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**WAR OFFICE
TECHNICAL INTELLIGENCE
SUMMARY
No. 144**

M.I.10
The War Office

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The War Office (M.I.10).
20th September, 1944.

SECRET

WAR OFFICE TECHNICAL INTELLIGENCE SUMMARY

No. 144

INDEX

PART I.

SMALL ARMS, ARTILLERY AND A.F.Vs.

Germany.

1. Changes in nomenclature.
2. 7.92 mm. Ball for machine carbine M.P.43
3. 7.92 mm. Parachutists automatic rifle (FG 42).
4. 7.92 mm. Self-loading rifle 43 (Gewehr 43).
5. Hollow charge rifle grenades.
6. Recoilless hollow charge bomb discharger (Panzerfaust 30).
7. 8 cm. (3 in.) Illuminating mortar bomb.
8. 7.5 cm. A.P. shot (7.5 cm. Pzgr.Patr 40(W) Pak 40).
9. 7.62 cm. (3 in.) A tk gun (7.62 cm. Pak 39).
10. 8.8 cm. Pak 43 gun barrel.
11. Buffer fluid - 8.8 cm. Pak 43/41.
12. 10.5 cm. Geb.H.40.
13. 7.5 cm. Hollow charge shell Gr 38 H1/A and H1/B.
14. German 12.8 cm. H.E. round (12.8 cm. Sprgr.Patr L/4,5).
15. Ammunition developments.
16. Anti-tank sights.
17. German nose percussion fuze (Kz 38).
18. German A A sight (Schwebedornvisier).
19. A A tank - 3.7 cm. Flakpanzer (3.7 cm. Flak 43 on Pz.Kpfw.IV).
20. Lynx armoured recce vehicle - Sd Kfz 123.
21. S-Mine dischargers on tanks.
22. 2 cm. (0.79 in.) and 3.7 cm. (1.45 in.) light A A guns on semi-tracked S.P. mountings.

PART II.

CORRIGENDUM.

BOMBS AND FUZES.

Germany.

23. Delay action clockwork fuze "Z 17 BM".

CAMOUFLAGE.

Germany.

24. Camouflage equipment - dummy tanks.

ENGINEER EQUIPMENT.

Germany.

25. Riegel mine - safety precautions.
26. Riegel mine - technical data.
27. "Panzerschnellmine" (anti-tank wooden box mine).
28. Anti-personnel "Glas Mine 43".
29. Tellermine igniter T.Mi.Z.43.
30. Electrically driven "Goliath".
31. B IV radio-controlled demolition vehicle.

/FIELDWORKS...

FIELDWORKS.

Germany.

- 32. Concrete pillboxes.
- 33. Siegfried Line.

OBSTACLES.

Germany.

- 34. Mine obstacles.

VEHICLES.

Germany.

- 35. German semi-tracked vehicles as S.P. A.A. mountings.
- 36. Bussing-N.A.G. $4\frac{1}{2}$ ton lorry - road performance.

- Appendix A. German 7.92 mm. Ball (M.S. core) for machine carbine (M.P.43).
- B. German 7.92 mm. Parachutists automatic rifle.
- C. 7.92 mm. self loading rifle (Gewehr 43).
- D. Panzerfaust.
- E. 7.5 cm. A.P. shot - 7.5 cm. Pzgr.Patr. 40(W) Pak 40.
- F. German 12.8 cm. H.E. round (12.8 cm. Sprgr.Patr L/4.5).
- G. German ammunition developments.
- H. German nose percussion fuze (Kz 38).
- J. German A.A. sight (Schwebedornvisier).
- K. A.A. Tank 3.7 cm. Flakpanzer (3.7 cm. Flak 43 on Pz.Kpfw. IV).
- L. Lynx armoured recce vehicle.
- M. German Z 17 Bn clockwork delay fuze.
- N. German dummy tanks.
- O. "Panzerschnellmine" (anti-tank) wooden box mine.
- P. Tellermine igniter T.Mi.Z.43.
- Q. B IV radio-controlled demolition vehicle.
- R. Concrete pillboxes.
- S. German mine obstacles.
- T. German semi-tracked vehicles as S.P. A.A. mountings.

SECRET

WAR OFFICE TECHNICAL INTELLIGENCE SUMMARY

No. 144

PART I.

SMALL ARMS, ARTILLERY AND A.F.Vs.

GERMANY.

1. CHANGES IN NOMENCLATURE.

According to captured documents the following changes in nomenclature have been ordered :-

(a) Gewehr 43 becomes Karabiner 43 (K.43).

(b) M.P. 43 " M.P.44.

2. 7.92 mm. BALL FOR MACHINE CARBINE M.P.43.

Ref. Summary 131, para. 1, a drawing of this round is attached at appendix A.

Further details are as follows :-

(a) Identification.

Bullet: Gilding metal coloured. Plain.

Cartridge case: Steel varnished.

Cap: Cap shell coated with a white metal. Base of cap varnished all over with transparent varnish, after assembly.

(b) General. The complete cartridge weighs 16.48 grammes (254.3 grains).

The cartridge consists of a bullet 25.5 mm. (1.006 in.) long, weighing 8.132 grammes (125.5 grains) and having a steel envelope with lead liner and steel or iron core, inserted in a steel 7.92 mm. cartridge case; the case is shortened to 32.8 mm. (1.295 in.).

(c) Components.

Bullet: The bullet envelope is coated both sides, apparently with gilding metal. The lead liner between the envelope and core varies somewhat in length. The core is soft and the surface shows characteristics similar to those observed on the sintered iron bands of German small calibre cannon ammunition. The core appears to have been shaped at the nose by turning.

The bullet was not secured in the cartridge case by indenting or other means. Pulls of 123 - 190 lbs. were required to extract the bullets.

Cartridge case: The steel cartridge case is varnished inside and out including the cap chamber. It appears to conform to normal 7.92 mm. contour up to the shoulder (approximately 0.95 in. above the base).

The loading volume of the case, with the bullet in position (determined on cartridge No. 2) is 1.73 cc.

/Propellant...

Propellant: The propellant consists of small tubular grains, graphited. The grains vary in length between 0.5 mm. and 1.5 mm. (0.019 - 0.058 in.) and are approximately 0.5 mm. (0.019 in.) diameter. The central perforation is approximately 0.10 mm. (0.004 in.). The average weight of charge is 1.579 grammes (24.37 grains).

Cap: The cap shell is of steel, plated both sides with a white metal. Dimensions appear to be comparable with those of the German 7.92 mm. brass cap shell. The cap contains 0.025 gramme (0.38 grain) of composition, in which yellow and black constituents are visible.

The surface of the composition is covered with a disc of brown paper, 0.004 in. thickness. Both disc and composition are pressed with a shallow central dimple. The disc had been varnished after assembly with nitrocellulose varnish, tinted green.

The thickness through paper disc, composition and base of cap shell, is 0.052 in. at the centre. The caps were inset 0.010 - 0.014 in. into the cap chambers.

Remarks:

(i) The bullet core probably consists of sintered iron. Use of an iron core may be intended to economise supplies of lead.

(ii) Substitution of a paper disc in place of the usual lead tinfoil on the cap, is new. This also may be intended to economise lead.

The paper disc would tend also to increase the sensitiveness of the cap to the striker blow, and to offset possible loss of sensitiveness, due to the use of a steel cap shell.

(iii) The cap composition is likely to be a lead styphnate/barium nitrate/calcium silicide mixture.

3. 7.92 mm. PARACHUTISTS AUTOMATIC RIFLE (FG 42).

Ref. Summary 135 para. 2, a specimen of the modified version of this weapon has now been captured in France and is illustrated at appendix B. Comparison should be made with the drawing of the earlier model at appendix A to Summary 117.

From preliminary inspection, the principal modifications are as outlined in Summary 135 para. 2, but further details will be available shortly as the result of examination now in progress.

4. 7.92 mm. SELF-LOADING RIFLE 43 (Gewehr 43).

A report by C.E.A.D./S.A. on this weapon is attached at appendix C. The weight given (9 lbs. 8½ oz. with magazine) is rather heavier than the figure of 8 lbs. 10 oz. (without magazine) quoted from a German pamphlet in Summary 134 para. 2.

According to a recent German document, the weapon is to be renamed "Karabiner 43 (K 43)".

5. HOLLOW CHARGE RIFLE GRENADES.

Reference Summary 140 para. 1, the following provisional penetration figures for these grenades have been obtained by examination and static firings.

/(a)...

(a) S.S. Gewehr Panzergranate 61.

126 mm. (5 ins.) homogeneous plate at normal.

(b) S.S. Gewehr Panzergranate 46.

90 mm. (3½ ins.) homogeneous plate at normal.

6. RECOILLESS HOLLOW CHARGE BOMB DISCHARGER (Panzerfaust 30).

Photographs from a German publication showing preparations for firing and firing positions for this weapon are reproduced at appendix D.

A general description and a drawing of the discharger (known at that time as the Faustpatrone) were given at appendix B to Summary 126.

It will be noted that in each of the positions shown, the rear end of the discharger tube is well clear of the body.

7. 8 cm. (3 in.) ILLUMINATING MORTAR BOMB.

A captured German document mentions the development of an illuminating mortar bomb for the 8 cm. Mortar (Gr.W.34). This bomb, known as the 8 cm. Leuchtgranate, has the peculiarity of being loaded nose first into the mortar, and rights itself in flight. This system has apparently become necessary as a result of the light weight of the bomb.

8. 7.5 cm. A.P. SHOT (7.5 cm. Pzgr.Patr 40(W) Pak 40).

A brief report from A.F.H.Q. on the 7.5 cm. Pzgr.Patr.40(W) Pak 40 ammunition is at appendix E.

9. 7.62 cm. (3 in.) A. Tk GUN 39 (7.62 cm. Pak 39).

A German document states that the 7.62 cm. Pak 39 is a modified version of the Russian field gun, 7.62 cm. F.K.297 (r).

The following modifications are listed :-

Chamber bored out to take ammunition for 7.62 cm. Pak 36.

Barrel fitted with Pak 36 muzzle brake.

Traversing and elevating handwheels and firing gear on left of mounting.

Fitting of A Tk sight with Aushilfsrichtmittel 38 for indirect fire.

Modified shield.

Data:-

Muzzle velocity.	680 m.s.	2230 f.s.
Length of gun excluding muzzle brake (42 cal).	320 cm.	126 in.
Length of gun including muzzle brake.	348 cm.	137 in.
Length of rifling.	215 cm.	84½ in.
No. of grooves.	32.	
Elevation	- 6° to + 45°	
Traverse	57°	
Weight in action	1520 kg.	(1½ tons)
Breech mechanism	Semi automatic vertical sliding block.	

/Buffer...

Buffer	Hydraulic. Fitted below barrel.
Recuperator	Hydro-pneumatic. Fitted above the barrel.
Trails	Two. Box type.
Wheels	Two, fitted with pneumatic tyres.

10. 8.8 cm. Pak 43 GUN BARREL.

A German document states that the life of the 8.8 cm. Pak 43 gun barrel is approximately 500 rounds. It is stressed that, in view of the short life of the gun, it should be employed as far as possible as an anti-tank weapon and should not be included in any harassing fire plan.

11. BUFFER FLUID - 8.8 cm. Pak 43/41.

The following report has been received from the Chief Chemical Inspector on a sample of buffer fluid from the above gun.

.....materials have now been examined to find a suitable British equivalent for the above material, and the following mixture has been found to be practically identical with the German fluid as regards cold test properties and viscosity curve :-

Ethylene glycol	75%
Water	25%

12. 10.5 cm. Geb.H.40.

Reference Summary 142, appendix H, page 3, Ballistic performance - amend as follows :-

Charge 7. M.V.f.s. 1870 Max. range. 13810 yds

13. 7.5 cm. HOLLOW CHARGE SHELL Gr 38 H1/A and H1/B.

The Germans have been experiencing a large number of barrel prematures with defective 7.5 cm. Gr. 38 H1/A and H1/B shell, according to captured official documents. The new 7.5 cm. Gr. 38 H1/C is not liable to this type of failure, but considerable numbers of H1/A and H1/B shell will still be encountered. Defective shell can be detected by shaking them. If they are heard to rattle, they should be discarded.

British troops who may have occasion to use 7.5 cm. guns should be warned of this defect.

14. GERMAN 12.8 cm. H.E. ROUND (12.8 cm. Sprgr.Patr.L/4,5).

A brief description of the 12.8 cm. Sprgr.Patr.L/4,5 based on examination in this country is given at appendix F.

15. AMMUNITION DEVELOPMENTS.

At appendix G are details of current German ammunition developments taken from captured documents.

16. ANTI-TANK SIGHTS.

The following digest of information on German anti-tank sights has been obtained from a German document captured in France.

/(a)...

(a) Z F 38 vo 10^m (Old Model). This was used with the 5 cm. Pak 38. The graticules consisted of one main 'Stachel' with two subsidiary ones on each side. The angle between each graduation was 10 mils. The field of view was 8°, and the magnification 3 fold. This sight has now been replaced by:

(b) Z F 38/II S vo 4^m (New Model). This sight, used with all A Tk guns, has one main graduation with three secondary ones on each side of it, and a vertical line between the conical graticules. From conical to vertical graticule the angle is 4 mils, so that the sight allows for a lay-off of 24 mils to each side of the main graticule. The field of view is, as in the earlier model, 8°, with threefold magnification.

(c) Zieleinrichtung 38. This incorporates a mechanical allowance for deflection, and now appears in two modified forms as

38 A Models 1 and 2.

(i) Zieleinrichtung 38 A, Model 1 is used with 7.5 cm. Pak 40 and 7.62 cm. Pak 36. It is graduated

for AP (Pz Gr 39) up to 3000 metres in steps of 200 m.
for AP 40 (Pz Gr 40) up to 1100 metres in steps of 300 m.
for HE (Spr Gr) up to 5200 metres in steps of 200 m.

(ii) Zieleinrichtung 38 A, Model 2 also used with 7.5 cm. Pak 40 and 7.62 Pak 36 is graduated

for AP (Pz Gr 39) up to 3000 metres in steps of 200 m.
for AP 40 (Pz Gr 40) up to 2000 metres in steps of 200 m.
for Hollow Charge (Hl Gr) up to 3700 metres in steps of 100 m.
for HE (Spr Gr) up to 5200 metres in steps of 100 m.

(d) Zieleinrichtung 43. Zieleinrichtung 43 is used with the 8.8 cm. Pak 43. It comprises an A Tk sight (ZE 34) and a field sight 32. It is graduated for

A. HE (Spr Gr) up to 5500 metres (8000 metres with indirect laying) in steps of 200 m. up to 2000 m, and thenceforward intervals of 100 m.

AP (Pz Gr 39) up to 4000 m. in steps of 200 m.
AP 40 (Pz Gr 40) up to 4000 m. in steps of 200 m.
Hollow Charge (Hl Gr) up to 3000 m. in steps of 100 m.

B. Zieleinrichtung 43 (new model) is graduated for

AP (Pz Gr 39) up to 4000 m. in steps of 200 m.
AP 40 (Pz Gr 40) up to 2500 m. in steps of 200 m.
Hollow Charge (Hl Gr) up to 2500 m. in steps of 100 m.
HE (Spr Gr) up to 3400 m. in steps of 100 m.

Above 3400, the indirect sight is used.

(e) Aushilfsrichtmittel 38. This sight is used with all A Tk guns for indirect fire with HE. The gun is only as an exception to be used in this role. The Aushilfsrichtmittel consists of a TE drum, bearing ring and telescopic sight giving a field of view of 10° with threefold magnification. The TE drum is graduated from 0 - 1300 mils (roughly 0° - 72°) in steps of 100 mils, and the bearing scale from 0° - 6400 mils (360°) in steps of 100 mils. Both have micrometer adjustments for values from 0 - 100 mils.

The following table gives a resume of the maximum ranges of the main German A Tk guns in direct and indirect fire :-

<u>Gun</u>	<u>Direct (AP)</u>	<u>Indirect (HE)</u>
7.5 cm. Pak 40	3000 metres	7700 metres
7.62 cm. Pak 36	3000 metres	10000 metres
8.8 cm. Pak 43 (and 43/41)	4000 metres	15000 metres

17. GERMAN NOSE PERCUSSION FUZE (Kz 38).

A description of the Kz 38 based on examination in this country is attached at appendix H.

18. GERMAN A A SIGHT (Schwebedornvisier).

A description, obtained from an official German document, of a new German A A Sight is given at appendix J.

19. AA TANK - 3.7 cm. FLAKPANZER (3.7 cm. Flak 43 on Pz.Kpfw.IV).

Reference Summary 141 para 5, further details of this equipment are given in appendix K which is based on a report on a damaged specimen captured in Normandy.

20. LYNX ARMoured RECCE VEHICLE - Sd Kfz 123

Reference Summary 137 appendix G, a captured Lynx has recently been examined in France and additional information from the report is incorporated in a revised specification at appendix L.

21. S-MINE DISCHARGERS ON TANKS

From examination of a number of Pz.Kpfw Tigers, Model E, in Normandy, it appears that S-mine dischargers are no longer being fitted on these tanks. This is to some extent confirmed by an official German Handbook on this tank in which passages referring to the positions of S-mine dischargers on the hull roof have been deleted.

22. 2 cm. (0.79 in.) and 3.7 cm. (1.45 in.) LIGHT AA GUNS ON SEMI-TRACKED S.P. MOUNTINGS.

Illustrations of the following equipments are attached at appendix T.

2 cm. Flak 30 on 1 ton semi-tracked vehicle	-	Sd Kfz 10/4
3.7 cm. Flak 36 on 5 ton "	"	Sd Kfz 6/2
2 cm. Flakvierling on 8 ton "	"	Sd Kfz 7/1
3.7 cm. Flak 36 on 8 ton "	"	Sd Kfz 7/2

WAR OFFICE TECHNICAL INTELLIGENCE SUMMARY

No. 144

PART II

CORRIGENDUM

Reference Appendix 'J' Summary 139 dated 16 August, 1944.

In the following sections "instantaneous fuse" should read "detonating fuse".

Section II, 2

Section III, A.3, A.4, B.1.

BOMBS AND FUZES

GERMANY

23. DELAY ACTION CLOCKWORK FUZE "Z 17 BM"

Illustrations of this fuze are at appendix M.

Reports from France indicate that large numbers of bombs fitted with a mechanically armed clockwork delay fuze have been found. The clockwork mechanism is of normal (17)B type, with a maximum delay of about 130 minutes, but arming is effected by withdrawing a pin, instead of electrically as with the normal (17)B aircraft bomb fuze. The arming pin is attached to a ring, and is held in place by an aluminium disc which is torn away when the pin is withdrawn. A similar type of fuze has been found in the flying bomb.

(a) Markings.

In some of the fuzes examined, the figures "17" were stamped on the steel washer retaining the aluminium disc; in other cases it was marked "Bm". In other cases again, the markings "Z 17 Bm" had been stamped on the top of the pillar through which the arming ring passes with a rubber stamp; other fuzes were completely devoid of markings.

(b) Fuze settings.

The fuzes were not set at "safe", but were set for delays of about $1\frac{1}{2}$ hours. They were not armed and so far no anti-withdrawal devices have been encountered.

(c) Bombs in which found.

These fuzes were found in FX (radio-controlled bombs) and Hs 293 (radio-controlled glider bombs) from which the radio equipment had been removed. As the use of delay-action fuzes is unusual in these types of bomb, it is concluded that the Germans intended to use them for demolition purposes, for which this type of fuze is well adapted.

CAMOUFLAGE

GERMANY

24. CAMOUFLAGE EQUIPMENT - DUMMY TANKS

At appendix N is a series of photographs of German Dummy Tanks found in France. A description of these tanks was given in Summary 141.

ENGINEER EQUIPMENT

GERMANY

25. RIEGEL MINE - SAFETY PRECAUTIONS.

A captured document states that special care is to be exercised in handling Riegelmines, since unlike other types of mines they are supplied to troops with igniters in position. It is forbidden to stack mines which have been removed from their packing; mines still in their packing should only be stacked if absolutely necessary, in which case the packing must be carefully examined for damage, and the mines must be stacked with their safety bolts vertical. Dismantling and above all reassembling of armed Riegelmines is forbidden. They must only be transported in special vehicles which should not at the same time carry troops. On no account must they be carried in fighting vehicles.

26. RIEGEL MINE - TECHNICAL DATA

A technical report received gives further data concerning the weights of the components of this mine and the explosive content. This report generally confirms the description at Summary 131, appendix H.

(a) Weight of components.

Weight of complete mine in crate	25 lb. 4 oz.
" " mine alone	21 lb. 4 oz.
" " mine charge in container	13 lb. 11 oz.
" " H.E. filling	8 lb. 15 oz.
" " five exploder pellets (total)	7 oz.

(b) Analysis of explosive contents.

Main filling	T.N.T.	55.6%
	Ammonium nitrate	45.4%
Exploders	P.E.T.N.	90.6%
	Wax	9.4%

The filling is in agreement with the code marking on the container.

27. "PANZERSCHNELLMINE" (ANTI-TANK WOODEN BOX MINE)

A new German A tk mine known as the "Panzerschnellmine" (quick laying A tk mine) is reported from France. There are two types. A detailed description and drawings are at appendix O.

