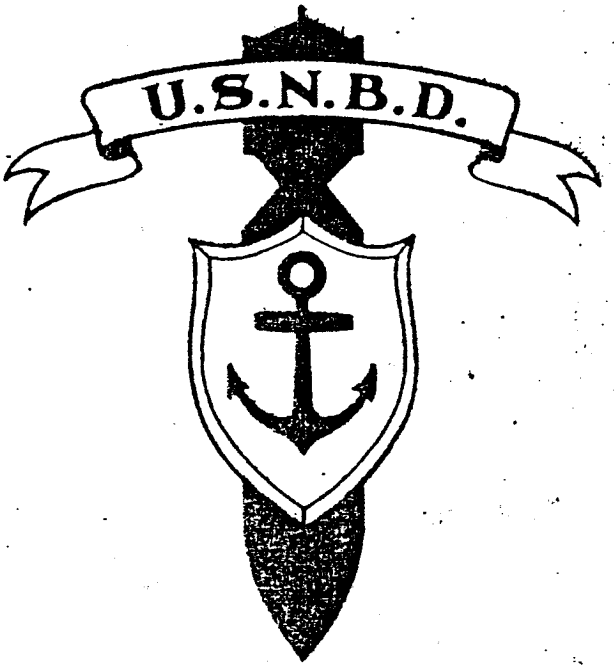
JAPANESE BOMBS & FUZES



JULY 1944

I

Date_____

From:

To: Officer in Charge, U.S. Navy Bomb Disposal School

Subj: Confidential Document - Receipt of.

1. This certifies that the above named has received _____ copy(ies) of the U. S. Navy Bomb Disposal School publication entitled "JAPANESE BOMBS AND FUZES". It is understood that this is a confidential document and is to be treated in accordance with Article 76 of U.S. Navy Regulations, 1920.

_____
(signature)

_____
(rank and organization)

Official Mailing Address:

_____

_____

_____

U. S. NAVY BOMB DISPOSAL SCHOOL
Washington 16, D.C.

July 1944

This document is issued to graduates of a course in Bomb Disposal by the Officer in Charge, U.S. Navy Bomb Disposal School, under authority of Bureau of Ordnance letter F41-6(L) of 22 April 1944. It is for information and guidance only and is not a Bureau of Ordnance publication.

Requests for additional copies of this publication should be addressed to the Officer in Charge, U. S. Navy Bomb Disposal School, Massachusetts & Nebraska Aves., N.W. Washington, D. C.

This publication contains both confidential and restricted information and should be handled in accordance with Article 76 of U. S. Navy Regulations, 1920. The Bomb Disposal School should be notified immediately in the event of loss or deliberate destruction of this document, on the attached form (facsimile if lost).

J. P. David

J. P. DAVID,
Lieutenant, USNR.
Officer in Charge.

- -

Date ____________

From:

To: Officer in Charge, U.S. Navy Bomb Disposal School.

Subj: Confidential Publication - (Loss) (Destruction) of.

1. The following confidential document has been (lost) (destroyed):

____

____

____

____
Name and Rank

NOTE: If lost, give details.

In Reply Address
Bureau of Ordnance, Navy Dept.
And Refer to No.
P41-6(L)
(Relf)

NAVY DEPARTMENT

BUREAU OF ORDNANCE

WASHINGTON, D.C.

2 December 1944.

From: The Chief of the Bureau of Ordnance
To: Officer in Charge, Bomb Disposal School
American University
Massachusetts and Nebraska Avenues, N.W.
Washington, D.C.

Subject: B.D.S. Publications, "Japanese Bombs & Fuses"- Reclassification of.

Reference: (a) Navy Regulations, Article 76, Section 5(b)
(b) OinC, B.D.S. ltr JFH/bjp NC118/A10-1, Ser 2271 of 20 Nov 1944 to BuOrd (BuOrd Serial 112444 40176)
(c) U.S.N.B.D. Publication entitled, "Japanese Bombs & Fuses"

1. In accordance with reference (a) the classification of reference (c) is hereby changed from Confidential to Restricted in order that this publication may be given a wider distribution than the present classification permits.

2. Loss or compromise of this type of information would not be highly prejudicial to the national interest at this phase of the war since the enemy is now aware that the items described in this publication are in allied hands.

G. F. HUSSEY, JR.

/s/ F. I. Entwistle
By direction

RESTRICTED

112444 40176

-- -- -- --

INDEX

MISCELLANEOUS - continued.

FUZES

TYPE A

TYPE B

TYPE C

TYPE D

GAINES

LAND MINES, BEACH MINES, AND IGNITERS.

IGNITERS

LAND MINES

BEACH MINES

JAPANESE DESIGNATION OF NAVY BOMBS, FUZES & GAINES

Bombs

The Japanese Naval Air Force has three general classifications of bombs:

Ordinary (tsūjō) - general purpose.
Special (tokushu)- special purpose
Land (rikuyō) - Primarily for use against land targets.

Usually, but not necessarily, the land bombs have a lighter case than ordinary. Bombs are given a designation or name which discloses 1) date of adoption, 2) weight, 3) type of special bomb if such, 4) land or ordinary, 5) Model number, and 6) modification, if any. An example of such a designation is:

(1)	(2)	(3)	(4)	(5)	(6)
Type 1 ichi shiki	Number 6 roku ban	Mark 1 ichigo	land rikuyo	Model 1 ichi kata	Modification 2 kai ni

(1) The type (shiki 式) discloses the year that the bomb was adopted, in the example, 1941. The practice is the same as that followed by the Japanese in giving a type number to an airplane.

(2) The number (ban 番) gives the weight in kilograms. The Japanese always drop one zero. Thus a number 6 bomb weighs 60 kilograms; a number 25 weighs 250 kg; a number 80 weighs 800 kg., etc.

(3) If mark (go 號) appears in the name of the bomb, it is a special bomb of which there are fourteen known types (Mark 1 to 7, 19, 21 to 26), discussed hereinafter. This part of the designation is omitted where the bomb is just a land or ordinary bomb not designed for a special purpose.

(4) The word ordinary (tsugo 常用) or land (rikuyo 陸) indicates whether the bomb is general purpose or primarily for use against land targets.

(5) The model (kata 型)number has the same connotation as a model number when applied to an article of U. S. manufacture.

(6) The modification (kai 改)number indicates when there has been some slight change in a bomb. It may refer to the type of powder. In the case of many bombs there may have been no modification.

The Japanese often abbreviate the name or designation. Three examples:

Type 99 number 6 ordinary - 九九式六番通常
Number 80 land - 八〇番陸用
Number 80 Ordinary 八〇番通常

The first example of an abbreviation includes the year of adoption, the second and third do not. It is also common to drop off the model number and modification number as in the above examples. The saving grace of abbreviations and the thing that gives them value is that the weight and type (whether land, ordinary or special) is practically always given.

The fourteen known types of special bombs are as follows:

Mark 1 (一號) . . . . . Chemical bomb.
Mark 2 (二號) . . . . . Anti-Submarine.
Mark 3 (三號) . . . . . For use against aircraft in the air or on the ground.
Mark 4 (四號) . . . . . Rocket.
Mark 5 (五號) . . . . . Armor Piercing.
Mark 6 (六號) . . . . . Incendiary
Mark 7 (七號) . . . . . Bacillus

JAPANESE DESIGNATION OF NAVY BOMBS, FUZES & GAINES - continued.

Mark 19 (一九號) . . . . . Special 7.5 kg.-bomb fired by fighters at our bomber formations.

Mark 21 (二一號) . . . . . Cluster of small bombs.

Mark 22 (二二號) . . . . . Large cluster of smaller bombs.

Mark 23 (二三號) . . . . . Long delay action bombs.

Mark 24 (二四號) . . . . . Parachute clusters

Mark 25 (二五號) . . . . . Cluster of small bombs

Mark 26 (二六號) . . . . . Nose charge to cause above ground burst of main charge.

The Mark 19 and 21 to 26 are of recent adoption. They do not seem to fit the same pattern as the standard Mark 1-7 series. For example, it is difficult to understand why the Mark 19 is not another bomb of the Mark 3 series. It may be that the Mark 19 and 21 to 26 represent some new series of special bombs. At the present time it is not known whether there are any special bombs with a mark number between 7 and 19.

The enemy has several other types of special bombs which do not have a Mark number, for example, smoke, flare, practice and dummy bombs. These are not included in these notes.

When a bomb is still in the experimental stages and has not been adopted for standard usage, the enemy gives it an experimental number. An example of the name or designation of an experimental bomb is:

kūshō shiki 13 shi ichi ban shichi go
Air Arsenal experimental type 13 number 1 Mark 7.

This is the same method as that used in designating new planes which are in the experimental stage.

Arming Devices

NOTE: The nomenclature "arming devices" represents a strict translation of the Japanese designation. The "arming devices" are what are normally referred to as "fuzes".

The exploding mechanism of Japanese naval bombs consists of two parts, the arming mechanism (hakkasōchi) and the fuze (shinkan). The name or designation of an arming mechanism indicates (1) the date of adoption, (2) whether nose or tail device, (3) Model number, and (4) modification number. For example:

(1)	(2)	(3)		(4)
一式	彈頭	發火裝置	二型	一改
ichi shiki	dantō	hakkasōchi	nikata	kai ichi
type 1	nose	arming mechanism	model 2	Modification 1

Often the type of bomb with which the mechanism is used appears in the designation. For example, #6 land bomb or the equivalent has been noted inserted between (1) and (2) above and in parentheses after (4).

Fuzes

NOTE: The nomenclature "fuzes" represents a strict translation of the Japanese designation. The "fuzes" are what are normally referred to as "gaines".

Fuzes are designated in the same manner as arming devices. An example of a fuze designation is:

	(1)	(2)
九九式	常用爆彈信管	丙
kyūjūkyu shiki	tsujō bakudan shinkan	hei
type 99	ordinary bomb fuze	C

This is a type 99C fuze for use in an ordinary bomb. The bomb with which the fuze is used almost always appears in the designation as above and may even be more detailed, such as #6 ordinary bomb.

R estricted

GLOSSARY

昭和 OR 昭 (abb.) - Showa era. Note: Year one - 1926

一 - 1
二 - 2
三 - 3
四 - 4
五 - 5
六 - 6
七 - 7
八 - 8
九 - 9
十 - 10

東京 OR 京 (abb.) - Tokyo
百 -100

航空兵 OR 航 (abb.) - The Air Service (a new word)

阪 - Osaka

動信管 - Fuze

爆薬 - Explosive
火薬 - Powder

爆弾 - Bomb
用 - Use

口径 - Caliber
米 - Metre

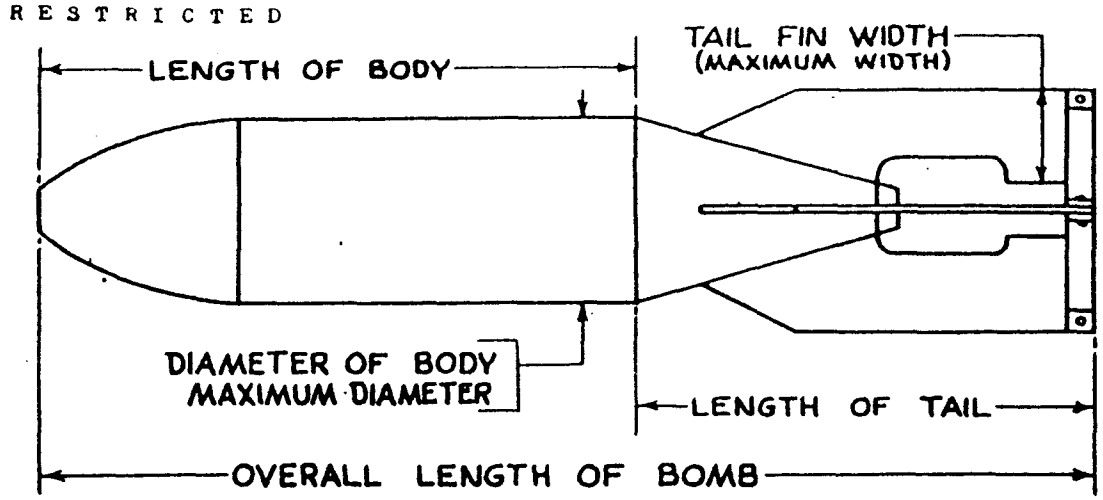
粍 - Millimetre
粁 - Kilometre

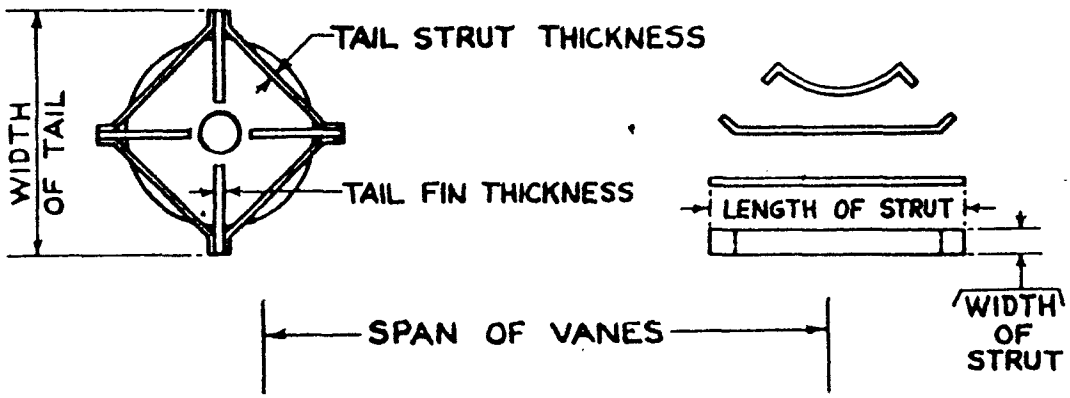
年 - Year
月 - Month
日 - Day

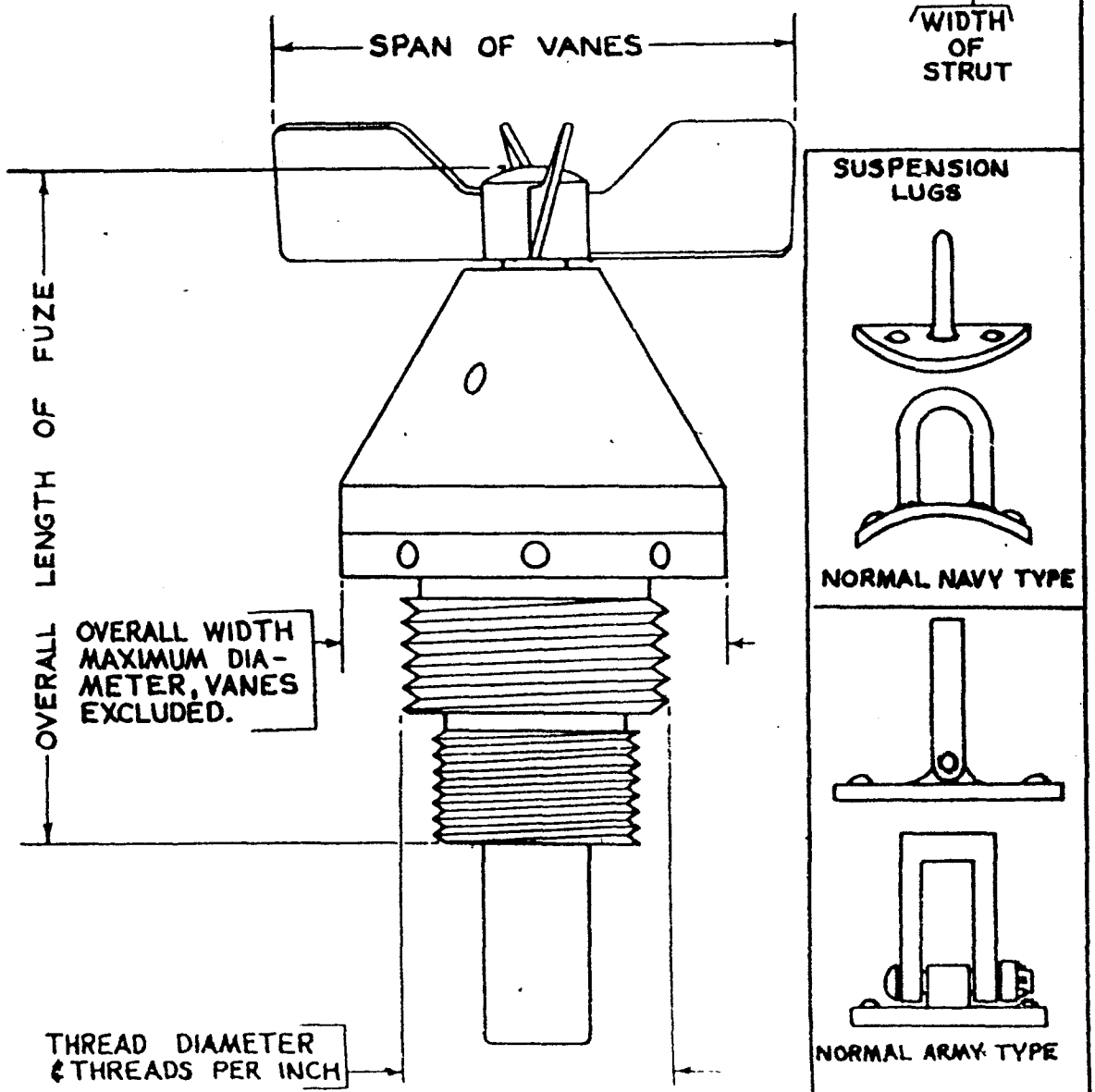
陸軍 - Army
海軍 - Navy

GLOSSARY - Continued

延	- Delay
瞬	- Instantaneous
甲	- Classification A or 1 (first calendar sign)
乙	- Classification B or 2 (second calendar sign)
丙	- Classification C or 3 (third calendar sign)
呉	- Navy Arsenal
可	- Inspector's approval stamp (Naval)
秘	- Military Secret
軍機	- Military Ultra Secret
瓲	- Kilograms
番	-Number
式	- Type
型	- Model
號	- Mark
改	- Revision or Modifications
陸用	- Land use
常 Or 通常	-Ordinary
呉	- Kure Naval Base
✕	- Osaka Army Arsenal Mark
☆	-Tokyo Army Arsenal Mark







DEFINITIONS OF TERMINOLOGY

JAPANESE BOMBS

INTRODUCTION TO JAPANESE BOMBS

The Japanese Army and the Japanese Navy have separate Air Forces. Each service employs its own distinctive types of bombs which possess definite identifying characteristics.

JAPANESE ARMY BOMBS

Construction

Army G.P.H.E. bombs and Incendiary (dual purpose) bombs are of three piece construction. The nose piece of the H.E. bombs is either threaded to screw into the body or is welded to the body. The nose piece of the incendiary bombs is attached to the body by three set screws (erroneously referred to as dowel pins in some reports). The tail cone of the H.E. bombs is either welded to the body or threaded to screw into the body. The tail cone of the incendiaries is welded to the body.

The tail fins are welded to the tail cone and extend from a point within an inch or two of the body-tail cone junction to beyond the apex of the cone. The fins are braced by one or two sets of tail struts.

The suspension lug consists of a rectangular hinged shackle on a plate secured to the body with four rivets.

Markings

Army G.P.H.E. bombs in general are painted black overall with a yellow band and a white band around the body forward of the suspension lug, and a red band around the nose. It is believed that the white band means "high grade steel". On some bombs of recent manufacture the white band has been omitted apparently as unnecessary. The yellow band indicates a high explosive filling. The red band indicates the explosive is loaded in the bomb.

The incendiaries and various types of chemical bombs (gas, smoke, etc.) are painted grey overall. They have a red band around the nose and color bands around the body that vary with the type of filling.

Fuzing

Just as with the bombs, there is a set of fuzes designed to be used only by the Army. (Refer Introduction to Japanese Fuzes, pg.98). G.P.H.E. bombs are generally fuzed nose and tail. In some cases only a nose fuze will be used and the black bakelite shipping plug will be left in the tail fuze pocket.

The incendiary and anti-personnel bombs are usually fuzed only in the nose or in the tail.

Filling

Army bombs are generally filled from the nose end. In most cases the explosive filling of H.E. bombs is comprised of three to five pre-formed blocks wrapped in wax paper (nose section, body sections, tail sections) and separated by cardboard, felt, or both. In less frequent cases the explosive filling is cast into the bomb.

Incendiaries have a H.E. charge in the nose and in the exploder tube. The incendiary filling is in the body and tail sections.

JAPANESE NAVY BOMBS

Our broad general classification of Japanese bombs divides them into general purpose, semi-armor piercing, armor piercing, incendiary, etc.

A captured document revealed that the Japanese Navy classifies their bombs as "land", "ordinary" and "special". We shall continue to use the original classification but shall also recognize the Japanese terminology.

"Land" bombs have a three piece body, a rough exterior, an explosive filled tail cone and the loading factor of a general purpose bomb.

"Ordinary" bombs have a one or two piece body and a smooth exterior. The tail cone is empty in bombs up to and including 250 Kg. The 800 Kg. has a filled tail cone. In loading factor they vary, depending on the size of the bomb, from general purpose to semi-armor piercing.

"Special" bombs are for specialized uses. They are designated by Mark numbers according to the purpose for which they were designed, e.g. "Mk 2" bombs are anti-submarine bombs, "Mark 5" bombs are armor-piercing bombs, etc. (See pg.2(a))

Construction

Navy G.P.H.E. bombs are thin cased and constructed of three pieces. The nose piece is usually welded and/or riveted to the body while the tail assembly is welded and/or riveted to a retaining collar which fits into the base of the bomb body and is secured by screws.

The S.A.P. and A.P. bombs have a thicker case and are made in one piece with a threaded base plate. The tail assembly is secured to the base plate by screws.

The tail fins extend from beyond the apex of the cone to a little past midway between the apex of the cone and the body-tail junction. The fins are braced by tail struts.

The suspension lug consists of an eyebolt welded to a circular plate which is riveted to the bomb body by four rivets.

Markings

The Japanese Navy has made a change in its color markings for bombs; hence, two systems of color markings are found in current use. General features of both systems will be listed here and a more complete chart of the new markings will be found on pg. 2(a).

Common features, NEW system:

(1) Nose of all bombs tipped green. Identifying color applied as a band immediately behind the green tip.
(2) Tail struts of some special bombs painted in identifying color. Tail struts of all common bombs same color as body.
(3) Longitudinal red stripe abandoned, present only in bombs repainted from old stocks.
(4) No color bands around body of bombs.

Common features, OLD system:

(1) Nose tipped with a single identifying color.
(2) Tail struts of all bombs painted with identifying color.
(3) Red stripe along the length of the bomb, 90° from suspension lug.
(4) Blue or greenish-blue band around body of bomb distinguished 60 kg. and 250 kg. "land" bombs. This constituted the only known use of bands around the body of the bomb.

Fuzing

There is a separate group of fuzes designed to be used only in Navy bombs. (Refer Introduction to Japanese Fuzes, pg. 98). Generally G.P. and S.A.P. high explosive bombs under 250 kg. are fuzed only in the nose while larger bombs are fuzed in both the nose and tail. A.P. bombs are fuzed only in the tail.

JAPANESE NAVY BOMBS - continued.

Fuzing (cont'd)

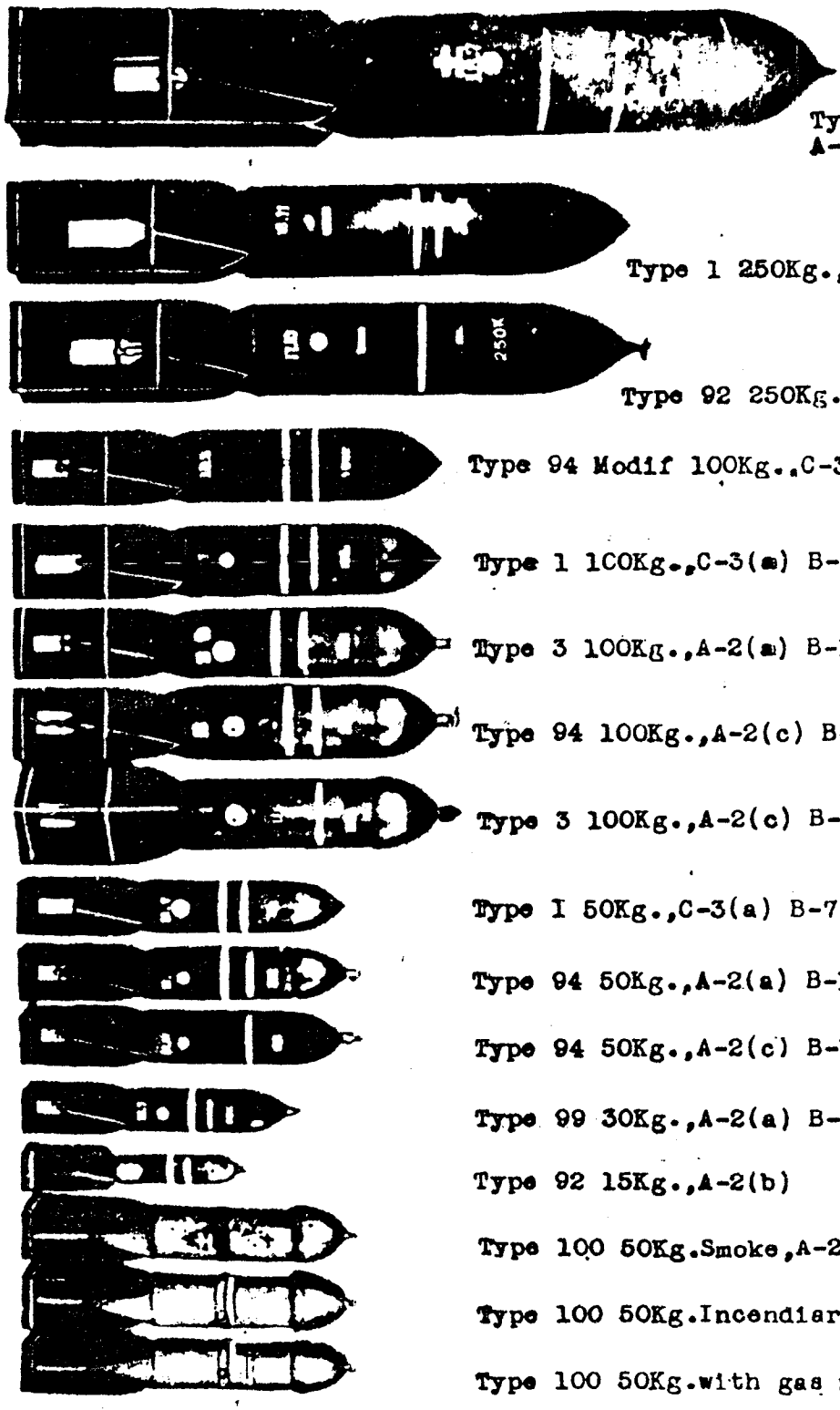
Incendiary bombs and smaller bombs are fuzed in the nose and/or the tail.

Filling

Navy type bombs are generally filled from the tail end. The explosive filling of G.P. bombs is either cast into the bomb case or else inserted in preformed blocks. The explosive is not wrapped in wax paper but the interior surfaces of the Navy bombs are lacquered.

S.A.P. and A.P. bombs have explosive filling in the body section only, the tail cone being empty. The explosive in these bombs may be wrapped in felt.

Incendiary bombs have an H.E. burster charge in the nose section, tail section, or in the exploder tube, with incendiary filling in the remaining sections.



Type 92 500Kg.
A-4(a),B-4(a)

Type 1 250Kg.,C-3(a) B-7(a)

Type 92 250Kg.,A-4(a) B-4(a)

Type 94 Modif 100Kg.,C-3(a) B-1(a)

Type 1 100Kg.,C-3(a) B-7(a)

Type 3 100Kg.,A-2(a) B-1(a)

Type 94 100Kg.,A-2(c) B-1(a)

Type 3 100Kg.,A-2(c) B-1(a)

Type I 50Kg.,C-3(a) B-7(a)

Type 94 50Kg.,A-2(a) B-1(a)

Type 94 50Kg.,A-2(c) B-1(a)

Type 99 30Kg.,A-2(a) B-1(a)

Type 92 15Kg.,A-2(b)

Type 100 50Kg.Smoke,A-2(b)

Type 100 50Kg.Incendiary,A-2(b)

Type 100 50Kg.with gas marking,A-2(b)

JAPANESE ARMY BOMBS

COLOR MARKINGS OF JAPANESE NAVY BOMBS

The following table is an extract from a captured Japanese document. This list of color markings is known to be in use by the Japanese Navy.

Kind of Bomb	Marking	Target
Ordinary bombs	Green Brown Gray Gray	(Large model (TN:OGATA 500 Kg. and over)) Bombing of capital ships (Medium Model (TN: CHUGATA 250-500 kg.)) Bombing of capital ships and carriers (Small Model (TN: SHOGATA 250 Kg. and under)) Other ships. Destruction of superstructure.
Land Bombs	Green Brown Gray Gray	Bombing of city buildings
Practice Bombs	Green Black White White	For use in training and practice.
Dummy Bombs	Green Black White White	Release tests and training
Training Bombs	Black	Training in installation, loading, and testing of release gear.
Special Bomb Mark 1	Green Yellow Gray Yellow	(Chemical Bomb) For special circumstances
Special Bomb Mark 2	Green Blue Gray Gray	Anti-sub bombing.
Special Bomb Mark 3	Green Silver Gray Red	Formations of planes. Planes exposed on ground
Special Bomb Mark 4	Green White Gray Red	(Rocket Bomb) Dive Bombing of capital ships
Special Bomb Mark 5	Green White Gray Gray	(Armor piercing bomb) Capital ships with heavy armor.
Special Bomb Mark 6	Green Red Gray Red	(Incendiary Bomb). Incendiary bombing of city buildings
Special Bomb Mark 7	Green Purple Gray Purple	(Bacillus Bomb) For special circumstances
Smoke Bomb	Green Black Gray Black	Concealment of our ships.

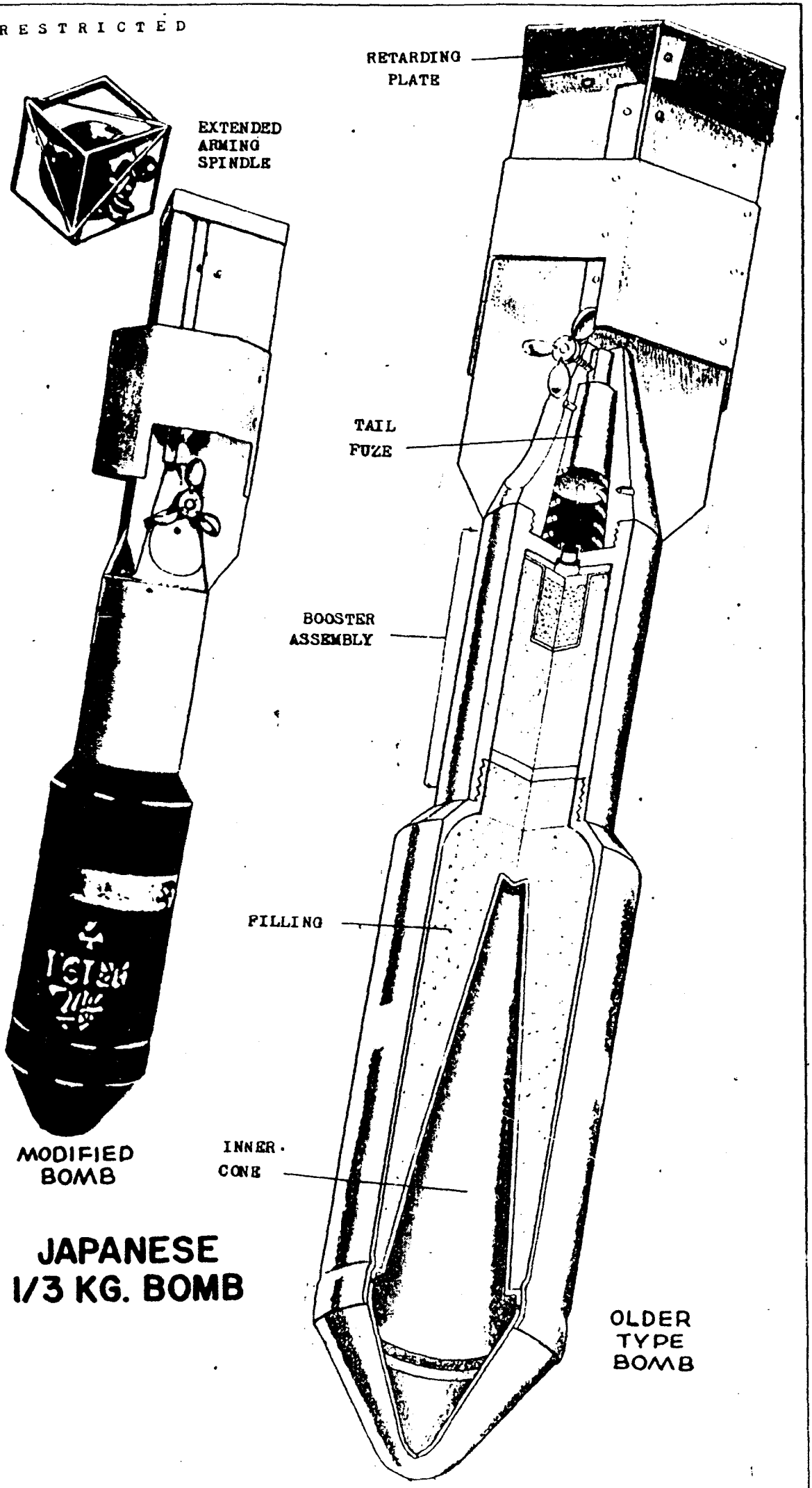
CONFIDENTIAL

JAPANESE HIGH EXPLOSIVE BOMBS

Our Designation	Japanese Designation
1 Kg. Smoke Explosive	*1 Kg. ~~Exercise~~ Prac. Bombs, Modification 3, ~~Smoke Explosive~~, ~~May 1941~~. ⊕ 一瓩習爆彈三改火塁爆薬 昭和0十六年五月
Army 15 Kg. Anti-Personnel	Type 92 15 Kg. Bomb 九二式十五瓩爆彈
Army Type 99 30 Kg. G.P.H.E.	Type 99 30 Kg. Bomb ⊕ 九九式三十瓩爆彈
Army Type 94 50 Kg. G.P.H.E.	Type 94 50 Kg. Bomb 九四式五十瓩爆彈
Navy 60 Kg. Type 96	Type [illegible] No. 6 ~~Land Bomb~~, Mark 23 Model 1 ⊕ 九六式六番陸用爆彈二三號
Navy 60 Kg. Type 97 G.P.H.E.	*Type 97 No. 6 Land ⊕ 九七式六番陸用爆彈
Navy 60 Kg. Anti-Submarine	*Type 99 No. 6 Mark 2 九九式六番二號
Navy 63 Kg. G.P. or S.A.P.	*Type 99 No. 6 Ordinary 九九式六番通常爆彈
Army Type 94 100 Kg. Bomb	*Type 94 100 Kg. Bomb 九四式百瓩爆彈
Army Type 1 100 Kg. Time Bomb	*Type 1 100 Kg. Bomb ⊕ 一式一〇〇瓩爆彈
Army Type 3 100 Kg. Bomb	*Type 3 100 Kg. Bomb ⊕ 三式一〇〇瓩爆彈
Army Type 92 250 Kg. Bomb	*Type 92 250 Kg. Bomb ⊕ 九二式二百五十瓩爆彈
Navy 250 Kg. S.A.P.	*Type 99 No. 25 Ordinary, Model 1 九九式二五番通常爆彈一型
250 Kg. G.P.H.E. Streamline	* No. 25 Ordinary, Model 2 二五番通常爆彈二型
Navy 300 Kg. Anti-Submarine	*Type 1 No. 25 Mk2. Model 1. 一式二五番二號一型
Army Type 92 500 Kg. Bomb	*Type 92 500 Kg. Bomb 九二式五百瓩爆彈
Navy 800 Kg. A.P.	*Type 99 No. 80 Mark 5 ⊕ 九九式八〇番五號爆彈
Navy 800 Kg. G.P.H.E.	No. 80 Ordinary Model 1, Mods 2, 3, 4. ⊕ 八〇番通常爆彈一型二三四改

* - These Japanese designations have been obtained from labels or characters on recovered bombs. The other Japanese designations were secured from various sources including captured Japanese documents.

⊕ - These Japanese characters were not copied directly. Only an English translation was received, and this retranslated to Japanese for identification purposes. As a result, there may be slight differences between the Japanese characters listed here and those on the original label. Other Japanese characters were copied directly from Japanese labels or documents.



JAPANESE 1/3 KG. BOMB

PUBLICATION DATE: July 1944 RESTRICTED

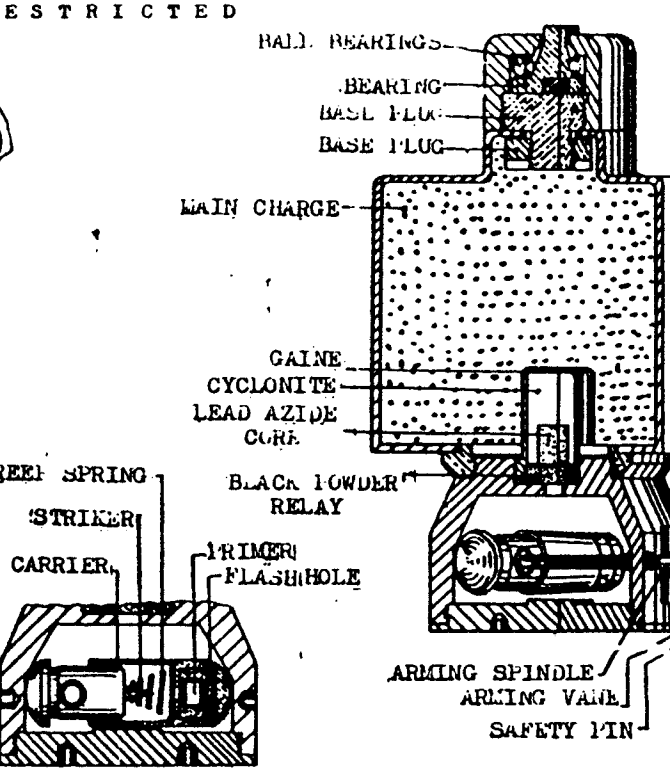
FUZES B-5(a)

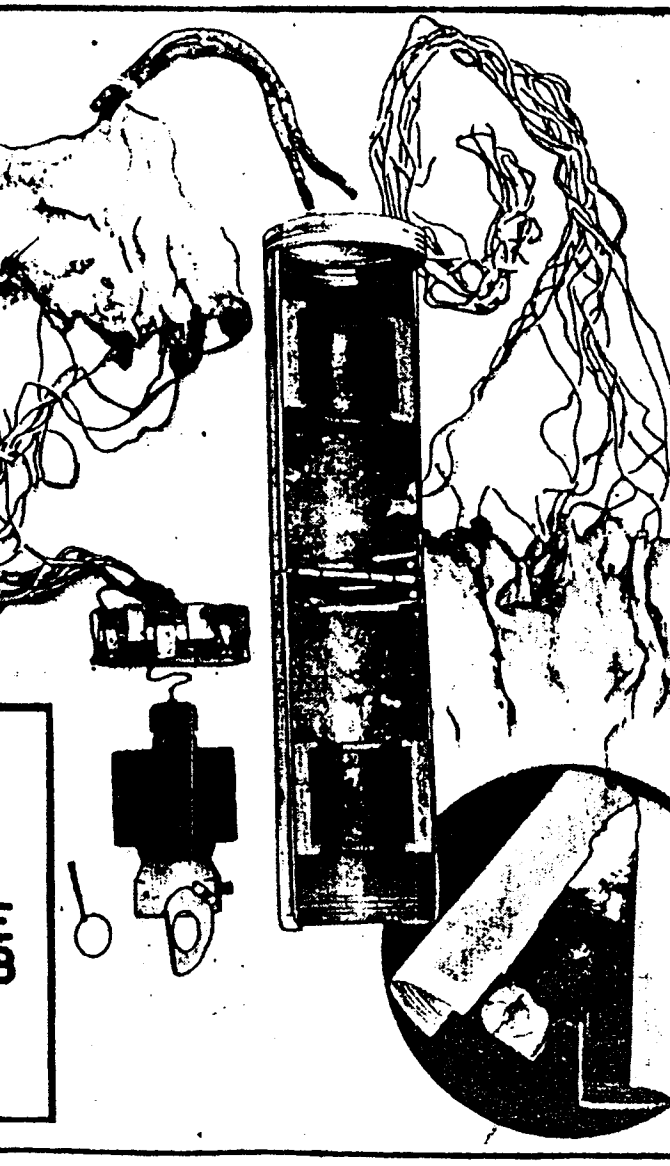
JAPANESE ARMY ~~NAVY~~ BOMB

1/3 KG.

Anti-Parked Aircraft

OVERALL LENGTH	10.25 in.
LENGTH OF BODY	4.60 in.
DIAMETER OF BODY	1.58 in.
THICKNESS OF WALL	0.03 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Carried in clusters of 30 or 76 in a black container.
CONSTRUCTION OF SUSPENSION LUG	
COLOR & MARKINGS ON BOMB AND TAIL	Body is black with yellow band around center. The tail extension and tail are grey.
LENGTH OF TAIL	6.0 in.
WIDTH OF TAIL	1.5 in.
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	Magnesium Alloy.
TYPE OF FILLING	T.N.T. with cyclonite booster.
WEIGHT OF FILLING	0.12 Kg.
TOTAL WEIGHT OF BOMB	0.33 Kg.
CHARGE/WEIGHT RATIO	0.32 %
CONSTRUCTION OF BODY	The body is crimped around the nose and screwed to a tail extension to which a fuze is screwed. The tail is held by screws to the fuze. An inner cone is found inside the body to give a "Monroe effect" on exploding. The booster assembly is found inside the tail extension.
CONSTRUCTION OF TAIL	Three tail fins are held on to fuze by screws. The fuze is screwed into the tail extension.
REMARKS	The body is that of a Japanese anti-tank rifle grenade. The container bursts in mid-air, scattering its bombs. This bomb can pierce high quality armor plate because of the "Monroe" principle of explosion. Modified Bomb. A container full of modified 1/3 Kg. bombs, manufactured in January and February of 1944, has been recovered. These bombs were filled with Japanese Army Mark 2 Explosive (TANOYAKU - 50% TNT - 50% cyclonite). A 5/16 inch layer of pure cyclonite poured in on top fills up the bomb body. Evidently in an effort to reduce UXB's the arming spindle of recent bombs was lengthened about 1/8 of an inch. The new length allows the cup shaped vanes to protrude further into the wind stream. The tail brake plate on the modified bombs has been omitted. A 3/16 inch strut at the extreme end of the fins has been substituted. A golden lacquered, thin, tinned steel has been substituted for the older type aluminum tail fins. The inner cone is about 80°. The older type bombs have a 30° cone.


BALL BEARINGS
BEARING
BASE PLUG
BASE PLUG
MAIN CHARGE
GAINE
CYCLONITE
LEAD AZIDE
CORE
BLACK POWDER
RELAY
REEL SPRING
STRIKER
CARRIER
PRIMER
FLASHHOLE
ARMING SPINDLE
ARMING VANE
SAFETY PIN



Publication Date: July 1944 RESTRICTED		JAPANESE ARMY PARACHUTE ANTI-AIRCRAFT BOLO BOMB
FUZES: Always acting fuze similar to the Italian "K" fuze.		
OVERALL LENGTH	4-13/32 in.	
DIAMETER OF BODY	2-1/2 in.	
THICKNESS OF WALL	3/32 in.	
COLOR & MARKINGS ON BOMB & TAIL	Black overall with red band around nose collar. 昭 (February 1943) (Symbol for place of filling) Stencilled in white at the middle of the body.	
TYPE OF FILLING	Mixture of cyclonite/TNT (40/60)	
WEIGHT OF FILLING	241 grams	
TOTAL WEIGHT OF BOMB	397 grams (without fuze)	
CHARGE/WEIGHT RATIO	60.7 %	

DESCRIPTION

The bomb assembly consists of a small bomb with fuze, a reel of cable, and two parachutes packed in a split can with a hinged bottom and a screw top. The bomb proper is a simple cylinder closed at both ends. The walls and base are made in one piece with a smaller extension drawn out from the base to take the base plug. The nose end is closed by a disc welded onto the walls and protruding threaded collar welded onto the disc. The base plug is a screw, threaded on two diameters. The smaller diameter is on the forward end and takes a keep ring which is threaded on from the inside of the bomb to hold the plug in. The larger diameter protrudes out of the base and takes the cable attachment. The nose collar is threaded to take the fuze. The bomb is filled from the nose.

The fuze, marked 昭十八 2 (February 1943) 東 (Tokyo) on the nose cap, is an all-ways action fuze similar to the Italian "K" fuze. It is screwed into the nose collar of the bomb.

The parachute assembly consists of the main parachute, attached to the auxiliary parachute, which is attached to the reel containing 164 feet of 1/16" diameter steel wire, which is connected to the cable attachment on top of the bomb.

The small auxiliary parachute is 13½" in diameter unfilled, and is attached to the top of the reel by nine 15 inch silk shrouds. There is no apparent reason for the location of this chute between the reel and the main chute.

The main parachute is 36½ inches in diameter unfilled. Thirteen silk shrouds, 37½" long, are attached to a cord leading out of the top of the auxiliary parachute by 8½" of double bungee cord.

OPERATION

It appears that this bomb is designed for air to air bombing. Prior to release, the container lid is unscrewed and the safety pin removed. It is probable that the entire can without the lid is discharged from the airplane. Air resistance would quickly eject the contents from the container.

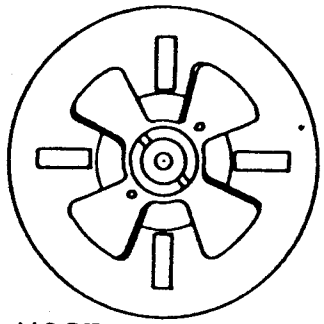
As soon as the bomb starts to fall through the air, the parachutes open, the cable partially unwinds, and the fuze arming vane rotates. The hinge attachment to the spindle permits the vane to flutter like a falling leaf, but the bent surfaces insure revolution of the vane in the same direction so that the spindle unscrews. Ten revolutions suffice to unscrew the spindle from the fuze body; the vane and spindle then fall away. The striker and primer are now free in the fuze body, held apart only by the creep spring.

When the plane strikes the cable, the bomb is either drawn up against the plane or whipped up, eventually hitting the plane. On impact with the plane, inertia causing the fuze parts to move in any direction except toward the nose of the fuze, will cause the striker and primer carrier to be driven together, firing the fuze, and detonating the bomb.

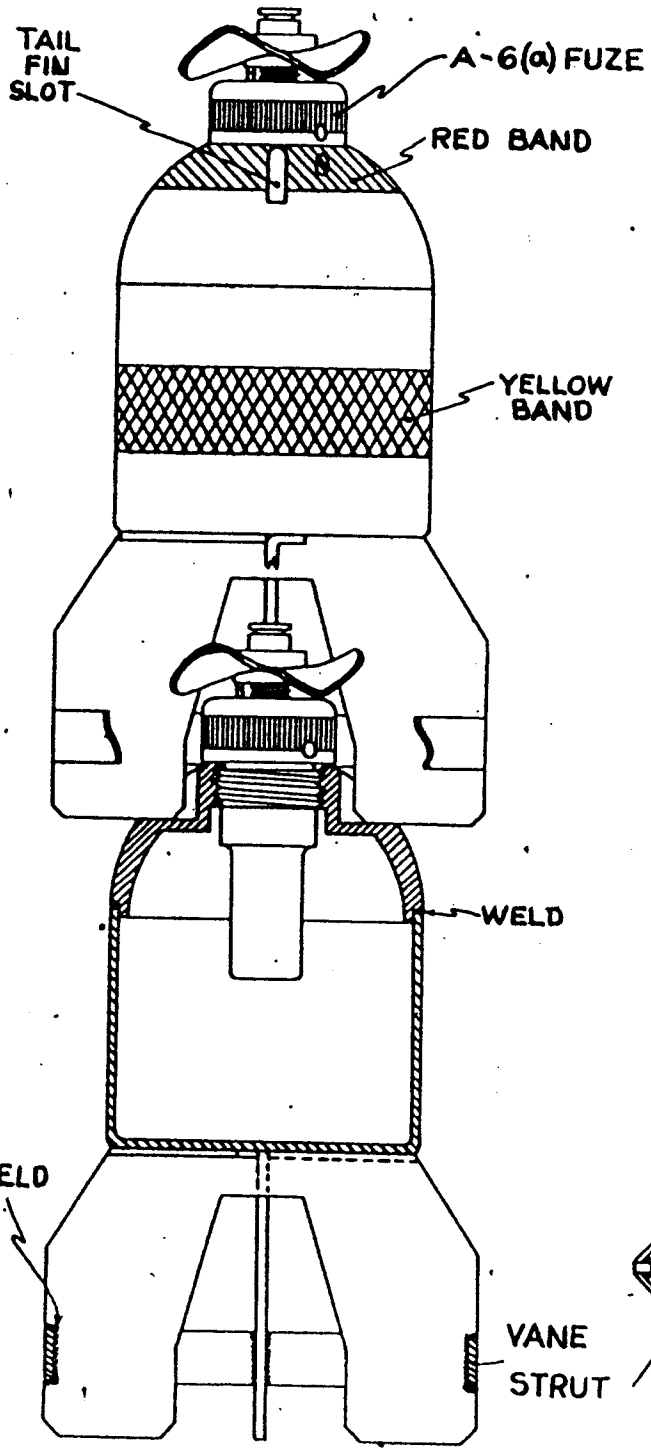
REMARKS

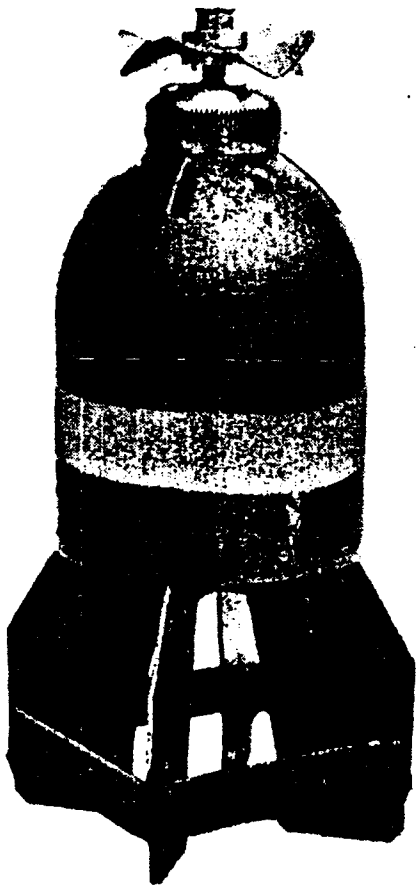
Since the fuze is designed not to fire when the bomb strikes on its nose, the bombs may not explode on impact with the ground(if it misses a plane). Since the creep spring is quite weak, a highly sensitive and dangerous UXB may be expected.

JAPANESE 1/2 KG. H.E. CLUSTER BOMB

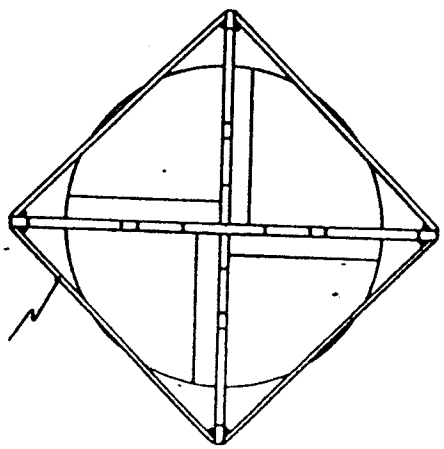


NOSE END VIEW





TAIL END VIEW



JAPANESE
ARMY BOMB

½ KG.

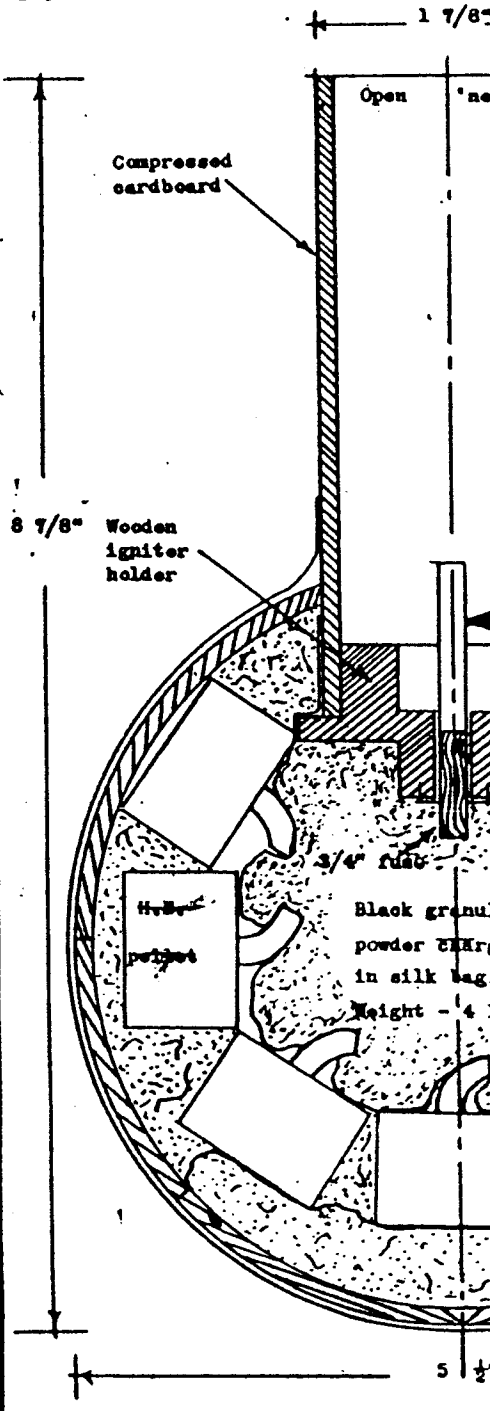
Cluster Bomb

PUBLICATION DATE: July 1944 RESTRICTED

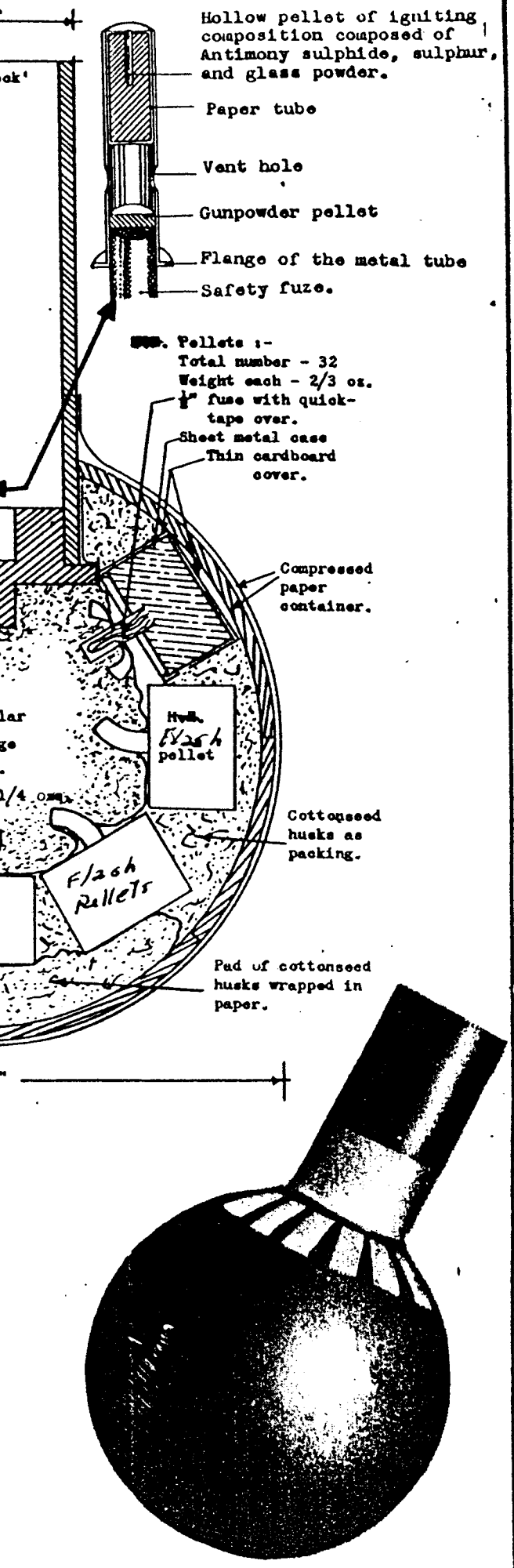
FUZES: A-6(a)

OVERALL LENGTH	4-3/4 in.
LENGTH OF BODY	2-3/4 in.
DIAMETER OF BODY	2-1/8 in.
THICKNESS OF WALL	3/64 in.
MATERIAL OF WALL	Drawn steel.
TYPE OF SUSPENSION	Cluster container
CONSTRUCTION OF SUSPENSION LUG	It is assumed that they are dropped from a cluster container.
COLOR & MARKINGS ON BOMB AND TAIL	Black overall with 9/16" yellow stripe 1/2" forward of base. Stamped: (Osaka Army Arsenal, November 1939) Has Red Band Around Nose.
LENGTH OF TAIL	2 in.
WIDTH OF TAIL	2-15/16 in.
WIDTH OF TAIL FINS	1.1 in.
DIMENSIONS OF TAIL STRUTS	Width, .39"; Length, 2.15"; Thickness, .05"
MATERIAL OF TAIL	Sheet steel
TYPE OF FILLING	A RDX/~~TNT~~ mixture originally. Filled with sand when found
WEIGHT OF FILLING	~~Unknown~~. (~~Believed to be about 7 oz.~~) 0.20 kg.
TOTAL WEIGHT OF BOMB	~~16 oz~~. (~~estimated~~) 0.41 kg
CHARGE/WEIGHT RATIO	56% (approximately)
CONSTRUCTION OF BODY	Drawn steel cup body with cast steel nose welded on.
CONSTRUCTION OF TAIL	Four fins spot welded to the base of the body. Fins supported by 3/8" steel struts.
REMARKS	A distinguishing feature of these bombs is the contruction which permits fitting the nose of one bomb into the tail of another. This union of the nose and tail serves two purposes: (1) It prevents the fuze vanes from rotating; (2) It decreases the length of the space needed to contain two fuzed bombs by 1". Although the bombs were not found in cluster containers, this feature of their construction is a strong indication that they are intended to be dropped in clusters. All samples recovered were contained in sealed boxed.

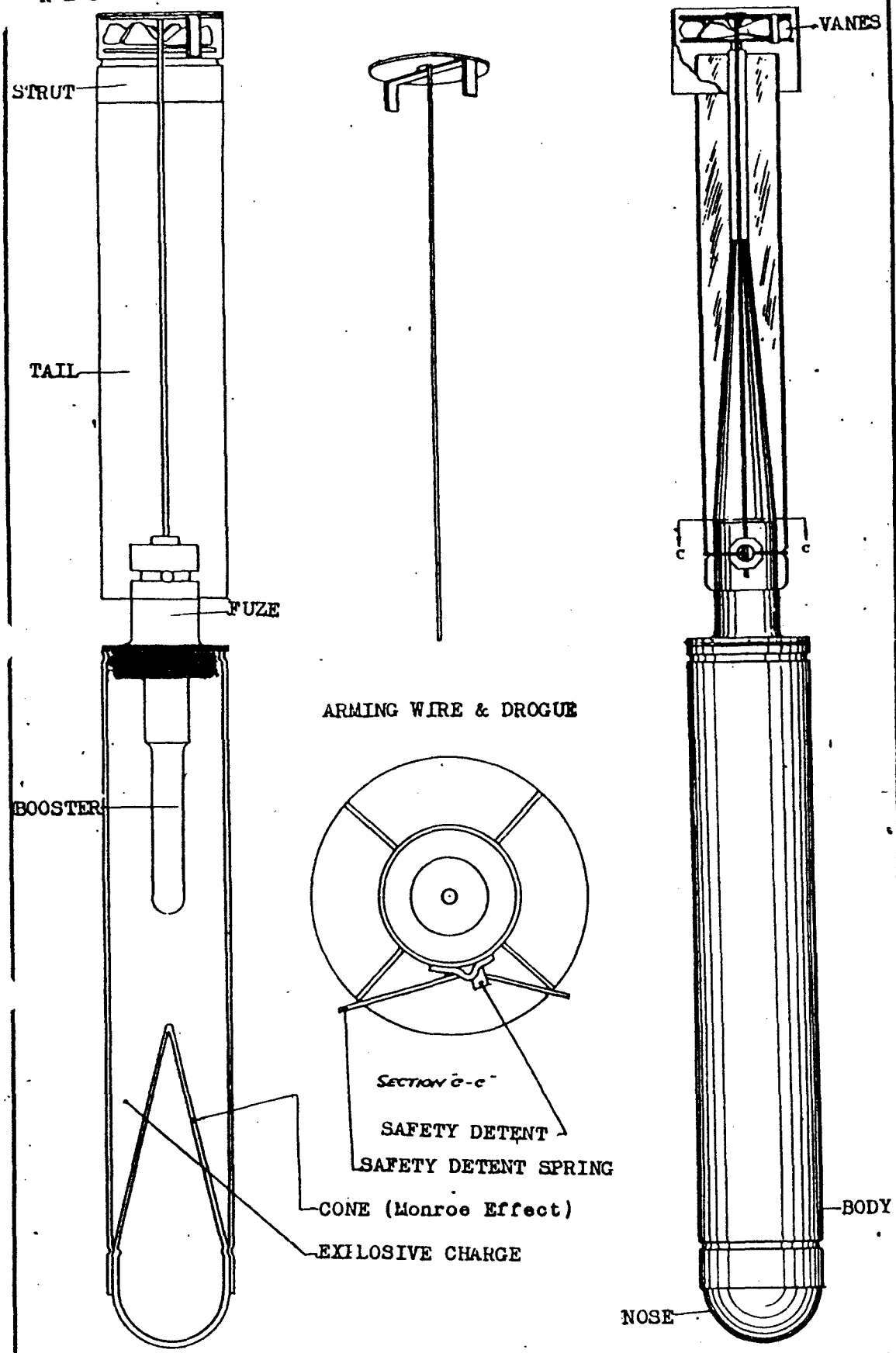
CONFIDENTIAL



JAPANESE ANTI-AIRCRAFT MISSILE


Hollow pellet of igniting composition composed of Antimony sulphide, sulphur, and glass powder.
Paper tube
Vent hole
Gunpowder pellet
Flange of the metal tube
Safety fuze.
Pellets :-
Total number - 32
Weight each - 2/3 oz.
fuse with quick-tape over.
Sheet metal case
Thin cardboard cover.
Compressed paper container.
Flash pellet
Cottonseed husks as packing.
Flash Pellets
Pad of cottonseed husks wrapped in paper.

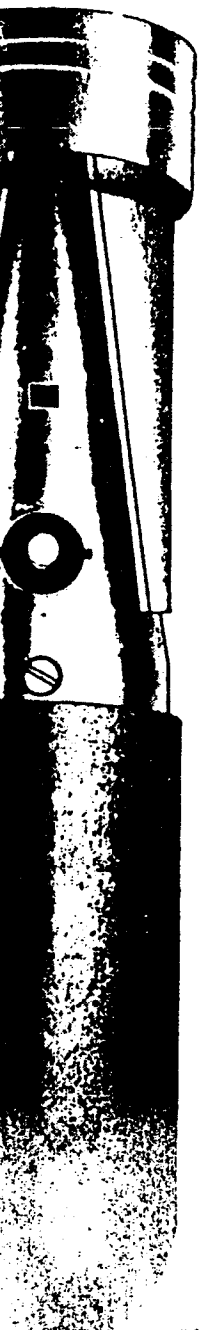
PUBLICATION DATE: July 1944 CONFIDENTIAL		JAPANESE 1 KG. Anti-Aircraft Missile
FUZES:		
OVERALL LENGTH	8.9 in. (incl. tube)	
LENGTH OF BODY	5.6 in. (spherical)	
DIAMETER OF BODY	5.5 in. (spherical)	
THICKNESS OF WALL	0.1 in.	
MATERIAL OF WALL	Compressed paper.	
TYPE OF SUSPENSION	No lug (See Remarks)	
COLOR & MARKINGS ON BOMB & TAIL	Black (probably a water proofing liquid)	
TYPE OF FILLING	Burster charge consists of black granular powder contained in a silk bag. Surrounding the burster charge are 32 high explosive pellets, each pellet having a 1/2 inch fuze in contact with the silk bag containing the black powder. Cottonseed husks are used as padding.	
WEIGHT OF FILLING	Burster Charge: 4-1/2 ozs. [redacted]. pellets (each): 2/3 ozs. FLASH.	
TOTAL WEIGHT OF MISSILE	36-1/2 ozs.	
CONSTRUCTION OF BODY	Spherical body is constructed of three portions of compressed paper. One part is hemispherical and has a compressed cardboard tube; the other hemisphere is in two parts for purpose of assembly. Successive layers of paper total thickness 1/16 inch, overlay the three portions, being pasted on after the body is filled. A wooden plug, which holds the igniter, is fitted to the base of the tubular neck.	
OPERATION	The friction pull igniter is operated as missile is projected from aircraft. After a short delay the black powder charge is ignited which bursts the container and scatters the H.E. pellets. At the same time the black powder bursts the container, it also ignites the short fuzes which project from each pellet. After a short delay, the pellets are detonated.	
REMARKS	(1) ~~The missile is thought to be projected from the plane~~ [illegible] A specimen complete with pull ring and pull cord has been recovered. From examination of this specimen it is thought that the missile is thrown by hand from the plane. The pull cord is pulled by hand as the missile is thrown over the side.	
	(2) The igniter tube is similar to the igniter tube previously found in the Japanese stick type hand grenade. (3) H.E. pellets are contained in sheet metal case, 1-1/8 inches in diameter and 13/16 inch high. A 1/2 inch fuze, with short length of ordinary paper impregnated with black powder attached to aid in lighting the fuze, projects from each pellet. There is a thin cardboard disc around each pellet, with a disc at the bottom. (4) The [redacted]. pellets are made up as follows: 55.7% Potassium ~~Perchlorate~~ NITRATE, 16.7% Sulphur, 14.6% Aluminum Powder, and 13.0% Antimony Sulphide. (5) Missile was recovered from a crashed aircraft in India (6) According to the analysis report, the composition of the H.E. pellet contains traces of resinous matter and appears to be an illuminating composition. However, the above mixture approximates gunpowder and several of the pellets were ignited with resultant loud reports, rather reminiscent of a normal low explosive.	

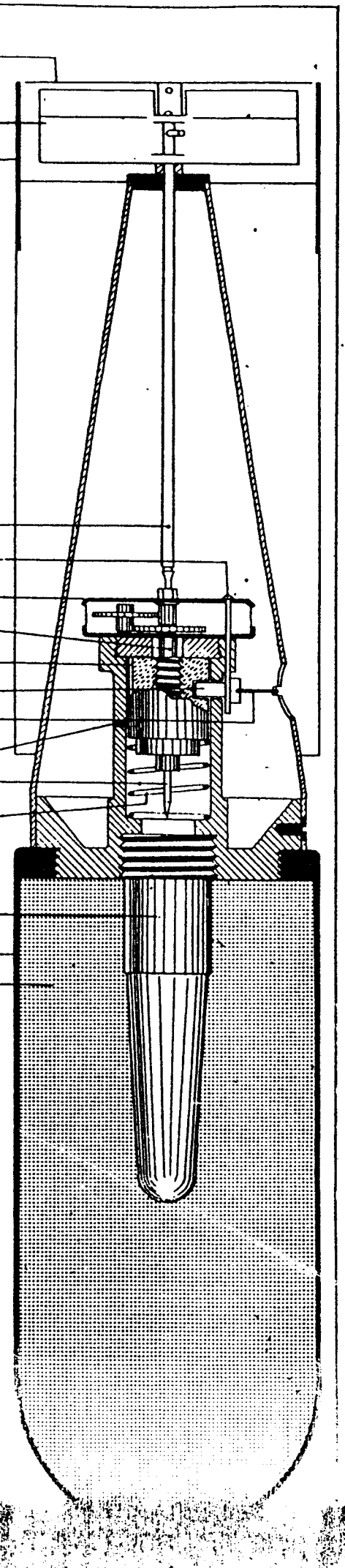


JAPANESE 1 KG. ANTI-AIRCRAFT BOMB

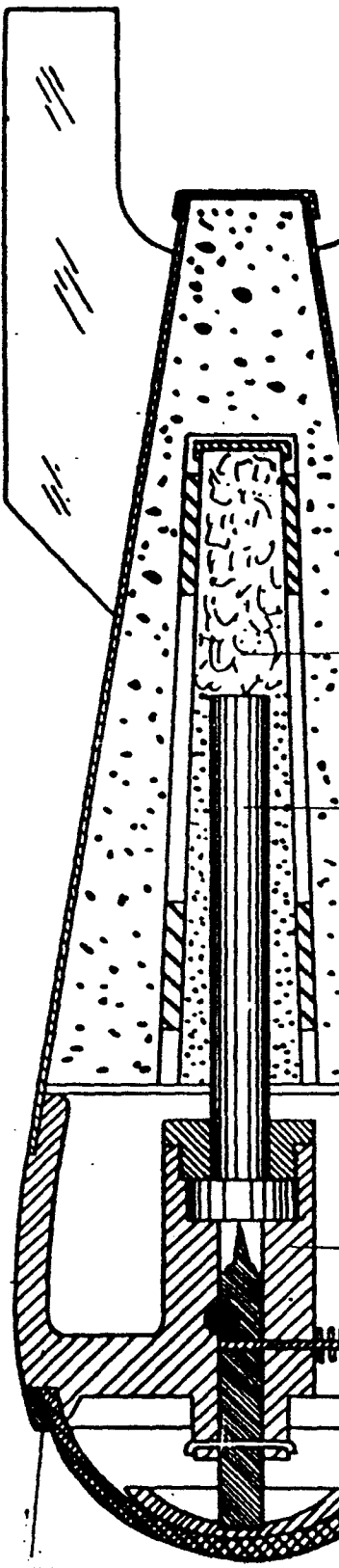
PUBLICATION DATE: May 1945 RESTRICTED	JAPANESE NAVY BOMB 1 KG. Anti-Aircraft
FUZES B-5(b)	
OVERALL LENGTH	18.7 in.
LENGTH OF BODY	8.4 in.
DIAMETER OF BODY	1.8 in.
THICKNESS OF WALL	.07 in.
MATERIAL OF WALL	Steel.
TYPE OF SUSPENSION	Carried - 40 in container which is fuzed with a D-4(a)
CONSTRUCTION OF SUSPENSION LUG	
COLOR & MARKINGS ON BOMB AND TAIL	Unpainted - Purple stencil on tail fin indicates Navy.
LENGTH OF TAIL	8.4 in. (includes fuze)
WIDTH OF TAIL	1.85 in.
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	Light sheet tin
TYPE OF FILLING	Type 98 (TNA-70%, HND-30%). Tetryl booster.
WEIGHT OF FILLING	313.5 grams.
TOTAL WEIGHT OF BOMB	1.0012 Kg. (exclusive of nose piece.) Wt. of tail Assembly: 287.7 gr.; Wt. of body: 410.0 gr.
CHARGE/WEIGHT RATIO	31 %
CONSTRUCTION OF BODY	Body is of unpainted sheet steel welded in a tubular shape. Forward end contains a black steel cone and an aluminum nose cap pressed in and held by crimping of main body. Fuze assembly screws into base of bomb body.
CONSTRUCTION OF TAIL	Four fins, each soldered on tail cone; circular sheet tin brace 1-1/8 inches in width lends strength and protects vanes from damage. Tail is secured to fuze body by four small screws. The arming system consists of the arming vanes and threaded reach rod which screws through the upper end of the fuze body and into the inertia weight; a safety detent or jump out pin inserted through the side of the tail cone and fuze body into the inertia weight; a spring wire on outside of tail cone which ejects the safety detent in arming; and an arming wire which locks the safety detent in place against the pressure of the spring wire and also extends through the arming vanes to prevent their rotation. A thin metal disc, attached to arming wire and lying over arming vanes inside circular tail brace, acts as a drogue to withdraw the arming wire.
OPERATION	When bomb is released from canister, pressure of air on the drogue forces it from bomb and withdraws arming wire. The safety detent spring then ejects the safety detent from side of fuze. The vanes rotate and unscrew reach rod from inertia weight, the weight then being free to move forward and drive striker into primer on impact.
REMARKS	May be carried in other containers such as the "Molatov Breadbasket".

JAPANESE NAVY 1 KG. A/P BOMB

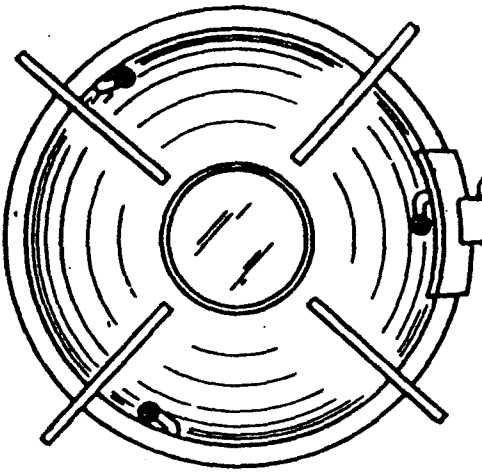




PUBLICATION DATE: May 1945 RESTRICTED	**JAPANESE NAVY BOMB**
FUZES: B-5(c)	**1KG.**
OVERALL LENGTH	11-3/8 in.
LENGTH OF BODY	5-1/2 in.
DIAMETER OF BODY	2-3/8 in.
THICKNESS OF WALL	1/32 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Carried 36 in a container which is fuzed with a D-4(a
	ANTI-PERSONNEL
CONSTRUCTION OF SUSPENSION LUG	None
COLOR & MARKINGS ON BOMB AND TAIL	Bomb body may be steel gray or black. Tail assembly and fuze are aluminum colored.
LENGTH OF TAIL	5-7/8 in.
WIDTH OF TAIL	2-3/8 in.
WIDTH OF TAIL FINS	Approximately 1 in. at the widest point
DIMENSIONS OF TAIL STRUTS	Diameter - 2-3/8 in. Length - 1-3/8 in.
MATERIAL OF TAIL	Light tinned steel
TYPE OF FILLING	Type 97 (T.N.T. 60%; H.N.D. 40%)
WEIGHT OF FILLING	1 lb. 1 oz.
TOTAL WEIGHT OF BOMB	2 lb. 3 oz.
CHARGE/WEIGHT RATIO	50 %
CONSTRUCTION OF BODY	The body is of one piece light steel construction. It is cylindrical in shape, rounded at the nose and threaded in the base to receive the fuze assembly. The inside of the body is coated with lacquer.
CONSTRUCTION OF TAIL	The tail assembly is made of light tinned steel and is secured to the fuze body by four screws. Four fins spaced 90° apart are soldered to the tail cone and are braced by a ring strut at the after end. An arming spindle extends from the fuze up through the tail cone and has vanes attached at the end. A drogue holds the vanes in a safe position.
OPERATION	When the bomb falls free from the container, the drogue retaining the vanes is carried away by the wind, allowing the vanes to rotate. The motion of the vanes is transmitted through the reduction gear system to the spindle which is threaded out of the striker. To prevent rotation of the striker, a key and keyway system is incorporated in the fuze body and striker. As the spindle rises, it also lifts the gear frame to which is secured a pin retaining the safety detent. The safety detent, which fits through the fuze body into the striker and holds it in position, is spring loaded outward, and removal of the safety detent pin permits it to fly out. With the spindle and detent removed, the heavy striker is held up only by a weak creep spring, which it overcomes on impact, initiating the gaine.



PR



TAIL FIN
WADDING
TAIL
RED PHOSPHOROUS

PLAN VIEW FROM T

BOOSTER

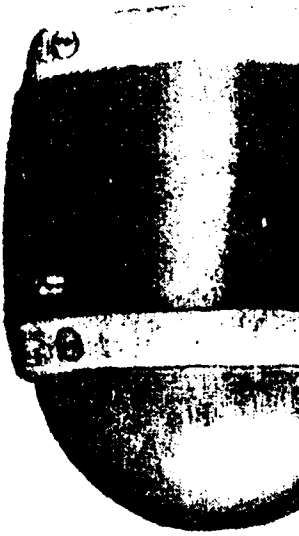
SUSPENSION LUG

BODY

FUSE

SAFETY PLUNGER

NOSE (RUBBER)



EXTERIOR VI
OF FUZE BO

JAPANESE

1 KG.

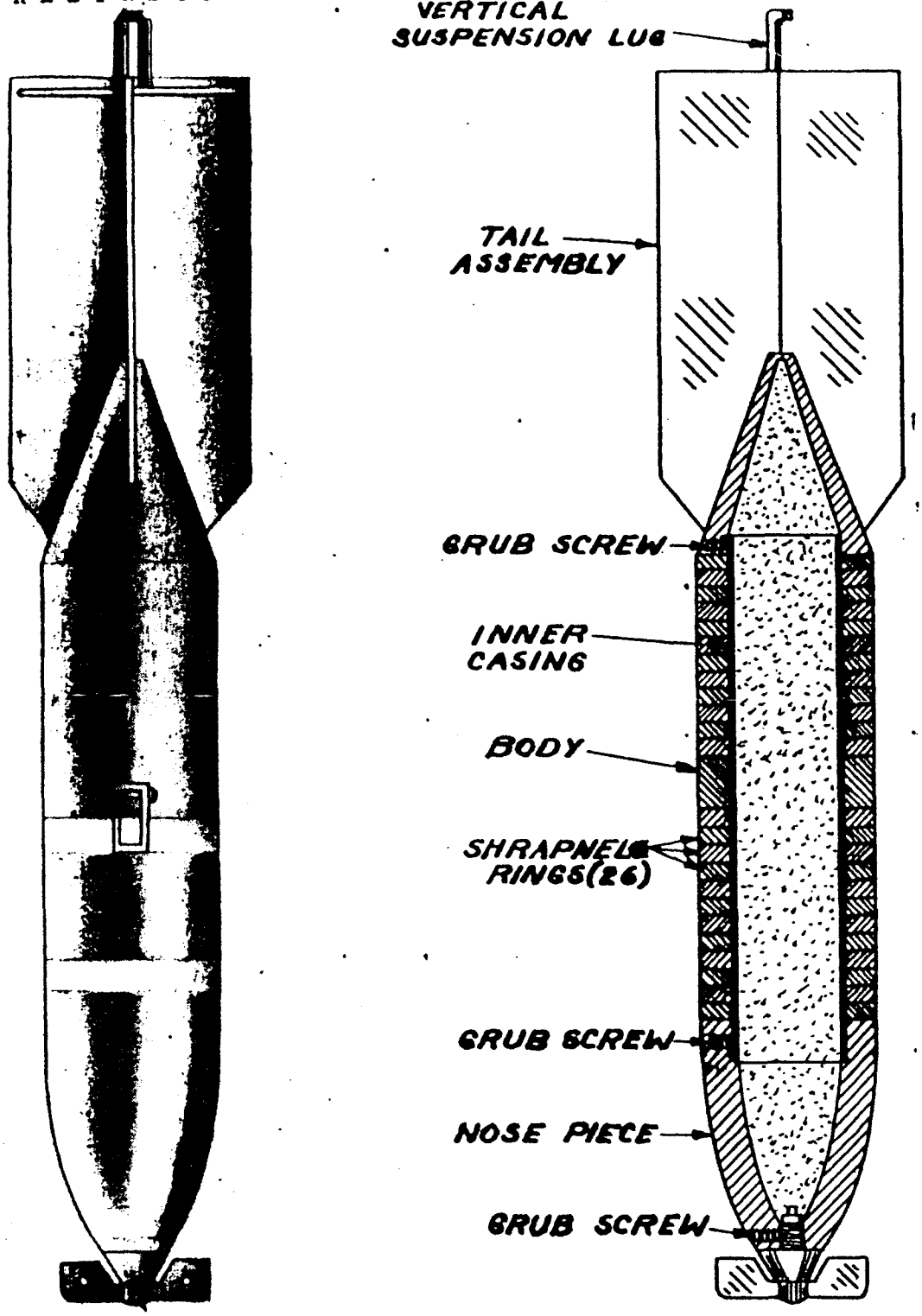
ACTICE BOMB

PUBLICATION DATE: July 1944 CONFIDENTIAL	**JAPANESE NAVY BOMB**
FUZES A-5(a)	**1 KG.**
OVERALL LENGTH	10.5 in.
LENGTH OF BODY	9.0 in. Nose to end of tail cone.
DIAMETER OF BODY	3.0 in.
THICKNESS OF WALL	0.25 in.
MATERIAL OF WALL	Steel.
TYPE OF SUSPENSION	Horizontal
CONSTRUCTION OF SUSPENSION LUG	A rectangular steel swivel eye-hook on a plate riveted to body with four rivets.
COLOR & MARKINGS ON BOMB AND TAIL	White rubber nose, black body, white tail cone and fins. Brass band just aft of rubber nose.
LENGTH OF TAIL	4.3 in.
WIDTH OF TAIL	3.1 in.
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	Sheet metal
TYPE OF FILLING	Picric booster; red phosphorus is the main charge with a smoke-incendiary effect.
WEIGHT OF FILLING	
TOTAL WEIGHT OF BOMB	1 Kg.
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	A hemispherical rubber nose closes the forward end of the one-piece, cast iron body to which the tail cone and its fins are attached by four screws. A mushroom-head fuze is fitted inside the nose and a booster filled with picric acid, and some cotton wadding are contained in a central tube which is surrounded by red phosphorus filling. A safety pin is pulled out when the bomb is released. A safety plunger is depressed while the bomb is in the container.
CONSTRUCTION OF TAIL	Four fins are welded to a sheet metal tail cone which is fastened to the body with four screws.
REMARKS.	~~This bomb is dropped over land targets before an H.E.~~ bombing attack. ~~The~~ smoke and fires enable the bombers to identify the targets. ~~The~~ shrapnel from the body on ~~exploding is dangerous to personnel~~

PRACTICE

(1 Kg. Exercise, Modification 1 Smoke Powder)

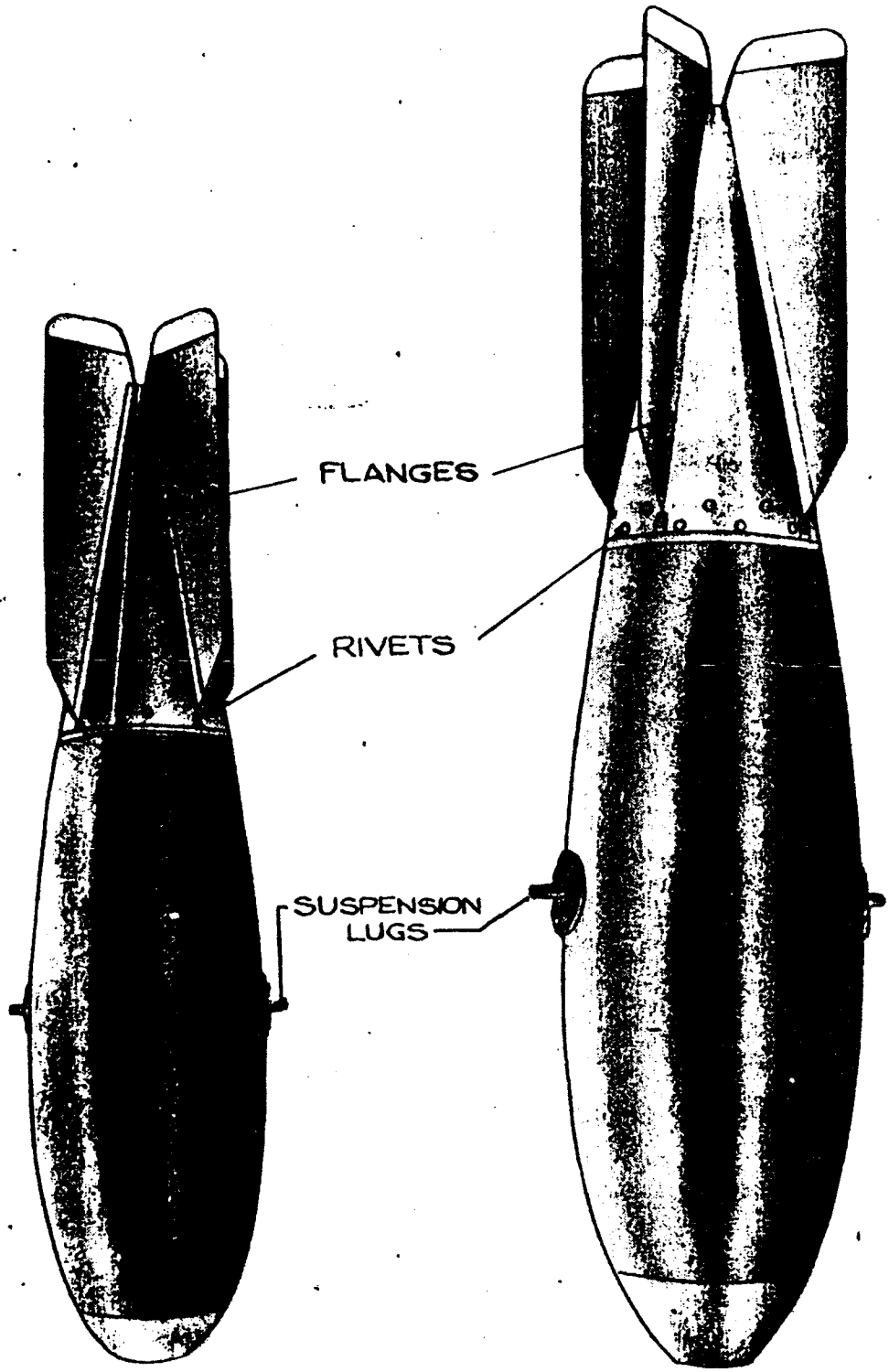
604101 O - 44 - 3



TYPE 92

JAPANESE
15 KG. ANTI-PERSONNEL H.E. BOMB

PUBLICATION DATE : July 1944 RESTRICTED		JAPANESE ARMY BOMB
FUZES A-2(b)		15 KG. TYPE 92 Anti-Personnel H.E.
OVERALL LENGTH	26.37 in.	
LENGTH OF BODY	14.6 in.	
DIAMETER OF BODY	3.87 in.	
THICKNESS OF WALL	0.53 in.	
MATERIAL OF WALL	Steel rings. (26)	
TYPE OF SUSPENSION	Vertical or Horizontal (Army type).	
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug. Rectangular steel swivel eye-hook on a plate riveted to body with four rivets. A similar steel swivel lug is fastened to end of tail fins.	
COLOR & MARKINGS ON BOMB AND TAIL	Army Code: Black nose, body and tail with red banded nose. 3/4 inch white band and ~~orange~~ band forwarded of suspension lug. (If faded, may be white and yellow.) "15 K" stencilled near nose. * YELLOW	
LENGTH OF TAIL	11.0 in.	
WIDTH OF TAIL	5.5 in.	
WIDTH OF TAIL FINS	2 3/4 in.	
DIMENSIONS OF TAIL STRUTS	WIDTH 5/16 IN.	
MATERIAL OF TAIL	1/16 inch Sheet Iron.	
TYPE OF FILLING	Army style: 3 sections (nose,body,tail) of lyddite (cast picric acid) separated by waxed cardboard.	
WEIGHT OF FILLING	4.4 Kg.	
TOTAL WEIGHT OF BOMB	15.0 Kg.	
CHARGE/WEIGHT RATIO	30.0 %	
CONSTRUCTION OF BODY	Army Construction: Cast steel nose screwed to steel tubular body and secured by grub-screw . Twenty-six steel rings sweated around body. Rings are 3/8 inches square. Suspension lug ring is 1-3/8 by 3/8 inches. Tail cone screwed to body sleeve. Rings fit closely. Can be seen only if paint is scraped off. Nose fuze secured by grub-screw.	
CONSTRUCTION OF TAIL	Four Army fins welded to cone. Cone screwed to body sleeve. Single row of struts. Second suspension lug secured at end of fins.	
REMARKS	Army Bomb: Dual purpose - anti-personnel and H.E. fuze held by grub-screw. No tail fuze fitted to date. Common usage. ~~Fuze Instruction and location assembly.~~ SOME BOMBS HAVE BEEN RECOVERED WITH A FILLING OF TNT.	



JAPANESE STREAMLINE G.P. H.E. BOMBS

RESTRICTED

PUBLICATION DATE: July 1944

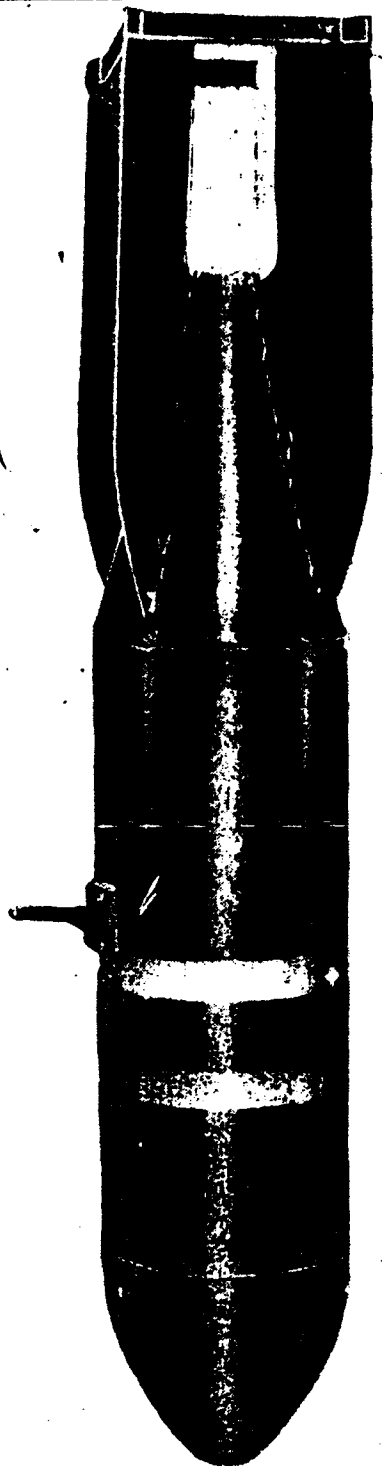
FUZES: 32 Kg.) - A-1(a), A-3(a) or A-3(b) probably.
63 Kg.)

