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ITALIAN BOMBS & FUZES

By Col. A.D. MERRIMAN
Royal Engineers

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MINISTRY OF SUPPLY

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ITALIAN BOMBS & FUZES

By Col. A.D. MERRIMAN
Royal Engineers

TYPE "B"

Officer Responsible:
Controller of Physical Research & Signals Development

Printed at I.E.M.E

CONTENTS

ABSTRACT

The information contained in this handbook presents all available information up to date of publication on all the known bombs and fuzes in the Italian Service.

The work is divided into three parts. In the first part a general description of the various types of missiles dropped from the air is given and the classification is based ultimately upon methods to be adopted in handling unexploded bombs, which in turn depends upon the types of fuzes and the method of arming.

The second part consists of a summary of bombs and fuzes intended for easy reference, while the third part contains detailed information of all known bombs and their fuzes with illustrations produced, in most cases, after an examination of the missiles themselves. All measurements are given in the English and in the metric systems.

CONTENTS

ITALIAN BOMBS AND FUZES

ITALIAN BOMBS AND FUZES

INTRODUCTION

In order to unify the classification of bombs used in the Italian Service, the Italians now indicate the various bombs by using an identification mark consisting of a number, which gives the approximate weight of the bomb, and one or more letters which indicate its special characteristics. The exception to this is the 500 C bomb, in which the figure 500 is said to indicate the calibre of the bomb, whereas its effective weight is 280 Kg. The following table gives a list of the abbreviations and terms in common use:-

Abbreviation	Signification	English Equivalent
A.	Armamento	Arming
A.E.	Alto Explosivo	High Explosive
-	Bomba Explosiva	H.E. bomb
-	Bomba Incendiaria	Incendiary bomb
-	Bombetta spezzone	Small A-per bomb
C	Chimica	Chemical
cN	contro Navi	Anti-surface craft
cS	contro Sommergibili	Anti-submarine
cV	contro Velivoli	Anti-aircraft
-	Doppio	Double
E.	Esercitazione	Practice
F.	A Frattura prestabilita	Fragmentation
f.	fosgene	Phosgene
fu.	fumogene	Smoke
g.c.	grosso calibro	Large size
I.	Incendiaria	Incendiary
lu.	luminoze	Flare
M.	Mina.	Mine
m.c.	medio calibro	Medium size
-	Miccia	Fuse
-	Miccia a combustione rapida	Quickmatch
Mtr.	a Mitraglia	A-per (Shrapnel)
O	ad Orologeria	Time (clockwork)
P	Perforante	Piercing
p.c.	piccolo calibro	Small size
R.	Ritardato a.	Delayed action
sp.	spezzoniera	Anti-personnel (container for small A-per bombs)
-	spoletta	Fuse (of bomb)
-	spoletta di fondello	Tail fuze
-	spoletta d'ogiva.	Nose fuze
T	Torpedine	Aerial torpedo (Bomb)
-	Tormillo elvador	Vane (of fuze)
YD	Yperite Distillata	Mustard Gas

A captured document states that the practice of galvanising aircraft bombs has ceased, and that a protective coat of paint is now used instead. These colourings are said to have the following significance:-

Red Nose	Service (War)
Blue Body	Fragmentation
Black Body	Anti-Personnel
Reddish Brown Body	Incendiary
Bright Yellow Body	Chemical Warfare

Specimens in accordance with the first three colourings have been obtained, but it is thought that the Italians are still in possession of large stocks of galvanised bombs.

SECTION I

CHEMICAL WARFARE BOMBS

No. C.W. bombs have yet been employed in the present war, although the following types have been described in Italian literature:-

Bomb	Type of Fuze	Type of filling
500 C.	Air Burst	Vesicant Filling
100 C. 40 C. 15 C. 4 C. 2 C.	Impact Fuze	Sternutatory Filling
Bomba Furetto	Impact Fuze	Lachrymatory Filling

It is thought that in addition to these, the 100 sp.I. bomb might be converted into a C.W. anti-personnel bomb, by replacing the 2 Kg bombs with sixteen 4.C. bombs or thirty two 2.C. bombs.

Two more bombs have been described viz;- the 40 Kg Bomba Dispersoide employing a vesicant, and the 55 Kg Bomba Evaporoide employing a lung irritant. It is, however, thought that these are now obsolete.

The yellow colouring of the bomb body is intended to be a general indication of C.W. filling, and the particular type of filling is said to be indicated by a superimposed Geneva Cross. The colour code for these crosses is given in the following table.

Type of filling	Marking	Nature of filling
(1) Poisonous		(Hydrocyanic Acid)
(2) Suffocating	White Geneva Cross	<u>Phosgene</u>. Di-phosgene
(3) Suffocating & Lachrymatory	Red and White Geneva Crosses	<u>Chloropicrin</u>
(4) Lachrymatory	Red Geneva Cross	<u>C.A.P</u>. Bromacetone. Benzyl Iodide. (Benzyl Bromide) (Benzyl Chloride). (Xylyl Bromide).
(5) Sternutatory & Lung Irritant	Black Geneva Cross	<u>Diphenyl chlorarsine D.A.</u> Diphenyl cyanoarsine D.C.
(6) Vesicant	Green Geneva Cross	<u>Mustard Gas</u>. (Phenyl Dichlor-arsine- M.A.) <u>Mustard and M.A.</u>= Y.D. (FDA50) Lewisite.

'Important gases are underlined.
Improbable gases are enclosed in brackets'.

In addition to the Geneva Crosses, certain markings giving information concerning the bomb and its filling were, in the older models, stencilled on the bomb body, e.g.

	Geneva Cross, indicating the chemical filling.
S.C.M. 1 - 37	Directorate of Chemical Warfare (Servizio Chimica Militare) and date.
C.500 T	Chemical filling, of 500 Kg nominal weight, fitted with a time fuze.
258 - 298	Total weight in Kgs.
C 100 P	Chemical filling, of 100 Kg; nominal weight, fitted with a percussion fuze
14.300 - 47.000	Weight of C.W. filling - Total weight
28.700	Weight of H.E. burster charge

NOTE: The abbreviations T and P used in connection with chemical bombs have the special meanings 'time' (a Tempo) and 'percussion' (a percussione) and are used in the older designations.

It is considered likely that the impact fuzes employed in Chemical bombs will be, in most cases, the same as those employed in the H.E. bombs of the same calibre. The fuze employed in the Bomba Furetto is the same as that in Bomba 2.C, but that employed in the 500 C is a variable short delay time fuze which is described on page 55.

With the exception of the Bomba Furetto, all these bombs incorporate an H.E. burster charge, and in handling them the same precautions as recommended for German C.W. bombs should be observed.

SECTION 2.

PARACHUTE FLARES

A complete specimen of only one type of Parachute Flare the E XVI has so far been obtained. The existance of two other types is known and damaged specimens of these have been recovered and examined.

SECTION 3

SMOKE BOMBS

Large smoke bombs for defensive purposes have not been met with, but two types of small smoke bomb have been described in Italian literature, and both are used in conjunction with the 500 C bomb, the effectiveness of which is dependent upon:-

(a) the height of the burst above target, and
(b) the direction and force of the wind at ground level.

The height of the aircraft above its target, upon which (a) is dependent, is determined by use of the 'Quota' bomb. The direction of the wind is obtained by the use of a special small smoke bomb designated Bomba Vento.

BOMBA QUOTA Page 101

BOMBA VENTO Page 105

SECTION 4

Incendiary Bombs

There are eight types of incendiary bomb used in the Italian Service and they may be divided into three classes:-

(a) Bombs with combustible bodies and incendiary fillings, e.g. Electron bodies and thermite filling.

Bomba 1.I.	Page 135
Bomba 20.I.	Page 123
Bomba 70 I.P., Electron body fitted with steel nose cap.	Page 115

(b) Bombs with non-combustible bodies and incendiary fillings

Bomba 0.5FI - sheet steel body with phosphorus filling	Page 139
Bomba 0.5 Ip - Thin sheet steel body. Filling consists of cotton soaked in petrol.	Page 143
Bomba 0.5 It - Thin sheet steel body with thermit filling	Page 146

(c) Composite bombs

Bomba 2.I - Electron thermite filled bomb attached to sheet metal cylinder containing oil	Page 131
Bomba 100 sp.I - This is a composite bomb acting as a container for small incendiary bombs, and has a central core which is an H.E. anti-personnel bomb.	Page 151

SECTION 5

H.E. BOMBS

In the Italian Service bombs may be referred to as small, medium or large calibre bombs.

Small calibre bombs - (p.c.) - all bombs less than 25 Kg.
Medium calibre bombs - (m.c.) - bombs from 25 Kg to 100 Kg exclusive
Large calibre bombs - (g.c.) - bombs of greater weight than 100 Kg.

It has long been held by the Italians that it is more effective to use a number of small calibre bombs than an equal weight of large calibre bombs, which accounts for the comparatively large number of bombs in the small calibre class.

The older classification for H.E. bombs included the following:-

(i) Bomba Torpedine. This was designed for use against light resistance targets. The fuze employed was of the instantaneous action type so as to give a burst above ground, and produce a large number of splinters.

(ii) Bomba Mina. This was designed for use against more resistant targets such as factories and buildings generally. The fuze employed had a short delay to allow the penetration and thus produce a greater destructive effect than (i). It was in effect a blast bomb.

(iii) Bomba Mina Perforanti. This was designed especially for greater penetration than (i) and (ii). It was to be used against armour, reinforced structures and capital ships.

(iv) Bomba Subacquee. This was designed for use against ships. It was fitted with a special fuze which would function below the surface of the water. The maximum depth at which the detonation would be effective against the underwater portion of a ship was given as 25 metres. Such a bomb was probably intended to be dropped as a 'near miss'.

Prior to, and during the present war new types of bombs have been introduced into the Italian service, some of which are to replace older types. They fall under the following headings:-

(i) Anti-personnel bombs. - These are all of small calibre and vary from 2 to 12 Kg with a charge/weight ratio of from 13 to 20%.

(ii) Small and medium calibre bombs for use against targets of small resistance. These include bombs of weight 15, 50 and 100 Kg with a charge/weight ratio of from 35 - 50%. They are intended to replace the 31 and 104 Kg bombs.

(iii) Bombs for use against specially protected targets, such as arsenals, forts, etc., and also against surface craft and submarines. These vary in weight from 250 to 800 Kg with a charge/weight ratio of 44 - 48%. Also in this class are included the cS and cN types.

PRESENT TYPES OF H.E. BOMBS

There are twenty eight different bombs known in the H.E. class and for the present purpose may be conveniently sub-divided as follows:-

(a) ANTI-PERSONNEL BOMBS

These differ from demolition bombs mainly in the construction of the outer casing.

(i) In 'Mtr.' bombs the explosive charge is held in an inner thin sheet metal container. Between this latter and the outer container is an annular space filled with concrete in which steel pellets are embedded.

(ii) In 'F' bombs the explosive charge is enclosed in a thin sheet steel container, round the outside of which strip steel is wound spirally, or in some cases the spiral strip is placed within the thin steel container.

(iii) Anti-personnel bombs are known in which the thick steel wall is deeply grooved to assist fragmentation.

(iv) The 4 A.R. (Thermos) Bomb differs from other types of anti-personnel bombs in having a steel wall 1/8-in. thick, with no extra loading or grooving, and in having a sensitive anti-handling fuze, which is sometimes fitted with a self detonating mechanism.

(v) The 100 sp. bomb, the central core of which, like that of the 100 sp. I. bomb, is itself an anti-personnel bomb of the 'Mtr'. type weighing about 25 Kg, is loaded with either 2.F. or 2.Mtr. bombs.

(b) <u>ANTI-AIRCRAFT BOMBS</u>

These are bombs of small calibre, and up to the present only two types have been encountered. In construction the bomb resembles the anti-personnel bomb described under Section 5 (a) (i).

The fuze employed is a fixed short delay time fuze designed to give an air-burst. Four different stampings are known to be used on the vanes of the fuze, viz:-

2 - 700, 4 - 600, 5 - 550, and 6 - 500.

The exact significance is not clear, but it has been observed that the pitch of the vanes varies slightly in the four cases.

These bombs are intended for use by aircraft against aircraft. Few of these bombs have been recovered and Intelligence reports state that the Italians have ceased to employ this type of bombing.

(c) <u>ANTI-SUBMARINE BOMBS</u>

One sample only of this class of bomb has been encountered. Its nominal weight is 160 Kg. but its actual weight as given in Italian literature is 180 Kg.

(d) <u>ANTI-TANK BOMBS</u>

A single example of this type of bomb is found in the 3.5 Kg Anti-Tank bomb. The peculiar features of this bomb include the hollow charge filling, the hollow charge filling, the hollow dome shaped head and the sensitive impact fuze, both of which latter are associated with the functioning of the hollow charge to produce penetration effects against steel armour.

(e) <u>DEMOLITION BOMBS</u>

(i) <u>Long Delay Time Bomb</u>

There is only one bomb of this type in the Italian Service, and that is the

500 R.O. It is fitted with four impact fuzes in the nose and also nose and tail long delay clockwork fuzes. The shape of the nose of the bomb would indicate that this bomb is not primarily intended for penetration though the impact fuzes, which are offset from the longitudinal axis are of the shear-washer type and function only on impact with resistant targets.

If the bomb hits a highly resistant target, such as a dock, a breakwater, a capital ship or even a substantial building, the bomb will detonate on the operation of one or more of the impact fuzes. Only if the bomb hits a target whose resistance is insufficient to operate the impact fuzes, e.g. water, will it function as a long delay bomb.

BOMBA 500 R.O.	Page 271

The remainder of the demolition bombs fall naturally into three groups according to their charge/weight ratios.

(ii) <u>Designation letter - T</u> <u>Charge/Weight ratio ca 48%</u>

Included here are the following:-

BOMBA	100 T	Page 289
BOMBA	50.T	Page 295
BOMBA	40.T	Page 305
BOMBA	24 T	Page 313

These bombs have an everage charge/weight ratio of 48%, and it is interesting to note that some of the older Italian documents refer to the 24 Kg bomb as the 24.T. The word Torpedine as applied to bombs has been translated 'Aerial Torpedoes'. It is interesting to note that the word 'torpedine' when used in connection with shells indicttes 'streamline'. There is, however, no streamlining on the T-bombs themselves.

(iii) <u>BOMBA di GROSSO CALIBRO</u> <u>Charge/weight ratio ca 43%</u>

These heavy calibre' bombs are of the G.P. type, and have no designation letter. They include the following:-

BOMBA	800	Page 319
BOMBA	500	Page 327
BOMBA	250	Page 333

The average charge/weight ratio is 43%. These three bombs are unique in that they are all fuzed nose and tail with the same fuze, the only difference being that in the nose it is armed by a simple vane, and the fuze is known as type A, whilst in the tail it is armed by a vane situated at the outer extremity of the tail and connected to the fuze by means of an articulated extension piece. The length of this latter varies as the length of the bomb tail, and the entire assembly is designated fuze type 01, 02 or 03 in decreasing order of size.

Lengths of articulated portion of the extension piece:

BOMBA	800	not known
BOMBA	500	700 mm.
BOMBA	250	500 mm.

(iv) <u>DESIGNATION LETTER - M</u> <u>Charge/weight ratio ca 31%</u>

These include the following:-

BOMBA	104 M	Page 339
BOMBA	100 M	Page 347
BOMBA	31	Page 353
BOMBA	15.M.	Page 359

In older Italian documents the 31 Kg bomb is referred to as the 31.M.(MINA) and bombs in this class are regarded as S.A.P. bombs. The bodies are hardened steel, and the average charge/weight ratio is 31%.

(v) BOMBA SFERICA

This bomb, the only one of its type which is known, has not been recovered neither has the fuze, with which it is normally fitted, been encountered elsewhere.

The details which exist are from documents and are included for the sake of completeness only, as both bomb and fuze are believed obsolete.

(vi) The following bombs have been recovered, but there is insufficient information concerning them to enable their classification to be decided. They are therefore included under the title 'Miscellaneous'. Also included in this section is a Marker Bomb and the Nose fuze V, for which no particular use is at present established.

SECTION 6

TAIL CONSTRUCTION

Except in the cases of the 70.IP and the small type bombs, 12 Kg and below, the tails of Italian bombs are transported separately. For the larger bombs (greater than 100 Kg) the tails are made of sheet steel or cast alloy. The general form is that of a cone on which four vanes are mounted, with a strengthening band at the outer end of the tail. In cast tails the vanes do not extend the whole length of the cone and the band is plain, but with sheet metal tails the vanes extend the whole length of the cone and the band may be either plain or corrugated. Usually the maximum diameter is the same as the diameter of the bomb body. A notable exception, associated directly with its special use, is the tail of the 160.cS bomb where the vanes are practically restricted to the length of the strengthening band and the maximum diameter is approximately 5.5 cm. greater than the diameter of the bomb body.

Alternative tails - probably representing old and new types - are found with the medium size bombs.

Where the medium and heavy bombs are fitted to take tail fuzes (as is usually the case) the bomb tail has a central tube at the outer end of the tail cone to accommodate the fuze. In all cases the fuze screws into the base of the bomb and the vanes of the fuze are supported within or beyond the strengthening band. Only in the 70.IP and in bombs 160 Kg and over is the fuze screwed into the outer end of the tail. The need for this extra support for the fuze arises from the special type of fuze used in the 70 IP and 160.cS bombs, and from the use of the extension piece D (see page 287) in bombs larger than 160 Kg.

In the medium and small calibre bombs the portion of the tail attached with bomb is either conical or dome-shaped, and to this the four vanes are welded. Strengthening of the tails by means of a strengthening band is usual, but the design and employment of the band does not follow any obvious plan. Thus the tail of the 12.F is unstrengthened, while that of the 12.Mtr. has a plain band 3 cm. wide and the 3 Mtr. a plain band 1 cm. wide.

With bombs using the N type fuzes the tail-vanes are sometimes welded directly to the steel tube of the fuze, while bombs employing O type fuzes have openings in the tail for the withdrawal of the safety pin.

The bomb 20.I., on account of its special method of suspension, has a recess cut in the tail, about half way along its length, to accommodate the vanes of the fuze.

Small bombs 4 Kg and smaller, which are dropped from containers, have no tails or stabilising fins, but are fitted with a fuze having an all-ways action.

SECTION 7

SUSPENSION OF BOMBS

Italian bombs may be fitted for horizontal suspension or for vertical suspension or for both methods. From bomb aimer's tables captured from the enemy, it appears that the following bombs are fitted for horizontal suspension:-

* 500., 500.C., 500.R.O.
* 250.
160,cS.
* 100.M., * 100.T., 100.sp., 100.sp.I.
70.IP.
* 50.T.
20.I.
15.M.
12.F., 12.Mtr.
3.Mtr.
Vento

From the same source of information it appears that those bombs marked with an asterisk may be fitted alternatively for vertical suspension.

It is known that in addition to these, the following bombs may also be fitted for alternative horizontal or vertical suspension:-

500 R.O.
70 IP.
20.I.
15.M.
12.F.

From illustrations in captured documents it is known that the following bombs may be suspended vertically:-

100.M.
100.C.
40.C., 40.T.
15.C.
Furetto

while the following are dropped from containers:-

4.A.R.
4.C.
2.C., 2.F., 2.Mtr., 2.I.
1.I.

Horizontal Suspension

Bombs carried horizontally in the aircraft may be suspended:-

(a) by means of a lug screwed into the side of the bomb.

(b) by means of a band encircling the bomb body. Such a band is normally in the form of an open ring. After fitting over the body of the bomb, the free ends are bolted together. A suspension lug is situated on the band diametrically opposite to the bolt.

Vertical suspension (see Page 13)

Bombs may be suspended in the vertical position in one or more of the following ways:-

(a) In the bombs 100,M. and 15,M. the nose of the bomb is cut as shown in fig. (1) to accommodate the nose lug. In the case of the latter bomb this lug takes the form of a loop as shown in fig. (2). Bomba 100.T. and 50.T are screw-threaded at the nose to take the suspension fitment shown at fig.(3). The loop is usually of the shape illustrated.

Though Vento bomb can be suspended horizontally by means of the lug in the side it may also be suspended vertically by means of an eyebolt incorporated in the type S fuze which screws into the nose.

(b) An alternative method of suspending Bomba 100.M. nose upwards consists in using what has been referred to as a steel rod 'basket'. This consists of a length of steel rod of about 3/8-in. in diameter twisted at its centre to form a loop. The rod is then bent to conform with the shape of the bomb and its free ends are flattened and looped to take the screws which secure the basket to the bomb body. The attachment is made to the side of the bomb utilising twoof the screws which secure the base plate. Near to the nose of the bomb the rod is welded to a ring which is intended to strengthen the 'basket' and maintain its shape. The suspension link passes through the loop at the nose of the bomb (fig.4).

(c) Vertical suspension of the bomb nose downwards is accomplished in the case of small bombs (e.g. 12 Kg.), by means of a wire loop. The wire is passed through two holes near the outer edge of two opposite fins of the tail (fig.5). The 24 Kg bomb can be suspended nose downwards in a basket arrangement similar to that described in para. (b) above except that the apparatus is made to include both bomb body and tail and is strengthened with two circular bands of the same material, the forward one of which is of smaller diameter than the diameter of the bomb body and the other end is shaped in the form of a loop. (fig. 9).

(d) An alternative method is found in the case of the 20.I. bomb where the suspension link is attached to the centre of the outer end of the tail (fig.6).

(e) For heavier bombs (e.g. 50.T. or 100.T.) where neither of the methods (c) and (d) are applicable a special tail fitting is employed (fig.7) or sometimes a more intricately shaped bracket as is seen in the Bomb Container (Page 19).

In Fig.8 another method of suspending a bomb nose downwards is illustrated. This is used in the case of the Bomba 104.M.

TYPES OF SUSPENSION.

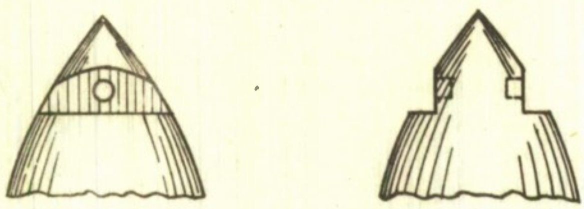
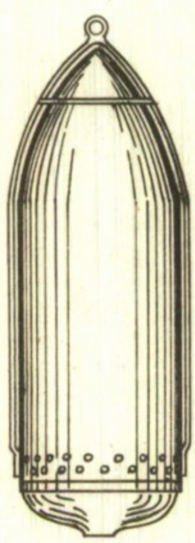


FIG. 1.

FIG. 2.

FIG. 3.



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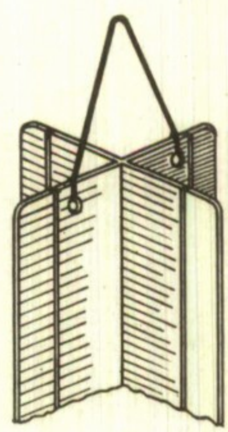

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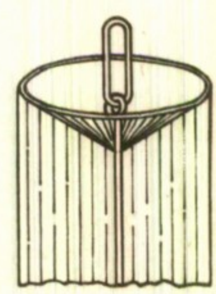

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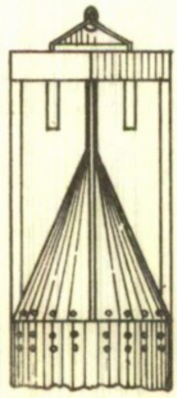

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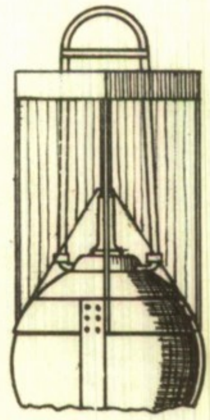

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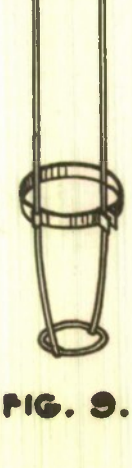
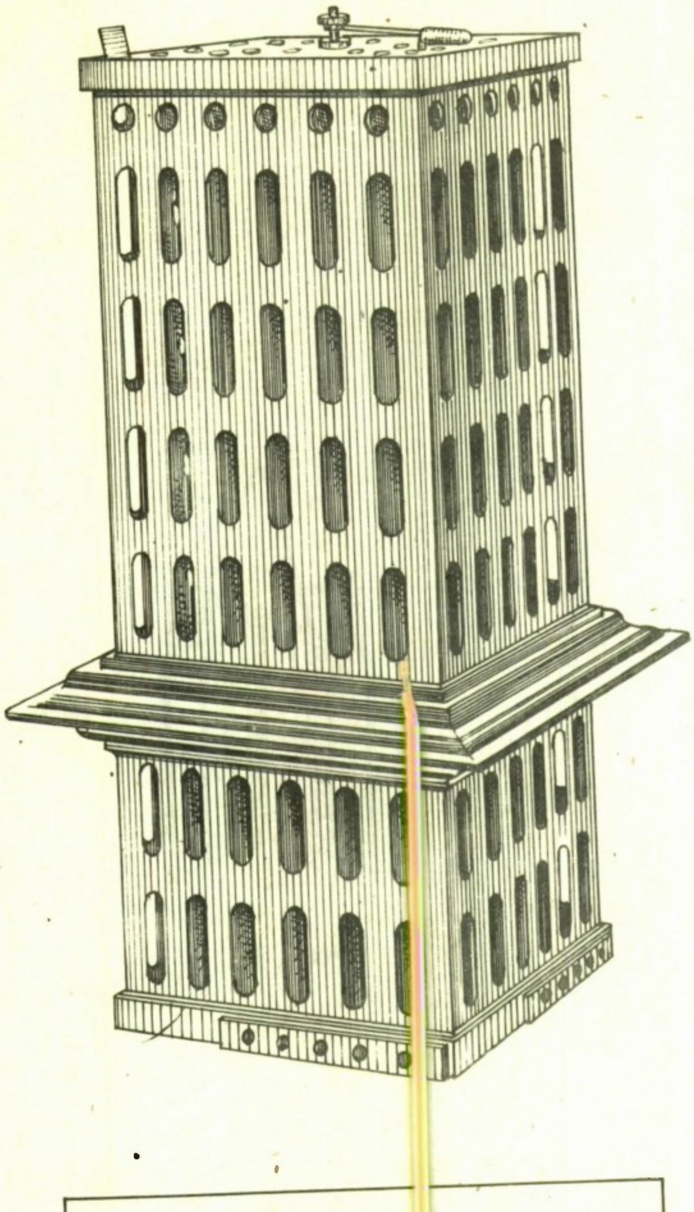
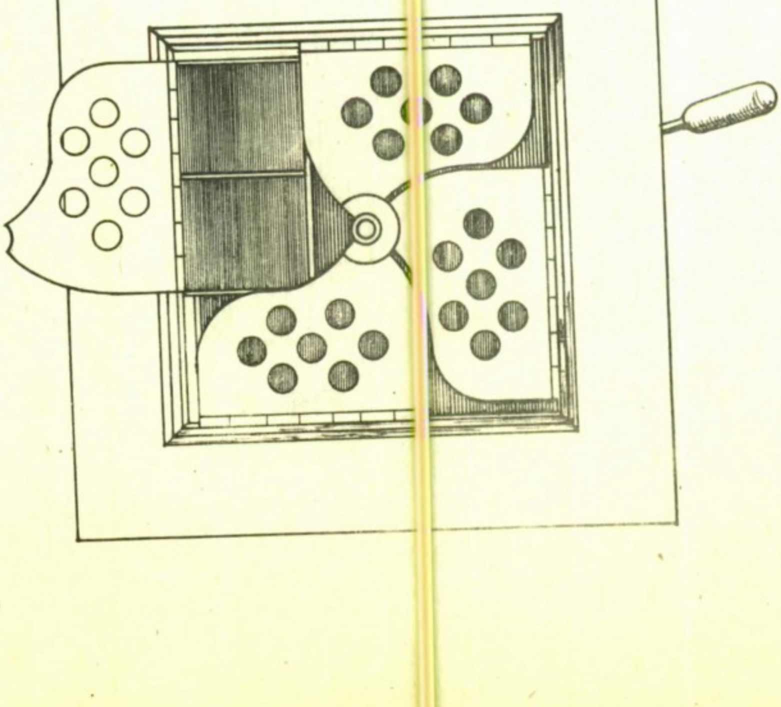
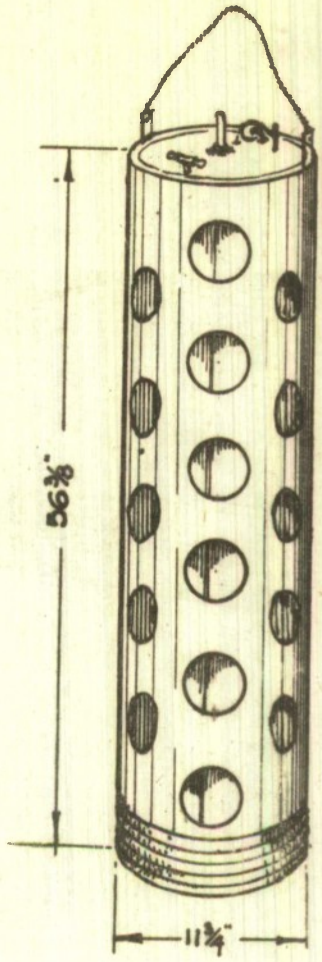


FIG. 9.

14



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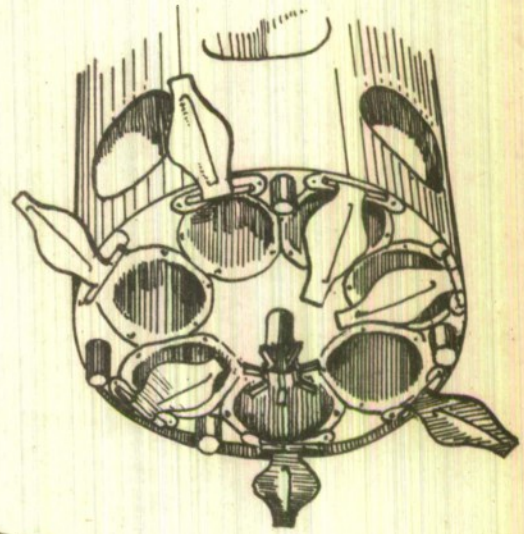

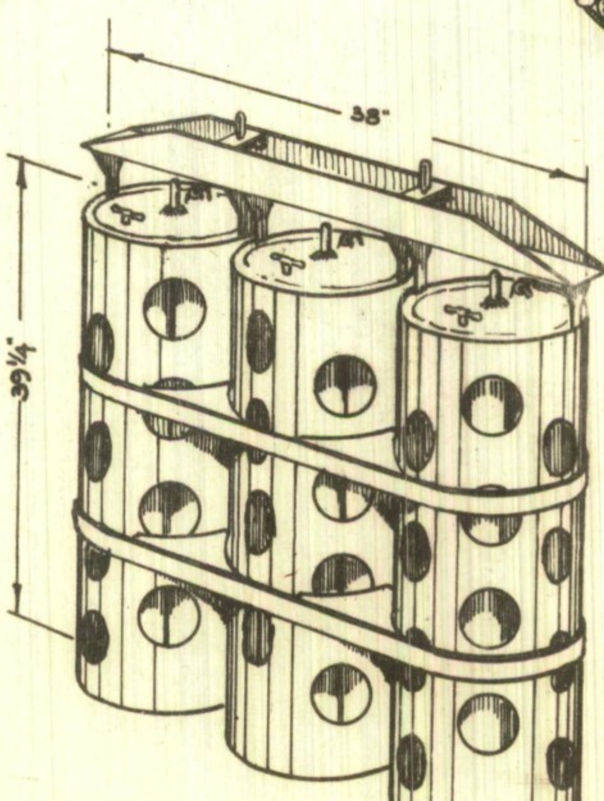
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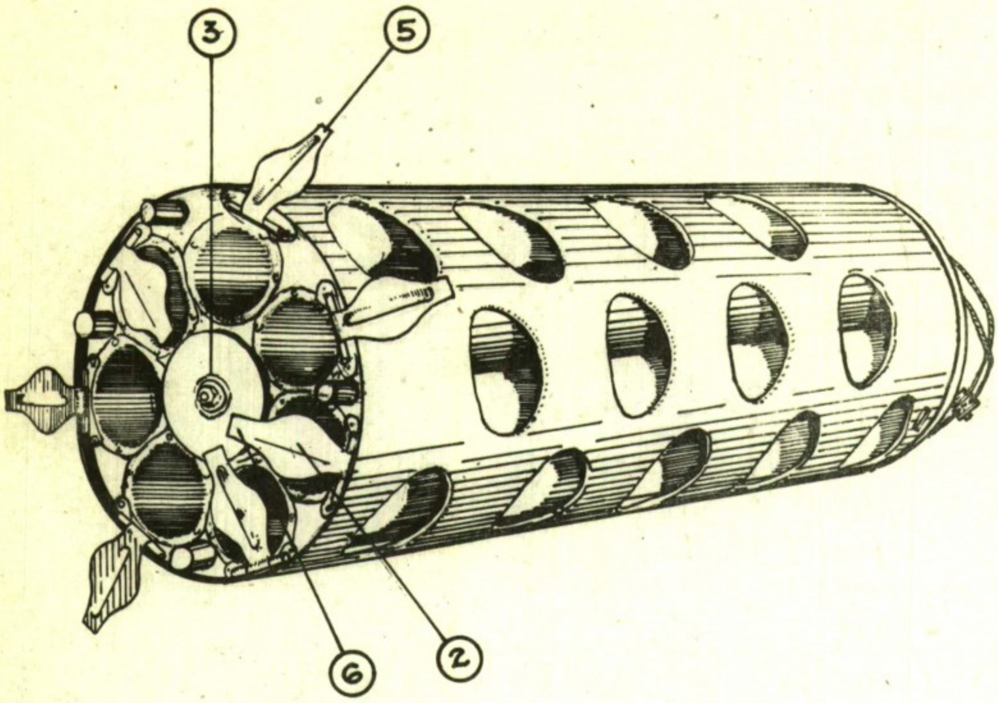
39¼"
11¼"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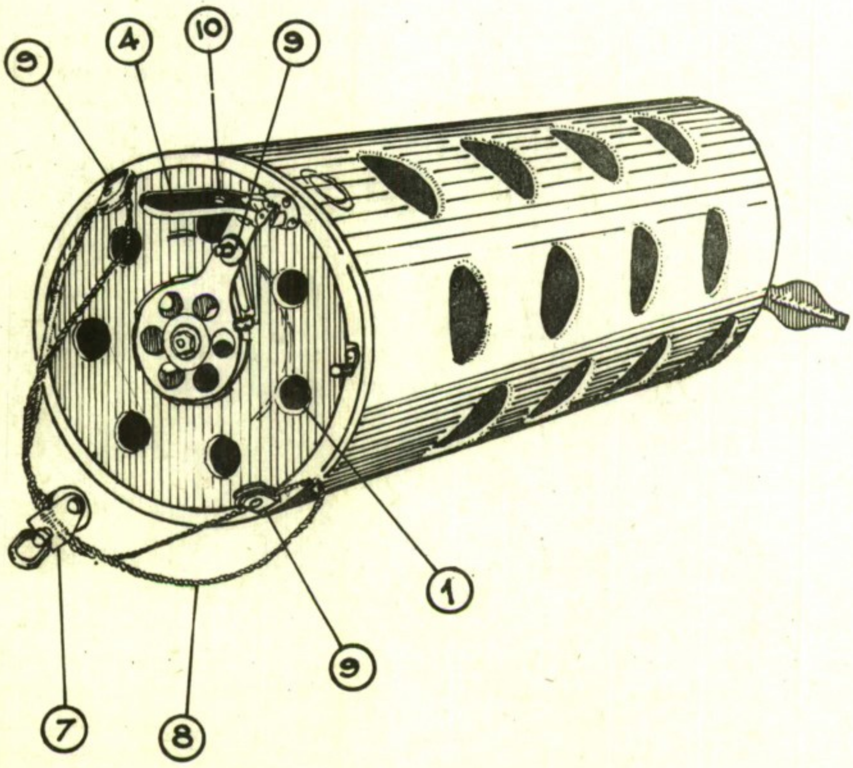
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SECTION 8

ITALIAN RELEASE GEAR FOR SMALL BOMBS

This section is included in order to make clear how certain bombs, which show no method of suspension, are released from the aircraft. The bomb containers in such cases are of two types - one which is retained in the aircraft and the other which is jettisonned and releases the contained bombs after falling a certain distance below the aircraft. Page 19 shows this latter type. Reference should also be made to the bomb 100,sp. (page 155) and to bomb 100.Sp.I. (page 151) which are really A. per. bombs containing small bombs, which are released after the container has fallen a pre-determined distance below the aircraft.

The release gear, illustrated on Page 16 takes the form of a cylindrical container. It was recovered from a Savoia 88 aircraft and is designed to carry :—

42 bombs of types 2.F.T. ; 2.Mtr., 2.C. or 1.I., or
21 bombs of types 4.C., or 2.I.

The container is 39.5 ins (1003 mm.) long and 10.5 ins (267 mm.) diameter and contains seven tubes, each 3 inches (76 mm) in diameter, arranged as shown.

Each tube has a spring loaded plate (1) at the top. This is designed to eject the bombs when the hinged flap (2), which closes the base of the tubes, is released. The opening of the flaps is controlled by the slotted plate (3). This plate is connected by a central spindle to the manual ratchet lever (4) at the top of the container.

When the tubes are loaded, the plate (3) is rotated to allow the projections (5) on the flaps to fall into the slot (6). Rotation of the plate then secures each flap in turn.

The container is stowed vertically in the aircraft and suspended by the swivelling lug (7) attached to the sling (8) which is run over pulleys on the container.

The projection (9) serves as a locking device for the lever (4). By raising the hinged portion of the lever, the latter can be made to engage in the slot (10).

To release the bombs the lever (4) is rotated so that each of the flaps is opened in turn. The contents of one or more tubes can thus be released as desired.

A container designed on similar lines to the above is known. It is 56.4 inches (1433 mm.) long and 11.75 inches (298 mm.) diameter. Each of the seven tubes may contain eight 2-Kg bombs and the whole contents may be released at once. The release plate shown at (3) (Page 1 5) is attached to a central rod, which can be moved longitudinally downwards in the container, so allowing all the hinged flaps to open at once.

A development of the single container is shown on page 15. Three cylindrical containers of the type described and illustrated on page 16, are bound together in a simple frame. The seven hinged flaps on each container are held in position by seven 'fingers' each attached to the central release plate. This latter is connected to the central rod running longitudinally in the container so that downward movement of this rod releases all the bombs in the container. The movement of this rod is effected by means of compressed air contained in a cylinder and by manipulation of the valve it can be arranged to release the contents of one or more containers simultaneously.

An older form of release gear consists of a rectangular container having 30 tubes each capable of holding eight 2 Kg bombs. The release is operated by a handle near the bomb aimer, each turn of the handle releasing the contents of one tube.

A smaller container of rectangular section is shown on page 14. The overall dimensions are 24.5 inches (622 mm) by 14.1 inches (358 mm) square, while the main structure is 12.25 inches (311 mm) square. The material is mild steel perforated for lightness so that the total weight of the empty 'Cassetta porta bombetta da Kg 2' is only about 4 Kg.

The container has eight tubes of square section each capable of holding four 2 Kg bombs. Four flaps, hinged along the outer edges of the container are specially shaped to close two tubes each. A central plate (1) has a 90^{o} sector cut away so that on rotation of the handle (2) each flap may open in turn and release eight bombs at a time - viz: the contents of two tubes.

Another container modelled on this pattern holds only twelve 2 Kg bombs

Recently an apparatus for releasing small bombs has been recovered in the form of a bomb container of slightly larger dimensions than a 100 Kg HE bomb which could contain.

40 bombs of types 2.F., 2.Mtr., 2.C. or 1.I.
20 bombs of types 4.A.R.
20 bombs of types 4.C. or 2.I.

This container is described below and illustrated on Page 19. It is made of sheet steel and is 66 inches (1676 mm) in overall length and 11 inches (279 mm) in diameter. It contains 8 steel tubes each approx 2.9 ins (74 mm) diameter to accommodate the bombs. The tail consists of a metal cone having four fins and a strengthening band (1) at the outer extremity. The suspension loop (2) is attached to a pair of opposite fins.

Between each pair of fins and lying below the strengthening band is a steel drogue (3). Each drogue is connected to its neighbour by a fabric web (4). An elastic strip (5) connects the edge of the drogue to the strengthening band and tends to pull out the drogue into a position at right angles to the axis of the container, while a steel cable (6) attached to under side of drogue limits the movement of the drogue to the horizontal position when the "tail" opens in the air.

Secured to one of the drogues is the clockwork mechanism (7) by the operation of which the container functions.

When the container functions in the air, the nose of the container is released thereby freeing the bombs contained in the 8 steel tubes. At the same time the drogues open and retard the movement of the container relative to the bombs. The latter are thus rapidly ejected.

NOTE: With the drogues open as shown on Page 19, the nose of the container would normally have been released.

A further type of container (Page 20) consists of a long metal trough the sides of which are perforated for lightness. This trough holds 16 cells, each provided with a hinged lid. They are locked in the container by the movement of the handle (1). Each cell (3) is approximately 13.25 inches (336 mm) long and 3 ins (76mm), wide and can hold four bombs of any of the following types - 4.A.R., 4.C.; 3.Mtr. or 2.I. - though it is believed that this carrier is usually employed for the release of thermos bombs. A plate at one end of the cell, hinged just below the lid and lightly spring loaded takes up the small differences in length of the various types of bomb. The container is carried in the aircraft with the open side downwards.

By rotating a handle attached to the release lever (2) the hinged lids of a line of cells are unlocked and the weight of the contained bombs forces them open and so discharges 16 bombs at a time.

The cells can be removed from the container for charging.

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SECTION 9.

GAINES

With the exception of those employed in the smaller bombs (4 Kg and less), all fuzes for Italian H.E. bombs are fitted to take a gaine.

There are two sizes of gaine in common use and since these bear no markings they have been designated Types 1 and 2 (Page 21). Type 1 is 7.7 ins (194 mm) long by 1.3 ins (340 mm) external diameter.

The wall thickness is 0.1 ins (2 mm.) and the filling consists of three blocks of T.N.T. Type 2 is 4.9 ins (124 mm.) long with the same external diameter and wall thickness but containing only two blocks of T.N.T.

In the upper T.N.T. block is a cavity to take a large detonator with a brass casing measuring 2.2 ins (56 mm) in length and 0.4 ins (10 mm.) in diameter. This detonator contains lead azide and penthrite and is threaded externally at the open end to screw into an adaptor which screws partly into the gaine and partly into the base of the fuze, the latter, itself, screwing directly into the base of the bomb. Six types of adaptor have been recovered and since they carry no identification marks they are referred to herein by letters of the Alphabet.

Type A, fitted with a cavity for a powder pellet, was used in early fuze models when the fuze itself employed detonating caps and an additional detonator was not employed.

Types B to E inclusive are normally employed with gaines Type 1 and 2. Of these types B and C are simply holders for the detonator and differ only slightly in detail. Type D has a relay of loose powder and Type E is fitted with a delay pellet.

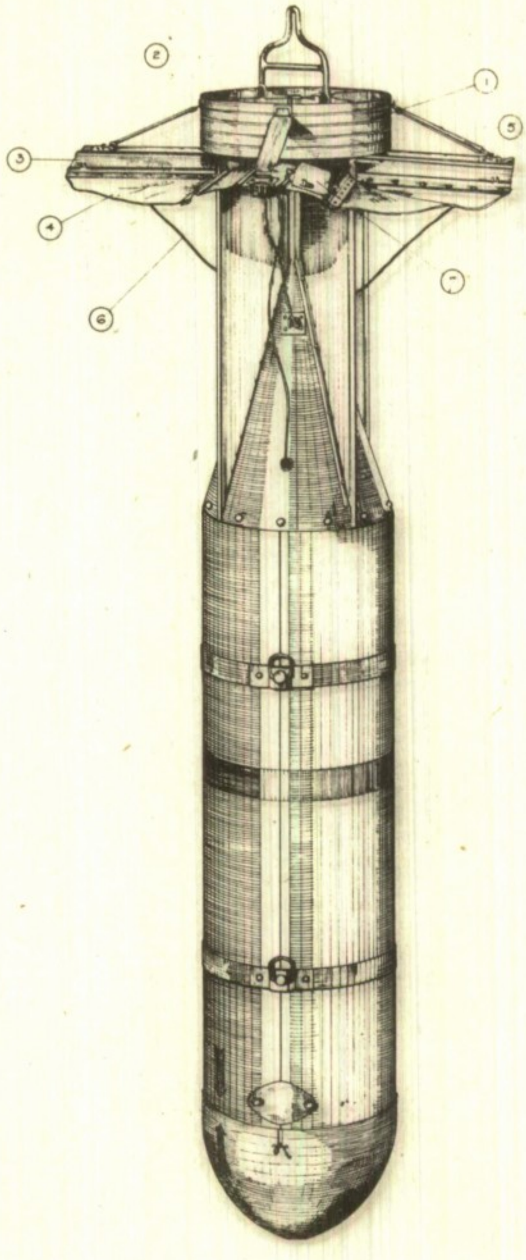
For use in the Bomba 500.R.O. with the Clockwork Long Delay Time Fuzes, the Long gaine Type 1 has been modified slightly to form types 3 and 4 both of which employ the adaptor Type F which is also merely a holder for the detonator.

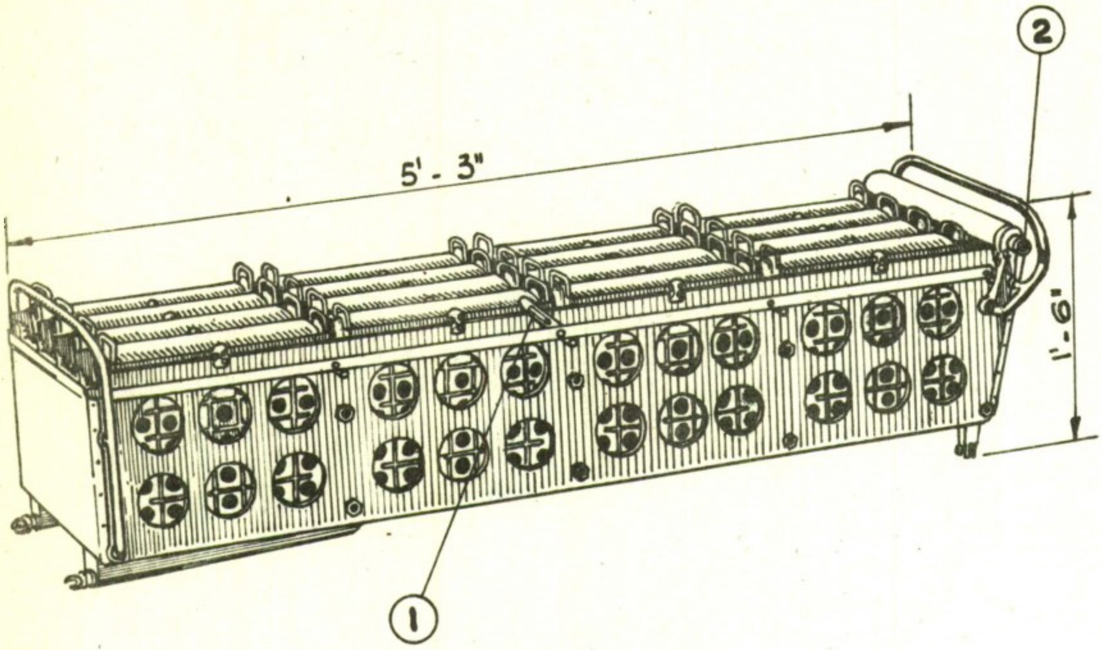
When fixed in position the detonator projects into the gaine to different extents in the different adaptors, e.g.: in type B & D the projection is 1.2 ins. (34 mm.); in Type C, 1.8 ins (47 mm.); in Type E, 2.0 ins (50 mm.); and in Type F, 1.0 ins (26 mm.).

Generally speaking the long gaine Type 1 is used with large bombs; the short gaine Type 2 with medium bombs and the detonator alone, screwing directly into the base of the fuze, in small calibre bombs.

The bombs 104.M, 40.T, 31. and 24. are exceptions in that the gaine screws into the bomb and the fuse screws into the gaine. Two of these gaines are known. Type 6, employed in Bomba 104.M, has a brass holder which screws into the gaine below the fuze. This holder is fitted with a perforated pellet below which is a small booster charge. Above the perforated pellet is a cavity in which may be inserted a solid delay pellet if so desired. Type 5, employed in Bomba 40.T, also has a brass holder which screws in below the fuze, but the contents of this holder have not been recovered.

19

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1' - 6"
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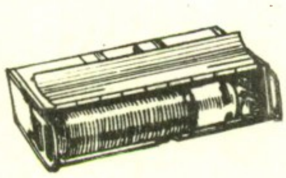

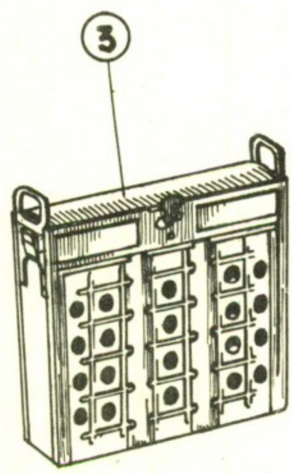
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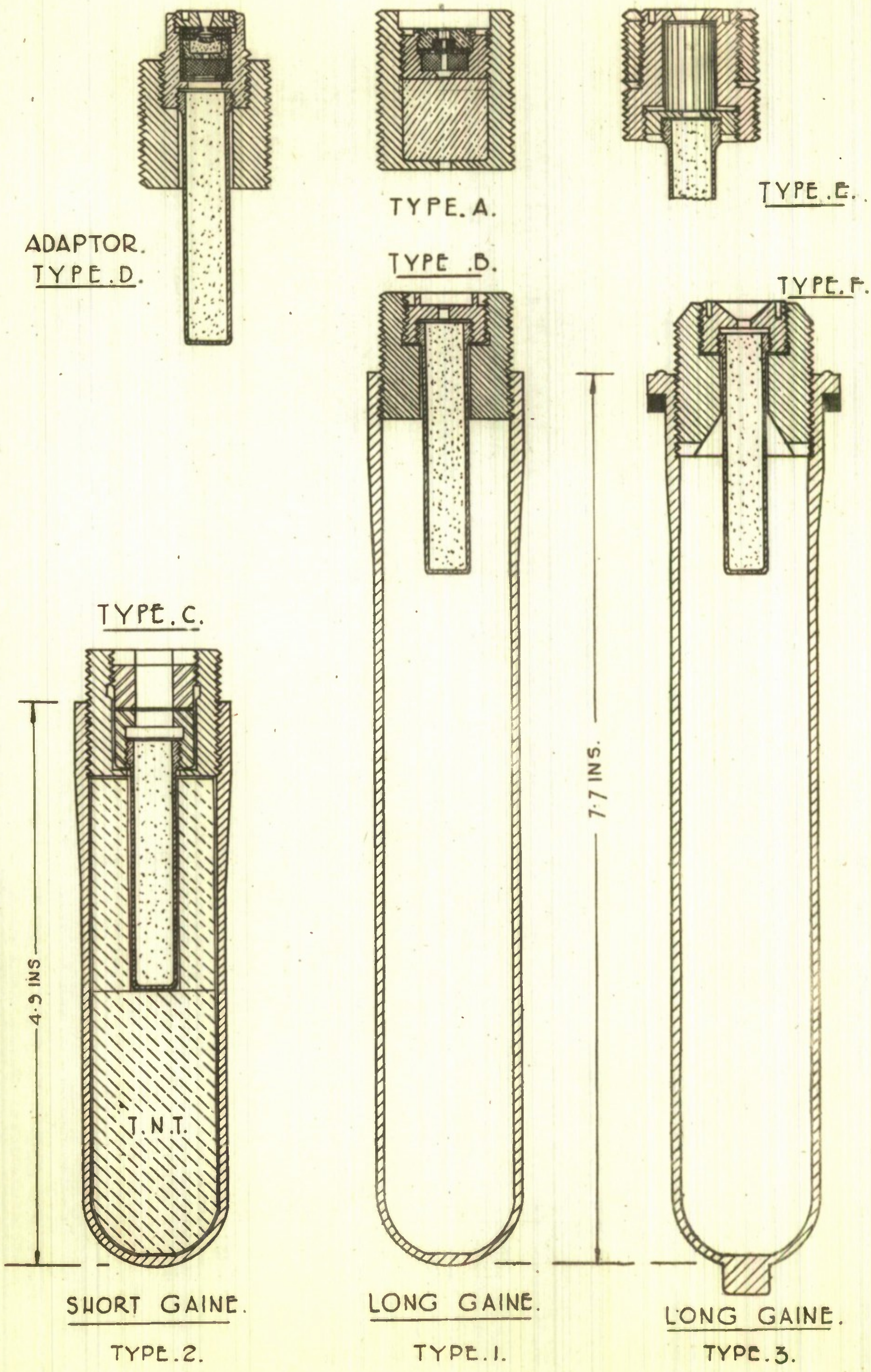
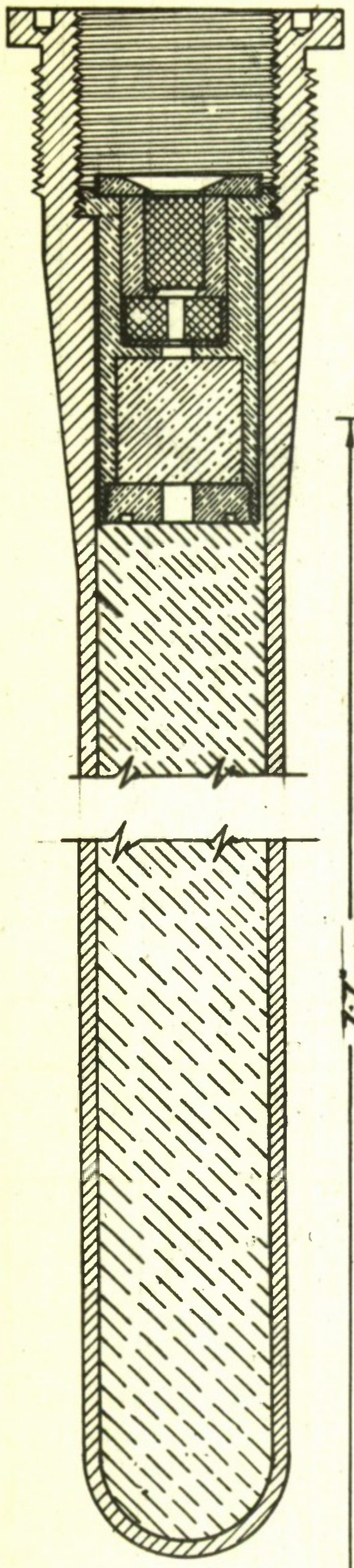
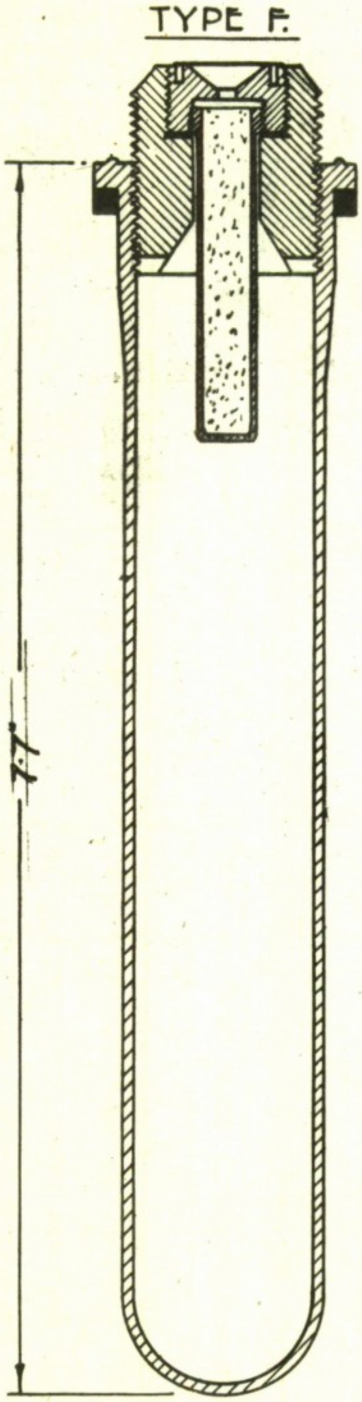

ADAPTOR.
TYPE.D.
TYPE.A.
TYPE.E.
TYPE.B.
TYPE.F.
TYPE.C.
4·9 INS
7·7 INS.
T.N.T.
SHORT GAINE.
TYPE.2.
LONG GAINE.
TYPE.1.
LONG GAINE.
TYPE.3.



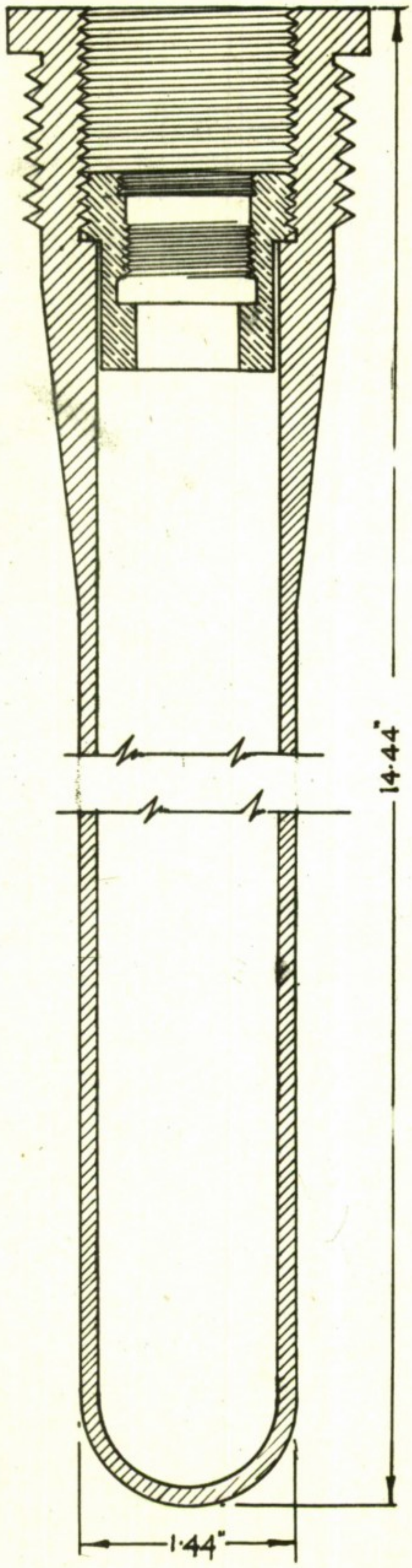
LONG GAINE.

TYPE 6.



LONG GAINE.

TYPE 4.



LONG GAINE.

TYPE 5.

The dimensions of Type 6 are not known. The details given above were obtained from a captured document. Type 5 is 14.4-ins (366 mm.) in length and 1.4-ins (36 mm.) in diameter over the main length of the gaine.

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SECTION 10

HIGH EXPLOSIVES USED IN ITALIAN BOMBS.

T.N.T. is commonly used as a filling for bombs, and the word 'Tritolo' is often stencilled in white on the outside of the bomb so filled. There are in addition many high explosive mixtures in common use in the Italian service. Nearly all of these contain ammonium nitrate as a constituent.

The commonest is amatol, - either 60/40 or 80/20 and bombs so filled are often stencilled in white with the word 'Amatolo'

In bombs 250 Kg and over, the filling is often put into thin sheet steel containers. These are of three shapes :-

(a) a nose container suitably shaped

(b) a tail container suitable shaped, and

(c) a cylindrical container.

In the 250 Kg. bomb there are only the nose and tail container but in the 500 Kg. bomb there are 3 cylindrical containers, and in the 800 Kg. 7 cylindrical containers in addition.

The following table gives a list of high explosive main fillings known to be in use, although not all of these have yet been encountered. No case of chlorate or perchlorate fillings have so far been recorded, but a penthrite filling has been found in 40 Kg and 150 Kg bombs and an RDX/TNT mixture in the 3.5 Kg Anti-tank bomb.

The D.N.B. mixture, whose composition is shown at the foot of the table, has been recovered as the filling of paper wrapped cartridges which are inserted in the central cavity in bomb fillings below the gaine.

Explosive	CONSTITUENTS							
	Ammon Nitrate	TNT	TNN	DNN	Al	Calcium Silicide	Sodium Nitrate	Other constituents
Tritolo		100						
Amatolo	60	40						
Amatolo	80	20						
N.T.	70	30						
Toluol Ammonal	47	30			20			Carbon 3
Schneiderite	87.4			12.6				
M.S.T.	49	44		7				
Siperite	72.8	16.7		10.5				
Sabulite S.	65		10			25		
Sabulite O.	60		8			14	18	
Sabulite R.	42		18				40	
Dynamon	88			8				Woodmeal 4
-	88				5			DNB 5 Woodmeal 2

TNN - Trinitronaphthalene   DNN - Dinitronaphthalene
DNB - Dinitrobenzene   Al - Aluminium powder

SECTION 11.

ITALIAN BOMB FUZES.

Italian bomb fuzes bear no distinctive markings by which they can be designated, and are known in the Italian Service by the designation of the bomb in which they are employed e.g. fuze R is referred to as Spoletta per bomba 12 Mtr. As far as can be ascertained, Italian bombs with few exceptions employ fuses which are peculiar to each type of bomb, and details of fuzes will be found in this Summary coupled with the bombs which employ them.

With one exception all the fuzes operate mechanically. This exception is the nose fuze used in the 100.sp.bombs, which depends for its action upon the current supplied by a small electric generator incorporated in the fuze. The majority of the Italian fuzes are designed to function on impact. Of the forty-one bomb fuzes known, thirty-two are impact fuzes, and their internal mechanisms divide them readily into five distinct types.

I. Impact Fuzes

(a) NOSE-DIRECT ACTION
In which there is a movable striker forced by impact on to a fixed cap.

(b) NOSE-INDIRECT ACTION
In which the striker is fixed and cap holder can move towards it when inertia overcomes the resistance of a light creep spring holding them apart.

(c) DOUBLE ACTION
In which both the striker and the cap holder can move relative to each other.

(d) TAIL-INDIRECT ACTION
(i) In which a movable striker can move towards a fixed cap holder when the resistance of a light creep spring holding them apart is overcome.
(ii) In which a heavy brass collar sets down and frees a spring loaded striker.

(e) ALL-WAYS ACTION
In which both striker and cap holder can move relative to each other. The interior of the fuze body is so shaped that the striker and cap holder can move radially and in so doing are forced to approach one another and since such movement would result from impact other then axial, the mechanism is all-ways acting.
The special characteristics of the remainder are set out below :-

II. Long Delay Fuzes.

(a) Time delay clockwork nose fuze.
(b) Time delay clockwork tail fuze.

These two fuzes each incorporate an eight day clockwork mechanism and are employed in the 500.R.O. bomb.

III. Short Delay Fuzes.

(a) Nose fuzes I and I.1. employed in the 3.cV. and 20.cV. bombs respectively. These are fixed time fuzes.

(b) Nose fuze T employed in the 500.C. bomb. This is a variable short delay time fuze. The delay can be varied by altering the pitch of the vanes.

(c) Nose fuze X employed in 100.sp. bombs. This also is a variable short delay time fuze. The delay can be controlled by manipulating the meter reading on the fuze.

IV. Fuze operating on the opening of a parachute.

Nose fuze L. This operates when its downward motion is suddenly checked, by the opening of a parachute. It is employed in the parachute flare Tipo E.XVI. (Type E.XVI).

V. Underwater Fuze.

The tail fuze fitted to the 160.cS. bomb. This fuze operates after penetrating a predetermined depth of water.

VI. Delayed Arming Fuze.

The Manzolini fuze fitted to the 4.A.R. (Thermos) bomb. This is a tail-less bomb with a sensitive fuze designed for delayed arming and anti-handling, and sometimes arranged to operate automatically after a delay.

Of the impact fuzes K, Q and U, were designed for use in the tail-less 2 Kg bombs. Up to the present only fuze K, has been encountered, and that in all the types of bombs employing these fuzes, viz 2.F., 2.Mtr., and 2.I. The fuze K is also normally employed in the 1.I. bomb, and captured enemy Documents show it fitted to the Bomba furetto, the 4.C. and 2.C. bombs, and it is believed to be used in the small incendiary bombs Ip, FI, and It.

All other bombs, except the Bomba Sferica da Kg.70, are fitted with either a nose or a tail fuze or both a nose and a tail fuze. This latter fuzing is typical of the larger calibre bombs. The arming of these fuzes takes place during the fall of the bomb and depends upon :-

(a) The rotation of a two or a three bladed airscrew.

or

(b) The rotation of a two or a four bladed cap.

The action of the airscrew is to cause the withdrawal of an arming rod which projects into the striker. The striker is immobilised by steel balls which either :-

(i) Lock the striker to the body of the fuze

or

(ii) Lock the striker and the cap holder to one another.

In either case the withdrawal of the rod frees the steel balls and so arms the fuze. In the case of fuzes which function as at (i) which are of the Nose-direct category the striker is then free, and on impact moves against a creep spring to penetrate the percussion caps, but in the case of those which function as at (ii) the striker and the cap holder are then free to approach one another on impact by compressing a light creep spring.

This latter mechanism, seen in fuzes E, F, F1, K, P, W and Z, is more sensitive than the former, for the interior of the fuze body is specially shaped so that impact at any angle will cause the striker and the cap holder to approach one another by riding up the conical or inverted dome-shaped surfaces. These fuzes are therefore ALLWAYS category.

Of the fuzes provided with bladed caps, fuzes B, B1, J, L, V and the nose fuze for the 140 Kg Bomb become fully armed only when the cap has unscrewed and fallen away. In the fuzes B and V the vaned cap unscrews from the striker spindle itself and in addition frees a set of steel balls which lock the striker to the body of the fuze. In the fuze B1 the steel balls have been considered redundant and and omitted, the safety arming time being provided by the unscrewing of the cap from the striker spindle. In the fuze L, the striker being fixed to the head of the fuze it is the cap holder which is released when the steel balls are freed, but in the fuze J the unscrewing of the cap withdraws an arming rod which in turn allows steel locking balls to move inwards and free the striker. The fuze for the 140 Kg bomb is a departure from normal Italian practice. When the cap unscrews and falls away, four pressure operated strikers situated in the head of the fuze are uncovered ready for subsequent operation and a spring loaded safety bolt, masking the flash channel to the main detonator, is released.

The caps of the time fuzes I and I1 do not tend to unscrew and so do not provide any visual indication of arming, and the same is true of fuze T.

As their designation implies impact fuzes are designed to function when the nose of the bomb strikes a target. The action of nose impact fuze varies with the different types.

(i) Fuzes B, B1, J, and V are fuzes intended for the heavier type of bomb and function by the shearing of a mild steel or copper washer.

(ii) The fuze employed in 140 Kg bomb operates by any or all of the four small strikers housed in the head of the fuze being forced on to their caps by the penetration of a target.

(iii) In fuzes M, R, and S the spindle, on which are the vanes, does not become detached but acts as a 'ramrod' forcing the striker on to the caps.

(iv) The fuzes F, F1 and W have 'allways' action and may function, however the bomb may strike the ground.

(v) The remainder of the nose impact fuzes function by inertia of the striker.

Italian Tail Impact Fuzes, with the exception of E, Z, and the tail fuze for the 3.5 Kg bomb, operate by the setting down of a heavy striker on to the percussion cap or caps when the motion of the bomb is suddenly arrested on impact. Fuzes E and Z are 'allways' and function in the same way as the nose fuzes F, F1 and W. The tail fuze for the 3.5 Kg bomb is especially sensitive and functions instantaneously when a spring loaded striker is released by the set-down of a heavy brass collar.

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SECTION 12.

SAFETY DEVICES IN ITALIAN FUZES.

The safety devices employed fall into two main categories; those which are intended to safeguard the fuze from premature operation during transport and those which safeguard the fuze against premature operation which might endanger the aircraft during the flight of the bomb. These have been here designated the Primary and Secondary Safety devices.

Method of Carrying Bombs in Aircraft	Fuze type	Primary Safety Device		Secondary Safety Device
		During transport on the Ground	During transport in the aircraft	During Flight of Bomb
Indepen-dent Suspen-sion.	Fuzes fitted with air screw	A rigid pin passes through the neck of the fuze and locks the arming rod. In some fuzes there is in addition a rigid pin which pre-vents movement of the striker itself. The fuze S has a safety clip which embraces the stri-ker spindle and prevents outward movement of the air screw. This latter device is also used in the aircraft witn this fuze.	Either a metal clip which locks the vane boss to the neck of the fuze or a metal fork which passes over one of the vanes of air screw and is secured to the bomb tail.	Steel balls, held in position by an arming rod, prevent relative movement between the stri-ker and the cap holder. The exceptions are the fuze S in which the outward movement of the vanes on the striker spindle frees the striker itself and the fuze X in which a special clutch mechanism en-sures that the fuze cannot op-erate until the bomb has fallen a certain distance from the aircraft
Independ-dent Suspen-sion.	Fuzes fitted with vaned cap which unscrews and falls away.	A rigid pin passes through the cap and prevents it rotating.	A flexible wire replaces the rigid pin.	The vaned cap either (i) Unscrews from striker shank. (ii) Withdraws arm-ing rod. (iii) Allows steel locking balls to fall away. (iv) Discovers 4 pressure oper-ated strikers and releases spring loaded safety bolt
Indepen-dent Suspen-sion.	Fuzes fitted with vaned caps which do not unscrew	A rigid pin locks the withdrawal mechanism. A metal clip prevents de-pression of the operating plate.	A Flexible wire replaces the rigid pin. The clip is removed.	Steel balls, held in position by an arm-ing rod, prevent relative movement between the striker and the cap holder.
Indepen-dent Suspen-sion.	Fuze fitted with a water screw	A rigid pin secures the safety plate.	A flexible wire replaces the rigid pin.	A shear pin retains the safety plate until the bomb penetrates the water.

Method of carrying Bombs in Aircraft	Fuze Type	Primary Safety Device		Secondary Safety Device.
		During transport on the Ground	During transport in the aircraft	During flight of Bomb.
	Manzo-lini	A rigid pin passing through one vane and locking it to the Aluminium cup		Mechanism held locked by means of aluminium cup which is released by rotation of vanes.
From Containers	Fuze M	Holes through the two vanes enable the latter to be wired either to the fuze body or to a metal stop which engages in a groove in the fuze body	Unnecessary in these fuzes since bombs are housed in a container.	Steel balls, held in position by an arming rod, prevent relative movement between the striker and cap holder.
	Fuze K	A rigid pin holds the rotating disc attached to the arming rod.		The arming rod passes through the striker and prevents relative movement between the striker and cap holder.
	Fuze U	A rigid pin secures the vaned disc to the head of the fuze		Steel balls, held in position by an arming rod, prevent relative movement between the striker and cap holder.
	Fuze Q	U-shaped pin passes through head of fuze and retains the cap holding the safety bolts		Safety bolts project between the head of the striker and the cap holder.

SECTION 13.

CLASSIFICATION OF ITALIAN FUZES

Since one of the main problems in the handling and disposal of unexploded Italian bombs is to decide in the first place whether or not the fuze is armed, the following classification is based upon the methods of arming and upon the indications available to decide whether or not arming has occurred.

NOSE FUZES

1. Fuzes showing visual indication of definite arming.

This group may be sub-divided into :-

(a) Fuzes with a vaned cap which falls away and which are fitted with:-

(i) a fixed percussion cap holder and shear washer.

Fuze B	...	Page 250
Fuze B1	...	Page 249
Fuze J	...	Page 277
Fuze V	...	Page 389

(ii) a heavy movable percussion cap holder.

Fuze L	...	Page 87

(iii) four pressure operated strikers in the nose of the fuze.

Fuze for 140 Kg Bomb	...	Page 381

2. Fuzes showing a visual indication of arming either complete or partial.

This group may be sub-divided into :-

(a) Fuzes in which the vanes rise beyond the collar and which employs:-

(i) a fixed percussion cap holder.

Fuze S	...	Page 111

(ii) a movable percussion cap holder.

Fuze F	...	Page 173
Fuze F1	...	Page 177
Fuze M	...	Page 203
Fuze W	...	Page 183

(b) Fuzes in which the screw-threaded spindle protrudes through the vanes, and which employ a movable cap holder.

Fuze A	...	Page 323
Fuze R	...	Page 189

3. <u>Time Delay Fuzes.</u>

(a) Short time delay fuzes - No visual indication of partial arming, but depression of a pressure plate indicates that the fuze has become armed, and that the striker needles have moved towards the percussion cap, and have pierced without firing them.

Fuze I	...	Page 241
Fuze I1	...	Page 233
Fuze T	...	Page 55

(b) Long time delay - no visual indication of arming :-

Long delay clockwork Nose Fuze ... Page 278

(c) Fuzes in which the arming is indicated by a reading on a delay setting, (height meter).

Fuze X ... Page 163

TAIL FUZES.

Usually the vanes of tail fuzes are situated at the outer end of the bomb tail while the fuze mechanism is located at the inner end of the tail and screwed into the base of the bomb. The exceptions to this are :-

(a) Fuze G where the fuze mechanism and the vanes are both situated at the outer end of the tail.

(b) Fuze E, where the vanes are located in a recess cut in the tail about half way along it.

(c) Fuze Z, where the fuze and vanes are located at the inner end of the tail to ensure delayed arming.

The tail fuzes are divided into the following groups :-

1. Fuzes which show a visual indication of arming, either partial or complete:-

(a) Fuzes in which the vanes rise beyond the collar and which employ :-

(i) a fixed percussion cap holder.

Fuze N ... Page 363
Fuze N1 ... Page 317
Fuze N2 ... Page 357
Fuze N3 ... Page 311
Fuze N4 ... Page 345
Fuze Y ... Page 299
Fuze Y1 ... Page 351

(ii) a movable percussion cap holder.

Fuze E ... Page 129
Fuze Z ... Page 167

(iii) a heavy operating sleeve

Fuze in 3.5 Kg
Hollow Charge A tk bomb ... Page 267

(b) Fuzes in which the screw-threaded spindle protrudes through the vanes and which employ a movable cap holder.

Fuze G ... Page 121

(c) Fuzes in which the arming is indicated by the reading on a delay setting (water penetration meter)

Fuze for 160 cS ... Page 253

2. Fuzes which do not show any visual indication of arming :-

(a) Fuzes in which the arming rod is withdrawn by means of an internally threaded cylinder.

Fuze C ... Page 303
Fuze C1 ... Page 293

(b) Fuses in which the arming rod is withdrawn by means of an extension piece :-

(i) Impact Fuze

(ii) Long Delay Fuze.

SPECIAL FUZES.

1. (a) Fuze for spherical bomb 70 Kg.

(b) Manzolini, anti-handling fuze ... Page 195

(c) Fuzes for small (2 Kg) bombs.

Allways type, arming mechanism falls away :-

SECTION 14.

Handling of Italian Unexploded Bombs.

The normal method of disposing of unexploded bombs is by demolition in situ whenever permissible. Before deciding upon this course, due regard must be paid to the amount of damage the detonation will produce and to the amount of damage which can be accepted. If it is decided that a bomb must be removed then the risks incurred should be balanced against the urgency of such a course.

If the bomb is to be removed, it should first be uncovered and the fuze inspected. In digging down for the bomb, great care should be taken not to disturb the bomb or the fuze. If the latter is found to be of a type not previously described, it should be at once reported, and whenever possible left until further instructions are received.

Bombs should normally be defuzed before removing them. If by reason of distortion or damage a fuze cannot be removed, then the bomb should be laid horizontally and transported in this position without jarring or jolting.

Methods of defuzing Italian Bombs.

1. General.

(a) Care must be taken during excavation neither to jar the bomb nor disturb the fuze.

(b) When the fuze is uncovered, secure the vane spindle to prevent rotational and longitudinal movement.

(c) When the bomb is completely uncovered bring it to the horizontal position without disturbing the fuzes or allowing them to pass through the vertical.

(d) Never attempt to replace or screw in the arming rod as this may result in forcing the striker on to the percussion caps and thus detonating the bomb.

(e) If, when extracting tail fuzes, the bomb tail is so damaged that it can only be removed by cutting it away, care must be taken, while so doing, to avoid unnecessary jarring of the bomb.

(f) When a fuze has been removed and the gaine unscrewed, the former must still be treated with due care since it still contains the caps.

2. <u>Fuzes in small bombs.</u> (2 Kg or less)

e.g., 2.F., 2,Mtr., 2.I., 1.I., etc.

(a) <u>Fuze K.</u>

Indication that the fuze is armed :- perforated disc and attached screw-threaded spindle are missing.

(b) <u>Fuzes Q and U.</u>

Indication of arming :- safety pin and caps missing.

<u>To defuze these bombs.</u>

Lay the bombs carefully on their sides. Unscrew the fuzes without jolting the bomb, and remove fuze and detonator complete. Unscrew the latter (where present), from the fuze and pack separately.

In the case of fuze K, never attempt to insert a pin through the hole in the head of the fuze, as this may cause the striker to approach the cap.

3. <u>The Manzolini Fuze in the 4.A.R. (Thermos) Bomb.</u>

Indication that the fuze is armed :- Aluminium cap is missing.

This fuze is very sensitive to a jerk or jolt and may incorporate a self-destroying mechanism. There is no external indication of this latter and all bombs must therefore be suspect. Time delays have been recorded varying from one to four days. UXB's should, wherever possible, be detonated in situ. This can be done by placing a 1-oz. guncotton primer, or a stick of gelignite, close to the base and on the longitudinal axis of the bomb. In this way the fuze will be given the necessary longitudinal jolt to cause it to operate and detonate the bomb. Alternatively, a loop placed loosely over the coils of the spring can be used to give the bomb a sufficient jerk to detonate it. A few sandbags built up close to the bomb will give protection to the operator, who should use a coil of rope not less than 200 ft. in length, and be in the prone position when he gives the necessary jerk.

The lethal area in the open, with the bomb on the surface is 100 ft. Complete immunity from fragments is obtained at 300 yds. When circumstances demand that the bomb should be moved it must be remembered that the most dangerous position for the fuze is the vertical position with the nose pointing upwards. Hence when moving the bomb (which will only be done in most exceptional circumstances) it should be carried horizontally and in bringing it to this position the operator should avoid passing the fuze through the vertical. Great care must be exercised in lifting, carrying and laying down the bomb, to ensure that there shall be no jolting or jerking All movements must be slow and deliberate and excessive acceleration of the bomb must be avoided.

4. <u>Tail fuze for 3.5 Kg Hollow Charge A tk Bomb.</u>

If the vanes are in place and have not risen above the fuze, the latter is unarmed and the bomb may be handled with safety.

If the vanes have risen 0.5 inch or more above the fuze, the latter is fully armed and is in a very sensitive condition. It should be demolished in situ by detonating 1 lb Wet Guncotton adjacent to the conical portion of the bomb.

If NO other course is open, an attempt to move the bomb might be made by carefully lifting the bomb until it is nose upwards and carrying it away in that position, without any jerking or jolting.

5. **Short delay fuzes I, I 1, and T for bombs 3.cV., 20.cV. and 500.C. respectively.**

There is no visual indication of arming. Since both the striker and the cap holder move within the armed fuze and there is no creep spring holding them apart, the fuze must be regarded as being in a most dangerous condition and the bomb should be detonated in situ whenever possible.

If the bomb must be moved, first secure the pressure plate so that it cannot move If the pressure plate has not been depressed, wedge it in position by means of a small piece of wood. If the pressure plate has been depressed, do not attempt to move it as the needles may have pierced the caps without firing them and withdrawal may cause the bomb to function.

After securing the pressure plate, move the bomb slowly and carefully into the horizontal position taking care not to pass the bomb, and hence the fuze, through the vertical in so doing. The bomb may now be moved horizontally for subsequent demolition if all jolting be avoided. No attempt should be made to defuze the bomb .

6. **Fuzes in the Bomb 500.R.O.**

Long delay (clockwork) time fuzes.

There is no visual indication of arming in either the nose or the tail fuze. No experience has been gained up to the present on the usefulness of the electric stethescope but it is considered probable that the ticking of the clock would be audible with the present apparatus. It is considered, however, that the present designs of clockstopper would be unlikely to be effective in stopping the clocks.

As the clock may be set for delay up to 8 days, it is recommended that identified and suspected long delay bombs be left for 9 days before commencing the usual excavations prior to removal. All the usual precautions observed in dealing with German Bombs containing a 17 fuze should be applied in the case of bombs containing a long delay clock. An emergency method of disposal is described under the description of the fuzes.

Nose fuzes Type J.

If the vane cap is missing the fuze is armed. If the black steel cylinder projects more than 1.5 inches beyond the brass fuze body the fuze is safe to handle provided due precautions are taken to avoid rough treatment.

If, however, the steel cylinder has been moved inwards, secure the cylinder firmly to prevent any further movement. The fuze may then be unscrewed and with drawn complete with detonator and gaine. Both these latter should be unscrewed from the fuze and packed separately.

7. **Fuzes for the '100.sp' type bombs.**

The nose fuze X is a variable short delay time fuze, which is used to eject the nose of the bomb after a pre-determined fall from the aircraft. The fuz functions by the completion of an electric circuit and the degree of arming is indicated on the drum type height meter incorporated in the fuze. At the zero reading the electrical contacts have just not closed, and a few further rotations of the vanes change the meter reading to 9990 and complete the circuit. Since the movable contact is attached to the 'thousand metre' drum, it is still possible for the other two drums to rotate until they are again about to operate the 'thousand metre' drum, and produce a reading of 8990. This reading is, in fact never indicated for the contacts 'jam' and hold up the rotation of the 'thousand metre' drum. In actual tests it has been shown that the contacts are closed at all readings between 9990 and 9000. Thus, if any reading between these limits is indicated on the height meter, the contacts have closed and are still closed, but the mechanism has failed to fire the detonator. For other readings it is probable that the circuit has not been made.

In no case, however, should the vanes be allowed to rotate. They should be secured by means of a pin or nail inserted in the hole through the vane spindle or by tying down the vanes with string or wire.

METHODS OF HANDLING

A. Bomb found complete with Nose in position.

1. Secure the vanes of fuze X as above.

2. Unscrew the fuze very carefully and remove it from the nose of the bomb.

The bomb is now safe for transport provided it is not subjected to undue jolting. Since the nose is still in position the fuzes of the small bombs and tail fuze Z will not have become armed.

B. Nose found complete but detached from bomb.

1. Sever the length of safety fuze attached to the detonator, taking care not to interfere with the fuze X.

2. Secure the vanes of fuze X as above.

3. Unscrew the fuze very carefully and remove it from the nose.

4. Unscrew the retaining collar and remove the detonator from the nose.

C. Bomb body found without the nose, but with the central bomb still in position and unexploded.

1. Since the tail fuze Z will not be visible, it must be considered armed and care must be taken not to jolt the bomb.

2. With the bomb on its side, remove the tail by unscrewing or drilling out the retaining screws.

3. Taking great care that the vanes are not rotated and that no longitudinal blow is given to the fuze, unscrew the fuze from the central bomb and withdraw it complete with detonator and gaine.

