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)

REPAIR INSTRUCTION

Sponsored for use in the
UNITED KINGDOM MINISTRY OF DEFENCE
AND ARMED FORCES
by

SOLDIER SYSTEMS PROGRAM LETHALITY
PROJECT TEAM
KD4Q8

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REPAIR INSTRUCTIONS

Chapter

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	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	Reference	Title
	[redacted]	[redacted]
	AESP 1000-A-003-013	Policy and procedures for armourers, light weapons and workshops

WARNINGS AND CAUTIONS

WARNINGS

(1) 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.

(2) PERSONAL INJURY OR DEATH. SUITABLE EQUIPMENT. WHEN RIFLES ARE REQUIRED FOR COMPETITION SHOOTING, ADJUSTMENTS MUST ONLY TO BE MADE WHEN IT IS SAFE AND STABLE FOR THE INDIVIDUAL RIFLE CONCERNED.

(3) PERSONAL INJURY OR DEATH. AVAILABILITY OF CORRECT TEST EQUIPMENT. ONLY ADJUST RIFLES TO THE NSRA STANDARD WHEN [redacted] NSRA 'DEAD-WEIGHT' TYPES OF TESTER ARE AVAILABLE FOR PULL-OFF WEIGHTS BELOW 3 LBF.

(4) PERSONAL INJURY OR DEATH. CORRECT IDENTIFICATION. RIFLES REQUIRED TO BE PERMANENTLY ADJUSTED TO THE NSRA LIMIT MUST BE READILY IDENTIFIABLE AS SUCH, AND MUST BE USED FOR COMPETITION SHOOTING ONLY.

(5) PERSONAL INJURY OR DEATH. CORRECT ADJUSTMENT. RIFLES REQUIRED TO BE ADJUSTED FOR SPECIFIC COMPETITIONS ONLY, ARE TO BE RE-ADJUSTED TO NORMAL SERVICE PULL-OFF LIMITS ON COMPLETION OF THE SPECIFIC COMPETITION.

(6) PERSONAL INJURY OR DEATH. REPAIRS AND ADJUSTMENTS ARE ONLY TO BE CARRIED OUT BY A QUALIFIED ARMOURER.

CAUTIONS

N/A

LIST OF ABBREVIATIONS

Abbreviation	Definition
AESP	Army Equipment Support Publication
BA	British Association
BSF	British Standard Fine
BSW	British Standard Whitworth
Chap	Chapter
deg	degree
dia	diameter
EMER	Electrical and Mechanical Engineering Regulations
etc.	etcetera
ETS	Equipment Table Scale
Fig	Figure
H	High
HQ	Headquarters
in.	inch(es)
L	Low
lbf	pound foot
LH	Left Hand
Max	Maximum
Med	Medium
Min	Minimum
Mk	Mark
NATO	North Atlantic Treaty Organisation
No.	Number
NSN	NATO Stock Number
NSRA	National Small-bore Rifle Association
Para	Paragraph
REME	Royal Electical and Mechanical Engineers
RH	Right Hand
SSP	Soldier System Programme
SWG	Stubs Wire Gauge
TBA	To Be Advised
tpi	threads per inch
UK	United Kingdom
yd(s)	yard(s)

CHAPTER 1

GENERAL INFORMATION

CONTENTS

INTRODUCTION

Safety precautions

1 Before commencing any operation on the weapon, ensure that it is unloaded. Pull the bolt to the rear and confirm that the chamber is clear.

General

2 This category 522 gives the procedures for the repair, adjustment and testing of the Rifle No.8, .22 in., Mk 1 (rifle) at Level 2 and Level 3 and the equivalent RN and RAF levels of repair. It is to be read in conjunction with the inspection standards in AESP 1005-L-203-532.

Range testing

3 Range testing is to be carried out whenever it is necessary to confirm the serviceability or accuracy of a weapon, or when repairs affecting accuracy have been completed. The range test is detailed in Chapter 2.

Rustproofing

4 Rustproofing is to be carried out in accordance with AESP 1000-A-003-013.

Tools and gauges

5 Tools and gauges are listed in Equipment Table Scale 03718. Gauges for Level 2 and Level 3 repair workshops are also listed in Table 1 and Table 2.

TABLE 1 GAUGES FOR FIELD WORKSHOPS

Serial (1)	DMC/NSN (2)	Description (3)
1	NUM8/5220-99-961-8926	Gauge, inspectors, headspace 0.045 in. Mk 1
2	NUM8/5220-99-961-8925	Gauge, inspectors, headspace 0.047 in. Mk 1
3	NUM8/5220-99-961-9052	Gauge, armourers firing pin protrusion No.2 Mk 1
4	NUM8/5220-99-961-8937	Gauge, inspectors, plug 0.215 in.

TABLE 2 GAUGES FOR BASE WORKSHOPS

Serial (1)	DMC/NSN (2)	Description (3)
1	NUM8/5220-99-961-8930	Gauge, inspectors, plate 7 deg Mk 1

CHAPTER 2

INSPECTION AND REPAIRS

UNIT

CONTENTS

INTRODUCTION

1 This chapter describes the stripping, assembling, inspection, adjustment, repair, sentence and zeroing for the Rifle No.8, .22 in., Mk 1, to be carried out by qualified armourers (AESP 1000-A-003-013 refers).

2 Tools required for the procedures contained in this chapter are detailed in Tables 1 and 2 of Chapter 1.

STRIPPING

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.

General

3 Prove the rifle.

4 Check that the serial numbers on the bolt and body agree.

Bolt

5 Remove the bolt as follows:

5.1 Raise the backsight.

5.2 Push the locking bolt to its fully forward position and raise the bolt lever.

5.3 Press down the bolt head catch on the right side of body and pull the bolt to the rear keeping the catch pressed downwards.

5.4 Rotate the bolt head upwards and remove the bolt from the body.

Fore-end and handguard

6 Remove the fore-end and handguard as follows:

6.1 Grip the rifle in a vice at the band, with the butt to the left and trigger guard uppermost.

6.2 Remove the front swivel screw and swivel, the trigger guard, and screws front and rear, the collar and spring washer. The filler plate can now be removed from its bed in the fore-end.

6.3 Remove the rifle from the vice.

6.4 Remove the band and the handguard.

6.5 Remove the fore-end from the rifle by tapping the front end of the fore-end on the bench and swinging it downwards away from the barrel.

Trigger mechanism

7 Remove the trigger mechanism as follows:

7.1 Put the rifle butt in a vice. Make sure the barrel is to the left and trigger mechanism uppermost.

7.2 Tap out the rear cartridge platform pin and remove the trigger mechanism assembly.

7.3 Remove the trigger and sear at the same time from the cradle by holding the cradle and lifting the sear upwards.

NOTE

The trigger setting screw and nut are not to be adjusted or removed. If the mechanism is found to be defective as a result of tests detailed in AESP 1005-L-203-532, the rifle is to be sentenced 'Y'.

ASSEMBLY

Trigger mechanism

8 Install the trigger mechanism as follows:

8.1 Assemble the sear and trigger together in the cradle, lining up the axis holes.

8.2 Put the inner and outer sear springs into the sear spring cup, and place the trigger mechanism assembly into the body.