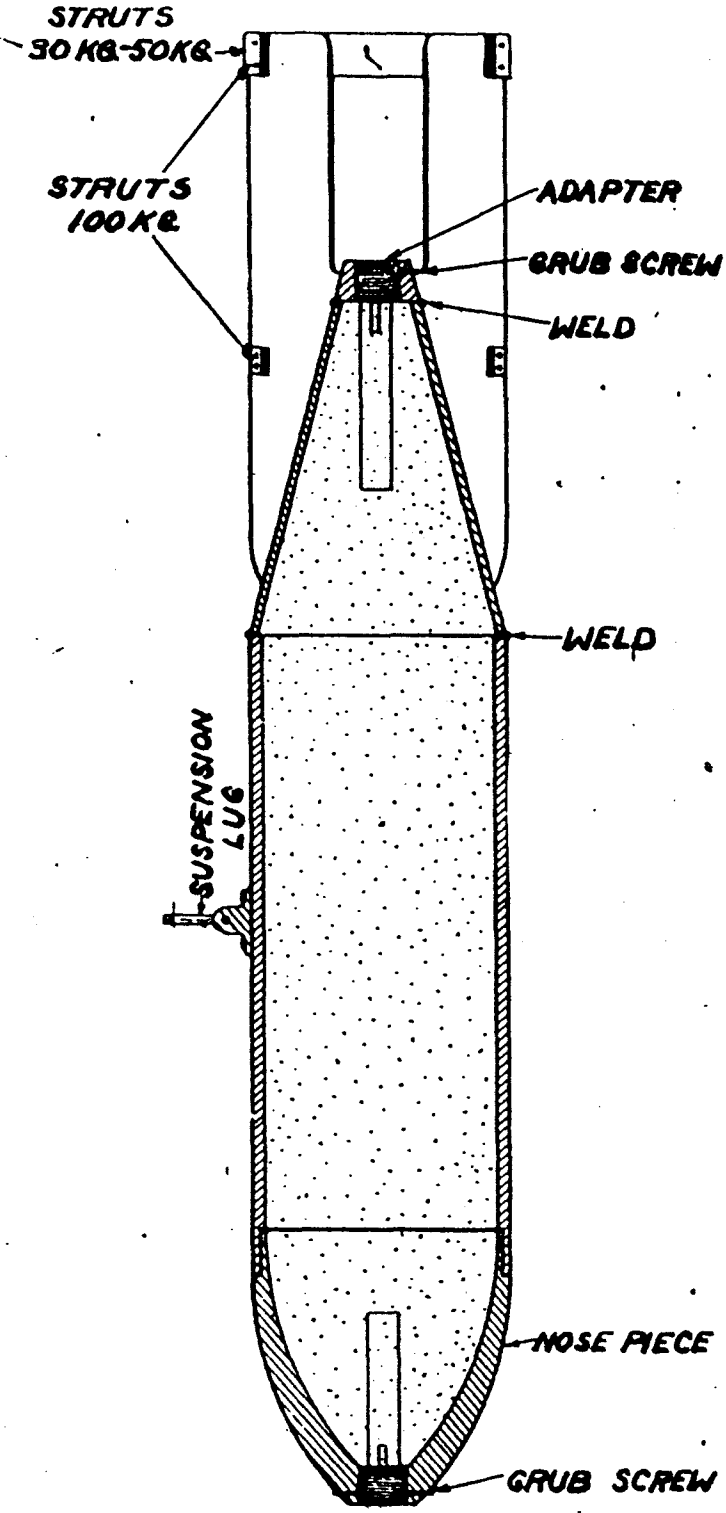
JAPANESE NAVY BOMBS

32 KG.
63 KG.

G.P.H.E.
Streamline

	32 Kg.	63 Kg.
OVERALL LENGTH	33 in.	42.5 in.
LENGTH OF BODY	19.75 in.	25.5 in.
DIAMETER OF BODY	7-9/16 in.	9 in.
THICKNESS OF WALL	0.25 in. (approx.)	
MATERIAL OF WALL	Steel	Steel
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Two U-shaped eyebolts 180° removed welded to circular plates which are riveted to bomb body.	
COLOR & MARKINGS ON BOMB AND TAIL	32 Kg.- Body dark green. Tail blue-grey with thin red stripe running the length of the cone. 63 Kg.- Light grey overall with two thin red lines diametrically opposite running the length of body and tail cone. Both bombs have green band on nose and on tip of tail fins.	
MATERIAL OF TAIL	Sheet Steel	
TYPE OF FILLING		Picric Acid
WEIGHT OF FILLING		65.75 lbs.
TOTAL WEIGHT OF BOMB	32 Kg.	139 lbs.
CHARGE/WEIGHT RATIO		47 %
CONSTRUCTION OF BODY	One piece machined steel body of streamlined shape with lacquered interior. A male base plate threads into the body and is held by two grub screws.	
CONSTRUCTION OF TAIL	The tail cone consists of four sheet metal sections riveted to an internally threaded ring. The edge of each section has a flange which turns up. The fins are secured between flanges of adjoining sections by spot welds. There are no fin struts. The tail cone ring threads to the base plate and is secured by two grub screws.	
REMARKS	Closely resembles British bombs in its streamlining. THESE BOMBS CONTAIN NO EXPLOSIVES IN TAIL CONE.	





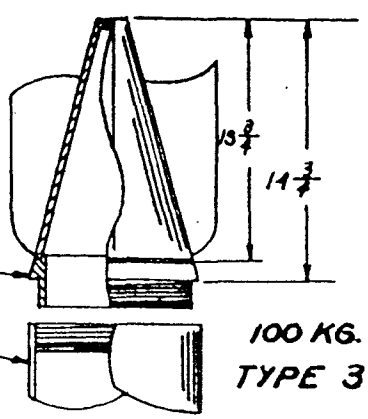
JAPANESE

30 KG. TYPE 99

50 KG. TYPE 94

100 KG. TYPE 94 & 93

G.P H.E. BOMBS



CONFIDENTIAL

PUBLICATION DATE: July 1944 CONFIDENTIAL

FUZES: Nose: A-2(a) or A-2(b) or A-2(c)
Tail: B-1(a), or B-1(b)

JAPANESE ARMY BOMB

30 KG. TYPE 99

50 KG. TYPE 94

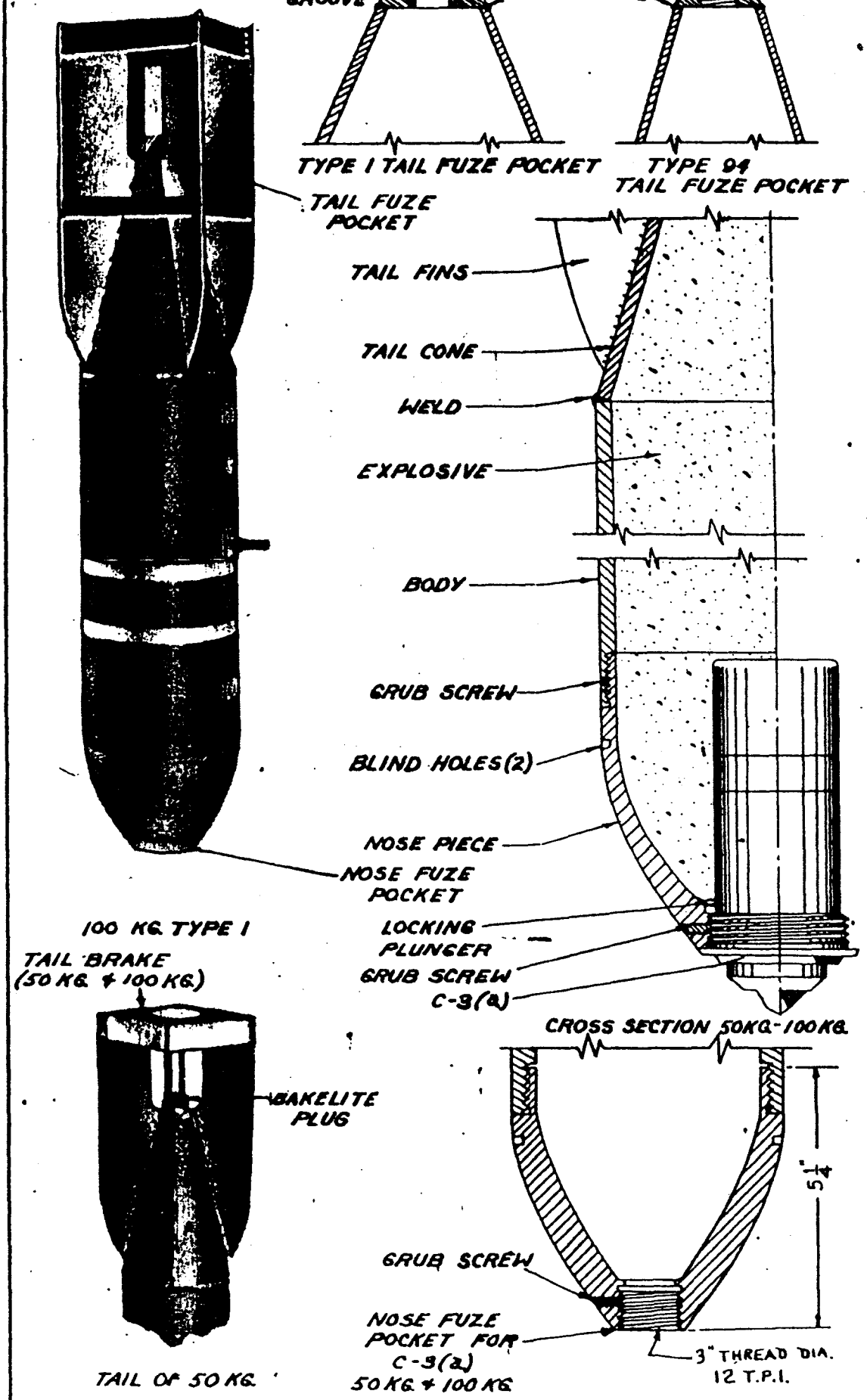
100 KG. TYPE 94 TYPE 3

G.P.H.E.

	30 Kg.	50 Kg.	100 Kg.
OVERALL LENGTH	33.25 in.	41.0 in.	53.0 in.
LENGTH OF BODY	19.7 in.	24.4 in.	31.25 in.
DIAMETER OF BODY	5.87 in.	7.1 in.	9.5 in.
THICKNESS OF WALL	0.29 in.	0.27 in.	0.4 in.
MATERIAL OF WALL	Tubular Steel		
TYPE OF SUSPENSION	Horizontal (army type)		
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug		
COLOR & MARKINGS ON BOMB AND TAIL	Army code: Black nose, body and tail. One yellow and one white band (7/8 in.) are forward of suspension lug. "30 K", "60 K", or "100 K" stencilled near nose. A red band may be stencilled on the nose. 100 Kg. type 3, may have only one band, yellow.		
LENGTH OF TAIL	13.8 in.	16.6 in.	21.75 in.
WIDTH OF TAIL	8.25 in.sq	9.5 in.sq.	9.75 in.sq.
MATERIAL OF TAIL	Steel	Steel	Steel
TYPE OF FILLING	30 Kg.: Three pre-formed blocks of cyclonite, 48.5%/T.N.T, 51.5%. 50 Kg.: Three pre-formed blocks of picric acid, or a cast filling of Ammonium nitrate, 77.5%/Cyclonite, 22.6%. 100 Kg., Type 3: Five pre-formed blocks of picric acid sealed in place with TNT instead of paraffin. 100 Kg., Type 94: Several variations of filling: (a) Four pre-formed blocks of picric acid. (b) Four pre-formed blocks of picric acid, 77.8%/TNT, 22.2%. This bomb is marked: 茶 黄 (c) Cast filling of Ammonium nitrate, 77.6%/Cyclonite, 22.4%. This bomb is marked: 牛土		
WEIGHT OF FILLING			
TOTAL WEIGHT OF BOMB			
CHG/WEIGHT RATIO	39 %	40 %	42.44 %
CONSTRUCTION OF BODY	Army construction: A steel nose is screwed to body and fastened by ~~screw~~ two grub screws. Tail cone is welded to body. A fuze adapter is welded to apex of tail cone. The nose fuze is held by one or two grub screws. The 100 Kg. bomb, Type 3, differs from this description in that the nose is welded to the body and the tail cone is externally threaded to screw into the bomb body. This bomb is similar to the 100 Kg. Type 94 otherwise.		
CONSTRUCTION OF TAIL	Four army fins, one spot welded to cone. Fins braced by single row of box-type struts on 30 Kg. and 50 Kg. and by a double row on 100 Kg. Grub screws for tail fuse.		
REMARKS	The 30 Kg. is Type 99. The 50 Kg. is Type 94, and the 100 Kg. is Type 94 and Type 3.		

DIMENSIONS OF TAIL STRUTS	50 Kg. - L 6-7/8"; W 1-9/16"; T 3/32" 100 Kg.- TYPE 94) inner struts L 9-7/16"; W 1-3/16" T 3/32" TYPE 3) outer struts L 9-7/16"; W 1-9/16" T 3/32"
WIDTH OF TAIL FINS	50 kg. - 3-1/2" 100 Kg.- 5-7/16"

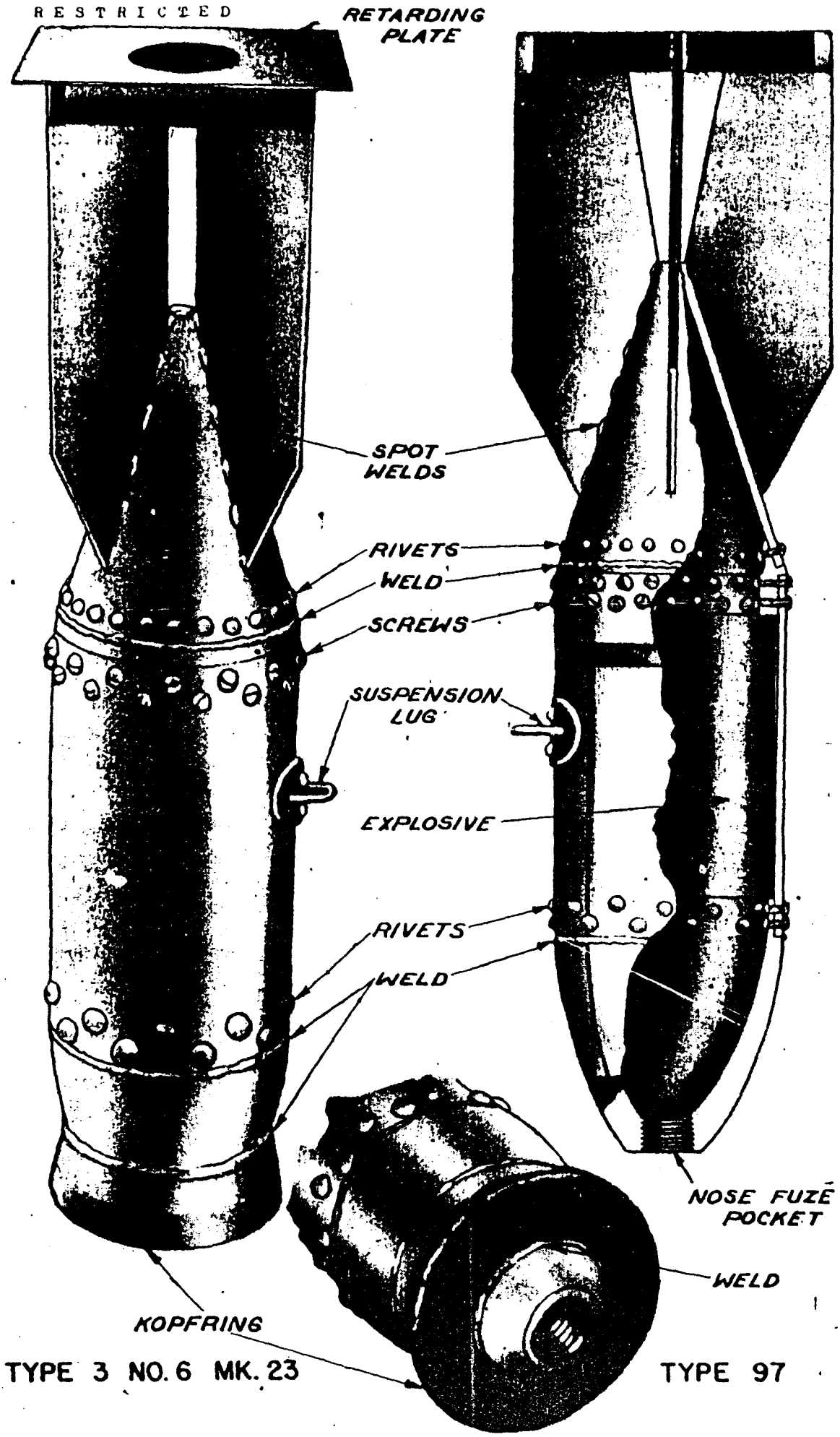
RESTRICTED



JAPANESE ARMY 50 KG.-100 KG TIME BOMB

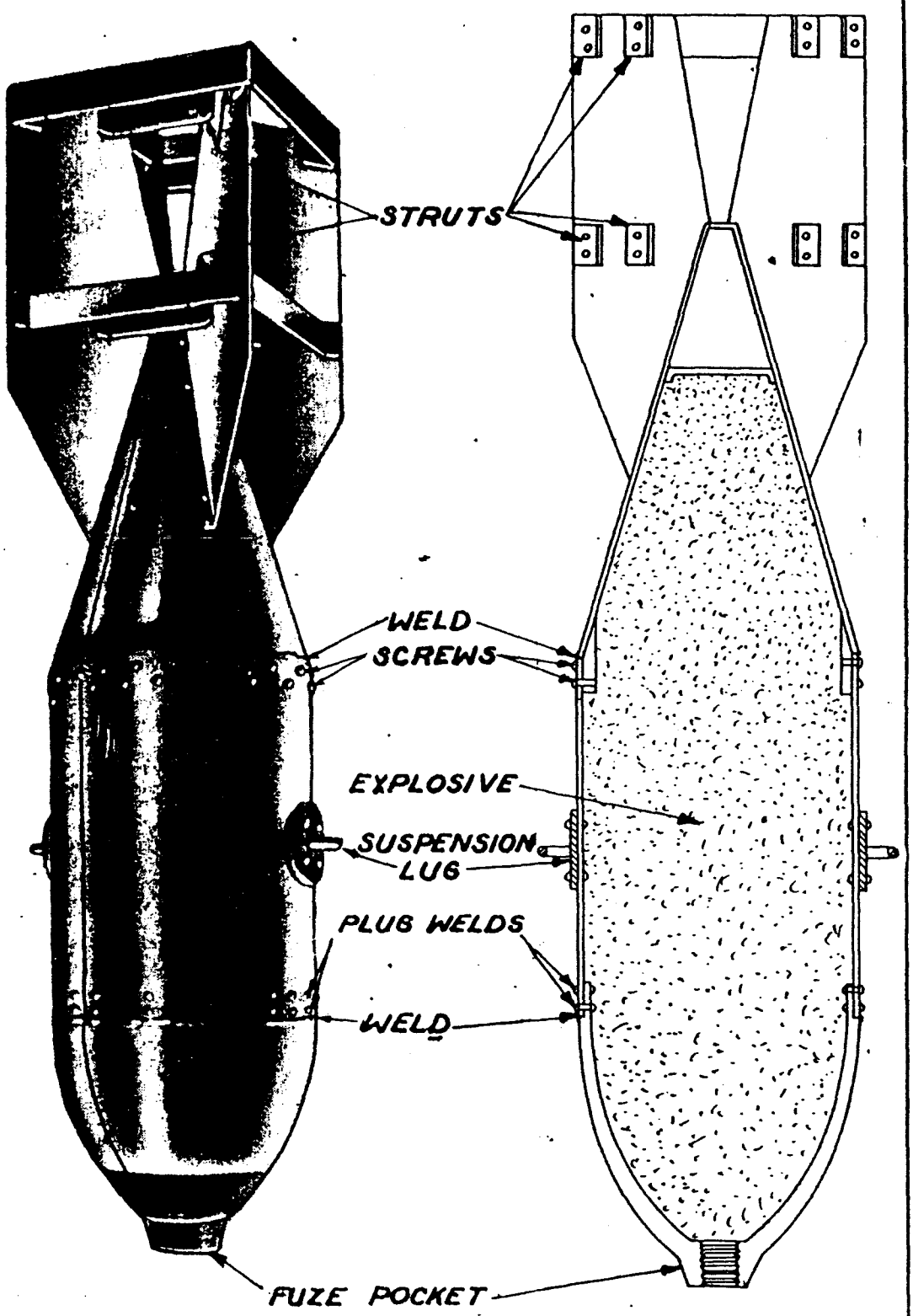
PUBLICATION DATE : Dec. 1944 RESTRICTED			JAPANESE ARMY BOMBS 50 KG } TYPE 94 100 KG } MODIFIED 50 KG. } TYPE 1 100 KG. } TIME BOMBS
FUZES Type 1, Nose C-3(a); Tail B-7(a) Type 94, Nose C-3(a); Tail, B-1(a), B-1(b) (Mbdified)			
	50 Kg.	100 Kg.	
OVERALL LENGTH	39.8 in.	52 in.	
LENGTH OF BODY	23.2 in.	30.25 in.	
DIAMETER OF BODY	7-1/8 in.	9.5 in.	
THICKNESS OF WALL	9/32 in.	0.4 in.	
MATERIAL OF WALL	Tubular steel		
TYPE OF SUSPENSION	Horizontal		
CONSTRUCTION OF SUSPENSION LUG	Normal Army type.		
COLOR & MARKINGS ON BOMB AND TAIL	Black nose, body and tail. One yellow and one white band (7/8") are forward of the suspension lug. 50 Kg. or 100 Kg. stencilled near nose. Red band may be stencilled on nose.		
LENGTH OF TAIL	16.6 in.	21.75 in.	
WIDTH OF TAIL	9.8 in.	13-3/8 in.	
WIDTH OF TAIL FINS	3.3 in.		
DIMENSIONS OF TAIL STRUTS	50 Kg.- W 1-9/16"; L 6-7/8"; T 3/32" 100 Kg.- outer strut W 1-9/16"; L 9-7/16"; T 3/32" inner strut W 1-3/16"; L 9-7/16"; T 3/32"		
MATERIAL OF TAIL	Steel		
TYPE OF FILLING	Preformed blocks of picric acid		
WEIGHT OF FILLING	20 Kg.	47 Kg.	
TOTAL WEIGHT OF BOMB	50 Kg.	107.7 Kg.	
CHARGE/WEIGHT RATIO	40 %	43.6 %	
CONSTRUCTION OF BODY	A steel nose is screwed to the body and fastened by one or two grub screws. Tail cone is welded to body.		
CONSTRUCTION OF TAIL	50 Kg., 100 Kg. Type 1: Four Army fins are welded to the tail cone and braced by box-type struts, a single row for 50 Kg. bombs and a double row for 100 Kg. bombs. A tail brake is fitted on top of the struts. A fuze adapter is welded to the end of the tail cone. The fuze pocket has three threads and then an annular groove This groove is an innovation which allows an anti-withdrawal fuze to be used. 50 Kg., 100 Kg. Type 94 (Modified): Four Army fins are welded to the tail cone and braced by box-type struts, a single row for 50 Kg. bombs and a double row for 100 Kg. bombs. A tail brake is fitted on top of the struts. A fuze adapter is welded to the end of the tail cone. The fuze pocket is of the usual type used in Type 94, 50 Kg. and 100 Kg. bombs. It is threaded to receive the standard mechanical impact tail fuze.		
REMARKS	In some cases the black bakelite shipping plug may be left in the tail fuze pocket in place of a tail fuze.		

RESTRICTED



JAPANESE 60 KG. G.P. H.E. BOMBS

PUBLICATION DATE: July 1944 RESTRICTED			JAPANESE NAVY BOMBS 60 KG. G. P. H. E. [redacted] TYPE 3 No 6 Mk 23 TYPE 97 No 6 LAND BOMB
FUZES: Type 96 - A-2(a) [redacted] Type 97 - A-3(a)			
	Type [redacted] 3	Type 97	
OVERALL LENGTH	40.7 in.	40.0 in.	
LENGTH OF BODY	21.75 in.	21.8 in.	
DIAMETER OF BODY	7.85 in.	7.85 in.	
THICKNESS OF WALL	.28 in.	.28 in.	
MATERIAL OF WALL	Steel		
TYPE OF SUSPENSION	Horizontal		
CONSTRUCTION OF SUSPENSION LUG	Normal Navy type		
COLOR & MARKINGS ON BOMB AND TAIL	Type [redacted] 3:-Grey overall with green band on nose forward of kopfring. HAS BROWN BAND JUST AFT OF GREEN BAND Type 97:-Grey overall. Blue band on body. Green band on nose. Green struts. Two thin red lines diametrically opposite run longitudinally along the bomb.		
LENGTH OF TAIL	18.5 in.	18.2 in.	
WIDTH OF TAIL	10.6 in.	10.6 in.	
WIDTH OF TAIL FINS	4.8 in.	4-3/4 in.	
DIMENSIONS OF TAIL STRUTS	Type [redacted] 3:-Width 1.4 in.; Length 7.75 in; Thickness .075 in. Type 97:-Width 1-3/8 in.; Length 7-7/8 in; Thickness 3/32".		
MATERIAL OF TAIL	Sheet steel.		
TYPE OF FILLING	Picric Acid	Mixture of Hexanite and TNA.	
WEIGHT OF FILLING	39 Kg. (estimated)	50 lbs.	
TOTAL WEIGHT OF BOMB	65 Kg. (approx.)	124 lbs. (58 Kg.)	
CHARGE/WEIGHT RATIO	60 %	41 %	
CONSTRUCTION OF BODY	A cast steel nose is riveted, with two rows of ten rivets each, to a steel tubular body. The tail cone is held by one row of twenty-four rivets to a collar which is held in the base of the bomb by two rows of screws (fourteen per row). The type [redacted] 3 also has an iron kopfring (outer diameter: 7-7/8 inches; maximum thickness: 1-3/4 in.) welded around the nose to prevent penetration.		
CONSTRUCTION OF TAIL	Four Navy fins welded to tail cone and braced by boxlike struts. The Type [redacted] 3 also has a retarding plate (7-7/8" square; .076" thick) welded onto the fins and struts, and has a hole 3-15/16" in diameter.		
REMARKS	The Type 97 is quite common. The Type [redacted] 3 is in all respects a type 97 bomb with a kopfring and retarding plate. Though no markings other than the green nose band were evident on the bomb, another bomb of the same type was reported to have longitudinal red assembly stripes and green tail struts. This was filled with picric but could use T.N.A. or Hexanite and Anisol.		



TYPE 99

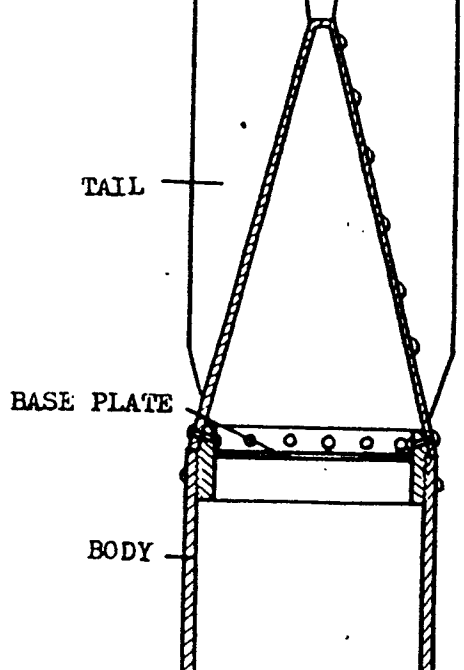
J JAPANESE 60KG. ANTI-SUBMARINE BOMB

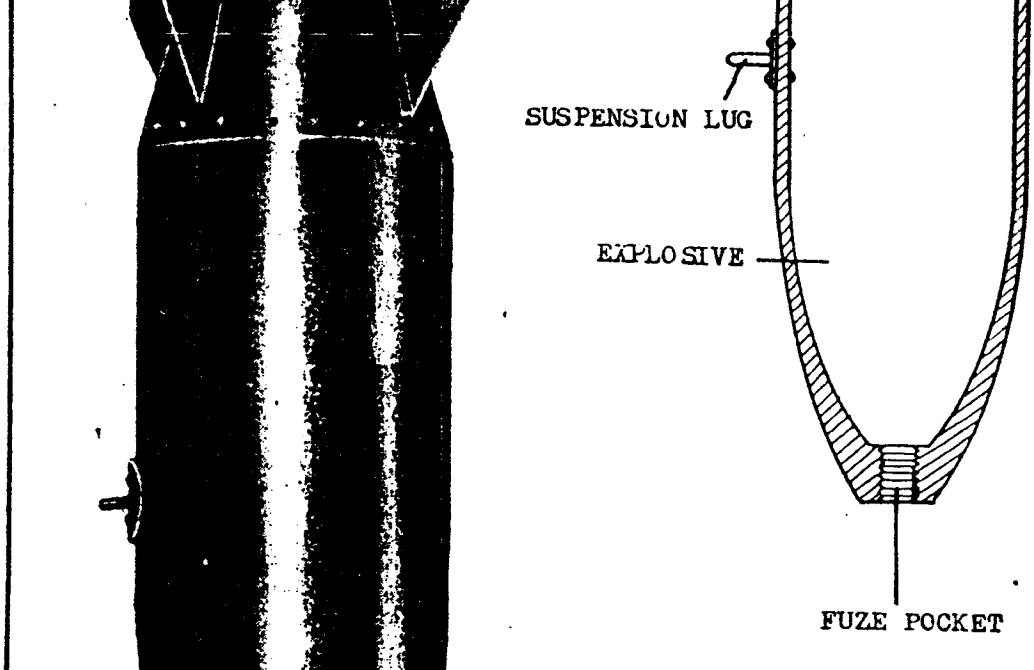
PUBLICATION DATE : J
FUZES
OVERALL LENGTH
LENGTH OF BODY
DIAMETER OF BODY
THICKNESS OF WALL
MATERIAL OF WALL
TYPE OF SUSPENSION
CONSTRUCTION OF SUSPENSION LUG
COLOR & MARKINGS OF BOMB AND TAIL
ENGTH OF TAIL
DTH OF TAIL
DTH OF TAIL FINS
MENSIONS OF IL STRUTS
TERIAL OF TAIL
PE OF FILLING
EIGHT OF FILLING
TAL WEIGHT BOMB
HARGE/WEIGHT RATIO
NSTRUCTION OF DY
NSTRUCTION OF IL
EMARKS

JAPANE
NAVY B
TYPE 99 NO
ANTI-SUBM

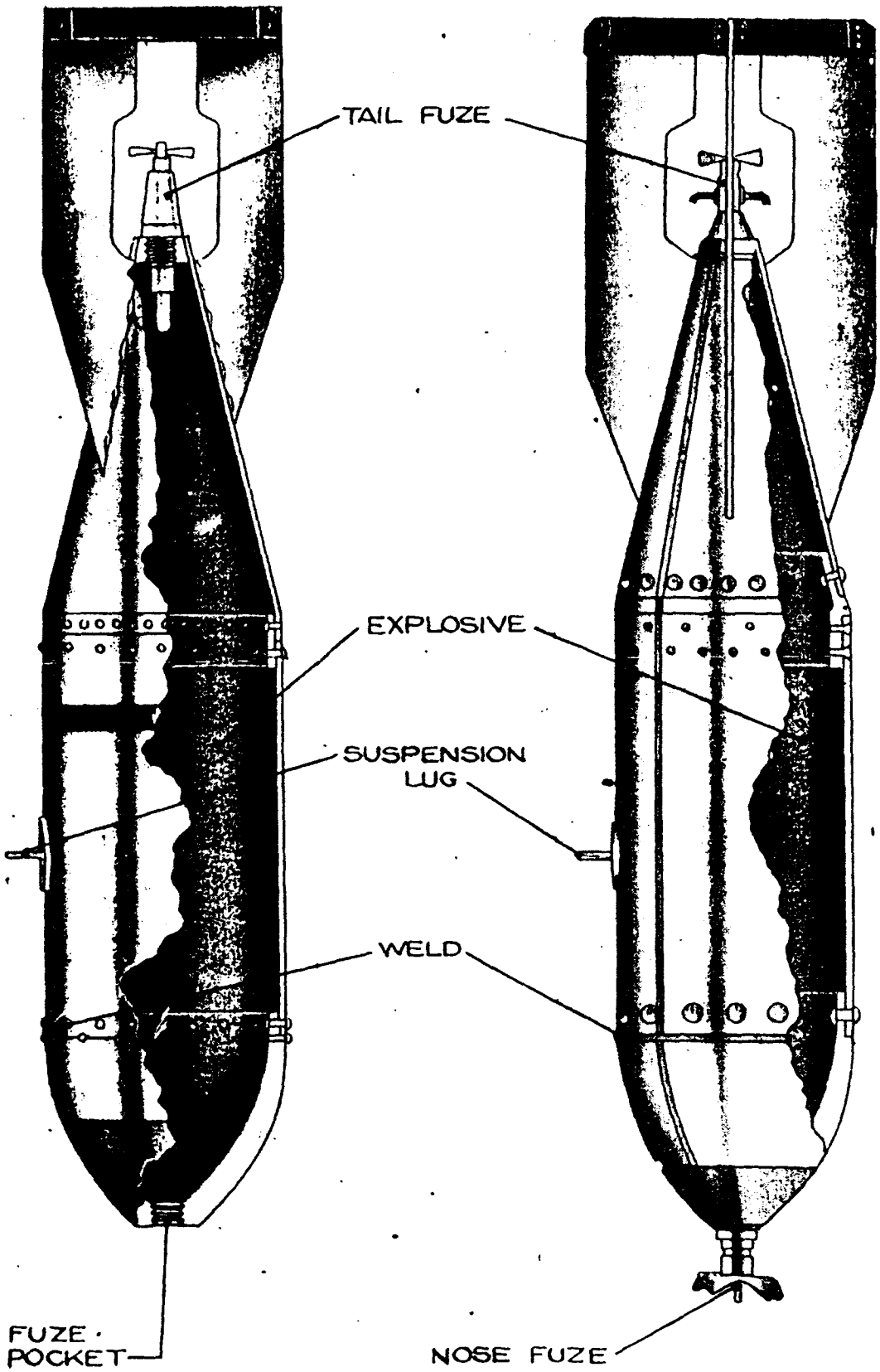
[redacted]

	42.0 in.
	21.0 in.
	9.4 in.
	0.18 in.
	Steel
	Horizontal
	Two lugs. Normal Navy type.
	Gray overall. Two thin red lines diametrically run longitudinally along the bomb. Green band Blue band just aft of green band. Aft outer be blue.
	21.0 in.
	13.25 in.
	Width, 6"; Thickness 3/64".
	Outer struts . . Width 1-3/8";Length 9½"; Thi Inner struts . . Width 1-3/8";Length 4-3/4";T
	Sheet iron
	TNA/HND (60/40)
	39 Kg.
	64 Kg.
	61 %.
	A cast steel nose is welded and plug welded w of sixteen plug welds each, to a steel tubula tail cone is welded to a collar which is held by two rows of screws (16 per row).
	Four Navy fins welded to tail cone. The fins by four sets of struts.
	This bomb may be found with only one set of s This bomb was originally referred to as Type translation of markings on recently captured b cates the Japanese designation is"Type 99 No. The Japanese designate their anti-submarine bo Mark 2. A captured Japanese document states that one ferent gaines is to be used with this bomb. Th be used are either the Type I Mark 2 Bomb"Fuze Model 5 with a delay of 3.5 seconds, or Type Bomb"Fuze"(Gaine) Model 6 , with 10.0 seconds Specimens of these gaines have not been recove A Type 15 Ordinary gaine with a delay of 0 seconds may be used.


TAIL
BASE PLATE
BODY


SUSPENSION LUG
EXPLOSIVE
FUZE POCKET

PUBLICATION DATE: July 1944 CONFIDENTIAL		JAPANESE NAVY BOMB 63 KG. TYPE 99 NO 6 ORDINARY
FUZES A-3(a), A-3(b).		
OVERALL LENGTH	42.25 in.	
LENGTH OF BODY	25.5 in.	
DIAMETER OF BODY	8.9 in.	
THICKNESS OF WALL	0.25 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal Navy Type	
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug. (Eyebolt welded to circular plate which is riveted to body with four rivets.	
COLOR & MARKINGS ON BOMB AND TAIL	Navy code: Grey body and tail with longitudinal diametrically opposite thin red lines. Green band on nose and on tail struts.	
LENGTH OF TAIL	16.88 in.	
WIDTH OF TAIL	12.25 in.	
WIDTH OF TAIL FINS	5-5/8 in.; Thickness: 1/16 in.	
DIMENSIONS OF TAIL STRUTS	1" x 9" x 1/16"	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Picric Acid or Type 98 (Trinitroanisol 70%, HND 30%)	
WEIGHT OF FILLING	32 Kg.	
TOTAL WEIGHT OF BOMB	63 Kg.	
CHARGE/WEIGHT RATIO	50 %	
CONSTRUCTION OF BODY	Navy construction: A machined forged steel body with a 1-7/8 in. diameter 10 TPI nose fuze pocket, and right hand threaded male base plate. There is a grub screw in nose and tail for holding nose fuze and base plate securely.	
CONSTRUCTION OF TAIL	Four fins welded to the tail cone which is held by 10 screws to the base plate of the bomb. Tail cone is empty.	
REMARKS	In India, bombs were found with an additional suspension lug bolted to the regular eyebolt for carrying this bomb in the regular 50 Kg. Army bomb rack. Recently recovered bombs have had brown nose, tipped in green, grey body, grey struts.	

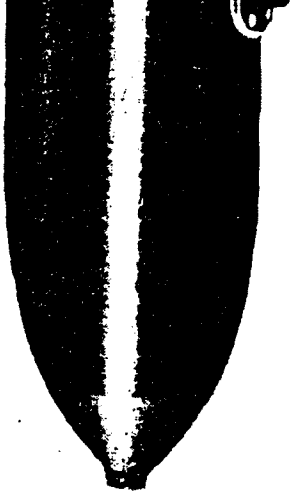


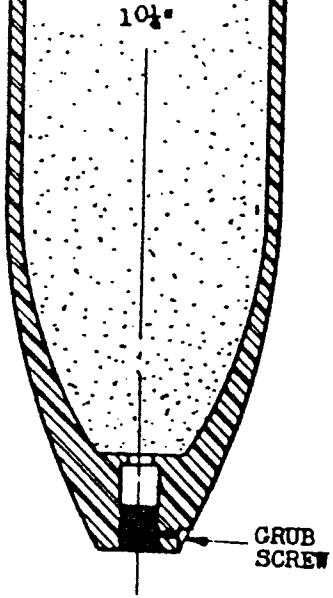
EARLY TYPE (I)

TYPE 98 NO. 25 LAND

JAPANESE 250 KG. G.P. H.E. BOMBS

PUBLICATION DATE: Dec. 1944 RESTRICTED			JAPANESE NAVY BOMBS 250 KG. G.P. H.E. TYPE I NO. 25 LAND TYPE 98 NO. 25 LAND
FUZES: Nose - A-3(a), A-3(b) or C-2(a) Tail - B-3(a) or C-1(a)			
	Type I	Type 98	
OVERALL LENGTH	72.0 in.	72.0 in.	
LENGTH OF BODY	35.5 in.	39.6 in.	
DIAMETER OF BODY	13.8 in.	12.0 in.	
THICKNESS OF WALL	0.25 in.	.5 in.	
MATERIAL OF WALL	Steel	Steel	
TYPE OF SUSPENSION	Horizontal (Navy type)		
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug. (Eyebolt welded to circular plate which is riveted to the body with four rivets).		
COLOR & MARKINGS ON BOMB AND TAIL	Navy code: Grey body and tail with two longitudinal red lines diametrically opposite, running from nose to tail, with a green band around the nose and green tail struts. Both types of bombs have a blue band around the body.		
LENGTH OF TAIL	37.1 in.	32.4 in.	
WIDTH OF TAIL	19.3 in.	16.6 in.	
WIDTH OF TAIL FINS	7.65 in.	7.3 in.	
DIMENSIONS OF TAIL STRUTS	13.85" x 2.25" x .075"		
MATERIAL OF TAIL	Sheet iron (.09 in.)		
TYPE OF FILLING	Type 98 Explosive	Picric acid or Type 98 explosive.	
WEIGHT OF FILLING	150 kg.	96 kg.	
TOTAL WEIGHT OF BOMB	250 kg.	242 kg.	
CHARGE/WEIGHT RATIO	60%	40%	
CONSTRUCTION OF BODY	Type I: A cast steel nose is welded to a steel tubular body by a continuous weld and a row of sixteen plug welds. The tail cone is held by one row of thirty-two screws to a collar which is held in the base at the bomb by a row of sixteen plug welds. There is a threaded fuze pocket in both the nose and tail. Type 98: A cast steel nose is welded to the body by a continuous weld and one row of twelve large plug welds. The tail cone is held by one row of eighteen plug welds and a continuous weld to a collar which is held in the base of the bomb by forty screws in two rows of twenty each. There is a threaded fuze pocket in both the nose and tail.		
CONSTRUCTION OF TAIL	Four Navy fins spot-welded to the cone which is fastened to the collar on the base of the body. Fins are braced with box-type struts.		
REMARKS	The Type 98 bomb is reported in some instances to be turned down to appear smooth on the outside.		




10½"
GRUB
SCREW

JAPANESE
250 KG. S.A.P BOMB
TYPE 99 NO25 ORDINARY

PUBLICATION DATE:	De
FUZES	A-3(a) or A
OVERALL LENGTH	
LENGTH OF BODY	
DIAMETER OF BODY	
THICKNESS OF WALL	
MATERIAL OF WALL	
TYPE OF SUSPENSION	
CONSTRUCTION OF SUSPENSION LUG	
COLOR & MARKINGS ON BOMB AND TAIL	
LENGTH OF TAIL	
WIDTH OF TAIL	
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	
TYPE OF FILLING	
WEIGHT OF FILLING	
TOTAL WEIGHT OF BOMB	
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	
CONSTRUCTION OF TAIL	

-3(b) and B-2(a)

JAPA
NAVY
250
S.A
TYPE 9
ORDI

	68.0 in.
	39.75 in.
	11.5 in.
	0.75 in.
	Steel
	Horizontal (Navy Type)

Normal Navy suspension lug. (Eyebolt welde
plate which is riveted to body with four r

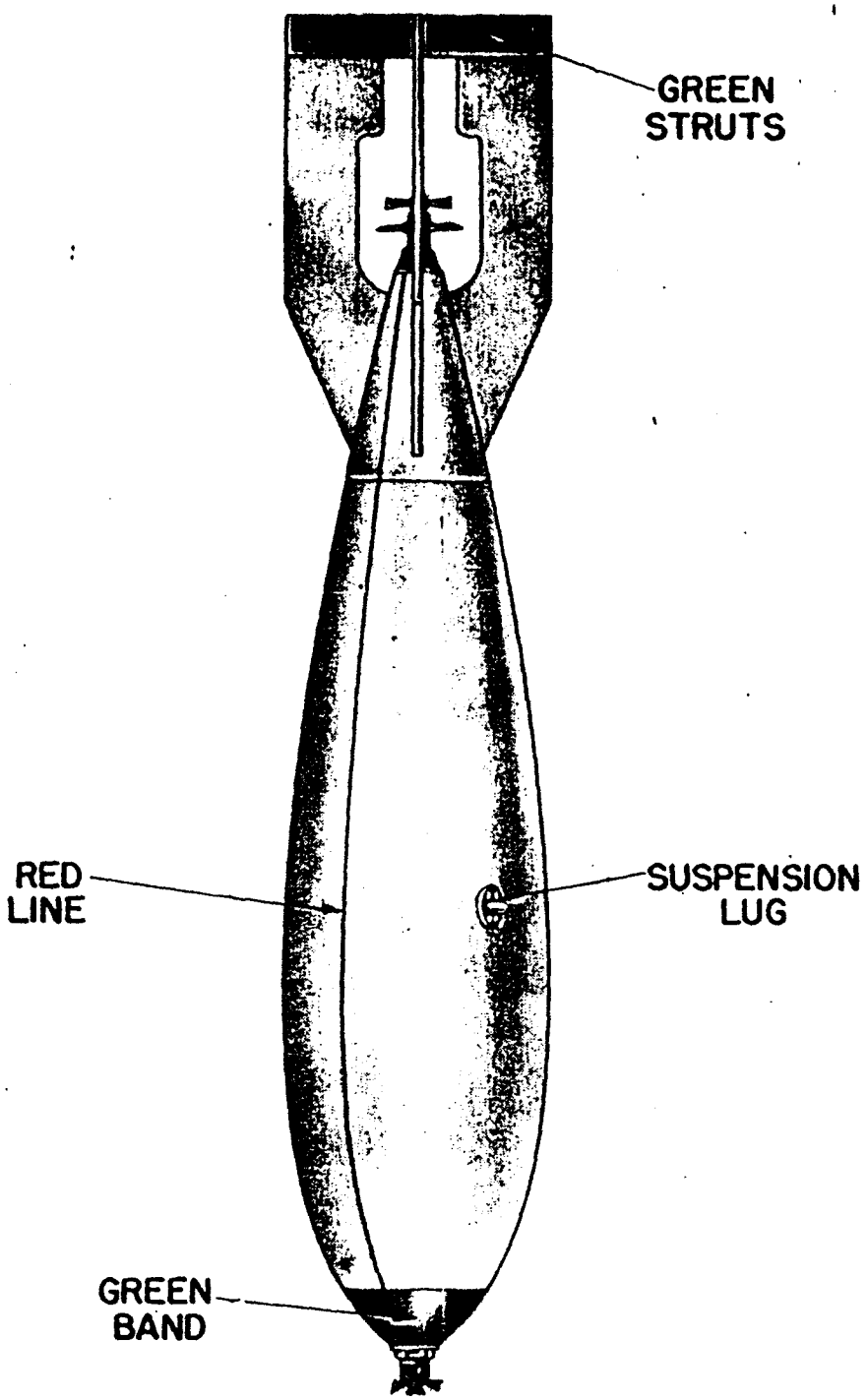
Navy Code: Grey body and tail with longit
cally opposite thin red lines. Green band
on tail struts.

	28.0 in.
	16.25 in.
	6-15/16 in.; Thickness: 1/16 in.
	1-21/32" x 12" x 1/16".
	Steel
	Tri-nitro-Anisol wrapped in felt.
	60 Kg.
	250 Kg.
	25 %

A machined forged steel body with 1-7/8" d
nose fuze pocket; 2-1/8" diameter 4 TPI
in base plate; and a right hand threaded
base plate. There is a grub screw in the n
and in the base plate.

Four Navy type fins welded to tail cone wh
6 screws to the base plate of the bomb. T
empty and has three doors for insertion of

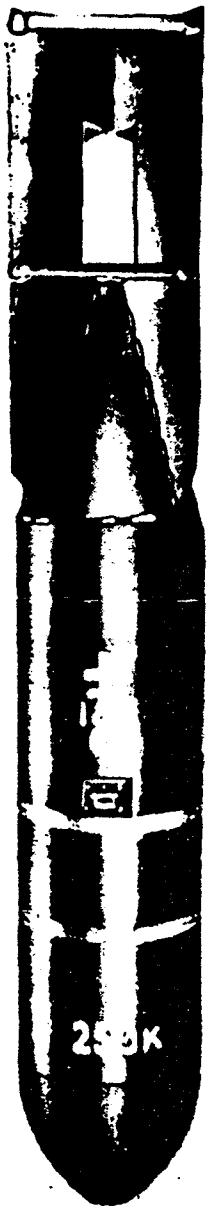
RESTRICTED



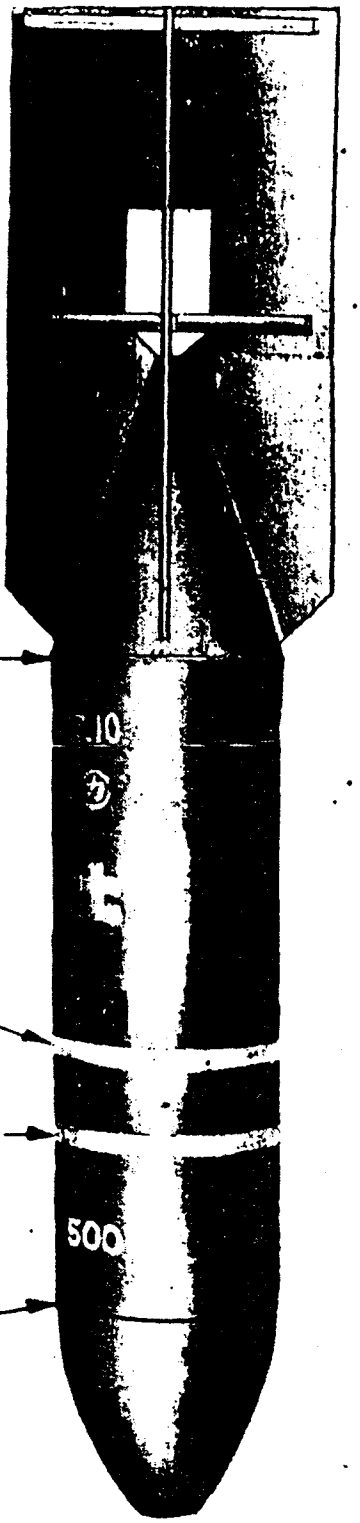
JAPANESE NAVY 250 KG. G.P. STREAMLINE BOMB

NO. 25 ORDINARY MODEL 2

PUBLICATION DATE: Dec 1944 RESTRICTED		JAPANESE NAVY BOMB 250 KG. G.P.H.E. Streamline NO. 25 ORDINARY MODEL 2
FUZES Nose:A-3(a) Tail:D-3(a)		
OVERALL LENGTH	71½ in.	
LENGTH OF BODY	44½ in.	
DIAMETER OF BODY	14 in.	
THICKNESS OF WALL	.60 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	One lug at center of gravity.	
COLOR & MARKINGS ON BOMB AND TAIL	Grey body and tail with 4½ in. green band on nose. Green tail struts.	
LENGTH OF TAIL	27 in.	
WIDTH OF TAIL	10 in.; Diameter: 14 in.	
WIDTH OF TAIL FINS	4-3/32 in.	
DIMENSIONS OF TAIL STRUTS	3/32 in. in thickness,	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Picric acid,cast. Tail cone is filled.	
WEIGHT OF FILLING	104 Kg.	
TOTAL WEIGHT OF BOMB	253 Kg.	
CHARGE/WEIGHT RATIO	41%	
CONSTRUCTION OF BODY	One piece cast or forged steel streamlined body.	
CONSTRUCTION OF TAIL	Four 3/32 sheet steel fins welded to filled tail cones, braced by 3/32 in. sheet steel struts spot welded to fins. Box type struts The tail cone is threaded and screws into the base of the bomb.	
REMARKS	Nose fuze pocket 11 TPI Tail fuze pocket 12 TPI This bomb was found at Tarawa and the above information was sent in. Additional information and corrections will be furnished when available. Several of the bombs recovered were filled with concrete.	



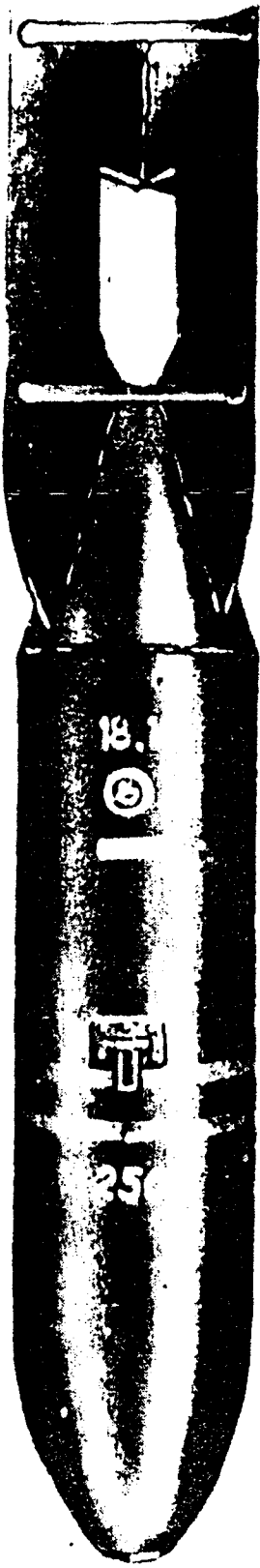
250 KG.
TYPE 92



500 KG.
TYPE 92

JAPANESE ARMY G.P.H.E. BOMBS

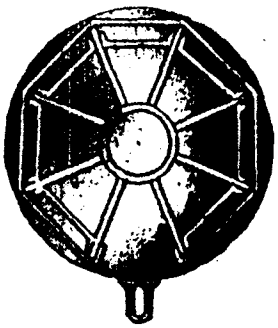
PUBLICATION DATE; Sept. 1944 RESTRICTED			JAPANESE ARMY BOMB 250 KG. 500 KG. TYPE 92 G.P.H.E.
FUZES Probably A-4(a) and B-4(a)			
	250 Kg.	500 Kg.	
OVERALL LENGTH	76½"	99-3/4"	
LENGTH OF BODY	59½" with tail cone	77" with tail cone	
DIAMETER OF BODY	11-3/4"	15"	
THICKNESS OF WALL	1/4 "	9/16"	
MATERIAL OF WALL	Tubular Steel		
TYPE OF SUSPENSION	Horizontal		
CONSTRUCTION OF SUSPENSION LUG	Normal Army type		
COLOR & MARKINGS ON BOMB AND TAIL	Black nose, body and tail. One yellow and one white 1" band forward of suspension lug. 1" red band on tip of nose. Weight stencilled 4" aft of nose screw joint.		
LENGTH OF TAIL	Fins 29"	Fins 40"	
WIDTH OF TAIL	16½"	20-3/4"	
WIDTH OF TAIL FINS	8 1/4 IN	10 7/16 IN.	
DIMENSIONS OF TAIL STRUTS	13/16 IN	width 15/16"	
MATERIAL OF TAIL	Steel		
TYPE OF FILLING	Picric acid (Preformed blocks)		
WEIGHT OF FILLING	104.3 Kg.	223.28 Kg.	
TOTAL WEIGHT OF BOMB	250 Kg.	500 Kg.	
CHARGE/WEIGHT RATIO	43%	46.4%	
CONSTRUCTION OF BODY	These bombs are constructed in a similar manner to the 30, 50, and 100 Kg. Army bombs. Nose screwed into the body. The tail cone is welded to the body.		
CONSTRUCTION OF TAIL	Four fins welded to tail cone and braced by two sets of box-type struts. A fuze adapter is welded at the apex of the tail cone. A grub screw is fitted to the tail fuze.		
REMARKS	These bombs have a weight discrepancy marking (+, -, ±) aft of the suspension lug. The tail fins of the 500 Kg. are similar to the Navy bombs in that they come to a definite point on the exterior side, as compared to the characteristic curve on the fins of Army 30 Kg. to 250 Kg. H.E. Bombs. Both bombs are threaded nose and tail to receive the A-4(a) and B-4(a). A 250 Kg. Type 92 Modified has been recovered which has a 3" nose orifice to receive the C-3(a) fuze.		


25

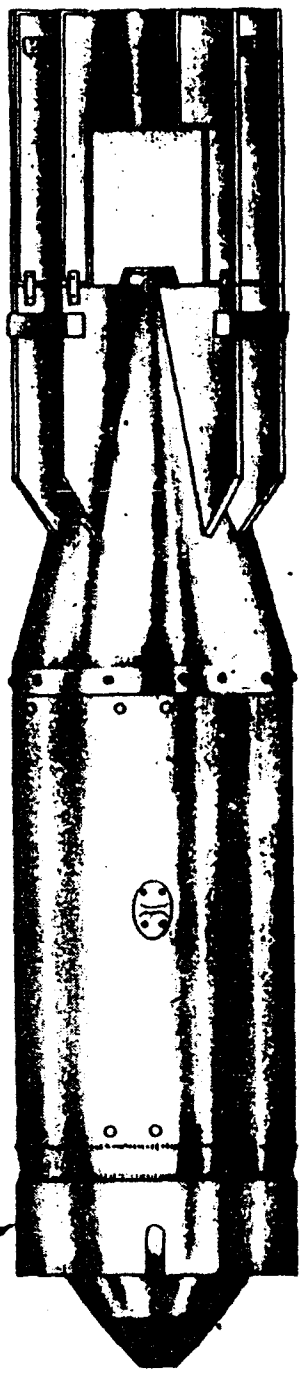
PUBLICATION DATE: December 1944 RESTRICTED		JAPANESE ARMY BOMB 250 KG. TYPE I TIME BOMB
FUZES: Nose - C-3(a) Tail B-7(a)		
OVERALL LENGTH	75½"	
LENGTH OF BODY	45-3/8"	
DIAMETER OF BODY	11-3/4"	
THICKNESS OF WALL	½ in.	
MATERIAL OF WALL	Tubular Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Normal Army type	
COLOR & MARKINGS ON BOMB AND TAIL	Black overall. One yellow & one white band (7/8") forward of suspension lug. 1" red band on tip of nose. "250 K" stencilled just forward of yellow band. Weight discrepancy marking aft of suspension lug.	
LENGTH OF TAIL	29 in. (length of fins)	
WIDTH OF TAIL	16½ in.	
WIDTH OF TAIL FINS	8-1/4"	
DIMENSIONS OF TAIL STRUTS	width,13/16"	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Preformed, paper-wrapped, paraffin sealed picric acid blocks.	
WEIGHT OF FILLING	103.41 Kg.	
TOTAL WEIGHT OF BOMB	239.6 Kg.	
CHARGE/WEIGHT RATIO	43.1 %	
CONSTRUCTION OF BODY	A steel nose is screwed to the body and fastened by one or two grubscrews. Tail cone is welded to body. The nose piece has a 3 inch orifice to admit the C-3(a) time fuze.	
CONSTRUCTION OF TAIL	Four fins welded to tail cone and braced by two sets of box-type struts. A fuze adapter is welded at the apex of the tail cone. The tail fuze pocket has three threads and then an annular groove. This bomb has no tail brake.	
REMARKS	The tail fuze pocket with the innovation of an annular groove is designed to accommodate an anti-withdrawal fuze.	

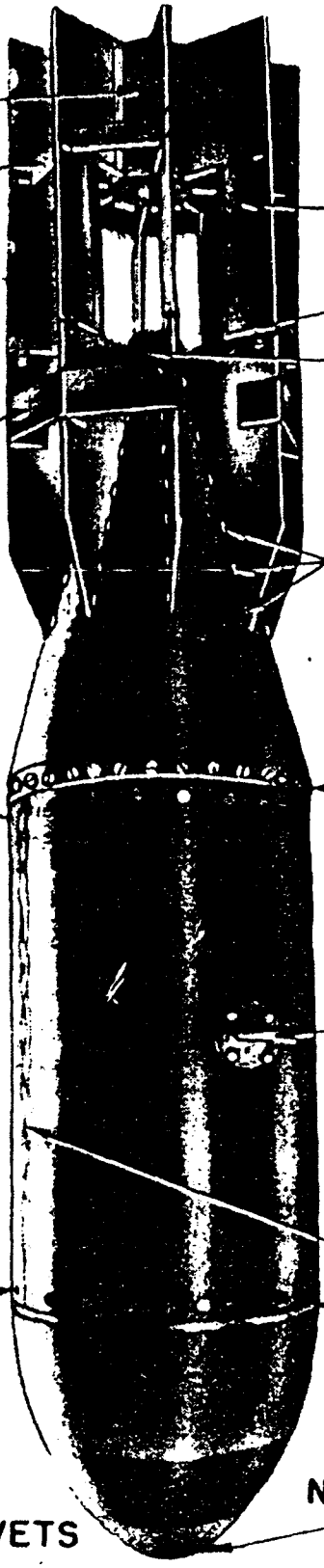
RESTRICTED

JAPANESE NAVY 250 KG. ANTI-SUB BOMB



TAIL VIEW





STEEL STRUT

METAL CYLINDER

PLYWOOD SECTION

BOLTED STEEL PLATES

TAIL FUZE POCKET

SPOT WELDS

36 SCREWS

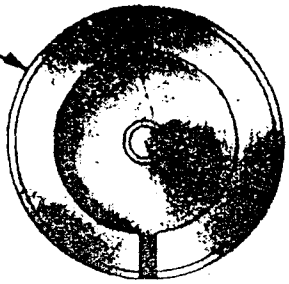
SUSPENSION LUG

WELD

ANTI-RICOCHET NOSE ATTACHMENT

NOSE FUZE POCKET

RIVETS



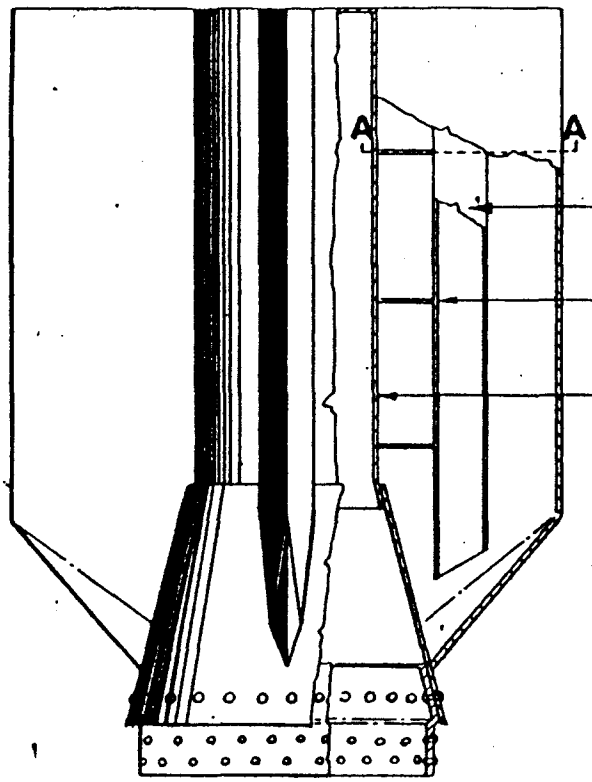
NOSE VIEW

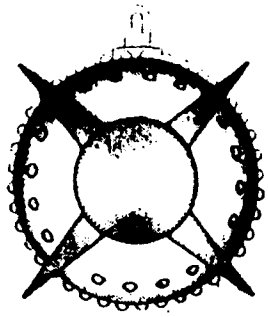
TYPE I NO. 25 MARK 2

ANTI-SUBMARINE

MODEL I MODIFICATION I

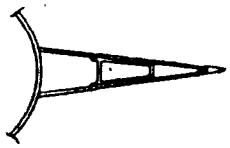
PUBLICATION DATE: December 1944 RESTRICTED		JAPANESE NAVY BOMB 250 KG. ANTI-SUBMARINE TYPE 1 NO. 25 MK. 2 MODEL 1 MODIFICATION 1
FUZES: Nose: A-1(a), A-3(a), A-3(b) Tail: B-3(a), C-1(a)		
OVERALL LENGTH	71.75"	
LENGTH OF BODY	35.65"	
DIAMETER OF BODY	14."	
THICKNESS OF WALL	0.25"	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Standard Navy type	
COLOR & MARKINGS ON BOMB AND TAIL	Bluish gray with a green band forward of a blue band on the nose. Some have only a 6" blue band.	
LENGTH OF TAIL	First section 21.5";Extension 14.5"	
WIDTH OF TAIL	14"	
WIDTH OF TAIL FINS	5¼"	
DIMENSIONS OF TAIL STRUTS	Width 2-3/16"-Length 42" continuous band-thickness 5/32"	
MATERIAL OF TAIL	First section-sheet steel; Extension-plywood	
TYPE OF FILLING	Type 98 explosive, main filler; granular Type 98, booster	
WEIGHT OF FILLING	Main filler;180 Kgs., booster; 1 Kg.	
TOTAL WEIGHT OF BOMB	295 Kgs.	
CHARGE/WEIGHT RATIO	61%	
Construction of Body	A cast steel nose is welded and riveted to tubular body. The body has one longitudinal weld. The tail cone is attached to an adapter ring by 36 screws, the ring being riveted to base of bomb body.	
Construction of Tail	The tail is constructed in two sections: the first section has eight 1/8 inch sheet steel fins welded to the tail cone and supported by a 1/8 inch steel strut. The second section consists of eight plywood fins in steel frames riveted to and supported at the interior of their tips by a metal cylinder 4 inches in diameter and on their outer tips by a 1/16 inch steel strut. The second section is attached to the first by bolted steel plates on each of the eight fins. Apparently the wooden tail section is designed to come off on water impact.	
Remarks	A Modification 1 has been recovered with an anti-ricochet nose ring and a main filling of Type 98 explosive and a booster of granular Type 98. The nose attachment consists of a metal ring 5/32" thick and 5" wide, with two semi-circular supporting plates. The ring is tack welded to the nose of the bomb at a point 1-3/4 inches forward of the weld at the juncture of the nose and body. The two semi-circular supporting plates are welded to the interior of the forward end of the ring, and to the nose of the bomb. There are two notches cut into the forward edge of the ring in line with the suspension lug and the semi-circular plates fail to meet by 7/8 in. at these two points. The gaines reported to be used with this bomb are either the Type 1 Mark 2 Bomb "Fuze" (Gaine) Model 5 with a delay of 5.5 seconds, or Type 1 Mark 2 Bomb "Fuze" (Gaine) Model 6 with 10.0 seconds delay.	

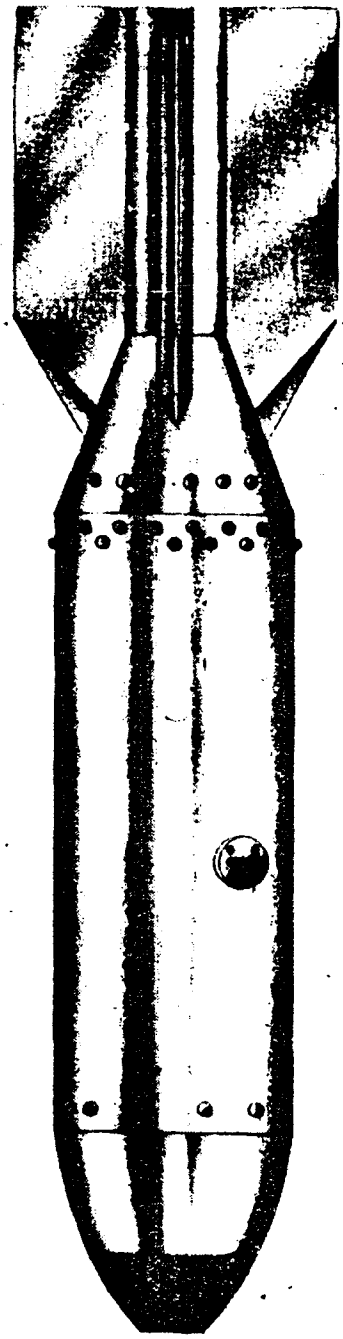




TAIL VIEW

SECTION A-A





JAPANESE NAVY 250 KG. GP. BOMB WITH EXPLOSIVE TAIL

TYPE 3-NO.25-MARK 8-MODEL 1

PUBLICATION DATE : Dec. 1944	RESTRICTED
FUZES:	Probably A-3(a). No tail fuze.

JAPANESE NAVY BOMB

250 KG.

EXPLOSIVE-FILLED TAIL

TYPE 3 NO. 25

MARK 8 MODEL 1

OVERALL LENGTH	67 in.
LENGTH OF BODY	39.6 in.
DIAMETER OF BODY	12 in.
THICKNESS OF WALL	0.5 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal (Navy type)
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug
COLOR & MARKINGS ON BOMB AND TAIL	Green band around the nose, brown band aft of green band. Grey body and tail.
LENGTH OF TAIL	27.4 in.
WIDTH OF TAIL	19-5/8 in.
WIDTH OF TAIL FINS	6-3/8 in.
DIMENSIONS OF TAIL STRUTS	None
MATERIAL OF TAIL	Mild Steel
TYPE OF FILLING	Trinitroanisol and HND 60/40
WEIGHT OF FILLING	119.5 Kg.
TOTAL WEIGHT OF BOMB	295 Kg.
CHARGE/WEIGHT RATIO	40.5%
CONSTRUCTION OF BODY	The bomb body resembles closely the body of the Japanese Navy Type 98 No. 25 Land Bomb (see pg. 31). The tail cone has several modifications.
CONSTRUCTION OF TAIL	The normal tail cone has been cut off 8-3/4 inches aft of the junction with the bomb body proper and to this has been welded a cylinder and hollow tail fins. Data on Tail Cylinder: Outside diameter - 6-5/8 in. Length - 18-5/8 in. Thickness of wall - 3/16 in. Material of Cylinder - Cold rolled drawn steel tubing. Type of filling - TNA and HND 60/40 Data on Tail Fins: Shape of Cross-section - Triangular Overall Length - 25-1/2 in. Height - 6-3/8 in. Width at Base - 2-1/2 in. Material of Fins - Mild Steel Thickness of Walls - 1/8 inch Reinforcement: (1) A box strut made of 1/8 inch mild steel runs the length of the fin on the inside. The box strut is 7/8 inches wide at the top and 1-1/2 inches wide at the bottom, 1-3/4 inches high and 22 inches long. The strut is welded along the two lower edges to the side of the fins proper and spot welded at 2-1/2 inch intervals along the sides. (continued on next page)

RESTRICTED

CONSTRUCTION OF TAIL, - continued.

REMARKS

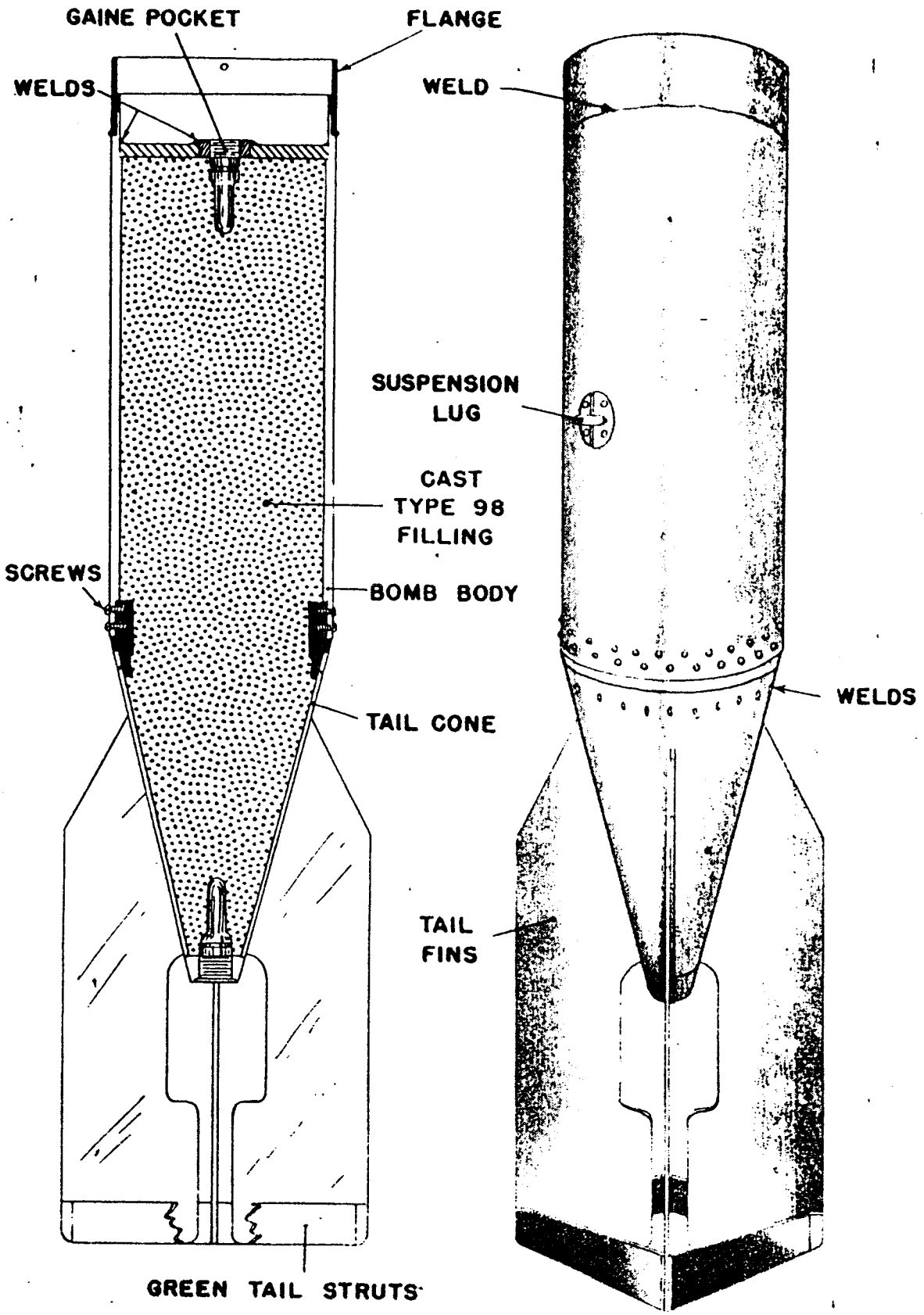
Tail Fin Data (Reinforcement) cont'd.

(2) Three 1/4 inch mild steel brac
ches wide at the top, 2-1/2 in
the bottom and 2 inches high a
5-1/2 inch intervals to the bo
the sides of the fins. The lo
of these braces have been shap
cylinder.

(3) The end of the fins is closed
inch steel plate welded in pla

The construction of the tail assembly wi
ternal bracing designed to shear into fr
and the increased explosive charge added
cylinder suggests that this bomb is inte
a heavier fragmentation suitable for bom
strips with planes exposed on the ground
the cratering and blast effect of the st
Navy bomb. The green and brown bands on
the Jap G.P. designation.

RESTRICTED

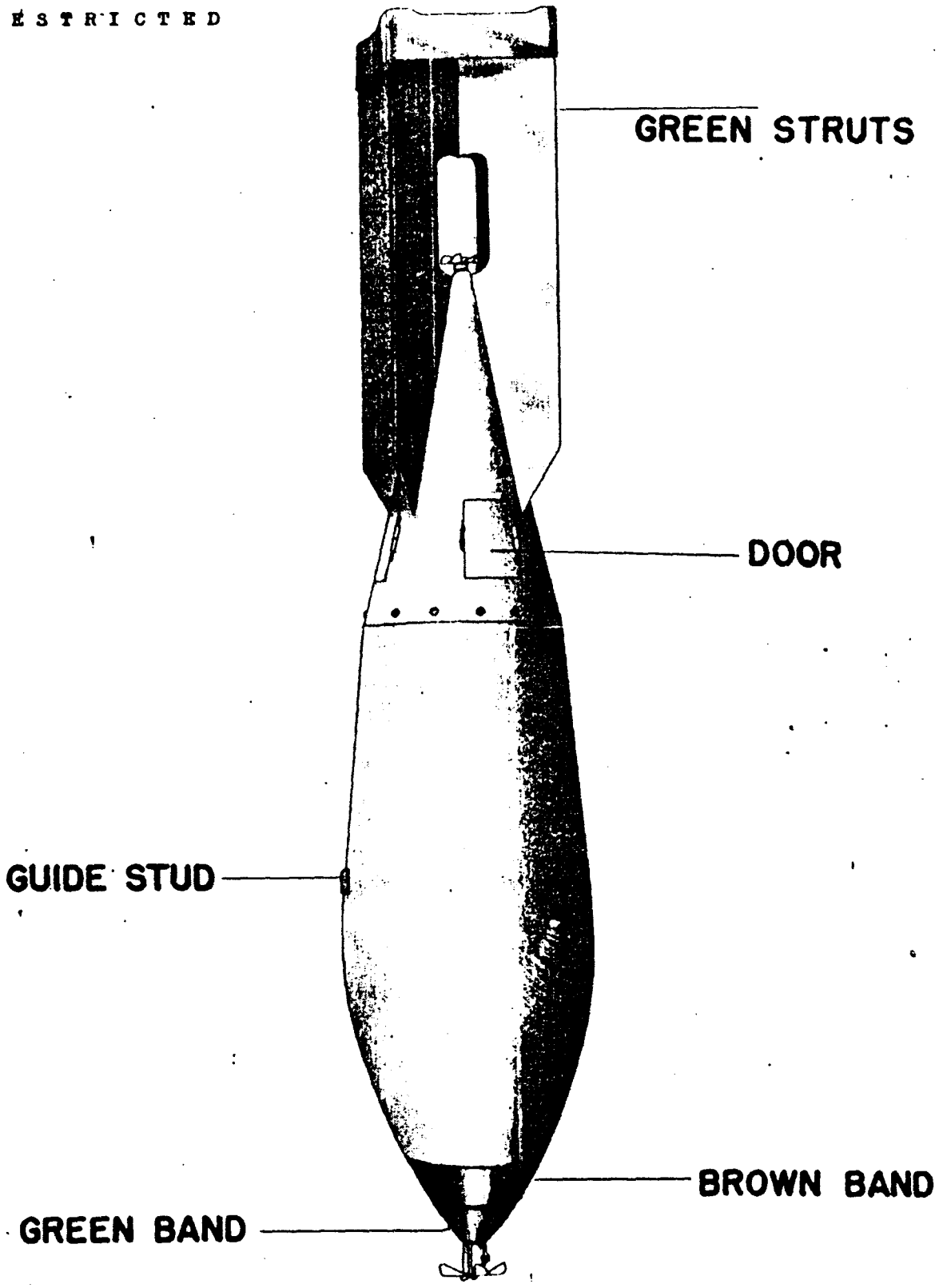


JAPANESE NAVY 250 KG. BOMB

TYPE 3 NO. 25 MK. 31 MODEL 1

PUBLICATION DATE: May 1945 RESTRICTED		JAPANESE NAVY BOMB
FUZES: Nose fuze unknown. B-3(a)		250 KG.
OVERALL LENGTH	62 in.	TYPE 3 NO 25
LENGTH OF BODY	30-3/8 in.	MK. 31 MODEL 1
DIAMETER OF BODY	11-3/4 in.	
THICKNESS OF WALL	1/2 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug.	
COLOR & MARKINGS ON BOMB AND TAIL	Grey overall. Green tail struts. No color bands on nose.	
LENGTH OF TAIL	32 in.	
WIDTH OF TAIL	16-1/8 in.	
WIDTH OF TAIL FINS	7-1/5 in.	
DIMENSIONS OF TAIL STRUTS	13-4/5 in. x 2-1/4 in. x 1/12 in.	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Type 98 Explosive, cast.	
WEIGHT OF FILLING	175 lbs.	
TOTAL WEIGHT OF BOMB	378 lbs.	
CHARGE/WEIGHT RATIO	33 %	
CONSTRUCTION OF BODY	The bomb consists of a nose piece, barrel and tail assembly. The nose of the bomb is blunt. A flat metal plate is fitted into the forward end of the barrel and welded there. The plate is drilled centrally and a gaine pocket is welded in the hole. A flange 3-7/8 in. long, 7/32 in. thick and of the same outer diameter as the barrel is welded to the forward end of the barrel. The flange is pierced by four 1/2 in. holes just aft of the forward end. The barrel is of tubular steel construction. The tail cone is held by one row of 18 plug welds and a continuous weld to a coupling ring which fits inside the barrel. The ring is held in the barrel by two rows of screws numbering 40 in all. There is a standard tail fuze pocket at the apex of the tail cone.	
CONSTRUCTION OF TAIL	Four Navy type fins are spot-welded to the tail cone. The fins are braced by a single set of box type struts.	
REMARKS	The unusual construction of the nose, plus the recovery of an electric gaine strengthens the belief that this bomb may utilize an electric firing mechanism which gives proximity burst.	

RESTRICTED

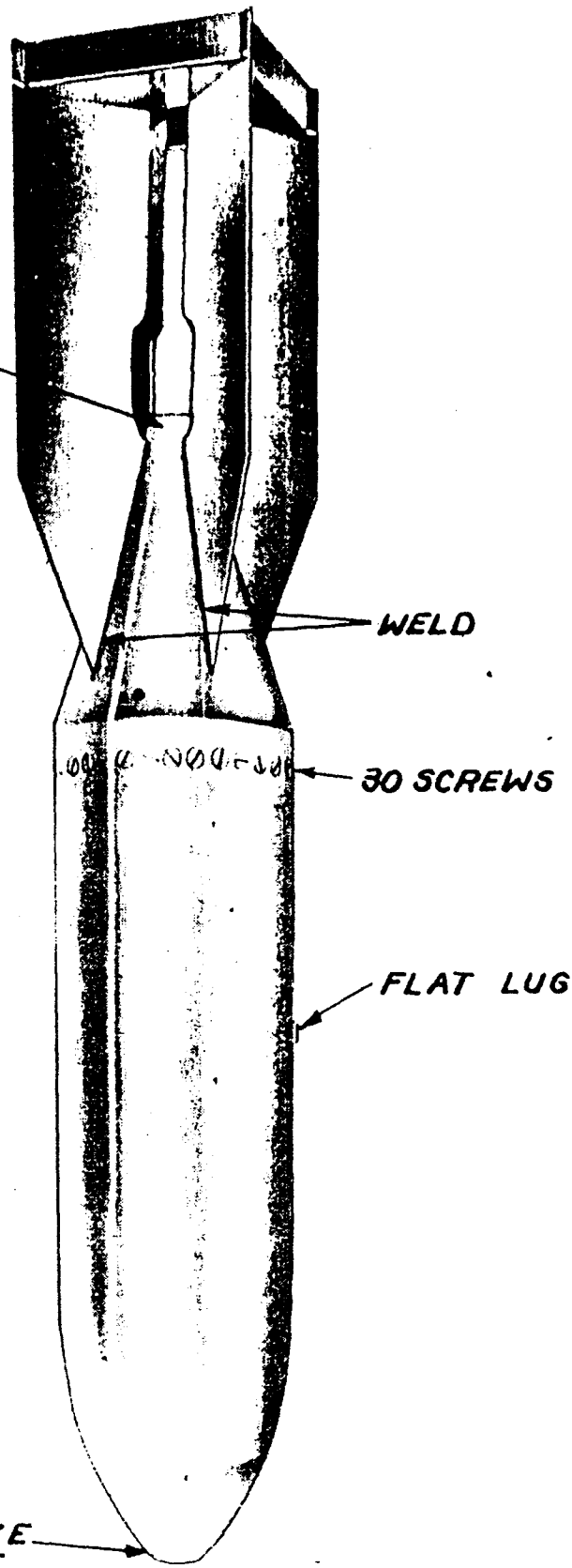


JAPANESE NAVY 500 KG.

G.P.H.E. BOMB

TYPE 2 NO 50 ORDINARY BOMB MODEL 1

PUBLICATION DATE: May 1945 RESTRICTED		JAPANESE NAVY BOMB 500 KG. TYPE 2 NO 50 ORDINARY BOMB MODEL 1
FUZES : A-3(f) B-2(a)		
OVERALL LENGTH	78 in.	
LENGTH OF BODY	38-1/2 in.	
DIAMETER OF BODY	15-1/2 in.	
THICKNESS OF WALL	1 in. at base. 7-1/2 in. at nose.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Two guide studs on the bomb body position the Navy type suspension band.	
COLOR & MARKINGS ON BOMB AND TAIL	The bomb is gray overall with a green-tipped nose, brown nose band and green tail struts.	
LENGTH OF TAIL	39-1/2 in.	
WIDTH OF TAIL	15-1/2 in.	
WIDTH OF TAIL FINS	7-3/4 in.	
DIMENSIONS OF TAIL STRUTS	10-3/4 in. x 3-1/4 in. x 1/8 in.	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Cast blocks of Type 98 explosive.	
WEIGHT OF FILLING	148 lbs.	
TOTAL WEIGHT OF BOMB	1100 lbs.	
CHARGE/WEIGHT RATIO	13 %	
CONSTRUCTION OF BODY	The bomb body is constructed of one piece of machined forged steel. A fuze pocket is drilled in the nose. The after end of the body is threaded internally to a accommodate a male base plate. There is a fuze pocket drilled in the base plate. A sheet steel tail cone is attached to the base plate by eight bolts. Three trap doors in the tail cone give access to the fuze pocket.	
CONSTRUCTION OF TAIL	Four Navy type tail fins are spot-welded to the tail cone. They are braced by a single set of box type struts.	



800 KG. G.P. H.E. BOMB

80 ORDINARY MODEL I

PUBLICATION DATE:	D
FUZES	Nose: A-1(c Tail: B-3(b
OVERALL LENGTH	
LENGTH OF BODY	
DIAMETER OF BODY	
THICKNESS OF WALL	
MATERIAL OF WALL	
TYPE OF SUSPENSION	
CONSTRUCTION OF SUSPENSION LUG	
COLOR & MARKINGS ON BOMB AND TAIL	
LENGTH OF TAIL	
WIDTH OF TAIL	
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	
TYPE OF FILLING	
WEIGHT OF FILLING	
TOTAL WEIGHT OF BOMB	
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	
CONSTRUCTION OF TAIL	
REMARKS	

JAPA
NAVY

80C

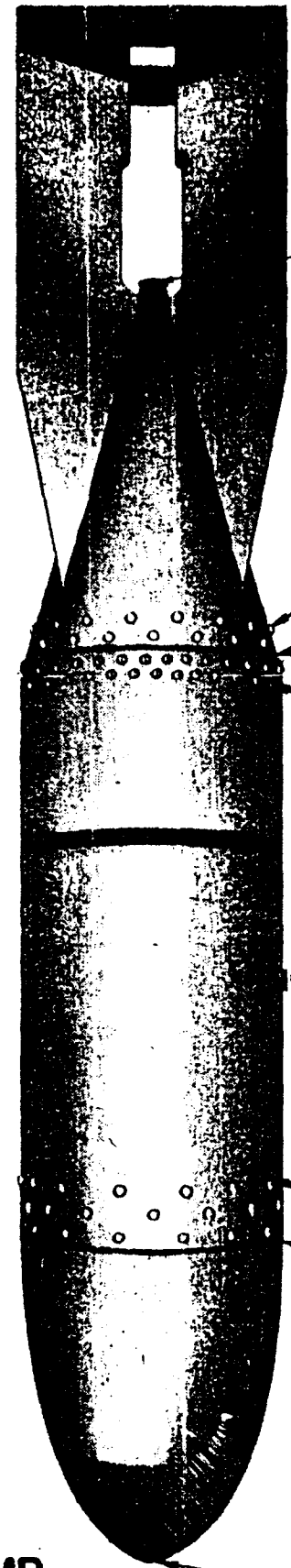
G. P.

NO. 80 C

MOD

, A-3(d)	
	111.5 in.
	62 in.
	17.5 in.
	Steel
	Horizontal
	Two flat lugs screwed to bomb body 180° re is in longitudinal axis, the other in the
	Blue-grey overall. Green nose and tail str lines 180° removed along the longitudinal bomb.
	49 in.
	24.5 in.
	10.5 in. THICKNESS: 5/32"
	3-9/16"x 17-3/4"x 5/32"
	Steel
	Trinitroanisol (cone is filled).
	770 lbs. (approx.)
	1820 (827 Kg.)
	41.7 %
	One piece forged steel; adapter ring held bomb by 30 screws.
	Four 1/8 inch steel fins welded to cone & box type struts. Cone threads onto adapte held by two grub screws.
	Diameter of fuze pockets: Forward - 2" ..... TPI - 10 Aft - 3.75".... TPI - 8

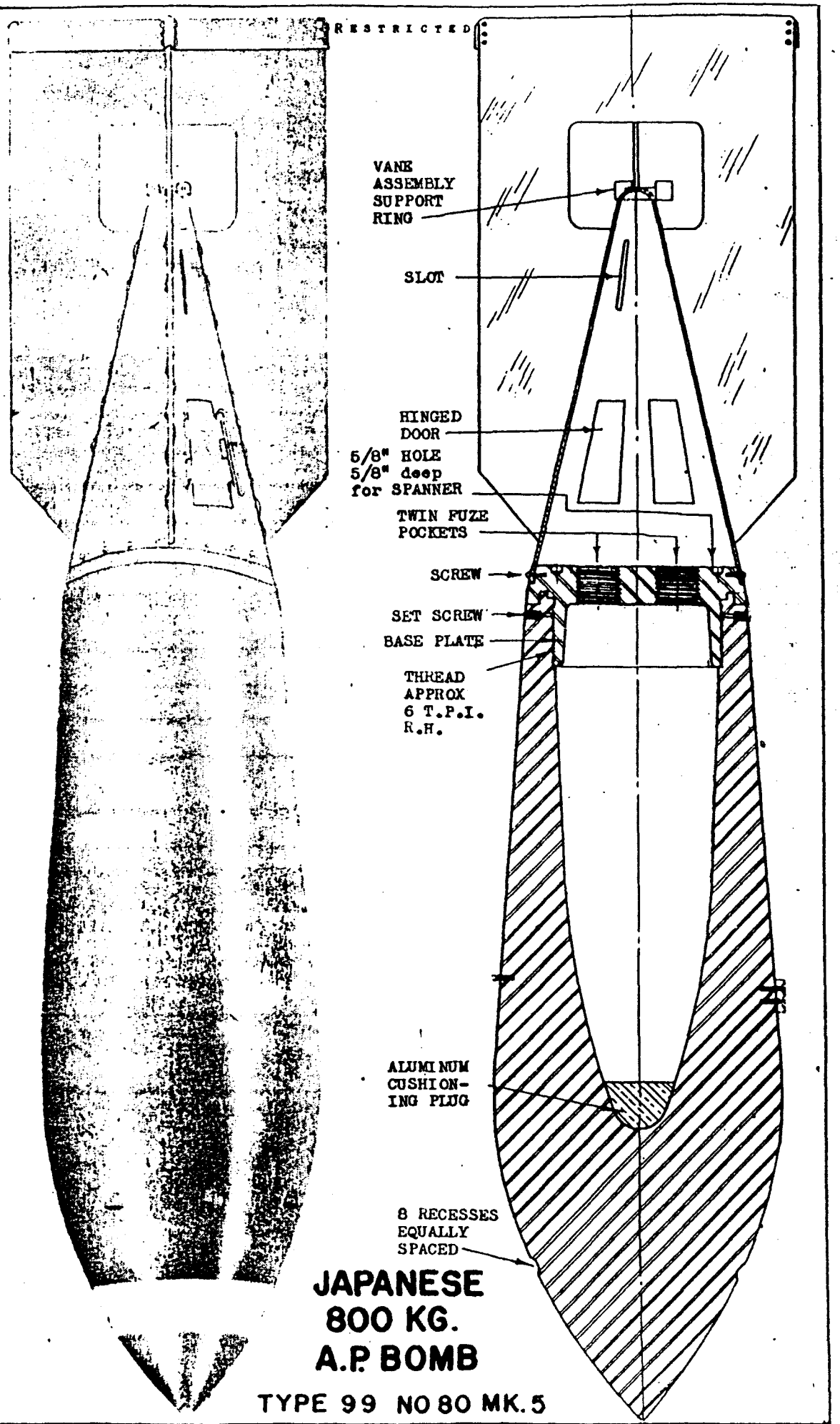
Recent information regarding the suspensi bomb in the plane reveals that it is accomp an eyebolt of the regular Navy type welded band. This band is placed at the center of the bomb. It is held in place by the two re lugs on the bomb body.



