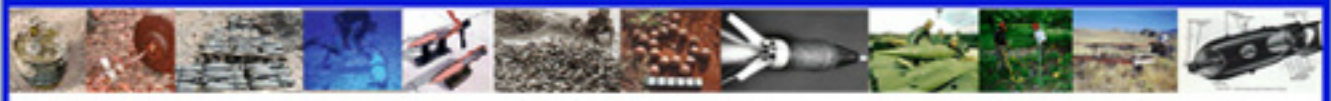

JAPANESE BOMBS & FUZES

Navy (1)

File: Weapons, Japan

U.S.N.B.D.

JULY 1944 (2) CONFIDENTIAL

Date_____

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

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

July 1944

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J. P. David

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Lieutenant, USNR.
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2				
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5				
6				
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8				
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14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				

INDEX

BOMBS

MISCELLANEOUS - continued.

FUZES

TYPE A

TYPE B

TYPE C

TYPE D

GAINES

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

一 - 1　　六 - 6

二 - 2　　七 - 7

三 - 3　　八 - 8

四 - 4　　九 - 9

五 - 5　　十 - 10

東京 OR 京 (abb.) - Tokyo

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

阪 - Osaka　　改 - Revision or Modifications

信管 - Fuse

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

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)
〒	- Navy Arsenal
可	- Inspector's approval stamp (Naval)
☆	- Tokyo Army Arsenal mark
式	- Model
型	- Type
號	- Mark
陸	- Land use
常	- Ordinary
吳	- Kure Naval Base
✕	- Osaka Army Arsenal Mark

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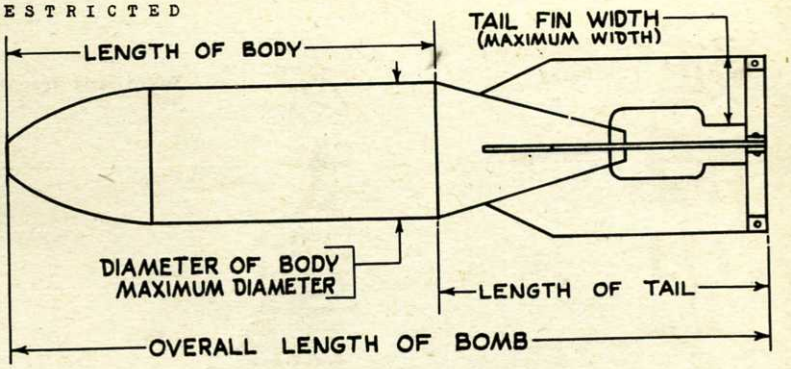