8.3 Line up the axis holes with a suitable drift and install the rear cartridge platform pin.

NOTE

For ease of assembly, the rear cartridge platform pin may be chamfered at one end, to a maximum of $^{1}/_{16}$ in.

Fore-end and handguard

9 Install the fore-end and handguard as follows:

9.1 Assemble the fore-end and handguard to the rifle, ensuring that the rear end of the handguard fits into the retaining ring.

9.2 Install the band so that the head of the screw is on the left-hand side of rifle.

9.3 Put the rifle band in a vice. Make sure the butt is to the left and the trigger guard recess is uppermost.

9.4 Reassemble the trigger guard ensuring that the collar and spring washer are not omitted.

Bolt

10 Installation of the bolt is the reverse of the procedure in Para 5. Make sure that the bolt head is screwed fully into the bolt before inserting the bolt into the body.

CONVERSION TO SINGLE AND DOUBLE ACTION PULL-OFF

Convert from double to single pull-off

WARNINGS

(1) PERSONAL INJURY OR DEATH. SUITABLE EQUIPMENT. WHEN RIFLES ARE REQUIRED FOR COMPETITION SHOOTING, ADJUSTMENTS MUST ONLY TO BE MADE WHEN IT IS SAFE AND STABLE FOR THE INDIVIDUAL RIFLE CONCERNED.

(2) PERSONAL INJURY OR DEATH. AVAILABILITY OF CORRECT TEST EQUIPMENT. ONLY ADJUST RIFLES TO THE NSRA STANDARD WHEN [redacted] NSRA 'DEAD-WEIGHT' TYPES OF TESTER ARE AVAILABLE FOR PULL-OFF WEIGHTS BELOW 3 LBF.

(3) PERSONAL INJURY OR DEATH. CORRECT IDENTIFICATION. RIFLES REQUIRED TO BE PERMANENTLY ADJUSTED TO THE NSRA LIMIT MUST BE READILY IDENTIFIABLE AS SUCH, AND MUST BE USED FOR COMPETITION SHOOTING ONLY.

(4) PERSONAL INJURY OR DEATH. CORRECT ADJUSTMENT. RIFLES REQUIRED TO BE ADJUSTED FOR SPECIFIC COMPETITIONS ONLY, ARE TO BE RE-ADJUSTED TO NORMAL SERVICE PULL-OFF LIMITS ON COMPLETION OF THE SPECIFIC COMPETITION.

(5) PERSONAL INJURY OR DEATH. REPAIRS AND ADJUSTMENTS ARE ONLY TO BE CARRIED OUT BY A QUALIFIED ARMOURER.

11 To convert from double to single pull-off proceed as follows:

11.1 Remove the trigger mechanism from the body.

11.2 Remove the outer sear spring from the sear spring cup.

11.3 Refit the trigger mechanism into the body.

11.4 Loosen the screw locking pull-off.

11.5 Screw in the screw setting pull-off, in half turn increments until a single pull is obtained.

11.6 Tighten the screw locking pull-off.

11.7 Test the weight of the pull-off.

NOTE

For normal service competition shooting, the weight should not be less than 3 lbf.

11.8 When necessary adjust the pull-off weight by turning the sear spring cup.

NOTE

Turning the sear spring cup clockwise will increase the pull-off weight. Turning the sear spring cup counter-clockwise will decrease the pull-off weight.

Convert from single to double pull-off

12 To convert from single to double pull-off proceed as follows:

12.1 Remove the trigger mechanism from the body.

12.2 Refit the outer sear spring.

12.3 Screw the sear spring cup in a counter-clockwise direction as far as possible.

12.4 Refit the trigger mechanism in the body.

12.5 Loosen the keeper screw in the front face of the trigger.

12.6 Unscrew the pull-off adjusting screw in half-turn increments until a double pull-off is obtained.

12.7 Tighten the keeper screw and test the weight of the pull-off.

12.8 Screw in the sear spring cup to adjust the weight of the pull-off until you get values that follow:

12.8.1 First pull – 3 lbf to 4 lbf.

12.8.2 Second pull – 5 lbf to 6 ½ lbf.

INSPECTION AND REPAIR

13 Give the rifle a general inspection as follows:

13.1 Carry out Normal Safety Precautions (NSPs).

13.2 Ensure that the serial numbers are legible and agree on the body, bolt and fore-end.

13.3 Examine all components for rust, corrosion, damage or distortion which would affect the functioning of the rifle.

13.4 When no sentence is given in column 4 of the tables, the component in doubt is to be exchanged.

13.5 When rustproofing is necessary, use existing local facilities. If this is not possible, apply protective paint in accordance with AESP 1000-A-003-013.

ZEROING AND ACCURACY

General

14 Rifles are to be zeroed and tested for accuracy after the repairs and adjustments that follow:

14.1 Fitting of new stock fore-ends.

14.2 Refitting of old stock fore-ends.

14.3 Repair of foresights.

14.4 Replacement of foresights.

Preparation for firing

15 Ensure that the foresight and foresight block are secure then check:

15.1 There is no excessive looseness of the backsight.

15.2 The fore-end is fitted correctly and the butt is not loose.

15.3 The correct bolt is fitted.

15.4 All screws are tight.

16 Zeroing and accuracy are to be carried out to the standards that follow:

16.1 Range – 25 yds.

16.2 Sights Setting – 25 yds.

16.3 Number of Rounds - (2 sighters), 5 deliberate.

16.4 Size of group – ½ in. circle.

16.5 MPI - Group to be within a rectangle 2 in. horizontal by 1 ½ in. vertical at point of aim.

NOTES

(1) Foresight Blades are available in the sizes given in AESP 1005-L-203-302.

(2) The Tool foresight cramp No.3 is to be used for the removal or lateral adjustment of the foresight blade.

(3) The limit of lateral adjustment is reached when the edge of the foresight tool is flush with the edge of the block.

INSPECTION REPAIR AND ADJUSTMENT TABLES

17 Inspection procedures and repair, adjustment or sentence are given as follows:

17.1 Barrel body assembly (Table 1 refers).

17.2 Trigger mechanism assembly (Table 2 refers).

17.3 Stocking (Table 3 refers).

17.4 Rifle assembled (Table 4 refers).

TABLE 1 BARREL BODY ASSEMBLY

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
	Barrel	Ensure that:	
1		a. Chamber, and bore are clean and free from superficial fouling.	Barrels are to be cleaned in accordance with AESP 1000-A-003-013.
		b. Bore is free from:	
2		(1) Cuts	Slight cuts can be ignored
3		(2) Pitting	Minor pitting can be accepted. Excessive pitting, rifle is to be sentenced 'Y'.
4		(3) Bends	Sentence rifle 'Y".
5		(4) Bulges	Sentence rifle 'Y', if not already range tested.
		Note: Information concerning bulges and dates of range testing will be found on a plate screwed to the knuckle of the butt.	
6		c. Block band foresight is tight. (Test by finger pressure only). Check that the screw thread is serviceable.	Slight movement of oil may be ignored. Loose band rifle is to be sentenced 'BLR'. If the thread is unserviceable sentence the rifle 'Y'.
7		d. Protector is not fractured or distorted.	Fractures, or distortion which cannot be rectified, exchange protector.
8	Body	a. Is free from fractures.	Bodies which are fractured, rifle is to be sentenced 'Y'.
9		b. Bridge charger guide is tight.	Loose bridge charger guides, sentence rifle 'Y'.
10	Backsight	a. Is held firmly in the horizontal and vertical positions.	Replace plunger and/or spring. If fault is still not rectified exchange backsight

continued

TABLE 1 BARREL BODY ASSEMBLY (continued)

