

**TECHNICAL MANUAL**

***Operation, Maintenance, Repair***

***and***

***Replacement Parts***


***ULTIMAX 100***

***LMG 5.56 MM***

**MARK III**



**CHARTERED INDUSTRIES OF SINGAPORE**

A member of the Singapore Technology Corporation 

## FIREARMS SAFETY

SAFETY MUST BE THE FIRST AND CONSTANT CONSIDERATION OF EVERY PERSON WHO HANDLES FIREARMS AND AMMUNITION.

This Technical Manual is designed to assist you in learning the proper use and care of your Ultimax 100 Mark III LMG.

Read the instructions and warnings in this manual carefully before using the LMG.

Do not handle any firearm without having a complete understanding of its peculiar characteristics and safe usage.

**Note :** Due to the continuous efforts spent in upgrading the design, it is possible that certain descriptions contained in this manual may vary from the actual weapon.

# CONTENTS

	<u>PAGE</u>
<b>SECTION 1 – INTRODUCTION</b>	<b>3</b>
1.1 DESCRIPTION OF THE ULTIMAX 100 MARK III	
1.2 PHYSICAL AND PERFORMANCE CHARACTERISTICS	
<b>SECTION 2 – OPERATING INSTRUCTIONS</b>	<b>5</b>
2.1 SAFETY PROCEDURES	
2.2 PREPARATIONS BEFORE FIRING	
2.3 LOADING, FIRING AND UNLOADING	
2.4 SIGHTS ADJUSTMENT	
2.5 ADJUSTMENT OF GAS REGULATOR	
2.6 HANDLING OF THE BIPOD	
2.7 IMMEDIATE ACTION, STOPPAGES AND REMEDIES	
<b>SECTION 3 – STRIPPING AND ASSEMBLING</b>	<b>16</b>
3.1 MAIN GROUPS	
3.2 FIELD DISASSEMBLY AND ASSEMBLY	
3.3 DISASSEMBLY AND ASSEMBLY BY ARMOURER	
<b>SECTION 4 – MAINTENANCE</b>	<b>26</b>
4.1 GENERAL	
4.2 CLEANING	
4.3 LUBRICATION	
<b>SECTION 5 – AMMUNITION</b>	<b>28</b>
5.1 AMMUNITION	
5.2 DESTRUCTION OF MATERIAL TO PREVENT ENEMY USE	
<b>SECTION 6 – ACCESSORIES (OPTIONAL)</b>	<b>30</b>
6.1 BLANK FIRING ATTACHMENT	
6.2 SLING	
6.3 MAGAZINES	
6.4 REAR SLING CLIP	
6.5 CANVAS BAG	
<b>APPENDICES</b>	<b>33</b>
APPENDIX 1 – EXPLODED VIEW	
APPENDIX 2 – RECEIVER BODY AND TRIGGER MECHANISM	
APPENDIX 3 – BOLT CARRIER ASSEMBLY	
APPENDIX 4 – BARREL AND GAS SYSTEM ASSEMBLY	
APPENDIX 5 – BUTT ASSEMBLY	
APPENDIX 6 – REAR SIGHT ASSEMBLY	
APPENDIX 7 – BIPOD ASSEMBLY	



INTRODUCTION

**1.1 DESCRIPTION OF THE ULTIMAX 100 MARK III**

The Ultimax 100 is a one-man portable, magazine-fed, gas-piston operated, rotating bolt, air-cooled light machine gun. It can be fired from the shoulder, hip, and off a bipod. Although it only fires in the full automatic mode from an open bolt position, single shot can easily be achieved through trigger control. It feeds from either a 100/60 rounds drum magazine or a slightly modified standard box magazine. It can be stripped and kept in a canvas bag for ease of manoeuvre.

This Mark III version adopts a heavy air-cooled detachable barrel which can sustain 500 rounds of full automatic fire without heat damage. Prolonged continuous firing can thus be achieved by fitting in a new barrel. The flash suppressor also serve as a rifle grenade launcher and bayonet support. The weapon can be used for firing blank firing attachment.

A handle is assembled onto the gas block for balanced carriage of the weapon and facilitate quick change of the barrel.

The rear sight is marked in 100 metre increments out to 600 metres. It is fully adjustable for range with a slide plunger sight and for traverse with both front or rear windage screw.

A unique lock-out mechanism incorporated on the trigger mechanism prevents accidental firing when the weapon is improperly cocked or dropped. The fire selector has two positions, 'F' (FIRE) and 'S' (SAFE). On 'S' the trigger is blocked, breaking the connection between trigger and sear. On 'F' the trigger engages the sear to allow forward motion of the bolt carrier for firing.

The weapon can be fired without the buttstock (which is easily detachable) because of its low recoil. This configuration in conjunction with a short para-barrel is ideal for deployment in confined areas and for paratroopers.

The bipod legs have incremental length adjustment and can be positively locked in either the ready or off positions. The bipod is also designed to allow a 30° roll and 30° sweep of the weapon. The entire bipod can be easily detached and assembled without tools.

The cocking handle is located on the left hand side of the receiver and does not cycle with the bolt carrier during firing.

The Ultimax has a gas regulator with 5 position gas setting which allow the weapon to operate under varying conditions. The return gas can also be sealed off completely for firing rifle grenades. This is absolutely necessary for weapon without semi automatic mode of firing. The use of a high pressure gas system prevents fouling, therefore minimising the need for periodic cleaning.



Fig. 1 Ultimax 100 Mark III with 100 rounds drum magazine.

## 1.2 PHYSICAL AND PERFORMANCE CHARACTERISTICS

### 1.2.1 PHYSICAL DATA

#### Lengths :

Gun overall with buttstock	1030 mm (40.6 inch)
Gun overall without buttstock	800 mm (31.5 inch)
Receiver (without barrel and buttstock)	485 mm (19.09 inch)
Barrel (without flash suppressor)	508 mm (20.0 inch)

#### Weights :

Gun empty without bipod	4.4 kg (9.68 lb)
Spare barrel	1.56 kg (3.75 lb)
Bipod	0.45 kg (0.99 lb)
Empty 100-round drum magazine	0.57 kg (1.25 lb)
Loaded 100-round drum magazine	1.76 kg (3.88 lb)
Gun with fully loaded magazine, buttstock, bipod and sling	6.78 kg (14.91 lb)

#### Barrel :

Calibre	5.56 x 45 mm
Rifling	6 grooves, right hand twist, 1 turn in 305 mm (for M193 ball) or 1 turn in 178 mm (for SS 109 round)
Cooling	Air

### 1.2.2 PERFORMANCE DATA

Type of operation	Gas (with piston cylinder and gas regulator)
Recoil	Constant reaction
Locking system	Rotary Bolt
Muzzle Velocity (m/s)	990 (for M193 ball round) 945 (for SS 109 round)
Cycle rate of fire (RPM)	400 - 600
Effective range (m)	460 (with 1 turn in 305 mm barrel and M193 round) 1300 (with 1 turn in 178 mm barrel and SS 109 round)
Accuracy (max. dispersion at 100 yards)	8 inch

**NOTE:** 1 turn in 305 mm rifling is the standard barrel for the Ultimax 100.  
1 turn in 178 mm rifling barrel will only be available on special request.



## SECTION 2

### OPERATING INSTRUCTIONS

#### 2.1 SAFETY PROCEDURES

It is a safe practice to clear the weapon before proceeding with any stripping exercise.

Clear weapon by performing the following operations :—



Fig. 2. 1a Remove magazine by depressing the magazine catch on the right hand side of the receiver.



Fig. 2. 1b 1) Cock the weapon by twisting the knob anti-clockwise and pull back fully then return knob to original position.  
2) Put selector on 'S' position.

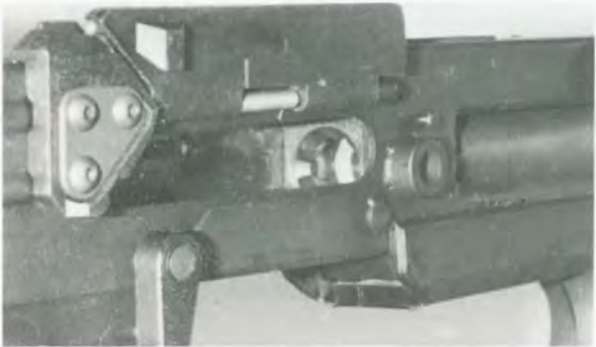


Fig. 2. 1c Inspect chamber and put selector on 'F' position



Fig. 2.1d Point the weapon in a safe direction, pull the trigger and put selector back to 'S' position.

## 2.2 PREPARATIONS BEFORE FIRING

Before firing, clean and lubricate weapon as instructed in SECTION 4.

Before loading, always check to ensure that the barrel is clear and the bore unobstructed. Firing the weapon with any obstruction in the barrel may result in severe damage to the weapon and serious injury to the firer.

If the bipod is to be used, the bipod legs should be adjusted to the position which suits the terrain.

## 2.3 LOADING, FIRING AND UNLOADING

2.3.1 Clear weapon as described in SECTION 2.1.

2.3.2 Cocking the weapon

To unlock cocking handle, grab knob with left hand and turn anti-clockwise



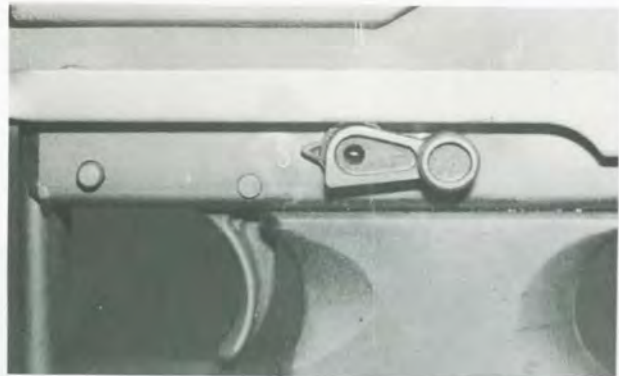
Pull cocking handle to rear until bolt carrier catches on bolt sear.



Push the cocking handle forward to original position as shown.



Ensure that the selector lever is in 'S' position. Note that the bolt carrier is in the open position.



### 2.3.3 LOADING

With the muzzle pointed towards a safe direction, hold the pistol grip with one hand. Insert a loaded magazine into magazine housing until the magazine catch engages and holds the magazine securely (Fig. 2.3.3).

