HIGH CAPACITY BOMBS

RESTRICTED

USE

These bombs are thin-walled and have a high charge/weight ratio. They are used for general bombardment purposes on operations where maximum blast damage is required. At present the thin series includes bombs of 2000, 4000, 8000, and 12,000 lbs.

FUZING

The earlier marks of these bombs are provided with side fuzing positions which are used for special operations, the bombs normally having fuzing pockets in the nose only. Later marks of the 2000 and 4000 lb. bombs, and all of the 8000 and 12,000 lb. bombs of the series have three nose fuzing pockets, all of which generally are used.

Central exploder tubes are at present fitted in all types of H.C. bombs, and where side fuzing positions or nose fuzing positions offset from the longitudinal axis of the bomb are used, auxiliary exploder tubes connect the fuzing positions to the central tube.

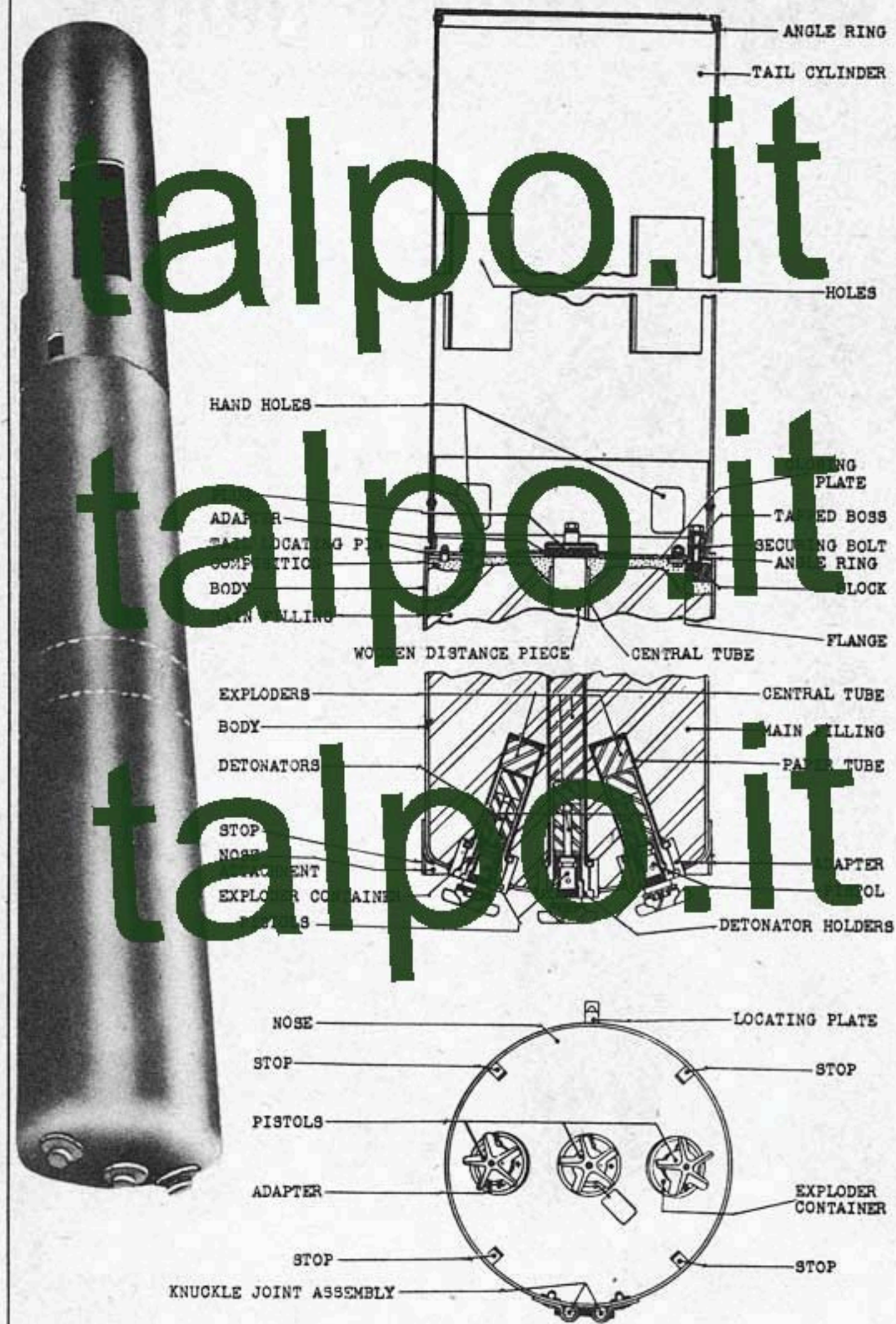
CHARACTERISTICS

These bombs are characterized by dome shaped noses and parallel sides, and may be fitted with nose attachments to retard the bomb in flight. Drum type tails are generally used although the 2000 lb. may be fitted with a parachute attachment, and the 12,000 lb. bombs sometimes incorporate the normal G.P. type tail assembly; i.e., tail cone, cylindrical strut, and four fins.

The body is usually welded together and the tail bolted on. The 8000 and 12,000 lb. bombs consist of two and three body sections, respectively, bolted together.

H.E. bombs are supplied uncrated and are fitted with transit rings. All fuzing positions are plugged with transit plugs. Tails, nose attachments, and parachute attachments are supplied in separate packages.

2000 LB. H.C. BOMB



BRITISH BOMB

2000 LB. H.C.

Mks II & III

(Service)

FUZING:
Mk III - Three Nose Pistols, No. 27, 42, or 44
Mk II - Three nose fuze cavities present but only center one can be used, with one of above pistols.

COLOR & MARKINGS:
Dark green overall; ½" red band 6" from front edge of cylindrical shell, and 2" light green band 16" from edge.

TAIL NO. . . . . No. 39 Mk I
OVERALL LENGTH . . . 131"
BODY LENGTH . . . . . 89"
MAX. BODY DIAMETER. . 18.[illegible]
WALL THICKNESS . . . 0.[illegible]
TAIL LENGTH . . . . 40"
TAIL [illegible] . . . 17.9
TOTAL WEIGHT . . . . 723 [illegible]. (Amatol 60/40)
CHARGE/WEIGHT RATIO . 71 %

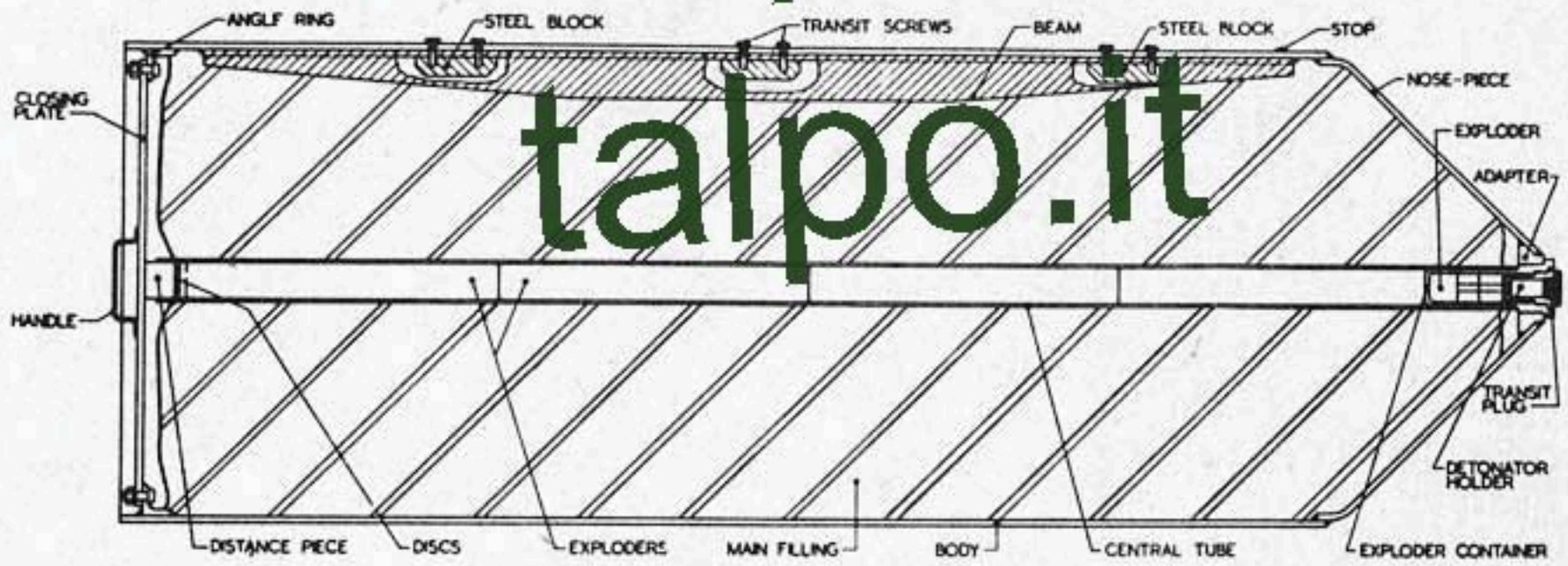
BODY CONSTRUCTION: Steel fabricated cylinder with dome shaped nose, parallel sides and closed by a flat plate bolted to a flange a short distance within the rear end. The base flange is fitted with locating pins for the tail, and holes to receive tail securing bolts are drilled through it. A central tube is cemented to the stem of the central exploder container in the nose and extends through the body almost to the closing plate. All three nose fuzing positions house exploder containers, the two side ones extending radially in toward the central tube.

TAIL CONSTRUCTION: Metal cylinder, having an angle ring secured at each end. Hand holes in the tail cylinder give access to the tail securing bolts, which pass through [illegible] on the forward angle ring. [illegible] holes in the cylinder provide stability in flight.

SUSPENSION: Single suspension lug 18" from nose fuze, secured by 8 screws.

EXPLOSIVE COMPONENTS: Detonators: [illegible] Appendix I, page 309)
Exploders: [illegible]E. exploder in pistol exploder containers, and [illegible]E. pellets in central tube.
Fillings: [illegible]30 lbs. Amatol 60/40 or 50/50
1285 lbs. R.D.X./T.N.T. 60/40, or
1360 lbs. Torpex 2.

REMARKS: May have nose attachment on bomb, to retard in flight; consisting of [illegible]ight gauge metal cylinder extending from the body shell forward around the dome shaped nose.



4000 LB. H.C. BOMB

BRITISH BOMB

4000 LB. H.C.

Mk I

(Obsolescent)

FUZING	One nose pistol, No. 27, 42 or 44; Two side fuze pockets, not used.
COLOR & MARKINGS	Dark green overall. ½" red band 1" from front edge of cylindrical shell, 2" light green band 16" from edge.
TAIL NO.	No. 24 Mk I
OVERALL LENGTH	115"
BODY LENGTH	88.5"
MAX. BODY DIAMETER	39"
WALL THICKNESS	[illegible]i"
TAIL LENGTH	27
TAIL WIDTH	29.5"
TOTAL WEIGHT	39[illegible] lbs.
CHARGE/WEIGHT RATIO	73

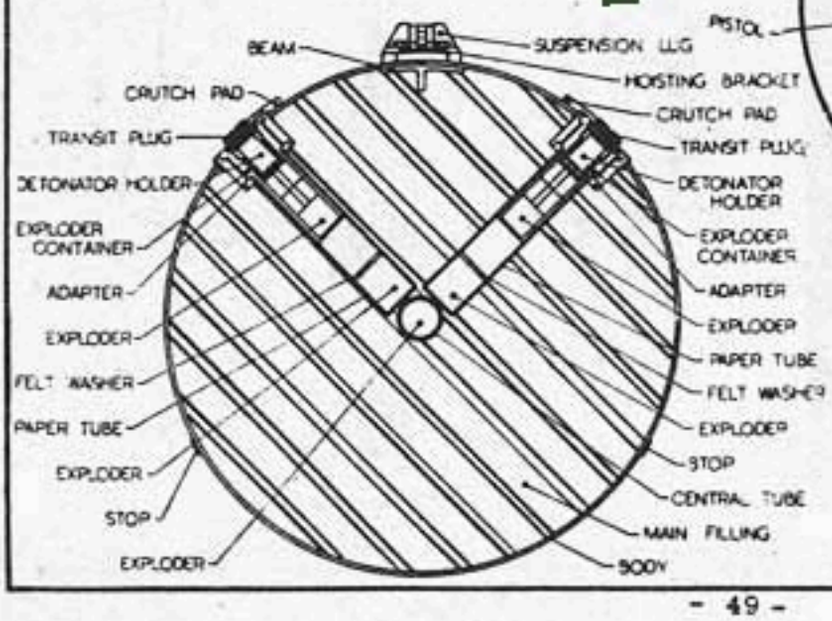
BODY CONSTRUCTION: Cylindrical shell having hollow conical nose piece welded on, partici[illegible]les, and closing plate bolted to angle ring welded in position at a short distance within the other end. Shell strengthened by a T-section beam welded to inner surface. Steel blocks, constituting pads for suspension lug and hoisting brackets, are welded in the angles of the beam. Central tube is fitted over and cemented to the stem of exploder container, extending almost to the closing plate. Two exploder containers are fitted near rear of bomb at 45° angle to strengthening beam.

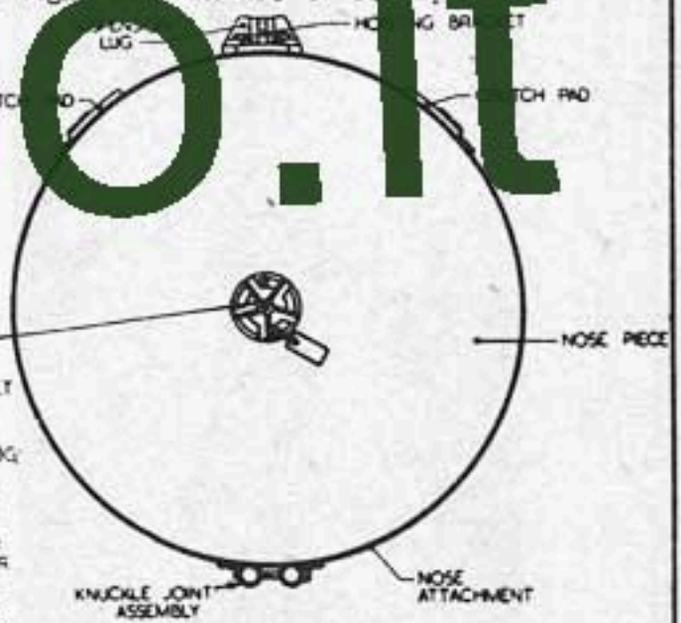
TAIL CONSTRUCTION: Cylinder of light gauge plate, closed at rear by a diaphragm plate welded in position. Tail securing screws thread into corresponding holes near the rear edge of the body shell. Forward portion of the cylinder has segments between adjacent screw clearance holes, so that the tail may spring in the rear of the bomb body.

SUSPENSION: Single lug at center of gravity, bolted to body and internal strengthening beam.

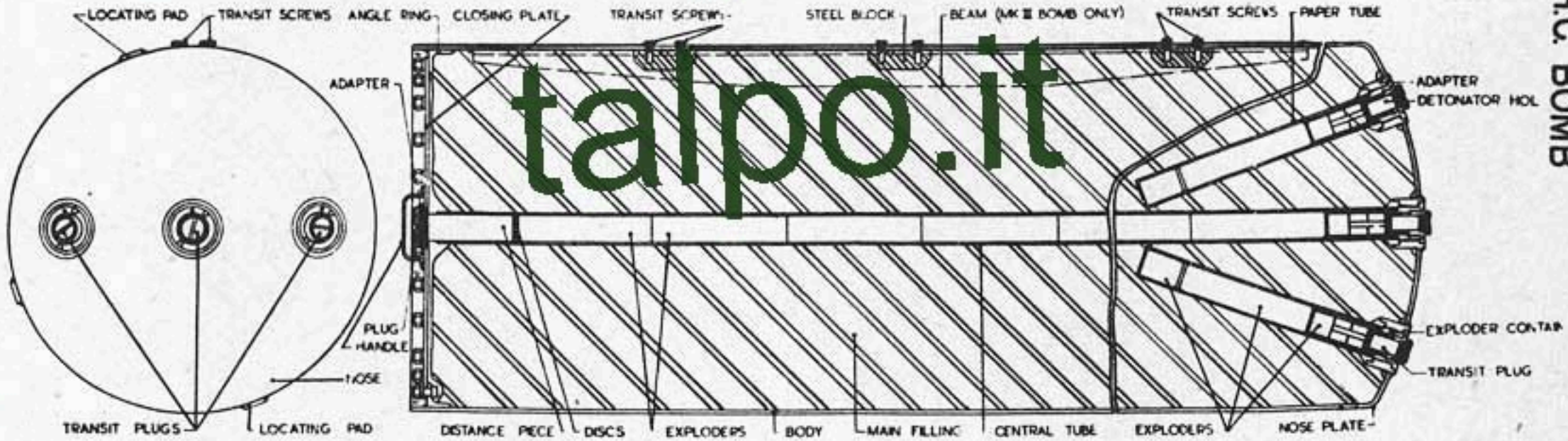
EXPLOSIVE COMPONENTS: Detonators: (See Appendix 1, page 309)
Exploders: Exploder containers house 1 solid and 2 perforated C.E. pellets, central tube filled with 36 pellets of pressed T.N.T.
Filling: 2882 lbs. Amatol 60/40

REMARKS: This bomb may be fitted with a nose attachment to retard it in flight, consisting of light gauge plate around the forward end of the shell, and projecting beyond it around the conical nose-piece. Side fuze pockets usually not used, but might contain No. 47 Tail p[illegible]





4000 LB. H.C. BOMB



BRITISH BOMB

4000 LB. H.C.

Mks II, III (Obsolescent)

Mks IV, V, VI (Service)

FUZING	Three nose pistols, Nos. 27, 42, or 44. Side fuze pockets on Mk II not used.
COLOR & MARKINGS	Dark green overall; ½" red band 8" from nose, and 2" light green band 2" from nose.
TAIL NO.	No. 24 Mk I
OVERALL LENGTH	110"
BODY LENGTH	82"
MAX. BODY DIAMETER	30"
WALL THICKNESS	0.[illegible]"
TAIL LENGTH	27"
TAIL WIDTH	29"
TOTAL WEIGHT	3930 lbs. Amatol [illegible]/40)
CHARGE/WEIGHT RATIO	75 %

BODY CONSTRUCTION: Fabricated steel cylindrical shell with domed plate welded to nose end, parallel sides and closing plate bolted by angle ring inside. Position a short distance within the tail end. Closing plate has central adapter for a screw-in plug and two drop handles. Nose dome houses three exploder containers, center one extended through the body by a central tube. Mk II has two side fuze pockets near rear of body. Mks II and III have strengthening beam running fore and aft, welded to inner surface of body and acting as a pad for suspension lug and hoisting brackets. Mk IV has steel blocks to support suspension lug and hoisting brackets and no beam.

TAIL CONSTRUCTION: Cylinder of light gauge plate, closed at rear by a diaphragm plate welded in position. Tail securing screws thread into corresponding holes near the rear edge of the body shell. Forward portion of the cylinder has slots between adjacent screw clearance holes, so that the tail can be sprung into the rear of the bomb body.

SUSPENSION: Single suspension lug 93" from nose dome, bolted to bomb body and steel block.

EXPLOSIVE COMPONENTS: Detonators: (See Appendix I, page 309)
Exploders: [illegible].E. pellets in exploder containers and central tube.
Filling: Mk II, 2954 lbs. Amatol 60/40
Mk III-VI, 2960 lbs. Amatol 50/50 or 60/40
3070 lbs. R.D.X./T.N.T. 60/40
3088 lbs. Minol 2
3294 lbs. Torpex 2

REMARKS:

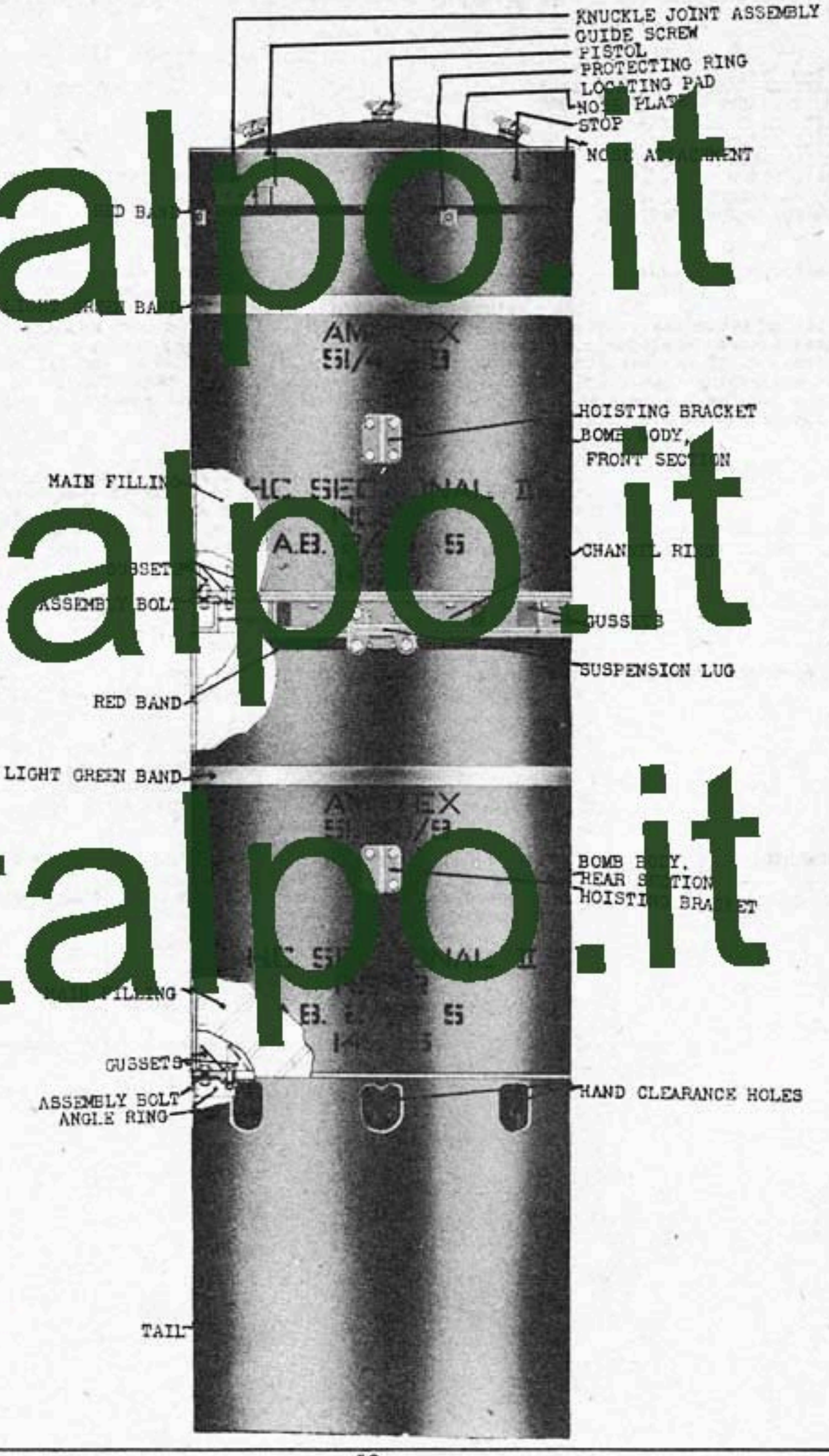
(1) These bombs may be fitted with nose attachment to retard the[illegible] in flight, consisting of light gauge plate around the forward end of the body shell and projecting beyond it around the nose piece.

(2) The side fuze pockets on the Mk II are usually not used but might contain No. [illegible] time pistols.

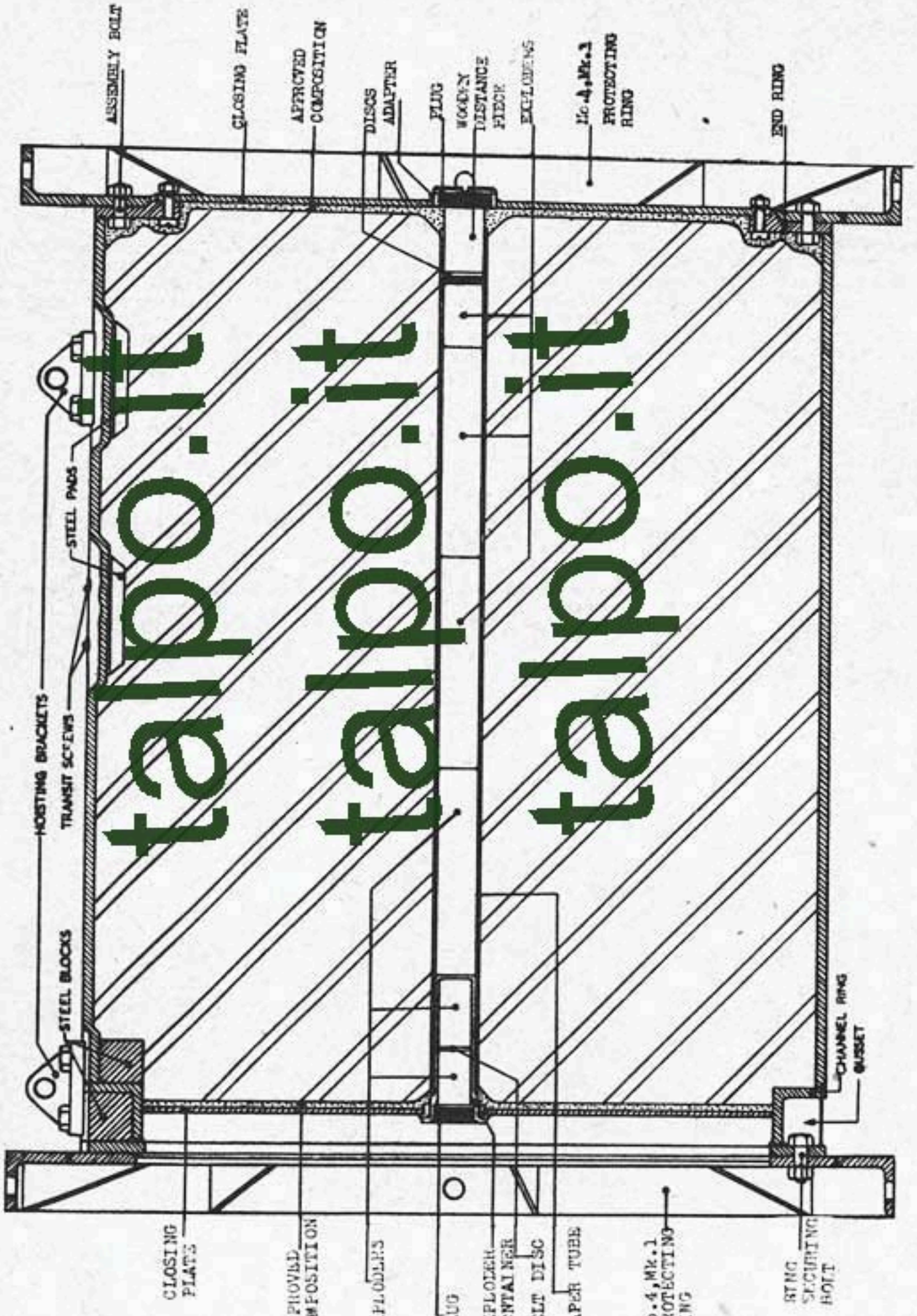
(3) Mk V same as Mk IV but made and filled in U.S.

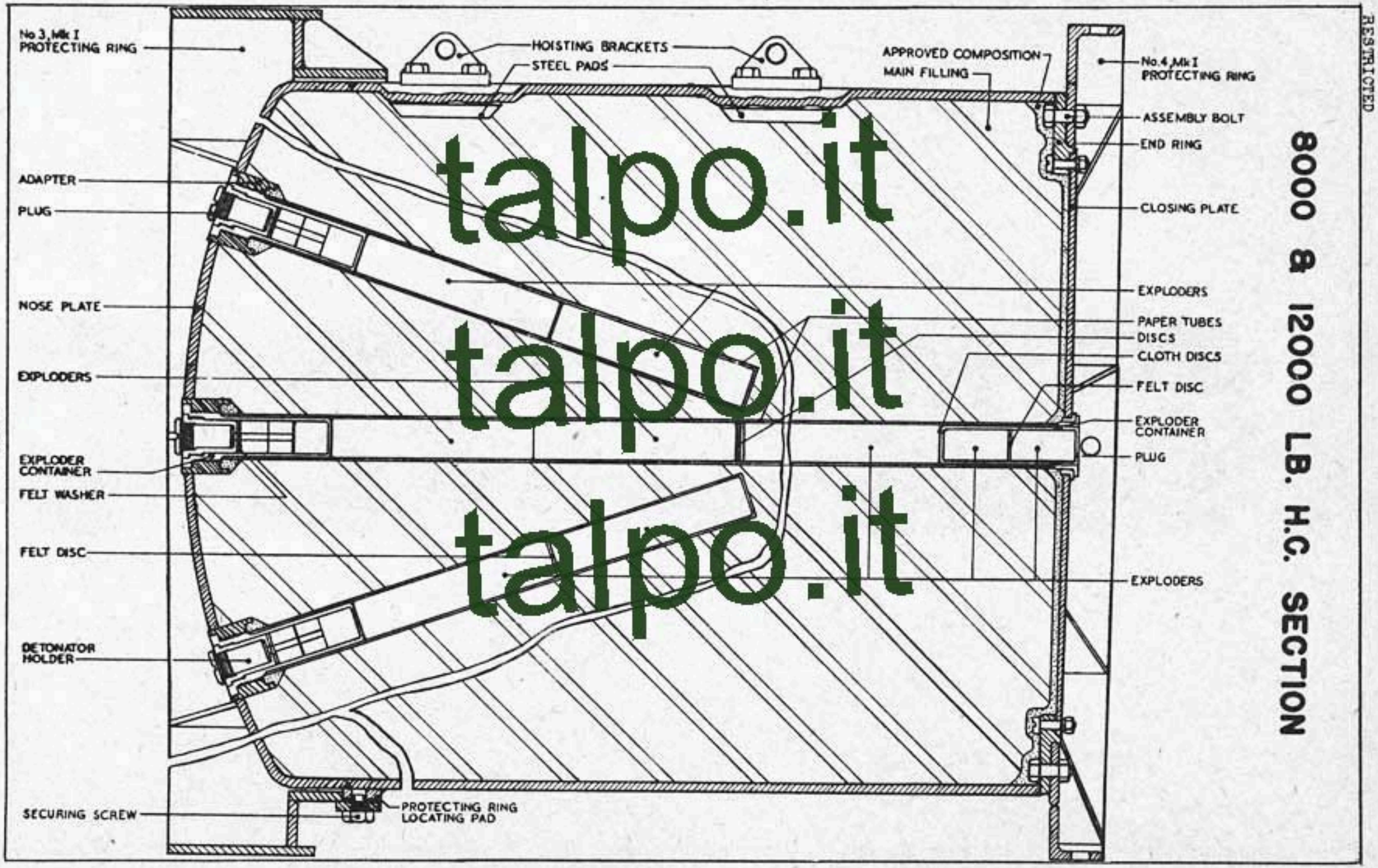
(4) Mk VI made in U.S. and has a metal box for lugs and other fittings welded to rear of bomb body.

8000 LB. H.C. BOMB



8000 & 12000 LB. H.C. SECTION





8000 & 12000 LB. H.C. SECTION

12000 LB. H.C. BOMB

BRITISH BOMB

12000 LB. H.C.

Sectional - Mk II

(Service)

FUZING	Three nose pistols, No. 27, 42, or 44.
COLOR & MARKINGS	Dark green overall, 1"bright red band and 2" light green band around each of the bomb body sections.
TAIL NO.	No. 33 Mk I, or No. 52 Mk I
OVERALL LENGTH	196"
BODY LENGTH	Each section approx. 4' long (3 sections)
MAX. BODY DIAMETER	38"
WALL THICKNESS	0.5"
TAIL LENGTH	No. 33 Mk I - 36.5"
	No. 52 Mk I - [illegible]
TAIL DIA.	38" approx.
TOTAL WEIGHT	11,93[illegible] lbs. (Amatex 9)
CHARGE/WEIGHT RATIO	70% (approx.)