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
11		b. There is no appreciable side play or slackness on the axle pin.	Exchange pin. If fault is still not rectified exchange leaf.
12		c. Range scale is legible and scaled side of leaf is polished.	If scaling is illegible, exchange leaf.
13		d. Leaf is not distorted, or fractured, and slide works freely for the full length of leaf.	
14		e. The plunger adjusting screw engages the serrations of the adjusting screw.	
15		f. Adjusting screw is not bent, and head of screw does not foul bridge charger guide.	
16	Bolt breech assembly	a. Bolt is not fractured or pitted. Barrel of the bolt is polished.	Bolts which are fractured or badly pitted on bearing surfaces, rifle is to be sentenced 'Y'.
17		b. Firing pin protrudes and moves freely in the bolt head under the influence of its spring. Pin and spring are not damaged.	
18		c. Bolt head can be screwed fully home by finger pressure, and does not overturn more than 10 deg.	Bolt heads with more than 10 deg of overturn, rifle is to be sentenced 'Y'.
19		d. Extractor and spring are not damaged, and first movement of the extractor is not less than 2 lbf.	
20		e. Stud on the cocking piece is not fractured and moves freely along the cam groove wall into positive engagement in the fully withdrawn position. With the bolt assembled to the body check the bolt action, the operation of raising the bolt lever from the fired position must be accomplished without difficulty.	When the stud is fractured exchange cocking piece. If bolt is hard to manipulate check cam groove wall. Some bolts have been manufactured with a rough surface finish at this point and are the cause of hard unlocking action. Where this is encountered attempt to remedy the defect by carefully stoning the affected part. If repair cannot be effected, sentence rifle 'Y'.
21		f. Striker is not loose in cocking piece. Check the striker protrusion using 'Gauge, Armourers, firing pin protrusion, No.2,Mk1' (5220-99-961-9052).	If protrusion is excessive reduce the length by stoning the point, ensuring that the radius is maintained. If protrusion is insufficient exchange the firing pin.
22		g. That the final screwing up of the bolt head lifts the cocking piece a distance within the limits of 0.060 in. max and 0.012 in. min. This distance will be measured between the cocking piece and rear of the bolt.	If the limits cannot be obtained by either changing the striker or cocking piece screw back off the striker a maximum of one turn from the 'flush' position. If the clearance is still unobtainable sentence the rifle 'Y'.

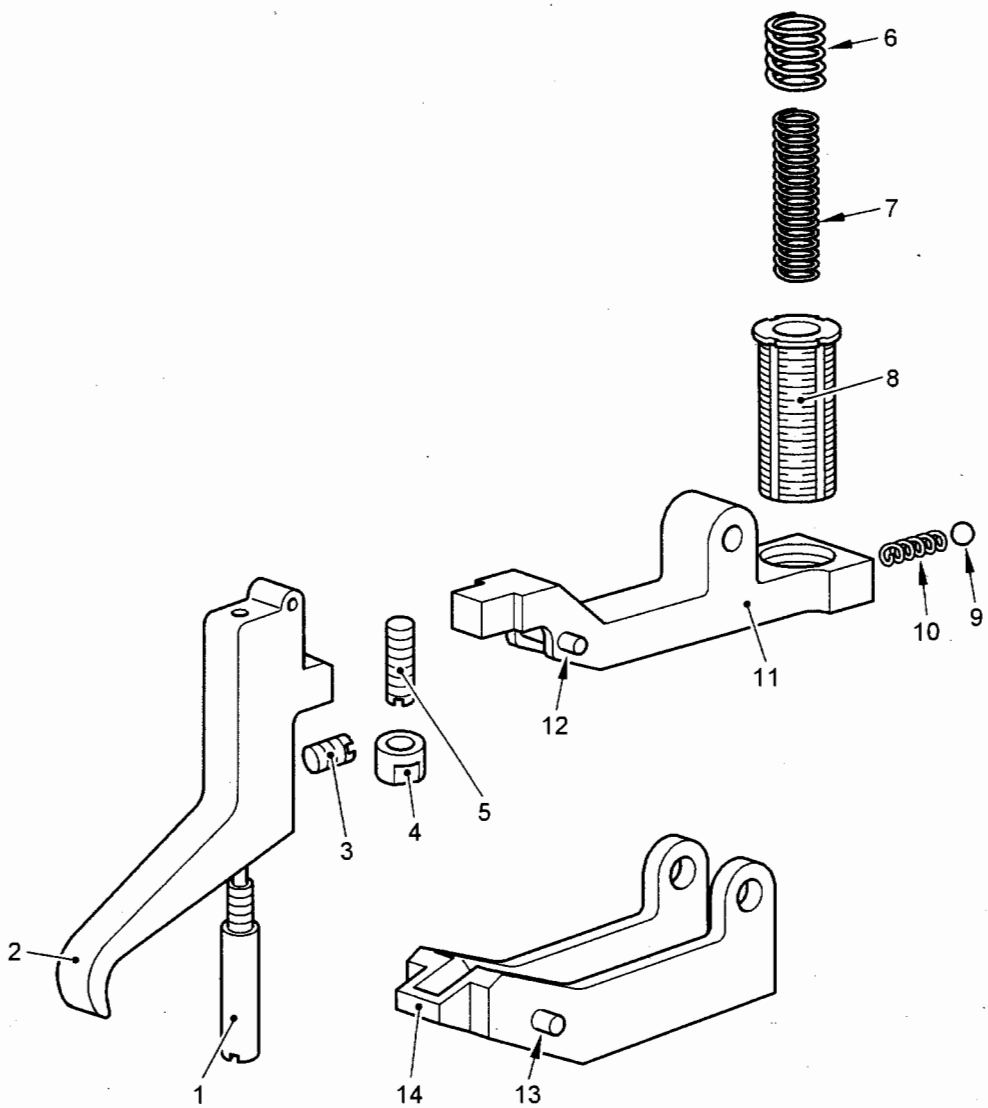
continued

TABLE 1 BARREL BODY ASSEMBLY (continued)

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
23	Bolt breech assembly (cont)	h. With bolt head, firing pin and spring removed and the bolt held securely in a vice, the strength of the mainspring is as follows: (1) With cocking piece held in approximate cocked position - first movement of cocking piece rearward is 13 to 15 ½ lbf. (2) Fired position - first movement of cocking piece rearward is 10 ½ to 13 lbf.	If the weight of the spring is under or overweight, exchange the spring.

