



Ministry of Defence

RIFLE .22 in. No.8 Mk 1

1005-99-961-9008 (long butt)

1005-99-961-9009 (normal butt)

1005-99-961-9010 (short butt)

OPERATING INFORMATION

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**SOLDIER SYSTEMS PROGRAM LETHALITY
PROJECT TEAM
KD4Q8**

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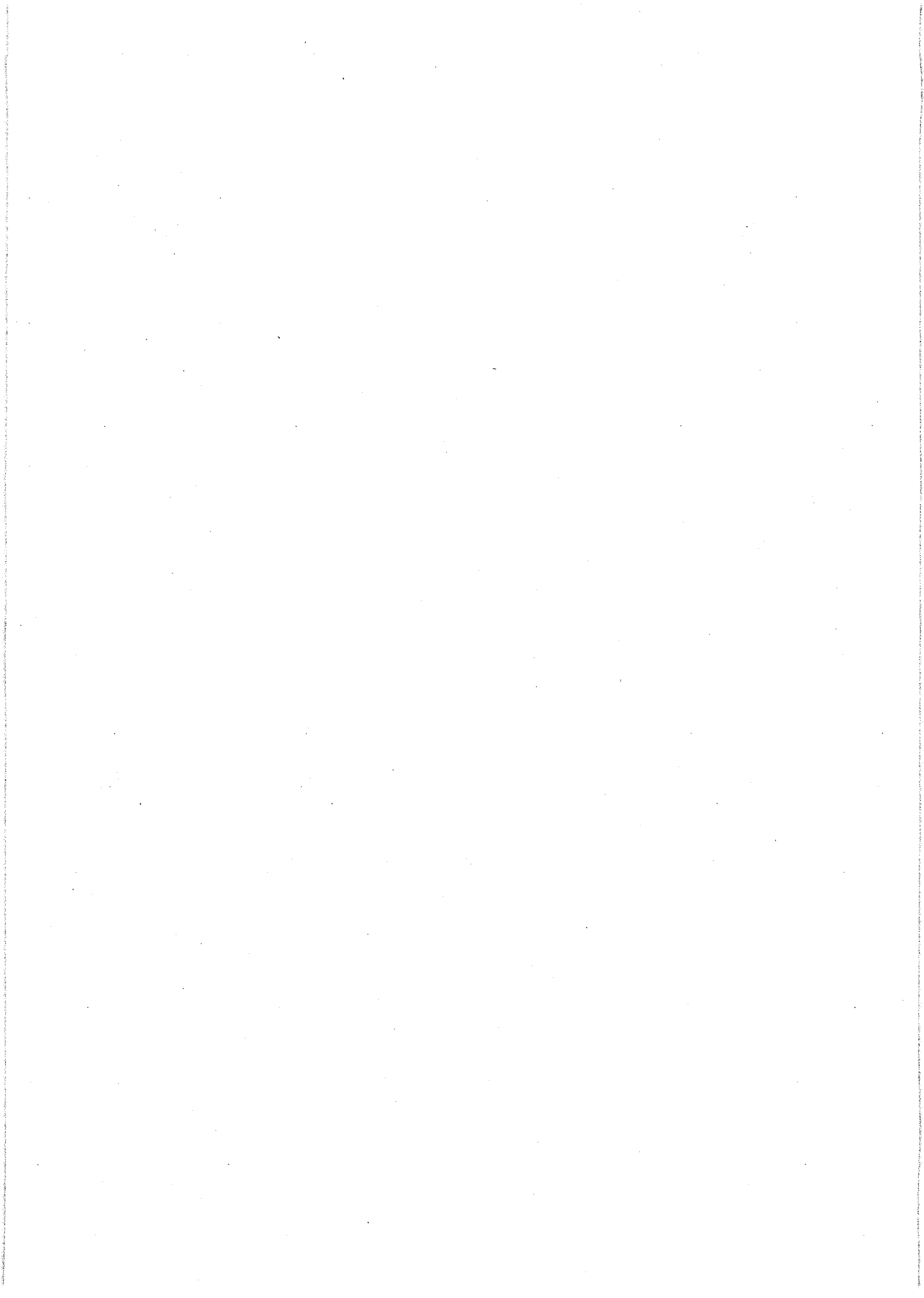


AMENDMENT RECORD

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OPERATING INFORMATION

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- 1 Description
- 2 Operating information
- 3 Failure diagnosis
- 4 Maintenance information

PREFACE

Sponsor: SSP Lethality
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INTRODUCTION

1 Any comments by service users on this publication should be forwarded through the channels prescribed in Army Equipment Support Publication (AESP) 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP.

