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D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION J
LEAFLET J 1

INTRODUCTION

DIVISION OF SECTION

The following division of this section has been arranged tentatively, and J. A. L's will be issued as they become ready :—

- J 1—Introduction.
- J 2—Smoke Generators.
- J 3—Type 94 Model 'B', Floating Smoke Generator.
- J 4)
- J 5) —Reserved.
- J 6)
- J 7)

It is proposed, in this Section, to deal with those Japanese C. W. and Smoke stores which do not fall under any of the other Sectional headings. Chemically charged Shell, Mortar Bombs, Mines and Grenades will be treated under their appropriate Sections.

GENERAL

2. The Japanese were good chemists and had, for a number of years been engaged in the development of protection against gas attacks for their own troops, and also, of means to employ gas as an offensive weapon in their armed services. They had set up several training and research establishments, and it now appears that they had a complete plan of anti-gas organization throughout the army. The plan called for one or more gas non-commissioned officers and several privates in each headquarters, from armies down to battalions. In general the duties of anti-gas personnel were, in most respects, similar to those of corresponding personnel in other armies. In the same way, the Field Army included in its organisation special C. W. regiments whose role was offensive and whose equipment consisted of smoke generators, etc.

STANDARDIZATION AND TYPES

3. (a) Artillery Weapons. The Japanese are known to have developed chemically charged shell in calibres from 75-mm. upwards. The typical methods of filling employed will be treated in J. A. L. E. 10, but briefly there are two methods. One type has a particularly large burster charge and accommodates the chemical charging in the annular space between the burster container and the shell wall; the usual charging for this type is D.C. The other design has a forged steel body, into which a normal burster container is screwed, the charging being a mixture of Lewisites and Mustard gas in a 50/50 proportion. Smoke shell also exist in all calibres from 75 mm. upwards; these are all bursting shell, charged W. P. and follow the same standard design. It is interesting to note that the Japanese have not developed B. E. shell either for smoke or chemical for any of their equipments.

The markings found on chemically charged shell are generally standard and are dealt with more fully in para (4) below and in the coloured Plates included in this pamphlet.

- (b) **Mortars.** The use of mortar bombs containing a chemical charging has been developed along the same lines as those followed by other armies, the operational value being the provision of large areas of contamination. Once again, Japanese mortar markings conform to the same system used in shell, gas bands being used to indicate the particular type of charging.

The 90-mm. mortar and the 81-mm. mortar are believed to use chemical bombs; but owing to insufficient evidence it is not possible to describe them satisfactorily.

- (c) **Grenades** Two types of chemical grenade are known to exist, one containing liquid C. A. P. the other containing Hydrocyanic acid. The Lachrymatory Type ('89 C) is contained in a silver grey sheet iron cylinder; when required for use the grenade is removed from the cylinder. The grenade itself is described as being constructed of rubber, by which is probably meant vulcanite or some plastic material which would contain the liquid C. A. P. without corrosion. Down the centre of the grenade runs a fuze; this, on being ignited, burns with a delay of 5 seconds to a small bursting charge which shatters the grenade and scatters the lachrymatory charging.

The other is filled with Hydrocyanic acid and consists of a spherical glass flask containing approximately 1 pint of the acid. The grenade itself will be dealt with fully in J. A. L. Section C. but the method of packing is perhaps worth mentioning here. The flask is packed in a mixture of sawdust and a neutralizing agent in an outer container which is painted khaki and banded in brown.

A rather smaller flask is used to provide a frangible smoke grenade. Again it is spherical in shape but flat bottomed and filled with a yellowish liquid ranging from 100% titanium tetrachloride to a mixture of approximately 60% titanium tetrachloride and 40% silicon tetrachloride. The grenade is packed in a cylindrical sheet metal container.

- (d) **Rockets.** So far as is known the Japanese have no chemically charged rockets comparable with the British 5" U.

- (e) **Smoke Generators** :—These, of which there are a large number of types, are canisters filled with a combustible composition, which produces either screening or toxic smoke on ignition. There are four main types, hand thrown, self-propelled, static and floating. Those of each type are generally similar and differ mainly in their size and weight.

- (f) **Miscellaneous** :—There are also in existence in the Japanese Service certain other stores, which, because of their type and the meagreness of information at present available on them, fall under this heading: Gas Mines and S.P. and Towed Tank Carts. They also have equipment in form of cylinders which are capable of spraying liquid chemical at high pressure. These weapons, however, do not properly come under the heading of ammunition and are mentioned here merely for the sake of interest. It is these stores together with generators which form the equipment of C. W. regiments and their sub-units.

SPECIAL SHELL MARKINGS

4. Japanese army shell markings generally conform to a standard system. This system is based on three considerations, the colour of the projectile, coloured bands and certain numerals and ideographs. This system appears to have been simplified in 1941 or 1942 and evidence from recently manufactured munitions supports this assumption; apparently the

new system constitutes the use of fewer projectile colours and fewer coloured bands. In documents gases are usually referred to by their physiological types, using the colour associated with their markings on gas shell; for example, a "yellow agent", a "red agent". In order to avoid confusion, the following terms will be used as defined (See Plates A & B).

- (a) **Colour Bands** :—All coloured bands approximately the same width as the driving band or the upper section of multiple driving bands.
- (b) **Gas Band** :—A coloured band approximately twice the width of driving band appearing in the mid-section of the projectile body.

It is worthwhile noting that for purposes of identification the Japanese army divided its shells into two classes which for the sake of convenience will be classified hereafter as :—

- (a) Common shell.
- (b) Special shell, including smoke, incendiary and gas shell. (Each of these has its own particular type of Marking).

It is necessary to point out here that the wide gas band is the important marking on gas shells. On smoke and incendiary shells, the important factors are the distinguishing KANA symbol (J.A.L. Leaflet A. 2) and the basic projectile colour. In the new system it is believed it will be the KANA symbol alone for all special shell except gas which will retain significant coloured gas bands. The significance of some secondary markings is not known but, in general, shell can be identified without having this information. Other chemically filled stores, Smoke Generators, Grenades etc. also conform to a standard system of marking; basic body colours and bands being employed to indicate the type of charging contained in the store. Fuller information will be found in the table included with this Leaflet.

INCENDIARY SHELL

5. The incendiary shell (rubber pellet type) may be met with marked according to a new modified system and differs from the standard system more than any shell yet reported. The only markings carried over are the red nose band, weight discrepancy mark, date and arsenal marking. The basic body colour is grey instead of yellow as in the old system. In the standard system the width of the identifying character is one third the diameter of the projectile and is enclosed in a circle placed to the right of the weight discrepancy mark. It is open to question, but it is believed that the filling of this shell is the standard incendiary filling for the army and that the Japanese character is that allotted to this type of filling.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

7. The bulk of Japanese Chemical, Smoke and Incendiary ammunition has its counterpart in the British Service and consequently the provisions of Magazine Regulations Chapter II Section C and D, and the Handbook of Chemical Warfare Weapons are generally applicable. Safety distances for C.W. Weapons depend on toxic considerations and on explosive effects. As a rule, the former outweighs the latter, since the explosive filling is relatively small, and the safety distance will therefore depend on the chemical chargings. Where the H.E. filling is large compared with the chemical charging (as in D.C./H.E. shell) the total quantity of explosive may impose a larger safety distance than that governed by the chemical charging; in this case the greater safety distance should be adopted.

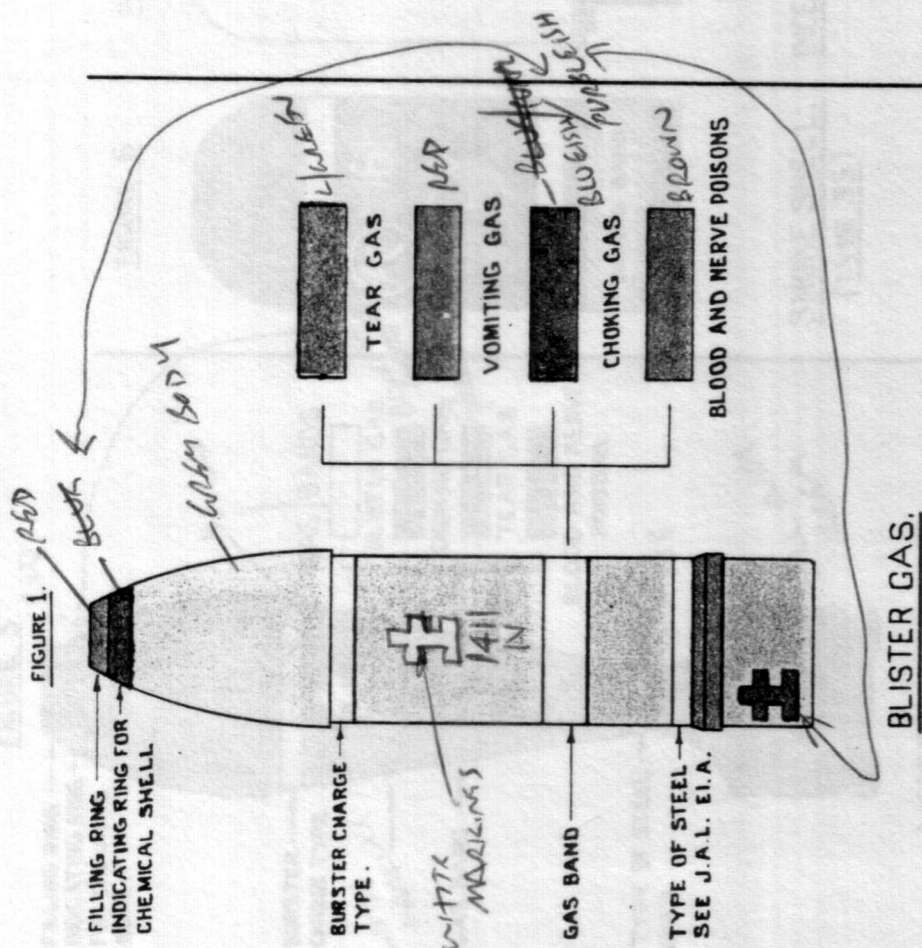
TABLE OF TYPICAL JAPANESE SPECIAL SHELL MARKINGS—(Contd.)

