

WEAPONS

VOLUME 6

**SHORT RANGE
ANTI-ARMOUR WEAPON
(MEDIUM)**

(BILINGUAL)

WARNING

ALTHOUGH NOT CLASSIFIED, THIS PUBLICATION, OR ANY PART OF IT, MAY BE EXEMPTED FROM DISCLOSURE TO THE PUBLIC UNDER THE ACCESS TO INFORMATION ACT. ALL ELEMENTS OF INFORMATION CONTAINED HEREIN MUST BE CLOSELY SCRUTINIZED TO ASCERTAIN WHETHER OR NOT THE PUBLICATION, OR ANY PART OF IT, MAY BE RELEASED.

Issued on Authority of the Chief of the Defence Staff

OPI: LFCHQ, Q3 Infantry

1995-09-30

LIST OF EFFECTIVE PAGES

Insert latest changed pages; dispose of superseded pages in accordance with applicable orders.

NOTE

On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the margin of the page. Changes to illustrations are indicated by miniature pointing hands or black vertical lines.

Dates of issue for original and changed pages are:

Original0.....1995-09-30

Zero in Change No. Column indicates an original page. Total number of pages in this publication is 162 consisting of the following:

Page No.	Change No.	Page No.	Change No.
Title	0	2-9-1 to 2-9-4	0
A	0	2-10-1 to 2-10-6	0
i to xiv	0	3-1 to 3-2	0
1-1 to 1-4	0	3-1-1 to 3-1-4	0
2-1-1 to 2-1-14	0	3-2-1 to 3-2-4	0
2-2-1 to 2-2-14	0	3-3-1 to 3-3-2	0
2-3-1 to 2-3-12	0	3-4-1 to 3-4-2	0
2-4-1 to 2-4-6	0	3-5-1 to 3-5-4	0
2-5-1 to 2-5-6	0	3-6-1 to 3-6-4	0
2-6-1 to 2-6-10	0	3-7-1 to 3-7-4	0
2-7-1 to 2-7-10	0	4-1 to 4-16	0
2-8-1 to 2-8-6	0	5-1 to 5-12	0

Contact Office: LFC HQ, G3 Inf 3

©1995 DND Canada

WEAPON SECURITY

THE SECURITY OF SMALL ARMS AND SMALL ARMS
AMMUNITION IS YOUR RESPONSIBILITY. ENSURE YOUR
WEAPON(S) AND AMMUNITION ARE SECURED/PROTECTED IN
ACCORDANCE WITH CURRENT ORDERS AND INSTRUCTIONS.

THIS PAGE IS INTENTIONALLY LEFT BLANK

WARNING

MISUSE OF WEAPONS, AMMUNITION AND EXPLOSIVES

PURPOSE

1. This order outlines Canadian Forces Policy governing the use or misuse of weapons, ammunition and explosives.

WEAPONS

2. Firing or attempting to fire locally manufactured weapons, obsolete service or foreign weapons, or weapons used for display, ceremonial or trophy purposes in museums, messes, parade grounds, armouries or such like area is prohibited except when specifically authorized by NDHQ.

3. Attention is also drawn to the following references which concern offences connected with the use or misuse of weapons:

- a. National Defence Act, Section 117,
- b. Criminal Code of Canada, Sections 82 to 106,
- c. QR & O 103.59, and
- d. A-SJ-100-001/AS-000, Security Orders for the Department of National Defence, Volume 1, Chapter 30.

AMMUNITION AND EXPLOSIVES

4. Tampering with or use of service and commercial ammunition or explosives for other than their designed purpose is prohibited.

5. Except as prescribed in paragraph 6, the modification, breakdown or sectioning of live ammunition for experimental, instructional or any other purpose, or manufacture of explosives is forbidden; this prohibition includes:

- a. unauthorized interchange of fuses or primers or both;
- b. experiments with blank ammunition to alter the powder charge or to introduce any other substance into the cartridge case or into the weapon with the approved cartridge;
- c. experiments involving the use of altered propelling charges or bursting charges with ammunition of any type;

- d. the use of any non-service or obsolete ammunition;
 - e. the use of foreign ammunition other than that received through normal supply channels or supplied in accordance with NATO Standardization Agreements;
 - f. the manufacture and use of locally fabricated explosive training devices, battle simulators, saluting charges, etc;
 - g. an alteration to the design of ammunition or explosive devices;
 - h. deviations from authorized drills for use of ammunition or explosive devices; and
 - i. rendering live ammunition inert for the use as museum or instructional items.
6. The prohibition in paragraph 5 does not apply to:
- a. authorized experiments, modifications, etc, carried out by experimental, research, proof or inspection establishments;
 - b. authorized breakdown, modification, repairs, proof-testing, etc, carried out as normal functions of a Canadian Forces ammunition depot or base ammunition facility;
 - c. personnel employed at Canadian Forces School of Aerospace and Ordnance Engineering as instructors or trainees under supervision, when breaking down is carried out as part of a course training standard and in accordance with an approved course training plan;
 - d. the use for its designed role of commercial pattern ammunition, which is obtained by local purchase as specified in CFP 137 or as authorized by NDHQ in accordance with CFAO 36-19;
 - e. the use for its designed role of commercial pattern ammunition which is taken into service and catalogued;
 - f. hand-loading small arms ammunition in accordance with CFAO 50-18; and
 - g. other cases, when specifically authorized by NDHQ.

FOREWORD

1. B-GL-317-006/PT-001, Short Range Anti-Armour Weapon (Medium), is issued on authority of the Chief of the Defence Staff.
2. This publication is effective upon receipt and supersedes B-GL-317-006/PT-001 dated 14 January 1974.
3. Comments and suggestions for changes should be forwarded through the normal channels to G3 Infantry, Land Force Command Headquarters.
4. In order to avoid confusion in the weapons generic titles, the 84 mm Carl Gustav was renamed Short Range Anti-Armour Weapon (Medium) as a consequence of the introduction of the Short Range Anti-Armour Weapon (Heavy) ERYX which carries a heavier explosive charge and has greater destructive capabilities.

THIS PAGE IS INTENTIONALLY LEFT BLANK

THIS PAGE IS INTENTIONALLY LEFT BLANK

CONTENTS

CHAPTER 1 - GENERAL

Introduction
Aim
Format
Technical Data
Organization of Instruction
Practice Periods
Classroom Organization
Hearing Conservation
Abbreviations

CHAPTER 2 - LESSON PLANS - BASIC SKILLS

Lesson 1 - Introduction, Characteristics, Description, Safety Precautions, Ammunition, Stripping, Assembling and Cleaning

Instructor's Notes
Conduct of the Lesson

Lesson 2 - Firing Positions - Loading and Unloading

Instructor's Notes
Conduct of the Lesson

Lesson 3 - Use of Sights and Aiming at Stationary and Moving Targets

Instructor's Notes
Conduct of the Lesson

Lesson 4 - Basic Mechanism, Firing and Misfire Drills

Instructor's Notes
Conduct of the Lesson

Lesson 5 - Boresighting the Telescope and Iron Sights

Instructor's Notes
Conduct of the Lesson

Lesson 6 - The Sub-Calibre Training Device - FFV 553

Instructor's Notes
Conduct of the Lesson

Lesson 7 - Handling

Instructor's Notes
Conduct of the Lesson

Lesson 8 - AFV Recognition Training

Instructor's Notes
Conduct of the Lesson

Lesson 9 - Cartridge, 84mm, HEDP FFV502

Instructor's Notes
Conduct of the Lesson

Lesson 10 - Sub-Calibre Adapter - 6.5mm

Instructor's Notes
Conduct of the Lesson

CHAPTER 3 - PRACTICE LESSONS - INTRODUCTION

General
Competition
Master and Pupil
Night Lessons
NBC Lessons

Practice Lesson 1 - Stripping, Care and Cleaning

Instructor's Notes
Conduct of the Lesson
Suggested Practices
Final Practice
Conclusion

Practice Lesson 2 - Firing Positions, Loading, Unloading and Aiming

General
Conduct of the Lesson - Preliminaries
Suggested Practices
Final Practice
Conclusion

Practice Lesson 3 - Safety, Stripping, Assembling and Gun Drills at Night

Instructor's Notes - General
Conduct of the Lesson - Preliminaries
Suggested Practices
Final Practice
Conclusion

Practice Lesson 4 - Firing, Misfire Drills

Instructor's Notes - General
Conduct of the Lesson - Preliminaries
Suggested Practices
Conclusion

Practice Lesson 5 - Tactical Handling at Night

Instructor's Notes - General ... :
Conduct of the Lesson - Preliminaries
Suggested Practice By Day
Daylight Preparation For Night Practice
Night Practice
Conclusion

Practice Lesson 6 - NBCD Handling

Instructor's Notes - General
Conduct of the Lesson - Preliminaries
Suggest Practice
Final Practice
Conclusion

Practice Lesson 7 - NBC Tactical Handling

Instructor's Notes - General
Conduct of the Lesson - Preliminaries
Introduction
Suggested Practices
Final Practice
Conclusion

CHAPTER 4 - INFORMATION FOR INSTRUCTORS

Section 1 - Description Ammunition, Stripping, Assembling and Cleaning

General

Carl Gustav M3 System

General

Use of 25 Metre Ranges and Indoor Training

General

CHAPTER 5 - RANGE PRACTICES

Introduction

Aim

General

Range Practice 1 - Stationary Targets 1 00 to 300 Metres Fire Arms
Training Systems (FATS)

Range Practice 2 - Moving Targets 1 00 to 300 Metres Fire Arms
Training System (FATS)

Range Practice 3 - Firing in a NBC Environment Fire Arms Training
System (FATS)

Range Practice 4 - 100 m Gallery Range Zeroing 7.62 or 6.5mm
Sub-Calibre Device

Range Practice 5 - Stationary Targets - 6 5mm or 7.62mm
Sub-Calibre Device (Gallery Round)

Range Practice 6 - 25 Metre Range Firing in a
NBC Environment - 6.65mm or 7.62mm Sub-Calibre Device (Gallery Round)

Range Practice 7 - Conventional Gallery Range Engaging Stationary
Targets - 7.62 or 6.5mm Sub-Calibre Device

Range Practice 8 - Conventional Gallery Range Engaging Moving
Targets - 7.62 or 6.5mm Sub-Calibre Device

Range Practice 9 - TP RAP FFV 552 Firing

LIST OF FIGURES

FIGURES

1-1	SRAAW(M) Front Grip (a) old pattern and (b) new pattern
2-1-1	The 84mm Short Range Anti-Armour Weapon (Medium)
2-1-2	Ammunition Recognition
2-1-3	Cartridge Case Assembly FFV 551, w/Colour Code
2-1-4	Shell 84mm HEAT RAP FFV 551
2-1-5	Shell 84mm TP RAP FFV 552 (w/fins deployed) w/Colour Code
2-1-6	Sight Bag Carried by No. 1
2-1-7	Tools and Spare Parts w/Bag Carried by No. 2
2-1-8	Cleaning Tools w/Bag carried by No. 3
2-2-1	Kneeling Position, Stationary Target
2-2-2	Kneeling Position, Moving Target
2-2-3	Kneeling Position, Same Side as No. 1
2-2-4	Loading (2 sheets)
2-2-5	Sitting Position, Stationary Targets
2-2-6	Sitting Position, Moving Targets
2-2-7	Standing Position
2-2-8	Prone Position
2-3-1	MBT Vulnerable Spots
2-3-2	APC Vulnerable Spots
2-3-3	Reconnaissance Vehicle Vulnerable Spots
2-3-4	Telescopic Sight FFV 556 w/Range Knob
2-3-5	Telescopic Sight w/Graticule Pattern
2-3-6	Telescopic Sight Pattern - Head On/Withdrawing Targets
2-3-7	Iron Sight Pattern - Head On/Withdrawing Targets
2-3-8	Leads
2-4-1	Mechanism
2-5-1	Boresight Fitted
2-5-2	Boresight with Iron Sights
2-6-1	Sub-calibre Training Device FFV 553
2-6-2	Description FFV 553 w/adapter
2-6-3	The 7.62mm Tracer Rd FFV 553 with Holder FFV 840
2-6-4	The 7.62mm Tracer Rd FFV 553 (Being placed into the Adapter)
2-6-5	Loading the FFV 840 Cap with Holder into the SCTD
2-6-6	Loading and Setting the SCTD into the Gun
2-7-1	Camouflaged 84mm Gun
2-7-2	Slung Over the Shoulder
2-7-3	Carriage Across the Body
2-7-4	Side Crawl
2-7-5	Leopard Crawl
2-10-1	Cocking the Mechanism with Cocking Tool
2-10-2	Cleaning Tools
4-1	Barrel

4-2	Venturi
4-3	Venturi Lock
4-4	Basic Stripping
4-5	Removing Retaining Leaf Spring Safety Catch - Trigger and Sear
4-6	To Remove Extractor and Spring
4-7	Checking Venturi
4-8	Spare Parts and Box
4-9	6.5mm MPI Scoring Trace

THIS PAGE IS INTENTIONALLY LEFT BLANK

CHAPTER 1

GENERAL

INTRODUCTION

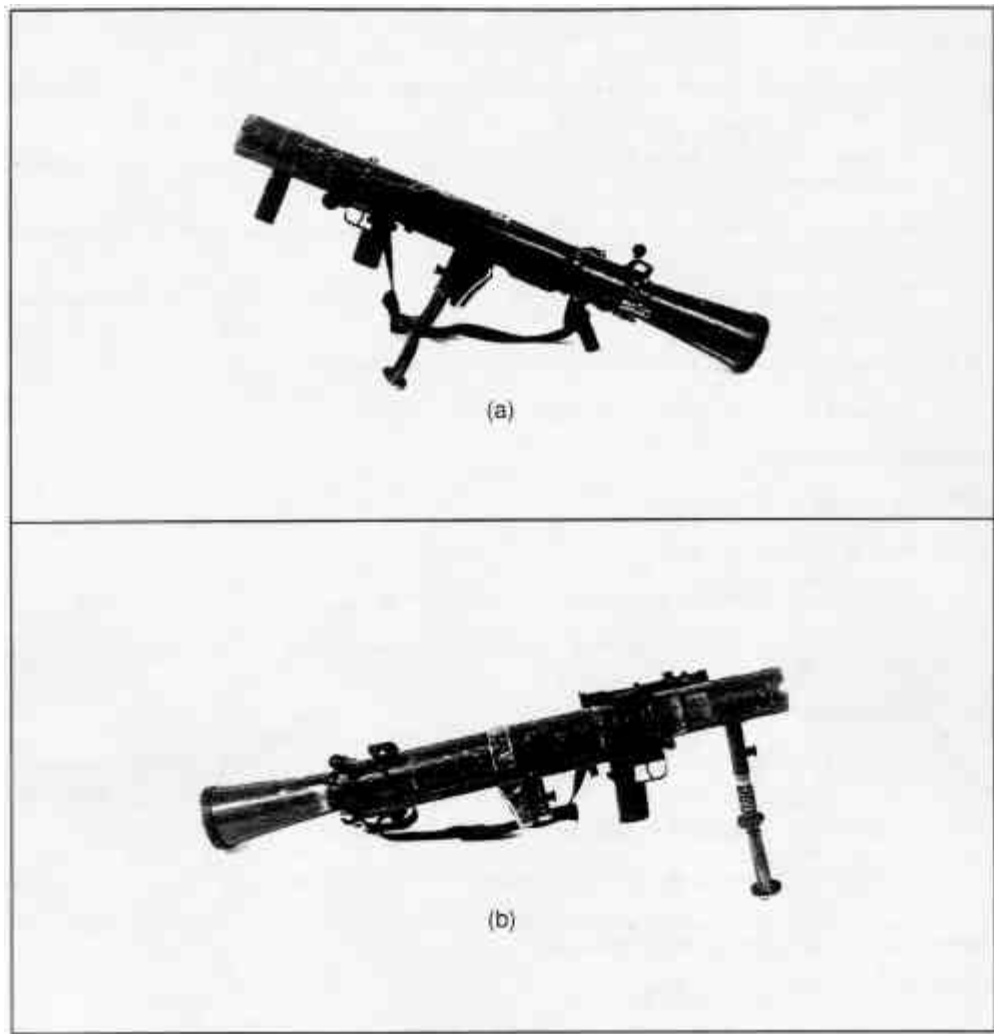


Figure 1-1 SRAAW(M) Front Grip (a) old pattern and (b) new pattern

AIM

1. This publication contains instructional material on the Short Range Anti-armour Weapon (Medium) (SRAAW(M)) for use by section commanders and small arms instructors. It enables instructors to teach the maintenance, handling and firing skills necessary to achieve the operational standards required under all conditions.

FORMAT

2. The information in Chapters 2 and 3 is presented in lesson plan format. The manual is laid out as follows:

- a. Chapter 1 contains general information about the 84mm SRAAW(M) and teaching methods;
- b. Chapter 2 contains the basic skills and the specific information required by soldiers to operate the SRAAW(M);
- c. Chapter 3 consists of practice periods designed to further develop the skills and techniques taught in Chapter 2;
- d. Chapter 4 contains information for instructors; and
- e. Chapter 5 contains range practices.

TECHNICAL DATA

3. Calibre - 84mm.

4. Weight Gun:

- a. complete with mount and telescopic sight - 16.35 kg;
- b. complete with cleaning equipment, tools, gun board and gun cover (canvas) - 30 kg.

5. Twist of Rifling - right hand.

6. Type of Sights - telescopic and luminous (phosphorous painted iron).

7. Sight Range - 900 m.

8. System of Operation - breech loaded, percussion fired.

9. Muzzle Velocity - 310 m/s for HEAT RAP FFV 551 and TP RAP FFV 552 and 230 m/s for HEDP FFV 502.

ORGANIZATION OF INSTRUCTION

10. The lessons and practice periods are best taught and practiced in the sequence laid down in the pamphlet. Instructors are allowed latitude in the method adopted to teach individual lessons provided that they do not deviate from the information specified.

11. Practice periods can be repeated according to progress. Instructors should remember that constant instruction and practice without firing makes the subject dull. Every effort should be made to introduce live firing as soon as the soldier has mastered the basic skills.

PRACTICE PERIODS

12. General. All training must be progressive and avoid unnecessary repetition. A soldier learns skills and facts in the basic lessons which should be taught only once during his service. He then requires practice in order to quicken, improve and maintain his skills and to get the facts firmly fixed in his mind.

13. The sequence for each stage of a practice period is:

- a. remind by explanations;
- b. assess weaknesses - by practice or test;
- c. improve on weaknesses - by practice; and
- d. progressive practice - by competitions.

14. The practice periods are intended as a guide to exercising soldiers during their training. The instructor should plan the period on an assessment of the soldiers' weak points.

15. Faults should be immediately brought to the attention of the soldiers and corrected.

16. If it becomes obvious during a practice period that the soldiers have failed to grasp a particular skill the instructor will have to teach that part of the basic lesson again.

17. Practice periods can be repeated according to the progress of the soldiers.

18. The incentive of competition will always help to make practice more interesting. An entire practice period can be based on competitions if the instructor so wishes. Some points on conducting competitions are:

- a. Teams may be formed.
- b. The instructor must ensure that the selected teams are all fairly equal in ability. The more advanced members of the team will help the weaker members.

- c. Marks can be awarded up to a given total, or start with a total and deduct marks for mistakes as the competition progresses.
- d. A chart drawn on a chalkboard or a sheet of paper on which to mark results should always be used.
- e. Further interest can always be attained by making one team watch another to find faults which result in the awarding or deducting marks.
- f. Above all, the instructor must make certain that competitions are simple and realistic. They must exercise the soldiers ability to perform a particular skill.

CLASSROOM ORGANIZATION

19. Prior to the start of all lessons, number the class into teams of two or three as necessary. Ideally, there should be no more than ten students per instructor. Each team and the instructor should have a weapon.

HEARING CONSERVATION

20. The dangers resulting from non-compliance with the detailed rules for hearing protection cannot be too strongly emphasized. Unless the rules are observed there is a significant danger that permanent hearing damage may occur.

ABBREVIATIONS

21. The following abbreviations are of particular importance to this manual:
- a. MPI - mean point of impact,
 - b. m/s - metres per second,
 - c. FFV - Forenad Fabric Verken,
 - d. AFV - armoured fighting vehicle,
 - e. FEBA - forward edge of the battle area,
 - f. IA - immediate action,
 - g. IWS - individual weapon sight,
 - h. kg - kilogram,
 - i. SRAAW(M) - Short Range Anti-Armour Weapon (Medium),

- j. MBT - main battle tank,
- k. RDX - cyclonite cyclotrimomethylene trinitramine (explosive),
- l. TETRYL - trinirophenyl methyl-nitramine (explosive),
- m. TNT - tri-nitro-toluene (explosive),
- n. HMX - homocyclonite cyclotetramethylene tetranitramine (explosive), and
- o. SCTD - Sub Calibre Training Device.