2 AESPs are issued under UK MOD authority and where AESPs specify action is to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions and Notices (DINs), Standard Operating Procedures (SOPs) or by local regulations. When any such instruction, order or regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

4 The Octad for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

Category/Sub-category			Information Level			
			1 User/Operator	2 Unit Maintenance	3 Field Maintenance	4 Base Maintenance
1	0	Purpose and Planning Information	101	101	*	*
	1	Equipment Support Policy Directive	111	111	*	*
2	0	Operating Information	201	201	*	*
	1	Aide Memoire	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	201	302	302	302
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	201	522	522	522
	2	Maintenance Instructions	201	522	522	522
	3	Inspection Standards	*	532	532	532
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedules	*	*	*	*
7	1	Illustrated Parts Catalogues	711	711	711	711
	2	Commercial Parts Lists	*	*	*	*
	3	Complete Equipment Schedule, Production	*	*	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	*	*	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	*	*	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	*	*	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

*Category/sub-category not published.

Associated publications

5 Associated publications are as follows:

[REDACTED]

WARNINGS AND CAUTIONS

WARNINGS

- (1) **RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.**
- (2) **RISK OF HEARING DAMAGE OR DEAFNESS. ALWAYS WEAR SUITABLE EAR PROTECTORS WHEN FIRING THE WEAPON.**
- (3) **RISK OF EYE INJURY OR BLINDNESS. ALWAYS WEAR SUITABLE EYE PROTECTION WHEN FIRING THE WEAPON. KEEP THE MUZZLE AREA CLEAR WHEN FIRING.**
- (4) **PERSONAL INJURY. OPERATION THIS WEAPON MUST BE CARRIED OUT IN ACCORDANCE WITH [REDACTED]**

CAUTIONS

- (1) **EQUIPMENT DAMAGE. Excessive force. Do not use excessive force when cleaning the weapon.**
- (2) **EQUIPMENT DAMAGE. Incorrect cleaning agents and care products. Do not use any metallic objects, plastics (nylon, etc.) or chemical cleaning agents to clean the weapon.**

LIST OF ABBREVIATIONS

Abbreviation	Definition
AESP	Army Equipment Support Publication
B.A.	British Association
B.S.F.	British Standard Fine
B.S.W.	British Standard Whitworth
dia	diameter
DMC	Domestic Management Code
etc.	etcetera
Fig	Figure
in.	Inch(es)
lb(s)	Pound(s)
Mk	Mark
MOD	Ministry of Defence
MPI	Mean Point of Impact
NATO	North Atlantic Treaty Organisation
No.	Number
NSN	NATO Stock Number
NSP	Normal Safety Precautions
oz	Ounce
Para	Paragraph
SOP	Standard Operating Procedure
SSP	Soldier System Programme
UK	United Kingdom
w/	with
yds	yards

CHAPTER 1

DESCRIPTION

CONTENTS

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- 1 Introduction
- 3 General
- 5 Trigger
- 6 Rifling
- 7 Bolt
- 8 Fore-end
- 9 Barrel

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INTRODUCTION

1 Designed for use as a training rifle and also for competition shooting, the No.8 Mk 1 rifle is a hand-operated, bolt-action rifle available in three different lengths. It is a single shot weapon that fires a .22 in. round and has no magazine. The trigger can be adjusted to give either the service (double) pull or a single pull. The weight of the pull can be adjusted in either case. The rifle is installed with a blade foresight and an aperture backsight which has graduations of 25, 50 and 100 yds.

2 General characteristics for the weapon are given in Table 1.

TABLE 1 GENERAL CHARACTERISTICS

Serial (1)	Characteristic (2)	Data (3)
General		
1	Length of rifle (normal butt)	41.05 in.
2	Weight of rifle	8 lb. 14 oz.
3	Cartridge head space	0.045 in. to 0.047 in.
4	Striker protrusion	0.034 in. to 0.038 in.
5	Screw thread system	B.A., B.S.F., B.S.W.
Barrel		
6	Length	23.3 in.
7	Diameter of bore	0.216 in. to 0.2165 in.
Rifling		
8	Form	Concentric tapering
9	Number of grooves	6
10	Direction of twist	Right hand
11	Pitch	One turn in 16 in.
12	Width of grooves	0.055 in. (+0.01 in. - 0.0 in.)
13	Depth of grooves at breech end	0.000275 in. to 0.004 in.
14	Uniform taper on groove diameter decreasing towards muzzle	0.0002 in. per inch
15	Chamber	0.22 in. service ammunition
Sights		
16	Fore: Blade type issued in eight heights:	-0.03 in., -0.015 in., .0 in., 0.015 in., 0.030 in., 0.045 in., 0.060 in., 0.075 in.
17	Back:	Aperture type located at the rear of the body and graduated for 25, 50 and 100 yds. and also a harmonisation position.
18	Mean sight radius	26.95 in.

GENERAL

3 The rifle has been designed both as a training rifle and also for competitive shooting. In the latter role it is intended to be used with a match-type backsight and a tunnel foresight. These are not issued with the rifle.