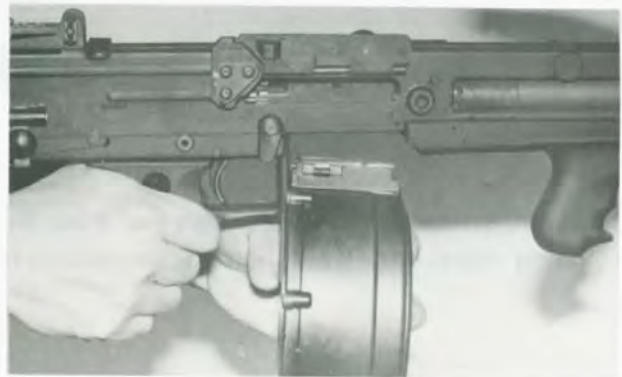


Fig. 2.3.3 Loading the magazine.

The weapon is now loaded and ready to fire. The selector lever should be in 'S' position when not ready to fire.

It is a good practice for firer not to have his finger on the trigger when no firing is intended.



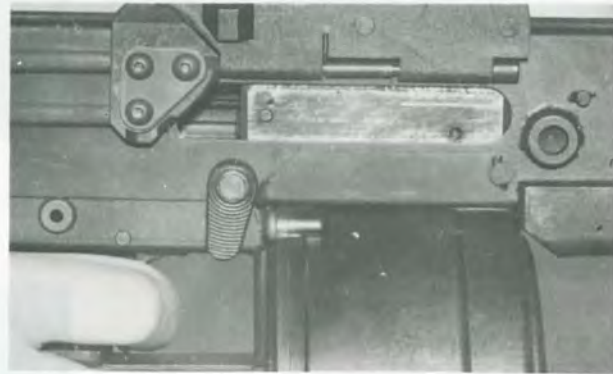
### 2.3.4 FIRING

Flip selector lever to 'F' position and squeeze trigger (Fig. 2.3.4). The weapon will continue to fire until either the magazine is emptied or the trigger is released. When trigger is released, bolt carrier will remain open if magazine still contains rounds.



Fig. 2.3.4 Automatic Fire

If the magazine is empty, the bolt carrier will be in the closed position.

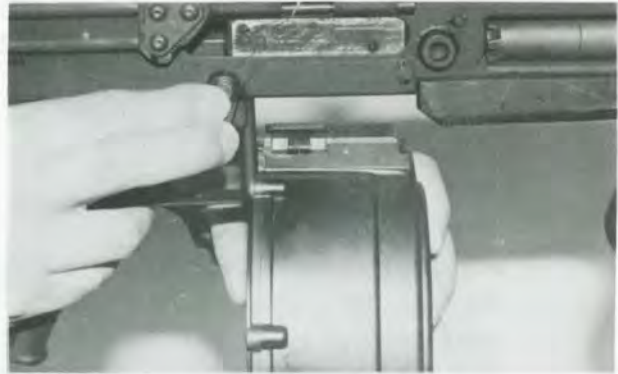


### WARNING :

Bolt carrier will also be in closed position when a misfire occurs. In such case, carry out immediate action procedure as given in SECTION 2.7.

### 2.3.5 UNLOADING

Ensure that the selector lever is switch to 'SAFE'. Point weapon towards a safe direction and release magazine catch. Clear the weapon as described in section 2.1



## 2.4 SIGHTS ADJUSTMENT

### 2.4.1 FRONT SIGHT

The front sight has both elevation and windage adjustment.

To raise the mean point of impact depress the detent front sight and turn the post front sight clockwise.



Fig. 2.4. 1a Adjustment of Post Front Sight.

One click in clockwise direction will raise the mean point of impact by 25mm at 100m. Similarly, one click in anti-clockwise direction lowers the mean point of impact by 25mm at 100m.

Depress adjusting screw front sight and turn the square shoulder (Fig. 2.4.1b) for windage adjustment. There are four clicks in 1 complete revolution; one click clockwise moves the mean point of impact 25mm to the left at 100m. Similarly, one click anti-clockwise moves the mean point of impact 25mm to the right at 100m.

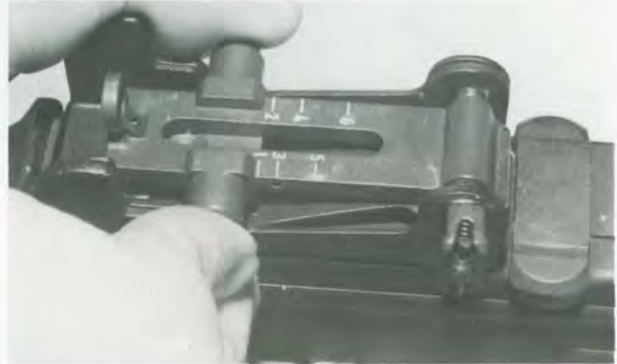


Fig. 2.4. 1b Front Windage Adjustment

## 2.4.2 REAR SIGHT ASSEMBLY

The rear sight assembly has both range and windage adjustment. There are two apertures; one on the main rear sight body and the other on the sight slide.

The sight slide can be quickly adjusted by pushing or pulling the slide sight plunger to the required range scale (Fig. 2.4. 2a)



2.4.2a Quick adjustment of sight slide.

The windage knob has to be pulled out before turning for windage adjustment (Fig. 2.4.2d). There are four clicks in 1 complete revolution. One click clockwise moves the mean point of impact 25 mm to the right at 100 m. Similarly, 1 click anti-clockwise moves the mean point of impact 25 mm to the left at 100 m.



2.4.2b Windage adjustment.



With the 1 in 305 mm twist barrel and the use of M193 ball ammunition, the rear sight is calibrated for ranges up to 600 m.



2.4.2c Marking up to 600 m

**OPTION:**

With the 1 in 178 mm twist barrel and the use of SS109 ammunition, the rear sight is marked for ranges up to 1000 m.

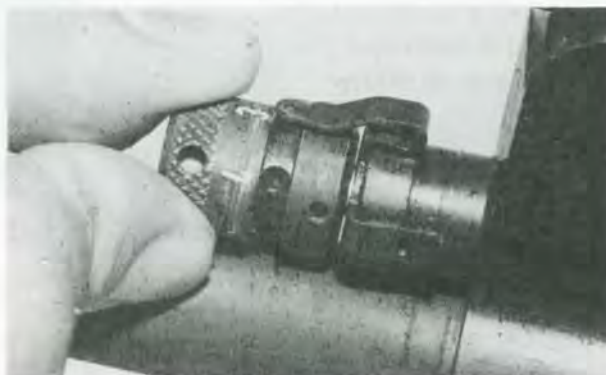


2.4.2d Marking up to 1000 m.

## 2.5 ADJUSTMENT OF GAS REGULATOR

The gas regulator has a 5 position hole settings numbered from one to five in increasing hole sizes. Under adverse conditions (e.g. excessive carbon, dirt), the gas regulator knob should be turned to hole setting No. 5 for strongest gas system. A sixth regulator position (i.e. hole setting No. 0) seals off return gas completely for firing rifle grenade.

Adjusting the gas regulator knob to the desire hole setting as indicated by the tip of the gas regulator spring.



Under irregular rate of firing, when the bolt carrier is hitting the back end of the receiver, the gas regulator should be turned anti-clockwise to the next smaller hole size to achieve optimum performance.

**The weapon is factory set at hole No. 3 or 4 under normal condition.**

## 2.6 HANDLING OF THE BIPOD

The bipod assembly is unfolded when in use and both legs are incorporated with a ten position adjustment to suit varying terrains. To unfold, pull both legs backwards individually so that they are disengaged from the bipod bracket and swing down to lock in ready position. To adjust the leg, depress the button and select appropriate length.

The bipod allows the weapon to roll and swivel through a 30-degree arc.

To fold bipod, the legs should be set to their minimum length.



Pull and pivot the bipod leg to unfold the leg.



Depress the button and pull downward to extend the leg.

## 2.7 IMMEDIATE ACTION, STOPPAGES AND REMEDIES

### 2.7.1 IMMEDIATE ACTION

An IMMEDIATE ACTION is the unhesitating application of a probable remedy to overcome a stoppage without investigating the cause. On this weapon, the sequence of an immediate action is as follows:

- a) Point weapon to a safe direction, cock the weapon and observe for ejection of a cartridge or cartridge case.
- b) If a cartridge or cartridge case is ejected, attempt to fire with a new round. If the weapon still fails to fire, unload, clean and inspect to determine the cause of malfunction.
- c) If a cartridge or cartridge case is not ejected, a failure to extract or feed has occurred. Put in safe position, check for a round in the chamber. If chamber is empty, change magazine, reload and attempt to fire the weapon. If the chamber is full, unload and inspect to determine the cause of malfunction.
- d) If (b) above occurs, it may indicate a defective round, a broken firing pin or a bolt closure problem.

### 2.7.2 STOPPAGES

A STOPPAGE is any unintentional interruption in the cycle of function. Immediate action must be taken to clear the stoppage.

STOPPAGES should be very rare if cleaning and maintenance operations are regularly carried out.

Following are the common stoppages and their causes:

- a) A cartridge case in the chamber  
Probable cause:    i) failure to extract  
                      ii) short recoil
- b) A cartridge in the chamber  
Probable cause:    i) misfire or failure to ignite  
                      ii) incomplete closing of the mechanism
- c) A cartridge case jammed in the mechanism  
Probable cause:    i) failure to eject  
                      ii) short recoil
- d) A cartridge jammed in the mechanism  
Probable cause:    i) failure to feed  
                      ii) short recoil  
                      iii) defective magazine  
                      iv) defective cartridge



### 2.7.3 TABLE OF STOPPAGES AND REMEDIES

S/NO	MALFUNCTION	PROBABLE CAUSE	REMEDIAL ACTION
1.	Failure to extract	<ol style="list-style-type: none"> <li>1. Broken extractor</li> <li>2. Broken extractor spring</li> <li>3. Broken extractor pin</li> <li>4. Fouling of chamber</li> <li>5. Torn cartridge rim</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Replace</li> <li>3. Replace</li> <li>4. Clean the chamber</li> <li>5. Change ammunition</li> </ol>
2.	Failure to eject	<ol style="list-style-type: none"> <li>1. Broken or damaged ejector</li> <li>2. Broken ejector spring</li> <li>3. Broken or damaged extractor or extractor spring, or extractor pin</li> <li>4. Short recoil</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Replace</li> <li>3. Replace</li> <li>4. See S/No. 5</li> </ol>
3.	Misfire or failure to ignite	<ol style="list-style-type: none"> <li>1. Defective cartridge</li> <li>2. Broken or damaged firing pin</li> <li>3. Light indent, incomplete or slow closing of mechanism</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove the defective round</li> <li>2. Replace</li> <li>3. Clean and lubricate the weapon</li> </ol>
4.	Failure to feed	<ol style="list-style-type: none"> <li>1. Incorrect position of cartridge in the magazine</li> <li>2. Component of magazine latch broken</li> <li>3. Return spring broken/damaged</li> <li>4. Defective cartridge</li> <li>5. Magazine incorrectly positioned</li> <li>6. Worn magazine lips</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct the position, check the alignment of other rounds.</li> <li>2. Replace</li> <li>3. Replace</li> <li>4. Remove the cartridge</li> <li>5. Ensure that the magazine catch is in position.</li> <li>6. Replace.</li> </ol>