BODY CONSTRUCTION: Consists of three sections bolted together, identical to the 8000 lb. H.C. plus an additional rear body section (see page 54) Joining rings are fabricated by welding, not cast as in Mk I sectional used in 8000 lb. H.C.

TAIL CONSTRUCTION: No. 33 Mk I - Hollow steel plate cylinder open at aft end, with angle ring welded or riveted on forward end, drilled to take assembly bolts of body rear section for attaching tail. Hand clearance holes give access to assembly bolts.

No. 52 Mk I - Tail cone with hand holes for access to the securing bolts; cylindrical strut attaches tail cone by [illegible] welded to strut and cone.

SUSPENSION: Tail suspension by lugs secured by 4 bolts each to the two connecting rings connecting the three body sections.

EXPLOSIVE COMPONENTS: Detonators: [illegible] (see Appendix I, page 309)
Explosive: [illegible] pellets
Filling: 5040 lbs. Amatex 9
5760 lbs. Torpex 2

S.A.P. AND A.P. BOMBS

USE

S.A.P.

There are two British S.A.P. bombs in present service use. They are designed for penetration of resistant targets, such as reinforced concrete and medium armored decks, where penetration is required before the bomb is detonated.

A.P.

Only one A.P. bomb is used by the British, the 2000 lb. It is used for attack against heavily armored targets, such as capital ships and is so constructed and fuzed that the bomb does not break up on impact, and detonation does not occur until after the target is penetrated. A 450 lb. bomb was formerly in use, constructed along the same lines as the 2000 lb., but is now obsolete.

FUZING

S.A.P. & A.P.

These bombs are fuzed in the tail only. Earlier marks were designed to receive a tail fuze, but later marks are fitted for a pistol/detonator combination. In later marks, the pistol used for fuzing is supplied, without detonators, in position in the bomb, where it acts as a tail transit plug.

CHARACTERISTICS

S.A.P.

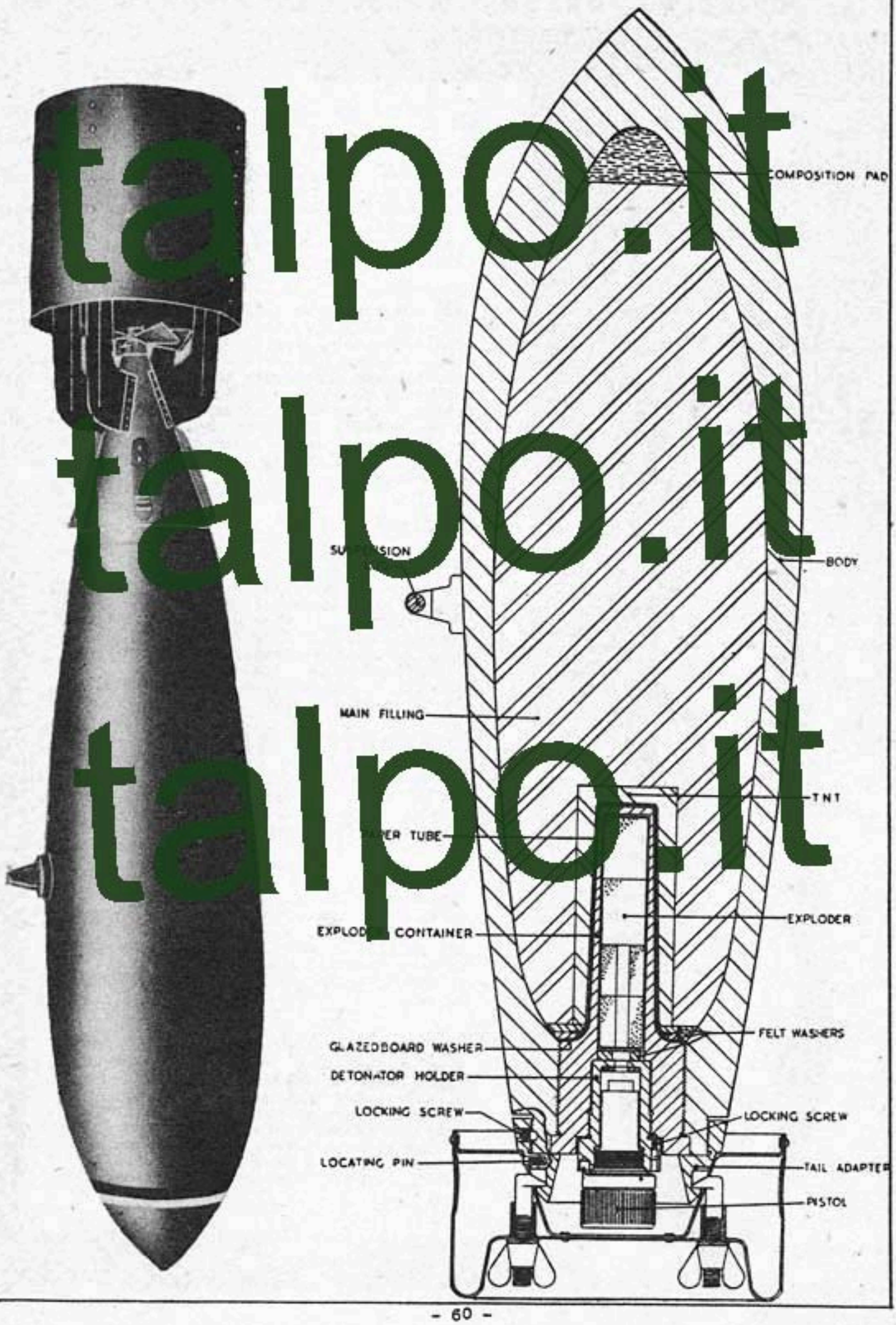
The colour is dark green overall with white band on the nose just forward of a red band. The general construction is similar to A.P. bombs, but the case is thicker, and they are even more streamlined. They are normally filled with T.N.T., with a loading factor of about 20 per cent.

Mks I, II, III and IV have tails secured by a fuze locking ring which is threaded left-handed; Mk V has a clip-on tail.

A.P.

A.P. bombs are dark green in cover over most of the bomb. The nose is painted light green to the point of widest diameter. Two white bands separated by a red band are painted around the nose. They are of one piece construction, filled with Shellite, consisting mainly of picric and very insensitive. The loading factor is about 10 per cent.

250 LB. S.A.P. BOMB



BRITISH BOMB

250 LB. S.A.P.

Mks II & III (Obsolete)

Mks IIC, IIIC, & V (Service)

FUZING:
Mks II-IV - No. 30 Tail fuze.
Mk V - Tail Pistols No. 28 or No. 30

COLOR & MARKINGS:
Dark green overall; ½" white band 3" from nose; ½" red band 3-1/2" from nose; 1" light green band 6.5" from nose.

TAIL NO. . . . . Mks II & III - No. 1 Mk I
Mk V - No. 10 Mk I

OVERALL LENGTH . . . 49"
BODY LENGTH . . . . 31.5"
MAX. BODY DIAMETER . 9.2"
WALL THICKNESS . . . 0.91-0.99" (at max. diameter)
0.61-0.69" (min. thickness
[illegible] 16" aft of nose)
TAIL LENGTH . . . . No. 10 Mk I 18"
No. 1 Mk I 18"
TAIL WIDTH . . . 2"
TOTAL WEIGHT . . . 5 lbs
CHARGE/WEIGHT RATIO . 17 %

BODY CONSTRUCTION: Mk V - Forged steel with pointed nose and an open base threaded internally to receive exploder container, which is cemented in position. Base of body threaded externally to receive tail adapter, which is in form of a coned ring with four equi-spaced slots to receive the spring clips of the tail.

Earlier Mks - Similar, with slight variations in the tail adapter

TAIL CONSTRUCTION: No. 10 Mk I - Tail cone with a cylindrical strut attached by four fins. Attached by 4 spring clips. Arming spindle engages lock in tail pistol to arm it.

No. 1 Mk I - Used on Mks II & III bombs) No spring clips.

No. 3 Mk I - Used on Mk II, Mk III bombs) Spring clips.

SUSPENSION: Single suspension lug secured to body by four screws.

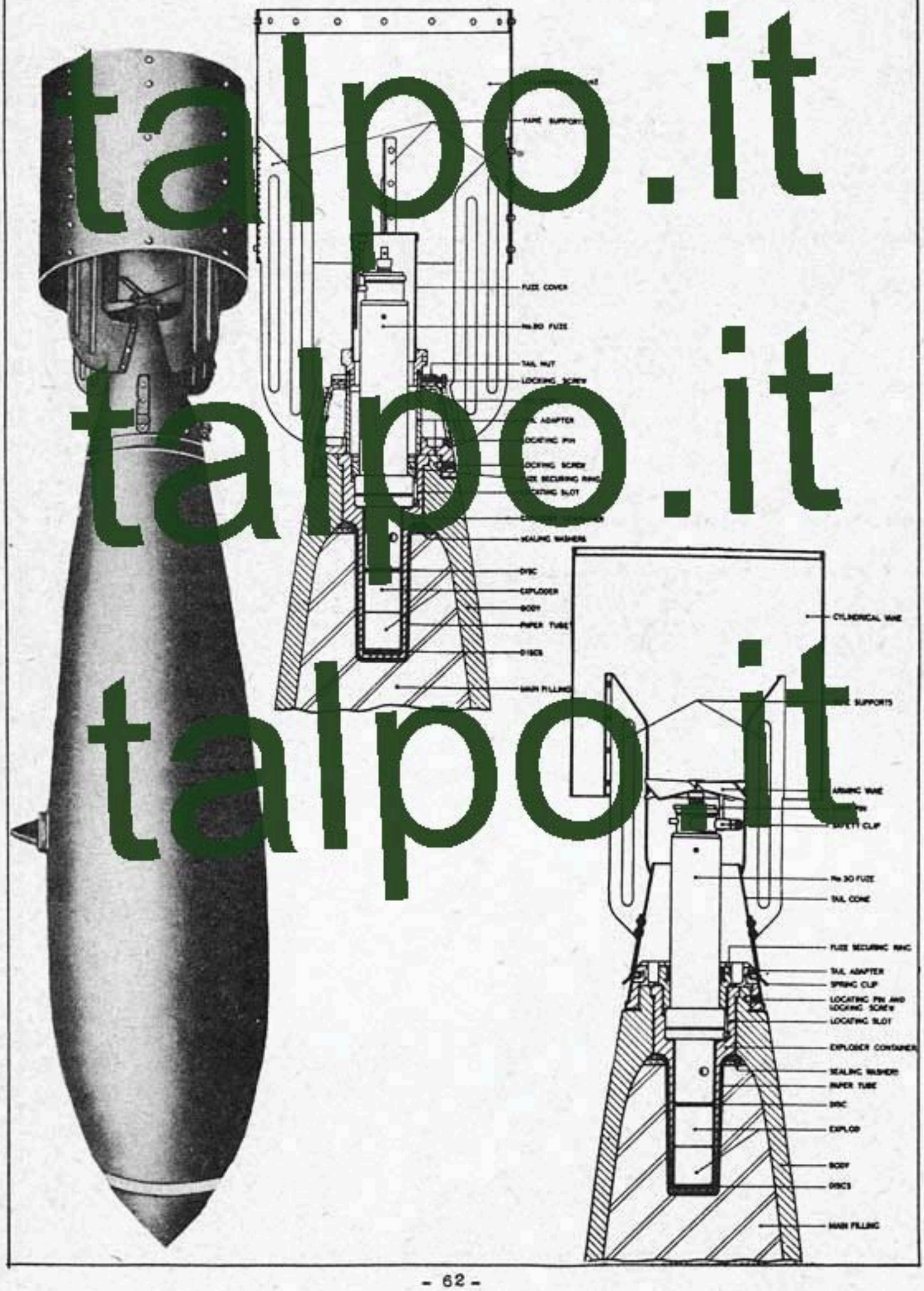
EXPLOSIVE COMPONENTS: Detonators: (See Appendix I, page 309)
Exploders: C.E. pellet (Mks II-IV), H.E.(Mk V). On Mk V there is a separate layer of T.N.T. around the exploder.
Filling: Mk V, 40.5 lbs. T.N.T./Beeswax
Mks II-IV, 41.5 lbs. T.N.T.

REMARKS: (1) No. 30 tail fuze has left hand threads on securing [illegible]

(2) Use of the No. 37 tail pistol is unlikely. Tail fins usually painted red when the pistol No. 37 is used.

(3) Any mark may be found fitted with copper driving band for waterproofing from B.[illegible] 9.2" Howitzer.

500 LB. S.A.P. BOMB



2000 LB. A.P. BOMB

BRITISH BOMB

2000 LB. A.P.

Mks I, II, III & IV

(Service)

FUZING . . . . . Mks I,II,III: Tail Fuze No. 37.
Mk IV: Tail Pistol No. 30

COLOR & MARKINGS . . . Dark green overall, with light green nose; three ½" bands, white, red and white respectively, painted 4" to 5½" from tip of nose.

TAIL NO.: . . . . . Mk I: No. 1 Mk I
Mk II & III: No. 10 Mk I
Mk IV: No. 47 Mk I

OVERALL LENGTH . . . . 113"
BODY LENGTH . . . . . 80"
MAX. BODY DIAMETER . . 13"
WALL THICKNESS . . . . 2" (approx.)
TAIL LENGTH . . . . . 35"
TAIL WIDTH . . . . . 13"
TOTAL WEIGHT . . . . . 1934 lbs.
CHARGE/WEIGHT RATIO . . 9 %

BODY CONSTRUCTION: Mk I - Forged steel body with solid nose approximately 1.9' long. Slight taper from maximum diameter to the tail. Base threaded externally to take tail adapter and internally to take base adapter, which receives exploder container. Fuze is locked by fuze securing ring.

Mks II & III - Similar to Mk I, except for tail adapter, which has four equi-spaced holes threaded for attachment of the tail.

Mk IV - Modified to take Tail Pistol No. 30.

TAIL CONSTRUCTION: No. 1 Mk I - Cylindrical alloy steel strut consisting of cylindrical strut attached to tail cone by four vanes. Fits over tail adapter and secured by six screws.

No. 15 Mk I - Similar to No. 1 Mk I but made of steel. Has strengthening ring 2" from base and is secured to tail adapter by four fixing bolts.

No. 47 Mk I - Cylindrical strut secured to tail cone by four fins riveted on. Reach rod extends through tail cone, supported by spider.

SUSPENSION: Suspended from plane by two suspension bands.

EXPLOSIVE COMPONENTS: Detonators: (See Appendix I, page 309)
Exploder: C.E. issued in position in exploder container.
Filling: 166 lbs. Shellite, with a composition pad in forward end of cavity, and sealed and with washers and cement. Shellite is a very insensitive explosive consisting of 70% picric and 30% di-nitrophenol.

ANTI-SUBMARINE BOMBS

RESTRICTED

USE

A.S. bombs, ranging from 35 to 600 lbs., are at present in service use. They are thin-walled bombs, having a high charge/weight ratio, for maximum blast effect on or under water. Aircraft depth charges are used by the British as alternatives for these bombs.

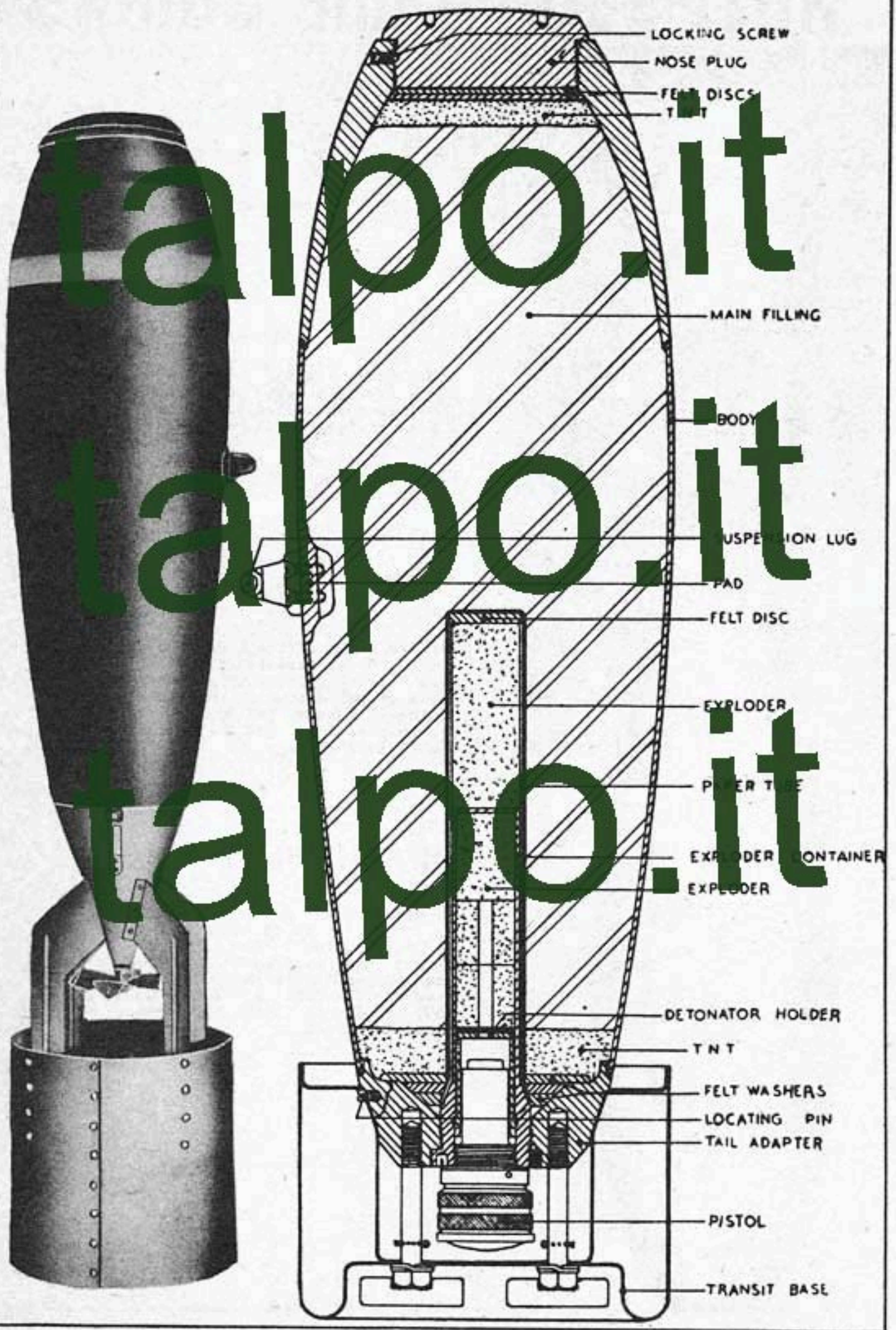
FUZING

Earlier marks of the 100, 250, and 500 lb. bombs employed a No. 32 nose fuze, but later marks incorporate a pistol/detonator combination at the tail only. The 35 lb. bomb uses a nose fuze, and the 600 lb. bomb a tail fuze.

CHARACTERISTICS

These bombs are painted green overall, and may be filled with Torpex, T.N.T., or Minol. Their charge/weight ratio is from 50 to 80 per cent, depending on the individual bomb and the filling. The 100, 250, and 500 lb. bombs are streamlined in shape.

100 LB. A.S. BOMB



FUZING:
Mks I - III: Nose Fuze No. 32.
Mk IV: Tail pistol No. 28 or No. 30
Mk VI: Tail pistol No. 30 or Tail Fuzes No. 875 or No. 895.

COLOR & MARKINGS:
Dark green overall; ½" red band 1" from nose; 1" light green band 4" from nose. Earlier mods originally painted yellow.

BRITISH BOMB

100 LB. A.S.

Mks I - IV (Obsolescent)

Mk V[illegible] (Service)

TAIL NO.	Mk IV: No. 7 Mk I Mk VI: No.56 Mk I
OVERALL LENGTH . . .	42" [illegible] VI is several inches lo[illegible]r with nose attachme[illegible])
BODY [illegible]TH	31" [illegible] I[illegible] [illegible]4.0[illegible]" (M[illegible] - VI)
MAX. [illegible]Y DI[illegible]ETER. .	[illegible].05"
WALL T[illegible]CKNESS .	[illegible].11"
TAIL L[illegible]GTH . . .	[illegible]8"
TAIL W[illegible]TH	[illegible]8"
TOTAL [illegible]IGHT . . .	[illegible]8 lbs.
CHARGE[illegible]	[illegible] % (approx.)

BODY CONSTRUCTION: Mk IV - Hol[illegible] nose forging or casting and cast or forged tail adapter welded to sheet steel casing. Hollow nose threaded to take solid flat nose plug locked by a locking screw. Casing made in two parts welded together longitudinally. Tail adapter receives exploder container which is locked and sealed in position, housing detonator h[illegible]der & pistol.

Mk III - Nose of bomb fitted with adapter for nose fu[illegible] three internal strengthening rings[illegible] tail adapter. A ballistic cap screws on the [illegible] to prevent [illegible]icochet.

Mk VI - Nos[illegible] cup [illegible] attachmen[illegible] weld[illegible] on as in dr[illegible] belo[illegible].

TAIL CO[illegible]TRUCTIO[illegible]: [illegible] IV, [illegible]. 7 [illegible]k I: S[illegible]t [illegible]tal cone [illegible]ith cylind[illegible]cal [illegible]rut [illegible]tache[illegible] by [illegible]ur fins[illegible] secu[illegible]d to t[illegible] adapter b[illegible] four [illegible] [illegible]ps on the [illegible]ne. [illegible]ch r[illegible] [illegible]rming [illegible]anes [illegible] aft[illegible]nd, extends [illegible]rough cone [illegible] engages ar[illegible] of tail pistol.

Mk III: Cyli[illegible]rical strut which is attached by fins to a dome, which is secured to the bomb by a [illegible]tral bolt.

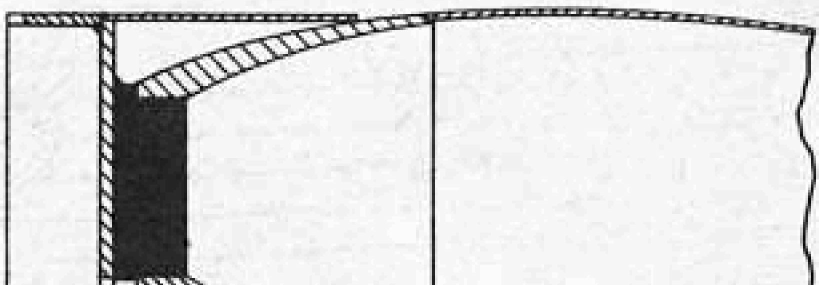
Mk VI: No. 56 Mk I tail secured by four locking screws threaded through four cone securing bosses welded on at an angle to tail cone; screws thread inward and aft to engage slots in body.

SUSPENSIO[illegible]: Horizont[illegible] suspension by single lug, secured by screws [illegible]ect-ing thro[illegible]h the case and into [illegible] block suppo[illegible] pad [illegible]elded [illegible] interi[illegible]r of [illegible]; [illegible]uspende[illegible] from [illegible]iversal bom[illegible] carri[illegible].

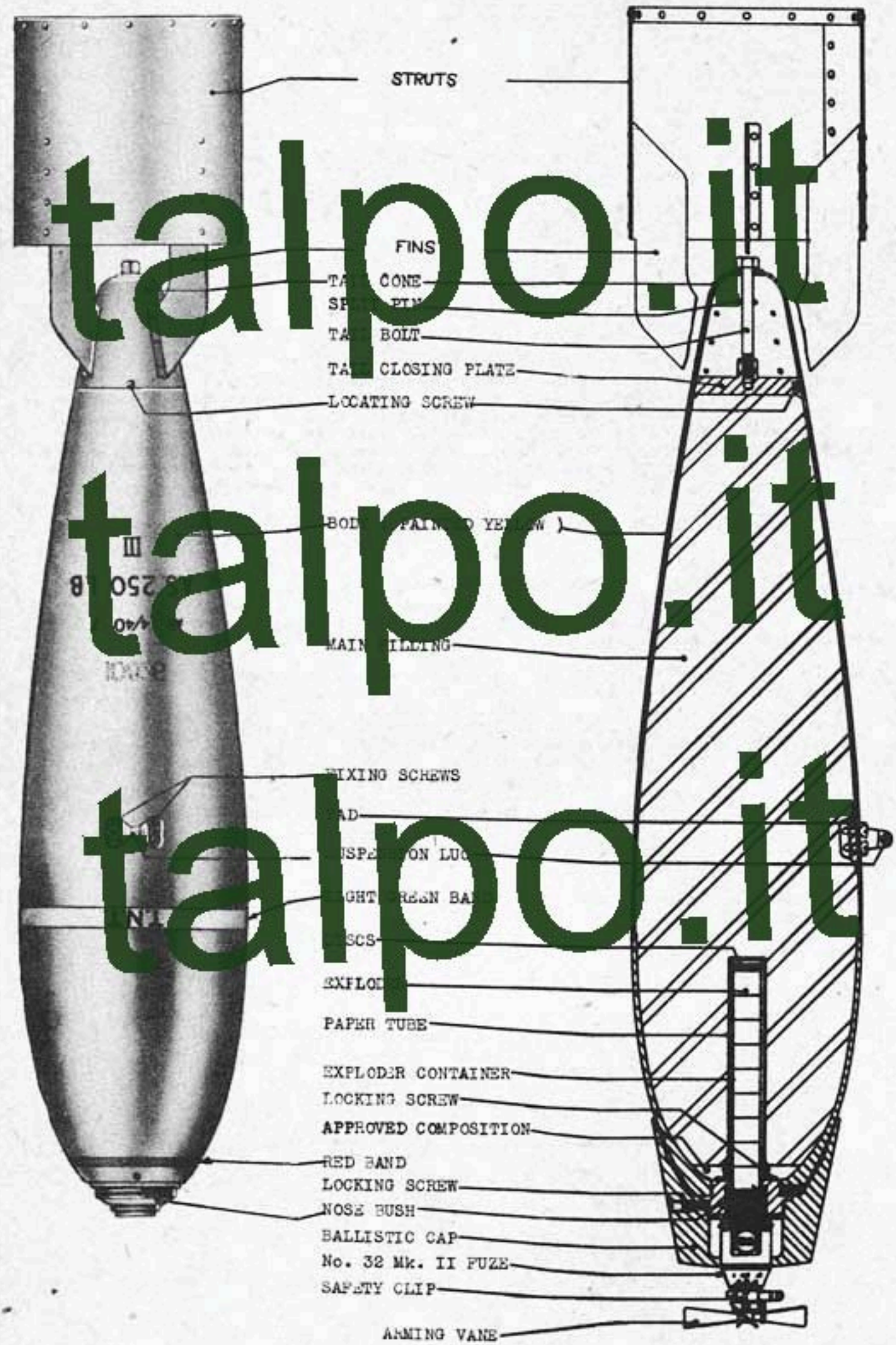
EXPLOSIVE [illegible]OMPONENTS:
[illegible]onators: (See Appen[illegible] I, page 30)
Ex[illegible]ders: C.[illegible].
Fi[illegible]ing: M[illegible]V: 45 [illegible]. R[illegible]X./T.[illegible]. 60/[illegible] or [illegible] lb. [illegible]T.
M[illegible] [illegible]bs. To[illegible] [illegible]hen fi[illegible]d with Torpex, a [illegible]opping of T.N.T. is added at the nose and base.

REMARKS:
(1) No. 30 Tail Pistol with needle striker to be used in Mk IV for A/S bombing; No. 28 can be used in place of No. 30 for land bombardment.

(2) Mk V never produced.



250 LB. A.S. BOMB



BRITISH BOMB

250 LB. A.S.

Mks I, II, III (Obsolescent)

Mk IV (Service)

FUZING:
Mks I-III - Nose Fuze No. 32
Mk IV - Tail Pistol No. 28 or No. 30.

COLOR & MARKINGS:
Dark green overall, ½" red band 1" from nose, 1" light green band 4½" from nose. Earlier models originally yellow overall.

TAIL NO.	Mk IV - No. 8 Mk I	
OVERALL LENGTH . . .	Mk III - 59"	
	Mk IV - 58"	
BODY LENGTH	Mk III - 42"	
	Mk IV - 35.2"	
MAX. BODY DIAMETER. .	11.[illegible]" (Mk IV)	
	11.2[illegible] (Mk III)	
WALL THICKNESS	0.[illegible] (Mk I & IV)	
	0.[illegible]" (Mk II & III)	
TAIL LENGTH . . .	23.4[illegible] (Mk IV)	
TAIL WIDTH .	11.0	
TOTAL WEIGHT . . .	243 lbs. (Mk IV)	
CHARGE/WEIGHT RATIO	55 % Mk I	

BODY CONSTRUCTION: Mk IV - Hollow nose forging or casting and cast or forged tail adapter welded to sheet steel casing. Hollow flat nose threaded to take solid nose plug locked by a locking screw. Casing made in two parts, welded together longitudinally. Tail adapter receives exploder container, which is locked and sealed in position, housing detonator holder and pistol.
Mk I-III - Nose of bomb fitted with adapter for nose fuze. Internal strengthening bands welded to body. No tail adapter. Ballistic cap screws on the nose to prevent ricochet.

TAIL CONSTRUCTION: Mk IV - Sheet metal cone with cylindrical strut attached by four fins secured to the tail adapter by four spring clips on the cone. Reach rod, with arming vanes attached to after end, extends through the cone and engages arming lock in tail pistol.
Mk I-III - Cylindrical strut attached by four fins to dome shaped tail cone, secured to the bomb by a central bolt.

SUSPENSION: Horizontal suspension by single lug, secured by screws projecting through the case and into a steel block support pad welded to interior of body.

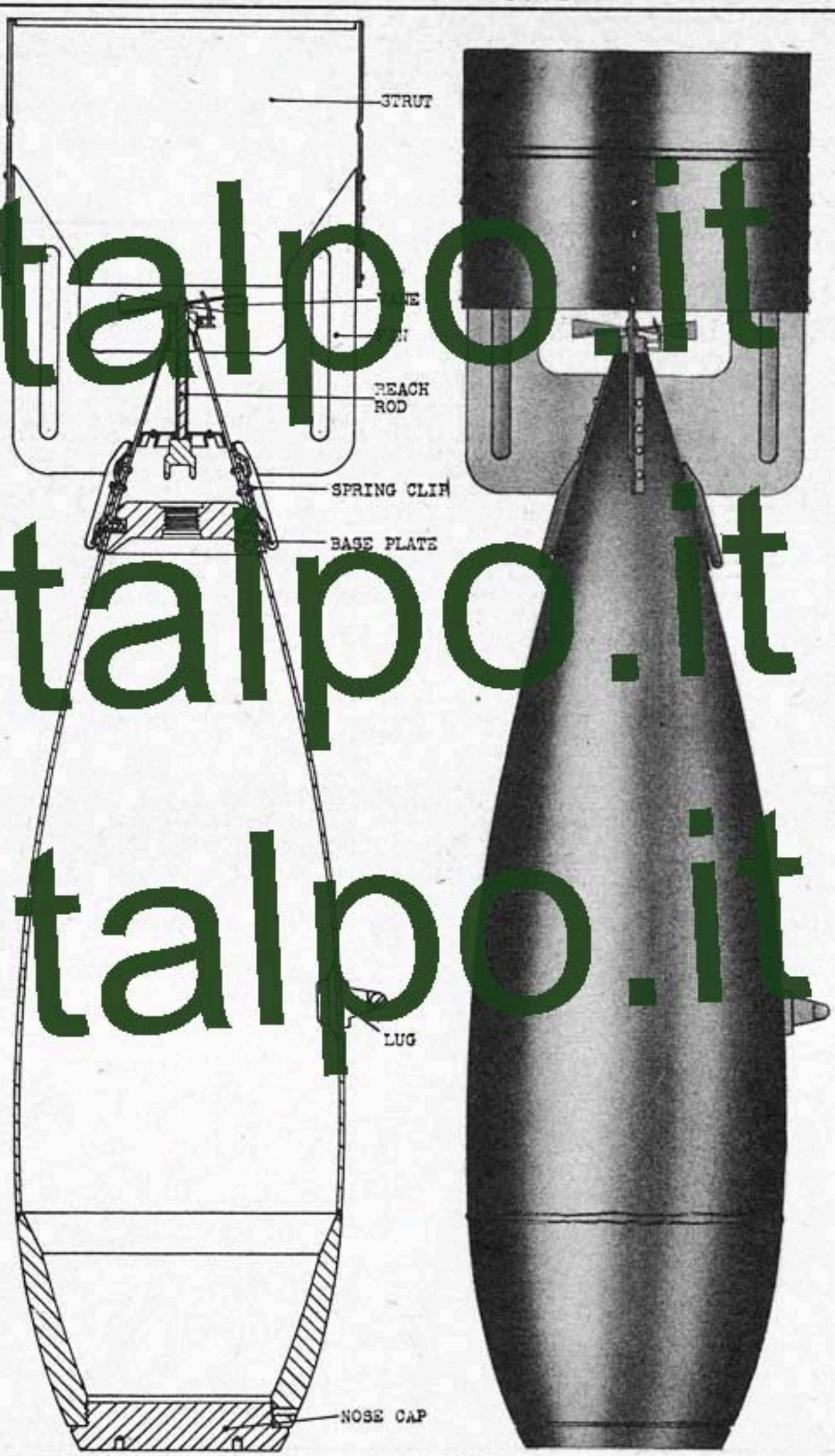
EXPLOSIVE COMPONENTS:

Detonators:	(See Appendix, page 309)
Exploders:	C.E. pellets. (Early marks had C.E. and T.N.T.)
Filling:	Mk IV - 134 lbs. R.D.X./T.N.T. or 131 lbs. T.N.T. When R.D.X./T.N.T. is used, bomb has ½" nose topping and 1" base topping of T.N.T. Mk III - 149 lbs. [illegible] or 140 lbs. T.N.T.