4 It is a bolt-action, single-shot weapon and has no magazine. The rifle is shown in Fig 1.

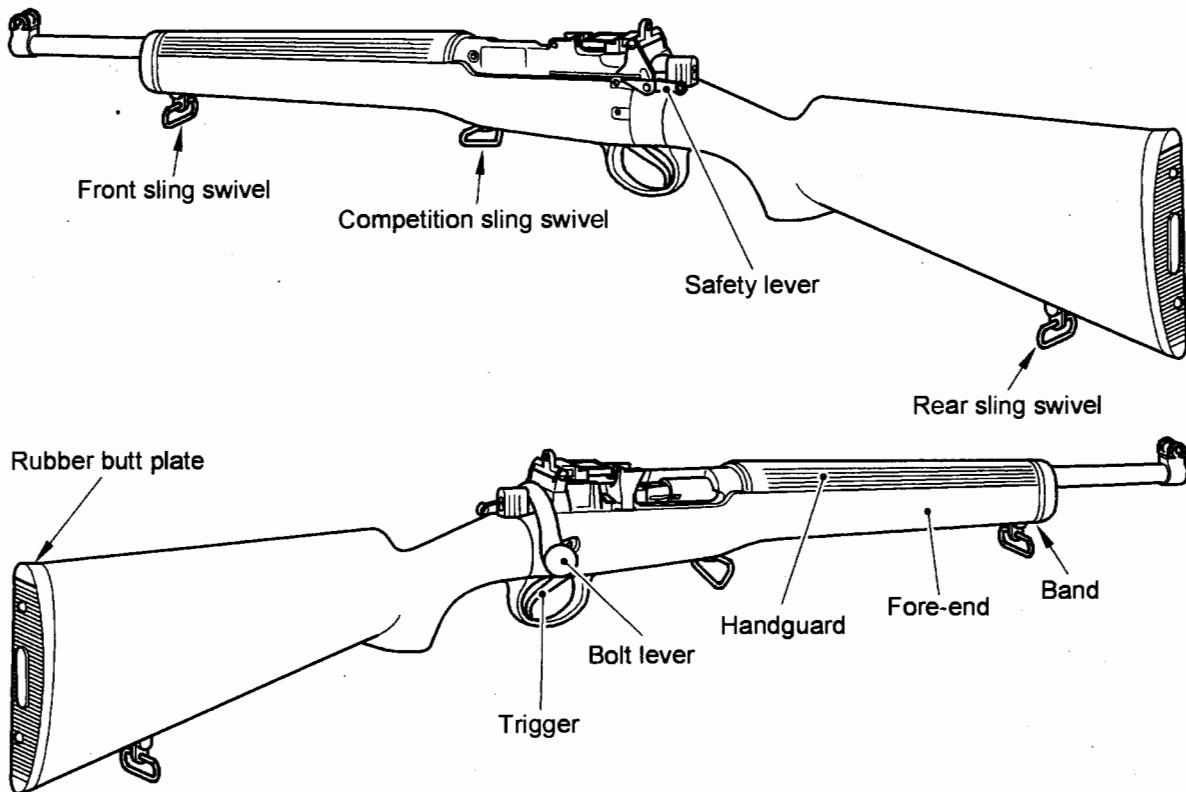


Fig 1 Rifle, No.8, Mk 1

TRIGGER

5 The trigger can be adjusted to give either the service pull-off or single pull-off. The weight can be adjusted in either case.

RIFLING

6 The depth of the grooves in the barrel taper, decreasing towards the muzzle end. This removes the engraving from the bullet as it leaves the bore, achieving greater stability in flight.

BOLT

7 Raising the bolt lever re-cocks the weapon. It is not necessary to pull the bolt back in the event of a misfire. There is no short cam. Instead there is a shallow recess in the back of the bolt which holds the cocking piece when it is in the withdrawn position. The striker does not strike the round, but drives forward an independent firing pin which is spring-loaded and housed in the bolt head.

FORE-END

8 The fore-end is wide and provides the shooter with a good grip. The bearings in the fore-end are:

- 8.1 Body seating.
- 8.2 Reinforce.
- 8.3 Centre bearing.
- 8.4 Muzzle.

NOTE

There is no draw bearing.

BARREL

9 The rifle is fitted with a heavy barrel to give added accuracy. The chamber is positioned sufficiently far back on the body to facilitate loading when the shooter is in the prone position. A cartridge platform, on which is formed the ejector, is located just behind the entrance to the chamber.