4. Unscrew the gaine and the detonator from the fuze and pack separately.

8. Fuzes for the Bomb 160.cS.

It is not anticipated that this bomb will often be found on land. It is possible however, that it may be washed up on the foreshore. It is fuzed in the nose with heavy duty impact fuzes. B or B1 and in the tail with a special underwater fuze It is this latter fuze which should receive the first attention.

Handling the Tail Fuze.

If the fuze is encountered with the pressure plate in position, arming can not have commenced and the fuze can be removed with safety.

If the pressure plate is absent the relative withdrawal of the arming shaft will be indicated on the setting disc. The inertia bolt may or may not have compressed the striker spring, but it must be assumed that the worst conditions prevail and, if the setting disc is at or approaching zero reading, the bomb should be demolished in situ without further delay. If this latter condition does not obtain :

(i) Secure the vanes from rotation by securing them to the fuze body.

(ii) Unscrew the fuze from the bomb tail and withdraw it from the bomb complete with detonator and gaine.

(iii) Unscrew the gaine and the detonator from the fuze and pack them separately.

Handling the Nose Fuze.

If the vaned cap has fallen away, the fuze is armed. If the whole of the screw-threaded portion of the striker shank in the fuze B, or more than 2.25 inches in fuze B1, is visible above the collar, the fuze is safe to handle provided due precautions are taken to avoid rough treatment.

If, however, the striker has moved inwards, secure the striker shank firmly to prevent any further movement. The fuze may then be unscrewed and withdrawn complete with detonator and gaine. Both the latter should be unscrewed from the fuze and packed separately.

9. **Nose Fuze V.**

It is not known in which bomb this fuze is employed although the screw-thread on the body is identical with that on Fuze A and that on the nose fuze for the 140. Kg bomb. The fuze should be handled in the same way as described for fuze B in Sec. 7 above.

10. **Nose fuze for 140 Kg bomb.**

If the vaned cap is missing the four pressure operated strikers housed in the nose of the fuze are unmasked and the fuze is armed.

(i) Insert into the safety bolt hole a 4.1/2 nail (about gauge 5) and bind it in position to prevent it falling away.

(ii) Unscrew the fuze and withdraw it from the bomb complete with detonator and gaine.

(iii) Unscrew both the gaine and the detonator from the fuze and pack them separately.

11. **Nose fuze L for Parachute Flare E.XVI.**

If the vaned cap has become unscrewed and the steel balls are missing the fuze is armed. Providing due care is taken to avoid jerking the flare may be carried horizontally. If necessary the fuze may be unscrewed and removed from the flare.

12. **Tail fuze G for the bomb 70.I.P.**

The bomb 70.I.P. contains no HE charge. The fuze may be removed as follows :-

(i) Avoid any longitudinal jolting of the bomb and secure the vanes to prevent rotation.

(ii) Unscrew the aluminium retaining collar from the outer end of the tail and remove the fuze mechanism.

(iii) Remove the piece of quickmatch and plug the end of the ignition tube.

13. **Nose Fuzes (other than those treated above)**

Fuzes A, F, F1, M, R, S, and W.

(a) Observe any visual indications of arming.

(b) Avoid any longitudinal blow on the fuze or jerk on the bomb. In the case of fuzes M, R and S, the spindle should be bound to prevent longitudinal movement.

(c) Ensure that the vanes are not rotated.

(d) Carefully unscrew the fuze and remove complete with detonator and gaine. Unscrew both the latter and pack them separately.

NOTE: There is no gaine with fuzes M and S but the former does employ a detonator.

14. **Tail Fuzes (other than those treated above).**

Fuzes C, C1, E, N, N1, N2, N3, N4, 01, 02, 03, Y and Y1.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin or set screw securing the vanes, and remove the vanes.

This procedure should be omitted in the case of the long extension piece used in bombs 800, 500, 500 R.O. and 250 Kg.

(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.

(f) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

NOTE: If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.

15. **Fuze P for the Spherical Bomb 70 Kg.**

This fuze is separated from the main classification merely because it cannot properly be called a nose or tail fuze. The internal mechanism does however closely resemble that seen in the fuzes F, W, etc., and as would be expected from its use in a spherical bomb can be regarded as ALLWAYS action.

(a) If the safety pin hole in the fuze spindle is visible 2 cm above the head of the fuze, the latter is fully armed.

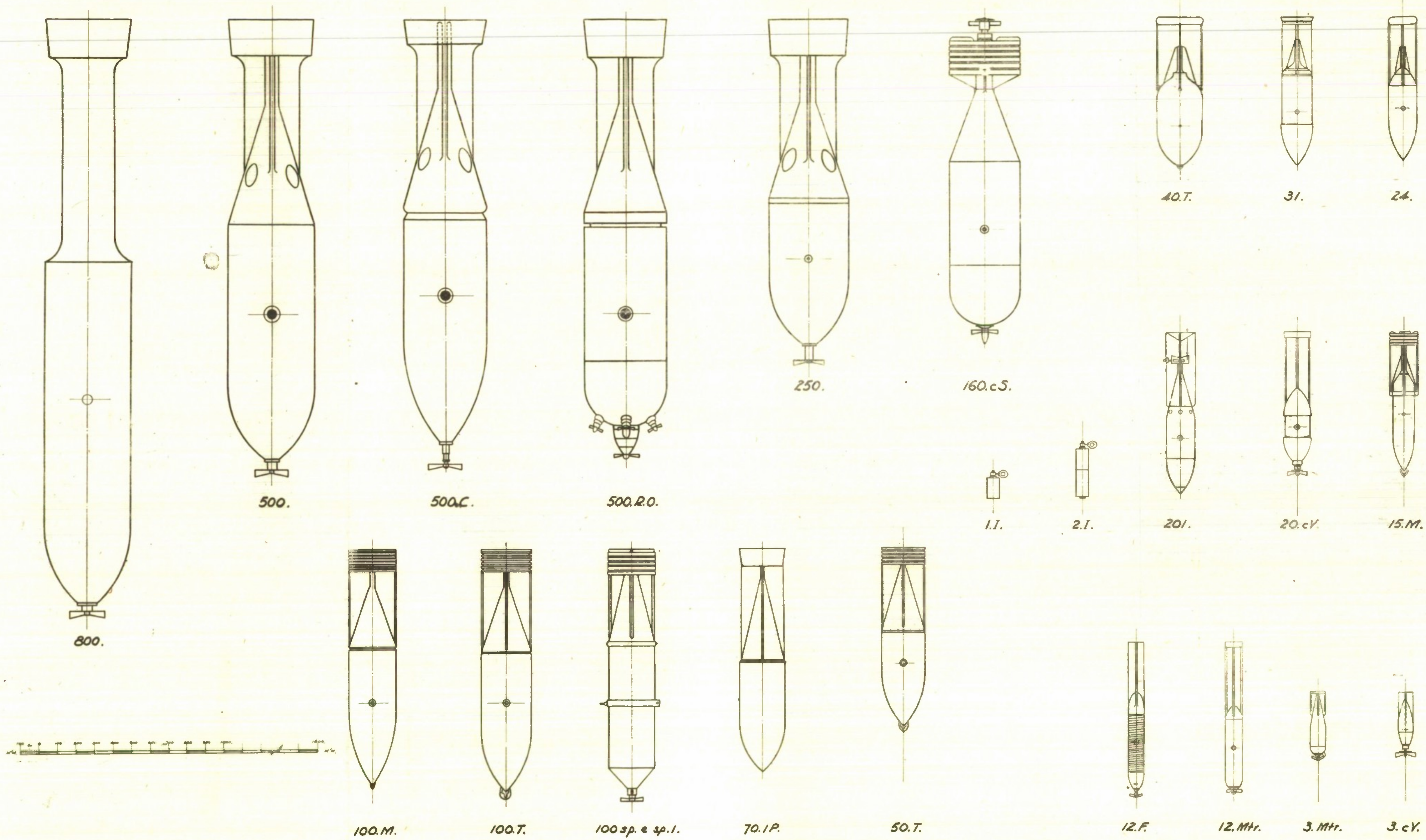
(b) In the armed condition the bomb should be destroyed in situ whenever possible

(c) If the bomb must be moved it should be carefully turned till the fuze is horizontal and then carried without jerking or jolting to a suitable site for demolition.

(d) If the fuze is not armed, it can be unscrewed from the bomb. Unscrew the gaine from the fuze and then remove the detonator and pack separately.

- T A B L E -

Details of Italian Bombs.



ITALIAN BOMBS.

New Designation	Old Designation	English Equivalent.	Colouring.	Method of fuzing with our referance letter	Nature & weight of filling.	Weight of complete bomb.	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table.
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
800	da kg 800 Mod 1928	G.P.	Body Dull Blue Nose 4" Red Band	Nose A Tail 01	TNT 357	800	44.6	Wall ½ Point ¼	H	458 18.0	458 18.0	1910 75.2	1300 51.2	3142 123.7	3247 127.8	(a)
500	da kg 500 Mod 1928	G.P.	Body Dull Blue Nose 4" Red Band	Nose A Tail 02	TNT 220	508	43.3	Wall ½ Point ¼	H or V	458 18.0	458 18.0	1320 52.0	1100 43.3	2366 93.1	2454 96.6	
500 R.O.	5.S.1	Delay Action (Time Fuze)	Body Dull Blue Nose 2" Red Band	Nose: 4 impact Type J, 1 Clockwork long delay. Tail: 1 Clockwork long delay.	TNT	500		Nose 2½ Wall ¼	H or V	460 18.1	460 18.1	1288 50.7	1089 42.8	2216 87.4	2380 93.7	

New Designation	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling.	Weight of complete bomb.	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins.		mm. / ins	m m. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
500 C	C. 500 T.	C.W. with Air Burst		Nose T Variable Short Delay	H.E. 10: Y.D. 210	280		Nose 2½ Wall 1/8	H	458 18.0	448 17.7	1403 55.3	1040 39.9	2320 91.4	2454 96.6	(d)
250	da kg 250 Tipo III	G.P.	Body Dull Blue Nose 3" Red Band	Nose A Tail 03	TNT 120	286	42.0	Nose 1¾ Wall 3/8 Point 2	H or V	446 17.6	446 17.6	835 32.9	1000 39.4	1780 70.1	1877 73.8	
160cS	da kg 160 a.s.	Anti-Submarine	Body pale Grey Nose 2" Apple Green Band	Nose B or Bl. Tail Under Water Type	TNT	180		Nose Wall 5/16	H	337 13.3	390 15.3	920 36.2	690 27.2	1540 60.7	1772 69.8	Tail with or without strengthening band

New Designation.	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension.	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
150		A.P.	Body Slate Grey. Nose 3rd Dark Blue Band	Tail	See note t. 21.3	151.1	13.0	Nose 4.0 Wall 1.0 Point 6.3	H	250 9.8	250 9.8	802 31.6	548 21.6	1275 50.2	1275 50.2	(t)
140			Grey	Nose Tail		138.5				256 10.1	250 9.8	700 27.6	550 21.7	1170 46.1	1256 49.4	
104 M	da kg 104 M	S.A.P		Tail N4	TNT or Amatol 30	104	28.8		V	254 10.0		711 28.0		1092 43.0	1092 43.0	(a) (b)
100 M	da kg 100 M	S.A.P	Body Dull Blue Nose 3rd Red Band	Tail C1 or Y1	TNT or Amatol 27.5	109	25.2	Nose 1½ Wall ½ Point 2½	H or V	252 9.9	252 9.9	788 31.0	540 21.3	1260 49.6	1283 50.5	

New Designation	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight on complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
100 T	da kg 100 T	L.C.	Body Dull Blue Nose 2" Red Band	Tail Cl or Yl	TNT or Amatol 50.6	100	50.6	Nose 2" Wall ¼ Point 3"	H or V	272 10.7	272 10.7	825 32.5	560 22.0	1305 51.4	1345 53.0	
100 C	C.100 P.	C.W.		Tail	H.E. 28.7 D.A. (Chem) 14.3	101.9	-		V	272 10.7	272 10.7	825 32.5	527 20.8	1275 50.2	1275 50.2	(c) (d)
100sp		Combined A pers bomb & A pers bomb carrier	Body Black Red Band at Nose	Nose X Tail Z		113	-	Outer case 1/8	H	272 10.7	272 10.7	650 25.6	530 20.8	1234 48.6	1300 51.2	(f)

New Designation	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm. / ins	mm / ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
100 sp.I		Combined A pers bomb & incend. bomb carrier	Body black Red band at Nose	Nose X Tail Z		89.1		Outer Case 1/8	H	272 10.7	272 10.7	650 25.6	530 20.8	1234 48.6	1300 51.2	(e)
70 L P.			Unpainted Electron & Dull gray	Tail G	Thermit 24.5	62		Elec Wall 1	H	252 9.9	252 9.9	600 23.6	679 26.7	1200 47.2	1200 47.2	(l)(q)
	Sferica da kg	Spherical		Tail P	TNT or Amatol 44		62.9			406 16.0	-	-	-	-	-	(a)

New Designation	Old Designation	English Equivalent	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
50 T	da kg 50 T	L.C.	Body Dull Blue.Nose 2"red Band	Tail C or Y	TNT or Amatol 25	58	43.1	Nose ½ Wall ¼	H or V	252 9.9	252 9.9	550 21.7	468 18.4	965 38.0	1029 40.5	
40 T				Tail N3					V	250 9.8	250 9.8	500 19.7	370 14.6	800 31.5	810 31.9	
40 C	C 40 P	C.W.		Tail NS	HE.13.0 D.A (Chem) 6.5	47	-		V	250 9.8	250 9.8	500 19.7	370 14.6	800 31.5	810 31.9	(c) (d)
31	da kg 31	S.A.P		Tail N2	TNT or Amatol 10.5		33.9			162 6.4	184 7.2	570 22.5	318 12.5	805 31.7	805 31.7	(a) (b)
24	da kg 24	L.C		Tail N1	TNT or Amatol 12.0		50.0			162 6.4	162 6.4	505 19.9	375 14.8	775 30.5	775 30.5	(a) (b)
20c.V	da kg 20c.a	Anti-air craft (Air Burst)		Nose I.1.				Wall Total 1.1/8		139 5.5	143 5.6	393 15.5	457 18.0	688 27.1	788 30.7	(g) (k)(q)

New Designation	Old Designation	English Equivalent	Colouring	Method of fuzing with our reference letter	Nature & weight of filling.	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A Length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins.	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
20.I	da kg 20.I	Incendiary	Unpainted Electron	Tail E	Thermit	19.4	-	Electron body ¼ steel nose plug 7/8 at Point	H or V	160 6.3	160 6.3	520 20.5	400 15.8	864 34.0	864 34.0	(m)
15.M	da kg 15 M	S.A.P.	Body Dull Blue Nose 3" red Band	Tail N	TNT or Amatol 5.6	15.5	36.1	Nose 1.1/8 Wall ¼ Point2	H or V	120 4.7	160 6.3	525 20.7	346 13.8	760 29.9	788 31.0	
15.C	C.15. P	C.W.		Tail	H.E. 3.65 D.A. (Chem) 1.7	16.0	-		H	120 4.7	160 6.3	525 20.7	346 13.8	760 29.9	788 31.0	(c) (d)
12.6 Kg Marker Brub (Sea)		Marker Brub (Sea)	Grey		Smoke (Purple)	12.6	-	-	H	135 5.3	178 7.0	838 33.0	432 17.0	1143 45.0	1193 47.0	(u)

New Designation	Old Designation	English Equivalent.	Colouring	Method of Fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of. bomb tail	O/A Length complete bomb less fuze or lug	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
12.F	da kg 12	Fragmentation	Body and Tail Sky Blue	Nose F	1.8	12.2	-	Strip 0.2 wound on container 0.15	H or V	90 3.5	90 3.5	440 17.3	368 14.5	787 31.0	827 32.6	(h)
	da kg 12	Fragmentation		Nose W						90 3.5	90 3.5	433 17.0	360 14.2	791 31.1	831 32.7	(b) (j)
12Mtr		A pers	Black	Nose R	Amatol	11.6			H	90 3.5	90 3.5	400 15.7	420 16.5	788 31.0	820 32.3	(g)
10.E	Proietto da Esercitazione da Kg 10	Practice			Smoke 0.430	11.0	-			132 5.2	132 5.2	224 8.8			450 17.7	
5.E	Proietto da Esercitazione da kg 5	Practice			Smoke 0.400	4.5	-			82 3.2	132 5.2	249 9.8			400 15.8	

New Designation	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins.	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
4.A.R.		Thermos Anti-Handling. Delayed Arming	Body Green or Buff. Cap Bright Metal	Manzolini with or without self destroying device	TNT 0.6	3.9	-	Wall 1/8		70 2.7	-	185 7.3	-	185 7.3	312 12.3	(s)
4.C	Dippio Spezzone C	C.W		K	H.E 0.67 D.A (Chem) 0.33	2.8	-			70 2.7	-	270 10.6	-	270 10.6	310 12.2	(d) (s)
		A.tk Hollow Charge Bomb	AppleGreen Red Spot Nose	Tail Fuze	RDX/TNT 2.15	3.5	-	1 mm.	H	152 6.0	212 8.4	-	200 7.9	384 15.1	384 15.1	
3.cV	da kg 3 c.a	Anti-Aircraft. (Air Burst)	Body & TailApple Green. Red band at Nose	Nose I	Amatol 0.40		-			82 3.2	82 3.2	-	-	277 10.9	344 13.5	(g)(k) (q)

New Designation	Old Designation	English Equivalent	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
3 Mtr		A pers	Black	Nose M	TNT 0.17	3.01	-			70 2.7	70 2.7	208 8.2	112 4.4	274 10.8	307 12.1	(g)
2.F	Spezzone da kg 2 a frattura prestabilita	Fragmentation.	Black	K	TNT 0.36	1.8	-			70 2.7	-	115 4.5	-	115 4.5	115 6.1	(h) (s)
	da kg 2	Fragmentation	Black	K	TNT 0.36	1.61	-	Wall 0.25		70 2.7	-	115 4.5	-	115 4.5	115 6.1	(j) (s)
2 Mtr	Spezzone da kg 2 a Mitraglia	A pers	Black	K	TNT 0.36	1.75	-			70 2.7	-	115 4.5	-	115 4.5	155 6.1	(g) (s)
2.C	Spezzone C	C.W.		K	H.E. 0.29 D.A. (Chem) 0.14	1.55	-			70 2.7	-	115 4.5	-	115 4.5	155 6.1	(d) (s)

New Designation	Old Designation	English Equivalent	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge-weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A length complete bomb less fuze or lug.	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
2.I	Bombetta Incendia-riaMista da kg 2	Incend-iary	Dull Grey	K	0.56 Thermite Oil		-			70 2.7	-	270 10.6	-	270 10.6	310 12.2	(n) (s)
1.I		Incend-iary	Unpainted Electron	K	Thermite 0.56	1.1	-			70 2.7	-	115 4.5	-		155 6.1	(s)
	Kg 0.5 Ip	Incend-iary	Light Grey-Green	K	Petrol & Cotton Wicks 0.355	0.5	-			70 2.7	-	115 4.5	-	115 4.5	155 6.1	(s)
	Kg 0.5 It	Incend-iary	Dark Green	K	Thermite 0.412	0.5				64 2.5	-	84 3.3	-	84 3.3	124 4.9	
	Kg 0.5 FI	Incend-iary	Light Grey	K	Phosphorus Mixture	0.5				64 2.5	-	85 3.4	-	85 3.4	127 5.0	
	Tipo E xvi	Parachute Flare	Body Blue Nose Yellow	Nose L						102 4.0	165 6.5	510 20.1	362 14.2	891 35.1	955 37.6	(o)

New Designation	Old Designation	English Equivalent.	Colouring	Method of fuzing with our reference letter	Nature & weight of filling	Weight of complete bomb	Charge weight ratio	Thickness of bomb	Suspension	Dia. of bomb body	Dia. of bomb tail	Length of bomb body	Length of bomb tail	O/A Length complete bomb less fuze or lug	O/A length complete bomb	Notes See End of Table
BOMBA	BOMBA	BOMB			kg	kg	%	ins		mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	mm./ins	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	(xv)	(xvi)	(xvii)
	Tipo E 40	Parachute Flare	Royal Blue	Nose	Magnesium Mixture				H	140 5.5	236 9.3		437 17.2			
		Parachute Flare	Black	Noxe X					H	122 4.8	236 9.3	1036 40.8	-	1036 40.8	1100 43.3	
	Furetto	C.W. Generator Percussion Fuze		K	Lachrymator 10	25			V	160 6.3	-	790 30.1	-	790 30.1	830 32.7	(d) (s)
	Vento	Smoke	White	Nose S		5.2			H	132 5.2	178 7.0	225 8.9	234 9.2	386 15.2	441 17.3	(p) (r)
	Quota	Smoke														(p) (q)

NOTES.

All dimensions are given to the nearest millimetre and nearest tenth of an inch. The exception is the wall thickness which is given to the nearest sixteenth of an inch.

a. The figure given in column (viii) has been calculated from the Nominal and not the Actual Total Weight of the bomb and is therefore only an indication of the Charge/weight ratio.

b. It is thought possible that this bomb is now obsolete.

c. The fuzing of this bomb is probably the same as that for the HE bomb of the same calibre.

d. Italian documents state that this bomb is painted yellow with a Geneva Cross (denoting the nature of the filling) stencilled on it.

e. Contains thirty-two 2 kg or sixteen 1 kg Incendiary bombs.

f. Contains thirty-two 2 kg A pers bombs.

g. Loading, Steel pellets embedded in concrete.

h. Loading, Strip metal wound spirally on sheet metal container.

j. Thick walled body grooved to assist fragmentation.

k. Short delay fixed time fuze.

l. Steelnose cap over electron nose. Wall of cap ¼ in. thick. Point of cap 1.7/8 ins. O/A thickness at point 5¼ ins.

m. Tail Electron or Sheet Iron.

n. Oil container screwed to base of 1 kg Incendiary bomb.

o. Diameter of Parachute 1981 mm/78.0 ins.

p. Employed in conjunction with Bomba 500 C.

q. Body and tail not distinct and separate units.

r. Four stabilising fins rivetted to brackets which are welded to the bomb.

s. No tail or stabilising fins.

t. Compressed cylindrical pellets of penthrite/wax coloured blue in a matrix of P.E.T.N/Pentaceythritol - tetracetate coloured brown.

u. Simple striker mechanism in nose of bomb.

SECTION 1.

CHEMICAL WARFARE BOMBS

BOMBA 500 C.

The bomb has the same general appearance and dimensions as the 500 Kg.H.E. bomb, but the actual weight is approximately 280 Kg. The filling is a vesicant and the bomb is designed to burst in the air.

The optimum effect of the spray of liquid is obtained when the bomb bursts at 250 - 350 metres above the target. The explosion of the T.N.T. charge produces a fine spray of liquid, which may affect an area of 50,000 to 80,000 sq. metres. Due to the forward motion of the bomb, the affected area approximates to an ellipse, the major axis of which is 500 to 800 metres, and the minor axis 100 to 200 metres. The effectiveness of the bomb depends upon :-

(a) The height of burst above the target

(b) The direction and force of the wind at ground level.

To determine these, two small bombs are used. The height of the aircraft is determined by the use of the 'Quota' bomb, (Page 101). This bomb has the same ballistics as the C 500 T bomb, so that it is necessary only to observe the time of dropping of this smoke bomb. It is usually dropped by hand. The direction of the wind is obtained by the use of a special small bomb type 'Vento'. (Page 105).

An Italian Document dated 1936 states :

"The effects of the liquid on personnel have a delay of 6-12 hours. The vapour danger from the contaminated ground is not great because the degree of contamination given by the bomb is small. The persistency of contamination on the ground depends on the temperature and wind. On sandy soil and with high temperatures it does not exceed 24 hours, but increases if there is low vegetation and low temperature.

Choice of Target.

The bomb is an anti-personnel weapon and can be used directly on troops or indirectly on ground which troops will cross shortly; the latter use is less effective and should not be attempted in bare sandy soil or in high temperatures, or if the contaminated area can be avoided by troops".

Extracts from report on 500 C bombs captured in store at MOGADISCIO.

"There was no coloured cross on the body which was painted a uniform grey"

'Wooden packing cases were marked in pencil."

"The walls were about 1/8' thick and there was a baffle plate in the middle presumably to prevent surging of the liquid in flight. The exploder chamber was welded into the nose of the bomb. The inside of the bomb was unvarnished".

"There was no sign of cement on the threads of the filler plug, reliance for a gas tight fit apparently being placed entirely on the metal washer with which this plug is provided and on the plug cover. There was surprisingly little pressure inside the bomb."

DESIGNATION.		TYPE.
OLD	Bomba C. 500 T	C.W. Bomb with Air-Burst
NEW	Bomba 500 C	
1.	O/A Length of Fuzed bomb.	96.6 ins / 2454 mm.
2.	O/A L. Less Fuze or Lug.	91.4 ins / 2320 mm.
3.	Length of Body.	55.3 ins / 1403 mm.
4.	Dia. of Body.	18.0 ins / 458 mm.
5.	Wall thickness.	1/8 ins / 3 mm.
6.		
7.	Material and construction of bomb body.	Burster charge in metal container welded to case in nose of bomb
8.	Details of C.W.Container.	
9.	Suspension System.	Horizontal:- Suspension band.
10.	Colouring of bomb.	
11.	Markings on bomb.	Old Marking + S.C.M. 1-37 Geneva Cross C 500 T coloured GREEN 258-298
12.		
13.	Length of tail.	39.9 ins/1040 mm.
14.	Dia. of tail.	17.7 ins / 448 mm.
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature & Wt of C.W. filling.	Vesicant 212 Kg
21.	Nature & Wt of H.E Burster charge.	1.5 Kg.
22.	Total Weight.	280 Kg
23.	Weight of Bomb Body.	
24.	Burster Charge / CW Charge Ratio.	0.7%
25.	Fuze - Our Designation.	Nose - Type 5 (Page 55.)
26.		

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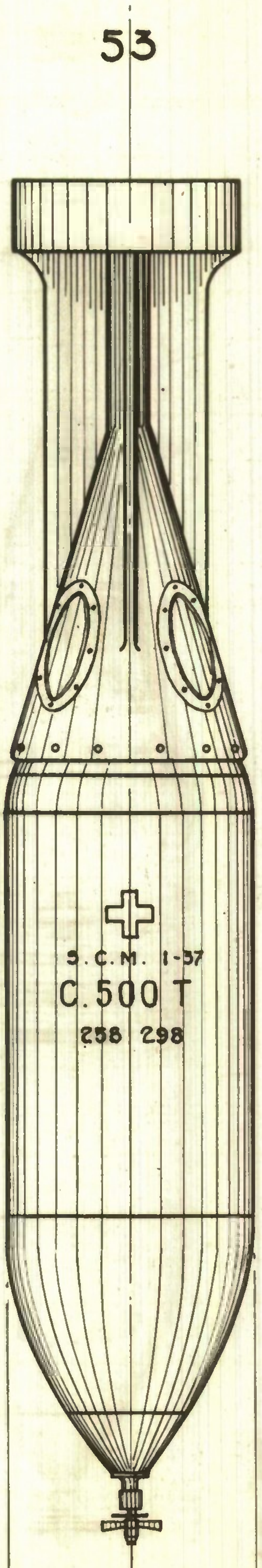
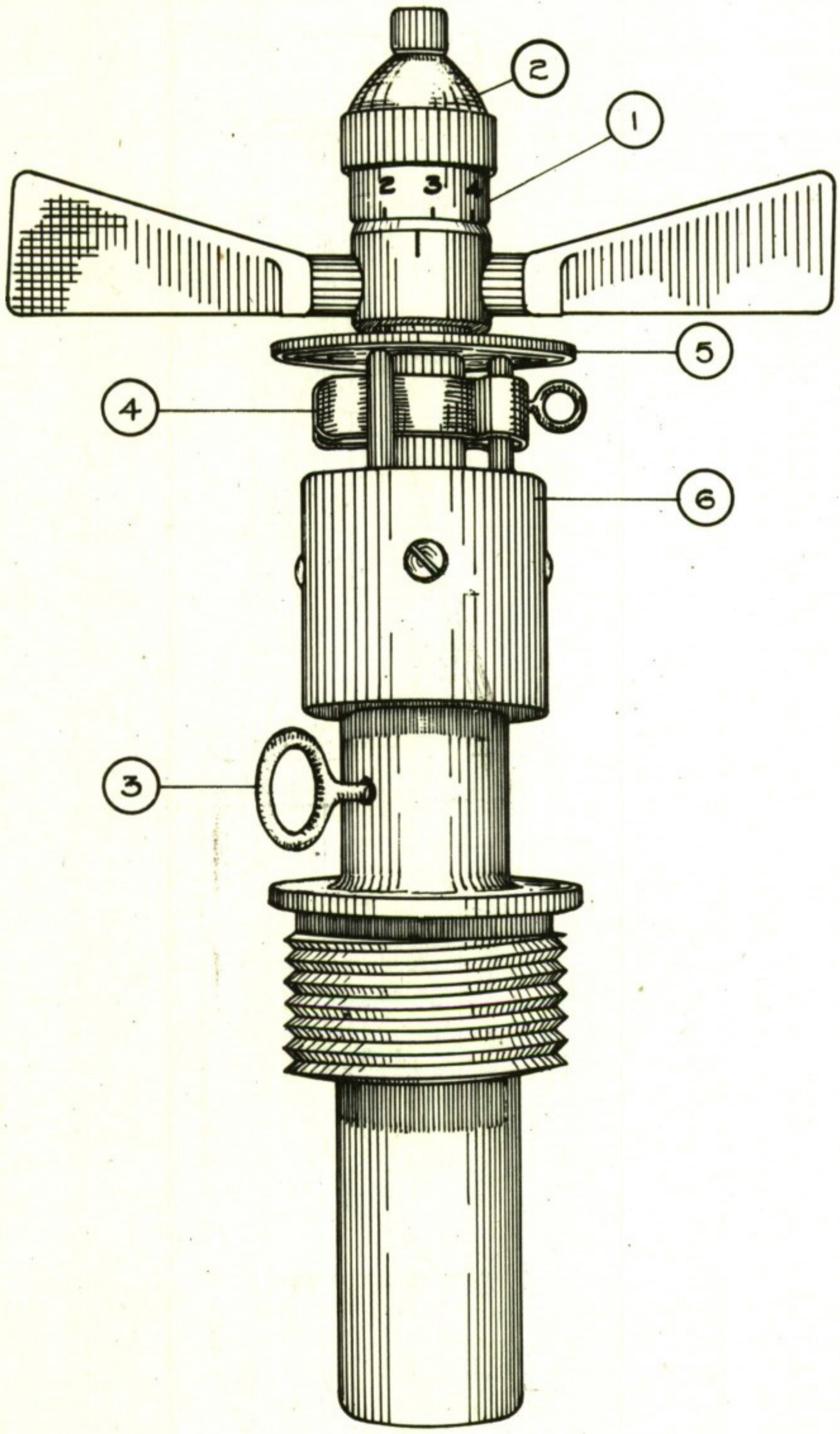


BOMBA
500. C.



FUZE T.

ITALIAN Designation of fuze Spoletta 'T' per Bomba 500 C		Our Designation Type T Classification. Variable Short Time Delay. Markings. Nil. Bomb in which employed. 500 C
1.	Colour	
2.	O/A length less gaine.	
3.	Max. spread over vanes	
4.	Dia. over threads where screwed into bomb.	
5.	Material.	
6.	Type of Gaine.	
7.		

Description of Fuze.

This time fuze is used in the 500 C bomb. The figures 0 to 6 on the head of the fuze at (1) indicate in thousands of metres, the fall of the bomb before the fuze functions. The setting of the fuze is made before the bomb is loaded into the aircraft by manipulating the knob (2). Turning this knob alters the pitch of the vanes and thus their rate of rotation. In this way the fuze may become armed after falling a known distance below the aircraft.

There are two safety devices - the safety pin at (3) and the safety clip at (4). The former is removed before loading the bomb into the aircraft and the latter as the bomb is launched. At the end of the predetermined fall of the bomb, the fuze becomes armed and then the pressure plate (5) is free to move under the action of the air pressure and operate the fuze. This arrangement is somewhat similar to that found in fuze I. The latter fuze, however, is a fixed time fuze

Handling of fuzed bomb.

Up to the present little is known of this fuze as CW bombs have not been dropped by the enemy. There is no visible indication of arming. Since both the striker and the cap holder move within the armed fuze and there is no creep spring holding them apart, the fuze must be regarded as being in a most dangerous condition and the bomb should be detonated in situ whenever possible.

If the bomb must be moved, first secure the pressure plate so that it cannot move. If the pressure plate has not been depressed, wedge it in position by means of a small piece of wood. If the pressure plate has been depressed, do not attempt to move it as the needles may have pierced the caps without firing them and withdrawal may cause the bomb to function.

After securing the pressure plate, move the bomb slowly and carefully into the horizontal position taking care not to pass the bomb, and hence the fuze, through the vertical in so doing. The bomb may now be moved horizontally for subsequent demolition if all jolting be avoided. No attempt should be made to defuze the bomb.

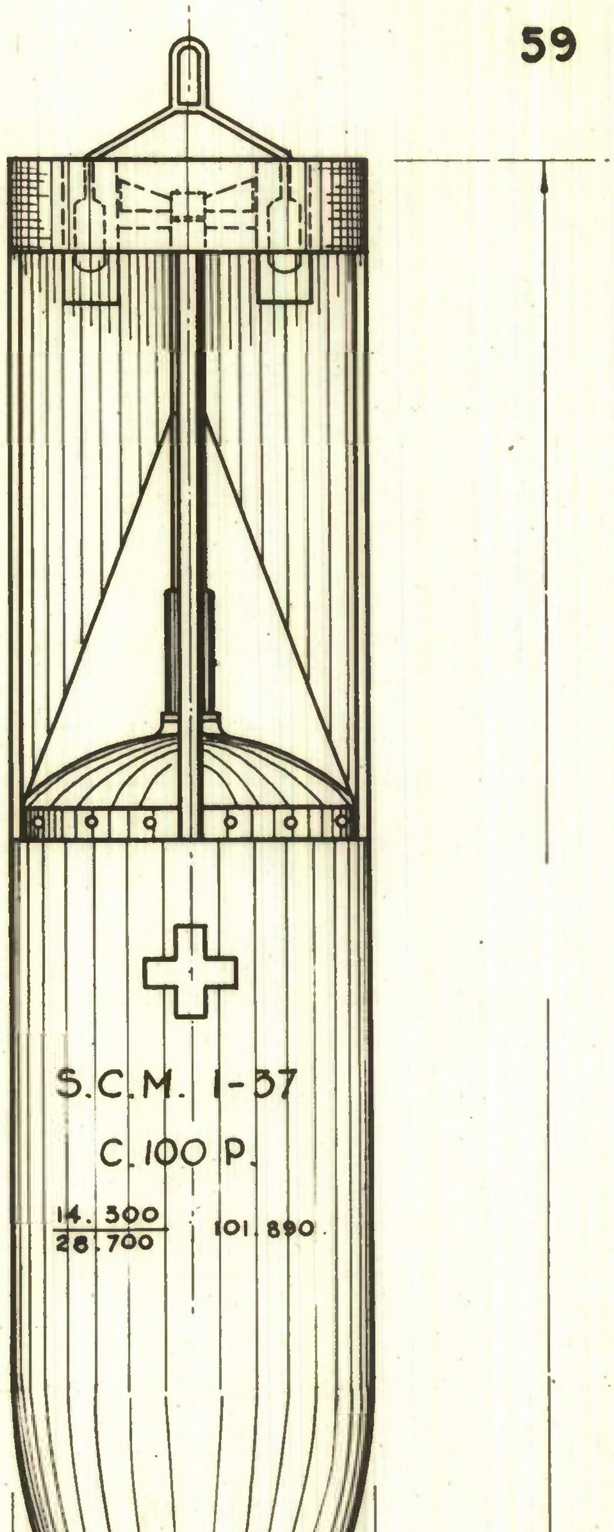
BOMBA 100 C

The bomb has the same general appearance, dimensions and weight as the bomb 100 T. The filling is a mixture of HE and a particulate gas in the weight ratio of two to one. The CW filling is a lung irritant and is disseminated in the form of a smoke by means of a fuze operating on impact.

Italian documents state that CW Bombs are to be coloured yellow but no specimens have been recovered and this cannot be confirmed.

Designation.		**Type.**
Old	Bomba C 100 P	C.W. Bomb
New	Bomba 100 C	Impact Burst.

1.	O/A Length of Fuzed bomb.	50.2 ins/1275 mm.
2.	O/A L. Less Fuze or Lug.	50.2 ins/1275 mm.
3.	Length of Body.	32.5 ins/825 mm.
4.	Dia. of body.	10.7 ins/272 mm.
5.	Wall thickness.	
6.		
7.	Material and construction of bomb body.	
8.	Details of C.W. Container.	
9.	Suspension System	Horizontal : Suspension band. Vertical : Tail suspension.
10.	Colouring of bomb.	
11.	Markings on bomb.	Old markings S.C.M. 1-37 Geneva Cross C 100 P Coloured BLACK 14.300 / 28.700 101.890
12.		
13.	Length of tail	20.8 ins/527 mm.
14.	Dia. of Tail	10.7 ins/272 mm.
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature & weight of C.W. Filling.	D.A. 14.3 kg.
21.	Nature & Wt. of HE. Burster charge.	TNT 28.7 kg.
22.	Total weight.	101.9 kg.
23.	Weight of Bomb Body.	
24.	Burster Charge/CW Charge Ratio.	200%
25.	Fuze - Our Designation.	Tail -
26.		



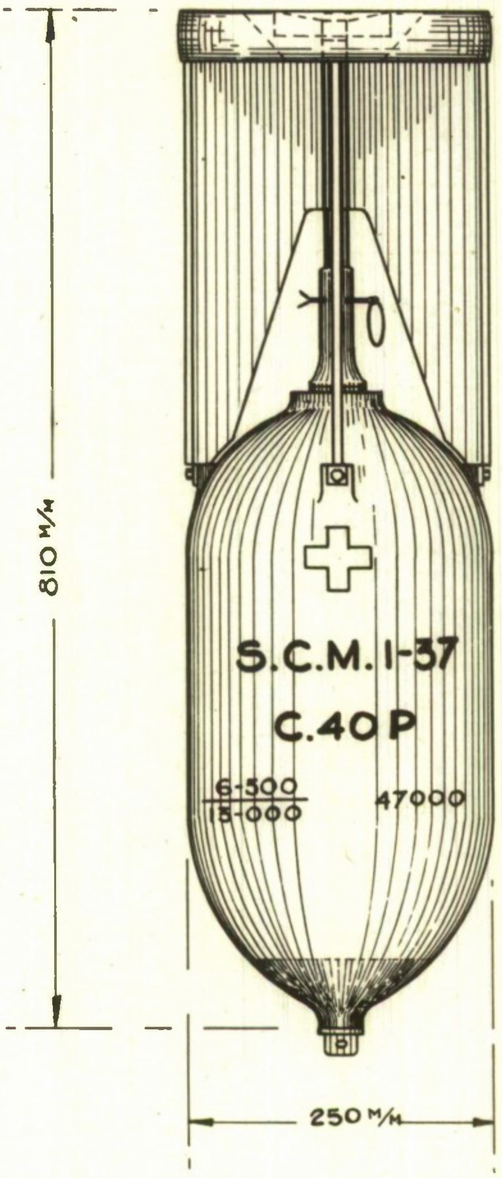
BOMBA
100. C.

BOMBA 40 C

The bomb has the same general appearance, dimensions and weight as the bomb 40 T. The filling is a mixture of HE and a particulate gas in the weight ratio of two to one. The CW filling is a Lung irritant and is disseminated in the form of a smoke by means of a fuze operating on impact.

Italian documents state that CW bombs are to be coloured yellow but no specimens have been recovered and this cannot be confirmed. (See H.E. Bomb 40.T).(Page 305).

Designation.		**Type**
Old Bomba C 40 P New Bomba 40 C		CW Bomb Impact Burst.
1.	O/A Length of Fuzed bomb.	31.9 ins/810 mm.
2.	O/A L. Less Fuze or Lug.	31.5 ins/800 mm.
3.	Length of Body	19.7 ins/500 mm.
4.	Dia. of body	9.8 ins/250 mm.
5.	Wall thickness.	
6.		
7.	Material and construction of Bomb body.	Steel. One piece. Rounded both ends. 4 lugs near one end for tail.
8.	Details of C.W Container.	
9.	Suspension System	Vertical : Nose lug.
10.	Colouring of bomb.	
11.	Markings on bomb	Old marking S.C.M.1-37 with red nose Geneva Cross C.40 P. Coloured BLACK 6.500 / 13.000 47.000
12.		
13.	Length of tail.	14.6 ins/370 mm.
14.	Dia. of Tail	9.8 ins/250 mm.
15.	Material of tail.	
16	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature & Weight of C.W.Filling.	D.A. 6.5 kg
21.	Nature & Weight of H.E.Burster charge.	TNT 13.0 kg
22.	Total weight	47.0 kg
23.	Weight of Bomb Body	
24.	Burster Charge/CW Charge Ratio	200%
25.	Fuze - Our Designation.	Tail
26.		



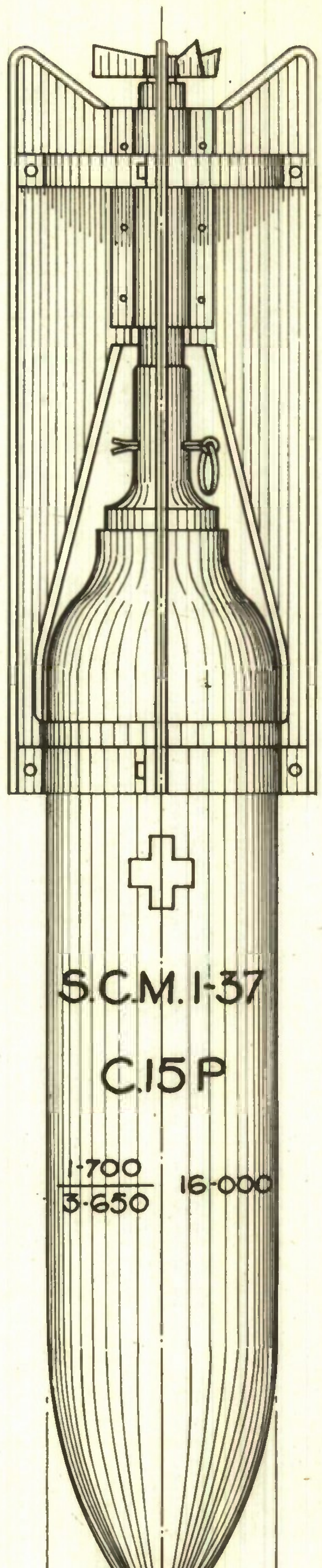
BOMBA
40. C.

BOMBA 15 C.

The bomb has the same general appearance, dimensions and weight as the Bomb 15 M. The filling is a mixture of HE and a particulate gas in the weight ratio of two to one. The CW filling is a lung irritant and is disseminated in the form of a smoke by means of a fuze operating on impact.

Italian documents state that CW bombs are to be coloured yellow but no specimens have been recovered and this cannot be confirmed.

Designation		Type
Old	Bomba C.15 P	CW Bomb
New	Bomba 15 C	Impact Burst
1.	O/A Length of Fuzed bomb	31.0-ins/788 mm.
2.	O/A L. Less Fuze or Lug.	29.9-ins/760-mm.
3.	Length of Body	20.7-ins/525-mm.
4.	Dia. of body	4.7-ins/120-mm.
5.	Wall Thickness	
6.		
7.	Material and construction of bomb body	
8.	Details of C.W. Container	
9.	Suspension System	Horizontal - Suspension Band
10.	Colouring of bomb	
11.	Markings on bomb	Old Markings S.C.M.1-37 Geneva Cross C.15 P Coloured BLACK $\frac{1.700}{3.650}$ 16.000
12.		
13.	Length of tail	13.8-ins/346-mm.
14.	Dia. of Tail	6.3-ins/160-mm.
15.	Material of tail	
16.	Colouring of tail	
17.	Markings on tail	
18.	Construction of Tail	
19.		
20.	Nature and weight of C.W. Filling	D.A.1.7 kg
21.	Nature & Wt of H.E. Burster Charge	TNT 3.65 kg
22.	Total weight	16.0 kg
23.	Weight of Bomb Body	
24.	Burster Charge/CW Charge Ratio	215%
25.	Fuze - Our Designation	Tail
26.		



BOMBA
15.C.

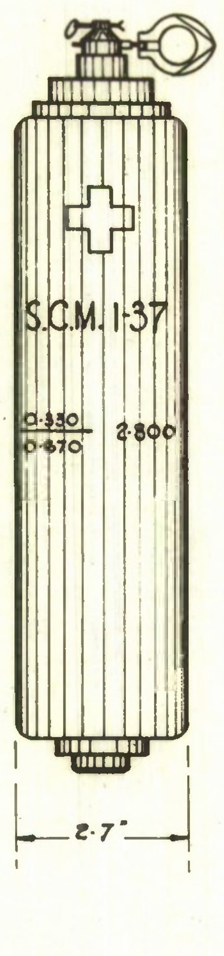
BOMBA 4 C.

The bomb has the same general appearance, dimensions and weight as the bomb 21. The filling is a mixture of HE and a particulate gas in the weight ratio of two to one. The CW filling is a lung irritant and is disseminated in the form of a smoke by means of a fuze operating on impact.

Italian documents state that CW bombs are to be coloured yellow but no specimens have been recovered and this can not be confirmed.

Designation	Type
Old Bomba DOPPIO SPEZZONE C	CW BOMB Impact Burst
New Bomba 4 C	

1.	O/A Length of Fuzed bomb	12.2-ins/310-mm.
2.	O/A L. Less Fuze or Lug	10.6-ins/270-mm.
3.	Length of Body	10.6-ins/270-mm.
4.	Dia. of body	2.7-ins/70-mm.
5.	Wall thickness	
6.		
7.	Material and construction of bomb body	
8.	Details of C.W. Container	
9.	Suspension System	Carried in Container
10.	Colouring of bomb	
11.	Markings on bomb	Old marking S.C.M.1-37 Geneva Cross { 0.330 Coloured BLACK { 0.670 2.800
12.	NOTE:	This bomb has no tail
13.	Length of tail	
14.	Dia. of Tail	
15.	Material of tail	
16.	Colouring of tail	
17.	Markings on tail	
18.	Construction of Tail	
19.		
20.	Nature and weight of C.W. Filling	D.A. 0.33 kg.
21.	Nature & Wt of H.E. Burster charge	TNT 0.67 kg.
22.	Total weight	2.8 kg.
23.	Weight of Bomb Body	
24.	Burster Charge/CW Charge Ratio	200%
25.	Fuze - Our Designation	Type K (Page 213)
26.		



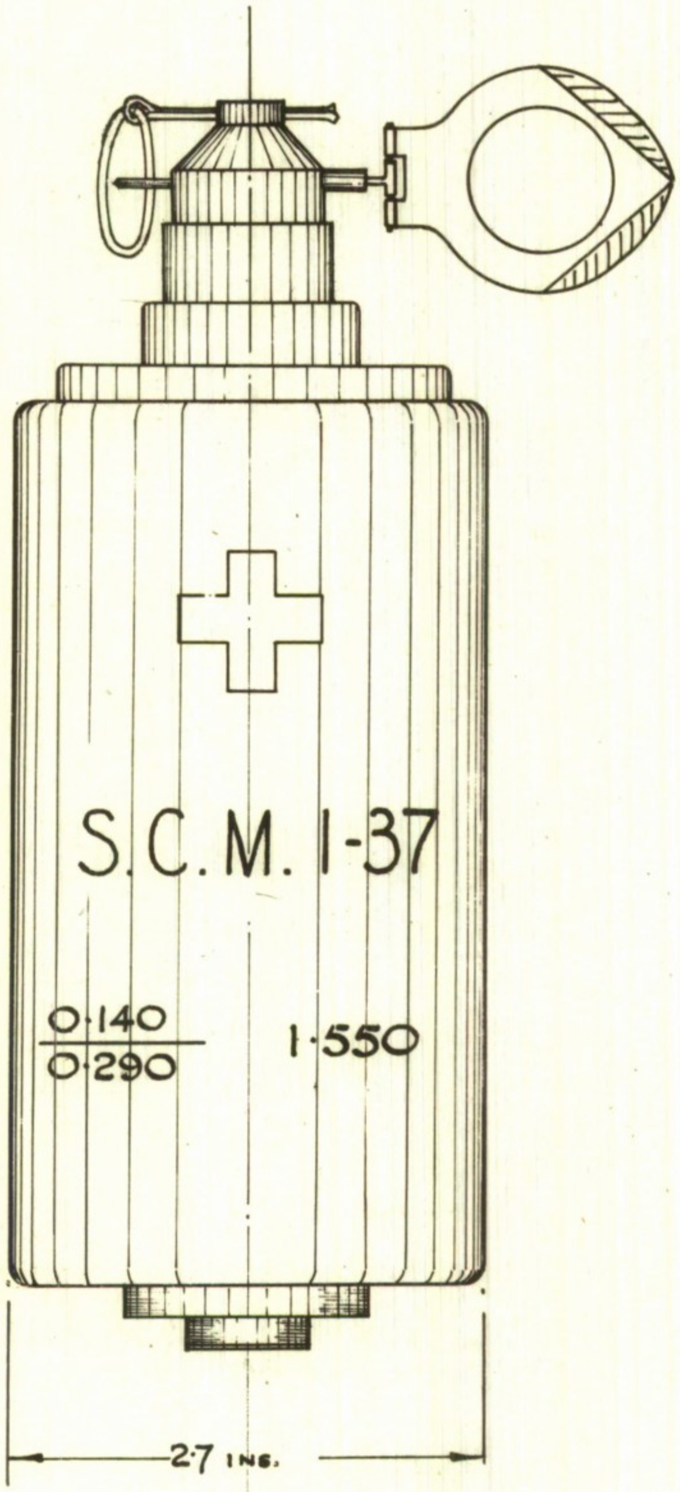
BOMBA
4.C.

BOMBA 2 C.

The bomb has the same general appearance, dimensions and weight as the bomb II. The filling is a mixture of HE and a particulate gas in the weight ratio of two to one. The CW filling is a lung irritant and is disseminated in the form of a smoke by means of a fuze operating on impact.

Italian documents state that CW bombs are to be coloured yellow but no specimens have been recovered and this can not be confirmed.

Designation		Type
Old Bomba SPEZZONE C New Bomba 2 C		CW Bomb Impact Burst
1.	O/A Length of Fuzed bomb	6.1-ins/155-mm.
2.	O/A L. Less Fuze or Lug	4.5-ins/115-mm.
3.	Length of Body	4.5-ins/115-mm.
4.	Dia. of body	2.7-ins/70-mm.
5.	Wall thickness	
6.		
7.	Material and construction of bomb body	
8.	Details of C.W. Container	
9.	Suspension System	Carried in Container
10.	Colouring of bomb	
11.	Markings on bomb	Old Markings S.C.M.1-37 Geneva Cross $\frac{0.140}{0.290}$ 1.550 Coloured Black
12.	NOTE	This bomb has no tail
13.	Length of tail	
14.	Dia. of Tail	
15.	Material of tail	
16.	Colouring of tail	
17.	Markings on tail	
18.	Construction of Tail	
19.		
20.	Nature and weight of C.W.Filling	D.A. 0.14 kg
21.	Nature & Wt of H.E.Burster charge	TNT 0.28 kg
22.	Total weight	1.55 kg
23.	Weight of Bomb Body	
24.	Burster Charge/CW Charge Ratio	200%
25.	Fuze - Our Designation	Type K (Page 213).
26.		

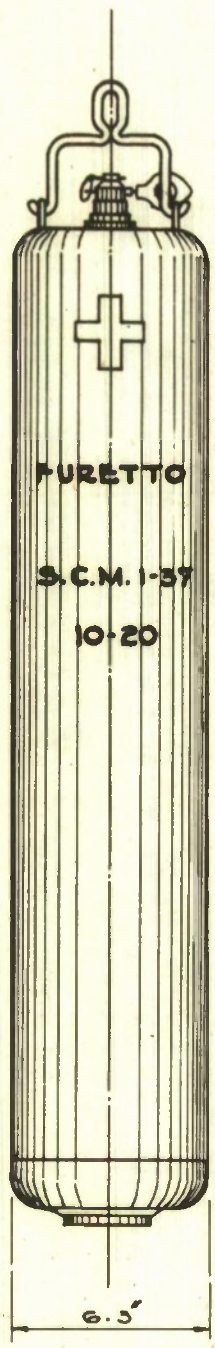


BOMBA
2.C.

BOMBA FURETTO

Definite information about this bomb is scanty. It is not similar to any HE counterpart. There is reason for believing that it is a lachrymatory generator designed to operate on impact.

Designation		Type
Old Bomba		C.W. GENERATOR
New Bomba FURETTO		WITH PERCUSSION FUZE
1.	O/A Length of Fuzed bomb	32.7-ins/830-mm.
2.	O/A L. Less Fuze or Lug	30.1-ins/790-mm.
3.	Length of Body	30.1-ins/790-mm.
4.	Dia. of body	6.3-ins/160-mm.
5.	Wall thickness	
6.		
7.	Material and construction of bomb body	
8.	Details of C.W. Container	
9.	Suspension System	
10.	Colouring of bomb	
11.	Markings on bomb	Old Marking Furetto Geneva Cross S.C.M.1-37 Coloured Red 10-20
12.		
13.	Length of tail	
14.	Dia. of Tail	
15.	Material of tail	
16.	Colouring of tail	
17.	Markings on tail	
18.	Construction of Tail	
19.		
20.	Nature and weight of C.W. Filling	Lachrymator 10.0 kg
21.	Nature & Wt of H.E. Burster charge	
22.	Total weight	25.0 kg
23.	Weight of Bomb Body	
24.	Burster Charge/CW Charge Ratio	
25.	Fuze - Our Designation	Type K (Page 213)
26.		



BOMBA
FURETTO.

SECTION 2

PARACHUTE FLARES

TIPO E XVI

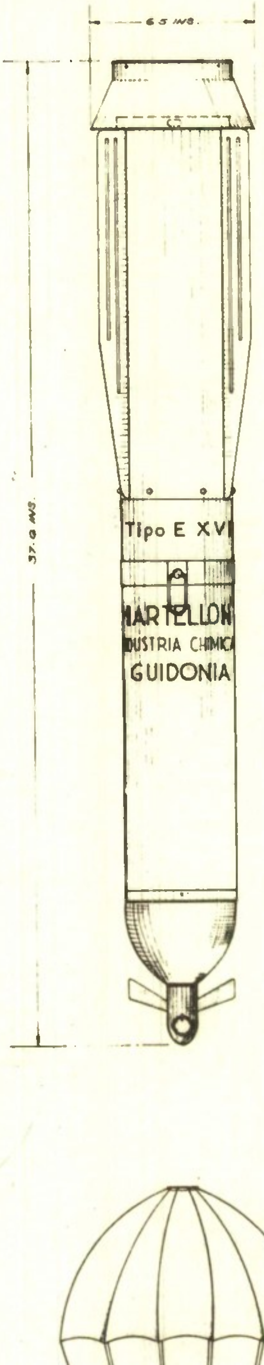
This flare comprises a single candle (1) housed in a compressed cardboard cyliuder (2). The candle consists of a 'white' flare composition of a Magnesium Powder Mixture topped by a layer of ignition powder (3).

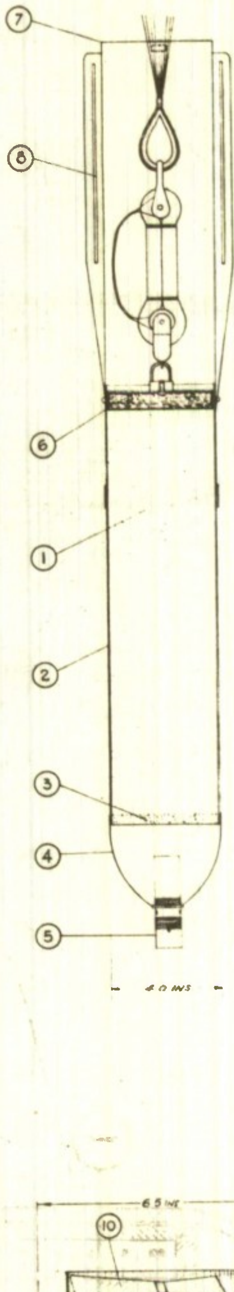
At the ignition end of the cylinder is rivetted a dome-shaped sheet metal nose (4) which carried a percussion fuze (5). The other end of the cylinder is closed by a sheet metal cap (6) which is held in place by four rivets. Attached to this by four screws is a sheet metal tail which consists of a hollow cylinder (7) on which are mounted four fins (8) extending the whole of its length.

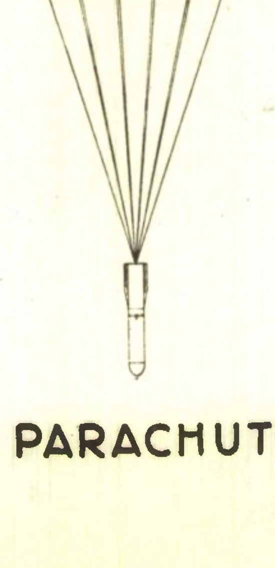
Housed in this cylinder is the parachute which comprises ten sections of white silk sewn together. When open in the air the parachute is hemispherical in form and 6-ft. - 6-ins./1981 m/m in diameter. At the top of the parachute is a rubber ring, 10-in./254 m/m in diameter, to which are attached ten suspension cords. These are plaited and are of a cotton-hemp material. They are sewn into the seams of the parachute, from the bottom of which they continue for a length of 10-ft./3048 m/m, where they are bound together on the eye-ring at the top of the parachute anchorage. The letters S.C.A.M.O.8. are stencilled in black around the periphery of the parachute.

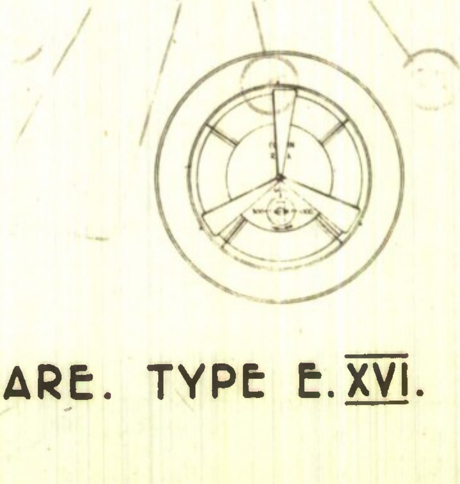
The parachute is withdrawn after a predetermined fall by the action of a release mechanism. This mechanism is secured to the top of the fin member by two movable rods (9), which are withdrawn, after a fall of 300 to 1000 metres (dependent on the setting), by a rack and pinion device actuated through gearing by the rotation of a wind vane (10). When the movable rods have withdrawn, the apparatus is pulled off by the air pressure, and pulls with it the parachute to which it is attached. The parachute then opens suddenly, and arrests the rapid downward flight of the flare with a sharp jerk, which functions the ignition fuze situated in the nose of the container.

Designation		Type
Old	TIPO E XVI	Parachute Flare single candle
New		
1.	O/A Length of Fuzed Bomb	37.6-ins/950-mm.
2.	O/A Length less Fuze or Lug	35.1-ins/891-mm.
3.	Length of Body	20.1-ins/510-mm.
4.	Dia. of Body	4.0-ins/102-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body	Compressed Cardboard cylinder holding flare mixture Nose sheet metal
9.	Suspension System	Horizontal. Metal band with suspension ring.
10.	Colouring of bomb	Body. Royal Blue--Nose. Yellow
11.	Markings on bomb.	Tipo E XVI and MARTELLONA INDUSTRIA CHIMICA GUIDONIA
12.		
13.	Length of Tail Unit	14.2-ins/362-mm.
14.	Dia. of tail unit	6.5-ins/165-mm.
15.	Material of tail unit	Sheet Metal
16.	Colouring of tail unit	Royal Blue
17.	Markings on tail unit	NIL
18.	Construction of Tail Unit	Four sheet metal fins 1.1/8-in./29-mm. wide extending the length of sheet metal cylinder and equi-spaced around its periphery
19.	Parachute: Housed in cylindrical tail. 10 sections white silk. 10 plaited cotton hemp suspension cords sewn in are 10-ft. long. Diameter of parachute 6-ft.6-ins/1981-mm. Marking S.C.A.M.O.8 stencilled in black. Parachute release mechanism: Attached to outer end of tail, graduated to operate at 300-1000 metres fall.	
20.	Nature of filling	Magnesium Mixture & Black Powder igniter.
21.	Weight of filling	
22.	Total Weight	
23.	Weight of Bomb Case	
24.	Charge/Total Wt. Ratio	
25.	Fuze - our designation.	Nose - Type L (Page 87)
26.		

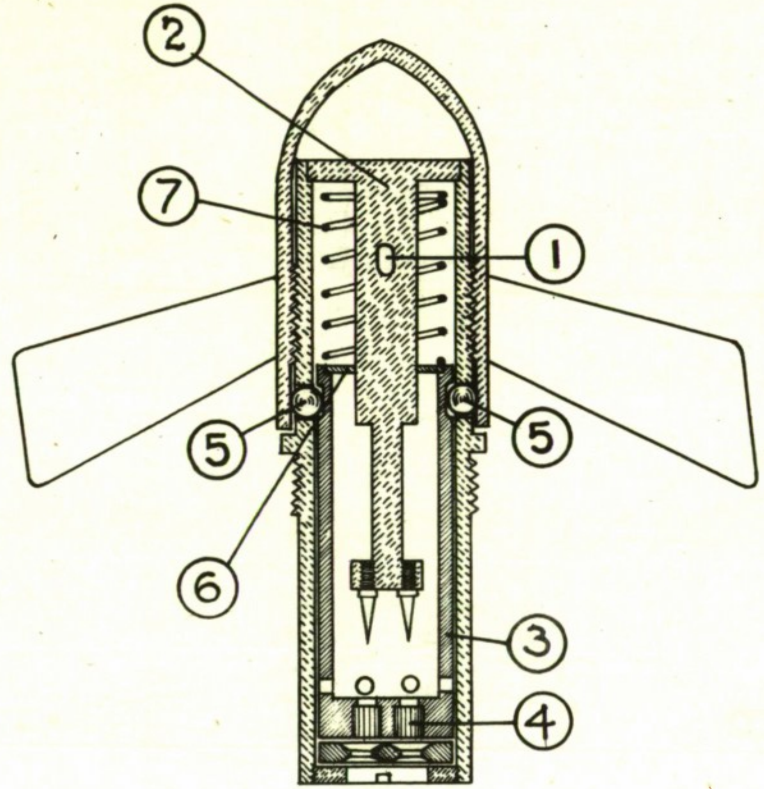


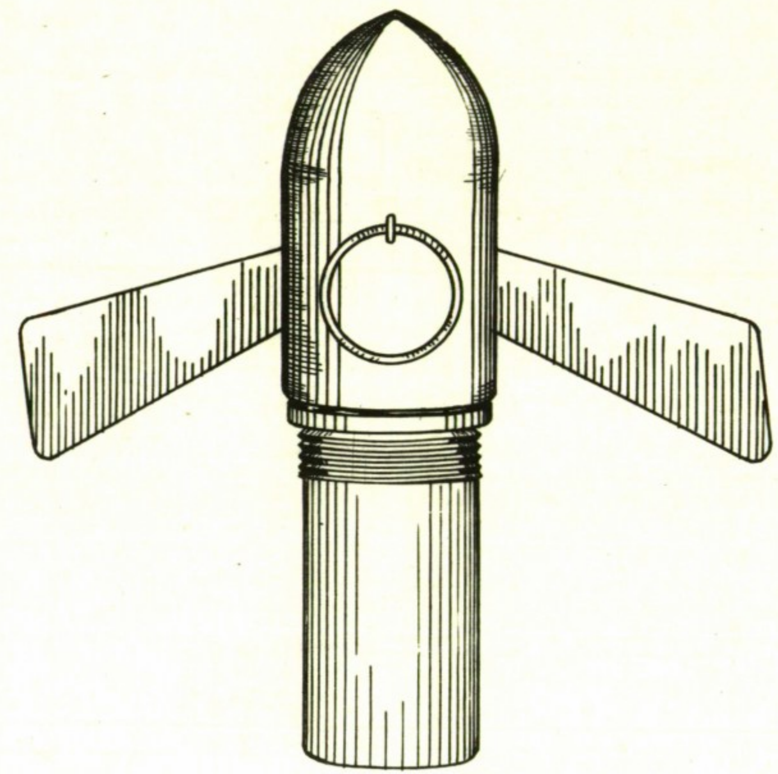






PARACHUTE FLARE. TYPE E. XVI.





FUZE. L.

ITALIAN Designation of fuze.		Our Designation Type L	
		Classification. Nose Mech Impact	
		Markings.	Nil
		Bomb in which employed.	Parachute Flare Tipo E XVI
1.	Colour	Vanes Cap. Body.	Royal Blue Unpainted Aluminium
2.	O/A length less gaine.	4.3-ins/110-mm.	
3.	Max. spread over vanes.	4.3-ins/109-mm.	
4.	Dia. over threads where screwed into bomb.	1.1-ins/27-mm.	
5.	Material	Vaned Cap Fuze Cap Striker Striker Needles Creep Spring Locking Balls Cap Holder Cap Holder retaining ring	Aluminium Aluminium Aluminium Hardened Steel Spring Steel Steel Brass Aluminium.
6.	Type of Gaine.	No gaine.	
7.			

Description of Fuze

The hole (1) in the striker (2) takes the safety pin which, when in position, passes through the vanes and holds them from rotating. On withdrawal of this pin the vaned cap can rotate and eventually fall away. The steel safety balls (5) are thus released and fall out, so freeing the cap holder (3) which is then held from the striker only by the light spring (7).

The upper portion of the striker (2) has a rectangular section and the washer (6) at the top of the cap holder has a hole of similar shape. The holder (3) is thus prevented from rotating and the location of the needles with respect to the caps (4) is assured.

When the flare is dropped, vanes in the tail of the bomb rotate to cause the release of the parachute. The fuze having become armed before the parachute is free, the opening of the latter provides the 'jerk' required to cause the cap holder to set forward, carrying the caps on to the needles.

Handling of unignited flare

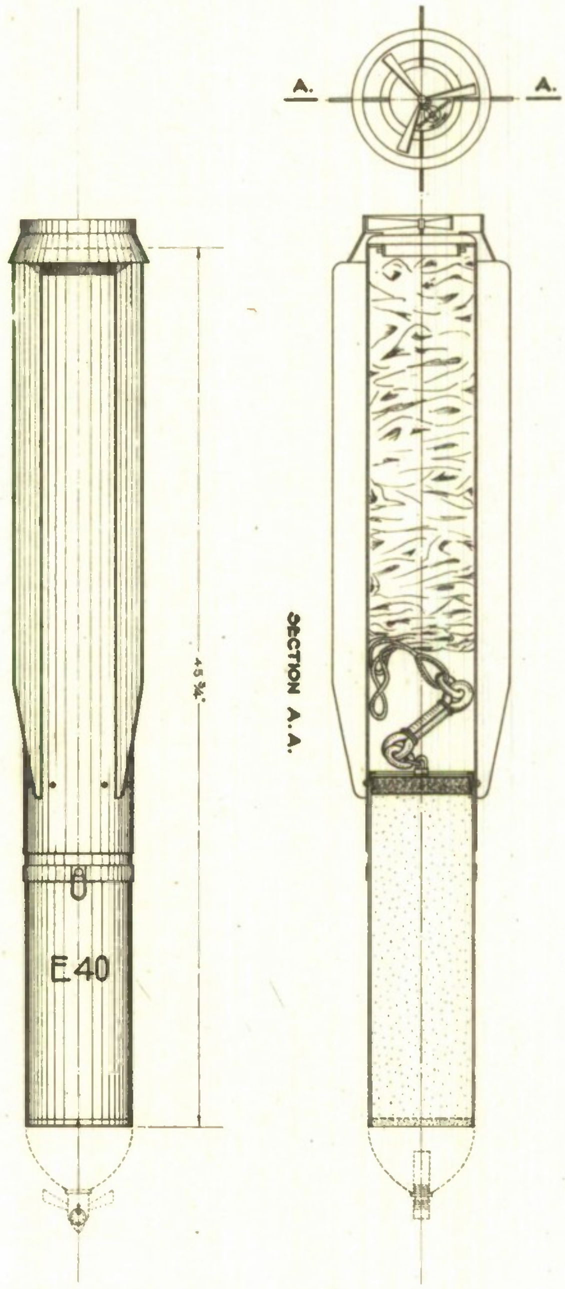
If the vaned cap has become unscrewed and the steel balls are missing the fuze is armed. Providing due care is taken to avoid jerking the flare may be carried horizontally. If necessary the fuze may be unscrewed and removed from the flare.

TIPO E 40

A damaged specimen, only, of this flare has been examined. It resembles very closely the TIPO E XVI but has slightly larger dimensions. The parachute release mechanism had functioned and was slightly damaged but the parachute itself had been removed. The nose fuze had also functioned and although it had been blown clear of the flare together with the nose portion, the flare mixture had failed to ignite. It has been possible to reconstruct the general appearance of the flare although much of the detail is missing.

Designation Old New — TIPO E.40	Type PARACHUTE FLARE SINGLE CANDLE

1.	O/A Length of Fuzed Bomb	
2.	O/A Length less Fuze or Lug	
3.	Length of Body	Less nose 18.3-ins/464-mm.
4.	Dia. of Body	5.5-ins/140-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Compressed cardboard cylinder holding flare mixture.
9.	Suspension System	Horizontal. Suspension band.
10.	Colouring of bomb.	Body Royal Blue.
11.	Markings on bomb.	TIPO E.40
12.		
13.	Length of Tail Unit.	17.2-ins/437-mm.
14.	Dia. of tail unit	9.3-ins/236-mm.
15.	Material of tail unit	Sheet metal
16.	Colouring of tail unit.	Royal Blue.
17.	Markings on tail unit.	Nil.
18.	Construction of Tail unit.	Four sheet metal fins 1.9-ins. wide extending the length of sheet metal cylinder and equi-spaced around its periphery.
19.		
20.	Nature of filling	Magnesium Mixture and Black Powder Igniter.
21.	Weight of filling	
22.	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt.Ratio	
25.	Fuze - our designation	
26.		



PARACHUTE FLARE. TYPE E.40.

PARACHUTE FLARE - UNDESIGNATED

This differs from the two preceding flares in that the flare candle is a separate entity attached to the parachute and ejected from the flare container on the functioning of a short delay time fuze in the nose of the container. Since only the jettisoned container was recovered nothing is known of the flare candle or the parachute, nor of the actual method of ignition of the flare candle or expulsion of the unit from the container.

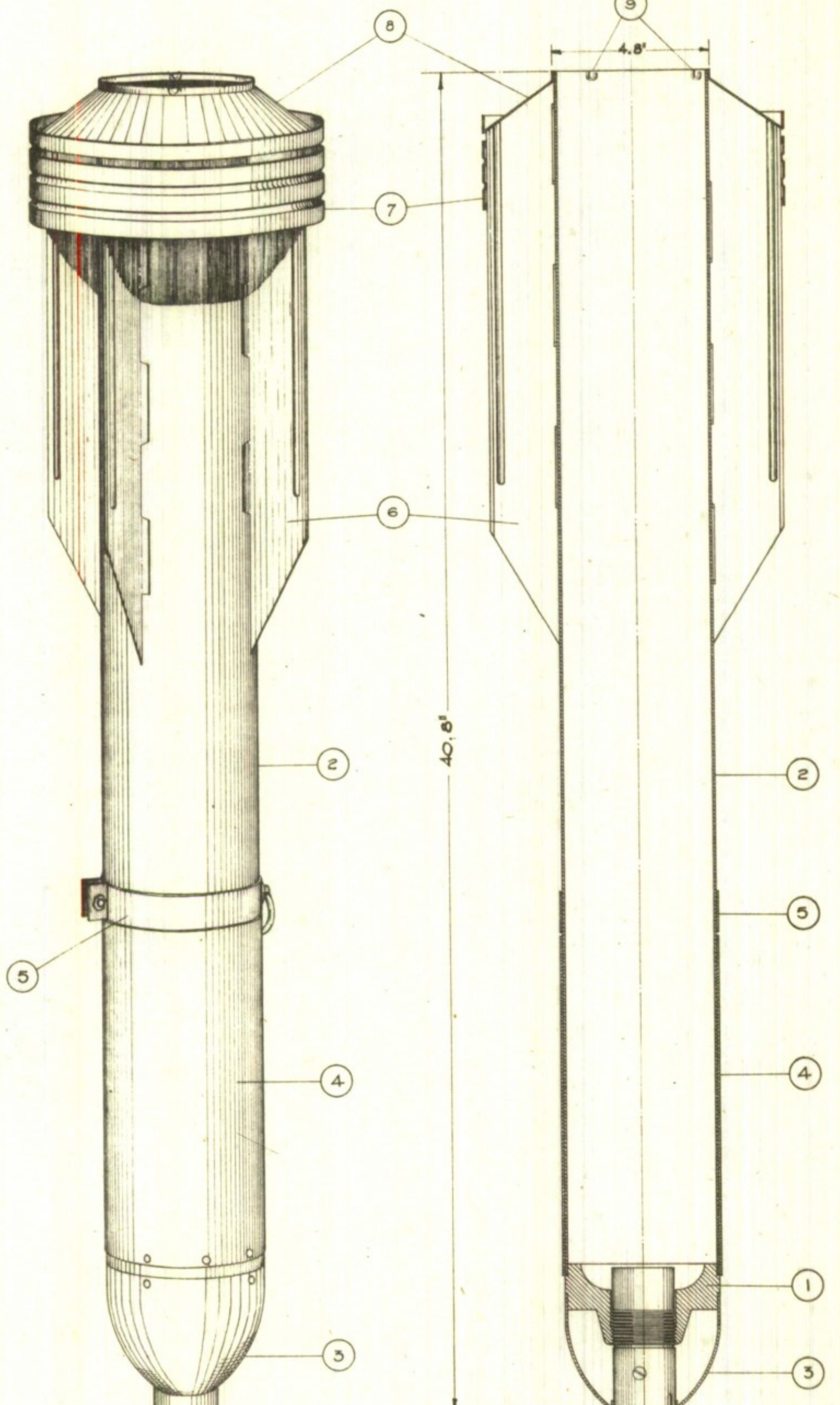
The fuze X is employed in this flare and screws into the steel casting (1) which closes the forward end of the cylindrical body (2). A sheet metal nose piece (3) is perforated to receive the nose fuze and is secured to the casting (2) by four screws. The forward end of the body is reinforced by a sheet steel sleeve (4) extending from the suspension band (5) to the casting (2), both the sleeve (4) and the body (2) being secured to the latter by eight screws.

At the rear end of the body four sheet steel fins (6) are welded to the body as stabilizers. A corrugated strengthening band (7) is welded to the fins and connected to the body (2) by a truncated sheet steel cone (8) which forms a wind brake, the purpose of which is not known.

Four J-shaped pressings (9) at the outer end of the body (2) are assumed to be part of a bayonet joint securing a closing cap which can be easily ejected by the firing of the expulsion charge.

Designation	Type
Old Bomba New Bomba	PARACHUTE FLARE SINGLE CANDLE

1.	O/A Length of Fuzed Bomb.	(Less Tail Cover) 43.3-ins/1100-mm.
2.	O/A Length less Fuze or Lug.	(Less Tail Cover) 40.8-ins/1036-mm.
3.	Length of Body.	40.8-ins/1036-mm.
4.	Dia. of Body.	4.8-ins/122-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Sheet steel cylinder closed at forward end by casting to accommodate the fuse. False nose of sheet steel fitted over casting.
9.	Suspension System.	Horizontal.- Suspension Band.
10.	Colouring of bomb.	Black
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail Fins.	17.0-ins/432-mm.
14.	Dia. of tail Fins.	9.3-ins/236-mm.
15.	Material of tail Fins.	Sheet Steel
16.	Colouring of tail Fins.	Black
17.	Markings on tail Fins.	Nil
18.	Construction of Tail.	Four sheet steel fins welded to rear end of body with strengthening band around rear end of fins. Truncated steel cone joining the strengthening band to the body forms wind-brake.
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22.	Total Weight.	
23.	Weight of Bomb Case	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - Type X (Page /63)
26.		



PARACHUTE
FLARE.

ITALIAN Designation of fuze.:		Our Designation Type X.:
		Classification Nose - Variable Short Delay for Air Burst
		Markings. Nil.
		Bomb in which employed PARACHUTE FLARE UN-DESIGNATED
1.	Colour	Unpainted Aluminium
2.	O/A length less gaine length of body	7.25-ins/184-mm. 6.25-ins/159-mm.
3.	Max. spread over vanes.:	5.5-ins/140-mm.
4.	Dia. over threads where screwed into bomb.	2.1-ins/52-mm.
5.	Material	Vanes and Body - Aluminium Spindles - Steel Cogwheels - Brass
6.	Type of Gaine.	Electric Flash Only
7.		

For a description of this fuze see Anti-personnel bomb 100 sp. (Page 155)

HANDLING

If the empty flare case is found in the condition described, it is perfectly harmless since the fuze has already functioned.

If the flare be found complete then proceed as follows:-

1. Observe any indications of arming.

2. Secure the vanes from rotation by means of a pin or nail inserted in the hole through the vane spindle or by tying down the vanes with string or wire.

3. Unscrew the fuze very carefully and remove it from the nose of the flare.

The flare is now safe for transport.

S E C T I O N 3

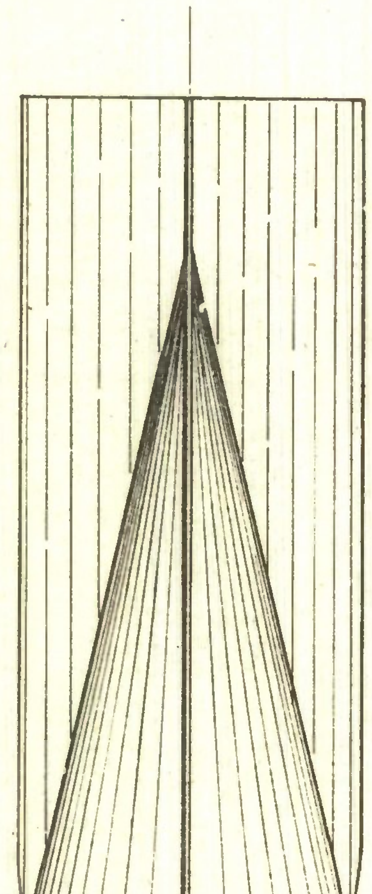
SMOKE BOMBS

BOMBA QUOTA

This projectile has the same ballistics as the 500.C, so that it is necessary only to observe its time of fall to ascertain the necessary data in that respect with regard to the larger bomb. It is usually dropped by hand, after the safety pin has been removed, the cord attached to the safety band around the head of the fuze being tied round the hand or attached to the aircraft, with the result that on releasing the bomb, the band is ripped off.

No details of the fuze are available, as no specimen has yet been recovered. The information concerning this bomb has been obtained from captured documents.

Designation		Type
Old	Bomba	
New	Bomba Quota	Smoke
1.	O/A Length of Fuzed Bomb.	
2.	O/A Length less Fuze or Lug.	
3.	Length of Body.	
4.	Dia. of Body.	
5.	Max. thickness at (point / (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	
9.	Suspension System	
10.	Colouring of bomb.	
11.	Markings on bomb.	
12.		
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22.	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	
26.		



BOMBA
QUOTA.

BOMBA VENTO

This is a special smoke bomb used in conjunction with the 500C. It is designed to function on impact and produce a column of smoke. The direction of this column of smoke & the angle which it makes with the ground are observed. From the former, the direction of the wind, and from the latter an estimate of the velocity of the wind at ground level can be obtained.

The bomb is formed on a thin sheet metal cylinder (1) whose length is 6.7-ins. and diameter 3.1-ins. The lower end is closed by the thin steel disc. (2) which has a central hole 0.9-ins. diameter. Over this hole is situated the fuze tube (3) pressed into the disc (2). To the side of the cylinder are spot-welded the four supports (4), for the vanes. The short tube (5) 1-inch long, threaded at its outer end to receive the suspension lug (6), is also spot-welded to the cylinder (1). (For vertical suspension the lug in the fuze is used). Four further short tubes of small diameter are welded over four corresponding holes near the open end of the cylinder. One pair of these short tubes which are 0.9-inches apart lies symmetrically between two vanes and the other pair directly opposite between the other pair of vanes. They are intended as guides for the wire (7). The bomb body (8) consists of hard concrete in which steel pellets are embedded. Two sets of helical reinforcing are provided. Three turns of wire approx. 16 S.W.G. are wound clear of the cylinder (1) near the open end. The wire passes through holes (9) in the vane-supports (4) and is welded at its ends to the cylinder (1). Five turns of heavier reinforcing (about 8 S.W.G.) are wound as shown at (10). This wire is welded to the cylinder (1) at one end and to the tube (3) at the other.

