

# LEE ENFIELD

**.303" SMLE (all marks)**

**.303" No.4 (all marks)**

**.303" No.5**

## TRAINING AND HANDLING NOTES



Version 6.1

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The British Young Shooters' Association exists to help young shooters enter and stay in the sport of target shooting, no matter what their discipline or preferred firearm type. For more information visit <http://www.youngshooter.co.uk> .

The author may be contacted by post care of:

The London and Middlesex Rifle Association  
Bisley Camp  
Brookwood  
Surrey  
GU24 0PA

or by email:

[csr@youngshooter.co.uk](mailto:csr@youngshooter.co.uk)

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# Introduction

This pamphlet has been written for instructors, coaches and range officers of the British Young Shooters' Association. It contains handling drills and user maintenance information for the .303" Lee Enfield No.1 (SMLE), No.4 and No.5 rifles. The drills were developed in accordance with the NRA Rules of Shooting in the 2016 edition of the Bisley Bible.

This pamphlet is for experienced instructors who already know the NRA rules of shooting and the general safety rules that apply to British ranges. It is an aide-memoire, not a comprehensive resource. The emphasis is on safe and competent handling of the rifle.

The SMLE, No.4 and No.5 are all open sighted .303" manually operated bolt action rifles with a 10 round magazine. Although each rifle is different, in range management and handling terms they are identical. Brief notes are included on these differences but only so far as is needed to strip and assemble each rifle.

Marksmanship is a separate topic not covered here. Many other publications deal with Lee Enfield marksmanship, including the excellent 1946 volume *Shoot to Live*, which can be downloaded from Milsurps.com. In time a second volume of this manual will be written, covering basic marksmanship as applied to the Lee Enfield.

The resourceful instructor will realise that the basic drills described in chapter 2 can be adapted for most manually operated magazine-fed bolt action rifles. This pamphlet, however, is not a replacement for the manufacturer's own instructions.



Figure 1: An SMLE (top) and a No.4

# How to use this pamphlet

There are six chapters:

1. General description and parts of the rifle
2. Range commands
3. The sights
4. Stripping, assembling and the function test
5. Stoppages
6. Cleaning

Important parts are set out under the heading “points to teach” and must be taught to students. Other information is for the instructor and may be taught at his discretion.

## Version history

Version number	Date of issue	Changes
1	January 2017	Original A4 draft
2.0	February 2017	A5; images identified
3.1	April 2017	Some pictures added; typos fixed
4.2	April 2017	Copyright page added; typos fixed; more pictures added
5.0	May 2017	Contents and index page added
6.0	June 2017	Sights chapter added
6.1	November 2018	Typo corrections; reference to Vol 2 Marksmanship in introduction

# Chapter 1: General description and parts of the rifle

## Chapter contents

- Brief history of the Lee Enfield
- Points to teach 1 – parts of the rifle
- Points to teach 2 – safety procedures

## Brief history

The .303” Lee Enfield rifle was the issued rifle of the British and Commonwealth armed forces during the First and Second World Wars. Millions of these rifles were built during the 20<sup>th</sup> Century and they are still in use by the police forces of some countries today.

The SMLE (“Rifle, **S**hort **M**agazine, **L**ee **E**nfield”) was used by British, Australian, Indian, Canadian and New Zealand forces during World War One, while the No.4 and No.5 were used mainly by British, Canadian and New Zealand forces during World War Two.

The SMLE (sometimes pronounced “smelly”) evolved from various designs used in the late 19<sup>th</sup> Century by the British Army. Its most common variants in modern civilian ownership are the Mark III and Mark III\* (pronounced “mark three star”). In the 1920s the SMLE became known in British and Commonwealth service as the Rifle, .303” No.1, but will be referred to in this pamphlet as the SMLE throughout.

The No.4 was designed for faster, cheaper mass production than the SMLE. The No.4 bolt and receiver were the basis for a number of post-war conversions to 7.62mm NATO calibre, including the L39A1 target rifle and the L42A1 sniper rifle.

The No.5 is based on the No.4 but was shortened and lightened for jungle use. Civilian firearms dealers commonly refer to it as the “Jungle Carbine” though it was never officially known as such.

# Points to teach 1: Parts of the rifle

The parts common to all Lee Enfield rifles are shown on the No.4 rifle pictured below.



*Figure 2: A No.4 Mk.I rifle with key parts numbered for reference*

## **Key to Figure 2**

- |                            |                       |                             |
|----------------------------|-----------------------|-----------------------------|
| 1. Rear sling swivel       | 5. Magazine release   | 10. Gas escape hole         |
| 2. Bolt handle             | catch                 | 11. Rearsight (folded down) |
| 3. Trigger guard           | 6. Magazine           | 12. Safety catch            |
| 4. Bolt head release catch | 7. Front sling swivel | 13. Trigger                 |
|                            | 8. Foresight          | 14. Cocking piece           |
|                            | 9. Muzzle             |                             |

The No.5's key parts are effectively identical to the No.4's as shown above. The main difference in handling terms is the shorter barrel.