CHAPTER 2

OPERATING INFORMATION

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- 1 Introduction
- 3 Normal safety precautions (WARNINGS)
- 5 Function check (WARNINGS)
Preparation of the weapon before firing
- 7 Attaching a carrying sling
- 8 Sights
Operation
- 12 Loading the weapon (WARNING)
- 13 Firing (WARNINGS)
- 14 Unloading the weapon
Immediate action and misfire drill
- 15 Immediate action
- 16 Misfire drill

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2	Cartridge platform	5

INTRODUCTION

- 1 This chapter gives the information that follows:
 - 1.1 Safety and function checks required to ensure the weapon is safe for maintenance and in good working order,
 - 1.2 Operating information.
- 2 The information contained in this chapter does not countermand Normal Safety Precautions and Standard Operating Procedures.

NORMAL SAFETY PRECAUTIONS**WARNINGS**

- 1) **RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.**
- 3 Successful completion of the Normal Safety Precautions (NSPs) will verify that the weapon is unloaded. The NSPs must be performed whenever:
 - 3.1 Handing over or receiving the weapon.
 - 3.2 Preparing the weapon for cleaning, maintenance or inspection.
 - 3.3 Uncertainty exists that the weapon is loaded.
- 4 Carry out NSPs as follows:
 - 4.1 Point the rifle in a safe direction.
 - 4.2 Move the safety lever forward to the fire position.
 - 4.3 Raise the bolt lever and draw the bolt fully to the rear.
 - 4.4 Look into the breech, bolt face and loading chamber. There must be no cartridge.
 - 4.5 If there is a cartridge, remove it.
 - 4.6 Grasp the knob of the lever, thrust the bolt sharply forward as far as it will go, then rotate the bolt lever fully downward.
 - 4.7 Point the rifle in a safe direction, aim and fire off the action.
 - 4.8 Move the safety lever back to the safe position.

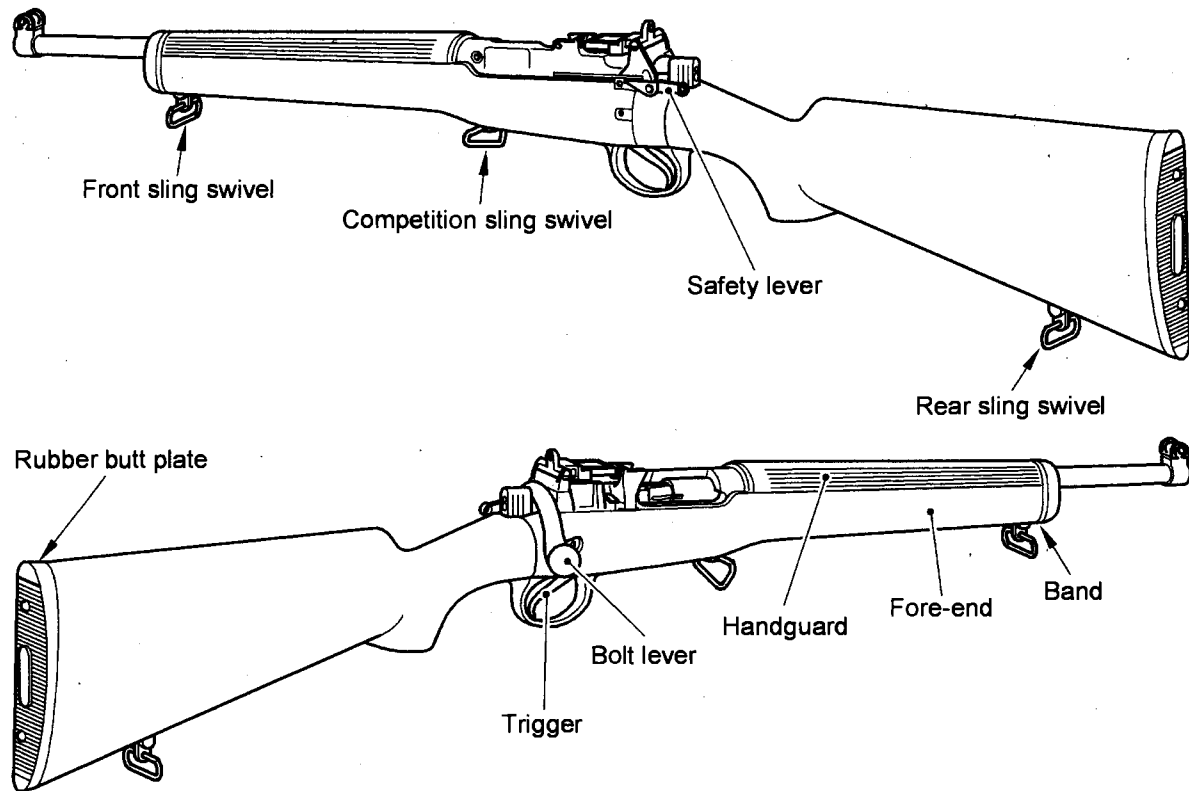


Fig 1 Rifle, No.8, Mk 1

FUNCTION CHECK

WARNINGS

1) **RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.**

5 Successful completion of the function check will confirm that the weapon is in working order. The function check **MUST** be done after:

- 5.1 The weapon has been re-assembled.
- 5.2 The weapon has been cleaned.
- 5.3 The weapon has been repaired.