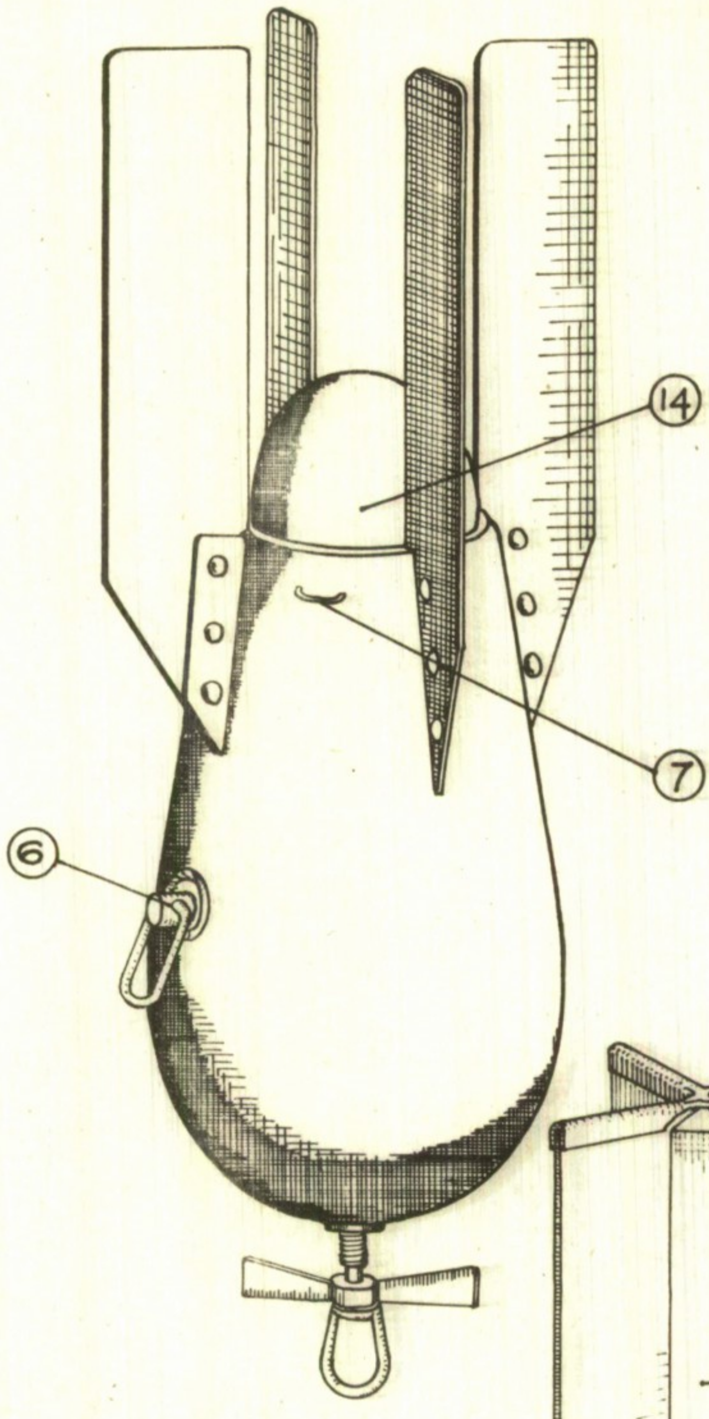
The vanes (11) are made of aluminium alloy and are rivetted to the supports (14).

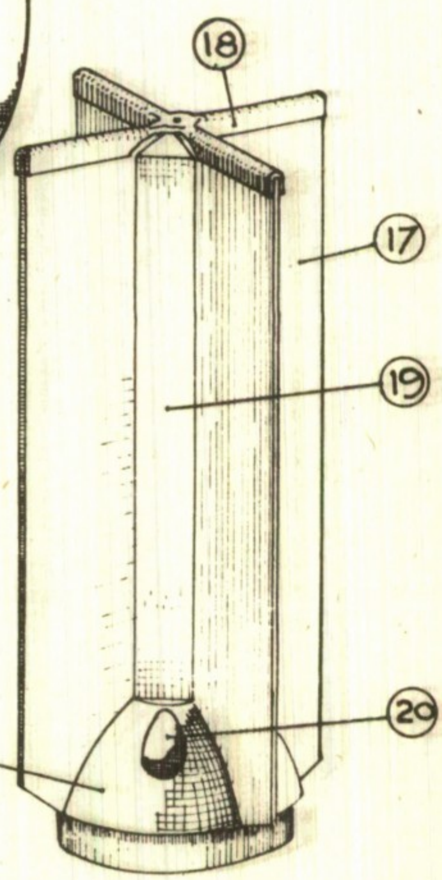
The cylinder (1) contains the bomb filling, which may consist of a cardboard tube (12) filled with a smoke composition (13). The cylinder is closed by a cork plug (14) secured in position by the wire (7). The smoke composition is labelled 'Luce e Fumo Bianco' which indicates that a flash as well as white smoke is emitted from the bomb.

An alternative filling which has been found consists of a 1 kg incendiary bomb (15) (Bomb 1.I) with a black powder charge (16) placed between it and the fuze when assembled in the 'Vento' bomb. When so employed the incendiary bomb has the usual transit plug (21) drilled to take the flash from the charge (16).

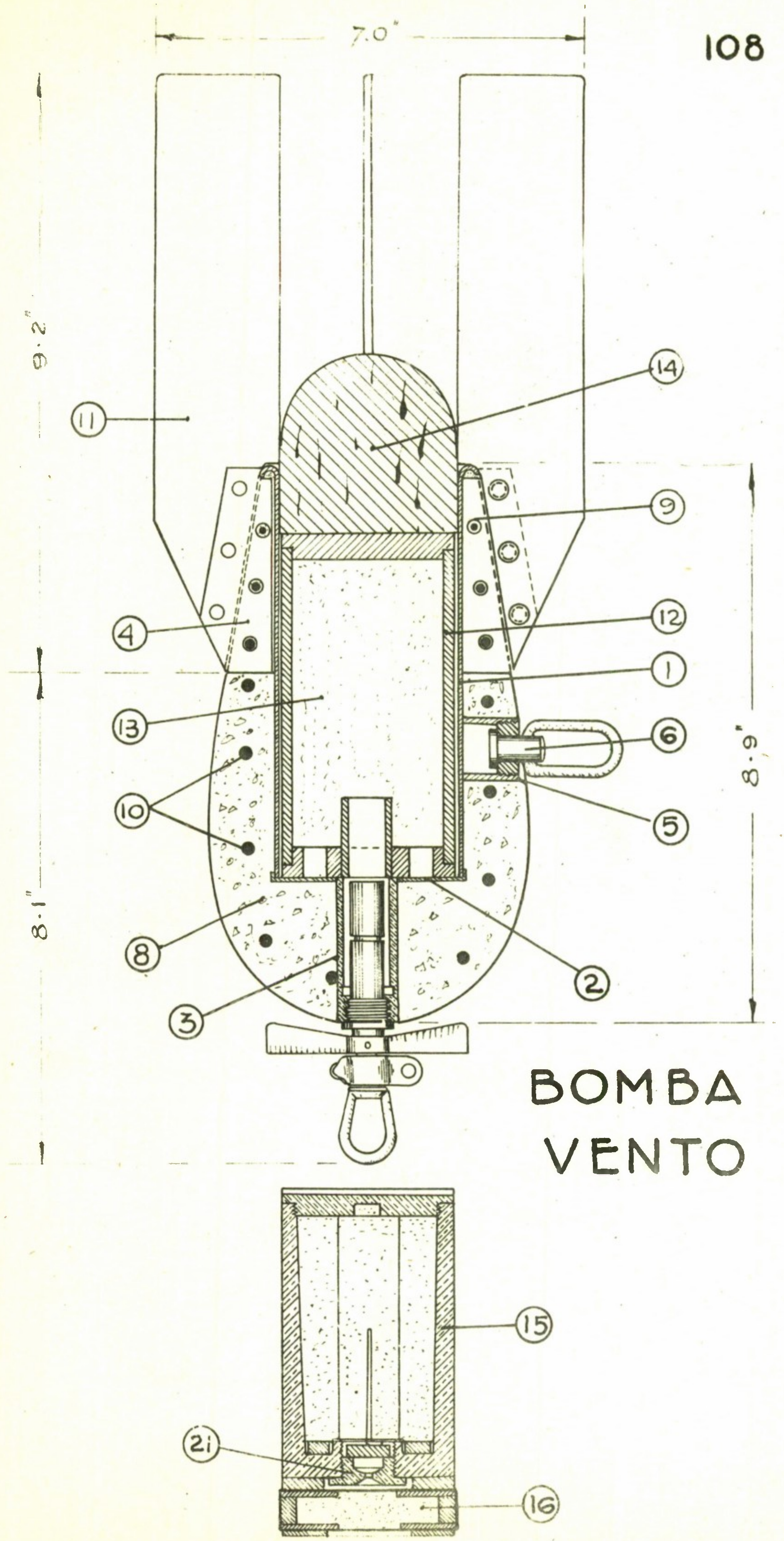
An alternative tail has been recovered in which the cork plug (14) is not used to close the bomb, but instead a wooden plug of the shape shown at (16) performs the double function of closing the bomb and supporting the vanes. These latter, shown at (17) are 8.7-inches long and 2.6-inches wide and are made of three ply wood. They are inserted in slots in the plug (16) and are strengthened by a metal binding at (18) and by four bevel-strips (19) running the whole length of the vanes. There are four holes (20) passing through the plug and situated midway between each pair of vanes. The plug (16) is attached to the bomb by four nails which are inserted through the concrete body. The fuze employed in the 'Vento' bomb is type S.

Designation Old Bomba New Bomba Vento		Type SMOKE
1.	O/A Length of Fuzed Bomb.	17.3-ins/441-mm.
2.	O/A Length less Fuze or Lug.	15.2-ins/386-mm.
3.	Length of Body	8.9-ins./225-mm.
4.	Dia. of Body	(max) 5.2-ins/132-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Reinforced concrete with steel pellets. Central metal cylinder.
9.	Suspension System.	Horizontal - Link attached to screwed plug. Vertical - Lug on nose fuze.
10.	Colouring of bomb.	White
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	9.2-ins/234-mm.
14.	Dia. of tail.	7.0-ins/178-mm.
15.	Material of tail	Aluminium or in some case three ply wood with metal binding
16.	Colouring of tail.	Grey
17.	Markings on tail.	NIL.
18.	Construction of Tail.	No separate tail. Four fins rivetted to brackets welded on body or supported in the closing plug.
19.		
20.	Nature of filling	Smoke composition labelled 'Luce e Fumo Bianco' or a Bomba 1I (see page 135).
21.	Weight of filling.	
22.	Total Weight	5.2 kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - Type S. (Page 111)
26.		

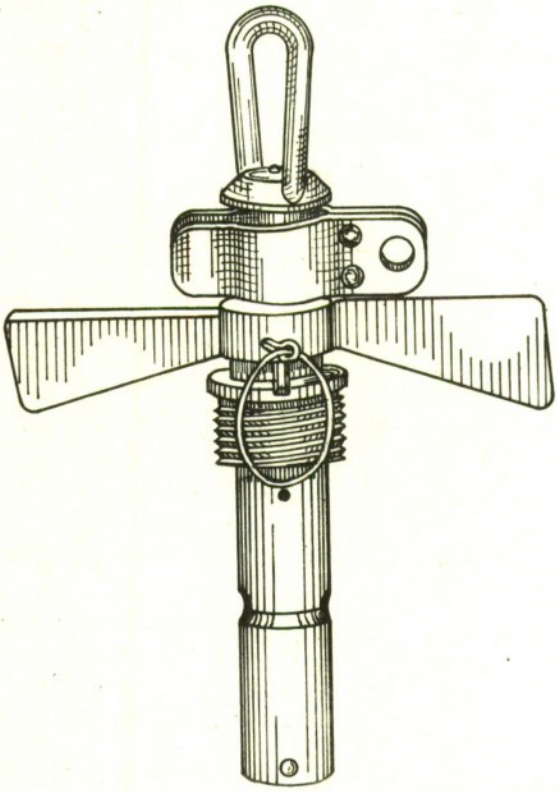




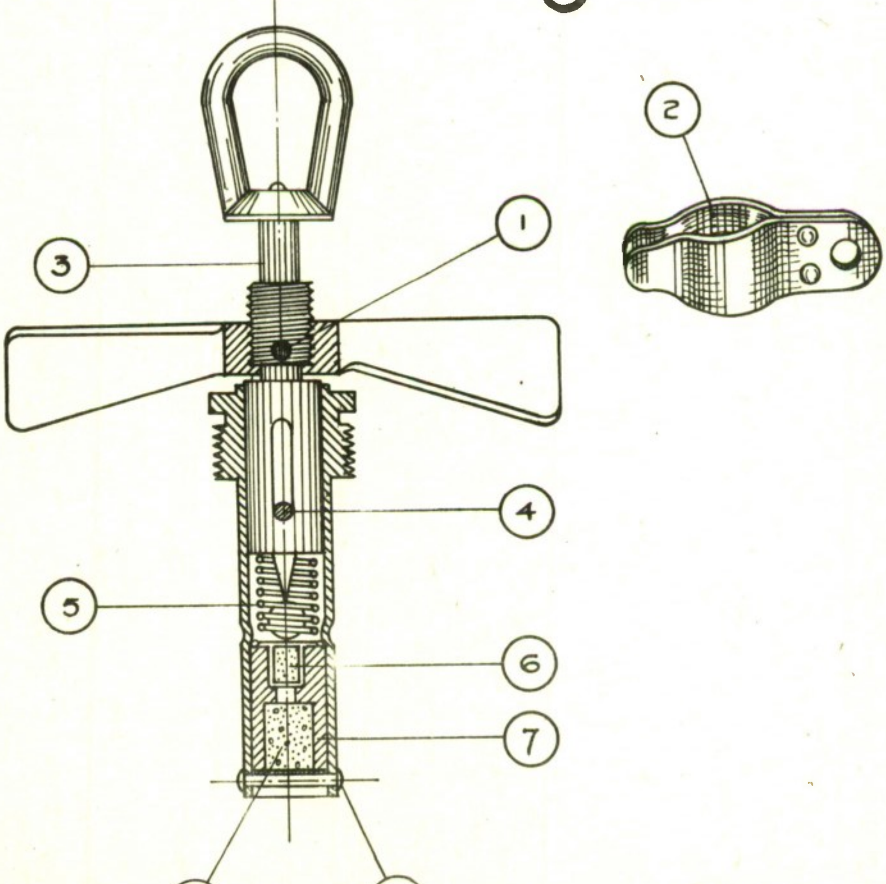
BOMBA
VENTO.



BOMBA
VENTO



FUZE S



ITALIAN Designation of fuze.		Our Designation Type S. Classification Nose Mech Impact. Markings Nil. Bomb in which employed VENTO
1.	Colour	Unpainted Brass or Bright Green
2.	O/A length less gaine.	4.5-ins/115-mm.
3.	Max. spread over vanes.	3.2-ins/82-mm.
4.	Dia. over threads where screwed into bomb.	0.8-ins/21-mm.
5.	Material.	Brass.
6.	Type of Gaine	Nil.
7.		

Description of Fuze

This is a nose fuze which functions on impact. The safety pin inserted at (1) is withdrawn when the bomb is loaded into the aircraft. The secondary safety device in the form of the clip (2) is pulled away as the bomb is dropped. The vanes then rotate, and rise on the striker spindle (3). This latter is prevented from rotating by the pin (4). When the vanes have rotated eight times, the spindle is free to move against the creep spring (5), and so fire the cap (6) in the holder (7). Below the cap is a black powder pellet (8). The pin (9) retains the cap holder in the barrel of the fuze.

To Defuze the Bomb

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb. The spindle (3) should be bound to prevent longitudinal movement.
(c) Ensure that the vanes are not rotated.
(d) Unscrew the fuze from the bomb.

Handling

If necessary this bomb may be carried horizontally without defuzing it providing all jolting is avoided. If the fuze is armed the spindle (3) should be bound to prevent longitudinal movement.

SECTION 4

INCENDIARY BOMBS

BOMBA 70 I.P.

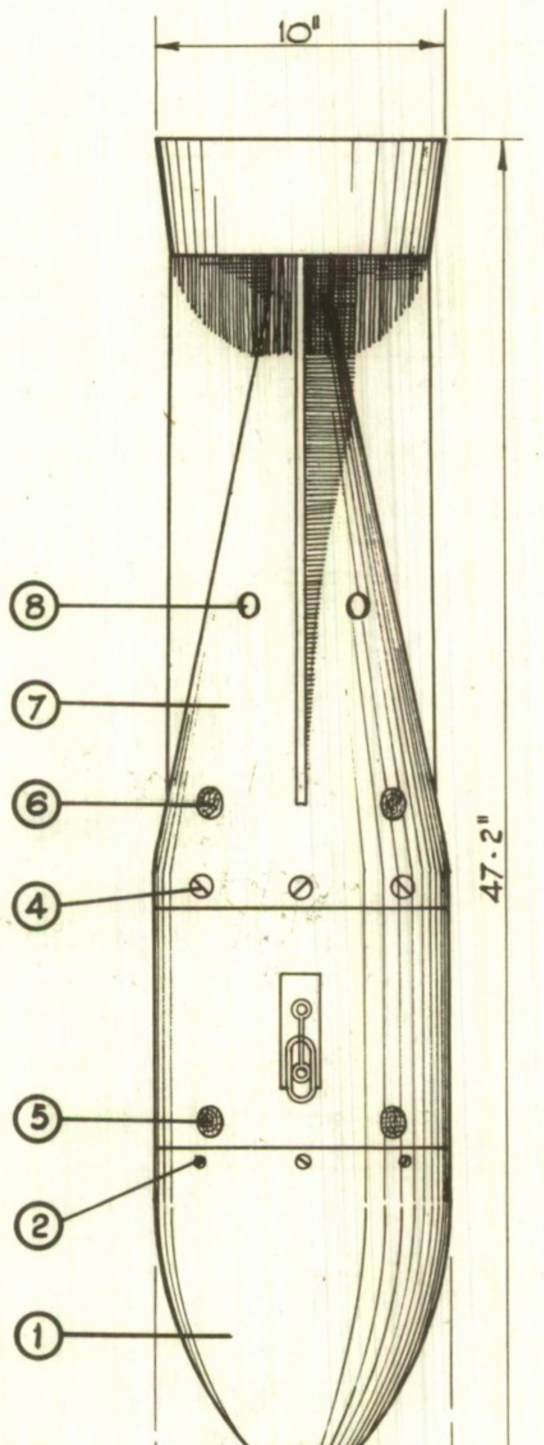
This electron bomb is fitted with a steel nose cap (1) which is approximately 1¼-in. thick at the pointed extremity and encircles the body for a length of 11¾-inches. It is secured to the body by eight screws (2). A hole (3) in the thickened nose is fitted to take the lug for vertical suspension. The body of the bomb has a maximum thickness of 1-inch. To it the tail unit is attached by eight screws (4).

In the bomb body are 4 equally spaced holes (5) 1¼-inches in diameter and plugged with cork. A similar set of holes (6) in the tail unit are also cork plugged. The hollow tail cone (7) has four vent holes (8) and the fins attached to the cone are strengthened by a plain wide band at their extremity.

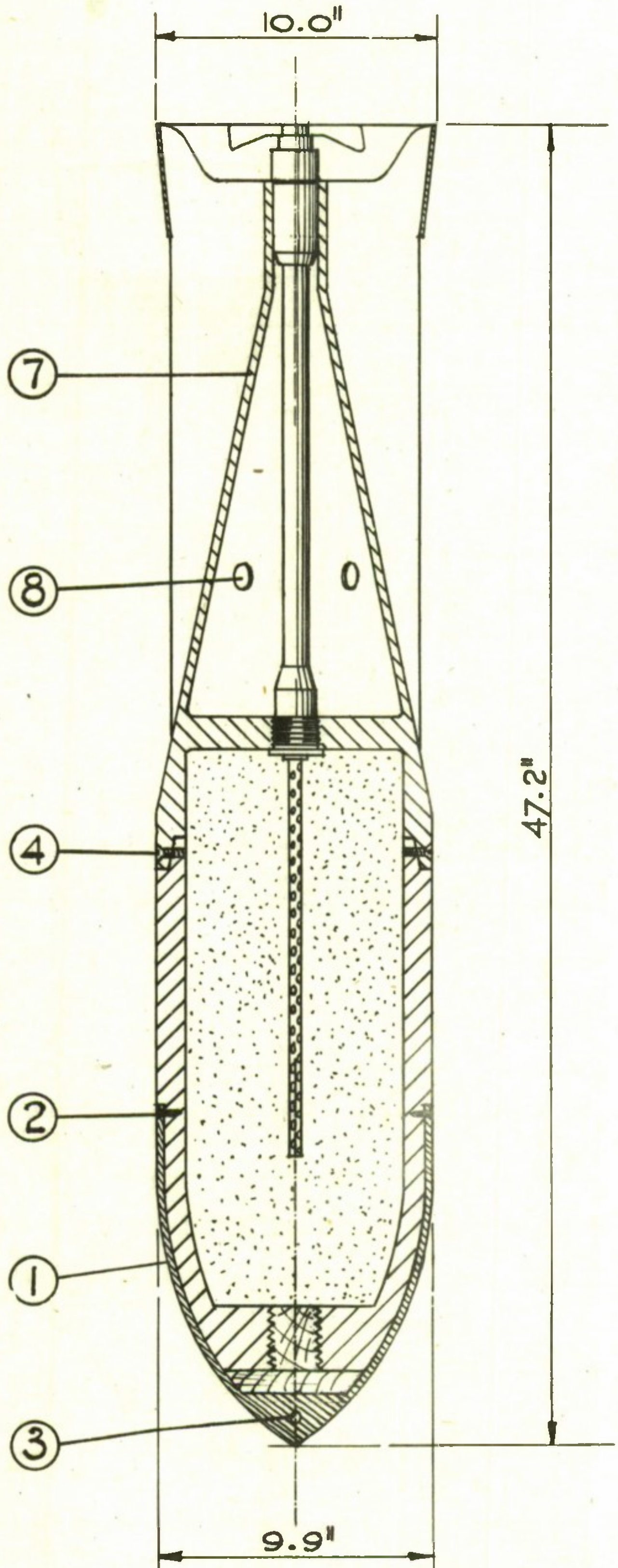
The filling is thermite into which projects the incendiary tube which screws into the adaptor (9) of the fuze.

For horizontal suspension a link attached to a lug (10) secured to the bomb body is fitted.

Designation Old Bomba New Bomba 70 I.P.		Type INCENDIARY
1.	O/A Length of Fuzed Bomb	47.2-ins/1200-mm.
2.	O/A Length less Fuze or Lug.	47.2-ins/1200-mm.
3.	Length of Body.	23.6-ins/600-mm.
4.	Dia. of Body.	9.9-ins/252-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness (Electron)	1.0-ins/25-mm.
7.		
8.	Material and construction of bomb body	ELECTRON. 8 Filling holes 1¼-in./32-mm. dia. closed by cork.
9.	Suspension System.	HORIZONTAL Link attached to Lug in Bomb Wall. VERTICAL Link attached through hole in Nose.
10.	Colouring of bomb.	UNPAINTED ELECTRON NOSE CAP: Grey
11.	Markings on bomb.	Nil.
12.	Nose Cap.	Steel: Length 1½-ins/305-mm. Wall Thickness: 1/8-in./3-mm to 2½-in/63-mm. at the nose.
13.	Length of Tail Unit.	26.7-ins/679-mm.
14.	Dia. of tail.	9.0-ins/228-mm.
15.	Material of tail.	Cast metal ¼-in./6-mm. thick.
16.	Colouring of tail.	Grey
17.	Markings on tail.	Nil
18,	Wt. of Tail. Construction of Tail.	10.2-Kg. Secured to body by 8 screws 4 fins mounted on truncated cone. Strengthening band around outer end of fins.
19.		
20.	Nature of filling	Thermite
21.	Weight of filling	24.5 Kg.
22.	Total Weight	62.0 Kg.
23.	Weight of Bomb Case.	27.3 Kg.
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Tail Type 'G' (Page 121).
26.		



BOMBA
70. I. P.



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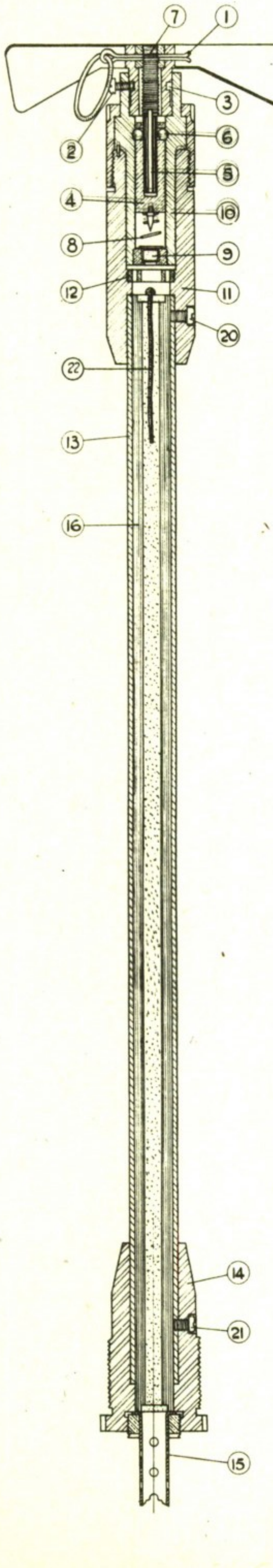
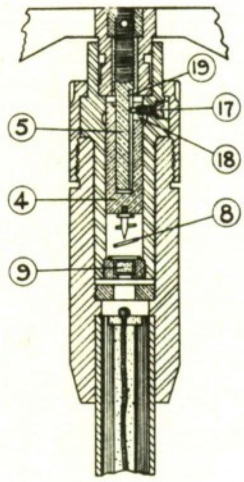
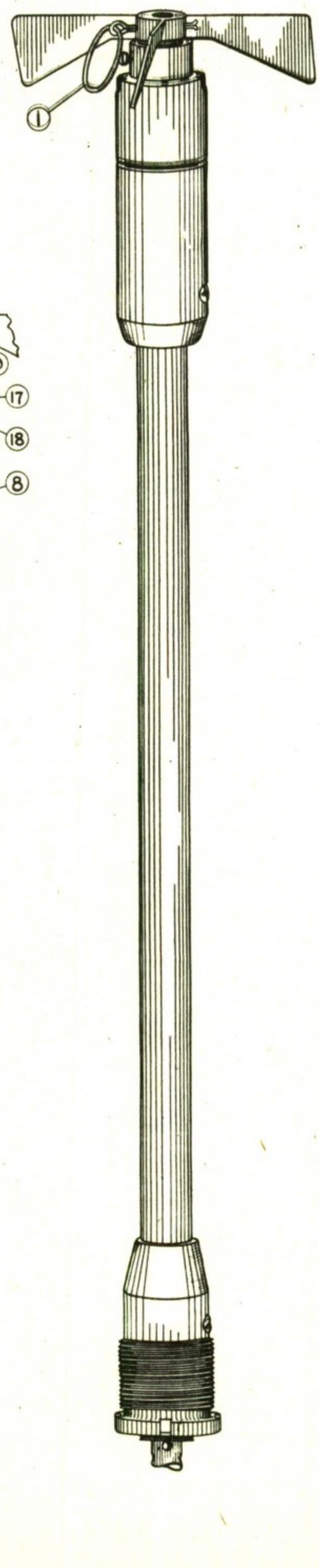
70. I. P.







FUZE
G.

ITALIAN Designation of fuze		Our Designation Type G.
		Classification. Tail Mech. Impact
		Markings. Nil
		Bomb in which employed 70 I.P.
1.	Colour	Unpainted Aluminium
2.	O/A length less gaine	3.5-ins/90-mm.
3.	Max. spread over vanes.	Dia. 5.4-ins/138-mm.
4.	Dia. over threads where screwed into bomb.	
5.	Material	Vanes, Vane hug, body and attachment collar - ALLUMINIUM. Vane hub bush, arming spindle striker and capholder - BRASS
6.	Type of Gaine	Nil.
7.		Perforated Aluminium tube projects into bomb filling, and is filled with ALUMINIUM Powder.

Description of Fuze.

When the safety pin (1) is withdrawn, the vanes are free to rotate. The screw (2) projecting into the annular groove (3) in the vane hub, prevents the longitudinal motion of the hub.

Both the arming rod (5) and the striker (4) are prevented from rotating by the screw (17) which projects through a cut (18) at the top of the striker into a longitudinal groove (19) in the withdrawal rod.

During the fall of the bomb the vanes rotate and the screw (7) protrudes beyond the vanes. When one inch of screw thread appears above the vanes the fuze is fully armed. The arming rod (5) is then completely withdrawn from the cavity in the striker, and the steel balls (6) are free to move inwards. The striker is thus freed and on impact moves forward against the creep spring, (8) to fire the cap (9).

The fuze is secured to the aluminium holder (10) by the collar (11). This holder contains the screwed ring (12) inserted from the top and also takes the steel tube (13) which is pressed into the base, and secured by three set screws (20). The tube is 17.5/8-in. long and terminates in the adapter (14) to which it is held by the three set screws (21). This adapter takes the perforated incendiary tube (15), which is about 14-ins. long and penetrates into the main thermite filling of the bomb.

Within the tube (13) is a long compressed paper tube (16) filled with a powder ignition mixture. When the fuze is to be prepared for use the collar (11) is unscrewed and the fuze removed. A special match (micce) (21) having a globular head and a quick match stem 2.1/2-in. long is inserted stem first into the head of the tube (16) and the fuze is then replaced. The firing of the cap ignites the special match which is turn fires the powder in the tube (16) and finally the incendiary composition in the tube (15).

Handling the fuzed bomb.

This bomb contains no HE Charge and if necessary may be carried horizontally provided it is not subjected to longitudinal jolting. The fuze may be removed as follows:-

(i) Avoid any longitudinal jolting of the bomb and secure the vanes to prevent rotation.

(ii) Unscrew the aluminium retaining collar (11) from the outer end of the tail and remove the fuze mechanism.

(iii) Remove the piece of quick match (21) and plug the end of the holder (10)

BOMBA 20 I

The bomb is madé of cast electron in two parts. The dome-shaped head (1) is fitted with a short steel pointed nose piece (2) which screws into it. The body (3) is cylindrical and slightly coned and shaped at the base to accommodate the tail. This latter can be of sheet steel or cast electron. The tail cone (4) terminates about half way along the tail and above it the fins (5), which are welded to the cone in the sheet steel tail, are cut away to provide the 'window' (6) in which the vanes (7) of the tail fuze can rotate. The extremity of the tail is strengthened by a saucer-shaped plate (8) to which is attached the link (9) for vertical suspension.

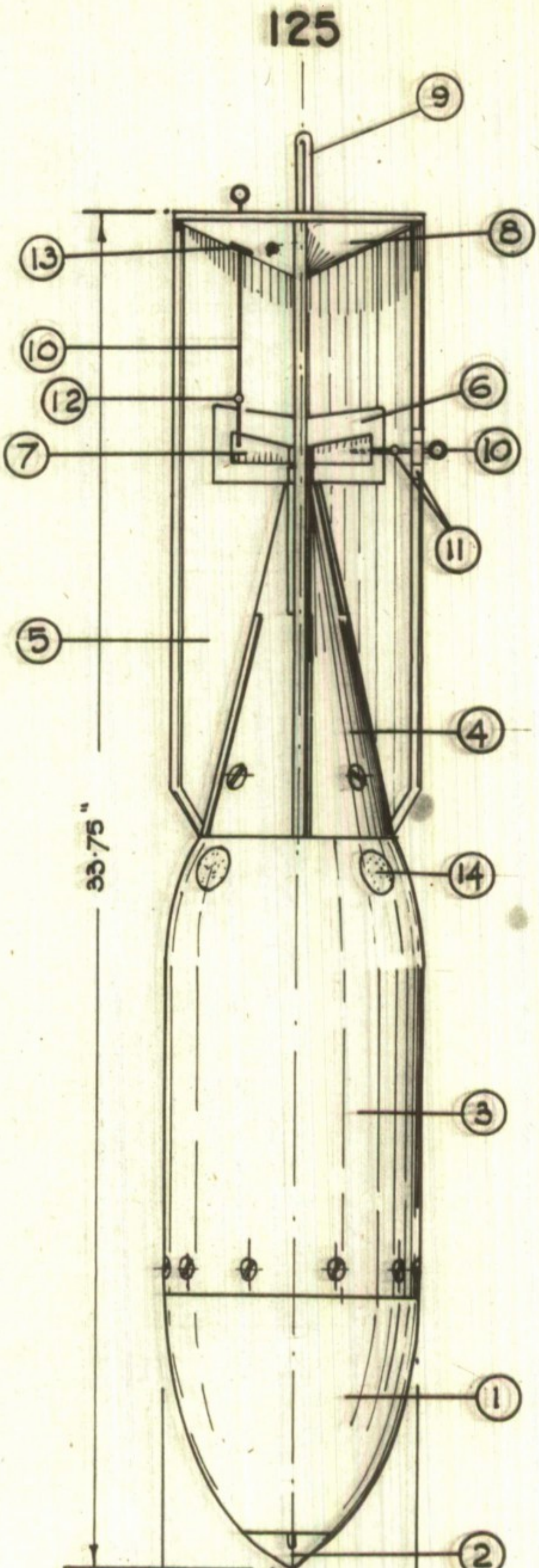
The vane stop consisting of a rod (10), which passes through the two guides (11) for horizontal suspension, or through the guide (12) and the slip (13) in the plate for vertical suspension, protrudes into the 'window' and holds the vanes till the bomb is released.

The head is secured to the body by 12 screws, and the tail is secured to the body by 4 screws. Near the tail end of the body are five equally spaced holes (14) of 1.1-inch diameter which are filled with cork plug. The bomb filling is thermite.

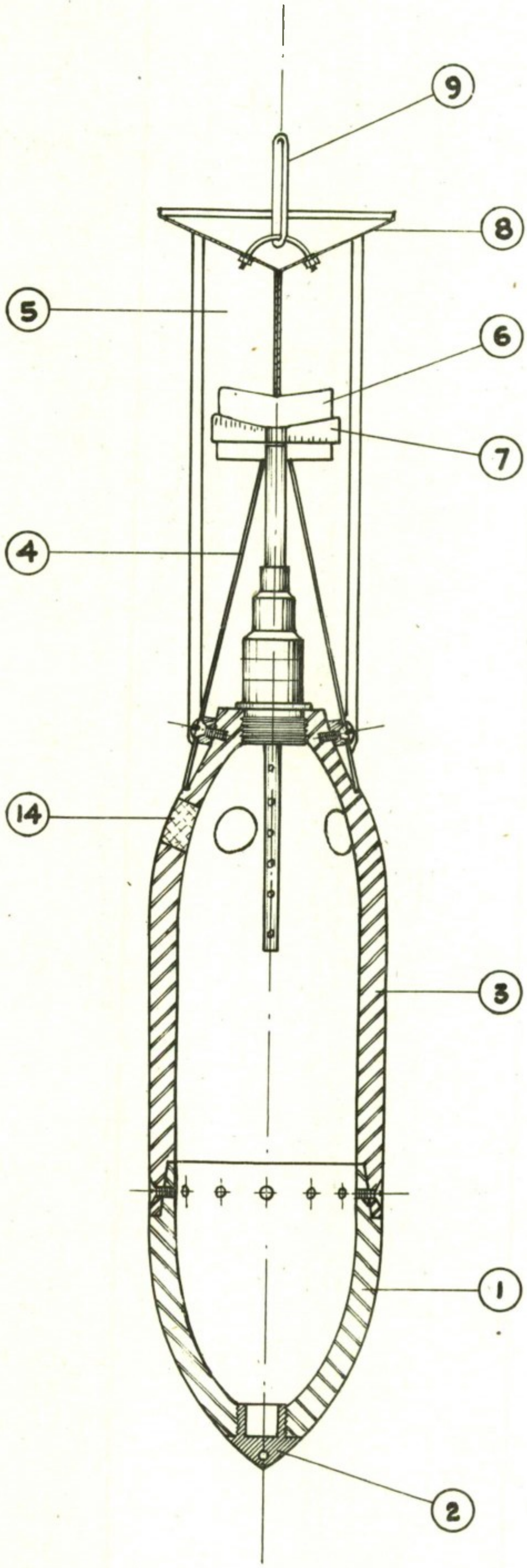
A modification of this bomb has been found in which the nose is constructed of concrete with steel pellets embedded. The rest of the body is made of electron metal..

The body and tail of this latter bomb are painted white.

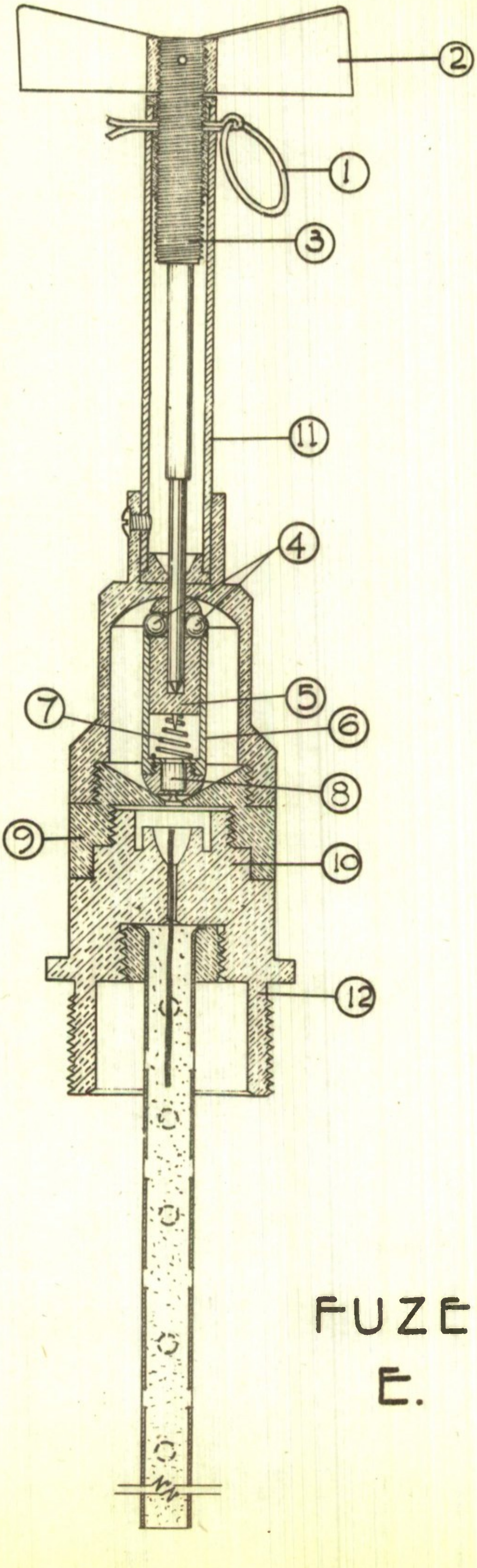
Designation Old Bomba da Kg. 20.8 New Bomba 20.I.		Type INCENDIARY
1.	O/A Length of Fuzed Bomb.	34.0-ins/864-mm.
2.	O/A Length less Fuze or Lug	34.0-ins/864-mm.
3.	Length of Body.	20.5-ins/520-mm.
4.	Dia. of Body	6.3-ins/160-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	¾-ins/19-mm.
7.		
8.	Material and construction of bomb body.	¾-in. Electron wall made in two parts, nose and body pierced by row of screws. Steel plug in nose. 5 cork filled holes near tail.
9.	Suspension System.	HORIZONTAL - Suspension band VERTICAL - Link attached to tail.
10.	Colouring of bomb.	Unpainted electron grey.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	15.8-ins/400-mm.
14.	Dia. of tail.	6.3-ins/160-mm.
15.	Material of tail.	Electron or Sheet Steel
16.	Colouring of tail.	Unpainted electron or Grey.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Cast electron or four sheet steel fins welded on truncated cone with saucer-shaped steel plate welded to outer extremity of tail fins.
19.		
20.	Nature of filling.	Thermite
21.	Weight of filling.	
22.	Total Weight	19.4 Kg.
23.	Weight of Bomb Case.	6 Kg.
24.	Charge/Total Wt. Ratio	
25.	Fuze - our designation.	Tail - Type E (Page 129).
26.		



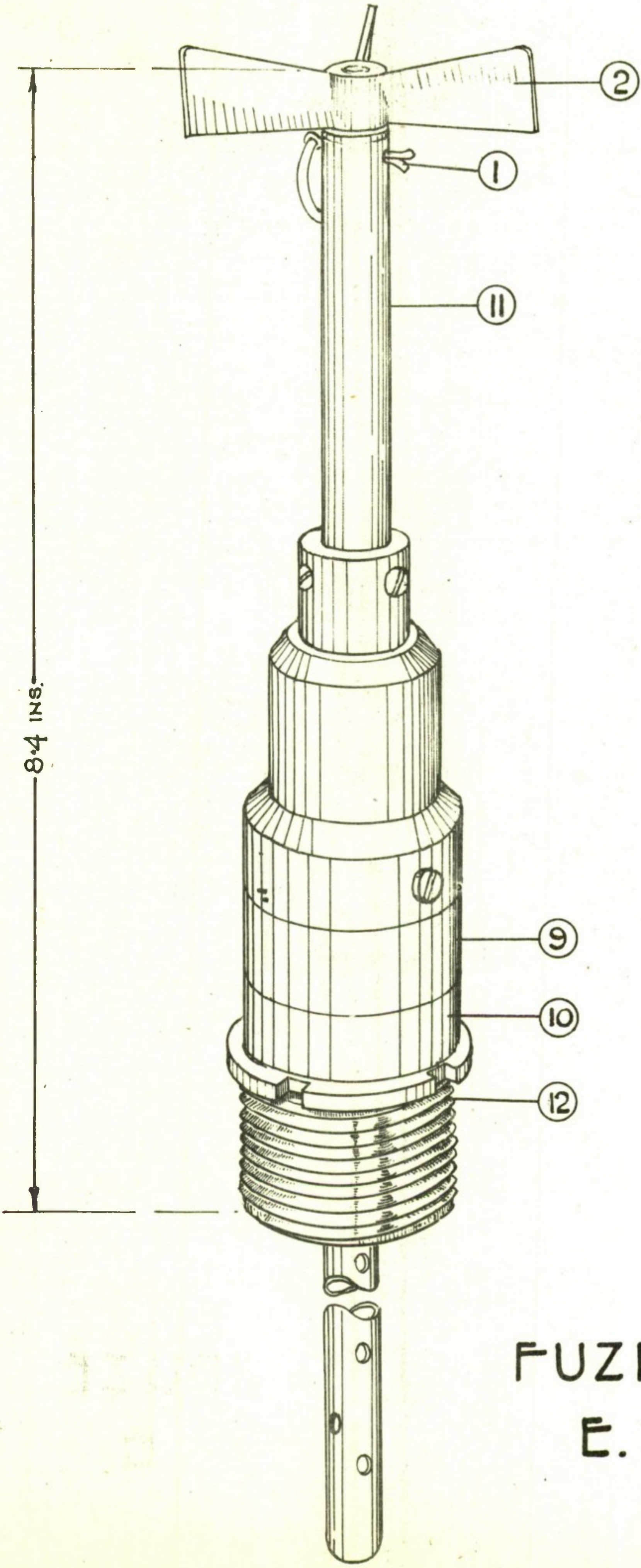
BOMBA
20.I.



BOMBA 20. I.



FUZE
E.



FUZE
E.

ITALIAN Designation of fuze.		Our Designation Type E.
		Classification. Tail Mech. Impact
		Markings. Nil.
		Bomb in which employed. 20.I
1.	Colour.	Vanes Green Steel Tube Black Body Unpainted Brass Adaptor Unpainted Aluminium Alloy.
2.	O/A length less gaine.	8.4-ins/213-mm.
3.	Max. spread over vanes.	3.5-ins/90-mm.
4.	Dia. over threads where screwed into bomb.	1.6-ins/41-mm.
5.	Material.	Tube: Steel Adaptor: Aluminium Alloy Remainder: Brass
6.	Type of Gaine.	Nil.
7.		Perforated Aluminium tube projects into Bomb filling and is filled with Aluminium powder.

Description of Fuze.

On withdrawing the safety pin (1) the vane (2) rotates and the screw (3) withdraws the vane and frees the steel balls (4) which can then move inwards. The striker (5) is then free to move, on impact, downwards in the sleeve (6) against the creep spring (7) and fire the cap (8). The lower end of the sleeve is spherical, and rests on the curved upper face of the plug (9). The adaptor (10) is usually made of zinc alloy while the rest of the fuze, except the tube (11) is of brass.

Handling of Fuzed bomb.

When the vane and screw have withdrawn 0.4-inches the fuze is armed and in a dangerous condition. On no account should the vanes be rotated or any effort be made to re-insert the safety rod. The bomb may be moved either by carrying in a horizontal position or better still with the vane pointing downwards. Care must be taken to avoid all jolting since this fuze has a semi-allways action. To defuze the bomb proceed as follows:-

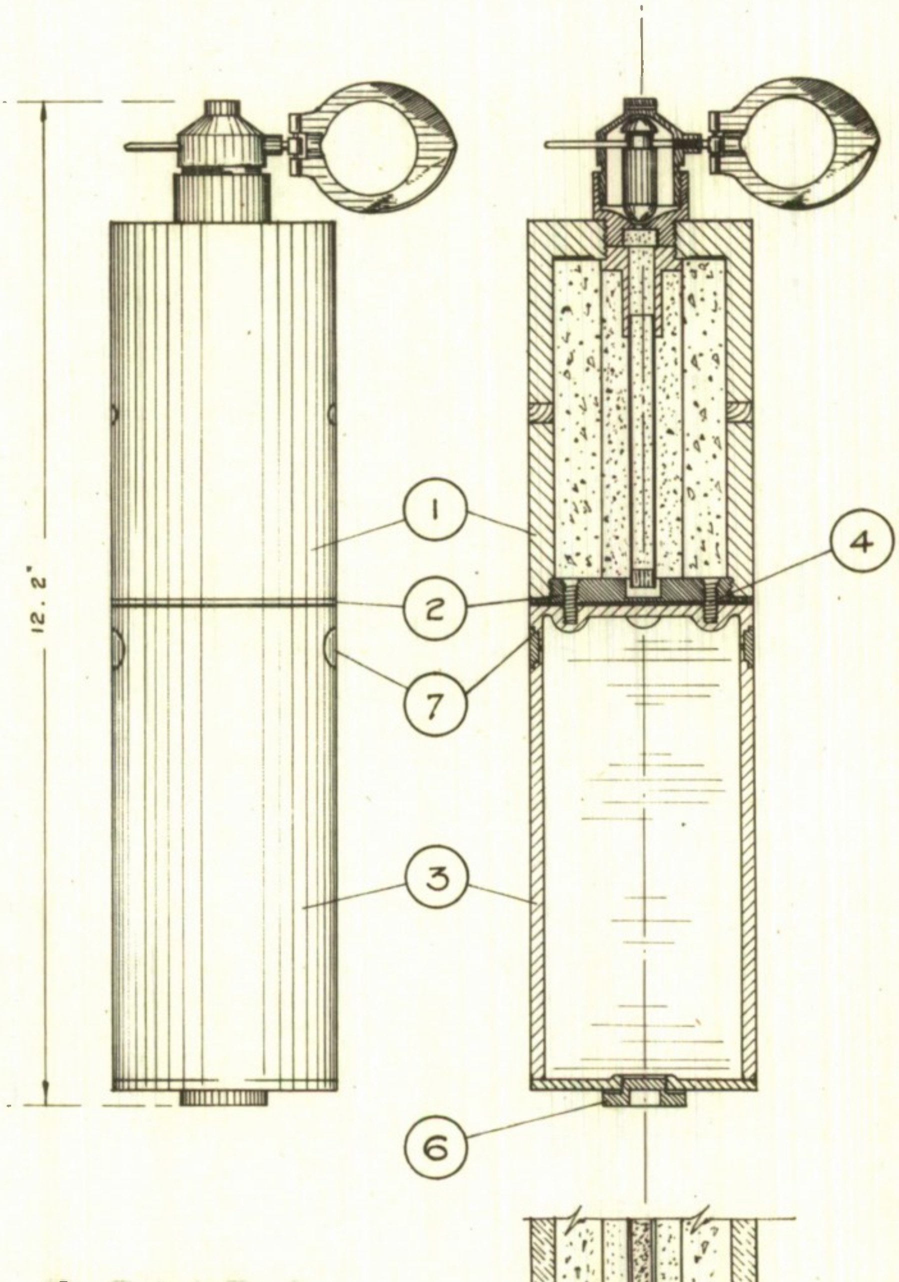
(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin securing the vanes and remove the vanes.
(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.
(f) Unscrew the fuze at (12) and withdraw it from the bomb complete with ignition tube.
(g) Unscrew the ignition tube from the fuze and pack separately.

BOMBA 2 I

The 2 I. bomb consists of a 1.I bomb (1) to the screw-threaded base plug (2) of which is attached a sheet metal container (3). The method of attachment may be by means of two screws (4) or by welding as shown at (5). The container is filled with an inflammable liquid and is closed at the base by the screw-threaded brass plug (6).

Near the top of the liquid container are two small holes (7) in the container wall. These are sealed with a small quantity of solder which melts due to the heat generated by the burning electron bomb. Vapour pressure within the container then forces two small jets of liquid through the holes and these jets are ignited as they leave the bomb.

Designation Old BOMBETTA INCENDARIA MISTA da Kg. 2. New. Bomba 2.I		Type INCENDIARY
1.	O/A Length of Fuzed Bomb.	12.2-ins/310-mm.
2.	O/A Length less Fuze or Lug.	10.6-ins/270-mm.
3.	Length of Body.	10.6-ins/270-mm.
4.	Dia. of Body.	2.8-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Bomb body as for 1.I with sheet metal fuel container attached to the screwed-in base of the 1.I.
9.	Suspension System.	Carried in container.
10.	Colouring of bomb.	Bomb unpainted electron attached fuel container grey.
11.	Markings on bomb.	Nil.
12.	NOTE:	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	Thermite and liquid fuel.
21.	Weight of filling.	0.56 Kg Thermite
22.	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213)
26.		



BOMBA
2. I.

BOMBA 1.I.

The bomb is a tail-less cylinder 4.6-inches long and 2.7-inches diameter. The body (1) is made of electron metal. On the curved surface are three small holes (2) plugged with cork. These act as vent holes when the thermite filling (3) is ignited. The thermite is in the form of a lightly pressed filling, pressed in two halves, with a central cylindrical cavity. This latter cavity is filled with magnesium powder (4).

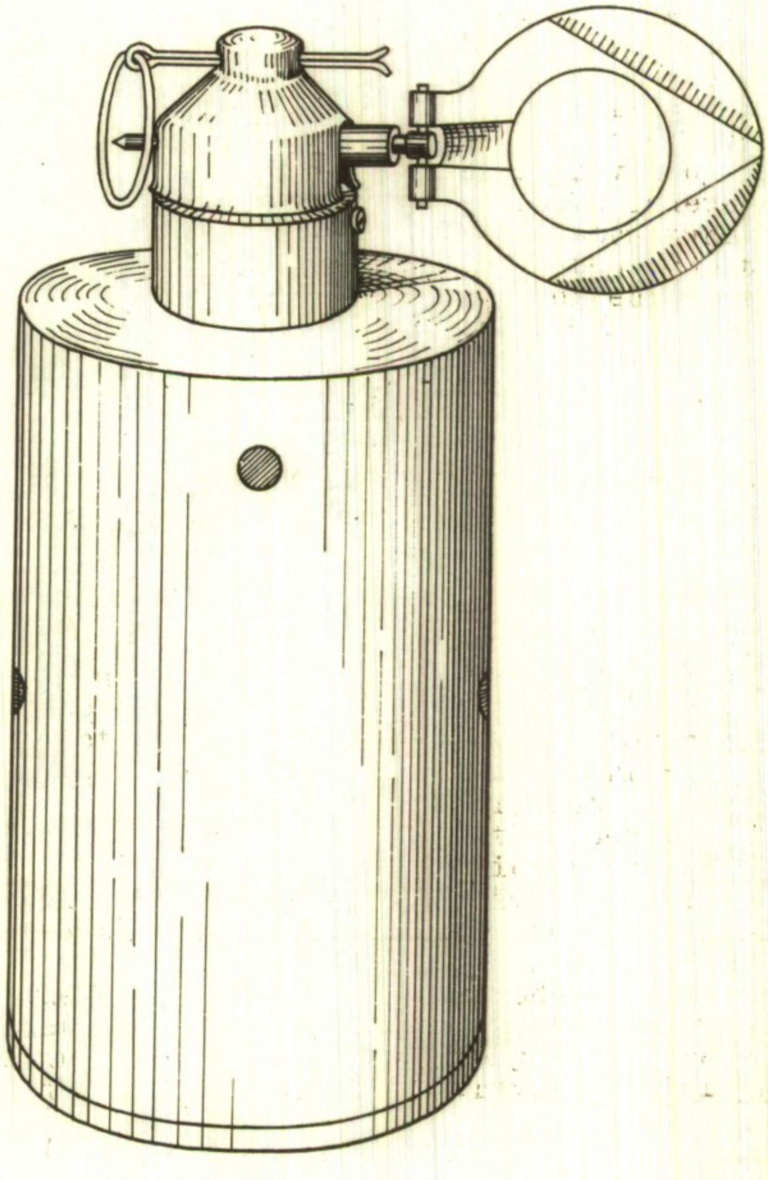
Below the fuze is the powder pellet (5) separated from the thermite by the paper disc (6). This latter is glued to the cardboard ring (7). Through the paper disc is looped a piece of quick-match (8) which extends into the magnesium.

The bomb body shows a slight internal taper of about 1 in 30. The closing disc (9) is also of electron.

Another type, made of the same materials and having the same dimensions has been encountered. The main difference concerns the internal arrangement for igniting the thermite. In place of the quick-match a thin aluminium tube (10) is inserted in the magnesium filling. This tube contains a number of holes on its surface covered by thin paper and is filled with magnesium powder. It is sealed at its lower end by a cork plug (12). The adaptor (13) holds this igniter tube in place as shown.

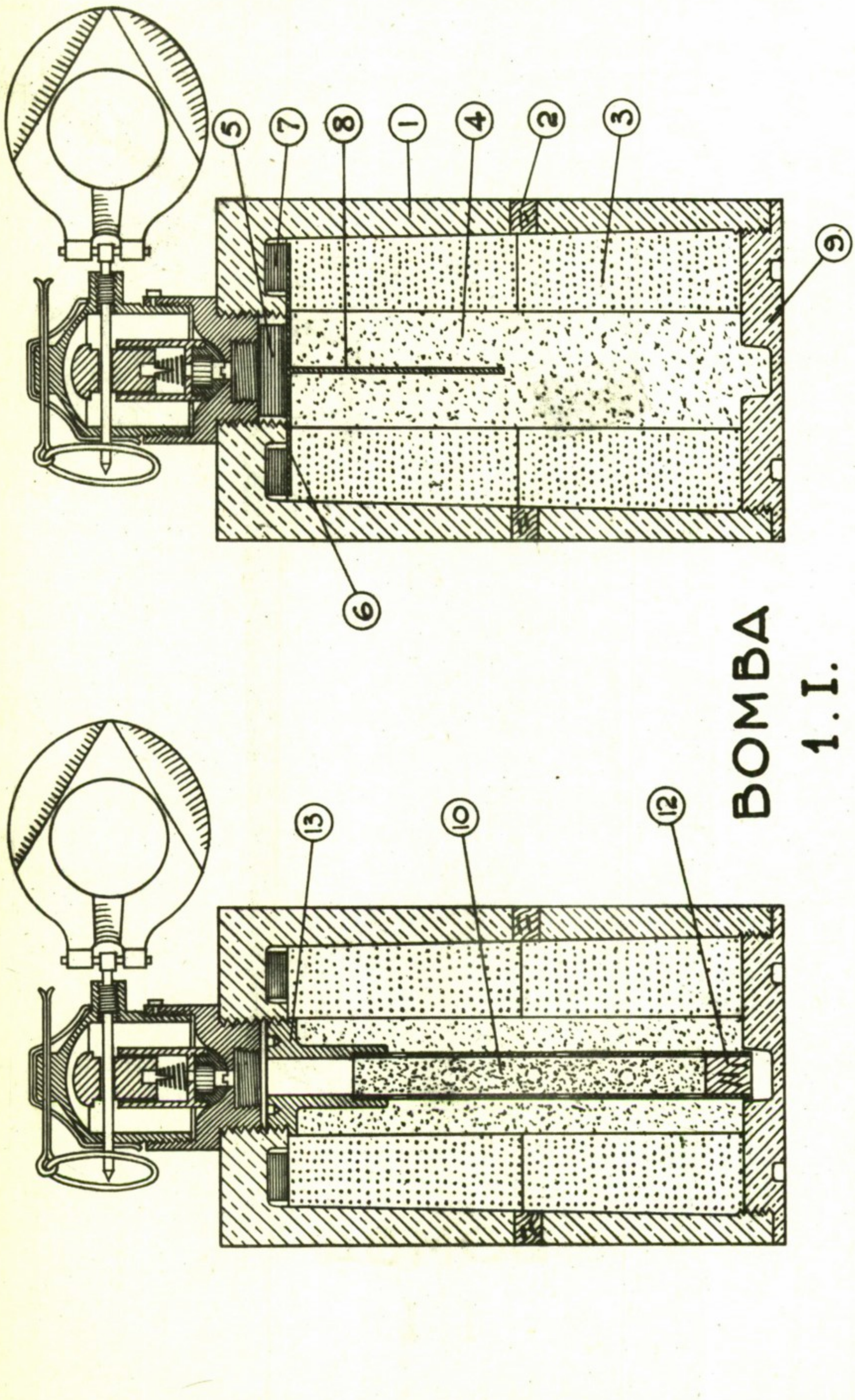
Incendiary bombs of the 1.I type have also been found in the Bomba Vento (see page 105).

Designation		Type
Old	BOMBETTA INCENDARIA da Kg. 1.	INCENDIARY
New	Bomba 1. I	
1.	O/A Length of Fuzed Bomb	6.1-ins/155-mm.
2.	O/A Length less Fuze or Lug.	4.5-ins/115-mm.
3.	Length of Body.	4.5-ins/115-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material & construction of bomb body	ELECTRON
9.	Suspension System.	Carried in Container.
10.	Colouring of bomb.	Unpainted Electron.
11.	Markings on bomb.	Nil.
12.	NOTE	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of Tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of tail.	
19.		
20.	Nature of filling.	Thermite with magnesium powder core.
21.	Weight of filling.	Magnesium .084 Kg. Thermite .473 Kg.
22.	Total Weight.	1.1 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio	
25.	Fuze - our designation.	Type K. (Page 213).
26.		



BOMBA

1.I.



BOMBA
1. I.

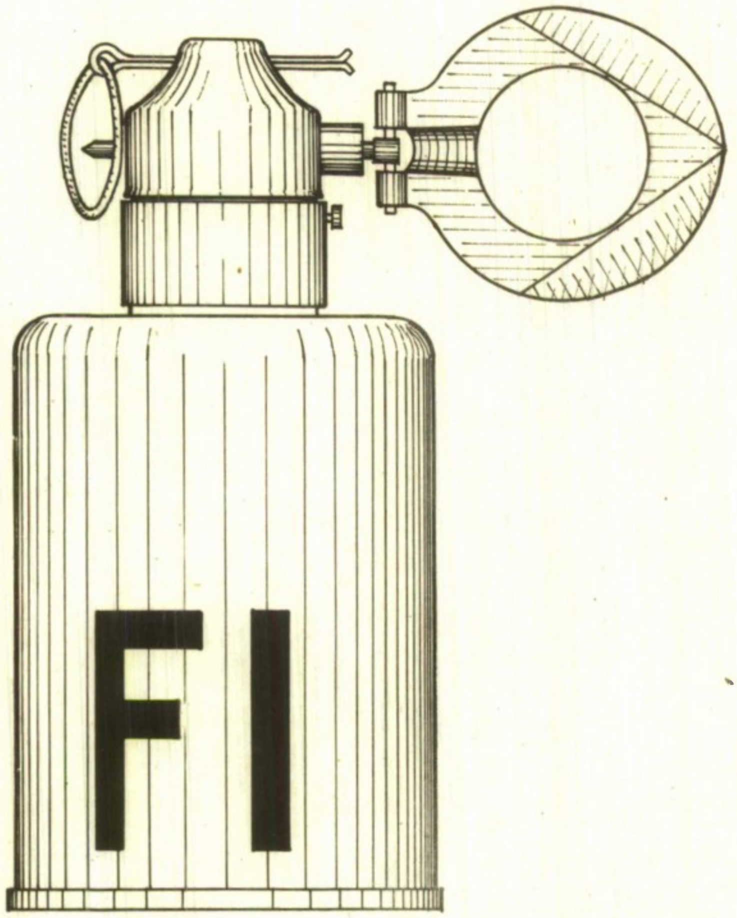
INCENDIARY BOMB F.I.

This consists of a mild steel container, seamless and apparently pressed out.

The bomb is filled with an inflammable mixture containing Phosphorus and a small burster charge is situated in the central pocket below the fuze.

Designation	Type
Old Bomba	
New Bomba F I	INCENDIARY

1.	O/A Length of Fuzed Bomb.	5.0-ins./127-mm.
2.	O/A Length less Fuze or Lug.	3.35-ins/85-mm.
3.	Length of Body.	3.35-ins/85-mm.
4.	Dia. of Body.	2.5-ins/64-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	
7.		
8.	Material and construction of bomb body.	Mild steel, pressed out seamless container.
9.	Suspension System.	Nil.
10.	Colouring of bomb.	Light Grey.
11.	Markings on bomb.	Stencilling in black on body: F.I.
12.	NOTE:	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	Phosphorus Mixture.
21.	Weight of filling.	
22.	Total Weight.	0·5-Kg.
23.	Weight of Bomb Case.	
24.	Charge Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213
26.		



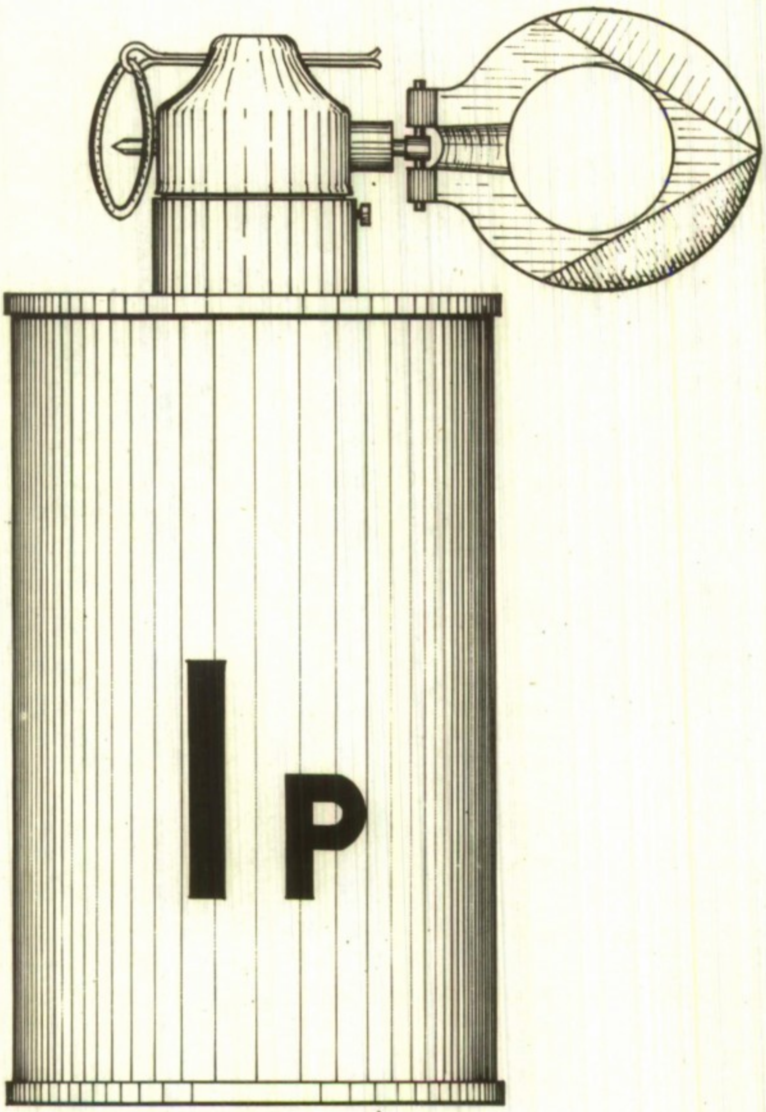
BOMBA
F. I.

INCENDIARY BOMB Ip

This consists of a thin mild steel container of cylindrical shape, filled with cotton wicks soaked in petrol and fitted with a small burster charge in the pocket below the fuze.

Designation	Type
Old Bomba New Bomba I.p.	Incendiary

1.	O/A Length of Fuzed Bomb.	6.1-ins/155-mm.
2.	O/A Length less Fuze or Lug.	4.5-ins/115-mm.
3.	Length of Body.	4.5-ins/115-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	
7.		
8.	Material and construction of bomb body.	Thin mild steel cylinder.
9.	Suspension System.	Nil.
10.	Colouring of bomb.	Light Grey-Green.
11.	Markings on bomb.	Stencilling in black on body: I.p.
12.	NOTE	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	Cotton wicks soaked in petrol.
21.	Weight of filling.	
22.	Total Weight.	0.5 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213).
26.		

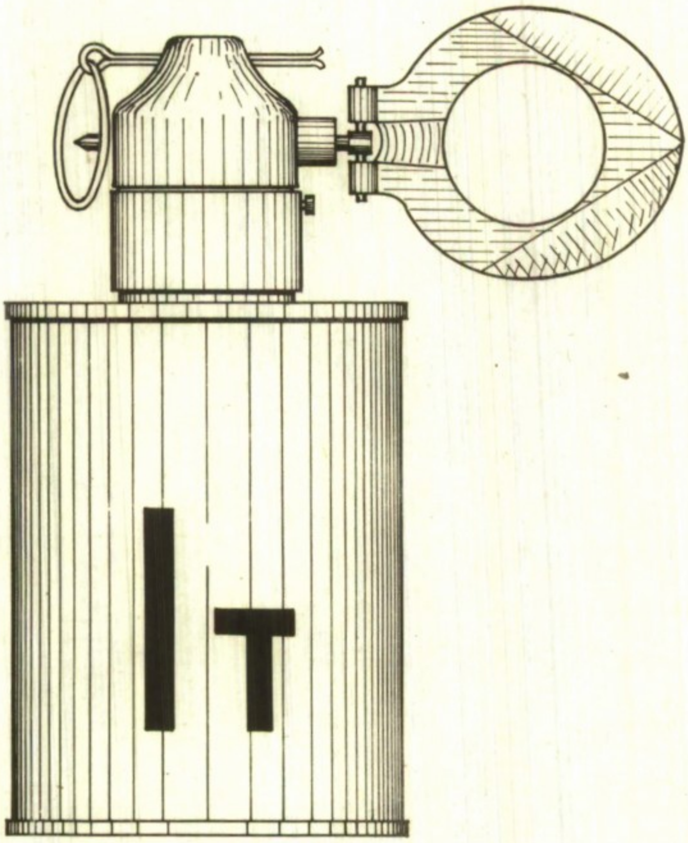


BOMBA
I.P.

INCENDIARY BOMB IT

This consists of a thin sheet steel container of cylindrical shape filled with thermite initiated by an ignition mixture of black powder situated in the shallow pocket below the fuze.

Designation Old Bomba New Bomba I T		Type Incendiary
1.	O/A Length of Fuzed Bomb.	4.9-ins./124-mm.
2.	O/A Length less Fuze or Lug.	3.3-ins./84-mm.
3.	Length of Body.	3.3-ins./84-mm.
4.	Dia. of Body.	2.5- ins./64-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	
7.		
8.	Material and construction of bomb body.	Thin mild steel cylinder.
9.	Suspension System.	Nil.
10.	Colouring of bomb.	Dark Green.
11.	Markings on bomb	Stencilling in black on body - I.T.
12.	NOTE	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of Tail.	
15.	Material of Tail.	
16.	Colouring of Tail.	
17.	Markings on Tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	Thermite initiated by Black Powder.
21.	Weight of filling.	
22	Total Weight.	0.5 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 2/3)
26.		



BOMBA
I.T.

BOMBA 100 sp.I.

The 100 sp;I bomb is a composite bomb, consisting of a central core surrounded by an annular space, in which are housed sixteen 2.I. bombs. There seems to be no reason why thirty two 1.I bombs should not be used as an alternative to these. The central core is itself a separately fuzed anti-personnel bomb loaded with concrete and steel pellets. The incendiary bombs are released in mid-air by means of a variable short delay nose fuze. When they have been ejected, a current of air passes through the annular space and arms the tail fuze for the anti-personnel bomb, which functions on impact.

A full description of the bomb and its fuzes appear on Page 155 et.seq.

Designation Old Bomba New Bomba 100 sp.I.		Type Combined anti-personnel bomb and Incendiary bomb Carrier.
1.	O/A Length of Fuzed Bomb.	51.2-ins/1300-mm.
2.	O/A Length less Fuze or Lug.	48.6-ins/1234-mm.
3.	Length of Body.	25.6-ins/650-mm.
4.	Dia. of Body.	10.7-ins/272-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	.03-ins/1-mm.
7.		
8.	Material and construction of bomb body.	Welded sheet steel container with central concentric cylinders the annular space of the latter being filled with concrete and steel pellets.
9.	Suspension System	Horizontal - Suspension Band
10.	Colouring of bomb.	Black
11.	Markings on bomb.	
12.	Length of central A.pers bomb. Dia. of central A.pers bomb.	21.5-ins/547-mm. 4.5-ins/115-mm.
13.	Length of Tail.	20.8-ins/530-mm.
14.	Dia. of tail.	10.7-ins/272-mm.
15.	Material of tail.	Sheet steel.
16.	Colouring of tail.	Black.
17.	Markings on tail.	
18.	Construction of Tail.	Cone of 1-mm. sheet steel to which is welded four stabilising fins with a corrugated strengthening band,
19.		
20.	Nature of filling.	See overleaf
21.	Weight of filling	
22.	Total weight.	89.1 Kgs.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - Type X (Page 163) Tail - Type Z (Page 167)
26.		

SECTION 5

HIGH EXPLOSIVE BOMBS

SECTION 5 (a)

(a) ANTI-PERSONNEL BOMBS

BOMBA 100 Sp.

This bomb is essentially an anti-personnel bomb which carries smaller bombs. When these smaller bombs are either 2.F or 2.Mtr. the assembly is designated Bomba 100.sp and when they are either 2.1 or 1.I it is designated Bomoa 100 sp.I (See Page 151).

The bomb body consists of a cylinder (1) of welded sheet steel 1-mm. in thickness on which are mounted four strips (2) of sheet steel of the same gauge. These strips, which are set radially, are equispaced around the periphery of the cylinder (1) and serve to locate the cylinder (3) co-axially with it. The latter is of welded sheet steel 2-mm. in thickness and is attached to each of the strips (2) by nine 4-mm. diameter steel rivets (4). A flanged circular end plate (5) fits inside the rear end of the cylinder (3) and has a central hole to accommodate the the cylinder (1) to which it is welded.

The central bomb is of the Mtr. type with steel pellets embedded in concrete in the annular space (6) between the two cylinders (7) and (8) which are mounted concentrically between the casting (9) and the basplate (10), the outer cylinder (8) being welded to each. The casting (9) is screwthreaded to take the impact fuze Z which employs a long gaine (11) projecting into the main filling (12). The shaped disc (13) is welded to the cylinder (1) and forms a seating for the central bomb which is retained in this cylinder by four locating screws (14). These latter are fitted with locking nuts (15), and mounted on four brackets (16) which are rivetted to the end plate (5) in the same planes as the four strips (2). One of these locating screws projects into a longitudinal groove cut in the casting (9) and thus prevents rotation of the bomb about its longitudinal axis.

Two truncated hollow cones (17) and (18), welded together as shown, form the nucleus of the tail. Four stabilising fins (19), which are rolled at the outer edges for greater robustness, are equally spaced around these cones and are welded in place on the inner truncated cone (17) whilst tabs protruding through slots in the outer truncated cone (18) are bent over to secure them to the latter. The corrugated strengthening band (20), spot welded to the stabilising fins (19), completes the assembly and is positioned with a slight gap between itself and the outer truncated cone (18) in order to form a wind brake. The tail is constructed of 1-mm. sheet steel throughout and the cylindrical portion at the base of the truncated cone (18) fits inside the flange on the end plate (5). It is secured in this position by four screws (21), which protrude through the outer cylinder (3) of the body, the flange of tne endplate (5) and the cylindrical portion of the truncated cone (18) and then screw into tapped holes in the 4-mm. thick steel band (22).

The nose of the bomb carries an explosive charge (23) which is contained in the inner container (24). This latter, which takes the form of a truncated cone with a central hole to accommodate the fuze X, is constructed of sheet steel and is mounted inside the nose casing (25) as shown. Surrounding the container (24) is a layer (26) of steel pellets embedded in concrete and protruding through this are three short tubes giving access to the filling (23). Two of these act as filling holes and are closed by the plugs (26) whilst the third receives the detonator assembly. The nose closing plate (28), which is spot welded to the casing (25), has, in addition to the three holes corresponding to these fitments, two further holes which are closed by two discs (29) spot welded in position. Secured to the closing plate (28) by means of four rivets (30) is the steel casting (31). This latter is screw-threaded internally to take the fuze X, at the base of which is an electric flash. Below the fuze is an explosive charge (32), and a metal cylinder (33) retained by a tinned disc (34) and the screwed ring (35). A length of wire-bound safety fuze (36), secured in position by two spiked washers and a brass bush (37), connects the explosive charge (32) with the detonating mixture in the aluminium tube (38).

This tube, which is crimped onto the safety fuze and abuts the detonator (39), is retained in the aluminium alloy bush (40) by the screw-threaded collar (41). The metal cylinder (33) extrudes two steel balls (42) through holes in the wall of the casting (31) into a semi-circular groove in the collar (43). The casting and the collar are thus locked together, rotational movement being prevented by two set screws (44) in the former (see view of inside of nose) locating in two longitudinal grooves in the latter. Screwed onto the collar (43) is the heavy casting (45) which forms an end cap below the fuze.

The nose is attached to the bomb by screwing the collar (43) into the bush (46) which is spot-welded to the cylinder (1). The nose casting (25) forms a close fitting joint with the cylinder (3) when the collar has been screwed fully home.

Between the nose and the end plate (5) in each of the four compartments formed by the four strips (2) are housed either eight bombs of the types 2F, 2 Mtr. or 1.I or four bombs of the type 2.I each with the safety pins removed from their fuzes.

The eight conical springs (47) are secured to the inner side of the end plate (5) by means of metal strips spot-welded to the plate in such a position that their apices fit over the head of the fuze of the leading bomb in each column. One of these latter also causes a spring loaded plunger (48) to project from its housing (49) and serve as a stop for the vanes of the fuze Z. The aluminium housing (49) screws onto a steel boss (50) which is welded to the end-plate (5). Seven circular holes (51) above the remaining columns of small bombs allow for the passage of a current of air to arm the tail fuze Z when the small bombs have been released. Suspension of this bomb is effected by means of a steel band (52) 35-mm. wide welded to the bomb and fitted with a suspension lug (53).

METHOD OF OPERATION

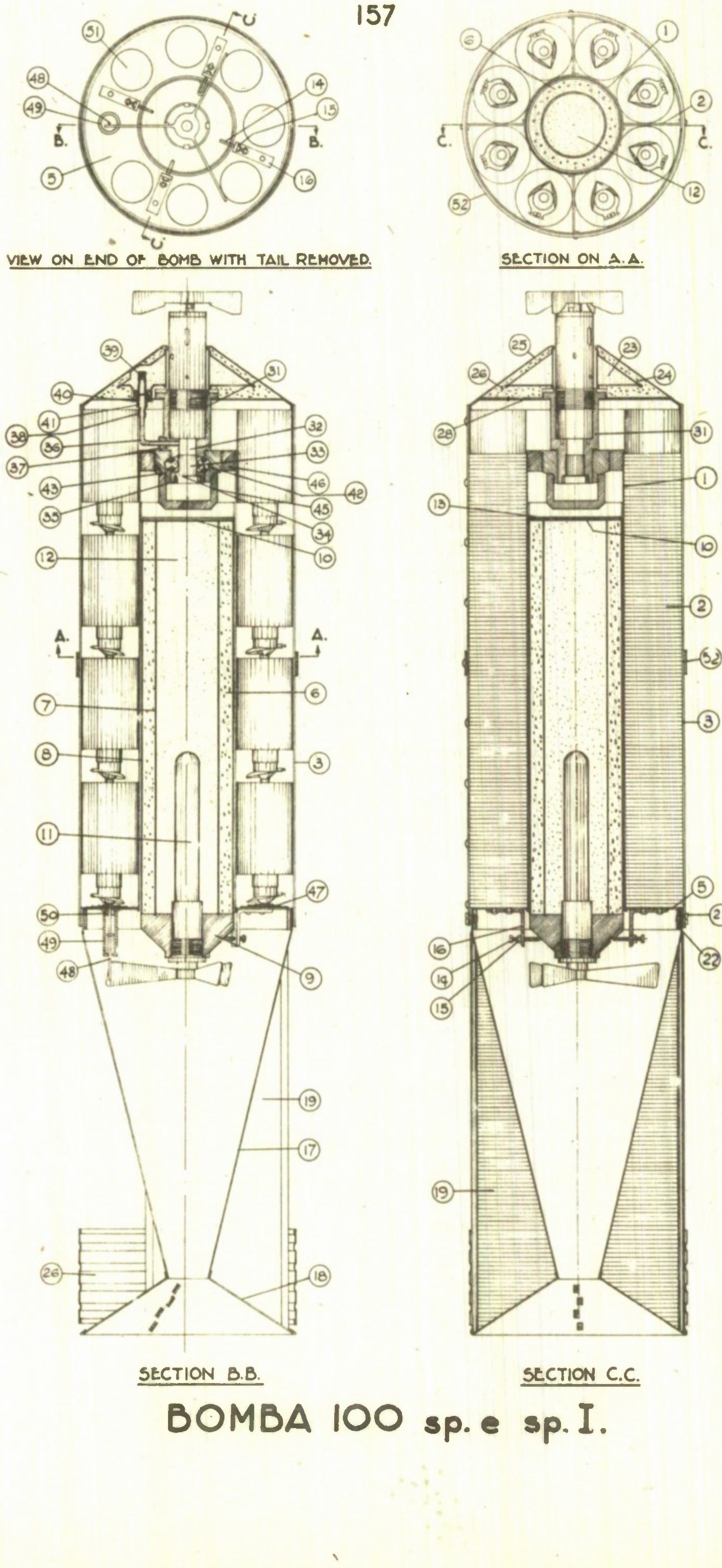
When the bomb is released from the aircraft, the safety pin is withdrawn from the nose fuze X and the latter functions after a pre-determined delay thus initiating the explosive charge (32). This simultaneosuly ignites the length of safety fuze (36) and drives the metal cylinder (33) through the tinned disc (34) thus releasing the steel ball locking mechanism. The pressure exerted by the eight conical springs (47) then forces off the nose, which itself explodes when the safety fuze initiates the detonator (39). At the same time these springs eject the small bombs whose fuzes arm themselves during the remainder of their downward flight and function on impact. The egress of the small bombs releases the spring loaded plunger (48) and the airflow through the evacuated annular space between the cylinders (1) and (3) and thence through the holes (51) and out through the open ended tail causes the fuze Z to become armed and capable of functioning on impact.

METHOD OF HANDLING

A. Bomb found complete with nose in position.

1. Take the necessary safety precautions described for fuze X.

2. Unscrew the fuze very carefully and remove it from the nose of the bomb.



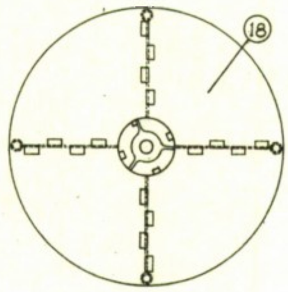
VIEW ON END OF BOMB WITH TAIL REMOVED.

SECTION ON A.A.

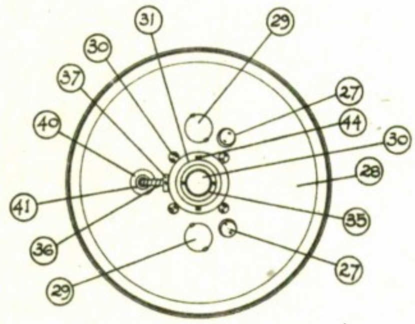
SECTION B.B.

SECTION C.C.

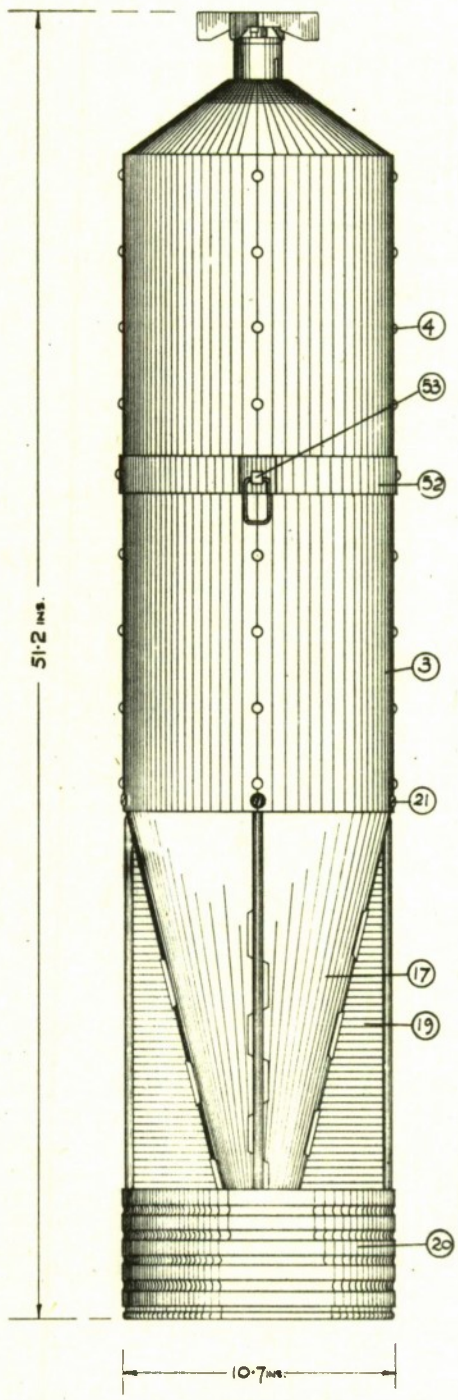
BOMBA 100 sp. e sp. I.



VIEW ON END OF TAIL.



VIEW ON INSIDE OF NOSE.



BOMBA
100 sp. e sp. I.

The bomb is now safe for transport provided it is not subjected to undue jolting. Since the nose is still in position, the fuzes of the small bombs and the tail fuze Z will not have become armed.