TABLE 2 TRIGGER MECHANISM

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
	Sear spring cup	Ensure that:	
1		a. Detent is operating and engages the cup at each quarter turn. After testing, ensure that the cup is returned to its original setting, otherwise pull-off will be affected.	If detent fails to retain cup at each quarter turn, exchange detent or springs and/or cup.
2		b. Cup contains both inner and outer springs, and springs have not collapsed.	
3	Trigger	Pull-off setting screw is locked by its locking screw and trigger stop screw is locked by its nut. Test mechanism for balance and high sear as follows:	If defective, sentence rifle 'Y'.
4		a. Cock rifle. Apply forward pressure to the trigger. The rifle should not fire.	
5		b. Remove bolt. Remove burrs from resistance lug of bolt and the locking recess in the body. Apply a smear of marking compound to the lug and assemble the bolt to the rifle. Operate the bolt, remove it from the rifle and check for evidence of the sear fouling the lug. If marking is evident the sear height is incorrect.	
6	Platform cartridge	Pins retaining front and rear are flush with the body and are a friction fit.	
7	Ejector	Is not fractured or damaged.	Rifle is to be sentenced 'Y'.



1 Screw, pull-off setting
2 Trigger
3 Screw, pull-off locking
4 Nut, trigger stop screw
5 Screw, trigger stop
6 Spring, sear, outer
7 Spring, sear, inner
8 Cup, sear spring
9 Ball, steel, anti-friction 1/8 in.
10 Spring, ball
11 Sear
12 Pin, trigger
13 Pin, crane
14 Cradle, sear

Fig 1 Trigger mechanism

TABLE 3 STOCKING

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
	General	Ensure that:	
1		a. Stocking has a smooth finish and matches in colour and grain as closely as possible.	Staining and preservation of woodwork is to be carried out by a qualified armourer.
2		b. Indentations up to ¼ in. diameter can be accepted if they are carefully filled with a suitable matching compound of a durable nature.	
3		c. Patches are dovetailed and pegged where possible.	Patches are to be made from wood similar to the stocking repaired.
4	Butt	a. It is not split or damaged. Patches are not to exceed four in number.	Patches should not normally exceed 3 in. in length but this dimension may be increased in order to eliminate damage to an otherwise serviceable butt, provided the butt is not weakened.
5		b. It is tight in socket and aligned to the barrel.	
6		c. There is a clearance between rear face of butt socket and the shoulder of the butt of 0.030 in. max, 0.010 in. min.	Wood will be removed from the shoulder of the butt to obtain this clearance.
7		d. Wood of butt should be proud of metal of the butt socket.	This is normal practice but is not to be insisted upon if it requires the exchange of an otherwise serviceable butt.
8		e. Butt plate is not damaged, fits the form of the butt, and is securely held by its screws.	
9	Fore-end	a. Is not split or damaged. Patches do not exceed four in number.	
10		b. It is correctly fitted.	To fit fore-end:
11			a. The rear of the fore-end must fit tightly against the butt socket. Where this is not possible a limit of $^{1}/_{32}$ in. is permissible.
12			b. Using a suitable marking compound on the underside of the barrel and body, ensure that the fore-end bears at the points that follow:- (1) Muzzle end (2) Reinforce (3) Body surfaces around the hole for the collar and rearwards for 1 ½ in.
		Note: A bearing midway between the reinforce and muzzle end is desirable but not essential.	

continued

TABLE 3 STOCKING (continued)

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
13	Fore-end (continued)	c. Ends of the collar are flat and square, and it has not been shortened to such an extent that when assembled to the rifle without the fore-end it is not held firmly between trigger guard and body.	
14	Handguard	a. It is not spilt or damaged. Slip patches do not exceed three in number.	Handguards which are split may be repaired by the fitting of slip patches which must not exceed ⅛ in. in width.
15		b. Even contact is obtained between the handguard and fore-end, and its sides are flush with the sides of the fore-end.	
16		c. Ring retaining handguard is not distorted or fractured and securely retains the handguard.	Handguards which are loose may be tightened by packing between rear shoulder of handguard and ring retaining.

TABLE 4 RIFLE ASSEMBLED

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
	General	Ensure:	
1		a. All screws are tight and screwdriver slots are not damaged.	
2		b. With screw swivel band screwed fully home, band is tight and swivel is free to rotate.	When swivel is not free to rotate, packing may be placed under band until swivel is free. To obtain a 'wood above metal' condition it is permissible to proceed as follows:
3			a. Remove packing when the band is flush or proud of the woodwork.
4			b. Band - a maximum of 0.030 in. (approx one thread pitch) may be removed from the inside face of the threaded lug, which should not be less than 0.120 in. wide after adjustment.
5			c. Swivel - metal may be removed as required from either face of the lug. The lug is not to be less than 0.17 in. wide after adjustment.
6			d. All faces adjusted are to be protected with a suitable paint.

continued

TABLE 4 RIFLE ASSEMBLED (continued)

Serial (1)	Component (2)	Inspection procedure (3)	Repair, adjustment or sentence (4)
	General (continued)		
7		c. When assembling the bolt to the body, the bolt head catch can be depressed by thumb pressure on the bolt head wing.	
8		d. Trigger guard is not distorted and fits evenly in the fore-end.	
9		e. Cocking piece does not foul the channel in the body, or spindle of the bolt locking.	If cocking piece fouls channel, check that the striker is straight. Metal may be eased lightly from channel to give clearance.
10	Applied safety	a. With the action cocked, and the locking bolt to the rear, the cocking piece is withdrawn to the rear and disengages from the sear. Also that the safety catch is engaged in the recess in the bolt. Apply thumb pressure to the rear of the cocking piece, bolt locking should remain on 'safe'.	
11		b. With the locking bolt in the 'safe' position, it should not be possible to raise bolt lever in either the cocked or fired position.	Exchange the safety catch.
12	Pull-off	There are two distinct trigger pressures. Cock action and test trigger functioning.	Pull-off is to be adjusted in accordance with Para 11 and 12.
13		First pull 3 lbf to 4 lbf.	
14		Second pull 5 lbf to 6 ½ lbf.	

CHAPTER 3

INSPECTION, REPAIR AND SENTENCE
FIELD AND BASE

CONTENTS

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 2.

1 This chapter deals with the inspection, repair, adjustment and testing of Rifles No.8, .22 in., Mk 1 in field and base workshops REME, and the equivalent RN and RAF repair echelons. It is to be read in conjunction with Chapter 2.

GENERAL

2 Rifles are to be inspected as detailed in AESP 1005-L-203-532 and the additional information contained in this chapter.

3 Rifles are to be repaired and adjusted in accordance with Chapter 2 and the additional repairs and adjustments detailed in this chapter.

4 Where limits of acceptable wear are not specified, the serviceability of the component or weapon is to be assessed by functional efficiency and the safety factors involved.

5 Use may be made of the tables of design sizes listed in Table 5 and Table 6. They are however, to be used as a guide only and not as condemning limits.

6 Weapons beyond field/base workshop repair are to be sentenced 'ZF'. A label is to be securely attached to the weapon giving the reason for sentence. The symbol 'ZF' is to be stencilled in white paint on the butt and fore-end.

7 Special tools and gauges required for the procedures contained in this chapter are detailed in Chapter 1.

REGISTERED NUMBERS

8 The serial numbers of bolt, body, and stock fore-end should agree. Should the numbers not be decipherable, application for a new serial number should be made through the Design Team (DT).