CHAPTER 2

LESSON PLANS - BASIC SKILLS

LESSON 1 - INTRODUCTION, CHARACTERISTICS, DESCRIPTION, SAFETY PRECAUTIONS, AMMUNITION, STRIPPING, ASSEMBLING AND CLEANING

INSTRUCTOR'S NOTES

1. **Aim.** To describe the gun and its ammunition, to teach the safety precautions and how to strip, assemble and clean the gun.
2. **Time.** Three 40 minute lessons.
3. **Method.** A basic instructional lesson.
4. **Stores.**
 - a. 84mm gun complete per 3 soldiers,
 - b. 84mm display rounds: FFV 551, 552 1 per gun,
 - c. FFV 553 SCTD, 7.62mm T/R
FFV 553 and FFV 840,
 - d. ammunition recognition diagram 1
 - e. duplex ammunition containers 1 set per gun,
 - f. cleaning rags as required,
 - g. tables 1 per gun (optional),
 - h. optic Sight FFV 556 1 per gun,
 - i. Luminous Sights 1 per gun, and
 - j. M3 Carl Gustav (light weight) 1 (if available).
5. **Preparation.** Layout the section room as follows:
 - a. place each weapon on a table with the telescopic sight FFV 556 and mount fitted.
Place alongside:
 - (1) the No. 1 bag,

- (2) the No. 2 bag, tool roll removed and screwdrivers laid out,
 - (3) muzzle and venturi covers off, and
 - (4) cleaning materials.
- b. Select one gun for demonstration and place alongside it:
- (1) duplex ammunition container and display round,
 - (2) ammunition recognition diagrams, and
 - (3) No 1 and No 2 bag laid out as for the other guns.
- c. Check that all guns are serviceable.
- d. Prepare a chalkboard to illustrate the backblast danger area.

6. **Miscellaneous:**

- a. Number the section in groups of three and allocated one group per gun prior to safety precautions.
- b. Use initial order for the commencement of each practice stage, i.e., safety precautions - "No. 1s and 2s out and carry out safety precautions", thereafter call out "change". Explain this system of control prior to the first practice stage.
- c. Ensure that as parts are stripped they are put in a clean place.
- d. When handling the various parts the instructor is to name them and their purpose. However, at this stage, the soldier is not expected to memorize all the names.
- e. Emphasize that stripping and assembling should be carried out with reasonable care and never practiced against time.
- f. Cleaning in adverse conditions can be taught by question and answer using prior knowledge of the personal weapon.
- g. Live ammunition is not to be used under any circumstances.

CONDUCT OF THE LESSON

- 7. **Safety Precautions.** Inspect all guns, ammunition and sub-calibre devices.
- 8. **Review.** Nil.

9. Introduction. Explain that the 84mm SRAAW(M) is breech loaded and percussion fired. There is no recoil as the gas pressure, escaping rearward through the venturi, equalizes the recoil forces. The weapon is shoulder controlled and can be fired from any of the normal rifle firing positions. It is capable of disabling or destroying any known AFV provided it is hit in a vulnerable area.

10. The M3 Carl Gustav system is the principal platoon anti-armour gun because of its light weight. It has the ability to withstand arctic, tropic and desert conditions, see Instructor Notes.

11. **Characteristics.** Explain and illustrate as necessary the following:

- a. **Accuracy.** Accuracy and penetration power are its main characteristics. The telescopic sight (FFV 556) iron sight and night sight allows accuracy to be maintained under moderately adverse conditions of weather and light.
- b. **Range.** The maximum range is 700 metres. The maximum effective range against a stationary target is 500 metres and against moving targets is 400 metres.
- c. **Flexibility.** Although its primary role is as an anti-armour weapon, the gun can be employed against buildings, gun emplacements and field defences.
- d. **Portability.** The gun weighs 16.35 kg and can be carried and fired by one man, the No. 1. A No. 2 assists in the handling drills and carries ammunition.
- e. **Sights.** Four types of sights are used with this gun:
 - (1) iron sights attached to the gun,
 - (2) telescopic sight (FFV 556) unit,
 - (3) luminous sights, phosphorous painted, and
 - (4) PVS 502.
- f. **Backblast.** Because the gun is recoilless it produces, at the moment of firing, a distinct flash and blast rearwards. The danger area extends 30 metres rearward at an angle of 800 mils to either flank of the line of fire. This area must be clear of any troops, equipment or obstruction at the moment of firing. When siting the weapon it must be realized that the arc of fire will determine the overall backblast area. The gun can be fired from wooded areas as long as there are no major obstacles in the backblast area.
- g. **Sub-Calibre Devices.** The weapon has two sub-calibre devices, FFV 553 which fires a 7.62mm tracer round and the FFV 480 which fires 6.5mm tracer. Refer to lessons 6 and 10.

- h. **Rate of Fire.** The maximum rate of fire is five rounds per minute with the HEAT RAP and TP RAP Round.

12. **Confirm by Questions.**

13. **Description.** The 84mm consists of the following major components, see Figure 2-1-1.

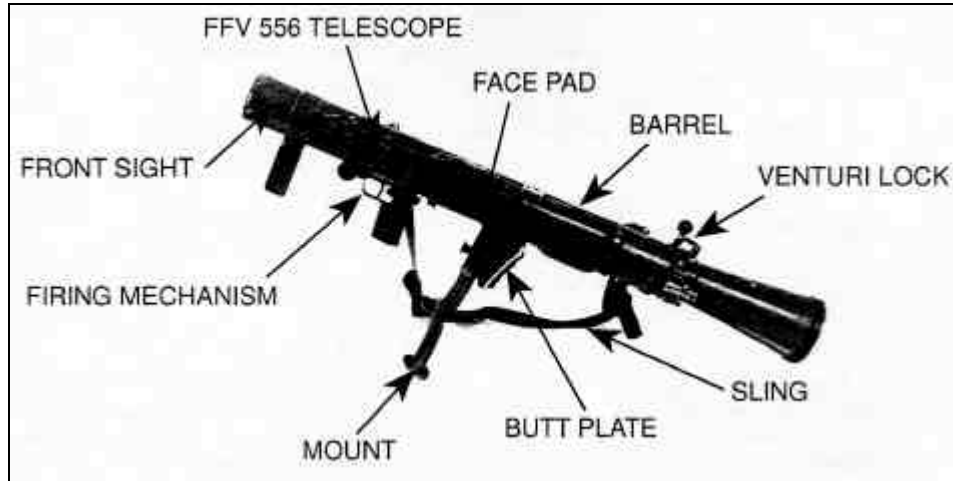


Figure 2-1-1 The 84mm Short Range Anti-Armour Weapon (Medium)

14. **Confirm by Questions**

15. **Normal Safety Precautions.** Explain and demonstrate. The following drills are to be carried out at the beginning and end of every lesson, exercise, operational task and when handing over or taking possession of a gun. Normal Safety Precautions are performed as follows:

- a. cock the weapon by pushing the cocking lever forward towards the pistol grip;
- b. move the safety catch to "Safe";
- c. push the venturi lock knob forward and raise the venturi lever thus opening the breech;
- d. visually inspect the chamber to ensure that it is clear, however, do not put your hand in the breech due to the possibility of burning propellant;
- e. visually inspect the venturi;
- f. ease springs by closing the breech. To do this press down on the venturi lever and tap the venturi lock knob towards the rear to ensure that it is fully locked; and

g. move the safety catch to "Fire" and operate the trigger mechanism.

16. Confirm by Question and Practice.

17. Ammunition Recognition. The 84mm round consists of a projectile and a cased propellant charge.



Figure 2-1-2 Ammunition Recognition

- a. **HEAT RAP FFV 551 (High Explosive Anti Tank Rocket Assisted Projectile).** The FFV 551 round is black in colour and is marked with yellow stencilling. It is intended for use against all types of armoured fighting vehicles (AFV) including those fitted with protective devices such as skirting plates. The rocket motor assist enables the shell to have a flat trajectory and a short time of flight. It has an electric fusing system. It can penetrate armour 400mm thick. The fuse becomes armed at 5 to 15 m from the muzzle of the gun. Shown below are the major components of the ammunition.

(1) cartridge case assembly for 84mm HEAT RAP FFV 551, consists of:

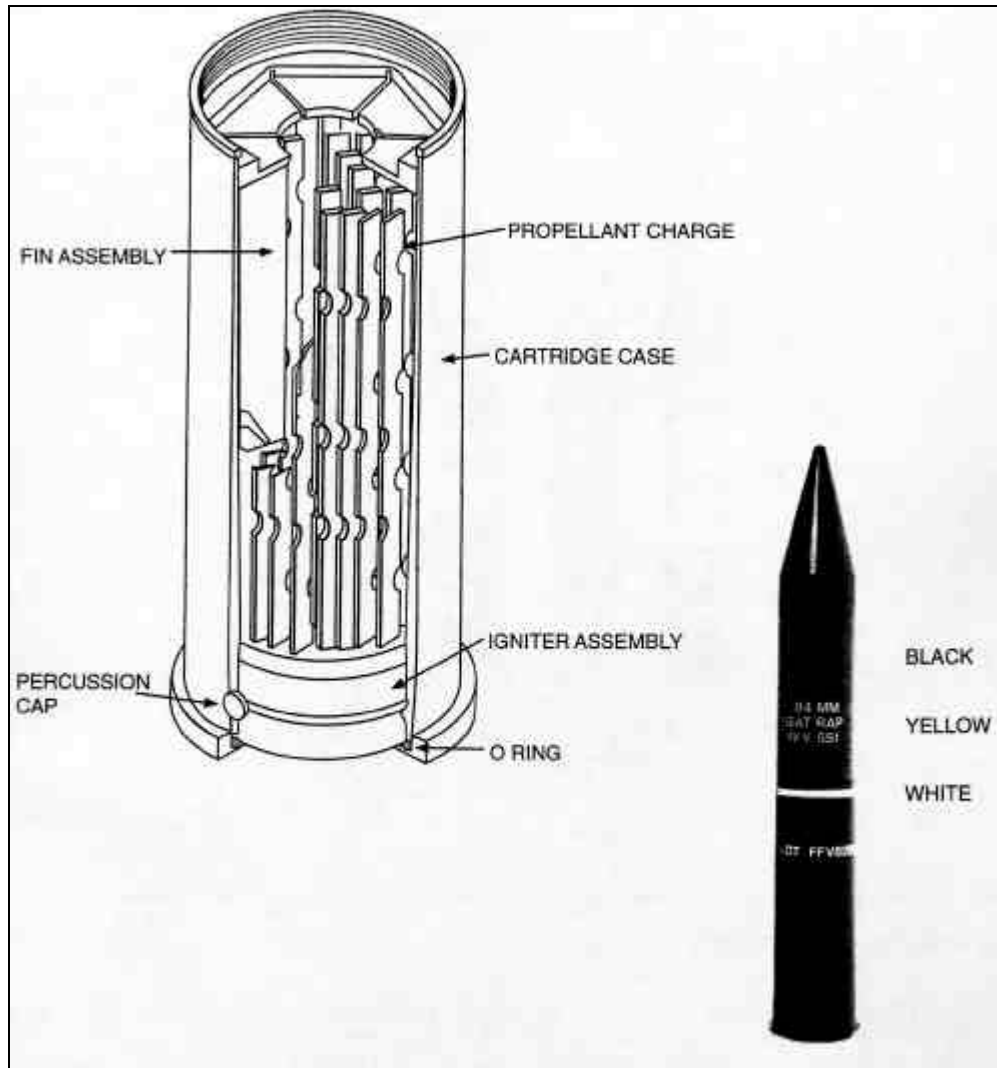


Figure 2-1-3 Cartridge Case Assembly FFV 551, w/Colour Code

(2) the shell assembly consists of:

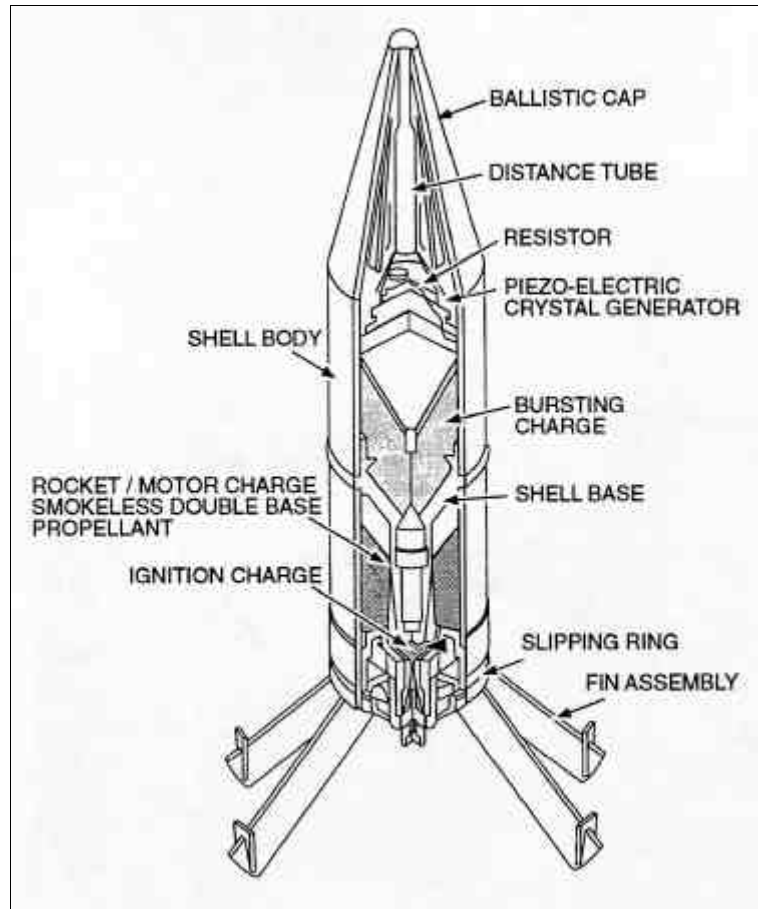


Figure 2-1-4 Shell 84mm HEAT RAP FFV 551

- b. **TP RAP FFV 552 (Target Practice Rocket Assisted Projectile).** The FFV 552 practice projectile resembles the HEAT counterpart only in the area of the rocket motor and aft closure. The remaining components are largely made from aluminum alloy and contain no explosives. The round is coloured (LIGHT BLUE) and is marked with (WHITE) stencilling and a white band. The cartridge case assembly for 84mm TP RAP FFV 552 consists of the exact same parts as the HEAT RAP FFV 551, Figure 2-1-3, and the shell assembly consists of the elements shown in figure 2-1-5.

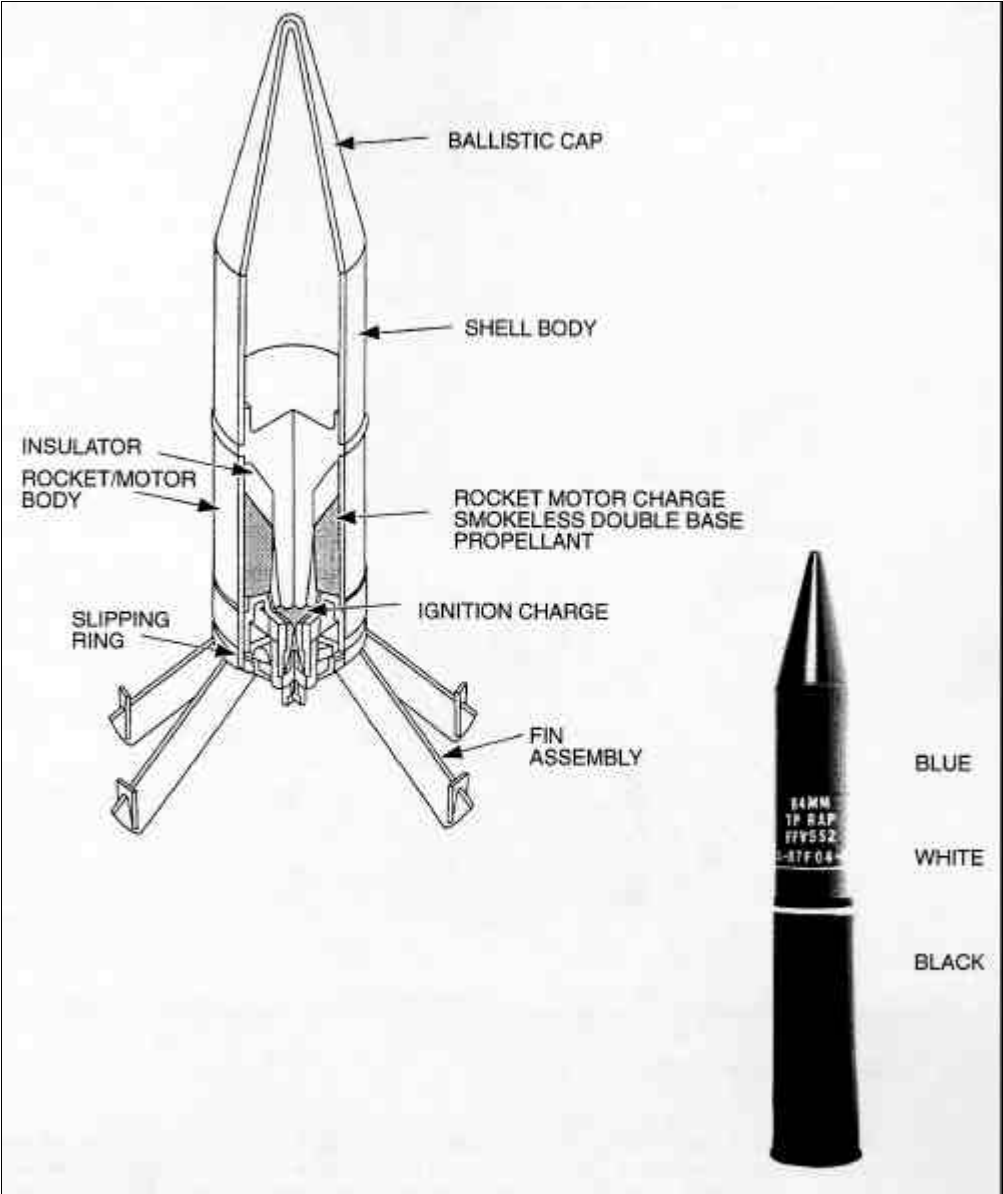


Figure 2-1-5 Shell 84mm TP RAP FFV 552 (w/fins deployed) w/Colour Code

- c. **Dummy Round.** The Dummy Round does not contain explosives. It is the training counterpart of the live round. It is an inert round used in training to practice handling and loading drills. The round is coloured (BRONZE) and is marked with (BLACK) stencilling denoting the word "DUMMY".
- d. **Sub-calibre Device FFV 553.** The 7.62mm T/R subcalibre adapter FFV 553 is a training aid for firing the 84mm RCL Carl Gustav M2/M3. The loading, aiming, and firing drills with the parent weapons are the same as when firing the FFV 551 ammo. The body of the FFV 553 is light grey colour, and similar in shape to the HEAT RAP Round. Detailed information on the FFV 553 is found in Lesson Six of this chapter.
- e. **Sub-calibre Device - 6.5mm.** The 6.5mm sub-calibre device is also used in training to practice loading, aiming and firing. Details on the 6.5mm sub-calibre device are found in Lesson 10 of this chapter.
- f. **HEDP FFV 502 (High Explosive Dual Purpose).** The HEDP FFV 502, often called the Bunker Buster, is a dual purpose round that can be set for "instantaneous" or on "delay". When set for "delay" the round will penetrate before exploding. A detailed lesson is found in Lesson 9 of this chapter.

18. **Confirm by Questions**

19. **Removing and Fitting the Telescope.** Explain and demonstrate:

- a. **To Remove.** Press down firmly on the spring plunger and rotate the sight away from the gun bracket. Place the sight in the No. 1 bag; and
- b. **To Fit.** Ensure that the iron sights are screwed fully down and folded to the gun. With the rubber guard of the telescope to the rear, fit the trunnions on the gun bracket. Holding the sight firmly, press down on the spring plunger, rotate the sight towards the gun and secure the sight to the gun bracket.

20. **Additional Equipment** (Figure 2-1-6): Explain

- a. the No. 1 bag carried by the No. 1 contains:
 - (1) one telescopic sight unit,
 - (2) one luminous sight, with case,
 - (3) one lens cloth (kalarinal), and
 - (4) one lens brush.



Figure 2-1-6 Sight Bag Carried by No. 1

- b. No. 2 bag carried by the No. 2 contains (Figure 2-1-7):
- (1) one boresight front and rear,
 - (2) one tool and spare parts roll,
 - (3) two drift pins, parallel, steel,
 - (4) one spare firing rod spring,
 - (5) one spare front sight,
 - (6) three screwdrivers (flat point 15mm point, 9.5mm point and a reversible 6mm point and 5mm point),
 - (7) one sight adjusting tool, and
 - (8) one metal spare parts box, which contains an assortment of small spare parts.

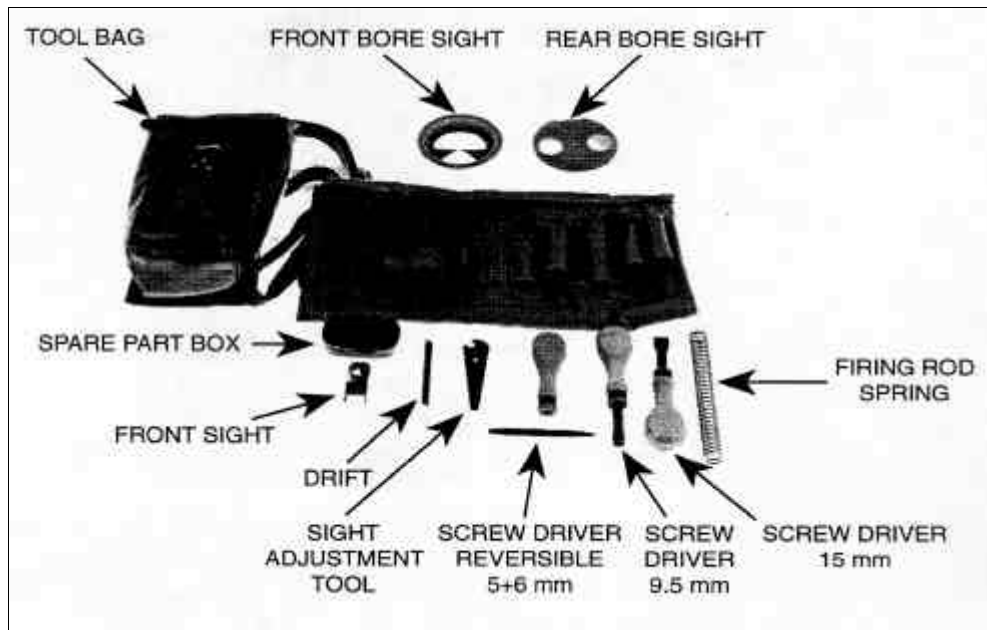


Figure 2-1-7 Tools and Spare Parts w/Bag Carried by No. 2

- c. No. 3 bag is normally carried in the parent vehicle of the weapon's crew. If necessary, the number two will carry it. It contains (Figure 2-1-8):
- (1) one cleaning brush in black box,
 - (2) one oiling brush in clear box,
 - (3) one cleaning rod head,
 - (4) one cleaning rod, 3 sections, and
 - (5) one oil bottle, expendable.

