

# AMMUNITION BULLETIN N<sup>o</sup> 51

ITEMS 1497-1522

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AMMUNITION BULLETIN No. 51

ISSUED BY:-  
CHIEF INSPECTOR OF ARMAMENTS

ITEM No.

- 1501 Ammunition Rocket 3" for Land Mattress Equipment - Obsolescent.
- 1506 Ammunition Rocket "U" 5 inch - Obsolete.
- 1511 Ammunition Q.F. 3 inch Howitzer - Obsolete.
- 1512 Ammunition S.A. .55 inch Boys Rifle - Obsolete.
- 1504 Box B.166 Mk.2 and Carrier No.8 Mk.2 and 3 - Restriction in Use.
- 1500 Cartridges M.L. 3 inch Mortar - Augmenting 65 gr. Hercules,  
81 mm. Powder - Design Cancelled.
- 1507 Cartridges S.A. Ball 9 mm. Mk.1.Z. - Obsolete.
- 1498 Explosive Group Labels and Stencilling on Packages (Fig.621).
- 1508 Float Smoke 50 lbs. Mk.2 - Obsolescent.
- 1505 Fuze Time No.208 Mk.6 - Introduction.
- 1497 Grenade Hand No.69 Mk.1 - Obsolete.
- 1509 Markings - Operational - Ammunition Packages (Fig.622).
- 1503 Packages for S.E., M.L., 4.2 inch Mortar Ammunition -  
Superseded by Tropical Designs.
- 1499 Rocket Projectiles - Nomenclature.
- 1502 Shell Q.F. H.E. 2 pr. H.V. Mk.2.T. - M. of F. Design Obsolescent.
- 1510 Simulators M.G. Fd. No.1 Mk.1 - Introduction (Fig.623).

ENEMY AMMUNITION

GERMAN

- 1513 3.7 cm. Pak K (Casement Gun) Cartridge Q.F. A.P./T. (Fig.624).
- 1514 7.5 cm. Kw.K.42 & Stu.K.42., Cartridge Q.F. H.E. (Fig.625).  
(7.5 cm. Kw.K.u. Stu.K.42 Sprgr. Patr.).
- 1515 7.5 cm. 10 F.H.18. Shell H.E. (Fig.626).
- 1516 7.5 cm. 1e J.G.18. Cartridge Q.F. H.E. Hollow Charge (Fig.627).  
(Jgr. 38. Hl/A.).
- 1517 8.8 cm. Kw.K.43 Cartridge Q.F. A.P.C.B.C./T. (Figs.628 and 629).  
(8.8 cm. Pzgr. Patr. 39-1).
- 1518 8.8 cm. Kw.K.43 Cartridge Q.F. A.P.C.B.C./T. (Figs.630 and 631).  
(8.8 cm. Pzgr. Patr. 39/43).
- 1519 8.8 cm. Kw.K.43 Cartridge Q.F. H.E.  
(8.8 cm. Sprgr. Patr. 43).
- 1520 10.5 cm. Flak 38 Cartridge Q.F. H.E. (Grooved Shell) (Figs.632 and 633).
- 1521 12.8 cm. Gerat 40, Cartridge Q.F. A.P.C./T. (Figs.634 and 635).
- 1522 2.7 cm. Pistol H.E. Cartridge (Fig.636).  
(Sprenggranate-Patrone K.P.)

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BULLETIN No. 51

AMENDMENTS

Bulletin No.50, Item 1458, Line 14:

Delete "65 grains Hercules 81 mm. Powder"

Bulletin No.50, Item 1468, Line 5:

For "filling" read "fitting" ✓

Bulletin No.50, Item 1475, Line 5:

For "cast iron" read "forged steel" ✓

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1497. GRENADE HAND No.69 MK.I

Approval has been given for the above-mentioned store to be declared obsolete.

1498. EXPLOSIVE GROUP LABELS & STENCILLING ON PACKAGES (FIG.621)

Approval has been given for stencilling in white to take the place of Explosive Group Labels on ammunition packages. The blue background has been omitted.

Typical designs of the stencil representing Storage Group Labels are illustrated in Fig.621.

To avoid errors in reading the labels of Groups 6 and 9 when upside down, the stencils for these groups include the words "SIX" and "NINE" as applicable.

1499. ROCKET PROJECTILES - NOMENCLATURE

Approval has been given for the use of the letters "FS" and "SS" in the primary nomenclature of Rocket projectiles to indicate Fin Stabilized and Spin Stabilized rockets respectively.

1500. CARTRIDGES, M.L. 3 INCH MORTAR, AUGMENTING 65 GRAINS, HERCULES, 81 MM. POWDER

Reference Bulletin No.50, Item 1458. None of the above-mentioned cartridges were manufactured and issued to the Service. Approval has therefore been given for the design drawing of the store to be cancelled.

1501. AMMUNITION ROCKET 3 INCH FOR LAND MATTRESS EQUIPMENT - OBSOLESCE

Approval has been given for the following Land Mattress ammunition and associated stores to be declared "Obsolescent" or "Obsolescent for Land Service" as indicated below.

Boxes:-

Land Mattress M.306 Mk.I  
" " M.309 Mk.I  
" " M.310 Mk.I  
Motor, Rocket, A/C. 3 inch, No.1, M.325A, Mk.I  
Shell, H.E., Rocket, 3 inch, M.326, Mk.I  
Spoilers, No.725 Fuze, M.337, Mk.I  
Shell, H.E., No.4, Rocket 3 inch, M.339, Mk.I

Cylinders:-

No.382 Mk.I  
No.409 Mk.I  
No.409 Mk.2

Exploder, H.E. Shell, 4¼ oz. C.E. Pellet Mk.I  
Fuze, Percussion D.A. No.724 Mk.I  
Pliers, Circuit Tester, Projector Rocket, Mk.I  
(Pliers, Seager Circlip, External Type, No.S.E.B/B.)  
Shell, H.E. No.4 Rocket, 3 inch Mk.I (29 lb.)  
" " " " " Mk.2 (37 lb.)  
" Drill No.4 Rocket, 3 inch Mk.I  
Spoiler Fuze No.725  
Red, White, Blue,  
Green, Yellow, Black.

The above stores have been declared "Obsolescent."

Box, Mortar, Rocket, A/C. 3 inch No.1, M.325, Mk.I  
Container, Packing, No.275 Mk.I  
Motor, Rocket, A/C. 3 inch, No.1, Mk.2

The above items have been declared "Obsolescent for Land Service."

1502. SHELL Q.F., H.E. 2 PR. H.V. Mk.2.T - M. OF F. DESIGN OBSOLESCEMENT

Approval has been given for Method of Filling Design DD(L)18747 for the above-mentioned shell to be declared "Obsolescent" consequent on the introduction into Land Service of M. of F. Designs N.O.D.4449 and N.O.D.5719.

1503. PACKAGES FOR S.E. M.L. 4.2 INCH MORTAR AMMUNITION

Consequent upon a decision to eliminate out of date and temporary packages superseded by tropical designs, approval has been given to declare the following "Obsolescent."

Boxes Ammn.	S.E.	M.L.	4.2	inch	Mortar	B.176	Mk.I
"	"	"	"	"	"	B.179	Mk.I
Carrier	"	"	"	"	"	No.7	Mk.I
Box	No.	378					Mk.I

The following are "Obsolescent" for packing 4.2 inch Mortar Ammunition.

Boxes Ammunition G.235 Mk.I and Mk.2.

1504. BOX B.166 MK.2 & CARRIER No.8 MKS.2 AND 3 - RESTRICTION IN USE

In future only Jungle type of packages will be used for packing P.I.A.T. ammunition. Packing of this ammunition in Box B.166 Mk.2 will cease and Carriers No.8 Mk.2 and 3 become "Obsolescent." Future packing will be in Box B.166A Mark I and Steel Carrier No.11 Mark I.

1505. FUZE TIME No.208 MK.6 - INTRODUCTION

Approval has been given for the introduction of Fuze Time No.208 Mk.6 which will incorporate Mechanism, Time, 43 seconds, No.4 (Stronger Mainspring) for use with 3.7 inch Mk.6 Gun.

Fuze Time No.208 Mk.3, when fitted with the above quoted time mechanism, will be known as Fuze Time No.208 Mk.6.

1506. ROCKET 'U' 5 INCH AMMUNITION - OBSOLETE

Approval has been given for the ammunition and associated stores for the Rocket 'U' 5 inch to be declared obsolete.

1507. CARTRIDGE, S.A. BALL 9 MM. MK.I.Z. - OBSOLETE

Approval has been given for the above-mentioned cartridge to be declared obsolete for Land Service. (Bulletin No.32, Item 652 refers.)

1508. FLOAT SMOKE 50 LB. MK.2 - OBSOLESCEMENT

Approval has been given for the above-mentioned float to be declared obsolescent.

1509. PACKAGES AMMUNITION - OPERATIONAL MARKINGS (FIG.622)

*Ref. Bulh. No. 17, 18, 19*  
The list of operational markings, to assist in the ready identification of ammunition at all stages of handling, shown in the above-mentioned Bulletin is cancelled and the following substituted.

The abbreviations are placed on the lid and on one long side of the package replacing the normal stencilling. In the case of packages with hinged lids the "operational marking" will appear on the rear and the normal stencilling on the front of the package.

1509. PACKAGES AMMUNITION - OPERATIONAL MARKINGS (FIG.622) (contd.)

The size of lettering is, wherever possible, to be 2 inches with strokes  $\frac{3}{8}$  inch wide, and is to be in plain block type. When, for various reasons, 2 inch lettering cannot be accommodated on packages, the size may be reduced to  $1\frac{1}{2}$ " ,  $1\frac{1}{4}$ " or to a minimum of 1 inch, but the largest size must be used.

The size of lettering for contractions such as "PR," "TH," "MM," etc., may be reduced in conformity with the size of the main lettering, e.g.  $1\frac{1}{4}$  inch in the case of 2 inch main lettering, but in no case less than 1 inch.

Colour of operational marking to be white. If possible silk screen stencilling is to be employed but it is recognized that this is not always practicable.

A sketch showing typical marking on the lines described above is shown in Fig.622.

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

	<u>Nature</u>	<u>Abbreviation</u>
Cartridge	Q.F. 2 Pr. H.E.	2 PR HE
"	" " A.P.C.B.C.	2 PR APCBC
"	" " A.P. S.V.	2 PR SHOT SV
"	" Clearing 2 Pr.	2 PR CLEARING
"	" 37 mm. A.P. S.V.	37 MM SHOT SV
"	" 40 mm. H.E. filled Pentolite with No.14 Tracer	40 MM PENT 12 SEC
"	" 40 mm. H.E. " " Fuzed No.255 with No.14 Tracer	40 MM PENT 12 SEC
"	" 40 mm. H.E. filled T.N.T. with No.11 or No.12 Tracer	40 MM TNT 7 SEC
"	" 40 mm. H.E. filled T.N.T. with No.14 Tracer	40 MM TNT 12 SEC
"	" 40 mm. H.E. filled Pentolite with No.11 or No.12 Tracer	40 MM PENT 7 SEC
"	" 40 mm. H.E. filled R.D.X., Fuzed No.251 with No.11 or No.12 Tracer	40 MM RDX 7 SEC
"	" 40 mm. H.E. filled R.D.X./B.W.X., Fuzed No.255 with No.14 Tracer	40 MM RDX 12 SEC
"	" 40 mm. A.P. Shot	40 MM SHOT
"	" 6 Pr. 6 Cwt. Mk.3 Gun H.E.	6 PR 6 AA HE
"	" " " " " A.P.C. Shot	6 PR 6 AA APC
"	" 6 Pr. 7 Cwt. H.E.	6 PR 7 HE
"	" " " " A.P.C.B.C.	6 PR 7 APCBC
"	" " " " " Decoppering	6 PR 7 APCBC DEC

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>					<u>Abbreviation</u>
Cartridge	Q.F.	6 Pr.	7 Cwt.	A.P. Shot	6 PR 7 SHOT
"	"	"	"	" " H.V. Charge	6 PR 7 SHOT H.V.
"	"	"	"	" C.R.	6 PR 7 SV CR
"	"	"	"	H.E. Hybrid	6 PR 7 HYB
"	"	"	"	" Decoppering	6 PR 7 DEC
"	"	"	"	A.P. H.V. Dec.	6 PR 7 APDEC
"	"	"	"	A.P.C. Shot	6 PR 7 APC
"	"	"	"	A.P. D.S.	6 PR 7 SV DS
"	"	6 Pr.	10 Cwt.	H.E.	6 PR 10 HE
"	"	Clearing	6 Pr.	7 Cwt.	6 PR 7 CLEARING
"	"	17 Pr.	A.P.C.	Shot	17 PR APC
"	"	"	A.P.	Shot	17 PR AP
"	"	"	H.E.	Full Charge	17 PR HE
"	"	"	A.P.C.B.C.		17 PR APCBC
"	"	"	H.E.	Reduced Charge	17 PR HE RED
"	"	"	"	" " " " } Fuzed 125 or 127	17 PR HE TIM
"	"	17 Pr.	A.P.	D.S.	17 PR SV DS
"	"	"	H.E./H.C.	with M.48 Fuze	17 PR HE HC
"	"	"	H.E./Super	H.C.	17 PR HE SUPR HC
"	"	Clearing	17 Pr.		17 PR CLEARING
"	"	77 mm.	H.E./H.C.	with M.48 Fuze	77 MM HE HC
"	"	"	H.E./Super	H.C.	77 MM HE SUPR HC
"	"	"	H.E.	Reduced Charge	77 MM HE RED
"	"	"	"	" " " " } Fuzed 125 or 127	77 MM HE TIM
"	"	77 mm.	A.P.C.B.C.		77 MM APCBC
"	"	"	A.P.	D.S.	77 MM SV DS
"	"	3 in.	Howr.	Smoke	3 IN HOW SMK
"	"	"	"	H.E.	3 IN HOW HE
"	"	25 Pr.	2 lb. 1 oz. 12 dr.	FNH	25 PR CART FNH
"	"	"	1 lb. 14 oz. 4 dr.	NQ	25 PR CART NQ



LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>	<u>Abbreviation</u>
Cartridge Q.F. 95 mm. Tank Howr. H.E.	95 MM TK HE
" " " " " Smoke Emission	95 MM TK SMK
" " " " " B.E. Smoke	95 MM TK BE SMK
" " " " " H.E.A.T.	95 MM TK HEAT
" " " Howr. Coloured Smoke	95 MM TK SMK (Colour)
" " " S.P. & INF. for use with Paper Shot	95 MM SP CART PS
" " 95 mm. S.P. & INF. Howr. S.E. Smoke Plugged	95 MM SP SMK
" B.L. 4.5 in. Gun 9 lb. 2 oz. WM	4.5 CART 3RD WM
" " " " 10 lb. 9 oz. N/S	4.5 CART 3RD N/S
" " " " 2 lb.15 oz. WM	4.5 CART 1ST
" " " " 3 lb. 1 oz. NQ	4.5 CART 1ST NQ
" " " " Blank	4.5 BLANK
" Q.F. 5.25 in. Full Charge	5.25 AA CART
" B.L. 5.5 in. 9 lb. 2 oz. WM	5.5 CART 4TH WM
" " " 9 lb.13 oz. NQ/S	5.5 CART 4TH NQ/S
" " " 4 lb. 4 oz. WM	5.5 CART 2ND WM
" " " 4 lb.12 oz. NQ	5.5 CART 2ND NQ
" " " 12 lb. 9 oz. (for 80 lb. Shell)	5.5 (80 LB) CART
" " " for use with Paper Shot	5.5 CART PS
" " " Blank	5.5 BLANK
" " 7.2 in. Howr. 11 lb.10 oz. WM	7.2 CART 3RD WM
" " " " 13 lb.11 oz. N	7.2 CART 3RD N
" " " " 7 lb. N/S	7.2 CART 5TH N/S
" " " " 19 lb.12 oz. WMT	7.2 CART 4TH WM/T
" " " " 24 lb. N/S	7.2 CART 4TH N/S
" " 9.2 in. Gun, $\frac{1}{4}$ or $\frac{1}{2}$ Charge	9.2 GUN CART $\frac{1}{4}$ or 9.2 GUN CART $\frac{1}{2}$ (as applicable)
" 2 in. M.L. Mortar 55 grains Ballistite	CART 2 MOR 55 GR
" 3 in. " " 90 " "	CART 3 MOR 90 GR
" " " " 95 " "	CART 3 MOR 95 GR

