to just under 50-mm. in diameter so that they can be loaded in the discharger cup.

*Note.*—It is known that igniter sets are issued separately and can be fitted in the field. It is possible that long delay igniter sets are fitted if necessary in Type '97 grenades. So far as is known, however, none has been found.

12. Other hand grenades less widely used than the Type '97 are:—

(a) Stick hand grenade (Serial 2) of which there is a H. E. (Type '98) and incendiary version. The design of this stick grenade follows closely the old German stick grenade (Stielhandgranate 24).

(b) Type '99-B. H. E. Hand Grenade (Serial 5). This is a small thin-walled grenade with friction igniter probably used for offensive purposes.

(c) Pull type, H. E. Hand Grenade (Serial 7). This grenade is similar in action to the Type '99-B but has a much thicker wall and a greater fragmentation effect. Its cast iron body is circumferentially grooved and two rings are fitted which can be used for carrying or as an aid in improvising foot straps. The lead cap is marked in Japanese characters "Type 2-3".

(d) H. E. Anti-Tank Hollow Charge Hand Grenade (Serial 8). This grenade has come to notice only recently and so far as is known has not been used in the Burma theatre of operations. It is a simplified version of the German Hollow Charge Anti-Tank Hand Grenade (Panzer Worfmine). It is known also as the Type 3 conical hand grenade.

(e) Hand grenades of the frangible type (Serials 17, 18, 19) are intended for use against pill boxes, armoured vehicles, tanks etc. The Molotov cocktail (filled with petrol and raw rubber) is similar to ours but a much more elaborate all-ways type fuze is fitted. This grenade is thought to be factory manufacture and issued as a regular service type. The small frangible smoke and gas grenades are also factory manufacture. Incidentally the sealing of all these grenades appears to be excellent and no instances have yet been reported of any 'leakers'. They have usually a rubber or other type of cork closing the bung, on the top of which is a crown cap kept in position by an additional securing cap.

(f) Grenade, Hand Flash (Serial 16). This is more a pyrotechnic flare than a grenade. Its exact use is not known but a report states that it is probably thrown from an aircraft at night to dazzle an attacking fighter-pilot. It may be intended also to simulate A.A. fire to worry bombers and make them take evasive action. It has a friction igniter somewhat similar to that used in the stick grenade (Serial 6)..

(g) A recent report from American sources refers to a new type of Japanese hand grenade made of pottery or ceramic (Serial 15) presumably for use as an offensive grenade. The report is reproduced below so that the grenade can be recognised and safely handled if encountered.

"The grenade is a sphere, about three inches in diameter with a short filler neck. In external appearance it resembles an old-fashioned bomb shell. The grenade body is made of glazed pottery, though some appear to be of white porcelain. Both types are of the same size and function in the same manner. A close fitting tan-coloured rubber cover is slipped over the grenade, covering it entirely, except for the filler neck. A loop of white tape which seems to be used for carrying purposes is tied into a groove in the neck. The match head striker of the fuze projects slightly from the filling hole. The entire assembly at the neck is covered by another small slip-on rubber cover. The cover also serves to retain in place a small wooden block, covered with match striking composition. The explosive filling of the grenade is a loose charge of Type 88\* explosive. The grenade weighs .88 pound and 60 are packed in a wooden case, with excelsior padding.

The fuze of this grenade is very simple. A one inch length of safety fuze with a detonator crimped on one end and a particle of match head composition on the other is set into a black rubber plug, which is cemented into the filling hole in such a manner that the match head composition is exposed. A small, loose wooden block with abrasive composition on one side is retained in place above the fuze head by the slip-on rubber cover. This

\* Believed to be Ammonium Nitrate and T. N. T. or Ammonium Nitrate and Dinitronaphthalene.

is used to strike the match on the fuze. It also seems possible to light the fuze with a cigarette. The fuze has a burning time of five seconds.

To use this grenade, it is grasped in the right hand with the striker down, the rubber cover is removed from the fuze, and the striker block scratched across the match head composition. As soon as the fuze is lighted, the grenade should be thrown. There is considerable blast but practically no fragmentation connected with the explosion. It is believed that the maximum effective radius is 15 yards. The grenade has a very sharp report and gives off a sizable cloud of white smoke. Care must be taken in throwing, to prevent the grenade from striking a hard object, as the grenade breaks easily, scattering the explosive charge. It is believed that the match head strikers are very sensitive to moisture and probably will cause a fair percentage of fails. One of the three grenades tested failed for this reason."

(h) Another report, also from American sources, refers to an "Experimental Hand Thrown Grenade or Mine". The report reads:—

"The mine weighs 1.6 Kg. (3.52 lbs) and is filled with 1.4 Kg (3.08 lbs) of TANOYAKU (R. D. X./T. N. T.). The body is made of aluminium. The maximum diameter is 120-mm. (4.72-ins.). The mine carries an always action instantaneous impact fuze, and may be found in a very dangerous condition."

13. The following rifle hand and rifle grenades are commonly used:—

(a) H. E. Anti-Tank Hollow Charge (Serial 9) which is a direct copy of the German hollow charge rifle grenade (Gewehr panzergranate). It is slightly larger than the small hollow charge grenade but in quantity big as the large one. Its primary function is against armoured vehicles. It is reported capable of penetrating up to about 4 inches of mild steel and 40 to 50-mm. of homogeneous hard armour. A similar but smaller version has recently been reported. This appears to be identical with the German small hollow charge grenade (Gewehr panzergranate).

(b) Type '99-A, H.E., Hand or Rifle Grenade (Serial 10). This at one time was known as the 'Kiska' grenade and is somewhat similar in action to the Type '97. It is projected from a rifle by a cup-shaped launcher (about 45-mm.), similar to a design used in the last war by the French and Germans, which can be used with ball powder. The maximum range is of the order of about 100 yards to 130 yards according to rifle use. This is known as the type '00 (1940) grenade discharger.

(c) H.E. Instantaneous Action Rifle Grenade (Serial 11). This grenade has been widely reported as "H.E. rifle grenade" but a recent report describes an identical grenade as "Type 3, Modification 1". The grenade is generally similar to the Type '91 but has a smooth thin-walled body with a much greater weight filling and is fitted with a tail unit to give stability in flight. It is fired from a rifle by means of a spigot type launcher and a bulletted blank cartridge. It should be noted that this grenade has an instantaneous igniter fuze which functions on direct impact.

## IGNITION MECHANISMS

14. There is nothing very modern or different in the igniter sets of fuzes used in Japanese grenades. They can be divided generally into two main groups:—

(a) Time or Instantaneous percussion fuzes requiring a direct blow on the head to function, e.g. as used in Type '91, '97, '99-A and Type 3 grenades. The fuze is a slight modification of the old Adam's mechanism as used in a number of earlier British grenades, e.g. the No. 34 Hand and No. 37 Hand or Rifle grenades introduced towards the end of the last war. The Japanese mechanism consists of a cap (similar to an S.A.A. cap) with an inertia pellet striker held off the cap by a spring and secured by a safety fork. There is a delay below the fuze according to the function of the grenade. The fuze is set off by withdrawing the safety fork and then striking the grenade on the head of the fuze on an hard object. When fired from a rifle, set-back causes the mechanism to function. The instantaneous fuze used in the Type 3 rifle grenade has an inertia pellet held off the cap by a shear wire which apparently is sufficiently strong to withstand the force of set-back when fired, but is sheared on impact of the grenade with the ground. The safety fork like that in the time percussion fuze is removed just before firing.

(b) Time, Pull, Friction Mechanisms. This Type of initiation is used in the Type '98 stick and Type 2-3 hand grenades, etc. This is a very old system. It was used in the earlier types of British grenades before the last war and was also widely used by the Germans before and during the last war. It cannot be regarded as a modern or efficient grenade igniter mechanism, although it has the advantage of being adapted readily for booby trap work.

15. No fly-off lever mechanisms are used such as are employed in modern British and American grenades and with one exception no "Allways" type of mechanisms, such as our fuze No. 247 used in the No. 69 grenade, are employed. The exception is the "Allways" mechanism incorporated in the fuze for the hand incendiary grenade, Molotov Cocktail. This Japanese "Allways" fuze would not seem to be very safe, it has no tape and bolt or similar device. Once the safety pin has been withdrawn the needle is held off the detonator only by a spiral spring and it is possible that a vigorous backward jerk when throwing or accidental contact against the side of trench or pit might cause the fuze to function covering the thrower with burning oil.

## IMPROVISED HAND GRENADES

16. There is little doubt as the war progresses that the Japanese in occupied territories must make a wider use of improvised or locally manufactured ammunition which is likely to take the form mainly of grenades and mines.

The following extract from a recent report from American sources regarding the use by the Japanese of improvised or home made hand grenades is useful as an indication of the lines on which Japanese improvisation of grenades may take:—

"Enemy equipment captured on Pelefeu Island included a number of improvised or home-made hand grenades. The first type was made by filling the empty case of a 20-mm. shell with picric acid and capping the projectile end with a wooden plug. On the rear end, where the percussion cap is found normally, the shell case had been threaded and a round brass tube screwed inside. This held a round plug of iron, with a point ground on to the lower end and the tube extending about 1/2 inch above the brass tube to form the striker. Through tube and iron was drilled a hole, and a cotter pin inserted to act as the safety pin to keep the striker from hitting the percussion cap. The percussion cap consisted of the rear end of a Japanese 7.7-mm. rifle cartridge, which had been cut off so as to include the percussion cap and approximately 1/4 inch of the case. Flush with the base of the percussion cap was an inch of fuze cord leading into the body of the grenade; it had a small booster crimped in the end.

The other type of grenade had a body made from a cast-iron cylindrical pipe, with uneven horizontal and vertical serrations similar to the ordinary type '91 grenade. The bottom and top were plugged by brass discs, threaded and screwed into the ends of the pipe. In the top piece of brass was a small hole, threaded to admit a detonating arrangement identical with the one described above. This type of grenade was used by three Japanese to commit suicide. It is deemed useful for this purpose but of little value against an enemy since the percussion cap flash may by-pass the fuze and cause the grenade to explode instantaneously.

Incendiary grenades (Molotov Cocktails) were found, consisting of two SAKA bottles tied together, covered with rags and plugged by rubber stoppers. The bottles were filled with gasoline and had rag wicks. There was no igniter, however."

17. There is also a report from Luzon of 25-mm. cartridge cases being used as hand grenades. The empty case was filled with biscuit Type '98 explosive\* in the base portion and an unidentified explosive in the upper portion near the mouth. A piece of safety fuze leading to the detonator was set in a wax and cotton thread plug in the neck of the cartridge case. Apparently the safety fuze is meant to be ignited by hand. It has a 4-5 seconds delay. The explosive charge is reported to weigh 806 grams (1 lb. 12 oz). There is some error here. The capacity of a 25 mm. cartridge case up to neck is only about 130 ccs. Taking an approximate density of 1.5 the maximum weight of filling cannot exceed 7 ozs.

18. Another similar report describes an improvised hand grenade in detail which it is thought was found in Burma. An extract from this report is as follows:—

"The grenade is made up of a standard 1-1/4 inch outside diameter pipe, 1/8 inch in thickness. The grenade is approximately 4-3/4 inches long with deep cuts round the pipe 1-1/4 inches from each end, the cuts apparently being made with a regular pipe cutter. The pipe is pinched together on each end to form the grenade body. A 1/2 inch hole is then drilled into the wall of the grenade body to form a fuze well. The body is filled with a mixture of a jelly type explosive (possibly gelatine dynamite) and small steel slugs made by cutting up 3/8 inch steel rod into lengths up to 1/2 inch. The firing mechanism consists of a piece of safety fuze, 1-1/4 inches long, fixed to a blasting cap. Although the specimens observed had no means of holding the firing mechanism in place, this could easily have been done with a string or some other means.

\* Hexanitrodiphenylamine and Trinitroanisole 40/60.

The specimens observed were not equipped with fuze igniters, and apparently were manually lighted before being thrown. Data are as follows:—

Diameter of Grenade body	...	1-1/4 inches.
Length, overall	...	4-3/4 inches.
Weight of grenade body	...	13 ounces.
Weight of steel slugs	...	3 ounces.

If the safety fuze has the standard burning rate of 30 seconds per foot, it appears that this grenade will explode 3 seconds after being lit. It would therefore, appear to be quite hazardous to use."

19. The following American report on "Gas Pipe Grenades" which were found in Luzon is of interest in connection with the above:—

"Gas Pipe Grenades have been found in four sizes, all basically the same in design. A short section of iron pipe closed at one end is filled with explosive. An iron disc fits in the other end of the pipe. In three types the disc is held in by a friction fit. In the fourth type it screws into the end of the pipe. A short iron tube with an internal diameter equal to a .22-in. R. F. cartridge case is fitted in the centre of this disc. Safety fuze and a detonator ignited by a .22-in. R. F. blank cartridge detonates the grenade. The .22-in. cartridge fits into the top of the iron tube. A 4-5 second delay safety fuze fits up into the blank cartridge. Apparently, the cartridge is meant to be set off by striking it on some hard object. One design uses the fuze of the Type 1 grenade.

#### Data

Weight.		Dimensions.	
Complete.	Explosive.	Length.	Diameter.
1st 15.5-ozs.	3-ozs.	3-5/16-ins.	1-7/8-ins.
2nd 10.7-ozs.	1.9-ozs.	3-1/4-ins.	1-1/2-ins.
3rd 17.6-ozs.	2.5-ozs.	3-1/4-ins.	1 7/8-ins.
4th 17.9-ozs.	2.3-ozs.	3 3/16-ins.	1-7/8-ins."

20. A translation of a captured Japanese document from Guam recently received from American sources describes a method of improvising a (frangible) petrol hand incendiary grenade, Molotov Cocktail. The method used follows normal practice and is generally similar to the Molotov Cocktail type of hand grenade experimented with in India in 1941—I. of A. Inspection Instruction No. 87 of 1941. This grenade was filled with petrol and raw rubber and an external means of ignition used. Initially cotton wool soaked in petrol was used and ignited just before throwing, and finally a small cloth bag, impregnated with potassium chlorate, containing a glass ampoule of sulphuric acid was used. The bag was fitted with tapes by means of which it was attached to the bottle before throwing. Impact caused the ampoule to break and flame occurred immediately the sulphuric acid came in contact with the potassium chlorate.

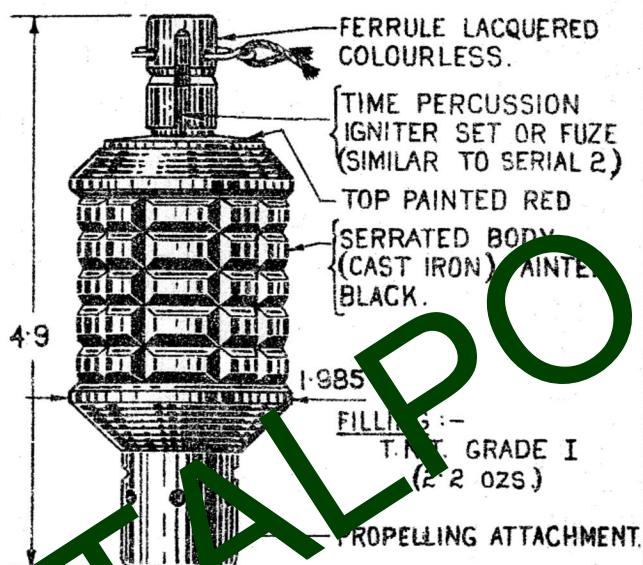
21. The Japanese version, however, incorporates a small quantity of sulphuric acid in the bottom of the bottle on to which is filled the petrol; a note is reported to be used to prolong the flame. For ignition purposes sheets of paper are covered with a paste of potassium chlorate and powdered charcoal (sugar and sulphur may be added) which are stored until required. The Molotov Cocktail is wrapped in sheets of this paper just before it is required for use. On being thrown the bottle is intended to break and the sulphuric acid to come in contact with the potassium chlorate paste on the paper which will cause a flame and ignite the petrol. This method has obvious disadvantages. The paper may become damp in storage and ignite spontaneously; it may deteriorate to cause blinks; the sulphuric acid may not come in contact with the paste on the paper to cause ignition.

22. Another report from American sources refers to a similar Molotov Cocktail in which an igniter plate of red phosphorus is held at the base by an elastic strap and is ignited by friction of impact. There are khaki coloured carrying straps round the bottle.

# RESTRICTED

## PROJECTION:-

- ① HAND
- ② DISCHARGER (TAISHO 10 OR TYPE '89.)
- ③ RIFLE WITH SUITABLE LAUNCHER - THE GRENADE IS MODIFIED BY FITTING A TAIL UNIT IN PLACE OF PROPELLING ATTACHMENT.



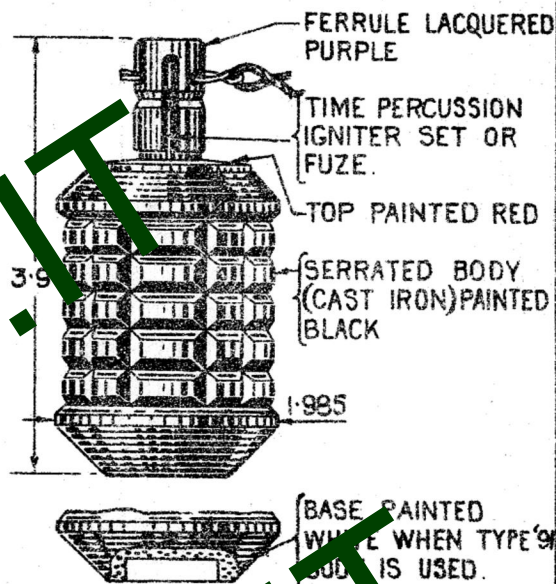
TIME OF DELAY :- 7-9 SECS.

FILLED WEIGHT:- 1 LB. 2.6 OZS.



## PROJECTION:-

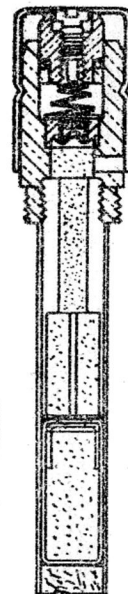
- ① HAND
- ② RIFLE USING CUP SHAPED LAUNCHER



FILLING:- T.M.T. GRADE I (2.2 OZS.)

TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 1 LB. 0.5 OZS



TIME PERCUSSION IGNITER SET OR FUZE ENLARGED VIEW.

SERIAL 1 HAND OR DISCHARGER, H.E. TYPE '89'

SERIAL 2 HAND, H.E. TYPE '97'

## PROJECTION:-

- ① HAND
- ② DISCHARGER (TAISHO 10 OR TYPE '89.)

TIME PERCUSSION IGNITER SET OR FUZE (SIMILAR TO SERIAL 2.)

BRASS BODY WITH INNER CONTAINER OF W.P.

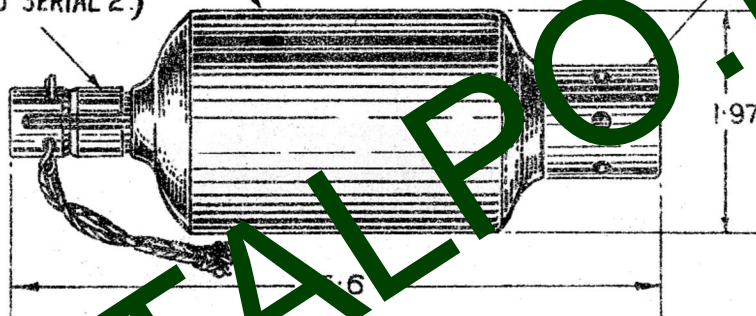
PROPELLING ATTACHMENT.

FILLING:-

WHITE PHOSPHORUS.  
(6.2 OZS.)

TIME OF DELAY :- 7-9 SECS.

FILLED WEIGHT:- 1 LB. 3.6 OZS.

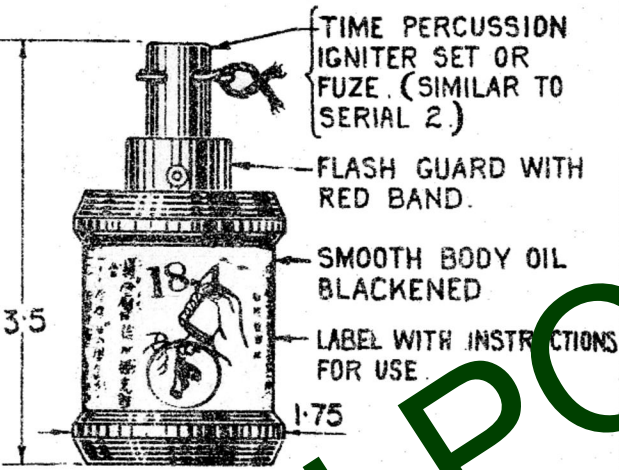


SERIAL 3 HAND OR DISCHARGER, INCENDIARY, (W.P.) 1/2 Kg.

# JAPANESE GRENADE

PROJECTION:-

- ① HAND
- ② RIFLE USING CUP SHAPED LAUNCHER TYPE '00.



FILLING:-  
 PRESSED PICRIC ACID BLOCKS  
 WRAPPED IN ROLES OF PAPER.  
 (2.7 OZS.)

TIME OF DELAY:- 4-5 SECS.

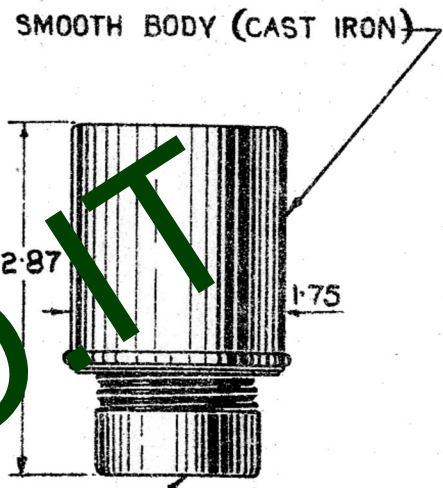
FILLED WEIGHT:- 10.6 OZS.

(V)

SERIAL 4 HAND OR RIFLE, H.E. TYPE '99A

PROJECTION:-

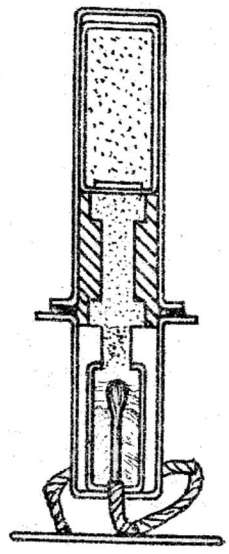
- ① HAND



FILLING:- PICRIC ACID BLOCK. (2 OZS.)

TIME OF DELAY:- 4-5 SECS.

FILLED WEIGHT:- 9.5 OZS.

