

LEE-ENFIELD

RIFLE MANUAL

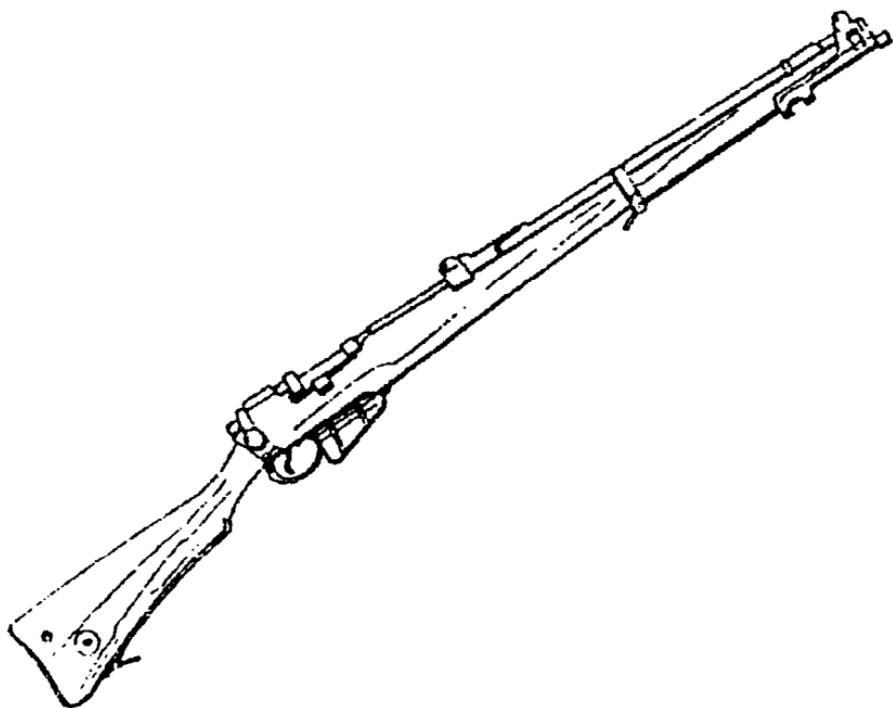
No.1 - - No.3 - - No.4 - - No.5

MKIII

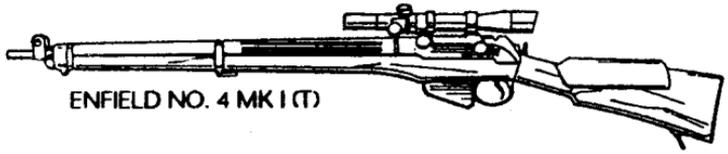
MKI

MKI

MKI



No. 4 Mk. 1



ENFIELD NO. 4 MK I (T)

The No. 4 Mk. 1 rifle was developed from the No. 1 SMLE between the World Wars. It retained the basic Lee action design of the No. 1 rifle, but was extensively modified to improve performance and made easier to manufacture.

Important modifications included a heavier barrel, heavier receiver, aperture rear sight and simplified bedding of the barrel in the **fore**-end.

Before the Battle of **Dunkirk**, only a few No. 4 rifles were built. However, after the British disaster, these rifles went into major production in England, Canada and the United States. After World War II, No. 4 rifles were used by Italy, Greece and some Arab countries. The No. 4 Mk. 2 rifles were used during the Korean War. In 1954, the No. 4 rifle was replaced in the British, Canadian and Australian Services by the FN-FAL in 7.62 NATO. No. 4 rifles are by and large in better condition than No. 1's, but for the most part, are not finished as well as the peacetime rifles.

No. 5 Mk. 1

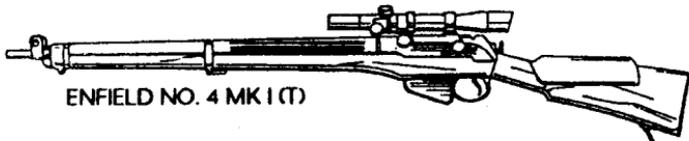


LEE ENFIELD NO. V MK I JUNGLE CARBINE .303

During World War II, the No. 1 SMLE and No. 4 rifles were found to be too long and heavy for jungle fighting. A shorter more handy rifle was needed and the No. 5 Mk 1 was developed and adapted from the earlier rifles. The new rifle became popularly known as the 'jungle carbine', as was a No. 4 with short fore-end and barrel.

It was also fitted with a flash hider and a rubber buttplate. The short fore-end makes the No. 5 look like a sporting rifle. Many of these rifles were built and used in Burma and the South Pacific during the later part of World War II. This version of the **Enfield** is very popular with shooters and hunters and will likely bring a premium price.

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Technical Specifications

Headspace

The .303 is a rimmed cartridge and headspace is measured from the barrel face to the face of the bolt. Headspace should not exceed .074 inch, but a maximum of 0.08 inch was allowed during wartime. Minimum headspace is .064 inch.

Barrel Gaging

A new barrel should have a bore diameter from .301 to .304 inches. For a used barrel, plug gages from .303 to .310 should be used. The .303 gage should run through the barrel. The .307 should not. The .308 gage should not enter the muzzle more than .25 inch. The .310 gage should not enter the breach more than .25 inch.

Firing Pin Protrusion

The high firing pin protrusion for No. 1 rifles is .055 inch and the low is .050 inch. The high for No. 4's and No. 5's is .050 inch. The low is .040 inch.

Trigger Pull

The first pull or slack should be 3 or 4 pounds. The second pull should be from 5 to 6 pounds. To increase or decrease the trigger pull weight, alter the angle of the cocking piece sear notch.

Buttstock Lengths

Stocks for the No. 1 rifles were made in long and short lengths. During World War I, a special short butt called the Bantam was made. These butts were marked "L", "S" or "B" on the top of the stock about one inch from the buttplate tang. Stocks for the No. 4 and No. 5 rifles come in long, short and normal lengths.

Sights

The front sights for the Enfield were originally a barley corn sight with a small 'v' for the rear. As improvements were made to the rifle, a front blade was used and a u-shaped rear sight replaced the old 'v'. Later a long range adjustable stand-up sight with a peep was used. They were fixed to the barrel. As the rifles were further refined, the rear sights were set over the tang to increase sight radius. These sights have adjustments out to 1600 yards and some can be fine tuned with a worm wheel to more precise increments.

The purpose of the long range sights was not for accuracy. The British like to fire in volleys and were able to use this strategy to terrorize the enemy with a hail of bullets from long range while the hapless enemy could not return fire.

During World War II, sniper scopes were introduced along with mounts and boxes to carry them when the scopes were not attached to the rifle.

Loading and Firing

Place the rifle on a table in the upright position or if in the field, place the left hand under the receiver and with the right hand, grasp the bolt and turn it up and to the left. Pull the bolt straight back as far as it will go. Insert a loaded five round clip in the clip guide inside the receiver and force the cartridges down into the magazine with the right thumb. Take out the empty clip. Place another five round clip in the clip guide and strip these cartridges into the magazine. There will be ten rounds in the magazine.

