AMMUNITION BULLETIN Nº 9.

FOR INSPECTING ORDNANCE OFFICERS.

(APRIL 1940).

CHIEF INSPECTOR OF ARMAMENTS,
WOOLWICH, S.E.18.

SECURITY.

AMMUNITION BULLETIN NO.9

for Inspecting Ordnance Officers.

Issued .. April, 1940.

Issued by :-

Chief Inspector of Armaments,
Woolwich.

Contents:

82. Details of S.A.P. Bombs with their packages.
83. Machine Fuze setting No.6. - Test for accuracy.
84. Mine, Contact, A.T. Mark IV.
85. Cartridge cases - discolouration.
86. Propellants. - Letters used to indicate various natures.
87. Ammunition for 20 mm. Hispano Gun.
88. Fuze, D.A. Percussion, No.119. Distinctive marking for Mark II fuze.
89. Cartridge, Q.F. - gauging of
90. Fuze setting machine - Correct position of time rings before setting.
91. Amendments to Bulletins Nos. 7 and 8.
92. 40 mm. Ammunition.

82.

DETAILS OF (S.A.P.) WITH

DESIGNATION	MAXIMUM DIMENSIONS IN INCHES		SERIAL Nº AND MARK OF BOX.	CONTENTS OF BOX.	BOX STORAGE DIMENSIONS OR OVERALL LENGTH WHEN TRANSIT BASE IS FITTED		
	LENGTH	DIAMETER			LENGTH	BREADTH	DEPTH
BOMB H.E. AIRCRAFT S.A.P.							
250 LB. MK. I	49·78	9·19	B. 224. MK. I	ONE BOMB TAIL UNASSEMBLED	48·75	15·0	15·25
" MK. II	49·53	"	B. 237. MK I OR MK I M OR B. 266. MK. I	ONE BOMB TAIL ASSEMBLED OR UNASSEMBLED	54·5	15·0	15·25
" MK. II C.	"	"	—	—	54·5	15·0	15·125
" BODY.	31·5	"	—	—	—	—	—
" MK. III	49·53	9·19	—	—	36·39	—	—
" BODY	31·5	"	—	—	—	—	—
" MK. III C.	4·9·53	"	—	—	35·79	—	—
" BODY.	31·5	9·19	—	—	—	—	—
" MK. IV	49·51	"	—	—	36·39	—	—
" BODY.	31·5	"	—	—	—	—	—
" MK. V	49·51	"	—	—	34·43	—	—
" BODY.	31·5	"	—	—	—	—	—
					35·78	—	—
S.A.P. 500 LB. MK. I	62·25	11·53	B. 223. MK I	ONE BOMB TAIL UNASSEMBLED	59·75	18·25	19·25
" MK. II	62·17	"	B. 236 MK I OR MK I M. OR B. 265 MK I	ONE BOMB TAIL ASSEMBLED OR UNASSEMBLED	68·0	18·25	19·25
" MK. II C	"	"	—	—	68·0	18·25	19·125
" BODY.	41·8	"	—	—	—	—	—
" MK. III	62·17	"	—	—	46·7	—	—
" BODY.	41·8	"	—	—	—	—	—
" MK. III C	62·17	"	—	—	47·08	—	—
" BODY	41·8	"	—	—	—	—	—
" MK. IV	62·22	"	—	—	46·7	—	—
" BODY	41·8	"	—	—	—	—	—
" MK. V	62·14	"	—	—	44·77	—	—
" BODY.	41·8	"	—	—	—	—	—
					46·07	—	—

R.2764

AIRCRAFT BOMBS PACKAGES, ETC.

