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AUSTRALIAN MILITARY FORCES

ENGINEER-IN-CHIEF BOMB DISPOSAL TECHNICAL INSTRUCTIONS

11 March, '44

Headquarters,
Australian Military Forces

Prepared by the Staff of the Engineer-in-Chief and issued under the direction of the Commander-in-Chief

Printed by Authority McLaren & Co. Pty. Ltd., Melbourne

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AUSTRALIAN MILITARY FORCES

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E in C
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E IN C BOMB DISPOSAL TECHNICAL INSTRUCTIONS

1. Issued herewith are revised Bomb Disposal Technical Instructions. The revision was necessary because of extensive new information received.

2. Acknowledgment is made for information received from RAE and Allied Forces thus enabling the Manual to be kept up-to-date, and it is pointed out that the future value of these instructions will depend upon further new data received from the field.

3. Details of techniques, special appliances, etc contained herein will NOT be communicated to anyone not directly entitled to such information.

4. All previous E in C Bomb Disposal Technical Instructions are cancelled by the issue of this Manual and will be destroyed by fire.

(C.S. STEELE)
Major General
Engineer in Chief

11 Mar 44.

TABLE OF CONTENTS

A :- INTRODUCTION

Sec. 1 - General Instructions

B :- JAPANESE BOMBS AND COMPONENTS

Sec. 2 - H.E. Bombs
3 - Anti-personnel Bombs
4 - Incendiary Bombs
5 - Miscellaneous Aerial Missiles
6 - Fuzes, Serial A
7 - " " B
8 - " " C
9 - " " D
10 - Gaines, Booster Systems and Magazines
11 - Ammunitions

CHAP. C :- GERMAN BOMBS AND COMPONENTS

Sec. 12 - H.E. Bombs
13 - Anti-personnel Bombs
14 - Incendiary Bombs
15 - Miscellaneous Aerial Missiles
16 - Fuzes
17 - Disposal Techniques
18 - Miscellaneous Data

CHAP. D :- MISCELLANEOUS TECHNICAL INSTRUCTIONS

Sec. 19 - Destruction of Bombs, Ammunition, etc.
20 - General

CHAP. E :- EQUIPMENT AND PLANT

Sec. 21 - General Use
22 - Anti-Japanese
23 - Anti-German

CHAP. F :- CONCERNING CIVIL DEFENCE ORGANISATION

Sec. 24 - Function in Bomb Disposal, Co-operation etc.

(See also Reverse side.

B

JAPANESE
BOMBS, AMMUNITION, ETC.

Sec. 2 : H.E. Bombs.
3 : Anti-personnel Bombs
4 : Incendiary Bombs
5 : Miscellaneous Aerial Missiles
6 : Fuzes, Serial A
7 : „ „ B
8 : „ „ C
9 : „ „ D
10 : Gaines, Booster Systems & Magazines
11 : Ammunition

JAPANESE H.E. CLUSTER BOMB - 1/3 Kg

1. CHARACTERISTICS.

(a) The bomb utilizes the body of Fuze B.5(A) as part of its own construction

(b) The principle of a hollow-cone charge is employed

2. DETAILS.

Dimensions: Lengths - overall .. .. 10¼"
body incl. nose .. 4¼"
tail tube .. .. .. 2"
tail unit .. .. .. 4"
Diameter of barrel .. .. .. 1½"
Barrel wall thickness .. .. 3/100"

Weights : Burster charges - TNT/RDX .. 104 grams
RDX .. .. 4.6 "
Booster charge RDX .. .. .. 5.7 "
Total charges .. .. 114.3 "

Colour : BLACK body and nose
ALUMINIUM - like tail tube and fins

Markings : YELLOW ⅜" band around barrel.

3. USE.

ARMY Airforce bomb which is carried in a cluster of 76 bombs in a container (see BDTI B/5/116).

Bomb is mainly for AA usage, both airborne and grounded. Other suitable targets include AFVs and constructions.

4. DESCRIPTION. (See diagram)

The bomb comprises 3 main structural portions :

(a) Nose piece. Attached for ballistic purposes is a hollow domed cone constructed of 1/50" thickness sheet steel. (In UXBs, the nose will tend to collapse on impact with hard surfaces.)

(b) Body. The barrel wall is of pressed steel 3/100" thickness, and bent over to retain the nose piece. Located in the body is a hollow-cone of thin pressed steel. The main burster charge of TNT/RDX is cast in the space between the cone and the body walling. Cast in the neck of the body is a smaller burster charge of RDX which serves as a subsidiary booster.

(c) Tail assembly is constructed wholly of anodised duralumin (aluminium-like in appearance) and comprises -

(i) Tail tube (or tail extension piece) which screws over the neck of the body and is threaded at the rear end to receive the body of fuze B.5(A). The septum is perforated centrally to take an initiator. A cup containing a burster charge of RDX (5.7 grams) fits inside a cardboard cylinder, both sliding into the tube below the septum.

(ii) Fuze body. This also serves as a tail cone For detail description see BDTI B/7/101.

(iii) Tail fin unit. 3 fins are screwed to the conical fuze body and are braced mid-length with hexagonal-strutting of shape and length as shown. A hexagonal-shaped plate closes their extreme end to ensure vertical descent.

5. FUZING.

Tail fuze B.5(A) is a structural part of the bomb. For description see BDTI B/7/101.

6. DISPOSAL.

Wherever possible, destroy in situ the complete bomb (see NOTES 1 and 2).

7. PRECAUTIONS WHEN HANDLING.

In UXBs, the arming screw will generally be found missing. In some cases it may be only partly withdrawn. In both conditions the bomb is dangerous and the following precautions should be observed when necessary to handle -

(a) Pick up bomb by the middle and carry HORIZONTALLY.

(b) Avoid jolting and do NOT drop it.

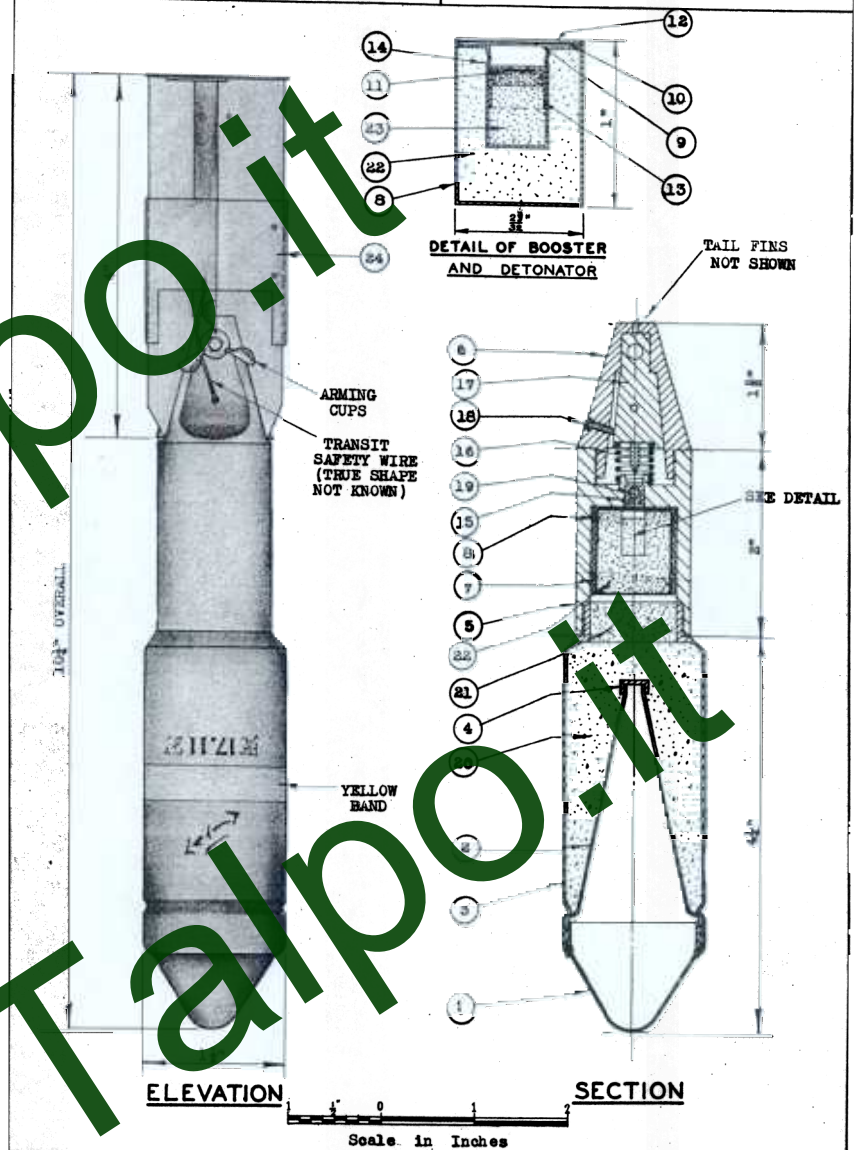
NOTE 1 :- In rare cases the arming screw may be found in its original position and undamaged. When this is so the bomb cannot function of its own accord and is safe to handle.

NOTE 2 :- If for any special reason dismantling is necessary, do NOT attempt to unscrew the tail cone first. Instead, commence dismantling from the nose end. Keep the bomb HORIZONTAL until the booster container is finally extracted.

NOTES

JAPANESE
H.E. (CLUSTER) BOMB. 1/3 KG.
INCORPORATES FUZE B. 5 (A).