REMARKS: (1) These bombs are designed to give maximum blast effect for use against submarines.

(2) No. [illegible] tail pistol with needle striker to be used in Mk IV for [illegible]S bombing; No. 28 [illegible] be used in place of No. [illegible] for land [illegible]

500 LB. A.S. BOMB



BRITISH BOMB

500 LB. A.S.

Mks I - IV

(Obsolescent)

FUZING:
Mks I-III - Nose Fuze No. 32
Mk IV - Tail Pistol No. 28 or No. 30

COLOR & MARKINGS:
Dark green overall; ½" red band 1" from nose; 1" light green band 6" from nose. Early designs originally yellow overall.

TAIL NO. . . . . Mk IV: No. 9 Mk I

OVERALL LENGTH . . . 74.0" (Mks I & II)
76.0" (Mk III)
72.5" (Mk IV)

BODY LENGTH . . . . 53" (Mks I, II & III)
50" (Mk IV)

MAX. BODY DIAMETER. . 14.0" (Mk I & [illegible])
14.3" (Mks [illegible] & I[illegible])

WALL THICKNESS . . . 0.16[illegible] (Mk [illegible] & II)
0.18[illegible] (Mk [illegible]I & IV)

TAIL LENGTH . . . . 4.2" (Mk [illegible])

TAIL WIDTH . . . . 4" (Mk IV)

TOTAL WEIGHT . . . . 490 lbs. (Mk IV)

CHARGE/WEIGHT RATIO 52 - [illegible] %
[illegible]8 % (Mk [illegible])

BODY CONSTRUCTION: Mk IV - Hollow nose forging or casting and cast or forged tail adapter welded to sheet steel casing. Nose threaded to take solid nose plug locked by a locking screw. Casing made in two parts, welded together longitudinally. Tail adapter receives exploder container, which is locked and sealed in position, housing detonator holder and pistol.

Mks I-[illegible]II - Nose of bomb fitted with adapter for nose fuze. Internal strengthening bands welded to body. No tail adapter. Ballistic cap screws on the nose to prevent ricochet.

TAIL CONSTRUCTION: Mk 9 Mk I: Sheet metal cone with cylindrical skirt attached by four fins, secured to tail adapter by four spring clips on the cone. Each rod, with arming vanes attached to outer end, extends through the cone and engages arming fork of tail pistol.
Mks I-III: Cylindrical strut attached by four fins to a dome shaped tail cone, secured to the body by central bolt.

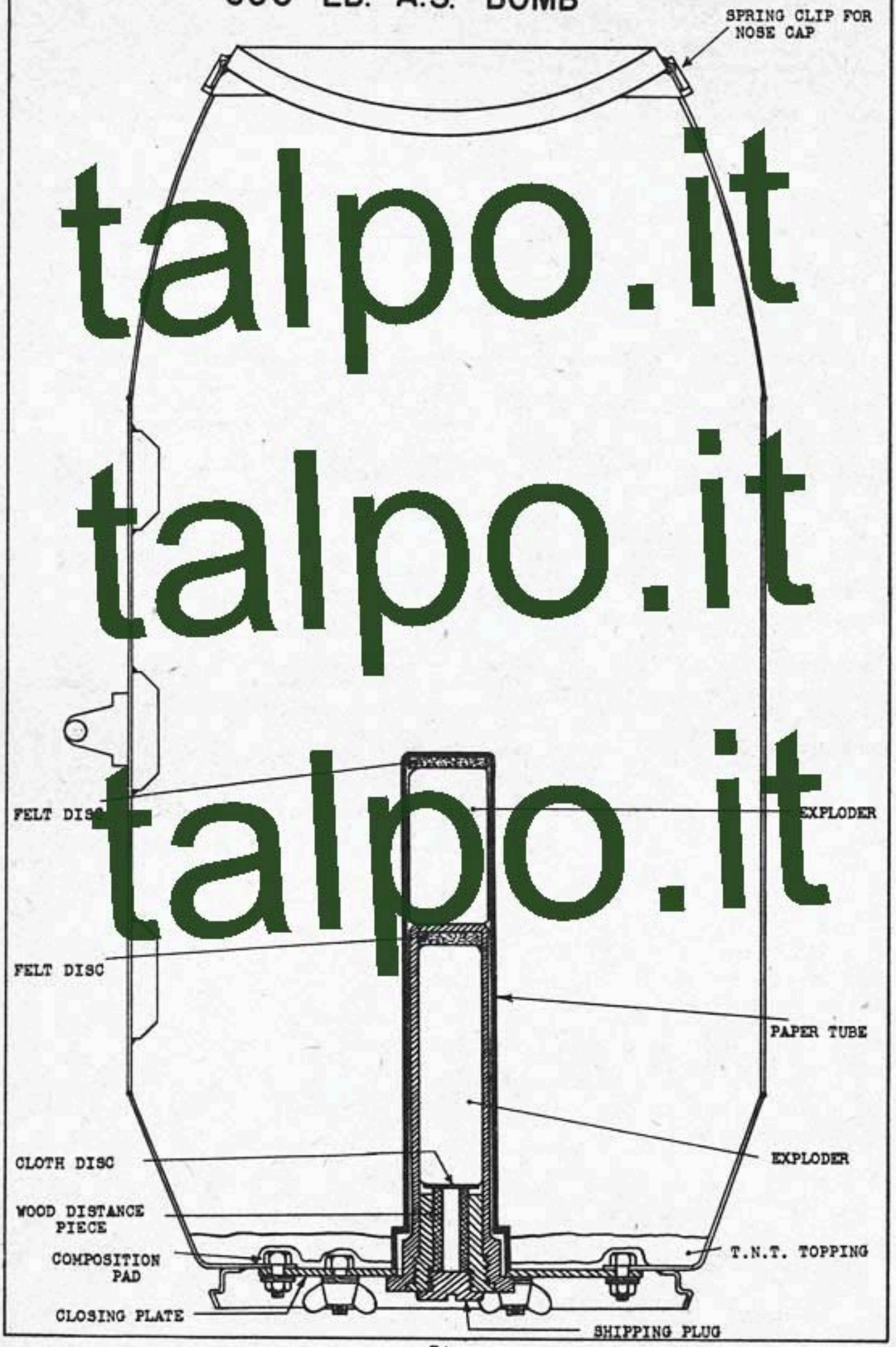
SUSPENSION: Horizontal suspension by single lug, secured by screws projecting through the case and into a steel block support pad welded to interior of body.

EXPLOSIVE COMPONENTS: Detonators: (See Appendix, page 309)
Exploders: C. E. pellets (earlier bombs had C.E. and T.N.T.)
Filling: Mk IV: 282 lbs. T.N.T. (may be filled with [illegible]D.X./T.N.T. or R.D.X./T.N.T. is used, bomb has [illegible] nose capping and [illegible] base capping of T.N.T.
Mk III: 29[illegible] lbs. T.N.T. or 308 lbs. Hexatol 70/30

REMARKS: (1) These bombs are designed to give maximum blast effect for use against submarines.

(2) No. 30 Tail Pistol with needle striker to be used in Mk IV for A/S bombing; No. 28 can be used in place of No. 30 for land bombardment.

600 LB. A.S. BOMB



BRITISH BOMB

600 LB. A.S.

Mk I

(Service)

FUZING . . . . Tail Fuze No. 862
COLOR & MARKINGS . . . Dark green overall; ½" red band and 1" light green band around body.
TAIL NO. . . . . No. 36 Mk I
OVERALL LENGTH . . . . 56.7"
BODY LENGTH . . . . . 36" (without nose attachment)
MAX. BODY DIAMETER . . 17.5"
WALL THICKNESS . . . . 0.125"
TAIL LENGTH . . . . . 20.5"
TAIL WIDTH . . . . . 17.5"
TOTAL WEIGHT . . . . 550 lbs.
CHARGE/WEIGHT RATIO. . 80 % (approx.)

BODY CONSTRUCTION: Three pieces welded together. Concave nose, parallel sides, tapered base to receive clip on tail. Aft end closed off by closing plate housing exploder container which extends into body 1[illegible]" from base. Very thin walls. Round nose cap attached to nose for streamlining during air travel, breaking off on impact, and giving bomb an unstable trajectory, preventing ricochet.

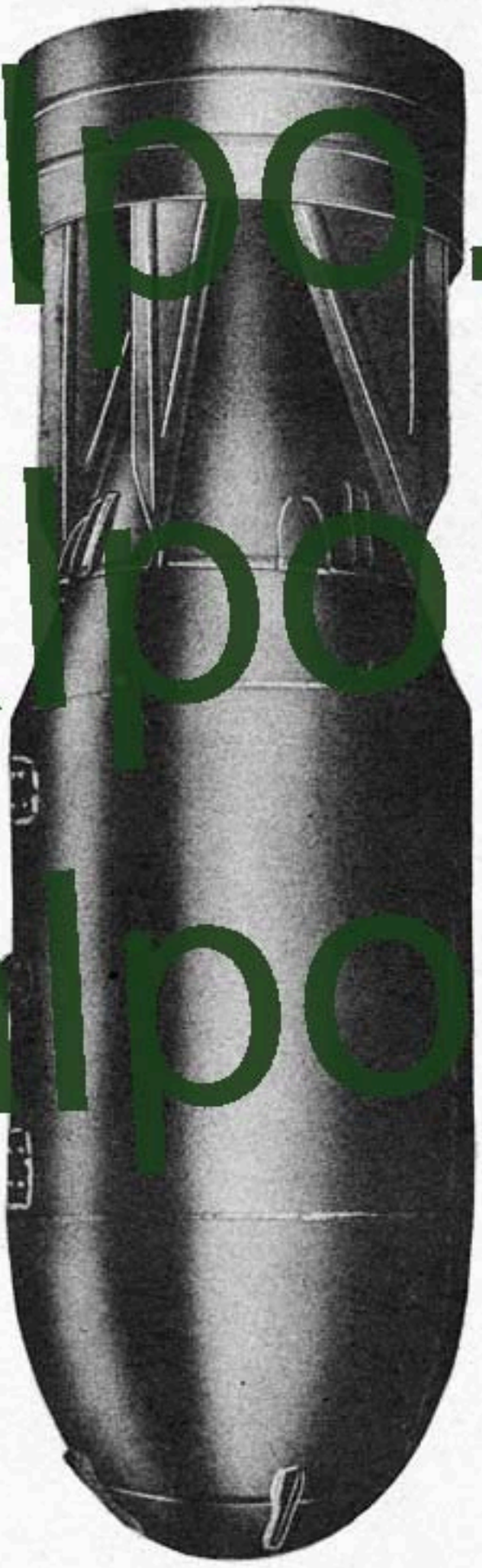
TAIL CONSTRUCTION: Clip-on type tail consisting of cylindrical strut secured to tail cone by four fins. Tail cone construction of four pieces and held together by three rivets only. There is no reach rod extending through the tail cone, as the fuze is not the arming vane type. Tail breaks off on impact with water, adding to the unstable trajectory of the bomb.

SUSPENSION: May be suspended from British planes by single lug, or by dual lugs 7" on either side of single lug for suspension from U.S. aircraft. Either dual lugs or single lug are used, the remaining lug screw holes closed by [illegible] screws when not used.

EXPLOSIVE COMPONENTS: Exploder: C.E.
Filling: 4[illegible] lbs. of Minol II or [illegible]9 lbs. Torpex. (Has ½" layer of T.N.T. at base when filled with Minol or [illegible].)

REMARKS: The fuze is fitted in an anti-countermining chamber.

600 LB. A.S. BOMB



AIRCRAFT DEPTH CHARGES

USE

The depth charges included in this section are those dropped from aircraft for anti-submarine warfare. Only one size is currently in use, the 250 pound. Normally they are carried on a bomb carrier.

FUZING

These consist of a cylindrical metal case, filled with an explosive charge, and have a central tube in which is mounted a primer, a detonator, and a nose pistol which arms the depth charge when fully armed. The depth at which the depth charge will detonate is determined by the pistol, which operates by hydrostatic pressure.

A safety device is incorporated to render the depth charge safe in the event of the carrying aircraft's sinking after a forced landing. This safety device, however, does not always prevent detonation if the depth charge is dropped safe, as it may be affected by impact with the water.

CHARACTERISTICS

Aircraft depth charges are thin-walled, with a loading factor of about 65 per cent. They are painted dark green overall, with a red band and a colored band to indicate the nature of the explosive filling. Attachments, comprised of a nose fairing and/or a tail, are usually fitted to a depth charge to reduce the air resistance when carried externally on an aircraft and to increase the stability of the air trajectory. Unless fitted with a parachute, failure to detonate may result if the depth charge is dropped from too great a height or at too great a speed.

250 LB. A/C DEPTH CHARGE

BRITISH BOMB

250 LB. D.C.

Mk XI, XI*

(Service)

FUZING	Mks XVI, XIV , XIX, or XX hydrostatic pistols.
COLOR & MARKINGS . . .	Dark green overall; ½" red band and a colored band indicating nature of explosive painted around body in front of suspension lug.
TAIL NO.	Mk III (Mk IV when using Mks XIX or XX pistols).
OVERALL LENGTH	54.8"
BODY LENGTH	37"
MAX. BODY DIAMETER . .	11"
WALL THICKNESS	
TAIL LENGTH	17.[illegible]"
TAIL WIDTH	11"
TOTAL WEIGHT	265 lbs.
CHARGE WEIGHT RATIO. .	66[illegible]

BODY CONSTRUCTION: Welded cylindrical [illegible] closed at each end by a cover welded on. Central primer tube [illegible] welded in an opening in the rear cover and [illegible] approximately half way through the body. Equi-spaced [illegible] the rear cover are three lugs, each drilled and tapped to receive a stud used for securing the tail to the depth charge. Two filling holes, each closed by a bung, are provided in the rear cover. The front cover is dished inward to prevent ricochet.

TAIL CONSTRUCTION: Mk III: Cylindrical drum open at both ends. Strengthening ring is welded to the front end and provided with 3 equi-spaced brackets, weakly riveted on, which fit over the studs [illegible] the corresponding lugs on the rear end cover of the body. Tail strengthened by [illegible] circumferential corrugations. Tail breaks off on impact with water. Front of tail has one large port for [illegible]-setting control [illegible] and two small ports to give access to pistol and valve unit when fitting the fuze-setting control link.

Mk IV: Designed with arming vanes and reach rod to arm pistols [illegible] XIX and XX, which are [illegible] the air-arming type and are replacing the Mks XIV and XVI tail hydrostatic pistols. The tail is constructed with a three segment cone, [illegible] which are [illegible] three [illegible] supporting the three segment cylindrical [illegible] hand clearance holes are equi-spaced around the forward end of the cone.

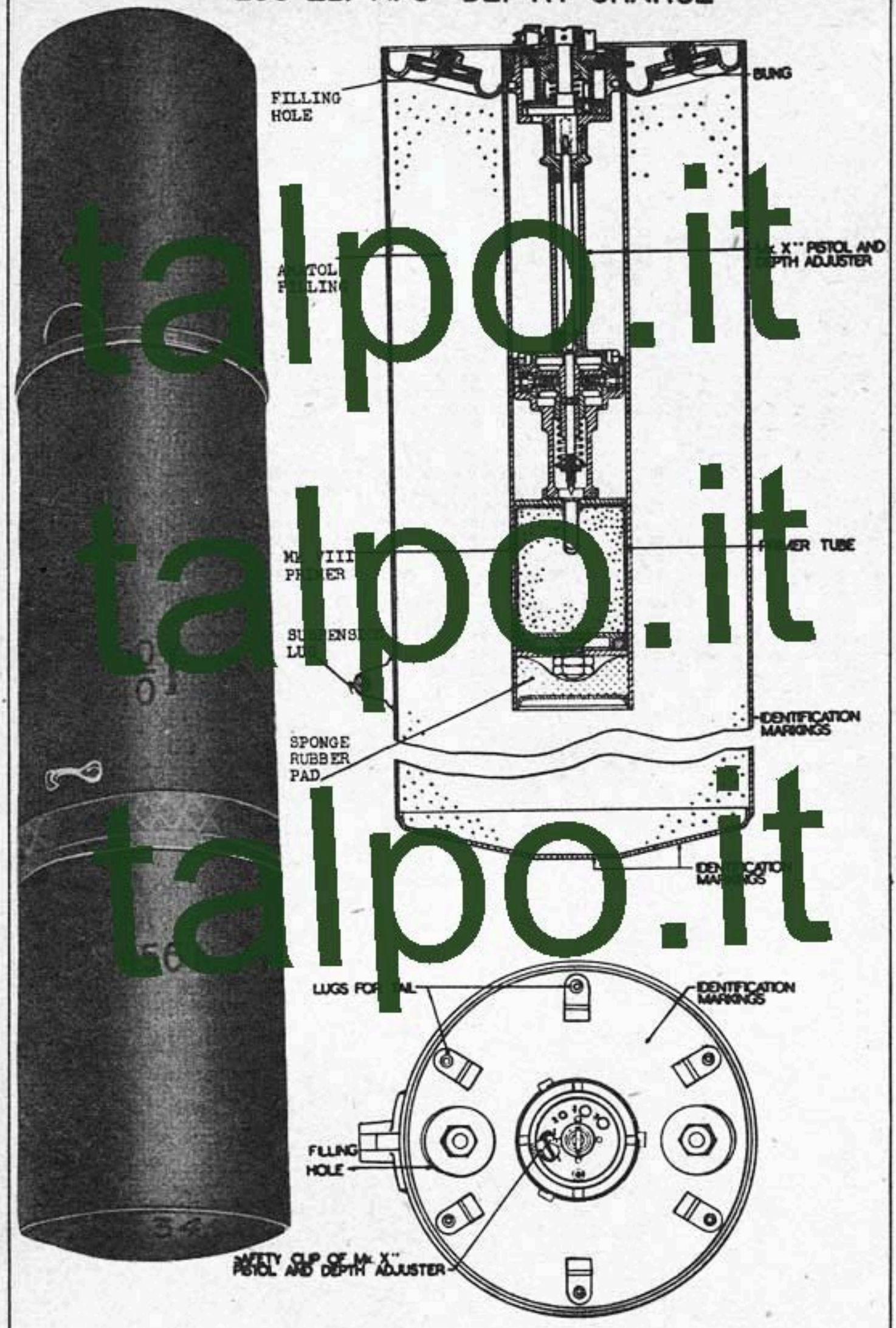
SUSPENSION: Mk XI: Single lug welded to case at center of gravity for British aircraft.

Mk XI*: Dual lugs welded to case for suspension from U.S. aircraft.

EXPLOSIVE COMPONENTS: Detonators: Mk VII detonator of A.S.A. and C.E.
Primer: Mk [illegible] primer, [illegible] and 1 solid C.E. [illegible]
Filling: [illegible] lbs. [illegible]

REMARKS: The Mk XIX and XX hydrostatic pistols are armed by vanes [illegible] a reach rod extending through [illegible] tail unit, consequently requiring the Mk IV [illegible] which is considerably different than the Mk III.

250 LB. A/C DEPTH CHARGE



BRITISH BOMB

250 LB. D.C.

AIRCRAFT DEPTH CHARGE

Mk VIII

(Obsolescent)

FUZING	Tail Pistol Mk XIV, XIV*, XVI, XVI*, or Mk X**
COLOR & MARKINGS . . .	Dark green overall, ½" red band near nose, 2" light green cross-hatched band near suspension lug.
TAIL NO.	
OVERALL LENGTH	56"
BODY LENGTH	38.15"
MAX. BODY DIAMETER . .	11"
WALL THICKNESS	
TAIL LENGTH	18"
TAIL WIDTH	11"
TOTAL WEIGHT	250 lbs.
CHARGE/WEIGHT RATIO	64 [illegible]

BODY CONSTRUCTION: Welded cylindrical outer case with convex nose welded on, sometimes fitted with concave nose attachment. Rear end of body closed by an end cover domed inwards, housing two filling holes, provided with bungs. On the cover are six equally spaced lugs for attaching the tail. A primer tube runs into the rear cover, extending approximately half the length of the body. It has 3.5" internal diameter, and contains the primer and pistol and depth adjuster.

TAIL CONSTRUCTION: Open-ended cylindrical sheet metal tail supported internally by a spiral wire stiffener. Strengthening band on forward end carries six brackets which are attached by studs and nuts to the six lugs on the closing cover on the depth charge. Three equally spaced ports are provided in the tail, through one of which is passed the fuze-setting control link when the depth charge is loaded on the aircraft. Tail breaks off on impact with water.

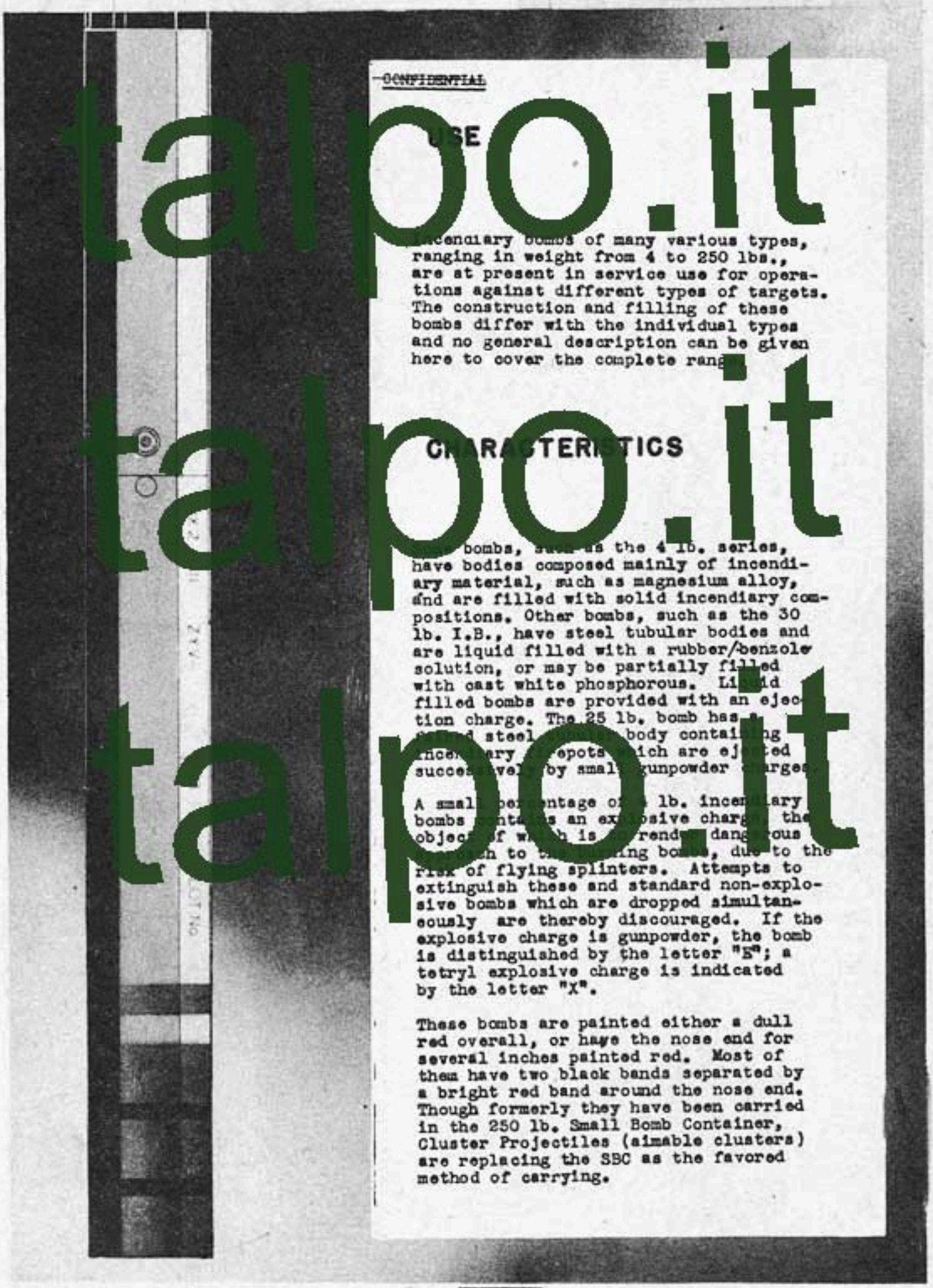
SUSPENSION: Horizontal suspension by a lug welded to the body at the center of gravity. May be fitted with two additional lugs for suspension from U.S. aircraft bomb racks.

EXPLOSIVE COMPONENTS:

Detonator:	Mk VII, A.S.A. mixture and C.E.
Primer:	Mk VIII, 1 solid and 1 perforated pellet of C.E.
Filling:	[illegible] lbs. Amatol.

REMARKS: This depth charge is dropped from a maximum height of 500' and at a maximum speed of 173 m.p.h.

INCENDIARY BOMBS



CONFIDENTIAL

USE

Incendiary bombs of many various types, ranging in weight from 4 to 250 lbs., are at present in service use for operations against different types of targets. The construction and filling of these bombs differ with the individual types and no general description can be given here to cover the complete range.

CHARACTERISTICS

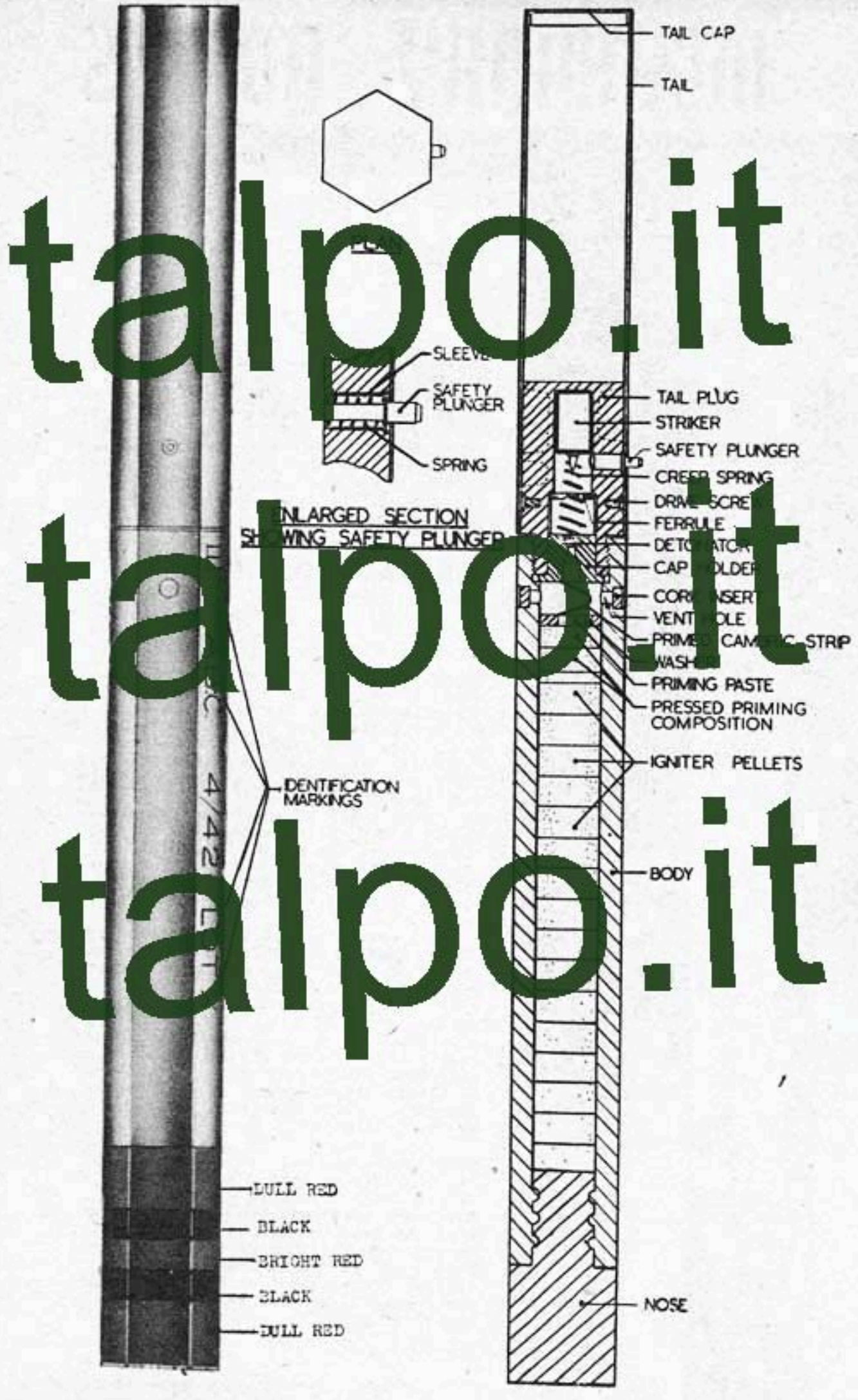
Some bombs, such as the 4 lb. series, have bodies composed mainly of incendiary material, such as magnesium alloy, and are filled with solid incendiary compositions. Other bombs, such as the 30 lb. I.B., have steel tubular bodies and are liquid filled with a rubber/benzole solution, or may be partially filled with cast white phosphorous. Liquid filled bombs are provided with an ejection charge. The 25 lb. bomb has a [illegible] steel [illegible] body containing incendiary [illegible]pots which are ejected successively by small gunpowder charges.

A small percentage of the 4 lb. incendiary bombs contains an explosive charge the object of which is to render dangerous [illegible] to the burning bomb, due to the risk of flying splinters. Attempts to extinguish these and standard non-explosive bombs which are dropped simultaneously are thereby discouraged. If the explosive charge is gunpowder, the bomb is distinguished by the letter "E"; a tetryl explosive charge is indicated by the letter "X".

These bombs are painted either a dull red overall, or have the nose end for several inches painted red. Most of them have two black bands separated by a bright red band around the nose end. Though formerly they have been carried in the 250 lb. Small Bomb Container, Cluster Projectiles (aimable clusters) are replacing the SBC as the favored method of carrying.

CONFIDENTIAL

4 LB. INCEND. BOMB



BRITISH BOMB

4 LB. I.B.

Mks III & IIIE

(Mks I, IE, II, IIE, and 4 lb. "X" with 2 & 4 minute delays, Mk I - see "Similar Incendiaries" below)

(Obsolescent)

FUZING . . . . . Simple impact striker.
COLOR & MARKINGS . . . Mks I-III have dull red nose, with two ½" black bands separated by ½" bright red band around nose. Mks IE-IIIE also have bright red tail base and additional ½" bright red band ½" aft of dull red nose coloring.
OVERALL LENGTH . . . 21.4"
WIDTH ACROSS FLATS . . 1.67" (hexagonal in shape)
TOTAL WEIGHT . . . 4 lbs. approx.