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Shell Type	Basic Body colour	Japanese Name	English Equivalent	Marking	Size of Marking	Operational Type	Type of Gas	Remarks
Smoke Shell	White	Haku Zai	White Agent	(KE) (Syllabic Inter pre- tation of marking). in BLACK	$\frac{1}{4}$ diameter of projectile	..	White Phosphorus	(a) See J.A.L. E 10. NOTE: Although the Japanese call their white smoke "White Agent" they do not apply this rule to other coloured smokes to avoid obvious confusion.
Smoke Shell	Black	Aka hatsuen	Red Smoke	Red circle	$\frac{1}{4}$ diameter of projectile	..	..	
Smoke Shell	Black	Ki hatsuen	Yellow Smoke	Yellow circle	$\frac{1}{4}$ diameter of projectile	..	..	
Flash Shell	Black	Kaen dan	Flash Shell	White circle	$\frac{1}{4}$ diameter of projectile	..	..	
Incendiary Shell (Original system)	Yellow	Shoi dan	Incen- diary Shell	(YA) (Syllabic Inter pre- tation of marking) in BLACK	..	..	Rubber Pellet Type	(a) See J.A.L. E 10 Cylindrical rubber pellets in a solution of W.P. in carbon disulphide.
Incendiary Shell (New system)	Grey	Shoi dan	"	(SO) in WHITE	Approxima- tely $\frac{1}{10}$ diameter of projectile	..	Rubber Pellet Type	See J.A.L. E 10 Cylindrical rubber pellets in a solution of W.P. in carbon disulphide.
Spotting Shell (50-mm. Series)	Black	Mo dan	Target Shell	(MO) WHITE all series.	Approxima- tely $\frac{1}{4}$ diame- ter of pro- jectile	..	..	(a) This type of shell is presumably used in the same manner as Flares T.R. in the British Service. Owing to its small calibre it would be unsuitable for use as a Target Shell.

ARMY GAS SHELL.

FIGURE 1.



ARMY SMOKE AND INCENDIARY SHELL.

FIGURE 2.

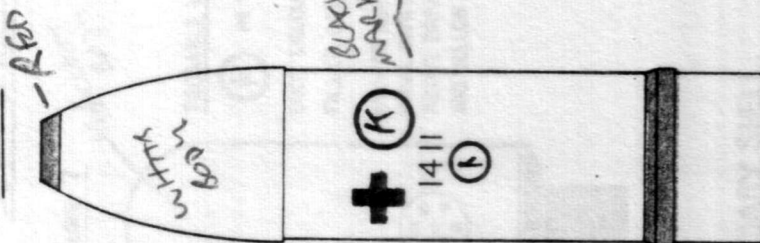


FIGURE 3

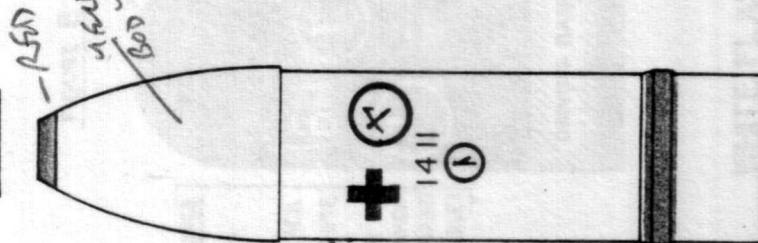
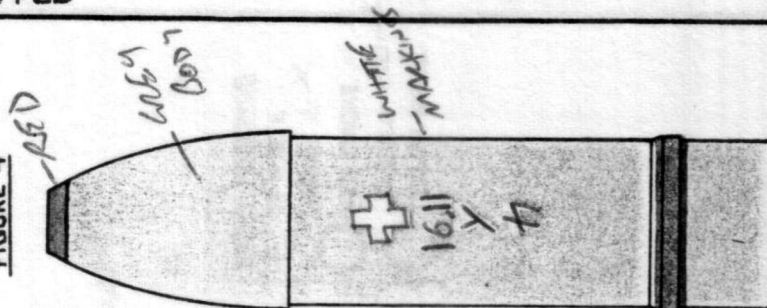


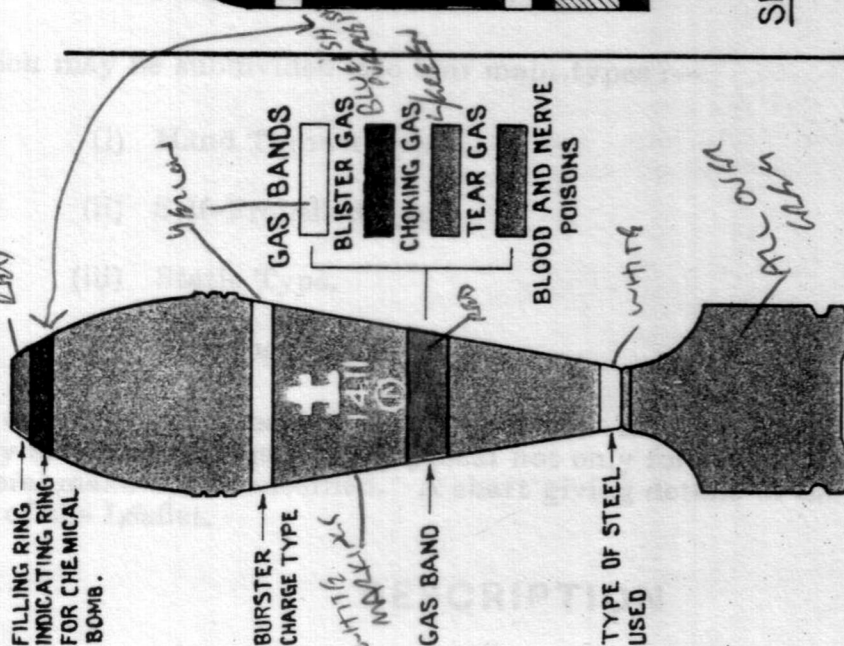
FIGURE 4



JAPANESE "SPECIAL" SHELL-TYPICAL MARKINGS.

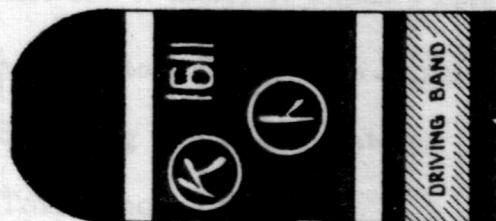
MORTAR BOMBS.

FIGURE 5



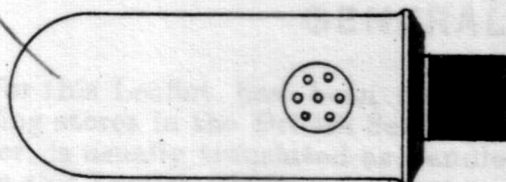
VOMITING GAS.

FIGURE 6



SMOKE SHELL.
(TYPE 95)

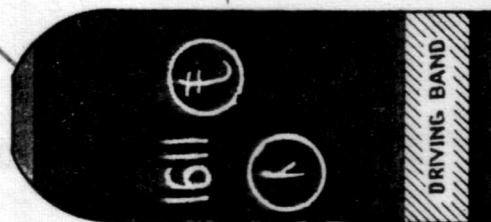
FIGURE 7



INCENDIARY SHELL.

50 MM. SHELL.

FIGURE 8



WHITE FLASH
SPOTTING SHELL E1.

KNOWN MARKINGS
£ IN WHITE
— RED RING
O RED SMOKE
O YELLOW RING
O YELLOW SMOKE

PROBABLE MARKINGS
£ IN WHITE
BODY COLOUR-BLACK
FILLED DATE-WHITE
MAY OR MAY NOT
HAVE WHITE BAND
ABOVE DRIVING BAND
AND YELLOW BOURRELET

JAPANESE "SPECIAL" SHELL-TYPICAL MARKINGS.

G.I. AMN. S/1388
KIRKEE, JAN. 46.

G.P.Z. P. POPPA. 1946

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JAPANESE AMMUNITION LEAFLETS

SECTION J

LEAFLET J 2

SMOKE GENERATORS

GENERAL

The heading for this Leaflet has been chosen as such, as this is the nomenclature given to corresponding stores in the British Service. The Japanese ideograph associated with these stores, however, is usually translated as Candle and the individual items have been referred to as such in this Leaflet. Other reports seem to designate them quite indiscriminately as Generators or Candles and it therefore appears that the two terms are synonymous.

2. The Smoke Generators used by the Japanese may be divided into two main groups:-

A—Screening Smoke Generators.

B—Toxic Smoke Generators.

each of which may be subdivided into four main types :-

(i) Hand Thrown Type.

(ii) Self-Propelled Type.

(iii) Static Type.

(iv) Floating Type.

The drawings at Plates A & B illustrate the Hand-Thrown and Self-Propelled Types respectively and may be regarded as typical not only for these two but for all types, in so far as the general make-up is concerned. A chart giving details of the various types is included at the end of the Leaflet.

DESCRIPTION

HAND THROWN TYPE

3. This store is cylindrical in shape, the container being constructed from tin plate. The container is painted either a bluish grey colour or brown, and depending upon the type of chemical charging, a coloured band, 1.75" from the top of the container will be found.

In certain modifications a lid, secured by adhesive tape, is fitted to the top, protecting a match head and friction disc; on the bottom of the container is fitted a "D" shaped handle which, at rest, folds into the base of the container.

The match head is positioned in the centre of a tin plate diaphragm near the top of the cylinder and communicates with time fuze extending into the charge through a tin plate tube which is fixed to the diaphragm, and sealed at the bottom by a lead foil cover to prevent contact with the charge. Two tin foil covered vents for the smoke are located in the diaphragm (See Plate A).

Method of use:—The top cover is removed and the match head thus exposed is lit by means of the friction disc. The candle is then thrown. The fuze communicating with the charge burns with a short delay and ignition takes place. The smoke issues through the two vents in the tin plate diaphragm.

SELF PROPELLED TYPE

4. Resembles in shape and size the Hand-Thrown Type, though it is slightly longer and lids, secured by adhesive tape, cover the top and bottom of the container. A spike approximately 7" long, formed into a ring round the container at the upper end and free to move up and down, is employed to set up the candle in the ground for firing at the desired angle.

A time fuze is fitted in the bottom and this communicates with the powder propellant through a drilled wooden block, the match head being situated in the periphery of the cylinder. The powder propellant is contained in a cylindrical steel pan, described below.

5. **Inner container:**—A steel cylinder, containing the charge, is placed inside the outer container. This is fitted with a screwed base into which is screwed an 8-mm. diameter cylinder containing a delay fuze sealed at the top with a lead cover to protect it from the charge. Two smoke vents, covered with tin foil are located in the cylinder wall.

6. **Method of use:**—Both lids are removed and the candle is set up by driving the spike into the ground. A small wooden board is used to set the candle at the desired angle, a plumb line being fitted to give the angle from the vertical.