S/NO.	MALFUNCTION	PROBABLE CAUSE	REMEDIAL ACTION
5.	Short recoil	<ol style="list-style-type: none"> <li>1. Fouling of the weapon or lack of lubrication</li> <li>2. Jamming in the movement of the parts</li> <li>3. Defective component in the trigger mechanism</li> <li>4. Insufficient gas power</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and oil the weapon</li> <li>2. Inspect the moving parts and eliminate cause of jamming.</li> <li>3. Change the defective parts</li> <li>4. Increase gas power setting.</li> </ol>
6.	Incomplete closing	<ol style="list-style-type: none"> <li>1. Fouling of the weapon</li> <li>2. Broken return spring</li> <li>3. Torn cartridge rim or stuck case. Cartridge remains in chamber.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the weapon</li> <li>2. Replace</li> <li>3a. If the weapon is only slightly heated by firing, cock the weapon to eject the cartridge. After cocking, if the cartridge has not been ejected, remove bolt carrier assembly from receiver and extract the cartridge with extraction tool.</li> <li>3b. If the weapon is very hot after prolonged firing, cock immediately the mechanism to eject the cartridge. In case of cocking difficulty, cool the barrel before attempting to eject the cartridge, as precaution against a possible cook-off.</li> </ol> <p><b>WARNING :</b> Never attempt to eject a 'live' round with the cleaning rod.</p>

## SECTION 3

### STRIPPING AND ASSEMBLING

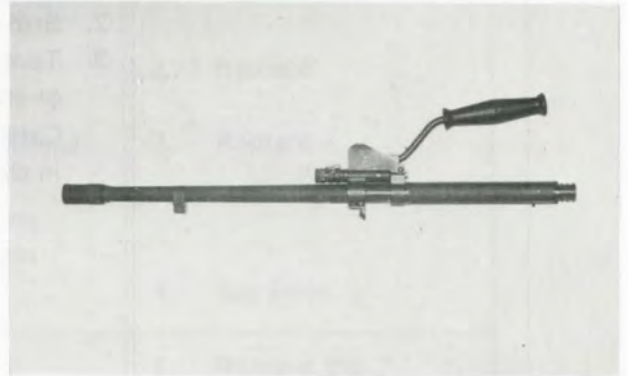
#### 3.1 MAIN GROUPS

The main groups of the weapon are:

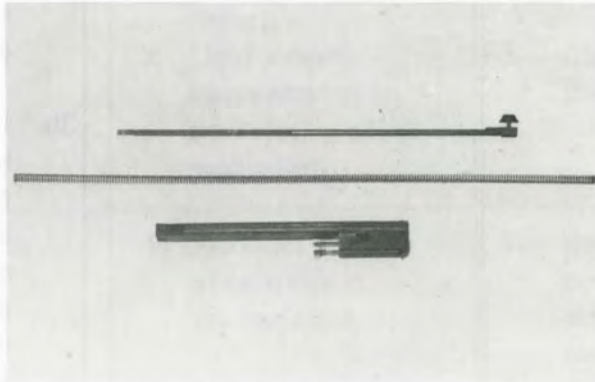
- i) Receiver Assembly
- ii) Barrel Assembly
- iii) Bolt Carrier Assembly
- iv) Buttstock Assembly
- v) Bipod Assembly



i) Receiver Assembly



ii) Barrel Assembly



iii) Bolt Carrier Assembly



iv) Buttstock Assembly



v) Bipod Assembly



## 3.2 FIELD DISASSEMBLY AND ASSEMBLY

The Ultimax 100 Mark III can be quickly field stripped to their basic main groups. Most of the operations described later can be done by the soldier without the aid of special tools.

Assembly is generally done in reverse sequence.

**Note:** It is mandatory to clear the weapon before proceeding with the stripping exercise.

### 3.2.1 REMOVING THE BUTTSTOCK

Remove the buttstock by pressing the stock latch buttons inwards against the receiver wall and pulling the buttstock away from the receiver at the same time.



Removing the buttstock

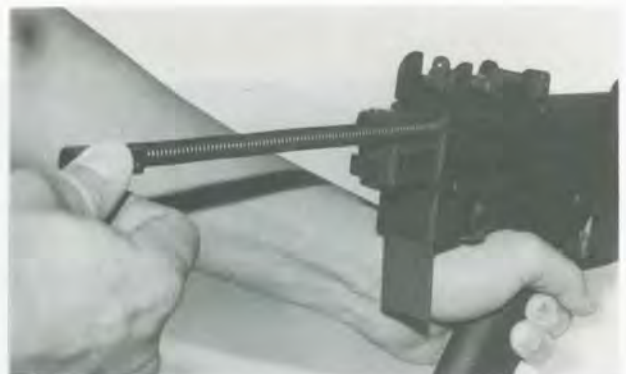
### 3.2.2 REMOVING THE BOLT CARRIER ASSEMBLY

Check and ensure that the bolt carrier is in the forward position, push the take down button forward to disengage the back plate from the main spring guide rod. The back plate should slide down freely (Fig. 3.2.2a).

Withdraw the bolt carrier assembly through the opening (Fig. 3.2.2b).



a) Slide down back plate  
Fig. 3.2.2



b) Remove bolt carrier assembly

**Note :** Extend the bolt and pull the trigger when assembling the bolt carrier assembly into the receiver body.

### 3.2.3 STRIPPING THE BOLT CARRIER ASSEMBLY

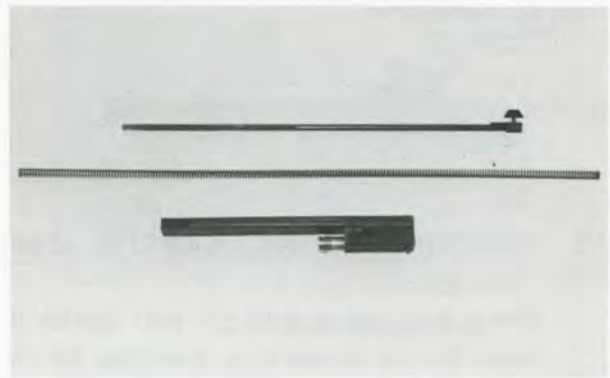
To release the bolt carrier bar assembly, hold the guide rod firmly and pull the main spring and the bolt carrier bar backwards until there is enough clearance between the top coil and the step on the guide rod (Fig. 3.2.3a).

By depressing the rear end of the firing pin slightly, the cross pin can be moved to the extreme position by pushing it with a bullet tip (Fig. 3.2.3c). Gradually reduce the finger pressure to allow the firing pin to slide out freely (Fig. 3.2.3d).

**CAUTION** : The main spring is heavily compressed - use care when stripping and assembling to prevent the spring and the guide rod from escaping forcibly and possibly causing injury.



a) Pull main spring and bolt carrier bar



b) Main spring bolt carrier bar and bolt carrier body assembly.



c) Depress firing pin to release cross pin



d) Remove firing pin

Fig. 3.2.3



Remove the cam pin using the firing pin (Fig. 3.2.3e) and withdraw the bolt (Fig. 3.2.3f).

Note: To assemble the bolt carrier group, the slot of the bolt cam pin must be parallel to the slot of the bolt carrier body.



e) Remove the cam pin

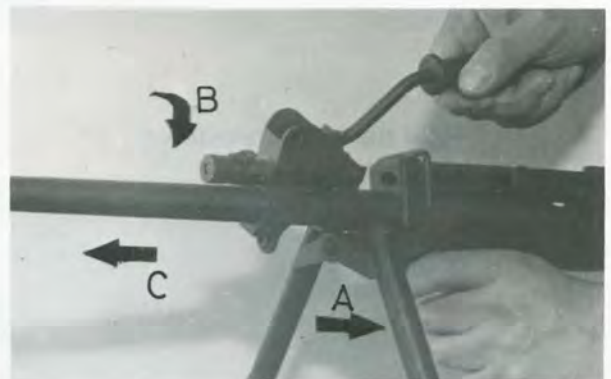


f) Remove the bolt

Fig. 3.2.3

### 3.2.4 REMOVING THE BARREL ASSEMBLY

To remove the barrel assembly from the receiver, pull the barrel takedown button backward (A), hold the carrying handle turn the barrel assembly anti-clockwise (B) and push it forward to slide it off (C).



### 3.2.5 REPLACING THE BARREL ASSEMBLY

Hold the carrying handle and guide the pin spiral barrel to position with the front cover till its back home position.





Hold the carrying handle and swing to the locking clockwise position and lock it.



### 3.2.6 REMOVING THE BIPOD ASSEMBLY

To remove the bipod assembly, the barrel assembly should be removed and at least one bipod leg must be unfolded.

Hold the barrel takedown button right back

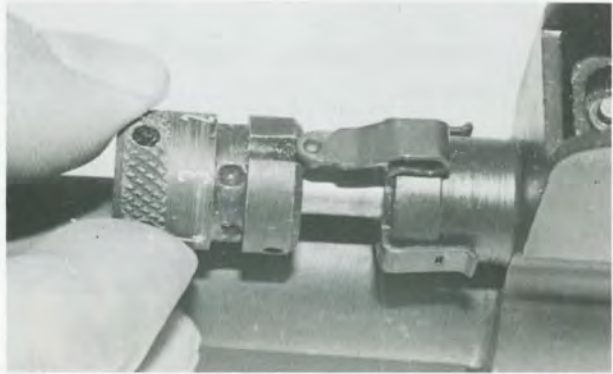


Hold one of unfolded leg, twist the assembly clockwise 45° and lift it forward

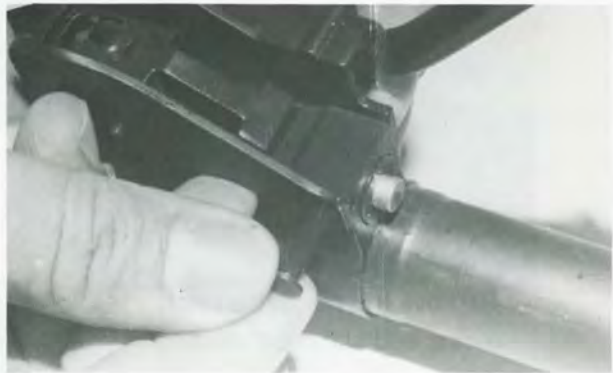


### 3.2.7 STRIPPING THE GAS SYSTEM

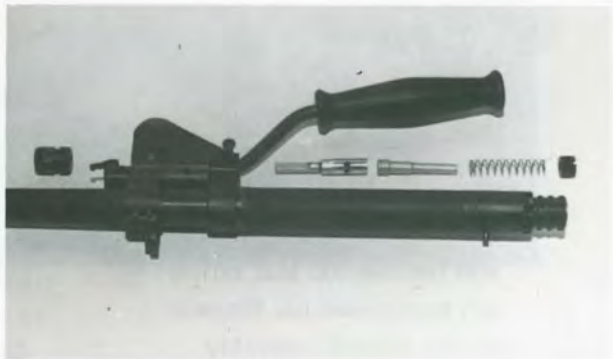
Turn the gas regulator knob until the slot is aligned with the stud of the gas regulator spring and remove the gas regulator knob



Depress and pull the cross pin gas block to the left.