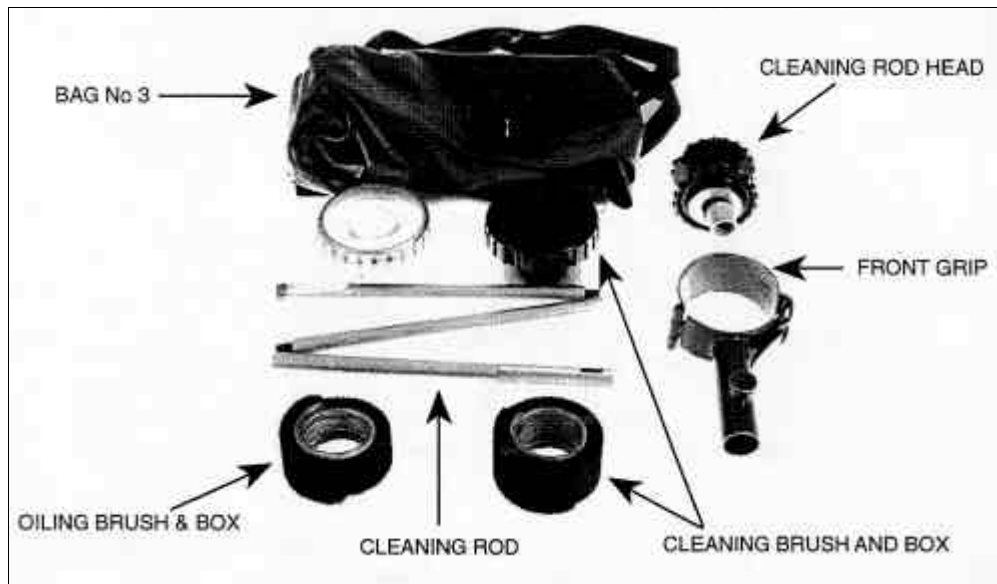


Figure 2-1-8 Cleaning Tools w/Bag Carried by No. 3

21. **Confirm by Questions and Practice.**

22. **Stripping and Assembling.** Explain and demonstrate. The firing mechanism must be stripped to clean or replace a worn or broken firing pin.

a. **To strip:**

- (1) remove the muzzle and venturi covers and sight unit if fitted;
- (2) carry out the safety precautions;
- (3) pull out the mount catch and remove the mount from its housing. Lay the gun down with the pistol grip up;
- (4) maintaining a firm hand hold on the front end cap use the large screwdriver to unscrew it and remove the main spring;
- (5) move the cocking lever as far forward as possible. Remove the rear end cap and, using a screwdriver, lift the firing pin straight out. If the firing pin washer comes out, it is to be replaced carefully; and

- (6) for cleaning, unscrew the two retaining screws of the cocking lever and remove the lever. Swing the front mount housing to one side so that when the trigger is pressed the cocking rod can be withdrawn from the front of the firing mechanism tube.
 - b. **To Assemble.** Replace the parts in reverse order.
 - c. **Test After Assembly.** After assembly a brief test should be conducted as follows:
 - (1) cock gun, place safety catch to "SAFE", press trigger. The gun should not fire, and
 - (2) place safety catch to "FIRE" and press the trigger. The action should fire.
23. **Confirm by Practice.**
24. **Daily Cleaning.** Explain and demonstrate as follows:
 - a. assemble the cleaning rod and attach a lightly oiled bristle brush. Open the breech, insert the brush from the breech end and clean the barrel. Insert cotton waste in the eyelet of the cleaning rod, dry and inspect the barrel;
 - b. if fouling is present, use the dry nylon brush on the cleaning rod until all fouling is removed;
 - c. similarly clean the venturi with an oily cloth, dry and inspect it;
 - d. leave the barrel and inside of the venturi slightly oiled;
 - e. clean and oil the exterior surfaces;
 - f. check and pack the cleaning materials;
 - g. under no circumstances is the telescope to be stripped. The metal parts are to be wiped clean and lightly oiled. Dust is to be removed from the lens by lightly dusting with the small brush provided, then gently polishing with the issued cloth. Check that the rubber eye guard is serviceable; and
 - h. for cleaning under normal conditions use the issued oil only.
25. **Confirm by Practice.**
26. **Cleaning Before, During and After Firing.** Explain and demonstrate as necessary:

- a. **Before Firing.** Thoroughly dry out the barrel and venturi from the breech end and wipe all surplus oil from the interior;
 - b. **During Firing.** During firing clean the venturi and chamber quickly with a pad of cotton waste or rag. This is particularly important if unburnt propellant is present in the chamber; and
 - c. **After Firing.** Do the following:
 - (1) remove fouling from the breech and barrel using the dry nylon brush,
 - (2) clean and oil the weapon as for daily cleaning,
 - (3) if it is not possible to clean immediately, oil the barrel and inner surface of the venturi. This will loosen the fouling and assist in cleaning later,
 - (4) clean the firing mechanism tube using the cleaning rod and brush from the .50 calibre machine gun cleaning equipment, and
 - (5) pay special attention to daily cleaning for three days following firing.
27. **Confirm by Questions.**
28. **Cleaning in Adverse Conditions.** Use leading questions.
- a. **Hot, Sandy or Extremely Dusty Areas:**
 - (1) all oil must be removed from the weapon to prevent the collection of sand or dirt; and
 - (2) care must be taken to prevent the formation of rust.
 - b. **Arctic Conditions.** All oil must be removed and moving parts lubricated with graphite or special oil for the cold.
 - c. **Extreme Dampness:**
 - (1) heavy film of oil should be placed over the entire weapon; and
 - (2) the weapon should be closely checked for rust.
29. **Confirmation by Questions.**
30. **Conclusion:**
- a. questions from the class on the entire lesson;

- b. confirm by questions and practice;
- c. normal safety precautions; and
- d. pack kit.

31. **Summary.** To include the following:

- a. the importance of safe handling, regular and correct maintenance. The need to identify the different types of ammunition; and
- b. a forecast of the next lesson relating to this subject.

LESSON 2 - FIRING POSITIONS - LOADING AND UNLOADING

INSTRUCTOR'S NOTES

1. **Aim.** To teach:
 - a. adjusting the mount,
 - b. firing positions, and
 - c. loading and unloading.
2. **Time.** Two 40 minute periods.
3. **Method.** A basic indoor or outdoor instructional lesson.
4. **Stores:**
 - a. 84mm complete 1 per 3 soldiers,
 - b. 84mm dummy rounds 2 per gun, and
 - c. 84mm duplex ammunition containers 1 per gun.
5. **Preparation.** The instructor should:
 - a. lay out the classroom with dummy rounds, containers and Nos. 1 and 2 bags alongside each gun;
 - b. check that all dummy rounds are serviceable and chamber tested; and
 - c. check that the mount will fit into the front and rear housings and is adjustable.
6. **Miscellaneous.** The instructor should:
 - a. number the section in groups of three and allocated one group per gun prior to normal safety precautions;
 - b. remind students that, during the practice stage, when a number is called out, that number is to act as No. 1 on the gun and the next number called is to act as the No. 2. Use the command "Change around" and explain the system of change around;
 - c. during demonstrations that require a crew of two, select a student to assist;
 - d. do not fit telescopes during this lesson; and

- e. before instructing loading drills, point out the "cartridge guide" on the gun and ammunition.

CONDUCT OF THE LESSON

- 7. **Safety Precautions.** Normal.
- 8. **Review.** Question the class on ammunition recognition.
- 9. **Introduction.** Explain. To be effective in battle the gun team has to be capable of selecting a good fire position and be able to load and unload the gun correctly.
- 10. **Adjusting the Mount.** Explain and demonstrate the following:
 - a. there are two housings for the mount. It may be set in the high, low or offset position in each housing;
 - b. the mount is adjusted by pulling out the catch on the housing and rotating the mount; and
 - c. this is normally done by the No. 2.
- 11. **Confirm by Practice.** Leave the mount fitted in the rear housing.
- 12. **Selection of Firing Position.** Explain. The gun can be fired from any of the normal rifle firing positions. The selection and adoption of a steady, fire position is essential to successful engagement with the gun. The No. 1 should consider whether:
 - a. the ground provides adequate cover and a clear backblast area;
 - b. the target can be clearly seen;
 - c. the target is moving; and
 - d. the arc of fire can be adequately covered.
- 13. **Kneeling Position.** Explain and demonstrate.
 - a. The No. 1 is to:
 - (1) offset the mount in the rear housing and adopt the normal kneeling position,
 - (2) hold the pistol grip with the right hand, forefinger along the trigger guard. The left hand grips the front grip,

- (3) pull the gun firmly into the shoulder and rest the left elbow on the left knee. The mount will then be against the chest, and
 - (4) to engage a moving target raise the body until the upper part of the right leg is vertical, hold the left arm close to the chest and swing from the waist.
- b. The No. 2 is to kneel opposite the No. 1's right shoulder and conform to any change in position made by him. Sometimes, depending on the cover, he may need to be on the same side as the No. 1.



Figure 2-2-1 Kneeling Position, Stationary Target



Figure 2-2-2 Kneeling Position, Moving Target



Figure 2-2-3 Kneeling Position, Same Side as No. 1

14. Confirm by questions and practice .

15. **Loading and Unloading.** Explain and demonstrate.

a. **Loading.**

- (1) The No. 1 on deciding to load or on receiving the order "LOAD" must:
 - (a) cock the gun and put the safety catch to "Safe"; and
 - (b) return both hands to the gun with the forefinger along the trigger guard and order "Load".
- (2) When the No. 1 orders "Load" the No. 2 is to:
 - (a) repeat the order "Load", open the breech and remove any dirt or unburnt propellant;
 - (b) remove a round from its container, hold it with the nose forward;
 - (c) place one finger in the recess in the rim of the round and partially insert the round into the chamber;
 - (d) ensuring that the recess and cartridge guide are aligned, push the round fully into the chamber; and
 - (e) close the breech, firmly tap back the venturi lock knob towards the venturi ensuring it is correctly positioned. Check that the back-blast area is clear and report "Ready". No. 1 shall repeat "Ready".
- (2) The No. 2 is to frequently check the back-blast area and if it is not clear at any time when the gun is loaded he is to order "STOP". The No. 1 is to repeat "STOP", put the safety catch to "SAFE" and discontinue the engagement until the back-blast area is clear.



OPENING THE VENTURI



FEEDING THE ROUND

Figure 2-2-4 (Sheet 1 of 2) Loading



CLOSING THE VENTURI

Figure 2-2-4 (Sheet 2 of 2) Loading

b. **Unloading:**

- (1) The No. 1 on deciding not to fire or on receiving the order "UNLOAD" is to:
 - (a) check that the safety catch is at "SAFE" and order "UNLOAD"; and
 - (b) hold the gun as for loading with the muzzle pointing towards the target area.
- (2) When the No. 1 orders "UNLOAD" the No. 2 is to:
 - (a) repeat the order "UNLOAD" and open the breech;
 - (b) tap the venturi lock knob forward, catch the round in the left hand and withdraw it fully from the chamber; and
 - (c) close the breech, tap the venturi lock knob to the rear and report "GUN CLEAR".
- (3) The No. 1, on hearing the report "GUN CLEAR", is to put the safety catch to "Fire" and operate the trigger.
- (4) The No. 1 will turn the range knob to zero and/or fold the sights.

16. **Confirm by practice.**

17. **Action with Defective Ammunition.** Explain. If a round will not fit into the chamber it is to be removed and another round is to be loaded. During a lull in firing, the defective round is to be cleaned and chamber tested. If it still will not fit, it is to be marked as 'overgauged' and returned.

18. **Confirm by questions.**



Figure 2-2-5 Sitting Position, Stationary Targets

19. **The Sitting Position.** Explain and demonstrate the following:
- a. the No. 1 is to place the gun on the right shoulder and offset the mount in its rear housing;
 - b. adopt the sitting position facing half right to the target. The right hand holds the pistol grip, forefinger along the trigger guard. The left hand grips the front grip.
 - c. hold the gun firmly with the mount against the chest and pull the shoulder pad of the gun into the right shoulder;
 - d. rest both elbows forward of or inside the knees;
 - e. to follow a moving target keep the body erect with the elbows close into the chest and swing from the waist; and
 - f. the No. 2 is to kneel opposite the No. 1's right shoulder. he is to conform to any change in position by the No. 1.
19. **Confirm by practise.**



Figure 2-2-6 Sitting Position, Moving Targets

21. **The Standing Position.** Explain and demonstrate the following:
 - a. the standing position may be used when firing from high cover, a fire trench or a gun emplacement;
 - b. stand half right to the target, body evenly balanced on both feet about half a metre apart, with the left hand holding the front grip;
 - c. in the open, the gun may be steadied with the left hand supporting the right hand instead of holding the front mount housing; and
 - d. the No. 2 is to stand close to the No. 1.



Figure 2-2-7 Standing Position

22. **Confirm by Practice.**

23. **The Prone Position.** Explain and demonstrate. The prone position may be used to engage stationary targets but not moving targets unless they are distant ones requiring a minimum swing and no other position is practical.

a. **The No. 1's Position.** The No. 1 will:

- (1) lie down with his body as near as possible at right angle to the gun. Bring the right leg over the left. It is important that no part of the body be behind the gun. The mount may be put in either mount housing; and
- (2) position the right shoulder as far under the gun as possible and move it firmly up against the shoulder pad.



Figure 2-2-8 Prone Position

- b. **The No. 2's Position.** The No. 2 will:
 - (1) lie opposite the No. 1 and at right angles to the gun;
 - (2) move close enough to the gun to operate the breech mechanism properly;
and
 - (3) cross the left leg over the right. Check that no part of the body is behind the venturi and that the ammunition he is carrying is not forward of the muzzle or in the backblast area.
24. **Confirm by Practice.**
25. **Explain.** Loading and unloading in other positions are the same as in the kneeling position.
26. **Final Practice.** Practice loading and unloading in all positions.
27. **Conclusion.**
 - a. Questions from the section on the entire lesson.
 - b. Confirm by questions and practice.
 - c. Normal Safety Precautions.

d. Pack up.

28. **Summary.** To include the following:

- a. factors affecting the selection of a good fire position;
- b. emphasis on the need to be aware of the backblast danger area of the gun; and
- c. a look forward to the next lesson relating to this subject.

LESSON 3 - USE OF SIGHTS AND AIMING AT STATIONARY AND MOVING TARGETS

INSTRUCTOR'S NOTES

1. **Aim.** To teach:
 - a. the points of aim on various types of AFVS; and
 - b. how to aim at stationary and moving targets with:
 - (1) telescopic sight FFV 556, and
 - (2) iron sights.
2. **Time.** One 40 minute lesson.
3. **Method.** A basic instructional lesson.
4. **Stores:**
 - a. 84mm complete w/scopes 1 per 3 soldiers,
 - b. set aiming aids 1 per soldier, and
 - c. AFV board targets.
5. **Preparation.** The instructor should:
 - a. check the telescopes for serviceability;
 - b. ensure that the telescope bracket is centered;
 - c. open sights for serviceability;
 - d. position AFV representative targets on wall in front of the guns one metre above floor level;
 - e. prepare chalkboard/posters to illustrate the vulnerable areas of a Main Battle Tank (MBT), APC and recce vehicles;
 - f. place out a set of aiming aids for each man; and
 - g. draw a sight pattern for both telescopic and iron sights on the chalkboard.

6. **Miscellaneous.** Consider the following:
 - a. ideally, representative targets should be photographs of likely enemy AFV's and depict different directions of movement;
 - b. number the section in groups of three and allocate one gun to each group prior to safety precautions; and
 - c. Explain the change around procedure.

CONDUCT OF THE LESSON

7. **Safety Precautions.** Normal.
8. **Review.** Question the section on the characteristics of the gun, practice adoption of fire positions for moving targets.
9. **Introduction.** Explain. The 84mm RAP round is capable of disabling or destroying any known AFV. However, it is essential that the round hits a vulnerable part of the AFV in order to do so. The 84mm gun team needs to know the vulnerable areas on enemy AFVs and be able to estimate the range and speed of the vehicle, accurately and to select the correct point of aim quickly using either of the sighting systems.
10. **Types of Target.** Explain that an AFV target is described in the following ways:
 - a. **Head on or Withdrawing.** The whole of the front or rear is visible and little or nothing of the sides.
 - b. **Direct Crosser.** All or nearly all of either side is visible and little or none of the front or rear.
 - c. **Diagonal Crosser.** An equal amount of the side and front or rear is visible.
11. **Vulnerable Areas of AFVS.** Explain using diagrams if available. There are three main groups of AFVS:
 - a. **Main Battle Tank (MBT).** MTBs are particularly vulnerable near the turret ring, the sides and rear of the hull. Ammunition is usually located within the fighting compartment and to the sides of the driver. A frontal shot will probably not destroy a MBT;

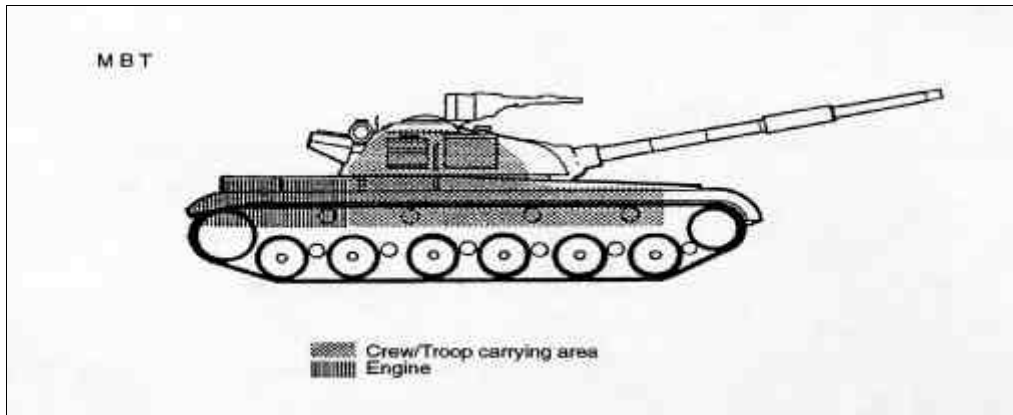


Figure 2-3-1 MBT Vulnerable Spots

- b. **Armoured Personnel Carrier (APC).** These vehicles are designed to carry personnel and at the same time provide a great deal of fire support. Engines are generally located at one side and to the front. Good points of aim are the side, the central area below the turret or cupola and the rear of the vehicle, which may be surrounded by fuel storage areas; and

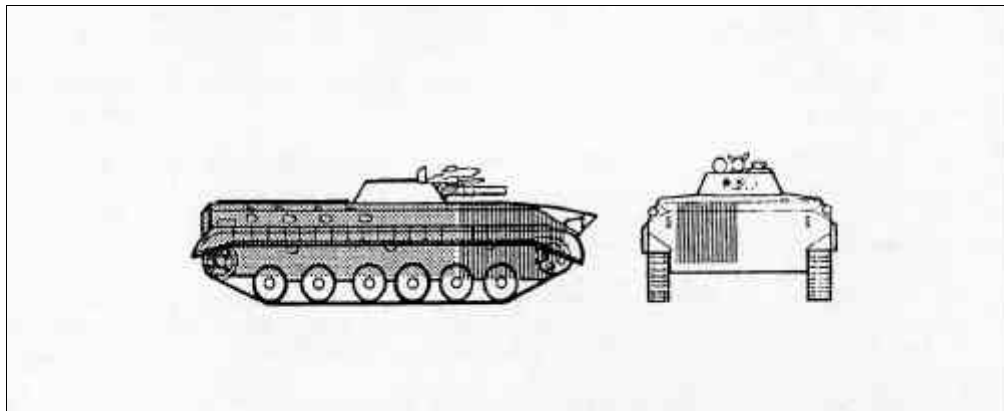


Figure 2-3-2 APC Vulnerable Spots

- c. **Reconnaissance Vehicles.** The most vulnerable areas are the sides and rear as this normally houses the crew and ammunition. Engines are less critical as there are often two, located on either side. This type of vehicle is generally only lightly armoured.

