1005-L-203-302
May 2014
1st Edition

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)

TECHNICAL DESCRIPTION

Sponsored for use in the
UNITED KINGDOM MINISTRY OF DEFENCE
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by

SOLDIER SYSTEMS PROGRAM LETHALITY
PROJECT TEAM
KD4Q8

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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	Installa ion Instruc ions	*	*	*	*
	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	Calibra ion 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 Instruc ions (RAF only)	*	*	*	*

*Category/sub-category not published.

Associated publications

5 There are no associated publications for this Category.

WARNINGS AND CAUTIONS

WARNING

RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON. REFER TO 1005-L-203-201 CHAP 2.

CAUTIONS

NA

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
Fig	Figure
i.e.	id est (that is)
in.	Inch(es)
lb(s)	Pound(s)
Mk	Mark
MOD	Ministry of Defence
NATO	North Atlantic Treaty Organisation
NC	Nitrocellulose
No.	Number
NSN	NATO Stock Number
NSP	Normal Safety Precautions
oz	Ounce
Para	Paragraph
RF	Rim Fire
SOP	Standard Operating Procedures
UK	United Kingdom
yds	yards

INTRODUCTION

WARNING

RISK OF INJURY OR DEATH. NORMAL SAFETY PRECAUTIONS MUST BE OBSERVED BEFORE OPERATION, INSPECTION OR REPAIR OF THIS WEAPON. REFER TO 1005-L-203-201 CHAP 3.

1 Designed for use as a training rifle and also for competition shooting, the No.8 Mk 1 rifle (the 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.