Note that the charger bridge is just above and to the right of label number 4.

Parts unique to the SMLE, as distinct from the No.4, are shown overleaf.



*Figure 3: A SMLE Mk.III fitted with volley sights*

### Key to Figure 3

- |  |                             |                                    |
|--|-----------------------------|------------------------------------|
| 15. Butt disc (not fitted to this rifle) | 17. Rearsight and protector | 20. Volley foresight               |
| 16. Magazine cut-off                     | 18. Piling swivel           | 21. Volley rearsight (folded down) |
| 19. Bayonet lug                          |                             |                                    |

Volley sights, if fitted, must not be used for target shooting. They are a relic from long range 19<sup>th</sup> century warfare before machine guns were common.

## Points to teach 2 – safety procedures

Students must know how to check the rifle is unloaded (“proved clear”) when they pick it up. The rifle must also be proved clear when it is handed to another person or put away for storage.

1. Check the safety catch is off (forward).
2. Open the bolt and check the magazine and chamber are empty.
3. Show the other person the chamber and magazine and state “clear”.
  - a. They should repeat back “clear”, then you hand the rifle over.

When putting the rifle away for storage the bolt should be closed, the striker forward (“fired off”) and the safety catch on. Bolts should not be separated from rifles in storage, especially where bolts bear different numbers to the rifles they are fitted to.



## **Information for the instructor**

The 'proving clear' drill can be adapted for handing over rifles that are "loaded" or "ready"; for example, if a firer has a severe stoppage on the range that they cannot clear. Emphasise to students that this variation of the handover drill is only ever to be used under the direct personal supervision of a coach or RCO.

Remember to keep a loaded or ready rifle pointed downrange at all times.

# Chapter 2: Range commands

## Chapter contents

- Points to teach 1 – rifle states
- Points to teach 2 – range commands
- Points to teach 3 – types of fire
- Points to teach 4 – command for different positions

The commands and their drills set out below are as used in NRA Civilian Service Rifle competitions run in accordance with the Bisley Bible. They apply equally to the SMLE, No.4 and No.5 rifles. Shooters using the Lee Enfield must be able to carry out all these commands. RCOs/safety supervisors/coaches in particular must know them by heart.

### Points to teach 1 – rifle states

All firers must know these rifle states by heart.

- **The rifle is *loaded*** when there are rounds in the magazine, no rounds in the chamber and the bolt is not cocked.



*Figure 4: A loaded No.4. The safety catch is on and the bolt is not cocked (the striker is forward)*

- The bolt is to be closed and the safety catch is to be on.

- **The rifle is *ready [to fire]*** when there is a round in the chamber, regardless of the state of the magazine. The safety catch is on until the shooter is ordered to start.



*Figure 5: A No.4 ready to fire. The bolt is cocked and the safety catch is on*

- **The rifle is *unloaded*** when there are no rounds in the magazine or chamber.



*Figure 6: An unloaded No.4. The bolt is open and the magazine is empty*

A breech flag is always inserted in the chamber when the rifle is not in use on the firing point. Where a breech flag is not available, the bolt should be removed instead.

## Points to teach 2 – range commands

### **Loading 1: “Detail – (with X rounds) load”**

1. Open the bolt fully.
2. Put the full charger on the charger guide.



*Figure 7: Figure 7: The charger clip in position on a No.4. Pic: Quarzexe/Wikipedia*

3. Using the right thumb and with the fingers curled under the rifle, press the rounds fully down into the magazine.
  - a. The point of the thumb should be pressed into the thumb slot in the left-hand receiver wall.
  - b. The 10th round may be harder to feed into the magazine. Sliding the thumb forwards as the rounds enter the magazine will help.
4. Once the last round of the clip is in the magazine, remove the charger.
5. Push the top round in the magazine down slightly and ease the bolt forward until it has passed the rim.  
[pic 12, rd being pushed down with bolt eased past case head]
6. Close the bolt on the empty chamber while pulling and holding the trigger. This ensures the rifle does not cock as the bolt is closed.
7. Apply the safety catch.

The rifle is now *loaded*.

**Ready: “Detail – ready”**

1. Release the safety catch.
2. Fully open and close the bolt in one fast, smooth movement to chamber a round from the magazine.
3. Apply the safety catch.
4. Raise the rearsight and set it as required.

The rifle is now *ready*.

**Loading variant 2: “Detail – load and make ready”**

1. Open the bolt fully.
2. Put the full charger clip (charger) on the charger guide.
3. Using the right thumb and with the fingers curled under the rifle, press the rounds fully down into the magazine.
  - a. The point of the thumb should be pressed into the thumb slot in the left-hand receiver wall.
  - b. The 10th round may be harder to feed into the magazine. Sliding the thumb forwards on the top round while pushing the other rounds down into the magazine will help.  
[pic, rds being pushed into mag]
8. Once the last round of the clip is in the magazine, remove the charger clip from the charger bridge and then sharply close the bolt in one fast and smooth movement.
  - a. Or, close the bolt in one fast and smooth movement. This will kick the empty clip out of the charger bridge and chamber a round. The rifle is designed to do this and the clip will not be damaged; it may be easily lost in long grass, however.
9. Apply the safety catch.