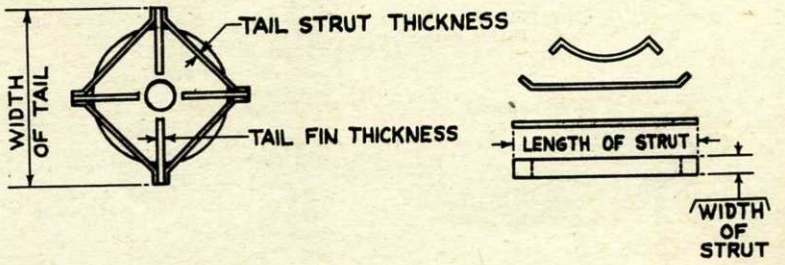

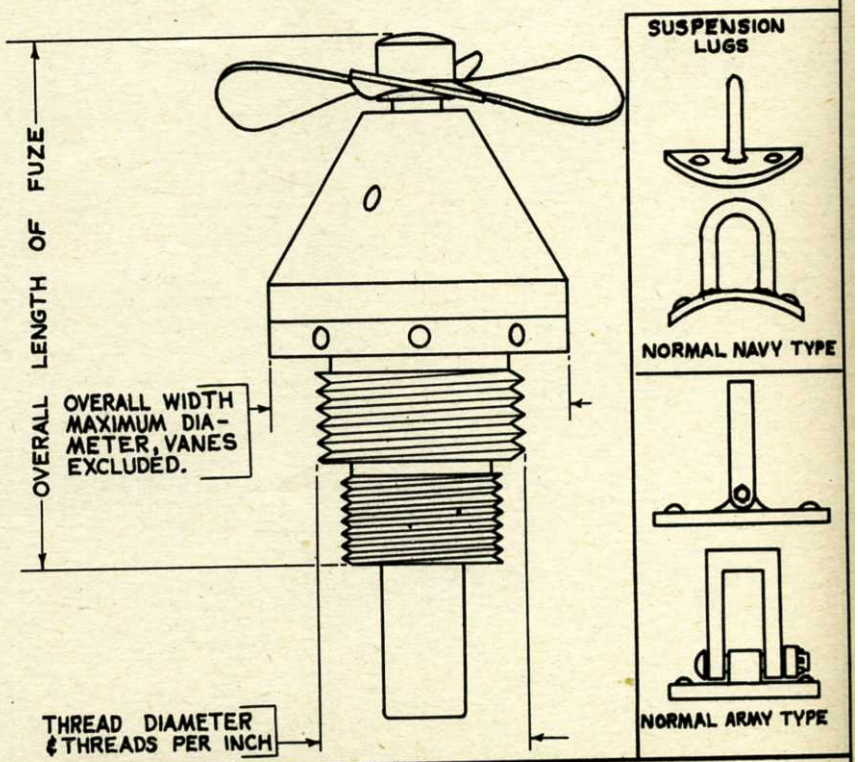

DEFINITIONS OF TERMINOLOGY

JAPANESE

BOMBS

604101 O - 44 - 2

INTRODUCTION TO JAPANESE BOMBS

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

Construction

Army

Army G.P.H.E. and Incendiary (dual purpose) bombs are of three piece construction. The nose pieces of H.E. bombs are threaded onto the body and held by two grub screws, or attached by means of three dowel pins in case of incendiaries. (Bombs are usually filled from the nose end) while the tail assembly is usually welded to the bomb body. The interiors are not coated.

The tail fins extend from beyond the apex of the cone to within an inch or two of the body-tail cone joint. (Compare diagrams, pages 20 & 24).

The suspension lug consists of a rectangular swivel eye-hook on a plate riveted to body with four rivets.

Navy

Navy G.P.H.E. bombs are thin cased & 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 & are made in one piece with a threaded base plate. On S.A.P. bombs the tail assembly is secured to the male base plate by screws.

The interior of Navy bombs has a hard lacquered finish.

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 joint.

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

Markings

Army G.P.H.E. bombs are generally painted black overall with a yellow and a white band around the body forward of the suspension lug and a red band around the nose. The size of the bomb is usually stencilled on the body near the nose.

The incendiaries do not follow this scheme.

Navy G.P. and S.A.P. high explosive bombs are generally bluish-grey overall with green tail struts, a green band on the nose, and two thin red assembly lines, diametrically opposite running longitudinally along the entire length of the bomb. There may be a blue band around the body aft of the suspension lug.

Incendiaries are generally bluish-grey with two thin red assembly lines diametrically opposite but have a silver or red band on the nose and/or red tail struts.

Fuzing

Only Army type fuzes are used. (Refer Introduction to Japanese Fuzes, page 98). G.P.H.E. bombs are generally fuzed nose and tail; however in a few instances, a bakelite plug has been screwed into the tail fuze pocket.

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

Only Navy type fuzes are used.(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 both nose and tail; A.P. bombs are fuzed only in the tail.

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

Filling

Army bombs are generally filled from the nose end. The explosive filling of H.E. bombs is comprised of 3 to 5 separate sections wrapped in wax paper, (nose section, body sections and tail sections), separated by cardboard, felt or both.

Incendiaries have an H.E. charge in the nose and the exploder tube with the incendiary filling in the body and tail sections.

Navy type bombs are usually filled from the tail end. The explosive filling of G.P. bombs is comprised of two sections (nose & body section, tail section); the explosive is not wrapped in wax paper but the interior surfaces of the Navy bombs are shellacked.

S.A.P. and A.P. bombs have filling in the body section only, the tail cone being empty. The explosive of these bombs is usually 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.

COLOR MARKINGS OF JAPANESE BOMBS

The following table is an extract from a captured Japanese document. It is possibly a list of new color markings to be used 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.