BODY

Sentencing

9 The rifle is to be sentenced 'ZF' for the faults in the body that follow:

9.1 Fractures.

9.2 Threads for screws holes stripped, Para 11.1 refers.

9.3 Platform loose, Para 12 refers.

Repairs

Loose bridge charger guides

NOTE

Bridge charger guides are secured either by welding or screws.

10 Repair a loose bridge charger guide that has a welded bridge as follows:

10.1 Clamp the insert securely into position.

10.2 Drill each side of the body at the centre of the lower seating of the insert to a depth of $^{1}/_{16}$ in. using a $^{3}/_{8}$ in. dia drill.

10.3 Fill the depression with weld deposit using a No.12 SWG mild steel electrode.

10.4 Dress off surplus material flush with the body and re-touch finish or re-rustproof as necessary.

11 Repair a loose bridge charger guide that has a screwed bridge as follows:

11.1 If the bridge support threads are stripped, drill a ⅛ in. dia hole at a suitable point on the circumference of the screw head and screw hole to a depth of $^{1}/_{16}$ in.

11.2 Fill the hole with weld deposit using a suitable mild steel electrode.

11.3 Dress off surplus metal and retouch finish or re-rustproof as necessary.

Loose cartridge platform

12 Repair a loose cartridge platform as follows:

12.1 Install new cartridge platform pins to the body and cartridge platform.

12.2 If the new pins are not a tight fit, install a new cartridge platform.

12.3 If the platform is still loose, sentence the rifle 'ZF'.

NOTE

Base workshops with low temperature welding facilities (Eutectic or Dewrance) may re-size holes by metal deposition and re-machining to the limits:

- High 0.1806 in.

- Low 0.180 in.

Damaged, or worn ejectors

13 When cartridge ejection is not correct because the ejector is chipped or worn, install a new ejector block. Make sure the pins are a tight fit.

BARREL

14 Rifles with three bulges or less are to be range tested for accuracy before repairs. Rifles that fail the range test or have more than three bulges are to be sentenced 'ZF'.

15 Rifles are to be sentenced 'ZF' for the following faults in the barrel:

15.1 Damaged cartridge seating face.

15.2 Obstructions that cannot be removed by normal methods (AESP 1000-A-003-013).

15.3 Inaccuracy.

15.4 Misalignment of barrel and body – i.e. barrel unbreeched or loose in the body.

15.5 Bends, puckers, or other faults that obstruct the free running of the 'Gauge, Inspectors, plug 0.215 in.' (Note 2 refers).

NOTES

(1) Slight bends are acceptable, if accuracy is not affected.

(2) Minor blemishes including cuts, pitting, puckers etc., are acceptable if accuracy is not affected and lead deposits do not accumulate in the bore (AESP 1000-A-003-013).

(3) Rifles with three bulges or less which pass the accuracy test are to be fitted with a brass disc stamped with the number of bulges and the date of the test. The disc should not exceed ¾ in. in diameter and is to be screwed to the flat of the knuckle of the butt.

TRIGGER MECHANISM

General

16 The trigger mechanism is capable of fine adjustment and must be accurately balanced to ensure maximum safety and efficiency. The instructions in Paras 18 to 22 give the basic adjustments to the mechanism, but variations in tolerance ranges of components ancillary to the mechanism mean that each rifle will vary in adjustment.

17 Make sure the following points are checked and adjustment is made before any adjustment is made to the mechanism:

17.1 Fit of stock fore-end and length of collar (see AESP 1005-L-203-532). Ensure that the trigger is clear of the fore-end at all points.

17.2 The seating in the fore-end for the trigger guard and plate is not broken away or otherwise malformed. The seating should permit an overall even bearing for the plate with no springing of the plate evident when the rifle is assembled.

17.3 The profile of the trigger is correct. Tails of triggers which have been 'set' are to be re-formed to the contours of the profile gauge as shown in Fig 1.

17.4 The trigger guard profile, particularly line A-B of Fig 2 is correct. Distorted guards should be re-set on a flat surface. Guards with distorted bows should be replaced.