6 Carry out the function check as follows:

- 6.1 Move the safety catch forwards to the fire position.
- 6.2 Grasp the bolt lever and cock the weapon.
- 6.3 Squeeze the trigger, the trigger should operate.
- 6.4 Re-cock the weapon.
- 6.5 Move the safety catch backwards to the safe position.

- 6.6 Squeeze the trigger, the trigger should not operate.
- 6.7 Move the safety catch forward to the fire position and squeeze the trigger.
- 6.8 Move the safety catch backwards to the safe position.

PREPARATION OF THE WEAPON BEFORE FIRING

Attaching a carrying sling

7 A carrying sling can be attached to the weapon using the front, rear and competition sling swivels as appropriate.

Sights

- 8 The rifle can be fitted with competition sights. Competition sights must be installed by an armourer.
- 9 The point of impact can depend on the ammunition. The use of different types of ammunition can change the elevation and windage of the point of impact. The sights can be adjusted to correct for the changed point of impact.
- 10 The rifle is zeroed, by alterations to the size and position of the foresight. There are eight foresights available ranging from -0.03 in. to +0.075 in., in steps of 0.015 in. One change of foresight will make a vertical alteration to the Mean Point of Impact (MPI) of approximately 1/2 inch at 25 metres. Lateral adjustment is made using the foresight cramp No.3. One turn of the cramp will make a lateral alteration to the MPI of approximately one inch at 25 metres.
- 11 The rifle should be zeroed so that the MPI is at the point of aim with the backsight set for the range used.

OPERATION

Loading the weapon

WARNING

1) RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.

- 12 Load the weapon as follows:
 - 12.1 Move the safety catch forwards to the fire position.
 - 12.2 Raise the bolt lever and draw the bolt fully to the rear.
 - 12.3 Place a cartridge in the groove of the cartridge platform (Fig 2), then press the round forward with the thumb or finger until the bullet has entered the chamber and resistance is felt.

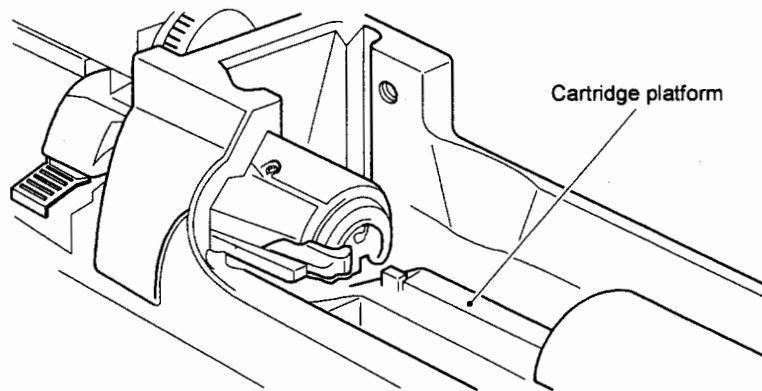


Fig 2 Cartridge platform

12.4 Grasp the knob of the bolt lever, thrust the bolt sharply forward as far as it will go, then rotate the bolt lever fully downward.

12.5 Repeat Paras 12.2 to 12.4 for each successive round.

Firing

WARNINGS

(1) **RISK OF HEARING DAMAGE OR DEAFNESS. ALWAYS WEAR SUITABLE EAR PROTECTORS WHEN FIRING THE WEAPON.**

(2) **RISK OF EYE INJURY OR BLINDNESS. ALWAYS WEAR SUITABLE EYE PROTECTION WHEN FIRING THE WEAPON. KEEP THE MUZZLE AREA CLEAR WHEN FIRING.**

(3) **RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.**

(4) **PERSONAL INJURY. OPERATION THIS WEAPON MUST BE CARRIED OUT IN ACCORDANCE WITH [REDACTED]**

13 Fire the weapon as follows:

13.1 Load the weapon. Para 12 refers.

13.2 Aim.

13.3 Move the safety lever forward to the fire position.

13.4 Pull the trigger; a cartridge is fired.

13.5 Move the safety lever back to the safe position.

Unloading the weapon

14 To unload the weapon:

14.1 Grasp the bolt lever, raise it, and retract the bolt.

NOTE

The empty case is removed from the chamber by the extractor claw; the ejector then strikes the rim of the case and ejects it from the rifle.

Immediate action and misfire drill**NOTE**

Misfires are attributed to two main causes, faulty ammunition and mechanical failure of the weapon. Both faults are likely to result in a misfired round of ammunition.

Immediate action

15 If the rifle fails to fire, do the steps that follow:

- 15.1 Check that the safety lever is forward in the fire position.
- 15.2 Re-aim and attempt to fire again.

