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.) ½ 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 – 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 ⅓ 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 1.
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 '99" 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 booby trap roles 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 grenade 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) filled version of the Type '91 grenade has 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 blank 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 a 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. 12 (*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.

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*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 6) 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 (Serial 5). This is a small thin-walled grenade with friction igniter probably used for offensive purposes.

(*c*) Pull type, H. E. Hand (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 booby traps. 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 Worfmi). 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 petrol and raw rubber) is similar to ours but a much more elaborate allways type fuze is fitted. This grenade is thought to be factory manufacture and issued as a regular service store. 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 duds. 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 allways action instantaneous impact fuze, and may be found in a very dangerous condition."

13. The following *rifle* or *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 not quite so 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 Germam small hollow charge grenade (Gewehr panzergranate).

(*b*) Type '99-A, H.E., Hand or Rifle Grenade (Serial 4). 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 a ball round. The maximum range is of the order of about 100 yards to 130 yards according to rifle used. 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 of 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 functioned by withdrawing the safety fork and then striking the grenade on the head of the fuze on any 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 intertia 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 Pelelfeu 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 closing 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 fitted a round plug of iron, with a point ground on to the lower end and the top 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 it appears 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 below:—

"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.

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*Hexanitrodiphenylamine and Trinitroanisol 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 seconds 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 '91 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 tied 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; creosote 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 blinds; 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.

C. I. Amn.,
Kirkee.

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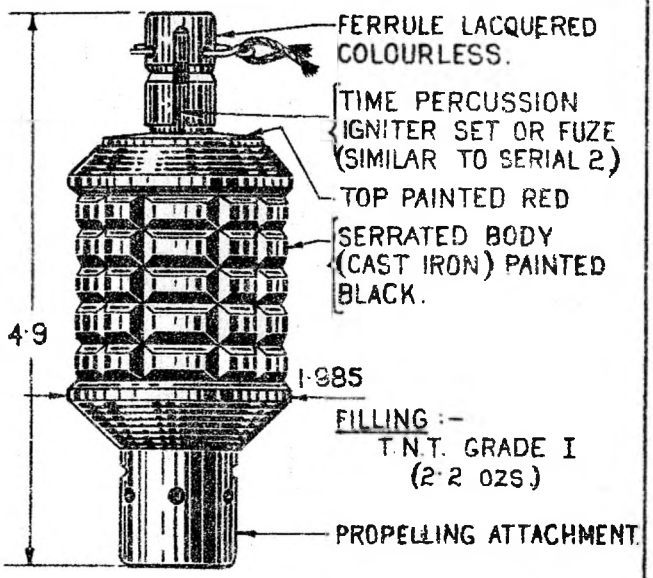
RESTRICTED

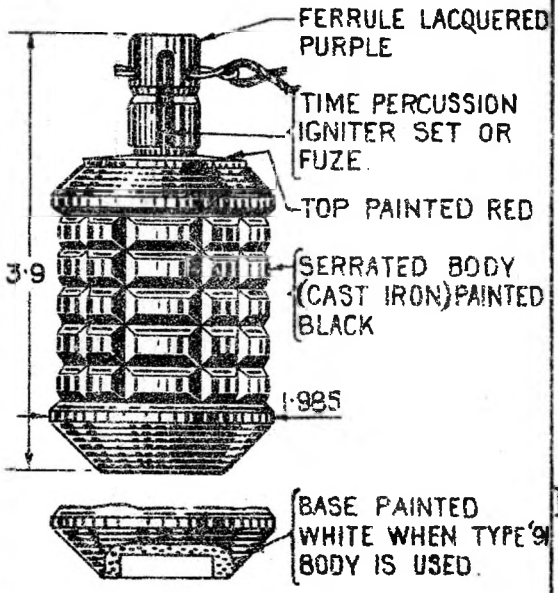
PROJECTION:-
(i) HAND
(ii) DISCHARGER (TAISHO 10 OR TYPE '89.)
(iii) RIFLE WITH SUITABLE LAUNCHER - THE GRENADE IS MODIFIED BY FITTING A TAIL UNIT IN PLACE OF PROPELLING ATTACHMENT.

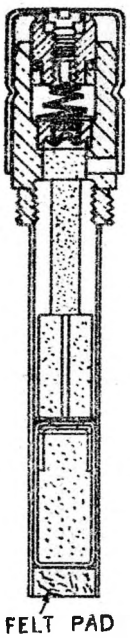


TIME OF DELAY :- 7·9 SECS.
FILLED WEIGHT :- 1 LB. 2·6 OZS.
(V)

SERIAL 1 — HAND OR DISCHARGER, H.E. TYPE '91

PROJECTION :-
(i) HAND
(ii) RIFLE USING CUP SHAPED LAUNCHER



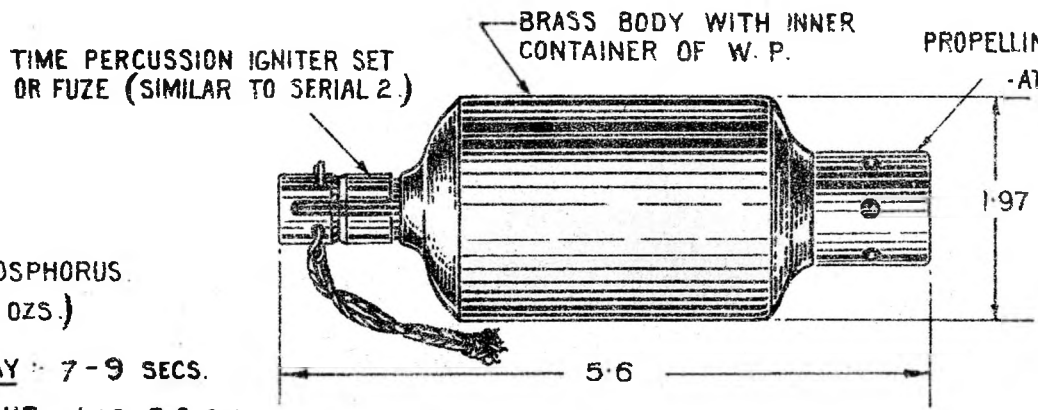


TIME PERCUSSION IGNITER SET OR FUZE ENLARGED VIEW.

FILLING :- T.N.T. GRADE I (2·2 OZS)
TIME OF DELAY :- 4-5 SECS.
FILLED WEIGHT :- 1 LB. 0·5 OZS
(V)

SERIAL 2 — HAND, H.E. TYPE '97

PROJECTION :- (i) HAND
(ii) DISCHARGER (TAISHO 10 OR TYPE '89.)



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 GRENA

DIMENSIONS IN INCHES.

PROJECTION :-
(i) HAND
(ii) RIFLE USING CUP SHAPED LAUNCHER TYPE '00.

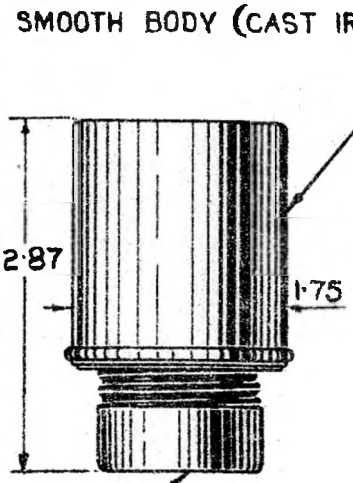
FILLING :-
PRESSED PICRIC ACID BLOCKS WRAPPED IN ROLLED PAPER. (1·9 OZS.)

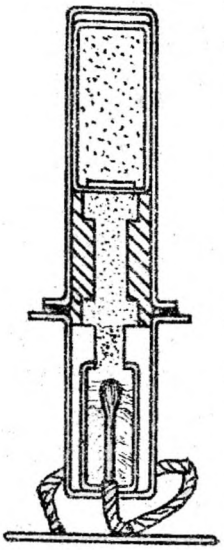
TIME OF DELAY :- 4-5 SECS.

(V) FILLED WEIGHT :- 10·6 OZS.

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

PROJECTION :-
(i) HAND





TIME PULL FRICTION IGNITER ENLARGED VIEW.

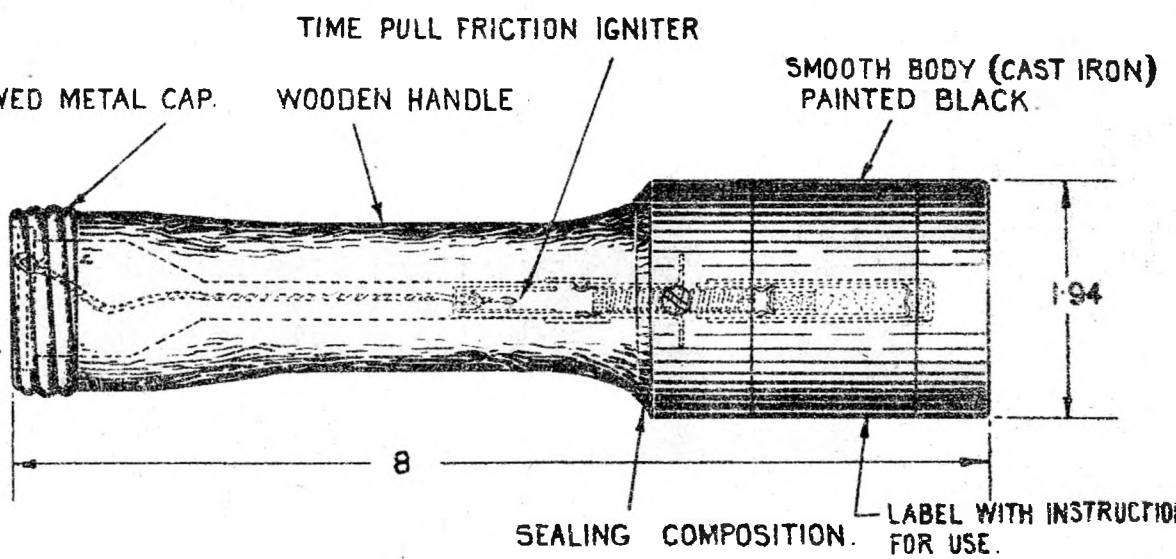
FILLING :- PICRIC ACID BLOCK. (2 OZS.)

TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 9·5 OZS.

SERIAL 5 — HAND, H.E., TYPE '99-B

PROJECTION :-
(i) 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

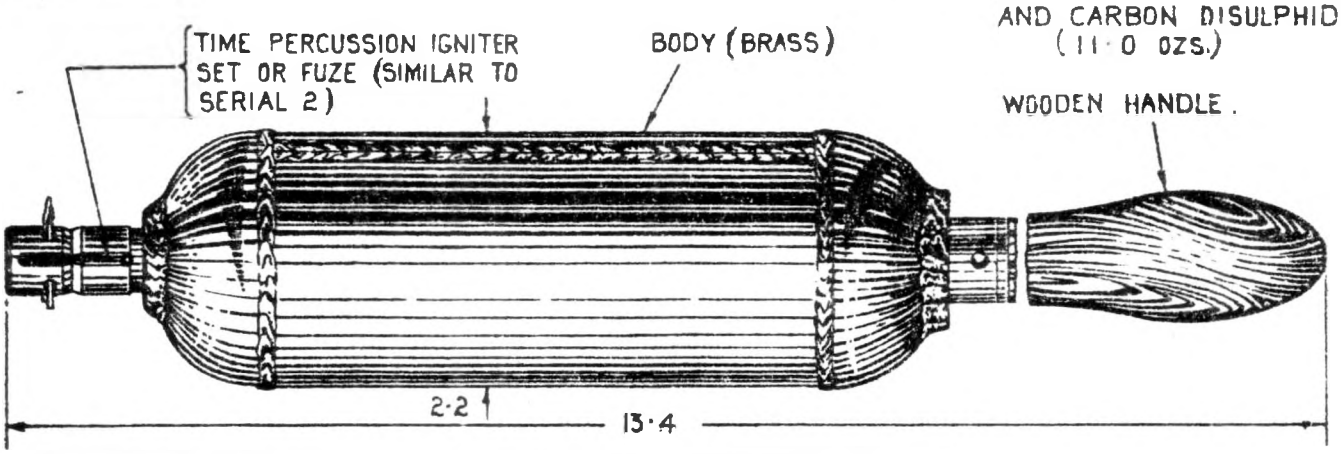
DES (SERIAL Nos. 1 TO 6 (a))

C.I.AMM. S/1116
KIRKEE. MAY 1945

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

PROJECTION :- HAND

FILLING :- RUBBER PELLETS IN A SOLUTION OF WHITE PHOS. AND CARBON DISULPHIDE (11·0 OZS.)



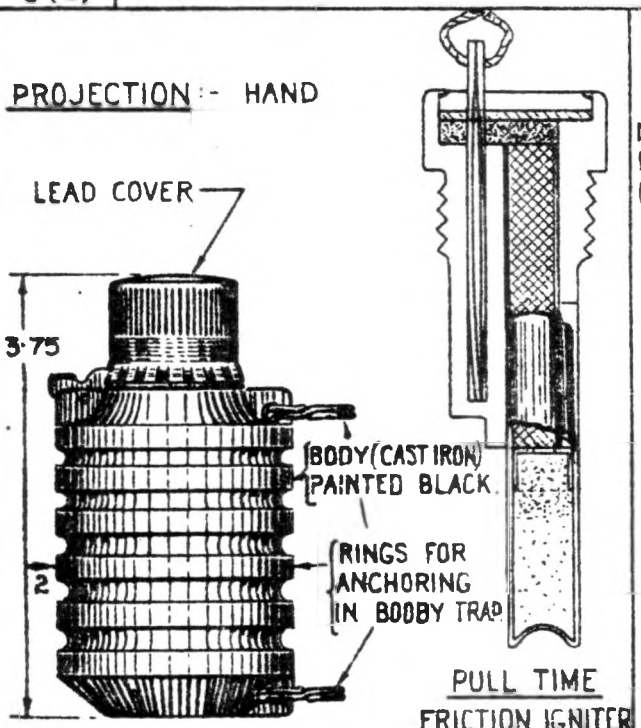
TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 1 LB. 9 OZS.

SERIAL 6(b)

HAND, INCENDIARY, STICK TYPE

PROJECTION :- HAND



FILLING :- GRANULAR T.N.T. (1·4 OZS.)

TIME OF DELAY :- 5-6 SECS.

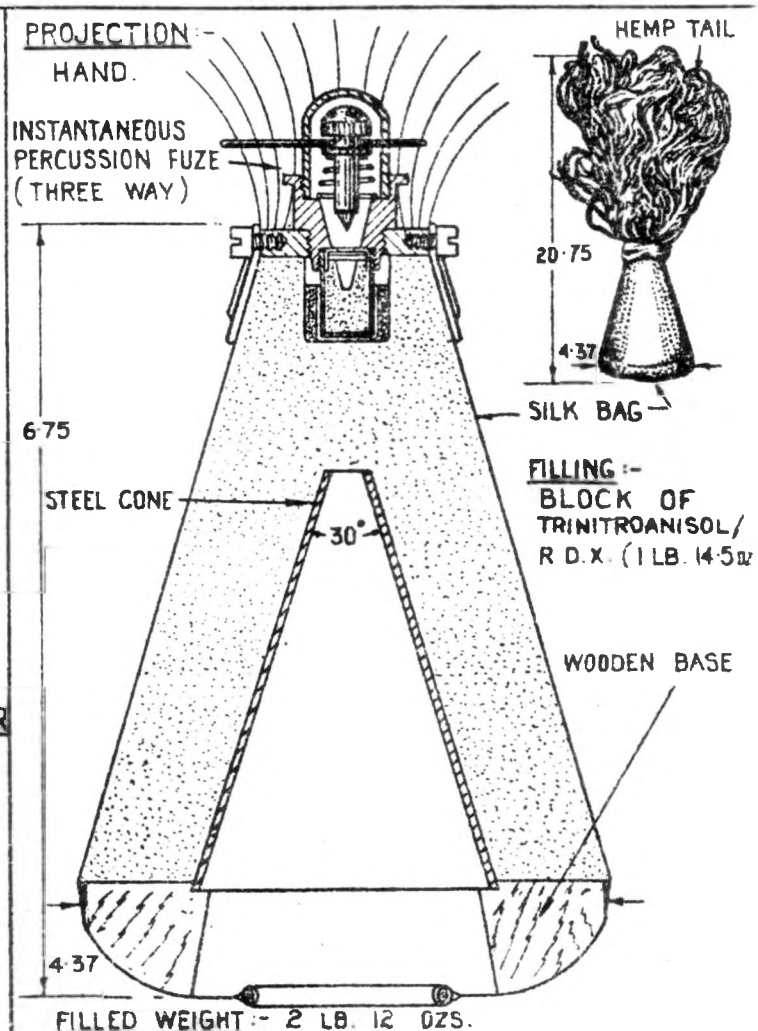
FILLED WEIGHT :- 1 LB. 4 OZS.

(V)

SERIAL 7

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

PROJECTION :- HAND.



FILLED WEIGHT :- 2 LB. 12 OZS.

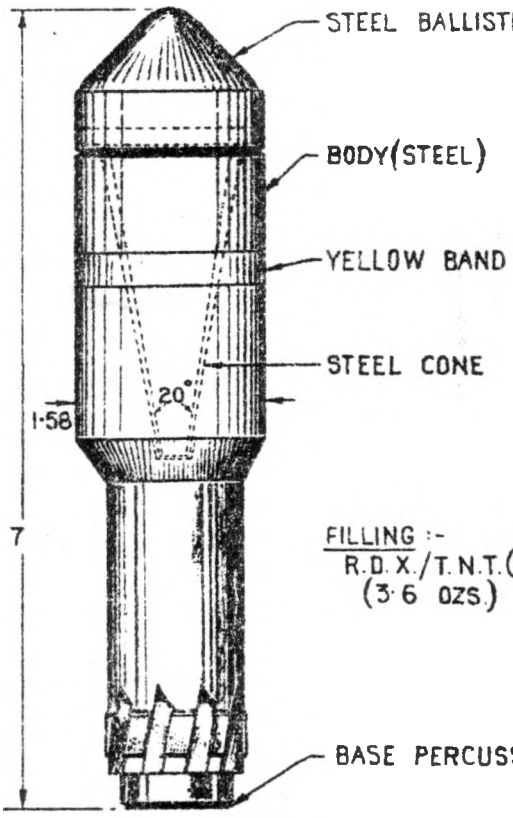
SERIAL 8

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

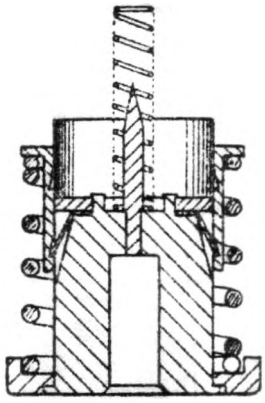
JAPANESE GRE

DIMENSIONS IN INCHCHES.

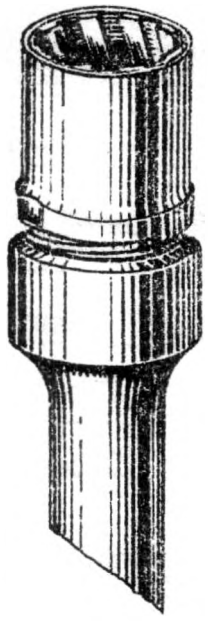
PROJECTION :- RIFLE, USING A RIFLED 30 MM. DISCHARGER CUP.



FILLING :-
R.D.X./T.N.T.(50:50)
(3·6 OZS.)



BASE PERCUSSION FUZE.
ENLARGED VIEW



30 MM. RIFLED DISCHARGER CUP ATTACHMENT.

(V) FILLED WEIGHT:- 12·75 OZS.

SERIAL 9

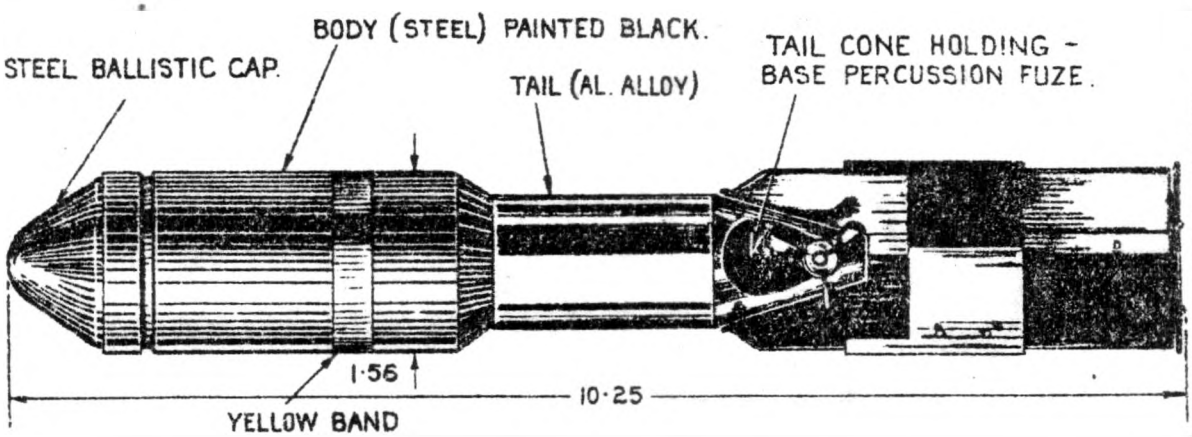
RIFLE, H.E., A.T., HOLLOW CHARGE

PROJECTION :- DROPPED FROM AIR-CRAFT.

FILLING :-
R.D.X./T.N.T.
(4·1 OZS)

FILLED WEIGHT:-
(12 OZS.)

(V)



SERIAL 10

1/3 Kg. H.E., A/C., (HOLLOW CHARGE) BOMB.

(ADAPTED FROM SERIAL Nº 9)

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

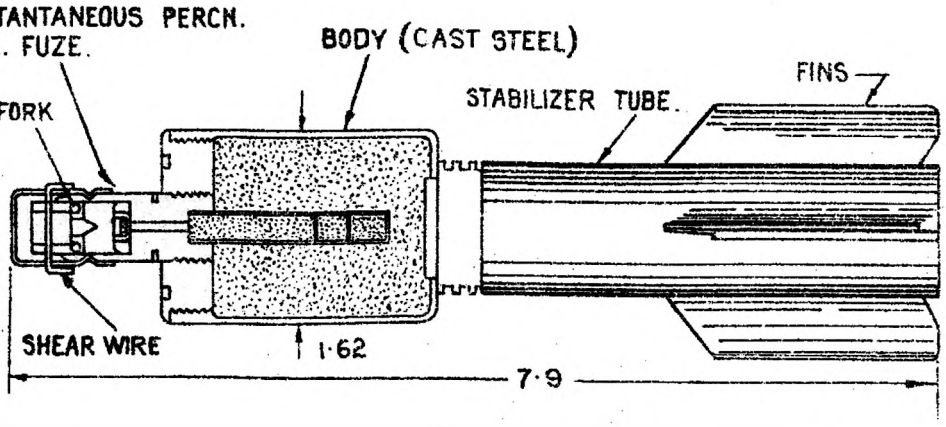
C.I. AMM.S/1117
KIRKEE. MAY 1945

G.P.I.P. POONA, 1945.

PROJECTION:- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER

FILLING:-
CAST T.N.T (3 ozs)

FILLED WEIGHT:-
1 LB. 1 oz.



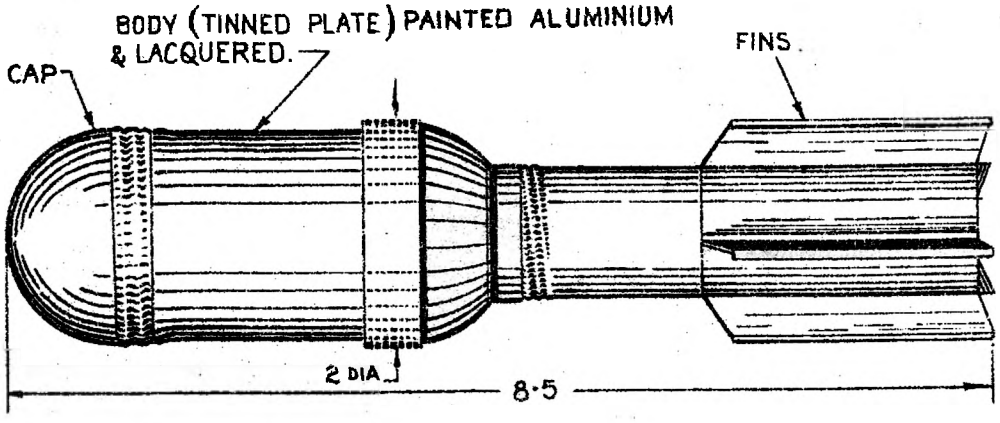
SERIAL 11

RIFLE, H.E., INSTANTANEOUS. (BELIEVED TO BE TYPE 3, MODIFICATION 1.)

PROJECTION:- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER.

FILLING:- SMOKE COMPO. (HEXACHLORETHANE.)
IGNITED BY FLASH FROM PROPELLANT GASES ON FIRING.

FILLED WEIGHT:-
1 LB. 4·64 ozs



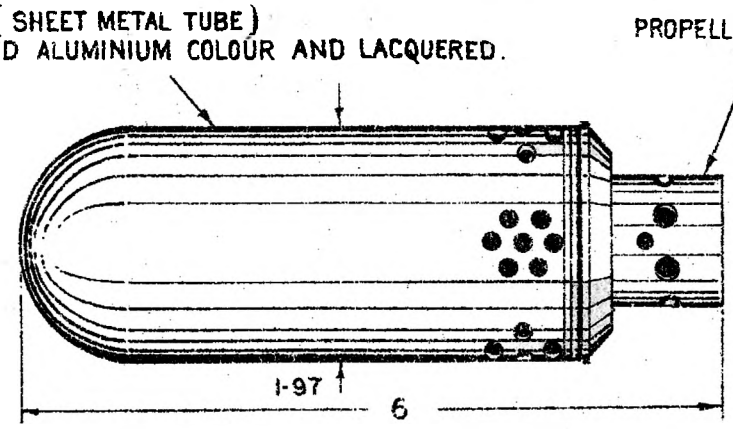
SERIAL 12

RIFLE, SMOKE. (VANED TYPE).

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

FILLING:- SMOKE COMPO. (HEXACHLORETHANE 8 ozs.)

FILLED WEIGHT:-
1 LB. 4 ozs.



SERIAL 13

50 MM. DISCHARGER SMOKE.

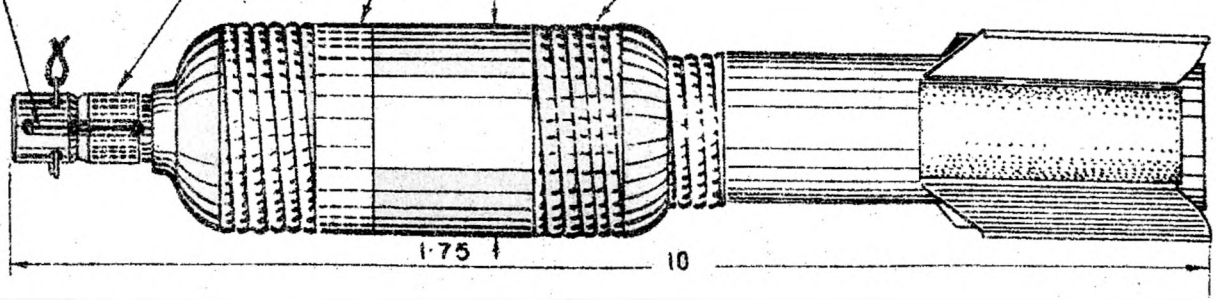
JAPANESE GRENA

DIMENSIONS IN INCHES.

PROJECTION :- RIFLE FITTED WITH SPIGOT TYPE LAUNCHER.

FILLING:- WHITE PHOSPHORUS. (6·7 OZS.)

FILLED WEIGHT :- 1 LB. ·25 OZS.



SERIAL 14

RIFLE, INCENDIARY.

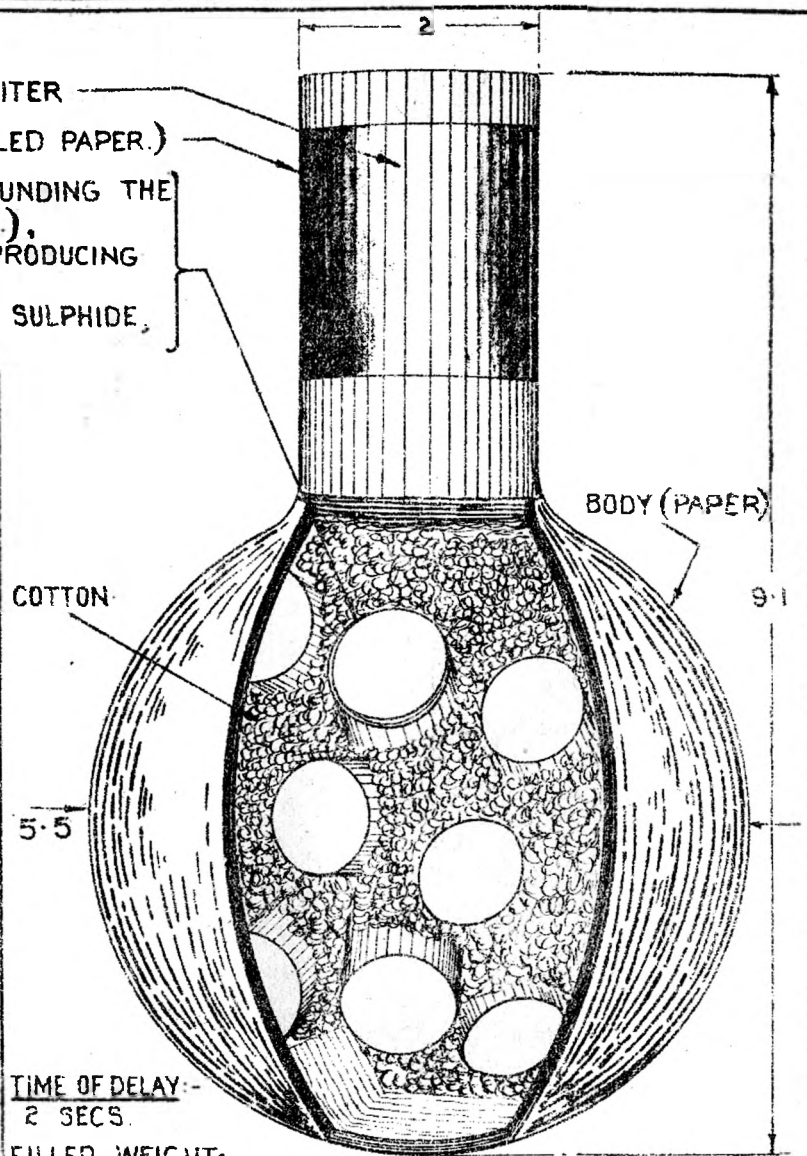
PROJECTION :- HAND

FILLING:-

PULL TIME FRICTION IGNITER

HANDLE (TUBE MADE OF ROLLED PAPER.)

32 PELLETS IN FIVE ROWS SURROUNDING THE BURSTING CHARGE (4·5 OZS. G.P.), EACH PELLET CONTAINING FLASH PRODUCING PYROTECHNIC COMPOSITION OF:-
POTASSIUM NITRATE, ANTIMONY SULPHIDE, ALUMINIUM (·26 OZS)



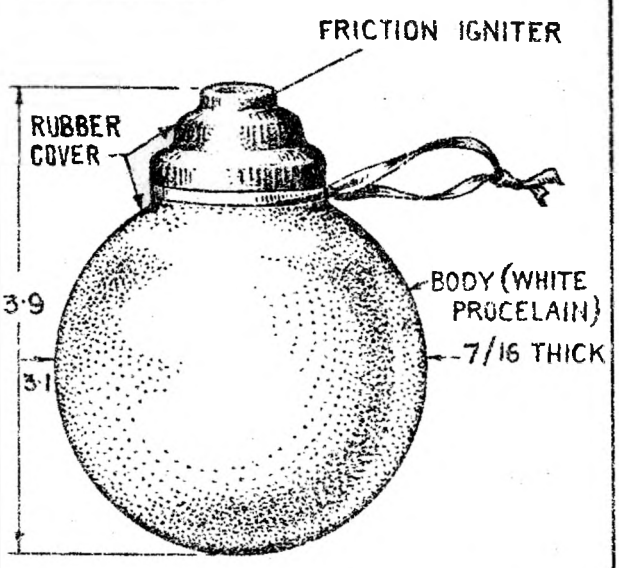
TIME OF DELAY:- 2 SECS.