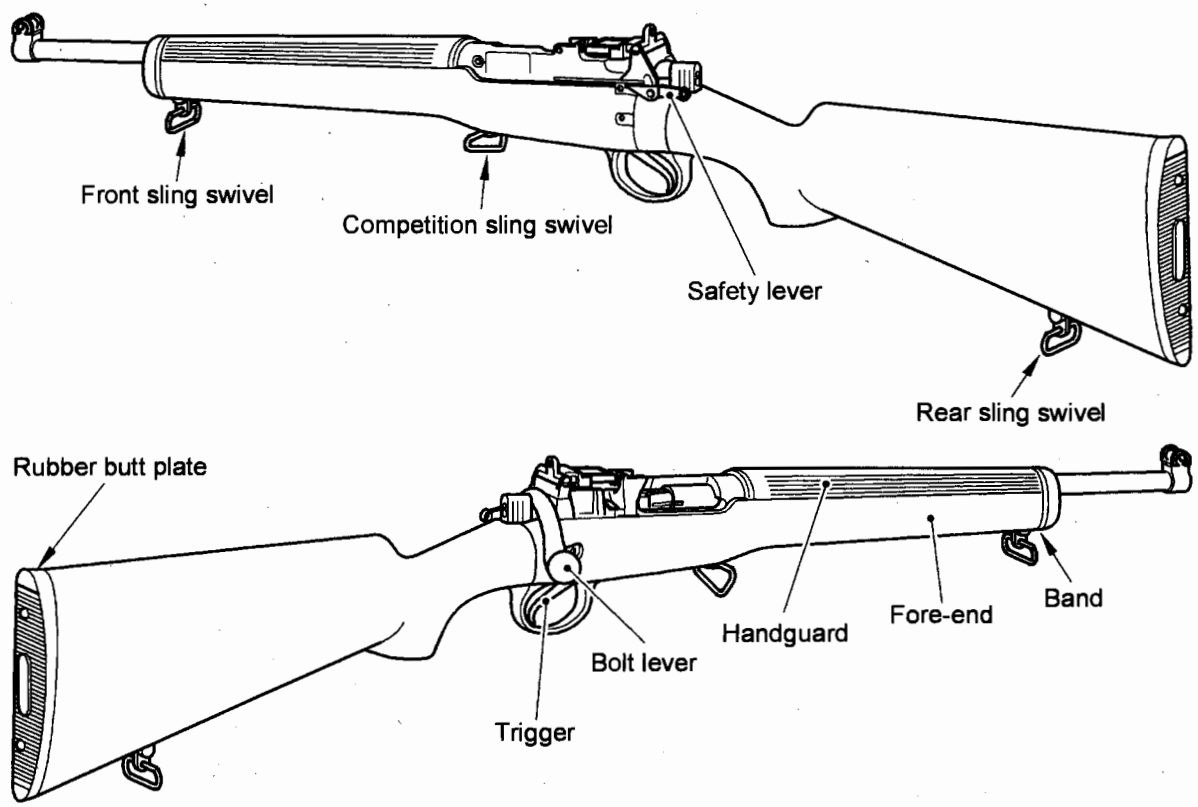


Fig 1 Rifle, .22 in., No.8, Mk 1

PHYSICAL DATA

2 Dimensions and general characteristics are described in Table 1.

TABLE 1 DIMENSIONS AND 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.

PHYSICAL DESCRIPTION

Furniture and external fittings

3 Fig 1 refers. Any of the approved hardwoods are used for the furniture, i.e., Walnut, Beech or Birch. The stock butt is available in three sizes, long, normal and short. Front and rear sling swivels are provided plus an additional combination swivel and front trigger guard screw which can be used for the fitting of a match shooting sling.

Service sights

4 The foresight, Fig 2, is a blade type mounted in a dovetail seating in a removable foresight protector. The protector is dovetailed to fit the foresight block and is removed when fitting a match foresight. The backsight is a folding leaf and slide pattern. The slide is adjustable and has an aperture. Graduations on the leaf are for ranges of 25, 50 and 100 metres with an additional harmonization (H) position provided for landscape target practices.

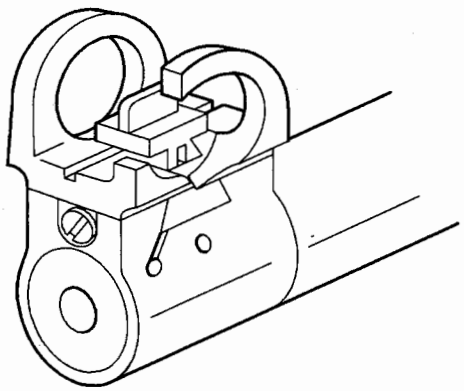


Fig 2 Foresight

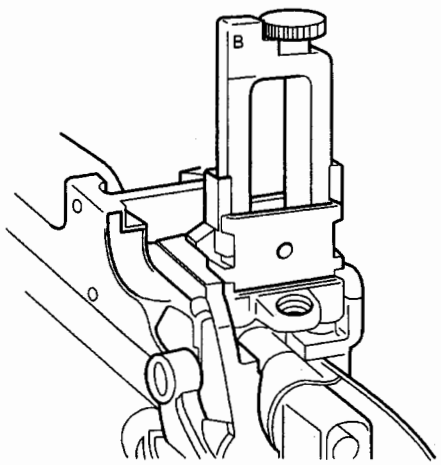


Fig 3 Backsight

Match sights

5 The standardised dovetail in the foresight block facilitates quick replacement of the service foresight with standard commercial pattern match foresights. Tapped holes in the rifle body are provided for the fitting of a commercial-type match backsight.

Bolt

6 Fig 4 refers. Cocking action is achieved by raising and lowering the bolt lever. Although it is necessary to draw the bolt to the rear to load, it is not necessary to do so merely to re-cock the rifle. The rear end of the bolt houses a single cocking cam. When in the withdrawn position the cocking piece is held to the rear against the end of the bolt. A striker attached to the cocking piece and housed in the bolt drives forward an independent firing pin housed in the bolt head. The firing pin is offset radially to suit the rim-fire .22 inch cartridge. The striker is enclosed by a strong spring which provides the impetus for the forward movement and the firing pin has a smaller and weaker spring acting in the opposite direction. This withdraws the firing pin from the face of the bolt head when the cocking piece and striker are withdrawn to the rear.