A wooden disc with an abrasive edging is placed inside the bottom lid and is used to light the match head, the fuze fires the powder propellant and the inner steel cylinder is ejected. The fuze in the inner cylinder, ignited by the powder propellant, has a delay of about 4 or 5 seconds, after which the charge is fired and smoke issued through the two vents (See Plate B).

7. An electrically fired self-propelled smoke generator may also be met with. This store is painted grey and resembles the normal self-propelled smoke candle described above. The weight is 1 1/2 lbs. approximately, and it is 8" in length and 2" in diameter. This store can be fired either by passing an electric current through a wire coil which is in contact with the match head or by the use of the scratcher block in the base lid, when the wire coil is removed.

STATIC TYPE

8. These stores may be said generally to resemble the Hand-Thrown or Self-Propelled types of candle. The chemical composition is of the same nature and the markings conform to the same standard as those set out in the table included in this Leaflet.

FLOATING TYPE

9. Typical of the Japanese Floating Smoke Generators is the Type '94 'B' Floating Generator. This store will be dealt with in detail in J.A.L. J 3.

10. A limited number of standard smoke mixtures are used, the chief being as follows:—

(a) Screening Smokes

(i) Berger Type Mixtures

Carbon Tetrachloride	..	..	..	..	45 per cent.
Metallic Zinc	..	..	..	..	25 "
Zinc Oxide	..	..	..	..	25 "
Keiselguhr	..	..	..	..	5 "

(ii) H.C.E. Type Mixture (1)

Hexachlorethane	..	..	..	..	50 "
Metallic Zinc	..	..	..	..	25 "
Zinc Oxide	..	..	..	..	25 "

(iii) H.C.E. Type Mixture (2)

Hexachlorethane	..	..	..	..	60 per cent.
Metallic Zinc	..	..	..	..	30 "
Zinc Oxide	..	..	..	..	10 "

(iv) Chlor-sulphonic Acid Mixtures

(b) Toxic Smokes

(i) C. N. Lachrymatory Smoke Mixture

Chloracetophenone	..	..	..	..	20 "
Nitrocellulose	..	..	..	..	60 "
Camphor	..	..	..	..	20 "

(ii) D. C. Toxic Smoke Mixture

Diphenyleyanarsine	..	..	..	..	40 "
Nitrocellulose	..	..	..	..	50 "
Camphor	..	..	..	..	10 "

(iii) D. C. (Pumice) Mixture

Diphenyleyanarsine	..	..	..	..	50 "
Pumice	..	..	..	..	50 "

(iv) D. C. Mixture

Diphenyleyanarsine	..	..	..	..	26.5 "
Diphenylarsenious Oxide	..	..	..	..	4.4 "
Nitrocellulose	..	..	..	..	54.7 "
Camphor	..	..	..	..	4.3 "
Water	..	..	..	..	4.1 "
Inorganic Matter..	..	..	..	..	6.0 "

PACKING

11. From information at the moment to hand, it is possible to list the following details on the markings of packages containing toxic smoke candles. The boxes, usually of wooden construction, have a diagonal, coloured stripe painted or stencilled on them, beside several numerals and letters. The colour of the stripe and/or the symbol at the top of the panel indicate the type of filling in the candle. A red diagonal stripe indicates vomiting gas, a green stripe, tear gas.

The letter following the Type No. can be coded as follows:—

l	—	Candle
h	—	Self-propelled
t	—	Medium
s	—	Light

It may be found, however, that the markings will vary in location on the box and also in the degree of information given.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

12. Generally, these stores may be treated in the same way as British Smoke Generators. It should be remembered that HCE compositions are liable to spontaneous ignition, especially in the presence of moisture; so far as is known the Japanese incorporate no stabiliser, as is the British practice with some compositions of this type. Generators must therefore always be stored in a cool, dry place. In the Japanese Instructions for Use, included in the package, it is stated that the storage life of the candles is one year. Unserviceable generators should be destroyed by burning in the usual way.

SELF PROPELLED TYPE

1. Resembles in shape and size the Hand-Turned Type, though the propellant is secured by a flexible tape and the generator has a more complex internal structure. The propellant is contained in a cylindrical chamber, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

A thin wire is fitted in the bottom of the generator, which is used to ignite the propellant. The wire is connected to a battery or to a fuse.

2. The generator is contained in a cylindrical case, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

3. The generator is contained in a cylindrical case, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

4. The generator is contained in a cylindrical case, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

5. The generator is contained in a cylindrical case, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

STATIC TYPE

6. These stores may be used generally to resemble the Hand-Turned Type, though the propellant is contained in a cylindrical chamber, the top of which is closed by a flexible tape. The propellant is ignited by a match or by a fuse.

FLOATING TYPE

C. I. Amn.,
Kirkee.

First Issue,
14th March, 1946.

TYPE 'A' SCREENING SMOKE CANDLES

Designation	Type	Dimensions (in ins.)		Body colour	Markings	Total weight		Smoke mixtures.	Remarks.
		Lt.	Dia.			Grams	Lbs.		
Type '94 Small Smoke Candle	Hand thrown	6.9	2.2	Grey	White label	1000	2.2	Berger	Metal ring handle.
Type '94 Small Smoke Candle	Hand thrown	6.9	2.2	Green or Brown	White band	1000	2.2	Berger	No metal ring handle.
Type '94 Large Smoke Candle 'A'	Static	18.0	6.0	Grey	White label	20000	44.0	Berger	Hinged wooden handle at top, attached to metal band around casing screw cap lid.
Type '94 Floating Smoke Generator 'B'	Floating	31.2	3.1	Grey	White label	7000	15.4	H. C. E. Type 1.	Metal ring bracket for float around upper part. Ignited by "10 Year" Type Gre- nade fuze.
1 Kg. Smoke Candle Modifica- tion 4	Static or Handthrown	8.3	2.1	Tinplate	White labels on top and side	1000	2.2	Berger	Naval Smoke Candle.
1 Kg. Smoke Candle Modifica- tion 6	Static or Handthrown	8.75	2.1	Tinplate lacquered	White label on lid	890	1.95	Berger	
1 Kg. Smoke Candle Modifica- tion 7	Static or Handthrown	8.3	2.1	Tinplate	White labels on top and side	100	2.2	H. C. E. (1)	Naval service.
10 Kg. Smoke Candle	Hand thrown	7.0	2.2	Grey	Yellow labels on top and side	1280	2.84	Berger	
Type '99 Small Smoke Candle	Self propelled	8.2	2.1	Grey/Brown or Olive Drab	White Japanese characters on the sides.	1270	2.80	Berger or H. C. E.	Projectile has sheet metal casing. Igniter tube ex- tends the whole length of the projectile. The match head is exposed through a slot under the bottom cover.