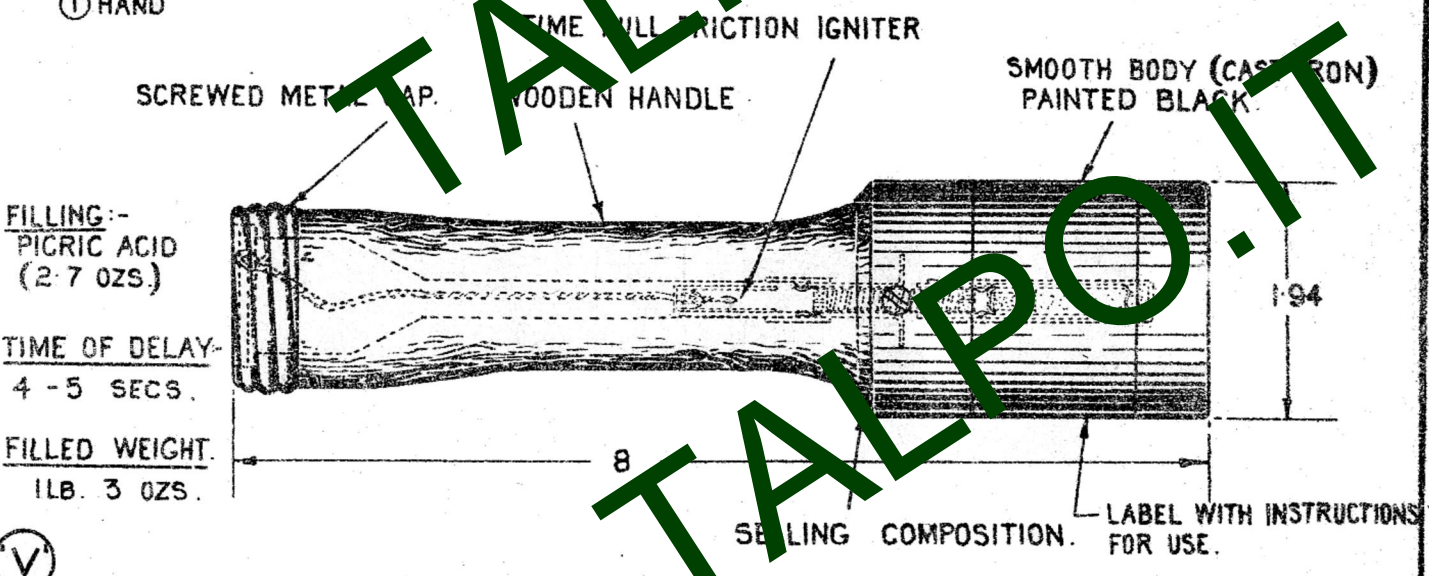


TIME PULL FRICTION IGNITER ENLARGED VIEW.

SERIAL 5 HAND, H.E., TYPE '99-B

PROJECTION:-

- ① HAND



FILLING:-  
 PICRIC ACID  
 (2.7 OZS.)

TIME OF DELAY:-  
 4-5 SECS.

FILLED WEIGHT:-  
 1LB. 3 OZS.

(V)

SERIAL 6 (a) HAND, H.E., (STICK) TYPE '98

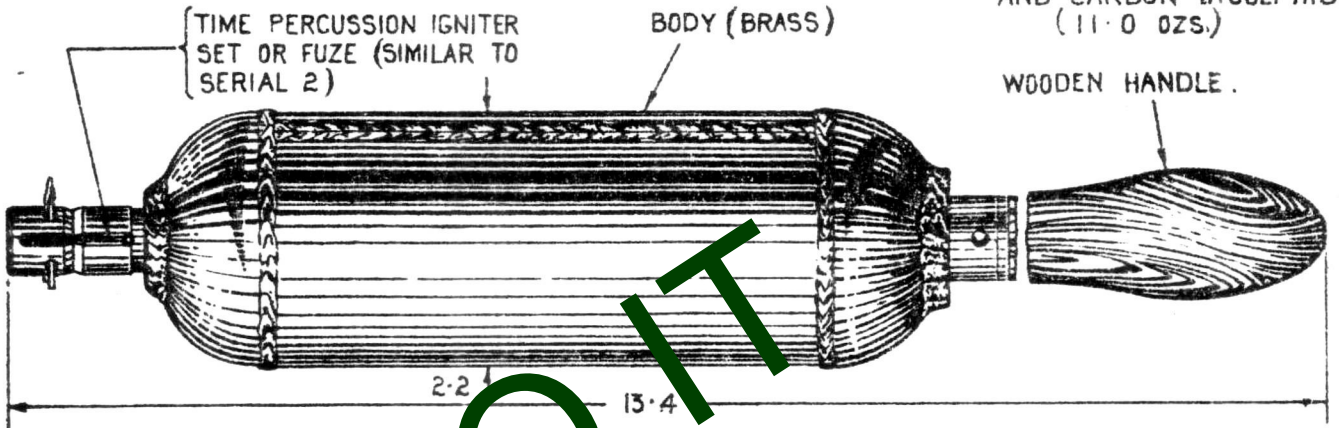
DES (SERIAL NOS. 1 TO 6 (a))



# RESTRICTED

PROJECTION :- HAND

FILLING :- RUBBER PELLETS IN A SOLUTION OF WHITE PHOS. AND CARBON DISULPHIDE (11.0 OZS.)



TIME OF DELAY :- 4-5 SECS.

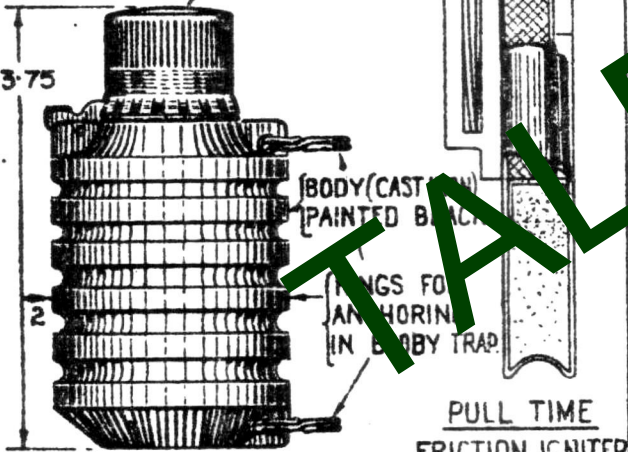
FILLED WEIGHT :- 1 LB. 9 OZS.

SERIAL 6(b)

HAND, INCENDIARY, STICK TYPE

PROJECTION :- HAND

LEAD COVER



PULL TIME FRICTION IGNITER ENLARGED VIEW.

FILLING :- GRANULAR T.N.T. (1.4 OZS.)

TIME OF DELAY :- 5-6 SECS.

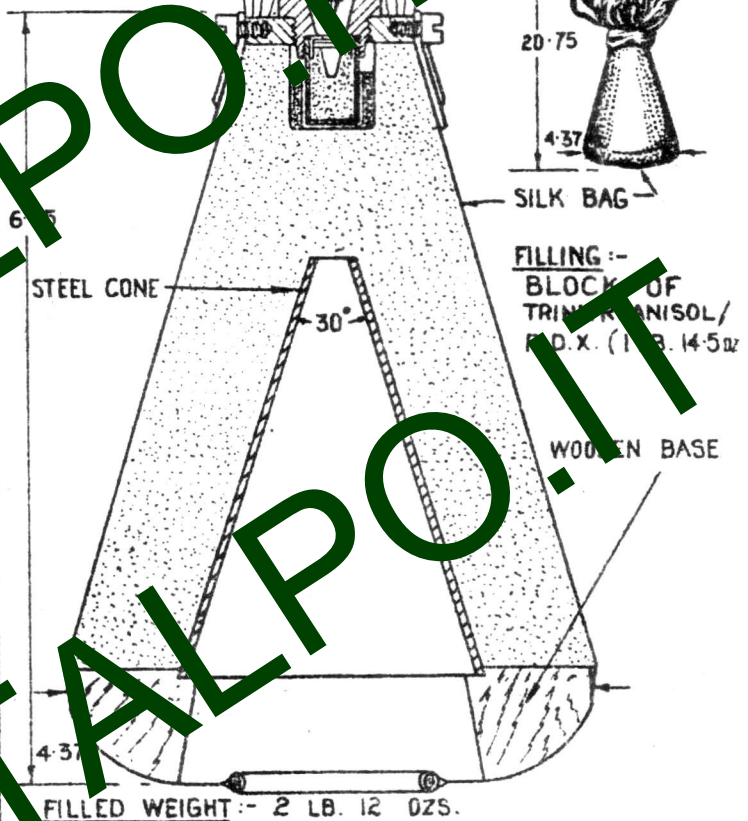
FILLED WEIGHT :- 1 LB. 48 OZS.

(V)

SERIAL 7 HAND, H.E., PULL TYPE (BELIEVED TO BE TYPE '2-3')

PROJECTION :- HAND.

INSTANTANEOUS PERCUSSION FUZE (THREE WAY)



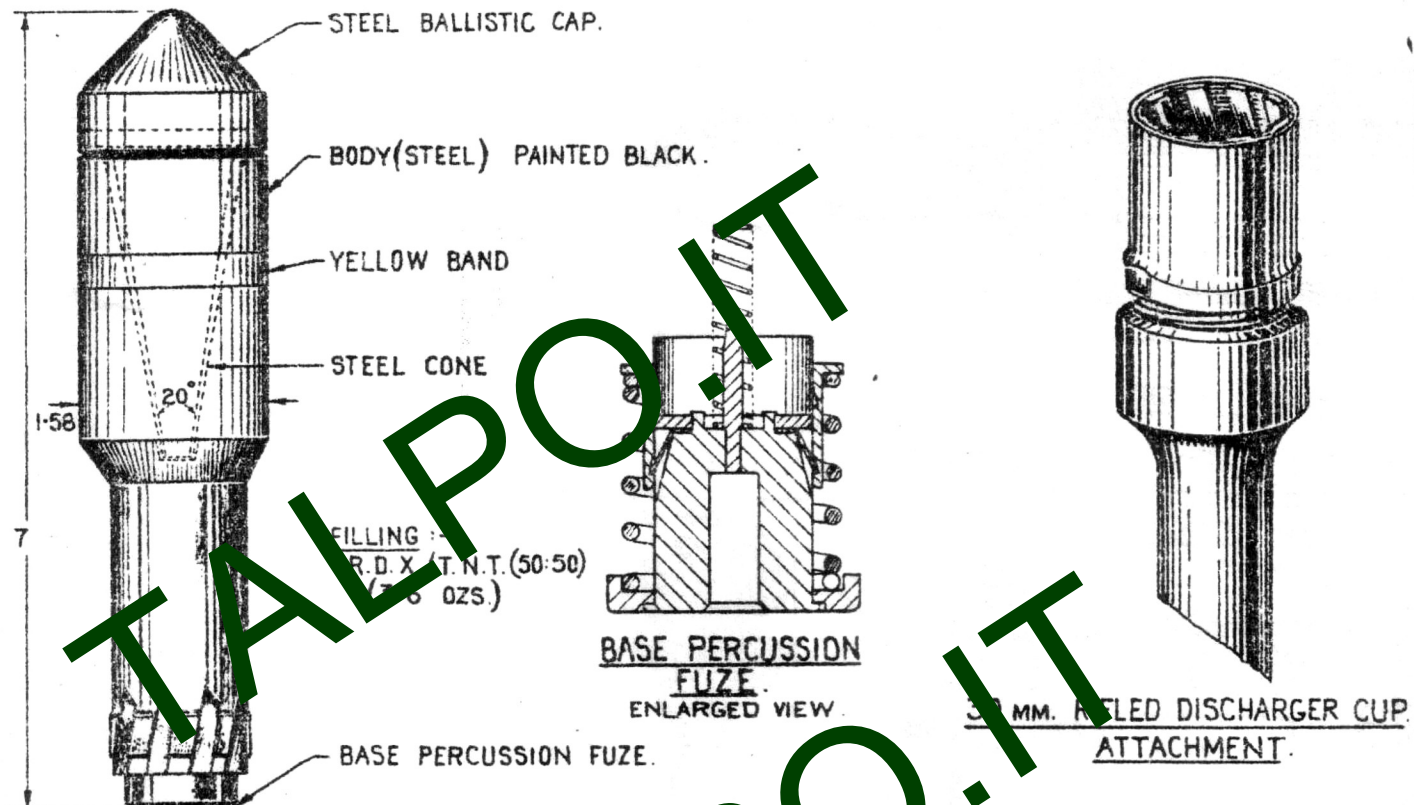
FILLING :- BLOCK OF TRINORANISOL/ P.D.X. (1 LB. 14.5 OZ)

FILLED WEIGHT :- 2 LB. 12 OZS.

SERIAL 8 HAND, H.E., A.T., HOLLOW CHARGE

# JAPANESE GRE

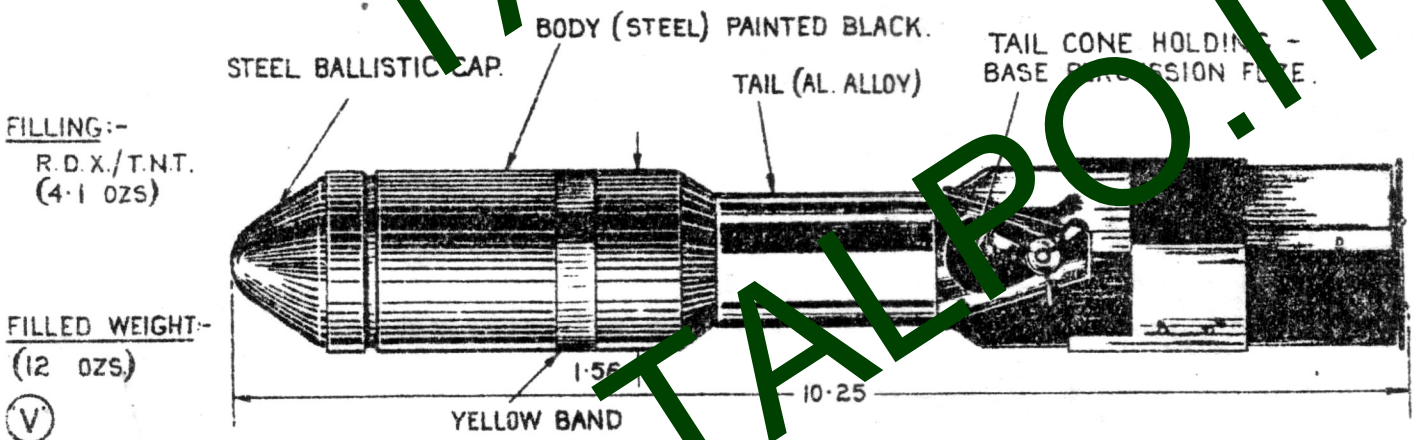
PROJECTION :- RIFLE, USING A RIFLED 30 MM. DISCHARGER CUP.



FILLED WEIGHT :- 12.75 OZS.

SERIAL 9 RIFLE, H.E., A.C., HOLLOW CHARGE

PROJECTION :- DROPPED FROM AIR GRAF



1/3 Kg. H.E., A/C., (HOLLOW CHARGE) BOMB.  
(ADAPTED FROM SERIAL No 9)

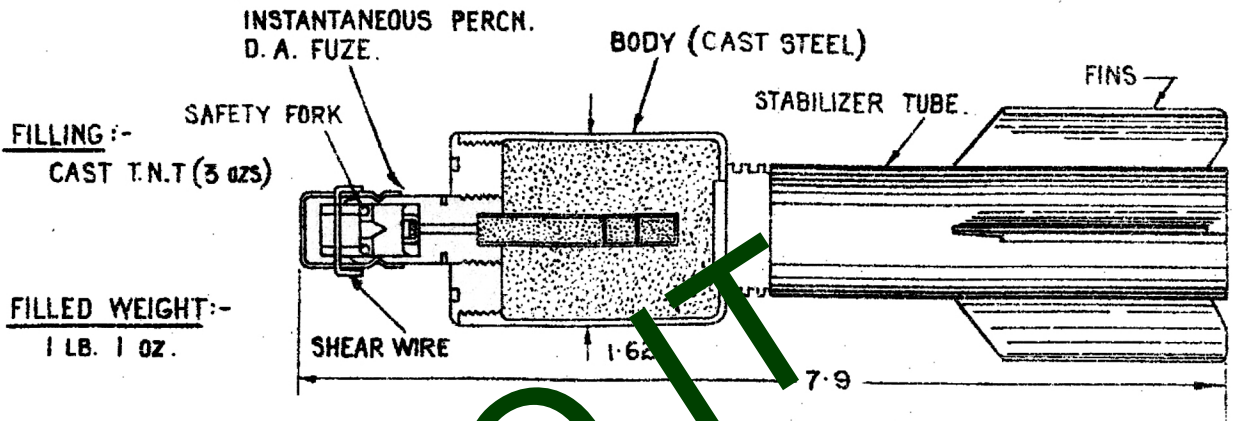
SERIAL 10

JADES (SERIAL NOS. 6(b) TO 10)

C.I. Amm-S/1117  
KIRKEE, MAY 1945

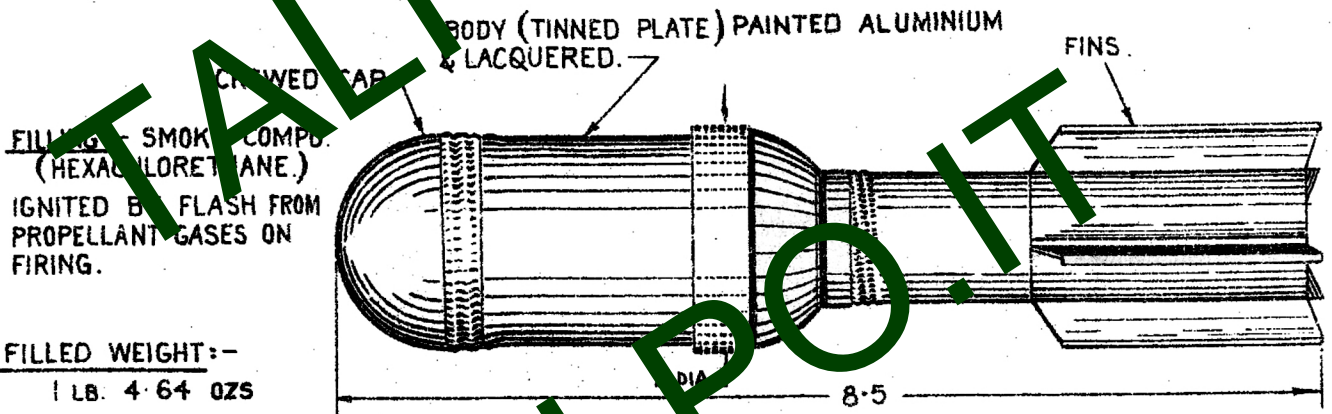
# RESTRICTED.

PROJECTION:- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER



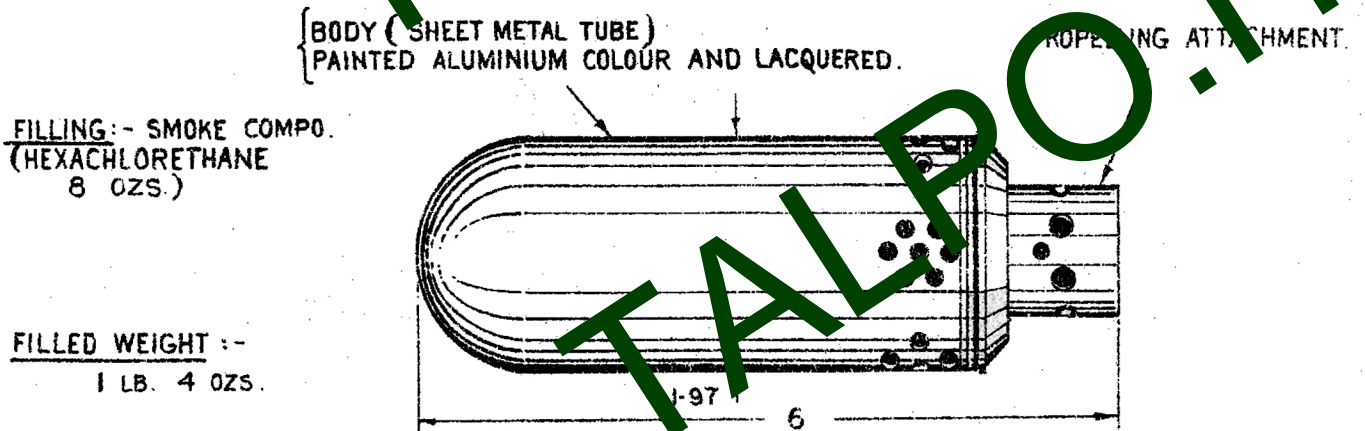
SERIAL 11 RIFLE, H.F. INSTANTANEOUS. (BELIEVED TO BE TYPE 3, MODIFICATION 1)

PROJECTION:- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER.



SERIAL 12 RIFLE SMOKE. (VANED TYPE)

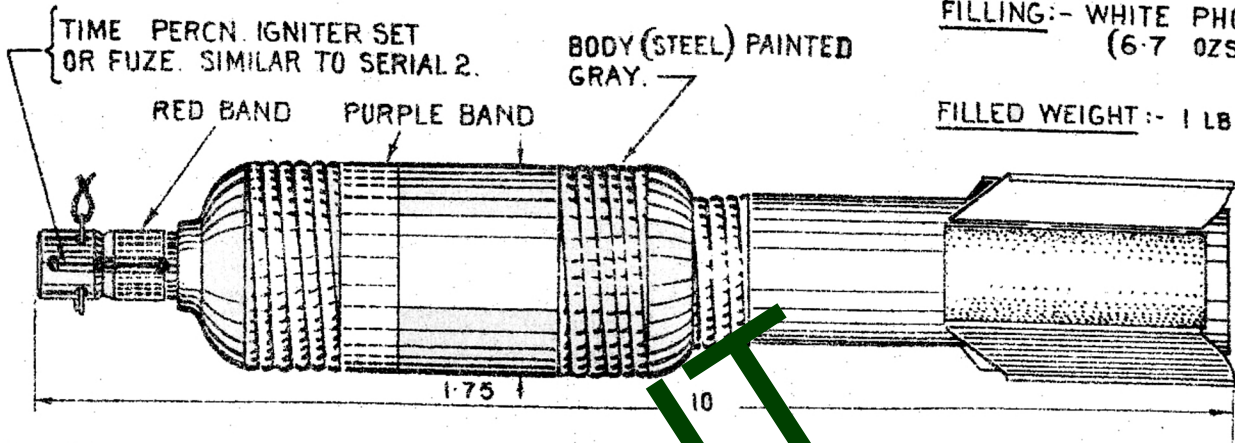
PROJECTION:- DISCHARGER (AISHO 10 OR TYPE '89)



SERIAL 13 50 MM. DISCHARGER SMOKE.

## JAPANESE GRENADES

PROJECTION :- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER.



