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ENEMY WEAPONS
**PART V—GERMAN INFANTRY, ENGINEER, AND
AIRBORNE WEAPONS**

1943

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*Prepared under the direction of
The Chief of the Imperial General Staff*

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CONTENTS

SECTION 1—GERMAN GRENADES AND GRENADE DISCHARGERS

PARA		PAGE
1.	Introductory note	1
2.	27 mm grenade and signal pistol	1
3.	Rifle discharger (cup type)	3
4.	Rifle discharger (spigot type)	9

SECTION 2—GERMAN MACHINE CARBINES

5.	Introductory note	12
6.	9 mm machine carbine MP 18 ¹ Bergmann	12
7.	9 mm machine carbine MP 28 ¹¹ Schmeisser	15
8.	9 mm machine carbine MP 34 ¹ Bergmann	16
9.	9 mm machine carbine MP 34 (ö) Steyr-Solothurn	18

SECTION 3—GERMAN RIFLES

10.	General	18
11.	7.92 mm self-loading rifle 41	19

Continued on page iii of cover

110
112

ENEMY WEAPONS

PART V—GERMAN INFANTRY, ENGINEER AND AIRBORNE WEAPONS

SECTION 1—GERMAN GRENADES AND GRENADE DISCHARGERS

1. Introductory note

In addition to the familiar egg and stick hand grenades (described in Enemy Weapons Part I) several new types of grenade, both HE and AP, have been developed recently. These are fired from two different rifle attachments, and from a modified signal pistol.

2. 27 mm Grenade pistol (Kampfpistole) (Fig 1)

This is a modification of a standard German signal pistol. The pistol is constructed of a light metal alloy, has a rifled barrel, and carries a small dial sight on the left side. The grenade is in the form of a small nose-fuzed HE round and is fired up to a maximum range of approximately 100 yards. The pistol will not fire British Verrey pistol ammunition. Smoke and indicating rounds (orange smoke) are also in service. The bases of the HE, smoke, and indicating cartridges are marked SPR. Z, NEBEL. Z and DEUT. Z, respectively.

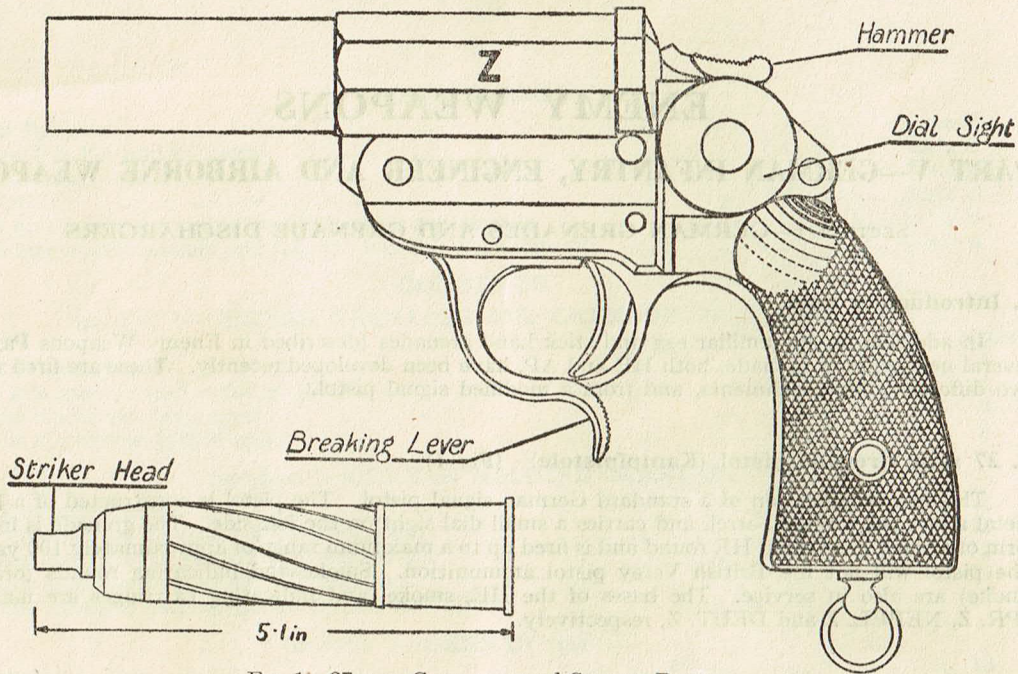


FIG 1—27 mm GRENADE and SIGNAL PISTOL

(a) General particulars

Calibre	27 mm (1 in)
Weight of pistol	1 lb 9½ oz
Length of pistol	9¾ in
Weight of complete round	5 oz
Length of complete round	5.1 in
Length of projectile with fuze	4.4 in
Type of filling	Penthrite wax

(b) Preparation for firing

Break the pistol by pressing down lever forming part of trigger guard. Load grenade and close pistol smartly.

3. Rifle discharger (cup type) (Schießebecher) (Fig 2—6)

(a) The discharger (Fig 2).—This is made of steel, and consists of a rifled barrel which screws into a holder fitted with a clamp for attaching to the rifle barrel. There are no gas ports, and varying ranges are obtained by altering the elevation of the rifle with the aid of a sighting attachment. With practice, however, the discharger can be used effectively without the sight.

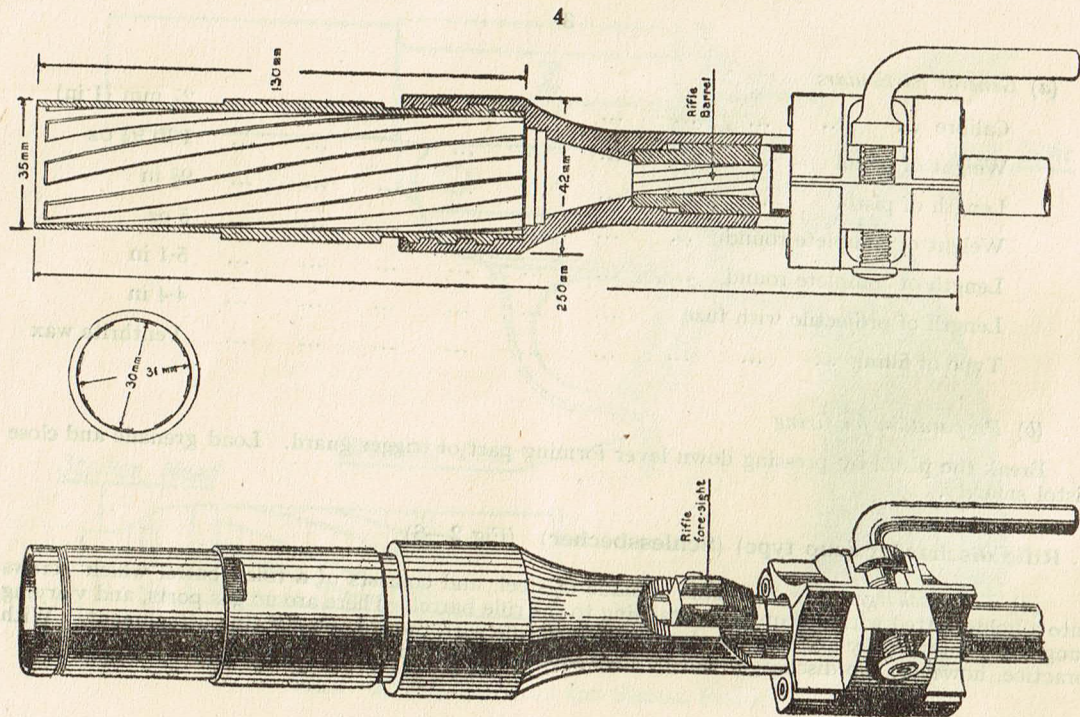


FIG 2—RIFLE DISCHARGER (CUP TYPE)

(b) *Ammunition* (Figs 3-5)

(i) Three types of grenade are fired, two of which are armour piercing in different sizes and the third anti-personnel with provision for throwing as a hand grenade.

(ii) *Small AP grenade (Gewehr Panzergranate)* (Fig 3)

This grenade incorporates the hollow charge principle, *i.e.*, a shaped cavity is formed at the forward end of the HE filling with the result that, on impact, a jet of blast is concentrated in a forward direction. It follows, therefore, that the penetration of armour is equal at all ranges, since it depends on this jet and not on the striking velocity of the projectile. The difficulty of hitting the target, however, restricts the use of this grenade to ranges up to 100 yards. It is only likely to be effective against lightly armoured targets.

The body is made in two parts: a forward portion of steel containing the bursting charge and hollow charge cone, closed by a light metal cap, and a rear portion of light aluminium alloy containing the fuze and exploder system. A pre-engraved driving band is formed at 6 mm from the rear end of the grenade.

Other details are as follows:—

Total weight	...	...	...	...	...	...	...	...	...	...	8.8 oz
Overall length	...	...	...	...	...	...	...	...	...	...	6.4 in
Weight of filling	...	...	...	...	...	...	...	...	...	...	1.75 oz

(iii) *Large AP grenade (Gross Gewehr Panzergranate)* (Fig 4)

This grenade is constructed on similar general lines to (ii) above, except that the front portion is enlarged and contains a greater bursting charge. The total weight of the grenade is approximately $12\frac{3}{4}$ oz, the weight of the bursting charge $4\frac{1}{4}$ oz. This grenade and the one described at (ii) above should be handled with great care, as they arm very easily.

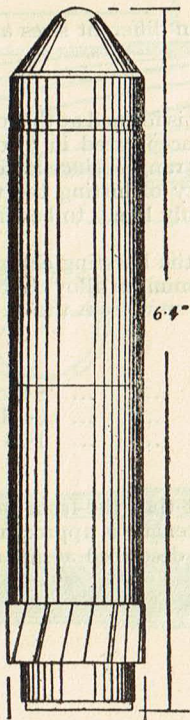


FIG 3—SMALL AP GRENADE

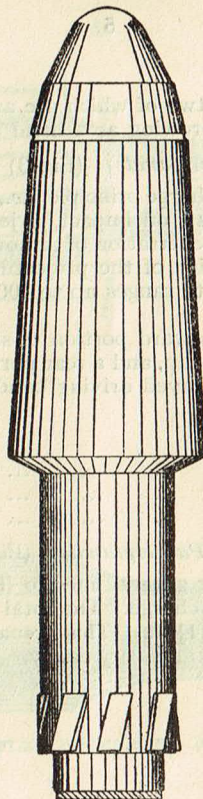
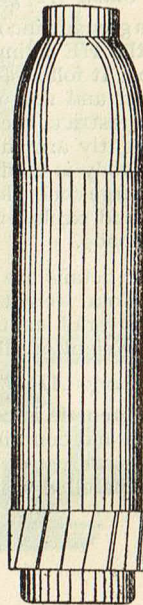


FIG 4—LARGE AP GRENADE

FIG 5—
ANTI-PERSONNEL GRENADE

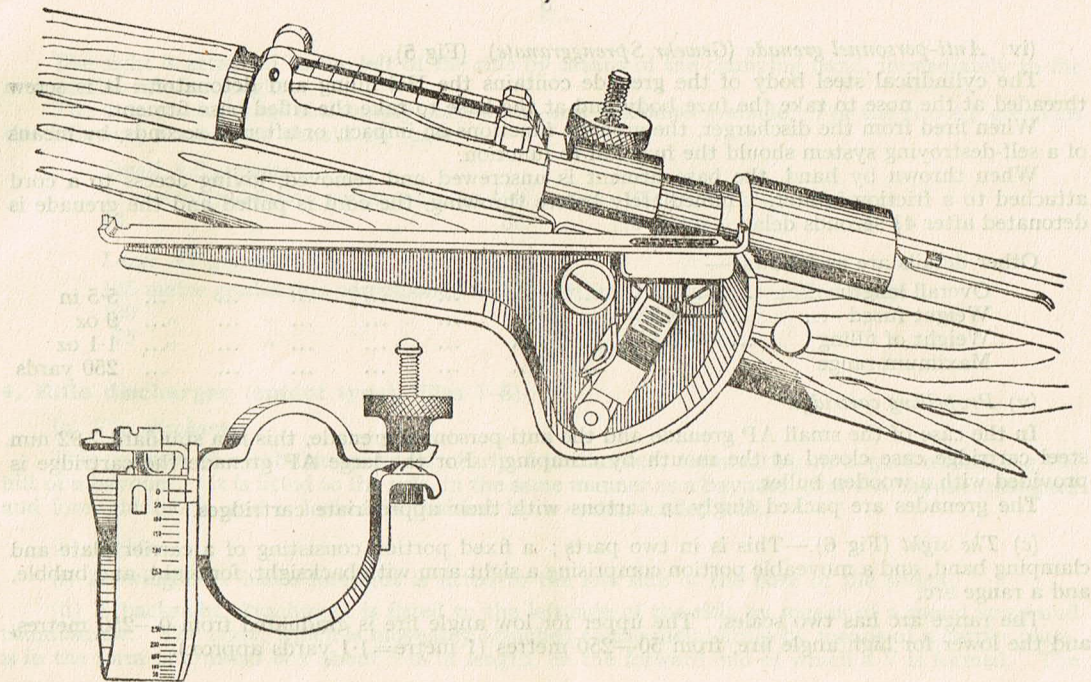


FIG 6—SIGHT FOR CUP DISCHARGER

(iv) *Anti-personnel grenade (Gewehr Sprenggranate)* (Fig 5)

The cylindrical steel body of the grenade contains the HE filling and detonator. It is screw threaded at the nose to take the fuze body and at the base to take the rifled base fitment.