B. <u>Nose found complete but detached from bomb.</u>

1. Sever the length of safety fuze (36) attached to the detonator (39) taking care not to interfere with the fuze X.

2. Take the necessary safety precautions described for fuze X.

3. Unscrew the fuze very carefully and remove it from the nose.

4. Unscrew the retaining collar (41) and remove the detonator (39) from the nose.

C. <u>Bomb body found without the nose but with the central bomb still in position and unexploded.</u>

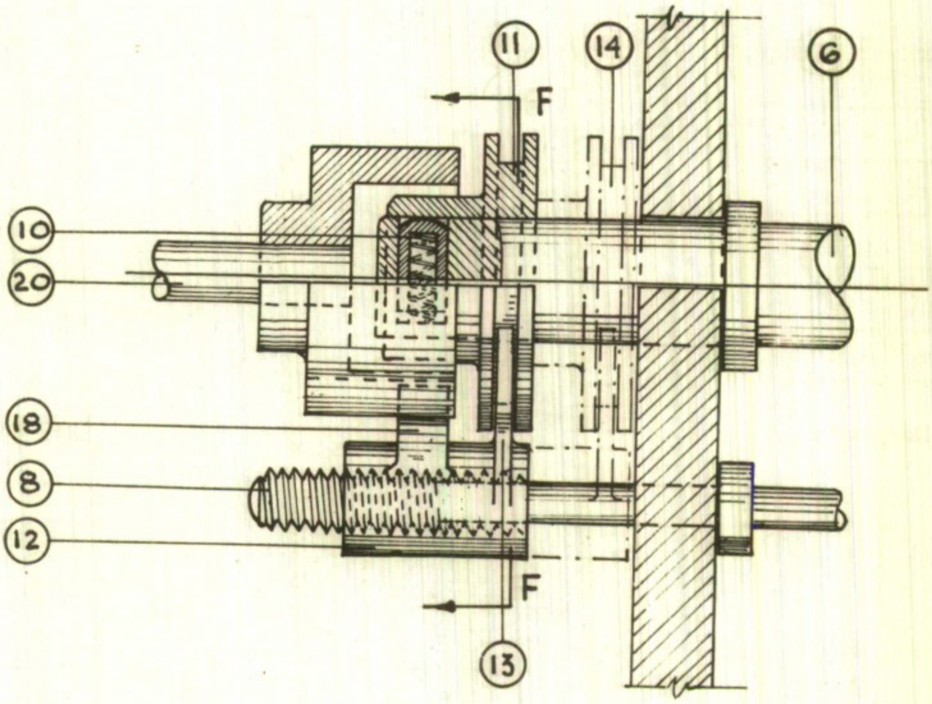
1. Since the tail fuze Z will not be visible, it must be considered armed, and care must be taken not to jolt the bomb.

2. With the bomb on its side, remove the tail by unscrewing or drilling out the retaining screws (21).

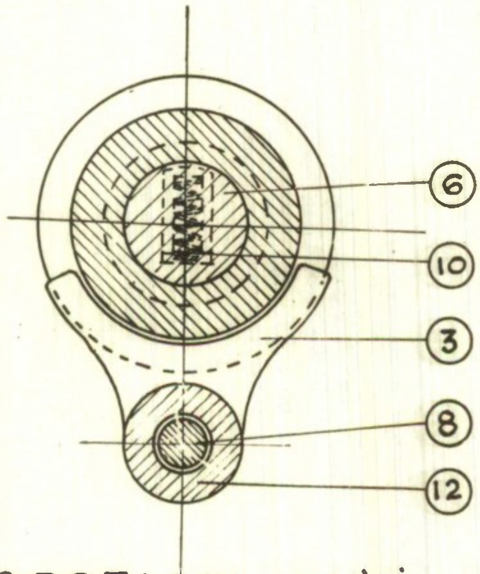
3. Taking great care that the vanes are not rotated and that no longitudinal blow is given to the fuze, unscrew the fuze from the central bomb and withdraw it complete with detonator and gaine.

4. Unscrew the gaine and detonator from the fuze and pack separately.

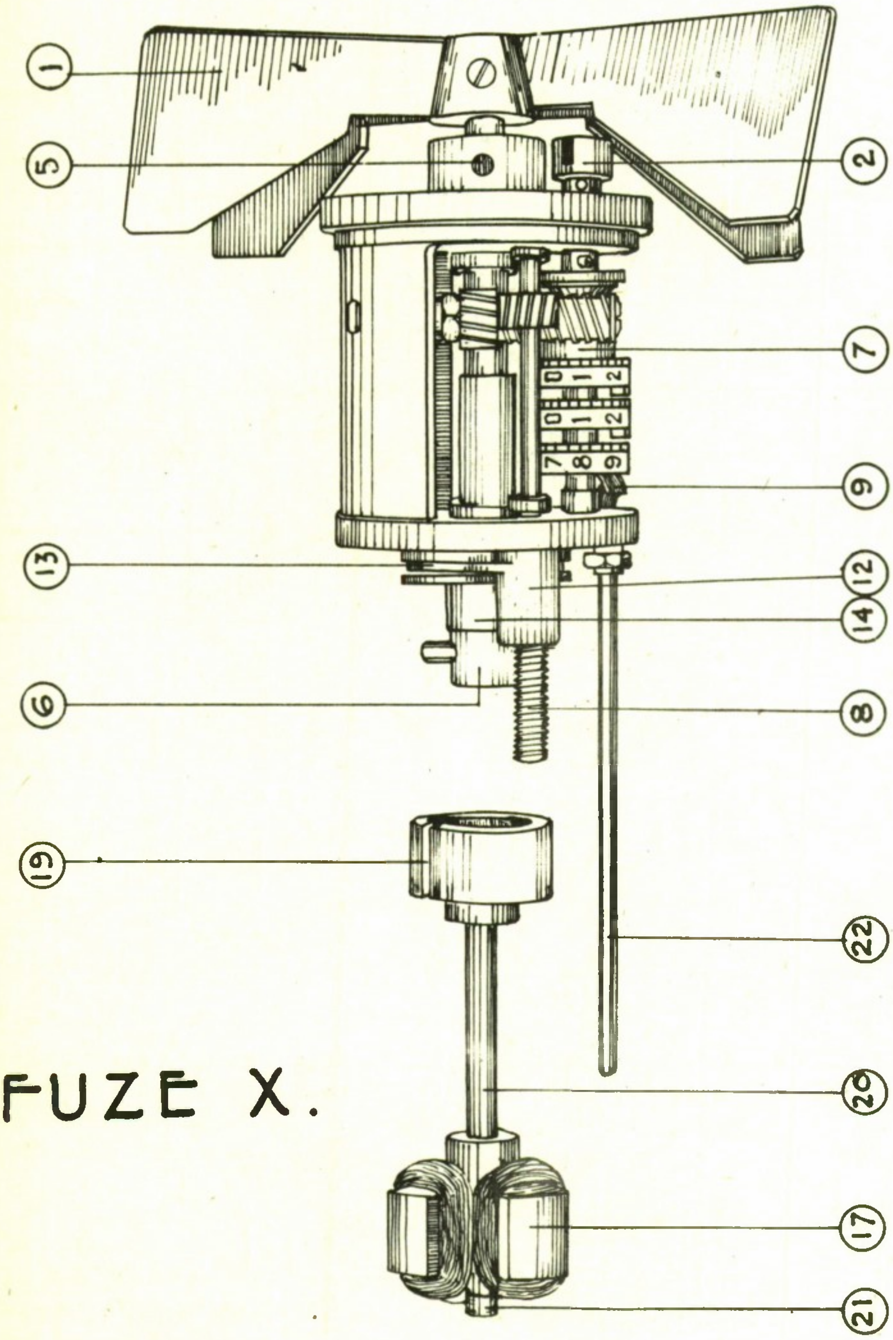
Designation Old Bomba New Bomba 100. sp.		Type Combined Anti-Personnel Bomb and Anti-Personnel Bomb Carrier
1.	O/A Length of Fuzed Bomb.	51.2-ins/1300-mm.
2.	O/A Length less Fuze or Lug.	48.6-ins/1234-mm.
3.	Length of Body less Nose.	25.6-ins/650-mm.
4.	Dia. of Body	10.7-ins/272-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	.03-ins/1-mm.
7.		
8.	Material and construction of bomb body.	Welded sheet steel container with central concentric cylinders the annular space of the latter being filled with concrete and steel pellets.
9.	Suspension System.	Horizontal
10.	Colouring of bomb.	Field Grey.
11.	Markings on bomb.	
12.	Length of central A per bomb Dia. of central A per bomb.	21.5-ins/547-mm. 4.5-ins/115-mm.
13.	Length of Tail.	20.8-ins/530-mm.
14.	Dia. of tail.	10.7-ins/272-mm.
15.	Material of tail.	Sheet Steel.
16.	Colouring of tail.	Field Grey.
17.	Markings on tail.	
18.	Construction of Tail.	Cone of 1-mm. sheet steel to which are welded four stabilising fins with a corrugated strengthening band.
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22.	Total Weight.	113 Kgs.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - Type X (Page 163) Tail - Type Z (Page 167)
26.		



FUZE X.



SECTION AT 'F'



FUZE X.

ITALIAN Designation of fuze.		Our Designation Type X Classification NOSE- VARIABLE SHORT DELAY FOR AIR BURST Markings Nil. Bomb in which employed. 100 sp. 100 sq.I. Parachute Flare (Undesignated).
1.	Colour.	Unpainted Aluminium.
2.	O/A length less gaine. Length of body.	7.25-ins/184-mm. 6.25/ins/159-mm.
3.	Max. spread over vanes.	5.5-ins/140-mm.
4.	Dia. over threads where screwed into bomb.	2.1-ins/52-mm.
5.	Material.	Vanes and Body - Aluminium Spindles - Steel Cogwheels - Brass
6.	Type of Gaine.	Detonator (Electric) Only.
7.		

Description of Fuze.

Four vanes (1) are shaped so as to give clearance for the head of the setting spindle (2). This latter operates the height meter, the object of which is to cause the fuze to function at a predetermined distance below the point at which the bomb is released. The setting of this meter is visible through the inspection hole (3). The clutch inspection window is situated at (4). In the base of the fuze insulated leads connect with a small electric flash.

The height meter and the generator armature are shown removed from the fuze casing. When the safety pin is withdrawn from the hole (5) the vanes can rotate and drive the main spindle (6). Geared to this spindle through a worm drive are the height meter (7), and the spindle (8), the lower portion of which is screw threaded.

As the vanes rotate, two operations are performed:-

(i) The reading on the height meter gradually decreases to the zero setting. At zero the contacts (9) begin to close and the circuit containing the electric detonator is actually completed after 3 or 4 further rotations of the vane.

(ii) The spindle (8) rotates and operates the clutch mechanism for the generator drive.

The clutch mechanism is shown in part section and part elevation.

When the fuze is assembled, the retaining sleeve for the spring lorded pawl (10) is in the (unarmed) position, shown at (11), and the pawl is in the disengaged position. As the spindle (8) rotates, the piece (12) rises and is prevented from rotating by the projection (13) which also serves to raise the pawl-retaining sleeve.

When the pawl-retaining sleeve has moved into the (armed) position (14), the pawl is released and moves outwards to engage in the projection (15) in the clutch

(16) (See view at D). The armature (17) can then rotate directly with the main spindle (6). The lower projection (18) of the piece (12) moves in the vertical slot (19) in the clutch (16) and thus prevents rotation of the armature until the pawl-retaining sleeve has moved into the (armed) position (14).

The delay in the operation of the clutch mechanism therefore provides a definite safety period after the bomb has been released, and at the same time ensures that the vanes have had time to develop sufficient rotational speed before assuming the load required to operate the generator. The release of the pawl (10) actually occurs after a minimum fall of 30 metres.

The Electrical Circuit.

One side of the generator armature is earthed to the fuze body via the armature spindle (20). The other side is connected to the cap (21) which is insulated from the armature spindle but rotates with it. A bearing contact is made with this cap and an insulated lead connects the former with the electric flash. The other insulated lead from the electric flash is connected to the insulated discharge rod (22) which protrudes through the hole (23) in the generator housing. The rod is connected to one of the contacts (9) while the other contact which is attached to the 'thousand-metre' drum of the height meter completes the circuit to earth.

Handling.

At the zero reading the contacts have just not closed, and a few further rotations of the vanes change the meter reading to 9990 and complete the circuit. But since the moveable contact is attached to the 'thousand-metre' drum, it is possible for the other two drums to rotate until they are about to operate the 'thousand-metre' drum, which would then produce a reading of 8990. This reading, is in fact, never indicated, since the contacts 'jam' and hold up the rotation of the 'thousand-metre' drum. In actual tests it has been shown that the contacts are closed at all readings between 9990 and 9000. Thus, if any reading between these limits is indicated on the meter, the circuit has closed, but the mechanism has failed to function the detonator. For other readings it is probabl that the circuit has not been made.

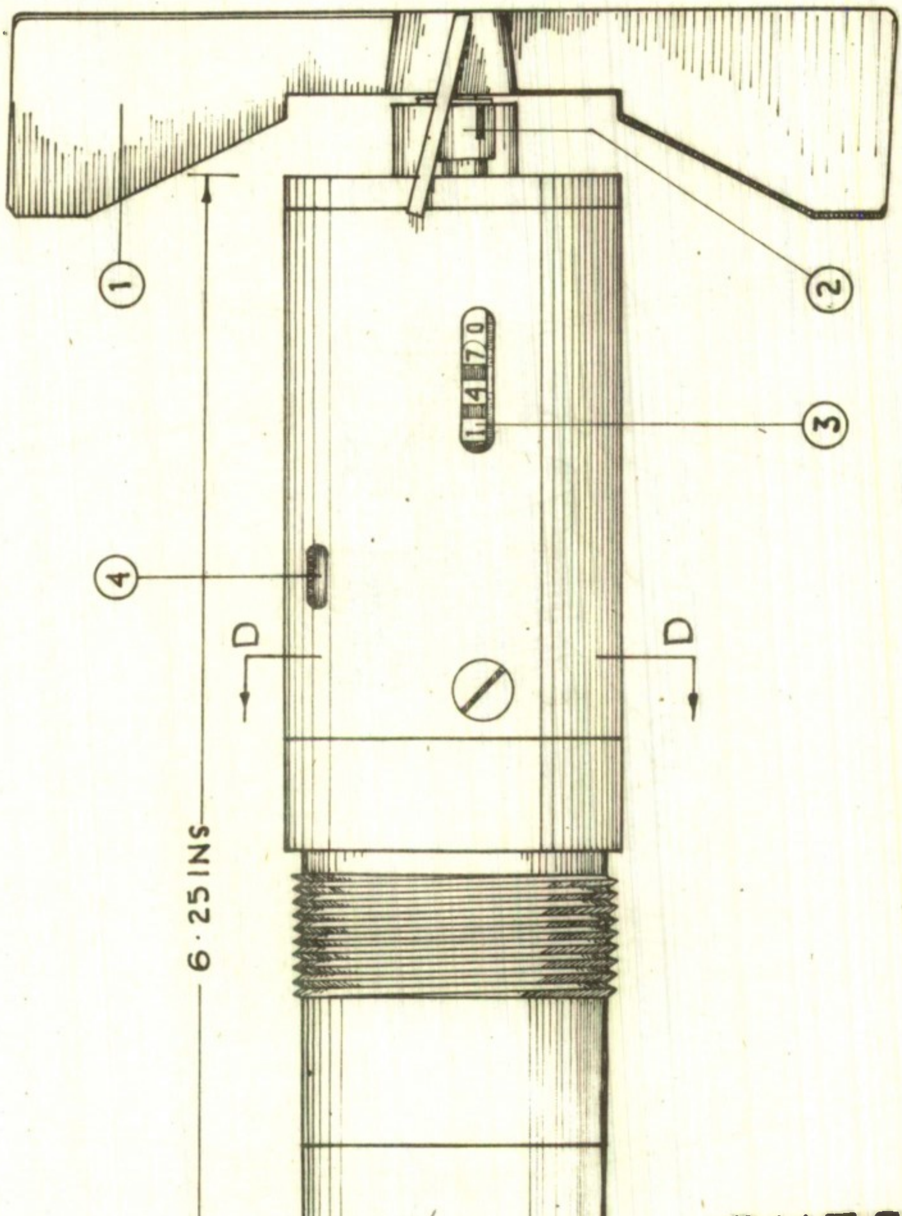
In no case, however, should the vanes be allowed to rotate. They should be secured by means of a pin or nail inserted at (5) or by tying down the vanes with string.

For handling this fuze in an U.X.B. see details under bomb concerned.

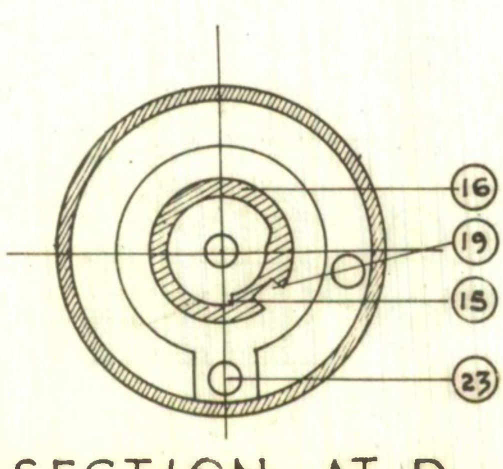
Parachute Flare - Undesignated Page 93

Bomba 100 sp.T. Page 151

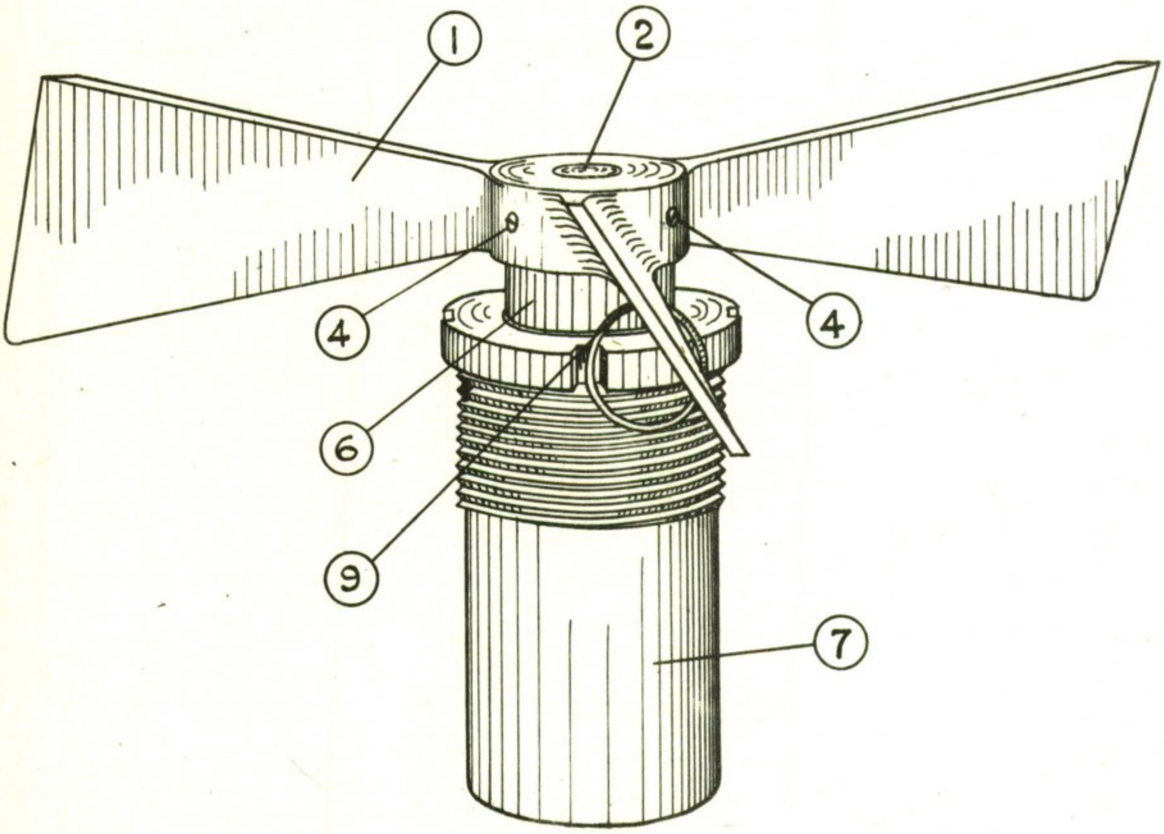
Bomba 100 sp. Page 156

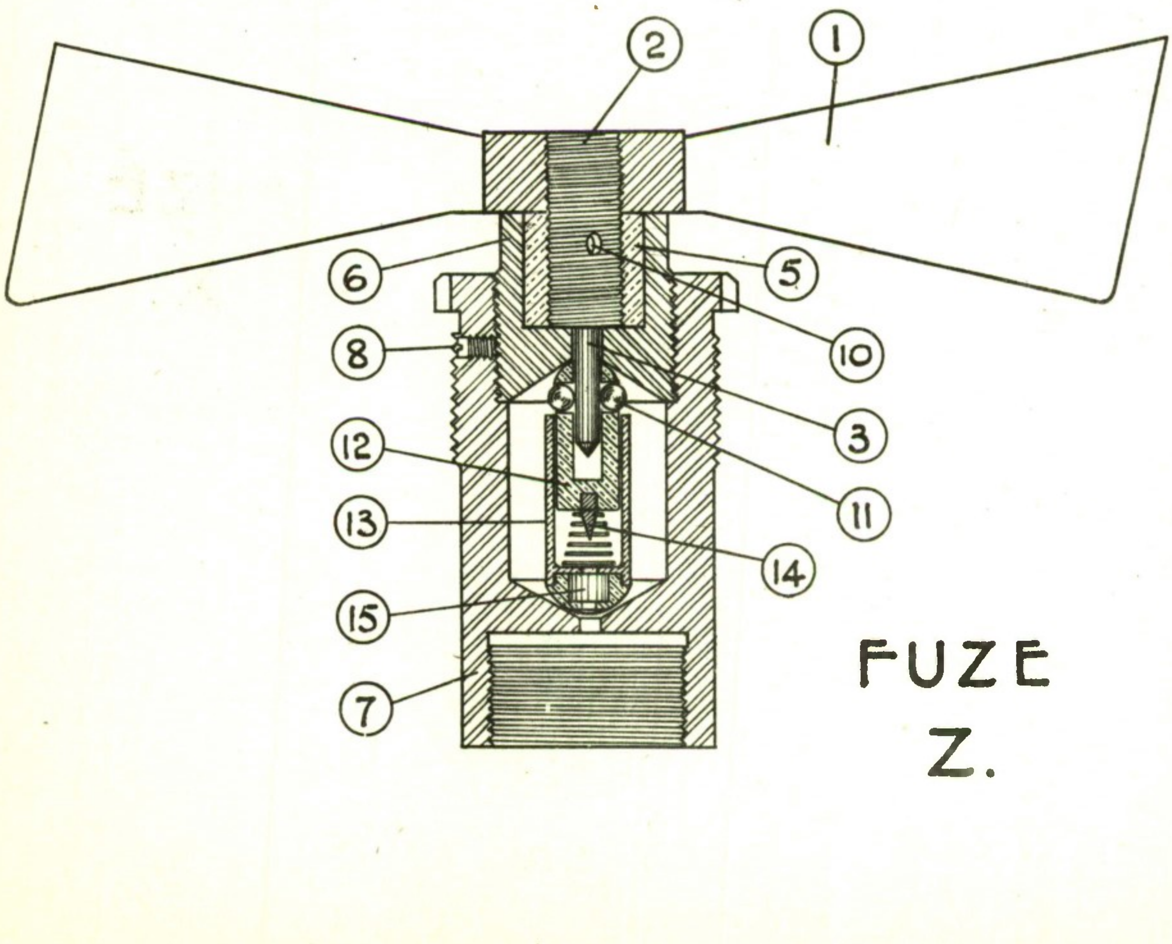


FUZE X.



SECTION AT D.





FUZE
Z.

ITALIAN Designation of fuze.		Our Designation Type Z Classification Tail Mech. Impact. Markings NIL. Bomb in which employed 100 Sp. 100 Sp.I.
1.	Colour	Unpainted aluminium.
2.	O/A Length less gaine.	3.85-ins/98-mm.
3.	Max. spread over vanes.	8.4-ins/213-mm.
4.	Dia. over threads where screwed into bomb.	1.7-ins/43-mm.
5.	Material.	Striker body) Cap holder) Arming rod) Bush) - Brass Main body) Vanes) - Aluminium
6.	Type of Gaine.	Long Gaine Type I
7.		

Description of Fuze.

The vanes (1) are secured to the top of the screw-threaded portion (2) of the brass withdrawal rod (3) by means of two set screws (4). The remainder of (2) screws into the brass bush (5) which is pressed into the aluminium holder (6). This latter screws into the fuze body (7) and is retained by the set screw (8).

After the fuze has been screwed into the bomb, the safety pin (9) is withdrawn from the hole (10) and the vanes are prevented from rotating by a spring loaded stop situated in the base of the bomb. When the nose fuze has functioned, the 2 Kg bombs are ejected and the spring loaded stop is released. The vanes then rotate and and rise above the fuze head. When 0.6 inches of screw thread are visible the fuze is fully armed and the arming rod (3) has been withdrawn sufficiently to allow the two steel locking balls (11) to move inwards. The striker (12) is then no longer locked with respect to the cap holder (13) and on impact is free to compress the light creep spring (14) and fire the cap (15). The interior of the body of the fuze is so shaped that the cap holder and striker may ride up the coned surfaces and approach one another, whatever may be the angle at which the bomb strikes its target.

Handling

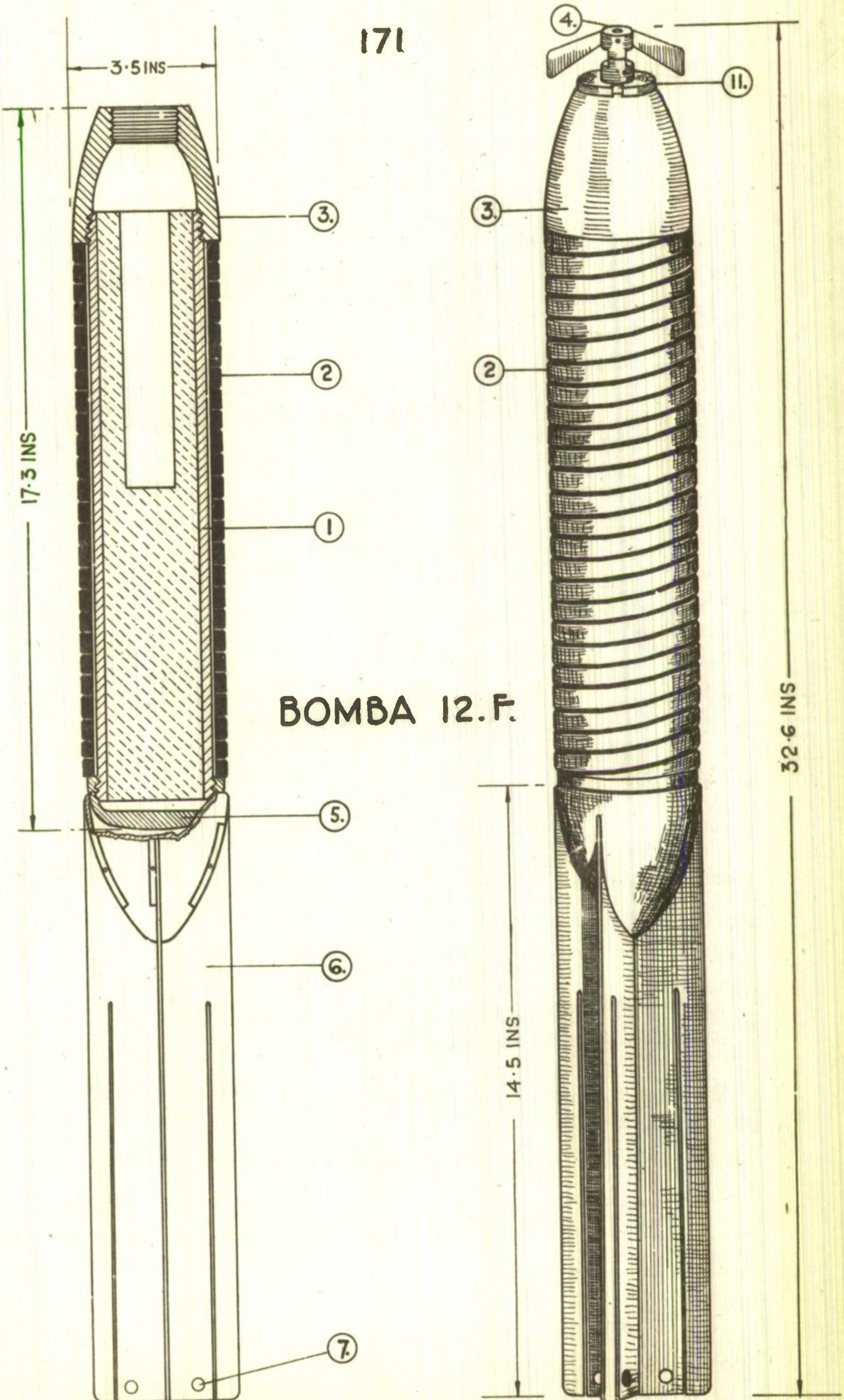
See details under discription of bomb (Page 156).

BOMBA 12 F

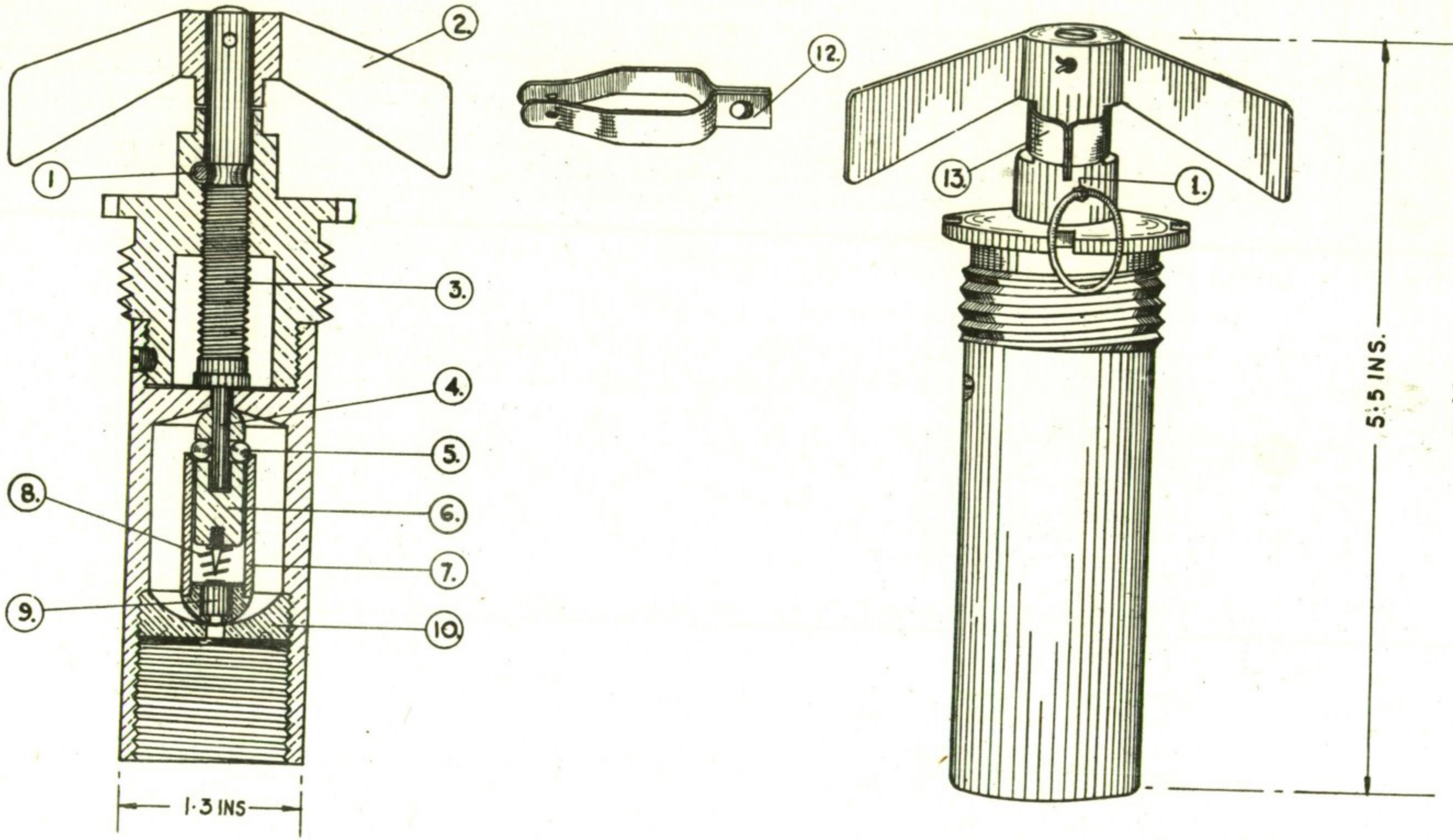
This anti-personnel bomb consists of a thin steel cylinder (1) 13.2-inches long, on the outside of which is wound strip steel (2) which breaks up into short lengtns on detonation. One end of this cylinder is screwed to take the heavy nose piece (3) into which the fuze (4) is fitted. The other end of the cylinder takes the screwed base cap (5) and to this latter the thin sheet iron tail (6) is attached by pressing into a groove in the cap. In two opposite fins of the tail at the outer end is a small hole (7) through which a loop of wire passes for vertical suspension in the aircraft.

The bomb is filled pressed T.N.T. 1.9 Kg.

Designation Old Bomba da kg 12 New Bomba 12 F		Type Anti-personnel Fragmentation Bomb
1.	O/A Length of Fuzed Bomb.	32.6-ins/827-mm.
2.	O/A Length less Fuze or Lug	31.0-ins/787-mm.
3.	Length of Body.	17.3-ins/440-mm.
4.	Dia. of Body.	3.5-ins/90-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	0.35-ins/9-mm.
7.		
8.	Material and construction of bomb body.	25 turns steel strip 0.2 ins/5-mm. thick wound on steel container 0.15-ins/4-mm. thick.
9.	Suspension System.	Vertical from tail Horizontal.
10.	Colouring of bomb.	Nose - Bright red. Body - Sky blue.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	14.5-ins/368-mm.
14.	Dia. of tail.	3.5-ins/90-mm.
15.	Material of tail.	Sheet Iron.
16.	Colouring of tail.	Sky blue.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	4 fins welded to hollow sheet metal dome.
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	1.8-Kg.
22.	Total Weight.	12.2 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - F (Page 173) F1 (Page 177)
26.		


3·5 INS
17·3 INS
3.
2
1
5.
6.
7.
3·5 INS.
BOMBA 12.F.
4.
11.
3.
2
14·5 INS
32·6 INS

FUZE .F.



ITALIAN Designation of fuze. Spoletta per Bomba 12.F		Our Designation Fuze F Classification Nose - Mech impact. Markings. Manufacturers stamp SRCM Bomb in which employed 12 F
1.	Colour	Unpainted Brass
2.	O/A length less gaine.	5.5-ins/140-mm.
3.	Max. spread over vanes.	3.2-ins/81-mm.
4.	Dia. over threads where screwed into bomb.	1.6-ins/41-mm.
5.	Material.	Brass.
6.	Type of Gaine.	Short gaine Type 2.
7.		

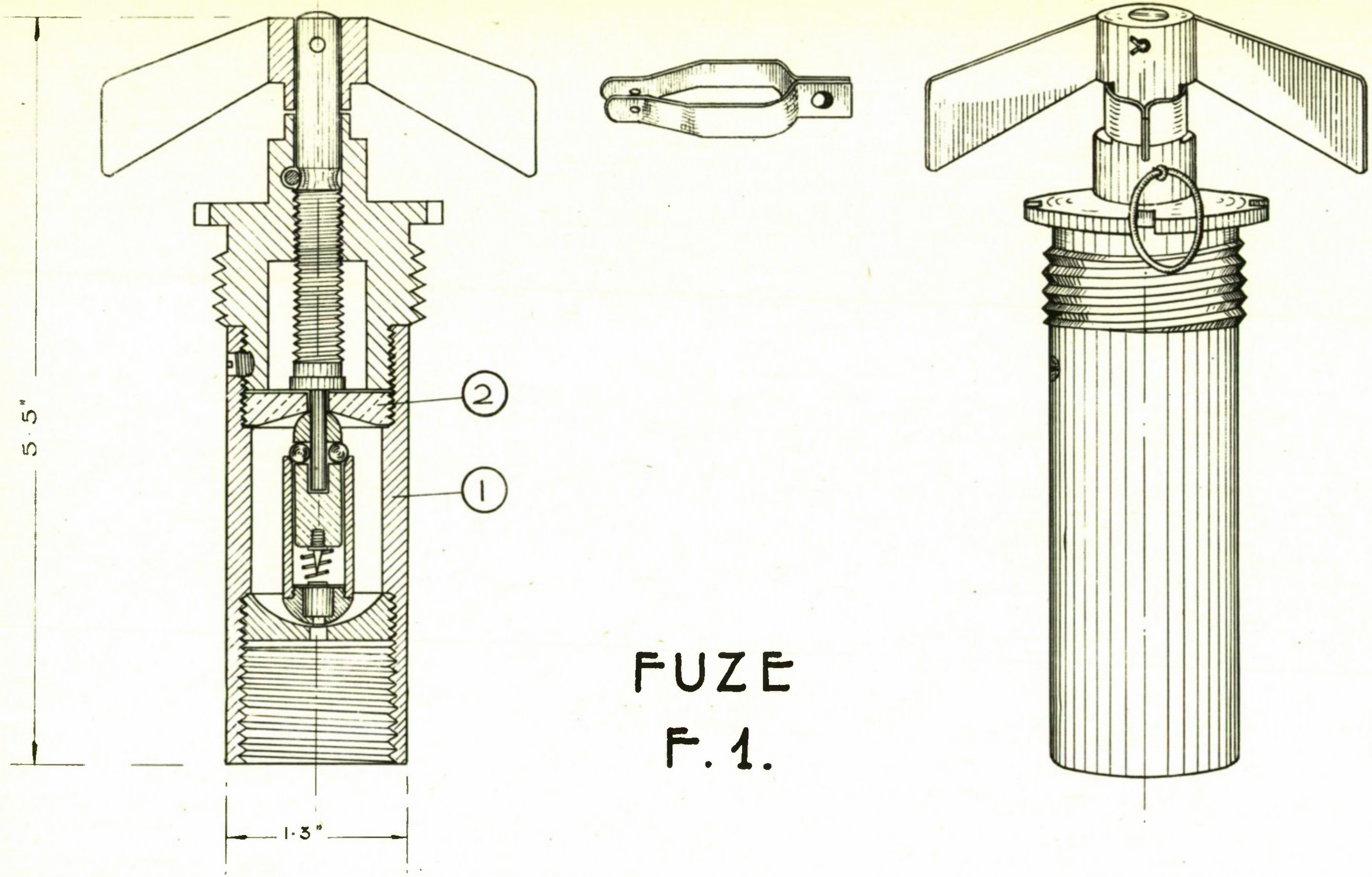
Description of Fuze.

On withdrawing the safety pin (1) the vane is free to rotate. The rotation of the vane (2), and the screw (3) to which it is pinned, withdraws the safety rod (4). After the screw has withdrawn 0.4-ins. the fuze is armed. The steel balls (5) move inwards and the striker (6) on impact can move down the sleeve (7) against the creep spring (8) and ignite the cap (9). This fuze is sensitive, as the lower end of the sleeve is spherical and rests on the curved upper face of the plug (10). The clip (12) which immobilises the vanes fits over the head of the fuze and the base of the vane hub as shown at (13).

Handling the fuzed bomb.

This fuze is very sensitive to shock, as the curved surfaces of sleeves and striker may ride on the curved faces of the fuze body and the plug.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully unscrew the fuze and remove it complete with detonator and gaine.
(e) Unscrew both the detonator and gaine from the fuze and pack them separately.



FUZE
F. 1.

ITALIAN Designation of Fuze.		Our Designation F1
		Classification Nose - Mechanical Impact
		Markings.
		Bomb in which employed 12.F
1.	Colour.	Unpainted brass
2.	O/A length less gaine.	5.5-ins/140-mm.
3.	Max. spread over vanes.	3.2-ins/81.mm.
4.	Dia. over threads where screwed into bomb.	1.6-ins/41-mm.
5.	Materials.	Brass.
6.	Type of gaine.	Short gaine Type 2
7.		

Description of Fuze.

This fuze differs from fuze F only in the following detail. The fuze body (1) consists of an open cylinder closed at the outer end by a screwed plug (2). In the fuze F this assembly is cast in one piece.

Handling the fuzed Bomb

This fuze is very sensitive to shock, as the curved surfaces of sleeves and striker may ride on the curved faces of the fuze body and the plug.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully unscrew the fuze and remove it complete with detonator and gaine.
(e) Unscrew both the detonator and gaine from the fuze and pack them separately.

BOMBA da Kg.12

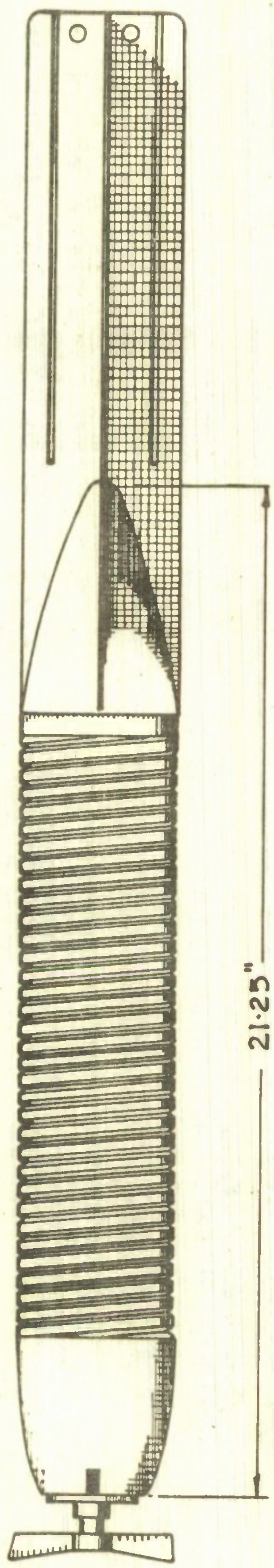
This anti-personnel bomb, the title of which contains no designation letter. is thought to be an older type than the 12 F and 12 Mtr. All three bombs have approximately the same dimensions.

The 12 Kg bomb has a thick steel wall which is deeply grooved spirally to assist fragmentation.

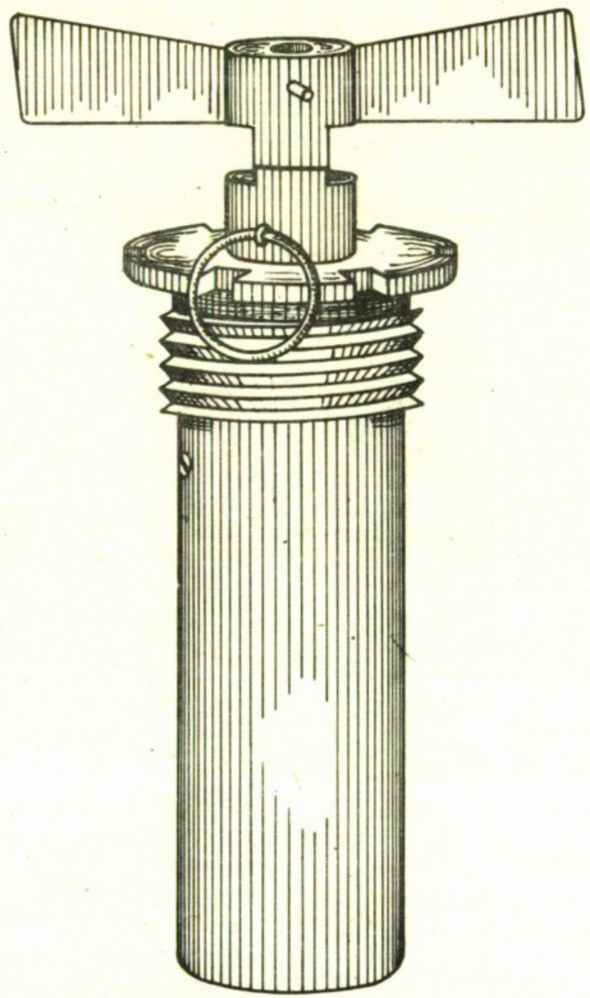
The TNT filling is cast in a sheet zinc container which has a central cavity to accomodate a short gaine and a paper wrapped cartridge of a Mitrobenzene explosive mixture (See page 182).

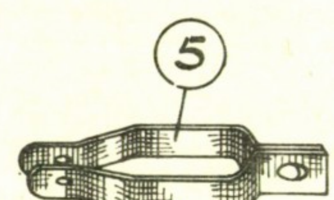
Designation.	Type
Old Bomba New Bomba da Kg. 12	Anti-personnel Fragmentation Bomb.

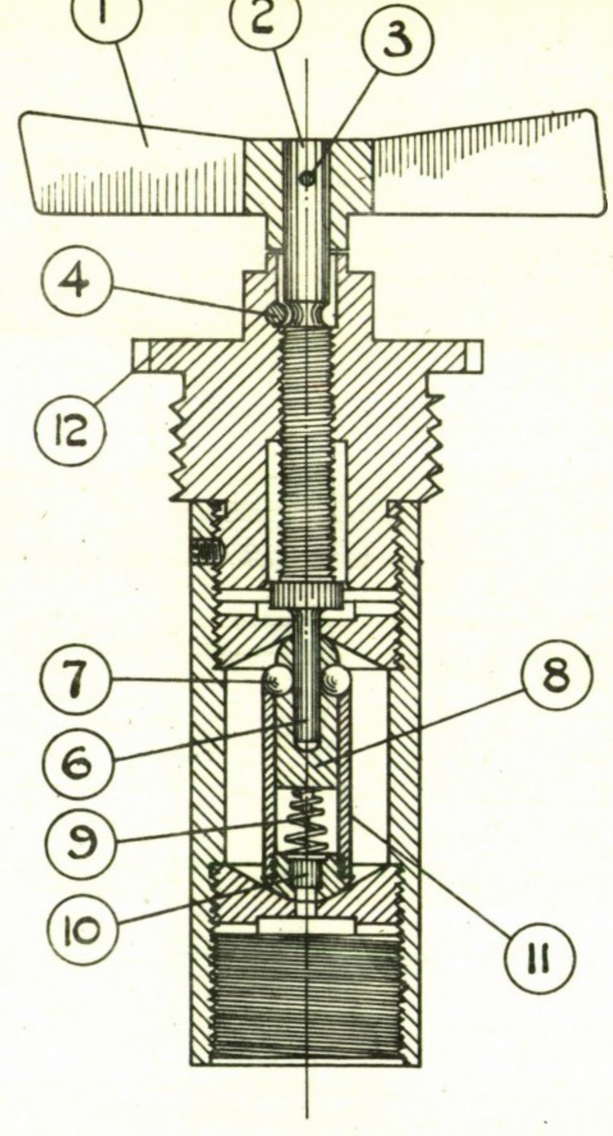
1.	O/A Length of Fuzed Bomb.	32.7-ins/831-mm.
2.	O/A Length less Fuze or Lug.	31-1-ins./791-mm.
3.	Length of Body.	17.0-ins/433-mm.
4.	Dia. of Body.	3.5-ins/90-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	0.4-ins/10-mm.
7.		
8.	Material and construction of bomb body.	Thick steel body with a deep spiral groove.
9.	Suspension System	Vertical from tail.
10.	Colouring of bomb.	
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	14.2-ins/320-mm.
14.	Dia. of tail.	3.5-ins/90-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	
17.	Markings on tail.	Nil.
18.	Construction of Tail.	4-fins welded to hollow sheet sheet metal dome.
19.		
20.	Nature of filling.	TNT plug Nitro-benzene Mixture.
21.	Weight of filling.	
22.	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt.Ratio.	
25.	Fuze - our designation.	Nose - Type W (Page 183)
26.		



BOMBA da Kg. 12.







FUZE
W.

ITALIAN Designation of Fuze. Spoletta Per Bomba da Kg. 12.		Our Designation Type W Classification Nose - Mech. Impact. Markings. Nil. Bomb in which employed Bomba da Kg. 12
1.	Colour	Unpainted Brass
2.	O/A length less gaine.	5.7-ins/144-mm.
3.	Max. spread over vanes.	3.5-ins/89-mm.
4.	Dia. over threads where screwed into bomb.	1.65-ins/41-mm.
5.	Materials.	Brass.
6.	Type of gaine.	Short Gaine Type 2.
7.		

Description of Fuze.

Except for the variation in the shape of the vanes, the larger diameter of the flange (12) and the slightly longer length of body, this fuze resembles fuze type F. It is used in the 12 Kg. anti-personnel bomb in which the thick steel wall is deeply cut in spiral grooves to assist fragmentation. This bomb is a variation of the 12 F bomb.

The vanes (1) are secured to the spindle (2) by the pin (3). The safety pin is inserted at (4), and when in position, prevents the screwed portion of the spindle from rising. The secondary safety device is shown at (5). It is a clip which fits partly over the vane hub and partly over the top of the fuze body, both of which are cut to receive it. The clip is removed before the safety pin is withdrawn.

When the vanes rotate during the fall of the bomb, the spindle (2) unscrews and withdraws the arming rod (6). At the same time the vanes rise beyond the head of the fuze. After the arming rod has withdrawn approximately half an inch, the fuze is armed because the steel balls (7) can then move inwards and free the striker. Both the striker and the cap holder thus become free to move but are kept apart until impact by the creep spring (9). The dome-shaped surfaces at the ends of the striker cavity ensure that however the bomb may fall, the cap holder (11) carrying the cap (10) and the striker (8) shall approach one another and so initiate the detonation of the bomb.

Handling the fuzed bomb.

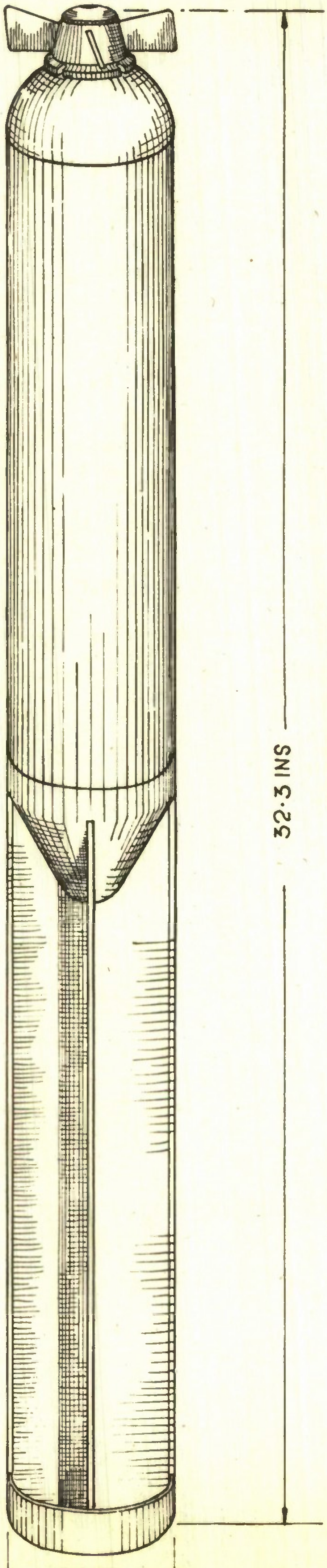
This fuze is very sensitive to shock, as the curves surfaces of sleeves and striker may ride on the curved faces of the fuze body and the plug.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully unscrew the fuze and remove it complete with detonator and gaine.
(e) Unscrew both the detonator and gaine from the fuze and pack them separately.

BOMBA 12 Mtr.

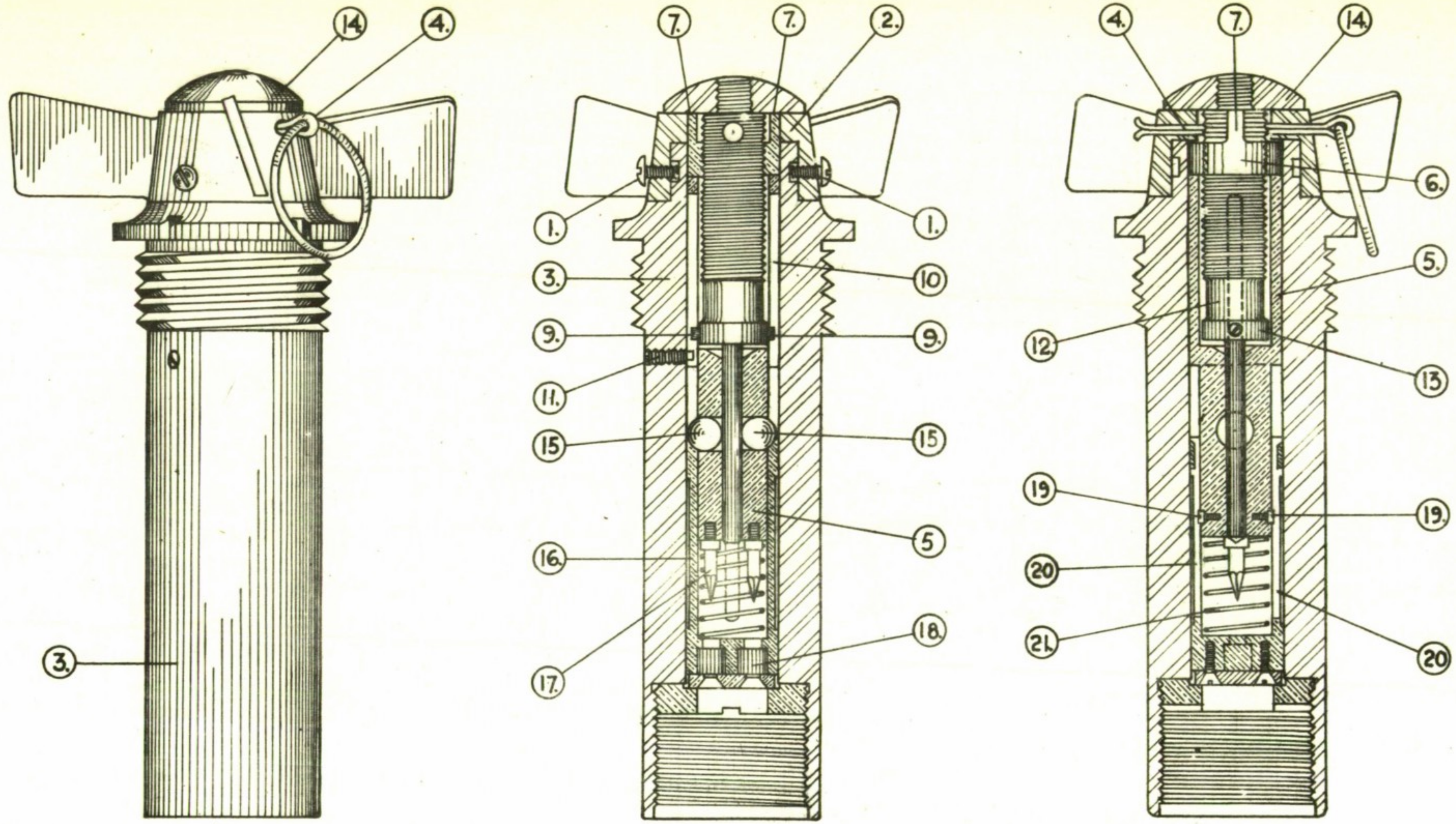
This anti-personnel bomb is made up of two concentric cylinders. The inner one containe the H.E. charge. In the annular space between the two cylinders are found steel pellets embedded in concrete. The tail is similar to that of the 12 F the four fins being apot welded on to the short central dome. It differs from the 12 F bomb in having a strengthening band round the extremity of the tail.

Designation Old Bomba New Bomba 12 Mtr.		Type Anti-personnel
1.	O/A Length of Fuzed Bomb.	32.3-ins/820-mm.
2.	O/A Length less Fuze or Lug.	31.0-ins/788-mm.
3.	Length of Body..	15.7-ins/400-mm.
4.	Dia. of Body.	3.5-ins/90-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Cylinders drawn steel; steel pellets in concrete.
9.	Suspension System.	Horizontal.
10.	Colouring of bomb.	Body: Black.
11.	Marking on bomb.	Amatolo
12.		
13.	Length of Tail.	16.5-ins/420-mm.
14.	Dia. of tail.	3.5-ins/90-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Black
17.	Markings on Tail.	Nil.
18.	Construction of Tail.	4 Fins welded to hollow sheet metaldome with strengthening band welded in position around outer extremities of fins.
19.		
20.	Nature of filling.	Amatol.
21.	Weight of filling.	
22.	Total Weight.	11.6 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - R (Page 189)
26.		



BOMBA

12 Mtr.



FUZE. R.

ITALIAN Designation of Fuze. Spoletta Per Bomba 12 Mtr.		Our Designation R Classification. Nose - Mech. Impact. Markings. Nil. Bomb in which employed. 12 Mtr.
1.	Colour.	Unpainted aluminium.
2.	O/A length less gaine.	5.85-ins/149-mm.
3.	Max. spread over vanes.	3.5-ins/89-mm.
4.	Dia. over threads where screwed into bomb.	1.6-ins/40-mm.
5.	Materials.	Striker Mechanism - Brass. Body and Vanes - Aluminium Alloy.
6.	Type of gaine.	Short gaine Type 2.
7.		

Description of the Fuze.

The set screws (1) pass through the vane hub (2) into a groove in the head of the fuze body (3) and the vanes are thus free to rotate without rising, when the safety pin (4) is withdrawn. Situated between the top of the striker (5) and the vane hub (2) is a screw-threaded collar (6). Two projections (7) on this collar engage loosely in slots in the vane hub (2) and when the latter rotates during the fall of the bomb the collar rotates with it, thus causing the withdrawal rod (8) to rise. Rotation of the withdrawal rod is prevented by the two set screws (9) which project into longitudinal grooves (10) in the upper portion of the striker (5). This latter is in turn prevented from rotating in the fuze body by means of the set screw (11) which also projects into one of the grooves (10).

The withdrawal rod (8) rises in the collar (6) until the unthreaded portion (12) lies within the collar but it cannot fall away because of the flange (13). When 0.9-ins of screw-thread are visible between the cap (14) and the vane hub (2), the fuze is fully armed and the steel balls (15) can then move inwards and thus free the striker (5) and the capholder (16). The striker needles (17) are located with respect to the caps (18) by the two set screws (19) moving in the slots (20). On impact the withdrawal rod (8) serves as a 'ramrod' to force the collar (6) against the striker (5) and so cause the latter to compress the creep spring (21) and fire the caps (18).

Note:- Two sections of the fuze, taken at right angles to one another, are given in order to show the relative positions of the various locating screws.

Handling of Fuzed Bomb.

If about one inch of screw-thread is visible between the cap (14) and the vane hub (2), the fuze is fully armed but has not functioned. The screw should be bound to prevent longitudinal movement and the bomb should only be moved in the horizontal position.

If less than ¾-inch thread is showing the fuze may have assumed a dangerous condition in which the fully armed striker has been depressed to pierce the caps without firing them. In this condition the striker should be bound to prevent any movement before the bomb is defuzed.

To Defuze the bomb.

(a) Observe any visual indications of arming.

(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.

(c) Bind the spindle to prevent longitudinal movement.

(d) Ensure that the vanes are not rotated.

(e) Carefully unscrew the fuze and remove it from the bomb complete with detonator and gaine.

(f) Remove both the detonator and the gaine from the fuze and pack separately.

BOMBA 4 A.R.

This bomb is essentially an anti-handling and anti-vibration device designed by virtue of its delayed arming and comparative sensitivity to impose delay, when used, against airfields, landing grounds, communications or otherwise where vehicles are likely to frequent.

The bomb consists of a steel cylinder screwed into one end of which is a heavy brass or aluminium fuze which is covered prior to arming by an aluminium cap, giving the complete assembly an appearance which has resulted in its familiar name of 'Thermos' bomb.

Release is effected from a container and there is no tail.

The safety pin (1) passes through one of the vanes on the vaned cap (2) and into a slot (3) in the aluminium cup (4). This pin is removed before the bomb is dropped, thus allowing the vanes to rotate. The cup (4) has three projections (5) formed by cutting the metal and bending the tab outwards. These assist the removal of the cup during the fall of the bomb.

The bomb body is made of steel 1/8-in. thick and is painted buff (or green) to make it inconspicuous on the ground.

The sensitive Manzolini fuze screws into the bomb at (6). It is protected by the aluminium cup (4) which is retained by the vaned cap (2). This latter screws into the brass adaptor (7) in the fuze cover (8). The two projections (9) on the outer face of (8) project through corresponding holes in the cup (4) and prevent the latter from rotating as the vaned cap unscrews during the fall of the bomb.

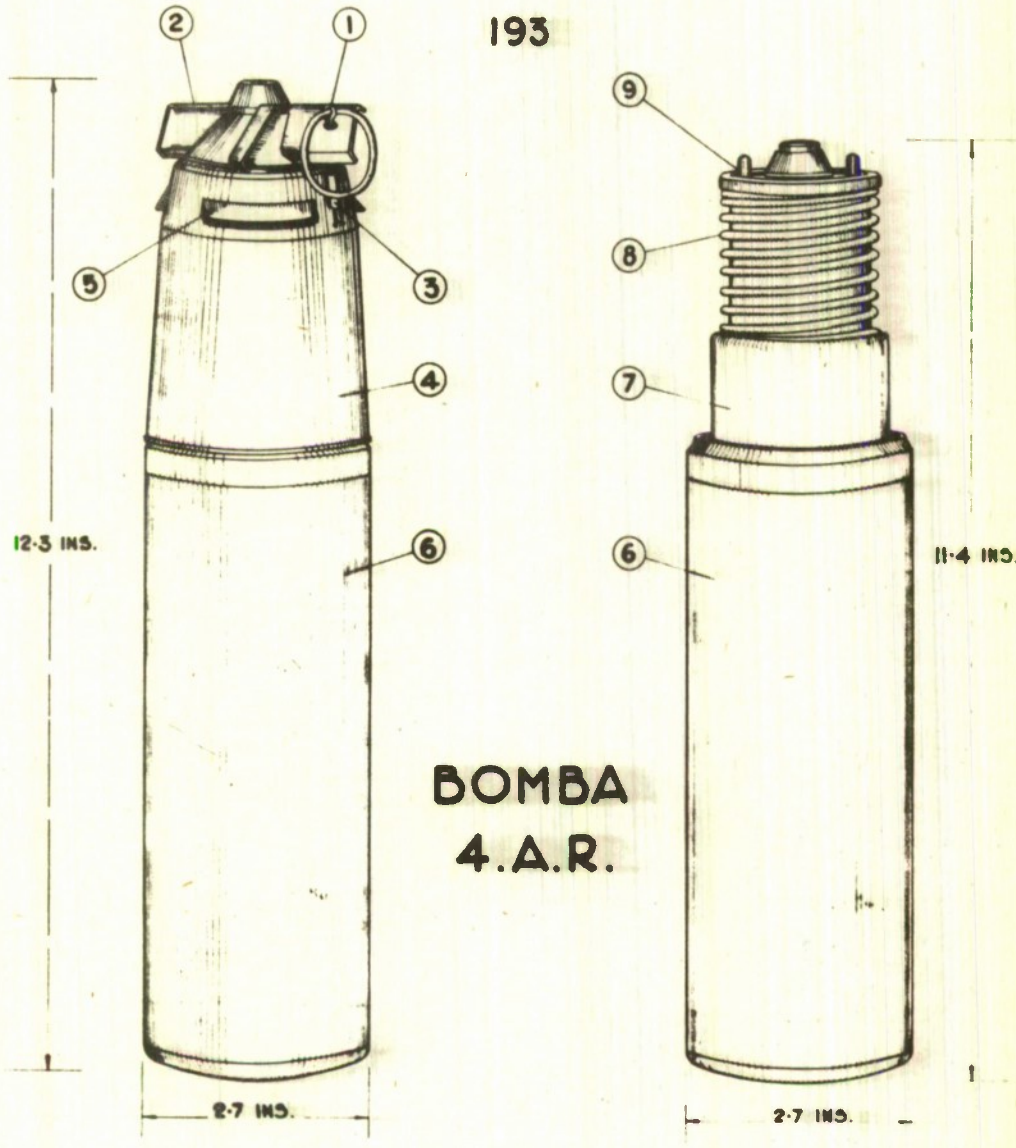
When the vaned cap has become unscrewed and has fallen away, the cup is released and is forced off the fuze mainly by the rush of air acting on the projections (5) but also assisted by the light helical spring and by the pressure of the strips (10) and (11) within the cup. Each of the three strips (10) has a brass claw (12) which passes through one of the three equally spaced holes (13) in the body (14) and holds the collar (15) in the position shown. Over the strips (10) clip the smaller strips (11), the lower ends of which rest in the groove (16). The strong spring (17) in depressing the collar (18) presses out the brass claws (12) so that the strips (10) would bear hard against the cup, producing a pressure normal to the surface of the latter. The shorter strips (11) with their fulcrums in the groove (16) alter the angle at which the pressure is applied to the surface of the cup, and transfer the pressure nearer to the head of the cup and hence reduce it. After the cup has been forced off the pressure of the strong spring (17) on the steel collar (18) acting on the curved surfaces of the claws (12) ejects them completely and the strips (10) and (11) fall away. The steel collar (18) then sets down and is pressed hard against the rubber rings (19) and (20) completely masking the holes (13) and thus protecting the interior of the fuze against the entry of water or grit which might interfere with its sensitiveness and this is the usual appearance of the bomb when found lying on the ground.

Certain of these bombs are fitted with a modification to the fuze which results in self-detonation after a period in the region of 80 hours.

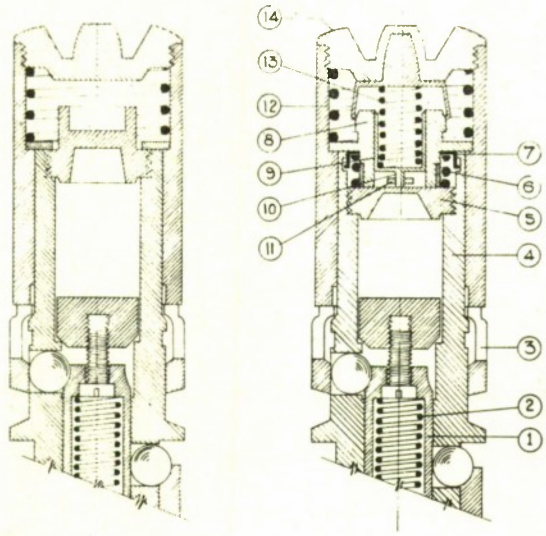
(Continuation under Fuze details Page 195)

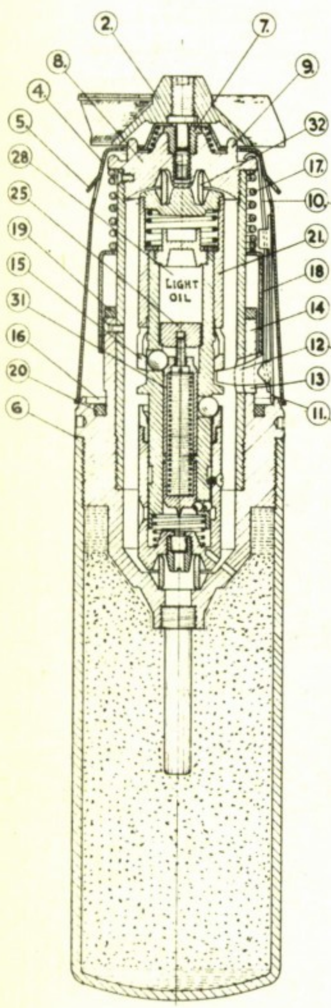
Designation	Type
Old Bomba New Bomba 4 A.R.	Anti-handling and Anti-vibration

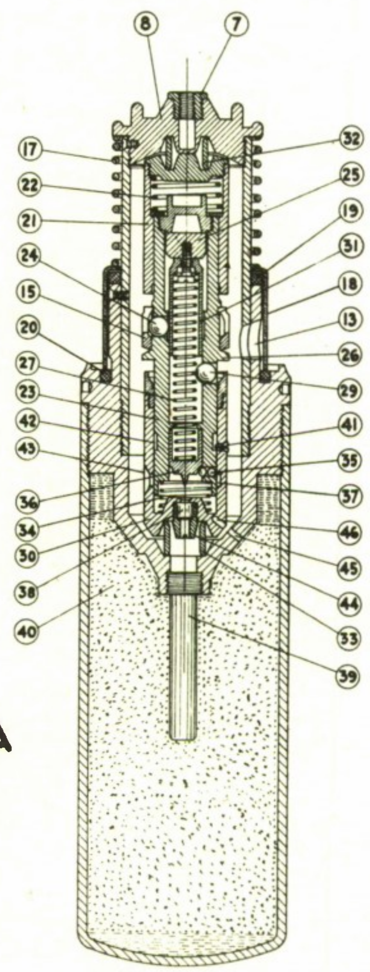
1.	O/A Length of Fuzed Bomb.	12.3-ins/320-mm.
2.	O/A Length less Fuze or Lug.	7.3-ins/185-mm.
3.	Length of Body.	7.3-ins/185-mm.
4.	Dia. of Body.	2.7-ins/67-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	.12-ins/3.2-mm.
7.		
8.	Material and construction of bomb body.	Steel cylinder.
9.	Suspension System.	Nil - dropped from containers.
10.	Colouring of bomb.	Green or Buff.
11.	Markings on bomb.	Nil.
12.	Note.	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	0.6 Kg.
22.	Total Weight.	3.9 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	15.2%
25.	Fuze - our designation.	Manzolini
26.		



BOMBA
4.A.R.







BOMBA
4.A.R.

ITALIAN Designation of fuze. Manzolini.		Our Designation Thermos.
		Classification. Mech - Delayed Arming.
		Markings.
		Bomb in which employed 4 A.R.
1.	Colour.	Unpainted Brass or Aluminium.
2.	O/A length less gaine.	7.21-ins/104-mm.
3.	Max. spread over vanes.	2 .7-ins/70-mm.
4.	Dia. over threads where screwed into bomb.	2.58-ins/65-mm.
5.	Material.	Body made of brass or aluminium Arming collar and spring - Steel. Internal mechanism - Brass External Cap and Vanes - Aluminium.
6.	Type of Gaine.	Nil - Detonator screws into base.
7.		

When the bomb strikes the ground the brass cup-shaped piece (21) and the inertia collar (15) set down. The former is cushioned by the spring (22) while the latter is slit in six places round the upper edge to allow it to move over the slight ridge on the cylinder (23). The three steel balls (24) which are equally spaced circumferentially, can then move outwards and free the piston (25). The downward movement of the collar (15) is limited by the shoulder (26). Under the action of the strong striker spring (27) the piston rises into the chamber (28) which is filled with light oil. This latter slowly escapes between the walls of the cylinder and the piston head, and so regulates the time of arming of the fuze. The arming delay thus obtained enables the bomb to come to rest before the fuze becomes completely armed. Rifle oil gives a delay period of 10 seconds. Until the piston (25) has moved outwards, the three equally spaced steel balls (29) prevent relative motion of the two cylinders (23) and (30). When, however, the piston has moved its full travel carrying with it the skirt (31), the steel balls are free to move inwards and the cylinders (23) and (30) can then move relative to one another. The fuze is then fully armed as shown.

The fuze mechanism is supported within the fuze body by two steel collars (32) and (33). These allow a lateral movement of the mechanism within the body, which results in the cylinders (23) and (30) approaching one another. Thus any jerk or jar that will overcome the weak spring (34) will cause the cylinders to approach one another longitudinally. The three pairs of small steel balls (35) which are equally spaced circumferentially and hold the striker head (36) can then escape into the annular groove (37) and the fuze will function by the firing of the cap (38). This latter will initiate the detonator (39) which projects into the main filling (40) of the bomb. In order to facilitate the assembly of the fuze mechanism, the spring (34) is prevented from ejecting the cylinder (23) from the cylinder (30) and thus allowing the steel balls (29) to move outwards and fall away, by means of the set screw (41) which protrudes into the annular groove (42). The hole (43) which connects with the annular groove (37) facilitates the insertion of the three pairs of steel balls (35). The cap (38) is not inserted in the cap holder (44) until the fuze has been completely assembled. In order to prevent rotation of the cylinder (30) during the operation of unscrewing and screwing back the cap holder, a spike is introduced through the hole (45) into the recess (46).

A modified model of this fuze has been recovered incorporating a device which will cause detonation to occur after the lapse of a certain period if the bomb has not already been detonated due to vibration or interference.

In this model,

(a) The piston (1) is 0.6 cm. shorter than in the older design.
(b) The piston travel in the oil chamber is 0.6 cm. shorter.
(c) The striker spring (2) is 2.0 cm. shorter
(d) The inertia collar (3) is slit in ten places instead of six.

The old and the newer design of the head of the fuze are reproduced side by side in the box.

The cylinder (4), which contains the oil, retains the same overall dimensions but the closing plug (5) has been modified in shape and screws down inside this cylinder. Above this is the helical spring (6) retained by a brass split ring (7) pressed into position.

The actual self destroying device consists of the steel holder (8) in which slides the hollow cylinder (9). The closed end of this cylinder carries a short projection (10) which passes through and locates the aluminium shear strip (11). This latter is 0.35 cm. wide and 0.08 cm. thick and lies in a diametrical slit in the base of (8). Above the holder sits the steel cover (12) having eight slits in the vertical rim and enclosing the strong steel spring (13). In the unarmed position the cover rests with its central projection in a recess in the closing plug (14).

On impact the cover (12) sets down and the projection on the rim engages in the annular groove and so locks itself to the holder (8). The spring (13) within this enclosure then exerts a pressure on the shear strip through the movable cylinder (9). At the end of a certain period, the strip (11) shears and, since the projection (10) bears on the plug (5), an appreciable jerk is communicated to the cylinder (4). This jerk is sufficient to operate the fuze.

A number of trials have been made to discover the time of the delay. Except in one case where the strip sheared after about 35 hours, all other timings have shown a variation of from 60 to 80 hours. There is no external indication that the fuze is so modified and all Thermos bombs must therefore be suspect.

HANDLING

Since this fuze is very sensitive to a jerk or a jolt, UXB's should, wherever possible, be detonated in situ. This can be done by placing a 1-oz. gun-cotton primer or a stick of gelignite close to the base and on the longitudinal axis of the bomb. In this way the fuze will be given the necessary longitudinal jolt to cause it to operate and detonate the bomb. Alternatively, a loop placed loosely over the coils of the spring (17) can be used to give the fuze a sufficient jerk to detonate the bomb. A few sandbags carefully built up close to the bomb will give protection to the operator, who should use a cord or rope not less than 200-ft. long and be in the prone position when he gives the necessary jerk. The lethal area in the open, with bomb on the surface is 100-ft. Complete immunity from fragments is obtained at 300 yards.

When circumstances demand that the bomb should be moved, it must be remembered that the most dangerous position for the fuze is the vertical position with the nose pointing upwards. Hence, when moving the bomb, which will only be done in most exceptional circumstances, it should be carried horizontally and in bringing it to this position the operator should avoid passing the fuze through the vertical. Great care must be exercised in lifting, carrying and laying down the bomb in order to ensure that there shall be no jolting or jerking. All movements must be slow and and deliberate and excessive acceleration of the bomb must be avoided.

BOMBA 3 Mtr.

This anti-personnel bomb consists of an outer steel casing (1) which shaped as a cylinder with one end coned. The open end is fitted with an adapter (2) into a groove in which the top of the bomb case is pressed at intervals.

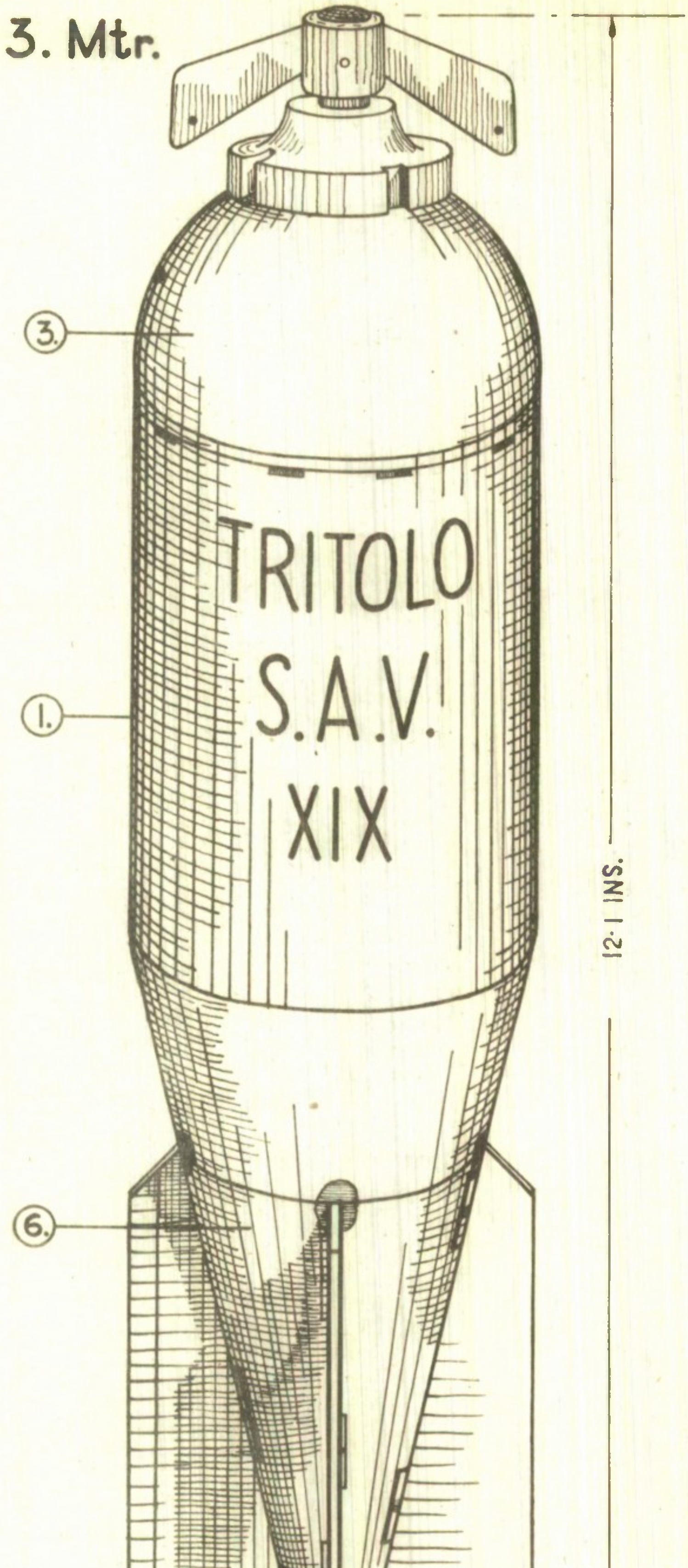
On to this adapter screws the steel head of the bomb (3). The inner sheet steel cylinder (4) which is hemispherical at the closed end contains 6 ozs. T.N.T. as a block filling, the upper block being shaped to take the lower part of the fuze body and the detonator.

The annular space (5) between the inner and outer steel cylinder (1) and (4) is filled with concrete in which are embedded steel pellets.

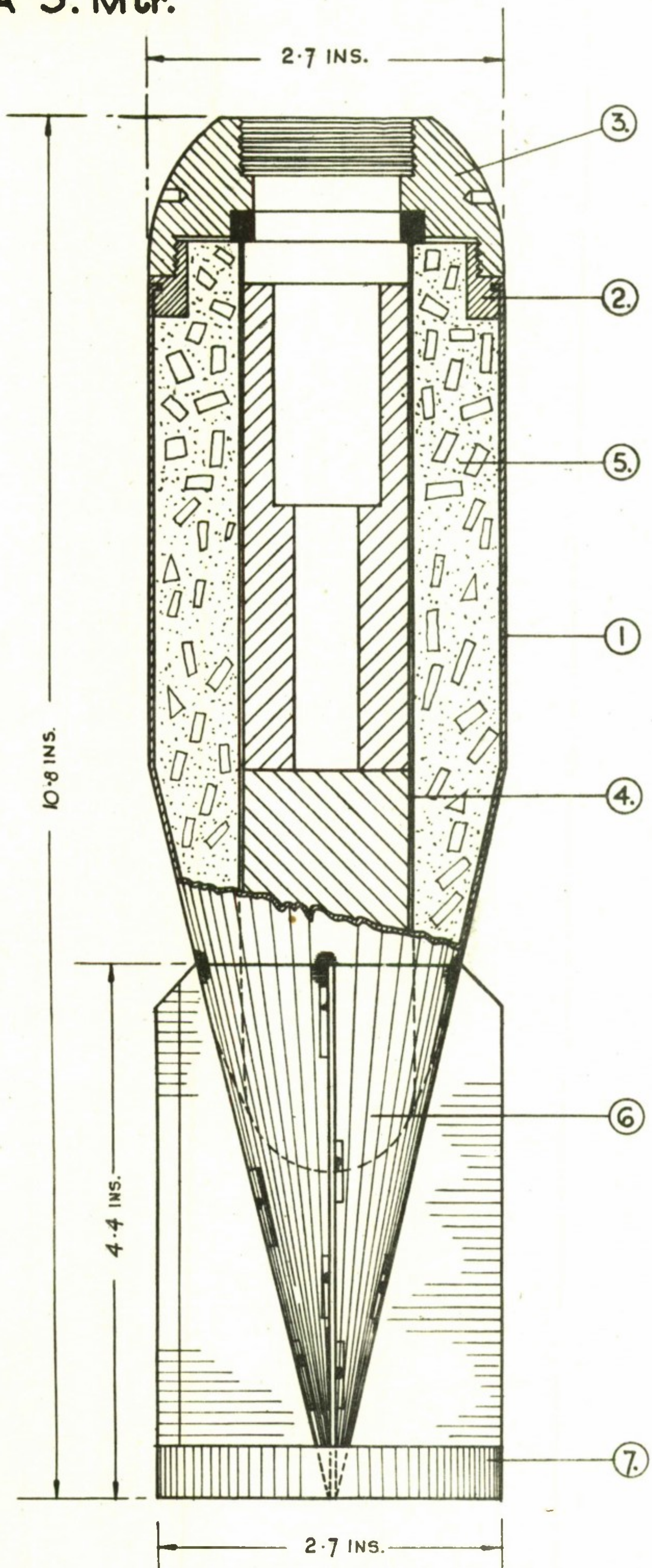
The tail consists of the hollow cone (6) spot welded to the bomb body and the four fins are spot welded to this cone. At the outer end the fins are strengthened by the steel ring (7) which is 0.37-ins wide and 0.1-ins thick. The ring is spot welded to the fins.

Designation		Type
Old Bomba New Bomba 3 Mtr.		Anti-personnel
1.	O/A Length of Fuzed Bomb.	12.1-ins/307-mm.
2.	O/A Length less Fuze or Lug.	10.8-ins/274-mm.
3.	Length of Body.	8.2-ins/208-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness (total)	0.75-ins/19-mm.
7.		
8.	Material and construction of bomb body.	Two concentric sheet steel containers. Annular space between loaded with steel pellets embedded in concrete.
9.	Suspension System.	Loaded in container.
10.	Colouring of bomb.	Body - Black Nose - Black
11.	Markings on bomb.	Tritolo S.A.V. XIX
12.		
13.	Length of Tail.	4.4-ins/112-mm.
14.	Dia. of tail.	2.7-ins/70-mm.
15.	Material of tail.	Sheet Iron.
16.	Colouring of tail.	Black
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four fins mounted on cone, with strengthening band around outer extremities.
19.		
20.	Nature of filling	T.N.T.
21.	Weight of filling.	0.17 Kg.
22.	Total Weight.	3.01 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose - M (Page 203)
26.		