TRANSIT BASE	TAIL PACKING & STOWAGE	MEAN WEIGHT OF BOMB EMPTY. LBS:	APPROX: WEIGHT OF			EXPLOSIVE QUANTITY * LBS.	MARKING	
			BOMB FILLED LBS.	BOX WITH EMPTY BOMB LBS.	BOX WITH FILLED BOMB LBS.		ON BOX	ON BOMB
—	—	190	240	273	322	48·5	NO SPECIAL MARKING GENERAL INFORMATION ONLY	PAINTED YELLOW WITH ONE WHITE & ONE RED RING AROUND NOSE. GREEN BAND AROUND BODY WITH THE LETTERS T.N.T. WHEN SO FILLED. WHEN FILLED T.N.T. BEESWAX A FRACTION, eg., 93/7 IS STENCILLED ON THE BODY BELOW THE BAND.
—	—	192 1/4	238	274 291	320 337	43·75		
—	—	192 1/4	238	—	—	43·75		
N°14 (STEEL)	CRATE B.275. HOLDS.2. 29·15 X 9·6 SQ.	189	234 3/4	—	—	"		
—	—	195	237	—	—	40·0		
N° 3 (WOOD) N°12 (STEEL)	CRATE B.275. HOLDS.2. 29·15 X 9·6 SQ.	191 1/2	233 1/2	—	—	"		
—	—	195	237	—	40·0	"		
N° 14 (STEEL)	CRATE B.275 HOLDS.2. 29·15 X 9·6 SQ.	191 1/2	233 1/2	—	"	"		
—	—	193	235	—	—	"		
N°10 (STEEL)	CRATE B.287 HOLDS. 2. 30·25 X 9·6 SQ.	188	230	—	—	"		
—	CONTAINER. B.302. HOLDS. 1. 18·5 X 10·0 DIA.	200	243	—	—	40·75		
N°22 (STEEL)	CONTAINER B.312. HOLDS. 1. 18·5 X 10·0 DIA.	193 1/2	236 1/2	—	—	"		
—	—	380	476	516	612	94·0	NO SPECIAL MARKING GENERAL INFORMATION ONLY.	FILLED T.N.T. ONLY MARKING AS FOR 250 LB. S.A.P. BOMB.
—	—	387 1/2	480	533	625	89·88		
—	—	387 1/2	480	—	—	89·88		
N°15 (STEEL)	CRATE. B.278 HOLDS. 2 34·4 X 12·0 SQ	382 1/2	475	—	—	"		
—	—	390	481	—	—	89·0		
N° 4 (WOOD) N°13 (STEEL)	CRATE. B.278 HOLDS. 2. 34·4 X 12·0 SQ	385	476	—	—	"		
—	—	390	481	—	—	89·0		
N° 15 (STEEL)	CRATE. B.278 HOLDS. 2 34·4 X 12 SQ.	385	476	—	—	"		
—	—	390	481	—	—	89·0		
N° 11 (STEEL)	CRATE. B.286 HOLDS. 2. 35·45 X 12·0 SQ	378 1/2	470	—	—	"		
—	—	398 1/2	490	—	—	89·75		
N° 23 (STEEL)	CONTAINER B.303. HOLDS. 1. 20·8 X 12·3 DIA. CONTAINER B.313. HOLDS. 1. 20·8 X 12·5 DIA.	386 1/2	478	—	—	"		

* CALCULATED IN ACCORDANCE WITH PARA. 23. MAGAZINE REGULATIONS PART I 1934.

A 2764.

(83) Machine Fuze setting No.6. Test for accuracy.

To test the accuracy of the above fuze setting machine, a dummy round, on the scale of one per battery, has been approved. This test should only be carried out periodically when the machine is suspect or being examined.

The dummy round consists of a service case with a dummy charge, weighted as necessary, to bring it up to the service charge weight of 11-lb.4-oz.4-drs. as used in the 4.5 Q.F. gun. The shell is fitted with an empty No.209 fuze and weighted with sand and shot to bring it to a weight of 55-lb.

The shell has the following marking and stencilling -

Marking ... Body painted black.

Stencilling.. "Fuze setter test" in .5-inch white letters above the shoulder.

To allow for the damage to the fuze caps caused by the knives of the fuze setter, six spare caps will be issued with each dummy round.

The instructions for changing the fuze caps are as follows -

(i) Set the fuze to zero.

(ii) Scrape off with a knife blade the grey enamel on the ends of the long transverse steel pin which passes through the cap immediately below and at right angles to the hole for the setting key. This will expose the ends of the pin which is secured by stabbing. Carefully remove the metal which has been pressed in over the ends of the pin.

(iii) Place the fuze horizontally on any convenient support so that either end of the pin is uppermost and there is clearance below the other end. The cap must be firmly supported at about the level of the hole for the setting key.