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JAPANESE HIGH EXPLOSIVE BOMBS

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

Our Designation	Japanese Designation
1 Kg. Smoke Explosive	1 Kg. Exercise Bomb, Modification 3, Smoke Explosive, May 1941. 一瓩習爆單ニ改煙爆藥 昭和十九年五月
Navy 63 Kg. G.P. or S. A. P.	Type 99 No. 6 Ordinary 九九式六番通常爆單
Navy 60 Kg. Type 97 G.P.H.E.	Type 97 No. 6 Land 九七式六陸用爆單
Navy 60 Kg. Type 96	Type 96 No. 6 Land bomb, Mark 23 九六式六陸用爆單二ニ號
Navy 800 Kg. A.P.	No. 80 Mark 5 八〇番五號爆單
Navy 800 Kg. G.P.H.E.	No. 80 Ordinary Model 1 Modifications 2, 3, 4. 八〇番通常爆單一型 ニニ四改
Navy 250 Kg. S.A.P.	Type 99 No. 25 Ordinary 九九式二五番通常爆單
Navy 300 Kg. Anti-Submarine	Type 99 No. 25 Ordinary Bomb, Model One, Mark 2 九九式二五番通常爆單 一型二號
Army Type 1, 100 Kg. Time Bomb	Type 1, 100 Kg. Bomb 一式一〇〇瓩爆單
Army Type 3, 100 Kg. Bomb	Type 3, 100 Kg. Bomb ニ式一〇〇瓩爆單
Navy 60 Kg. Anti-Submarine	Type 99 No. 6 Mark 2 九九式六番二號