28. ANTI-PERSONNEL "GLAS MINE 43"

Reference Summary 135 para 11, it is reported that the parts of a broken Glas mine have been found in France.

According to the report the mine consists of an outer glass casing, shaped like an inverted truncated cone; top diameter 5.9 in., bottom diameter 4.6 in. The lower portion is 0.4 in. thick. At the top is an internal circular ledge (presumably to carry a glass shear plate). An internal groove situated 2 in. from the base carries a circular spring resistance plate carrying a Buck chemical igniter on top and an adaptor carrying the detonator underneath. At the bottom of the casing are four raised strips - possibly locating strips to take a 200 g. prepared charge. The main filling is not known.

Comment.

The mine, containing a metal Buck igniter and metal spring resistance plate, should react to detectors. As previously mentioned, a "Glasmine 43" is listed in German official documents. It may have been an experimental type and there is no indication of its general issue to units. Further details are awaited.

29. TELLERMINE IGNITER T.Mi.Z.43

Reference Summary 142, further specimens of this igniter have been found in France. German units in the West appear to have been issued with this igniter in small quantities, but there is at present no sign of large scale issue.

A photograph of a sectioned specimen is at appendix P, together with a report of further tests which have been carried out.

30. ELECTRICALLY DRIVEN "GOLIATH"

The following extracts are taken from captured notes on the electrically driven "Goliath", which is identified as the "Elektro-Goliath" or "kleiner Ladungsträger 302".

Employment. It will be employed against AFVs, pill-boxes, field fortifications and landing craft.

Effect. Up to a radius of 10 metres the charge causes death from blast, there a severe splinter effect up to 100 metres, and a slight splinter effect up to 300 metres.

Climbing capacity. Up to 45°.

Speed. 8-10 km. per hour with fully charged batteries. The speed drops after 1200 to 1400 metres travel. It will only travel for short stretches under water. The length of cable is 750 metres".

Comment. This confirms previous reports that the "Goliath" was intended for use against landing craft, and that it is capable of travelling under water.

31. B IV RADIO CONTROLLED DEMOLITION VEHICLE

Some further illustrations of the B IV radio-controlled demolition vehicle are at appendix Q.

Examination of the vehicle has disclosed the existence of a safety-distance switch, which can be seen immediately to the left of the forward-reverse lever plate 1. This consists of a switch which is connected in series with the first circuits, and breaks the circuits when in a "safe" position. The switch is gradually closed as the vehicle moves along, by means of a reduction gear drive by a flexible drive from the differential, the distance taken for this to occur being adjustable by pressing a button on the top of the switch casing, and turning a graduated dial. The object of this switch is to prevent the charge being exploded in the neighbourhood of own troops.

Two further switches have been discovered in the floor of the vehicle. These are designed to be closed by upwards blast, and are evidently intended to cause the charge to explode in the event of a mine exploding beneath the B IV.

B IV Radio Control Equipment

Illustrations of the control-box and transmitter for the control of the recovered from a captured Stu.K.40, are at appendix Q.

FIELDWORKS

GERMANY

32. CONCRETE PILLBOXES

At appendix R are drawings of the following concrete constructions:

Pillbox with 7.5 cm. A tk gun - Type 626
Pillbox with light A tk gun - Type 630
Pillbox Type 67
Pillbox for two MGs, on breakwater.

Dimensions of these drawings are in metres.

33. SIEGFRIED LINE

Notes on German Fieldworks No. 4 "THE SIEGFRIED LINE" has been published and distributed to all concerned. The Notes include General Description, Design, Concrete, Reinforcement, Shelters and Obstacles with drawings and photographs of the various Pillboxes and Cupolas.

OBSTACLES

GERMANY

34. MINE OBSTACLES

Reference Summaries 134 (appendix G) and 139 (appendix K), the notes at appendix S are supplementary to the previous notes on German minefields.

VEHICLES

GERMANY

35. GERMAN SEMI-TRACKED VEHICLES AS S.P. A.A. MOUNTINGS.

With reference to Summary 138 para 24, illustrations of the following vehicles are at appendix T.

Sd Kfz	10/4
Sd Kfz	6/2
Sd Kfz	7/1
Sd Kfz	7/2

36. BÜSSING-N.A.G. 4¹/₂ TON LORRY - ROAD PERFORMANCE

A report has been received on road trials with a captured Büssing-N.A.G. 4¹/₂ ton diesel lorry (4 x 2). The following is a summary of the salient points. The lorry was tested with a load of 5 tons.

(a) Hill climbing. The lorry ascended a concrete slope of 1 in 4.01 and a gravel slope of 1 in 3.88 successfully, using first gear, but failed to ascend a gravel slope of 1 in 3.18.

(b) Road performance. Average speed for a 100 miles road circuit with heavy traffic was 21.1 m.p.h., fuel consumption being 10.5 miles per gallon. It was noted that the steering was heavy.

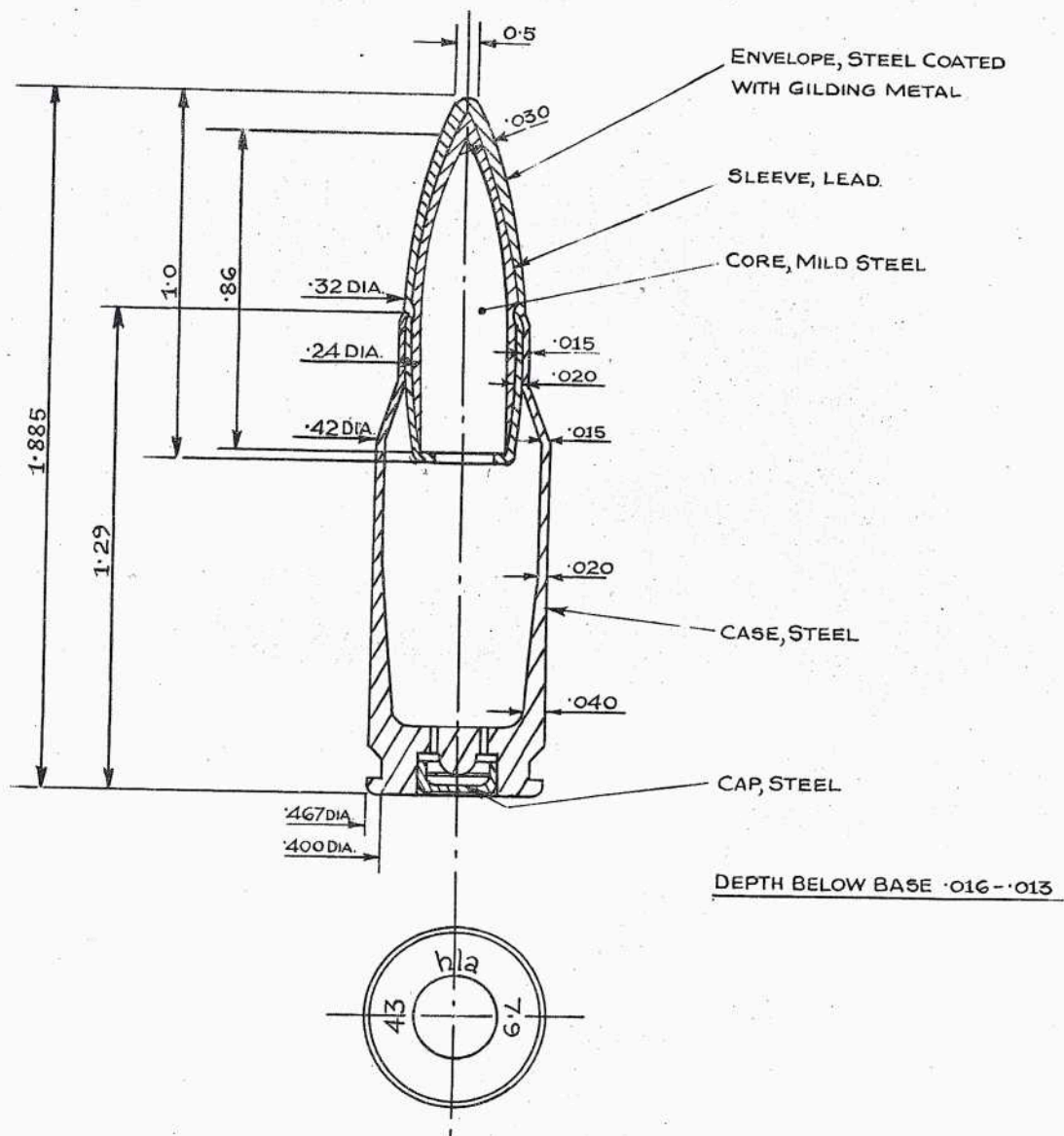
(c) Cross-country performance. The vehicle handled well and the steering and suspension were satisfactory, but it was noted that on ditches the frame twists, causing the fan to hit the cowling.

(d) Brakes. The brakes are of a self-adjusting type and are operated by a Lockheed and servo system. There is no mechanical link between the foot pedal and the master cylinder, which means that the brakes will not operate if the compressed air supply fails. This is a possible weakness.

(e) Engine. The B.H.P. developed at the governed speed of 1740 r.p.m. was 93. The fuel consumption in bench tests worked out at 0.46 pints/B.H.P/hr.

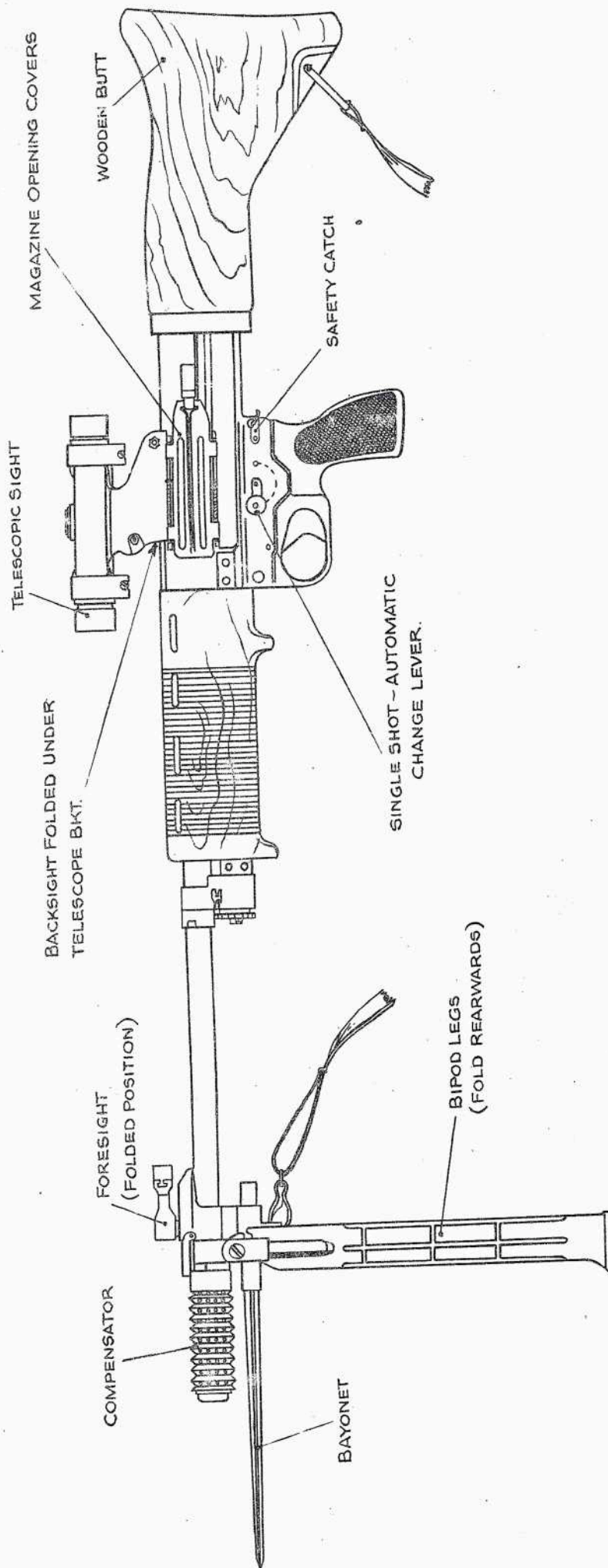
General. The lorry compares generally with British 6 ton diesel engined vehicles and is undoubtedly capable of carrying a 6 ton load. The engine power is greater than that of British vehicles in this class, but the fuel consumption is heavy.

APPENDIX A



GERMAN 7.92MM BALL (M.S. CORE) FOR MACHINE CARBINE (M.P.43/1)

Dimensions in inches. Scale 2/1.



GERMAN 7.92mm PARACHUTISTS AUTOMATIC RIFLE.

(Fallschirmgewehr 42) modified model.

Scale approx 1/4

German

7.92 mm Self Loading Rifle (Gewehr 43)

Technical Report

General Data

Weight of complete Rifle	...	...	...	9 lbs. 8 $\frac{1}{2}$ ozs.
Weight of recoiling portions	...	...	...	13 $\frac{1}{4}$ ozs.
Magazine capacity	...	...	...	10 rounds
Overall length	...	...	...	44 in.
Overall barrel length	...	...	...	21.7 in.

This weapon is extremely interesting since it incorporates a considerable number of features direct from the Russian Self loading Rifle, while the Breech action and Trigger Mechanism are almost identical with the German Gewehr 41 (W) Self-loading Rifle already examined by this Department.

The following components have been transferred almost without change from the Russian 7.62 mm Self-loading Rifle.

- 1). Gas Block
- 2). Gas Cylinder
- 3). Piston
- 4). Piston Rod
- 5). Piston Return Spring
- 6). Magazine Catch

The method of retaining the barrel in the body by making it a close fit and retaining it in position by a cross pin is also similar to that employed on the Russian Self-loading Anti-Tank Rifle.

The Magazine is removable on the lines of the Russian Model.

No provision is made for fitting a bayonet although there is a muzzle thread protector fitted, but it appears only to be there in order to cover this thread after screwing on the foresight block. (1)

The method of stocking up the Rifle is extremely simple. The body has two flats cut on it, one at the rear, and the other in front of the resistance lug at the front of the body. These flats bed down on corresponding flats in the fore-end, the body being held to the fore-end by means of the trigger guard screws front and rear.

/when

(1) Note By M.I. 10

It is now learnt that the end of the muzzle is threaded to take a muzzle attachment for use with wooden bulletted blank for practice firing. This attachment consists of a short tapering extension to the barrel which has the effect of increasing the gas pressure and breaking up the wooden projectile

When the screws are tight there is no movement of barrel and action in the fore-end although when received the barrel and body could be made to rattle in the fore-end when the Rifle was shaken. When these screws are tight, the barrel is fully floating to the muzzle from the body, and the only stocking points are the two flats previously mentioned.

The positioning of the metal insert which transmits the shock of discharge from body to fore-end appears to be unsatisfactory since there is insufficient wood in rear of it to take the shock of discharge, and consequently on the model submitted the metal insert has moved slightly rearwards. This is an important feature and a bad point in the design of this weapon.

Provision is made on the right hand rear of the body for fitting a telescope and bracket to a dovetail which is machined from the metal of the body.

As in previous models very considerable use is made of mouse-trap type springs which are used throughout the whole of the trigger mechanism as in the model G.41W.

Apart from the changes in design specified above, no other changes have occurred of major importance, but it should be noted that by fitting the conventional design of gas cylinder and piston etc., the weight of the weapon has been reduced from just under 11 lbs to $9\frac{1}{2}$ lbs.

Manufacturing Criticisms

In this weapon a very large proportion of forgings or steel casting are employed. These forgings are only machined on functioning surfaces and are otherwise left as cast or forged.

The body is either a steel casting or a forging while components of the trigger mechanism and bolt carrier are all forgings.

Fabricated pressings are used for all components on which no great load has to be placed, i.e., trigger guard, butt plate, band, ejector housing and bolt carrier guide. Machining is only employed to any extent on the barrel, bolt, locking lugs, firing pin, sight block and backsight.

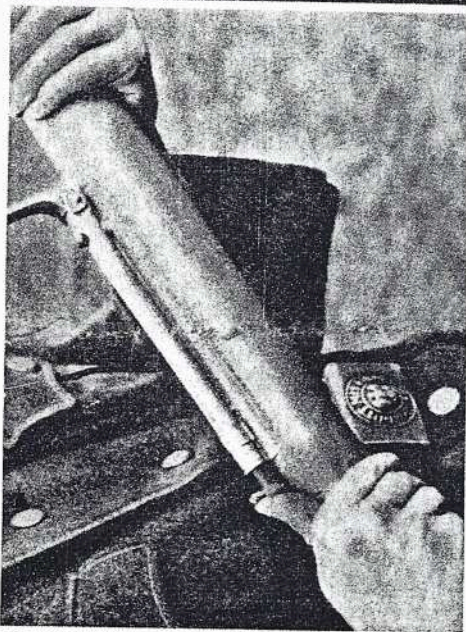
The method of stocking ensures that the Rifles can be put together with the minimum of fitting. It is clear therefore, that once the necessary dies have been made up for forging and for the manufacture of the necessary pressings that this Rifle can be turned out in large numbers extremely quickly.

PANZERFAUST

Preparations for Firing



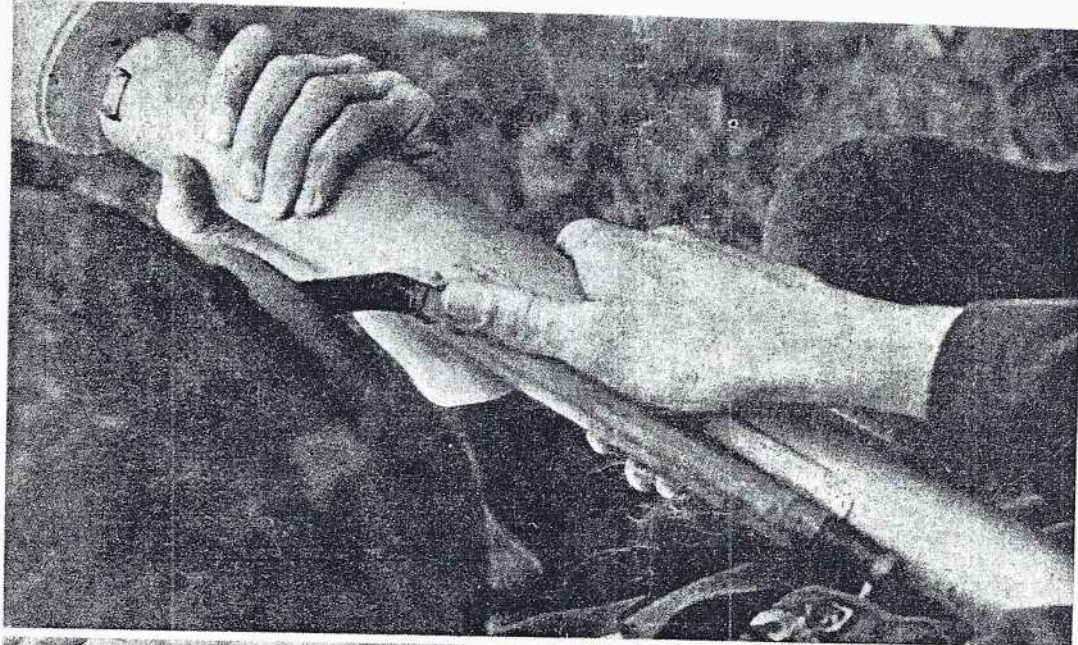
1. Remove safety pin and raise sight arm vertical.



2. Press in cocking bolt to full extent with right thumb.



3. Pull cocking bolt out again.



4. Turn cocking bolt over to left. Fire by pressing trigger button with right thumb.

PANZERFAUST

Firing Positions



1. Standing.



2. Kneeling.



3. Lying.

7.5 cm A.P. Shot - 7.5 cm Pzgr. Patr.
40(W) Pak 40

The following information has been obtained by examination. A diagram is attached.

As seen from the nomenclature, the round is intended for the 7.5 cm Pak 40. As for other types of ammunition for this equipment, the above ammunition is Q.F. fixed.

(i) Projectile

The projectile is a solid shot to which is attached a ballistic cap and tracer is fitted. A noteworthy feature of the projectile is that it is constructed throughout of SOFT steel. The projectile is painted black and apart from the normal markings, 'W' is stencilled on the body in white.

(ii) Propellant Charge

This consists of :

- (a) an igniter containing 25 gm of the usual German igniter powder.
- (b) 2.25 kg tubular 'diglykol' propellant, size :

length	625 mm
external diameter	4 mm
internal diameter	1.8 mm

- (c) a flash reducer containing 35 gm of potassium sulphate

(iii) Cartridge Case and Percussion Primer

Similar to those used on other types of projectiles for the 7.5 cm Pak 40.