DESCRIPTION: Consists of a thin-walled magnesium-alloy body at one end of which is a cast iron or steel nose, the body being cast onto the nose during manufacture. A magnesium-alloy tail plug, which may be of solid or open construction, is screwed into the other end of the body. Fixed to the tail plug by a five-screw is a tinplate tail cloud by a tail cap. The tail plug houses a striker, creep spring, ferrule having four tabs, and a brass cap holder containing a .7 grain detonator. When the bomb is packed in its case, movement of the striker towards the detonator is prevented by a spring-loaded safety plunger housed in a slot fitted into the tail plug. Two vent holes, plugged by cork inserts, are provided in the body to communicate with the space between the cap holder and the filling of the bomb. A strip of primed cambric is located in this space. The Mk IIIE is identical to the Mk III except for a black powder exploder just aft of the nose plug in the body cavity. The main filling is thermite.

FUNCTIONING: When bomb is released, the safety plunger springs out and on impact the striker overcomes the resistance of the creep spring bends the tabs on the ferrule (brass cross) and strikes and fires the detonator, the products of detonation from the detonator blowing the cork inserts out of the vent holes. The flash from the detonator is conveyed by the primed cambric strip to the gunpowder-shellac paste on the inside of the washer, which ignites the pressed primer composition and in turn the igniter pellets. The magnesium-alloy body starts burning about 25 sec. after the bomb is ignited, and burns for about 10 minutes. In the Mk IIIE bomb, after 1½ to 4 minutes, the powder in the exploder is ignited and explodes.

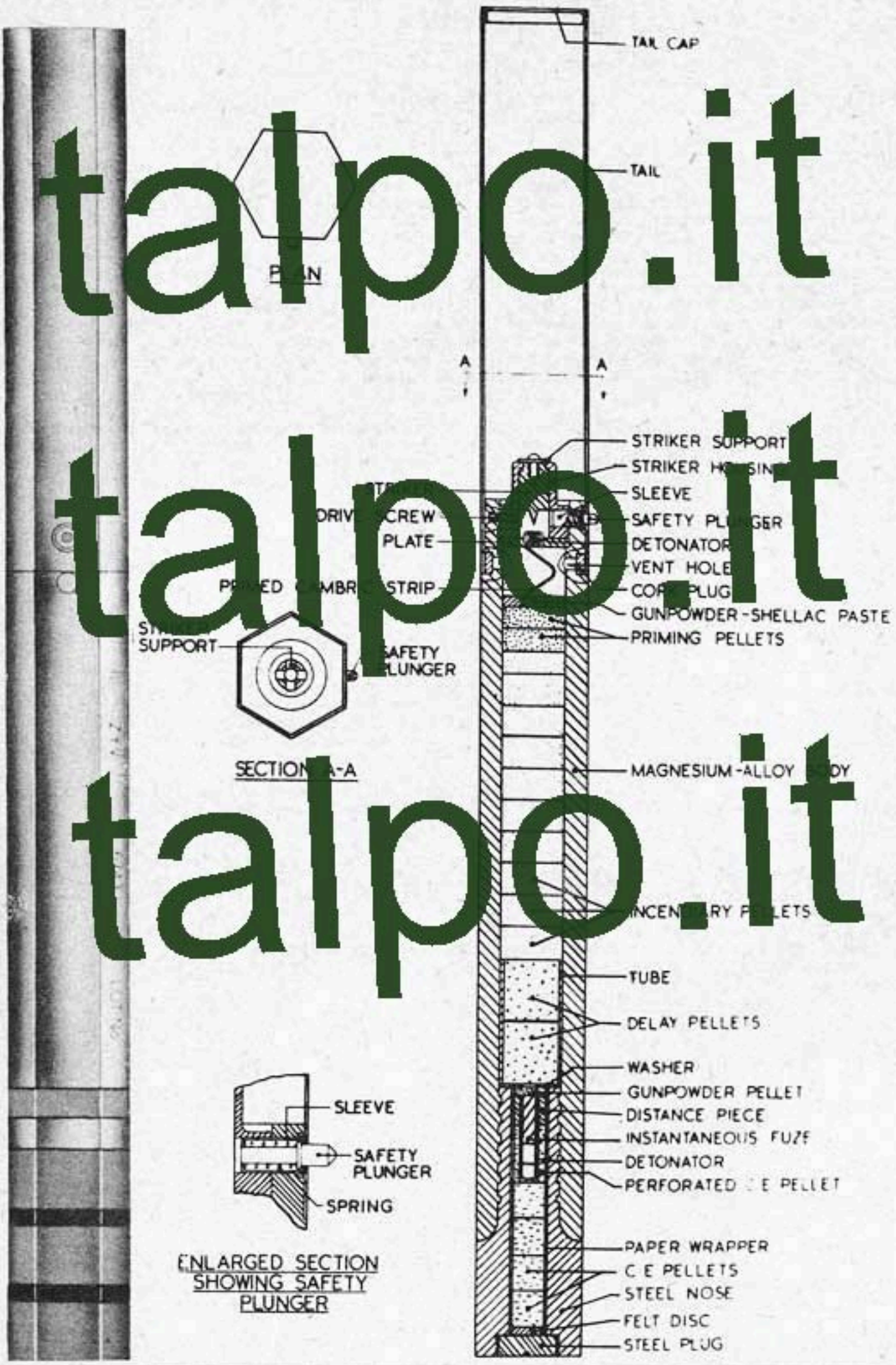
SUSPENSION: Carried in the Small Bomb Container or in a Cluster Projectile

SIMILAR INCENDIARIES: 4 lb. Mk II and IIE: Similar to the Mk III and Mk IIIE, but have following differences: (a) bomb bodies have smaller bore, (b) cap holders are of magnesium-alloy, (c) bomb bodies have four cork-plugged vent holes, (d) tail plugs are of solid magnesium alloy, and (e) noses are of steel.

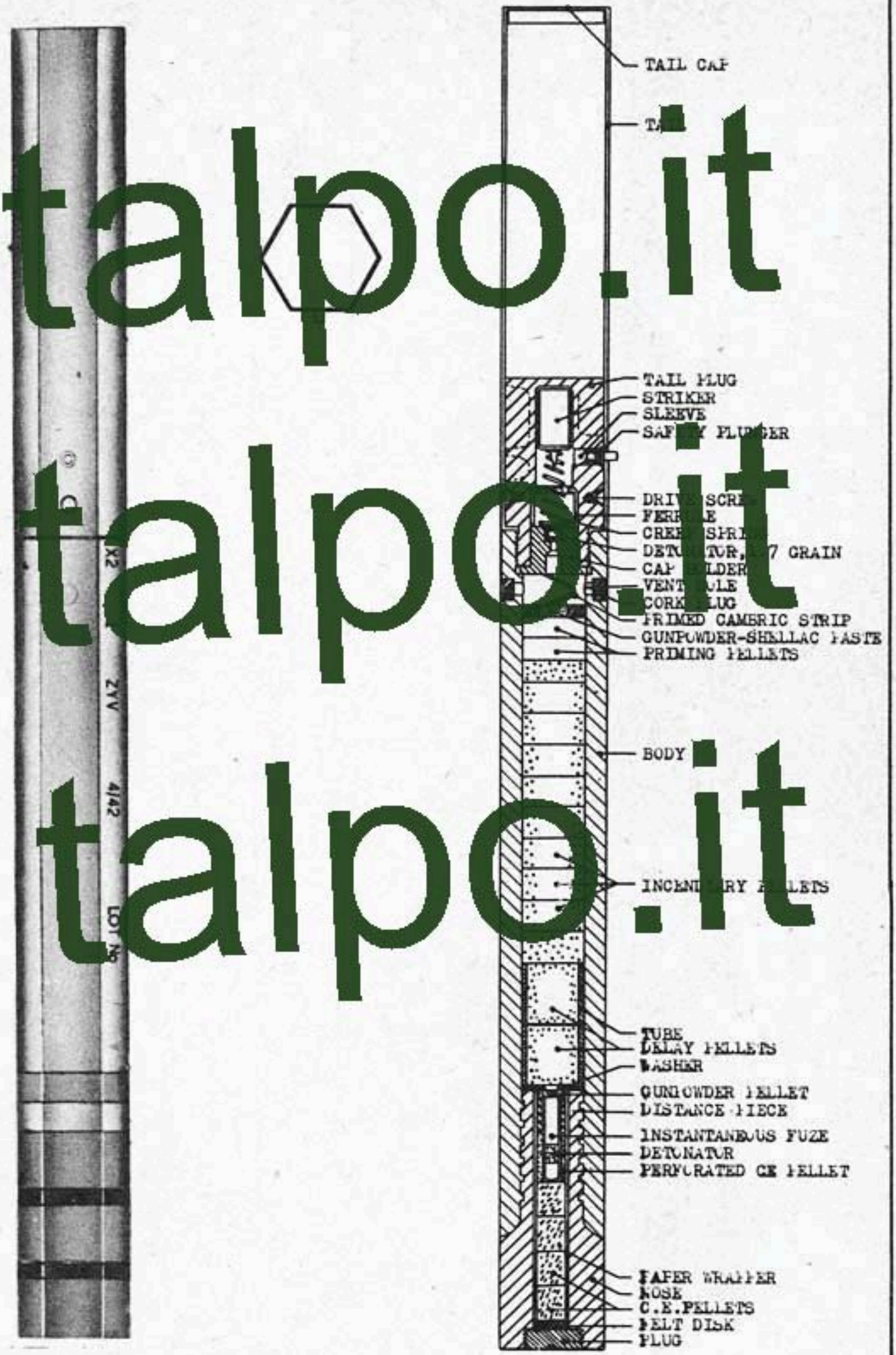
4 lb. Mk I and IE: Similar to the Mk II and IIE respectively, but differ in the following respects: (a) length of bomb 21.5", (b) have a 1.52 grain detonator.

4 lb. X with 2 & 4 minute delays, Mk I: Similar in construction to the Mk III, except that the C.E. exploder is contained in the steel nose plug, as shown in the drawing opposite; this exploder being initiated after delays of either 2 or 4 minutes, depending on which body it is fitted to. The letter "X" is stamped on the outside followed by the number "2" or "4" indicating which delay is incorporated in the bomb. The marking bands are the same as on the Mk IIIE, except that the red band between the two black bands is 1" instead of ½", and the base of the tail is not painted red.

4 LB. INCEND. BOMB



4 LB. INCEND. BOMB



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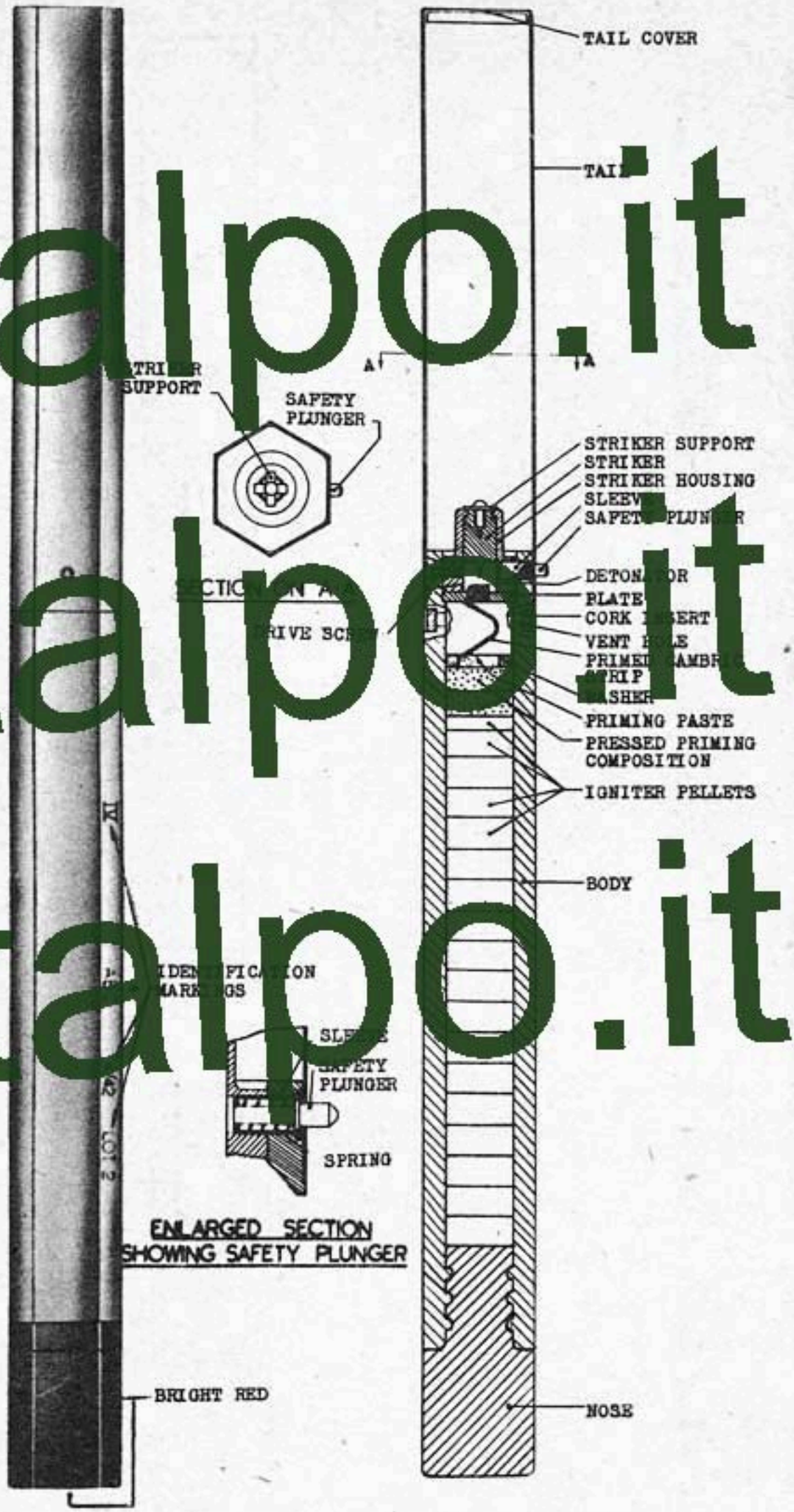
4 LB. INCEND. BOMB



ENLARGED SECTION SHOWING SAFETY PLUNGER

BRITISH BOMB

100 LB. SMOKE

Mks I & II

(Service)

FUZING	Tail Fuze No. 854 Mk I
COLOR & MARKINGS	Dark green overall, with red band around lower part of body.
TAIL NO.	Fabric Tail
OVERALL LENGTH	18.3"
BODY LENGTH	18.3"
MAX. BODY DIAMETER . . .	10" square
WALL THICKNESS	Very thin
TAIL LENGTH	21"
TAIL WIDTH	12"
TOTAL WEIGHT	92-95 lbs.
CHARGE/WEIGHT RATIO . .	85% (approx.)

BODY CONSTRUCTION: These bombs are dropped from aircraft to produce smoke screens to cover land operations. The bomb consists of a thin tinplate can of square cross-section, on one face of which are soldered two corrugated stiffeners, these serving to increase the strength of the can and also acting as distance pieces between the can and the drop bar of the 250 lb. Small Bomb Container. A burster container to take the No. 854 Mk I fuze and its burster, and an inlet filling hole are provided in the top part of the can, together with a large circular distance piece.

The burster container is closed, during transit and storage by a rolled-thread tinplate transit plug. The filling hole is permanently sealed by a rolled thread filling hole cap, seating on a sealing disc. <u>This cap must in no circumstances be unscrewed from the bomb</u>, and as it is fitted with a short Tommy bar, it may be readily distinguished from the transit plug.

Three handles for lifting the bomb are provided, and at two diagonally opposite corners of the can are soldered metal loops for the attachment, by a length of whipcord, of a fabric tail which acts as a stabilizer to the bomb.

FUNCTIONING: On impact of the fuzed bomb with its target, the "all-ways" action fuze functions instantaneously, and the explosion of its burster disrupts the bomb and scatters the white phosphorous filling which, on contact with the air, ignites spontaneously and begins to give off smoke.

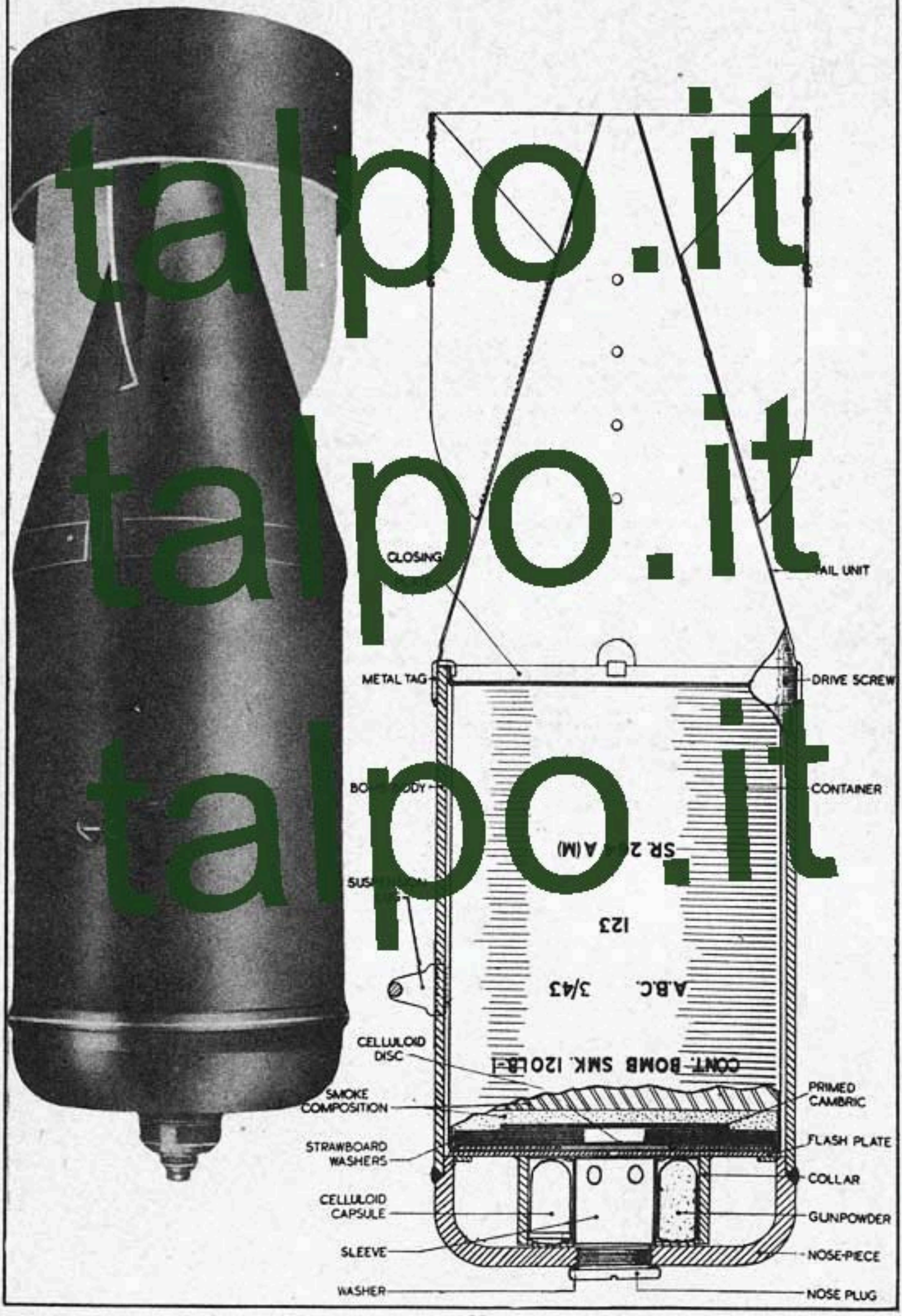
SUSPENSION: These bombs are carried three in a 250 lb. Small Bomb Container. In the container, they are separated from each other by the distance pieces on the end of each bomb.

EXPLOSIVE COMPONENTS: Burster: Gunpowder
Main Filling: 86 lbs. white phosphorous.

REMARKS:

1. The Mk II bomb is similar to the Mk I in operation, differing only in minor structural details as follows:
   a) The filling hole is centrally located in the top of the can.
   b) Two small distance pieces are provided at the top of the can and are located at diagonally opposite corners, on either side of the filling hole.
   c) The two metal loops to which the fabric tail is secured differ slightly in design to those used on the Mk I bomb.
2. These bombs have a burning time of 15-20 minutes and provide an effective screen 250-300 yds. in length.

120 LB. SMOKE BOMB



BRITISH BOMB

120 LB. SMOKE

Mks I & II

(Sa[illegible]ice)

FUZING . . . . . Nose Fuze No. 864 Mk I
COLOR & MARKINGS . . . Dark green overall with 1/2" red band around nose; tail is light green.
TAIL NO. . . . . No. 41 Mk II
BURNING TIME . . . . . 20 minutes
OVERALL LENGTH . . . . 31"
BODY LENGTH . . . . . 15.8"
MAX. BODY DIAMETER . . 9.5"
WALL THICKNESS . . . . 0.25"
TAIL LENGTH . . . . . 15.1"
TAIL WIDTH . . . . . 10"
TOTAL WEIGHT . . . . . 120 lbs.
CHARGE/WEIGHT RATIO . .

CONSTRUCTION: The bomb consists of a cylindrical body, to which the tail unit is secured, housing a metal container filled with a smoke composition and a gunpowder ejection charge contained in nine celluloid capsules. The bomb body is a steel tube welded to a flattened nose-piece. The nose-piece is centrally tapped to receive the fuze, during transit and storage, is sealed by a nose transit plug [illegible] the exterior of the bomb body is welded [illegible] plug.

A steel flash plate, abutting the nose-piece within the bomb body, has secured to it a steel collar. A small centrally-located hole is drilled through the flash plate and is sealed by a paper disc. The nine celluloid capsules, each filled with 1 oz. 1 drm. of gunpowder, are retained in the collar by a cardboard sleeve and felt and cardboard washers. The sleeve has six equi-spaced holes near its inner end.

The metal container, filled with approximately 50 lbs. of smoke composition (H.C.E.), is housed in the bomb body against the flash plate and fuze, at this end a 3 in. diameter hole [illegible] celluloid disc. Between this disc and the smoke composition there are four strawboard washers, each with a 1/8 in. diameter hole, the holes so formed being sealed by two squares of primed fabric. The container is retained in position against the flash plate by a closing plate fitting into the rear end of the bomb body and secured by four metal tabs turned over.

The tail unit is secured to the bomb body by eight drive screws and consists of a tail cone to which cylindrical vanes are secured by four vane supports

FUNCTIONING: On impact of the bomb with the target, the magazine of the fuze explodes after a delay of not less than 1/2 sec., during which period the bomb will have come to rest. The flash from the fuze magazine, passing through the hole in the flash plate and the celluloid disc, ignites the two primed cambric squares, which in turn ignite the smoke composition in the container.

Concurrently with the ignition of the smoke composition, the flash from the fuze magazine also passes through the holes in the cardboard sleeve to initiate the gunpowder ejection charge contained in the nine celluloid capsules. The resulting explosion of the gunpowder [illegible] tail cone, closing plate, the container of burning smoke [illegible] and the flash plate, rear of the crater formed by the bomb.

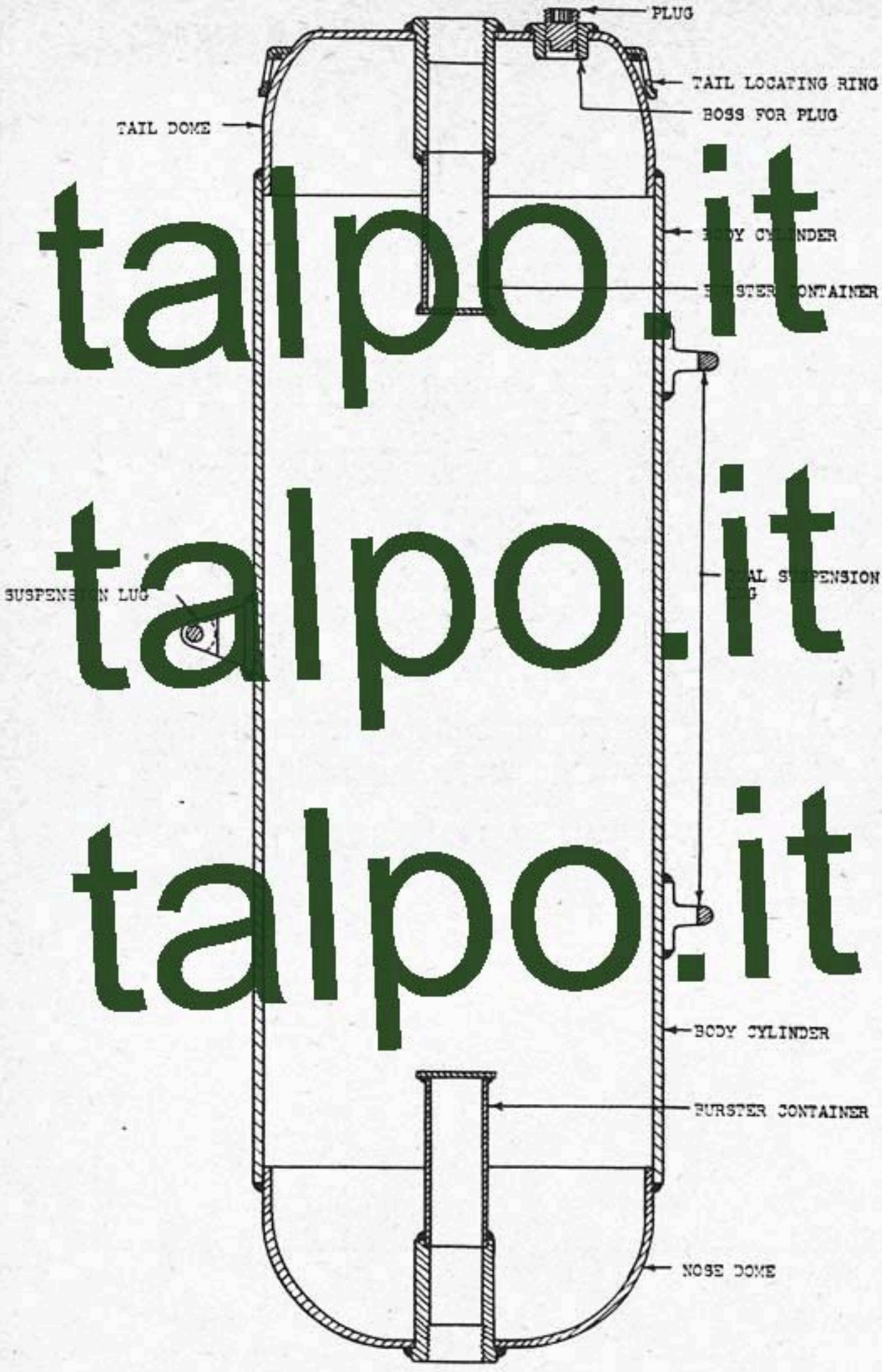
SUSPENSION: The bomb may be carried in a 250 lb. Small Bomb Container, or the bomb may be suspended individually by a single lug. Mk II bombs may be fitted with [illegible] for suspension in [illegible] aircraft.

EXPLOSIVE COMPONENTS: Magazine: Gunpowder
Ejector Charge: Gunpowder in nine celluloid capsules.
Main Filling: Smoke Composition (H.C.E.)

REMARKS: The smoke composition contained in these bombs is liable to spontaneous ignition should it become wet, particularly with sea water.

The Mk II bomb is similar to the Mk I in operation, the principal differences being a modified tail assembly and arrangement for twin suspension lugs for carrying in American aircraft.

500 LB. SMOKE BOMB



BRITISH BOMB

500 LB. SMOKE

Mk I

(Service)

FUZING	Tail Pistol No. 30 Mk IV
COLOR & MARKINGS	Dark green overall, with a red band around the lower part of the body
OVERALL LENGTH	66.0"
BODY LENGTH	40.7"
MAX. BODY DIAMETER	13.1"
WALL THICKNESS	3/16"
TAIL LENGTH	27.7"
TAIL WIDTH	11.8"
TOTAL WEIGHT	400 lbs. (approx.)
CHARGE/WEIGHT RATIO	60 %

BODY CONSTRUCTION: The [illegible] welded cylindrical metal container has a rounded nose and a somewhat rounded tail piece welded on to it. There is a burster tube in the filling hole. Around the welded on tail section there is a tail locating ring. The body has three suspension lugs on it, two spaced 180 degrees around from the third for carrying in American aircraft.

TAIL CONSTRUCTION: The tail is of sheet metal with a tail cone to which are riveted 4 vanes. The end of the cone is cut away so that the arming vanes and the reach rod may be fitted. It is held onto the bomb by spring clips that are set 90 degrees apart. Inside the tail cone supporting the lower end of the reach rod is a diaphragm in which are four large holes to allow air passage.

EXPLOSIVE COMPONENTS: Burster: Gunpowder
Main Charge: [illegible] phosphorus, [illegible] lbs.

REMARKS: Provision has been made in this bomb for both nose and tail fuzing, using a pistol/detonator combination. The bomb, however, is to be fuzed at the tail only, with a No. 30 Mk IV pistol; the nose burster is left sealed with a [illegible]sit plug.

500 LB. SMOKE BOMB

PRACTICE BOMBS

RESTRICTED

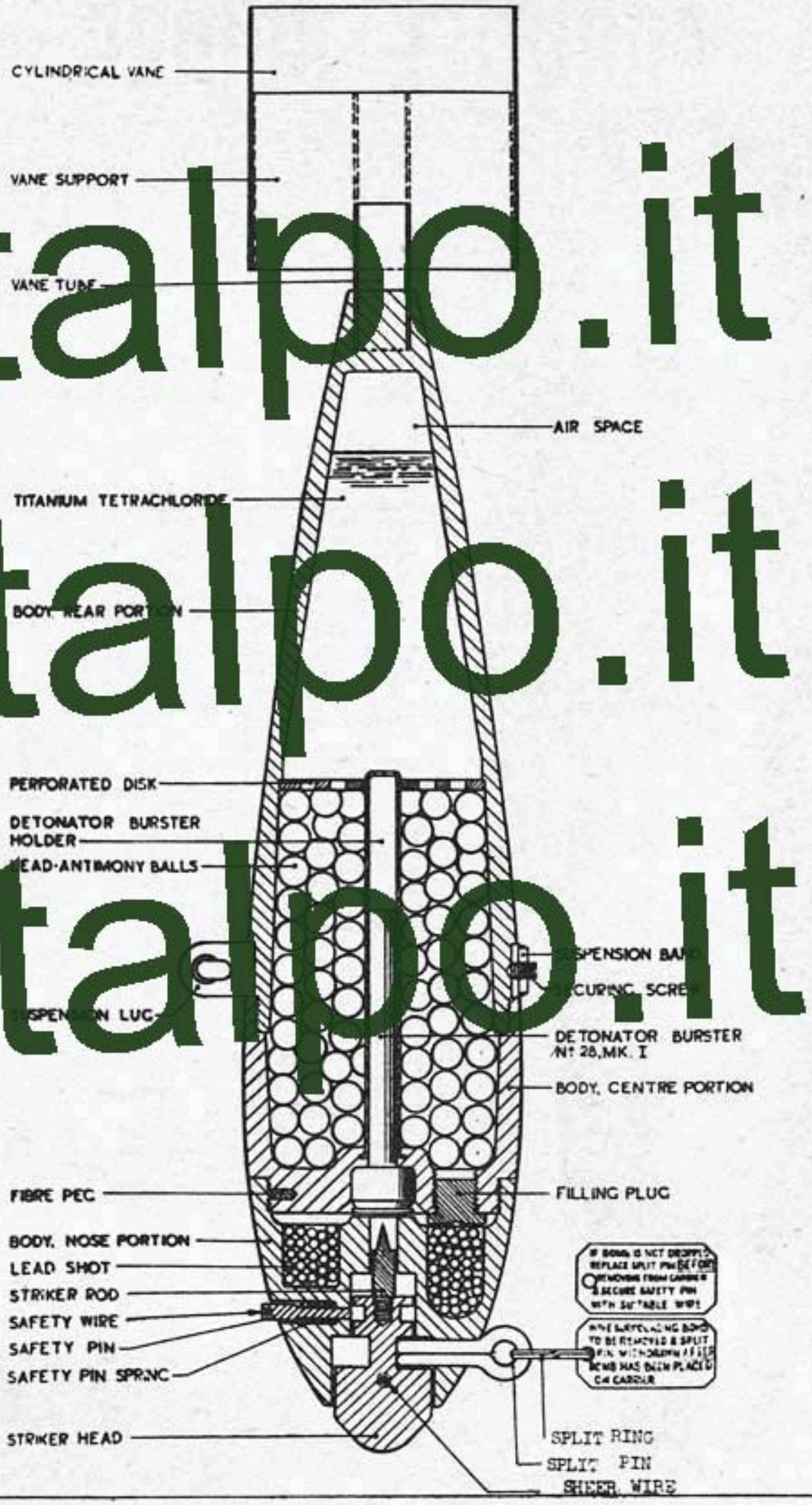
USE

Included in this section are only three practice bombs. These are the only ones specifically designed for that purpose, although there are currently in use several practice bombs which are merely service bombs inert loaded with sand, water, or a chalk-lime solution. The standard practice bomb is generally fitted with a spotting charge to indicate bombing accuracy.