The rifle is now *ready*.

Note that for loading single rounds, the firer should be taught to press it into the magazine and then pick it up with the bolt rather than feeding it into the chamber as with a target rifle. This reduces stress on the extractor claw.

### **Unloading: “Detail – unload”**

1. Open the bolt.
2. Check the chamber and magazine are empty.
  - a. If a round is in the chamber, close the bolt and open it again to pick up the round and pull it out.
  - b. If there are rounds in the magazine, work the bolt back and forth (no need to lock it down) until the magazine is empty.
3. Leave the bolt open.

### **Make safe**

This is used to take a rifle from the *ready* state to the *loaded* state. It is normally used on a multi-distance rundown practice in between bounds to ensure firers do not start running with a chambered round.

### **“Detail – (with X rounds) make safe”**

1. Take the safety catch off.
2. Open the bolt slowly and fully and catch the ejected round.
3. Press the round back into the top of the magazine.
4. Hold the rounds in the magazine down and ease the bolt forward until the bolt head has passed the rim of the top round. **It is vitally important that no round is picked up by the bolt or chambered.**
5. Pull and hold the trigger and close the bolt so the rifle is not cocked.
6. Apply the safety catch.

The rifle is now *loaded*.

### **Inspection: “For inspection – port arms” or “show clear”**

This command is given straight after the “unload” at the end of a detail.

1. Ensure the bolt is fully open.
2. Tilt the rifle to the left.
3. Where possible, tilt the muzzle down slightly to give the safety supervisor a better view into the chamber.  
[pic, firer showing clear]

### **Inspection variant 2: “Unload and show clear”**

This is given while the rifle is still loaded or made ready.

1. Check the safety catch is fully forwards.
2. Open the bolt by lifting the bolt lever and pulling it fully backwards.
3. Check the chamber and magazine are empty.
  - a. Remove any rounds present in the rifle.
4. Leave the bolt open for the safety supervisor to double check.

Do not remove the magazine from a Lee Enfield rifle during the unload drill. In NRA Civilian Service Rifle competitions it is not normal to remove the bolt for inspecting the chamber unless ordered to do so.

Although the RCO may give orders relevant to other types of rifle (e.g. “ease springs”) no further actions are required, other than inserting the breech flag on the RCO’s or safety supervisor’s direct instruction.

## Points to teach 3 – types of fire and fire control orders

There are four main types of fire used in CSR shooting:

1. Deliberate
2. Application
3. Rapid
4. Snap

These may be combined during a particular practice or competition.

## **Deliberate**

Deliberate fire is shooting at a slow and steady rate, emphasising correct sight picture and shot release. There is no time limit and the target does not move.

Deliberate shooting is the type of fire used during grouping practices. The sights are not adjusted and the firer does not aim off between shots during a deliberate shoot. Typical scoring involves measuring the size of the group.

The RCO's fire control order will end with the phrase **"in your own time – go on"**.

## **Application**

Application refers to "applying the group" to the centre of the target. It is identical to deliberate shooting but the sights are adjusted in between shots or the firer aims off. Target Rifle shooting is a form of application shooting. Typical scoring is based on the value of scoring rings.

The RCO's fire control order will end with the phrase **"in your own time – go on"**.

## **Rapid**

Rapid fire is shooting against a time limit. The target may appear at the start of the time period and disappears at the end of it, or the RCO may have a watch and count down the time. The number of rounds to be fired varies between matches.

Sometimes rapid fire can be combined with snap shooting, as explained later.

The RCO's fire control order will end with the phrase **"rapid – rapid – fire"** with the word "rapid" repeated twice. Shooters may take their safety catches off on the second "rapid" and start shooting after the word "fire".

## **Snap**

Snap shooting is shooting at a target that appears and disappears. The number of rounds to be fired, and the shooting position they may be fired from, is set in the practice conditions. Similarly, the length of time the target appears for (the "exposures") and the intervals between exposures may be set or may differ ("varying").



In competitions the butts officer has a precise time chart so although the intervals between exposures will vary, they are always the same at each interval for each detail so everyone experiences the same shoot.

The RCO's fire control order will end with the phrase "**watch and shoot – watch and shoot**". As with rapid fire, on the second repetition of "watch and shoot" the safety catch may be taken off. The first shot may be fired once the target appears.

### **Combined snap and rapid practices**

Combined practices generally mean the shooter has a certain amount of time to fire a given number of shots at a snap target.

The RCO's fire control order will end with the phrase "**X rounds rapid, watch and shoot**". On the words "watch and shoot" the safety catch may be taken off and shooting may start as soon as the target appears.