USE – ARMY AIRFORCE	REFER E IN C. BDTI B/2/100



LEGEND

ITEM	MATERIAL	ITEM	MATERIAL
1. NOSE PIECE	STEEL	13. LEAD AZIDE CONTAINER	ALUMINIUM
2. CENTRAL CONE	STEEL	14. CUP HOLDER	ALUMINIUM
3. BODY CASING	STEEL	15. DETONATOR HOLDER	BRASS
4. CONE CAP	STEEL	16. CREEP SPRING	STEEL
5. TAIL TUBE	DURALUMIN	17. INERTIA PELLET	STEEL
6. BODY OF FUZE	DURALUMIN	18. GUIDE SCREW	STEEL
7. CYLINDER	CARDBOARD	19. INITIATOR	
8. BOOSTER CONTAINER	ALUMINIUM	20. BURSTER	R.D.X./T.N.T. (50/50)
9. WASHER	ALUMINIUM	21. BURSTER	R.D.X.
10. BLUE SILK GAUZE		22. BOOSTER	R.D.X.
11. BLUE SILK GAUZE		23. DETONATOR	LEAD AZIDE AND P.E.T.N.
12. WASHER	ALUMINIUM	24. TAIL FINS	DURALUMIN

JAPANESE H.E. CLUSTER BOMB - 1 Kg
Incorporates Fuze B.5(B)

1. REFERENCES.

BDTI B/7/115 should be read in conjunction with this Tech Instn.

2. DETAILS.

Dimensions:	Overall length (incl. fins).	16¾ ins
	Length of body (incl. nose).	8⅜ ins
	Diameter of body	1-13/16 ins
	Wall thickness of body	0.07 ins
	Width of tail	1-25/32 ins
Weights:	Total weight (excl. nose) ..	1.01 Kg
	Filling(HEXANITE and ANISOL)	313.5 grams
	Charge/weight ratio	31%
Colour:	Body - BLACK (assumed)	
	Tail unit - unpainted TIN	
Markings:	"Anchor" ideograph stencilled in purple on tail denoting NAVY Airforce type.	

3. USE.

(a) This bomb is one of a cluster (probably 40 in all) carried in a container which separates after release from the aircraft and scatters the cluster.

(b) Due to the application of the shaped charge (as in 1/3 Kg H.E. type) probable targets include airborne and grounded aircraft, AFVs, oil installations and structures.

4. DESCRIPTION. (See diagram)

The bomb consists of 3 main structural portions:-

(a) Body. A side-welded cylinder of sheet steel is crimped near the nose to retain internally a cone made of thin pressed steel. A hemispherical ballistic cap of thin pressed steel is fitted at the nose end. This would tend to collapse on impact with a hard surface. The rear end of the cylinder is crimped to a ring which screws into the base of the fuze body.

(b) Fuze body. For description see BDTI B/7/115.

(c) Tail unit. This consists of a light sheet tin cone secured to the fuze body by 4 small screws, and 4 fins of similar material soldered to the cone. A tin cylinder 1⅛" wide braces the fins, protects the vanes from damage and assists their rotation. Extending the full length of the tail unit and passing through the cone is a reach rod terminating at the arming vanes.

5. FUZING.

The fuzing system, known as fuze B.5(B), is incorporated in the rear end of the bomb body. Refer to BDTI B/7/115 for details.

6. FILLING.

The main filling is HEXANITE and ANISOL (37/63 approx) cast in the space between the cone and the body casing. The rear end is formed to take a small gaine.

7. DISPOSAL.

(a) Destruction:

Wherever possible, destroy the complete bomb in situ

(b) Handling Bomb:

When the Safety Detent Pin and Reach Rod are missing in UXBs, the striker needle is either held off the detonator cap only by a light creep spring or more probably has pierced the cap. In both conditions the bomb is dangerous to handle. If necessary to do so, pick up bomb by the middle, carry horizontally, avoid jolting and do NOT drop it.

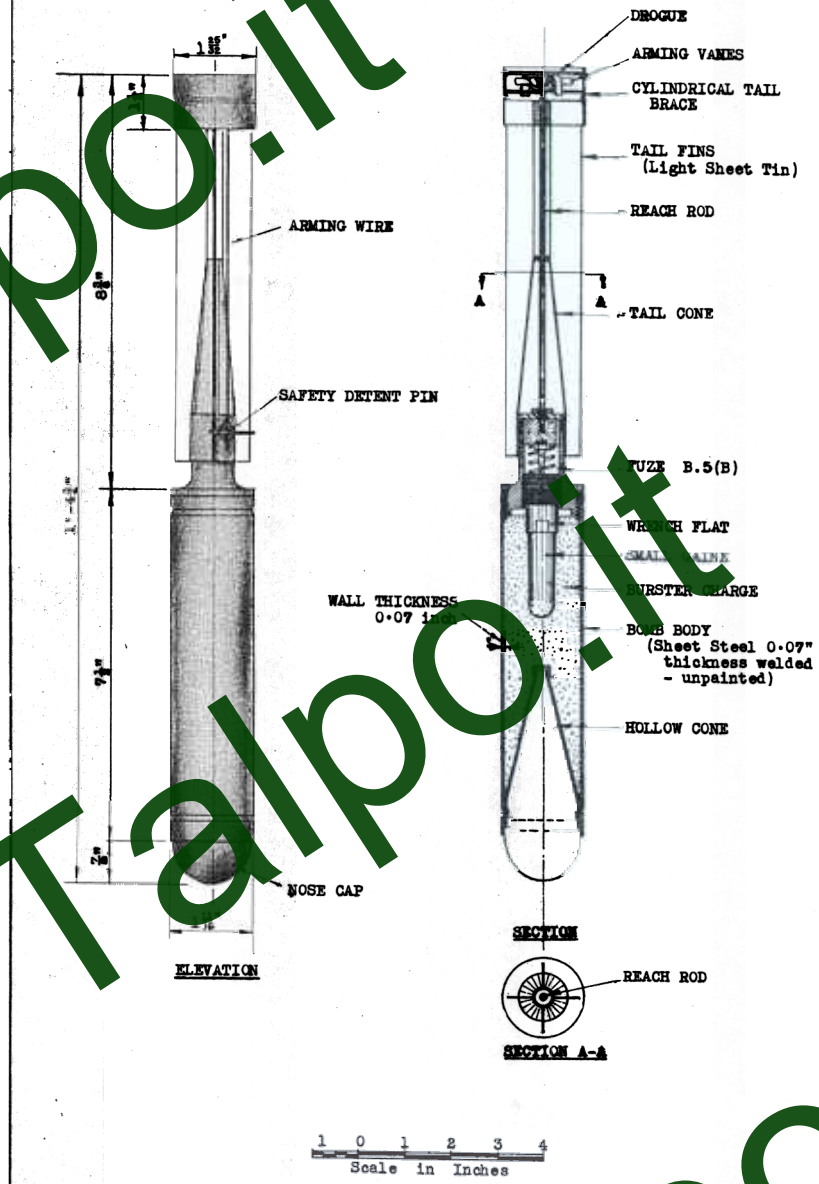
(c) Rendering safe (provisional)

Before handling, dismantling or transporting a UXB the fuze should be treated wherever practicable with an approved explosive neutralizer (see BDTI B/10/93, para 14) on the fairly certain assumption that the detonator is pierced.

NOTES

JAPANESE
H. E. (CLUSTER) BOMB – 1 Kg.
INCORPORATES FUZE B.5(B)

USE :- NAVY AIRFORCE	REFER E IN C B.D.T.I. B/2/114



JAPANESE G.P., H.E. BOMB, TYPE 99 - 30 Kg

1. DETAILS.

Dimensions:	Overall length	2'9¼"
	Diameter of body	5⅞ ins
	Wall thickness of body	9/32 ins
	Length of body	2'4⅛"
	Length of tail	1'1¼"
	Diameter over tail fins	8¼ ins
Weights:	Main filling TNT/RDX (50:50).	11¾ Kg
	Charge/weight ratio	39%
Colour:	Painted BLACK overall	
Markings:	YELLOW and a WHITE band, each ⅞" wide, around body forward of suspension lug.	

2. USE. General Purpose (GP) bomb for use by ARMY Air-force.

3. DESCRIPTION. (See diagram). The general construction is similar to that of the 50 Kg H.E. bomb described in BDTI B/2/4. The bomb consists of the following portions :-

(a) Barrel (1), which is a cylinder of 9/32" thickness steel, is threaded at the fore end to screw on to the nose piece (2), and is secured thereto with a single grub screw (10). A swinging suspension lug is fitted at the point of balance.

(b) Nose-piece (2) of cast steel machined down to form a thread for screwing into the barrel. Two grub screws (9), diametrically opposite, engage in the thread of the nose fuze and secure it.

(c) Tail unit, the cone (3) of which is 9/16" steel, is welded to the rear end of the barrel. A steel adaptor (7) is welded to the apex of the cone for fitment of a tail fuze also secured by two grub screws. Four fins (4) of sheet steel are spot welded to the cone and, at their extreme end, are rivetted to box-type struts (6).

5. MAIN FILLING. The nose piece, barrel and tail cone are separately filled with a combination of TNT and RDX (50:50), which is of a hard nature and white in colour. The explosive is made up in block form wrapped in a cardboard covering. A cardboard separating disc is placed at each end of the barrel filling.