When fired from the discharger, the grenade functions on impact, or after 11 seconds, by means of a self-destroying system should the fuze fail to function.

When thrown by hand, the base fitment is unscrewed and removed, giving access to a cord attached to a friction igniter. Immediately before throwing, the cord is pulled and the grenade is detonated after $4\frac{1}{2}$ seconds delay.

Other details are as follows:—

Overall length	...	...	...	...	...	...	...	...	...	5.5 in
Weight fuze	...	...	...	...	...	...	...	...	...	9 oz
Weight of filling	...	...	...	...	...	...	...	...	...	1.1 oz
Maximum range	...	...	...	...	...	...	...	...	...	250 yards

(v) *Propelling cartridge*

In the case of the small AP grenade and the anti-personnel grenade, this is a standard 7.92 mm steel cartridge case closed at the mouth by crimping. For the large AP grenade the cartridge is provided with a wooden bullet.

The grenades are packed singly in cartons with their appropriate cartridges.

(c) *The sight* (Fig 6).—This is in two parts; a fixed portion consisting of a carrier plate and clamping band, and a moveable portion comprising a sight arm with backsight, foresight, and bubble, and a range arc.

The range arc has two scales. The upper for low angle fire is graduated from 0—250 metres, and the lower for high angle fire, from 50—250 metres (1 metre=1.1 yards approx).

The sight is attached to the left of the rifle by means of the clamping band, immediately to the rear of the rifle backsight.

The data on the range scale apply only to the anti-personnel grenade. For the two AP grenades the following corrections should be made:—

Small AP grenade

75 metre graduation corresponds to 100 metres (109 yards) required range.

50 " " " 65 " (75 yards) " "

Large AP grenade

125 metre graduation corresponds to 100 metres (109 yards) required range

100 " " " 75 " (82 yards) " "

75 " " " 50 " (55 yards) " "

4. Rifle discharger (spigot type) (Figs 7-8)

(a) *The discharger*

This consists of a tubular spigot of nearly 1 in diameter terminating in a part resembling the hilt of a bayonet. It is fitted to the rifle, in the same manner as a bayonet, over the bayonet standard and foresight block, and is locked in position by a spring loaded bolt.

(b) *Sights*

(i) A swing over blade foresight is fitted to the left side of the base of the spigot.

(ii) A backsight attachment is fitted to the left side of the rifle by means of a metal strap and thumbscrew. The body, which is moveably attached to the metal strap by means of a carrier plate, is in the form of a metal box about 5 in in length, on the forward end of which a V is formed. The

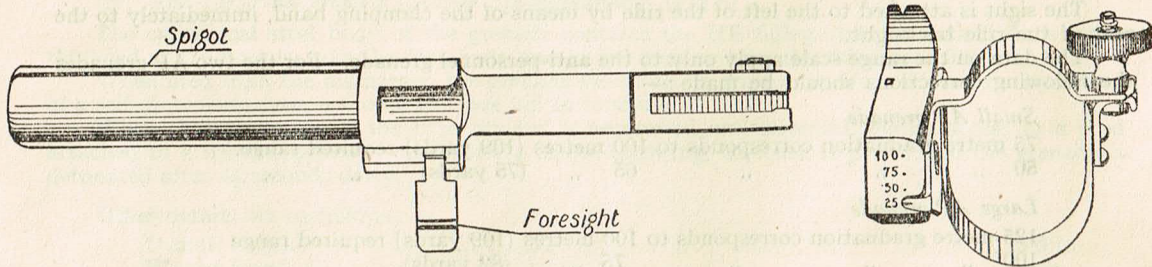


FIG 7—RIFLE DISCHARGER (SPIGOT TYPE) AND SIGHT

other end, facing the firer when the sight is assembled to the rifle, is inscribed with a range scale graduated from 25–100 metres in steps of 25 metres. To give the desired range, the body is rotated and the appropriate graduation brought opposite a pointer on the carrier plate. The body is then held in position by a ball and spring detent.

(c) *Ammunition* (Fig 8)

(i) Only one type of ammunition has been identified to date. This is a hollow charge anti-tank grenade with a tubular tail which fits over the spigot of the discharger. The grenade is grey-green in colour.

(ii) The head is bell shaped and contains the explosive filling, which is hollowed out to a depth of .79 in and contained by a concave aluminium diaphragm. The head is closed by a slightly convex metal cap.

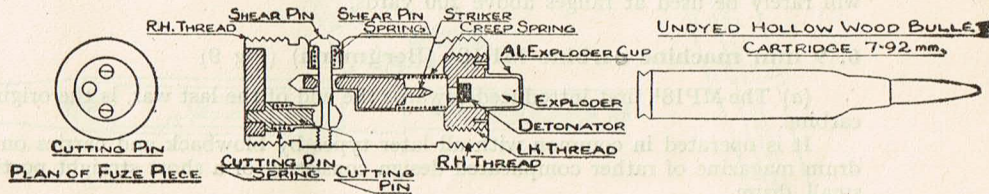
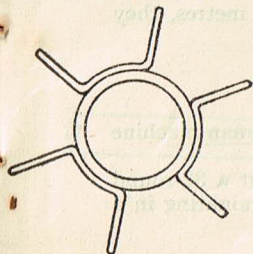
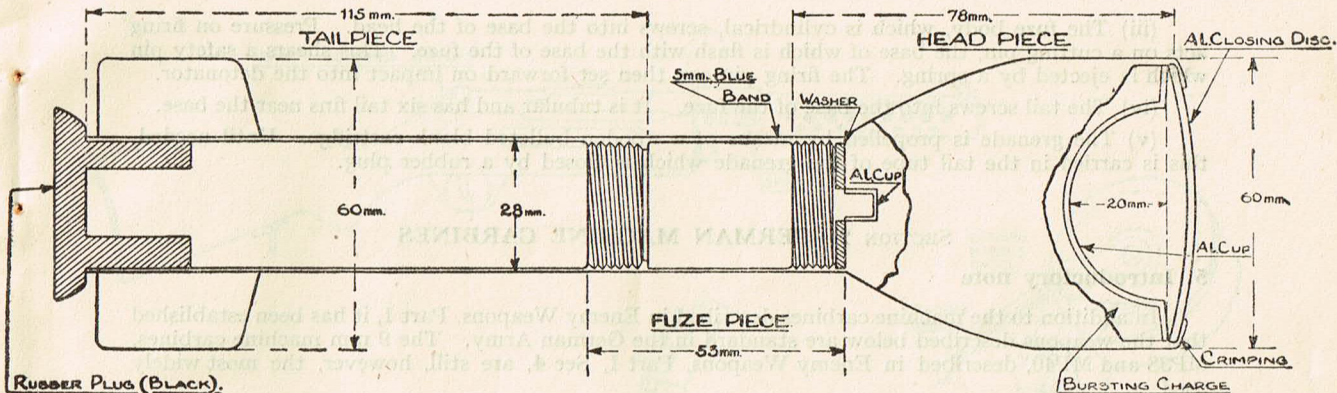


FIG 8—GRENADE FOR SPIGOT TYPE DISCHARGER

(iii) The fuze body, which is cylindrical, screws into the base of the head. Pressure on firing acts on a cutting pin, the base of which is flush with the base of the fuze. This shears a safety pin which is ejected by a spring. The firing pin can then set forward on impact into the detonator.

(iv) The tail screws into the base of the fuze. It is tubular and has six tail fins near the base.

(v) The grenade is propelled by means of a wooden bulleted blank cartridge. Until needed, this is carried in the tail tube of the grenade which is closed by a rubber plug.

SECTION 2—GERMAN MACHINE CARBINES

5. Introductory note

In addition to the machine carbines described in Enemy Weapons, Part I, it has been established that the weapons described below are standard in the German Army. The 9 mm machine carbines, MP38 and MP40, described in Enemy Weapons, Part I, Sec 4, are still, however, the most widely used.

It should be noted that although many of these weapons are sighted up to 1,000 metres, they will rarely be used at ranges above 200 yards.

6. 9 mm machine carbine MP18¹ (Bergmann) (Fig 9)

(a) The MP18¹, first introduced towards the end of the last war, is the original German machine carbine.

It is operated in common with all later types by blowback and carries on the left a 32-round drum magazine of rather complicated design consisting of a short straight portion terminating in a small drum.

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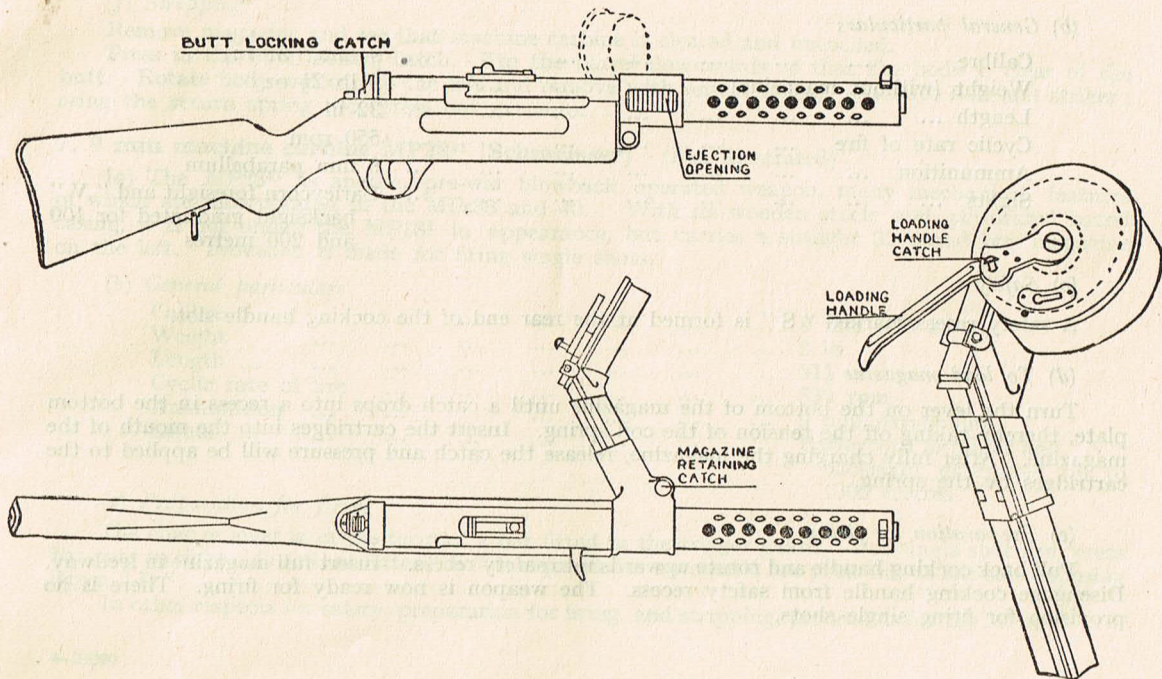


FIG 9—9 mm MACHINE CARBINE MP 18¹ (BERGMANN)

(b) General particulars

Calibre	9 mm (.35 in)
Weight (without magazine)	...	...	...	...	...	...	...	9 lb 2½ oz
Length	...	...	...	...	...	...	...	32 in
Cyclic rate of fire	...	...	...	...	...	...	...	550 rpm
Ammunition	...	...	...	...	...	...	...	9 mm parabellum
Sights	...	...	...	...	...	...	...	Barleycorn foresight and " V " backsight graduated for 100 and 200 metres

(c) Safety

A safety recess marked " S " is formed at the rear end of the cocking handle slot.

(d) To load magazine

Turn the lever on the bottom of the magazine until a catch drops into a recess in the bottom plate, thereby taking off the tension of the coil spring. Insert the cartridges into the mouth of the magazine. After fully charging the magazine, release the catch and pressure will be applied to the cartridges by the spring.