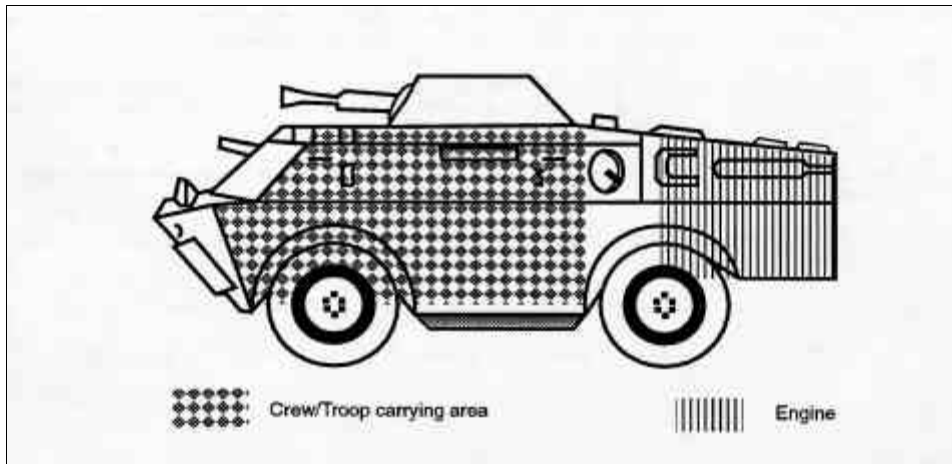


Figure 2-3-3 Reconnaissance Vehicle Vulnerable Spots

12. Should a target be indistinct, the centre of the visible mass should be selected as the point of aim. The gun, aerials and spare fuel tanks should be disregarded when determining the visible mass.

13. Firing down onto the top or towards the underside of an AFV, particularly in the area of the fighting compartment, should destroy the vehicle.

14. **Confirm by Questions.**

15. **The Telescopic Sight.** Explain and demonstrate using diagram as necessary, see Figures 2-3-4 and 2-3-5.

- a. the 84mm M2/M7 telescopic sight FFV 556 is the primary sighting system of the gun. It has a storage bag and the field of view is 213 mils;
- b. on the left of the bracket is a range knob with two sets of figures:
 - (1) **White Figures.** The left or outer figures range from zero (0) to nine hundred (900) metres marked every hundred. Above the 200 m mark there is also a mark every 50 m. These figures are used for the HE RAP FFV 552, TP RAP FFV 552 and the sub-calibre;
 - (2) **Light Green Figures.** The right or inner figures range from zero (0) to thirteen hundred (1300) metres, marked every hundred, in divisions of fifty metres. These figures are used for NATO country HE and SMOKE ammunition; and

- c. two parallel grooves around the circumference of the knob have a number of dimples in which a spring loaded detent plunger can engage to lock the knob at the required range;
- d. the sight pattern consists of a vertical pointer, the tip of which is used to aim at stationary, head on or withdrawing targets. On either side of the pointer are lead marks; lead one a small square, lead two a short vertical line; lead three between two long vertical lines and lead four the far long vertical line. The inverted small line is used for aiming at vehicles moving faster than 50 kph. Leads will vary for diagonal crossings. The horizontal lines are used to assist in maintaining elevation when aiming;
- e. on the top and on the left of the telescope there is an elevation and horizontal drum scale respectively. These allow the telescopic sight pattern to be adjusted during boresighting and zeroing. They are locked into position by locking screws; and
- f. after adjustment of the drums, the scale is read against index lines which are colour coded as described:
 - (1) **WHITE DOT.** It is used to zero the scale when boresighting at all temperatures and is the drum zero index at all temperatures from -10EC to 30EC;
 - (2) **RED DOT.** It is used as the drum zero index at temperatures above 30EC; and
 - (3) **BLUEDOT.** It is used as the drum zero index at ammunition temperatures below -10EC.

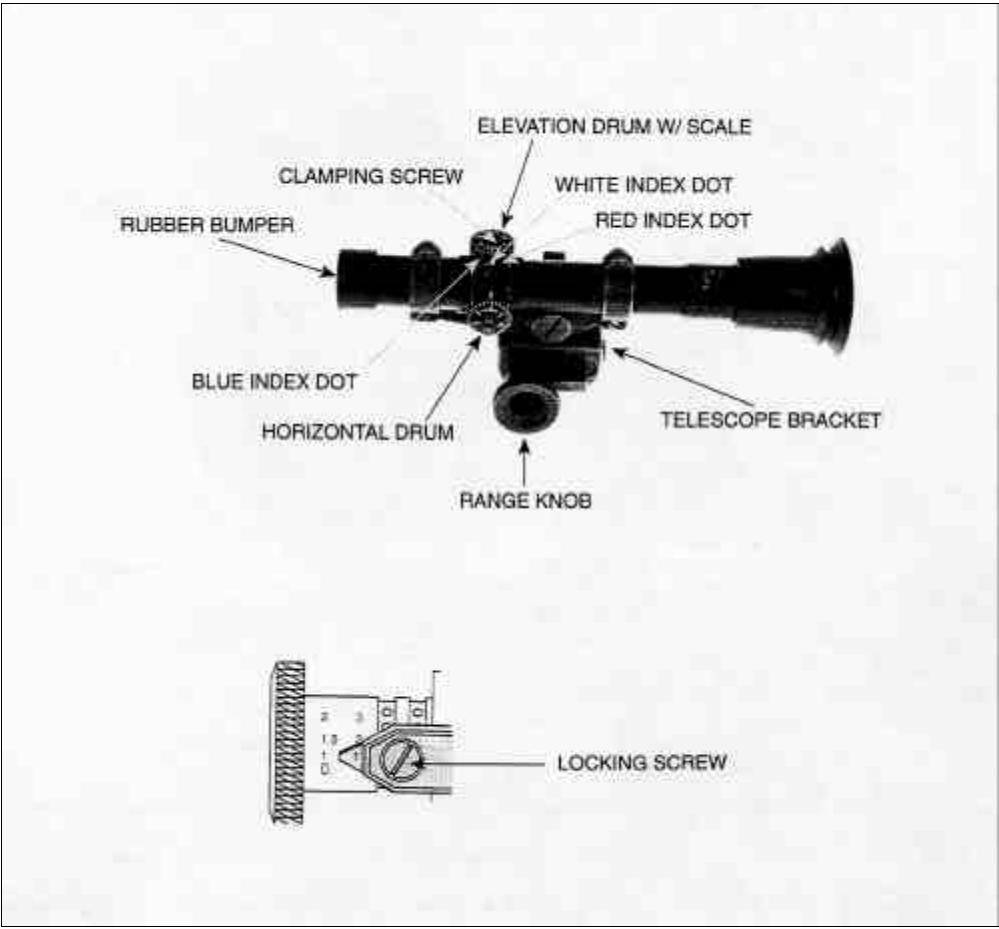


Figure 2-3-4 Telescopic Sight FFV 556 w/Range Knob

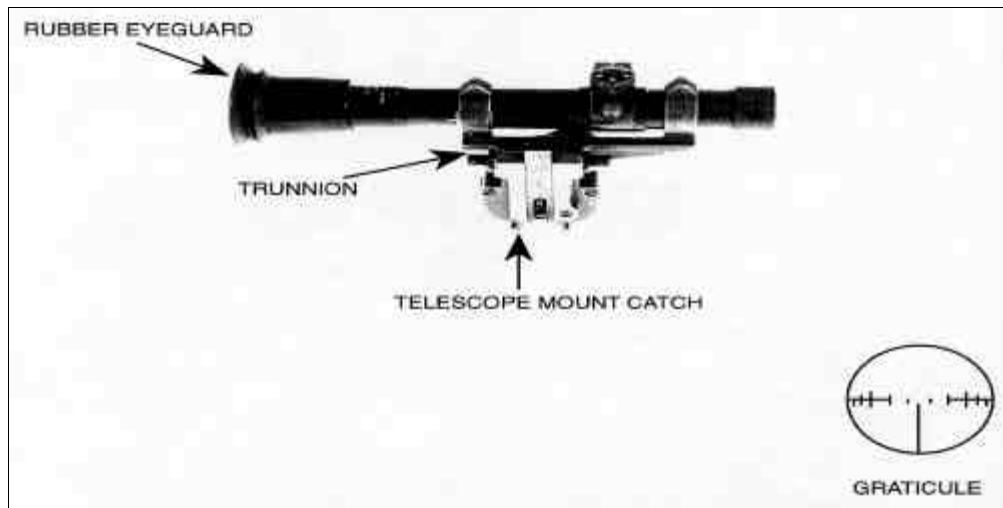


Figure 2-3-5 Telescopic Sight w/Graticule Pattern

16. **Confirm by Questions.**

17. **Telescopic Sight/Aiming at Stationary Targets.** Explain and demonstrate to aim at a stationary target:

- a. estimate the range to the target to the nearest 50 metres and set it on the range drum;
- b. position the right eye up against the eyepiece and move the head back until a full view or proper eye relief is obtained through the telescope;
- c. aim the top of the pointer on the selected point of aim (this should be the most vulnerable area exposed);and
- d. note that the range drum should be set at zero when not in use.

18. **Confirm by Practice.**

19. **Telescopic Sight/Aiming at Moving Targets.** Explain and demonstrate. To aim at a moving target its range, direction of movement and speed have to be determined.

- a. **Head On or Withdrawing:**
 - (1) set the range knob to the range at which the target is to be engaged;
 - (2) aim as for a stationary target; and

- (3) the target is engaged when the aim is correct and the target is at the selected range (Figure 2-3-6).

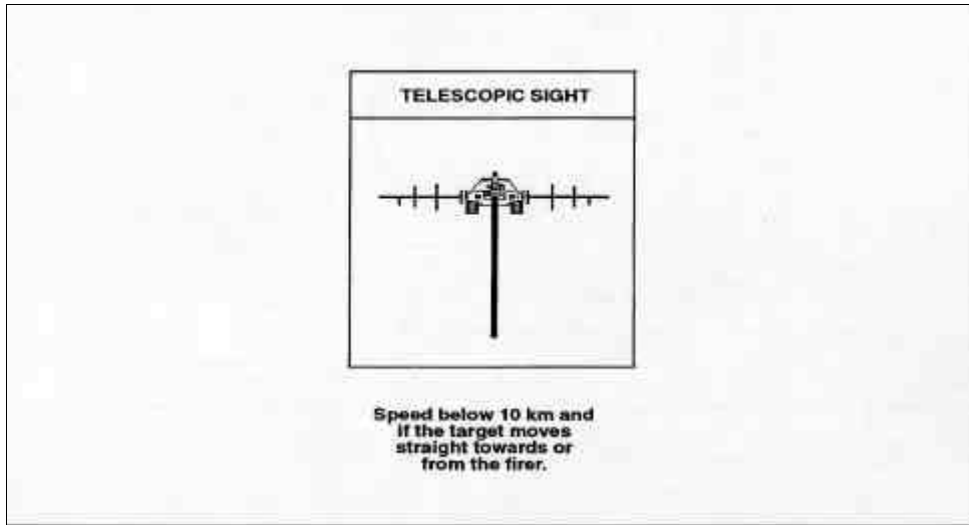


Figure 2-3-6 Telescopic Sight Pattern - Head On/Withdrawing Targets

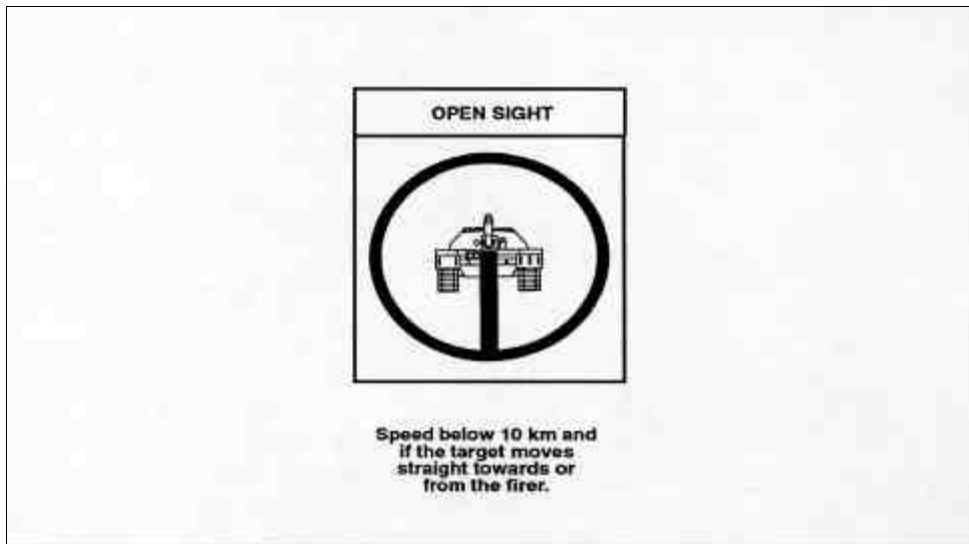


Figure 2-3-7 Iron Sight Pattern - Head On/Withdrawing Targets

b. **Direct and Diagonal Crossing:**

- (1) set the range knob to the range at which the target is to be engaged; and
- (2) ensure correct lead is taken, see Figure 2-3-8.

20. **Method of Engagement.** The No. 1 is to decide whether to aim and swing with the target, or to aim in front of the target and allow it to move on to the lead. Care must be taken to establish the correct elevation when employing the latter method.

21. **Confirm by Practice.**

22. **Iron Sights.** Explain and demonstrate:

- a. the iron sights are used when the telescope is unavailable;
- b. the backsight is hinged to the gun and consists of an aperture, range scale and range indicator. The aperture and the range scale indicator are adjustable for boresighting purposes; and
- c. the foresight is also hinged to the gun and consists of a vertical pointer and two small horizontal bars.

23. **Care of the Sight.** To minimize the chances of damage to the iron sights during carriage the back sight is to be screwed down fully and both sights folded into the side of the gun after use.

24. **Aiming.** With Open Sights explain and demonstrate:

- a. **Stationary Targets.** Estimate the range, set the sights, select the point of aim and focus the foresight within the aperture as for the rifle; and
- b. **Moving Targets.** Additionally estimate the speed of the target and decide on the method of engagement. Lead is applied as for Figure 2-3-8.

15KPH	25KPH	35KPH	45KPH
TARGET AT RIGHT ANGLE			
LEAD ONE	LEAD TWO	LEAD THREE	LEAD FOUR
TARGET AT OBLIQUE ANGLE			
LEAD ONE	LEAD TWO	LEAD THREE	LEAD FOUR

Figure 2-3-8 Leads

25. **Confirm by Practice.**

26. **Corrections.** Explain as a result of the observation of strike, corrections are made as follows:

- a. **Elevation.** Quickly add or drop the setting on the range scale and engage. For a target between range settings i.e., a range of 275 m, set the drum at the next highest setting - in this case 300 metres, and aim slightly lower on the target; and
- b. **Wind.** Strong crosswinds must be considered when firing, particularly at longer ranges. As a guide, in a strong wind at a range of approximately 300 metres, aim at the upwind side of the turret or cupola as opposed to the centre of the visible mass.

27. **Conclusion.**

- a. Questions from the section on the entire lesson.
- b. Confirm by question and practice.
- c. Safety precautions.

28. **Summary**

- a. the importance of AFV recognition and knowledge of the vulnerable areas;
- b. the need to practice judging distance; and
- c. a forecast of the section's next lesson in this subject.

THIS PAGE IS INTENTIONALLY LEFT BLANK

LESSON 4 - BASIC MECHANISM, FIRING AND MISFIRE DRILLS

INSTRUCTOR'S NOTES

1. **Aim.** To teach:
 - a. the action of the firing mechanism; and
 - b. how to fire the gun and the action on misfire.
2. **Time.** Two 40 minute lessons.
3. **Method.** A basic instructional lesson.
4. **Stores:**
 - a. 84mm complete 1 per 3 soldiers,
 - b. 84mm dummy rounds 2 per gun,
 - c. 84mm mechanism board 1 per class,
 - d. 84mm duplex ammunition container 1 set per gun,
 - e. armour representative targets 1 per gun,
 - f. mechanism diagram 1 per gun,
5. **Preparation.** The instructor should:
 - a. lay out the section room;
 - b. fit the telescope to each gun;
 - c. position representative targets on the wall in front of the guns and one metre above floor level;
 - d. chamber test each dummy round; and
 - e. check that all front and rear end caps are removable.
6. **Miscellaneous.** Consider the following:
 - a. number the section in groups of three and allocate each group to a gun prior to safety precaution;

- b. explain that during the practice stage when a number is called out, that man is to act as No. 1 on the gun and the second number called is to act as No. 2. Use the command "Change Around" and explain the system of rotation; and
- c. during the practice stage of misfire and further action drills use the commands "WEAPON FAILS TO FIRE, MISFIRE, PRIMER STRUCK, PRIMER NOT STRUCK, 60 SECONDS ARE UP".

CONDUCT OF THE LESSON

- 7. **Safety Precautions.** Normal.
- 8. **Review.** Loading and unloading.
- 9. **Introduction.** Explain that in battle the gun numbers must work as a team to load quickly and fire accurately. Any misfire must be dealt with quickly in order to prevent armour breaking through the defended position. A high standard of training in these skills is required of the team. A knowledge of the firing mechanism will assist the team in determining the cause of the misfire and its remedy.
- 10. **Basic Firing Mechanism.**
 - a. When the gun is cocked the firing rod spring is compressed against the front end cap. The cocking rod notch on the cocking rod head engages with the hook on the sear.
 - b. When the trigger is pressed the sear is disengaged and the spring drives the firing rod to the rear.
 - c. The firing pin cam bears against the inner part of the firing pin, which is forced inwards on to the primer cap of the round.
 - d. The safety catch can only be applied when the cocking rod is forward in the cocked position.

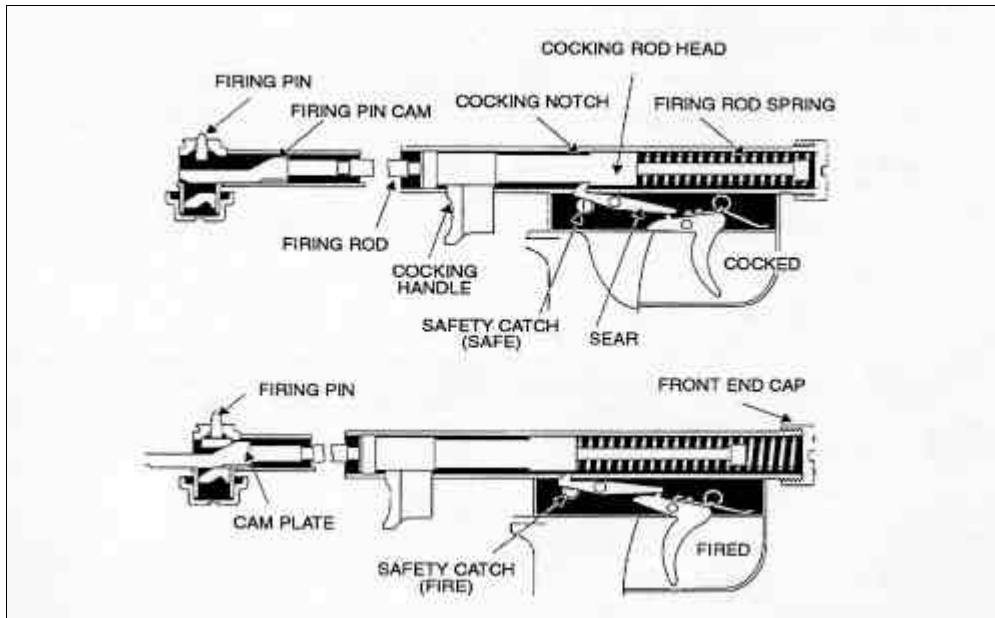


Figure 2-4-1 Mechanism

11. **Confirm by Questions.**
12. **Firing.** Explain and demonstrate the following:
 - a. when the No. 1 decides or is ordered to engage the target he is to set the sights and put the safety catch to "FIRE";
 - b. when the hold and aim is correct the No. 1 orders "STAND BY", takes the first trigger pressure, fires and follows through as taught;
 - c. when the trigger has been operated the No. 1 is to open his left eye, observe the strike, immediately cock the gun, put the safety catch to "SAFE" and order "LOAD";
 - d. on the order "STAND BY" the No. 2, having ensured that the backblast area is clear, is to face forward in order to reduce the likelihood of hearing damage. He is then to observe the target area and assist the No. 1 in observing the strike of the round. To reduce the amount of discomfort caused by the over pressure around the gun at the moment of firing he should stay midway between the muzzle and the breech;
 - e. after firing and on receiving the order "LOAD" from the No. 1 the No. 2 is to:

- (1) repeat the order "LOAD" and open the breech;
 - (2) remove the empty case and throw it off to a flank well clear of the backblast area; and
 - (3) examine the chamber for unburnt propellant, remove it if necessary and load again as taught.
- f. before firing again, the No. 1 is to make any corrections to range, lead or point of aim depending on the observation of strike of the previous round; and
- g. should the backblast area not be clear at any time tile No. 2 is to call out "STOP".
13. **Confirm by Practice.**
14. **Hangfire and Misfire.** Explain that:
- a. a hangfire is an abnormal time lag between the trigger being operated and the round being fired. As the delay is caused by slow burning propellant, the round could fire without warning and therefore the gun is to be kept pointed at the target while the correct drill is carried out; and
 - b. a misfire is caused by either a faulty firing mechanism or a faulty round.
15. **Misfire Drills.** Explain and demonstrate where necessary.
- a. If the weapon fails to fire, the following actions shall be taken:
 - (1) No. 1 maintains his point of aim, recocks the weapon, puts the safety catch to "SAFE" and orders No. 2 to "CHECK VENTURI";
 - (2) No. 2 taps the venturi lock knob to the rear and reports to the No. 1 "VENTURI LOCK CHECKED"; and
 - (3) No. 1 places the safety catch to "FIRE" aims and carries out the proper firing drills.
 - b. If the weapon fails to fire a second time, the following action shall be taken:
 - (1) No. 1 will report "MISFIRE" and the No. 2 repeats "MISFIRE";
 - (2) Nos. 1 and 2 wait one minute with the No. 1 maintaining the aim in the event of a possible hangfire;
 - (3) if the gun has not fired after one minute, No. 1 recocks the weapon, places the safety catch to "SAFE" and orders "MISFIRE UNLOAD". No. 2

repeats "MISFIRE UNLOAD"; and

- (4) after unloading the gun one of the following drills shall be carried out:
- (a) **Primer Struck.** After removing the misfired round, No. 2 inspects the primer. If the primer is fully struck he reports "PRIMER STRUCK", No. 1 repeats "PRIMER STRUCK". The No. 2 then lays the misfired round aside for disposal. If the target is still in view the team reloads and carries on firing; or
 - (b) **Mechanical Breakdown.** If, on examination of the primer, No. 2 finds that it has been lightly struck or not struck at all he will report "MECHANICAL BREAKDOWN". No. 2 will then close the venturi and report "GUN CLEAR". No. 1 repeats "GUN CLEAR" and completes the unloading drill. The firing mechanism must then be stripped and damaged parts replaced.