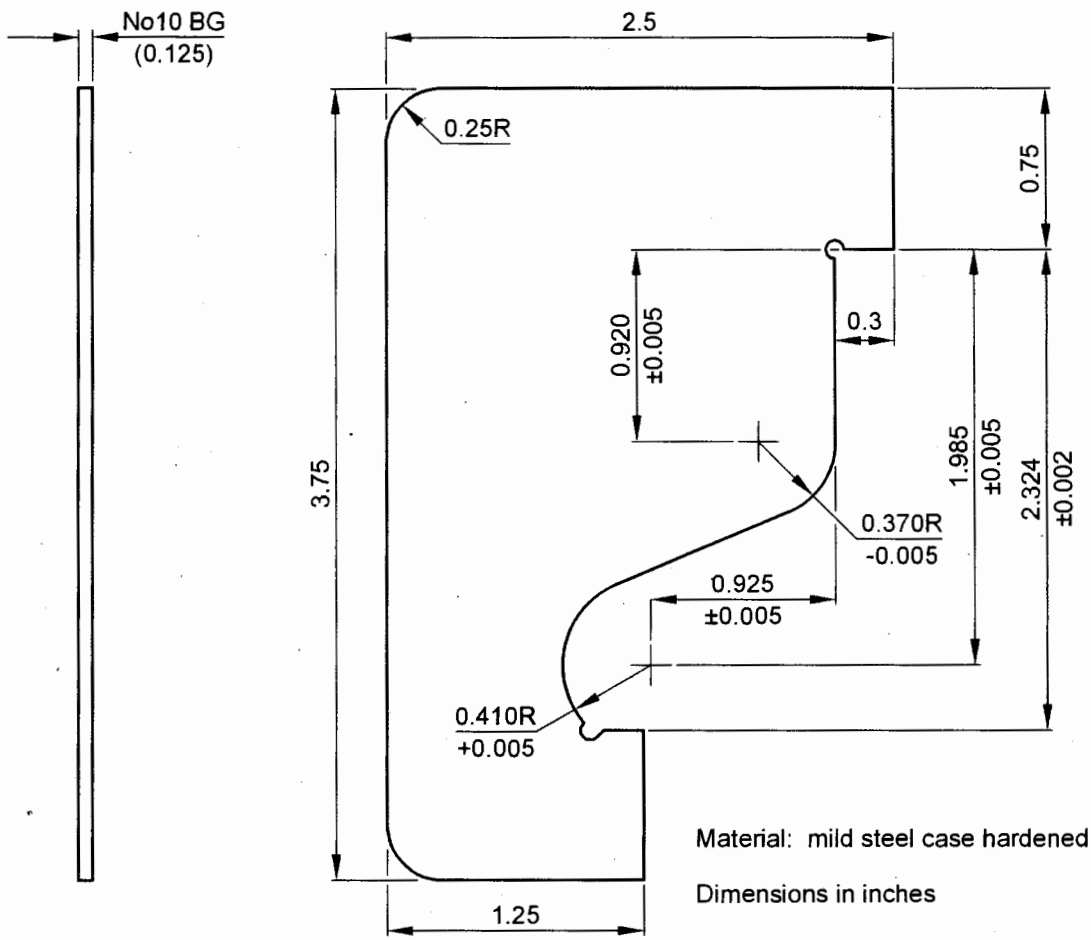


Fig 1 Profile gauge for trigger

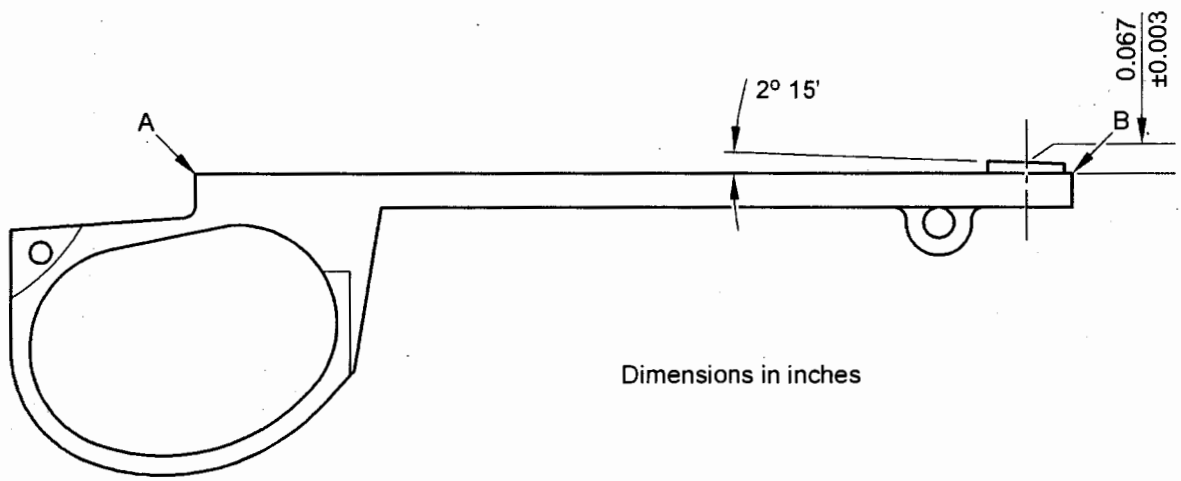


Fig 2 Correct form of trigger guard

NOTE

The internal dimensions and radii of trigger guard bows vary considerably. Interchange of trigger guards may therefore assist in the correction of the fault noted in Para 22.

Tests and adjustments

18 After checking and correcting the points listed in Para 17, assemble the mechanism for double pull-off action. Adjust to the limits given in AESP 1005-L-203-532 using the pull-off adjusting screw and sear spring cup only.

19 Assemble the rifle without the handguard, outer band swivel and bolt.

20 Assemble the bolt to the rifle.

21 Cock the rifle and apply forward pressure to the trigger.

NOTE

The rifle should not fire and forward movement of the trigger should be stopped by the inside surface of the trigger guard bow.

22 If the rifle fires, adjust the mechanism as follows:

22.1 Remove the trigger guard, plate, and fore-end.

22.2 Re-assemble the trigger guard to the rifle with the fore-end collar in position between the trigger guard boss and the body.

22.3 Install the front and rear guard screws. Make sure they are screwed fully in.

22.4 Slacken the lock-nut of the trigger setting screw and adjust the screw counter-clockwise in one-eighth turn increments.

22.5 After each one-eighth turn adjustment test the mechanism by cocking the rifle and applying forward trigger pressure until the rifle fails to fire.

22.6 Adjust one further eighth turn increment.

22.7 Tighten the lock nut securely.

22.8 Re-check the pull-off in accordance with AESP 1005-L-203-532 and adjust the length of pull as necessary using the pull-off adjusting screw only.

22.9 Test and adjust for 'high sear' condition as follows:

22.9.1 Apply a suitable marking compound to the underside of the bolt resistance lug and operate the bolt.

22.9.2 Remove the bolt and check for sear/lug interference.

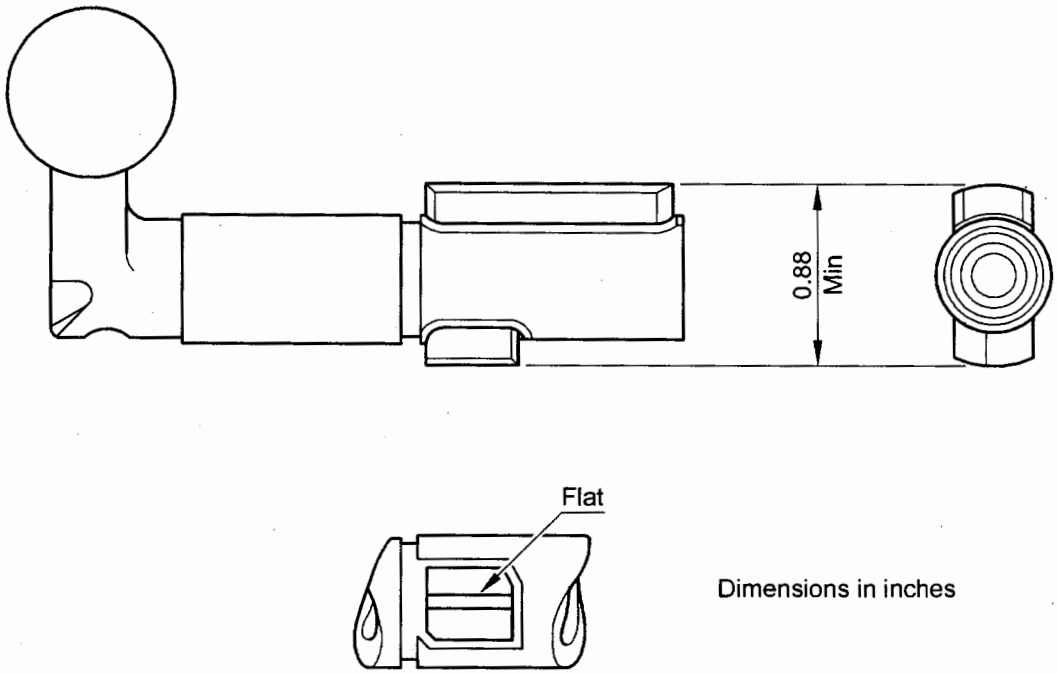


Fig 3 Adjustment to bolt resistance lug

22.9.3 If the marking on the lug indicates that the sear is high, check the dimension shown in Fig 3. If it is in excess of 0.88 in. a flat may be stoned or machined on the lug as illustrated. The dimension is not to be adjusted to less than 0.88 in.

22.9.4 If a high sear condition remains after the adjustment in Para 22.9.3 selectively replace the components of the trigger mechanism and then repeat Paras 22.9.1 to 22.9.3 as necessary.

22.9.5 If the trigger mechanism cannot be adjusted satisfactorily, sentence the rifle 'ZF' and label it accordingly.

REPAIR OF LOOSE BANDS AND FITTING OF NEW BAND PROTECTOR FORESIGHT

Loose bands

23 Repair loose bands as follows:

23.1 Remove the pin and band from the barrel.

23.2 Clean the mating surfaces.

23.3 Make sure that the protector hole and its corresponding groove on the barrel circumference are in the correct position.