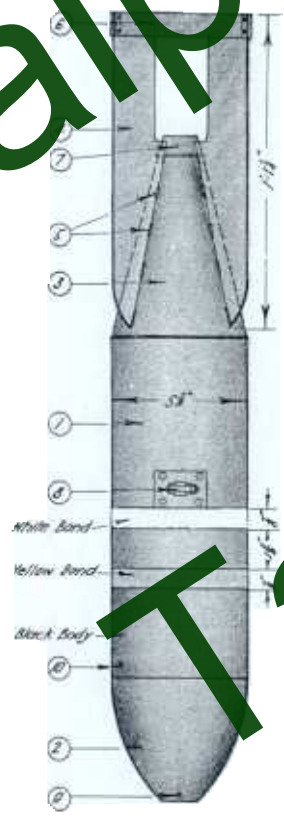
6. FUZING. Normal fuzing will probably be both NOSE FUZE A.3(A) and TAIL FUZE B.1(A), together with exploder systems normal for each of these types.

7. DISPOSAL. (Bomb filled and fuzed as above)

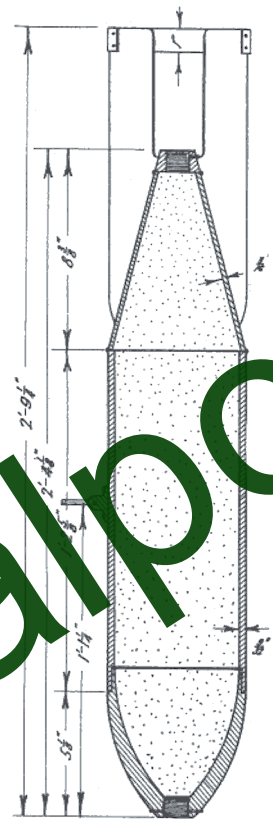
(a) Fuze removal : See appropriate BDTIs.
(b) Demolition (fuzed or unfuzed) : Normal methods.
(c) Trepanning (if nose piece not removable) : Permissible, but see BDTI D/20/62 for Special Precautions.
(d) Steaming-out (or boiling-out) : Permissible, but by improvised methods - see BDTI D/20/31
(e) Burning-out : Not permissible.

JAPANESE
G. P. BOMB TYPE 99 - 30 KG.

USE:- ARMY AIRFORCE | REFER B.D.T.I. B/2/102

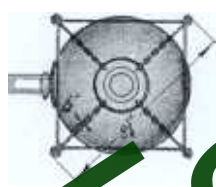


ELEVATION



SECTION

NOSE VIEW



TAIL VIEW

1 0 1 2 3 4 5 6
Scale in Inches

LEGEND	
1. BARREL	7. ADAPTOR
2. NOSE PIECE	8. SUSPENSION
3. TAIL CONE	9. GRUB SCREWS
4. TAIL FINS	10. GRUB SCREW
5. WELDS	
6. STRUTS	

JAPANESE G.P., H.E. BOMB, TYPE 94 - 50 Kg

1. DETAILS.

Dimensions:	Overall length.	3'4½" (aver.)
	Length of body.	2'10¾"
	Diameter of barrel	7⅛ ins
	Thickness of barrel wall	7 mm (9/32" approx)
	Thickness of tail fins..	2 mm
Weights:	Filling - nose block. ..	7 lbs PICRIC
	" barrel block..	30 lbs "
	" tail block. ..	5 lbs "
	Total weight of filling.	42 lbs "
	Charge/weight ratio.. ..	39% approx.
Colour:	BLACK overall	
Markings:	(a) RED band, ¾" wide, on tip of nose piece	
	(b) One YELLOW and one WHITE band, each about 1" wide, around barrel forward of suspension	
	(c) "50 K" stencilled in white paint on barrel near nose piece.	

2. USE.

A General Purpose (GP) bomb in common use by the ARMY Airforce.

3. DESCRIPTION. (See diagram)

The bomb comprises 3 separate portions :-

(a) Barrel. A cylinder 7⅛" external diameter of 7 mm (9/32 ins) thickness steel. The fore end is threaded internally to screw on to the nose piece. A swinging type suspension lug is fitted at the point of balance.

(b) Nose piece of steel, which is machined down and threaded (8 t.p.i.) for screwing into the barrel.

(c) Tail unit. The cone is butt welded to the barrel and at the apex an adaptor, threaded internally, is welded on to take a tail fuze. Four fins, either "T" or spot welded to the cone, are braced at their extreme end with box-type struts.

4. FILLING.

The filling consists of 3 separate preformed blocks of PICRIC ACID. The nose block is pressed crystalline powder, the barrel block is cast whilst the tail block is pressed crystalline powder with a cast central core about twice the width of the exploder tube and extending from the closed end of the exploder tube to the fore end of the block.

Each block is wrapped in cardboard approx. 1/16" thickness. A barrier consisting of a felt disc 1/4" thick and a waxed cardboard disc 3/16" thick is placed between each block. The nose block fits against a shaped wood block placed inside the fuze opening. A space 3 mm wide between the blocks and the casing is filled with paraffin wax.

A pocket 2⅝" deep is formed in the nose block to take 2 Picric pellets (one a ring pellet). A pocket 5" deep is formed in the tail block to take an exploder tube.

5. FUZING.

Fuzes generally used are :-

Nose Fuze A.2(A) and modifications
Tail Fuze B.1(A) " "

6. DISPOSAL. (Bomb filled and fuzed as above)

(a) Fuze removal : See appropriate BDTIs.

(b) Demolition (fuzed or unfuzed) : Normal methods.

(c) Trepanning (if nose piece not removable) : Permissible, but see BDTI D/20/62 for Special Precautions.

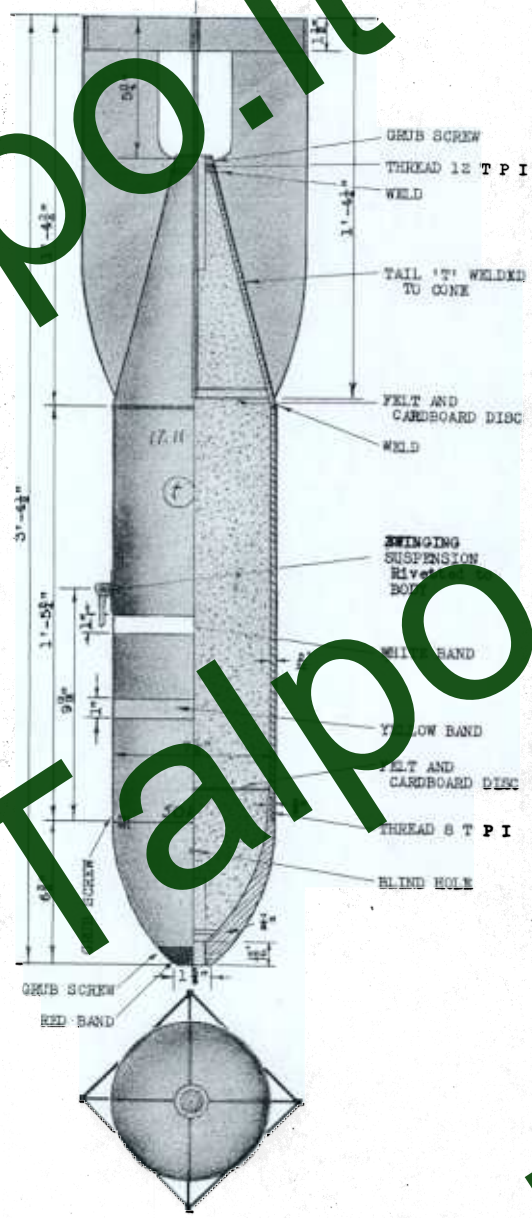
(d) Steaming-out (or boiling-out) : Permissible, but by improvised methods (see BDTI D/20/31).

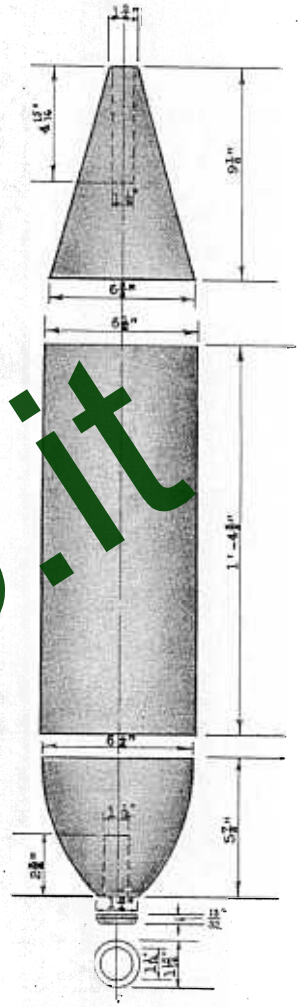
(e) Burning-out : Not permissible.

NOTES

JAPANESE
G.P. BOMB TYPE 94 - 50KG

USE - ARMY AIRFORCE	REFER E IN C B.D.T.I. B/2/4





ELEVATION OF
BLOCK FILLINGS

JAPANESE G.P., H.E. BOMB, TYPE 94 - 50 Kg
Incorporates Fuze C.3(A)

1. REFERENCES.

(a) BDTI B/2/4 - description of 50 Kg, Type 94, bomb, which resembles subject bomb
(b) BDTI B/8/95 - description of Fuze C.3(A)

2. DETAILS.

Dimensions: Overall length.. .. .. 3'3½"
Length of body.. .. .. 2'9¾"
Diameter of barrel. .. .. 7⅛"
Wall thickness.. .. .. 9/32"
Diam nose fuze opening .. .. .. 2⅞"

Weights : Total weight (fuzed).. .. .. .. 110 lbs
Bomb empty (incl. fuze).. .. .. 67 lbs
Fuze C.3(A).. .. .. 9 lbs
Burster charge (PICRIC ACID) .. 43 lbs
Charge/weight ratio 39%

Colour : BLACK (painted)

Markings : A YELLOW and a WHITE band, each 1" wide around barrel forward of suspension.