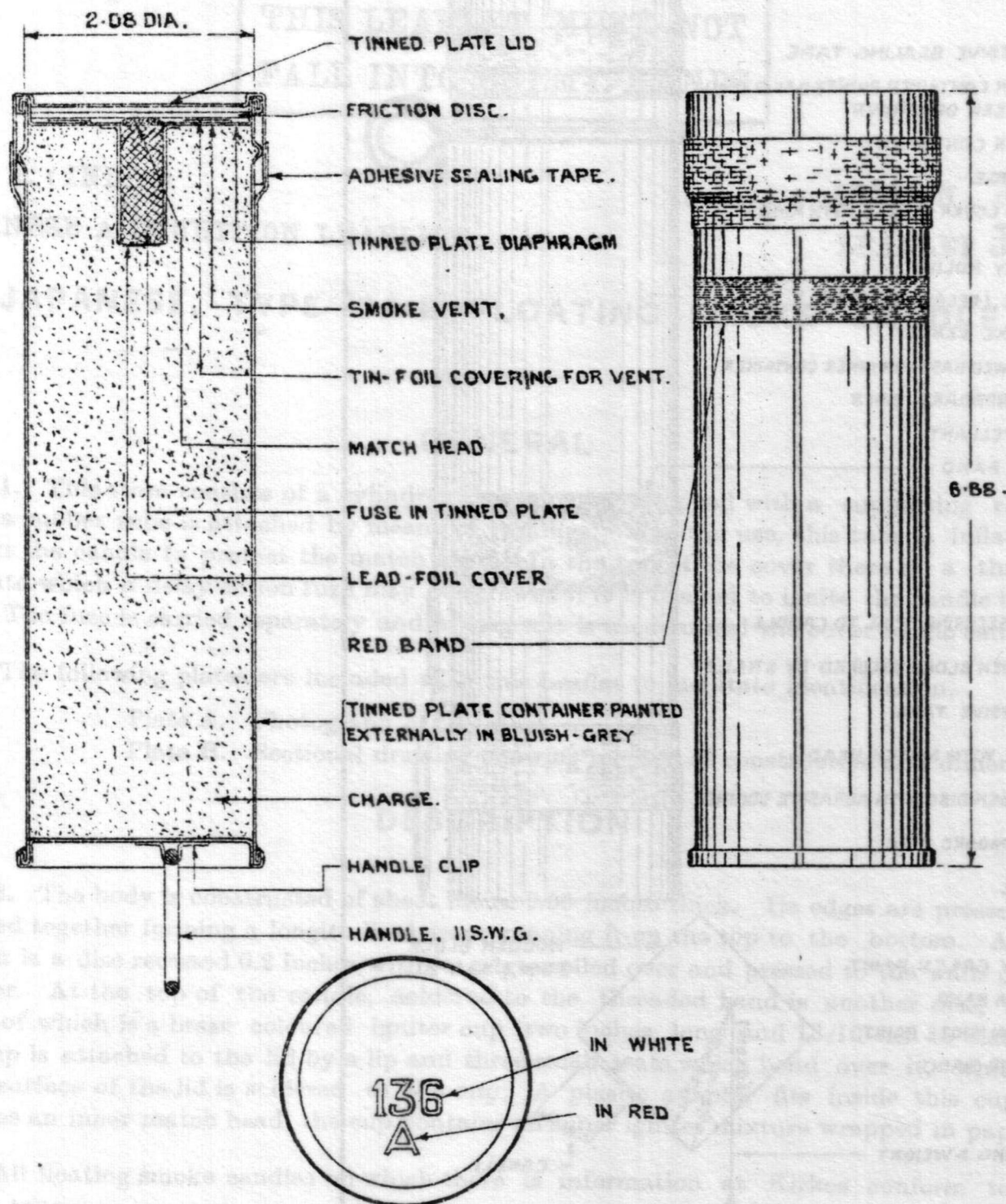
TYPE 'B' TOXIC SMOKE CANDLES

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Designation.	Type.	Dimensions (in ins.)		Body colour.	Markings.	Total weight.		Smoke mixtures.	Remarks.
		Lt.	Dia.			Grams	Lbs.		
Type '89 A Lachrymatory Candle	Hand thrown	7.2	2.2	Silver Grey or Grey/ Green	Green band and instruction label		0.5	CN or CAP	Main filling nitrocellulose wafers containing CN.
Lachrymatory Candle. Training Type A.	Hand thrown	5.2	2.2	Grey	Green band		0.4	CAP	Believed obsolete.
Type '89 Small Toxic Candle	Hand thrown	7.2	2.2	Grey	Red band	270	0.6	DC	Metal ring handle at bottom.
Large Toxic Smoke Candle	Static	8.75	4.4	Dark green	Red band	2000	4.5	DC	
Type '97 Medium Toxic Candle	Static	9.8	4.4	Brown	Red band	2000	4.5	DC	Metal ring handle at bottom. 16 taped vent holes. Fixed hinged metal prong at side.
Type '99 Medium Toxic Candle	Static	8.8	4.4	Brown	Red band	1500	3.3	DC	Metal prong at side.
Type '98 Toxic Candle	Self propelled	7.9	2.0	Brown	Red band	690	1.5	DC	Projectile has cardboard casing (obsolete)
Type '99 Toxic Candle	Self propelled	8.2	2.0	Brown	Red band	1000	2.2	DC	Sheet metal casing and wooden bottom (old type)
Type '100 Toxic Candle	Self propelled	8.2	2.0	Brown	Red band	1000	2.2	DC	Heavy metal container with metal bottom (New Type)

NOTE:—As the weight of these stores vary, figures shown are merely the conversion of Kilograms to Pounds.

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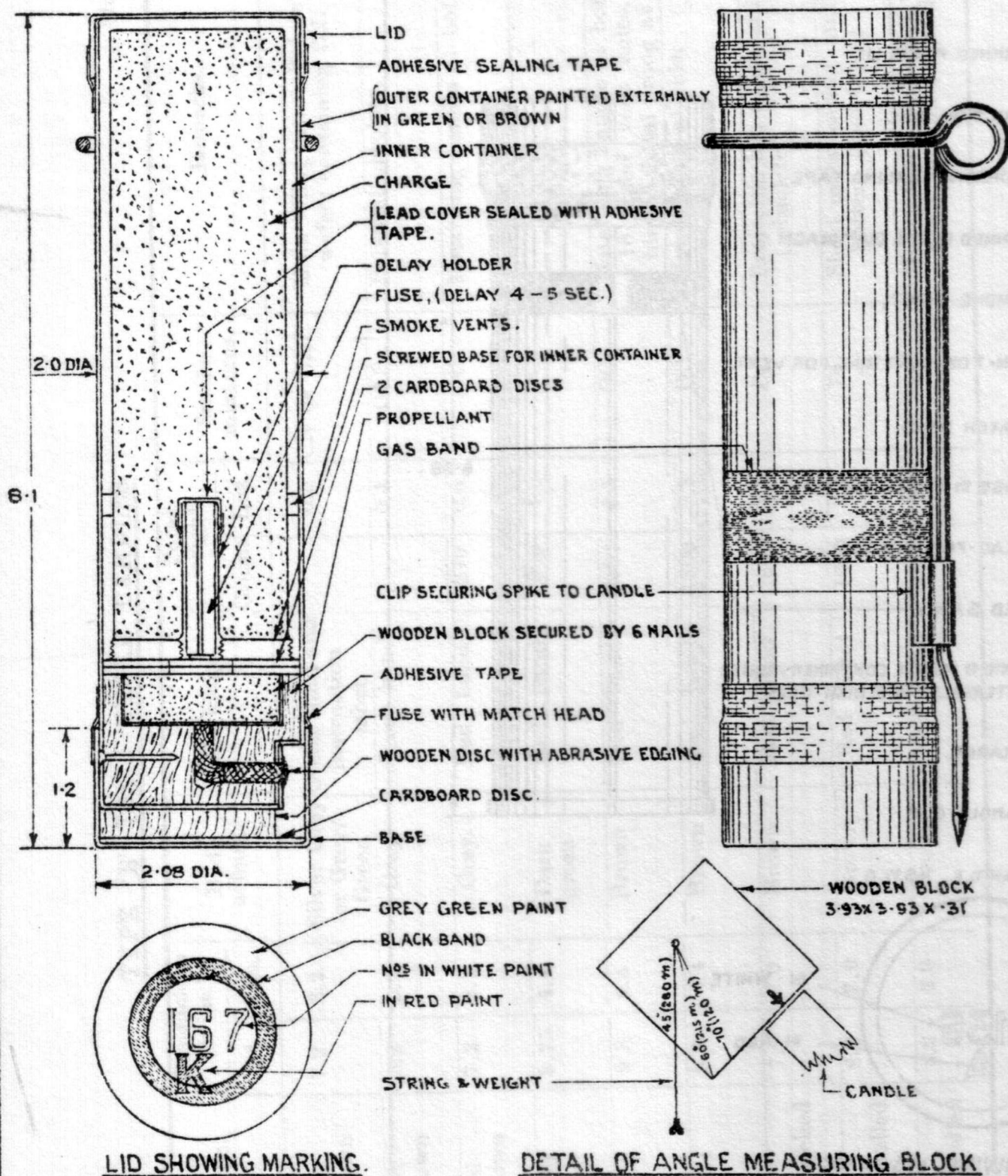
LID SHOWING MARKING

TYPICAL JAPANESE TOXIC SMOKE CANDLE
(HAND THROWN TYPE)

DIMENSIONS IN INCHES.

C.I. AMN. S/1391
KIRKEE. JAN. 46.

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TYPICAL JAPANESE TOXIC SMOKE CANDLE
(CHARGE PROPELLED TYPE)

DIMENSIONS IN INCHES.

C.I. AMN. S/1392
KIRKEE, JAN. 46.

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JAPANESE AMMUNITION LEAFLETS

SECTION J
LEAFLET J 3

JAPANESE, TYPE '94 B FLOATING SMOKE CANDLE.

GENERAL

1. This store consists of a cylindrical metal tube equipped with a supporting ring to which a rubber tube is attached by means of two lugs. When in use, this tube is inflated to support the candle to protect the match head. In the top of the cover there is a threaded hole into which a delay action fuze may be screwed if it is desired to ignite the candle in that way. The fuze is carried separately and a wing nut is used to seal the cover of the candle.

The following plates are included with this Leaflet to facilitate identification.

Plate A. Photograph of the store.

Plate B. Sectional drawing showing method of construction and dimensions.

DESCRIPTION

BODY

2. The body is constructed of sheet metal 0.03 inches thick. Its edges are pressed and soldered together forming a longitudinal seam running from the top to the bottom. At the bottom is a disc recessed 0.2 inches with its edges rolled over and pressed to the walls of the cylinder. At the top of the candle, soldered to the threaded band is another disc, in the centre of which is a brass coloured igniter cup two inches long and 13/16-ins. in diameter. This cup is attached to the lid by a lip and three small teats which bend over it, while the under surface of the lid is soldered to the cup. A plastic adapter fits inside this cup and contains an inner match head, the cup contains an inner igniter mixture wrapped in paper.

All floating smoke candles on which there is information at Kirkee conform to this general type.

MAIN FILLING (HCE)

3. C.W. Intelligence Bulletin No. 46 Page 4 states that two varieties of H.C.E. smoke are used by the Japanese.

	Type 1	Type 2
H. C. E.	50%	60%
Zinc	25%	30%
Zinc Oxide	25%	10%
	100%	100%

The filling of the generator described in this Leaflet consisted of the No. 1 Type mixture.

IGNITER SYSTEM

4. This consists of short, thick walled brass body, threaded externally and internally at the lower end, which screws into the brass collar on top of the candle cover. Into the lower end of the body is screwed a second brass tube containing a delay train of compressed gunpowder. At the lower end, the bore of the delay tube is widened for a short distance, and the cavity thus formed filled with small granules pressed together to form a flash pellet. Fitted into the body is one end of a coil of light brown safety fuze which is tightly wedged by a wrapping of paper. The end of the fuze is situated directly above the gunpowder delay train. To the other end of the safety fuze is fitted a thin walled brass tube containing a match head. Tied to the safety fuze, immediately behind the match head tube, is a light wooden scratch block, the edges of which are coated with red phosphorus. When the igniter is screwed in position the lower end of the delay tube is situated directly above the inner match head. The safety fuze fitted to each of the igniters varies in length from 15 to 18 feet and has a burning rate of two feet per minute.

GRENADE TYPE FUZE

5. This fuze is the same as that used in the Type '97 Hand Grenade and has an overall length of 2.36-inches. It consists of a light brass cover, a fuze body, a cylindrical tube, an inertia pellet containing a firing pin, a creep spring and a safety device of the fork type. There are two safety devices in this fuze, the safety fork already remarked upon and the threaded firing pin. This is screwed up into the inertia pellet, exposing its head through a hole in the cover. In order to fire, the pin must be screwed down. The safety pin is removed, and the head of the fuze is then hit with a mallet causing the firing pin to strike the detonator.

DETAILS ON LABEL

6. The translation of the rectangular white paper label gummed on the side of the candle is as follows:—

Type '94 Floating Smoke Candle (B).

Manufacturing details, i. e.

No. 2 Arsenal Tokyo December 1941.

Method of Use.

- (i) Ensure that the clamp is securely fastened.
- (ii) Check the float to see that it is fully inflated.
- (iii) Do not remove the cover from the outer tube or moistureproof seal.
- (iv) Where a fuze is fitted, hold the fuze in the left hand, pull out the safety pin slowly, then give the head of the fuze a sharp and accurate tap with a mallet. Make sure that the fuze is pointing in a safe direction when it starts spluttering.

- (v) When a delayed action igniter is used, it can either be used as it stands or the fuze can be cut down to give the required burning time. The ignition cap is fitted separately, and should be rubbed with the scratcher block.
- (vi) As soon as it ignites, throw the candle into the water, holding it so that it will float in an upright position when it lands.
- (vii) As a candle which is not smoking properly in the early stages is likely to explode, keep at least 10 metres away from it until it has completely burned out.

PACKING AND IDENTIFICATION

PACKING DETAILS

7. An unpainted wooden crate (43-inches long by 12 1/2-ins. wide and 6 1/2-ins. deep holds three of the candles and all their accessories which include 3 pairs of fixtures or clamps for attaching the candle to the rubber float, 3 float tubes, 3 grenade type igniters and 3 igniters of the safety fuze type.

