

AMMUNITION BULLETIN No 34

ITEM 749-803

SECURITY

THIS DOCUMENT IS THE PROPERTY OF H.M. GOVERNMENT, and is issued for the information of officers and responsible officials.

The officer or official in possession of the document will be responsible for its safe custody and that its contents are not disclosed to any unauthorized person.

The document will be kept under lock and key when not in actual use.

Officers commanding units and establishments, etc., are responsible that appropriate circulation is given to this document.

Any person other than the authorized holder upon obtaining possession of this document by finding or otherwise should forward it, together with his name and address, in a closed envelope to the Secretary, Ministry of Supply, Adelphi, W.C. Letter postage need not be prepaid; other postage will be refunded.

All persons are hereby warned that the unauthorized retention or destruction of this document is an offence against the Official Secrets Acts, 1911-1920.

MAY 1943

PRINTED & ISSUED BY
THE CHIEF INSPECTOR OF ARMAMENTS.

NOTE

Reference Item 759 herein.

The Kaolin treated experimental floor has
up to the weathering trial and no further action w/
with this material. Experiments with other substances
hand.

MINISTRY OF SUPPLY

AMMUNITION BULLETIN NO. 34.

SECURITY

ISSUED BY :-

INSPECTOR GENERAL OF ARMAMENTS.

Item No.

- 752. Box, Ammunition, Q.F. 40 m.m. C.297 Mk.I.
- 779. " " Q.F. 6 pr. 6 cwt. Mk.III Gun - C.303 Mk.I.
- 757. Boxes, Ammunition, Q.F. 6 pr. 7 cwt.
- 756. Box, Demolition CE/TNT. Slabs - W.109 Mk.I.
- 777. Box, packing 90 m.m. Gun M.1 Ammunition (American). (Fig.313)
- 780. Cartridges, S.A. Blank, .303 inch I Mk.V.
- 784. Cartridges, Q.F. 2 pr. Mk.I Gun sub-calibre.
- 788. Cartridges, Q.F. 6 pr. 6 cwt. Mk.III Gun.
- 751. Cartridges, Q.F. 6 pr. 7 cwt. - Decoppering rounds.
- 760. Cartridges, Q.F. 6 pr. 7 cwt. - Box C.264
- 771. Cartridge, Q.F. 37 m.m. Shot A.P.C. M51. (American).
- 768. Cartridge, Q.F. 37 m.m. Shot S.A.P.M.74 - Box, packing (American)
- 786. Cartridge, Q.F. 90 m.m. Shell H.E.M.71 for Gun M.1 (American). (Fig.314)
- 755. Cartridges, Q.F. 3 in. 20 cwt. - Packing.
- 789. Cartridges, B.L. 5.5 in. Mk.III Gun.
- 793. Cartridges, B.L. 7.2 in. Howitzer.
- 782. Cartridges, M.L. Mortar - Air cushion wads.
- 759. Floors for Buildings containing explosives.
- 783. Fuze, Mine, Contact, A.T. No.3.
- 785. " " " " Mk.I, II & III.
- 781. Fuze No.221 - Bulk packing.
- 758. Fuze No.247 - Always.
- 772. Fuze, percussion, D.A. No.255 Mk.I (Fig.312)
- 753. Generators declared obsolete.
- 795. Generator, Smoke, No.26 Mk.I. (Fig.315)
- 757. Grenade, hand or .303" Rifle, No.36M - All purpose key (Fig.310).
- 754. Grenade, hand, No.74 A.T. Mk.II.
- 763. Grenade, hand, No.75 A.T. Mk.I.
- 787. Grenade, hand, Practice, No.75.
- 761. Grenade, hand, Smoke, No.79 Mk.I.

Item No.

- 773. Labelling of S.A.A. 9 m.m.
- 770. Mortars, 81 m.m. (American). Increment, propellant Mk.I.
- 769. Mortars, 81 m.m. M.1 and 3 inch Mk.I.A2 (American). Complete round with Shell, smoke, M.57.
- 765. 3 in. Mortar Bomb-Use in S.B. 3 in Gun.
- 791. Naval equipments issued to Land Service - Cartridges to Land Service Designs.
- 766. Obsolete Stores.
- 778. Packages, Ammunition - Colouring.
- 774. Plugs, fuze-hole, Transit.
- 764. Primer, percussion, No.29 Mk.I. (Fig.311).
- 790. Primer, percussion, No.30 Mk.I. (Fig.311A).
- 776. Primer, percussion, M.32 (American)
- 792. Q.F. Cartridge clips (Fig.314A)
- 775. Shell, Q.F. 40 m.m. - Varnishing of driving bands.
- 749. Shell, Q.F. H.E. 3 in. How. - Standard Fuze.
- 762. Simulators, Gun flash.
- 750. Smoke Boxes - Shell above 6 in.
- 794. Statement of Ammunition, Q.F. 25 pdr.

GERMAN AMMUNITION

GERMAN

- 796. 7.5 cm. l.I.G.18 H.E. Shell (Fig.316)
- 797. 7.5 cm. l.I.G.18 H.E./A.L. Shell (Fig.317)
- 798. 7.5 cm. Kw.K. & Stu.G.Cartridge, Q.F., hollow charge 38 (Fig.318)
- 799. 21 cm. Mrs.18 Q.F. howitzer cartridge.
- 800. 21 cm. streamlined anti-concrete shell 18 (Fig.319).
- 801. Teller Mine 42 (Fig.320).

ITALIAN.

- 802. 75/27 Streamlined hollow charge shell (Fig.321)
- 803. H.E. hand grenade S.R.C.M.35 (Fig.322).

AMENDMENTS

- Bulletin No.19, Item 250. Page 3. Dimensions and Weights. Line 3 Delete "19-lb.6-ozs." and substitute "19-lb.14-ozs."
Line 4 Delete "14-lb.6-ozs." and substitute "14-lb.15-ozs."
- " No.31, Item 618. No.14 Tracer. Line 1. After "40 m.m." insert "and 6-pdr. 6-cwt. Mk.III"
- " No.31, Item 634 (page 25), Para.6, line 2 - Delete "Rauchonwickler" and substitute "Rauchentwickler"
- " No.31, Item 634 (page 28), Para.9(iii), line 9:- Delete "Mgl" and substitute "Ngl"
- " No.31, Fig.262, Arrow indicating discs sewn to base of bag:-
Delete lettering "NEUROCELLULOSE PERFORATED DISCS"
and substitute "Perforated discs of double base propellant"
- " No.32, Item 648. Line 3. Delete "brilliant"
- " No.32, Item 650. Page 12. No.14 Tracer. Col.4. Insert "40 m.m."
Col.5. Delete "10" and substitute "13.5"
- " No.32, Item 652. Line 2. Delete "Weston" and substitute "Wesson"
- " No.32, Item 679. Pages 29 and 30. Against "Practice, Flatheaded, Reduced, Mk.IIIIT, IVT, VT and VIT" in Col.3. Delete "4,350 Grns." and substitute "4-ozs.350-Grns."
- " No.32, Item 680. Page 34. Against "Shell, H.E. Mk.II Foil" in Col.3
Delete "2-lb.5-ozs.6-drs." and substitute "2-lb.5-oz.4-dr."
- " No.33, Item 733. Page 34. Against "H.E. Shell Mk.XIIIT Foil" Amend Col.3 to read "Mk.I* or II with adapter, or Mk.III or IV". Amend Col.5 to read "Perc.No.12, Mk.I, II or III".
- " No.33. Page 1 (Contents List), Item 746:-
Delete "17.5 cm" and substitute "7.5 cm."

749. SHELL Q.F., H.E., 3 INCH HOW. - STANDARD FUZE

Fuze No.119 has been adopted as the standard fuze for the abovementioned shell.

750. SMOKE BOXES - SHELL ABOVE 6-INCH.

Reference Bulletin No.33, Item 691. The space formerly occupied by the smoke box in shell above 6-inch will be filled with an additional exploder of T.N.T. or C.E.

751. CARTRIDGES, Q.F., 6 PR. 7 CWT. - DECOPPERING ROUNDS

A proportion of 6 pr.. 7 cwt. cartridges containing $2\frac{2}{3}$ dr. lead foil, i.e. double the normal quantity, will be provided as decoppering rounds. Cartridge cases and packages will be marked with the letters "DEC", the normal legend denoting decoppering rounds. The marking will be in silver nitrate on cartridge cases and yellow painted on packages.

752. BOX, AMMUNITION, Q.F. 40 M.M. C.297 MK.I/WOOD.

This wood box, to Design DD/L/15895, has been approved for Q.F. 40 m.m. ammunition. It is designed to hold 24 rounds, each in a Cartridge Container No.6. Each end of the box is fitted with a galvanised wire lifting handle, the centre portion of each handle being leather covered. The maker's initials or recognised trade mark and year of manufacture are branded on the end grain of box (see also Bulletin No.33, Item 690).

Stowage dimensions are 21.75 x 17.7 x 13.1 inches. Weight filled will be notified later.

753. GENERATORS

The following generators have been declared obsolete :-

Generators, Lachrymatory, No.2 Mks.I and II.

Generators, Smoke, No.8, Mk.I.

754. GRENADE, HAND NO.74, A.T. MK.II.

Reference Bulletin No.32, Item 649. It has been found possible, on handle assemblies incorporating triggers to Design M.D.1/7156, to pull the head of the trigger away from under the striker nut without removing the safety pin. This may lead to possible prematures. The Design has been amended to eliminate all possibilities of prematures of this nature occurring.

755. CARTRIDGES, Q.F. 3 IN. 20 CWT. - PACKING OF

Approval has been given for H.E. rounds fuzed No.119B, Mk.IV, to be packed in the C.204 steel box, also for A.P. rounds to be packed in the C.147 wood box, modified.

As the H.E. rounds will not fit into the Box C.204 with cartridge clips in position, the 4 No.5 clips, tied in a bundle, will be placed in the box for subsequent fitting in position prior to A.F.V. stowage.

Containers, cartridge (No.76 for H.E. and No.77 for A.P. rounds) are only required for A.F.V. stowage. These containers are issued separately to units and are replaceable.

756. BOX, DEMOLITION C.E./T.N.T. SLABS, W.109 MK.I.

This wood box has been approved for packing the 1 lb. C.E./T.N.T. cast slab. It is designed to pack 14 slabs and is provided with a rope handle at each end. The box is stained Vandyke Brown and is stencilled in $\frac{1}{2}$ inch yellow lettering on both sides and both ends to show the Number, Nature and Mark of contents, Monogram or initials of filler, Month and year of filling, Lot No., Packing serial number (in white). It also carries the Group I Government Explosives Label.

Stowage dimensions are :- 12.375 x 8.25 x 6.5 inches. Weight filled $17\frac{1}{2}$ lb.

757. GRENAD, HAND OR .303" RIFLE, NO. 3611 MK. I - ALL PURPOSES KEY. (Fig. 310)

This steel key, designed for use with the above grenade, is suitably shaped for the following purposes :-

- (i) To remove or replace the screwed plug in base of grenade.
- (ii) To recock the striker.
- (iii) As a gauge to ensure that the detonator chamber is clear before inserting the detonator.

758. FUZE NO. 247 - ALLWAYS.

Reference Bulletin No. 33, Item 693, sub-para. (iii). This fuze, with a percussion cap filled "B" composition, will not now be used in Grenade No. 79.

759. FLOORS FOR BUILDINGS CONTAINING EXPLOSIVES

In the construction of these buildings the floors require special consideration. For buildings where loose or bulk explosives are handled, i.e. Magazines, Laboratories, and Factories, a good floor should possess the following characteristics:-

- 1. Dustless and gritless.
- 2. Stand up to hard wear.
- 3. Safe from frictional firing of loose explosive.
- 4. Not reactive with explosives.
- 5. Non-inflammable.
- 6. Composed of readily obtainable materials.

Hitherto, the choice has lain between linoleum on a wood or concrete bed or gritless asphalt. Both of these become in short supply in war and neither are entirely satisfactory in wear, whilst with linoleum there is the possibility of explosive dust getting into slits and even under the linoleum.

For buildings containing explosives of the made up type, in which the chances of loose explosives being met is remote, some relaxation on the above conditions can be accepted. These buildings are known as explosives storehouses and their floors may be of concrete, which fails in 1 and 2 of the above requirements unless treated with a surface hardening agent. Linoleum and gritless asphalt fail in respect to 2.

The basis of most surface hardening is sodium silicate, but unfortunately this material is strongly alkaline and as such is incompatible with T.N.T., picric acid and similar explosives. It has been found, however, that when a concrete floor is treated with sodium silicate a chemical reaction takes place which gradually reduces the surface alkalinity to an acceptable figure. Hence, provided a weathering period of not less than two months is allowed to elapse after the laying of the floor there is no objection to the application of sodium silicate on the floors of buildings used for the storage of Groups III and IV explosives. For buildings containing Groups V - XII ammunition a similar floor is suitable and the weathering period is unnecessary. For buildings containing Group XIII ammunition, sodium silicate must be used on the floors of buildings since its surface hardness is valuable in reducing the penetration of leaking chemicals into the floor, rendering decontamination easier.

The obvious objection to special floors is that the buildings are not available for the general storage of explosives. Hence buildings tend to become specialised for use, an unsatisfactory arrangement in view of the shifting nature of the quantities in each group.

For these reasons experiments have been proceeding with a view to finding a suitable substitute capable of being used in any building containing explosives, and conforming therefore to the requirements set out in 1 to 6 above. These have been conducted by the Research Department and have resulted in a Kaolin-concrete treatment of a normal concrete floor. A trial floor has been laid in the London area and although a final decision has to await the completion of an extended use and weathering trial, it can be said that the experiment is promising. It is hoped that this type of floor may prove

suitable for all explosive buildings but a final recommendation cannot be made at present. Details of the experiments and the method of application of the Kaolin mixture, which can be applied to existing concrete floors, may be obtained from the Secretary, Explosives Storage and Transport Committee.

760. BOX, C.264 FOR CARTRIDGES, Q.F. 6 PR. 7 CWT.

Reference Bulletin No.32, Item 680. Boxes C.264 Mark I have been made to two different designs, viz. DD/L/12062A and DD/L/13666.

Those to DD/L/12062A are approximately 2 inches shorter than those to DD/L/13666 and, in consequence, will only pack A.P. or A.P.C. rounds, whereas boxes to DD/L/13666 will pack A.P., A.P.C. or H.E. rounds.

Boxes to DD/L/12062A have been, and are being, produced by one firm in Canada only and those already issued can be identified by the manufacturer's monogram "M/C" ("C" for Canada). Future production to this design will have the letter "A" inserted after the box number, viz. "C.264A I".

Attention is therefore drawn to the fact that C.264 Mk.I with Contractor's monogram "M/C" or C.264A I boxes will only pack 6 pr. 7 cwt. A.P. or A.P.C. rounds and are not suitable for H.E. rounds.

Stowage dimensions.

Box C.264 Mk.I (DD/L/13666) 27.875 x 9.5 x 13.75 inches.

" C.264A Mk.I or C.264 Mk.I with monogram "M/C"	}	(DD/L/12062A) 26 x 9.5 x 13.75 inches.
--	---	--

761. GRENADE, HAND, SMOKE NO.79 MK.I.

Reference Bulletin No.32, Item 637. Dimensions of the B.166 Box used for packing are 19.7 x 9.0 x 13.2 inches. Weight filled 88 lb.

762. SIMULATORS, GUN FLASH

Reference Bulletin No.32, Item 638. No.3 Simulators are each packed in a rolled paper Container Packing No.81, and 64 containers in a Box C.147 Mk.IV whose dimensions are $34\frac{1}{8}$ x 12 x $11\frac{1}{8}$ inches. Weight filled is not yet available.

No.4 Mk.I Simulators are packed two in a Container Packing No.831 and 200 Containers, i.e. 400 Simulators, in a Box C.147 Mk.IV. The packing for the No.4 Mk.II Simulators is not yet decided.

The No.5 Mk.I Simulators are packed two in a Container Packing No.82, with 64 Containers in a Box C.147 Mk.IV.

The Simulator No.4 Mk.II differs from the Mk.I described in Bulletin No.32, Item 638, in being arranged for firing by safety fuze ignition which requires a flanged brass sleeve to be fitted in the upper tube to take the safety fuze. The following types of safety fuze may be used:- No.11, Mk.II, No.15, Mk.I, No.15B Mk.I, No.15 Mk.II, No.16 Mk.II or No.18 Mk.I.