NO. 80 LAND BOMB

JAPANESE 800 KG. G.P. H.E. BOMB

PUBLICATION DATE: Dec. 1944 RESTRICTED		JAPANESE NAVY BOMB 800 KG. G. P. H. E. NO. 80 LAND BOMB
FUZES : A-1(c) and B-3(b). Possibly A-3(d)		
OVERALL LENGTH	113 in.	
LENGTH OF BODY	72 in.	
DIAMETER OF BODY	18 in.	
THICKNESS OF WALL		
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Two rectangular lugs screwed to the bomb body and positioned 180° apart. One lug is placed longitudinally, the other transversely.	
COLOR & MARKINGS ON BOMB AND TAIL	Grey overall. Green nose and tail struts. Two red lines 180° apart along the longitudinal axis of the bomb. Blue band around the body.	
LENGTH OF TAIL	41 in.	
WIDTH OF TAIL	25 in.	
WIDTH OF TAIL FINS	10-1/2 in.	
DIMENSIONS OF TAIL STRUTS	3-3/5 in. wide	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Picric Acid (Tail cone is filled).	
WEIGHT OF FILLING	383 Kg.	
TOTAL WEIGHT OF BOMB	800 Kg.	
CHARGE/WEIGHT RATIO	48%	
CONSTRUCTION OF BODY	A cast steel nose is welded to a steel tubular body by a continuous weld and is also riveted to the body with three rows of fourteen rivets each. The tail cone is held by a continuous weld and two rows of sixteen rivets each to a collar which is held in the base of the bomb by two rows of round-headed screws (thirty-two screws in each row). This bomb has a threaded fuze pocket in both the nose and tail.	
CONSTRUCTION OF TAIL	Four Navy fins are spot welded to the tail cone. The fins are braced with a single set of box-type struts.	
REMARKS	Recent information regarding the suspension of this bomb in the plane reveals that it is accomplished by an eyebolt of the regular Navy type welded to a steel band. This band is placed at the center of gravity of the bomb. It is held in place by the two rectangular lugs on the bomb body.	

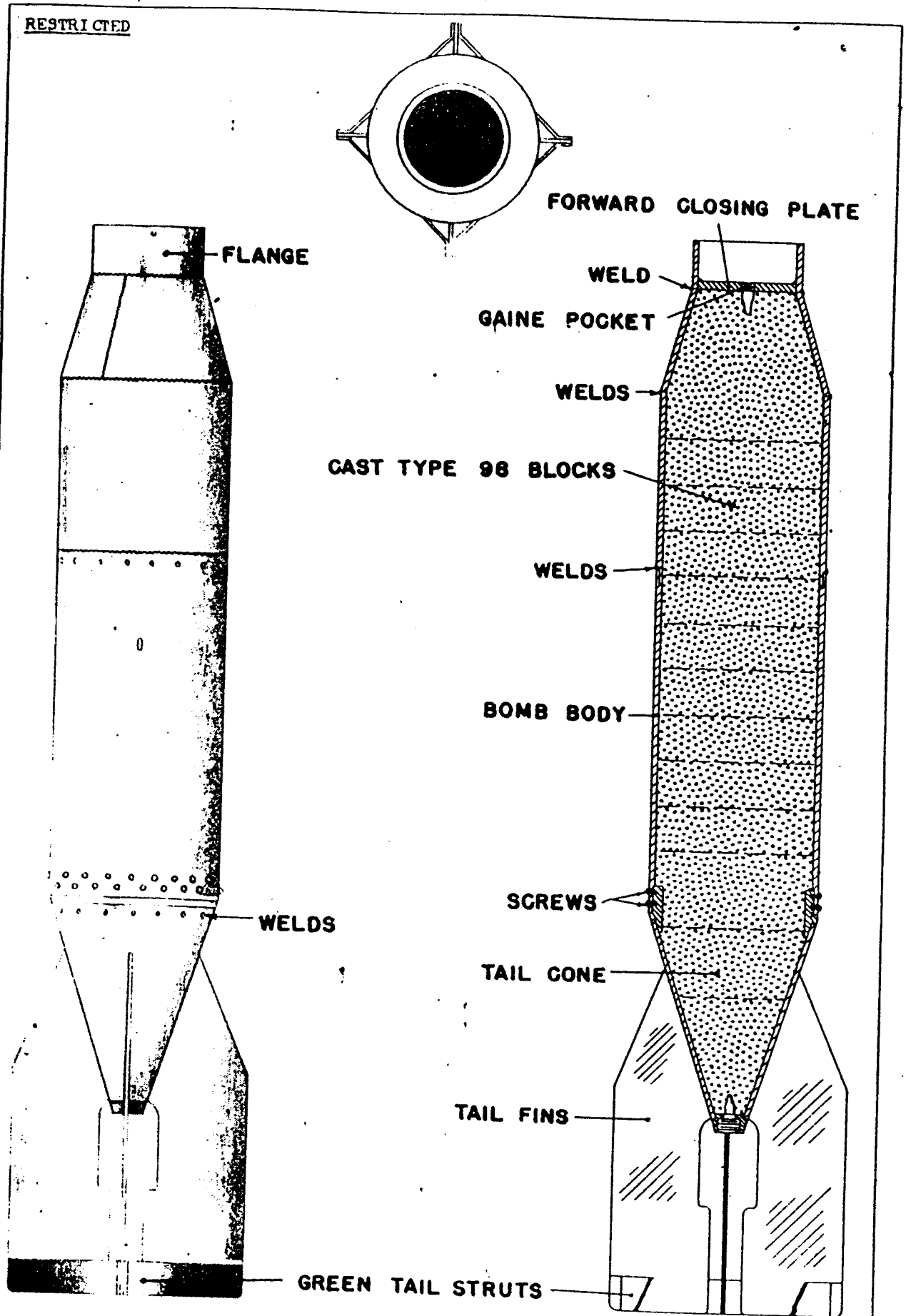


JAPANESE 800 KG. A.P BOMB

TYPE 99 NO 80 MK. 5

PUBLICATION DATE: May 1945 RESTRICTED		JAPANESE NAVY BOMB 800 KG. A.P. TYPE 99 NO.80 MK.5
FUZES: Two B-2(b) tail fuzes		
OVERALL LENGTH	95.5 in.	
LENGTH OF BODY	52-1/3 in.	
DIAMETER OF BODY	16.1 in.	
THICKNESS OF WALL	4.0 in.(Nose) 2.0 in.(Tail)	
MATERIAL OF WALL	Forged steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Two rectangular lugs screwed to the bomb at its center of gravity and positioned 180° apart. One lug is placed longitudinally, the other transversely.	
COLOR & MARKINGS ON BOMB AND TAIL	Green band around the nose, white band aft of green band, grey body and tail and white struts.	
LENGTH OF TAIL	43-7/8 in.	
WIDTH OF TAIL	22.13 in.	
WIDTH OF TAIL FINS	11.06 in.	
DIMENSIONS OF TAIL STRUTS	2.75" wide; 15-1/4" long; 5/32" thick.	
MATERIAL OF TAIL	Sheet steel	
TYPE OF FILLING	30 Kg. Trinitroanisol. Aluminum plug in the forward end of the cavity to protect the filling from shock.	
WEIGHT OF FILLING	30.0 Kg.	
TOTAL WEIGHT OF BOMB	746.0 Kg. (less tail)	
CHARGE/WEIGHT RATIO	4.0 %	
CONSTRUCTION OF BODY	The bomb body is constructed of one piece of forged machined steel. There are 8 recesses cut in the nose to hold a windshield if the case is used as a projectile. A base plate is screwed into the body and has two fuze pockets.	
CONSTRUCTION OF TAIL	The tail cone is formed of rolled sheet steel (3/32 inch) welded down one side. Three hinged doors in the cone permit access for the purpose of placing the fuzes. Two vane assembly supporting rings are located at the apex of the cone. They are welded to opposite ends of an iron bar which in turn is welded into a slot at the apex of the cone. These rings are constructed to receive the B-2(b) vane assembly bushings which are held in place by set screws. Slots in the tail cone are located beneath the supporting rings to permit passage of the reach rods from the fuze bodies to the vane assemblies. The tail cone is attached to the bomb by twelve equally spaced screws. The screws fasten the unreinforced base of the cone to the base plate of the bomb which has holes drilled around the edge to receive the screws.	
REMARKS	Recent information regarding the suspension of this bomb in the plane reveals that it is accomplished by an eyebolt of the regular Navy type welded to a steel band. This band is placed at the center of gravity of the bomb. It is held in place by the two rectangular lugs on the bomb body.	

RESTRICTED



JAPANESE NAVY 800 KG. BOMB

TYPE 3 NO. 80 MK. 31 MODEL 1

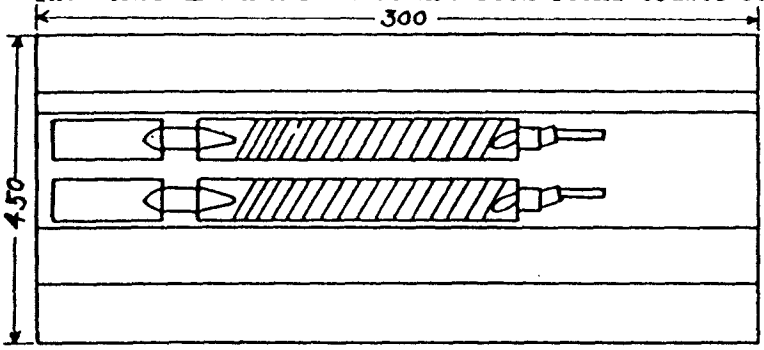
PUBLICATION DATE : May 1945 RESTRICTED		JAPANESE NAVY BOMB 800 KG. TYPE 3 NO 80 MK. 31 MODEL 1
FUZES: Nose fuze unknown. B-3(b)		
OVERALL LENGTH	113 in.	
LENGTH OF BODY	72 in.	
DIAMETER OF BODY	18 in.	
THICKNESS OF WALL	9/16 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Two guide studs on the bomb body position the steel suspension band.	
COLOR & MARKINGS ON BOMB AND TAIL	Gray overall. Green tail struts. No color bands on the nose.	
LENGTH OF TAIL	41 in.	
WIDTH OF TAIL	25 in.	
WIDTH OF TAIL FINS	10-1/2 in.	
DIMENSIONS OF TAIL STRUTS	17-1/4 in. x 3-3/5 in. x 1/8 in.	
MATERIAL OF TAIL	Steel	
TYPE OF FILLING	Type 98 explosive cast in paper-wrapped blocks.	
WEIGHT OF FILLING	922 lbs.	
TOTAL WEIGHT OF BOMB	1584 lbs.	
CHARGE/WEIGHT RATIO	58 %	
CONSTRUCTION OF BODY	The bomb consists of a nose piece, barrel and tail assembly. The slightly tapered longitudinally welded nose piece is closed at its forward end by a flat plate which has an 11-3/8 in. diameter. The plate is drilled centrally and this nose pocket can only accommodate a Navy gaine. A metal flange is welded to this plate. It is 5-1/4 in. long, 7/32 in. thick and has a 11-3/8 in. inner diameter. It is pierced by four 1/2 in. holes 3/4 in. aft of the forward end. The nose section is attached to the barrel by a continuous circumferential weld and 17 plug welds. There is a second circumferential weld at the point where the nose section begins to taper. The barrel is of tubular steel construction. The tail cone is attached by 30 plug welds to a coupling ring which fits inside the barrel. The coupling ring is held in the barrel by two rows of screws numbering 34 in all. There is a standard tail fuze pocket at the apex of the tail cone.	
CONSTRUCTION OF TAIL	Four Navy type tail fins are welded to the tail cone. The fins are braced by a single set of box-type struts.	
REMARKS	The unusual construction of the nose, plus the recovery of an electric gaine strengthens the belief that this bomb may utilize an electric firing mechanism which gives proximity burst.	

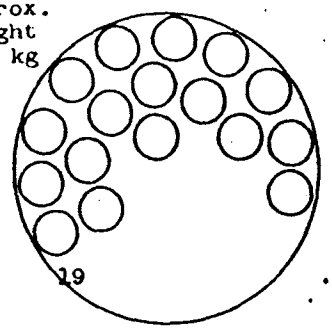
RESTRICTED

Excerpt from **JAPANESE SPECIAL BOMB CHART**

Captured at Darwin, Australia, 6 July 1943

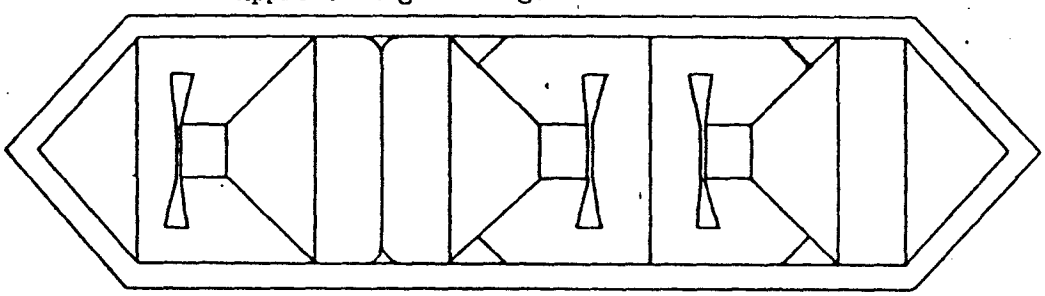
The bombs drawn here have not been found todate July 1944





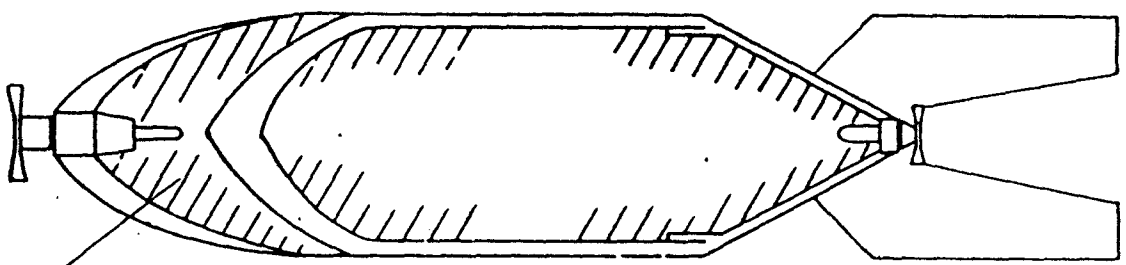
Bomb Type	Detonating Equipment	Fuze	Remarks
Air Technical Arsenal Experimental Model 18 Mark 22 Bomb (Fig. 5)	Container body Cluster Bombs Nose Type 1 Special Bomb Nose Booster. Tail Type 2, Special Bomb Base Booster Model 11	Nose Type 92 bomb Fuze, Improved 2 Tail Type 2 Bomb Fuze, Model 11	For aerodrome neutralization. Aerodromes bombed with stick clusters (time delay or instantaneous fuze) will be rendered unsuitable for take-off or landing.

Approx. weight 45 kg.



Air Technical Arsenal Experimental Model 18, Mark 25 Bomb (Fig. 7)	Assembly Cluster Bombs Type 2 Special Bomb Nose Booster. Model 11	Type 2, Bomb Fuze, Model 11	For neutralization of aerodromes. After landing, explosion will result by contact with aircraft or personnel. Body shaped to resist penetration.

Approx. weight 250 kg.



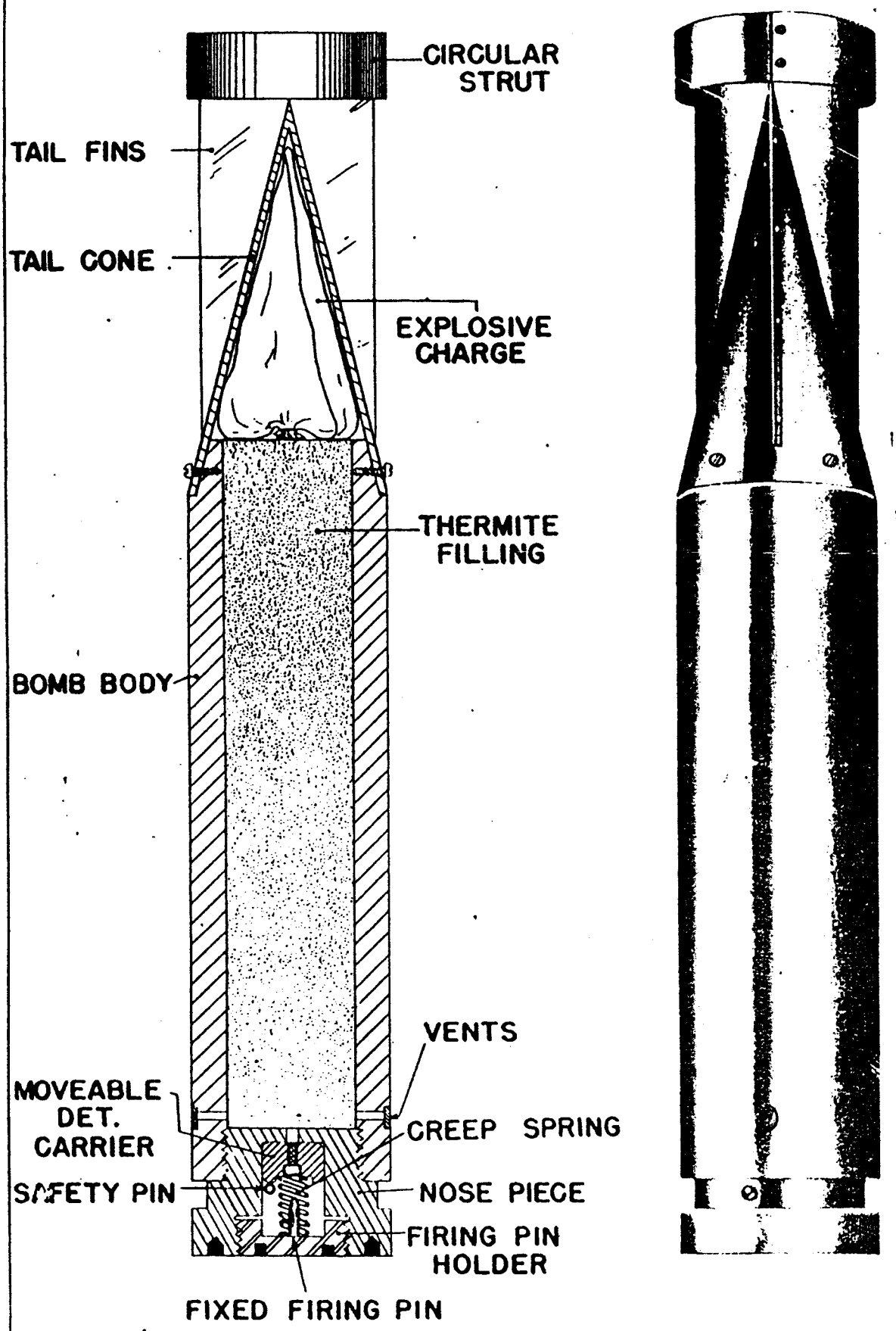
Air Technical Arsenal Experimental Model 18, Mark 26 Bomb (Fig. 8)	Nose Type 97 1 0 Bomb Nose Booster Model 2	Type 92 Bomb Fuze, Improved 2	For neutralization of aerodromes. Special burster charge in bomb nose. Burst will decrease rate of fall and penetration. Time delay fuze attached in tail.
	Tail Type 99 Special Bomb Nose Booster Models (1,2,3)	Type 92 Bomb Fuze, Improved 2	

JAPANESE INCENDIARY BOMBS

Our Designation	Japanese Designation
Navy 32 Kg. Incendiary	* Type 99, No. 3 Mark 3 九九式三番三號
Army 50 Kg. Type 97 Incendiary	Type 97 Incendiary Bomb ⊕ 九七式二番火弃夷火暴彈
Army 50 Kg. Type 100 Incendiary	* Type 100, 50 Kg. Incendiary Bomb 一〇〇五〇㋐㊎
Navy 250 Kg. Incendiary	* Type 2, No. 25, Mark 3, Bomb Model 1 + ⊕ 二式二五番三號火暴彈一型

* - These Japanese designations have been obtained from labels or characters on recovered bombs. The other Japanese designations were secured from various sources including captured Japanese documents.

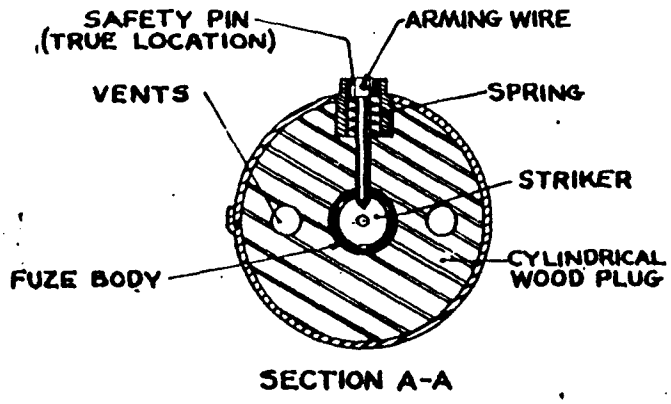
⊕ - These Japanese characters were not copied directly. Only an English translation was received, and this retranslated to Japanese for identification purposes. As a result there may be slight differences between the Japanese characters listed here and those on the original label. Other Japanese characters were copied directly from Japanese labels or documents.



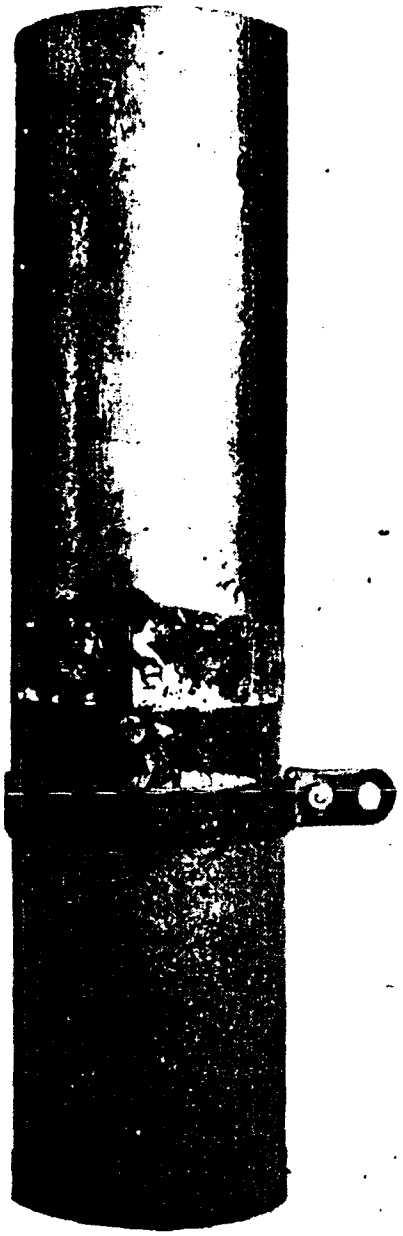
JAPANESE ARMY

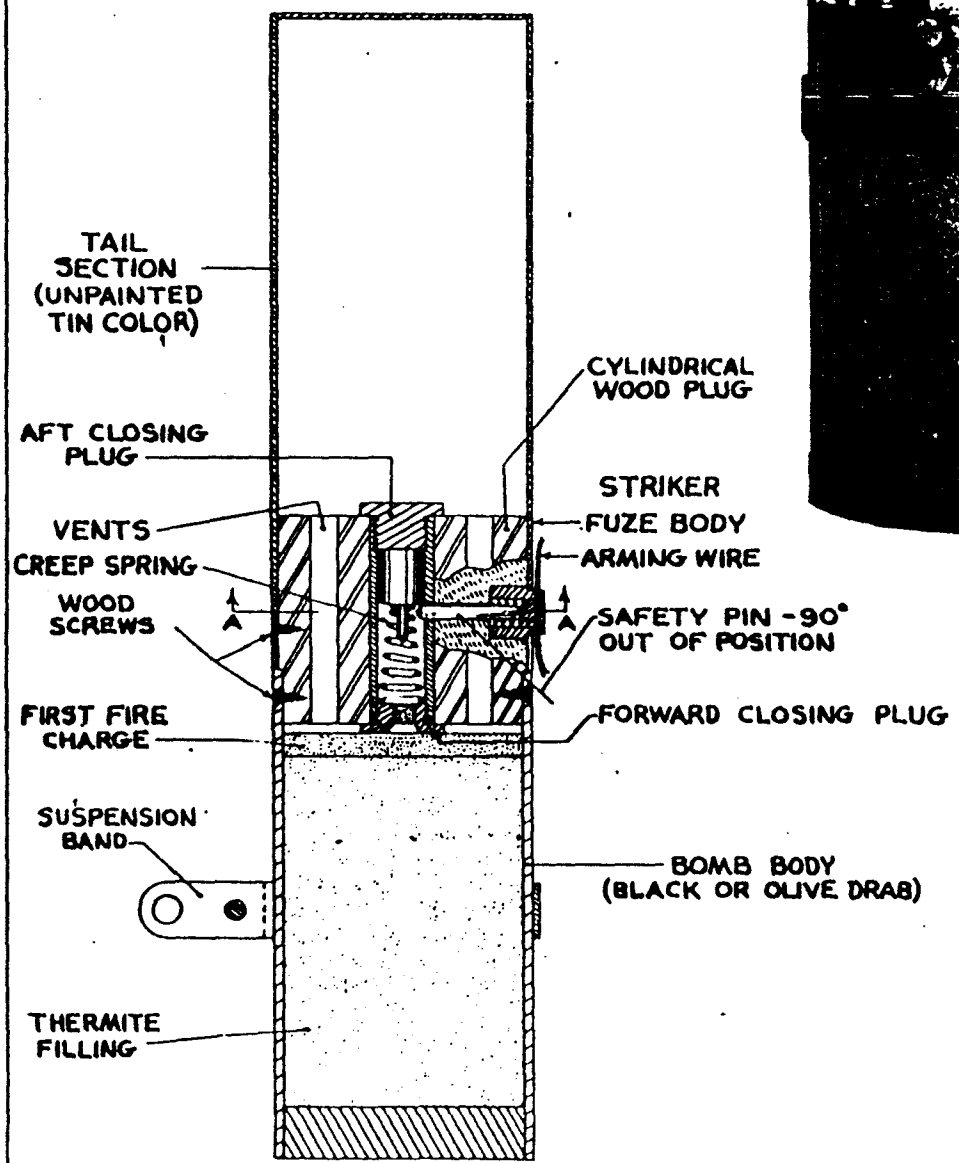
1 KG. INCENDIARY BOMB

PUBLICATION DATE: May 1945 RESTRICTED		JAPANESE ARMY BOMB 1 KG. INCENDIARY
FUZES: Inertia Impact Fuze		
OVERALL LENGTH	13-1/2 in.	
LENGTH OF BODY	8-5/16 in.	
DIAMETER OF BODY	2-1/8 in.	
THICKNESS OF WALL	3/8 in.	
MATERIAL OF WALL	Magnesium	
TYPE OF SUSPENSION	Cluster container	
CONSTRUCTION OF SUSPENSION LUG	None	
COLOR & MARKINGS ON BOMB AND TAIL	Black overall (prime coat of gold paint on the body only).	
LENGTH OF TAIL	5-1/8 in.	
WIDTH OF TAIL	2-1/8 in.	
WIDTH OF TAIL FINS	1-1/16 in.	
DIMENSIONS OF TAIL STRUTS	13/16 in. wide	
MATERIAL OF TAIL	Light sheet metal	
TYPE OF FILLING	Thermite	
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB	2 lbs. 12 oz.	
CHARGE/WEIGHT RATIO		
CONSTRUCTION OF BODY	The bomb consists of a nose piece, incendiary filled body and explosive filled tail. The nose piece is made of magnesium and screws into the bomb body. At the flat forward end it is threaded centrally to receive the brass firing pin holder which contains a fixed steel firing pin. At the after end it is pierced by a flash hole. The recess within the nose piece houses a moveable detonator carrier and a creep spring. An off-center transverse safety pin prevents the detonator carrier from hitting the firing pin. The body is a thermite-filled cylindrical magnesium tube. The forward end is threaded internally to receive the nose piece. The after end is boat-tailed to accommodate the conical tail cone. Three-fourths(3/4) inch aft of the forward end are four vent holes, 90° apart. The conical tail cone, made of light sheet metal, slips over the boat-tailed after body of the bomb, and is secured to it by four screws. Each of the three fins, which are made of the same material as the cone, has its inner edge turned and held to the cone by four rivets. Where the three fins meet aft of the apex of the tail cone, they are braced and held together by angular metal strips, which are riveted onto both sides of each fin by two rivets. The outer edge of each fin is turned for a distance of 3/4" from the after end. Six rivets hold these turned edges to a circular strut. Filling the inside of the tail cone is a conical cloth bag containing a pyrotechnic mixture which may have explosive properties.	
OPERATION	The fuze is armed when the safety pin is removed. On impact the detonator carrier moves down against the creep spring and hits the firing pin. The resultant flash ignites the thermite filling of the bomb.	



SECTION A-A

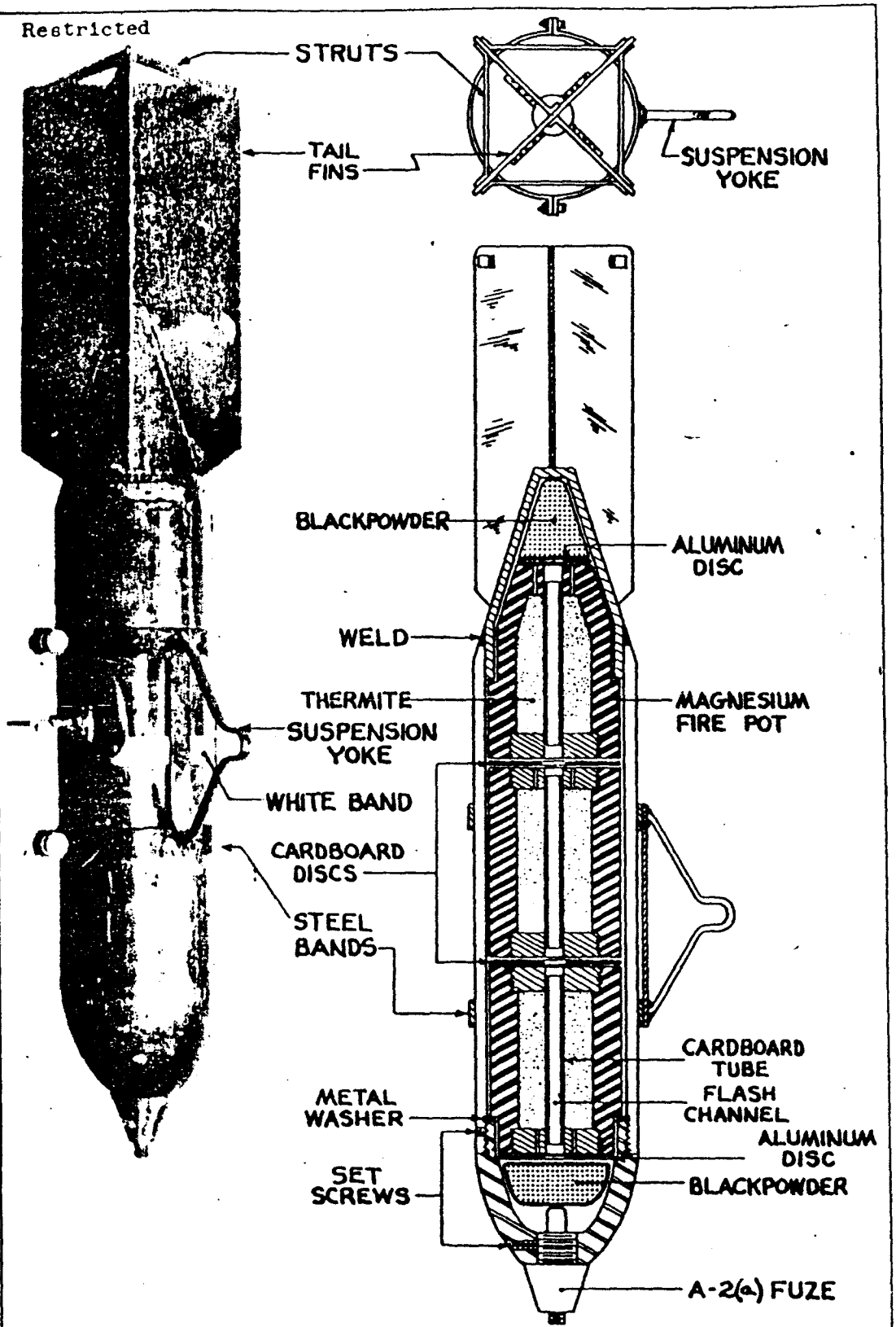




JAPANESE 5KG. THERMITE INCENDIARY BOMB

PUBLICATION DATE : May 1945 RESTRICTED	JAPANESE BOMB 5KG THERMITE INCENDIARY
FUZES : Mechanical Impact Tail Fuze	
OVERALL LENGTH	16-3/4 in.
LENGTH OF BODY	6-3/4 in.
DIAMETER OF BODY	3-11/16 in.
THICKNESS OF WALL	1/8 in.
MATERIAL OF WALL	Welded steel tube
TYPE OF SUSPENSION	Horizontal
CONSTRUCTION OF SUSPENSION LUG	3/4" steel band secured around the body by a nut and bolt. 5/16" hole drilled in the extension of the band to accept metal hook.
COLOR & MARKINGS ON BOMB AND TAIL	Bomb body: Black or olive drab Tail : Unpainted tin color
LENGTH OF TAIL	9 in.
WIDTH OF TAIL	3-11/16 in.
WIDTH OF TAIL FINS	None
DIMENSIONS OF TAIL STRUTS	None
MATERIAL OF TAIL	Tin-plated sheet steel
TYPE OF FILLING	Incendiary, consisting of a first fire charge and a main charge.
WEIGHT OF FILLING	
TOTAL WEIGHT OF BOMB	11 lb. (5 kg.) (approx.)
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	The bomb body consists of a 1/8" thick steel tube welded longitudinally and closed at the forward end by a 3/4" thick nose plug which is welded in place. A cylindrical wooden block is fitted part way into the aft end of the body and secured by six (6) countersunk wood screws. The block contains the simple impact fuze and spring-loaded safety pin and also acts as the connecting element between the body and the tail. Two 3/8" vent holes are drilled longitudinally through the block 180° apart. The fuze is 2-7/8 in. long and has a 1-3/16 in. diameter. The tubular aluminum body contains a striker and a creep spring. A solid threaded plug closes the aft end and a plug containing the primer screws into the forward end. A spring-loaded safety pin holds the striker in position. The incendiary filling in the bomb body consists of a first fire charge which is adjacent to the primer and a main charge below it. The first fire charge is a compressed black powder composed of magnesium, barium peroxide and potassium nitrate. The main charge is thermite.
CONSTRUCTION OF TAIL	The tail, consisting of a tinned sheet steel tube closed at the after end, is secured to the wooden block by five wood screws. The tail and body sections rest flush against one another, completely concealing the wooden block to which they are attached. A slot in the tail accepts the brass safety pin housing which is contained in the wooden block.
OPERATION	When the bomb is released the arming wire is withdrawn, allowing the spring-loaded safety pin to fly out, arming the fuze. On impact, the striker compresses the creep spring and hits the primer. The explosion of the primer ignites the first fire charge and the thermite.

Restricted



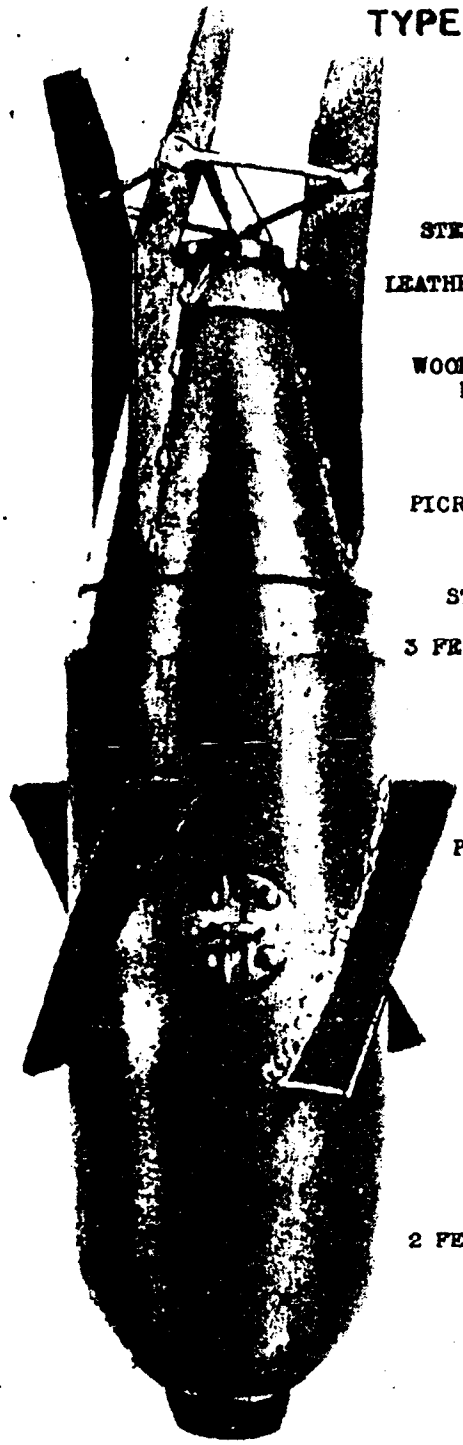
JAPANESE
12 Kg. INCENDIARY BOMB

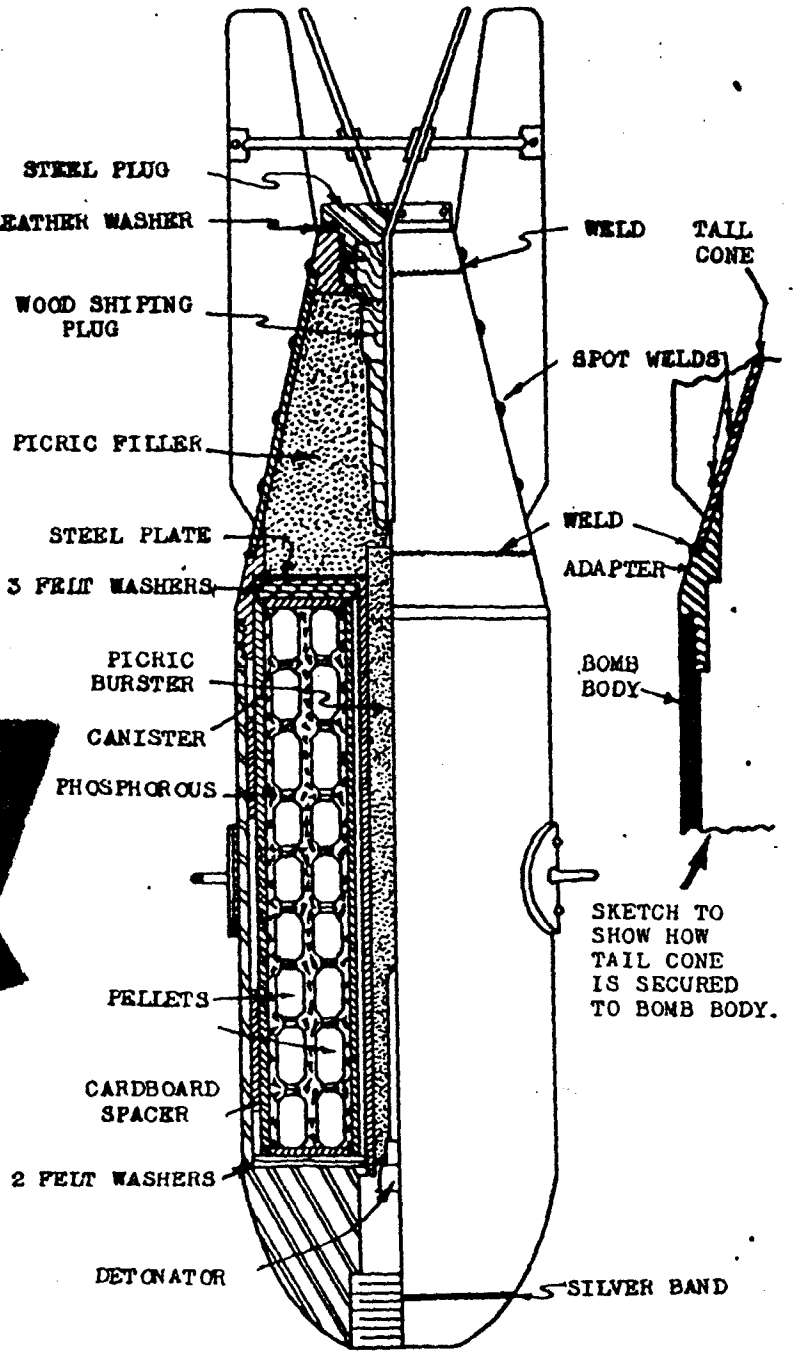
PUBLICATION DATE : May 1945 Restricted	JAPANESE ARMY BOMB 12 KG. THERMITE INCENDIARY TYPE 97
FUZES : A-2(a) (fitted with a magazine)	
OVERALL LENGTH	25-1/2 in.
LENGTH OF BODY	14-1/2 in.
DIAMETER OF BODY	4 in.
THICKNESS OF WALL	3/16 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug on barrel, plus an improvised suspension device described below.
COLOR & MARKINGS ON BOMB AND TAIL	Black overall with a 9/16 in. white stripe just forward of the suspension lug.
LENGTH OF TAIL	11 in.
WIDTH OF TAIL	5-7/16 in.
WIDTH OF TAIL FINS	2-3/16 in.
DIMENSIONS OF TAIL STRUTS	5/16 in. x 3-3/4 in.
MATERIAL OF TAIL	1/16 in. rolled steel
TYPE OF FILLING	Three thermite-filled magnesium fire pots. Two black powder ignition charges.
WEIGHT OF FILLING	Fire pots, 10 lb.; Black powder charges, 11 oz.
TOTAL WEIGHT OF BOMB	26 lbs.
CHARGE/WEIGHT RATIO	38%
CONSTRUCTION OF BODY	A steel nose, 9/16 in. thick, is screwed into a tubular steel barrel and secured by a set screw. A normal hinged Army suspension lug and an additional suspension device are fitted to the barrel. The suspension device consists of two steel bands 11/16 in. wide, each secured around the barrel by a bolt and nut. The bands are joined by a steel strip 1/2 in. wide which is welded to them. A 1/4 in. steel rod formed into a suspension yoke is welded to the steel strip.
CONSTRUCTION OF TAIL	Four Army fins are welded to a tail cone and are braced by a single row of box type struts. The base of the tail cone fits into the barrel and is welded in place.
OPERATION	The fuze is armed in flight and on impact the magazine is fired which in turn initiates the black powder charge. The flash from this charge travels down a central flash channel igniting the incendiary composition in the fire pots and firing the black powder charge in the tail.
REMARKS	It has not been ascertained whether the explosive force of the two black powder charges is sufficient to rupture the bomb case and thus expel the fire pots, or whether the bomb burns as a unit. The suspension yoke will only be found on this bomb under special circumstances.

RESTRICTED

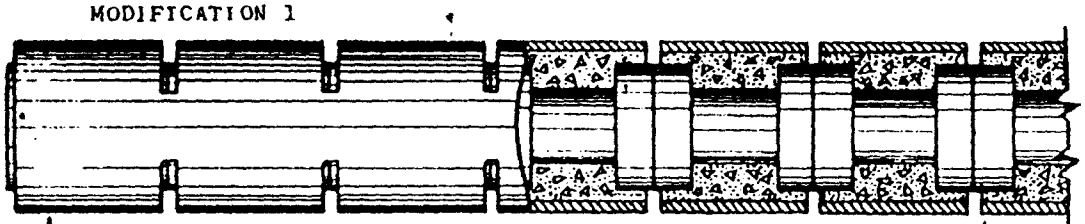
JAPANESE 32 KG. INCENDIARY

TYPE 99 NO. 3 MK. 3

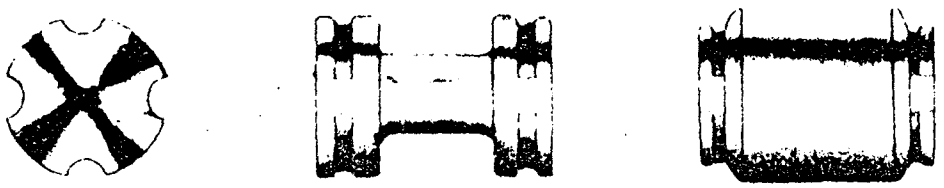




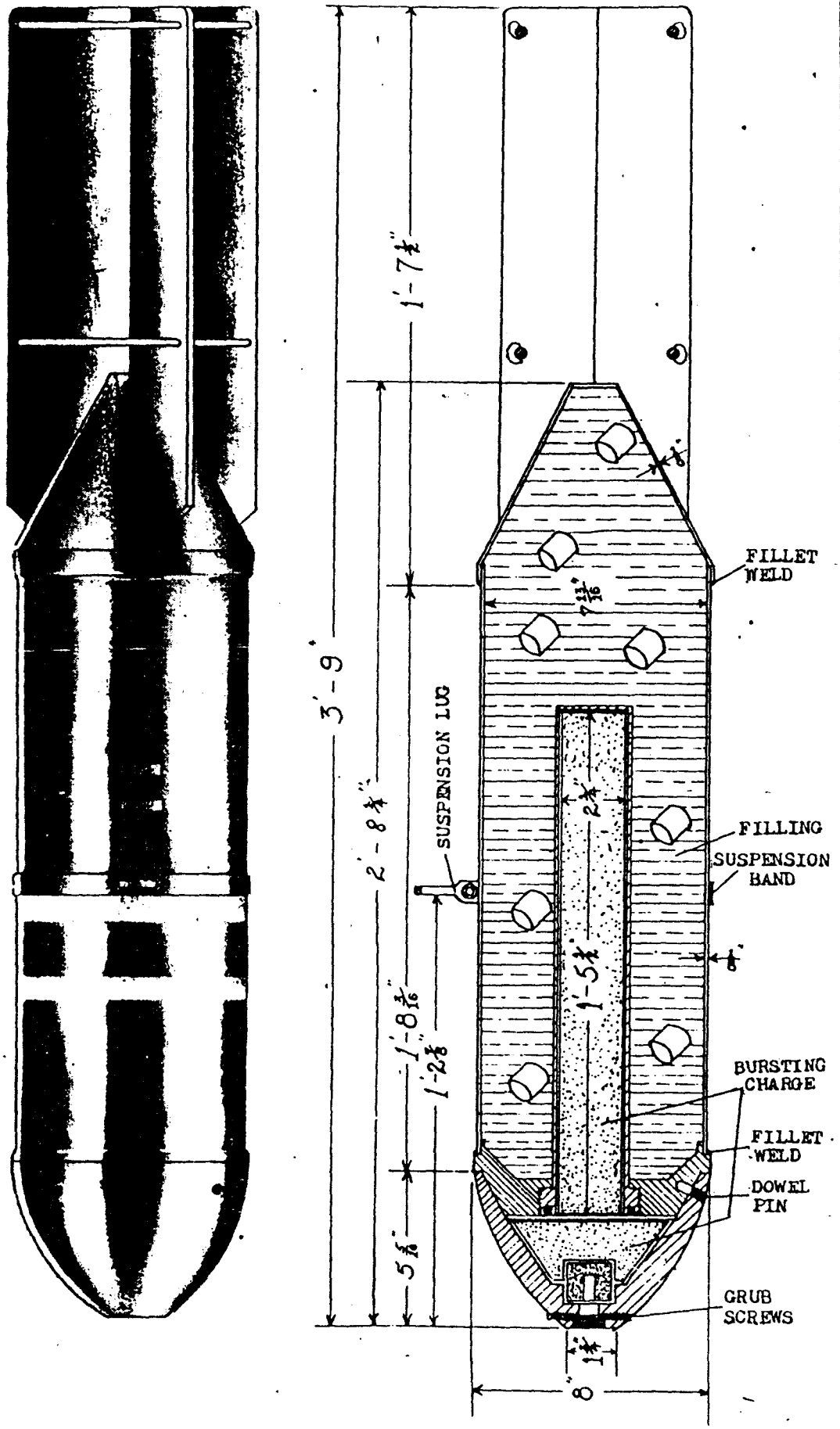
MODIFICATION 1



TYPES OF INCENDIARY PELLETS



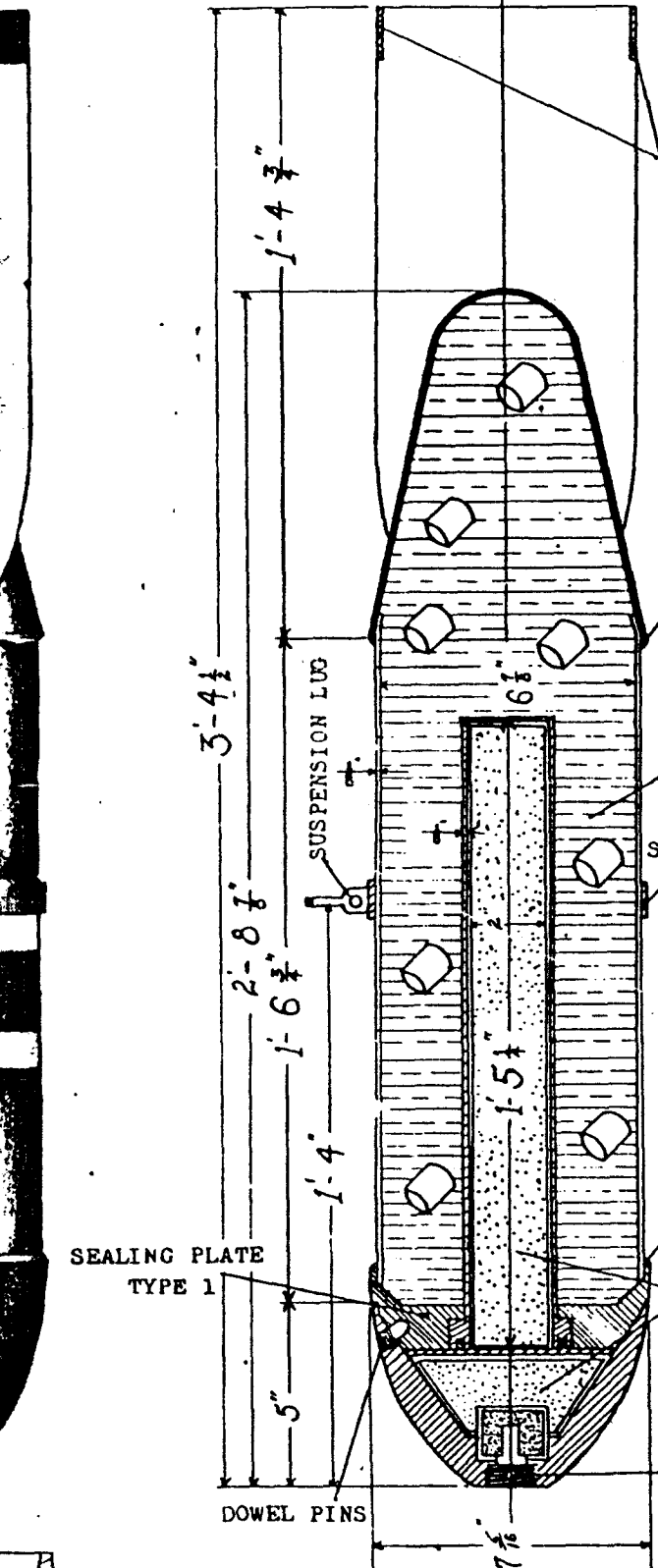
PUBLICATION DATE: Sept. 1944 RESTRICTED	JAPANESE NAVY BOMB
FUZES: Nose: A-1(b), A-3(c) Tail: Solid plug or D-2(a), D-2(b) or D-2(c)	32 KG.
OVERALL LENGTH: 24.5 in.	TYPE 99, NO.3 MK.3
LENGTH OF BODY: 13.5 in.	Incendiary
DIAMETER OF BODY: 5.75 in.	
THICKNESS OF WALL: 0.19 in.	
MATERIAL OF WALL: Steel	
TYPE OF SUSPENSION: Horizontal	
CONSTRUCTION OF SUSPENSION LUG: Two normal Navy suspension lugs are diametrically opposite at the center of gravity.	
COLOR & MARKINGS ON BOMB AND TAIL: Navy [redacted] Code: Grey body and tail. A two inch silver band around the nose, a one inch silver band on the end of the tail fins, and two red lines diametrically opposite run from nose to tail.	
LENGTH OF TAIL: 11.0 in.	
WIDTH OF TAIL: 5.75 in.	
WIDTH OF TAIL FINS: 1-11/16 in.	
DIMENSIONS OF TAIL STRUTS: 3/16 in. circumference	
MATERIAL OF TAIL: Sheet steel	
TYPE OF FILLING: Canister containing 198 phosphorus-filled steel pellets. Picric Acid in tail cone.	
WEIGHT OF FILLING: 3.5 pounds Picric Acid	
TOTAL WEIGHT OF BOMB: 32.0 Kg.	
CHARGE/WEIGHT RATIO:	
CONSTRUCTION OF BODY: The body is of single piece forged steel construction with a solid nose, well machined, and coated on the inside with red lacquer. The canister containing the incendiary pellets is inserted from the base and the tail cone is screwed into the body. A steel tube containing the burster charge screws into the nose and extends the entire length of the body. Two suspension lugs are fitted. A plate is fastened into the tail cone by four screws to protect the cast explosive charge.	
CONSTRUCTION OF TAIL: Four fins (.06 inches) welded with four spot-welds each to a cone which is welded to a collar, the collar in turn being screwed into the base of the bomb. A fuze adapter is welded at the apex of the tail cone. The fins are supported by 3/16 inch round struts flattened at the fins to take one rivet. A plate closes the tail cone containing a picric bursting charge.	
REMARKS: Centrifugal force is necessary to arm the D-2 series of fuzes. To ensure that these fuzes will arm, the tail fins are bent to an angle of approximately 19 degrees in order to impart a rotary action to the bomb. A modification of the bomb, probably a factory variation, has been recovered. It contained 21 lengths of mild steel pipe, one inch in diameter, packed vertically in the canister. Each length was divided into 8 equal sections by being cut completely through except for 1/4" of circumference left along one side. The bomb thus contained 168 phosphorus filled pellets. A variation of this bomb listed as Modification 1 has four fins welded to the body and utilizes the new color markings. The fins, which are 6" long, 1-1/2" wide and 1/16" thick, are welded to the body at 4-5/8" intervals, two between each suspension lug. They are offset 35° from the longitudinal axis of the bomb and serve to accelerate its clockwise rotation. The bomb is painted grey. It has a silver nose tipped with green. The tail struts are red.	



JAPANESE INCENDIARY BOMB
50 KG. TYPE 97

PUBLICATION DATE: July 1944 RESTRICTED	**JAPANESE ARMY BOMB**
FUZES: Nose: A-2(a) or A-2(b). Tail: None	**50 KG.**
OVERALL LENGTH: 45.0 in.	**TYPE 97**
LENGTH OF BODY: 26.4 in.	Gas Bomb used as Incendiary
DIAMETER OF BODY: 7.5 in.	
THICKNESS OF WALL: 0.2 in.	
MATERIAL OF WALL: Steel.	
TYPE OF SUSPENSION: Horizontally (Army type)	

CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug. (A rectangular steel swivel eye-hook on a plate riveted to body fastened to carrying band).
COLOR & MARKINGS ON BOMB & TAIL	Army Code for Incendiaries: Grey nose, body and tail. A yellow and a white band are stencilled just forward of the suspension lug.
LENGTH OF TAIL	18.5 in.
WIDTH OF TAIL	9.2 in.
MATERIAL OF TAIL	Sheet iron
DIMENSIONS OF TAIL STRUTS	
TYPE OF FILLING	Carbon disulphide solution (64.5%) of white phosphorus, with rubber bungs impregnated with phosphorus (1 inch long x 1 inch in diameter).
WEIGHT OF FILLING	6 Kg. (approx.) (Explosive)
TOTAL WEIGHT OF BOMB	50 Kg.
CHARGE/WEIGHT RATIO	12 %
CONSTRUCTION OF BODY	Army construction: A steel nose is screwed to body and fastened by three grub-screws. Tail cone welded to body. No fuze pocket in tail cone.
CONSTRUCTION OF TAIL	Four Army fins are welded to cone. Supported by two rows of box-type struts.
REMARKS	This bomb was dropped in India.



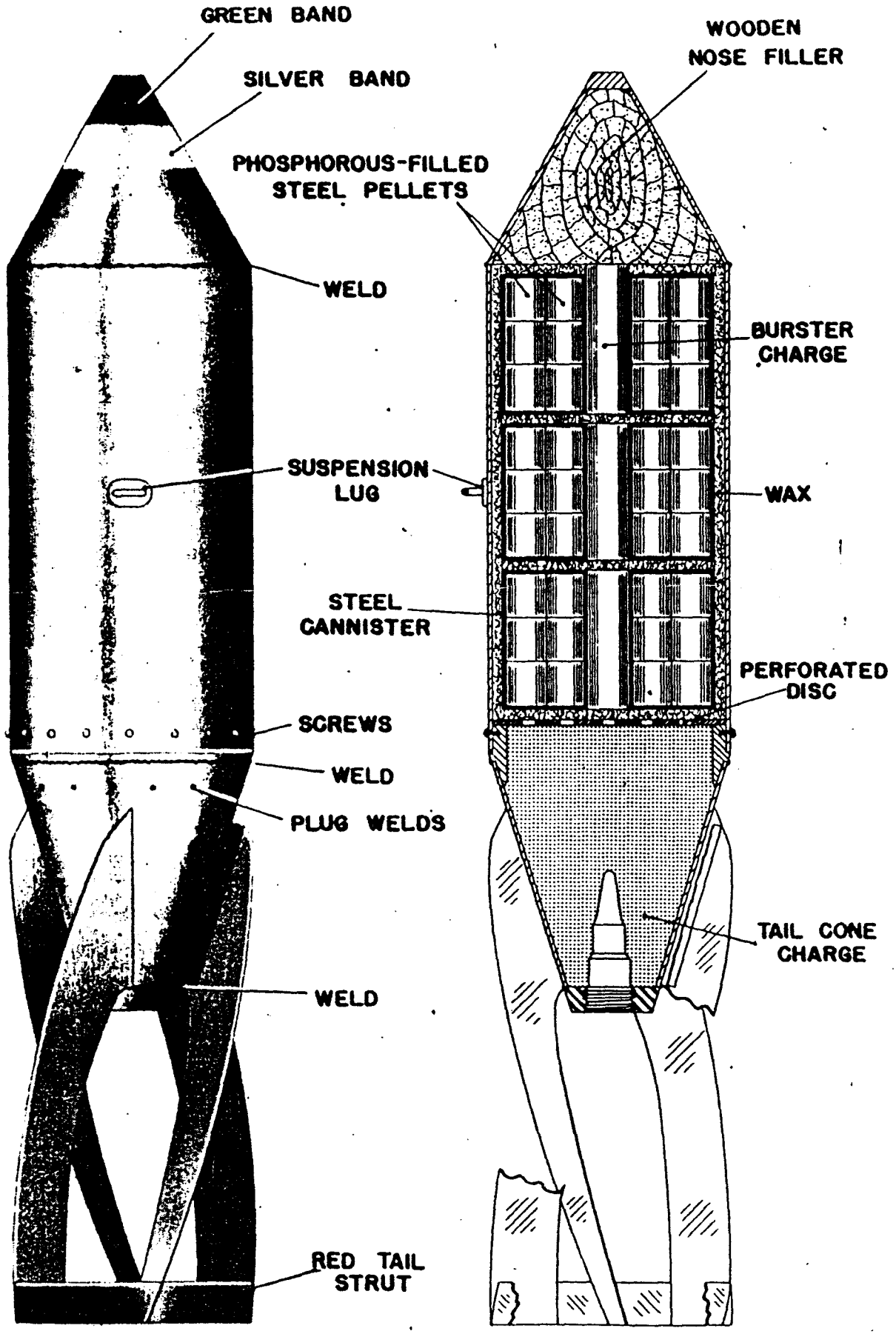
PE 2

ESE INCENDIARY BOMB
50 KG. TYPE 100


STRUTS
FILLET WELD
FILLING
SUSPENSION BAND
FILLET WELD
BURSTING CHARGE
GRUB SCREWS

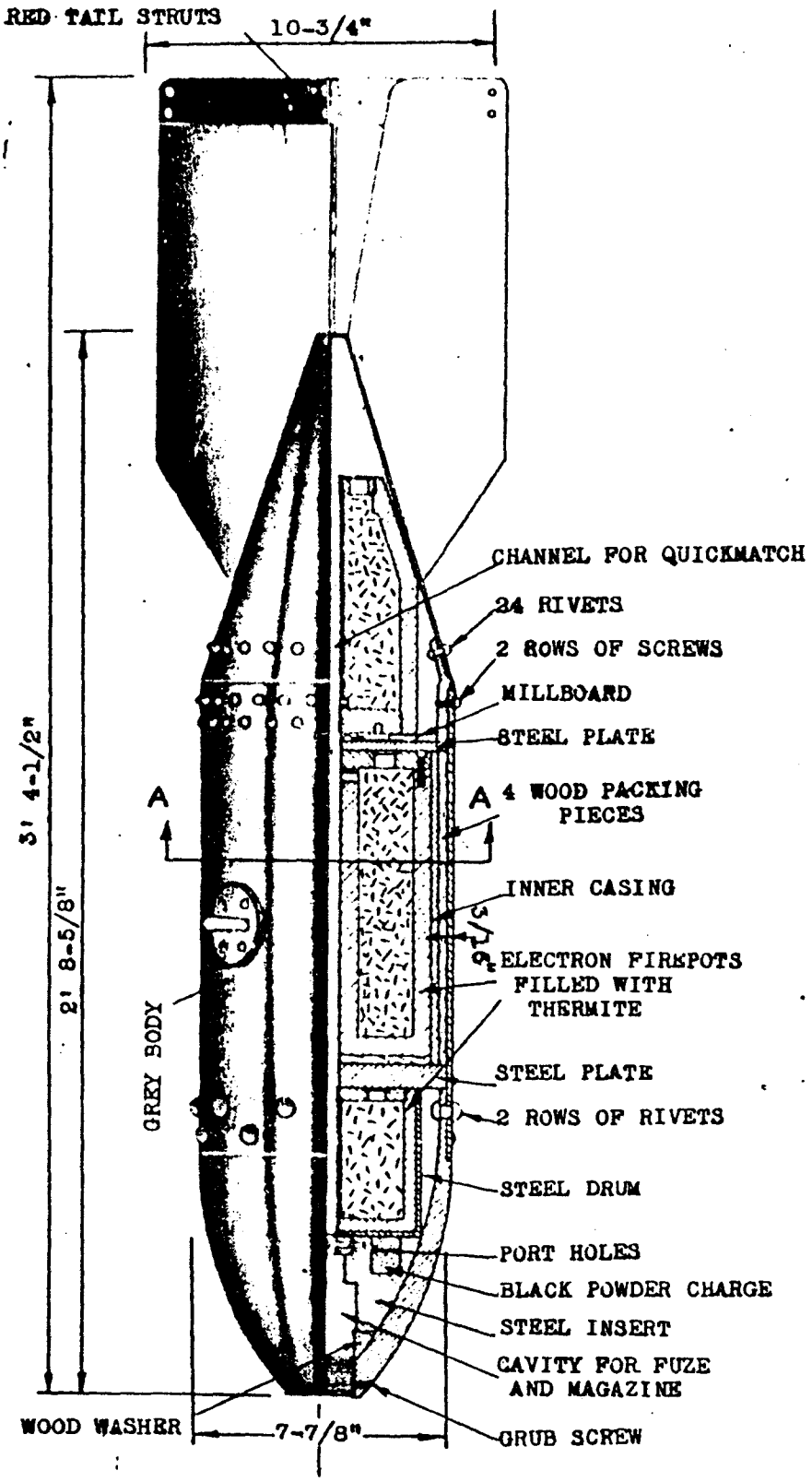
PUBLICATION DATE: May 1945 RESTRICTED		JAPANESE ARMY BOMB 50KG. TYPE 100 Incendiary (Phospherous Pellets)
FUZES A-2(b) or possibly A-2(a) or A-2(c) .		
OVERALL LENGTH	40.5 in.	
LENGTH OF BODY	23.75 in.	
DIAMETER OF BODY	7.0 in.	
THICKNESS OF WALL	0.125 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal (Army Type)	
CONSTRUCTION OF SUSPENSION LUG	Normal Army Suspension lug. (A rectangular steel swivel eyehook is welded to a carrying band).	
COLOR & MARKINGS ON BOMB & TAIL	Blue-grey overall with a white or a white and a yellow band forward of suspension lug and a red band around the nose. "50K" and incendiary symbol (十) stencilled in white on body.	
LENGTH OF TAIL	16.75 in.	
WIDTH OF TAIL	9.75 in.	
WIDTH OF TAIL FINS	4.50 in.	
DIMENSIONS OF TAIL STRUTS	1.5 x 5.3 x 0.09 in.	
MATERIAL OF TAIL	Sheet steel	
TYPE OF FILLING	Solution of 84.5% white phosphorous in carbon disulphide and 475 rubber bungs (one inch long by one inch diameter) impregnated with phosphorous. Picric Acid burster charge in nose and in the exploder tube.	
WEIGHT OF FILLING	16.1 Kg. Incendiary Filling. 2.1 or 2.7 Kg. H.E. charge.	
TOTAL WT. OF BOMB	43.5 Kg.	
CHARGE/WT. RATIO	44 %	
CONSTRUCTION OF BODY	The bomb consists of a tubular steel body to which is welded the conical tail cone and a steel closing plate or collar. A central exploder tube is screwed into the plate, and the joint is made airtight by a lead washer at the thread seat and molten lead poured around the external thread union. The steel nose piece is attached to the plate by three dowel pins.	
CONSTRUCTION OF TAIL	Four Army fins are spot welded to tail cone and supported by box-type struts. The tail cone is welded to the body.	
REMARKS	Analysis of incendiary filling has also been reported as: white phosphorous - 84%; carbon disulphide - 16%. The burster tube may be either 11-5/8 inches or 17-1/4 in. long, the shortened tube being the latest Japanese modification. This accounts for the variance in weight of the H.E. charge. Since the bombs are not shipped with the explosive charge, captured specimens will not have the red band on the nose. The wooden packing cases are stencilled: 一〇五〇㊒㊒ Translated: "Type 100 50 Kg. Incendiary bomb, one unit". The character (短) meaning "short" is stencilled on each end. This refers to the burster tube. This bomb case is similar to the 50 kg. Smoke bomb, pg. 83(b) Two different steel closing plates have been found with varying thicknesses of 1" and 1-3/4".	

RESTRICTED



JAPANESE NAVY 60 KG. AERIAL BURST INCENDIARY BOMB TYPE 3 NO. 6 MK. 3

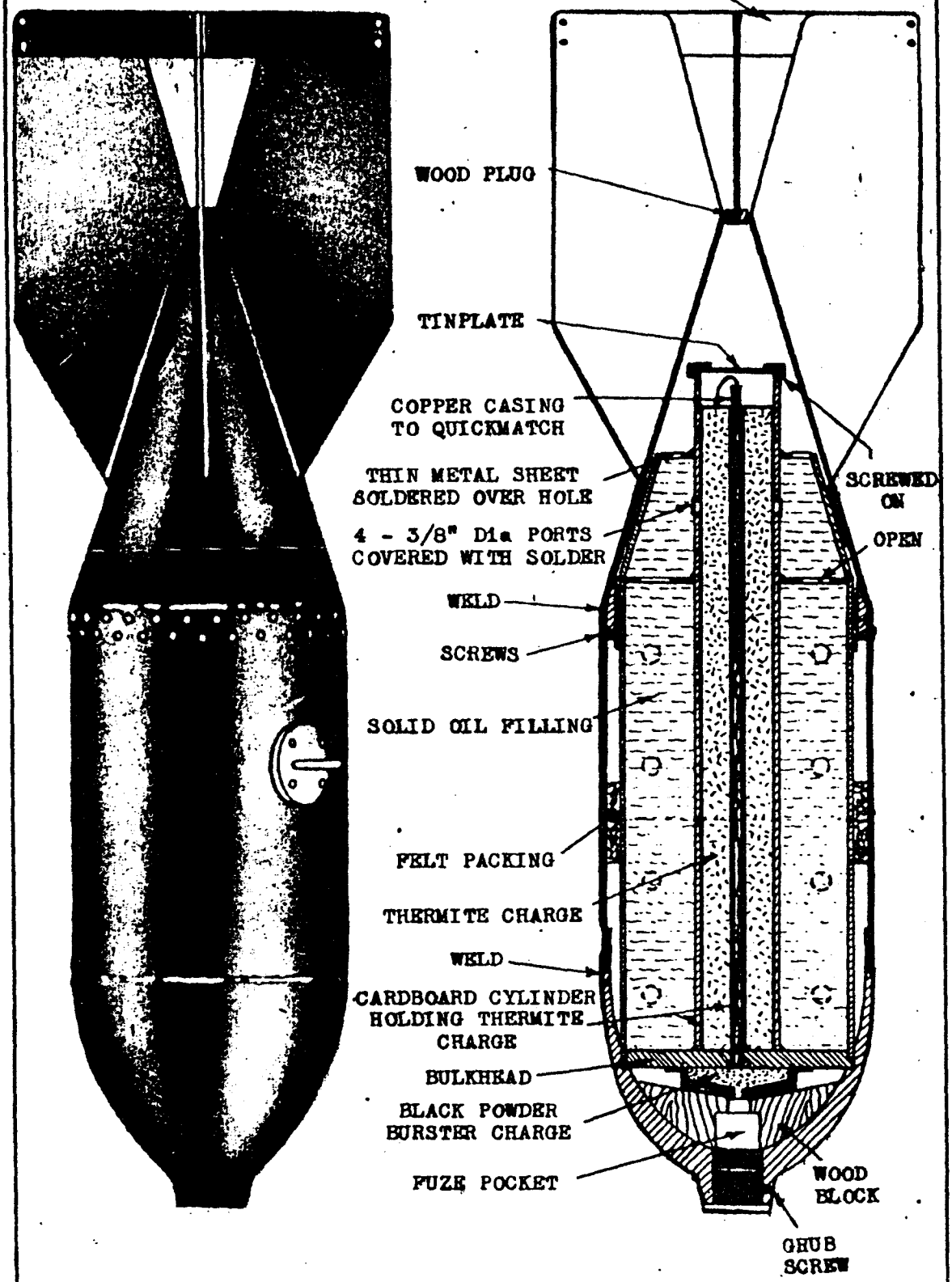
PUBLICATION DATE: May 1945 RESTRICTED	**JAPANESE NAVY BOMB**
FUZES: D-2 series	**60 KG. INCENDIARY**
OVERALL LENGTH	40 in.
LENGTH OF BODY	23 in.
DIAMETER OF BODY	7.8 in.
THICKNESS OF WALL	.12 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal
	TYPE 3 NO 6
	MK. 3 MODEL 1
CONSTRUCTION OF SUSPENSION LUG	Navy suspension lug. Eyebolt welded to a circular plate which is riveted to the body.
COLOR & MARKINGS ON BOMB AND TAIL	Silver nose tipped with a green band. Body is gray overall, except for red tail struts. Marked "Provisional designation Type 3 No. 6 Mk 3 Model 1".
LENGTH OF TAIL	17 in.
WIDTH OF TAIL	7.8 in.
WIDTH OF TAIL FINS	2.6 in.
DIMENSIONS OF TAIL STRUTS	5 in. long, 1.5 in. wide, .12 in. thick.
MATERIAL OF TAIL	Steel
TYPE OF FILLING	Three cylindrical steel canisters each containing 87 white phosphorous filled cylindrical steel pellets. Each canister has a central exploder tube filled with Type 98 explosive. A heavy wax coating covers each canister. Dimensions: Length of canister . . . . . 4.6 in. Diameter of canister . . . . . 7.2 in. Length of pellet . . . . . 1.2 in. Diameter of pellet . . . . . 1.1 in. Diameter of exploder tube . . . . . 1.4 in. Weight of individual canister . . . . . 24.0 lbs
WEIGHT OF FILLING	3 canisters - 72 lbs., tail cone charge - 11.2 lbs.
TOTAL WEIGHT OF BOMB	118 lbs.
CHARGE/WEIGHT RATIO	71 %
CONSTRUCTION OF BODY	The bomb consists of a nose piece, barrel and tail assembly. The conical-shaped nose piece is welded to the barrel and has a steel plate welded where the fuze pocket would be. The cavity in the nose piece is filled with a wooden block. The barrel is cylindrical in shape and is welded longitudinally. The tail cone is welded to a coupling ring which fits into the barrel and is held there by a single row of screws. A burster charge of cast Type 98 explosive is contained in the tail cone. A perforated steel plate separates the explosive from the incendiary filling.
CONSTRUCTION OF TAIL	The tail cone is welded longitudinally. Four angled fins are welded to the cone and braced by a single set of box type struts. The angle of these fins imparts a counterclockwise rotation in flight to the bomb, thereby arming the clockwork fuze.
OPERATION	Upon release from the plane the aerial burst fuze functions initiating the tail cone charge which detonates the central burster tube. The bomb case and canisters are ruptured scattering the incendiary pellets. The white phosphorous is ignited when it is exposed to the air.



JAPANESE 70 KG. INCENDIARY (THERMITE) BOMB

TYPE 98 NO. 7 MK. 6 MODEL 1

PUBLICATION DATE: July 1944 RESTRICTED		JAPANESE NAVY BOMB 70 KG. INCENDIARY TYPE 98 NO. 7 MK. 6 MODEL 1
FUZES: A-3(a) or A-3(b)		
OVERALL LENGTH	40.0 in.	
LENGTH OF BODY	21.8 in.	
DIAMETER OF BODY	7.9 in.	
THICKNESS OF WALL	0.3 in.	
MATERIAL OF WALL	Steel.	
TYPE OF SUSPENSION	Horizontal (Navy type)	
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug. (Eyebolt welded to circular plate which is riveted to body with four rivets).	
COLOR & MARKINGS ON BOMB & TAIL	Navy Code: Grey body and tail with red tail struts. ~~Nose red + tail green.~~	
LENGTH OF TAIL	18.3 in.	
WIDTH OF TAIL	10.6 in.	
MATERIAL OF TAIL	Sheet iron (.06 in.)	
TYPE OF FILLING	Four electron inserts comprise the filling. The nose and tail inserts are cylindrical, while the body inserts are hemi-cylindrical and are made of thermite and priming compositions.	
WEIGHT OF FILLING	~~30 pounds (approx.)~~ 35 kg.	
TOTAL WEIGHT OF BOMB	~~[illegible]~~. 71 kg.	
CHARGE/WEIGHT RATIO	~~25% (approx.)~~ 50%	
CONSTRUCTION OF BODY	A cast steel nose is riveted, with two rows of ten rivets each, to a steel tubular body. The tail cone is held by one row of twenty-four rivets to a collar which is held in the base of the bomb by two rows of screws (fourteen per row).	
OPERATION	On impact, the nose fires a magazine which ignites a fuze cord passing through the bomb. This fuze ignites the electron and a black powder charge which scatters the burning thermite.	
REMARKS	A magazine replaces the standard Navy gaine in this bomb. This bomb body is the same as the Type 97 No. 6 Land Bomb.	



JAPANESE 70 KG. OIL INCENDIARY

TYPE 98 NO. 7 MK. 6 MODEL 2

PUBLICATION DATE: Feb.1945 RESTRICTED

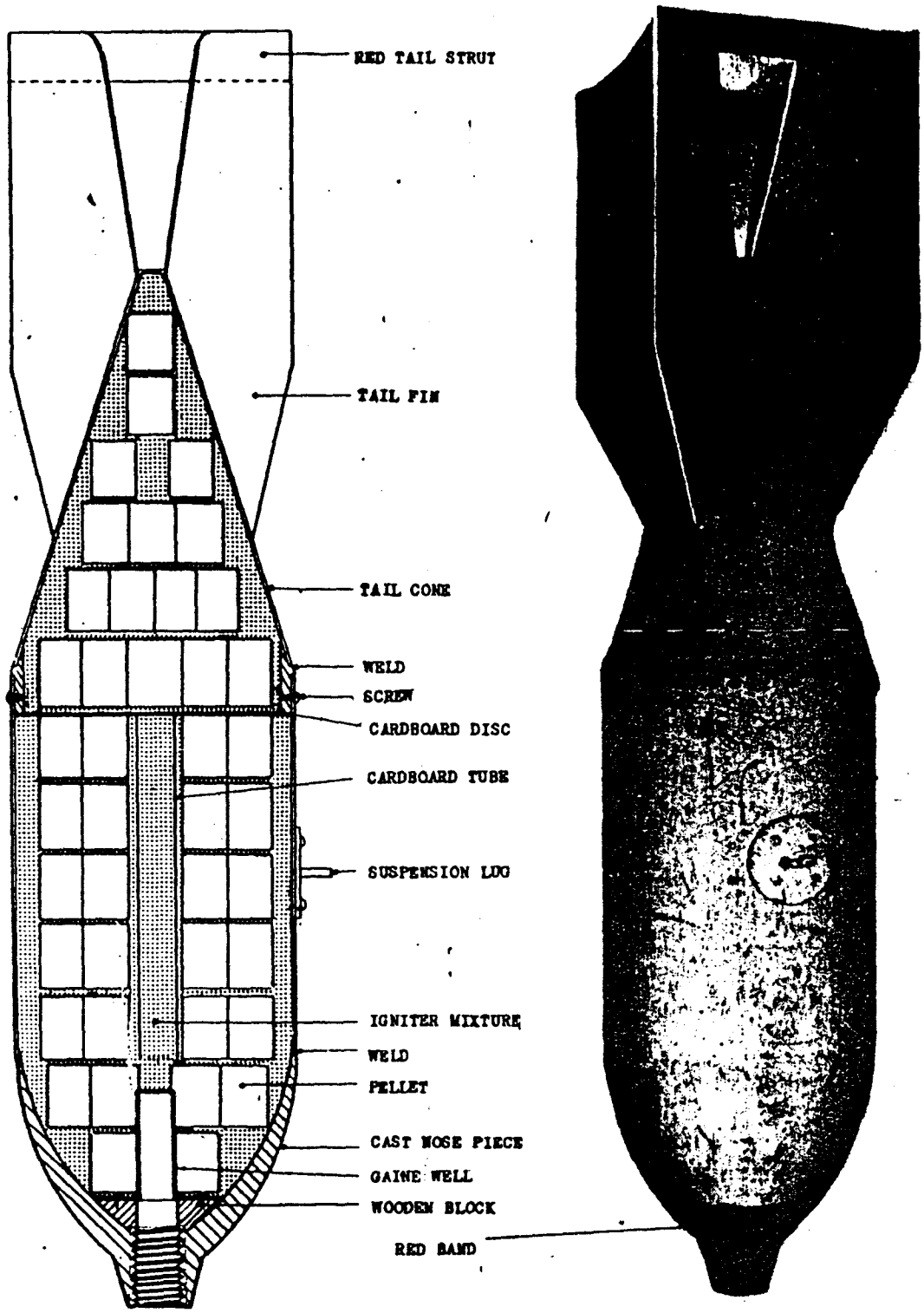
JAPANESE NAVY BOMB

70 KG.

Oil Incendiary

TYPE 98 NO. 7 MK. 6 MODEL 2

FUZES: A-3(a) or A-3(b)	
OVERALL LENGTH	42.25 in.
LENGTH OF BODY	21.0 in.
DIAMETER OF BODY	9.5 in.
THICKNESS OF WALL	0.18 in.
MATERIAL OF WALL	Tubular steel.
TYPE OF SUSPENSION	Horizontal (Navy type)
CONSTRUCTION OF SUSPENSION LUG	Normal Navy suspension lug. Eyebolt welded to circular plate which is riveted to body (four (4) rivets).
COLOR & MARKINGS ON BODY AND TAIL	Navy Code: Grey body and tail with longitudinal diametrically opposite thin red lines. Red nose and red struts.
LENGTH OF TAIL	21.25 in.
WIDTH OF TAIL	13.2 in.
WIDTH OF TAIL FINS	6.0 in.
DIMENSIONS OF TAIL STRUTS	9.25 in. long, 1.5 in. wide, .06 in. thick
MATERIAL OF TAIL	1/16 inch Sheet steel fins and cone.
TYPE OF FILLING	A central thermite core surrounded by a kerosene, petrol, alcohol-soap mixture.
WEIGHT OF FILLING	20 lbs. of Inflammable mixture. 7.5 lbs. Thermite.
TOTAL WEIGHT OF BOMB	145 lbs.
CHARGE/WEIGHT RATIO	22%
CONSTRUCTION OF BODY	Navy Construction: Outer steel cylindrical tube enclosing inner casing. Cast nose welded to outer casing. Tail collar secured by two (2) rows (sixteen per row) of 5 mm screws to casing. Conical tail welded to collar.
CONSTRUCTION OF TAIL	Four Navy fins (.06 inches thick) welded to metal strips which are riveted (fourteen rivets each) to cone. Cone welded to tail collar. Collar held by two rows (sixteen each row) of 5 mm screws. Single row box-type struts (1.4 inches wide).
SYSTEM	Operation: Impact actuates fuze whose booster explodes a black powder charge. This blows inner casing out, shearing thirty-two screws. Simultaneously a length of quick-match ignites thermite which burns as a compact mass with gel mixture. If rubber pellets are used, the explosive trains detonate the H.E. burster tube. An incendiary bomb designated as the Type 1 No. 7 Mk 6 Model 3 utilizes the same bomb case as the Type 98 No. 7 Mk 6 Model 2, but differs in the filling. It has an incendiary filling of approximately 520 wedge-shaped rubber pellets impregnated with iron and aluminum.



JAPANESE NAVY 70 KG. INCENDIARY BOMB

TYPE 1 NO. 7 MK. 6 MODEL 3 MODIF. 1

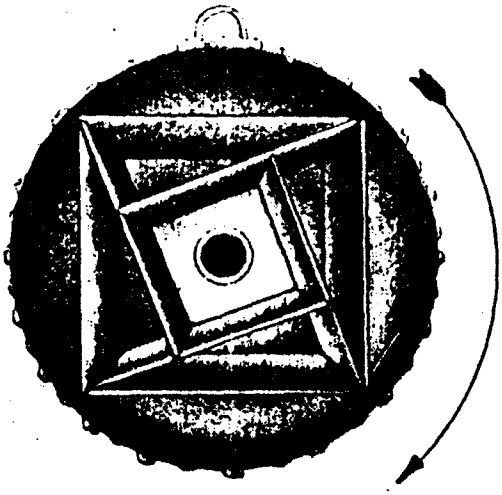
PUBLICATION DATE: February 1945 RESTRICTED

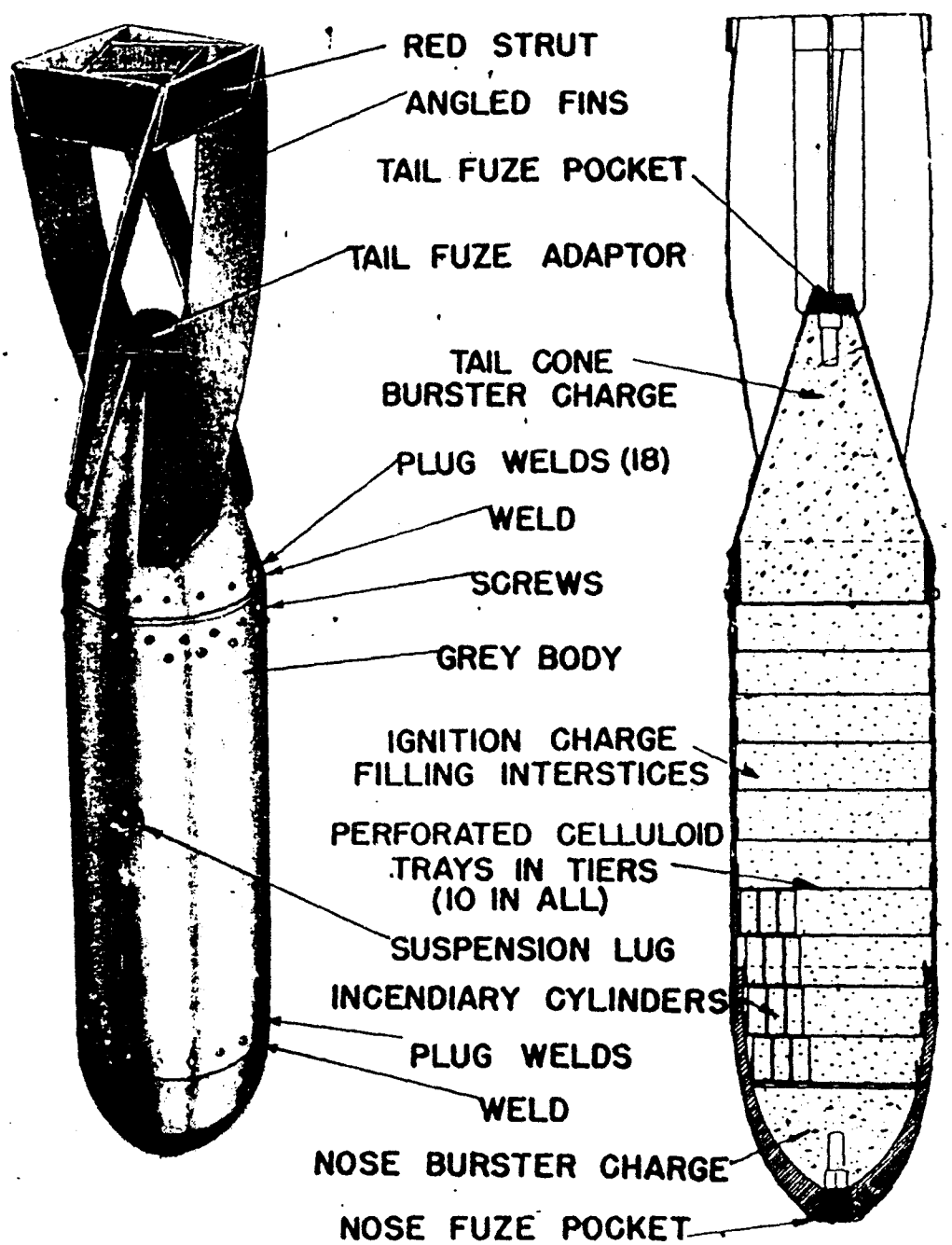
JAPANESE NAVY BOMB

70 KG INCENDIARY

TYPE 1 NO 7 MK 6 MODEL 3 MODIF 1

FUZES	A-3(a)
OVERALL LENGTH	42.25 in.
LENGTH OF BODY	21.0 in.
DIAMETER OF BODY	9.5 in.
THICKNESS OF WALL	.125 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal (Navy type)
CONSTRUCTION OF SUSPENSION LUG	An eyebolt is welded to a circular plate which is secured to the bomb body by four rivets.
COLOR MARKINGS AND TAIL	Grey body, 3½ inch red band at the nose, red tail struts.
LENGTH OF TAIL	21.25 in.
DIAMETER OF TAIL	13.25 in.
WIDTH OF TAIL FINS	6.0 in.
DIMENSIONS OF TAIL STRUTS	9.25 in. long, 1.5 in. wide, .06 in. thick.
MATERIAL OF TAIL	.06 in. sheet steel.
TYPE OF FILLING	182 cylindrical incendiary pellets are arranged around a central cardboard tube. The pellets are bound together with string to form rings. The rings surround the central tube which is filled with grey powder. All the space in the bomb not occupied by the pellets is filled with this powder. Weight of individual pellets . . 7 oz. Total weight of pellets . . . . 81 lbs. Length of pellets . . . . . 2.12 in. Diameter of pellets . . . . . 1.5 in. Composition of pellets . . . . . 35% Barium Nitrate 28% Ferric Oxide 18% Aluminum Remainder is synthetic rubber of polysulphide type resembling "thiokol" Weight of igniter powder . . . . 30 lbs. Composition of igniter powder. . 75% Barium Nitrate 24.5% Aluminum 0.3% Oil 0.2% Moisture
WEIGHT OF FILLING	111 lbs.
TOTAL WEIGHT OF BOMB	160 lbs.
CHARGE/WEIGHT RATIO	69.4%
CONSTRUCTION OF BODY	[illegible] nose piece is attached to a longitudinally [illegible] barrel by a continuous weld. The nose contains a wooden block 1-3/4 in. thick to which a light metal [illegible] well is secured by three bolts. The tail cone is welded to a coupling ring which fits into the barrel and is held there by a single row of sixteen (16) screws.
CONSTRUCTION OF TAIL	The tail cone is constructed of [illegible] steel and is welded longitudinally. Four Navy fins are spot welded to the cone. They are braced by four sheet steel struts welded to the after ends of the fins.