### **"Watch out"**

This order is given to start a rundown practice. "Watch out" means you will be given a signal to start moving without further orders from the RCO. This signal is usually a quick flash of a target from the butts.

It comes at the end of the RCO's fire control order. For example: "**Practice four – watch out!**"

## Points to teach 4 – adopting different shooting positions during a practice

There are some CSR snap practices where the shooter must change position when the target appears. These almost always begin with the shooter in the **standing alert position**, which means standing up but with the rifle pointing down (at about 30 degrees) so it is not aimed at the target area.

[pic, firer in standing alert]

# Chapter 3: The sights

## Chapter contents

- Overview
- Points to teach 1 – SMLE sights
- Points to teach 2 – No.4 and No.5 sights
- Zeroing

## Overview

For teaching the No.4 and No.5 it is assumed that the Mk.1 'Singer' type micrometer rearsight (*right*) is fitted.

This is the most common pattern of rearsight.

Other types of sights can be found fitted to the No.4. These are not covered in detail because their operation is straightforward. In addition, they are of limited use for precise target shooting.

Almost all Lee Enfield rifles are iron sighted except for the L42A1 and the No.4(T) sniper rifles. This pamphlet does not cover the telescope sighted rifles because they are almost never found as club or shared rifles due to their high value.



*Figure 8: Mk.1 'Singer' rearsight with vertical adjustment wheel*

## Information for the instructor – No.4 rifle sights

All Lee Enfield rifles have an interchangeable blade foresight to adjust the vertical zero of the rifle. The blade can be an interference fit (all SMLEs and some late manufacture No.4s) or be secured by a screw (No.4 and No.5 only).

The blades used on the No.4 and No.5 are interchangeable. They come in 7 different heights at .015" intervals between -.045" and +.060", which refer to the height of the tip of the blade above the centre of the bore. The size 0 blade is exactly 1.000" above it. Each blade's size is stamped on the top of its block. The SMLE also uses a similar blade system but those blades cannot be interchanged with the No.4 or No.5 rifles.



**Figure 9: Closeup of early-pattern No.4 rifle foresight securing screws. Note how the screw heads are reversed, needing a special key for adjustment. Pic: Milsurps.com**

Some rifles were fitted with the Mk.3 or Mk.4 wartime rearsight, which are very imprecise and adjusted using a spring-loaded plunger and a slider. Adjustments can only be made to the pre-milled distances on the sight leaf; there are no “in-between” settings.



**Figure 10: No.4 fitted with Mk.3 wartime economy stamped rearsight**

Others were fitted with the Mk.2 wartime economy rearsight, which is L-shaped and has two holes: one for 300yds and one for 600yds. The 300yds hole should be used all

distances up to 400yds. Aiming off for elevation is necessary for precise shooting with this sight.



*Figure 11: An early Canadian-made No.4 Mk.1 fitted with the Mk.2 two-position rearsight*

## Information for the instructor – SMLE rifle sights

The SMLE is fitted with a post foresight and a ramp rearsight mounted on the barrel. Some, slightly rarer, SMLE rearsights have windage adjustment wheels.

Other SMLEs, especially those made before World War One, may have volley sights fitted. These rare items consist of a disc fairly far forward on the left hand side of the rifle and a loop on a metal post fixed just below the safety catch. **These should not be used for target shooting.**

In the days before machine guns were common, volley sights were used by groups of soldiers to put a large number of shots into a distant area on the command of an officer or NCO. Originally designed for pre-Boer War conditions when the British Army was facing tightly-packed formations of enemy troops, volley sights were obsolete by the turn of the 20<sup>th</sup> century and had been removed from most rifles in service by the outbreak of WWI.

Although all Lee Enfield rifles have backsights marked in yards, these were calibrated for military issue .303” ammunition. No modern commercial ammunition (or standalone bullet, for handloaders) precisely matches the ballistics of military ammunition. Therefore, Lee Enfield sight markings are just a rough guide to where shots will hit at different

ranges. **As ranges become longer these markings become more and more inaccurate and should not be relied upon.**

## Points to teach 1 – setting the SMLE's sights

The SMLE rearsight is a ramp with a slider controlled by a spring-loaded locating plunger. It can be set between 200yds and 2,000yds. The graduations on the left hand side of the ramp give 25yd intervals.



*Figure 12: A SMLE Mk.III rearsight. Note windage wheel on the right hand side*

The sights are of the post and notch type: the foresight post (blade) should be positioned at the same height as the shoulders of the rearsight notch in order to achieve the correct sight picture.

On the rarer Mk.III backsight windage can be adjusted with the wheel set into the right hand side. **Each clockwise click of the wheel moves the point of impact 1 minute of angle to the right.**

The more common Mk.III\* type backsight does not have windage adjustment.