CHARACTERISTICS

Standard practice bombs are painted white overall with two light green bands painted around the center of the tail. Inert loaded service bombs used as practice are painted black. Practice bombs containing an exploder have a red band painted around the body.

8.5 LB. PRACTICE BOMB



BRITISH BOMB

8.5 LB. PRACTICE

Mks I, II, III

(Service)

FUZING	Simple striker arrangement with detonator-burster No.28 Mk I.
COLOR & MARKINGS	White overall, with two 1/2" green bands 1/2" apart around center of tail unit.
OVERALL LENGTH	16"
BODY LENGTH	12"
MAX. BODY DIAMETER	3.0"
WALL THICKNESS	0.5"
TAIL LENGTH	4"
TAIL WIDTH	3"
TOTAL WEIGHT	8. lbs.

BODY CONSTRUCTION: Mks I & III - Moulded plastic body, made in three parts - nose section holding striker, center section housing detonator-burster and filling plug, and rear section which is hollow and closed at rear end. Perforated disc inside rear section supports the end of the detonator burster holder. The center part of the body is filled with lead-antimony balls, with the interstices between them filled out a lead space in the rear section cone, filled with titanium tetrachloride or gunpowder and magnesium turnings. Striker head is retained in handling by a cotter pin, safety pin and shear wire. An annular groove inside the nose portion is filled with lead shot secured by wax.

Mk II - Nose fitted for an extension rod.

TAIL CONSTRUCTION: Tail assembly consists of a tube moulded into the rear section of the body, with a cylindrical strut attached to the tube by four fins.

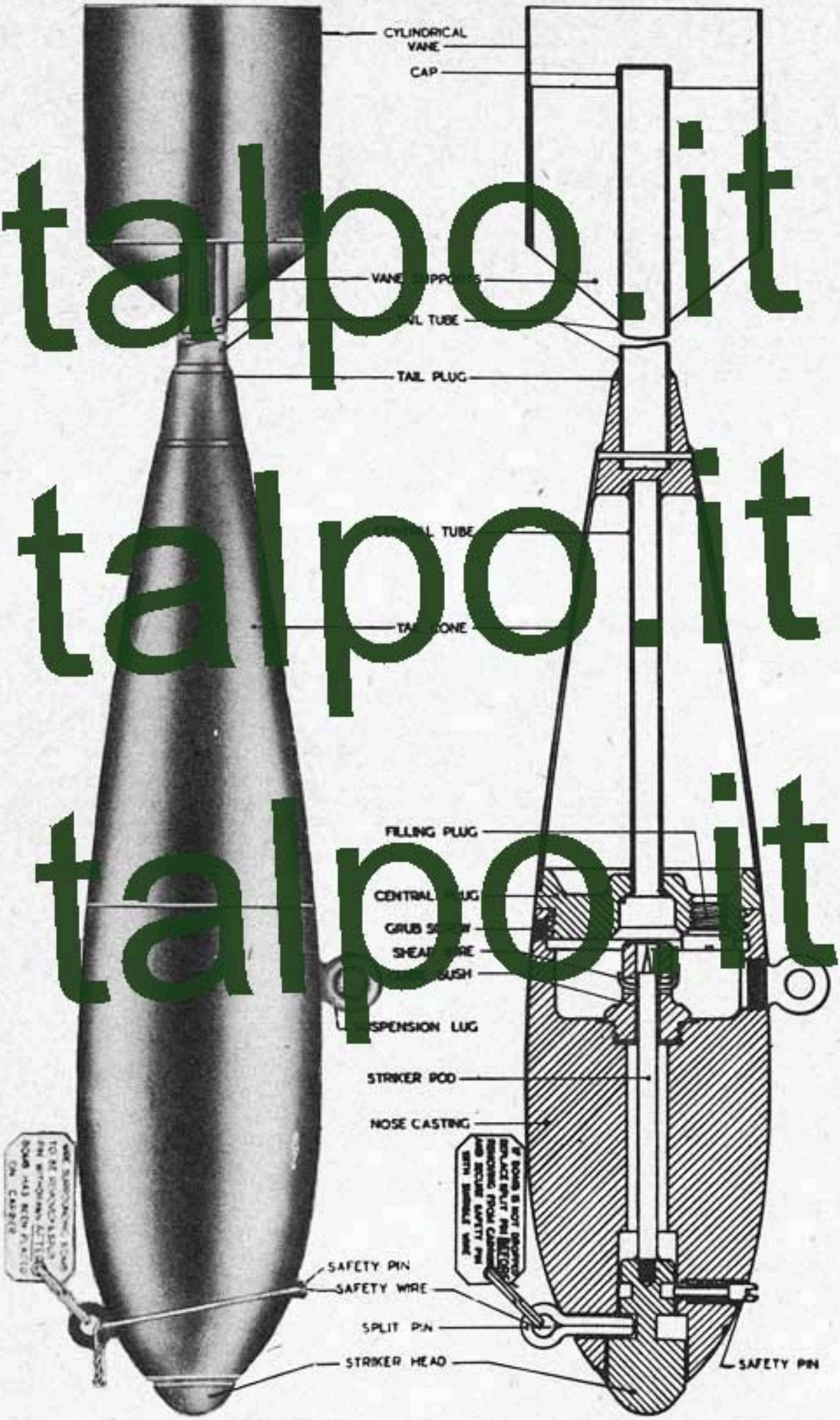
SUSPENSION: Single suspension lug on band which fits in a groove in the body and secured in place by a securing screw.

EXPLOSIVE COMPONENTS: Detonator burster: 1½ grains fulminate of mercury and T.N.T. pellets.

Main filling: Mks I, II - Titanium tetrachloride, which, when exposed to atmosphere as detonator-burster breaks open body, forms a cloud of white smoke, marking the point of impact.
Mk III - Flash filling, gunpowder and magnesium turnings.

REMARKS: (1) This bomb is for use against certain targets where a bomb is required to break on impact without causing damage to the target. Due to its low terminal velocity the bomb is only suitable for low level bombing.

10 LB. PRACTICE BOMB



BRITISH BOMB

10 LB. PRACTICE

Mk I - Smoke

Mk III - Flash

(Service)

FUZING	Simple striker assembly with detonator-burster No.28 Mk I
COLOR & MARKINGS	White overall. 2 light green bands 1/2" wide around tail cone.
OVERALL LENGTH	18 in.
MAX. BODY DIAMETER	3 in.
WALL THICKNESS	Solid body
TOTAL WEIGHT	10 lbs.

BODY CONSTRUCTION: Solid cast iron nose with an axial bore housing striker head and rod, with guide bush threaded into rear cavity, and internal rear thread to take central plug. Striker retained by cotter pin (removed when loaded on aircraft), safety pin, and shear wire through rod and guide bush. Central plug houses central detonator tube.

TAIL CONSTRUCTION: Tail cone closed at rear by conical tail plug and at front end by the central plug to which it is attached. Central tube extends through the tail cone to the tail plug and holds the detonator-burster. A tapped hole, fitted with a plug, is provided in the central plug for filling. Tail tube, with four fins carrying cylindrical strut, projects from tail plug, its rear end closed by a cap.

SUSPENSION: Single eyebolt which screws into bomb body opposite cavity, for suspension from Light Series bomb carrier.

EXPLOSIVE COMPONENTS: Detonator-burster: 10 grains fulminate of mercury and T.N.T. C.E. pellet.

Smoke filling, Mk I: 1 lb. titanium tetrachloride, which forms white cloud on exposure to atmosphere upon detonation of central charge.

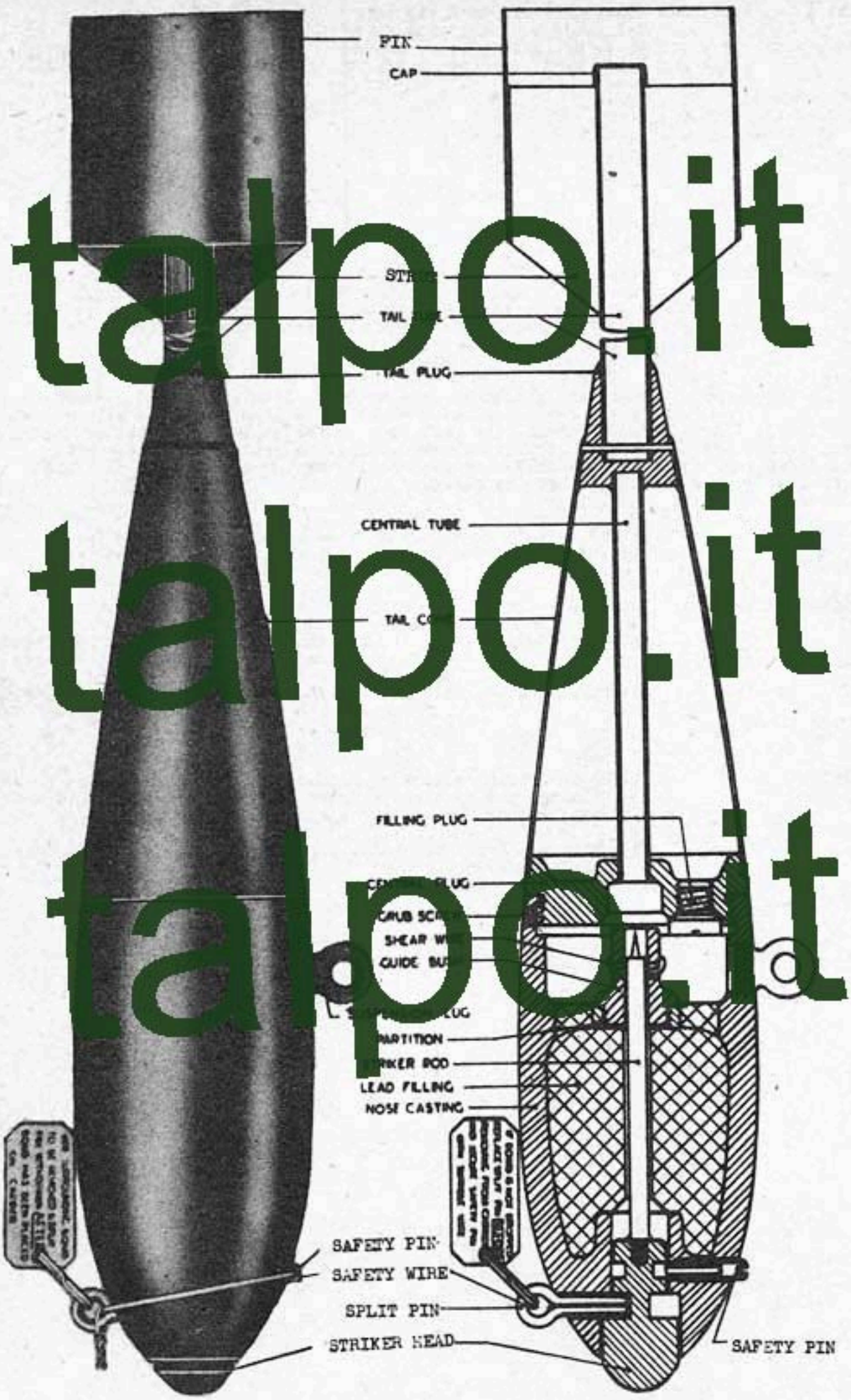
Flash filling, Mk III: 1 lb. mixture of gunpowder and magnesium turnings, which causes brilliant white flash on detonation.

REMARKS:

(1) Smoke filling used for daytime practice operations. Flash filling used at night. These bombs, because of solid iron nose, should not be used against lightly armored targets.

(2) Mk II had a plastic tail, but was not satisfactory and all were scrapped.

11.5 LB. PRACTICE BOMB



BRITISH BOMB

11.5 LB. PRACTICE

Mk I - Smoke

Mk I - Flash

(Service)

FUZING . . . . Simple striker assembly with detonator-burster No.28 Mk I.
COLOR & MARKINGS . . . White overall, with two 1/2" green bands 1/2" apart around tail cone.
OVERALL LENGTH . . . . 18 in.
MAX. BODY DIAMETER . . 3 in.
TAIL WIDTH . . . . 3 in.
TOTAL WEIGHT . . . . 11.5 lbs.

BODY CONSTRUCTION: Bomb consists of a nose casting, fitted with a striker assembly and a tail cone which constitutes a container for the filling and is fitted with a central tube for a detonator burster. Nose casting made of iron, internally threaded at rear to receive spigot portion of a central plug which closes the forward end of the tail cone. Interior of nose filled with lead, having a clearance hole for the striker rod. Striker secured by a cotter pin (removed when loaded), a safety pin, spring-loaded [illegible], and a shear wire through the guide bush.

TAIL CONSTRUCTION: Sheet metal tail cone, constituting the container for the filling, is closed at the rear by a conical steel tail plug and at the forward end by a central plug which screws into the rear of the nose casting. A tapped hole is provided in the central plug for filling purposes. Secured to the tail plug is a tail tube having four fins which carry a cylindrical strut. Tail tube closed at rear by a cap.

SUSPENSION: Single eyebolt which threads into bomb case.

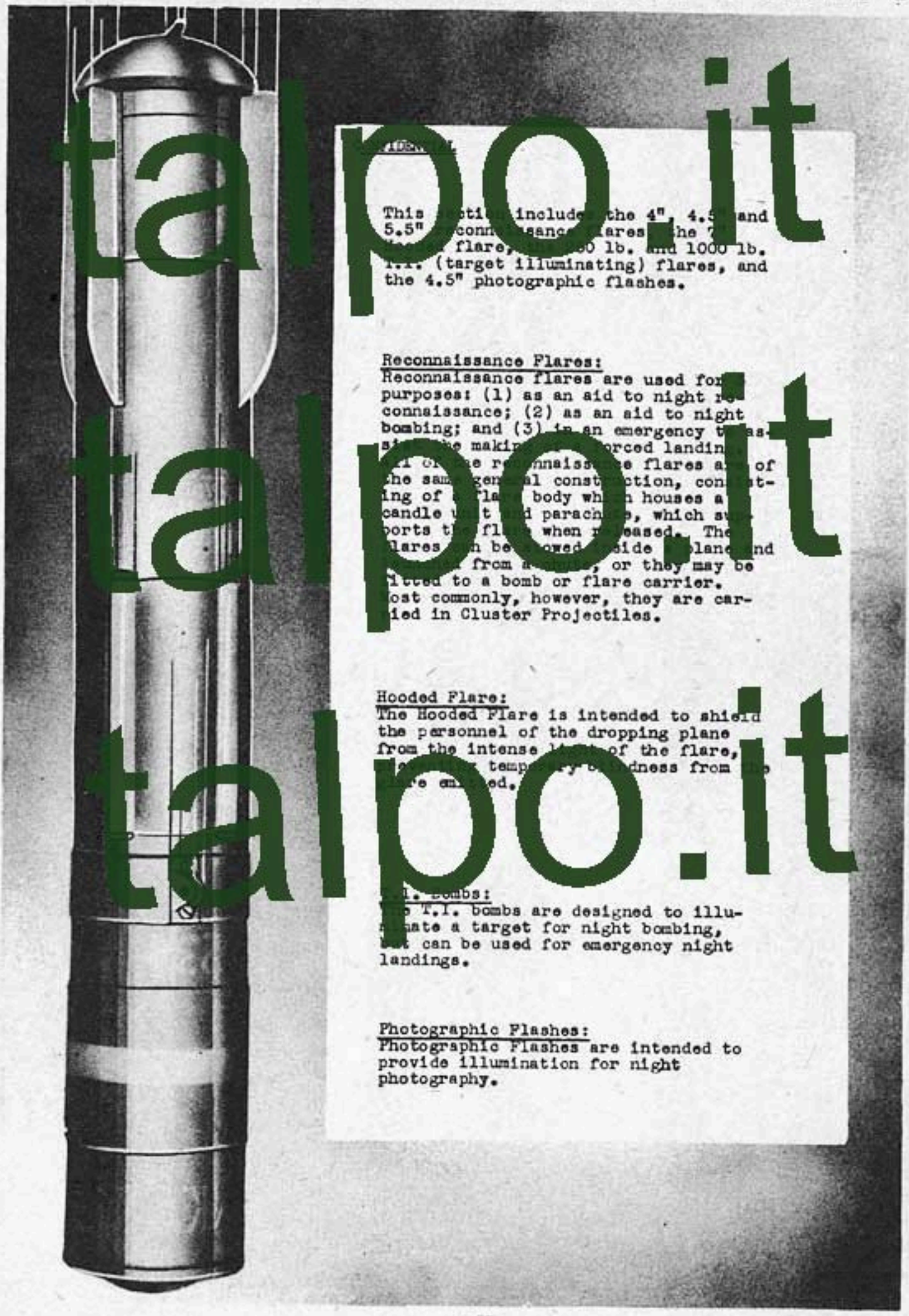
EXPLOSIVE COMPONENTS: Detonator-burster: 10 grains fulminate of mercury and [illegible].E. pellets.
Smoke Filling: 1 lb. Titanium tetrachloride, which produces white smoke when detonator-burster breaks open tail cone and exposes it to the atmosphere.
Flash Filling: 1 lb. mixture of gunpowder and magnesium turnings, producing a brilliant white flash on impact.

REMARKS:

(1) Smoke is used as filling for daytime use; flash mixture at night.

(2) Mk [illegible] of these bombs was made in the U.S. of bakelite, but now [illegible]crapped.

FLARES & PHOTOFLASH BOMBS



This section includes the 4", 4.5" and 5.5" reconnaissance flares, the 2[illegible] flare, the 500 lb. and 1000 lb. T.I. (target illuminating) flares, and the 4.5" photographic flashes.

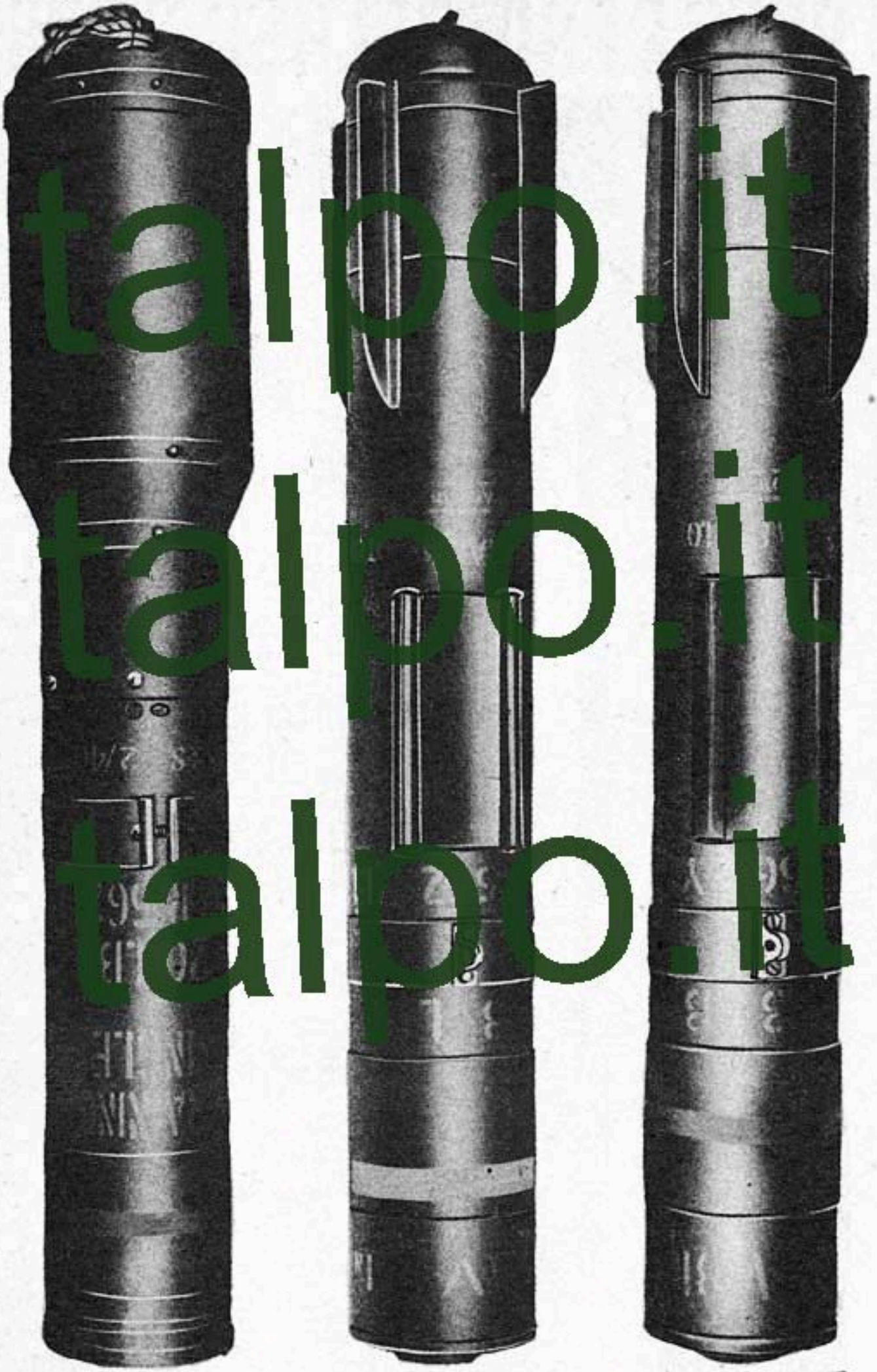
Reconnaissance Flares:
Reconnaissance flares are used for two purposes: (1) as an aid to night reconnaissance; (2) as an aid to night bombing; and (3) in an emergency to assist the making of a forced landing. All of the reconnaissance flares are of the same general construction, consisting of a flare body which houses a candle unit and parachute, which supports the flare when released. The flares can be towed beside plane and released from a rack, or they may be fitted to a bomb or flare carrier. Most commonly, however, they are carried in Cluster Projectiles.

Hooded Flare:
The Hooded Flare is intended to shield the personnel of the dropping plane from the intense light of the flare, thereby preventing temporary blindness from the flare employed.

T.I. Bombs:
The T.I. bombs are designed to illuminate a target for night bombing, but can be used for emergency night landings.

Photographic Flashes:
Photographic Flashes are intended to provide illumination for night photography.

BRITISH FLARES



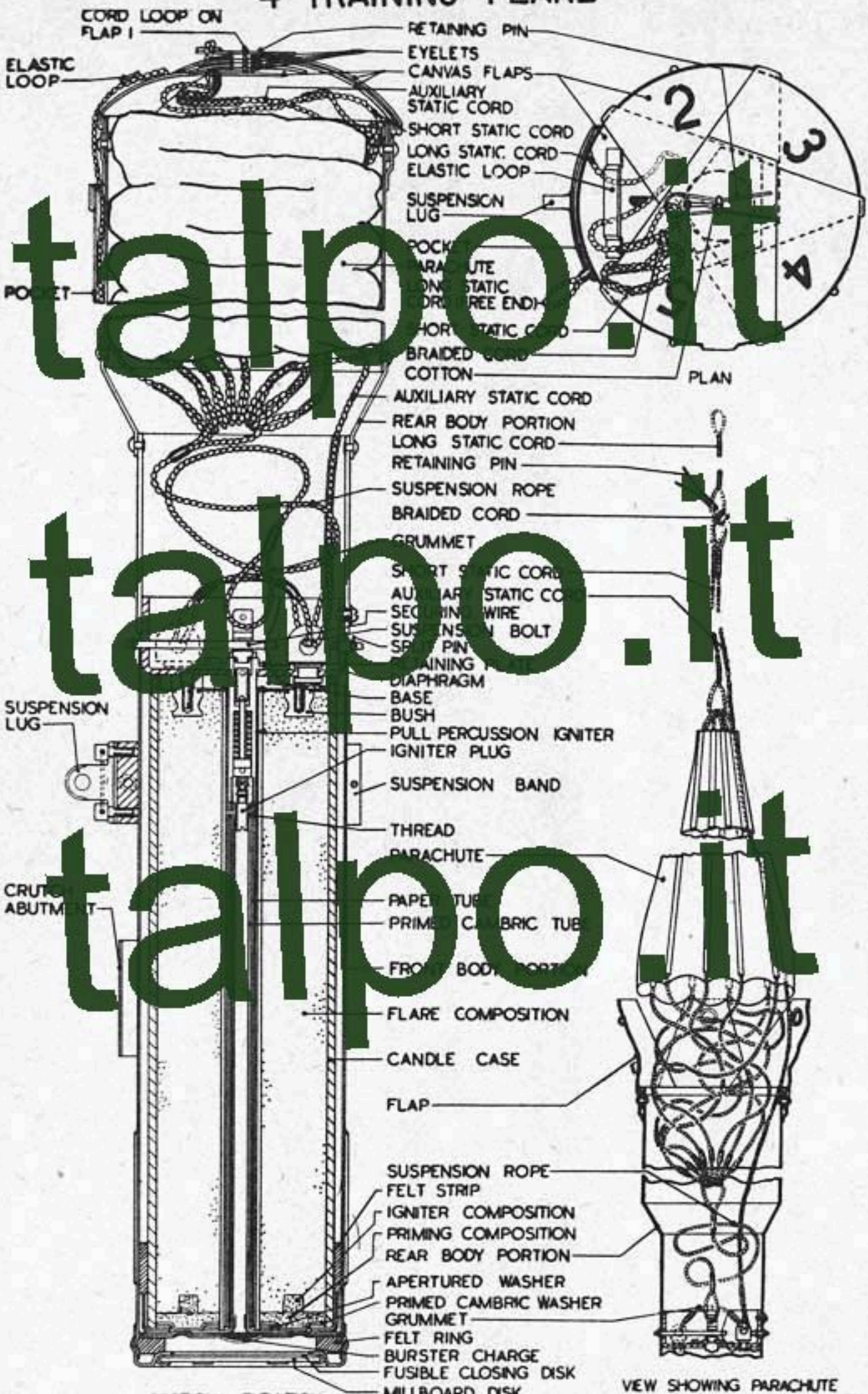
4" TRAINING Mk.IV

4.5" Mk. IV

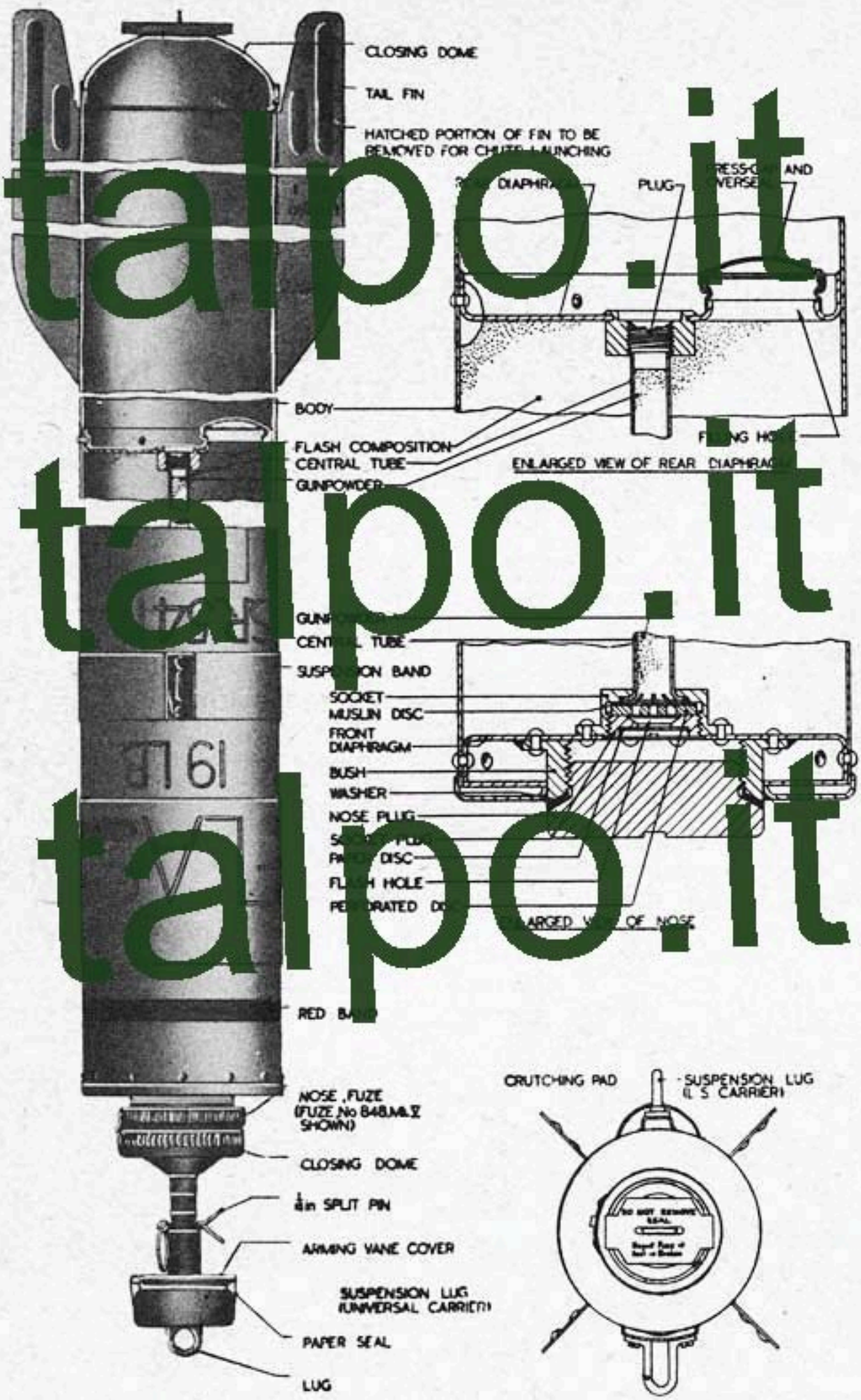
4.5" Mk. V

1000 LB. T.I. BOMB

4" TRAINING FLARE



4.5" PHOTOFLASH BOMB



BRITISH BOMB

4.5" PHOTOFLASH

Mks I & II

4.5" Heavy Photo Flash

(Service

FUZING . . . . . Nose Fuze No. 28B, 848, or 849; No. 860 can be used only if specially authorized

COLOR & MARKINGS . . . Body is black; tail is red; ½" red band around nose end. The word "FLASH" is printed plainly on the body near the nose end.

OVERALL LENGTH . . . 33"

MAX. BODY DIAMETER . . 4.5"

TOTAL WEIGHT . . . . 19 lbs.

ILLUMINATION TIME . . 0.[illegible] sec. approx.

DESCRIPTION: The [illegible] I and II flashes are similarly constructed, the only difference being that the Mk II has a narrower tail fin. Each flash has a tubular body closed at the tail by a closing dome and at the nose by a front diaphragm having a hole into which is screwed the nose fuze. The fore-and-aft [illegible] is also located at the tail end. The quantity of flash composition is contained in the body between the front and rear diaphragm, the filling hole being closed by a brass-cap and oversealed. A central tube, closed at each end, extends between the front and rear diaphragms and is filled with gunpowder. A socket secured to the front diaphragm houses a perforated disc and a muslin disc which closes the nose end of the central tube. The perforated disc is held in position by a socket plug having a flash hole covered by a disc which, in earlier issues, is of brass, but in later issues is paper.