NOTE

A hang fire should be suspected whenever the rifle fails to fire, but has not clearly malfunctioned. Hang fire refers to an unexpected delay between the triggering of the rifle and the ignition of the propellant. The delay is typically too brief to be noticed, but can be several seconds.

15.3 If the rifle still fails to fire, a hang fire must be assumed. Keep the weapon pointed at the target and wait 30 seconds.

Misfire drill

16 After 30 seconds pull the bolt back and do the steps that follow:

- 16.1 If the cartridge is not struck:
 - 16.1.1 Remove the cartridge.
 - 16.1.2 Check the firing pin hole. Clean it if necessary.
 - 16.1.3 Reload the weapon with the same cartridge.
 - 16.1.4 Re-aim and fire the weapon.
- 16.2 If the cartridge is struck:
 - 16.2.1 Remove the cartridge.
 - 16.2.2 Reload the weapon with a new cartridge.
 - 16.2.3 Re-aim and fire the weapon.
- 16.3 If after examination and cleaning the rifle still fails to fire, submit the rifle to the armourer.

16.4 Isolate a misfired cartridge from the other ammunition. At the conclusion of firing it is to be taken to a suitable area and destroyed as a blind.

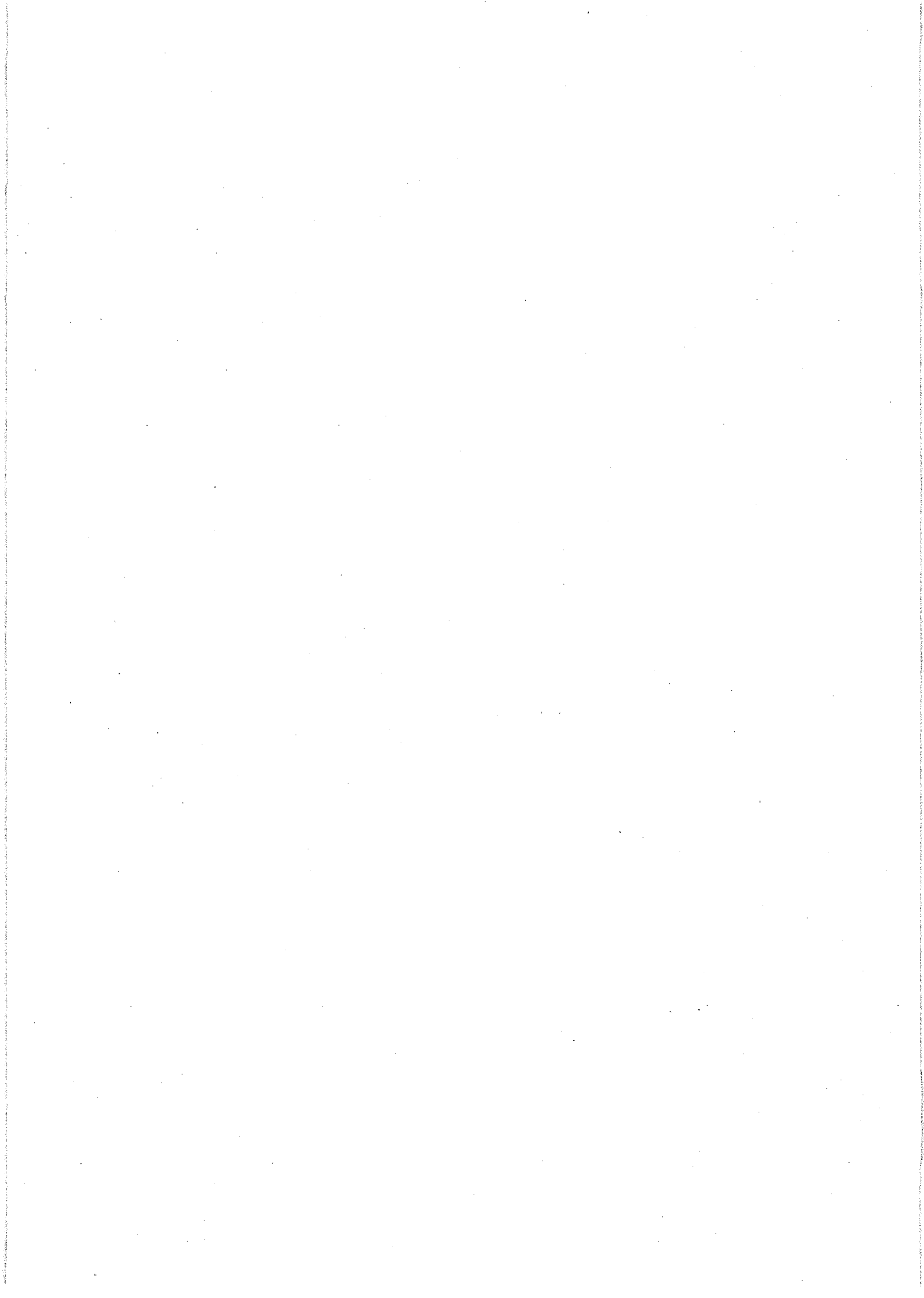
16.5 If misfires happen at night it will not be possible to examine the rounds for firing pin strike. In this event:

16.5.1 Reload the weapon with a new cartridge.

16.5.2 Re-aim and fire the weapon.

16.5.3 If the misfire happens again, replace the weapon and the ammunition batch.

16.5.4 Keep the batch of ammunition from which the misfired rounds came from to one side for further examination by the Ammunition Technical Officer.