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

	<u>Nature</u>	<u>Abbreviation</u>
Cartridge	Augmenting 3 in. Mortar 280 grains NRN No.9	CART 3 MOR 280 GR
"	M.L. 4.2 in. Mortar 140 grains Ballistite	CART 4.2 MOR 140 GR
"	R.C.L. 3.7 in. Gun W.B.	RCL 3.7 WB
"	R.C.L. 3.45 in. Gun W.B.	RCL 3.45 WB
Guncotton	Wet Slabs Field	GC SLABS
Primers	Guncotton	PRIM/GC
Shell	Q.F. 25 Pr. H.E. filled T.N.T.	25 PR HE TNT
"	" " " " " " Plugged for Fuze 222	25 PR FLGD
"	" 25 Pr. H.E. filled Amatol	25 PR AMTL
"	" " " " " RDX/TNT	25 PR RDX/TNT
"	" " " " " PEN/DI	25 PR PEN/DI
"	" " " " " Plugged for Fuze T.97	25 PR HE 97
"	" " " " " " British Fuze or Fuze T.97	25 PR HE OPT 97
"	" 25 Pr. Smoke (except Mk.7B & 8)	25 PR SMK
Shot	" " A.P.	25 PR APS
Shell	" " Coloured Smoke - Red	25 PR SMK RED
"	" " " " " - Green	25 PR SMK GRN
"	" " " " " - Blue	25 PR SMK BLU
"	" " " " " - Yellow	25 PR SMK YEL
"	" " " Smoke Mk.7	25 PR SMK 7
"	" " " " Mk.8	25 PR SMK 8
"	" " " Coloured Smoke Mk.7	25 PR SMK (Colour) 7
"	" " " " Flare Fuzed - Red	25 PR FLAR RED
"	" " " " " " - Green	25 PR FLAR GRN
"	" " " Star	25 PR STAR
"	" " 3.7 in. Howr. H.E.A.T.	3.7 HOW HEAT
"	" " " " Smoke	3.7 HOW SMK
"	" " " " Coloured Smoke	3.7 HOW SMK (Colour)
"	" " " " Star	3.7 HOW STAR

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>	<u>Abbreviation</u>
Shell Q.F. 95 mm. S.P. and Inf. Howr. H.E.	95 MM SP HE
" " " " " " " H.E.A.T.	95 MM SP HEAT
" " " " " " " Coloured Smoke	95 MM SP SMK (Colour)
Mines Anti Tank Mk.5 H.C.	MINE 5 HC
" Shrapnel Mk.2	MINE SHP 2
Bombs 3 in. Mortar H.E. with 280 grains Aug. Carts.	3 MOR HE
" " " " " " " " " } Fuze 162	3 MOR HE FZD 162
" " Mortar Smoke " " " " "	3 MOR SMK
" " " " (W.P.) Fuze 162	3 MOR SMK WP FZD 162
" " " " E.S. Plugged for Fuze 390	3 MOR SMK BE PLGD
" " " " " Fuze 390	3 MOR SMK BE
" " " " Red " "	3 MOR SMK RED
" " " " Blue " "	3 MOR SMK BLU
" " " " Green " "	3 MOR SMK GRN
" " " " (Phosphorus)	3 MOR SMK WP
" 4.2 in. Mortar H.E. Fuze 152	4.2 MOR HE
" " " " " 162	4.2 MOR HE FZD 162
" " " Smoke (Phosphorus)	4.2 MOR SMK WP
" " " " (W.P.) Fuze 162	4.2 MOR SMK WP FZD 162
Fuzes No.117	FUZ 117
" No.117 with Exploders	FUZ 117 W/EXPR
" No.119	FUZ 119
" No.119 with Exploders	FUZ 119 W/EXPR
" No.213	FUZ 213
" No.213 with Exploders	FUZ 213 W/EXPR
" No.221	FUZ 221
" No.221B	FUZ 221B
" No.222 with Exploders	FUZ 222 W/EXPR
" No.222B	FUZ 222B
" No.222B with Exploders	FUZ 222B W/EXPR

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

	<u>Nature</u>	<u>Abbreviation</u>
Fuzes No.223		FUZ 223
" No.231		FUZ 231
" No.232		FUZ 232
" No.232 with Exploders		FUZ 232 W/EXPR
" No.289		FUZ 289
" No.291		FUZ 291
" No.390 Mk.I		FUZ 390 MK I
" No.390 Mk.2		FUZ 390 MK 2
" No.390 Mk.2A		FUZ 390 MK 2A
" Mine Contact A.T. No.3		FUZ MINE AT 3
" Electric No.14		FUZ 14 ELEC
" T.M. No.208 Mk.3		FUZ 208
Tubes Percn. S.A. Mk.5		TUBES PSA
" Vent Electric .4 in.		TUB ELEC 4 IN
" " Percn. .4 in.		TUB PERC 4 IN
Caps Percussion Mk.2		CAPS PERC 2
Primers Percn. 17 grains Mk.2 A.4.		PRIM MK 2 A4
" 21 grains		PRIM 21 GR
" 18 "		PRIM 18 GR
Cartridges S.A. .303 in. Ball, Bandoliers		303 BDR
" " " " Cartons		303 CTN
" " " " 7 Stripless Belts		303 BLT 7
" " " " 8Z " "		303 BLT 8
" " " " Tracer (G) 2		303 TRA
" " " " A.P. (W)		303 AP
" " " " Incendiary (B) 7		303 INC 7
" " " " " (B) 7Z		303 INC 7Z
" " .30 in. Belted		30 IN BLT
" " 7.92 mm. Ball Cartons		7.92 CTN
" " " Belted		7.92 BLT
" " .380 in. Revolver Ball		380 REV

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>	<u>Abbreviation</u>
Cartridges S.A. 9 mm. Parabellum Ball	9 MM
" " .45 in. Ball Rimless	45 AUTO
" " 20 mm. Cerlikon H.E.I.	20 MM HEI
" " " " H.E.I.T.	20 MM HEIT
" " " " H.E.T.	20 MM HET
" " " " H.E.I.T./SD	20 MM SD HEIT
" " " " SAP/H.E.I.	20 MM SAP HEI
Bomb M.L. Smoke, 2 in. Mortar with Cartridge	2 MOR SMK
" Smoke 2 in. Bomb Thrower with 17 or 18 gr. Cart. ) (Filled H.C.E.)	2 MOR TK SMK
" " 2 in. Bomb Thrower with 55 grain Cartridge ) (Filled H.C.E.)	2 MOR TK SMK LR
" M.L. Illuminating with Parachute 2 in. Mortar	2 MOR ILL
" " Signal, 2 in. Red	2 MOR RED
" " " " Green	2 MOR GRN
" " " " Multi Star White	2 MOR WHI
" " " Success, 2 in. Mortar Change Colour, Red to Green	2 MOR SIG SUCS
" Incendiary, 1 1/4 lb.	BOM INC 1 1/4
Flares, T.R. Red	FLAR TR RED
" " Green	FLAR TR GRN
" " Yellow	FLAR TR YEL
" Trip Wire	FLAR TRIP
Generator, Smoke, No.8, Mk.5	8 GEN SMK 5
" " " Mk.6	8 GEN SMK 6
" " No.24 Mk.2	24 GEN SMK 2
" " No.24 Mk.3, Mk.4 or Mk.5	24 GEN SMK 3 (4) or (5)
Grenade Hand No.83 Yellow	83 GREN YEL
" " " Red	83 GREN RED
" " " Blue	83 GREN BLUE
" " " Green	83 GREN GRN

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>	<u>Abbreviation</u>
Grenade No.88 Yellow	88 GREN YEL
" " Red	88 GREN RED
" " Blue	88 GREN BLUE
" " Green	88 GREN GRN
" No.91	91 GREN
" No.92	92 GREN
Igniter, Electric, No.84	IGN ELEC 84
" " No.88	IGN ELEC 88
" No.90	IGN 90
" Relay	IGN RELAY
Cartridges, Illuminating 1" J	CART ILL
" Signal, Red	CART SIG RED
" " Green	CART SIG GRN
Simulator, Gunflash, No.3	SIM GF3
Capsules for Simulators Gunflash	PET CAPS
Portfires, Common	PORT CMN
Matches Fuzes (Small) for Generators Smoke	FUZ MATCH 24 GEN
" " (Large)	FUZ MATCH
Rocket Signal, 3 Star White Trailer	ROCK 3 WHITE
" 3 Star Red and Green	ROCK 3 RED GRN
" Signal Star Red	ROCK SIG RED
" " " Green	ROCK SIG GRN
" 3 Star Red	ROCK 3 RED
" " Green	ROCK 3 GRN
" Flash and Sound	ROCK F & S
Thunderflash Mk.8 with Brassards	THUNFLASH
Signal Double Star Red and Green	SIG DBLE RED GREEN
" " " Red	SIG DBLE RED
" " " Green	SIG DBLE GRN

LIST OF ABBREVIATIONS FOR OPERATIONAL MARKING ON PACKAGES

(contd.)

<u>Nature</u>	<u>Abbreviation</u>
Signal Distress 2 Star Red	SIG 2 RED
" 1 Star Red	SIG 1 RED
" 1 " Green	SIG 1 GRN
" 1 " Yellow	SIG 1 YEL
" Illuminating	SIG 1 ILL
" Light & Sound 3 Star Red	SIG L&S 3 RED
Ammonal	AMNL
Slabs Demolition TNT/CS	TNT/CS
Nobels 808 Cartridges	808/(a)/(b)
" 808 Plastic Cartridges	808/PLAS/(a)/(b)
" 851 Cartridges	851/(a)/(b)
" 852 Cartridges	852/(a)/(b)
<u>NOTE:</u> (a) = diameter (b) = weight in ozs.	
(e.g. - Nobels 808 32 oz. ctge. 2" x 1 1/4"	808/2/32 OZ)
P.E.	PE
P.E. 2. 8 oz. Charge	PE 2 (8 oz.)
Primers C.E.	PRIM CE
" T.N.T. 1 c.m.	TNT/PRIM
Polar Ammon. Gelatine	POL AM GELATINE
" " Gelignite	POL AM GEL 4 OZ
" N.S. "	POL NS GEL 4 OZ
Saxonite	SAXONITE
Blasting Gelatine	BLAST GEL
Dynamite	DYNAMITE

1510. SIMULATOR M.G. F.D. No.1 Mk.I (FIG.623)

Design D4(L)983/GF/169 for the above-mentioned store has been approved.

It consists mainly of six sets of Detonators Multiple No.93, seven lengths of safety fuze No.11 Mk.2, a celluloid capsule Type "A," a tray simulator, a brown paper tube in halves and a tin plate cylinder.

The sets of multiple detonators employed are of the types shown below.

- 3 sets of No.93 Type C Mk.I each with 4 detonators
- 1 " " " Type D Mk.I " " 5 "
- 2 " " " Type E Mk.I " " 6 "

Each type differs mainly in the number of detonators interposed between sleeves of delay composition. Between each set of detonators is a length of safety fuze, 5 inches long.

To one end of the above assembly is crimped a length of safety fuze, 1 inch long, which is sealed with R.D. cement at the free end. To the other end of the assembly is crimped a length of safety fuze 2 inches in length. The celluloid capsule filled with 1 grain of gunpowder G.20, and the tray simulator is crimped to the free end of the 2 inch length of safety fuze. The tray and its connector provide for the connection of the means of ignition.

The above arrangement is housed in the paper tube and is packed, folded lengthwise, in the tin plate cylinder. The cap, which screws onto the end of the cylinder, is attached by a whipcord becket to the end of each half of the paper tube to facilitate the withdrawal of the simulator from the cylinder. When the simulator is withdrawn, the paper tube falls apart in halves.

1511. AMMUNITION - Q.F. 3 IN. HOWITZER

Reference Bulletin No.50, Item 1460.

Approval has been given for Q.F. 3 inch Howitzer Ammunition to be declared obsolete.

1512. AMMUNITION, S.A., .55 IN. BOYS RIFLE

Approval has been given for the A.S.A. .55 inch Boys Rifle to be declared obsolete.

ADDENDUM

Immediately under heading of Item 1509

insert "Reference Bulletin No.46, Item 1267"



ENEMY AMMUNITION

GERMAN

1513. GERMAN 3.7 CM. PAK K (CASEMENT GUN) CARTRIDGE Q.F. A.P./T. (FIG.624)

This Q.F. A.P./T. round is used in the 3.7 cm. Pak K Casement Gun. The complete round weighs 3 lb. 14 $\frac{3}{4}$  oz. and has an overall length of approximately 18.1 inches. The shell body is painted black and stencilled in red. Exterior markings on the shell are illustrated in Fig.624.

The complete round consists of the following components:-

Shell A.P.  
Fuze Bd.Z.5103<sup>\*\*</sup> Type with Gaine and Tracer  
Case Model 6353  
Propellant Charge of NC/DEGN Composition with Igniter  
Primer Electric C/23.

SHELL (Fig.624.)

The filled shell weighs 1 lb. 8 $\frac{1}{2}$  oz. and is fitted with a single non-ferrous driving band. The empty shell weighs 1 lb. 5 $\frac{1}{4}$  oz. and the base is screwthreaded internally to receive the fuze.

The method of filling is illustrated in Fig.624 and follows the standard German practice for 3.7 cm. A.P. Shell. The filling consists of 6 drams of PBTN/WAX (82.5/17.5) pressed direct into the shell cavity and formed with a cavity to accommodate the forward end of the fuze and gaine.

FUZE and TRACER

The fuze is similar to the Bd.Z.5103<sup>\*\*</sup> described in Bulletin No.25, Item 435 (2) and illustrated in Fig.152. It is used in conjunction with a separate gaine consisting of an aluminium "Duplex-Kapsel" type of detonator filled with 3.55 grains of Lead Azide under a thin layer of Lead Azide/Lead Styphnate mixture weighing 0.13 grains. A perforation in the inner cup of the detonator is covered on the inside by a yellow gauze disc. The detonator is located in a cavity in the shell filling and is separated from the fuze by a cork washer.

The tracer is identical in design with that of the 8.8 cm. Kw.K.43 described in Item 1517 and illustrated in Fig.629 of this Bulletin. The time of burning at rest is 31 seconds and the colour of the flame is bright yellow.

PROPELLANT and IGNITER

The propellant (Digl. R.P. 8,2 - (310 - 3/1) ) weighs 326 grams (11 $\frac{1}{2}$  oz.) and is of the normal NC/DEGN composition in tubular form, greenish-grey in colour and cut in lengths of approximately 12.2 inches. It is contained in a viscose continuous filament rayon sock in plain weave.

The igniter consists of approximately 2.2 grams of nitro-cellulose powder in the form of small green porous chopped cord.

1513. GERMAN 3.7 CM. PAK K (CASEMENT GUN) CARTRIDGE Q.F. A.P./T. (FIG.624)

PROPELLANT and IGNITER (contd.)

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	67.12 per cent	88.92 per cent
Diethylenglycol Dinitrate	28.18 " "	8.68 " "
Ethyl Centralite	2.79 " "	-
Diphenylamine	-	0.30 " "
Graphite	0.15 " "	0.58 " "
Magnesium Sulphate	0.49 " "	-
Volatile Matter	0.76 " "	1.52 " "
Ash-Sulphated	0.20 " "	-

CASE CARTRIDGE and PRIMER

The brass case is 15.15 inches long, flanged at the base and has a slight increase in taper near the mouth. It is stamped in the base with the case model number "6353" and "3.7 cm. Pak K," and stencilled in white "Pak K."

The electric primer C/23 is described in Bulletin No.42, Item 1123.

1514. GERMAN 7.5 CM. Kw.K. and Stu.K.42 CARTRIDGE Q.F. H.E. (FIG.625)

(7.5 cm. Kw.K.u. Stu.K.42 Sprenggranate-Patrone)

This Q.F. fixed round is used with the 7.5 cm. Kw.K.42 (tank gun) and the Stu.K.42 (assault gun). The complete round weighs 25 lb. 12½ oz. and has an overall length of 36.5 inches. The shell is fitted with two sintered iron driving bands, is painted the usual dark olive green and is stencilled in black. Exterior markings on the shell are illustrated in Fig.625.

The complete round consists of the following components:-

- Shell H.E. filled Amatol (50/50)
- Fuze Kl. AZ.23 Nb.
- Propellant Charge of NC/DEGN Composition
- Case Model 6387 St.
- Primer Electric C/22 St.

SHELL (Fig.625)

The construction and method of filling the shell is illustrated in Fig.625. The shell filled and fuzed weighs 12 lb. 10½ oz. It differs from earlier designs (see Bulletin No.26, Item 464) mainly in being fitted with two driving bands each 0.7 inches wide, and in the nose being modified to accommodate the fuze Kl. AZ.23 Nb. and gaine container without the use of an adapter.

The bursting charge weighs 1 lb. 6 oz. 6 dr. and is of the normal "13" type consisting of a direct poured filling of Amatol (50/50). A cavity below the exploder container accommodates a No.8 smoke box. The smoke box is described in Bulletin No.40, Item 1025 and has a gross weight of 1 oz. 3 dr. The gaine weighs 1¼ oz. and is stamped in the base "grid Np.10."

1514. GERMAN 7.5 CM. Kw.K. and Stu.K.42 CARTRIDGE Q.F. H.E. (FIG.625) (contd.)

FUZE

The fuze, Kl. AZ.23 Nb., is described and illustrated in Bulletin No.41, Item 1079.

PROPELLANT

The propellant consists of approximately 5 lb.  $3\frac{3}{4}$  oz. (2,370 Kg.) of NC/DEGN composition in tubular form. The sticks are cut in two lengths of 19.25 inches (weight 985 grams) and 20.52 inches (weight 1385 grams) respectively, and are contained in a viscose continuous filament rayon bag in plain weave with a rayon igniter cover at the base.

The igniter consists of 20 grams of the usual small grey green porous chopped cord. The cover is stencilled in black as follows:-

7.5 cm. Kw.K.42  
7.5 cm. Stu.K.42  
2,370 Kg.  
Digl. R.P. - G.O.6 - (500 - 6/4)  
blz 1943/8  
Digl. R.P. - G.O.6 - (530 - 6/4)  
blz 1943/8  
An. 19.6.43. Ge.

An analysis of the propellant and igniter compositions is as follows.