8. The candles are wrapped in corrugated paper and the rubber floats, wrapped together, occupy the space between the wrapped candles and the box wall. The fuzes are contained in a round brownish cardboard box occupying a partitioned space (7 1/2 x 6-ins.) at the end of the crate. The clamps used to attach the rubber floats to the candles fill the remainder of this end of the crate.

MARKINGS

9. The generators are painted either dark grey with a white label pasted on the side or light brown with circumferential white band. The light brown candle is believed to be a later model. However the Japanese nomenclature for both is Type '94 B Floating Smoke Candle.

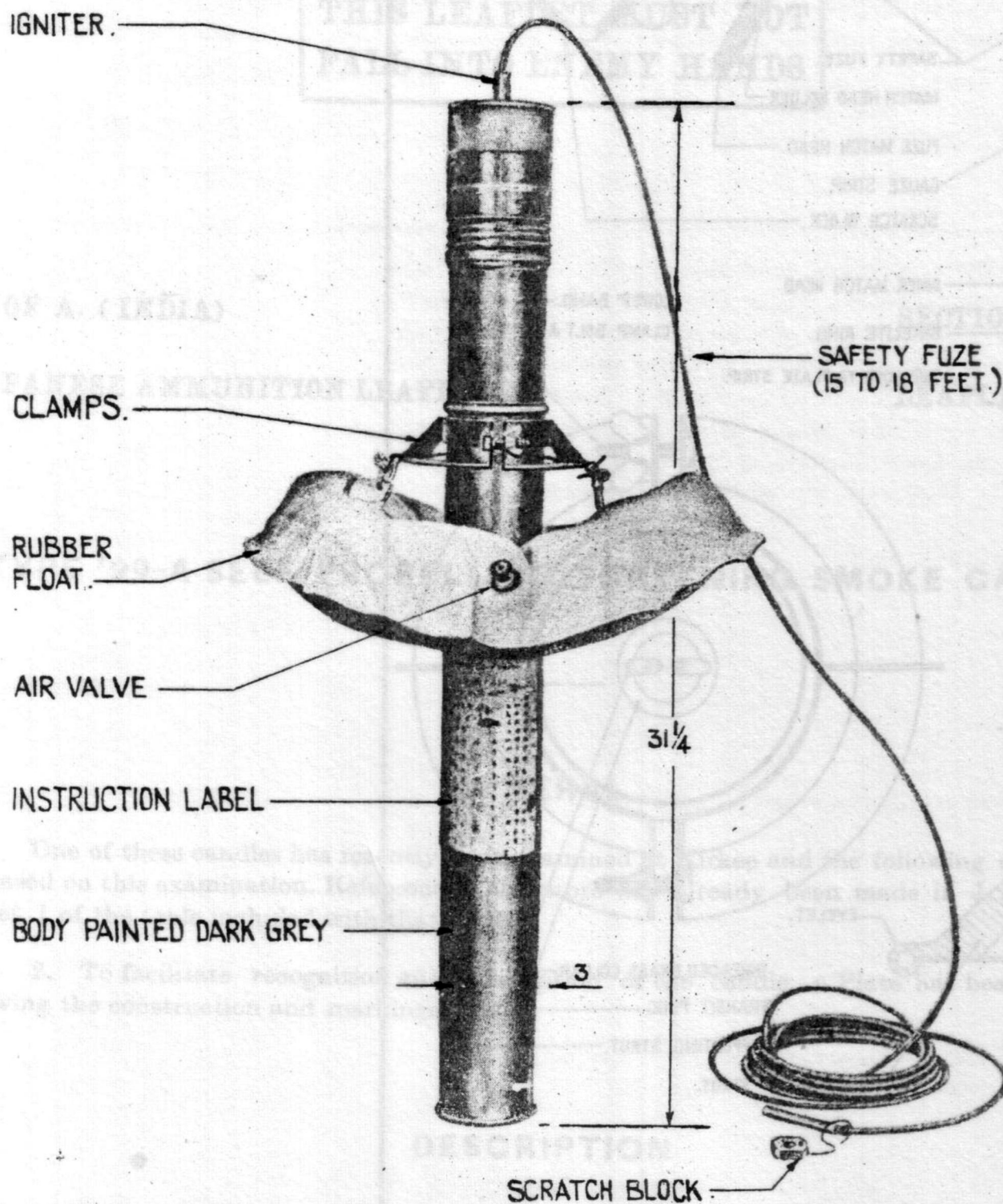
SUMMARY OF DATA

10. Complete weight	..	..	14 1/2-lbs.
Overall length	..	..	31 1/4-ins.
Diameter	..	..	3-ins.
Length of Candle	..	..	27-ins.
Length of cover	..	..	4 1/2-ins.
Diameter of cover	..	..	3 1/4-ins.

Rubber Float only.

Outer diameter	..	..	18 1/4-ins.
Inner diameter	..	..	3 1/4-ins.

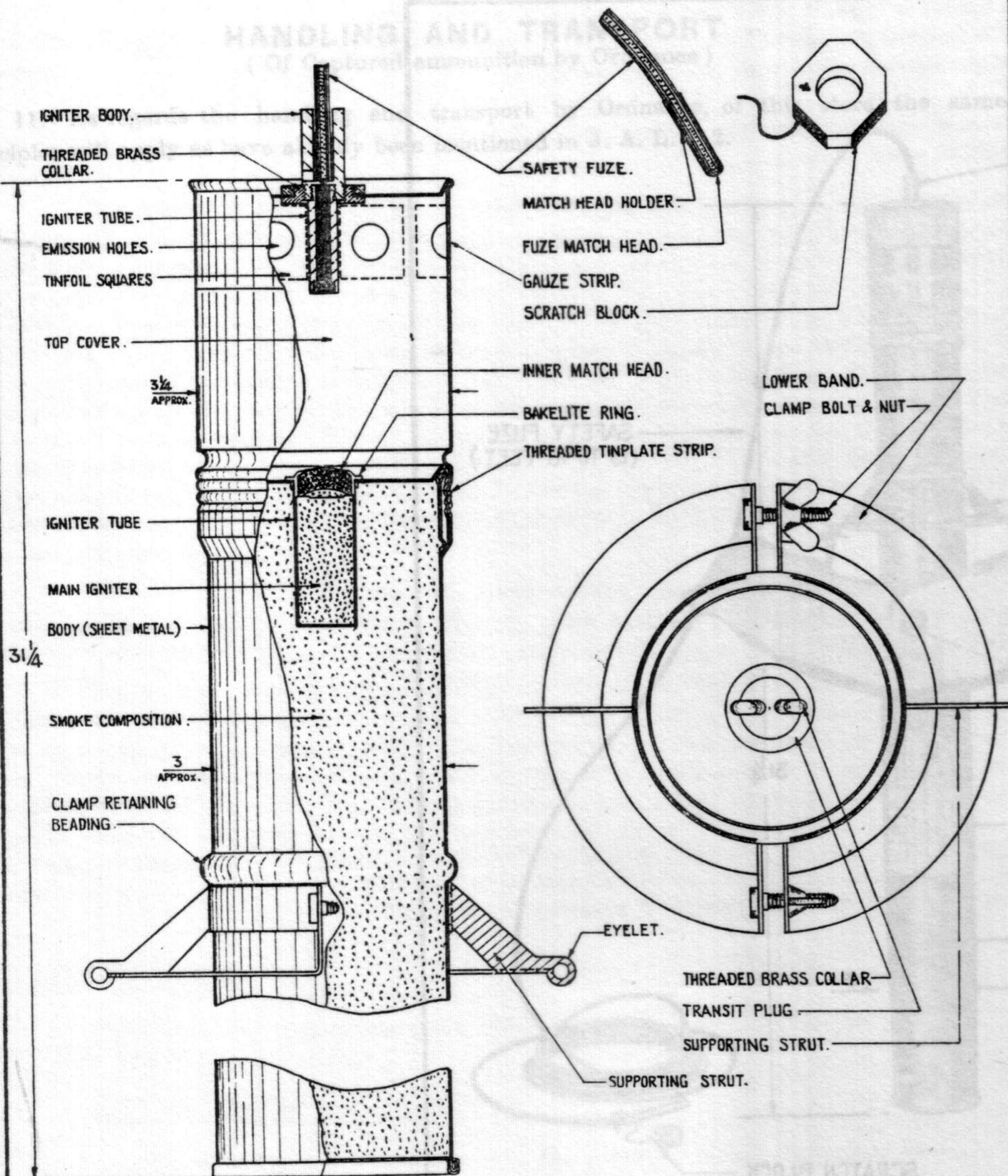
An air valve 1 1/2-ins. long is located 1 3/4-ins. from the outer edge. The float has two cloth, earlike tabs secured to the side for tying to the bracket.



JAPANESE.
TYPE 94-B FLOATING SMOKE CANDLE
 (EXTERNAL VIEW)

DIMENSIONS IN INCHES.

CI.AMN.S/1428
 KIRKEE, MAR 1946
 G.P.Z.-P. D00NA. 1946



JAPANESE, TYPE '94-B' FLOATING SMOKE CANDLE.

(INTERNAL DETAILS)

DIMENSIONS IN INCHES

C.I. Amn. S/1420
KIRKEE, MAR. 1946.

G.P.Z. 1:140000-1946

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

D. OF A. (INDIA)

SECTION J

JAPANESE AMMUNITION LEAFLETS

LEAFLET J 4

TYPE '99-A SELF PROPELLING SCREENING SMOKE CANDLE

GENERAL

One of these candles has recently been examined at Kirkee and the following description is based on this examination. Reference to this store has already been made in J. A. L. J2 at Sheet 1 of the table included with that Leaflet.

2. To facilitate recognition and description of the candle, a Plate has been included showing the construction and markings.

DESCRIPTION

3. The candle is cylindrical in shape and consists of an outer container inside which is a wooden block holding the propellant charge and an inner container holding the smoke composition. During storage the candle is closed at either end by two lids secured by shellaced adhesive tape.

4. OUTER CONTAINER.

This is cylindrical in shape and is constructed of tin plate. The propellant charge is held in a tin plate container which fits inside a recess in a wooden block. The propellant container,

which holds 273 grs. of G. P., is closed with a tissue paper disc and a cardboard washer. The wooden block is secured at the base of the candle by four nails. In the base of the wooden block is a brass tube containing the match head and safety fuze which is connected to the propellant charge. A spike similar to that described in J. A. L. J2 is used to set the candle up at the angle required to obtain the necessary range.