(e) Preparation for firing

Pull back cocking handle and rotate upwards into safety recess. Insert full magazine in feedway. Disengage cocking handle from safety recess. The weapon is now ready for firing. There is no provision for firing single shots.

(f) Stripping

Remove magazine and see that machine carbine is cleared and uncocked.

Press in the butt locking catch. Tip the barrel downwards so that the body is clear of the butt. Rotate body end cap to the left and remove with return spring. Remove bolt and striker; using the return spring rod, press out extractor.

7. 9 mm machine carbine MP28¹¹ (Schmeisser) (Not illustrated)

(a) The MP28¹¹ is another pre-war blowback operated weapon, many mechanical features of which are incorporated in the MP38 and 40. With its wooden stock and perforated barrel casing, it is not unlike the MP18¹ in appearance, but carries a straight 32 round box magazine on the left. Provision is made for firing single shots.

(b) General particulars

Calibre	...	...	...	...	...	...	...	9 mm (.35 in)
Weight	...	...	...	...	...	...	...	9 lb
Length ...	...	...	...	...	...	...	...	31½ in
Cyclic rate of fire	...	...	...	...	...	...	...	550 rpm
Ammunition	...	...	...	...	...	...	...	9 mm parabellum
Sights	...	...	...	...	...	...	...	Barleycorn foresight and "V" backsight graduated up to 1000 metres

(c) Preparation for firing

The change lever is in the form of a bar fitted in the trigger guard. For single shot fire, press bar over to right side so that letter "E" is exposed, for automatic fire press bar to left side exposing letter "D".

In other respects for safety, preparation for firing, and stripping, proceed as for the MP18¹.

8. 9 mm machine carbine MP34¹ (Bergmann) (Fig 10)

(a) This weapon, although not listed as a standard machine carbine, is known to be in service to some extent. Of more complicated design than the MP18¹ it incorporates two safety devices, a catch operating on the trigger and a cocking piece preventing movement of the cocking handle. Provision is made for single shot and automatic fire.

(b) General particulars

Calibre	9 mm (.35 in)
Weight	9 lb
Length	32 $\frac{3}{4}$ in
Cyclic rate of fire	850 rpm
Ammunition	9 mm parabellum
Sights	Barleycorn foresight and " V " backsight graduated to 1,000 metres

(c) Preparation for firing

Pull back safety catch (on left of body, below back sight) to " F " (fire). Rotate cocking handle anti-clockwise through 90° and pull back. Push forward again and return to original position. Set safety catch to " S " (safe), and insert a filled magazine in feedway.

(d) Stripping

Remove magazine and ensure that chamber is empty. Set safety catch to " F ". Rotate cocking handle anti-clockwise through 90° and pull back. Depress bolt retaining plunger situated to rear of safety catch and withdraw cocking piece and breech block.

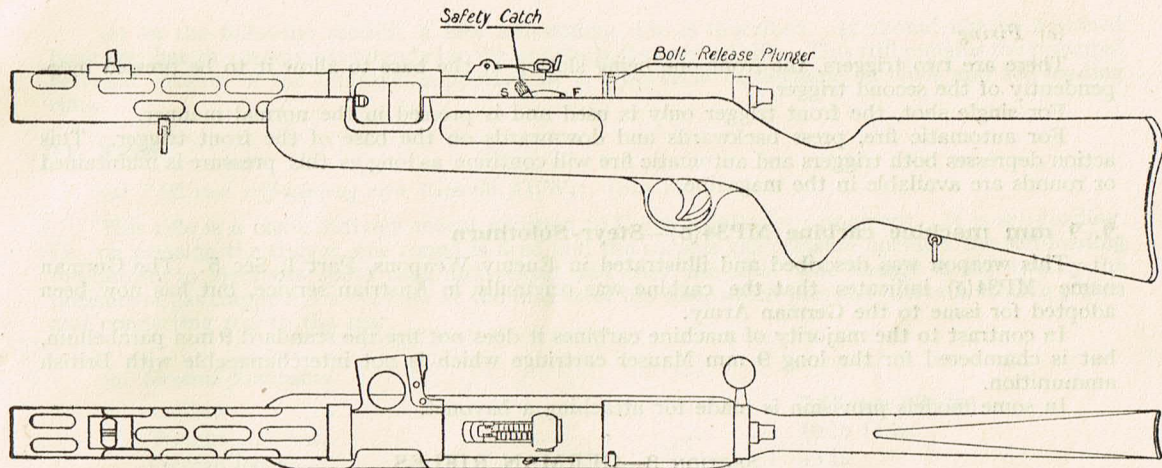


FIG 10—9 mm MACHINE CARBINE MP 34¹ (BERGMANN)

To remove cocking piece from breech block, press cocking piece forward and rotate clockwise through 90°. Withdraw cocking piece, return spring and firing pin from breech block.

To assemble proceed in reverse order. When assembled, the arrow on the cocking piece must coincide with the arrow on the breech block.

(e) Firing

There are two triggers, the front one being slotted at the base to allow it to be pressed independently of the second trigger.

For single shot, the front trigger only is used and is pressed in the normal manner.

For automatic fire, press backwards and downwards on the base of the front trigger. This action depresses both triggers and automatic fire will continue as long as this pressure is maintained or rounds are available in the magazine.

9. 9 mm machine carbine MP34(ö)—Steyr-Solothurn

This weapon was described and illustrated in Enemy Weapons, Part I, Sec 5. The German name MP34(ö) indicates that the carbine was originally in Austrian service, but has now been adopted for issue to the German Army.

In contrast to the majority of machine carbines it does not fire the standard 9 mm parabellum, but is chambered for the long 9 mm Mauser cartridge which is not interchangeable with British ammunition.

In some models provision is made for attaching a bayonet.

SECTION 3—GERMAN RIFLES**10. General**

(a) Rifles and carbines were described in Enemy Weapons Part I, Sec 11. It should be noted that short barrelled rifles, of various marks, though differing only very slightly in design, are now the most frequently encountered in regular units. The later models are usually fitted with tunnel foresight protectors and moulded plastic muzzle caps in place of the original combined protector and muzzle cap of metal.

(b) In the following section, a new self-loading rifle is described. It should not be assumed however that this weapon is intended to replace the bolt-operated rifle. This still remains the principal personal weapon of the infantry, supported by a proportion of machine carbines and self-loading rifles.

11. Rifles

(a) 7.92 mm self-loading rifle (Gewehr 41(W)) (Fig 11)

This rifle is a comparatively recent addition to German infantry armament. It is self-loading, *i.e.*, on pressing the trigger, one round is fired and the surplus gas pressure operates the self-loading mechanism to eject the spent case, and reload and cock the rifle. The energy is supplied by the pressure of gas trapped in a cylinder at the muzzle of the rifle, which pressure drives a floating piston and connecting rod to the rear.

(b) General particulars

Calibre	7.92 mm (.31 in)
Weight	10 lb 14 oz
Overall length	45 in
Feed	rectangular box magazine incorporated in trigger guard.
Magazine capacity	10 rounds
Sights	leaf backsight graduated from 100-1,200 metres
Ammunition	standard 7.92 mm SAA

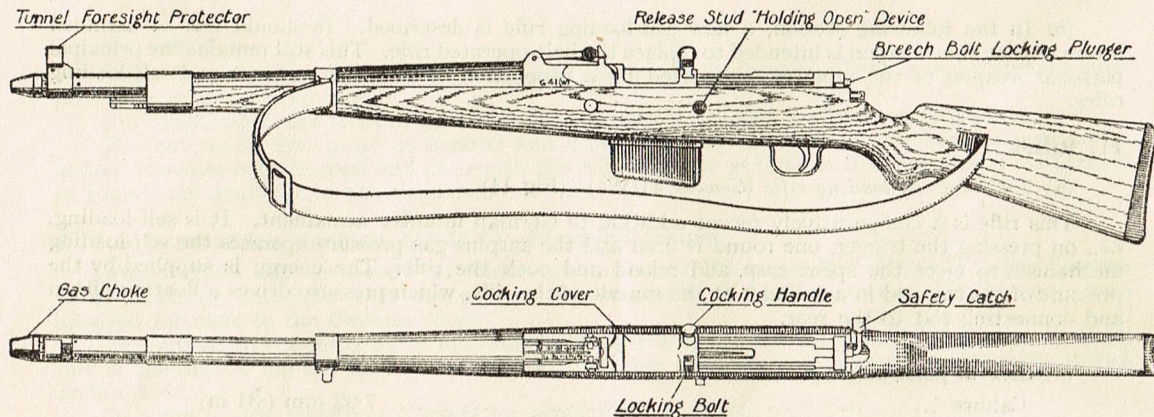


FIG 11—7.92 mm SELF-LOADING RIFLE (GEWEHR 41 (W))

(c) *Safety*

Safety catch at rear end of body, rotated to the right for "safe" and to the left for "fire."

(d) *Locking bolt*

When the breech bolt is withdrawn to the rear, a locking bolt can be applied. This operates through the cocking cover and holds the main spring compressed and facilitates removal and assembly of breech bolt to body.

(e) Preparation for firing

Withdraw breech bolt to rear of body. Place a charger vertically in guides. Force cartridges down until top cartridge is clear of charger and held in magazine. Repeat with second charger to fill magazine. Allow breech bolt to go forward and feed top cartridge into chamber by depressing plunger on left of body.

(f) Strip for cleaning

Withdraw breech bolt to rear of body and apply locking bolt by pressing over to right. Rotate safety catch to the right—"safe."

Push in the locking plunger at rear end of breech bolt, raise rear end of breech bolt, and withdraw from body. Rotate safety catch to left, press trigger to release tension on hammer. Cleaning rod or pull-through can now be used.

(g) Normal cleaning after firing

Withdraw breech bolt to rear of body and apply locking bolt. Pull-through can now be used.

(h) To assemble breech bolt to rifle

Rotate safety catch to left, "Fire". Depress hammer until it engages with sear bent. Rotate safety catch to right, "Safe". Insert breech bolt in body, keeping the front end down, and move slightly forward.

Depress plunger at rear end to allow rear end of breech bolt cover to take up its position in body. Release pressure on locking plunger and rotate safety catch to the left.

NOTE.—Particular care should be taken to ensure that the breech bolt is oiled, only the bolt face being left dry.

SECTION 4—GERMAN MACHINE GUNS

12. Introductory note

Three new German MGs have been brought into use since 1941. One of these, the MG 42, described below in Sec 13, has already been introduced into several German units, where it has replaced the MG 34. It is not expected, however, that a complete change over will take place in the near future, so that the MG 34 is likely to be met in the field for some time to come. The other two MGs, briefly described in Secs 14 and 15, are regarded as experimental models, but are included here as they are known to have been in service to some extent.

13. 7.92 mm dual purpose MG—MG 42 (Figs 12-13)

(a) This is the new standard dual purpose MG in the German Army, and is in process of replacing the MG 34.

The gun has a high cyclic rate of fire (about 1,200 rpm) obtained by the improved design of breech and feed mechanism, and is provided with a rapid and efficient barrel changing device. The extensive use of pressings in place of machined parts in the construction is a notable feature from the production point of view. German documents give the cyclic rate of fire as 1,500 rpm.

On the other hand, accuracy is not as high as with the MG 34, and there is no provision for single shot fire.

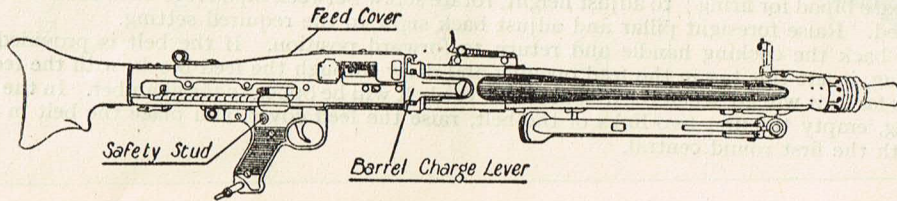
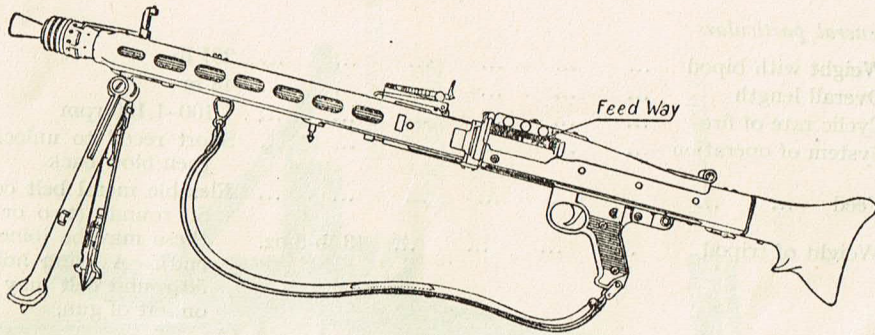


FIG 12—7.92 mm DUAL PURPOSE MG—MG 42

(b) General particulars

Weight with bipod	...	...	...	...	...	...	23 $\frac{1}{2}$ lb
Overall length	...	...	...	...	...	...	48 in
Cyclic rate of fire	...	...	...	...	...	...	1,100-1,150 rpm
System of operation	...	...	...	...	...	...	Short recoil to unlock action, then blow back.
Feed	...	...	...	...	...	...	Flexible metal belt containing 50 rounds (two or more of these may be joined end to end). A drum holding one 50 round belt may be fitted on left of gun.
Weight of tripod	...	...	...	...	...	43 lb 5 oz.	