16. **Confirm by Practice.**

17. **Other Conditions.** At night, if there is a misfire, the No. 1 is to carry out the same drill as in daylight. As it may not be possible to see if the primer cap has been struck the No. 2 is to unload and immediately load with another round. If that round is also a misfire the gun team is to unload and inspect the firing mechanism.

18. **Confirm by Questions.**

19. **Conclusion.**

- a. Questions from the section on the entire lesson.
- b. Confirm by questions and practice.
- c. Safety precautions, normal.

20. **Summary.** To include the following:

- a. the importance of practice is to promote good team work and instinctive handling;
- b. the safety pause of one minute must be observed if a misfire occurs during training; and
- c. a forecast of the section's next lesson in this subject.

THIS PAGE IS INTENTIONALLY LEFT BLANK

LESSON 5 - BORESIGHTING THE TELESCOPE AND IRON SIGHTS

INSTRUCTOR'S NOTES

1. **Aim.**
 - a. to teach how to boresight the weapon; and
 - b. to teach resetting the elevation and deflection scales of the telescopic and iron sights.
2. **Time.** One 40 minute lesson.
3. **Method.** A basic outdoor instructional lesson.
4. **Stores.**
 - a. 84mm complete 1 per 3 soldiers,
 - b. aim diagram of the boresight 2,
 - c. boresighting stand 1 per gun, if available,
5. **Preparation.**
 - a. Prepare a boresight aim diagram.
 - b. Select an aiming target at least 400 metres away.
 - c. Layout the equipment, telescopic sights are not to be fitted. Unpack the boresights, small screwdrivers and combination tools.
 - d. Ensure that both sights are offset from their true boresight settings.
6. **Miscellaneous.**
 - a. If a fire trench is available the weapon can be steadied during boresighting by the No. 1 using sandbags to steady the mount. The No. 2 is to lie behind the weapon, elbows rested and both hands steadying the venturi.
 - b. If there are no fire trenches available the prone position is to be used.
 - c. If available, an extra telescopic sight for the instructor is a useful aid.
 - d. Due to the rifling, the front boresight can be levelled by pulling out the iron foresight and checking it against the horizontal bars.

- e. The ideal situation is to have the det comd act as the No. 3 to adjust the telescopic sight.

CONDUCT OF THE LESSON

- 7. **Safety Precautions.** Normal.
- 8. **Review.** Telescopic sight.
- 9. **Introduction.** The aim of boresighting is to ensure that, with the range drum set at zero, the axis of the bore and the line of sight meet at a common distance. That aiming point must be at least 400 metres away.
- 10. Confirmation of boresighting is achieved by live firing either HEAT RAP or TP RAP ammunition.
- 11. The boresighting procedure should be carried out with both the telescopic and iron sights:
 - a. prior to all live firing; and
 - b. whenever the accuracy of the weapon is in doubt.
- 12. Live firing is the method used to confirm the alignment of the line of sight with the axis of the barrel and the actual ranges being set on the sight.
- 13. **Fitting the Boresights.** Explain and demonstrate:
 - a. **Rear Boresight.** This has a small aperture and is shaped like the base of the round, including a recess for the cartridge guide. It is fitted by opening the venturi, inserting the boresight with the thumb and finger, and closing the venturi.
 - b. **Front Boresight.** This is inserted into the muzzle so that the straight edges of the Foresight are horizontal and uppermost.

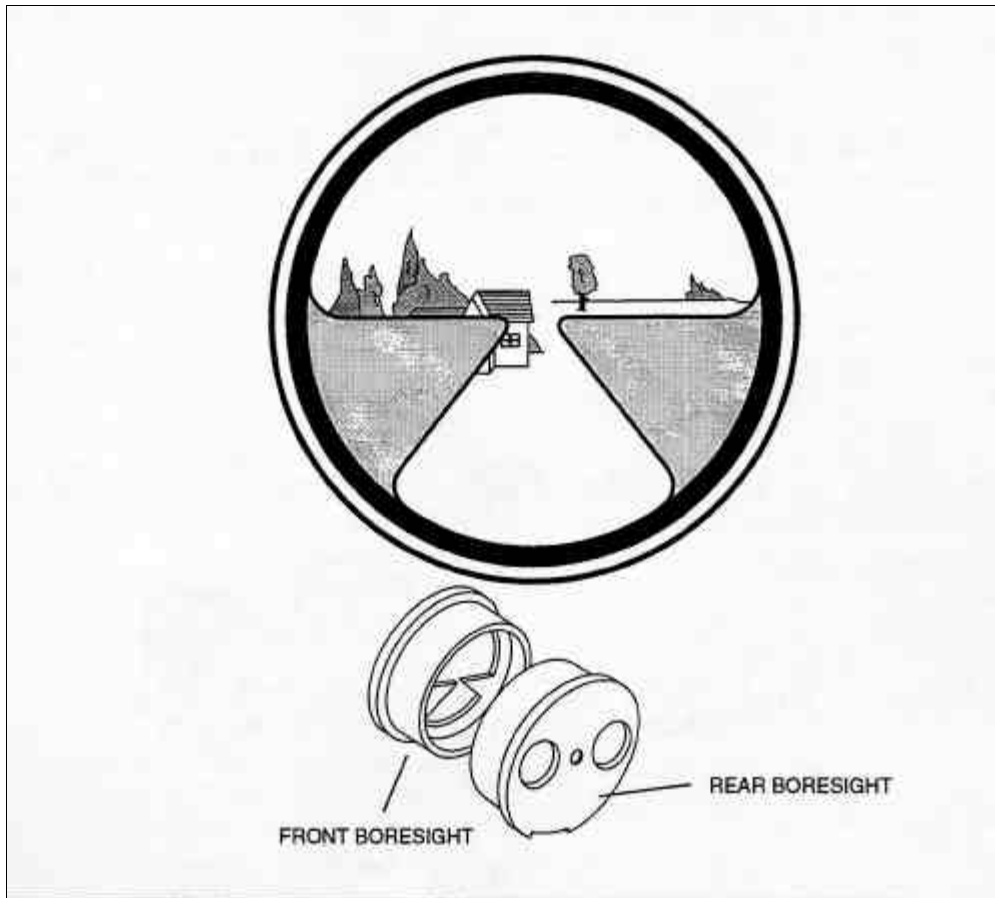


Figure 2-5-1 Boresight Fitted

14. **Confirm by Questions and Practice** (Leave boresights fitted).
15. **Telescopic Sight Adjustments.** Explain and demonstrate the following:
 - a. The elevation drum is locked firmly in position by a lock screw. When the lock screw is loosened and the drum turned, the sight pattern inside the telescope can be moved up and down.
 - b. The deflection drum on the left side of the sight is also held in position by a lock screw. When the lock screw is loosened and the drum turned the sight pattern inside the telescope can be moved left and right. The letters "R" and "L" on the top plate of the drum indicates the direction of movement of the sight pattern.

- c. Movement of the lock screw is to be carried out carefully to avoid risk of damage to the head of the screw.
- d. On the top of the elevation drum is a plate which is marked in mils both plus and minus. By loosening the central screw on the plate it can be rotated, independently of the elevation drum. When an adjustment has been made, the plate is to be reset by loosening the central screw and turning the plate until the zero mark is opposite the white index dot on the body of the telescope. Finally, the central screw is tightened.
- e. The deflection drum has a similar plate held by a central screw and is also marked in mils. After adjustment for direction the plate is to be similarly reset so that the zero is opposite its white index dot on the bod of the telescope, see Figures 2-3-4 and 2-3-5.

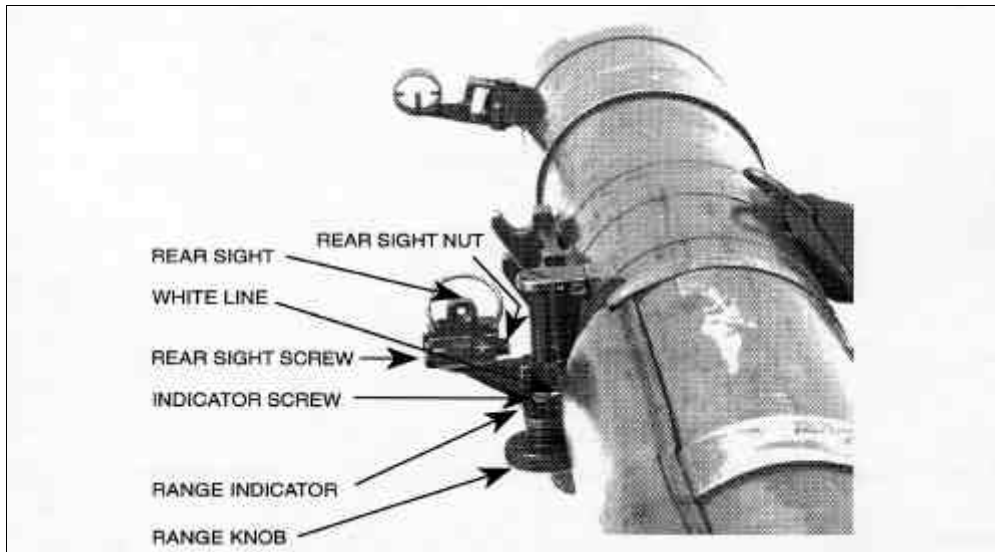


Figure 2-5-2 Boresight with Iron Sights

- 16. **Confirm by Practice.** Fit telescopic sight to each gun.
- 17. **Boresighting the Telescopic Sight.** Explain and demonstrate:
 - a. select a target not less than 400 metres away and indicate it to the No. 2;
 - b. set the range drum at zero, slacken the elevation and direction drum lock screws;
 - c. ensure that the gun is firmly mounted on the boresighting stand. If the stand is not

- available, both No. 1 and No. 2 adopt the prone position, with No. 2 lying directly in the rear of the gun looking through the bore;
- d. the No. 2 is to aim the boresights at the target and report "ON" when a correct aim is laid;
 - e. if the tip of the pointer in the telescope is not pointing at the target the No. 1 will loosen the lock screws and rotate the elevation and deflection drums as taught until the aim pictures through the boresight and telescope coincide;
 - f. the team then changes places and agree to the accuracy of the boresighting;
 - g. tighten both lock screws, relay the bore and check that the telescope is still on. Reset both the elevation and deflection plates to zero;
 - h. the axis of the bore now coincides with the line of sight through the telescope with zero range applied; and
 - i. if at any stage the cross check by the No. 1 and No. 2 shows an error, then the bore must be relaid and the procedure carried out again.

18. **Confirm by Practice.** Ensure that the telescopic sight is correctly boresighted at the end of the practice stage. (Remove telescopic sights at end of practice.)

19. **The Iron Sights.** Explain and demonstrate.

- a. Point out the adjustment nut and screw on the back.
- b. To correct an elevation error during boresighting, turn the range drum as for sight setting. To reset the scale loosen the screw on the range indicator and position the centre of the white line at zero on the Range Scale. Tighten the screw.
- c. Errors in direction are corrected by moving the backsight aperture laterally. If the aim is to the left, loosen the screw on the left of the sight block and tighten the nut, so moving the aperture to the left. If the error is to the right, the nut must first be loosened and the screw tightened.
- d. The scale on the backsight block is marked in mils plus and minus from a central point. After final adjustment of the backsight the reading is to be noted.

20. **Boresighting the Iron Sights.** Explain and demonstrate (Use the same target used by the No. 1 and No. 2 before):

- a. set the range to zero;
- b. lay the bore onto the target and report "ON";

- c. adjust the open sights onto the target;
- d. confirm by changing around;
- e. reset the range scale indicator;
- f. note the backsight scale reading; and
- g. if the cross check by the No. 1 and the No. 2 shows an error, then the boresighting procedure must be carried out again.

21. **Confirm by Practice.**

22. **Conclusion.**

- a. Questions from the section on the entire lesson.
- b. Confirm by question and practice.
- c. Safety precaution, normal.
- d. Pack up.

23. **Summary.** To include the following:

- a. importance of having an aiming target not less than 400 metres away;
- b. care in using the elevation and deflection drum lock screws; and
- c. a forecast of the sections next lesson in this subject.

LESSON 6 - THE SUB-CALIBRE TRAINING DEVICE - FFV 553

INSTRUCTOR'S NOTES

1. **Aim.** To teach the characteristics of the FFV 553, S/C, 7.62mm T/R FFV 553 to include:
 - a. introduction;
 - b. description;
 - c. ammunition;
 - d. priming the device;
 - e. load/Fire/Unload;
 - f. misfire drill; and
 - g. care and Cleaning.
2. **Time.** Two 40 minute lessons.
3. **Method.** A basic instructional lesson.
4. **Stores:**

a.	84mm complete	1 per 3 soldiers,
b.	FFV 553 S/C	1 per 3 soldiers,
c.	7.62mm TIR FFV 553 (DUMMY)	3 per gun,
d.	FFV 840 (DUMMY)	3 per gun,
e.	7.62mm (DUMMY)	if required, and
f.	FFV 551 (DUMMY)	1 per gun,
5. **Preparation.** As follows:
 - a. ensure that all guns are serviceable; and
 - b. check that the subcalibre devices are serviceable.
6. **Miscellaneous.**

- a. Number the section in groups of three and allocate one group per gun prior to safety precautions.
- b. Remind students that, during the practice stage, when a number is called out, that number is to act as No. 1 on the gun and the next number is to act as No. 2. Use the command "CHANGE AROUND" and explain the system of change around.
- c. It must be kept in mind that the absence of backblast tends to induce carelessness and loose holding. These points must be checked at all times.
- d. Until a 7.62mm T/R FFV 553 (DUMMY) and FFV 840 cap/holder is produced, the action of loading is only to be done with a normal 7.62mm DUMMY round.
- e. Functioning of the subcalibre device is found in the Instructor's Notes of Lesson 4 in this chapter.

CONDUCT OF THE LESSON

7. **Safety Precautions.** Normal.
8. **Review.** Load, unload and misfire drills.
9. **Introduction.** Explain.
 - a. The 7.62mm subcalibre device FFV 553 is a training device used in conjunction with the 84mm SRAAW(M).
 - b. The device weighs 3.3 kg and is externally similar in shape to the 84mm HEAT rd FFV 551.
 - c. The loading, aiming and firing operation with the 84mm is the same as when firing the FFV 551 ammo.
 - d. The adapter mechanism is set to F (fire) when the device is fully inserted in the nun chamber.
 - e. The SCTD can be zeroed to the gun.
 - f. The ammo 7.62mm tracer rd FFV 553 is intended for use when firing at ranges up to 700 m. The device is fired by the shock wave from a cap.



Figure 2-6-1 Sub-calibre Training Device FFV 553

10. **Description.** Explain and demonstrate. The SCTD consists of three main parts:
 - a. **Body.**
 - (1) The body consists of a casing with front and rear barrel mountings. The front barrel mounting houses four zeroing screws with locking screws, spaced an equal distance around the body. The rear barrel mounting has a seating for the cap with holder and an aperture to the hammer of the firing mechanism.
 - (2) To the rear, the body is fitted with an interchangeable rim. On the rim, a line is engraved to which the notch shall point when inserting the adapter into the body. Also engraved are the letters F (fire) and S (safe).
 - b. **Barrel.** The barrel has a calibre of 7.62mm which is fitted in the barrel nut of the rear barrel mounting by a weapon tech or specialist.
 - c. **Adapter.**

- (1) The adapter has a seat for the 7.62mm round, hammer, firing pin with firing pin spring, firing pin catch and bolt catch.
- (2) The firing pin catch prevents the firing pin from striking until the adapter has been set to F (fire).
- (3) The adapter is retained in the position S and F by the engagement of the bolt catch with the grooves in the left locking shoulder of the barrel nut.

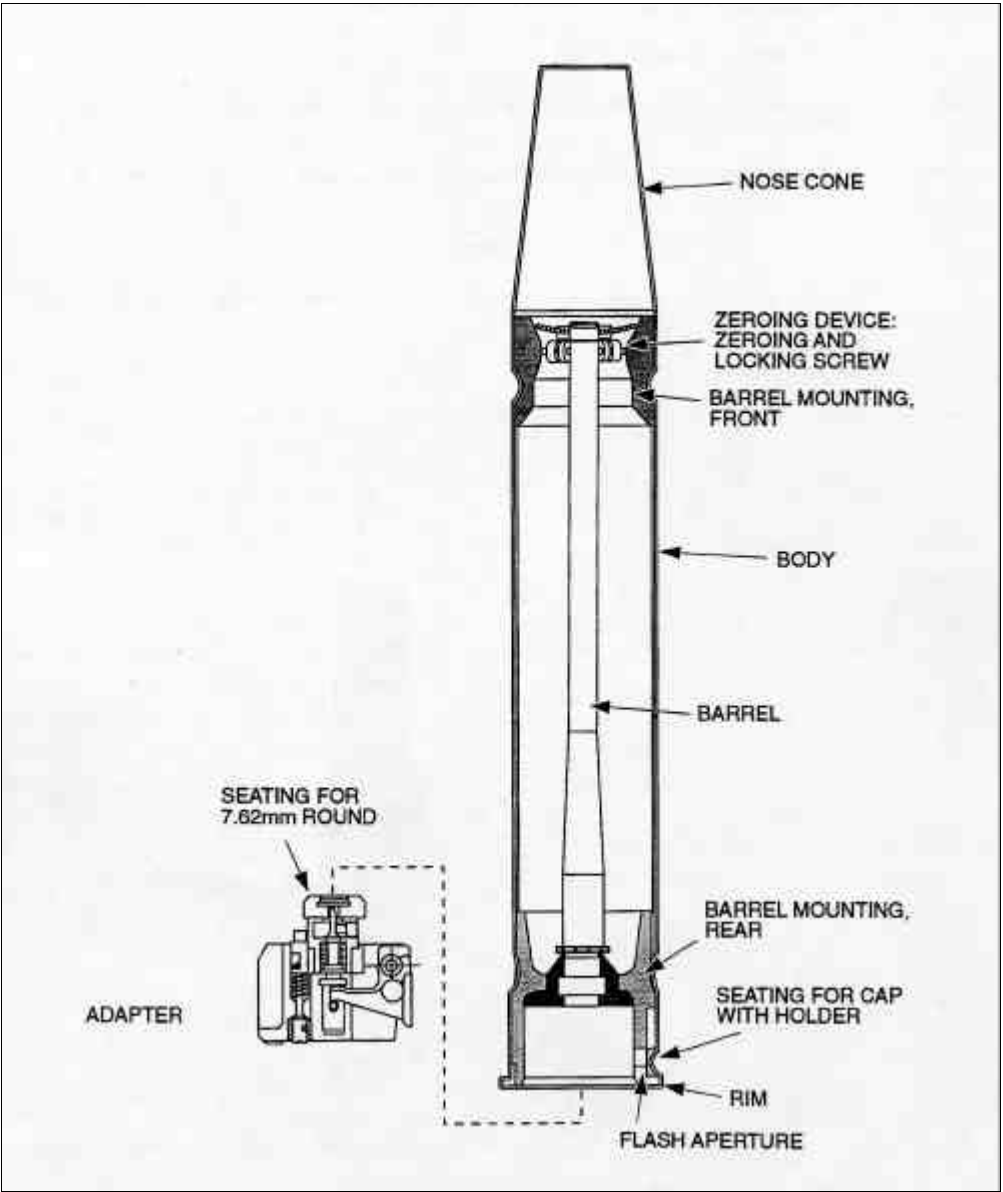


Figure 2-6-2 Description FFV 553 w/adapter

- 11. **Confirm by Questions.**
- 12. **Ammunition.** Explain and demonstrate.

- a. The 7.62mm tracer round FFV 553 only is used. The nose of the bullet is white, half the rear surface of the cartridge case is black.
- b. When making the subcalibre adapter ready for firing, the cap with holder FFV 840 is inserted into its seating.

NOTE

Do not try to fire normal 7.62mm tracer, Ball Ammunition in the subcalibre training device.