FILLED WEIGHT:- 2 LB. 2·7 OZS.

SERIAL 16

HAND, FLASH.

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.

ADES. (SERIAL NOS. 11 TO 16).

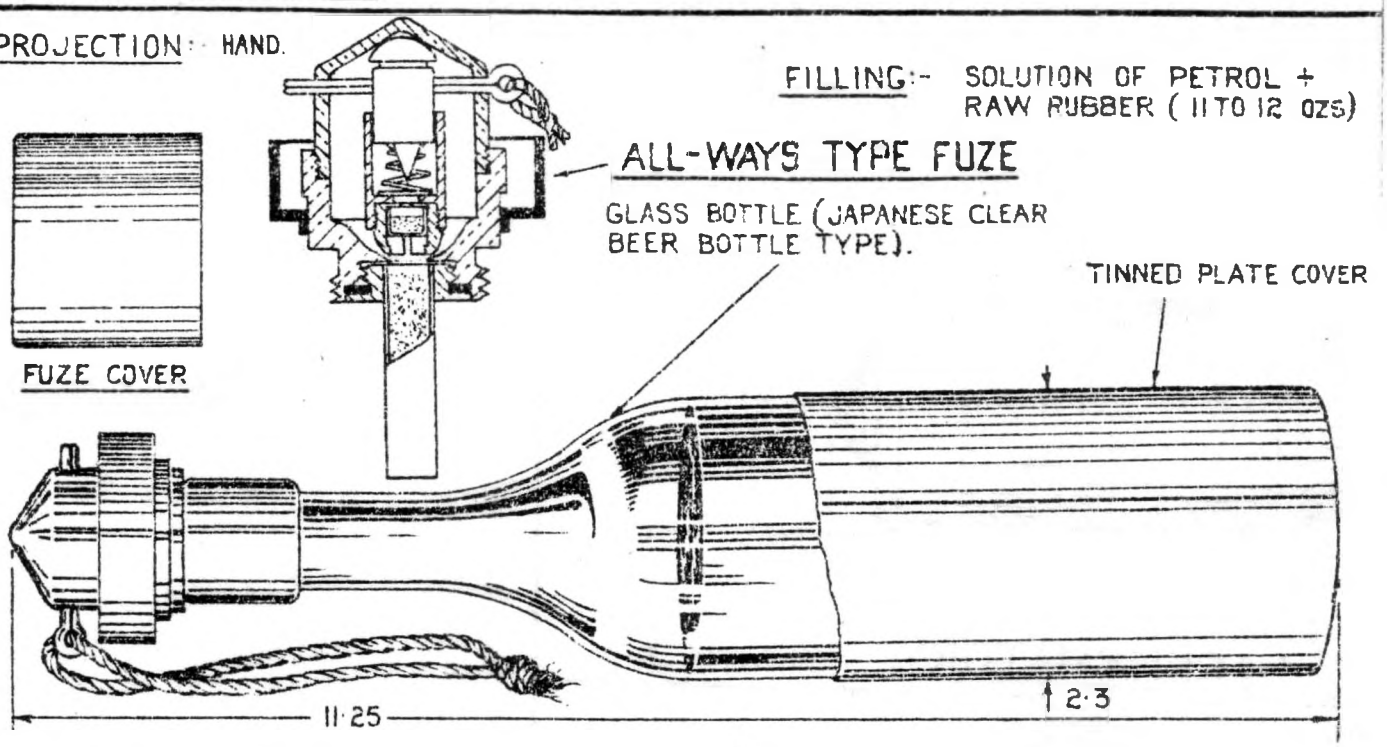
C.I. AMM/S1118
KIRKEE. MAY 1945

G.P.P. POONA, 1945

RESTRICTED

PROJECTION:- HAND.

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

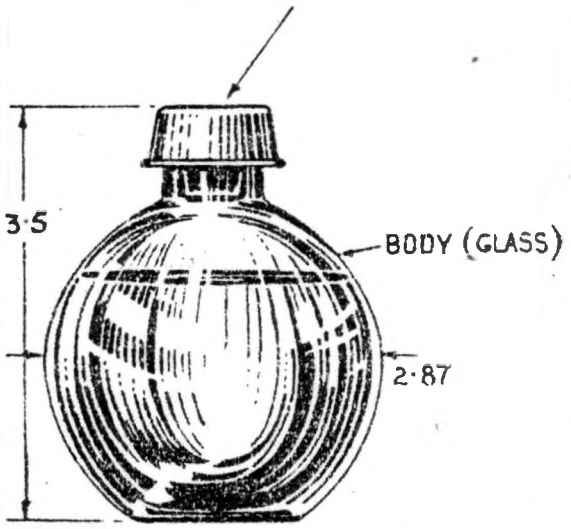


FILLED WEIGHT:- 2 LB. 11 OZS.

SERIAL 17

HAND, INCENDIARY, (MOLOTOV COCKTAIL).

PROJECTION:- HAND



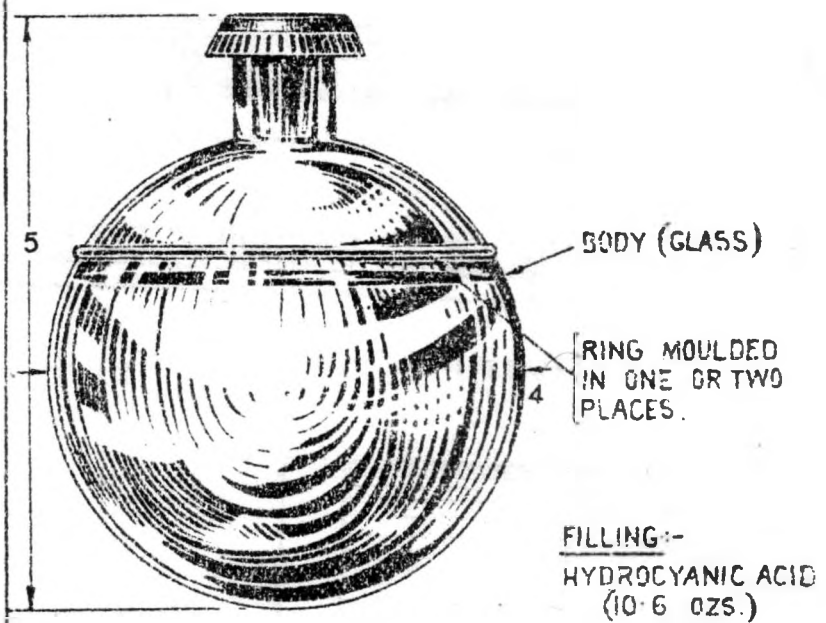
FILLING:- TITANIUM TETRACHLORIDE AND SILICON TETRACHLORIDE. (7·8 OZS.)

FILLED WEIGHT:- 12·8 OZS.

SERIAL 18

FRANGIBLE SMOKE.

PROJECTION:- HAND



FILLING:- HYDROCYANIC ACID (10·6 OZS.)

FILLED WEIGHT:- 1 LB. 4 OZS.

SERIAL 19

FRANGIBLE HCN. (GAS)

JAPANESE GREN

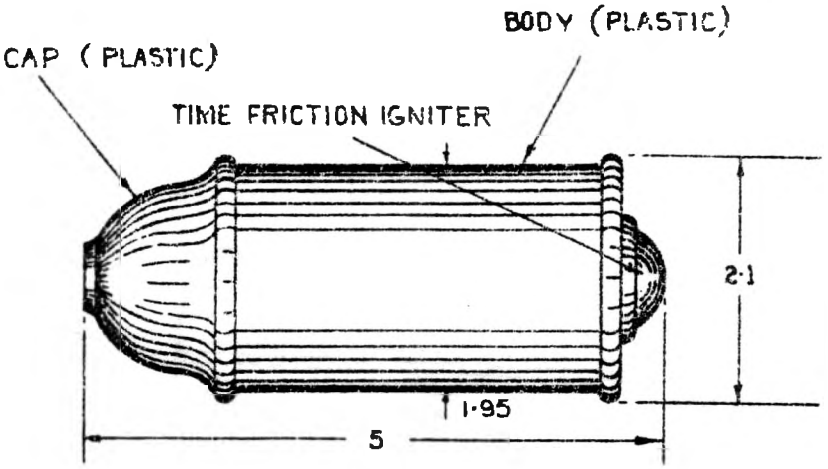
DIMENSIONS IN INCHES.

PROJECTION:- HAND

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

TIME OF DELAY:-
4-5 SECS.

FILLED WEIGHT:-
11 OZS.



SERIAL 20

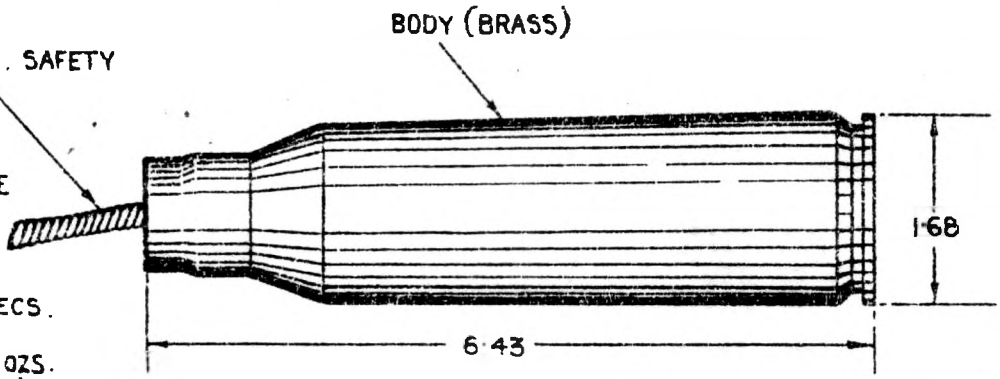
TYPE '89, MK. 'C' LACHRYMATORY.

PROJECTION:- HAND

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.)



SERIAL 21

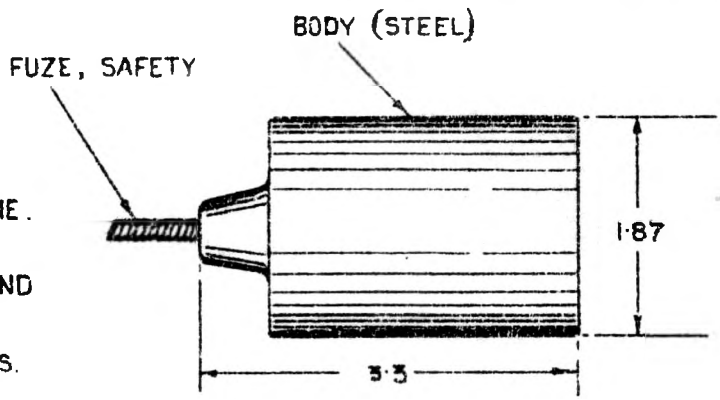
TYPICAL IMPROVISED GRENADE USING 25 MM. CARTRIDGE CASE.

PROJECTION:- HAND

FILLING:-
POTASSIUM CHLORATE AND DINITRONAPHTHALENE.
OR
POTASSIUM CHLORATE AND DINITROTOLUENE.

TIME OF DELAY:- 4-5 SECS.

FILLED WEIGHT:- 15 OZS.



SERIAL 22

TYPICAL IMPROVISED GRENADE USING GAS PIPE.

ADES (SERIAL NOS. 17 TO 22.)

C.I.AMM.S/1119
KIRKEE. MAY 1945

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

JAPANESE GRENADES

Brief Summary for quick reference

Serial No.	Type.	Method of Projection	Maximum. Length. Ins.	Maximum. Diameter. Ins.	Total weight. Lbs. Ozs.	Weight of filling. Lbs. Ozs.	Nature of filling.	Delay time. Secs.	Remarks.
1	Hand or Discharger, H. E., Type '91.	(*a*) Hand. ... (*b*) Tai-ho 10 discharger. (*c*) Type '89 discharger. (*d*) Rifle fitted with a spigot type launcher.	4·9	1·985	1 2·6	0 2·2	T.N.T. ...	7-9	V Serrated cast iron body. Ignition mechanism consists of inertia pellet with striker and percussion cap, the whole being covered by a spring fitted brass ferrule. For hand use, fired by a blow before throwing. On firing from rifle or discharger, set back causes the inertia pellet with striker to fire the cap. The inertia pellet is held safe during transport and storage by a safety fork.
2	Hand, H. E., Type '97.	Hand ...	3·9	2·08	1 0·5	0 2·2	T.N.T. ...	4-5	V Similar to the Type '91 grenade but the delay period is less and it is not fitted with a propelling attachment. It is believed that certain grenades of this type can be fired from a rifle using a 50-mm. cup-shaped launcher (*see* para. 11 of Text).
3	Hand or Discharger, Incendiary, (W. P.), ½ Kg.	(*a*) Hand ... (*b*) Type '89 and Taisho 10 dischargers.	5·6	1·97	1 3·6	0 6·2	White phosphorus.	7-9	The body is made of brass with an inner brass container holding white phosphorus. The action is the same as for Type '91 (Serial 1) above.
4	Hand or Rifle, H. E., Type '99-A.	(*a*) Hand ... (*b*) Rifle using cup-shaped launcher.	6·5	1·75	0 10·6	0 1·9	Picric acid ...	4-5	V This grenade was originally known as the Kiska type. Very similar in general construction to the Type '97 described above but differs from it in having (*i*) plain exterior (not serrated), (*ii*) a flash guard positioned over the closing plug, (*iii*) a brass fuze cover instead of a brass ferrule secured to the fuze body by a screw. Ignition mechanism similar to Serials 1 and 2 above.
5	Hand, H. E., Type '99-B.	Hand ...	2·87	1·75	0 9·5	0 2	Picric acid ...	4-5	Resembles Type '99-A described above in external appearance. Plain cylindrical cast iron body. Pull type friction igniter mechanism covered by a screwed metal cap which has to be removed before throwing.

Serial No.	Type.	Method of Projection.	Maximum Length. Ins.	Maximum Diameter. Ins.	Total weight. Lbs. Ozs.	Weight of filling. Lbs. Ozs.	Nature of filling.	Delay time. Secs.	Remarks.
6	**Hand, Stick Type—** (*a*) H. E. (Type '98).	Hand ...	8	1·94	1 3	0 2·7	Picric acid ...	4-5	V Consists of a cylindrical cast steel body, plain exterior and a wooden handle having an axial channel housing the igniter and friction cord. A metal cap which is screwed on to the end of the wooden handle is removed before throwing.
	(*b*) Incendiary ...	Hand ...	13·4	2·2	1 9	0 11·0	About 35 cylindrical rubber pellets in a solution of W.P. and carbon disulphide.	4-5	Smooth brass body fitted with wooden handle. The ignition arrangement is similar to that for Serials 1 and 2 above. The number of rubber pellets in the filling may vary and the weight of filling and total weight will not be the same in all cases.
7	Hand, H. E., Pull Type. (believed to be Type 2-3).	Hand ...	3·75	2	1 4·8	0 1·4	T.N.T.	5-6	V Cast iron body, having 5 circumferential serrations. Two metal rings are attached at one side at the top and bottom for booby trap and/or carrying purposes. The friction igniter at the nose of the grenade is protected by a lead cover secured by a quick release catch.
8	Hand, H. E., A. T., (Hollow Charge Type 3).	Hand ...	6·75	4·37	2 12	1 14·5	Trinitroanisol 60% R.D.X. 40%.	Instantaneous.	Consists of a cast explosive block in the form of a truncated cone with a steel liner to form the hollow charge cavity. A wooden block at the nose gives the required stand off distance on impact. The grenade is encased in a white or olive drab silk bag. It has a percussion type base fuze with a three-way action to ensure functioning at inclined angles. To give necessary stability and head-on impact when thrown, it is fitted with a hemp streamer tail. The existence of a smaller grenade of the same type is also reported. It is filled with pentolite.
9	H. E., A. T. (Hollow Charge).	Rifle fitted with rifled 30-mm. discharger cup.	7	1·58	0 12·75	0 5·6	R.D.X./T.N.T.	,,	V Consists of a light steel body with a ballistic cap at the head and a base fuze mechanism at the tail. The fuze is armed by set back on discharge from rifle. A steel cone-shaped liner forms the necessary cavity in the filling to give a hollow charge effect.

Serial No.	Type.	Method of Projection.	Maximum. Length. Ins.	Maximum. Diameter. Ins.	Total weight. Lbs. Ozs.	Weight of filling. Lbs. Ozs.	Nature of filling.	Delay time. Secs.	Remarks.
10	⅓ Kg. H. E., Aircraft, Hollow Charge Bomb.	Dropped from aircraft.	10·25	1·56	0 12	0 4·1	R.D.X./T.N.T.	Instantaneous.	V This is an adaptation of the H. E., A. T. grenade described above. Vanes are fitted and a modified fuze is used. An air operated arming spindle screws into the tail and through the inertia pellet. The arming spindle rotates and falls off while dropping leaving the inertia pellet and striker held off the detonator by the creep spring. On impact the inertia pellet goes forward to fire the detonator.
11	Rifle, H. E., Instantaneous Action (Believed to be Type 3 Modification).	Rifle fitted with spigot type launcher.	7·88	1·62	1 1	0 3	T.N.T.	"	Resembles the Type '99-A (Serial No. 4). The cylindrical body has a solid steel plug pressed into a bored opening in the base. A sheet steel tube having four fins is screwed on to the steel plug to act as a stabilizer during flight. Instantaneous percussion type fuze similar to Type '99-A, but having a shear wire, instead of striker spring, is screwed in to the nose of the grenade.
12	Rifle, smoke, (Vaned type).	Rifle fitted with spigot type launcher.	8·5	1·97	1 4·64	.....	Hexachlorethane mixture.	...	Lacquered tinned plate body having a blunt nose. Stamped sheet steel base to which is screwed a tail unit. The igniter pellet is contained in a thin brass container inside the filling. A 6·5-mm. cartridge with wooden bullet is used for propelling the grenade. The flash from the propellant ignites the igniter pellet.
13	50-mm. Discharger, Smoke.	(*a*) Taiso 16 Discharger. (*b*) Type '89 Discharger.	6·0	1·97	1 4	0 8	Hexachlorethane mixture.	Fuzeless.	Cylindrical sheet metal tube with hemispherical nose covered with clear lacquer. Propelling attachmeat similar to Type '91 (Serial 1) screws into the base. On discharge the flash from the propellant ignites igniter pellets in grenade base which in turn ignites the filling. This grenade with an incendiary filling of potassium nitrate, aluminium etc. has also been reported.
14	Rifle, Incendiary ...	Rifle fitted with spigot type launcher.	10·0	1·75	1 0·2	0 6·7	White phosphorus.	Not known.	Cylindrical soft steel body similar to the Rifle Smoke grenade (Serial 12). A sheet steel tube having four fins is screwed into the base of the body to act as a stabiliser during flight. Has a percussion fuze at the top, similar to the Type '91 grenade (Serial 1). Fired by using a Rifle Grenade cartridge.

Serial No.	Type.	Method of Projection.	Maximum.		Total Weight.		Weight of filling.	
			Length.	Diameter.				
			Ins.	Ins.	Lbs.	Ozs.	Lbs.	Ozs.
15	Hand, H. E., Ceramic or Pottery.	Hand ...	3·9	3·1	1	0	0	3·5
16	Hand, Flash ...	Hand ...	9·1	5·5	2	2·7	...	
17	Hand, Incendiary, Molotov Cocktail.	Hand ...	11·25	2·3	2	11·0	0	12·0
18	Frangible Smoke ...	Hand ...	3·6	2·87	0	12·8	0	7·8
19	Frangible HCN—Gas.	Hand ...	5	4	1	4	0	10·6
20	Lachrymatory (Gas), Type '89, Mk. C.	Hand ...	5	1·95	0	11	0	5

Nature of filling.	Delay time. Secs.	Remarks.
Believed to be ammonium nitrate and T. N. T. or ammonium nitrate and dinitronaphthalene.	4-5	Made of glazed pottery or white porcelain, spherical in shape. A one inch length of safety fuze with a detonator crimped on one end and match head composition on the other end acts as an igniter.
...	2	Spherical paper body with a wooden handle covered with paper. The wooden handle houses the pull ignition mechanism. The filling consists of 4·5 ozs. of G. P. (bursting charge) in the centre surrounded by 32 flash producing pellets, each containing ·26 ozs. of pyrotechnic composition. The delay time is reported to be 2 secs.
Petrol and raw rubber.	Instantaneous.	This is an anti-tank/anti-vehicular weapon something similar to our Hand Incendiary bombs (Molotov Cocktail). Consists of a clear glass bottle of the soda water bottle type, about a pint size. The neck closed by an adaptor which takes V an "All-ways" fuze.
Titanium Tetrachloride and Silicon Tetrachloride.	,,	Short necked, flat bottomed glass flask with rubber stopper and crown top. Packed for transport in saw dust in brown tin container. The smoke is irritating to the skin and lungs.
H. C. N. ...	,,	Similar in shape to smoke grenade (Serial 18), but larger. Consists of a light green or a light yellow round bottomed glass flask. Extending round the flask on its upper half is usually found either one or two moulded glass rings. A rubber stopper, metal cap and gasket close the neck of the flask. The acid filling both as a liquid and a gas is deadly poison. Packed for transport in two tinned-plate containers. The outer container is painted khaki green and has a reddish brown band 2 inches wide.
C.A P. dissolved in carbon tetrachloride	4-5	Vulcanite casing with internal gunpowder burster charge surrounded by the liquid lachrymator housed in a rubber container; initiated by a match-head igniter. The grenade is packed for transport in a silver-grey sheet iron cylinder.

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C

JAPANESE AMMUNITION LEAFLETS LEAFLET C1 (a)

INTRODUCTION

A Summary of a few more Japanese grenades reported since the issue of J. A. L. C1 is included at the end of this Leaflet. They are illustrated in Plates A, B and C. These grenades fully reveal the extent to which the Japanese resorted to improvised and locally manufactured ammunition as the war progressed. All these grenades are very simple in their make up and action and hence no special comment is necessary. Two further grenades not included in the summary are described below.

2. **10 Year Type Time Grenade.** A report from Australian sources refers to a "10 Year Type Time" hand or discharger grenade. No samples have been received in Kirkee for examination.

The grenade is generally similar in appearance and construction to the Type '91 grenade described in J. A. L. C2. If this is only a modification of the Type '91 grenade, the name 10 Year Type is difficult to follow, unless it is Showa 10 (1935).

This grenade, it is reported, differs from the Type '91 grenade in the following details:—

(*i*) It has not got a separate closing plug; top is cast with remainder of the body.

(*ii*) Threading in the base extends right through; filling is presumably done through this opening.

(*iii*) Top surface of the propelling attachment is dished to provide a seating for the detonator assembly.

3. The following is an extract from a recent report from Australian sources on an improvised conical H. E./A. T. hand grenade. It has not been illustrated in the Plates.

The grenade is similar in appearance and employment to the Grenade, Hand, H. E., Anti-Tank, Hollow Charge described in J. A L C1 (serial 8). This has, however, no hollow charge cavity. It consists of the explosive tail cone of a Naval 30-kg. Practice bomb having the outer cannister filled with crushed picric acid. A standard A. C bomb fuze [called B-6 (*a*) by Bomb Disposal Organisations] with detonator cap is fitted to the top of the cone by means of an adapter. The original pre-cast block of picric acid in the centre is left intact. Tied around the top of the grenade is a tail of hemp to give stability in flight.

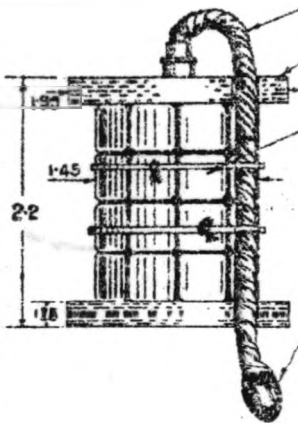
4. To use the grenade, the vanes are unscrewed from the fuze and the grenade is thrown; on impact the striker overcomes a weak spring, firing the detonator and the main charge.

C. I. Amn.,
Kirkee.

S 739

First Issue,
8th November 1945.

PROJECTION :- (i) RIFLE FITTED WITH 50 MM CUP DISCHARGER
(ii) HAND.

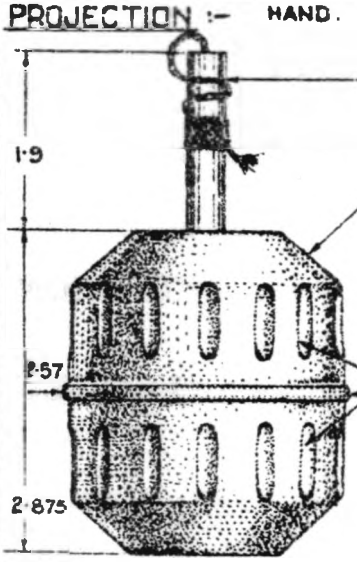


FILLED WEIGHT:- 14 1/2 OZS.

SERIAL 1

HAND OR DISCHARGER, H.E. (BURMA MANUFACTURE.)

PROJECTION :- HAND.



FILLING :- 1·4 ozs EXPLOSIVE AND STEEL BULLETS FOR SHRAPNEL EFFECT

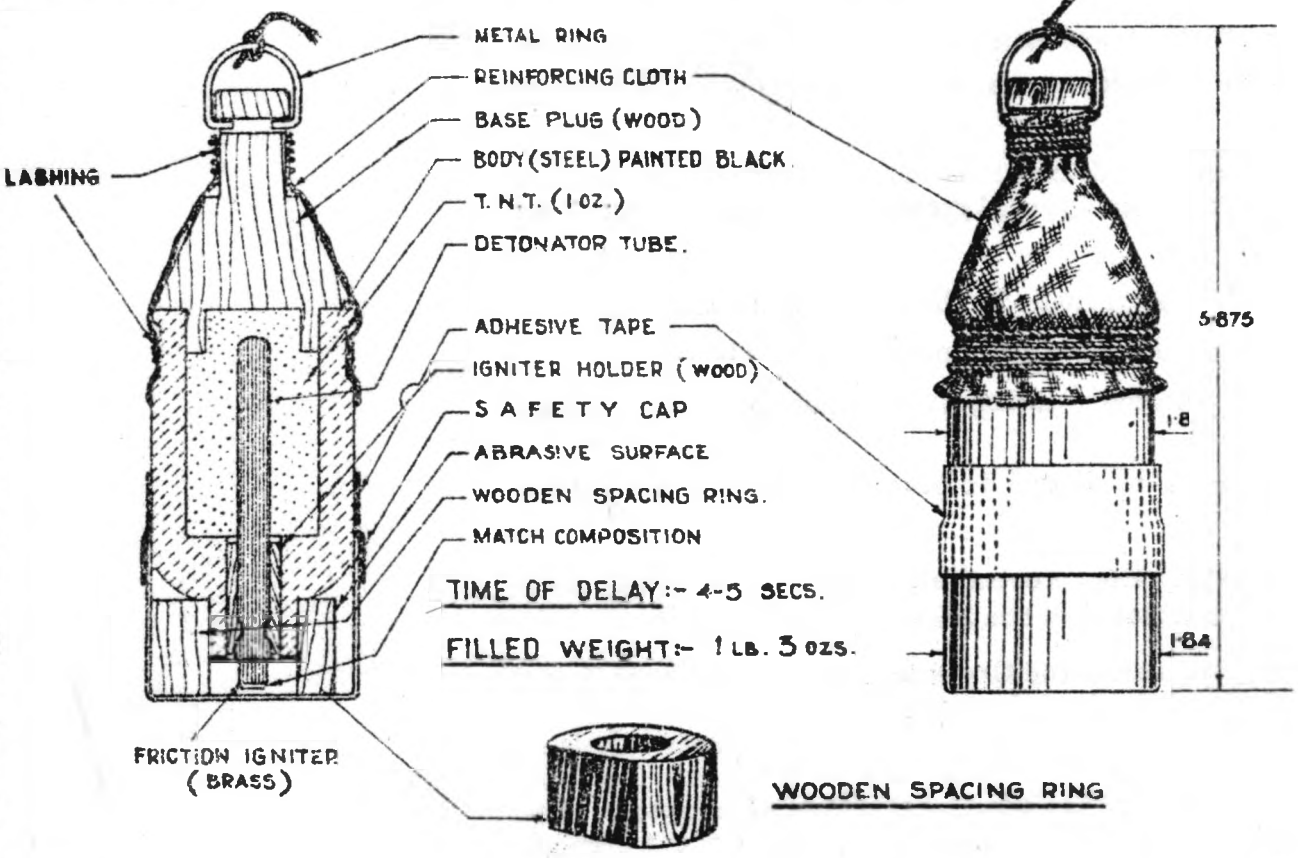
TIME OF DELAY :- 4-5 SECS.

FILLED WT :- 1 LB.

SERIAL 2

HAND, SHRAPNEL, CERAMIC.

PROJECTION :- HAND



TIME OF DELAY :- 4-5 SECS.

FILLED WEIGHT :- 1 LB. 3 OZS.

WOODEN SPACING RING

SERIAL 3

HAND. H.E., (SLING TYPE)

JAPANESE GRENADES.

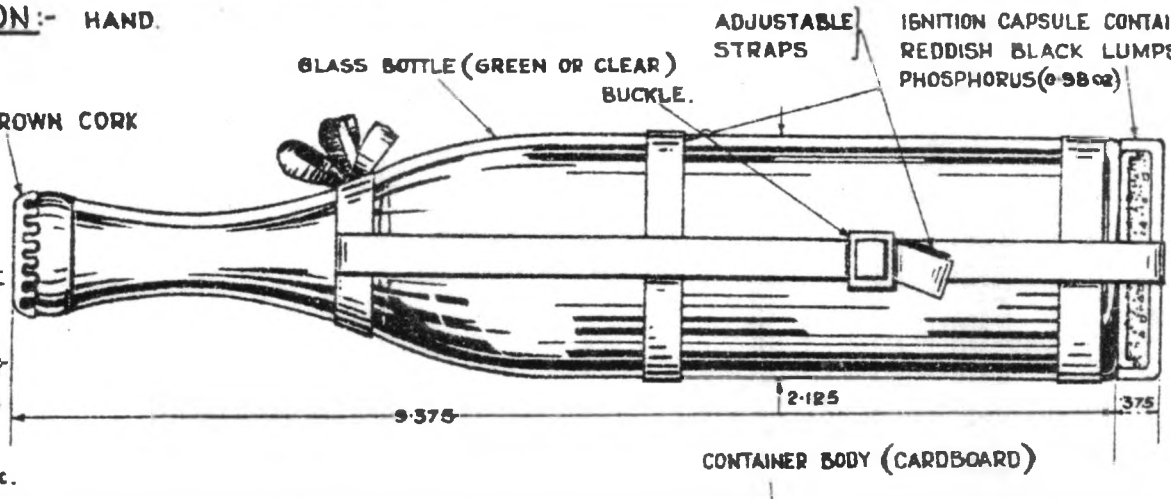
(SERIAL NOS 1 TO 3)

DIMENSIONS IN INCHES.

C.I.AMN. 5/1251
KIRKEE. OCT. 1945.