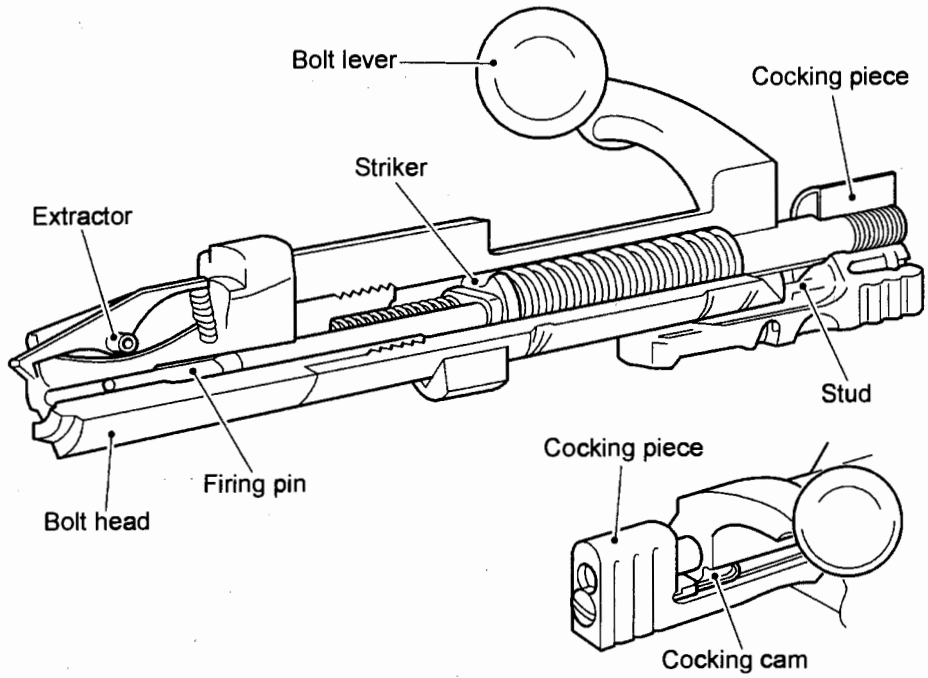


Fig 4 Bolt

Barrel and body

7 The barrel is relatively short and heavy. Its heavy weight reduces to a minimum the vibrations set up in firing and ensures a high degree of accuracy. The breech end of the barrel protrudes into the body to bring the chamber further to the rear to permit quick loading in the lying position. The chamber has a plain taper and the breech face is counterbored to take the rim of the cartridge and front of the bolt head. Immediately to the rear of the chamber is the cartridge platform which is securely pinned between the sides of the body. Integral with the platform is the ejector. The rifling is tapered, being deepest at the breech end and running out to almost bore diameter at the muzzle. The tapering of the rifling gives an improved gas seal and also removes the initial engraving from the bullet by the time it leaves the muzzle. The purpose of this is to improve the standard of accuracy with various brands of ammunition.

Trigger mechanism

8 The trigger can be adjusted to either the service double pressure or a single match pressure. The weight and length of the pressure can be adjusted in both cases. During release of the sear the cocking piece is supported by the sear cradle. This eliminates drag between the sear and cocking piece bents and ensures a clean and crisp let-off.

Safety devices

9 Applied and mechanical safety devices are incorporated in the rifle as follows. Fig 5 refers:

9.1 Applied safety. With the action cocked and safety applied, the safety catch engages with a hole in the bolt preventing it from being raised and the locking bolt engages with the forward recess in the cocking piece drawing it rearwards away from the sear. With the action in the fired position the safety catch again engages with the hole in the bolt but the locking bolt engages in the rear recess of the cocking piece; due to the semi-circular shape of the rear recess the cocking piece is not drawn rearwards.