3. USE. ARMY Airforce type General Purpose (GP) bomb, fuzed only for long delay.

4. DESCRIPTION. (See diagram)

Construction is identical with the 50 Kg Type 94 H.E. bomb described in BDTI B/2/4, EXCEPT for the following differences :-

(a) The nose is machined down 1" to provide a fuze opening 2⅞" diam. to take a C.3(A) fuze. This has reduced the maximum width of nose wall from ⅞" to ⅝"
(b) The fins, at their extreme end, are fitted with a closing plate.

5. FILLING.

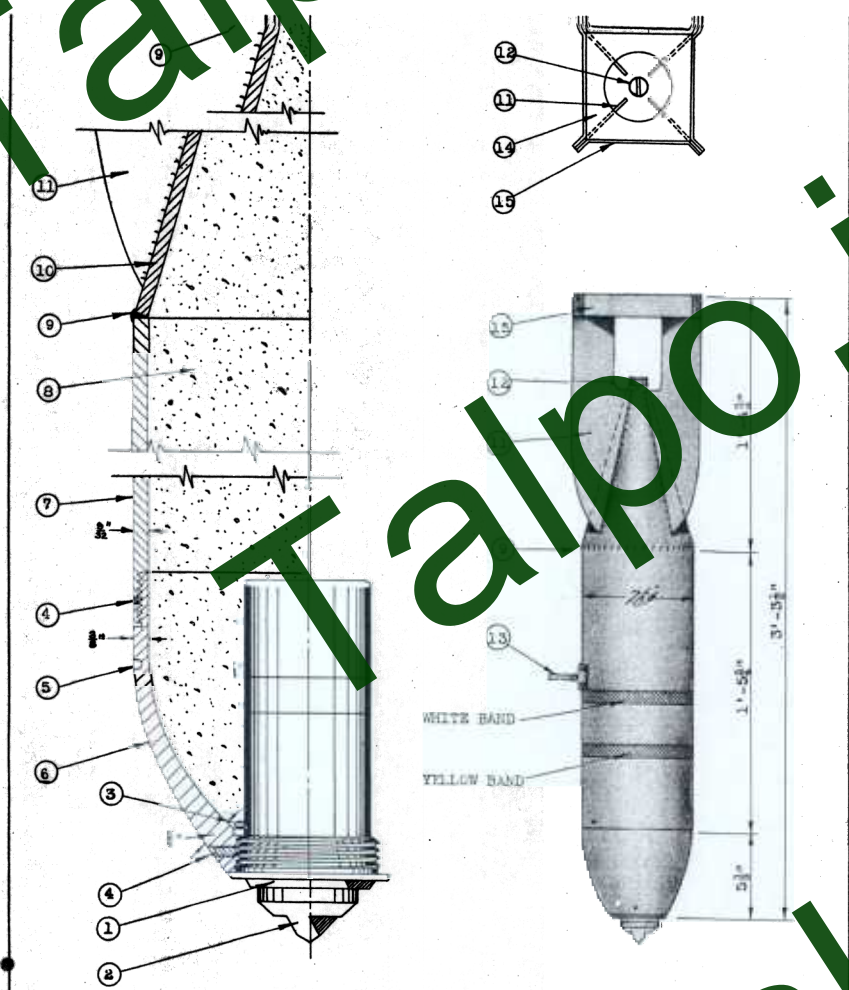
Burster charge same as described in BDTI B/2/4 except that pocket formed in nose block will take a C.3(A) fuze and booster.

6. FUZING.

Only chemical long delay fuze type C.3(A) can be fitted at the nose.

7. DISPOSAL. (Bomb filled and fuzed as above)

(a) Demolition : Normal methods
(b) Fuze removal: For fuze C.3(A) see BDTI B/8/95
(c) Trepanning : May be trepanned AFTER fuze has been immunized, but normal method is to unscrew nose piece.
(d) Steaming-out: May be steamed-out AFTER fuze has been immunized, NEVER BEFORE.
(e) Burning-out : NEVER permissible.



PART SECTION

Scale in Inches

ELEVATION

Scale Inches

LEGEND	
1. FUZE C.3(A)	9. WELD
2. FUZE NOSE-CAP	10. TAIL CONE
3. LOCKING PLUNGER	11. TAIL FINS
4. GRUBSCREW	12. BAKELITE PLUG
5. BLIND HOLES (2)	13. SUSPENSION
6. NOSE PIECE	14. CLOSING PLATE
7. BARREL CASING	15. TAIL STRUTS
8. BURSTER CHARGE	

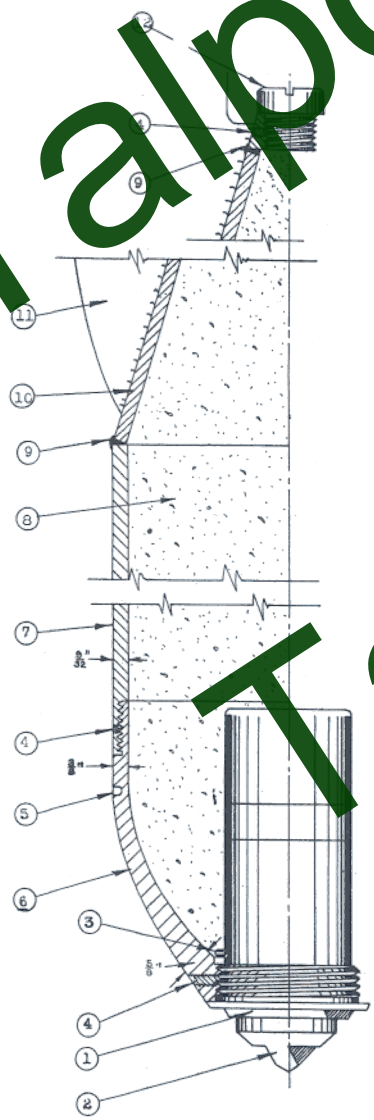
JAPANESE

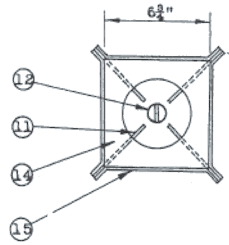
G. P. H.E. BOMB TYPE 94 - 50 KG

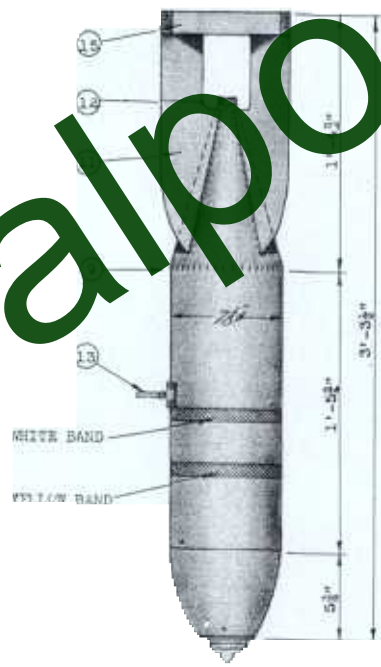
INCORPORATES FUZE C.3(A)

USE - ARMY AIRFORCE

REFER B. D. T. I. B/2/96







PART SECTION

ELEVATION

Scale in Inches

Scale Inches

LEGEND

1. FUZE C.3(A)	9. WELD
2. FUZE NOSE-CAP	10. TAIL CONE
3. LOCKING PLUNGER	11. TAIL FINS
4. GRUBSCREW	12. BAKELITE PLUG
5. BLIND HOLES (2)	13. SUSPENSION
6. NOSE PIECE	14. CLOSING PLATE
7. BARREL CASING	15. TAIL STRUTS
8. BURSTER CHARGE	

JAPANESE G.P. H.E. BOMB, TYPE 97 - 60 Kg

1. DETAILS.

Dimensions: Overall length.. .. .. .. 3'4¼"
Length of body.. .. .. .. 2'8⅜"
Diameter of barrel .. .. 7⅞ ins
Wall thickness.. .. .. .. 9/32 ins

Weights: Total weight (excl. fuze) 130 lbs (aver.)
Empty bomb .. .. 80 lbs "
Filling (see para 4).. .. 50 lbs "
Charge/weight ratio .. .. 38½% approx.

Colour: GREY overall

Markings: Though structural details are uniform , as above, colour markings have varied as follows:-

Example A : (land use)
HEXANITE and ANISOL filling
1" BLUE band around barrel aft of suspension
Two thin RED lines diametrically opposite and full length of body.
GREEN tail fin struts.

Example B : Cast PICRIC filling
Same as A but blue band is absent.

Example C : HEXANITE and ANISOL filling
Same as A, plus 1" BLACK band two-thirds around barrel and above blue band.

Example D : HEXANITE and ANISOL filling
1" BLUE band around barrel aft of suspension
GREEN tail fin struts
3" GREEN band on tip of nose

Example E : HEXANITE and ANISOL filling
Same as D plus standard 2 thin RED lines

Example F : (land use) Cast PICRIC filling
No colour markings.

2. USE.

General Purpose (GP) type bomb for use by NAVY Airforce.

3. DESCRIPTION. (see diagram)

This bomb consists of 3 main structural portions

(a) Barrel. A cylinder of 9/32" thickness steel. Suspension is Navy type eye-bolt welded on.