Remove the gas piston plug with the gas piston return spring, gas piston and gas regulator.



**NOTE :** Assemble the gas system with the cut groove of gas piston plug facing upward and the slot vertical, then depress cross pin gas block



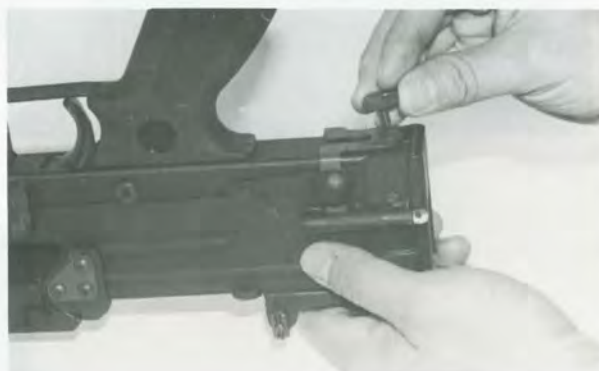
### 3.3 DISASSEMBLY AND ASSEMBLY BY ARMOURER

Advance assembly/disassembly is not expected under normal maintenance of the weapon.

This section is specially written for replacing worn-out or damaged components by armourer or similarly skilled technical personnel.

#### 3.3.1 TRIGGER MECHANISM

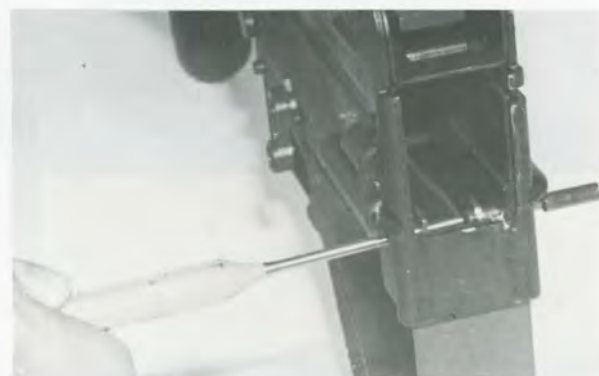
Disassemble the stock latch by removing the stock latch screw.



Remove the magazine latch spring and stand-off post.



Slide the sear buffer guide out of the sear buffer pin and remove the sear buffer pin to disassemble the sear buffer helicoil assembly.



Remove the sear buffer assembly from the receiver body.

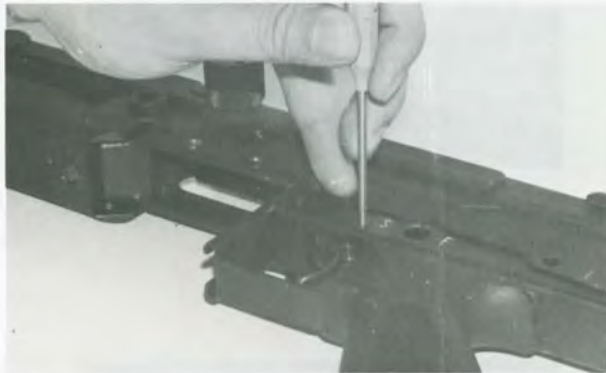




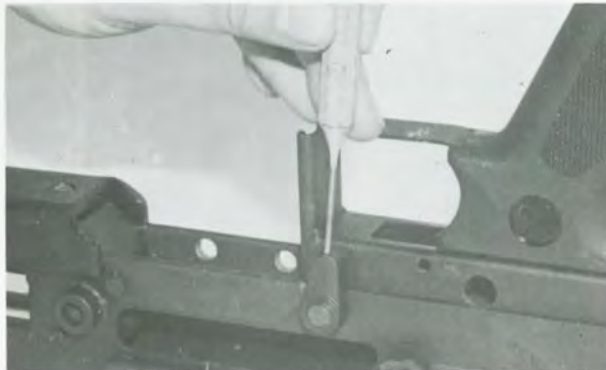
Turn the selector lever up as shown in the right figure and pull it out.



Remove the trigger pivot pin to free the trigger assembly



Remove the magazine latch roll pin to disassemble the button and actuator.



Remove the detent pin to free the trigger group detent wire.



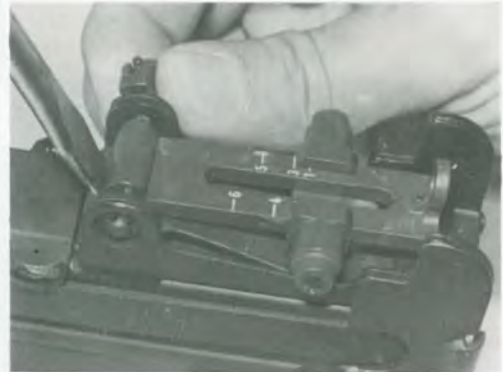
**NOTE :** Lift the trigger group detent wire up before assembling the trigger assembly. Press the trigger group detent wire down before assembling the selector.

### 3.3.2 REAR SIGHT ASSEMBLY

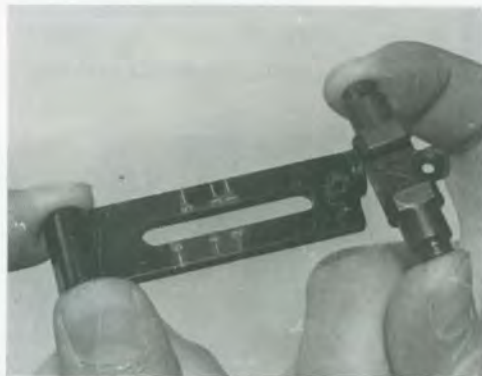
Depress the sight leaf spring and windage screw to remove the sight lock pin. Unscrew the windage screw to free the sight leaf spring and sight assembly. Depress the sight slide plunger to remove the sight slide and the adjusting screw.



Depress sight leaf spring and windage screw. Remove sight lock pin.



Unscrew windage screw. Remove sight leaf spring and sight assembly.



Remove sight slide from the sight.



Sight assembly

**NOTE:** Ensure that the sight leaf spring rivet is located at the hole of the sight base when assembling the sight leaf spring to the sight base.

### 3.3.3 BOLT ASSEMBLY

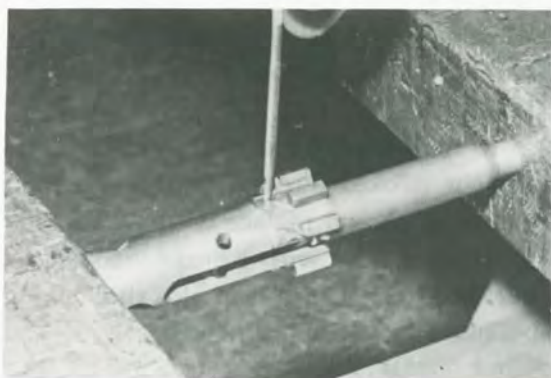
The extractor is to be depressed slightly with the thumb when disengaging the extractor pin. Remove the ejector pin to disassemble the ejector and ejector spring.



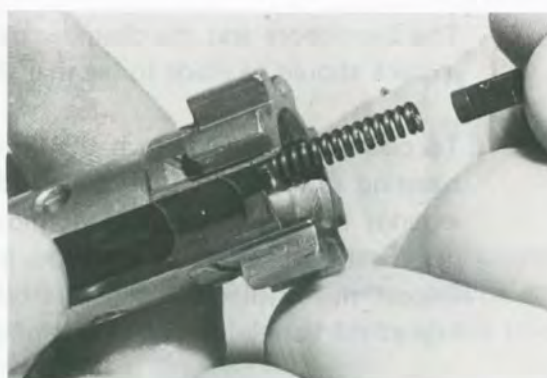
Depress rear of extractor and punch out extractor pin.



Separate extractor spring rubber insert.



With the aid of a vice and a spent cartridge case, depress ejector and punch out ejector pin.



Remove ejector and spring

**NOTE:** Once the weapon is fully assembled, conduct a manual function check before loading/arming the weapon.



## SECTION 4

### MAINTENANCE

#### 4.1. GENERAL

A clean, properly lubricated and well maintained weapon loaded with good ammunition will fire reliably when it is needed.

The weapon should always be thoroughly cleaned after every exercise to remove the carbon, sand and powder residues in order to minimise corrosion.

In combat, the main parts to be cleaned are the cycling mechanism (bolt carrier), the barrel bore, the chamber and the gas system.

For lubrication, a special oil (Military spec.: VV-L-800 or equivalent) should be used (See 4.3)

#### 4.2 CLEANING THE WEAPON

##### 4.2.1 BARREL

The barrel bore and the chamber must always be thoroughly cleaned; before firing, a check should be made to see that there is no barrel obstruction.

To clean the barrel, attach the bore brush to the cleaning rod. Dip the brush in a cleaning solvent and pull the brush in straight strokes through the bore until it extends beyond the muzzle. Remove the bore brush and replace with a clean and dry flannelette. Pull through the bore to dry the bore with a fresh flannelette. Repeat this until the flannelette comes out clean and dry. Clean also the locking lugs of the barrel, just to the rear of the chamber with a wire brush.

On completion of cleaning, lubricate the bore and locking lugs at the barrel with a lightly oiled flannelette to prevent corrosion and pitting.

##### 4.2.2 BOLT CARRIER GROUP

Field strip the bolt carrier group and clean all external surfaces with flannelettes.