(iv) Drive out the pin with a punch not greater than 0.1" in diameter and approximately 0.75" long.

(v) Withdraw the cap by screwing it round in the direction of increasing setting until the index peg disengages from its spiral groove. It can then be pulled off the projecting end of the mechanism key.

(vi) Check for presence of felt washer (impregnated with wax) in the conical recess through which the mechanism key protrudes. This washer may have been withdrawn adhering to the underside of the old cap, in which case it should be replaced in position by threading it over the end of the mechanism key and pressing it well down into the recess.

(vii) Smear the end of the mechanism key, the top of the felt washer and the spiral for the index peg lightly with vaseline.

(viii) Place a new cap in position, screwing it round in the direction of decreasing setting until its index peg is at the bottom of its index slot and the zero graduation on its skirt is opposite the engraved triangle.

(ix)./

(83)-contd.

(ix) Line up the holes for the pin in the cap and the end of the mechanism key by inserting a pointed steel rod (such as a long nail) of slightly smaller diameter than the pin. The mechanism key has limited vertical play and will probably have been pressed down by putting on the new cap. It can easily be lifted so as to bring the holes into line in the manner described above.

(x) Replace the steel pin, driving it home until its ends lie symmetrically just below the surface of the new cap. It is not necessary to stab the pin unless it is so loose that it may come out accidentally.

(xi) Check that the setting of the fuze still reads zero both on the skirt of the cap and according to the index peg.

(84) Mine, Contact, A.T., Mark IV.

This mine (Figs. 14 & 15) is generally similar to the Mark III described in No.5 Bulletin, item 41, from which it differs chiefly in being flatter and of larger diameter, in having a larger bursting charge and in the cover being secured to the body by two steel straps. The straps are riveted to the bottom of the body at the centre, forming four arms; each arm is slotted to receive a pin, four of which are riveted to the cover.

The filling consists of about 8½-lbs. T.N.T.poured or biscuit covered with a waxed felt disc. After filling, the mine is closed with a bottom piece pressed in and coated with cement.

Weight of mine (without fuze and exploders) ... 12½-lbs.
Diameter ... ... 9-inches.
Height ... ... 4.6 "

Marking. The body is painted khaki-green with a ½-inch red band at the bottom and a similar band in green at the top on which is stencilled "T.N.T." in two places. The cover is painted khaki-green all over and the outside surface daubed with black or brown paint.

Packing. Mark IV mines are packed in Crate, packing, mines, Contact, A.T. M.86, Mark I to hold 5. Stowage dimensions L. 25", B. 10", D. 10". Estimated weight - empty 6-lb. filled 71-lb.

The No.3 fuze is packed in Box No.3 fuzes, mine, Contact, A.T. M.85, Mark I. This box contains 4 cylinders No.323, each cylinder holding 5 fuzes. Stowage dimensions L. 28¾", B. 8¼", D.6". Estimated weight - empty 6¾-lb., filled 19-lbs.

Fuze, Mine, Contact, A.T. No.3.

The No.3 fuze (fig. 14) differs from the No.2 described in No.5 Bulletin in having a 5 grain lead azide detonator instead of the No.27 and in the exploder system. This consists of a C.E. and T.N.T. pellet which, with the fuze, is contained in an aluminium magazine, the whole being inserted, when the mine is armed, in a socket formed in the mine body.

The/

The safe load for this mine is the same as for the Mark III, i.e. 320-lbs. and the remarks contained in No.7 Bulletin, Item 64, regarding the handling of the Mark III mine apply, generally, to the Mark IV.

(85) Discolouration of cartridge cases.

A case has occurred recently in which a cartridge case of a 3.7-inch A.A. round packed in a C.213 box was found to have a brownish-black semi-oval mark about 12-inches from the rim. This mark is due to copper sulphide, and is caused by contact between the cartridge case and the vulcanised rubber pad which is fitted to the pillar of the C.213 box. These marks are not injurious and may normally be removed by light rubbing with a cloth.

(86) **Propellants.** Letters used to indicate various natures.

To indicate the various propellants used in the make up of B.L. and Q.F. cartridges, the following letters are employed :-

"C"	indicates	Cordite	R.D.B.
"D"	"	"	M.D. or M.C.
"E"	"	"	W.
"H"	"	"	H.S.C.T. or H.S.C.T/a
"J"	"	"	Bofors.
"S"	"	"	S.C.
"B"	"		Ballistite.