G.P.E.P. POONA 1945

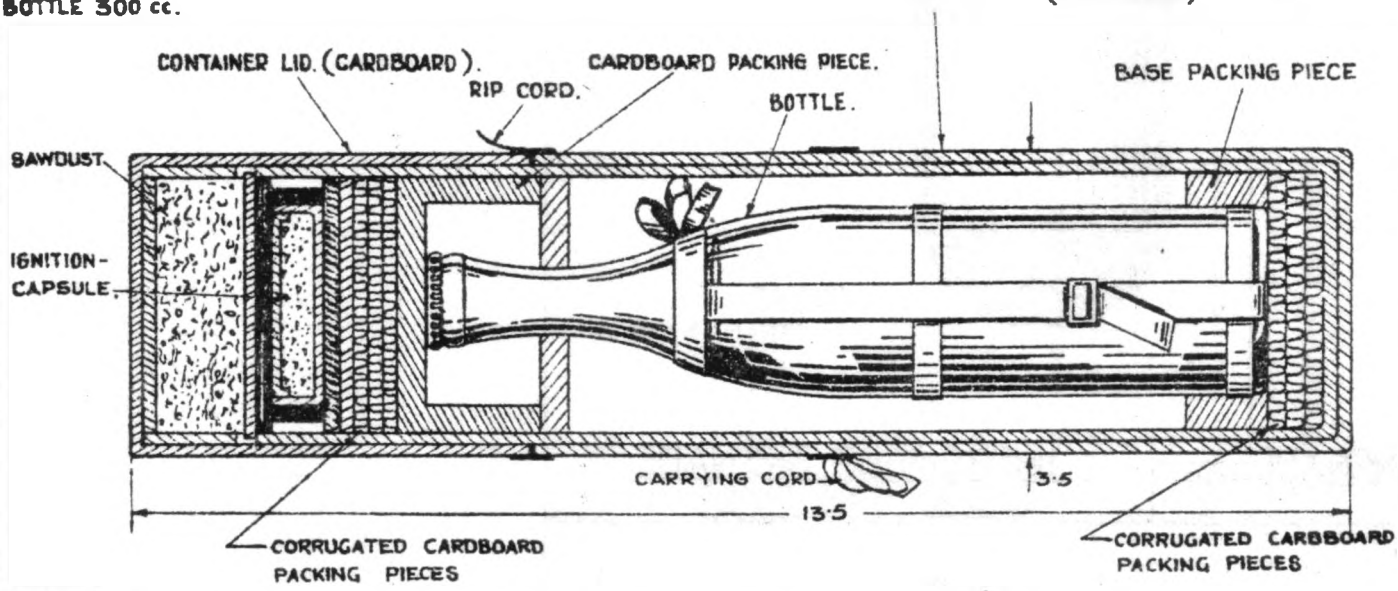
PROJECTION:- HAND.



FILLING:- A SOLUTION OF POLYMETHYL METHACRYLATE IN BENZENE.

FILLED WEIGHT:- 1 LB. 10½ OZS.

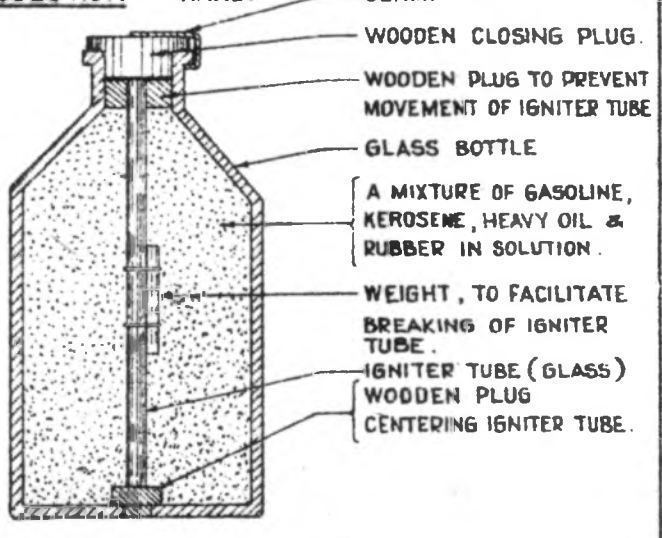
CAPACITY OF BOTTLE 300 cc.



SERIAL 4

HAND, INCENDIARY (MOLOTOV COCKTAIL - NEW TYPE)

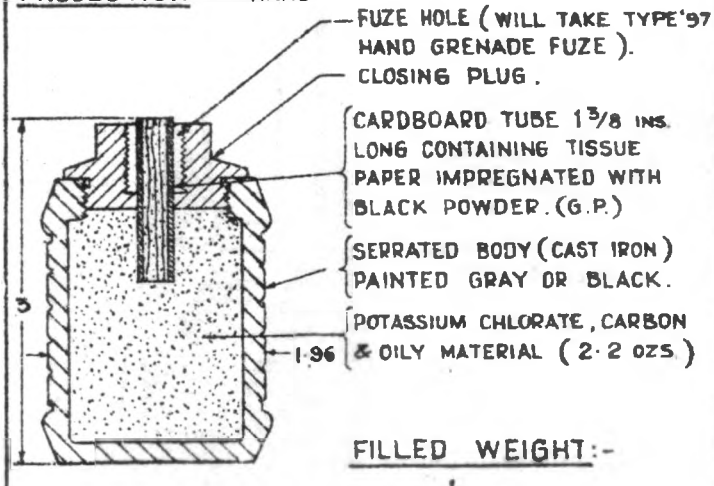
PROJECTION:- HAND.



SERIAL 5

FRANGIBLE, INCENDIARY.

PROJECTION:- HAND



FILLED WEIGHT:- 1 LB.

SERIAL 6

HAND, H.E., (OKINAWA GRENADE)

JAPANESE GRENADES.

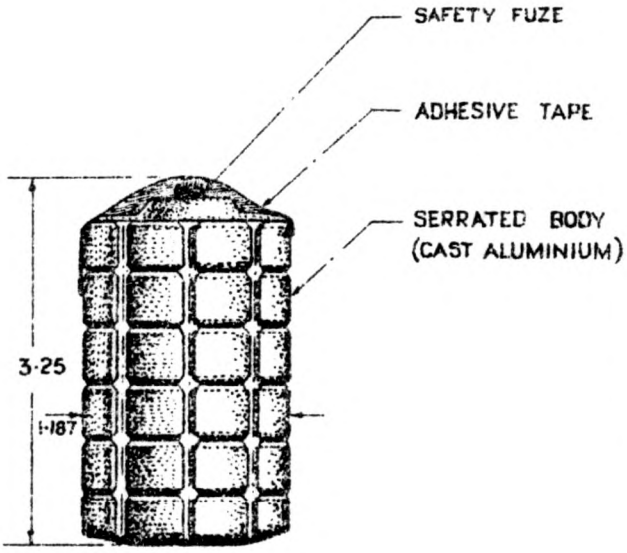
(SERIAL NOS. 4 TO 6.)

DIMENSIONS IN INCHES.

C.I.AMN. 5/1252 KIRKEE. OCT. 1945

G.P.I.P. POONA. 1945

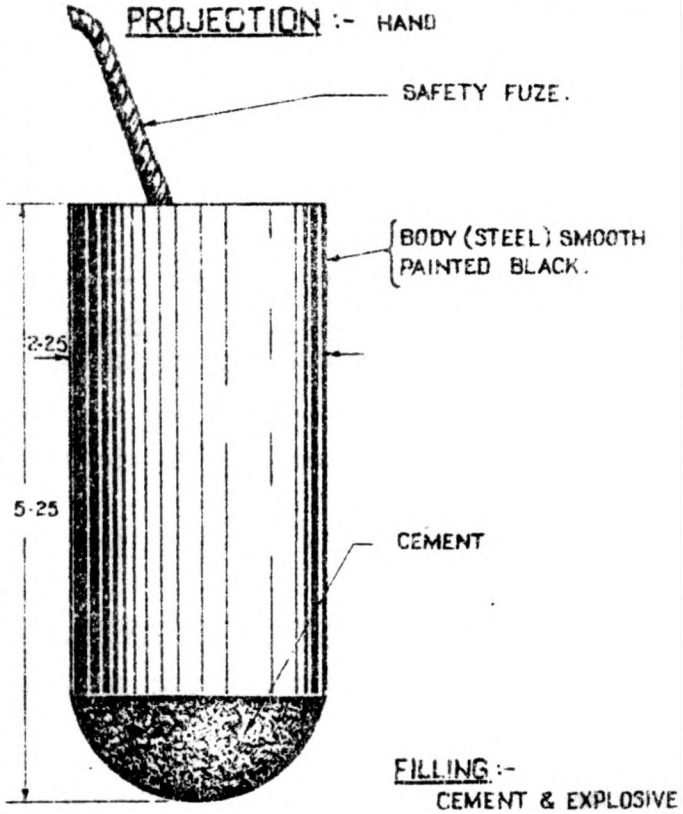
PROJECTION :- HAND



SERIAL 7

IMPROVISED ALUMINIUM GRENADE

PROJECTION :- HAND

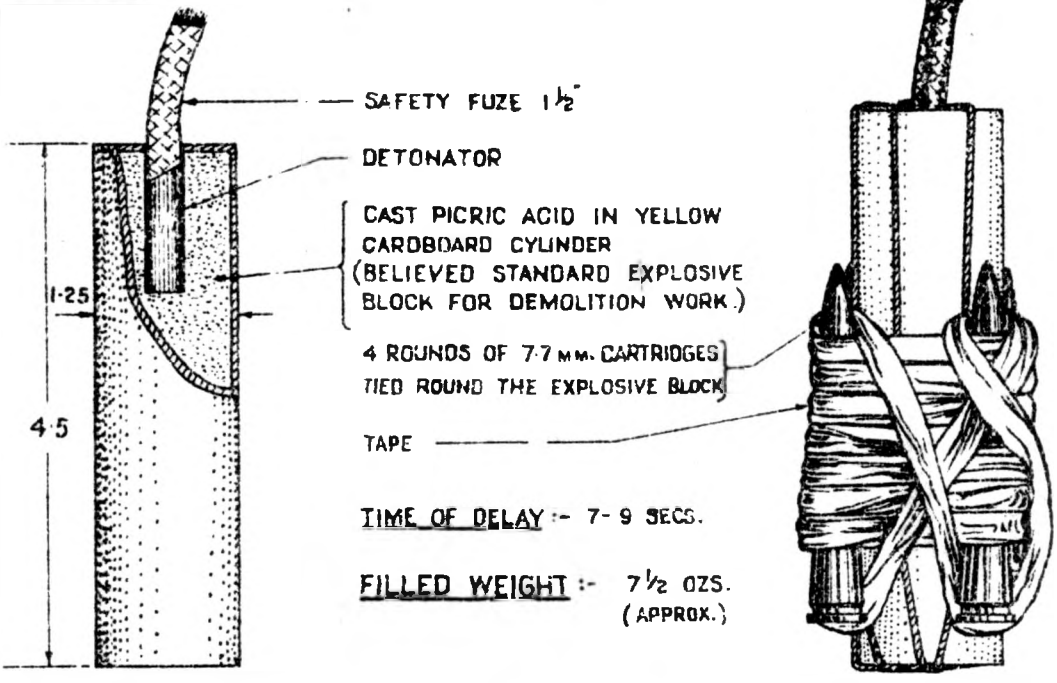


FILLING :-
CEMENT & EXPLOSIVE

SERIAL 8

IMPROVISED GRENADE (USING GAS PIPE)

PROJECTION :- HAND



TIME OF DELAY :- 7- 9 SECS.

FILLED WEIGHT :- 7½ OZS. (APPROX.)

SERIAL 9

IMPROVISED GRENADE (USING 7·7 MM CARTRIDGES)

JAPANESE GRENADES.

(SERIAL NOS 7 TO 9)

DIMENSIONS IN INCHES.

C.I.AMN. 5/1253
KIRKEE OCT. 1945

D.P.S.P. POONA 1945

JAPANESE GRENADES

(Reported since the issue of Leaflet C1)

Serial No.	Type.	Method of Projection.	Maximum. Length. Ins.	Maximum. Diameter. Ins.	Total Weight. Lbs.	Total Weight. Ozs.	Weight of filling. Lbs.	Weight of filling. Ozs.	Nature of filling	Delay time. Secs.	Remarks.
1	Hand or Discharger, H. E., (Burma manufacture).	(*i*) Hand. (*ii*) Rifle fitted with 50-mm. cup discharger (Burma manufacture)	2·6	1·95	0	14·5	...	...	...	...	A groove is cut on either flange of the grenade body allowing the safety fuze to be led from the top of the grenade to the bottom. One end of the fuze enters at the top of the gronade and is crimped to a detonator inside The other end is heavily coated with match composition which is ignited by the flash from the propellant cartridge on firing.
2	Hand, Shrapnel, Ceramic.	Hand ...	4·8	2·57	1	0	0	4·5	H. E., Filling- a mixture of T. N. T Ammonium perchlorate, Silicon and woodmeal. And steel bullets for shrapnel effect.	4·5	V This grenade differs slightly from the one described in J. A. L. C1. Serial No. 15. It makes use of a pull friction igniter and has a Shrapnel filling.
3	Hand, H. E., (Sling Type).	Hand ...	5·8	1·84	1	3	0	1	T. N. T. ...	4·5	Consists of a steel body, wooden base plug, scratch type friction igniter, wooden igniter seat, wooden spacing ring and a metal safety cap A strip of reinforcing cloth is wrapped around base plug and lower end of grenade body. The friction igniter consists of a short brass tube having a match head and a detonator tube housing a delay train and detonator; a flat surface on the side of the wooden spacing ring is coated with an abrasive compound. To use the grenade, the safety cap is first removed and the wooden spacing ring is taken out. The abrasive on the ring is rubbed against the match head of the igniter and the grenade is then thrown, by means of the line attached to the ring at the base.

Serial No.	Type.	Method of Projection.	Maximum.		Total Weight.		Weight of filling.		Nature of filling.	Delay time.	Remarks.
			Length.	Diameter.							
			Ins.	Ins.	Lbs.	Ozs.	Lbs.	Ozs.		Secs.	
4	Hand, Incendiary, (Molotov Cocktail, New Type).	Hand ...	9·7	2·12	1	10·5	0	9·5	Benzene, thickened with polymethyl methacrylate.	Instantaneous.	Consists of a 300 c.c. green or clear glass bottle closed with a crown cork and contains a colourless viscous liquid. Attached to the base of the bottle by a series of straps is a flat circular glass capsule filled with reddish black lumps of phosphorus which ignite on slight friction. The grenade is packed for transport in a cylindrical container having a separate compartment in its lid to house the igniter capsule. To use the grenade the igniter capsule is tightly secured in position at the base of the bottle by means of the straps and the grenade is thrown forcibly against a hard target.
5	Hand, Frangible, Incendiary.	Hand ...	...	...	...	...	...	...	Mixture of gasoline, Kerosene, Heavy oil, and rubber in solution.	Instantaneous.	Consists of a bottle filled with a viscous incendiary mixture. The igniter is a sealed glass tube filled with a sensitive compound which ignites spontaneously on contact with air. A weight attached to the igniter tube ensures its breaking on impact. The liquid in the igniter tube causes severe burns in contact with the skin and so if found should be treated with extreme care.
6	Hand, H. E., (Okinawa Grenade).	Hand ...	3	1·96	1	0	0	2·2	Potassium chlorate, carbon and oily material.	...	This grenade is similar in appearance to the Type '97 grenade, but uses safety fuze for ignition. The method of lighting the fuze is not known, but it is presumed that a match or fuze igniter is used. The hole in the filling plug is threaded and will take the igniter set used in Types '91 and '97 grenades described in J. A. L. 02. This indicates that the grenade was probably designed to employ a mechnical fuze.

Serial No.	Type.	Method of Projection.	Maximum.		Total Weight.		Weight of filling.		Nature of filling.	Delay time.	Remarks.
			Length. Ins.	Diameter. Ins.	Lbs.	Ozs.	Lbs.	Ozs.		Secs.	
7	Improvised Aluminium grenade.	Hand ...	3·2	1·9	...	...	...	...	Any explosive may be used.	...	Has a small length of safety fuze at the top and relies on a separate means of ignition.
8	Improvised grenade using gas pipe.	Hand ...	5·25	2·2	...	...	...	...	Cement and explosive.	...	Gas pipe filled with explosive and cement. The purpose served by cement in the filling is not understood. Presumably set cement pieces may be used for Shrapnel effect; it may also afford better confinement for the explosive.
9	Improvsied grenade using 7·7-mm Cartridges.	Hand ...	4·5	1·25	0	7½	0	3	Picric acid.	...	A standard explosive block is made use of in improvising this grenade; the cartridges tied round the explosive block make the grenade more effective.

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA)
JAPANESE AMMUNITION LEAFLETS

SECTION C.
LEAFLET C. 2

GRENADE, HAND OR DISCHARGER, H. E., TYPE '91 AND GRENADE, HAND, H. E., TYPE '97.

GENERAL

Before giving a detailed description of the Type '91 and Type '97 Japanese H. E. grenades it will be useful to make some general remarks on their development and use, based on an examination of large numbers of these grenades both at Kirkee and in the Burma Theatre.

The Type '91 grenade was evolved in 1931 and appears to have been intended as a hand or Discharger grenade. The firing of a grenade from a rifle was generally regarded as something of a makeshift and the trend then of Japanese Service opinion was probably that grenades should be fired from a Discharger. The Type '91 grenade could be projected, with its propelling attachment from the Type Taisho 10 (1922) 50-mm. smooth bore Discharger and also from the Type '89, (1929) 50-mm. rifled Discharger. There is also believed to be another smooth bore Discharger known as the " 1927 Model " which is very similar to the Taisho 10 in appearance and action. The 50-mm. smooth bore Discharger was probably designed initially as a flare Discharger while the 50-mm. rifled Discharger was designed to throw H. E. or smoke shell (spin stabilized) about 600 yards. The range from the Discharger with the Type '91 grenade 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 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 to 9.4 seconds accepted. The 2-in. mortar (equivalent role to the Japanese 50-mm. Discharger) was introduced later.

2. 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 attached to a rifle. To effect this a tail unit is screwed into the base of the grenade replacing the propellant attachment and a bulletted blank 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.

3. Subsequently, it is presumed, the Type '89 rifled Discharger with its long range and more efficient ammunition became available in adequate quantities and the need for projecting

grenades from a Discharger declined. During operations in Assam and Burma in 1942–45 comparatively few Type '91 grenades were found and it is thought that they must now be largely obsolescent, if not obsolete, in that theatre at any rate.

4. 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 to 5 seconds. The grenade appears to have been intended only as a hand grenade, because no instances have been reported of an igniter-set being fitted with a longer delay than 4 to 5 seconds. There is no reason, however, why this grenade could not be fitted with the standard long delay igniter similar to that used in the Type '91 grenade and used for projection from a rifle. Actually cup type launchers (discharger cups) have been captured in Burma which fit the Japanese Service rifle (6.5–mm.) and it is very probable that the Type '97 grenade is fired from rifles this way using a rifle grenade cartridge, see J. A. L., C.1.

5. The Type '91 and Type '97 grenades have been frequently used by the Japanese as booby traps although the igniter mechanism which is similar to the old Adam's Type is not very suitable for this purpose.

6. Although each grenade is described separately below, only one assembly sequence is shown for the Type '97 grenade on Plate B. This, however, applies equally to the Type '91 grenade, the components of which except for the delay tube are identical. In describing the Type '91 grenade on Plate A reference will be necessary to Plate B for details and assembly sequence of components.

DESCRIPTION.

Grenade, Hand or Discharger, H.E., Type '91.

7. The drawing in Plate A shows the general appearance and construction of the grenade. Plate B gives a detailed description and assembly sequence of internal components which are identical (except for the delay tube) in both types of grenade. For convenience of description the grenade can be divided into three main components :—

(i) Body.
(ii) Igniter assembly.
(iii) Propelling attachment.

Body.

8. The body is made of cast iron (about 3.7% carbon) serrated externally to improve fragmentation effect and to facilitate holding by the thrower. The body is closed at the head by a flat screwed cast iron plug which is also serrated externally and has two key-holes diametrically opposite to facilitate screwing in. This plug is screw-threaded centrally to take the igniter assembly complete (fuze or igniter, delay tube and detonator). The details are shown clearly in the Plates. The body at the base is recessed* and screw-threaded internally to take the propelling attachment.

The usual filling is 2.2–oz. stemmed crystalline T. N. T. Following usual Japanese practice the top of the grenade is painted red to indicate that it is filled.

*NOTE :—Some grenades have been reported in which this recess is not screw-threaded and the propelling attachment was stated to be a push-fit in the base.

Igniter Assembly

9. This may be divided into two main parts :—

(i) Igniter (or fuze) mechanism.

(ii) Igniter assembly tube, holding delay tube and detonator.

10. **Igniter Mechanism.** This is of the percussion type consisting of a tubular brass body (5) screw-threaded internally at the lower end to take the delay tube (7) and externally to screw into the grenade closing plug (6). Details of this mechanism are clearly shown in Plates A and B. Note that the percussion cap is very similar to an ordinary S. A. A. cap (Berdan Type) and fits over an anvil formed in the cap-holder (4). The inertia pellet (2) with its screw striker is held off the cap by a light steel spring (3). The striker screws into the inertia pellet (2) and the grenade is issued with the striker withdrawn until the point is flush or below the surface of the inertia pellet (2) giving added safety during storage and transport. The striker has to be screwed down by the user and for this purpose small screw-drivers are issued on a fairly wide scale. A drawing of this screw-driver is given in Plate C.

It should be noticed that once the safety fork (1-A) is withdrawn the inertia pellet is held in position only by the brass ferrule which is a spring fit over the fuze body. If this gets distorted during transport and handling it may fall off, together with the inertia pellet (2) when safety fork (1-A) is withdrawn.

11. **Igniter Assembly Tube.** The igniter assembly tube (10) is made of copper and contains the delay tube (7) below which is a steel washer (8) separating the delay tube from the detonator (9). The detonator (9) rests on the felt pad. This arrangement will be clear from the Plates. The differnce between the delay tube in the Type '91 grenade and the delay tube in the Type '97 grenade should be noted. All long delay tubes (7 to 9 seconds) examined were without any marking, while the short delay tube (4 to 5 seconds) has the time of delay stamped in Japanese characters as shown in Plate B. A relatively small number only of the long delay tubes have been examined and it is possible that some may be marked if of recent manufacture.

Propelling Attachment.

12. The propelling attachment (11) is shown in Plate A. The construction of this component will be clear from the drawing. The propellant charge consists of about 15 grs. of flake N. C. The holder (15) and percussion cap in the propelling attachment appears identical with that used in the fuze and they are considered to be interchangeable.

Sefety Devices.

13. The safety of the grenade is ensured in three ways :—

(i) During storage and transport to user troops the striker is withdrawn into the body of the inertia pellet (2) and even with accidental withdrawal of the safety fork (1-A) firing of the grenade is impossible.

(ii) A safety fork (1-A) which passes through holes in the brass ferrule (1) and fuze body (5) seats under the inertia pellet (2) positively preventing it from moving in the direction of the cap.

(iii) A striker spring (3) which after removal of the safety fork holds the inertia pellet (2) clear of the percussion cap until the fuze receives a blow sufficiently powerful to overcome the spring (3) or a sufficiently strong set-back force on firing.

Preparation for use and action.

14. The grenades on receipt by the user are presumably examined and the striker screwed fully home. This can be done without removing the safety fork (1–A) or the brass ferrule (1).

(a) **Action when thrown by hand.** The grenade is held in the hand as shown in Plate C and the fuze is struck against a hard surface such as the heel of the boot and at once thrown. The sketch in Plate C has been taken from an actual Japanese instruction sheet packed with grenades. A point to watch is the hand or exposed portion of body must be clear of the vent hole to prevent being burnt by the escaping gases.

(b) **Action when fired from a 50–mm. Discharger.** The grenade is loaded in the Discharger from the muzzle after removing the safety fork similar to the loading of a British 2–in. mortar bomb. The Discharger is fired and the striker strikes the cap in the propelling attachment, causing the propellant to ignite. The propellant gases escaping through the six gas escape holes propel the grenade forward. The range is controlled according to the type of Discharger in use. Set–back forces cause the inertia pellet (2) to set back and fire the cap of the igniter set. The grenade then functions 7 to 9 seconds after leaving the Discharger.

(c) **Action when fired from a rifle.** The action here is similar to that employed for firing the American M9A1 H. E. Anti–Tank rifle grenade. The grenade by means of a tail unit is loaded on the spigot type launcher of the rifle, and the safety fork withdrawn. It is then fired in the usual way but a bulletted blank cartridge is used for this purpose. Again, set–back forces cause the inertia pellet to set back and the striker to fire the cap.

GRENADE, HAND, H. E., TYPE '97.

15. The construction, and components of the Type '97 grenade, is generally identical with the Type '91 except that:—

(a) There is no screwed recess in the base to take the propelling attachment.

(b) The delay channel in the delay tube (7) is of a reduced length to give a short delay of 4 to 5 seconds.

Safety devices and action are identical with those of the Type '91 grenade and no further description is necessary.

PACKING

Type '91 Grenade

16. No grenades in original packing have been examined but reports indicate that 20 grenades are packed in a wooden box weighing about 50–lb., stowage dimensions being 30″ x 13″ x 6½″. It is assumed that these boxes are somewhat similar to the box described below for packing Type '97 grenades.

Type '97 Grenade

17. Details of packing of this grenade are shown in Plate C. Two methods of packing have been examined here :—

(a) Wooden box holding 20 grenades.

(b) Waxed cardboard container containing five grenades. This container after being closed is hermetically sealed by dipping in wax. No details of the outer package are available but this is probably an ordinary wooden packing case holding two containers. The details and dimensions of this package will be clear from Plate C. The increased length of the tape used on the wooden blocks suggests that this may be a method of transporting grenades ready for use.

IDENTIFICATION

(Summarised Details)

Type '91 Grenade

18. The body of the grenade and the propelling attachment are painted black. The brass ferrule of the igniter set is lacquered with a colourless lacquer. The igniter body (5) is stamped with Japanese characters indicating date of manufacture and inspection mark. This stamping is just above the closing plug (6) of the grenade and just below the lower edge of the ferrule (1). The closing plug (6) is painted red to indicate that the grenade is filled.

That this grenade has a long delay igniter set can be detected only by

(a) the presence of the propelling attachment of the screwed recess in the base;

(b) that the ferrule (1) is not coated with coloured varnish i. e. has a normal brass colour.

19. The conical base of this grenade is believed to be stencilled with characters indicating the monogram of the filling factory and date of filling. Grenades examined here, however, were very old and markings were very indistinct.

Type '97 Grenade

20. The body of this grenade is painted black and the closing plug (6) painted red as in the case of the Type '91 grenade above. The ferrule (1) of the igniter set is, however, invariably lacquered with a purple lacquer. On the base of the grenade is pasted a paper label on which is printed 4 to 5 seconds time delay, see Plate B. In the case of grenades which have apparently been converted from Type '91 grenade bodies this label is pasted in the recess. Such grenades have also the conical base of the flange painted white, see para. 16 (a) above. The conical portion of the base is invariably stencilled on white paint with fillers' monogram and the date of filling, in this instance Nagoya Arsenal Branch Depot, October 41. 4 to 5 seconds delay tube (7) has been found invariably stamped with characters indicating this delay, see Plate B.

21.	Type '91	Type '97
Length overall (including igniter) ..	4.9″	3.9″
Weight filled ..	18.6-oz.	16.51-oz.
Length of body ..	2.75″	2.75″

Length of body with propelling attachment ..	3.7″	—
Maximum diameter (over flange) ..	1.985″	2.08″ (but see J.A.L.C.1)
Maximum diameter over body ..	1.9″	1.9″
Nature and weight of H.E. filling ..	T. N. T. 2.2–oz. to 2.3–oz.	T. N. T. 2.2–oz. to 2.3–oz.
Weight of delay composition ..	10.16–grs.	6.16–grs.
Weight of perforated G. P. pellet (booster charge) ..	3.7–grs.	18.9–grs.
Time of delay ..	7 to 9 secs.	4 to 5 secs.

Propelling attachment (11)

Length ..	1.2″	
Diameter ..	1.02″	
Weight filled ..	3.1–oz.	
Weight of propellant charge I	15–grs.	(Two natures have been examined)
II	18–grs.	

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

22. For purposes of storage and transport these grenades can be equated with British mortar ammunition, although of course the explosive charge is much less. Unlike most types of British and American grenades the igniter system and detonator is a permanent part of the Japanese grenade. On the other hand, however, the striker is not spring–loaded and is not self-ignited. Even after screwing down of the striker and withdrawal of the safety fork it requires a definite blow on the nose or a high drop etc. on its base to function.

23. Grenades which had been in the hands of troops or lying loose not in original packages should, unless they are in an obviously good condition, be destroyed. These grenades are frequently used by the Japanese as booby traps and this possibility must be kept constantly in mind. Your best protection is a thorough knowledge of the mechanism of the grenades, and of their possibilities as booby traps. If grenades not in packages, or in packages which are obviously not original packing, have to be recovered, check :—

(a) That the safety fork is in position and the points turned over to avoid any possibility of accidental withdrawal.

(b) That the striker is unscrewed to its full extent, i. e. until it touches the underside of the brass ferrule. See para 10 above.

24. If blinds have to be disposed of, the usual practice of destroying in situ should be followed. If, however, a grenade must be moved a study of the mechanism will show that, unless it is a booby trap, no undue risk is involved.

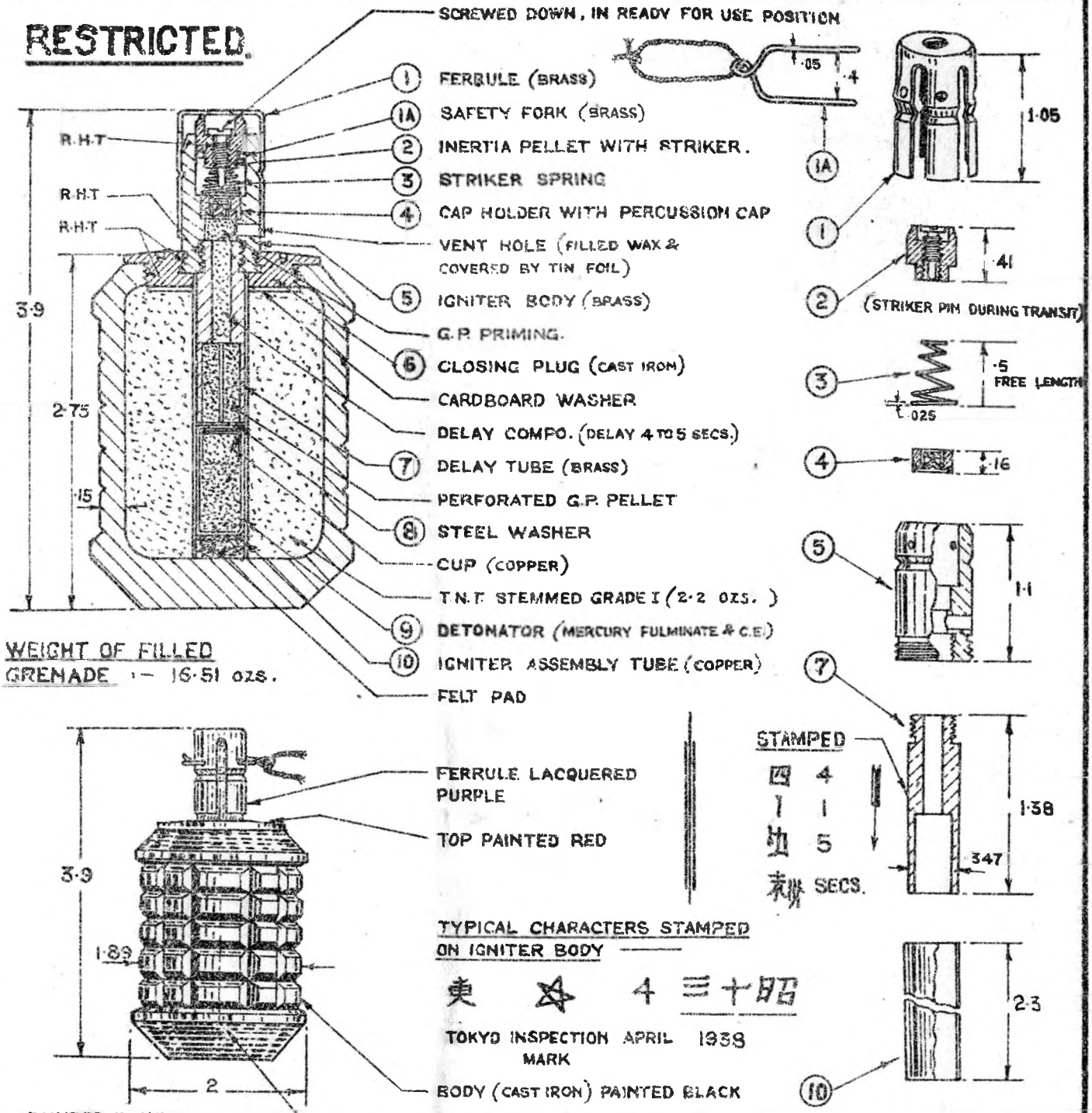
25. If these grenades have to be used the user should be warned to keep his fingers clear of the vent hole and to throw the grenade immediately after striking the igniter on a hard object.