SERIAL 14

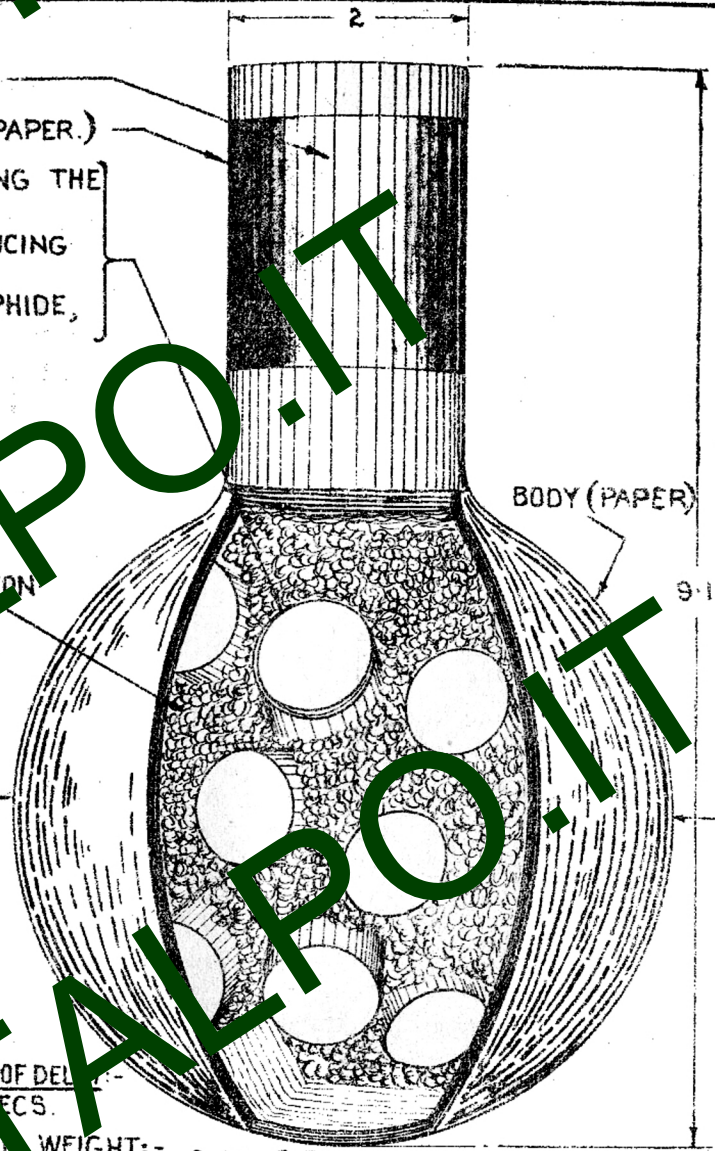
RIFLE INCENDIARY.

PROJECTION :- HAND PULL TIME FRICTION IGNITER

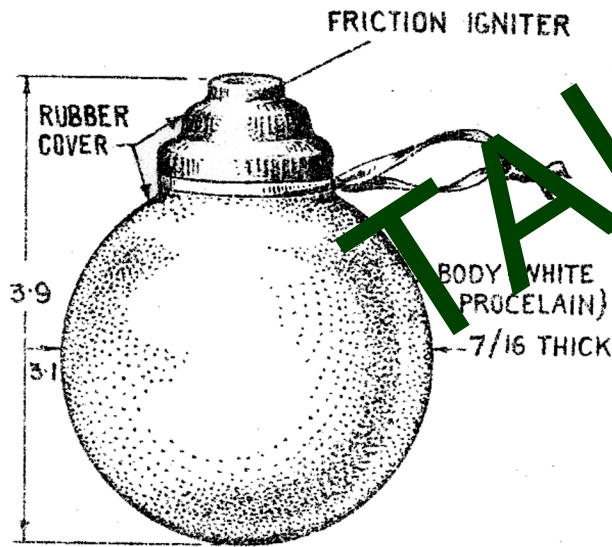
FILLING:- HANDLE (TUBE MADE OF ROLLED PAPER.)

32 PERFORATIONS IN FIVE ROWS SURROUNDING THE BURSTING CHARGE (4.5 OZS. G.P.), EACH PERFORATION CONTAINING FLASH PRODUCING PYROTECHNIC COMPOSITION OF:-

POTASSIUM NITRATE, ANTIMONY SULPHIDE, ALUMINIUM (.26 OZS)



PROJECTION :- HAND



FILLING :- TYPE 88 EXPLOSIVE (3.5 OZS.)

TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 1 LB.

SERIAL 15

HAND, H.E. CERAMIC OR POTTERY.

SERIAL 16

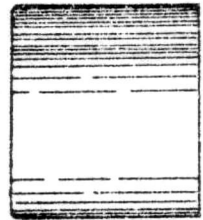
HAND, FLASH.

MODES. (SERIAL NOS. 11 TO 16).

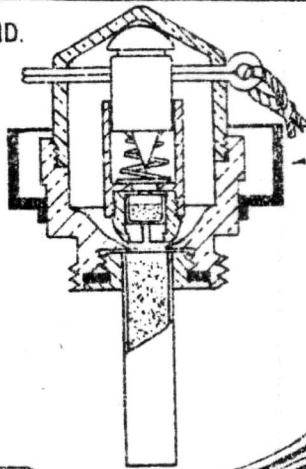
# RESTRICTED

PROJECTION:- HAND.

FILLING:- SOLUTION OF PETROL + RAW RUBBER (11 TO 12 OZS)



FUZE COVER



ALL-WAYS TYPE FUZE

GLASS BOTTLE (JAPANESE CLEAR BEER BOTTLE TYPE).

TINNED PLATE COVER



FILLED WEIGHT:- 2 LB. 11 OZS.

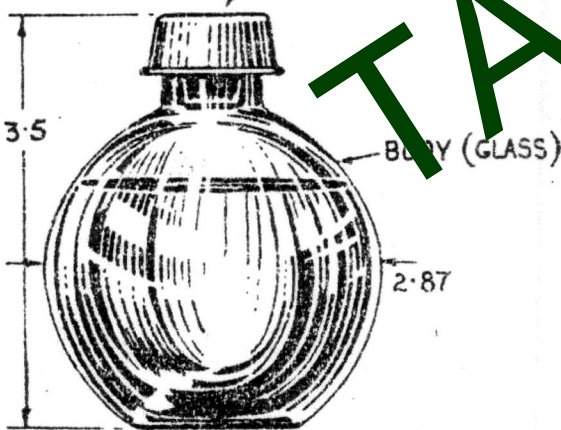
SERIAL 17

HAND. INCENDIARY, (MOLOTOV COCKTAIL).

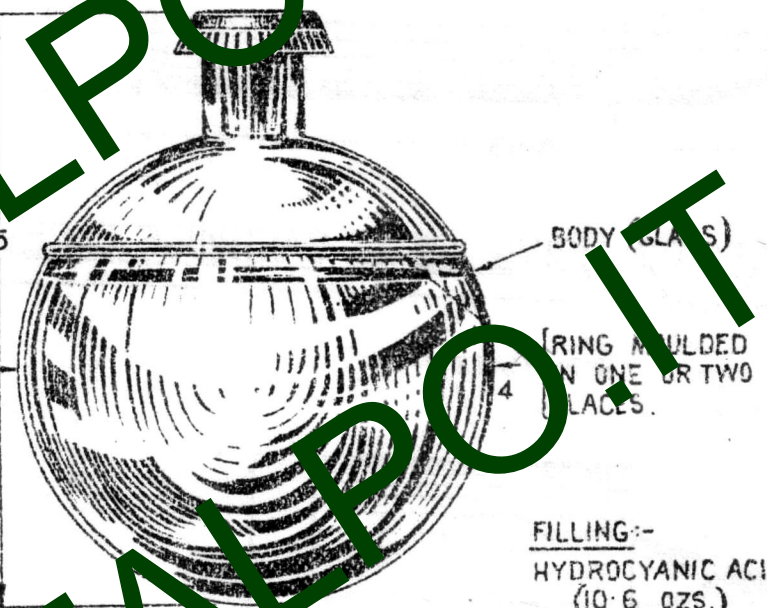
PROJECTION:- HAND

SECURING CAP OVER CROWN CAP WITH RUBBER CORK IN BUNG

PROJECTION:- HAND



FILLING:- TITANIUM TETRACHLORIDE AND SILICON TETRACHLORIDE (7.8 OZS.)  
FILLED WEIGHT:- 12.8 OZS.



FILLING:- HYDROCYANIC ACID (10.6 OZS.)

FILLED WEIGHT:- 1 LB. 4 OZS.

SERIAL 18

FRANGIBLE SMOKE.

SERIAL 19

FRANGIBLE HCN. (GAS)

# JAPANESE GREN

DIMENSIONS IN INCHES.

PROJECTION:- HAND

FILLING:-

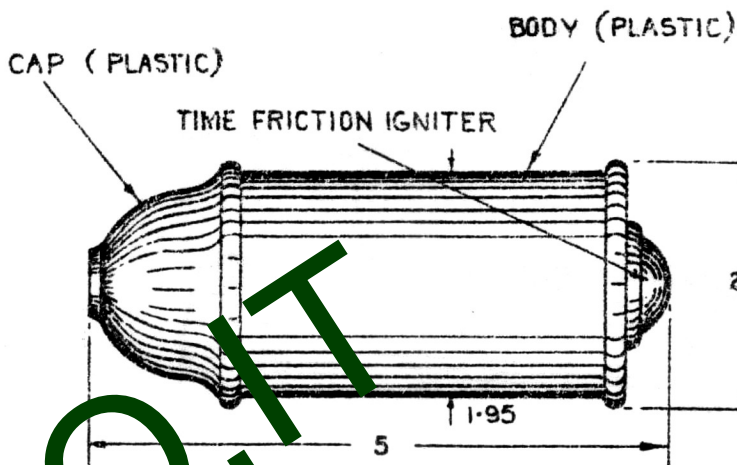
C.A.P DISSOLVED IN  
CARBON TETRACHLORIDE  
(5 OZS.)

TIME OF DELAY:-

4-5 SECS.

FILLED WEIGHT:-

11 OZS.



TYPE 'B' LACHRYMATORY.

SERIAL  
20

PROJECTION:- HAND

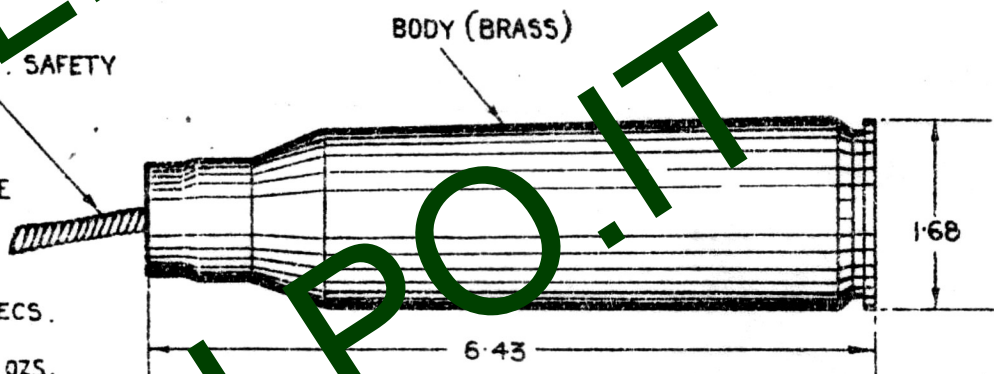
FUZE, SAFETY

FILLING:- CHIPPED

CAST TYPE '98 EXPLOSIVE  
(TRINITROANISOL AND  
H.N.D. 8 OZS)

TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 1 LB. 3 OZS.  
(APPROX)



TYPICAL IMPROVISED GRENADE USING 25 MM. CARTRIDGE CASE.

SERIAL  
21

PROJECTION:- HAND

FUZE, SAFETY

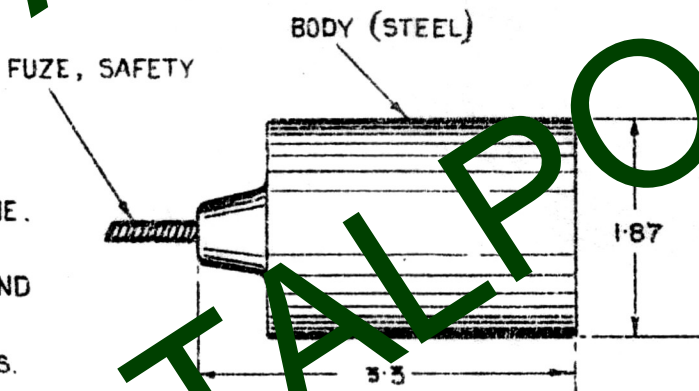
FILLING:-

POTASSIUM CHLORATE  
AND DINITRONAPHTHALENE.  
OR

POTASSIUM CHLORATE AND  
DINITROTOLUENE.

TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 15 OZS.



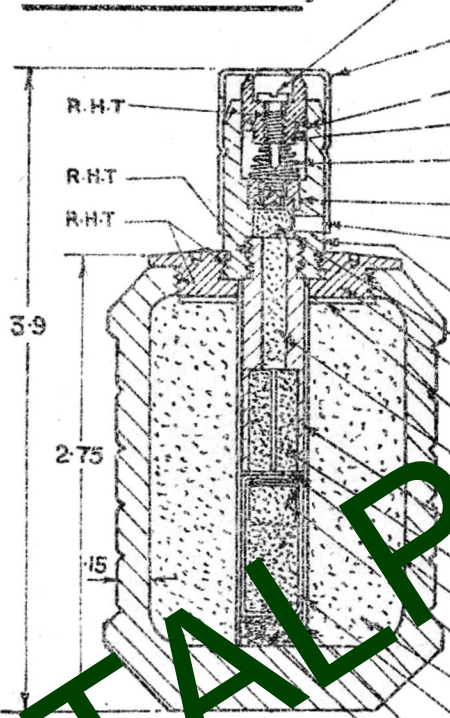
TYPICAL IMPROVISED GRENADE USING GAS PIPE.

SERIAL  
22

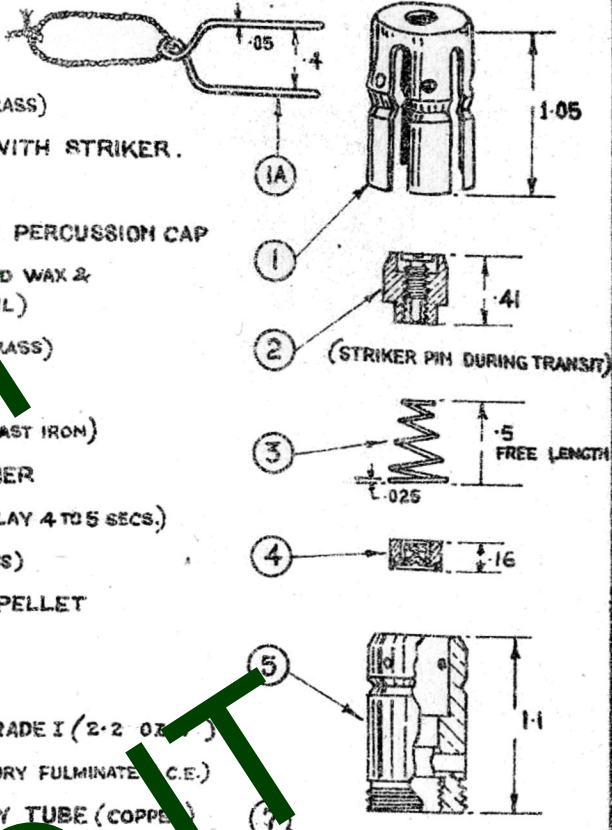
**IMPROVED GRENADES (SERIAL Nos. 17 TO 22.)**

**RESTRICTED.**

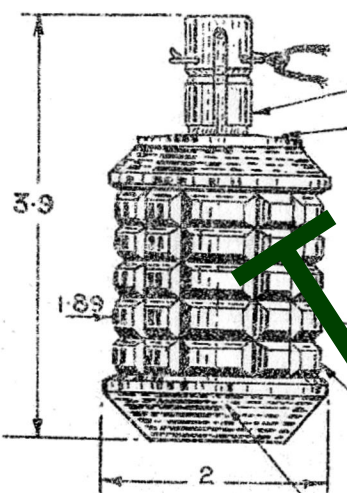
SCREWED DOWN, IN READY FOR USE POSITION



- ① FERULE (BRASS)
- ①A SAFETY FORK (BRASS)
- ② INERTIA PELLET WITH STRIKER.
- ③ STRIKER SPRING
- ④ CAP HOLDER WITH PERCUSSION CAP
- VENT HOLE (FILLED WAX & COVERED BY T. FOIL)
- ⑤ IGNITER BODY (BRASS)
- G.P. PRIMING.
- ⑥ CLOSING PLUG (CAST IRON)
- CARBOARD WASHER
- DELAY COMPO. (DELAY 4 TO 5 SECS.)
- ⑦ DELAY TUBE (BRASS)
- PERFORATED G.P. PELLET
- ⑧ STEEL WASHER
- CUP (COPPER)
- T.N.T. STEMMED GRADE I (2.2 OZ.)
- ⑨ DETONATOR (MERCURY FULMINATE C.E.)
- ⑩ IGNITER ASSEMBLY TUBE (COPPER)
- FELT PAD



WEIGHT OF FILLED GRENADE - 16.51 OZS.

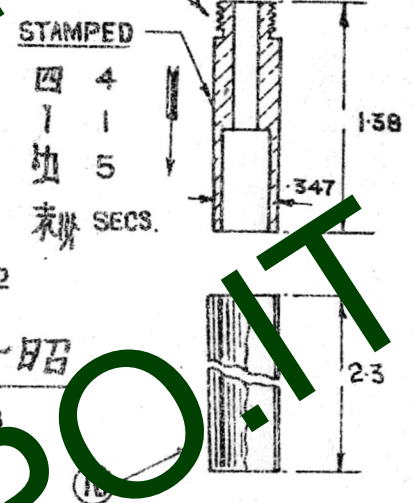


FERRULE LABEL PURPLE  
TOP PAINTED RED  
TYPICAL CHARACTERS STAMPED ON IGNITER BODY

美 ☆ 4 三十昭

TOKYO INSPECTION APRIL 1938 MARK

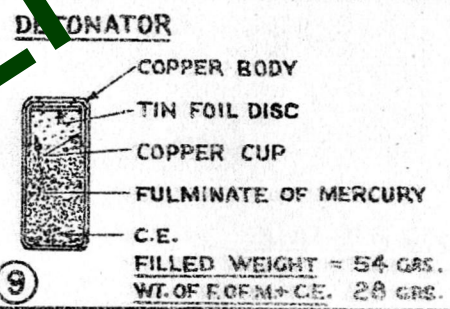
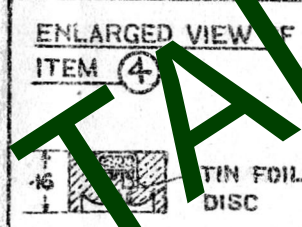
BODY (CAST IRON) PAINTED BLACK



PAINTED IN WHITE



4 SECS. DELAY TO TIME 5 SECS.



FILLED WEIGHT = 54 GRS.  
WT. OF F.O.F.M. + C.E. 28 GRS.

DIMENSIONS IN INCHES

JAPANESE

GRENAD, HAND, H.E. TYPE '97

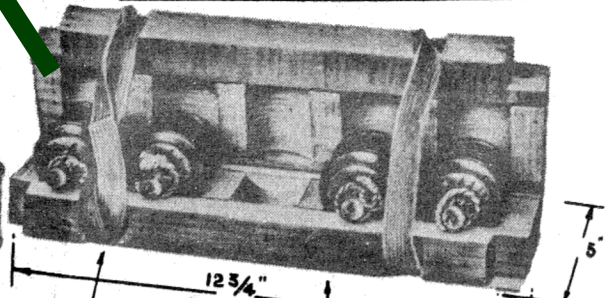
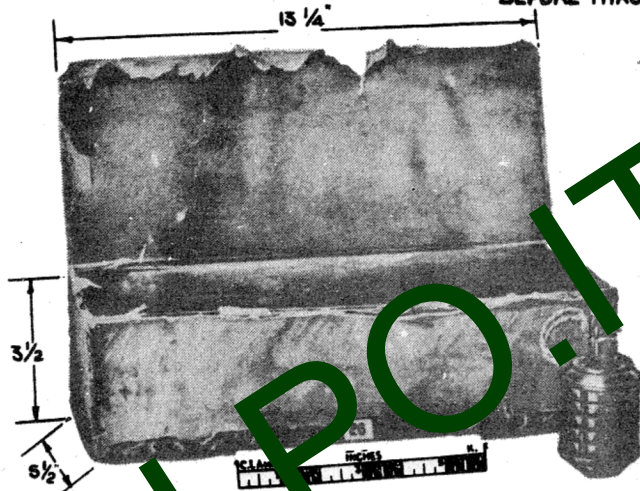
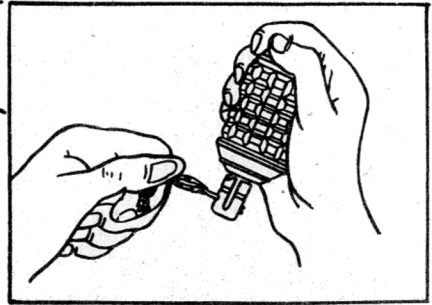
GENERAL ARRANGEMENT AND ASSEMBLY SEQUENCE.

C.I. AMMS/1108 KIRKEE, MAY '45

**RESTRICTED.**



EXTRACT FROM JAPANESE INSTRUCTION SHEET ILLUSTRATING METHOD OF HOLDING GRENADE BEFORE THROWING.



**WEIGHT OF FILLED CONTAINER**

7 lbs. 7 oz.

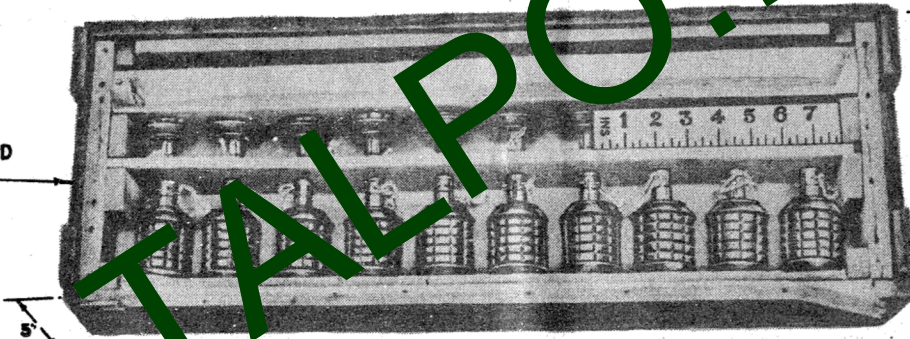
**WAXED CARDBOARD CONTAINER**

HOLDING FIVE GRENADES IN WOODEN PACKING PIECES, HERMETICALLY SEALED BY DIPPING IN WAX.