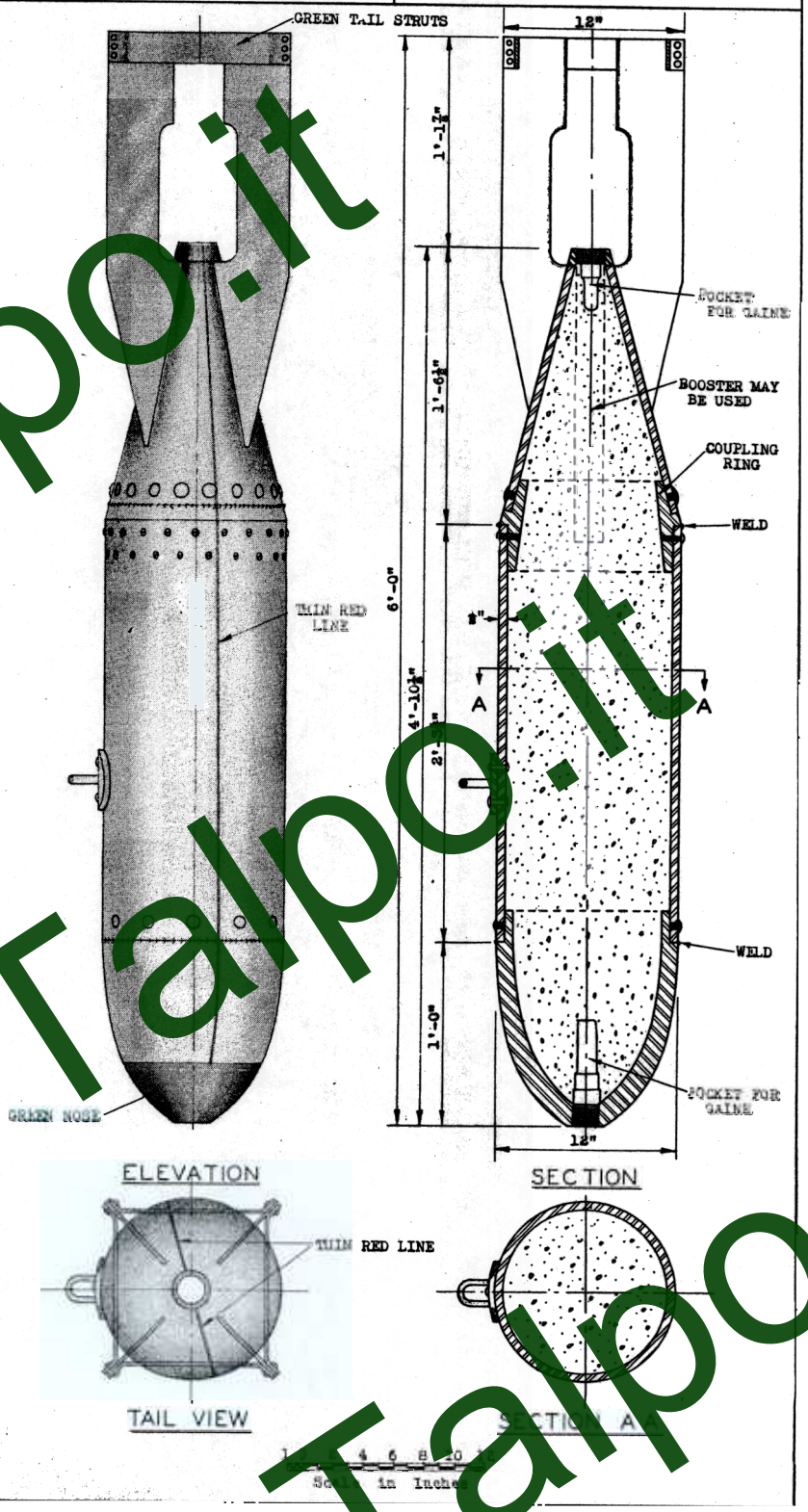
(b) Nose piece of cast steel. The barrel slides over the machined down portion and is secured by 20 rivets in 2 rows of 10 each. The joint is sealed by a continuous weld. A grub screw through the nose engages in the thread of the fuze.

JAPANESE

G.P. H.E. BOMB TYPE 98 - 250 Kg.

USE - NAVY AIRFORCE

REFER E IN C B.D.T.I. 8/2/52



JAPANESE S.A.P., H.E. BOMB, TYPE 99 - 250 Kg

1. DETAILS.

Dimensions: Overall length .. .. 5'8¼"
Length of body .. .. 3'3¾"
Diameter of body .. .. 12"
Min. thickness of body wall . ⅞"
Width of tail fins . .. . 13½"

Weights : Total weight . .. . 546 lbs
Weight of filling (ANISOL) .. 133 lbs
Charge/weight ratio .. .. .. 24% approx.

Colour : GREY (painted)

Markings : (Bomb filled with ANISOL)-

GREEN band 6" wide on nose
RED LINES (2) diametrically opposite and full length of bomb casing.

2. USE.

NAVY Airforce S.A.P. type bomb. Suitable targets - lightly armoured ships and shore installations (medium constructions).

3. DESCRIPTION. (See diagram)

The bomb comprises 3 main structural portions:-

(a) Body. The barrel and nose are a single steel casting, and machined externally and internally. Provision is made in the nose for a fuze and a grub screw to secure it. Suspension is normal Navy type eyebolt.

(b) Base plate. A steel base plate screws into the rear end of the body and is locked thereto with a grub screw. The top flange of the plate is machine slotted for an assembly tool. Positioned centrally is a threaded hole to take a fuze. A conical-shaped booster container screws on to a flange formed below this hole

(c) Tail unit. The tail cone, made of sheet steel, is secured to the top flange of the base plate with 6 screws. Hinged doors are fitted to the 3 access openings. A steel adaptor is welded to the apex of the cone to receive the tail arming assembly of the tail fuze.

Welded to the cone are 4 tail fins which are shaped on the internal edge to allow for the fuze arming vanes. Cylinder-type bracing is fitted at the extreme end of the fins.

NOTE 1 :- In UXBs, the tail cone will often separate from the body on penetration.

4. FILLING.

(a) The burster charge of ANISOL is in the form of about 7 preformed blocks of the pressed powdered explosive, each block covered with a layer of paper, a thin layer of paraffin wax and a layer of cloth. The blocks are embedded in paraffin wax in the bomb case. The rear block is perforated to take the booster container and its diameter is reduced by 1½" so as to fit into a cylinder made of a composition material acting as a packing between it and the flange on the base plate. The recesses on the underside of the base plate are filled with a similar material. Between this and the filling are 2 wide cardboard discs.

(b) The booster explosive is 330 grams of pressed powdered PICRIC ACID wrapped in waxed paper. A pocket is formed to take a Navy type standard gaine. A perforated cardboard washer fits over the top of the filling.

5. FUZING.

Tail fuze B.2(A) is normal fuzing. Nose fuze A.1(C) would be added if dual fuzing is desired.

6. DISPOSAL. (Bomb filled and fuzed as above).

(a) Fuze removal

(i) Fuze A.1(C) - see BDTI B/6/25
(ii) Fuze B.2(A) - see BDTI B/7/57

(b) Demolition: Normal methods

(c) Trepanning: Permissible, but not necessary if base plate is removable.

(d) Steaming-out: Permissible, but not necessary if base plate is removable and blocks can be eased out (see BDTI D/20/117, para 3)

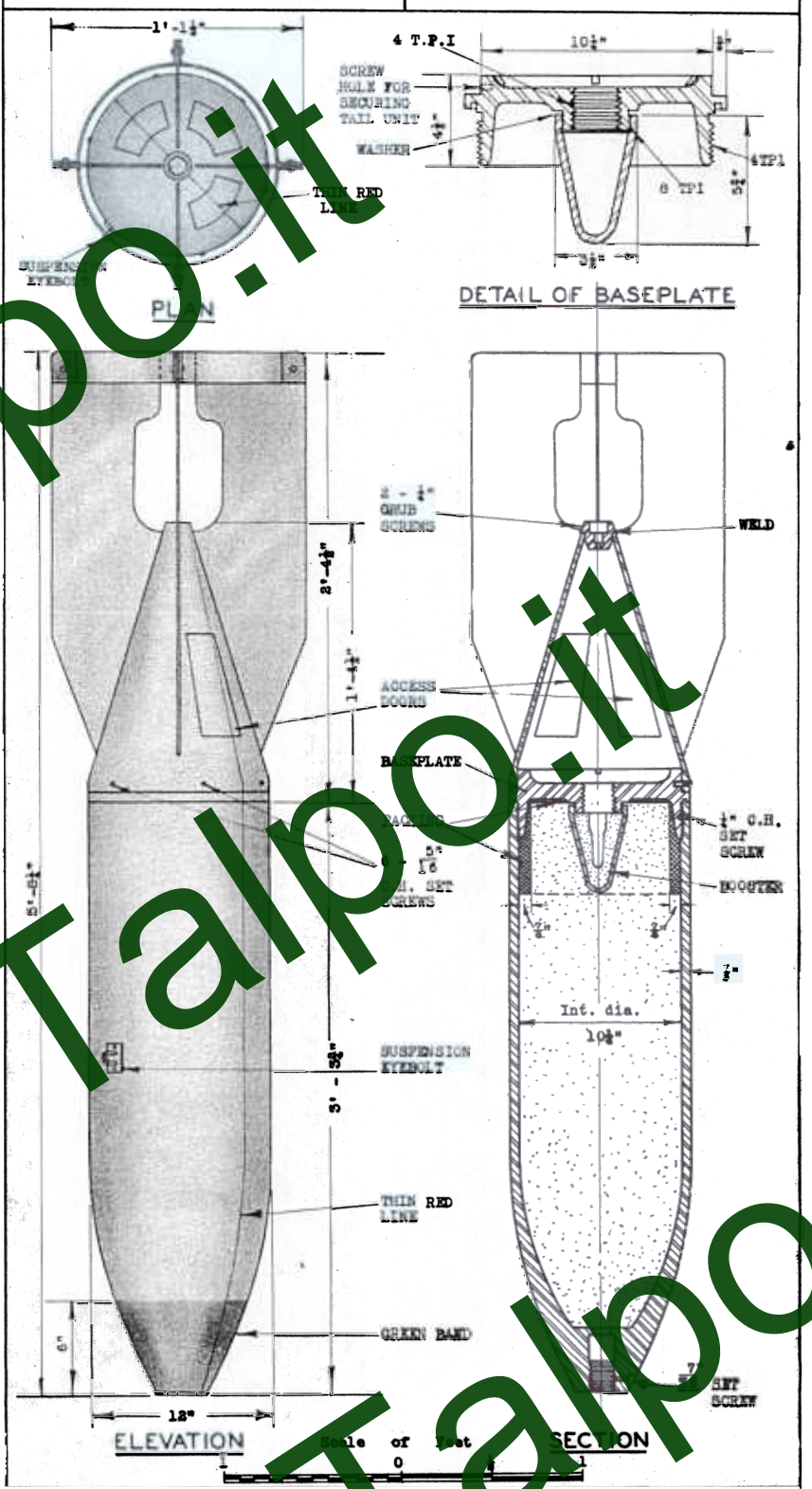
If steaming-out is resorted to, an improvised hand attachment should be used (see BDTI D/20/31, PART C)