EXPLOSION/FIRE RISK	..	Assume 2·5–oz. for each grenade.
GROUP CLASSIFICATION	..	VIII Category Z.
CLASSIFICATION FOR SEA TRANSPORT	..	O. A. S.

C. I. Amn.,
Kirkee.

First Issue,
20th June, 1945.

RESTRICTED.



WEIGHT OF FILLED GRENADE :— 16·51 ozs.

TYPICAL CHARACTERS STAMPED ON IGNITER BODY

東 ☆ 4 三十昭

TOKYO INSPECTION MARK APRIL 1938

PAINTED IN WHITE :—

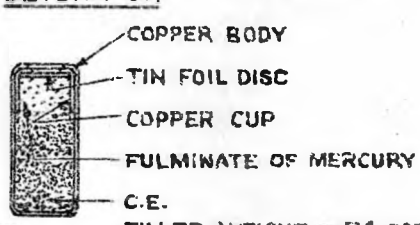
16 10 (十)

SECS. 4 TO 5 SECS. DELAY TIME TIME

PAPER LABEL ON BASE OF GRENADE.

ENLARGED VIEW OF ITEM (4)

DETONATOR



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

DIMENSIONS IN INCHES

JAPANESE

GRENADE, HAND, H.E. TYPE '97

GENERAL ARRANGEMENT AND ASSEMBLY SEQUENCE.

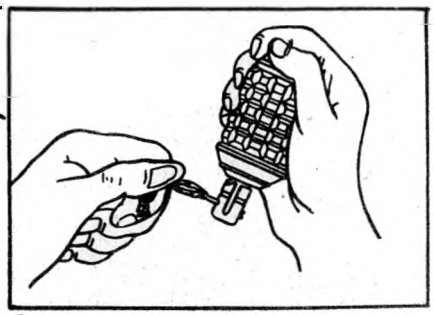
C.I.A.M.S. 603
KIRKEE. MAY '45

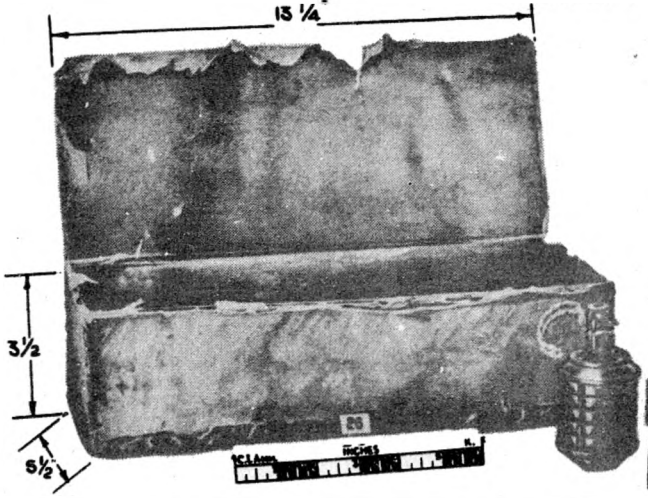
G.P.E.P. POONA, 1945.

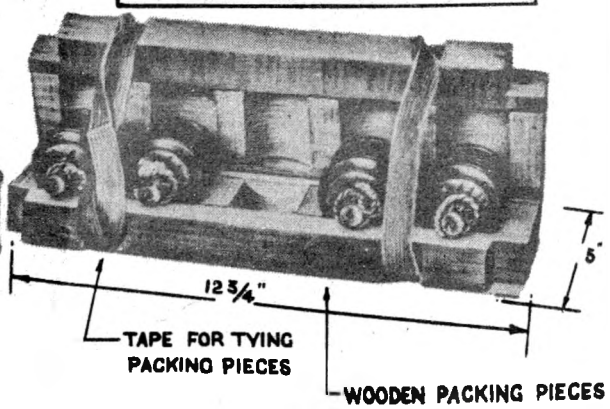
RESTRICTED.

SCREW DRIVER FOR SCREWING DOWN STRIKER

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







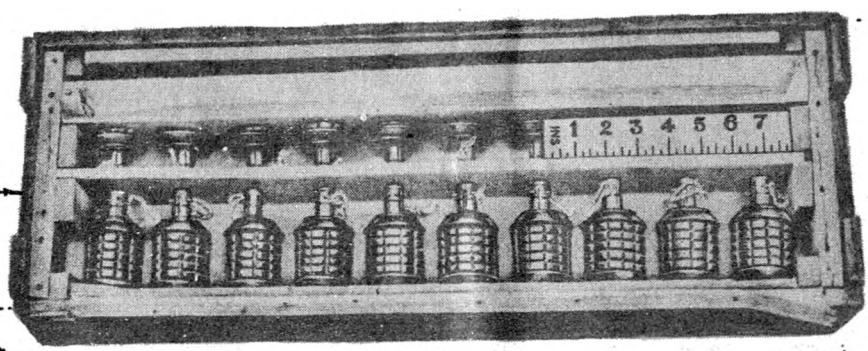
TAPE FOR TYING PACKING PIECES

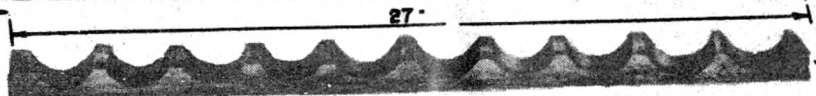
WOODEN PACKING PIECES

WEIGHT OF FILLED CONTAINER :— 7 LBS. 7 OZS.

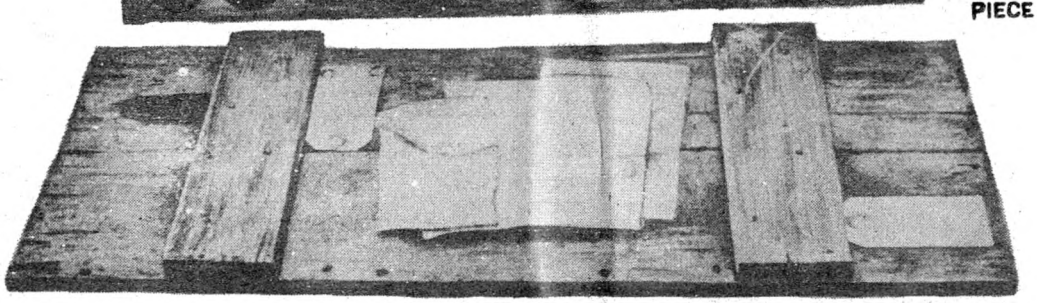
WAXED CARDBOARD CONTAINER HOLDING FIVE GRENADES IN WOODEN PACKING PIECES, HERMETICALLY SEALED BY DIPPING IN WAX.

WOODEN BOX TO HOLD TWENTY GRENADES





WOODEN PACKING PIECE



WEIGHT OF FILLED BOX :- 31 LBS.

METHOD OF PACKING

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

C.I.A.M.M. 5/1096
KIRKEE, MAY 45

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

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C

JAPANESE AMMUNITION LEAFLETS LEAFLET C 3

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

GENERAL

A sample of this grenade captured in the Burma Area has now been received and examined at Kirkee, and it was found that the igniter was similar and the propelling attachment identical to those used in the Type '91 Grenade. It appears that this grenade was used by the Japanese in all theatres. It was initially designed to be fired from the 50–mm. Type '89 and the Type Taisho 10 grenade dischargers or used as a hand grenade. When fired from a discharger, this grenade should range the same as the Type '91 (i.e. 175–yds.) as the weights of the two grenades are much the same.

DESCRIPTION

2. The drawing in the Plate attached shows the general appearance and construction of the grenade which may for convenience of description be divided into three main components :—

(i) Body and inner container.

(ii) Igniter Assembly.

(iii) Propelling Attachment.

BODY AND INNER CONTAINER.

3. The body is made of brass with a heavy base which is slightly necked and has a hole in the centre which is screw-threaded internally to take the propelling attachment. The body is cylindrical in shape, has relatively thin walls and a smooth surface; a dome-shaped brass lid with an internal screw-threaded neck to take the Igniter Assembly is soldered to the top. The inner W.P. container is also made of brass and occupies the grenade body. This container is charged with W.P. through a charging hole in the base and is closed by the charging hole disc (brass) which is soldered in position. The brass tube which houses the Igniter Set extends the length of the container and is soldered to flanges formed at both ends. A cardboard washer is positioned between the container and the grenade body.

The grenade examined here was charged with 6.4–ozs. of White Phosphorus.

IGNITER ASSEMBLY.

4. This is similar to that used in the Type '91 grenade but differs slightly in having two picric acid pellets contained in a paper tube below the detonator.

PROPELLING ATTACHMENT.

5. This is exactly similar to that used in the Type '91 grenade and no separate description is included here. (See J.A.L. C 2 para. 12).

ACTION.

6. The grenade should be first prepared for use by screwing the striker fully home. When used as a discharger grenade the operation is the same as that of the Type '91 grenade but when used as a hand grenade the propelling attachment should not be removed, otherwise the exploder pellets may fall out. The remaining procedure is the same as of the Type '91 or the Type '97 grenades. At the end of the delay period (7–9 secs.) the detonator is ignited which in turn detonates the exploder and the grenade functions; the grenade is burst open scattering the W.P. filling. In view of the fact that an exploder, in addition to the powerful detonator, has been included in the igniter-set, the W.P. will be widely scattered and it would seem that the primary function of this grenade is therefore more for producing an incendiary effect rather than for producing screening smoke.

Compare this grenade, which contains about 6½-ozs. W.P. and a powerful exploder, with the Grenade No. 77 Mk. I, which contains about 8-ozs. W.P. and only a 8.35-grs. detonator.

PACKING

7. Packing details of this grenade are not known.

IDENTIFICATION

MARKINGS.

8. The brass body is unpainted except for the top of the closing lid and part of the igniter body which are painted red (see drawing) to indicate that the grenade is filled. Other markings, as shown in the drawing include stamped as well as stencilled markings; marking on the body in one case could not be deciphered. The characters on the paper exploder tube in black ink are translated as follows:—

> "Type 11 year hand grenade, Picric Acid Booster Charge,
> Showa, January 1939, Itabashi Powder Factory,
> Inspected at Tokyo Laboratories".

SUMMARY OF DATA.

9.

Length overall	5.66-inches
Weight filled	1-lb. 3.6-ozs.
Length of body	3.5-inches
Dia. of body	1.96-inches
Dia. of inner container	1.84-inches
Weight of W.P. filling	6.33-ozs.
Weight of delay composition	10.0-grs.
Weight of perforated G.P. Pellet	4.0-grs.
Weight of Fulminate of Mercury	15.1-grs.
Weight of C.E.	16.2-grs.
Weight of paper exploder, filled	23-grs.
Time of delay	7–9-secs.

HANDLING AND TRANSPORT

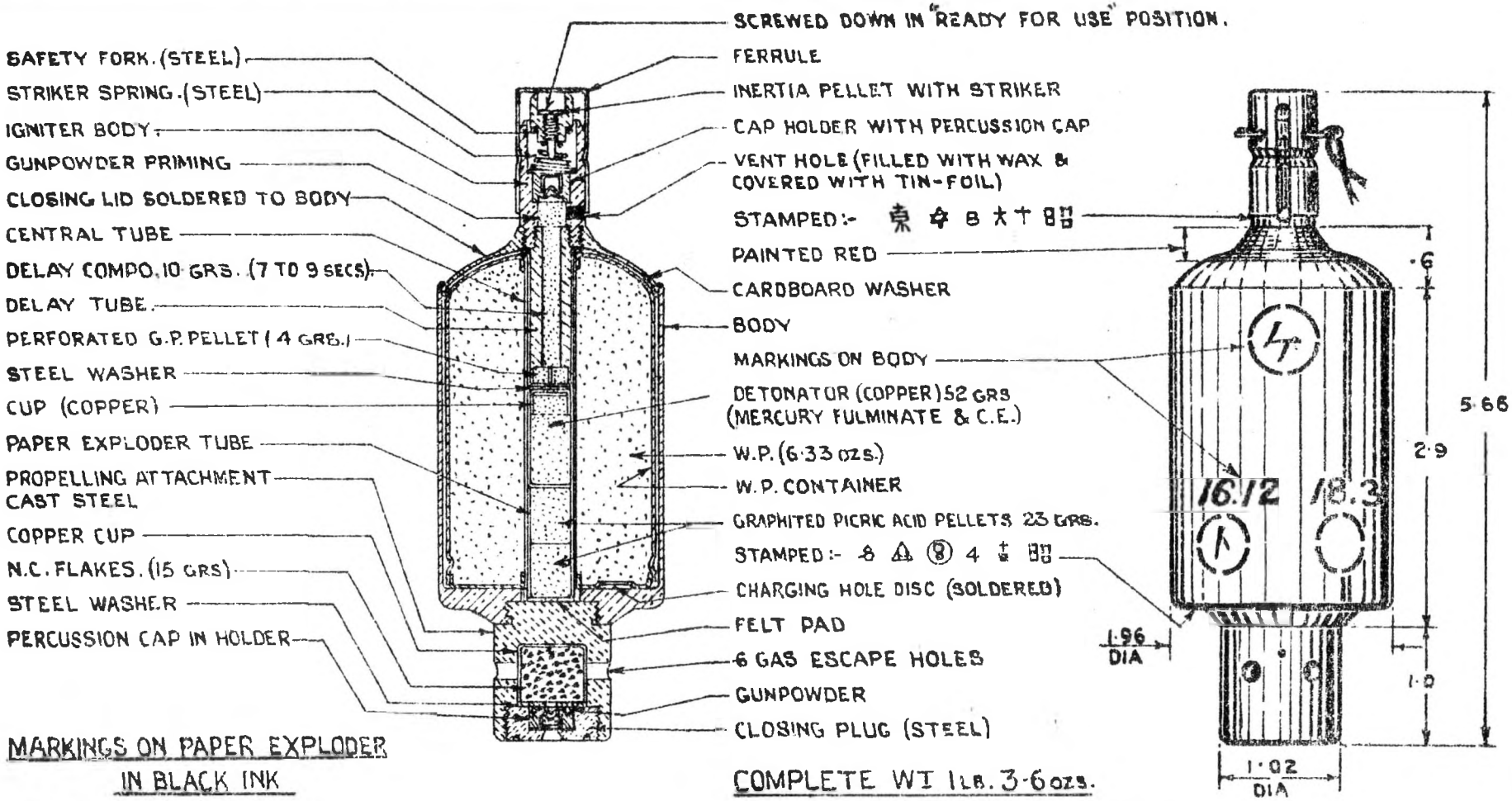
(Of captured ammunition by Ordnance)

10. These should be dealt with similarly to No. 77 grenades. Although the grenades are well constructed there is the possibility that rough usuage may weaken the soldered joints and so give rise to leakers. Grenades showing any signs of damage should be destroyed.

EXPLOSION / FIRE RISK	6½-ozs.
GROUP CLASSIFICATION	XII, Y.
CLASSIFICATION FOR SEA TRANSPORT	S.A.S. (R).

C I. Amn.,
Kirkee.

First Issue,
1st May. 1946.



MARKINGS ON PAPER EXPLODER

IN BLACK INK

COMPLETE WT 1 LB. 3·6 OZS.

GRENADE MADE OF BRASS EXCEPT WHERE OTHERWISE STATED

ALL THREADS R.H.T.

JAPANESE

GRENADE, HAND OR DISCHARGER, INCENDIARY (W.P.) ½ Kg

DIMENSIONS IN INCHES.

C.I. AMN. S/1434
KIRKEE. MAR 46.

G-P.E.P. POONA. 1946.

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C.

JAPANESE AMMUNITION LEAFLETS LEAFLET C 4.

GRENADE, HAND OR RIFLE, H. E., TYPE '99-A

GENERAL

This grenade was first encountered during the invasion of Kiska and was for some time known as the 'Kiska' Type Grenade. It has also been described under various names e. g. "Type '00 Hand Grenade"; "Offensive Hand Grenade"; "New Type Hand Grenade"; "Improved Type Hand Grenade". It is now clear that the grenade is known to the Japanese as the Type '99-A. The nomenclature "Grenade, Hand or Rifle, H.E., Type '99–A". will therefore be used to describe it.

2. It should be noted that the Japanese use also a H. E. hand grenade known as the Type '99-B. This is a somewhat smaller grenade than the Type '99-A and uses a pull time friction igniter instead of the time percussion igniter of the Type '99-A.

3. The projection of the Type '99-A grenade is by hand or from a discharger cup fitted to a rifle. This is a new type of discharger cup known as "Grenade Discharger Type 100 or '00 (1940)" and appears to have been designed specially for the Type '99-A grenade. It is believed that the discharger cup was designed for attachment to the Type '99 rifle (7.7-mm.) but it could, with suitable adapter, be attached to any service rifle provided tube dimension is suitable. A discharger cup with a smaller diameter tube is believed to be used with the 6.5 mm. rifle.

The design of the discharger cup follows a principle used by the French and Germans during the last war which allows a ball round to be used to propel the grenade. It will be useful to mention briefly some details of this discharger cup.

The "Type '00 Grenade Discharger" weighs 1-lb. 9-ozs. and is fitted to the muzzle of the rifle. It consists of a cup offset from the axis of the bore to hold the grenade and a tube which centres over the bore of the rifle; a gas vent leads from this tube into the cup. When the ball round is fired, the bullet, during its passage through the tube, traps the gases momentarily which are, therefore, vented into the cup to propel the grenade. Range adjustments are reported to be made by opening or closing a small gas port located on the cup. Ignition of the grenade occurs on firing in the usual way by the inertia pellet striker setting back to fire the cap, see J. A. L. C 2.

4. According to reports of trials carried out in America, an elevation of 30 degrees was found to give the maximum range. With different rifles these were as follows :—

Meiji 38 Long Rifle (6.5-mm.)	..	.. 102 yards
Meiji 38 Short Rifle (6.5-mm.)	..	.. 117 yards
Type '99 Rifle (7.7-mm.)	..	.. 132 yards

5. A " Discharger Cup, Type '00" has not yet been received at Kirkee and it has not been possible to carry out any trials. Three grenades, hand or rifle, H. E., Type '99-A only were received early this year from D. O. S., A. L. F., S. E. A. and the detailed description given below is based on their examination.

DESCRIPTION

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

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

BODY

7. The body (18) is made of cast iron, lacquered internally with a black finish and oil blackened externally. The surface is plain with a flange at the top and bottom machined to a diameter of 1.75-in. for fitting in the discharger cup. The body is in the form of a cylinder closed at one end. The mouth is closed by a flat cast iron screwed plug (9) having two holes diametrically opposite to facilitate assembly. This plug (9) is bored and screw-threaded centrally to take the igniter assembly complete. Details of this are shown clearly in the Plate. The filling consists of two pressed picric acid blocks (14) weighing about 1.9-ozs. enclosed in a yellow varnished rolled paper container (19). To ensure snug fitting of the pellets in the grenade body cardboard washers are fitted at both top and bottom. The rolled paper container (19) for the pellets is stencilled in ink with the filler's monogram, inspection mark, nature of filling and date of filling. The details shown in the Plate are as found on the actual sample examined.

IGNITER ASSEMBLY

8. This consists of:—

(i) An igniter into the body (6) of which screws,
(ii) A delay tube (11).
(iii) A detonator (15) which rests on a felt pad (17) in,
(iv) A copper tube (igniter assembly tube) (16). This copper tube is crimped near the mouth on to the delay tube (11).

9. The igniter is somewhat similar to the igniter in the Types '97 and '91 grenades, see J. A. L. C2. There are, however, a number of differences. The striker is formed integral with a steel inertia pellet, rust proofed. The brass cover (1) is positively fitted by means of a small screw (4) to the igniter body (6) but a slot in the side allows about 1/4-in. downward movement once the safety fork (1A) is withdrawn. A small slot is cut in the skirt of the cover (1) to avoid masking the vent hole when the cover is in the down or fired position. A tinned plate flash guard (7) is fitted and secured in position by the igniter when the latter is screwed home into the cast iron closing plug (9). Two holes are bored in the flash guard, diametrically opposite, to coincide with the tommy hole in the igniter body (6). This flash guard probably meets two requirements; it protects the thrower's hand when the igniter is functioned and also hides the small flash and flame which might be visible at night to opposing forces and thus reveal the position of the thrower.

A brass cap holder (5) with an anvil and two flash holes are pressed into the igniter body (6). The cap holder carries a small cap something similar to that found in pistol cartridges. Below the cap holder (5) is stemmed a small quantity of mealed G. P. to prime the delay train and ensure correct ignition.

10. The delay tube (11) is much smaller than that used in the Types '97 and '91 grenades but the principle of construction is exactly the same. It holds a train of delay composition (about 6.3-grs. of G.P.) with a perforated booster pellet at the bottom of about 8-grs. of G.P.

11. The detonator is of the same size and generally similar in construction to that used in the Types '97 and '91 grenades and is interchangeable with these. It holds 22-grs. of lead azide, R.D.X. and wax ; details are given clearly in the Plate.

12. A copper tube (16) holds the detonator and the mouth of the tube is crimped on to the delay tube (11), thus forming a complete igniter assembly unit. The time of delay 4 to 5 seconds is stamped on the delay tube as shown in the Plate.

13. **Safety Devices.** The only safety device is the safety fork (1A) which passes through holes in the igniter cover (1), through the igniter body (6) and rests under flanges formed on the striker (2), thus positively locking the striker until the safety fork is withdrawn. When the safety fork is withdrawn the striker is held off the cap by a spiral spring (3). This spring ensures that the striker is kept well clear of the cap so that when the head of the igniter is struck, or it is functioned by inertia, it will fire with greater certainty.

ACTION

14. (a) **When thrown by hand.** The grenade is held in the hand with the igniter downwards – see J.A.L. C 2, Plate C – and the safety fork withdrawn. The igniter is then struck on its head against a hard surface and the grenade at once thrown. On striking, the cover (1) is forced downwards together with the striker (2). This downward movement of the cover is allowed by a small slot as explained in para. 9 above.

(b) **When fired from a rifle.** The grenade is loaded in the Type '00 cup-shaped launcher. At the time of loading in the cup-shaped launcher the safety fork (1A) is withdrawn. It is then fired using a ball round. Set-back forces cause the striker (inertia pellet) (2) to set back and fire the cap. Owing to the short time of delay it is probable that air bursts will occur, particularly at the longer ranges. Owing to lack of grenades trials to check this point have not yet been carried out at Kirkee.

PACKING

15. Only single grenades have been received at Kirkee. From a photograph, reproduced in General Headquarters, India, Military Intelligence Directorate, Supplement to Periodical Technical Summary No. 27, it appears that 20 grenades are packed in a wooden box in four rows of five each. Each five round unit is wrapped in asphalt impregnated paper.

IDENTIFICATION

16. The grenade has a black finish owing to the oil blackening. A paper label is pasted round the body as shown in the Plate. This label has a small illustration showing how

to hold the grenade with instructions for its use, a translation of which reads :—

" Grasp hand grenade as in picture.

Pull safety pin from top and firmly strike end.

Throw hand grenade immediately.

To prevent accidental discharge :—

Keep safety pin in place.

Wrap cord around shank and secure after pin is inserted.

Avoid striking end in this condition."

This translation is taken from General Headquarters, India, Military Intelligence Directorate, Periodical Technical Summary No. 27 of April 1944.

MARKINGS

17. The top of the cast iron closing plug and up to about three quarters of the height of the flash guard (7) is painted red. This indicates that the grenade is filled.

Other markings on components were as follows:—

On the top of striker (2) of one sample was stamped a small square and on another the letters CH. The delay tube is stamped with the time of delay 4 to 5 seconds while the rolled paper container for the H. E. filling is stencilled with the filler's monogram, inspection mark, nature of filling and date of filling as described earlier in this Leaflet.

SUMMARY OF DATA

18.

Length overall ..	.. 3·5–ins.
Weight filled ..	.. 10·6–ozs. (Mean of three grenades)
Length of body ..	.. 2·28–ins.
Maximum diameter over body	.. 1·62–ins.
Maximum diameter over flanges	.. 1·75–ins.
Nature and weight of H. E. filling	.. Picric acid 1.94–ozs.
Weight of delay composition	.. 6·33–grs.
Weight of perforated G. P. pellet (booster)	.. 8·02–grs.
Time of delay ..	.. 4–5 seconds.
Length of detonator (overall)	.. 0·87–in.
Diameter of detonator..	.. 0·354–in.
Weight of detonator filling	.. 22·04–grs.

HANDLING AND TRANSPORT.

(Of captured ammunition by Ordnance)

19. The percussion igniter is very similar to that used in the Type '91 and Type '97 grenades described in J. A. L. C 2 and similar instructions apply.

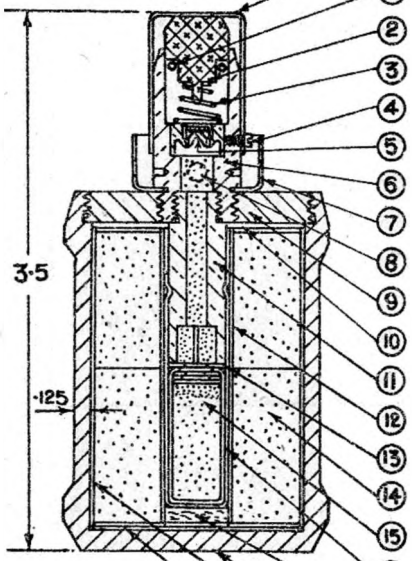
20. It should be noted that in the Type '99–A grenade the striker is formed integral with the inertia pellet, unlike the screw–striker of the Types '91 and '97 grenades. This deprives the former grenade of one safety device and renders it somewhat less safe than the Types '91 and '97 grenades.

EXPLOSION/FIRE RISK	..	2–ozs. for each grenade.
GROUP CLASSIFICATION	..	VIII Category Z.
CLASSIFICATION FOR SEA TRANSPORT	..	O. A. S.

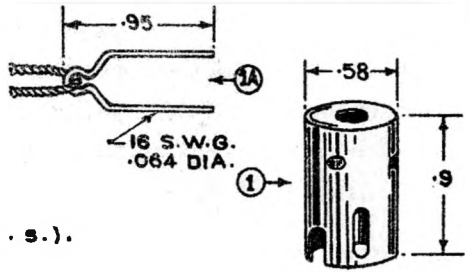
C. I. Amn.,
Kirkee.

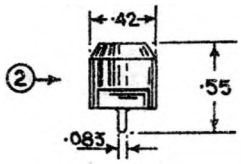
First Issue,
18th July, 1945.

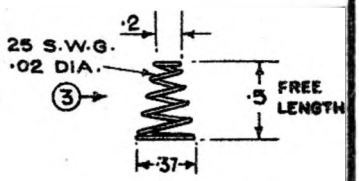
RESTRICTED.

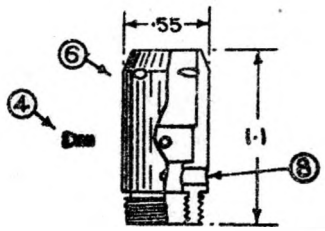


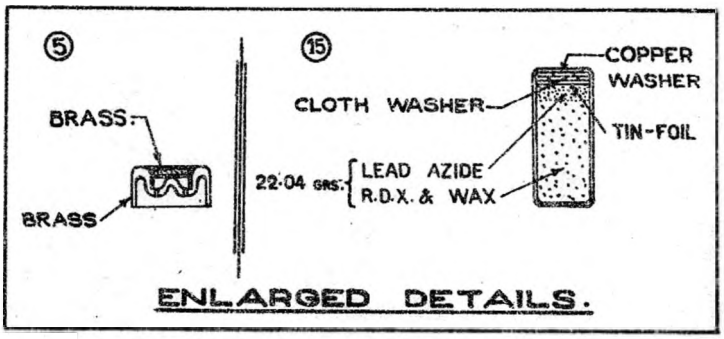
1. COVER (BRASS).
1A. SAFETY FORK (G. I.).
2. STRIKER (~~ALUMINIUM~~ STEEL).
3. STRIKER SPRING (STEEL).
4. COVER RETAINING SCREW (M. S.).
5. CAP HOLDER WITH CAP.
6. IGNITER BODY (BRASS).
7. FLASH GUARD (TINNED-PLATE).
8. VENT HOLE.
9. CAST IRON CLOSING PLUG.
10. CARD BOARD WASHER.
11. DELAY TUBE (BRASS).
12. ROLLED PAPER LINER.
13. STEEL WASHER.
14. PICRIC ACID. 1·9 ozs.
15. DETONATOR.
16. IGNITER ASSEMBLY TUBE (COPPER).
17. FELT PAD.
18. CAST IRON BODY.
19. ROLLED PAPER CONTAINER.
20. CARD BOARD DISC.

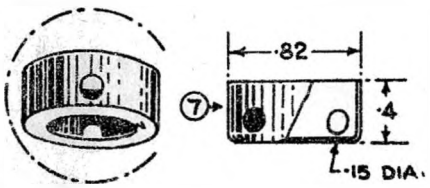


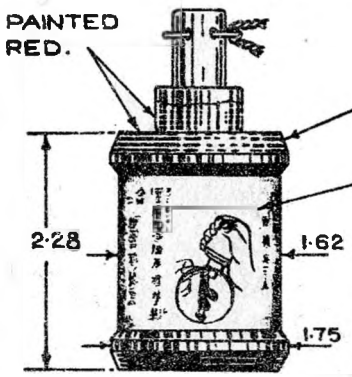










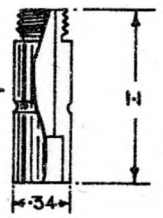


BODY LACQUERED BLACK INTERNALLY AND OIL BLACKENED EXTERNALLY.

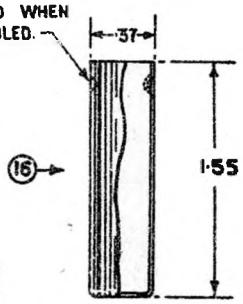
PAPER LABEL WITH USER INSTRUCTIONS PASTED ON BODY.

WT. OF FILLED GRENADE :- 10·6 ozs.

STAMPED 四 4 一 TO 五 5 秒 SECS. 11



CRIMPED WHEN ASSEMBLED.



STAMPINGS ON 6

東 TOKYO | ☆ INSPECTION MARK | 10 OCTOBER | 十十 1942

STENCILLING ON 19

TOKYO EXPLOSIVES FACTORY | 1942 SEPTEMBER | 17·9 | 火 OSAKA ARSENAL | 黄色 PICRIC ACID | 南 UNKNOWN ARSENAL

JAPANESE

GRENADE HAND OR RIFLE H.E. TYPE '99 A

GENERAL ARRANGEMENT & ASSEMBLY SEQUENCE.

DIMENSIONS IN INCHES.

C.I. AMM. S/1122
KIRKEE MAY '45

G.P.Z. POONA. 1945.

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C

JAPANESE AMMUNITION LEAFLETS LEAFLET C 5

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

GENERAL

No reports indicating the use of this grenade in any theatres have so far been received at Kirkee, although the grenade has been described in various captured Japanese documents. The following information, however, based on reports derived from such documents, is given in this Leaflet, in case any grenades of this type are encountered.

2. The grenade is similar in action to the pull-type grenade, while in external appearance it more resembles the Type '99-A. The grenade is reported to be used in close combat fighting and its effective fragmentation radius is claimed to be 5 yards.