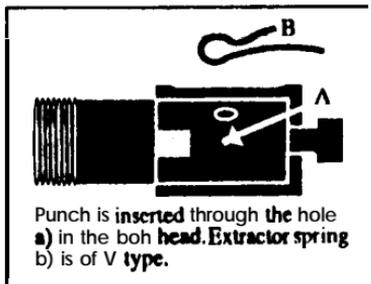
With the right hand, grasp the bolt handle and push it forward and down, (to the right). This will strip a cartridge from the magazine and slide it into the chamber. This action also cocks the firing pin. The rifle is now ready to be fired by squeezing the trigger. If the rifle will not be fired immediately, set the thumb safety on the rear of the receiver to "Safe".

After the rifle has been fired, lift the bolt handle up and to the left. Pull the bolt straight back. This action causes the spent cartridge to be withdrawn from the firing chamber and flipped clear of the receiver. To reload the rifle, push the bolt handle forward and down. A fresh cartridge is stripped from the magazine and slipped into the chamber. The rifle is now ready to fire again. This sequence may be repeated until the magazine is empty.

Insert the t-shaped tool into the notches and turn the cocking piece until the lower two notches are reached. The firing pin spring should be virtually decompressed. Remove the firing pin locking screw found in the rear of the cocking piece. Now we may finish removing the firing pin with the special tool. Unscrewing the firing pin with a 'makeshift rig may cause damage and should be left to a qualified gunsmith.

Removal of the Extractor Spring

Place the bolt in a padded vice and insert a drift punch of less than 0.04 inch in diameter into the small hole found in the bolt head adjacent to the extractor. Push the punch into the hole against the extractor spring and ease the spring forward using a screw driver.



Keep one finger over the extractor slot to keep the spring from jumping out. To reassemble, place the spring into the extractor slot and seat the small projection on the spring into its seat in the bolt head.

Replacing the Bolt

Lee-Enfield bolts are not interchangeable. They have been fitted to their respective boltways. Compare the number of the bolt with the number of the rifle to avoid any chance that might cause you to substitute a bolt in the wrong rifle. Check to see that there is no cartridge in the chamber. Be sure that the bolt head is fully screwed home and that the bolt cocking piece lines up with the lug on the underside of the bolt.

Replace the bolt in the boltway and push it forward. Next, pull the bolt to the rear to the resistance shoulders and force the bolt head down over the spring retaining catch. Then, push the bolt forward all the way and turn the bolt handle down. Hold the rifle so the muzzle is pointing in a safe direction and press the trigger. The firing pin should fall with an audible click.

Field Stripping

First, make sure there is no cartridge in the chamber. Second, remove the magazine.

The magazine catch is located in the forward end of the trigger guard. Push it in or pull it up as your rifle requires. This will release the heavy sheet steel box and it may be withdrawn from the bottom of the receiver. Turn the rifle upside down and push the rear of the magazine follower and spring down past the chamber. You can turn the rifle right side up and pull the forward end of the follower and spring out the top of the receiver.

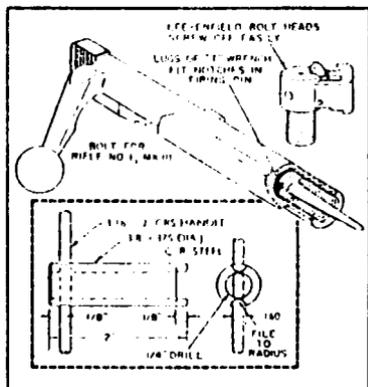
To remove the bolt, you will find the safety catch above the left rear of the trigger guard. Rock the safety catch above the left rear of the trigger guard. Rock the safety forward, then turn the bolt handle up, pull it up and rearward as far as it will go. Hold the rifle steady with the left hand and place the right forefinger under the bolt head. Now pull the bolt up until it is free of its spring catch. Then hold the bolt handle and withdraw the bolt to the rear until it is clear.

Special Instructions for Field Stripping the No. 4 Mark 1 Rifle

First, make sure there is no cartridge in the chamber. In order to withdraw the bolt from the No. 4 Mark 1 Rifle, find the cut out on the bolt head track. Look on the right side of the receiver. Slide the bolt back until it is over this cut out. Now you can lift the bolt head straight up and remove the bolt from the rifle.

Disassembly of the Bolt for Cleaning and Inspection

The bolt head can be unscrewed from the bolt body. This facilitates cleaning and inspection. The removal of the firing pin can be difficult. However, with the proper tool, it is a simple procedure for the person with some mechanical dexterity. With the bolt head removed, look at the front of the bolt and you will see the two notches on both sides of the firing pin shoulder.



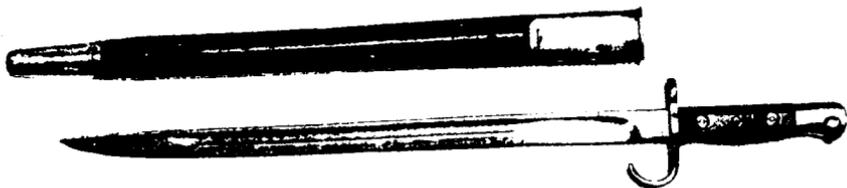
Bayonets

The bayonets for the Lee-Enfield No. 1 rifles look like a short sword as did other bayonets of the time. One had a quillion similar to a knife or sword to parry an enemy thrust. Later bayonets for the Mark 4 rifle were known as the cruciform bayonet because it looks like a cross in cross section. These look like a spike and were easier to fight with than the blade type bayonet.

The British went back to a blade type bayonet with composite hand grips for the No. 7 Mk. 1 after World War II. Another bayonet that appeared after the war was the No. 9 Mk. 1 for the No. 4 rifle. This one has no grips and is a bit less than eight inches in length and is lighter in weight than its predecessors.



BAYONET FOR THE NO. 4 RIFLE.



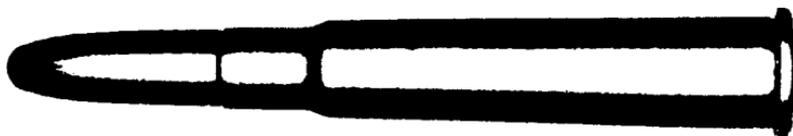
BAYONET HOOKED QUILLION FOR THE NO. 1 RIFLE.

The Lee-Enfield Ballistics

In 1892, the .303 British cartridge was loaded with 70 grains of black powder and had a 215 grain round nose bullet with a muzzle velocity of 1850 fps. Muzzle energy was 1640 fp. By 1914, with a smokeless powder loading and a 174 grain pointed bullet, the velocity moved up to 2440 fps. This was the Mk. VII round and was still in use when the .303 was discontinued.

Used extensively in Africa, Canada and India by the military, government, workers and settlers, the .303 cartridge suffered from a bad reputation due to the use of the military full metal jacketed pointed bullets. When sporting ammunition became available, the .303 became a reliable cartridge for lighter non-dangerous game. Jacketed ammunition has a bullet diameter of .311 inch. Cast lead bullets can be .312 inch or even .313 inch.

The .30-40 Krag was the cartridge by which the .303 was judged early in its life. The .303 had a slight edge over the .30-40 and later could take chamber pressures of 50,000 psi. The **Enfield Mk. 4** has been successfully converted to .308 Winchester (7.62 NATO). The British .303 is now compared with the more powerful .308 Winchester and the .303 has found its niche in the American market. Plentiful stocks of rifles and ammunition have assured it a place for many years to come.