JAPANESE NAVY 250 KG. INCENDIARY BOMB TYPE 2 NO.25 MARK 3 MODEL 1

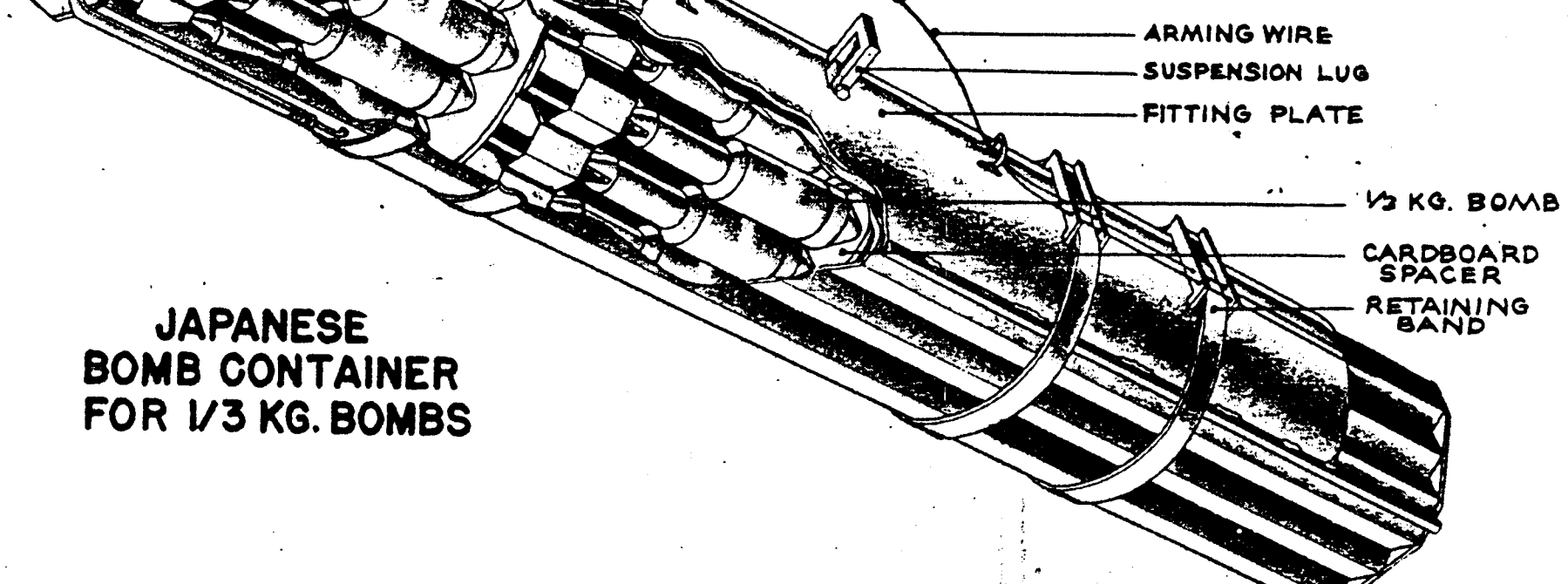
CONFIDENTIAL

JAPANESE BOMB CONTAINERS

From available information, it is thought that the following is correct.

Our Designation	Japanese Designation
Navy Bomb Container for 5 7 Kg. H.E. Bombs	Type 2, No. 6 Land Bomb, Model 5 二一式九番陸用爆彈五型
Navy Bomb Container for 1 Kg. H.E. Bombs	Type 2, No. 6, Mark 21 Bomb, Model 1 二式九番二一號爆彈一型
~~Navy Bomb Container (60 Kgs.) for 6 parachute bombs~~	Air Technical Arsenal Experimental Model 18, Mark 24 航技巧製試十八型二四號

Air Technical Arsenal Experimental Model 18, Mark 24.



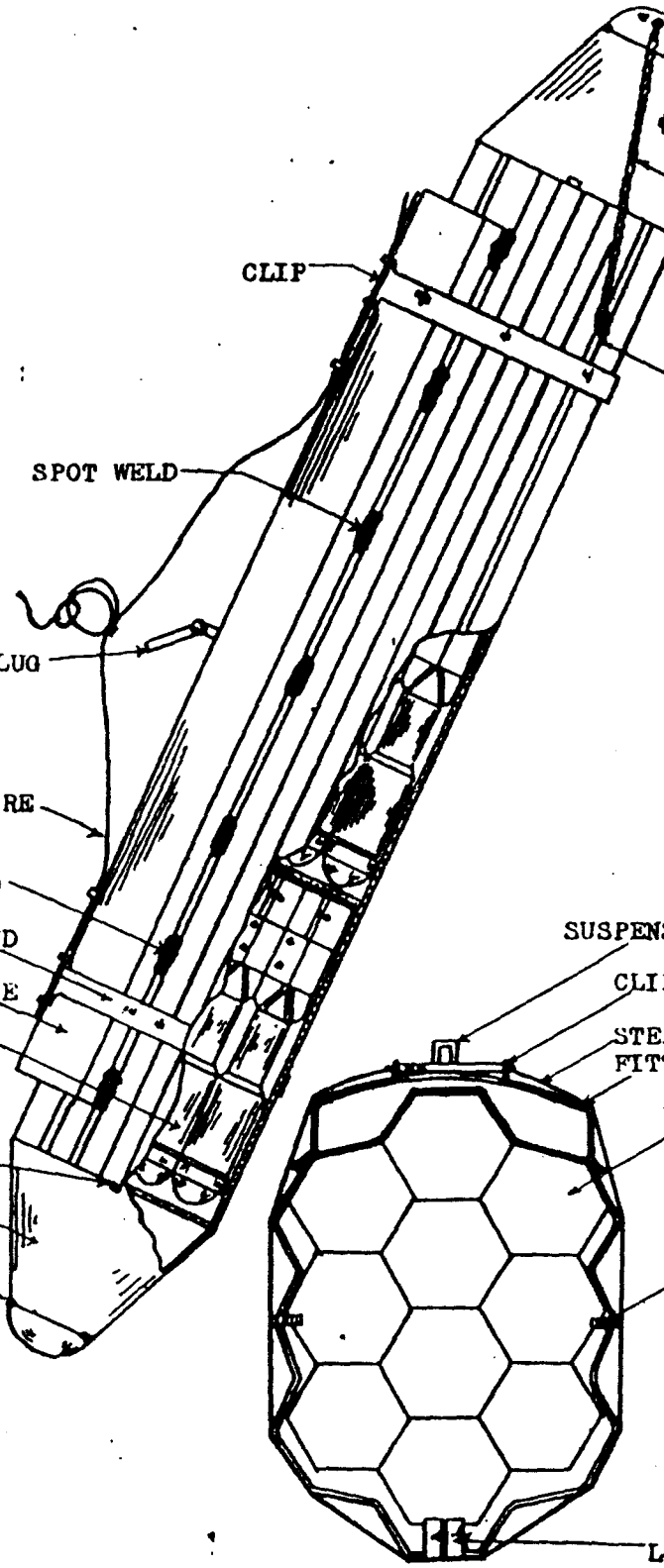
JAPANESE BOMB CONTAINER FOR 1/3 KG. BOMBS

PUBLICATION DATE: Dec. 1944 RESTRICTED	**JAPANESE NAVY BOMB**
FUZES : Nose: A-3(a) Tail: D-2(a)	**250 KG.**
OVERALL LENGTH	71 in.
LENGTH OF BODY	40 in.
DIAMETER OF BODY	12 in.
THICKNESS OF WALL	0.22 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal (Navy type)
CONSTRUCTION OF SUSPENSION LUG	Navy suspension lug. Lug and plate held by four rivets to bomb body.
COLOR & MARKINGS ON BOMB AND TAIL	Silver nose tipped with green. Grey body and tail. Red tail struts.
LENGTH OF TAIL	31 in.
WIDTH OF TAIL	12 in. square (approx.)
WIDTH OF TAIL FINS	5.50 in.
DIMENSIONS OF TAIL STRUTS	2 in wide
MATERIAL OF TAIL	Sheet steel
TYPE OF FILLING	750 steel tubes. Incendiary metallic-rubber filling. Bursting charges (HE) are found in nose & tail sections.
WEIGHT OF FILLING	Bursting charges - 33 Kg. Incendiary filling - 136 Kg.
TOTAL WEIGHT OF BOMB	250 Kg.
CHARGE/WEIGHT RATIO	67 %
CONSTRUCTION OF BODY	A cast steel nose is welded to a tubular steel body by a continuous weld and a row of twelve plug welds. The tail cone is held by one row of eighteen plug welds and a continuous weld to a collar which is held in the base of the bomb by two rows of round-headed screws, twenty in each row. The nose has a threaded fuze pocket. A fuze adapter is welded to the apex of the tail cone.
CONSTRUCTION OF TAIL	Four-angled Navy fins (.06 in.) are welded to the tail cone. The angle of these fins imparts a counter-clockwise rotation in flight to the bomb, thereby arming the clockwork fuze. Two sets of box type tail struts are used.
REMARKS	The aerial burst fuze functions and the flash from the tail charge passes through the perforated closing plates and trays separating the shrapnel tubes. The inflammable trays ignite and these ignite the incendiary mixture in the tubes. These fragments are scattered over a 175 yard radius when air-burst occurs 100 feet above ground. The dimensions of the steel tubes are 2-3/4" x 1-1/8". Some bombs have all the voids within the bomb body filled with an ignition charge of black powder, the flash from which accelerates ignition of the incendiary cylinders.

TYPE 2, NO25
MARK 3 MODEL 1

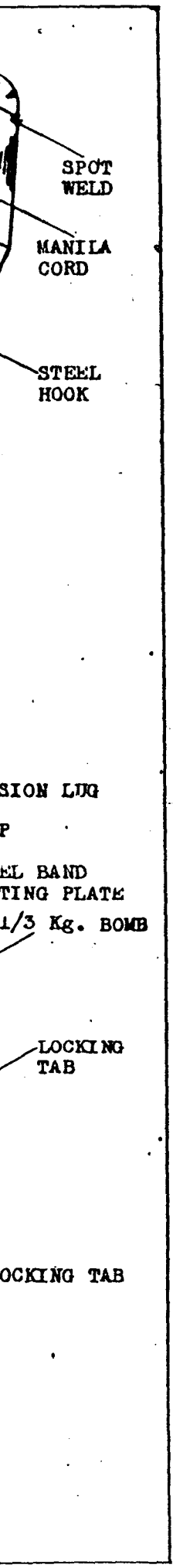
PUBLICATION DATE: Dec. 1944 RESTRICTED		JAPANESE INCENDIARY BOMB (PARACHUTE)
FUZES: Unknown		
OVERALL LENGTH	42.0 in.	
LENGTH OF BODY		
DIAMETER OF BODY	6.0 in.	
THICKNESS OF WALL		
MATERIAL OF WALL		
TYPE OF SUSPENSION		
CONSTRUCTION OF SUSPENSION LUG		
COLOR & MARKINGS ON BOMB AND TAIL	Black body with red band 6 inches from nose.	
LENGTH OF TAIL		
WIDTH OF TAIL		
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL		
TYPE OF FILLING		
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB		
CHARGE/WEIGHT RATIO		
REMARKS	A delay fuze with 12 hour delay is incorporated. The incendiary is dropped by day. Planes return at night and carry out bombing mission, using flares as markers. Possibly equipped with anti-handling device.	

PUBLICATION DATE: July 1944 RESTRICTED		JAPANESE ARMY BOMB CONTAINER For Seventy-six 1/3 Kg. bombs
FUZES: None		
OVERALL LENGTH	41-1/2 in.	
LENGTH OF BODY	41-1/2 in.	
DIAMETER OF BODY	8 in.	
THICKNESS OF WALL	.050 in.	
MATERIAL OF WALL	Corrugated sheet metal.	
TYPE OF SUSPENSION	Swinging type suspension lug secured by bolt.	
CONSTRUCTION OF SUSPENSION LUG	HINGED ARMY LUG.	
COLOR & MARKINGS ON BOMB AND TAIL	BLACK - OVERALL	
LENGTH OF TAIL		
WIDTH OF TAIL		
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL		
TYPE OF FILLING	Four (4) sections, each containing nineteen (19) 1/3 Kg. H.E. bombs. (76 total). Sections formed by placing one transverse cardboard disc between each group of nineteen (19) bombs.	
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB	35 Kg.	
CHARGE/WEIGHT RATIO		
CONSTRUCTION OF BODY	The container is formed by three (3) interlocking lengths of corrugated sheet steel, closed at each end by hexagonal sheet steel plates. The three interlocking lengths are held in position by four (4) encircling sheet steel bands and clips. The clips are prevented from opening by two (2) arming wires. To the exterior of one of the end plates are attached three Bungee cords 7-1/2 inches long, to each of which is attached a steel hook. One of the three interlocking corrugated lengths serves as the upper portion of the horizontally suspended container. To this upper portion is spot welded a smooth semi-circular sheet steel piece 31½" long, in the center of which is located the suspension lug. On each side of the lug, between it and the inboard steel bands, there is welded an eyebolt to take the arming wires.	
REMARKS	It is thought that the Japanese Army Air Force employs the swinging type suspension lug, as found on this container, and that their Naval Air Force employs the rigid U-bolt. This would indicate that the 1/3 Kg. bomb may be employed by the Army instead of the Navy as previously reported.	



APANESE CONTAINER

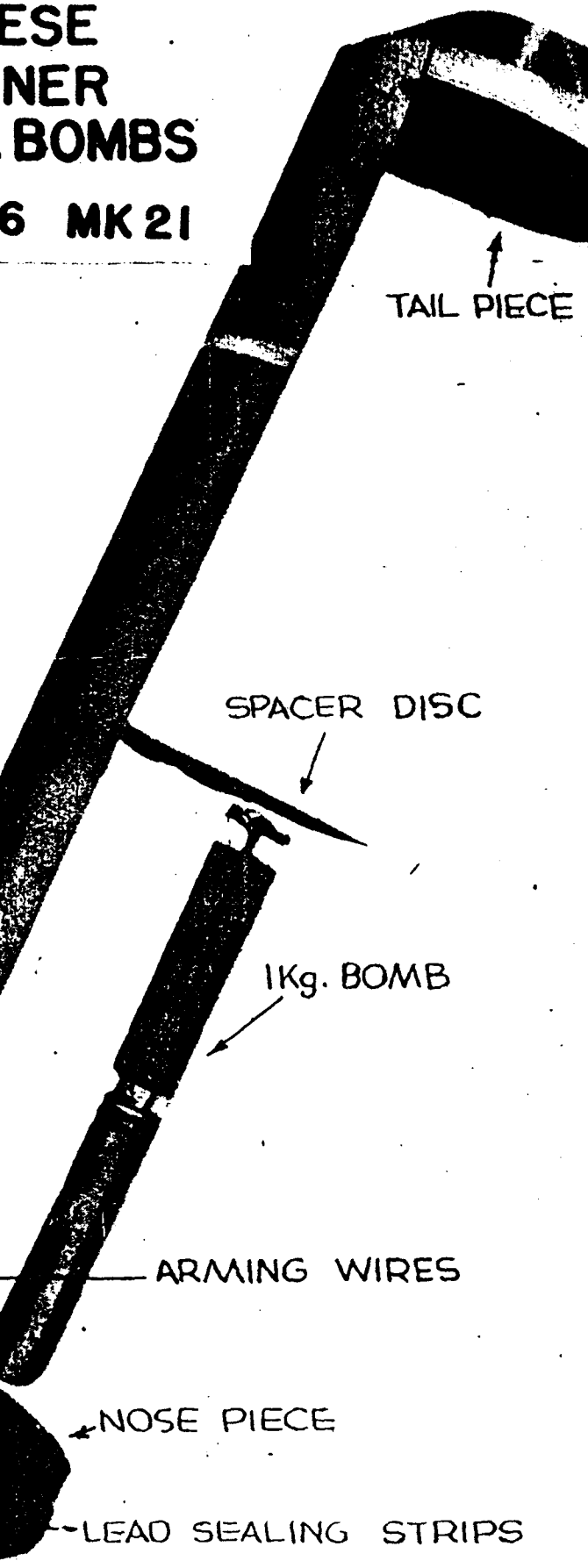
/3 KG. ANTI-AIRCRAFT BOMBS


SPOT
WELD
MANILA
CORD
STEEL
HOOK
SION LUG
P
EL BAND
TING PLATE
1/3 Kg. BOMB
LOCKING
TAB
OCKING TAB

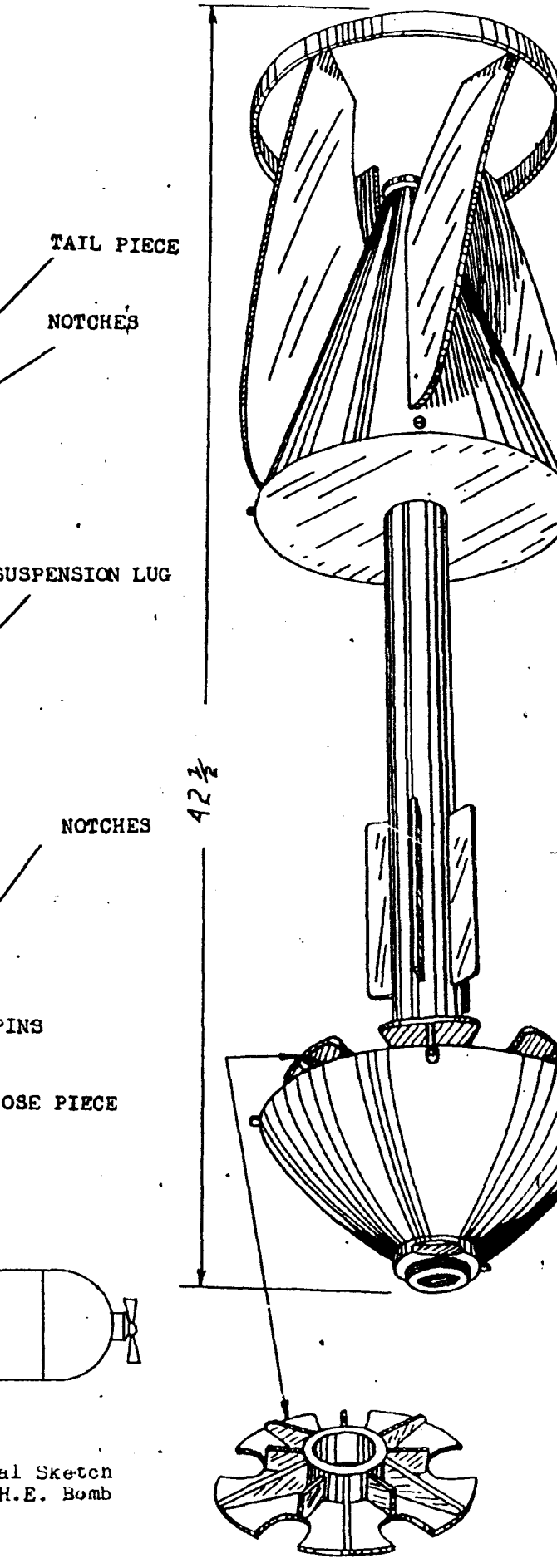
PUBLICATION DATE: July 1944 RESTRICTED	JAPANESE ARMY BOMB CONTAINER for THIRTY 1/3.KG. ANTI-AIRCRAFT BOMBS
FUZES: None	
OVERALL LENGTH	43 in.
LENGTH OF BODY	31.0 in. less nose piece.
DIAMETER OF BODY	Maximum - 7-1/8 in. Minimum - 4all/16 in.
THICKNESS OF WALL	1/25 in.
MATERIAL OF WALL	Corrugated sheet steel
TYPE OF SUSPENSION	Horizontal
CONSTRUCTION OF SUSPENSION LUG	Normal Army type.
COLOR & MARKINGS ON BOMB AND TAIL	Black overall. Japanese characters on nose piece (頭部) meaning "nose".
LENGTH OF TAIL	Conical tail section 6" & nose section 6".
WIDTH OF TAIL	
WIDTH OF TAIL FINS	
DIMENSIONS OF TAIL STRUTS	
MATERIAL OF TAIL	
TYPE OF FILLING	Thirty 1/3 Kg. Anti-Aircraft Bombs.
WEIGHT OF FILLING	10.3 Kg.
TOTAL WEIGHT OF BOMB	Filled - 24.4 Kg.
CHARGE/WEIGHT RATIO	
CONSTRUCTION	The container is formed by three interlocking lengths of corrugated sheet steel. Each end is closed by a conical nose and tail piece made of thin sheet steel. The three interlocking lengths are held in position by two sheet steel bands with clips. The clips are prevented from opening by two arming wires. Attached to the tail piece are three manila cords 13 in. long. To each of these is attached a steel hook which fits into a hole in each of the three body sections. One of the three interlocking corrugated lengths serves as the top of the bomb. Spot welded to this is a smooth semi-circular sheet steel piece 25½ in. long. The Army type, folding suspension lug is attached to this piece. Eyebolts are welded on either side of the lug to serve as guides for the arming wires. By inserting transverse cardboard discs, the inside of the container is divided into three sections containing 10 bombs each. The layers of bombs are also separated by cardboard.

604101 O - 44 - 6

ESE
NER
BOMBS
6 MK 21



PUBLICATION DATE: Dec. 1944 RESTRICTED		JAPANESE NAVY BOMB CONTAINER TYPE 2 NO 6 MK 21 FOR 1 KG. H.E. BOMBS
FUZES D-4(a)		
OVERALL LENGTH	41 in.	
LENGTH OF BODY	36.25 in.	
DIAMETER OF BODY	9.5 in.	
THICKNESS OF WALL	0.06 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Normal Navy type.	
COLOR & MARKINGS ON BOMB AND TAIL	Painted grey overall. One inch green band on nose. Broader brown band just aft of green band. Two $\frac{1}{2}$ inch white bands on body mark position at binding straps.	
LENGTH OF TAIL		
WIDTH OF TAIL		
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL		
TYPE OF FILLING	40 1 Kg. H.E. bombs.	
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB	60 Kg. (approx.)	
CHARGE/WEIGHT RATIO		
DESCRIPTION	The canister consists of a blunt nose assembly and a light tail piece around which is fitted a segmented cylinder held together by two circumferential metal binding straps. Two steel wires, which are attached to the nose, run longitudinally along the canister and pass through buckles of the straps locking them together. The buckles open automatically when the wires are withdrawn. The burster charge is made up in an annular silk bag, enclosed in a flat, round can. The ignition hole, which is near the periphery of the top, is sealed with tinfoil. This can is mounted off center in a wooden disc which fits snugly into the steel pan of the nose assembly. The eccentric position of the charge centers the ignition hole directly under the fuze and places the main portion of the charge near to the point at which the two steel release wires are attached to the nose piece. This accounts for a more direct pull being exerted on the release wires when the burster charge detonates. The cylinder is filled with forty 1 Kg. H.E. bombs, a flat steel disc separating these into two clusters of twenty each. Remains of paper on the nose assembly, spacer disc, and tail piece indicate that cardboard packing discs were glued to the metal surfaces in front and back of each group of bombs.	
OPERATION	The burster charge is contained within the nose assembly When this charge is fired by the aerial burst fuze, the lead sealing strips are sheared and the nose piece is blown free from the canister. The nose piece withdraws the release wires from the buckles of the binding straps which in turn frees the segments of the canister and allows the forty bombs to fall individually.	
REMARKS	Captured documents show the complete container. There are four small tail fins welded to the after end of the	



al Sketch
H.E. Bomb

SE BOMB CONTAINER
FIVE 7 KG. BOMBS

. 6 LAND BOMB MODEL 5

PUBLICATION DATE: July 1944 CONFIDENTIAL		JAPANESE NAVY BOMB CONTAINER For Five 7 Kg. H.E. Bombs Type 2 No. 6 Land Bomb Model 5.
FUZES: Nose: A-3(a) or nose plug. Tail: No tail fuze used.		
OVERALL LENGTH	42 in.	
LENGTH OF BODY	in. 25 3/4"	
DIAMETER OF BODY	10 in.	
THICKNESS OF WALL	4/50 in.	
MATERIAL OF WALL	Sheet steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Standard Navy type	
COLOR & MARKINGS ON BOMB AND TAIL	Brown nose section. Light blue tail section and fins.	
LENGTH OF TAIL	15-3/4 in.	
WIDTH OF TAIL	10 in.	
WIDTH OF TAIL FINS	4-1/4 in.; Thickness: 1/16 in.	
DIMENSIONS OF TAIL STRUTS	1" x 8" x 1/16"	
MATERIAL OF TAIL	Sheet steel	
TYPE OF FILLING	Five 7 Kg. H.E. bombs	
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB	60 Kg. (approx.)	
CHARGE/WEIGHT RATIO		
CONSTRUCTION OF BODY	Steel nose and tail connected by a metal tube on the inside and two half cylinders of sheet steel on the outside. The two half cylinders are connected by four metal tabs riveted to each half of the cylinder on the inside. There are four notches 3/16 inches square and 90° apart in each end of the assembled cylinder. The notches fit around the four pins which are on the nose piece and tail piece. There is a spacer piece attached to the central tube.	
CONSTRUCTION OF TAIL	Four (4) fins spot welded to tail cone and braced by a ring strut welded to tips of fins. The fins are curved so that a spinning motion is imparted to the container.	
DESCRIPTION OF 7 Kg. H.E. BOMB	No fuze or complete bomb has been found. The only information available on the bomb and fuze comes from a captured Japanese bomb chart. The tail fins from several of the bombs have been found. The tail fins are painted grey. They are made up of two metal strips, the widest one has 4-1/4" slot which allows the narrower one to fit into it. The fins are spot welded at the extreme ends of the slot. The tail fins are braced by box-type struts welded to the aftermost end. Dimensions: Wide Fin — Width 4-1/4", Length 10-3/8" (approx), Thickness 1/16"; Narrow Fin — Width 3-1/2", Length 10-3/8" (approx), Thickness 1/16"; Tail Struts — Width 19/32", Length 2-3/4" (approx), Thickness 1/16"	
REMARKS	Exact operation of the container is unknown. Available information indicated that the container is opened by centrifugal force exerted by the spinning container and that the central tube is used as a sixth bomb when fuzed with the A-3(a). The one Kg. H.E. bomb has been dropped from this container.	

MISCELLANEOUS

PRACTICE BOMBS

GAS BOMBS

SEA FLARES

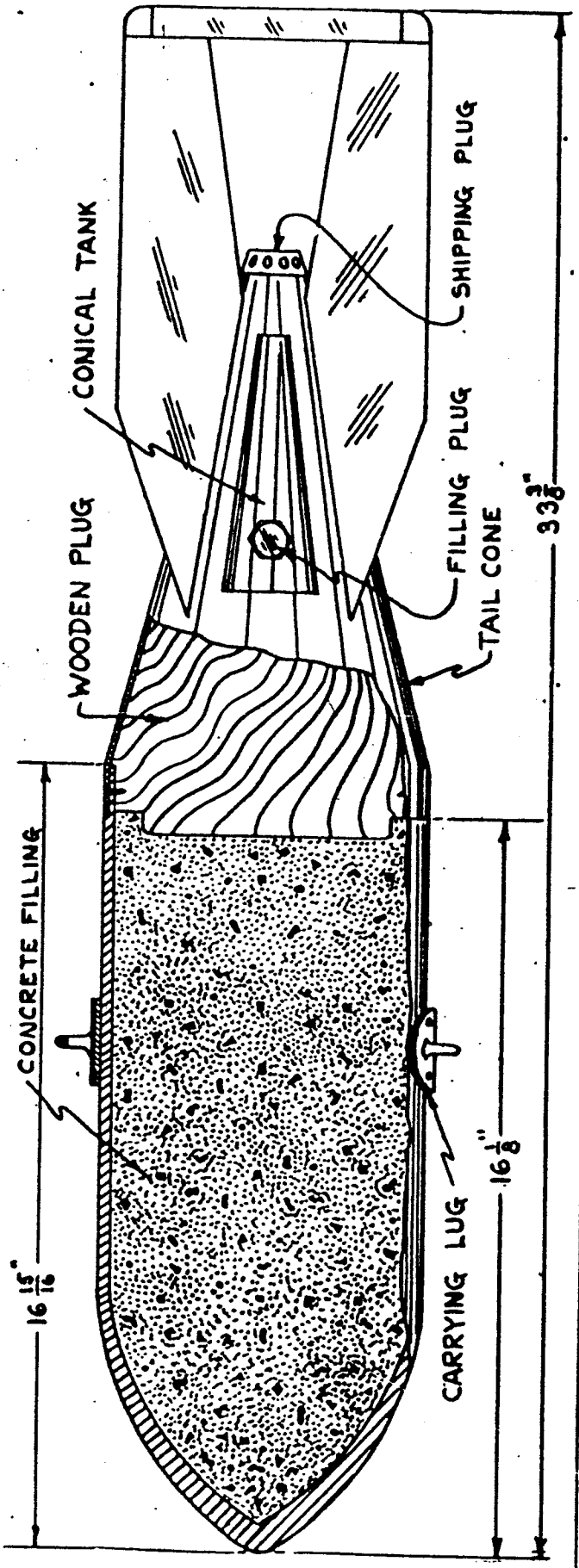
SEA MARKERS

SMOKE FLOATS

LAND FLARES

PAMPHLET CONTAINERS

OBJECTS FOR RECOGNITION



JAPANESE 31 KG. PRACTICE BOMB

TYPE 99 NO. 3 PRACTICE

PUBLICATION DATE:
FUZES
OVERALL LENGTH
LENGTH OF BODY
DIAMETER OF BODY
THICKNESS OF WALL
MATERIAL OF WALL
TYPE OF SUSPENSION
CONSTRUCTION OF SUSPENSION LUG
COLOR & MARKINGS ON BOMB AND TAIL
LENGTH OF TAIL
WIDTH OF TAIL
WIDTH OF TAIL FINS
DIMENSIONS OF TAIL STRUTS
MATERIAL OF TAIL
TYPE OF FILLING
WEIGHT OF FILLING
TOTAL WEIGHT OF BOMB
CHARGE/WEIGHT RATIO
CONSTRUCTION OF BODY
CONSTRUCTION OF TAIL
OPERATION

B-6(a)

JAPA
NAVY

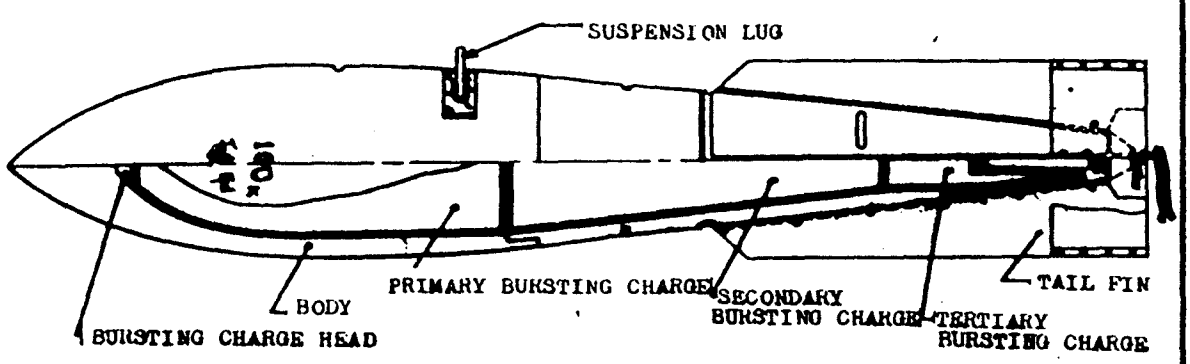
31

TYPE 99 NO. 3

	33-3/8 in.
	16-15/16 in.
	7 in.
	1/4 in.
	Horizontal (Navy type)
	Two normal Navy suspension lugs 180 degree 1/4 inches from the nose of the bomb. The to circular plates which are riveted to th
	Bomb body painted black with exception of white or red stripes running length of bod from suspension lugs. Believed that tail i but condition of the specimen examined pre analysis.
	17-1/4 in.
	9-1/2 in.
	3-7/8 in. Thickness,1/16 in.
	Width,1-3/16"; Length,6-7/8"; Thickness,1/
	Concrete
	31 Kg.
	One piece machine steel casing, 1/4 inch t closed by a conical wooden plug projecting from the base. A conical metal container i the wooden plug by the tail cone, which is bomb body by screws. Four slots in the tai the smoke to escape when the picric explo bursts the metal container.
	Hollow sheet steel cone. Four Navy-type fi welded to the cone. The fins of 1/16 inch are supported by four sheet metal box-type their extreme end. The tail cone has four in it, one between each set of fins. Withi cone is held the previously mentioned coni container which contains, it is believed, ducing liquid. A picric exploder charge 6" ted into the apex of the conical shaped co
	On impact the fuze fires setting off the p charge. The explosion of the picric boost tures the tank in the tail which contains ducing liquid. The smoke produced escapes slots in the tail cone assembly.
	The purpose of the glass disc filling in bombs is to lessen the damage to the targ while still preserving the correct trajec ballistics of the bomb.

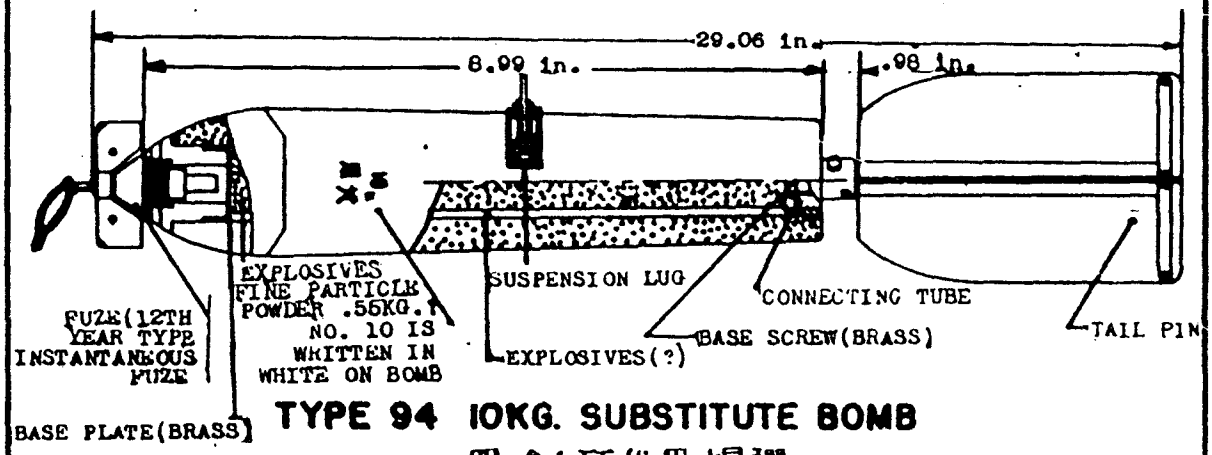
JAPANESE BOMB CHART FROM CAPTURED DOCUMENT

The following chart of heretofore unrecovered bombs was reconstructed from a captured Japanese document. Additions or deletions will be made as new documents are captured or the actual specimens are recovered.

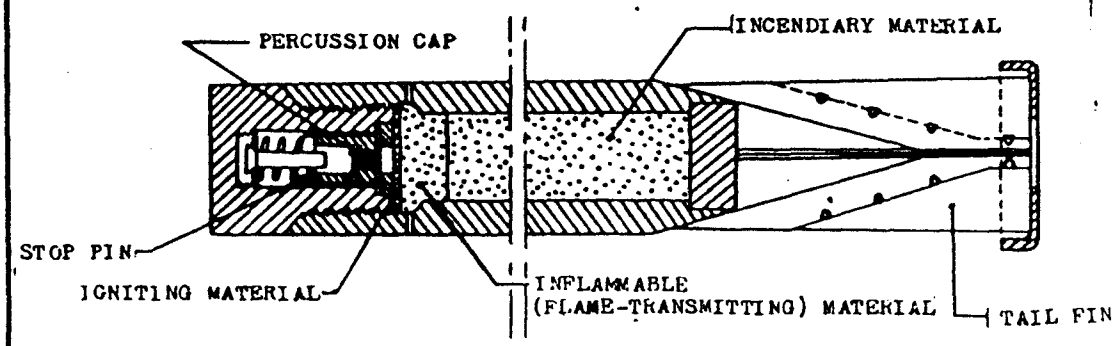


12TH YEAR TYPE 100KG ARMOR PIERCING BOMB
十二年式百瓩破甲爆彈

TOTAL BOMB WEIGHT- 9.30±0.3 KG.
FUZE WEIGHT- 0.22 KG.
EXPLOSIVE POWDER FINE PARTICLE POWDER0.55KG
EMPTY BOMB WEIGHT- 8.53±0.3 KG.

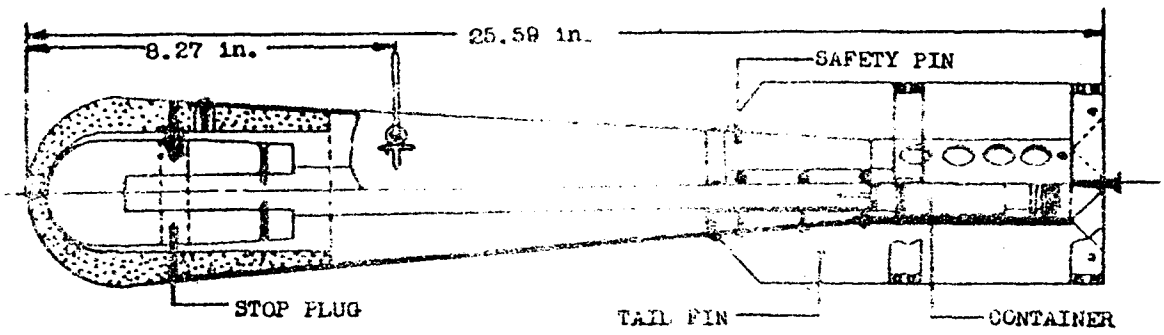


TYPE 94 10KG. SUBSTITUTE BOMB
九四式十瓩代用爆彈



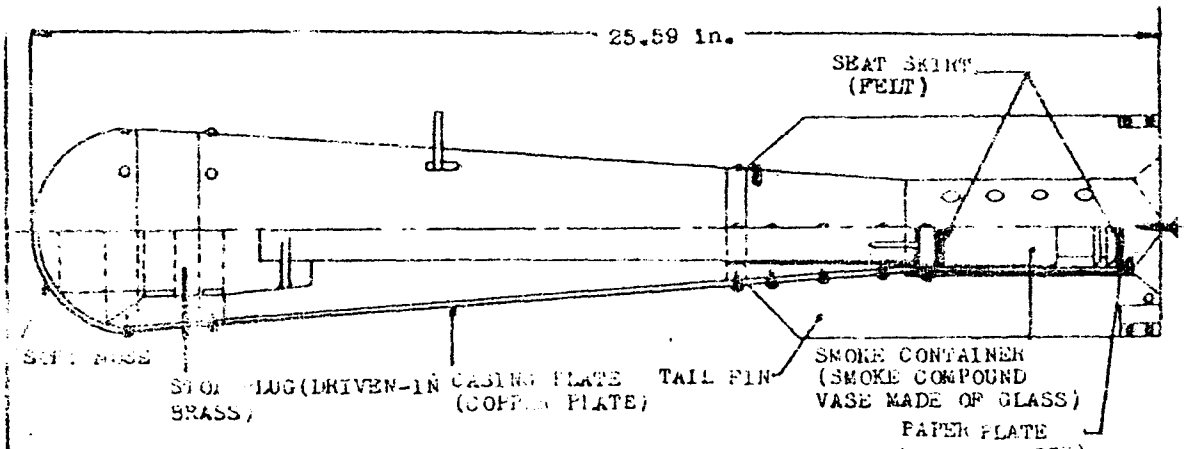
"ELECTRON" INCENDIARY BOMB
「エレクトロン」焼夷彈

CONFIDENTIAL

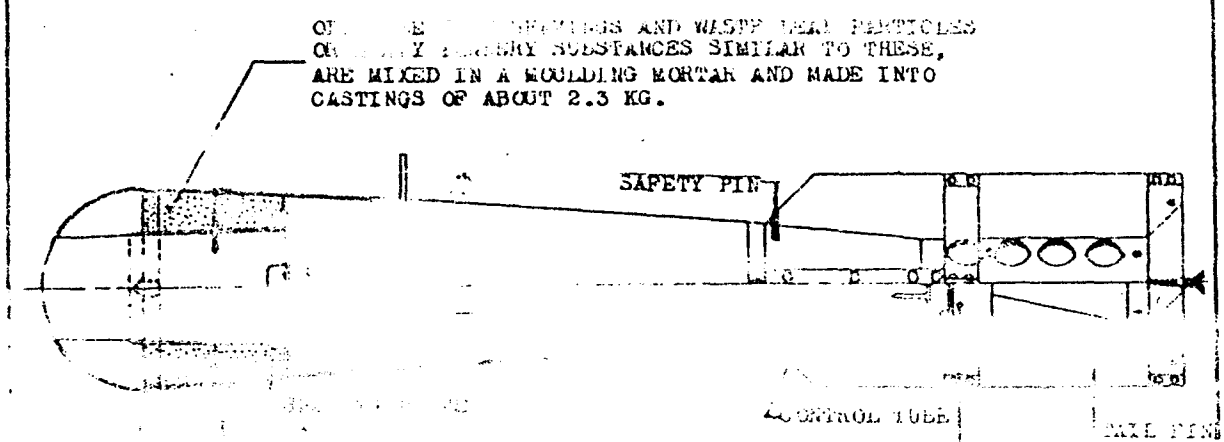


TYPE 95 4KG. PRACTICE BOMB
九五式四粁演習爆彈

TOTAL BOMB WEIGHT-4.00KG.(APPROX.)
SMOKE COMPOUNDS (PURE SALT OXIDE No.2 TIN)
EMPTY BOMB WEIGHT-3.775KG.(APPROX.)



TYPE 98 [illegible]KG. PRACTICE BOMB
[illegible]式四粁演習爆彈



[illegible] 4KG. PRACTICE BOMB
九[illegible]式四粁演習爆彈

PUBLICATION DATE: May 1945 RESTRICTED	**JAPANESE NAVY BOMB 30 KG. PRACTICE GLASS-FILLED**
FUZES: Probably B-6(a)	
OVERALL LENGTH	35-3/4 in.
LENGTH OF BODY	19-1/2 in.
DIAMETER OF BODY	7 in.
THICKNESS OF WALL	1/4 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal (Navy Type)
CONSTRUCTION OF SUSPENSION LUG	Single Navy suspension lug welded to a circular plate which is riveted to the bomb body.
COLOR & MARKINGS ON BOMB AND TAIL	The forward half of the bomb is painted black and has a green band around the nose. The after half including the tail cone, fins and struts is painted white.
LENGTH OF TAIL	16-1/4 in.
WIDTH OF TAIL	9-1/2 in.
WIDTH OF TAIL FINS	4 in.
DIMENSIONS OF TAIL STRUTS	6-7/8 in. x 1-3/16 in. x 1/16 in.
MATERIAL OF TAIL	Steel
TYPE OF FILLING	The nose is filled with fine gravel held in place by a steel separating plate. The body contains fifteen glass discs 6-1/2 in. in diameter and 3/4 in. thick.
WEIGHT OF FILLING	
TOTAL WEIGHT OF BOMB	30 Kg.
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	Three types of body construction have been found: 1. Seamless steel case in one piece. 2. Steel case with nose secured by small screws. 3. Steel nose with two circumferential welds 4 in. and 8 in. from the nose.
CONSTRUCTION OF TAIL	The construction of the tail and tail cone is the same as that used in the 31 Kg. concrete filled practice bombs. (pg. 73).
REMARKS	The purpose of the glass disc filling in practice bombs is to lessen the damage to the target ship while still preserving the correct trajectory and ballistics of the bomb.

STEEL FUZE WELL

BRASS DISC

CONCRETE CASE

STEEL TUBE

BLACK POWDER

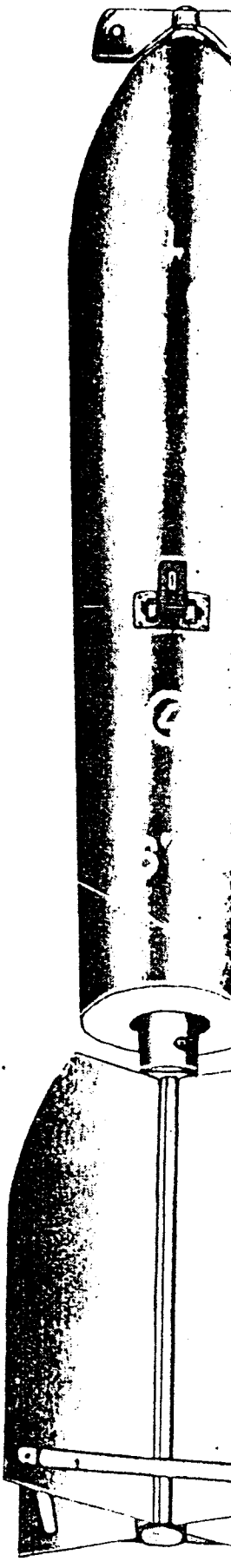
SUSPENSION LUG

ALE BASE PLATE

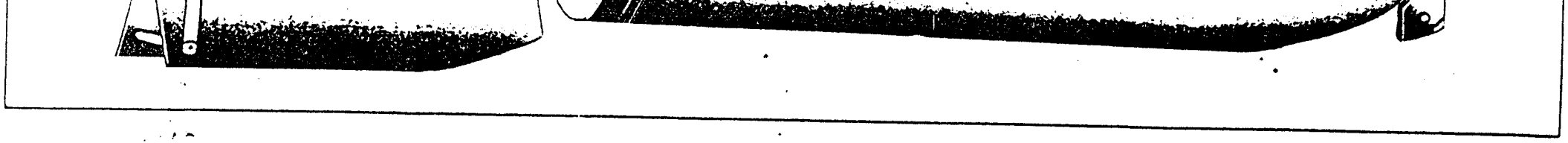
PIPE

FINS

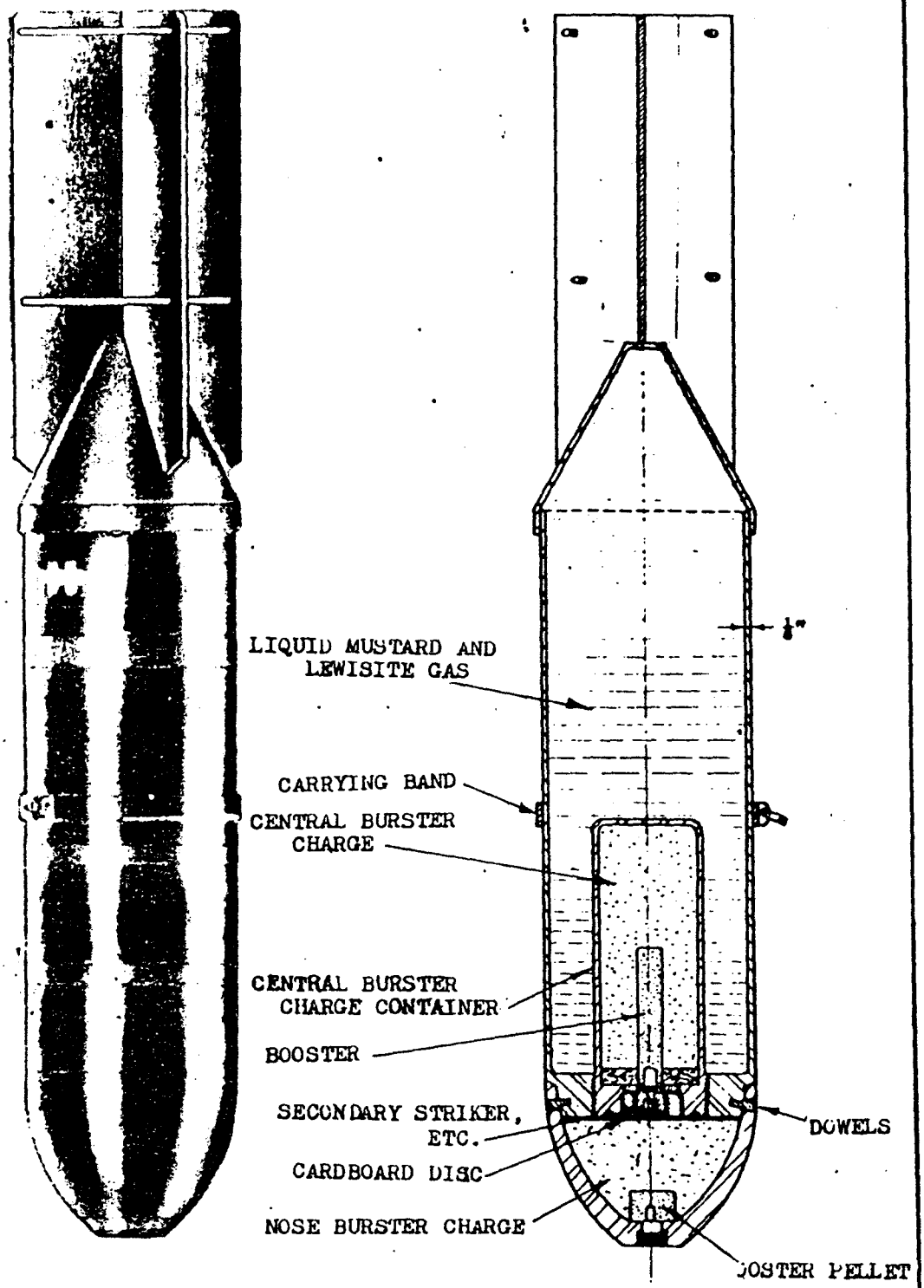
STRUTS



E 94 10 KG. SUBSTITUTE BOMB

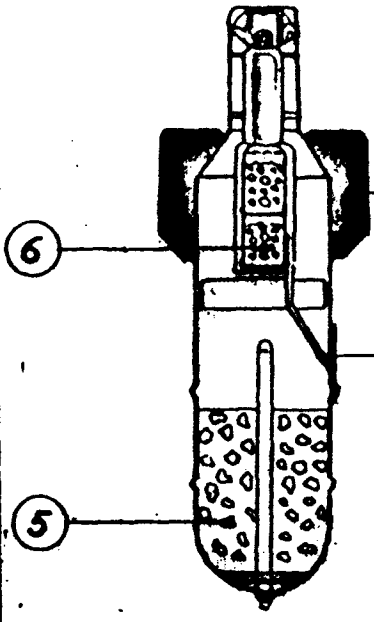


PUBLICATION DATE: May 1945 RESTRICTED	JAPANESE ARMY BOMB 10 KG. SUBSTITUTE BOMB TYPE 94
FUZES: A-2(b)	
OVERALL LENGTH	27-1/2 in.
LENGTH OF BODY	18-1/4 in.
DIAMETER OF BODY	4-1/8 in.
THICKNESS OF WALL	1 in. (approx.)
MATERIAL OF WALL	Concrete
TYPE OF SUSPENSION	Horizontal
CONSTRUCTION OF SUSPENSION LUG	Normal Army hinged lug
COLOR & MARKINGS ON BOMB AND TAIL	Black overall with a red band on nose. Markings in white: 10 Kg. Mfd. Sept 1943. Kwantung Army Field Ord. Branch Depot
LENGTH OF TAIL	9-1/4 in.
WIDTH OF TAIL	5-1/2 in.
WIDTH OF TAIL FINS	2-3/8 in.
DIMENSIONS OF TAIL STRUTS	3-1/2" x 1/4" x 1/16"
MATERIAL OF TAIL	Sheet steel
TYPE OF FILLING	Central steel tube filled with black powder
WEIGHT OF FILLING	.55 Kg.
TOTAL WEIGHT OF BOMB	10 Kg.
CHARGE/WEIGHT RATIO	
CONSTRUCTION OF BODY	The bomb consists of a thick concrete case surrounding a steel central tube. The tube is filled with loose black powder. It is threaded internally at both ends. A steel well containing a nose fuze pocket threads into the forward end of the tube. A brass disc is placed between the fuze and the black powder. The after end of the tube is closed by a male base plate. A length of pipe is attached to the base plate by four screws.
CONSTRUCTION OF TAIL	Four tail fins are welded to the pipe extending from the base plate. Four single struts support the fins.

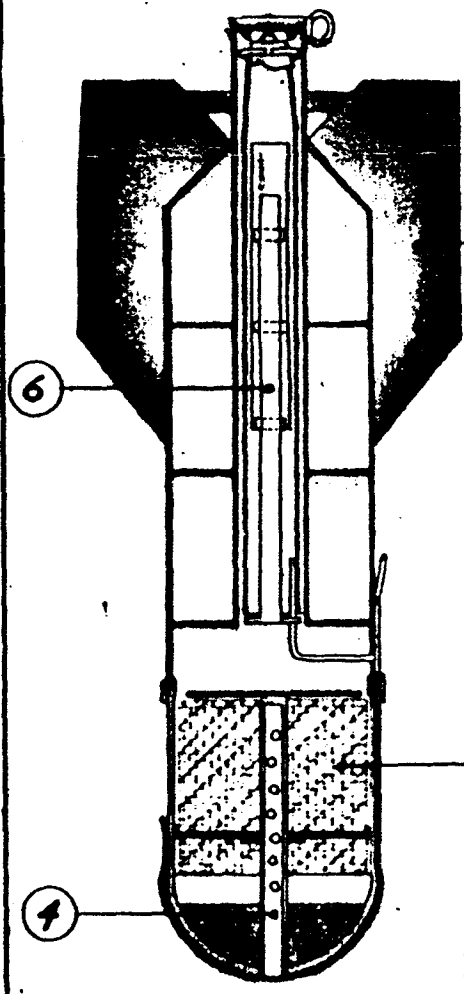


JAPANESE GAS BOMB
50 KG. TYPE 92

PUBLICATION DATE : July 1944 RESTRICTED		JAPANESE ARMY BOMB
FUZES: Nose - A-2(b) Tail - None		50 KG. GAS
OVERALL LENGTH	45.0 in.	Type 92
LENGTH OF BODY	26.4 in.	
DIAMETER OF BODY	7.5 in.	
THICKNESS OF WALL	0.2 in.	
MATERIAL OF WALL	Steel.	
TYPE OF SUSPENSION	Horizontal (Army type)	
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug. (A rectangular steel swivel eye-hook is welded to a carrying band.)	
COLOR & MARKINGS ON BOMB AND TAIL	Army code: The bomb is grey-green with a red and blue band on the nose; two yellow bands with a white band between are stencilled around the body.	
LENGTH OF TAIL	18.5 in.	
WIDTH OF TAIL	9.2 in. 4 7/8 in	
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS	WIDTH 1 5/8 in.	
MATERIAL OF TAIL	Sheet iron.	
TYPE OF FILLING	Chemical gas (50/50 Lewisite - Mustard gases).	
WEIGHT OF FILLING	23 Kg.	
TOTAL WEIGHT OF BOMB	50 Kg.	
CHARGE/WEIGHT RATIO	46 %	
CONSTRUCTION OF BODY	Army Construction: A steel nose is screwed to body and held by three screwed in dowel pins. Tail cone is welded to the body. The nose is fastened to a steel plate in which the burster tube is screwed. Two grub-screws secure the nose fuze.	
CONSTRUCTION OF TAIL	Four Army fins are welded to a tail cone which is welded to the body. Fins are supported by a double row of bar struts.	
REMARKS	The A-2(a) nose fuze may be used or the A-2(c) may be used.	



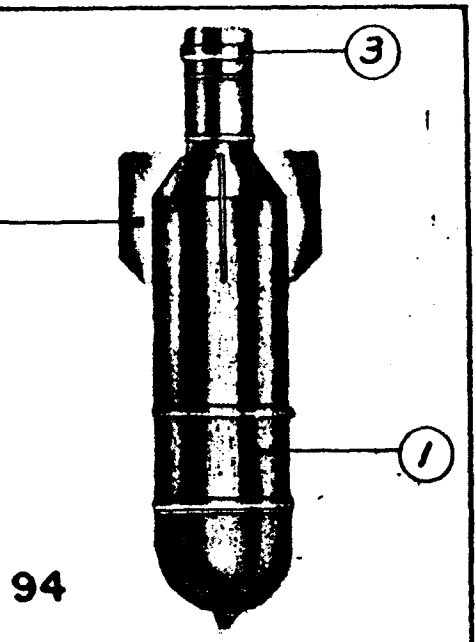
1 KG. TYPE



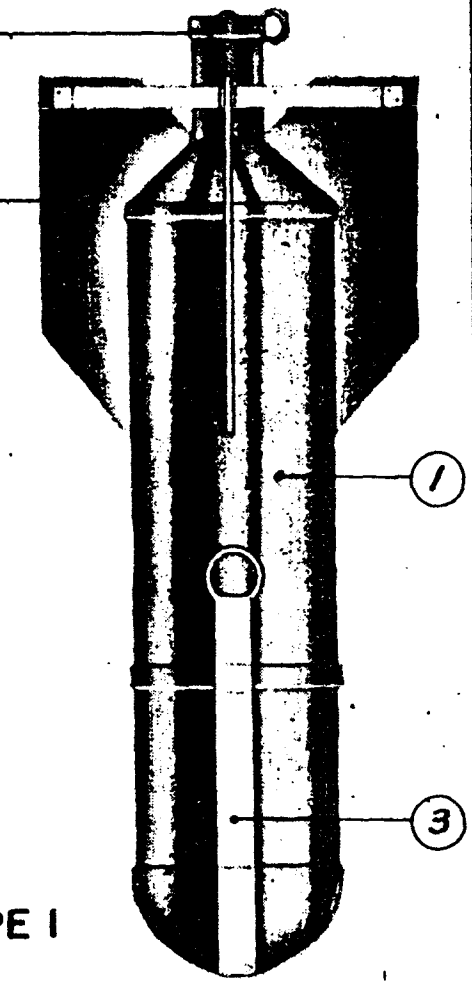
3 KG. TYP

LEGEND
1. Body
2. Tail fins.
3. Tear Strips
4. Inlet tube
5. Calcium Carbide
6. Calcium Phosphide

JAPANE



94



E I

SE SEA FLARES

RESTRICTED

PUBLICATION DATE: July 1944

FUZES: No fuzes. Tear-off strip is used.

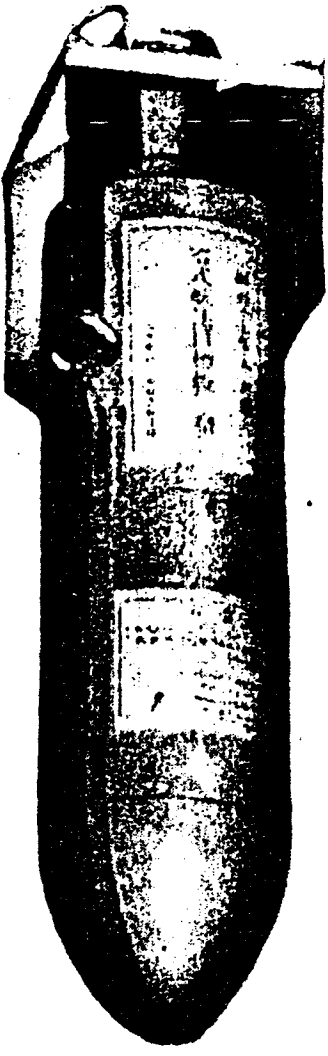
JAPANESE NAVY SEA FLARES

1 Kg. Type 94

3 Kg. Type 1

	1 Kg (Type 94)	3 Kg. (Type 1)
OVERALL LENGTH	11.43 in.	21.75 in.
LENGTH OF BODY	11.43 in.	21.75 in.
DIAMETER OF BODY	2.8 in.	4.75 in.
THICKNESS OF WALL	0.04 in.	0.04 in.
MATERIAL OF WALL	Tin plate	Tin plate
TYPE OF SUSPENSION		Clusters of Five
CONSTRUCTION OF SUSPENSION LUG		
COLOR & MARKINGS ON BOMB AND TAIL	Grey. Red pull rings. One paper label.	Chrome yellow. Red pull rings. Two paper labels.
LENGTH OF TAIL	2.75 in.	7.0 in.
WIDTH OF TAIL	3.0 in. square	5.0 in. square.
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL	Tin plate	Tin plate.
TYPE OF FILLING	Calcium Carbide and Calcium Phosphide.	
WEIGHT OF FILLING	Calcium Carbide -.6 lbs.	Calcium Carbide - 2.0 lbs.
TOTAL WEIGHT OF BOMB	1 Kg.	3 Kg.
CHARGE/WEIGHT RATIO	46%	33%
CONSTRUCTION OF BODY	In both types, tin plate is rolled into a cylinder with soldered lapped joints. Lead weight in nose. Buoyancy chamber in nose. Nose is hemispherical tin plate soldered to body. Soldered cap at apex of tail cone.	
CONSTRUCTION OF TAIL	Four stabilizer fins welded to body. One row of box-type struts on Type I. No struts on Type '94. Tail cone secured by soldered strap.	
OPERATION	The tear strips are removed before dropping. After impact, water enters holes under tear strips and contacts calcium phosphide. The gas catches fire and ignites the gas which is evolved when water contacts calcium carbide. The flame comes out the tail cone and is about eight inches in height. Recovered specimens should be expended in water.	

RESTRICTED



TYPE 3

JAPANESE

TYPE 4

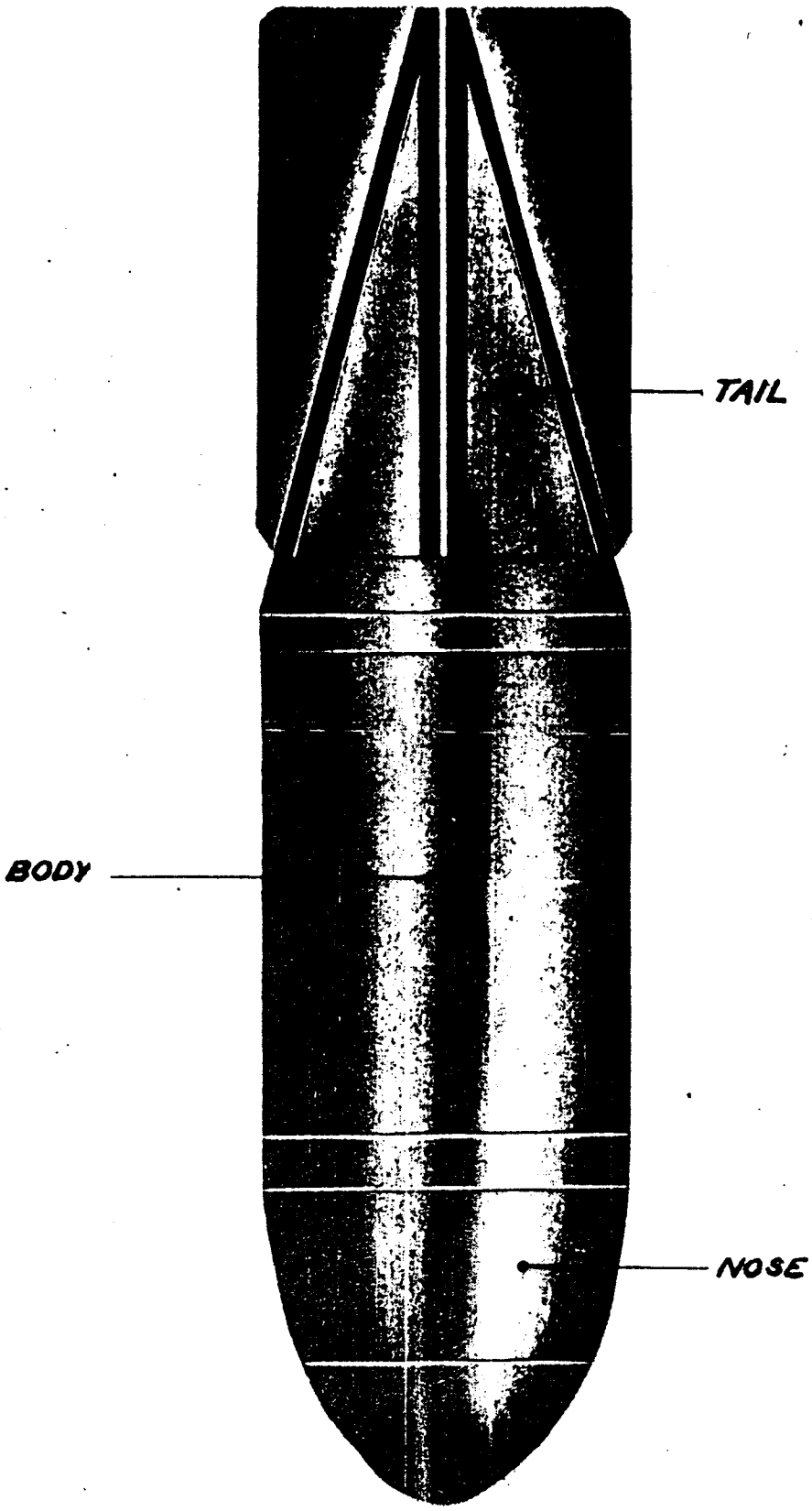
SEA FLARES

RESTRICTED

PUBLICATION DATE:	July 1944	JAPANESE NAVY SEA FLARES
FUZES:	None	
	Type III	Type IV
OVERALL LENGTH	13.8 in.	10 in.
LENGTH OF BODY	13.8 in.	10 in.
DIAMETER OF BODY	2.9 in.	2.4 in.
COLOR & MARKINGS ON BOMB AND TAIL	Grey overall with 2 labels on one side.	Grey overall, 2 labels 180° apart.
CONSTRUCTION & OPERATION	Construction and operation are similar to the construction and operation of Type I and Type 94. Type III has four fins braced by struts, but Type IV has only three fins with no struts. Both flares have more pointed noses than Type I and 94.	

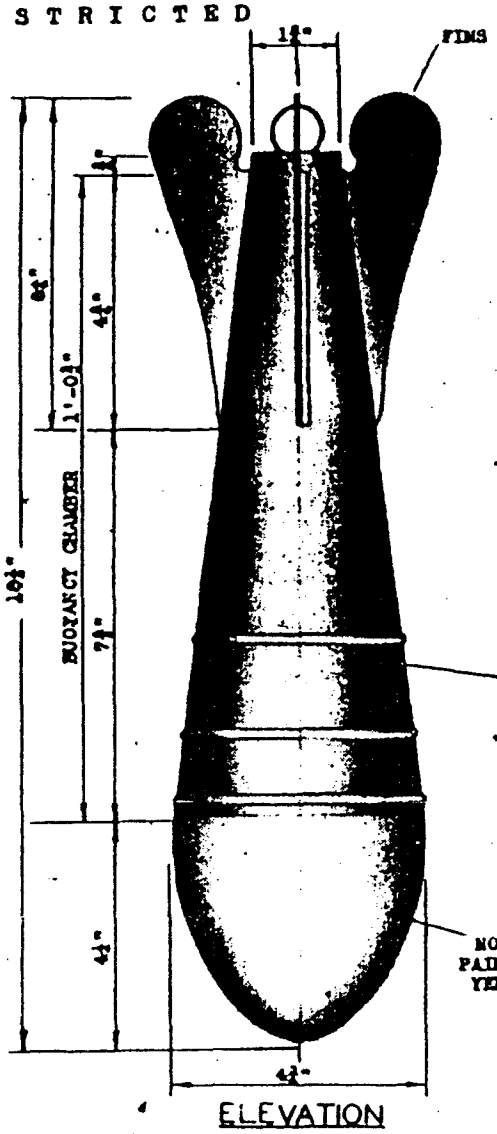
Type 3

Type 4

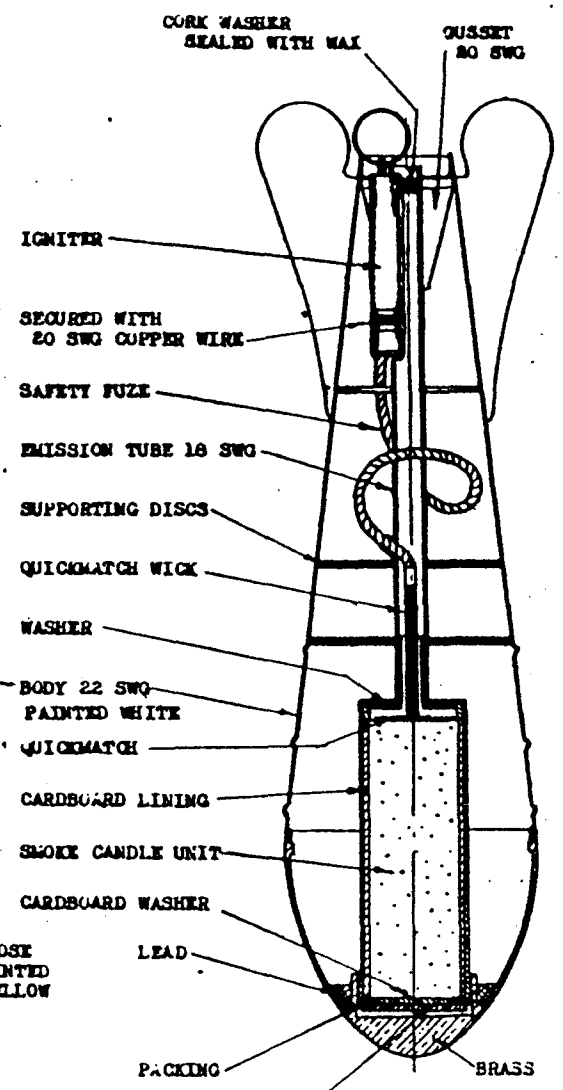


JAPANESE SEA MARKER

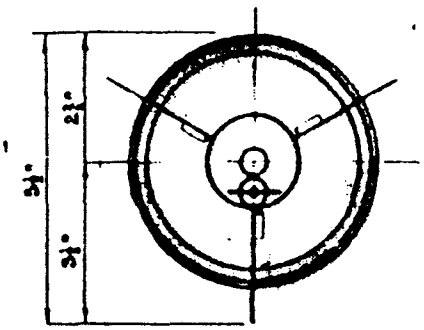
PUBLICATION DATE : July 1944 C O N F I D E N T I A L			JAPANESE SEA MARKER Metal Type (Type 0, Model 1) Paper Type
FUZES No fuzes			
	Metal Type	Paper Type	
OVERALL LENGTH	12.25 in.	12.37 in.	
LENGTH OF BODY	7.5 in.	7.75 in.	
DIAMETER OF BODY	3.0 in.	2.8 in.	
THICKNESS OF WALL	0.010 in.		
MATERIAL OF WALL	Sheet Steel	Cardboard	
TYPE OF SUSPENSION	Dropped by hand	Dropped by hand	
CONSTRUCTION OF SUSPENSION LUG			
COLOR & MARKINGS ON BOMB AND TAIL	Aluminum color; Japanese inscription printed on a paper label which is glued to the body of the marker. (Instructions for operation of marker).		
LENGTH OF TAIL	4.75 in.	4.6 in.	
WIDTH OF TAIL	4.12 in.	2.9 in.	
WIDTH OF TAIL FINS			
DIMENSIONS OF TAIL STRUTS			
MATERIAL OF TAIL	Light tin .008 inch.	Cardboard	
TYPE OF FILLING	Aluminum powder containing 6.5% zinc. One ounce covers 118 square feet. No explosive of any sort.		
WEIGHT OF FILLING		1.0 lb.	
TOTAL WEIGHT OF BOMB	3.5 lbs.	3.5 lbs.	
CHARGE/WEIGHT RATIO		28%	
CONSTRUCTION OF BODY	Metal Type: Sheet steel cylindrical body fastened to the steel nose pieces by four punch marks. The tail cone and body are secured by a thin disc of light wood secured by four tacks in each component. Paper Type: A paper body, reinforced with cardboard strips has the nose weighted with a hollow steel nose piece fastened with adhesive tape.		
OPERATION	Metal Marker: - Situated in the hollow section of the steel nose piece is a wooden cylinder 1-7/16 inches in diameter fastened to this cylinder is a small wooden disc the same diameter as the inside of the body. Located between this nose disc and the wooden disc in the tail is a connecting wooden pin 4.75 inches long. On impact with the water, the plug in the nose is forced up through the marker, forcing the body and tail portion to be freed from the body, thereby scattering the aluminum powder. Cardboard Marker: - Relies on impact with water to break container and spread contents.		



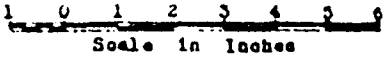
ELEVATION

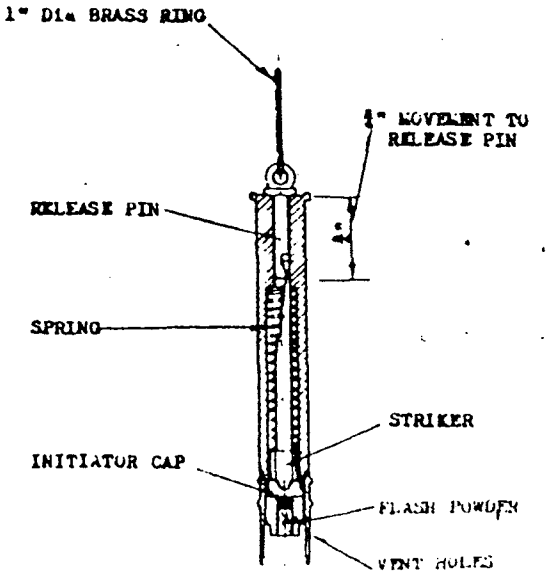


SECTION



TAIL VIEW





IGNITER

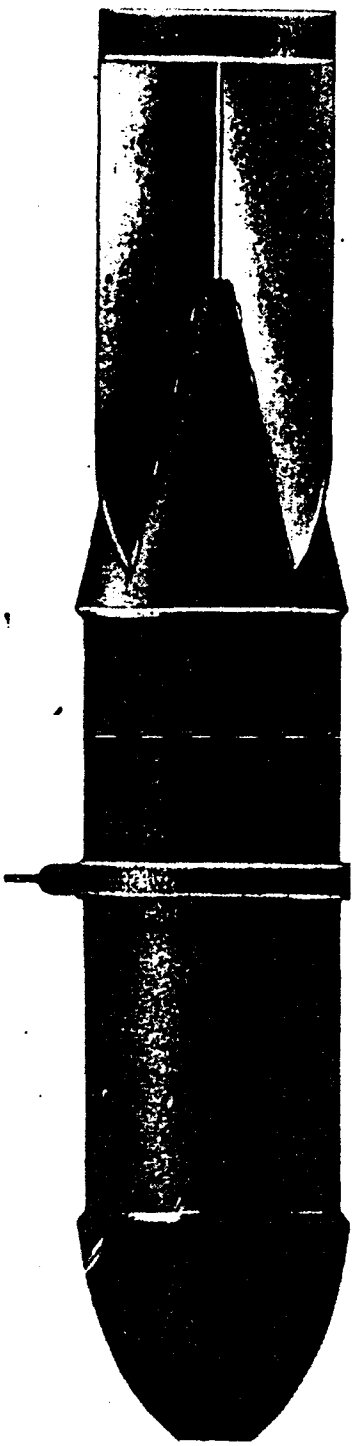
JAPANESE 2 KG. SMOKE FLOAT

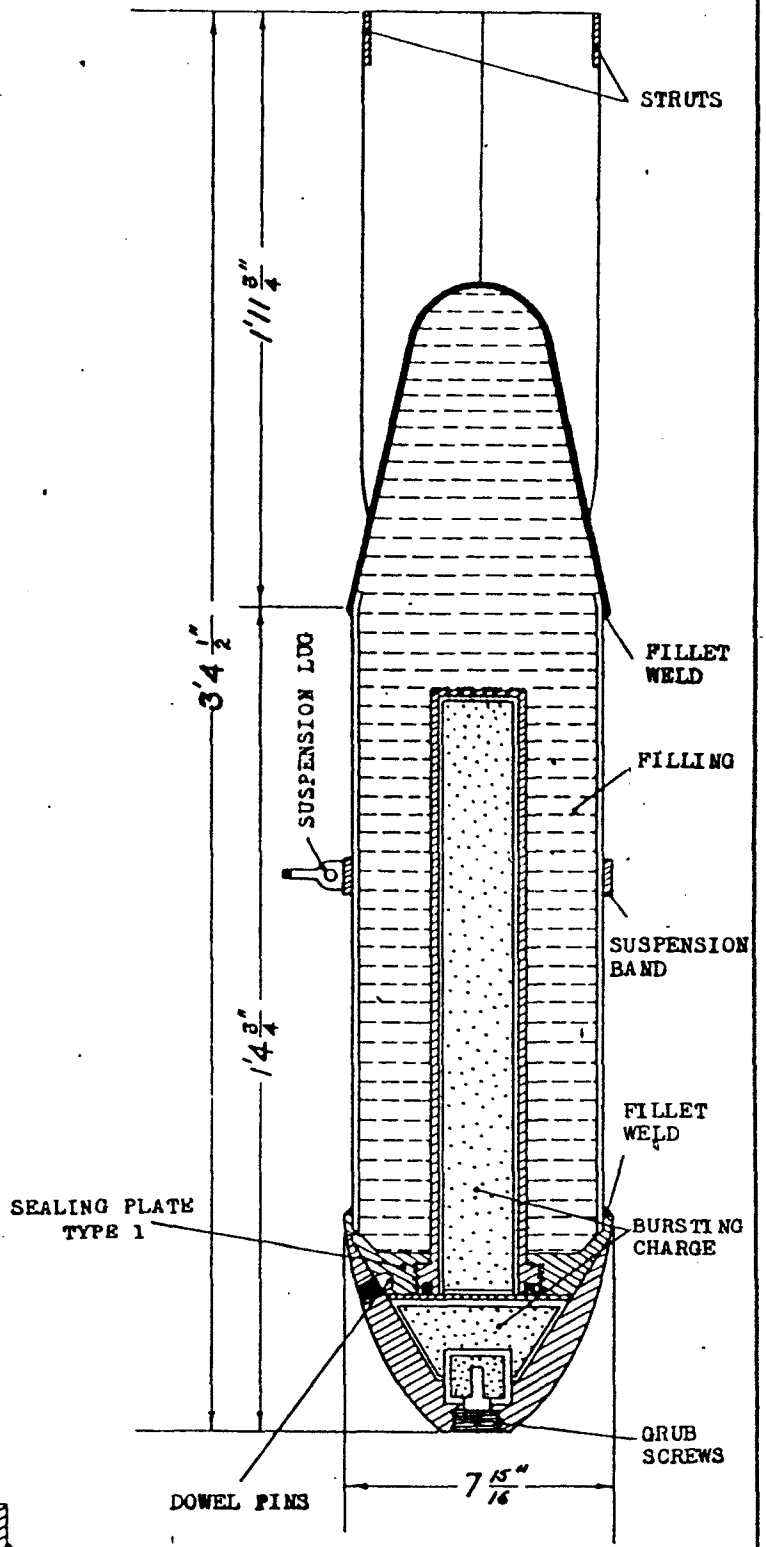
PUBLICATION DATE: July 1944 RESTRICTED	
FUZES: Pull igniter	
OVERALL LENGTH	18-1/8 in.
DIAMETER OF BODY	4-3/4 in.
COLOR & MARKINGS	White except for yellow ~~nose~~ or BLACK NOSE
TOTAL WEIGHT	4-3/4 lbs.

JAPANESE SMOKE FLOAT

2 KG.

DESCRIPTION	A cast brass nose piece weighted with lead is soldered to a conical shape body of 22 gauge sheet metal. A smoke candle unit screws into the nose. An emission tube, supported by 3 metal discs, passes lengthwise through the center of the body and has a cork plug in the tail end. The smoke candle unit consists of a casing of light alloy containing a smoke producing composition. A quickmatch wick and a length of safety fuse connects the candle with the igniter. The igniter casing contains a release pin, a spring loaded striker and an initiator cap pressed into a plug which screws into the end of the casing.
OPERATION	The safety pin is removed, the release pin is withdrawn by pulling on the pull cord. The striker spring is compressed until the release pin is free of the casing and then the striker is released and strikes the cap thus igniting the safety fuze and quickmatch wick which ignites the smoke composition (after a short delay) which produces a yellow smoke. The marker is dropped by hand after the release pin is pulled.

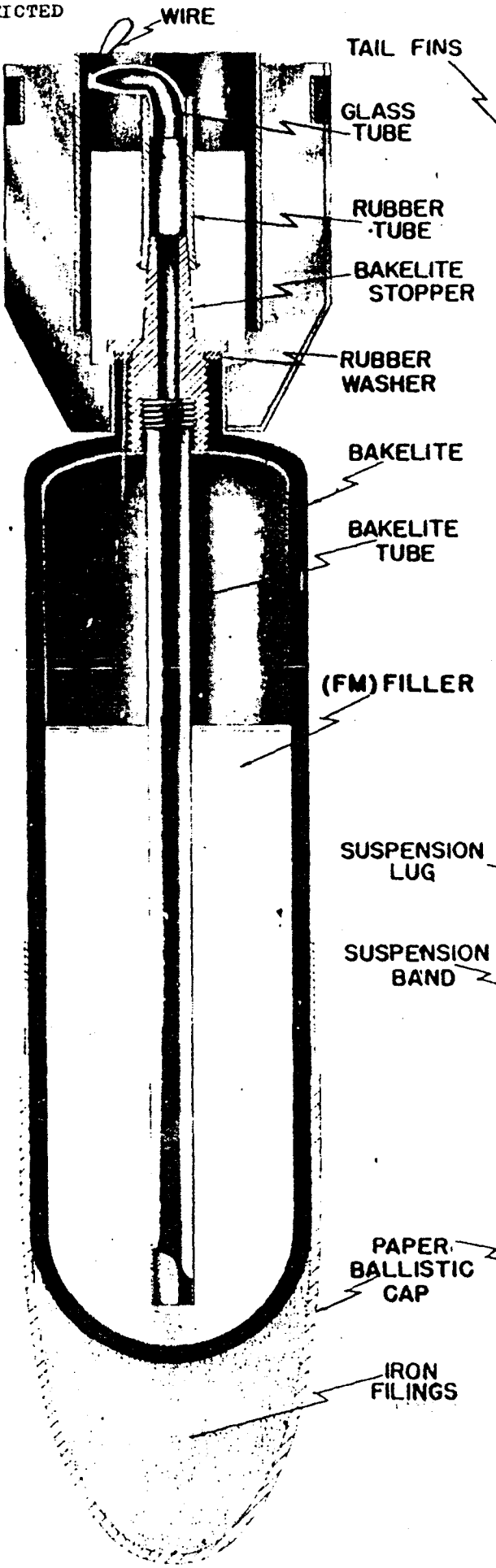




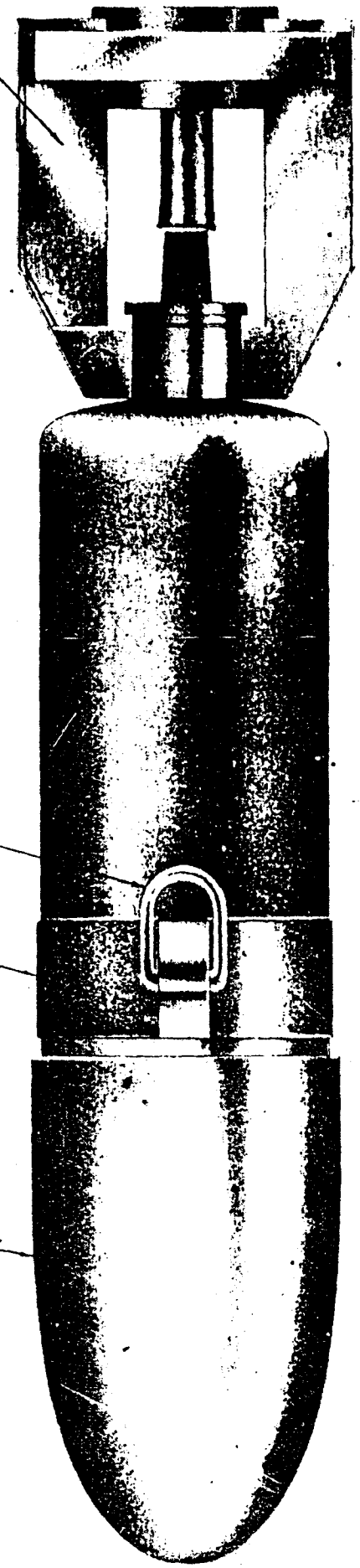
JAPANESE SMOKE BOMB
50 KG. TYPE 100

RESTRICTED

PUBLICATION DATE : May 1945 RESTRICTED		JAPANESE ARMY BOMB 50 KG. TYPE 100 Smoke
FUZES A-2(b); possible: A-2(a), A-2(c) D-5(a)		
OVERALL LENGTH	40.5 in.	
LENGTH OF BODY	23.75 in.	
DIAMETER OF BODY	7 in.	
THICKNESS OF WALL	0.125 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug. (A rectangular steel swivel eyehook is welded to carrying band).	
COLOR & MARKINGS ON BOMB AND TAIL	Body blue-grey overall with a red band around nose. "50K" and the smoke symbol (㊆) are stencilled in white on the body.	
LENGTH OF TAIL	16.75 in.	
WIDTH OF TAIL	9.75 in.	
WIDTH OF TAIL FINS	4.60 in.	
DIMENSIONS OF TAIL STRUTS	1.6 x 5.3 x 0.09 inches.	
MATERIAL OF TAIL	Sheet steel	
TYPE OF FILLING	FS Smoke analyzed to be chlorosulfonic acid-41%, & sulphu trioxide-54%, sulphuric acid-5%. Picric acid H.E. burster charges.	
WEIGHT OF FILLING	Chemical filling - 23 Kg. H.E. filling - 2.7 Kg.	
TOTAL WEIGHT OF BOMB	53.2 Kg.	
CHARGE/WEIGHT RATIO	48 %	
CONSTRUCTION OF BODY	Bomb consists of a tubular steel body to which is welded the conical tail cone and a steel sealing plate or collar. A central exploder tube is screwed into the plate and the joint is made airtight by a lead washer at the thread seat. The steel nose piece is affixed to the plate by three dowel pins.	
CONSTRUCTION OF TAIL	Four Army fins are spot welded to tail cone and supported by box type struts.	
REMARKS	The preformed nose and burster charges are shipped loaded in the bomb. On the side of the wooden packing crates are stencilled:. Translated: "Type 100 50 Kg. Smoke Bomb". $\frac{50\,B(G)}{100}$ (A) (B) The smoke symbol (㊆) appeared on the end of the crate. This bomb case is similar to 50 K Incendiary bomb, pg 51. Two different steel closing plates have been found with varying thicknesses of 1" and 1-3/4".	



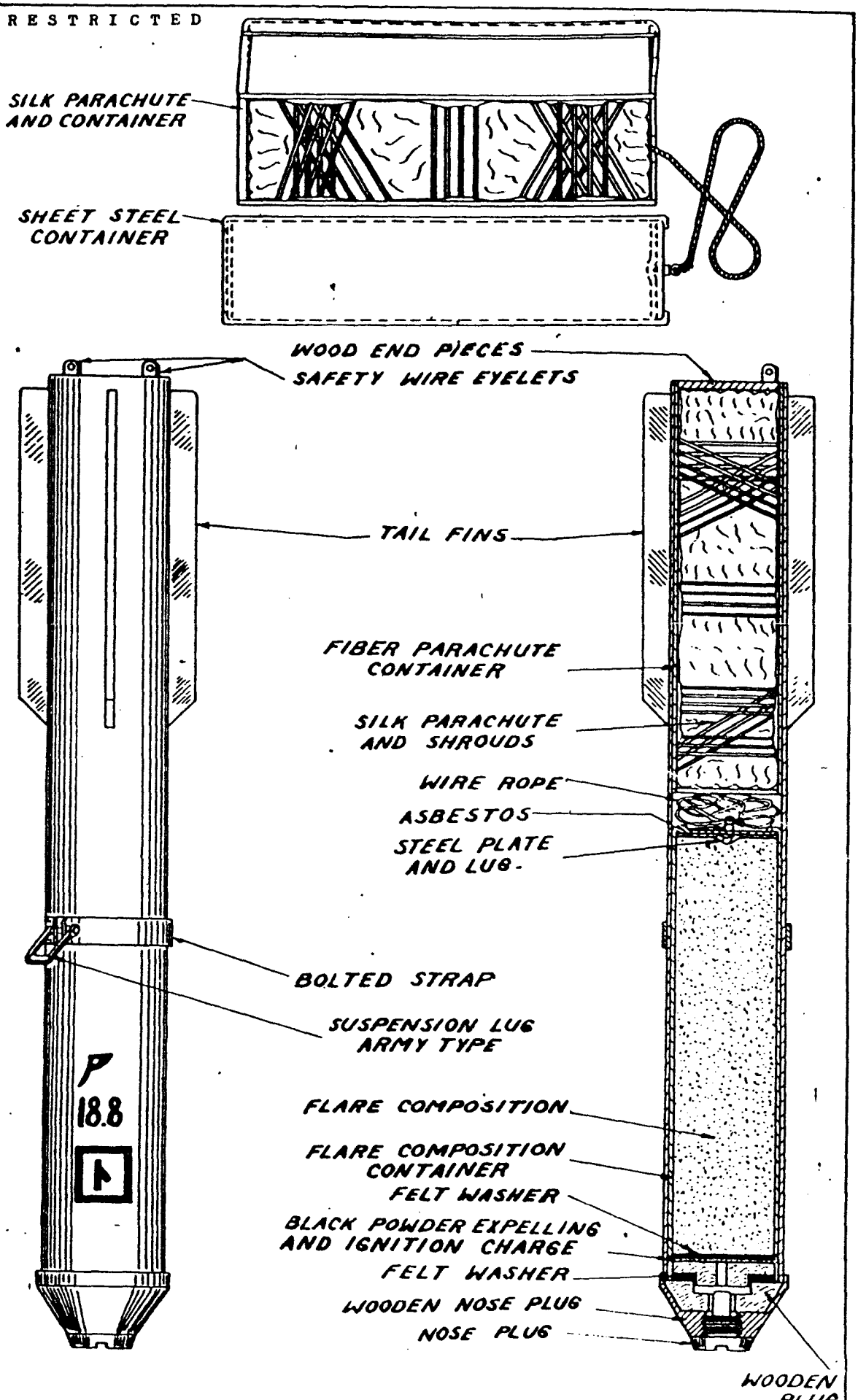
JAPANESE 2KG. S



SMOKE BOMB

PUBLICATION DATE : May 1945 RESTRICTED		JAPANESE SMOKE BOMB 2KG.
FUZES : None		
OVERALL LENGTH	17 in.	
LENGTH OF BODY	11-3/16 in.	
DIAMETER OF BODY	3 in.	
THICKNESS OF WALL	3/16 in.	
MATERIAL OF WALL	Bakelite	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	A steel suspension ring is attached to a steel band by a soldered tin strip. The steel band fits tightly around the bomb body.	
COLOR & MARKINGS ON BOMB AND TAIL	Black body and tail. No other color or markings present.	
LENGTH OF TAIL	4-7/8 in.	
WIDTH OF TAIL	5 in.	
WIDTH OF TAIL FINS	1-9/16 in.	
DIMENSIONS OF TAIL STRUTS	Length 3-1/8 in.; Width 7/16 in.	
MATERIAL OF TAIL	Sheet tin	
TYPE OF FILLING	FM (titanium tetrachloride)	
WEIGHT OF FILLING	1 lb. 7-3/4 oz.	
TOTAL WEIGHT OF BOMB	3 lb. 14 oz.	
CHARGE/WEIGHT RATIO	37%	
CONSTRUCTION OF BODY	The bomb body is of molded bakelite construction with an opening in the after end only. This opening is threaded to receive a bakelite stopper, the union being sealed by a black rubber washer. The stopper is threaded internally to receive a bakelite tube which extends nearly the complete length of the bomb body. The after end of the stopper is a slightly tapered tube and a rubber tube is cemented over it. Cemented into the after end of the rubber tube is a glass tube thru which the bomb is filled. When the bomb is approximately two-thirds filled with liquid FM, the glass tube is heated and sealed off. A small wire is attached to the glass tube at the point of sealing. Each of the cemented unions is reinforced with a wire wrapping. A ballistic cap is glued to the nose of the bomb. The cap is made of heavy paper and is filled with fine iron filings to make the bomb nose heavy.	
CONSTRUCTION OF TAIL	The tail fins are made of sheet tin. Pairs of adjacent fins are stamped from the same piece of metal and soldered to the forward and after circular struts. The edges of the fins are strengthened by having a one-eighth (1/8) inch turnback. The after circular strut (width 1"; dia. 1-7/8 in.) is similarly strengthened. The forward circular strut (width 9/16"; dia. 1-1/16") is of lighter gauge tin and is secured to the fins by soldering except for one free end which is secured by a bolt and nut after the fins are assembled to the bomb. To insure positive seating of the fins, a rubber insert extends half way around the inside of the forward circular strut. A single set of box type struts (length 3-1/8"; width 7/16") is located at the after extremities of the fins.	
OPERATION	The bomb is released from the plane and the case fractures on contact with the target. The smoke mixture is dispersed. This bomb may be used as a smoke marker, practice bomb or navigational aid.	