Composition	Propellant	Igniter
Nitrocellulose	64.3 per cent	95.73 per cent
Diethyleneglycol Dinitrate	26.20 " "	1.90 " "
Ethyl Centralite	7.20 " "	
Akardite	0.25 " "	
Potassium Sulphate	1.00 " "	0.15 " "
Graphite	0.42 " "	0.07 " "
Volatile Matter	0.50 " "	1.50 " "
Diphenylamine	-	0.50 " "
Nitrated Products of Stabilizer (by difference)	-	0.15 " "

CASE and PRIMER

The case is the normal steel flanged type, 25.1 inches in length, and is stamped in the base with the model number "6387 St."

The primer is the normal Electric C/22 type as described in Bulletin No.26, Item 464, with the following modifications.

- (a) The body and contact plug are of steel.
- (b) The fabric disc below the aluminium closing disc is replaced by unvarnished parchment paper.
- (c) The screw cap holding the fuze head is secured by a white cement applied to the screw thread.

1515. GERMAN 7.5 CM. 1e.F.K.18. H.E. SHELL (FIG.626)

This shell is fired from the 7.5 cm. light field gun Model 18 (7.5 cm. 1e.F.K.18) using a separate loading cartridge. The cartridge is described in Bulletin No.47, Item 1330.

The shell examined and described below is of pre 1939 manufacture and filling. It is painted the usual olive green with a red band immediately in front of the single non-ferrous driving band; the stencilling is in black. The filled shell with fuze AZ.23, weighs 12 lb. 13 oz.

The construction and method of filling the shell is illustrated in Fig.626. The empty shell weighs 10 lb. 11½ oz.

The bursting charge weighs 13½ oz. and consists of pressed pellets of P.N.T. waxed on the surface, enclosed in a waxed paper carton and set in the body of the shell with magnesium oxychloride cement. The filling is initiated by the normal C/98 Np. gaine in a steel exploder container. A cavity in the base of the bursting charge accommodates a smoke box.

The smoke box, is marked "Rauchentwickler N<sup>F</sup> 7," weighs 35 grams (1¼ oz.) and is of the following dimensions: Length 7 cm. (2¾ inches) diameter 1.9 cm. (¾ inch). It consists of a cylinder of grey cardboard with closing discs at each end, and a pellet weighing 29.9 grams (1 oz.) of the following composition.

Red Phosphorus	-	80.2	per cent
Paraffin Wax	-	13.4	" "
Acid Soluble Matter	-	6.4	" "

The acid soluble matter is mainly magnesium phosphate.

Fuze AZ.23 is described in Bulletin No.41, Item 1080.

1516. 7.5 CM. 1e.J.G.18 CARTRIDGE Q.F. H.E. HOLLOW CHARGE SHELL (FIG.627)

(7.5 cm. Jgr.38 HL/A.)

This fixed Q.F. hollow charge round is used in the 7.5 cm. light infantry howitzer (7.5 cm. 1e.J.G.18) which also fires separate loading Q.F. ammunition. It has been made a fixed round to ensure that the special charge used with this hollow charge shell is not used with any other type of shell. The case of the fixed round is stamped with the model number "6391" whilst the case of the separate loading round is stamped "6341". The shell is painted the usual olive green except the ogive which is unpainted, and is stencilled in black. The overall length of the complete round is 12.1 inches and it weighs approximately 8 lb. 10 oz. 14 dr.

The complete round consists of the following components.

Shell H.E. Hollow Charge Filled RDX/WAX (95/5)  
Gaine Kl. Zdlg. 34 Np.  
Fuze AZ.38 St.  
Propellant of NG/NG Composition  
Case Model 6391 St.  
Primer Model C/12 nA. St.

1516. 7.5 CM. 1e.J.G.18 CARTRIDGE Q.F. H.E. HOLLOW CHARGE SHELL (FIG.627) (contd.)

SHELL (Fig.627)

The shell is generally similar in internal design and method of filling to the 7.5 cm. L.G.40 (Gr.38 HL/B) described in Bulletin No.33, Item 746; it differs mainly in having a standard Kl. Zdlg. 34 Np. gaine instead of a Zdlg. 40.B, the shell cavity for the bursting charge is less tapered, and a tracer cavity is formed in the base. No tracer was found in the round examined.

The bursting charge weighs  $14\frac{1}{2}$  oz. and consists of three pressed pellets of RDX/BWX in a waxed paper carton which is cemented to the wall of the shell cavity. A central channel formed in the pellets accommodates a light alloy tube and the gaine; the upper part of the top pellet forms a conical cavity in which there is a steel liner.

A blue label on the carton is printed in black:-

Sprldg.  
d. 7.5 cm. Jgr. 38 HL/A  
H.5  
cwg. 91 475.43

FUZE and GAINÉ

Fuze AZ.38 St. is described in Bulletin No.50, Item 1493, and the gaine Kl. Zdlg. 34 Np. in Bulletin No.39, Item 989.

PROPELLANT

The propellant consists of two bundles of NC/NG composition in the form of corrugated perforated discs and is placed directly in the cartridge case without a bag. The top bundle weighs 85 grams and the discs are approximately 2.9 inches in diameter and 0.03 inches thick with a central hole 0.118 inches in diameter. The bottom bundle, which is the igniter, weighs 15.5 grams and the discs are approximately 2 inches in diameter and 0.007 inches thick with a central hole 0.2 inches in diameter. The discs in the bottom bundle are sewn together eccentrically so as to increase the diameter of the bundle.

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	54.87 per cent	55.12 per cent
Nitroglycerine	43.81 " "	43.24 " "
Akardite	0.71 " "	0.75 " "
Wax	0.21 " "	-
Volatile Matter	0.33 " "	0.30 " "
Graphite	0.18 " "	0.03 " "
Ash-Sulphated	0.17 " "	0.28 " "

A small label in the case was printed as follows:-

1e.J.G.18  
15.5 g. Ngl. Pl.P. - 12,5 - (50. 0,2)  
85. g. Ngl. Pl.P. - 12,5 - (73,5. 0,8)  
Liefg. versch. Aus entlab. Sond. Huls. Kart.  
N.G.

1516. 7.5 CM. 1e.J.G.18 CARTRIDGE Q.F. H.E. HOLLOW CHARGE SHELL (FIG.627) (contd.)

CASE and PRIMER

The case is 3.5 inches in length and stamped in the base with the model number "6391 St." It is generally similar to the model "6341 St." case. Both models are of steel and plated with brass over copper.

The primer is a normal C/12 nA.St. of the type with a steel closing washer.

1517. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.C./T. (FIGS.628 and 629)

(8.8 cm. Pzgr. Patr. 39-1)

This round is somewhat similar to the 8.8 cm. Pzgr. Patr. 39/43 described in Item 1518; it differs mainly in the following particulars.

SHELL (Fig.628)

The shell, filled, fuze and with tracer weighs 20 lb. 0½ oz. Stencilled in white on the ballistic cap is a large numeral "1", and immediately above the driving band are four longitudinal rectangular bars equally spaced around the body.

FUZE Bd.2,5127 with GAINE and TRACER

The fuze and gaine are essentially identical with that of the 8.8 cm. Pzgr. Patr. 39/43.

The tracer (see Fig.629) weighs 16.6 grams and is of the type in which the tracer composition, in two increments, and the priming composition is pre-pressed in a steel cup shape liner. An identical tracer is used in the 7.5 cm. Pak 40 A.P.C.B.C./T. Shell. The composition of the filling as found by analysis is as follows.

Composition	Tracer	Priming
Magnesium	29.3 per cent	14.9 per cent
Barium Nitrate	59.0 " "	- " "
Barium Peroxide	- " "	69.8 " "
Oryolite	6.8 " "	- " "
Stronthium Peroxide	- " "	3.5 " "
Resinous Matter	4.9 " "	1.8 " "
Red Lead	- " "	10.0 " "
Weight (Approx.)	1.9 grams	0.85 grams

PROPELLANT

The propellant (Gu. R.P. - G.1,5 - K.N.) weighs approximately 15 lb. 5½ oz.

The bag is stencilled:-

8.8 cm. Kw.K.43  
 8.8 cm. Stu.K.43  
 8.8 cm. Stu.K.43/1  
 8.8 cm. Pak.43  
 8.8 cm. Pak.43/41  
 6,960 Kg.  
 Gu. R.P. - G.1,5 - K.N. (725/650 - 5,1/2)  
 Ktz. 1943/10  
 Kzu. 10.7.43 Da.

1517. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.C./T. (FIGS.628 and 629)

PROPELLANT (contd.)

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	40.86 per cent	59.06 per cent
Nitroguanidine	28.62 " "	-
Diethyleneglycol Dinitrate	18.65 " "	-
Diphenylurethane	3.85 " "	-
Akardite	0.20 " "	-
Phenylethylurethane (by diff.)	5.38 " "	-
Potassium Nitrate	1.16 " "	-
Magnesium Nitrate	0.29 " "	-
Graphite	0.14 " "	0.40 " "
Volatile Matter	0.61 " "	0.37 " "
Nitroglycerine	-	39.00 " "
Ethyl Centralite	-	0.84 " "
Magnesium Sulphate	-	0.12 " "
Ash-Sulphated	-	0.34 " "

PRIMER C/22 St.

The primer is the normal C/22 St. type except for the presence of a layer of insulating material in the cavity below the head of the fuze head.

1518. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.C./T. (FIGS.630 and 631)

(8.8 cm. Pzgr. Patr. 39/43)

This Q.F. fixed cartridge is used in the 8.8 cm. Kw.K.43 (tank-gun) and the 8.8 cm. Pak.43, 43/1, 43/2, 43/3 and 43/41 (anti-tank guns). The length of the complete round is 44.4 inches and it weighs approximately 51 lb. 9 oz.

The complete round consists of the following components:-

- Shell A.P.C.B.C. filled Cyclonite/Wax (90/10)
- Fuze Base Bd.Z.5127 with Tracer
- Case Model 6388 St.
- Propellant Charge of either a Stabilized Gudol Composition, or, alternatively, NC/DEGDN Composition.
- Primer Electric C/22 St.

SHELL (Fig.630)

The weight of the shell filled, fuzed and with tracer is 22 lb. 7¼ oz. The exterior is painted black with a white tip on the ballistic cap, and there is a white band between the cannellure and the rear driving band; the stencilling is in red. Exterior markings on the body are illustrated in Fig.630. The shell body is fitted with two sintered iron driving bands. Two cannellures are formed in the base for the attachment of the case, and the cavity in the base is screwthreaded to receive the fuze with tracer. The A.P. cap is a machined drop forging and is attached to the nose of the body by solder. The ballistic cap is pressed from mild steel strip, approximately 1.5 mm. thick, and is attached to the A.P. cap by a circumferential weld and forms a continuous ogive of 10 calibre radius. An alternative method of securing the cap is employed by pressing it into a cannellure in the shoulder of the A.P. cap and keying it by longitudinal knurling of the A.P. cap surface forward of the cannellure.

1518. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.G./T. (FIGS.630 and 631)

SHELL (Fig.630) (contd.)

The weight of the empty shell together with the ballistic and A.P. cap and driving bands is 21 lb. 8¼ oz.

The filling consists of approximately 60 grams (2 oz. 2 dr.) of Cyclonite/Wax pressed directly into the shell cavity.

FUZE Bd.Z.5127 with GAINS and TRACER (Fig.631)

The fuze is a modified version of the Bd.Z.5127 described in Bulletin No.43, Item 1163. It differs from the earlier model mainly in that the inertia sleeve is restrained by a circlip resting in a groove cut in the mechanism holder instead of by the short shearing pin. There are also minor dimensional differences, and in one fuze examined the forward edge of the inertia sleeve was radiused.

The tracer (see Fig.631) weighs 17.4 grams (9.8 dr.) and has an overall length of 0.94 inches; the diameter over the threads is 0.59 inches. It is of the usual German type in which the tracer and priming compositions are pre-pressed in a steel cup-shape liner. The filling weighs 2.9 grams. A similar tracer is used in the 5 cm. Kw.K., A.P. Shell described in Bulletin No.25, Item 455 (2).

The composition of the filling as found by analysis is as follows.

Composition	Tracer	Priming
Magnesium	25.0 per cent	13.6 per cent
Barium Nitrate	55.4 " "	-
Barium Peroxide	-	70.9 " "
Cryolite	14.6 " "	-
Stronthium	-	6.4 " "
Calcium Silicide	-	7.1 " "
Resinous Matter	5.0 " "	2.0 " "
Weight Approx.	1.75 gm.	1.15 gm.

Ignited at rest, the tracer burns with a steady yellowish flame for 7.3 seconds.

PROPELLANT

(a) Gudol Composition

The propellant (Gu. R.P. - G.1,5 - K.N.) is a stabilized Gudol composition of calorific value 702 containing 2 per cent of potassium nitrate, and weighs approximately 15 lb. 1½ oz. It is tubular in form, grey in colour, and cut in two lengths of 28.4 inches and 25.5 inches respectively.

The igniter consists of 100 grams of graphited square flakes of nitrocellulose and nitroglycerine.

1518. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.C./T. (FIGS.630 and 631)

PROPELLANT

(a) Gudol Composition (contd.)

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	42.40 per cent	58.40 per cent
Nitroguanidine	26.50 " "	-
Diethyleneglycol Dinitrate	19.50 " "	-
Akardite	0.08 " "	-
Diphenylurethane	3.64 " "	-
Phenylethylurethane (by diff.)	4.94 " "	-
Graphite	0.44 " "	0.13 " "
Potassium Nitrate	2.00 " "	-
Volatile Matter	0.50 " "	0.50 " "
Nitroglycerine	-	39.80 " "
Ethyl Centralite	-	0.97 " "
Sodium Sulphate	-	0.11 " "

The charge is contained in a viscose rayon bag in plain weave having, at the base, an igniter cover of viscose rayon/cellulose acetate plaid material.

The bag is marked as follows:-

Kw.K.43 (L/71)  
 Pak. 43 (L/71)  
 Pak. 43/1 (L/71)  
 Pak. 43/2 (L/71)  
 Pak. 43/3 (L/71)  
 Pak. 43/41 (L/71)

6.830 Kg.

Gu. R.P. - G.1,5 - K.N. (725/650 - 5,1/2)

Ktz. 1943/22

Kzv. 3.9.43.Xa.

(b) NC/DEGDN Composition

This alternative propellant (Digl. R.P. - G.2 -) has a calorific value of 700 and weighs 14 lb. 8 oz. 3 dr. It is grey-black in colour and cut in two lengths similar to the Gudol composition.

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	63.63 per cent	59.96 per cent
Diethyleneglycol Dinitrate	23.41 " "	-
Ethyl Centralite	9.05 " "	-
Graphite	0.22 " "	0.05 " "
Potassium Sulphate	2.58 " "	-
Volatile Matter	0.68 " "	0.35 " "
Ash-Sulphated	0.29 " "	0.15 " "
Nitroglycerine	-	38.59 " "
Akardite	-	0.50 " "

1518. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. A.P.C.B.C./T. (FIGS.630 and 631)

PROPELLANT

(b) NC/DEGDN Composition (contd.)

The propellant is contained in the usual viscose filament sock which has an igniter compartment formed by sewing a disc of nitrated cotton to the base.

The bag is marked as follows:-

8.8 cm.  
Kw.K.43  
Pak. 43 und 43/1. /2. /3.  
Pak. 43/41  
6,580 Kg.  
Digl. R.P. - G.2. -  $\left. \begin{matrix} 725 \\ 650 \end{matrix} \right\} 6,1/2,5$   
Ktz. 1943/6  
Kzu. 26.10.43. Ma.

CASE and PRIMER

The case is of solid drawn steel plated with brass, 32.4 inches in length and increases in taper near the mouth. It is stamped in the base "6388 St. - 8.8 cm. Kw.K.43." The marking on the bag containing the propellant is repeated in red on the case.

The primer is of the G/22 type described in Bulletin No.26, Item 464, and illustrated in Fig.160 with the following modifications.

- (a) The body, contact plug and screw cap are of plated steel.
- (b) The screw cap is secured by stabbing.
- (c) The disc beneath the aluminium closing disc is varnished paper instead of fabric.

The composition and weight of the filling is as follows.

Composition	G/P. Pellet	G/P. Grain
Sulphur	9.5 per cent	8.9 per cent
Potassium Nitrate	75.6 " "	75.6 " "
Charcoal	14.9 " "	15.5 " "
Weight	21 grains	8.1 grains

The fuze head composition consists of a lead salt of a nitrobody (probably lead picrate) and lead nitrate with a covering sheath of green nitrocellulose varnish.

1519. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. H.E.

(8.8 cm. Sprgr. Patr. 43)

This Q.F. fixed cartridge is used in the 8.8 cm. Kw.K.43 (tank-gun) and the 8.8 cm. Pak.43, 43/1, 43/2, 43/3 and 43/41 (anti-tank guns). The length of the complete round is 46.0 inches and it weighs 42 lb. 5 oz.

1519. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.P. H.E. (contd.)

The complete round consists of the following components:-

Shell H.E. filled Amatol 40/60  
Gain C/98 Np.  
Smoke Box No.8  
Fuze AZ.23/28  
Case Model 6388 St.  
Propellant Charge of Digl Composition  
Primer Electric C/22 St.

SHELL

The method of filling the shell is identical with that of the 8.8 cm. Flak 41 H.E. Shell described in Bulletin No.47, Item 1332 and illustrated in Fig.541, except for the presence of the smoke box. The shell filled and fuzed weighs 21 lb. 3½ oz. The bursting charge consists of a poured filling of Amatol 40/60 and weighs 2 lb. 2 oz. 2 dr. Initiation is by a normal C/98 Np.gaine.