.303 British

Max. Case Length: 2.222" Trim-To Length 2.212" Max. Overall Length: 3.075" Primer Size: Large Rifle Bullet Diameter: .311"

Rifle Loads for

LOAD NUMBER	BULLET				POWDER			VELOCITY FPS
	WEIGHT	BRAND	SHAPE	TYPE	WEIGHT	BRAND	TYPE	
1	100	SPR	RNN	SP	44.0	IMR	3031	2933
2	150	SPR	PTD	SP	31.0	HER	RE7	2400
3	150	HDY	SPP	SP	44.0	IMR	3031	2787
4	150	HDY	SPP	SP	41.8	HOD	BLC2	2600
5	150				45.5	ACC	2230	2620
6	150	SRA	PTD	SP	48.5	IMR	4320	2808
7	150	HDY	SPP	SP	45.6	HOD	H380	2600
8	150	SPR	PTD	SP	45.0	HER	RE12	2700
9	150	HDY	SPP	SP	50.0	WIN	760	2600
10	150	SPR	PTD	SP	50.0	IMR	4350	2584
11	174	HDY	RNN	SP	43.1	HOD	H380	2400
12	174	HDY	RNN	SP	47.2	WIN	760	2400
13	174	HDY	RNN	SP	46.5	IMR	4350	2400
14	180	SPR	RNN	SP	30.0	HER	RE7	2050
15	180	SRA	PTD	SP	42.0	IMR	3031	2533
16	180				40.0	ACC	2230	2300
17	180	SPR	RNN	SP	40.0	HER	RE12	2340
18	180	SPR	RNN	SP	47.0	IMR	4831	2421
19	180				46.0	ACC	3100	2350

Abbreviations: ACC - Accurate Arms Co.; - Canadian Industries, Ltd.;
 HDY - Hornady Manufacturing Co.; HER - Hercules, Inc.; HOD -
 Hodgdon Powder Co.; IMR - IMR Powder Co.;

the .303 British

PRESSURE CUP	CASE BRAND	PRIMER		CARTRIDGE OAL	BARREL LENGTH	SOURCE
		BRAND	TYPE			
	CIL	CCI	200		25	SPR
41,200	WIN	WIN	WLR	2.935	24	HER
44,900	REM	WIN	WLR	2.840	26	NRA
	REM	FED	210	3.035	25½	HDY
	REM	CCI	200		24	ACC
43,830	REM	WIN	WLR	2.945	26	NRA
	REM	FED	210	3.035	25½	HDY
42,900	WIN	WIN	WLR	2.935	24	HER
	REM	FED	210	3.035	25½	HDY
	CIL	CCI	200		25	SPR
	REM	FED	210	2.975	25½	HDY
	REM	FED	210	2.975	25½	HDY
	REM	FED	210	2.975	25½	HDY
39,600	WIN	WIN	WLR	2.940	24	HER
44,220	REM	WIN	WLR	3.075	26	NRA
	REM	CCI	200		24	ACC
42,600	WIN	WIN	WLR	2.940	24	HER
	CIL	CCI	200		25	SPR
	REM	CCI	200		24	ACC

PTD - Pointed; RNN - Round Nose; SP - Soft Point; SPP - Spire Point;
 SPR - Speer; SRA - Sierra Bullets.

Care and Cleaning

The enemy of all weapons is rust. In order to maintain a rust free rifle, a few simple steps must be performed periodically. All metal surfaces should be coated with a light coat of a quality gun oil from time to time depending on the humidity in your area.

In humid areas, more applications of oil are required. The user should pay close attention to the patch that is run through the bore. If the patch comes out dirty or green, a more thorough cleaning is recommended.

After firing the rifle, the bolt should be removed and the **rifle** should be cleaned. A cleaning rod with screw-in tips should be used for versatility in cleaning of the bore. Other cleaning items include a good quality bore cleaner and oil, G.I. or commercial is fine. Also at hand should be some white cotton or blended cleaning patches, a brass brush in the correct caliber (**.303 / 7MM**), pipe cleaners, tooth brush and some lint-free cloth. A bore light and rust inhibiting spray such as WD-40 are optional.

Corrosive Ammunition

Corrosive ammunition can be manufactured using less expensive chemicals such as fulminate of mercury. Unfortunately, these chemicals will attract moisture, which in time will cause iron to rust. When corrosive ammunition has been used, the rifle should be cleaned within a day or two after firing. A rusty or pitted bore will destroy the accuracy of any rifle.

Regular Ammunition

To clean the bore, place a clean patch in the slot of the rod tip and saturate it with bore cleaner. Place the rod tip into the breach or chamber area of the rifle and force the rod up the bore until the tip with the patch comes out the muzzle. Pull the rod back through the bore until the tip with the patch comes out the breach or chamber end. Repeat this until the patch has gotten so dirty it will no longer remove fouling. Replace the dirty patch with a clean one, saturate it in gun cleaning solvent and go through the cleaning process again.

When the patches are coming out much cleaner, you have removed the first layer of fouling. Replace the slotted patch tip with the bore brush and run it through the bore from the breach end. Several strokes should be done. Remove the bore brush and screw on the patch tip. Saturate the patch with bore solvent and run it through the bore as before.

Now the patch should look dirty again and it may possibly look green. The green color comes from the interaction of the solvent with copper jacketed ammunition that may have been used. This is normal and means that the solvent is doing its job of removing the copper residue that is left after the rifle has been shot.

When the patches come out clean, stop the cleaning of the bore leaving a heavy coat of solvent in the bore overnight.

General **Cleaning**

All metal surfaces including the sights, should be wiped down with a solvent dampened cloth. Wipe the solvent from the outside surfaces of the metal with a dry cloth. This should remove most grime and powder residue. A light coat of rust inhibitor such as WD-40 can be used to spray the exposed surfaces of metal and then wiped with an oily cloth.

We now turn our attention to the bolt and the internal area of the receiver. The bolt can be unscrewed and placed **in a container** filled with solvent to soak while you wipe down the internal magazine using a cloth with a liberal amount of solvent. Wipe down the **boltway**, and other places in the receiver with the solvent laden cloth. Be sure to clean the bolt latch and safety knob.

Next, take the toothbrush and dip it in the solvent and scrub inside the receiver and boltways. Crime and fouling will be lifted. **Follow up** with a dry cloth to remove the fouling. When this area is clean, take a pipe cleaner and dip it in solvent. Scrub as many nooks and crannies as possible. This done, wipe all solvent from the internal surfaces of the receiver and magazine area with a dry cloth and pipe cleaners. A light coat of the rust inhibitor may be sprayed here, but remember this is not a lubricant and should be lightly wiped up. A coat of oil should be wiped over all the internal parts just cleaned. It may be necessary to use a pipe cleaner coated with gun oil to reach hard to lubricate places.

Take the bolt out of the cleaning solvent and scrub the exterior with the toothbrush. Wipe it down with a dry cloth. If it has not been soaking, apply a liberal amount of solvent to the interior and exterior surfaces of the bolt, Dip the toothbrush in solvent and scrub the bolt until all fouling has been loosened. Pay close attention to the extractor, removing all fouling.

Wipe all internal and external parts of the bolt clean with a cloth. Coat the bolt with a light coat of gun oil and let it sit out of the rifle overnight.