The indicating letter is stencilled in a rectangle in yellow on the side of ammunition boxes and containers, in blue on B.L. cartridge bags, and in silver nitrate on the side of Q.F. cartridge cases.

(87) Ammunition for 20 mm. Hispano Gun.

This ammunition is of the fixed type and consists of a H.E. cartridge (Fig. 16) using the D.A. No.252 fuze and a Ball cartridge.

The H.E. Shell is fitted near its base with a copper driving band pressed into an undercut groove which is ribbed to prevent the band turning on the shell. The shell filling consists of pressed Composition Exploding (C.E.) or Pentolite. It is screw threaded at the nose to take the No.252 fuze.

The projectile for the Ball cartridge consists of an empty flat nosed shell closed at the bottom with a steel disc riveted in and fitted with a driving band as above.

The rimless cartridge case is of brass, and is fitted at the base with a brass percussion cap filled with about 2.5 grain of cap composition. The case is secured to the shell by four indents.

The propellant charge for H.E. or Ball consists of about 500 grains Neonite N.R.N. No.121 (See Bulletin No.6, Item 56).

Marking on shell.

H.E. filled C.E. The body is painted yellow with a red ring around the nose and the letters "C.E." stencilled

in/

in black on the body.

H.E. filled Pentolite. Body painted yellow with red ring round the nose, a green band round the body and a narrow black band on the green.

The shell for the Ball cartridge is painted black.

Marking on base of case.

H.E. cartridge with Neonite charge. Annulus of cap lacquered black with H.E.IZ on base.

Ball cartridge with Neonite charge. Annulus of cap lacquered dark purple with IZ on base.

For details of packing see Ammunition Bulletin No.7, item 69.

Pentolite consists of a mixture of PENTAERYTHRITOL TETRANITRATE and T.N.T.

(88) Fuze, D.A. and percussion No.119. Distinctive marking of Mark II fuze.

Owing to the difference in weight between the Mark I (brass) and Mark II (zinc) fuzes, the lighter weight of the Mark II fuze necessitates a range table correction. These fuzes should, therefore, always be separately grouped.

No. 119, Mks. I & II fuzes have a knurled ring as a distinguishing feature for identification by night, and a black ring for identification by day. In addition, to distinguish between the Mark I and Mark II fuzes, the Mk.II fuzes will be marked with a large figure 2 stencilled in white on the body and packages containing No.119 fuzes or rounds fuzed No.119, will be stencilled with the "mark" of the fuze.

(89) Gauging of Q.F. Cartridges.

All Q.F. cartridges, both fixed and separate, are gauged in the Filling Factory before being packed for issue. The chamber gauge used is "tighter" than the plan size of the gun chamber.

Owing to possible mishaps in transport and storage and also to possible divergencies in gun chambers, it is a prudent procedure to gauge ready use cartridges in the gun in which they are to be used. This gauging in the gun is particularly desirable in the case of the larger calibres of fixed ammunitions where distortions of the mouth of the case may occur owing to faulty supports in ready use racks.

If the cartridge fails to gauge in one gun it should be tried in another gun of the same battery, before being set aside for return.

The cartridge and chamber should be dry and clean, and the gun laid horizontal. The cartridge is to be inserted by hand. Power or any form of rammer must not be used. The

The 4.5-inch A.A. gun is fitted with a catch retaining which"bites" on the cartridge when about 4-inches short of its final position. This obstacle is easily overcome by lifting the base of the case very slightly when this point is reached, at the same time pushing the cartridge home into the chamber.

Only ready use ammunition should be treated in this way as it is very undesirable to open ammunition packages unnecessarily. It may be objected that it is not worth while to chamber gauge unless all the rounds are dealt with. The answer to this is, that whilst cartridges remain in the packages they are suitably supported and not likely to be deformed, whereas in improvised ready use racks distortion is liable to occur.

(90) Fuze setting machine. Correct position of time rings before setting.

Fuze setting machines are in use on A.A. mountings and it is important for I.O.O's to know how fuzes should be prepared before insertion of the cartridge into the machine.