(e) Burning-out: NOT permissible.

NOTES

JAPANESE
S.A.P. H.E. BOMB, TYPE 99 – 250 KG.

USE – NAVY AIRFORCE	REFER E. IN C. BDTI B/2/65



JAPANESE A.P., H.E. BOMB - 800 Kg

1. JAPANESE DESIGNATION.

2. DETAILS.

Dimensions: Length (less tail unit). .. .. .. 48.3"
Diameter (maximum) .. .. 16.1"
Wall thickness (Tapers from 4" near the solid nose end to 2" at the tail end)

Weights: Filled (less tail unit). .. .. .. 746 Kg
Burster charge. .. .. 30 Kg
Charge/weight ratio 4%

Colour:

Markings:

3. USE.

NAVY Airforce special type A.P. bomb (believed to be a converted projectile) for use where a high degree of penetration is required, e.g. heavy fortifications and heavy armoured ships.

4. DESCRIPTION. (See diagram)

The tail unit was missing from the specimen bomb.

The remainder of the bomb, i.e. body and nose, is of ONE PIECE construction of forged machined steel, heavily constructed at the nose, and threaded internally at the base to take a base plate. A suspension lug is bolted to the body at the point of balance.

8 indentations are cut in the nose, presumably for the fitment of a ballistic cap when used as a projectile.

The base plate is holed and threaded to receive twin fuzes.

5. FILLING.

Burster charge is cast ANISOL with an aluminium plug as a cushion in the forward end.

6. FUZING.

Twin fuzes of type B.2(B) are fitted in the baseplate.

7. DISPOSAL.

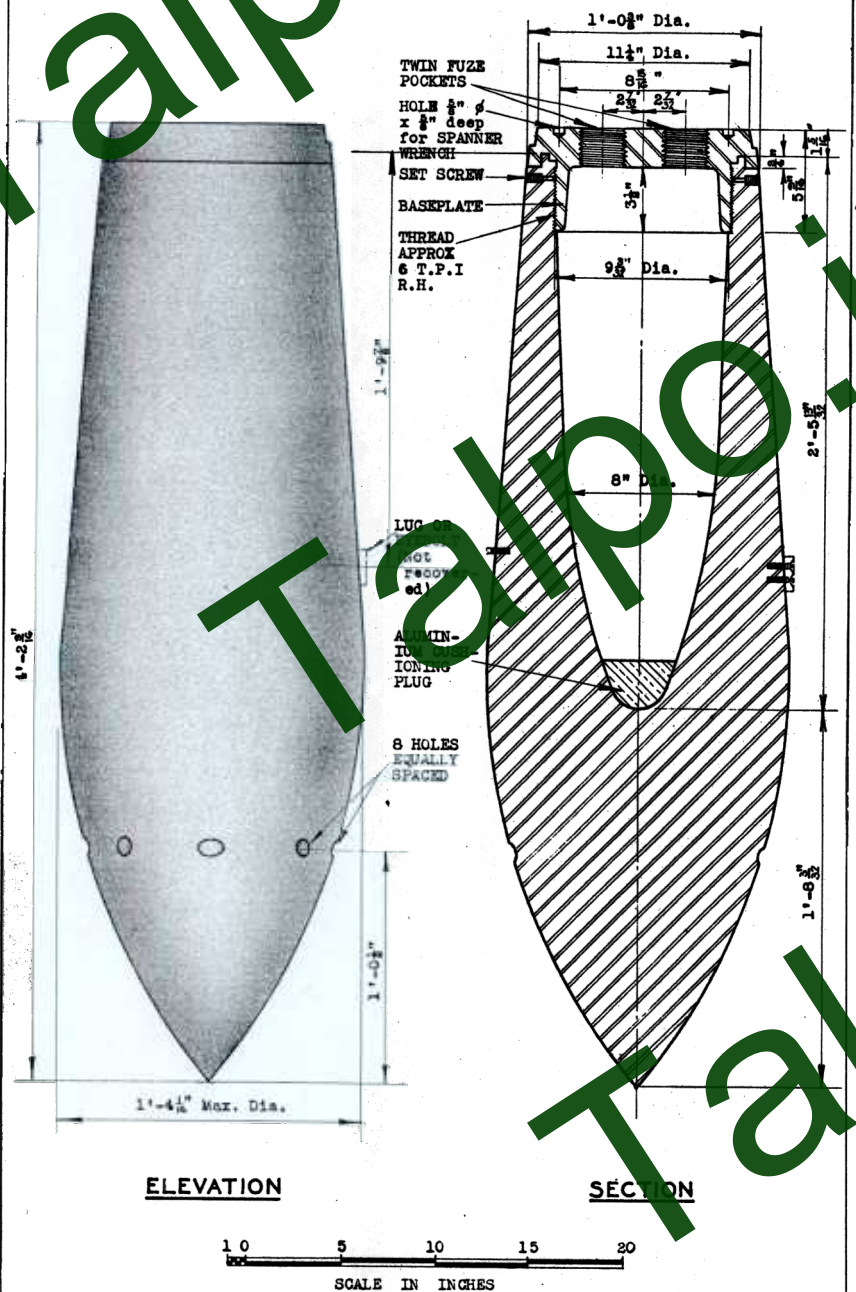
(a) Fuze removal. See BDTI B/7/77

(b) Steaming-out. Permissible (after removal of baseplate)

JAPANESE
A.P. H.E. BOMB — 800 Kg.

USE — NAVY AIRFORCE

REFER E IN C BDTI B/2/76



JAPANESE, ANTI-PERSONNEL H.E. BOMB, TYPE - 15 Kg

1. DETAILS.

Dimensions: Overall length .. .. 2'1⅜"
Length of body .. .. 1'8¼"
Diameter of barrel . .. .. 3⅞"
Thickness of barrel wall . 17/32"
Width of tail fins . .. ..
Diameter over tail fins .. 5½"

Weights : Weight empty . .. . 26 lbs
Burster charge (PICRIC ACID) . .. 7 lbs approx
Total weight . .. . 33 lbs "
Charge/weight ratio .. .. 21.2% "

Colour : BLACK (painted)

Markings : RED band, ½" wide, on nose
YELLOW and WHITE bands, each ¾" wide, around barrel forward of suspension
"15K" stencilled with white paint on barrel.

2. USE.

ARMY Airforce Anti-personnel (Fragmentation) type bomb.

3. DESCRIPTION. (See diagram)

The bomb comprises 3 main structural portions:

(a) Barrel. This consists of an inner and an outer case. The inner case is a tube of 5/32" thickness steel, threaded externally for a length of ¾" at one end to screw into the nose piece, and at the other end for a length of 9/16" to take a threaded shrapnel ring. The threaded parts are retained by grub screws as shown.

The outer case consists of 26 shrapnel rings, 25 of which are ⅛" thick and approx ⅜" wide, whilst the remaining ring is 1-3/16" wide for fitment of normal Army type horizontal swinging suspension. The shrapnel rings are not easily noticeable until the painted surface is scraped.

(b) Nose piece, of uniform thickness steel, is threaded for screwing on to the barrel inner casing. The nose opening receives a fuze and a grub screw to secure it.

(c) Tail unit. The tail cone, constructed of sheet steel, is welded to the end shrapnel ring. Four fins are rivetted to the cone, and to each other on the internal edges, and are braced at their extremity with narrow box-type struts.

Alternative vertical suspension is provided by a rigid fitment at the end of the tail fins.

4. FILLING.

The burster charge is cast PICRIC ACID (Lyddite). The nose piece filling is cast separately and 4 cardboard washers are inserted in the gap between the 2 fillings.

5. FUZING.

Nose fuze A.2(B) only is employed.