(c) Safety

A press stud is provided on the pistol grip. With the letter " S " exposed, the action is safe. With the letter " F " exposed, the action is ready for firing.

(d) Preparation for firing as LMG

Prepare bipod for firing ; to adjust height, rotate screw between bipod legs until the desired height is obtained. Raise foresight pillar and adjust back sight to the required setting.

Pull back the cocking handle and return to forward position. If the belt is provided with a loading tag, insert this tag in the feed opening and draw through the feed block, with the feed cover closed, as far as it will go, when the first round in the belt will be opposite the chamber. In the absence of the tag, empty the first two links of the belt, raise the feed cover, and place the belt in the feed block with the first round central.

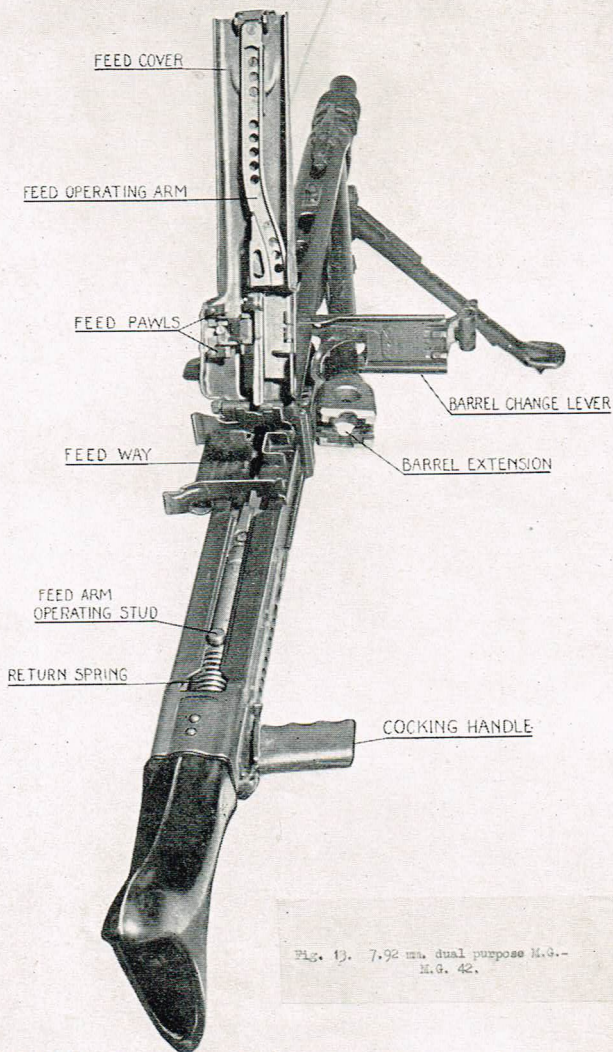


Fig. 13. 7.92 mm. dual purpose M.G.-
M.G. 42.

GUN COCKED - FEED COVER OPEN - BARREL PARTLY WITHDRAWN.

(e) Removal of belt

Cock the action, set safety catch to "safe". Raise the feed cover and lift out the belt. Set safety catch to "fire". Press trigger and allow the recoiling portion to move forward under control. Close the body cover.

(f) Partial stripping

After a period of continuous fire when the barrel has become hot, it should be changed as follows:—

(i) Cock the action and set to safe.

(ii) Press forward barrel change lever catch, and swing out lever to the right. Remove barrel, using asbestos gloves, tongs, or by tilting the muzzle.

(iii) Place new barrel in body, ensuring flanges on muzzle have entered the piston correctly. Close barrel change lever, and ensure that the catch has engaged.

(g) Stripping

(i) *Barrel*.—Cock the action, push in barrel change lever catch, move barrel change lever outwards, and remove barrel.

(ii) *Butt*.—To remove butt, depress stud on underside, rotate butt and pull to the rear.

(iii) *Buffer housing*.—Depress catch on underneath. Rotate quarter turn to right, and pull back.

To return: Replace buffer into body with cut-away portions on forward lug of buffer housing downwards, rotate quarter turn to left, and ensure catch has engaged.

- (iv) *Bolt*.—Withdraw bolt to rear, and remove from body. To strip bolt, hold bolt head, rotate bolt tail quarter turn and separate, remove "push piece" from tail. Remove ejector, locking wedge and firing pin from bolt head, remove extractor.
- (v) *Feed cover and feed block*.—Lift cover and feed block to a vertical position, rotate hinge pin until its cut-away portion is clear of the flange on the body, then withdraw hinge pin to the left.
Remove feed cover and feed block.
- (vi) *Feed mechanism*.—Press in spring catch at front end, lift out feed arm. Press bullet guide cover to the rear and allow to spring up on its hinge.
Lift out connecting link and feed pawls.
- (vii) *Pistol grip*.—Remove split pin and bush at rear end of pistol grip. Move grip to the rear, and lift away from body.
- (viii) *Ejection opening cover*.—After removal of pistol grip, the ejection opening cover can be removed by sliding rear end of hinge pin towards centre of body, and removing.
To replace: reverse above operation. Care must be taken to ensure that the spiral spring is in correctly, so as to retain the cover in the open position.
- (ix) *Cocking handle*.—Pull cocking handle to the rear, depress lever on skirt of handle, and remove assembly from gun.
- (x) *Bipod*.—To remove from body: force bipod assembly to the rear until the spring plunger in the rear of the hinge assembly is depressed, and pull away from body.
To assemble: replace plunger in body, force down, and replace forward end of hinge in body.

xi) *Muzzle attachment.*—Raise catch and unscrew muzzle attachment. Remove cylinder from outer casing of muzzle attachment.

To assemble : reverse the above procedure.

To remove piston : raise muzzle attachment catch, move piston to rear, rotate until clear of any obstructions, withdraw to rear and remove.

To assemble : reverse the above operations. Care must be taken to ensure that the piston is in correctly so that the cut-away portion of the piston skirt is to the right, and that the piston can be moved completely forward. If this is in incorrectly, the forward travel of the piston is limited.

(xii) *Trigger mechanism.*—Unscrew bolts (two) through side grips, and remove grips.

Remove lower of the two larger axis pins.

Remove top large axis pin.

Remove remaining two small axis pins.

Remove main spring.

Remove sear by rotating half turn to left and withdrawing.

Remove trigger and tripping lever.

Remove change lever by pushing to left, rotating until lug is in line with cut-away slot in left side of grip and removing change lever from pistol grip.

To assemble :

Replace change lever.

Replace tail of sear in tripping lever—replace as one assembly. Trigger—tripping lever—sear. Replace trigger axis pin (small diameter pin).

Replace main spring axis pin (large pin).

Replace sear axis pin (large pin).

Replace sear lifting pin (small pin).

Replace grips.

Replace grip bolts and nuts.

(xiii) *Assembly*.—Unless otherwise stated, proceed in reverse order.

(h) *Immediate action on stoppage*

Remove belt as described. Investigate and remedy stoppage.

NOTE.—When investigating a feed stoppage by raising the feed cover, the gun should be re-cocked or the cocking handle should be held.

(i) *Cleaning and oiling, etc.*

The mechanism should be kept scrupulously clean and well oiled.

The ejection opening cover, which is opened automatically, should be kept closed whenever possible. Precautions should be taken to keep the belts and ammunition clean at all times.

(j) *Use as a MMG*

For use as a MMG the gun is mounted on a tripod mounting (Lafette 42). This mounting has a bracket for a dial sight. The trigger of the gun is actuated by means of a trigger lever beside the handle on the right side of the elevating gear.

An automatic searching fire device, operated by the recoil of the gun in the cradle is incorporated. This device elevates the gun step by step and depresses it similarly through a predetermined angle while the gun is firing.

The tripod is very similar to that issued for the MG 34. Points of difference are :—

The cradle is not hinged to allow the barrel to be changed (this is of course not necessary for the MG 42).

To disengage the elevating handwheel from the teeth of the stop, the handwheel is pulled out a short distance, instead of a catch being pressed in as with the MG 34 tripod.

Method of attachment of the gun to the tripod is slightly different to suit the different fittings on the gun. The MG 42 cannot be fired from the MG 34 tripod.

14. 7.92 mm MG 34 S

Of the three new guns, this one resembles the MG 34 most closely. Rate of fire is the same, and minor differences in construction do not affect the users' instructions as issued for the MG 34.

15. 7.92 mm MG 34/41

This gun shows an improvement on both MG 34 and 34 S. A higher rate of fire is obtained by an improved breech mechanism which, however, is still basically the same as that of the MG 34. The gun is well constructed and steady to fire from the bipod, but it is thought possible that production considerations have prevented its adoption.

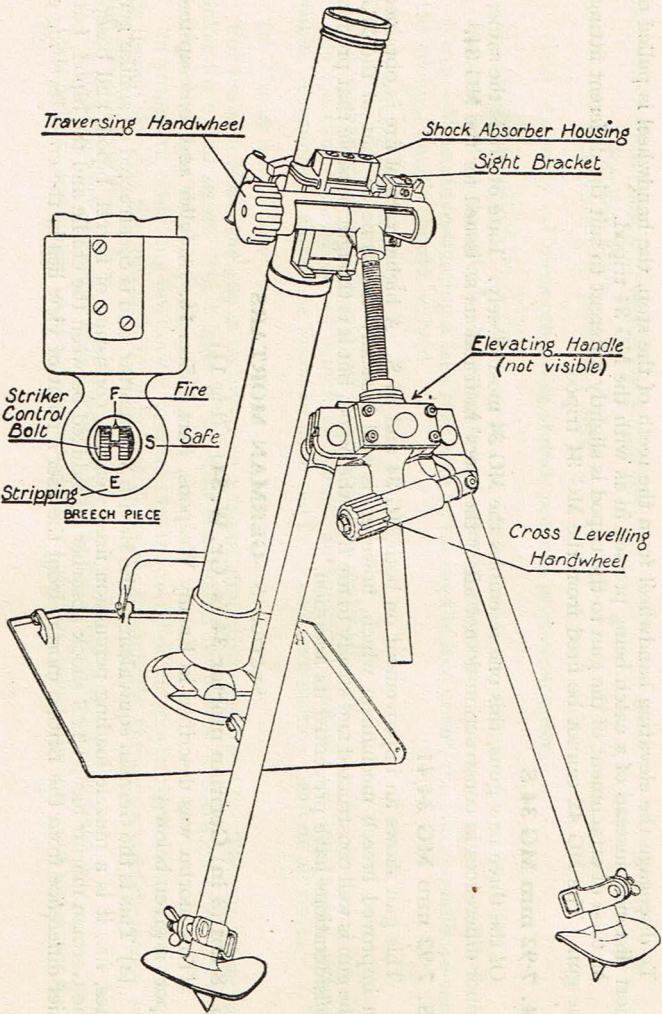
SECTION 5—GERMAN MORTARS

16. 8 cm (3 in) German mortar 34 (s. Gr. W. 34) (Fig 14)

(This mortar was described in Enemy Weapons, Part I, Sec. 16. A fuller and more up-to-date report is given below.)

(a) This is the German equivalent of the British 3-in mortar, and is constructed on similar general lines, *i.e.*, it is a muzzle loading percussion fired weapon, consisting of barrel, bipod, and baseplate. The German mortar has a small shock absorber introduced between the cradle and the bipod, but the chief difference from the British mortar from the user's point of view lies in the cross levelling gear.

FIG 14—8 cm MORTAR 34



In the German gear, rotation of the cross levelling handwheel causes pivotal movement of the elevating screw tube towards or away from the left leg of the bipod and thus alters the transverse level of the traversing gear. A control bolt provided in the breech piece enables the striker to be retracted before unloading should there be a misfire.