23.4 Sweat the band into position using ordinary tinmans solder.

23.5 Replace the pin with a new item.

NOTE

Replacement pins are not issued. They are to be manufactured locally from silver steel, bar, carbon, cold finished, 0.106 in. dia and cut to a length of 0.600in.

Modification of band protector and protector to No.4 BA

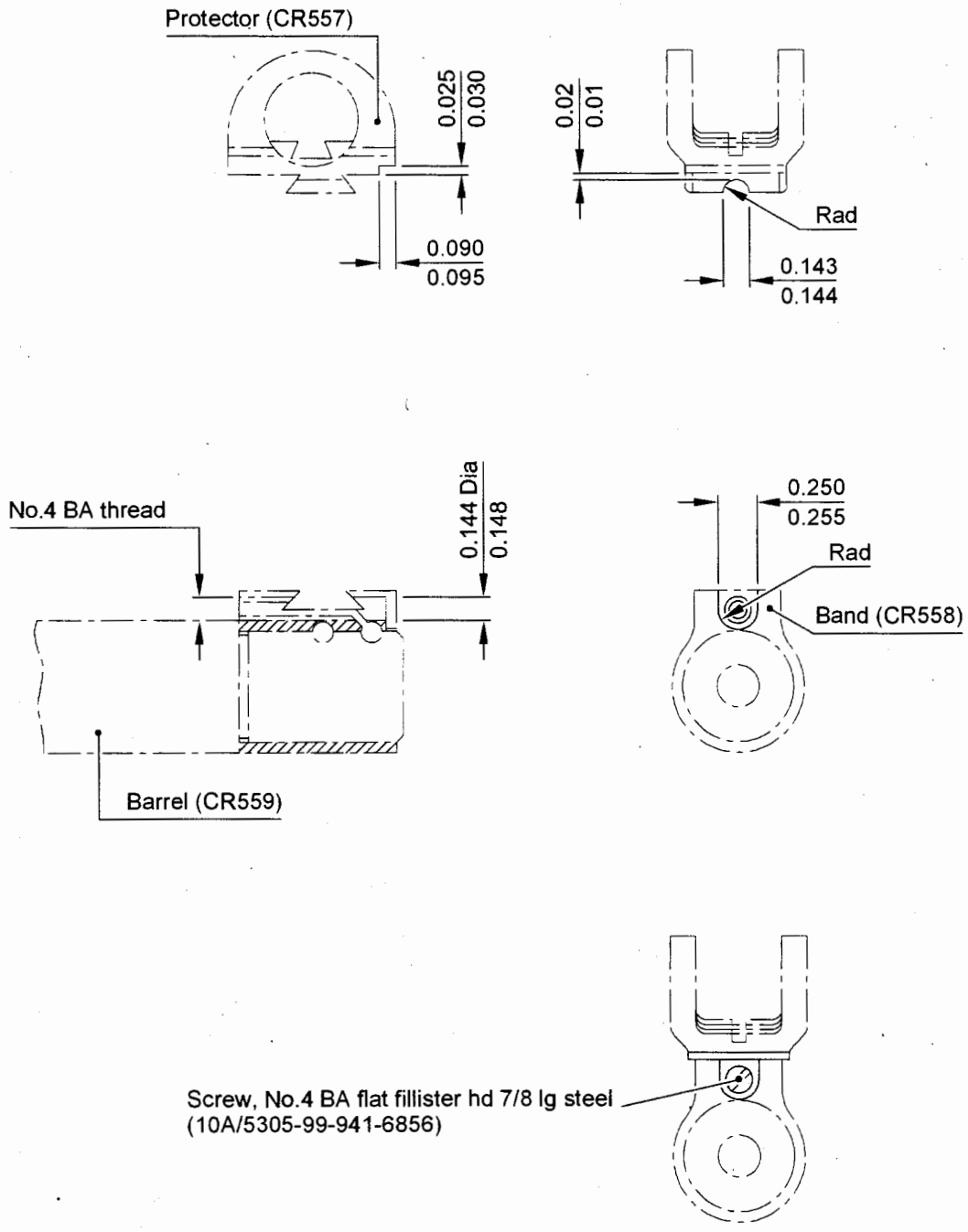
24 Replacement protector screws will be one of the following. Fig 4 refers:

24.1 B1/BA 10326 Screw protector (6 BA thread).

24.2 10A/5305-99-941-6856. Screw, machine, BA, steel, cadmium plated, No.4 x $^{7}/_{8}$ in.

NOTE

To accommodate the 4 BA screw it will be necessary to modify existing bands and protectors in accordance with Fig 4. Future manufacture bands and protectors are to be manufactured to accommodate the 4 BA screw.



Dimensions in inches

Fig 4 Modification, protector and band foresight

BOLT BREECH ASSEMBLY

Bolt

25 The bolt is to be replaced when any of the faults that follow are found:

25.1 Fractures.

25.2 Excessive wear of the short cam recess or the safety catch engagement recess.

25.3 Excessive wear of internal threads for the bolt-head.

25.4 Excessive pitting of bearing surfaces.

NOTE

Combined wear of the internal threads of the bolt and the external threads of the bolt-head may cause the bolt-head to foul the cartridge platform.

Bolt-heads

26 Bolt-heads are to be exchanged for the faults that follow:

26.1 Excessive wear of threads.

26.2 Fractures or cracks.

26.3 Evidence of removal of metal from front or rear faces.

BOLT ASSEMBLED - TESTS, ADJUSTMENTS AND REPAIRS

Firing pin protrusion

27 Turn the cocking piece into the long cam recess in the bolt.

28 Use the 'Gauge, armourers, firing pin protrusion No.2' to check the protrusion of the firing pin is within the limits given in Table 1.

TABLE 1 FIRING PIN PROTRUSION

Serial (1)	Maximum protrusion (2)	Minimum protrusion (3)
1	0.038 in.	0.034 in.

29 Adjust the firing pin protrusion as follows:

29.1 Excessive protrusion - reduce its length by stoning the point of the firing pin, maintaining the radius of 0.045 in.

29.2 Insufficient protrusion - replace the firing pin.

Bolt head clearance

30 Unscrew the bolt head until it is free from mainspring pressure. Using a feeler gauge, check that the clearance between the rear face of the bolt head and front face of the bolt is within the limits given in Table 2.

TABLE 2 BOLT HEAD CLEARANCE

Serial (1)	Maximum clearance (2)	Minimum clearance (3)
1	0.060 in.	0.012 in.

31 Adjust the bolt head clearance by the interchange of the following components, singly or in combination:

31.1 Bolt head.

31.2 Striker.

31.3 Cocking piece.

32 If the correct clearance is still unobtainable, replace the bolt and repeat Paras 30 and 31 as necessary.

Overturn of bolt head

33 Screw the bolt head fully home. If overturn is in excess of the following limits, exchange the bolt head:

33.1 Field 10 deg.

33.2 Base 7 deg.

NOTE

Bolt heads rejected for overturn which are otherwise serviceable should be retained for possible future use with other bolts.