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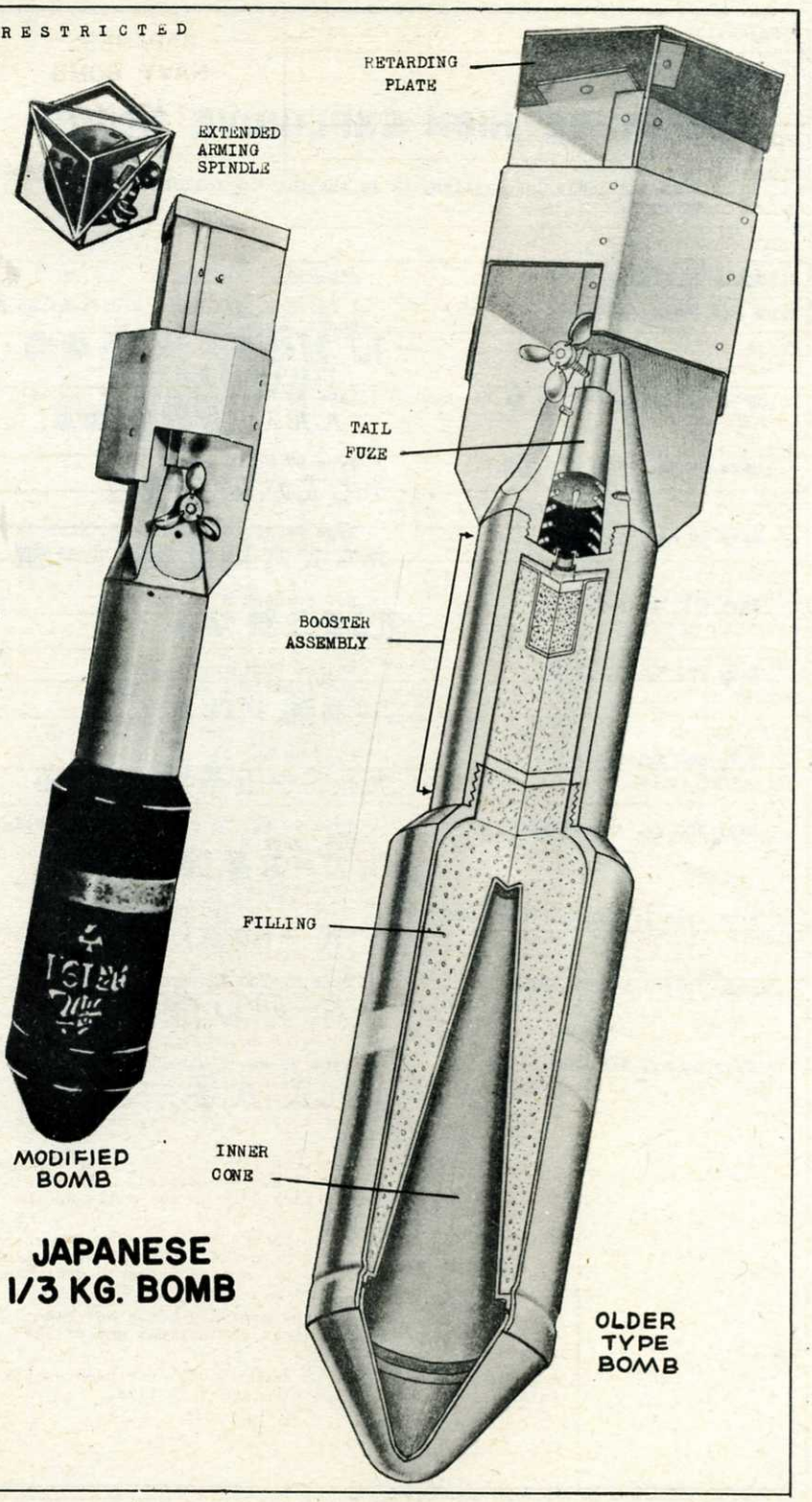