(b) *General particulars*

Calibre ... ..	...	...	...	...	...	...	...	81.4 mm (3.2 in)
Total weight ... ..	...	...	...	...	...	...	...	125 lb
Elevation ... ..	...	...	...	...	...	...	...	40-90 degrees
Traverse ... ..	...	...	...	...	...	...	...	5½ degrees
Maximum range ... ..	...	...	...	...	...	...	...	2625 yards
No. of charges ... ..	...	...	...	...	...	...	...	5
Weight of bomb ... ..	...	...	...	...	...	...	...	7¾ lb.
Rate of fire ... ..	...	...	...	...	...	...	...	6 rounds in 8-9 secs

(c) *To set up mortar*

Position base plate. Insert ball on breech cap of barrel in socket of base plate, keeping flat part of ball to the side. Rotate barrel 90 degrees so that sight line painted along barrel is towards firer. Position bipod with elevating handle towards barrel. Open barrel clamping band. Turn elevating handle until about one-third of elevating screw is exposed. Secure clamping band round barrel between clamp position marks. Place sight on barrel and clamp up.

(d) *To load and fire*

Same procedure as for British 3 in mortar.

(e) Dial sight (RA 35)

The German dial sight differs from the British sight in that both deflection and elevation are graduated in mils instead of degrees and yards. In correcting for line during shooting, if required correction is to the *left* (last round having fallen to the right of the target), the extra deflection must be *added* to the angle on the deflection scales, and if to the right, the extra deflection must be subtracted.

(f) German procedure in event of misfire

Wait one minute, and then proceed as follows:—

Make safe by pressing in control bolt and turning it 90 degrees to the right until arrow on head of bolt points to the letter "S" (safe), painted on the breech piece. This action effects withdrawal of the striker.

Loosen the barrel clamping band, rotate the barrel 90 degrees and clamp up again.

Raise the breech end of the barrel until the bomb slides out into the hands of a member of the detachment.

(g) To change striker

Lay barrel horizontal. Remove spring ring securing striker in ball of breech cap. With a screwdriver, or the tool provided in the German kit, unscrew striker retaining cap. Press in and rotate control bolt so that arrow points to letter "E". Remove control bolt and spring. Remove striker, using any convenient tool. For insertion of a new striker proceed in reverse order.

(h) Ammunition (Fig 15)

Five types of bomb have been identified. These are all nose fuzed streamlined bombs of similar design weighing approximately $7\frac{3}{4}$ lb. The primary cartridge is fitted centrally in the tail tube and is used alone as Charge I or with one or more secondaries to make up charges 2, 3, 4 or 5.

Details are as follows :—

Type	German name	Markings	Remarks
HE	8 cm Wurfgranate 34	Painted chocolate brown with lettering in black paint.	The standard HE bomb.
HE	8 cm Wurfgranate 38	Painted green. "38" stencilled on body.	Fitted with a rebound charge in the head and bursts 3-20 ft in the air.
HE	8 cm Wurfgranate 39	Painted field grey.	As Wgr 38 but with strengthened head.
Smoke	8 cm Wurfgranate 34 Nb.	Painted dull red. "Nb" stencilled in white on body.	The standard smoke bomb.
Indicator	8 cm Wgr 38 Deut	"Deut" stencilled on body	Used for indicating targets by coloured smoke.

Interchangeability of ammunition

See table at Appendix A.

34

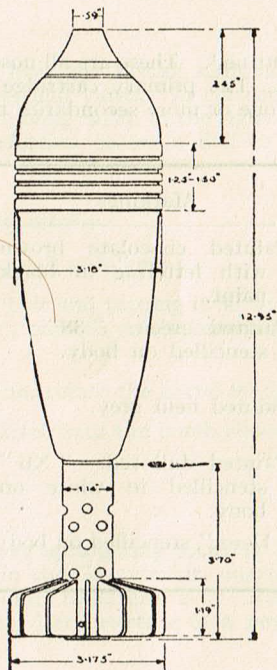


FIG 15—

8 cm MORTAR BOMB 34

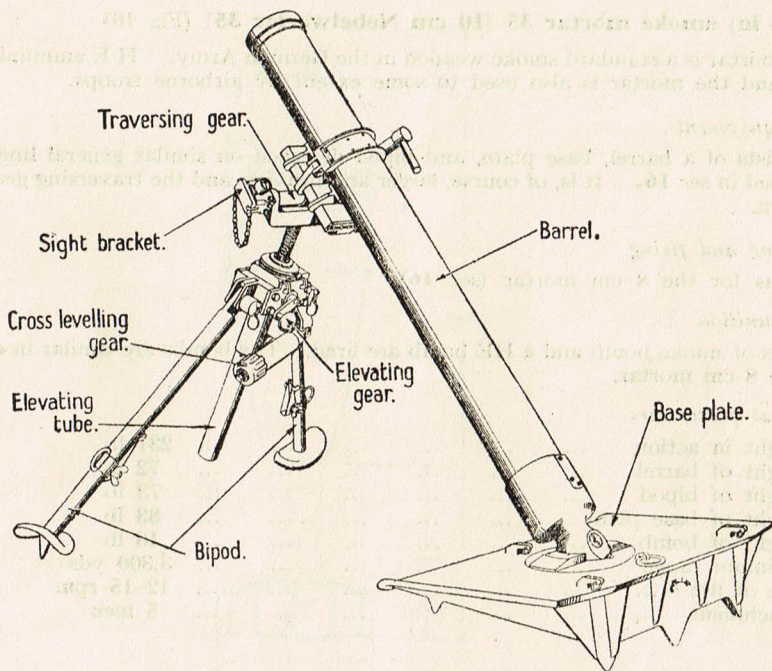


FIG 16—10 cm (4 in) SMOKE MORTAR 35

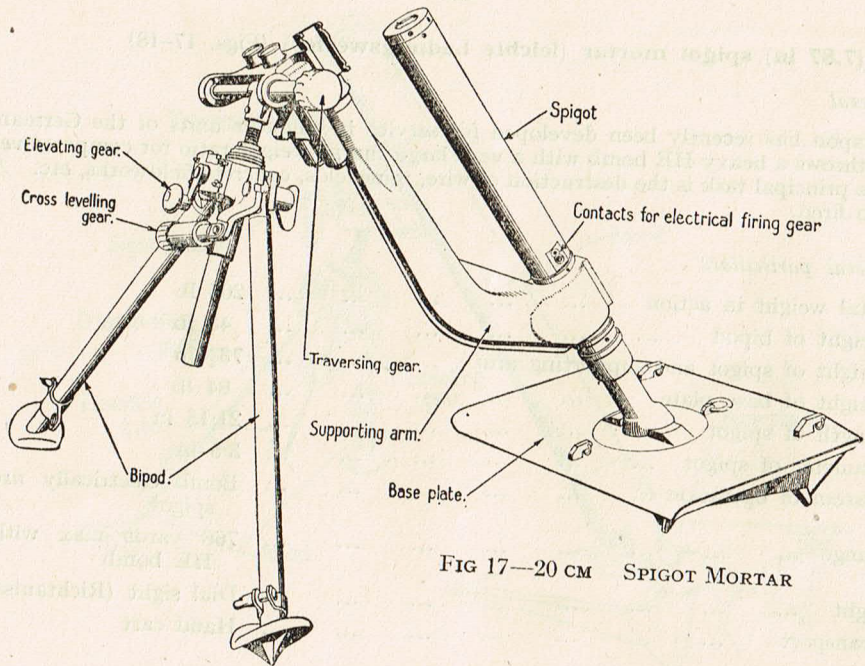


FIG 17—20 CM SPIGOT MORTAR

(c) *The equipment*

This consists of a base plate, bipod mounting and spigot with supporting arm.

- (i) *The base plate* is of the familiar German mortar design, the bottom being formed with strengthening webs and spikes.
- (ii) *The bipod mounting* is similar in construction to those of the 8 cm and 10 cm German mortars, the recoil arrangements however being of a more substantial nature.
- (iii) *The spigot* consists of a drawn steel tube reduced at its lower end and screw threaded externally to receive the supporting arm and base piece. It is bored transversely at its lower end to receive contact pieces and insulation for the electrical firing gear.

A T-shaped contact tube extends from these up the inside of the spigot, and is maintained central by an insulating spacing washer at the front end.

The front end of the spigot is closed by a screw plug, which is bored centrally to house a contact plug and insulating bushes, and also houses the firing needle and spring. The front face is prepared with an undercut groove to form a bayonet joint when the cartridge is placed in position.

- (iv) *The base piece* screws on to the spigot and is formed with a ball at the rear end to engage in the socket of the base plate.
- (v) *The supporting arm* is tubular and elbow shaped. The rear end is formed with a boss which is bored to receive the spigot, the front end is solid and is screw-threaded to receive a collar for positioning in the cradle.

(d) *Ammunition*(i) *20 cm HE bomb 40 (20 cm Wurfgranate 40) (Fig 18)*

This is a nose fuze bomb fitted with a tubular tail having eight stabilizing fins. The large proportion of explosive to the total weight of bomb will produce considerable blast effect.

Details are as follows :—

Maximum diameter of bomb	...	...	...	7.79 in
Length of bomb (without fuze or tail)	...	...	...	10.63 in
Overall length of bomb	...	...	...	31.26 in
Weight of bomb filled	...	...	...	46 $\frac{3}{4}$ lb
Weight of filling	...	...	...	15 lb

(ii) *20 cm smoke bomb 40 (20 cm Wurfgranate 40)*

No detailed information on this bomb is available at present, though it is probably of similar dimensions to the HE bomb but containing a smoke composition filling with an HE burster. The letters "Nb" will probably be found stencilled on the bomb casing.

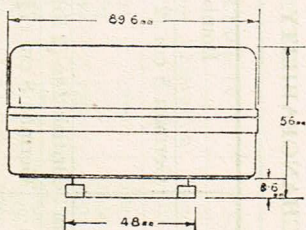
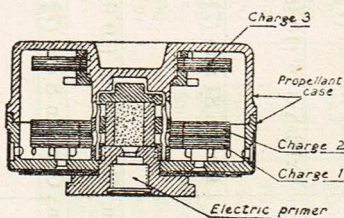
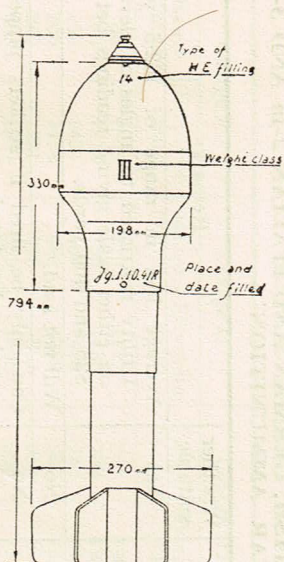
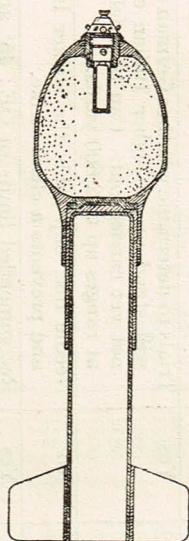
(iii) *Propellant charges*

There are three charges weighing respectively 540, 370, and 185 grains.

These are contained in a steel propellant case fitted with an electric primer, which is attached to the face of the spigot before the bomb is loaded.

On firing, the case separates, the upper part leaving the spigot with the bomb.

FIG 18—20 cm SPIGOT MORTAR BOMB 40



PROPELLANT CASE

**INTERCHANGEABILITY OF BRITISH, GERMAN AND ITALIAN 2-in AND 3-in
MORTAR AMMUNITION**

Mortar	Bomb	Whether suitable	Remarks
British 2 in	German 5 cm (2 lb)	Yes	Average loss in range of 162.5 yards. Utility restricted to angles of elevation on either scale giving readings between 525 and 400 yards.
German 5 cm	British 2 in (2 lb)	No	Will not load.
British 3 in	German 8 cm ($7\frac{3}{4}$ lb)	No	Can only be fired if strikers pipped or striker clips fitted.
British 3 in	Italian 81 mm ($7\frac{1}{4}$ lb & 15 lb)	Yes	Lower MV and shorter maximum range than with Italian mortar.
German 8 cm	British 3 in (10 lb)	No	Can only be fired if adaptor is fitted to German mortar lengthening the striker stud.
German 8 cm	Italian 81 mm ($7\frac{1}{4}$ lb & 15 lb)	Yes	Trials to determine whether German mortar will stand up to higher Italian charges not yet carried out. Can be safely fired at ranges up to 2,600 yards.
Italian 81 mm.	British 3 in (10 lb)	No	Needle disc clip fouls the striker housing and prevents a clean strike.
Italian 81 mm	German 8 cm ($7\frac{3}{4}$ lb)	Yes	Recommended limits of QE: 45° and 80°. Ranges realized: 45°, 2,300 yards; 80°, 900 yards.