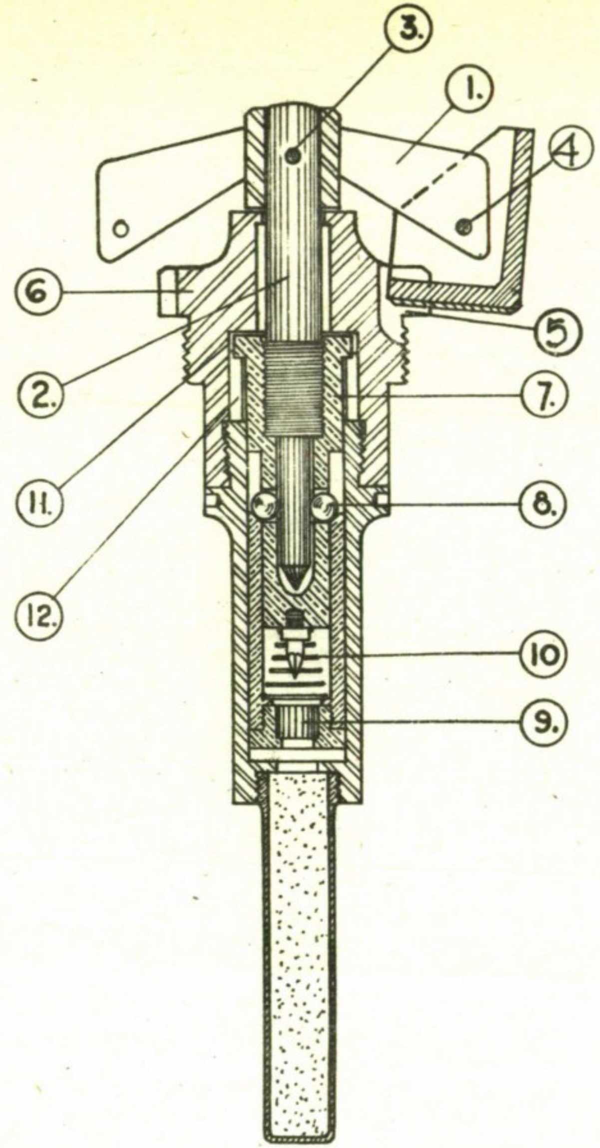
BOMBA 3. Mtr.

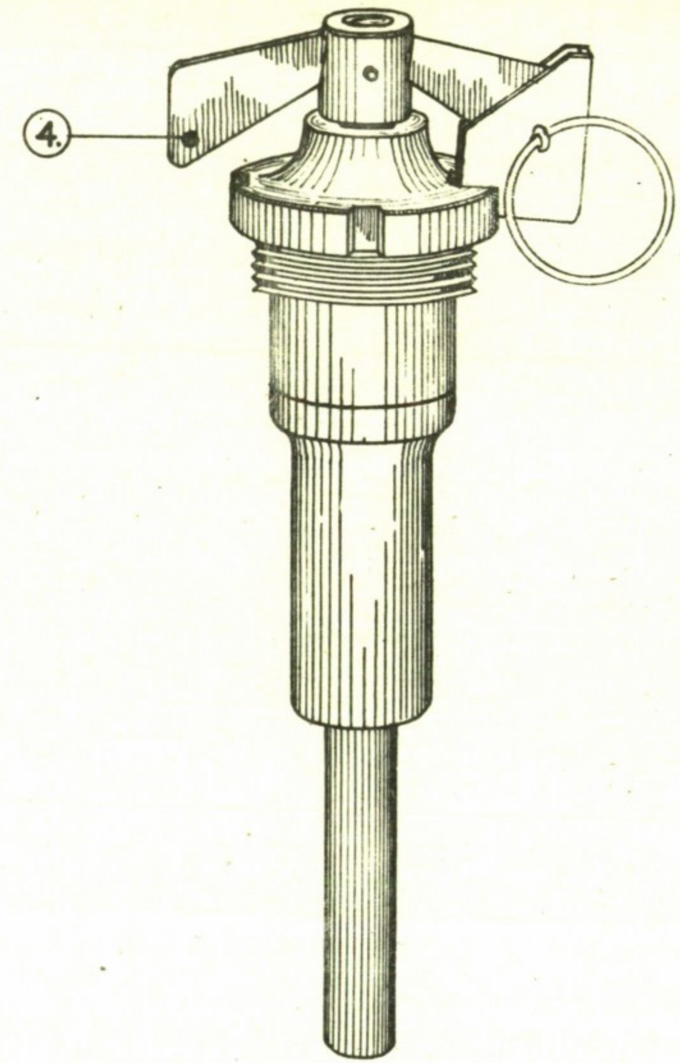


BOMBA 3. Mtr.



FUZE . M.





ITALIAN Designation of fuze Spoletta For Bomba 3 Mtr.		Our Designation. M Classification. Nose - Mech Impact Markings. Nil. Bomb in which employed. 3 Mtr.	
1.	Colour.	Unpainted Aluminium	
2.	O/A Length less gaine.	4.1-ins/104-mm.	
3.	Max. spread over vanes.	2.4-ins/60-mm.	
4.	Dia. over threads where screwed into bomb.	1.3-ins/34-mm.	
5.	Material.	Striker Mechanism - Brass. Body and Vanes - Aluminium	
6.	Type of Gaine.	Detonator only.	
7.			

Description of Fuze.

The vanes (1) are attached to the spindle (2) by a pin (3). During transport on the ground, the vanes are prevented from rotating by means of a metal clip (13) which is attached to the vane by means of a split pin (14) through one of the holes (4). This clip engages in one of the four slots (5) in the fuze body, this slot having been cut deeper than the others in order to receive it. An alternative method of preventing rotation of the vanes is to secure them to the body of the fuze by a wire passing through the holes (4).

When the bombs are loaded into their container these safety devices are removed. During the fall of the bomb, after release from the container, the vanes rotate and the spindle (2) rises in the fuzehead (6). When 0.6-ins. of the spindle are visible below the vanes, the fuze is fully armed. The lower part of the spindle. when withdrawn from the striker (7), allows the steel balls (8) to fall inwards and so release the striker. This latter is then kept away from the cap (9) only by the creep spring (10). The vanes are not detached from the fuze when the latter is fully armed, so that the spindle (2) acts as a hammer and on impact forces the striker onto the cap. Rotation of the striker is prevented by the two projections (11) moving in the slots (12).

Handling of fuzed bomb.

If the visible portion of the spindle be bound with tape to prevent movement the bomb can be carried horizontally providing all jolting be avoided.

To Defuze the Bomb.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Bind the spindle to prevent longitudinal movement.
(d) Ensure that the vanes are not rotated.
(e) Carefully unscrew the fuze and remove complete with detonator.
(f) Unscrew the detonator from the fuze and pack separately.

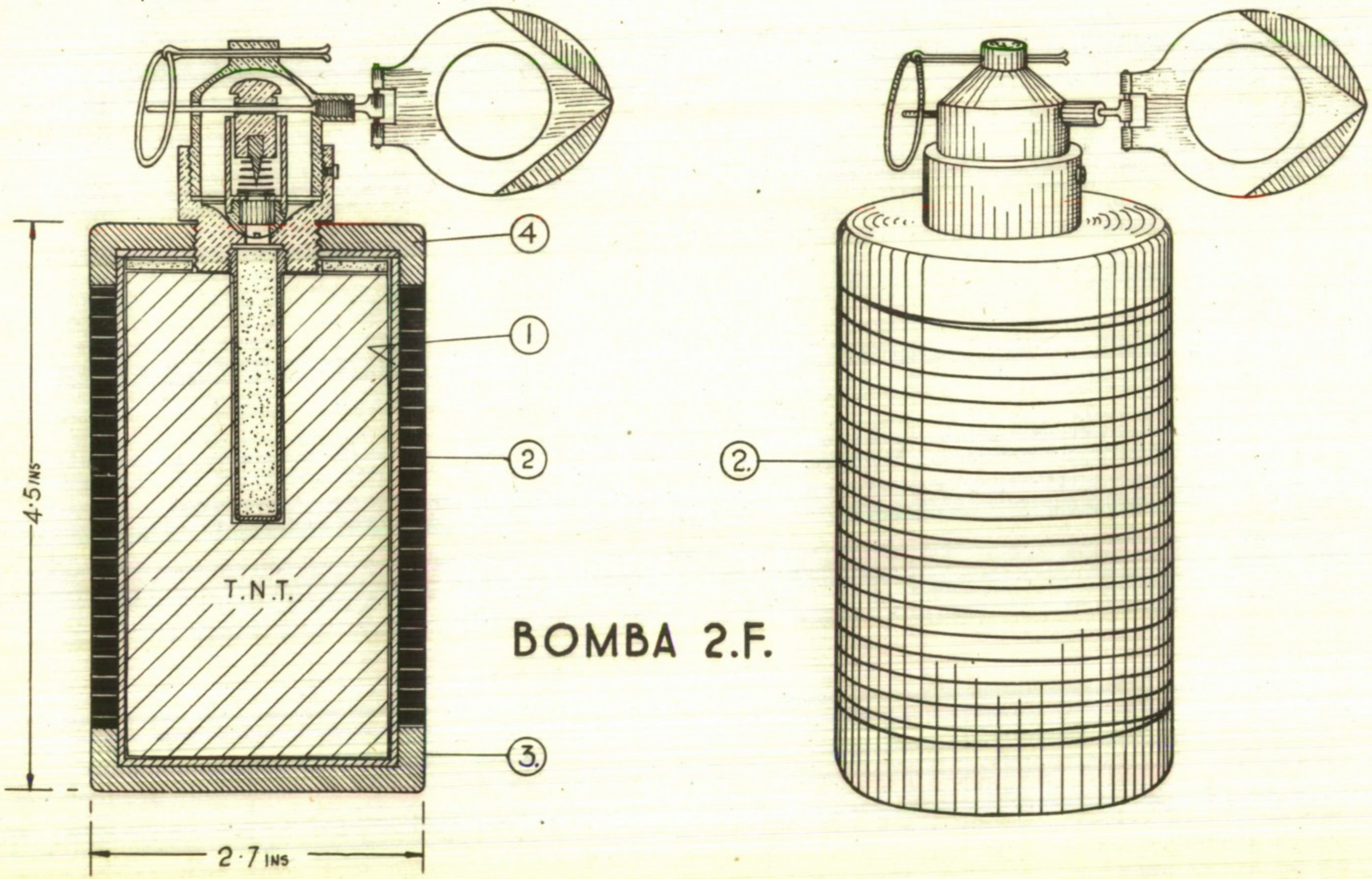
BOMBA 2 F

The anti-personnel bomb 2 F is a tail-less bomb, in the shape of a right cylinder. The inner then sheet steel cylinder (1) contains the explosive charge consisting of T.N.T. On the outside of this cylinder is wound a continuous band of strip metal (2). This is located between the cup-shaped ends (3) and (4) which are pressed on to the inner cylinder. The end (4) is cut and threaded to take the fuze K.

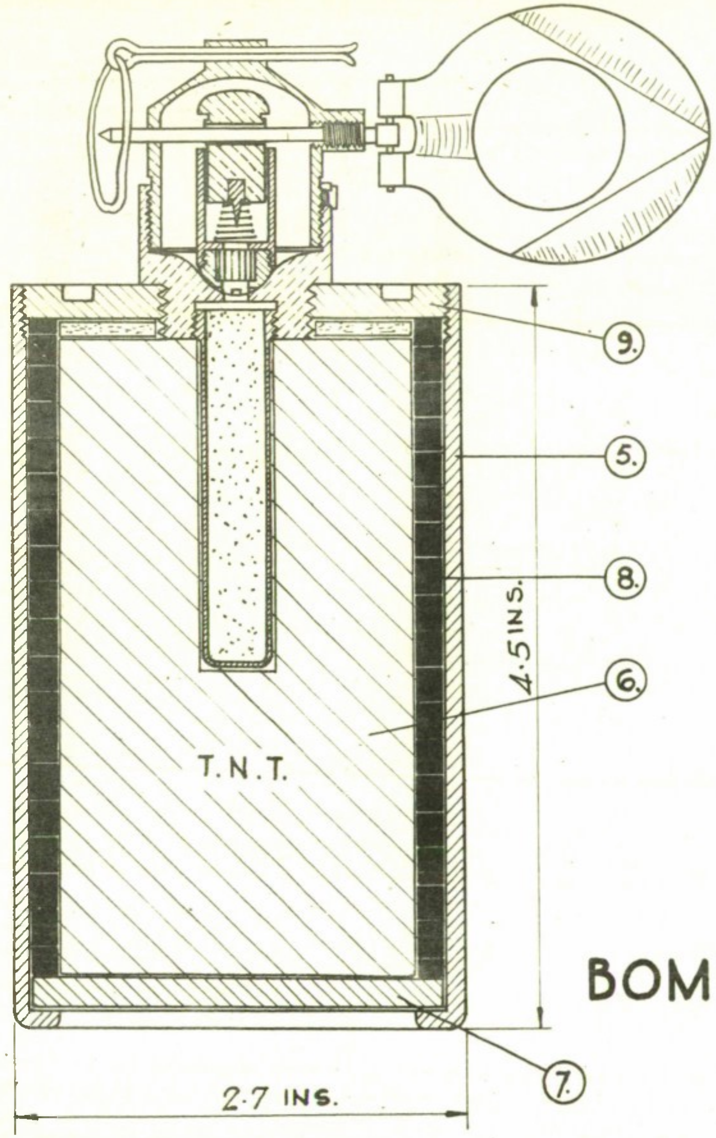
A variation of this bomb is shown in which the steel strip is placed inside the outer steel cylinder (5). This latter is 0.1-inches thick and has a loose base (7). The T.N.T. in the form of a block charge (6) lies within the coiled strip (8) and is shaped to take the detonator. The disc (9) which is recessed and screwed to take the fuze K screws into the cylinder (5).

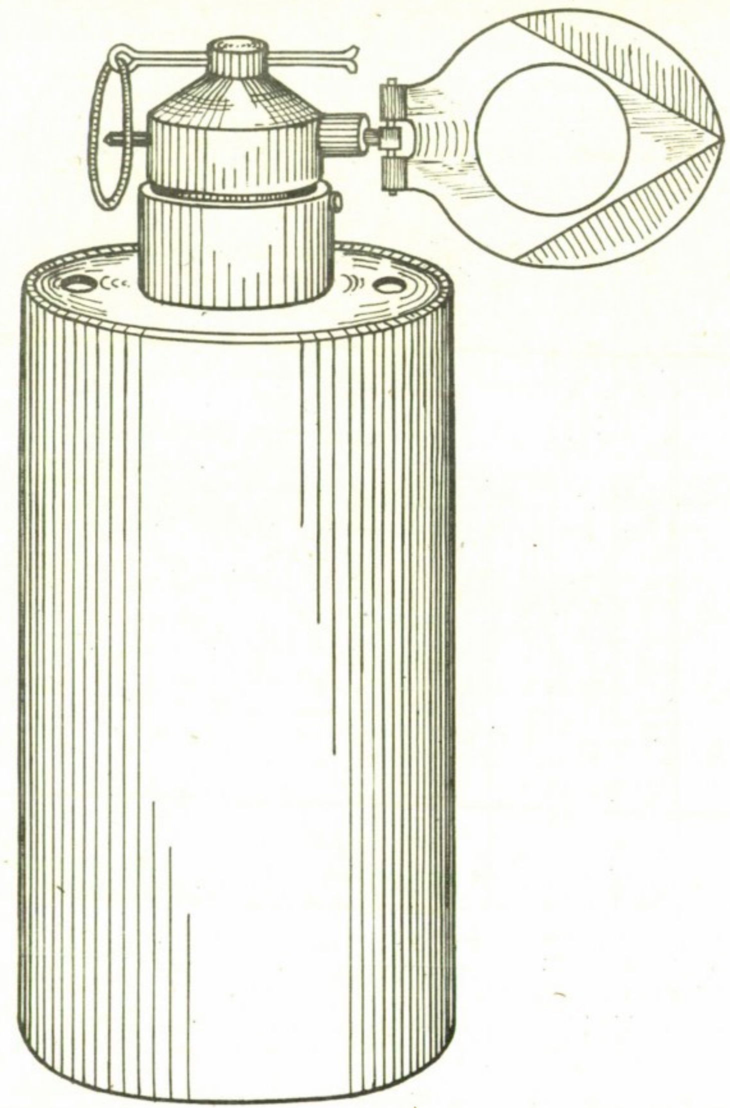
The coiled strip metal in both cases is 0.2-inches by 0.18-inches and has the same total length. In the former case the coil is wound on a diameter of 2.2-inches with the smaller dimension set longitudinally. In the latter case the coil is wound on the same diameter but with the longer dimension longitudinally. On detonation it breaks up into short lengths 1 to 2-inches long.

Designation		Type
Old	SPEZZONE da Kg 2 A FRATTURA PRESTABILITA	Anti-personnel Fragmentation Bomb
New	Bomba 2F	
1.	O/A Length of Fuzed Bomb.	6.1-ins/155-mm.
2.	O/A Length less Fuze or Lug.	4.5-ins/115-mm.
3.	Length of Body.	4.5-ins/115-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	0.28-ins/6.5-mm.
7.		
8.	Material and construction of bomb body.	See page 205
9.	Suspension System.	Carried in container or in BOMBA 100 sp.
10.	Colouring of bomb.	Black
11.	Markings on bomb.	Nil.
12.	Note	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	0.36 Kg.
22.	Total Weight.	1.8 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213).
26.		



BOMBA 2.F.





BOMBA 2.F.

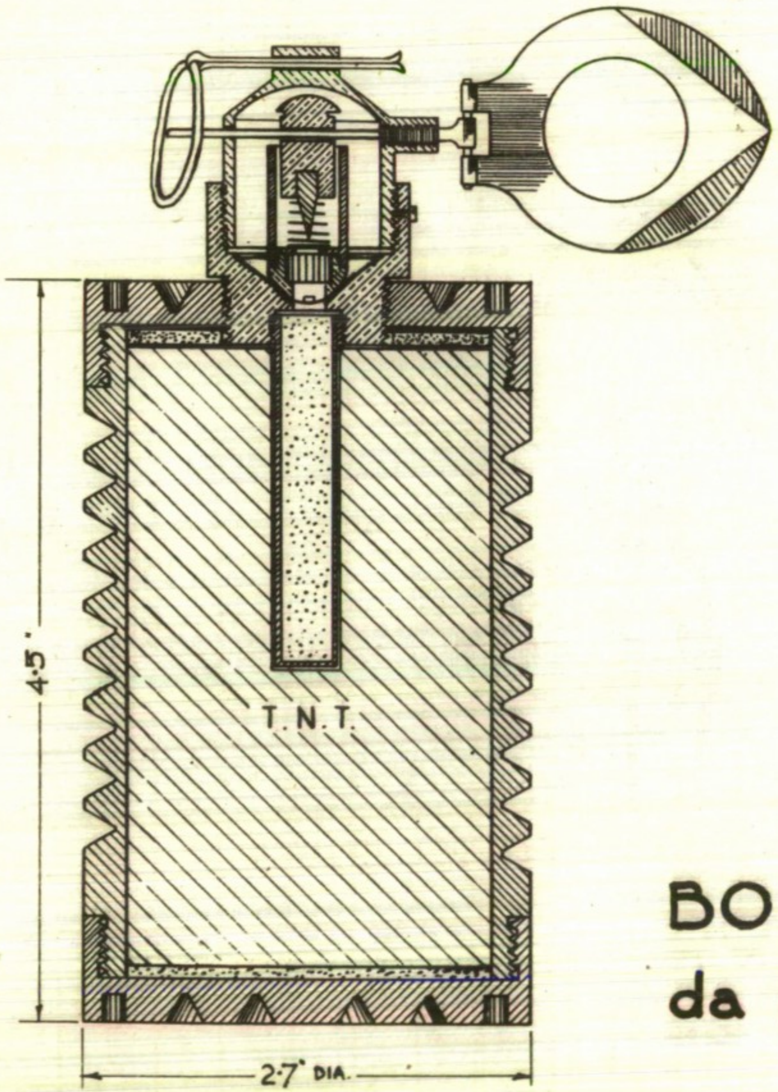
BOMBA da Kg 2

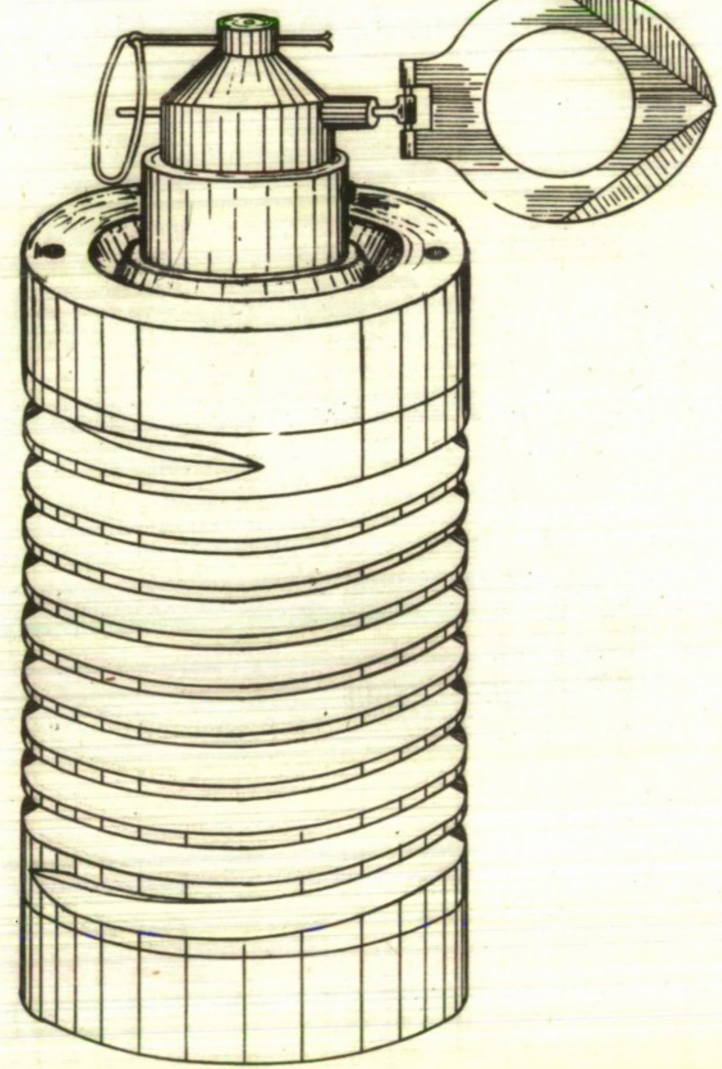
This bomb is the early model of the 2 Kg anti-personnel bomb having been subsequently developed into the 2 F. and 2 Mtr. described on Pages 205 and 215 respectively.

It consists of a steel cylinder with one end closed and the other screw threaded to receive a closing cap into the centre of which the fuze screws. Both the body and the ends of the bomb are deeply grooved sprially to assist fragmentation.

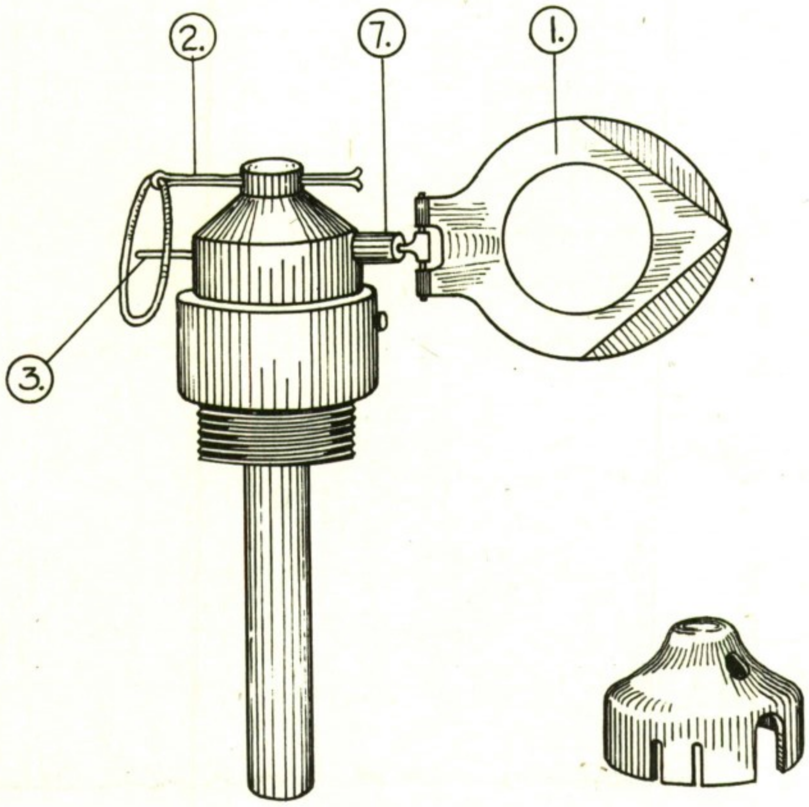
Designation	Type
Old Bomba New Bomba ka Kg. 2	Anti-personnel

1.	O/A Length of Fuzed Bomb.	6.1-ins/155-mm.
2.	O/A Length less Fuze or Lug.	4.5-ins/115-mm.
3.	Length of Body	4.5-ins/115-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	.25-ins/6-mm.
7.		
8.	Material and construction of bomb body.	Steel cylinder deeply grooved. End and top which latter screws on to the main cylinder are also grooved to assist fragmentation.
9.	Suspension System.	Carried in container or in Bomba 100.Sp.
10.	Colouring of bomb.	Black
11.	Markings on bomb.	Nil.
12.	Note	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	0.36 Kg.
22.	Total Weight.	1.61 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213)
26.		

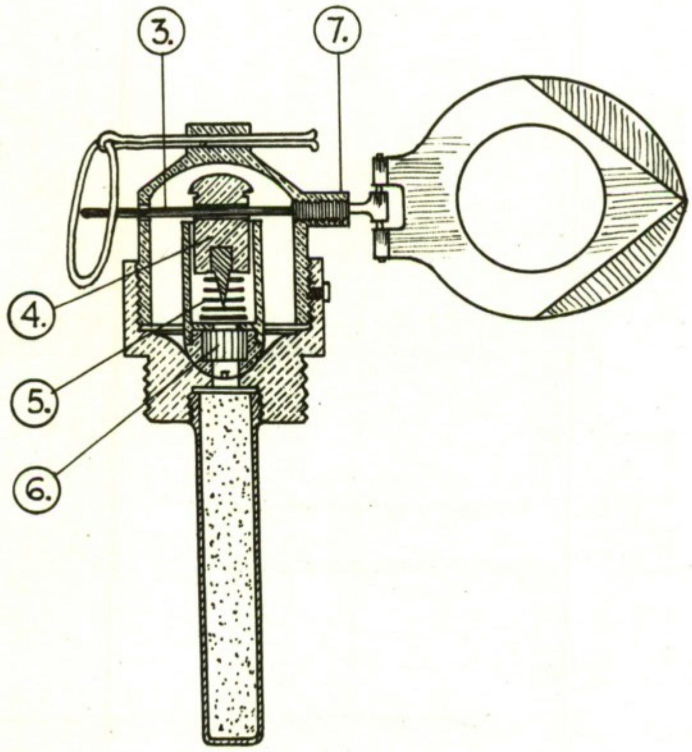




BOMBA
da Kg.2.



FUZE COVER.



FUZE. K.

ITALIAN. Designation of Fuze. Spoletta per Bomba da Kg 2		Our Designation. K Classification. Mech Impact Markings. Nil Bomb in which employed. See Below
1.	Colour.	Unpainted Brass Unpainted Zinc Alloy
2.	O/A length less gaine.	1.8-ins/47-mm.
3.	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	0.9-ins/24-mm.
5.	Materials.	Fuze Head, cap holder and striker - Brass; Fuze body - Zinc alloy: Vane - Aluminium. N.B. Fuze head sometimes fitted with a sheet iron cover painted black.
6.	Type of gaine.	Detonator only.
7.		

Description of Fuze

This fuze is the type employed in 2 Kg anti-personnel bombs 2.F and 2-Mtr. and in the incendiary bombs 2.I and 1.I. It may also be used in the chemical bombs 4.C. 2.C and Furetto.

The fuze screws into the end of the bomb, and carries a large detonator screwed into the base. In the unarmed position, the vane (1) lies over the head of the fuze, and is held by a split pin (2).

To arm the fuze this pin is withdrawn, and the vane freed. If the fuze should be found with this pin in position, it should not be assumed that the fuze is safe, as the pin has no other function than to hold the vane to prevent premature arming.

When the bomb falls the vane rotates, and unscrews the safety rod (3) which eventually falls away. The striker (4) is then held away from the cap only by the light creep spring (5). Both the striker (4) and the cap holder (6) are then free to move. On impact, they ride up the dome-shaped surfaces within the fuze, and the needle and cap approach one another. This ensures that the fuze will function however the bomb may fall.

Handling of the Fuzed Bomb.

No attempt should be made to insert a wire in the open end of (7) as this may force the striker on to the cap. The bomb may be carried on its side, but all jerking must be carefully avoided.

To Defuze the Bomb.

(a) Lay the bomb carefully on its side.

(b) Unscrew the fuze without jolting the bomb and remove the fuze complete with detonator.

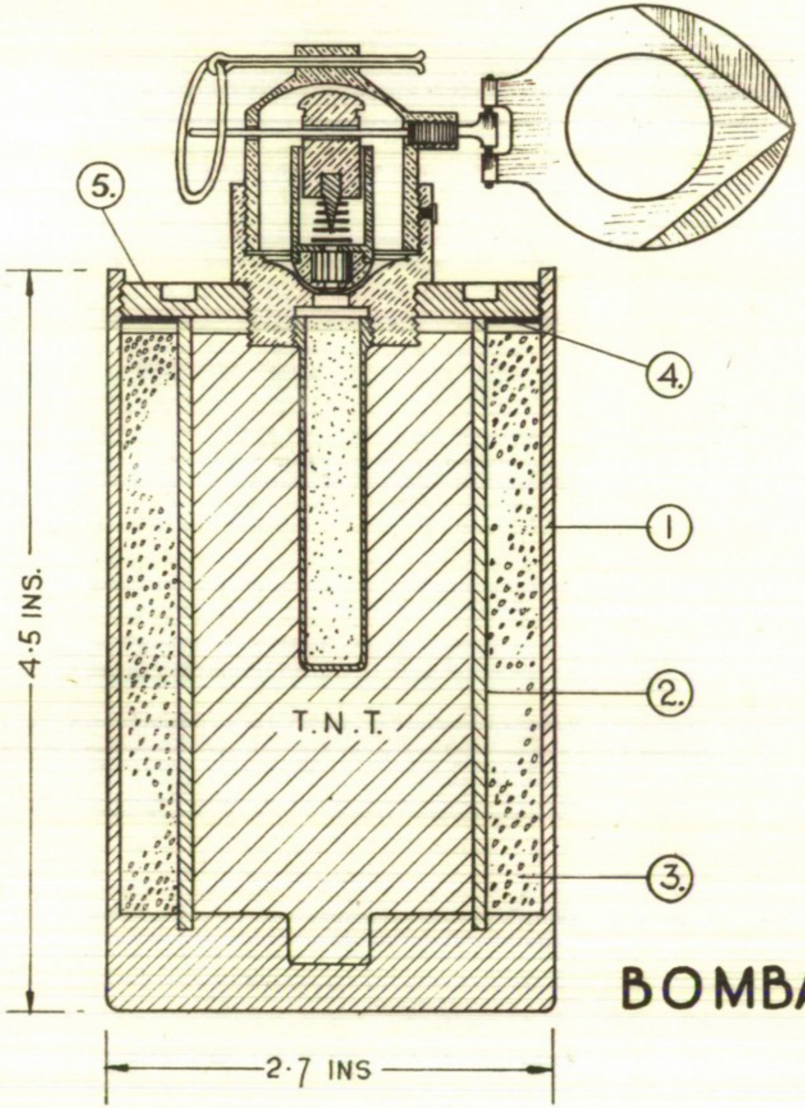
(c) Unscrew the detonator from the fuze and pack separately.

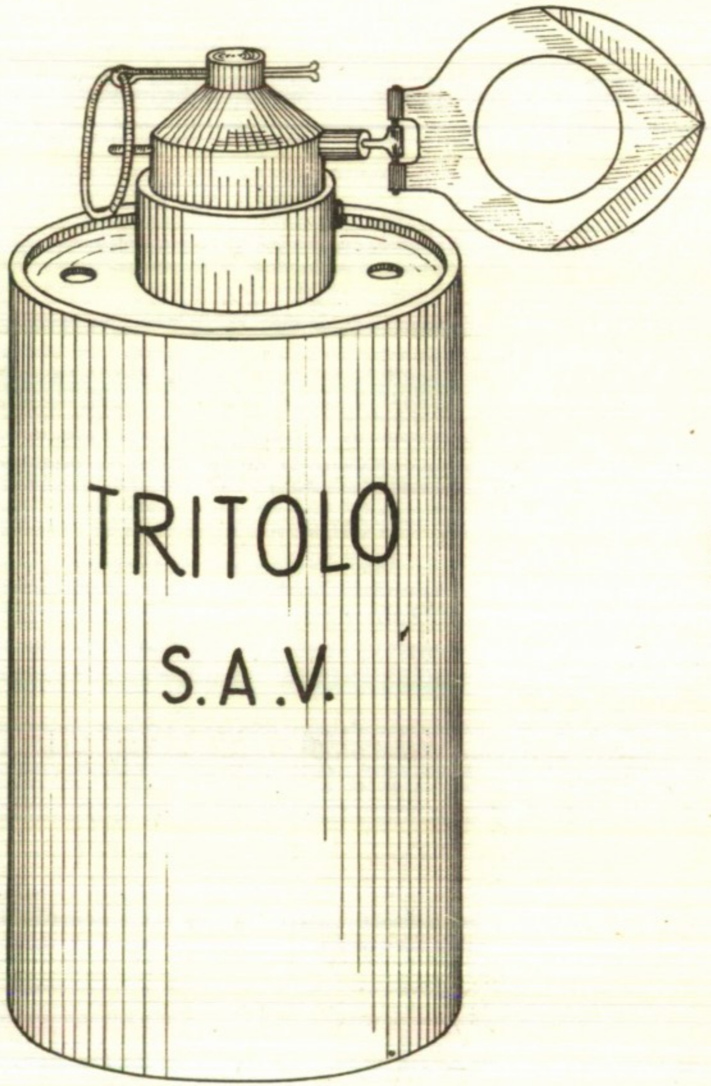
BOMBA 2 Mtr.

The bomb 2 Mtr. resembles in external appearance and dimensions the variation of the 2 F bomb described on Page 205. Within the outer cylinder (1) and concentric with it is a smaller cylinder (2). The annular space (3) between the two cylinders is filled with concrete in which steel pellets are embedded. The concrete is covered with a perforated disc (4) and the screwed disc (5), which seals the bomb, is threaded to take the fuze K.

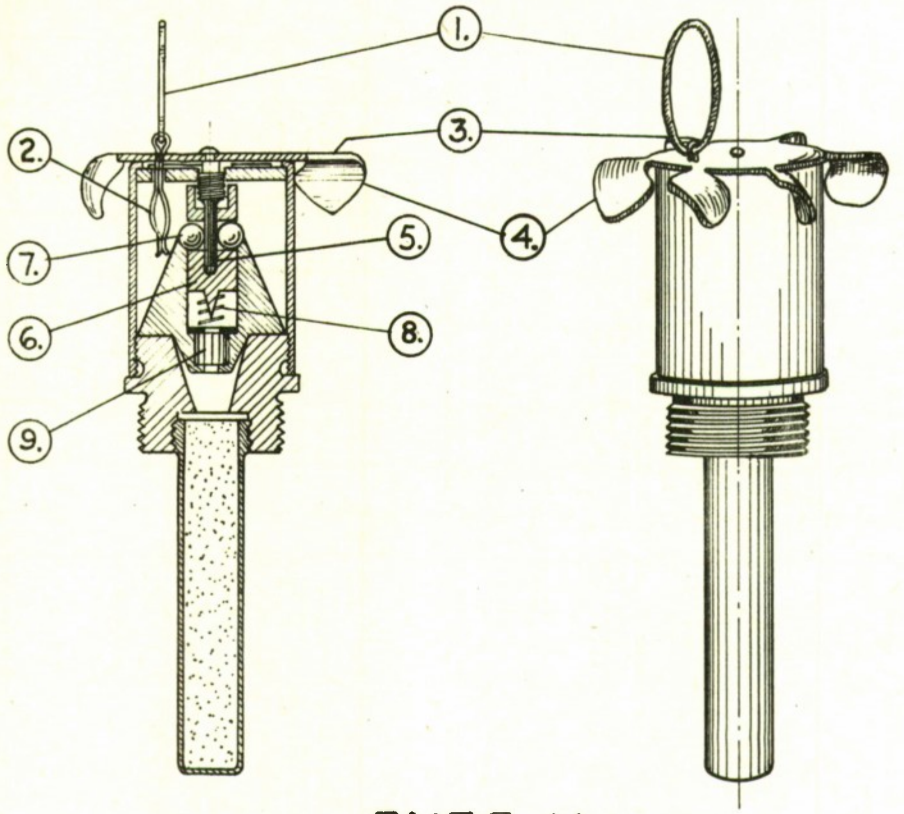
Designation	Type
Old Spezzone da kg 2 A Mitraglia New Bomba 2 Mtr.	Anti-personnel

1.	O/A Length of Fuzed Bomb	6.1-ins/155-mm.
2.	O/A Length less Fuze or Lug.	4.5-ins/115-mm.
3.	Length of Body.	4.5-ins/115-mm.
4.	Dia. of Body.	2.7-ins/70-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	0.5-ins/12-mm.
7.		
8.	Material and construction of bomb body.	Loading of steel pellets embedded in concrete between two thin walled cylinders.
9.	Suspension System.	Carried in container or in BOMBA 100 sp.
10.	Colouring of bomb.	Black
11.	Markings on bomb.	TRITOLO - S.A.V.
12.	Note	This bomb has no tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	0.36 Kg.
22.	Total Weight.	1.75 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Type K (Page 213)
26.		

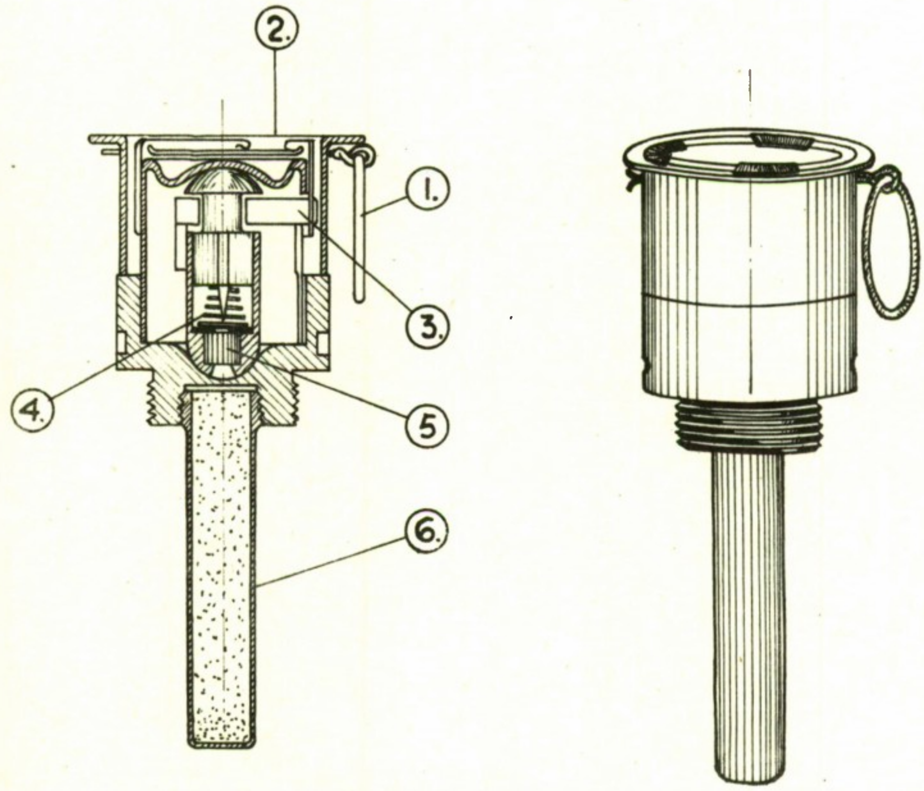




BOMBA 2.Mtr.



FUZE. U.



FUZE. Q.

ITALIAN Designation of fuze.		Our Designation. Q
		Classification. Mech Impact.
		Markings. Nil
		Bomb in which employed. See below.
1.	Colour.	
2.	O/A length less gaine.	
3.	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	
5.	Materials.	
6.	Type of gaine.	Detonator only.
7.		

Description of Fuze. (Page 218)

This is described in documents as the universal type and can be employed in bombs of 2 Kg.

The safety pin (1) is U-shaped. When it is withdrawn, the cap (2) is free to fall away, releasing the safety bolts (3). The striker is then freed, and on impact compresses the creep spring (4) and fires the cap (5) which in turn fires the detonator (6).

The striker assembly here resembles that used in the fuze K.

Handling of fuzed Bombs.

As this fuze is sensitive to shock, it should only be carried on its side, and all jerking carefully avoided.

To Defuze the Bomb.

(a) Lay the bomb carefully on its side.

(b) Unscrew the fuze without jolting the bomb and remove the fuze complete with detonator.

(c) Unscrew the detonator fr m the fuze and pack separately.

ITALIAN Designation of fuze.		Our Designation. U
		Classification. Mech. Impact
		Markings. Nil.
		Bomb in which employed. See Below.
1.	Colour.	
2.	O/A length less gaine.	
3.	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	
5.	Material.	
6.	Type of Gaine.	Detonator only.
7.		

Description of Fuze (Page 218)

This small detonating fuze appears to be equally suitable for employment in small bombs, e.g. 2 Kg, as the fuze Type Q. No specimens have yet been recovered.

When the ring (1) is pulled to withdraw the safety pin (2), the cap (3) can rotate by air pressure on the vanes (4). This causes the arming rod (5) to be withdrawn from the slot in the striker (6). The vanes and cap rise above the head of the fuze, so that when the rod (5) has risen sufficiently with the cap, the steel balls (7) can move inwards and free the striker (6). On impact, the striker compresses the creep spring (8) and fires the cap (9).

Handling of fuzed bomb.

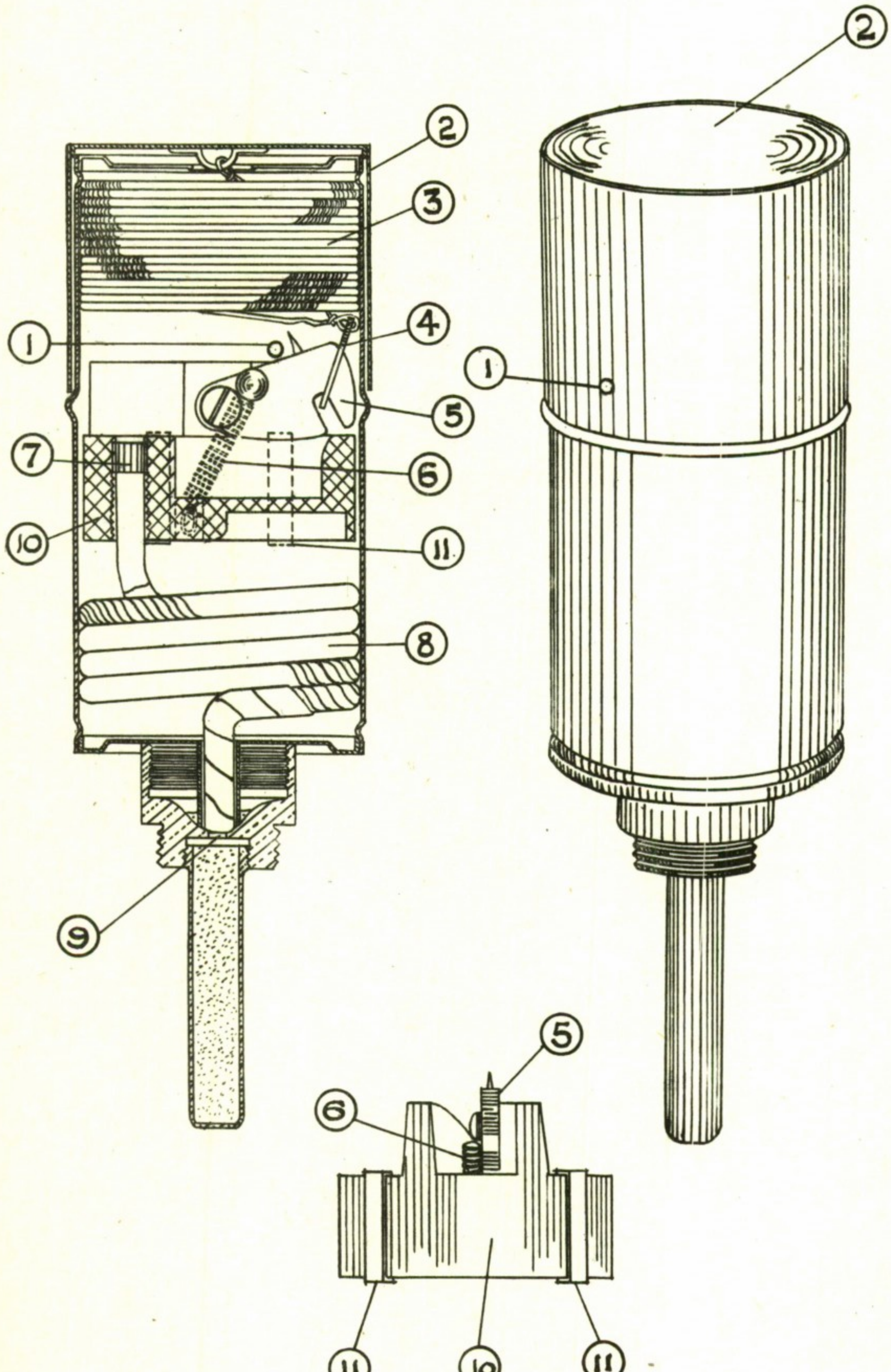
The fuze is sensitive to jerking, and bombs containing it should only be carried with the fuze horizontal.

To Defuze the Bomb

(a) Lay the bomb carefully on its side.

(b) Unscrew the fuze without jolting the bomb and remove the fuze complete with detonator.

(c) Unscrew the detonator from the fuze and pack separately.



FUZE H.

ITALIAN.: Designation of fuze.		Our Designation. Type H.
		Classification. Deliberate Firing.
		Markings. Nil.
		Bomb in which employed. See below.
1.	Colour.	Green.
2.	O/A length less gaine.	5.5-ins/141-mm.
3.	Dia. of fuze.	2.2-ins/57-mm.
4.	Dia. over threads where screwed into bomb.	0.9-ins/24-mm.
5.	Material.	See below
6.	Type of Gaine.	See below.
7.		

Description of Fuze.

This fuze is designed to permit the crews of Italian aircraft, forced to land in enemy territory, to destroy their aircraft by using the 1 Kg or 2 Kg Incendiary bombs or the 2 Kg Anti-Personnel bombs.

The fuze consists of a cylindrical sheet iron container which is divided into two halves by a diaphragm, and is fitted with a close fitting sheet iron cover and brass adaptor for screwing into the standard fuze socket in these types of bombs. The cover is held in position by a safety pin which also prevents the rotation of the striker. When the safety pin has been removed from the hole (1) the cover 2 can be pulled away. To the inside of this cover is attached one end of a piece of cord (3) which is 6 metres (19-ft.4-ins) in total length. The other end of the cord is attached by a wire loop (4) to the striker (5). When the cord is pulled taut the striker moves over with the aid of the spring (6) and fires the cap (7). This ignites a 3-ft. length of safety fuze (8) which burns for about 90 secs., and fires through the hole (9). The striker mechanism is mounted on the bakelite mounting (10) which is positioned in the container by means of four strips (11) spot welded to the latter.

Handling of Fuzed Bomb.

The bomb which is being used for this purpose will be found securely attached to the aircraft near the petrol tanks or other vulnerable point. When Italian aircraft are being examined search should be made for the bomb which, when found should be removed complete with Fuze. The fuze should then be removed from the bomb, and if present the detonator from the fuze. These should then be packed separately.

SECTION 5(b)

(b) ANTI-AIRCRAFT BOMBS

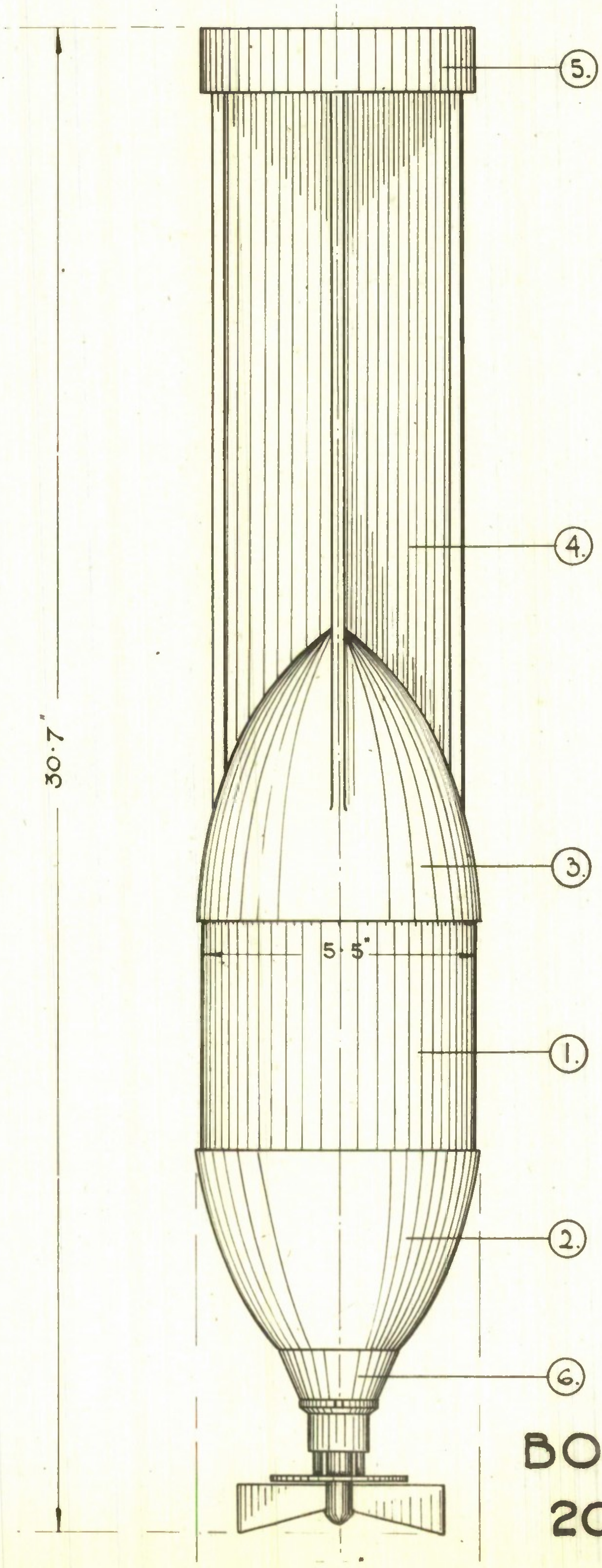
BOMBA 20 cV

This bomb consists of a cylindrical body (1) together with two shaped pieces of slightly larger diameter forming the nose (2) and the base (3). Mounted on the latter are four sheet metal fins (4) which are rolled along their outer edges for greater strength. A strengthening band (5) is welded round the rear end of these fins.

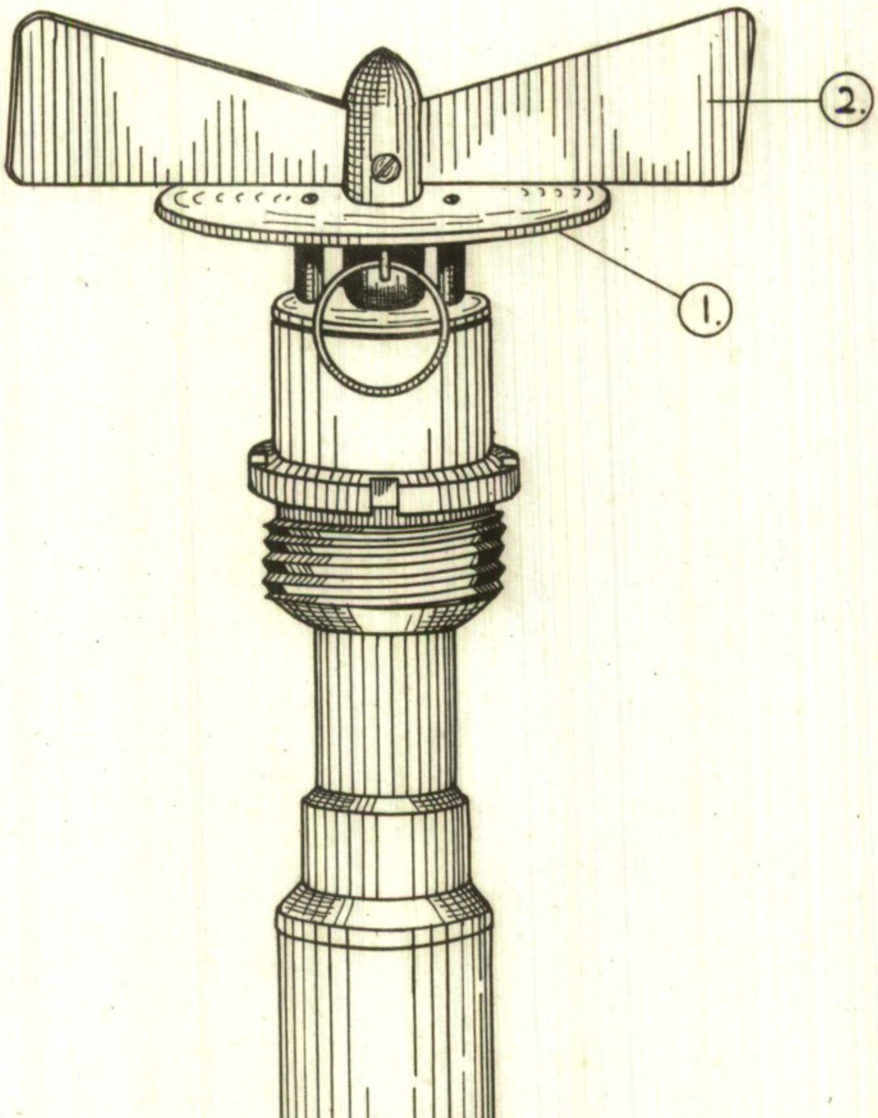
The bomb is constructed of concentric sheet metal pressings, the annular space between which is filled with steel pellets embedded in concrete. The nose of the bomb is threaded to receive the brass adaptor (6) for fitting the fuze.

This bomb is used for air-to-air bombing.

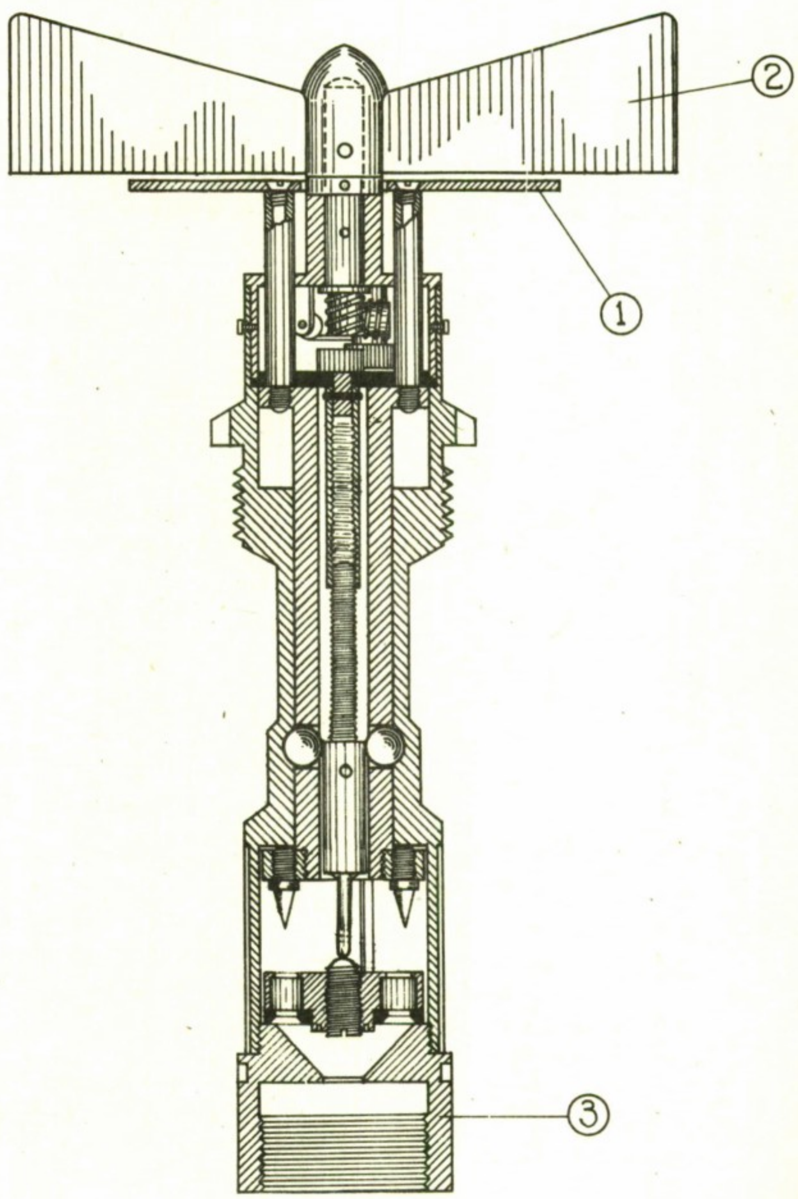
Designation Old Bomba da Kg 20 c.a. New Bomba 20 cV.		Type ANTI-AIRCRAFT
1.	O/A Length of Fuzed Bomb.	30.7-ins/778-mm.
2.	O/A Length less Fuze or Lug.	27.1-ins/688-mm.
3.	Length of Body.	15.5-ins/393-mm.
4.	Dia. of Body.	5.5-ins/139-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	1.1-ins/28-mm.
7.		
8.	Material and construction of bomb body.	Loading steel pellets embedded in concrete in annular space between two drawn steel containers.
9.	Suspension System.	Horizontal.
10.	Colouring of bomb.	
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	18.0-ins/457-mm.
14.	Dia. of tail.	5.6-ins/143-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four fins mounted on conical end cap of bomb, with strengthening band round outer extremities.
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22.	Total Weight.	Nominal 20.0 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio	
25.	Fuze - our designation.	Nose - Type I.1 (Page 233).
26.		



BOMBA
20 cV.



FUZE I. 1.



FUZE I. 1.

ITALIAN Designation of fuze.		Our Designation I.1
		Classification: Nose - Fixed Time short Delay.
		Markings. See below.
		Bomb in which employed. 20 cV.
1.	Colour.	Vanes - Green Fuze - Unpainted Brass
2.	O/A length less gaine.	7.5-ins/190-mm.
3.	Max. spread over vanes.	4.25-ins/108-mm.
4.	Dia. over threads where screwed into bomb.	1.4-ins/35-mm.
5.	Material.	Brass.
6.	Type of Gaine.	Short Gaine Type 2
7.		

Description of Fuze.

This fuze is essentially the same as fuze I and differs from it only in the following respects.

1. The marking denoting the fall required to operate the fuze is stamped on the circular plate (1) and not on the vane (2). The marking on the specimen recovered is

   4

   m.450

2. The base plug (3) is screw-threaded internally to receive a gaine adaptor.

Handling of Fuzed Bomb.

There is no visual indication of arming. Since both the striker and the cap holder move within the armed fuze and there is no creep spring holding them apart, the fuze must be regarded as being in a most dangerous condition and the bomb should be detonated in situ whenever possible.

If the bomb must be moved, first secure the pressure plate so that it cannot move. If the pressure plate has not been depressed, wedge it in position by means of a small piece of wood. If the pressure plate has been depressed, do not attempt to move it as the needles may have pierced the caps without firing them and withdrawal may cause the bomb to function.

After securing the pressure plate, move the bomb slowly and carefully into the horizontal position taking care not to pass the bomb, and hence the fuze, through the vertical in so doing. The bomb may now be moved horizontally for subsequent demolition if all jolting be avoided. No attempt should be made to defuze the bomb.

BOMBA 3 cV.

The bomb consists of two containers (1) and (2) of mild sheet steel. The space between them is filled with steel pellets embedded in concrete (3).

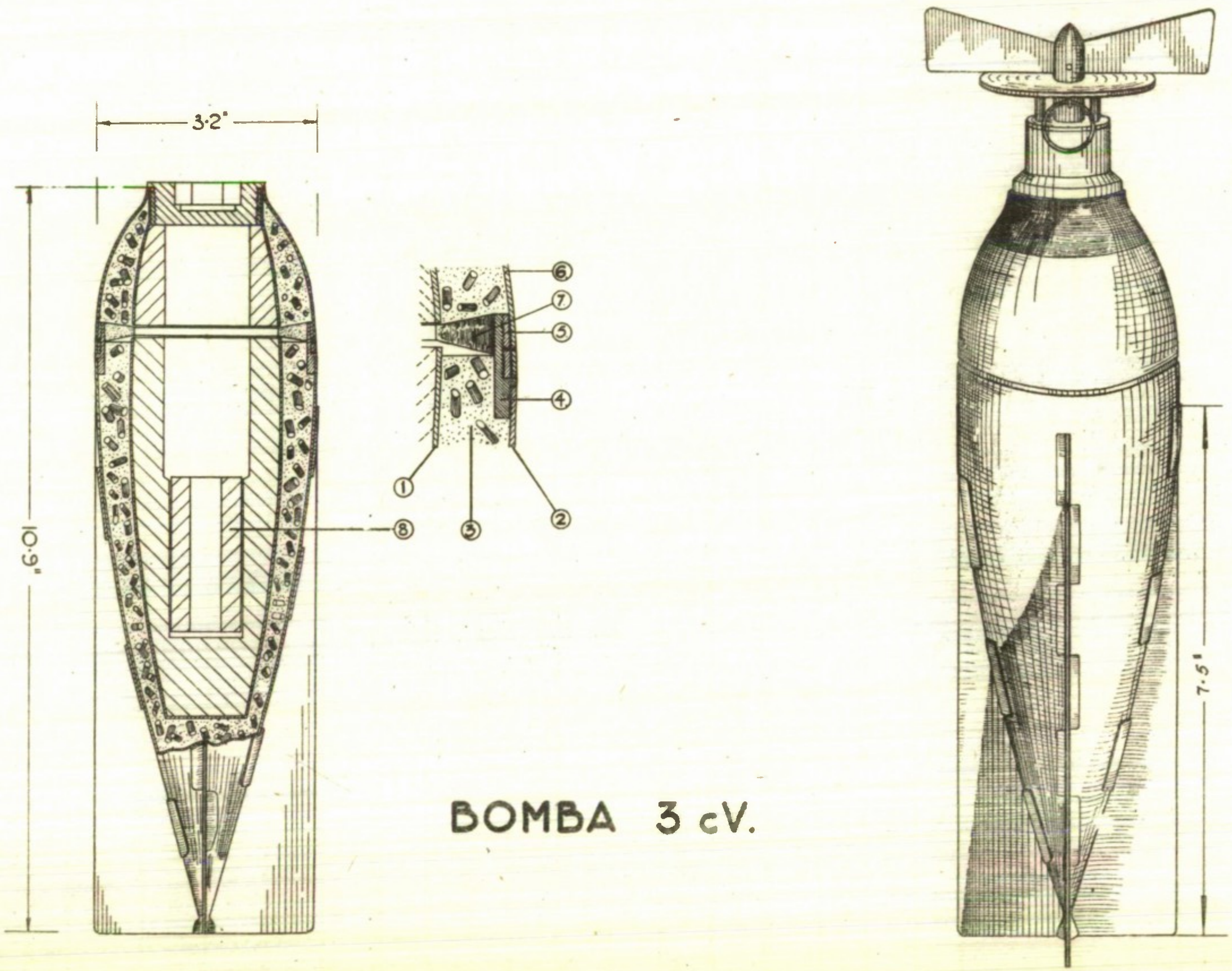
In the body a collar (4) is inserted, the upper part being threaded externally. This screws on to a collar (5) which is rivetted to the head of the bomb (6). The head and the body of the bomb are loaded separately with their charge of concrete and steel. The brown substance (7) which tops the head filling forms a cushion and a sealing when the head is screwed on to the body. It is a resinous waterproof compound.

The outer casing of the bomb forms the tail cone on to which the vanes are spot welded.

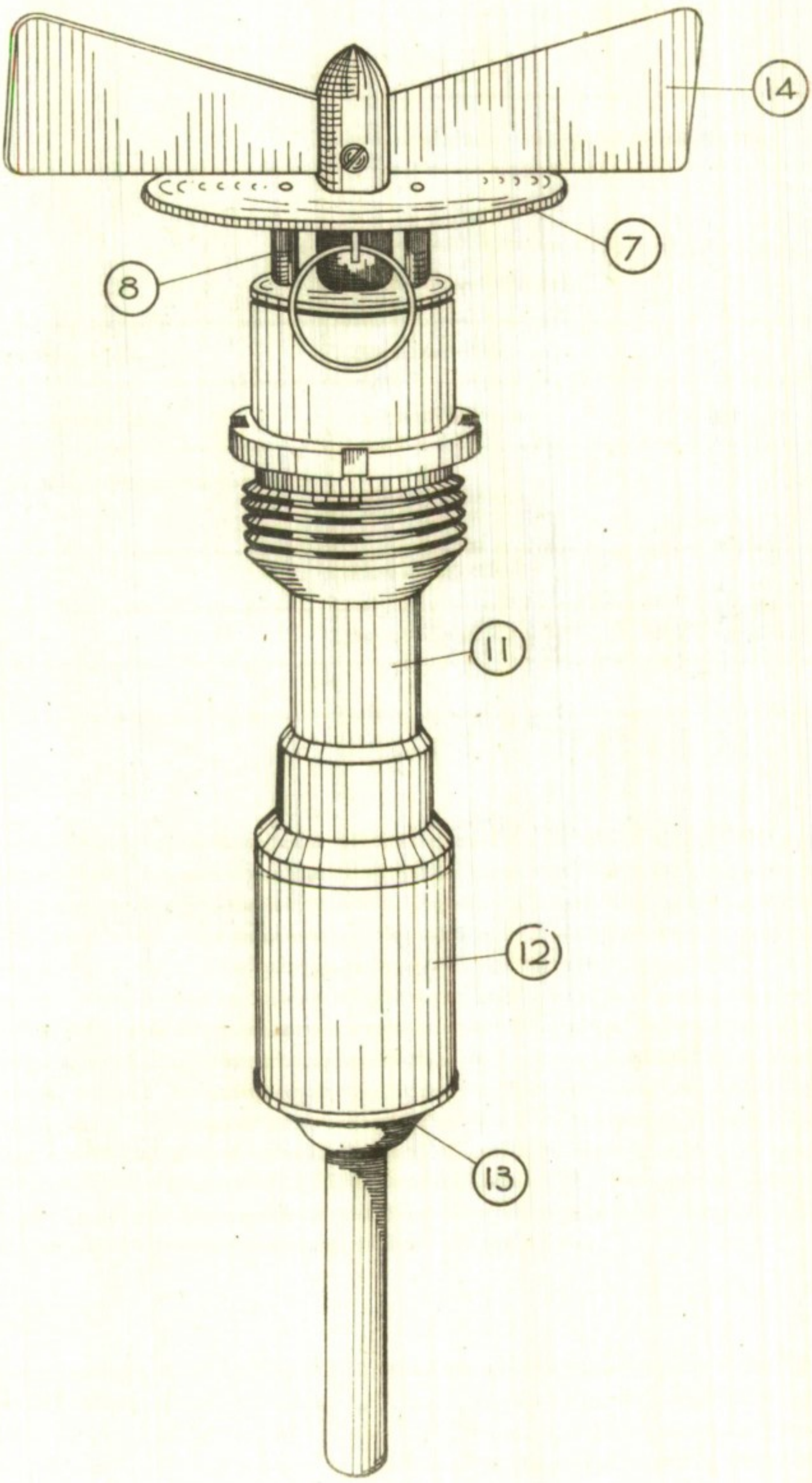
The bomb is usually transported plugged and the HE filling is TNT with a pressed hollow TNT pellet (8) surrounding the detonator.

The bomb as its designation (contro Velivoli) indicates is used by aircraft against enemy aircraft.

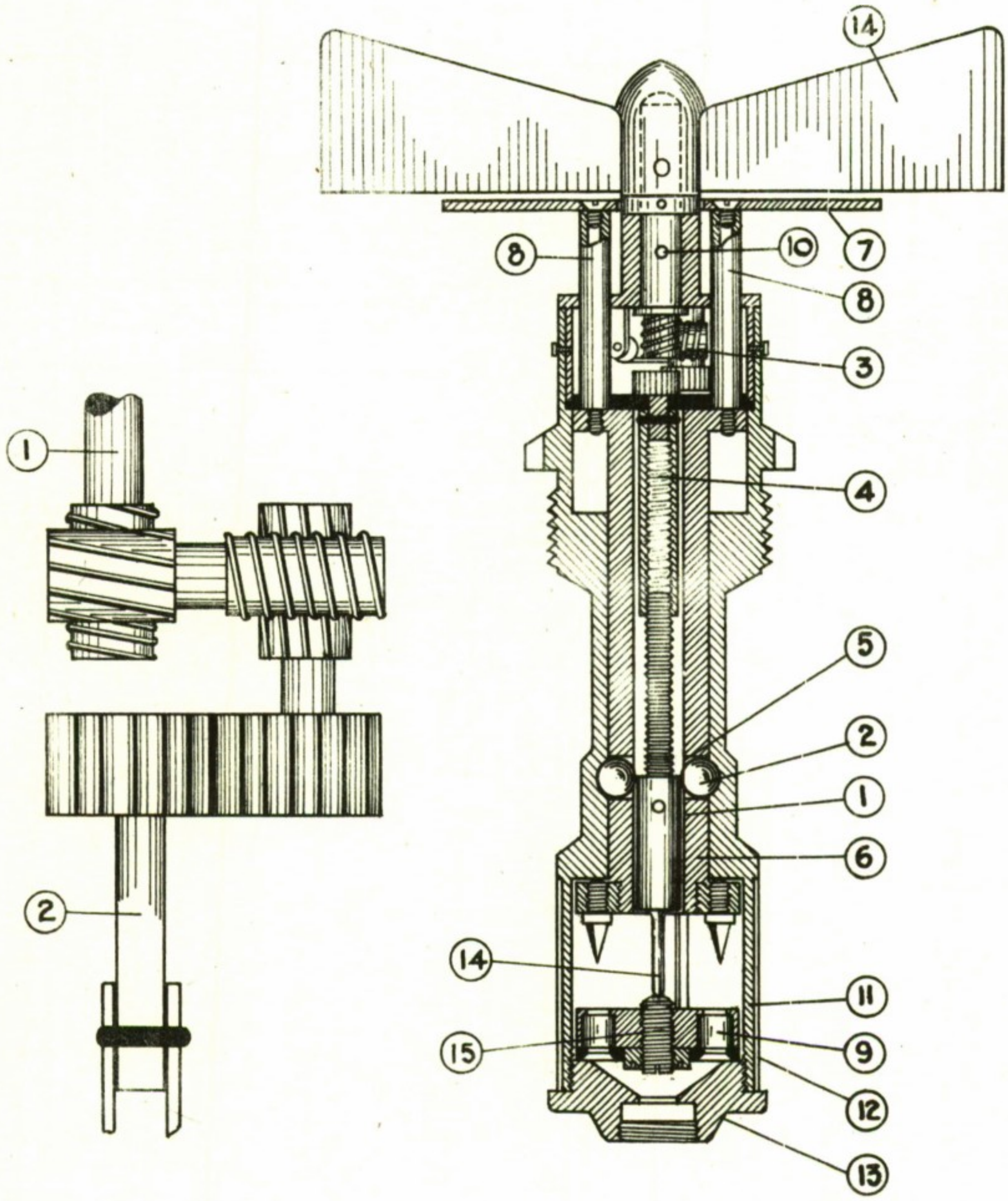
Designation. Old Bomba da Kg 3 c.a. New Bomba 3 cV		Type ANTI-AIRCRAFT
1.	O/A Length of Fuzed Bomb.	13.5-ins/344-mm.
2.	O/A Length less Fuze or Lug.	10.9-ins/277-mm.
3.	Length of Body.	8.7 -ins/220-mm.
4.	Dia. of Body.	3.2-ins/82-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness (total)	0.55-ins/14-mm.
7.		
8.	Material and construction of bomb body.	Loading steel pellets embedded in concrete in annular space between two thin walled containers.
9.	Suspension System.	
10.	Colouring of bomb.	1-in. red band round nose. Body apple green.
11.	Markings on bomb.	AMATOLO
12.		
13.	Length of Tail Fins.	7.5-ins/90-mm.
14.	Dia. of tail Fins.	3.2-ins/81-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Apple Green.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four fins spot welded to body.
19.		
20.	Nature of filling.	AMATOL
21.	Weight of filling.	0.40 Kg.
22.	Total Weight.	Nominal 3.0 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	NOSE - TYPE 1 (Page 241)
26.		



BOMBA 3 cV.



FUZE I.



FUZE I.

ITALIAN Designation of Fuze.		Our Designation. Type I.
		Classification. Nose - Fixed Time Short Delay.
		Markings. See below.
		Bomb in which employed. 3cV
1.	Colour.	Vanes - Green Fuze - Unpainted Brass.
2.	O/A length less gaine.	6.9-ins/175-mm.
3.	Max. spread over vanes.	4.25-ins/108-mm.
4.	Dia. over threads where screwed into bomb.	1.4-ins/35-mm.
5.	Materials.	Brass
6.	Type of gaine.	Detonator only.
7.		

Description of Fuze.

There are several features about this fuze, both internal and external, which distinguish it from the types already described. Externally the fuze is readily identified by the vanes (14) attached to the small cap, and by the pressure plate (7). This latter is made of brass and is 2¾-ins. in dia. The cap and the vanes are painted green and stamped on one vane are certain figures. The fact that most Italian fuzes are without identification markings makes these figures most interesting. They are believed to indicate the fall in metres required to operate the fuze. Specimens stamped as follows have been recovered:

2 700,
4 600,
5 550 and
5 500

After withdrawal of the safety pin from the hole (10), rotation of the vanes causes the rotation of the internally threaded tube (4). The arming rod (1) is prevented from rotating by the guide pin (5) which projects into a vertical slot in the striker unit (6). The cap holder (9) has a sliding fit in the body of the fuze (11). The positioning of the caps below the two striker needles is ensured by two fine screws in the holder (9) which project into the two vertical slots in the body (11). A thin brass sleeve (12) covers this part of the fuze and is retained by the plug (13). Into the base of the latter screws the detonator. There is no creep spring in this fuze and in the safe condition the cap holder is held away from the striker needles by the projection (14) from the base of the arming rod (1). The screw (15) is provided to allow for small adjustments.

When the arming rod (1) has been withdrawn sufficiently to allow the steel balls (2) to move inwards the fuze is armed. Air pressure on the head of the fuze then causes the plate (7) together with its supports (8), which are screwed into the striker unit, to move towards the cap holder (9). The firing of the caps initiates the detonation of the bomb.

In the safe condition, the extension of the lower end of the arming rod(1) holds the cap holder in place. This latter is free to move on the withdrawal of the arming rod. After some 400 revolutions of the vanes, the gearing (3) has caused the arming rod to withdraw 2.5-cm.; and the fuze is then fully armed. There is however no external evidence of the condition of the fuze since the vanes do not fall away or rise on a central screw.

Handling

Since both the striker and the cap holder move within the armed fuze and there is no creep spring holding them apart, the fuze must be regarded as being in a most dangerous condition and the bomb should be detonated in situ whenever possible.

If the bomb must be moved, first secure the pressure plate so that it cannot move. If the pressure plate has not been depressed, wedge it in position by means of a small piece of wood. If the pressure plate has been depressed, do not attempt to move it as the needles may have pierced the caps without firing them and witndrawal may cause the bomb to function.

After securing the pressure plate, move the bomb slowly and carefully into the horizontal position taking care not to pass the bomb, and hence the fuze, through the vertical in so doing. The bomb may now be moved horizontally for subsequent demolition if all jolting be avoided. No attempt should be made to defuze the bomb.

SECTION 5 (c)

(c) ANTI-SUBMARINE BOMBS

BOMBA 160 c.S.

This anti-submarine bomb merits particular remark on account of its special construction. The head which is almost hemispherical in shape resembles in this respect the 500 RO bomb except that it is threaded to take only one fuze. It is welded to the cylindrical body at (1). The tail unit has a central cone to take the stem of tne tail fuze, but there are only elementary fins, set well back and the corrugated strengthening band which surrounds the tail fuze has a larger diameter than the bomb itself. This latter detail is unusual in Italian bombs as bomb bodies and tails usually have the same diameter. Several specimens have been recovered in which no strengthening band has been fitted.

The bomb is intended primarily for use against submarines. In the event of a direct hit, either on the surface or up to a certain shallow depth the nose fuze will function detonating tne bomb instantaneously. If no direct hit is obtained, or the bomb travels beyond the depth referred to, the tail fuze will function when it has travelled through the water the distance indicated by the reading to which it had been pre-set, the bomb then operating as a depth charge.

Handling the UXB

It is not anticipated that this bomb will often be found on land. It is possible however that it may be washed up on the foreshore. It is fuzed in the nose with heavy duty impact fuzes B or B1 and in the tail with a special underwater fuze. It is this latter fuze which should receive the first attention.

Handling the Tail Fuze.

If the fuze is encountered with the pressure plate in position, arming cannot have commenced and the fuze can be removed with safety.

If the pressure plate is absent the relative withdrawal of the arming shaft will be indicated on the setting disc. The inertia bolt may or may not have compressed the striker spring, but it must be assumed that the worst conditions prevail and, if the setting disc is at or approaching zero reading, the bomb should be demolished in situ without further delay. If this latter condition does not obtain.

(i) Secure the vanes from rotation by securing them to the fuze body.

(ii) Unscrew the fuze from the bomb tail and withdraw it from the bomb complete with detonator and gaine.

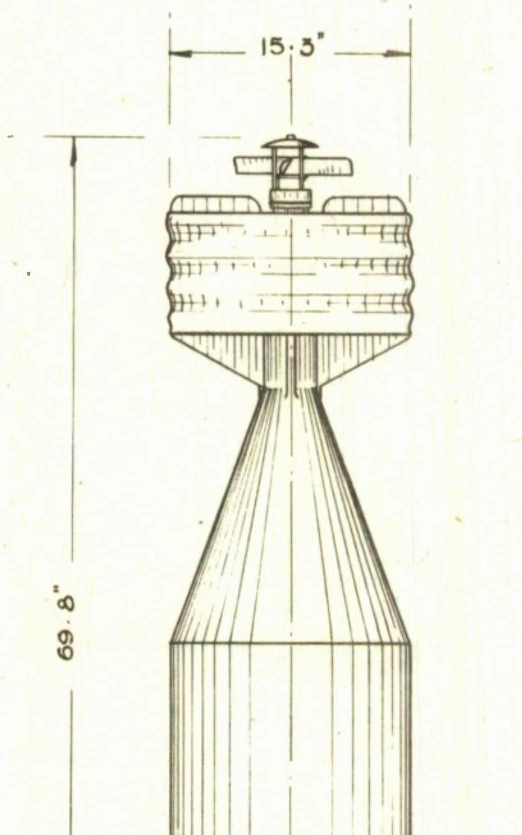
(iii) Unscrew the gaine and the detonator from the fuze and pack them separately.

Handling the Nose Fuze.

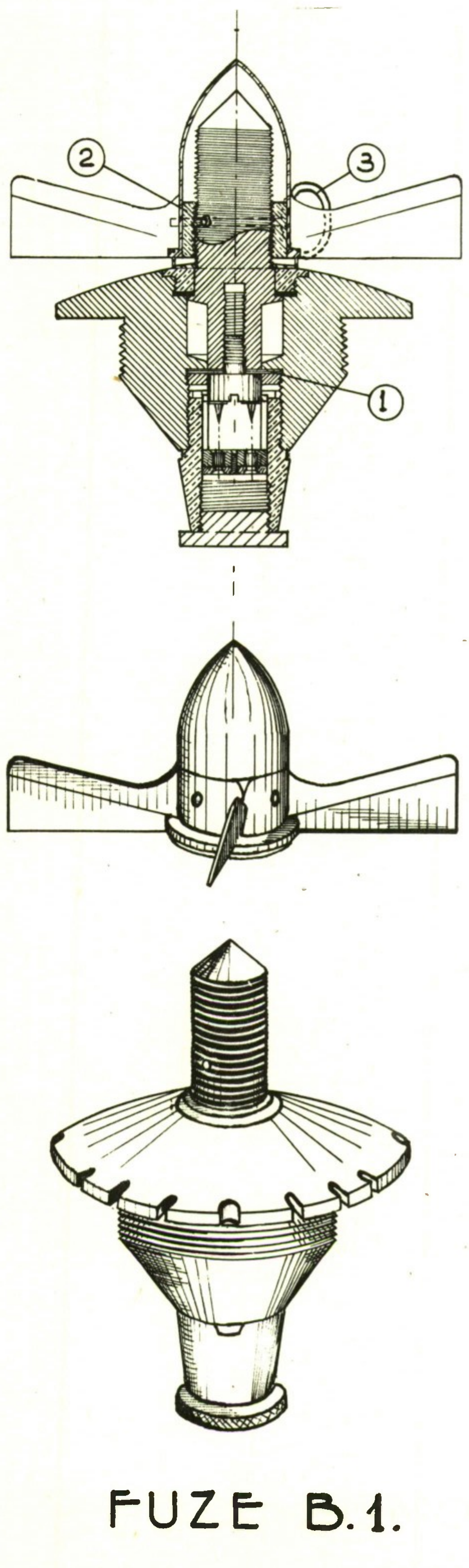
If the vaned cap has fallen away, the fuze is armed. If the whole of the screw threaded portion of the striker shank in the fuze B, or more than 2.25-inches in fuze B1, is visible above the collar, the fuze is safe to handle provided due precautions are taken to avoid rough treatment.

If, however, the striker has moved inwards secure the striker shank firmly to prevent any further movement. The fuze may then be unscrewed and withdrawn complete with detonator and gaine. Both the latter should be unscrewed from the fuze and packed separately.