SUSPENSION: Suspended by means of a suspension band to which are secured two suspension lugs, one for attaching to a Light Series bomb carrier the other for attaching to a Universal bomb carrier.

FUNCTIONING: When a fuzed flash is released from an aircraft its nose is set in operation [illegible] flash. This will the magazine charge of the fuze explodes. The flash from the magazine charge passes through the perforated disc and ignites the gunpowder in the central tube. The gunpowder explodes, bursts the body of the photographic flash, and simultaneously ignites the flash composition.

4.5" HEAVY PHOTOGRAPHIC FLASH

FUZING . . . . . U.S. M 111, 111A1, or 111A2 nose fuze.

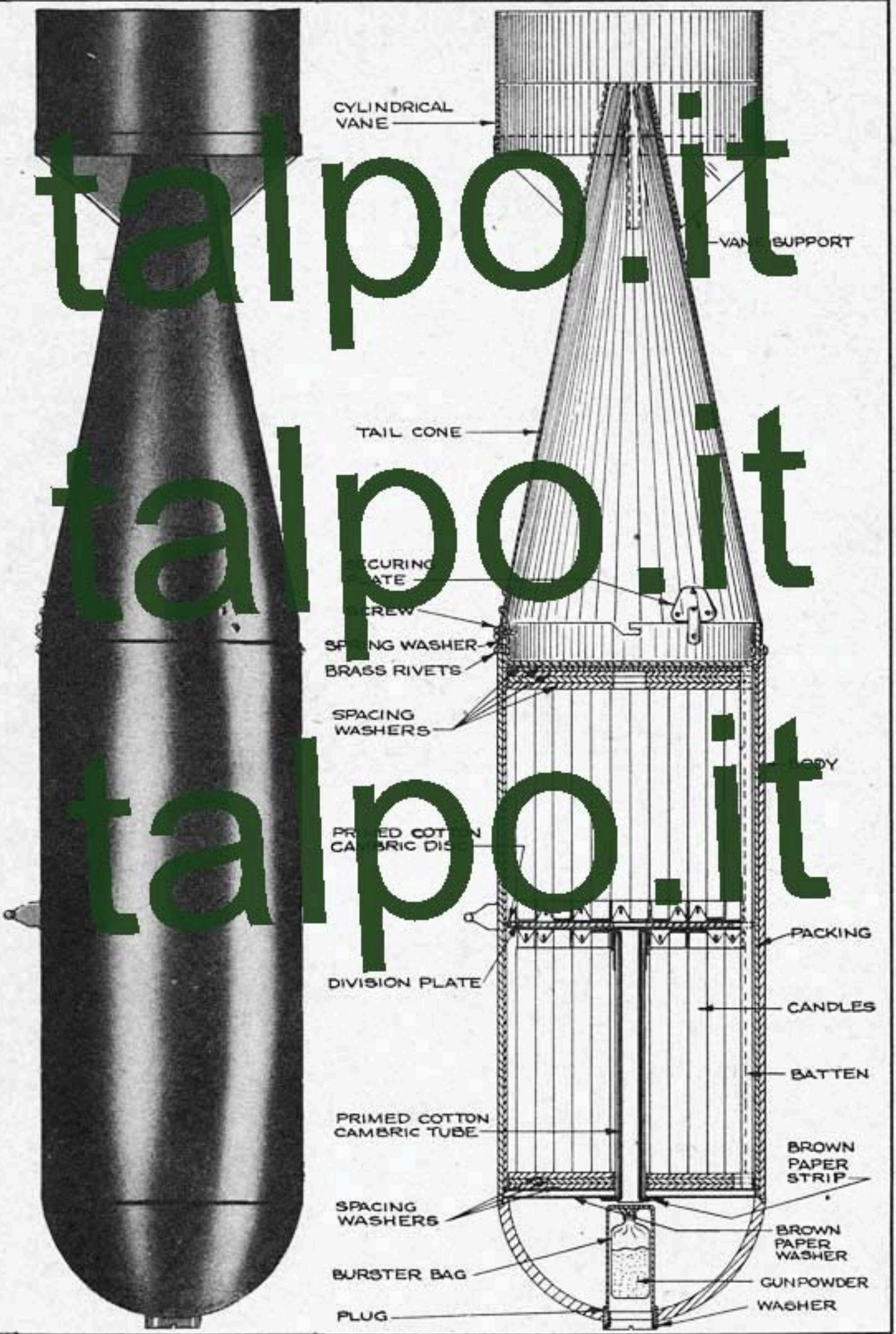
TOTAL WEIGHT . . . . . 40 lbs.

DESCRIPTION . . . . . Externally it is the same as the ordinary 4.5" flash. Internally the construction is slightly modified, the rear diaphragm being moved to a position nearer the closing dome, consequently increasing the length of the central tube. A retaining diaphragm is positioned in the body 5½" from the front diaphragm. A cast-iron weight is located between the front and retaining diaphragms, the flash composition being housed between the rear and retaining diaphragms. The fuze is a [illegible] time [illegible] which has a fuze adapter in order to [illegible] in the [illegible] bomb. When [illegible] is loaded, the arming wire is inserted through the second hole in the [illegible] pin and passes through the arming vane lock. The delay may be from 5 seconds to 9[illegible] seconds.

REMARKS . . . . . (1) These flashes are intended to provide illumination in night photography and when functioned they explode with a loud report and a [illegible] flash.

(2) It is important to distinguish between flares and flashes. They may be distinguished by the following differences: (a) "FLASH" is stencilled on the nose of all photographic flashes; (b) The tail of the flash is RED; (c) eight rivets around the body at the junction of the red and black parts of the flash; (d) on removal of the tail dome of a flash, there is no parachute or shackle visible.

250 LB. T.I. BOMB



BRITISH BOMB

250 LB. T.I.

Mk. I

(Service)

FUZING . . . . . Nose Fuze No. 860 (No. 848, Mk I may be used)

COLOR & MARKINGS . . . Black overall with colored band around nose to indicate color of flares, and 1" red band 8" from nose. Red cross near rear indicates explosive candles are present. Color of flares stencilled on bomb.

TAIL NO. . . . . No. 1, Mk I

OVERALL LENGTH . . . . 61.

MAX. BODY DIAMETER . . 12

TAIL LENGTH . . . . . 27.

TAIL [illegible] 11.

TOTAL WEIGHT . . . . 220 lbs.

BURNING TIME . . . . 3 min. approx. (red & green candles)
5 min. approx. (Yellow candles)

DESCRIPTION: The flare body consists of a steel tube to which is fitted a steel nose [illegible] end secured by a tail plate held in place by six copper or brass shear rivets. The tail plate has two bayonet slots to receive the fixing pins of the tail. In the nose is a short burster container having a flash hole in its inner end. Inside the burster container is a burster charge consisting of a cambric bag containing gunpowder. A suspension lug is secured to the body to enable the flare to be attached to a bomb carrier. Tail consists of a cone, four vane supports, and cylindrical drum; it may be the tail normally used with the 250 lb. Incendiary, or a specially designed shortened tail.

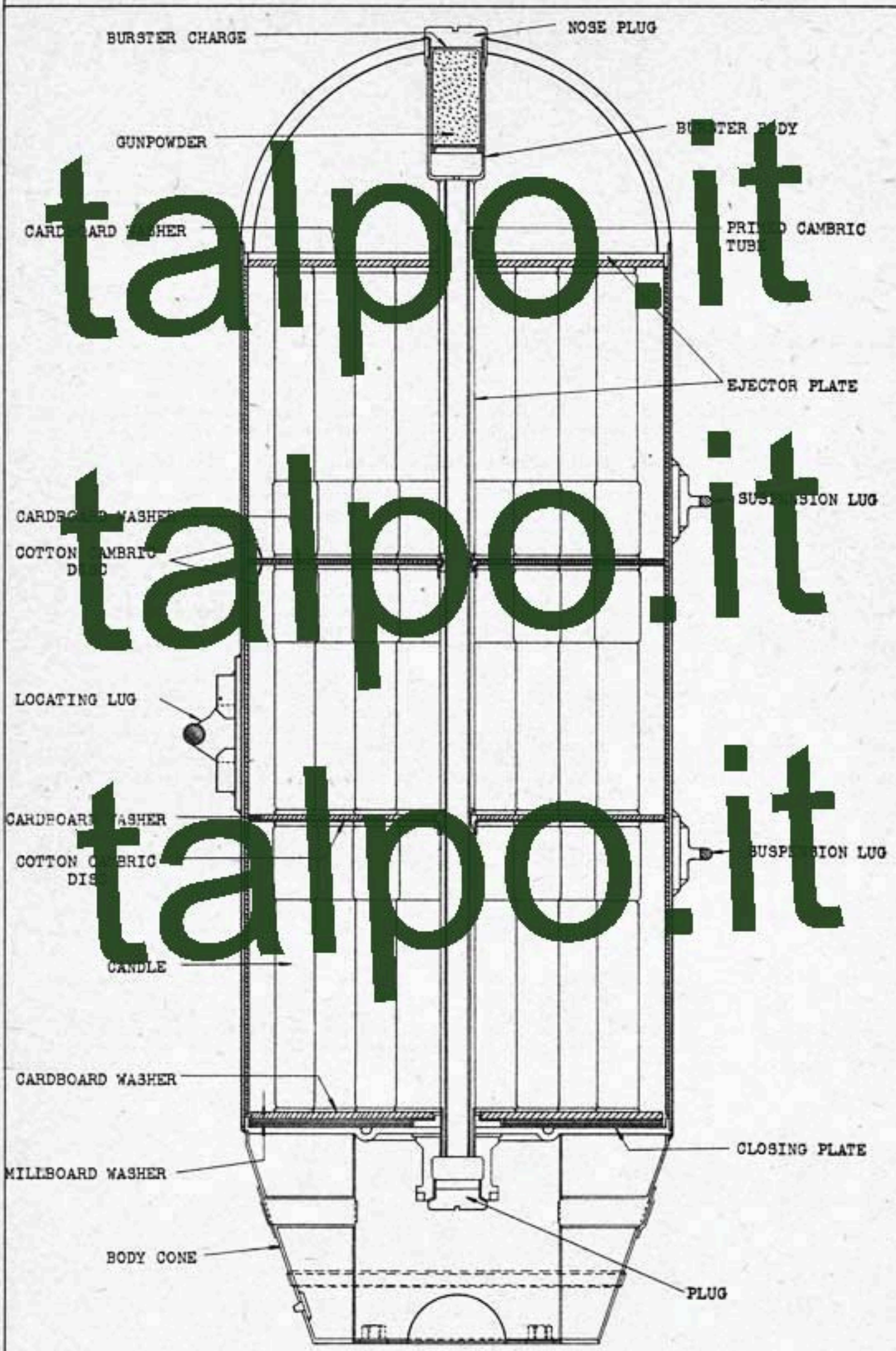
FILLING: The filling comprises 60 candles arranged in two groups of 30, the two groups separated by a wooden disc to each side of which is secured a primed cambric disc threaded with lengths of quickmatch. Each candle weighs 1½ lbs. and is 14" long. They are cylindrical in shape and [illegible] are identified by 1 lb. incendiaries, and are either red, green, or yellow (white if incendiary). These candles are two main types: Non-explosive and explosive. The non-explosive candles may function without delay, or after a delay of 2½ minutes to 5 [illegible] the explosive candles function after 1, 1½, or 2 minutes delay. The bomb may be filled with any of a number of combinations of non-delay and delay non-explosive, and various delay explosive candles. The explosive candles are usually [illegible] in the layer nearest the tail and are marked "X" with the time of delay marked in [illegible]. These candles contain an explosive charge of 300 grams of gunpowder.

FUNCTIONING: When the fuzed flare, with safety pin removed, is released, the fuze arms when the arming vanes rotate off, and when it has fallen to a height of 3,000 ft. the gunpowder in the fuze magazine is fired and initiates the burster charge in the burster container of the flare. The products of combustion of the burster charge force the steel plate towards the tail plate and the pressure exerted by the wooden battens shears the copper or brass shear rivets holding the tail in place, so that the tail plate and tail are forced off and the candles are ejected from the flare. Simultaneously with the forcing out [illegible] of the steel plate, the flash from the burster charge passes through the flash hole in the burster container, is conveyed through the central tube by the primed cambric tube, and ignites the primed cambric discs and the lengths of quickmatch which are threaded through the discs. The primed cambric discs ignite the primed ends of the candles, so that the candles are already ignited when the flare is ejected from the flare. The ignited candles, which are ejected at about 3,000 ft. above the ground, take 20 to 25 seconds to fall to the ground, where they form a distinctive mark and continue to burn until expended.

REMARKS: (1) This bomb case may also be filled with photoflash material or other filling.

(2) The usual ways of filling with candles are either: (a) 60 non-delay; (b) 56 non-delay and 4 explosive; (c) 20 non-delay and 40 delay; (d) 16 non-delay, 4 explosive, and 40 delay; (e) 30 non-delay and 30 delay; (f) 26 non-delay, 4 explosive, and 30 delay.

1000 LB. T.I. BOMB



BRITISH BOMB

1000 LB. T. I.

Mk I

(Service)

FUZING . . . . . .
COLOR & MARKINGS . . . Black overall with red band around nose end, and 2" ring around nose to indicate color of contents; "X" stencilled in red when explosive candles are used.
TAIL NO. . . . . No. 57 Mk I
OVERALL LENGTH . . . . 73.6"
MAX. BODY DIAMETER . . 17"
TAIL LENGTH . . . . . 20"
TAIL WIDTH . . . . . 17.4"
BODY LENGTH . . . . . 53.6"

DESCRIPTION — The bomb consists of a cylindrical body with ogive-shaped nose cap welded on. The after body of the bomb consists of a sheet steel body cone. This after cone section is welded to a steel closing plate which is pressed fitted into the after end of the central cylinder. A small notch is cut at one point on the circumference of the closure plate. A projection from the end of the central body engages in this notch, properly positioning the closure plate and tail assembly. A steel tube, running centrally through the bomb, is welded to a burster container at the nose end, and passes through a central hole in the closure plate at the tail end. A steel plug is threaded to this tube aft of the closure plate, holding the closure plate and tail assembly tight in the bomb body.

Three banks of flares are placed in the central body cylinder. The ignition ends of the flares bear against one of two equi-spaced primed cambric discs. A primed cambric tube is inserted in the central tube, and holes in the central tube lead out to each of the primed cambric discs.

An ejection plate is located just forward of the first bank of flares and just aft of the hollow nose portion of the bomb. This ejection plate is welded to the central tube. [illegible] short burster container with a flash hole in the bottom end and additional flash holes located circumferentially around its upper portion. These latter holes lead into the empty cavity formed by the nose portion of the bomb and the ejection plate.

FILLING — A number of combinations of candles may be incorporated in this bomb. The following table indicates the combinations most commonly used:

No. & Type of Candles	Color	Remarks
186 Non-delay candles 14 Explosive candles	Red, green, or yellow.	Burning time: 3 min.
8 Non-delay candles 128 Delay candles 9 Explosive candles	Red, green, or yellow	Total burning time: 35 min.
[illegible] Non-delay candles [illegible] Delay candles [illegible] Explosive candles	Red, green, or yellow	Total burning time: 12 min.

FUNCTIONING — When the series burst nose fuze functions, the fuze magazine initiates the gunpowder in the burster container. The ejection of the burster passes through and blows out flash holes in the top part of the burster container, putting pressure against the ejection plate. Simultaneously, the explosion of the burster passes through the flash hole in the bottom of the burster container, ignites the primed cambric tube, which in turn ignites the primed cambric discs, initiating the flares. Pressure of the explosive gases behind the ejection plate, assisted by wind drag on the tail, forces the whole internal assembly out of the tail of the central body cylinder, allowing the flares to be dispersed.

REMARKS
1. Additional information will be released when available.
2. Dual suspension lugs are provided for suspension in American planes.

AIRCRAFT PYROTECHNICS

RESTRICTED

This section includes data on flame floats, marine markers, smoke floats, seamarkers, and smoke generators dropped from aircraft.

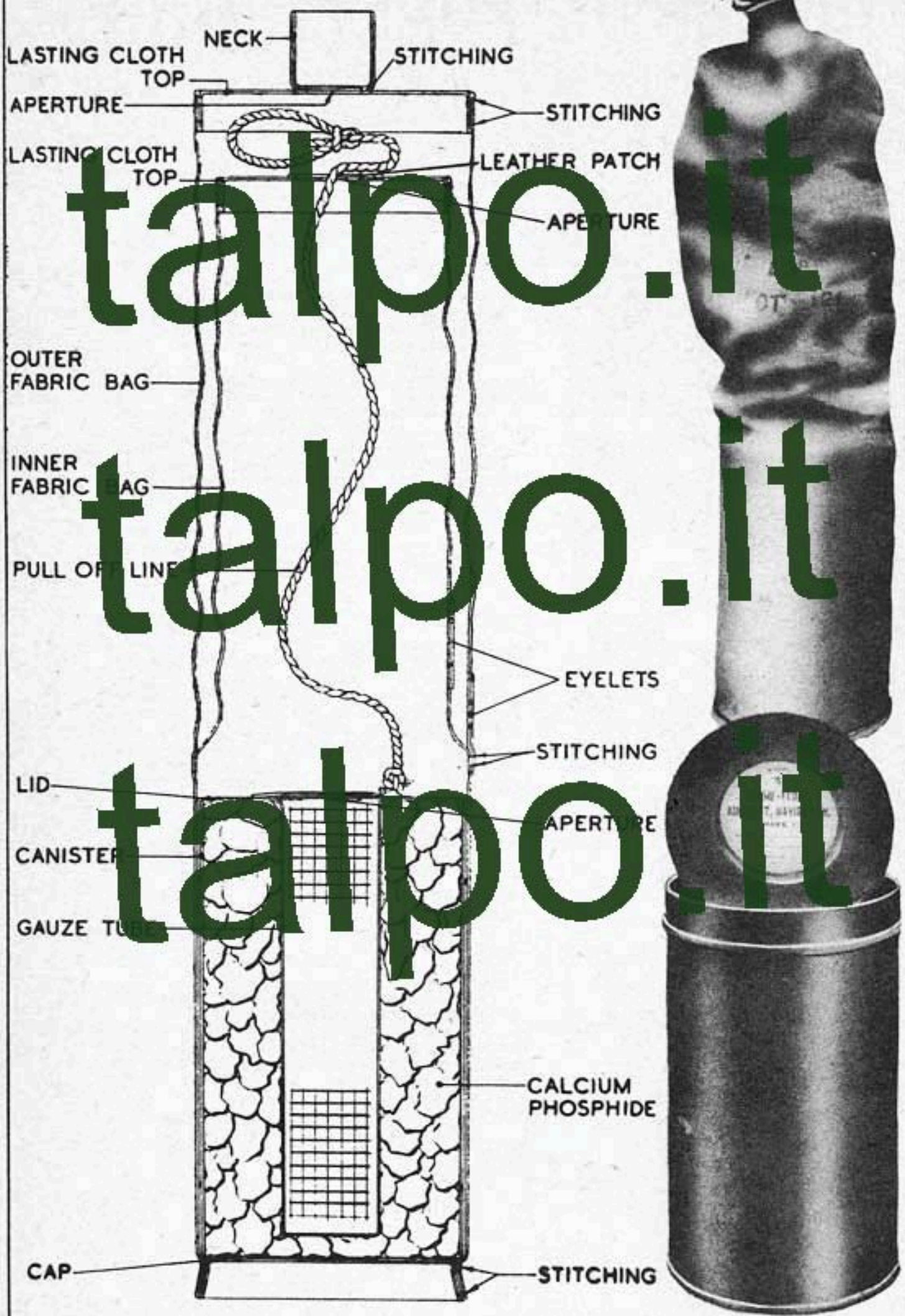
Flame Floats and Marine Markers:
These are devices designed to give off a flame to illuminate surrounding areas of water. Generally calcium phosphide is used as the filler for flame floats. When moistened, this gives off a spontaneously inflammable gas, phosphine.

Smoke Floats:
Smoke floats generate smoke by the combustion of a smoke composition filler. The smoke so produced may be used for indicating position, for obscurement, or for signalling. Although all smoke floats are designed primarily for use at sea, they differ from each other in construction and design according to the purpose for which the smoke is intended. There are three essential types of smoke floats in use, one for each of the following purposes: to mark a position at sea for navigational or bombing purposes; to create a smoke screen; and to be thrown by hand from a plane or dinghy to attract attention following a forced landing.

Sea Markers:
These devices are designed to be dropped on the sea to produce a surface patch readily visible from the air in daylight for purposes of navigation or identification. Generally, aluminum powder is used as the filling, with stearic acid incorporated to form a slick.

Smoke Generators:
Smoke generators are designed to emit smoke, sometimes colored, upon ignition of their filling. Only one type of generator is discussed, since it is the only one intended to be dropped from aircraft in flight.

FLAME FLOAT, NAVIGATION



BRITISH

FLAME FLOAT

Aircraft, Navigation, Mk I

(Obsolescent)

OVERALL LENGTH (extended)	17 in.
OVERALL LENGTH (collapsed)	8 in.
MAX. BODY DIAMETER	3.7 in.
FILLER	Calcium phosphide
FILLER WEIGHT	2 lbs.
TOTAL WEIGHT	3.2 lbs.
EFFECTIVE ILLUMINATION	5 min.
COLOR	Cylinder painted red with yellow label on lid.

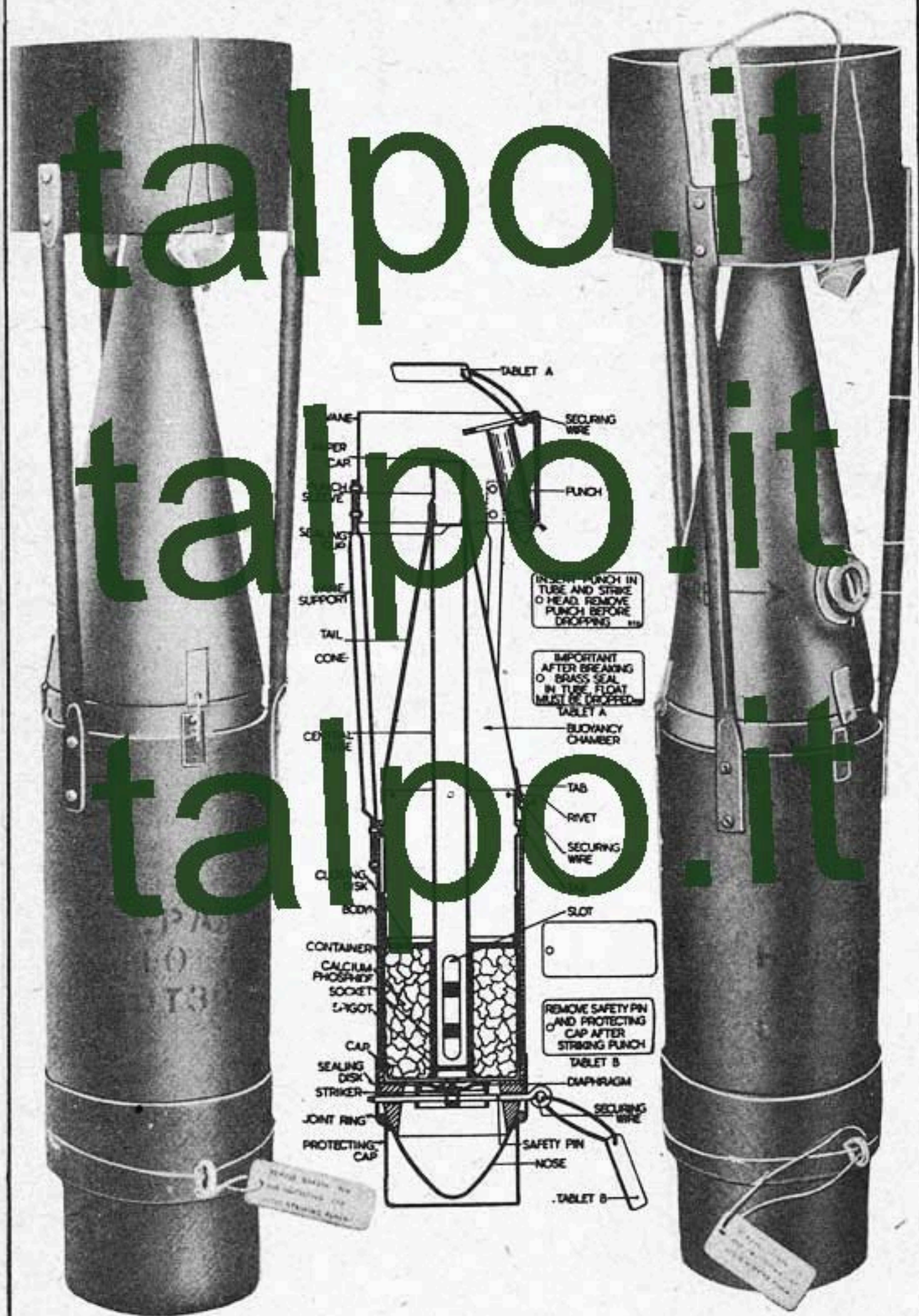
DESCRIPTION — Cylindrical tinplate canister with a tinplate lid having a central aperture soldered over the top of the canister and a piece of brass sealing patch soldered over the aperture. Soldered to the lid is an iron gauze tube, which extends axially nearly to the bottom of the canister, and is closed at its lower end. The annular space outside the gauze tube is filled with granular calcium phosphide. The base of the canister is closed by a circular disc of tinplate. The canister is surrounded by an outer fabric bag, which is considerably longer than the canister. Secured by a double row of stitching inside the outer fabric bag, above the canister, is a second fabric bag, termed the inner fabric bag. Above the top of the canister, in the walls of the inner and outer fabric bags, at different levels, are two eyelets. The pull-off line passes through the aperture in the leather patch at the top of the inner fabric bag and through the neck of the outer fabric bag, the aperture being a fairly snug fit on the line.

FUNCTIONING — When the flame float has been prepared for use by removing the brass sealing patch and has been dropped into the sea, water passes through the eyelets and into the canister through the aperture in its lid. The water enters the gauze tube through which it penetrates into the calcium phosphide filling. Phosphine is then evolved, inflating the inner fabric bag, and providing sufficient buoyancy to bring the flame float to the surface of the sea. The gas escapes from the neck of the outer fabric bag and takes fire spontaneously in contact with the air, producing a highly luminous flame.

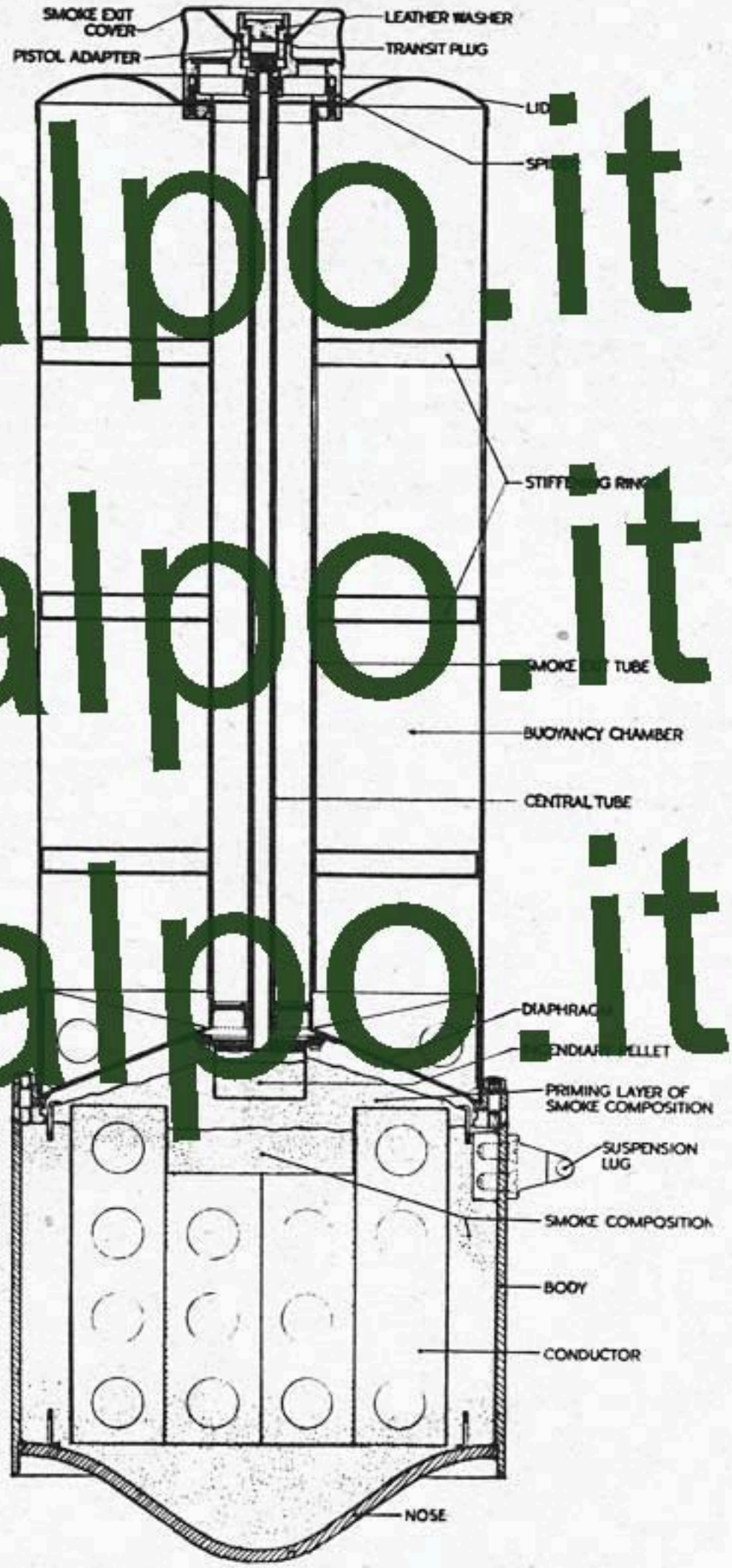
REMARKS — It may be dropped from any height and gives a reasonably steady and bright flame for about five minutes. A flame continues for a further 15 minutes, but it becomes increasingly feeble and intermittent.

If the sealing patch of the canister has been removed, the flame float must be dropped or removed to a safe place for disposal.

FLAME FLOAT, NAVIGATION



SMOKE FLOAT



BRITISH

SMOKE FLOAT

No. 2, Mks I & II

(For Mk I see "SIMILAR FLOATS" below)

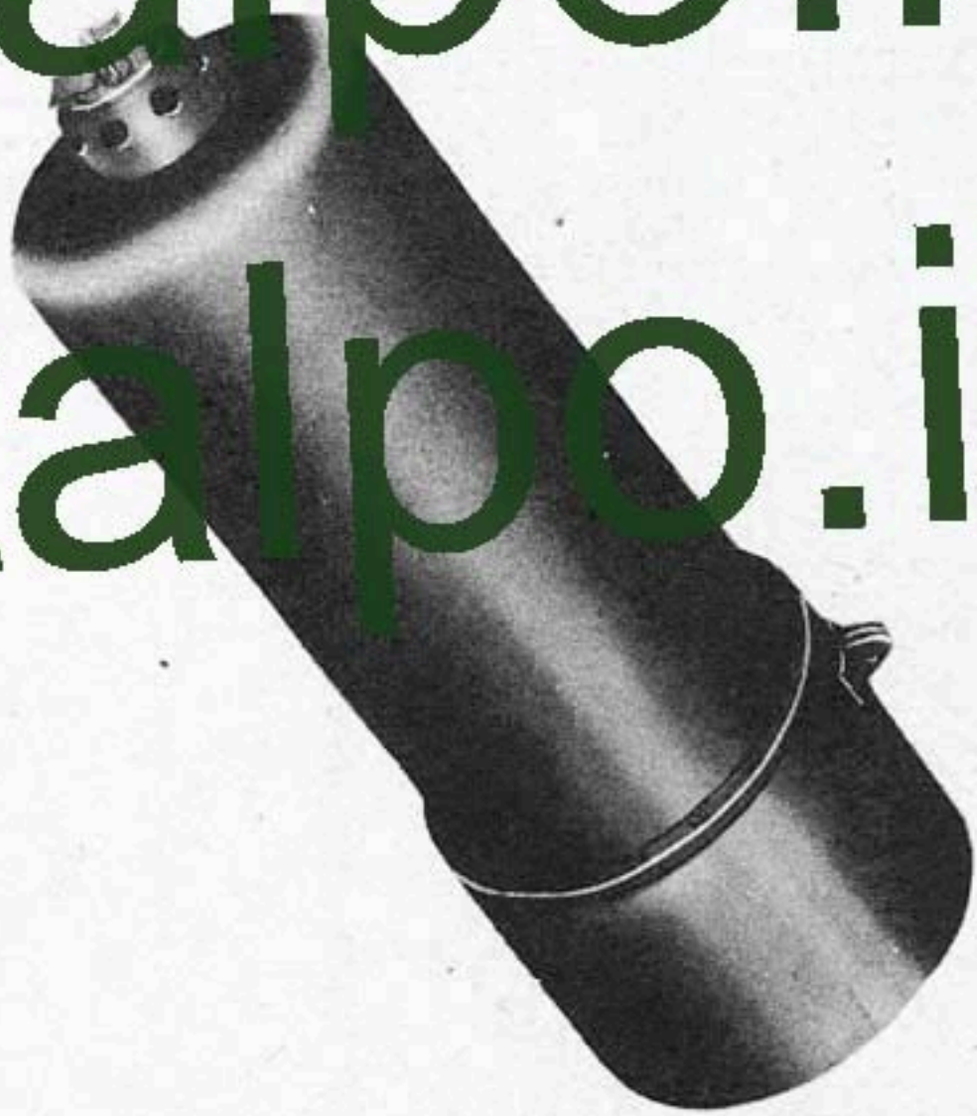
(ONLY...