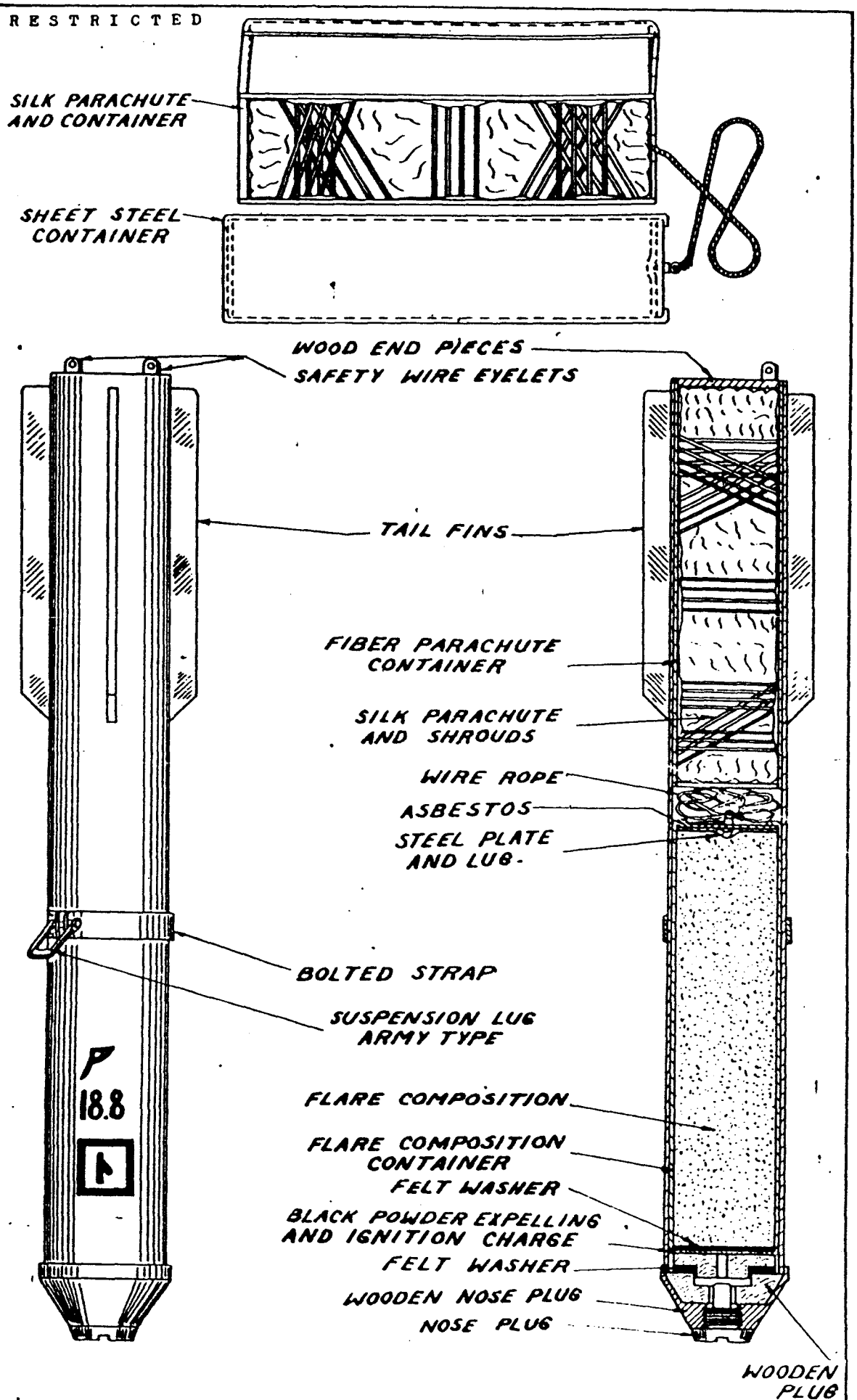
RESTRICTED



JAPANESE ARMY 12 KG. PARACHUTE FLARE TYPE 1

PUBLICATION DATE : May 1945 RESTRICTED		JAPANESE SMOKE BOMB 2KG.
FUZES : None		
OVERALL LENGTH	17 in.	
LENGTH OF BODY	11-3/16 in.	
DIAMETER OF BODY	3 in.	
THICKNESS OF WALL	3/16 in.	
MATERIAL OF WALL	Bakelite	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	A steel suspension ring is attached to a steel band by a soldered tin strip. The steel band fits tightly around the bomb body.	
COLOR & MARKINGS ON BOMB AND TAIL	Black body and tail. No other color or markings present.	
LENGTH OF TAIL	4-7/8 in.	
WIDTH OF TAIL	5 in.	
WIDTH OF TAIL FINS	1-9/16 in.	
DIMENSIONS OF TAIL STRUTS	Length 3-1/8 in.; Width 7/16 in.	
MATERIAL OF TAIL	Sheet tin	
TYPE OF FILLING	FM (titanium tetrachloride)	
WEIGHT OF FILLING	1 lb. 7-3/4 oz.	
TOTAL WEIGHT OF BOMB	3 lb. 14 oz.	
CHARGE/WEIGHT RATIO	37%	
CONSTRUCTION OF BODY	The bomb body is of molded bakelite construction with an opening in the after end only. This opening is threaded to receive a bakelite stopper, the union being sealed by a black rubber washer. The stopper is threaded internally to receive a bakelite tube which extends nearly the complete length of the bomb body. The after end of the stopper is a slightly tapered tube and a rubber tube is cemented over it. Cemented into the after end of the rubber tube is a glass tube thru which the bomb is filled. When the bomb is approximately two-thirds filled with liquid FM, the glass tube is heated and sealed off. A small wire is attached to the glass tube at the point of sealing. Each of the cemented unions is reinforced with a wire wrapping. A ballistic cap is glued to the nose of the bomb. The cap is made of heavy paper and is filled with fine iron filings to make the bomb nose heavy.	
CONSTRUCTION OF TAIL	The tail fins are made of sheet tin. Pairs of adjacent fins are stamped from the same piece of metal and soldered to the forward and after circular struts. The edges of the fins are strengthened by having a one-eighth (1/8) inch turnback. The after circular strut (width 1"; dia. 1-7/8 in.) is similarly strengthened. The forward circular strut (width 9/16"; dia. 1-1/16") is of lighter gauge tin and is secured to the fins by soldering except for one free end which is secured by a bolt and nut after the fins are assembled to the bomb. To insure positive seating of the fins, a rubber insert extends half way around the inside of the forward circular strut. A single set of box type struts (length 3-1/8"; width 7/16") is located at the after extremities of the fins.	
OPERATION	The bomb is released from the plane and the case fractures on contact with the target. The smoke mixture is dispersed. This bomb may be used as a smoke marker, practice bomb or navigational aid.	

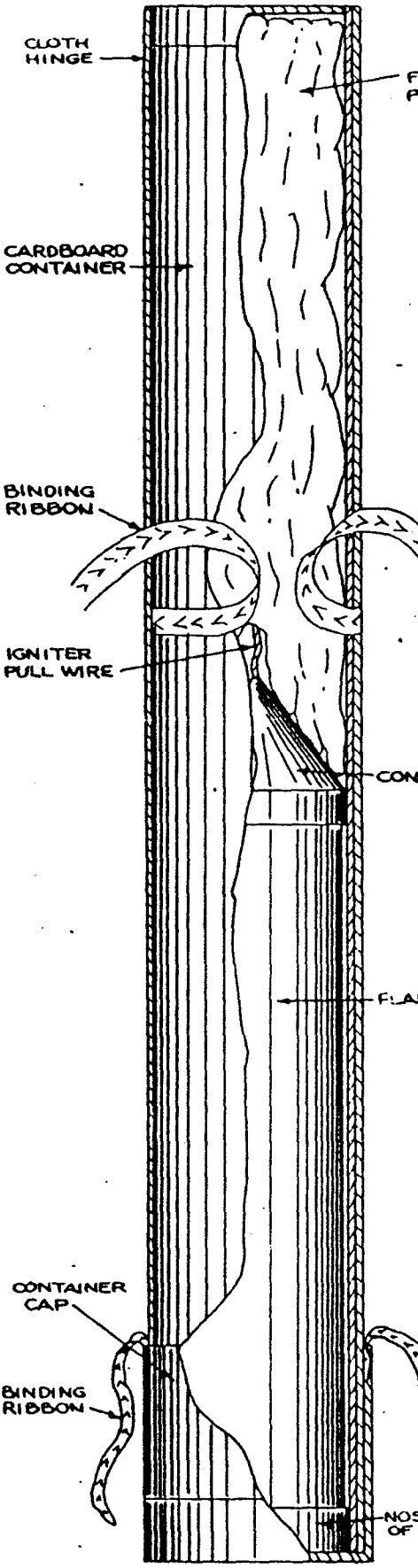
RESTRICTED



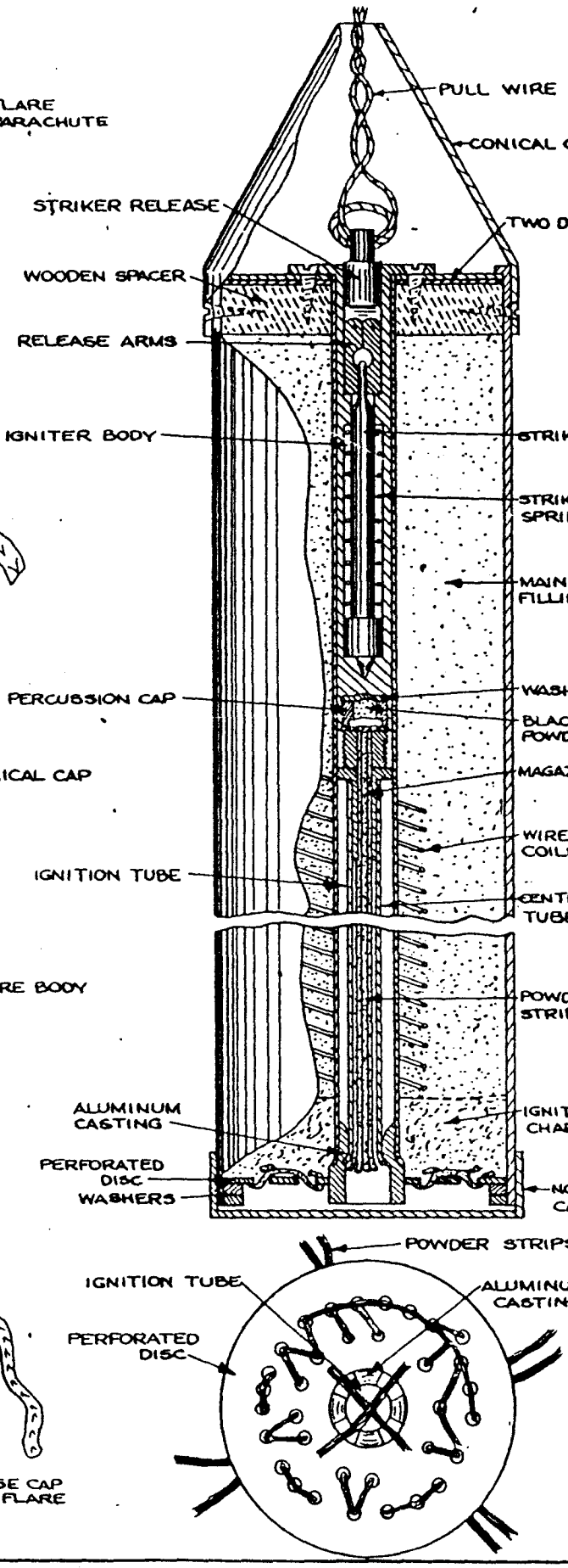
JAPANESE ARMY 12 KG. PARACHUTE FLARE TYPE 1

PUBLICATION DATE: July 1944 RESTRICTED		JAPANESE ARMY [redacted] FLARE 12 KG. TYPE 1 Parachute Flare
FUZES D-5(a)		
OVERALL LENGTH	34-1/8 in.	
LENGTH OF BODY	34-1/8 in.	
DIAMETER OF BODY	4-3/16 in.	
THICKNESS OF WALL	1/16 in.	
MATERIAL OF WALL	Cold rolled steel	
TYPE OF SUSPENSION	Horizontal	
CONSTRUCTION OF SUSPENSION LUG	Army type	
COLOR & MARKINGS ON BOMB AND TAIL	Black overall. Marked: ▶ 18.8 P Tokyo, August 1942 and Symbol for illuminating flare.	
LENGTH OF TAIL	11-3/4 in.	
WIDTH OF TAIL	6-1/16 in. diameter	
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS	None	
MATERIAL OF TAIL	Cold rolled steel.	
TYPE OF FILLING	Flare composition container & parachute container	
WEIGHT OF FILLING	Flare composition, 15 lb. 1 oz.	
TOTAL WEIGHT OF BOMB	26 lb. 5 oz.	
CHARGE/WEIGHT RATIO	57 %	
DESCRIPTION	Externally the flare is a 34 inch, black, parallel-sided tube of 18 gauge, cold rolled steel, with a conical shaped nose. An Army type carrying band with folding lug is bolted around the case 13 inches from the nose. Four fins protrude 7/8 inch from the body and are spot welded along the after two-fifths of the container. Internally the flare consists of two sections: the flare composition container and the parachute with its container. These are joined together by 53 inches of 1/8 inch wire rope. The flare composition is contained in an aluminum painted sheet steel cylinder with a lap rolled seam. The parachute is contained in a split, cylindrical, fiber housing with wooden closing plugs at each end. The parachute is of light weight white silk. It is 18 feet 2 inches in diameter (unfilled and has sixteen peripheral shrouds and one central shroud. The shrouds are 13 feet 9 inches long.	
OPERATION	When the fuze initiates explosion of the black powder disc the resultant flash ignites the flare composition. The expanding gases cause both the parachute and the composition container to be expelled out the rear of the flare container. The parachute housing falls away allowing the parachute to be opened. While carried in the plane, a safety wire is passed through two eyelets at the tail end of the outside container, preventing the parachute from coming out until the flare has fallen free of the safety wire. It is possible that a tail plate, also held in by the safety wire, is missing.	
REMARKS	The flare composition is silvery gray and appears to be a hand pressed mechanical mixture of powdered magnesium asbestos flakes, and other ingredients to account for its weight. The composition burns a greenish white for 1-1/3 to 3 minutes (estimated. The flares come packed two per black wooden box marked: — あ (1) お 古 二	

RESTRICTED



JAPANESE AR
TYPE S



RMY PARACHUTE FLARE
90 SMALL MODEL

PUBLICATION DATE: September 1944	RESTRICTED
OVERALL LENGTH OF FLARE BODY	12.2 in.
DIAMETER OF FLARE BODY	2.4 in.
MATERIAL OF WALL	Sheet Steel
TYPE OF SUSPENSION	Thrown by hand from plane
COLOR & MARKINGS ON BOMB & TAIL	The flare body is varnished sheet steel.

弾明照型小式〇九

translation: Type 90 Small Model Aircraft Flare

JAPANESE ARMY [redacted] FLARE TYPE 90 SMALL MODEL PARACHUTE FLARE

TYPE OF FILLING	An igniter charge and illuminant main filling. Both compositions are under analysis. The main filling probably consists of magnesium and metal salts.
WEIGHT OF FILLING	1.77 Kg.
TOTAL WEIGHT OF FLARE (Less Igniter & End Caps	2.02 Kg. (4 lb. 7.5 oz.)

DESCRIPTION

The flares are crated eight (8) per box. Each flare is packed in a hermetically-sealed, tinned steel, cylindrical container which is opened by a tear-off strip. The containers are painted blue and have a printed label of instructions, pasted on the side. On the top end is another label with Markings, a translation of which reads: "Type 90 Small Model Aircraft Flare, May 1944, Tokyo Army Arsenal Number 1, Tokyo". Inside the blue container the flare is packed in a split cardboard cylinder. At one end the cylinder halves are hinged by means of a piece of cloth. On the other, they are held together by a cardboard cap. Two lengths of cotton tape hold the cap in place, and another is tied around the container body. The parachute is made up of three strips of cotton cloth sewn together. Sixteen shrouds and a line attached to the center of the chute are woven into a single line which leads to the pull wire of the igniter.

The flare proper houses a pull type igniter which is activated by the initial jerk at the opening of the parachute. The striker is spring loaded. Two arms pivoted on the striker release grip the eye on the end of the striker. The flare body is formed from varnished sheet steel rolled and soldered into the form of a cylinder. The case of the flare (furthest from the parachute) is serrated and the teeth crimped over the perforated disc. Two fibre washers and a steel cap held on by tape protect the network of powder strips. The end of the central tube passes through a hole in the center of the perforated disc and is crimped over it. An aluminum casting fits into the central tube and guides some of the powder strips in the disc through grooves in its face over the strips within the ignition tube. At the top of the flare is a wooden spacer drilled centrally to accommodate the central tube. A steel closing disc rests on the spacer and is soldered to the end of the central tube. The case is crimped over this disc. A conical cap with a hole in the apex to accommodate the pull wire is fastened to the case and spacer with three wood screws.

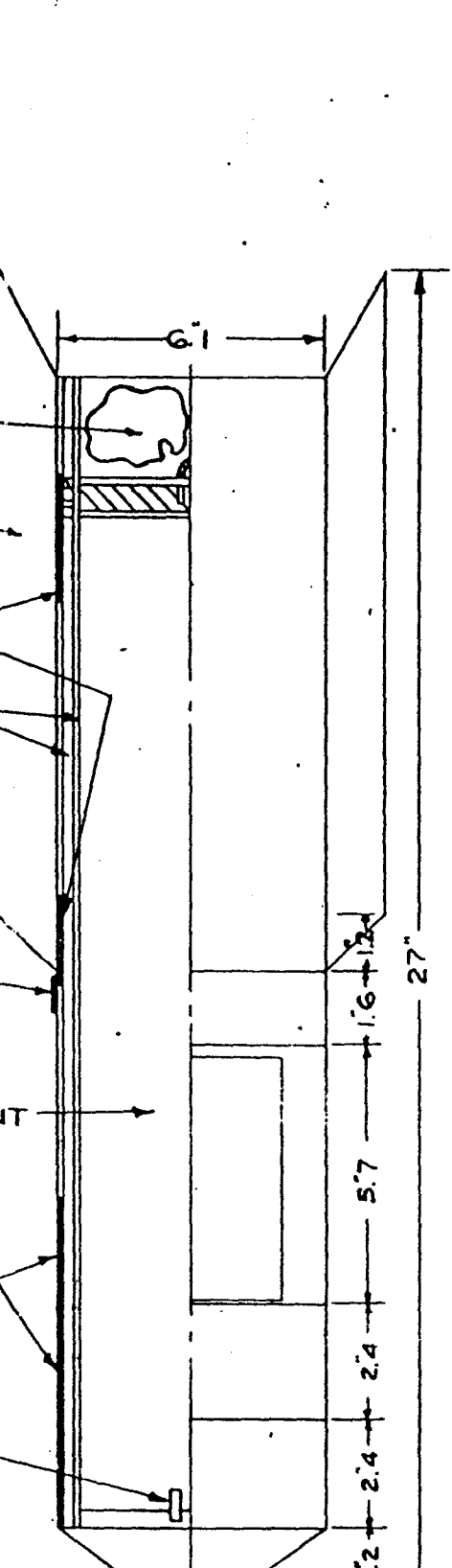
The main filling extends from the wooden spacer down to the ignition charge and is pressed into the flare case. Several coils of copper wire around the central tube prevent the filling from falling out of the base when the flare is burning in the air. The ignition charge is packed unevenly below the main filling.

OPERATION

The tapes holding the cap and container body are untied and the cardboard container with the flare inside is thrown from the plane by hand. The container opens to release the parachute and flare. The pull of the parachute on opening, lifts the striker release upward, further compressing the striker spring. When the release is free of the igniter body, the arms open outward freeing the striker which then impinges on the cap, igniting the black powder magazine below it and the powder strips. The flash from the strips passes down the ignition tube to the network of powder strips in the base of the flare, igniting the ignition charge and the flare.

REMARKS

The flare burns for two (2) minutes and 40 seconds with an intense greenish white flame.



TYPE I

TYPE II (TYP

APANESE PARACHUTE FL

E O MODEL 2)

ARES

RESTRICTED

PUBLICATION DATE : Feb. 1945

JAPANESE NAVY PARACHUTE FLARES

Type I (Earlier Type)

Type II (Type 0 Model 2)

FUZES: Type I - Unknown
Type II - D-3(a)

	Type I	Type II
OVERALL LENGTH	27 in.	34 in.
LENGTH OF BODY	25 in.	31.5 in.
DIAMETER OF BODY	6.1 in.	6.5 in.
THICKNESS OF WALL		0.05 in.
MATERIAL OF WALL	Sheet steel	Sheet steel
TYPE OF SUSPENSION	Unknown	Horizontal
CONSTRUCTION OF SUSPENSION LUG	Type II - Lug fastened to suspension band (approximately 1.5" wide).	
COLOR & MARKINGS ON BOMB AND TAIL	Type I: Bluish grey - marked - April 1939, Large type flare, Tech Dept. of Naval Air Force. Type II: Grey overall.	
LENGTH OF TAIL	Fins 14"	Fins 15.0" (approx.)
WIDTH OF TAIL		
WIDTH OF TAIL FINS	2"	1.0" (approx.)
DIMENSIONS OF TAIL STRUTS	None	
MATERIAL OF TAIL		18 Gauge steel plate
TYPE OF FILLING	Illuminant	Illuminant
WEIGHT OF FILLING	18 Kg.	
TOTAL WEIGHT OF BOMB	33 Kg.	
CHARGE/WEIGHT RATIO		

CONSTRUCTION

Type I: Inner and outer case of sheet steel. The inner case is filled with illuminant and attached to a parachute. The parachute is silk, 64.5 inches in diameter and has 32 cords. The inner case contains woolen bands around it, presumably to prevent the case from sticking when it is ejected from the outer case.

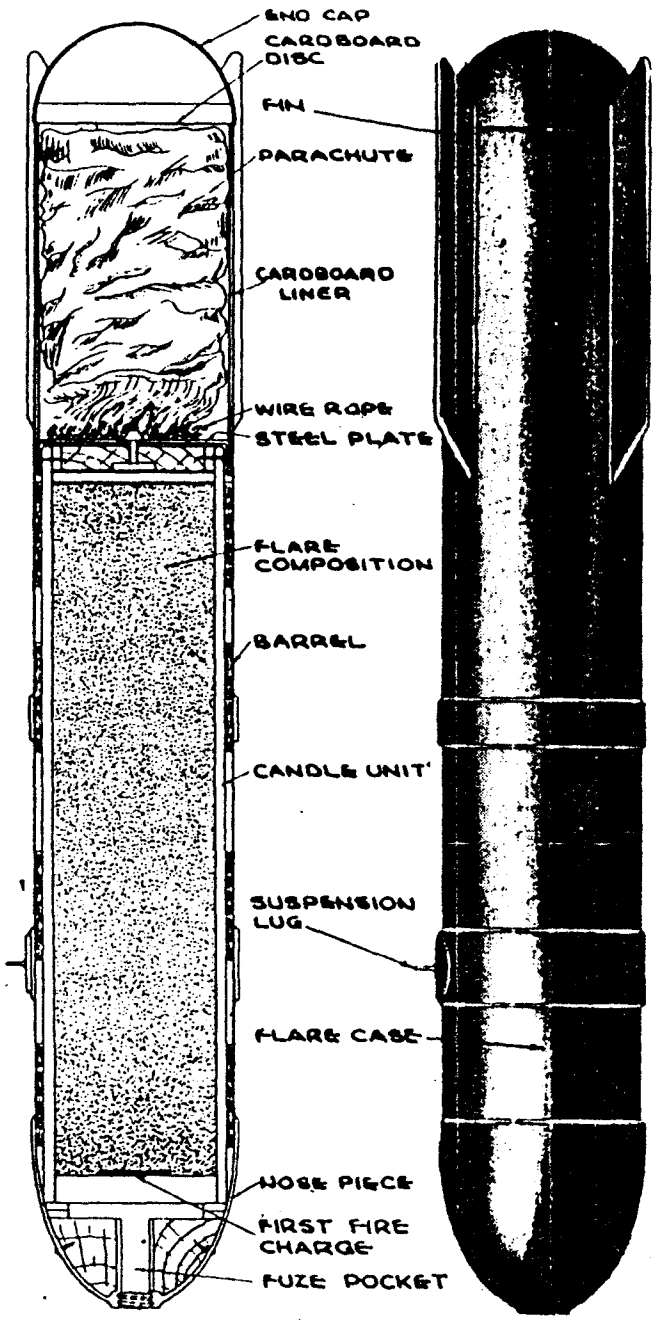
Type II: The outer container consists of a cylindrical barrel of 18 gauge M.S. plate, with a nose piece of 16 gauge M.S. plate lap-jointed on. A wooden block is located in the nose. Four stabilizing fins are soldered to the rear end of the barrel. The exact nature of the end cap is not known, but it is held in position by spot soldering in four places, and sealed against moisture with a material resembling shellac.

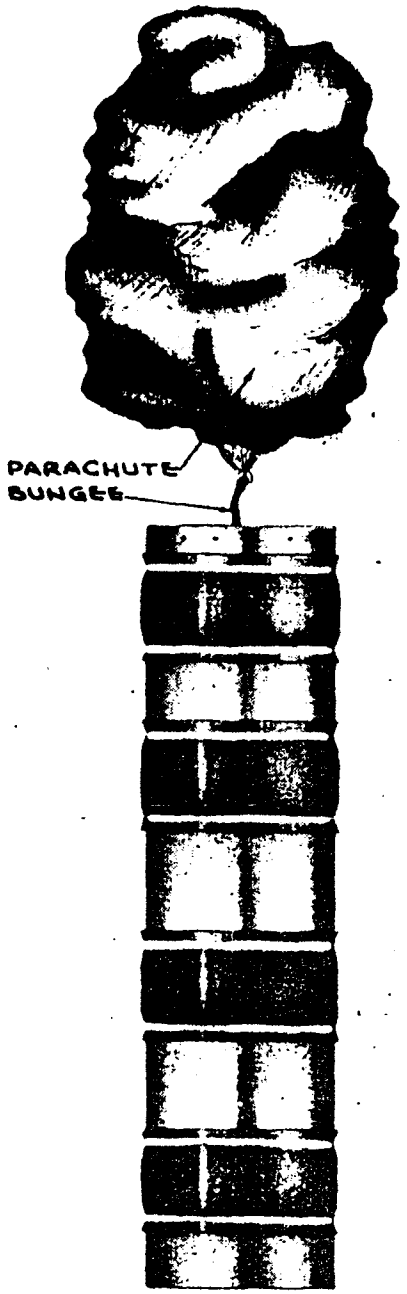
An inner casing (details unknown) slides into the container, and houses the candle with attached parachute.

REMARKS

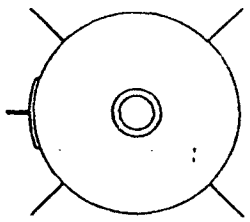
The earlier type flare was described in an early Chinese pamphlet but has not been recovered to date. The later type was dropped over Port Moresby, New Guinea, from approximately 20,000 feet, drifting across the target at about 1200 feet. It burned for about 5 minutes.

Captured documents reveal that the Type II flare has an end cap that is hemispherical in shape. The inner casing containing the illuminant is of light sheet metal construction. The aft end of the casing is closed by a cap which is held in place by 25 - 30 screws. A shackle is fastened to the center of this cap through which is passed a wire cable which is attached to the parachute. The inner casing is wrapped with four strips of felt.





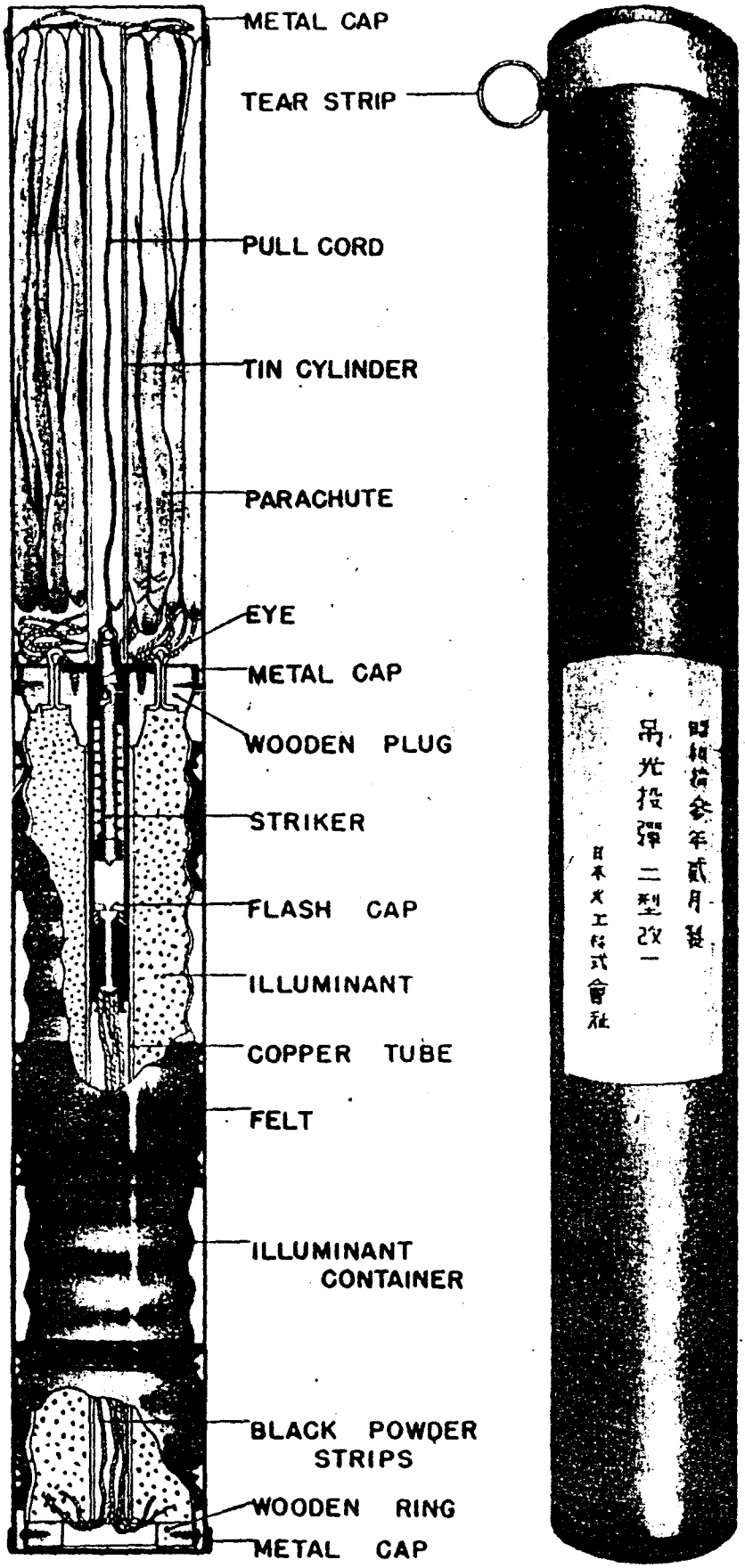
CANDLE UNIT



NOSE VIEW

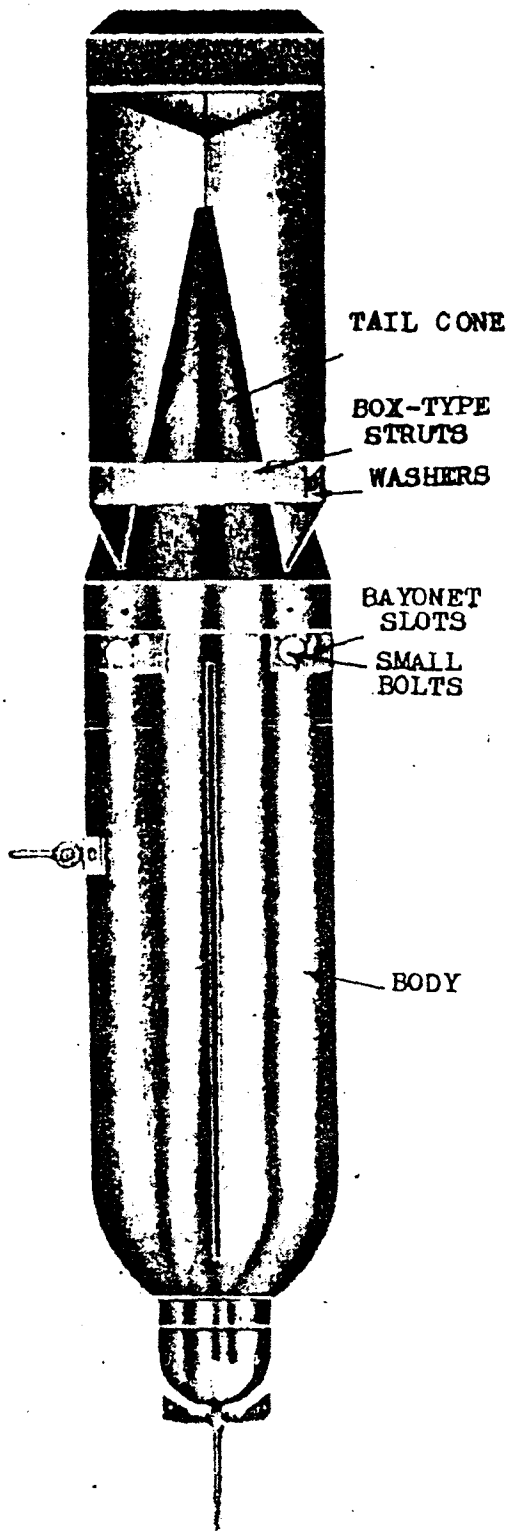
JAPANESE NAVY TYPE 0 MODEL 1. PARACHUTE FLARE

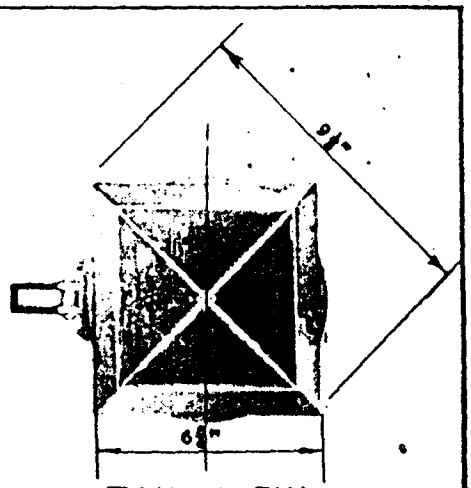
PUBLICATION DATE February 1945 RESTRICTED	JAPANESE NAVY FLARE TYPE O MODEL 1 PARACHUTE FLARE
FUZES D-4(a)	
OVERALL LENGTH	42.5 in.
LENGTH OF BODY	39.5 in.
DIAMETER OF BODY	7 in.
THICKNESS OF WALL	.05 in.
MATERIAL OF WALL	Steel
TYPE OF SUSPENSION	Horizontal (Navy type)
CONSTRUCTION OF SUSPENSION LUG	An eyebolt is welded to a circular plate. The plate is welded to a steel band that fits around the barrel.
COLOR & MARKINGS ON BOMB AND TAIL	Bluish-grey overall with a $\frac{1}{4}$ in. red stripe just below the end piece.
LENGTH OF TAIL	Fins 15 in.
WIDTH OF TAIL	
WIDTH OF TAIL FINS	1.8 in.
DIMENSIONS OF TAIL STRUTS	None
MATERIAL OF TAIL	Steel
TYPE OF FILLING	Illuminant
WEIGHT OF FILLING	52 lbs. (23.6 Kg)
TOTAL WEIGHT OF BOMB	83 lbs. (38 Kg)
CONSTRUCTION	The flare consists of three main elements, (1) the flare case, (2) the illuminating candle unit, and (3) the parachute. (1) The flare case consists of three sections: a nose piece, barrel and end cap. The nose piece is soldered securely to the barrel, and the hemispherical end cap is held in position by spot soldering in four places. Four tail fins are welded to the after two-fifths of the barrel. The nose is threaded to receive a fuze. (2) The illuminant is contained in a cardboard cannister which is covered by sheet brass .025 in. thick. The after end is closed by a steel plate held by screws to the cylinder. A wire rope from which the candle unit is suspended is attached to this steel plate by means of a shackle. The forward end of the container is open and fits against a wooden block in the nose piece. The illuminant at the open end contains in its center a first fire charge 3 in. in diameter and $\frac{1}{4}$ in. thick. The illuminant is silvery grey and appears to be a hard-pressed mechanical mixture of powdered magnesium, asbestos flakes and other ingredients. The flare sheds a bright white light and burns for 3 minutes and 40 seconds. Length of illuminant container . . . $25\frac{1}{8}$ in. Length of illuminant . . . . . $23\frac{1}{4}$ in. Diameter of illuminant . . . . . $5\frac{1}{8}$ in. (3) The parachute which is made of light weight white silk, is packed compactly in the after end of the barrel of the flare case. A layer of cardboard between the flare case and the parachute insures easier and smoother ejection. The parachute shrouds are connected to the candle unit by $65\frac{1}{2}$ inches of $\frac{1}{4}$ inch wire rope. At the junction of the parachute shrouds and the wire rope is a shock absorber made of 3/8 inch bungee strands.
OPERATION	Shortly after being released from the plane the aerial burst fuze operates. The resultant flash from the magazine ignites the first fire charge which in turn ignites the illuminant. The expanding gases force the end cap off and eject the parachute and illuminating candle unit.



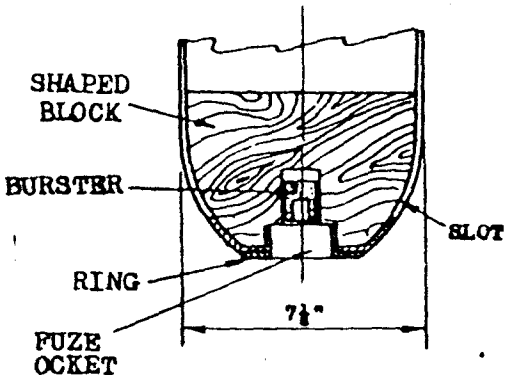
JAPANESE NAVY PARACHUTE FLARE
5 KG MODEL 2 MODIF 1

PUBLICATION DATE: February 1945 RESTRICTED		JAPANESE NAVY FLARE 5 KG MODEL 2 MODIF 1 PARACHUTE FLARE
FUZES Pull igniter		
OVERALL LENGTH	25.12 in.	
DIAMETER	3.12 in.	
MATERIAL OF WALL	Light sheet steel	
TYPE OF SUSPENSION	None. Thrown by hand from plane.	
COLOR AND MARKINGS	Body is grey overall. Two labels give description and instructions for use.	
TYPE OF FILLING	Illuminant	
WEIGHT OF FILLING	5 lb. 8 oz. (2.5 Kg.)	
COMPOSITION OF ILLUMINANT	Barium Nitrate . . . 55.5% Aluminum, powdered . 11.0% Magnesium, powdered . 18.0% Wax 9-10%	
TOTAL WEIGHT OF FLARE	10 lb. 3/4 oz. (5 Kg.)	
CONSTRUCTION	The flare case is cylindrical and of light sheet steel construction. It contains an illuminating candle unit and a parachute, and is closed at both ends by metal caps. The cap on the parachute end may be removed by pulling a tear strip. The illuminating candle unit container is cylindrical in shape and is made of corrugated sheet tin. A copper tube extends the length of the unit and the illuminant is cast around it. A wooden plug is fitted into the top of the flare and is held there by a metal cap and several screws. The fuze is inserted in a hole in the plug and fits down into the copper tube. Four black powder impregnated strips are attached to the fuze and extend down the copper tube to the base of the illuminant. Similar black powder strips are cast in the bottom of the flare. A wooden ring in the base of the candle unit holds it away from the bottom of the flare containers. The fuze used is of the pull igniter type illustrated on page 92. A tin cylinder fits over the end of the fuze and extends up through the parachute to the end cap. The pull cord attached to the catch on the fuze is led up through the tin cylinder to the end cap. The parachute is made of cloth and is attached to the candle unit by a length of wire rope. The wire rope is spliced and the two ends are attached to two eyes fastened to the wooden plug in the end of the illuminant container.	
OPERATION	The tear strip is pulled and the end cap removed. Then the fuze igniter cord is pulled and the flare is thrown from the plane. The striker in the fuze hits the flash cap which ignites the powder train. This burns slowly down to the black powder strings cast in the base of the illuminant. These ignite the illuminant. The expanding gases expel the candle unit and the parachute from the container.	

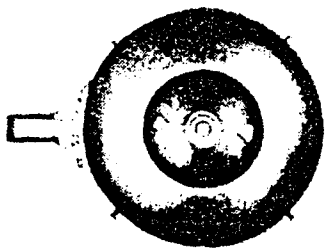




TAIL VIEW



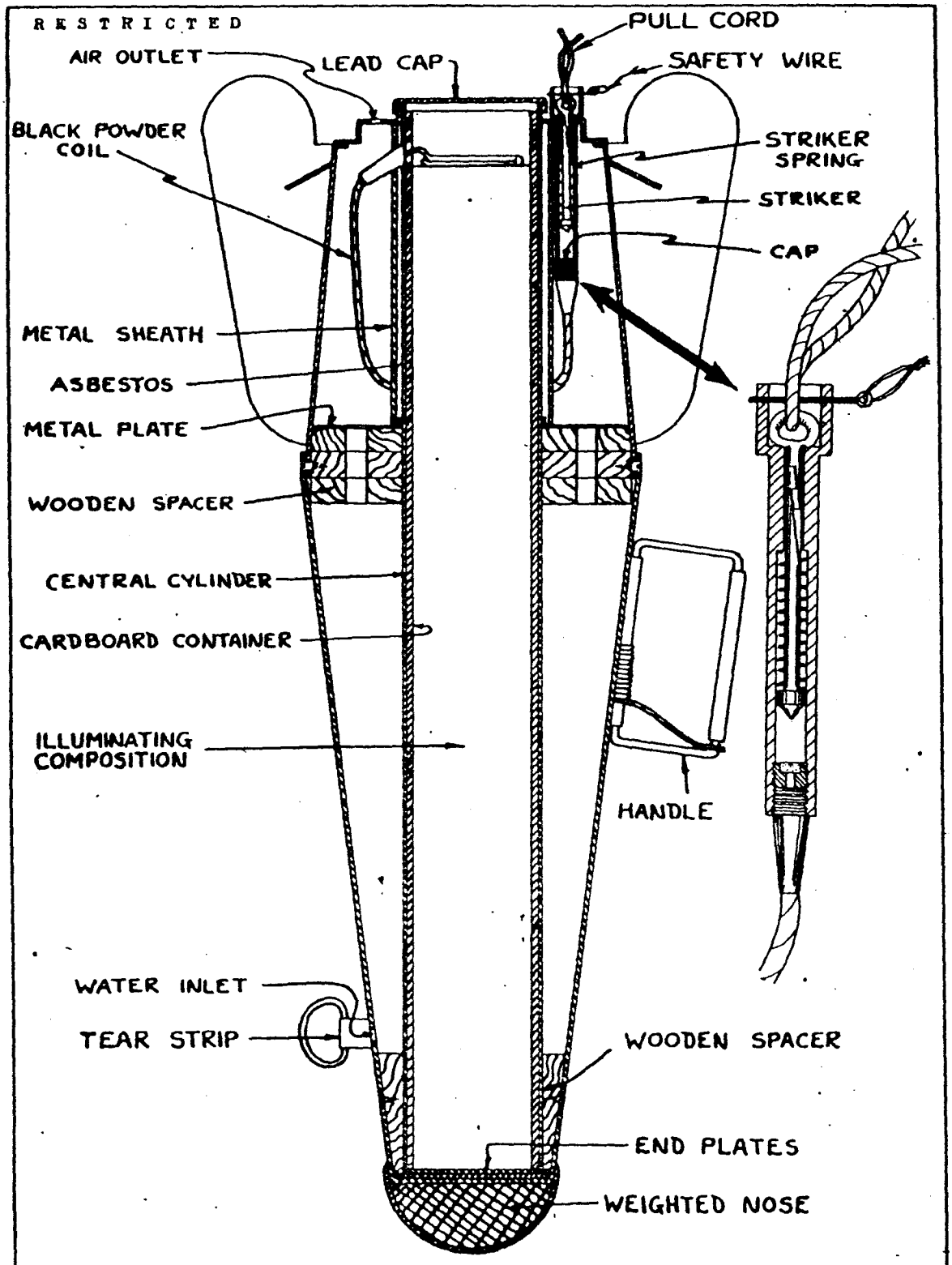
SECTION OF NOSE

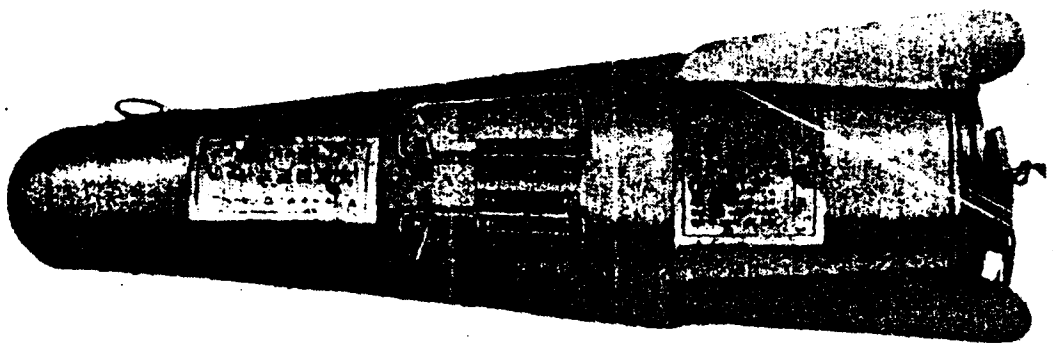


NOSE VIEW

JAPANESE PAMPHLET CONTAINER

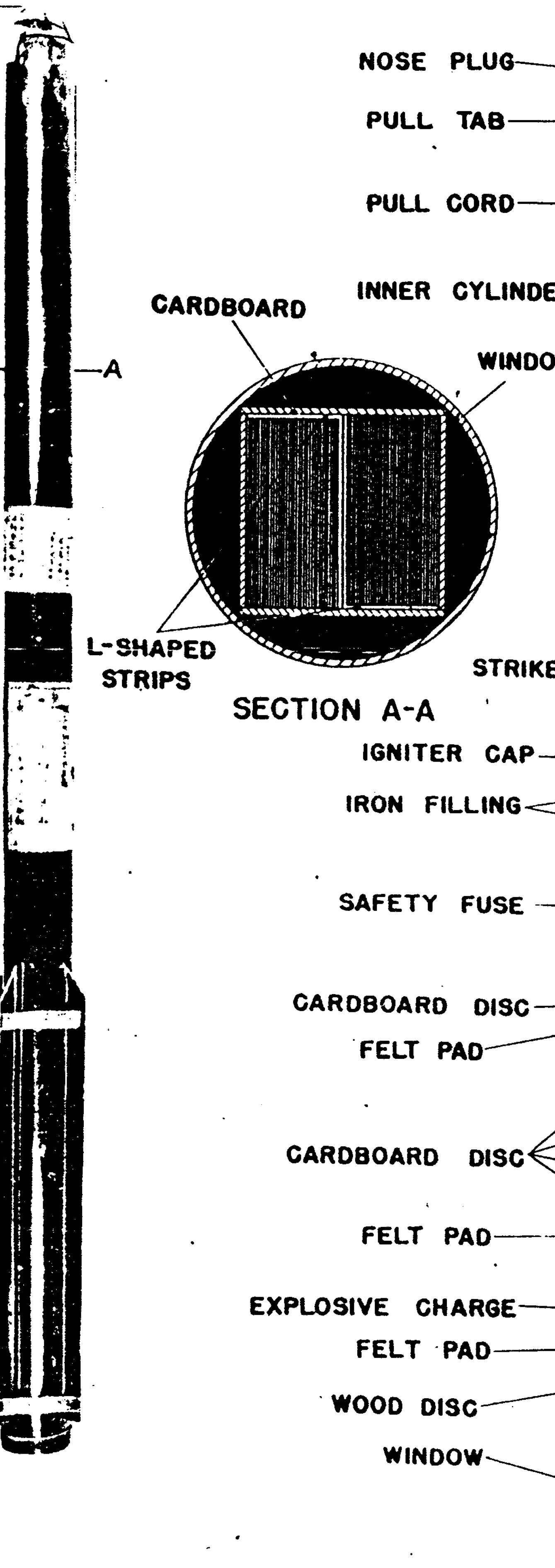
PUBLICATION DATE : July 1944 RESTRICTED		JAPANESE ARMY BOMB PAMPHLET CONTAINER
FUZES	Electrical D-1(a)	
OVERALL LENGTH	43.5 in. with fuze. (37.0 in. without fuze).	
LENGTH OF BODY	18.75 in.	
DIAMETER OF BODY	7.12 in.	
THICKNESS OF WALL	0.12 inches.	
MATERIAL OF WALL	~~Sheet steel~~. CARDBOARD.	
TYPE OF SUSPENSION	Horizontal (Army type)	
CONSTRUCTION OF SUSPENSION LUG	Normal Army suspension lug. Rectangular steel swivel eye-hook on plate riveted to cardboard body (two rivets).	
COLOR & MARKINGS ON BOMB AND TAIL	Light brown nose, body and tail with no visible markings.	
LENGTH OF TAIL	18.0 in.	
WIDTH OF TAIL	6.75 in.	
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL	Cardboard (0.12 inches)	
TYPE OF FILLING	Bursting charge and paper pamphlets (8 inches x 5 inches).	
WEIGHT OF FILLING		
TOTAL WEIGHT OF BOMB		
CHARGE/WEIGHT RATIO		
CONSTRUCTION OF BODY	The cardboard body is slit on opposite sides. The slits terminate one inch from either end of the body. The split wooden nose plug allows the nose fuze housing to be nailed to it by three nails.	
CONSTRUCTION OF TAIL	Four Army cardboard fins and two rows of cardboard box-type struts. Cone fastened to body by four bolts which engage in bayonet-type slots.	
REMARKS	The bursting charge splits the bomb longitudinally along the diametrically opposite slits into halves. Filled with leaflets. Flimsy construction.	



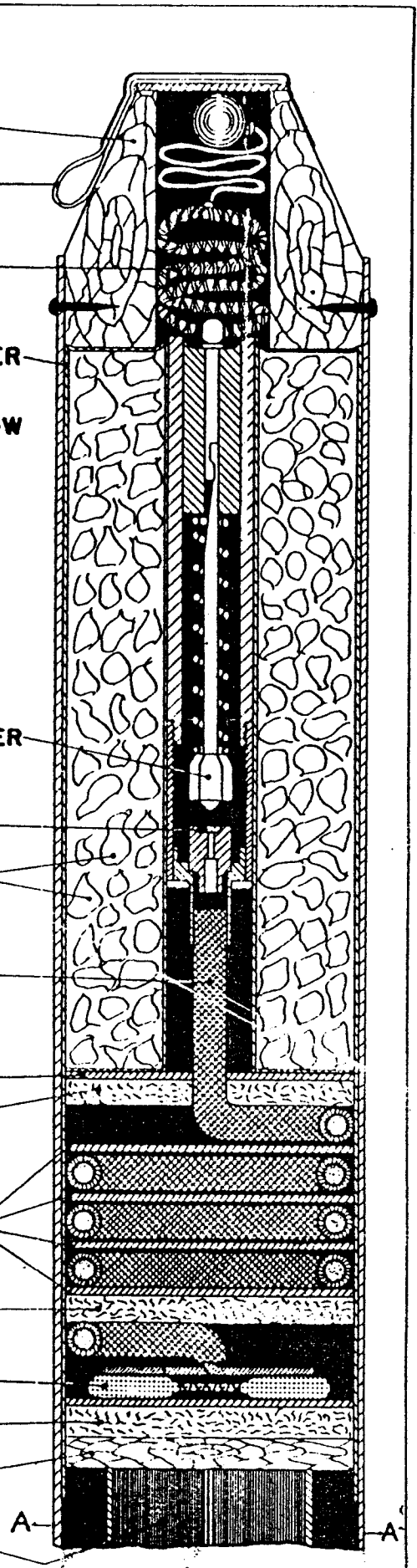


JAPANESE ILLUMINATING FLARE BOMB

PUBLICATION DATE : May 1945 RESTRICTED		**JAPANESE FLARE BOMB**
FUZES	Percussion igniter.	**ILLUMINATING**
OVERALL LENGTH	22-9/16 in.	
LENGTH OF BODY	15-1/16 in.	
DIAMETER OF BODY	6-1/4 in.	
THICKNESS OF WALL		
MATERIAL OF WALL		
TYPE OF SUSPENSION	Launched by hand.	
CONSTRUCTION OF SUSPENSION LUG		
COLOR & MARKINGS ON BOMB AND TAIL	Grey. Label just below carrying handles reads: "Manufacturing Date - September 1940. Naval Aerial Factory Illuminating Flare Bomb".	
LENGTH OF TAIL	7-1/8 in.	
WIDTH OF TAIL	2-1/4 in.	
WIDTH OF TAIL FINS		
DIMENSIONS OF TAIL STRUTS		
MATERIAL OF TAIL		
TYPE OF FILLING	Unknown.	
WEIGHT OF FILLING	5-1/8 lbs.	
TOTAL WEIGHT OF BOMB		
CHARGE/WEIGHT RATIO		
CONSTRUCTION OF BODY	Consists of three distinct parts - nose, body and tail. Nose is a solid metal weight which is hemispherical in shape. It is welded to the body. The body is of sheet metal construction and conical in shape. It is welded to the nose and secured to the tail portion by eight small screws. On the exterior of the body is a tear strip which covers a small water inlet hole. A pair of handles held flush against the sides by springs, is riveted to the body. Inside the body is a long central tube which extends the full length of the flare. This tube contains the illuminating composition. It is held in place by a large wooden spacer disc situated at the junction of the body and the tail with another wooden spacer at the junction of the body and the nose. Spacers are held in place by small screws, six at the nose and eight at the tail.	
CONSTRUCTION OF TAIL	Constructed of light sheet metal and has 4 fins soldered to it. A metal cap is soldered over the end of the tail and fits around the central cylinder. There is a small air outlet in the cap. A percussion igniter is inserted through a hole in the cap and soldered into position. Over the end of the central cylinder is a lead cap which is soldered to the end cap. This lead cap has a central disc of the same metal but much thinner. Central cylinder is surrounded by an asbestos liner covered by a metal sheath. This extends down to the wooden spacer, also covered by a metal disc.	
OPERATION	Before dropping - remove tear strip and safety wire and pull the percussion igniter catch out. When catch has been pulled out approximately 3/4" the spring loaded striker is released. The striker then impinges on the flash cap. A 10" safety fuze is ignited by the flash from the cap and after burning for 35 seconds the safety fuze ignites a coil of black powder. Resultant heat melts lead cap allowing flash to escape. Burns rapidly with brilliant greenish-white flame which lasts approximately 1 minute and 20 seconds.	



JAPANESE NAVY 2 KG. W

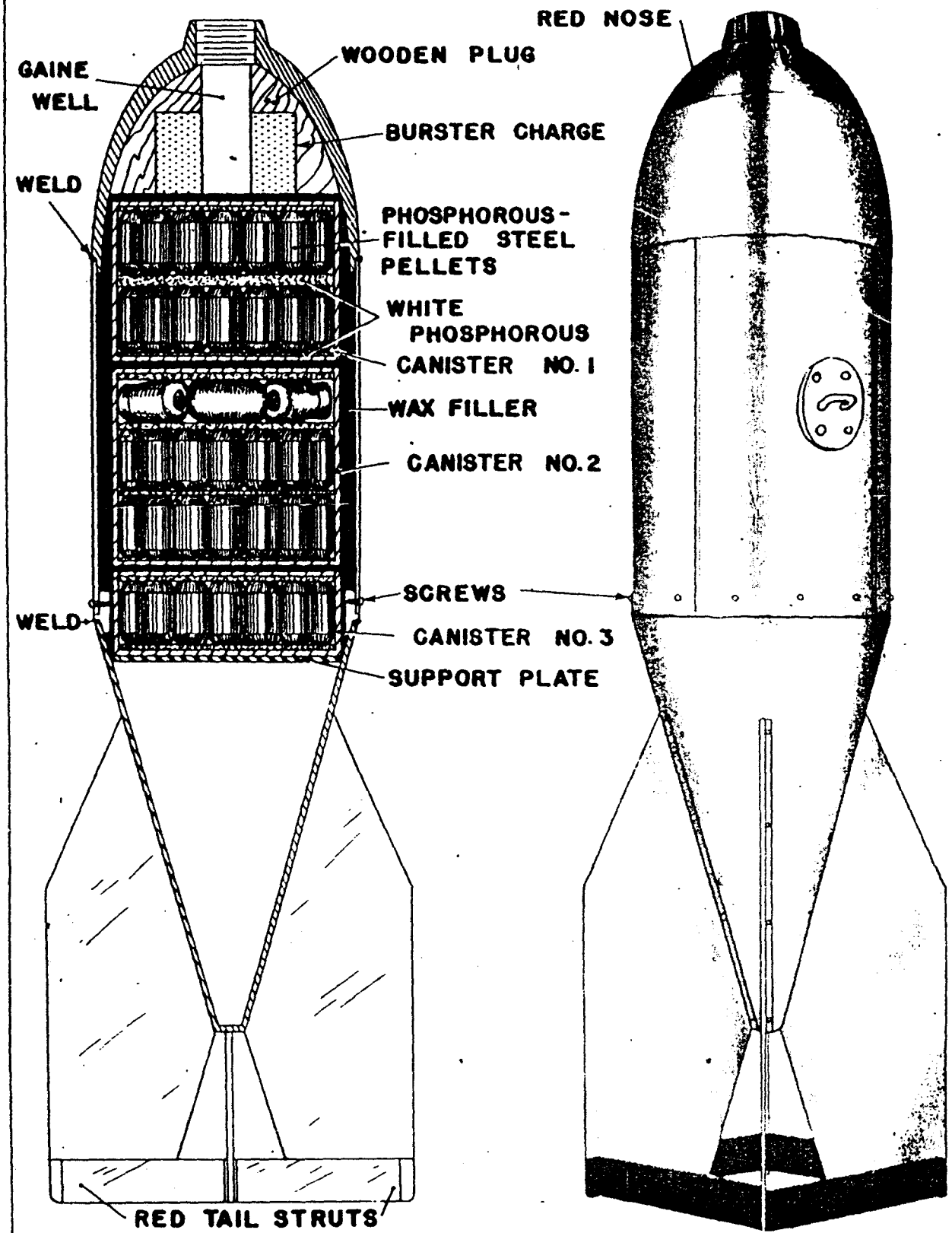


WINDOW BOMB

PUBLICATION DATE: May 1945 RESTRICTED	JAPANESE NAVY BOMB 2KG. WINDOW BOMB
FUZES: Pull Igniter	
OVERALL LENGTH	37 in.
LENGTH OF BODY	37 in.
DIAMETER OF BODY	1-3/4 in.
THICKNESS OF WALL	.03 in.
MATERIAL OF WALL	Sheet steel
TYPE OF SUSPENSION	None, hand thrown
CONSTRUCTION OF SUSPENSION LUG	None
COLOR & MARKINGS ON BOMB AND TAIL	Grey overall. Two yellow labels. One gives instructions for use, the other the following: Silver Paper Scattering Bomb, Mfd. Oct. 1944, Navy Air Force Arsenal
LENGTH OF TAIL	12 in.
WIDTH OF TAIL	2-7/8 in.
WIDTH OF TAIL FINS	9/16 in.
DIMENSIONS OF TAIL STRUTS	2 in. x 3/8 in. x .03 in.
MATERIAL OF TAIL	Sheet steel
TYPE OF FILLING	250 paper strips, cylinder containing iron pyrite
WEIGHT OF FILLING	Paper strips - 306 grams; iron pyrite & cylinder- 557 gr.
TOTAL WEIGHT OF BOMB	2 Kg.
DESCRIPTION	Bomb case consists of a nose piece, barrel and end cap. Nose piece is made of wood and has a hole in the center to accommodate the string attached to the pull igniter. End of nose piece is sealed with a paper disc which is removed when the bomb is to be used. Nose piece is secured to barrel by six nails. Barrel is of light sheet metal construction, soldered longitudinally. After end is closed by an end cap of similar metal and held in place by a sealing tape. Four equally spaced tail fins are soldered to the barrel one inch from the after end of the case. Two sets of tail struts are utilized to support the fins. Filling of the bomb case consists of 250 metal-coated paper strips and an inner cylinder which contains the delay element and ejection charge. Inner cylinder is in the front end of the case. It is of light sheet metal construction and soldered longitudinally. A metal disc closes the nose end and another metal disc is soldered in place 1-5/8" from the tail end. Space between the two discs is filled with 383 gr. of iron pyrite to make the bomb nose heavy. Each disc has a 1/2" hole in the center thru which a metal tube is inserted. This houses a standard type pull igniter such as is used in the 5 Kg. Parachute flare. (See pg. 89). An 11" length of safety fuse crimped into the after end of the igniter is led to a doughnut-shaped silk bag containing 4 gr. of smokeless powder. 250 paper strips are just aft of the inner cylinder. Two "L"-shaped metal strips placed back to back hold 125 strips each. Four heavy cardboard strips surround the paper strips to insure their smooth ejection. The paper strips are covered on one side by a metal foil.
OPERATION	The cotton tab on the nose is pulled exposing the pull igniter cord. This cord is pulled and the striker hits a flash cap which ignites the safety fuse. The bomb is thrown from the plane. The safety fuse burns for 40 sec. and sets off the smokeless powder which ejects the paper strips.

RESTRICTED

CROSS SECTION OF A PELLET

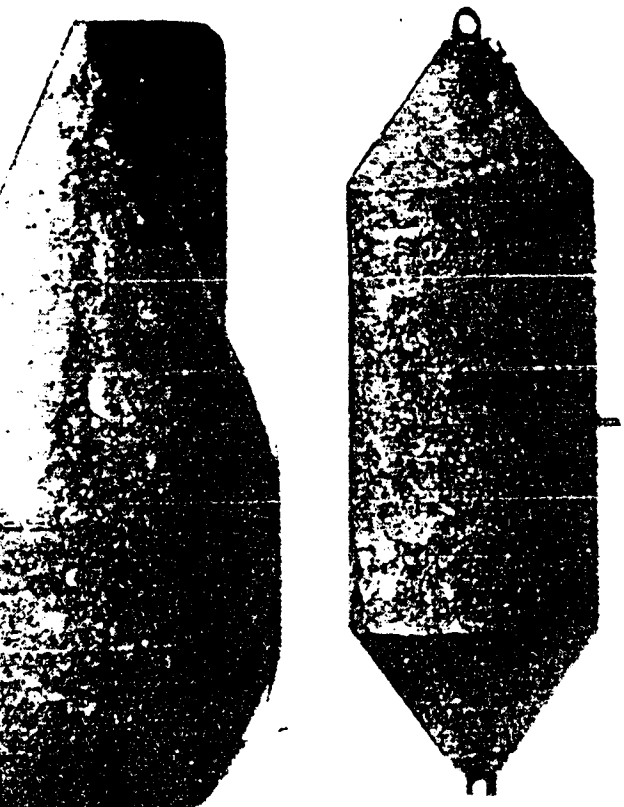


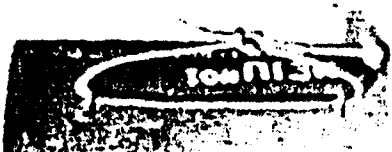
NAVY 60 KG. TARGET MARKER BOMB

TYPE 3 NO 6

PUBLICATION DATE : May 1945 RESTRICTED		JAPANESE NAVY BOMB 60 KG. TARGET MARKER TYPE 3 NO 6
FUZES : A-1 or A-3 series		
OVERALL LENGTH	42.25 in.	
LENGTH OF BODY	21.0 in.	
DIAMETER OF BODY	9.5 in.	
THICKNESS OF WALL	.125 in.	
MATERIAL OF WALL	Steel	
TYPE OF SUSPENSION	Horizontal (Navy type)	
CONSTRUCTION OF SUSPENSION LUG	An eyebolt is welded to a circular plate which is secured to the bomb body by four rivets.	
COLOR & MARKINGS ON BOMB AND TAIL	The bomb is gray overall with a red band on the nose and red tail struts. The longitudinal grooves are painted red.	
LENGTH OF TAIL	21.25 in.	
WIDTH OF TAIL	13.25 in.	
WIDTH OF TAIL FINS	6.0 in.	
DIMENSIONS OF TAIL STRUTS	9.25 in. long, 1.5 in. wide, .06 in. thick.	
MATERIAL OF TAIL	.06 in. sheet steel	
TYPE OF FILLING	The filling consists of 152 phosphorous filled steel pellets contained in three cylindrical steel canisters. Each canister is filled with pellets and the space not occupied by the pellets is filled with white phosphorous. The canisters are covered with a heavy wax coating. There is a charge of Type 98 explosive in the nose piece of the bomb. Weight of canisters: 68 pellets . . . . . 56.0 lbs. 56 pellets . . . . . 37.5 lbs. 28 pellets . . . . . 13.0 lbs. Dimensions of canisters: Length / Diameter 68 pellets . . . . . 7 in. / 8-1/4 in. 56 pellets . . . . . 5-3/4 in. / 8-1/4 in. 28 pellets . . . . . 3 in. / 8-1/4 in. Dimensions of pellets . . . . . 2-1/2 in. / 1-1/2 in.	
WEIGHT OF FILLING	107 lbs.	
TOTAL WEIGHT OF BOMB	155 lbs.	
CHARGE/WEIGHT RATIO	69 %	
CONSTRUCTION OF BODY	A cast steel nose piece is attached to a longitudinally welded steel barrel by a continuous weld. The nose piece contains a gaine well surrounded by an explosive charge which in turn is surrounded by a wooden filler plug. The barrel has four external longitudinal grooves 90° removed from each other. The tail cone is welded to a coupling ring which fits into the barrel and is held there by a single row of sixteen (16) screws.	
CONSTRUCTION OF TAIL	The tail cone is constructed of 1/8 in. steel and is welded longitudinally. Four Navy fins spot welded to the cone are braced by four steel struts welded to the after end of the fins.	

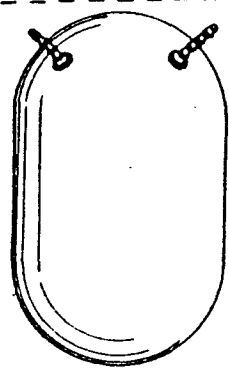
I C T E D



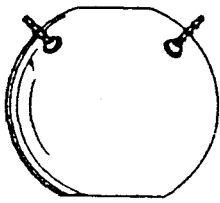


JA
MINE S
(For
purp

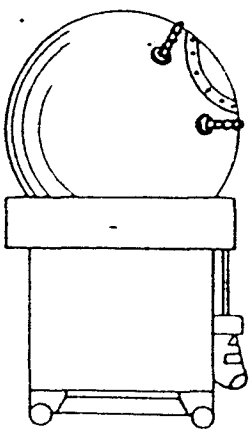
CONFIDENTIAL



J-1
Diameter 34"
Height 48"



J-4
Diameter 34"



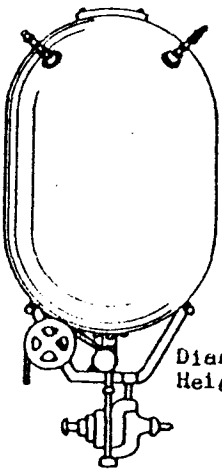
Diameter 41"
J-7 Height 40"

J-13

Diameter 20¼"
Height 10.62"

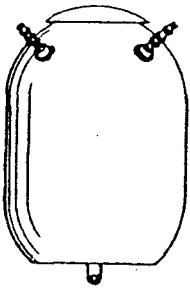
J-16 TENATIVE

Diameter 14.25"
Height 16.14"



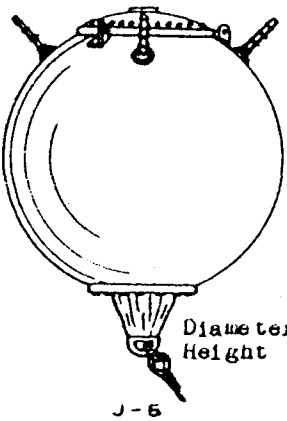
J-2

Diameter 34"
Height 46"



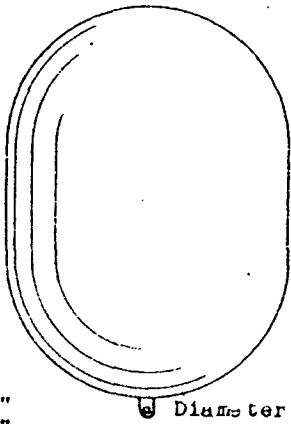
J-3

Diameter 33 ½"



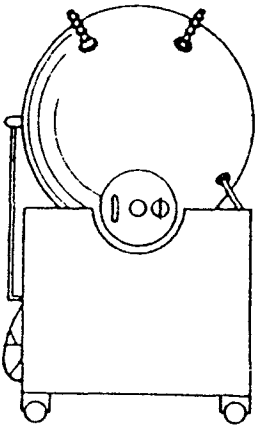
J-5

Diameter 32½"
Height 33½"



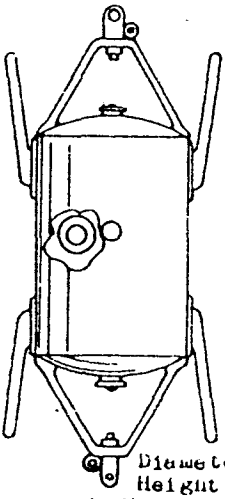
J-6

Diameter
Height



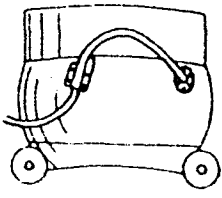
J-8

Diameter 34"
Height 34"



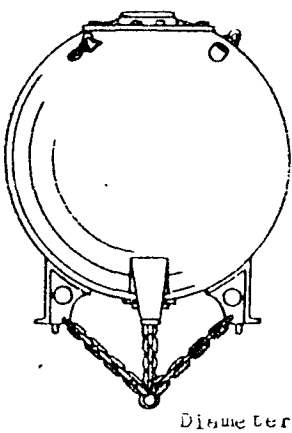
J-11

Diameter
Height



J-14

Diameter 28 5/16"
Height 9"

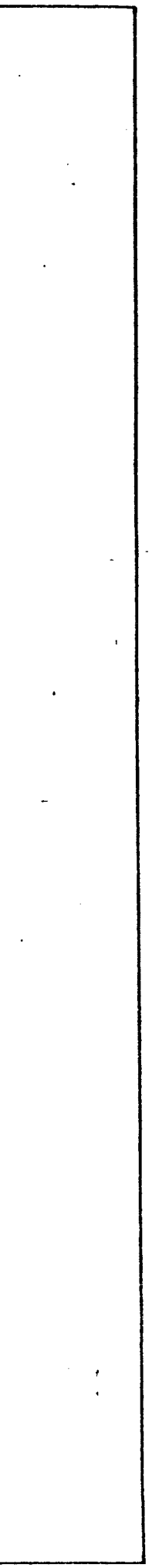


J-15

Diameter

JAPANESE NAVAL MINES

for identification purposes only



INTRODUCTION TO JAPANESE FUZES

Types of Fuzes

The Japanese Army and the Japanese Navy Air Forces each use a distinctive type of fuze, each group possessing definite identifying characteristics. Individual fuzes and gaines of each service are generally interchangeable for use with the bombs of that service, but are not interchangeable for use with ordnance of the other.

Army Fuzes	Navy Fuzes
1. Arming vanes have holes for arming wires.	1. Arming vanes do not have holes for arming wires.
2. Safety forks are usually fitted over the vanes into holes in the top of the fuze body.	2. Safety forks or safety pins are usually inserted into the fuze body from the side.
3. Most fuzes have the primer flash cap as an integral part of the fuze.	3. The fuze seldom has the primer cap as an integral part of the fuze.

Nomenclature

The designation of Japanese Army and Navy fuzes is by letter and number. New fuzes, as recovered, are assigned designations by the Allied Forces in the Southwest Pacific in accordance with the basic standards previously adopted.

"A" series: Mechanical Impact Nose Fuzes.
"B" series: Mechanical Impact Tail Fuzes.
"C" series: Long Delay Time Fuzes
"D" series: Aerial Burst Fuzes.

The numbers indicate the different types of fuzes within each of the above named groups; the small letter following the number indicates modifications of the existing fuze.

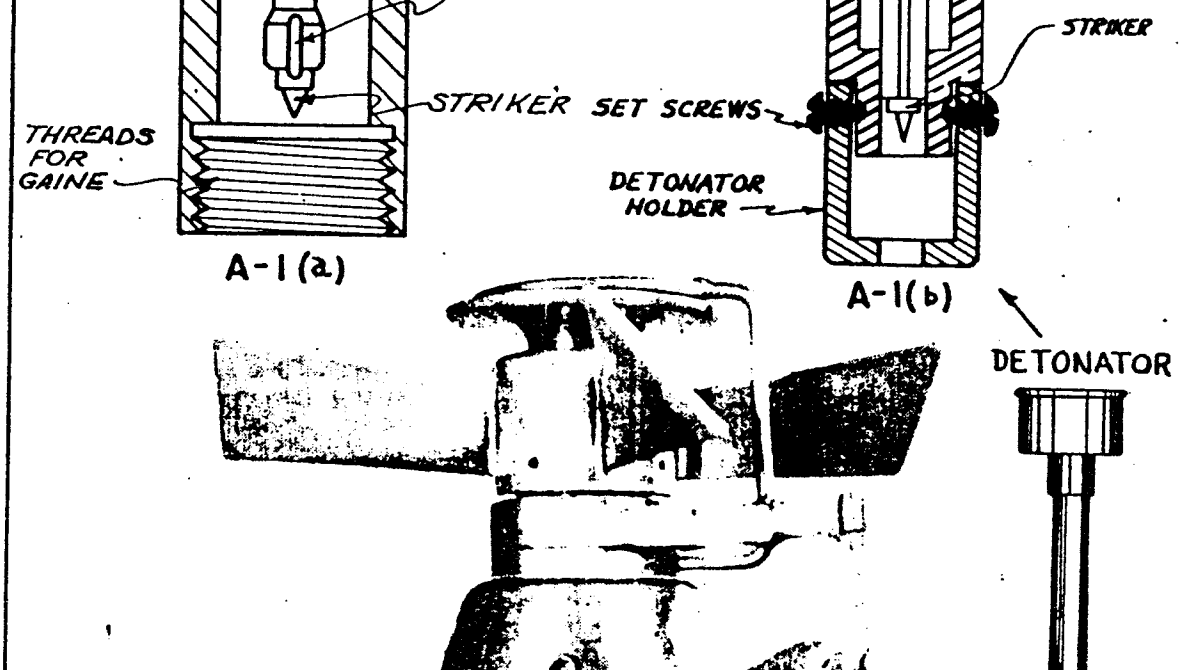
CONFIDENTIAL

JAPANESE FUZES

Our Designation	Japanese Designation
A-1(c)*	Type 2, Head Firing Arrangement, Model 1, Change 3.
⊕	二式彈頭發火裝置一型改三
A-2(a)*	Type 93, Double Action Fuze
⊕	九三式投下二働信管
A-2(b)	12th Year Type Instantaneous Ignition Fuze
⊕	十二年式投光瞬發信管
A-2(c)*	Type 99 Automatic Uppercut Change 2 Work Fuze
⊕	九九式機械切上二働信管
A-3(a)*	Type 97 Mk 2 Head Firing Arrangement Model 2
⊕	九七式二號彈頭發火裝置二型
A-4(a)	Type 92 Large Bomb Head Fuze
⊕	九二式投下大彈頭信管
B-1(a)*	12th Year Type Dropped Base Fuze
	十二年式投下彈底信管
B-1(b)*	Type 1 15 second fuze.
B-2(a)*	Type 99 Number 25 Striker Block Ignition
⊕	九九式二五番通彈底發火裝置
B-2(b)*	Type 99 Number 80 Mark 5 Ignition Device
⊕	九九式八〇番五號發火裝置
B-3(a)*	Type 15 Base Firing Arrangement Model 2 Change 1
⊕	一五式彈底發火裝置二型改一
B-3(b)*	Type 15 Base Firing Arrangement Model 1 Change 2
⊕	一五式彈底發火裝置一型改二
B-4(a)	Type 92 Large Bomb Base Fuze
⊕	九二式投下大彈底信管
C-1(a)	Type 99
	九九式
C-2(a)	Type 99
	九九式
C-3(a)*	Type 1 Long Delayed Action Fuze
⊕	一式投下不定延期信管
D-2(a)	Type 2 Mk 3
	二式三號
D-2(b)	14th Year Type Mk 3
	十四年式三號
D-2(c)	14th Year Experimental Type Mk 3
	十四年試製式三號
D-4(a)*	Fuze for Model 1, Parachute Illum. Flare, Type 0.
⊕	零式吊光照明彈一型發火裝置
D-5(a) Flare Fuze*	Type 1 Bomb Nose Time Impact Fuze
⊕	一式投下彈頭著曳信管
Bomb Fuze*	Type 1 Bomb Nose Time Fuze
⊕	一式投下彈頭曳火信管

* - These designations were translated from recovered specimens. Other designations were taken from field reports and captured Japanese documents.

⊕ - These characters were copied from Japanese labels and documents. Other characters are retranslations into Japanese of designations received already translated into English, the original of which was not included.

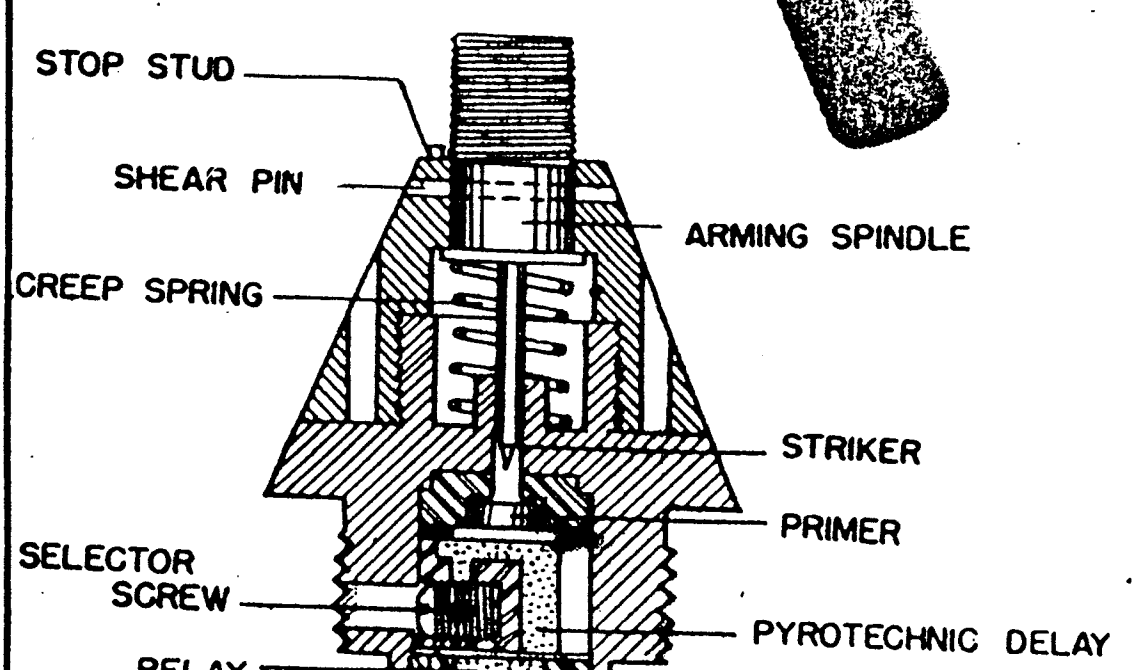

THREADS FOR GAINE
STRIKER
A-1(a)
STRIKER
SET SCREWS
DETONATOR HOLDER
A-1(b)
DETONATOR

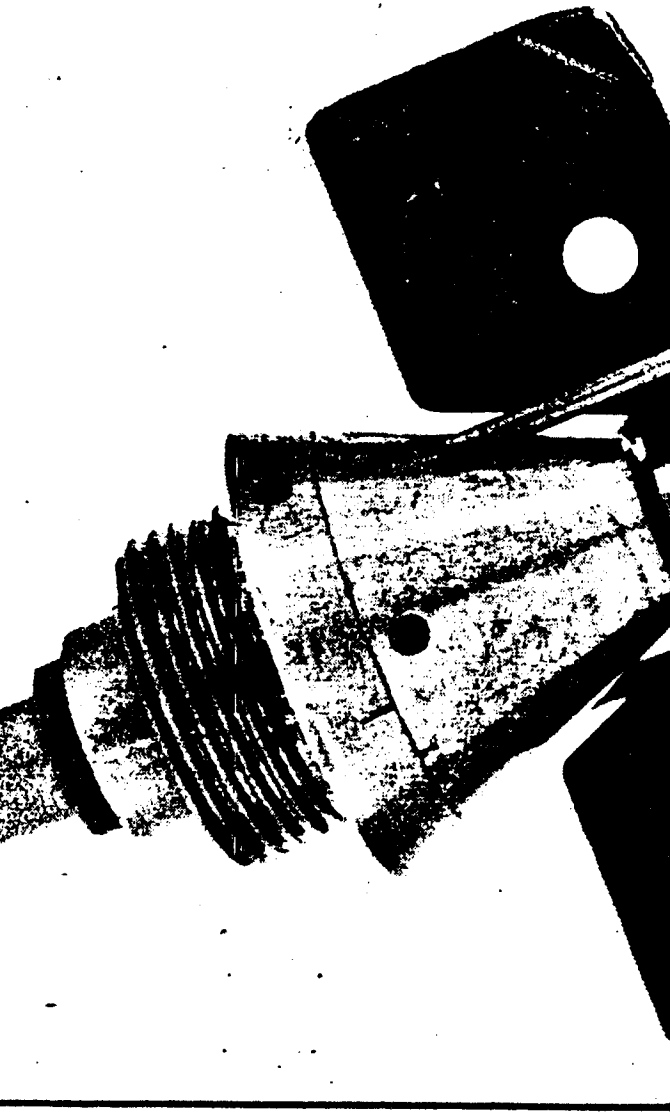
CONFIDENTIAL **PUBLICATION DATE :** July 1944	**JAPANESE** **A-1(a)** **A-1(b)** **A-1(c)** **NAVY MECHANICAL IMPACT NOSE FUZES**

BOMBS USED IN
A-1(a) - Probably interchangeable with A-3(a)
A-1(b) - 32 Kg. Incendiary
A-1(c) - ~~Unknown~~ 800 kg G.P.H.E

MARKINGS
A-1(a)- (大) 寿 2638
A-1(b) 88末口16年3月
A-1(c)- (r) 寿 334 舟六

Data	A-1(a)	A-1(b)	A-1(c)
COLOR	Natural brass	Natural brass	Brass upper body. Lacquered lower body.
OVERALL LENGTH	6.0 in.	6.0 in.	7.6 in.
OVERALL WIDTH	2.25 in.	2.25 in.	2.3 in.
MATERIAL OF CONSTRUCTION	Brass	Brass	Brass except for steel setscrew, striker point, & locating pin.
POSITION & METHOD OF FIXING IN BOMB	Threaded into nose of bomb.		
COMPONENTS OF EXPLOSIVE TRAIN	Standard Navy Gaine	Primer and Detonator	Standard Navy Gaine.
FUZES LIKELY TO BE FOUND WITH	Navy tail fuzes except C-1(a)	Possibly D-2(b)	B-3(b) or possibly B-2 series.
DELAY TIMES	Probably none.		
THREADS	All three fuzes 1-7/8" diameter 10 TPI		
DESCRIPTION	The upper portion of the body houses the vane nut, which is secured by retaining pins, is free to rotate, and is threaded into the lower body and held by a grub screw. Through the upper and lower bodies passes the striker threaded to the anvil which is keyed to the vane nut. The anvil will turn when the vane nut is rotated and it threads up the striker until the keys shoulder in the partial keyways. Through the striker passes a shear wire which breaks on impact and a locating pin which slides out of a slot in the upper body on impact.		
OPERATION	On release, the arming pins are pulled out, the vanes and vane nut turn the anvil which threads upward and away from the fuze (due to left-handed threads). The vanes do not come off because the vane nut to which they are attached, is held by retaining pins and can only rotate. The anvil is stopped by keys when it reaches the limit of its partial keyways. Impact pushes anvil back. Spindle is forced downward. Shear wire is sheared, and the striker impinges on the primer.		
REMARKS	A-1(a): May arm in 5 revolutions of the arming vanes. Fragments of this fuze were found in India and on Midway Island. It is reported to be used in a 500 Kg. G.P.H.E. Probably obsolete. A-1(b): This fuze was found in a 32 Kg. Incendiary (Phosphorus) Bomb which was buried tail down on beaches in the Munda Area between gun positions. The fuze was armed. About 540 lbs. pressure is necessary to shear the shear wire. Thus the fuze was used in a 32 Kg. bomb employed as an anti-vehicle mine in beach defenses against landing forces attempting a seaward invasion. A-1(c): This fuze is similar to the A-1(a). It differs in that the fuze body below the thread is substantially longer while the fuze body above the threads is only slightly longer than that of the A-1(a). The striker spindle is longer, the diameter of the anvil head is larger, and the arming vanes are longer. The safety device is somewhat similar to the fork used for the A-3(a)		


STOP STUD
SHEAR PIN
ARMING SPINDLE
CREEP SPRING
STRIKER
PRIMER
SELECTOR
SCREW
PYROTECHNIC DELAY



PUBLICATION DATE	July 1944 RESTRICTED	JAPANESE A-2(a) Army Mechanical Impact Nose Fuze
BOMBS USED IN	30 Kg. G.P.H.E. 50 Kg. G.P.H.E. 100 Kg. G.P.H.E.	
MARKINGS	東☆4七十8B (TOKYO - April, 1942.)	

Data	
COLOR	Natural brass
OVERALL LENGTH	2.75 inches
OVERALL WIDTH	1.65 inches
MATERIAL OF CONSTRUCTION	Brass except steel spring and steel firing pin.
POSITION & METHOD OF FIXING IN BOMB	Nose fuze screwed in by hand and tightened by spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Primer flash cap ignites a short delay train, or passes through the selector to give instantaneous action by igniting a relay which sets off the gaine.
FUZES LIKELY TO BE FOUND WITH	B-1(a) Tail Fuze
DELAY TIMES	Short delay time (unknown)
THREADS	1-5/32 in. diameter 13 TPI
DESCRIPTION	The upper body portion houses the striker and arming spindle while the lower body portion contains the selector mechanism for instantaneous or short delay. A shear wire and creep spring hold the arming spindle after the vanes fall away. A U-shaped safety wire fits over the vanes into the holes. A selector screw is fitted in the fuze body and can not be changed while the fuze is fitted within the bomb. A stop/stud on the body and one on the vane cap prevent the arming vane assembly from jamming too tightly. The regular Army gaine is fitted to the fuze.
OPERATION	The arming wire is withdrawn from the vanes upon release of the bomb and after 10 revolutions, the vanes fall free. On impact, the wire is sheared and the striker is forced inward against the action of the creep spring. If the selector screw is set for instantaneous action, the flash from the primer passes directly through a hole in the selector screw to fire a relay which fires the gaine. If set for delay action, the flash from the primer ignites the delay in the selector screw and this delay fires a relay which in turn fires the gaine.
REMARKS	If the fuze is found with the arming spindle depressed, the striker is probably imbedded in the primer and a slight movement may free it, and the creep spring will force the striker back. This friction may be sufficient to set off the primer, thereby igniting the exploder system. Could be used in 15 Kg. Anti-personnel, 50 Kg. Incendiary, and 50 Kg. Gas bomb.