Designation. Old. Bomba da Kg. 160 a.s. New. Bomba 160 c.S.		Type HIGH EXPLOSIVE ANTI-SUBMARINE
1.	O/A Length of Fuzed Bomb.	69.8-ins/1772-mm.
2.	O/A Length less Fuze or Lug.	60.7-ins/1540-mm.
3.	Length of Body.	36.2-ins/920-mm.
4.	Dia. of Body.	13.3-ins/337-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	0.3-ins./8-mm.
7.		
8.	Material and construction of bomb body.	Sheet metal bomb with rounded nose. Rear end of bomb coned, ending in short cylindrical portion to receive the tail fuze.
9.	Suspension System.	Horizontal - Suspension Band.
10.	Colouring of bomb.	Grey body with 2-in. apple-green band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	27.2-ins/690-mm.
14.	Dia. of tail.	15.3-ins/390-mm.
15.	Material of tail.	Sheet metal.
16.	Colouring of tail.	Grey.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four small fins mounted on cylindrical portion at rear end of body. These may or may not be fitted with a corrugated strengthening band.
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	
22.	Total Weight.	180 Kg.
23.	Weight of Bomb Case (including (tail.	76 Kg.
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	NOSE - Type B, or B1 (Pp. 248, 250) TAIL - Under Water Fuze (Page 253).
26.		



BOMBA 160 cS.



FUZE B.1.

ITALIAN Designation of fuze.		Our Designation B1 Classification. Nose - Mech Impact. Markings. Nil. Bomb in which employed.
1.	Colour	Vanes - painted light green.
2.	O/A length less gaine.	7.3-ins/185-mm.
3.	Max. spread over vanes.	7.0-ins/178-mm.
4.	Dia. over threads where screwed into bomb.	3.6-ins/90-mm.
5.	Material.	Vanes - aluminium Bush in vane cap, cap holder and gaine adaptor - brass Shear Washers - copper Remainder - steel.
6.	Type of Gaine.	Long gaine type 1
7.		

Description of Fuze.

This fuze is a modification of type B fuze described on Page 250. The steel shearing collar is replaced by two copper discs (1) and the cap and vanes are fitted internally with a brass screw threaded collar (2) which in the unarmed position screws down on the central screw against the body of the fuze and is held in that position by the safety pin (3). The ball locking device incorporated in the type B fuze has been dispensed with.

Handling of Fuzed Bomb.

See instructions under description of bomb (Page 245).

ITALIAN Designation of Fuze. Spoletta per bomba 160 cS		Our Designation. Type B. Classification. Nose - Mech Impact. Markings. Nil. Bomb in which employed. 160 cS.
1.	Colour	Vaned Cap - Apple Green Body - Unpainted Steel.
2.	O/A length less gaine.	8.5-ins/217-mm.
3.	Max. spread over vanes.	7.5-ins/192-mm.
4.	Dia. over threads where screwed into bomb.	3.5-ins/88-mm.
5.	Materials.	Vaned Cap - Aluminium. Body - Steel Cap holder - Brass
6.	Type of gaine.	Long gaine type 1
7.		

Description of Fuze.

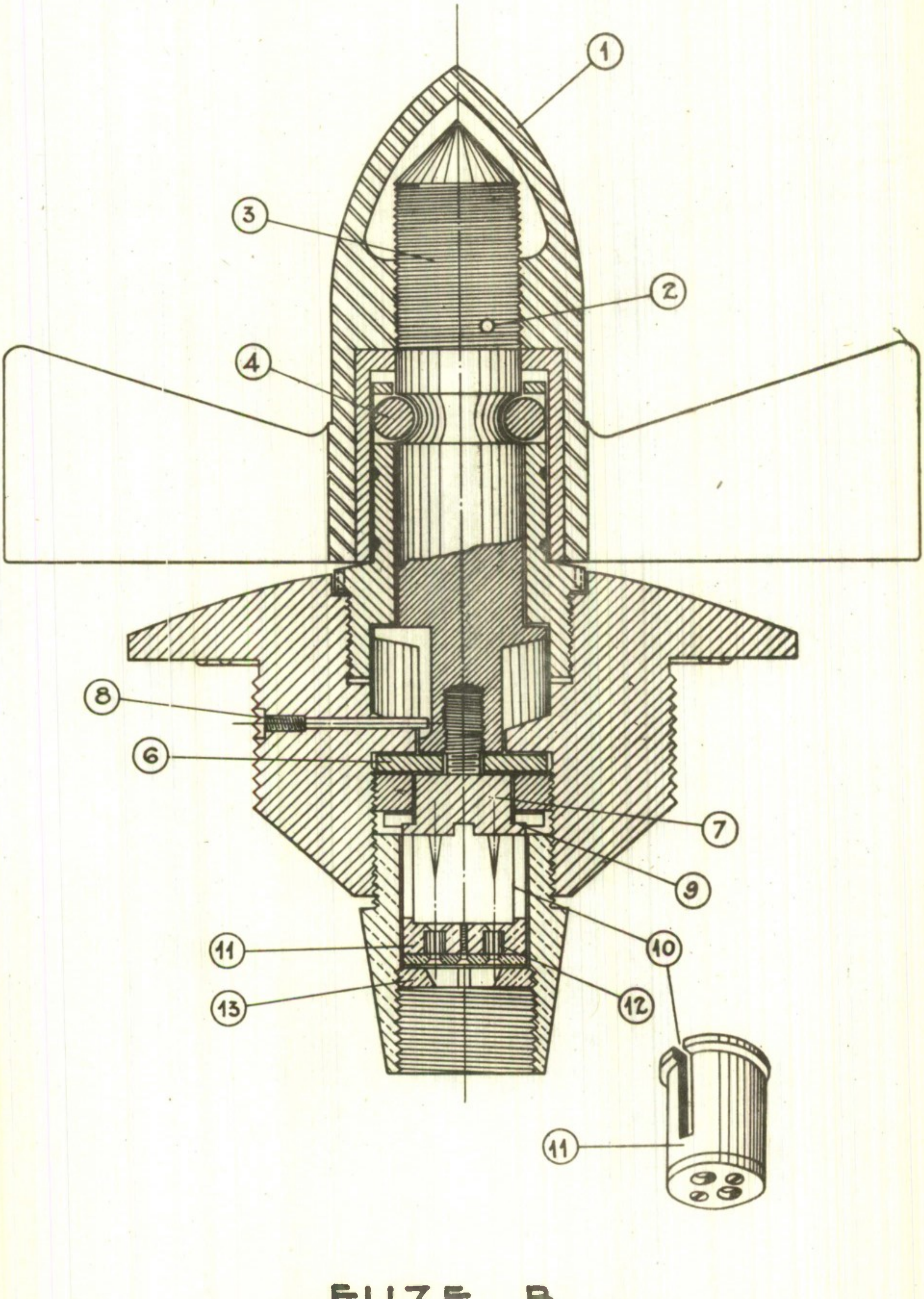
In the unarmed condition, the vaned cap (1) is prevented from rotating by a safety pin passing through the hole (2) in the striker (3). There are two pairs of holes in the cap either of which, as convenient, can be used for the insertion of the pin.

The fuze is fully armed when the cap (1), having become unscrewed from the striker, has fallen away and released the four steel balls (4) which also fall away thus freeing the striker. Rotation of the cap is made easier by the provision of lubrication grooves (5).

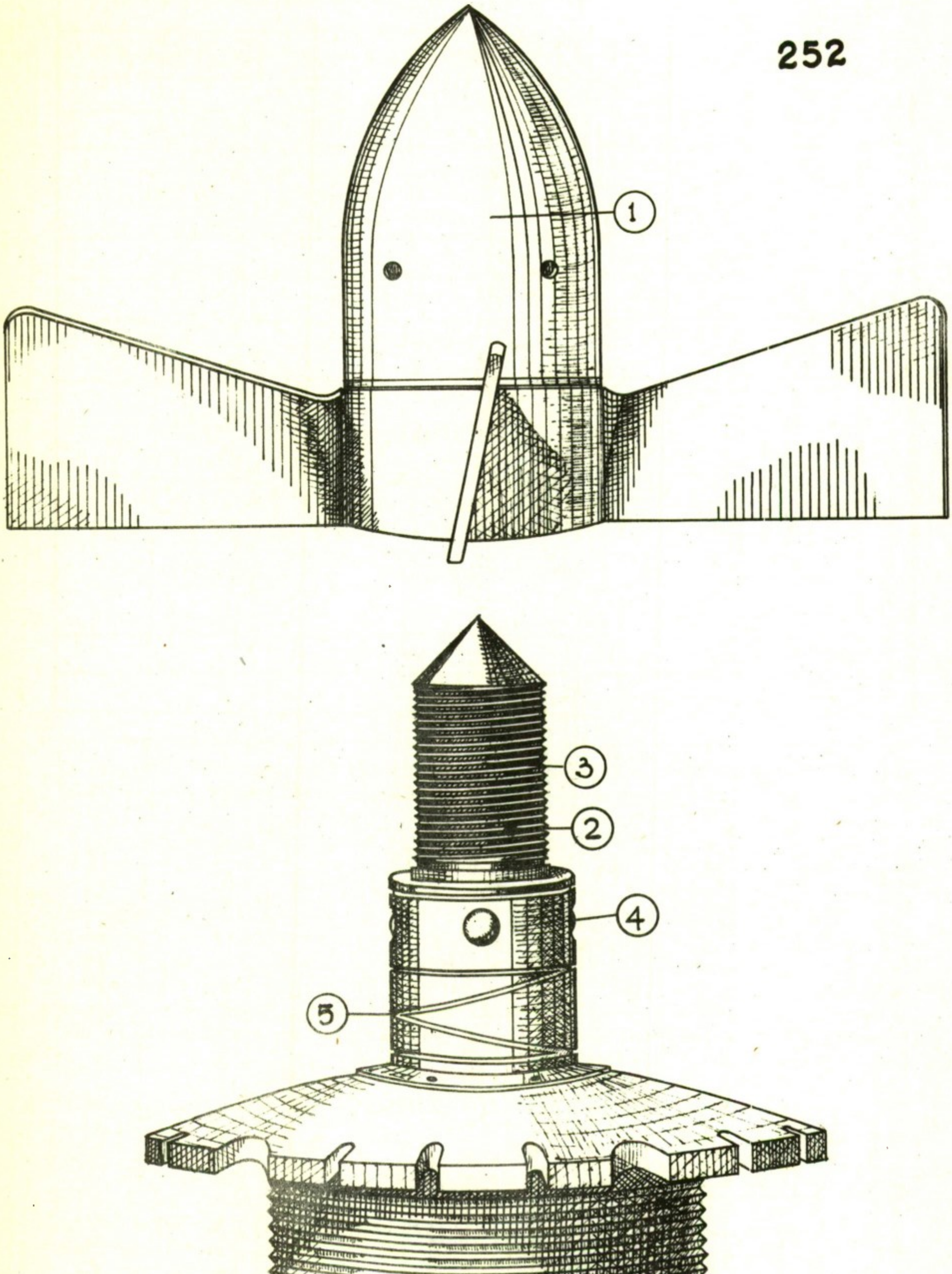
Into the base of the striker, through the shear washer (6), is screwed the needle holder (7) fitted with two needles. Rotation of the striker, when the vaned cap unscrews, is prevented by the long screw (8) which projects into a longitudinal groove in the striker. The needle holder has two lugs (9) which project into the vertical slots (10) in the brass cap holder (11). This locates the caps (12) with respect to the striker needles. The cap holder is retained in the fuze by the screw-threaded ring (13).

Handling of the Fuzed Bomb.

See instructions under description of bomb (Page 245).



FUZE B.



FUZE
B.

ITALIAN Designation of fuze.		Our Designation Tail Fuze for 160 cS
		Classification. Mech Tail - Underwater.
		Markings.
		Bomb in which employed 160 cS
1.	Colour.	Main body painted light grey Pressure plate light grey and red Remainder unpainted.
2.	O/A length less gaine.	33.6-ins/855-mm.
3.	Max. spread over vanes.	6.8-ins/175-mm.
4.	Dia. over threads where screwed into bomb.	1.75-ins/44-mm.
5.	Material.	Pressure plate - Alloy Adjusting gear) Main body) Striker needles) - Steel Cocking wedges) Various ball races) Remainder - Brass
6.	Type of Gaine.	Long gaine type I
7.		

This fuze is designed to function after falling to a pre-selected depth in water and for the purpose of description may be divided into five main parts, viz: The main body; the arming mechanism; the striker cocking assembly; the fuze setting mechanism; and the pressure plate.

The main Body.

This consists of a brass casting (1), to the top of which is secured by means of a steel collar (2) a second brass casting (3), which is capable of rotational movement. The steel collar (2) is locked in position by means of the set screw (4). Screwed to the base of the casting (1) and retained by three set screws is a steel tube (5) within which are three guides (6), (7) and (8) for the steel arming rod (9). Each of these guides is located by three set screws, two guides being in the form of brass rings and the third a hollow brass cylinder.

The brass collar (10) is provided for locating the fuze correctly in the tail end of the bomb.

The Arming Mechanism.

The arming mechanism consists of a heavy three bladed steel water-screw (11), which is mounted on a brass casting (12) and secured by three set screws. The casting (12) screws onto the projecting end of the casting (3) and has mounted within it a brass cylinder (13) which is retained by the brass collar (14). This cylinder is capable of independent rotation and is scrrw-threaded internally to receive the outer end of the arming rod (9).

The inner end of the arming rod projects through the striker body (15) which it locks in position by extruding two steel balls (16) into a groove in the wall of the striker housing (17). This latter screws into the open end of the steel tube (5))and is retained by three set screws, thus forming a continuation of the hollow cylinder (8).

The Striker Cocking Assembly.

Surrounding the arming rod within the hollow cylinder (8) is a heavy brass inertia bolt (18) which is recessed & coned at its lower part to receive two specially shaped retaining wedges (19). The striker spring (20) is located over a projection on the inertia bolt at one end and within the hollow end of the striker body (15) at the other.

The Fuze Setting Mechanism.

The cylinder (13) is shaped externally to form a concave worm wheel (21) which engages with the steel worm drive (22). This latter is mounted on a steel spindle (23) which projects through the wall of the casting (12) and is fitted with with a square sectioned recess to receive the Fuze Setting Key (24).

Screwed into the top of the casting (12) and secured by a set screw is the brass casting (25). A small screw (26) projects through the wall of this latter casting into a groove in the wall of the steel cylinder (27) which screws by means of a left hand thread onto the upper end of the brass cylinder (13).

Four U-pins, projecting internally from the brass bush (28) in the outer end of the arming rod (9), engage in the spiral grooves in the spindle (29) which latter projects through the casting (25) and keys with a graduated disc (30). This disc is enclosed by the end cap (31) which screws onto the casting (25) and is provided with a shaped slot (32) for viewing the graduations.

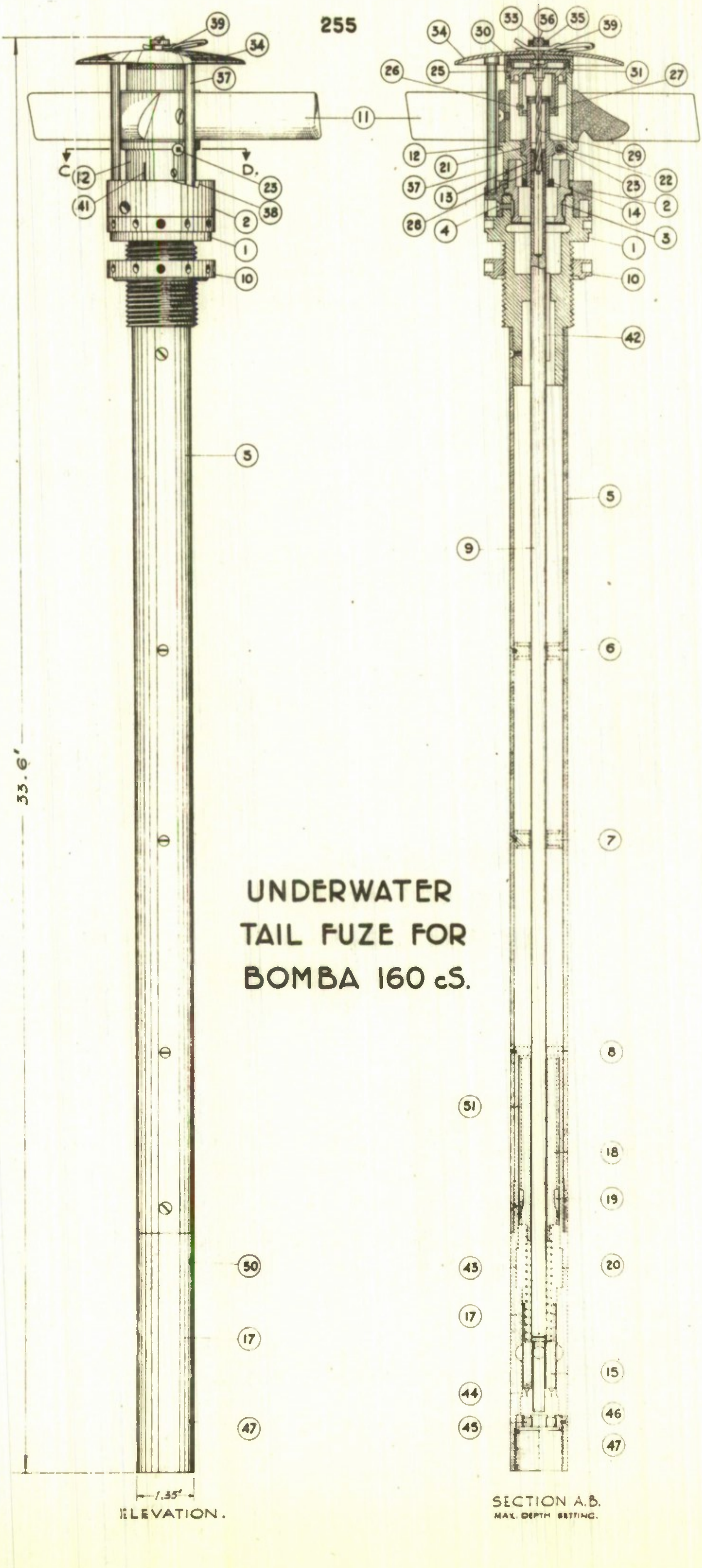
The Pressure Plate.

Mounted on a projection (33) from the end cap (31) is a light metal pressure plate (34) retained by a steel collar (35) through which passes a light copper shear pin (36). This plate is provided with a shaped slot which coincides with the slot (32) for viewing the fuze setting. Attached to the underside of the pressure plate are three equi-spaced steel legs (37) each of which rests at the foot of an inclined plane (38) inset in the surface of the steel collar (2). A heavy split pin (39), passing through the projection (33) and the boss on the pressure plate (34), serves as a safety device during transport on the ground. The pin is wired in position and and the ends of the wire are held within a lead seal.

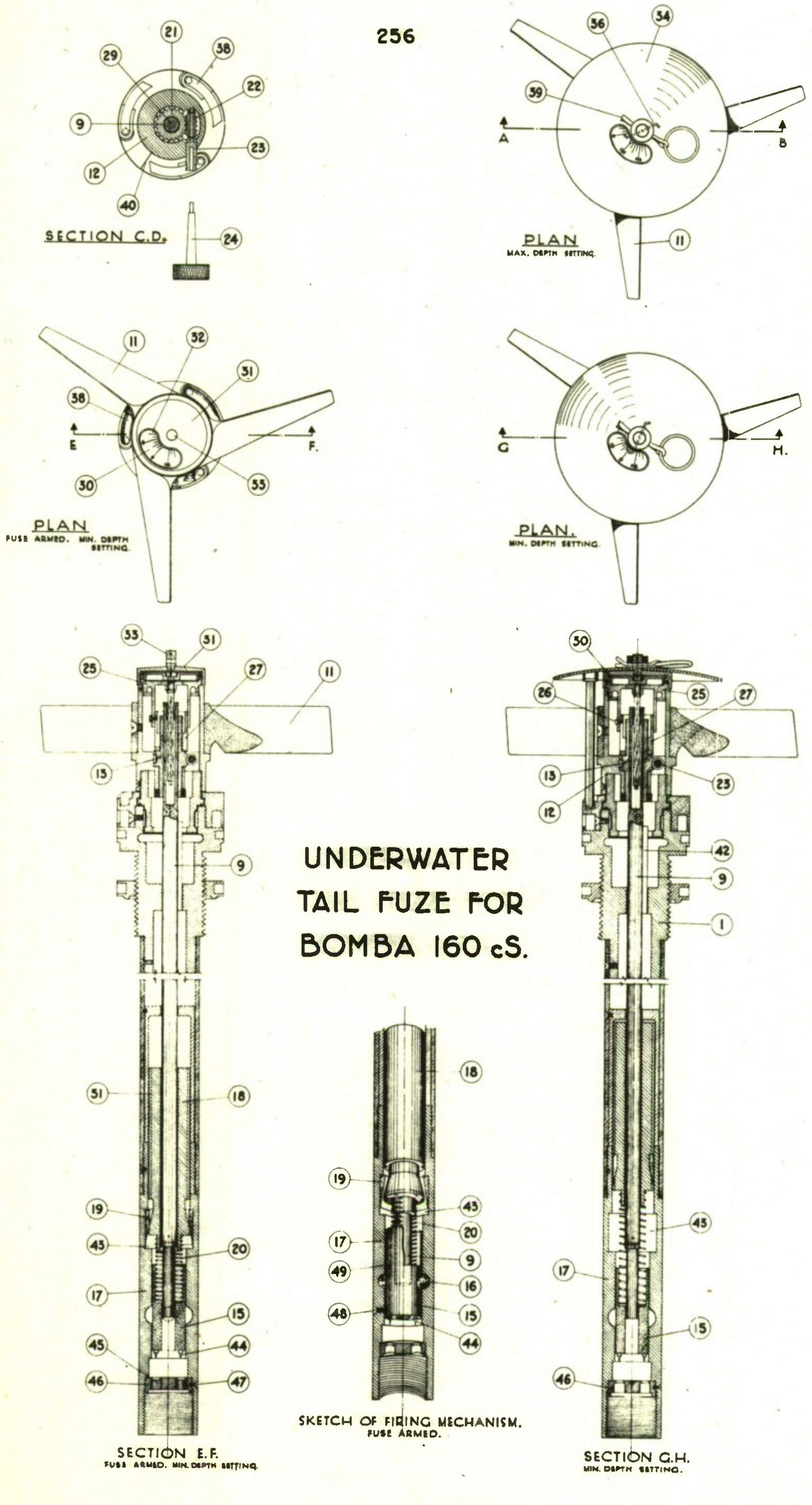
To Set The Fuze.

The disc (30) is graduated from 0 to 90 to indicate true depth of water in metres providing the 'setting mark' (40) on the upper surface of the steel collar (2) is in alignment with the 'setting mark' (41) engraved longitudinally on the brass casting (3). During transport the fuze is normally set at its maximum setting of 90 metres. The relative positions of the moving parts are then as shown in section AB.

If it is desired to reduce the depth setting, the setting key (24) is inserted in the spindle (23) and rotated in the direction of the arrow engraved on the head of the key. This imparts rotary motion to the cylinder (13) through the worm drive and, since the arming rod (9) cannot rotate because of the spline (42) engaging in a groove in the wall of the casting (1), this rod is slowly withdrawn from the striker body. At the same time the rotation of the cylinder (13) relative to the casting (12), and hence also relative to the casting (25), causes the steel cylinder (27), which is keyed to the casting (25), to move inwards along the threaded portion of the cylinder (13). When the cylinder (27) has reached the limit of its travel in this direction, i.e.; when the set-screw (26) abuts the end of the groove as shown in Section EF, the setting key (24) can be rotated no further and the reading indicated on the graduated disc (30) is 10 metres. The cylinder (27) thus acts as a safety device to prevent the complete withdrawal of the arming rod when setting the fuze and it is still necessary for the bomb to fall through 10 metres of water in order to complete the withdrawal and operate the fuze.



UNDERWATER TAIL FUZE FOR BOMBA 160 cS.



UNDERWATER TAIL FUZE FOR BOMBA 160 cS.

Operation of the Fuze.

When the bomb is loaded into the Aircraft, the lead seal on the wire securing the transport safety pin is broken and the pin is replaced by a flexible wire attached to the bomb rack. This flexible wire is withdrawn automatically when the bomb is released.

On impact of the bomb with the surface of the water the heavy brass inertia bolt (18) sets forward compressing the striker spring (20). When the inertia bolt attempts to return to its former position, the two shaped wedges (19) riding on the coned surface of the bolt are forced outwards and engage with the groove (43) in the wall of the striker housing (17) thus maintaining the compression of the striker spring.

When the fuze enters the water, water pressure, tending to rotate the water-screw (11) and force the legs (37) of the pressure plate (34) up the inclined planes (38), combines with water pressure on the underside of the pressure plate itself to shear the copper pin (36) and force the plate clear of the fuze, thus releasing the water-screw.

Rotation of the water-screw causes rotation of the brass cylinder (13) and consequent withdrawal of the arming rod (9). No interference in this withdrawal is caused by the steel cylinder (27), since there is no relative motion between the cylinder (13) and the casting (25).

When the arming rod is completely withdrawn, the steel balls (16) move inwards and the compressed spring (20) forces the striker needles (44) into the percussion caps (45), thus initiating the detonation of the main filling of the bomb.

The percussion caps are located in the brass cap holder (46), which is a push-fit in the striker housing (17) and secured to it by the set-screw (47). The striker needles (44) are located with respect to the caps by means of the set-screw (48) riding in the groove (49) in the striker body (15).

Two screws (50) close two holes in the wall of the striker housing (17). These holes provide access to the groove (43) and may be used for the introduction of lubricating fluid or, if it be necessary, for effecting the release of the striker cocking mechanism. Two lubricating grooves (51) extend along the full length of the inertia bolt (18).

Handling of the Fuzed Bomb.

See instructions under description of bomb (Page 245).

SECTION 5 (d)

(d) ANTI-TANK BOMBS

3.5 Kg HOLLOW CHARGE A tk BOMB

The bomb body is in two parts which screw together at (1). They are made of aluminium alloy approximately 1-mm. thick. The forward end (2) of the body is dome shaped, 4.5-ins. deep and 6.0 ins. in diameter. It is fluted in six places (3) to give added strength against crushing. This increased resistance to the collapse of the dome on impact is important since the unlined hollow charge will then be held off the target and also prevented from breaking up until the sensitive fuze has had time to function. Below the threaded portion on the inside of the dome is an L-section flange (4), 0.7-ins. wide. On this, in the assembled bomb, rests the main charge (5). To the rear portion (6) of the egg-shaped bomb body the four stabilisers of the tail unit are rivetted. Each stabiliser consists of a flat fin (7), ribbed diagonally as shown at (8), and a portion (9) which is pressed to form one quarter of the tail cone. Each of these four sections is rivetted to the adjacent section in five places as indicated at (10). The tail is made of the same alloy as the body.

On one tail fin is rivetted the ribbed disc (11) which takes the shaped pin (12) as shown. This pin, being held in position by reason of its special shape, acts as a stop to the vanes of the fuze. The ring (13) is used solely as a loop for withdrawing the pin when the bomb is launched.

The fuze screws into the rear end of the bomb at (14) and is supported in the outer end of the tail cone. It is assembled in the bomb by first removing the split pin (15) and withdrawing the vanes (16). The brass sleeve (17) is then unscrewed and the fuze is screwed into the base of the bomb from the inside. The fuze is then re-assembled by screwing in the sleeve from the outer end of the tail and replacing the vanes. This bomb is usually transported and stored filled and fuzed but without the detonator (18) and the detonator retaining collar (19) both of which are packed separately.

The bomb is suspended by the lug at (20).

The main filling (5) consists of a pink substance and the exploder pellet (21) (weight 3.6-ozs) is pinkish white in colour. These two substances have been subjected to analysis, and have the following compositions:-

Main Filling.

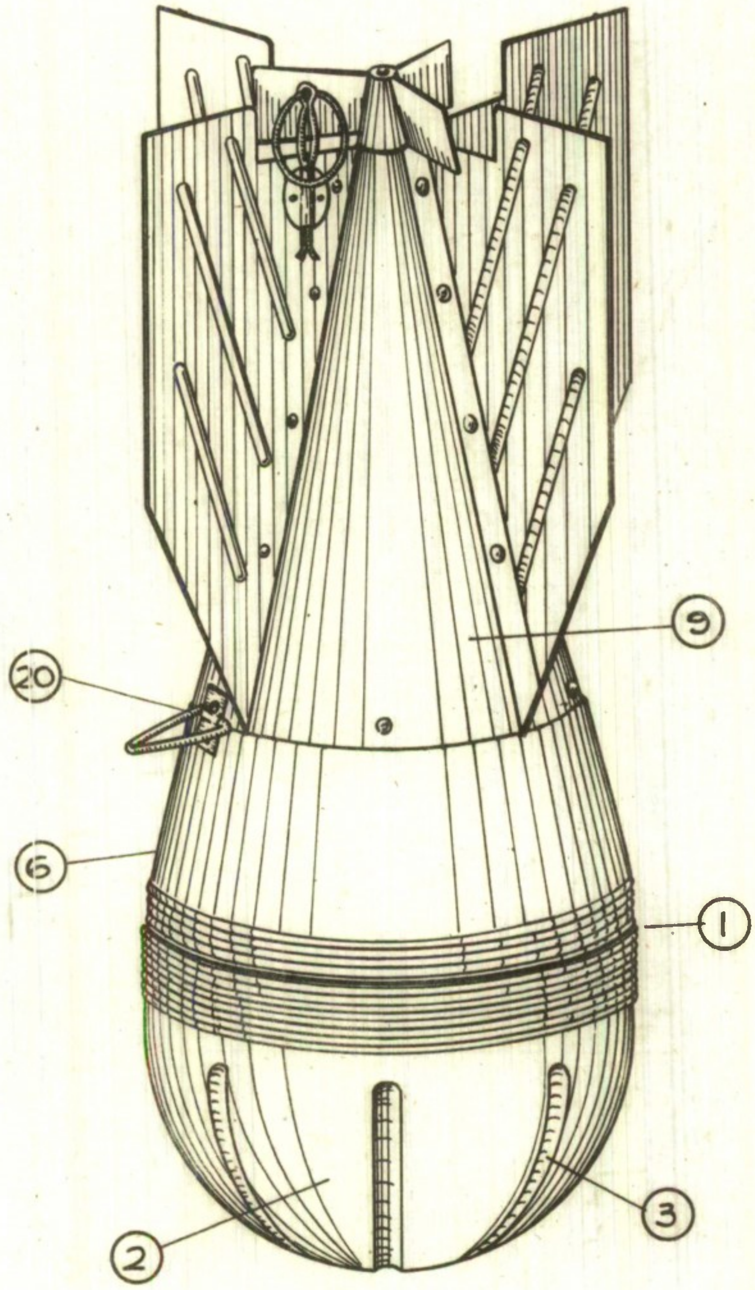
R.D.X.	60%
T.N.T.	38%
Wax	2%

Exploder Pellet.

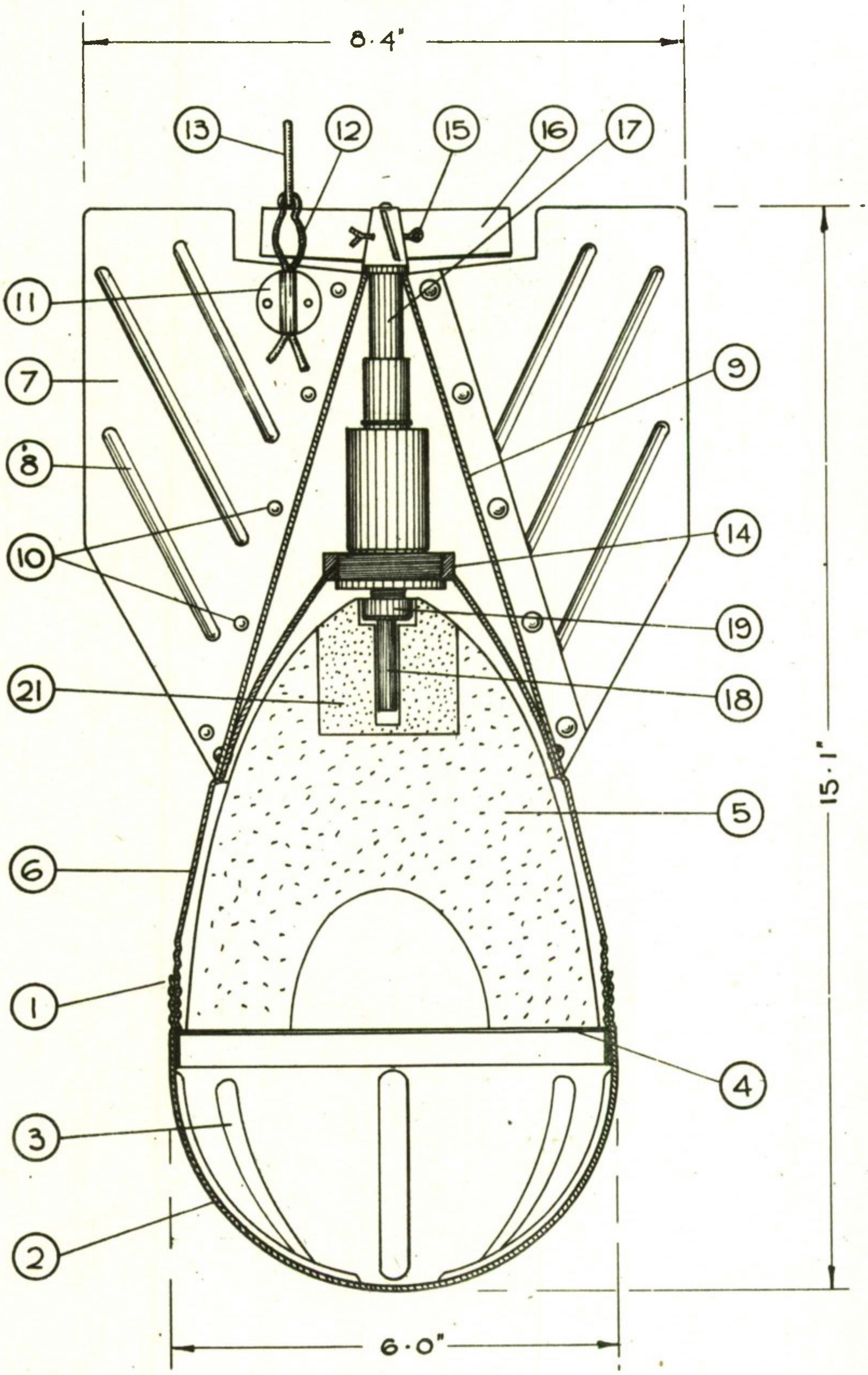
R.D.X.	95%
Wax	5%

In the base of the charge is a hollow approximating in section to a parabola. This hollow has a depth of 2.0-ins. and is 2.8-ins. across the open end.

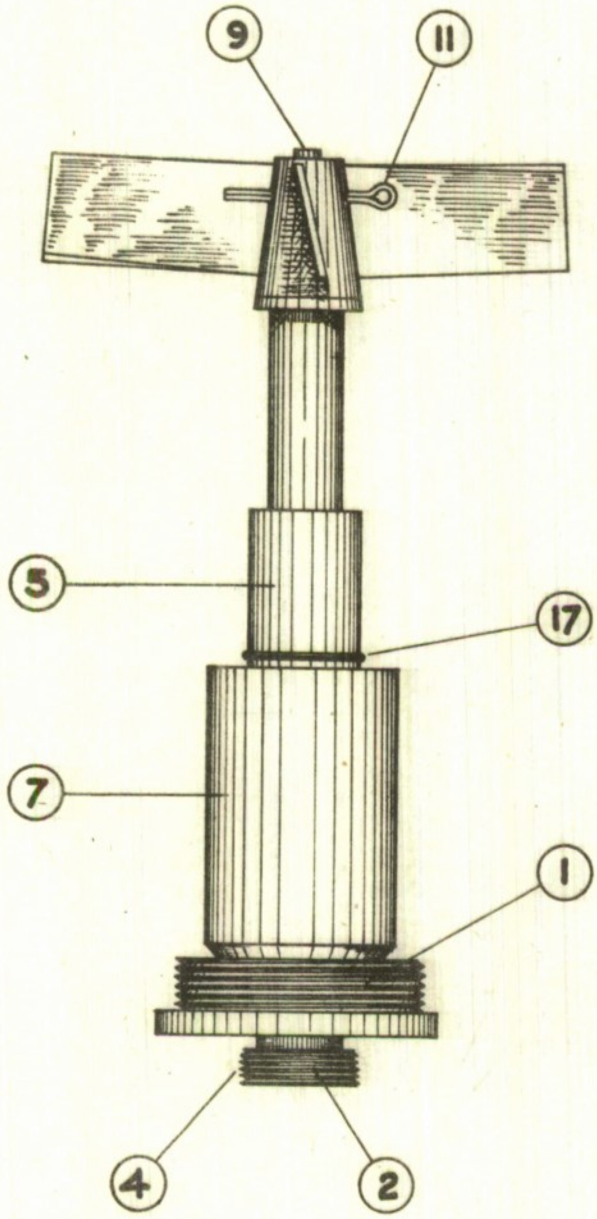
Designation Old Bomba New Bomba		Type A TK HOLLOW CHARGE
1.	O/A Length of Fuzed Bomb.	15.1-ins/384-mm.
2.	O/A Length less Fuze or Lug.	15.1-ins/384-mm.
3.	Length of Body.	
4.	Dia. of Body.	6.0-ins/152-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	0.04-ins/1-mm.
7.		
8.	Material and construction of bomb body.	See overleaf.
9.	Suspension System.	HORIZONTAL - Lug
10.	Colouring of bomb.	Body apple green with red spot at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	7.9-ins/200-mm.
14.	Dia. of tail.	8.4-ins/212-mm.
15.	Material of tail.	Sheet Aluminium alloy.
16.	Colouring of tail.	Apple green.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	See overleaf.
19.		
20.	Nature of filling.	See overleaf.
21.	Weight of filling.	2.15 Kg.
22.	Total Weight.	3.5 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Tail (Page 267).
26.		



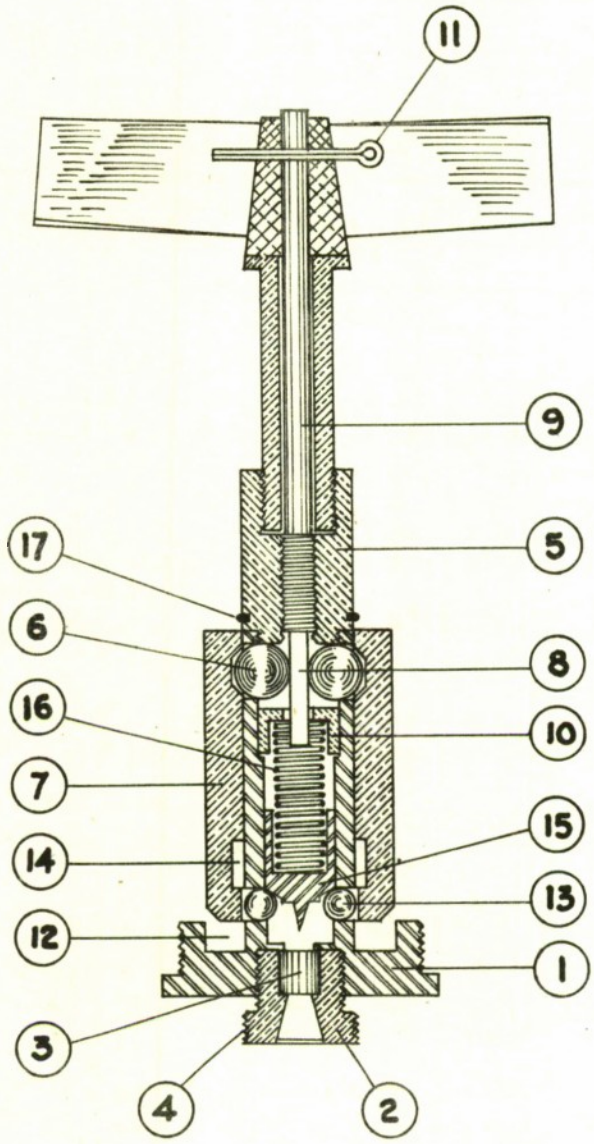
3·5 Kg. HOLLOW CHARGE
A tk BOMB.



3·5 KG. HOLLOW CHARGE
A tk BOMB.



FUZE FOR 3·5 KG.
HOLLOW CHARGE A tk BOMB.



FUZE FOR 3·5 KG.
HOLLOW CHARGE A tk BOMB.

ITALIAN Designation of fuze.		Our Designation. Tail Fuze for 3.5 Kg. Hollow Charge A tk. Bomb.
		Classification Tail - Mech Impact.
		Markings. Nil.
		Bomb in which employed. 3.5 Kg Hollow Charge A tk. Bomb.
1.	Colour.	Vanes - unpainted zinc alloy. Fuze - unpainted brass.
2.	O/A length less gaine.	5.4-ins/138-mm.
3.	Max. spread over vanes.	4.3-ins/110-mm.
4.	Dia. over threads where screwed into bomb.	1.4-ins/36-mm.
5.	Material.	See below.
6.	Type of Gaine.	Special detonator with exploder pellet.
7.		

Description of Fuze.

The body of the fuze is made in three parts. The lowest portion (1) is made of zinc alloy and screws into the rear end of the bomb from the inside. Into the base of (1) screws the cap holder (2) containing the cap (3). An aluminium collar holding a flanged detonator screws on to the holder at (4).

The central portion (5) of the fuze is of brass and screws into the part (1). It houses the two steel safety balls (6) which in the unarmed condition of the fuze project through the portion (1) into a groove in the heavy arming sleeve (7). In this way the arming sleeve is locked to the part (5).

The steel balls are held in the safe position by the projection (8) of the arming spindle (9). This latter is supported in the brass guide (10).

The three vanes of the fuze mounted on a conical hub are made of zinc alloy. The vane assembly is attached to the spindle by a brass split pin (11).

Action of the fuze.

On release of the bomb a shaped pin attached to one of the tail fins of the bomb is withdrawn, so allowing the vanes to rotate. The vanes rise with the spindle as they rotate and when 0.5-inch of spindle is visible the fuze is fully armed.

The withdrawal of the extension (8) allows the steel balls (6) to move inwards thus freeing the heavy arming sleeve (7). This latter is prevented from moving outwards by the split ring (17) which is located in a groove in (5). On impact the sleeve sets down into the recess (12) in the base of the fuze and so frees the two steel balls (13). These are pressed outwards into the groove (14) in the arming sleeve and the striker is thus released.

The striker (15) consists of a hollow tube into which fits a tightly coiled spring (16). On release of the striker head the needle is forced down on to the cap (3). Tests have been performed which indicate that the armed fuze will function with a drop of only 2-inches and it should therefore be regarded as a very sensitive fuze.

Handling of fuzed bomb.

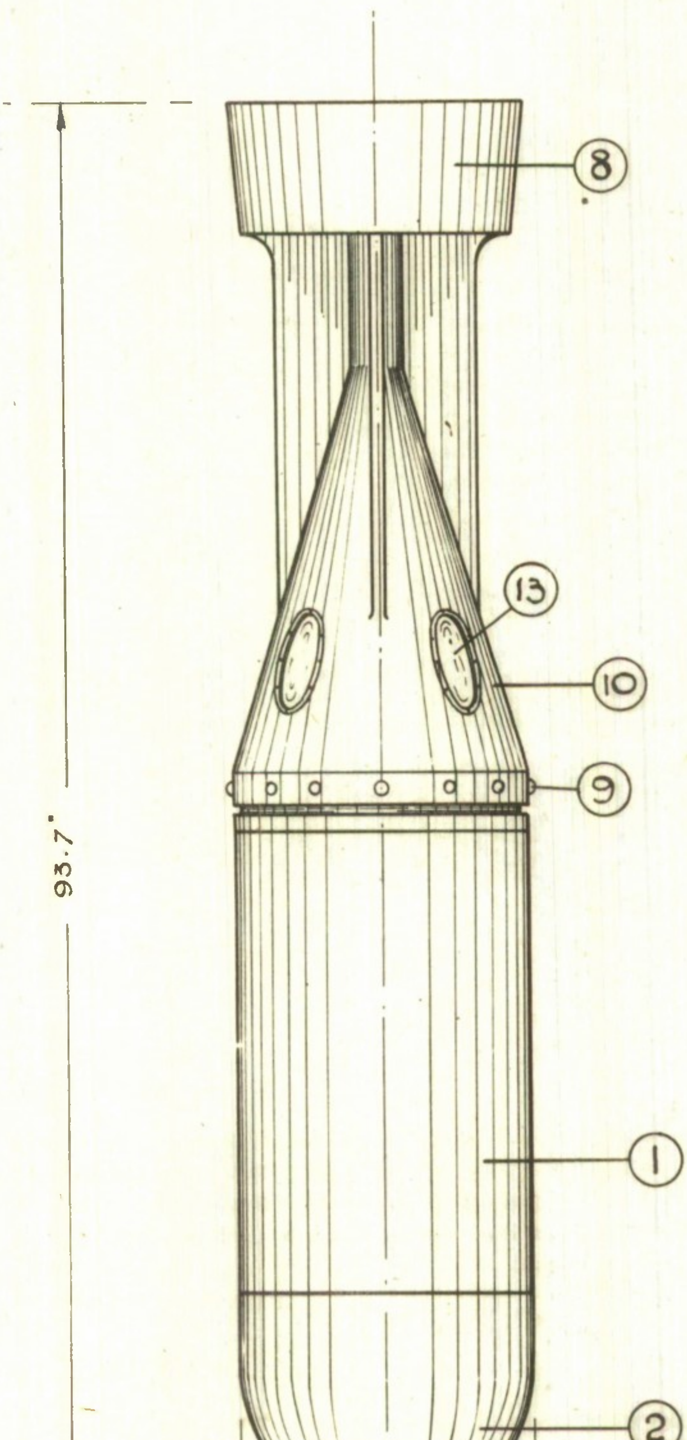
If the vanes are in place and have not risen above the fuze the latter is unarmed and the bomb may be handled with safety.

If the vanes have risen 0.5-inch or more above the fuze the latter is fully armed and is in a very sensitive condition. It should be demolished in situ by detonating 1-lb. Wet Guncotton adjacent to the conical portion of the bomb.

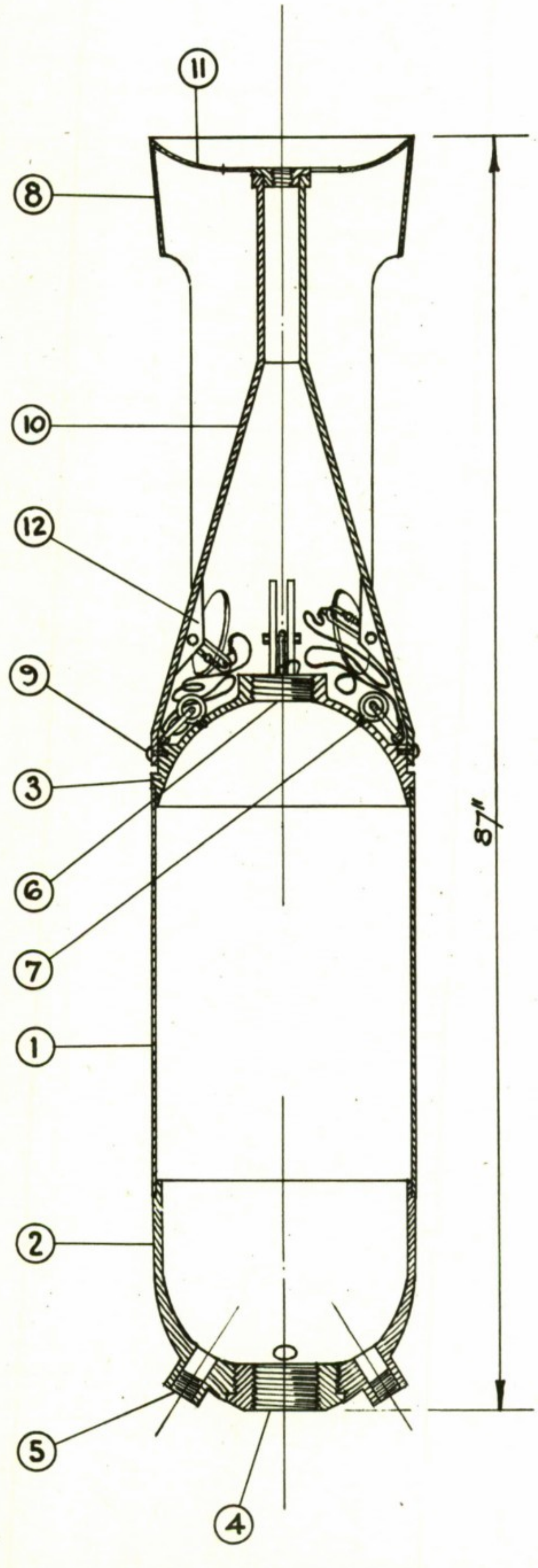
If NO other course is open an attempt to move the bomb might be made by carefully lifting the bomb until it is nose upwards and carrying it away in that position without any jerking or jolting.

SECTION 5 (e)

(e) DEMOLITION BOMBS



BOMBA 500. R.O.



BOMBA 500. R.O.

BOMBA 500 R.O.

The bomb is built up from a cylindrical steel tube (1) ¼-in. thick and 18.1/8-in. external diameter. To the ends of this are welded the dome-shaped head (2) and the base (3). The former contains the central threaded hole (4) to receive the clockwork fuze. Equally spaced round the socket for the time fuze are the threaded sockets (5) for the four impact fuzes.

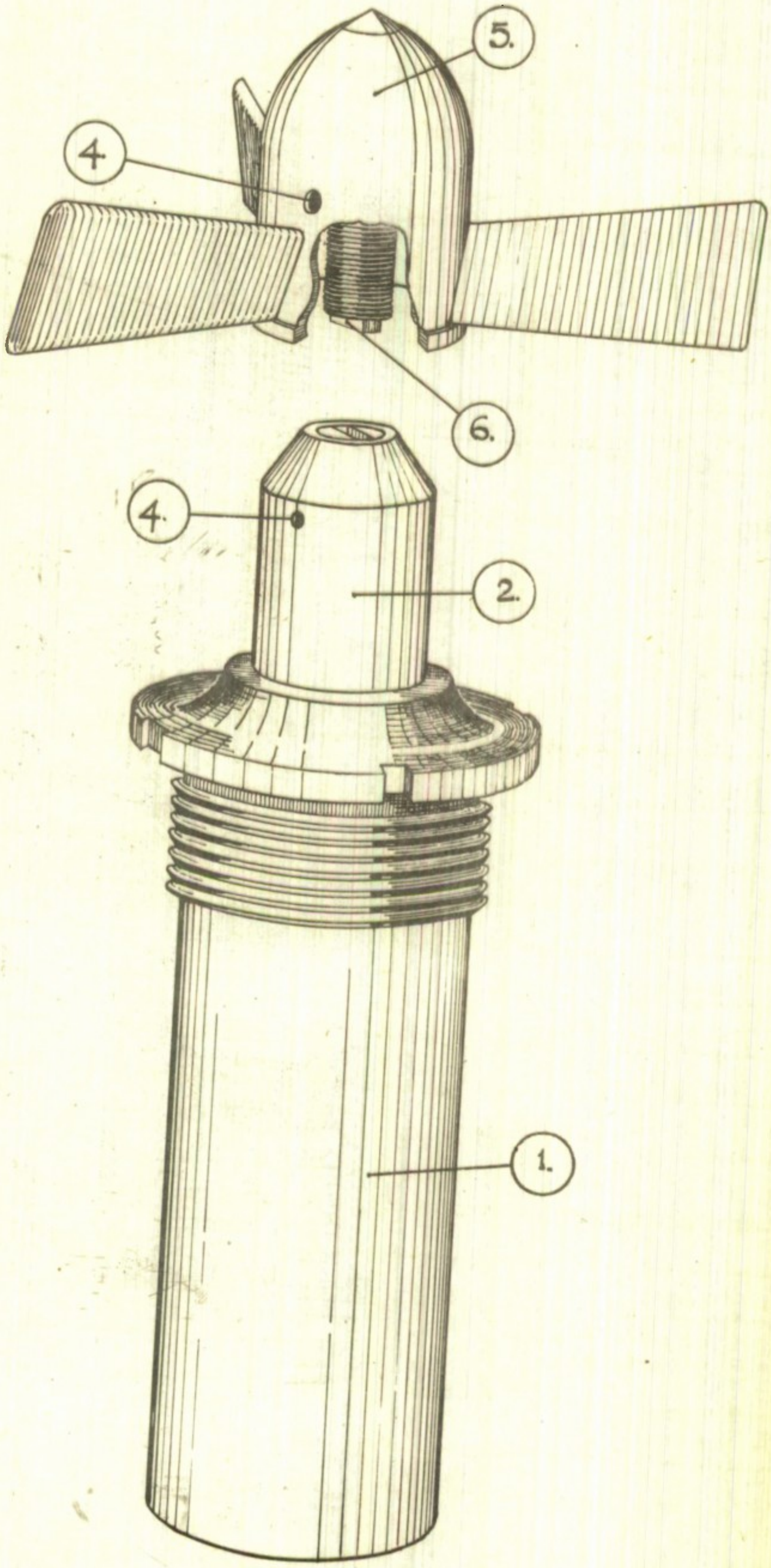
The base of the bomb has a central threaded socket (6) to take the tail long delay fuze. Arranged round this are four eye-bolts (7).

The tail which has four fins and a wide strengthening band (8) is cast in light alloy and is secured to the base of the bomb by the screws (9). The tail is built up on a hollow cone (10) through which passes the extension piece to operate the tail fuze. The space between the rear end of the strengthening band (8) and the projection of the tail cone (10) is partially closed by the cast web (11). Within the tail cone are four brackets (12) to each of which is attached by means of a shackle a 700-mm. length of 7-mm. diameter S.W.R. The other end of the S.W.R. is attached by means of another shackle to one of the eye-bolts (7).

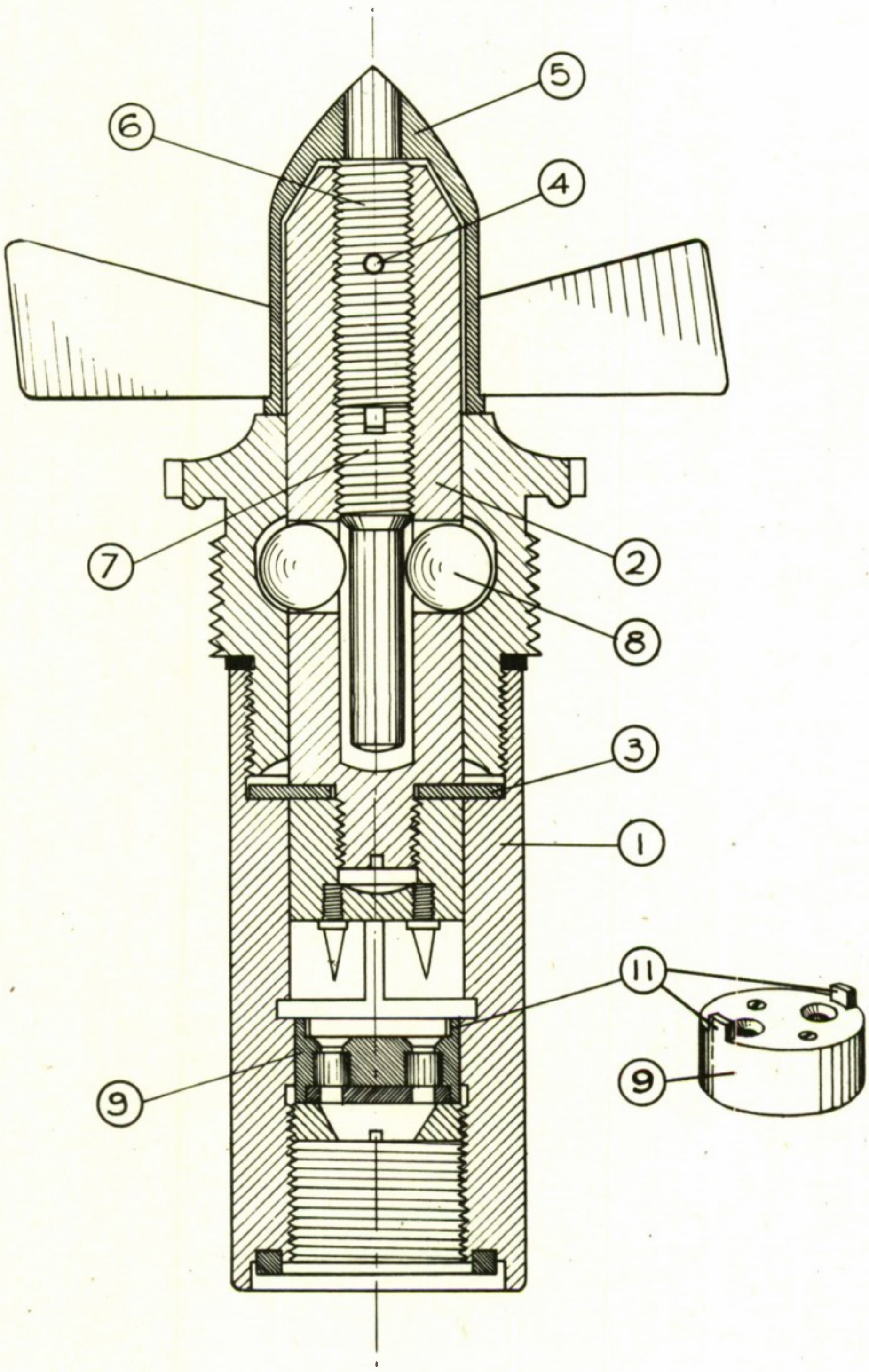
Four holes giving access to the inside of the tail cone are closed by four plates (13) which are retained by screws.

If the bomb hits a highly resistant target, such as a dock, a breakwater, a capital ship or even a substantial building, the bomb will detonate on the operation of one or more of the impact fuzes. Only if the bomb hits a target whose resistance is insufficient to operate the impact fuzes, e.g. water, will it function as a long delay bomb.

Designation.		Tyoe.
Old	Bomba 5 S 1	G.P. DEMOLITION LONG DELAY OR IMPACT
New	Bomba 500 R.O.	
1.	O/A Length of Fuzed Bomb.	93.7-ins/2380-mm.
2.	O/A Length less Fuze or Lug.	87.4-ins/2216-mm.
3.	Length of Body.	50.7-ins/1288-mm.
4.	Dia. of Body.	18.1-ins/460-mm.
5.	Max. thickness at (point (nose	2.8-ins/71-mm.
6.	Wall thickness	0.25-ins/6-mm.
7.		
8.	Material and construction of bomb body.	See overleaf
9.	Suspension System.	Horizontal - Suspension Band.
10.	Colouring of bomb.	Body dull blue with 2-ins. Red Band at the nose.
11.	Markings on bomb.	
12.		
13.	Length of Tail.	42.8-ins/1089-mm.
14.	Dia. of tail.	18.1-ins/460-mm.
15.	Material of tail.	Cast Light Alloy.
16.	Colouring of tail.	Dull blue.
17.	Markings on tail.	Nil.
18	Construction of Tail.	Cast alloy.
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	NOSE. LONG DELAY CLOCKWORK + 4 TYPE J. TAIL. LONG DELAY CLOCKWORK (pp 277 et seq.).
26.		



FUZE J.



FUZE

J.

ITALIAN Designation of Fuze.		Our Designation Type J.
		Classification Nose - Mech Impact.
		Markings. Nil.
		Bomb in which employed. 500 R.O.
1.	Colour	Black
2.	O/A Length less gaine.	7.9-ins/200-mm.
3.	Max. spread over vanes.	5.6-ins/142-mm.
4.	Dia. over threads where screwed into bomb.	2.2-ins/55-mm.
5.	Materials.	Brass and Steel.
6.	Type of gaine.	Long Gaine Type 1.
7.		

Description of Fuze.

This is a heavy nose fuze employed in the 500 R.O. bomb. Four such fuzes may be used in a bomb. When armed these fuzes lose their caps and vanes and the remaining portions protruding from the bomb have been referred to in certain reports as 'horns'.

This fuze is made partly of steel and partly of brass. The steel portion consists of the lower part (1) of the body, thr striker unit (2) and the shear washer (3).

When the safety pin is withdrawn from the hole (4) the cap (5) and the vanes are free to rotate. During rotation the cap and the threaded rod (6) attached to it, rise above the striker (2). The rod (6) keys with the withdrawal rod (7), the upper part of which is threaded. When this withdrawal rod has risen to the top of the striker, the cap and vanes fall away. At the same time the steel balls (8), which immobilise the striker, become free to move inwards. On impact the striker shears the washer (3). The cap holder (9) is a tight fit into the body of the fuze, and three lugs (11) fit into grooves in the body to locate the caps with respect to the needles.

Handling.

When the cap and the vanes are missing the fuze is fully armed. Care should be taken in handling the bomb containing this fuze in view of the possibility of a partially sheared washer. If the bomb must be moved it should be carried horizontally and the striker protected against accidental jarring.

If less than 1.5-inches of the black steel cylinder (2) projects beyond the brass fuze body, the washer has sheared and the cylinder should be firmly secured to prevent further movement. The fuze may then be unscrewed and withdrawn complete with detonator and gaine. Both these latter should be unscrrwed from the fuze and packed separately.

ITALIAN Designation of fuze.		Our Designation. Long Delay Nose.
		Classification. Long Delay Clockwork.
		Markings. Nil.
		Bomb in which employed. 500 R.O..
1.	Colour.	Unpainted Steel.
2.	O/A length less gaine.	16.25-ins/408-mm.
3.	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	
5.	Material.	See below.
6.	Type of Gaine.	Long gaine Types 5 or 6
7.		

Description of Fuze.

The fuze is a nose fuze. The body is made of steel, and its greatest length, not including the gaine, is 16.1/4-ins.

To facilitate assembly, the fuze body consists of the following parts:-

A. This is the nose piece which carries the vanes (1) and houses the withdrawal rod (2).

B. The ignition mechanism, which functions on impact, is housed in the part B. This part is covered at its inner end by the copper disc (3). The rim of this plate is compressed between the parts B and C to produce a gas tight joint.

C. Into C, which is the main housing for the clock mechanism, is screwed the part B. It also contains the heavy steel washer (4) which is coned to allow the movement of the copper disc.

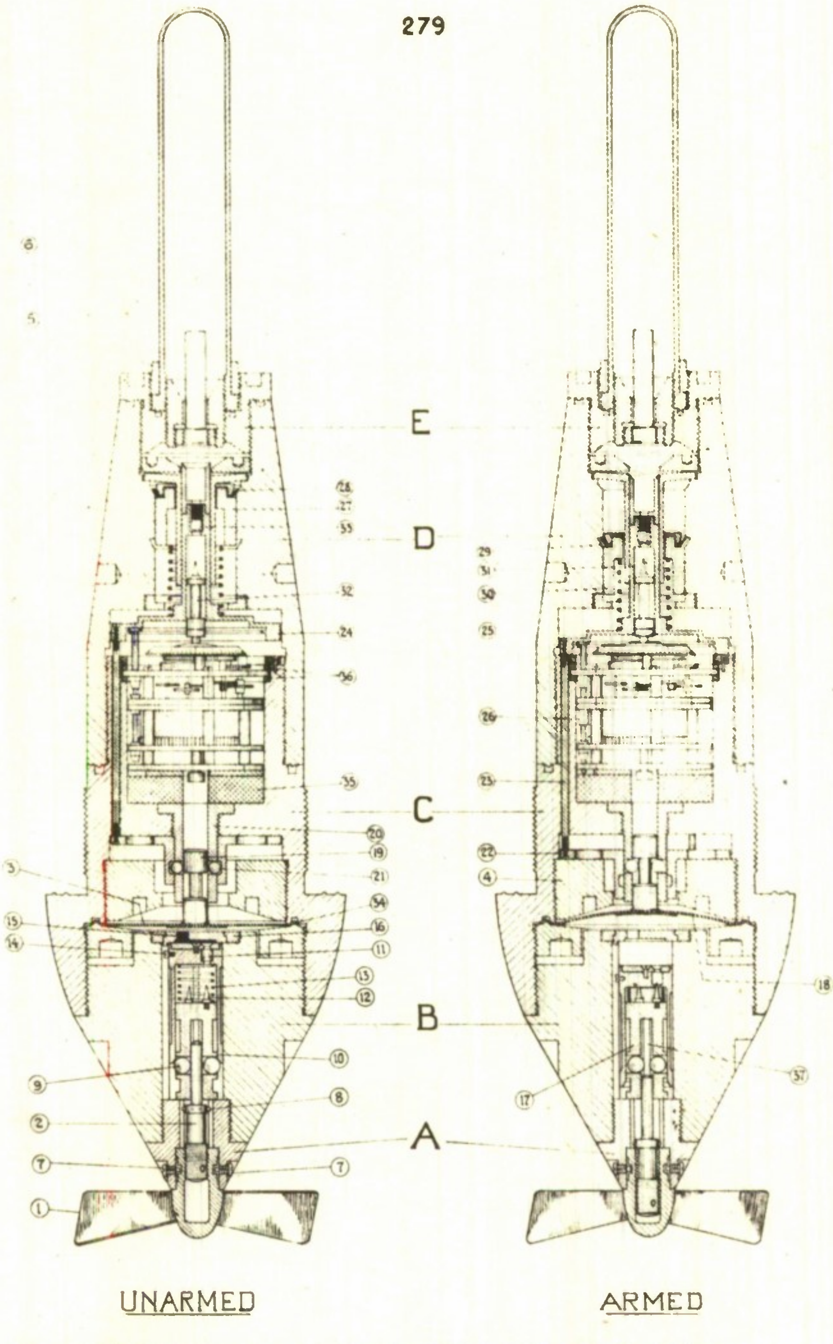
D. The clock housing is completed by the part D, which also contains the arming mechanism of the fuze.

E. This is the base piece which screws into the end of D. Secured to it by the locking ring (5) is the gaine (6) with its detonator and adaptor.

The whole of the mechanism within the fuze can be most conveniently considered as consisting of three units.

The Ignition Unit.

This is in the nose of the fuze. During the fall of the bomb, the vanes (1) rotate, and the withdrawal rod (2) moves outwards into the hollow hub of the vanes. The screws (7) retain the vanes in the nose of the fuze, and prevent any longitudinal motion. Thus the vanes do not show any visible sign whether or not the ignition mechanism is armed.



UNARMED

ARMED

ITALIAN LONG DELAY (CLOCKWORK) NOSE FUZE

When the withdrawal rod (2), which is prevented from rotating by the lugs (8) moving in a longitudinal groove, has moved forward 0.55-ins. the steel safety balls (9) can move inwards, and so free the sleeve (10). The striker (7) is also free to move, and is located by means of a screw moving in the slot (7) in the sleeve (10). On impact, this sleeve sets forward, carrying the three caps (11) on to the three striker needles (12) against the pressure of a light creep spring (13). The sleeve (10) is located with respect to 3, by the screw (14), which moves in a longitudinal groove. The firing of the caps ignites the powder pellets (15) situated in the plug (6).

The gas pressure produced as a result of the ignition of the powder pellets causes the copper disc (3) to assume a dome shape, as indicated at (18). A gas tight joint for the copper disc is designed at (34), and prevents leakage of the products of combustion into the clock mechanism beyond. The plunger (19) then moves in the sleeve (20) longitudinally, allowing the safety balls (21) to move inwards behind the head of the plunger. The perforated plate (22) is then free to move forward.

The Time Delay Unit.

(The letters and the figures in brackets under A to C refer to the detailed drawing of the clock mechanism).

The complete mechanism as shown, weighs 1-lb 11-ozs. It is stoutly built of plated brass. A pressure of 4.1/2-lbs is required to depress the striker to the cooked position.

A. Figure A, shows the clock with the discs, C, D, E and F removed (in that order). The striker is held in the cocked position by the lever (1) which is pivoted on the pin (2). This latter is retained in the slot (3) in the plate (4) by two screws (5), the heads of which overlap the pin. A short finger (6) is provided to enable the lever to be moved by means of a tool inserted through the groove (7). On the lever is a small roller (8) facilitating the movement of the time disc D, against the inner side of which the roller presses. The toothed wheel E, engages with the uppermost of the train of wheels (9). On the upper surface of E, are three spring projections (10) which engage in the ridges in the underside of the time disc D, and so urge it round. When the slot (11) arrives opposite to the lever (1) the latter moves outwards, releasing the striker (12). The lever in the 'set' position is shown in figure B.

B. The clock is wound by means of an ordinary clock key inserted through the base at (13). The rod (14), in the position shown, holds the lever (15) attached to which is the hair spring (16). This latter bears on the balance wheel (17). When the rod (14), is pushed down, the lever (15) executes a quick rotary movement about its pivot (18) under the influence of the coiled spring (19). The hair spring (16) then moves clear of the balance wheel, at at the same time giving it the necessary urge to start the clock.

C - F. The assembly of the discs is shown in figure B.

The timing disc at the head of the clock is graduated from 0 to 8, and each division is sub-divided into 6. The clock may thus be set for a minimum period of 1/6 of a day, - that is, 4 hours up to a maximum period of eight days. The clock is cushioned in the housing in C by a number of rubber washers shown at (35) and (36). The clock is started by the longitudinal movement of the rod (26). The head of this rod engages in a groove in the plate (24) which is urged forward by the pressure of the spring (25). As this latter plate is attached to the perforated plate (22) by the three rods (23), it can only move after the distortion of the copper disc has freed the plate (22).

The Arming Unit.

This consists of a brass cylinder (27) with light brass projections (28) around the circumference of one end. On impact it sets forward, and is retained in the forward position by the projections which engage in the groove (29). By this means the spring (30) is compressed and so provides the pressure to move the plate (24) in order to start the clock.

Attached to the plate (24) is the cylinder (31) which is hollow to receive the striker (32) and which carries at its inner end the cap (33). In the 'armed' position only, is the cap capable of being pierced by the striker when the latter is released by the clockwork mechanism.

The whole fuze weighs approximately 45-lbs.

Handling

The balance wheel is situated approximately 10-inches from the nose of the fuze so that it is unlikely that the present model of clock stopper would be effective in stopping the clock.

It is recommended that suspected long delay bombs be left 9 days before commencing the usual excavations prior to removal. All the usual precautions observed in dealing with German Bombs containing a No.17 fuze should be applied in the caseof bombs containing the clock.

An emergency method for dealing with a bomb containing this clock has been devised for cases when it is not possible to remove the clockwork mechanism from the bomb. This method depends upon the ability to remove the part B from the fuze and has never been tried operationally.

When the part B has been removed, the copper disc (3) is exposed. If this disc is not found depressed then the fuze is safe, since the rod (26) has not been pushed down to release the balance wheel of the clock nor is the cap (33) in the firing position.

If the disc is found to be depressed proceed as follows:-

(a) Using about a 1/8-inch drill, drill through the copper disc at two or more places just outside the edge of the 1-inch diameter centre boss.

(b) Introduce the standard 20% sugar solution by means of the S.S. Equipment, using a collet designed to fit over the conical head of the part B.

Laboratory tests show that the clock stops a few seconds after admitting the solution and will not re-start on oscillating the fuze about its axis.

ITALIAN Designation of fuze.		Our Designation. Long Delay Tail.
		Classification. Long Delay Clockwork.
		Markings Nil.
		Bomb in which employed. 500 R.O.
1.	Colour	Unpainted Steel.
2.	O/A length less gaine.	14.25-ins/362-mm.
3.	Max. spread over vanes.	7.4-ins/190-mm.
4.	Dia. over threads where screwed into bomb.	3.9-ins/99-mm.
5.	Material.	Brass and Steel.
6.	Type of Gaine.	Long gaine Types 5 or 6.
7.		

Description of Fuze

The fuze proper without the gaine, the extension rod and adapting sleeve is approximately 14.1/4-in. long. The body of the fuze can be conveniently described in four sections:-

A. This part is made of brass, and protrudes beyond the base of the bomb. It contains the ignition mechanism. To its outer end is screwed the adapting sleeve (1) which takes the square section end of the fuze extension piece D.

B. This heavy steel part contains the copper disc (2). Above the disc is the thick steel washer (3) which is screwed down on to the disc to make a gas tight joint. Attached to the underside of the disc, is the metal cylinder (4), into which is screwed the striker holder (5). This striker holder forms part of the disc (6) which operates the starting device for the clock.

C. This is the main housing for the clock mechanism.

D. The main clock housing is closed by the plug D. This plug holds the gaine (7) with its detonator (8). These latter form the exploder system, and are secured in the base of the fuze by the locking ring (9).

The ingition Unit.

This unit consists of the part A together with the sleeve (1) and the extension piece (10). The safety pin for the fuze mechanism is withdrawn from the hole (28) before the bomb is launched. During the fall of the bomb, the vanes of the fuze extension piece D rotate, and so cause the rotation of the sleeve (1). This latter screws on to the collar (11) so that the sleeve and collar rotate together. Within the collar, is the threaded upper part of the withdrawal rod (12). This latter has two projecting pins (13) which engage in two vertical grooves (14) in the brass body. The withdrawal rod is thus prevented from rotating.

When the vanes rotate, the withdrawal rod rises within the sleeve, and when it has risen 1.5-in. the two steel safety balls (15) are free to move inwards, and so free the striker (16). The latter is prevented from rotating, and the three needles (17) are located with respect to the three caps (18) by the screw (19) which moves in the vertical groove (20). On impact of the bomb with the target, the striker sets forward against the creep spring (21) and fires the caps which provide the impulse necessary to distort the copper disc (2). This disc then assumes a dome-shape, moving with it the cylinder (4). This movement produces two effects - it brings the needle (23) into the firing position, and it moves the disc (6) towards the clock.

Located in a groove in the disc (6) is the rod (24), and as this moves downwards, the clock is started as already described.

The Time Delay Mechanism.

This consists of a clockwork mechanism, which is similar in all respects to that described on page except that the needle and holder in the striker of the clock are removed, and in the open end is placed a cap (25) which is retained in position by the collar (27). The clock is cushioned in its housing by a number of perforated rubber discs (26).

When the time for which the clock is set has elapsed, the cap (25) moves forward on to the striker (23) and the flash passes through the hollow striker to the detonator (8).

The total weight of the fuze is approximately 25 lbs.

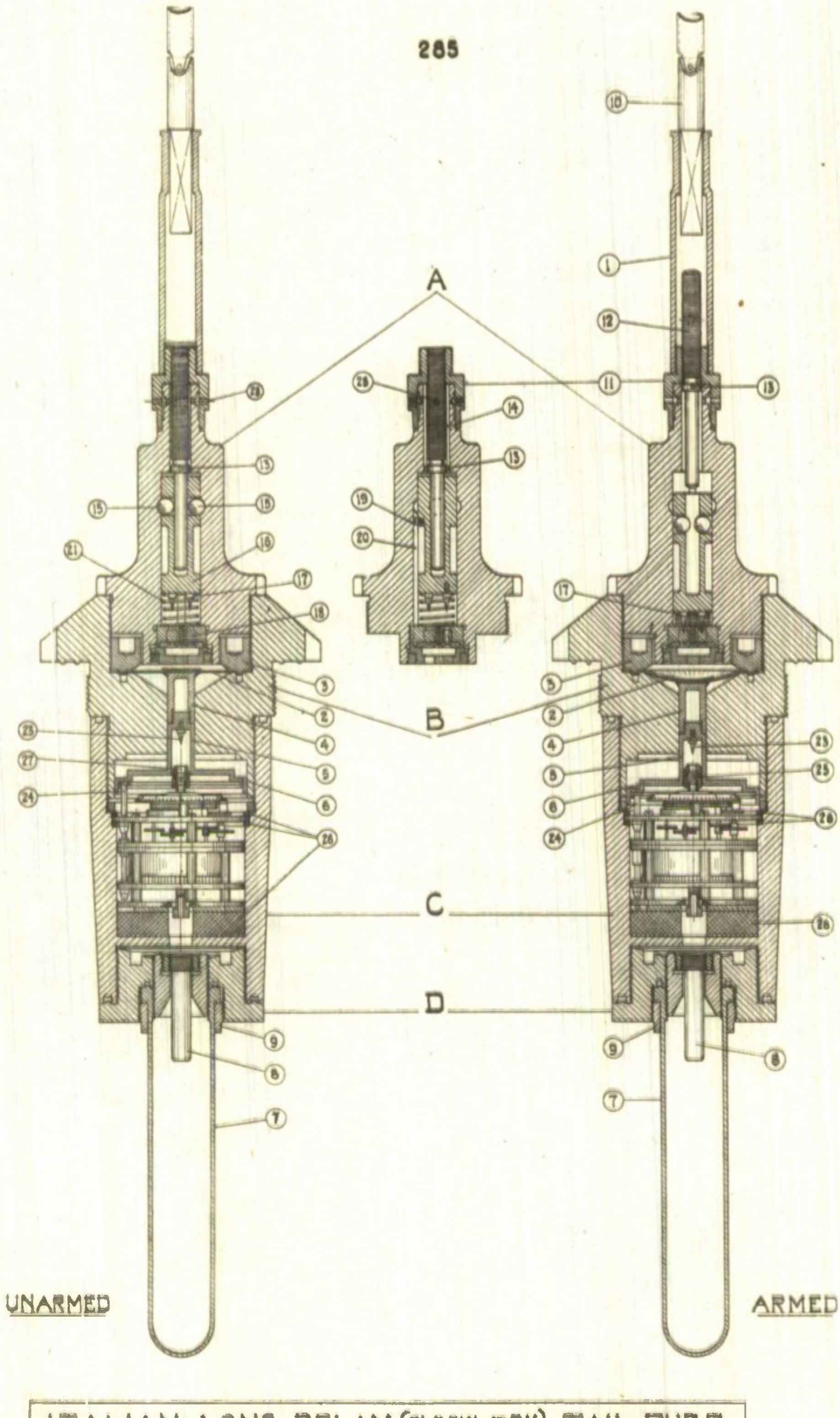
Handling

The balance wheel of the clock is located 4.3/4-in. below the base of the bomb, and the presence of the ignition unit A, prevents the effective use of the present design of clockstopper.

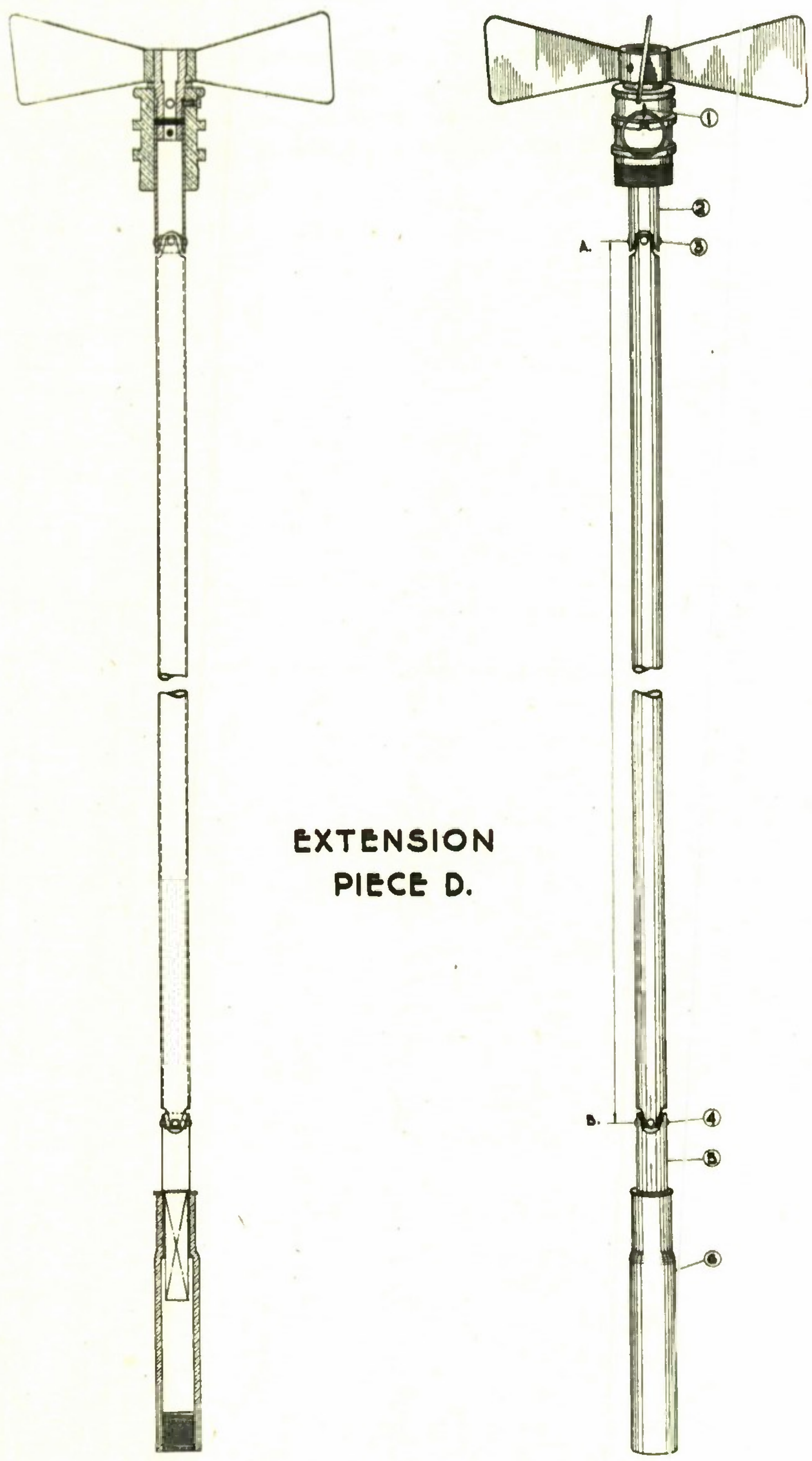
It is considered that the ticking of the clock would be audible with the present design of stethoscope, though it has not been possible up to the present to confirm this.

As the clock may be set for a delay up to 8 days, it is recommended that suspected long delay bombs be left for 9 days before commencing the usual excavation prior to removal. All the precautions observed in dealing with German Bombs containing No. 17 fuzes should be applied.

The emergency technique described for the clockwork nose fuze (Page 282) can equally well be applied to this fuze providing the brass ignition unit A can be removed from the fuze.



ITALIAN LONG DELAY (CLOCKWORK) TAIL FUZE



EXTENSION
PIECE D.

ITALIAN Designation of fuze.		Our Designation EXTENSION PIECE D
		Classification.
		Markings.
		Bomb in which employed 500 R.O. 800, 500, 250.
1.	Colour.	Vanes - Green or unpainted Brass Extension Piece - Green or unpainted Steel. Remainder - Unpainted Brass.
2.	O/A length less gaine.	See Below
3.	Max. spread over vanes.	7.5-ins/190-mm.
4.	Dia. over threads where screwed into bomb tail.	1.2-ins/30-mm.
5.	Material.	Brass and Steel.
6.	Type of Gaine.	
7.		

Description of Fuze.