TAPE FOR TYING PACKING PIECES

WOODEN PACKING PIECES

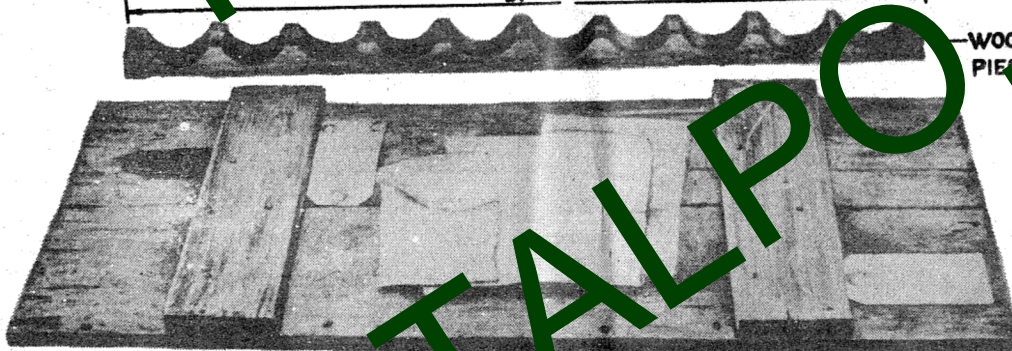
**WOODEN BOX TO HOLD TWENTY GRENADES**



10 1/4"

27"

WOODEN PACKING PIECE



**WEIGHT OF FILLED**

**BOX :- 31 lbs.**

**METHOD OF PACKING**

**JAPANESE GRENADES, HAND, H.E., TYPE '97**



## HANDLING AND TRANSPORT

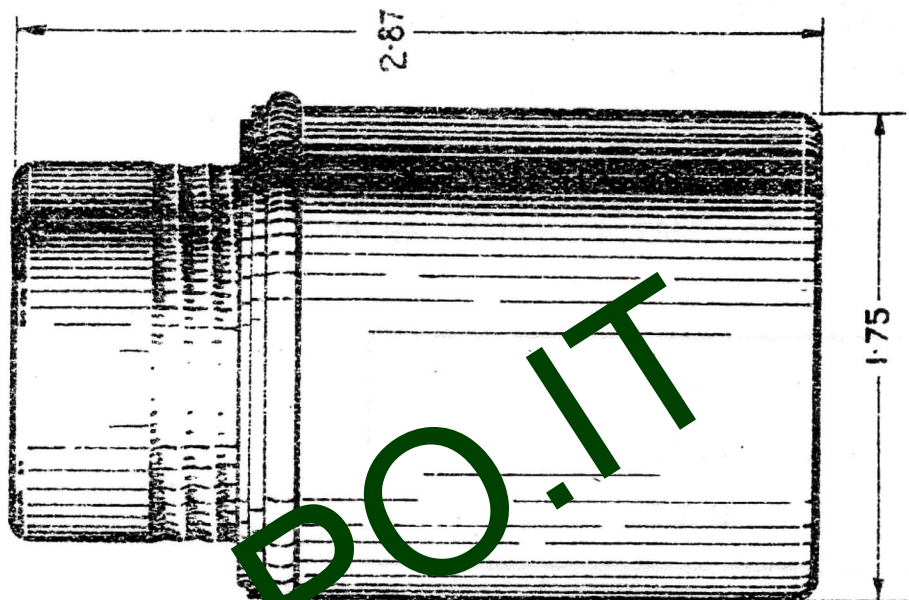
( Of Captured ammunition by Ordnance )

10. Treat similarly to the Pull-type and Stick-type hand grenades. Care must be taken to ensure that the safety cap is screwed home firmly on the grenade. Once it becomes loose, it may soon fall off when there is a possibility that the ring may get caught up in something and the grenade function accidentally.

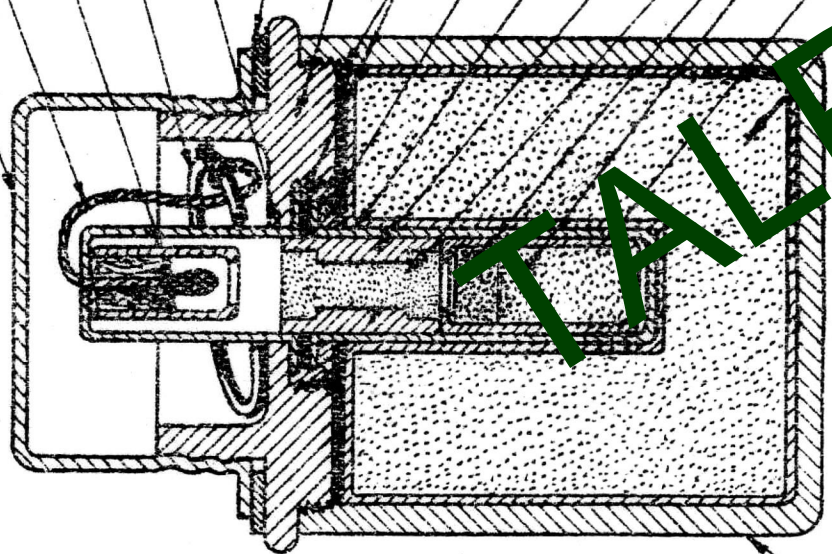
EXPLOSION/FIRE RISK	..	2-ozs.
GROUP CLASSIFICATION	..	VIII, Z
CLASSIFICATION FOR SEA TRANSPORT	..	O.A.S.

TALPO.IT  
TALPO.IT  
TALPO.IT

RESTRICTED.



- SCREWED METAL CAP.
- PULL CORD.
- FRICTION IGNITER.
- PULL RING.
- ALUMINIUM TUBE.
- FABRIC WASHER.
- CLOSING PLUG (CAST IRON).
- WASHERS.
- RETAINING PLUG.
- ALUMINIUM TUBE.
- DELAY HOLDER.
- POWDER DELAY (APPROX. 4 SECS)
- LEAD AZIDE.
- R. D. X. / WAX.
- DETONATOR.
- PICRIC ACID BLOCK (PAPER WRAPPED)



BODY, CAST IRON.

WT. OF FILLED GRENADE --- 5.6 OZS.  
 WT. OF FILLING --- 2.0 OZS.

**JAPANESE**  
**GRENADE, HAND, H.E., TYPE '99-B.**

C.J. Amr. S/1414  
 KIRKEE, FEB. 46

DIMENSIONS IN INCHES

G.P.I.Z.P. POONA, 1946.

**THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS**

D. OF A. (INDIA)

SECTION C.

JAPANESE AMMUNITION LEAFLETS

LEAFLET C 6

(a) GRENADE, HAND, H. E., STICK, TYPE '98

(b) GRENADE, HAND, INCENDIARY, STICK TYPE

(a) GRENADE, HAND, H. E., STICK, TYPE '98

### GENERAL

This grenade, in design and general appearance, closely resembles the German Stick Grenade, Model 24 (Stielhandgranate 24). The Japanese grenade is, however, considerably smaller in size and the H. E. charge is less than half that of the German grenade. The body of the Japanese grenade is made of cast iron with comparatively thick walls while the German grenade has a light-gauge steel body. This is reflected in their comparative weights, 17-oz. for the German grenade against 19-oz. for the Japanese grenade. The German grenade relies for its effect on blast while the Japanese Stick Grenade is a fragmentation grenade. The fragmentation effect is of a slightly lower order than the Type '97, see J. A. L. C-2.

2. The only other stick grenade known to be used by the Japanese is an incendiary grenade but none has yet been received at Kirkee for detailed examination. This incendiary grenade has, however, a time percussion igniter and differs considerably from the Type '98 H. E. Stick Grenade, see J. A. L. C-1.

3. The description of the "Grenade, Hand, H. E., Type '98 (Stick Type)" given below is based on actual examinations carried out at Kirkee.

### DESCRIPTION

4. The drawing at Plate A gives full details of the construction of the grenade which can, for convenience of reference, be divided into three main components:—

- (i) Body,
- (ii) Handle,
- (iii) Friction Igniter Assembly.

### BODY

5. This is a smooth hollow cylinder of cast iron closed at one end. It is painted black both externally and internally and filled with a pressed pellet of picric acid weighing 2.65-oz. This pellet has a waxed paper wrapping and is recessed as shown in the Plate. The mouth of the grenade body is closed by a cardboard washer over the filling. A wooden handle is then fitted and secured in position by three No. 4 gauge wood screws  $\frac{1}{2}$ -in. in length. The screw recesses and joints are waterproofed with a bituminous compound. A paper label 1-in. wide is pasted on the body of the grenade giving instructions for its use.

HANDLE

6. This is made of well-seasoned, light, white wood and shaped externally to present a good grip for the thrower's hand. Some samples examined were varnished externally and some were unvarnished. The handle is bored internally to its full length, as shown in the Plate, to take the friction igniter assembly. The outer end has right-handed screw threads cut in the wood to accommodate a tinned plate closing cap which closes the recess at that end of the handle. Under the cap the handle is recessed to take a steel ring to which is attached the pull friction cord. A wax impregnated cloth disc in the closing cap ensures a waterproof joint when the cap is screwed home. The other end of the handle has a circular shallow recess with a cardboard washer. This recess is to take the flange of the brass tube of the igniter set which fits over the cardboard washer and is held in place by two steel tacks. The recess is then filled with a bituminous compound to ensure that no moisture will penetrate into the interior of the handle and affect the friction igniter which is particularly susceptible to damp.

FRICITION IGNITER ASSEMBLY

7. Details of construction of the complete assembly will be clear from Plate A. It can be divided into two parts:—

(a) A flanged brass tube which, at one end, takes a piece of white safety fuze, time of delay being 4 to 5 seconds. Against the inner end of the safety fuze is a small perforated G. P. pellet (1.1 grs.). This pellet is prevented from moving by a light crimp in the brass tube. Immediately below the G. P. pellet are two vent holes 0.1-in. in diameter, diametrically opposite. These vent holes are covered with a strip of tin foil round the tube. The lower end of the brass tube has a paper tube containing about 1.7-grs. of friction composition (potassium chlorate and antimony sulphide) through which passes a silk cord the inner end of which is covered with a blob of red phosphorus. The sequence of assembly appears to be, the paper tube, complete with friction composition and silk cord, is inserted in the brass tube, the silk cord being threaded through a small (0.26-in. diameter) hole in the base of the brass tube. The tube is then lightly crimped at the correct distance from the flange and the perforated pellet dropped into position followed by the length of safety fuze.

(b) A detonator consisting of a brass tube containing 7.5-grs. of C. E. in the bottom, on top of which is pressed an inverted copper cup holding 3.6-grs. of fulminate of mercury. The bottom of the cup is perforated and closed by a tin foil disc. The detonator tube is lightly crimped to hold the inverted cup in position and to form a stop for the booster pellet. The latter is a perforated G. P. pellet (1.1-grs.) which is inserted to boost up the flash from the fuze. A paper tube is then passed over the detonator the end of which is filled with a bituminous compound and finally closed by a paper disc. The intention of this bituminous compound is not quite clear. It is thought that its purpose may be to facilitate assembly of the components of the friction igniter to the correct length for insertion in the handle. This could be effected if the components were assembled when the compound was warm and, therefore, soft.

ACTION

8. The tinned plate cap is removed from the end of the handle by unscrewing (about two turns) and the middle finger of the throwing hand inserted in the metal ring. On throwing the grenade the ring remains on the finger and the friction cord is pulled sharply through the friction igniter to ignite the G. P. booster pellet, the flash from which ignites the fuze to burn with a delay of 4 to 5 seconds. The gases from the G. P. pellet and burning fuze are vented through the two holes in the brass tube, via the channel in the wooden handle, to the atmosphere.

PACKING

9. According to information available, twenty grenades in two layers of ten each are packed in a metal-lined wooden box. The box is painted green with a yellow stripe at the end of each carrying handle. The total weight of the box is  $41\frac{1}{2}$ -lbs. and the exterior dimensions are  $28\text{-}3/4" \times 10\text{-}1/8" \times 7\frac{1}{2}"$ .

## IDENTIFICATION

SUMMARY OF DATA10. Grenade :

Overall length of grenade	... 8-in.
Length of cast iron body	... 2.81-ins.
Thickness of body wall	... 0.2-in.
Diameter over body	... 1.94-in.
Diameter over the screw cap	... 1.44-in.
Weight of filled grenade	... 1-lb. 3-oz.
Nature and weight of main filling	... 2.65-oz. pressed picric acid block, in waxed paper container.
Weight of friction composition	... 1.7-grs.
Weight of C. P. pellets (2 in number)	... 1.1-grs. each.
Length of safety fuze	... 1-in.
Diameter of safety fuze	... 0.21-in.
Time of burning of fuze	... 4 to 5 seconds.
Weight and nature of detonator filling	... 8.6-grs. of fulminate of mercury and 7.5-grs. of C. E.

11. Packing :

Total weight of box	... 41½ lbs.
Dimensions of box, external	... 28-3/4" x 10-1/8" x 7½"

## HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

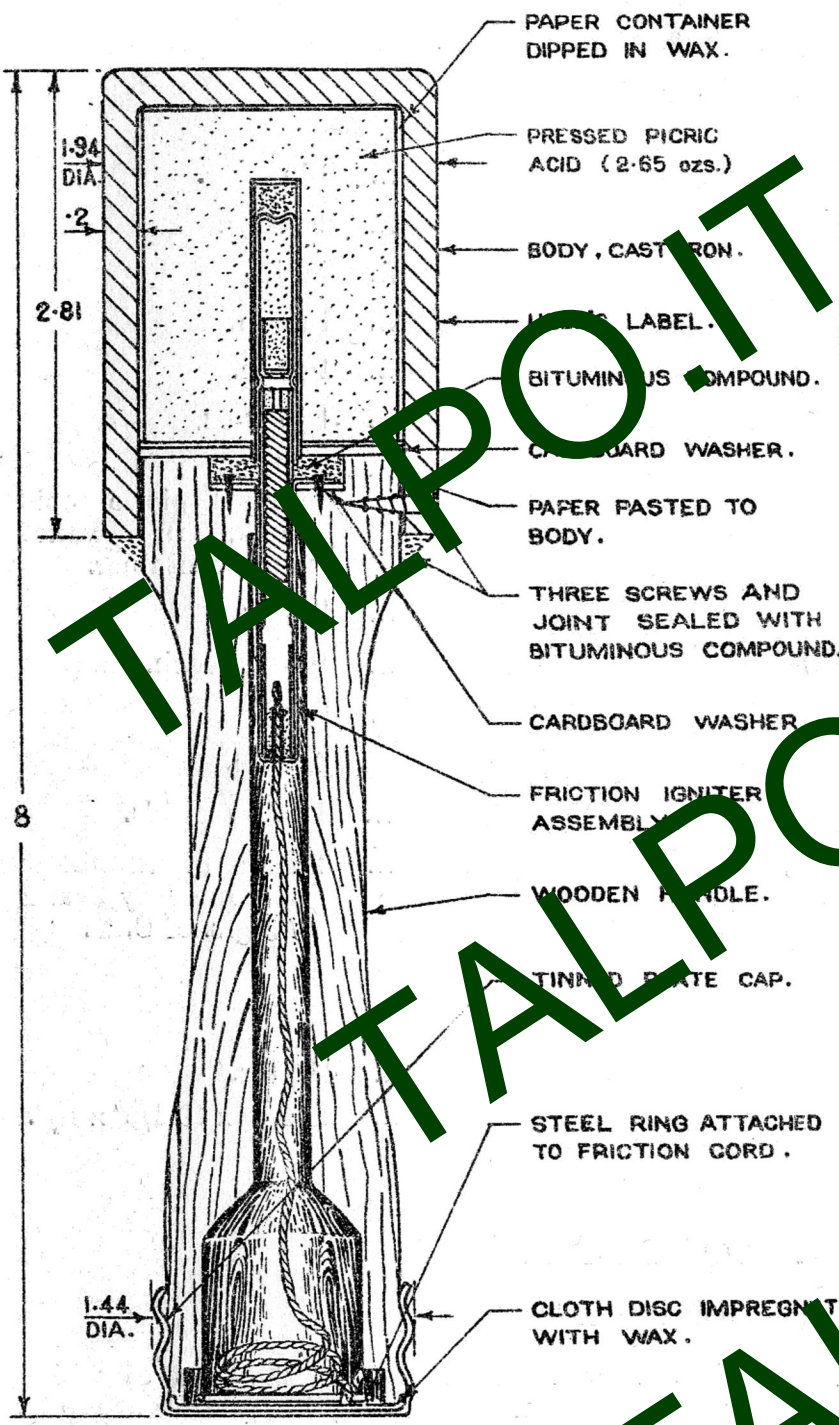
12. This is an obsolete type of grenade which has many disadvantages not the least of which is its susceptibility to moisture owing to the match composition used in the igniter; blinds are to be expected in use unless grenades are in obviously good condition.

Stick grenade should be dealt with for storage and transport similar to Type '97 grenades, but care must be taken to ensure that the cap is firmly screwed home if grenades not in original sealed packages are being dealt with. Grenades which are obviously very damp or which have been wet, should be destroyed—owing to the filling of picric acid sensitive picrates may have formed.

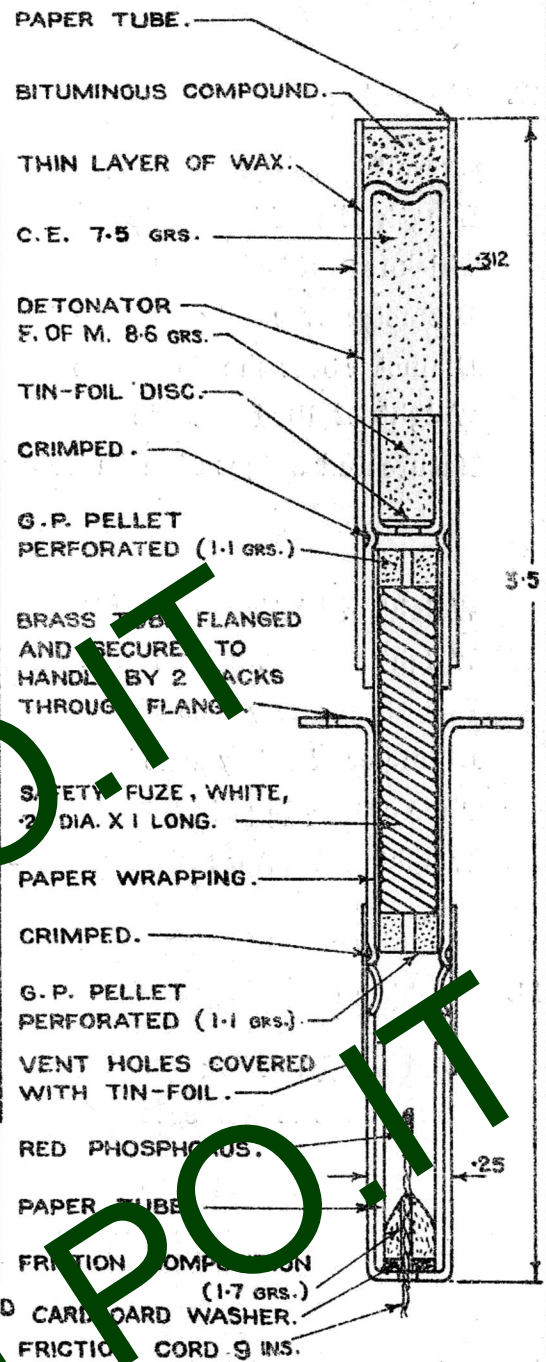
Blind grenades present no undue risk, but destruction in situ is advisable, if possible.

EXPLOSION/FIRE RISK	... 2.7-ozs. per grenade
GROUP CLASSIFICATION	... VIII, Category Z.
CLASSIFICATION FOR SEA TRANSPORT	... O. A. S.

**RESTRICTED.**



**ENLARGED VIEW**



WT. OF FILLED GRENADE :- 1 LB. 3 OZS.

**FRICITION IGNITER ASSEMBLY**

**JAPANESE  
GRENADE, HAND, H.E., STICK, TYPE '98**

**GENERAL ARRANGEMENT**

DIMENSIONS IN INCHES

C.I. AMM. S/1113  
KIRKKE MAY 45

**(b) GRENADE, HAND, INCENDIARY, STICK TYPE****GENERAL**

13. No reports regarding the use of this grenade in the Burma Theatre have been received and no samples have been examined at Kirkee; the details below are taken from various reports from American and Australian sources. Again, however, there is no specific mention that the grenade has actually been encountered in any theatre during the past year. It is possibly obsolete or not very widely used. Although it is primarily an incendiary grenade there is no reason why it should not be effective in producing screening smoke.

**DESCRIPTION**

14. A drawing of the incendiary grenade is given in Plate B and there is little further to add. Some reports refer to the body of the grenade as being made of brass instead of steel. The fuze and its action is identical with that used in the Type '97 Hand grenade—see J. A. L. C.2. The time of delay has variously been reported as 4 to 5 seconds, but it is probably the same as that for the Type '97 grenade. The number of rubber pellets in the body of the grenade has also been variously reported as 33 and 41; this number is likely to vary in different grenades.

**HANDLING AND TRANSPORT**

(Of captured ammunition by Ordnance)

15. These grenades should be dealt with similar to our Service 3-in. Mortar Bombs filled with White Phosphorus. As the igniter set is identical to that used in the type '97 hand grenade, the remarks given in J. A. L. C. 2 equally apply.

16. The grenade, however, is not so robust as a mortar bomb and handling, etc. is liable to cause damage to the case and weaken seams which may cause leaks. The danger of leaks is greatly accentuated if the grenades are stored in the sun for any length of time. Loose grenades showing any signs of damage should preferably be destroyed. A gun cotton primer should be adequate, but a careful inspection is necessary afterwards to ensure that the burster container also has been destroyed.

**EXPLOSION/FIRE RISK**

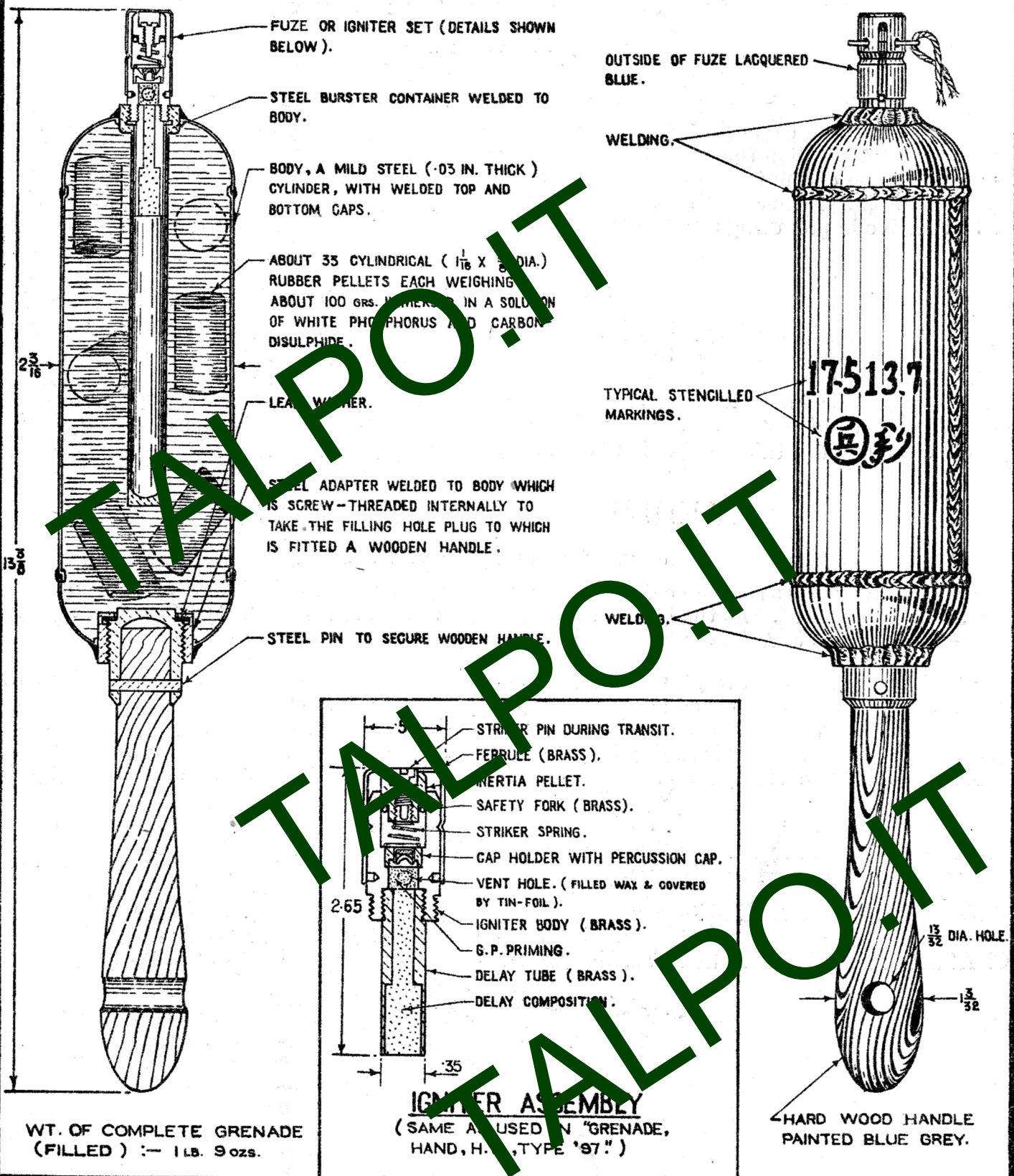
... 1 oz. per grenade

**GROUP CLASSIFICATION**

... Xn, Category Y

**CLASSIFICATION FOR SEA TRANSPORT**

... S. A. S. (R)



**— JAPANESE —**

**— GRENADE, HAND, INCENDIARY, STICK TYPE. —**

**— GENERAL ARRANGEMENT —**

DIMENSIONS IN INCHES.