STUD —

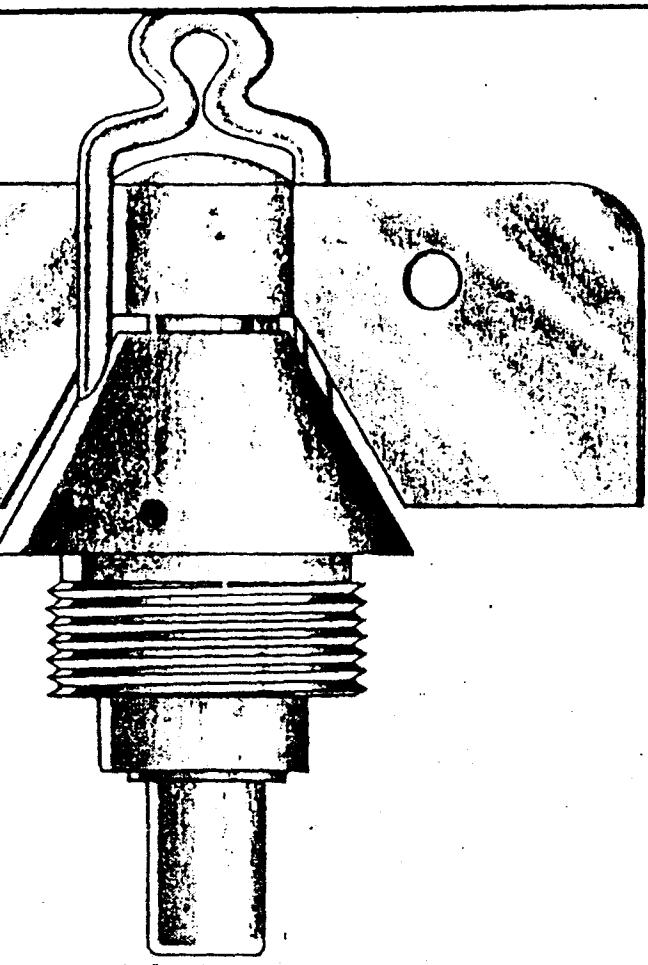
GROOVE

CREEP SPRING

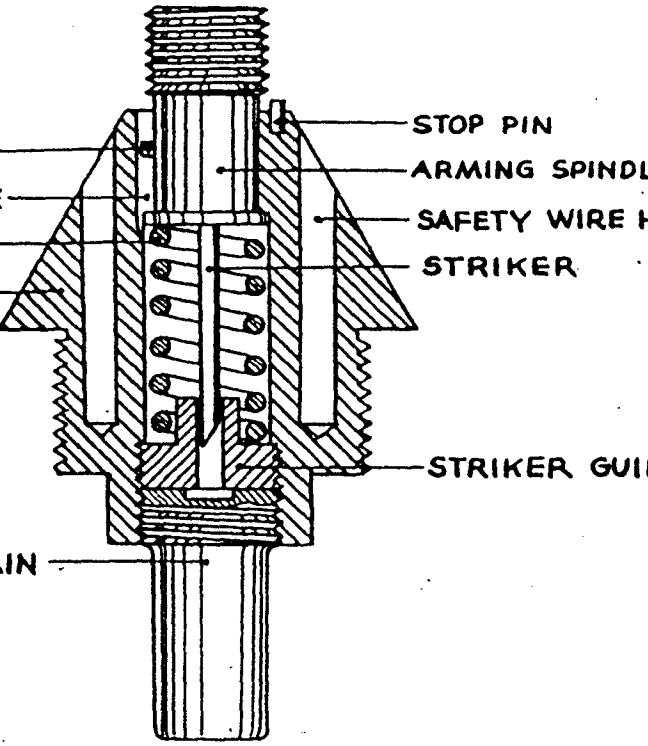
BODY —

ARMY GA

JAPANE



UNARMED POSITION

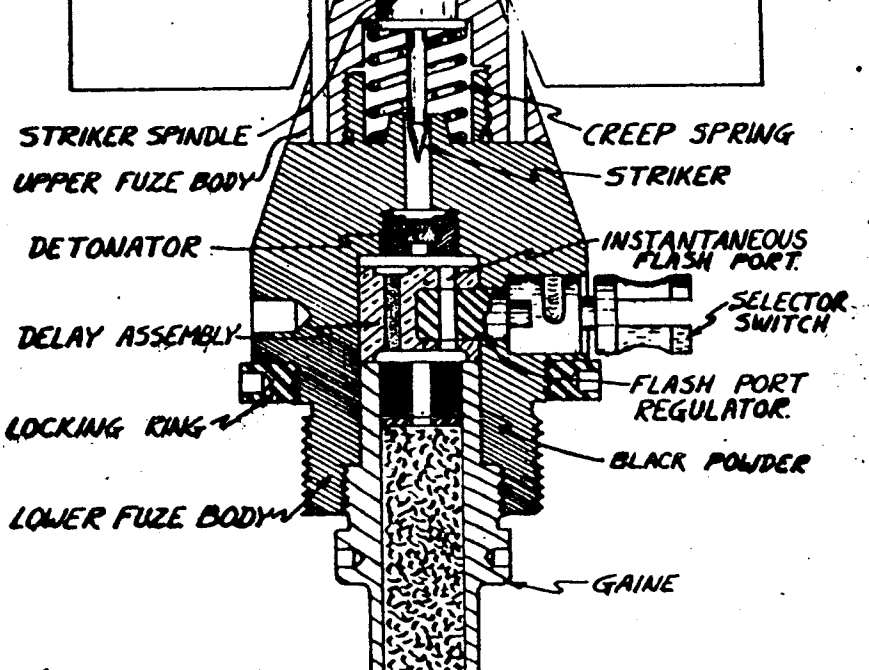


ARMED POSITION

ESE A-2 (b) NOSE FUZE

PUBLICATION DATE: July 1944 RESTRICTED	JAPANESE A-2(b) Army Mechanical Impact Nose Fuze
BOMBS USED IN: 15 Kg. Anti-Personnel 50 Kg. Incendiary (Phosphorus) 50 Kg. Gas Bomb	
MARKINGS 阪※2六十昭 (OSAKA - February, 1941.)	

Data	
COLOR	Natural brass.
OVERALL LENGTH	2.25 inches (with vanes), (less gaine).
OVERALL WIDTH	1.67 inches.
MATERIAL OF CONSTRUCTION	Brass except steel spring and steel firing pin.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the nose of the bomb and tightened with a spanner wrench. A grub-screw is usually present in the nose also.
COMPONENTS OF EXPLOSIVE TRAIN	This fuze has an Army gaine with the primer in the gaine. The striker enters the gaine, pierces the primer and sets off the exploder assembly.
FUZES LIKELY TO BE FOUND WITH	Probably none; may be fitted to bomb with an Army tail fuze.
DELAY TIMES	None.
THREADS	1-5/32 in. diameter 13 TPI
DESCRIPTION	The fuze body houses the arming vane assembly to which the striker is attached. No shear wire is used. After arming, the striker is kept away from the gaine by means of a creep spring. A U-shaped wire secures the vanes during transit, and it is removed only after the fuze is in the plane. A stop-stud is found on the body and on the vane cap, and these prevent the vanes from being jammed against the fuze body.
OPERATION	Upon release from the plane, an arming wire is withdrawn from the holes in the vanes and the latter rotate and fall free. Upon impact with the ground, the arming spindle is pushed in against the action of the spring and the striker pierces the primer which is located in the gaine.
REMARKS	1. Could be used in the 30 - 50 - 100 Kg. G.P.H.E. bombs. 2. Fuze generally used in bombs requiring detonation at ground level such as incendiary, anti-personnel, and gas.


STRIKER SPINDLE
UPPER FUZE BODY
DETONATOR
DELAY ASSEMBLY
LOCKING RING
LOWER FUZE BODY
CREEP SPRING
STRIKER
INSTANTANEOUS FLASH PORT
SELECTOR SWITCH
FLASH PORT REGULATOR
BLACK POWDER
GAINE

RESTRICTED

PUBLICATION DATE : Sept. 1944

JAPANESE

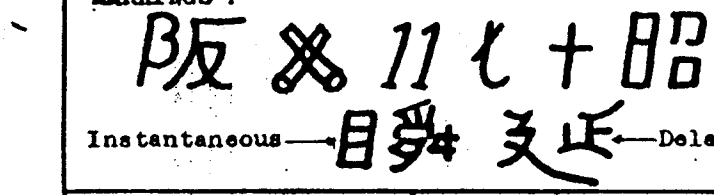
A-2(c)

Army Mechanical Impact Nose Fuze

BOMBS USED IN:

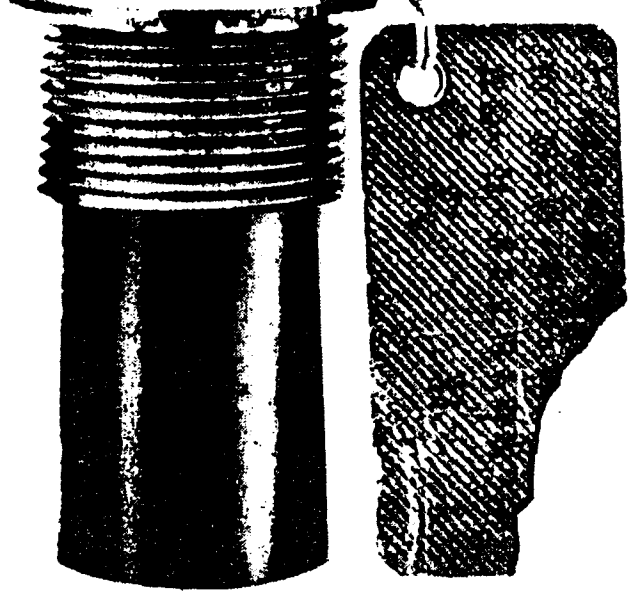
30 Kg. G.P.H.E.	60 Kg. (Type 97) Incend.
50 Kg. G.P.H.E.	50 Kg. (Type 92) Gas Bomb
100 Kg. G.P.H.E.	50 Kg. (Type 100) Incend.

MARKINGS :



Instantaneous — Delayed

Data	
COLOR	Natural Brass coated with a yellowish green varnish. Fuze may be steel colored.
OVERALL LENGTH	3-3/8 in. (less gaine)
OVERALL WIDTH	1-19/32 in.
MATERIAL OF CONSTRUCTION	Brass throughout except for steel striker, steel creep spring, & copper shear wire. The upper part of fuze body may be made of steel. What does MAY BE MADE of Steel.
POSITION & METHOD OF FIXING IN BOMB	Screwed clockwise into nose and locking ring tightened. Both fuze body and locking ring contain spanner wrench holes.
COMPONENTS OF EXPLOSIVE TRAIN	Detonator cap, a selective pyrotechnic assembly, and a gaine.
FUZES LIKELY TO BE FOUND WITH	B-1(a), B-1(b)
DELAY TIMES	Instantaneous or short delay
THREADS	1-5/32 in. diameter; 13 T.P.I.
DESCRIPTION	The upper fuze body houses the arming spindle and striker while the lower body portion contains the selective pyrotechnic assembly. A "U" shaped safety wire fits over the arming vanes into holes in the upper fuze body to prevent premature rotation. The shear wire and creep spring prevent the striker & spindle from moving down on the primer after the fuze is armed. The selective pyrotechnic assembly consists of one channel containing a pyrotechnic train for short delay, an open flash channel for instantaneous action, and a selector switch. Choice of fuze action is made by turning the switch to the vertical or horizontal position in accordance with the Japanese characters and red arrow indicating the setting. A stop stud on the upper fuze body and one on the vane cap prevent the arming vane assembly from jamming too tightly. An Army gaine is threaded into the lower body.
OPERATION	The arming wire is withdrawn upon release of the bomb and after 10 revolutions, the vanes fall free. On impact, the wire is sheared and the striker is forced inward against the creep spring. If the selector switch is set for instantaneous action, the flash from the primer passes directly through the open channel to fire a relay which fires the gaine. If the switch is set for delay action, the flash channel is closed and the primer ignites the pyrotechnic delay which in turn fires the relay and the gaine.
REMARKS	Fuze armed after six (6) rotations of vanes, vanes will fall off after 10 rotations. An adaptation of this fuze has been recovered. It is identical with the brass bodied A-2(c) except that the upper fuze body is made of steel. Crashed Aircraft Intelligence (India) have found a fuze changing mechanism with each bomb release mechanism on Army bombers. Operation of the "fuze changer" causes a projecting telescopic arm to rotate approximately 90°. The forked end of this arm will fit into slot of selector switch. It is suggested that the fuze changer mechanism may be the means by which Japanese bombardiers can select between instantaneous or slight delay during flight.

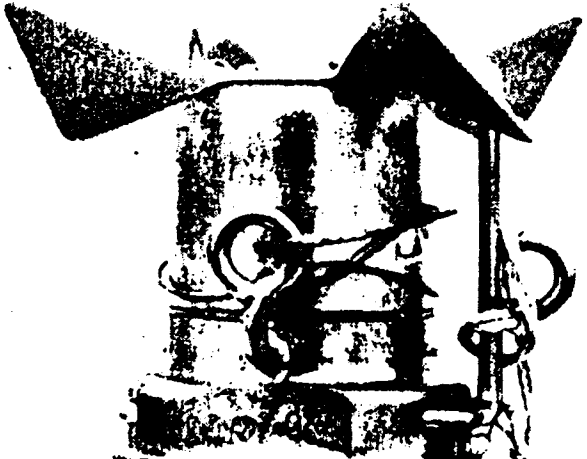


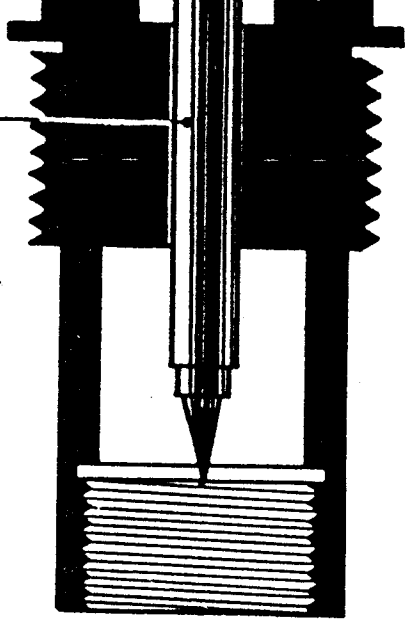
THREADS FOR GAINE

A-3(a)

SHEAR WIRE

STRIKER





RESTRICTED

PUBLICATION DATE: Sept. 1944

BOMBS USED IN:
60 Kg. Incend.(Solid Oil)
60 Kg. Incend.(Thermite)
250 Kg. Incend.(Shrapnel)
60 Kg. G.P.H.E.
250 Kg. G.P.H.E.
63 Kg. S.A.P.
250 Kg. S.A.P.

MARKINGS:
One side - ㊭⚓日呂内
Other side - 444

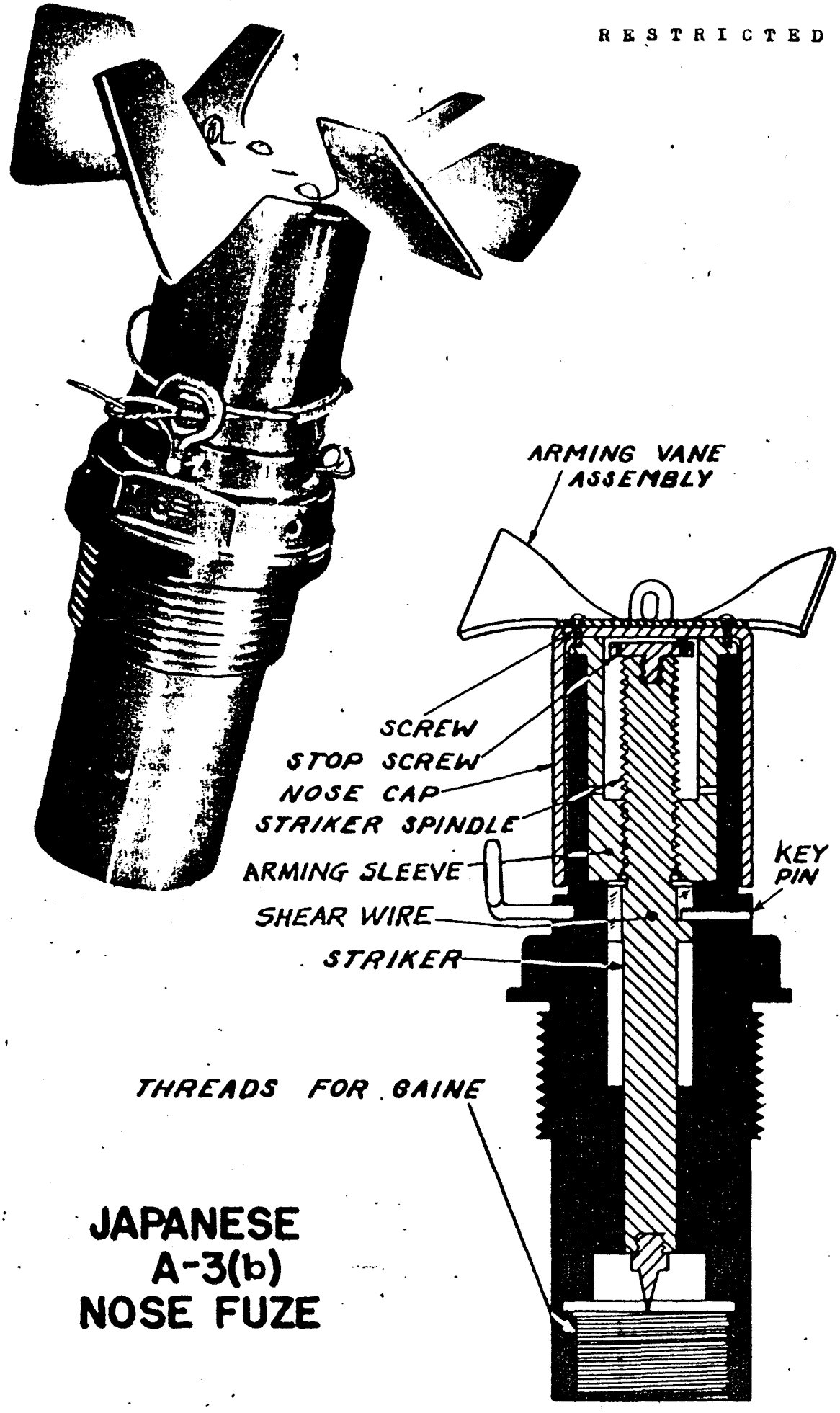
JAPANESE

A-3(a)

Navy Mechanical Impact Nose Fuze

Data	
COLOR	Natural brass; lower fuze body shellacked
OVERALL LENGTH	5-1/2 in.
OVERALL WIDTH	2-3/16 in; Vane span, 3-1/2 in.
MATERIAL OF CONSTRUCTION	Brass except steel arming vanes & striker point
POSITION & METHOD OF FIXING IN BOMB	Screwed clockwise into nose; there are wrench flats on body. No anti-withdrawal,locking device is used.
COMPONENTS OF EXPLOSIVE TRAIN	Standard Navy gaine or magazine
FUZES LIKELY TO BE FOUND WITH	B-2(a), B-3(a), D-2(a), D-2(b), D-2(c)
DELAY TIMES	Incorporated in Navy gaines.
THREADS	10 T.P.I.; Diameter, 1-13/16 in.
DESCRIPTION	The fuze consists of three main parts: the body, the striker spindle, and the arming vane assembly. The striker spindle is located in the fuze body by means of a [illegible] and a shear wire which prevents the spindle from rotating or moving forward until impact. The upper portion of the spindle is threaded while a small steel striker is screwed into the lower end. The arming vane assembly consists of a nose cap, arming vanes, and arming sleeve. The arming sleeve internally threaded, screws onto the spindle and its length of travel is limited by a stop screw threaded into the top of the spindle. To this sleeve, the nose cap and arming vanes are attached by four short screws. The lower end of the fuze body is internally threaded to take the standard Japanese gaine or magazine. A heavy wire eyelet is attached to the side of the fuze body and serves as a guide for the starting wire. The starting wire is soldered to the nose cap in two places and gives an initial turn to the arming assembly when the bomb is dropped. A safety fork fits into the upper portion of the fuze body, one prong of which extends up through eyelets of arming vane assembly to prevent premature vane rotation.
OPERATION	On release of bomb, the arming wire pulls the starting wire through the eyelet, breaking it loose at the soldered points and simultaneously imparting an initial rotation to the arming vane assembly. In seven revolutions, the arming [illegible] rises up the striker spindle to lock against the stop screw and arm the fuze. On impact, the entire assembly (vanes, nose cap, collar & spindle) are driven inward, shearing the shear wire, and the striker pierces the primer.
REMARKS	The threads on the arming spindle are 12 T.P.I. This fuze has been found with an all steel body. The nose cap was brass.

614045 O - 44 - 4



JAPANESE A-3(b) NOSE FUZE

RESTRICTED

PUBLICATION DATE: Sept. 1944

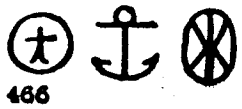
JAPANESE

A-3(b)

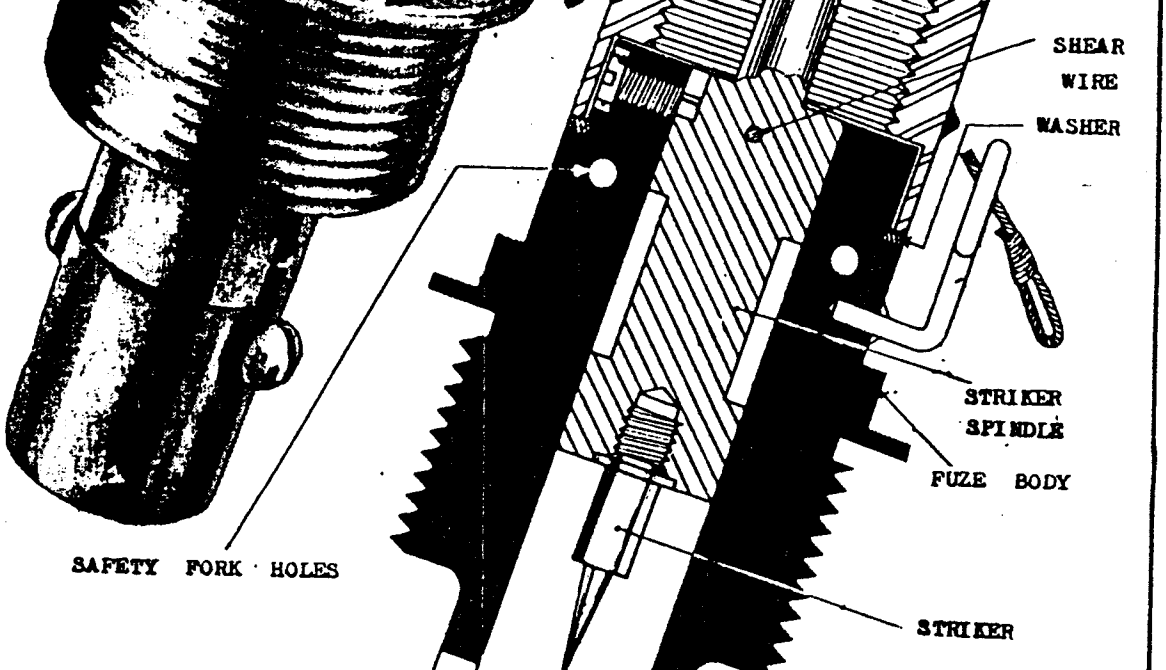
Navy Mechanical Impact Nose Fuze

BOMBS USED IN :

60 Kg. Incend.(Solid Oil)
60 Kg. Incend.(Thermite)
250 Kg. Incend.(Shrapnel)
60 Kg. G.P.H.E.
250 Kg. G.P.H.E.
63 Kg. S.A.P.
250 Kg. S.A.P.

MARKINGS:
On Wrench Flats:
One side - 
Other side - 466

Data	
COLOR	Brass colored overall except for steel colored vanes.
OVERALL LENGTH	6-3/8 in.
OVERALL WIDTH	2-1/4 in.; Vane span 3-1/2 in. or 4-3/8 in.
MATERIAL OF CONSTRUCTION	Brass except steel arming vanes and striker point.
POSITION & METHOD OF FIXING IN BOMB	Screwed clockwise into nose; there are spanner wrench flats on side of body. No anti-withdrawal or locking device used.
COMPONENTS OF EXPLOSIVE TRAIN	Employs standard Navy gaine or magazine.
FUZES LIKELY TO BE FOUND WITH	B-2(a); B-3(a)
DELAY TIMES	Incorporated in Navy gaine.
THREADS	10 T.P.I.; Diameter, 1-13/16 in.
DESCRIPTION	The fuze consists of three parts: the fuze body, the striker spindle, and the nose cap arming assembly. The fuze body contains the striker spindle which is held in place by a shear wire and a brass pin. The lower end of the body is internally threaded to take a standard Navy gaine or magazine. A safety fork fits into the upper side of the fuze body, one prong of the fork extending up through eyelets in the vane assembly to prevent premature rotation. The upper part of the brass striker spindle is externally threaded for the arming sleeve and has a stop screw threaded into the top end. The steel striker point is screwed into the lower end of the spindle. The nose cap arming assembly consists of the arming vanes, brass nose cap, and arming sleeve. The arming sleeve, internally threaded, screws onto the striker spindle and its length of travel is limited by the stop screw at the top end of the spindle. The nose cap and arming vanes are secured to the arming sleeve by four small screws. A heavy wire eyelet is attached to the side of the fuze body and serves as a guide for the starting wire which is soldered to the nose cap at two points and gives an initial turn to the arming assembly.
OPERATION	On release of bomb, the arming wire pulls the starting wire through the eyelet, breaking it loose at the soldered points and simultaneously imparting an initial rotation to the arming vane assembly. The arming vane assembly rotates up on the striker spindle and locks against the stop screw, thereby arming the fuze. On impact, the striker spindle is forced inward, shearing the shear wire, and the striker pierces the primer.
REMARKS	1. The threads on the striker spindle are 25 T.P.I. 2. Two different types of arming vanes have been used on this fuze, the vanes varying as to size, shape and pitch; each type has six blades.


SHEAR
WIRE
WASHER
STRIKER
SPINDLE
FUZE BODY
SAFETY FORK HOLES
STRIKER

RESTRICTED

PUBLICATION DATE: Sept. 1944

BOMBS USED IN:

Probably 32 Kg. Incendiary

MARKINGS:

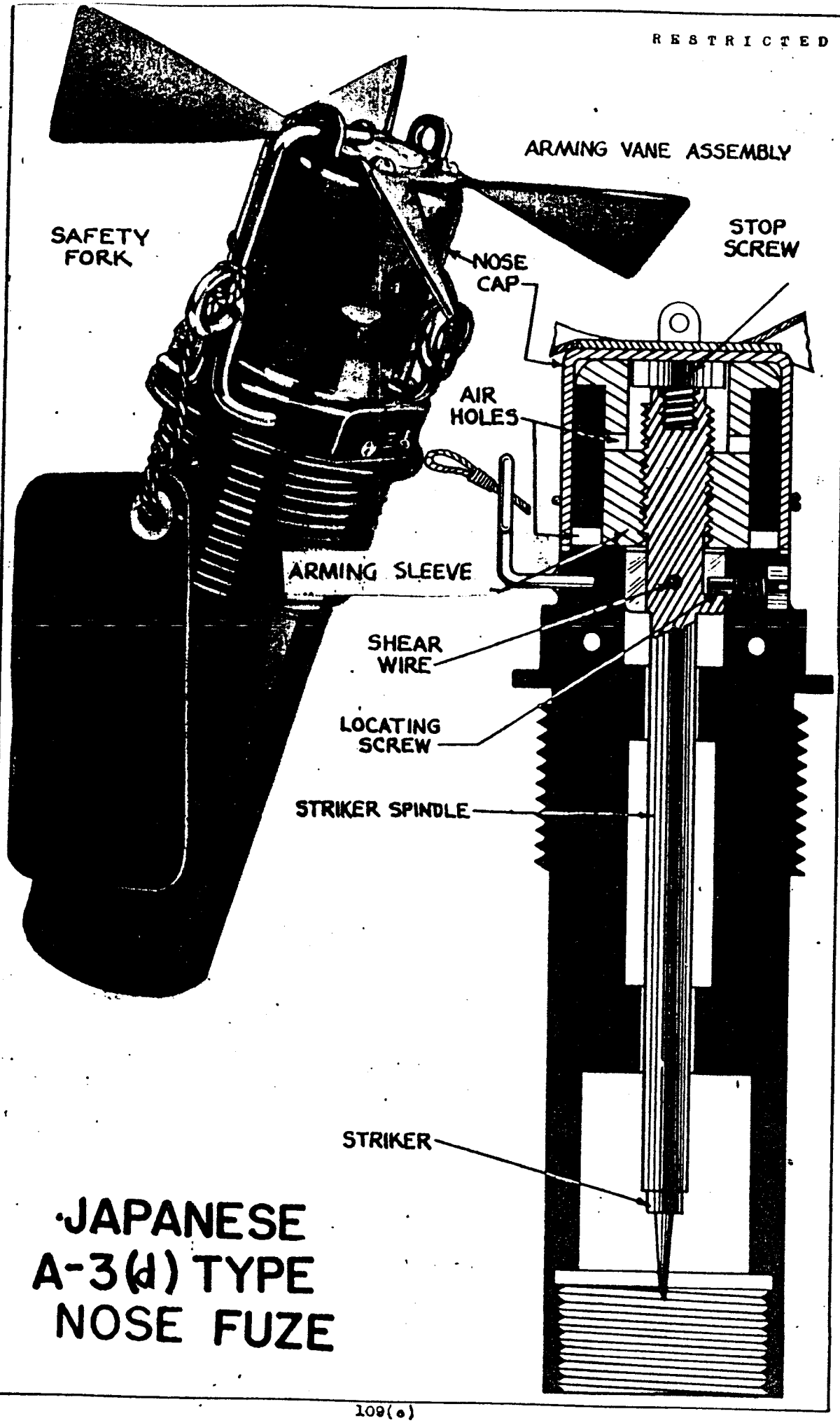
㊨⚓関223

JAPANESE

A-3(c)

Navy Mechanical Impact Nose Fuze

Data	
COLOR	Natural steel color overall except for brass nose cap.
OVERALL LENGTH	6 inches (including detonator holder).
OVERALL WIDTH	2-1/4 inches; vane span, 3-11/16 in.
MATERIAL OF CONSTRUCTION	Steel with brass striker spindle and nose cap.
POSITION & METHOD OF FIXING IN BOMB	Screws clockwise into nose; there are spanner wrench flats on side of body. No locking or anti-withdrawal device.
COMPONENTS OF EXPLOSIVE TRAIN	Primer cap and detonator.
FUZES LIKELY TO BE FOUND WITH	D-2(a), D-2(b), D-2(c)
DELAY TIMES	Probably none.
THREADS	10 T.P.I.; Diameter, 1-13/16 in.
DESCRIPTION	The fuze consists of four main parts: the fuze body, the striker spindle, the nose cap, and the detonator-holder. The fuze body contains the striker spindle which is held in place by a shear wire and a striker grub screw. The lower end of the body is grooved to receive the screws in the detonator holder. A safety fork fits into the upper side of the fuze body, one prong of the fork extending up through eyelets in the vane assembly to prevent premature vane rotations. The brass striker spindle is of one piece construction except for the steel striker which screws into the lower end. A threaded flange, 1 inch in diameter, at the top of the spindle screws into the nose cap. The spindle is drilled to take the shear wire; a groove in the side of the spindle receives the grub screw which prevents rotation or upward movement. The brass nose cap, unlike that of the A-3(a), is of one piece construction. The cap is internally threaded to receive the flange of the striker spindle. A six bladed vane assembly is secured to the cap by four screws. The usual type starting wire is soldered to the side of the cap so that a rotary motion will be imparted to the vane assembly when the bomb is dropped. The detonator holder, similar to that of the A-1(b), is affixed to the lower end of the fuze body by two screws.
OPERATION	On release from the plane, the starting wire is pulled out through the eyelet, breaking it loose from the soldered contacts with the nose cap. Simultaneously, an initial rotation is imparted to the nose cap which rotates up on the striker spindle flange. The fuze is armed in approximately 28 revolutions and the vane and cap fall away after 37 revolutions. On impact, the striker spindle is forced inward, shearing the shear wire, and the striker point pierces the primer.
REMARKS	1. The threads on the striker spindle flange are 26 TPI. 2. The appearance of this fuze (armed) in a UXB will materially differ from that of the A-3(a). The visible parts will be the threaded brass striker spindle flange resting flush against the top of the fuze body; the nose cap and vanes fall away after 37 revolutions.



JAPANESE A-3(d) TYPE NOSE FUZE

RESTRICTED

PUBLICATION DATE: May 1945

BOMBS USED IN:

Probably 800 Kg. G.P.H.E.

MARKINGS:

One side - 2660

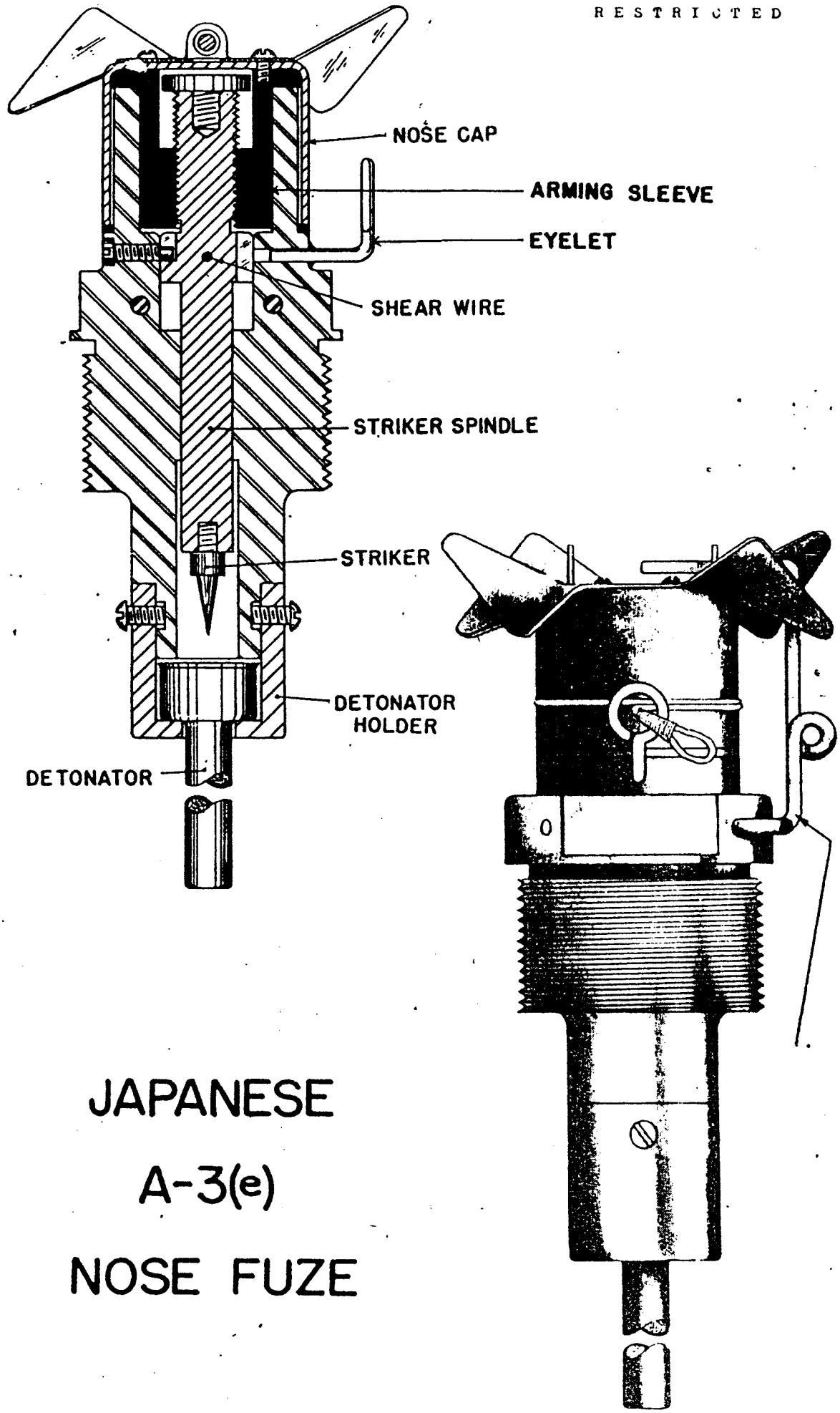
Other side - ⚓㊱三恵

JAPANESE

A-3(d)

Navy Mechanical Impact Nose Fuze

Data	
COLOR	Natural brass, maroon lacquered lower body. Steel vanes.
OVERALL LENGTH	7-1/8 in.
OVERALL WIDTH	2-1/4 in.; vane span, 4-3/4 in.
MATERIAL OF CONSTRUCTION	Brass except for steel vanes and striker point.
POSITION & METHOD OF FIXING IN BOMB	Screwed clockwise into nose. There are spanner wrench flats on side of body. No anti-withdrawal or locking device is used.
COMPONENTS OF EXPLOSIVE TRAIN	Employs standard Navy gaine or magazine.
FUZES LIKELY TO BE FOUND WITH	Probably B-3(b)
DELAY TIMES	Incorporated in Navy gaine.
THREADS	10 T.P.I.; Diameter, 1-13/16 in.
DESCRIPTION	The fuze consists of three main parts: the body, the striker spindle, and the arming vane assembly. The striker spindle is located in the fuze body by means of a locating screw and a shear wire which prevents the spindle from rotating or moving forward until impact. The upper portion of the spindle is threaded while a small steel striker is screwed into the lower end. The arming vane assembly consists of a nose cap, arming vanes, and arming sleeve. The arming sleeve internally threaded, screws onto the spindle and its length of travel is limited by a stop screw threaded into the top of the spindle. To this sleeve, the nose cap and arming vanes are attached by four short screws. The lower end of the fuze body is internally threaded to take the standard Japanese gaine or magazine. A heavy wire eyelet is attached to the side of the fuze body and serves as a guide for the starting wire. The starting wire is soldered to the nose cap in two places and gives an initial turn to the arming assembly when the bomb is dropped. A safety fork fits into the upper portion of the fuze body, one prong of which extends up through eyelets of arming vane assembly to prevent premature vane rotation.
OPERATION	On release of bomb, the arming wire pulls the starting wire through the eyelet, breaking it loose at the soldered points and simultaneously imparting an initial rotation to the arming vane assembly. In seven revolutions, the arming sleeve rises up the striker spindle to lock against the stop screw and arm the fuze. On impact, the entire assembly (vanes, nose cap, sleeve and spindle) are driven inward, shearing the shear wire, and the striker pierces the primer.
REMARKS	1. This fuze is similar to the A-3(a) with the following exceptions: (a) the maroon lacquered lower fuze body is 1-7/16 inches longer than that of the A-3(a); (b) the striker spindle of the new fuze is longer than that of the A-3(a) to match the elongated lower fuze body; (c) the vanes have a span of 4-3/4 inches as compared to the 3-1/2 inch vane span of the A-3(a). 2. The threads on the arming spindle are 12.T.P.I.



JAPANESE
A-3(e)
NOSE FUZE

NAVORD 1587A (8D) (11/44)

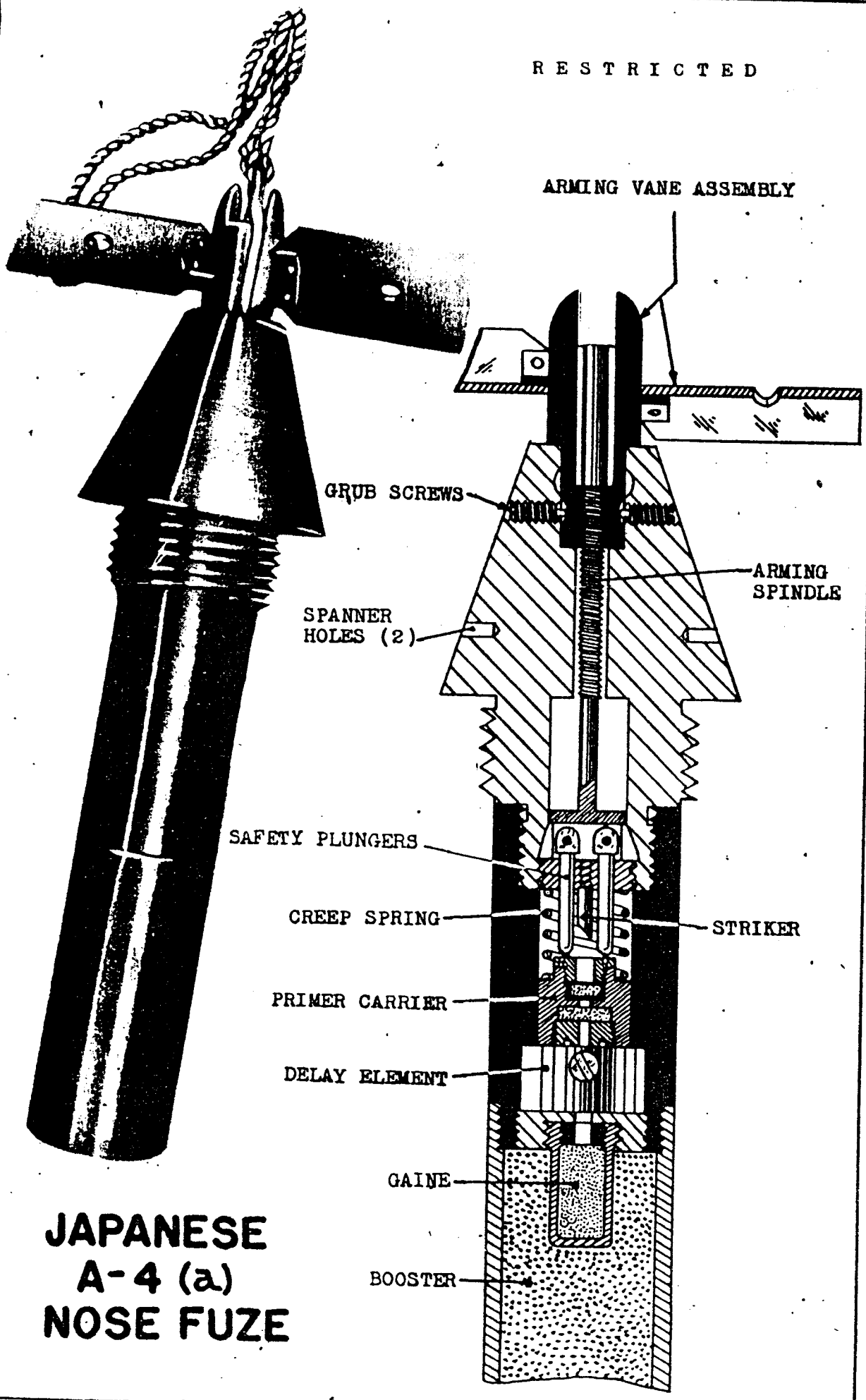
PUBLICATION DATE:
BOMBS USED IN:
MARKINGS
Data
COLOR
OVERALL LENGTH
OVERALL WIDTH
MATERIAL OF CONSTRUCTION
POSITION & METHOD OF FIXING IN BOMB
COMPONENTS OF EXPLOSIVE TRAIN
FUZES LIKELY TO BE FOUND WITH
DELAY TIMES
THREADS
DESCRIPTION
OPERATION

JAPAN

A-3

Navy Mechanic
Nose Fuz

	Steel, except for brass nose cap
	5-3/8 in. (less detonator)
	2-1/8 in.; vane span, 3-5/8 in.
	Steel, except for brass nose cap, arming sl striker spindle.
	Screwed into nose fuze pocket and tightened wrench.
	Detonator
	None
	10 T.P.I., R.H., 1-7/8 in. diameter
	The fuze consists of the fuze body, ar assembly, striker spindle and detonator hol The fuze body is of one piece construc houses the striker spindle which is held in a locating screw and a brass shear wire. Th tion of the spindle is threaded and a small er point is screwed into the lower end. Th assembly consists of a nose cap, arming van sleeve. The arming sleeve is internally th screws onto the spindle. Its length of trav by a stop screw threaded into the top of th The nose cap and four arming vanes are att sleeve by four short screws. The lower end of the fuze body is groo ferentially. The cup-like detonator holder to the fuze body by two screws which fit in groove. A heavy wire eyelet is attached to the fuze body and serves as a guide for the sta The starting wire is soldered to the nose places and gives an initial turn to the arm when the bomb is dropped. A safety fork fi upper portion of the fuze body, one prong tends up through eyelets of arming vane ass vent premature vane rotation.
	On release of bomb, the arming wire pu starting wire through the eyelet, breaking the soldered points and simultaneously impa initial rotation to the arming vane assembl revolutions; the arming sleeve rises up the spindle to look against the stop screw and On impact, the entire assembly (vanes, nos and spindle) are driven inward, shearing th and the striker pierces the detonator.



JAPANESE A-4 (a) NOSE FUZE

PUBLICATION DATE: July 1944 CONFIDENTIAL

JAPANESE

A-4(a)

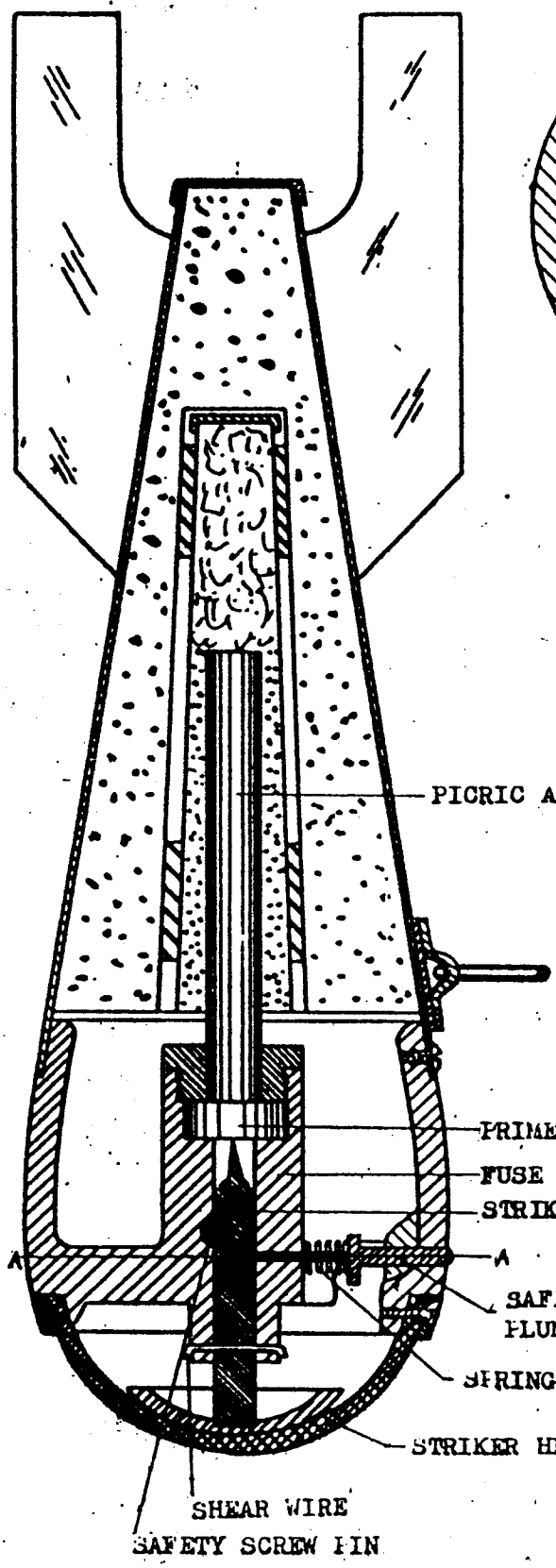
Army Mechanical Impact Nose Fuze

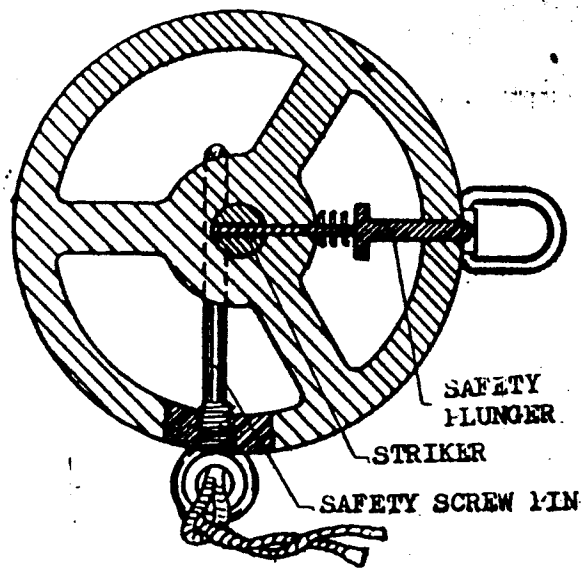
BOMBS USED IN
Probably 250 Kg. Army G.P.H.E.
Sooky Army GPHE

MARKINGS
阪 ※ 9五十日
(OSAKA - September, 1940)

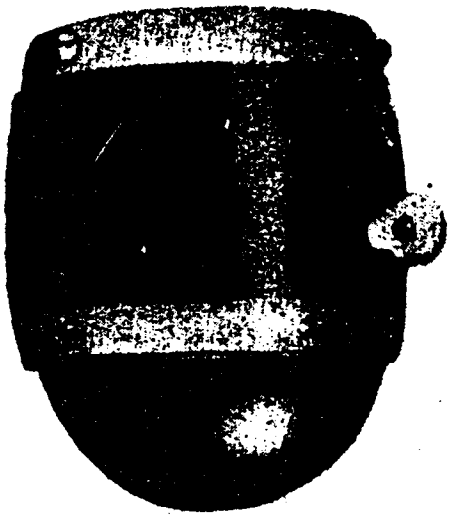
Data	
COLOR	Natural brass.
OVERALL LENGTH	7.1 inches (less booster)
OVERALL WIDTH	2.4 inches.
MATERIAL OF CONSTRUCTION	Brass except steel spring and steel striker.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the nose of the bomb and tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	A primer sets off a delay element which fires a gaine which in turn sets off the booster.
FUZES LIKELY TO BE FOUND WITH	Probably B-4(a)
DELAY TIMES	Not known (short delay only).
THREADS	1-5/8 in. diameter 8 TPI
DESCRIPTION	The upper portion of the fuze body houses the arming vane assembly. The lower portion of the fuze body houses the striker which is attached to a plug, and the two safety plungers which protrude beyond the point of the striker. The vanes are rivetted to a sleeve which is screwed to the arming spindle. The vanes are free to rotate, but two grub-screws prevent their falling off. A creep spring keeps the striker away from the primer, after the fuze is armed, until impact with the target. A selector unit permits a delay to be set. The standard Army gaine is surrounded by a booster. Spanner holes are present. A U-shaped safety wire is also probably used.
OPERATION	Upon release from the plane, an arming wire is withdrawn from the holes in the vanes and the vanes rotate, but do not fall free. The arming spindle is screwed upward by the vanes, raising the two safety plungers with it. This allows the striker point to protrude below the plungers. On impact, the primer carrier moves against the spring and hits the striker to set off the explosive system.

604101 O - 44 - 9





SECTION A-A



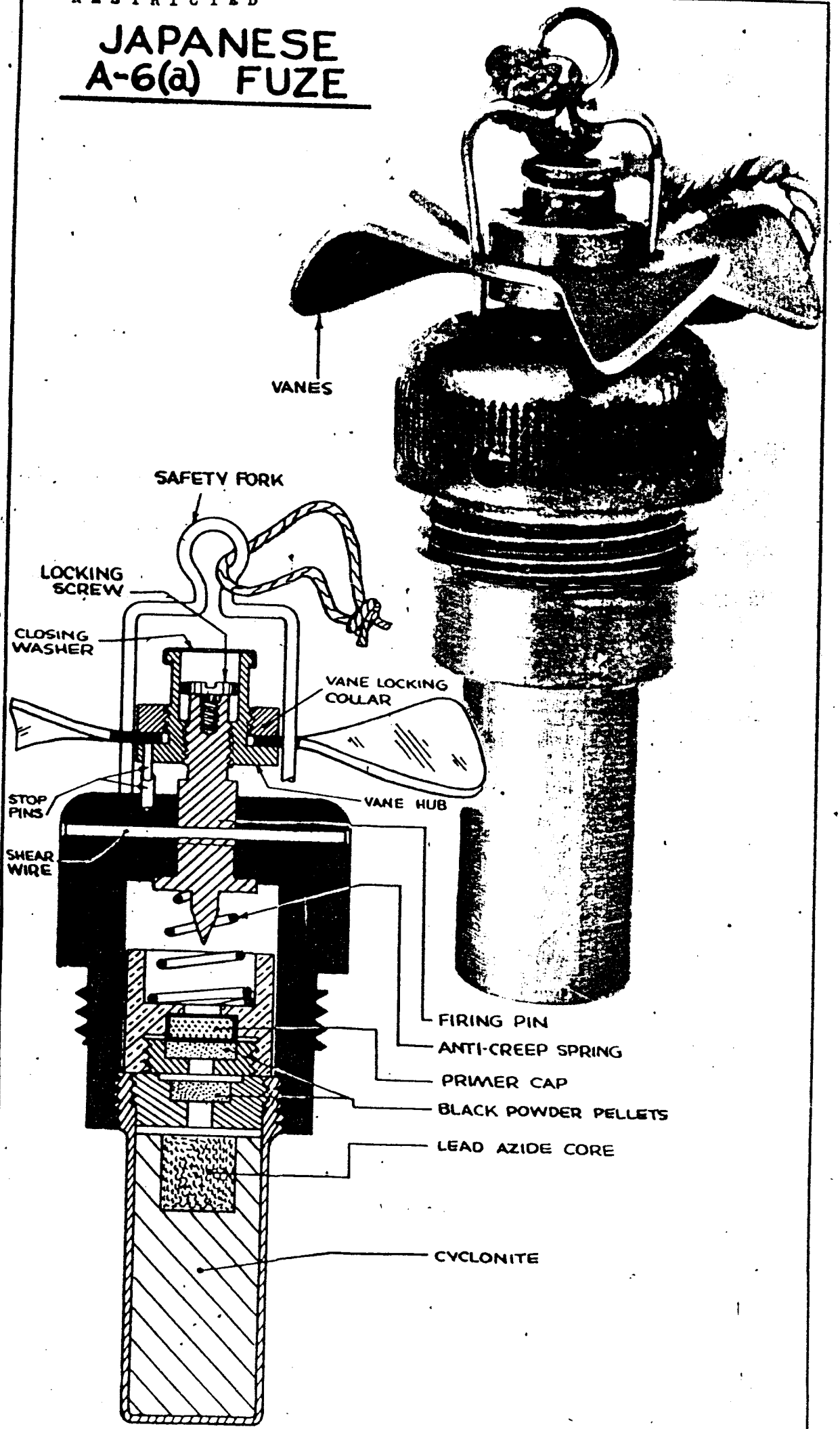
EXTERNAL VIEW OF FUZE

JAPANESE A-5(A) NOSE FUZE

CONFIDENTIAL PUBLICATION DATE: July 1944	JAPANESE A-5(a) Navy Mechanical Impact Nose Fuze
BOMBS USED IN: 1 Kg. ~~Incendiary - Smoke - Anti-Personnel~~. PRACTICE	
MARKINGS "6503" (Four digit number on striker head)	

Data	
COLOR	Black. May have brass band.
OVERALL LENGTH	2.8 in. (less booster)
OVERALL WIDTH	3.0 in. (including fuze housing).
MATERIAL OF CONSTRUCTION	Cast iron.
POSITION & METHOD OF FIXING IN BOMB	Fixed in the nose of the bomb.
COMPONENTS OF EXPLOSIVE TRAIN	A primer and a booster are present.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	None
DESCRIPTION	The fuze is inside the nose of the bomb and can not be seen. The fuze body is part of the nose of the bomb. A striker head has the striker point fastened on the same spindle. In the unarmed position, a safety plunger holds the striker along with a safety pin which is withdrawn on release. A shear wire is sheared on impact. A primer and booster constitute the exploder assembly.
OPERATION	On release from the plane, the safety wire is withdrawn. The safety plunger is forced out by the spring and on impact, the wire is sheared. The striker is forced into the primer to start the explosion.
REMARKS	This fuze has no creep spring. If the bomb has been dropped, the striker may be imbedded in the primer. Any slight movement may be sufficient to disturb the striker and to set off the bomb.

JAPANESE A-6(a) FUZE



PUBLICATION DATE; May 1945 RESTRICTED

BOMBS USED IN

1/2 Kg. Cluster Bomb

MARKINGS

阪 ※ 12 八十日昭

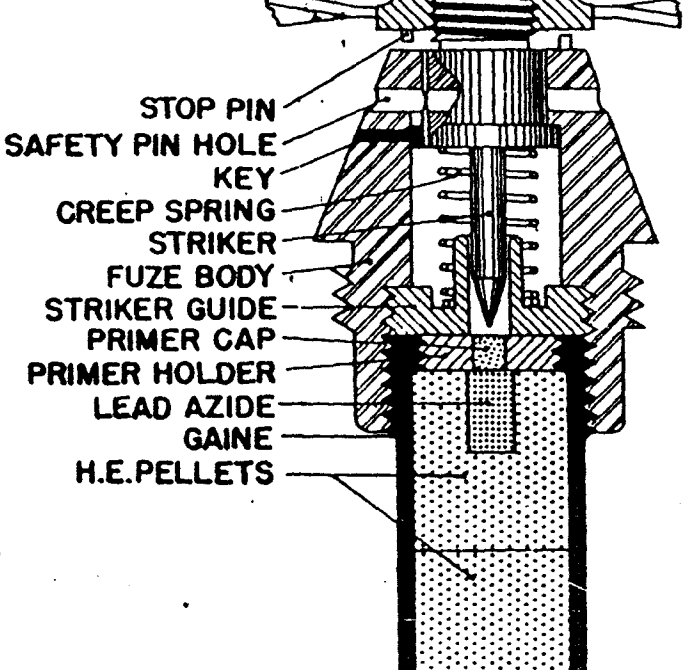
(OSAKA Army Arsenal, December 1943)

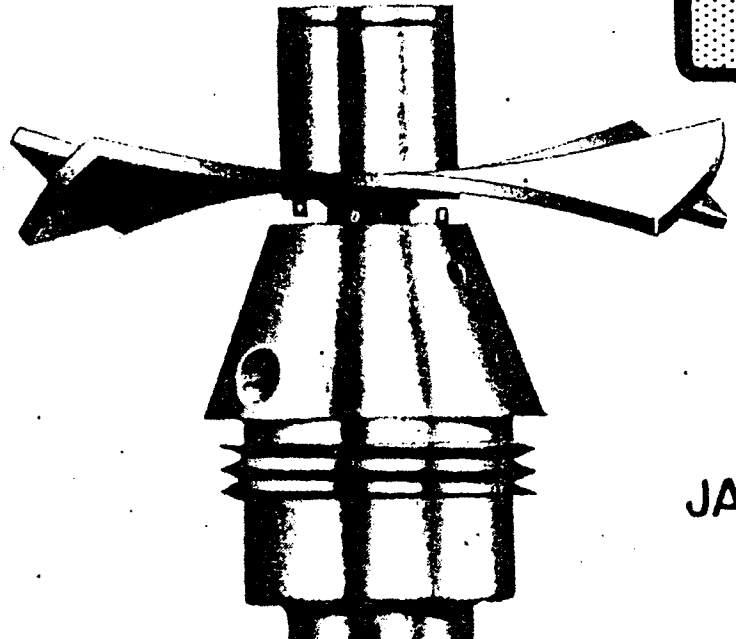
JAPANESE

A-6(a)

Army Mechanical Impact Nose Fuze

Data	
COLOR	Natural brass
OVERALL LENGTH	1.45 in.
OVERALL WIDTH	1.0 in.
MATERIAL OF CONSTRUCTION	Brass except steel spring and firing pin and copper shear wire and nose cap.
POSITION & METHOD OF FIXING IN BOMB	Screwed into nose. Secured by a grub screw.
COMPONENTS OF EXPLOSIVE TRAIN	Primer flash cap, two (2) relay pellets of black powder, cyclonite gaine with lead azide cone.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	Instantaneous
THREADS	1-3/16 in. diameter 16 TPI
DESCRIPTION	The steel striker is held in the brass body by a soft copper shear wire. A creep spring is positioned between the striker and the movable primer carrier. The vane hub screws down on the portion of the striker that extends above the fuze body. A locking screw in the top of the striker prevents the vane assembly from falling away.
OPERATION	The vanes rotate, screwing the vane assembly to the top of the striker where it is stopped by the locking screw head. The fuze is now armed. On impact the shear wire is broken and the striker is driven inward. Simultaneously, the movable primer carrier moves forward against the creep spring until the striker pierces the primer.
REMARKS	The fuze is armed after 4½ turns of the vanes.


STOP PIN
SAFETY PIN HOLE
KEY
CREEP SPRING
STRIKER
FUZE BODY
STRIKER GUIDE
PRIMER CAP
PRIMER HOLDER
LEAD AZIDE
GAINE
H.E.PELLETS



JAPANESE

A-6(b)

PUBLICATION DATE: May 1945 RESTRICTED

JAPANESE

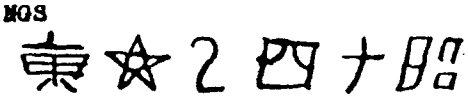
A-6(b)

Army Mechanical Impact Nose Fuze

BOMBS USED IN

1/2 Kg. Cluster Bomb

MARKINGS



(Tokyo Army Arsenal, February 1939)

Data	
COLOR	Natural brass
OVERALL LENGTH	1-5/8 in. (less gaine)
OVERALL WIDTH	7/8 in.
MATERIAL OF CONSTRUCTION	Brass except for a steel creep spring, a key and two stop pins.
POSITION & METHOD OF FIXING IN BOMB	Screwed into the nose. Secured by a grub screw.
COMPONENTS OF EXPLOSIVE TRAIN	The entire explosive train is contained in the gaine. The primer screws into the gaine and is adjacent to the lead azide core. Two H.E. pellets fill the gaine.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	Instantaneous
DESCRIPTION	The brass fuze body contains the striker, striker block, and striker spring. A key set in the fuze body fits into a keyway in the striker block preventing the block from rotating. A striker guide is screwed into the base of the fuze body. A vane hub screws down on the portion of the striker that extends above the fuze body. The locking screw in the top of the striker prevents the vane assembly from falling away. The top of the vane hub is sealed by a closing washer which is crimped over its end. Stop pins on the vane hub and on the fuze body, prevent the vanes from binding. A safety pin hole extends through the fuze body and striker block but no safety pin has been recovered. There is no shear wire in this fuze.
OPERATION	When the bombs fall free from the container the vanes on the fuze rotate and thread out on the spindle. On impact the striker compresses the creep spring and hits the primer.
REMARKS	The fuze is armed after 4 turns of the vanes.

ESE
RMY
ACTION)
UZE

DY

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:

Japanese Army Parachute Bolo Bomb

MARKINGS:

Tokyo Army Arsenal June, 1942

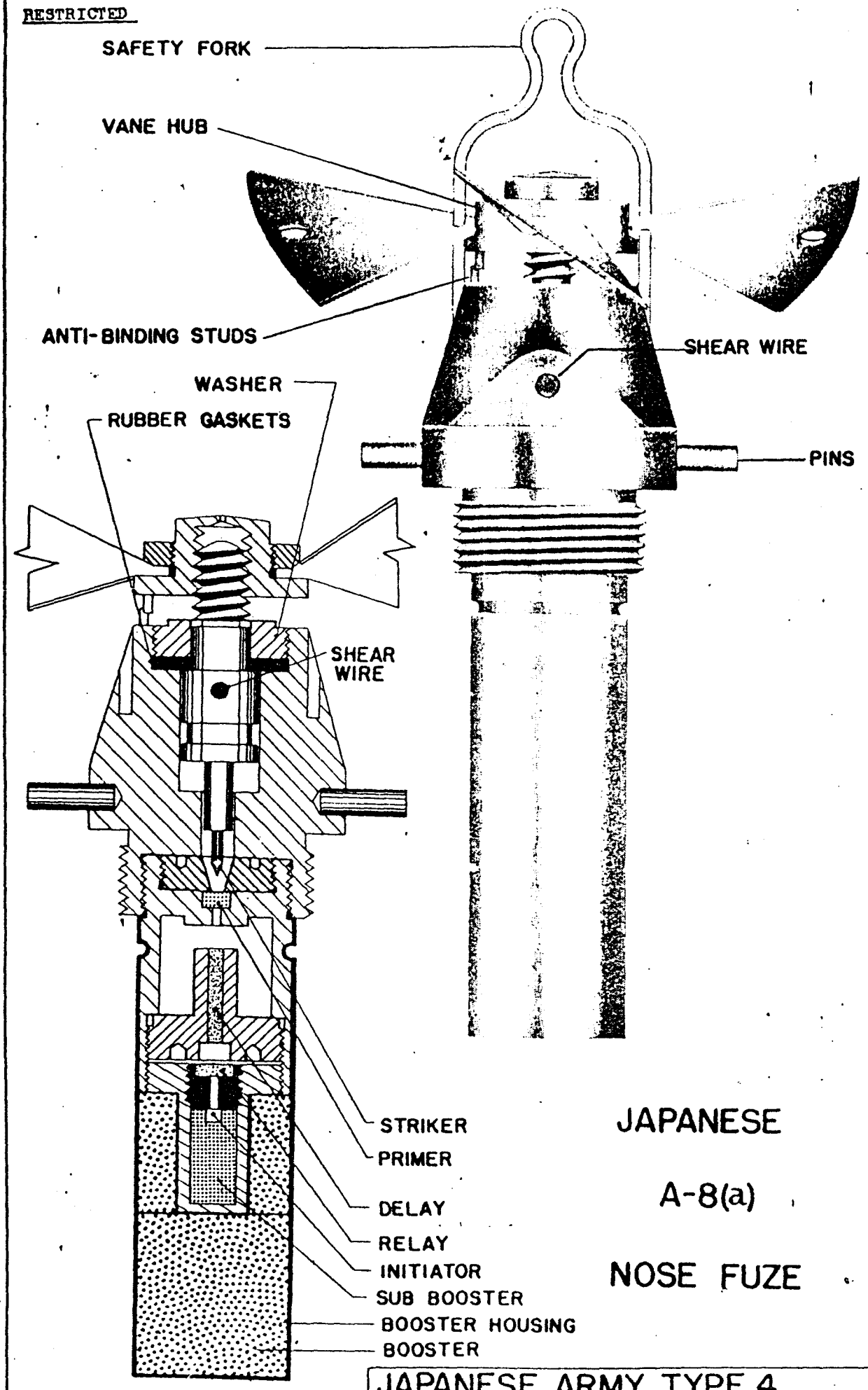
JAPANESE

A-7(a)

Army All-Ways Action Nose Fuze

Data	
COLOR	Aluminum
OVERALL LENGTH	1-5/16 in. (less gaine)
OVERALL WIDTH	1-3/4 in.
MATERIAL OF CONSTRUCTION	Aluminum body & arming vane, brass arming spindle, striker body & primer carrier. Striker point is steel.
POSITION & METHOD OF FIXING IN BOMB	Threads into an adapter on the bomb body, tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Primer and gaine. Gaine incorporates a black powder relay.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	None
THREADS	32 T.P.I., R.H., Diameter 1-1/8 in.
DESCRIPTION	The fuze body is of one piece construction. It is closed at the forward end by a threaded closing disc. The after end is threaded externally to screw into the bomb and internally to receive the gaine. The base of the body is pierced centrally by a flash hole. A single arming vane is held in the safe position against the fuze body by a safety pin which fits through a brass nub protruding from the fuze body. The arming vane is hinged to a brass arming spindle. The spindle threads through the fuze body and extends through the striker body. The all-ways action unit is housed within the fuze body, the cavity of which is tapered so that the diameter at the base is smaller than at the nose. The outer ends of the striker and primer carrier assembly are domed. The striker body is of solid brass construction with a sharp steel striker in the base. A hole is drilled through the body to receive the arming spindle. The primer carrier is made of brass and consists of a barrel threaded at one end to receive a male base plug containing the primer. In the outer diameter of the plug are drilled four flash holes. The inner diameter of the barrel is large enough to accommodate the striker body. A creep spring holds the two apart.
OPERATION	The safety pin is withdrawn from the arming vane before the bomb is thrown from the plane. The vane rotates causing the arming spindle to thread out of the fuze body and fall free. On impact with a solid object, the striker and primer are rammed together overcoming the force of the creep spring. The flash from the primer passes through the flash holes, ignites the relay which in turn sets off the gaine.

RESTRICTED



JAPANESE

A-8(a)

NOSE FUZE

JAPANESE ARMY TYPE 4
2 SECOND DELAY NOSE FUZE

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN

Type 3 100 Kg. Skipping Model Bomb

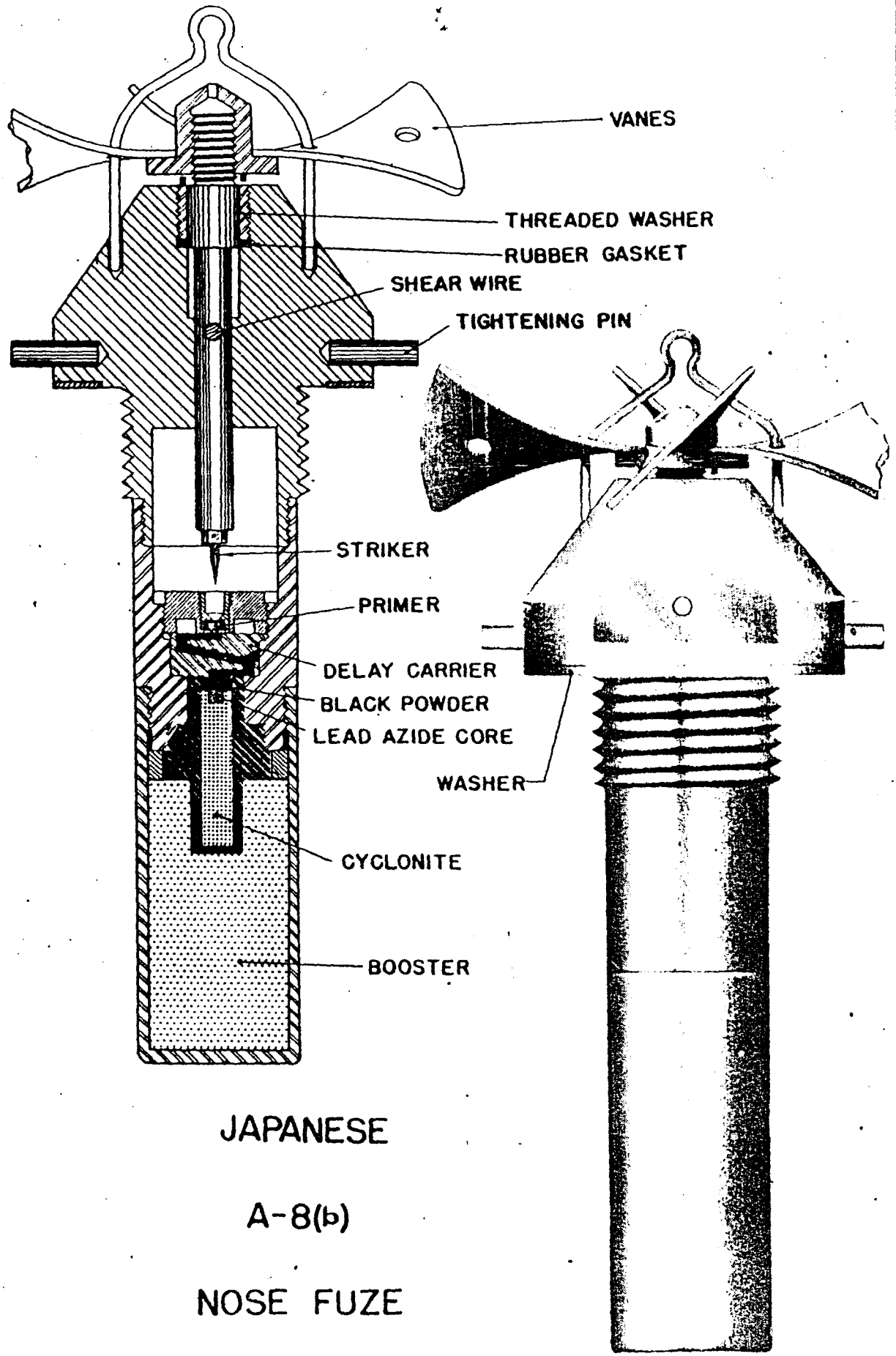
MARKINGS

JAPANESE

A-8(a)

Army Mechanical Impact Nose Fuze

Data	
COLOR	Brass, except for black vanes
OVERALL LENGTH	3-1/2" (less booster and gaine)
OVERALL WIDTH	1-1/2"
MATERIAL OF CONSTRUCTION	Brass except for steel arming vanes, tightening pins and striker point. Tinned sheet steel booster housing.
POSITION & METHOD OF FIXING IN BOMB	Screwed into nose of bomb and tightened by a wrench that fits over the protruding pins.
COMPONENTS OF EXPLOSIVE TRAIN	Primer, delay, gaine and booster. Relay incorporated in gaine.
FUZES LIKELY TO BE FOUND WITH	B-8(a)
DELAY TIMES	2 sec.
THREADS	13 T.P.I., R.H., Diam. 1-5/32 in.
DESCRIPTION	The fuze body houses a spindle that has a striker point at its lower end, and a threaded segment at the upper end that protrudes above the body. The vane assembly consisting of four black vanes attached to a brass hub screws onto this threaded portion. The central segment of the spindle is enlarged to form a shoulder for a rubber gasket located in a recess in the top of the fuze body. A brass washer threads into this hole and bears on the top of the gasket. The spindle is drilled to receive a brass shear wire 2.6 mm in diameter. The primer is contained in a thin cylinder pressed into the lower fuze body against a dividing section. The section is pierced with a flash hole. The delay element, consisting of a column of pressed brown powder, is carried in a brass piece which threads into the base of fuze body and aligns with the flash hole in the base of the dividing section. The gaine threads into the base of the fuze immediately below the delay element. It has a relay pellet above a lead azide cone imbedded in cyclonite. The booster, containing two cyclonite pellets, is housed in a light metal cylinder and is crimped onto a groove in the lower part of the fuze body just below the threads.
OPERATION	The safety fork is withdrawn allowing the vanes to rotate up the threaded spindle and fall clear. On impact with a solid target the shear wire is sheared and the striker is driven into the primer. The flash ignites the delay train which in turn fires the gaine.



JAPANESE

A-8(b)

NOSE FUZE

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:

Type 3 250 Kg. "Skipping Model" Bomb
Type 3 500 Kg. "Skipping Model" Bomb

MARKINGS

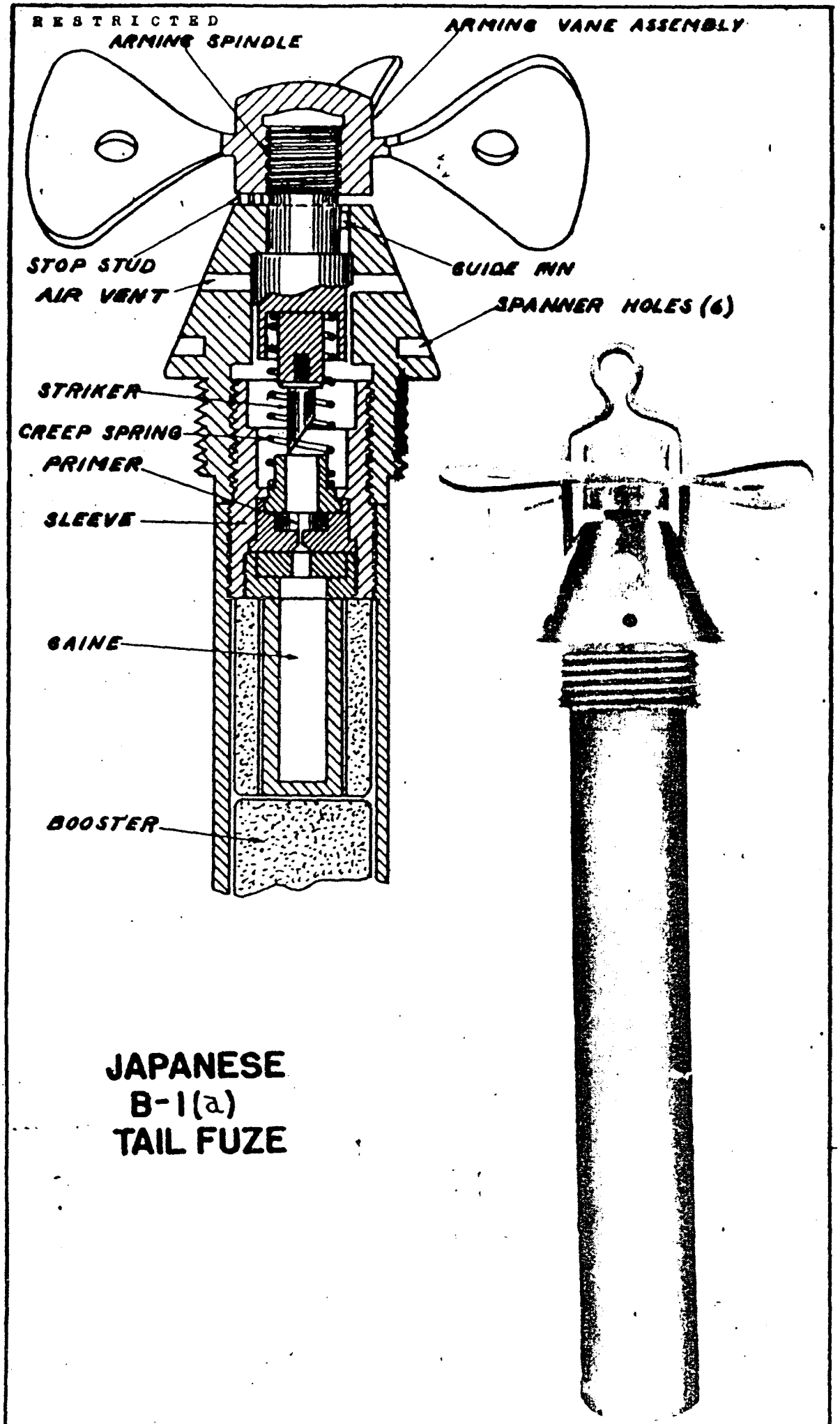
JAPANESE

A-8(b)

Army Mechanical Impact Nose Fuze

Data	
COLOR	Brass, except for black vanes
OVERALL LENGTH	6 in. (less booster and gaine)
OVERALL WIDTH	2-3/8 in.
MATERIAL OF CONSTRUCTION	Brass except for steel arming vanes, tightening pins and striker point.
POSITION & METHOD OF FIXING IN BOMB	Screwed into nose of bomb and tightened by a wrench that fits over the protruding pins.
COMPONENTS OF EXPLOSIVE TRAIN	Primer, delay, gaine and booster. Relay incorporated in gaine.
FUZES LIKELY TO BE FOUND WITH	
DELAY TIMES	2 sec.
THREADS	8 T.P.I., R.H., Diam. - 1-5/8 in.
DESCRIPTION	The upper fuze body houses a striker spindle that has a striker point at its lower end and a threaded segment at the upper end that protrudes above the body. The vane assembly consisting of four black vanes attached to a brass hub screws onto this threaded portion. Just below this threaded portion a part of the spindle is enlarged. A rubber gasket fits down over this shoulder and a threaded washer screws down in a hole in the top of the fuze body and bears on the gasket. The spindle is drilled to receive a brass shear wire 2.5 mm in diameter. The lower fuze body houses a threaded plug containing the primer and below that a threaded delay carrier. The delay train runs across the diameter of the carrier and relays on the top and bottom of the carrier serve to lead the flash away from and back to the center line of the fuze. The gaine abuts against the delay carrier. The booster housed in a brass cylinder threads onto the lower fuze body.
OPERATION	The safety fork is withdrawn allowing the vanes to rotate up the threaded spindle and fall clear. On impact with a solid target the shear wire is sheared and the striker is driven into the primer. The flash ignites the delay train which in turn fires the gaine.

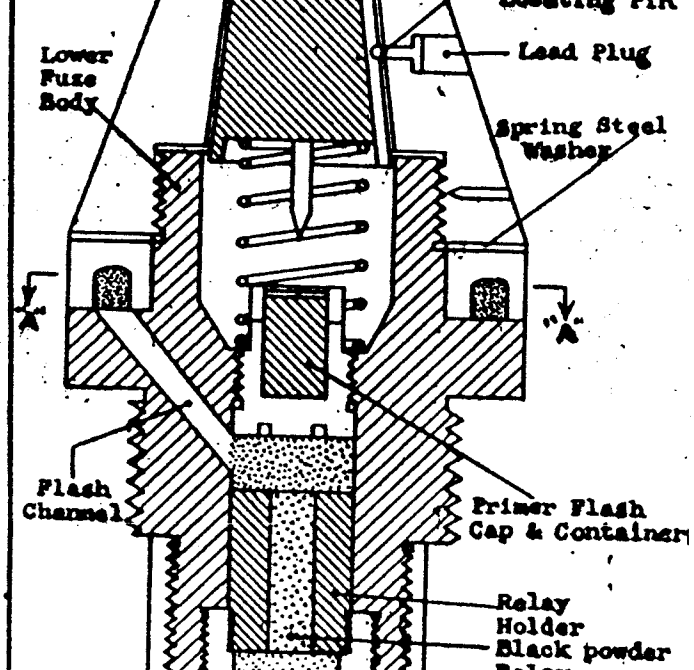
RESTRICTED

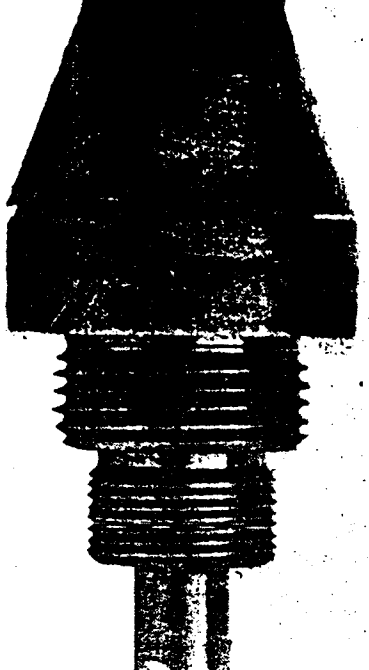


JAPANESE
B-1(a)
TAIL FUZE

PUBLICATION DATE: July 1944 RESTRICTED	JAPANESE B-1(a) Army Mechanical Impact Tail Fuze
BOMBS USED IN: 30 Kg. G.P.H.E. 50 Kg. G.P.H.E. 100 Kg. G.P.H.E.	
MARKINGS: 東☆12九十昭 (Tokyo - December 1941)	

Data	
COLOR	Natural brass
OVERALL LENGTH	2.85 inches (less booster)
OVERALL WIDTH	1.55 inches
MATERIAL OF CONSTRUCTION	Brass except steel spring and firing pin
POSITION & METHOD OF FIXING IN BOMB	Fuze is screwed into tail of bomb and tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Primer, standard Japanese Army tail gaine and booster.
FUZES LIKELY TO BE FOUND WITH	A-2(a), A-2(c) or possibly A-2(b)
DELAY TIMES	None
THREADS	1-5/32 in. diameter 13 TPI
DESCRIPTION	The fuze body houses the arming vane assembly which is secured by a U-shaped wire. The striker is screwed into the arming spindle and is kept away from the primer by a creep spring. Six spanner holes are present, along with a hole for a shear wire. No shear wire is fitted, however, a guide pin prevents the arming spindle from rotating with the vanes. A sleeve permits the tail booster to be connected to the body. Stop-studs are found on the vane cap and on the fuze body to prevent the vanes from being screwed down too tightly.
OPERATION	On release from the plane, an arming wire is withdrawn from the holes in the vanes, allowing the latter to rotate and fall free. On impact, the spindle is forced inward, against the action of the creep spring, to pierce the primer and set off the exploder system.
REMARKS	This fuze has been found with a black steel body and steel vanes attached to a brass hub.


Lower Fuze Body
Lead Plug
Spring Steel Washer
"A"
"A"
Flash Channel
Primer Flash Cap & Container
Relay Holder
Black powder



PUBLICATION DATE: July 1944 RESTRICTED

BOMBS USED IN:
30 Kg. G.P.H.E.
50 Kg. G.P.H.E.
100 Kg. G.P.H.E.

MARKINGS

阪 ✕ 5t + 日日

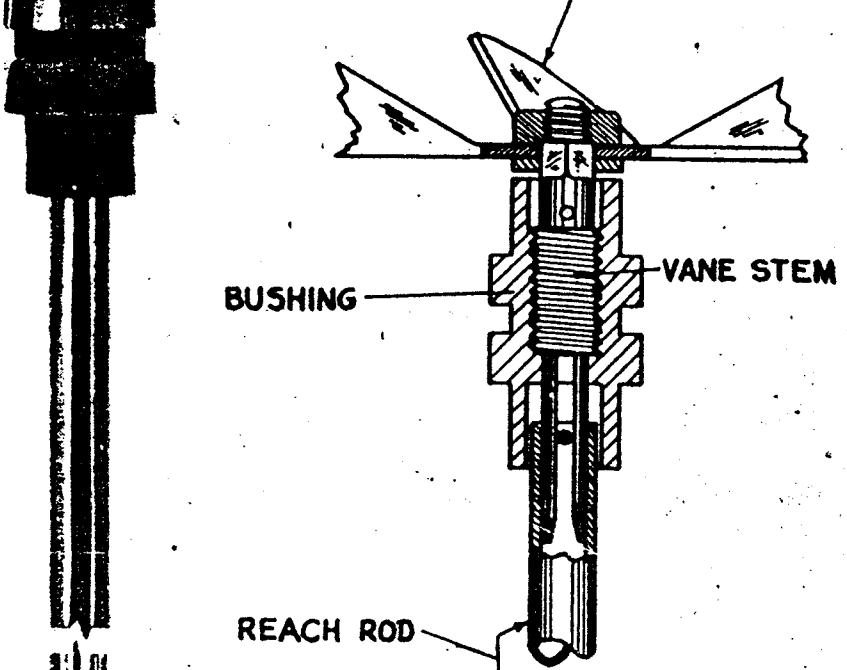
(OSAKA - June 1942)

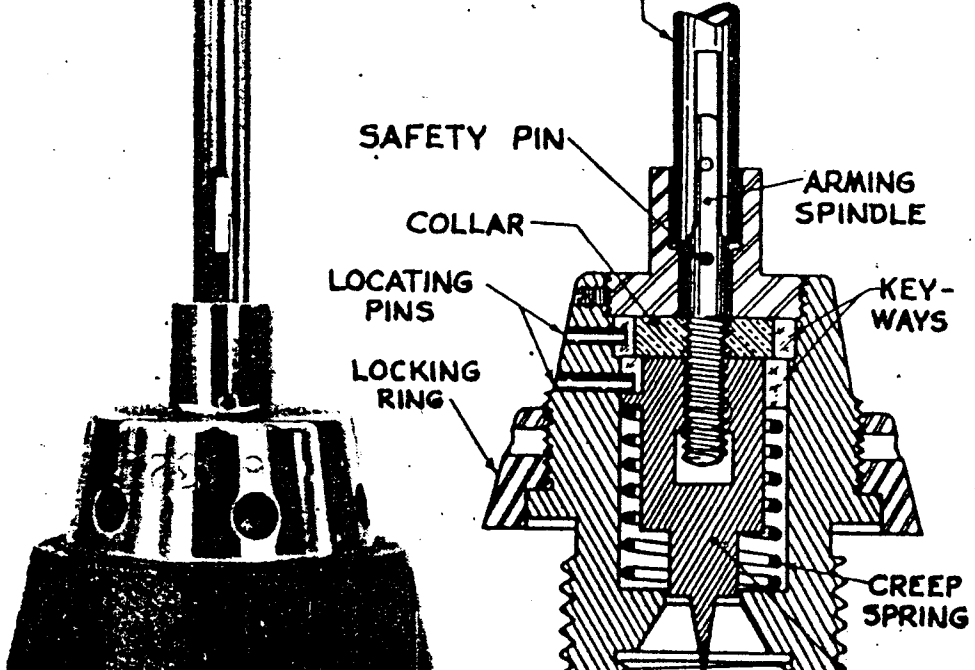
JAPANESE

B-1(b)

Army Mechanical Impact Tail Fuze

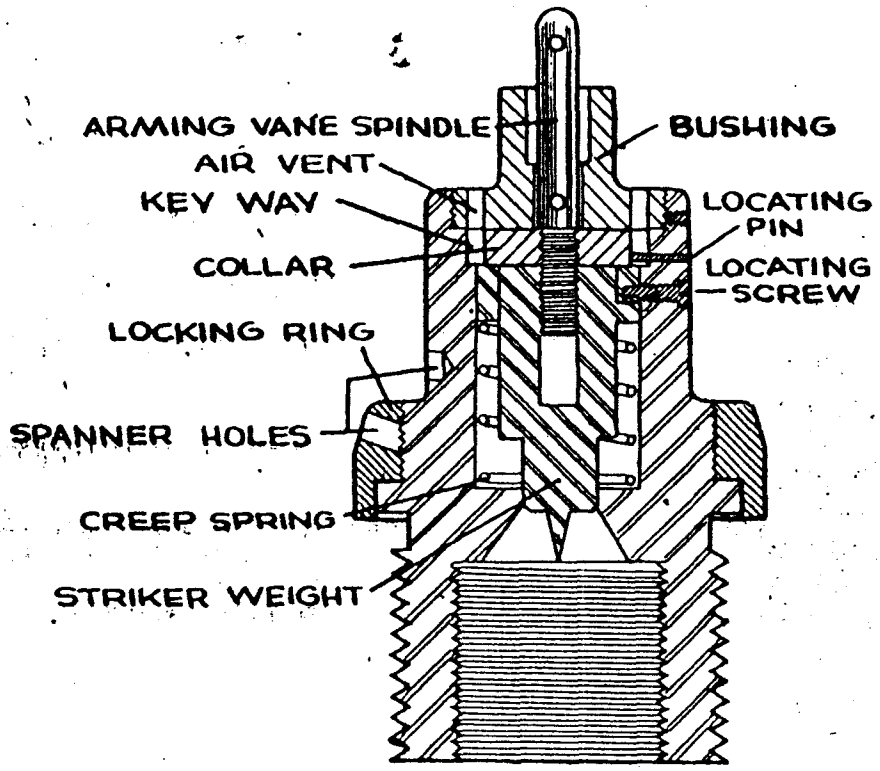
Data	
COLOR	Natural brass
OVERALL LENGTH	5.4 inches (less booster)
OVERALL WIDTH	~~2.287 inches~~ 19/16 in.
MATERIAL OF CONSTRUCTION	All brass except spring and firing pin.
POSITION & METHOD OF FIXING IN BOMB	Screwed into tail cone with spanner wrench fitting in holes.
COMPONENTS OF EXPLOSIVE TRAIN	Flash cap, delay train, black powder relay, standard Army gaine, and picric booster.
FUZES LIKELY TO BE FOUND WITH	Will generally be used alone; however, bombs are designed to use and may have nose fuze.
DELAY TIMES	~~Instantaneous.~~ 15 TO 16 SEC.
THREADS	1-5/32 in. diameter 13 TPI
DESCRIPTION	Upper fuze body houses striker assembly, the upper end of which is threaded for the arming vanes which are prevented from rotating during shipment by U-shaped safety fork fitting into holes. A lead plug fits into groove of [illegible] spindle preventing rotation during arming time. The lower fuze body contains primer flash cap, delay train, flash channel and black powder relay. The creep spring prevents striker from moving down on primer flash cap after fuze is armed.
OPERATION	On release, arming wire is withdrawn allowing vanes to rotate and fall free in eleven turns. On impact, the striker moves in against the spring and pierces the cap. The flash passes through channel and ignites delay train, the gas from burning powder escaping through escape hole. The delay train burns around the periphery to flash channel, ignites powder relay, which in turn sets off the gaine and booster.