DESCRIPTION

3. The drawing in the attached plate shows the details of construction of the grenade. For purposes of description it can be divided into two main components :—

(i) Body and H. E. filling,

(ii) Friction Igniter Assembly.

BODY.

4. This consists of a plain cylindrical cast-iron body threaded internally to receive a closing plug. The plug is made of cast iron and screwthreaded externally below the lip so as to screw into the grenade body; the lip is knurled to facilitate assembly. A safety cap, protecting the pull cord and ring, is screwed to the plug above the lip; a fabric washer is placed on the lip to ensure a tight fit of the cap.

The filling consists of about 2-ozs. of pressed picric acid with a cavity formed in the centre to accommodate the lower half of the igniter assembly. Substitute charges, however, may also be used.

Friction Igniter Assembly.

5. This is housed in two aluminium tubes secured to the closing plug by a screwed retaining plug. It consists essentially of —

(a) **Friction Igniter**:—This consists of a small tube closed at one end and containing friction composition, through which passes a pull cord. On one end of the cord is a blob of match composition and on the other is fixed a pull ring.

(b) **Delay Holder**:—This is housed in the lower aluminium tube immediately above the detonator. It contains a pressing of delay composition which burns for about 4 secs.

(c) **Detonator**:—This is similar to that used in the Type '99-A grenade and lies immediately below the delay holder.

6. **Safety Devices**:—Apart from the metal cap which prevents accidental pulling of the cord, no safety devices are incorporated.

ACTION.

7. (i) Remove the metal cap.

(ii) Fit the ring over a finger of the throwing hand.

(iii) Grasp the grenade with its head towards the little finger.

(iv) Throw the grenade. As it leavas the hand, the friction igniter is operated, since the ring is still retained round the one finger. The delay burns for about 4 seconds after which the grenade detonates.

IDENTIFICATION

8. The grenade can be identified by its shape and smooth casing.

SUMMARY OF DATA.

9.

Length Overall	..	$2\frac{7}{8}$-ins.
Max. Diameter	..	$1\frac{3}{4}$-ins.
Weight (filled)	..	9.6-ozs.
Weight of Filling	..	2.0-ozs.

HANDLING AND TRANSPORT

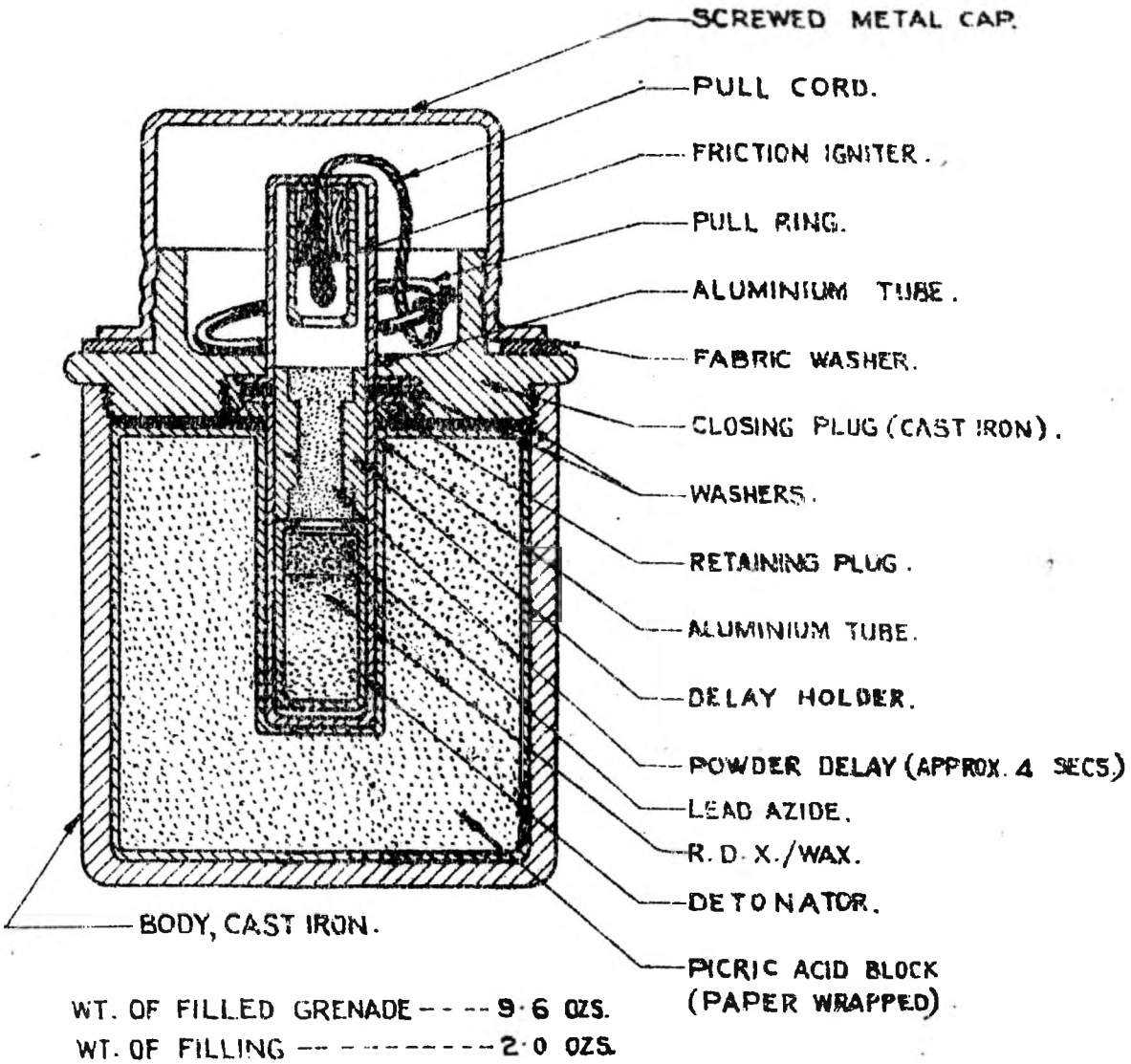
(Of Captured ammunition by Ordnance)

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.

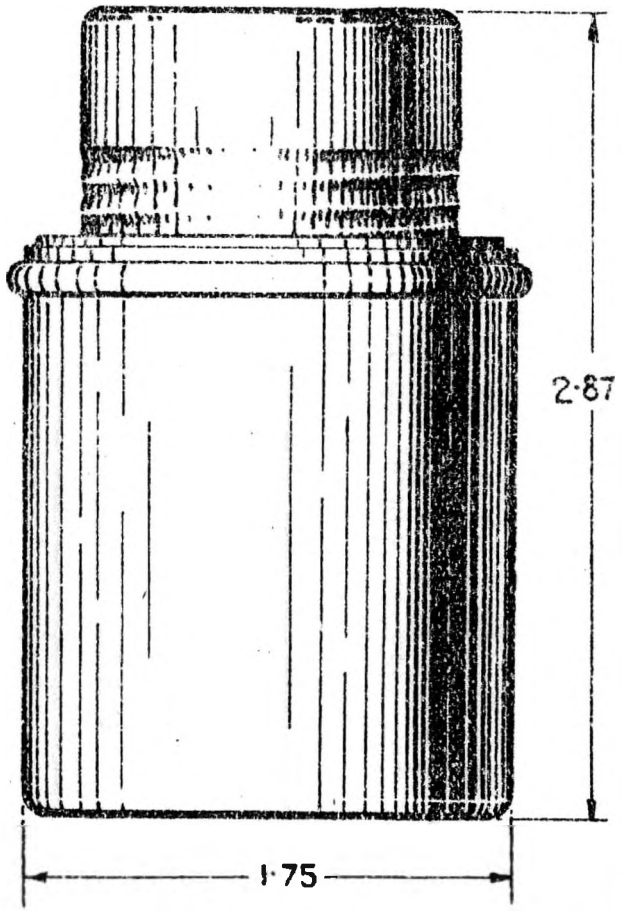
EXPLOSION/FIRE RISK	..	2-ozs.
GROUP CLASSIFICATION	..	VIII, Z
CLASSIFICATION FOR SEA TRANSPORT	..	O.A.S.

C. I. Amn.,
Kirkee.

First Issue.
28th March, 1946.



WT. OF FILLED GRENADE ---- 9·6 OZS.
WT. OF FILLING ---------- 2·0 OZS.



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

DIMENSIONS IN INCHES

C.I.Ami.S/1414
KIRKEE, FEB. 46

G.P.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.

FRICTION 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 (·06-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 8·6-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 filling. 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 41½-lbs. and the exterior dimensions are 28-3/4″ × 10-1/8″ × 7½″.

IDENTIFICATION

SUMMARY OF DATA

10. **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 G. 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″ × 10-1/8″ × 7½″.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

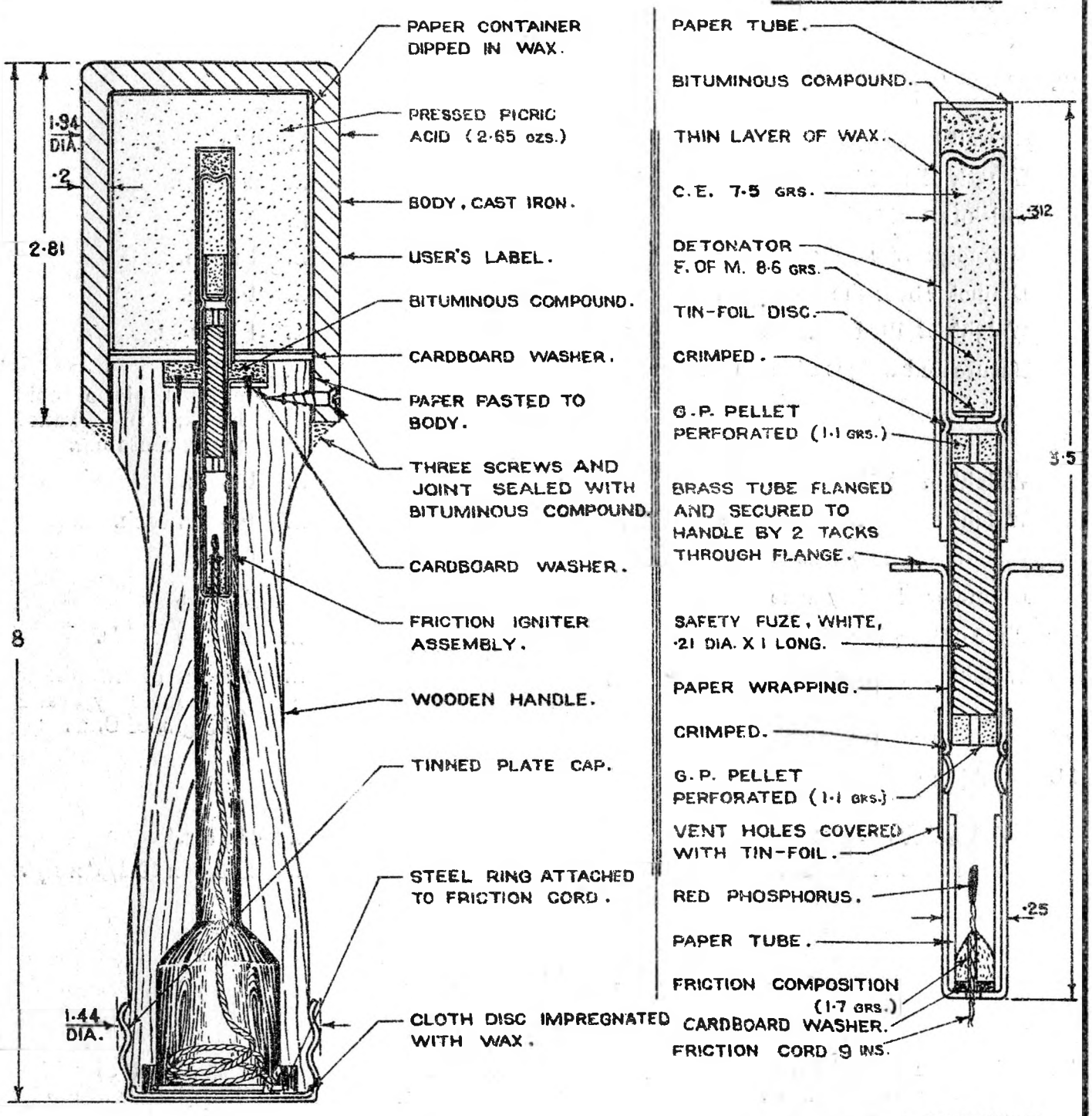
12. This is an obsolete type of grenade which has many disadvantages not the least of which is its susceptibility to moisture owing to the match composition used in the igniter; blinds are to be expected in use unless grenades are in obviously good condition.

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 pircates 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.



FRICTION IGNITER ASSEMBLY

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

JAPANESE

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

GENERAL ARRANGEMENT

DIMENSIONS IN INCHES

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

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

(*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.

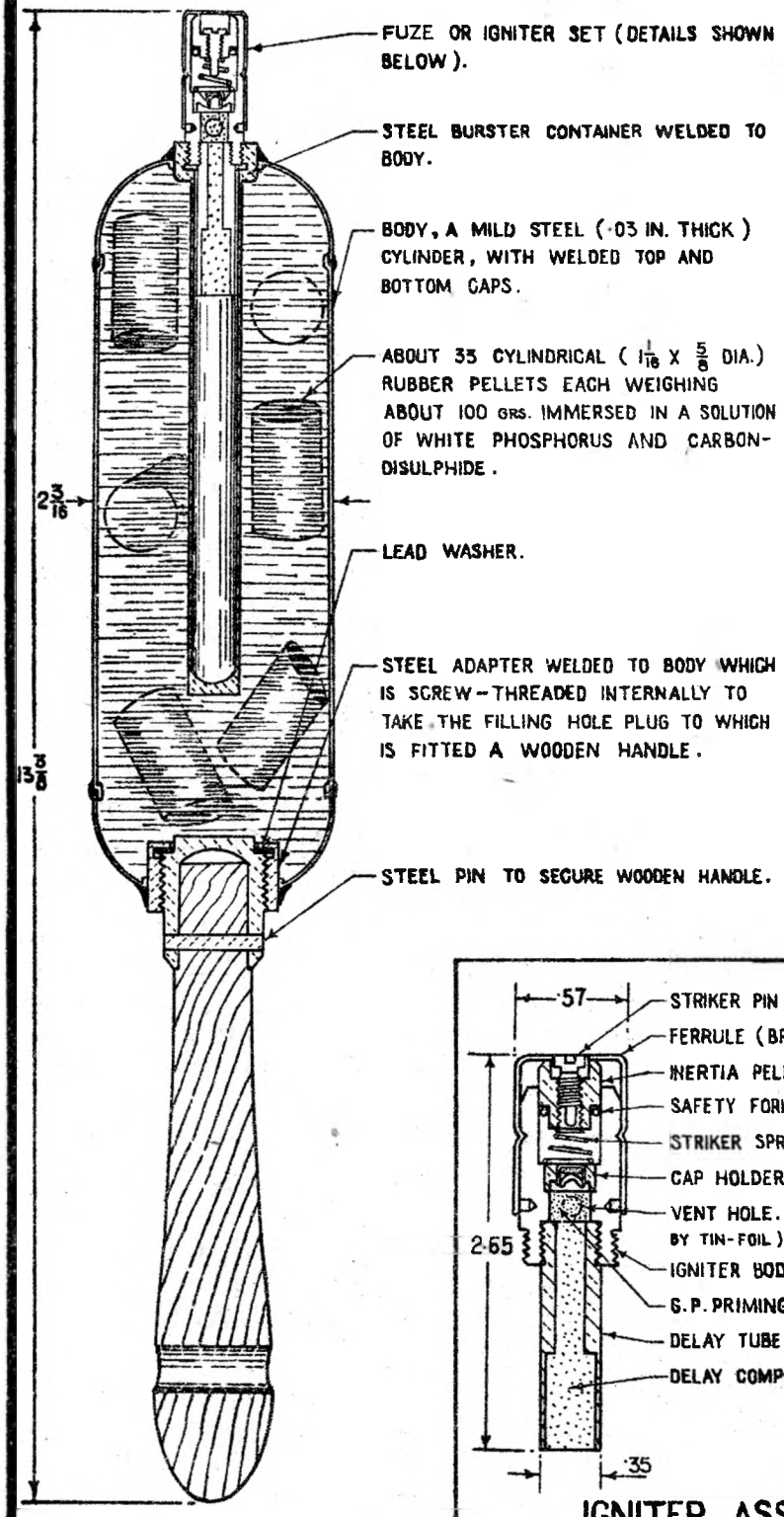
HANDLING AND TRANSPORT

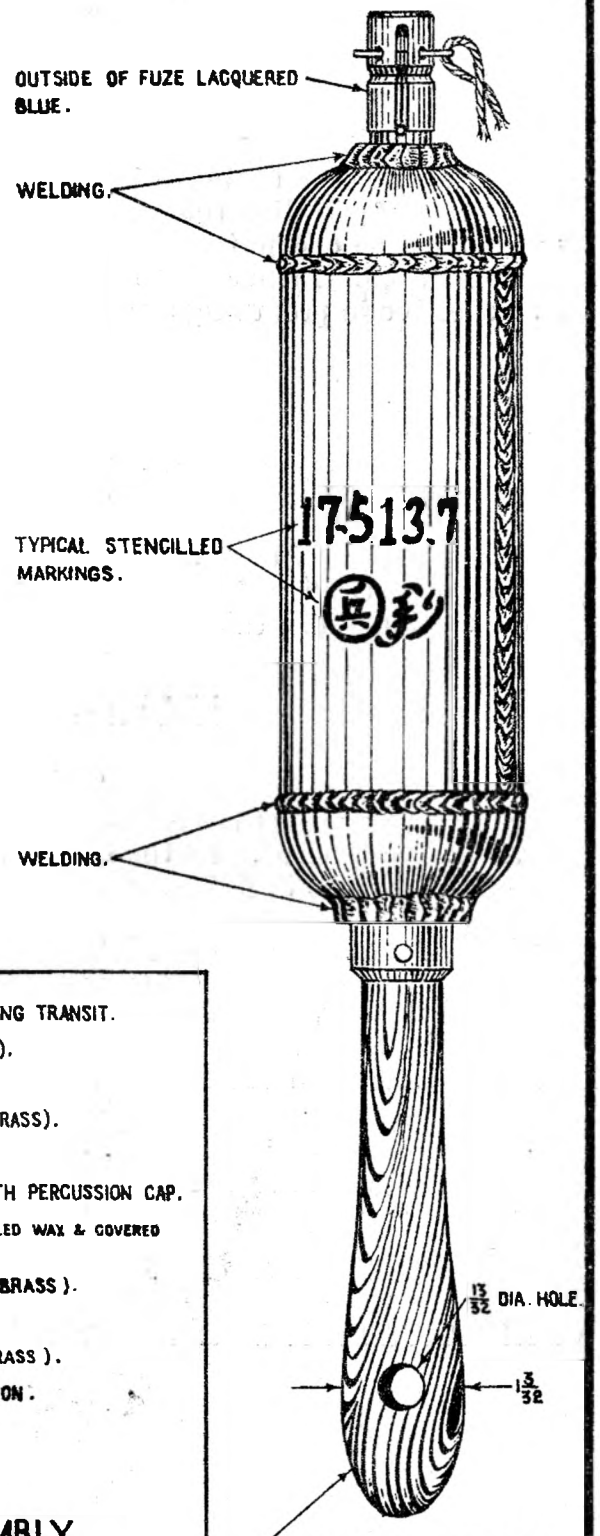
(Of captured ammunition by Ordnance)

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.

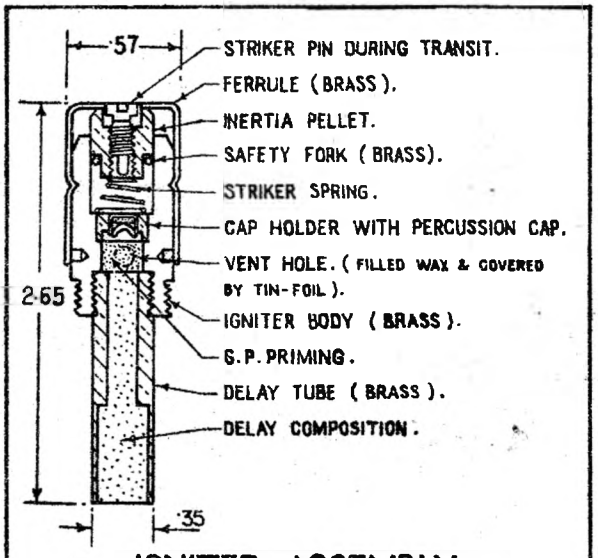
16. The grenade, however, is not so robust as a mortar bomb and handling, etc. is liable to cause damage to the case and weaken seams which may cause leaks. The danger of leaks is greatly accentuated if the grenades are stored in the sun for any length of time. Loose grenades showing any signs of damage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

EXPLOSION/FIRE RISK	... **11-oz. per grenade**
GROUP CLASSIFICATION	... **XII, Category Y**
CLASSIFICATION FOR SEA TRANSPORT	... **S. A. S. (R)**





WT. OF COMPLETE GRENADE (FILLED) :— 1 LB. 9 OZS.



IGNITER ASSEMBLY

(SAME AS USED IN "GRENADE, HAND, H.E., TYPE '97'.")

JAPANESE

GRENADE, HAND, INCENDIARY, STICK TYPE.

GENERAL ARRANGEMENT

DIMENSIONS IN INCHES.

C.I. AMN. S/1158
KIRKEE JULY '45

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

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C.

JAPANESE AMMUNITION LEAFLETS 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.

2. This is an efficient offensive grenade having slightly thicker walls than those of the Type '91 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 rings 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 body	..	2–ins.
Weight filled	..	1–lb. 4 3/4–ozs.
Weight of body without cap	..	15.6–ozs.
Nature and weight of H. E. filling	..	T N.T. 1.4–ozs.
Weight of closing cap	..	1.75–ozs.
Weight of igniter assembly complete	..	1.95–ozs.
Length of safety fuze	..	1.45–ins.
Weight of safety fuze	..	12.04–grs.
Weight of detonator filled	..	22.5–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.

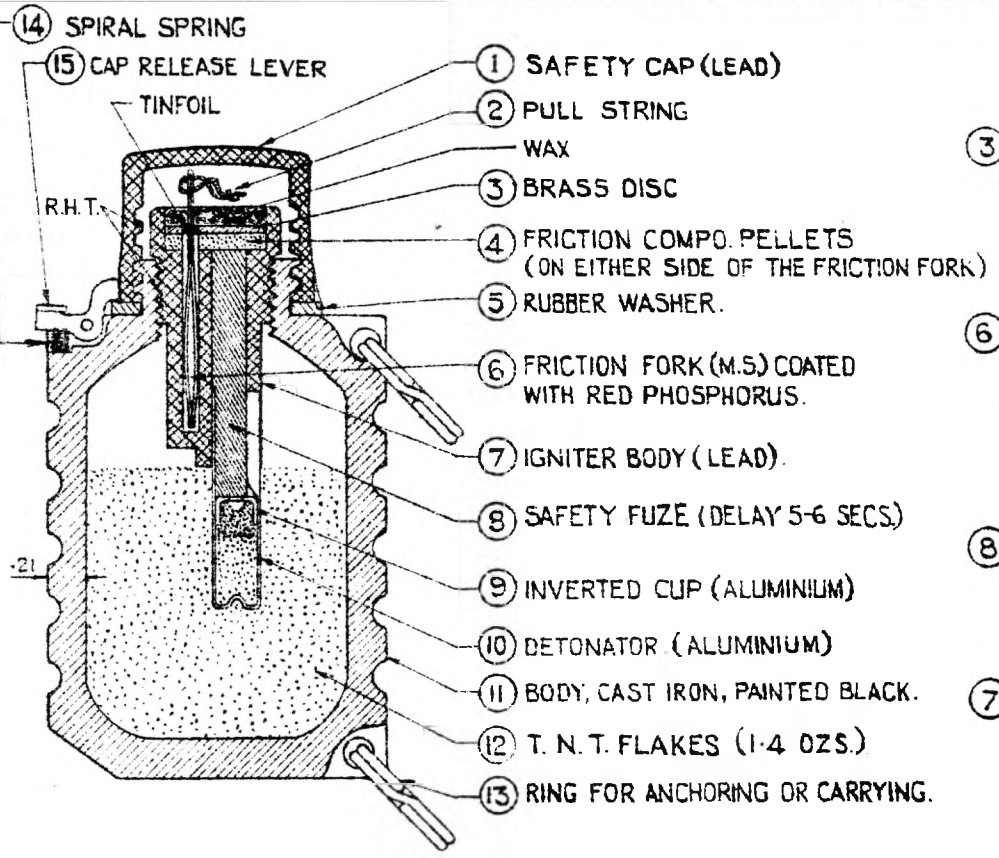
If blinds have to be disposed of the usual practice of destruction in situ should be followed. If, however, such a grenade must be moved, a study of the mechanism will show that no undue risk is involved.

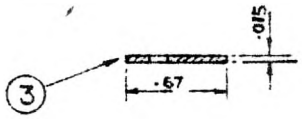
The possibility that these grenades may be used as booby traps should never be over'ooked.

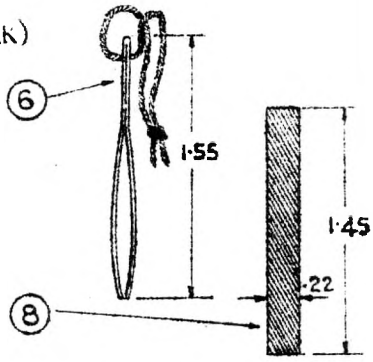
EXPLOSION/FIRE RISK	..	1 1/2–ozs.
GROUP CLASSIFICATION	..	Group VIII, Category Z.
CLASSIFICATION FOR SEA TRANSPORT	..	O.A.S.

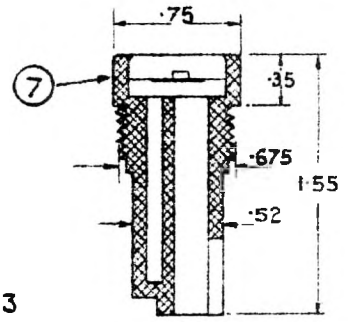
C. I. Amn.,
Kirkee.

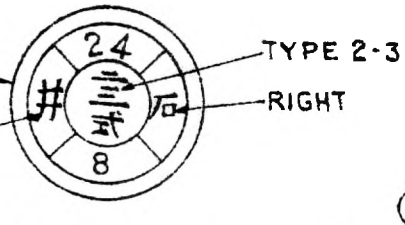
First Issue,
15th October, 1945.

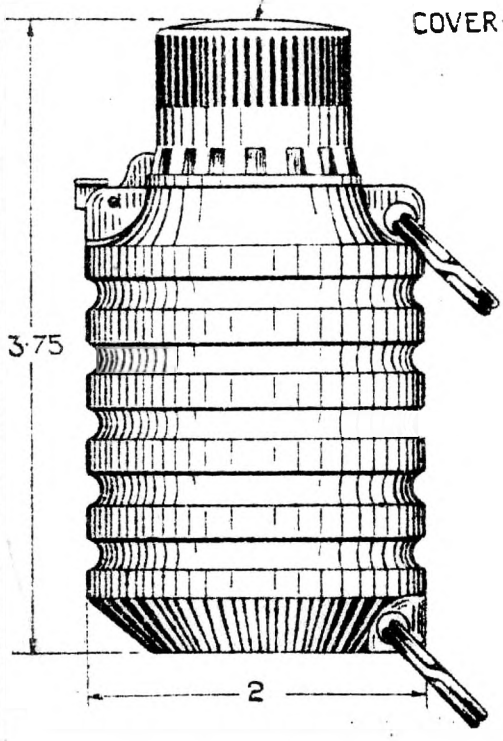




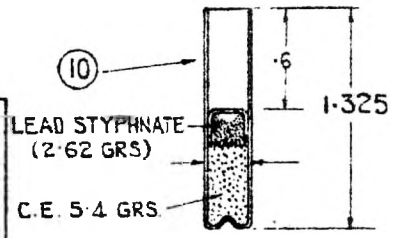




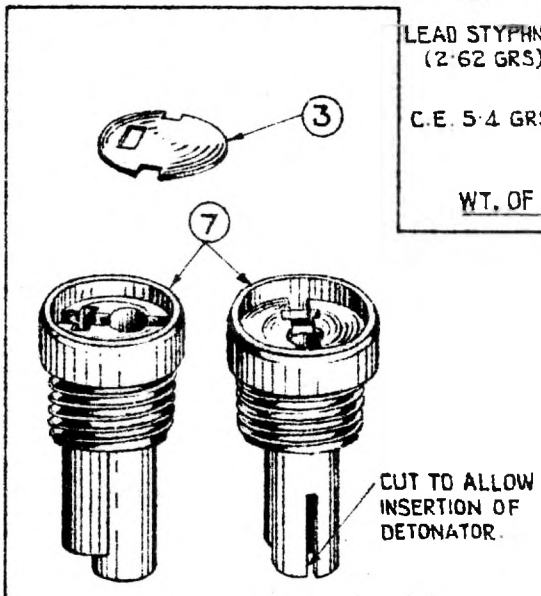


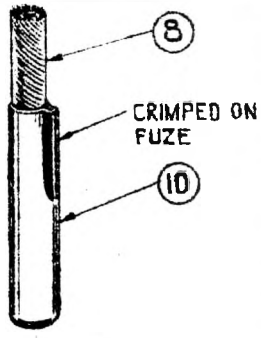


WEIGHT OF FILLED GRENADE 1 LB. 4 3/4 OZS



WT. OF DETONATOR 22·5 GRS.





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) SECTION C.

JAPANESE AMMUNITION LEAFLETS 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 R.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 photograps :—

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 90/10–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.

12. 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°) thus giving more space for filling. It is not thought that this 50° 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. This 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 handling 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 as 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 shank 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 5/3 –in.
Diameter over tail unit.	1 5/32–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.E. filling.	3.6–oz. of R.D.X. & Wax (50/50).	4.09–oz. of R.D.X. & T.N.T. (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 (96/4).	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 a black finish.		
	3/8–in. yellow band 1 1/2–in. from the top of body.	3/8–in. yellow band 2–in from the top of body.	Yellow band round middle of body.
Special features.	Tail extension with rifled collar.	Tail cone adapter fitted with stabilizing vanes.	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.