This extension piece is employed as an arming mechanism for long tail bombs. The withdrawal of the pin (1) permits the vanes to rotate and in turn rotate the rod (2). The universal joints (3) and (4) allow for errors in alignment. The lower end of the rod (5) is square in section and fits the sleeve (6), which is internally threaded at its lower end to receive the fuze mechanism.

In order to accommodate the various lengths of tail, different lengths of extension link AB are employed. Up to the present date specimens have been recovered with extension links measuring 50 cms., 80 cms., and 70 cms. and these are employed respectively with the modified fuze A to form fuzes 03 and 02 in Bomba 250 and 500 and with the long delay clockwork tail fuze in Bomba 500 R.O.

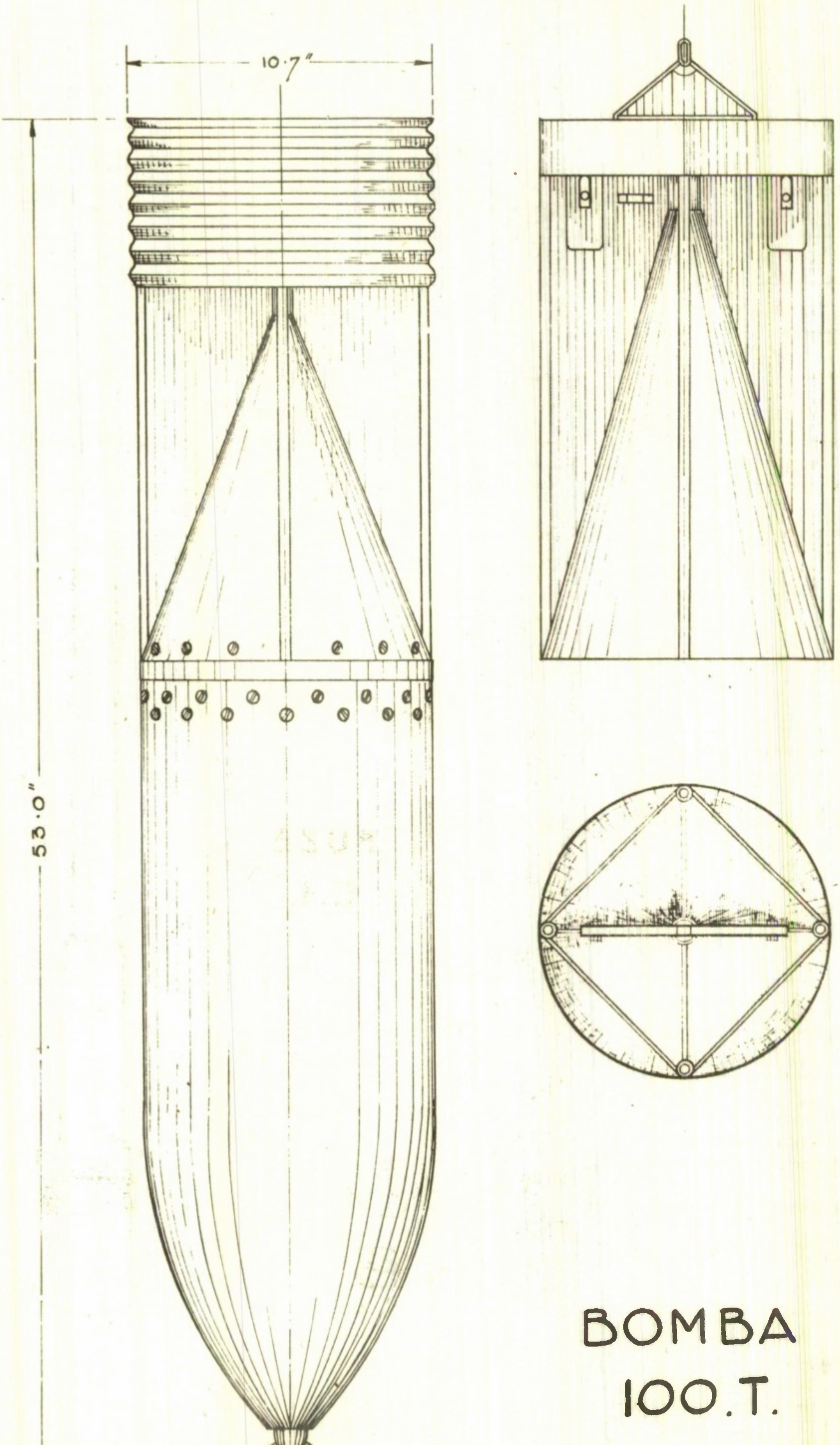
BOMBA 100.T.

This is a G.P. thin walled demolition bomb. It can be fitted for either horizontal or vertical suspension and there appear to be two types of tail which may be used. The older type is distinguished by a plain strengthening band and the newer possesses 7 corrugations.

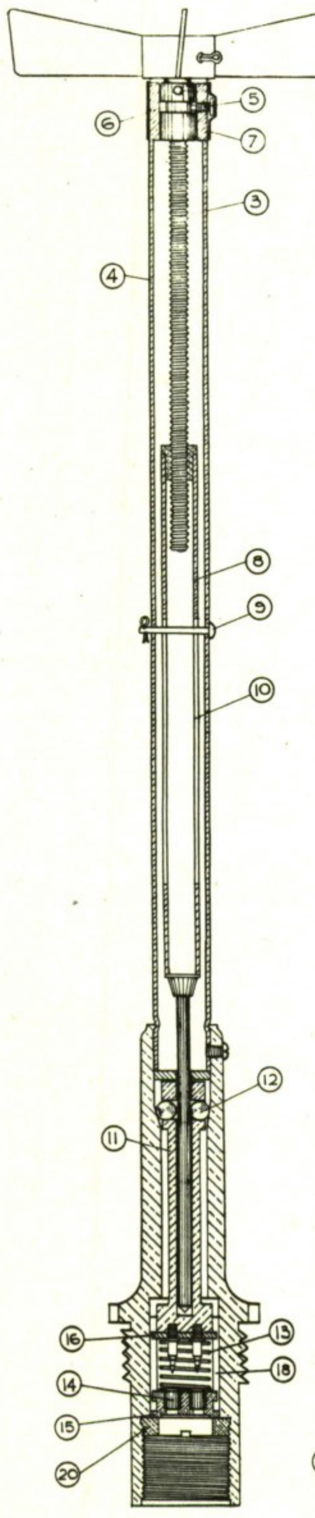
The tail is secured to the body by a series of screws in one row around the periphery of the bomb at the junction with the tail.

The fuze usually employed is the C1 but with the older tail fuze Y1 can be used.

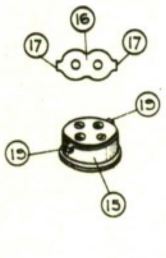
Designation. Old Bomba da Kg. 100. T. New Bomba 100. T.		Type G.P. DEMOLITION (TORPEDINE CLASS)
1.	O/A Length of Fused Bomb.	53.0-ins/1345-mm.
2.	O/A Length less Fuze or Lug.	51.4-ins/1305-mm.
3.	Length of Body.	32.5-ins/825-mm.
4.	Dia. of Body.	10.7-ins/272-mm.
5.	Max. thickness at {point (nose	3.0-ins/76-mm. 2.0-ins/51-mm.
6.	Wall thickness	0.25-ins/6-mm.
7.		
8.	Material and construction of bomb body.	
9.	Suspension System.	HORIZONTAL. Suspension Band. VERTICAL. Nose Lug or by fitting on tail in older type.
10.	Colouring of bomb.	Body dull blue with 2-ins. Red band at Nose.
11.	Markings on bomb.	NIL.
12.		
13.	Length of Tail.	22.0-ins/560-mm.
14.	Dia. of tail.	10.7-ins/272-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Dull Blue.
17.	Markings on tail.	NIL.
18.	Construction of Tail.	Two types (see overleaf).
19.		
20.	Nature of filling.	T.N.T.
21.	Weight of filling.	50.6 kg.
22.	Total Weight.	100.0 kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	50.6%
25.	Fuze - our designation.	TAIL. Type C1 or Y1 (pp 293 & 351)
26.		

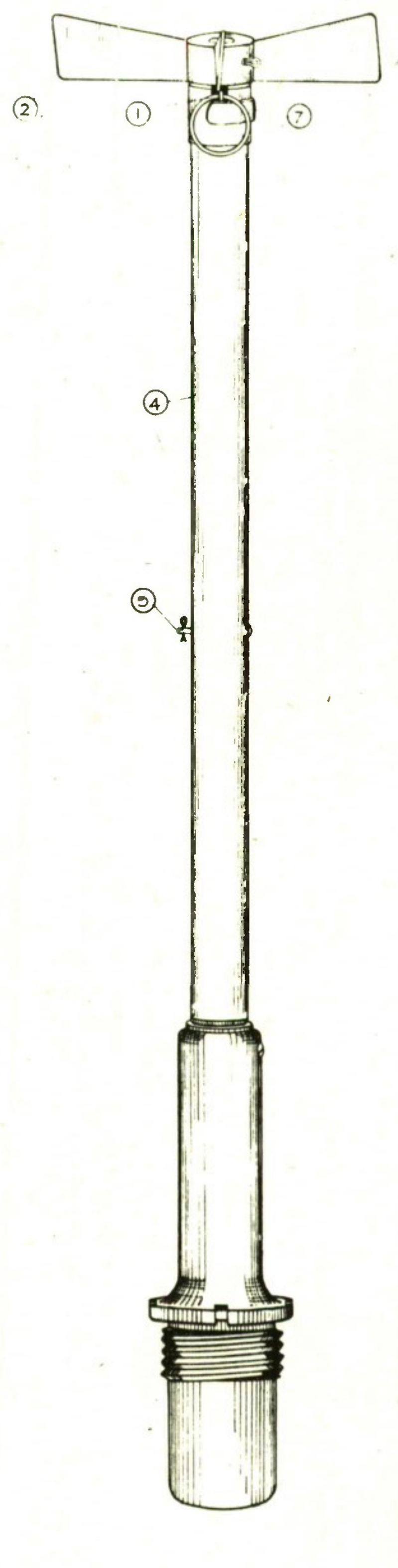


BOMBA
100.T.



FUZE
C.1.





ITALIAN Designation of fuze.	
SPOLETTA PER BOMBA 100 T. e 100 M.	Our Designation Type C1
	Classification. TAIL - Mech Impact
	Markings. NIL
	Bomb in which employed 100 T 100 M

1.	Colour	Body and Vanes - Unpainted Brass Steel tube - Black.
2.	O/A length less gaine.	19.2-ins/488-mm.
3	Max. spread over vanes.	6.2-ins/158-mm.
4.	Dia. over threads where screwed into bomb.	1.65-ins/42-mm.
5.	Material.	Brass and Steel.
6.	Type of Gaine.	Long Gaine Type I.
7.		

Description of Fuze.

The withdrawal of the safety pin (1) permits the vanes (2) to rotate. The vanes do not withdraw the screw threaded rod (3) from the tube (4) because of the setscrew (5) engaging in the annular slot (6). A brass sleeve (7) prevents the setscrew (5) becoming inadvertantly unscrewed. An alternative method of retaining the screw-threaded rod is the use of a U-shaped pin as illustrated in fuze C. The inner tube (8) is prevented from rotating by a pin (9) passing through the two slots (10). The tube (8) therefore rises on the screw-threaded rod (3) and the lower end is withdrawn from the striker (11). When this withdrawal has progressed far enough to allow the steel balls (12) to move inwards, the striker is free to move forward against the creep spring (13) and fire the caps (14) in thr holder (15). Attached to the base of the striker is the small plate (16) which has two projections (17) which move in the vertical slots (18). The cap holder (15) has two similar projections (19) and in this way the needles are located with respect to the caps. A screw-threaded collar (20) retains the cap holder in the fuze.

Handling of Fuzed Bomb

The external appearance of this fuze gives no guide as to the extent to which the rod has been withdrawn from the striker, but, if the top of the inner tube (6) is visible through the hole (21) in the tube (4), then the fuze has not commenced to arm. On no account should the vanes be rotated as the lower end of the tube (8) might be forced onto the striker and cause it to move towards the caps The bomb is best carried with care in the horizontal position.

To Defuze The Bomb.

(a) Observe any visual indications of arming.

(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.

(c) Ensure that the vanes are not rotated.

(d) Carefully remove the split pin (22) securing the vanes, and remove the vanes.

(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.

(f) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

NOTE: -

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.

BOMBA 50.T.

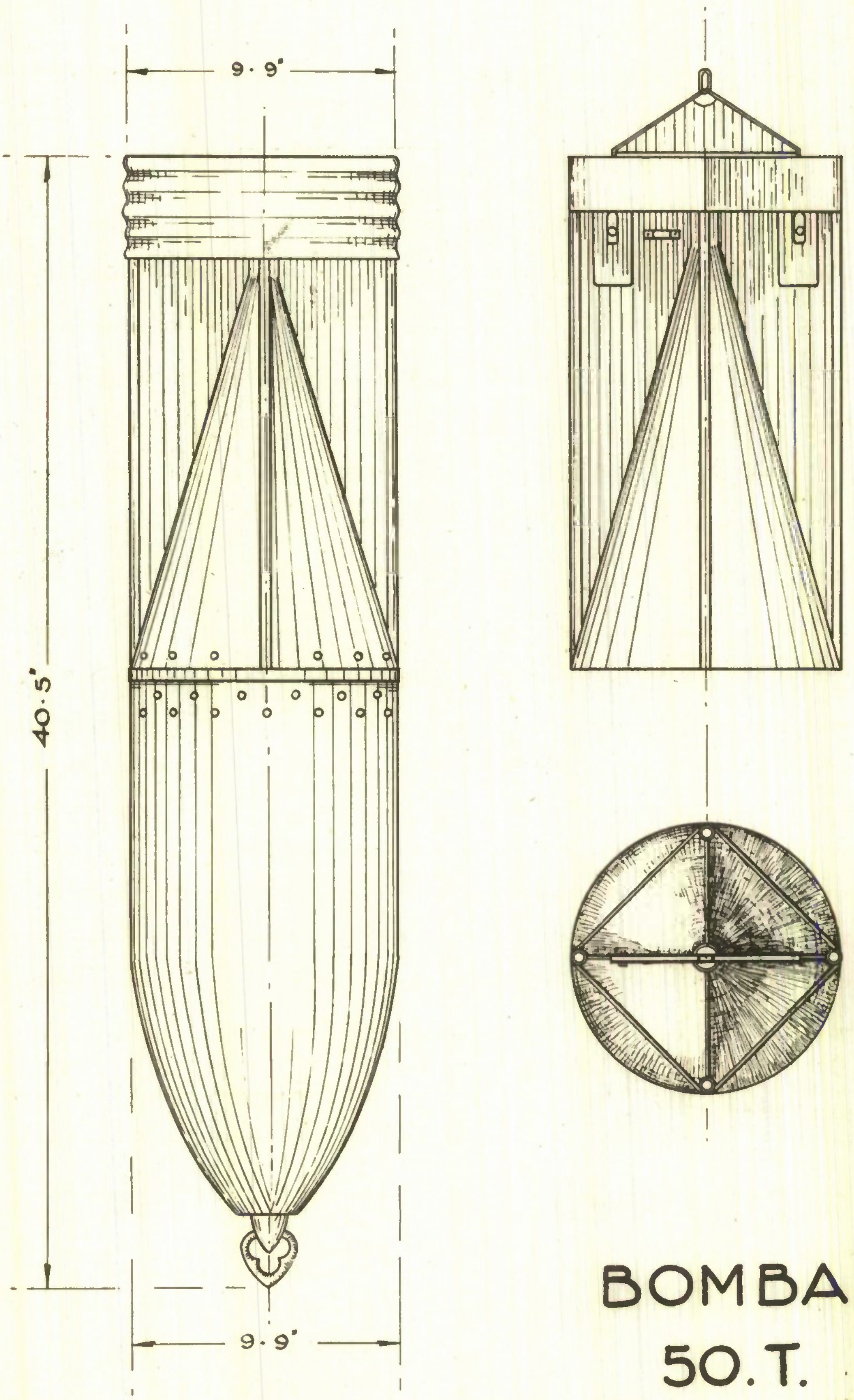
This G.P. H.E. Bomba is the only example of a bomb of this weight - viz. 50kg. It has a nose thickness of 0.5-inches and an average wall thickness of 0.25-inches. The bomb is in two parts, the body and the base plate. The latter is attached to the former by a single row of 16 screws (e.g. Bomba Mina - S.A.P. type where the attachment is usually by two rows of screws).

The tail of the bomb is made up of four fins, strengthened at the outer end by a corrugated band, and attached to a central cone. It is secured to the base plate by a row of screws and is located against a shoulder on it.

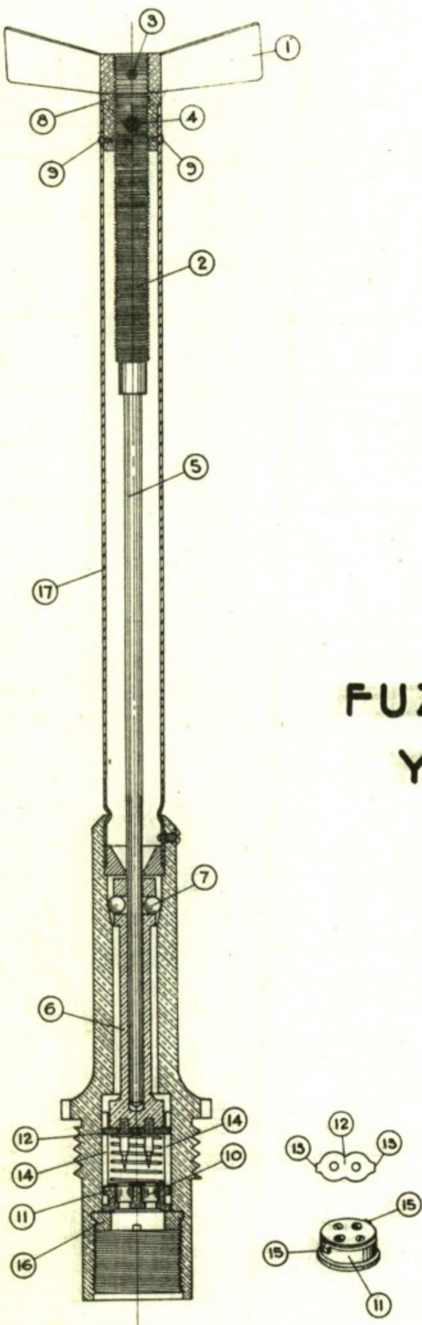
The tail can be distinguished from the similarly constructed tails of 100.T and 100.M by the number of corrugations in the strengthening band. The 50.T has five and the other bomb referred to seven.

Designation	Type
Old Bomba da Kg 50.T New Bomba 50.T	G.P. DEMOLITION (TORPEDINE CLASS)

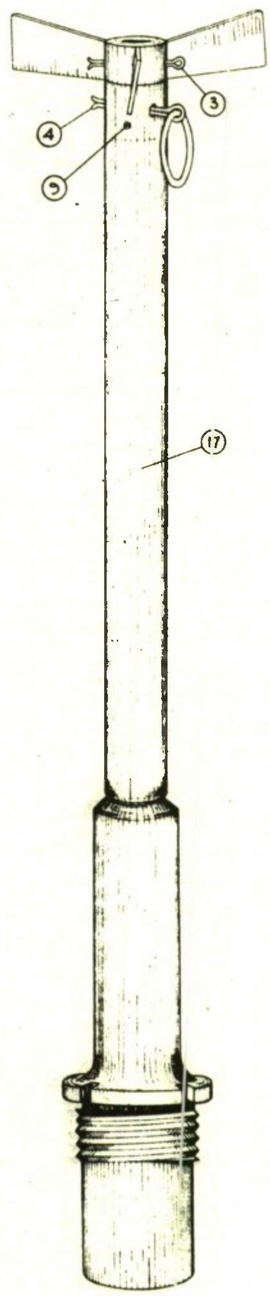
1.	O/A length of Fuzed Bomb.	40.5-ins/1029-mm.
2.	O/A Length less Fuze or Lug.	38.0-ins/965-mm.
3.	Length of Body.	21.7-ins/550-mm.
4.	Dia. of Body.	9.9-ins/252-mm.
5.	Max. thickness at (point (nose	0.5-ins/12-mm.
6.	Wall thickness	0.25-ins/6-mm.
7.		
8.	Material and construction of bomb body.	(See overleaf)
9.	Suspension System	Horizontal. Suspension Band Vertical. Nose Lug or by fitting on tail in older type
10.	Colouring of bomb.	Body Dull Blue with 2-ins. Red Band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	18.4-ins/468-mm.
14.	Dia. of tail.	9.9-ins/252-mm.
15.	Material of tail.	Sheet Iron.
16.	Colouring of tail.	Dull Blue
17.	Markings on tail.	NIL.
18.	Construction of Tail.	Two types (see overleaf)
19.		
20.	Nature of filling	AMATOL or T.N.T.
21.	Weight of filling.	25 kg.
22.	Total Weight.	58.kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt.Ratio.	43.1%
25.	Fuze - our designation.	TAIL - TYPE C or Y (pp. 299 and 303)
26.		



BOMBA
50.T.



FUZE Y.



ITALIAN Designation of fuze. SPOLETTA PER BOMBA 50.T		Our Designation. Y Classification TAIL - Mech Impact Markings Nil Bomb in which employed 50.T.
1.	Colour	Body and Vanes - Unpainted Brass Steel tube - Black
2.	O/A Length less gaine.	16.6-ins/422-mm.
3.	Max. spread over vanes	4.7-ins /120-mm.
4.	Dia. over threads where screwed into bomb.	1.65-ins/42-mm.
5.	Material	Brass and Steel.
6.	Type of Gaine.	Long Gaine Type I
7.		

Description of Fuze.

The mode of operation of this fuze is the same as that for the fuze type N which is found in the 15.M bomb. There are, however, certain differences in the dimensions; in the safety devices; and also in detail of the cap and striker assembly. Externally the fuze resembles the fuze C although it is 0.4-inch greater in length and there is no inspection hole in the steel tube (17).

The vanes (1) are secured to the screw (2) by a split pin (3). When the safety pin (4) is withdrawn, the vanes rotate and withdraw the rod (5) from the striker (5). The steel safety balls (7) can then move inwards and free the striker. The collar (8), which is threaded to take the screw (2), is secured by the two screws (9). On impact the striker, provided with two needles, compresses the creep spring and fires the caps (10), in the holder (11). Attached to the base of the striker is the small plate (12) which has two projections (13) which move in the vertical slots (14). The cap holder (11) has two similar projections (15), and in this way the needles are located with respect to the caps. A screw-threaded collar (16) retains the cap holder in the fuze.

Handling of Fuzed Bomb.

The fuze is armed when appriximately 2¼-inches of screw-thread appear between the vanes and the collar (8). Bombs containing these fuzes should only be moved in the horizontal position, preferably using a sling.

To Defuze The Bomb.

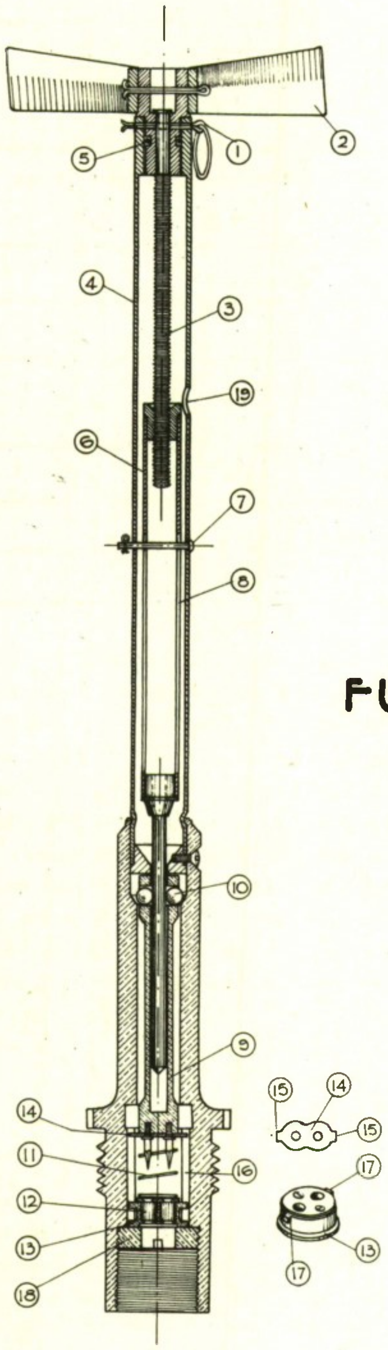
(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin (3) securing the vanes, and remove the vanes.

(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.

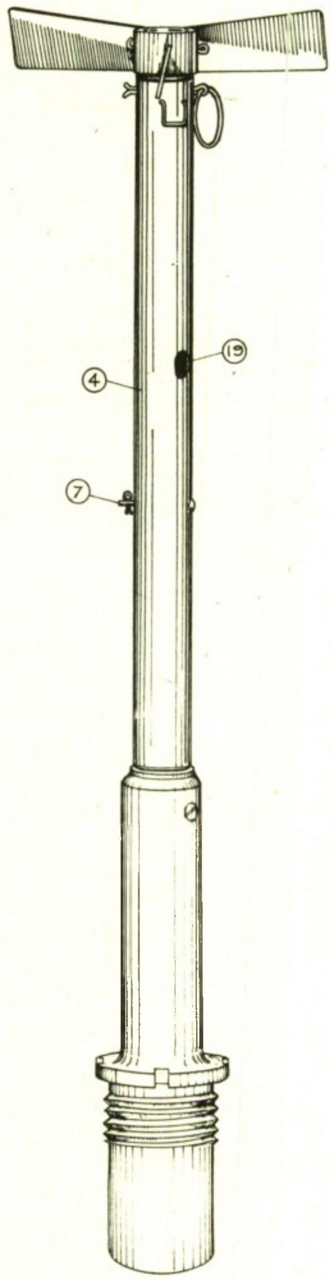
(f) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

NOTE:

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.



FUZE
C.



ITALIAN Designation of fuze. SPOLETTA PER BOMBA 50.T			Our Designation. Type C.
			Classification. TAIL - Mech. Impact
			Markings NIL
			Bomb in which employed. 50.T
1.	Colour		Body and Vanes. Unpainted Brass Steel tube. Black.
2.	O/A length less gaine.		16.2-ins/411-mm.
3.	Max. spread over vanes.		6.2-ins./158-mm.
4.	Dia. over threads where screwed into bomb.		1.65-ins/42-mm.
5.	Material		Brass and Steel
6.	Type of Gaine.		Long Gaine Type I
7.			

Description of Fuze.

The withdrawal of the safety pin (1) permits the vanes (2) to rotate. They do not withdraw the screw-threaded rod (3) from the tube (4) because of the U-shaped pin which engages in the annular slot (5). An alternative method of retaining the screw-threaded rod is the use of a set screw as illustrated in Fuze C.1. The inner tube (6) is prevented from rotating by a pin (7) passing through the two slots (8). The tube (6) therefore rises on the screw-threaded rod (3) and the lower end is withdrawn from the striker (9). When this withdrawal has progressed far enough to allow the steel balls (10) to move inwards, the striker is free to move forward against the creep spring (11) and fire the caps (12) in the holder (13). Attached to the base of the striker is the small plate (14) which has two projections (15) which move in the vertical slots (16). The cap holder (13) has two similar projections (17) and in this way the needles are located with respect to the caps. A screw-threaded collar (18) retains the cap holder in the fuze.

Handling of Fuzed Bomb.

The external appearance of this fuze gives no guide as to the extent to which the rod has been withdrawn from the striker, but, if the top of the inner tube (6) is visible through the hole (19) in the tube (4), then the fuze has not commenced to arm. On no account should the vanes be rotated as the lower end of the tube (6) may be forced on to the striker and cause it to move towards the caps. The bomb is best carried with care in the horizontal position.

To Defuze The Bomb.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin (19) securing the vanes, and remove the vanes.
(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.
(f) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

NOTE:

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.

BOMBA 40.T

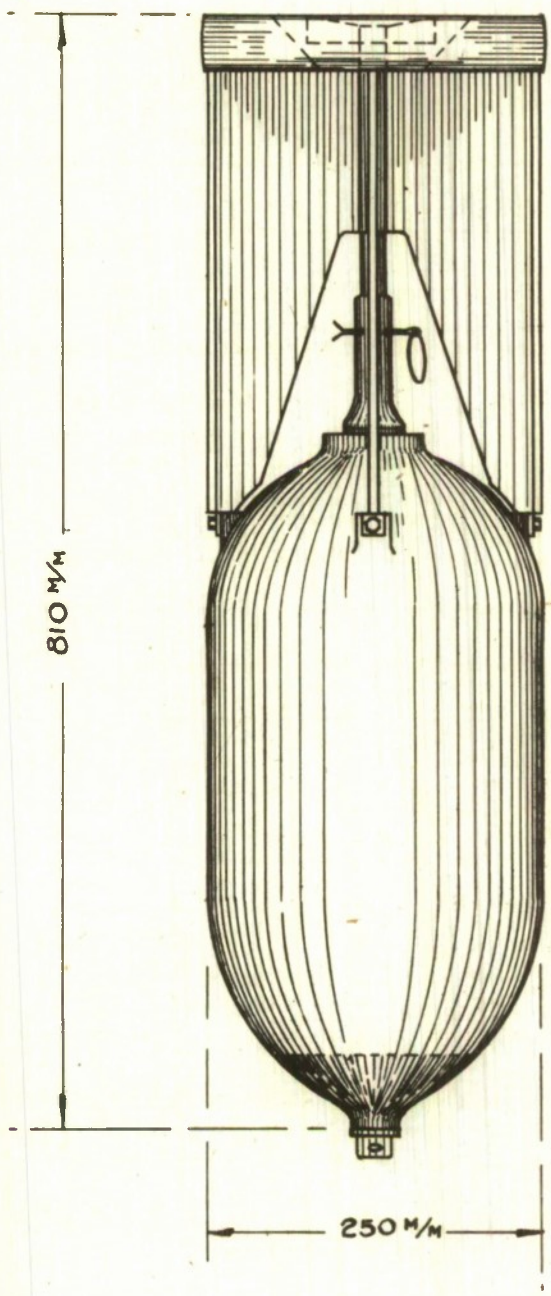
Specimens of a bomb, agreeing with the pictures and dimensions of the 40 Kg. bomb given in Italian documents, have been recovered from Enemy Bomb Dumps.

The bomb body was painted bright yellow and there was a 2-ins. red band round the nose. Tests have been made for a C.W. filling on account of the bomb colouring but analysis of the filling gives the following composition:

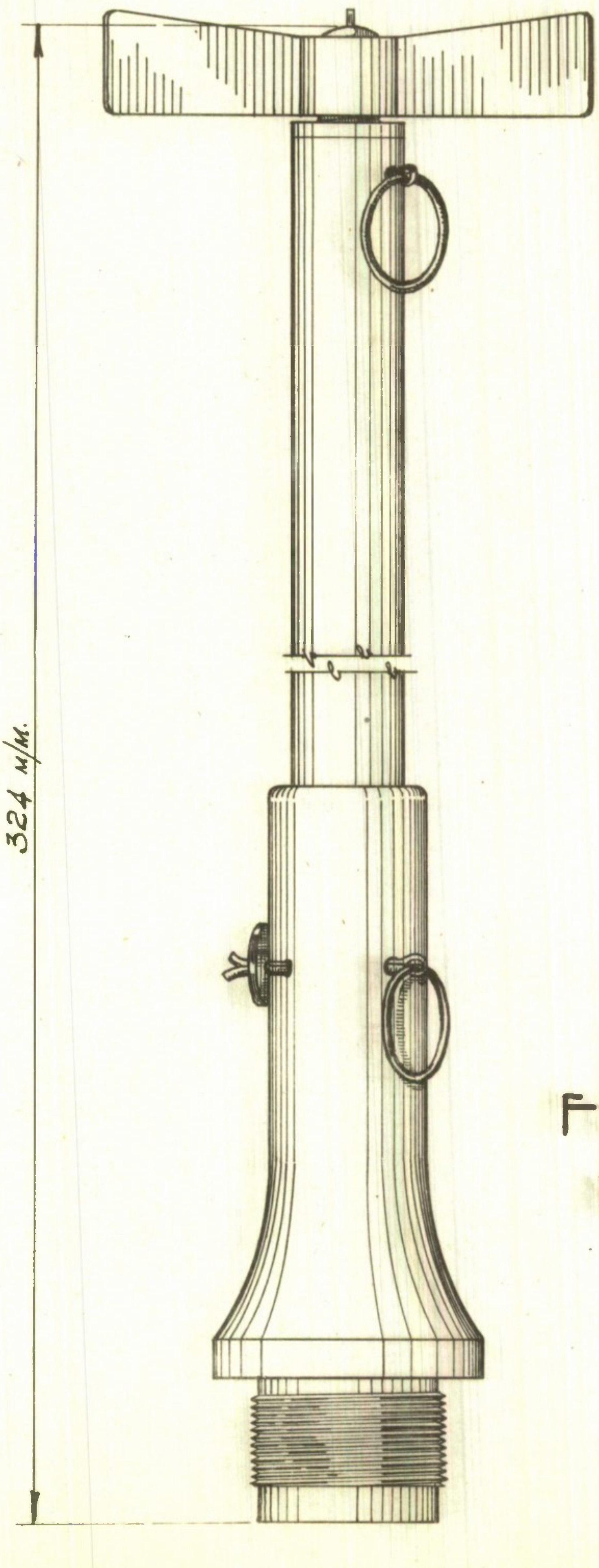
P.E.T.N.	20%
Ammonium Nitrate.	80%

Designation Old Bomba New Bomba 40.T		Type G.P. DEMOLITION (TORPEDINE CLASS)
1.	O/A Length of Fuzed Bomb	31.9-ins/810-mm.
2.	O/A Length less Fuze or Lug.	31.5-ins/800-mm.
3.	Length of Body.	19.7-ins/500-mm.
4.	Dia. of Body.	9.8-ins/250-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Steel - Cast in one piece, with brackets for tail attachment.
9.	Suspension System.	VERTICAL - Nose lug.
10.	Colouring of bomb.	See overleaf
11.	Markings on bomb.	Stencilled weight details.
12.		
13.	Length of Tail.	14.6-ins/370-mm.
14.	Dia. of tail.	9.0-ins/250-mm.
15.	Material of tail.	Sheet iron
16.	Colouring of tail.	Dark Green
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Skeleton structure consisting of four fins mounted on short cylinder with strengthening band around rear end.
19.		
20.	Nature of filling.	See overleaf
21.	Weight of filling.	
22.	Total Weight.	37.0 Kg.
23.	Weight of Bomb Case.	18.8 Kg.
24.	Charge/Total Wt. Ratio	
25.	Fuze - our designation.	Tail - Type N3. (Page 311).
26.		

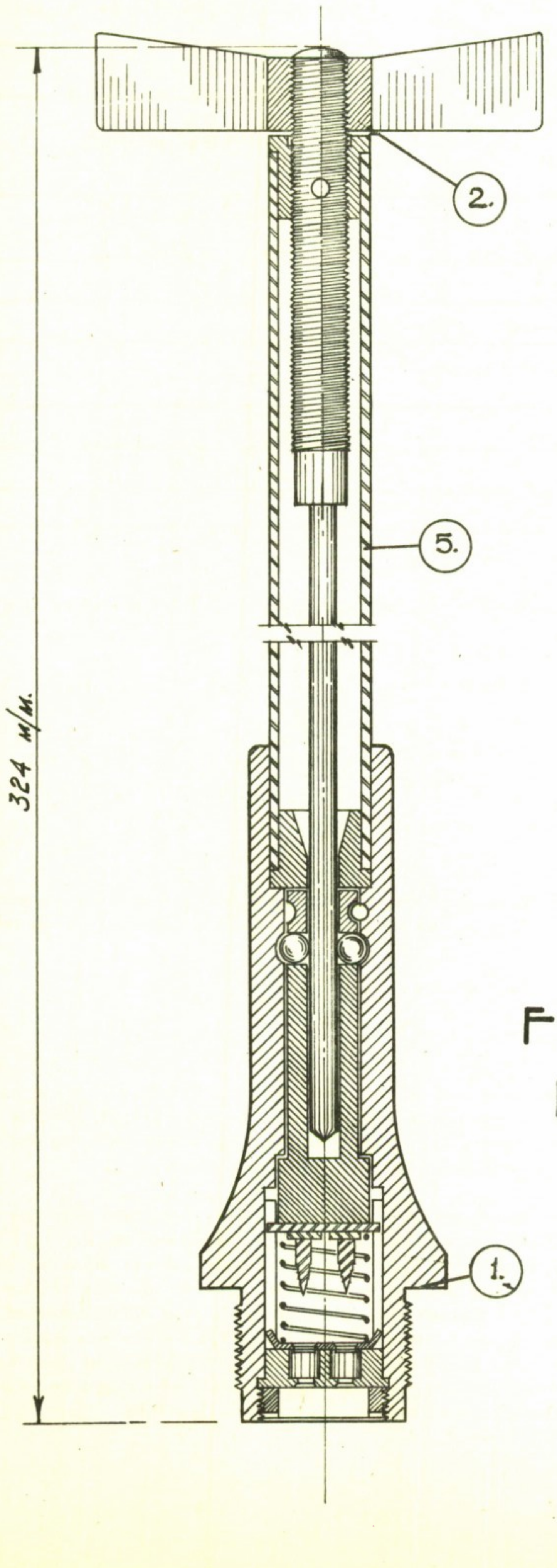
307



BOMBA
40.T.



FUZE
N. 3.



FUZE
N. 3.

ITALIAN Designation of fuze. SPOLETTA PER BOMBA 40 T		Our Designation N.3
		Classification. Tail - Mech.Impact.
		Markings.
		Bomb in which employed 40.T.
1.	Colour	Body and Vanes - Unpainted Brass Steel tube - Black
2.	O/A length less gaine.	12.7-ins/324-mm.
3.	Max. spread over vanes.	4.9-ins/124-mm.
4.	Dia. over threads where screwed into bomb.	1.3-ins/35-mm.
5.	Material	Brass and Steel
6.	Type of Gaine	Long gaine Type 7
7.		

Description of Fuze.

This fuze is generally similar to the type N described on Page 363 as also are the fuzes N.1, N.2, and N.4.

The employment of these fuzes is:-

N1	Bomba 24	(Page 317)
N2	Bomba 31	(Page 357)
N3 (double striker)	Bomba 40.T	(Page 311)
N4 (double striker)	Bomba 104M	(Page 345)

The lengths of the fuzes vary slightly. In comparing these, the dimensions from the flange (1) of the fuze to the under side (2) of the vane has been taken.

N	22.7 cm.
N1	22.9 cm.
N2	22.9 cm.
N3	28.0 cm.

These fuzes are characterised by the presence of a safety pin which passes through the body of the fuze and holds the striker. In the case of fuzes N, N2, N3 and N4 there is a second safety pin passing through the steel tube (5) and also through the arming spindle thus holding the vanes from rotating.

The presence of two safety devices is thought to be connected with the fact that in the case of two types of tail the fuze has been welded to the tail. In these cases there has been no central tube. Two sheet metal pieces suitably shaped and bent at right angles have been welded to the steel tube of the fuze to form the four fins. In such cases it is thought that the fuze being less well protected than when carried in the usual manner in wood boxes, the extra safety precaution has therefore been introduced. The lower safety pin would be withdrawn by hand before the bomb was loaded into the aircraft, and the upper safety pin would be replaced by a flexible wire which would be withdrawn as the bomb was launched.

In the case of bomba 24 which takes fuze N1 it has been observed that the tail was stamped S on each of the 4 fins, but as the specimen was damaged it was impossible to decide how the vanes were held as the hole for the upper safety pin was not present. This is the exceptional case.

Handling.

The method given under fuze N should be adopted. If, however, the tail and fuze are welded together the following procedure may be adopted after taking the necessary safety precautions, should the removal of the fuze be desired.

(a) In the case of Bomba 24 with fuze N1 - Unscrew the tail and fuze together.

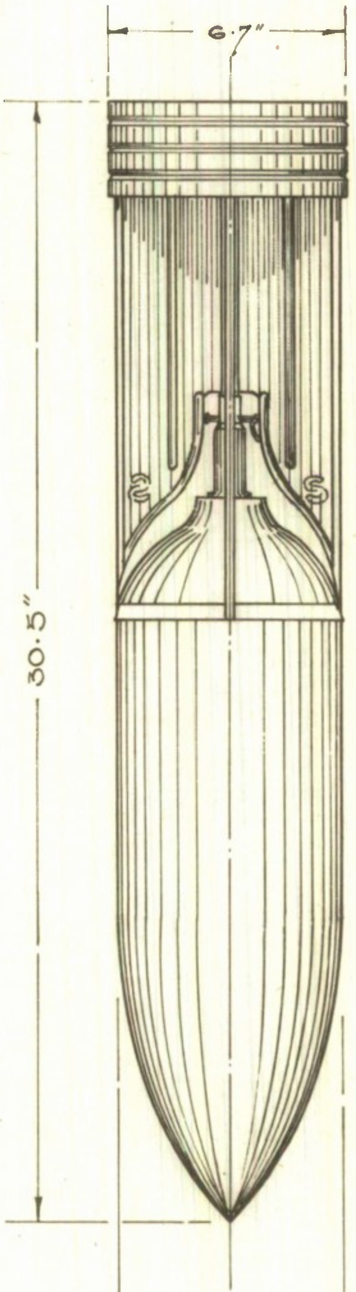
(b) In the case of Bomba 31 with fuzes N2 - Loosen the tightening screws on the band at the base of the tail and unscrew fuze and tail together.

BOMBA 24

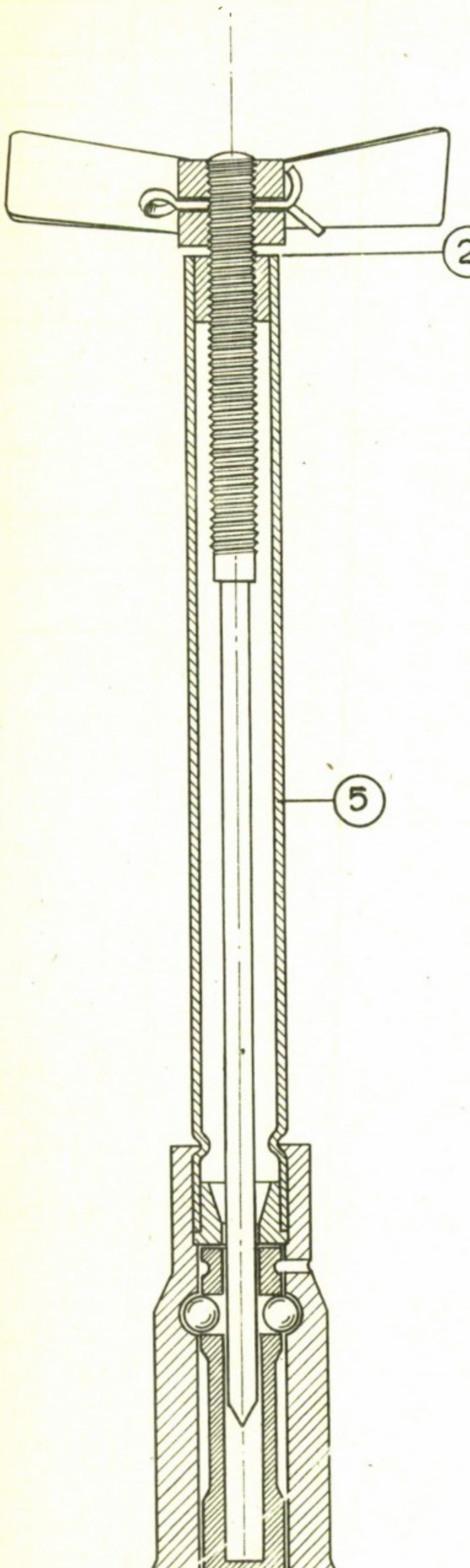
This bomb which is believed obsolescent has not been encountered operationally but specimens were recovered in ERITREA, from which the details overleaf have been obtained.

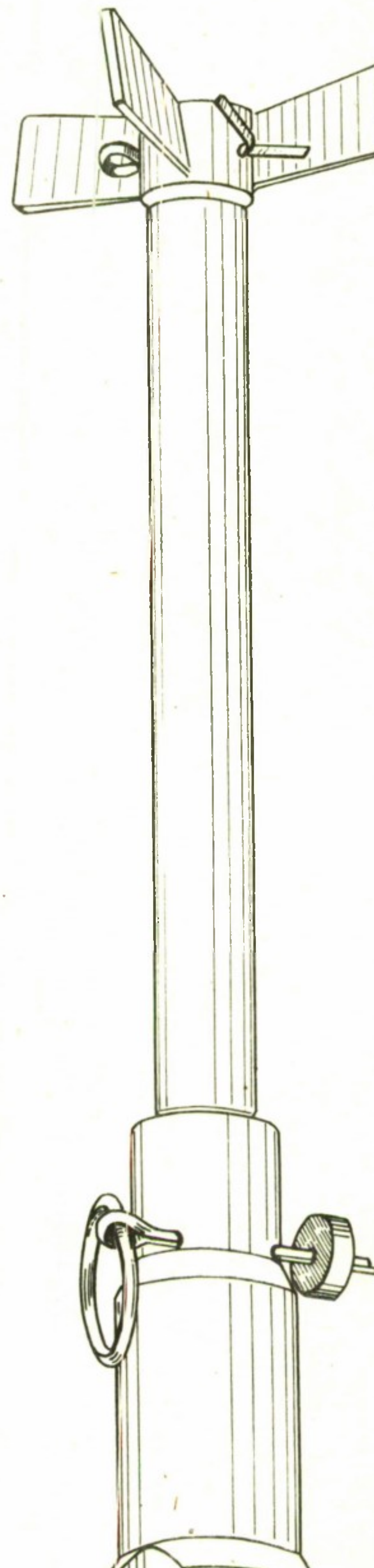
Designation	Type
Old Bomba da Kg 24 T New Bomba 24	G.P. DEMOLITION (TORPEDINE CLASS)

1.	O/A Length of Fuzed Bomb.	30.5-ins/775-mm.
2.	O/A Length less Fuze or Lug.	30.5-ins/775-mm.
3.	Length of Body.	19.9-ins/505-mm.
4.	Dia. of Body.	6.4-ins/162-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	
9.	Suspension System.	HORIZONTAL - Suspension Band.
10.	Colouring of bomb.	Dull Blue
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	14.8-ins/375-mm.
14.	Dia. of tail.	6.4-ins/162-mm.
15.	Material of tail.	Sheet iron
16.	Colouring of tail.	Dull blue
17.	Markings on tail.	Nil
18.	Construction of Tail.	See under fuze N3 for Bomba 40 T.
19.		
20.	Nature of filling.	TNT or Amatol
21.	Weight of filling.	12.0 Kg.
22.	Total Weight.	24 Kg - NOMINAL
23.	Weight of Bomb Case.	13 Kg.
24.	Charge/Total Wt. Ratio.	50.0%
25.	Fuze - our designation.	Tail - Type N1 (Page 317)
26.		



BOMBA
24.





FUZE

N. 1.

ITALIAN Designation of fuze SPOLETTA PER BOMBA 24		Our Designation N.1 Classification Tail - Mech. Impact Markings. Nil Bomb in which employed 24
1.	Colour	Body and Vanes - Unpainted Brass Steel tube. - Black.
2.	O/A length less gaine.	10.6-ins/270-mm.
3.	Max. spread over vanes	4.1-ins/104-mm.
4.	Dia. over threads where screwed into bomb.	1.15-ins/30-mm.
5.	Material	Brass and steel.
6.	Type of Gaine.	
7.		

A description of this fuze appears on Page 311.

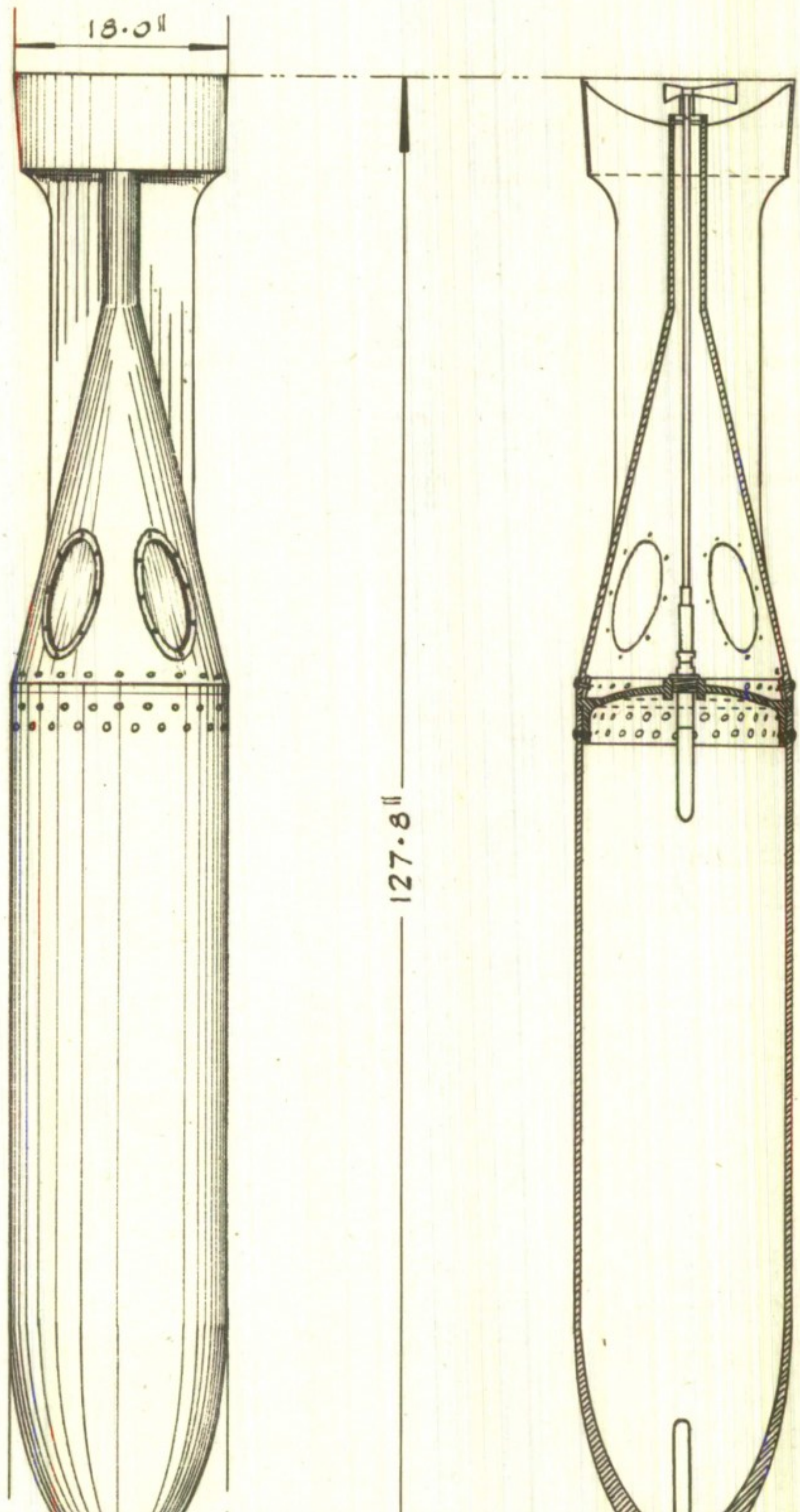
BOMBA 800

This is the largest of the G.P. heavy calibre demolition bombs. The body is cast steel parallel sided with wall thickness increasing towards the nose which is threaded to receive an A Fuze. The other end of the body is closed by a shaped and flanged disc which is provided with a central threaded boss to receive the tail fuze. This base plate serves to effect a junction between the bomb body and the tail the former being attached by two rows and the latter by one row of screws.

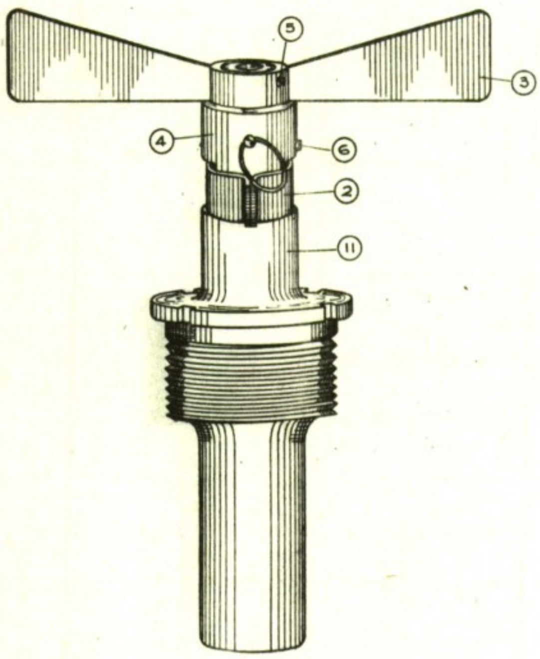
The tail unit is cast in one piece of light alloy and is in the form of a cone with four fins strengthened by a circular band at their extremities. The end of the tail is provided with a threaded bush to receive the vane unit to which is the articulated extension rod which operates the tail fuze.

The explosive filling is made up in eight cast pieces shaped one for nose, and one for the tail with six intervening cylindrical portions between them.

Designation		Type
Old Bomba da Kg. 800 mod. 1928 New Bomba 800		G.P. DEMOLITION
1.	O/A Length of Fuzed Bomb.	127.8-ins/3247-mm.
2.	O/A Length less Fuze or Lug.	123.7-ins/3142-mm
3.	Length of Body.	75.2-ins/1910-mm.
4.	Dia. of Body.	18.0-ins/458-mm.
5.	Max. thickness at (point (nose	0.75-ins/19-mm.
6.	Wall thickness.	0.5-ins/12-mm.
7.		
8.	Material and Construction of bomb body	Steel Parallel-sided Base plate attached by 60 screws in 2 rows.
9.	Suspension System.	Horizontal - Suspension Band.
10.	Colouring of bomb.	Body: Dull Blue Nose: 4-in. Red band.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	51.2-ins/1300-mm.
14.	Dia. of tail.	18.0-ins/458-mm.
15.	Material of tail.	Cast alloy.
16.	Colouring of tail.	Dull Blue.
17.	Markings on tail.	Nil
18.	Construction of Tail.	Four narrow vanes with circular band 200-mm. width. Fixed to body by 28 screws.
19.		
20.	Nature of filling.	TNT in eight shaped cast blocks for nose, central portion and tail.
21.	Weight of filling.	357 Kg.
22.	Total Weight.	
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	44.6
25.	Fuze - our designation.	Nose - Type A (Page 323) Tail - Type O.1 (Page 324)
26.		

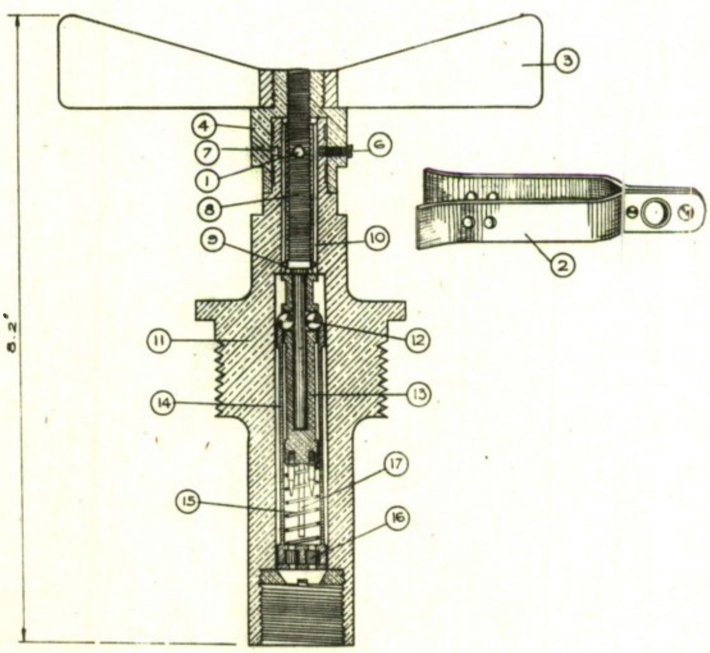


BOMBA 800.



FUZE

A.



ITALIAN Designation of fuze. SPOLETTA DI OGIVA PER BOMBA di g.c.		Our Designation. Type A. Classification. Nose - Mechanical Impact. Markings. Nil. Bomb in which employed. 800, 500, 250
1.	Colour.	Unpainted Brass.
2.	O/A length less gaine.	8.2-ins/208-mm.
3.	Max. spread over vanes.	6.3-ins/160-mm.
4.	Dia. over threads where scrrwed into bomb.	2.3-ins/58-mm.
5.	Material.	Brass.
6.	Type of Gaine.	Long Gaine Type I.
7.		

Description of Fuze.

On withdrawing the safety pin from the hole (1) and removing the steel clip (2), the vane (3) is free to rotate. The vane is secured to the collar (4) by means of two screws (5). Through this collar passes a screw (6) which projects into the annular space (7). The rotation of the vane causes the screw-threaded portion of the arming rod (8) to withdraw, the arming rod being prevented from rotating by two screws (9) which travel in guide slots (10) in the fuze body (11).

After the arming rod (8) has withdrawn 1¼-inches the two steel balls (12) move towards the centre and the striker block (13) and the cap holder (14) are free on impact, to move together against the creep spring (15) and fire the caps (16). The striker needles are located with respect to the caps by means of screws in the striker body which travel in guide slots (17).

Handling.

(a) Observe any visual indication of arming.
(b) Avoid any longitudinal blow or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully unscrew the fuze and remove it complete with detonator and gaine.
(e) Unscrew both the detonator and the gaine from the fuze and pack them separately.

ITALIAN Designation of fuze. SPOLETTA DI FONDELLO PER BOMBA DI g.c.			Our Designation. Type 0.1
			Classification Tail - Mechanical Impact
			Markings. Nil.
			Bomb in which employed. 800
1.	Colour.		Extension piece green or unpainted Steel. Vanes green or unpainted Brass. Fuze. Unpainted brass.
2.	O/A length less gaine.		49.1-ins/1248-mm.
3.	Max. spread over vanes.		7.5-ins/190-mm.
4.	Dia. over threads where screwed into bomb.		2.3-ins/58-mm.
5.	Material.		Brass and Steel.
6.	Type of Gaine.		Long Gaine Type I.
7.	Length of portion AB		

Description of Fuze.

The fuze O consists of the fuze A (Page 323), which has been modified for use with the Extension Piece D (Page 287) by removing the vane and screwing in its place the brass adaptor (1). Removal of the safety pins (2) and (3) and the steel clip (4) allows the vanes to rotate and arm the fuze. It will not be possible to detect from external observation whether this fuze is armed or not.

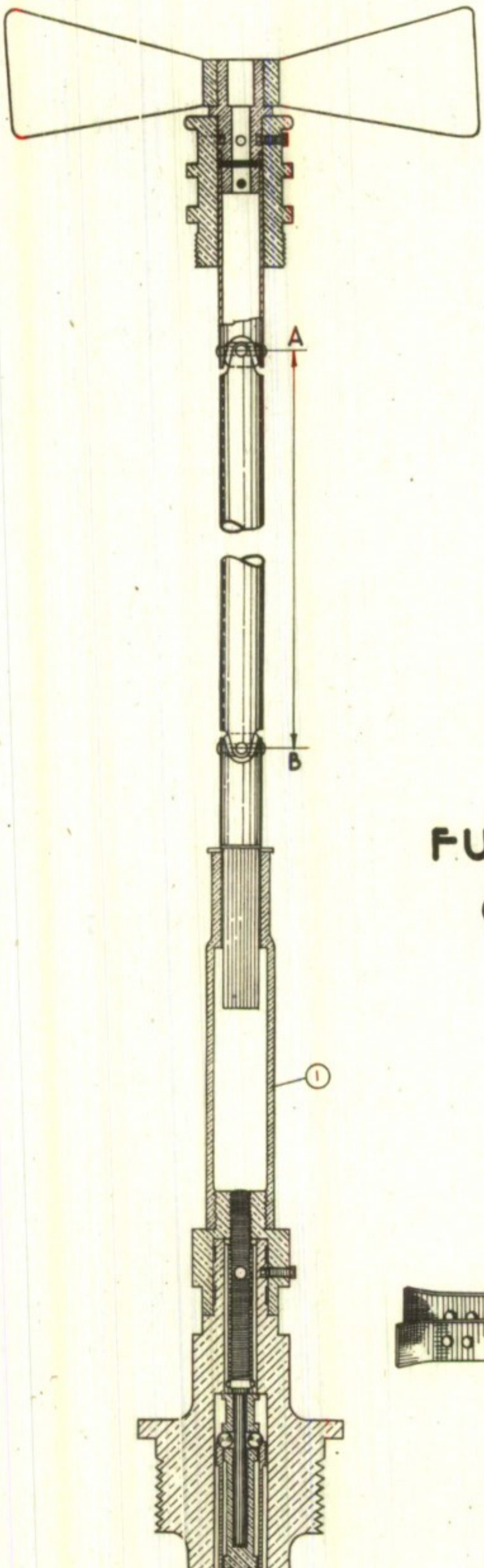
This fuze has been adapted for use with the varying lengths of tail in the bombs 800, 500 and 250 by fitting different lengths of articulated extension AB and the fuzes are then designated 01, 02 and 03 respectively.

Handling the Fuzed Bomb.

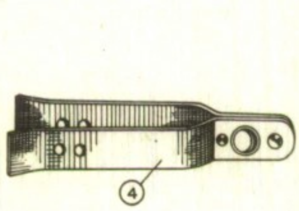
(a) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(b) Ensure that the vanes are not rotated.
(c) Remove the securing screws and take off the tail, drawing it carefully over the fuze.
(d) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

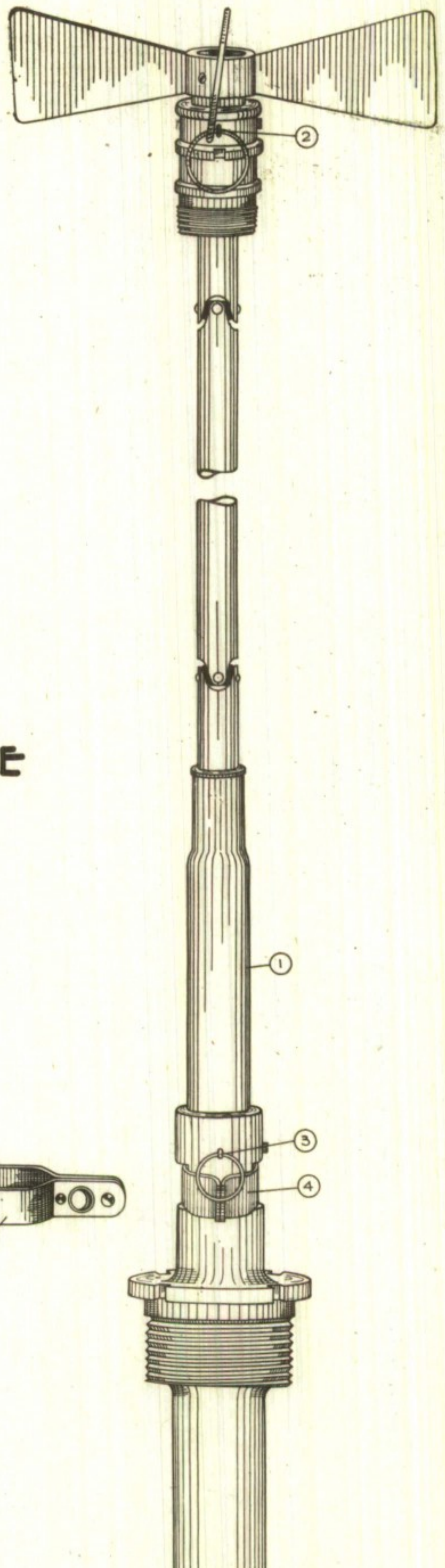
NOTE:

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze, it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.



FUZE O.





BOMBA 500

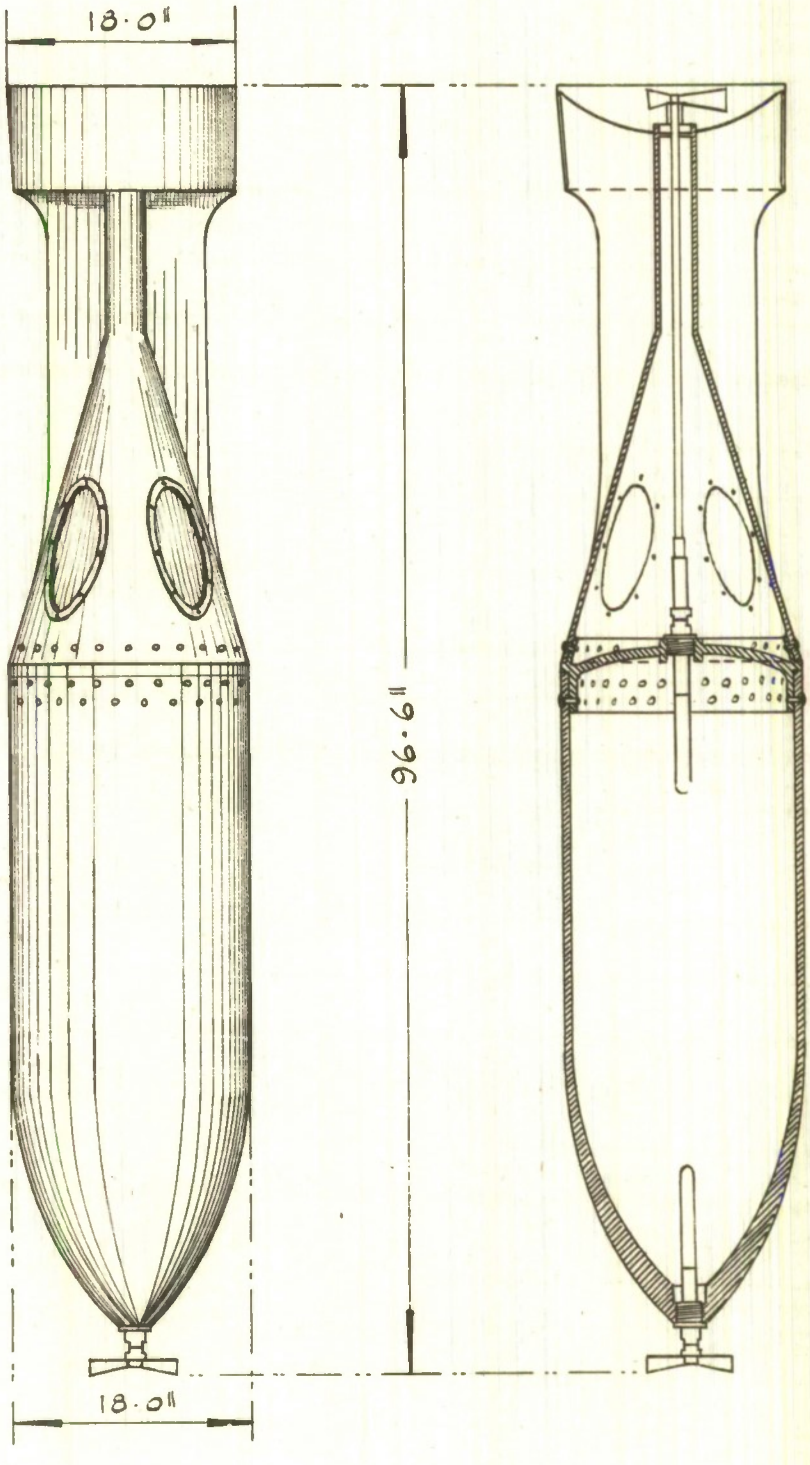
The design and construction of this bomb and its tail are identical with Bomba 800 (Page 319), on a smaller scale.

It is fitted with the same nosed tail fuzes the only difference being in the length of the articulated extension rod.

The explosive filling is made up in five cast pieces shaped one for the nose and one for the tail with three intervening cylindrical portions between them.

Designation	Type
Old Bomba da Kg 500 mod. 1928 New Bomba 500	G.P. Demolition.

1.	O/A Length of Fuzed Bomb.	96.6-ins/2454-mm.
2.	O/A Length less Fuze or Lug.	93.1-ins/2366-mm.
3.	Length of Body.	52.0-ins/1320-mm.
4.	Dia. of Body.	18.0-ins/458-mm.
5.	Max. thickness at (point (nose	0.75-ins/19-mm.
6.	Wall thickness	0.5-ins/12-mm.
7.		
8.	Material and construction of bomb body	Steel Thin walled, parallel sided with base plate attached by 60 screws in 2 rows
9.	Suspension System.	Horizontal - Suspension Band Vertical
10.	Colouring of bomb.	Body Dull Blue with 4-ins red band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	43.3-ins/1100-mm.
14.	Dia. of tail.	18.0-ins/458-mm.
15.	Material of tail.	Cast Alloy.
16.	Colourung of tail.	Dull Blue.
17.	Markings on tail.	
18.	Construction of Tail.	Four narrow vanes with circular band 200-mm. width fixed to body by 28 screws.
19.		
20.	Nature of filling.	TNT in five shaped blocks for nose, central portion and tail.
21.	Weight of filling.	220 Kg.
22.	Total Weight.	508 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	43.3%
25.	Fuze - our designation.	Nose - Type A (Page 323) Tail - Type 0.2 (Page 331)
26.		



BOMBA 500.

ITALIAN Designation of fuze. Spoletta di fondello per bomba di g.c.		Our Designation. 0 2 Classification. Tail - Mechanical Impact. Markings. NIL. Bomb in which employed. 500
1.	Colour.	Extension piece: Green or unpainted steel. Vanes: Green or unpainted brass. Fuze: Unpainted brass.
2.	O/A length less gaine.	45.2-ins/1148-mm.
3.	Max. spread over vanes.	7.5-ins/190-mm.
4.	Dia. over threads where screwed into bomb.	2.3-ins/58-mm.
5.	Material	Brass and Steel.
6.	Type of Gaine.	Long Gaine Type I.
7.	Length of portion D.	31.5-ins/800-mm.

This is the fuze A modified as described on Page 324.

BOMBA 250

This bomb is the smallest of the class 'di grosso calibro' and is similar in construction to Bomba 800 and Bomba 500, but in some models the bomb body is made up of two parts.

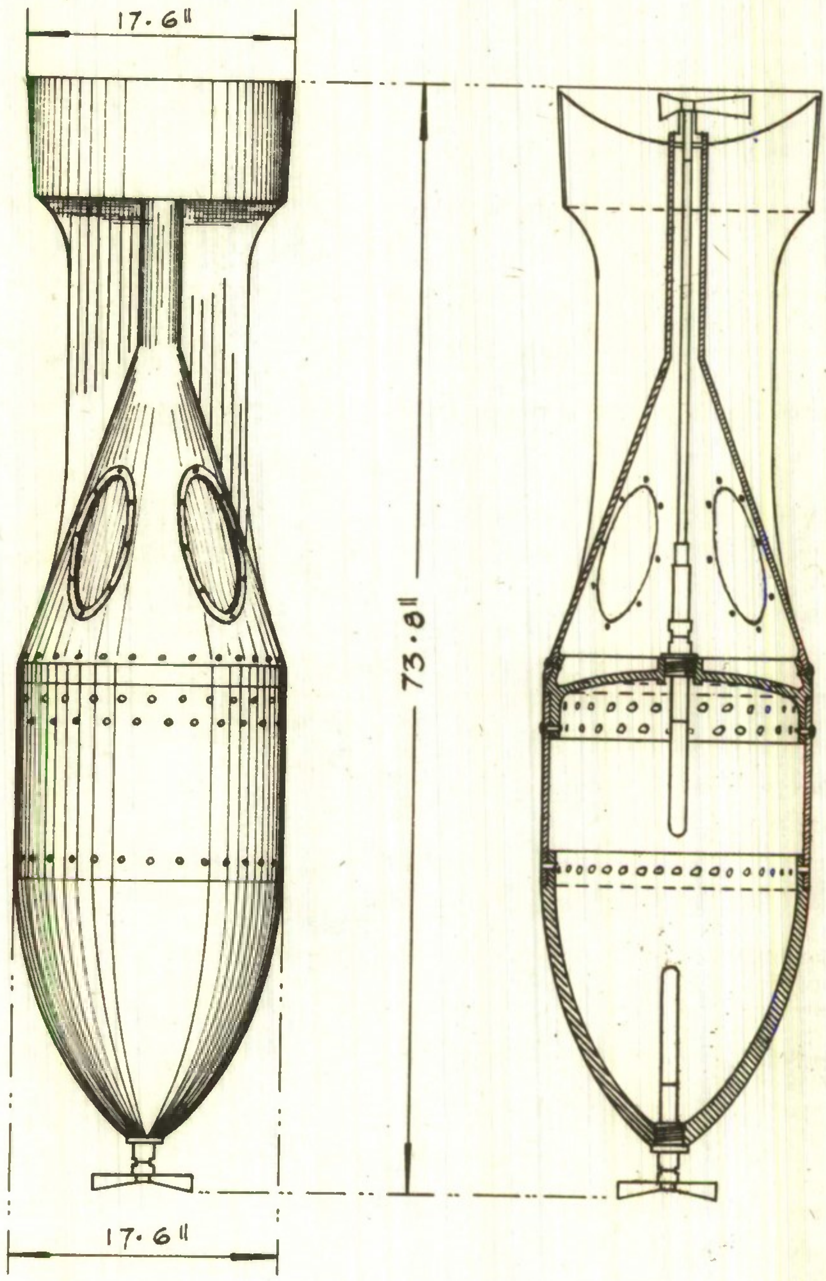
This consists of a parallel sided cylindrical portion attached to the base plate in the same manner as in the largest bombs and a separate cast nose, of greater wall thickness attached to the other end of the central cylinder by one row of screws. This nose portion is recessed at the junction so that the overlapping cylinder may make a flush fit.

The same fuzes as in the larger bombs are used, the length of the articulated extension rod being modified accordingly.

The explosive filling is made up in two cast pieces shaped for nose and tail.

Designation.	Type
Old Bomba da Kg 250 Tipo III New Bomba 250	G.P. Demolition.

1.	O/A Length of Fuzed Bomb.	73.8-ins/1877-mm.
2.	O/A Length less Fuze or Lug.	70.1-ins/1780-mm.
3.	Length of Body.	32.9-ins/835-mm.
4.	Dia. of Body.	17.6-ins/446-mm.
5.	Max. thickness at (point (nose	2.0-ins/51-mm. 1.75-ins/44-mm.
6.	Wall thickness.	0.4-ins/10-mm.
7.		
8.	Material and construction of bomb body.	Steel. Thin walled parallel sided with base plate attached by 60 screws in two rows. In some models the body is made in two parts held together by a circumferentiál row of screws.
9.	Suspension System.	Horizontal - Suspension Band Vertical.
10.	Colouring of bomb.	Body Dull Blue with 3-ins red band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	39.4-ins/1000-mm.
14.	Dia. of tail.	17.6-ins/446-mm.
15.	Material of tail.	Sheet iron or light alloy.
16.	Colouring of tail.	Dull Blue
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four vanes with circular band 205-mm. width fixed with 14 screws.
19.		
20.	Nature of filling.	TNT in two shaped cast pieces.
21.	Weight of filling.	120 Kg.
22.	Total Weight.	286 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	42%
25.	Fuze - our designation.	Nose - Type A (page 323) Tail - Type O.3 (page 337)
26.		



BOMBA 250.

ITALIAN Designation of Fuze. Spoletta di fondello per bomba di g.c.	Our Designation. O 3 Classification. Tail - Mechanical Impact Markings. NIL. Bomb in which employed. 250.

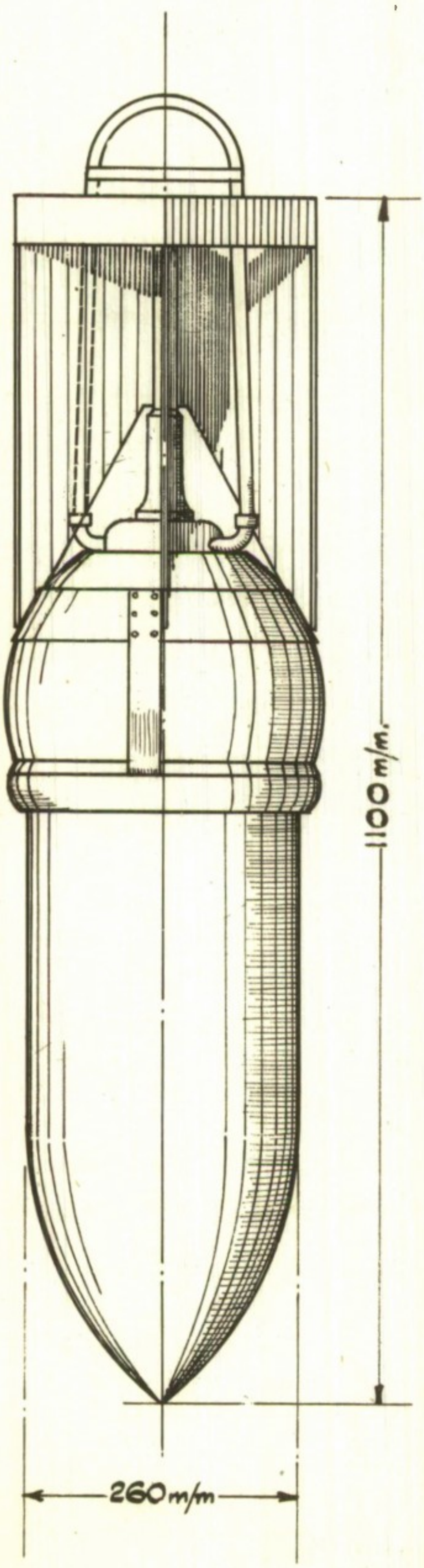
1.	Colour.	Extension piece; Green or unpainted steel Vanes: Green or unpainted brass Fuze: Unpainted brass.
2.	O/A length less gaine.	37.3-ins/948-mm.
3.	Max. spread over vanes.	7.5-ins/190-mm.
4.	Dia. over threads where screwed into bomb.	2.3-ins/58-mm.
5.	Materials.	Brass and Steel.
6.	Type of gaine.	Long Gaine Type I.
7.	Length of portion A.B.	19.8-ins/500-mm.

This is the fuze A modified as described on page 324.

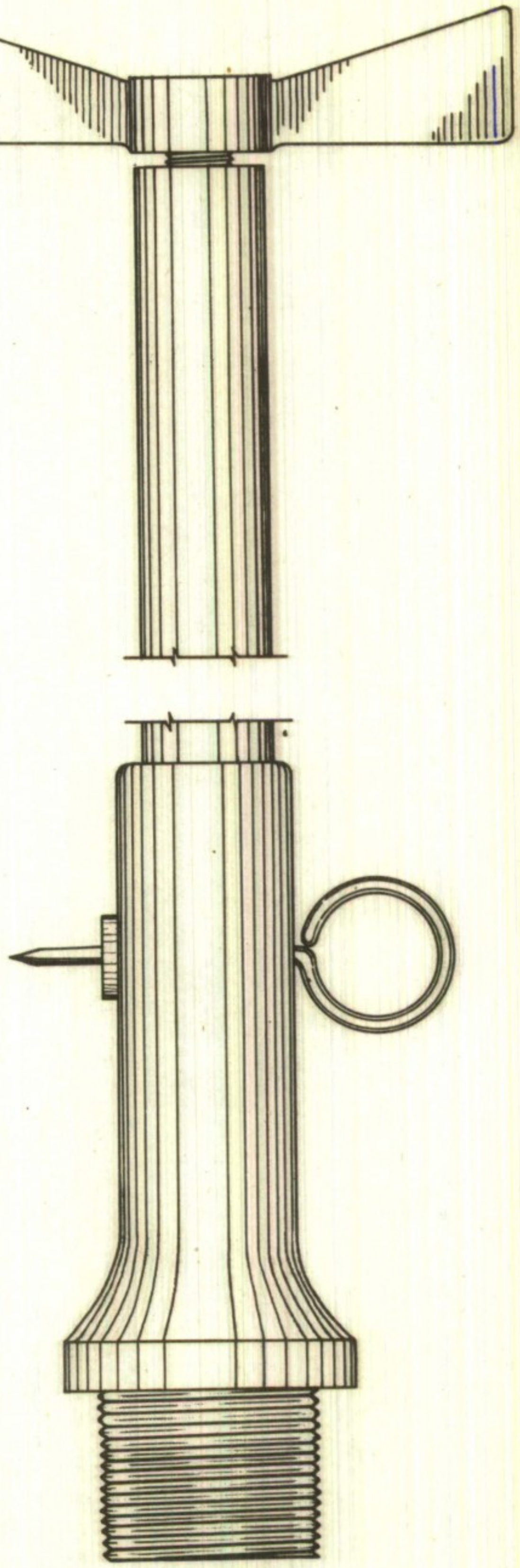
BOMBA 104 M.

No bomb of this weight has yet been encountered. The details available have been extracted from captured documents. The tail unit has no central cone and in this respect differs from most other types of bomb tail. The bomb is normally suspended vertically by means of a V-shaped rod the arms of which pass through the tail and attached to two lugs at the base of the bomb body. The loop projects beyond the extremity of the tail and is strengthened by a cross piece.

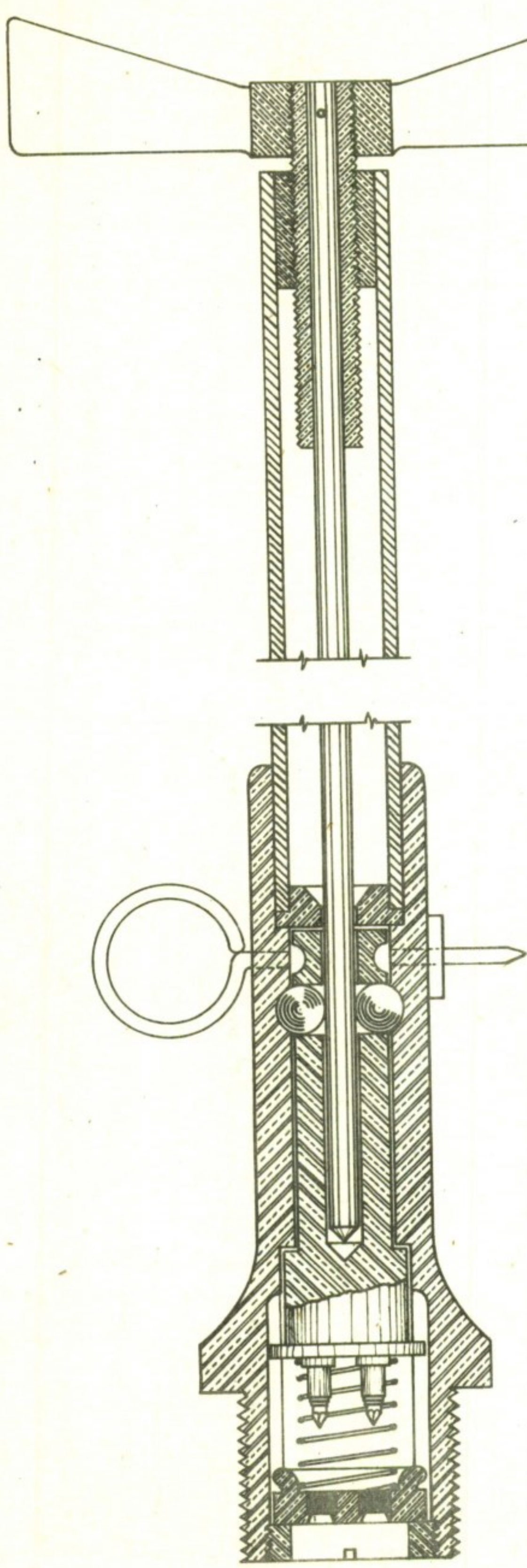
Designation Old Bomba da Kg. 104 M New Bomba		Type S.A.P.: DEMOLITION
1.	O/A Length of Fuzed Bomb.	43.0-ins/1092-mm.
2.	O/A Length less Fuze or Lug.	43.0-ins/1092-mm.
3.	Length of Body.	28.0-ins/711-mm.
4.	Dia. of Body.	10.0-ins/254-mm
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	
9.	Suspension System.	Vertical.
10.	Colouring of bomb.	
11.	Markings on bomb.	
12.		
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T. or Amatol.
21.	Weight of filling.	30 kg.
22.	Total Weight.	104 Kg. (Nominal)
23.	Weight of bomb case.	
24.	Charge/Total Wt. Ratio.	28.8%
25.	Fuze - our designation.	Tail - Type N4 (Page 345).
26.		