FUZING . . . . . Tail Pistol No. 48
COLOR & MARKINGS . . . . . Green overall; red band around nose, yellow band around tail.
OVERALL LENGTH . . . . . 45.5 in.
MAX. BODY DIAMETER . . . . 13 in.
TOTAL WEIGHT . . . . . 108 lbs. (empty)
DURATION OF BURNING . . . 8-10 minutes
COLOR OF SMOKE . . . . . .

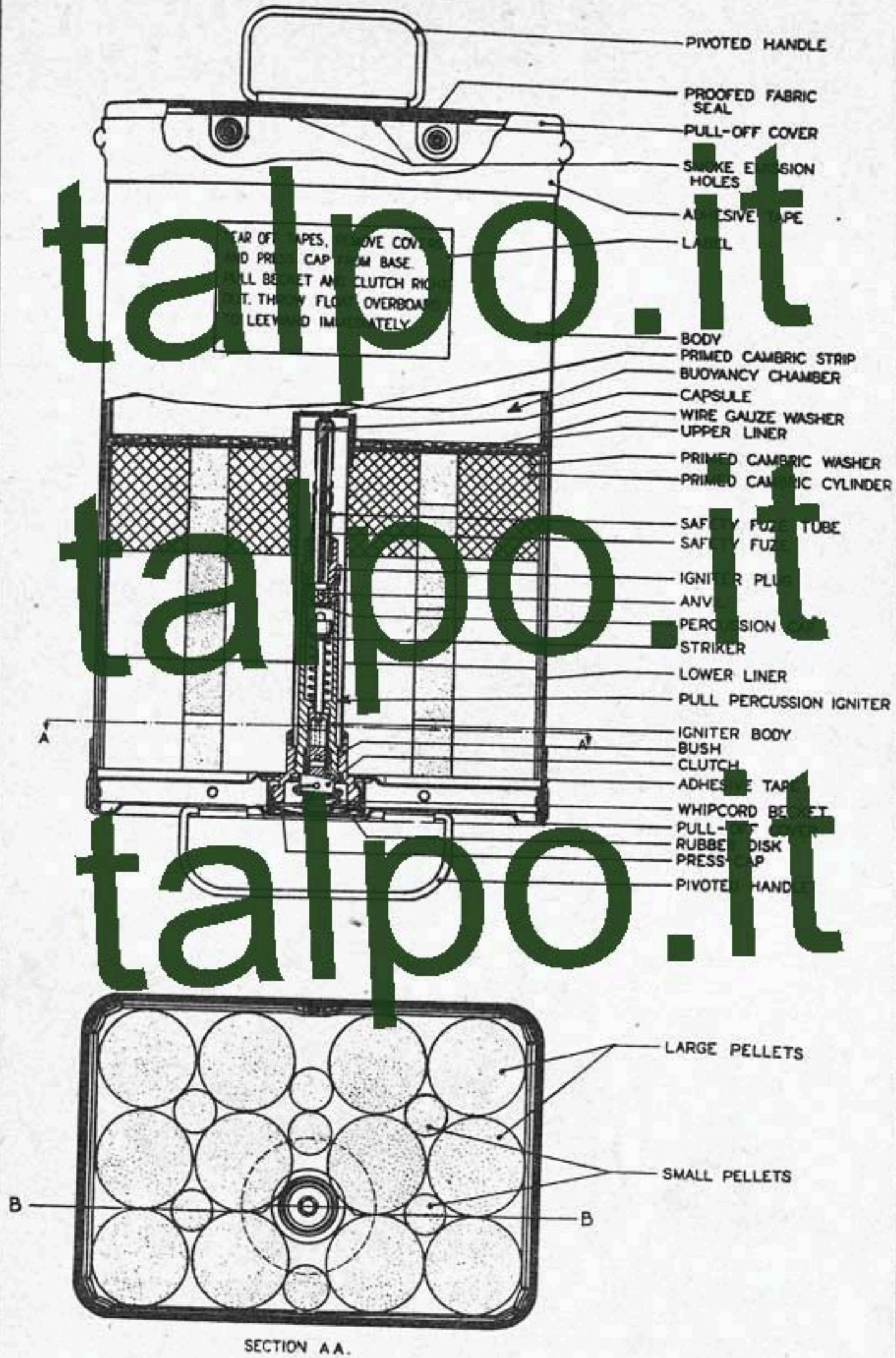
DESCRIPTION — This float consists of a cylindrical body with a rounded nose containing the smoke composition. The nose piece is [illegible] to a metal band passing around the body at the joint. The rear of the body is cylindrical and contains a central well filled with primed cambric. At the end of the centre well is the pistol well. The body has several internal stiffening rings. The float is suspended in the carrier by a single suspension [illegible] the base of the float.

FUNCTIONING — When the fuzed float is dropped, the striker overcomes the creep spring on water impact and fires a detonator located below the pistol in the pistol well. The flash is carried to the smoke composition in the nose of the float by means of the primed cambric in the central well.

SIMILAR FLOATS — No. 2 Mk I : The forward end is reduced in diameter about [illegible] for a distance of about one foot.



SMOKE FLOAT



SECTION AA.

BRITISH

SMOKE FLOAT

No. 3, Mk I

(Obsolescent)

FUZING . . . . . Pull-Percussion igniter
COLOR & MARKINGS . . . . Upper half of body is yellow; lower half green, with red band ½" wide 2" from bottom.
OVERALL LENGTH . . . . 10.1 in.
WIDTH . . . . . 6.7 in.
DEPTH . . . . . 4.95 in.
DURATION OF SMOKE EMISSION . . . . . 4 min.
COLOR OF SMOKE . . . . . Red

GENERAL: This smoke float is intended for use from an emergency dinghy, after a forced landing has been made, to assist search planes.

DESCRIPTION: Consists of a thin metal body at the upper end of which six smoke emission holes are covered by a proofed fabric seal. A wire gauze washer held in place by an upper and lower liner divides the body into two portions, the upper portion comprising a buoyancy chamber, and the lower portion housing a number of large and small smoke pellets disposed around a pull-percussion igniter. The large smoke pellets are arranged in tiers, the pellets in the upper tier each contained in a primed cambric cylinder. Below the wire gauze washer, a primed cambric washer rests on the upper ends of the primed pellets, and strips of primed cambric cross over the igniter. The igniter, which is secured to the body, includes a clutch movable lengthwise in the igniter body. A whipcord becket is secured to the head of the clutch and threaded through a rubber disc. The upper end of the clutch is sprung over one end of a striker which is spring loaded when the clutch is pulled out. Opposite the free end of the striker is a percussion cap and an ignition composition filled igniter plug screwed into the igniter body. A length of safety fuze embedded in a tube terminates in a capsule filled with igniter composition.

FUNCTIONING: When the clutch is pulled out, the striker is released and fires the percussion cap. The flash from the cap ignites the safety fuze which fires the igniter composition and the capsule after a delay of not less than 8 secs. The flame from the igniter composition is conveyed by the primed cambric strips and the primed cambric washer to the pellets in the upper tier. The smoke produced raises the pressure in the buoyancy chamber until the pressure bursts the proofed fabric seal, and the smoke escapes to the atmosphere, through the smoke emission holes.

REMARKS: When the float is to be used proceed as follows: remove the adhesive tapes securing the covers and remove both covers; press in the center of the press-cap to release the cap, then remove the cap; pull the whipcord becket and the clutch right out of the float, and immediately throw the smoke float overboard to leeward.

SEA MARKER, AL.

BRITISH

SEA MARKER,AL.

Mk I

(Service)

LENGTH . . . . . 4.5 in.

WIDTH . . . . . 3.5 in. sq.

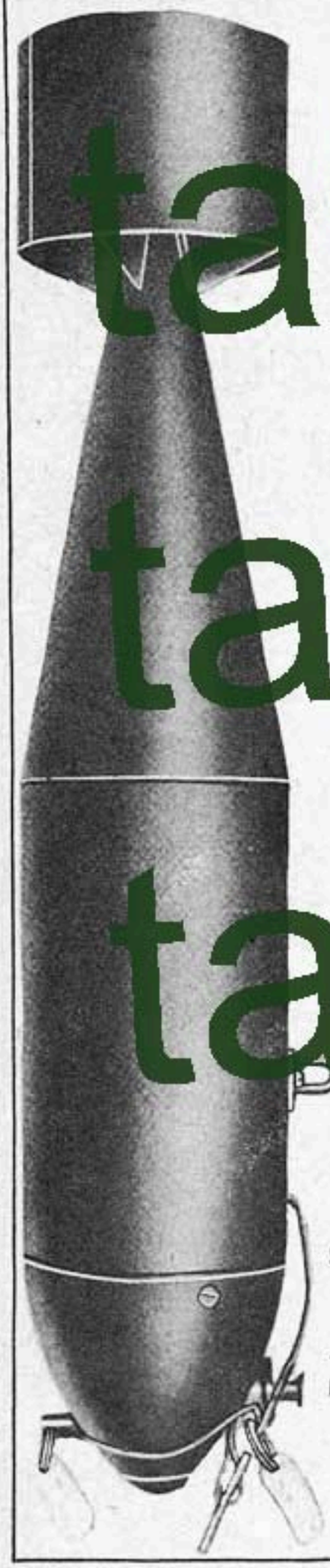
WEIGHT . . . . . 1 lbs.

COLOR . . . . . Aluminum

DESCRIPTION — The marker consists of a fragile, paper-sided body of square cross section, fitted with wooden end pieces and filled with aluminum powder. The outside is painted with aluminum paint. The body is surrounded by a loose cardboard sheath to protect it from damage while being handled.

FUNCTION — When the sea marker is dropped from a plane, the sheath separates from the marker, and the latter bursts on impact with the sea, leaving a patch of aluminum powder floating on the surface.

SEA MARKER, AL.



TAIL DRUM
VANE SUPPORT
TAIL CONE
STRENGTHENING BAND
BODY
ALUMINIUM POWDER
SUSPENSION LUG
DETONATOR BURSTER TUBE
STRENGTHENING BAND
DIAPHRAGM
PLUG
SHEAR WIRE
NOSE
STRIKER GUIDE
STRIKER NEEDLE
FLANGE
SAFETY PIN
TRANSIT SAFETY PIN
SECURING WIRE
STRIKER HEAD
TABLETS
WITHDRAWAL WIRE

BRITISH

SEA MARKER, AL.

Mk III

(Service)

FUZING . . . . . Simple impact striker

COLOR . . . . . Aluminum overall

OVERALL LENGTH . . . . . 23.12 in.

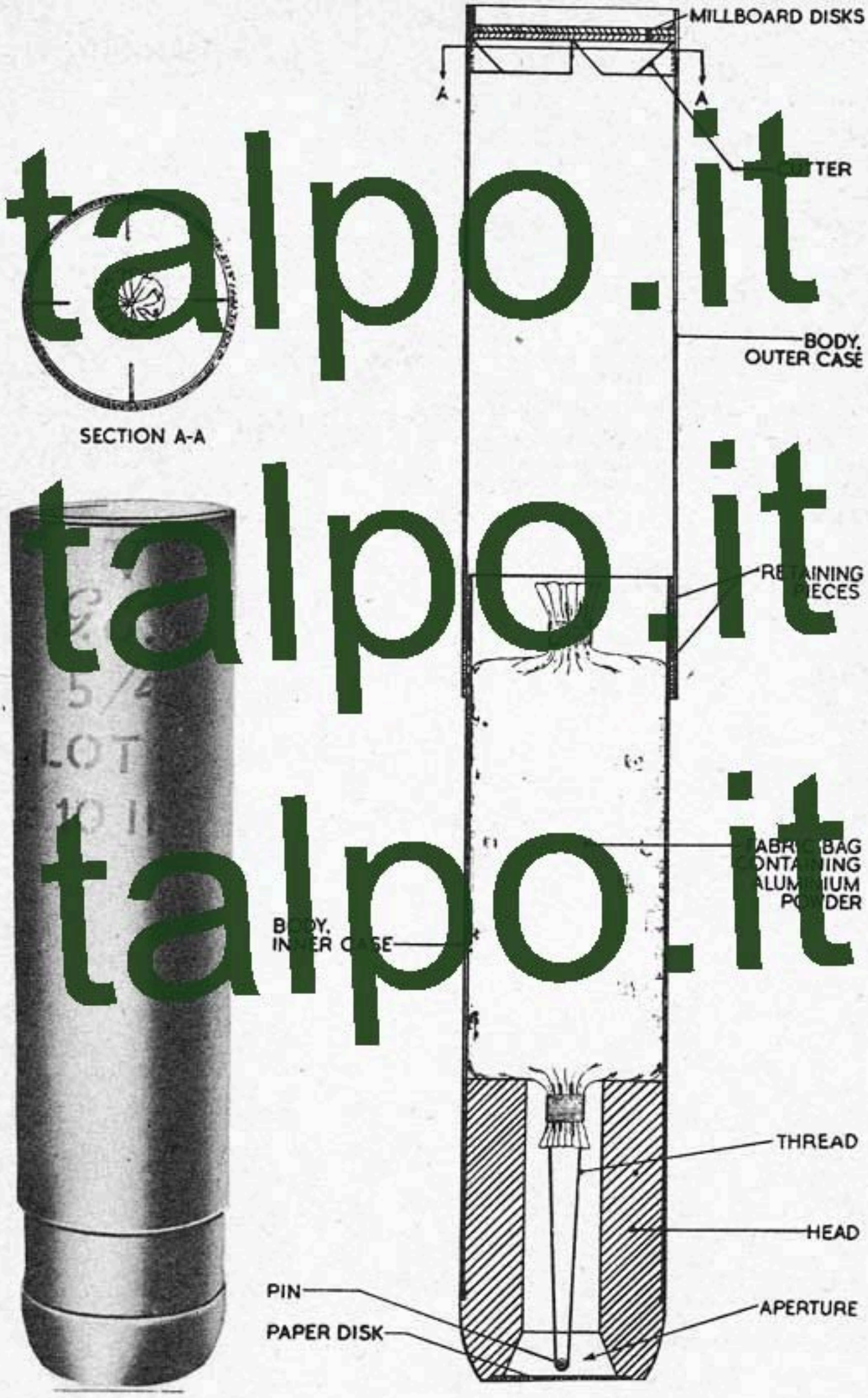
MAX. BODY DIAMETER . . . . 4.4 in.

TOTAL WEIGHT . . . . . 10.25 lbs.

DESCRIPTION — Cylindrical tinplate body, containing aluminum powder, and a detonator-burster charge which explodes when the marker is dropped on the sea, rupturing the body and scattering the aluminum powder contained therein. The body has an internal strengthening band near each end. A tail cone is soldered to the body, and carries the fins to which a tail drum is secured. At the other end the body is closed by a steel diaphragm. The diaphragm has a central opening, threaded to receive a plug, which carries a detonator-burster charge. A nose is fitted to this diaphragm and secured in position by three set screws. Screwed into the nose is a striker guide in which slides a striker needle, secured to a striker head which projects outside the nose. When in its operative position, a transit safety pin engages with the striker head, preventing it from moving inwards. A second safety pin is provided in the nose. This pin is flanged and is spring-loaded outward, but normally is held in its operative position by a split pin to which a withdrawal wire is secured. A securing wire is passed through the eye of the split pin, around the head of the safety pin and the nose of the marker, and through a boring in the transit safety pin.

FUNCTIONING — When the sea marker has been prepared for use and dropped on the water, the impact of the striker head with the water drives the striker needle inwards and explodes the detonator-burster charge, which ruptures the body and tail cone and scatters the aluminum powder.

SEA MARKER, AL.



BRITISH

SEA MARKER, AL.

Mk V

(S...vi...

OVERALL LENGTH (telescope) . . . 12.5 in.

OVERALL LENGTH (extended) . . . 20 in.

MAX. BODY DIAMETER . . . . . 3 in.

WEIGHT . . . . . 10 lbs.

COLOR . . . . . Aluminum

DES...ON ...dy i...r cas...f s...et meta... the lower ...d of ...hich is ...asse...on to a...eav...aperture...head. The ...ertu...e in the ...ead i...sealed ...a ...per disc ...nd is trav...sed ...a pin. To th...upper ...d of ...bo... inn... case a ...irc...ar retai...ng piece i...secur...d. Inside the b...y in... case ...a f...ric ... conte...ing ...uminum ...owder, each ...d of ... bag being ...ied ...h thre... to c...se ... The thread ... lower c... of t... fabric bag is pa...d ar...d t...n, t... hol... th...g in contact with the head. A body outer case s...s ov...the inner case. ...t its upper end the body outer case is closed by two millboard discs, and inside ... lower end a circular retaining piece is secured to provide a stop to prevent its ...ing withdrawn completely from the body inner case. Immediately below the millboard discs a cutter is provided. The cutter is a ring secured inside the outer case and cut across in four places at about 45 degrees, the cut ends bent up at right angles to form four projections within the outer case.

FUNCTIONING T... head is the heaviest part of the marker and co...equently wi... strike the water first. Impact with th... su...ce of the wa...r break... the paper d... ...ling the ape...re i... the head. ...ter en... ...s ape...ure ... car... th... fabric ...g rearwards ...rom ...e head, break... the t...ead w...h an...ors ... to th... in ...d also ...ecting the ...llbo...d discs ...ling ...e aper...re a... the ...il end ... th... body out... case. As ...e b... passes through ...his apertu... ... stri...es ...e sharp ...ro...ting par... of the cu...er, ...ich slit it... relea... ...its con...s. ... a resu... a ...tch of ...minum powd... is ...rmed on the sur...ce o... the sea.

REMARKS The mark... contains no explosive.

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BRITISH

250 LB. SEA MARKER

No. 19 Mk I

(Service)

FUZING	Nose fuze No. 848 or 860
COLOR & MARKINGS	Black overall with ½" red band near the nose; words "Sea Marker Flame" stencilled in white on both body and nose, with the number "19" three places on the nose.
TAIL NO.	No. 35 Mk I
OVERALL LENGTH	[illegible].5 in.
MAX. BODY DIAMETER	[illegible] in.
FILLING	[illegible]dium phosphide and [illegible]phosphorus

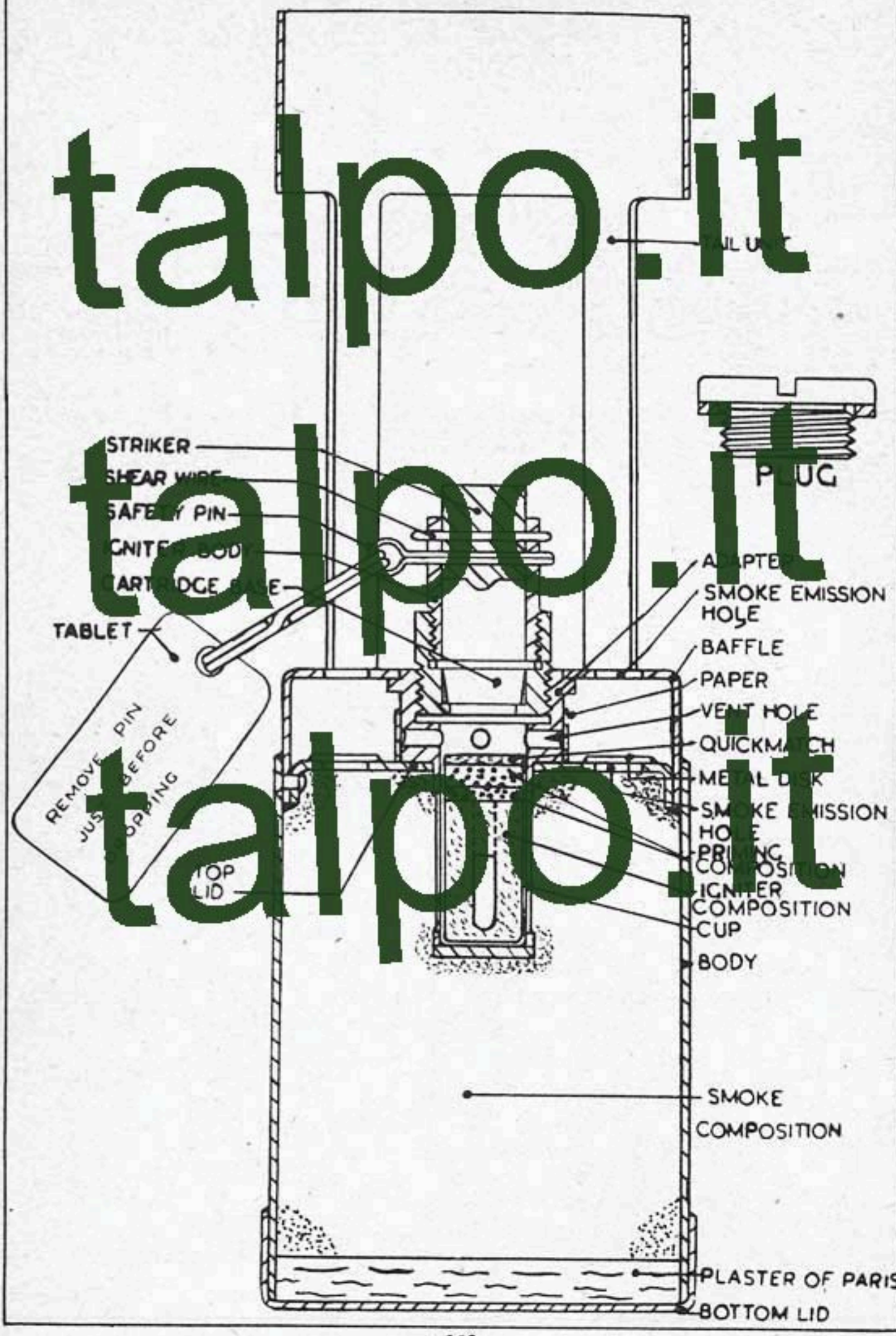
DESCRIPTION

This bomb consists of the normal 250 lb. T.[illegible] bomb casing (see page 131) without the canales and with an altered internal construction. The canister is divided into two parts by a tinned plate, the upper part acting as [illegible] chamber and the lower containing the filling. Two inlet holes and a charging hole are drilled through the lower part of the canister. Each inlet hole is covered with wire netting soldered to the inside of the canister, and the charging hole is sealed with a plug. The canister is seated on an ejector plate and is retained in position by a thin metal diaphragm soldered to the bomb body below the tail plate and by six equi-spaced wooden battens extending between the ejector plate and the diaphragm.

FUNCTIONING

On release from the aircraft, the bomb falls in a normal manner until the fuze functions. The explosion of the booster charge forces off the tail plate and ejects the canister. On impact, the water percolates through the inlet holes, and on surfacing, the generated phosphine gas burns spontaneously, giving a luminous flame about [illegible] ft. long. At the same time a cloud of white smoke is emitted for about 5 [illegible]8 minutes.

SMOKE GENERATOR



BRITISH

SMOKE GENERATOR

No. 6, Mks. I & II

(Service)

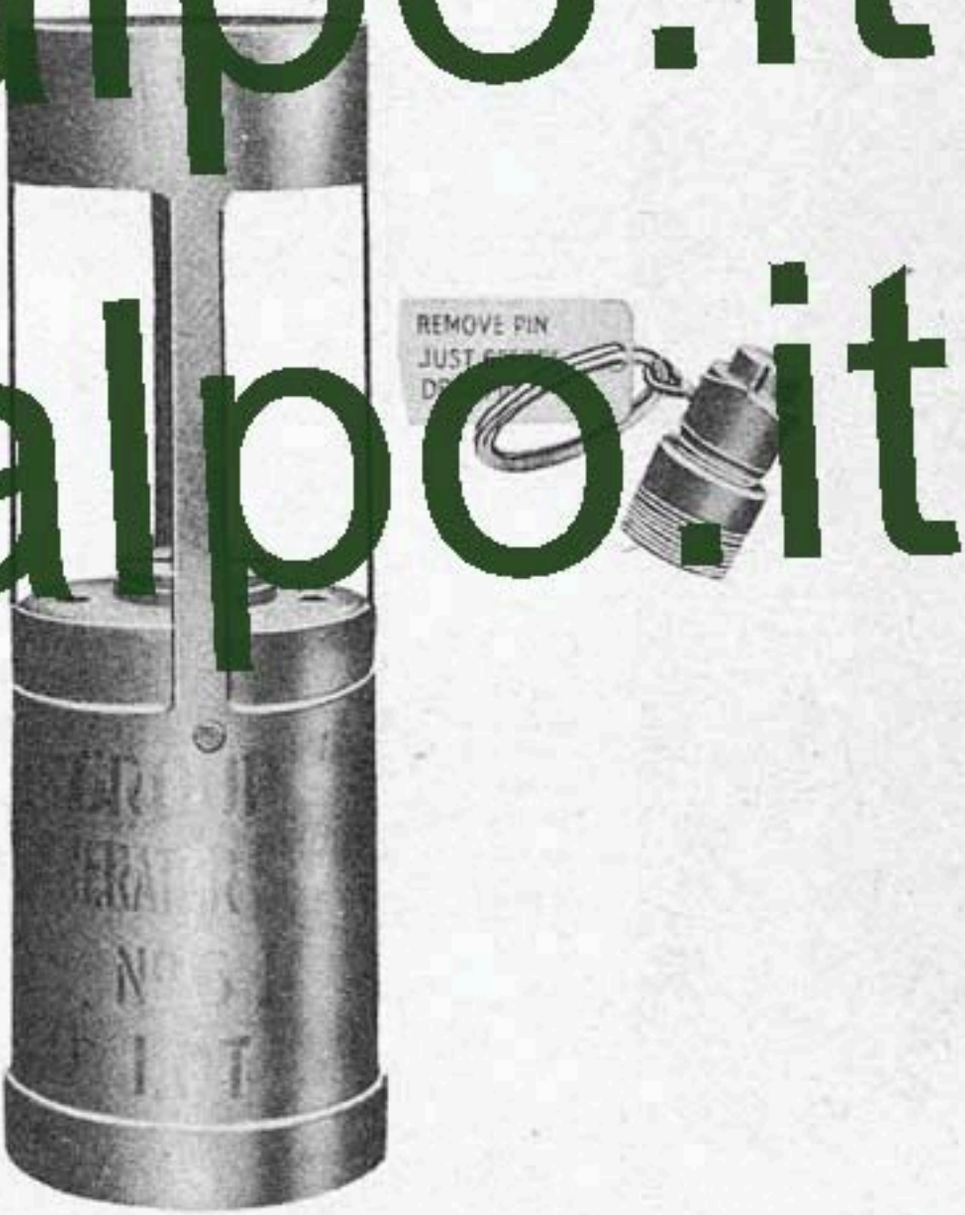
FUZING	Percussion igniter
COLOR & MARKINGS	Light green overall
OVERALL LENGTH	7.13 in.
MAX. BODY DIAMETER	2.42 in.
SMOKE COLOR	Orange
TOTAL WEIGHT	1 lb.
EMISSION TIME	2½ min.

DESCRIPTION

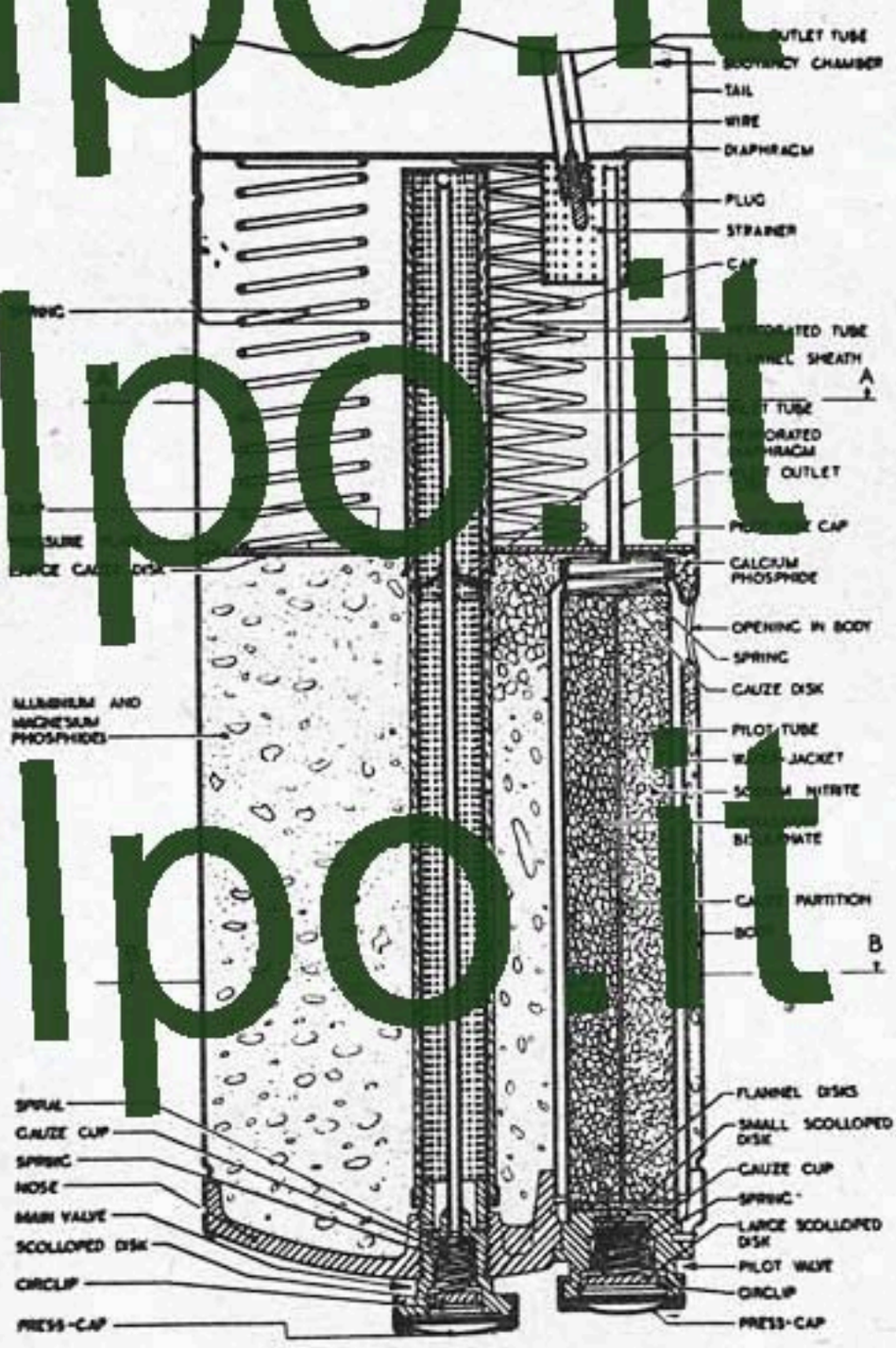
The smoke generator is designed to be dropped from an aircraft to enable the pilot to ascertain the direction of the wind on the ground before making an emergency landing. It consists of a cylindrical metal body containing smoke composition, a plugged adapter containing ignition composition in a metal foil cup, a quantity of priming composition, and a length of quickmatch. When prepared for use a percussion igniter replaces the adapter plug. A tail unit is formed integrally with the body, and the upper end of the body is closed by a lid. The igniter consists of an igniter body, a striker supported above the cartridge base by a shear wire, and a safety pin. The cartridge base includes a small quantity of lead composition located between a percussion cap and an anvil.