Final Bore Cleaning

The next day, the bore should be coated with a liberal amount of solvent. The patch will be discolored with dirty powder and may be green from the copper. This is normal. Use the bore brush to clean out any remaining rust, fouling or copper residue.

At this time, you may wish to inspect the bore with a bore light to look for fouling, lead build-up, rust, pits or cracks. Insert the bore light into the breach, turn it on and look down the muzzle to view the bore. If an unusual amount of firing has been done, it may be necessary to repeat the cleaning process the following day.

After the bore comes out clean, dry it with clean, dry patches. Now, coat a fresh patch with gun oil and coat the bore liberally. Finally, you may use a cotton bore swab coated with oil to pass through the bore. It should come out clean. Wipe all exterior metal parts with a light coat of oil. Replace the bolt and set the rifle aside.



F A L

USER'S MANUAL



LIGHT AUTOMATIC RIFLE

CAL. 7.62 mm

FABRIQUE NATIONALE HERSTAL
Société Anonyme

H 12

B-4400 HERSTAL (BELGIUM)



I. INTRODUCTION

The FN Light Automatic Rifle, calibre 7.62 mm NATO, usually known as the "F. A. L." or "L. A. R.", has resulted from prolonged research and competitive trials made in various countries and under all types of climatic conditions.

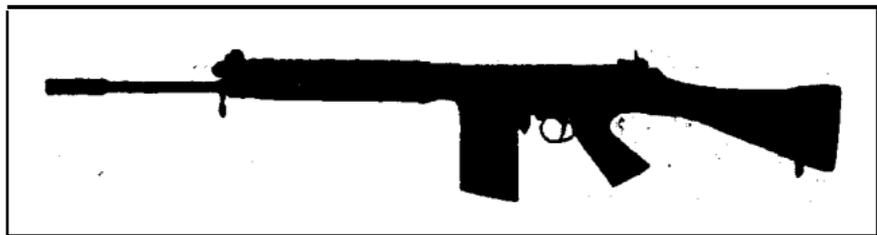


Fig. 1

This rifle, which has been adopted by many countries both within and outside NATO, was designed and made by FN to give the user a rifle which would combine all the essential qualities needed under modern fighting conditions, to a hitherto unequalled degree.

This booklet is neither for the armourer nor the specialised officer: its purpose is to familiarise the user with a weapon which is new to him and to put sufficient knowledge at his disposal to enable him to use it with maximum efficiency.

II. CHARACTERISTICS AND TECHNICAL DETAILS

The FN Light Automatic Rifle is an automatic weapon, calibre 7.62 mm NATO, gas-operated and with a breech block which is mechanically locked before firing can take place.

Rifle

1. Weights

- a) Rifle without magazine: 4.325 kgs (approx. 9.53 lbs)
- b) Magazine (steel) empty: 250 g ($8\frac{1}{2}$ ozs)
- c) Magazine (steel) filled 20 rounds Ball Ammn.: 730 g (1 lb $9\frac{3}{4}$ ozs)
- d) Barrel. approx. 800 g (1 lb $12\frac{1}{4}$ ozs)

2. Measurements

- a) Overall length . 1,090 mm (approx. 40")
- b) Barrel length . 533 mm (approx. 21")
- c) Sight radius . 553 mm (approx. $21\frac{3}{4}$ ")

- 3. System of operation: gas, with regulator and piston.
- 4. Method of feed: 20-round magazine.
- 5. Magazine housing : underneath the receiver.
- 6. Ejection opening : right side of receiver.

7. Cocking handle: left side of receiver.
8. Change lever: left side of trigger frame.
9. Sights: adjustable, bocksight graduated from 200-600 metres, scaled by 100 m.
10. Rifling of barrel : 4 grooves, direction-right, pitch-1 in 305 mm (1 in 12")
11. Cyclic rote of fire: 650-700 rpm.
12. Operational rate of fire, semi-automatic: up to 60 rpm.

Cartridge

1. Colibre: 7.62 mm NATO (Fig. 2).
2. Weight of cartridge: (for ordinary ball round "SS 77") approx. 24 g (0.86 oz).
3. Length of cartridge: 71 mm (2.8").
4. Weight of ordinary bullet: "FN SS 77": 9.30 g (0.33 oz).
5. Powder charge: approx. 3 g (0.1 oz).
6. Initiol Velocity (VO) in the "F. A. L.": 840 m/sec (2,754 ft/sec).
7. Muzzle Energy (EO) in the "F. A. L.": 335 kgm (2,422 ft.lbs).
8. Remaining Kinetic Energy at 600 metres (656 yds): 100 kgm (723 ft.lbs).

N. B. For further technical information and ballistical choracteristics, also firing tables, refer

to FN booklet for Ammunition calibre 7.62 mm NATO, or other handbook on thk subject.



Fig. 2

FN 7.62 mm NATO cartridge with SS 77 bullet

III. FUNCTIONING

1. COCKING

Before firing, the breech block mechanism is forward, with the safety applied (change lever set at "S").

Insert a filled magazine obliquely in the housing under the receiver, swing it from front to rear and push fully home: the magazine is then secured in the rifle at both front and rear.

Pull the cocking handle, on the left side of the receiver, fully to the rear, then let it go forward: a cartridge is thus introduced into the chamber; the rifle is loaded and cocked.

To fire, set the change lever either at "R" for semi-automatic fire, or at "A" for automatic fire.

2. REAR MOVEMENT OF THE MECHANISM

Pressing the trigger fires the shot.

When the bullet passes the gas port in the barrel, part of the combustion gases penetrate the regulator and thence into the gas cylinder. The piston is projected to the rear, strikes the breech-block slide, which is also driven rearwards. After recoiling a few millimetres, the ramps of the slide force the rear part of the breech block to rise, thus lifting it out of engagement with its locking

shoulder in the receiver. The mechanism is then unlocked. The recoil of slide and breech block continues, the extractor removes the spent case from the chamber: extraction is completed; then the hammer, pushed by the slide, is forced to pivot to the rear.

As recoil continues, the base of the spent case contacts the ejector, an integral part of the receiver; the case is then thrown out of the gun to the right, through the ejection opening.

During this rear movement, the return springs, housed in the butt, are compressed by the slide rod, hinged to the rear of the slide.

The piston has returned to its forward position, as its spring relaxed.

3. FORWARD ACTION OF THE MECHANISM

The return springs, compressed during the rear movement of the mechanism, now relax and drive the breech block assembly forward. The breech block pushes the next cartridge towards the chamber, while the hammer is held in the cocked position by the safety sear: the front of the breech block contacts the rear portion of the barrel; the cartridge is chambered and the base of its case seized by the extractor claw.

The slide acts on the upper shoulder of the breech block and forces its rear end downwards, causing its lock shoulder to engage in the locking recess in the receiver. The mechanism is now locked.

The slide continues its forward movement alone: towards the end of its course, the safety sear is tripped by the shoulder on the rear left underside of the slide, which causes the sear to pivot and the hammer to be released; the rear end of the firing

pin protrudes beyond the rear face of the slide, when the front face of the slide is fully home.

In automatic fire, it is the safety sear which releases the hammer and thus causes the shot to be fired, because the trigger sear is not in action in this case, except for the first shot of each burst of fire.

In semi-automatic fire, it is the trigger sear which finally releases the hammer, after it has first been released by the safety sear; the mechanism has been so designed that the trigger must be released, then pressed again, to permit the following shot to be fired (see 4 below).