The No.1 Mk.I Simulator differs from the Mk.II, previously described, in being ignited by an electric fuze No.F.53 which is housed in rolled paper sleeves and held in position by millboard washers banded by a liner band shellacked to body. A 4 volt battery with leads of about 30 feet is used. Packing is not yet clear.

763. GRENADE, HAND, NO.75, ANTI-TANK MK.I.

Reference Bulletin No.23, Item 373. Leakage of the filling from between the neck and the sealing cap of this grenade has resulted in the serious and rapid deterioration of many grenades. In future, a waxed felt washer, $\frac{1}{4}$ inch thick, will be fitted in the neck of the grenade, whilst hot, to assist in sealing.

764. PRIMER, PERCUSSION, NO. 29 MK. I (Fig. 311)

This primer, to Design No. DD/L/16202, has been approved for the 3-inch How. Cartridge. It comprises a No. 9 Primer, which is screwed into the primer hole of the cartridge case, and a cylindrical brass magazine prepared with 12 flash holes, which is inserted in the cartridge case and screwed into the front end of the primer.

The primer is prepared with external screwthreads above the flange to screw into the cartridge case and the front end is recessed and screwthreaded internally to receive the magazine. The rear end of the magazine is reduced in diameter and bored centrally to form a cavity containing 15 grns. G.12 which is enclosed between two paper discs, external screwthreads are provided to screw the magazine into the primer. The body of the magazine contains a charge of 910 Grns. Cordite W.016 or W.M.017.

765. 3 INCH MORTAR BOMB - USE IN S.B. 3 INCH GUN.

All designs of special cartridge and tail units for Mortar Bombs for use in 3 inch S.B. have been declared obsolete.

766. OBSOLETE STORES

The following stores have been declared obsolete :-

Design No. DD/L/8257 8257/1	Exploder, Mine, Contact, A.T. Mk.I.
8880 8880/1	Fuze, Mine, Contact, A.T. No.2 Mk.I (Ref. Bulletin No.5, Item 42).
8697	Fuze, electric, drill, No.31 Mk.I.
10121A 10166	Mine, Contact, A.T. Mk.III. (Ref. Bulletin No.5, Item 41 and Bulletin No.7, Item 64)
6693	Mine, dummy, contact, A.T. Mk.I.
8398	Box, No.31 electric fuze, M.65 Mk.I.
10157	Box, No.2, fuze, mine, contact, A.T. M.83, Mk.I.
10159	Grate, packing, mines, contact, A.T. M.84, Mk.I.
6694	Carrier, mine, dummy, contact, A.T. Mk.I.
10152 10152/1	Cylinder No.319 Mk.I.

767. BOXES, AMMUNITION, Q.F. 6 PR. 7 CWT.

Wood boxes to the undermentioned Designs, for manufacture in Canada, have been approved:-

DD/L/15804	To pack 6 rds. Q.F. 6 pr. 7 cwt. cartridges A.P. or A.P.C., each in Container No.42. Stowage dimensions:- 27.15 x 13.9 x 10.6 inches.
DD/L/15811	To pack 6 rds. Q.F. 6 pr. 7 cwt. cartridges A.P.C.B.C., each in Container No.71. Stowage dimensions:- 31.1 x 13.9 x 10.6 inches.

768. CARTRIDGE, Q.F. 37 m.m. Shot, S.A.P. M.74 FOR GUNS M.3, M.5, and M.6 - BOX PACKING. (AMERICAN).

Reference Bulletin No.25, Item 415. 20 of the above rounds, each in a fibre container, M.78, are packed in a wood box. Stowage dimensions of the box are $16\frac{7}{8} \times 14\frac{1}{2} \times 12.27/32$ inches. Weight empty $16\frac{1}{2}$ lb. Details of painting and marking are not yet available.

769. MORTARS 81 M.M. M.1 and 3 inch Mk.IA2 (AMERICAN). COMPLETE ROUND WITH SHELL SMOKE, M.57.

Reference Bulletin No.28, Item 499, para.2. Cartridge, Ignition, M.3 has now been replaced by Cartridge, Ignition, M.6 with Primer, percussion, M.34, in the container at the tail of the shell, but details of these components are not yet available.

770. MORTARS, 81 M.M. (AMERICAN). INCREMENT, PROPELLANT, M.1.

Reference Bulletin No.28, Item 497, para.3. Another type of this increment has been introduced. It is made up of a number of units, each with an approximate weight of 117 grains, and consisting of a number of square flakes 1.49 inches square and .010 inches thick, each with a centre and four side perforations. Each unit is secured in a bundle by stitching together with silk sewing, the stitching being arranged in two parallel rows between the centre and side perforations. Weight of increments is adjusted by cutting a notch in the side of the flakes.

771. CARTRIDGE, Q.F. 37 M.M. SHOT, A.P.C. M.51 (AMERICAN)

Reference Bulletin No.18, Item 224. The use of the 37 m.m. A.P.C. Shot, M.51B1 has been extended to include the M.3, M.5 and M.6 guns.

The method of attachment of cartridge to the shot now provides for the mouth of the case to be indented at 4 points into the groove formed in the shot or, alternatively, for it to be crimped into the groove through 360° .

772. FUZE, PERCUSSION, D.A. NO.255 MK.I. (Fig.312)

This fuze is designed to provide a short delay action to provide for penetration of the outer fabric before functioning thereby obtaining greater lethal effect. The design also incorporates certain manufacturing advantages as compared with the 251 fuze.

Fig 312 shows the general arrangement in which the head, body and magazine forms the main portion, and contour as in the 251 fuze. The magazine, stemmed plug, shutter, ferrule and stirrup spring are similar to the 251. The detonator pellet has a two diameter central bore, the larger diameter being charged R.D.1305 the smaller diameter lead azide and C.E. The igniferous detonator is held between the detonator plug and striker guide, whilst the detonator plug has three displaced fire channels instead of a single central channel, a recess in the face providing for the flash from the detonator reaching all three.

An arming unit assembly comprises a 3 armed housing, ferrule, stirrup spring, armingsleeve and spring and functions generally as in the 251 fuze.

ACTION

This is practically the same as the 251 fuze except that the displaced fire channels introduce a very slight delay between the functioning of the detonator and the ignition of the central channel in the detonator pellet.

773. LABELLING OF S.A.A. 9 M.M.

Ammunition with a velocity of 1250 ± 50 f.s. is being marked "V 1250" but the marking by rubber stamp on the existing label is not sufficiently distinct for store purposes.

A new label H.2870 has therefore been printed with "V 1250" in $\frac{1}{2}$ " characters, black on white. One of these will, until further notice, be fixed to each end of appropriate wooden boxes above the diamond and one above each description label on top of the wooden box and on top of each lining.

774. PLUGS, FUZE-HOLE - TRANSIT

Certain Plugs, fuze hole, used for plugging empty shell during transit, will have existing nomenclature markings on the base barred out and the letter "T" added. Plugs so marked will not be used with filled service shell.

775. SHELL, Q.F. 40 M.M. VARNISHING OF DRIVING BANDS.

Approval has been given for the exterior varnishing of Q.F. 40 m.m. shell to include the driving band. Hitherto, the driving band has been masked during the varnishing process, the shell body only being varnished.

776. PRIMER, PERCUSSION, M.32 (AMERICAN)

Reference Bulletin No.28, Item 495, para.2. The body and housing of this primer are now being made of steel, instead of aluminium-alloy.

777. BOX, PACKING, 90 M.M. GUN, M.1 AMMUNITION. (Fig.313)

This wood box, of American manufacture, is designed to pack the following types of 90 m.m. Gun ammunition:-

Type	Container	Gross Weight lb.
4 Complete rounds, Shell, H.E. M.71 with Fuze, M.T. M.43A3.	M.53	234.65
4 Complete rounds, Shot, A.P. M.77.	"	"
4 Complete rounds Proj. A.P.C. M.82 with Fuze B.D.M.68.	M.96	Not yet available.
-do- (without fuze)	"	234.27

The box is unpainted. Details of markings are shown in the Figure.

When practice ammunition is packed a 3 inch blue band is painted around the centre of box and the end cleats are also painted blue. Stowage dimensions are not yet available.

778. PACKAGES, AMMUNITION - COLOURING

Approval has been given for ammunition packages to be coloured green as an alternative to dark brown.

779. BOX, AMMUNITION, Q.F. 6 PR. 6 CWT. MK.III GUN, C.303 MK.I.

This wood box is designed to hold 4 6 pdr. 6 cwt. Mk.III Gun H.E. rounds each in a paper container, cartridge No.95 Mk.I, dimensions of which are:- length 26.25 inches, diameter 3.75 inches.

Stowage dimensions of box are 33.15 x 9.8 x 9.65 inches. Filled weight details will be given later.

780. CARTRIDGES S.A. BLANK .303 INCH L MK.V.

Approximately 90,000 rounds Cartridges S.A. Blank .303 inch L Mk.V of Swynnerton manufacture, and having ringed in caps, have been passed all clear for Service use, as a concession.

The rounds have all been subjected to radiological examination to ensure they contain no foreign bodies likely to cause injury to either personnel or weapons and duly passed as serviceable after this examination.

All boxes containing this blank ammunition will be clearly marked as having ringed in cases so that they may be easily identified.

781. FUZES NO.221. BULK PACKING

Box A.S.A. H.31 has been approved as an alternative to Box A.S.A. H.30 for bulk packing, filled Fuzes No.221.

The external dimensions of this box are 18 x 8 x 8 inches with a tin liner in two compartments. Each compartment will pack 14 fuzes wrapped in paper and lying on their sides, i.e. 28 fuzes in all. The weight of the filled box is 71 lb.

782. CARTRIDGES, M.L. MORTAR - AIR CUSHION WADS.

Approval has been given for air cushion wads, as an alternative to felt wads, to be fitted in all mortar primary cartridges. The difference in range, due to the somewhat higher M.V. attained with cartridges fitted with these wads, is considered insufficient to warrant any reduction in the charge.

783. FUZE, MINE, CONTACT, A.T. NO.3.

Reference Bulletin No.9, Item 84. The use of Granulated Pentolite has been approved as an alternative filling for the magazine of the above mentioned fuze.

784. CARTRIDGES, Q.F. 2 PR. Mk.I GUN SUB-CALIBRE.

The use of the No.27 primer as an alternative to the Nos.5 and 16 primers, in the above cartridges, has been approved.

785. FUZE, MINE, CONTACT, A.T. No.3, Mk.I, II AND III.

A new type of safety pin with becket has been approved for the above mentioned fuze. One arm of the pin passes through a hole in the striker stem, while the other arm is shaped to spring round the striker stem, holding the pin securely in position.

786. CARTRIDGE, Q.F. 90 M.M. WITH SHELL H.E. M.71 FOR GUN M.1 (AMERICAN) (Fig.314)

1. The complete round, fixed Q.F. type, consists of the following components :-

Primer, percussion M.28.A.2.
Case, cartridge, M.19.
Propellant, approx. 7 lb. 5 ozs. N.H. powder.
Shell H.E. M.71.
Booster, M.20
Fuze, time, mechanical, M.43A3.

2. Primer, percussion, M.28A2. See Bulletin No.31, Item 603, para.2.

3. Case, cartridge, M.19. See Bulletin No.24, Item 394. The mouth of the case is attached to the shell by 8 ~~indents~~ and sealed with N.R.C. compound.

4. Shell, H.E. M.71.

The shell body is of forged steel with a steel cover plate welded to the base. It is fitted with a gilding metal dirving band below which is a canneler for the attachment of the cartridge case. The front end of the body is screwthreaded internally to receive a bakelite fuze-well cup and the fuze.

The following bursting charges are used:-

T.N.T. ... 2 lb. approx.
Amatol 50/50 ... 1 lb. 13 oz. approx. (with TNT booster surround)
Trimonite ... 2 lb. 2 ozs. approx.

5. Booster M.20. See Bulletin No.24, Item 392.

6. Fuze, time, mechanical, M.43A3.

Details of the difference between this fuze and the M.43A1 described in Bulletin No.24, Item 395, are not yet available.

7. Painting and Marking.

The shell is painted the usual buff colour and bears the following markings in black:- "90G". Nature of H.E. filling. "SHELL M71". Lot number.

Weight zone markings (see Bulletin No.27, Item 476, para.4) are as follows:-

FILLED SHELL WITHOUT FUZE			
ZONE	OVER (lb)	UP TO AND INCLUDING (lb)	PUNCH MARKS
1	20.76	21.09	1
2	21.09	21.42	2
3	21.42	21.75	3

8. Dimensions and Weight

Overall length of complete round - 37.44 inches.
Weight of complete round - approx. 42 lb.

9. Packing

Packing details are given in Item 777 this bulletin.

787. GRENADE, HAND, PRACTICE, NO.75.

The grenade contains an inert filling in place of the H.E. filling of the service grenade (see Bulletin No.23, Item 373), but is used with live igniters and detonators.

It is marked with a $\frac{1}{4}$ inch yellow ring around the neck instead of the red ring on the service grenade and the Box G.70 has a yellow band painted around the centre.

788. CARTRIDGES, Q.F. 6 PR. 6 CWT. MK.III GUN.

A nominal charge of 3 lb. 2 oz. 4 dr. FNH/P.038 has been approved for the above cartridge.

789. CARTRIDGES, B.L. 5.5 INCH MK.III GUN.

The undermentioned cartridges have been approved for the B.L. 5.5 inch Mk.III gun, for 80 lb. H.E. shell to design DD(L)11236.

Design No.

DD(L)16407 12 lb. 8 oz. Cordite N/S.164-048. Igniter at each end.

DD(L)14715 11 lb. 8 oz. Cordite W.M.130. 1 Igniter. Foil.

790. PRIMER PERCUSSION, NO.30, MK.I (FIG.311A)

This primer is used with the 3 inch Tank Howitzer cartridge and is a modification of the No.1, Mk.II primer.

It differs essentially from the No.1, Mark II in being fitted with a cone shaped sealing plug and in having a smaller magazine, the latter being filled with 15 grains G.12.

791. NAVAL EQUIPMENTS ISSUED TO LAND SERVICE - CARTRIDGES TO LAND SERVICE DESIGNS

Reference Bulletin No.20, Item 274 and Bulletin No.23, Item 351. The following list gives particulars of cartridges to Land Service Designs, their packages, and the Naval guns in which used:-

Gun	Cartridge	Design No. of M. of F. .	Arrangement	Package
B.L. 7.5 inch Mk.VI -do-	31-lb.2-oz.8-dr. Cordite W.M.182 Mk.I Foil. 15-lb.9-oz.4-dr. Cordite W.M.182 Mk.I Foil.	DD/L/12814A DD/L/12963	$\frac{1}{2}$ Charge: Igniter 7.5 inch "E". $\frac{1}{4}$ Charge: No igniter.	Cylinder, cartridge, No.36 to take $1\frac{1}{2}$ charge or 2 $\frac{1}{4}$ charges. <u>Stowage dimensions</u> (crated) 38 x 11.9 x 11.9 inches.
B.L. 6 inch Mks.XI and XI*	33-lb.12-dr. Cordite W.M.182 Mk.I Foil.	DD/L/13266	Full Charge: Consisting of $\frac{2}{3}$ Charge of 22-lb.8-dr. and $\frac{1}{3}$ Charge of 11-lb.4-dr. each with Igniter, B.L. 6-inch "K".	American 155 m.m. Gun Cartridge Cylinder with lining, discs and packing piece. <u>Stowage dimensions</u> :- 41.25 x 8 inches, or Cylinder, cartridge, No.36.
B.L. 6 inch Mks.XII, XILA, and XII.B.	27-lb.13-oz. Cordite W.145 Mk.I Foil. 27-lb.13-oz. Cordite W.M.152 Mk.I Foil.	} DD/L/13267	Full Charge: Consisting of $\frac{2}{3}$ Charge of 18-lb.8.2/3- oz. and $\frac{1}{3}$ Charge of 9-lb. $4\frac{1}{3}$ -oz. each with Igniter, B.L. 6-inch "B".	American 155 m.m. Gun Cartridge Cylinder with lining, discs and packing piece.
B.L. 5.5-inch Mk.I.	22-lb.8-oz.10-dr.Cordite W.M.152 Mk.I Foil.	DD/L/13496	Full Charge: Consisting of $\frac{2}{3}$ Charge of 15-lb. 7-dr. and $\frac{1}{3}$ Charge of 7-lb.8-oz.3-dr. each with Igniter, B.L. 5.5 inch "C" and igniter covers.	Containers, cartridge, No.68 Mk.I to hold 1, inside American 155 m.m. Gun Cartridge Cylinder.