SMOKE BOX No.8

The smoke box is of normal design and contains 29.2 grams of smoke composition having the following analysis.

Red Phosphorus	-	81.6	per cent
Paraffin Wax and Resin	-	12.9	" "
Water and Acid Extract	-	5.5	" "

FUZE AZ.23/28

This fuze is substantially the same as the AZ.23v (Pressstoff) described in Bulletin No.47 and illustrated in Fig.542. It differs mainly in having a stronger creep spring and the metal reinforcement of the plastic body is of more robust design.

The body of the fuze comprises three steel pieces, lightly welded together, which reinforce a mass of moulded plastic.

The inertia pellet, carrying an igniferous detonator, the centrifugal segments, and the delay unit are assembled to a cylindrical moulding which slides into the cavity of the body from the base and is located by the delay setting arrangement. A second moulding, in the form of a magazine, supports the first and the base of the fuze is closed by a screwed plug made from zinc alloy. The delay pellet consists of 0.06 grams of gunpowder and the magazine is filled with a perforated gunpowder pellet weighing 3.5 grams. The central fire channel in the base of the fuze is closed by a transparent disc held in place by varnish.

PROPELLANT

The propellant is Digl. R.P. - G.l. - (700/650 - 6/4,5) and weighs approximately 7 lb. 4¼ oz. The igniter is exceptional in consisting of flake NC/NG composition instead of the usual Nz Man N.P.; it weighs 100 grams.

The bag is marked in black as follows.

8.8 cm.  
Kw.K.43  
Pak. 43 u 43/1, /2, /3.  
Pak. 43/41  
3,300 Kg.  
Digl. R.P. - G.l. - (700/650 - 6/4,5)  
dbg. 1943/5  
Kzu. 6.12.43 Wa

1519. GERMAN 8.8 CM. Kw.K.43 CARTRIDGE Q.F. H.E.

PROPELLANT (contd.)

The composition of the propellant and igniter as found by analysis is as follows.

Composition	Propellant	Igniter
Nitrocellulose	61.39 per cent	60.01 per cent
Diethyleneglycol Dinitrate	27.45 " "	-
Ethyl Centralite	7.80 " "	-
Mineral Jelly	1.70 " "	-
Graphite	0.14 " "	0.14 " "
Potassium Sulphate	0.87 " "	-
Magnesium Nitrate	0.65 " "	-
Volatile Matter	0.81 " "	0.49 " "
Nitroglycerine	-	38.89 " "
Akardite	-	0.96 " "

CASE and PRIMER

The case and primer are similar to that of the 8.8 cm. Kw.K.43 (Pzgr. 39/43) described in Item 1518.

1520. GERMAN 10.5 CM. FLAK 38 CARTRIDGE Q.F. H.E. GROOVED SHELL (FIGS.632 and 633)

This Q.F. fixed cartridge is used with the 10.5 cm. Flak 38, a standard German A.A. Gun and Multi-purpose Gun which also fires a H.E. Shell with percussion fuze and an A.P.C.E.C. Shell.

The complete round weighs approximately 57 lb. 9 oz. and its overall length is 45.75 inches. The shell is painted yellow and stencilled in black. It is of the controlled fragmentation type and appears to have been improvised by cutting grooves in the exterior of a shell of normal type.

The round consists of the following components:-

- Shell H.E. filled Amatol (40/60)
- Gain C/98 F.
- Fuze Zt.Z.3/30. Fgl.
- Propellant (Digl. R.P. - KO - D)
- Primer Electric C/22 St.
- Case Model "10.5 cm. Flak 38"

SHELL (Fig.632)

The shell filled and fuzed weighs 33 lb. 1 oz. The shell body is of the early design with a base plug, and has two copper driving bands. A diaphragm, which is screwthreaded to receive a steel container, is formed in the nose below the fuze hole.

The grooves in the exterior of the shell body are of rough workmanship and appear to have been carried out on a finished shell of normal type. Twenty-four longitudinal grooves are cut approximately  $4\frac{1}{4}$  inches long and  $\frac{9}{16}$  inch apart starting approximately  $\frac{1}{8}$  inch from the edge of the upper driving band, and a circumferential groove is cut at approximately  $3\frac{1}{4}$  inches from the edge of the upper driving band.

The bursting charge weighs 3 lb. 5 oz. and is a direct poured filling of Amatol (40/60).

1520. GERMAN 10.5 CM. FLAK 38 CARTRIDGE Q.F. H.S. GROOVED SHELL (FIGS.632 and 633)

(contd.)

GAINES C/98 F. (Fig.633)

The gaine C/98 F. (Ferderkapsel), is the smaller of the two gaines illustrated in Fig.633 which are later types of the C/98 Np. It differs from the earlier type of C/98 gaine in having a telescopic spring loaded distance piece instead of a cork or fibre composition washer. This device permits greater tolerance in the length of the exploder container. The gaine is 3.11 inches overall in length and 0.866 inches in diameter.

FUZE Zt.Z.S/30. Fgl.

This fuze is described and illustrated in Bulletin No.33, Item 743.

PROPELLANT

The propellant charge weighs 12 lb. 6 oz. and consists of a bundle of Digl. R.P. - KO - D. composition, the lower end of which is encased in a viscose filament cambric sock, approximately 4 inches in length with the usual igniter compartment in the base containing Nz Man N.P.

Above the propellant are -

- (a) A ring bag containing 100 grams of potassium sulphate crystals.
- (b) Thirteen slabs (7.0 cm. x 6.65 cm. x 0.2 cm.) of a H.C. composition, greenish yellow in colour, containing approximately 62 per cent potassium sulphate. Total weight 20 grams.
- (c) A length of lead (100%) decoppering wire weighing 62 grams (2 oz. 3 dr.).

As the total weight of potassium sulphate in the composition slabs is only about 1/10 of that in the flash reducing bag charge, it is possible that the principal function of the slabs is to act as packing pieces.

The composition of the propellant, igniter and slabs as found by analysis is as follows.

Composition	Propellant	Igniter	Slabs
Nitrocellulose	68.37%	95.90%	37.52%
Diethyleneglycol Dinitrate	15.86%		0.22%
Dinitrotoluene	13.65%		
Ethyl Centralite	1.41%		
Potassium Sulphate	0.52%		61.85%
Graphite	0.19%	0.76%	
Volatile Matter	0.41%	2.41%	0.14%
Diphenylamine		0.66%	0.41%
Camphor		1.69%	
Sodium Sulphate		0.99%	

1520. GERMAN 10.5 CM. FLAK 38 CARTRIDGE Q.F. H.E. GROOVED SHELL (FIGS.632 and 633)

PROPELLANT (contd.)

The propellant bag is marked:-

5,625 Kg.  
Digl. R.P. - KO - D - (625 - 5,8/2,2)  
Ktz. 44/22  
Ng. 15.6.44. W.

The ring flash reducing charge is marked in black:-

Kasu. Kby.

CASE and PRIMER C/22 St.

The steel case is 30.3 inches in length, and is stamped in the base "Patch St. - 10.5 cm. Flak 38."

The primer examined was of 1944 manufacture and incorporates the following modifications as compared with the C/22 described in Bulletin No.26, Item 464.

- (a) The body and contact plug are of plated steel.
- (b) Closure is effected by means of a parchment paper disc covered by a thin steel washer and the whole being waterproofed externally by a colourless translucent varnish.
- (c) The spring washer which clamps the fuze head has only one lug instead of two. Corresponding to this there is a single groove in the body and insulating moulding.
- (d) The screw cap is held in place by a white cement on the screw threads.

The weight and composition of the gunpowder filling as found by analysis is as follows.

Composition	Pellet	Grain
Sulphur	10.3 per cent	8.6 per cent
Potassium Nitrate	74.8 " "	75.6 " "
Charcoal	14.9 " "	15.8 " "
Weight	21.4 grains	5.5 grains

The fuze head composition consists of a lead salt of a nitro-body (probably lead picrate) and lead nitrate with a covering sheath of green nitrocellulose varnish.

1521. GERMAN 12.8 CM. GERAT 40 CARTRIDGE Q.F. A.P.C./T. (FIGS.634 and 635)

This Q.F. fixed round is used with the 12.8 cm. Flak 40 gun in the anti-tank role. The complete round weighs 99½ lbs. and has an overall length of 50.1 inches. The shell is fitted with two non-ferrous driving bands, is painted in black and stencilled in red. Exterior markings on the shell are shown in Fig.634.

1521. GERMAN 12.8 CM. GERAT 40 CARTRIDGE Q.F. A.P.C./T. (FIGS.634 and 635) (contd.)

The complete round consists of the following components:-

- Shell A.P.C.
- Fuze Bd.Z.5121
- Tracer
- Propellant of Digi R.P. Composition
- Case Model 6311
- Primer Electric C/22 St.

SHELL

The construction and method of filling of the shell is shown in Fig.634. The shell cavity is closed by a steel base plug which is recessed and screwthreaded at the top and bottom to receive the base fuze and tracer respectively.

The filling is of the "86" type and is contained in a varnished paper carton. It consists of a pressed pellet, weighing 383 grams (13½ oz.), of Ethylenediamine dinitrate containing approximately 2 per cent of T.N.T., and an exploder pellet of RDX/WAX (90/10) weighing 167 grams (5 oz. 14 dr.). The main pellet is coated with a thin layer of paraffin wax, and the exploder pellet is varnished (blue) on the upper surface and inside the recess. A suitably shaped plastic block is accommodated at the top of the shell cavity.

The composition of the main filling and exploder pellet as found by analysis is as follows.

<u>Main Filling</u>		<u>Exploder Pellet</u>	
Ethylenediamine Dinitrate	= 97.5%	R.D.X.	= 89.7%
T.N.T.	= 2.4%	Montan Wax	= 10.1%
Extraneous Matter	= 0.1%	Extraneous Matter	= 0.2%

FUZE Bd.Z.5121

The fuze weighs 127 grams (4 oz. 7 dr.) and is generally of normal German design incorporating a fixed striker and an inertia pellet locked by an arming device consisting of centrifugal segments retained by a coiled spring. It differs however from German base fuzes (other than rocket fuzes) previously examined in having a creep spring.

The fuze body is of steel and has a front and a rear cavity separated by a perforated septum which carries the striker. These cavities and the exterior of the fuze have right-hand threads. The rear cavity is closed by a light alloy plug which carries the pivot pins for six centrifugal segments and has a cavity housing the inertia pellet. The centrifugal segments are of dimensions identical with those of the AZ.38 fuze (see Bulletin No.33, Item 741). The front cavity houses a hollow light alloy plug which incorporates a throttling diaphragm and is threaded internally to accommodate the gaine detonator. The gaine detonator and the igniferous detonator (Type 28) are identical with those of the Bd.Z.f. 7.5 cm. Pzgr. (see Bulletin No.25, Item 435 (1)).

1521. GERMAN 12.8 CM. GERAT 40 CARTRIDGE Q.F. A.P.C./T. (FIGS. 634 and 635) (contd.)

TRACER (Fig. 635)

The tracer is generally of normal German design and its filled weight is 98.1 grams (3 oz. 7 dr.).

The tracer composition weighs approximately 9.9 grams and is pressed in three increments into a cylindrical steel liner; the priming composition weighs approximately 2.9 grams and is pressed in two increments into the base of the liner and a choked retaining ring. The tracer is closed by a celluloid disc secured by a steel ring and sealed with a ring of brown varnish.

The composition of the tracer is as follows.

Barium Nitrate	=	53.3	per cent
Magnesium Metal	=	29.9	" "
Sodium Oxalate	=	9.1	" "
Resinous Matter	=	5.4	" "
Corrosion Products	=	2.1	" "
Volatile Matter	=	0.2	" "

PROPELLANT

The propellant charge consists of 8,250 kg. of Digl. R.P. - 8 - (820 - 7,25/3,2) in a rayon sock fitted with a double igniter compartment at the base. The compartment next to the primer contains 24 grams of Nz Man N.P. and the other compartment 194 grams of a NC/DEGDN flake composition. A length of decoppering wire is attached to the upper end of the propellant bundle.

CASE

The case is of the normal flanged type 37.8 inches overall in length with an increase in taper at approximately 4.9 inches from the mouth. It is stamped in the base with the Model No. "6311" "Gerat 40."

PRIMER C/22 St.

The primer is of the C/22 type described in Bulletin No. 26, Item 464, with the following modifications.

- (a) The body is of steel instead of brass.
- (b) Keyways are in the form of two flats instead of three semicircular recesses.
- (c) Fabric disc below aluminium closing disc is replaced by a varnished paper disc.
- (d) The insulation of the contact plug is of a blue colour instead of the usual yellow.

1522. GERMAN 2.7 CM. PISTOL H.F. CARTRIDGE

(Sprenggranate-Patrone K.P.)

This cartridge is used with the 2.7 cm. Battle pistol (Kampfpistole) and is an improved design of the cartridge described in Bulletin No. 39, Item 984. It differs mainly in having a new fuze developed from the 20 mm. AZ.1504 fuze mechanism, in having a modified explosive filling, and in being fitted with a gaine initiated directly by the striker instead of by an intermediate igniferous detonator.

The complete round is 4.95 inches overall in length and weighs approximately 5 oz. 2 dr.

1522. GERMAN 2.7 CM. PISTOL H.E. CARTRIDGE (contd.)

FUZE (Fig.636)

The fuze is of the direct action type functioned by a protruding hammer or plunger, and is fitted with a gaine of the Duplex Kapsel type.

It consists mainly of an ogival nose cap, body, needle, needle holder, two centrifugal bolts with an expanding tape spring, a ball, and a hammer. The components are made from light metal except where stated otherwise in the description below.

The nose cap forms the head of the projectile and is screw-threaded externally below a flange for insertion in the shell. Internally, it is screwthreaded at the base to receive the body and is turned in at the top to retain the hammer by means of a flange.

The body is screwthreaded externally near the base for assembly in the nose cap and internally to receive the gaine. Above the gaine and displaced from the centre, there is a vertical channel which houses a steel ball. A slot formed in the wall of this channel along its length, accommodates the stem of the needle holder in a safe position displaced from the centre of the fuze before it is armed.

The steel needle is carried loosely in the stem of the holder. A tongue of metal in the head of the holder is turned over to form a recess on the underside to receive the ball during flight.

The needle and holder are retained in the safe position by two steel centrifugal bolts accommodated in holes near the top of the body. The bolts are retained by a phosphor bronze expanding tape spring accommodated in a circumferential groove in the exterior of the body.

Above the needle holder is a washer which is fixed to the body by stabbing.

The hammer is made from brown plastic and its protrusion is limited by a flange at its base. The lower end of the stem of the hammer is accommodated in the central hole in the washer and is held off the needle by a light spring of zinc coated steel. The spring serves also to maintain a seal at the head of the fuze.

GAINE

The gaine is of the "Duplex Kapsel" type with all metal components of brass and lacquered. The inner cup is perforated in the base and inserted in the body of the gaine, mouth first. It is slightly inset in the body and a washer of light felt is attached to the base of the cup, i.e. to the top of the gaine. The gaine is closed by a brass disc on the inside of the cup.

The filling consists of lead azide/tetrazene initiator composition pressed into the inner cup, over a boosting charge of PETN in the bottom of the gaine.

An analysis of the compositions is as follows.

INITIATOR COMPOSITION		BOOSTING COMPOSITION	
Lead Azide	93.4 per cent	PETN	99.6 per cent
Tetrazene	6.6 " "	Foreign Matter	0.4 " "
Weights	7.1 grains		6.8 grains

1522. GERMAN 2.7 CM. PISTOL H.E. CARTRIDGE (contd.)

ACTION

On acceleration the ball is held in the base of its channel by set back.

During flight centrifugal action causes the tape spring to expand and the safety bolts to move outwards thereby freeing the needle holder. The ball creeps forward into the recess in the holder during deceleration, and centrifugal action causes the ball to bring the stem of the holder and the needle into alignment with the hammer and detonator.

On impact the hammer is forced in and drives the needle through the stem of the holder on to the gaine.

SHELL

The modified explosive filling consists of a slightly increased H.E. charge (PETN. Wax - 90/10) without the original cavity. It weighs 379 grains and is pressed to a flat finish, without cavity, at approximately .8 inch below the top of the shell body. The base of the gaine in the air space above the filling is separated from the filling by at least .3 inch. The filling is pressed onto a cardboard disc wedged in the bottom of the steel liner as shown in Bulletin 39, Fig.387, but the disc separating the increments is omitted. The filling is dyed pink and only lightly consolidated; there is no paper disc or cardboard washer at the top to prevent the composition breaking up.