(iv) Weights

Weight of projectile	4.12 kg (9.125 lbs)
Weight of complete round	9.18 kg (20.25 lbs)

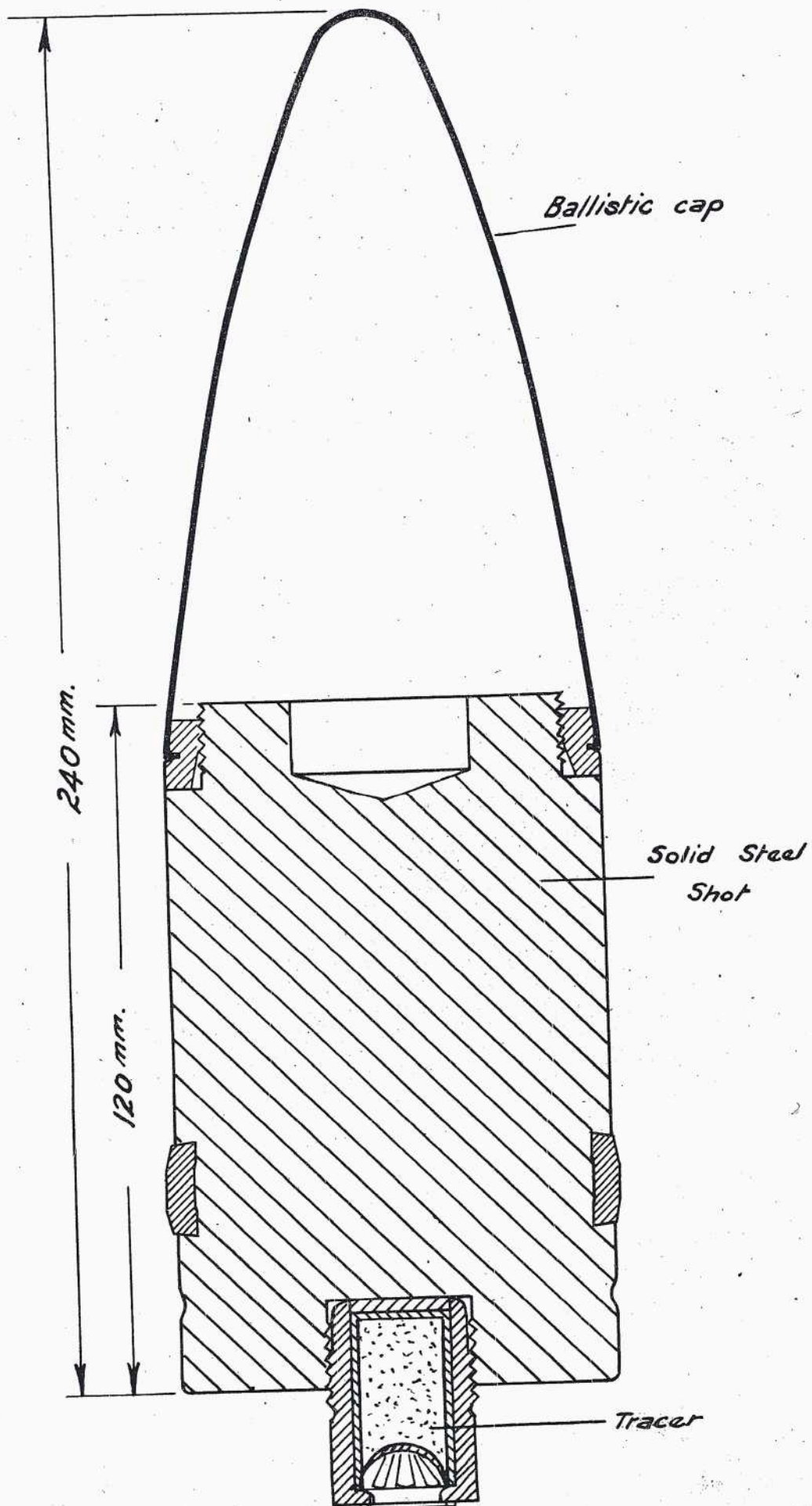
(v) Uses

There is no documentary evidence as to the original use of this type of projectile. It is now known that it has been reserved for practice use only.

APPENDIX E.

7.5 cm. Pzgr. 40 (W)

Scale — Full Size



T.S.144.

GERMAN 12.8 cm. H.E. round (12.8 cm. Sprgr. Patr. 4.5)

This fixed Q.F. Cartridge is used in the 12.8 cm. Flak 40 A.A. gun which may be static, mobile or mounted on railed vehicles. The length of the complete round is 58.5 inches and it weighs approximately 100 lb. 4 oz.

The complete round consists of :-

Shell H.E. filled Amatol 40/60
Fuze Zt.Z.S/30
Brass cartridge case
Propellant charge of tubular Digl
Primer electric C/22

SHELL. The shell is painted yellow, stencilled in black and fitted with two iron driving bands. The bursting charge of Amatol 40/60 cast, indicated by the numeral "13" stencilled on the shoulder, weighs 7 lb. 7½ oz. An exploder container of the larger size, for the 36 gaine, is screwed into the fuze hole. The weight of the shell, filled and fuze, is 57 lb. 5 oz.

GAINED. The gaine used below the time fuze is the Zdlg 36 Np .

FUZE. The standard German time fuze Zt.Z.S/30 is used.

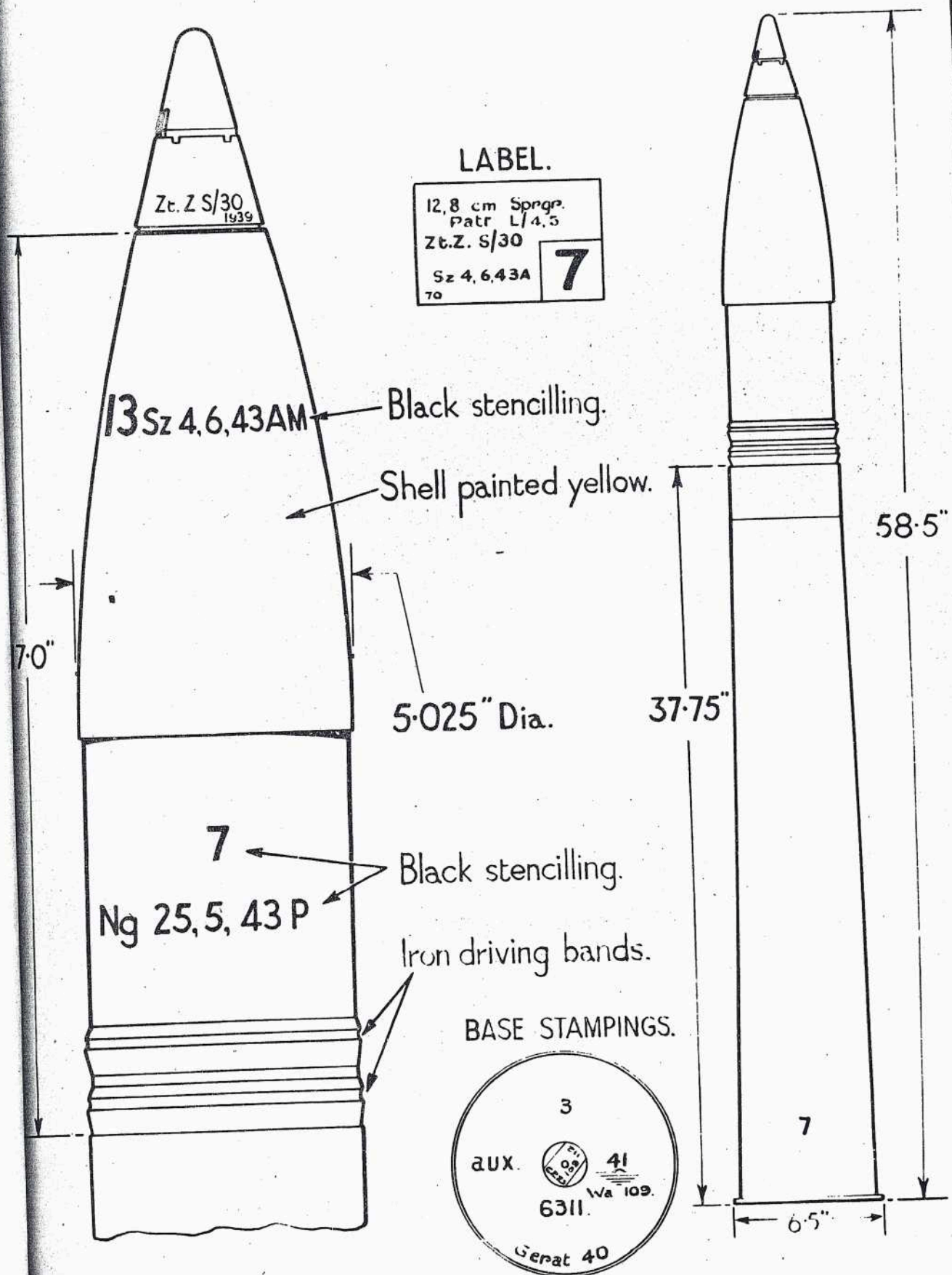
CARTRIDGE CASE. The brass cartridge is the normal flanged type, 37.75 inches long with a slight increase in taper towards the mouth. The effective capacity of the case is 864 cubic inches.

PROPELLANT CHARGE. The propellant charge consists of 9.62 Kg (21 lb. 3½ oz.) Digl RP - KN - (850 5,6/2) fitted with an igniter consisting of 239 grams of Nitrocellulose composition.

PRIMER. A C/22 electric primer is fitted.

APPENDIX F.

GERMAN 12.8cm.FLAK 40 CARTRIDGE Q.F. H.E. FUZED Zt.Z.S/30 (12.8cm. Sprgr Patr.L/4,5.)



GERMAN AMMUNITION DEVELOPMENTS

1. Ammunition for the 10.5 cm. le F.H. 18, 18(H), 18/39, 18/40

F.H.Gr.Br. Filling consists of an opening charge in an enlarged exploder container, the remainder of the shell being filled with phosphorus absorbed in wood wool.

F.H.Gr.Br. 38 Kh. This shell consists of the body etc. of the F.H.Gr. 38 Nb filled HE instead of smoke. It retains the central burster tube of the original smoke shell.

F.H.Gr. 39 This shell is based on the F.H.Gr. 39 Nb. filled HE instead of smoke. The shell has a diaphragm below the nose exploder.

F.H.Gr. 40 Nb and Deut These two projectiles are identical in construction, the only difference being in the smoke filling; Nb produces white smoke, Deut coloured. Both are base ejection smoke shell with burning time of 1 - 2 minutes. The Nb shell is filled with zinc powder and hexachlorethane. The shell is fuze Dopp Z.S/60 v or Flx.

F.H.Gr. 43 New type of cast steel HE shell. The steel is in the pearlite condition. The shell is marked Pg in red, meaning Perlitgussgeschoss.

10 cm. Pzgr 39 TS Construction similar to that of the Sprgr 42 TS, except that the basic shot is 7.5 cm. calibre. Weight of emergent projectile 7.7 kg. (17 lb). Muzzle velocity 770 m.s. (2520 f.s.) Penetration claimed by the Germans - at normal: 180 mm. at 100 m., 91 mm. at 500 m., 80 mm. at 1000 m., and 71 mm. at 1500 m.

10.5 cm. Minen Granate This shell is still in process of evolution. The shell is unrotated, being stabilised by fins in flight.

weight (approx)	28 kg.	62 lb.
M.V. (approx)	270 m.s.	890 f.s.
Max. range (approx)	5200 m.	5700 yds.

This shell cannot be fired by le F.H. 18(H), 18/39 or 18/40 with the present muzzle brakes.

2. Ammunition for the 15 cm s.F.H. 18 & 10.5 cm. le.F.H. 18.

15 cm. Sprgr 42 TS and 10.5 cm Sprgr 42 TS. These two shells were described Summary 123 Appendices D. & E as sub calibre shell with self removing driving bands.

3. Ammunition for the 21 cm. Mrs. 18

21 cm. RÖ Gr 42
21 cm. RÖ Gr 44

The precise difference between the RÖ Gr 42 and the RÖ Gr 44 is not known. The few available details of the 21 cm. RÖ Gr 44 were given in Summary 138.

21 cm. Gr 37 This is a new type of forged steel shell.

4. Ammunition for the 34 cm. K(E) (f)

34 cm. RÖ Gr. 42
34 cm. RÖ Gr 44

/ It

It seems probable that these are adaptations of the 21 cm or 35.5 cm. shell.

5. Ammunition for the 35.5 cm. M1.

35.5 cm. Ro Gr 42
35.5 cm. Ro Gr 44

Construction similar to the 21 cm. version. No details known.

6. Ammunition for the 28 cm. K5(E)

28 cm. R. Gr. I/4.7 This is a rocket assisted shell with a range which is reported to be 50% greater than that of the normal shell.

GERMAN NOSE PERCUSSION FUZE (Kz 38)

This fuze is used with the 4 cm. Sprgr. Patr 28 (Flak) and may be identified by the stencilling "Kz 38" on the dome shaped body. It weighs 1 oz. including the gaine and is two inches in length, the length of the body protruding from the nose of the shell is 0.6 inch. The empty fuze is similar to the British fuze No. 250 Mk. II. The fuze is of the direct action type, and the principal parts are, the body with adapter, striker guide, needle and hammer, arming sleeve and arming spring, stirrup spring and ferrule, 3 balls, igniferous detonator and gaine.

The dome shaped body has a flat nose and is prepared with an internal channel stepped in four diameters and screwthreaded internally at its base to receive an adapter. The smaller diameter at the forward end houses the head of a wooden hammer and below it is a chamber to accommodate the arming sleeve after firing and a second step which forms a shoulder and bearing surface for the upper end of the ferrule. The channel is closed at its front end by a copper disc 0.006 inch thick.

The adaptor is screwthreaded externally to receive the body and to screw into the shell. Internally it is screwthreaded to receive the striker guide and at its upper end has a chamber to receive an arming sleeve and arming spring which surround the upper end of the striker guide. The sleeve and spring are retained in the unarmed position by a stirrup spring and ferrule. A pin through the side of the adaptor prevents the ferrule from turning.

The striker guide is screwthreaded externally to suit the adaptor and to receive a gaine body, and has a central channel. The upper part of the channel forms a guide for the hammer and needle, and the lower part accommodates an igniferous detonator held between a shoulder and a plug, with central fire channel, which screws into the bottom of the channel. Three radial holes are bored in the upper part of the channel and partially accommodate three balls which rest against the underside of the needle head and thereby hold the needle off the detonator. Before firing, they are retained in position by the arming sleeve.

The needle is of steel and flanged at its upper end to enable it to be engaged by the three balls and held in the safe position. A wooden hammer, shaped with a head, rests on the top of the striker and is retained in position by a copper disc which closes the nose of the fuze.

The arming sleeve is cylindrical and fits around the striker guide to retain the balls. It is flanged at its upper end to form a seating for the arming spring and has a curved periphery to suit the stirrup spring.

The stirrup spring is cylindrical, its lower edge has a number of external projections which fit under the ferrule and its upper edge has a number of internal projections which fit over the arming sleeve and keep the arming spring under compression.

The ferrule is cylindrical, its upper end engages a shoulder in the body and its lower end the stirrup spring. A pin engages a slot cut vertically in one side of the ferrule and prevents its rotary movement in the fuze.

The igniferous detonator contains about 0.5 grains of a mixture of mercury fulminate, potassium chlorate, antimony sulphide (with, possibly, a small proportion of ground glass) followed by a thin layer of gunpowder. It is the same size as the ignitory detonator in Fuze No. 250.

The gaine, approximately 1.05 inches long, is a steel cylindrical body closed at its bottom end and containing 7 grains of CE/TNT (40/60) pressed extremely hard into the base with a thin layer of the same composition in the form of loose crystals on top. Above this is an inverted cup shaped capsule

/containing

containing a detonator composition consisting of 0.46 grains of C.E. under 6 grains of fulminate of mercury. The flash hole in the top of the capsule is closed by a fabric disc on its underside. The mouth of the gaine is screwthreaded to enable it to be screwed on the striker guide of the fuze, and contains a leather washer under a metal washer which fits over the detonator cap.

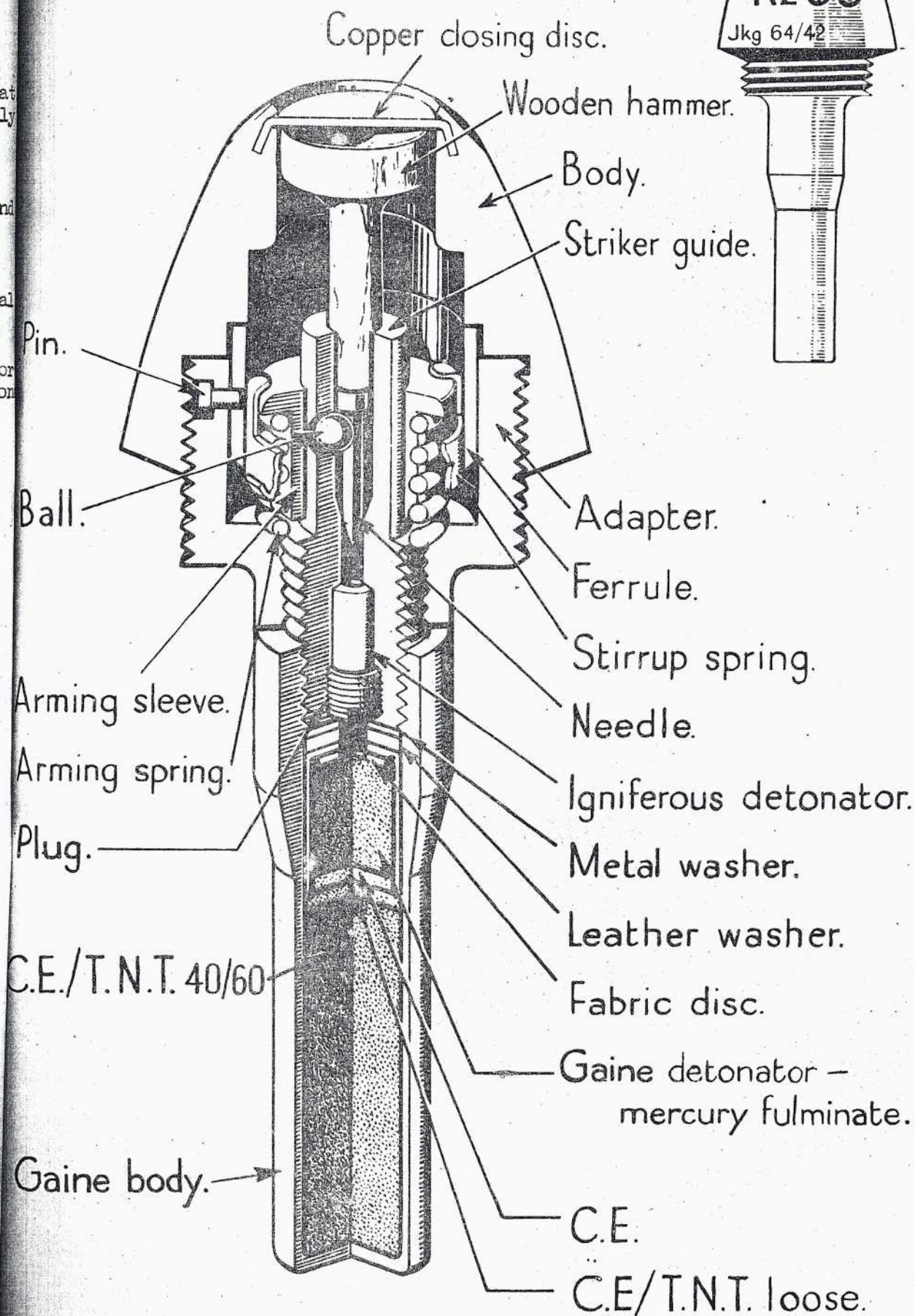
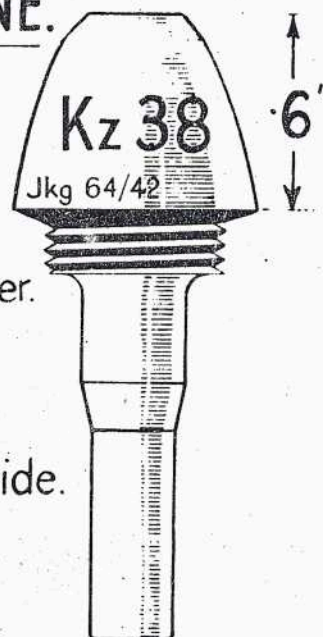
This fuze is of the floating needle type and is not provided with a supporting spring, it therefore cannot be over emphasised that before being fired the closing disc in the nose of the fuze should be examined to see that it is not damaged or perforated, otherwise the round may be fired prematurely by air pressure acting directly on the hammer.

On firing, the ferrule sets back and takes the stirrup spring with it, thereby releasing the arming sleeve which is forced upwards by its spring and unmasks the three holes in the striker guide.

During flight, the needle and hammer tend to creep forward owing to deceleration, the three balls are released and fly outwards under centrifugal action and so release the needle.

On impact, the hammer is forced in driving the needle into the detonator which is fired and in turn sets off the gaine detonator and gaine which det the shell filling.

GERMAN FUZE Kz 38 WITH GAINE.