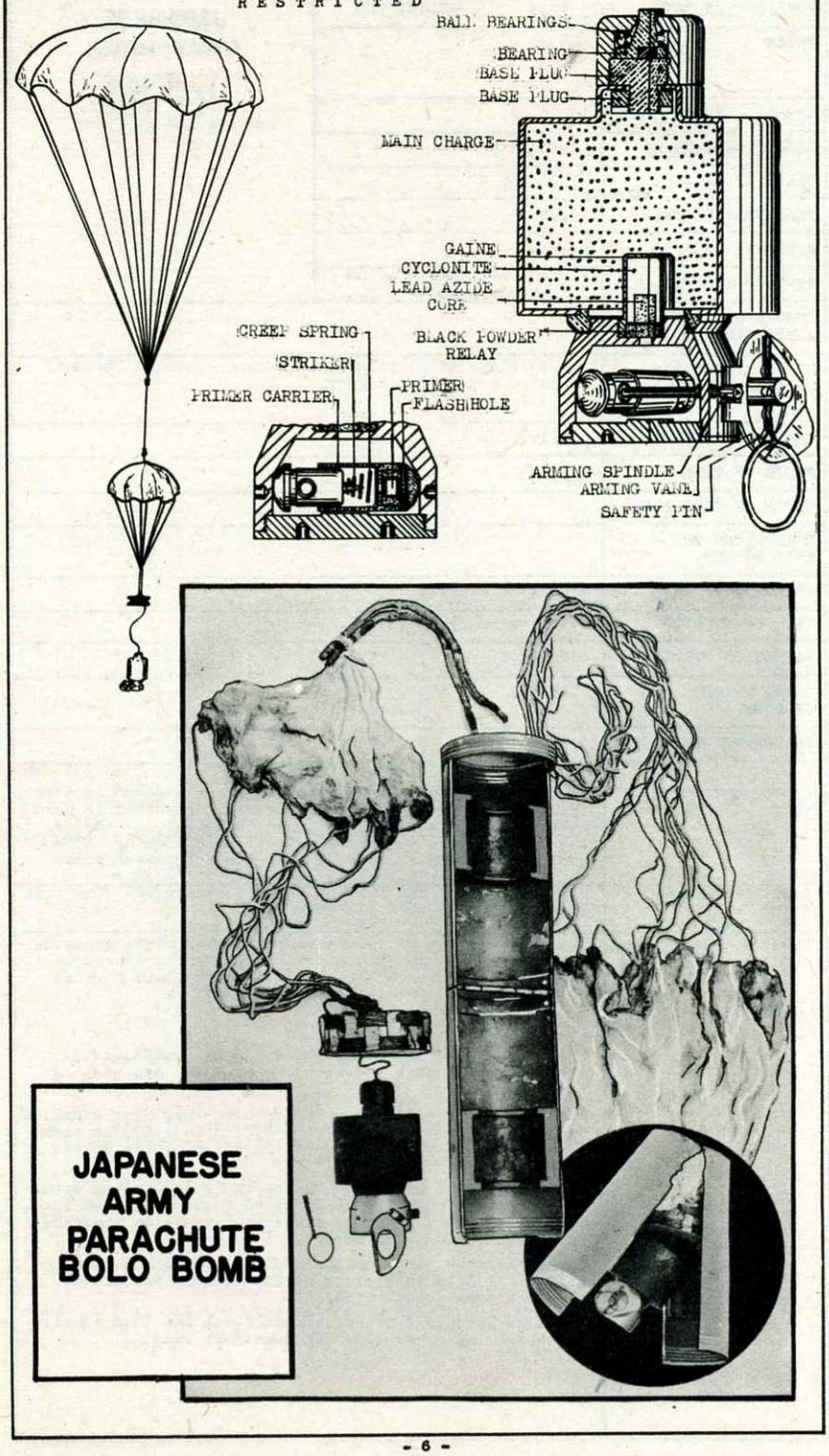
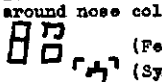