4. CHANGE LEVER

The lever arm can occupy one of the three following positions:

a) An uppermost position "S" when the rifle is at safe: in this position, if the trigger is pressed, it is impossible to fire because the rounded part of the change lever arm is over the trigger platform, preventing it from rising to engage the tail of the sear.

b) A front position "A", which sets the mechanism at automatic fire: before firing the rear tip of the trigger is now so positioned in relation to the deeper bent in the change lever axis that pressing the trigger causes the sear to pivot upwards: the nose of the sear is consequently disengaged from the hammer bent and firing takes place.

In addition, the nose of the trigger sear has been swung downwards so that it cannot contact the hammer, which is controlled by the safety sear only, so long as the trigger is not released; as firing depends on the safety sear, this frees

the hammer each time the mechanism closes after the breech is completely locked: firing is automatic,

When the firer releases the trigger, the nose of the sear rises, catches hold of the hammer, which then pushes the sear slightly to the rear; this positions the tail of the sear over the heel of the trigger and the mechanism is then cocked, ready to fire the next burst.

c) A rear position "R", which sets the mechanism at semi-automatic (single shot); the rear tip of the trigger is now against a shallower bent in the change lever than in position "A", pressing the trigger therefore pivots the sear to a lesser degree so that after the first shot has been fired, the hammer will be caught by the sear. This moves slightly forward under the action of its spring and is thus placed in front of the heel of the trigger, i.e. no longer in contact. Firing another cartridge is therefore impossible if pressure on the trigger is maintained.

To continue firing, the trigger must be released; when this is done, the hammer turns slightly under action of its spring; as it is in contact with the sear, it pushes the sear towards the rear so that the tail of the sear comes over the heel of the trigger; pressure on the trigger will now fire the second shot, and so on.

Note : If automatic fire is not required, the change lever can be removed and another change lever fitted with indent for semi-automatic fire only, i.e. with 2 instead of 3 settings. Any soldier can easily make this substitution.

5. HOLDING OPEN DEVICE

When the magazine is empty, its platform pushes the holding open device upwards, in the pathway of the breech block, which is thus held to the rear, and the firer knows that his magazine is empty. After a filled magazine has been inserted, depress the lever of the holding open device so that the breech block is released and can continue its forward movement.

IV. HANDLING

1. FILLING MAGAZINE

a) With Magazine Filler

Each rifle is usually supplied with a magazine filler.

- Fit the magazine filler over the mouth of the magazine, with the guides for the loading clip on the side of the magazine rib



Fig. 3

- Insert a loaded clip into the rear guide of the magazine filler (fig. 3).
- With the thumb as near as 'possible to the clip, force the rounds down into the magazine.

b) Without ● Magazine Filler

- If the rounds are in clips, take them out.
- Insert the cartridges one by one into the magazine, with the base of the round to the rib of the magazine.

c) Note

- After filling a magazine, particularly when a magazine filler has not been used, it is advisable to check the positioning of the cartridges in the magazine by pressing down with the thumb on the last round inserted.
- In the event of one or more cartridges not sliding freely inside the magazine (jamming of the point of a round against the front wall), a correct positioning of all the cartridges can be obtained by striking the rear wall or on the bottom of the magazine lightly with the palm of the hand.

2. CHARGING

- Insert a filled magazine front end foremost into the magazine housing (fig. 4).
- Swing the magazine into position and push fully home.



Fig. 4

- The magazine is then secured at the rear by the magazine catch.

3. LOADING

- Take hold of the pistol grip with the right hand.
- With the left hand, pull the cocking handle (on the left side of the receiver) to the rear and then release it.
- The forward movement of the breech block will have extracted a cartridge from the magazine, chambered it and then locking of the moving parts will have taken place automatically. The rifle is now ready to fire.

Note: During charging and loading operations, the rifle will be kept at safe (Change lever set at "S").

4. RELOADING

After the last round in the magazine has been fired, the holding open device, operated by the magazine platform, keeps the mechanism to the rear (see page 11).

- Press the magazine catch (fig. 5).
- Remove the empty magazine, swinging it forward.
- Insert a filled magazine.

Depress the lever of the holding open device (fig. 6); the breech block will then move forward.



Fig. 5



Fig. 6

The rifle is now ready to fire again.

5. UNLOADING

- Put the rifle at safe (change lever set at "S").
- Remove the magazine.
- Pull the cocking handle fully back to extract and eject the cartridge in the chamber.
- Release the cocking handle and let the mechanism go forward.

6. FIRING SINGLE SHOT

- Insert a filled magazine.
- Use the tip of a cartridge to push the plunger in the gas plug fully down and hold it in this position (fig. 22).
- Turn the cartridge and the gas plug 180° so that the letter “G” appears on top, instead of the letter “A”.
- Let the plunger return to its housing (the notch in the plug is towards the bottom).
- Carry out the loading operations (see page 14).
- After firing each shot, repeat the loading operations.

7. FITTING THE BLANK FIRING DEVICE

- This device is to be screwed on the tapped end of the combined device (fig. 7).



Fig. 7

8. GAS REGULATION

The purpose of the gas regulator is to ensure correct functioning of the rifle with maximum gas escape, or, in other words, the minimum intake

necessary for normal functioning, without causing undue wear on the various parts of the mechanism.

Turning the gas regulator to the right (clockwise) reduces the opening by which gas escapes, thus increasing the quantity or “intake” gas used to drive the piston to the rear.

Turning the gas regulator to the left (anticlockwise) causes the opposite effect: gas escape is increased and the balance available to work the piston is decreased.

By a system of “clicks” and engagement of the gas regulator spring, the regulator has 13 different positions (12 “clicks” to open fully).

To make setting in any given position easier, figures are engraved on the gas regulator, the figure 1 corresponding to the completely closed position and one figure for every 2 “clicks” opening. Example: when the figure 5 is opposite the gas hole, the gas regulation corresponds to 8 “clicks”.

e) Method of gas setting

There are several different ways of finding the correct adjustment but we suggest the following method, which has, we think, proved itself the best :-

- Insert an empty magazine in the rifle;
- All firing is carried out by inserting the cartridges by hand, one by one into the empty magazine, through the ejection opening.
- The correct setting *is* determined by the point at which the holding open device engages the mechanism and holds it to the rear, or fails to do this.

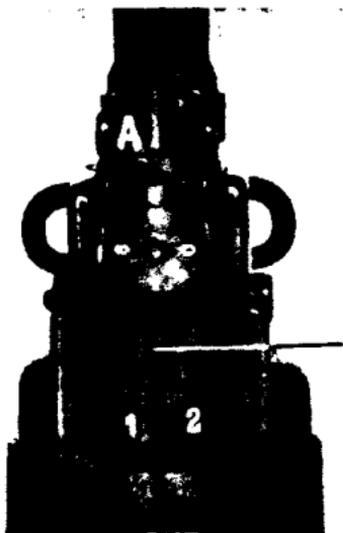


Fig. 8

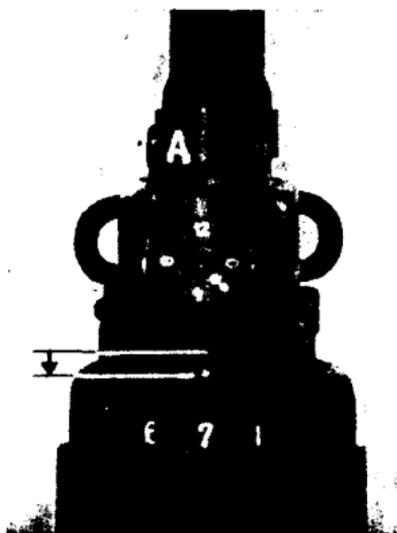


Fig. 9

b) Operations

Operation 1. After screwing the gas regulator right down against the gas block (fig. 8), unscrew by one complete turn so that the figure 7 is in line with the axis of the gas escape hole (fig. 9). This is the fully open position and, when a round is fired, causes a "short recoil", identifiable by the holding open device failing to engage the mechanism.