*Figure 13: View down the sights of an SMLE. Note position of foresight blade within the notch of the rear sight. Pic: CandRsenal, Imgur/YouTube*

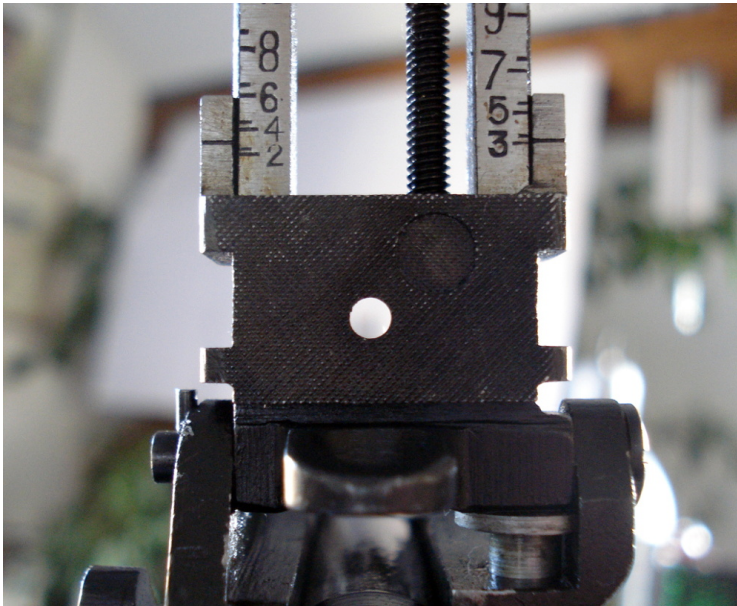
## Points to teach 2 – setting the No.4 and No.5's Mk.1 Singer pattern sights

The No.4 and No.5 have almost identical leaf rear sights with a hole for the firer to look through. The only difference between the two is where the yard graduations are stamped into the No.5 leaf, to take into account that rifle's shorter barrel. The shorter graduations without numbers represent 50yd intervals.

The battle sight is the large loop presented when the rear sight leaf is folded down. It is a larger hole than the one on the adjustable part of the sight and is therefore less accurate to use. When the rifle is correctly zeroed the battle sight will have a very approximate 300yds zero. Its use should be strongly discouraged.

The Mk.1 rear sight can be adjusted between 200yds and 1,300yds. It can also be moved 2 clicks below 200yds, which a skilled shooter can use as a precise 100yds setting. The No.5 rear sight is adjustable over exactly the same range of travel as the No.4 but only has graduations up to 800yds.





*Figure 14: Closeup of the Mk.1 'Singer' rearsight. Note shorter 50yds graduations.  
Pic: Bretho via Wikipedia*

The rearsight is adjusted with a wheel on top of the leaf. **Turning the wheel clockwise raises the point of impact by 1 minute of angle per click on the No.4 and the No.5.**

No windage adjustment is available on the No.4 or No.5 rearsight. The service rearsight can be replaced by items such as the Parker Hale PH5C rearsight, which adds  $\frac{1}{4}$  minute of angle clicks for precision Target Rifle shooting. These sights are not used for Civilian Service Rifle shooting under NRA rules.

## Zeroing – instructor's information

**At 25yds all .303" Lee Enfield rifles should be zeroed so the shot hits 3" above the point of aim.**

**At 100yds all .303" Lee Enfield rifles should be zeroed so the shot hits  $\frac{3}{4}$ " above the point of aim.**

For zeroing at 25yds or 100yds the sights should be set to the 200yds position.

The theory of zeroing in this way is that with the sights set at 200yds, it is not necessary to adjust the sights or take a different point of aim to hit a man-sized target between 100yds and 300yds away.

Experience with commercial PPU 174gr ammunition has shown that with a No.4 rifle zeroed at 200yds so the point of aim and point of impact are the same, two rearsight clicks down will produce a precise 100yds setting, while two clicks up from 200yds produces a precise 300yds setting.

Shooting with the bayonet fixed will move the point of impact. On the SMLE this is about 18" higher at 200yds, while it is about 4" lower with the No.4 spike bayonet.



# Chapter 4: Stripping, assembling, function test

## Chapter contents

- Points to teach 1 – the magazine
- Magazine maintenance
- Points to teach 2 – the bolt
- Bolt maintenance
- Points to teach 3 – function test

Normal stripping of the Lee Enfield is limited to removing and replacing the bolt and magazine for routine cleaning.

For detailed stripping of the SMLE for inspection and repair, refer to the 1931 Instructions for Armourers (which can be found via Google on milsurps.com). For the No.4, refer to the Canadian 2002 Instructions for Armourers, which can be found in the same place.

Both publications are also held on the BYSA Filedrop.

## Points to teach 1 – The magazine; its parts, removing and replacing it

The SMLE magazine has sharper, squarer edges than the No.4/No.5 magazine. The magazine for the No.4 and No.5 is identical. Both hold 10 rounds.

The Lee Enfield is designed to be reloaded with chargers through the top of the rifle body, not by changing the magazine for a full one.