RANGE TABLE FOR 8 cm MORTAR

Charge I		Charge II		Charge III		Charge IV		Charge V	
Range (yards)	Elevation (mils)	Range (yards)	Elevation (mils)	Range (yards)	Elevation (mils)	Range (yards)	Elevation (mils)	Range (yards)	Elevation (mils)
66	1545	328	1447	656	1388	1203	1289	1640	1255
100	1515	350	1435	700	1373	1250	1275	1650	1253
150	1471	400	1410	750	1354	1300	1260	1700	1240
200	1428	450	1386	800	1337	1350	1244	1750	1227
250	1381	500	1361	850	1318	1400	1228	1800	1214
300	1334	550	1335	900	1300	1450	1211	1850	1200
350	1282	600	1308	950	1280	1500	1195	1900	1187
400	1229	650	1278	1000	1261	1550	1177	1950	1172
450	1170	700	1250	1050	1241	1600	1158	2000	1157
500	1098	750	1220	1100	1219	1650	1138	2050	1142
550	1010	800	1188	1150	1196	1700	1118	2100	1125
591	891	850	1154	1200	1175	1750	1097	2150	1105
		900	1116	1250	1149	1800	1074	2200	1096
		950	1074	1300	1124	1850	1050	2250	1075
		1000	1023	1350	1096	1900	1023	2300	1055
		1050	956	1400	1066	1950	993	2350	1034
		1094	874	1450	1033	2000	956	2400	1011
				1500	994	2050	910	2450	985
				1550	949	2078	869	2500	957
				1597	881			2550	920
								2600	861
								2625	800

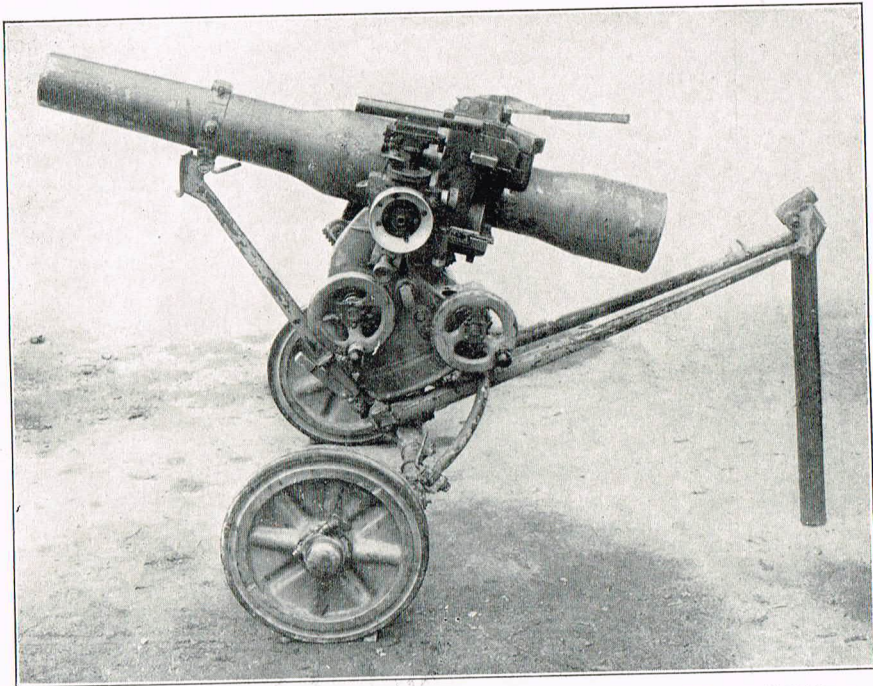


FIG 19—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG40)

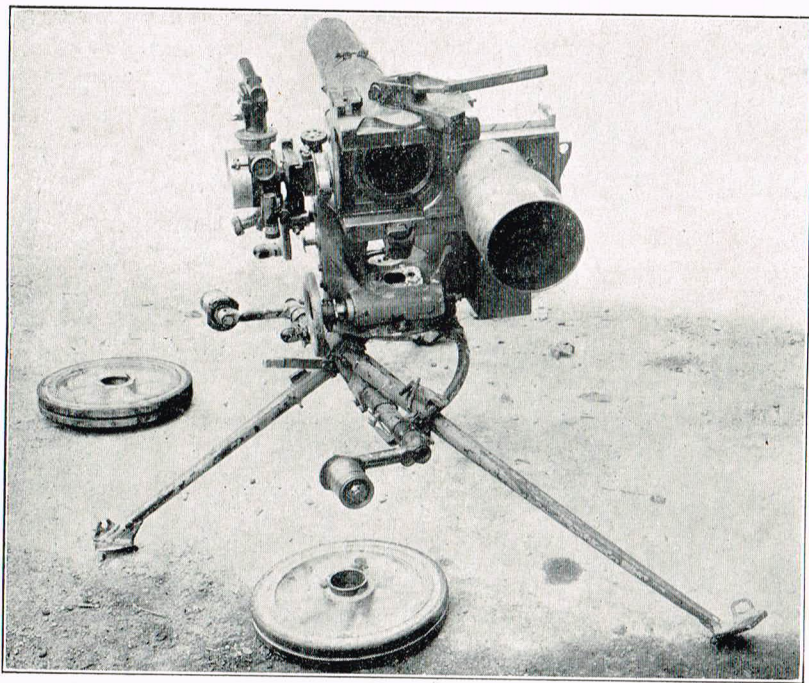


FIG 20—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG40)

Rifling (polygroove plain section, uniform twist 1 in 52) :						
Number of grooves	...	...	...	...	...	28
Width of grooves	...	...	...	...	...	0.2 in
Depth of grooves	...	...	...	...	...	0.03 in
Length of chamber	...	...	...	...	...	8.11 in
Cubic capacity of chamber	...	...	...	...	...	122 cu in
Chamber pressure	...	...	...	...	...	14 tons
Elevation : With traverse of 30° right and left						= -15° to +42°
With traverse of 360° right and left						= -15° to +20°
Traverse : With elevation of -15° to +42°						= 30° right and left
With elevation of -15° to +20°						= 360° right and left

(c) *Ammunition*

Three types are fired :—

(i) HE shell (7.5 cm Gr 34) :	weight	...	...	...	...	12 lb 9 oz
	max range (estimated)	...	...	...	...	8,900 yards
	MV (estimated)	...	...	...	...	1,238 fs
(ii) APCBC shell (7.5 cm Pz Gr rot.) :	weight	...	...	...	...	15 lb
(iii) Hollow charge shell (7.5 cm Gr 38 HI/B) :	This shell can not only be used against AFVs but also against soft skinned targets owing to its considerable fragmentation effect.					
	Weight, filled and fuze	...	...	...	...	10 lb 2 oz
	Fuze	...	...	...	...	Nose percussion fuze, without delay, AZ38
	Weight of propellant	...	...	...	...	2 lb 10 oz
	Armour penetration performance	...	...	...	...	50 mm at 30° attack

A distinctive feature of all three types of ammunition is the base of the cartridge case. This consists of a plastic disc (pierced to receive the primer) which is blown out when the gun is fired, allowing part of the propellant gas to escape to the rear.

(d) *Ballistic characteristics*

The particulars given below apply to the hollow charge round (Gr 38 H1/B) :—

Muzzle velocity	...	...	...	...	...	...	...	1,197 fs
Maximum range	...	...	...	...	...	...	...	7,437 yards

Range		TE		Drift	Time of flight	50% zone		
						Length	Breadth	Height
metres	yards	mils	degrees	degrees	seconds	yards	yards	yards
500	547	20	1° 8'	3'	1.4	25	0	1
1000	1094	42	2° 22'	3'	3.0	25	1	1
2000	2187	95	5° 21'	10'	6.6	27	2	3
3000	3281	161	9° 4'	17'	10.5	31	3	7
4000	4374	243	13° 41'	27'	15.1	36	5	12
5000	5468	343	19° 19'	40'	20.5	45	8	22
6000	6562	475	26° 45'	1° 1'	26.9	60	10	48
6800	7437	710	39° 58'	1° 35'	39.0	86	14	125

21. The gun

The gun consists of a barrel and breech ring which can be very rapidly separated or assembled.

(a) *The barrel* (Fig 21) is prepared externally at the breech end with interrupted threads to suit similar threads within the breech ring. A clamping band is attached about halfway along the barrel; it is fitted with a catch on the underside to retain the front leg of the platform when travelling.

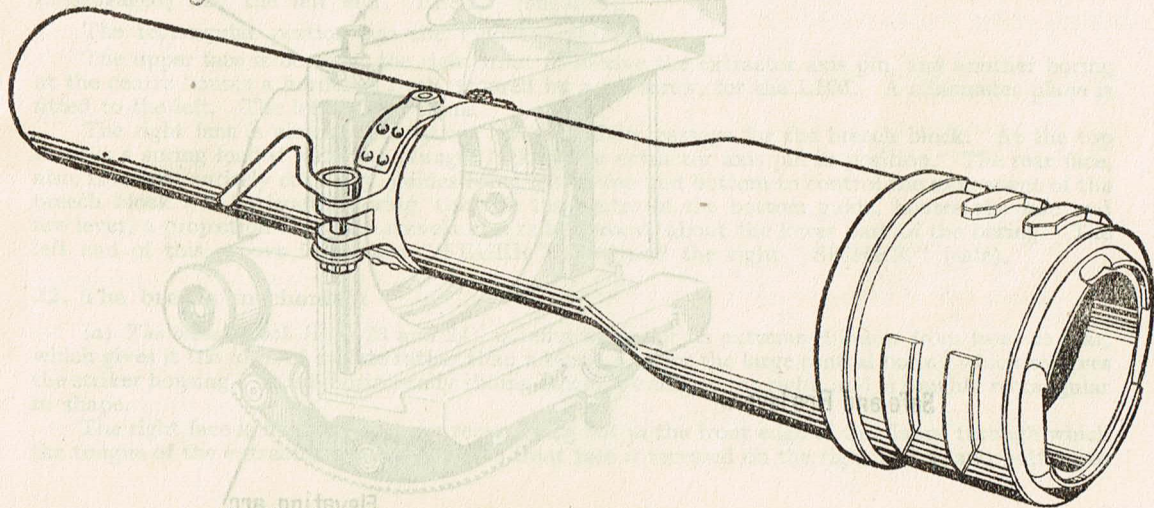


FIG 21—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG 40)

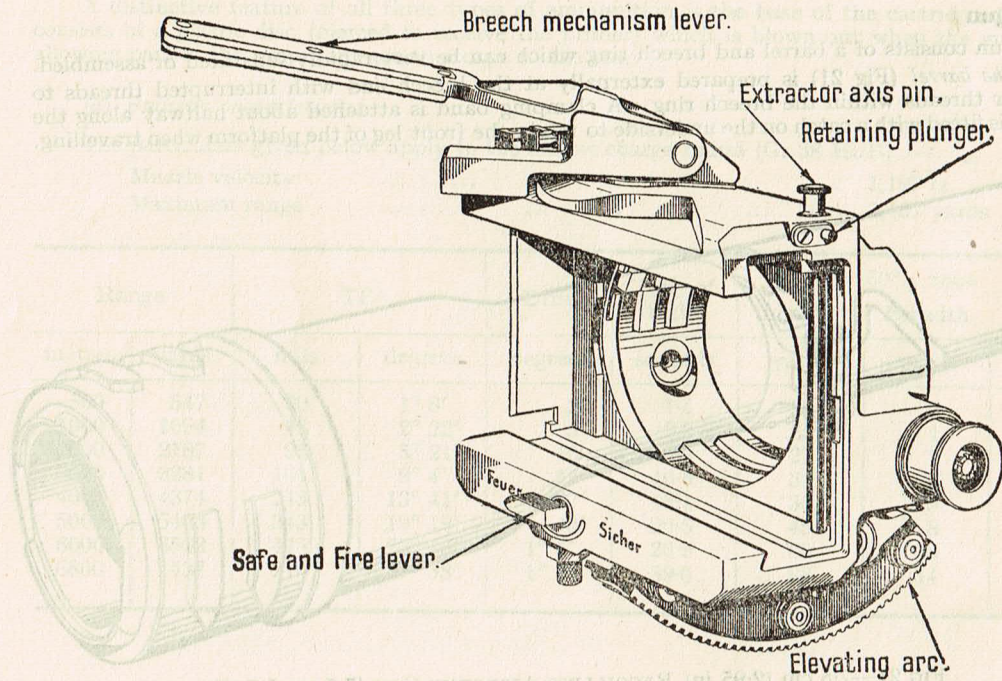


FIG 22—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG 40)

(b) *The breech ring* (Fig 22) is of unusual design. In front it is cylindrical in shape to conform with the barrel; while the rear portion forms a roughly rectangular frame within which the breech block slides horizontally.