C.I.A.M.N. S/1158  
KIRKEE JULY '45



THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION C.

LEAFLET C 7.

**GRENADE, HAND, H. E., PULL TYPE.**

(BELIEVED TO BE TYPE 2-3)

**GENERAL**

Two grenades, Hand, H. E., Pull Type were received here in April this year, and the details given below are based on an examination of them at Kirkee.

This is an efficient offensive grenade having slightly thicker walls than those of the Type '94 and Type '97 grenades and should give good fragmentation. As only two grenades have been received, no fragmentation trials have been carried out at Kirkee.

3. This method of initiation which requires only a light pull (from 2 1/2-lbs. to 5-lbs) on the pull string and the presence of the anchoring ring makes this grenade eminently suitable for booby traps.

**DESCRIPTION**

4. The drawing in the attached Plate shows the general appearance and details of construction of the grenade. For convenience, the grenade may be divided into two main components:—

- (i) The body and H. E. filling,
- (ii) The igniter assembly.

**BODY**

5. The body (11) is made of cast iron, painted black on the outside and sand-blasted on the inside. It has five circumferential grooves to ensure good fragmentation and to give a good grip; it has no longitudinal grooves. Except for the grooves, the body is of uniform diameter throughout and has no flanges either at the top or bottom.

The body is cast as a hollow shell with a short neck at the top which is threaded internally to take the friction igniter assembly and externally to take the safety cap (1). The cap (1) is made of lead alloy and is threaded internally to screw on to the neck of the grenade. It is serrated externally to provide a good grip and the lower edge is toothed at the surface to engage the cap release lever (15). A rubber washer is inserted between the cap and the body to provide a good seal. The cap is tinned internally.

On one side of the body (11), at top and bottom, are two lugs to which are attached two metal rings (13). These are of the key ring type and are used for attaching the grenade either to the man or to a holdfast.

6. The cap release lever (15) is a small brass catch pivoted about its centre in a slot in a lug formed in the body diametrically opposite the top anchoring ring. The outer end is flattened at the top to form a thumb piece. A small spiral spring (14) is housed in a recess in the body immediately beneath this thumb piece and bears against its lower surface. In this way the inner end of the lever is held between two of the "teeth" in the cap and therefore prevents it from unscrewing during transit.

The body is loosely filled to a depth of about 1.6-in. with T. N. T. flake. The filling of the two grenades examined here varied slightly. One had thin shining white flakes of T. N. T. whereas those in the other were greenish white in colour.

## IGNITER ASSEMBLY

7. This is made up of the following components:—

- (i) The Igniter Body (7).
- (ii) The Friction Fork (6).
- (iii) The Friction Composition Pellets (4).
- (iv) The Safety Fuze (8).
- (v) The Detonator (10).

8. The Igniter Body (7):—This is made of lead alloy and screws into the neck of the grenade body (11). It has two vertical compartments, one cylindrical and open at the bottom (delay tube), the other rectangular in section and closed at the bottom. The latter is shorter than the cylindrical compartment and accommodates the friction fork (6). The other compartment is the delay tube which houses the safety fuze (8) and to the bottom end of which is fixed the detonator (10); there is a vertical slot in the wall of the delay tube for fixing the detonator.

9. The Friction Fork (6):—This is made of a narrow strip of thin mild-steel plate folded to form two leaves. There is a hole punched at the top end to which is tied a thin cord (2) to facilitate removal of the fork. The leaves are given a thick coating of red phosphorus.

10. The Friction Composition Pellets (4):—The two friction composition pellets are positioned on either side of the friction fork (6) in a recess at the top of the igniter body (7), the larger pellet lying immediately above the safety fuze. The provision of two pellets on either side of the fork ensures certainty of ignition.

11. The Safety Fuze (8):—This is about 1.15-in. long and has a white coating. It gives a delay of 5 to 6 seconds.

12. The Detonator (10):—This consists of an aluminium shell 1.33-in. long and .26-in. in diameter with a conical depression at the bottom to produce a hollow charge effect. The safety fuze (8) is inserted into the detonator to a depth of 0.6-ins. The shell is slightly flattened along one side to enable it to be inserted into the slot in the delay tube. After fitting the detonator, the slot is sealed with a thick resinous composition of high melting point.

The detonator (10) has a bottom filling of 5.4-grs. of C.E. on top of which, inside an inverted aluminium cup (9), is 2.6 grs. of lead styphnate.

The friction composition pellets are covered by a brass disc (3) which has a hole to allow the friction fork (6) to pass through. This disc is prevented from turning by means of two diametrically opposed slots cut at the circumference which engage two small studs on the igniter body. Above the brass disc (3) is a thick layer of paraffin wax to prevent any ingress of moisture. The hole in the plate through which the friction fork passes is tightly sealed with tin foil to prevent molten wax flowing down through the friction fork and covering the red phosphorus coating.

13. Safety Devices:—Safety Cap. Whilst this is in position, the friction fork cannot be removed.

## ACTION

14. The grenade is held in the right hand, the cap release lever is pressed down with the thumb of the right hand and the lead safety cap (1) is unscrewed with the left hand (about 1 1/2 to 2 turns). The pull string for the friction fork (6) is now exposed. The friction fork is pulled out sharply with the left hand and the grenade is at once thrown. While pulling out the fork, the neck of the grenade should be kept away from the hand and body.

The grenade has a delay of 5-6 seconds.

## PACKING

15. The method of packing of these grenades is not known.

## IDENTIFICATION

16. The grenade should be easily identified from the Plate. It can be readily distinguished from the Type '91 and Type '97 grenades by the absence of any longitudinal grooves in the body wall. The only markings carried on the grenade are stamped on top of the cap and these are shown in the Plate; one of the grenades received here had no markings either on the cap or the body.

## SUMMARY OF DATA

17. Length overall	.. 3.75-ins.
Length of body without cap	.. 3.1-ins.
Maximum diameter over end	.. 2-ins.
Weight filled	.. 1-lb. 4 3/4-ozs.
Weight of body without cap	.. 15.6-ozs.
Name and weight of H. E. filling	.. T.N.T. 1.4-ozs.
Weight of casing cap	.. 1.5-ozs.
Weight of igniter assembly complete	.. 1.5-ozs.
Length of safety fuze	.. 1.45-ins.
Weight of safety fuze	.. 12.04-grs.
Weight of detonator filled	.. 2.5-grs.
Weight of friction composition pellets	.. 3-grs.

## HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

18. For purposes of storage and transport these grenades can be handled in the same way as British and American grenades although, unlike these, the igniter system is permanently assembled.

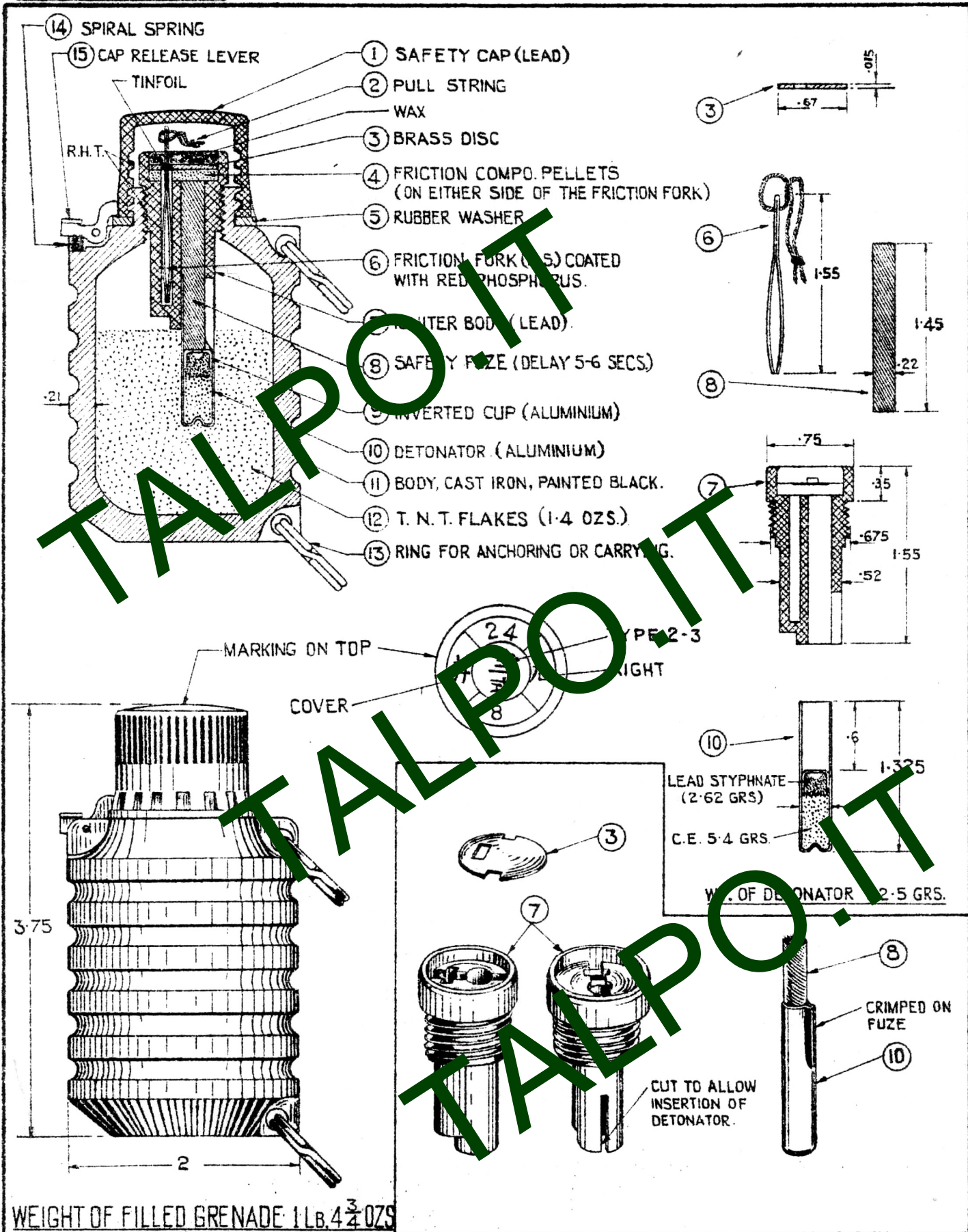
Grenades found lying loose and in an obviously poor condition should be destroyed. Those found in good condition should be examined to see that the friction fork is still in position; this will in general be so if the cap is still in place.

If blinds have to be disposed of the usual practice of destruction in situ should be followed. If, however, such a grenade must be moved, a study of the mechanism will show that no undue risk is involved.

The possibility that these grenades may be used as booby traps should never be overlooked.

EXPLOSION/FIRE RISK	.. 1 1/2-ozs.
GROUP CLASSIFICATION	.. Group VIII, Category Z.
CLASSIFICATION FOR SEA TRANSPORT	.. O.A.S.

RESTRICTED.



# JAPANESE GRENADE, HAND, H.E., PULL TYPE.

(BELIEVED TO BE TYPE 2-3)

DIMENSIONS IN INCHES.

C.I. AMN. S/1232  
KIRKEE AUG. 1945

G. P. Z. P. POONA, 1945.

THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION C.

LEAFLET C. 12.

H.E., A.T. (HOLLOW CHARGE) GRENADE FOR 30-mm. RIFLED  
DISCHARGER CUP AND ITS ADAPTATION AS 1/3-Kg., H. E., A/C.  
(HOLLOW CHARGE) BOMB.

**GENERAL.**

These grenades are used fairly widely by the Japanese and a number are known to have been used in the Burma Theatre.

Before describing the grenade and its adaptation as a 1/3-Kg. H.E., Aircraft Bomb, it will be useful to make some general remarks.

2. From a user aspect the grenade may be regarded as the Japanese equivalent to our Grenade, H.E., A.T., No. 68 or the American M. 9 A. 1 A.T. Grenade. The method of projection is, however, different. A rifled discharger cup being fitted to the rifle, which imparts a rotary motion to the grenade and gives the necessary stability in flight and head on impact.

3. The Japanese grenade is an obvious copy of the German hollow charge rifle grenade (Gewehr Panzergranate). Although the tail of the Japanese grenade is identical with that of the German (30-mm.) and fits the 30-mm. rifled discharger cup, the body is not quite the same. It is larger than the small German hollow charge grenade, but not quite so large as the large German grenade (Gross Gewehr Panzergranate).

It has, however, been reported recently that a smaller type of grenade is being used by the Japanese. The diameter of the body is the same as that of the tail. This is probably a close copy of the German small hollow charge rifle grenade. The complete weight is reported to be 8 1/4-oz. with a filling of 2-oz. of U.D.X. etc.

4. According to reports, the 6.5-mm. rifle is used with a bulletted (wooden bullet) blank cartridge to project the Japanese grenade, but none of these cartridges has been received at Kirkee for examination. There is, of course, no reason why the discharger cup could not be fitted to Japanese rifles of 7.7-mm. and 7.92-mm. calibres and similarly fired.

According to old reports (1943), penetration, when fired statically against a mild steel plate, is 3 7/8-in., making a hole of approximately 1/2-in. diameter at the point of entry.

5. This grenade has been adapted by the Japanese as an aircraft bomb by the fitting of vanes and a modified fuze. One of these was recovered unexploded, late last year after

a small Japanese bombing attack on the East coast of India. The bomb was forwarded here for examination. A full description of this type of bomb is, therefore, also included in this Leaflet. The bombs are dropped in clusters from a container. One type of container is designed to hold 30 bombs and the other to hold 76. Initial reports stated that they were intended for A.A. use, but it seems unlikely that this can be their primary role. They would be effective against lightly armoured vehicles and parked aircraft.

## DESCRIPTION.

### H.E., A.T. (Hollow Charge) Grenade.

6. The make-up and general arrangement of the grenade can be seen from the drawings and photographs:—

Plate A.—Drawing showing internal details and assembly sequence of fuze components.

Plate B.—Drawing showing external appearance, markings on the grenade and the general design of the 30-mm. rifled discharger cup attachment.

Plate C.—Photograph of the grenade showing its general appearance and the assembly sequence of all components.

Plate F.—Comparative photograph of the A. T. grenade and a 1/3-Kg. H. E. aircraft bomb.

### Body.

7. The steel body (3) of the grenade is painted black or rust-proofed with a black finish. It is cylindrical in shape with a parabolic steel ballistic cap (1) at the head. This also serves as an impact cap to give the necessary stand-off distance to ensure maximum effect from the hollow charge. The tail extension (8) is of smaller diameter than the body and is screwed on at the base of the grenade body. Note the steel liner (2) with a 20° cone, which forms the necessary cavity in the filling to give a hollow charge effect. This steel liner (2) is closed at the narrow end by a small mild steel cup soldered on. The steel liner (2) and ballistic cap (1) are held in position by the mouth of the grenade body (3) being crimped and turned over as shown in the drawing, Plate A.

### Filling.

8. The body of the grenade has a main filling of 3.6-oz. of R. D. X. and T. N. T. 50/50, while towards the tail end it is filled with .15-oz. of R. D. X. and wax 90/1—see Plate A. The more sensitive filling at the base is presumably intended to boost up the impulse from the exploder and to give the maximum rate of detonation to the main filling.

### Tail Extension.

9. The tail extension (8), which is secured to the body by right-handed screw threads, is made of aluminium or light alloy such as duralumin, anodised to prevent surface corrosion. It is recessed at both ends forming two compartments with a diaphragm in between. This is perforated and in it is fitted a small detonator (7) held in place by a perforated screwed plug (6). In the rear compartment is the fuze mechanism and in the front is the exploder or booster pellet (4).

### Exploder Pellet.

10. This is a self-contained unit consisting of a light aluminium cup holding a main filling of 96-grs. of R. D. X. and wax. The filling is recessed to take a flanged aluminium alloy cup or tube containing 7-grs. of P. E. T. N. and wax at the bottom, over which is an

aluminium alloy inverted cup containing lead azide. This cup is perforated to allow the flash from the cap to pass unobstructed to the lead azide. The exploder container is surrounded by a rolled paper tube (5) which ensures snug fitting of the exploder in the tail of the grenade. Full details of this exploder are given in Plate A.

### Fuze.

11. The mechanism of the fuze is fully detailed in Plate A, and this, together with the assembly sequence of components in Plate C, will make its construction clear. It consists of an inertia pellet (16) carrying a needle. This inertia pellet with needle is held away from the detonator (7) by an arming (clock type) spring (9). This spring (9) is held inside the arming sleeve (10), which is supported by a strong set-back spring (11) held in compression between an external flange on the arming sleeve (10) and a steel collar (14) at the base of the inertia pellet (16). The arming sleeve (10) is prevented from rising under the pressure of the set-back spring (11) by a ferrule (13), which is secured to the head of the inertia pellet (16) by a retaining washer (12). This ferrule (13) has four prongs which engage in a circular groove inside the arming sleeve (10), preventing upward movement of the latter. A second internal groove is formed near the top of the arming sleeve (10) to engage the prongs of the ferrule (13) when the fuze is armed.

### Safety Devices.

The grenade is safe during handling and transport, because the coiled arming spring (9) is bearing against the diaphragm in the tail extension (8) thus preventing the inertia pellet (16) from moving forward. This arming spring (9) is prevented from uncoiling by the strong set-back spring (11) holding the arming sleeve (10) forward until the fuze is armed on firing.

### Action.

13. On acceleration at time of firing, the arming sleeve (10) sets back compressing the set-back spring (11) and is prevented from moving forward on deceleration by the prongs of the ferrule (13) entering the internal groove near its head. The arming spring (9) is then free to uncoil outwards into the recess in the tail extension. This uncoiling of the spring is probably assisted by the rotation of the grenade. The inertia pellet (16) is therefore now free to move forward except for the light creep spring (15), which prevents creep during flight. On graze or impact, the inertia pellet carrying the needle moves forward through the arming spring (9) to pierce the detonator and cause the grenade to function.

### 1/3-Kg. H.E., Aircraft Bomb (Hollow Charge).

14. The construction of this bomb will be seen clearly from the drawings and photographs:—

**Plate D.**—Drawing of the bomb showing internal details and dimensions.

**Plate E.**—Photograph showing its external appearance and the sequence of assembly of the components.

**Plate F.**—Comparative photograph of the bomb and the A.T. rifle grenade.

This Plate shows two types of bombs:—

- (i) One with light alloy vanes secured to the tail extension by screws.
- (ii) The other with varnished tinned plate vanes secured by pressing into three grooves in the cone portion of the tail extension.

### Body.

15. The body conforms generally to that of the grenade described above, both in size and construction, except that in the sample examined the steel liner (2):—

- (i) forms a much wider cone ( $50^\circ$ ) thus giving more space for filling. It is not thought that this  $50^\circ$  cone is peculiar to the aircraft bomb, but rather that this form of cone

is to be expected in all hollow charge grenades or bombs of this type, of recent manufacture, certainly after April 1944. All grenades examined with the 20° cone are of dates of manufacture in 1943 and earlier.

- (ii) is of much thinner metal and the method of attachment of it and the steel ballistic ( or impact ) cap (1) to the body has been somewhat simplified.
- (iii) is formed from one pressing of mild steel.

### Filling.

16. The filling is the same as described above except that the quantity of main filling is slightly greater i. e. 4-oz. instead of 3.6-oz.

### Exploder.

17. The exploder unit is identical with that used in the grenade.

### Tail Extension.

18. The tail extension is made of anodised aluminium or a light alloy, such as duralumin, similar to the tail extension of the grenade described above, but differs somewhat from it in construction. While the portion above the diaphragm to house the exploder (14) is identical with that of the grenade, the portion below, is in two parts screwed together with a R. H. T. The lower portion forms a tail cone adapter (11) to take externally the vane assembly (13), and internally to house the inertia pellet with needle (10) and spring (9)—see Plate D for details. The tail cone adapter (11) has two tommy holes near the head for assembly purposes. There are also three other holes:—

- (a) A screw-threaded hole (R. H.) to take a small anti-rotation screw to prevent turning of the inertia pellet (10) which might cause the arming spindle (12) to jam. It also ensures that the inertia pellet (10) is correctly positioned for the safety wire to pass through it and the tail cone adapter (11).
- (b) A hole for the safety wire which passes right through the tail cone adapter (11) and inertia pellet (10).
- (c) A screw-threaded hole (R. H. T.) into which screws the arming spindle (12).

### Fuze.

19. This consists of a simple inertia pellet (10) mechanism with needle and spring (9), see details in Plate D.

### Safety Devices.

20. (a) A safety wire which passes right through the tail (11) of the bomb and the inertia pellet (10) thus preventing the latter from moving during landing and transport. It is possible that a number of bombs in a container will have the same wire passing through each tail. On release the wire is withdrawn through the tail and the bomb drops from the container.

(b) An air-operated arming spindle (12) which during handling and transport is screwed into the tail (11) and through a hole in the shock of the inertia pellet (10).

(c) A spiral spring (9) which holds up the inertia pellet (10) and the detonator (7) during flight and ensures more positive functioning on impact. This is not really a safety device, except in regard to a very light check of the bomb during flight.

### Action.

21. The bombs are released from the container in a cluster; the safety wire being drawn through the tail as each bomb falls. As soon as they leave the container, pressure acting on the cups of the arming spindle (12) causes them to rotate thus unscrewing the spindle (12) which falls clear, leaving the inertia pellet (10) and striker held off the detonator (7) only by the spring (9). On impact the inertia pellet (10) goes forward to fire the detonator (7).



**IDENTIFICATION.**

( Summarised Details )

22.