##### 4.2.3 GAS SYSTEM

Field strip the gas system as described in para 3.2.7. Clean the piston, the gas regulator and the internal surface of the gas block thoroughly to remove carbon deposits. Scrub also the piston for carbon deposits.

Upon completion of cleaning, apply a light coat of oil to all surfaces of components comprising the gas system.

### 4.3 LUBRICATION

When reassembling or after every 2000 rounds lubricate where required.

Apply lubricant to sliding surfaces such as bolt barrier, guide rod, main spring guide rod, cam path, bolt mechanism, gas regulator and gas piston.

The bipod legs, the bipod head and all pivot points in the trigger mechanism should also be lubricated.

Parts to be or not to be lubricated:

Lubricated:	Bolt Bolt carrier keyway Bolt carrier guide rod Barrel extension Return spring Bipod legs and bipod head Cocking handle Gas regulator Gas piston Receiver Trigger mechanism
-------------	---

Unlubricated:	Barrel Plastic components
---------------	------------------------------

**NOTE:** Only a very small amount of lubricant is needed to provide adequate lubrication of moving parts and to prevent rust. Accumulation of lubricant tend to attract particles of dust and dirt which can interfere with the safe and reliable function of the mechanism of the weapon.

## SECTION 6

### ACCESSORIES (OPTIONAL)

#### 6.1 BLANK FIRING ATTACHMENT

A blank firing attachment which consists of two parts can be fitted over the flash suppressor.

To fit the blank firing attachment, slide the threaded 'C' ring over the flats on the flash suppressor (Fig. 6.1a), then mount the blank firing attachment housing over the 'C' ring (Fig. 6.1b). Ensure that the blank firing attachment housing is always well screwed on.



a) Fit the 'C' Ring  
Fig. 6.1



b) Mount the housing



6.2 SLING



6.3 MAGAZINES

#### 6.4 REAR SLING CLIP

The Ultimax 100 III can also be fired without a buttstock. A clip-on bracket for the rear swivel can be fitted to the receiver in place of the buttstock (Fig. 6.4).



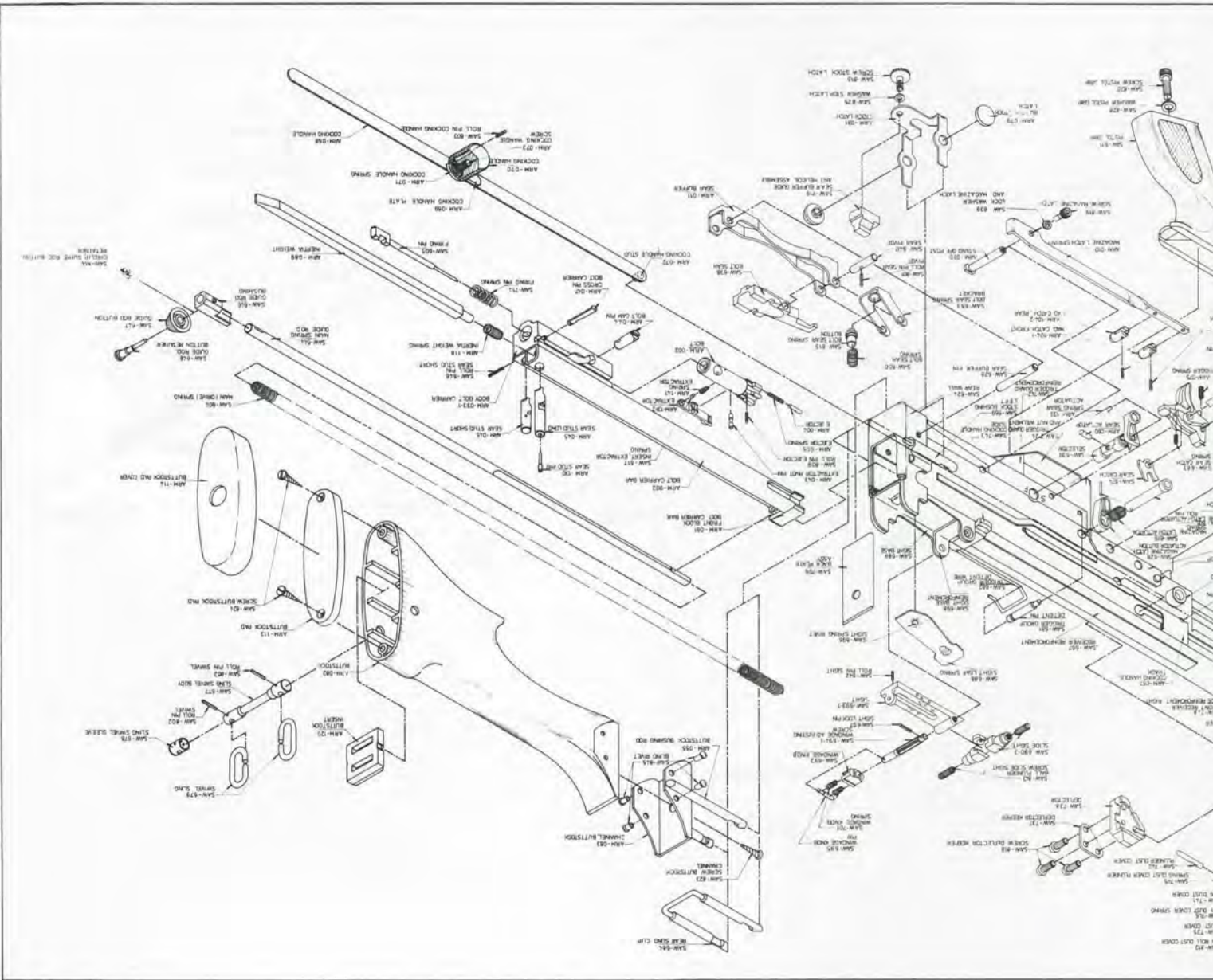
Fig. 6.4



## 6.5 CANVAS BAG

The canvas bag has the capacity for one ULTIMAX 100 MARK III weapon (Carbine barrel) with bipod, one spare short barrel, accessories cleaning kits, and two units of 100 rounds drum magazine.