CARTRIDGE

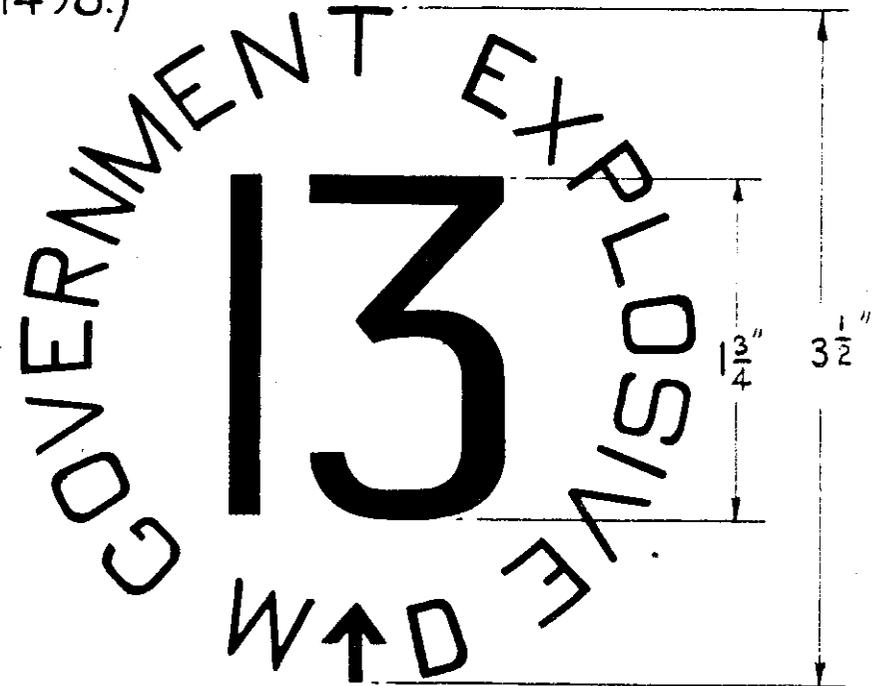
The propellant charge consists of 12.4 grains of unpressed granular gunpowder. The case is loosely attached to the bottom of the shell by lightly rolling in the side of the case to grip the body.

The cap composition is yellow-brown in colour and is pressed with a central dimple in a shell of zinc-plated steel. The composition is unvarnished and foiled with a disc of thin paper; the final assembly is varnished internally. The composition as found by analysis consists of:-

Lead Styphnate	-	40	per cent
Barium Nitrate	-	42	" "
Calcium Silicide	-	14	" "
Glass	)		
Tetrazene	-	4	" "

STENCIL OF EXPLOSIVE GROUP ON PACKAGES.

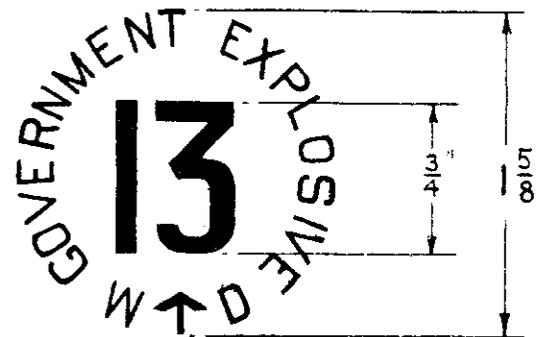
FIG. 621. (ITEM 1498.)



SIZE OF LETTERS

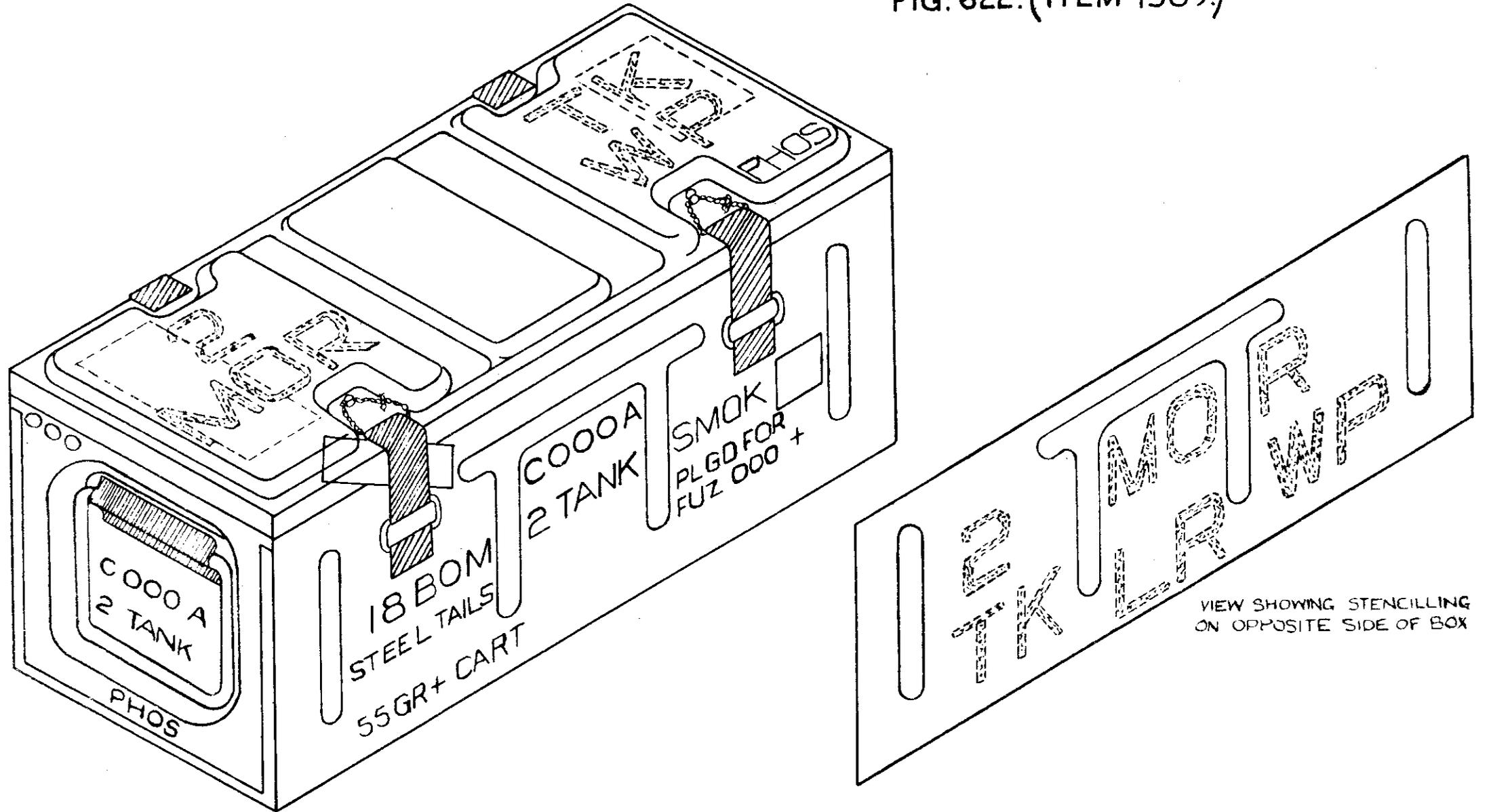
LARGE STENCIL  $\frac{3}{8}$  INCH.  
SMALL STENCIL  $\frac{3}{16}$  INCH.

THE LETTERS SIX AND NINE  
TO BE ADDED AS SHOWN TO  
STENCIL OF THESE TWO GROUPS  
ONLY.



"OPERATIONAL MARKINGS" ON PACKAGES (TYPICAL)

FIG. 622. (ITEM 1509.)

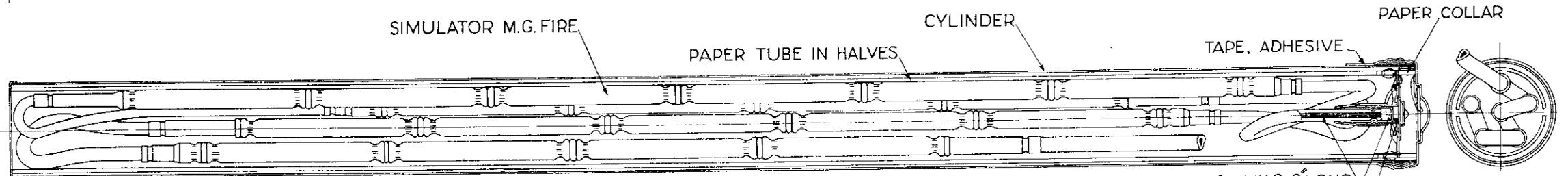
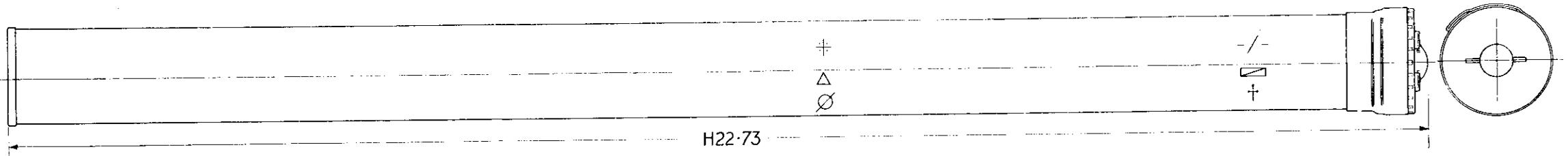


# SIMULATOR, M.G., Fd., N°1, MK.1

FIG 623 (ITEM 1510)

FILLED MARKING {  
 † DATE OF FILLING (MONTH AND YEAR)  
 Δ FILLED LOT NUMBER  
 ∅ MONOGRAM OF FILLING STATION, OR CONTRACTOR'S INITIALS

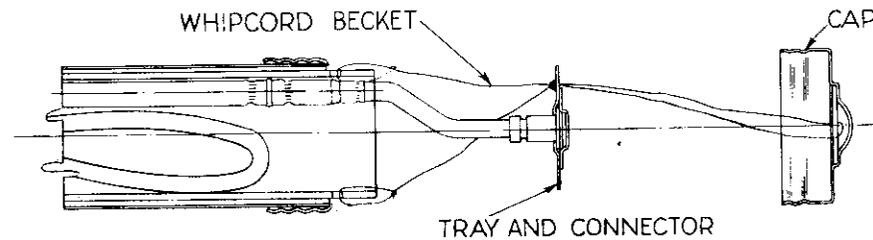
EMPTY MARKING {  
 -/- DATE OF MANUFACTURE (MONTH AND YEAR)  
 ⊞ LOT NUMBER  
 † CONTRACTOR'S INITIALS OR RECOGNISED TRADE MARK



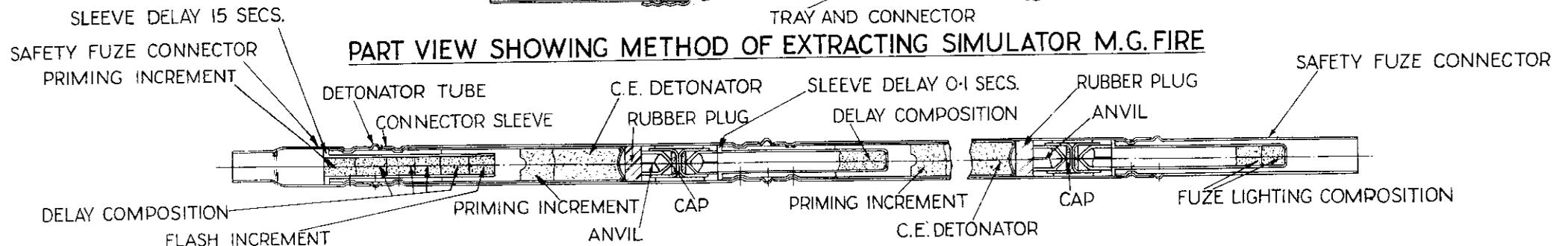
VIEW SHOWING METHOD OF PACKING

FUZE SAFETY N°11, MK.2, 2' LONG  
 GUNPOWDER G.20 1 GRAIN  
 CELLULOID CAPSULE

END VIEW WITH CAP AND TRAY REMOVED



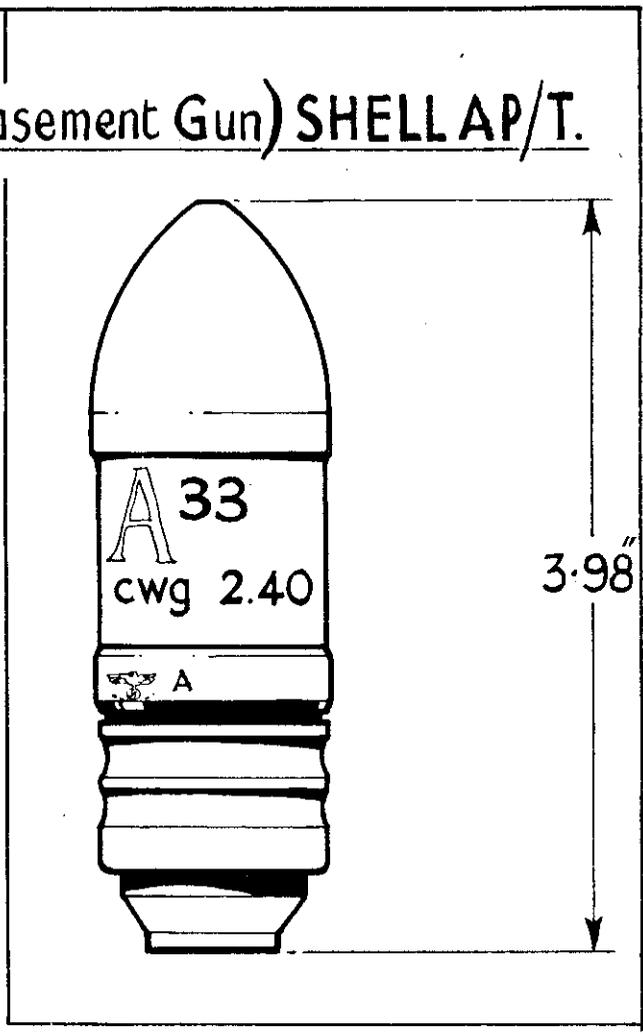
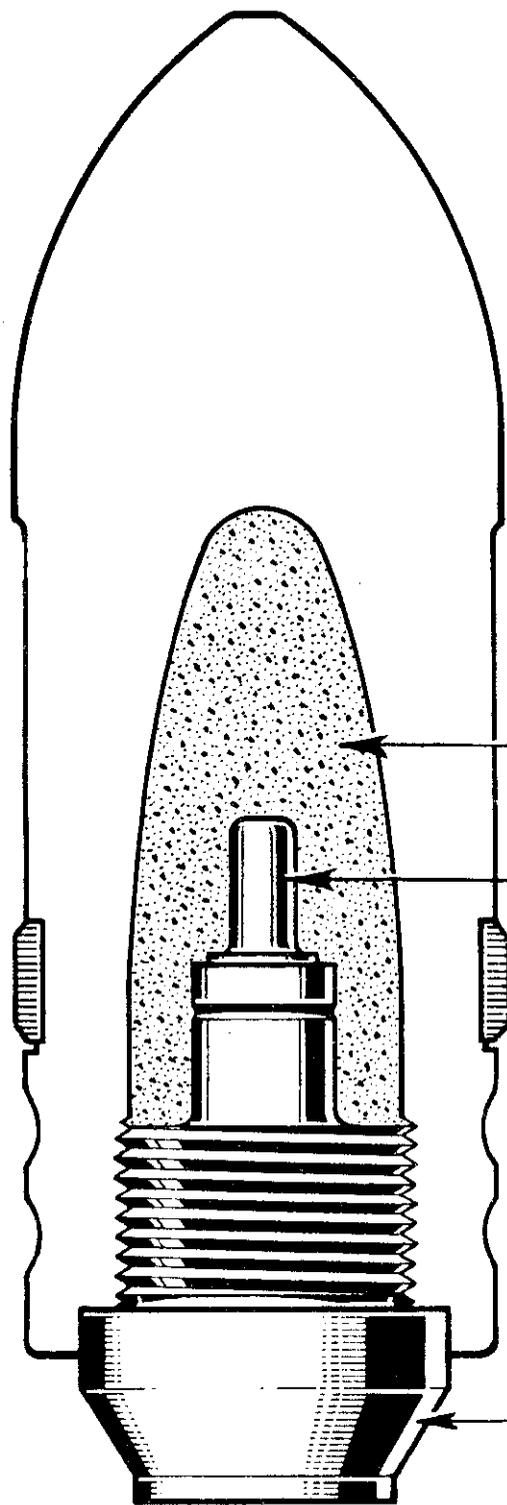
PART VIEW SHOWING METHOD OF EXTRACTING SIMULATOR M.G. FIRE



DETONATOR MULTIPLE N°93-GENERAL ARRANGEMENT

GERMAN 3.7 cm. Pak.K. (Casement Gun) SHELL AP/T.

FIG. 624. (ITEM 1513.)



P.E.T.N./Wax (6 dr.)