Operation 2. Close the gas regulator click by click and fire a cartridge after each adjustment until the breech block is held to the rear by the holding open device.

Operation 3. Now verify by firing several cartridges, one after the other, in the way described above.

Operation 4. If any shot results in a failure of the holding open device to engage the mecha-

nism, repeat Operation 3, after closing the gas regulator by one click.

Operation 5. If necessary, repeat Operation 4 until 5 consecutive shots result in the holding open device holding the mechanism to the rear 5 times.

Operation 6. The gas setting for the rifle is now determined, but it is always advisable to allow a small reserve of "working" gas by reducing the gas escape by two additional clicks.

Note

- If the special spanner (fig. 10) is not available, adjustment can be made with the point of a cartridge (fig. 11), or even by hand.



Fig. 10

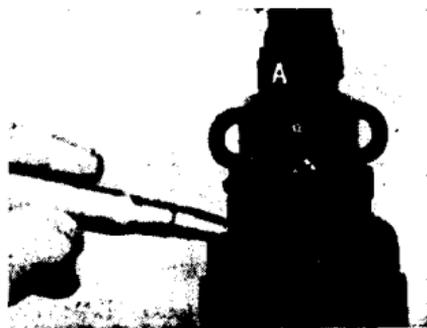


Fig. 11

- Before leaving the factory, every rifle has been adjusted for correct gas setting.
- In principle, the soldier should not alter the gas setting; this operation ought to be done in the presence of the unit armourer, or an instructor.
- In practice, the force with which the spent cartridge case is ejected gives an invaluable indi-

cation of the gas setting. An ejection of cases to a distance of 1.50-2 m from the rifle and at $\pm 45^\circ$ in relation to the barrel axis can be considered normal. Violent ejection shows that too much gas is being admitted and, in this event, the gas escape must be increased. On the contrary, weak ejection shows that insufficient gas is being taken in and, in this case, the gas escape should be reduced.

9. ZEROING

The rifle is zeroed, i.e. the sights are correctly adjusted, before issue to the user but it may require some attention to correct for elevation and direction to suit individual needs.

Such correction must be done by a qualified **armourer**, or an instructor, who will have the special tools to do this.

a) Correction for Elevation

Errors in elevation are corrected by screwing the foresight up or down. If it is screwed up, the M. P. I. will be moved down and vice-versa.

A spring detent locates and holds the foresight in position, which forms a clicking device with the 16 equal divisions serrated under the foresight collar; this assists the armourer when calculating movement of the M. P. I. Moving the foresight 1 division (or click) is equal to a variation in M. P. I. of 1 cm at 100 metres (approx. 0.39" at 109 yds).

b) Correction for Direction

Errors in direction are corrected by moving the backsight to the right or left.

If the M. P. I. is to the right of the point sighted, the screw on the left of the sight is loosened and the screw on the right is screwed up, thus moving the sight laterally along its dovetail from right to left. Tighten the screw on the left. When the correction has been made, and before shooting, tighten both screws.

If the M. P. I. is to the left of the point sighted, the sight must be moved from left to right.

A movement of 1 division (or click) is equal to a variation in M. P. I. (to right or left) of 1 cm at 100 metres (approx. 0.39" at 109 yds).

10. STOPPAGES AND IMMEDIATE ACTION

The FN Light Automatic Rifle is unlikely to be affected by variations in normal ammunition. Obviously, this means good quality ammunition because a bad cartridge will give rise to stoppages, whatever the weapon that fires it.

Stoppages are generally of two types:—

1. Those caused by fouling, due to the user's negligence, or ignorance of his rifle, or lack of lubrication (modern powders of good quality cause very little fouling).
2. Those caused by some mechanical deficiency (less frequent).

A mechanical stoppage, other than that caused by an empty magazine, can usually be remedied by taking immediate action, without stopping to investigate its cause.

Procedure for immediate action

- Remove the magazine;
- Pull the cocking handle fully to the rear and release; do this twice;
- Replace the magazine;
- Load (recock the rifle by pulling the cocking handle to the rear and releasing so that a new round is fed into the chamber);
- Resume firing.

If the stoppage recurs, consult the armourer or instructor to find out the cause.

V. GRENADE LAUNCHING

The F. A. L. is equipped with a combined device, serving as both flash-hider and grenade-launcher; with this fitment, anti-tank and anti-personnel grenades can be launched with great accuracy.



Fig. 12

1. CARTRIDGE

A special type of ammunition is used, generally known as a propulsive, or grenade, cartridge. This cartridge has no bullet and the mouth of the case is closed by a "star" crimping which is waxed to ensure complete tightness (fig. 12).

2. HANDLING

1. Put the rifle at **SAFE**.
2. Unload (chap. IV, 5).
3. Set the rifle for firing single shot (see chapter IV, 6).
4. With the left hand, cock the rifle.
With the right hand, insert the propulsive cartridge in the chamber (fig. 13).
Let the mechanism go forward (it is easier if the muzzle of the gun is held downwards).



Fig. 13

5. Put the grenade on the launcher and make sure that it is fully home
6. Release the safety from the rifle and, as required, remove the grenade safety. The rifle is then ready to fire.

3. FIRING POSITIONS

a) Direct fire (fig. 14)

- For the 3 usual positions (standing, kneeling, prone) the method of holding the rifle is the same.
- Grasp the middle of the handguard firmly with the left hand.
- Hold the pistol grip firmly with the right hand, with the index finger securely in front of the trigger.
- Hold the butt under the right armpit, never lean it on the shoulder.



Fig. 14

N. B.: A sling can be used to help take the recoil but this is left to the discretion of the user.

b) Indirect fire (fig. 15)

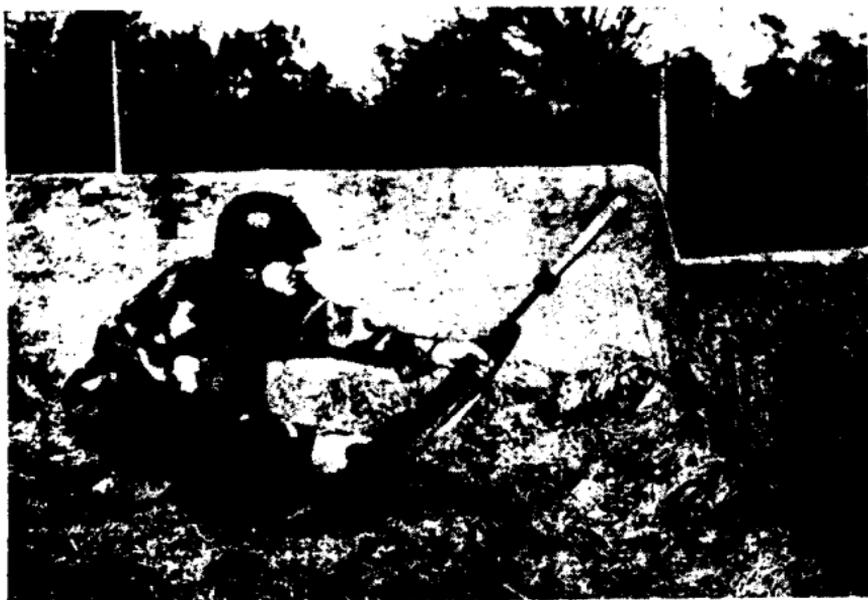


Fig. 15

- Dig the heel of the butt into the earth, with the pistol grip uppermost, i.e. towards the firer.
- Incline the rifle at the required angle.
- Hold the foot down on the front of the butt to prevent it from moving out of position.