A1 EXPLODED VIEW



APPENDICES  
APPENDIX 1

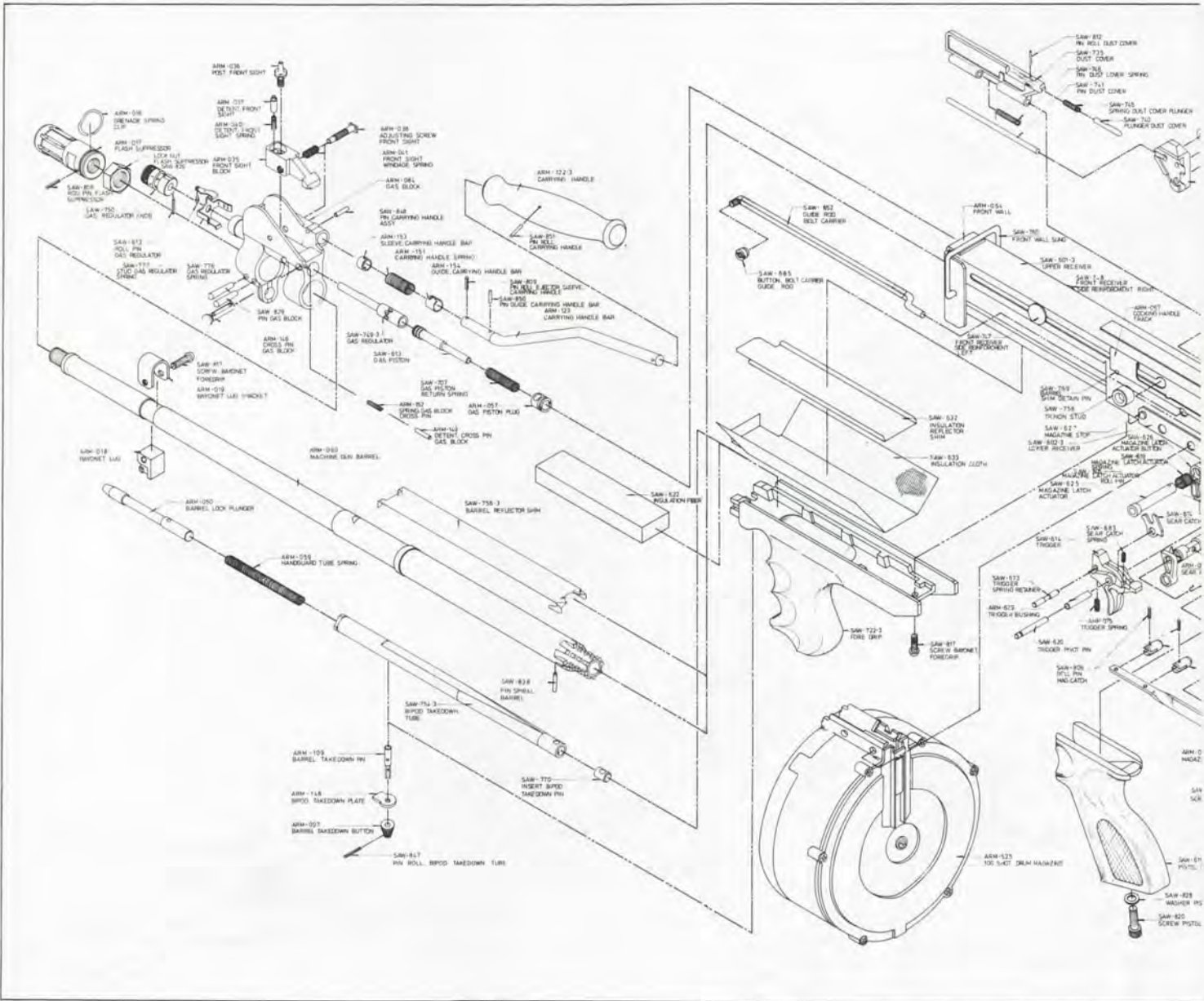


FIG. A1 EXPLO



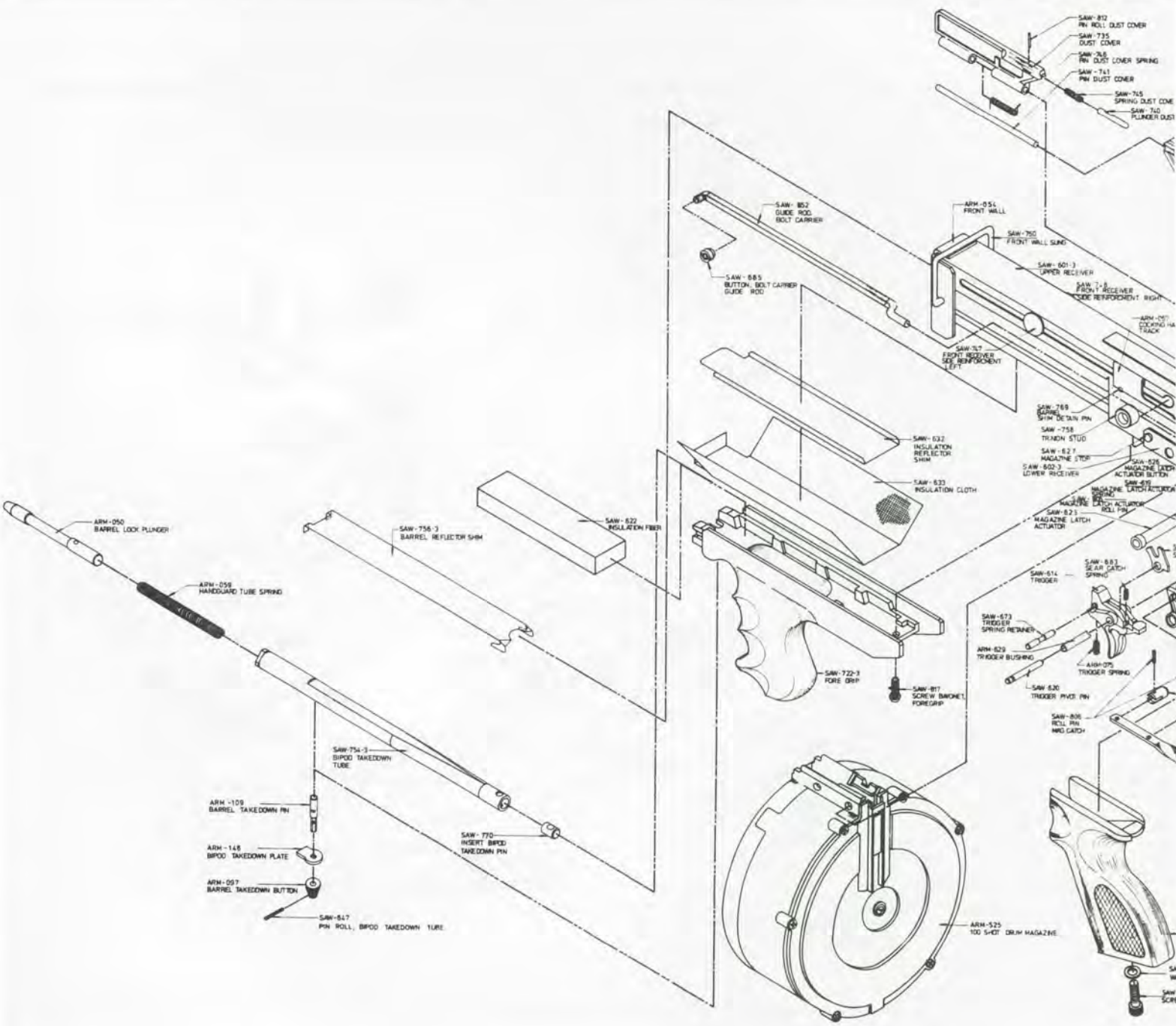


FIG. A2. RECEIVER BODY AND TRIGGER



RECEIVER BODY AND TRIGGER MECHANISM (FIG. A2)

APPENDIX 2

Page 1 of 2

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	ARM-010	MAGAZINE LATCH SPRING	1
2.	ARM-011	SEAR BUFFER	1
3.	ARM-030	STAND-OFF POST	1
4.	ARM-050	BARREL LOCK PLUNGER	1
5.	ARM-059	HANDGUARD TUBE SPRING	1
6.	ARM-060	SEAR ACTUATOR	1
7.	ARM-068	COCKING HANDLE BAR	1
8.	ARM-069	COCKING HANDLE PLATE	1
9.	ARM-070	COCKING HANDLE	1
10.	ARM-071	COCKING HANDLE SPRING	1
11.	ARM-072	COCKING HANDLE STUD	1
12.	ARM-073	COCKING HANDLE SCREW	1
13.	ARM-075	SPRING TRIGGER	1
14.	ARM-079	BUTTON STOCK LATCH	2
15.	ARM-081	STOCK LATCH	1
16.	ARM-097	BARREL TAKEDOWN BUTTON	1
17.	ARM-104-1	MAGAZINE CATCH, FRONT	1
18.	ARM-104-2	MAGAZINE CATCH, REAR	1
19.	ARM-109	BARREL TAKEDOWN PIN	1
20.	ARM-133	SEAR ACTUATOR SPRING	1
21.	ARM-148	BIPOD TAKEDOWN PLATE	1
22.	SAW-611	PISTON GRIP	1
23.	SAW-614	TRIGGER	1
24.	SAW-615	BOLT SEAR SPRING BUTTON	1
25.	SAW-619	MAGAZINE ACTUATOR SPRING	1
26.	SAW-620	TRIGGER PIVOT PIN	1
27.	SAW-622	INSULATION FIBER	1
28.	SAW-625	MAGAZINE LATCH ACTUATOR	1
29.	SAW-626	MAGAZINE LATCH ACTUATOR BUTTON	1
30.	SAW-628	SEAR BUFFER PIN	1
31.	SAW-629	TRIGGER BUSHING	1
32.	SAW-632	INSULATION REFLECTOR SHIM	1
33.	SAW-633	INSULATION CLOTH	1
34.	SAW-638	BOLT SEAR	1
35.	SAW-639	SELECTOR	1
36.	SAW-640	SEAR PIVOT	1



<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
37.	SAW-650	BOLT SEAR SPRING	1
38.	SAW-652	BOLT CARRIER GUIDE ROD	1
39.	SAW-653	BOLT SEAR SPRING BRACKET	1
40.	SAW-670-3	RECEIVER ASSEMBLY IV, MARK III	1
41.	SAW-673	TRIGGER SPRING RETAINER	1
42.	SAW-674	SEAR CATCH	1
43.	SAW-681	TRIGGER GROUP DETENT PIN	1
44.	SAW-682	TRIGGER GROUP DETENT WIRE	1
45.	SAW-683	SEAR CATCH SPRING	1
46.	SAW-685	BUTTON, BOLT CARRIER GUIDE ROD	1
47.	SAW-706	BACK PLATE ASSEMBLY	1
48.	SAW-719	SEAR BUFFER GUIDE AND HELI COIL ASSEMBLY	1
49.	SAW-722-3	FORE GRIP	1
50.	SAW-735	DUST COVER	1
51.	SAW-737	DEFLECTOR KEEPER	1
52.	SAW-738	DEFLECTOR	1
53.	SAW-740	PLUNGER, DUST COVER	1
54.	SAW-741	PIN, DUST COVER	1
55.	SAW-745	SPRING, DUST COVER PLUNGER	1
56.	SAW-746	SPRING, DUST COVER PIN	1
57.	SAW-754-3	BIPOD TAKEDOWN TUBE	1
58.	SAW-770	INSERT BIPOD TAKEDOWN PIN	1
59.	SAW-801	PIN ROLL, SEAR PIVOT	1
60.	SAW-803	PIN ROLL, COCKING HANDLE	1
61.	SAW-806	PIN ROLL, MAGAZINE CATCH	1
62.	SAW-812	PIN ROLL, DUST COVER	1
63.	SAW-816	SCREW, STOCK LATCH	1
64.	SAW-817	SCREW, BAYONET FORE GRIP	1
65.	SAW-818	SCREW, DEFLECTOR KEEPER	3
66.	SAW-819	SCREW, MAGAZINE LATCH	1
67.	SAW-820	SCREW, PISTOL GRIP	1
68.	SAW-825	WASHER, STOCK LATCH	1
69.	SAW-828	WASHER, PISTOL GRIP	1
70.	SAW-839	LOCK WASHER, MAGAZINE LATCH	1
71.	SAW-847	PIN ROLL, BIPOD TAKEDOWN TUBE	1

BOLT CARRIER ASSEMBLY (FIG. A3)

APPENDIX 3

Page 1 of 1

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	ARM-002	BOLT	1
2.	ARM-003	BOLT CARRIER BAR	1
3.	ARM-004	EJECTOR	1
4.	ARM-005	EJECTOR SPRING	1
5.	ARM-033-1	BODY BOLT CARRIER	1
6.	ARM-043	EXTRACTOR PIVOT PIN	1
7.	ARM-044	BOLT CAM PIN	1
8.	ARM-045	SEAR STUD LONG	1
9.	ARM-046	SEAR STUD SHORT	1
10.	ARM-047	CROSS PIN BOLT CARRIER	1
11.	ARM-061	FRONT BLOCK BOLT CARRIER BAR	1
12.	ARM-089	INERTIA WEIGHT	1
13.	ARM-118	INERTIA WEIGHT SPRING	1
14.	ARM-130	SEAR STUD PIN	1
15.	ARM-131-2	EXTRACTOR	1
16.	ARM-141	EXTRACTOR SPRING	1
17.	SAW-604	MAIN DRIVE SPRING	1
18.	SAW-605	FIRING PIN	1
19.	SAW-617	RUBBER INSERT EXTRACTOR SPRING	1
20.	SAW-644	MAIN SPRING GUIDE ROD	1
21.	SAW-646	GUIDE ROD BUSHING	1
22.	SAW-647	GUIDE ROD BUTTON	1
23.	SAW-648	GUIDE ROD BUTTON RETAINER	1
24.	SAW-714	FIRING PIN SPRING	1
25.	SAW-809	ROLL PIN EJECTOR	1
26.	SAW-844	CIRCLIP, GUIDE ROD BUTTON RETAINER	1
27.	SAW-846	PIN ROLL, SEAR STUD SHORT	1