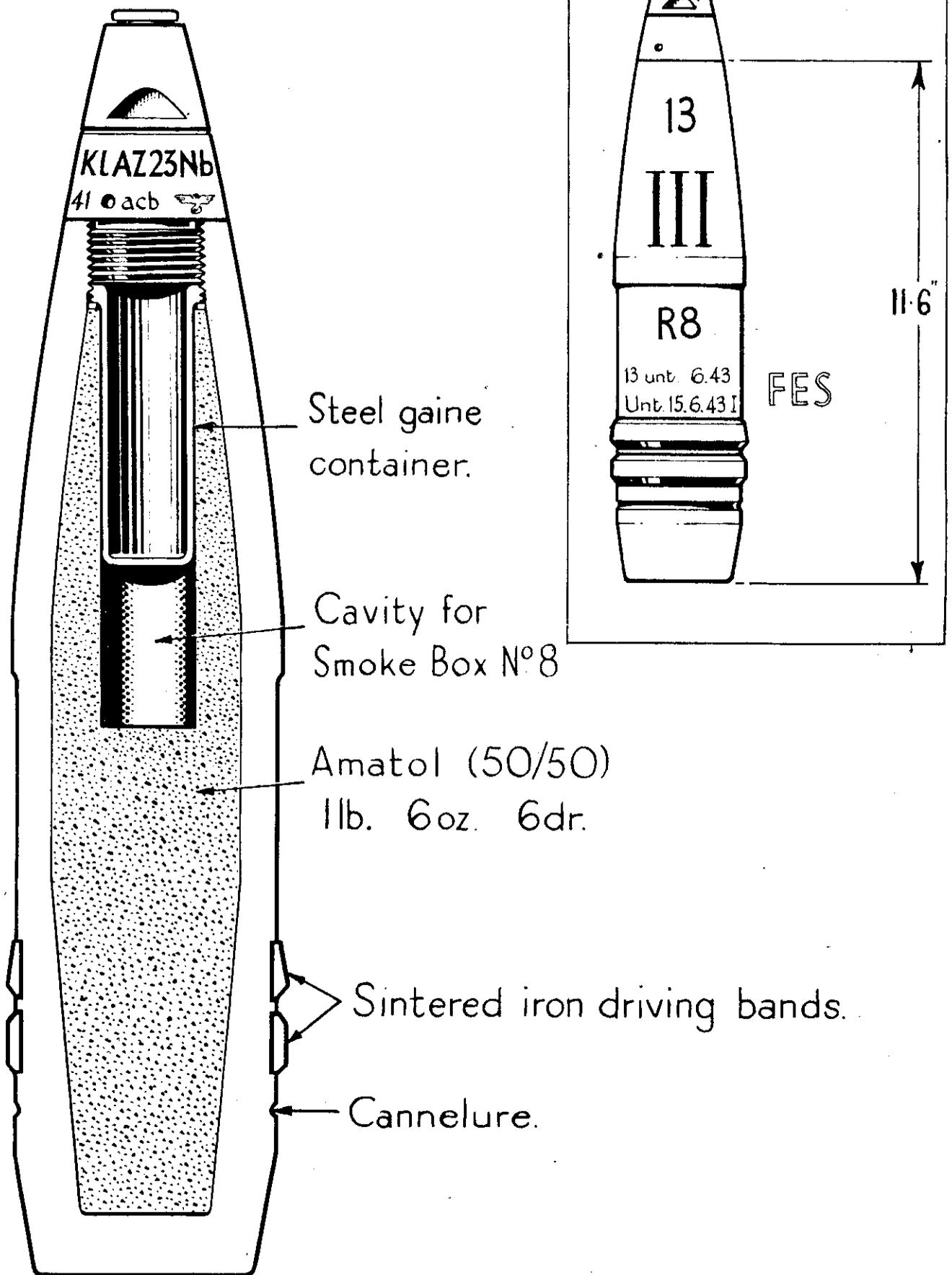
Gaine.

Non-ferrous driving band.

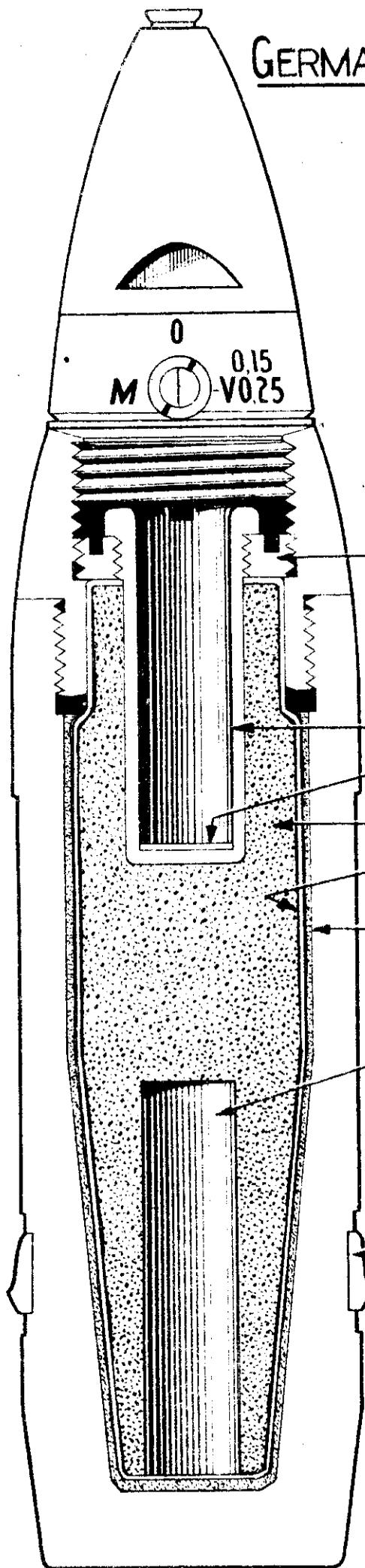
Fuze Bdz. 5103<sup>\*</sup> type.

# GERMAN 7.5 cm Kw.K.u. Stu.K42 H.E. SHELL (Spgr Patr)

FIG. 625. (ITEM 1514.)



GERMAN 7.5CM. l.FK18. H.E. SHELL.  
 FIG. 626 (ITEM. 1515.)



Adapter ring

Exploder container

Cardboard washer.

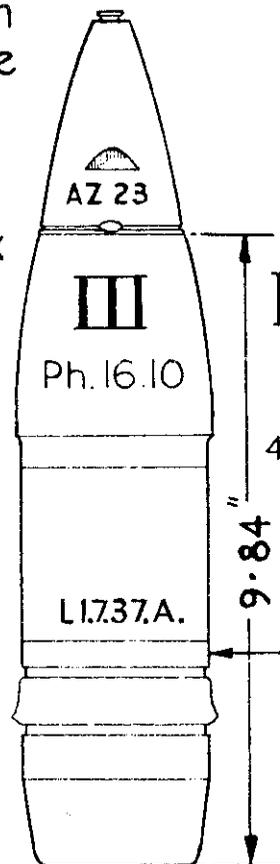
T.N.T. Pellet (13 1/2 oz)

Waxed paper carton.

Magnesium oxychloride cement.

Cavity for smoke box No. 7.

Non ferrous driving band.



III Tp

93 68  
 93 68  
 46 1/35 E  
 135

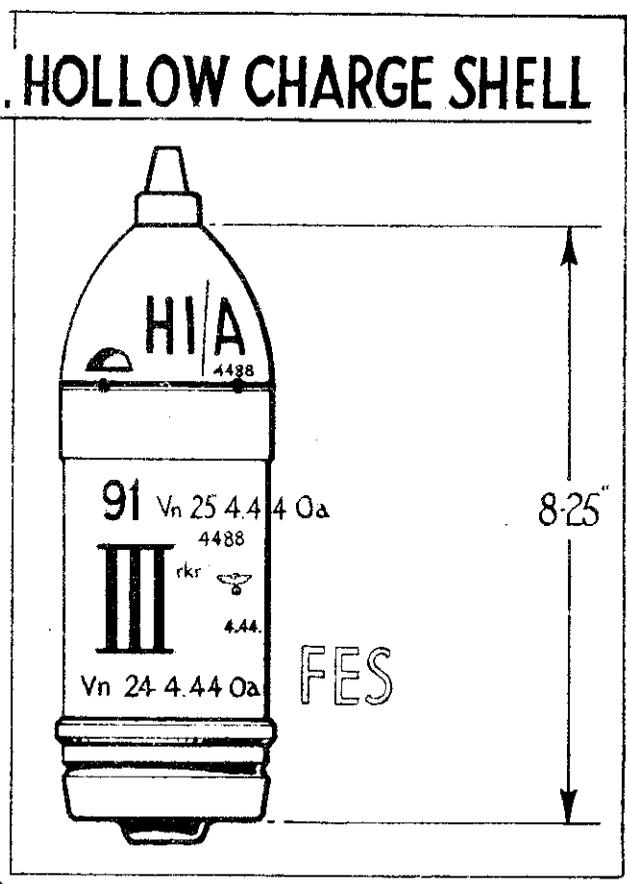
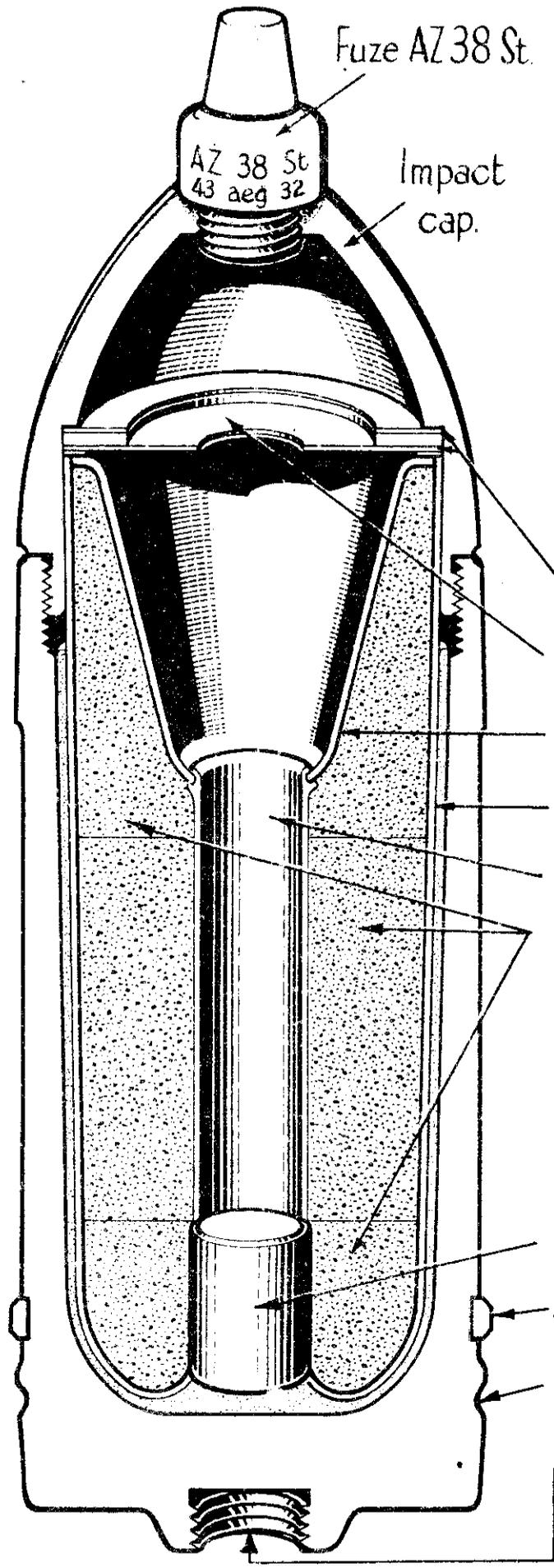
Stamped markings.

9.84"

Red band.

# GERMAN 7.5 cm. le J.G. 18 H.E. HOLLOW CHARGE SHELL

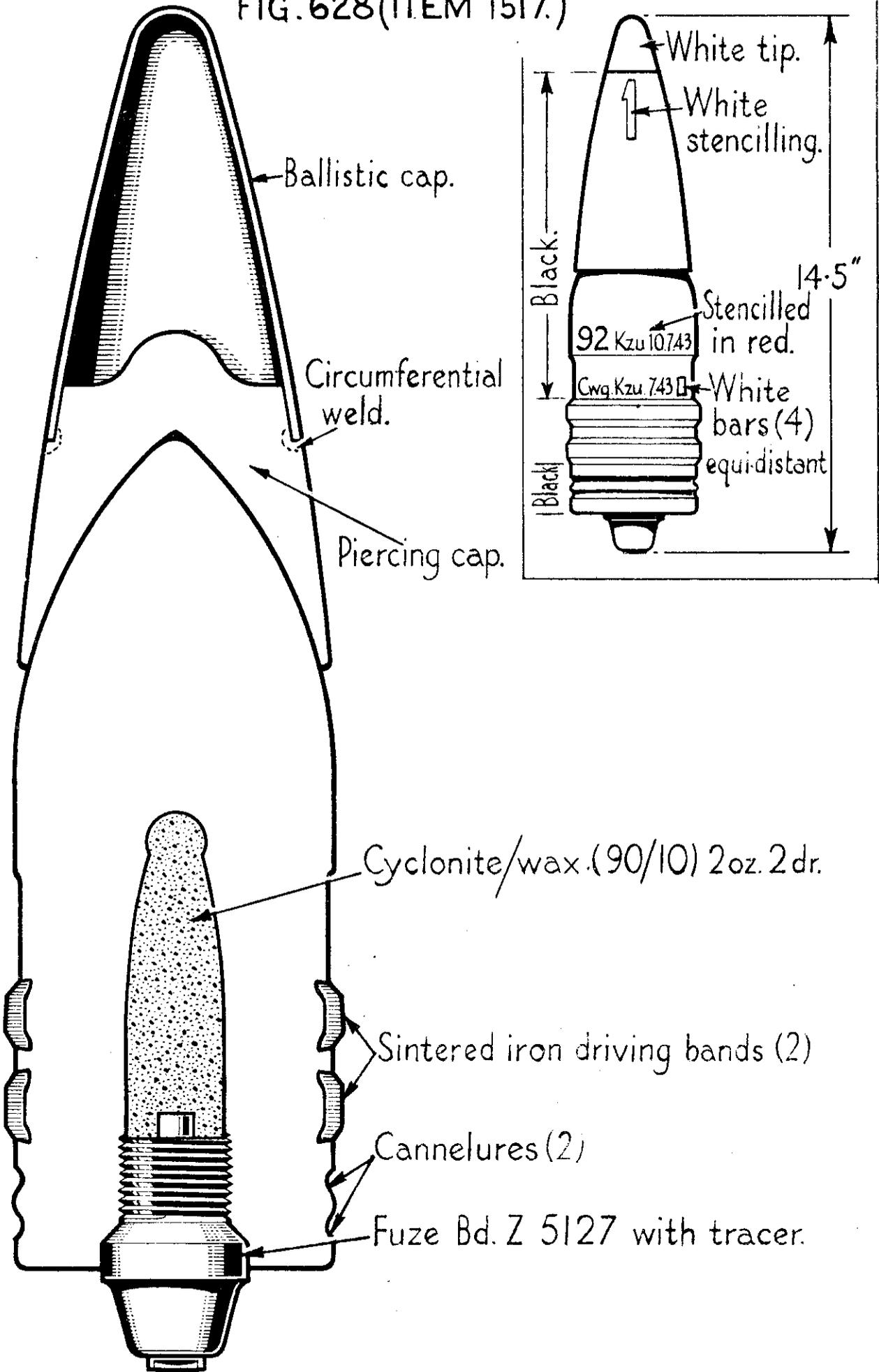
FIG 627 (ITEM 1516.)



- Cardboard washers (2)
- Steel washer.
- Steel liner.
- Waxed paper carton set in cement.
- Light alloy tube.
- RDX/Wax. (3 pellets)
- Gaine KI Zdlg 34 Np.
- Sintered iron driving band.
- Cannelure.
- Tracer cavity.

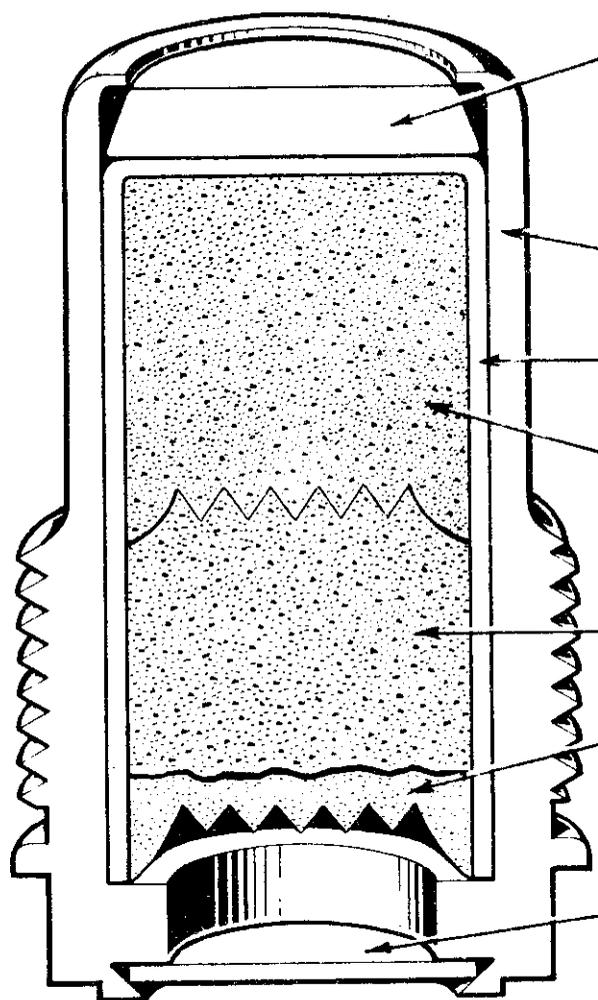
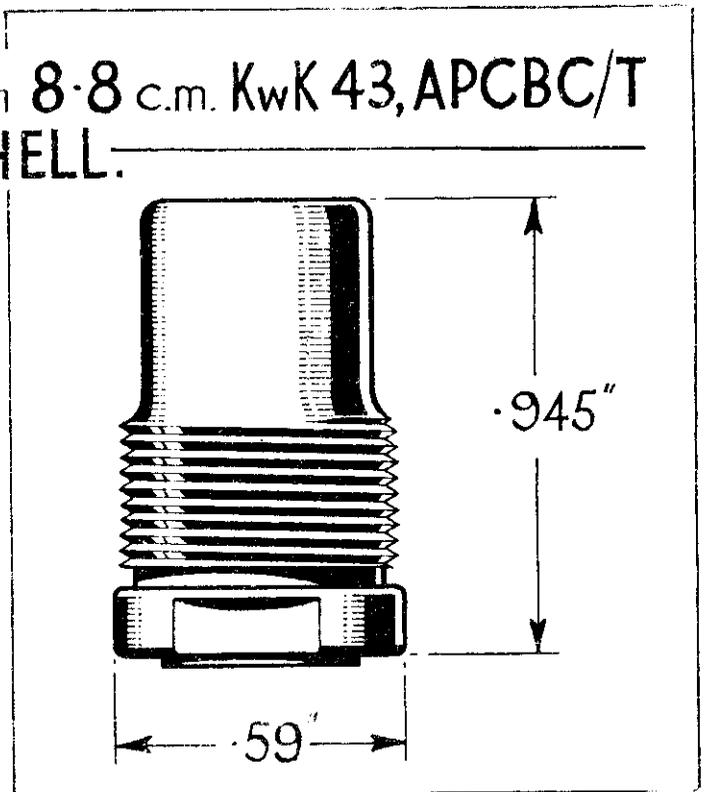
GERMAN 8.8 cm. K.w.K 43. SHELL APCBC/T.