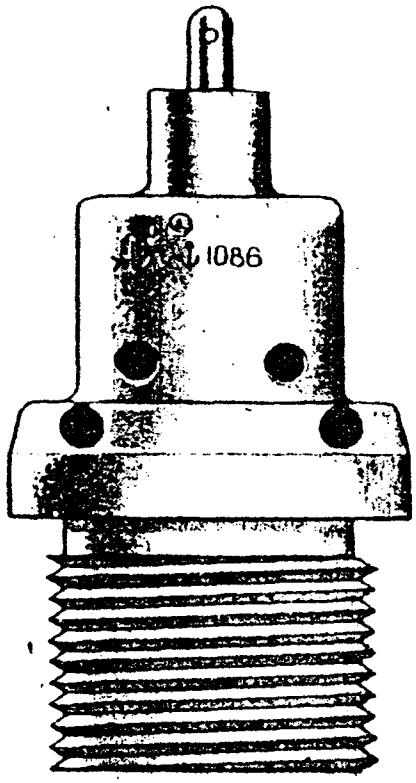

BUSHING
VANE STEM
REACH ROD


SAFETY PIN
ARMING SPINDLE
COLLAR
LOCATING PINS
KEY-WAYS
LOCKING RING
CREEP SPRING

PUBLICATION DATE: July 1944 RESTRICTED	**JAPANESE** **B-2(a)** Navy Mechanical Impact Tail Fuze
BOMBS USED IN: Navy 250 Kg. S.A.P.	
MARKINGS	

Data	
COLOR	Chromium plated
OVERALL LENGTH	4.5 inches (without the arming spindle extension).
OVERALL WIDTH	2.55 inches.
MATERIAL OF CONSTRUCTION	Steel, except locking ring, safety collar and spindle.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the base plate of the bomb and tightened with a spanner wrench. The locking ring is then screwed down to secure the fuze.
COMPONENTS OF EXPLOSIVE TRAIN	The standard Japanese gaine is employed.
FUZES LIKELY TO BE FOUND WITH	Navy nose fuze (A-3(a)).
DELAY TIMES	Incorporated in the Navy gaines.
THREADS	2-9/64 in. diameter 4 TPI
DESCRIPTION	The fuze body houses the safety collar, the striker, the arming spindle and the creep spring. Six spanner holes are found in both the body and the locking ring. The arming assembly consists of a long reach rod connecting the arming spindle and the vanes. The lower end of the spindle screws through the top of the fuze body and the safety collar into the striker.
OPERATION	On release from the plane, the vanes rotate, unscrewing the arming spindle from the striker. On impact, the striker moves against the action of the creep spring and pierces the primer in the gaine to set off the exploder system.
REMARKS	This fuze has only been recovered from the 250 Kg. S.A.P. Navy bomb. Slight variations of the B-2(a) which have been recovered are: (a) Fuze body and locking ring made of zinc-plated steel alloy. (b) Fuze body made of unplated steel, locking ring made of brass. Body shoulders are straight rather than sloping. Has two locating screw pins located 180° apart.





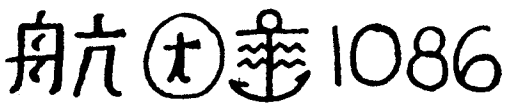
JAPANESE B-2(b) TAIL FUZE

PUBLICATION DATE : Sept. 1944 RESTRICTED

BOMBS USED IN :

800 Kg. A.P.

MARKINGS

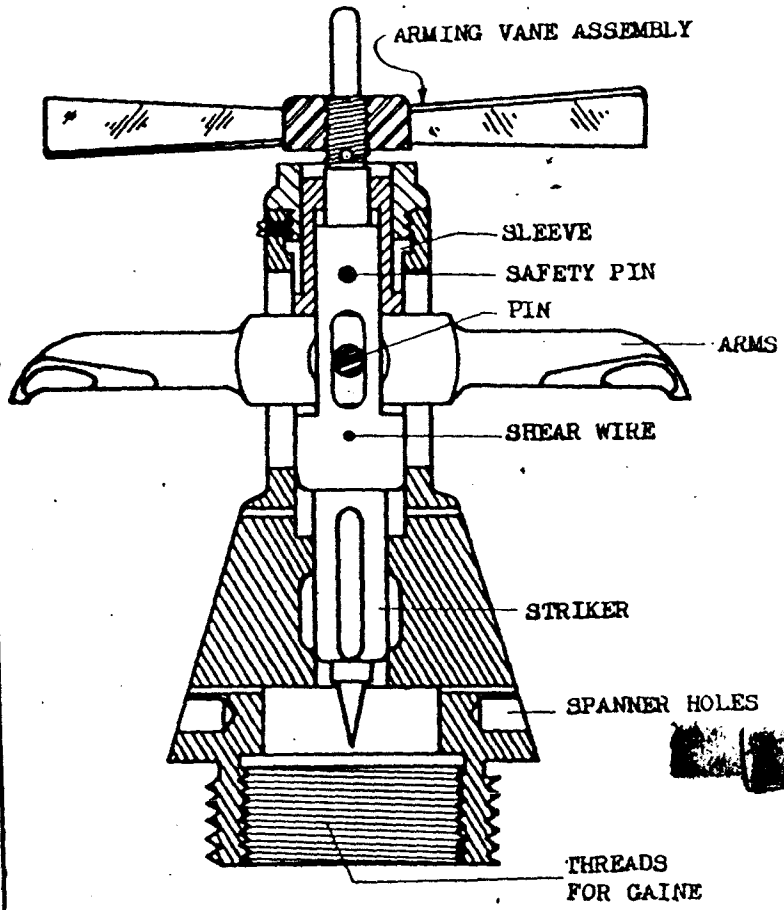


JAPANESE

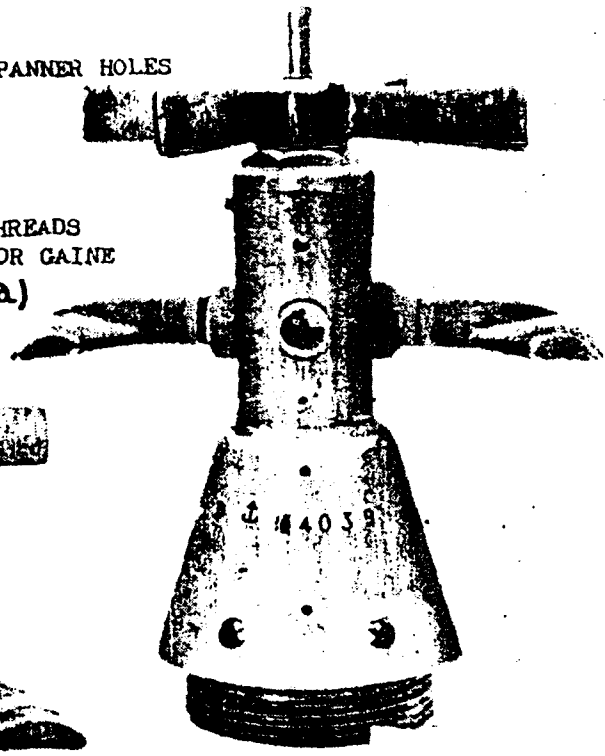
B-2(b)

Navy Mechanical Impact Tail Fuze

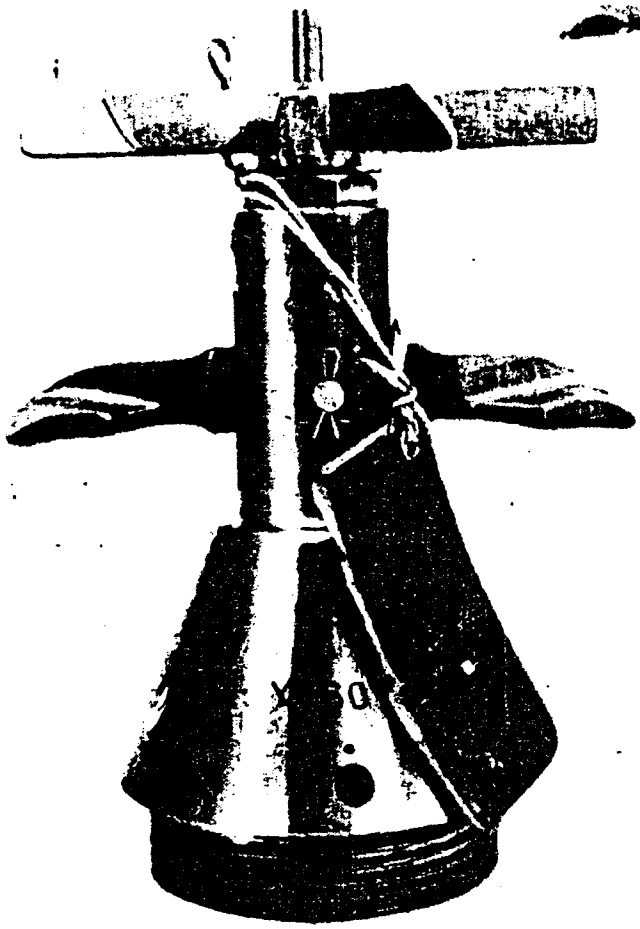
Data	
COLOR	Unpainted steel
OVERALL LENGTH	5-9/16 in.
OVERALL WIDTH	3-5/32 in. (incl. locking ring)
MATERIAL OF CONSTRUCTION	Steel except for brass arming spindle and brass safety collar.
POSITION & METHOD OF FIXING IN BOMB	Two fuzes are screwed into the base plate of the bomb and secured by the locking ring.
COMPONENTS OF EXPLOSIVE TRAIN	Incorporated in a large Navy gaine.
FUZES LIKELY TO BE FOUND WITH	One other B-2(b)
DELAY TIMES	.2 second delay incorporated in Navy gaine.
THREADS	2-17/32 in. diameter; 4 TPI
DESCRIPTION	The fuze body houses the striker, the creep spring, the safety collar, and the arming spindle. The upper end of the body is internally threaded right-hand to receive the retaining collar. The arming assembly consists of the vanes and a long reach rod which slide-fits over the arming spindle. A locking ring screws down over a shoulder of the body to secure the fuze in the bomb. The safety collar and the top of the striker are internally threaded left-hand to receive the arming spindle. The collar rests on a shoulder of the fuze body and prevents the striker from moving downward when fuze is unarmed. The striker and safety collar are prevented from rotating by the locating screw and locating pin respectively.
OPERATION	On release from the plane, the arming vanes rotate, unscrewing the arming spindle from the striker. On impact the striker moves against the creep spring and pierces the primer in the gaine.
REMARKS	(1) The fuze uses an oversize Japanese Navy gaine in which is incorporated the primer, slight delay, detonator and booster. (2) The arming assembly is similar to the B-2(a) except that the arming vane span of the B-2(b) is only 3-15/16" as compared to the 4-11/16" span of the vanes used with the B-2(a).



CROSS SECTION OF B-3(a)



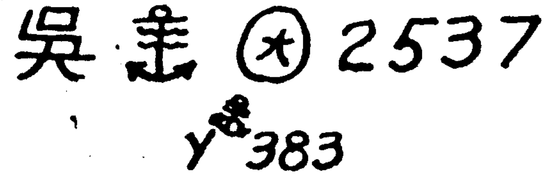
B-3 (a)



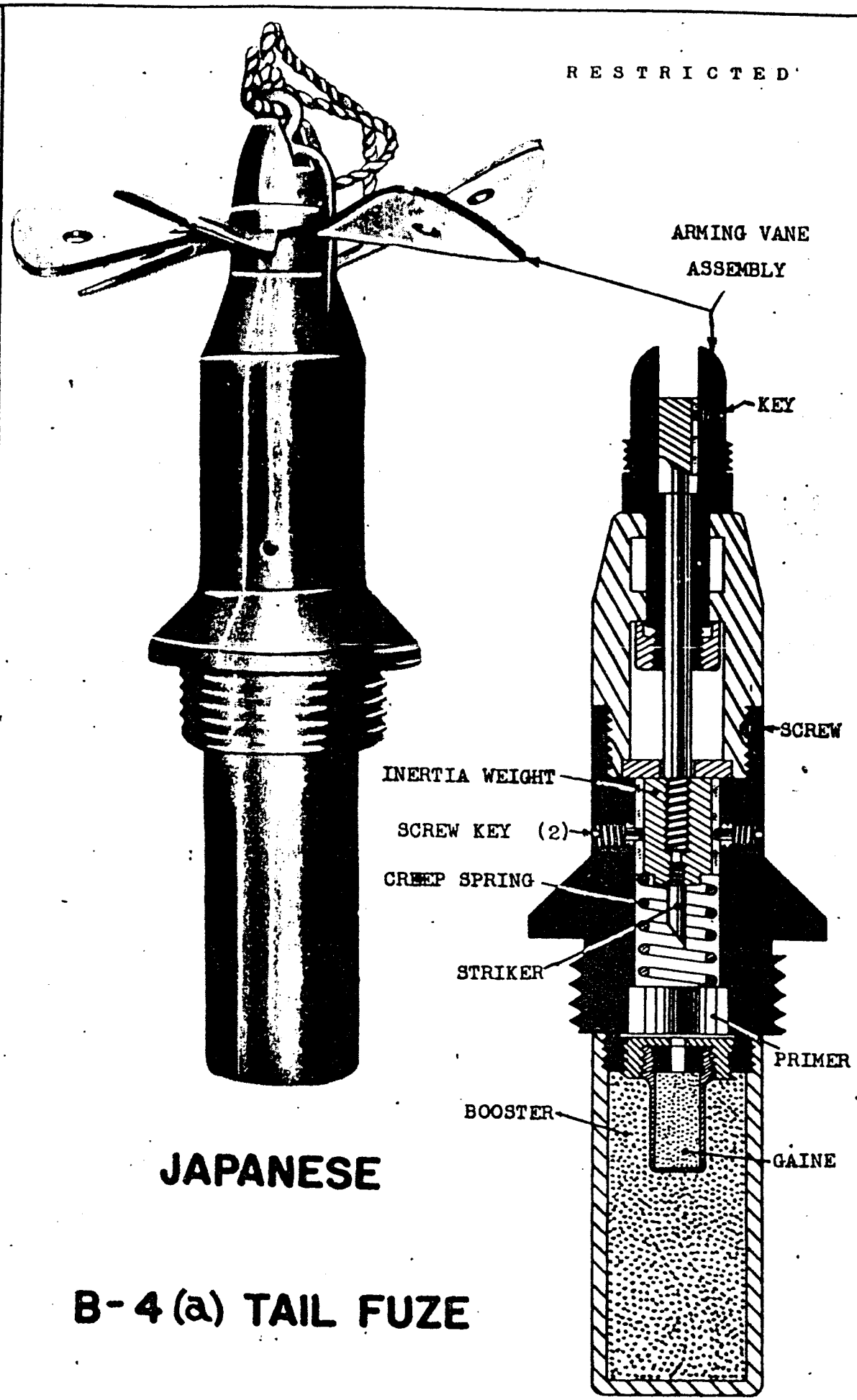
B-3 (b)

JAPANESE B-3 TAIL FUZES

PUBLICATION DATE : Sept. 1944 RESTRICTED	JAPANESE
BOMBS USED IN : B-3(a) - 250 Kg. G.P.H.E. B-3(b) - Probably in 800 Kg. G.P.H.E.	B-3(a) B-3(b)
MARKINGS	Navy Mechanical Impact Tail Fuze



Data	B-3(a)	B-3(b)
COLOR	Brass	Brass
OVERALL LENGTH	5.6 in.	7.2 in.
OVERALL WIDTH	2.4 in.	3.5 in.
MATERIAL OF CONSTRUCTION	Brass except for steel sleeve, steel pivot for arms, and steel striker.	
POSITION & METHOD OF FIXING IN BOMB	Threaded into tail cone. Tightened with spanner wrench.	
COMPONENTS OF EXPLOSIVE TRAIN	Employs standard Navy gaine.	
FUZES LIKELY TO BE FOUND WITH	A-3(a) in nose	Probably A-1(c) in nose.
DELAY TIMES	Incorporated in the gaine.	
THREADS	B-3(a) - 1-31/32 in. diameter 12 TPI B-3(b) - 3 in. diameter 8 TPI	
DESCRIPTION	Principal parts are the body, the bushing which threads into the upper end of the body, the sleeve housed within the bushing, the striker stem which is threaded to take the vanes, and the arms which pivot on a steel pin extending through the body. When unarmed, the striker stem is prevented from moving down by the safety pin, the safety fork, the shear wire, and the arming vanes. The arms are prevented from moving by the sleeve which in turn is held in place by the arming vanes. The fuze body is internally threaded for the standard Navy gaine. Six spanner holes are drilled in the body.	
OPERATION	On loading in the plane, the safety pin and the safety fork are removed. The vanes are prevented from rotating by an arm on the bomb rack. On release, the vanes rotate up and off leaving the sleeve free to rise. The striker stem is held up by only a shear wire. On impact, inertia forces the arms down against the shoulder of the striker stem, the shear wire is sheared, and the striker pierces the primer. Because both arms pivot about the stationary pin and extend through the body, pressure upward against the arms would force the short ends of the arms down against the striker stem and thereby shear the shear wire. Two-way action is thus achieved.	
REMARKS	After impact, a slight movement of the arms is liable to force the striker into the primer. B-3(b):- The fuze is similar to the B-3(a) except that all parts are larger and, secondly, it lacks one minor safety pin hole at the top of the striker spindle. The diameter of the threads for the fuze pocket is larger than that of any other Japanese Navy fuze, but the fuze is internally threaded to take the standard Navy gaine. The fuze appears designed for use in large G.P. bombs - probably 500 Kg. and over. Increased size of the fuze may provide greater certainty of arming and of firing despite the greater disruptive force of impact of the larger bomb.	



JAPANESE

B-4(a) TAIL FUZE

PUBLICATION DATE: July 1944 CONFIDENTIAL

JAPANESE

B-4(a)

Army Mechanical Impact Tail Fuze

BOMBS USED IN

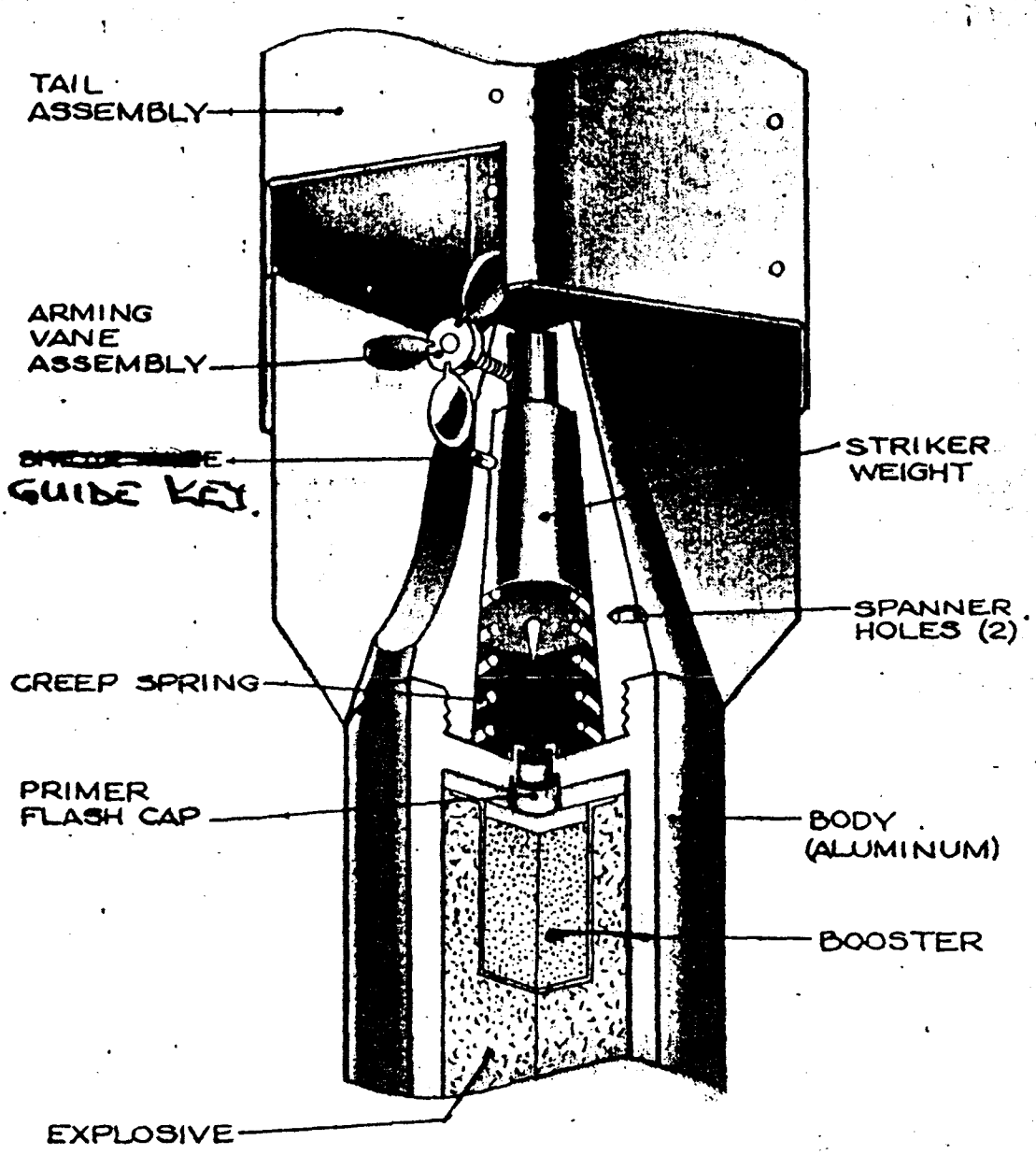
Probably 250 Kg. Army G.P.H.E.

MARKINGS

阪 ⚔ 10 九 昭

(OSAKA - December 19__)

Data	
COLOR	Natural brass.
OVERALL LENGTH	5.9 inches (less booster)
OVERALL WIDTH	2.4 inches.
MATERIAL OF CONSTRUCTION	Brass except steel spring and striker.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the bomb and tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	A primer fires the Army gaine which detonates the booster.
FUZES LIKELY TO BE FOUND WITH	Probably A-4(a)
DELAY TIMES	None.
THREADS	1-25/32 in. diameter 8 TPI
DESCRIPTION	The upper portion of the body houses the arming vane assembly. The arming spindle is threaded at the lower end to screw into the inertia weight which is located in the lower portion of the body. A grub-screw causes the spindle to rotate with the arming vanes. Two grub-screws keep the inertia weight from rotating as the spindle is unscrewed. The striker is kept away from the primer by a creep spring. A grub-screw holds the body screwed into the lower portion. Two holes are present for the U-shaped safety wire. Six spanner holes are located in the body. A booster screws into the lower body portion.
OPERATION	On release from the plane, the arming wire is withdrawn from the holes in the vanes and the latter rotate unscrewing the spindle from the inertia weight. The vanes will not fall free because they are held on by a lock-nut on the vane boss collar On impact, the inertia weight moves downward, and the striker enters the primer, overcoming the resistance of the creep spring.
REMARKS	This fuze is reported to have no shear wire.

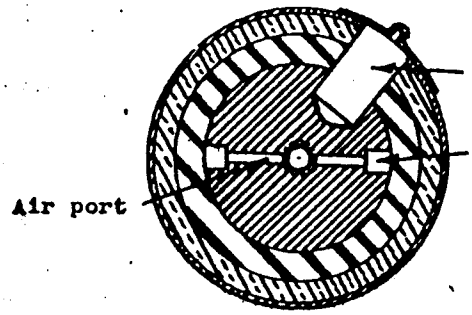


JAPANESE B-5(a) TAIL FUZE

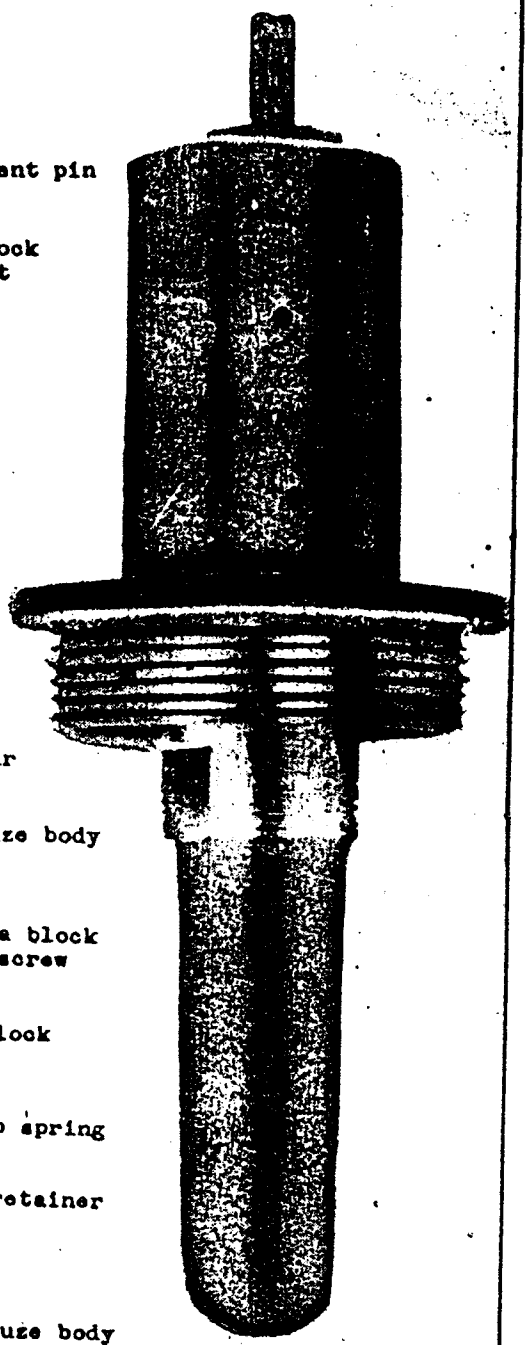
PUBLICATION DATE: July 1944 RESTRICTED	JAPANESE B-5 (a) Army Mechanical Impact Tail Fuze
BOMBS USED IN: 1/3 Kg. Anti-Aircraft	
MARKINGS None	

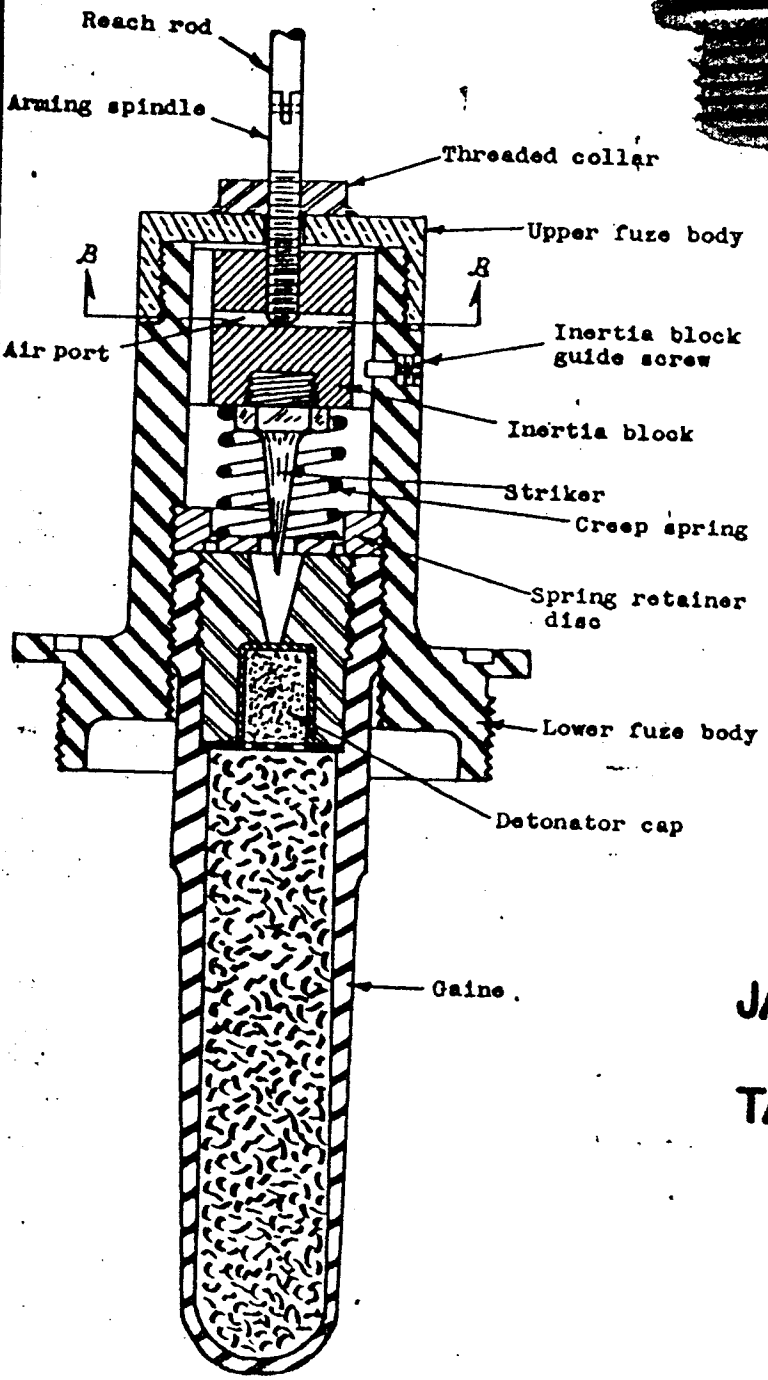
Data	
COLOR	Aluminum.
OVERALL LENGTH	3.37 inches (including tail extension).
OVERALL WIDTH	1.3 inches
MATERIAL OF CONSTRUCTION	Aluminum
POSITION & METHOD OF FIXING IN BOMB	Tail fuze held under tail cone with vanes and arming spindle protruding perpendicular to side of bomb body.
COMPONENTS OF EXPLOSIVE TRAIN	Lead azide primer, cyclonite detonator and T.N.T. Cyclonite main filler.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	None
DESCRIPTION	Fuze body houses an inertia striker which is secured by the arming vane assembly which protrudes from the side of the body. The arming vanes are cup-shaped. ~~A copper shear wire is present and~~ a guide key keeps the striker from turning. A creep spring keeps the striker away from the primer flash cap after the arming vane assembly falls away. The tail assembly hides the fuze to a great extent.
OPERATION	The arming vane assembly unscrews and falls away after the bomb is released from the container. The striker has a tendency to creep up to the top of the primer flash cap. This is prevented by the creep spring ~~and shear wire~~. On impact, inertia causes the striker to move downward against the creep spring. ~~The shear wire is sheared~~ the striker pierces the primer and the exploder system is set into operation.

REMARKS	On modified 1/3 Kg. bombs recently recovered, the arming spindle was lengthened about 1/8 of an inch. The new length allows the cup shaped vanes to protrude further into the wind stream.



SECTION B-B

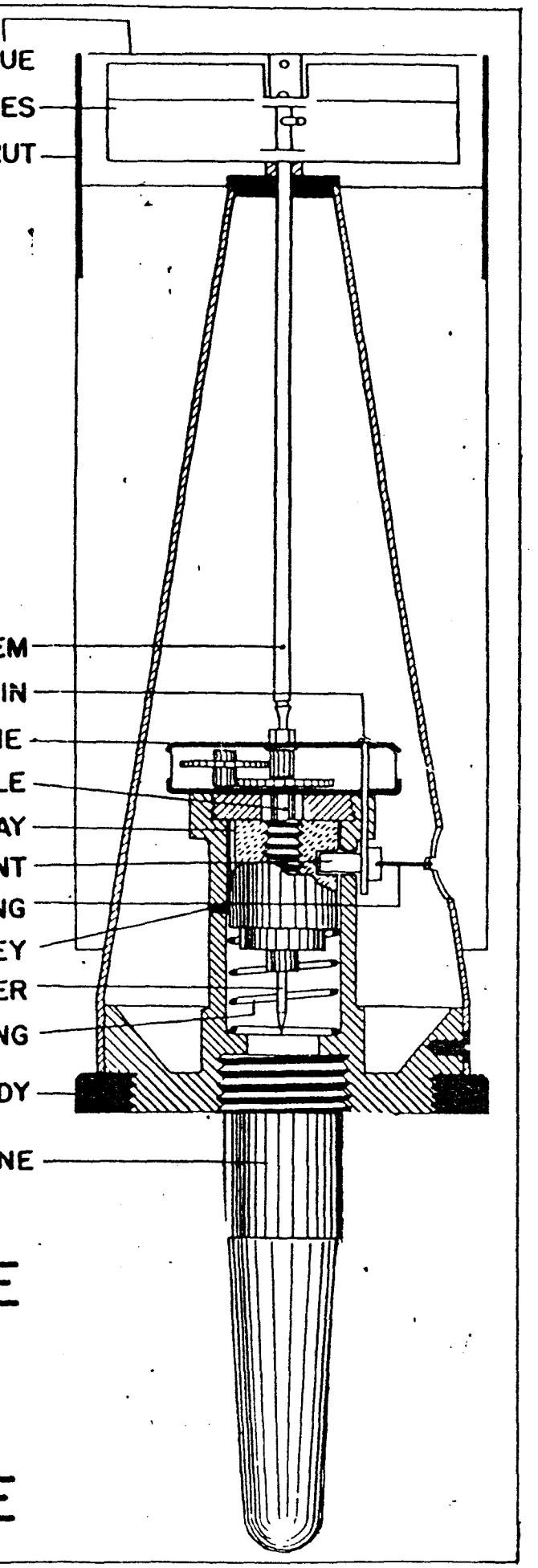




JAPANESE B-5(b) TAIL FUZE

RESTRICTED PUBLICATION DATE: May 1945	JAPANESE B-5(b) Navy Mechanical Impact Tail Fuze
BOMBS USED IN: 1 Kg. Anti-Aircraft	
MARKINGS	

Data	
COLOR	Aluminum
OVERALL LENGTH	2.3 inches (less booster)
OVERALL WIDTH	1.75 inches
MATERIAL OF CONSTRUCTION	Steel
POSITION & METHOD OF FIXING IN BOMB	Screwed into base of bomb body.
COMPONENTS OF EXPLOSIVE TRAIN	Gaine similar to Navy Type I with primer, detonator, booster.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	Instantaneous
THREADS	
DESCRIPTION	Lower fuze body which houses striker is externally threaded at the base to screw into bomb body and externally threaded at the top for the upper body cap. The upper body cap screws onto the lower body section and is threaded to receive arming spindle which screws into the inertia weight and holds striker in position. There are three grooves in the inertia weight, two of which act as air vents and one as a guide. In the unarmed position, the striker is held in the safe position by safety detent or jump out pin and the arming spindle. An arming wire passes through vanes preventing rotation and extends down to lock the safety detent against the pressure of the safety detent spring. A thin metal disc attached to arming wire and lying just over the vanes inside the circular tail brace, acts as a drogue to withdraw the arming wire when bomb falls. When armed, the striker is held away from primer by creep spring.
OPERATION	When bomb is released from container, the pressure of air against drogue forces it from bomb and withdraws the arming wire. The safety detent spring then ejects the safety detent from side of fuze. The vanes rotate and unscrew the threaded arming spindle, freeing the inertia weight. (This spindle is threaded with a left hand thread). On impact, inertia weight carries forward and drives the striker into the primer.
REMARKS	Refer drawing 1 Kg. bomb.


UE
ES
UT
EM
IN
IE
LE
AY
NT
NG
EY
ER
NG
DY
NE

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:
Navy 1 Kg. A/P Bomb

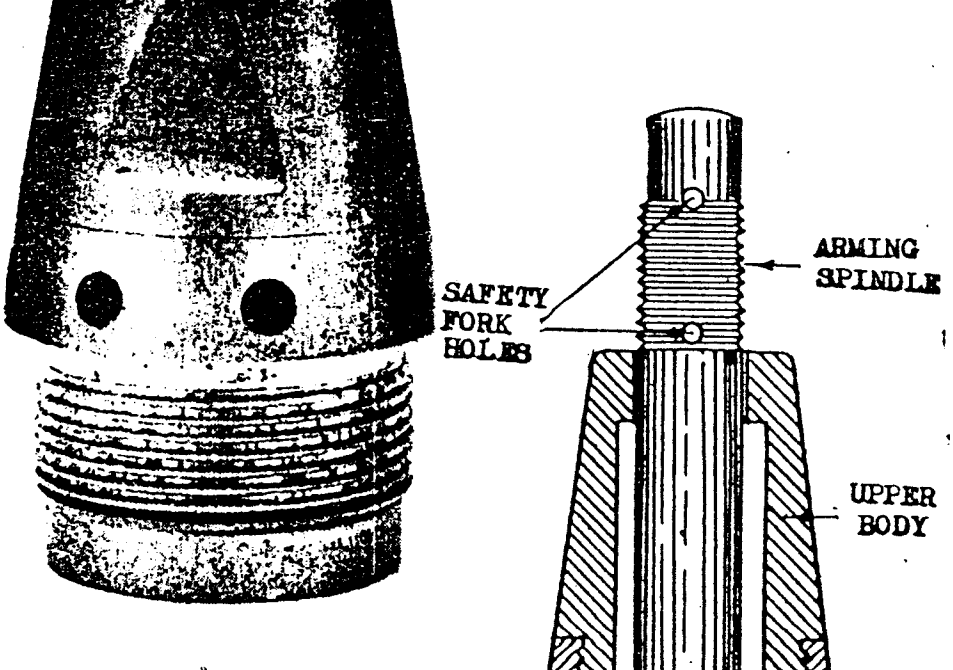
MARKINGS:
None

JAPANESE

B-5(c)

Navy Mechanical Impact Tail Fuze

Data	
COLOR	Aluminum
OVERALL LENGTH	2-1/4 in. (less gaine and arming stem)
OVERALL WIDTH	2-1/8 in.
MATERIAL OF CONSTRUCTION	Aluminum alloy
POSITION & METHOD OF FIXING IN BOMB	Screws into base of bomb body
COMPONENTS OF EXPLOSIVE TRAIN	Same gaine as is used with the B-5(b)
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	Instantaneous
DESCRIPTION	The fuze is integral with the tail section, and is very similar to the B-5(b) except for a reduction gear system used to slow down the arming process. The fuze is composed of the following parts: (1) Two small arming vanes held in the safe position by a drogue; (2) an arming stem; (3) gear frame containing the arming stem gear, intermediate gear, pinion gear and arming spindle gear; (4) detent retaining pin; (5) spring-loaded safety detent; (6) arming spindle; (7) heavy inertia striker; (8) weak creep spring; and (9) fuze body.
OPERATION	When the bomb falls free from the container, the drogue retaining the vanes is carried away by the wind, allowing the vanes to rotate. The motion of the vanes is transmitted through the reduction gear system to the spindle which is threaded out of the striker. To prevent rotation of the striker, a key and keyway system is incorporated in the fuze body and striker. As the spindle rises, it also lifts the gear frame to which is secured a pin retaining the safety detent. The safety detent, which fits through the fuze body into the striker and holds it in position, is spring loaded outward, and removal of the safety detent pin permits it to fly out. With the spindle and detent removed, the heavy striker is held up only by a weak creep spring, which it overcomes on impact, initiating the gaine.

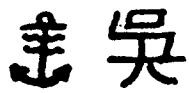

SAFETY
FORK
HOLES
ARMING
SPINDLE
UPPER
BODY

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:

31 Kg. Practice Bomb

MARKINGS

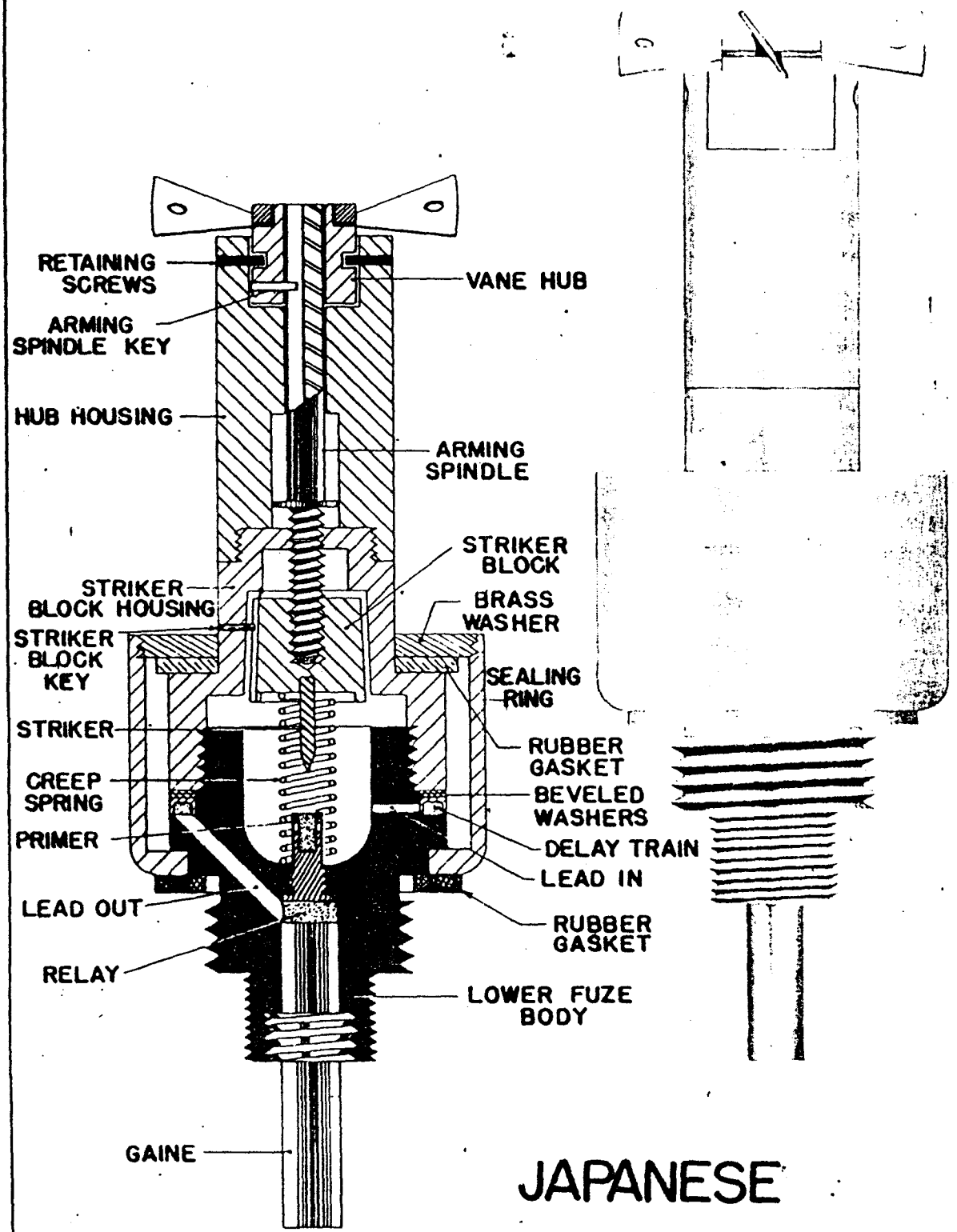


JAPANESE

B-6(a)

Navy Mechanical Impact Tail Fuze

Data	
COLOR	Brass
OVERALL LENGTH	3.6 inches.
OVERALL WIDTH	1.25 inches. Vane width: 2.3 inches.
MATERIAL OF CONSTRUCTION	Brass except steel striker point and creep spring.
POSITION & METHOD OF FIXING IN BOMB	Screwed into tail fuze pocket and tightened with spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Not known.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	
THREADS	1-3/64 in. diameter 20 TPI
DESCRIPTION	The upper portion of the body acts as a guide for the arming spindle. The lower portion of the body contains the light creep spring. The striker point is screwed into the end of the spindle. The lower portion of the fuze has a combination spanner ring and detonator cup screwed to it. Around the striker point, four air vents are drilled. Two vents are also located on the striker collar. These vents allow the striker to move against the primer on impact without any cushion effect caused by the air in the striker channel. The arming vane assembly has eight vanes.
OPERATION	On release from the aircraft, a U-shaped safety fork is withdrawn from the two holes in the arming spindle. The vanes rotate twelve times and fall free, leaving the striker held back by the light creep spring. The arming spindle is prevented from rotating by a small guide pin which fits in a groove in the lower portion of the fuze body. On impact, inertia causes the striker to move against the spring and to pierce the primer.



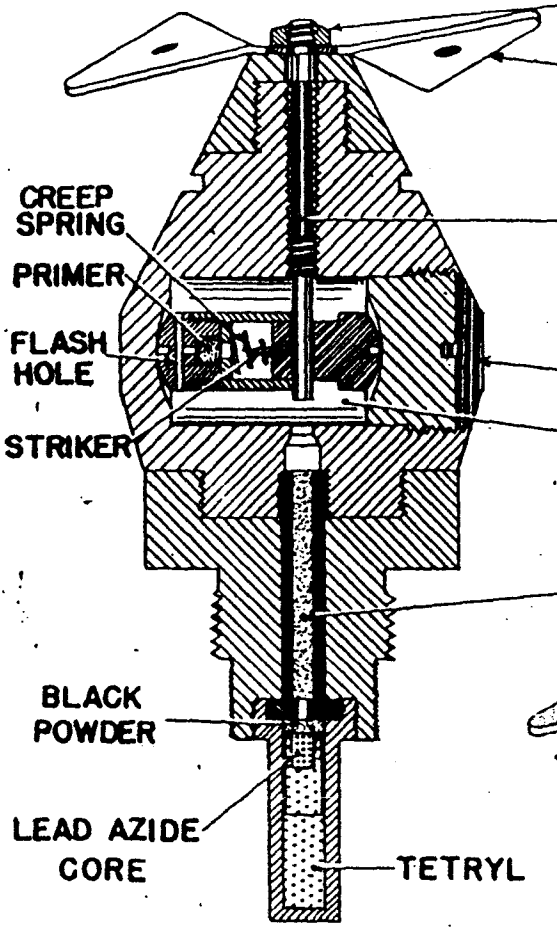
JAPANESE

B-7(a)

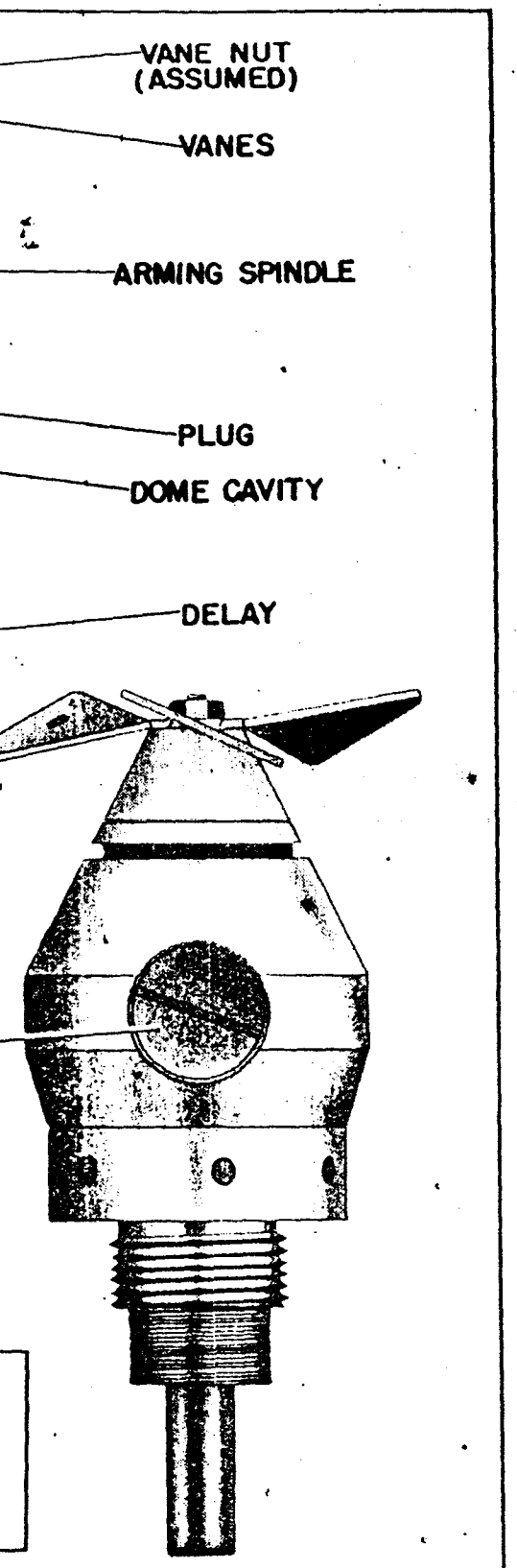
TAIL FUZE

PUBLICATION DATE : May 1945 RESTRICTED	JAPANESE B-7(a) Army Mechanical Impact Tail Fuze
BOMBS USED IN : Type 3 100 Kg. "Skipping Model" Bomb	
MARKINGS:	

Data	
COLOR	Brass, except for black vanes
OVERALL LENGTH	4-3/4 in. (less gaine and booster)
OVERALL WIDTH	2-1/8 in.
MATERIAL OF CONSTRUCTION	Brass, except for steel arming vanes and steel striker point.
POSITION & METHOD OF FIXING IN BOMB	Screwed into tail fuze pocket.
COMPONENTS OF EXPLOSIVE TRAIN	Primer, delay train, gaine and booster. Relay incorporated in gaine.
FUZES LIKELY TO BE FOUND WITH	A-8(a)
DELAY TIMES	3.5 seconds, or an alternative setting of approximately 25 seconds.
THREADS	13 T.P.I., R.H., Diameter 1-5/32 in.
DESCRIPTION	The fuze consists of a vane assembly, hub housing, striker block housing, lower fuze body and sealing ring. The arming vane assembly consists of three black vanes attached to a hub. The hub is retained in a cylindrical housing by two retaining pins which permit the hub to rotate. There is a key on the inside of the hub which fits in a longitudinal keyway in the arming spindle.The hub housing is threaded internally at its lower end to screw onto the striker block housing. The striker block housing has a threaded hole in its center. The arming spindle screws thru this hole and into the striker block. A key on the inside of the housing fits into a longitudinal groove on the block and prevents it from rotating. The striker is separated from the primer by a creep spring. The lower fuze body contains the primer and delay train. The primer is carried in a threaded plug which screws into a hole in the center of the body. The flash lead in from the primer goes thru the body to the delay train. This consists of a ring having a pressed brown powder train in a groove. The ring is a friction fit on the body and fits against a flange on the lower fuze body. A beveled washer fitted between the delay ring and the striker block housing maintains a constant tension on the ring. The delay train burns around to a lead out that goes down diagonally to a relay of black powder on top of the gaine. The sealing ring is a large knurled brass ring. The lower fuze body fits into the ring so that its shoulder bears against a flange on the base of the ring. A rubber gasket on the outside of the ring seals this connection. The ring extends up slightly beyond the shoulder of the striker block housing. A brass washer with a rubber gasket glued to it threads into the top of the ring and screws down so that the gasket bears on the shoulder of the striker housing.
OPERATION	Arming vanes rotate causing the arming spindle to unscrew from the striker block. On impact the striker compresses the creep spring and hits the primer. The flash ignites the delay train which ignites the relay which in turn sets off the gaine.



JAPANESE
B-8(a)
TAIL FUZE


VANE NUT
(ASSUMED)
VANES
ARMING SPINDLE
PLUG
DOME CAVITY
DELAY

PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN :

100 Kg. Skipping Model Bomb

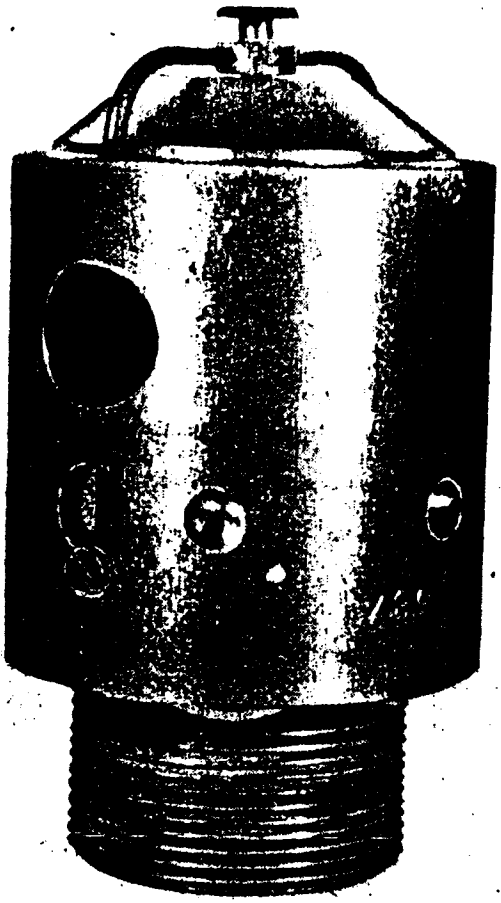
MARKINGS

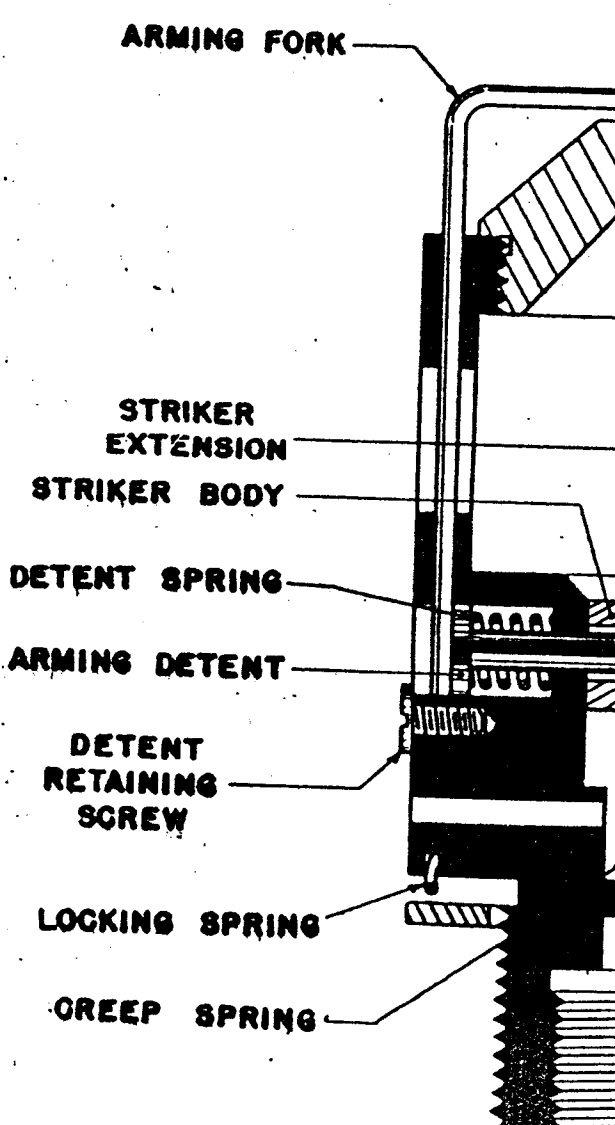
JAPANESE

B-8(a)

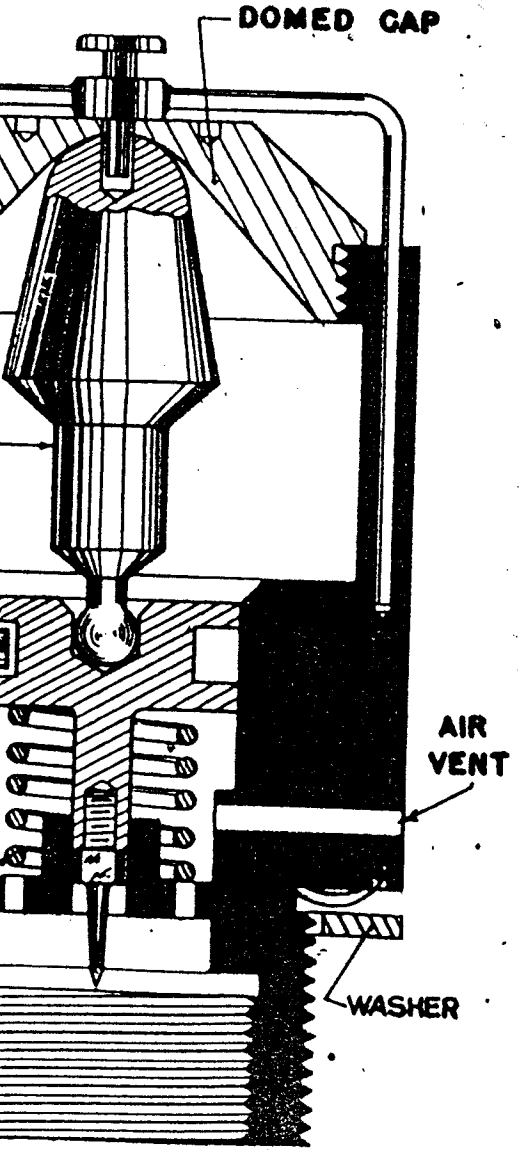
Army All-Ways Action Tail Fuze

Data	
COLOR	Brass except for black vanes.
OVERALL LENGTH	5-1/4 in. (less booster)
OVERALL WIDTH	2-1/4 in.
MATERIAL OF CONSTRUCTION	Brass except for steel vanes and steel striker point.
POSITION & METHOD OF FIXING IN BOMB	Screws into tail cone. Tightened in place with spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Primer, delay train, standard Army gaine and booster.
FUZES LIKELY TO BE FOUND WITH	A-8(a)
DELAY TIMES	5 seconds
THREADS	13 T.P.I., R.H., 1-5/32 in. diameter.
DESCRIPTION	The fuze consists of an upper and lower fuze body. Upper fuze body houses the all-ways action unit, arming spindle and arming vane assembly. The lower fuze body which is threaded internally to receive the upper body houses the lower part of the delay element. It is threaded externally at one point to screw into the fuze pocket and below that to accommodate the booster tube. It is threaded internally at the after end to receive a standard Army gaine. Upper fuze body is pierced centrally by a threaded hole which houses the arming spindle. Three bladed arming vanes fit over the top of the spindle and held there by a vane nut staked in place. Just above the dome cavity is a threaded segment of the arming spindle. The spindle extends down into the cavity. The all-ways action unit is housed in the cavity drilled across the upper fuze body ending concavely in a dome. The open end is closed by a threaded plug with a similar dome on the inside. This cavity is filled by the striker and primer carrier assembly, the outer ends of which are domed. This assembly is similar to the all-ways action unit utilized in the A-7(a). The assembly fits across the fuze and the arming spindle fits down thru a hole in the striker holding the primer and striker apart. A creep spring also holds the two apart. A flash hole in the bottom of the cavity leads to delay train which is threaded into the base of the upper fuze body. This in turn leads through the lower fuze body to the gaine.
OPERATION	The safety fork is withdrawn and the vanes rotate causing the arming spindle to rise in the central hole and withdraw from the all-ways action unit. This leaves the striker and primer carrier separated only by the creep spring. On impact at any angle the striker and primer are cammed together by the force of inertia. The flash from the primer passes thru the flash holes, ignites the delay which in turn ignites the relay on top of the gaine.




ARMING FORK
STRIKER EXTENSION
STRIKER BODY
DETENT SPRING
ARMING DETENT
DETENT RETAINING SCREW
LOCKING SPRING
CREEP SPRING

JAPANESE B-9(a) TAIL FUZE



PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:

Japanese Piloted Rocket Bomb

MARKINGS

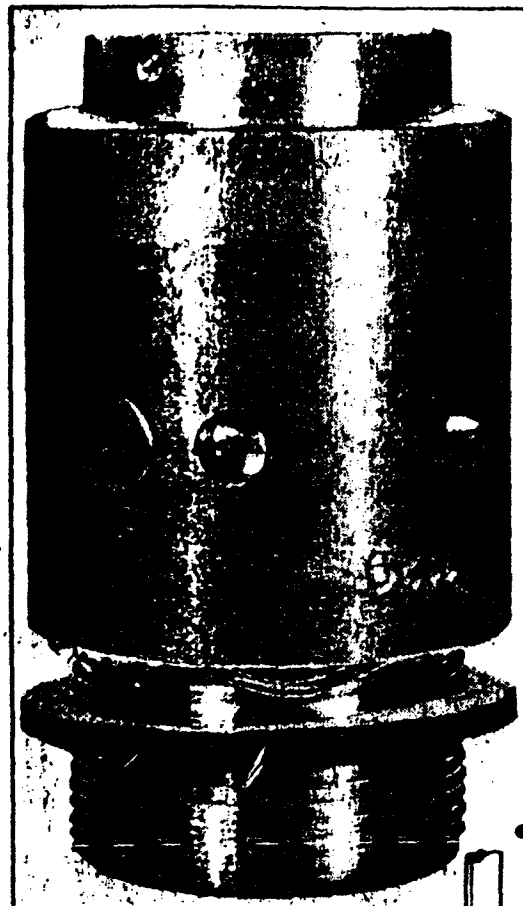
JAPANESE

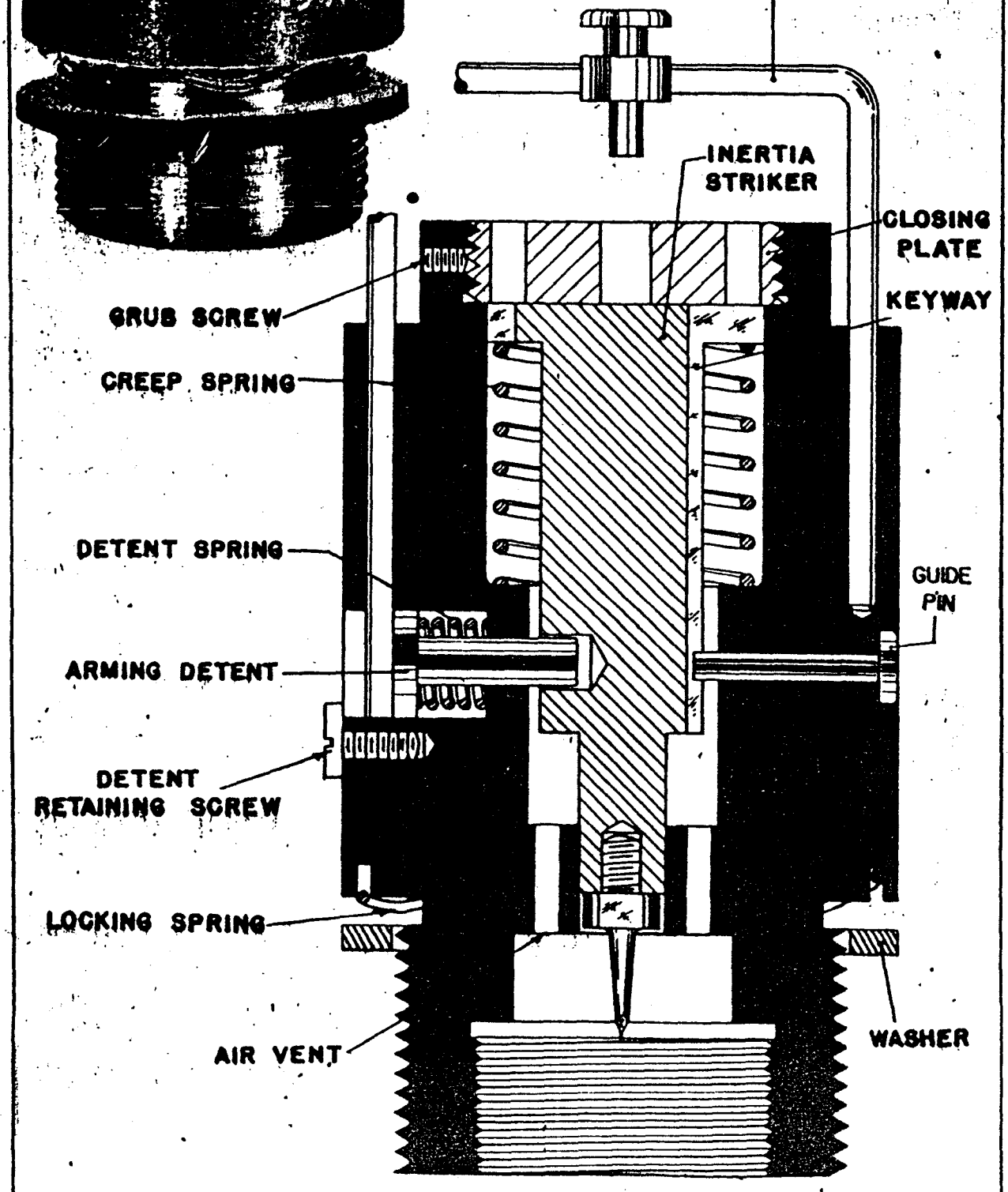
B-9(a)

Navy All-Ways Action Tail Fuze

Data	
COLOR	Brass
OVERALL LENGTH	4-1/2 in.
OVERALL WIDTH	2-3/4 in.
MATERIAL OF CONSTRUCTION	Brass except for an aluminum striker body and a steel striker point and creep spring.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the tail fuze pocket and tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Incorporated in the Navy gaine.
FUZES LIKELY TO BE FOUND WITH	Modification of A-3(d) B-10(a)
DELAY TIMES	Incorporated in the Navy gaine.
THREADS	12 T.P.I., R.H., 1-15/16 in. diameter.
DESCRIPTION	The fuze body has at its upper end a dome-shaped cap which has a curved inner surface. The cap is pierced by a central hole thru which a stud on the arming fork fits to engage a recess in the top of the striker extension. The cap is held in place by a grub screw. Two holes 180° apart are drilled longitudinally in the fuze body to accommodate an arming fork. Two holes are drilled thru the body wall along the axis of one of the longitudinal holes. The upper hole appears to be for inspection purposes. The lower hole contains a spring-loaded arming detent. A screw threads into the body just below this hole and prevents the detent from flying out of the body after it has been released by the arming fork. Two air vents 180° apart pierce the lower portion of the fuze body. A groove in the bottom of the fuze body contains a locking spring which serves to secure the fuze firmly in its pocket. The striker assembly consists of a striker extension, striker body and a creep spring. The striker extension is an egg-shaped brass knob having a cylindrical lower shaft, at the end of which is machined a small ball. The striker body has a wide head which is recessed in its center to take the ball of the striker extension. There is a deep annular groove in the side of the striker body into which is fitted a spring-loaded arming detent held in position by the arming fork. A creep spring holds the striker away from the primer after the detent has been released.
OPERATION	When the pilot of the bomb pulls the handle of the tail fuze arming mechanism, the arming fork is withdrawn far enough to allow the spring-loaded detent to move outward, disengaging the groove in the striker body. The fuze is now armed. The striker is held away from the primer by the creep spring. On direct impact the weight of the striker extension forces the striker down compressing the creep spring and hitting the primer. If the impact is not direct, the striker extension is cammed to the side against the curved dome of the closing cap. This action forces the striker down against the creep spring thereby firing the primer.

JAPANESE B-10(a) TAIL FUZE





PUBLICATION DATE: May 1945 RESTRICTED

BOMBS USED IN:

Japanese Piloted Rocket Bomb

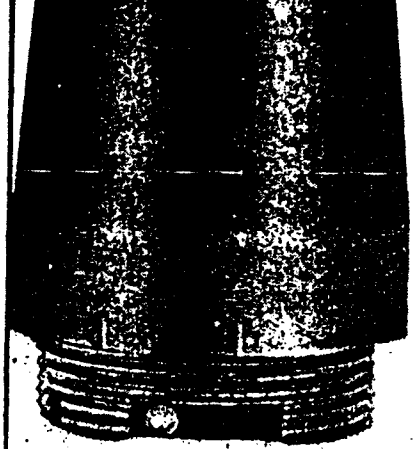
MARKINGS

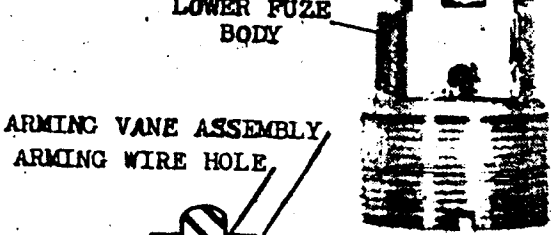
JAPANESE

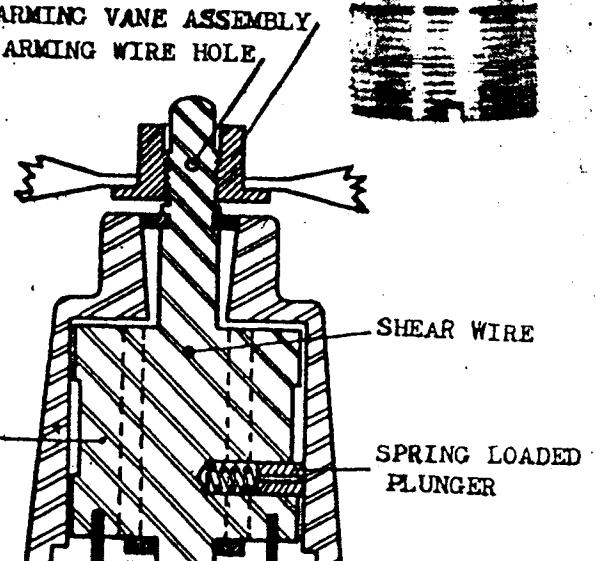
B-10(a)

Navy Impact
Tail Fuze

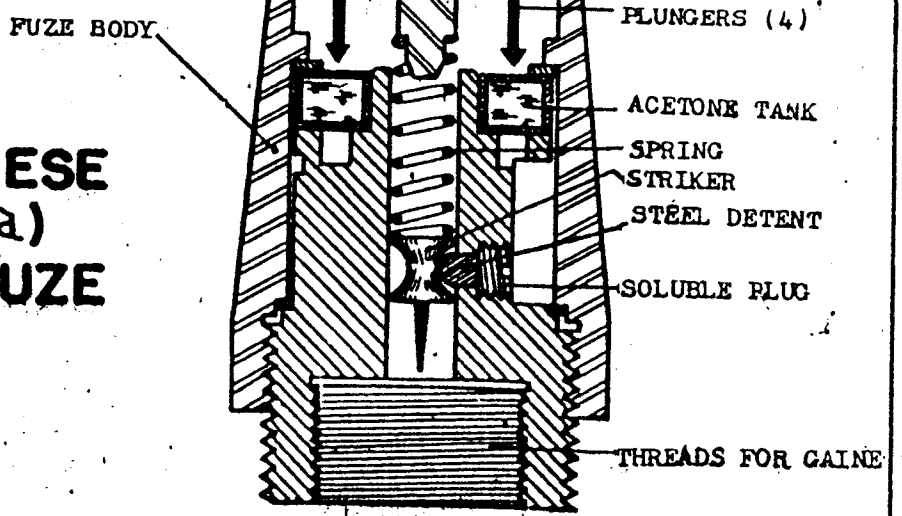
Data	
COLOR	Brass
OVERALL LENGTH	4-3/32 in.
OVERALL WIDTH	2-3/8 in.
MATERIAL OF CONSTRUCTION	Brass except for the steel striker point threaded into the lower end of the striker body.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the tail fuze pocket and tightened with a spanner wrench.
COMPONENTS OF EXPLOSIVE TRAIN	Incorporated in the Navy gaine.
FUZES LIKELY TO BE FOUND WITH	Modification of A-3(d) B-9(a)
DELAY TIMES	Incorporated in the Navy gaine.
THREADS	12 T.P.I., R.H., 1-15/16 in. diameter.
DESCRIPTION	The body is of one piece brass construction. It is threaded at the top to receive a brass closing plate. This plate is pierced by two spanner holes and a central hole. A grub screw holds the closing plate in place. There are six spanner holes in the outer circumference of the fuze body, slightly below the central portion. In the same plane as the spanner holes is a guide pin, staked in place, which extends through the body and engages a keyway in the striker body. 180° removed there is an arming detent. The arming detent is limited in its outward movement by the head of a screw threaded into the fuze body directly below the detent cavity. The body is pierced longitudinally by two holes 180° apart, one of which terminates in the outer end of the detent cavity. A U-shaped arming fork fits in these holes and holds the spring-loaded arming detent inward so that it engages a hole in the striker body. The heavy brass striker body has a wide head which is cut by four vents. There is also a longitudinal keyway which runs the entire length of the striker and accommodates the guide pin. At a 180° interval there is a hole for the arming detent. The striker rests on a creep spring which is in the central channel of the fuze body. The bottom shoulder of the striker channel is pierced by four vents. A groove cut in the bottom of the fuze body contains a steel locking spring which serves to hold the fuze firmly in the fuze pocket.
OPERATION	After the bomb has been released from the plane the fuze is armed by the pilot of the bomb. He operates a tail fuze arming mechanism which withdraws the arming fork far enough to allow the spring-loaded arming detent to move outward, disengaging the hole in the striker body. The fuze is now armed. The striker is held away from the primer by the creep spring. On impact the striker compresses the spring and hits the primer.




LOWER FUZE
BODY


ARMING VANE ASSEMBLY
ARMING WIRE HOLE
SHEAR WIRE
INERTIA WEIGHT
SPRING LOADED
PLUNGER

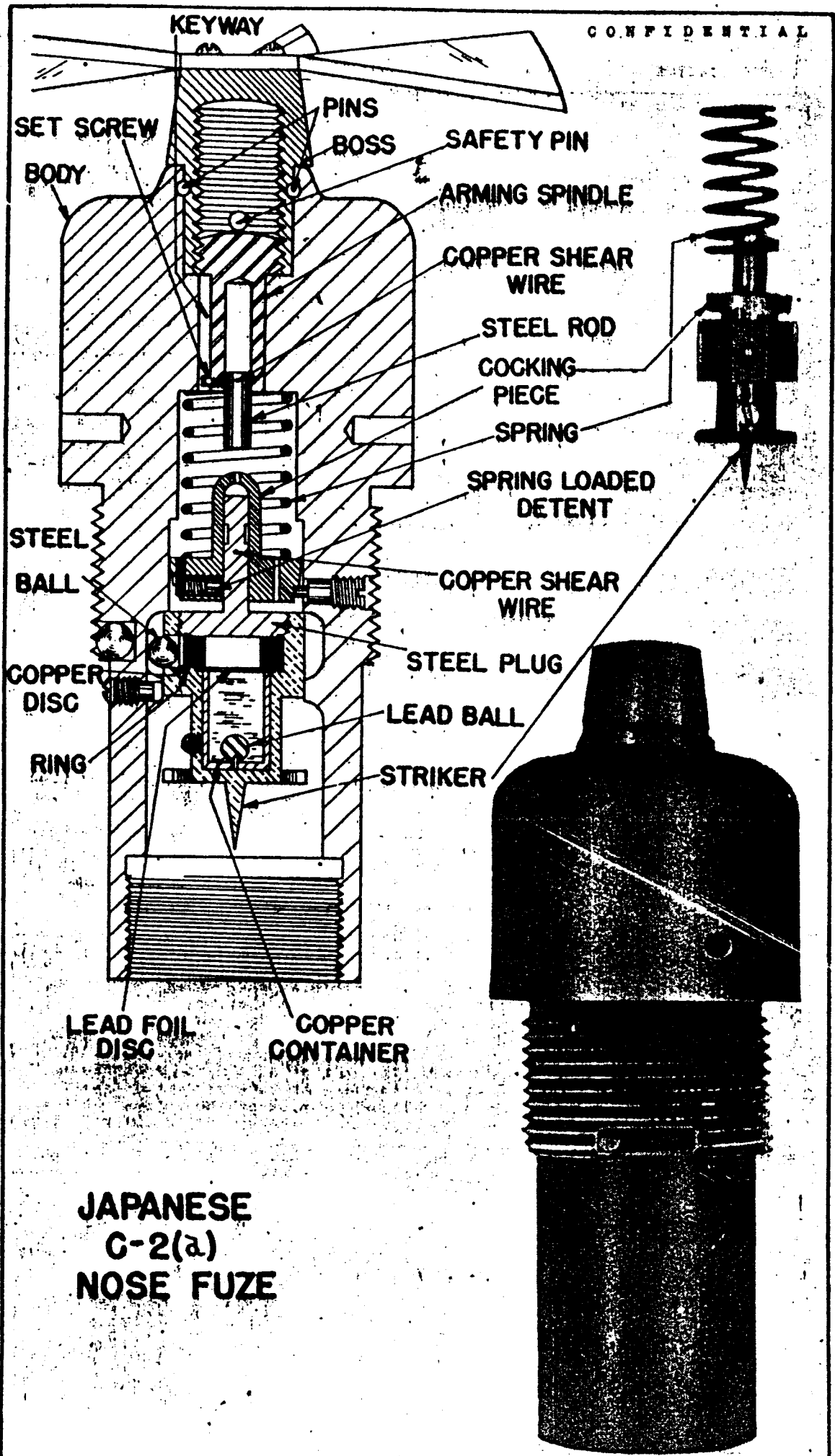
JAPANESE C-1(a) TAIL FUZE



PUBLICATION DATE: July 1944 RESTRICTED	**JAPANESE** **C-1(a)** Navy Chemical Long Delay Tail Fuze
BOMBS USED IN: Navy 250 Kg. G.P.H.E.	
MARKINGS: Three digit number "151" on one fuze "385" on another fuze	

Data	
COLOR	Steel.
OVERALL LENGTH	6.1 inches
OVERALL WIDTH	2.45 inches
MATERIAL OF CONSTRUCTION	Steel throughout except copper chemical tank.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the tail of the bomb. A steel locking ball prevents removal.
COMPONENTS OF EXPLOSIVE TRAIN	Standard Navy gaine.
FUZES LIKELY TO BE FOUND WITH	None. A plug is placed in the nose fuze pocket.
DELAY TIMES	Varies from 1/2 to 125 hours.
THREADS	1-61/64 in. diameter 12 TPI
DESCRIPTION	The outer portion of the body houses the arming vane assembly, the inertia weight and the inner body portion. Rotation of the inertia weight is prevented by a shear wire. At the base of the inertia weight are fastened four piercing pins and a lug to which is fastened a heavy spring which bears against the striker located in the inner body portion. A torus-shaped copper tank is located directly under the piercing pins. Bearing against the concave portion of the [redacted] Striker is a steel detent held in place by a soluble plug.
OPERATION	On release from the plane, the arming wire is withdrawn and the vanes unscrew and fall free, leaving the inertia weight to be held back by the shear wire which is sheared on impact. The inertia weight, moving down after impact, is locked in the down position by the spring loaded plunger. The acetone from tank contacts the soluble plug. At the moment that the inertia weight moved down and the plungers pierced the tank, the spring was compressed; the striker is then under pressure. When the plug dissolves, the striker moves forward under spring pressure and pierces the gaine. A steel ball locks the fuze in the pocket to prevent withdrawal.
REMARKS	Anti-withdrawal. A steel ball in the threads of the fuze locks the fuze when an attempt is made to withdraw it.

Captured documents reveal that there are three Models of this fuze, the variation being in the delay element. Model 1, 3 - 9 hrs., Model 2, 6 - 40 hrs., Model 3, 65 - 118 hrs.



JAPANESE C-2(a) NOSE FUZE

PUBLICATION DATE: July 1944 CONFIDENTIAL	JAPANESE C-2(a) Navy Chemical Long Delay Nose Fuse
BOMBS USED IN: 60 Kg. G.P.H.E.; 60 Kg. Type 96; 250 Kg. G.P.H.E.	
MARKINGS: None	
COLOR	Cadmium plated.
OVERALL LENGTH	5.9 in.
OVERALL WIDTH	2.5 in.
MATERIAL OF CONSTRUCTION	Steel except brass inertia weight.
POSITION & METHOD OF FIXING IN BOMB	The fuze is screwed into the nose of the bomb. A steel locking ball prevents removal.
COMPONENTS OF EXPLOSIVE TRAIN	A standard Japanese Navy gaine is screwed into the base of the fuze.
FUZES LIKELY TO BE FOUND WITH	C-1(a) Navy chemical long delay tail fuze.
DELAY TIMES	Up to 195 hours.
THREADS	1-61/64 in. diameter 12 TPI

DESCRIPTION

The fuze consists of a steel body in which are housed the arming assembly and the delay assembly. The arming assembly, which is housed in the upper end of the body, consists of the arming vanes which are attached to the arming vane boss by three small screws. The arming vane boss is internally threaded at the lower end to receive a short, hollow arming spindle and an arming piece which is held in the base of the spindle by a copper shear wire. A small screw key inserted in the spindle engages in the keyway of the fuze body and prevents the spindle from rotating but permits upward or downward movement. The boss is retained in the fuze body by two pins but these pins permit the boss to rotate. A safety pin engages in the fuze body and the boss. The delay assembly, which is housed toward the lower end of the body, is actuated by a spring after the delay period has expired. Screwed into the top of the striker assembly is a steel plug with a cutaway striker assembly stem on which a brass cocking piece rides. In one side of this cocking piece is a small brass spring-loaded detent; on the opposite side is an assembly screw. The cocking piece and striker assembly stem are held in position by a copper shear wire. Under the steel plug is a soluble cellulose ring outside of which is a copper disc and a steel ball set into a drilled hole. This ball prevents the downward movement of the striker assembly as the ball rests on a shoulder of the fuze body. A lead foil disc is fitted over a copper container which is filled with acetone. A solid lead ball with a small copper stud on its side is placed in the container.

OPERATION

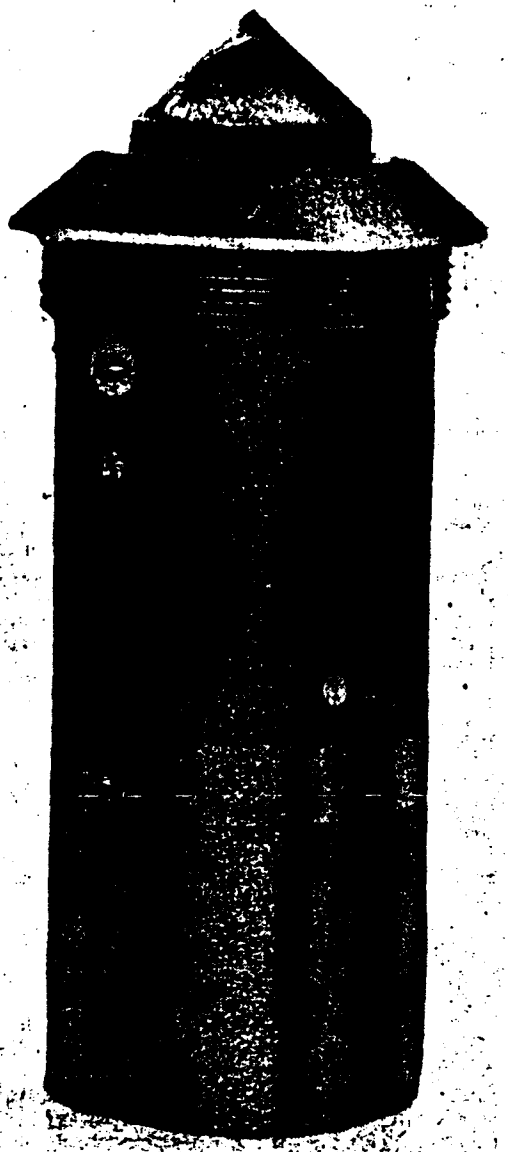
When the bomb is released, safety pin withdrawn, allowing the arming vanes and boss to rotate. This action screws the arming spindle and the arming piece into the arming vane boss, clear of cocking piece. On impact, the cocking piece shears wire and moves forward, compressing striker [redacted] and is locked down by the detent, thus holding the striker unit under compression of spring. Simultaneously, the solid ball in the acetone container fractures the lead foil cover, allowing the solvent to escape into the space above and dissolve the celluloid ring. After a period of time, in which the soluble ring has become softened, the steel ball, due to the pressure of the striker spring, is forced away from the shoulder of the fuze body. The striker assembly, under compression of the spring, is forced downward with the striker detonating the cap.

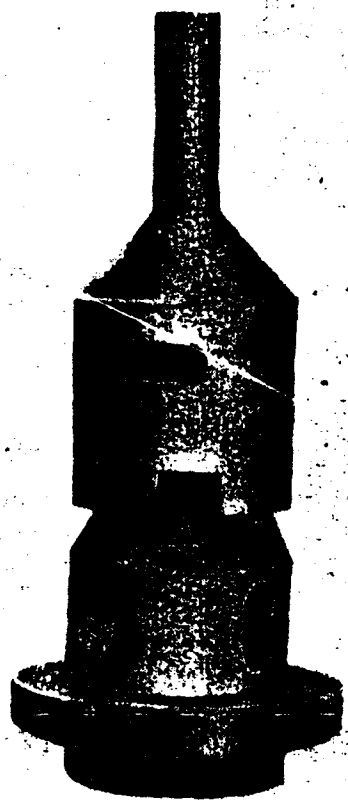
REMARKS

If the vanes fail to rotate, the inertia of the cocking piece may be sufficient to shear the shear wire and to drive the arming piece into the provided recess in the spindle and thus permit the fuze to arm if dropped from sufficient altitude. Thus the fuze may be armed despite the presence of the safety pin.

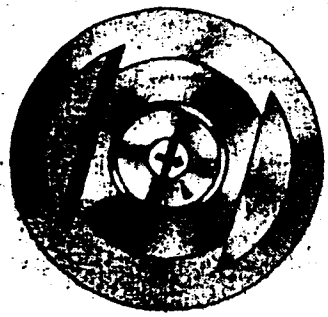
ANTI-WITHDRAWAL

A steel ball in the threads of the fuze locks the fuze when an attempt is made to withdraw it.