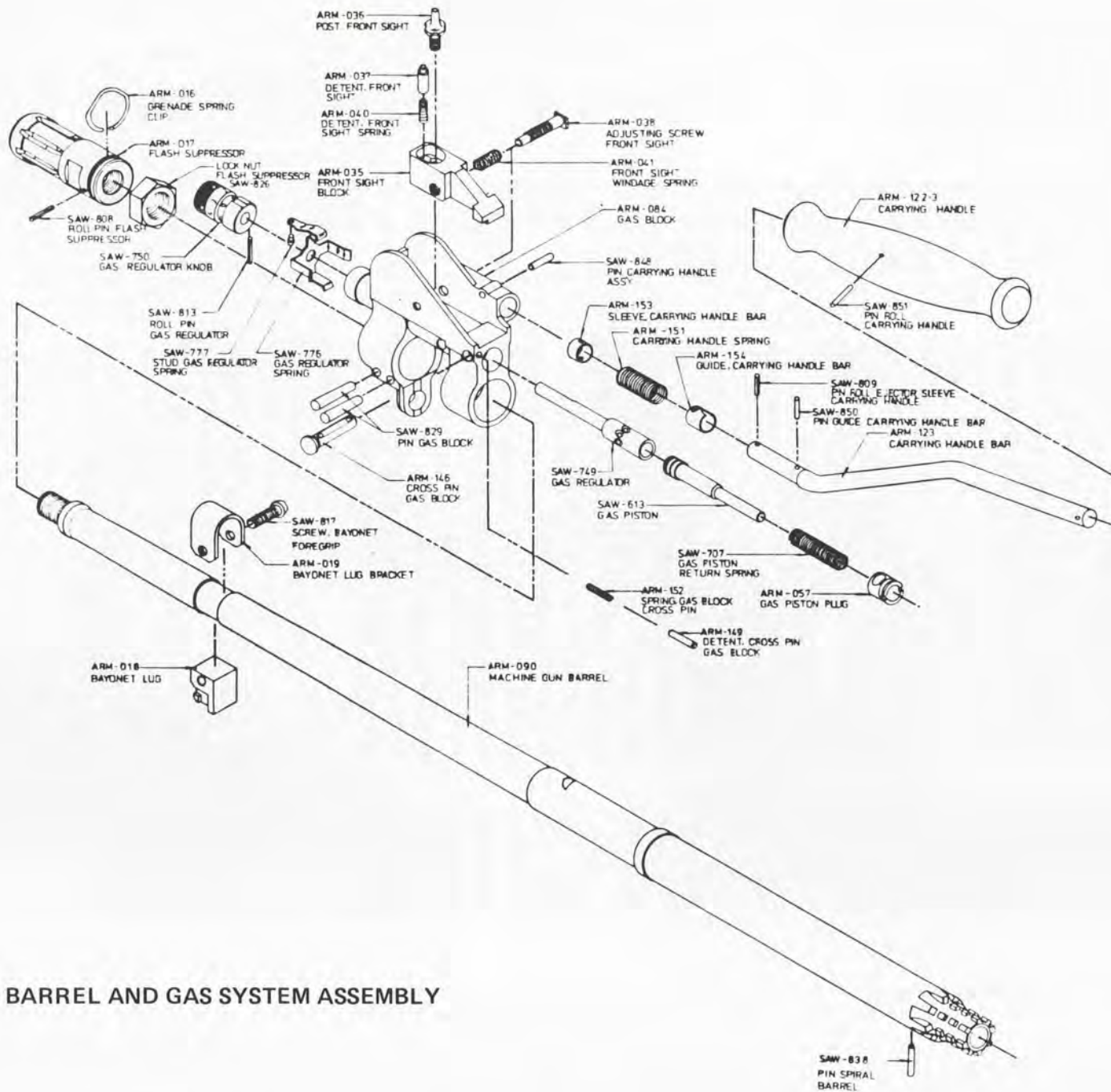


FIG. A4 – BARREL AND GAS SYSTEM ASSEMBLY



BARREL AND GAS SYSTEM ASSEMBLY (FIG. A4)

APPENDIX 4

Page 1 of 2

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	ARM-016	GRENADE SPRING CLIP	1
2.	ARM-017	FLASH SUPPRESSOR	1
3.	ARM-018	BAYONET LUG	1
4.	ARM-019	BAYONET LUG BRACKET	1
5.	ARM-035	FRONT SIGHT BLOCK	1
6.	ARM-036	POST, FRONT SIGHT	1
7.	ARM-037	DETENT, FRONT SIGHT	1
8.	ARM-038	ADJUSTING SCREW FRONT SIGHT	1
9.	ARM-040	DETENT, FRONT SIGHT SPRING	1
10.	ARM-041	FRONT SIGHT WINDAGE SPRING	1
11.	ARM-057	GAS PISTON PLUG	1
12.	ARM-084	GAS BLOCK	1
13.	ARM-090	MACHINE GUN BARREL	1
14.	ARM-122-3	CARRYING HANDLE	1
15.	ARM-123	CARRYING HANDLE BAR	1
16.	ARM-146	CROSS PIN GAS BLOCK	1
17.	ARM-149	DETENT CROSS PIN GAS BLOCK	1
18.	ARM-151	CARRYING HANDLE SPRING	1
19.	ARM-152	SPRING GAS BLOCK CROSS PIN	1
20.	ARM-153	SLEEVE CARRYING HANDLE BAR	1
21.	ARM-154	GUIDE CARRYING HANDLE BAR	1
22.	SAW-613	GAS PISTON	1
23.	SAW-686	FRONT SIGHT GUARD	1
24.	SAW-707	GAS PISTON RETURN SPRING	1
25.	SAW-749-3	GAS REGULATOR	1
26.	SAW-750	GAS REGULATOR KNOB	1
27.	SAW-776	GAS REGULATOR SPRING	1
28.	SAW-777	STUD GAS REGULATOR SPRING	1
29.	SAW-778	GAS REGULATOR SPRING ASSEMBLY	1
30.	SAW-808	PIN ROLL, FLASH SUPPRESSOR	1
31.	SAW-809	PIN ROLL, EJECTOR SLEEVE CARRYING HANDLE	1
32.	SAW-811	PIN ROLL, SWIVEL	1
33.	SAW-813	PIN ROLL, GAS REGULATOR	1
34.	SAW-817	SCREW, BAYONET LUG	1
35.	SAW-826	LOCK NUT, FLASH SUPPRESSOR	1
36.	SAW-829	PIN, GAS BLOCK	2
37.	SAW-838	PIN, SPIRAL BARREL	1
38.	SAW-848	PIN, CARRYING HANDLE ASSEMBLY	1
39.	SAW-850	PIN, GUIDE CARRYING HANDLE BAR	1
40.	SAW-851	PIN ROLL, CARRYING HANDLE	1

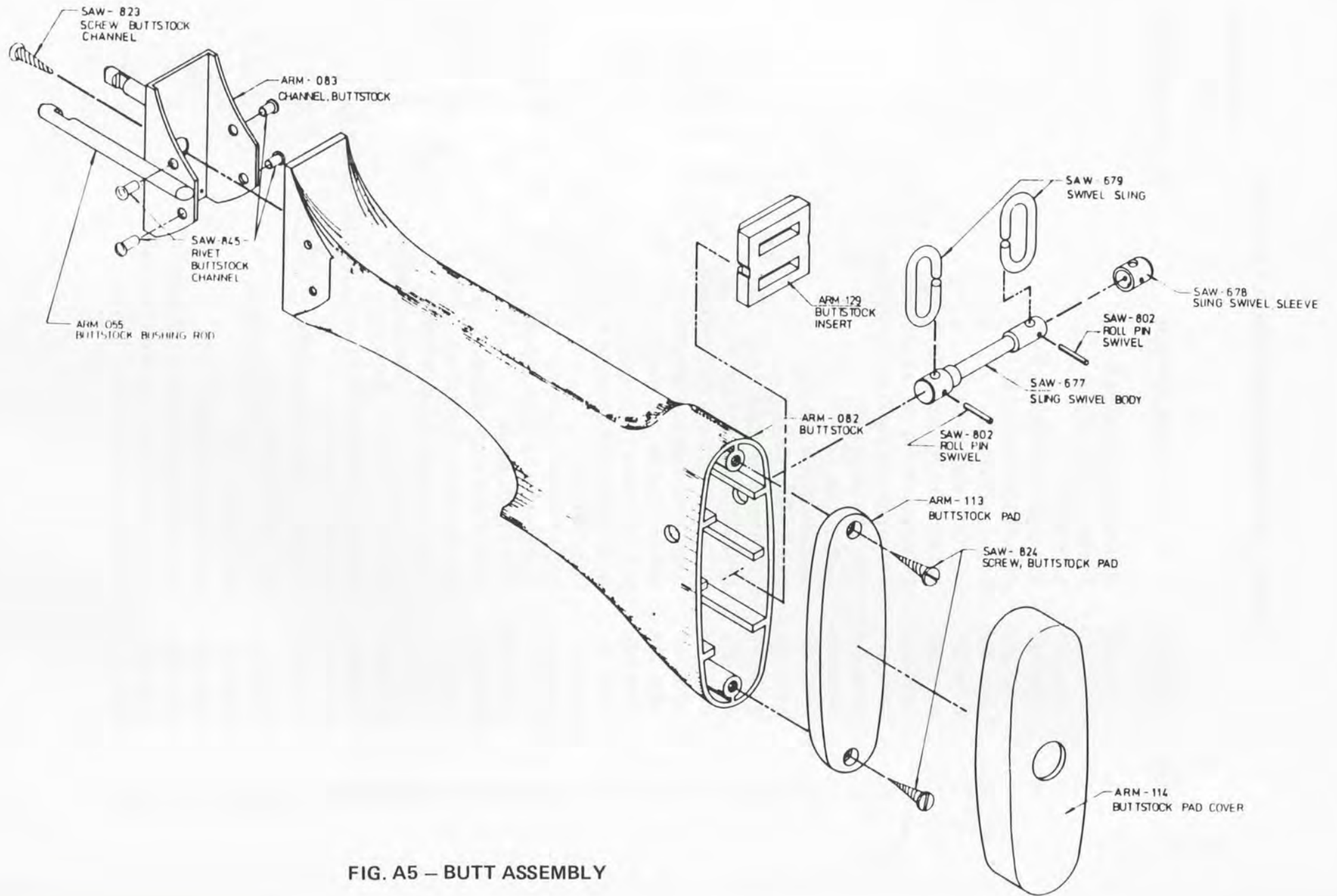


FIG. A5 – BUTT ASSEMBLY

BUTT ASSEMBLY (FIG. A5)

APPENDIX 5

Page 1 of 1

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	ARM-055	BUTTSTOCK BUSHING ROD	2
2.	ARM-082	BUTTSTOCK	1
3.	ARM-083	CHANNEL BUTTSTOCK	1
4.	ARM-113	BUTTSTOCK PAD	1
5.	ARM-114	BUTTSTOCK PAD COVER	1
6.	ARM-129	BUTTSTOCK INSERT	1
7.	SAW-677	SLING SWIVEL BODY	1
8.	SAW-678	SLING SWIVEL SLEEVE	1
9.	SAW-679	SLING SWIVEL	2
10.	SAW-802	PIN ROLL SWIVEL BODY	2
11.	SAW-823	SCREW BUTTSTOCK CHANNEL	1
12.	SAW-824	SCREW BUTTSTOCK PAD	2
13.	SAW-845	RIVET, BUTTSTOCK CHANNEL	2