FIG. 628 (ITEM 1517.)



# GERMAN TRACER from 8.8 c.m. KwK 43, APCBC/T SHELL.

FIG. 629 (ITEM 1517.)



Steel closing disc upper surfaces thickly coated with Black Paint.

Steel Body, rustproofed.

Steel liner.

Tracer composition 1<sup>st</sup> increment 1.1 grams

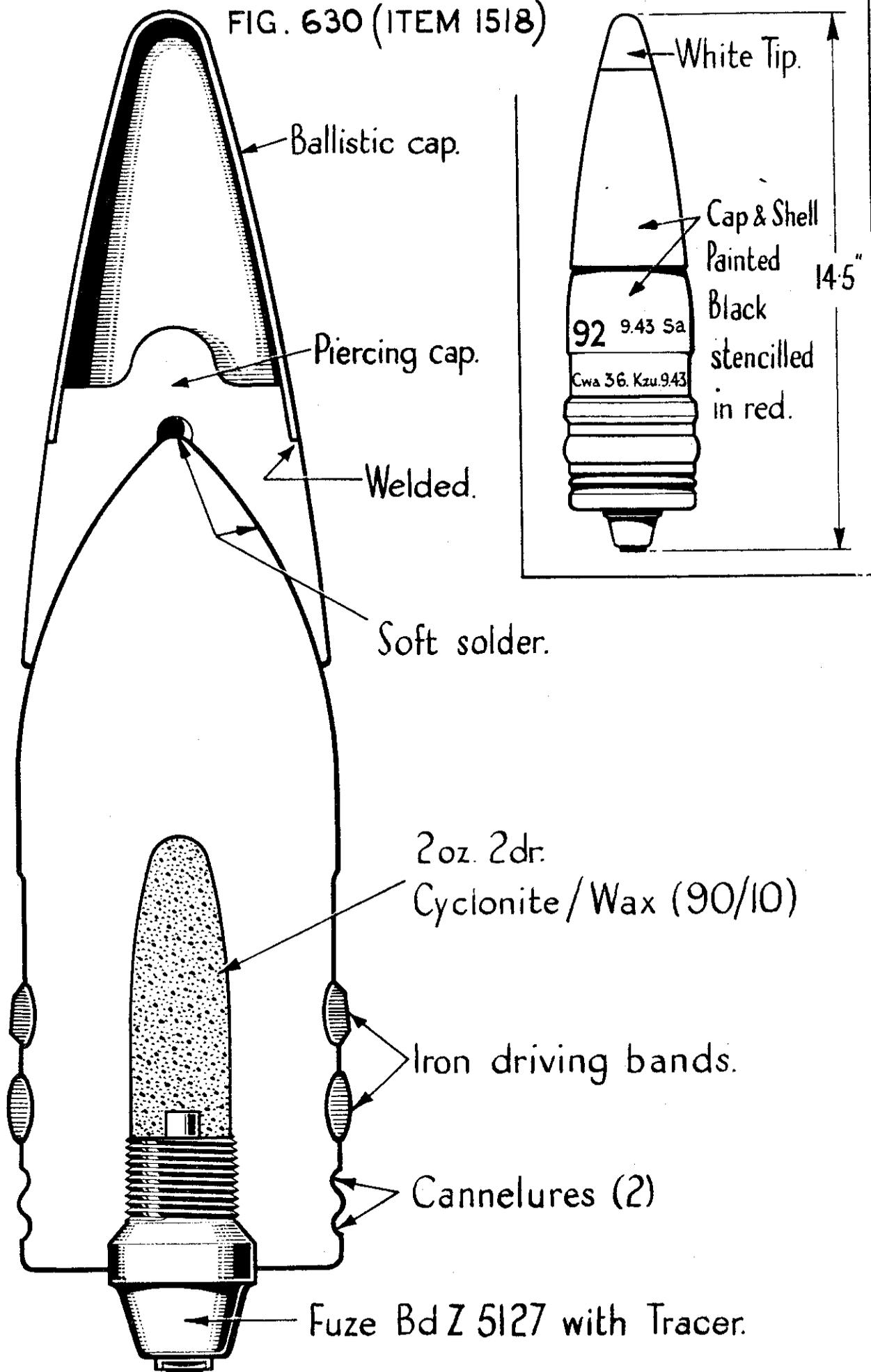
2<sup>nd</sup> increment 0.8 grams

Priming composition 0.8 grams.

Celluloid disc secured with Brown Varnish.

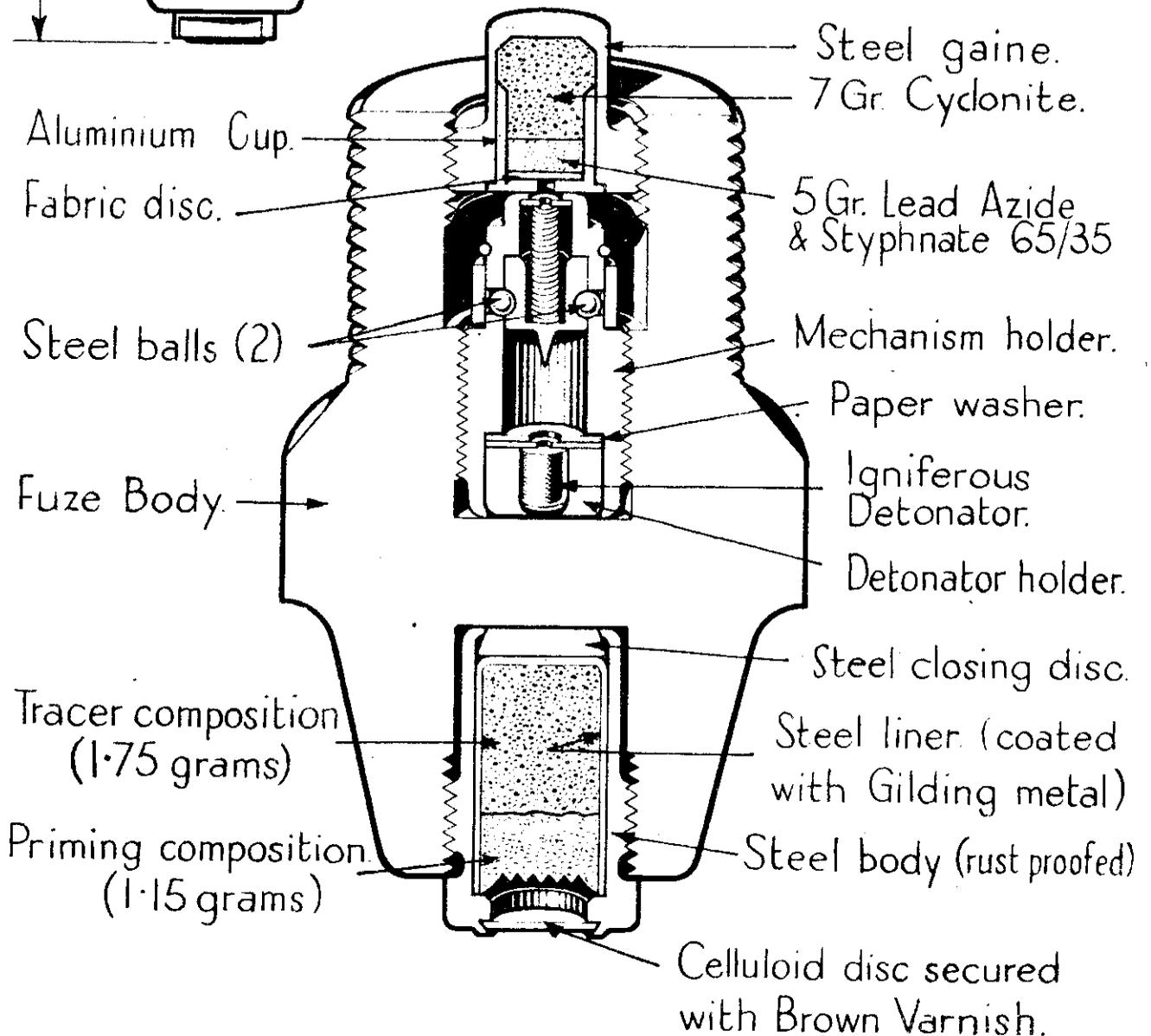
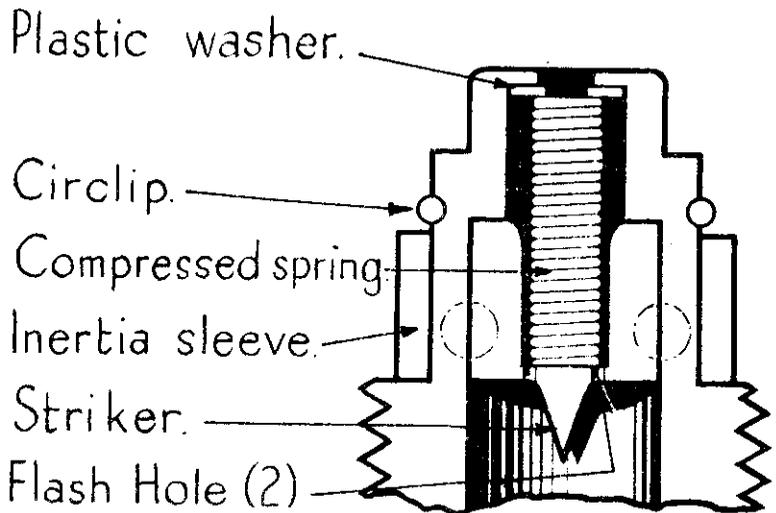
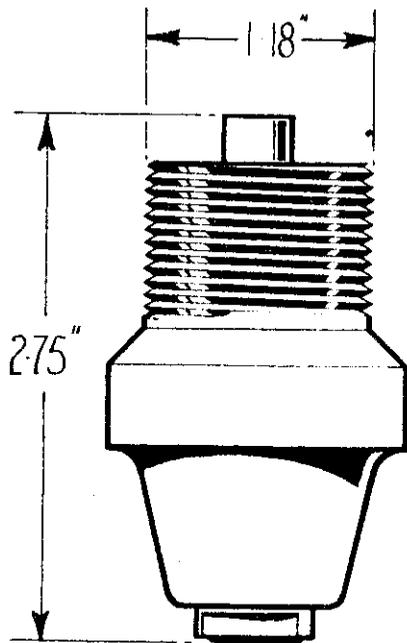
# GERMAN 8.8 cm. KwK43 APCBC/T SHELL.

FIG. 630 (ITEM 1518)



# GERMAN BASE FUZE Bd.Z5I27 WITH TRACER.

FIG.63I. (ITEM 1518)



# GERMAN 10.5 cm. FLAK 38 CARTRIDGE Q.F. H.E. (Grooved Shell)

FIG. 632 (ITEM 1520).