Note: So far as possible, it is advisable to avoid positioning the butt against any hard surface, such as concrete, rock, etc. This is particularly important for indirect fire from the prone position, where the soldier naturally tends to anchor the fore part of the butt to avoid the effects of recoil.

VI. FIELD STRIPPING

The soldier should know the field stripping routine so well that it can be carried out in darkness. For this stripping, he will need to use the nose of a cartridge; no other tools are required.

- Remove the magazine.
- Cock the mechanism to ensure that the rifle is clear and there is no round left in the chamber, allow the breech block to go forward and set the change lever at safe, leaving the hammer cocked.

1. STRIPPING THE MECHANISM

- Press the body locking lever (on the left side) as far as possible upwards; at the same time, press the butt/trigger frame group downwards, which will swing the rifle open like a shotgun (see fig. 16).
- Remove the slide-breech-block assembly by taking hold of the slide rod hinged to the slide (fig. 17).

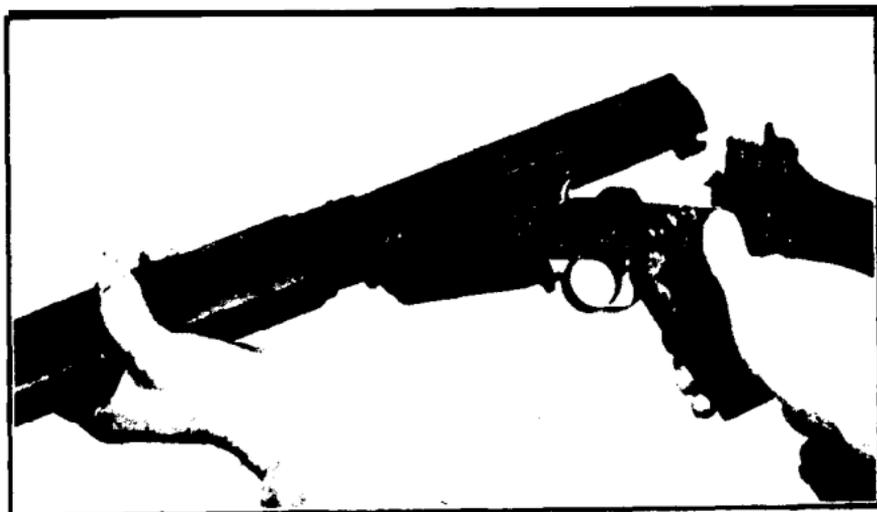


Fig. 16



Fig. 17

2. REMOVING THE COVER

Slide the receiver cover to the rear (fig. 18).



Fig. 18

3. SEPARATING THE SLIDE FROM THE BREECH BLOCK

Disengage the fore part of the breech block from the slide and continue to separate with a levering movement against the rear part of the breech block, keeping the thumb on the rear end of the firing pin (fig. 19).

4. REMOVING THE FIRING PIN

Exert pressure on the rear end of the firing pin and push out its retaining pin. If the pin does not fall out easily, use the nose of a cartridge to push it out (fig. 20).



Fig. 19



Fig. 20

When the retaining pin has been removed, the firing pin will come out of its housing under action of its spring (fig. 21).

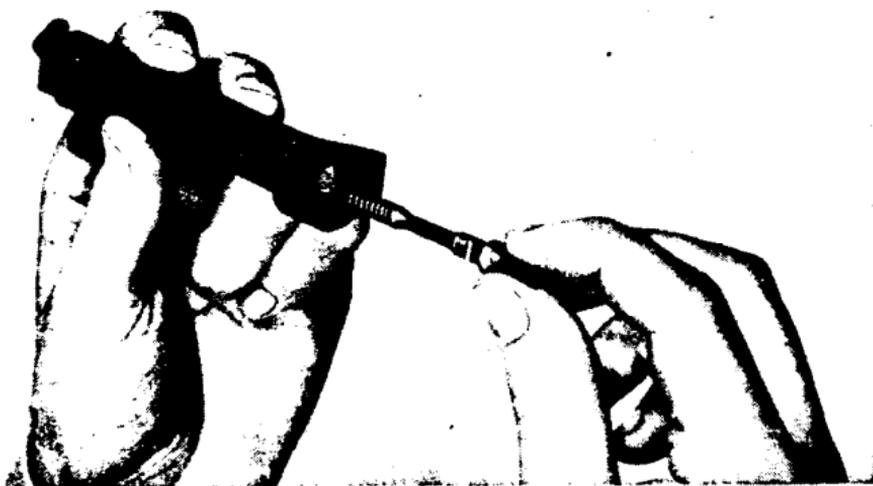


Fig. 21

5. REMOVING THE GAS PLUG

Use the nose of a cartridge to press in the plunger (fig. 22), then turn the gas plug a quarter turn in a clockwise direction (fig. 23).

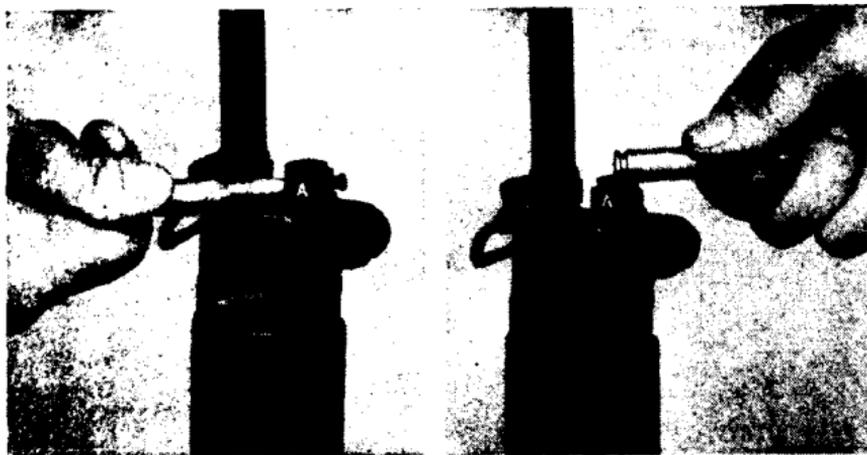


Fig 22

Fig. 23

In this position, the plug will be pushed from its housing by the piston spring.

6. REMOVING THE PISTON

Remove the piston and its spring from the gas cylinder (fig. 24).