Gun	Cartridge	Design No. of M. of F.	Arrangement	Package
B.L. 4-inch Mks.VII, VII ^{XX} and VII ^{XXIX} .	9-lb.11-oz. Cordite W.M.130 Mk.I Foil.	DD/L/13457.	Igniter, B.L. 4-inch "K", with igniter cover, at each end of cartridge.	Box, cartridge, B.L. 4-inch C.277 to take 8, each in Container, cartridge, No.57 or Box C.219A to take 5, each in Container, cartridge, No.57. <u>Stowage dimensions:-</u> C.277 - 27.0 x 21.625 x 13.25 inches. C.219A - 20.6 x 17.75 x 10.45 inches.
B.L. 4-inch Mks.IX to IX ^{XXIX} .	7-lb.14-oz.10-dr.Cordite W.M.118 Mk.I Foil.	DD/L/13458	Igniter, B.L. 4-inch "E", with igniter cover, at each end of cartridge.	Box, cartridge, B.L.4-inch C.277 to take 8, each in Container, cartridge, No.58 or Box C.239A to take 6, each in Container, cartridge, No.58. <u>Stowage dimensions:-</u> C.239A - 25.4 x 17.6 x 10.3 inches.
Q.F. 4.7-inch Mk.V ^{XX}	8-lb.10-oz.6-dr. Cordite W.M.118 Mk.I Foil.	DD/L/13513	Q.F. separate loading. Primer, percussion, No.26. Cartridge clip No.32 or 33.	Box, cartridge, Q.F. 4.7-inch C.17 or C.278, to hold 4. <u>Stowage dimensions:-</u> C.17 - 29.2 x 14.4 x 13.65 inches. C.278 - 31.0 x 15.25 x 15.85 inches.
-do-	8-lb.10-oz.6-dr. Cordite W.M.118 with adapter, Mk.II, Foil.	DD/L/13512	Q.F.separate loading. No primer. Base of cartridge case fitted with Adapter Mk.VI or VII screwed into a metal igniter Mk.I or II containing gunpowder. Tube, percussion .4" Mk.VII or IX. Cartridge clip No.32 or 33.	-do-

Gun	Cartridge	Design No. of M. of F.	Arrangement	Package
Q.F. 4-inch Mk. IV.	5-lb. 2-oz. 2-dr. Cordite W.M. 118 Mk. I Foil.	DD/L/13514	Q.F. separate loading. Primer, percussion No. 9 Cartridge clip No. 1.	Box, Cartridge Q.F. 4-inch C. 22 to hold 6. <u>Stowage dimensions:-</u> 17.075 x 13.3 x 23.0 inches.

792. Q.F. CARTRIDGE CLIPS (Fig. 314A)

The following Table gives the available information on cartridge clips approved for service use. These clips are intended to protect the primer cap in transit but where steel pattern packages are provided the use of the clip is often discontinued.

When the clips are fitted to cartridges carried in vehicles for ready use, such as Trailers or A.F.V.'s webbing loops are fitted to facilitate withdrawal.

Clips may have 3 or 4 arms, the latter type are usually those fitted with webbing loops.

One arm of each clip is in the form of a spring, to facilitate removal, and is specially marked.

Clips are valuable salvage as they can normally be used again without repair.

In some instances the clips are issued to the unit apart from the ammunition and put on ready use ammunition only. This applies at present to the No. 38 which is used only with 25 pdr. cartridges in A.F.V.'s.

The No. 31 clip is not issued with 3.7 inch cartridges, the small stock already manufactured being used in Laboratory operations only.

For explanation of dimensions A and B referred to in the table, see Fig. ~~345~~. 314 A.

Design	Clip No.	Mark	Protrusion		Material	Gauge	Arms	Diameter		Use
			H	L				A	B	
R.L.13594A R.L.22924	4	I II	.589 .575		B S	16 S.W.G. 18 B.G.	4	H 4.1 L 4.08	H 3.9 L 3.88	18 Pr. and 13 Pr. 9-cwt. in Canada.
I.D.W.(A)12	5	I II	.374 .36	.354 .34	B S	16 S.W.G. 18 B.G.	3	4.63 ± .02	H 4.465 L 4.455	3-in. 20-cwt. with A.P.Shot for A.F.V.'s.
R.L.13768A R.L.22976	9	I II	.589 .575		B S	16 S.W.G. 18 B.G.	4	H 3.65 L 3.63	H 3.45 L 3.43	13 Pr. or 3-in. How.
C.I.W.561 R.L.24706	11	I II	.26 .26	.24 .24	B S	18 S.W.G. 18 S.W.G.	3	3.43	3.23	Obsolete for I.S.
I.D.W.(A)12	12	III IV	.266 .245	.246 .225	B S	17 S.W.G. 21 B.G.	3	3.01 ± .02	H 2.775 L 2.765	6 Pr. Hotchkiss Gun.
	14	III IV	.25 .24	.23 .22	B S	19 S.W.G. 21 B.G.	3	2.55 ± .01	H 2.445 L 2.435	3 Pr. Sub.Cal. and 2-cwt. Guns.
	16	II I	.242 .245	.222 .225	B S	21 S.W.G. 21 B.G.	3	1.99 ± .01	H 1.89 L 1.87	2 Pr. Mk.V Gun.
	17	I II ^M	.242 .245	.222 .225	B S	21 S.W.G. 21 B.G.	3	1.92 ± .01	H 1.8 L 1.795	2 Pr. H.V.
R.L.28824 C.O.W.13179F	18	II III	.132 .131		B. S	21 S.W.G. 22 B.G.	3	H 1.86 L 1.85	H 1.695 L 1.69	1½ Pr. Mk.III to IV Guns.
I.D.W.(A)12	26	I II	.266 .245	.246 .225	B S	17 S.W.G. 21 B.G.	3	3.17 ± .02	H 2.905 L 2.895	6 Pr. 10-cwt.
DD(L)524 DD(L)6394	27	I II	.609 .595	.569 .555	B S	16 S.W.G. 18 B.G.	4	L 4.57 + .03	4.38 ± .02	3-in. 20-cwt.

Design	Clip No.	Mark	Protrusion H L	* Material	Gauge	Arms	Diameter A B	Use
DD(L)6198 DD(L)6956	29	I II	.609 .569 .595 .555	B S	16 S.W.G. 18 B.G.	4	L 4.41 + 4.25 ± .03 .02	95 m.m. How.
I.D.W. (A)12	30	I II	.242 .222 .235 .215	B S	21 S.W.G. 24 B.G.	3	2.26 ± H 2.175 .01 L 2.165	2 Pr.
	31	I II	.374 .354 .235 .215	B S	16 S.W.G. 18 B.G.	3	5.31 ± H 5.065 .02 L 5.055	3.7-in. (Not for general use).
DD(L)12063 DD(L)12063A	35	I II	.593 .553 .595 .555	B S	18 S.W.G. 18 B.G.	4	L 3.44 + 3.25 ± .02 .01	75 m.m.
I.D.W. (A)12	36	I II	.266 .246 .26 .24	B S	17 S.W.G. 18 B.G.	3	3.62 ± H 3.425 .02 L 3.415	6 Pr. 7 cwt. and 6-pr. 6-cwt. Mk. III Gun.
DD(L)13415 DD(L)13415A	37	I II	.609 .569 .595 .555	B S	16 S.W.G. 18 B.G.	4	L 5.32 + 5.03 ± .02 .02	17 Pr.
DD(L)13419 DD(L)13419A	38	I II	.593 .553 .595 .555	B S	18 S.W.G. 18 B.G.	4	L 4.15 + 3.96 ± .02 .02	25 Pr. For ammunition used in A.F.V.'s only.

* B - Brass. S - Steel.

793. CARTRIDGES, B.L. 7.2 INCH HOWITZER.

The following table gives particulars of existing cartridges, B.L. 7.2-inch howitzer, and their packages.

Design No. Filled	Cartridge	Arrangement	Nominal Weight	Dimensions (inches) L Dia	Packages and Dimensions	Filled Weight (approx.)
DD/L/13049B	23-lb. N.H.055 Mk.I.	Core (forming No.1 Section) and 3 other sections. Igniter filled 6-oz. G.12 gun- powder.	No.1 Section " 2 Section " 3 Section " 4 Section Total	lb. oz. 7 11 3 1 6 4 6 0 <u>23 0</u>	23.25 x 7.4 Container Ctge. No.269 Mk.I to hold 1 Stowage dimen:- 24.56 x 8.375".	lb. oz. 31 6

Design No. Filled	Cartridge	Arrangement	Nominal Weight lb. oz.	Dimensions L (inches) Dia.	Packages and dimensions	Filled Weight (Approx) lb. oz.
DD/L/13373A	11-lb. 10-oz. Cordite W.M. 061 Mk. I (Charge 3)	Core (forming No. 1 Section) and 2 other sections. Igniter B.L. 7.2" "A" 6 ozs.	No. 1 Section 5 8 " 2 Section 1 11 " 3 Section 4 7 Total <u>11 10</u>	21.75 x 6.1 or 20.75 x 6.3 according to cutting lengths of cordite.	Container Ctge. No. 60 with Liner No. 3, packing rings and distance pieces to hold 1, in Box, Ctge. C. 238 Mk. I. Stowage dimen. of Box: - 26.1 x 10.1 x 9.6"	42 0
DD/L/13374A	19-lb. 12-ozs. Cordite WMT. 316-100 Mk. I Foil (Charge 4)	Cylindrical bag. Igniter B.L. 7.2" "A" 6 ozs. at one end only.	W.M.T. 19 12	21.75 x 5.75	Container, Ctge. No. 60 with Liner No. 3 and packing discs as required, to hold 1, in Box, Ctge. C. 238 Mk. I.	50 8
DD/L/13657A	25-lb. F.N.H. 057 Mk. I Foil. (Charge 4)	Cylindrical bag. Igniter filled 6 ozs. G. 12 gun- powder at one end only.	F.N.H. 057 25 0	23.25 x 7.0.	Container, Ctge. No. 60, with Liner No. 2, packing discs and distance pieces, to hold 1, in Box, Ctge. C. 238 Mk. I.	55 0
DD/L/13658A	16-lb. 3-oz. 8-dr. F.N.H. 025 and 057 Mk. I (Charge 3)	Core (forming No. 1 section) and 2 other sections. Igniter filled 6 ozs. G. 12 gun- powder.	No. 1 Section (F.N.H. 025) 6 11 0 No. 2 Section (F.N.H. 025) 2 3 8 No. 3 Section (F.N.H. 057) 7 5 0 Total <u>16 3 8</u>	23.25 x 7.4	Container, Ctge. No. 60, with Liner No. 1, packing rings and distance pieces, to hold 1, in Box Ctge., C. 238 Mk. I.	45 4

Design No. Filled	Cartridge	Arrangement	Nominal Weight lb. oz.dr.	Dimensions (inches) L. Dia	Packages and Dimensions	Filled Weight (Approx) lb. oz.
DD/L/13658A	17-lb.6-oz.8-dr. FNH.025 and FNH/ P.073 Mk.I (Charge 3)	Core (forming No.1 Section) and 2 other sections. Igniter filled 6 ozs. G.12 gun- powder.	No.1 Section (FNH.025) 6 11 0 No.2 Section (FNH.025) 2 3 8 No.3 Section (FNH/P.073) 8 8 8 Total 17 6 8	23.25 x 7.4	Container,Ctge. No.60, with Liner No.1, packing rings and distance pieces, to hold 1, in Box Ctge. C.238 Mk.I.	46 8
DD/L/15282	16-lb.3-oz.8-dr. FNH.025 and 057 Mk.II. (Charge 3)	3 cylindrical sections. Igniter filled 6 ozs. G.12 gunpowder.	No.1 Section (FNH.025) 6 11 0 No.2 Section (FNH.025) 2 3 8 No.3 Section (FNH.057) 7 5 0 Total 16 3 8	23.25 x 5.75	Container,Ctge. No.60 with Liner No.3 and packing discs as required, to hold 1, in Box Ctge.No.C.238 Mk.I.	45 4
DD/L/15368	14-lb.13-oz.8-dr. FNH.025 and N.H. 050 Mk.I. (Charge 3)	Core (forming No.1 Section) and 2 other sections. Igniter filled 6 ozs. G.12 gun- powder.	No.1 Section (FNH.025) 6 11 0 No.2 Section (FNH.025) 2 3 8 No.3 Section (N.H.050) 5 15 0 14 13 8	23.25 x 7.4	Container, Ctge. No.269 Mk.I, to hold 1.	23 8
	24-lb. Cordite N/S.198-054. (Charge 4)	Cylindrical bag, Igniter, filled, 6 oz. G.12, gun- powder, at each end.	N.S.198- 054. 24 0 0	Dimensions and packing details not yet available.		

STATEMENT OF AMMUNITION

794. CARTRIDGE Q.F. 25-PR.

Mark of Cartridges	Charge	Nominal Weight lb. oz. dr.	Case	Primer	Method of Filling.	Package	Weight of Cartridge lb. oz. dr.	Overall length (inches)
I	1st Chge. Red M.D. or R.D.B. 2 $\frac{1}{4}$	6 1	Q.F. 25-pr. Mk. II.	Perc. Q.F. Ctg. No. 1, Mk. II or IIM.	DD/L/11242 Sheet 5	Box Ctge. C. 206 Mk. I or II or Box Ctge. C. 207 Mk. I to hold 8 ctges.	6 0 0	11.525
	2nd Chge. White M.D. or R.D.B. 8	8 0						
	3rd Chge. Blue -do-	12 12						
	Full charge	1 10 13						
I, II, III, IV or V.	1st Chge. Red W. 016 or WM. 017	6 5	-do-	-do-	DD/L/11242 Sheets 6, 7 and 8.	-do-	6 0 0	-do-
	2nd Chge. White W. 057 or WM. 061	7 12						
	3rd Chge. Blue -do-	13 3						
	Full charge	1 11 4						
I	1st Chge. Red	7 11	-do-	Perc. Q.F. Ctg. No. 11.	DD/L/11242 Sheet 11.	-do-	6 0 0	-do-
	2nd Chge. White N.H. 025 or 023	9 5						
	3rd Chge. Blue	1 0 4						
		2 1 4						
II foil	-do-	-do-	-do-	Perc. Q.F. Ctg. No. 1 Mk. II or IIM.	DD/L/11242 Sheet 12.	-do-	-do-	-do-
I foil	1st Chge. Red N.H. 012	7 7	-do-	-do-	DD/L/11242 Sheet 16	-do-	6 6 8	-do-
	2nd Chge. White F.N.H. 023	9 12						
	3rd Chge. Blue -do-	1 0 9						
		2 1 12						
II foil	-do-	-do-	-do-	Perc. Q.F. Ctg. No. 11.	DD/L/11242 Sheet 17	-do-	-do-	-do-

Mark of Cartridge.	Charge			Nominal Weight lb. oz. dr.	Case	Primer	Method of Filling	Package	Weight of Cartridge lb. oz. dr.	Overall length (inches)
I	1st Chge.	Red	NQ/T.05-03	7 2	Q.F.25-pr. Mk.II.	Perc.Q.F. Ctg.No.11.	DD/L/11242 Sheet 10	Box Ctge. C.206 Mk.I or II or Box Ctge. C.207 Mk.I to hold 8 cartridges	6 3 4	11.525
	2nd Chge.	White	NQ.045	8 10						
	3rd Chge.	Blue	-do-	14 12						
				<u>1 14 8</u>						
<u>Supercharge increments for use with 20-lb. projectiles.</u>										
			W.M.061	0 5 0						
			NQ/S.134-040	0 5 8						
<u>CARTRIDGES Q.F. 25 PR. SUPERCHARGES FOR MK.II GUN</u>										
Mk.I foil S/chg.			WT.206-100 or WMT.211-100	2 8 0	-do-	Perc.Q.F. Ctg.No.1 Mk.II or IIM.	DD/L/11242 Sheet 9	-do-	6 12 12	-do-
-do-			SCT.198-100	2 9 14	-do-	-do-	DD/L/11242 Sheet 13	-do-	6 14 10	-do-
-do-			NQ/S.144-040	2 13 8	-do-	Perc.Q.F. Ctg.No.11.	DD/L/11242 Sheet 14	-do-	7 2 4	-do-

CARTRIDGES Q.F. 25 -PR. PACKAGES - WEIGHTS AND DIMENSIONS

No.	Package		
	Contents	Approx. Weight lb.	Stowage dimensions (inches)
Box C. 206.	M.D. or R.D.B. 2 $\frac{1}{4}$ and M.D. or R.D.B. 8.	62	19.00 x 9.70 x 12.10
-do-	W.016 or W.M.017 and W.057 or W.M.061	62	
-do-	N.H.025 or N.H.023.	65	
-do-	N.H.012 and F.N.H.023	65 $\frac{1}{4}$	
-do-	N.Q.045 and N.Q./T.05-03	63 $\frac{3}{4}$	
-do-	W.T.206-100 or W.M.T.211-100	68 $\frac{1}{2}$	
-do-	S.C.T.198-100	69 $\frac{1}{2}$	
-do-	N.Q.S.144-040	71	
Box C. 267	M.D. or R.D.B. 2 $\frac{1}{4}$ and M.D. or R.D.B. 8.	69 $\frac{1}{2}$	25.00 x 10.25 x 10.25
-do-	W.016 or W.M.017 and W.057 or W.M.061.	69 $\frac{1}{2}$	
-do-	N.H.025 or N.H.023.	72 $\frac{1}{2}$	
-do-	N.H.012 and F.N.H.023.	72 $\frac{1}{4}$	
-do-	N.Q.045 and N.Q./T.05-03.	70 $\frac{3}{4}$	
-do-	W.T.206-100 or W.M.T.211-100.	76	
-do-	S.C.T.198-100.	77	
-do-	N.Q.S.144-040.	78 $\frac{1}{2}$	

SHELL, Q.F. 25-PR.