*Figure 15: SMLE (L) and No.4 (R) magazines. Note the rounded edges of the No.4 magazine. The No.5 magazine (not pictured) is identical to the No.4's.*

The magazine consists of the body, the leaf spring, the auxiliary spring and the platform. The leaf spring and platform are permanently pinned together and move up and down inside the body. The auxiliary spring clips to the front of the magazine body via a small pimple stamped into the body. The magazine will work perfectly without the auxiliary spring.

The magazine catch is inside the trigger guard. Press it up against the rifle body and hold it in to pull the magazine out of the bottom of the rifle.

To replace the magazine, push it back into the magazine housing (front/narrower end first, curving it round) until a click is felt and give it a tug to ensure it is locked in place.



*Figure 16: Removing the magazine from the No.4 rifle*

The spring and platform can be removed from the magazine body by pressing down the rear of the platform and releasing the front of it from behind the front feed lips.



*Figure 17: A stripped No.4 magazine. L: platform and spring. R: Magazine body. Bottom: auxiliary spring.*

To reassemble the magazine, feed the rear of the platform in first and guide the front of it behind and underneath the front feed lips.

Most magazines are not numbered to their rifles but they should **not be treated as interchangeable**.

### **Information for the instructor**

Magazines cannot be interchanged between the SMLE and the No.4, though with some jiggling they will feed unreliably. There are four feed lips on the top of the body which are individually adjusted (bent!) to ensure the magazine feeds properly in its rifle. It is these unique adjustments which mean magazines should not be swapped between rifles.

Historians are unsure about the auxiliary spring's purpose but most informed opinion seems to be that it was provided as an emergency repair method in case the leaf spring snapped. This is vanishingly rare.

**The Lee Enfield is designed to be reloaded with chargers through the top of the rifle body, not by changing the magazine for a full one.** Constantly removing and replacing magazines wears them and the rifle's sear out much faster than they were designed for.

The U-shaped spring in the rifle body which holds the magazine catch against the magazine is also the same spring which provides the trigger pressure. Changing the

magazine means the magazine catch will rest at a slightly different position, which will have a tiny but occasionally noticeable effect on the trigger weight.

## Maintaining the magazine

A light film of oil should be applied to the leaf spring. The insides of the body should be clean and free from grit. The undersides of the feed lips should be clean and dry. A very light film of oil on the edges of the platform will help it run freely.

It is not desirable to dismantle the magazine more often than once every 6 months unless necessary because it was used in the rain or has picked up sand or grit.

## Points to teach 2 – The bolt; its parts, removing and replacing it

The Lee Enfield bolt consists of 6 main parts: the bolt body; the bolt head; the cocking piece; the striker; the striker retaining screw; and the mainspring.



*Figure 18: A No.4/No.5 type bolt stripped. Pic: Justintoxicated/calguns.net*

### **Key to Figure 18**

1. Striker. This runs through the bolt body. Its narrow tip strikes the primer in the cartridge case.
2. Bolt body.
3. Mainspring. This bears against the collar on the striker.
4. Cocking piece. The striker's threaded end screws into the block.
5. Striker retaining screw. This screws into the block of the cocking piece.
6. Bolt head.

Only the bolt head should be unscrewed from the bolt body where required for cleaning. The rest requires a unique tool to dismantle and reassemble.

The rifle receiver and bolt body should be numbered to match each other, though a significant minority of No.4 and No.5 rifles are mismatched. For these two rifles, the serial number is found on the rear of the bolt handle and on the left hand side of the rifle receiver.



*Figure 19: No.4 serial number locations: back of the bolt handle and left hand side of the receiver*

On the SMLE, the serial number is stamped on the rear of the bolt handle and on the receiver ring where the barrel screws in.

### **Information for the instructor**

Although there are 4 nominal sizes of bolt head (0, 1, 2 and 3) for the No.4 and No.5, in which a higher number means the bolt head is longer, in reality sizes vary between them thanks to poor wartime manufacturing tolerances and adjustments by armourers.



The SMLE was issued with one oversize bolt head which was stoned down by armourers to achieve the correct tolerance. Each SMLE bolt head is a unique length for its own rifle.

The Enfield bolt head is held on the bolt body by its screw thread. The bolt body rotates when the bolt is opened and closed while the bolt head stays put.

## SMLE

The SMLE bolt is retained by a spring on the right hand side of the receiver. To take the bolt out of the rifle, pull it fully to the rear. Firmly grasp the bolt head and rotate it to the 12 o'clock position. It will ride over the spring detent when it is rotated.



*Figure 20: The arrow indicates the SMLE bolt head retaining spring. Pic: Virginia Toolworks*

Once the bolt head is at the 12 o'clock position, pull the bolt out of the rifle.

To replace the SMLE bolt, screw the bolt head all the way into the bolt body and then unscrew it until it lines up with the long resistance column on the side of the bolt body.

[pic of aligned bolt and bolt head]

Then offer up the bolt to its raceway and push it forward into the rifle until it stops. Firmly press the bolt head down against the rifle's body until it clicks into place against the spring detent. Then push the bolt forward an inch or so.

## No.4 and No.5

The No.4/No.5 bolt is retained by different methods depending on where the rifle was made.