Fuzes for use with the No.6 fuze setting machine should be screwed fully home in the shell.

The correct position of time rings for the several fuze setters is set out in the following table :-

Machine.	Equipment.	Fuze.	Fuze setting.
4	3" 20-cwt.	199	Any
5	3.7-inch	199	Safe
5	3.7-inch	207	Safe
6	4.5-inch	209	Zero
7	3.7-inch	199	Any
7	3.7-inch	207	Any

With combustion fuzes of the 199 type, if the fuze is not as shown on the table before insertion in a No.5 machine the fuze will be set wrongly.

With mechanical fuzes of the 207 or 209 types in No.5 or No.6 machines, respectively, if the fuzes are not correctly prepared, as shown in above table, before insertion, not only will the fuze be wrongly set, but the mechanism may be seriously damaged.

(91) Amendment to Bulletin No.7.

Item 63, under Rifle, Grenade, for "N" read "H".

Amendment to Bulletin No.8.

Item 72. Bomb, H.E. Aircraft, G.P. 40-lb., Mark I, approximate weight of bomb filled, for " " against weight of bomb, insert "+".

Item 81. for 3.7 mm. read 37 m.m.

92./

(92) 40 mm. Ammunition.

A. Reference to item 73 the work of reducing the charge in the above ammunition has now been completed. All packages and the cartridges in these packages which have been converted in this manner bear the letter 'R' in black on the boxes and on the cartridge cases.

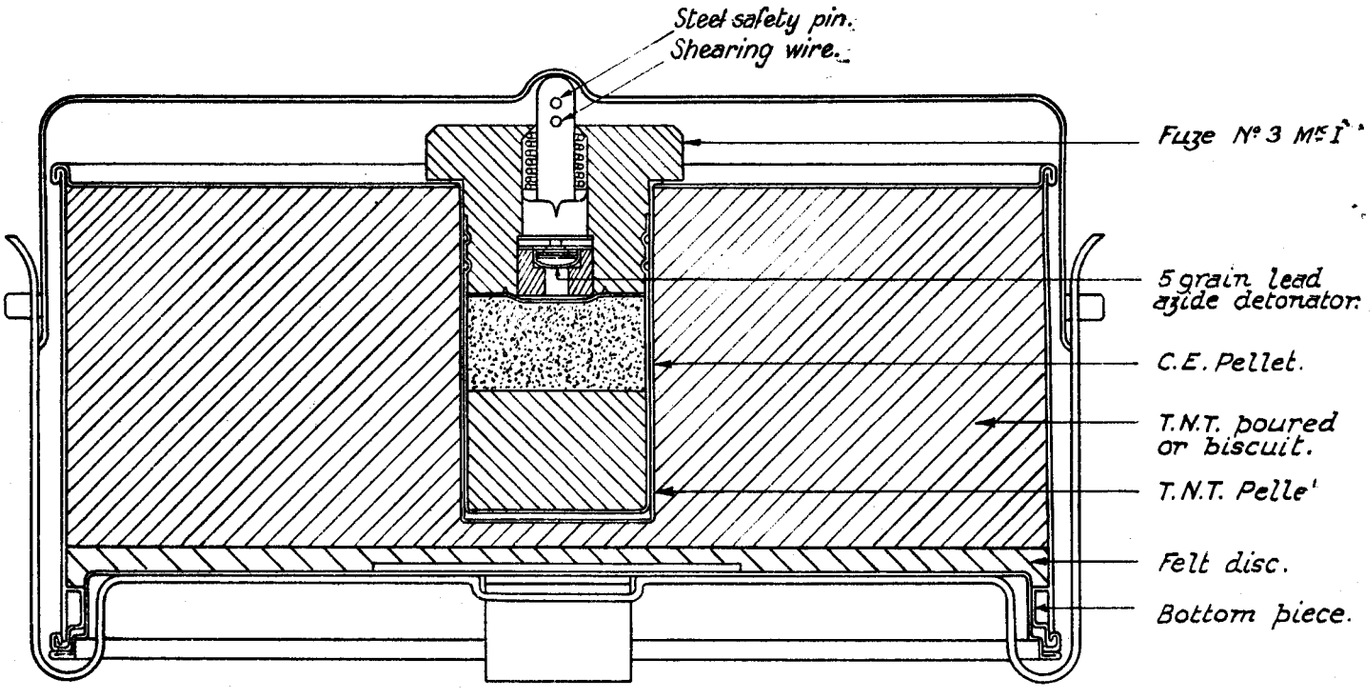
To provide for the possibility of a package or cartridge having been overlooked in the course of this somewhat extensive laboratory operation, I.O.Os should note that all Bofors Ammunition of Batches B.1 to B.21 should have been dealt with in this way. Should they come across a package or cartridge case of these batches which does not bear the letter 'R' it should be set aside for special examination by the C.I.A.