GERMAN A.A. SIGHT (Schwebedornvisier)

The Schwebedornvisier illustrated in the attached drawings is a development of the earlier open-type German A.A. sights - the Linealvisier and the Schwebekreisvisier. It has been designed for 3.7 cm. A.A. equipments and will eventually be the standard sight on the 3.7 cm. Flak 43 and will be used as an auxiliary sight on the 3.7 cm. Flak 18 and 36.

The sight consists essentially of a suspension bracket, frame, adjustable backsight and backsight support, and a C shaped pendulum, the upper part of which carries a sight adjusting stem and the lower part a rotatable thorn shaped foresight and T.E. gear. A flexible drive connects the T.E. gear to a coupling inside the suspension bracket. Linked to the coupling is the pendulum guide which, in turn, is connected to the pendulum guide plate. The pendulum is supported in the upper part of the suspension bracket and held by the pendulum guide plate.

On the right stay of the frame is a bracket which takes a telescope for ground shooting and at the right end of the backsight support is an electric socket for illuminating the telescope cross wires.

The thorn shaped foresight is fitted to the foresight support by a dovetailed slide. On the slide are four different coloured marks representing target speed; and there are four corresponding coloured foresights. Target speeds are as follows :-

Blue	50 - 100 m.s.	(110 - 220 m.p.h.)
Yellow	90 - 140 m.s.	(200 - 300 m.p.h.)
White	120 - 170 m.s.	(160 - 370 m.p.h.)
Red	150 - 200 m.s.	(320 - 440 m.p.h.)

The cut away portions of the foresight are for engaging targets at varying ranges. The point of the foresight represents 1000 m., the first cut-away portion 2000 m, the second 3000 m, and there is a mark representing 4000 m. which is used only for approaching targets.

To operate the sight, the appropriate foresight is fitted and target speed set on the slide. The layer lays the gun roughly on the target. The sight operator rotates the foresight so that the pointed end is in the direction of, and the straight edge is parallel to, the line of flight of the target. The layer then lays accurately so that the nose of the target cuts the approximate range mark. The rotary movement of the foresight is transmitted to the pendulum through the flexible drive, pendulum guide and guide plate. The pendulum is tilted resulting in a correction to elevation equal to T.E.

When engaging diving targets the pendulum can be disengaged from the guide plate by operating a release catch on the lower part of the pendulum frame. This enables the pendulum to swing freely so that the foresight may be correctly directed.

Engine

Type - 6 cylinder in line
H.P. - 178 British BHP

Designation HL 66 P } (unconfirmed)
Capacity 6.6 litres }

Power/Weight ratio

16 BHP per ton

Fuel capacity

51.7 galls.

Dimensions

Overall length	14 ft. 6 in.
" width	8 ft. 2 in.
" height	7 ft. 0 in.
Length of track on ground (official document)	7 ft. 3 in.
(measured)	8 ft. 10 in.
Ground clearance	14 in.
Track centres	6 ft. 9½ in.
Track width	14 in.
Width of hull	4 ft. 9 in.
Overall length of turret	5 ft. 4 in.
Overall width of turret	4 ft. 11 in.
Overall diameters:	
driving sprocket	24½ in.
idler	22 in.
bogie wheels	28½ in.

Performance

fording	4 ft. 7 in.
gradient	30 degrees
consumption - roads	3.1 m.p.g.
- cross country	2.1 m.p.g.
radius of action	
roads	155 miles
- cross country	93 miles.

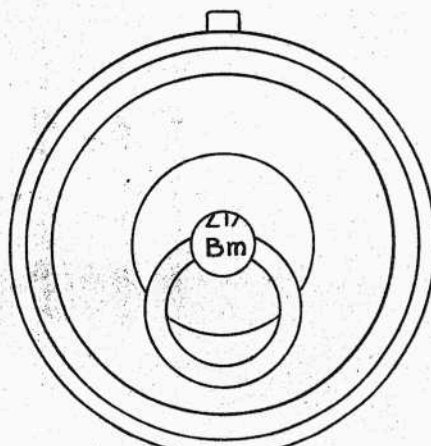
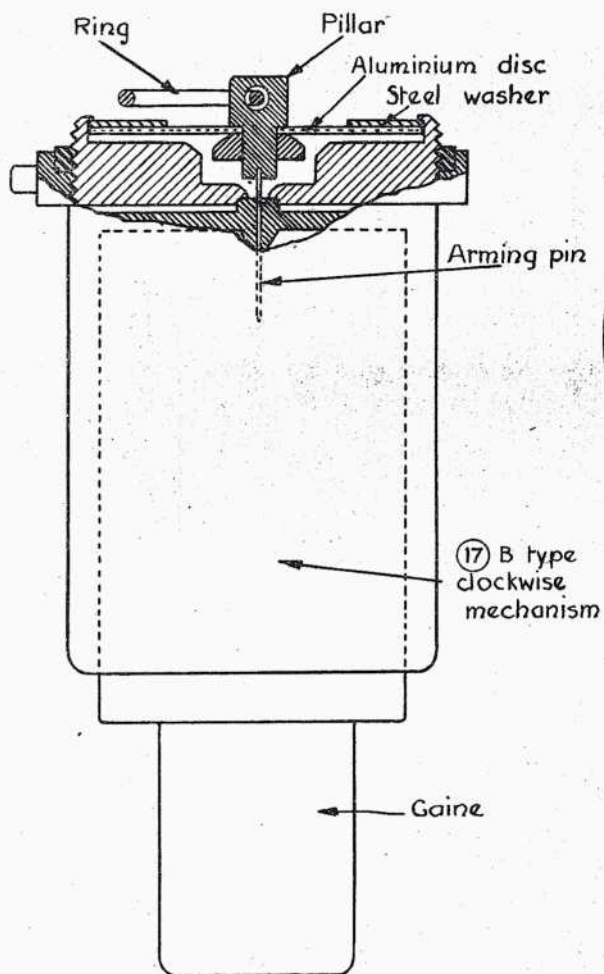
Intercommunication

R.T. sender-receiver Fu Spr.f. with intercom telephone and long range equipment Fu 12 (speech 16 miles key 43 miles)

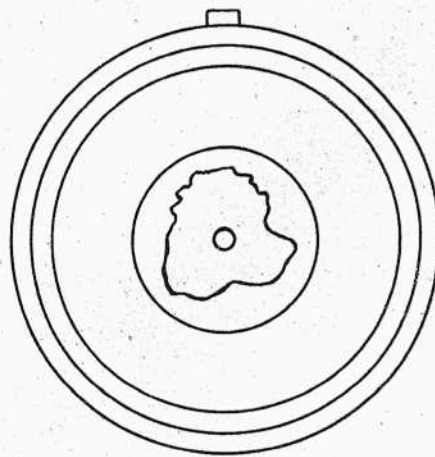
The latter is sometimes omitted.

Aerials - one rod aerial mounted high up on rear of turret and one star aerial, probably for Fu 12 equipment

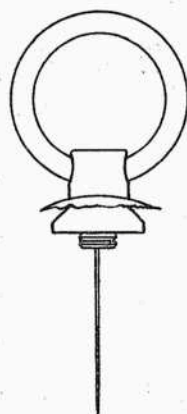
Appendix M.



TOP VIEW OF FUZE
UNARMED



TOP VIEW OF FUZE
ARMED



ARMING DEVICE

German Z17 Bm Clockwork Delay Fuze

MI. 106/1267
Aug. 44

T.S. 144.

APPENDIX J.

FIG. 1

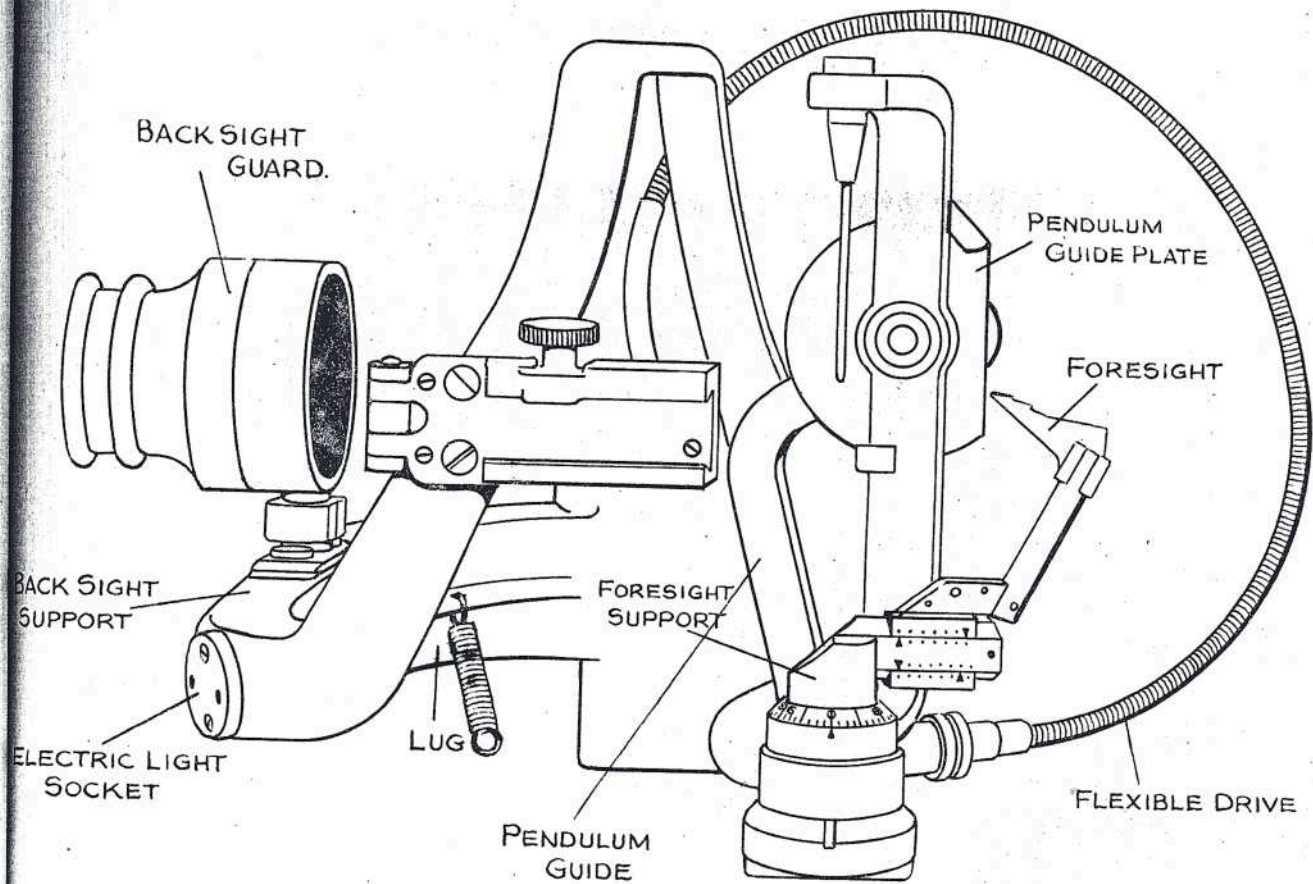
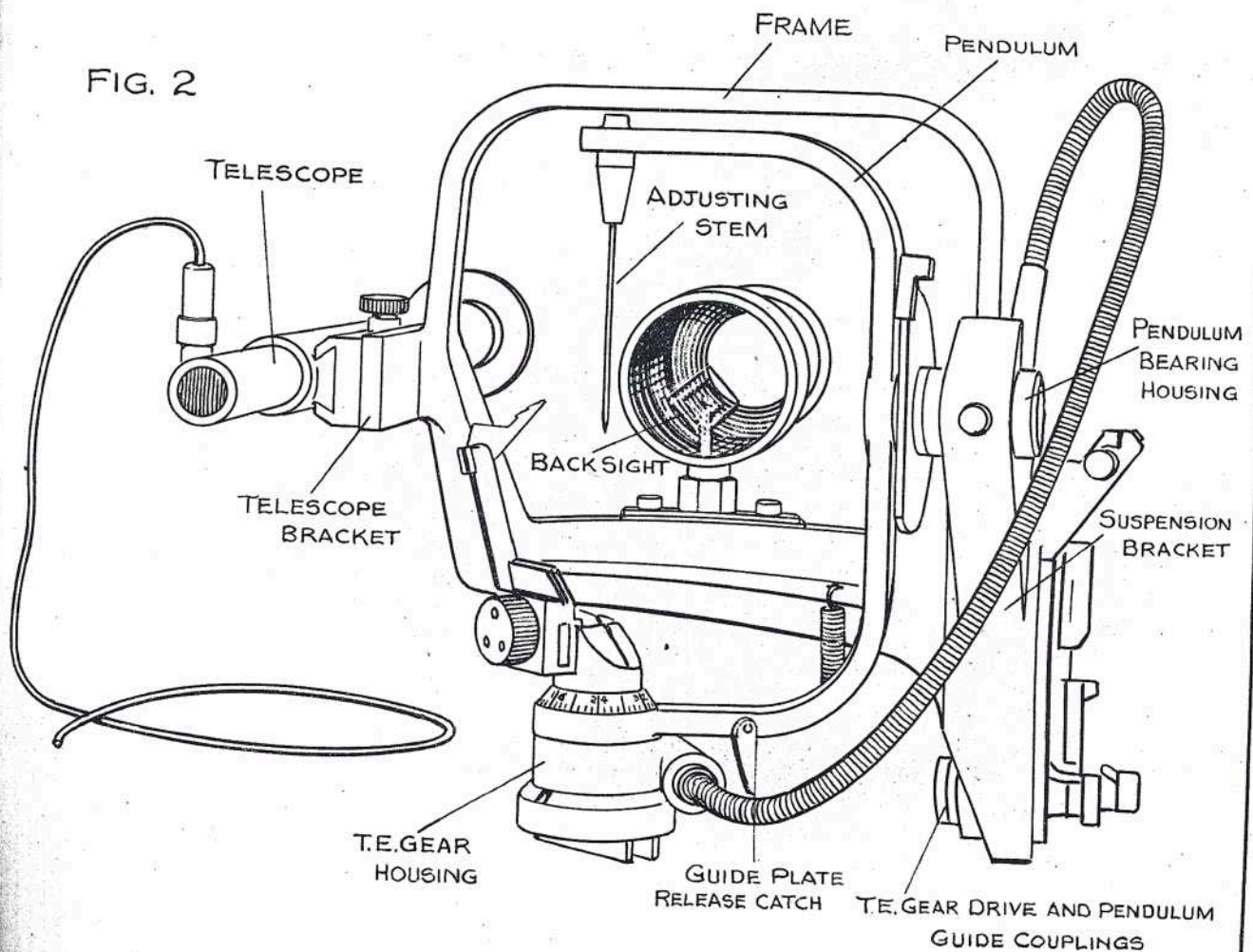
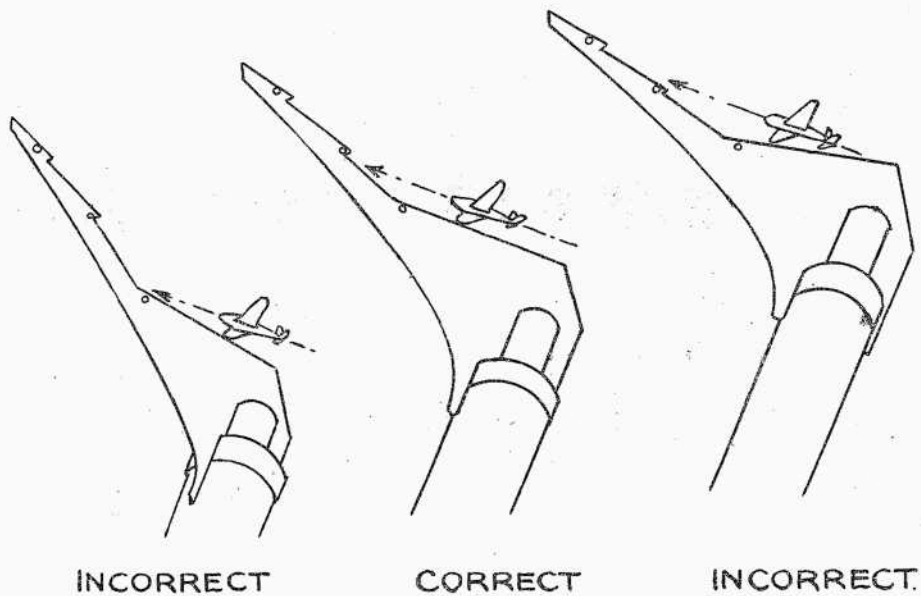


FIG. 2



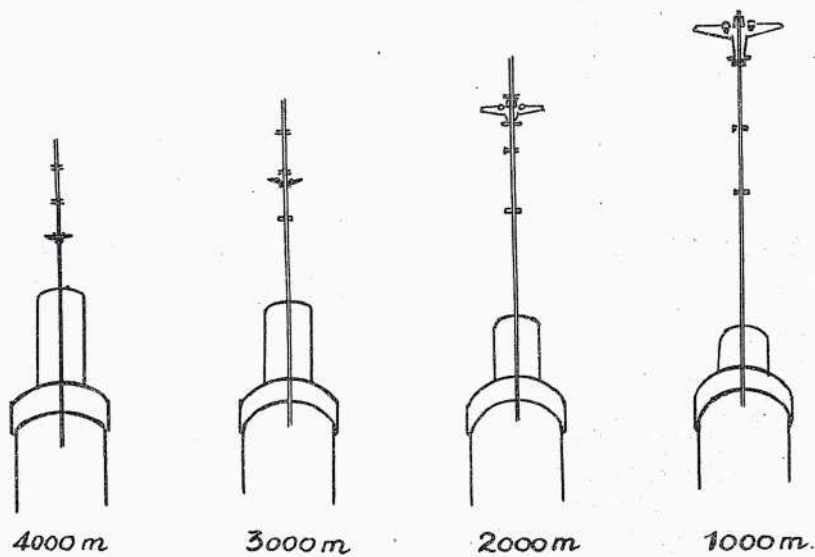
METHOD OF LAYING.

FIG. 3



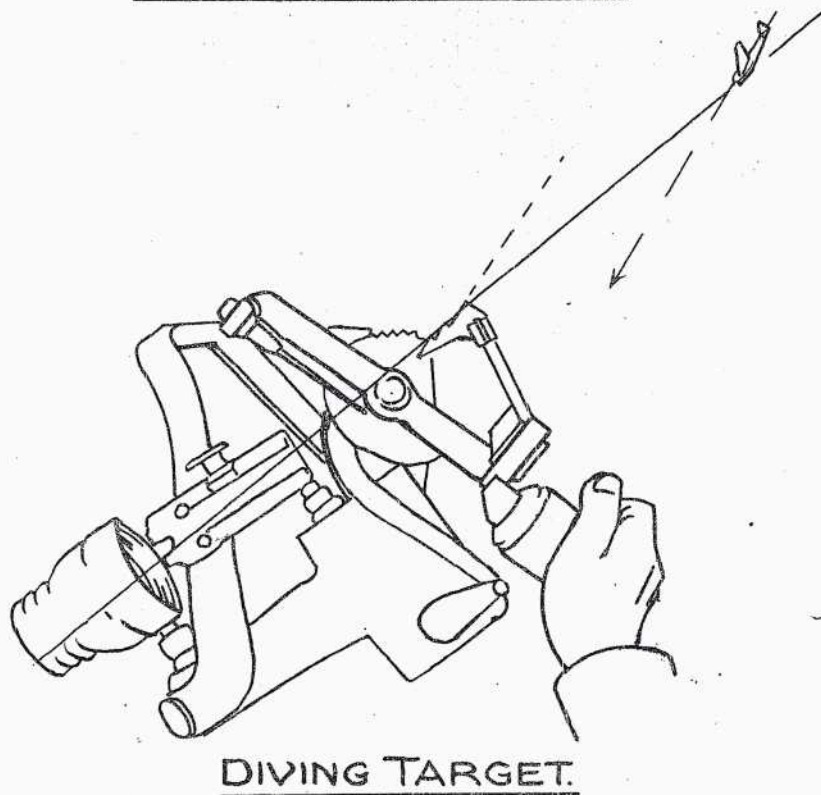
CROSSING TARGET.

FIG. 4



APPROACHING TARGET.

FIG. 5



A.A. Tank 3.7 cm. Flakpanzer (3.7 cm. Flak 43
on Pz. Kpfw.IV.)

General

The equipment consists of a 3.7 cm. Flak 43 centrally mounted on a turretless Pz.Kpfw.IV. The gun, which is mounted on a pedestal carried on a platform in the normal fighting compartment, has 360 degrees traverse and can be elevated up to 90 degrees.

Gun, and ammunition storage

The gun is recoil-operated and is fed horizontally from the left in trays of 8 rounds. Ammunition is stowed in a space beneath the platform in boxes each containing two clips of eight rounds. As far as could be ascertained from the specimen examined, there is provision for stowing 32 boxes under the platform. According to the first ammunition issue, however, 400 rounds only (80 rounds AP and 320 rounds HE/I or HE/T) are carried on the tank - see Summary 141 para. 5.

For further details of the gun and ammunition, see Summary 143 appendix C.