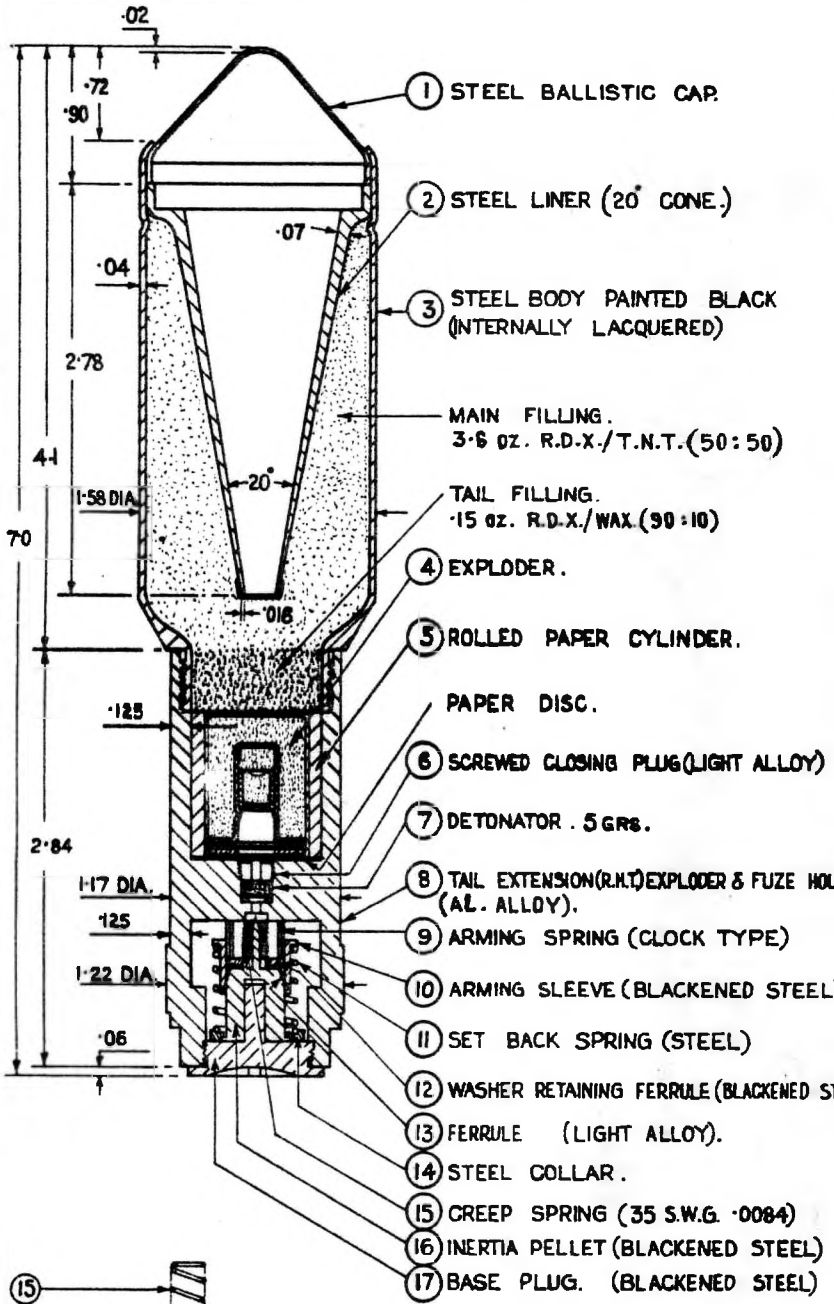
Blinds should be dealt with as for rifle grenades but it may be possible to detect whether inertia pellet is forward by looking through holes in tail cone. If inertia pellet is back and it is essential to move bomb a nail or piece of wire should be passed through the safety wire hole to secure inertia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

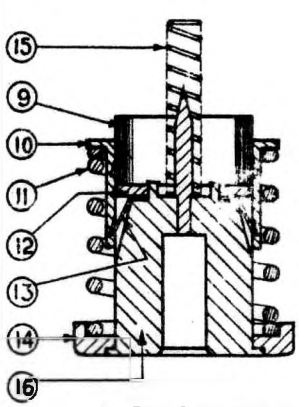
EXPLOSION/FIRE RISK	Assume 5–oz. for each grenade or bomb.
GROUP CLASSIFICATION	VIII Category Z.
CLASSIFICATION FOR SEA TRANSPORT	O. A. S.

C. I. Amn.
Kirkee.

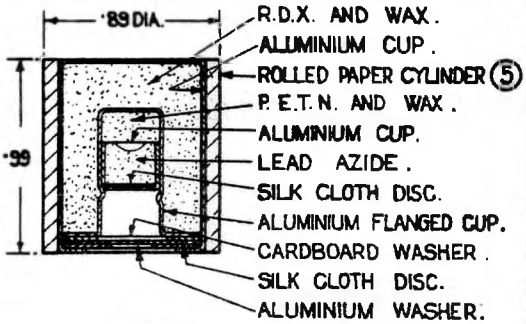
First Issue,
15th June, 1945.

RESTRICTED.





BASE FUZE



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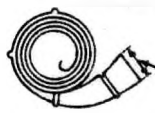
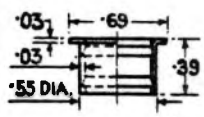


(9)
LENGTH :- 23·5
BREADTH :- 0·23
THICKNESS :- 0·002



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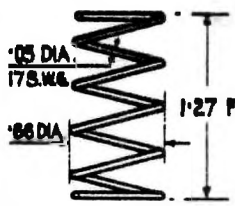

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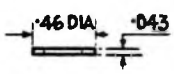

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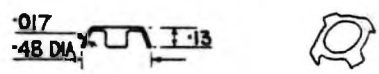

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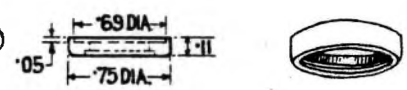

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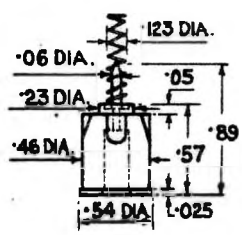

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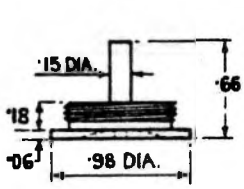


(17)

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

(ATTACHED TO JAPANESE RIFLES)

INTERNAL DETAILS & ASSEMBLY SEQUENCE.

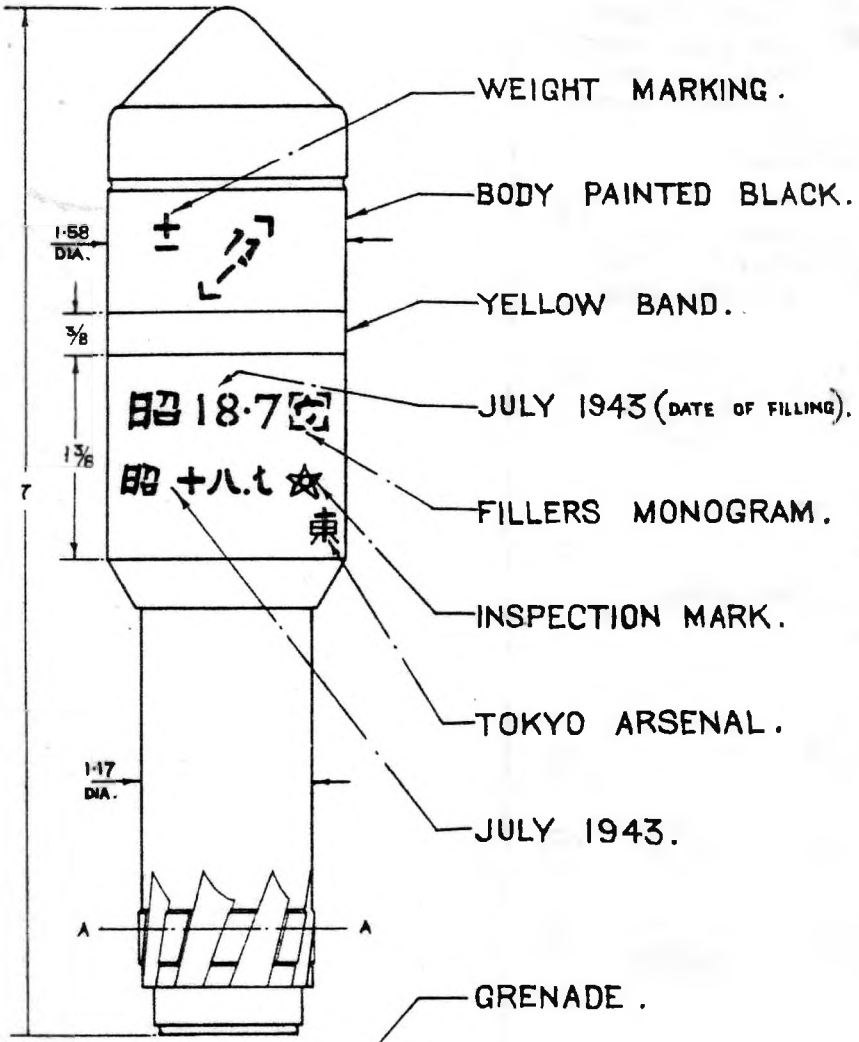
DIMENSIONS IN INCHES.

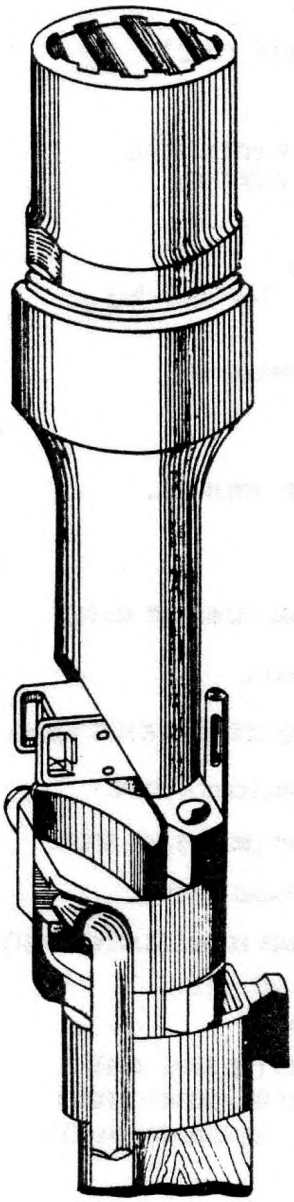
SHEET 1 OF 2 SHEETS.
C.I.AMM. 8/971.
KIRKEE, JAN. 1945.

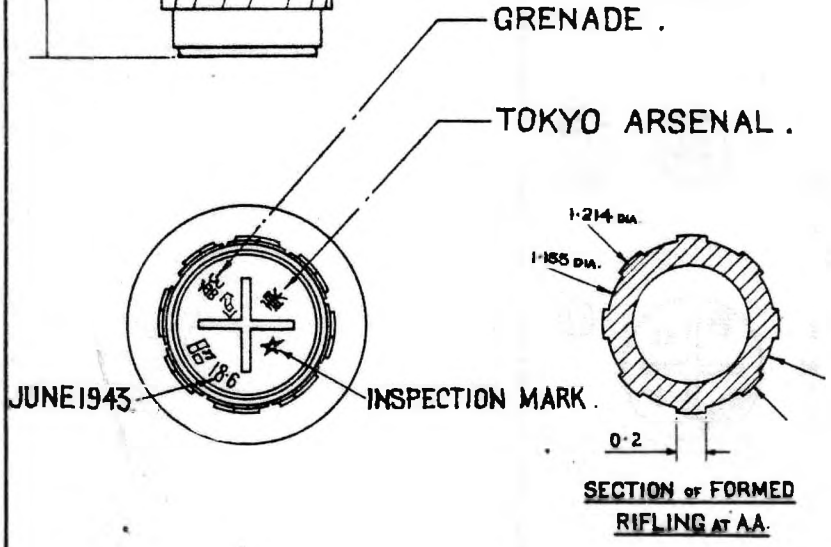
G.P.Z.P. POONA, 1945.

RESTRICTED

COMPLETE WT. 12·75 OZS.







SECTION OF FORMED RIFLING AT AA.

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.

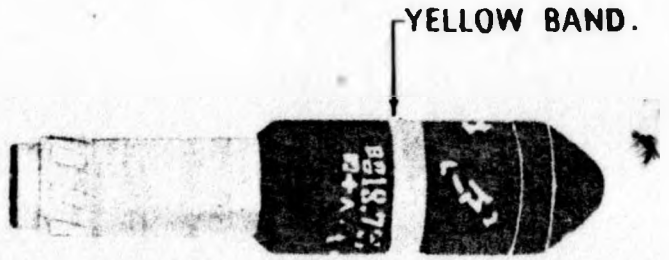
DIMENSIONS IN INCHES.

SHEET 2 OF 2 SHEETS.

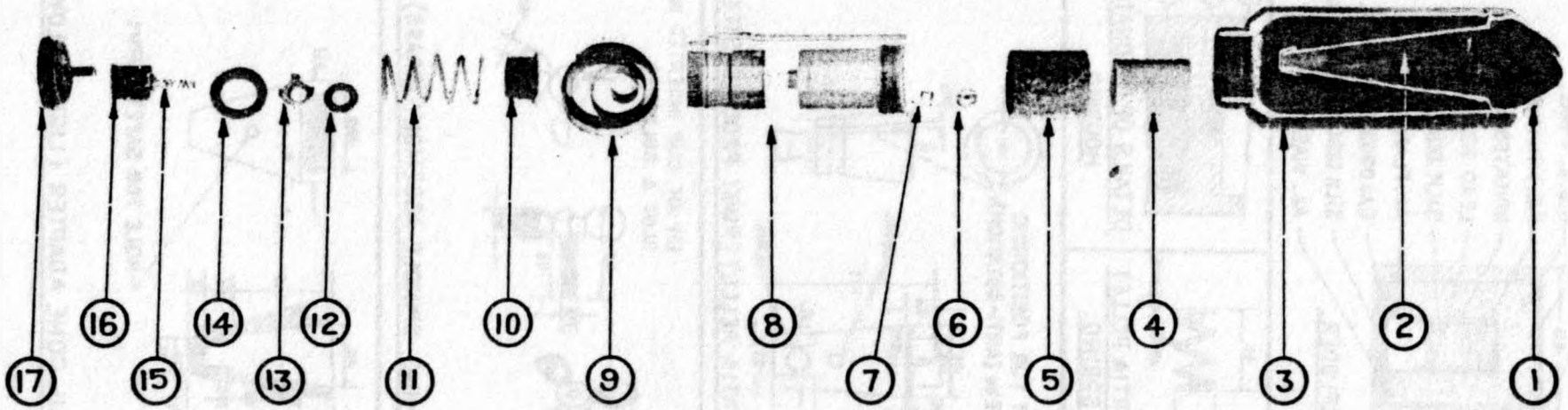
C.I.AMM. S/971. KIRKEE, JAN. 1945.

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

RESTRICTED.



COMPLETE GRENADE.



JAPANESE H.E., A.T., GRENADE (HOLLOW CHARGE).

FOR 30 MM. RIFLED DISCHARGER CUP.

EXTERNAL APPEARANCE & ASSEMBLY SEQUENCE.

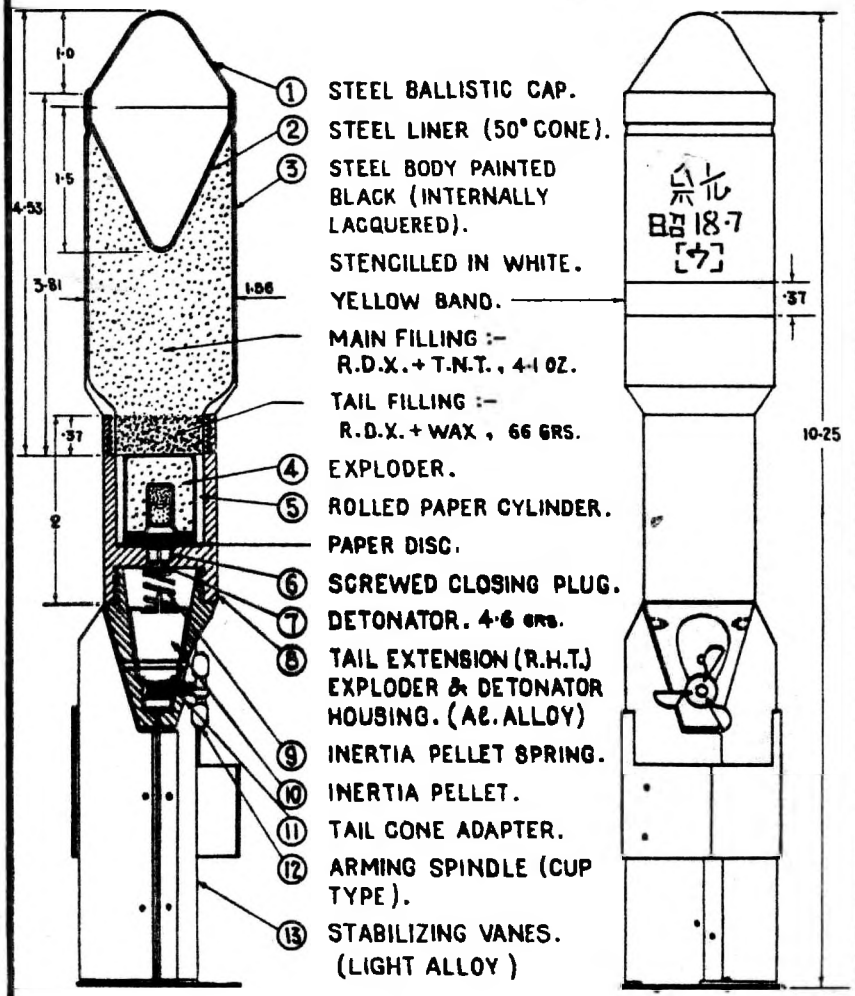
C.I. Amm. S/970
Kirkee. Jan 45.

PLATE C

S.P.Z.P. POONA. 1945.

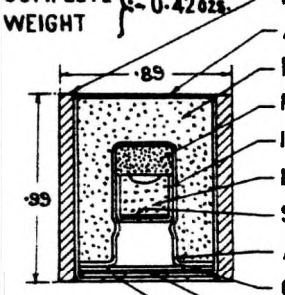
RESTRICTED.

COMPLETE WEIGHT :- APPROX. 12 ozs.



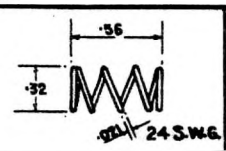
1. STEEL BALLISTIC CAP.
2. STEEL LINER (50° CONE).
3. STEEL BODY PAINTED BLACK (INTERNALLY LACQUERED). STENCILLED IN WHITE. YELLOW BAND.
   MAIN FILLING :- R.D.X. + T.N.T., 4·1 OZ.
   TAIL FILLING :- R.D.X. + WAX, 66 GRS.
4. EXPLODER.
5. ROLLED PAPER CYLINDER. PAPER DISC.
6. SCREWED CLOSING PLUG.
7. DETONATOR. 4·6 GRS.
8. TAIL EXTENSION (R.H.T.) EXPLODER & DETONATOR HOUSING. (Al. ALLOY)
9. INERTIA PELLET SPRING.
10. INERTIA PELLET.
11. TAIL CONE ADAPTER.
12. ARMING SPINDLE (CUP TYPE).
13. STABILIZING VANES. (LIGHT ALLOY)

COMPLETE WEIGHT :- 0·42 ozs.

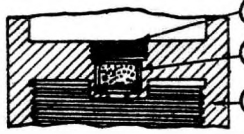


ROLLED PAPER CYLINDER.
ALUMINIUM CAP.
R.D.X. + WAX.
P.E.T.N. + WAX.
INVERTED Al. CUP.
LEAD AZIDE.
SILK DISC.
Al. FLANGED CUP.
CARDBOARD WASHER.
SILK DISC COLOURED BLUE.
Al. WASHER.

EXPLODER.
④

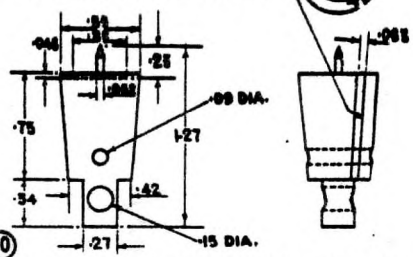


INERTIA PELLET SPRING.
⑨



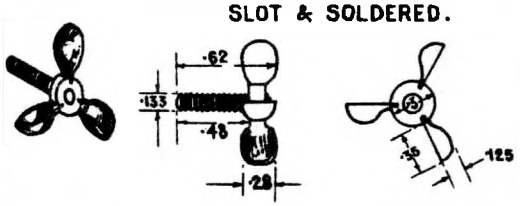
DETAILS OF DETONATOR HOUSING.

SLOT FOR POSITIONING SCREW (ANTI-ROTATION).

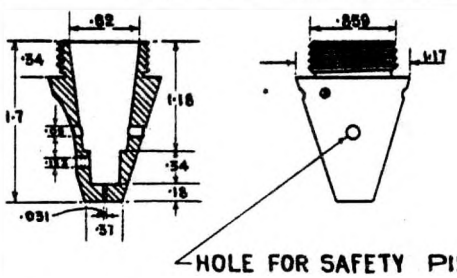


⑩ INERTIA PELLET (RUST PROOFED STEEL).

LIP OF CUP INSERTED IN SLOT & SOLDERED.

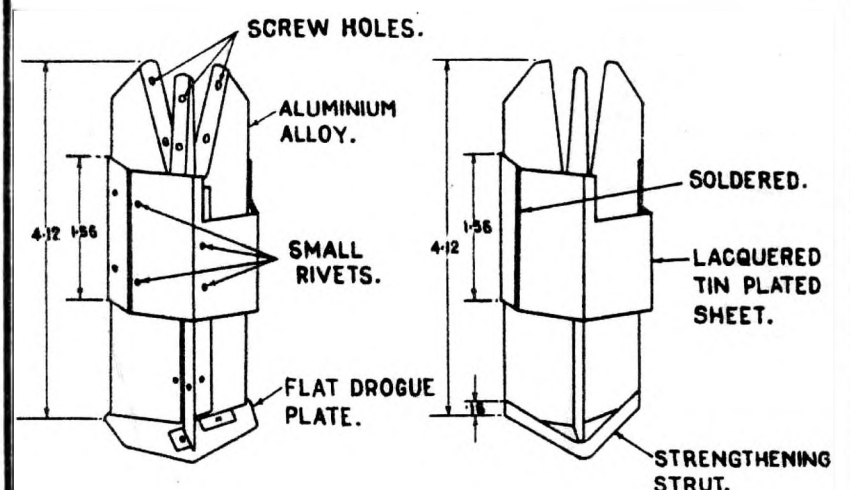


⑫ ARMING SPINDLE ASSEMBLY (BRASS).



HOLE FOR SAFETY PIN

⑪ TAIL CONE ADAPTER (LIGHT ALLOY).



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)

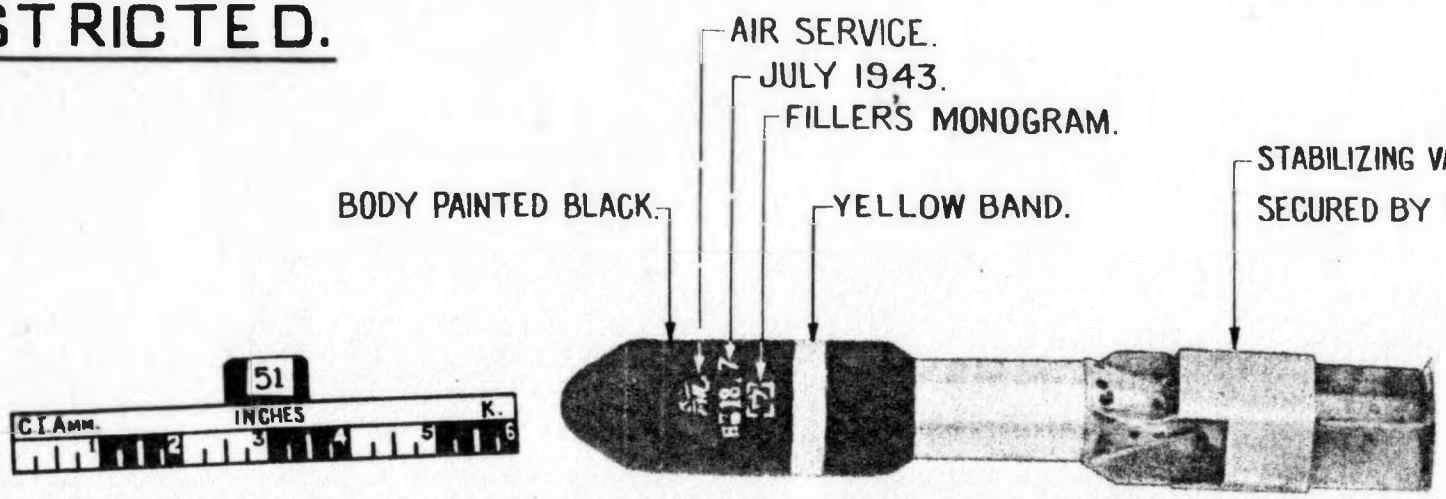
INTERNAL DETAILS & DIMENSIONS.

DIMENSIONS ARE IN INCHES.

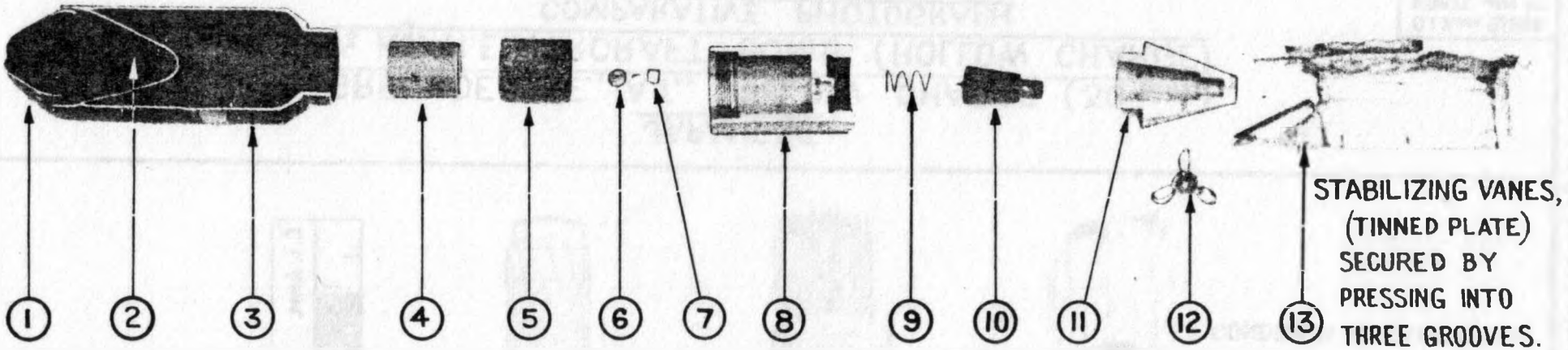
C.I. Amm. S/969 NIRKEE JAN 45.

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

RESTRICTED.



COMPLETE BOMB.



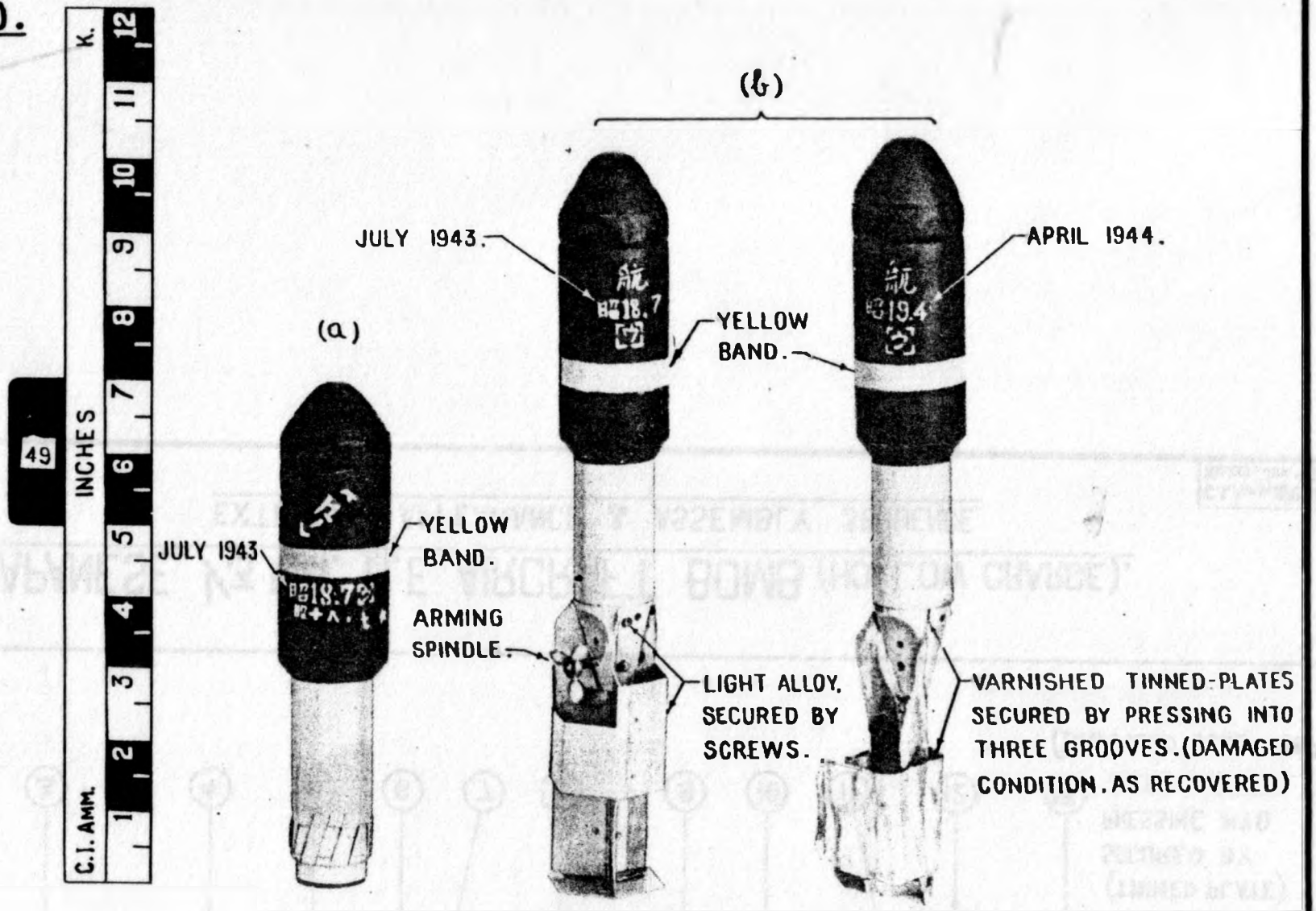
JAPANESE 1/3 Kg. H.E., AIRCRAFT BOMB (HOLLOW CHARGE).

EXTERNAL APPEARANCE & ASSEMBLY SEQUENCE.

C.I.AMM.S/968
KIRKEE. JAN. 45.

PLATE E

RESTRICTED.



JAPANESE

(a) GRENADE H.E., A.T., HOLLOW CHARGE (30 MM.)

(b) ⅓ Kg. H.E., AIRCRAFT BOMB (HOLLOW CHARGE)

COMPARATIVE PHOTOGRAPH

C.I.Amm S/984
KIRKEE JAN 45

PLATE F

S.P.Z.P. POONA, 1945.

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 existance 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 cap. 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	1¾-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)

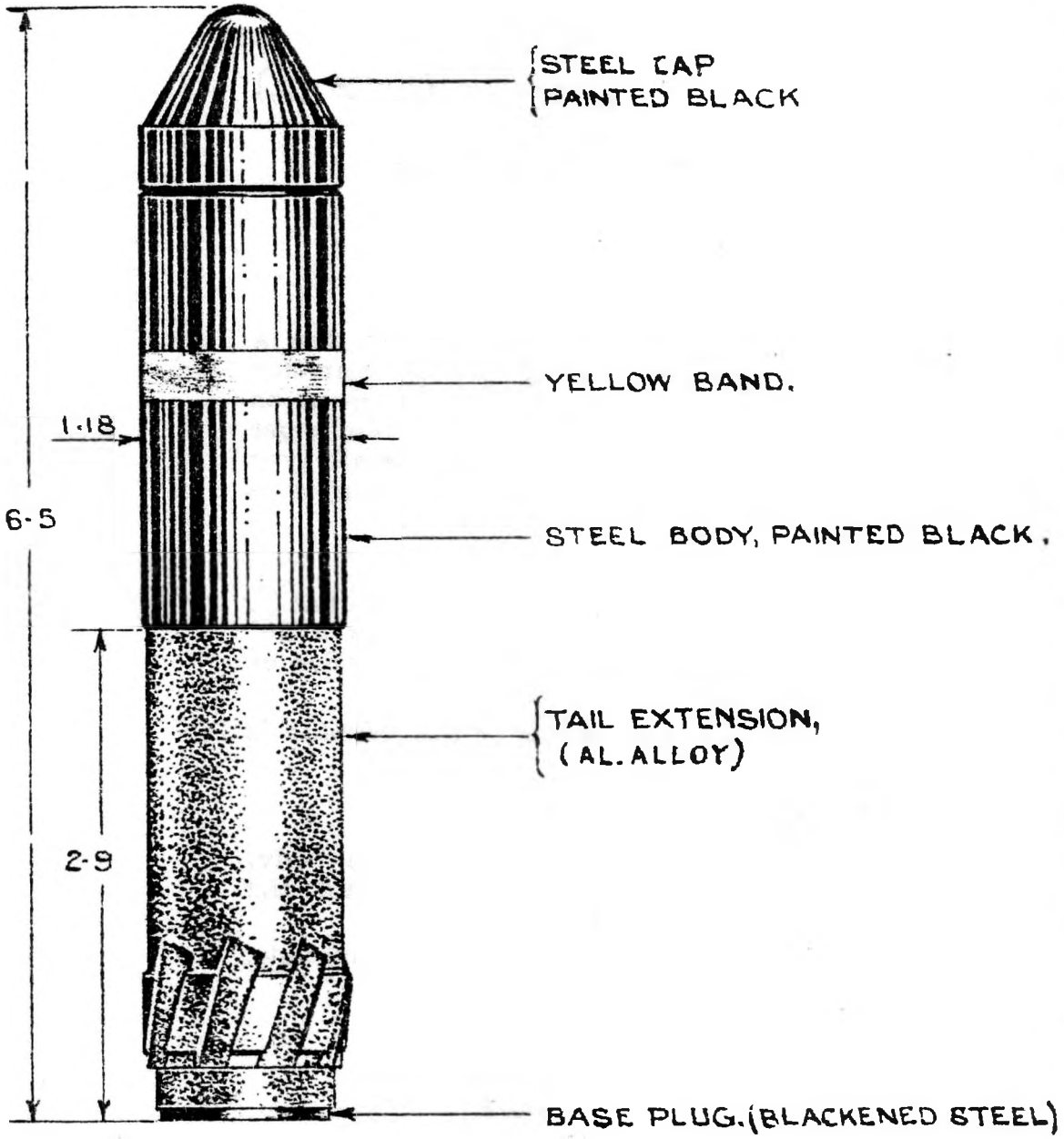
6. See para. 23, J.A.L. C 12.