**British rifles** (the No.4 Mk.I, No.4 Mk.I/2 and No.4 Mk.2) have a retaining catch on the right hand side of the receiver.

**Canadian and American rifles** (the No.4 Mk.I\* and Mk.I/3) do not have this catch but instead have a notch cut in the bolt head guide rail.

### – British rifles

To remove the bolt from a British rifle, push the bolt forward an inch or so. Press and hold down the bolt head catch and pull the bolt fully to the rear, letting the bolt head ride over the catch; then let go of the catch.



*Figure 21: Note how the bolt head is sitting on top of the bolt head catch*

Rotate the bolt head to the 12 o'clock position before pulling the bolt out of the rifle.

To replace the bolt in a British rifle, screw the bolt head all the way into the bolt body and then unscrew it until it lines up with the long resistance column on the side of the bolt body. This should take no more than an eighth of a turn of the bolt head.





*Figure 22: The bolt head is lined up perfectly with the long resistance column*

Then offer up the bolt to its raceway and push it forward into the rifle until it stops. Press and hold the bolt head release catch, rotate the bolt head anticlockwise until it is flat against the bolt head release catch, and push the bolt forward an inch or so before letting go of the bolt head release catch.

**– Canadian rifles**

To remove the bolt from a Canadian rifle, identify the inch-long slot in the bolt head guide rail on the right-hand side of the receiver raceway.

Push the bolt forward until the bolt head lines up precisely with the slot – this will need the bolt to be pushed forward and held against the mainspring. Once the bolt head is aligned with this slot, rotate it to the 12 o'clock position and remove the bolt in the same way as described above.

To replace the bolt in a Canadian rifle, screw the bolt head in as described above for British rifles. Then offer up the bolt to its raceway and push it into the rifle body until it stops.



*Figure 23: The Long Branch rail cutout. Compare with Figure 21 above. Pic: monkeymasher/reddit*

Rotate the bolt head to meet the guide rail and then push the bolt forward against the mainspring until the bolt head is over the slot. Push the head down into the slot and release the bolt; the bolt head should now be in its working position against the rail, running back and forth freely.

Avoid hitting the bolt head against the bolt head guide rail. If the guide rail is chipped, especially around the slot, the bolt head may be able to jump off its track during rapid bolt movements – meaning it will cause the bolt to jam and the rifle will be of no use.

Note that Canadian No.4s do not have a bolt head release catch.

## Maintaining the bolt

The bolt head can be unscrewed from the bolt body. **Do not mix up bolt heads: they are precisely headspaced to each individual rifle.**

- Clean the bolt body and bolt head with oiled flannelette or a clean oiled rag.
- Oil the bolt body and the bearing faces of the locking lugs.
- Lightly oil the bolt head screw thread.
- Wipe carbon build up and any brass shavings off the bolt face and tip of the striker.
- Check that the tip of the striker is smooth and rounded. If it is not, do not use the rifle: ask a competent person for advice.
- Remove any brass shavings from under the extractor. Clean off any carbon buildup rings on the bolt face. If preparing for firing, leave the bolt face absolutely dry.
- Lubricate the mainspring by applying oil from the front of the bolt body with the bolt head removed. It does not need large quantities of oil.
  - Where possible, the spring should be removed from the bolt and greased, as well as the striker rod where the spring bears.
  - Avoid oiling from the rear of the bolt body as excess oil there will be flicked into the firer's eye when the rifle is fired.

If any cracks, fractures or evidence of missing metal are found anywhere on the bolt, stop using the rifle immediately and show the bolt to a gunsmith.

## Points to teach 3 – Function test

After removing and replacing the bolt, or carrying out any work on the safety catch or trigger mechanism, the function of the bolt and the safety catch must be tested. The safety catch is used regularly during CSR shooting under NRA rules.

To do this:

- Close the bolt.
- Apply the safety. It should click into place pointing to the rear.
- Press the trigger 2 or 3 times. **The rifle must not fire.** The trigger should run freely without catching or binding on anything.
- Take the safety catch off. It should lie flush pointing forwards in its recess on the receiver.
- Slowly and gently squeeze the trigger until the first stage is felt. The pressure should be held and the rifle must not fire. Resistance in the trigger pull should smoothly build up to the first stage without feeling rough or jerky. Ease off and take up the first stage 2 or 3 times.
- Then pull through the first stage until the rifle fires. The cocking piece should go fully forward.
- Open the bolt.

If the bolt cannot be opened after the trigger is pulled fully, it is at half cock. Pull the cocking piece rearwards until it clicks into place and then open the bolt. The rifle should be taken to a gunsmith if it repeatedly stops at half cock.

If the rifle fails the function test, take it to a gunsmith and describe what went wrong.

**Note: Never apply the safety catch when the bolt is open.** Trying to do this will damage the bolt body and break the safety. The safety can only be applied when the bolt is closed or when the bolt is not in the rifle.