The cylindrical portion is prepared internally with interrupted threads to engage those on the barrel. A portion of the upper edge is cut away to form stops which limit the movement of the barrel when it is inserted or removed. The right end of the cut-away portion is marked "LOSE" (Disengaged) and the left end "FEST" (engaged).

The rectangular portion has the following features:—

The upper face is bored at the right front to receive the extractor axis pin, and another boring at the centre houses a hardened bush, secured by a set screw, for the LBM. A clinometer plane is fitted to the left. The left face is blank.

The right face is almost entirely cut away to allow passage for the breech block. At the top front is a spring loaded retaining plunger locking the extractor axis pin in position. The rear face, also, is almost entirely cut away, guides being left at top and bottom to control the movement of the breech block. A horizontal boring, through the centre of the bottom guide, houses the safe and fire lever, a projection on which travels in a radial groove about the lower part of the boring. The left end of this groove is marked "FEUER" (fire) and the right "SICHER" (safe).

22. The breech mechanism

(a) *The breech block* (Figs 23 and 24) is remarkable for its extreme thinness from front to rear, which gives it the form of a plate rather than a block, and for the large central boring which receives the striker housing. It is a horizontally sliding block, opening to the right, and is roughly rectangular in shape.

The right face is flanged, a square recess being cut in the front edge of the flange through which the tongue of the extractor protrudes. The front face is recessed on the right at top and bottom to

receive the heels of the extractor for dismantling and assembling purposes. The rear face is recessed for lightness. The upper face is bored as far as the central boring to house the cocking lever. The lower face is bored on the right to house the firing lever locking plunger and spring, and centrally to house the sear, which thus has access to the central boring. A radial recess is engaged by the safe and fire lever when set to "SICHER" (safe).

(b) *The striker housing* (Figs 23 and 24) consists of a cylindrical body passing through the central boring of the breech block, and a front plate which lies on the face of the block.

(c) *The jet* (Figs 23 and 24) is roughly cylindrical and is threaded internally at the front to receive the cylindrical portion of the striker housing. Two recesses near the front form grips for an assembly wrench. It is secured to the striker housing by a locking ring.

(d) *The LBM* (Figs 22 and 24) consists of two parts, the lever and actuating block carrier. These are joined towards the front by an axis pin.

(e) *The extractor* (Figs 21 and 24) consists of an upper and lower arm and a cross piece.

(f) *The extractor axis pin* (Figs 22 and 24) is a rod with a knurled head. It passes through the right front of the top face of the breech ring, through the cross piece of the extractor, and into a notch in the interior of the bottom face of the breech ring.

(g) *The safe and fire lever* (Figs 22 and 24) is housed in a boring in the rear face of the breech ring.

(h) *The actuating block* (Figs 23 and 24) is pivoted on a bracket secured to the top left of the rear face of the breech block and moves in a channel in the LBM when the breech is opened and closed.

(i) *The firing lever* (Figs 23 and 24) is L-shaped, the shorter arm forming the handle and the longer arm the shaft. The handle is bored at the outside end to receive a lanyard, and a projection near its junction with the shaft moves in a radial groove in the right face of the breech block.

(j) *The firing lever locking plunger* (Figs 23 and 24) is housed in a boring at the left of the lower face of the breech block.

(k) *The sear* (Figs 23 and 24) is a roughly rectangular block with a cylindrical rod at the top. A radial recess in the bottom is engaged by the safe and fire lever when set to "Sicher" (Safe).

(l) *The cocking lever* (Figs 23 and 24) is housed in a central recess in the top face of the breech block. It consists of a bracket and lever, the L-shaped lever being pivoted in the bracket by means of an axial screw.

(m) *The striker* (Figs 23 and 24) is cylindrical in shape. An elongated projection along the upper surface is engaged by the cocking lever.

(n) *The striker main spring* (Figs 23 and 24) bears at the rear against the striker main spring seat and at the front against the base of the striker.

(o) *The striker main spring seat* (Figs 23 and 24) is conical in shape. The front end is threaded to suit the rear of the diffuser.

23. Action of the breech mechanism

(a) *To open the breech.*—Set the safe and fire lever to "Feuer" (Fire). Depress the LBM, thus freeing it from the groove in the bush and at the same time operating the cocking lever. The longer arm of the latter, by engagement with the elongated projection on the upper surface of the striker, draws it to the rear. The sear, under the influence of the firing lever, is then able to ride over the shoulder of the striker and hold it in the rear position. This action moves the firing lever to the rear position. Rotate the LBM in an anti-clockwise direction. The actuating block, which is fixed to the breech block, is thus forced to travel along the channel of the LBM, so moving the breech block to the right into the open position. As the breech block reaches the fully open position the hardened steel pieces on the front face strike the heels of the extractor. The arms of the extractor are thus rotated to the rear, ejecting the cartridge case.

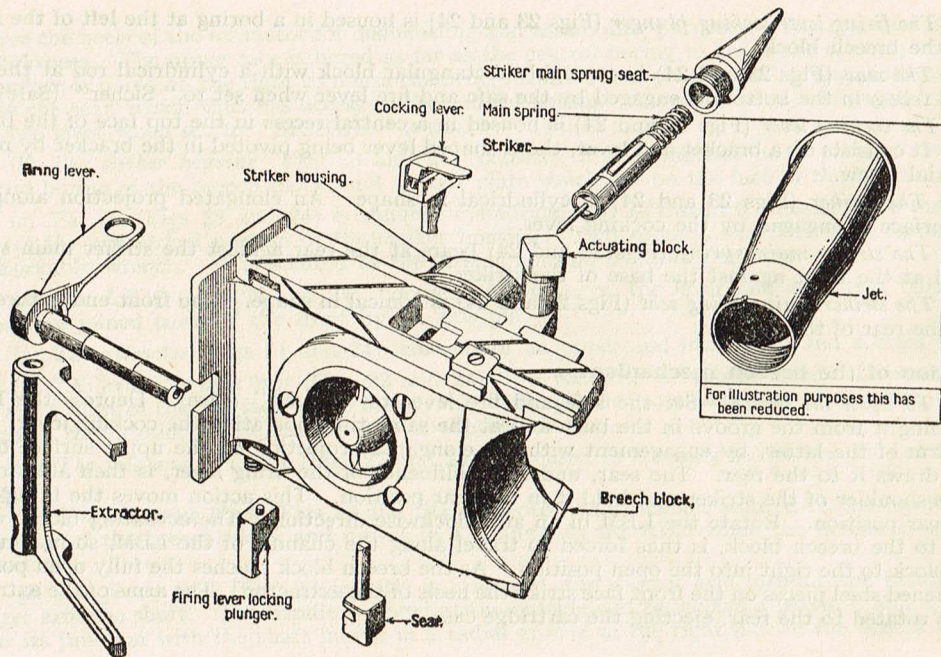


FIG 23—7.5 cm (2.95 in.) RECOILLESS AIRBORNE GUN (7.5 cm LG 40)

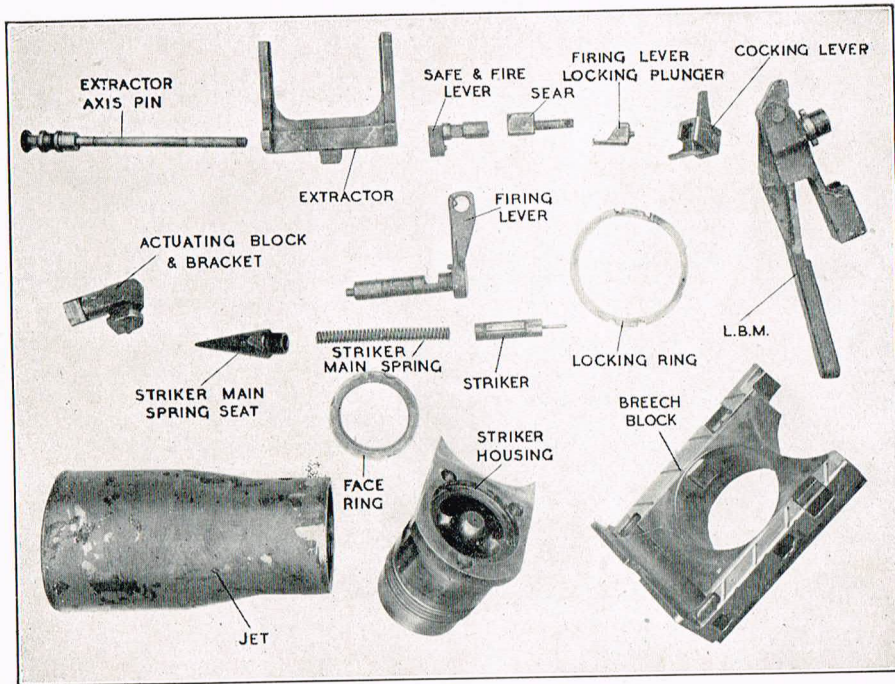


FIG 24—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG 40)

(b) *To close the breech.*—Insert the cartridge. The flange of the cartridge engages the arms of the extractor returning it to the normal position. Rotate the LBM in a clockwise direction. The actuating block, travelling along the channel of the LBM carries the breech block to the closed position.

(c) *To fire.*—Press the firing lever forward. The projection on the end of the lever, moving eccentrically with it, forces the sear downwards. The striker main spring asserts itself, driving the striker forward on to the primer.

(d) *To assemble the mechanism.*—Standing at the muzzle end, depress the plunger in the cylindrical portion of the breech ring. Insert the barrel and turn in the direction of the marking "Fest" (Engaged) until it strikes the stop. Release the plunger. Insert the safe and fire lever, setting it to "Feuer" (Fire). Insert the LBM and rotate it anti-clockwise. Place the striker housing in the breech block and replace the face ring and locking ring. Insert the striker and striker main spring, and screw the striker main spring seat on to the rear of the central portion of the diffuser. Screw the jet into position and lock with the locking ring.

Insert the sear and cocking lever, followed by the firing lever locking plunger. Press the latter inwards against its spring and insert the firing lever.

Insert the breech block in the breech ring. Position the extractor with its heels in the recesses. Engage the actuating block in the channel of the LBM and close the breech.

Position the extractor by means of its tongue and insert the extractor axis pin.

(e) *To dismantle the mechanism*

Set the safe and fire lever to "Feuer" (Fire).

Remove the extractor axis pin and set the heels of the extractor in the recesses by means of the tongue.

Open the breech block until the actuating block is clear of the channel in the LBM.

Remove the breech block complete.

Remove the extractor.

Press the firing lever locking plunger inwards against its spring and remove the firing lever.

Remove the firing lever locking plunger, sear, and cocking lever.

Move the LBM until the keys in the plunger are coincident with the keyways of the bush.
Remove the LBM.

Unscrew the jet and remove the locking ring, striker main spring seat, striker main spring and striker.

Remove the striker housing locking plate. The striker housing can now be tapped out to the front.

Remove the safe and fire lever.

Standing at the muzzle end, depress the plunger in the cylindrical portion of the breech ring. Rotate the barrel in the direction of the marking "Lose" (Disengaged) until it strikes the stop.
Remove the barrel.

24. The carriage

The light aluminium alloy carriage, which is, of course, chiefly remarkable for the absence of provision for recoil and recuperation, consists mainly of a platform and a body.

(a) *The platform* comprises the following parts :—

(i) *The wheels* are fitted with solid rubber tyres.

(ii) *The legs* comprise a front leg and right and left rear legs. All three are pivoted in lugs on the base ring, and are provided with foot plates.

The front leg is fitted with a catch, near the top, which engages a slot in the axle tree so that the leg can be engaged in either of two positions when in action. In the travelling

position the foot of the leg is secured to a clamp on the barrel, thus acting as a travelling stay.

The rear legs have spring loaded plungers near the top which enable the legs to be locked to the guide rails. The feet are formed with a pin with two lugs, and an eye, respectively, to enable the legs to be locked together when travelling. The right foot has in addition a socket for a towing attachment.

- (iii) *The two tubular guide rails* are hinged on the inside to lugs under the rear of the base ring, and their outer ends are fitted with sockets to engage locking pins on the outer ends of the axle tree.
- (iv) *The tubular axle tree* is secured to the base ring by two brackets. Lugs on the outer ends lock the guide rail in position. Internally the ends receive the arms of the stub axles.
- (v) *The base ring* is a casting over which is pressed a sleeve. A groove in the casting contains a felt ring. The upper face of the casting carries the traversing rack, which is bolted in position and prepared to receive the central pivot. In the top face of the pivot are two diametrically opposite pins to locate the centre pivot cover plate.
- (vi) *The traversing rack* is in the form of a wormwheel. An interrupted flange on the upper side, operating in conjunction with a traverse and elevation limiting stop, automatically limits the traverse to 60 degrees when the elevation exceeds 20 degrees.
- (vii) *The stub axles* comprise an arm, crank, hub, two conical roller bearings and a torsional bar.