Fig. 24

Separate the piston spring from the piston rod (fig. 25).

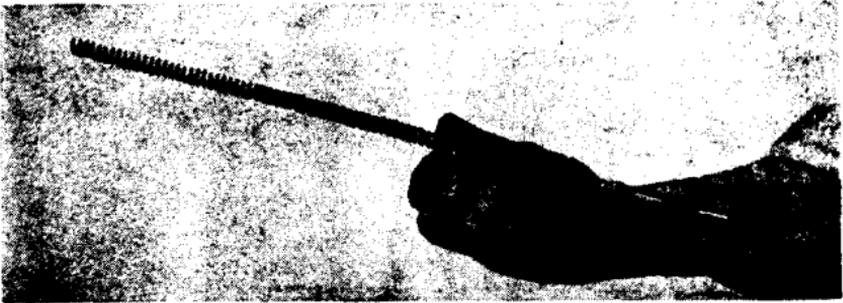


Fig. 25

Note: There is no need for the soldier to strip the extractor. It is necessary to use a cartridge for this, or a special tool, and it is normally done by the armorer when making a periodic inspection.

7. ASSEMBLY AFTER FIELD STRIPPING

- Replace the piston spring on the piston rod (fig. 25).**
- Replace the piston and its spring in the gas cylinder (fig. 24).**
- Insert the gas plug, compressing the piston spring, with the big end of the plunger turned towards the barrel (fig. 23).**
- When the gas plug is fully home, rotate it one-eighth of a turn, so that the letter "A" moves upwards.**
- Use the nose of a cartridge to push the plunger and rotate so that the letter "A" appears uppermost (fig. 22).**
- Replace the firing pin spring and the firing pin in the breech block (fig. 21); compress the spring by working the firing pin and replace the pin.**
- Replace the breech block in the slide, inserting the rear part obliquely in the slide (fig. 19). Exert pressure on the breech block so that the firing pin spring is slightly compressed and the breech block is swung downwards into its correct position in the slide.**
- Insert the ribs of the cover in the corresponding grooves in the receiver (fig. 18) and slide the cover fully forward.**
- Replace the mechanism in the body, inserting the ribs of the slide in the corresponding**

grooves in the receiver. When this is done, the breech block should be in its forward position (fig. 17) and the muzzle of the rifle pointing downwards; the mechanism will then fall into position correctly.

- Close the rifle, still holding the muzzle downwards, to prevent any possibility of the slide rod protruding.

VII. CLEANING AND MAINTENANCE

1. GENERAL REMARKS

It must be emphasized that all automatic weapons require constant cleaning and maintenance and that most of the stoppages mentioned elsewhere are the result of the soldier's negligence or lack of knowledge of his weapon. All weapons, whether automatic or repeating rifles, should be cleaned at the end of a day's firing and special care must be taken after firing with blank cartridges.

2. MAINTENANCE OF THE RIFLE

a) Maintenance by the soldier

The FN Rifle cal. 7.62 mm only needs to be partially stripped for this maintenance (field stripping); maintenance routine is as follows:-

- Use the barrel cleaning brush, oiled with the special rifle bore oil provided, and pass through the barrel several times;
- Follow this by pulling through two or three dry rags;
- Clean the chamber with the cleaning brush provided for this purpose;

Clean the slide, rear of the barrel and inside the body;

Clean the breech block, firing pin and its housing;

Clean underneath the extractor claw, without stripping it;

Remove the gas plug, the piston and its spring and carefully clean these parts, as they are exposed to gas fouling;

Clean the gas cylinder and wipe with a slightly oiled rag; this rag should also be passed through the barrel;

Very slightly oil the moving parts of the mechanism.

b) Inspection and maintenance by the unit armorer

It is essential that the rifle should be examined periodically by the armorer, who will check that it is being properly cared for by the user.

All components of the rifle will then be checked for correct functioning. When this examination is made, the following special cleaning and inspection operations will also be carried out:-

- Cleaning the exhaust port in the gas cylinder;**
- Stripping and cleaning the extractor;**
- Checking the gas setting;**
- Checking the sight and correcting, if necessary.**

3. COMPLETE CLEANING OF BARREL AND GAS CYLINDER

The barrel and gas cylinder must be cleaned regularly so that they never get into such a state that the use of abrasives is necessary; all abrasive material such as emery paper, sand, etc., is always harmful.

The full cleaning of barrel and gas cylinder should be done unhurriedly, when circumstances permit, as follows:

Wash the barrel, using barrel brush, or sponge, steeped in special oil.

Wash the inside of the front part of the gas cylinder and gas block, using the brush for cleaning the chamber and the special oil.

After the barrel and gas cylinder have been thoroughly cleaned in this way, dry carefully, using clean rags. After drying, the rag—usually white service flannelette—should come out of the barrel and gas cylinder unstained.

After drying, slightly oil the barrel (bore and chamber) and the gas cylinder.

Dry the outside of the barrel and polish with a greasy rag.

The pieces of flannelette for this cleaning will usually be cut to the following measurements: length approx. 120 mm, width approx. 60 mm (about $5'' \times 2\frac{1}{2}''$).

For passing through the barrel, use an unfolded piece, for cleaning the gas cylinder, double it over to give a 60×60 mm square before inserting in the loop of the cleaning rod or pullthrough.

Rags or cotton waste can be used for cleaning the remaining parts of the rifle.

Note: The inside of the barrel and inside of front half of the gas cylinder come into direct contact with the combustion gases and are also submitted to friction; they consequently require more care and attention. Other components are protected against oxidising by phosphating (parts of the mechanism and receiver) and the piston and gas plug are hard chromed.

Precaution after firing

To be on the safe side, particularly in hot climates, and to make subsequent cleaning of barrel and gas cylinder easier, the user is strongly advised to take the following preventive measure:

Immediately after firing, before leaving the firing range or scene of manoeuvres, clean barrel and gas cylinder by wiping with a rag steeped in special oil (Rifle bore oil).

This precaution has the effect of:—

Neutralising the harmful effect of any fouling caused by residue of powder gases;

Preventing the formation of carbon deposits in the gas cylinder and gas block;

Allowing the usual cleaning operations to be postponed for at least 24 hours, without causing any damage.

Within 48 hours of carrying out this precaution, the rifle should be completely cleaned as indicated in paragraphs 2 and 3.

4. PREPARATION OF RIFLE BEFORE FIRING

The L. A. R. functions with very little or practically no lubrication.

Before firing, wipe off any oil remaining on barrel and gas cylinder surfaces; if the piston and chromed part of the gas plug have been slightly oiled, dry clean these too.

The tabulation given below gives on one side the list of parts which can be slightly oiled, on the other the list of parts which require no oiling and which, in some cases, can be adversely affected, if oiled.

Components, or parts of components, which will be very slightly oiled	Components, or parts of components, which will not be oiled before firing
<p>OILED</p> <ul style="list-style-type: none"> — Inside breech block slide. — Breech block, ot locking shoulders. — Body, at bottom and along guide grooves for slide. — Holding open device. 	<p>LEFT DRY</p> <ul style="list-style-type: none"> — Barrel. — Gos cylinder. — Piston. } chromed — Gos Plug. } ports — Outer surface of slide. — Front face of breech block. — Mogorine and platform. — Magazine catch — Sights.

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