FUNCTIONING

The safety pin is removed just before the generator is dropped. On impact the striker moves downwards, breaks the shear wire, and fires the cap composition in the cartridge base. The flash from the cap composition ignites the quickmatch which, in turn, ignites the priming composition in the adapter. The priming composition ignites the ignition composition which, in turn, ignites the smoke composition. The heat due to the combustion of the smoke composition loosens the metal discs covering the smoke emission holes in the top lid, and the pressure of the smoke forces the discs off the top lid, allowing the smoke to escape to the atmosphere. Orange coloured smoke is emitted for about 2½ minutes.



MARINE MARKER



BRITISH

MARINE MARKER

Mk. I

(Ob[illegible])

OVERALL LENGTH	26.8 in.
MAX. BODY DIAMETER	5.8 in.
TOTAL WEIGHT	16 lbs.
FILLER	Aluminum and magnesium phosphides
EFFECTIVE ILLUMINATION	2 hours
COLOR	Body and nose red; tail and tail cap yellow.

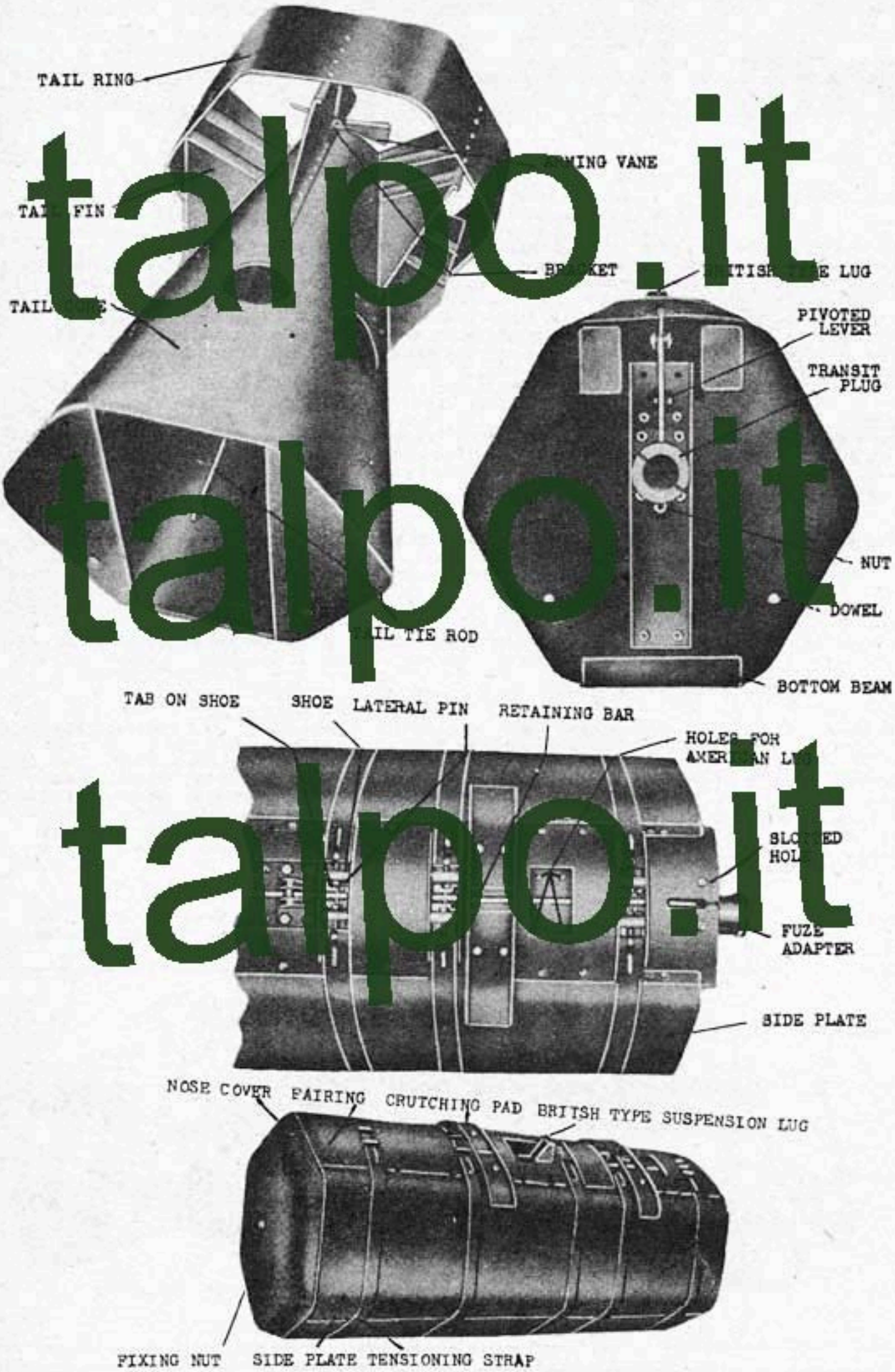
DESCRIPTION — When the marker has been prepared for use and dropped into water, the water locket fills and the scalloped disc in the main valve and the large disc in the pilot valve are forced against the ledges in the valves, thus preventing too great an ingress of water while it is submerged. Some water, however, enters the main outlet tube, passes through the pressure plate, and reacts with the calcium [illegible]. This action evolves impure phosphine which ignites spontaneously when the marker surfaces. As it surfaces, the pressure closing the valves is relaxed, and the springs return the discs against the circlips, thus permitting the ingress of water through the scallops in the disc to the bottom of the inlet tube and pilot tube. The water entering the main valve passes through the inlet tube into the perforated tube, and after passing through the perforated diaphragm percolates through the flannel sheath and reacts with the main charge to give off pure phosphine, which is not spontaneously inflammable. The cap over the free end of the perforated tube prevents the water from percolating through the part of the flannel sheath above the pressure plate.

The water entering the pilot valve percolates through the flannel disc and dissolves the potassium bichromate and the sodium nitrite, which interact and evolve nitrous oxides and nitrogen which mix with the phosphine in the container. The mixed gases are spontaneously inflammable in air and, passing through the main outlet tube, ignite immediately on reaching the air. The flame thus produced continues to burn evenly for approximately 2 hours, during the whole of which time the gases remain spontaneously inflammable, so that even if the flame is put out by a wave, it lights up again as soon as contact with air is re-established.

The flame is visible, either from the air or from the bridge of a surface vessel, in daylight over a distance of at least three miles, and at night over a distance of about 20 miles, and white smoke is given off with the flame.

REMARKS — In damp atmosphere, after removal of the overseals and press-caps, this marker evolves spontaneously inflammable phosphine, and for this reason should be prepared for use only just before it is to be launched.

CLUSTER PROJECTILE NO.6 MK.I



BRITISH BOMB

CLUSTER PROJ.

No. 6, Mk. I

(Service)

FUZING . . . . . Tail Fuze No. 867 Mk I
COLOR . . . . . Dark green overall
CONTENTS . . . . . Ninety 4 lb. smoke bombs
OVERALL LENGTH . . . . 72"
WIDTH ACROSS FLATS . . 16"
TOTAL WEIGHT . . . . . 428 lbs.
TAIL LENGTH . . . . . 27"
TAIL WIDTH ACROSS FLATS . . 16"
TAIL NO. . . . . No. 45 Mk. I.

DESCRIPTION: The cluster is hexagonal in cross section and comprises ninety 4 lb. smoke bombs, arranged in five faggots of eighteen. The bombs are arranged in rows, the bombs in alternate rows being point in opposite direction. The bombs are held in place by a front end plate and a rear end plate, a top beam and a bottom beam, four side plates, tensioning straps, and a retaining bar. Lateral pins on the retaining bar engage tabs forming part of shoes attached to the ends of the tensioning straps. A shear wire passes through the retaining bar and a bridge on the top beam. The four side plates, together with the two beams, completely surround the bomb cluster. A channel secured to the rear end plate supports a fuze adapter, the outer end of which is closed by a transit plug and leather washer. Inside the adapter is a piston through which is a pin to engage the lower end of a pivoted lever. The fuze adapter and piston are slotted to receive the lever, which is connected at its upper end to the retaining bar.

The rear end plate has two dowels for locating the tail in position, and a nut welded to the center of the plate receives one end of a tail tie rod when the tail unit is fitted to the cluster. The front end plate has two dowels for locating a nose cover in position. A screw bolt is screwed into the center of the front plate to receive a fixing nut when the nose cover is fitted to the cluster.

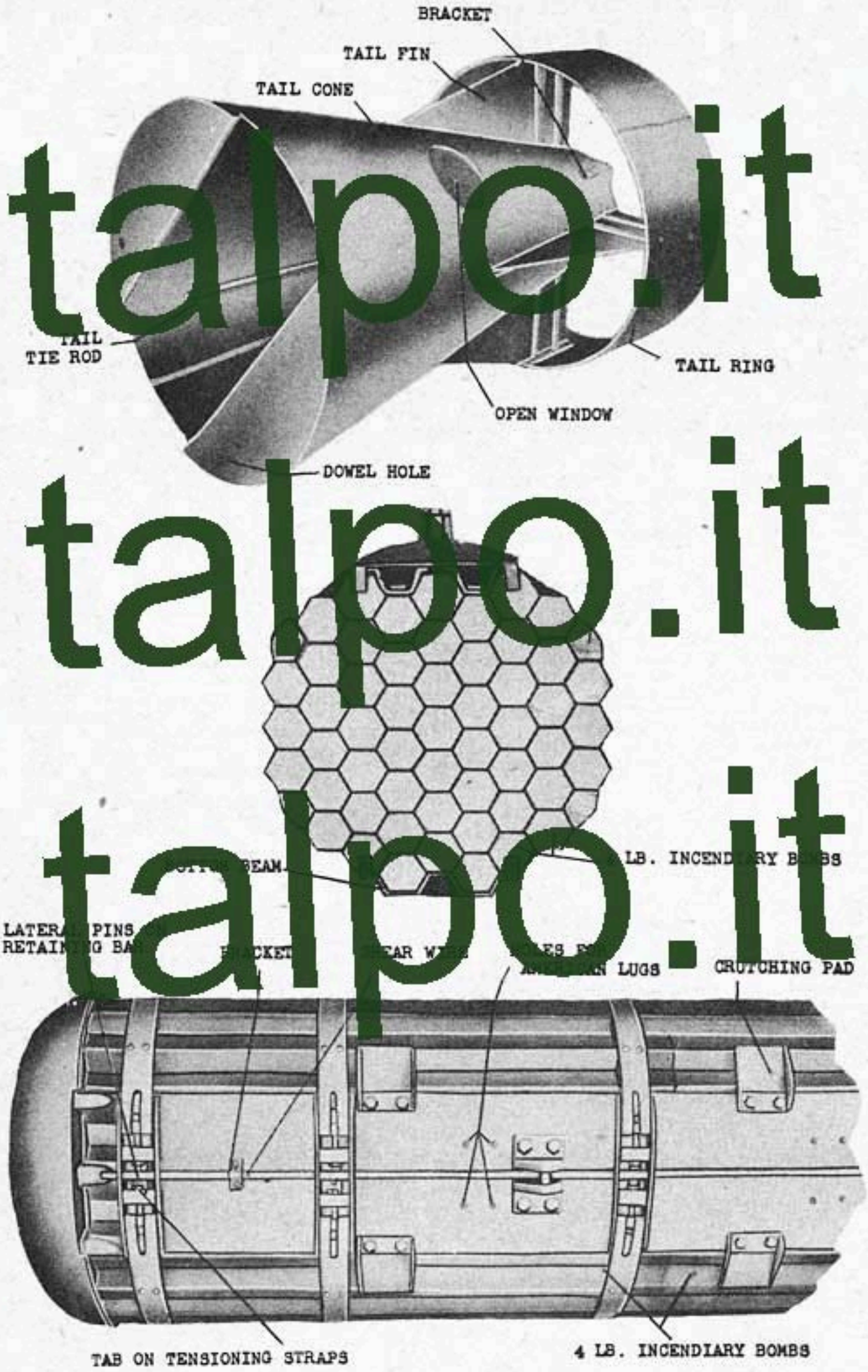
TAIL UNIT: The tail unit consists of a tail cone with an approximately hexagonal base, and a tail fin secured to the cone by screws. At the base of the tail cone are holes to fit over the dowels on the rear end plate of the cluster. A tie rod passes through the center of the tail, one end of this rod is threaded to screw into the central nut on the rear end plate. The other end of the rod is fitted with a tensioning nut for securing the tail to the cluster. The tail unit also has an arming spindle mounted in bearings and having a fork at its inner end and an arming vane at its outer end. The safety wire, when fitted, passes through holes in a bracket, a projection on the support for the arming spindle bearings, and a blade of the arming vane. Two inspection windows in the tail cone are provided to enable the armorer to watch the fork of the arming spindle when fitting the tail unit.

SUSPENSION: A British type suspension lug is welded to the top beam of the cluster and two lugs are provided for fitting American type lugs.

FUNCTIONING: When a cluster projectile fitted with a No. 867 fuze is released, the safety wire is withdrawn from the tail unit arming vane and the shear wire of the fuze is broken to release the fuze safety pin. After a period of delay during which the cluster projectile falls freely, the fuze magazine is fired. The products of combustion of the magazine charge force the piston in the fuze adapter against the lower end of the pivoted lever, which is thus rocked about its pivot and exerts a pull on the retaining bar of the cluster. The pull breaks the shear wire passing through the retaining bar, and moves the bar so that its pins disengage the tabs on the shoes attached to the tensioning straps. The straps then fly outwards and the cluster disintegrates, its component parts falling away separately. The individual bombs function on impact.

REMARKS: If the smoke composition used in the 4 lb. smoke bombs gets wet, and especially if wetted by sea water, it is liable to spontaneous combustion through chemical action.

CLUSTER PROJECTILE NO.14 MK.1



FUZING . . . . Nose Fuze No. 42, Mk IV
COLOR . . . . Dull red overall; one of tensioning straps painted bright red.
CONTENTS . . . . 106 4 lb. incendiaries
TAIL NO. . . . . No. 42, Mk I
OVERALL LENGTH . . . 67"
DIAMETER . . . . 14"
TAIL LENGTH . . . . . 21"
TAIL DIAMETER . . . . 14"
TOTAL WEIGHT . . . . . 450 lbs.

BRITISH BOMB

CLUSTER PROJ.

No. 14, Mk. I

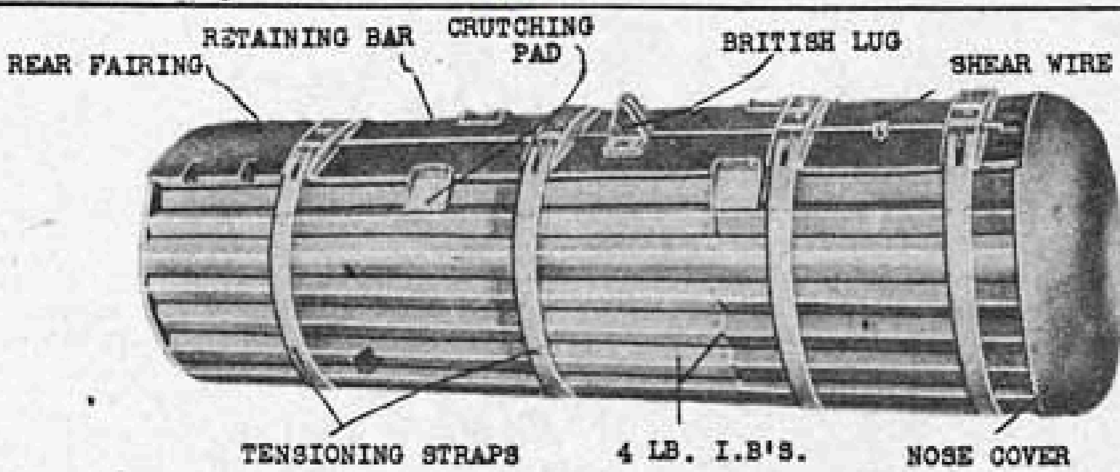
(Service)

DESCRIPTION: The cluster comprises two faggots of 53 bombs each. The bombs in the two faggots are arranged nose to tail and with their safety plungers inwards so that they are all depressed. The bombs are held in place by a front end plate and a rear end plate, a top beam and a bottom beam, four wooden slats, tensioning straps, and a retaining bar having lateral pins which engage tabs on the tensioning straps. A shear wire passes through a bridge and the retaining bar at a position near the rear end plate. A channel, secured to the rear end plate, supports a fuze adapter, the outer end of which is closed by a transit plug fitted with a leather washer. Inside the adapter is a piston through which is a pin arranged to engage the lower end of a pivoted lever. The fuze adapter and the piston are slotted to receive the lever. The upper end of the lever is forked and is connected to the retaining bar. The rear end plate has two dowels for locating the tail in position and a nut welded to the center of the rear end plate to receive one end of a tail tie rod when the tail unit is fitted to the cluster. A nose cover is fitted to the front end plate to decrease the drag of the cluster.

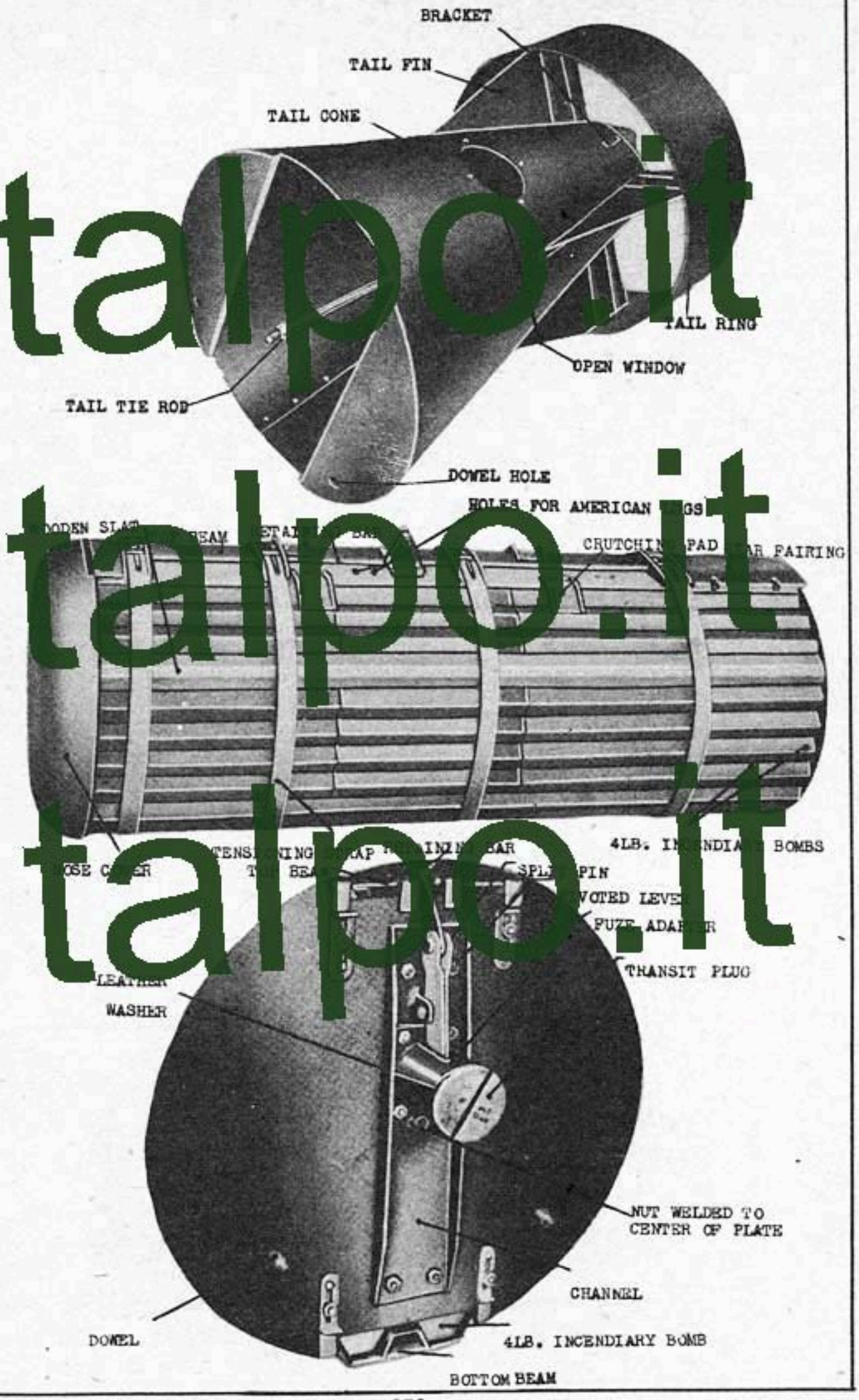
TAIL UNIT: The tail is a shortened drum type tail having a tail cone to which a tail tie is secured by [illegible]. At the base of the tail cone are two holes to fit over the dowels on the rear end plate of the cluster. The tail unit is fitted with a bearing for an arming spindle, so that if it should ever be required to fuze the cluster with an air armed fuze, a suitable arming spindle with an arming vane could be readily fitted. Also, against this contingency, a bracket to receive a safety wire is welded to the tail cone and a hole passes through a projection on the support for the arming spindle bearing. A tie rod passes through the center of the tail and one end of the rod is screw threaded to go into the central nut of the rear end plate. Two windows, one of which is open, are provided in the tail cone. The open window is provided so that when the cluster is prepared for use the fuzing link connected to the pull percussion mechanism of the No. 42, Mk IV fuze can be passed through it and be connected to the fuzing unit of the bomb carrier.

SUSPENSION: A British type suspension lug is fitted to the top beam and tapped holes in the beam are provided for fitting American type lugs.

FUNCTIONING: When a cluster is released from an aircraft, the fuze is functioned and after a period of delay, during which the cluster projectile falls freely, the fuze magazine charge is fired, and the products of combustion of the magazine charge force the piston in the fuze adapter against the lower end of the pivoted lever which is thus rocked about its pivot and exerts a pull on the retaining bar of the cluster. This causes the retaining bar to break the shear wire and to be moved so that the pins on the bar disengage the tabs on the tensioning straps. The straps then fly outwards and the cluster disintegrates, the component parts falling away separately. The individual 4 lb. bombs function on impact.



CLUSTER PROJECTILE NO. 15 MK.I



BRITISH BOMB

CLUSTER PROJ.

No. 15, Mk. I

(Service)

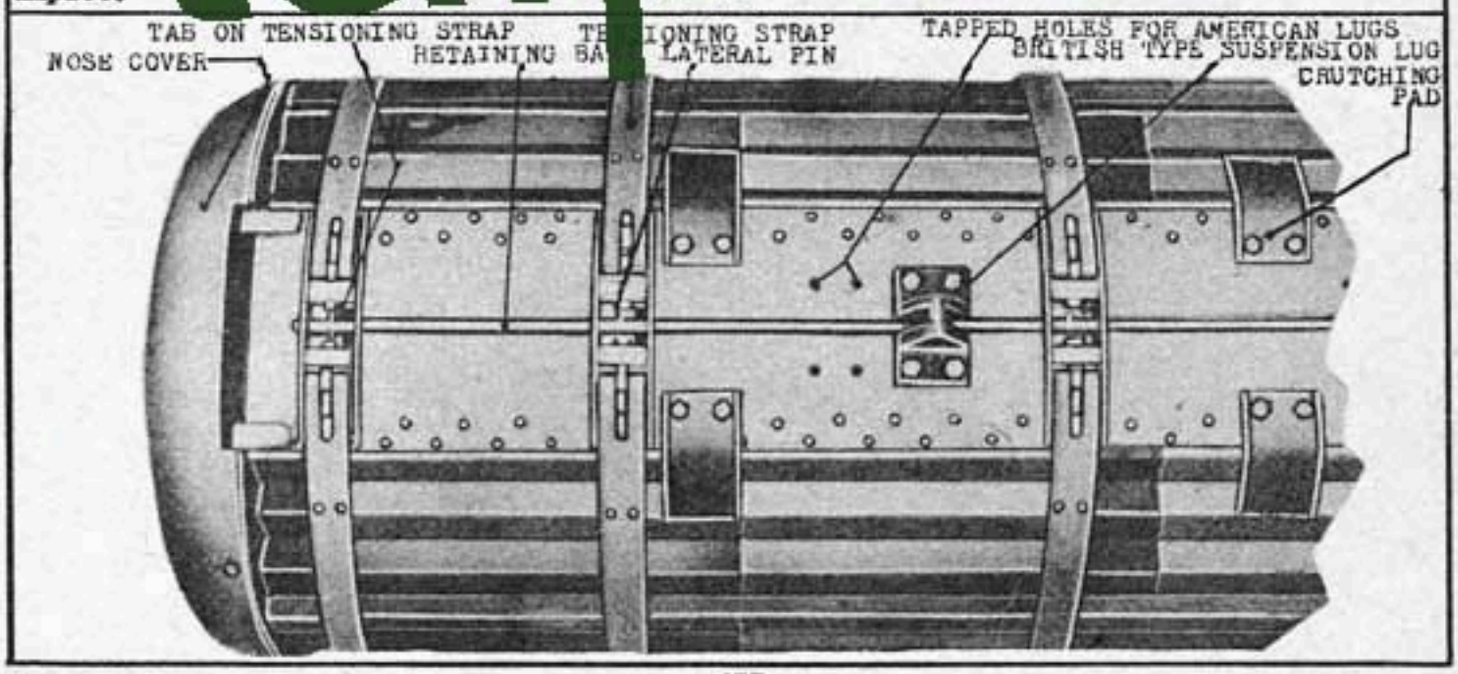
FUZING	Nose Fuze No. 42, Mk IV
COLOR	Dull red overall; one tensioning strap painted bright red.
CONTENTS	158 4 lb. incendiary bombs
TAIL NO.	No. 43, Mk I
OVERALL LENGTH	67"
DIAMETER	17.3"
TAIL LENGTH	21"
TAIL DIAMETER	17.3"
TOTAL WEIGHT	668 lbs.

DESCRIPTION: This cluster comprises two faggots of 79 bombs each, the bombs in each being arranged nose to tail and with their safety plungers outwards so that they are all depressed. The bombs are held in place by a front end plate and a rear end plate, a top beam and a bottom beam, four wooden slats, tensioning straps and retaining bar having lateral pins which engage tabs in the tensioning straps. A lateral pin passes through a bridge and the retaining bar at the rear of the end plate. A channel secured to the rear end plate supports a fuze adapter, the outer end of which is closed by a transit plug fitted with a leather washer. Inside the adapter is a piston through which is a pin arranged to engage the lower end of a pivoted lever. The fuze adapter and the piston are slotted to receive the lever. The upper end of the lever is forked and is connected to the retaining bar. The rear end plate has two dowels for locating the tail in position and a nut welded to the center of the rear end plate to receive one end of a tail tie rod when the tail unit is fitted to the cluster. A nose cover is fitted to the front end plate to decrease the drag of the cluster.

TAIL UNIT: The tail is of the drum type and having a tail cone to which the tail fins are secured by finals. At the base of the tail cone are two holes to fit over the dowels on the rear end plate of the cluster. The tail unit is fitted with a bearing for the arming spindle so that if it should ever be required to fuze the cluster with an armed fuze a suitable arming spindle with an arming vane could be readily fitted. Two windows one of which is open, are provided in the tail cone. The open window is provided so that when the cluster is prepared for use; the fuzing wire connected to the pull-percussion mechanism of the No. [illegible] Mk I fuze can be passed through it and be connected to the fuzing unit of the bomb carrier.

SUSPENSION: A British type suspension lug is fitted to the top beam and tapped holes in the seam are provided for fitting American type lugs.

FUNCTIONING: When a fitted cluster projectile is released, the fuze is functioned after a delay, during which the cluster projectile falls freely, the fuze magazine charge is fired and the products of combustion of the magazine charge force the piston in the fuze adapter against the lower end of the pivoted lever which is thus rocked about its pivot and exerts a pull on the retaining bar of the cluster. This causes the retaining bar to break its shear wire and to move so that the pins on the bar disengage the tabs on the tensioning straps. The straps then fly outwards and the cluster disintegrates, the component parts falling away separately. The incendiary 4 lb. bombs function on impact.



CLUSTER PROJECTILE NO. 17 MK. I

BRITISH BOMB

CLUSTER PROJ.

No. 17, Mk. I

(Service)

FUZING	Tail Fuze No. 885, Mk I
COLOR	Dark green overall
CONTENTS	26 20 lb. Frag bombs (specially designed for use in this cluster)
TAIL NO.	No. 63, Mk I & II
OVERALL LENGTH	63" (with bluff nose)
WIDTH ACROSS FLATS	15" (octagonal in shape)
TAIL LENGTH	27"
TAIL DIAMETER	17.5"
TOTAL WEIGHT	582 lbs.

DESCRIPTION: The cluster comprises twenty-six 20 lb. Frag bombs arranged in two faggots of thirteen. The bombs are held in place by a front end plate and a rear end plate, a top beam and a bottom beam, side plates which overlap each other, and tensioning straps and a retaining bar which hold the components together. The bombs are completely enclosed. Laterally pins on the retaining bar and bombs form part of slots attached to the ends of the tensioning straps. A shear wire passes through the retainfng bar and a bridge on the top beam. A channel secured to the rear end plate supports a fuze adapter, the outer end of which is closed by a transit plug and leather washer. Inside the adapter is a piston through which is a pin to engage the lower end of a pivoted lever. The fuze adapter and piston are slotted to receive the lower end of the lever. The lever can be seen passing into the fuze adapter. Links connect the upper end of the lever to a downwardly projecting plate welded to the retaining bar. The rear end plate has two dowels for locating the tail in position, and a nut welded to the center of the plate, to receive one end of a tail tie rod when the tail unit is fitted to the cluster. The front end plate has two dowels for locating either a bluff nose fairing or a streamline nose fairing in position, and a nut welded to the center of the plate to receive the securing screw of the nose fairing, or the tie rod of the streamline fairing. The bluff nose fairing is fitted to the cluster if it is to be carried internally in an aircraft. The streamlined nose fairing consists of a hollow metal dome, the base of which is partly covered by an end plate welded to the dome, and is to be fitted to the cluster when carried externally on an aircraft.

TAIL UNIT: The No. 63, Mk I tail unit consists of a tail cone, having an approximately octagonal base and a tail drum secured to the cone by six drum supports. The tail unit has an arming spindle mounted in bearings and having a fork at its inner end and an arming vane at its outer end. Two inspection windows in the tail cone are provided to enable the armorer to watch the fork of the arming spindle when fitting the tail unit to a cluster fuzed with a No. 855 tail fuze. The No. 63, Mk I tail is only used when the cluster is carried internally in an aircraft. The No. 63, Mk II tail is similar to the Mk I except that it is generally strengthened and has seven tail drum supports as compared with the six of the No. 63, Mk I tail, and is to be used when the cluster is carried externally on the aircraft.

SUSPENSION: A British type suspension lug is fitted to the top beam and tapped holes in the top beam are provided for fitting American type lugs.

FUNCTIONING: When the fuzed cluster is projected or released, the fuze is actioned and, after a period of delay during which the cluster falls freely, the fuze magazine is fired. The products of combustion of the magazine charge force the piston in the fuze adapter against the lower end of the pivoted lever which is thus rocked about its pivot and exerts a pull on the retaining bar of the cluster. The pull breaks the shear wire passing through the retaining bar and moves the bar so that its pins disengage the tabs on the tensioning straps. The straps then fly outwards and the cluster disintegrates, its component parts falling away separately. The individual bombs descend, supported by their parachute, and function in the normal manner.