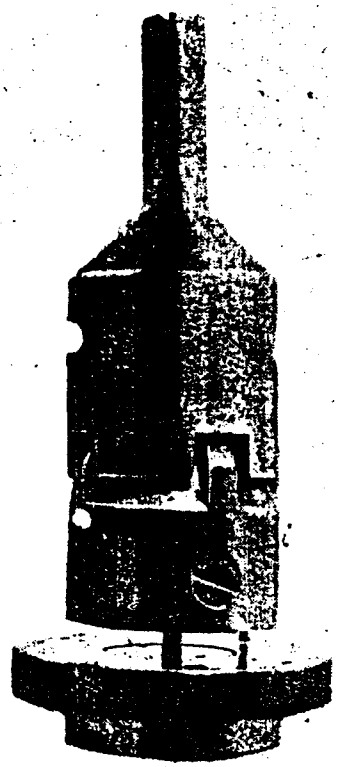


STRIKER SPINDLE
INERTIA WEIGHT ASSEMBLY
UNARMED



TOP VIEW WITHOUT NOSE CAP

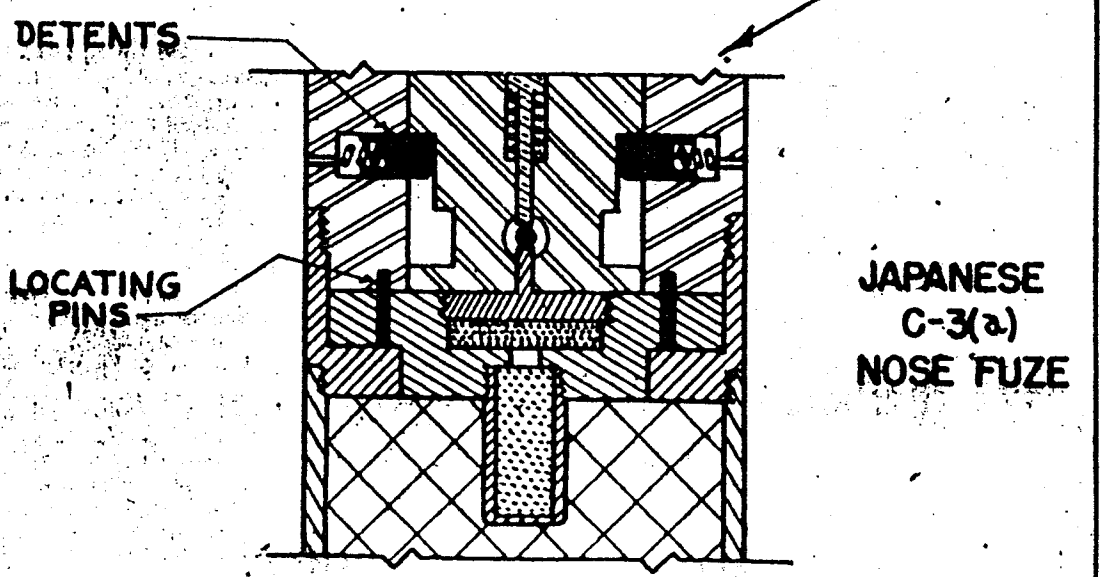
JAPANESE
C-3 (a)
NOSE FUZE

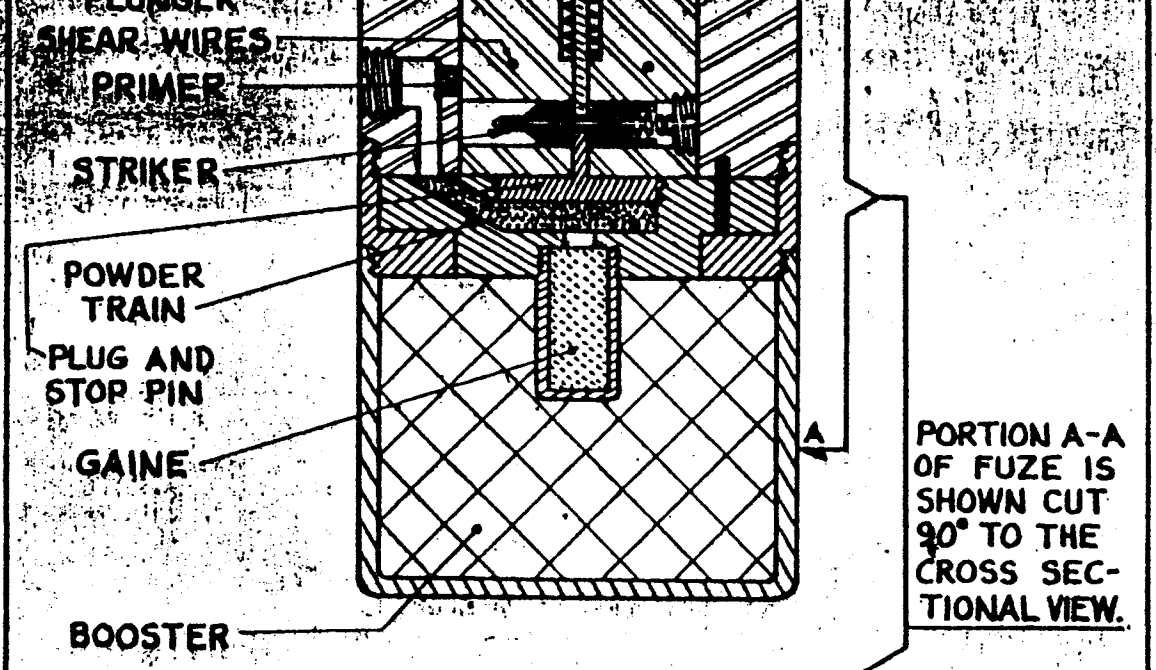


STRIKER SPINDLE
INERTIA WEIGHT ASSEMBLY
ARMED

CONFIDENTIAL PUBLICATION DATE : July 1944	JAPANESE C-3(a)
BOMBS USED IN 50 Kg. & 100 Kg. G. P. H. E.	
MARKINGS 東☆4七十昭 TOKYO - April 1942.	Army Chemical Long Delay Fuze

Data	
COLOR	Unpainted steel.
OVERALL LENGTH	7.78 in. (visible length 1.54 in.)
OVERALL WIDTH	3.5 in.
MATERIAL OF CONSTRUCTION	Steel body, brass inside.
POSITION & METHOD OF FIXING IN BOMB	Screwed into modified nose of 50 Kg. G.P.H.E. army bomb. (Right hand thread). Anti-withdrawal device is fitted to prevent removal.
COMPONENTS OF EXPLOSIVE TRAIN	Primer; Powder train relay; gaine and booster.
FUZES LIKELY TO BE FOUND WITH	None. (Plastic plug in tail fuze pocket).
DELAY TIMES	Two hours to twenty-four hours. (May be shorter or longer).
THREADS	2-31/32 in. diameter 12 TPI
DESCRIPTION	The fuze consists of the fuze body, a nose cap which will not usually be found on a UXB, and a collar which joins the booster to the body. An anti-withdrawal detent prevents the fuze from being unscrewed by hand. An arming spindle is hollowed out to house a copper tank filled with acetone. The arming spindle is held in place by two spring-loaded plungers. A screwdriver slot in the top of the spindle allows it to be turned from the safe (+) position to the armed position (—) marked in red meaning "firing point". The rotation of the spindle is regulated by the length of the grooves into which the spring-loaded plungers are fitted. When in the armed position, the four cut-away segments of the spindle are in line with the cut-out portions of the inertia weight, thus allowing the latter to move up on impact. The inertia weight is held by two shear wires which are sheared on impact. In the section B-B, the bottom of the inertia weight is shown, rotated through 90 degrees. Two spring-loaded plungers hold the inertia weight as shown in the position before impact. On impact the inertia weight moves up toward the top of the fuze, and is locked in this position by plungers. This insures that the firing pin is in line with the primer. When the inertia weight moves up to the armed position, the safety detent remains behind, leaving the firing pin held only by the striker-release pin bearing against the soluble plug. When this plug dissolves, the detent moves up, freeing the striker and allowing it to be pushed into the detonator by the spring behind the striker. A rubber sealing plug keeps the solvent from running throughout the fuze after the acetone tank is pierced.
OPERATION	Nose cap is removed. The arming spindle is turned to the firing point (—) as shown in the view of the fuze. This turns the spindle so that the inertia weight is free to move down on impact. The spindle is locked in position by spring detents. The nose cap may be replaced. On impact, the inertia weight shears the shear wires and moves down. The striker is lined up with the primer and is moved away from the stop pin. The acetone tank is pierced and the inertia weight is locked down by spring

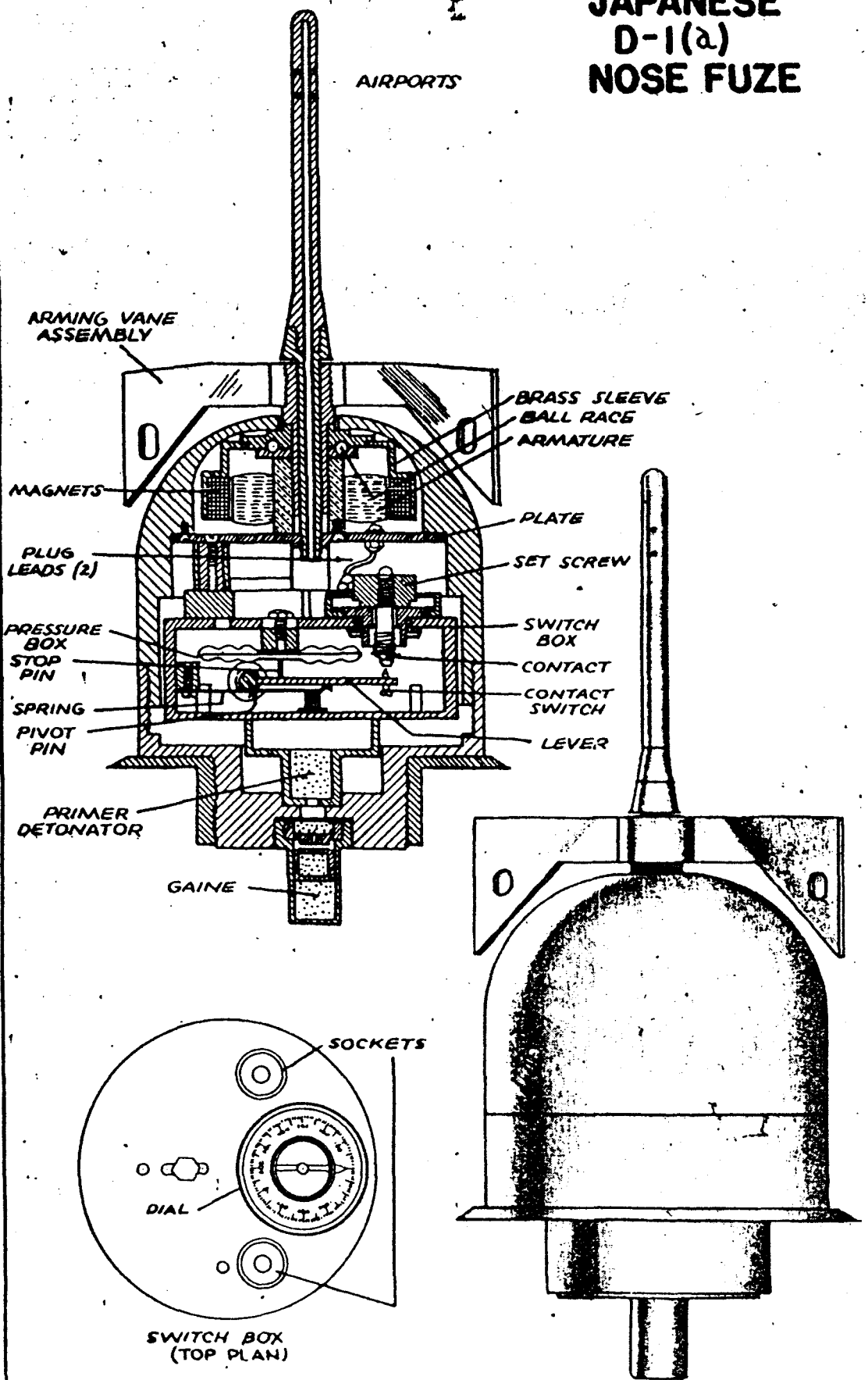

DETENTS
LOCATING PINS
JAPANESE C-3(a) NOSE FUZE
PORTION A-A


SHEAR WIRES
PRIMER
STRIKER
POWDER TRAIN
PLUG AND STOP PIN
GAINE
BOOSTER
A
PORTION A-A OF FUZE IS SHOWN CUT 90° TO THE CROSS SECTIONAL VIEW.

JAPANESE C-3(a) NOSE FUZE - continued.

OPERATION (cont'd)	detents. (See portion A-A). After the acetone has softened the soluble plug, the striker release pin moves out under spring action thus releasing the striker which fires the primer.
REMARKS	a) Once the arming spindle is turned through 45 degrees to the firing point, it cannot be turned back to safe. The spring-loaded plungers prevent this. Also, after impact, the inertia weight has moved on to the spindle and will prevent rotation. b) If the cap is found on a UXB, the fuze may have been armed and the cap may have been replaced. c) The anti-withdrawal will usually prevent the fuze from being removed from the bomb. If the fuze is removed, the booster and gaine may be set off if the fuze operates later. Therefore, unscrew the booster and gaine immediately after withdrawing the fuze. d) This fuze may be fitted in the 100 Kg. G.P.H.E. Army bomb and possibly the 250 Kg. G.P.H.E. Army bomb. (e) Documents indicate that there is an A, B, C, D series (first four calendar signs) signifying increasing delays. The length of the delays is not known.

JAPANESE D-1(a) NOSE FUZE



CONFIDENTIAL

JAPANESE

D-1(a)

PUBLICATION DATE: July 1944

BOMBS USED IN:

Pamphlet Container Bomb (50 Kg.)

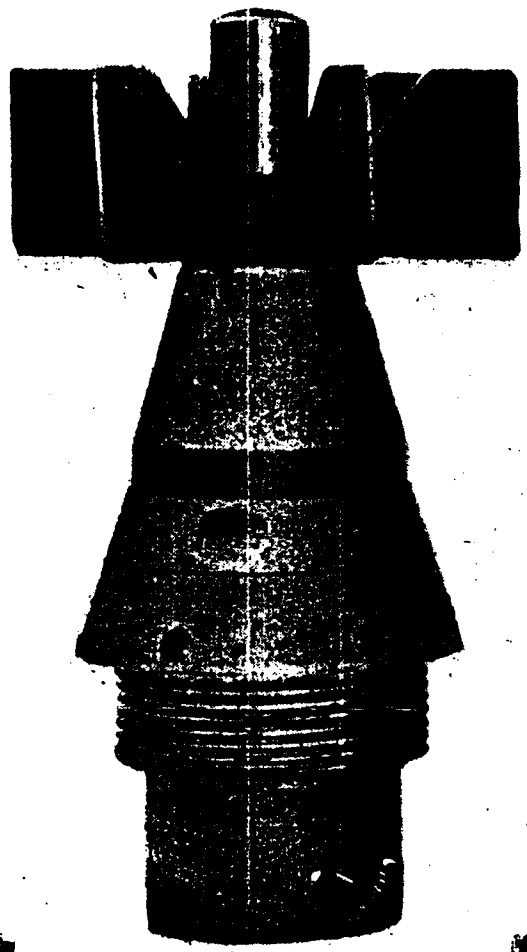
MARKINGS:

Three digit number on seller

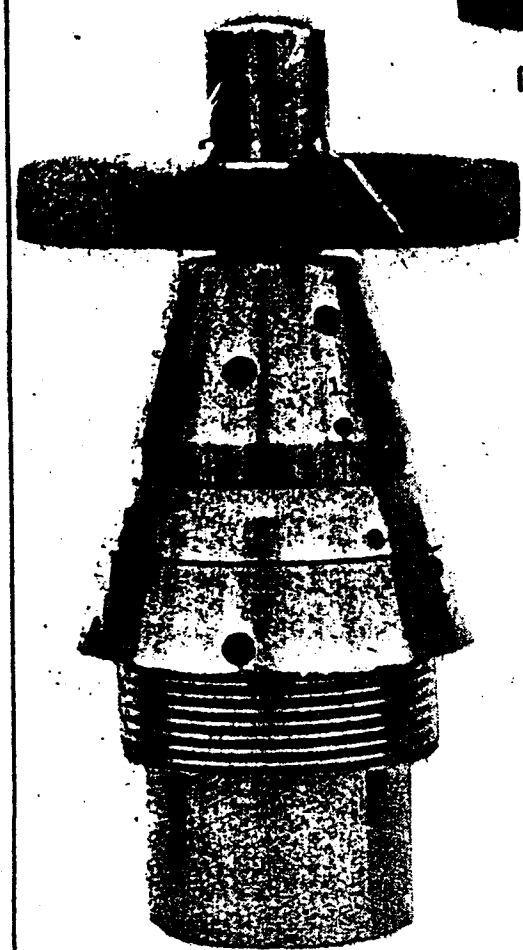
(i.e. "182")

Data	
COLOR	Lamp Black
OVERALL LENGTH	7.4 in.
OVERALL WIDTH	3.3 in. (Vanes); 3.05 in. (Body)
MATERIAL OF CONSTRUCTION	Aluminum body, brass vanes
POSITION & METHOD OF FIXING IN BOMB	Nose
COMPONENTS OF EXPLOSIVE TRAIN	The detonator ignites the gaine which in turn ignites the gunpowder bursting charge.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	None
DESCRIPTION	The three essential parts of this fuze are the generator, circuit, and pressure box (aneroid). The generator consists of an armature secured to the closing plate and four quarter-section magnets encased within a brass sleeve which rides on a ball race seated on the armature and is threaded externally to take the vanes. The vanes do not come off but are threaded on securely, and, in rotation, turn the magnets about the armature, generating current. The circuit consists of two plug leads which conduct the current through the sockets into the switch box, one lead passing the current to the adjustable contact, the other to the contact switch which is on the end of a lever pivoting about a pin and being forced toward the adjustable contact by the leaf spring. A stop pin is soldered onto the pressure box and holds the contact switch on the lever away from the adjustable contact. By rotating the setting screw the adjustable contact may be moved toward or away from contact switch. (See REMARKS). 12 small air ports permit air to enter and pass down the hollow spindle into the fuze.
OPERATION	On release an arming wire is withdrawn from the vanes which then rotate, causing the magnets to turn about the armature, inducing current. As the bomb falls the atmospheric pressure in the switch box increases and the width of the pressure box is slightly decreased. The stop pin recedes slightly and the lever and contact switch move inward toward the adjustable contact under the influence of the spring. After the bomb has fallen a given distance, according to the setting of the adjustable contact, the contact switch moves in and completes the circuit, the current flowing directly through the detonator, which fires the gaine. A gunpowder bursting charge splits the casesnd scatters the pamphlets or propaganda leaflets.
REMARKS	The mode of operation of the dial is not apparent. The scale itself is fitted into a housing, the sides of which are knurled. The adjustable contact is not affected by rotation of the dial. It may be that the screw is turned to give the required adjustment, but this is not certain, and it is suspected that some part of this portion of the fuze may have been missing. Two modifications of the aluminum fuze have been found - one in which the aluminum housing is 3-7/8", the other 4-3/8"; this being the only apparent difference. In addition, this same fuze has been found with a bakelite body instead of aluminum, but is otherwise the same. The air pressure box may have pervious portions, allowing slow leakage of air.

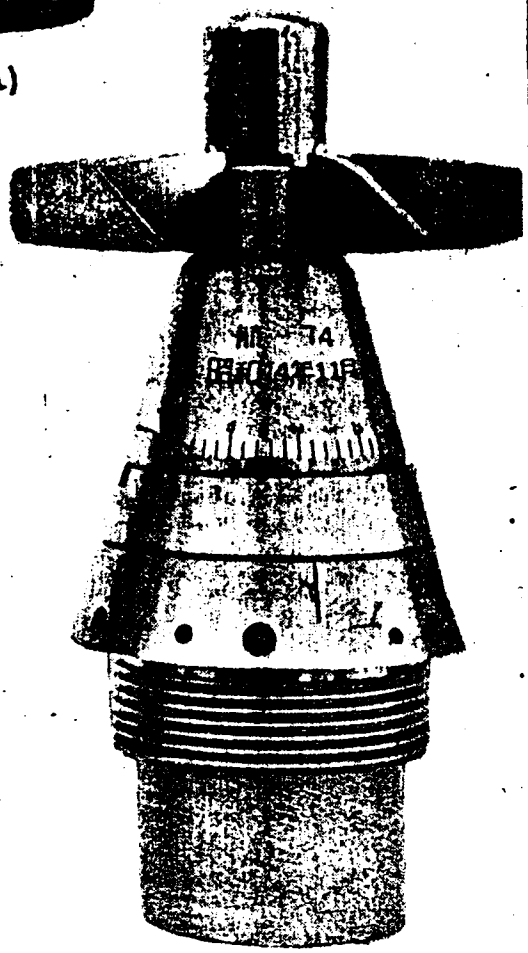
JAPANESE D-2 TAIL FUZES



D-2 (a)



D-2 (b)



D-2 (c)

RESTRICTED

PUBLICATION DATE: July 1944

JAPANESE

D-2(a) D-2(b) D-2(c)

Navy Clockwork Delay Aerial Burst, Tail Fuzes

BOMBS USED IN :

D-2(a)- 250 Kg.(possibly 32 Kg.) Incendiary.
D-2(b)- 32 Kg.(possibly 250 Kg.) Incendiary.
D-2(c)- 32 Kg. (possibly 250 Kg.) Incendiary.

MARKINGS

舟凡言式104 - D-2(a)
令 ㊥ - D-2(b)
昭和14年11月 - D-2(c)

Data	D-2(a)	D-2(b)	D-2(c)
COLOR	Brass	Cadmium Plated	Cadmium plated
OVERALL LENGTH	5.75 in.	5.75 in.	5.75 in.
OVERALL WIDTH	2.44 in.	2.5 in.	2.5 in.
MATERIAL OF CONSTRUCTION	Brass except for a few internal parts of steel.		
POSITION & METHOD OF FIXING IN BOMB	Screwed into adapter ring at apex of tail cone.		
COMPONENTS OF EXPLOSIVE TRAIN	A primer detonator is fitted in the fuze. The flash from it sets off a Gaine which has a relay in place of a cap. The relay fires the detonator.		
FUZES LIKELY TO BE FOUND WITH	Probably A-3(a)		
DELAY TIMES	0 to 50 sec.	5 to 20 sec.	0 to 20 sec.
THREADS	1-15/16 in. diam. 12 TPI	1-15/16 in. diam. 12 TPI	1-15/16 in. diam. 12 TPI

DESCRIPTION

These fuzes are all similar in design, construction and operation. The clockworks in all three fuzes is almost exactly identical with the clock in a Japanese Artillery Projectile and with the fuze in a German Artillery Projectile for the 88 mm gun. All of the fuzes require a rotation of 1000 R.P.M. before they can function.

The parts of the fuze can be broken down into five principal categories according to their function: (A) The Body, (B) The Arming Mechanism, (C) The Timing Mechanism, (D) The Firing Mechanism, and (E) The Safety Features.

(A) The Body consists of an upper part and a lower part held together by a retaining ring which fits over the upper body and threads into the lower body. The upper body has a lip on its lower edge which is held under the retaining ring, permitting rotation of the upper body for setting the time. An adapter fits into the lower body, secured by two screws.

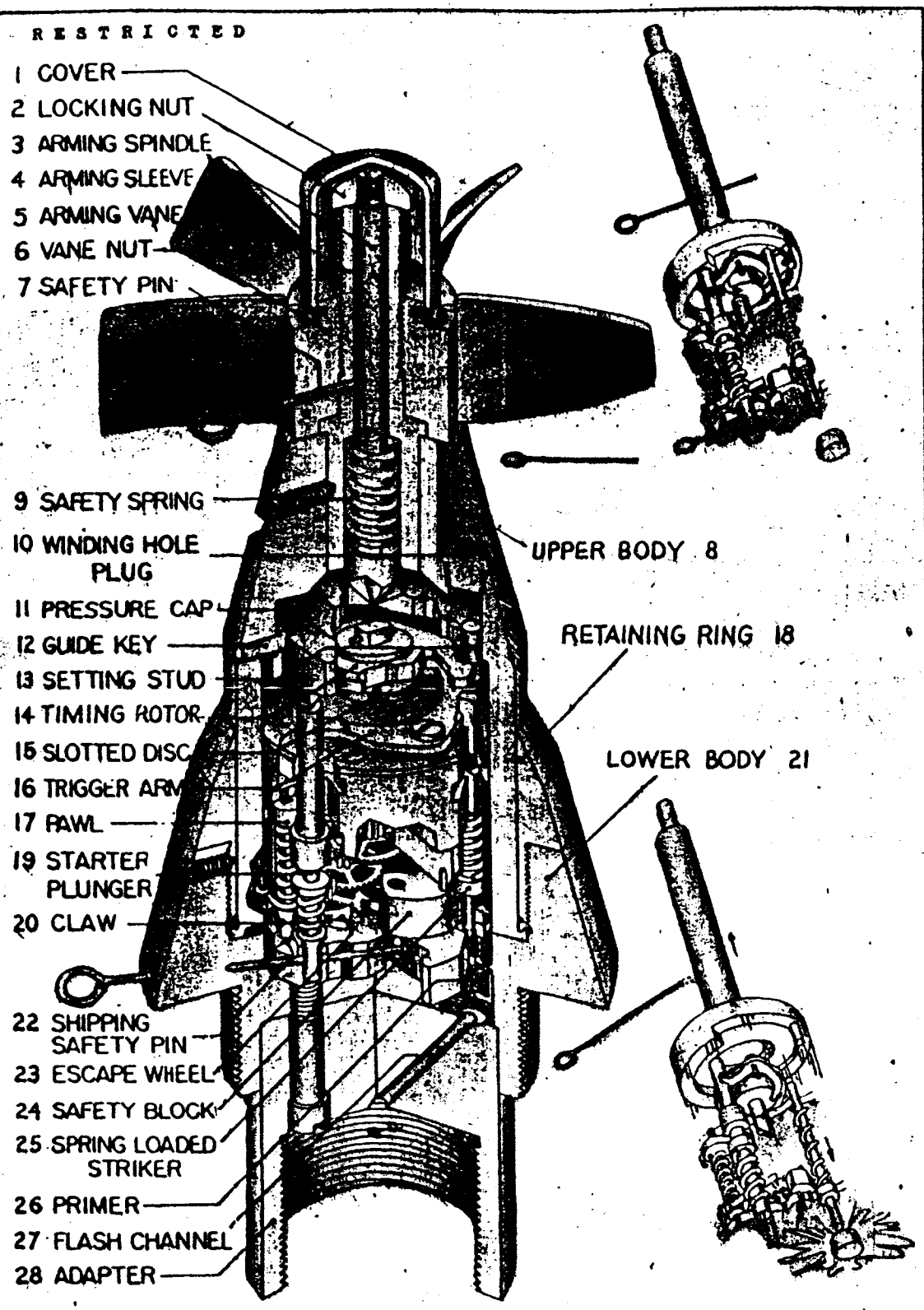
(B) The Arming Mechanism consists of six vanes press fitted into the vane nut and an arming sleeve externally threaded to take the vane nut. The arming sleeve houses the arming spindle which is secured at the base to the pressure cap. The top end of the arming spindle is externally threaded (left-handed) to take the locking nut. A cover is secured to the vane nut with three grub screws.

(C) The Timing Mechanism consists of a spring-driven clockwork which turns a timing rotor and slotted disc at a predetermined rate. The pressure cap is keyed to the upper body and has a setting stud which engages the notch in the timing rotor. The parts of the timing mechanism which start the clockwork are the spring-loaded starter plunger, the spring-loaded pawl, the claw, and the escape wheel.

(D) The Firing Mechanism consists of the spring-loaded striker which has a beveled shoulder that bears against a beveled edge on the trigger arm.

(E) The Five Safety Features are: safety pin; safety spring; safety block which overcomes the pressure of its spring (not shown in the drawing) and swings out from under the striker by centrifugal force; shipping safety pin which both locks the starter plunger and prevents the safety block from swinging out during shipping;

RESTRICTED

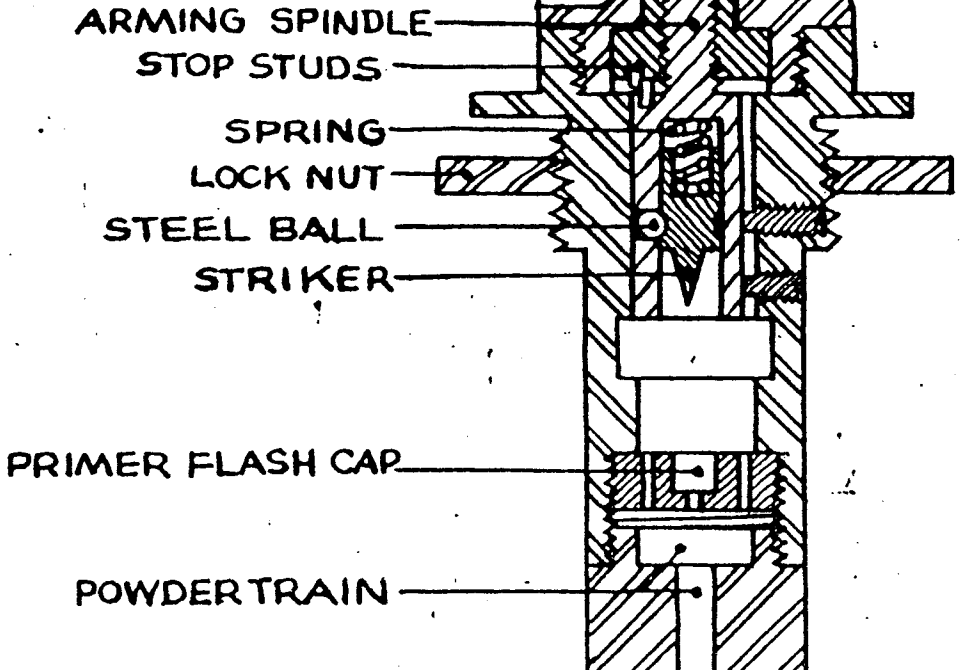


D-2(a)

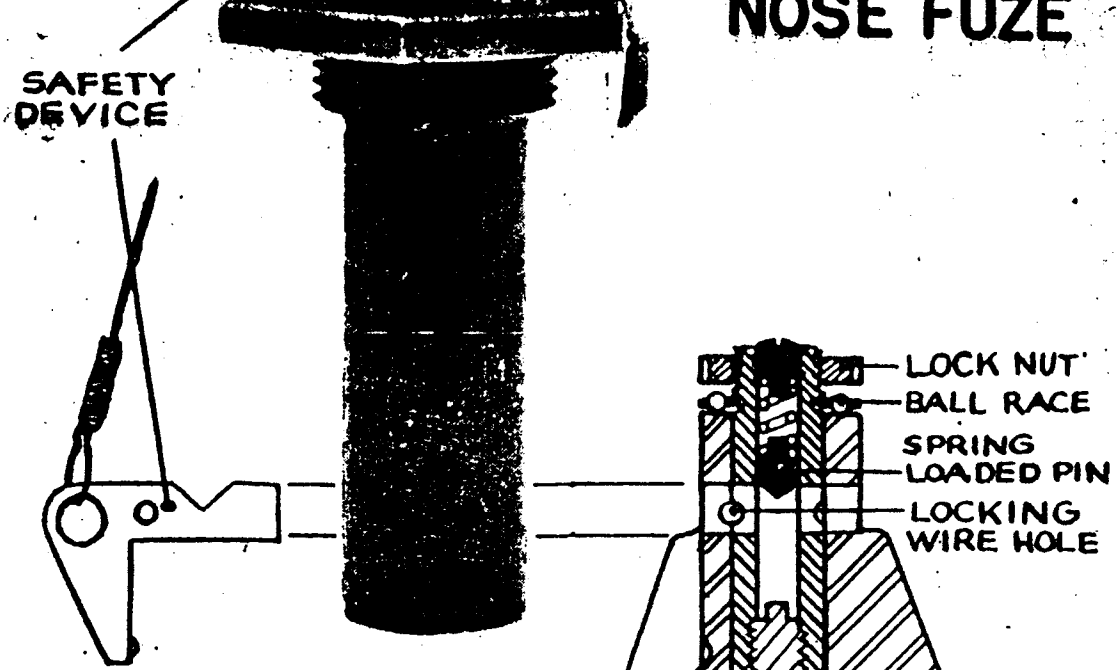
JAPANESE CLOCKWORK DELAY AERIAL BURST TAIL FUZE

JAPANESE D-2(a), D-2(b), and D-2(c) FUZES - continued.

DESCRIPTION (cont'd)	and the locking of the trigger arm by the starter plunger until it rises during flight and presents a notch through which the end of the trigger arm can pass.
OPERATION	The fuze is set by rotating the upper body, which is calibrated up to 50 seconds, and matching the desired setting with a line on the retaining ring. The setting stud in the pressure cap - which is keyed to the upper body - is thus rotated, turning the timing rotor - in which it is engaged - and the slotted disc so that the slot of the disc is positioned with respect to the trigger arm. At the expiration of the set time, after the bomb has been dropped, the disc will have rotated so that the slot will be opposite the trigger arm. Shipping safety pin is pulled when bomb is loaded in plane. On release safety pin is pulled, vanes and vane nut rotate up. Initial impact of the vane nut against the locking nut, plus the continued rotation of the vanes and vane nut, lifts the pressure cap, overcoming the resistance of the safety spring and freeing the setting stud from the timing rotor. As the pressure cap is lifted, the spring-loaded starter plunger rises until the spring-loaded pawl slips into the groove in the plunger. This action of the pawl rotates the rod to which it and the claw are keyed, freeing the claw from the escape wheel and starting the clockwork. The clockwork turns the slotted disc so that the slot is rotated toward the trigger arm. The pawl locks the starter plunger up so that the notch in the plunger is opposite the end of the trigger arm. The starter plunger no longer obstructs the end of the trigger arm, since it can now pass through the notch when the trigger is forced into the slot of the disc. Angled fins on the bomb cause rotation which, when 1000 R.P.M. is attained, is sufficient to swing the safety block out from under the spring-loaded striker by centrifugal force. The spring-loaded striker is now held by the edge of the trigger arm only. After the set time has elapsed in slot of the disc comes opposite the trigger, which is forced into the slot by the pressure of the beveled shoulder of the striker on the beveled edge of the trigger arm. The spring-loaded striker impinges on the primer, sending a flash through the flash channel which sets off the gaine
REMARKS	The time of delay is set before leaving the ground, and the bomb must be dropped from a specific height above the target. The bomb usually explodes about 100 to 175 feet above ground. The fuzes D-2(b) and D-2(c) were not recovered from UXB's but were found in ammunition dumps. The D-2(c) is the earliest model of the clockwork fuzes - as indicated by the early date of manufacture and the lack of an external means of winding the clock.

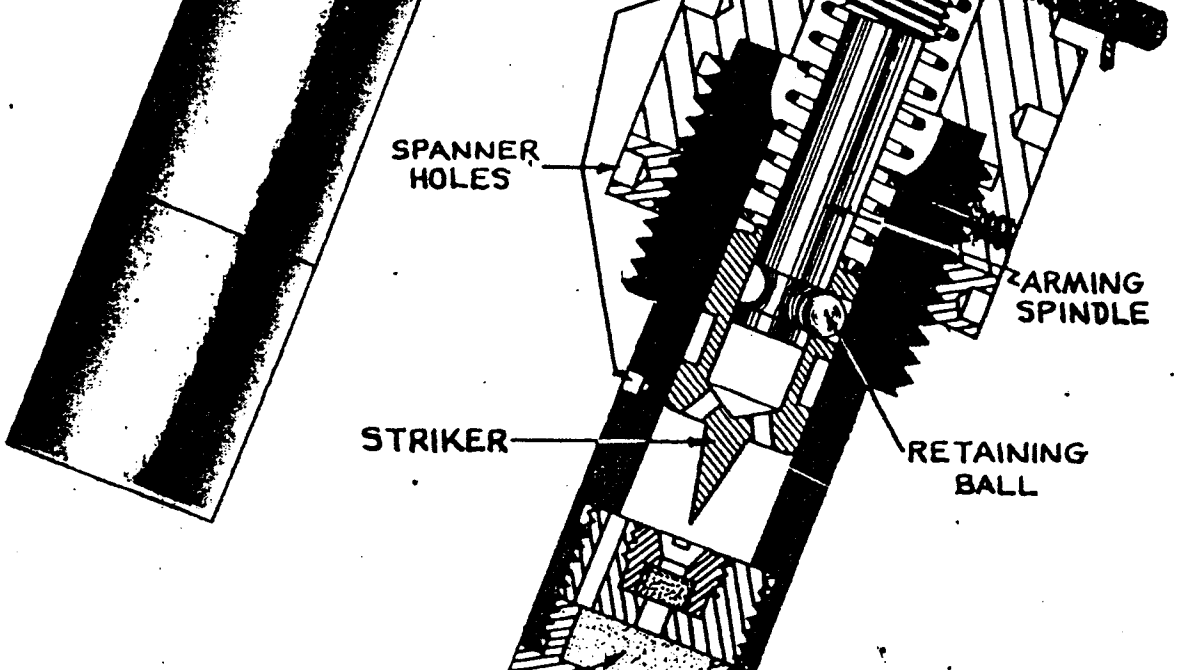

ARMING SPINDLE
STOP STUDS
SPRING
LOCK NUT
STEEL BALL
STRIKER
PRIMER FLASH CAP
POWDER TRAIN

NOSE FUZE


SAFETY DEVICE
LOCK NUT
BALL RACE
SPRING
LOADED PIN
LOCKING WIRE HOLE

PUBLICATION DATE: July 1944 CONFIDENTIAL	JAPANESE D-3(a) Navy Mechanical Aerial Burst Nose Fuze
BOMBS USED IN: 33 kg. Illuminating (Parachute Flare)	
MARKINGS 16 D 752	

Data	
COLOR	Natural brass.
OVERALL LENGTH	4.53 inches
OVERALL WIDTH	1.75 inches
MATERIAL OF CONSTRUCTION	Brass except for steel striker and steel locking balls.
POSITION & METHOD OF FIXING IN BOMB	The fuze is located in the nose of the flare case and is secured by lock nut.
COMPONENTS OF EXPLOSIVE TRAIN	Flash cap directly over a powder pellet and a powder train (assumed).
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	In specimen recovered, possible delayed train or flash powder elements were not present.
THREADS	1-3/32 in. diameter 15 TPI
DESCRIPTION	The upper body portion houses the arming vane assembly and the spring loaded pin used for holding the safety wire firmly in its holes. A ball race is also present to provide smooth operation surface for the vanes (not shown). The lower body portion contains the arming sleeve into which three steel balls are fitted and which lock the striker when in the unarmed position (as shown). A primer flash cap and a powder relay comprise the explosive train.
OPERATION	The lock nut is tightened over the vanes which rest on the ball race. On release from the aircraft the safety wire is withdrawn from its holes, allowing the vanes to rotate, thus screwing the arming spindle downward. The arming spindle is prevented from rotating by the guide keys. The stop stud prevented the arming vane sleeve from being tightened down too far during fuze assembly. As the arming spindle moves downward, the striker and its spring move also until the striker forces the balls to move into the groove cut into the lower body, (the striker is under spring pressure). As the balls move outward, the striker moves downward, under spring action, and pierces the primer to initiate the explosive train.
REMARKS	The lock nut is used for fastening the fuze securely in the body of the bomb.


SPANNER HOLES
ARMING SPINDLE
STRIKER
RETAINING BALL

PUBLICATION DATE: Sept. 1944 RESTRICTED

JAPANESE

D-4(a)

Navy Aerial Burst
Nose Fuze

BOMBS USED IN

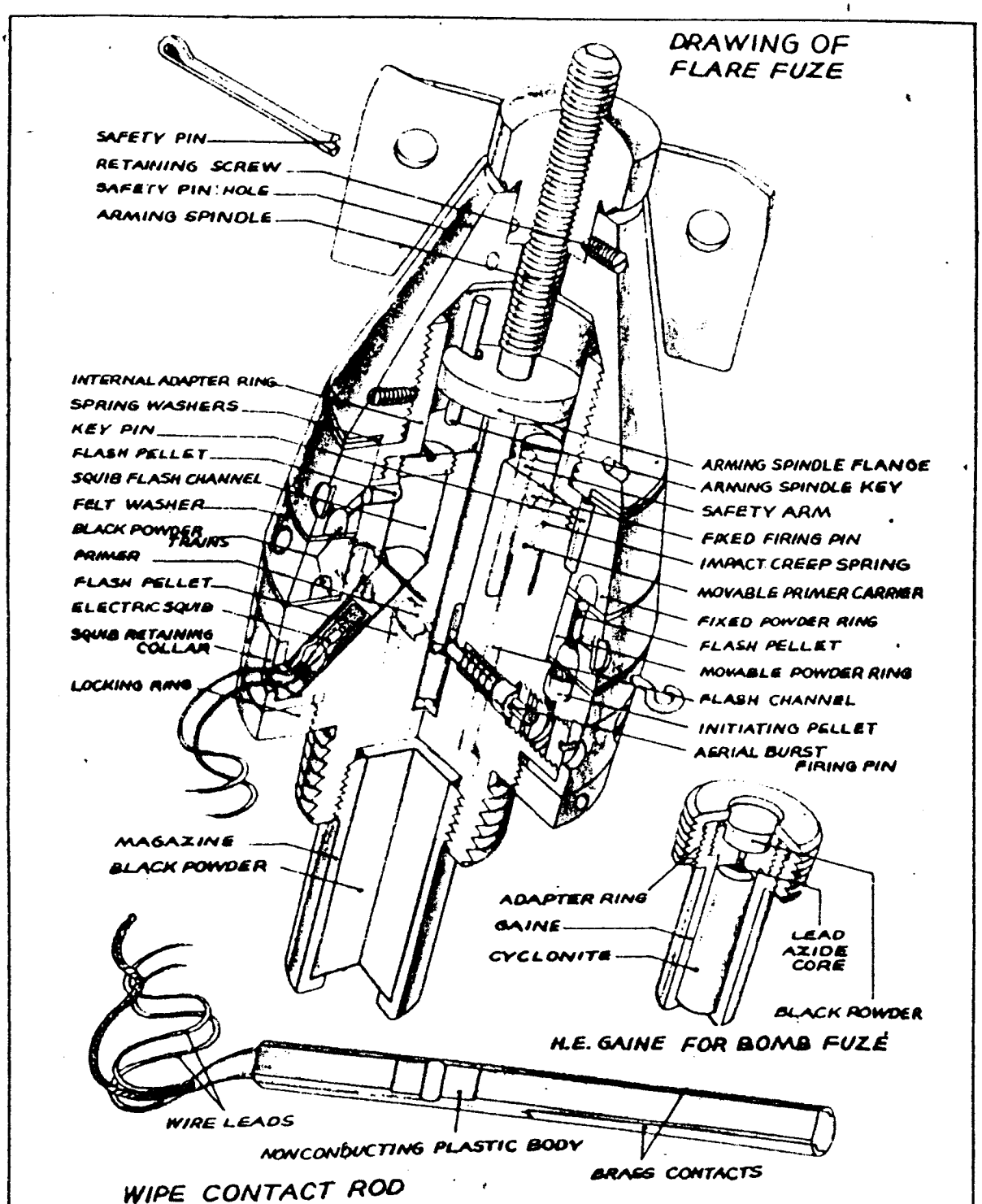
Bomb Container for 1 Kg. H.E. bombs.
60 Kg. Container for 5 parachute bombs.
Model 1, Type 0, Parachute Illuminating Flare

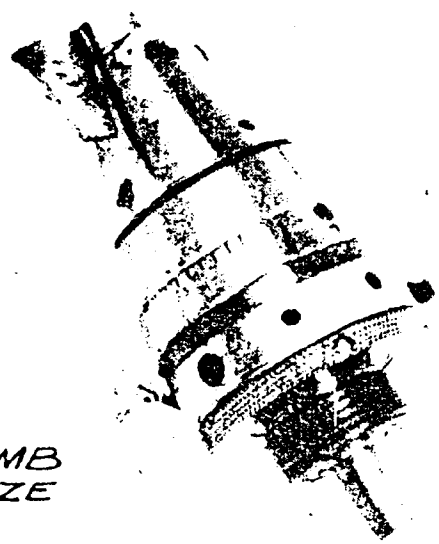
MARKINGS

One Fuze: "404"
Other Fuze: "213" "4" " " stamped on body

Data	
COLOR	Natural brass or fuze with steel body may be yellow due to coat of lacquer; vanes natural steel color.
OVERALL LENGTH	4-3/4 in. (May vary due to type of delay container used.)
OVERALL WIDTH	1-13/32 in.; vane span 4-5/16 in.
MATERIAL OF CONSTRUCTION	Brass except for steel striker, steel retaining ball, and steel creep spring or fuze may be steel throughout.
POSITION & METHOD OF FIXING IN BOMB	Screwed clockwise into nose and secured by lock nut. No anti-withdrawal devices used.
COMPONENTS OF EXPLOSIVE TRAIN	Primer flash cap and delay train incorporated in delay container.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	May be varied by changing type of delay container.
THREADS	1-3/32 in. diameter; 15 TPI
DESCRIPTION	The fuze body consists of three principal parts: the upper body, the lower body, and the powder delay container. The upper body is threaded internally at the base to receive the lower body, and threaded internally at the top to take the arming spindle. A grub screw locks the lower body and the upper body in position. A safety screw pin screws into the upper body and extends into a hole in the arming spindle to prevent rotation. The conventional arming fork is fitted to the upper body to prevent vane rotation. The lower body is threaded externally at its upper end to screw into the upper body and threaded internally at the lower end to receive the primer flash cup holder and the powder delay container. The striker, striker retaining ball, and striker spring are contained in the lower body. The central channel of the lower body is widened at its upper end to permit the striker retaining ball to move outward during the operation of the fuze. The powder delay container is believed to contain thruout its length a powder delay. It is possible, however, that a portion of the container may be empty and act as a flash channel. The container on the fuze most recently recovered was shorter than that on the other fuzes found, indicating that a difference in delay may be obtained by selection of powder delay containers. The container is threaded externally at its upper end so that it may be screwed into the lower fuze body. There are two principal operating units in the fuze: the arming spindle-vane assembly, and the striker assembly. The arming spindle-vane assembly consists of an arming spindle to the top of which is attached a six-bladed vane assembly. The arming spindle is threaded at its upper end and grooved at the lower end to receive the striker retaining ball. A hole in the side of the threaded portion of the spindle takes the tip of the safety screw pin. The striker assembly consists of a hollow striker, striker retaining ball, and striker spring. The striker is hollow to receive the end of the arming spindle. The striker retaining ball rides in a channel through the side of the striker. The ball is held in place by the groove of the arming spindle at one end of the channel and by the inner wall of the fuze body at the other end.

DESCRIPTION (cont'd)	When the fuze is dropped, the striker spring is not compressed as previously assumed. The position of the moving parts is as indicated in the diagram.
OPERATION	The safety screw pin is removed when loaded in plane. On release from the aircraft, the arming vanes rotate (clockwise when viewing the fuze from the nose end) and thread the arming spindle upward. The striker retaining ball locks the spindle to the striker and as the spindle moves up it pulls the striker with it, compressing the striker spring. After 26 to 27 revolutions of the vanes, the striker has been moved up so that the retaining ball is opposite the widened portion of the channel in which the striker rides. The retaining ball now moves outward and the spindle, no longer locked to the striker, threads out of the fuze and falls away. Removal of the spindle from the striker permits the retaining ball to move inward under pressure from the cocked striker. Inward movement of the ball releases the striker which is driven against the flash cap by its spring. The flash cap sets off the powder delay train.
REMARKS	Fuze may be constructed of either brass or steel. Markings on can containing fuze: 零式吊光照明弾一型發火裝置 Translation: "Fuze for Model 1, Parachute Illuminating Flare, Type O".





BOMB FUZE

JAPANESE D-5(a) AND D-5(b) NOSE FUZES

RESTRICTED

PUBLICATION DATE: May 1945

JAPANESE

D-5(a)

(H.E.Gaine, no impact striker)

D-5(b)

(B.P.Magazine, impact striker)

BOMBS USED IN:

Flare Fuze - 12 Kg. Parachute Flare
Bomb Fuze - H.E. Bombs (size unknown)

MARKINGS

昭十八7東☆ Flare Fuze (July 1943. Tokyo Army Arsenal)

昭十八11阪※ Bomb Fuze (November 1943. Osaka Army Arsenal)

Army Aerial Burst (or impact) Nose Fuze Electrically Initiated

Data	
COLOR	Brass
OVERALL LENGTH	4 in.
OVERALL WIDTH	2 in.
MATERIAL OF CONSTRUCTION	Brass except for steel firing pins, spring, spring washers and retaining screws.
POSITION & METHOD OF FIXING IN BOMB	Screwed into nose.
COMPONENTS OF EXPLOSIVE TRAIN	Black powder magazine.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	3 to 40 seconds
THREADS	1-3/16" diameter 13 TPI

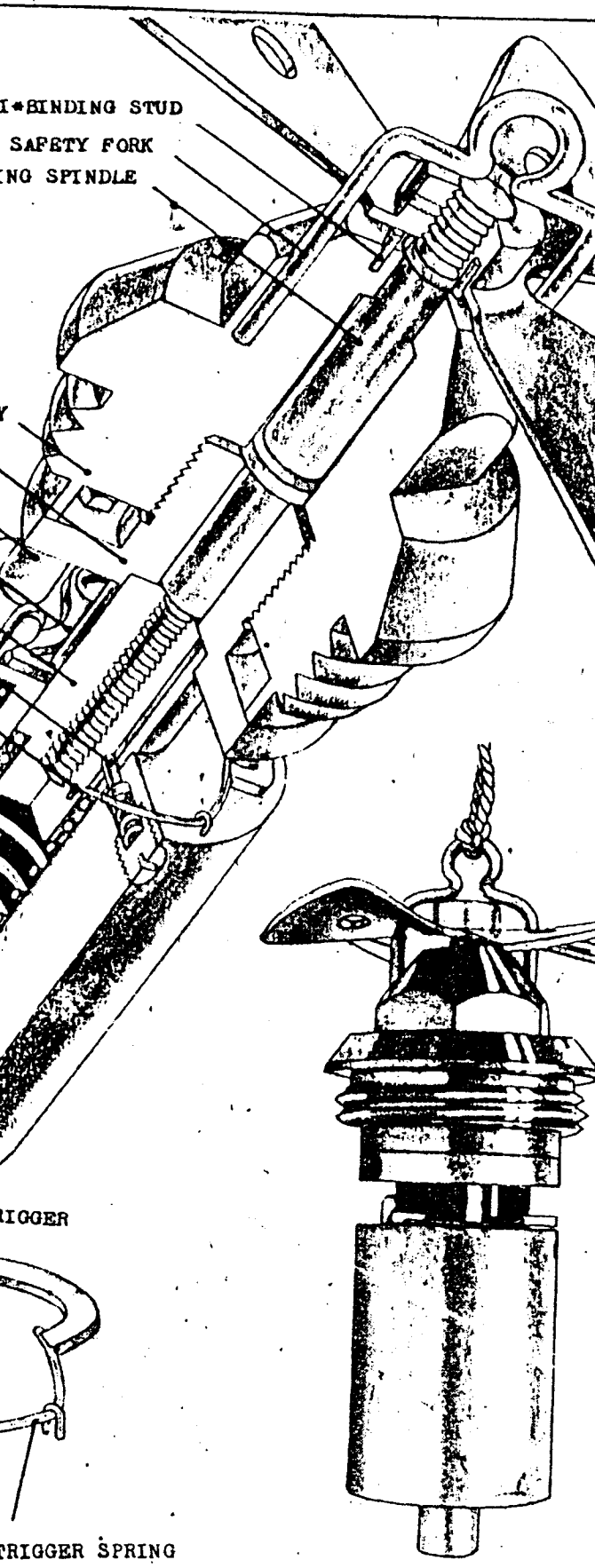
DESCRIPTION

The fuze body is made up of eight parts. The vane hub is secured to the upper fuze body by two retaining screws. These allow the vanes to rotate yet prevent the vanes from falling away. The upper fuze body screws onto an internal adapter ring which in turn screws around the lower fuze body. The upper powder train is fixed, being locked to the upper fuze body by a key pin. Two spring steel washers between the upper fuze body and the fixed powder train keep a working friction between the powder rings. The lower movable powder train is separated from its adjacent parts by two felt washers. Both the upper and lower powder train rings slip down over the lower fuze body. The squib retaining collar is an "L" shaped ring that fits around the lower fuze body. The knurled locking ring threads on the lower fuze body and serves to lock the fuze into the bomb. The magazine is filled with large grained powder and has a 3/8" hole through its base to allow the flash to reach the ignition charge of the flare proper. The arming spindle is 3-7/16" long. The upper portion is threaded for 1-3/4" to turn through the vane hub. At the end of the threaded portion is a 3/4" flange. The tip of the lower portion of the spindle is split (forked). The gas operated, aerial burst, firing pin shoulders on the forked tip of the arming spindle which denies it access to the primer until the spindle is raised (armed). In the unarmed position the arming spindle flange holds the impact (movable) primer carrier down and away from its fixed firing pin by bearing against the safety arm of the carrier. The 5/8" long electric squib fits into the lower fuze body. Two five foot insulated single strand copper wires, and a forty inch cord are attached.

OPERATION

On release, the wipe contact rod is pulled through the plane's contact points, firing the squib and thus initiating the powder train rings. The vanes rotate, turning the spindle up thus freeing the striker, and the impact primer carrier. When the powder train has burned its course, the gas generated by the initiating pellet drives the firing pin forward against the creep spring and into the primer. A flash pellet relays this to the black powder magazine or gaine. If the aerial burst feature fails, the primer carrier moves against the fixed firing pin on impact.

NOTE: The bomb fuze differs from the flare fuze in that it has an H.E. gaine and adapter ring instead of a magazine, and the impact firing feature is left out.



BOMB FUZE E-1(a)

RESTRICTED

PUBLICATION DATE: May 1945

JAPANESE

E-1(a)

Army Anti-Withdrawal Tail Fuze

BOMBS USED IN:

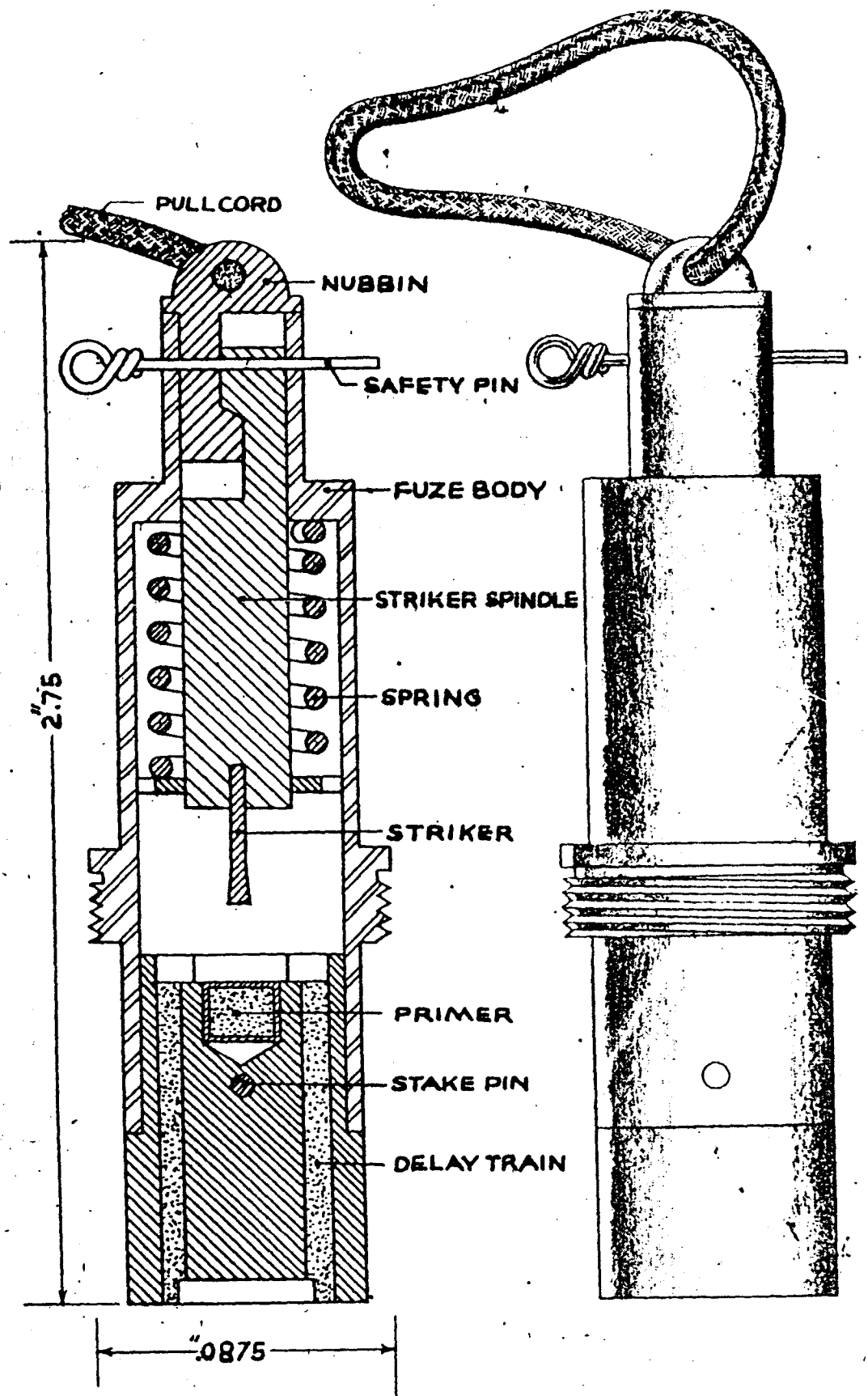
Army 60 Kg., 100 Kg., 260 Kg. Type 1 Time Bombs

MARKINGS:

阪 ※ 7 八 十 昭

(Osaka Army Arsenal, July 1943)

Data	
COLOR	Brass
OVERALL LENGTH	4-5/8 in. (with gaine)
OVERALL WIDTH	2 in.
MATERIAL OF CONSTRUCTION	Striker, springs, screws, anti-binding studs, trigger and 3 spacers made of steel. All other parts made of brass.
POSITION & METHOD OF FIXING IN BOMB	Screwed into tail fuze pocket
COMPONENTS OF EXPLOSIVE TRAIN	Primer and standard Army type gaine.
FUZES LIKELY TO BE FOUND WITH	C-3(a)
DELAY TIMES	No delay
THREADS	1-13/16 in. diameter 8 TPI
DESCRIPTION	The vanes, similar to those of the B-1(a) are locked to the arming spindle by a set screw. The arming spindle, housed in the conical shaped upper fuze body, is a round shaft threaded at the top with right-hand threads to attach to the vanes and at the bottom with finer left-hand threads to fit into the inertia block. The spacing ring screws into the upper fuze body and is secured by screws to the lower fuze body. It serves to hold the inertia block part way down against the creep spring. The lower fuze body houses the firing mechanism and the primer cap. The trigger and the trigger spring are mounted on top of the lower fuze body. The trigger is pivoted on a screw threaded into the top of the lower fuze body. One end bears against the trigger spring; the other in the cocked position fits on the striker notch, preventing the spring loaded striker from firing. The trigger is prevented from pivoting by the inertia block against which it rests.
OPERATION	On release from the plane, the vanes rotate the arming spindle clockwise, unscrewing it from the inertia block, which is keyed to prevent rotation. The fuze is now armed. The flange of the arming spindle prevents the spindle and vanes from falling away. On impact the inertia block moves down against the creep spring and is held below the surface of the lower fuze body by the spring loaded detent. The spring loaded trigger arm is released and pivots out beyond the fuze body a distance of 1/64" where it encounters the wall of the fuze pocket. This movement of 1/64" is not sufficient to release the striker. The fuze will not fire as long as it remains in the bomb. If withdrawal is attempted, the trigger arm will snap into the annular groove as the last thread of the fuze pocket is disengaged. This movement of the trigger releases the spring loaded striker and it hits the primer.



JAPANESE FLARE FUZE (PROBABLE)

PUBLICATION DATE: July 1944 CONFIDENTIAL	JAPANESE
BOMBS USED IN: Hand thrown flare	FLARE FUZE (Probable)
MARKINGS: Four digit number. 8511	

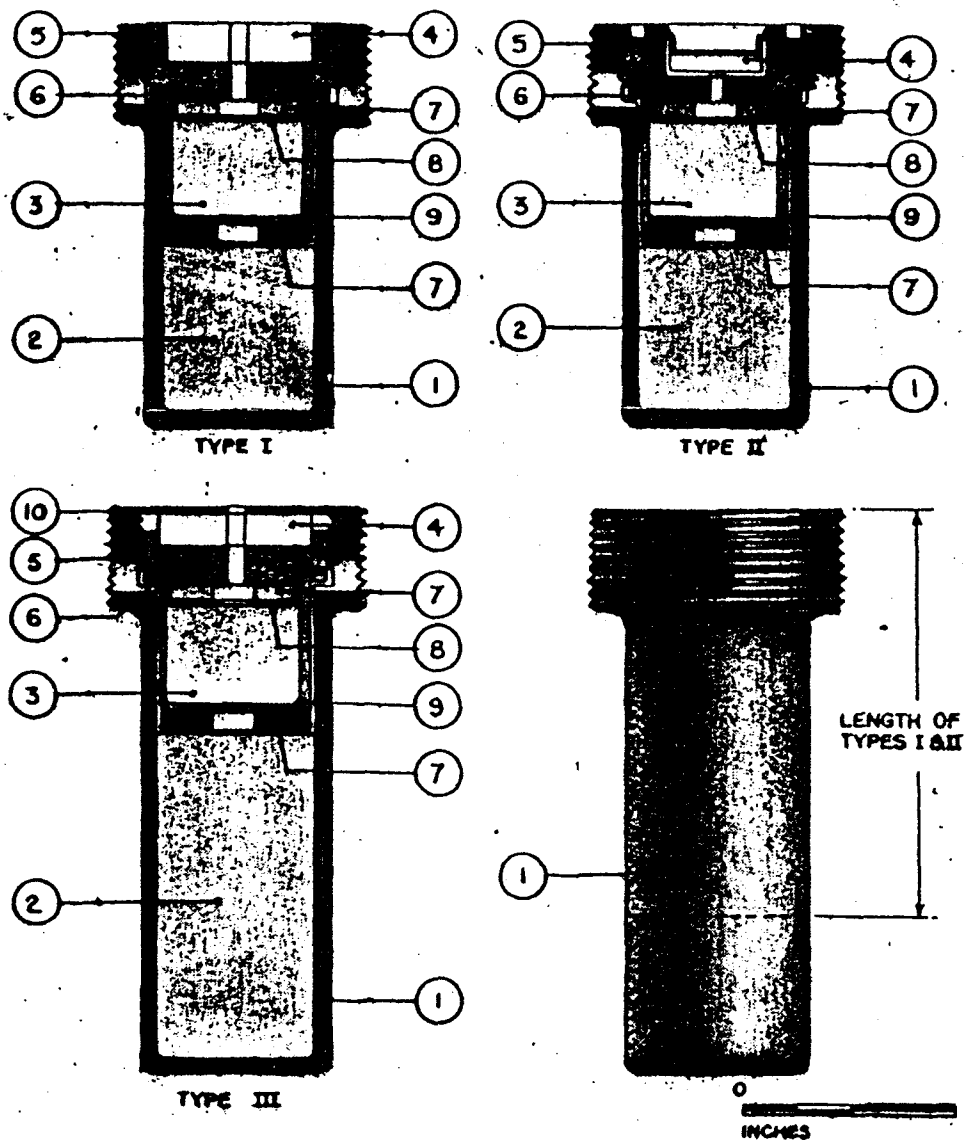
Data	
COLOR	Natural brass
OVERALL LENGTH	2.75 inches
OVERALL WIDTH	0.875 inches
MATERIAL OF CONSTRUCTION	Brass
POSITION & METHOD OF FIXING IN BOMB	Screwed into bomb.
COMPONENTS OF EXPLOSIVE TRAIN	The cap is set off and its flash ignites the short-delay powder trains which in turn ignite the main filling.
FUZES LIKELY TO BE FOUND WITH	None
DELAY TIMES	Unknown
THREADS	
DESCRIPTION	The fuze body houses striker spindle under spring pressure. The spindle is locked by the nubbin whose tongue engages with the spindle. A screw-driver-shaped striker is secured in the spindle. The primer cup is present in the fuze and is connected to the delay trains by flash chambers. A safety pin is also present. The fuze is believed to be not visible in the bomb. The pull cord is attached to nubbin.
OPERATION	The safety pin is first removed. When the missile is hurled, the cord which is held in the hand, pulls out the nubbin. Immediately the striker moves forward under spring pressure, striking the primer cap. The flash ignites the delay. If nubbin is present in fuze when found in UXB, the fuze is safe.

JAPANESE

GAINES

ARMY GAINES

Army fuzes employ different gaines from those used in Navy fuzes. All Army fuzes use one of the three types shown below or variations of a slightly different shape but of similar construction. Types I and II are used in nose fuzes only, while Type III is used only in the tail fuzes. The latter type is approximately twice as long as Types I and II (see scale). Types I and III are ignited by a flash from a primer cap in the fuze, while Type II is pierced by the striker. Type I is used in all Army nose fuzes except A-2(b). This fuze uses Type II and is used only in bombs which do not have H.E. as the main charge (15 Kg. Anti-personnel is an exception, and employs the A-2(b) fuze). Type III only is used in all Army tail fuzes. These gaines are usually surrounded by a booster (see A-4(a), B-1(a) and C-3(a) as examples).



LEGEND

Type I
1. Container
2. Tetryl
3. Fulminate of Mercury (6 gr.
4. Black powder mixture
5. Copper plug
6. Copper cup cover
7. Felt washer
8. Tin Foil strip
9. Copper cup

Type II
1. Container
2. Tetryl
3. Fulminate of Mercury (6 gr.)
4. Cap
5. Copper plug
6. Copper cup cover
7. Felt washer
8. Tin Foil strip
9. Copper cup

Type III
1. Container
2. Tetryl
3. Fulminate of Mercury (gr.)
4. Black powder mixture
5. Copper plug
6. Copper cup cover
7. Felt washer
8. Tin Foil strip
9. Copper cup
10. Metal washer cover

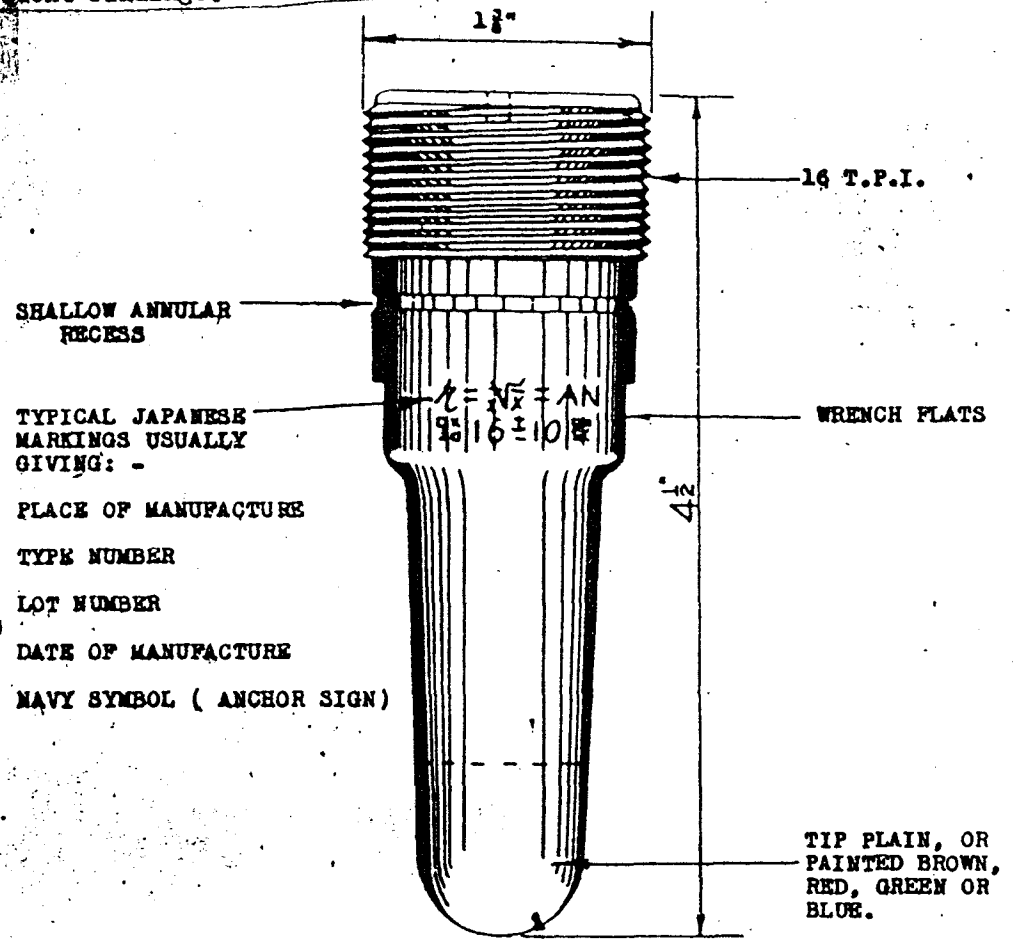
NAVY GAINES

There are four main types of Navy gaines, all similar in external shape but differing in internal construction. All standard Navy gaines fit most Navy fuzes and are screwed (right hand threads) into the fuze hand tight. Japanese Navy gaines contain all necessary explosive to initiate an explosion. The component internal parts of Navy gaines are: Primer plugs (screwed in and staked), Delay plugs (slip fit) and detonator plugs (screwed in, or slip fit). The striker impinges on the primer which initiates the delay (if any), thereby firing the detonator and in turn the picric booster.

The four main types of Navy gaines are: Type A, B, C, & D. Types A & D are used for delay, while Types B & C are used for inatantaneous action.

Navy gaines are made of brass, cadmium plated, and finished a dull lacquer and may have the tip of the gaine painted. Type A-4 gaine (blue tipped) is an exception in that it is made of steel.

No standard set of figures has been arrived at regarding the delays incorporated in the Type A gaines. The information taken from Japanese documents does not agree with the results of our own laboratory tests. The figures listed on the following pages were arrived at as a result of tests on a very limited number of specimens. In the table at the bottom of this page are listed subsequent findings.

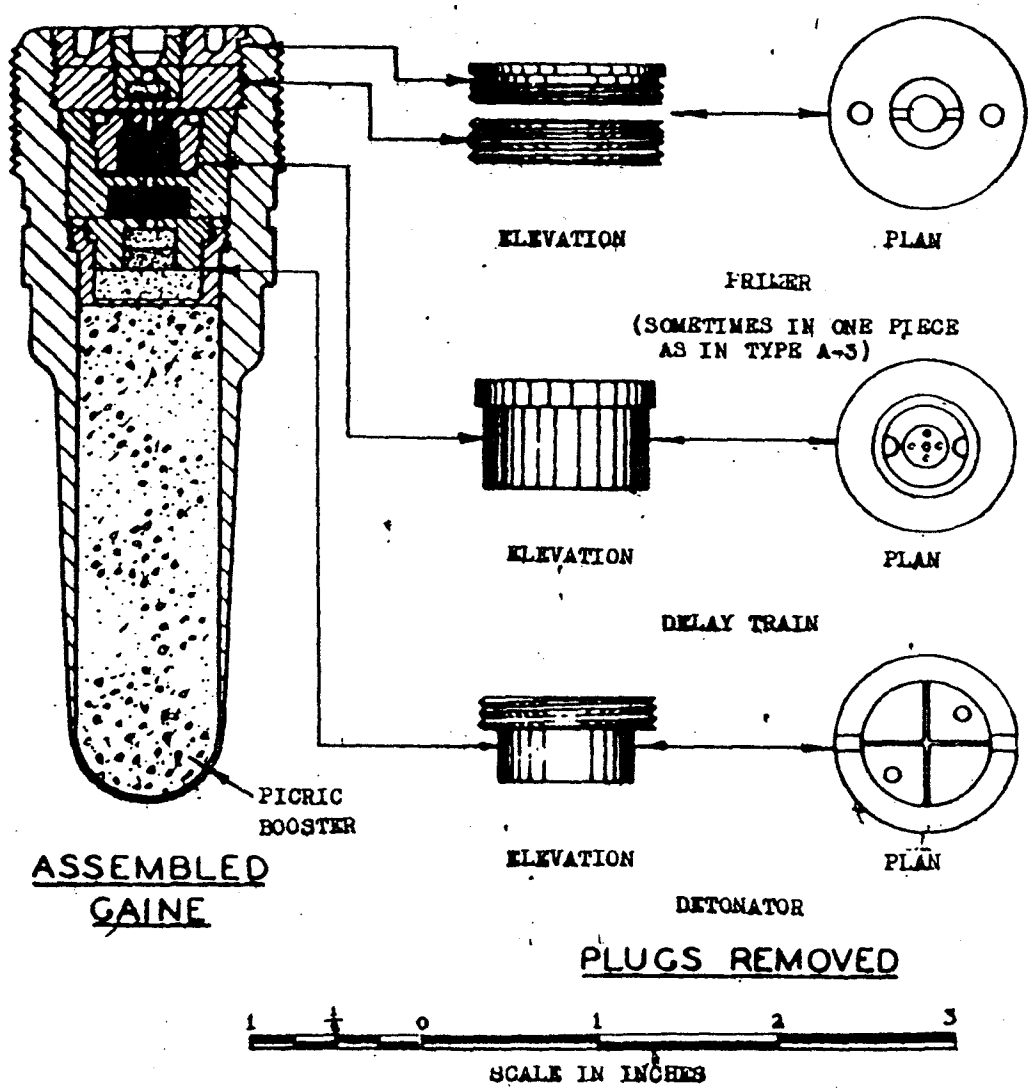


TYPICAL ELEVATION

	Jap Document	E.A.U. Report	M.S.L. Report
Type 97 A	.03 sec.	.0467 sec.	.016 sec.
Type 97 B	.1 sec.	.0477 sec.	.075 sec.
Type 99 A	.03 sec.	.0160 sec.	.016 sec.
Type 99 C	.2 sec.	No record	.079 sec.

TYPE A-1	CONFIDENTIAL	PUBLICATION DATE: July 1944
Japanese designation: "Temporary Name Type 99 Ordinary Bomb Fuze C, Fuze cap explosive M 26.		Brown tipped
		.014 seconds delay
		PRIMER Detonating composition over gunpowder
		DELAY Flash powder over pressed sealed gunpowder over flash powder.
		DETONATOR Lead azide over tetryl
TYPE A-2		PICRIC BOOSTER
Japanese designation: "Type 97 Land Use Bomb Fuze B. (Fuze cap explosive M 60)		Red tipped
		.017 seconds delay
		Explosive Components are the same kind as for Type A-1

TYPES A-1 & A-2, SLIGHT DELAY



CONFIDENTIAL

TYPE A-3

Japanese designation:
Type 97 Land Use Fuze A.
(Fuze cap explosive M 71)

九七式陸用火管甲信管甲

PUBLICATION DATE: July 1944

Green tipped

.025 seconds delay

Explosive components are the same kind as for Type A-1

TYPE A-4

Japanese designation:
Temporary name type 99 Bomb Fuze A. (Fuze cap explosive M 21)

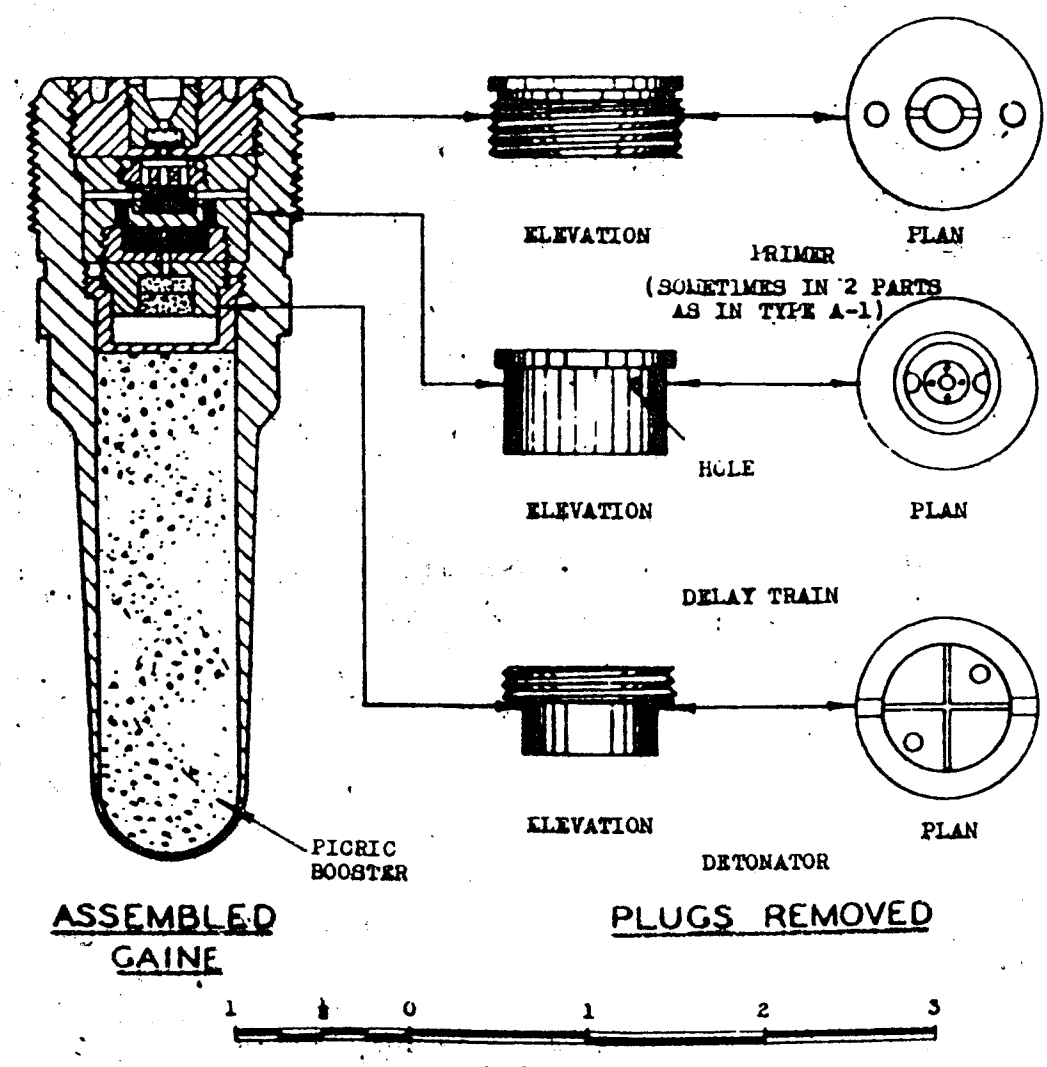
仮称九九式爆弾火管甲信管甲

Blue tipped

.031 seconds delay

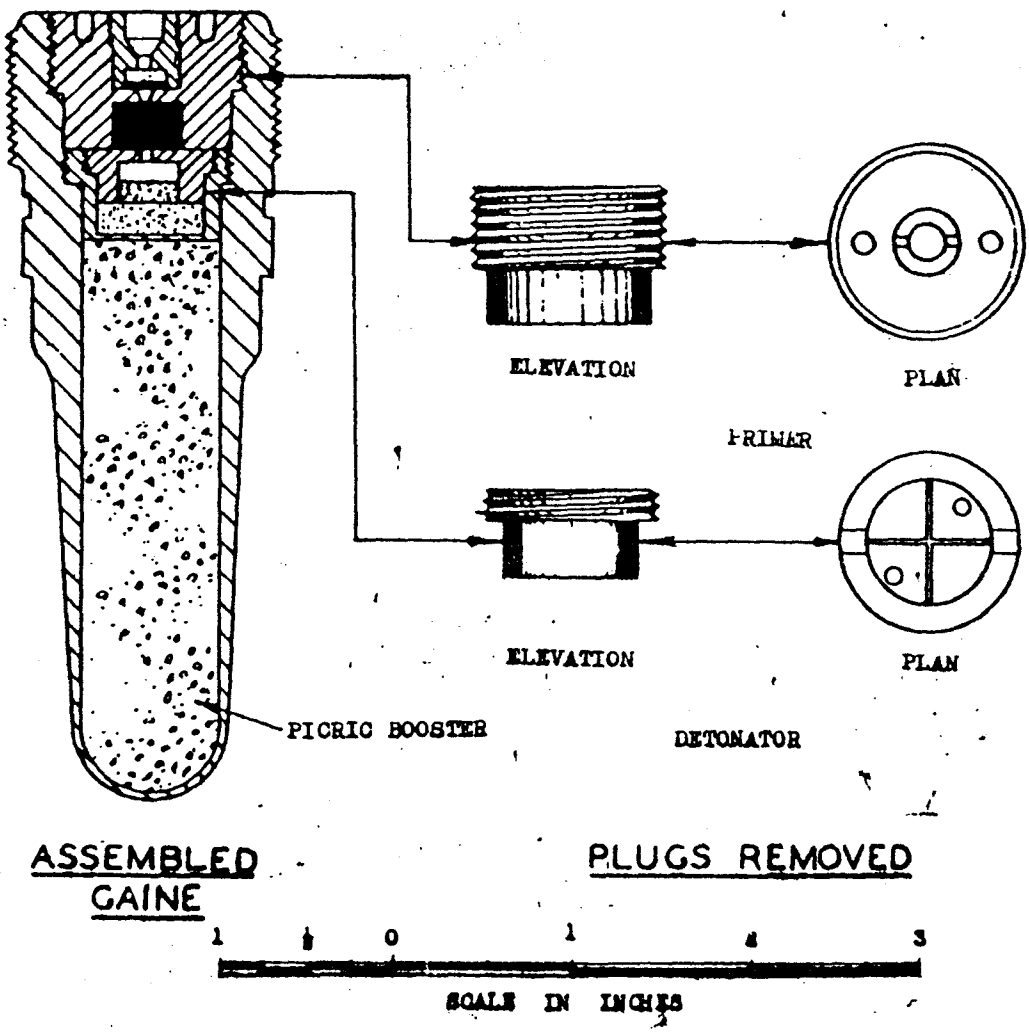
Explosive components are the same kind as for Type A-1

TYPES A-3 & A-4, SLIGHT DELAY



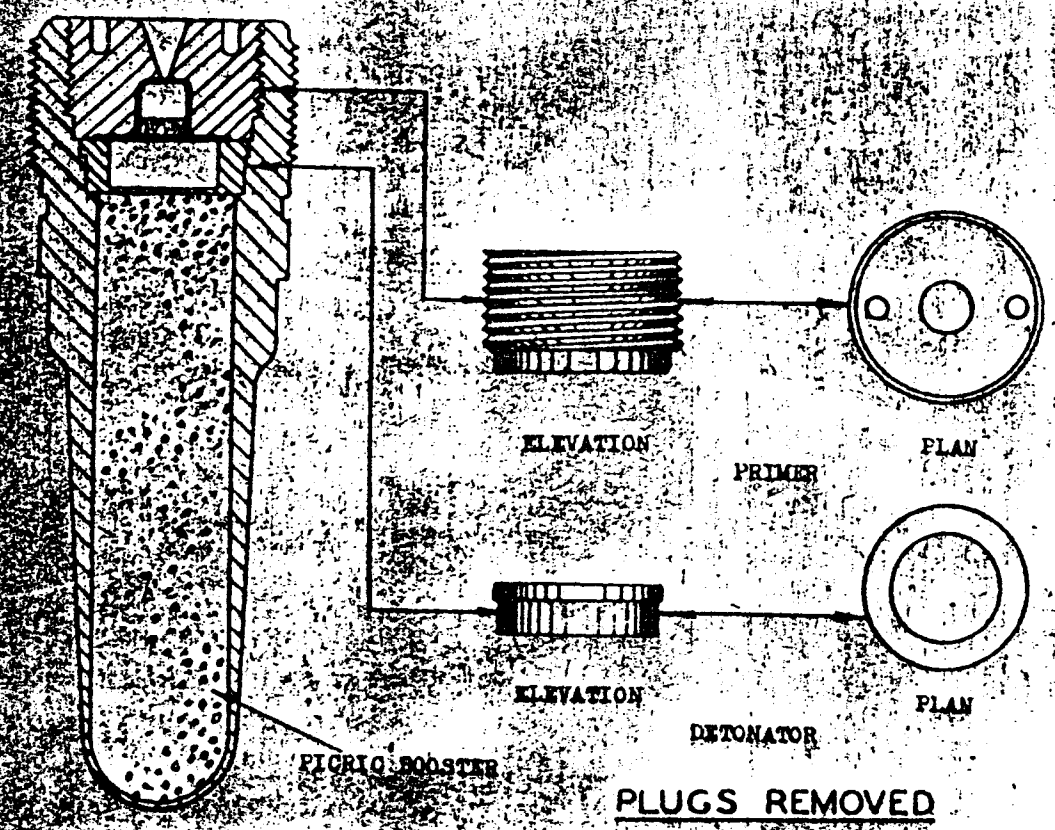
TYPE B CONFIDENTIAL	PUBLICATION DATE: July 1944
	Tip not colored
Japanese designation: Type 96	Instantaneous
九六式	PRIMER Detonating composition over gunpowder.
	No delay
	DETONATOR Lead Azide over Tetryl
	PICRIC BOOSTER

TYPE B, INSTANTANEOUS



TYPE C CONFIDENTIAL	PUBLICATION DATE: July 1944
	Tip not colored
Japanese designation: "Type 92 Land Use Bomb Fuze, Improvement 2. (Fuse cap explosive M 26)	Instantaneous
九二式陸用爆弾信管甲	PRIMER Mercury Fulminate over Tetryl in an inverted copper cup.
	No delay
	DETONATOR Tetryl
	PICRIC BOOSTER

TYPE C, INSTANTANEOUS



CONFIDENTIAL

TYPE D

Japanese designation:
"Type [redacted] 15 ...."

式一五番

PUBLICATION DATE: July 1944

Tip not colored

Selective delay from fractional to 1.5 seconds.

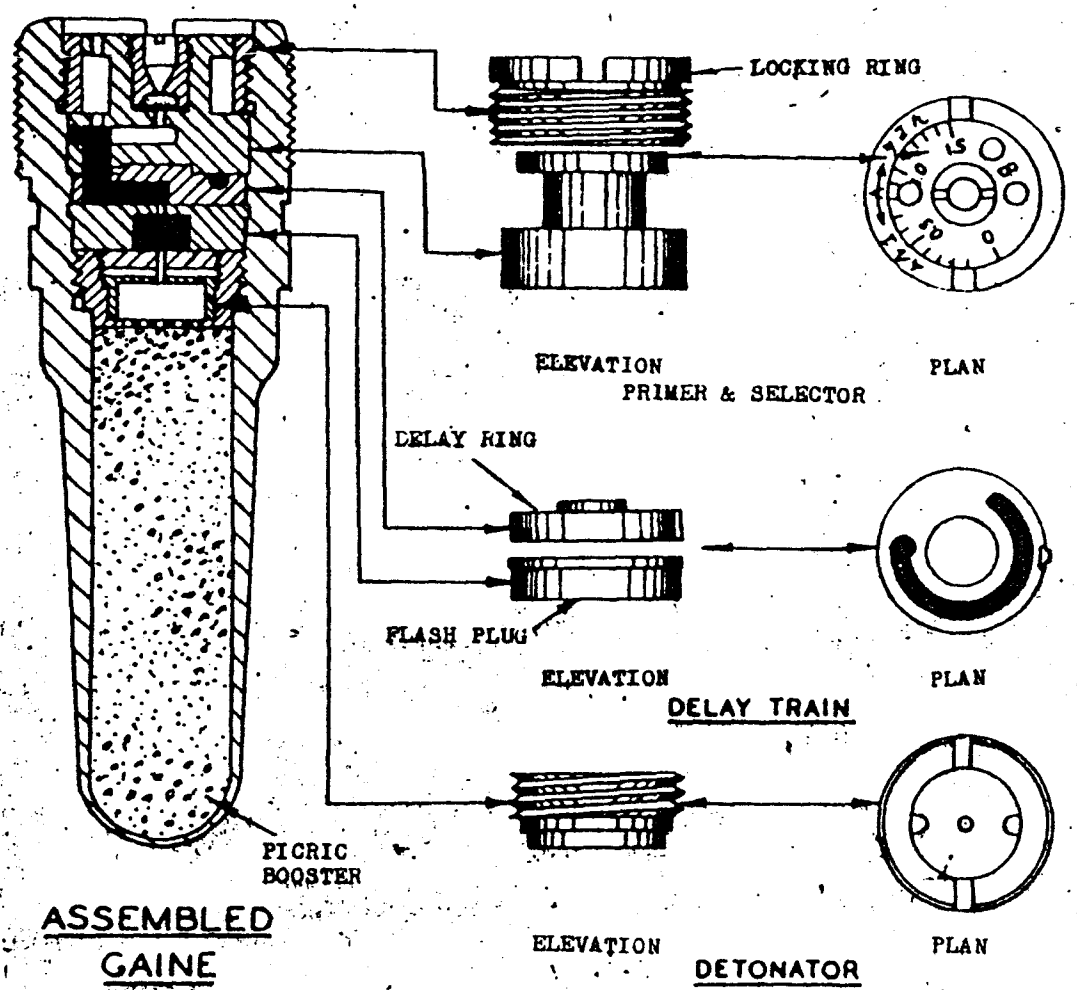
PRIMER
Detonating composition over gunpowder

DELAY
Pressed meal gunpowder in a semi-circular channel.

DETONATOR
Shallow plug of lead azide over tetryl

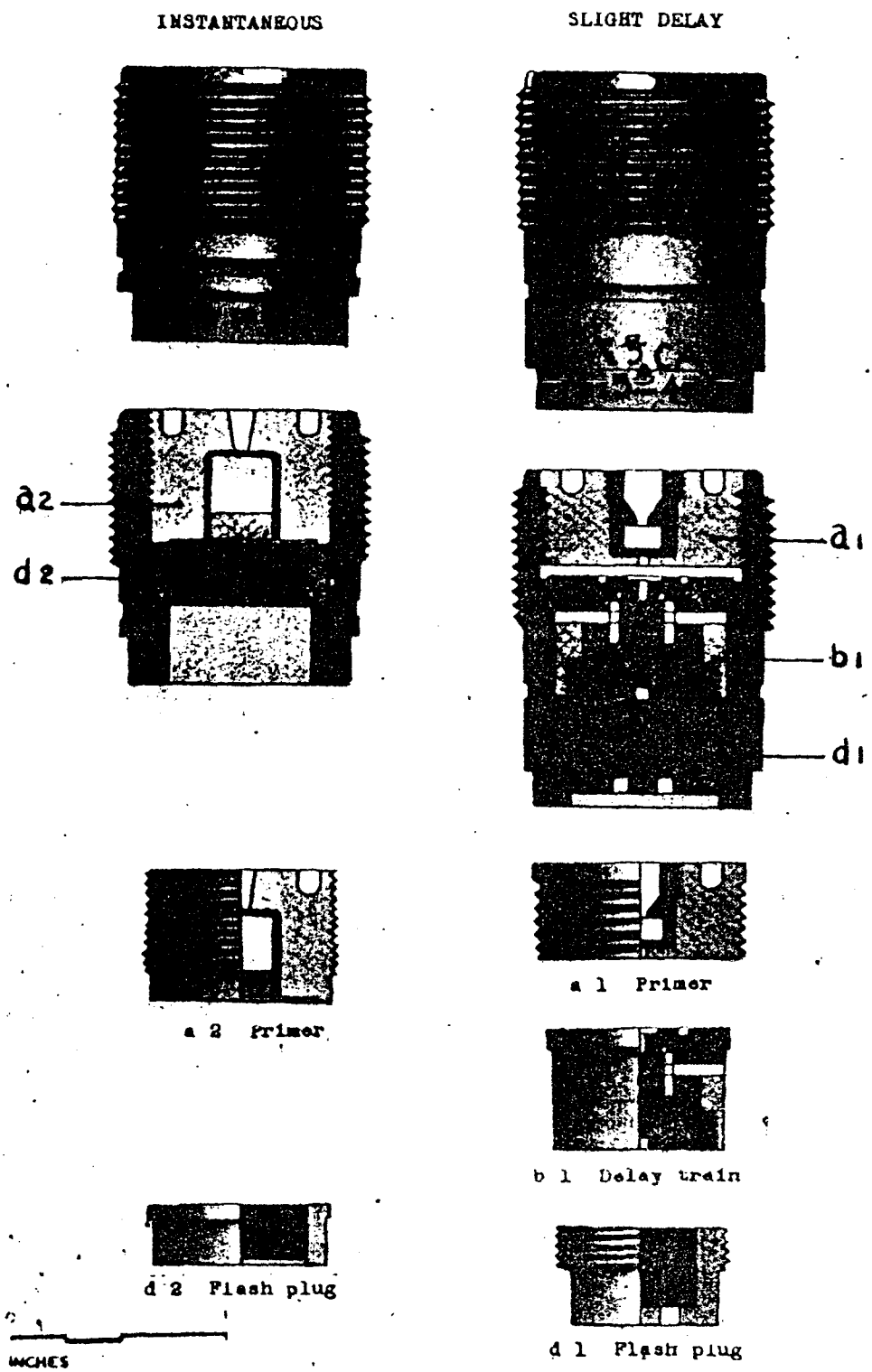
PICRIC BOOSTER

TYPE D, SELECTIVE DELAY



NAVY MAGAZINES

Magazines are used only in NAVY fuzes, used to initiate Low Explosives such as black powder. They are never used with H.E. filled oombs. Magazines can be fitted to any fuze which takes a standard Navy gaine. Up till now, however, only A-3(a) and A-3(b) have been used with magazines. Only an instantaneous magazine with two plugs and a slight delay magazine with three plugs have been found to date. The "d" type pluge contain a large amount of gunpowder and are not used in gaines. Pluge "a" and "b" are used in gaines as well as magazines. The magazine explosive is initiated by the fuze striker piercing plug "a 1" or "a 2".



U. S. GOVERNMENT PRINTING OFFICE O—1944