Particulars	H. C. Grenade	H. C. A/C. Bomb	H. C. Grenade (Small) recently reported, see para. 3 above.
Overall length.	7-in.	10 1/4-in.	6 1/2-in.
Diameter over body.	1 9/16-in.	1 9/16-in.	1 5/32-in.
Diameter over tail unit.	1 5/2-in.	1 5/32-in.	1 5/32-in.
Total weight ( filled ).	12 3/4-oz.	12-oz.	8 1/4-oz.
Total weight of explosive charge.	4 1/2-oz.	5-oz.	2 1/4-oz.
Weight and nature of H.C. filling.	3.6-oz. of R.D.X. & Wax (50/50).	4.09-oz. of R.D.X. & P.E.T.N. (50/50).	1 3/4-oz. of R.D.X./Wax.
Weight and nature of booster filling in tail.	0.15-oz. of R.D.X. & Wax (90/10).	0.15-oz. of R.D.X. & Wax (90/10).	1/4-oz. R.D.X./Wax.
Weight and nature of composition in detonator.	Small quantity of	Mercury Fulminate, Potassium Chlorate, and Antimony Sulphide.	
Weight and nature of filling in aluminium container of exploder.	95.6-grs. of R.D.X. and Wax.		
Weight and nature of filling in flanged cup of exploder.	7.1-grs. of P.E.T.N. and Wax.		
Weight and nature of filling in inverted cup.	Small quantity of Lead Azide.		
Coloured band markings, etc.	Body and ballistic cap painted black or rust-proofed with black finish.		
Special features.	3/8-in. yellow band 1 1/2-in. from the top of body. Tail extension with rifled collar.	3/8-in. yellow band 2-in. from the top of body. Tail cone adapter fitted with stabilizing vanes.	Yellow band round middle of body. Tail extension with rifled collar.

**HANDLING AND TRANSPORT.**

( Of captured ammunition by Ordnance )

23. The rifle grenade may be treated during storage, handling and transport similar to the Service No. 68 A/T grenade. The presence of a lead azide pellet in the exploder tends to

make the grenade somewhat sensitive to heavy jolting, falls, etc. The fuze in the grenade, however, should be at least as safe as that in the No. 68 A/T Grenade.

Blinds or suspected grenades must be treated with great caution, the fuze will almost certainly be armed and there is a strong possibility that the needle may be sticking in the detonator. Destruction in situ without touching the grenade should be the drill.

24. The remarks above apply generally to the 1/3-Kg. bomb version, but the fuze is of course different. Bombs must be examined carefully for correct fitting of arming spindle and there should be a pin or a piece of wire through the safety pin (or wire) hole. Bombs should not be handled or stored unless the inertia pellet is locked by both these safety devices.

Blinds should be dealt with as for rifle grenades but it may be possible to detect whether inertia pellet is forward by looking through holes in tail cone. If inertia pellet is back and it is essential to move bomb, nail or piece of wire should be passed through the safety wire hole to secure inertia pellet. The diameter of pin required is about .085-in. (14 S.W.G.)

EXPL. ION. FIRE RISK

Assume 5-oz. for each grenade or bomb.

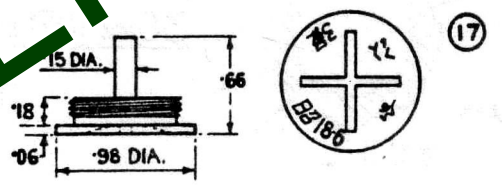
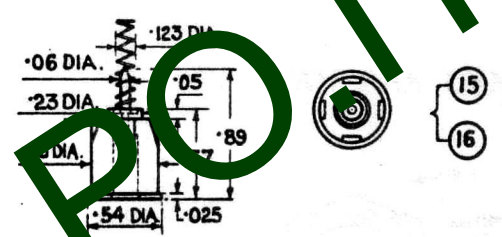
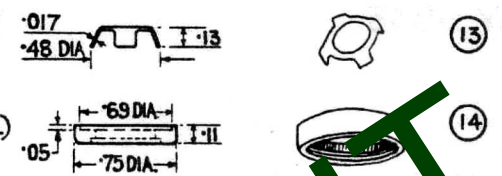
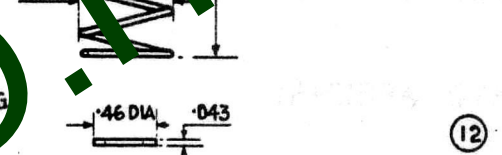
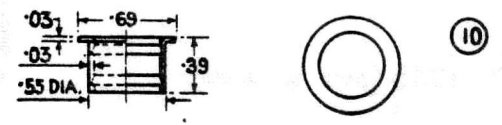
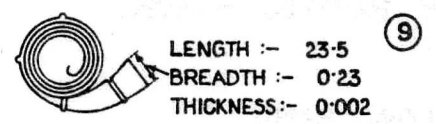
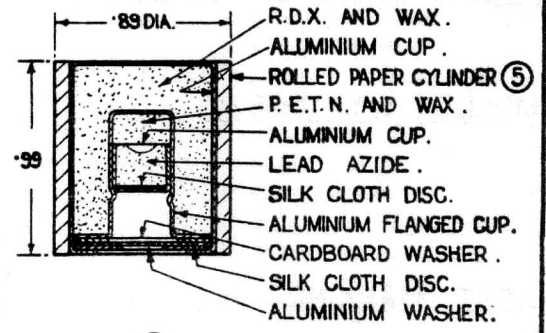
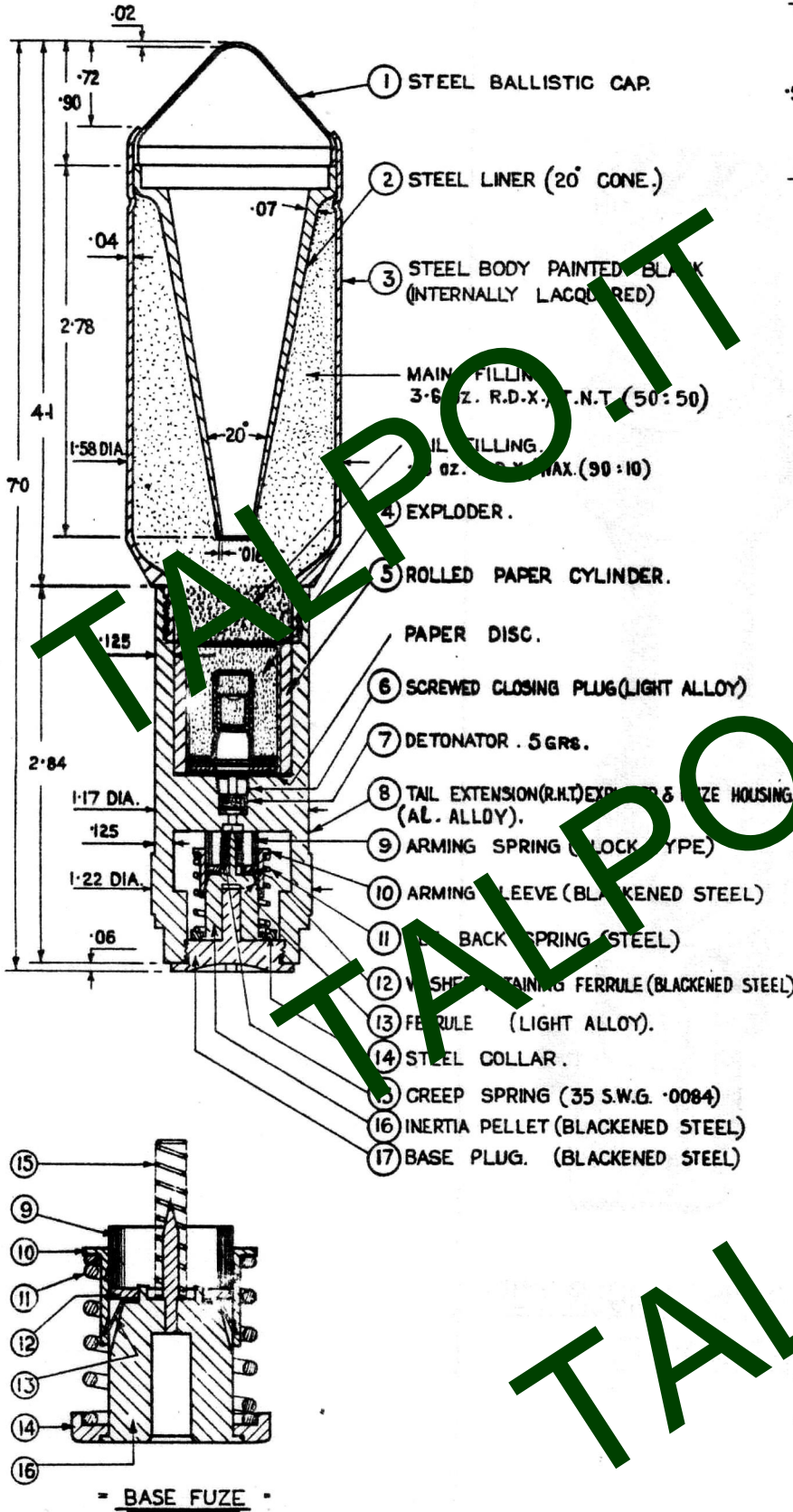
GROUP CLASSIFICATION

VIII Category 2

CLASSIFICATION FOR SEA  
TRANSPORT

. A.S.

**RESTRICTED**



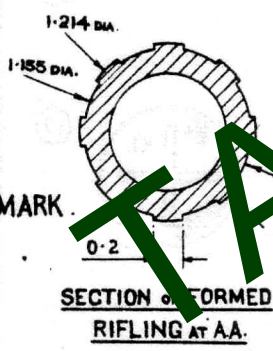
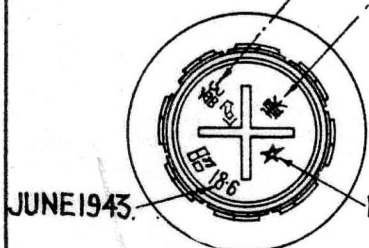
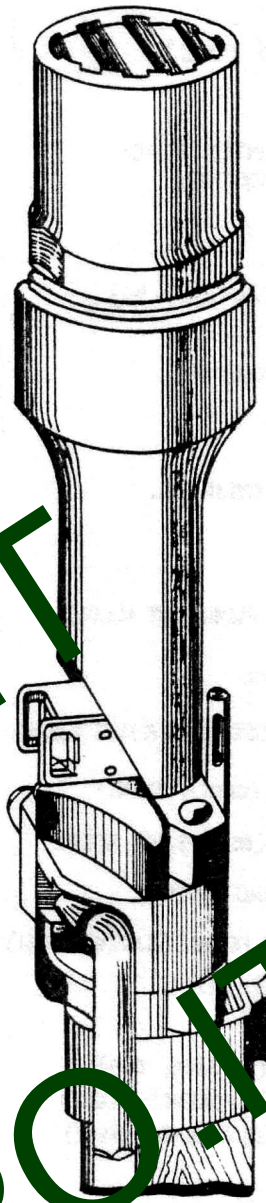
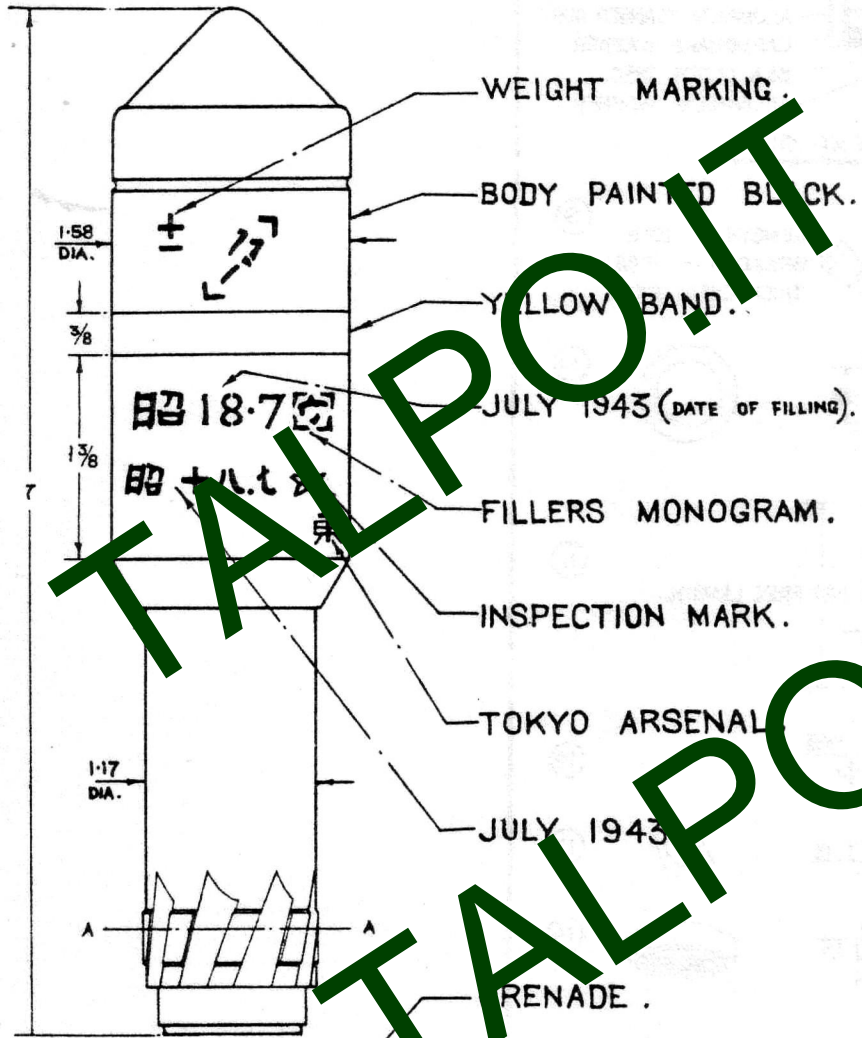
— JAPANESE H.E.AT. GRENADE (HOLLOW CHARGE) FOR 30MM. RIFLED DISCHARGER CUP —  
 (ATTACHED TO JAPANESE RIFLES)  
 — INTERNAL DETAILS & ASSEMBLY SEQUENCE. —

SHEET 1 OF 2 SHEETS.  
 C.I.A.M.M. 8/971.  
 KIRKEE, JAN. 1945.

G.P.Z.P. POONA, 1945.

**RESTRICTED**

COMPLETE WT. 12.75 OZS.



30MM. RIFLED DISCHARGER CUP ATTACHMENT.

JAPANESE H.E.A.T. GRENADE (HOLLOW CHARGE) FOR 30MM. RIFLED DISCHARGER CUP  
(ATTACHED TO JAPANESE RIFLES)

EXTERNAL APPEARANCE & MARKINGS.

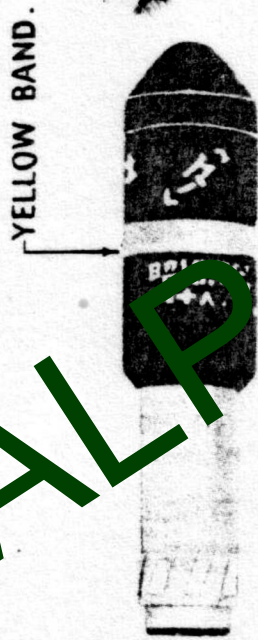
DIMENSIONS IN INCHES.

SHEET 2 OF 2 SHEETS.

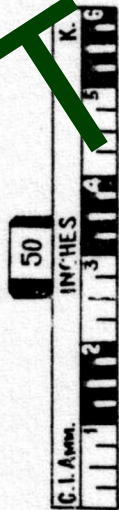
C.I.A.M.M. 9/ 971.  
 KIRKEE, JAN. 1945.

G.P.Z.P. POONA, 1945.

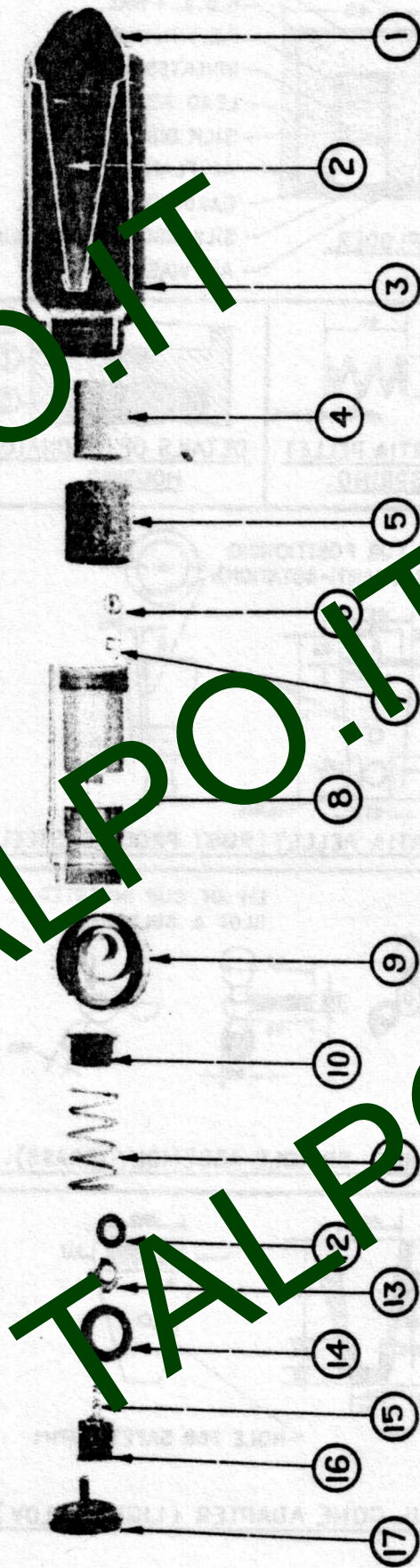
RESTRICTED.



YELLOW BAND.



COMPLETE GRENADE



JAPANESE HE. A.T., GRENADE (HOLLOW CHARGE).

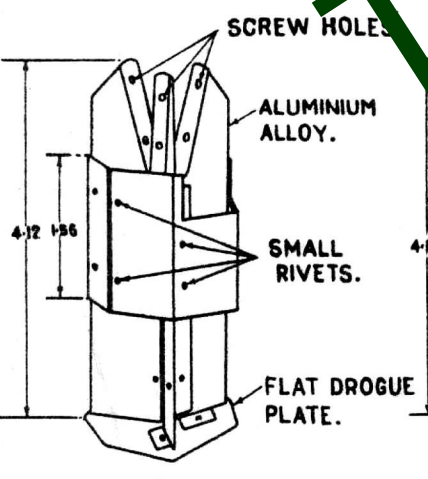
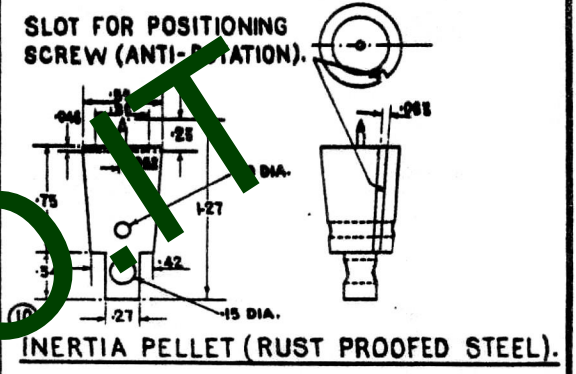
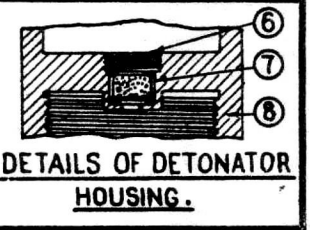
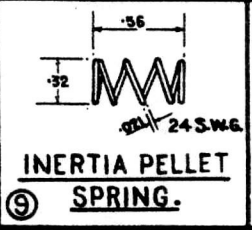
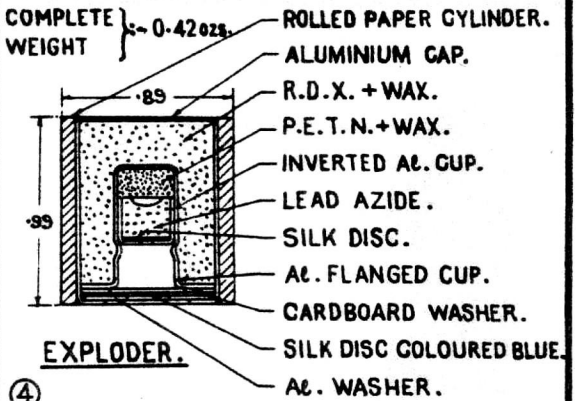
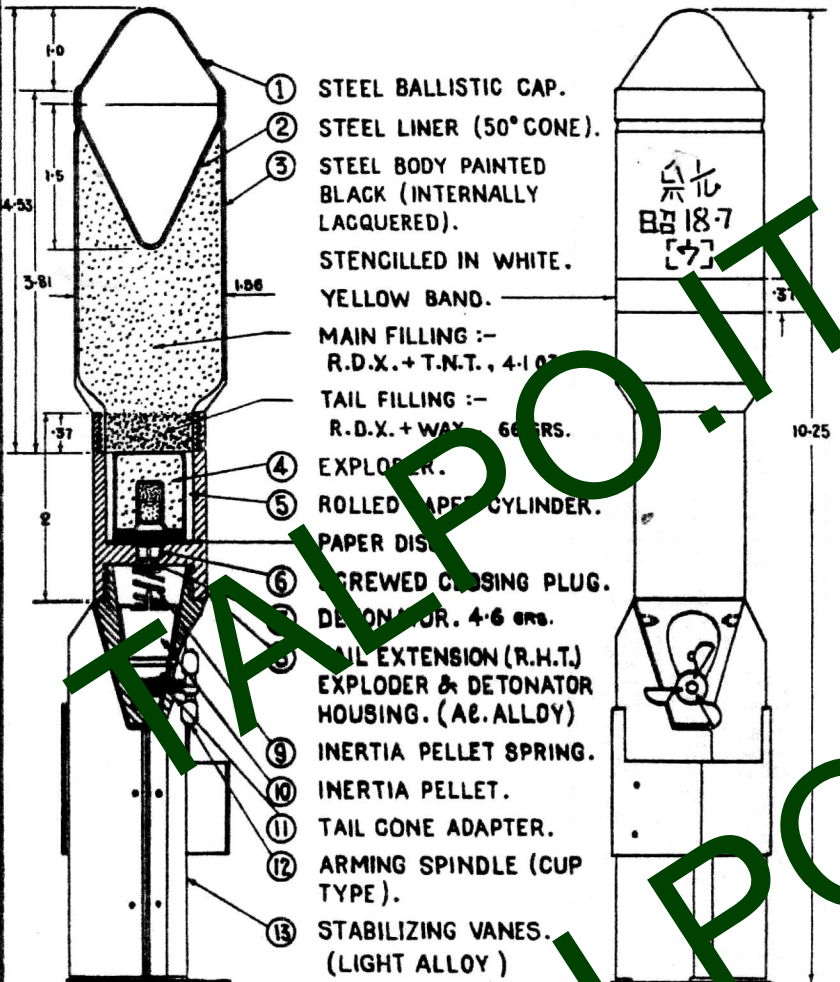
FOR 30 M.M. RIFLED DISCHARGER CUP.

EXTERNAL APPEARANCE & ASSEMBLY SEQUENCE.

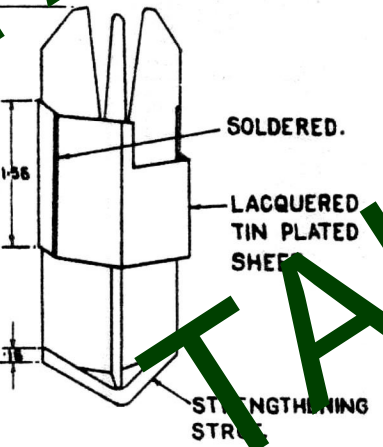
C.I. Arm. S. 1970  
KIRKEE. JAN 45.