Nomenclature	Nature of Filling	Filled Design No.	Fuze	Tracer
Shell Q.F. H.E. S/L Mk.I.D.	Amatol 60/40	DD/L/7389 or DD/L/9028	Fuze Perc. D.A. No.117, 119, 119B or Fuze,Time,No.210 or Fuze Time or Perc. No.222.	<u>**For India.</u>
	Amatol 50/50	DD/L/9028 or DD/L/9711		
	T.N.T.	DD/L/7517		
Shell Q.F. Chem. B.E. S/L. Mk.I.D. Mk.II.D. Mk.III.D. Mk.IV.D. Mk.V.D. Mk.VI.D. Mk.VII.D.	Head Filling Body charging.	DD/L/10171 DD/L/10171/1	Fuze Time and Perc. No.221 or 221.B.	
-do- Mk.VIII.D.	Head Filling Body charging	DD/L/12974 DD/L/10171/1		
Shell,Q.F. Chem. (Cylindrical Base) Mk.IX.B. Mk.X.B.	Head Filling Body charging	DD/L/10171 DD/L/10171/1		
Shell, Q.F. Chem. Bursting S/L Mk.I.D. Mk.II.D.	Head Filling Body Charging	DD/L/8154 DD/L/8154/1	Fuze Perc. D.A. No.106 or 106.E.	

Shell, Q.F. Smoke, B.E.	Container-- Smoke. Burster-- Powder	DD/L/7734	Fuze Time and Perc. No.220.		
Mk.I.A.	-do-	DD/L/7223.B.	Fuze Time and Perc. No.221 or 221.B.		
Mk.I.D.					
Mk.II.D.					
Mk.III.D.					
Mk.IV.D.					
Mk.V.D.					
Mk.VI.D.					
Mk.VII.B.		DD/L/10681			
Shell, Q.F. Smoke or Incendiary B.E. Mk.I.D.	Container	DD/L/11182	-do-		
Shot, A.P. Q.F. 25-pdr. Mk.I.T.	-	DD/L/8214	-	No.2 Mk.VIS	
" " " " Mk.II.T.	-	DD/L/10946	-	-do-	
" " " " Mk.III.T.	-	DD/L/12149A	-	Tracer Cavity S.R.261 and S.R.399.	
" " " " Mk.IV.T.	(North American production)	DD/L/13879	-	-do- (Tracer cavity .37" dia.)	
" " " " Mk.V.T.					(Indian production)
" " " " Mk.VI.T.					
" " " " Mk.VIII.T.	-				-
" A.P.C." " Mk.VII.T.	-	DD/L/15708	-	S.R.261 and S.R.399.	

P A C K A G E S			
Box	Stowage dimensions.	Weight	
		Empty	Filled
P.59, Mk. I.	19.15 x 7.85 x 8.5	12 $\frac{1}{4}$ lb.	112 $\frac{1}{4}$ lb.
P.59, Mk. II.	H 19.15 x 8.35 x 7.85	12 $\frac{1}{2}$ lb.	112 $\frac{1}{2}$ lb.
P.70.	H 23.0 x 11 $\frac{1}{2}$ x 10 $\frac{1}{2}$	21 $\frac{1}{4}$ lb.	121 $\frac{1}{4}$ lb.
P.73.	21.4 x 8.8 x 8.8	with clamp. 18 lb.	118 lb.
P.60.	19.375 x 12.3 x 5.2	10 lb.	110 lb.

795. GENERATOR, SMOKE, No.26 MK.I. (FIG.315)

This generator comprises a sheet steel body, No.30 B.G. in the form of an inverted cup having 8 radial holes near the top for the emission of smoke, and one centre hole in the head for the match composition.

Match Composition P.N.196 is filled into the hole of a millboard washer and the head of the body, being built up on the outside to form a good striking medium. A strip of Lassolastic or similar approved material of the same colour as the smoke filling is bound round the body to close the emission holes. A strip of primed muslin or cambric cotton is fixed over the millboard washer inside the body, by means of two strips of adhesive tape.

The generator is charged with P.N. compositions according to the following table:-

<u>Colour of Smoke</u>	<u>Composition</u>	<u>Amount (approx.)</u>
Red	P.N. 432	3 oz.
Yellow	P.N. 431A	3 oz.
Green	P.N. 435	3 oz.
Blue	P.N. 429	4½ oz.

The charging is retained by a bottom plate, the latter having a dab of paint of the appropriate colour on the exterior.

A sheet steel lid, lacquered on both sides, fits fairly tightly over the body for transit purposes, a cork washer being interposed between lid and body to prevent accidental functioning of the metal composition, whilst a hardwood striker, tipped with striking composition, is secured to the body, inside the lid, by adhesive tape.

The generator is 3.8 inches in diameter and 1.3 inches deep. The lid is marked with the colour of the smoke filling and instructions for use, all in black stencilling as shown in the Figure.

The lid is removed, also the striker, and the latter drawn sharply across the match composition. The generator must then be thrown away at once. Smoke begins to appear between 2-4 seconds after ignition and continues from 15-45 seconds in the case of yellow smoke, and 15-30 seconds with other colours.

Five generators are packed in a rolled paper container No.94 and eight containers i.e. 40 generators, in a steel box P.59.

The dimensions of the box are 19.15 x 8.35 x 7.85 inches and filled weight approx. 32½ lbs. The box is painted green and stencilling is in yellow.

Each box is packed with generators of one colour.

ENEMY AMMUNITION.

796. GERMAN 7.5 CM. 1.I.G.18, (or Jgr 18), H.E. SHELL
(Infanteriegranate 18)

Fig. 316

The shell is fired from the 7.5 cm. 1.I.G.18 (light, infantry howitzer) with a separately loaded Q.F. cartridge. The colour of the shell is the usual deep olive green with the numeral "13" stencilled near the head and the weight class stencilled in Roman numerals just above the shoulder. The stencilling is black. A single copper driving band, .16 inches wide is fitted at 1.1 inches from the base. The nose fuze is stamped 1.I.gr Z.23nA above the flange and is fitted with a setting plug for optional delay. The two setting positions are stamped "H" and "V" respectively. The overall length of the fuze shell is 13 inches and the weight, filled and fuze, is 12 lb. 2 oz.

SHELL

The shell consists of two main parts, the body and the head. The head is screwed into the body and is screwthreaded internally to receive the fuze and a disc carrying an exploder container. The container is of steel and is screwthreaded externally near the head for insertion in the disc. Two slots are formed in the wall at the head for the inserting tool. The length of the container is 3.07 inches. The weight of the empty shell is approximately 9 lb. 12 oz.

BURSTING CHARGE

The bursting charge, as indicated by the numeral "13" painted on the shell, consists of 1 lb. 4 oz. of cast Amatol 40/60 with a cavity for the exploder container and a smoke box. The depth of the cavity, measured from the mouth of the fuze-hole is 3.7 inches. The lower part of the cavity contains a No.7 smoke box (Rauchentwickler NF7) which is 1.1 inches in length.

GAIN

The gain, carried in the exploder container, is the Gr. Zdlg. C/98 Np. This is the larger size of the C/98 gain with a filling of P.E.T.N./Wax. Further details are given in Bulletin No.32, Item 669.

FUZE

The fuze, 1.I.gr.Z.23nA, may be given on package labels as "1.I.gr.Z.23nA." and is very similar to the type described in Bulletin No.7, Item 67. The optional delay is .15 seconds.

CARTRIDGE

The separate loading Q.F. cartridge used with this equipment consists of a brass case closed at the mouth by a millboard cup and containing a propellant charge, weighing approximately 2.5 oz., arranged in 5 sections. The percussion primer used is the C/12nA. The case is 3.5 inches in length and has stamped in the base the case model number, "6341" and the designation of the equipment, "1.I.G.18" (leicht Infanterie Geschutz, Model 18). Further details of the propellant charge are not yet available.

797. GERMAN 7.5 CM. 1.I.G.18 (or Jgr 18), H.E./AL. SHELL

Fig. 317

The shell is fired from the 7.5 cm. 1.I.G.18, a separate loading light Q.F. infantry howitzer, and is fitted with the 1.I.gr.Z.23nA fuze. The colour of the shell is the normal deep olive green with the letters "AL" marked in black 2.4 inch lettering at two positions round the shell, midway between the driving band and the shoulder. This marking indicates the inclusion of aluminium powder in the filling. The nature of the filling is indicated by the numeral "15" painted near the head of the shell. This is also in black. The overall length of the fuze shell is 13 inches and the weight, filled and fuze, is 12 lb. 2 oz. The single narrow driving band is of copper.

SHELL

The shell is comparatively thin walled and is in two parts, the body and the head. The head is screwed into the body and is threaded internally to receive the fuze and a disc carrying the steel exploder container. The weight of the empty shell is approximately 9 lb. 12 oz.

BURSTING CHARGE

The bursting charge consists of 1 lb. 7 oz. $4\frac{1}{2}$ dr. of cast T.N.T./Aluminium, 90/10, with a density of 1.63. The aluminium powder passes the 240 B.S.S. The exploder cavity formed in the filling is deeper than is required to accommodate the exploder container and is unoccupied to a depth of 2.8 cm. below the base of the container. The dimensions of this space correspond with those of the No. 7 smoke box (Rauchentwickler N^o 7) which is used below the exploder container in amatol filled shell for this equipment. The addition of the aluminium gives rise to a very considerable evolution of heat and so increases the available energy of the explosive. The duration of the flash is also considerably prolonged.

GAINIE

The gainie, carried in the exploder container, is the Gr.Zdlg.C/98Np. This is the larger size of the C/98 gainie, filled P.E.T.N./Wax of which details are given in Bulletin 32, Item 669.

FUZE

The fuze has optional delay of .15 seconds. A description of a similar type is given in Bulletin No. 7, Item 67. The abbreviated designation stamped on the fuze is "L.I.gr.Z.23nA" but on package labels it may be given as "L.Jgr.Z.23nA".

798. GERMAN 7.5 CM. Kw.K CARTRIDGE Q.F. HOLLOW CHARGE, MODEL 38

Fig. 318

This fixed Q.F. round is fired from the 7.5 cm. Kw.K. (tank gun) and the Stu.G. 7.5 cm.K. (Assault gun). The weight of the complete round is approximately 12 lb. 14 oz. and the overall length 18.5 inches. The shell is fitted with a dome shaped impact cap which carries the small direct action fuze A.Z.38. The cap and shell are painted the normal dark olive green or, in some instances, white. There is no fundamental difference between the shell of these colours. The numeral "95", indicating the nature of filling, is marked on the cap in black. The cartridge case is stamped in the base with the model number 6354 St and the designation of the tank gun "7.5 cm. Kw.K".

The complete round consists of the following components:-

- Fuze A.Z.38.
- Shell, model 38, filled RDX/wax/T.N.T.
- Gainie, model 40.
- Case, model 6354 St.
- Propellant charge of 355 grams of Nz.R.P. (135.5.5/2)
- Primer electric C/22.

SHELL

The weight of the shell, filled and fuzed, is approximately 9 lb. 14 oz. and the overall length, 11.2 inches.

The steel body of the shell is punched and drawn with a solid base and is fitted with a single driving band of the iron copper clad type. A cannellure is formed behind the driving band for the attachment of the case. The cavity for the bursting charge tapers towards the base and is designed for a block filling. An internal screwthread is formed at the forward end of the body to receive the impact cap. The impact cap is of cast iron and is dome-shaped with a flat formed on the top in which a screwthreaded fuze hole is formed. A circumferential shoulder is formed on the inner surface of the cap to bear on a washer positioned over the liner of the cavity in the bursting charge. The cavity liner is pressed from dead mild steel sheet of 1 mm. thickness and is flanged to cover the top of the bursting charge. An aluminium tube, to connect the fuze with the gainie in the base of the shell cavity, passes through a hole in

the base of the liner where it is secured by crimping of the tube. The weight of the shell without filling, fuze or gaine is 8.46 lb.

BURSTING CHARGE

The bursting charge weights 1 lb. 3 oz. 9 dr. and comprises three pressed blocks consisting of 60 per cent. of R.D.X. phlegmatised with 5 per cent. of wax and 40 per cent. of T.N.T. The upper block has the "hollow" cavity formed in the head and a central channel for the aluminium tube. The intermediate block also has a channel for the aluminium tube whilst the lower block is in annular form and accommodates the gaine. The three blocks are contained in a waxed paper carton which is secured in the shell by a bituminous composition lining the walls. A layer of this composition is also formed in the base of the shell cavity.

A label on the waxed paper carton containing the filling reads as follows:-

Sprldg.	d. 7,5 cm.	Gr.38
H.5.(K)	elg	40
+ Fp.02	slb	39
cwg	95	433/40

GAINES AND FUZE

Descriptions of the gaine, model 40, and the A.Z.38 fuze are included in Bulletin No.33, Items 741 and 744 respectively.

PROPELLANT CHARGE.

The charge is enclosed in an artificial silk bag and, as indicated by the markings on the bag, weighs 12 oz. 8 dr. The propellant is nitrocellulose powder in the tubular form. The tubes vary in colour and are approximately 5.3 inches long. The diameter of the hole varies between .053 and .068 inches. The external diameter of the tube varies because of the irregular exterior surface. This diameter is approximately .131 inches. An igniter consisting of perforated circular discs of double base propellant is attached at the base of the bag by thread. The bag containing the charge is marked "7.5 cm. Kw.K, Stu.G.7.5 cm. 355 g. Hz.R.P. (135.5.5,5/2).

PRIMER

The C/22 electric primer is described in Bulletin No.26, Item 464.

ACTION OF SHELL

On impact the cap is shattered and the fuze functions. The flash from the fuze passes through the aluminium tube to the detonator in the gaine at the base of the shell cavity. This results in the detonation of the P.E.T.N./Wax filling of the gaine and thus brings about the detonation of the bursting charge from the base. The "hollow" in the head of the bursting charge has the effect of focussing the effect of the detonation to perforate the plate struck.

PERFORATION OF ARMOUR PLATE

It is estimated that the shell will perforate 55 mm. of homogeneous armour at normal or 45 mm. of homogeneous armour at 30 degrees to the normal.

799. GERMAN 21 CM. Mrs. 18 Q.F. HOWITZER CARTRIDGE

The cartridge is of the separate loading Q.F. type consisting of a brass-plated steel case with the percussion primer C/12 n A.St. and a propellant charge of double base composition arranged in sections to form 5 charges for normal use. These sections are packed in a cylindrical container. A special or super charge, section No.6, is also used in place of the lower charges. The supercharge is also packed separately in a cylindrical container.