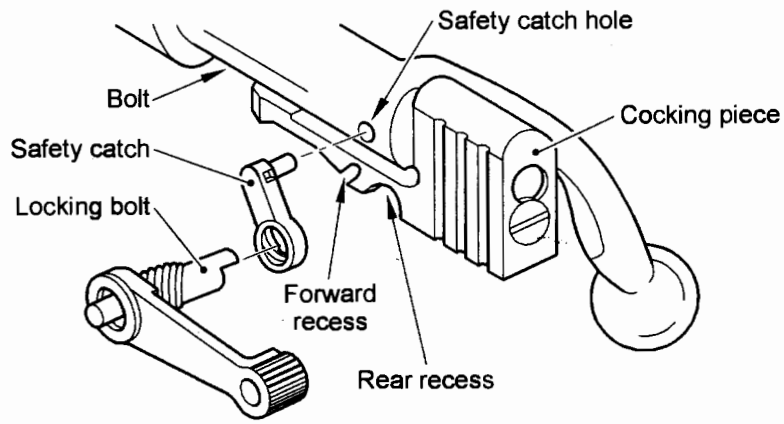


Fig 5 Safety devices

9.2 Mechanical safety. Mechanical safety is effected by a stud on the cocking piece, working in conjunction with a cam shaped recess on the underside of the bolt, ensuring that the rifle cannot be fired unless and until the breech is closed. Should the cocking piece be released before the bolt is turned fully down to the right, the stud engaging in the cam shaped groove fully closes the breech before the round can be fired.

Cartridge platform and ejector

10 Fig 6 refers. There is no magazine. A cartridge platform is situated just in the rear of the chamber. The ejector is integral with the cartridge platform.

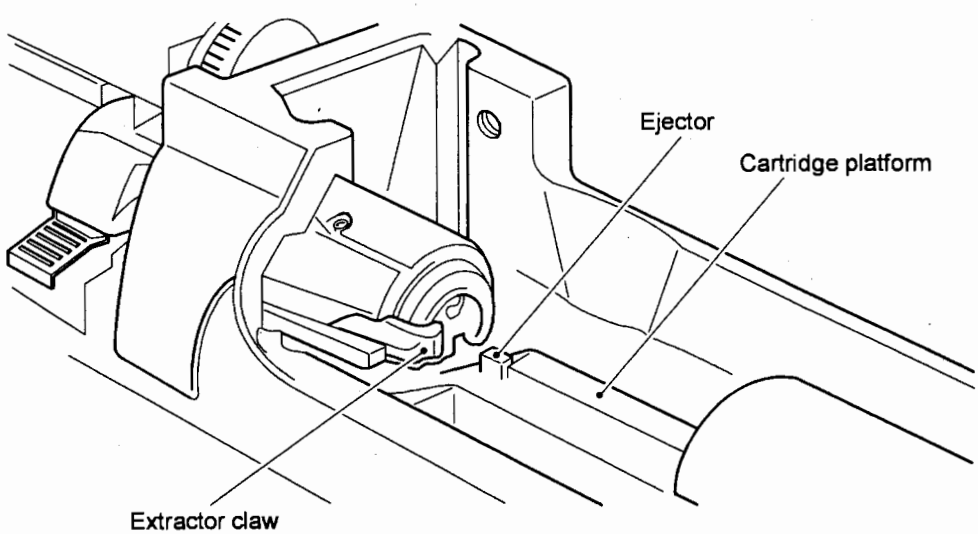


Fig 6 Cartridge platform and ejector

Stock bearings

11 The bearings are, the body seating, the reinforce, the middle of the barrel and the muzzle; the middle barrel bearing is no longer mandatory.

Ammunition

12 Fig 7 refers. The ammunition used with the rifle is the Cartridge, Rim-fire, .22 in., Ball, Mk 2. This round comprises a bullet, cartridge case and filling, and is approximately 55 grains in weight. The case is press fitted to the bullet.

12.1 Bullet. The bullet is made of lead, antimony and tin alloy and is normally 40 grains in weight. The bullet is round headed and three grooves cut in the periphery are filled with a wax lubricant.

12.2 Cartridge case and filling. The case is made from cartridge brass or gilding metal. The base of the case is widened to form a hollow rim which is filled with a quantity of rim fire composition. The main charge consists of a quantity of NC propellant.