**RESTRICTED.**

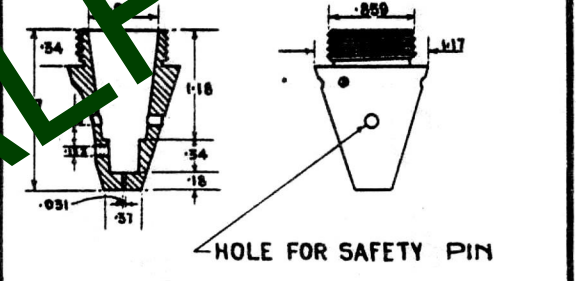
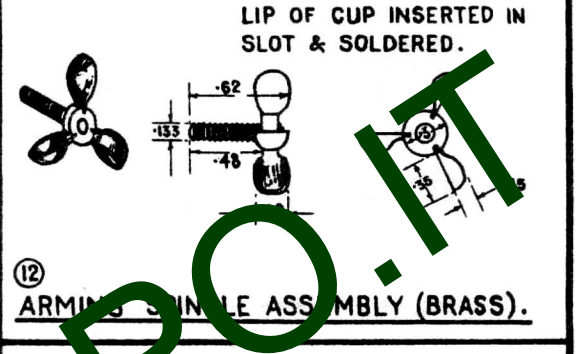
COMPLETE } :- APPROX. 12 OZS.  
WEIGHT }



STABILIZING VANES ATTACHED BY SCREWS. TWO SCREWS IN EACH VANE, SIX IN ALL. (JULY 1943 FILLING.)



STABILIZING VANES ATTACHED BY THE FORWARD EDGES BEING PRESSED INTO THREE GROOVES IN THE TAIL CONE ADAPTER. (APRIL 1944 FILLING.)



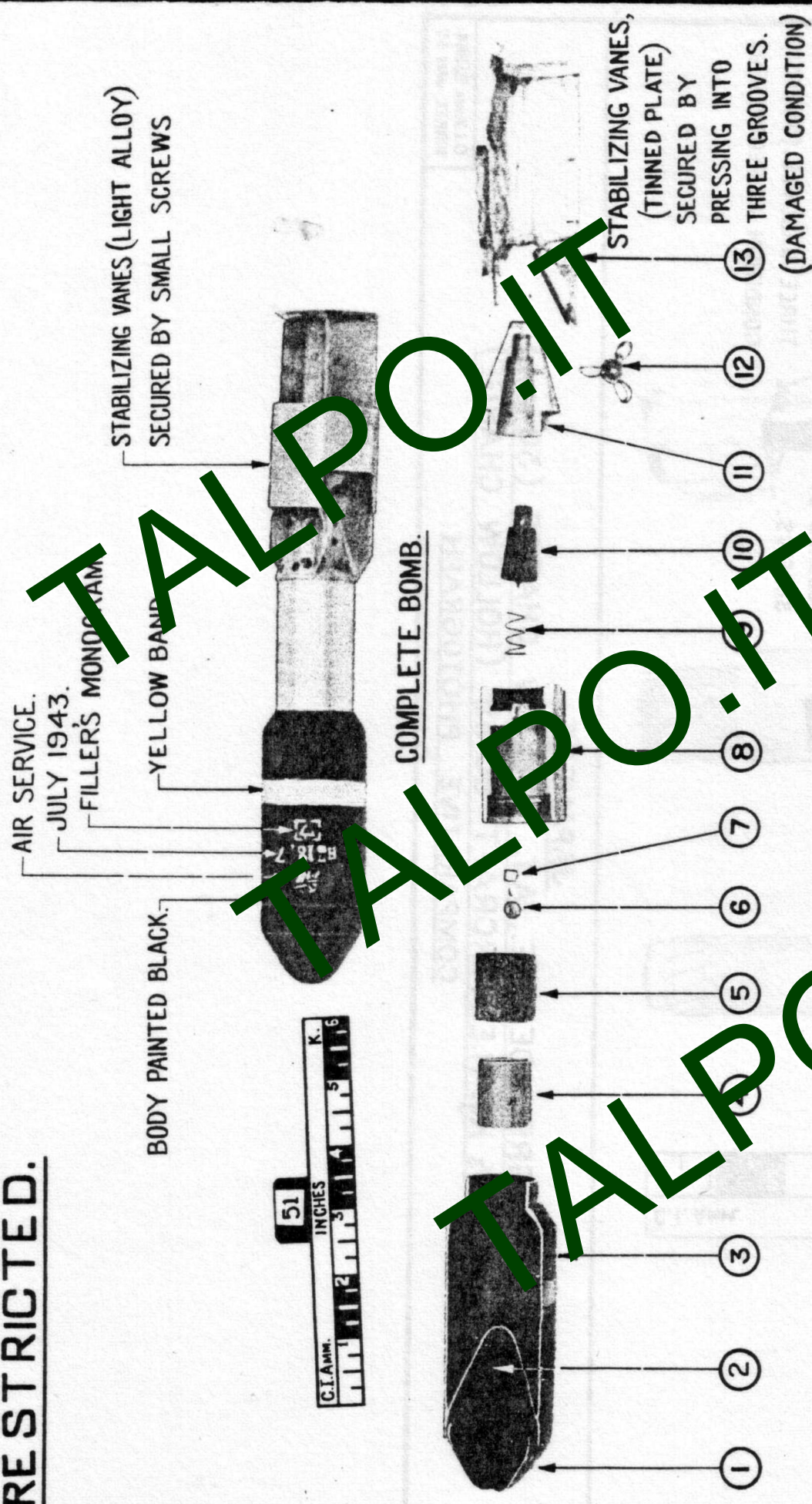
**JAPANESE 1/3 Kg. H.E. AIRCRAFT BOMB. (HOLLOW CHARGE)**

**INTERNAL DETAILS & DIMENSIONS.**

DIMENSIONS ARE IN INCHES.

C.I. AMM. S/969  
MIRKEE JAN 45.

RESTRICTED.

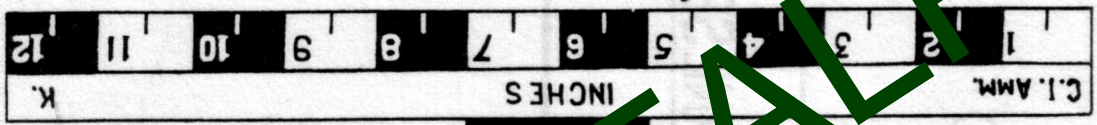


JAPANESE 1/3 Kg. H.E. AIRCRAFT BOMB (HOLLOW CHARGE).

EXTERNAL APPEARANCE & ASSEMBLY SEQUENCE.

C.I.AMM. S/1984  
KIRKEE. JAN 45

RESTRICTED.



(a) JAPANESE GRENADE H.E. A.T., HOLLOW CHARGE (30 MM.)  
(b) JAPANESE 1/3 Kg. H.E., AIRCRAFT BOMB (HOLLOW CHARGE)  
COMPARATIVE PHOTOGRAPH



THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

SECTION C

JAPANESE AMMUNITION LEAFLETS

LEAFLET C 12 (a)

**GRENADE, H.E., A.T. HOLLOW CHARGE (SMALL TYPE)  
FOR 30-mm. RIFLED DISCHARGER CUP.**

**GENERAL**

In Leaflet C 12 is given a detailed description of the large type grenade which has a body diameter of 1.58 inches. The existence of a smaller grenade, having a body diameter of 1.18 inches, was indicated in paragraph 3, but full information could not be given as details for this were lacking. Both the grenades are fired from the 30-mm. Rifled Discharger cup and, as explained above, the only difference is in the body dimensions. The small type grenade has not been examined at Kirkee and information on it from other sources is comparatively meagre.

**DESCRIPTION**

2. A sketch of the grenade is given at the end of this Leaflet. It will be seen that it is a reproduction on a smaller scale of the grenade described in Leaflet C 12. It has a 30° cone in the nose and a one inch stand-off provided by the steel cup. The tail extension of the two grenades is interchangeable and the fuzes are identical.

3. Filling:—According to an American Report the main filling of the grenade is R. D. X.

**IDENTIFICATION**

4. The grenade is coloured black with a yellow band round the middle of the body. The tail extension is of aluminium and houses the fuze. Note the body diameter which is the same as that of the tail extension.

On the body of the grenade is stencilled "Hollow charge", in addition to the usual date, station monogram etc.

**5. SUMMARY OF DATA.**

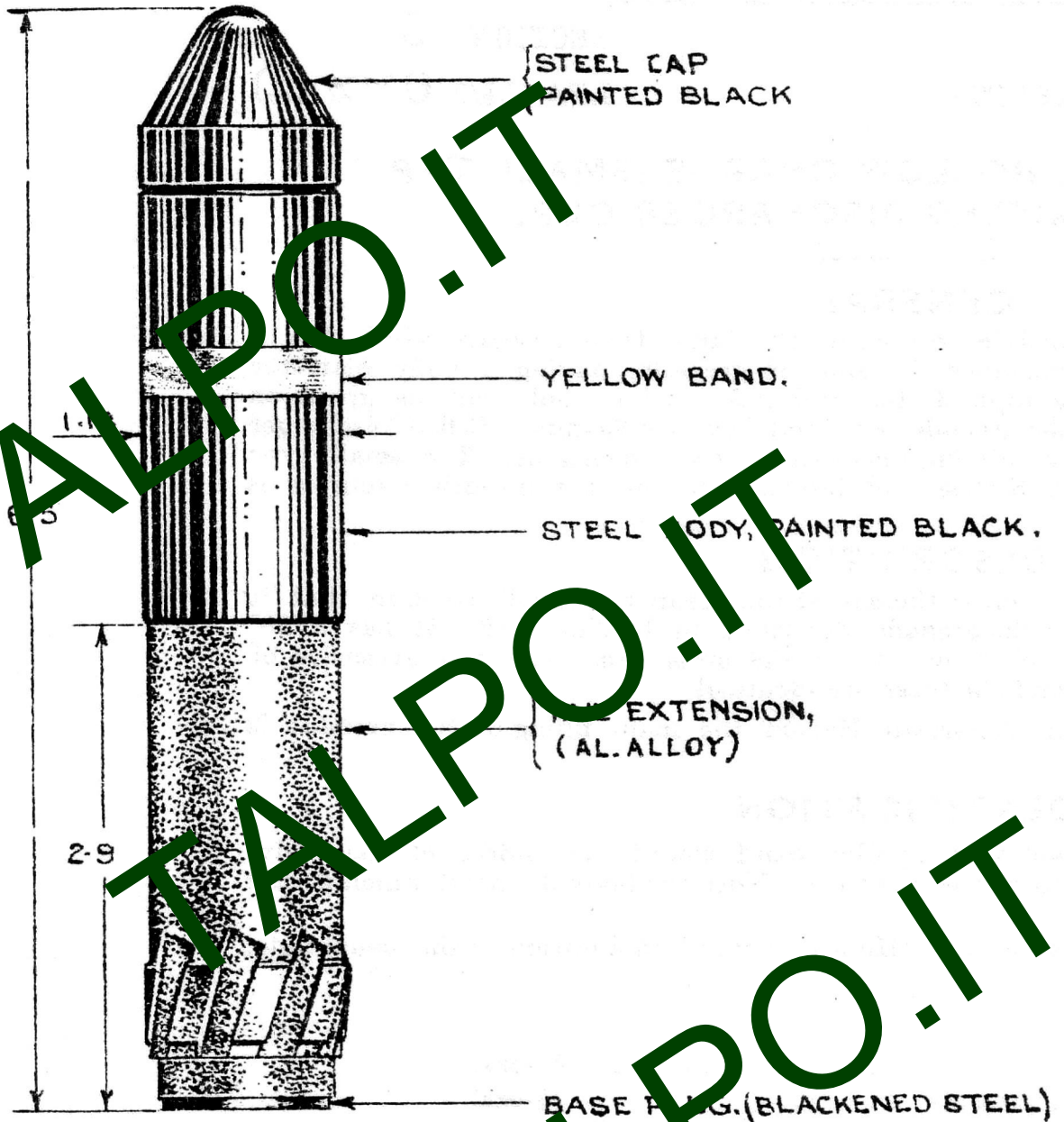
Weight of grenade .. .. .	8¼-ozs.
"    "    filling .. .. .	1½-ozs.
"    "    exploder .. .. .	¼-ozs.
Length of grenade .. .. .	6½-ins.
"    "    tail .. .. .	2.9-ins.
Diameter of body .. .. .	1.18-ins.

**HANDLING AND TRANSPORT**

(Of captured ammunition by Ordnance)

6. See para. 23, J.A.L. C 12.

EXPLOSION/FIRE RISK .. .. .	2 ozs.
GROUP CLASSIFICATION .. .. .	VIII, Z.
CLASSIFICATION FOR SEA TRANSPORT .. .. .	O.A.S.



WEIGHT OF FILLED GRENADE 8 1/4 LBS.

JAPANESE GRENADE M.E., A.T. HOLLOW CHARGE  
(SMALL TYPE)  
FOR 30MM. RIFLED DISCHARGER CUP.

DIMENSIONS IN INCHES.

C.I. AMN.S/1488  
 KIRKEE. JUNE '46

THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION C

LEAFLET C 15

**GRENADE, RIFLE H.E. TYPE 3, MODIFICATION 1.**

**GENERAL**

This grenade is designed to be fired from the 6.5-mm. Type Meiji 38 and the 7.7-mm. Type '91 rifles using the Spigot-type launcher mentioned in J. A. C 2 and the wooden bulletted rifle grenade cartridge. It is similar in operation and use to the Type '91 rifle grenade but is smaller and has a smooth walled body with a much greater weight of filling.

Recent reports indicate that this grenade may also be fired from a new type of spigot type launcher which can also be used with both 6.5-mm. and 7.7-mm. rifles. The launcher is slightly larger (27-mm. in diameter) than the one referred to above and has an improved method of attachment to the rifle. Firing is again carried out by means of a wooden-bulletted round. It is likely that the smoke rifle grenade and the Type '91 rifle grenade may also be fired from this launcher.

2. No samples of this grenade have so far been received at Kirkee and the information in this Leaflet has been based on American Reports.

**DESCRIPTION**

3. The drawing in the attached Plate shows the general appearance and gives details of construction of the grenade which for convenience, may be divided into three main parts:—

- (i) Body & H. E. filling.
- (ii) Igniter Assembly.
- (iii) Tail Unit.

**BODY**

4. This is a smooth, thin walled, cast iron cylinder with a bored hole in the base into which is pressed a solid steel adapter, screw-threaded externally to take the tail unit. The mouth of the grenade is closed by a screwed plug, having two key holes to facilitate assembly. The plug is bored and screw-threaded centrally to take the igniter assembly.

The filling consists of 3-ozs of cast T.N.T. with a cavity formed in the centre to accommodate the lower half of the igniter assembly.

## IGNITER ASSEMBLY. (FUZE).

5. This is very similar in external appearance to that used in the Type '91 grenade and can be divided into two parts:—

- (a) Igniter (or fuze) mechanism,
- (b) Detonator Tube.

(a) **Igniter mechanism**: This is of the percussion type consisting of a tubular body screw-threaded externally at the lower end to screw into the grenade closing plug. The cap holder with percussion cap is housed in the hollow portion above the flash channel in the igniter body. A steel firing pin screws into the aluminium inertia pellet and is held away from the cap by a robust brass shear wire. A safety fork fits through holes in the brass cover igniter body, and into a groove in the inertia pellet; thus the firing pin is held in a safe position. The mechanism is closed by a brass cover clamped into a circumferential groove in the igniter body.

(b) **Detonator Tube**: This is made of brass and is fitted immediately below the flash channel in the igniter body. It contains at the bottom two pressings of C. E., immediately above which is pressed 3 grs. of R. D. X.; above this is a small relay pellet to pick up the flash from the cap.

6. **Safety Devices**: (i) Shear Wire  
(ii) Safety fork.

### ACTION

7. The grenade is loaded on the launcher of the rifle and the safety fork withdrawn. It is then fired in the usual way, using wooden bulletted round. On impact, the inertia pellet is forced into the igniter body, bearing the shear wire and driving the firing pin into the percussion cap; the grenade detonates instantaneously.

**NOTE**:—The heavy construction of the shear wire suggests that impact on soft ground might, in some cases, be insufficient to function the fuze.

### TAIL UNIT

8. This consists of a sheet steel tube to one end of which are spot welded four vanes at 90° intervals. The tube is screw-threaded internally at the upper end to screw on the adapter of the grenade. The tail unit acts as a stabilizer during flight.

### PACKING

9. The method of packing of these grenades is not known.

### IDENTIFICATION

10. The grenade can be identified by its size, smooth body and design of tail tube. Paper labels are stuck on to the igniter body and tail tube, giving instructions for use. According to an American report the translation of these instructions is as follows:—

- “ This grenade can be used on rifles Type 38 and Type '99 ”
- “ The wooden bullet for Type 38 and Type '99 is to be used ”
- “ Do not remove fork (in fuze) until ready to fire ”
- “ Do not drop or otherwise strike the nose ”

SUMMARY OF DATA

11. Length overall .. .. .	7.9-ins.
Length of Tail Unit .. .. .	4.3-ins.
Diameter of body .. .. .	1.62-ins.
Weight complete .. .. .	1-lb. 1-oz.
Weight of filling .. .. .	3-ozs.
Outside diameter of tube .. .. .	1.81-ins.
Inside diameter of tube .. .. .	1.062-ins.

**HANDLING AND TRANSPORT**

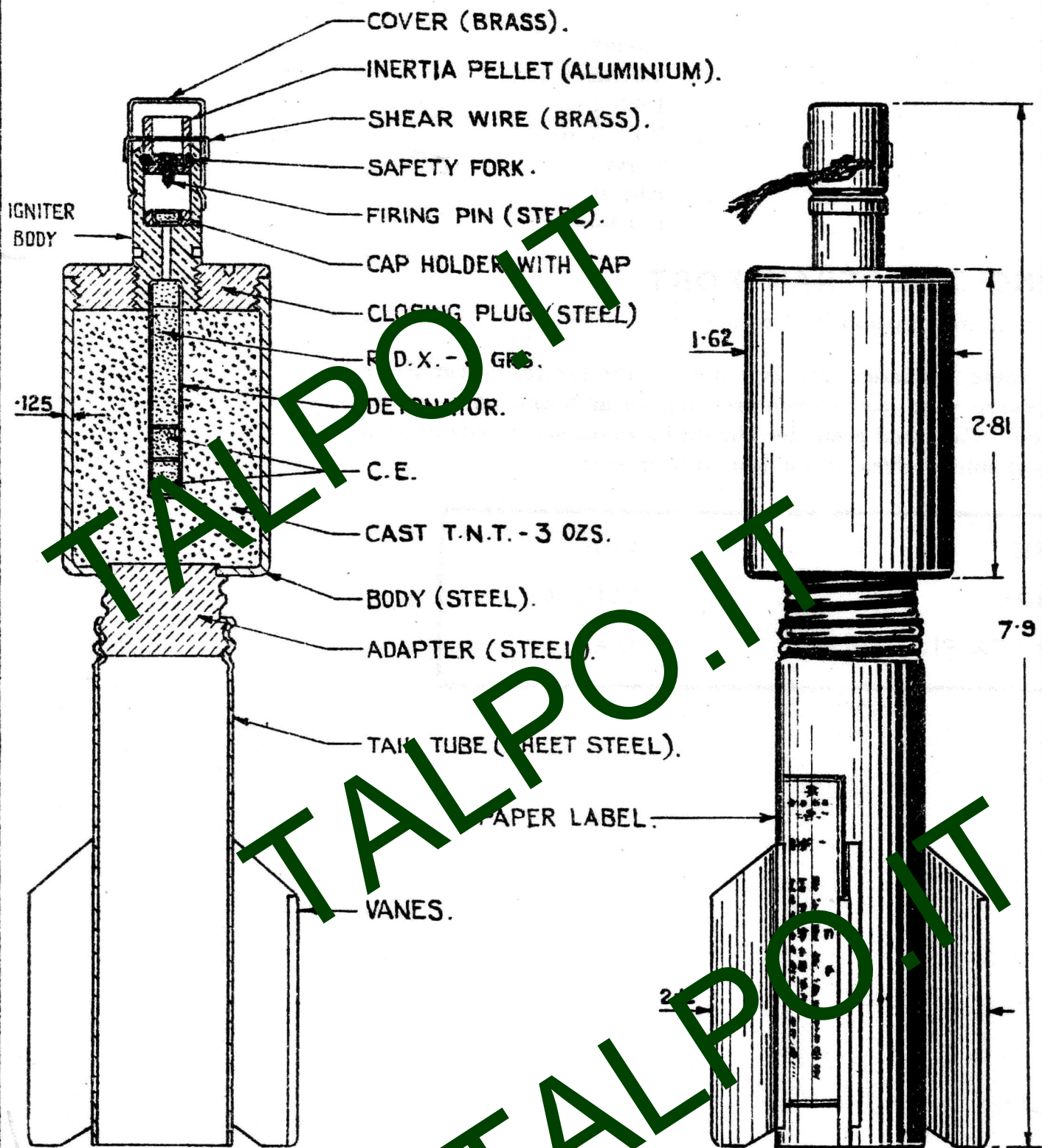
(Of captured ammunition by Ordnance)

12. It is not clear whether these grenades are issued with the igniter assembly in position or not, but it is usual Japanese practice to issue grenades primed and it is presumed that this grenade is no exception. Captured grenades should be examined to ensure that the safety fork is in position. Blinds should preferably be destroyed in situ.

EXPL. NO. FIRE RISK .. .. .	3-ozs.
GROUP CLASSIFICATION .. .. .	VIII, Z
CLASSIFICATION FOR SEA TRANSPORT .. .. .	O.A.S.

TALPO.IT

RESTRICTED.



WT. OF FILLED GRENADE ---- 1 LB. 1 OZ.

JAPANESE  
GRENADE, RIFLE, H.E., TYPE 3 MOD. 1.

DIMENSIONS IN INCHES.

C.I. Amn S/1421  
KIRKEE, FEB. 46

THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

SECTION C

JAPANESE AMMUNITION LEAFLETS

LEAFLET C 16

GRENADE, RIFLE, SMOKE.

### GENERAL

This grenade is fired from the 6.5 mm. Type Miji 38 and the 7.7 mm. Type '99 rifles using the Spigot-type launcher and the wooden-bullet cartridge in the same way as the Type '91 or the Type 3 rifle grenades, described in J. A. Ls C 2 and C 15 respectively. As far as is known, this is the only Japanese smoke grenade designed to be discharged from a rifle.

2. According to an Australian report the grenade was captured at Milne Bay; no information however of its use in any other theatre is available. No sample has been examined at Kirkee and the information in this Leaflet has been based on American and Australian reports.

### DESCRIPTION

3. The drawing shows the general appearance and construction of the grenade. It is made of tinned-plate except for the tail-tube and base which are made of sheet-steel, and it can be divided into the following four main parts:—

- (i) Nose Cap.
- (ii) Body, with Filling and Igniter.
- (iii) Base.
- (iv) Tail Unit.

### NOSE CAP

4. This is made of tinned-plate with a rounded head and is provided with rolled threads to screw on the body of the grenade. Soft iron wire is wrapped in the thread grooves in order to seal the joint.