CASE

The steel case, coated with brass, has the model number "6351 St" and the designation of the equipment "21 cm. Mrs.18" stamped in the base. The length of the case is 16.2 inches.

PROPELLANT CHARGE

The propellant charge, comprising sections No.1 to 5 inclusive, consists of 15 lb. 14 oz. 1 dr. of double base propellant and a 1 oz. 12 dr. igniter of nitrocellulose powder. These weights are based on a normal charge temperature of 25 degrees Centigrade.

Each of the sections is enclosed in a white flat bag of artificial silk excepting the No. 1 section which consists of two such bags sewn together at four points on the circumference, with a pink igniter bag at the base. The bags containing sections No.2 and 3 are semi-circular. All of the remainder are circular. The bags are marked in black to indicate the charge numeral, the weight, nature and size of propellant and the place and date of manufacture of the propellant and the filling of the charge. The upper bag of section No.1 is also marked "Bleidraht im Beutel" to indicate the inclusion of lead wire as a decoppering agent. The charge temperature normal of 25° Centigrade is indicated by the marking "P.T. + 25°C." in red.

Section No.1 is a composite charge, each of the bags containing a double base propellant of the same basic composition (diethylene-glycoldinitrate and nitrocellulose) but of a different shape and size. The propellant in the lower bag is in the form of square flake whilst that in the upper and in the other sections is in the form of circular discs with a central perforation.

The weights, natures and sizes of propellants, as marked on the bags, are as follows :-

Section	Nature of Propellant	Size		Weight of Section		
		Metric	Inches	Grams	lb.	oz.dr
Igniter	Nz.Man H.P.	(1,5-1,5)	.059 x .059	50	-	1 12
1 (base bag)	Digl. Bl.P.10.5	(3,3.0,8)	.113 x .113 x .03	1000	2 3	4
1 (top bag)	Digl. Rg.P.-10.5	(1,9-15/4)	.075 x .59- .158	1377	3 -	9
2	-do-	-do-	-do-	527	1 2	9
3	-do-	-do-	-do-	697	1 8	9
4	-do-	-do-	-do-	1480	3 4	3
5	-do-	-do-	-do-	2124	4 10	15

SUPERCHARGE (SONDERKART 6)

The cylindrical rolled paper container in which this charge, section No.6, is packed, is marked in white, "Sonderkart 21 cm. Mrs. 18".

The charge is contained in a cylindrical bag of white artificial silk which is choked at the neck, and has a pink base, containing the igniter composition. The bagged charge is approximately 20 inches long and bears the following marking in addition to the charge numeral "6", in black:- "21 cm. Mrs.18, 15,537 kg. Digl. R P.-G1-(500-5,6/3)". The normal charge temperature, on which the weight of the charge is based, is indicated by the marking "P.T. 25°C." in red.

The weight of the propellant charge as indicated by the markings is 34 lb. 3 oz. 11 dr. The charge consists of a bundle of tubular cords tied in two places with string. The tubular cords are approximately 19.7 inches long and .22 inches in diameter. The internal diameter of the tube is .12 inches. The propellant is of the double base type and consists basically of diethylene-glycoldinitrate and nitrocellulose.

800. GERMAN 21 CM. ANTI-CONCRETE STREAMLINED SHELL, MODEL 18

(Granate 18 Be.)

Fig.319

The shell is fired from 21 cm. Mrs. 18, a separate loading Q.F. heavy field howitzer and is, in general design, similar to the shell of the same nature described for the 15 cm. s.F.H.18. in Bulletin 33, Item 748. Two driving bands of copper and iron are fitted to the streamlined body of the shell. The ballistic cap, welded to the head, is not rounded at the nose to

the same extent as that on the 15 cm. shell. The shell and cap are painted the normal dark olive green and the abbreviated designation, "Gr. 18 Be.", is included in the stampings in the underside of the base fuze. The overall length is 36.75 inches and the weight, filled and fuze, is 267.75 lb. The weight of the empty shell is 237 lb. 3 oz. The average V.D.H. figure for the body is 290.

BURSTING CHARGE

The bursting charge weighs approximately 25 lb. 9 oz. and is of the block type comprising a main filling of T.N.T./Wax pellets, an intermediary of T.N.T. pellets and desensitized nose pellets consisting of T.N.T./Wax/potassium chloride. The pellets, 10 in all, are contained in a cardboard carton which is cemented to the wall of the shell cavity. The carton is stencilled "Sprengladung 21 cm. Gr.18 Be" and a label at the base is printed as follows:-

"Sprengldg d 21 cm. Gr. Be, Fp 10 (Sulfiltri) Rd.1939 Fp 02 (unkr)."

The details of the pellets comprising the filling from base to nose are as follows:-

- 4 lb. 2 oz. pellet of T.N.T./Wax 94/6 at the base shaped from the underside to fit over the exploder container and at the upperside to receive a T.N.T. pellet.
- 8 oz. T.N.T. pellet in annular form which fits into the upperside of the base pellet and surrounds the upper end of the exploder container.
- 4 lb. $\frac{3}{4}$ oz. pellet of T.N.T./Wax 90/10 in annular form to receive a T.N.T. pellet.
- 1 lb. $5\frac{1}{2}$ oz. T.N.T. pellet in solid cylindrical form which fits into the annular T.N.T./Wax pellet.
- 5 lb. 2 oz. pellet of T.N.T./Wax 90/10.
- 5 lb. $4\frac{1}{2}$ oz. pellet of T.N.T./Wax 91/9.
- 4 lb. 2 oz. pellet of T.N.T./Wax 91/9.
- 6 oz. disc pellet of T.N.T. 60.5 per cent., wax 5.4 per cent. and potassium chloride 34.1 per cent.
- 5 oz. disc pellet of T.N.T. 44.1 per cent, wax 5.6 per cent. and potassium chloride 50.3 per cent.
- 5 oz. disc pellet of potassium chloride.

The potassium chloride pellet and the desensitized T.N.T. composite pellets at the forward end of the shell cavity are apparently used instead of the usual pitch pad or wooden block to deaden the H.E. filling at this point and so prevent premature functioning on impact.

GAIN AND FUZE

The gaine is carried in the steel exploder container and is the Zldg. C/98 filled picric acid.

The base fuze is of the optional delay type and is provided with a setting plug and has setting graduations stamped in the underside.

801. GERMAN TELLER MINE 42

Fig. 320

This model of the teller mine, like the 35 model described in Bulletin No.33, Item 738, is designed to function by pressure applied to a contact fuze or by detonators in the side and base which may be initiated by "booby trap" devices or by instantaneous detonating fuze connected to another mine. In this model the fuze is situated beneath the cover plate assembly.

The mine is 12.8 inches in diameter and has a convex head with a central recess, approximately 7 inches in diameter, from which the main cover plate and the fuze cover plate protrude. The main cover plate is corrugated radially and has a plain retaining ring surrounding its base. The fuze cover plate protrudes from the centre of the main cover plate and has 6 curved surfaces formed on its flange to facilitate turning by hand.

The overall height of the mine with the cover plate assembly is 3.7 inches. The weight of the mine with its amatol bursting charge and P.E.T.N./Wax exploders is 17 lb. 15 oz. The exterior is painted a dark grey but will probably also be found with camouflage painting.

The fuze is similar to that used in the British anti-tank mine R.E.No.1 with the striker supported by a shearing wire. A load of 500 lb. applied to the cover plate above the fuze will cause the fuze to function. The required load decreases towards the periphery of the main cover plate because of the lever effect and at the outer edge is approximately 300 lb.

BODY

The body is pressed from sheet steel and consists of two main parts, the charge container and the base plate. The base plate is fitted to close the base of the container after filling and is turned in at its circumference to engage a flange at the base of the container wall. A brass detonator holder is screwed into a hole with a socket in the base about 2.2 inches from the centre. The holder is screwthreaded internally near the mouth to receive the pull igniter. The charge container has a similar detonator holder screwed in the side wall. The head of the container is convex and is shaped to form a concentric circular recess of 7 inch diameter with a fuze socket welded at its centre. A detonator holder of steel for the main detonator is fitted to the base of the fuze socket. A locating ring with a circular groove to receive the base end of the cover plate spring is fitted round the socket in the recess. A steel retaining ring fitting round the wall of the recess is secured by indentations at intervals in the wall and ring. The top of the ring is turned inwards to form a flange which retains the main cover plate by engaging with a flange at the base of the cover plate. The bottom of the ring is also curved inwards to present a suitable surface for a skirting of red rubber the lower edge of which is held between the retaining ring and the wall of the recess.

COVER PLATE ASSEMBLY.

The main cover plate is approximately 5.8 inches in diameter with a .5 inch cylindrical wall flanged at the base to engage with the retaining ring in the charge container. The top of the plate is corrugated radially and rises slightly towards the centre where a screwthreaded hole is formed to receive the fuze cover plate. A locating ring for the top of the spiral spring which supports the main cover plate is spot welded to its underside. Two supporting rings between which the upper edge of the rubber skirting is held are attached beneath the main cover plate. The uppermost ring is in the form of a hoop with an internal flange at the base. This ring fits into the underside of the main cover plate where it is secured by spot welding. The lower ring is in the form of a slightly dished washer with a larger external diameter than the upper ring. The two rings with the top of the rubber skirting held between them are held together by spot welding.

The fuze cover plate screws into top of the main cover plate and is recessed at the underside to fit over the top of the striker protruding from the fuze. The plate is in the form of a plug with a flanged head which has six curved sides to provide a handgrip. A rubber sealing washer is held between the flange and the main cover plate.

BURSTING CHARGE AND EXPLODERS.

The bursting charge consists of 10 lb. of Amatol 50/50 which is filled from the base to a density of 1.59 and covered with a coating of black bituminous paint. An unwrapped exploder pellet of pressed P.E.T.N./Wax 91/9 is inserted to form a surround for each of the detonator holders during the process of filling. The weights and densities of the pellets are :-

Exploder for main detonator $5\frac{1}{2}$ oz, density 1.57
Exploder for side detonator $3\frac{1}{2}$ oz, density 1.58
Exploder for base detonator $2\frac{1}{4}$ oz, density 1.57

802. ITALIAN 75/27 HOLLOW CHARGE STREAMLINED SHELL WITH INTERNAL BASE FUZE

Fig. 321

The shell is fired from the separate loading Q.F. 75 m.m. 27 calibre field gun. The streamlined body of the shell has a narrow driving band of copper and is fitted with a dome shaped impact cap. The body is coloured the normal pale blue with a white band immediately above the driving band. The impact cap is bright red. The designation of the equipment "75/27" and the nature of the bursting charge "TRITOLITE" are stencilled in dark blue on the body. The length of the shell is 10-inches and the weight, filled, is 10-lb. 3-oz.

SHELL

The shell body is of forged steel with a mild steel plate pressed in at the base and a left hand external screwthread at the head to receive the impact cap. The cavity for the bursting charge is increased in diameter near the head and has a steel adapter for the fuze sweated with solder near the base. The impact cap is of aluminium alloy and is stepped internally to engage the flange on the cavity liner.

The cavity liner is pressed from 1 m.m. mild steel plate and is roughly parabolic in shape.

The weight of the shell without fuze and filling is 8.57-lb.

BURSTING CHARGE AND EXPLODER.

The bursting charge weighs 1-lb. 0-oz. 6-dr. and consists of R.D.X./T.N.T./Wax, the percentage of each being 58, 40.5 and 1.5 respectively. The filling is cast with the fuze and exploder assembled in the cavity.

The exploder consists of approximately 656 grains of R.D.X./wax, 95/5, in the form of two pellets in a paper wrapper. The upper pellet is solid whilst the lower has a cavity in the base to fit over the gaine fitted to the fuze. An aluminium sheath, shaped to fit round the pellet and form a liner for the gaine cavity, is fitted over the base end of the lower pellet.

FUZE

The fuze is screwed into adapter in the base of the shell cavity with a left hand screwthread and is fitted with a gaine which enters the cavity in the exploder. Details of the fuze and gaine are not yet available.

PERFORATION OF ARMOUR.

The perforation performance against homogeneous armour plate is estimated to be 55 m.m. at the normal and 50 m.m. at 30 degrees to the normal.

803. ITALIAN H.E. HAND GRENADE S.R.C.M. Model 35.

Fig. 322

The grenade is of the percussion type with an "Always" action. The cylindrical body with a screwthread around the centre is painted red and is fitted with an unpainted safety cover of aluminium which fits over one end and extends over a portion of the side. The head of the safety cover is embossed "SOCIETA' ROMANA". The grenade is approximately 3.2 inches long, 2 inches in diameter and weighs 6 oz. 10 dr. A paper wrapper, in which the grenade is packed, bears the printing "SOCIETA ROMANA COSTRUZIONI MECCANICHE".

The body of the grenade is of tinned plate and consists of two cup shaped portions with a pressed screwthread at the mouth for assembly and a recess at the closed end which forms part of the arrangement to obtain "Always" action. When screwed together the cups are secured by a locking wire which is located on the inside of the pressed threads in the base cup and is bent to form a projection which passes through coinciding holes in both cups and protrudes slightly from the exterior of the assembled body. The upper cup carries a stud near the periphery of the head and has slots in the wall for the insertion of the safety strip and safety bar. The stud is used as a means of coiling a

length of light chain which connects the safety cap to the safety bar.

A steel collar is located in the recess inside the head and base of the body. The collars are seated in similar recesses in the charge container and outer container for which they form the end supports.

The outer container is of tinned plate and is in the form of an inverted cup which carries a needle inside at the closed end and fits over the charge container. A spiral spring is held between the upper end of the outer container and a bearing plate. The bearing plate has a central hole for the needle and is supported by a shutter device when the grenade is armed. The shutter device consists of a tinned plate arm pivoted at one end on a pin which is fixed in an aperture in the wall of the outer container whilst the other end protrudes through another aperture on the opposite side of the container. The protruding end is held in engagement with an inclined undercut on a projection formed in the aperture by a spiral spring. The spring extends around the outside of the container, between the two apertures, and is tensioned between the protruding end of the shutter and the pivot pin. The aperture in which the undercut projection is formed, also has a slot through which the protruding end of the shutter is moved, by the spring, when freed from the undercut. The shutter is a thin flat plate tapering from the centre towards the ends. A hole, eccentrally placed at its widest part, is not coincident with the needle hole in the bearing plate when the shutter is held by the undercut projection. Two additional apertures are formed diametrically opposite in the wall of the outer container, at right angles to those for the shutter, to receive the safety bar and the safety strip. The bar extends diametrically through the outer container between the bearing plate and the shutter and is bent at the outer end to fit over the ring of the safety cover. The bar is attached to the ring by a 2.5 inch length of light chain. The safety strip is of thin brass and extends diametrically through outer container and the body of the grenade between the shutter and the head of the charge container. A vulcanized gripping tab is attached to one end of the strip which passes over the cover ring. The other end of the strip emerges below the ring and is bent upwards over the ring and the safety bar. A steel sleeve, wound with wire, is fitted externally to the outer container to provide fragments for destructive effect and the weight necessary for "Always" action.

The cylindrical charge container is of tinned plate and has a 1.5 oz. filling of T.N.T. with a central detonator. The percussion cap at the head of the detonator protrudes through a central hole in the closing cap of the container.

The safety cover is shaped to fit over the head and down one side of the grenade. The cover carries an encircling ring secured in an inclined position by bent tongues formed in the cover. The cover is retained on the grenade by the safety strip and bar engaging the ring to which the chain of the safety bar is also attached.