13. **Confirm by Questions.**

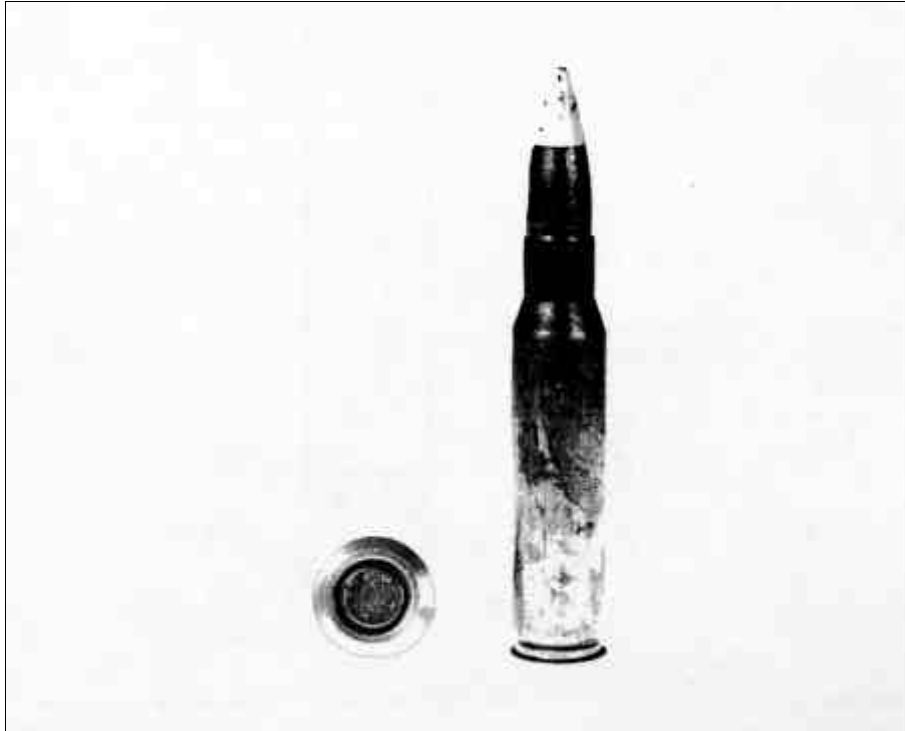


Figure 2-6-3 The 7.62mm Tracer Rd FFV 553 with Holder FFV 840

14. **Priming the Device.** Explain and demonstrate.

- a. Turn the adapter counter-clockwise until the notch on the adapter points to the line on the rim and remove the adapter from the sub-calibre device.

- b. Place a 7.62mm round into the seating of the adapter.
- c. Insert the adapter into the sub-calibre device with the arrow pointing to the line and turn the adapter to the safe position (arrow pointing to S).
- d. Press down the cap with holder into its seating.

15. **Unload.** Done in reverse.

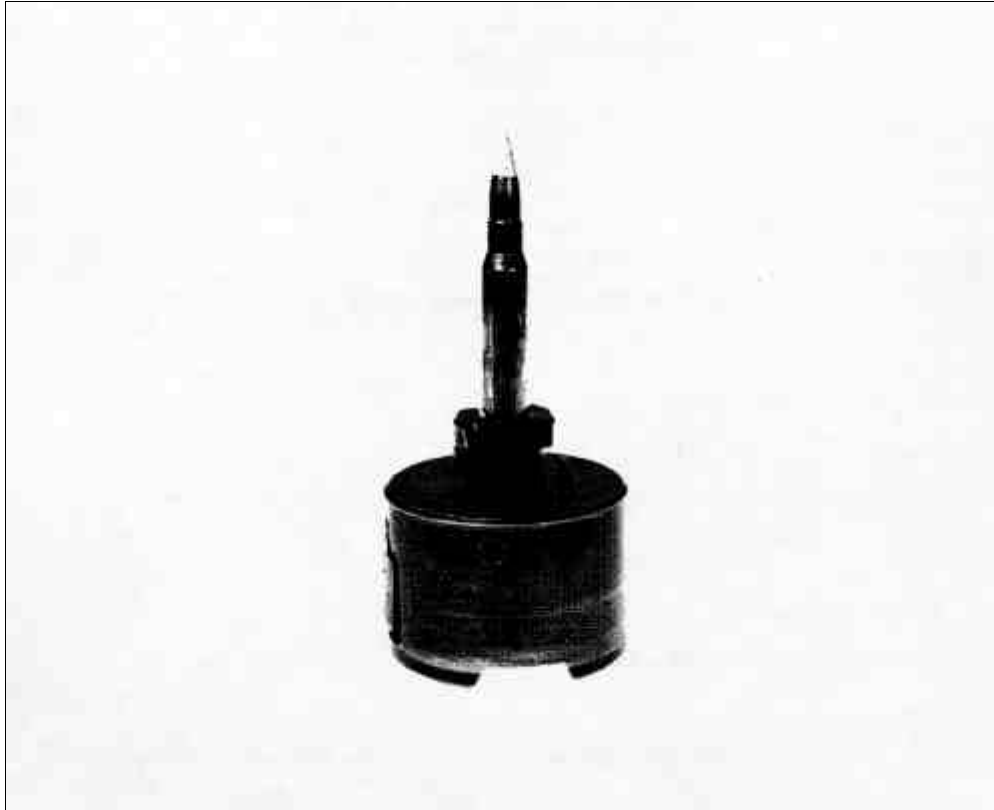


Figure 2-6-4 The 7.62mm Tracer Rd FFV 553 (Being placed into the Adapter)



Figure 2-6-5 Loading the FFV 840 Cap with Holder into the SCTD

16. **Confirm by Practice.**
17. **Load, Firing and Unload of the 84mm.** Explain and demonstrate as necessary.
 - a. **Load:**
 - (1) insert the sub-calibre device (arrow set to S) completely into the chamber of the gun;
 - (2) turn the adapter of the subcalibre to the right (arrow pointing to F); and
 - (3) close the venturi of the gun.



Figure 2-6-6 Loading and Setting the SCTD into the Gun

- b. **Firing.** The operation of the gun is the same as when firing the FFV 551 ammo.
- c. **Unload:**
 - (1) **cock the gun**, place the safety catch at safe and keep the gun pointed in a safe direction;
 - (2) open venturi;
 - (3) set the adapter to "S";
 - (4) remove the subcalibre device from the gun by pushing forward the venturi locking knob; and
 - (5) when reloading the 84mm do the normal load as listed above.
- 18. **Confirm by Practice.**
- 19. **Misfire Drills.** Explain and demonstrate where necessary.
 - a. Initially the drills are as listed in lesson 4.

- b. **Misfire Unload.** The No. 2 is to repeat "Misfire unload", unseat the device and check the adapter:
 - (1) if not set at "F" - set it to "F", reload and continue the shoot; and
 - (2) if set at "F" - remove the device, pass it to the No. 3. If available, reload with a fresh device and continue the shoot. No. 3 will unload the FFV 553.
- c. **Disposal.** Any misfired round should be set aside and marked for return to the ammo compound.
- d. **Suspect Device.** If it is suspected that a sub-calibre device is faulty then it should not be used again until examined by a weapon tech.
- e. **Jammed Device.** If a device becomes jammed in the chamber, seek the assistance of a weapons tech.

20. **Confirm by Questions and Practice.**

21. **Care and Cleaning.** Explain and demonstrate as necessary. After firing, considerable fouling will be left in the barrel of the gun.

- a. Clean the 84mm barrel as taught.
- b. Remove the adapter from the device clean the barrel using the nylon pull through and flannelette swab size 100mm x 50mm and oil the barrel using 100mm x 25mm.
- c. Clean the adapter, leave slightly oiled and screw back into the device.
- d. Report to the weapon tech any burrs set on the body or rim which cause difficulty in loading and do not use until rectified.
- e. Return the device to its container.

22. **Confirm by Questions and Practice.**

23. **Conclusion:**

- a. questions from the section on the entire lesson;
- b. confirm by questions and practice;
- c. safety precautions on gun and subcalibre device; and

d. pack up.

24. **Summary.** To include the following:

- a. the importance of regarding the subcalibre training device as a weapon and handling it as such;
- b. the requirement to call in the weapon tech in the event of a jammed or suspect device; and
- c. the need to ensure the device is in a fired condition before storage.

LESSON 7 - HANDLING

INSTRUCTOR'S NOTES

1. **Aim.** To teach the composition of a SRAAW(M) team in the field, the carriage of weapons and equipment and the selection of antitank fire positions.
2. **Time.** Two 40 minute lessons.
3. **Method.** A basic instructional outdoor lesson.
4. **Stores**
 - a. 84mm complete 1 per 3 soldiers,
 - b. FFV 551 (DUMMY) 1 per gun,
 - c. Duplex ammunition container 1 set per gun,
 - d. 9mm pistol w/case 1 per 3 soldiers,
 - e. C7 2 per 3 soldiers,
 - f. sandbags/string sufficient to camouflage at least the SRAAW duplex containers, and
 - g. white tape, pegs, protractor and 200 m measuring tape.
5. **Preparation:**
 - a. recce the ground to be used;
 - b. decide on the direction of likely tank approaches and select a good fire position/trench, defilade to the approaches;
 - c. peg out the dimensions of the backblast danger area; and
 - d. lay out the weapons and equipment sufficient to equip the section in three man groups.
6. **Miscellaneous.**
 - a. During the practice stages detail and equip 3 man teams. The third rifleman is normally a critic but occasionally he should act as part of the team.

- b. The film "TANK KILLING" (catalogue No. 07233) 66mm film may be used as an introduction to this lesson.

CONDUCT OF THE LESSON

7. **Safety Precautions.** Supervised.
8. **Review:**
 - a. the factors affecting the position for firing M72; and
 - b. the factors to be considered in the selection of a good rifle fire position.
9. **Camouflage.** The section is to carry out personal camouflage. Fit a telescopic sight to each gun.
10. **The SRAAW Team.** Besides the section comd or weapons det comd, the team normally consists of two men equipped as follows:
 - a. **The No. 1.** He commands the team and fires the gun. He is responsible for the gun and No. 1 bag. He is armed with a C7 rifle or pistol.
 - b. **The No. 2.** He is to carry 4 x FFV 551 RAP rounds in their containers and the No. 2 bag. He is armed with a C7 rifle.
11. **Explain.** Riflemen may be attached to carry additional ammunition and provide local protection.
12. **Camouflage.** Explain and demonstrate. Sandbags, hessian or disruptive pattern material are to be used to camouflage the gun and ammunition containers. (Using the principles applied to other small arms, securely tie string or elastic to secure additional scrim, hessian strips and natural foliage.) Ensure free access and use of the following:
 - a. the muzzle and venturi;
 - b. venturi lock knob and lever;
 - c. the sight unit and field of view;
 - d. the trigger, front and rear housing for the mount; and
 - e. ammunition.
13. **Confirm by Questions and Practice.** (Detail two man teams, leave equipment camouflaged at the end of the practice stage.)



Figure 2-7-1 Camouflaged 84mm Gun

14. **Carriage.** Explain and demonstrate. The gun is normally carried by the No. 1 but on occasions the No. 2 may assist. The method of carriage used will be determined by the task and the nature of the ground and cover available. The following methods are a guide:

- a. slung over the shoulder;
- b. across the body, sling around the back of the neck;
- c. using the side crawl, or the leopard crawl; and
- d. ammunition containers strapped to the top of the webbing yoke, or carried "suitcase style" using the duplex ammunition container harness.



Figure 2-7-2 Slung Over the Shoulder



Figure 2-7-3 Carriage Across the Body



Figure 2-7-4 Side Crawl



Figure 2-7-5 Leopard Crawl

15. **Confirm by Practice.** (two man teams)
16. **Backblast Danger Area.** The section is to view the prepared layout of the backblast danger area. Question them on the dimensions and discuss the problems associated with various types of cover.
17. **The SRAAW(M) Fire Position.** Explain and demonstrate. The type of terrain normally dictates the firing position selected. In addition to the basic principles of a good fire positions the No. 1 is to consider the following factors when siting the SRAAW(M).
 - a. Cover from view must whenever possible include concealment of the backblast. This may be achieved by siting in defilade so that the arc of fire is at right angles to the line of approach of enemy AFVS. Then, when firing, the backblast may be hidden from supporting AFVs by the cover selected.
 - b. A position in defilade gives the added advantage of firing at the more vulnerable side of the AFV.
 - c. There should be room for the two man team to operate, although if the cover or space dictates the No. 2 can work from the left side.

- d. Alternate positions capable of covering the same task are to be selected.
- e. Routes to alternate positions must be planned and marked, particularly in close country and at night.
- f. Ammunition, in its containers, must be concealed yet readily available. Personal weapons must also be in hand.
- g. If other riflemen are part of the team, their positions must be concealed and sited so that they can provide the necessary local protection.
- h. The No. 1 needs early warning of the approach of enemy AFVs into his arcs or killing area. The other members of the team may be used in this role.

18. **Confirm by Questions.**

19. **Use of Various Types of Cover.** Explain. In addition to the general factors, specific matters relating to the type of cover available must be considered.

20. **The Fire Trench.** Explain and demonstrate.

- a. This is normally a prepared position in defence and the normal rifleman's "1" trench is suitable.
- b. Position the mount in the front housing, and adjust it to suit the elbow rest and yet give muzzle clearance over the parapet.
- c. Brace the body against the rear wall of the trench. The No. 2 is to ensure that the venturi is above ground level and clear of the rear face of the trench.
- d. Use the left end of the trench to enable the No. 2 to work on the right of the gun and permit storage of ammunition under the overhead cover of the trench.
- e. The gun may be loaded, safety catch applied and laid front to rear across the trench.

21. **Fold in the ground and low cover.** Explain and demonstrate.

- a. The height of the cover may dictate the use of the lying position, therefore the size of the arc and the killing area may be greatly reduced.
- b. Use the mount in the front housing but check carefully for muzzle clearance.
- c. The need for a rising line of sight and clearance for the backblast danger area may be difficult to achieve.

- d. Low cover may require the firing position to be modified to achieve concealment.
- e. Similarly the limitations of the cover may require the No. 2 to load and operate from the left side of the gun.

22. **Build Up Areas.** Explain and demonstrate.

- a. Due to the problems of backblast debris and damage to hearing, confined spaces (narrow streets and rooms) should be avoided except in extreme emergency.
- b. If forced to fire within a room, open all doors and windows to help reduce the effect of overpressure.
- c. Garden walls and demolished buildings provide adequate cover for use of the normal firing positions.
- d. Firing parallel to a wall may help to conceal the backblast and also provides an alternative to having the wall directly behind the gun and within the backblast danger area.
- e. Again, the No. 2 may be required to operate from the left side of the gun in order to allow the No. 1 to make maximum use of the cover.

23. **Weapon Safety.** Explain.

- a. When moving to a planned fire position the gun may be loaded in dead ground close to the position provided that the safety catch is at "Safe".
- b. Care must be taken when occupying an alternative position quickly that ammunition and equipment are NOT positioned in the backblast danger area.
- c. When preparing to move ammunition container lids must be replaced and tools and spare parts secured in their respective bags.

24. **Confirmation.** Confirm practice, as follows:

- a. detail and equip two man teams;
- b. indicate areas of work to cater for various types of cover;
- c. brief teams on the direction of enemy AFV approaches;
- d. criticize siting, cover and concealment. View from the enemy position;
- e. have teams move tactically from fire position to fire position and have the third man of each team criticize their movement; and

- f. discuss the positioning of other members of the team where applicable.

25. **Conclusion:**

- a. questions from the section on the entire lesson;
- b. confirm by questions and practice;
- c. normal safety precautions;
- d. pack kit; and
- e. **Summary.** To include the following:
 - (1) importance of teamwork;
 - (2) the value of defilade; and
 - (3) the need to balance the factors of concealment and protection with the need effectively to cover the arc of fire and killing area.

THIS PAGE IS INTENTIONALLY LEFT BLANK

LESSON 8 - AFV RECOGNITION TRAINING

INSTRUCTOR'S NOTES

1. **Aim.** To teach:
 - a. the main component parts of AFVS;
 - b. factors affecting AFV recognition;
 - c. how to recognize different types of AFVS; and
 - d. to qualify AFV recognition level one.
2. **Time.** Two 40 minute lessons.
3. **Method.** A basic instructional lesson. Stores are as follows:
 - a. slide projector (35mm) and slides,
 - b. OHP and projectuals,
 - c. 35mm slides in carousel, and
 - d. screen.
4. **Preparation;**
 - a. obtain training aids and necessary equipment,
 - b. prepare classroom,
 - c. test the slide projector and OHP prior to giving the class, and
 - d. all vehicles mentioned in this lesson are proposals only to assist the instructor/section commander for the preparation of the lesson.
5. **Miscellaneous.**
 - a. AFV training is divided in the three levels:
 - (1) Level One - all infantry soldiers and officers,
 - (2) Level Two - section commanders, and
 - (3) Level Three - members within Recce or Anti-Armour pl.

- b. Anti-armour gunner (84mm) team must be very effective in recognizing potential targets at the weapons maximum range.
- c. On achieving the basic standard, continuation training is essential as facts learned are easily forgotten; two training classes should be organized monthly.

CONDUCT OF THE LESSON

- 6. **Safety Precautions.** Nil.
- 7. **Review.** Vulnerable areas, Lesson Three.
- 8. **Introduction.** On the modern battlefield it can no longer be assumed that all AFVs in front are enemy and all those to the rear are friendly. It is vitally important that all 84mm gunners be able to rapidly and accurately identify AFVs in their area. This will result in the gathering of vital battlefield intelligence and rapid engagement of targets. In order to perfect skills required in AFV recognition, the next two lessons will be devoted to AFV recognition.
- 9. **Main Component Parts of the AFV.** As we go through our main component recognition lesson we will be describing the AFV by using distinguishing features. Keep in mind that the secret of effective AFV recognition is systematic inspections. When attempting to recognize AFVs we will observe the three main component parts in the following sequence:

- a. **The Suspension:**

- (1) Main types:

- (a) wheeled LUCH,
 - (b) tracked T64, and
 - (c) half tracked.

- (2) Name the important parts:

- (a) road wheels,
 - (b) sprockets,
 - (c) idler wheel, and
 - (d) support rollers.

- (3) Various examples:

- (a) tight track, large road wheel AMX30, and

- (b) loose tracks, no support rollers, T54/55.
large road wheels

b. **The Hull.** Normally houses the fighting compartment and the engine. Comes in many shapes.

(1) Name the important parts and features:

- (a) glacis plate,
- (b) splash guard,
- (c) exhausts,
- (d) engine, and
- (e) shape of the hull.

(2) Various examples:

- (a) flat decked, prominent exhausts, Leopard,
almost vertical glacis, normally
configure with tools, boxes, etc...
- (b) very low, very sharp glacis, BMP1 gun, and
and note parts on side, and
- (c) boat shaped, high profile LVTP7(US).

c. **The Turret.** Normally houses the veh main armament and will have a variety of boxes, bins, rails, etc.

(1) Name the important parts:

- (a) fume extractor,
- (b) muzzle brake T72 mantlet, and
- (c) gun.

(2) Various examples:

- (a) Leopard 1 ARV Leopard 1 ARV,
- (b) AMX 30 PP Bridgelayer AMX 30 PP, and

10. **Confirm by Questions.**

11. **Factors Affecting AFV Recognition.** Unfortunately, the AFVs you see on the battlefield do not appear as they come out of the factory. Many things will have happened to the vehicle when it appears before you. Factors that affect recognition are:

- a. distance,
- b. visibility,
- c. camouflage,
- d. speed,
- e. tactical employment of the veh, ie., hull down, use of dead ground,
- f. restrictions imposed on observer-hatches down, NBC, fatigue etc, and
- g. add on - nets, bins, boxes, spare track, rucksacks, etc.

12. **Confirm by questions.**

13. **Recognition of Different Types of Vehicles.** All AFVs are designed to do a specific task. We have broken these down to eight categories which basically indicate a certain threat.

- a. Tanks (Main Battle Tank):
 - (1) mounting a large direct fire gun on a turret M1 ABRAMS,
 - (2) very good armour protection, and
 - (3) fair to good mobility.
- b. Recce Vehicle:
 - (1) tracked or wheeled Commando,
 - (2) mount a variety of wpns (MG to 152mm) 4K,
 - (3) limited protection (reduced weight) BTR 80,
 - (4) good to excellent mobility, and

(5) poor cross country capability in scout car.

c. Tank Destroyer:

- (1) tracked or wheeled IKV 91,
- (2) can carry a gun (in those cases it can be mistaken for a light tank) BRDM 2,
- (3) can carry missiles (usually modified APC or recce vehs) w/SPANDREL (Soviet),
- (4) limited protection, and
- (5) fair to good mobility.

d. APCs:

- (1) tracked or wheeled,
- (2) limited protection,
- (3) varied firepower, and
- (4) good mobility (especially when tracked).

e. Self Propelled Guns and Howitzers:

- (1) normally tracked AFV 1,
- (2) limited protection,
- (3) normally carrying an extreme large gun, and
- (4) fair to good mobility.

f. AA (Gun and Missiles):

- (1) tracked or wheeled SA8 GECKO,
- (2) with some exception they are fitted with a huge turret surmounted by a large radar Gephard,
- (3) if AA gun, it will have 2 or more barrels

(4) limited to good protection Chapparal, and

(5) fair to good mobility.

g. Armoured Recovery Vehicle:

(1) tracked or wheeled,

(2) instead of a turret and armament, will carry special equipment such as winch cranes, etc...,

(3) can be mistaken for an AEV because of similar equipment,

(4) fair to good protection,

(5) fair to good mobility.

h. Armoured Engineer Vehicle or Bridge Layer:

(1) normally tracked IMR,

(2) special equipment fitted to it i.e., T54/55,
cranes, dozer, blades, bridge, etc.

(3) limited to good protection BGL 60, and

(4) fair to good mobility AMX 30 PP.