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

C. I. Amn.,
Kirkee.

First Issue,
15th July, 1946.

RESTRICTED



WEIGHT OF FILLED GRENADE - 8¼ ozs.

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

DIMENSIONS IN INCHES.

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

G.P.Z.P. POONA '46

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C

JAPANESE AMMUNITION LEAFLETS 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 '99 rifles, using the Spigot–type launcher mentioned in J. A. L. 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 crimped 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 shearing 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 adaper 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)

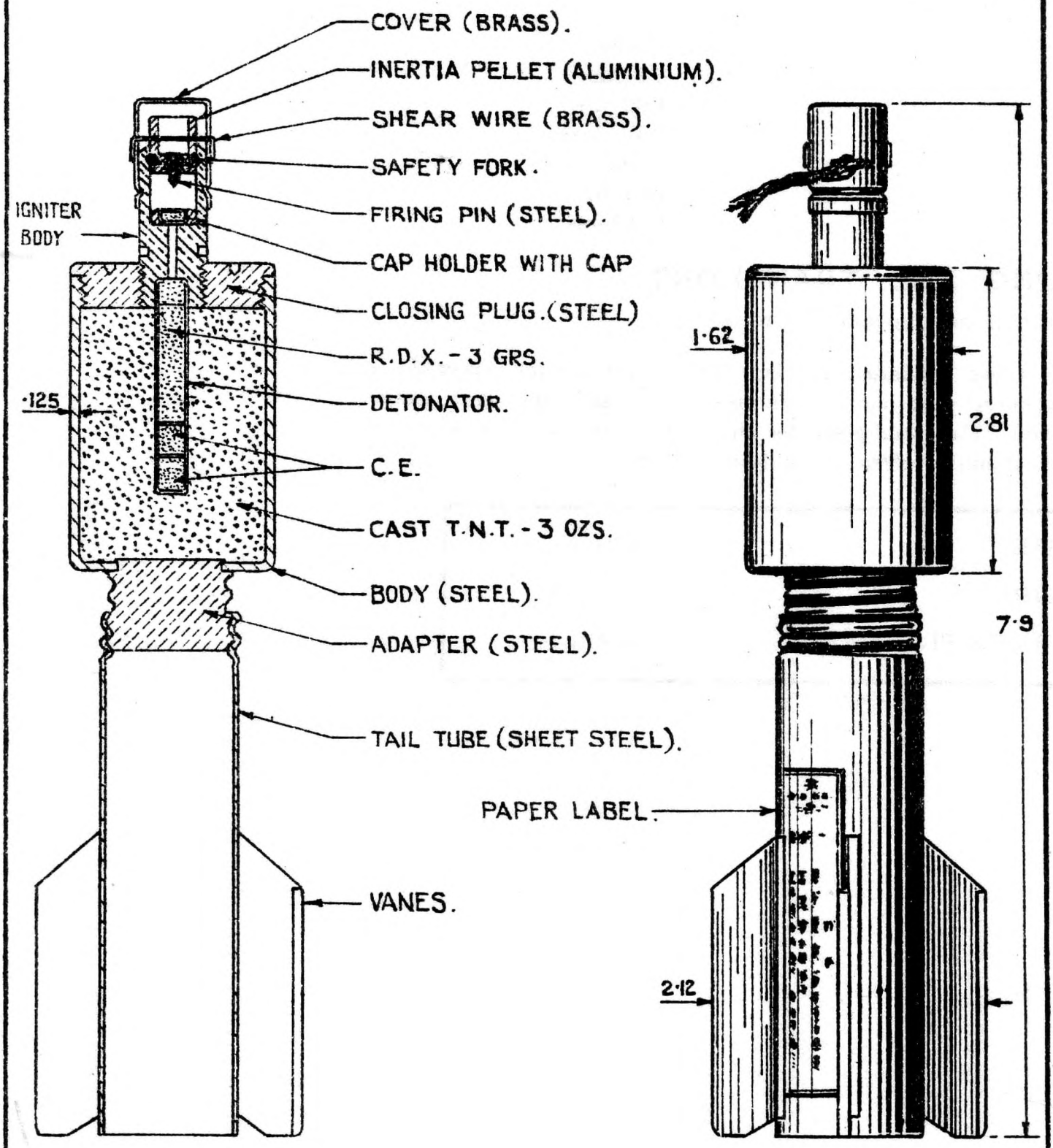
12. It is not clear whether these grenades are issued with the igniter assembly in position or not, but it is usual Japanese practice to issue grenades primed and it is presumed that this grenade is no exception. Captured grenades should be examined to ensure that the safety fork is in position; blinds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

EXPLOSION/FIRE RISK	3-ozs.
GROUP CLASSIFICATION	VIII, Z
CLASSIFICATION FOR SEA TRANSPORT	O.A.S.

C I Amn,
Kirkee

First Issue,
5th April. 1946.

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

G.P.T.P. POONA. 1946

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 Meiji 38 and the 7.7 mm. Type '99 rifles using the Spigot-type launcher and the wooden-bulletted 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 ½ ins.
Weight complete	1 lb. 5 ozs. approx.
Max. Diameter	2 ins.
Dia. of fins.	2 9/16 ins.
Weight of Smoke Composition ..	9½ ozs.

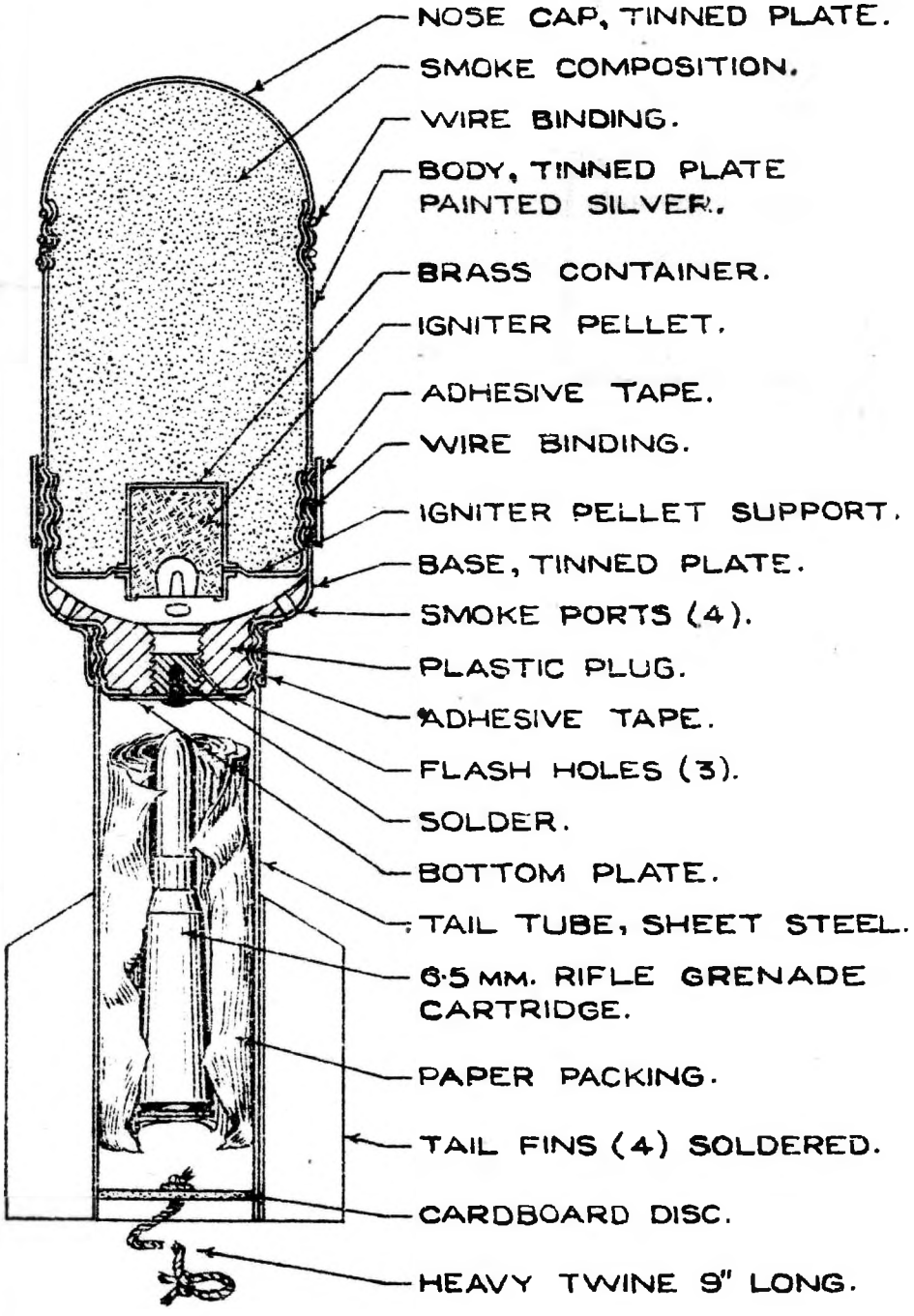
HANDLING AND TRANSPORT

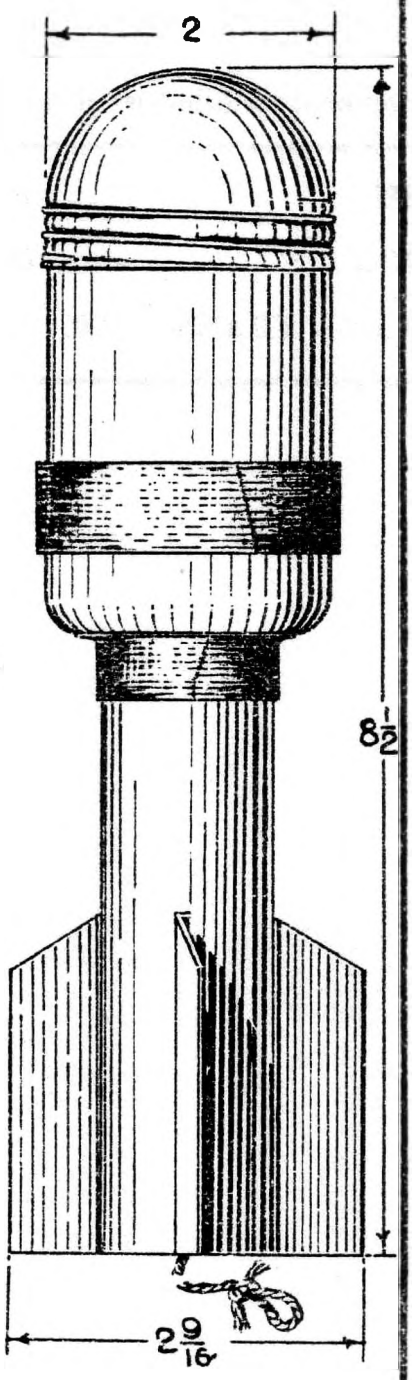
(Of captured ammunition by Ordnance)

12. Treat similarly to Service generators filled with hexachlorethane mixture.

EXPLOSION/FIRE RISK	..	Assume 10 ozs. per grenade
GROUP CLASSIFICATION	..	Group XI, Category X
CLASSIFICATION FOR SEA TRANSPORT.	..	O.A.S.

RESTRICTED.





COMPLETE WT. :— 1 LB. - 5 OZS.

JAPANESE

GRENADE, RIFLE, SMOKE.

DIMENSIONS IN INCHES

C.I.AMN.S/1461
KIRKEE MAY 46

G.P.E.P. POONA. 1945.

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C
JAPANESE AMMUNITION LEAFLETS LEAFLET C 17

FLARE 50-mm., TENTH YEAR TYPE (A)

GENERAL.

The exact nomenclature of this store is not known and it has been variously described as a Mortar Grenade Incendiary Shell, a Smoke Grenade and a Tenth Year Type (A) Flare. In accordance with the translation of the label found on the container, it is being called the Tenth Year Type (A) Flare. Reports differ regarding the main filling of this ammunition. Some state that it has a smoke mixture consisting of hexachlorethane, zinc oxide and zinc, whereas others state that the filling is a pyrotechnic composition, which, however, probably has incendiary properties. It is probable that the Japanese have two different methods of filling, i. e. smoke or flare composition according to the role in which it is to be employed.

2. The flare was initially designed to be fired from the 50-mm. Type Taisho 10 smooth bore discharger, both the flare and the discharger having been introduced in 1921. Later on, it was also used in the 50-mm. Type '89 Discharger. As the former weapon has become largely obsolescent, the flare is now fired from the Type '89 Discharger; as this is rifled, a certain amount of escape of gas is expected with consequent inaccuracy and loss in ranging.

3. The following sketches have been included in this Leaflet :—

Plate A. Sectioned view of the Flare.
Plate B. External view of the Flare and the Container.

DESCRIPTION.

4. For the purposes of description the flare may be divided into the following three parts :—

(i) Brass case and base plate.
(ii) Flare composition, Ignition pellet and Delay pellet.
(iii) Propelling attachment.

CASE

5. The case is 22 S.W.G. brass, increasing to 18 S.W.G. at the nose, and is covered with a clear lacquer. There are four groups of ports, each containing seven small circular holes, at the base of the case. Each group is covered with tissue paper and tinfoil. The case is firmly attached to the base plate by crimping into a cannelure and by three securing screws. There is no driving band of any kind.

The aluminium alloy base plate has two diametrically opposed holes, lined with brass bushes containing delay pellets. Between the inner surface of the base plate and the main filling is a felt disc which also has holes in line with the delay pellets. The ignition pellets are embedded in the main filling immediately above the delay pellets.

FLARE COMPOSITION ETC.

The following is an analysis of the fillings as reported in Australian Technical Intelligence Summary No. 15 of June 1944.

Main Filling.

Potassium nitrate	49%
Aluminium	22%
Antimony trisulphide	8%
Sulphur, wax, charcoal	21%

Ignition Pellet.

Potassium nitrate	54.7%
Aluminium	18.7%
Wax and sulphur	16.5%
Antimony sulphide	5.8%

Delay Pellet.

Wax and sulphur	45%
Potassium perchlorate	35%
Carbon	15%
Shellac	(on outer layer of pellet).

Propelling Attachment.

7. The propelling attachment is the same as that used for the Grenade, Hand or Discharger, H.E., Type '91 discussed in para. 12 of J.A L. C 2; also see Plate 'A' of that Leaflet.

ACTION.

8. The flare is loaded in the discharger from the muzzle in the same way as the British 2-in. mortar bomb. The discharger is fired by lanyard and the striker pierces the cap in the propelling attachment thus igniting the propellant. The propellant gases, escaping through the six gas escape holes in the propelling attachment, propel the flare forward at the same time igniting the delay pellets. After a given delay, which is not known, the flash from the delay pellets is conveyed to the ignition pellets and thence to the main filling.

PACKING

9. The flare is packed in a tinned plate container shown in Plate B. Cardboard discs are fitted at the base and below the lid of the container. The lid is sealed by a piece of adhesive tape.

IDENTIFICATION

10. The flare can be easily identified by its cylindrical body and the hemispherical nose. The container has a paper label on the lid having Japanese characters, the translation of which is :—

"Tenth Year Model Type 'A' Flare
May 1939
Tokyo Arsenal".

SUMMARY OF DATA

11.

Total weight of flare	1-lb. 4-ozs.
Weight of flare composition	11.1-ozs.
Weight of propellant charge	17-grs.
Overall length of flare	5.95-ins.
Diameter of case	1.93-ins.
Diameter of base plate	1.97-ins.

HANDLING AND TRANSPORT

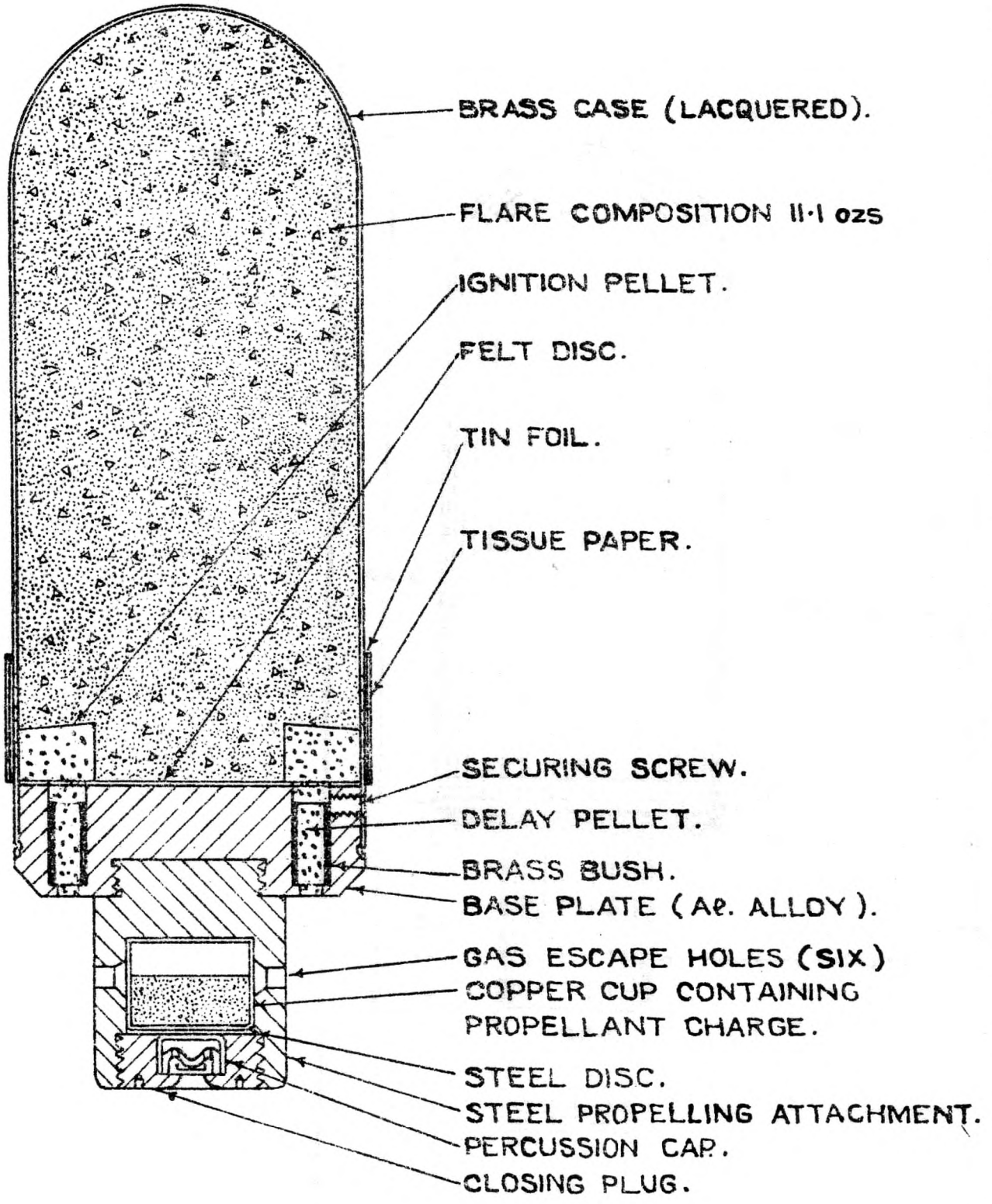
(Of captured ammunition by Ordnance)

12. This may be handled in the same way as British Illuminating 2-in. Mortar Bombs. Also see instructions under Handling and Transport given in Leaflet G 1.

EXPLOSION / FIRE RISK	3/4 lb.
GROUP CLASSIFICATION	XI, category Y.
CLASSIFICATION FOR SEA TRANSPORT	O.A.S.

C. I. Amn.,
Kirkee.

First Issue,
24th September 1946.



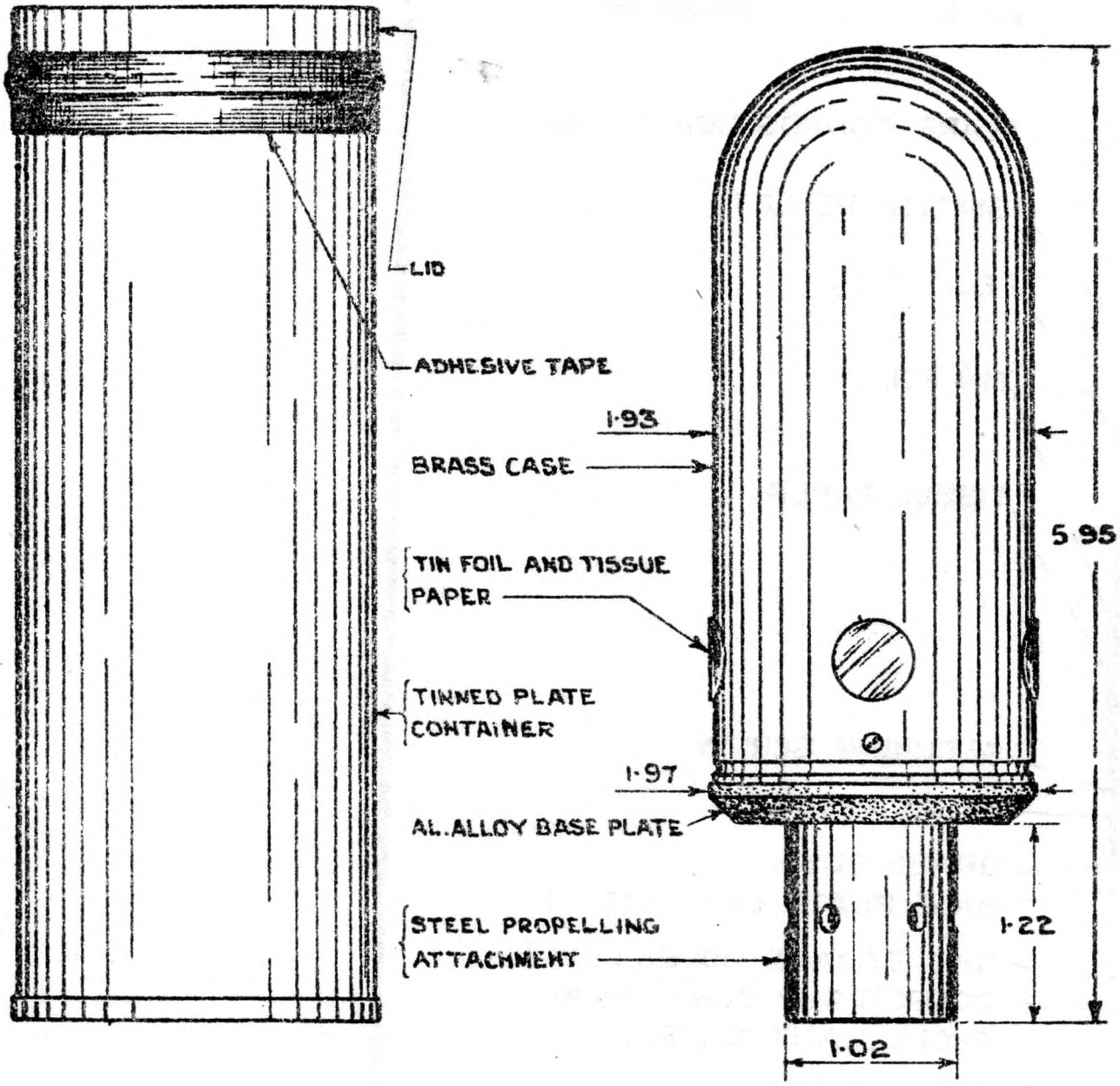
JAPANESE

FLARE 50MM. TENTH YEAR TYPE (A)

DIMENSIONS IN INCHES.

C.I. AMN.S/1523
KIRKEE AUG 46

G.P.Z.P. POONA. 1946



CONTAINER
(TINNED PLATE)

FLARE

JAPANESE

FLARE 50 MM. TENTH YEAR TYPE (A).

AND CONTAINER

DIMENSIONS IN INCHES

C.I. AMN. S/1515
KIRKEE, AUG. '46.

G.P.Z. P. POONA. 1946.

THIS LEAFLET MUST NOT
FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C
JAPANESE AMMUNITION LEAFLETS LEAFLET C18

GRENADE, HAND, H. E., CERAMIC
AND
GRENADE, HAND, SHRAPNEL, CERAMIC.

GENERAL

Brief descriptions based on reports, of these two grenades have already been given in J. A. Ls Cl & Cl (a) respectively but samples have now been received and the details given below are based on an examination of them at Kirkee. These grenades are similar in that the bodies of both are made of a high grade pottery but differ in the type of filling and in the igniter system; one has an H. E. filling and a scratch friction igniter whereas the other has a shrapnel filling and a pull fricton igniter.

2. Reports indicate that the H. E. grenade has been used extensively by the Japanese on the Phillipine Islands, although the samples received here were captured in the Burma Arca. No information is available regarding the use of the shrapnel grenade in any other theatres of War and this is the first evidence of its use in the Burma Area ; it seems to have been introduced only in the later stages of the War.

3. So far as is known the H E. grenade is manufactured in two shapes-one with a flat base and the other with round base. The pottery used may be either terra-cotta or white porcelain, but only the latter type have been received here. There are slight differences in dimensions etc. and these are shown in the summary of da'a at the end of this Leaflet.

DESCRIPTION

GRENADE, HAND, H. E., CERAMIC.

4. The drawing in Plate A shows the general appearance and the details of construction of the grenade, which consists essentially of :—

(i) The Body and H. E. filling.

(ii) The igniter assembly.

BODY.

5. This is spherical in shape except for the neck at the top and is made of white porcelain consisting of two hemispheres baked together. The body is white in colour and is glazed inside and out. A close fitting, thin, straw-coloured rubber covering is slipped over the body, covering it entirely except for the neck ; this serves as a waterproof covering and allows the thrower to take a better grip. A loop of cord is tied around the neck for carrying purposes.

The grenades examined here were found to contain 3½ ozs. of poured type '88 explosive,. (Ammonium perchlorate, wood meal, silicon and oil).

IGNITER ASSEMBLY.

6. The details of construction of the complete assembly will be clear from Plate A. It can be divided into three main parts :—

(a) **Detonater Assembly.** This consists of an ordinary detonator into the open end of which is inserted a length of white safety fuze. A short paper tube fits over the protruding end of the fuze to ensure a snug fit in the wooden ring which contains a pellet of friction composition (Potassium chlorate, Antimony sulphide and Oxide of Lead). A piece of paper is pasted round both the safety fuze and the detonator to retain the one in the other.

(b) **Adapter.** This is made of rubber and houses the detonator assembly. The upper portion is coned to ensure a tight fit into the mouth of the grenade, into which it is sealed with a layer of composition.

(c) **Striker Block** This is a wooden block one side of which is coated with a layer of red phosphorus. It is wrapped in thin white paper and is held in position over the adapter by a thin rubber cover.

7. **Safety Devices.** The only safety device is the safe position of the wooden striker block as shown in the Plate.

ACTION.

8. The grenade is held in the right hand, the small rubber cover removed and the striker block scratched accross the friction composition in the wooden ring. This ignites the safety fuze and the grenade is immediately thrown. The grenade detonates after a delay of 4-5 seconds and is reported to produce a considerable blast but practically no lethal fragments. The grenade has very sharp report and gives off a considerable quantity of white smoke. As the friction composition is highly susceptible to moisture a high percentage of blinds may be expected.

GRENADE, HAND, SHRAPNEL, CERAMIC.

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

(i) Body and shrapnel filling.

(ii) Friction igniter assembly.

BODY.

10. Like the H. E. grenade this is also made in two parts baked together and the pottery used is believed to be terra-cotta, glazed light brown inside and out. There are 24 longitudinal grooves on the body in two rows, 12 in each, to ensure a good grip.

A circumferential groove is moulded in the filling hole to allow fixture of a steel washer and for sealing composition.

No rubber coverings etc., as on the H. E. type, were found on this grenade.

The filling consists of a loose powder of T. N. T., Ammonium perchlorate, wood meal and silicon. There are a number of steel pieces having sharp edges cut from a ¼-in. dia. steel bar; the number varied in the grenades examined here, the highest being 70.

FRICTION IGNITER ASSEMBLY.

11. Details of construction will be clear from the Plate B. The complete assembly is about 3¼" in length and is sealed into the grenade body; it can be divided into two main parts.

(a) **Friction Igniter.** This consrists of a silk cord 10-ins. long with a blob of red phosphorus on the inner end ; this passes through a roll of paper coated with friction composition (Potassium chlorate, sulphur and binding material) held in a short paper tube. This is housed in a tin tube which fits over a steel tube sealed into the grenade body.

(b) **Detonator Assembly.** This consists of a standard detonator into the open end of which is inserted a length of white safety fuze, the free end projecting into the friction igniter tube.

12. **Safetv Devices.** Nil.

ACTION.

13. The grenade is grasped in the right hand and the silk cord pulled out sharply. This ignites the rolled paper coated with friction composition which in turn ignites the safety fuze; the grenade is then thrown immediately. It has a delay of 5-6 secs.

PACKING

H. E. GRENADE.

14. According to reports 60 grenades (round-based) are packed in a wooden case and it is believed that this will hold the same number of flat based grenades also.

SHRAPNEL GRENADE.

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

IDENTIFICATION

16. The grenades should be readily identified by the material of which they are made. No markings of any type were present on the grenades examined here.

SUMMARY OF DATA.

17.

	H. E. Grenade.		Shrapnel Grenade
	Round Base.	Flat Base.	
Length overall	3.66-in. (with rubber covers)	3.46-in.	4.37-in.
Length of body	3.3-in. (without rubber covers)	3.14-in.	2.88-in.
Diameter	3.15-in. (with rubber covers)	3	2.52-in. (at the joint)
	3.1-in. (without rubber covers)	2.97-in.	..
Thickness of body wall	..	0.34-in.	0.44-in.
Weight of empty body	10.5 ozs.	9.75 ozs.	10-3 ozs.
Weight complete	15-3 ozs. (with rubber covers)	13-95 ozs.	15.9 ozs.
Weigbt of filling	4.06 ozs.	3.5 ozs.	1.4 ozs.
Length of Igniter Assembly	1.75-in. (less strike block)	1.75-in.	3.28-in.
Weight of detonator filled	28 grs.	28 grs.	36.5 grs.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

H. E. GRENADE.

18. The H. E. grenade should be dealt with for storage and transport in the same way as Type '97 grenades (J. A. L. C2) but care must be taken to ensure that the striker block is in safe position as shown in Plate A, if grenades not in original packages are being dealt with.