5. INNER CONTAINER.

By reference to J. A. L. J2 and to the Plate included with this Leaflet, it will be seen that although the general design of the two candles is the same there are certain noticeable differences. The former has two smoke vents positioned three quarter way down the side of the inner container; the Type '99A candle has only one smoke vent, at the top of the inner container. It is probable that the igniter channel also assists the escape of the smoke. Another difference is in the make up of the igniter systems. The Type 99-A candle has a tube running centrally down the whole length of the container. In the lower portion of this tube is a delay holder containing pressed G. P. The upper portion is filled with an igniter composition. The main filling is Hexachlorethane Mixture Type (1) See (J. A. L. J2. Para. 10) The Toxic Candle shown at Plate B of J.A.L. J2 has only a short delay holder.

6. METHOD OF USE.

This store is used in the same way as the candle described in J.A.L. J2.

PACKING

7. As these candles did not arrive at Kirkee in their standard Japanese packing it is not possible to give any more details than those already mentioned in J.A.L. J2.

IDENTIFICATION

8. The outer container is painted olive drab and bears white Japanese characters on the side and also a thin, white vertical line. The meaning of this line is not clear but in view of its position relative to the match head slot, it is thought it may be used as a means of indicating the position of the match head at night. This marking has also been found on the Type 100 Illuminating Self-propelling Candle and the Type 100 Toxic Self-propelling Candle. It is also thought that it may act as an aiming mark. Dimensions and other details concerning this candle will be found in the Table included in J.A.L. J2.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

9. The instructions already given in para. 12 of J.A.L. J2 will apply.

EXPLOSION/FIRE RISK

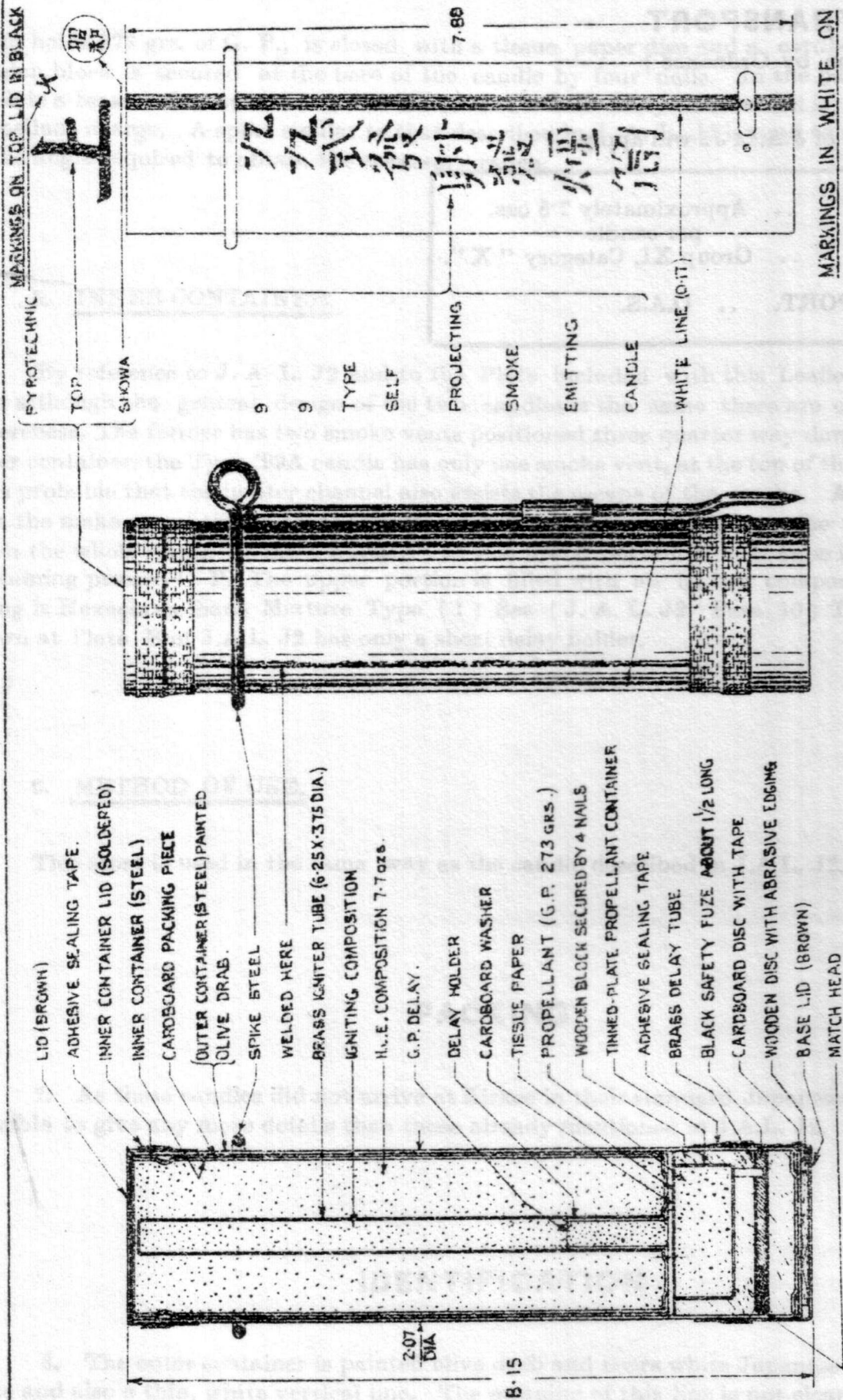
.. Approximately 7.5 ozs.
per candle.

GROUP CLASSIFICATION

.. Group XI, Category " X ".

CLASSIFICATION FOR SEA TRANSPORT.

.. O.A.S.



COMPLETE WT.: 2 LBS. 15 1/16 OZS.

JAPANESE SCREENING SMOKE CANDLE, TYPE '99A SELF PROPELLING.

DIMENSIONS IN INCHES

Restricted

THIS LEAFLET MUST NOT
FALL INTO ENEMY HANDS

D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION J
LEAFLET J 5

JAPANESE TYPE '94-A SCREENING SMOKE CANDLES LARGE AND SMALL.

GENERAL

Reference has already been made to these types of candles in Sheet 1 of the Table included in JAL J2. These candles have recently been examined at Kirkee and the following is the detailed report.

Two Plates are included with this Leaflet to assist description and to aid recognition.

Plate A—Showing details of construction and markings of Type '94-A. Large, Candle.

Plate B—Showing details of construction and markings of Type '94-A. Small Candle.

DESCRIPTION

2. TYPE '94-A. LARGE, SCREENING SMOKE CANDLE (STATIC)

The body of the candle is manufactured from 24 S.W.G. tin-plate, and a soldered seam runs down the side. The ends are closed with plates of the same material which are recessed and rolled on to the body. Fitted through the top closing plate is a smaller inner container to which is attached the igniter tube of brass. This inner container is secured to the larger one by a supporting piece which is threaded to take a screw on cover. The wooden carrying handle is attached to a metal ring which is secured to the head of the outer container by a nut and bolt (Plate A).

3. Filling Type '94-A. Large.

Both the body and inner container are filled with a C.T.C. type smoke mixture. As these mixtures differ in composition from those given in J. A. L. J 2, they are reproduced here:—

(a) Main Smoke Composition.

Carbon Tetrachloride	..	..	..	36%
Zinc Metal	..	..	..	30%
Zinc Oxide	..	..	..	25%
Kieselguhr	..	..	..	9%
				100%

(b) Primary Smoke Composition.

Carbon Tetrachloride	..	..	..	28%
Zinc Metal	..	..	..	28%
Zinc Oxide	..	..	..	34%
Kieselguhr	..	..	..	10%
				100%

(c) Igniter Composition.

Potassium Nitrate	..	..	..	44
Aluminium	..	..	..	16.6
Antimony sulphide	..	..	..	20
Sulphur	..	..	..	16
Ferric Oxide	..	..	..	2.6
				99.2

The igniter composition is the same as is used in the Type '99-A candle.

Action

4. The translation of the label found on the candle, giving instruction for use, is as follows :—

- (a) "To ignite the candle take off the cap and remove the scratch block. Then using its painted surface, rub the igniter head.
- (b) When the smoke spurts out, do not approach within two metres of the smoke port, as it gives out sparks.
- (c) The smoke has an extremely high temperature; do not expose the body to the smoke or use the candle near any inflammable material.
- (d) It is possible to use the candle from moving vehicles or on board ship, as well as on the ground.
- (e) When used on the ground it should be tipped into the wind.
- (f) A defective candle can be ignited by setting its smoke port near the smoke port of a candle that is already burning."

5. When the match head is rubbed it sets off the igniter composition, the thin walls of the igniter tube fall in and the primary smoke composition commences to burn. The walls and base of the primary smoke composition container are also very thin, these are melted and thus the main smoke filling is ignited. Smoke is vented through the hole in the top plate where the igniter is fixed. The burning time of the candle is 2 minutes 21 seconds.

6 TYPE '94-A SMALL SCREENING SMOKE CANDLE (HAND-THROWN).

The candle consists of a cylindrical container 7" in length and 2.08" in diameter, manufactured from 27 S. W. G. tinplate containing the smoke composition.

The body is closed with a tinplate disc in the centre of which is the igniter assembly. The match head itself is held in a lead ring and is covered with a moisture proof paper disc (Plate B).

7. Filling Type '94-A Small.

As in the case of the large candle the smoke composition is of the C.T.C. type.

Carbon Tetrachloride	..	..	..	44.5%
Zinc Dust	..	..	..	22.5%
Zinc Oxide	..	..	..	24.0%
Kieselguhr	..	..	..	8 0%
				99.0%

The igniter composition is the same as is used in the Large Type 94-A Candle and the Type '99-A Candle.

Action

8. The candle is wrapped in a double thickness of corrugated paper with an outer layer of plain white paper on which are printed directions for use, a translation of which is as follows :
 "The '94 Small Smoke Candle "A". "

Directions for use :

- (a) Remove the moisture proof strip, take off the lid, push out the scratch block and rub the head of the match head composition on the surface of the block, when it will ignite.
- (b) As some fire is omitted after ignition, and also because of the high temperature of the smoke, the smoke aperture must not be turned towards the body ; moreover it must not be used near anything inflammable.
- (c) In order to be able to throw the candle after ignition hold the lower part of it in the hand, ignite it, and after making sure it is generating smoke throw it.
- (d) In cases where the initial emission of smoke is unsatisfactory, because of the danger of explosion keep at least five metres from the candle and do not approach until the smoke disappears.

9. On rubbing the match head, it burns, initiating the igniting composition which in turn sets off the main smoke composition.