BOMBA
104. M.



FUZE N4



FUZE N4.

ITALIAN Designation of fuze. SPOLETTA AD ELICHETTA		Our Designation N4
		Classification. Tail - Mech Impact.
		Markings.
		Bomb in which employed. 104 M
1.	Colour.	
2.	O/A length less gaine.	
3,	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	
5.	Material.	
6.	Type of Gaine.	Long Gaine Type 6.
7.		

A description of this fuze appears on Page 311.

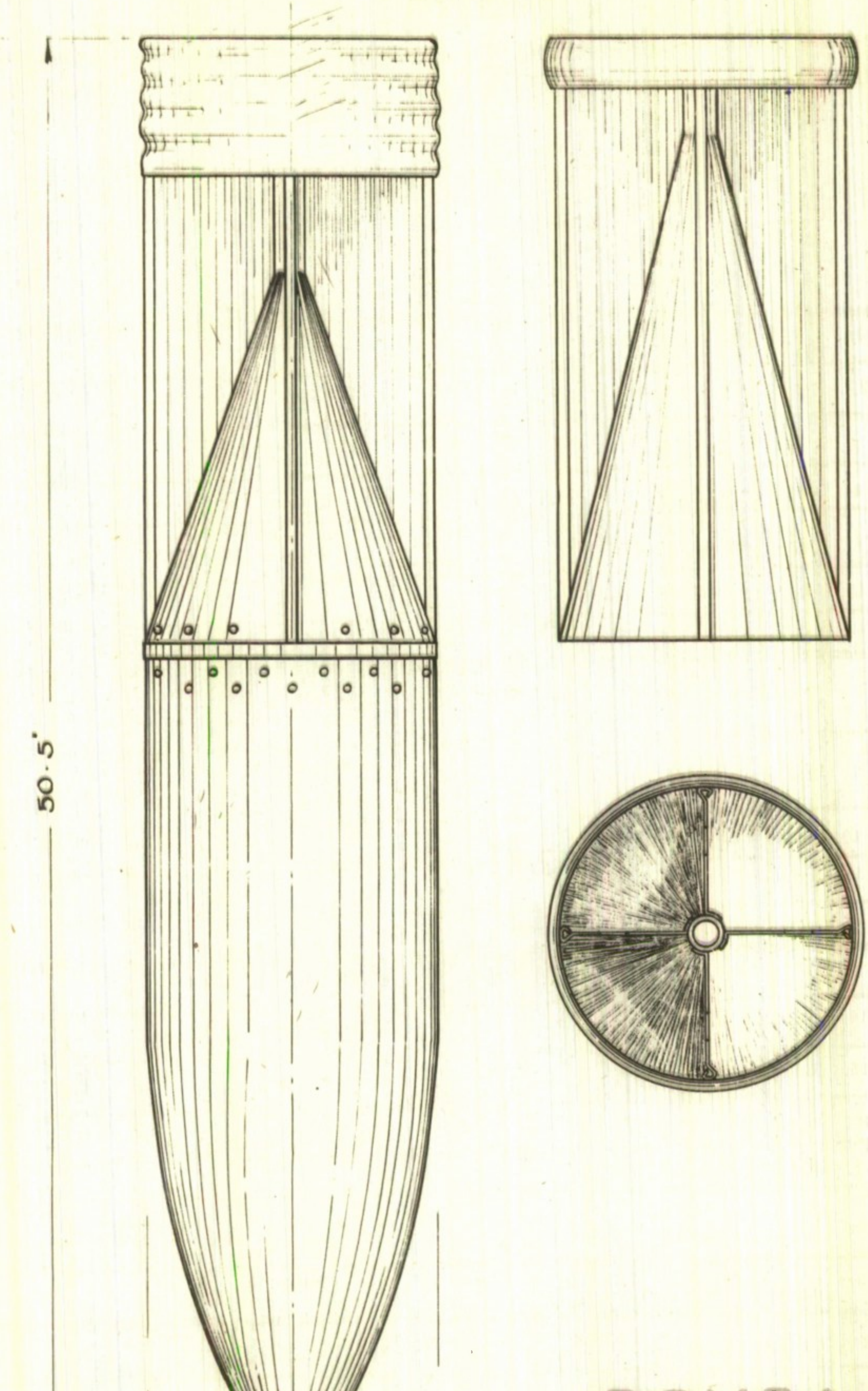
BOMBA 100 M.

The bomb is typical of the S.A.P. class of H.E. demolition bombs. It differs from the corresponding T type in having a greater wall thickness resulting in a reduction in the diameter and length of the bomb.

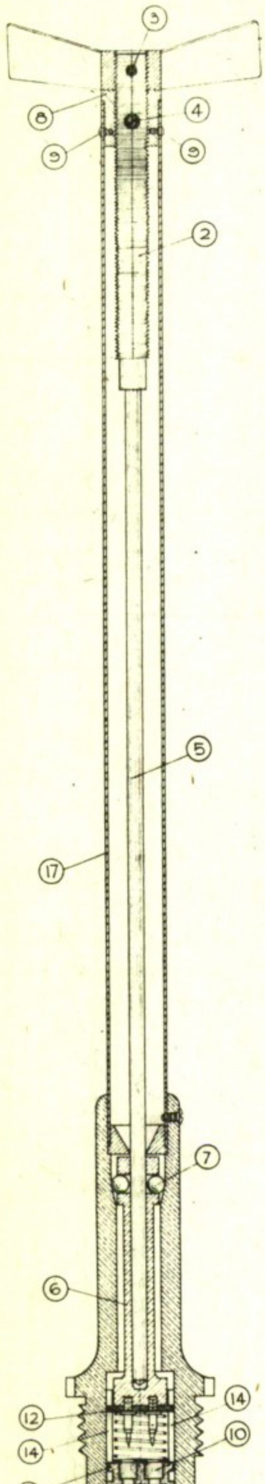
It can be fitted for both horizontal and vertical suspension, the latter being by a nose lug. An alternative method of vertical suspension by means of a 'basket' has been found.

Two types of tail - the older having a plain and the newer a corrugated strengthening band - are known which differ in length by approximately 10-mm. The usual fuze employed with this bomb is Y1 but fuze C1 may be fitted as an alternative.

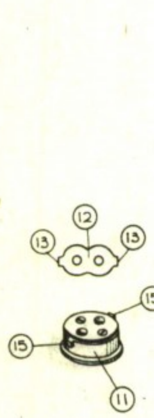
Designation.		Type
	Old Bomba da Kg. 100M New Bomba 100 M	S.A.P. Demolition.
1.	O/A Length of Fused Bomb.	50.5-ins/1283-mm.
2.	O/A Length less Fuze or Lug.	49.6-ins/1260-mm.
3.	Length of Body.	31.0-ins/788-mm.
4.	Dia. of Body.	9.9-ins/252-mm.
5.	Max. thickness at (point (nose	2.5-ins/63-mm. 1.5-ins/38-mm.
6.	Wall thickness.	0.5-ins/12-mm.
7.		
8.	Material and construction of bomb body	Cast steel envelope with separate base plate attached by screws.
9.	Suspension System.	Horizontal. Insert lug or Suspension Band. Vertical. Nose lug or 'basket' attachment
10.	Colouring of bomb.	Body Dull Blue with 3-ins red band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	21.3-ins/540-mm.
14.	Dia. of tail.	9.9-ins/252-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Dull blue.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Two types see overleaf for description.
19.		
20.	Nature of filling.	AMATOL or T.N.T.
21.	Weight of filling.	27.5 kg.
22.	Total Weight.	109 kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	25.2%
25.	Fuze - our designation.	Tail - Type Y1 or C1 (pp.293 and 351).
26.		

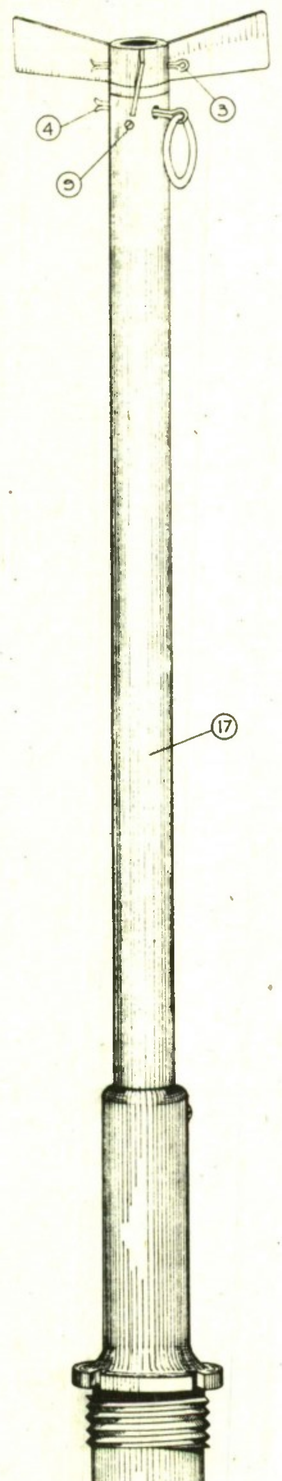


BOMBA
100.M.



FUZE
Y. 1.





ITALIAN Designation of fuze. SPOLETTA DI FONDELLO PER BOMBA 100 M and 100 T.		Our Designation Type Y1 Classification. Tail - Impact Mech. Markings Nil. Bomb in which employed. 100 M, 100T.
1.	Colour.	Vanes and body unpainted brass. Steel tube - black
2.	O/A length less gaine.	20.2-ins/513-mm.
3.	Max. spread over vanes.	4.7-ins./120-mm.
4.	Dia, over threads where screwed into bomb.	1,65-ins/42-mm.
5.	Material	Brass Steel
6.	Type of Gaine.	Long Type I.
7.		

Description of Fuze.

The mode of operation of this fuze is the same as that for the fuze type N which is found in the 15 M bomb. There are, however, certain differences in the dimensions; in the safety devices; and also in detail of the cap and striker assembly. Externally the fuze resembles the fuze C1 although it is 1-inch greater in length and there is no inspection hole in the steel tube (17).

The vanes (1) are secured to the screw (2) by a split pin (3). When the safety pin (4) is withdrawn the vanes rotate and withdraw the rod (5) from the striker (6). The steel safety balls (7) can then move inwards and free the striker. The collar (8) which is threaded to take the screw (2) is secured by the two screws (9). On impact the striker, provided with two needles, compresses the creep spring and fires the caps (10), in the holder (11). Attached to the case of the striker is the small plate (12) which has two projections (13), which move in the vertical slots (14). The cap holder (11) has two similar projections (15), and in this way the needles are located with respect to the caps. A screw-threaded collar (16) retains the cap holder in the fuze.

Handling of Fuzed Bomb.

The fuze is armed when approximately 2½-ins of screw-thread appear between the vanes and the collar (8). Bombs containing these fuzes should only be moved in the horizontal position, preferably using a sling.

To Defuze the Bomb.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin (3) securing the vanes and remove the vanes.
(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.

(f) Unscrew the fuze and withdraw complete with detonator and gaine. Unscrew the gaine from the fuze and pack separately.

NOTE:

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.

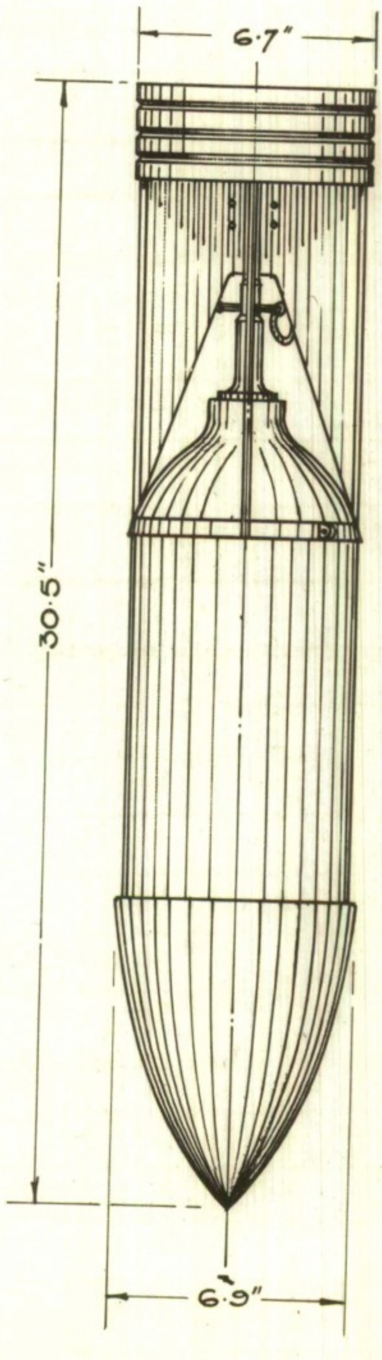
BOMBA 31

This bomb specimens of which were recovered in ABBYSSINIA has not been encountered operationally, although it would appear according to captured enemy documents to be still in service.

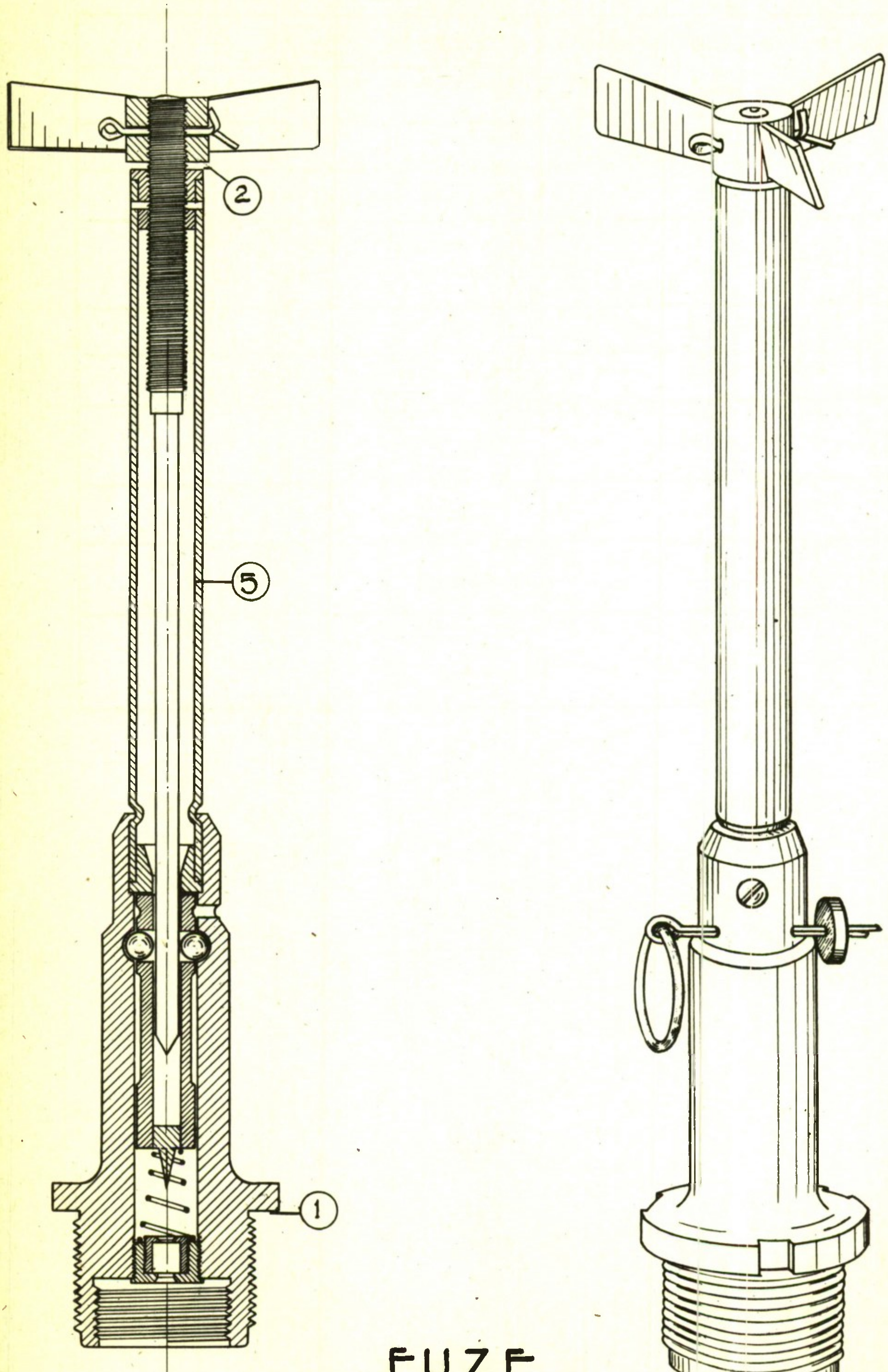
It consists of a hardened steel body with a nose piece of greater wall thickness welded into it.

The tail fitted is similar in construction to that used for the 15.M but is welded to the steel tube of the fuze N2.

Designation		Type
Old	Bomba da kg 31	S.A.P. DEMOLITION
New	Bomba 31	
1.	O/A Length of Fuzed Bomb.	31.7-ins/805-mm.
2.	O/A Length less Fuze or Lug.	31.7-ins/805-mm.
3.	Length of Body.	22.5-ins/570-mm.
4.	Dia. of Body.	6.4-ins/162-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	Steel body with heavier nose welded on.
9.	Suspension System.	Horizontal. Suspension Band.
10.	Colouring of bomb.	Dull Blue.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	12.5-ins/318-mm.
14.	Dia. of tail.	7.2-ins/184-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Dull Blue.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	See under Fuze N3 for Bomba 40.T
19.		
20.	Nature of filling.	T.N.T. or Amatol.
21.	Weight of filling.	10.5 Kg.
22.	Total Weight.	31 kg. (NOMINAL)
23.	Weight of bomb Case.	17 kg.
24.	Charge/Total Wt. Ratio	33.9%
25.	Fuze - our designation	Tail - Type N.2 (Page 357)
26.		



BOMBA
31.



FUZE
N. 2.

ITALIAN Designation of fuze. SPOLETTA PER BOMBA 31		Our Designation. N2 Classification. Tail - Mech Impact Markings Nil Bomb in which employed. 31
1.	Colour.	Body and Vanes - Unpainted Brass Steel tube - Black
2.	O/A length less gaine.	11.0-ins/280-mm.
3.	Max. spread over vanes.	3.9-ins./99-mm.
4.	Dia. over threads where screwed into bomb.	1.6-ins/40-mm.
5.	Material	Brass and Steel.
6.	Type of Gaine.	Long gaine.
7.		

A description of this fuze appears on Page 311.

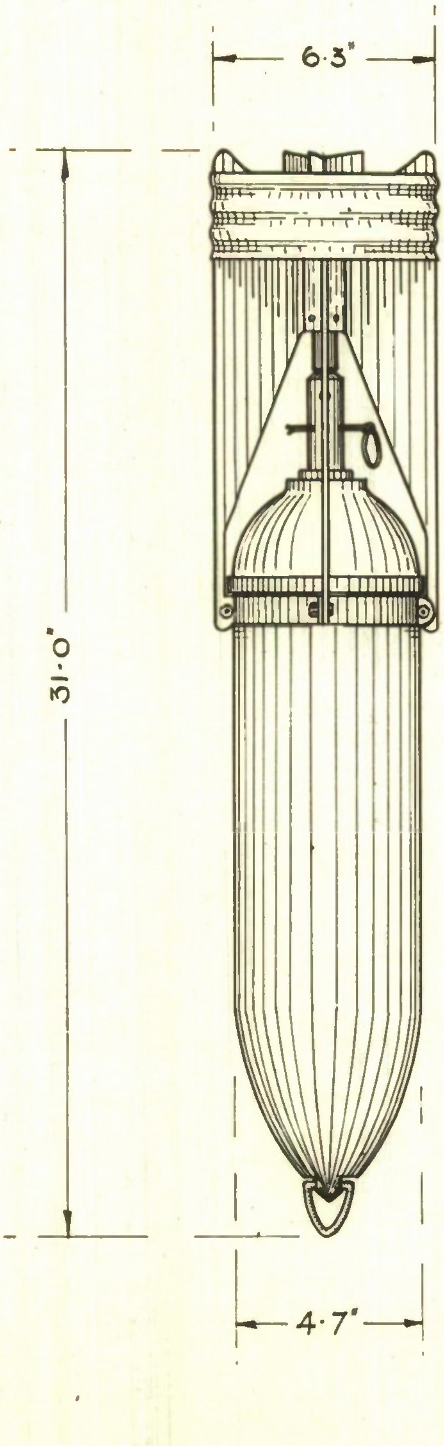
BOMBA 15 M

This S.A.P. bomb has a somewhat shell like appearance. The nose lug is fitted for vertical suspension. Near the base of the bomb a projection on the body, in the form of a flange is provided for the special tail attachment.

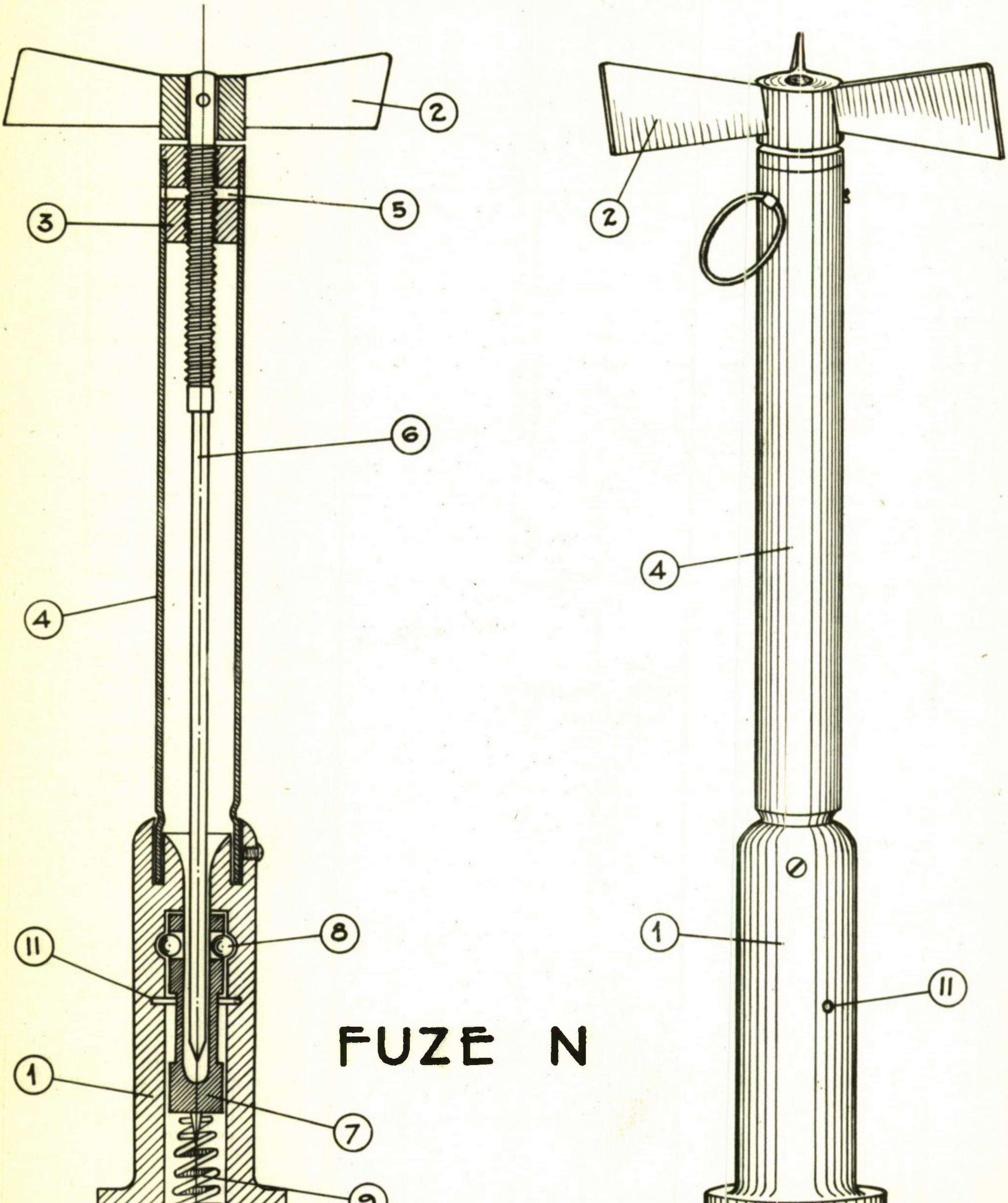
The tail has no central cone so that the fuze is visible when inserted in the bomb. The four fins are strengthened at the outer extremity by a plain or corrugated band and at the end nearest the bomb they are secured to a metal band by four bolts. This band is in four sections and is located below the flange on the bomb body.

Designation Old Bomba da kg 15 M New Bomba 15 M		Type S.A.P. Demolition.
1.	O/A Length of Fuzed Bomb.	31.0-ins/788-mm.
2.	O/A Length less Fuze or Lug.	29.9-ins/760-mm.
3.	Length of Body.	20.7-ins/525-mm.
4.	Dia. of Body.	4.7-ins/120-mm.
5.	Max. thickness at (point (nose	2.0-ins/51-mm. 1.1-ins/29-mm.
6.	Wall thickness	0.25-ins/6-mm.
7.		
8.	Material and construction of bomb body.	Steel. One piece -no base plate. Sharply pointed nose. Steel band welded on 100-mm. from base to retain tail.
9.	Suspension System.	Horizontal. Suspension band. Vertical. Nose Lug.
10.	Colouring of bomb.	Body dull blue with 3-ins red band at nose.
11.	Markings on bomb.	Nil.
12.		
13.	Length of Tail.	13.8-ins/346-mm.
14.	Dia. of tail.	6.3-ins/160-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Dull Blue.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Skeleton tail of four fins with strengthening bands. No tail cone. Circular band having 4 corrugations.
19.		
20.	Nature of filling.	T.N.T. or Amatol.
21.	Weight of filling.	5.6 kg.
22.	Total Weight.	15.5 kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	36.1%
25.	Fuze - our designation.	Tail - Type N. (Page 363).
26.		

361



BOMBA
15. M.



FUZE N

ITALIAN Designation of fuze. SPOLETTO DI FONDELLO PER BOMBA 15 M.		Our Designation. Type N. Classification. Tail - Mech Impact Markings. Nil. Bomb in which employed 15.M.
1.	Colour	Vanes and body - unpainted brass Steel tube - black.
2.	O/A length less gaine.	10.6-ins/ 261-mm.
3.	Max. spread over vanes.	4.2-ins/107-mm.
4.	Dia. over threads where screwed into bomb.	1.4-ins/36-mm.
5.	Material.	Steel Brass.
6.	Type of Gaine.	Short gaine Type 2.
7.		

Description of Fuze.

The body of the fuze (1) the vanes (2) and the collar (3) are of brass, while the tube (4) is of mild steel. The safety pin, when withdrawn, from the hole (5) allows the vanes to rotate while the bomb is falling. The spindle (6) then rises in the collar (3) and the lower part of the spindle is withdrawn from the striker (7). This allows the steel balls (8) to move inwards, and so the striker is freed. On impact, the striker moves against the creep spring (9) and fires the cap (10). During transport an additional safety device is employed in the shape of a brass pin passing through the hole (11) in the fuze body (1). This pin passes under a shoulder on the striker (7) and prevents the latter approaching the cap (10).

Handling of Fused Bomb.

Lay the bomb on its side. Except when the tail is badly distorted the fuze is visible and can be dealt with. If the tail is missing, the fuze will probably be distorted but can usually be made safe by inserting a nail or a stout wire through the hole (11).

The fuze is armed when 0.9-ins. of screw-thread shows below the vanes. In some cases the vanes may be missing, as the spindle can completely unscrew. If the bomb is to be moved, it should be carried on its side, and all jolting completely avoided.

To Defuze the Bomb.

(a) Observe any visual indications of arming.
(b) Avoid any longitudinal blow on the fuze or jerk on the bomb.
(c) Ensure that the vanes are not rotated.
(d) Carefully remove the split pin securing the vanes, and remove the vanes
(e) Remove the securing screws and take off the tail, drawing it carefully over the fuze.

(f) Unscrew the fuze and withdraw complete with detonator and gaine Unscrew the gaine from the fuze and pack separately.

<u>NOTE:</u>

If the tail is distorted or damaged so that it will not conveniently withdraw over the fuze it may be cut as necessary so as to expose the base of the bomb to allow the fuze to be unscrewed.

BOMBA SFERICA DA KG 70

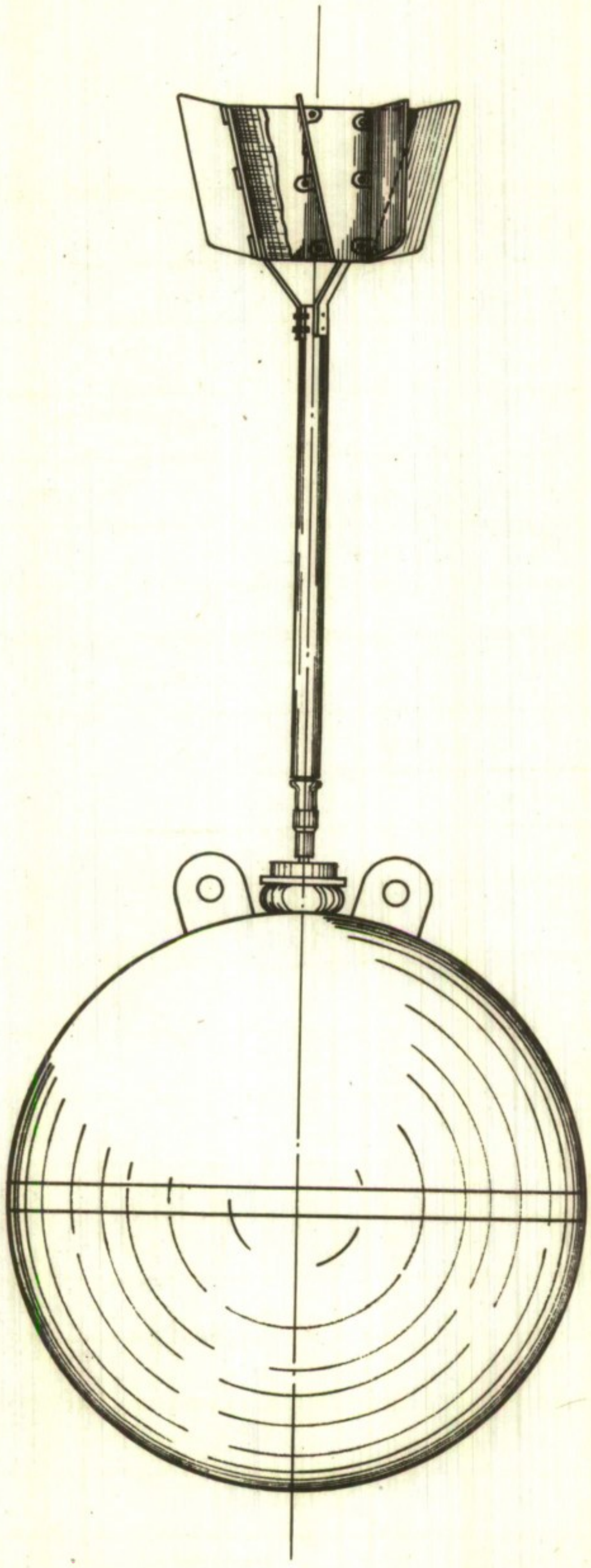
This bomb has not been encountered nor have specimens been recovered and although much information was available in early captured documents it is now considered obsolete.

The bomb consists of a steel sphere filled with 44 kg. of TNT and fitted with two small suspension lugs placed close together. Between the lugs a special fuze screws in and attached to the fuze by a doubly articulated rod is a heavy arming vane.

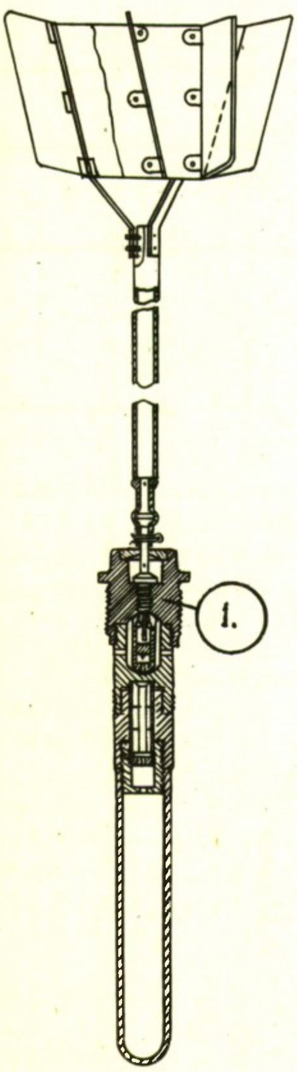
By virtue of the articulation this vane hangs down between the special bomb when they are secured in the bomb rack by means of the suspension lugs.

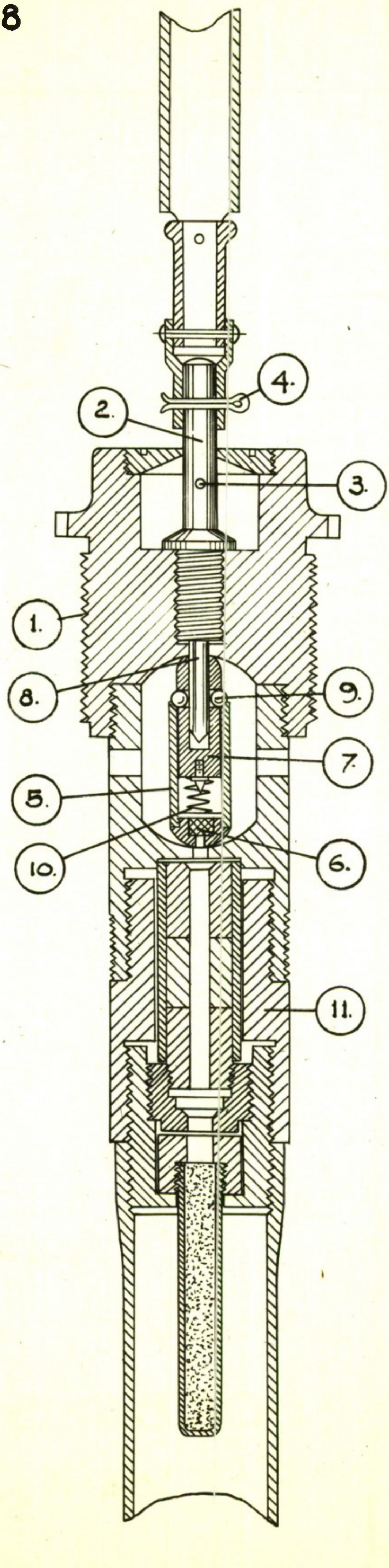
Designation	Type
Old Bomba Sferica da kg. 70 New Bomba	Spherical Bomb Demolition.

1.	O/A Length of Fused Bomb.	
2.	O/A Length less Fuse or Lug.	
3.	Length of Body.	
4.	Dia. of Body.	16.0-ins/406-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness	
7.		
8.	Material and construction of bomb body.	
9.	Suspension System.	
10.	Colouring of bomb.	
11.	Markings on bomb.	
12.	Note.	This bomb has no separate tail.
13.	Length of Tail.	
14.	Dia. of tail.	
15.	Material of tail.	
16.	Colouring of tail.	
17.	Markings on tail.	
18.	Construction of Tail.	
19.		
20.	Nature of filling.	T.N.T. or Amatol.
21.	Weight of filling.	44 kg.
22.	Total Weight.	(Nominal) 70 kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio	62.9%
25.	Fuse - our designation.	Tail - Type P. (Page 369)
26.		



BOMBA SFERICA
da Kg. 70.





FUZE

P.

ITALIAN Designation of Fuze.		Our Designation. Type P.
		Classification. Mech. Impact.
		Markings. Nil.
		Bomb in which employed. Sferica 70 kg.
1.	Colour.	
2.	O/A length less gaine.	
3.	Max. spread over vanes.	
4.	Dia. over threads where screwed into bomb.	
5.	Materials.	
6.	Type of gaine.	Long gaine Type I
7.		

Description of Fuze.

No specimens of this fuze have been recovered. The fuze assembly is shown in the upper part of the diagram. The fuze itself screws into the bomb at (1), the arming rod (2) projecting above the fuze, and prevented from rotating by the safety pin inserted at (3). The vanes and the extension rod are attached to the arming rod by the split pin (4).

The striker assembly within the fuze resembles that found in fuze F. The sleeve (5) contains at its lower end, the cap (6). Within the sleeve is the striker (7) hollowed to take the arming rod (8). This latter holds the steel balls (9) which immobilise the striker. Withdrawal of the arming rod takes place during the fall of the bomb, when the steel balls move inwards, and on impact allows the striker and cap to approach one another, compressing the creep spring (10), and firing the cap. The housing for the striker assenbly is dome shaped as shown. This is intended to cause the striker and the cap to approach, and so fire the latter, whatever may be the position of the fuze on impact.

Handling of Fuzed Bomb.

When found after falling, the tail will generally be missing. If the hole for the split pin is visible, and is 2-cm., above the fuze head, the fuze is fully armed If the bomb must be moved carry it with the fuze horizontal and avoid all jerking. The holder (11) containing a relay, is presumably used to extend the fuze so as to bring the detonator and the gaine into the centre of the explosive filling of the bomb.

BOMBA DA KG.150

This is the only Italian bomb recovered in which the charge-weight ratio has been as low as 13%. It is considered to be Armour Piercing.

The steel envelope (1) is in one piece and into it screws the base-plate (2) which is fitted with a left hand thread. A lead wasner (3) ensures a good seal between the two. The base-plate is drilled and tapped centrally to receive a tail fuze but as yet no fuze has been recovered.

The sheet iron tail is secured to the base plate by 8 screws.

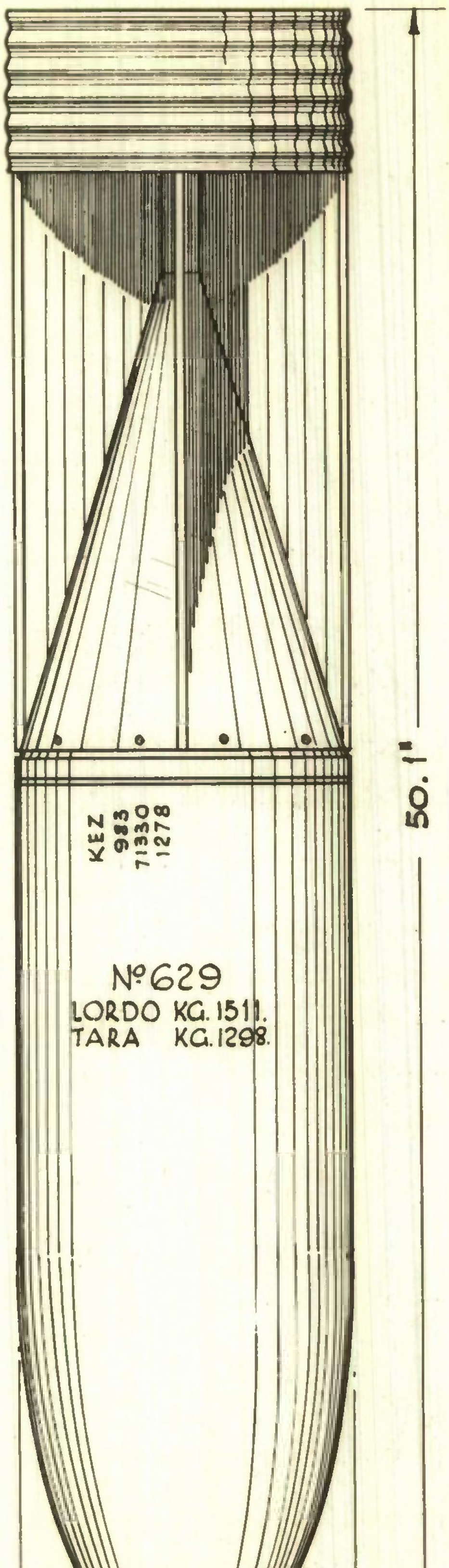
The explosive filling of this bomb is of an unusual type and consists of cylindrical blocks of explosive coloured bright blue embedded in a matrix of a brown explosive.

Chemical analysis of these fillings gives the following compositions:-

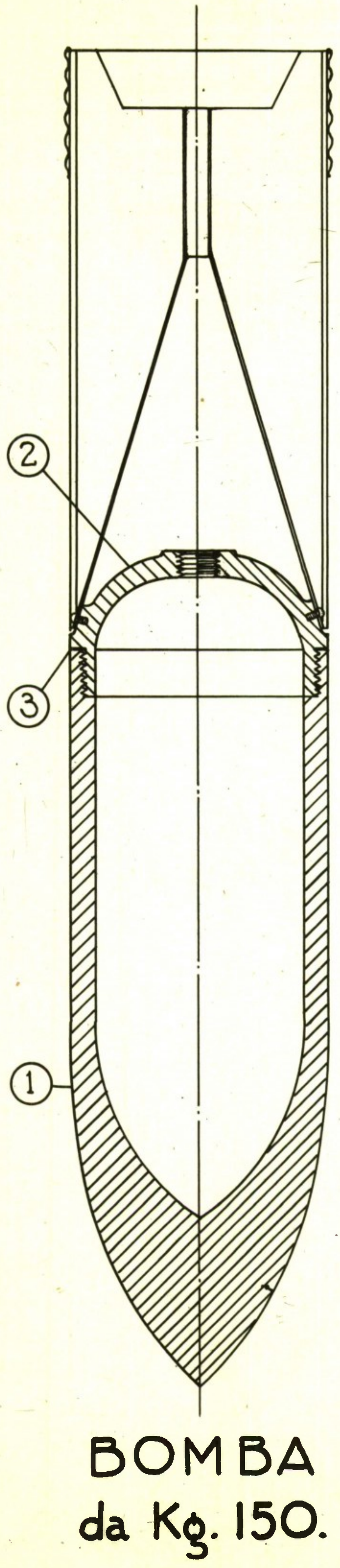
Blue Explosive:	P.E.T.N.	90%
	Paraffin Wax	10%
Brown Explosive:	P.E.T.N.	60%
	Pentaerythritol-Tetracetate	40%

Designation	Type.
Old Bomba New Bomba	A.P. 150 Kg.

1.	O/A Length of Fuzed Bomb.	50.2-ins/1275-mm.
2.	O/A Length less Fuze or Lug.	50.2-ins/1275-mm.
3.	Length of Body.	31.6-ins/802-mm.
4.	Dia. of body.	9.8-ins/250-mm.
5.	Max. thickness at (point (nose	6.3.ins/160-mm. 4.0-ins/100-mm.
6.	Wall thickness	1.0-ins/25-mm.
7.		
8.	Material and Construction of bomb body	See overleaf
9.	Suspension System.	HORIZONTAL - (Suspension Band.)
10.	Colouring of bomb.	Body slate-grey with 3-ins. dark blue band at nose.
11.	Markings on bomb.	Stencilled weight markings.
12.		
13.	Length of Tail.	21.6-ins/548-mm.
14.	Dia. of tail.	9.8-ins/250-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Slate grey.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Four fins mounted on sheet iron cone with corrugated strengthening band.
19.		
20.	Nature of filling.	See overleaf.
21.	Weight of filling.	21.3 Kg.
22.	Total Weight.	151.1 Kg.
23.	Weight of Bomb Case.	127.5 Kg.
24.	Charge/Total Wt. Ratio.	13.0%
25.	Fuze - our designation.	Tail.
26.		



BOMBA
da Kg. 150.



BOMBA
da Kg. 150.

BOMBA DA KG. 140.

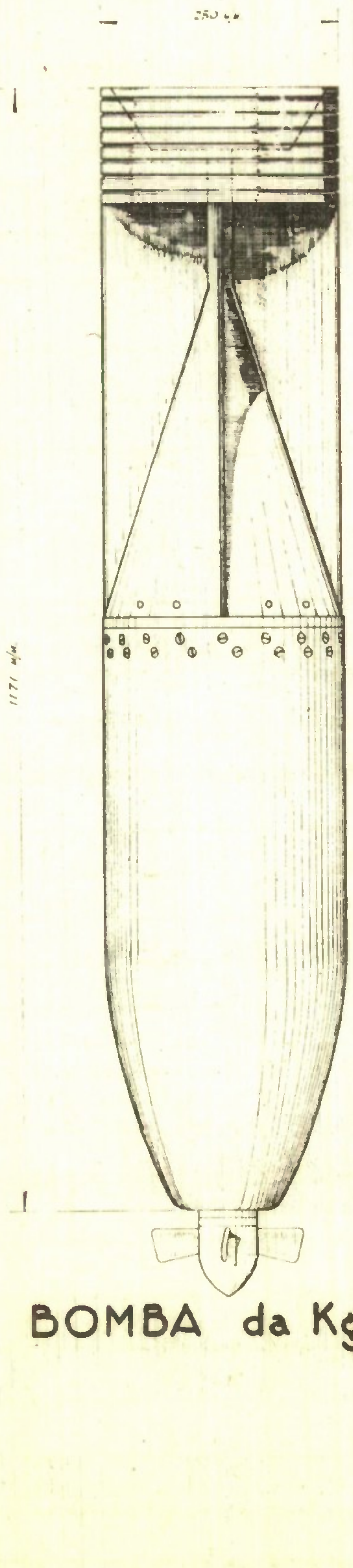
This bomb was originally reported as the 135 Kg. H.E. Bomb since this was the weight of the bomb body recovered. The total weight of the complete bomb is approximately 140 Kg. Little is known of this bomb since no detailed examination has been made. The drawing has been made up from field sketches.

Secured to the bomb by a double row of screws is a base-plate which is closed by a screwed plug. The tail which is of normal pattern is secured to the base plate by screws.

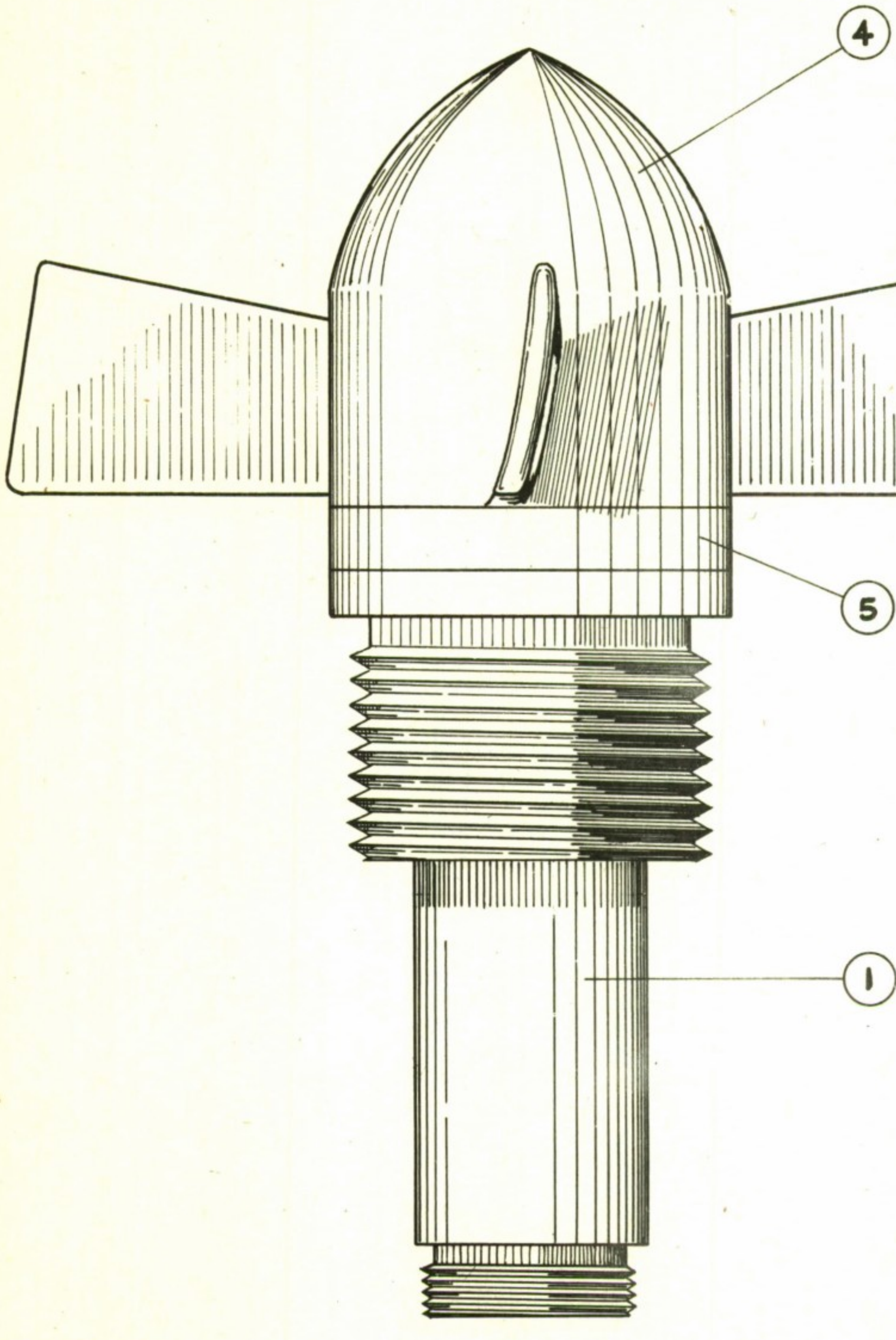
The only specimen recovered was fitted with a nose fuze only although provisi[illegible] for the fitting of a tail fuze has been made both in the base plate and the tail [illegible] the bomb.

Designation	Type
Old Bomba New Bomba	140 Kg. H.E. Bomb.

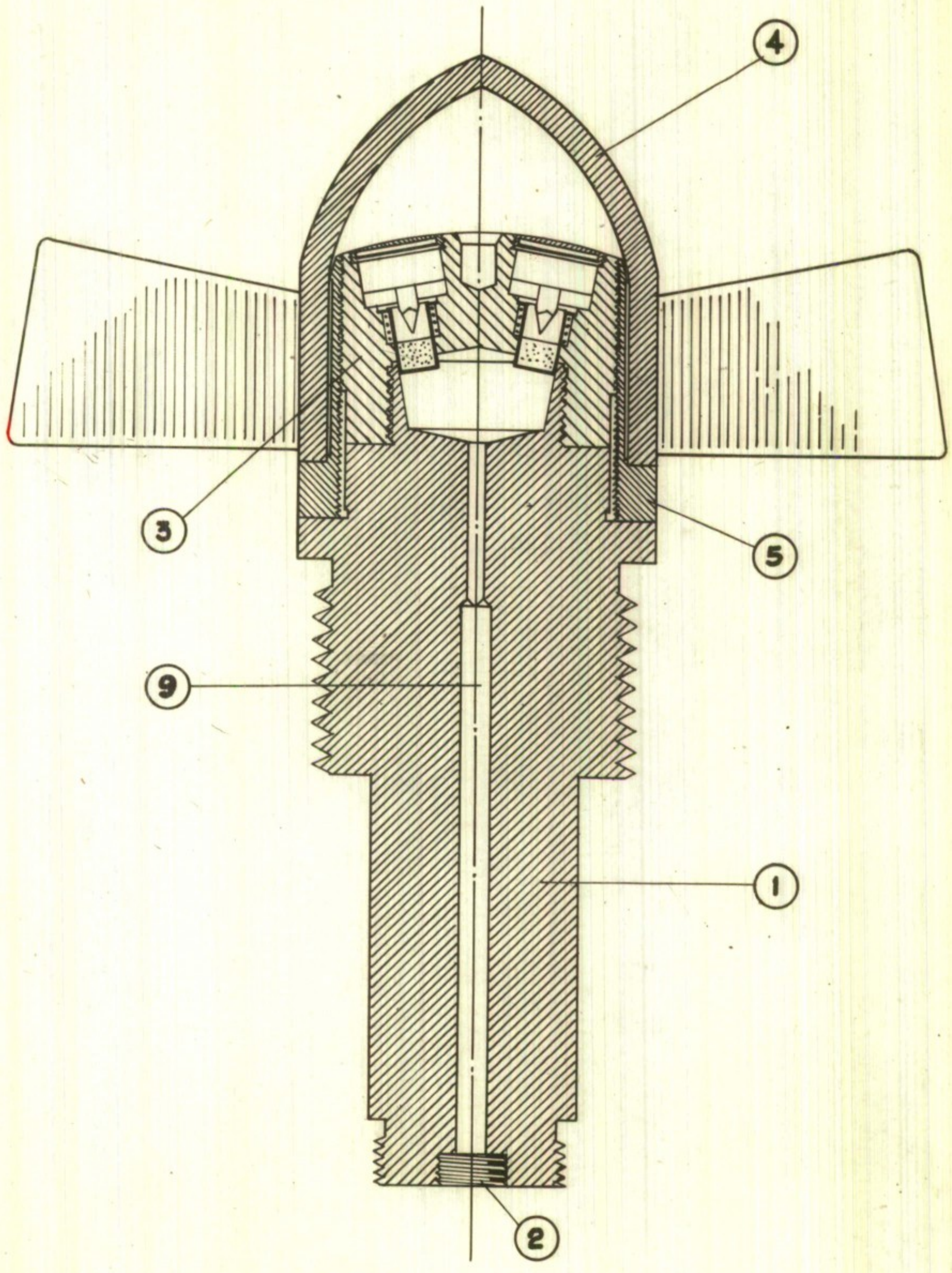
1	O/A Length of Fuzed Bomb.	49.5-ins/1258-mm.
2.	O/A Length less Fuze or Lug.	46.1-ins/1171-mm.
3.	Length of Body.	27.5-ins/700-mm.
4.	Dia. of Body.	10.1-ins/256-mm.
5.	Max. thickness at (point (nose	1.4-ins/35-mm.
6.	Wall thickness.	
7.		
8.	Material and construction of bomb body.	
9.	Suspension System.	
10.	Colouring of bomb.	Body dull blue with 1½-ins. red band at nose.
11.	Markings on bomb.	
12.		
13.	Length of Tail.	21.6-ins/550-mm.
14.	Dia. of tail.	9.8-ins/250-mm.
15.	Material of tail.	Sheet iron.
16.	Colouring of tail.	Dull Blue.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	Cone of sheet steel to which are welded four stabilising fins with a corrugated strengthening band.
19.		
20.	Nature of filling.	
21.	Weight of filling.	
22.	Total Weight.	ca. 140 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuze - our designation.	Nose (Page 381).
26.		



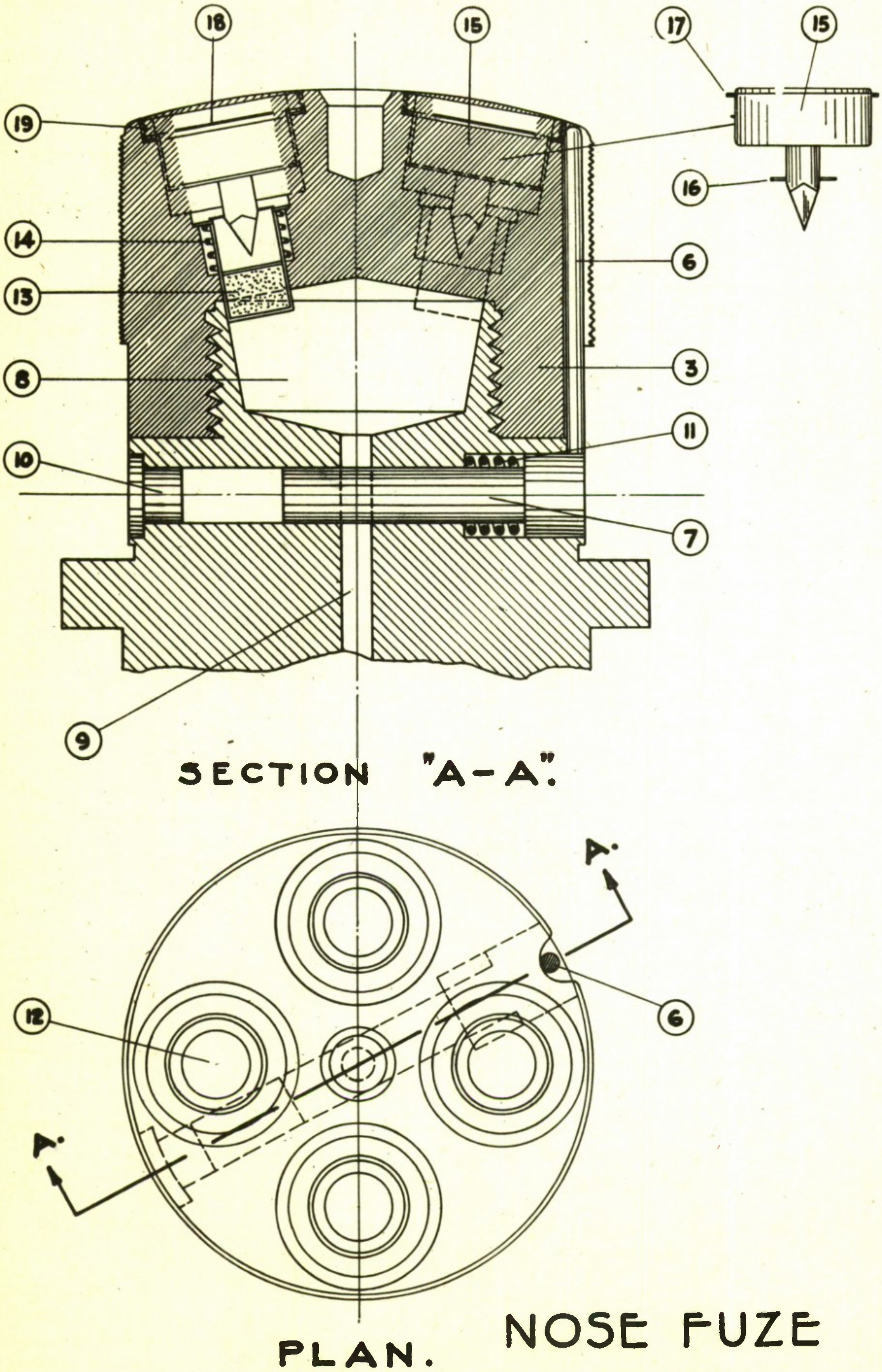
BOMBA da Kg. 140.



NOSE FUZE FOR
BOMBA da Kg. 140.



NOSE FUZE FOR
BOMBA da Kg. 140.



PLAN.

NOSE FUZE
FOR
BOMBA da Kg. 140.

ITALIAN Designation of fuze.		Our Designation. Nose fuze for 140 Kg. Bomb.
		Classification Nose - Mech Impact
		Markings. Nil.
		Bomb in which employed. -
1.	Colour.	Red.
2.	O/A length less gaine.	7.7-ins/194-mm.
3.	Max. spread over vanes.	6.4-ins/160-mm.
4.	Dia. over threads where screwed into bomb.	2,2-ins/56-mm.
5.	Material.	Aluminium Alloy, Brass and Steel.
6.	Type of Gaine.	Long Gaine Type 1
7.		

Description of Fuze.

The fuze body (1) is made of aluminium alloy (density about 2.5). It is threaded at the lower end (2) to take the standard screwed detonator. The fuze head (3), which carries the four impact mechanisms, screws on to the body and is protected by the vaned cap (4). The cap is made of aluminium alloy and has a brass liner (5). This is roughened so as to make a good press fit in the aluminium cap. A hole, off centre, passing through the upper part of the fuze body takes a safety pin to retain the cap. There are four vanes attached to the cap which are set at approx. 17° to the longitudinal axis of the fuze.

The head of the fuze (3) has a longitudinal slot in which one arm (6) of the safety bolt is accommodated. The other arm (7), made of brass, passes through the fuze body and blanks off the flash chamber (8) from the channel (9) leading to the detonator. The hole in which this safety bolt is located is plugged at the end (10) and has a shoulder to seat the spring (11). This latter ejects the safety bolt when the cap has unscrewed.

The four slots (12) for the striker mechanisms are equally spaced on the slightly domed head of the fuze. The brass flash tube (13) rests in its slot on the spring (14). Above the flash tube is the striker (15). This consists of a cap closed by a pressed in cover and has the needle projecting from the underside. Through the needle passes a fine wire (16) which in the complete assembly restson the upper edge of the flash tube.

The striker itself has three equi-spaced small projections (17) which rest on the shoulder at (18). The striker is covered by a thin aluminium disc and held by a screwed brass ring (19).

After the removal of the safety pin, the vanes can rotate as the bomb falls. When the cap has fallen away the safety bolt (7) is ejected.

On impact one or more of the strikers will be forced inwards. The projections (17) usually break off and at the same time the fine wire (16) is also sheared. Thus the needle is urged towards the cap by the impact, while the cap is urged towards the needle by the oscillation of the spring (14). The whole system is reminiscent of the French R.S.A. mechanism, the three projections (17) replacing the usual shear wire.

Handling of Fuzed Bomb.

If the vaned cap is missing the four pressure operated strikers housed in the nose of the fuze are unmasked and the fuze is armed.

(i) Insert into the safety bolt hole a 4½ nail (about gauge 5) and bind it in position to prevent it falling away.

(ii) Unscrew the fuze and withdraw it from the bomb complete with detonator and gaine.

(iii) Unscrew both the gaine and the detonator from the fuze and pack them separately.

12.6 Kg MARKER BOMB (SEA).

The fuze in this bomb is unlike any of the fuzes in the Italian Service already described. It is not a separate mechanism which is detachable from the bomb since the striker needle is embedded in the ignition composition which initiates the burning of the safety fuze. The moveable part of the fuze is a spindle carrying a cap at its inner end.

The bomb is of light alloy all welded construction (including the tail unit) with a longitudinal seam down the body.

The nose (1) of the bomb houses the fuze mechanism the moveable part of which consists of a spindle (2) fitted with a shaped pressure plate (3) and a percussion cap (4). The nose of the bomb is sealed against the entry of water by the rubber washer (5) and premature movement of the spindle (2) is prevented by the safety pin (6).

Mounted on the inner end of the nose (1) is a tube (7) on which are mounted twenty six blocks (8) of purple smoke producing composition. Between each of these, which is 3-ins. in diameter and 1-in. thick, is a metal spacer (9). A perforated metal cylinder (10) encloses the whole smoke producing charge and four lengths (11) of angle iron provide the necessary support.

A length (approximately 108-ins/274-mm.) slow-burning fuse (12) leads from behind the striker needle (13) along the central tube (7) down one of the lengths of angle iron (11) and back up the adjacent length, out to the tail and back into the top block of smoke producing composition. The slow-burning fuse is supported within the tail by the round iron bar (14) which also supports a length of quick-burning fuse (15) running from the top block of smoke producing composition to the celluloid disc (16) which seals the tail orifice.

Equally spaced around the striker mechanism within the nose of the bomb are four ¼-inch diameter holes filled with black powder (17).

Operation of the Bomb.

The safety pin (6) is withdrawn as the bomb is launched and the special shape of the pressure plate (3) ensures that even for poor angles of impact with the surface of the water, the spindle (2) will be forced inwards thus carrying the cap (4) onto the striker needle (13). The flash from the cap ignites the slow-burning fuse (12) which burns for approximately 10 minutes thereby enabling the bomb to be floating steadily on the surface of the water before it is initiated. On expiry of the delay period the top block of smoke producing mixture and the length of quick-burning fuse (15) are ignited simultaneously. The quick-burning fuse burns out the celluloid disc (16) and thus permits the egress of the purple smoke.

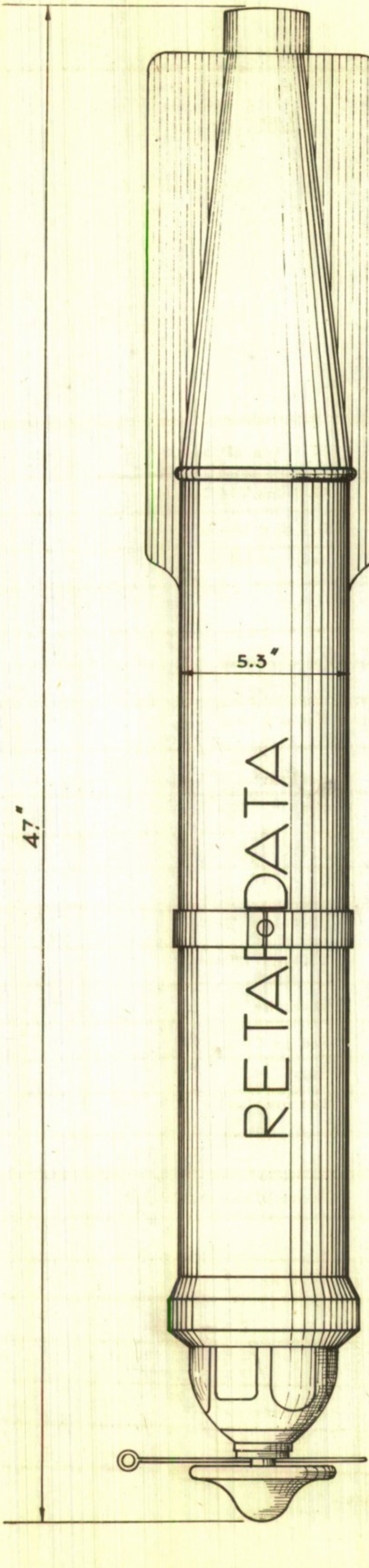
The smoke producing composition continues to burn slowly downwards until it in turn ignites the black powder self-destroying charges (17) in the nose when the bomb sinks.

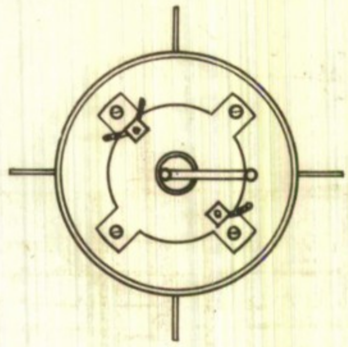
Handling the Fuzed Bomb.

Providing the spindle (2) is secured against all movement, the bomb may be lifted and carried in a horizontal position with safety.

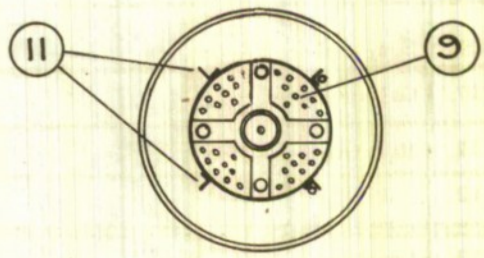
Designation.	Type
Old Bomba New Bomba	Marker Bomb (Sea)

1.	O/A Length of Fuzed Bomb	47.0-ins/1193-mm.
2.	O/A Length less Fuse or lug.	45.0-ins/1143-mm.
3.	Length of Body.	33.0-ins/838-mm.
4.	Dia. of body.	5.3-ins/135-mm.
5.	Max. thickness at (point (nose	
6.	Wall thickness.	
7.		
8.	Material and construction of bomb body	See overleaf
9.	Suspension System.	Horizontal - Suspension band.
10.	Colouring of bomb.	Grey.
11.	Markings on bomb..	Nil.
12.		
13.	Length of Tail. Fin.	17.0-ins./432-mm.
14.	Dia. of tail.	7.0-ins/178-mm.
15.	Material of tail.	Sheet Metal.
16.	Colouring of tail.	Red or Grey.
17.	Markings on tail.	Nil.
18.	Construction of Tail.	See overleaf.
19.		
20.	Nature of filling.	Smoke Mixture (Purple)
21.	Weight of filling.	
22.	Total Weight.	12.6 Kg.
23.	Weight of Bomb Case.	
24.	Charge/Total Wt. Ratio.	
25.	Fuse - our designation.	See overleaf
26.		

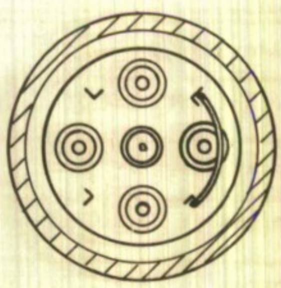




SECTION A.A.



SECTION B.B.



SECTION C.C.

12.6 KG. MARKER BOMB. (SEA)

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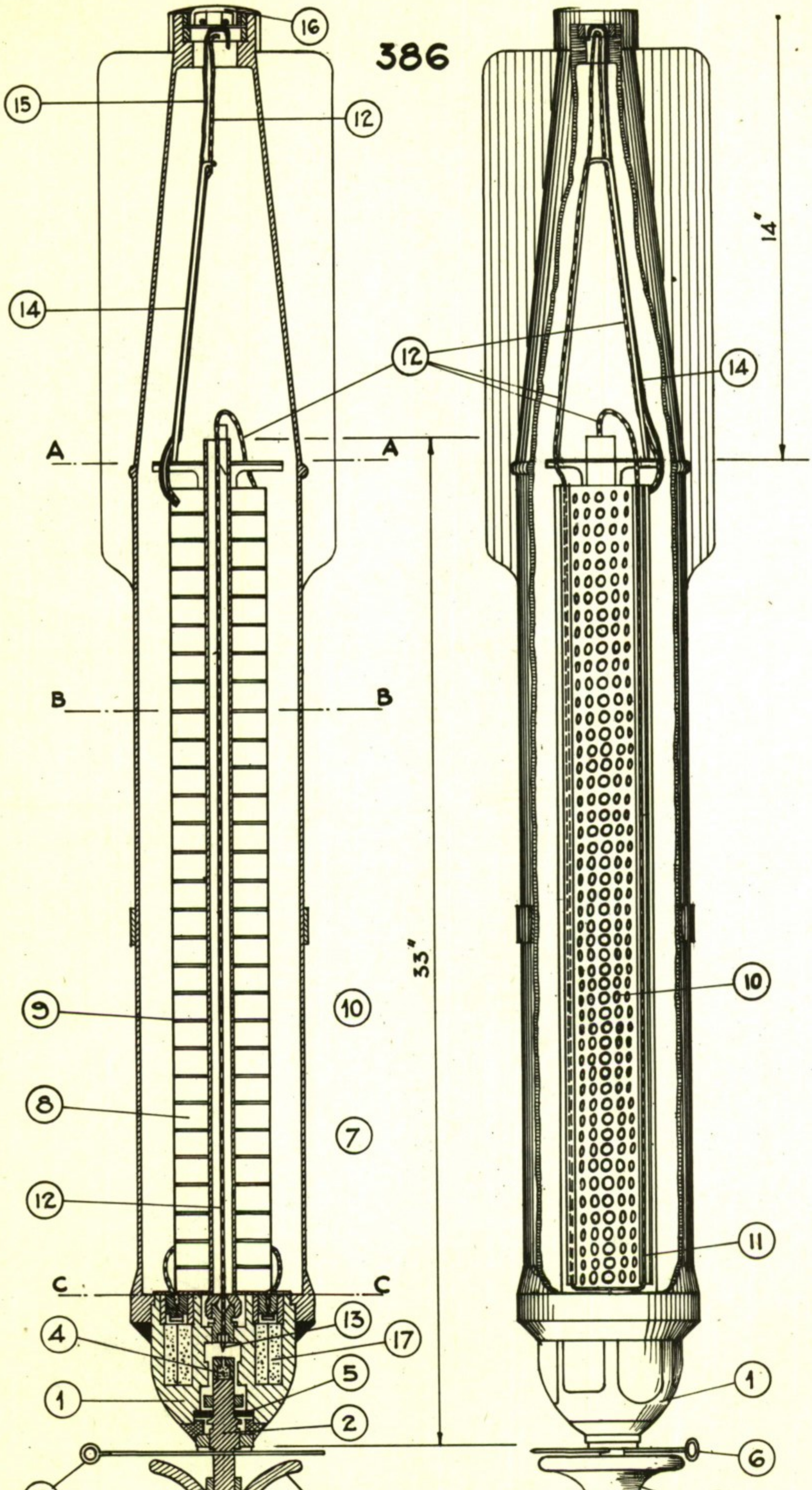
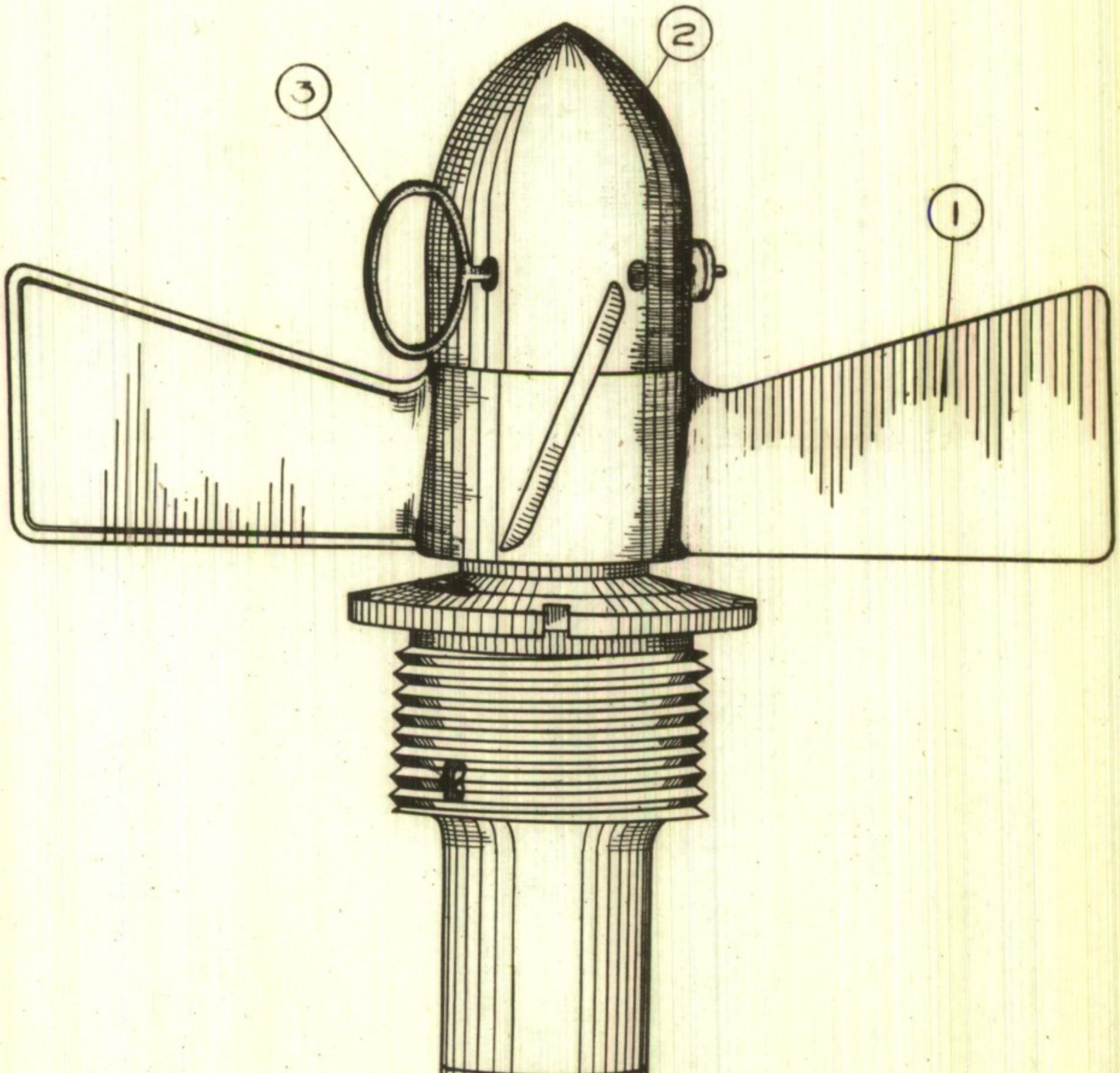
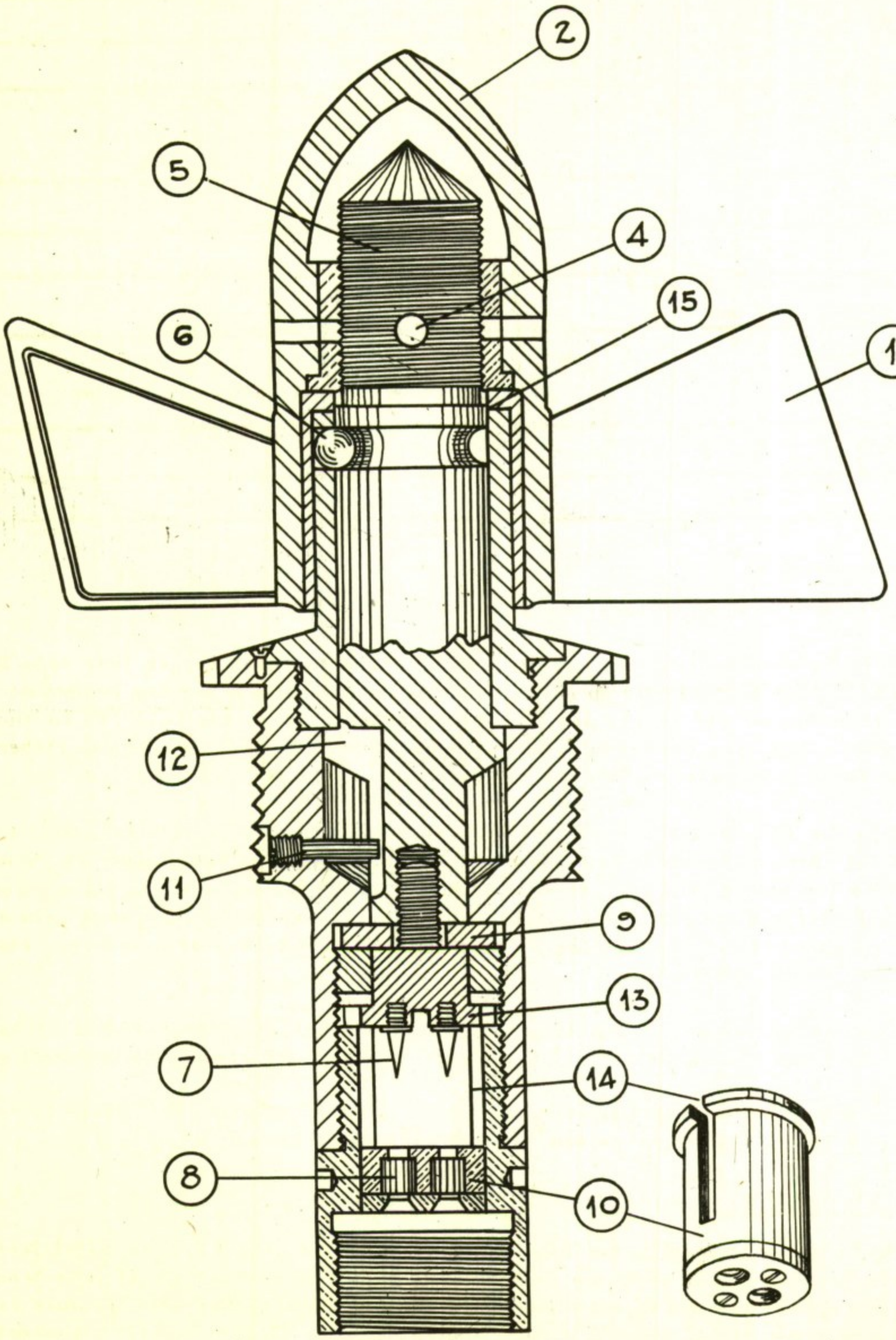




FUZE V.



FUZE V.

ITALIAN Designation of fuze.		Our Designation. Type V	
		Classification Nose - Mech. Impact.	
		Markings. Nil.	
		Bomb in which employed.	
1.	Colour.	Vanes - Unpainted Aluminium Body - Unpainted Stainless Steel.	
2.	O/A length less gaine.	8.2-ins/210-mm.	
3.	Max. spread over vanes.	7.3-ins/186-mm.	
4.	Dia. over threads where screwed into bomb.	2.1-ins/53-mm.	
5.	Material	Vanes - Aluminium Cap holder and gaine adaptor - Steel.	
6.	Type of Gaine.	Long gaine Type 1.	
7.			

Description of Fuze.

It is not known which bomb employs this fuze.

This fuze resembles, in certain respects, the somewhat larger fuze type B. The vanes (1) form part of the cap (2). In the unarmed condition the cap is prevented from rotating by the safety pin (3) which passes through the hole (4) in the striker (5). There are two pairs of diametrically opposite holes in the cap either of which can be used as convenient for the insertion of the pin.

When the fuze is fully armed, the cap (2) having unscrewed, falls away and so releases the three steel balls (6). These in turn fall away and the striker is thus freed. Into the base of the striker is screwed the needle holder with the two needles (7). The latter are located above the two caps (8). The screw (11) projects into a vertical groove (12) in the striker. This locates the striker by preventing its rotation as the cap unscrews.

The needle holder has two lugs (13) which project into the vertical slots (14) in the brass cap holder (10). This locates the caps with respect to the needles

The fuze functions on impact by the shearing of the washer (9). There is no creep spring in the cap holder between the striker and the caps.

Handling of Fuzed Bomb.

When the cap is missing the fuze is fully armed. If only 1.1/2-in. of striker appear abovr the shoulder (15) the washer has probably been sheared. If less than this amount shows the needles are close up to the caps. In either case the fuze is in a dangerous condition, and the striker shank should be secured firmly to prevent any further movement. The fuze may then be unscrewed from the bomb and withdrawn complete with detonator and gaine. Both the latter should be unscrewed from the fuze and packed separately.

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Former reference (Department) 17.805
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