Fighting compartment and Armour

On the superstructure of the tank is arranged a large rectangular fighting compartment, approximately 9 feet long, 8 ft. 8 in. wide and 4 ft. 1 in. high. In action the fighting compartment walls can be pushed outwards and downwards and remain in the horizontal position to extend the area of the loading platform. The side and rear walls each consist of two spaced 15 mm. plates. The spacing of the side walls varies from nil at the bottom to 53 mm. (2.16 in.) at the top, while that of the rear wall is 50 mm. (1.96 in.) uniform. The front of the fighting compartment is protected by a vertical wall (which was missing from the specimen examined) behind which is a wide gun shield sloped at 30 degrees to the vertical. The shield is in three sections, namely a centre section 9 mm. thick and two side sections each 6 mm. thick. The height of the shield, measured up the slope is 4 ft. 3½ in.

Pistol ports are provided in both side walls near the top and about one third of their length from the rear.

LYNX ARMoured RECCE VEHICLE

Designation

Pz.Späh Wg II (Luchs) - Sd Kfz 123

Note. Markings on vehicles examined gave alternative designation

Pz.Kpfw II, Model L

Weight

11.8 tons

Crew

4

Armament

One 2 cm.Kw.K.38 with one 7.92 mm. MG on offside.

Turret traverse

Hand-operated

Ammunition carried

2 cm. - 330 rounds
 7.92 mm. - 13 bags (1950 rds)

Sight

Monocular jointed telescope TZF 6/38

Armour

<u>Plate</u>	<u>Thickness</u>	<u>Angle to vertical</u>
C. Turret top front	13 mm.	80
D. Turret top rear	13 mm.	90
E. Turret sides	20 mm.	20
" front and rear under-cut portions (gusset plates)	20 mm.	15
F. Turret rear	20 mm.	20
G. Turret front	30 mm.	0
H. Gun mantlet	30 mm.	rounded
J. Superstructure front	30 mm.	5
K. Glacis plate	20 mm.	70
L. Upper (main) nose plate	30 mm.	25
M. Lower nose plate	20 mm.	70
N. Superstructure sides	20 mm.	0
P. Hull sides	20 mm.	0
Q.R. Superstructure roof	13 mm.	90
W. Upper tail plate	20 mm.	30
Lower tail plate	20 mm.	70

Suspension

General: Front sprocket, rear idler and large interleaved rubber-tyred, disc type bogie wheels touching top and bottom of track and arranged on five load-carrying axles each side of hull. Two bogie wheels are arranged on each axle, the second and fourth pairs being interleaved between the first, third and fifth pairs.

Springing: Torsion bar, 38.2 mm.dia.

Shock

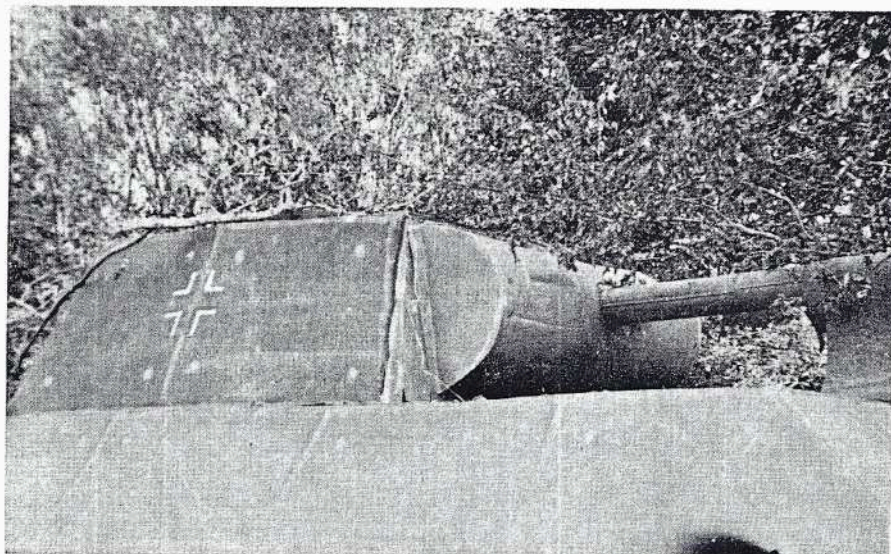
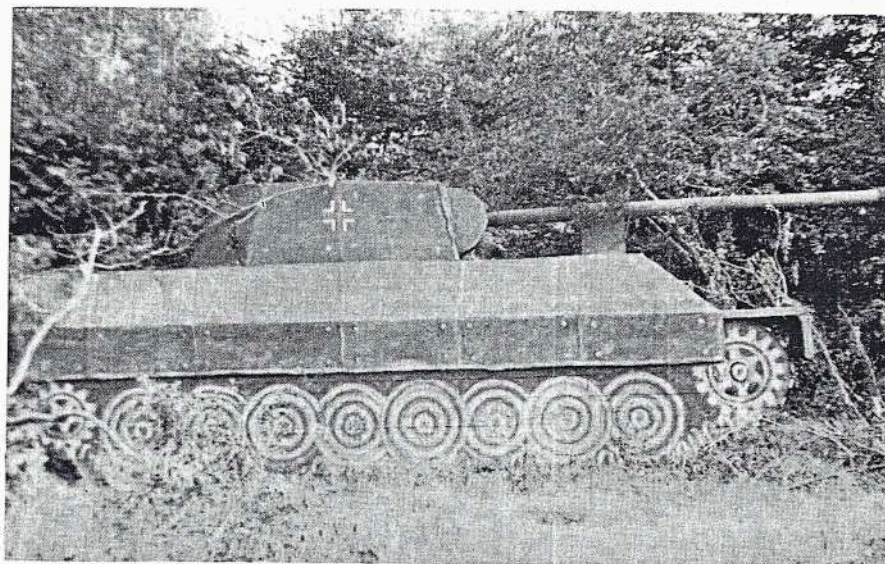
absorbers: Provided only for front and rear axles each side.

Tracks

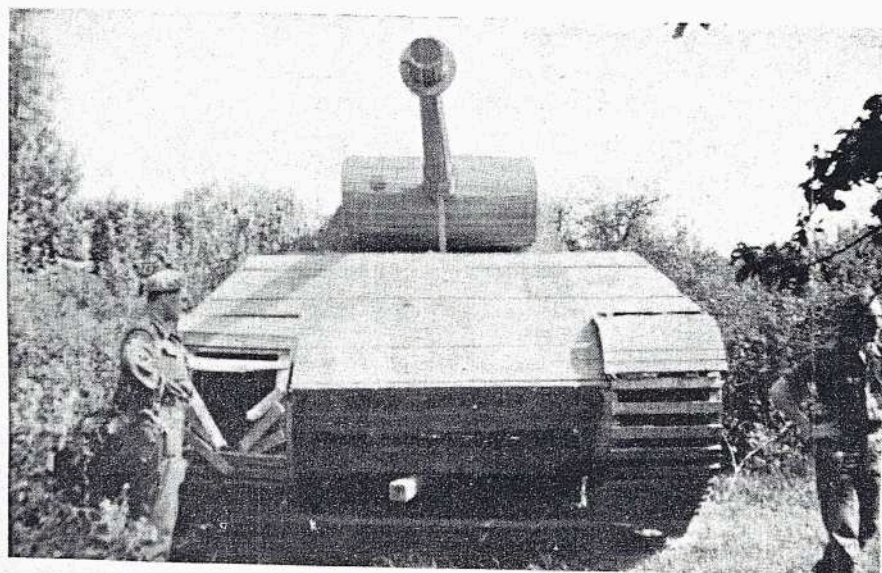
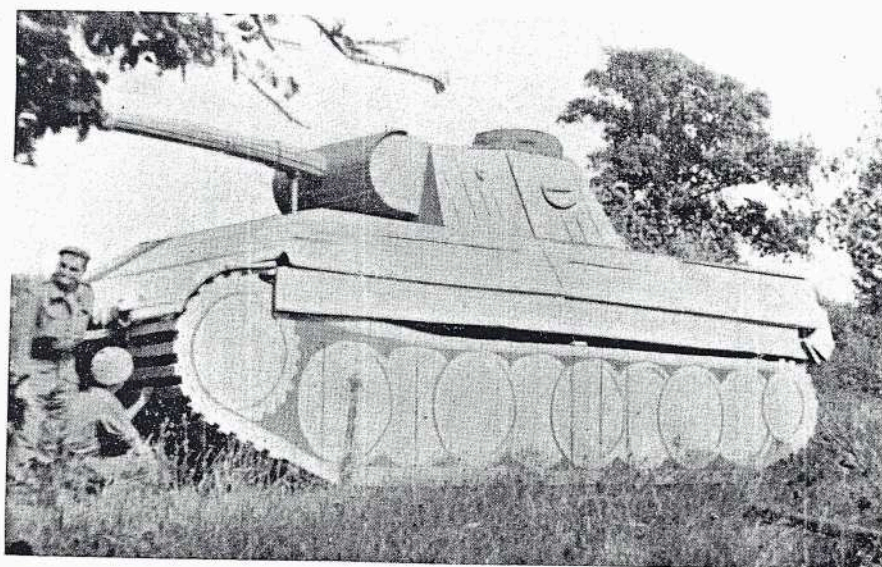
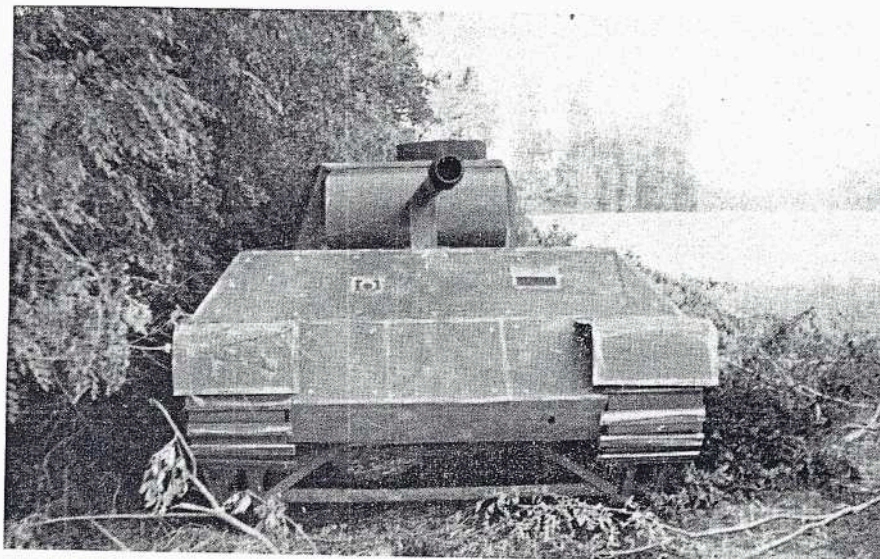
Width 14 in.
 Number of links per track - 96
 Ground pressure 9 - 11 lb. per sq. in. (approx.)

/Engine

GERMAN DUMMY TANKS



GERMAN DUMMY TANKS



"PANZERSCHNELLMINE" (ANTI-TANK) WOODEN
BOX MINE

Two varieties of a new German A tk mine, known as the "Panzerschnellmine" (quick-laying A tk mine), are reported from FRANCE.

In appearance this mine resembles a large Schumine, (see attached drawing). The two types, A and B, are actuated by Z.Z.42 and Buck igniters respectively. In each type the casing consists of a wooden box with a hinged lid, containing 6 kg. (13 lb.) of picric acid in damp-proof paper as the main filling and standard 200 g. Sprengkörper 28 charges as primers, the latter being built up on wooden blocks to give the correct positioning for insertion of the igniters. Above the main filling is a plywood cover plate on which the type letter A or B is painted, and which carries a label with instructions for use (see below).

(a) Type A This mine is actuated by a single Z.Z.42 igniter (1), located centrally in the front of the casing and screwing into a single Sprengkörper 28 primer (2). The front of the lid (3) carries a slot which fits over the head of the igniter and bears on the stirrup of the Z.Z.42 actuating pin, as in the Schumine. Two $\frac{1}{2}$ in. diameter wooden dowels (4) must be sheared before the mine is fired, and serve to increase the firing pressure.

(b) Type B This is actuated by two Buck igniters (5), which are fired by pressure on the lid. The dowels (6) are of $\frac{3}{4}$ in. diameter.

(c) Markings A translation of the label on the cover plate is as follows:

QUICK-LAYING A TK MINE A AND B

(i) Quick-laying A tk mine A with pull-igniter 42.
Quick-laying A tk mine B with chemical Buck igniter.
Each contains 6 kg. of explosive and is a means of quick defence against tanks.

(ii) These mines are delivered without igniters.

(iii) The following are to be screwed in to serve as igniters:
In A tk mine A a detonator and pull-igniter 42 in the front socket.
In A tk mine B two detonators and two Buck igniters in the sockets in the cover plate.

(iv) For transport the detonators and igniters must be removed, and those supplied with the mines must be inserted.

(Note. This presumably refers to some sort of safety plug for preventing damage to the socket threads).

(v) The wooden dowels must be intact, in order that the lid may not set off the mine if it falls.

(vi) These mines must be laid at intervals of 4 metres (13 ft.)

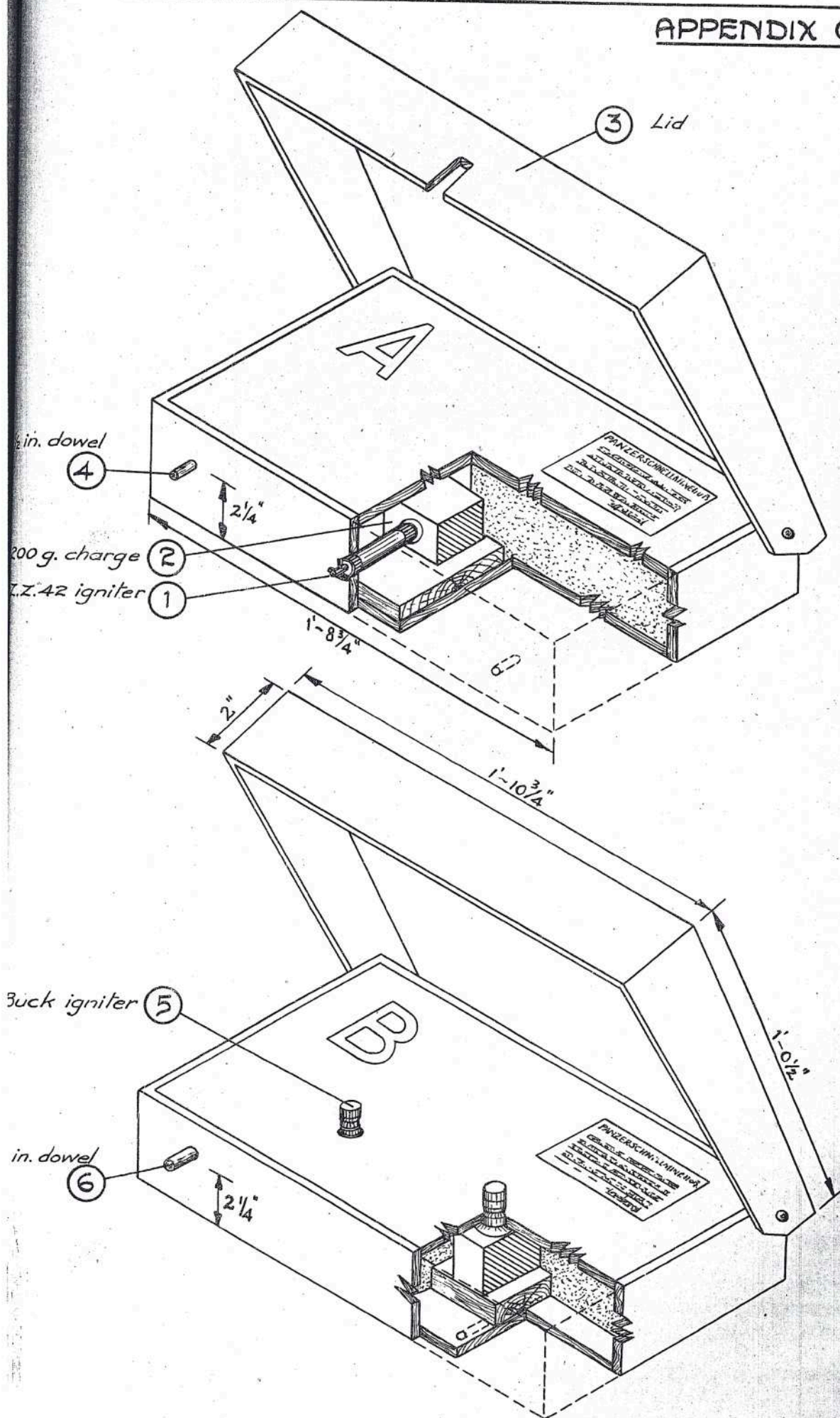
(d) Camouflage The mine is sprayed with buff and green paint.

(e) Detection The case contains nails and also has a metal carrying handle on the hinge side. The mines have been located

by a No. 4 detector.

(f) Neutralisation Unscrew the igniters.

APPENDIX O



GERMAN "PANZERSCHNELLMINE"

TELLERMINE IGNITER T.Mi.Z.43

A drawing and description of this igniter was given at appendix M, Summary 142.

The strong shear wire would appear to act as a safety device, in addition to its normal function of determining the actuating pressure of the igniter. Its distance from the top of the outer casing is such that it bears on the outer casing before the striker retaining balls can escape above the shoulder on the outer sleeve. If, therefore, for any reason, the travel of the pressure cap screw thread, after shearing the weak shear pin, is greater than the distance between the balls and the top of the shoulder, the pressure cap will seem to be tightly screwed down before the igniter can be actuated. The play between the pressure cap and the head of the T.Mi.Z.42 igniter can be detected in all four types of mine in which this igniter can be used, by the rattle heard, when holding the mine chest high with its base in a vertical position and shaking. This cannot, however, be considered as a safe means of distinguishing between mines armed with the T.Mi.Z.42 or the T.Mi.Z.43, and would be dangerous if the mines had been subjected to blast.

Tests carried out on the T.Mi.Z.43

A description of the tests carried out on the first specimen T.Mi.Z.43 at the Second Army School may be of interest.

Before carrying out the tests it was decided, as the tests were to take place in filled Tellermines, that the percussion cap of the igniter should first be fired from the outside. The blast effect of this was to shear the inner shear wire. Owing to the fact that there was no withholding pressure on the igniter head the striker was released - in fact the anti-withdrawal action functioned.

A portion of the side of the igniter was then removed and the striker re-cocked, and a brass shear wire re-fitted. This procedure was repeated five times and two tests were carried out in each of 35, 42 and 43 Tellermines. In each case after screwing down the cap about $2\frac{1}{2}$ turns, the inner shear wire sheared and the striker fired simultaneously, without the outer or normal shear wire shearing. The reason for this was apparently that the inner shear wire used was a harder brass than the original, and the shock of its shearing together with the general give in the mine and the cap caused the inner sleeve in the igniter to jump and release the striker prematurely.

A softer copper shear wire was then employed and the result with each mine was satisfactory. In each case about two and a half turns of the cap sheared the inner shear wire - this could be heard quite distinctly. The cap could then be screwed down firmly on to its seating. On unscrewing the cap the igniter fired each time as the cap slipped from its final thread and not during the unscrewing.

During the unscrewing the friction of the igniter head pressing on the under side of the cap could be distinctly felt.

The sectioning of the igniter was then completed on an approximate 120° V.

On completing the sectioning it was discovered that it would be possible to remove the percussion cap from the base of the igniter without firing it (a rather intricate operation). This would obviate the trouble

/ encountered

encountered in the first place and would allow a safe test to be carried out in a filled mine with an igniter in virgin condition, in the case of future investigation.

The number of turns required to shear the inner shear wire on a 35 type mine depends on the setting of the screwed adaptor sleeve in the igniter socket of the mine. This is not satisfactory as the setting of the sleeve is arbitrary and there are no practical means of locking it in position.

The Tellermine 43 used was one with no booby trap sockets. The cap of the normal 43 tried was so constructed that it was impossible to start screwing the cap on with this igniter in place.

Note The igniter was later tried in another normal Tellermine 43 and it was found possible to engage the threads.

It has now been ascertained that German training emphasises the use of this igniter in Tellermines 42 only, since its setting in any other type of Tellermine entails the danger of immediate explosion.