IDENTIFICATION

10. **TYPE '94-A LARGE.** The store is painted blue grey or brown. On one side is a white painted label overstencilled in black with Japanese characters which give the nomenclature and the instructions for use translated in paragraph 5. The translation of the nomenclature is :

"Model 94 Smoke Candle (Large) " A " "

Summary of Data.

11. Total Weight	..	..	..	32.5 lbs.
Weight of main filling	..	..	..	29 lbs. 2 ozs.
Weight of primary smoke composition	..	..	..	3 ozs.
Weight of igniter composition	..	..	..	35.2 grains.
Length (excluding handle).	..	..	..	19.0"
Diameter ,, ,,	..	..	..	6.0"

12. **TYPE '94-A SMALL.** The candle is coloured dark green or brown and bears a white band, indicating the type of filling, just below the lid. The painted markings on the lid probably indicate the date of filling and Lot Number.

Summary of Data.

13. Weight of complete candle	..	..	..	1 lb. 13.9 ozs.
Length of complete candle	..	..	..	7"
Diameter	..	..	..	2.08"

PACKING

14. **TYPE '94-A LARGE.** One Generator is packed in a plain wooden box together with Instructions for use. The stowage dimensions are $26\frac{7}{8}" \times 10\frac{1}{2}" \times 10\frac{1}{4}"$. The box is lined with black water proof paper.

15. **TYPE '94-A SMALL.** 30 wrapped candles are packed in a nailed wooden box $23\frac{1}{2} \times 7\frac{1}{2} \times 7\frac{1}{2}$. The box is lined with cardboard and strengthened by wooden battens, 2 on each side. Stencilled in black paint on each side is:—

“Type '94

Small Smoke Candle A

30 in number”.

A label, pasted on each end, reads:—

Pyrotechnics. Osaka Works.

NAME Type '94 Small Smoke Candle (A).

CONTENTS 30 Candles.

PASSED September 1943.

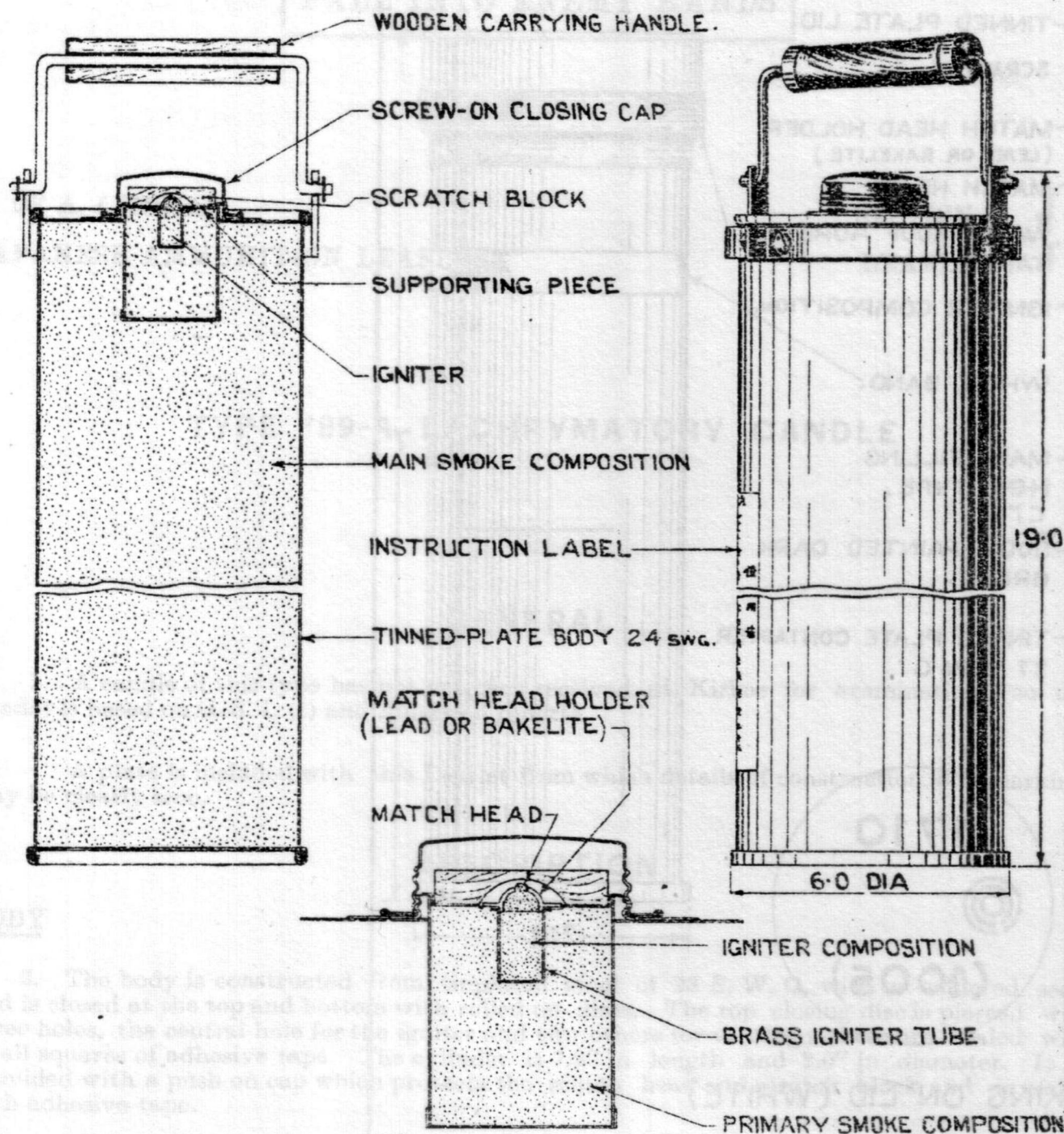
HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

16. In regard to storage, handling and transport of both these types of candle, normal British practice can be safely followed. It should be remembered that C. T. C. is under certain circumstances liable to spontaneous combustion. Unserviceable generators should be destroyed by burning in the normal way. In tropical climates C. T. C. fillings are likely to dry out on long storage. Reduction in the quantity of C. T. C. produces violent burning, though it cannot burn without access to air.

EXPLOSION / FIRE RISK	Large Assume 29 lbs. 5 ozs. per candle. Small Assume 1 lb. 8 oz. ,, ,,
GROUP CLASSIFICATION	Group 11, Category X
CLASSIFICATION FOR SEA TRANSPORT ..	O.A.S.

RESTRICTED.



ARRANGEMENT OF IGNITER SYSTEM

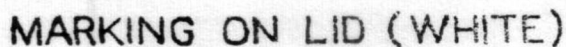
JAPANESE TYPE 94A (LARGE),
SCREENING SMOKE CANDLE

DIMENSIONS IN INCHES

C.I. Am. S/1460
 KRM:EE MAY '46

O.P. & P. POONA 1946

PLATE 'B'



SCREENING SMOKE CANDLE.

C.I. AMN. S/1454
KIRKEE. MAY 46.

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

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D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION

J

LEAFLET

J 6

TYPE '89-A LACHRYMATORY CANDLE

GENERAL

1. A candle of this type has not yet been received at Kirkee for examination ; so this Leaflet is based on G. S. I. (t) and American reports.

A plate is included with this Leaflet from which details of construction and markings may be clearly seen.

DESCRIPTION

BODY

2. The body is constructed from tinned steel of 28 S. W. G. with a soldered seam and is closed at the top and bottom with rolled on discs. The top closing disc is pierced with three holes, the central hole for the igniter and two others for venting ; these are sealed with small squares of adhesive tape. The cylinder is 7.2" in length and 2.0" in diameter. It is provided with a push on cap which protects the match head and scratch block and is sealed with adhesive tape.

MAIN FILLING

3. The generator is charged with pale-yellow, rectangular wafers the composition of which is as follows :—

Chloracetophenone	..	17%	..	277.4 grs.
Nitrocellulose	..	63%	..	2 ozs. 158 grs.
Water	..	1%	..	15.4 grs.
Camphor	..	19%	..	30 grs.

This filling occupies nearly all the volume of the casing. There are two circular pads of cotton gauze secured to the underside of the top closing disc.

IGNITION SYSTEM

4. This consists of the following parts and its make-up may be clearly seen from the Plate:—

- (a) A Scratch Block.
- (b) A Match Head.
- (c) Slow burning Fuze.
- (d) An Ignition Mixture.
- (e) Main filling.

The scratch block consists of a wooden disc, the upper surface of which is coated with red phosphorus, it is normally stored on top of the generator under the lid, with the red phosphorus face upwards. The underside has a central recess lined with cotton wool. This allows the striker to rest on top of the generator without fear of accidental ignition.

The match head is located in the centre of the top closing disc. The fuze of the slow burning type fits into a copper tube soldered into the underside of the top cover.

At the bottom, this copper tube is expanded into a cup shaped bulb in which the ignition mixture is contained.

METHOD OF USE

5. The match head is ignited by the scratch block. The fuze is thus initiated and in turn sets off the ignition mixture which cause the main filling to burn. The smoke produced by the burning of the main filling escapes through the two vent holes at the top of the generator.

IDENTIFICATION

6. The cylinder is painted externally with a dark grey lacquer and is marked with a $\frac{1}{4}$ " green band $5\frac{1}{4}$ " from the base of the cylinder. Markings on the lid are, numerals in white and the letter in red.

PACKING

7. No details are known concerning the packing of this store but it is thought that it will be much the same as that used by the Japanese for smoke candles of the Hand-thrown and Self-Propelled types (See J. A. L. J2).

SUMMARY OF DATA

8. Complete Weight	..	1/2-lb. (Main filling C.A.P. 3 ozs. 320 grs.)
Overall Length	..	7.2-in.
„ Diameter	..	2.1-in.

HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

9. The generators may be treated for storage in the same way as equivalent stores in the British Service.

EXPLOSION/FIRE RISK	..	..	..	C. W.
GROUP CLASSIFICATION	..	..	..	XIII
CLASSIFICATION FOR SEA TRANSPORT	..	..	..	S. A. S. (R)

C. I. Amn.,
Kirkee.

First Issue,
3rd June, 1946.

RESTRICTED

TINNED PLATE LID.

SCRATCH BLOCK.

COTTON WOOL.

ADHESIVE TAPE.

MATCH HEAD.

COTTON GAUZE.

COPPER TUBING.

FUZE SLOW BURNING.