RIFLE ASSEMBLED

Cartridge headspace

NOTE

Trials have shown that it is feasible to increase the cartridge head space without impairing the safety or accuracy of the weapon. The increased limits are given in Table 3.

TABLE 3 CARTRIDGE HEADSPACE

Serial (1)	Maximum limit (2)	Minimum limit (3)
1	0.050 in.	0.045 in.

34 Punch out a shim from 0.003 in. shim foil. The shim is to be used in conjunction with – 'Gauge, Inspectors, Headspace 0.047 in. Mk 1'. To produce the shim the following items are necessary:

34.1 Stores required - G2/9535-99-943-3984, Brass foil, hard temper 0.003 in.

34.2 Tools required – HTC16/5110-99-910-5566, Punch cutting hollow round, 3/16 in. dia of hole, No.6.

35 Test as follows:

35.1 Remove and strip the bolt and bolt-head. Re-assemble the stripped bolt head to the bolt.

35.2 Install the bolt in the rifle and insert the 0.045 in. headspace gauge in the chamber. Close the bolt, using light finger and thumb pressure only on the final bolt lever movement. The bolt should close fully.

35.3 Remove the 0.045 in. gauge.

35.4 Use a smear of grease to attach the 0.003 in. shim (made in Para 34) to the 0.047 in. gauge and insert the 0.047 in. gauge together with the shim in the chamber.

35.5 Close the bolt using light finger and thumb pressure only on the final bolt lever movement. The bolt should not close.

35.6 Adjust the headspace by exchanging bolt heads within the range of sizes supplied. Should headspace conditions not be adjustable within the size range, exchange the bolt. Re-test with the range of bolt head sizes. If still incorrect sentence the rifle 'ZF'.

NOTE

Bolt heads are supplied in 8 sizes varying by 0.002 in. between sizes. They are numbered from 1-8.

Primary extraction

36 Test primary extraction as follows:

36.1 Cock the rifle.

36.2 Raise the bolt lever gently until a check is felt as the stud of the cocking piece contacts the bolt.

36.3 Make sure that a 0.030 in. feeler gauge cannot be inserted vertically between the front of the bolt head and the rear end of the barrel.

36.4 If the gauge can be inserted and the bolt, bolt head, and cocking piece stud are serviceable, sentence the rifle 'ZF'.

Body socket and fore-end clearance

37 If the clearance between the body socket and rear face of the fore-end is in excess of $^{1}/_{32}$ in. replace the fore-end.

Butt sizes

38 Butt sizes are as follows:

38.1 Butts are supplied in three lengths. To ensure positive identification, butts should be measured and an identifying letter stamped on the top rear end of the butt using a $^{5}/_{16}$ in. letter stamp.

38.2 Measurements are to be taken from the heel of the butt to the rear of the body socket. The dimensions, butt sizes and identification letters are given in Table 4.

TABLE 4 BUTT SIZES

Serial (1)	Dimension (2)	Description (3)	Marking (4)
1	12.75 in.	Long butt	'L'
2	12.25 in.	Normal butt	'N'
3	11.75 in.	Short butt	'S'

NOTE

In support of the revised Out of Service Date (OSD), only weapons complete with normal butts are provisioned.

TABLE 5 PLAN SIZES OF MAIN COMPONENTS

Serial (1)	Designation (2)	Dwg No. (3)	Size (in inches) (4)	
	BARREL 6 grooves RH	CR559		
1	Twist of grooves 1 turn in 16 in. Bore dia		L 0.216	H 0.2165
2	Width of extractor way		L 0.110	H 0.115
3	Length of barrel from breech face to end of muzzle		L 23.25	H 23.3
4	Outside dia of muzzle		L 0.649	H 0.650
	BODY	CR324		
5	Dia of boltway		L 0.395	H 0.398
6	Keyway for resistance column		L 0.395	H 0.398
7	Outside dia of boss for front guard screw		L 0.47	H 0.48
8	Holes for pins, cartridge, platform front and rear		L 0.1800	H 0.1806
9	Hole for pin, axis, backsight		L 0.144	H 0.146
10	Hole for plunger, backsight, large shank		L 0.196	H 0.198
11	Hole for plunger, backsight, small shank		L 0.104	H 0.107
12	Thread for front guard screw		¼ in. BSF (med)	
13	Thread for rear guard screw		No.4 BA	
14	Thread for stock bolt		$^{7}/_{16}$ in. BSW	
15	Thread for screw, spring, bolt, locking		No.3 BA	
16	Thread for ejector screw		No.3 BA	
	BACKSIGHT	CR313		
17	Hole for pin, axis		L 0.1445	H 0.1470
18	Aperture of slide, dia		L 0.100	H 0.102
	BOLTS, BREECH			
19	Internal dia of mainspring housing		L 0.376	H 0.382
20	Internal dia of striker housing		L 0.253	H 0.255
21	Length of mainspring housing		L 2.900	H 2.920
22	Internal dia of bolt head (plain shank) housing		L 0.439	H 0.440
23	Thread for bolt head		L 0.4375 x 26 tpi	
24	Width of resistance column and lug		L 0.390	H 0.394
25	Outside dia of body of bolt		L 0.583	H 0.584
26	Overall length of bolt		L 3.295	H 3.305
27	Dia across resistance lug and column		L 0.88	H 0.895
	COCKING PIECE	CR942		
28	Thread for striker		0.247 x 26 tpi	
29	Thread for screw striker		No.4 BA	
30	Hole for head of screw striker		L 0.286	H 0.290

continued

TABLE 5 PLAN SIZES OF MAIN COMPONENTS (continued)

Serial (1)	Designation (2)	Dwg No. (3)	Size (in inches) (4)
	HEAD, BREECH BOLT	CR390 to CR397	
31	Length of bolt head No.1		L 1.346 H 1.347
	(Each subsequent head increases by 0.001 in.)		
32	Length of bolt head No.8		L 1.353 H 1.354
33	Thread of tenon		L 0.4375 x 20 tpi
34	Hole for pin, firing, large shank		L 0.125 H 0.127
35	Hole for pin, firing, small shank		L 0.090 H 0.092
36	Hole for pin, extractor		L 0.100 H 0.1006
37	Depth of cartridge face		L 0.032 H 0.0325

TABLE 6 DETAILS OF HELICAL SPRINGS

Serial (1)	Spring Designation (2)	Part No. (3)	Total No. of coils effective (4)	Dia of wire (5)	Dia external (6)	Free length (7)	Spring to be wound (8)
1	Catch head breech bolt	CR367	8	0.026	0.176	0.60	LH or RH
2	Extractor	CR337	5	0.022	0.142	0.315	LH or RH
3	Firing pin	CR339	15	0.0136	0.1186	1.00 + 0.05	LH or RH
4	Plunger adjusting screw	CR502	8	0.015	0.088	0.30	LH or RH
5	Plunger backsight	CR368	11	0.036	0.186	0.85	LH or RH
6	Sear, inner	CR560	14	0.064	0.314	1.50	RH
7	Sear, outer	CR370	3	0.08	0.50	0.57	LH
8	Striker	CR 331	31	0.048	0.358	3.57	LH or RH