GERMAN TELLERMINE IGNITER, T.Mi.Z.43

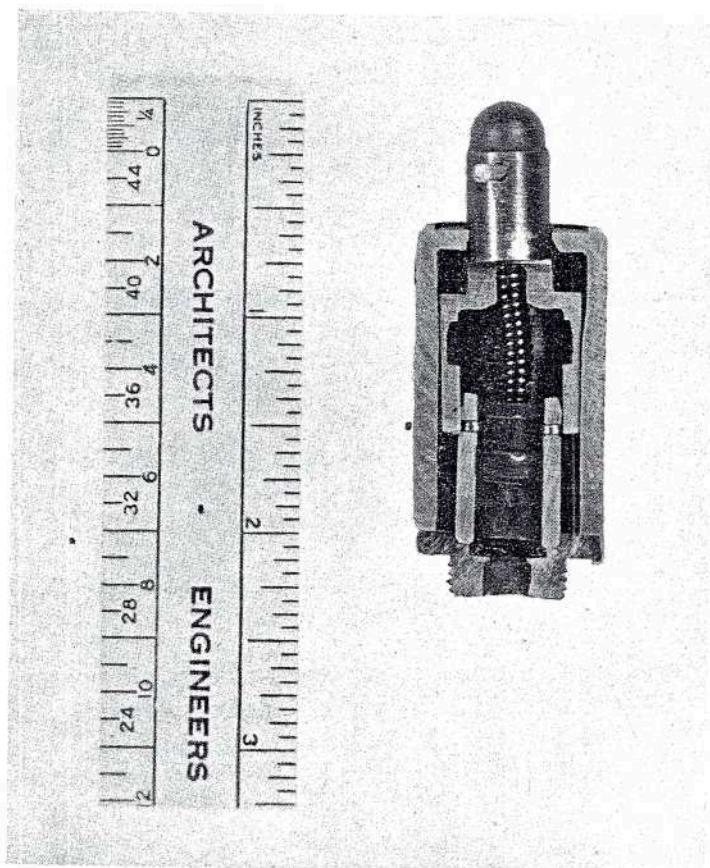


PLATE 1.

The igniter sectioned, in armed position. The weak brass shear pin (on the left) has been partially removed in order to indicate its position.

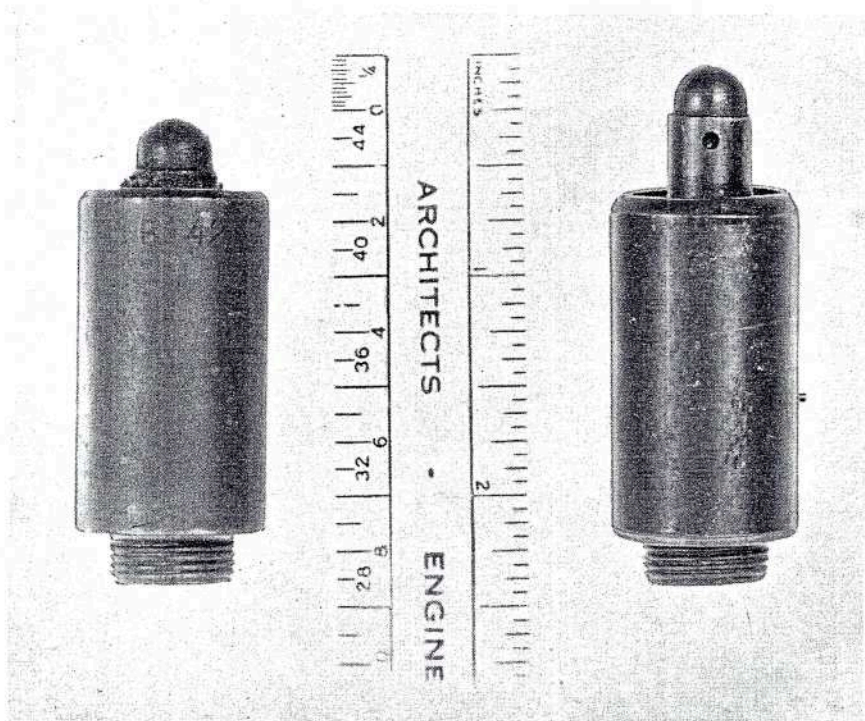


PLATE 2.

Comparison between T.Mi.Z.42 (on left) and T.Mi.Z.43. The only outwardly visible distinctions of the T.Mi.Z.43 are its longer striker head and the weak brass shear pin which is hardly noticeable as it is flush with the outer casing.

B IV RADIO-CONTROLLED DEMOLITION VEHICLE

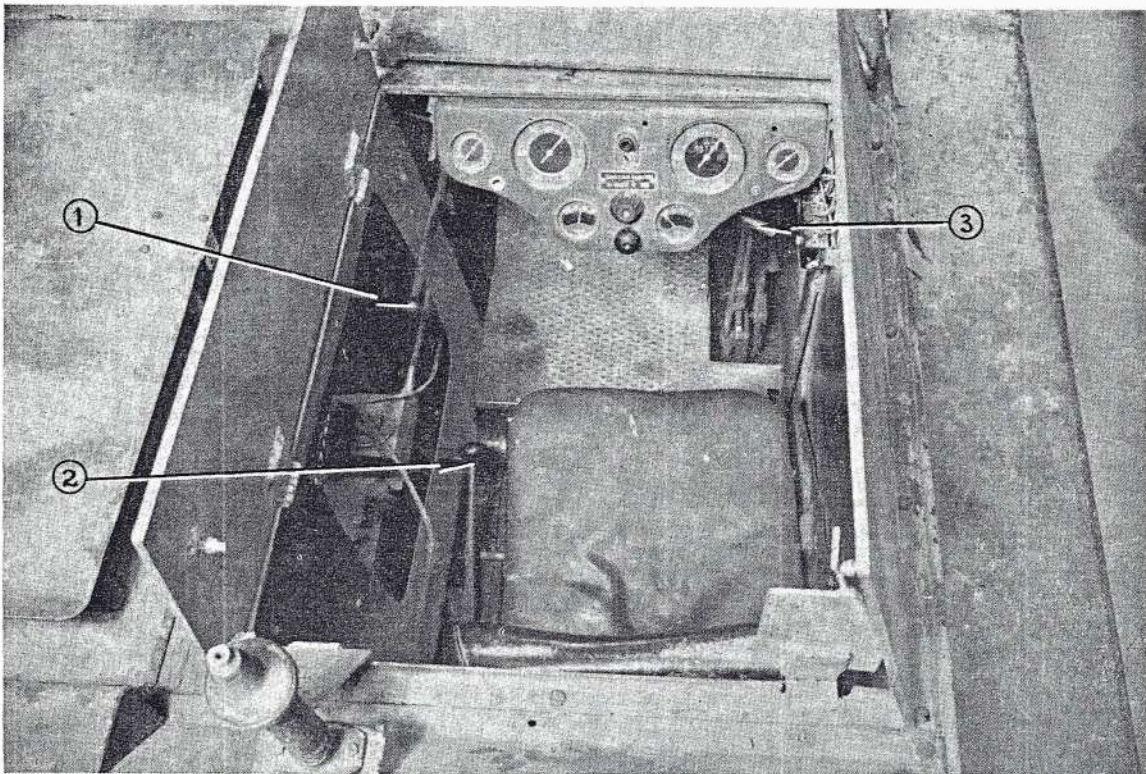


PLATE 1.

Driver's compartment.

Key:

1. Gear lever.

2. Forward-reverse lever.

3. Tiller bar.

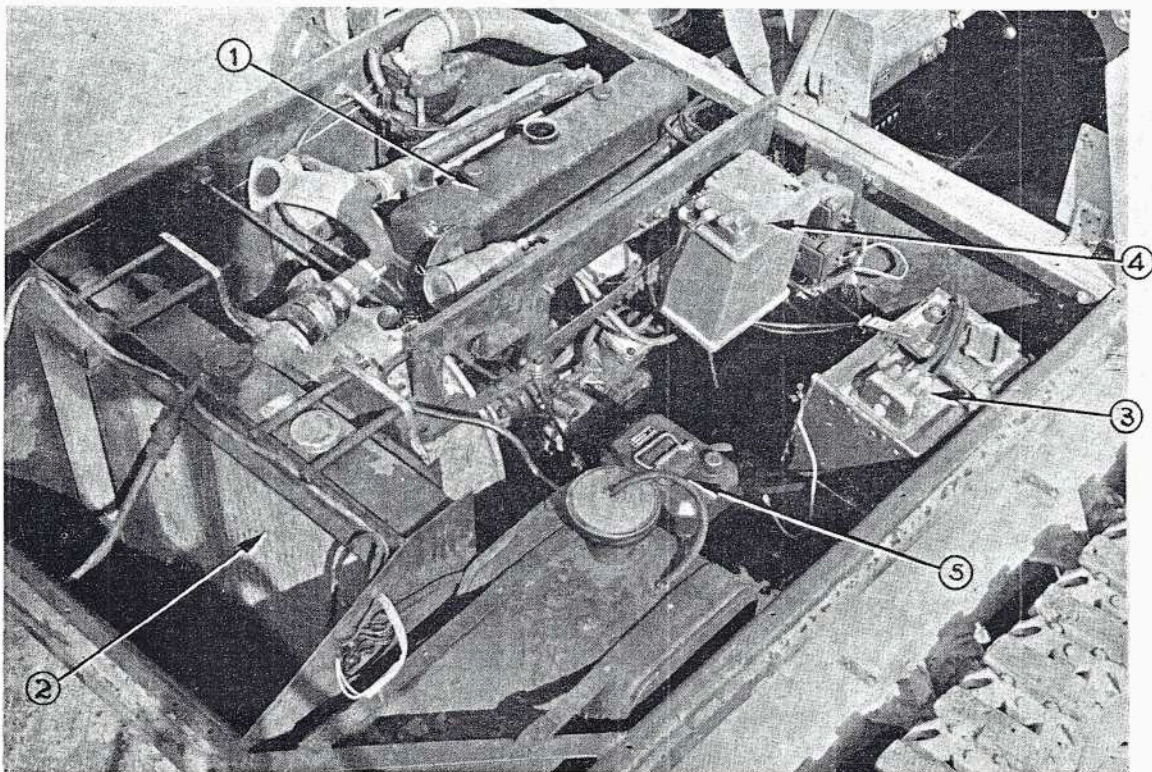


PLATE 2.

Engine compartment.

Key:

1. Engine.

2. Radiator.

3. Radio receiver.

4. Relay box.

5. Hydraulic control box.

B IV RADIO-CONTROLLED DEMOLITION VEHICLE

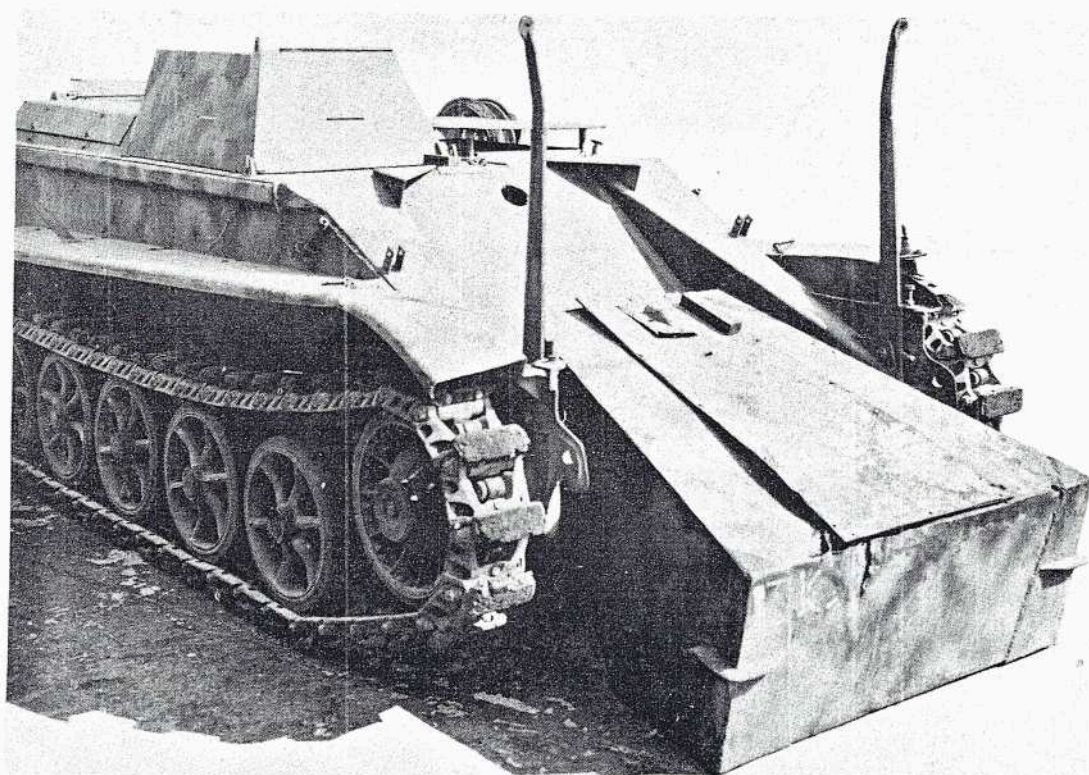


PLATE 3.

Detachable demolition charge.

B IV RADIO-CONTROLLED DEMOLITION VEHICLE

Relay Box from B IV.

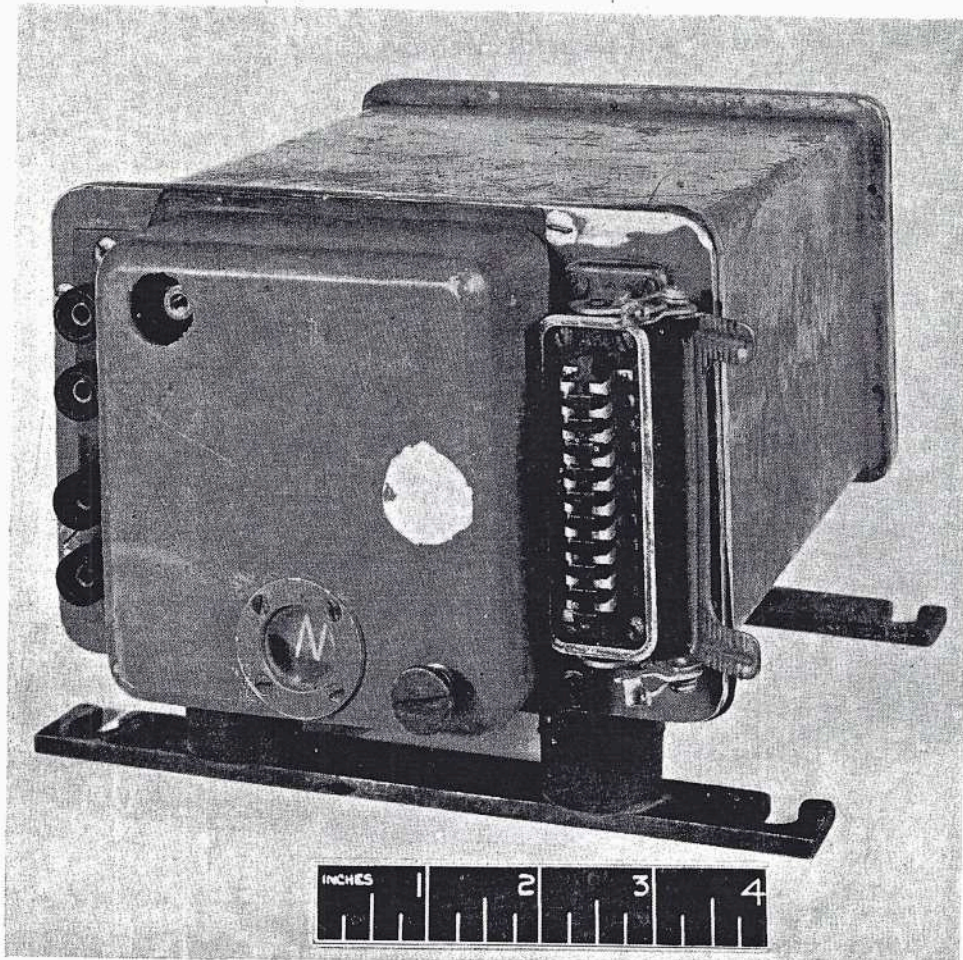


PLATE 1.

Top view, showing window with coding plug, marked "W."

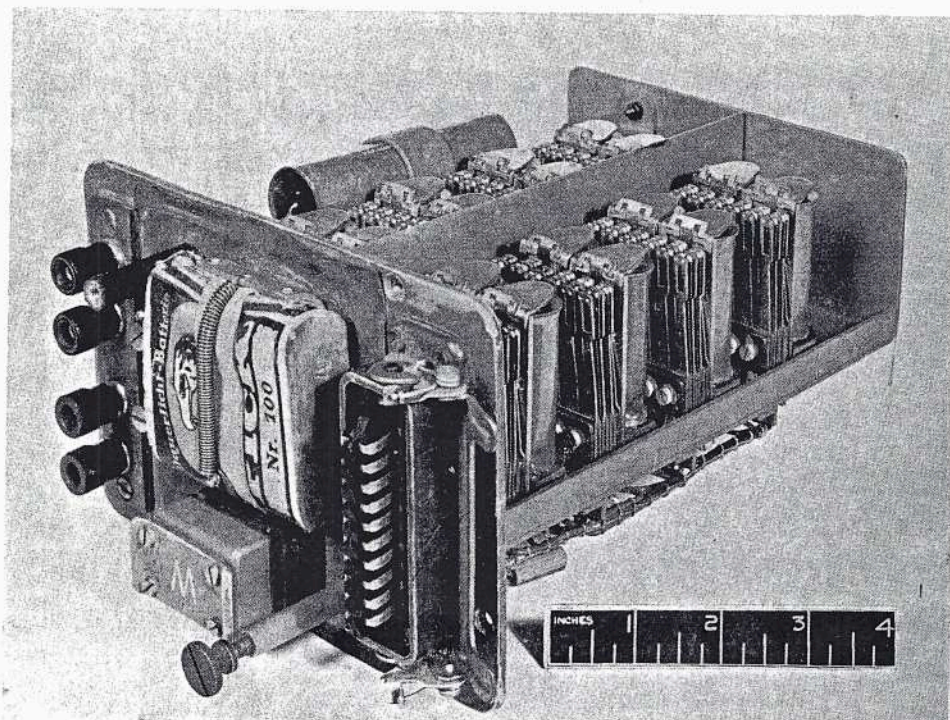


PLATE 2.

Internal view, showing coding plug, relays and battery used for firing detonators.

B IV RADIO-CONTROLLED DEMOLITION VEHICLE

Control Box from Stu. K 40 Control Vehicle

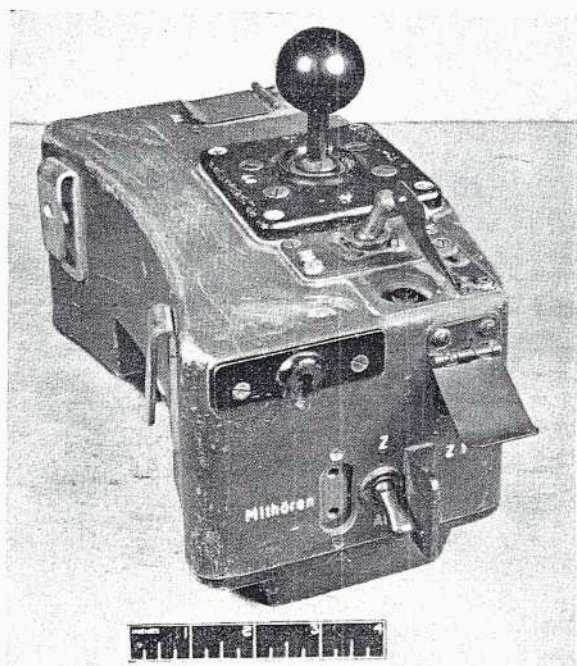


PLATE 1.

Right-hand side.



PLATE 2.

Left-hand side.

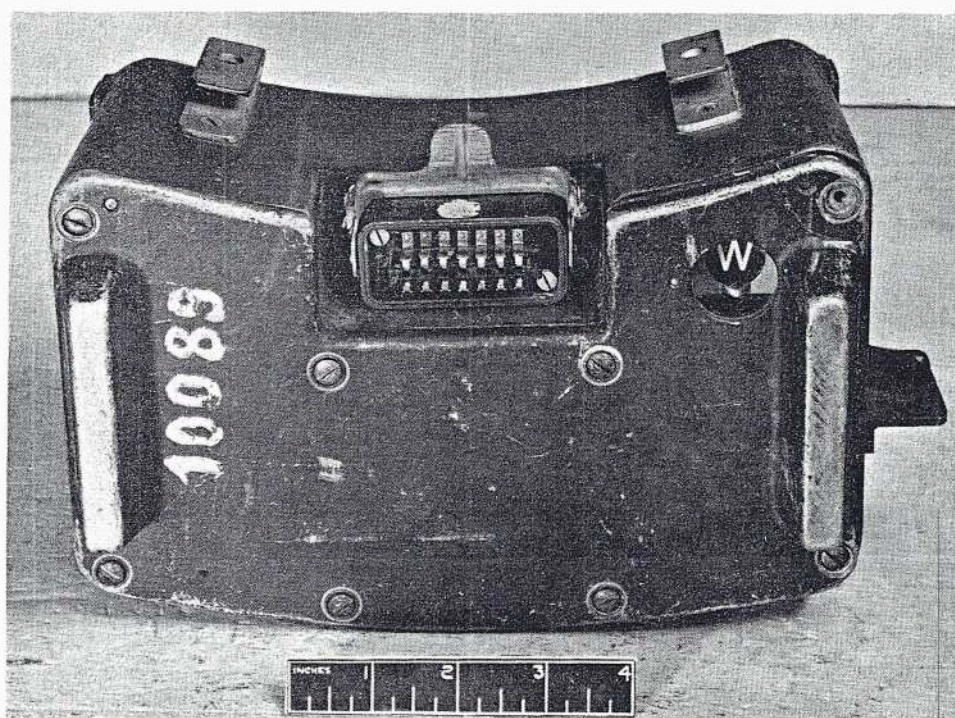


PLATE 3.