(b) *The body* (Fig 25).—The body has a circular base, which is provided with a plastic bush fitting over the base ring. At the top of the body, to right and left, are trunnion bearing housings.

An external bracket on the right supports a spare parts box.

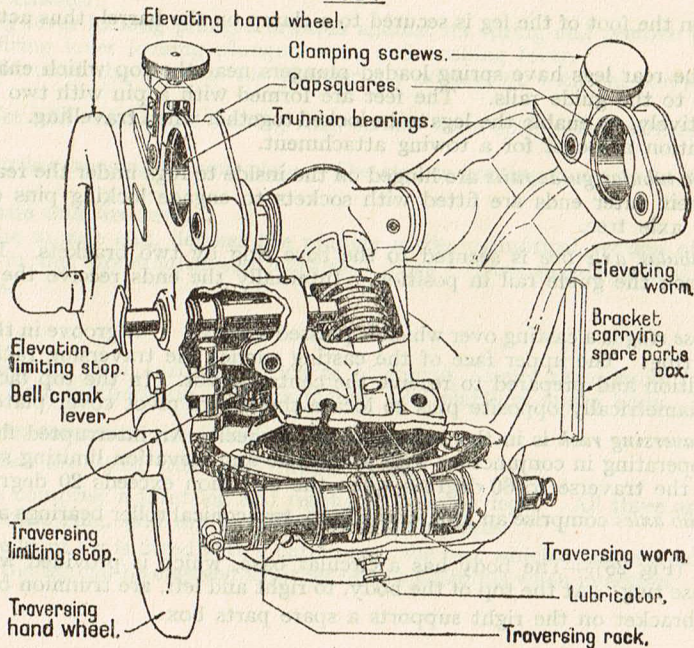
BODY

FIG 25—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN (7.5 cm LG 40)

The left side is bored to receive the elevation and traverse limiting stops, the outer end of the former protruding through the body. The inner end of the elevation limiting stop engages one arm of a bell crank lever. The traverse limiting stop is supported in two lugs inside the body, its upper end being engaged with the other arm of the bell crank lever, which is pivoted in lugs inside the body. The effect of the device is that when the elevation limiting stop is pushed in the elevation is limited to 20 degrees by the engagement of the stop against a flange of the elevating arc: at the same time the bell crank lever raises the traverse limiting stop, allowing 360 degrees traverse.

When the elevation limiting stop is pulled out its inner end abuts against a stop plate in the elevating arc, allowing 42 degrees elevation. At the same time the bell crank lever depresses the traverse limiting stop which engages the interrupted flange on the traversing rack, limiting the traverse to 60 degrees.

The elevating gear consists of an arc, worm, bevel wheel spindle, bevel pinion spindle, worm casing and handwheel. The traversing gear consists of a worm rack fitted to the base ring and a worm carried on a spindle.

25. The sights (Fig 26)

The sighting gear comprises a base bracket, oscillating bracket, cross-levelling gear, range gear, telescope carrier and telescope.

An adjustable supporting bracket is clamped to an extension of the left trunnion. To this is hooked a base bracket which is secured by a clamping screw. An oscillating bracket is pivoted to the base bracket and the trunnions of the cross-levelling gear fit in bearings on the oscillating bracket. The cross-levelling gear is operated by a milled handwheel.

The range gear is mounted in a casing on the oscillating bracket. The range drum ring is graduated from 0-800 mils in units of 100 and is read by an adjustable reader. Range is set by a milled handwheel graduated in 100s of mils and read by an arrow on the casing.

A micrometer adjusting head is screwed to the range gear casing and actuates the platform on

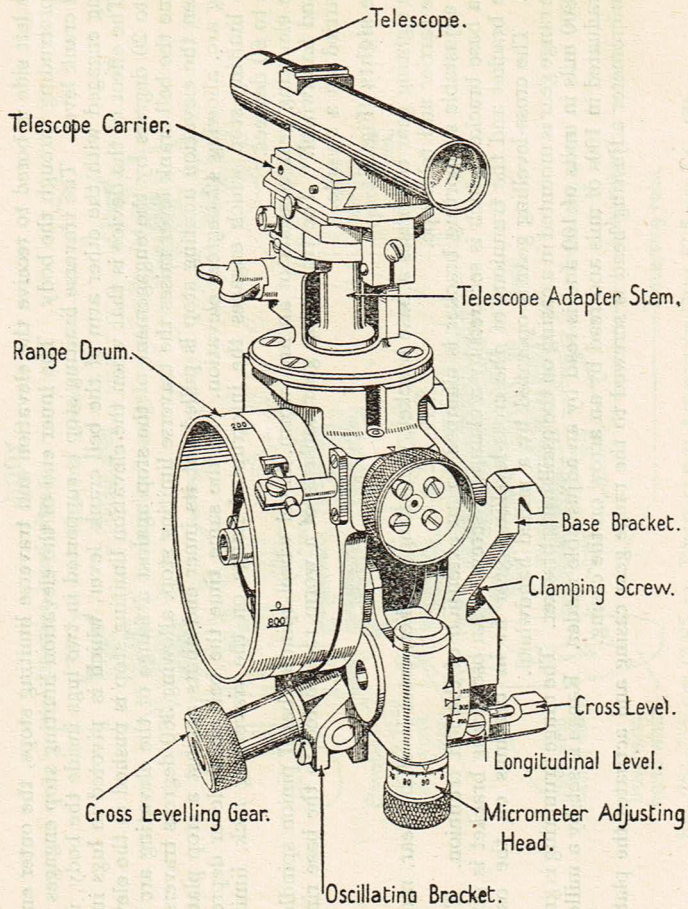


FIG 26—7.5 cm (2.95 in) RECOILLESS AIRBORNE GUN 7.5 cm LG 40)

5 m = 6 yds
 10 m = 11 yds
 50 m = 55 yds
 100 m = 110 yds

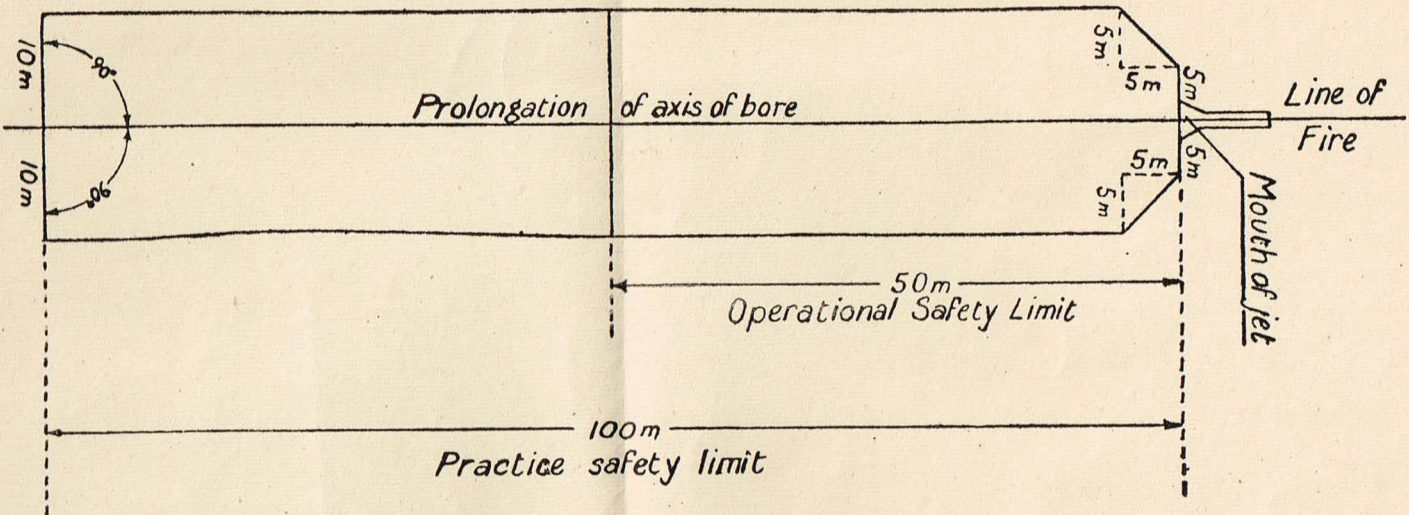


FIG. 27

7.5 cm (2.95) RECOILLESS AIRBORNE GUN (LG 40).

which the cross and longitudinal levels are mounted. The movement of the platform is recorded on a scale marked in 100s of mils from 100-500. 300, being the zero, is marked in red, the remainder in black. The gear is operated by a milled handwheel graduated into 100 divisions.

An adjustable socket for the telescope adapter stem is screwed to the top of the range gear casing, and the telescope carrier which is adjustable for elevation, is mounted on top of the adapter.

The telescope has a fixed focus and fixed eyepiece, and the field of view is 11 degrees.

26. Special safety precautions (Fig 27)

(The following paragraph is translated from a captured document.)

The following safety precautions must be observed when firing the 7.5 cm LG 40.

- (a) *In front of the muzzle* the same safety precautions apply as in the case of other guns.
- (b) *For practice and operational firing* respectively, the areas outlined in Fig 27 to the side and rear of the mouth of the jet, must be avoided. The length of the danger area in rear of the jet is :—
- | | | | | | | | | | |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----------|
| (a) for practice firing... | ... | ... | ... | ... | ... | ... | ... | ... | 110 yards |
| (b) for operational firing | ... | ... | ... | ... | ... | ... | ... | ... | 55 yards |

(But see sub-para (c) below.)

- (c) *The area in rear of the gun*, roughly in prolongation of the axis of the bore, may become dangerous for a distance of several hundred yards, owing to flying stones, etc. For this reason such an area should also be avoided if possible.
- (d) *The blast from the jet* may endanger the ear drums of those in the immediate neighbourhood of the gun. The detachment must, on principle, therefore, plug their ears with compressed clay or mud, which must be rammed firmly into the ear. Commercial ear protectors (with the exception of "Akustika") can be used instead.

The telescope has a fixed focus and fixed eyepiece, and the field of view is 11 degrees. An adjustable socket for the telescope adapter stem is screwed to the top of the range gear block. The gear is operated by a milled handwheel graduated into 100 divisions. A scale marked in 1000 of mils from 100-500, 300 being the zero, graduated in red, the remainder in black. The movement of the platform is recorded on a scale marked in 1000 of mils from 100-500, 300 being the zero, graduated in red, the remainder in black.

20. Special safety precautions (Fig 27)

(The following paragraph is transcribed from a copy of document)

The following safety precautions must be observed when using the 7.5 cm LG 10. (a) In front of the muzzle the same safety precautions apply as in the case of other guns.

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110 yards
85 yards

- (a) The gun must be kept in a position of safety in the immediate neighbourhood of the gun. The direction must be principle therefore, that the gun with compressed charge or muzzle, which must be firmly fixed into the ear. (Continental ear protector with the exception of "Albatros" can be used instead.)
- (b) The gun must be kept in a position of safety in the immediate neighbourhood of the gun. The direction must be principle therefore, that the gun with compressed charge or muzzle, which must be firmly fixed into the ear. (Continental ear protector with the exception of "Albatros" can be used instead.)
- (c) The gun must be kept in a position of safety in the immediate neighbourhood of the gun. The direction must be principle therefore, that the gun with compressed charge or muzzle, which must be firmly fixed into the ear. (Continental ear protector with the exception of "Albatros" can be used instead.)

SECTION 4—GERMAN MGs

PARA	PAGE
12. Introductory note	22
13. 7.92 mm dual purpose MG—MG 42	22
14. 7.92 mm dual purpose MG—MG 34S	29
15. 7.92 mm dual purpose MG—MG 34/41	29

SECTION 5—GERMAN MORTARS

16. 8 cm mortar	29
17. 10 cm smoke mortar 35	35
18. 20 cm spigot mortar... ..	37
Appendix A.—Interchangeability of British, German, and Italian 2-in and 3-in ammunition	42
Appendix B.—Range table for 8-cm mortar	43

SECTION 6—AIRBORNE GUNS

19. General note	44
20. 7.5 cm recoilless airborne gun (LG 40)	44
21. The gun	47
22. The breech mechanism	49
23. Action of the breech mechanism	51
24. The carriage	54
25. The sights	57
26. Special safety precautions	59