CHAPTER 3

FAILURE DIAGNOSIS

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Para

- 1 Introduction (WARNINGS)

Table

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- 1 Failure diagnosis 2

INTRODUCTION

WARNINGS

(1) RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.

(2) PERSONAL INJURY. OPERATION THIS WEAPON MUST BE CARRIED OUT IN ACCORDANCE WITH [REDACTED]

1 This Chapter contains Level 1 fault diagnosis for the Rifle. It does not cover all theoretical failures, causes and rectification.

2 If a fault cannot be identified and rectified using the information contained in Table 1, do NOT investigate further, return the weapon to unit for repair by qualified armourers.

TABLE 1 **FAILURE DIAGNOSIS**

Serial (1)	Fault (2)	Cause (3)	Action (4)
1	Fails to fire.	Ammunition defective.	Replace ammunition.
		Firing pin damaged.	Send weapon in for repair.
2	Fails to extract.	Extractor or extractor spring damaged.	Send weapon in for repair.
3	Fails to eject.	Ejector block worn or damaged.	Send weapon in for repair.
4	Fails to chamber a round.	Ammunition defective.	Replace ammunition.
		Dirty chamber.	Clean chamber & barrel.
5	Unable to zero.	Damaged sights.	Send weapon in for repair.
		Misaligned sights.	Re adjust sights.

CHAPTER 4

MAINTENANCE INFORMATION

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- 1 Introduction
- 3 Cleaning (WARNING) (CAUTIONS)
Bolt (WARNING)
- 6 Stripping
- 7 Assembly

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- 1 Remove the bolt 2
- 2 Strip the bolt 3

INTRODUCTION

- 1 This chapter describes User (Level 1) maintenance for the Rifle, .22in., No.8, Mk 1.
- 2 User maintenance is limited to removal of the bolt and the cleaning of the weapon.

CLEANING

WARNING

RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.

CAUTIONS

- (1) **EQUIPMENT DAMAGE. Excessive force. Do not use excessive force when cleaning the weapon.**
- (2) **EQUIPMENT DAMAGE. Incorrect cleaning agents and care products. Do not use any metallic objects, plastics (nylon, etc.) or chemical cleaning agents to clean the weapon.**
- 3 Clean the exterior and working parts with an oily rag.
- 4 The .22 inch ammunition issued to the services and most makes of commercial ammunition are non-rusting, therefore, it normally is not necessary to clean the bore after firing. The deposit remaining in the barrel after firing is a preservative and should not be removed. Particular attention should be paid to the cleaning of the chamber, breech area and face of the bolt to ensure that all wax and deposits are removed.
- 5 When putting the rifle into storage for a long period or when changing from one brand of ammunition to another it may however, be necessary to clean the barrel to remove foreign matter other than the preservative deposited by the ammunition. When cleaning the bore, the No.6 cleaning rod with brush and cleaner should be used.

BOLT**WARNING**

RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON.

Stripping

6 Remove and strip the bolt as follows:

- 6.1 Raise the backsight (Fig 1 (1)).
- 6.2 Press down the bolt head catch (3), lift the bolt lever (2) and pull the bolt back to its full extent.
- 6.3 Release the bolt head catch (3), raise the bolt head and withdraw the bolt from the rifle.