## BODY, FILLING AND IGNITER

5. This is also constructed from tinned-plate with rolled threads at both ends to take the nose cap and the base. The filling is a smoke composition which consists of:—

Hexachlorethane	.. ..	56.2%
Zinc Metallic	.. ..	27.6%
Zinc Chloride	.. ..	2.9%
Zinc Oxide	.. ..	13.3%

The igniter pellet is contained in a thin-walled, brass container which is supported on a tinned-plate cup, screwed and soldered on to the body.

## BASE

6. This is made of sheet-steel and is screwed on to the body by means of rolled threads. Soft iron wire is wrapped and soldered into the thread grooves, the joint is covered with adhesive tape. The base is partially filled with a plastic plug which has a threaded hole half filled with solder. The bottom plate is held in place by a small screw embedded in the solder.

Four smoke ports are provided and are placed at 90 degree intervals around the base; they are covered with light metal discs held in place by waterproof cement and covered with paraffin wax. Three flash holes are drilled through the plastic plug at 120 degree intervals.

## TAIL UNIT

7. This consists of a sheet-steel tube to which are soldered four fins constructed from tinned plate. The upper end of the tube is threaded to fit the neck of the base; the threaded joint is wrapped with adhesive tape. A 6.5 mm. wooden-bulletted cartridge, wrapped in paper is stored inside the tube which is sealed with a paraffin impregnated cardboard disc attached to 9" of heavy twine.

## ACTION

8. The method of firing the grenade is the same as of the Type '91 rifle grenade. On firing, the gases from the cartridge propel the grenade forward and also pass through the flash holes to initiate the igniter pellet which in turn ignites the smoke composition. Smoke is then emitted through the four smoke ports.

## PACKING

9. The method of packing of this grenade is not known.

## IDENTIFICATION

10. The grenade is painted silver overall.

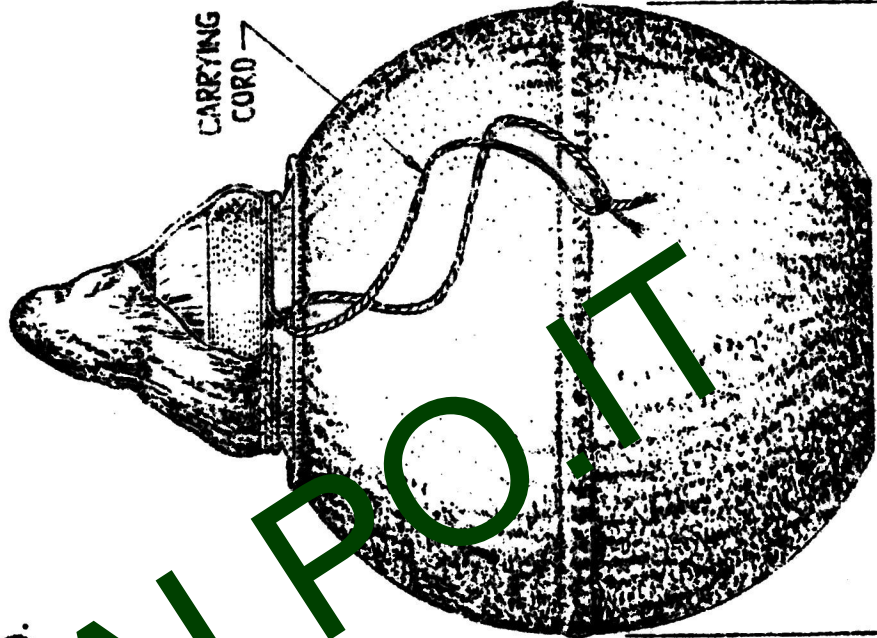
## SUMMARY OF DATA

11.	Length overall	.. ..	8 $\frac{1}{2}$ ins.
	Weight complete	.. ..	1 lb. 5 ozs. approx.
	Max. Diameter	.. ..	2 ins.
	Dia. of fins.	.. ..	2 $\frac{9}{16}$ ins.
	Weight of Smoke Composition	.. ..	9 $\frac{1}{2}$ ozs.



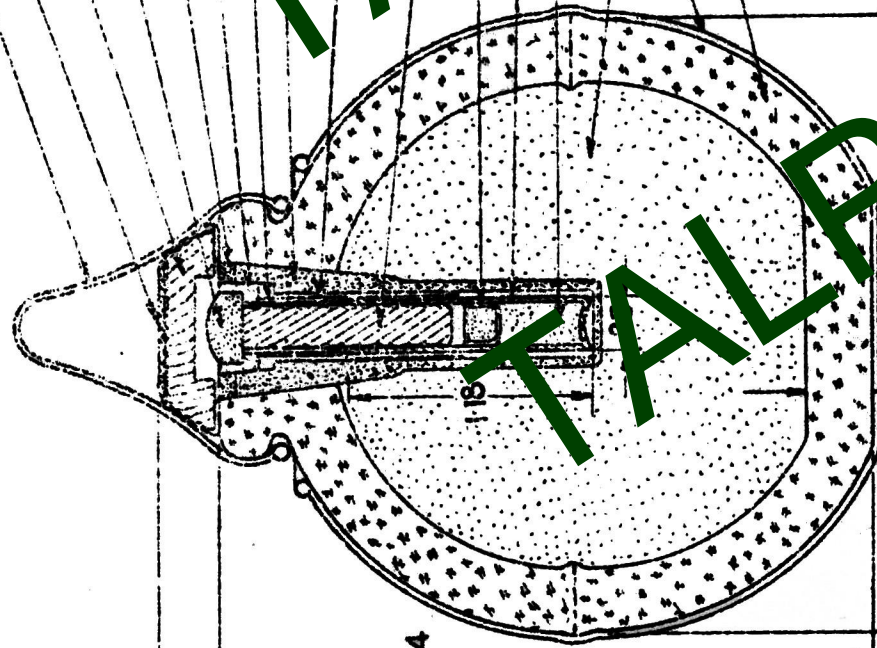
C.I. AMR. S/1337  
KURKEE, DEC. 1945  
G. P. P. POONA 1945

THIN RUBBER COVER.  
MATCH COMPOSITION (RED PHOS.).  
WOODEN STRIKER BLOCK  
FRICTION COMPOSITION, 5 GRS.  
SEALING COMPOSITION.  
WOODEN RING.  
PAPER TUBE.  
ADAPTER (BLACK RUBBER).  
PAPER PASTED ROUND THE FUZE  
IGNITOR.



3

SAFETY FUZE (WHITE) 0.96 x 0.18.  
COPPER CLIP (F. OF M. 4.6 GRS.)  
DETONATOR (COPPER), 28 GRS.  
C.E. (4 GRS)  
TYPE 88 EXPLOSIVE (3.5 OZS)  
THIN RUBBER COVER.  
GRENADE BODY (WHITE PORCELAIN).



3.14

3.46

1.18

2.97

0.34

COMPLETE WEIGHT  
13.95 OZS.

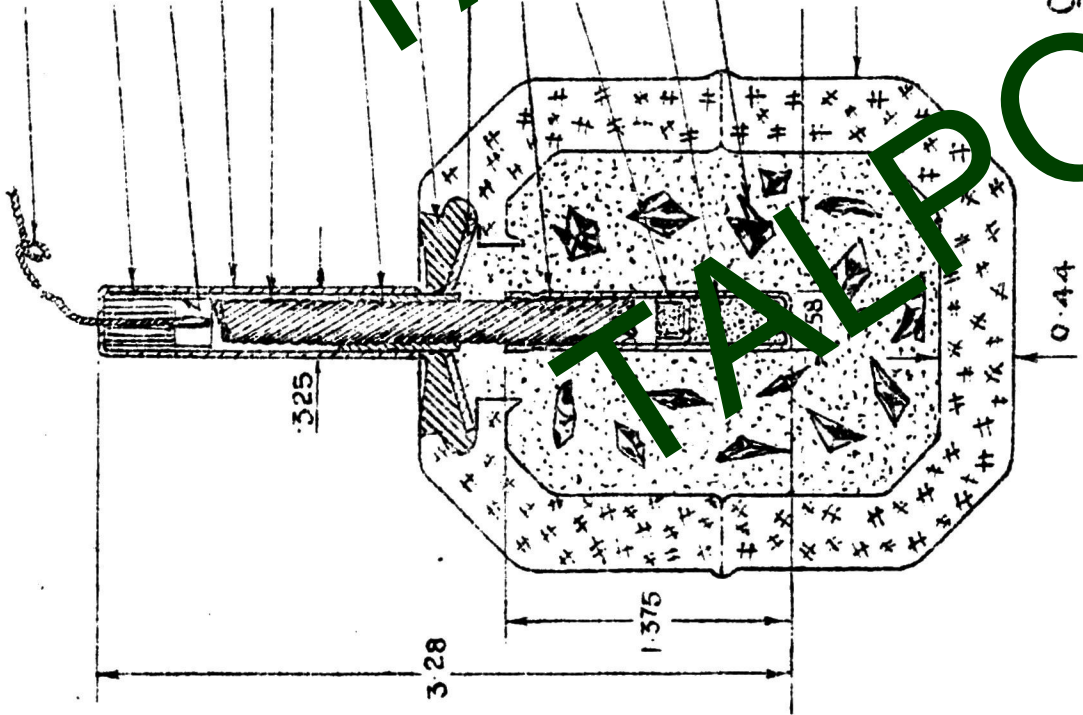
JAPANESE  
GRENADE, HAND, H. E., CERAMIC.

DIMENSIONS IN INCHES

CI AMN. S/1338  
KIRKEE. DEC. 45  
G.F.F. PDWVA. 1525

PULL CORD (SILK) WITH A THICK COATING OF RED PHOSPHORUS AT INNER END.  
ROLLED PAPER, COATED WITH FRICTION COMPO.  
PAPER TUBE  
FRICTION IGNITER TUBE (TIN)  
SAFETY FUZE (WHITE) 2.125" LONG 1/2" DIA. (5.6 SECS. DELAY)  
IGNITER TUBE SOLDERED TO STEEL WASHER  
SEALING MATERIAL  
STEEL WASHER  
DETONATOR (COPPER) 36.5 GRs.  
COPPER CUP CONTAINING 5.4 GRs. OF F.F.M.  
C.E. 8 GRs.  
STEEL PIECES WITH SHARP EDGES (45 IN NUMBER)  
LOOSE FILLING, 1.4 OZ.  
BODY IN TWO HALVES  
LONGITUDINAL GROOVES 12 IN EACH ROW

**ALPOIT**



COMPLETE WT. 15.9 OZs.

JAPANESE  
GRENADE HAND, SHRAPNEL, CERAMIC

DIMENSIONS IN INCHES

THIS LEAFLET MUST NOT  
FALL INTO ENEMY HANDS

D. OF A. (INDIA)  
JAPANESE AMMUNITION LEAFLETS

SECTION C  
LEAFLET C 19

GRENADE, HAND FLASH.

GENERAL

The exact use of this grenade is not known but, according to reports, it is probably thrown from an aircraft to dazzle an attacking pilot; the reference to air burst on the printed label gummed to the handle supports this view. Assuming that it is used for a dazzle effect and not for signalling purposes, the effect of its bursting on the line of sight of a night fighter pilot would be to form a persistent, patterned image which would prevent concentration on his target.

Another intention of this grenade may also be to simulate A.A. fire to worry bombers and make them take evasive action.

2. According to reports the grenade was recovered at New Guinea. No sample has been received at Kirkee and the information in this Leaflet has been based on American and Australian reports.

DESCRIPTION

3. The drawing shows the general appearance and construction of the grenade; reference should also be made to the drawing in Plate C, of J.A.L. C 1. It can be divided into the following two main parts—

- (i) Handle with friction igniter.
- (ii) Body with filling.

HANDLE WITH FRICTION IGNITER.

4. The Handle :—This consists of a rolled paper tube, to one end of which a shaped, wooden block is fitted by means of four brads; the block holds the friction igniter in place. The handle is fitted to the grenade body by a ring made from long cellulose fibres and, finally, by a gummed paper strip with one serrated edge. The mouth of the tube is reported to be closed by a screw type cover or a pull-off cap, but the details of these are not known.

5. The Igniter.—This is of the pull-friction type and consists of a brass tube (body), a pull-cord with ring, safety fuze and friction composition. The tube is closed at one end but has a small central hole to allow insertion of the pull-cord; the other end of the tube is flanged and is cut into four lugs. A rolled paper tube, open at one end, is positioned in the brass tube and this holds the friction composition, which has a central perforation to take the pull-cord. The friction composition consists of Potassium Chlorate, Strontium Nitrate, Antimony Sulphide and Zinc, whilst the inner end of the cord is coated with a small quantity of red phosphorus. The other end of the cord is attached to an iron-wire ring which is held to the interior of the handle by two strips of gummed paper. The igniter is secured to the wooden block by two steel brads, driven through the lugs. A length of safety fuze (15-mm.), with a G.P. pellet at each end, is wrapped in a white-paper sleeve and inserted into the igniter body.

## BODY WITH FILLING.

6. The Body :—This is spherical in shape and is made of layers of news-paper pasted together. The manufacture of the body and the filling process take place concurrently and appear to be as follows :—

The lining is built up from paper, gummed together over a spherical former to a thickness of about 3-mm., and cut into 3 sections for the purposes of assembly. The base and the middle segments make one hemisphere while the top hemisphere is provided with a 49-mm. hole to take the handle.

The filling, consisting of 4½-ozs. of G.P., is contained in a silk bag, the flaps of which are fastened to the wooden block at the bottom of the handle. The first three rows of the pellets are then assembled around the silk bag and the space between the pellets is packed with cotton-seed husk or cotton (upland cotton according to an Australian report).

The next section of the lining is then secured to the top hemisphere by gummed paper. The fourth and fifth rows of pellets are inserted and then the paper-wrapped pad of cotton seed husk is added; the base section is also replaced at this stage and the lining is completed. The 2-mm. thick outer covering is then pasted on over the lining, followed by a final covering of gummed paper.

The Pellets :—These are 32 in number and are assembled in 5 rows around the G.P. filling; their assembly in the grenade body is described above and will be clear from the drawing. The pellet consists of a tinned-plate, cylindrical cup 26.5-mm. in diameter and 20-mm. in length and is closed by a cup-shaped lid which is secured to the cup by a folded joint. The cup is lined with paper and filled at the base with a layer of 112-grs. of pyrotechnic composition, analysed as follows :—

Potassium Nitrate .. .. .	..	55.5%
Antimony Sulphide .. .. .	..	9.5%
Sulphur .. .. .	..	16.0%
Aluminium .. .. .	..	19.0%

A wooden disc 5-mm. thick, is attached to the inside of the lid. A 20-mm. length of safety fuze passes through a hole in the lid and the wooden disc. The fuze is coated at both ends with priming composition, the inner end being in contact with the pyrotechnic composition, the outer end lying in folds in the silk gunpowder bag.

## ACTION.

8. To use the grenade, the iron-wire ring is attached to one of the fingers of the throwing hand and the grenade thrown. This ignites the friction igniter, which in turn ignites the safety fuze; the grenade explodes after a delay of two seconds, shattering the body and scattering the pellets in all directions. Simultaneously, the lengths of safety fuze and, after approximately a second's delay, the pellets are also ignited; these are reported to burn for about 10 seconds. It is also possible that the pellets may explode, especially if they have been affected by damp and later dried out; this is particularly likely as the grenade is not adequately waterproofed.

## **PACKING**

9. According to an Australian report, six grenades are packed in a rough wooden box, packed with straw and held in position by a wooden frame with six circular holes through which the handles of the grenades are pushed.

## **IDENTIFICATION**

10. The grenade is painted black overall, except for the mouth of the handle.

According to an Australian report, a printed label pasted to the handle was translated as follows:—

“Directions for use :

Remove the cover on the handle and pull out the ring on the cord. Grasp the handle and throw without delay. The charge explodes about two seconds after it is ignited by the cord and numerous explosive containers are scattered in the air. Each container explodes individually”.

The label also included the date of manufacture, inspection stamp and the place of manufacture (Tokyo).

SUMMARY OF DATA.

11. Length overall .. .. .	9.1-ins.
Diameter of the body .. .. .	5.5-ins.
Total length of handle .. .. .	4.53-ins.
Length of handle, visible .. .. .	3.54-ins.
Diameter of handle .. .. .	1.9-ins.
Wall thickness of handle .. .. .	3-mm.
Wall thickness of body .. .. .	5-mm. (approx)
Weight of grenade .. .. .	2-lbs. 3-ozs.
Weight of bursting charge .. .. .	4.5-ozs.
Weight of pellet (average) .. .. .	288-grs. (18.7-gms.)
Weight of pyrotechnic mixture in pellet .. .. .	112-grs.

**HANDLING AND TRANSPORT**

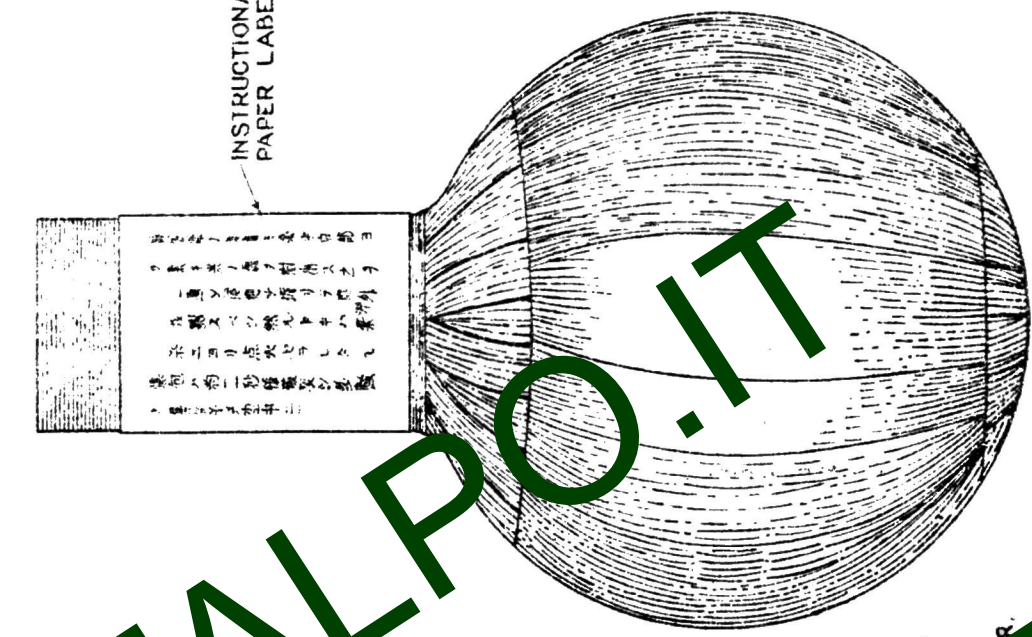
(Of captured ammunition by Ordnance)

12. As this grenade is a pyrotechnic store, it may be dealt with in the same way as the Japanese flares described in J.A.L. The grenades in their original packages should be safe to handle but loose grenades should be examined to see that their pull rings are not loose. Since no waterproofing composition has been applied, a high percentage of blinds may occur. In addition, grenades which have been stored under adverse conditions may explode on ignition (see para 7).

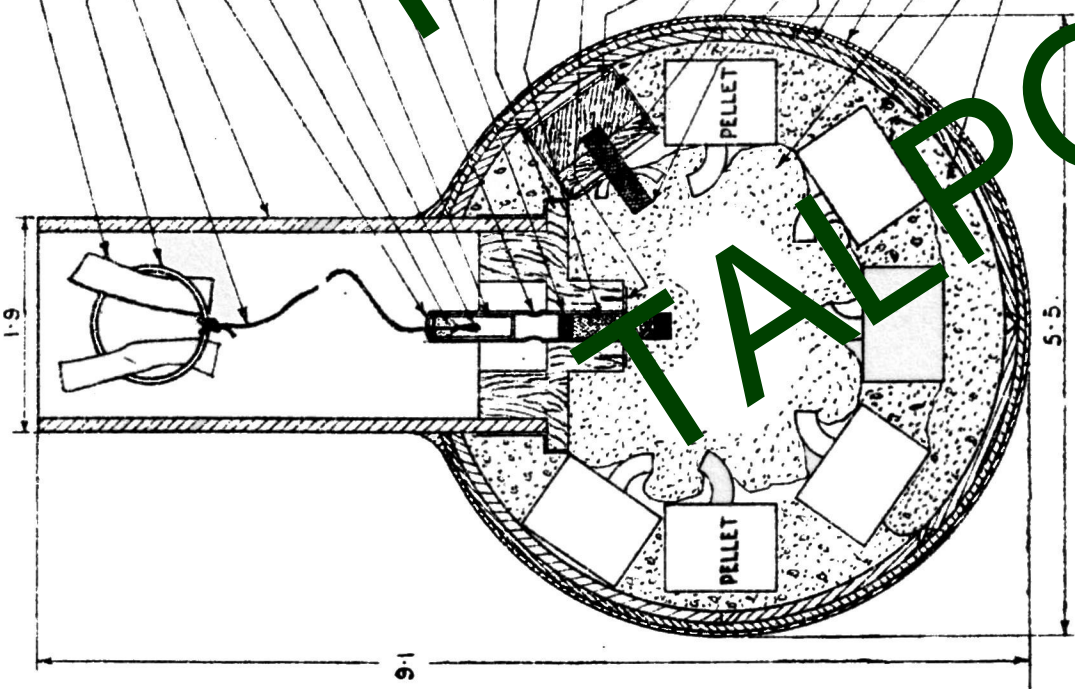
EXPLOSION/FIRE RISK .. .. .	1.5-ozs. (per grenade)
GROUP CLASSIFICATION .. .. .	IX, Y.
CLASSIFICATION FOR SEA TRANSPORT .. .. .	A.S.P.

INSTRUCTIONAL  
PAPER LABEL.

日本語の... 安全... 使用... 注意...  
1. 使用前に必ずこの説明書をよく読んでおくこと。  
2. 点火のときは必ず安全の注意を怠らぬこと。  
3. 点火のときは必ず安全の注意を怠らぬこと。  
4. 点火のときは必ず安全の注意を怠らぬこと。  
5. 点火のときは必ず安全の注意を怠らぬこと。



- STRIPS, PAPER.
- RING, IRON WIRE.
- PULL CORD.
- HANDLE, ROLLED PAPER TUBE.
- IGNITER BODY, BRASS.
- FRICTION COMPOSITION.
- RED PHOSPHORUS.
- TUBE, ROLLED PAPER.
- VENT.
- G. P. PELLET.
- IGNITER WELDER, WOOD.
- SAFETY FUZE.
- LUG OF IGNITER BODY.
- 32 PELLETS EACH IN TINNED PLATE CUP LINED WITH PAPER.
- PYROTECHNIC COMPOSITION.
- WOODEN DISC.
- SAFETY FUZE.
- LINING (OUTER COVER) BODY PASTED PAPER.
- FINAL COVERING, PAPER.
- BURSTING CHARGE - G. P. IN SILK BAG - 4 1/2 OZS.
- COTTONSEED HUSK PACKING.
- PAD OF COTTONSEED HUSK WRAPPED IN PAPER.



COMPLETE WEIGHT - 2 LBS. 3 OZS.

# JAPANESE HAND-MADE FLASH GRENADE

DIMENSIONS IN INCHES