B. A number of Bofors cartridges contained in sub-batches B.101.C to B.103.N have already been issued to the Service as an emergency issue, which may have to be withdrawn as other supplies become available. The Batch Nos. quoted do not cover the whole of the ammunition affected. The complete list, when available, will be published in a later Bulletin.

To facilitate this withdrawal, the packages, which are either C.219 or C.216 (i.e. steel), bear a red strip 1" wide in a hollow of the lid whilst the two horizontal recesses at each end are also painted red. There is a possibility that some packages may have been issued prior to this marking being carried out, consequently Ordnance Officers and I.O.Os should note the Batch Nos. quoted above and arrange to have such boxes marked as indicated on Fig. 17. As far as possible, this ammunition should be retained in E.A.Ms or I.A.Ds and issued to guns on emergency only.

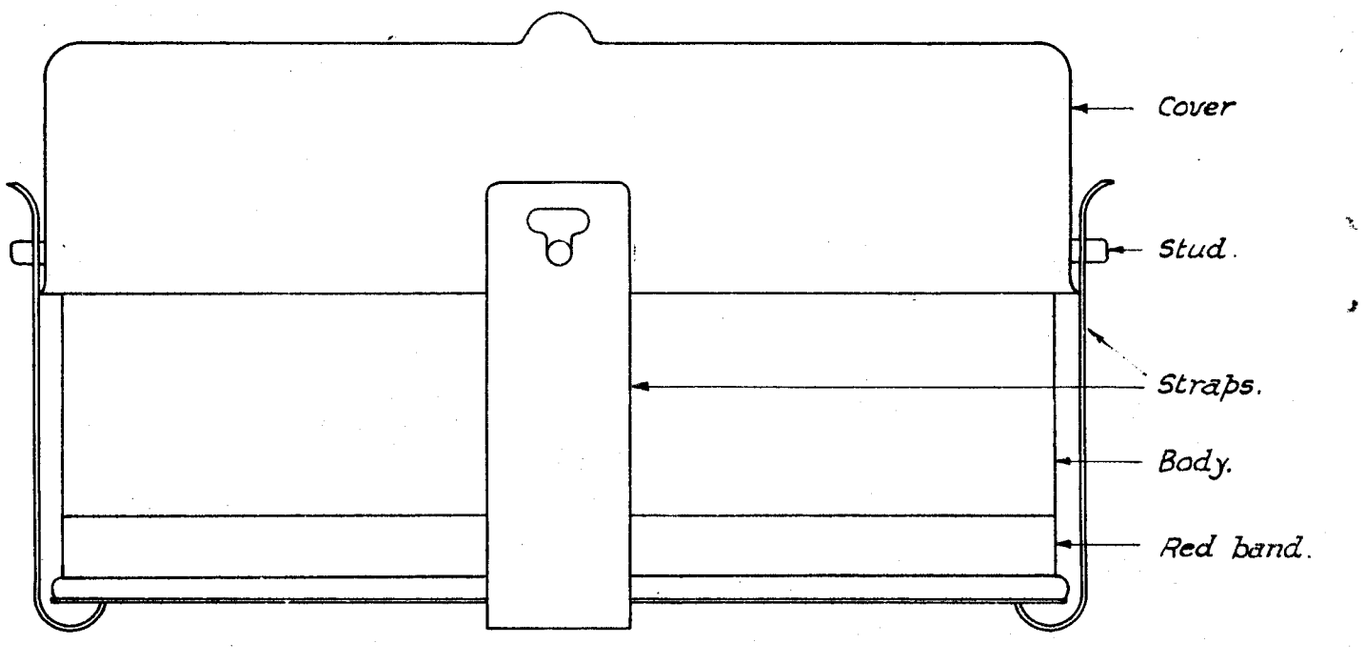
This ammunition is fitted with the reduced charge referred to in A, consequently there is no question of 'R' marking.