Underside, showing coding plug marked "W."

B IV RADIO-CONTROLLED DEMOLITION VEHICLE

Control Transmitter from Stu. K 40 Control Vehicle

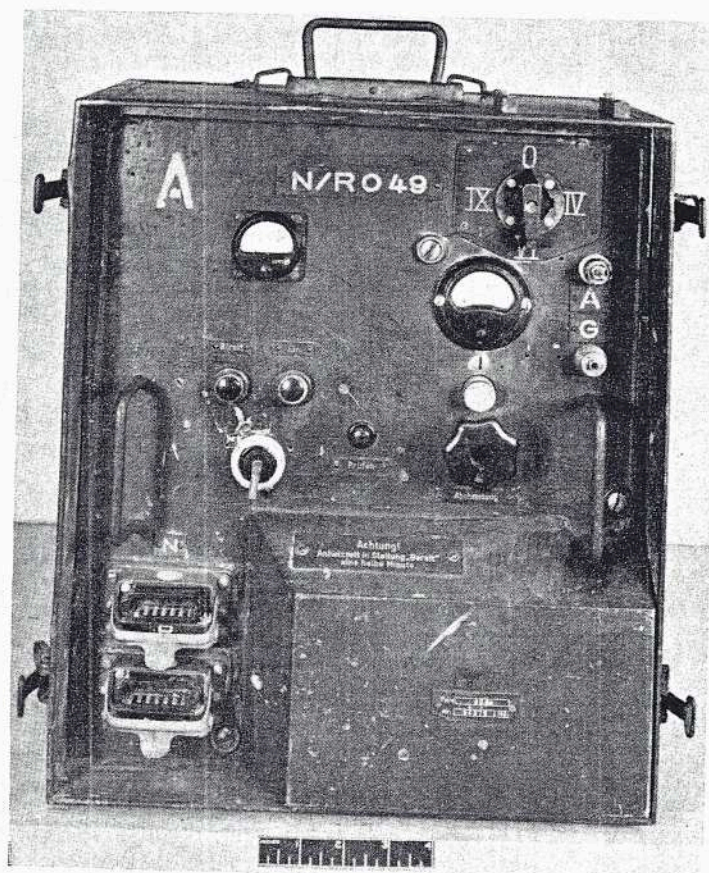


PLATE 1.

Front view.

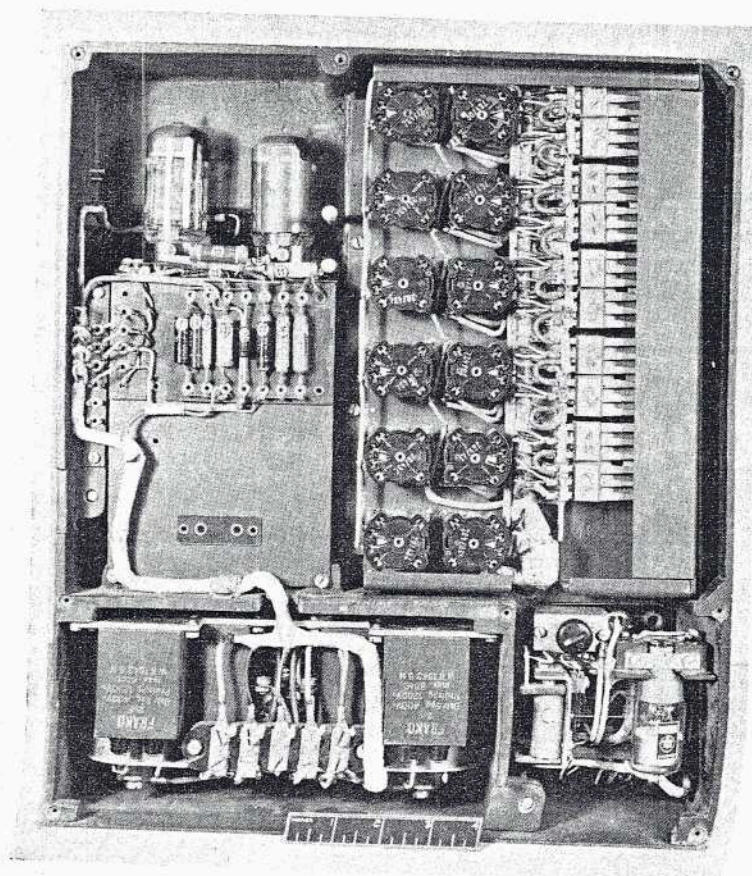
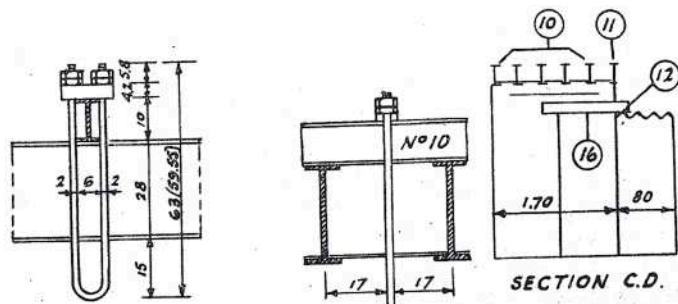


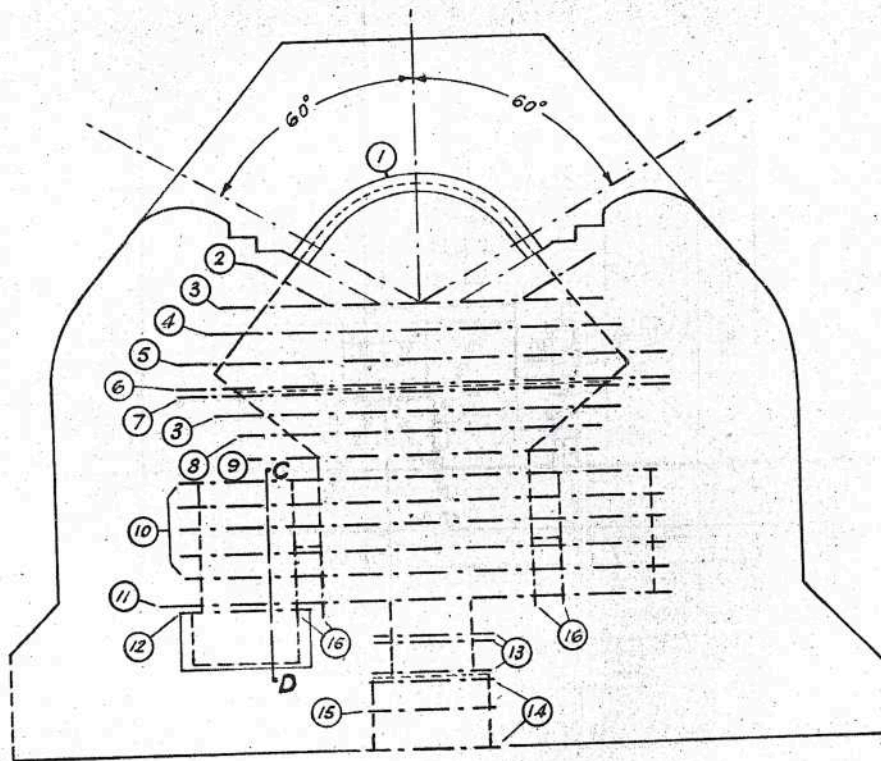
PLATE 2.

Internal view.

APPENDIX R.



STEELWORK DETAILS



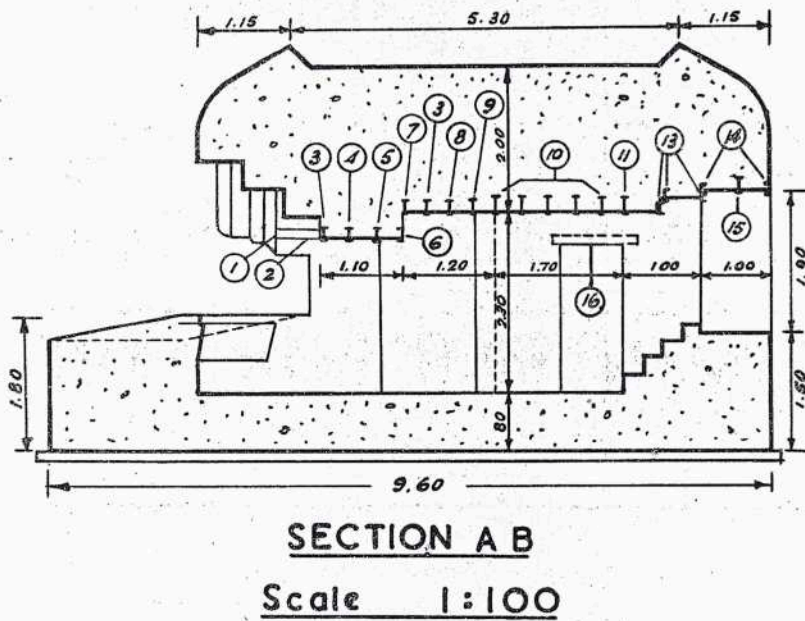
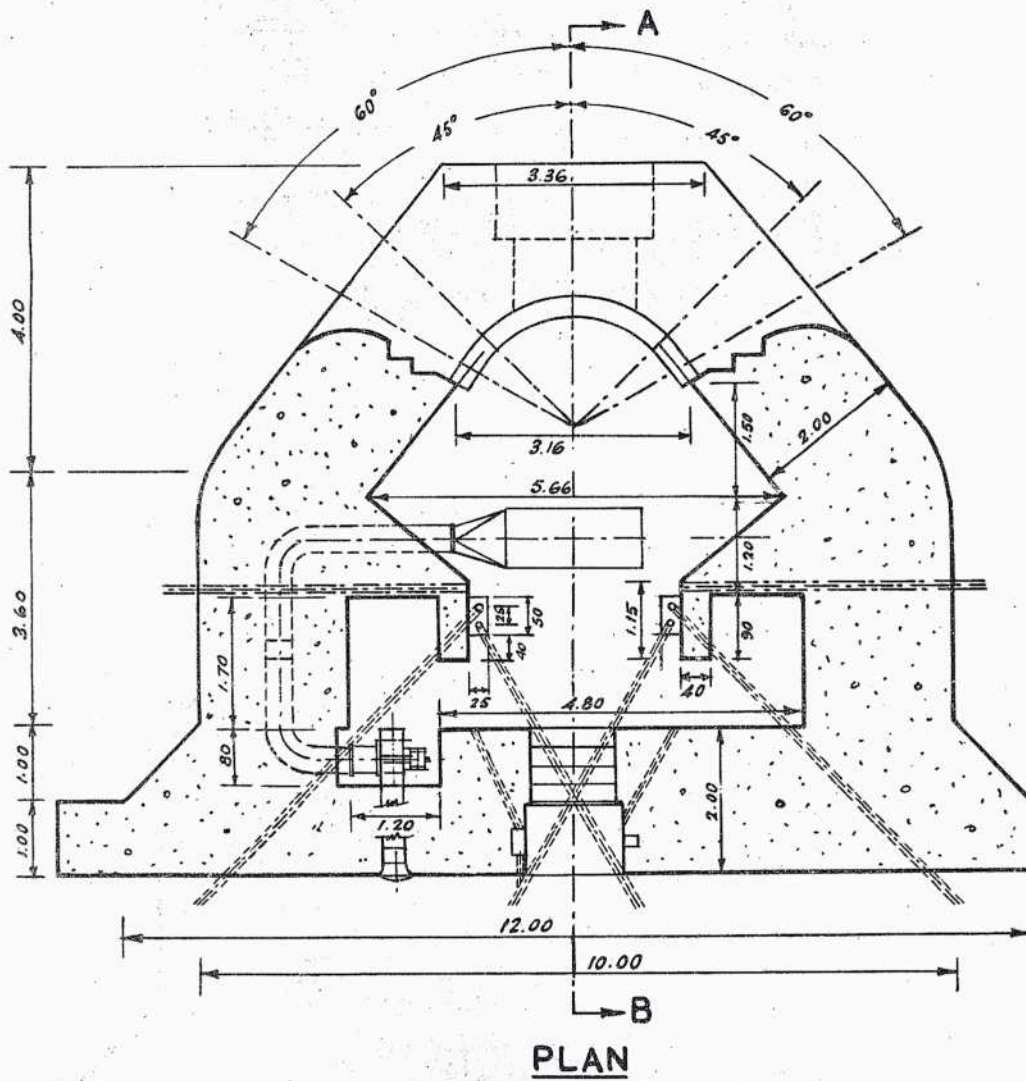
PLAN OF STEELWORK

REF. No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CHANNEL DEPTH cm	20					26						10	14	14		14
R.S.J. " "		14	22	24	26		26	20	18	28	28				14	
Kg/m	25.3	14.4	31.1	36.2	41.9	37.9	41.9	26.3	21.9	48.0	48.0	10.60	16.00	16.00	14.4	16.00

GERMAN PILL BOX TYPE '671

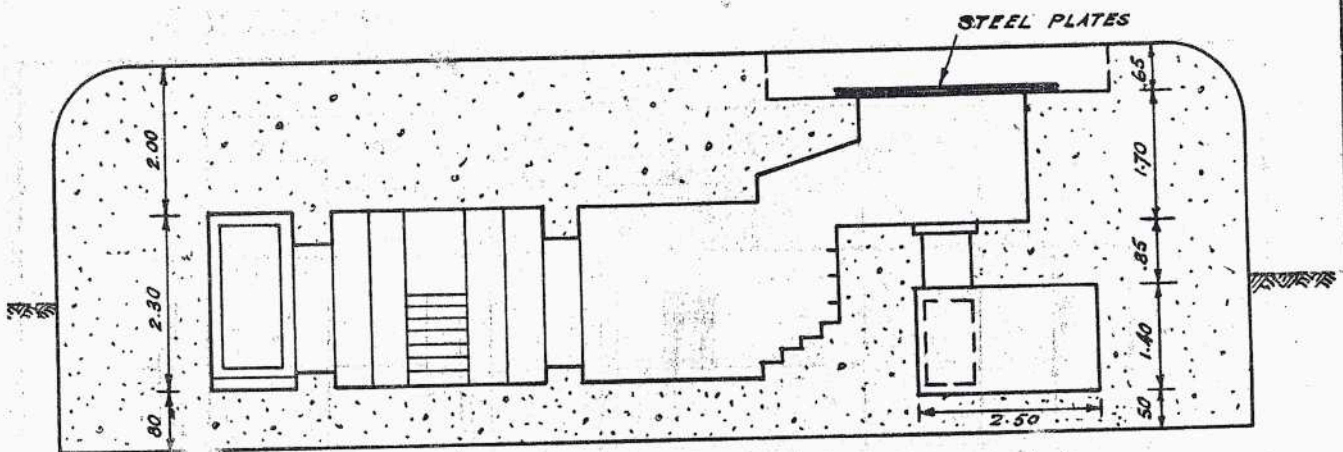
T.S. 144.

APPENDIX R.

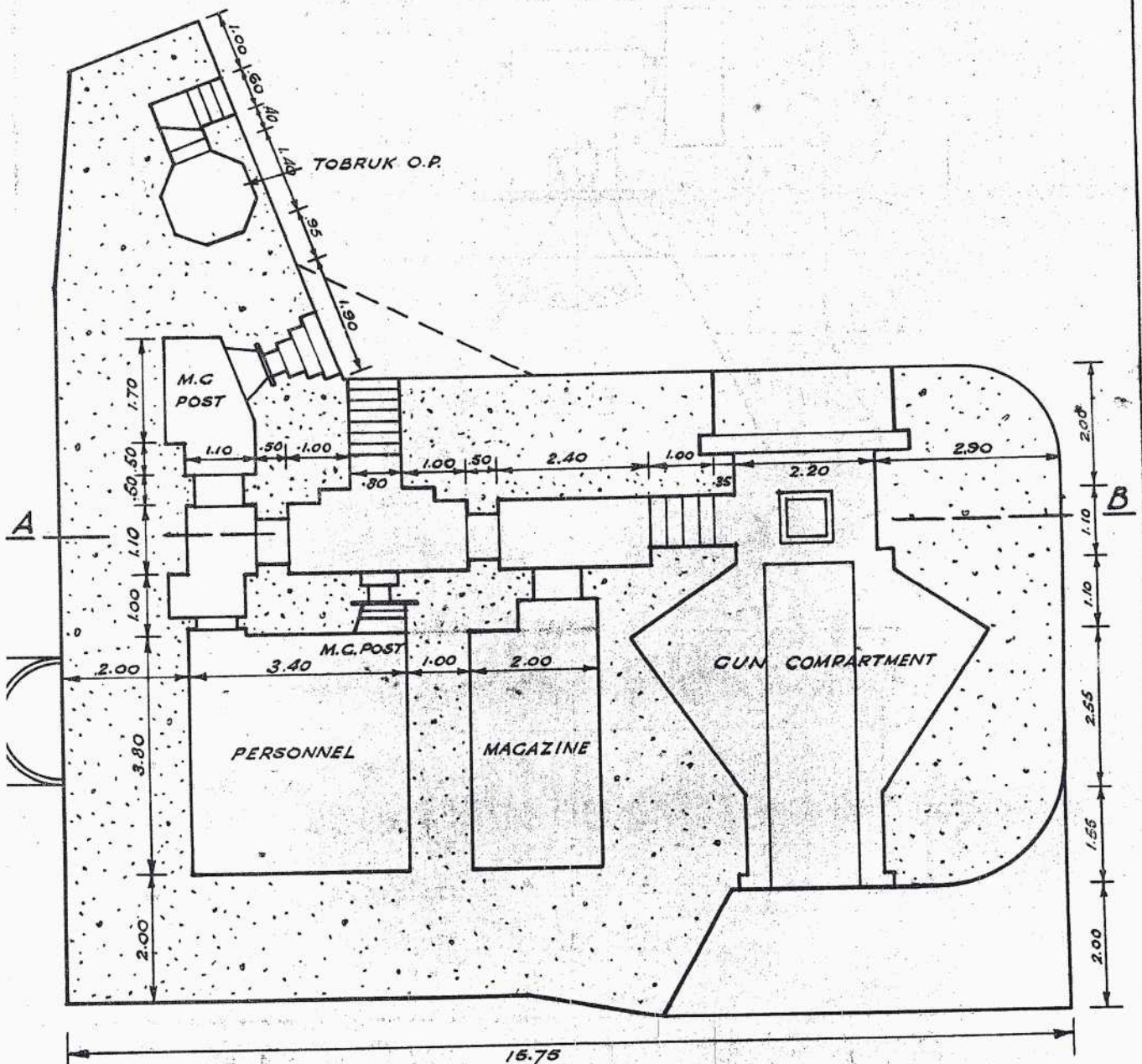


GERMAN PILL BOX TYPE 671

APPENDIX R.



SECTION A.B.