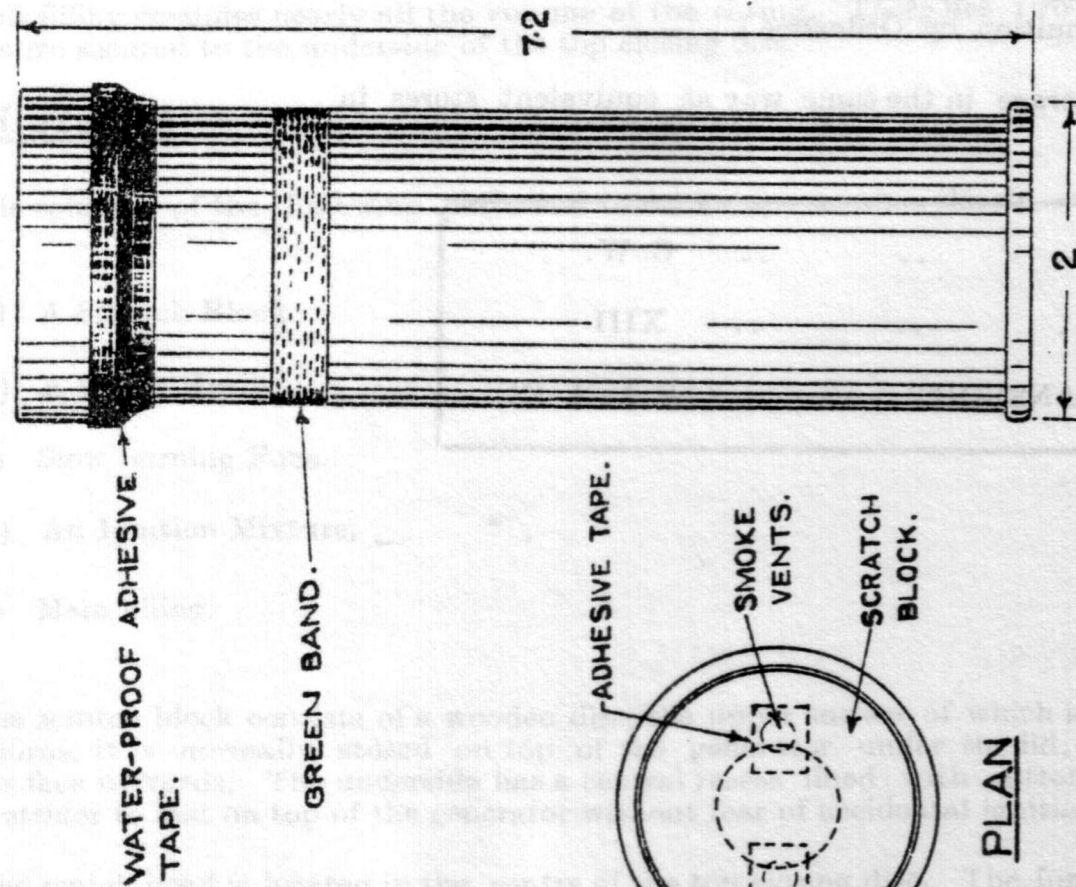
IGNITER COMPOSITION.

BODY TINNED PLATE

LACQUERED GREY.

MAIN FILLING:

(CHLORACETOPHENONE
FLAKES)



ADHESIVE TAPE.

SMOKE
VENTS.

SCRATCH
BLOCK.

PLAN

WT. OF CANDLE : - $\frac{1}{2}$ LB.

JAPANESE TYPE 89-A LACHRYMATORY CANDLE

DIMENSIONS IN INCHES.

C.I.A.M.N.S/1465
KIRKEE MAY 46

G.P.F.P. POONA. 1946.

Restricted

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D. OF A. (INDIA)

JAPANESE AMMUNITION LEAFLETS

SECTION J
LEAFLET J 7

JAPANESE TYPE I MODEL I SMOKE GENERATOR (WHITE)

GENERAL

No specimen of this type of Generator has yet been received at Kirkee and this Leaflet is compiled from an Anti-Gas Laboratory report and drawing. The report on which this Leaflet is based states that there is no previous information on this Generator; certainly no reference to it has been found at Kirkee. Presumably its role is similar to that of Flares T.R. or Grenades No. 83 in the British Service, especially as the colour of the smoke is specifically denoted in the Japanese nomenclature.

DESCRIPTION

2. The generator is cylindrical in shape and is constructed of 28 S.W.G. tin-plate. All the seams are folded and pressed. It is closed at the top by a shallow cup which carries the igniter. A lid protects the match head and igniter; the match head itself is also protected by a piece of cotton wool. No scratch block was present in either of the generators reported on but there is sufficient space inside the lid to accommodate one and it is thought that this component would normally be found there. The igniter and priming composition are contained in a brass tube.

3. Main Filling. This is of the C.T.C. type which has the following composition:—

C. T. C.	..	..	..	..	33.0 %
Zinc	..	..	..	..	16.0 %
Zinc oxide	..	..	..	..	48.0 %
Zinc chloride	..	..	..	..	0.5 %
Insoluble material..	..	..	..	..	3.0 %
					100.5 %

ACTION.

4. The striker is drawn across the match head causing it to initiate the priming which in turn sets off the main filling. From reports it would seem the rate of burning of the generator is rather fast and the gases generated may be liable to burst the container.

PACKING

5. No details of the packing of this store are yet known.

IDENTIFICATION

6. The generator is cylindrical in shape and is painted a matt-cream. Two labels bearing Japanese characters are glued to the side of the container. The upper label is translated to read:—

Manufactured October 1943
 Type 1 Model 1
 Single Smoke Generator (White)
 Japanese Pyrotechnic Co. Ltd.

The lower label was translated:—

Precautions.

On operating this generator, push the lower part into the ground so that it will stand upright. Tear off the tape and remove the outer cover. Ignite the flare by rubbing the match composition with the striker block; when igniting the generator turn the face away as much as possible then leave the vicinity immediately.

SUMMARY OF DATA.

7. Length overall	..	..	..	..	10.12-in.
Diameter (maximum)	..	..	..	..	2.24-in.
Total weight	..	..	..	..	2-lb. 13-ozs.
Wt. of Filling	..	..	..	..	2-lbs. 5-ozs.

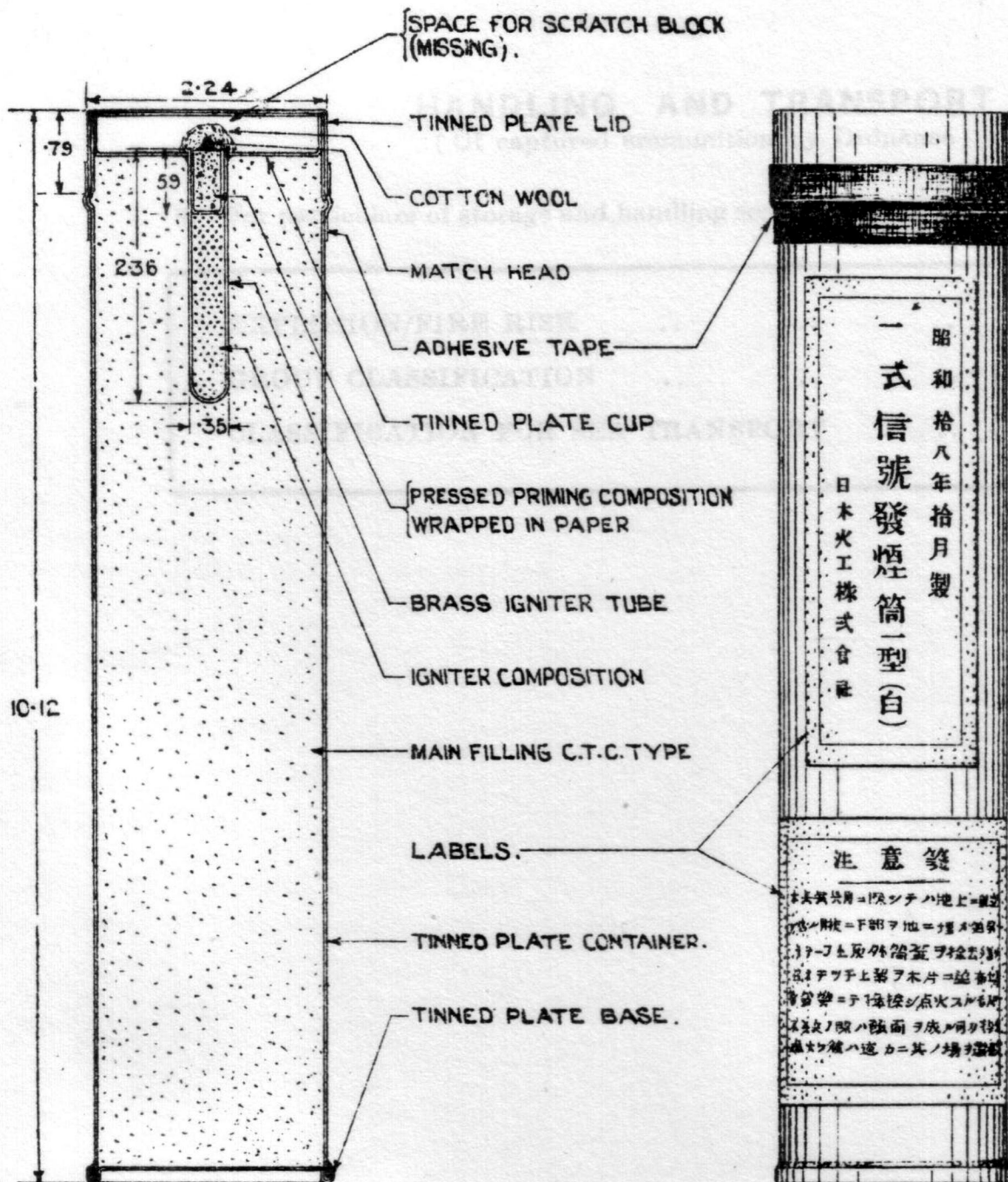
HANDLING AND TRANSPORT

(Of captured ammunition by Ordnance)

8. For particulars of storage and handling see J.A L. J. 2. Paragraph 12.

EXPLOSION/FIRE RISK	..	..	..	—
GROUP CLASSIFICATION	..	..	..	11. Category Y.
CLASSIFICATION FOR SEA TRANSPORT			..	O.A.S.

RESTRICTED



COMPLETE WEIGHT 2 LBS. 13 OZS.

JAPANESE TYPE I. MODEL I. SMOKE GENERATOR (WHITE)

DIMENSIONS IN INCHES.

C.I.A.M.N.S/1516
KIRKEE, AUG. 46.

G.P.Z.P. POONA 1946