FIG. 14.



SECTION OF FILLED MINE
WITH FUZE AND COVER IN POSITION.

FIG. 15.



EXTERIOR VIEW OF MINE.

FIG. 16.

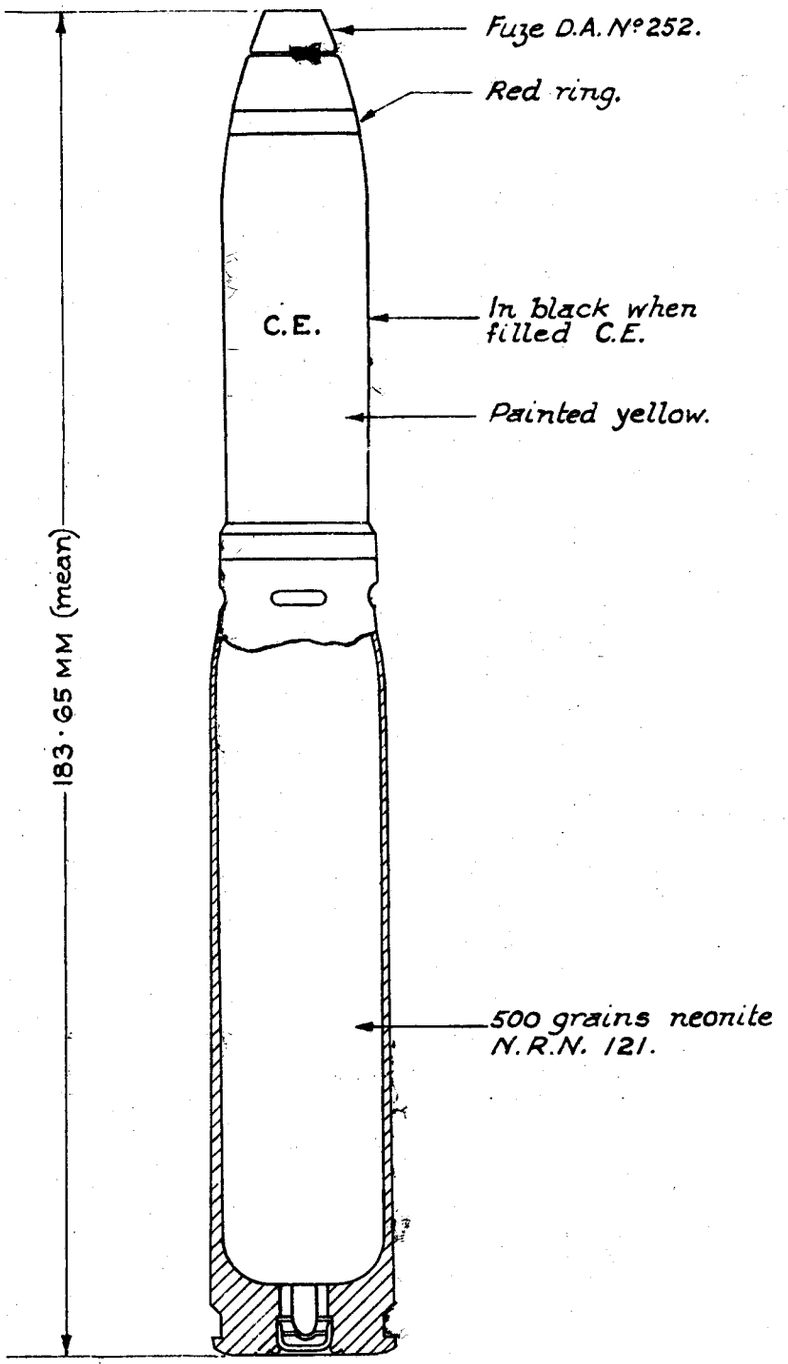

Fuze D.A. Nº252.
Red ring.
C.E.
In black when filled C.E.
Painted yellow.
183·65 MM (mean)
500 grains neonite N.R.N. 121.

FIG. 17.