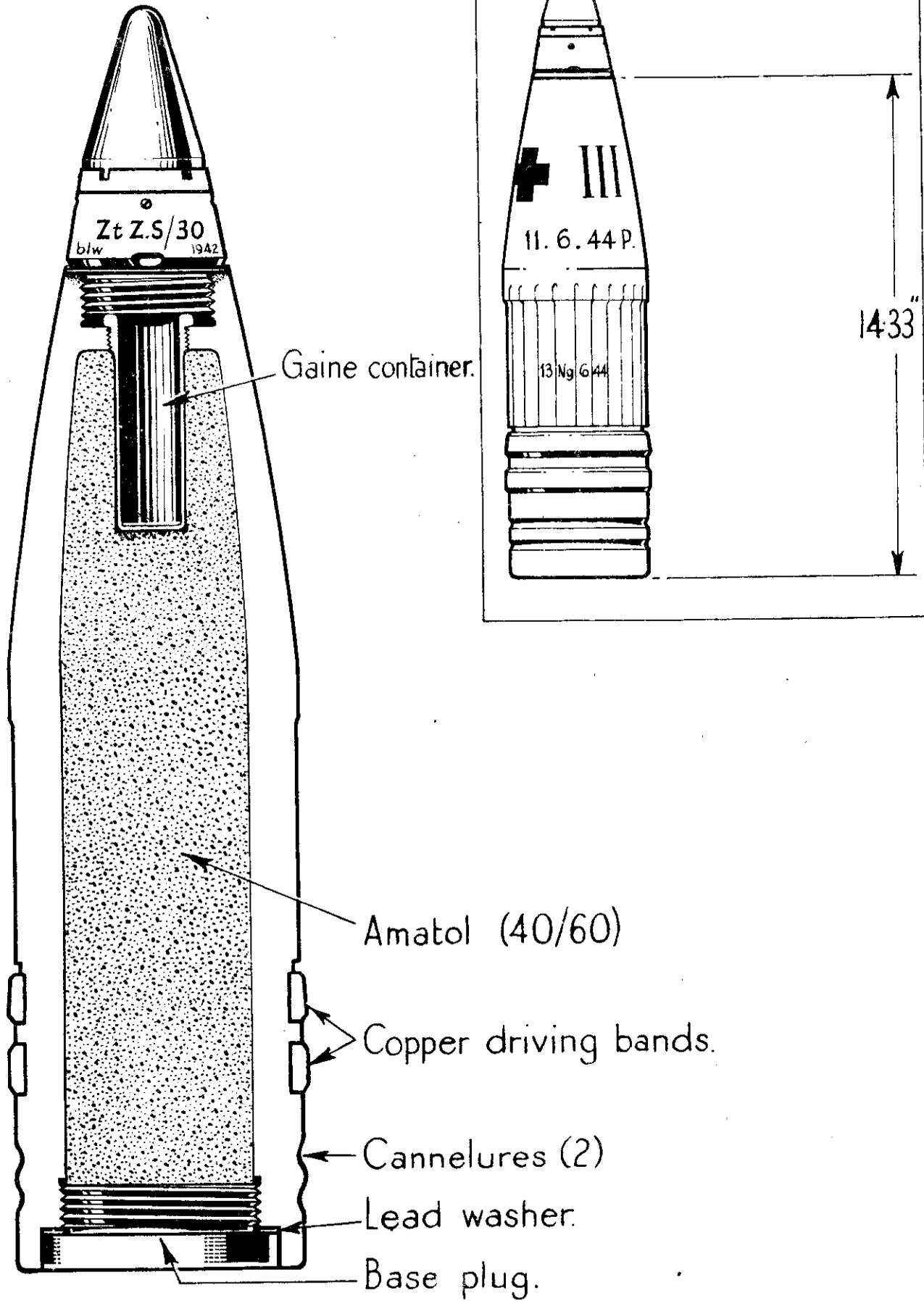
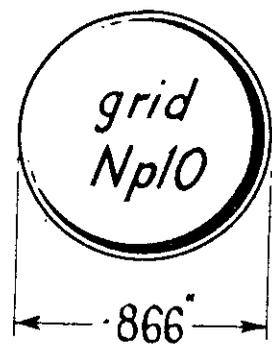
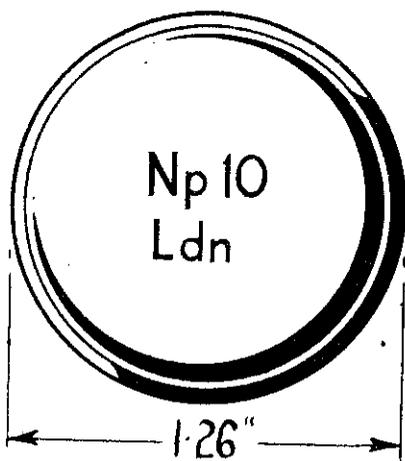
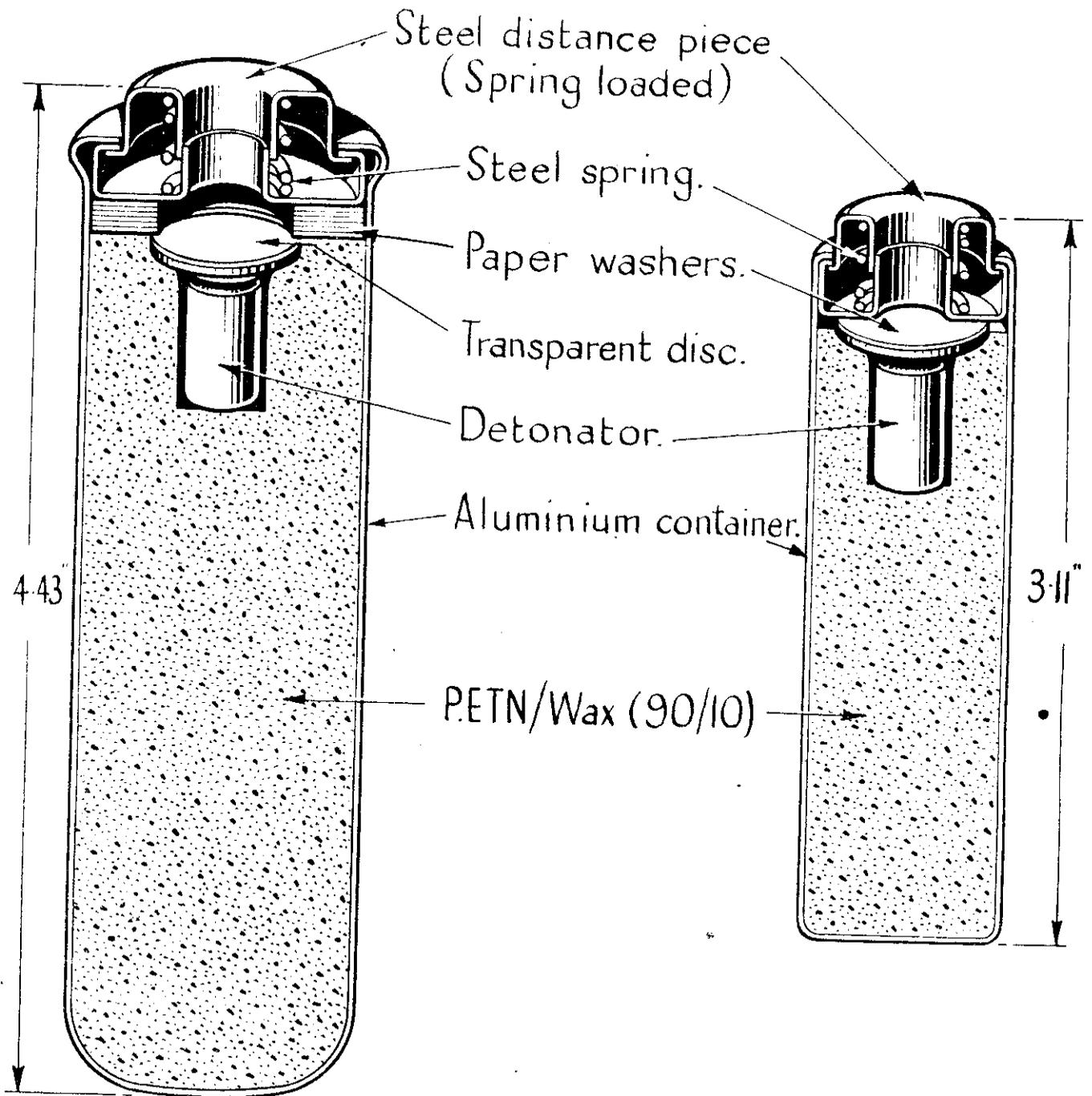
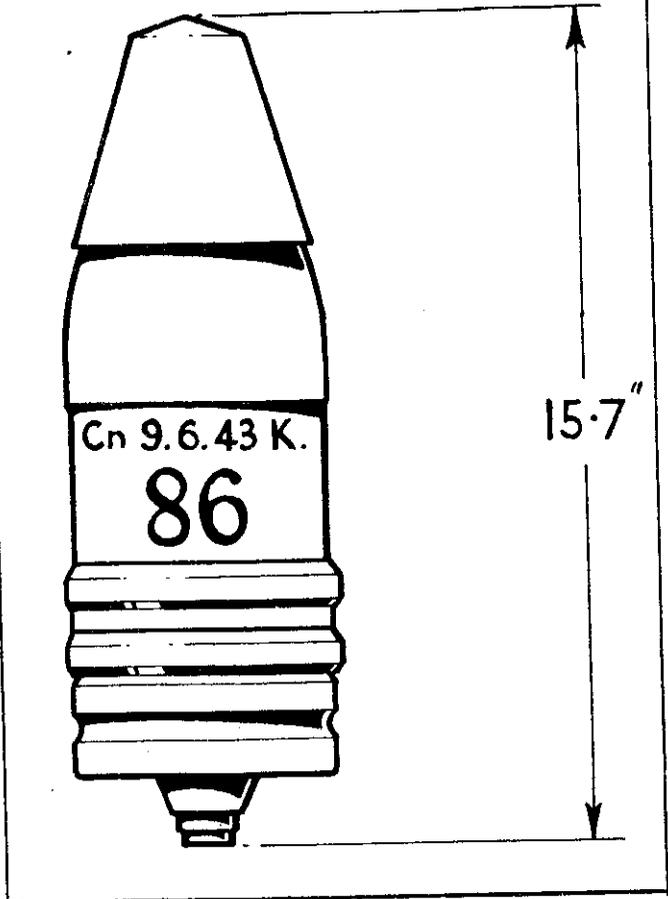
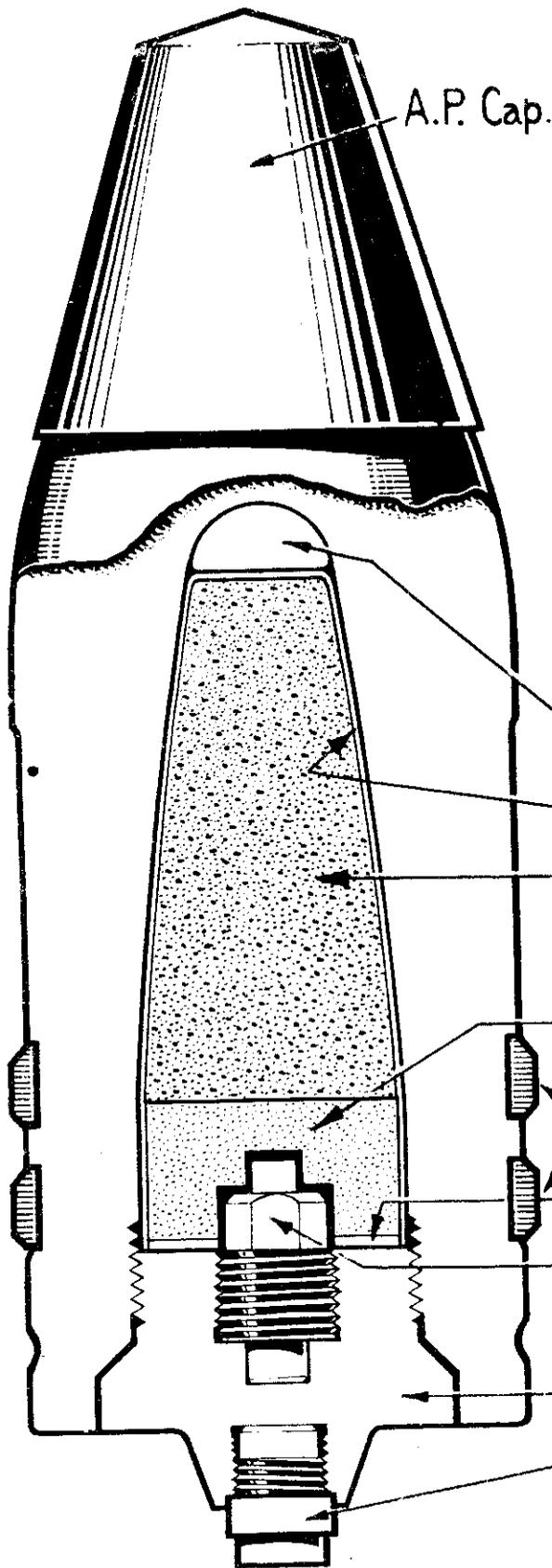


FIG. 633. (ITEM 1520.)  
**GERMAN GAINES**  
(with spring loaded distance piece)



# GERMAN 12.8CM. GERAT 40 SHELL A.P.C./T.

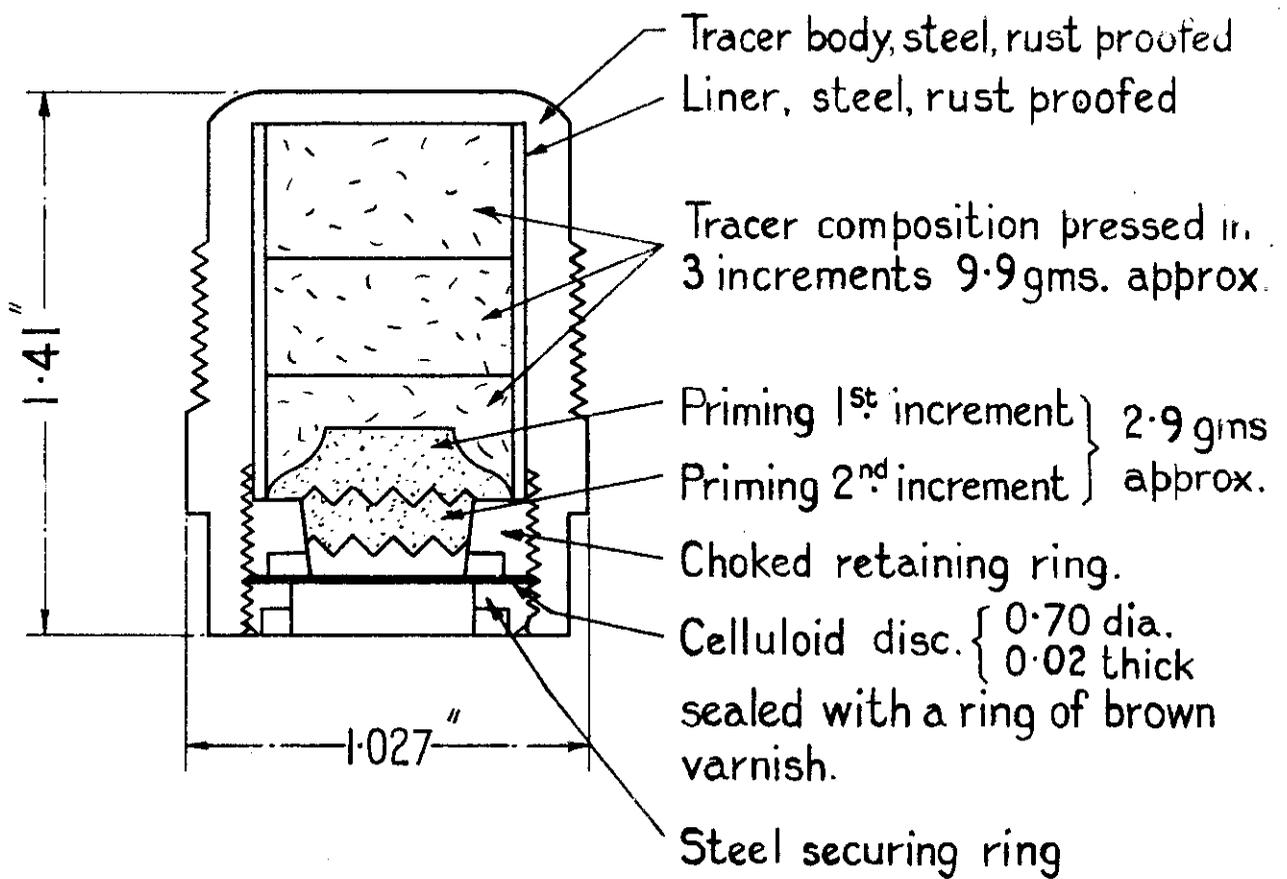
FIG. 634 (ITEM 1521.)



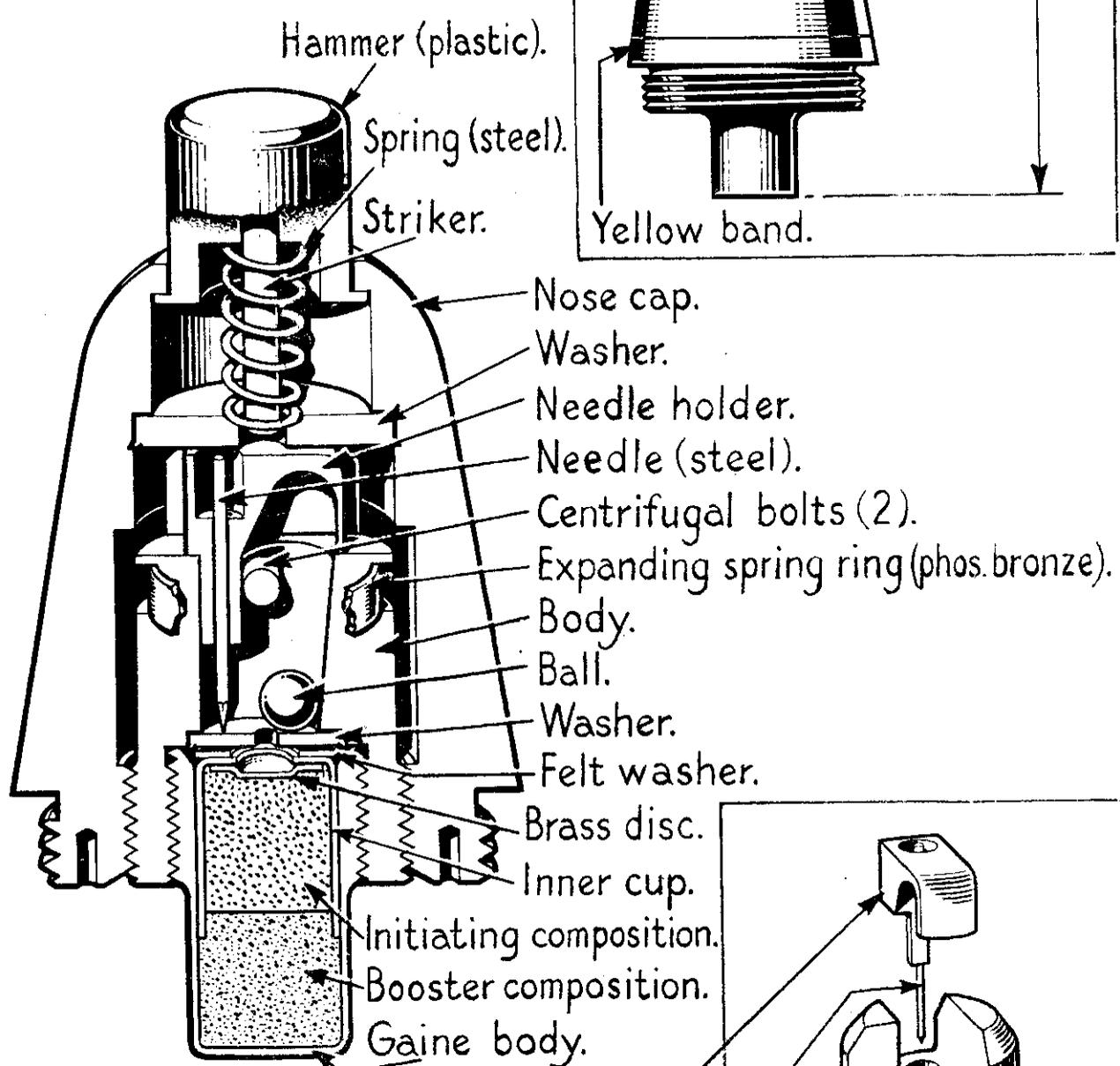
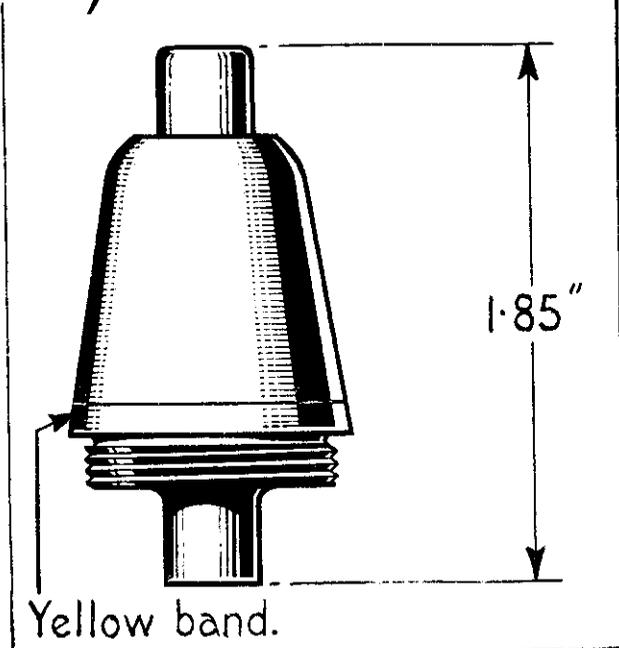
- Plastic Block.
- Paper carton
- Main filling (13 1/2 oz)  
Ethylene - diamine  
dinitrate / T.N.T.
- Exploder Pellet (5 oz 14 dr.)  
R.D.X. Wax. (90/10.)
- Non-ferrous driving bands.
- Cardboard disc.
- Fuze Bd Z.5121.
- Base plug.
- Tracer.

GERMAN TRACER FROM 12.8 CM. GERAT 40 A.P.C./T. SHELL

FIG. 635 (ITEM 1521.)



GERMAN D.A.FUZE FOR 2.7CM. PISTOL H.E.CARTRIDGE.  
(A.Z.1504 TYPE.) FIG. 636. (ITEM 1522.)



GAIN (BRASS)  
 DUPLEX KAPSEL TYPE.

Needle holder.  
 Needle.  
 Expanding spring ring.  
 Centrifugal bolts.  
 Body.