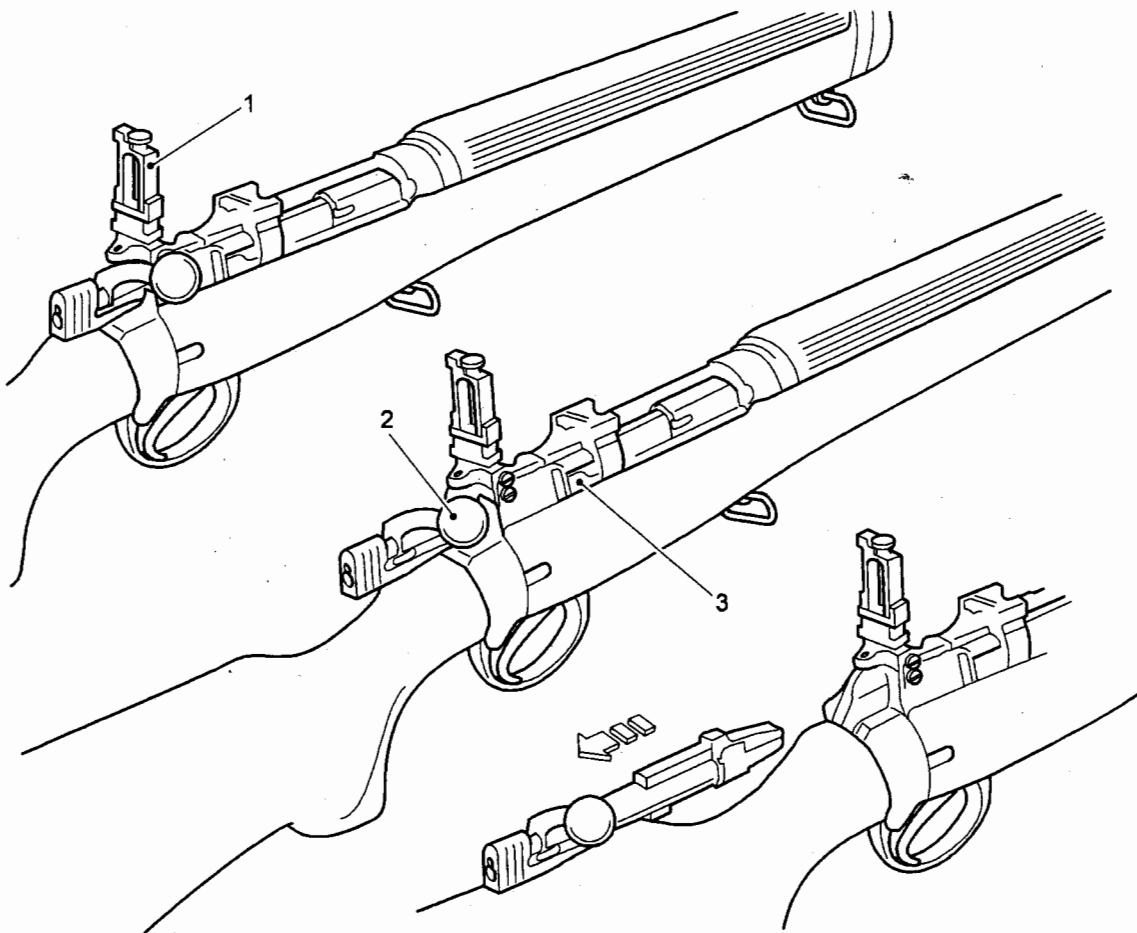


Fig 1 Remove the bolt

6.4 To strip the bolt: Unscrew the bolt head (Fig 2 (2)), and pull out the firing pin (1) and the firing pin spring (3).

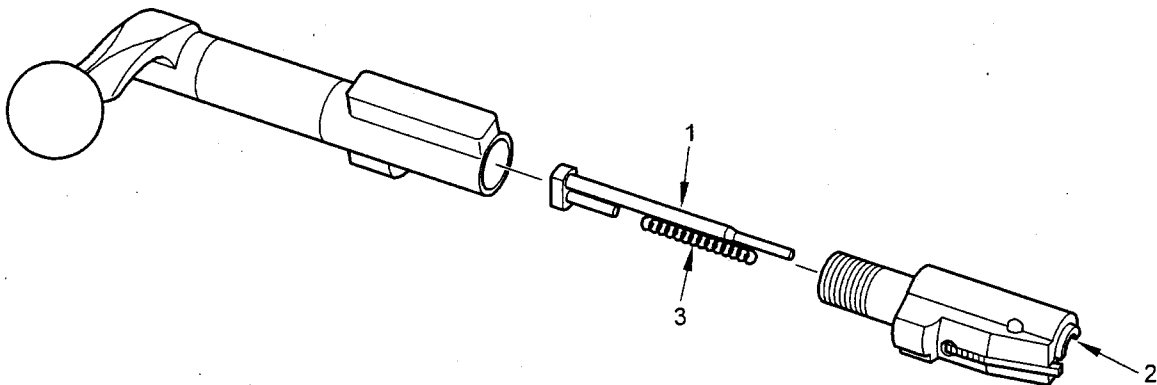


Fig 2 Strip the bolt

Assembly

7 Assemble and install the bolt as follows:

- 7.1 Insert the firing pin (Fig 2 (1)) and firing pin spring (3) into the bolt.
- 7.2 Screw the bolt head (2) into the bolt; make sure it is fully tightened.
- 7.3 Raise the backsight (Fig 1 (1)).
- 7.4 With the bolt head catch (3) released, slide the bolt into the rifle.
- 7.5 Rotate the bolt head downwards.
- 7.6 Push the bolt fully forwards so that the bolt lever (2) is in the locked position.

NOTE

Stripping the bolt further than described above must be carried out by an armourer.