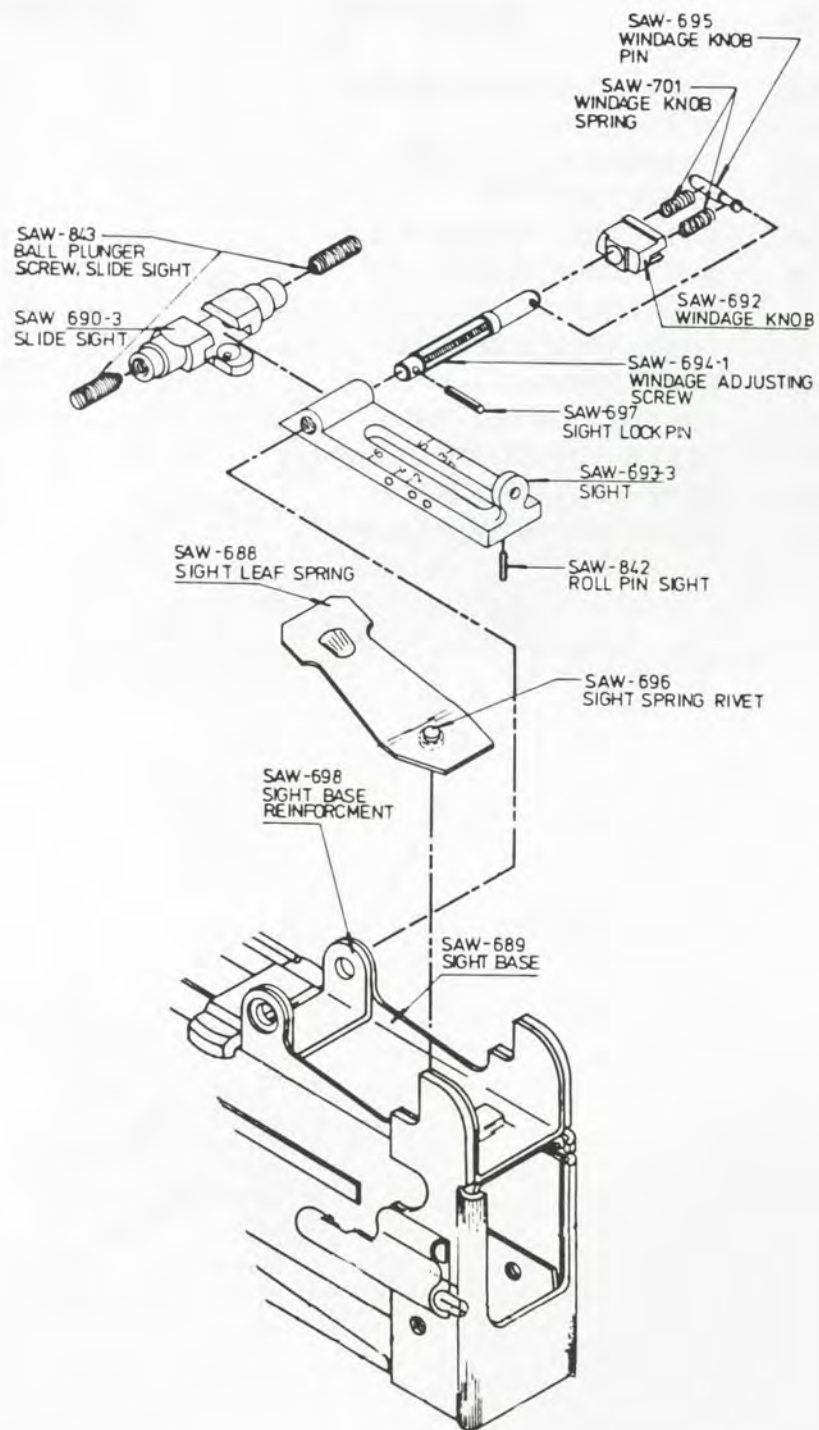


FIG. A6 – REAR SIGHT ASSEMBLY

REAR SIGHT ASSEMBLY (FIG. A6)

APPENDIX 6

Page 1 of 1

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	SAW-688	SIGHT LEAF SPRING	1
2.	SAW-690	SLIDE SIGHT	1
3.	SAW-692	WINDAGE KNOB	1
4.	SAW-693	SIGHT	1
5.	SAW-694-1	WINDAGE ADJUSTING SCREW	1
6.	SAW-695	WINDAGE KNOB PIN	1
7.	SAW-696	SIGHT SPRING RIVET	1
8.	SAW-697	SIGHT LOCK PIN	1
9.	SAW-701	WINDAGE KNOB SPRING	2
10.	SAW-842	PIN ROLL, SIGHT	1
11.	SAW-843	BALL PLUNGER SCREW SLIDE SIGHT	1

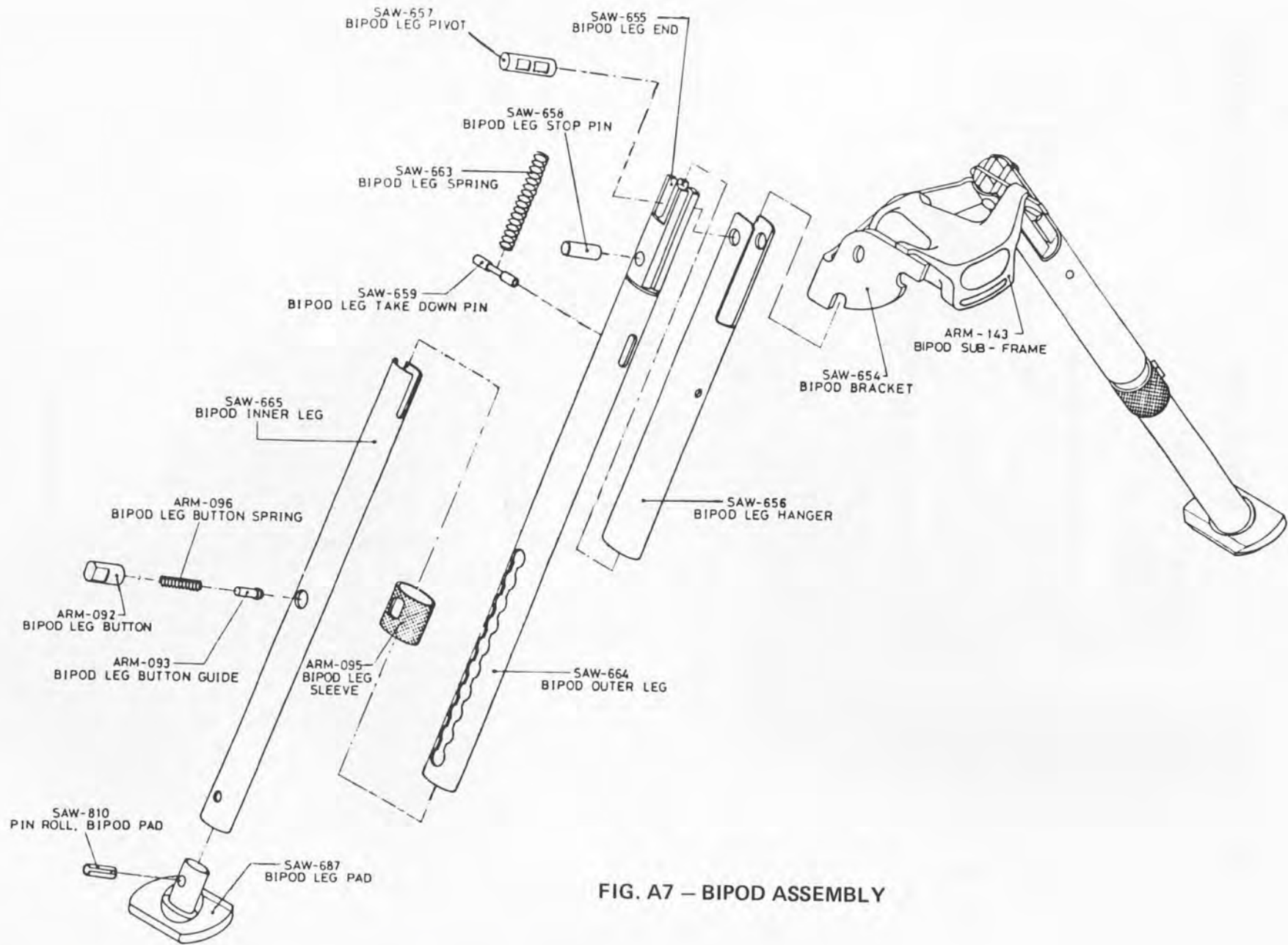


FIG. A7 – BIPOD ASSEMBLY



BIPOD ASSEMBLY (FIG. A7)

APPENDIX 7

Page 1 of 1

<u>S/NO</u>	<u>PART NO</u>	<u>DESCRIPTION</u>	<u>QTY. PER WEAPON</u>
1.	ARM-092	BIPOD LEG BUTTON	2
2.	ARM-093	BIPOD LEG BUTTON GUIDE	2
3.	ARM-095	BIPOD LEG SLEEVE	2
4.	ARM-096	BIPOD LEG BUTTON SPRING	2
5.	ARM-143	BIPOD SUB-FRAME	1
6.	SAW-654-3	BIPOD BRACKET	1
7.	SAW-655	BIPOD LEG END	2
8.	SAW-656	BIPOD LEG HANGER	2
9.	SAW-657	BIPOD LEG PIVOT	2
10.	SAW-658	BIPOD LEG STOP PIN	2
11.	SAW-659	BIPOD LEG TAKE DOWN PIN	2
12.	SAW-663	BIPOD LEG SPRING	2
13.	SAW-664	BIPOD OUTER LEG	2
14.	SAW-665	BIPOD INNER LEG	2
15.	SAW-687	BIPOD LEG PAD	2
16.	SAW-810	PIN ROLL, BIPOD PAD	2



*Symbol of Reliability*

## **CHARTERED INDUSTRIES OF SINGAPORE**

*P.O. BOX 1334, SINGAPORE 9026. TEL 2651066  
249, JALAN BOON LAY, SINGAPORE 2261.*

*Cable Address: "DOBERMAN" SINGAPORE  
Telex: CIS RS 21419*