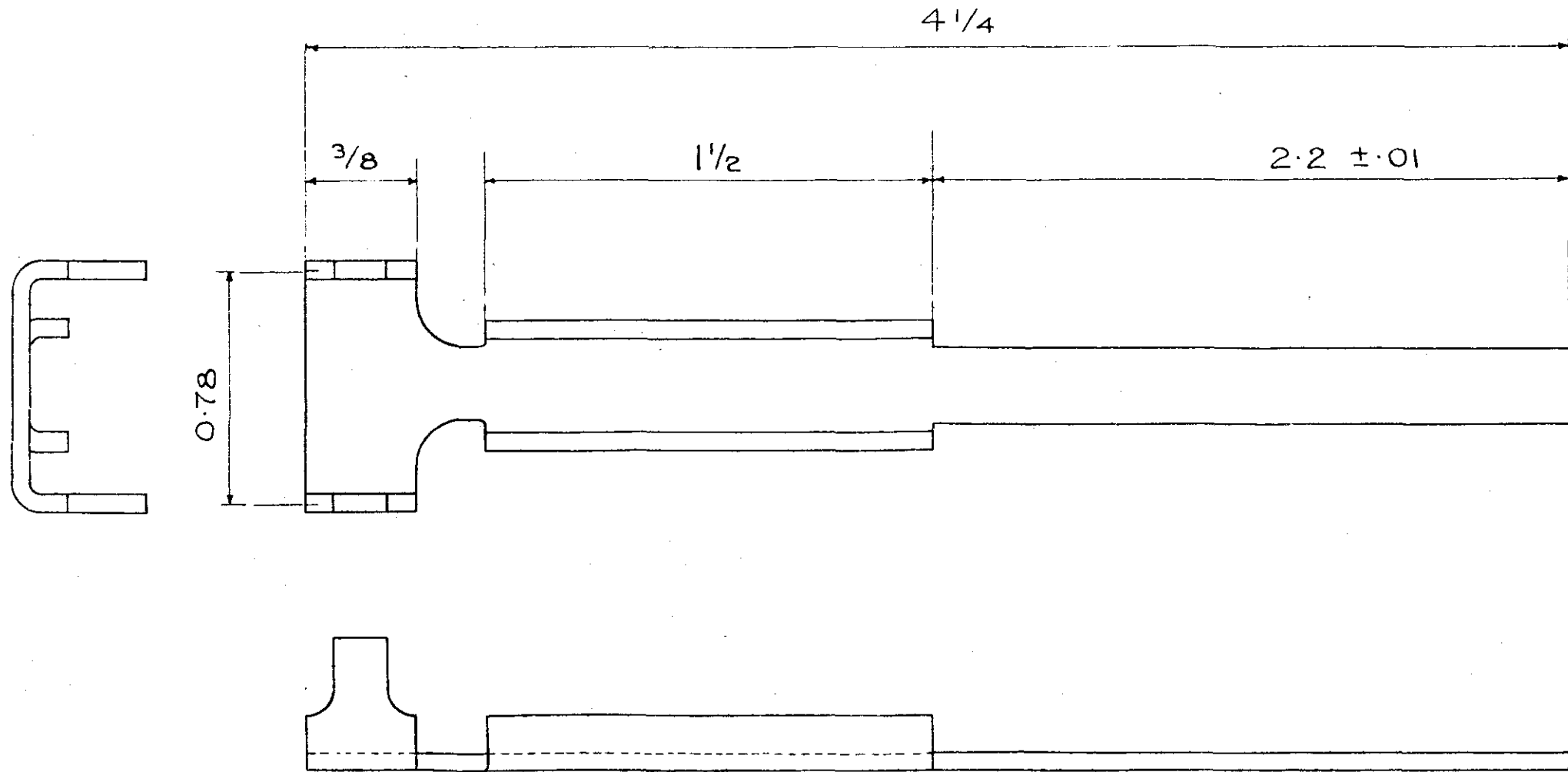
ACTION.

Before throwing the grenade the safety strip is removed by pulling the vulcanized tab. The withdrawal of the strip releases the ring of the safety cover. During flight the cover leaves the grenade and functioning as a drogue extends the chain and withdraws the safety bar. The charge container with its detonator is then held off the needle in the head of the outer container only by the intervening spiral spring and the shutter. On impact the charge container is forced further into the outer container. The manner in which this movement is brought about depends upon the position of the grenade on impact. With a head-on strike the charge container is carried into the outer container by momentum. With a base strike the outer container, weighted with its steel sleeve and wire winding, is carried down over the charge container by momentum. With side impact the collars engaging in the recesses at the head and the base of the containers are tilted by the side thrust and thus cause a telescopic movement of the containers. The entry of the charge container forces the shutter clear of the undercut projection and as it is turned on its pivot by the tension spring, the hole in the shutter coincides with the hole in the bearing plate. Whilst in this position the spiral spring is further compressed and the needle pierces the detonator. Unless the grenade is thrown with considerable force the shutter will not be released on impact and the grenade will fail to function.

FIG. 310 (ITEM 757.)

GRENADÉ HAND OR .303 IN RIFLE Nº 36 M

ALL PURPOSE KEY



SCALE - 2/1

FIG. 3IIA (ITEM. 795)
PRIMER, PERCUSSION, No. 30. MK I

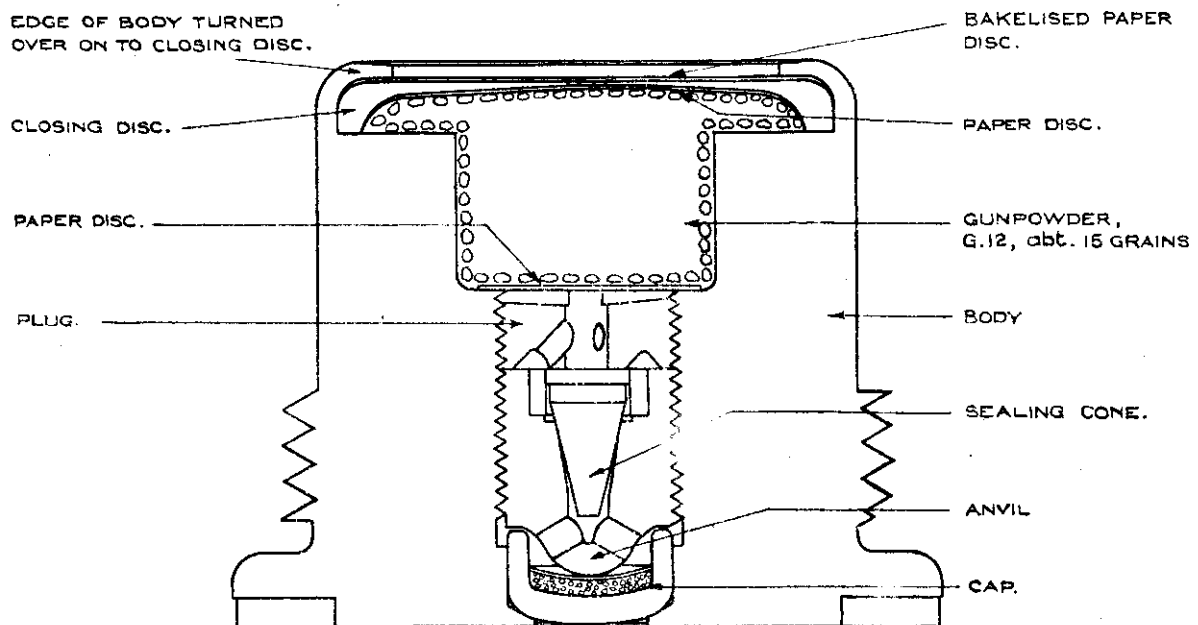


FIG. 3II (ITEM. 764)
PRIMER, PERCUSSION, No. 29. MK I

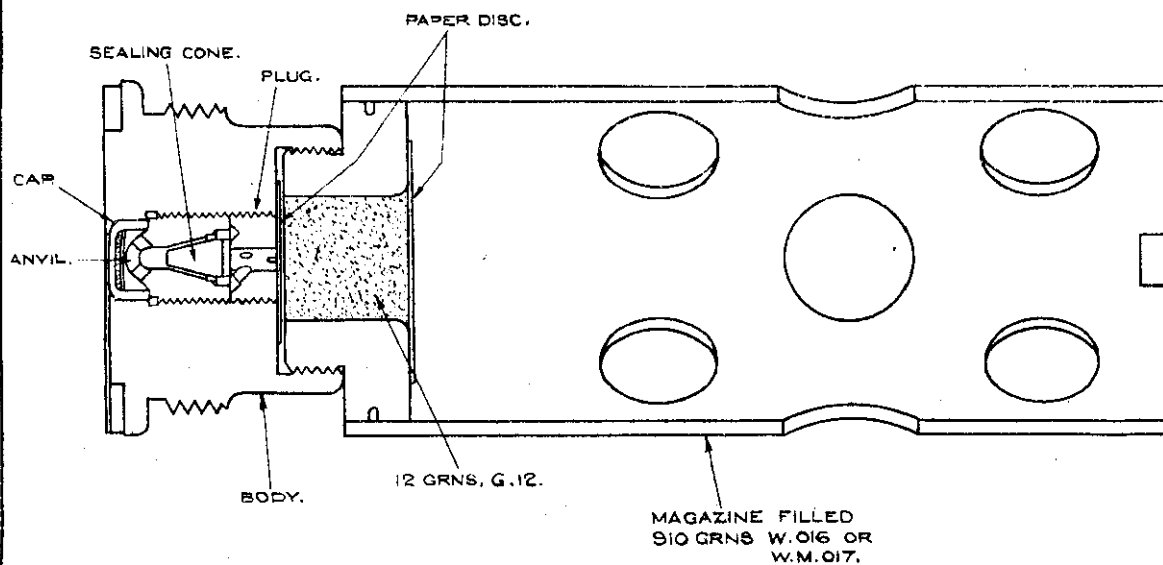
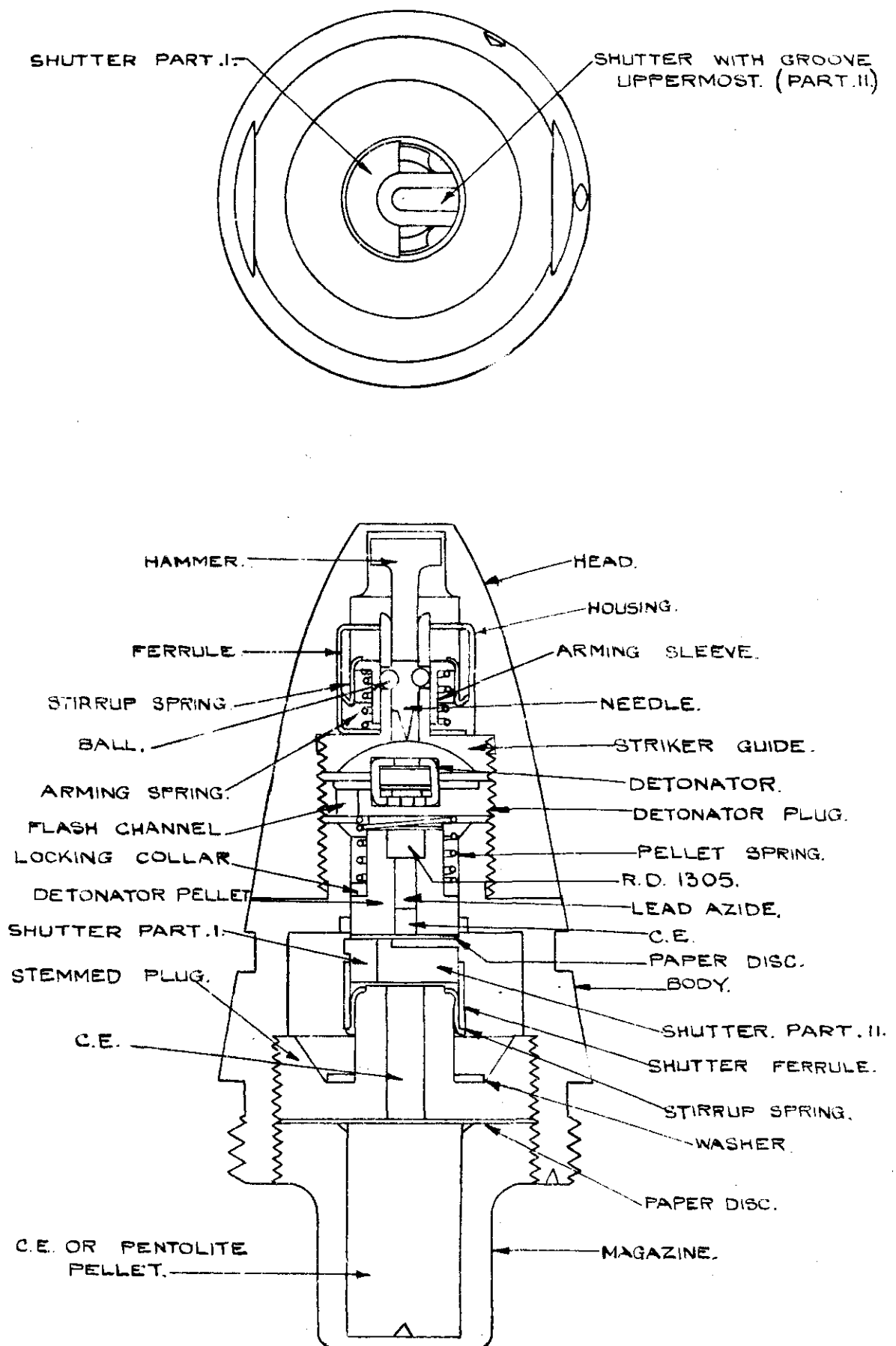


FIG. 312 (ITEM 772).
FUZE, PERCUSSION, D.A. N° 255 MK.1.



BOX, PACKING, FOR 90m.m. GUN M.I.
AMMUNITION MARKING.

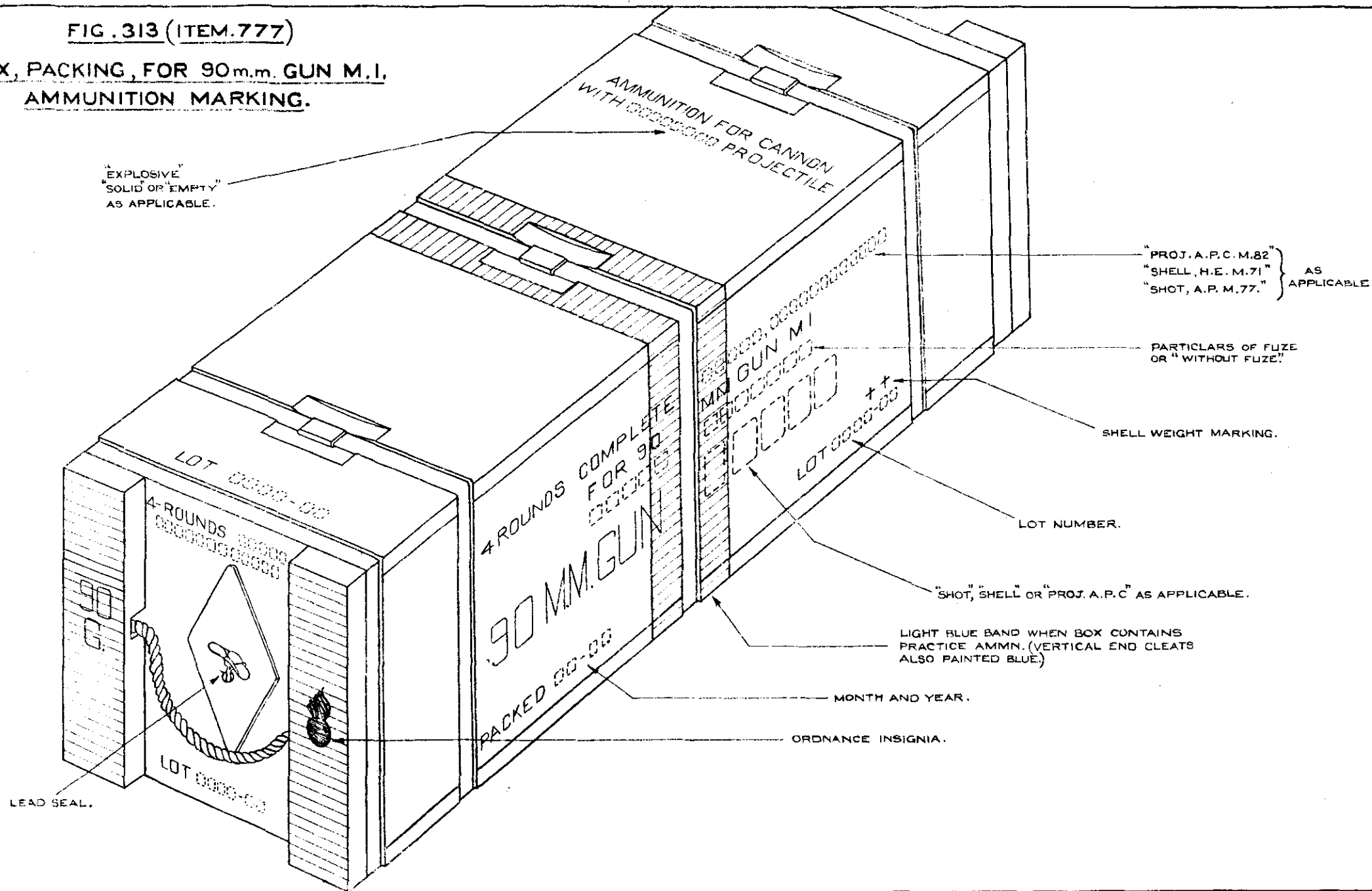


FIG. 314. (ITEM.786)
CARTRIDGE, Q.F. 90 M.M.WITH SHELL H.E. M.71 FOR GUN M.I. (AMERICAN.)