14. **Confirm by Questions.**

15. **AFV Level One.** All infantry soldiers and officers should be qualified level one, which is taught in this class, 84mm gunners should try to advance to level two and possibly level three. AFV standards for each level are maintained by the Advanced Anti-Armour Cell at the Combat Training Centre.

16. **Confirm by Practice** (Slides).

17. **Conclusion:**

a. Questions from the section on the entire lesson.

b. Confirm by questions.

c. Pack up.

18. **Summary.**

- a. Remember the purpose of this is to highlight the importance of the subject as part of a gun team.
- b. A forecast of the section's next lesson in this subject.

LESSON 9 - CARTRIDGE, 84MM, HEDP FFV 502

INSTRUCTOR'S NOTES

1. **Aim.** To introduce and teach:
 - a. the 84mm HEDP round,
 - b. characteristics,
 - c. detailed description, and
 - d. proper setting and use.
2. **Time.** One 40 minute lesson.
3. **Method.** A basic instructional lesson.
4. **Stores.**
 - a. FFV502 HEDP rounds (inert or dummy) 4 per class,
 - b. duplex ammunition containers 1,
 - c. charts as required, and
 - d. gun 84mm 2 per class.
5. **Preparation.**
 - a. Ensure that the FFV502 HEDP rounds are inert or dummy.
 - b. Check with stores on the quantity of rounds available before you plan your lesson.
6. **Miscellaneous:**
 - a. number the section in groups of three and allocate one round per group; and
 - b. stress the importance of the dual purpose setting.

CONDUCT OF THE LESSON

7. **Safety Precautions.** To be carried out by the instructor.
8. **Review.** Other 84mm ammunition.

9. **Introduction.** The FFV502 High Explosive Dual Purpose (HEDP) round was introduced to handle the requirement for killing or incapacitating enemy personnel protected by field fortifications or lightly armoured vehicles. It is nicknamed **THE BUNKER BUSTER.**

10. **Physical Characteristics.**

- a. The ammunition carriage for the HEDP round are very similar to the other rounds. The HEDP round are packaged similarly to the other rounds in that there are two rounds in a plastic carrying case six rounds in a wooden crate;
- b. The projectile is fin stabilized with a base fuze.
- c. There are two modes of operation.

11. **Weights and Dimensions:**

- a. total weight of the round 3.3 kg,
- b. weight of the duplex container with two rounds 8.3 kg,
- c. length 44 cm, and
- d. diameter 84mm.

12. **Performance:**

- a. muzzle velocity 230 m/s,
- b. effective range:
 - (1) moving hard targets 300 m,
 - (2) field fortification targets 500 m, and
 - (3) unprotected troops 1 000 m.
- c. time of flight out to 300 m 1.3 s,
- d. arming distance 15 - 40 m,
- e. armour penetration approx 150mm, and
- f. operating temperature -40EC to 50EC.

13. **Markings:**

- a. round designator 84mm HEDP in white,
- b. band on shell body bright yellow,
- c. slip ring yellow,
- d. tot number white,
- e. the letter "1" (instantaneous) or "D" (delay) is stencilled on the side of the shell casing in white, and
- f. colour of the complete round black.

14. **Confirm by Questions.**

15. Shell. The shell consists of the following parts: nose cap, shell body, fin assembly and fuze system.

- a. **Nose Cap.** The nose cap is made of aluminum.
- b. **Shell Body.** The shell body is made of steel and designed for optimum fragmentation. The hollow charge liner is made of a special material, making for extensive behind armour damage.
- c. **Bursting Charge.** The bursting charge is cast HMX/TNT and the booster is pressed of tetryl and RDX.
- d. **Fin Assembly.** The fin assembly is made of aluminum alloy. The fins are folded inside the cartridge case and unfold when the shell leaves the muzzle.
- e. **Fuze System.** The fuze system is a combination instantaneous and delay system. The fuze mode is set when the round is loaded by keeping the desired letter, I or D, in the upright position.

16. **Revised Load.** Explain and demonstrate as necessary:

- a. the revised load drill is as follows:
 - (1) the No. 1 orders "IMPACT LOAD" or "DELAY LOAD" as required, and
 - (2) the No. 2 repeats the order and loads the projectile with the function letter "1" or "D" up as appropriate.

- b. the No. 2 must grasp the round and place one finger in the recess of the round opposite to the correct letter. The recess is guided onto the cartridge guide; and
- c. after closing the breech and ensuring the venturi is locked No. 2 orders "IMPACT READY" or "DELAY READY" as required. The No. 1 shall repeat the order.

17. **Mode Selection.** The selection is made based on the type of target:

- a. lightly armoured vehicles - use "1" for instantaneous;
- b. heavily fortified defences - use "D" for delay. The round will penetrate before exploding; and
- c. if there is a great chance of a ricochet use the "1" setting.

18. **Confirm.** Questions and practices.

19. **Conclusion.**

- a. Take questions from class on the entire lesson.
- b. Confirm by questions and practice.
- c. Normal Safety Precautions.
- d. Pack kit.
- e. Summary including the following:
 - (1) the importance of selecting the correct setting for the target, and
 - (2) a forecast of the next lesson.

LESSON 10 - SUB-CALIBRE ADAPTER - 6.5MM

INSTRUCTOR'S NOTES

1. **Aim.** To teach the description, priming, unpriming, loading, unloading, misfire drills, care and cleaning of the 6.5mm device.
2. **Time.** One 40 minute lesson.
3. **Method.** A basic instructional lesson.
4. **Stores:**
 - a. 84mm complete 1 per 3 soldiers,
 - b. subcalibre device 3 per gun, and
 - c. FFV 551 DUMMY RD 1 per gun.
5. **Preparation.**
 - a. Ensure both the serial numbers on the casing and the adapter are the same.
 - b. Layout the section room and ensure that the guns are serviceable.
 - c. Check that the sub-calibre devices are serviceable.
6. **Miscellaneous.**
 - a. Number the class in groups of three and allocate one group per gun prior to safety precautions.
 - b. When demonstrating a two man crew, use a soldier from the class to act as the No. 1.
 - c. Have boresighting stands set up outside.

CONDUCT OF LESSON

7. **Safety Precautions.** Normal.
8. **Review.** Load/unload and misfire drill.
9. **Introduction.** The sub-calibre device is used during the early stages of training to practice the team in loading, unloading and firing at both stationary and moving targets. The device is fitted with a barrel from which a 6.5mm round is fired.

10. **Description.** Explain:

a. **General:**

- (1) the 84mm can be fitted with a sub-calibre device (L1A2) for training purposes;
- (2) the device weighs 4 kg and is externally similar in shape to the old 84mm HEAT - T FFV 65;
- (3) the loading, aiming and firing Operation is the same as with the 84mm FFV 551 and 552 ammunition;
- (4) the ammunition for this sub-calibre is 6.5mm gallery and tracer; and
- (5) the sub-calibre device consists of three basic components: casing, barrel and adapter.

b. **Components**

- (1) **Casing.** The casing is similar to the 84mm HEAT-T FFV 65. The rim at the base is made of brass and is identical to the rim of the old FFV 65 casing in shape. There are single and double lines engraved on the base marked "S" and "F" to denote the safe and fire positions, respectively for the adapter. The recess in the brass rim lines up with the cartridge guide on the gun. The casing is fitted with a conical sleeve which fits between the rim and barrel sleeve to keep sub-calibre rounds and dirt out of the interior of the casing.
- (2) **Barrel.** Internally, the casing is fitted with a barrel sleeve to which the firing mechanism is attached. The barrel is screwed into the front end of the sleeve and is locked by the barrel positioning screw. At the front end of the casing is a hole through which the barrel protrudes. A rubber dust cover fills in the gap between the barrel and the casing and keeps dirt out of the interior of the casing. Spaced equidistant around the casing are four zeroing screws for aligning the barrel to the 84mm when zeroing. The barrel is fitted at the tip with a brass ferrule to prevent accidental damages to the bore of the 84mm when loading.

NOTE

The barrel and barrel sleeve can be removed from the casing but only by a weapon technician. The barrel and its sleeve can be assembled 180 degrees out of alignment thus causing a malfunction and damage.

- (3) **Adapter.** The percussion type mechanism is assembled in the base of the casing. It must be cocked before it can be withdrawn from, or placed in, the casing. This is because the two grooves in the conical sleeve contain the safety and cocking sears. When they are in the fired position, out of their respective cocking notches, rotation is impossible.

11. **Confirm by Questions.**

12. **Operation.** Explain and demonstrate.

- a. **General.** The sub-calibre device is primed with a 6.5mm round while out of the weapon. This allows the entire device to be used as a standard round for loading and live fire training;
- b. **Priming and Unpriming Device.** To prime the device, remove the adapter, ensuring the barrel points towards the target:
 - (1) cock the mechanism with the cocking tool provided (Figure 2-10-1);
 - (2) rotate the adapter counter-clockwise;
 - (3) withdraw the adapter;
 - (4) insert the base of the 6.5mm round into the groove on the front of the breech bolt; and
 - (5) replace the adapter in the base of the device with a clockwise turn until the indicator mark is opposite the letter "S".
- c. **Unpriming the Device:**
 - (1) Ensure the device is pointing towards the target;
 - (2) Unscrew the adapter counter-clockwise;
 - (3) Remove the round from the groove in front of the adapter; and
 - (4) Replace the adapter.

13. **Confirm.** By practice. Leave device rimed.

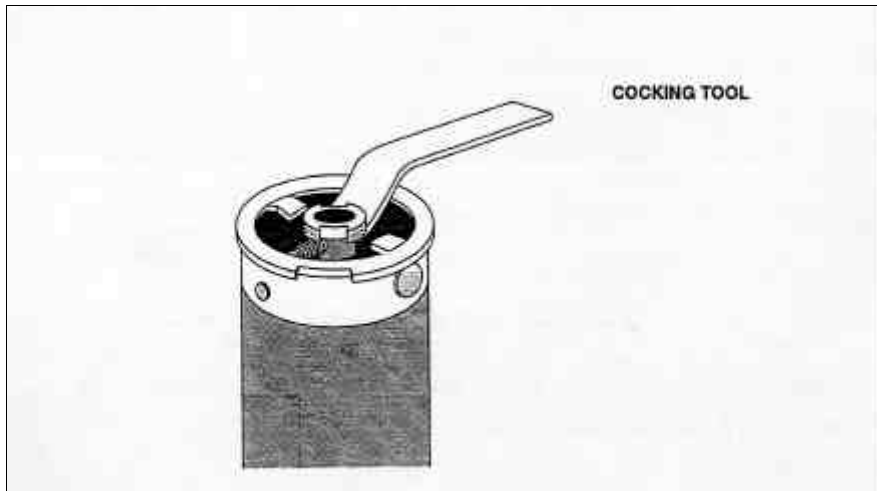


Figure 2-10-1 Cocking the Mechanism with Cocking Tool

14. **Loading and Unloading the Gun.** Explain and demonstrate as necessary.
 - a. **Loading:**
 - (1) on the command "LOAD"; the No 2 is to act as taught when loading a full calibre round, except that the device is to be stopped 50mm short of the fully chambered position, and
 - (2) set the adapter to "F" and push the device fully home.
 - b. **Unloading** (if device has been fired). On the command "UNLOAD" the No 2 is to act as taught.
 - c. **Unloading** (if device has not been fired):
 - (1) on the command "UNLOAD" the No 2 is to tap the venturi lock nob forward to partially unseat the device;
 - (2) set the adapter to "S" and remove the device from the gun; and
 - (3) pass the device to the No 3 in the team who will either lay the device on the ground pointed towards the target or unprime it.
15. **Confirm by Practice.**
16. **Jammed Device.** Should a device become jammed in the chamber and normal unloading

drills fail to extract it, the gun is to be placed to one side pointing towards the target. A weapons tech's assistance is required to remove the device.

17. **Misfire Drills.** Explain and demonstrate as necessary.
 - a. Initially, the drills are as listed in lesson 4 at paragraph 15.
 - b. On the Command "MISFIRE, UNLOAD", the No 2 repeats "MISFIRE UNLOAD" and inserts the device and checks the adapter:
 - (1) if it is not set at "F" set to "F", reload and continue the engagement, and
 - (2) if set to "F" remove the device, pass to the No 3, reload with another device and continue the shoot. The No 3 will unprime the device.
 - c. Any misfired ammunition should be placed to one side and returned to the ammunition compound for disposal.
 - d. If the device is faulty then it should not be used again until examined by the weapons tech.
18. **Sub-calibre Tool Roll.** Explain and describe the contents of the tool roll.
19. **Confirm by Questions and Practice.**
20. **Care and Cleaning.** Explain and demonstrate.
 - a. After firing practices, the sub-calibre adapter must be cleaned. The tools shown in Figure 2-10-2 are provided for this purpose.
 - b. Remove the mechanism and clean it. Clean the barrel with the brush and pull through using a 100 x 38mm flannelette swab.
 - c. After cleaning, rightly oil the device, load it into the gun and fire the mechanism. The adapter is never left cocked because this reduces the tension on the spring which may result in misfires.
 - d. unload the device and return it and the cleaning tools to the container.
21. **Confirm by Practice.**
22. **Conclusion.**
 - a. questions from the class on the entire lesson;
 - b. confirm by questions and practice;

- c. normal safety precautions;
- d. pack kit; and
- e. summary to include:
 - (1) the importance of regarding the sub-calibre device as a weapon and handling it as such,
 - (2) the need to seek the assistance of a weapon tech in the event of a jammed or suspect device,
 - (3) ensuring the device is a fired condition before storage, and
 - (4) a forecast of the next lesson in this subject.

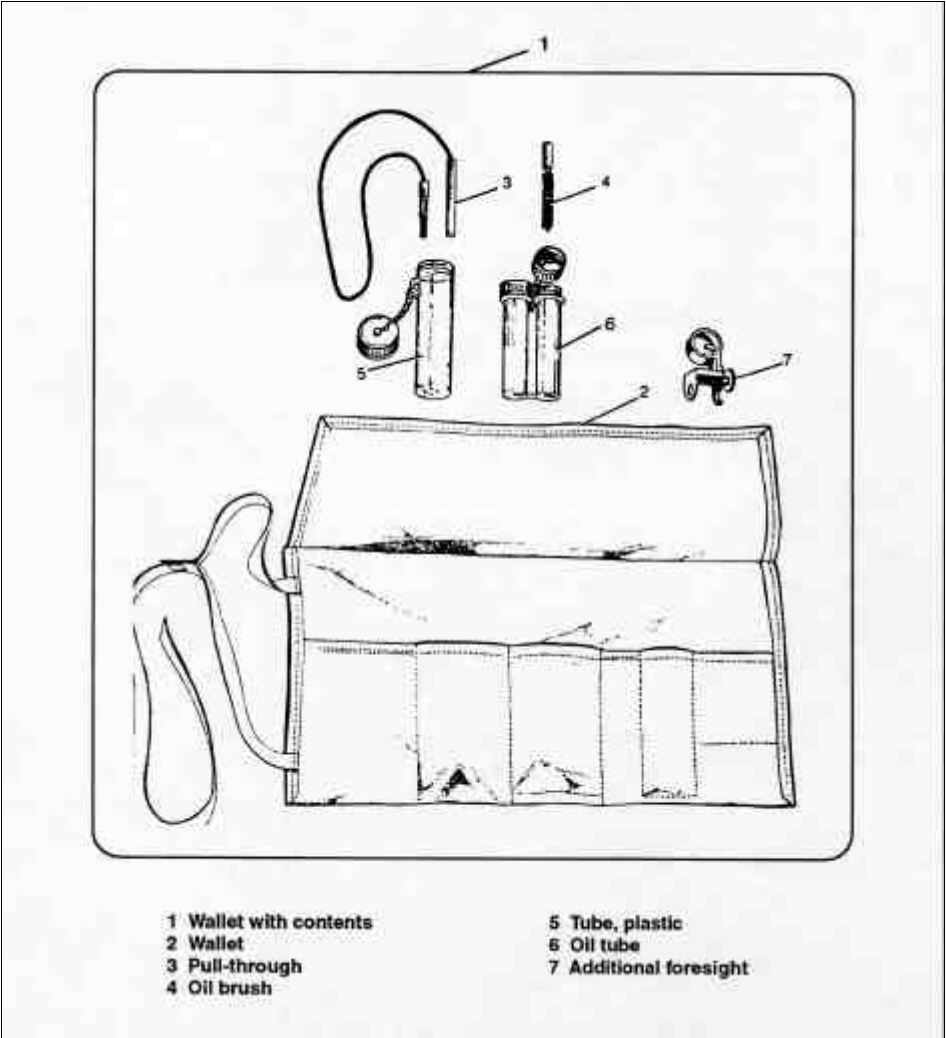


Figure 2-10-2 Cleaning Tools

CHAPTER 3

PRACTICE LESSONS - INTRODUCTION

GENERAL

1. All training must be progressive as unnecessary repetition is poor instructional practice. A soldier learns skills and facts in the basic lessons which should be taught only once during his service. He then requires practice to maintain and improve his skills.
2. The sequence of a practice lesson is:
 - a. **REMIND** - by explanation.
 - b. **ASSESS WEAKNESS** - by practice or test.
 - c. **IMPROVE ON WEAKNESS** - by practice.
 - d. **PROGRESSIVE PRACTICE** - by competitions.
3. The practice lessons in this publication are intended as a guide to exercising soldiers to improve skills that soldiers have already learned. The instructor should plan the lesson based on an assessment of the soldiers weak points.
4. Faults should be immediately brought to the attention of the soldier and corrected.
5. It may become obvious during a practice lesson that the soldiers have failed to grasp a particular skill or fact. In this case the instructor will have to teach that part of the lesson again.

COMPETITION

6. The incentive of competition will always help to make practice more interesting. Some points on conducting competitions are:
 - a. It may be on an individual or team basis.
 - b. If conducted on a team basis the instructors must ensure that the selected teams are all fairly equal with respect to their ability. The more advanced members of the team will help the weaker members.
 - c. Marks can be awarded up to a given total, or instructors may begin with a total and deduct marks for mistakes as the competition progresses.
 - d. A score chart drawn on the chalkboard or a sheet of paper on which to mark the results should always be used as it will create interest.

- e. Further interest can always be attained by making one team or individual watch another to find faults which result in the awarding or deducting of marks.
- f. Above all the instructor must make certain that competitions are simple and realistic, i.e., that they exercise the soldiers ability to perform particular skills.
- g. Within each practice lesson there is a final practice competition. Scores and standards achieved can be assessed by the instructor and used as a basis for continued training and practice to correct weak points. During advanced training the standard for the final practice competition is to match those laid down in the Handling Tests where applicable.

MASTER AND PUPIL

- 7. The master and pupil method of practice in its simplest form is for one man (the pupil) to work under the supervision of another (the master); the instructor watches both.
- 8. At all stages of training this stimulates interest, and attention to detail. It is particularly useful with large sections and in competitions.

NIGHT LESSONS

- 9. Practice in handling the gun by night is essential. Details are given in practice lessons 3 and 5.

NBC LESSONS

- 10. It is important to practice handling the gun in NBC clothing. Details are given in practices 6 and 7.

PRACTICE LESSON 1 - STRIPPING, CARE AND CLEANING

INSTRUCTOR'S NOTES

1. **Aim.** To practice the soldiers in:
 - a. stripping, assembling and cleaning; and
 - b. recognition of ammunition, safe handling and the characteristics of the gun.
2. **Time.** One 40 minute lesson.
3. **Method.** An indoor practice lesson.
4. **Stores.**
 - a. 84mm gun complete 1 per 3 soldiers,
 - b. 84mm dummy rounds as required, and
 - c. cleaning material as required.
5. **Preparation.**
 - a. Fit telescopic sights to all guns.
 - b. Prepare a chalkboard for the final practice competition as follows:

NAME	STRIPPING	ASSEMBLING	CLEANING	SAFE HANDLING AND CHARACTERISTICS	TOTAL
------	-----------	------------	----------	---	-------
 - c. To score, record the number of mistakes made in each test. The soldier or team with the lowest combined totals for all the tests is the winner. Winners of individual tests can also be determined.
6. **Miscellaneous:**
 - a. at no time during this practice period is any skill to be timed;
 - b. teaching is only to be done when considered absolutely necessary; and
 - c. questions for the section on handling and safe handling are to be carefully planned and should be general questions not related to skills.

CONDUCT OF THE LESSON

7. **Safety Precautions.** Inspect all guns and ammunition and sub calibre devices. Done by the instructor.
8. **Review.** Nil.
9. **Introduction.** The 84mm SRAAW(M) team must take care to ensure that the gun is well cleaned and correctly assembled. Negligence could lead to the gun failing to operate at a critical time. Practice in these skills will improve the teams ability to achieve a first round kill.

SUGGESTED PRACTICES

10. **Stripping and Assembling.**
 - a. Practice the section in stripping the gun, each man removing only one part at a time.
 - b. Practice assembling the gun in the same way.
 - c. Each man is then practiced in stripping and assembling the gun completely.
 - d. Leave the guns stripped at the end of the practice.
11. **Description of the Gun.**
 - a. With the guns stripped, question the section on the names of various parts.
 - b. Questions on characteristics, to include:
 - (1) dimensions of back blast area,
 - (2) maximum effective range, and
 - (3) roles of the guns.
12. **Cleaning:**
 - a. practice the section in cleaning;
 - b. question the section in cleaning in adverse conditions and the use of the contents of the No.2 bag; and
 - c. assemble the guns.

13. **Ammunition and Safe Handling.** Question the section on the recognition of all types of ammunition and on safe handling.