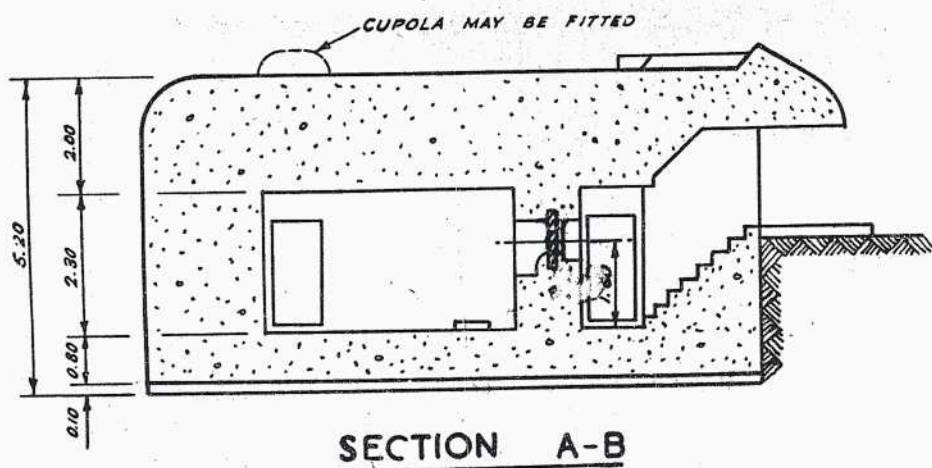
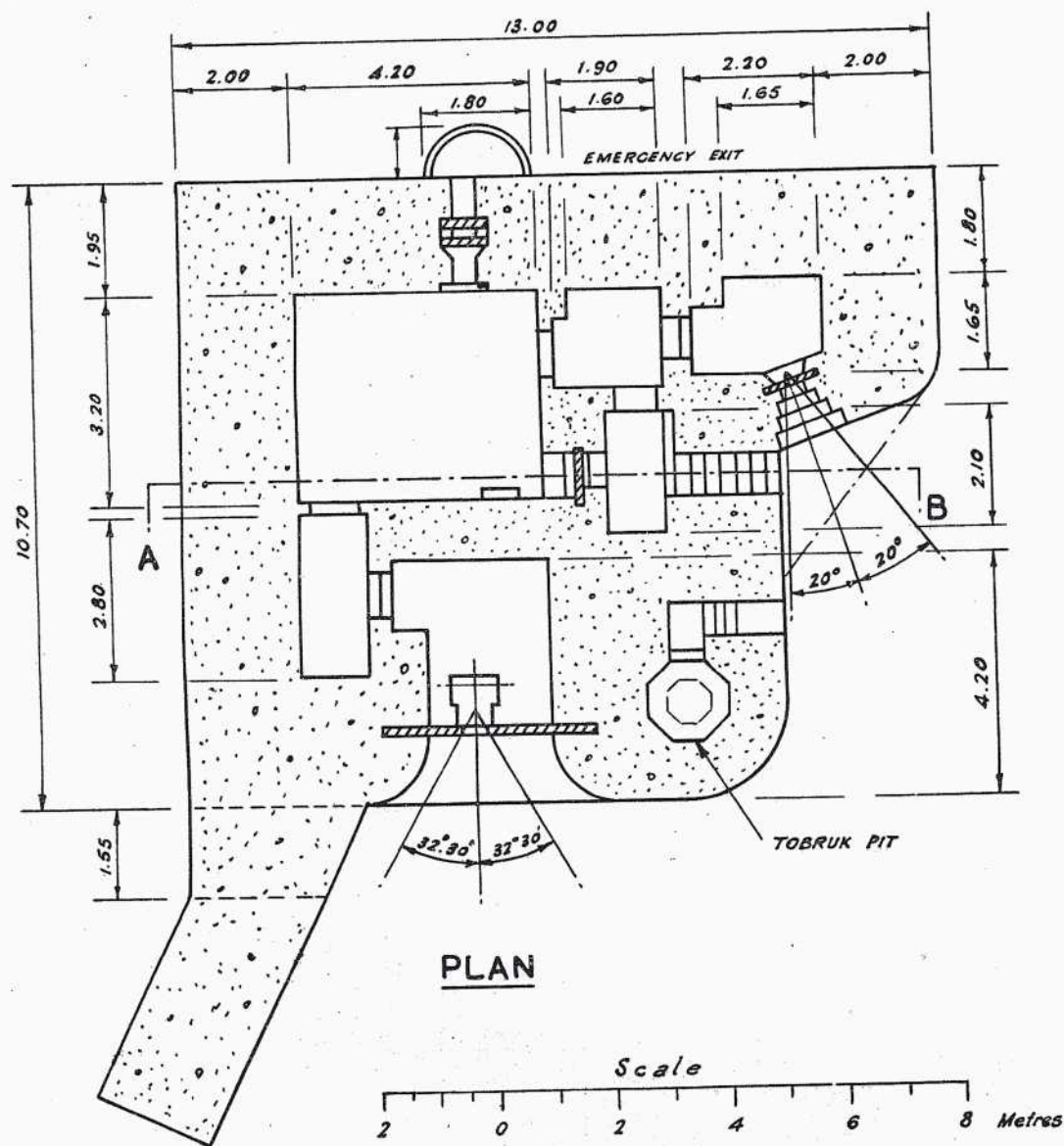


PLAN



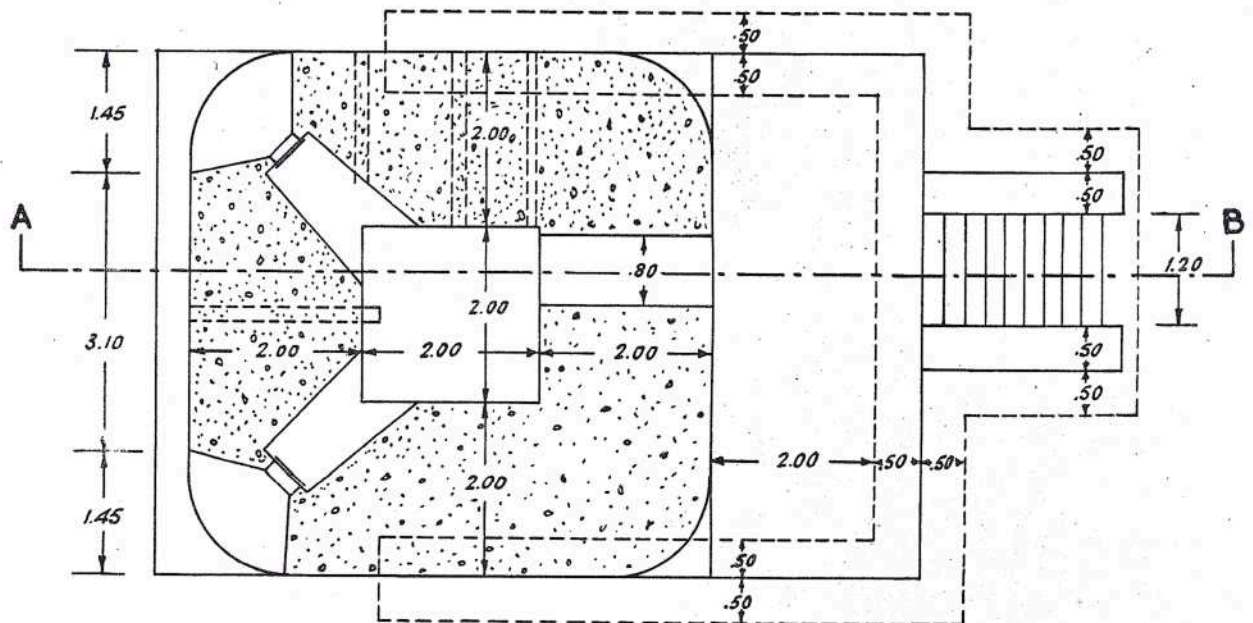
PILLBOX WITH 75mm A/TK GUN - TYPE 626

APPENDIX R.

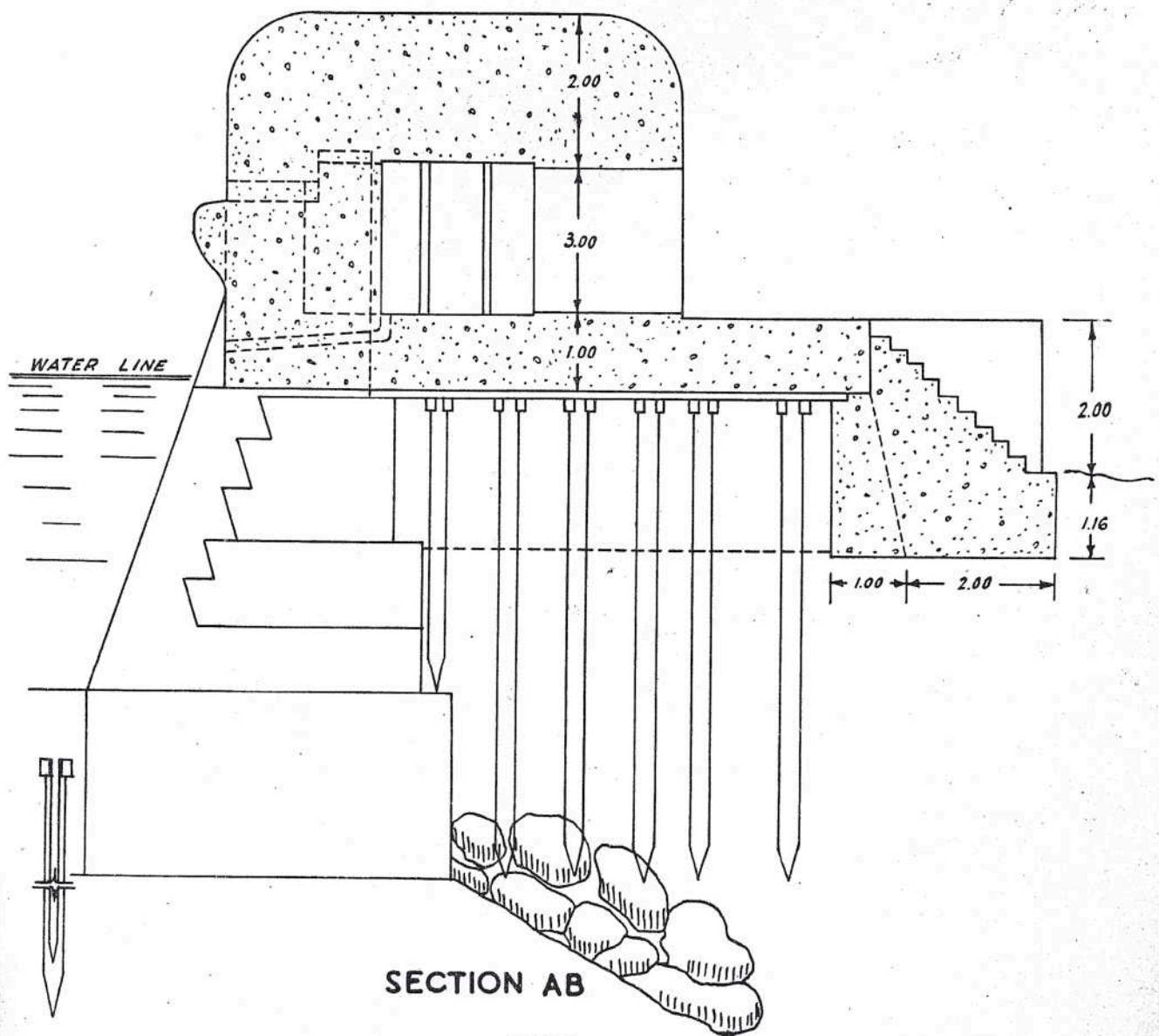


PILLBOX FOR LIGHT ANTI-TANK GUN
TYPE 630

APPENDIX R.



PLAN



SECTION AB

SCALE

PILLBOX FOR 2 M.G. ON BREAKWATER

T.S.144.

GERMAN MINE OBSTACLES

(a) Mine obstacles for coastal defence

In addition to the under water obstacles previously described, it is known that the Germans are using large quantities of a concrete block mine obstacle known as "Katie Mine". This consists of a reinforced concrete block 3 ft 11 in. square by 1 ft 8 in. deep, filled with an explosive charge of 175 lb. The upper face carries a steel tripod, the apex of which is fitted with a single lead horn connected electrically to the detonator.

This horn may be fitted with a clip-on steel cage to which a snag line is attached. The total height of the mine from the top of the lead horn to the base is 7 ft 4 in. It is not considered that the mine is designed to carry a non-contact firing unit.

The mines are laid off shore below low water mark. Large quantities of the concrete casings were recovered at Cherbourg.

In ports and harbours, the Germans may rely on naval mines for both defence and demolitions.

Two types have been in use, the 50 in. diameter aluminium hemispherical RMA(K), and the 36 in. wooden box mine RMH(K): both are ground mines designed for use as controlled mines or as influence actuated non-control mines.

On evacuation of ports the enemy may use these together with depth charges for harbour and shore demolitions, with or without delay action mechanisms.

(b) Mine Obstacles in Inland Areas.

The Germans continue to make use of all types of standard and improvised mines previously reported. Apart from the "Panzerschneellmine" described at appendix O to this Summary, no new mines have been recovered, although what are believed to be the parts of a broken Glasmine (see para. 28 of this Summary) have just been reported from France.

Mines of Dutch origin may be found in Holland. The Dutch A per/A tk mine Type I is shaped rather like a Tellermine. It consists of two steel pressings fitted together with a watertight joint, with a central igniter socket and carrying handle at the side. The firing load is given as 21 lb. The Type II has a spherical body and operates on a pressure of 165 lb.

The Dutch A per/A tk mine PW2-41 is a flat cylindrical mine fitted with a domed cover and has a firing pressure of 50 lb. The Germans have also catalogued a Dutch A tk mine T 40; this contains a charge of 9 lb. and the firing pressure is 100 lb. These mines have been described in detail in Summaries 120 and 143.

(c) Anti-personnel Mines on Barbed Wire Fences

The following methods of employing A per mines have been extracted from captured enemy documents. Neutralisation in each case is accomplished by removing the igniters.

(i) The middle strand of every second post of a barbed wire fence is not nailed. A Stock mine or other type of A per mine is fastened to the middle wire at the post by means of soft wire or waxed cord and armed with a ZZ 35 pull-igniter. The pull wire leading from the igniter is nailed to the post just below the top strand of wire. Cutting the middle wire releases the weight of the mine, which actuates the igniter and explodes the mine. The mine will also be detonated by movement of the middle wire towards the ground, or away from the post.

(ii) Another method is to staple a ZZ 42 igniter to the post with the pull wire fastened to the un-nailed middle strand. The Stock mine is secured to the barbed wire with a piece of primacord connecting the mine or igniter. Movement or release of the middle wire will explode the mine.

(c) Mining of Roads

For the mining of roads against tanks, the Germans sometimes excavate a narrow trench over the full width; Tellermines are placed in tiers of three at close spacing and the intervening space is occupied by S mines - the whole being filled in and covered. The Riegel mine is also used for road blocks.

GI

GERMAN SEMI-TRACKED VEHICLES AS S.P. A.A. MOUNTINGS

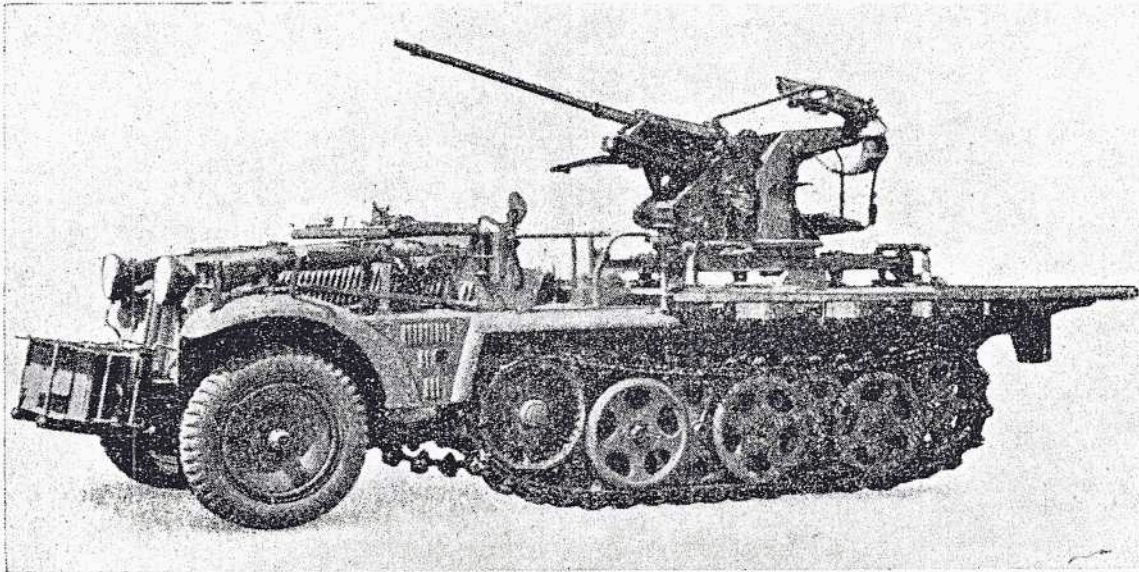


PLATE 1.

1-ton semi-tracked chassis mounting 2 cm Flak 30 (Sd. Kfz 10/4).

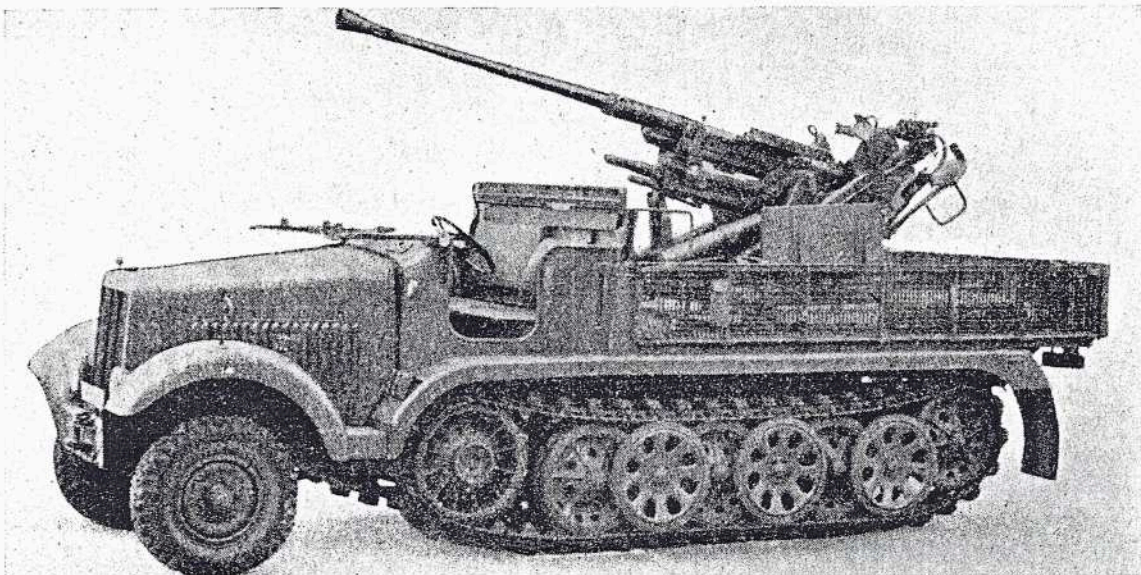


PLATE 2.

5-ton semi-tracked chassis mounting 3.7 cm Flak 36 (Sd. Kfz 6/2).

GERMAN SEMI-TRACKED VEHICLES AS S.P. A.A. MOUNTINGS

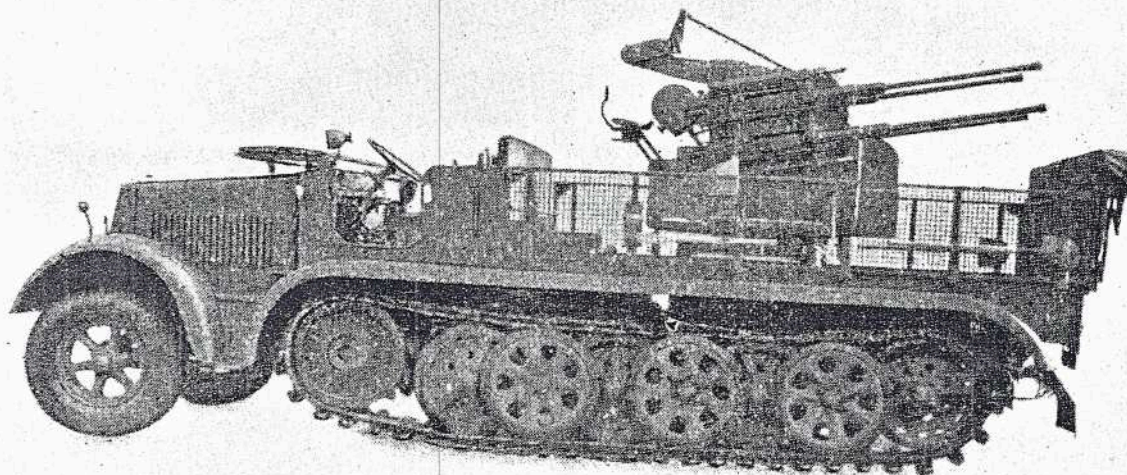


PLATE 3.

8-ton semi-tracked chassis mounting 2 cm Flakvierling (Sd. Kfz 7/1).

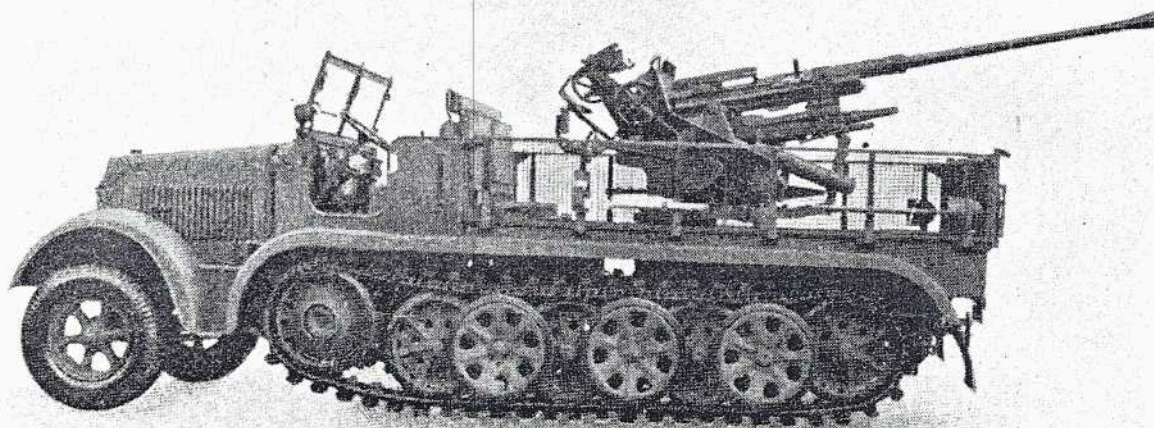


PLATE 4.

8-ton semi-tracked chassis mounting 3.7 cm Flak 36 (Sd. Kfz 7/2).