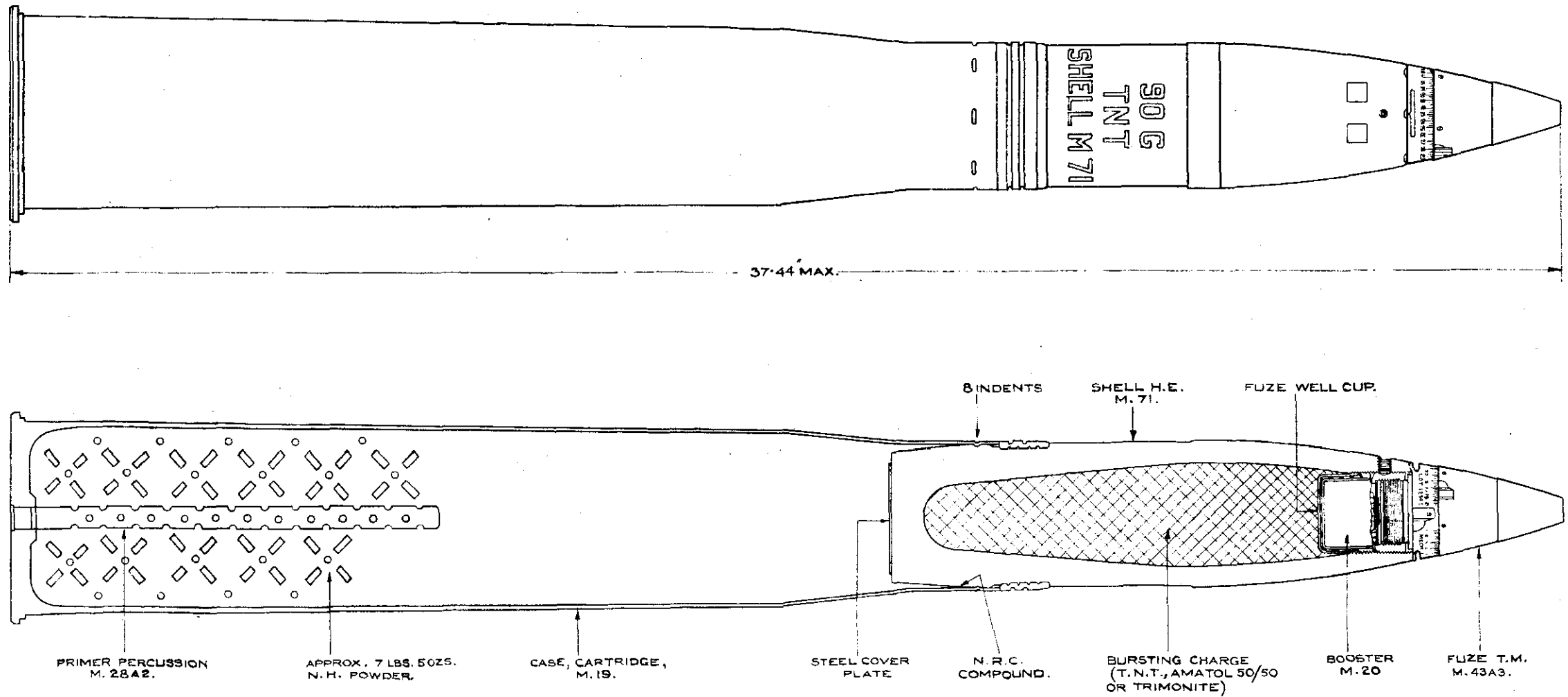
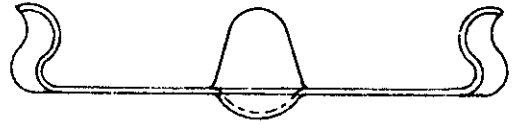
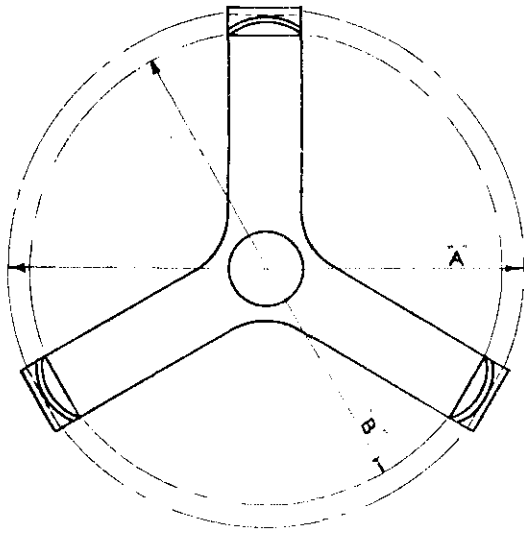
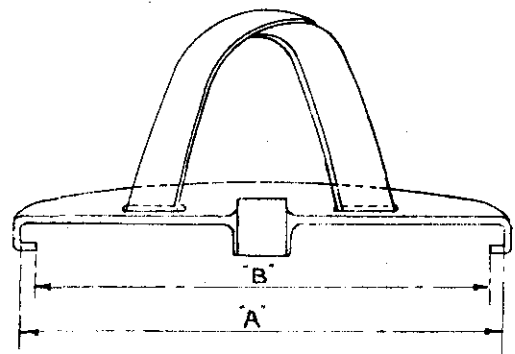
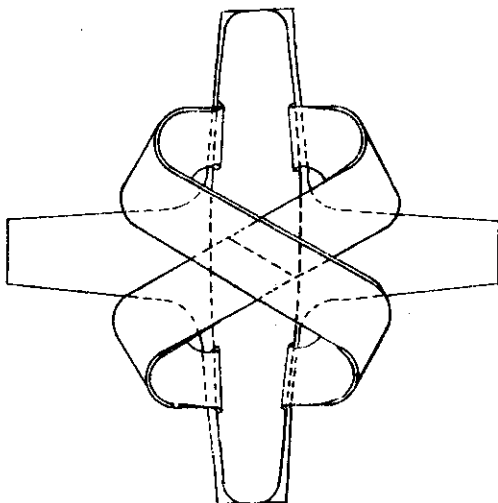


FIG.314 A. (ITEM 792.)

Q.F. CARTRIDGE CLIP DIMENSIONS A AND B REFERRED TO IN ABOVE ITEM.



3 ARM CLIP



4 ARM CLIP

FIG. 315 (ITEM. 795.)

GENERATOR, SMOKE, No. 26.

BLUE, MK.I.
RED, MK.I.
GREEN, MK.I.
YELLOW, MK.I.



PARTICULARS TO BE COMPLETED AND
STENCILLED IN BLACK TYPE.

* MONOGRAM OF FILLING STATION OR
CONTRACTOR'S INITIALS OR RECOGNISED
TRADE MARK.

-/- DATE OF FILLING (MONTH AND YEAR.)

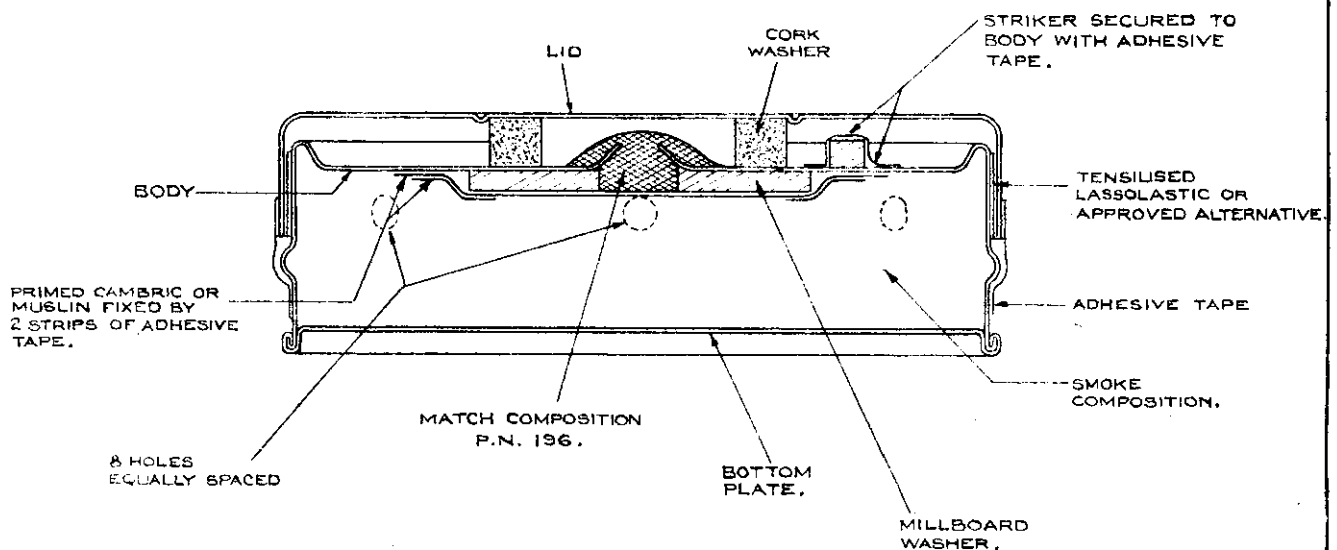
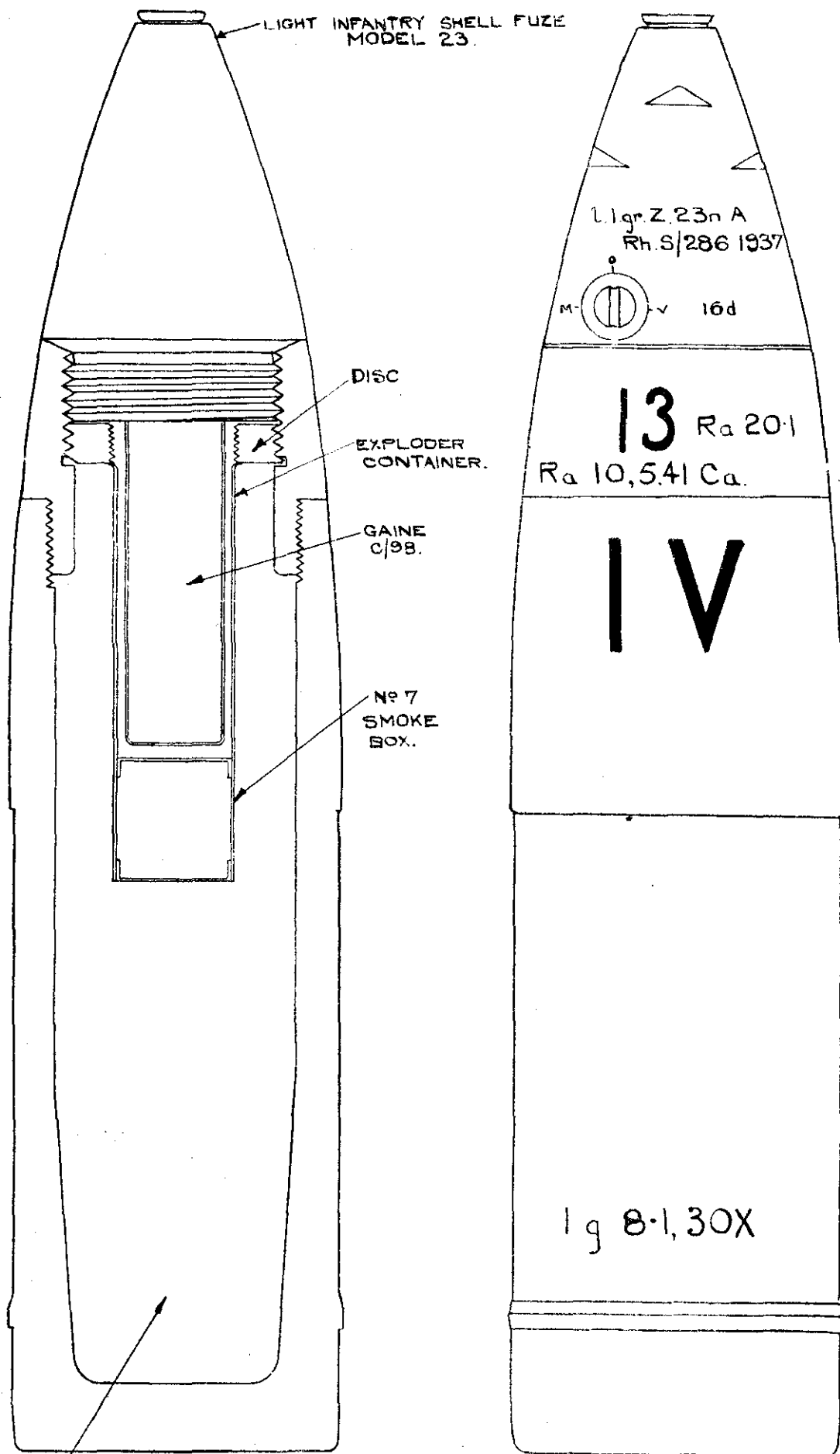


FIG. 316 (ITEM 796)

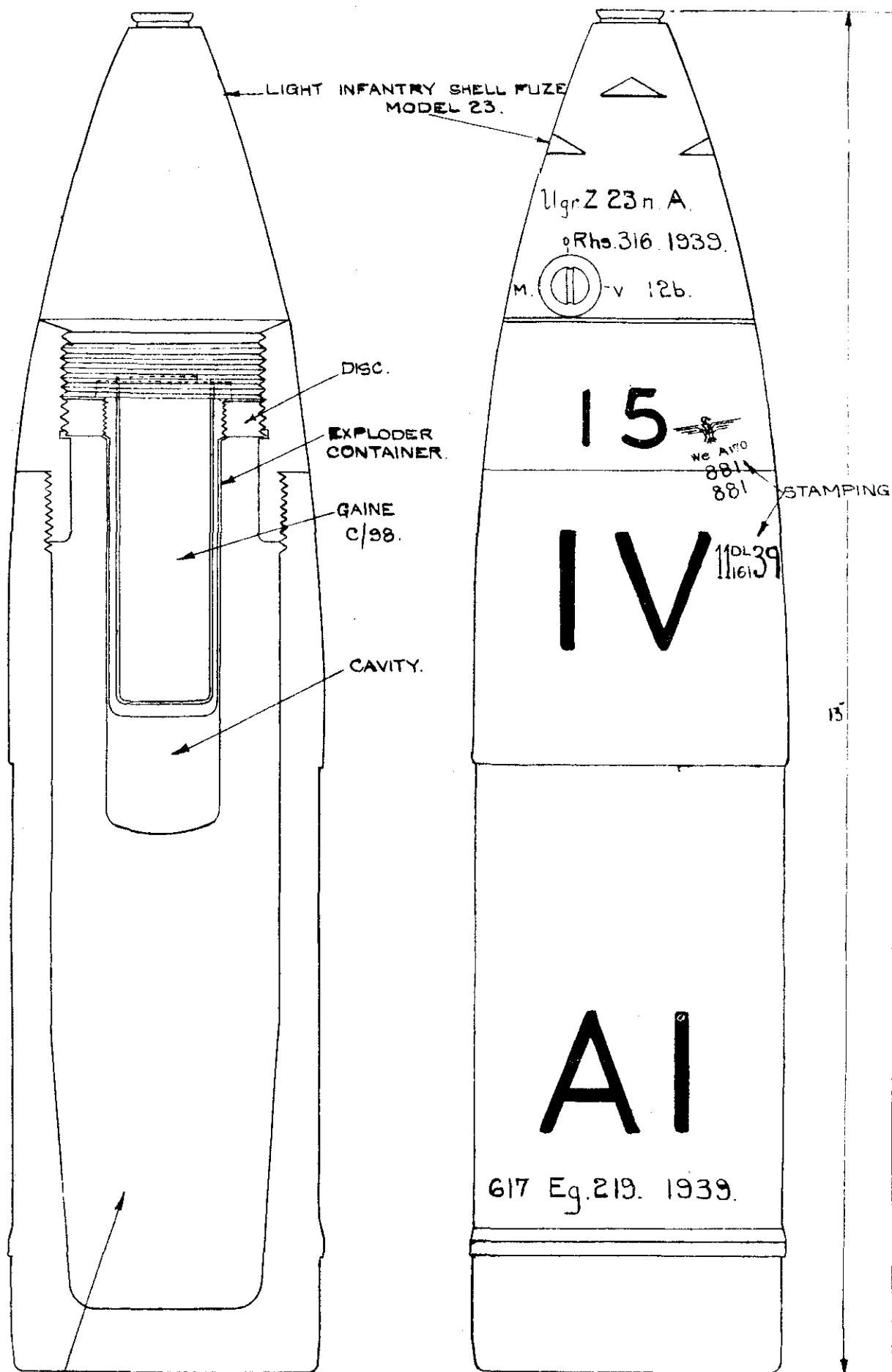
GERMAN 7.5 cm. l. I.G. 18, (OR Jgr 18,) H.E. SHELL.