JAPANESE 1/3 KG. BOMB

PUBLICATION DATE: July 1944 RESTRICTED		**JAPANESE NAVY BOMB 1/3 KG.** Anti-Parked Aircraft
FUZES B-5(a)		
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.	



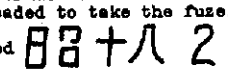
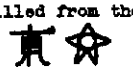
JAPANESE ARMY PARACHUTE BOLO BOMB

Publication Date: July 1944 RESTRICTED	
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.  (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 %

JAPANESE ARMY PARACHUTE ANTI-AIRCRAFT BOLO BOMB

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  (February 1943)  (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.

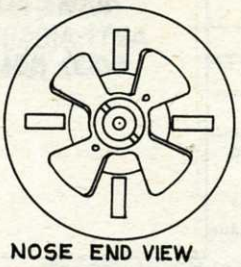
As soon as the bomb starts to fall through the air, the parachutes open, the cable partially unwinds, and the fuze arming vane rotates. The hinge attachment to the spindle permits the vane to flutter like a falling leaf, but the bent surfaces insure revolution of the vane in the same direction so that 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



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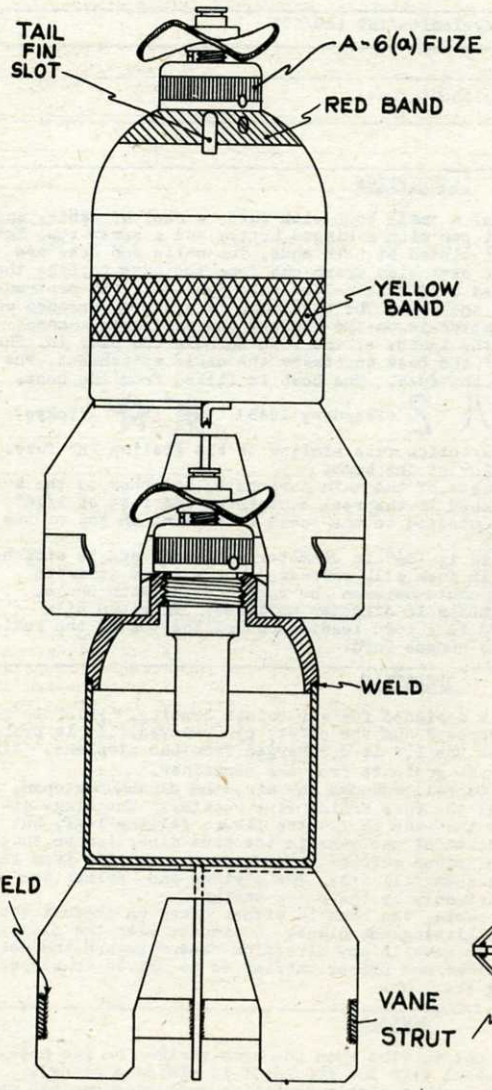
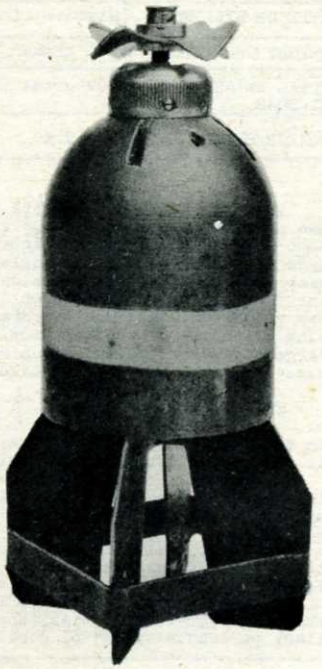
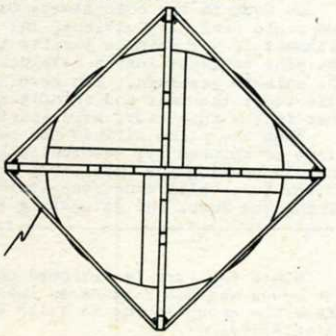
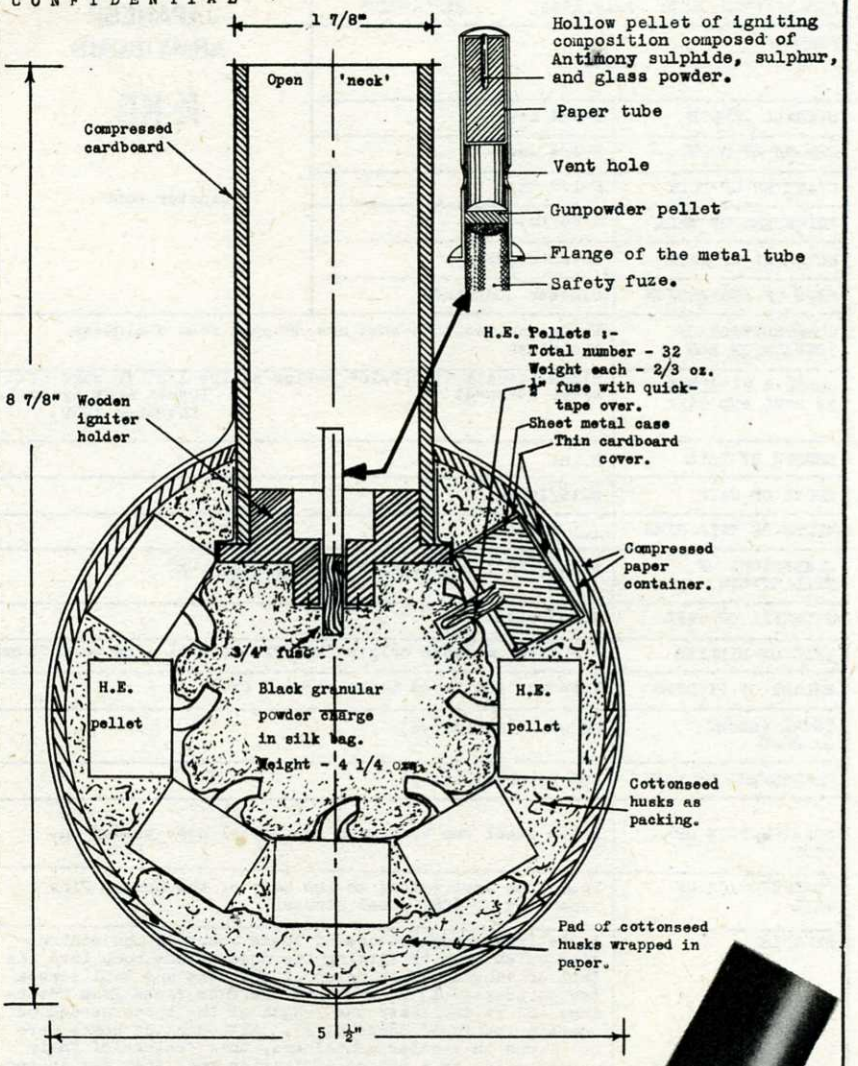




TAIL END VIEW



PUBLICATION DATE: July 1944 RESTRICTED		JAPANESE ARMY BOMB
FUZES: A-6(a)		½ KG.
OVERALL LENGTH	4-3/4 in.	
LENGTH OF BODY	2-3/4 in.	
DIAMETER OF BODY	2-1/8 in.	Cluster Bomb
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)	
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/TNA mixture originally. Filled with sand when found	
WEIGHT OF FILLING	Unknown. (Believed to be about 7 oz.)	
TOTAL WEIGHT OF BOMB	16 oz. (estimated)	
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.	



JAPANESE ANTI-AIRCRAFT MISSILE