12.3 Markings. The contractor's initials or recognised trade mark is stamped on the base of the cartridge case.

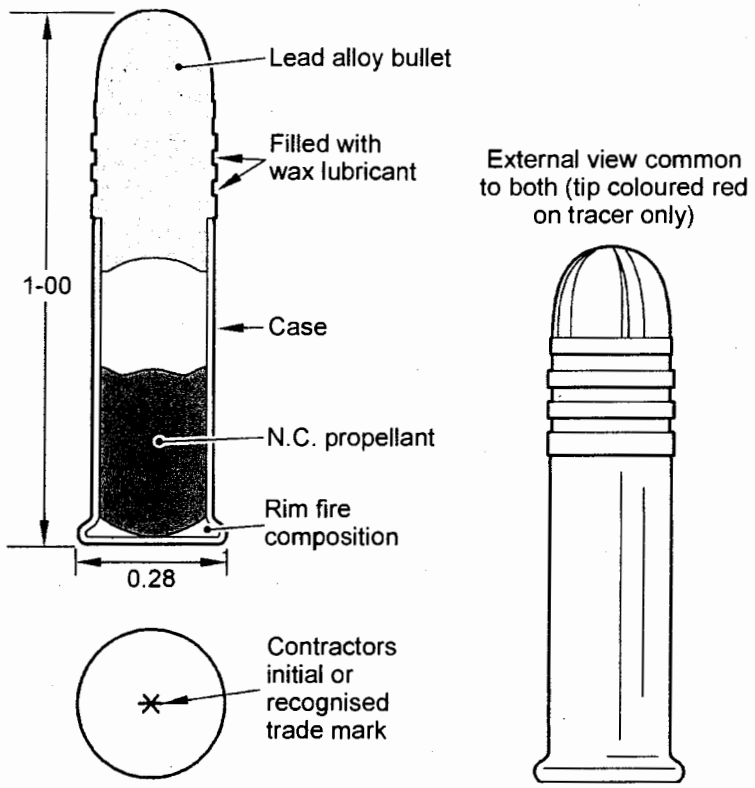


Fig 7 Cartridge, Rim-Fire, .22 in. Ball, Mk 2

FUNCTIONAL DESCRIPTION

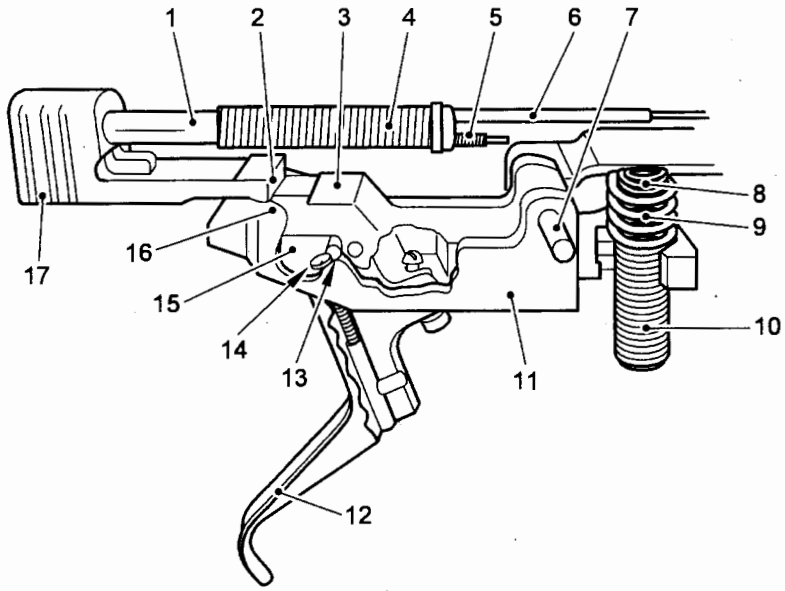
Loading

13 As there is no magazine, the rifle is loaded by hand for each shot as follows:

13.1 The safety catch is pushed fully forward, the bolt lever raised and the bolt drawn fully to the rear. A round is then manually inserted into the groove of the cartridge platform and pressed fully forward until the round has entered the chamber and resistance is felt. Using the bolt lever, the bolt is pushed forward as far as it will go and then locked in position.