1 LB 4 OZ. CAST
AMATOL 40/60.

SHELL PAINTED DEEP
OLIVE GREEN AND
STENCILLED IN BLACK.

FIG. 317 (ITEM. 797)
 GERMAN 7.5 cm. L.I.G. 18 (OR Jgr. 18) H.E./A.L. SHELL.



1LB. 7oz. 4 1/2 DR. CAST
 T.N.T. ALUMINIUM 90/10.

SHELL PAINTED DEEP
 OLIVE GREEN AND
 STENCILLED IN BLACK.

FIG. 318 (ITEM 798)

GERMAN 7.5 cm. K.W.K. & Stu.G. 7.5 cm. K. SHELL Q.F. HOLLOW CHARGE.
GRANATE 38.

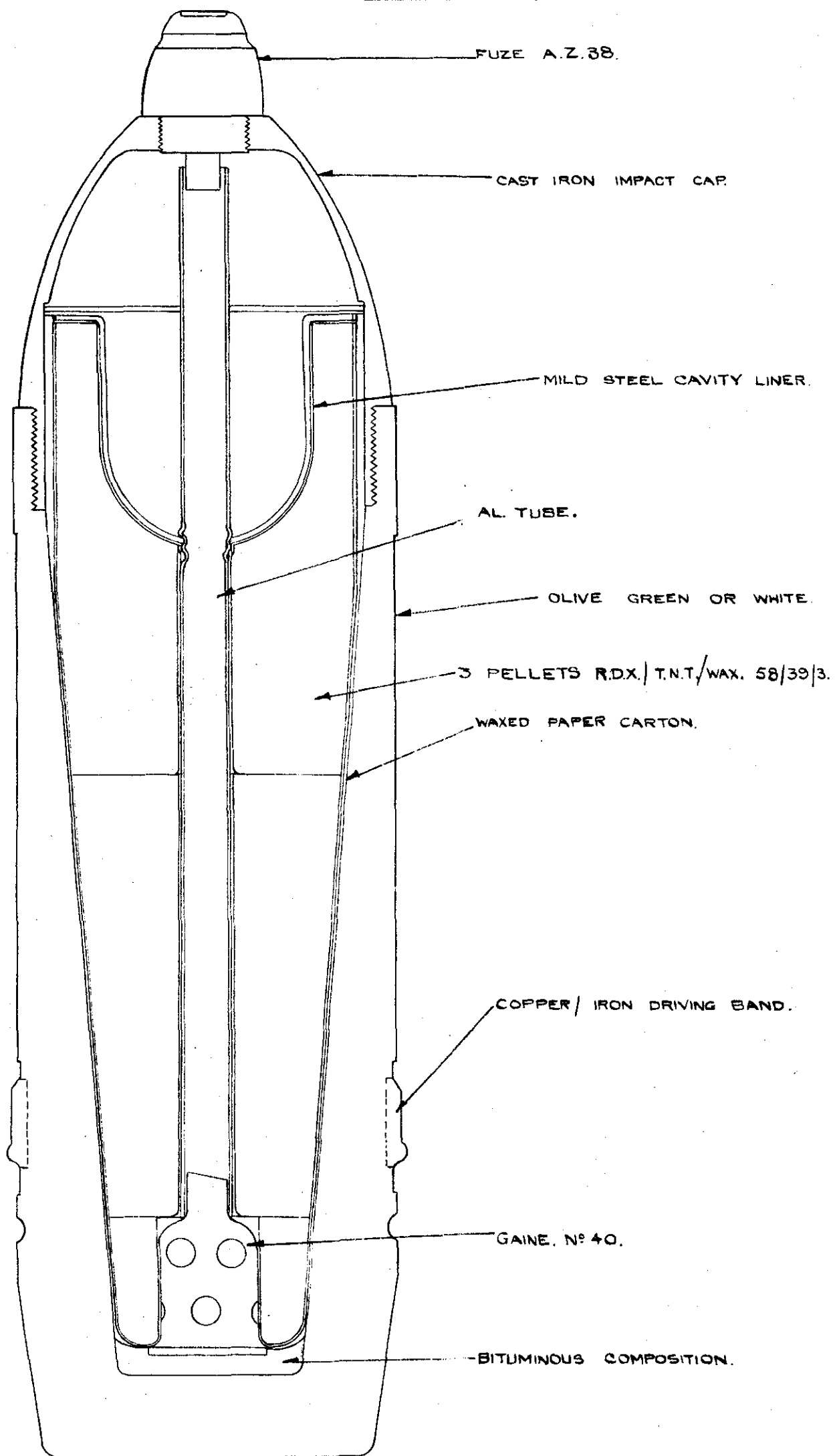


FIG 319. (ITEM 800)

GERMAN 21cm. ANTI-CONCRETE STREAMLINED SHELL, MODEL 18.
GRANATE 18 Be.

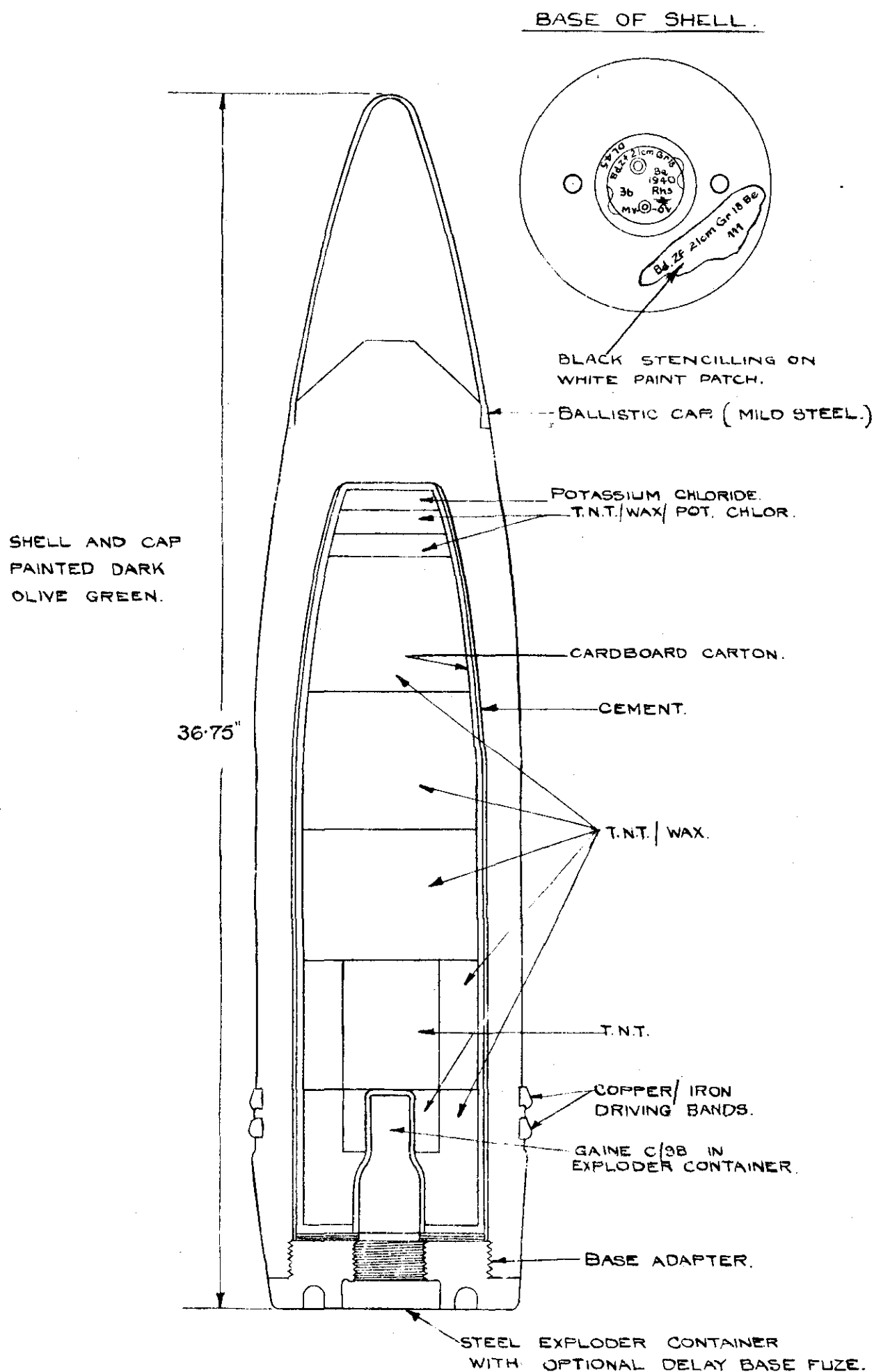


FIG. 320 (ITEM. 801.)

GERMAN TELLER MINE 42.

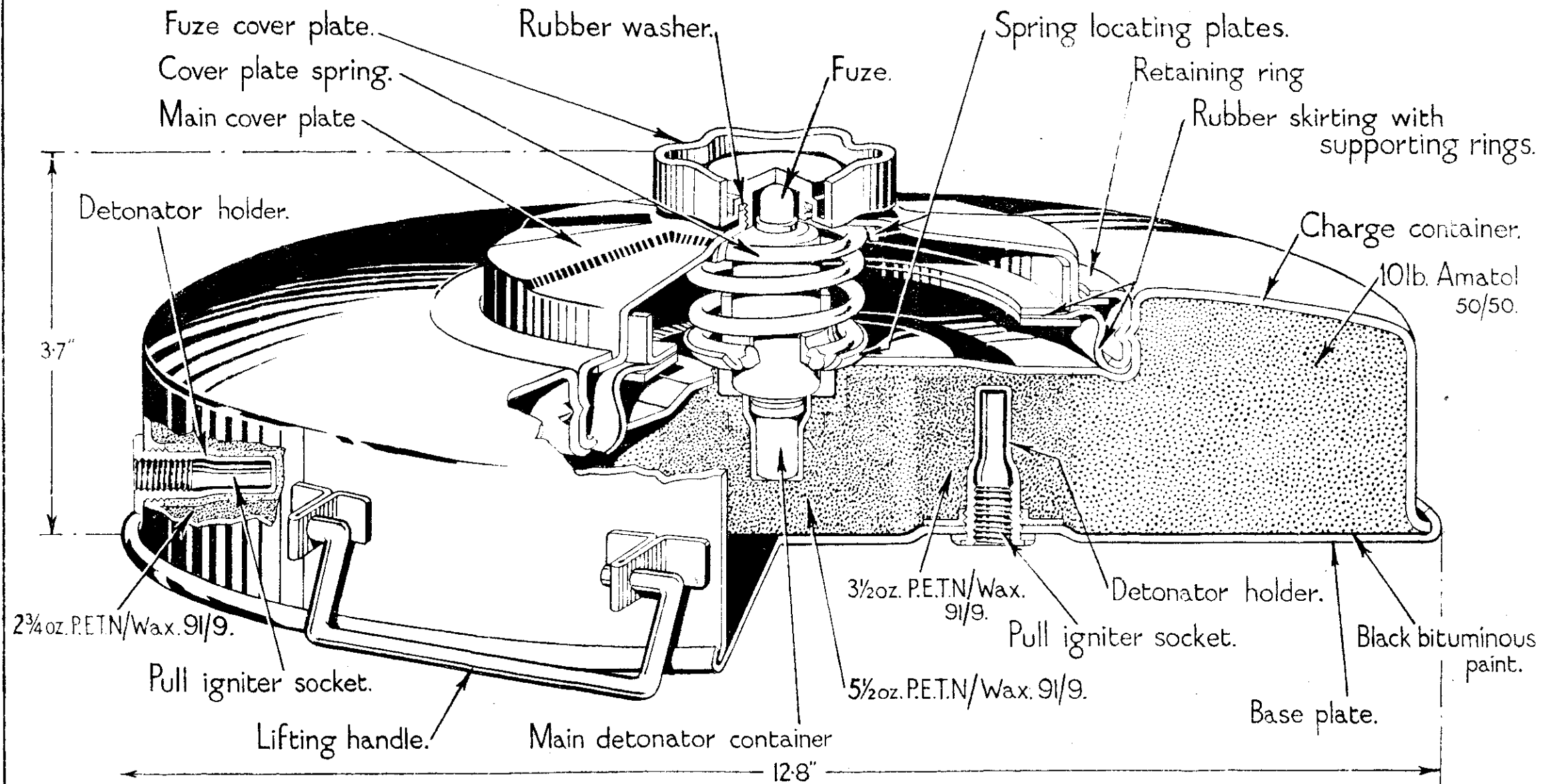


FIG. 321 (ITEM 802.)
ITALIAN 75/27 Q.F. HOLLOW CHARGE SHELL WITH INTERNAL
BASE FUZE.

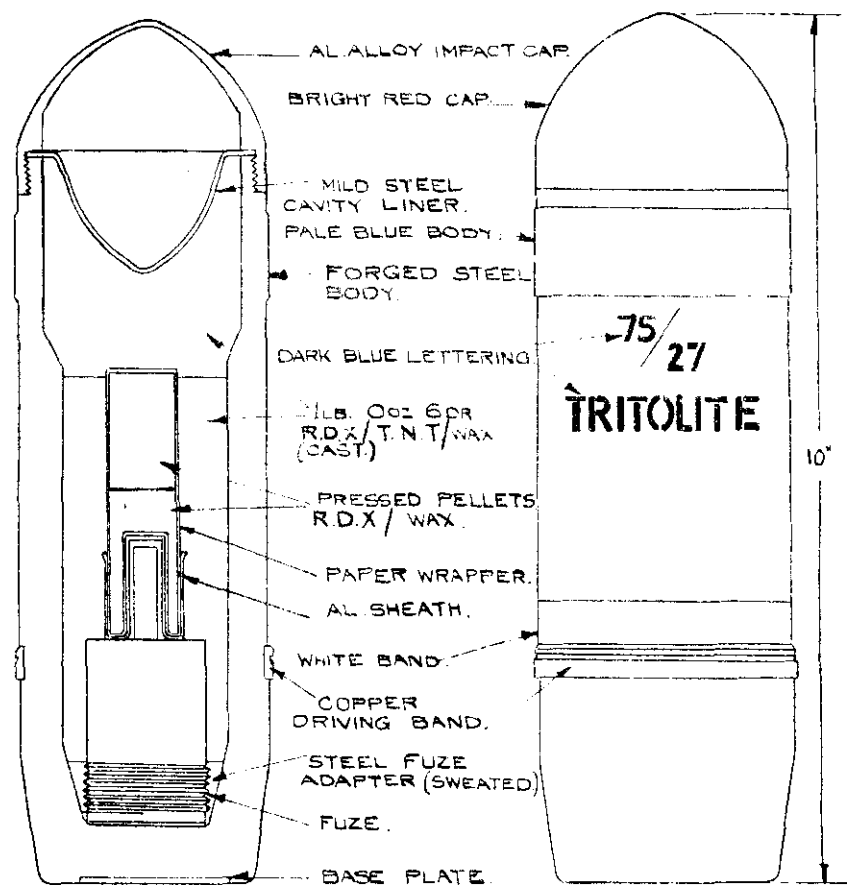


FIG. 322 (ITEM 803.)
ITALIAN H.E. HAND GRENADE S.R.C.M. MODEL 35.