6. DISPOSAL. (Bomb filled and fuzed as above)

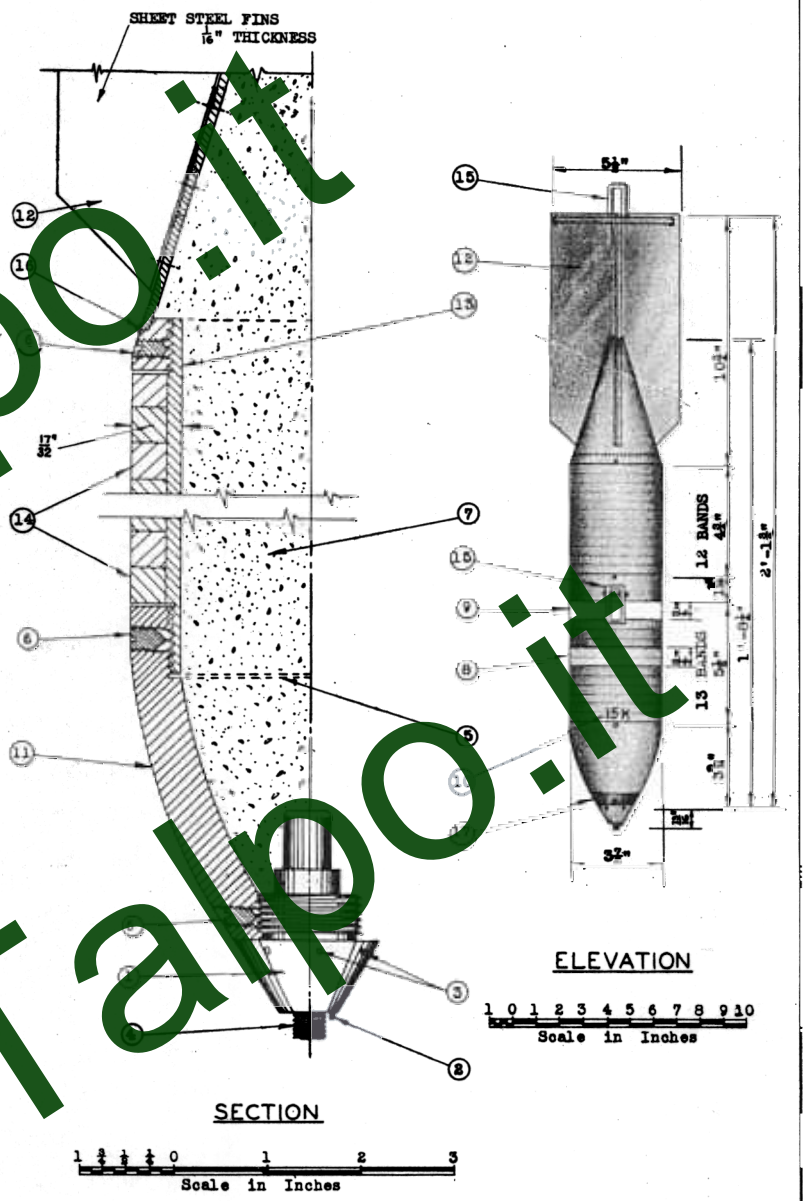
(a)	Fuze removal.	For fuze A.2(B) see BDTI B/6/73
(b)	Demolition.	Normal methods
(c)	Trepanning.	Not applicable to this size bomb
(d)	Steaming-out.	Simplest method is to apply a steam jet through nose fuze opening
(e)	Burning-out.	NOT permissible.

NOTES

JAPANESE

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

USE - ARMY AIRFORCE	REFER E IN C B.D.T.I. B/3/3



LEGEND

1. FUZE - A. 2(B)	10. MARKING
2. ANTI-BINDING PIN	11. NOSE PIECE
3. TOOL HOLES	12. TAIL FINS
4. STRIKER SPINDLE	13. INNER CASING
5. CARDBOARD WASHERS	14. SHRAPNEL RINGS
6. GRUB SCREWS	15. SUSPENSION
7. PICRIC ACID	16. WELDED JOINT
8. YELLOW BAND	17. RED BAND
9. WHITE BAND	

JAPANESE INCENDIARY BOMB, TYPE 99 - 32 Kg (Phosphorous/steel pellets)

1. JAPANESE DESIGNATION.

Type 99, Model 3, No. 3 Incendiary Bomb.

2. DETAILS.

Dimensions: Overall length .. .. 2'0½"
Length of body (incl nose) .. 1'1½"
Thickness of barrel wall . .. 3/16"
Diameter of barrel . .. . 5¾"
Diameter over tail fins .. .. 5¾"

Weights : Total weight, unfuzed . .. .. 70.4 lbs
Burster charges (tail cone .. 3.5 lbs
(central tube 3/16 lbs

Colour : GREY (painted)

Markings : SILVER-WHITE 2" band on nose
SILVER-WHITE 1" band on tip of tail fins
RED LINES (2) diametrically opposite and full length of body and tail cone.

NOTE 1 :- SILVER-WHITE is standard colour for phosphorous incendiary agent.

3. USE.

NAVY Airforce type incendiary bomb mainly for AA use, both grounded and airborne. Also suitable for ground targets of inflammable materials.

NOTE 2 :- This bomb was used on one occasion in SPA as a beach mine for disabling amphibious landing craft, possibly as a substitute expediency.

4. DESCRIPTION. (See diagram)

The bomb consists of 3 main structural portions :-

(a) Barrel. The barrel casing is welded on to the machined down portion of the nose piece and the joint machine finished. At the rear end it screws on to a shaped coupling ring. Twin suspension is provided by 2 Navy type eyebolts diametrically opposite.

A cylindrical canister constructed of 3/16" thickness steel fits full length in the barrel. The annular space between its outer and inner walls houses the incendiary pellets and is sealed both ends with steel discs.

The central burster charge is contained in a steel tube which screws into the nose piece and runs full length of barrel

(b) Nose piece, of solid steel, is machined down to receive the barrel and hollowed out centrally for a nose fuze.

(c) Tail unit. The truncated tail cone is in 2 sections. The lower section is constructed of sheet steel butt-welded to both the coupling ring and the upper section. The upper section is a shaped steel ring perforated and threaded to receive a tail fuze.

4 tail fins, each spot welded to the cone in 4 places, are braced down from their extremities where shown with 3/16" diameter steel rods flattened at each end for single rivetting to the fins. Each fin is bent to an angle of 30 deg at 4" down from their ends so as to impart rotation to the bomb on release.

FILLINGS.

(a) Burster charges. The tail cone burster charge is 3½ lbs of pressed powdered PICRIC ACID with a pocket formed for a Navy type gaine. The central burster charge is a cylindrical plug of pressed powdered PICRIC ACID weighing 3 ozs with one end formed to receive a special type detonator

(b) Incendiary material (see detail drawings). 198 steel pellets in sticks of 9 lightly soldered together (i.e. 22 sticks) are packed vertically in the annular space in the canister. Liquid white phosphorous is poured in so as to fill the cavities in the pellets and interstices between the sticks. The phosphorous solidifies and binds the mass.

6. ACTION.

(a) Functioning of bomb. The bomb will revolve upon release due to the angled tail fins. Revolution speed will gradually increase. On reaching 1000 r.p.m. the safety mechanism of the tail fuze assembly is freed.

When reaching the time-setting period during descent the tail fuze assembly will initiate explosion of the burster charges. The explosion will shatter the bomb casing, break up the sticks, and spray the individual steel pellets conically downward.

Impact in the air or with ground surfaces before the time-setting is reached will cause the instantaneous nose fuze to initiate explosion and throw the pellets laterally within a less diameter

(b) Incendiary material. The phosphorous in the pellet will emit a flame through the flame ports on exposure to the air and ignite combustible material on which the pellet lodges.

Particles of loose phosphorous in the bomb may also have some incendiary effect on combustible ground surfaces.

7. FUZING.

Dual fuzing is normally employed, consisting of Navy Airforce type fuzes as under :-

Nose fuze - A.1(B) mechanical impact
Tail fuze - D.2(A) or D.2(B) or D.2(C) clockwork airburst.

8. TREATMENT. (Bomb which has functioned)

See BDTI D/20/119 for treatment of ignited pellets, resultant fires and precautions to be observed.

9. DISPOSAL. (Bomb which has failed to function)

(a) Fuze removal. If fitted, deal with the tail fuze first and BEFORE the bomb is moved.

For fuze D.2(A) see BDTI B/9/98
" " D.2(B) " " B/9/113
" " D.2(C) " " B/9/120
" " A.1(B) " " B/6/112

(b) Destruction. Remove bomb, if necessary, to a suitable site where there is no risk of fire or damage, place in an excavation and explode the tail burster charge. Do NOT attempt to dismantle bomb.

NOTE :-

Modification - (probably a factory variation).

A bomb recently examined conforms exactly with the one above described but differs in the following respects :-

(a) The cylindrical canister narrows down sufficiently so as to extend to the end of the coupling ring, and its rear opening is sealed with a lid soldered on

(b) Incendiary material. 21 lengths of 1" external diam. m.s. piping (an inner row of 7-10⅜" lengths and an outer row of 14-9⅜" lengths) are packed vertically in the canister. Each inner and outer length of piping is divided into 8 equal portions, the piping being cut completely through except for ¼" of circumference left along one side. Width of cut is 5/64". That is to say, each length of piping breaks up into 8 individual pellets of equal length, those in the outer row being shorter than the inner ones, there being a total of 168 pellets in all.