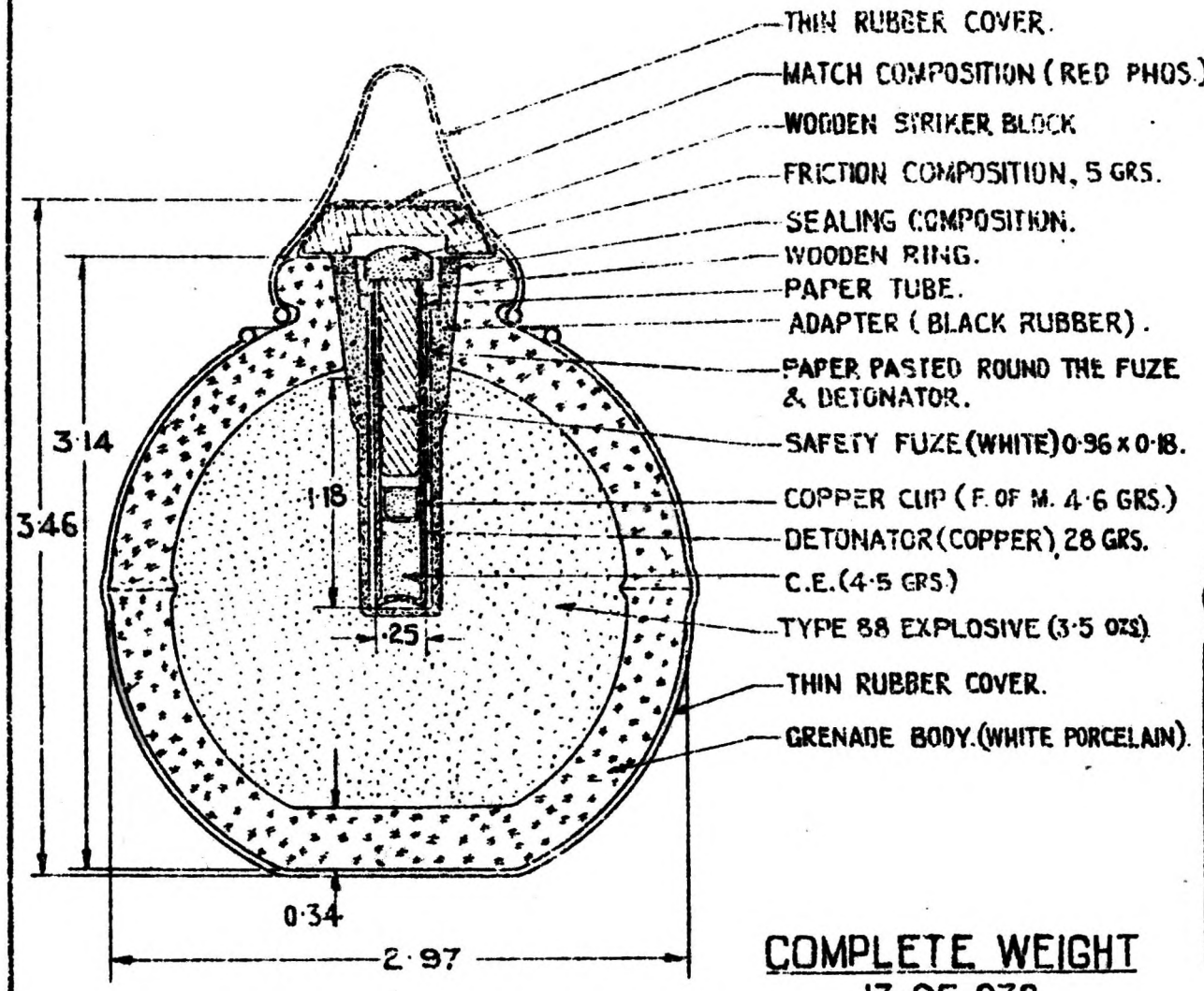
A fair percentage of blinds are to be expected as the friction composition in the igniter is highly susceptible to moisture.

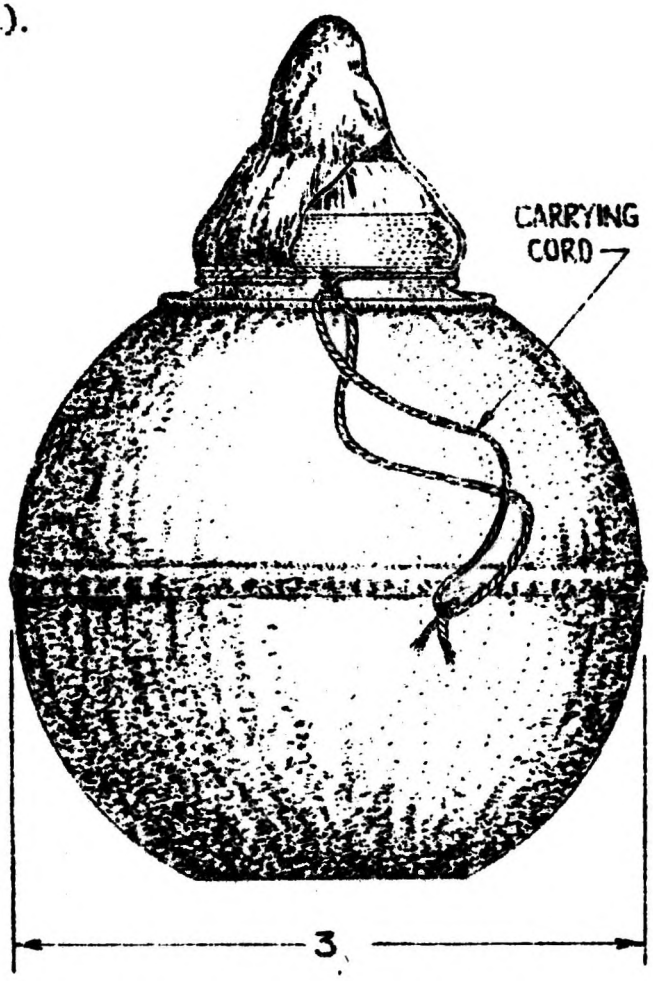
SHRAPNEL GRENADE.

19. When packed, these grenades are quite safe to handle. Care should be taken when dealing with individual grenades, as there are no safety devices and as a light pull on the cord, will cause it to function.

The possibility that this grenade may be used as a booby trap, should never be overlooked.

	H. E. Grenade	Shrapnel Grenade
EXPLOSION/FIRE RISK	4.1 ozs. (round base) 3.5 ozs. (flat base)	1.5 ozs.
GROUP CLASSIFICATION	VIII, Z	VIII, Z
CLASSIFICATION FOR SEA TRANSPORT	O.A.S.	O.A.S.





COMPLETE WEIGHT
13·95 OZS.

JAPANESE

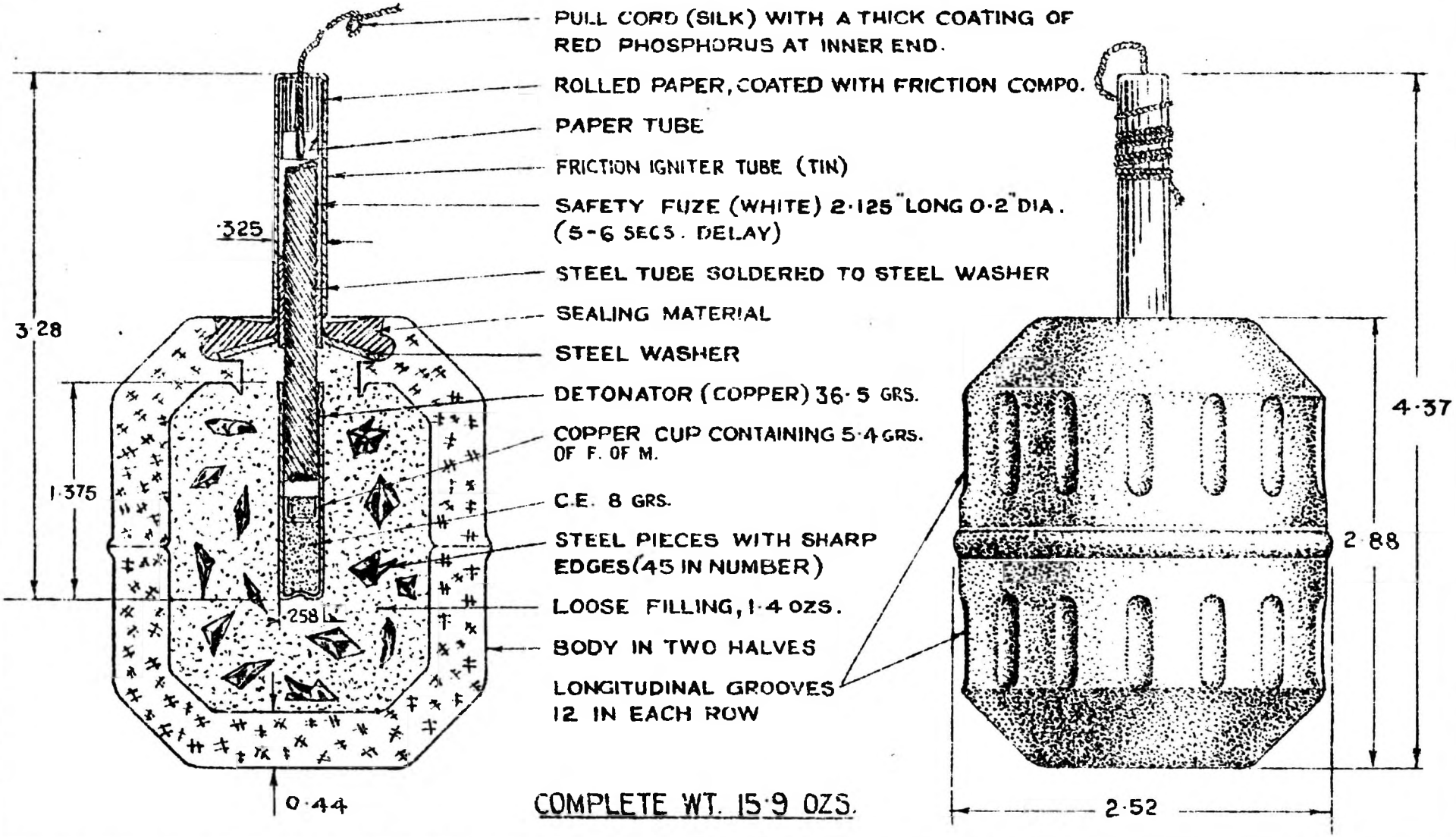
GRENADE, HAND, H. E., CERAMIC.

DIMENSIONS IN INCHES

C.I. Amn. S/1337
KIRKEE, DEC. 1945

G.P.S.P. POONA. 1945

PLATE A.



JAPANESE

GRENADE, HAND, SHRAPNEL, CERAMIC.

DIMENSIONS IN INCHES

C.I.AMN. S/1338
KIRKEE. DEC. 45

G.P.E.P. POONA. 1945

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C
JAPANESE AMMUNITION LEAFLETS 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; this 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 top, 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 Potasium 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.

7. **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 drawings. 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

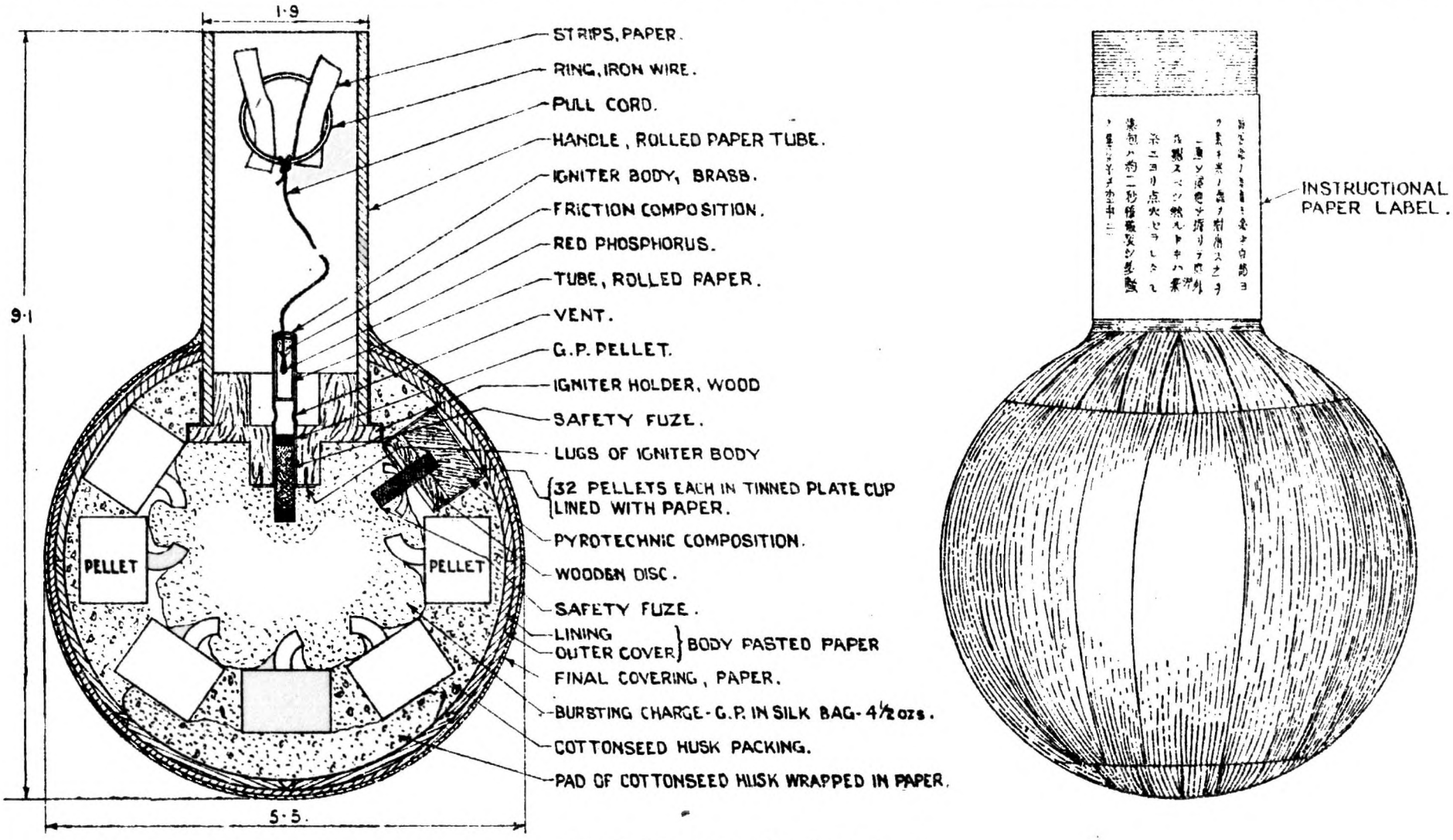
(Of captured ammunition by Ordnance)

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. G 4. 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	13–ozs. (per grenade)
GROUP CLASSIFICATION	IX, Y.
CLASSIFICATION FOR SEA TRANSPORT	A.S.P.

C. I. Amn.,
Kirkee.

First Issue.
21st August, 1946.



COMPLETE WEIGHT - 2 LBS. 3 OZS.

JAPANESE

GRENADE, HAND, FLASH.

DIMENSIONS IN INCHES

C.I.AMN. S/1511.
KIRKEE. JULY. '46

G.P.Z.A POONA. 1946

THIS LEAFLET MUST NOT FALL INTO ENEMY HANDS

D. OF A. (INDIA) SECTION C

JAPANESE AMMUNITION LEAFLETS LEAFLET C 22

GRENADES, HAND, INCENDIARY, (MOLOTOV COCKTAILS).

GENERAL

Two types of these grenades have so far been encountered in various theatres and summarised details have already been included in J.A.Ls. C 1 and C 1 (a) respectively. These are anti-tank/anti vehicular weapons somewhat similar to our Molotov Cocktails and are variously described as 'Tank Hunting Weapons', 'Flame Bottles', 'Frangible Incendiary, A.T. Hand Grenades', 'Improvised Molotov Cocktails', etc., but the nomenclature 'Grenade, Hand, Incendiary, (Molotov Cocktail)', has been decided upon.

2. The grenades differ in the nature of filling and method of ignition in that one is filled with petrol and raw rubber or petrol and lubricating oil and takes an 'All-Ways' fuze, whereas the other is filled with Benzene thickened with Polymethyl methacrylate, but does not take any fuze at all; the method of ignition in this case being by means of reddish black lumps of phosphorus contained in a circular glass capsule attached to the base of the bottle by a series of straps As the latter type of grenade was not received at Kirkee, information in this Leaflet has been based on American and Australian reports; if any samples are received, a new leaflet will be issued if necessary.

3. Reports indicate that the Japanese also employed improvised Molotov Cocktails. One type found on Peleliu Island consisted of two 'Saka' (Japanese spirit) bottles tied together, covered with rags and plugged with rubber stoppers. The bottles were filled with gasoline and had rag wicks, but no igniter. A Japanese document picked up in the South West Pacific Area describes another method of improvisation as follows :—

> "Fill a cider or beer bottle with petrol, put on a metal stopper or wooden plug and tie a piece of string around the neck. An igniter rod should be made up by attaching a piece of cotton-wool to a length of wire about 12 inches long. To use the grenade, remove the stopper from the bottle and place a large piece of cotton-wool in the neck. As the tank comes closer, soak the igniter rod in petrol and light it. When the tank comes within throwing distance, light the cotton-wool in the neck of the bottle by using the igniting rod. The bottle should then be thrown to hit the plates behind the tank turret"

GRENADE, HAND, INCENDIARY-(MOLOTOV COCKTAIL)-FITTED WITH ALL-WAYS FUZE.

DESCRIPTION

4. The drawing in the attached Plate shows the general appearance and details of the grenade which consists essentially of :—

(i) Bottle.
(ii) Fuze Adapter.
(iii) All-Ways Fuze.

BOTTLE

5. The sample examined at Kirkee was a clear glass bottle of the soda-water type of about 380 ccs capacity, with no mouldings in the glass. According to reports this may also be a Japanese lemonade or beer bottle which is shown by the Japanese moulded characters around the walls at the base : "KINSEN golden line" or "route Beverage MANUFACTURING Co" or "THE NIPPON BEER KOSEN STOCK COMPAY". The grenade is reported to be entirely enclosed in a Khaki coloured cloth bag with two loops on one side, presumably for fastening to the soldier's belt. A piece of cloth is also reported to be tied around the neck of the bottle, presumably to facilitate throwing

6. **Filling.** The grenade examined at Kirkee contained about 325 ccs. (10 ozs.) of a black viscous liquid which was found to be a 22% solution of raw rubber in petrol.

From information available here, the filling may also be :—

Petrol	.. 40%	or	Petrol	54%
Lubricating oil	.. 60%		Rubber	12%
			Crude oil	34%

FUZE ADAPTER

7. This consists of a gilded steel collar to which a type of crown cap, with a hole bored centrally to admit the igniter tube of the fuze, is soldered. The collar is screw-threaded internally with a right hand thread to take the fuze. To seal the contents a rubber washer fits under the crown cap while a second rubber washer fits inside the collar underneath the fuze. The collar, which fits over the neck of the bottle, is also held in position by a gilded, tinned-plate cap as shown in the drawing.

ALL-WAYS FUZE

8. The details of construction of the fuze will be clear from the drawing.

The fuze examined here was of a good standard workmanship and obviously factory made; it was made generally from brass and its overall length including the igniter was about 2". The rounded part of the detonator holder rests on the cup-shaped base of the fuze body and thus the whole striker guide is free to move. The striker is grooved to allow escape of air when it is driven downwards. The igniter filling was a composition of Barium Nitrate, Magnesium and Aluminium. The detonator consisted of Potassium Chlorate, Antimony Sulphide and Fulminate of Mercury.

9. **Safety Devices.**

(i) Safety Pin.
(ii) Creep Spring.

ACTION

10. To use the grenade, the tinned plate cover is removed which exposes the safety pin and lanyard. On removal of the safety pin, the striker is held away from the detonator only by the creep spring. The grenade is then thrown and the impact smashes the bottle. Simultaneously, the striker and striker guide move together, the curved head and recessed fuze body camming the striker on to the detonator.

NOTE :—Any vigourous jerk or sudden change in direction during throwing might be sufficient to cause this fuze to function and for this reason it would not appear a very safe design. If, on the other hand, the spring is sufficiently strong to withstand such handling after the safety pin has been withdrawn, it is probable that blinds may occur, unless the grenade strikes the target with considerable force.

PACKING

11. According to reports, a wooden case holds 24 empty bottles complete with fuze adapters and in one end of the case is placed a small wooden funnel and 12 aluminium containers holding fuzes. This suggests that these grenades may be charged with any suitable materials available in the field.

IDENTIFICATION

SUMMARY OF DATA

12.

Length of grenade with fuze	10.375–ins.
Length of bottle	9.0–ins.
Length of fuze with igniter	2.165–ins.
Dia. of bottle	2.6–ins.
Weight of grenade	1–lb. 13–ozs.
Weight of fuze	2.2–ozs.
Weight of filling	10.0–ozs.
Weight of igniter composition, pressed	15–grs.
Weight of detonater composition	1.85–grs.
Weight of fuze cover	170–grs.

GRENADE, HAND, INCENDIARY, (MOLOTOV COCKTAIL)—NEW TYPE

DESCRIPTION

13. As there is nothing more to add to the drawing in J. A. L. C 1 (a) at Plate B., a separate drawing is not included in this leaflet and the same drawing will be referred to.

The grenade can be divided into the following main parts :—

(i) Bottle.
(ii) Igniter Capsule.
(iii) Mounting Straps.

BOTTLE

14. This is either a green or clear white glass bottle of a 300 ccs. capacity closed with a crown cork. This is also described in reports as a commercial cider bottle or standard Japanese beer bottle.

A label attached to the clear bottle bears Japanese characters translated as 'Hand Incendiary grenade, manufactured August 1943, Sagami Naval Arsenal' whereas the only characters on the green bottle read 'Hand Incendiary grenade'. Moulded characters (e. g. KIRWIN BREWERY COY. LTD., REGISTERED TRADE MARK), either in Japanese or in English are also present.

15. Filling :—The filling is a colourless, highly inflammable, viscous liquid consisting f benzene thickened with polymethyl methacrylate. The weight of the filling is 9½-ozs. ut according to reports this may vary.

GNITER CAPSULE

16. This is a round, shallow glass container consisting of two shallow glass dishes itting one within the other and secured by cement. The capsule contains about 1-oz. of dark red lumps of " black " phosphorus, although red phosphorus has been reported also. he lid is tightly sealed with a suitable compound, and bears a label with ideographs which nean ' Incendiary Hand Grenade-Igniter Capsule '.

MOUNTING STRAPS

17. These are canvas or rubberized fabric straps for the clear and green bottles respectively. Two rubber pieces, stitched together, hold igniter capsule in place against the ase of the bottle. Final adjustment to bring the capsule in contact with the bottle is nade by an adjustable strap which passes through a plastic buckle.

ACTION

18. To use the grenade, the igniter capsule is fitted to the bottom of the bottle and the buckle tightened. The grenade is then thrown against the target which shatters the ottle and capsule ; the friction between the pieces of phosphorus causes instant ignition of ne inflammable liquid. According to reports, the filling adheres to the target and burns for about 75 seconds although the phosphorus continues to burn for about 90 secs. with much pluttering. The rubberized harness itself has good incendiary qualities and burns for 3 inutes.

PACKING

19. The method of packing of this grenade in a thick cardboard container will be ear from the drawing.

A label in Jap. characters attached on the outside of the container describes the ethods of using the grenade.

The bulk packing of the grenade is not known.

IDENTIFICATION

SUMMARY OF DATA

20.

Length of bottle	9.75-ins.
Length of container	13.5-ins.
Height of igniter capsule	0.375-ins.
Dia. of bottle	2.125-ins.
Dia. of container	3.5-ins.
Dia. of Igniter Capsule	2.375-ins.
Weight of grenade complete as packed	2 3/4-lbs.
Weight of bottle filled	1-lb. 10 1/2-ozs.
Weight of filling	9 1/2 to 10-ozs.
Weight of Igniter Capsule	2.05-ozs.
Weight of phosphorus	1-oz.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

MOLOTOV COCKTAIL—FITTED WITH ALL-WAYS FUZE

21. Particular care is necessary to ensure that all fuzes are fitted with safety pins and that the fuze covers are firmly in position.

While transporting and during storage each grenade should be periodically examined to see that the fuze is correct, that there are no signs of leakage, that the bottle is free from cracks, and that it is securely packed.

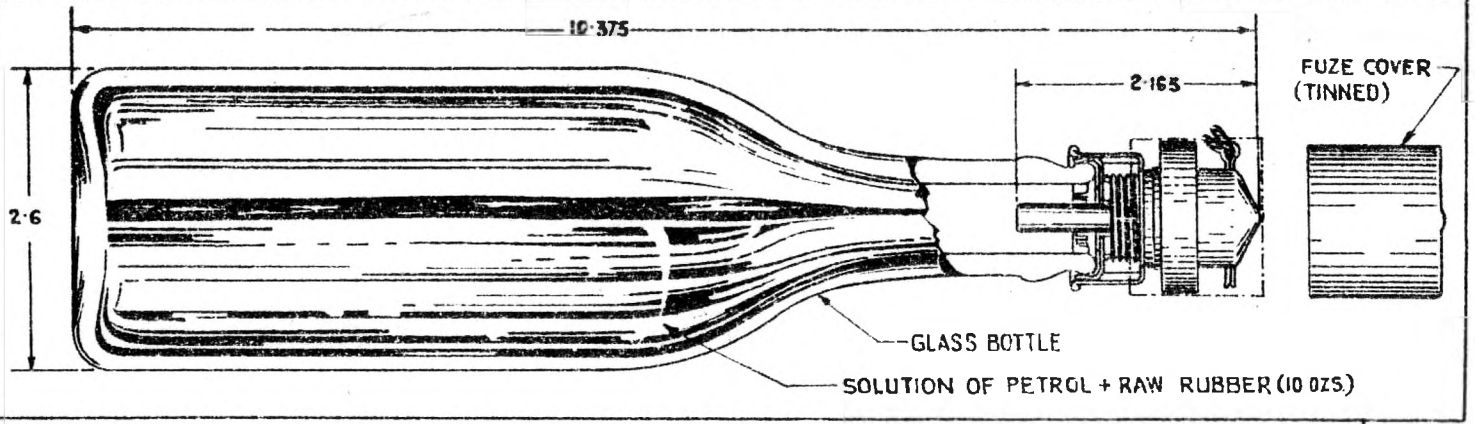
MOLOTOV COCKTAIL—NEW TYPE

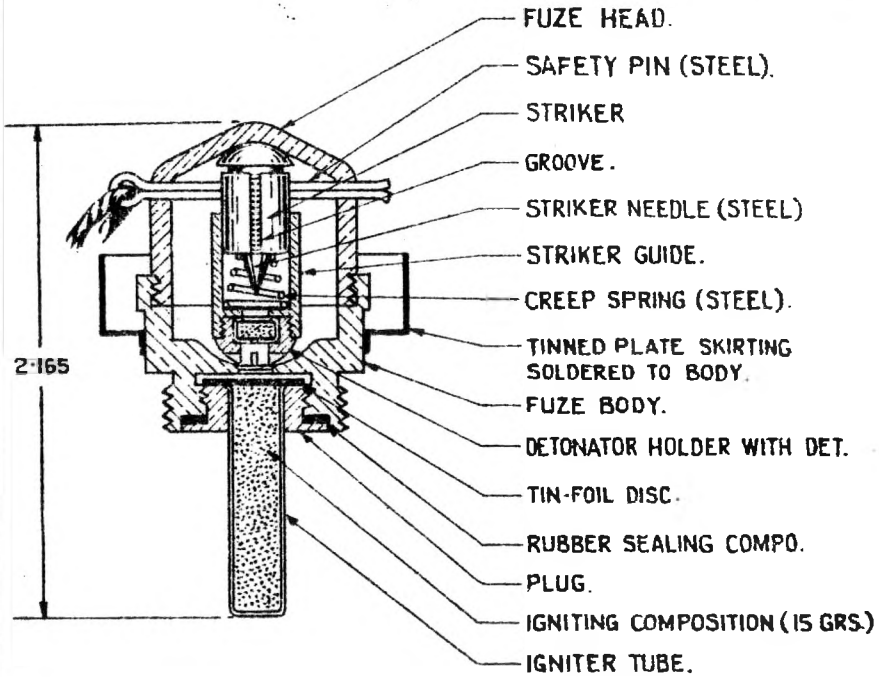
22. The grenade should be protected from direct exposure to the sun and from the rain. It should not be brought near heat and handled with great care, as even though it is packed inside the container the igniter may break from a shock or blow and catch fire.

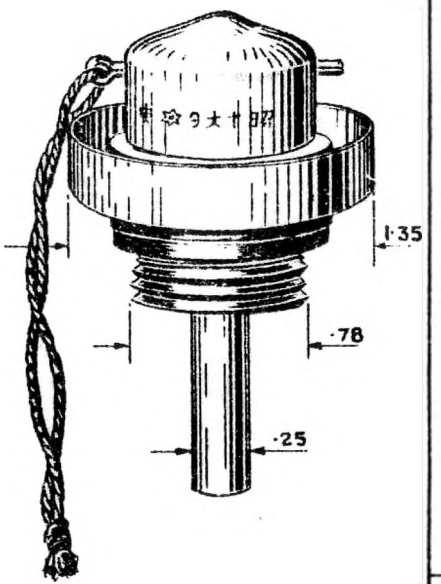
	Grenade fitted with fuze	New Type.
EXPLOSION/FIRE RISK	10-ozs.	10-ozs.
GROUP CLASSIFICATION	XV, Y	XV, Y
CLASSIFICATION FOR SEA TRANSPORT	D. S. O.	D. S. O.

C. I. Amn.,
Kirkee.

First Issue.
28th February, 1946.

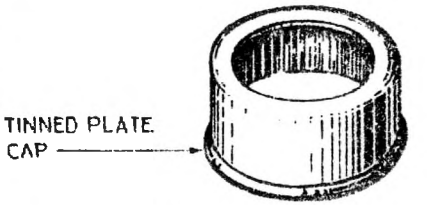


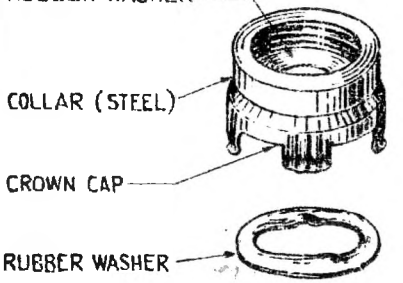


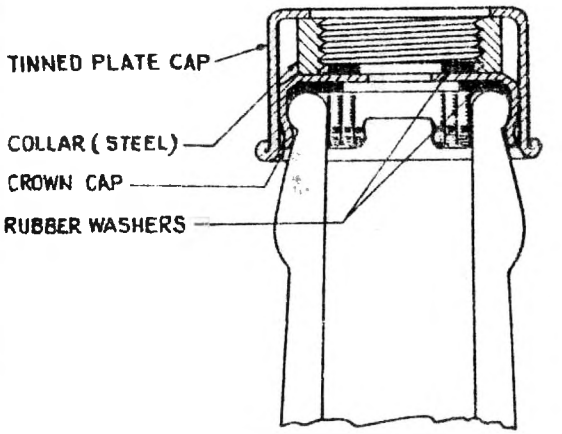


ALL PARTS MADE OF BRASS EXCEPT WHERE OTHERWISE STATED.
ALL THREADS ARE R.H.

ALL-WAYS FUZE.







ENLARGED DETAILS OF NECK OF BOTTLE.

WT. OF GRENADE, COMPLETE --- 1 LB. 13·0 OZS
WT. OF FUZE ---------- o - 2·2 OZS.

JAPANESE
GRENADE, HAND, INCENDIARY.
(MOLOTOV COCKTAIL)
FITTED WITH ALL-WAYS FUZE.

DIMENSIONS IN INCHES

C.I.A. MN. S/1394
KIRKEE, FEB. 1946

G.P.Z.P. POONA 1946.