## Chapter 5: Stoppages

Stoppages are rare on the Lee Enfield and are almost exclusively caused by improper filling of the magazine. The symptom is normally the bolt failing to go forward as the rims of the rounds in the magazine lock together and stop the bolt head picking up the top round. This is called “rim lock”.

[Pic of rim lock]

To clear a stoppage, the immediate action is to:

- Open the bolt fully
- Push the rounds in the magazine down and allow them to spring back up into place
- Close the bolt and continue firing

If this does not clear the stoppage:

- Take the magazine off
- Empty it and refill it
- OR hand feed each round one at a time into the magazine before chambering it

The other type of stoppage is case head separation caused by handloaded ammunition, in particular handloads where the cartridge case has been fired more than once. Repeated re-sizing of some cases can weaken them. On firing, the case head separates from the body of the case.

[pic of case head separation]

If this happens, the rifle will be out of action until a case extractor tool can be found. This is chambered like a normal round. It fits inside the case body and pulls it out of the chamber when the bolt is withdrawn.

## Chapter 6: Cleaning

The SMLE and No.4/No.5 rifles can be cleaned with any sensible method used for modern rifles when fired with modern non-corrosive ammunition.

BYSA CSR standard operating procedures are that a dry cleaning instrument (jag, brush, mop, etc) should not be pushed down a dirty barrel, and that barrels should be oiled for storage.

A brush loaded with cleaning fluid and pushed down the barrel 4 or 5 times before being left to soak for at least 15 minutes is a good method to remove powder fouling. This dirty fluid should be pushed out of the barrel using 4" x 2" flannelette patches until the bore is clean and dry.

The barrel should be left with a film of oil in the bore if the rifle is not going to be used within 48 hours. This oil **must** be removed before firing. All external parts of the rifle should be wiped down with an oily rag to prevent rust.

The woodwork of the rifle must not be exposed to mineral oil used for cleaning and lubricating the metal parts.

Raw linseed oil is the original waterproofing treatment for the wood. Every 3 months rub a little raw linseed oil into the wood using the palm of your hand. Boiled linseed oil works just as well but is cut with mineral oil thinners to make it dry faster. Do not leave linseed oil on exposed metalwork because it will eventually rust.

### Corrosive primers and cleaning

Original military .303" ammunition (almost all .303" manufactured before the 1980s) had corrosive mercury-based primers. This means the residue from firing original ammunition must be cleaned out immediately or the barrel will rust. The original military method of doing this was to pour 3 or 4 pints of boiling water down the bore to flush out the deposits. This was done using a funnel to introduce the water from the chamber end. The bore must be dried using plenty of flannelette if this method is used.

Modern ammunition, powder and primers are all non-corrosive. This means any normal cleaning fluid may be used without worrying about special methods to get every last bit of fouling out of the barrel.

SMLE and No.4/No.5 barrels were made from chrome molybdenum steel and will rust if not cared for. Modern replacement barrels tend to be non-stainless steel as well.

# Chapter 7: Zeroing and points of aim

The topic of zeroing the Lee Enfield rifle and picking points of aim can be split between the SMLE and all other rifle types. The SMLE uses a post and notch system whereas the No.4, and all subsequent Lee Enfields, use a post and aperture arrangement.

## Information for the instructor

This chapter is a brief overview of points of aim. You need to be familiar with all of the terms below before trying to teach it.

It is necessary to cover what the terms *point of aim*, *point of impact* and *correct zero point* mean before teaching the chapter.

**Zeroing** means shooting your rifle and adjusting its sights until you know where a shot you fire is going to land. It is a broad term: you “have a zero” (a known sight setting) for each target range distance you are going to fire at.

The **Point of Aim (POA)** is the precise spot you point your sights at before firing a shot.

The **Point of Impact (POI)** is where the shot will hit for a given sight setting. POA and POI are not the same thing.

The **Mean Point of Impact (MPI)** is the centre of a group of shots. Taking 20 shots is perfect for determining the MPI; 5 shots is what most people use; 3 shots will do if you're short of time or ammo.

The **Correct Zero Point (CZP)** is a term used when you zero your rifle at a shorter range than the one you intend to shoot at later on. The ballistics of the bullet are known so you can calculate (or use pre-calculated) POIs and POAs. For example, the British Army teaches soldiers zeroing their rifles at 100m that to hit the centre of the target at 300m with the same sight setting and POA, the CZP is 90mm above the centre of the 100m target.

In service rifle shooting, zeroing usually means adjusting the sights so the MPI and CZP meet.

## The No.4

The rifle is fitted with an aperture rearsight and a post foresight. When looking down the sights, the firer puts the tip of the foresight in the middle of the rearsight aperture to achieve the correct sight picture. See below.



**Figure 24: The No.4/No.5 sight picture (illustrative)**

The rifle is aimed at a target by putting the tip of the foresight blade just underneath the point of aim. In this way the target can always be seen and is not blocked by the foresight blade. When used with a round bull target this method is sometimes referred to as 'lollipop on a stick'.

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