8 shaped inserts (see diagram) slide into each length of piping and abut midway under each cut. The inserts in the outer row of piping are therefore correspondingly shorter than those in the inner row.

Phosphorous filling is same as described in para 5 (b) above

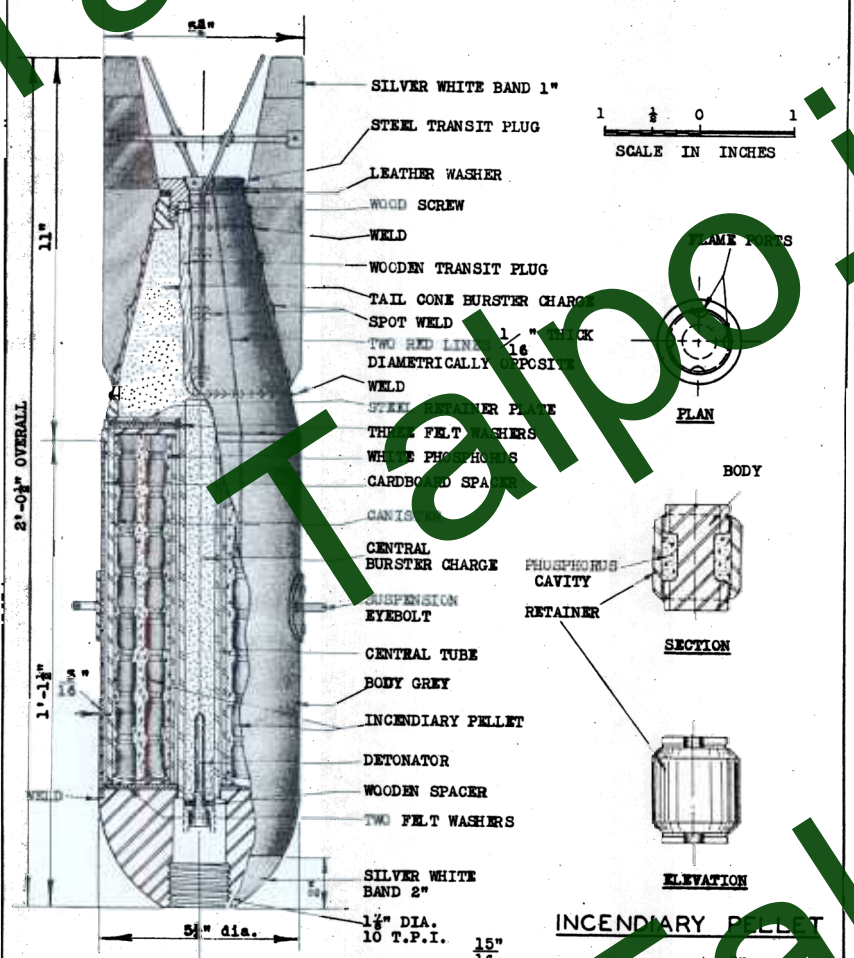
(c) Burster charges are all PICRIC ACID. The tail cone charge is in cast block form with waxed paper covering. The central burster charge is in 2 lengths. The short length is pressed powder and holed for the detonator, and the long length is cast. Each length is wrapped in waxed paper with cotton cloth outer covering.

JAPANESE

INCENDIARY BOMB TYPE 99 – 32 KG.

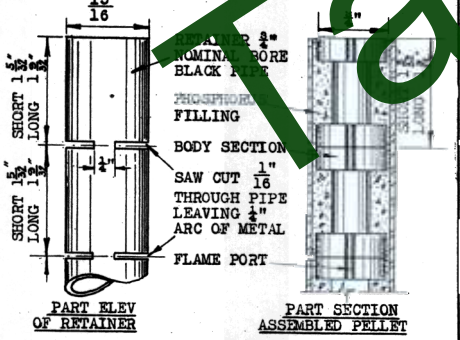
(PHOSPHORUS/STEEL PELLETS)

USE – NAVY AIRFORCE | REFER E.IN C. BDTI B/4/III



PART SECTIONAL ELEV.

INCENDIARY PELLET



MODIFIED INCENDIARY PELLET

(See Note 3.(b).

STETHOSCOPE ELECTRICAL
DESIGN IVB

REFER B.D.T.I. E/23/104

SHEET No 1

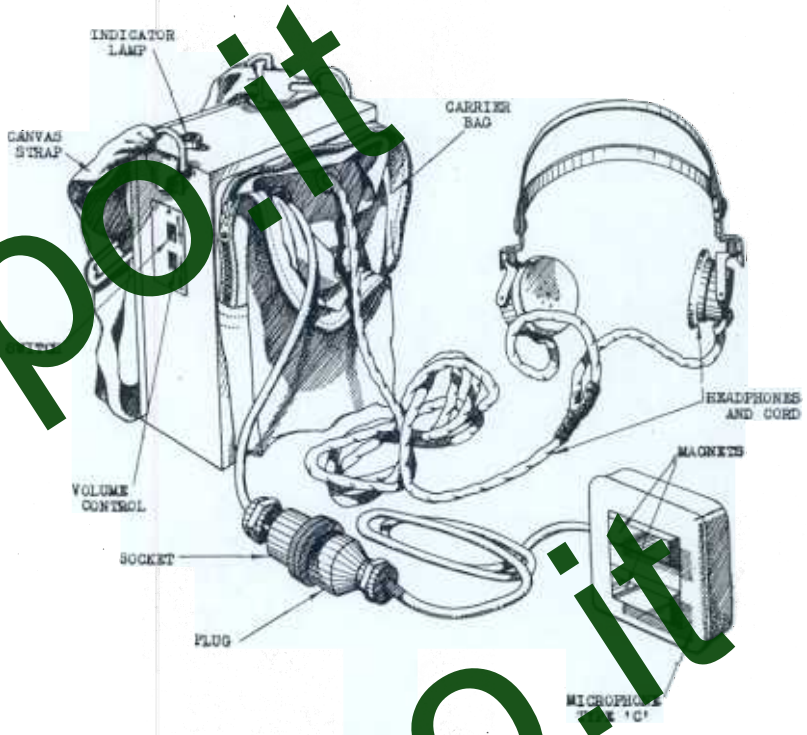


FIG 1

METHOD OF USE IN SHAFT

FIG 2

STETHOSCOPE ELECTRICAL

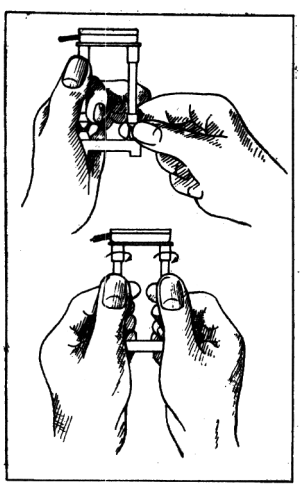
DESIGN IV B

REFER B.D.T.I. E/23/104

SHEET No 2

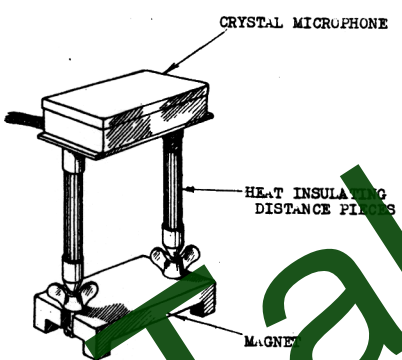
CABLE DRUM

FIG 3



METHOD OF ASSEMBLING

FIG. 4



STERILISING MICROPHONE TYPE 'B'

FIG. 5

CONCERNING
CIVIL DEFENCE ORGANISATION

F

BOMB CATEGORIES AND PRIORITIES

1.

Immediate disposal of bomb essential for the

The above order of disposal remains until a phase of invasion is imminent or in progress in which case no Safety Period will be observed in the area affected and all bombs, etc. will be dealt with as they fall. The Category given merely indicates the priority of tasks (see also para 5).

5. SUPERIMPOSED BOMB CATEGORIES.

(a) CATEGORY M. This new category is brought into force in an area affected by invasion, either imminent or in progress. It is a priority superimposed by the Military upon the categories mentioned in para 2 above and refers to those unexploded bombs whose immediate disposal is essential for operational reasons. Category M bombs will be dealt with in preference to all others except P (see (b) below)

(b) CATEGORY P. Under ordinary conditions parachute mines are allotted to Categories A, B and C but under conditions as in 5 (a) above they are allotted to Category P if affecting operations of the Armed Forces. German type 'G' and similar mines would be treated as parachute mines. Category P bombs take an equal precedence with Category M bombs.

6. BOMBS ON MILITARY PROPERTY.

Under ordinary conditions, bombs on military property are reported through the Police or Wardens' Service with an indication of the priority which should be attached to them from the Military point of view.

7. ALLOCATION OF PRIORITIES UNDER ABNORMAL CONDITIONS.

All the foregoing, except para 5, contemplates procedure and communications remaining uninterrupted under ordinary conditions, but under abnormal conditions as stated in para 5 above, a Commander may have cause to decentralise his bomb disposal resources to a particular area. When this is done, reports from Civil Defence sources of unexploded bombs and mines in the area for disposal would be transmitted through the most convenient civil channels direct to the Military HQ concerned, which will decide the priority.

8. BOMB CATEGORIES IN PURELY MILITARY AREAS.

The foregoing refers to procedure in areas where the Civil Defence Organization exists and co-operates.

In areas wholly under military control and where no Civil Defence Organization exists, all the above Categories and their application are followed in principle by the armed forces. The degree of urgency, i.e. a Category, is determined by a Commander.