Trigger mechanism

14 Fig 8 refers. When, with the weapon cocked, the trigger (12) is pressed, the trigger rotates initially about the cradle pin (13) as a fulcrum, levering down the sear (3) in its cradle (11) and rotating it about its axis pin (7). This compresses the inner and outer sear springs (8 and 9), and produces the first pressure. Continued pressure on the trigger causes the protruding end of the pressure setting screw (14) to contact the flat on the underside of the sear cradle (15), to which the fulcrum point is then transferred and the leverage altered. This produces the second pressure.

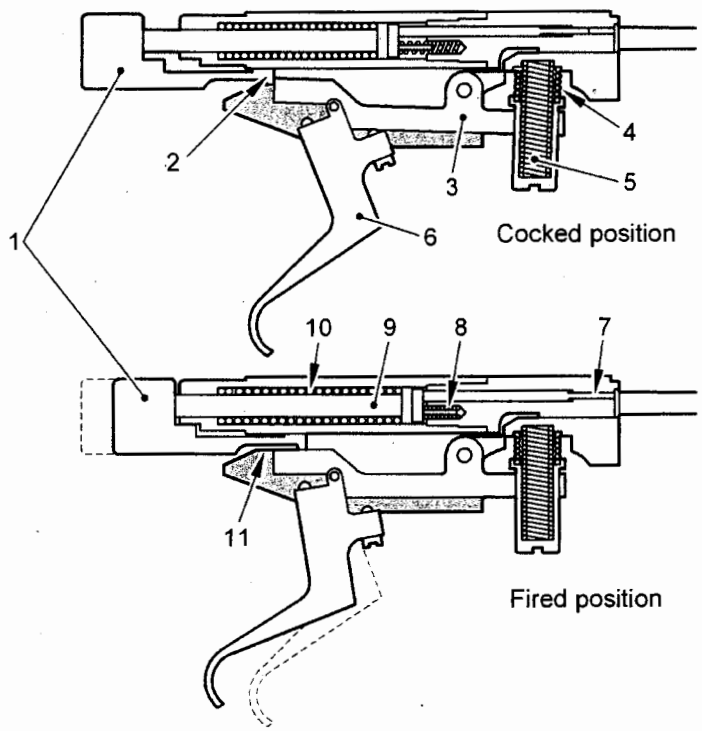


1	Striker	10	Sear spring cup
2	Bent of cocking piece	11	Sear cradle
3	Sear	12	Trigger
4	Striker spring	13	Cradle pin
5	Firing pin spring	14	Setting screw
6	Firing pin	15	Flat of sear cradle (underside)
7	Axis pin, sear	16	Sear cradle pads
8	Sear spring, inner	17	Cocking piece
9	Sear spring, outer		

Fig 8 Trigger mechanism

Sear release

15 Fig 9 refers. The pressure exerted by the compressed sear springs (4 and 5), transferred via the sear (3) and trigger (6), combined with the direct pressure on the trigger, produces an upward thrust through the sear cradle pads (11) on to the base of the cocking piece (1). This upward thrust counterbalances the downward drag of the bent of the sear on the bent of the cocking piece (2) and prevents any axial movement of the bolt. When the sear is released, the striker spring (10) carries forward the cocking piece and striker (1 and 9) to drive the firing pin (7) forward on to the rim of the cartridge, compressing the firing pin spring (8) in doing so.



1	Cocking piece	7	Firing pin
2	Bent of cocking piece	8	Firing pin spring
3	Sear	9	Striker
4	Sear spring, outer	10	Striker spring
5	Sear spring, inner	11	Sear cradle pads
6	Trigger		

Fig 9 Sear release

Withdrawal of the firing pin

16 Fig 9 refers. When, after firing, the bolt lever is raised, the striker (9) and cocking piece (1) are withdrawn by the action of the stud on the cocking piece in the cam slot of the bolt. The withdrawal of the striker allows the firing pin spring (8) to re-assert itself and withdraw the firing pin.

Extraction and ejection

17 Fig 6 refers. When the bolt lever is raised and the bolt withdrawn, the empty case is removed from the chamber by the claw of the extractor pulling on the rim of the case. The empty case is held between the claw of the extractor and the face of the bolt during withdrawal of the bolt until the ejector strikes the rim of the case and ejects it from the rifle.