FINAL PRACTICE

14. A suggested method of conducting the final practice is a competition as follows:
- a. divide the section into two or three teams, each soldier checking an opposing team member;
 - b. practice each team in turn in stripping, assembling, cleaning, safe handling and characteristics; and
 - c. record individual and team scores on the chalkboard.

CONCLUSION

15. **End of Lesson Drill:**
- a. questions from the section on the entire lesson;
 - b. normal safety precautions;
 - c. pack kit; and
 - d. summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson.

THIS PAGE IS INTENTIONALLY LEFT BLANK

PRACTICE LESSON 2 - FIRING POSITIONS, LOADING, UNLOADING AND AIMING

GENERAL

- 1. **Aim.** To practice the soldiers in:
 - a. loading and unloading in various firing positions; and
 - b. aiming at stationary and moving targets using the telescopic and open sights.
- 2. **Time.** One 40 minute lesson.
- 3. **Method.** An indoor or outdoor practice lesson.
- 4. **Stores.**
 - a. 84mm gun complete 1 per 3 soldiers,
 - b. 84mm drill rounds as required,
 - c. duplex ammunition containers 1 per gun,
 - d. aiming aids as required,
 - e. AFV recognition cards as required, and
 - f. stopwatch 1
- 5. **Preparation.**
 - a. Check that the stopwatch is serviceable.
 - b. Chamber test all drill rounds to ensure drill rounds chamber properly.
 - c. Prepare a chalkboard for the final practice competition as follows:

NAME	LOADING AND UNLOADING HPS 10		AIMING AND SIGHTSETTING HPS 15			TOTAL HPS 25
	NO 1	NO 2	PROB 1	PROB 2	PROB 3	

- d. To score in loading and unloading deduct one point for each drill error and one point for each second over the time limit. To score in aiming and sight setting deduct five points for each incorrect answer. Winners of the individual test can also be determined.

6. **Miscellaneous.** Teaching is only to be done when considered absolutely necessary.

CONDUCT OF THE LESSON - PRELIMINARIES

7. **Safety Precautions.** Normal.

8. **Review.** Nil.

9. **Introduction.** In battle the gun team can only be effective if it is capable of selecting good fire positions, accurate sighting and able to load and unload the gun instinctively. This requires a great deal of practice.

SUGGESTED PRACTICES

10. **Loading and Unloading:**

- a. practice members of the section in loading and unloading in all firing positions, initially without a time limit, in order to check correct drills; and
- b. alternate roles within the section until each soldier has practiced the duties as No. 1 and No. 2.

11. **Sight Setting:**

- a. practice members of the section in setting sights to varying ranges on both telescopic and iron sights; and
- b. use other section members to check for any errors.

12. **Aiming:**

- a. Question the section on the vulnerable areas of the various types of AFV.
- b. Further questions on correct points of aim allowing for speed and direction of movement.
- c. Include problems associated with both telescopic and iron sights.

FINAL PRACTICE

13. A suggested method of conducting the final practice as a competition is as follows:
- a. Within each gun team practice each member as No. 1 and No. 2 in loading and unloading. Score as suggested in paragraph 5.d.

- b. Set three problems on aiming at moving targets, two with telescopic and one with the iron sight. The section should illustrate answers using individual aiming aids.
- c. Record individual and team results on the chalkboard.

CONCLUSION

14. End of Lesson Drill:

- a. Questions from the section on the entire lesson,
- b. Normal safety precautions,
- c. Pack kit, and
- d. Summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson.

THIS PAGE IS INTENTIONALLY LEFT BLANK

PRACTICE LESSON 3 - SAFETY, STRIPPING, ASSEMBLING AND GUN DRILLS AT NIGHT

INSTRUCTOR'S NOTES - GENERAL

1. **Aim.** To practice the soldiers at night in:
 - a. safety,
 - b. stripping and assembling, and
 - c. loading and unloading in different firing positions.
2. **Time.** One 40 minute lesson.
3. **Method.** Conduct the practice lesson outdoors at night or indoors with the lights off.
4. **Stores.**
 - a. 84mm gun complete 1 per 3 soldiers,
 - b. 84mm drill rounds as required,
 - c. 84mm duplex ammunition containers as required, and
 - d. AN PVS 5A 1
5. **Preparation:**
 - a. prepare the training area or classroom;
 - b. chamber test all drill rounds;
 - c. ensure viewing device is available and in working order;
 - d. prepare a chalkboard for the final practice competition as follows:

NAME	STRIPPING & ASSEMBLING HPS 15	LOADING & UNLOADING HPS 25	TOTAL HPS 40
------	----------------------------------	-------------------------------	-----------------

- e. to score, deduct one point for each mistake and five points for each safety error.

6. **Miscellaneous:**
 - a. when carrying out normal safety precautions extend the requirement by practicing each member of the section; and
 - b. number the section in groups of three, allocate each group to a gun and explain the system of change around.

CONDUCT OF THE LESSON - PRELIMINARIES

7. **Safety Precautions.** Normal.
8. **Review.** Nil.
9. **Introduction.** In battle, much of the soldiers weapon handling will be done at night. If he is to function effectively during the hours of darkness, it is essential that the soldier is practiced in basic handling drills under these conditions.

SUGGESTED PRACTICES

10. **Stripping and Assembling.** Practice the section in stripping and assembling the gun completely.
11. **Loading, Unloading and Safe Handling.**
 - a. Practice the section in loading and unloading in all fire positions.
 - b. Introduce black blast area "not clear", and damaged round or over gauged round.

FINAL PRACTICE

12. A suggested method of conducting the final practice as a competition is as follows:
 - a. divide the section into teams, each team is to check the faults of an opposing team;
 - b. practice each team in turn in "stripping, assembling" and "loading and unloading"; and
 - c. record team results.

CONCLUSION

13. **End of Lesson Drill:**

- a. questions from the section on the entire lesson,
- b. further practice as time permits,
- c. normal safety precautions,
- d. pack kit, and
- e. summary to include the following:
 - (1) the overall standard achieved and any weak points,
 - (2) emphasize the importance of night training, and
 - (3) a forecast of the sections next lesson in relation to this subject.

PRACTICE LESSON 4 - FIRING, MISFIRE DRILLS

INSTRUCTOR'S NOTES - GENERAL

1. **Aim.** To practice the soldier in:
 - a. firing drills; and
 - b. action should the gun fail to fire.
2. **Time.** One 40 minute lesson.
3. **Method.** An indoor or outdoor practice lesson.
4. **Stores.**
 - a. 84mm complete 1 per 3 soldiers,
 - b. 84mm drill rounds 2 per gun,
 - c. duplex ammunition containers 1 per gun, and
 - d. armour representative targets as required.
5. **Preparation:**
 - a. fit a telescope to each gun;
 - b. position representative targets;
 - c. chamber test all drill rounds; and
 - d. prepare a chalkboard for the final practice competition as follows:

TEAM	FIRING DRILLS HPS 10	MISFIRE DRILLS HPS 10	TOTAL HPS 20
------	----------------------	-----------------------	--------------

6. **Miscellaneous.**
 - a. Although neither the final practice competition or the training test has a time limit, the section should be encouraged to conduct actions quickly when dealing with misfires quickly.
 - b. The 15 second waiting time may be reduced for training expedience. The instructor orders "Time Up" when he considers it appropriate.

- c. Be continually looking for mistakes in any drills during target engagement and deduct marks accordingly.
- d. Number the section in groups of three. Allocate each group to a gun and explain the system of change around.
- e. During the practice of misfires drills use the commands "MISFIRE", "TIME UP" to the No. 1 and "LIGHTLY STRUCK", or "NOT STRUCK" to the No. 2.

CONDUCT OF THE LESSON - PRELIMINARIES

7. **Safety Precautions.** Normal.
8. **Review.** Nil.
9. **Introduction.** The techniques of firing the weapon must be mastered by both members of the team. Should the gun fail to fire actions must be done quickly and instinctively. Survival could depend upon it.

SUGGESTED PRACTICES

10. **Firing.** Practice the section in all firing positions in the following:
 - a. the firing drill (indicate the target, the direction of movement, range and speed); and
 - b. corrections (plot the fall of shot) and rapid reloading.
11. **Action should the gun fail to fire.** Practice the section in various firing positions in the following:
 - a. the initial drill on a failure to fire; and
 - b. the subsequent drill if the gun still fails to fire. Give the necessary orders to indicate a:
 - (1) "FAULTY ROUND", and
 - (2) "DAMAGED OR BROKEN PART".
12. **Final Practice.** A suggested method of conducting the final practice as a competition is as follows:
 - a. divide the section into teams, each team fault checking an opposing team;
 - b. practice each team in firing drills and misfire drills; and

- c. record team scores on a board.

CONCLUSION

13. End of Lesson Drill:

- a. questions from the section on the entire lesson,
- b. normal safety precaution,
- c. pack kit,
- d. summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson in this subject.

PRACTICE LESSON 5 - TACTICAL HANDLING AT NIGHT

INSTRUCTOR'S NOTES - GENERAL

1. **Aim.** To practice the SRAAW(M) team at night as part of the section in:
 - a. camouflage, movement and selection of a fire position,
 - b. tank hunting, and
 - c. operating in a tank ambush.
2. **Time.** One 40 minute lesson by day (preparation and briefing) followed by two 40 minute practice lessons at night.
3. **Method.** An outdoor practice exercise by night.
4. **Stores.**
 - a. 84mm gun complete 1 per section (additional weapons will be required for the camouflage and movements phase and for ambush drills if more than one SRAAW(M) team is to be exercised),
 - b. 84mm drill rounds 2 per SRAAW(M),
 - c. duplex ammunition containers 2 per SRAAW(M),
 - d. C7 weapons with EIS 1 per rifleman,
 - e. C9 weapon with EIS 2 per section,
 - f. SRAAW(L) drill weapon 2 per section,
 - g. vehicle and driver 1,
 - h. radios 2,
 - i. material to cam eqpt as required, and
 - j. night viewing device.

5. **Preparation.**

- a. Recce the ground and select positions for the vehicle for tank hunting. Select realistic tank lines of approach, ambush positions and killing areas.
- b. Brief the vehicle driver on his actions and the method of communication.
- c. Fit telescopic sights, layout the SRAAW(M) team equipment and weapons by groups including drill rounds and camouflage material.
- d. Chamber test all the drill rounds.
- e. Prepare a paper on clipboard as follows:

TEAM A NAME/FAULTS	TEAM B NAME/FAULTS	TEAM C NAME/FAULTS
-----------------------	-----------------------	-----------------------

- f. To score deduct one point for each mistake and five points for each safety error.

9. Ensure viewing device is available and in working order.

CONDUCT OF THE LESSON - PRELIMINARIES

6. **Safety Precautions.** Normal.

7. **Review.** Nil.

8. **Introduction.** When dealing with an armour threat at night the SRAAW(M) team must be able to conduct themselves effectively by using the ground to carry out any movement and to handle the gun instinctively in the dark. The team must also understand the tactics of tank stalking and the setting of a tank ambush by night.

SUGGESTED PRACTICE BY DAY

9. **Camouflage and Movement.** Allocate personal weapons to the SRAAW(M) teams. Practice the teams in the following:

- a. camouflage - personal, weapons and ammunition containers;
- b. methods of carriage and movement across varied types of ground and obstacles;
- c. weapon handling drills - to ensure the operability of camouflaged weapons; and
- d. change gun numbers and do the practice again.

10. **Tactical Knowledge.** Relating to the chosen area of ground. Question the section on the following:

- a. characteristics of a good SRAAW(M) fire position;
- b. the factors to be considered and the information needed to plan and carry out tank hunting; and
- c. the factors to be considered when setting a tank ambush.

DAYLIGHT PREPARATION FOR NIGHT PRACTICE

11. **General.** The groups are to be equipped as a section. Section Instructors to act as section commanders.

12. **Daylight Briefing - Tank Hunting.** Position the vehicle, brief the driver and any critics being used as enemy. Brief the section on the following:

- a. the tactical setting,
- b. the aim,
- c. final fire position - alternate position,
- d. likely line of approach and bounds,
- e. the section formation,
- f. fire position for rifleman and C9's - local protection,
- g. means of communication and signals, and
- h. consolidation point or RV.

13. **Daylight Briefing - Tank Ambush.** Position the vehicle, brief the driver on his line of approach and the signal to move. Brief the section on the following:

- a. the tactical setting,
- b. likely lines of enemy AFV approach,
- c. selection of ambush positions,
- d. any OPs required,
- e. position of C9's and SRAAW(L) if used,

- f. communication and signals, and
- g. consolidation and RV.

NIGHT PRACTICE

14. Brief the driver and critics and allow them time to move into position. The SRAAW(M) team and section are to prepare in safe area. Conduct the practice and debrief the section and any critics used.
15. Organize the section, detail a different SRAAW(M) team and repeat exercise.
16. **Final Practice.** A suggested method of conducting the final practice is to organize a simple competition requiring teams to:
 - a. stalk to a fire position using various methods of movement;
 - b. judge distance and fire from these positions;
 - c. move to an alternative ambush position;
 - d. each team checks the faults of the opposing team; and
 - e. practice each team and record scores on the scoresheet.

CONCLUSION

17. **End of Lesson Drills:**
 - a. questions from the section on the entire lesson,
 - b. normal safety precautions,
 - c. pack kit,
 - d. summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson in this subject.

PRACTICE LESSON 6 - NBCD HANDLING

INSTRUCTOR'S NOTES - GENERAL

1. **Aim.** To practice the soldier under NBC conditions in:
 - a. loading and unloading in various fire positions;
 - b. aiming at stationary and moving targets using telescopic and iron sights; and
 - c. firing and misfire drills.
2. **Time.** One 40 minute lesson.
3. **Method.** Indoor/outdoor practice lesson.
4. **Stores.**
 - a. NBC kit complete 1 per soldier,
 - b. 84mm gun 1 per 3 soldiers,
 - c. 84mm drill rounds 2 per gun,
 - d. duplex ammunition containers as required,
 - e. AFV recognition posters as required,
 - f. representative targets as required, and
 - g. stopwatch 1
5. **Preparation:**
 - a. Check that the stopwatch is serviceable.
 - b. Chamber test all drill rounds.
 - c. Fit telescope to each gun.
 - d. Position representative targets.

- e. Prepare chalkboard for the final practice as follows:

TEAM	LOADING/UNLOADING HPS 20	AIMING/FIRING HPS 10	MISFIRE DRILL HPS 20	TOTAL HPS 50
------	-----------------------------	-------------------------	-------------------------	-----------------

- f. To score the loading and unloading, deduct one point for each error in drill and one point for each second over the time limit. To score in the aiming and firing deduct points for inaccurate sight setting and errors in drill. To score the misfire drills deduct one point for each mistake and five points for each safety error.

6. **Miscellaneous.**

- a. Although the final practice competition in firing and misfire drills carries no time limit, the section should be encouraged to complete drills quickly, except when stripping and assembling required during misfire drills.
- b. During TOPP HIGH practice have other gun detachments at TOPP MEDIUM to check faults.

CONDUCT OF THE LESSON - PRELIMINARIES

7. **Safety Precautions.** Supervised.

8. **Review.** Nil.

9. **Introduction.** Lessons taught initially and the related practice lessons will instill confidence in the operating procedures required to achieve battle effectiveness with the gun in NBC conditions. The drills are the same, except the difficulty of carrying out the drills in an NBC suit. Consistent practice will be required to become operationally effective under these conditions.

SUGGEST PRACTICE

10. **Loading and Unloading.** (state "TOPP MEDIUM" and then "TOPP HIGH"):
- a. Do not impose a time limit initially to allow gun crews to gain confidence.
- b. Alternate within the section until each soldier has practiced the duties as No. 1 and No. 2 on the gun.
- c. Repeat the practice under state "TOPP HIGH" conditions and later introduce a time limit.

11. **Sight Setting, Aiming and Firing.**

- a. Practice the section in setting sights to varying ranges on both telescopic and iron sights.
- b. Practice the gun numbers in aiming and firing with the telescopic and iron sights at stationary and moving targets.
- c. Use critics to check for errors.

12. **Action Should Gun Fail to Fire.** Practice the section in the various fire positions in the following:

- a. The initial drill on a failure to fire.
- b. The subsequent drill if the gun still fails to fire giving the necessary orders to indicate:
 - (1) a faulty round, and
 - (2) a damaged or broken part.

FINAL PRACTICE

13. A suggested method of conducting the final practice as a competition is as follows:

- a. Practice gun teams in loading and unloading. Score as suggested in para 5 above.
- b. Conduct a practice in aiming and firing paying particular attention to the accurate setting of sights and scoring as suggested in para 5 above.
- c. Practice each team in firing drills and misfire drills. Score as suggested in para 5 above.
- d. Record team results on score board.

CONCLUSION

14. **End of Lessons Drills:**

- a. questions from the section on the entire lesson,
- b. normal safety precautions,
- c. pack kit,

- d. summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson on this subject.

THIS PAGE IS INTENTIONALLY LEFT BLANK

PRACTICE LESSON 7 - NBC TACTICAL HANDLING

INSTRUCTOR'S NOTES - GENERAL

1. **Aim.** To practice the SRAAW(M) team under NBC conditions, as part of the section, in:
 - a. movement and selection of a fire position,
 - b. tank hunting, and
 - c. operation in a tank ambush.
2. **Time.** Two 40 minute periods.
3. **Method.** Outdoor practice period.
4. **Stores.**
 - a. NBC kit complete 1 set per soldier,
 - b. 84mm gun complete 1 per section (additional weapons will be required for the camouflage and movement phase and for ambush drills if more than one SRAAW(M) team is to be exercised),
 - c. 84mm drill rounds 4 per gun,
 - d. duplex ammunition containers 2 per gun,
 - e. C7 1 per rifleman,
 - f. C9 2 per section,
 - g. SRAAW(L) drill weapon 2 per section,
 - h. vehicle and driver 1,
 - i. radios (77 set) 2, and
 - j. camouflage material as required.
5. **Preparation.**
 - a. Recce the ground and select positions for the vehicle for tank hunting. Select realistic tank lines of approach, ambush positions and killing areas.

- b. Brief the vehicle driver on his actions as the enemy vehicle driver and the method of communication.
- c. Fit telescopic sights, lay out the SRAAW(M) team equipment and weapons by groups including drill rounds and camouflage material.
- d. Chamber test all drill rounds.
- e. Prepare a score sheet as follows for the final competition:

TEAM A		TEAM B		TEAM C	
NAME	FAULTS	NAME	FAULTS	NAME	FAULTS

6. **Miscellaneous:**

- a. Number the section in groups of three and allocate each group to a gun for the initial movement and selection of a fire positions. Then prepare the groups as a section for either the tank hunting or setting an ambush.
- b. Alternate members of each group through the duties of No. 1, No. 2 and critic throughout the practice.

CONDUCT OF THE LESSON - PRELIMINARIES

- 7. **Safety Precautions.** Normal.
- 8. **Review.** Nil.
- 9. **Equipment.** The section is to adopt NBC state TOPP LOW.

INTRODUCTION

10. The principle of "one round - one kill" has to be maintained even under NBC conditions. The armoured threat could well be even more evident at such times. Only with persistent practice in NBC clothing will the required weapons handling standard be achieved.

SUGGESTED PRACTICES

- 11. **Movement and Selection of Fire Positions.** Allocate personal weapons to the SRAAW(M) teams. Detail critics. Practice the teams in the following:
 - a. methods of carriage and movement across varied types of ground;
 - b. adoption of various types of fire positions and weapon handling drills; and

- c. change the gun numbers and critics and conduct the practice again.

12. **Tank Hunting.** The group is to be equipped as a section. Section Instructor is to act as section commander. Position the enemy vehicle, brief the driver and any critics. Brief the section in the same manner as para 12, page 3-5-3.

13. **Tank Ambush.** Position the vehicle and brief on his line of approach and signal to move. Brief the section in the same manner as in para 13, page 3-5-3.

FINAL PRACTICE

14. Do this in the same manner as paras 12 and 13, page 3-5-3.

CONCLUSION

15. **End of Lesson Drill:**

- a. questions from the section on the entire lesson,
- b. normal safety precaution,
- c. pack kit, and
- d. summary to include the following:
 - (1) the overall standard achieved and any weak points, and
 - (2) a forecast of the sections next lesson in this subject.

THIS PAGE IS INTENTIONALLY LEFT BLANK

CHAPTER 4

INFORMATION FOR INSTRUCTORS

SECTION 1

DESCRIPTION AMMUNITION STRIPPING

GENERAL

1. It may be necessary, working in extreme conditions of sand or dust, to strip and clean areas of the gun which have not been previously taught. Such further stripping is to be carried out only by those officers and NCOs who have received instruction on the subject on a recognized course. The information for the instructor is provided as general information and is not to be taught on basic skill lessons.

2. **Data.** Not all of the data contained in this article is of importance to the infantry soldier and provided as supporting information for instructors.

3. **General Data.**

- a. Total weight of weapon with cleaning equipment, tools, gun board, and gun cover (canvas), approximately, 30 kg.
- b. Weight of the weapon with face pad and sling, 14.3 kg.
- c. Weight of mount, .91 kg.
- d. Weight of telescopic sight unit, .91 kg.
- e. Weight of gun with mount and telescopic sight unit, 16.2 kg.
- f. Length of gun 84 cm.

4. **Barrel.**

- a. **Bore.** Made up of land and grooves:
 - (1) diameter, 84mm,
 - (2) twist of rifling, right hand, uniform 1 turn in 43 calibres, and
 - (3) length of barrel 84.3 cm.

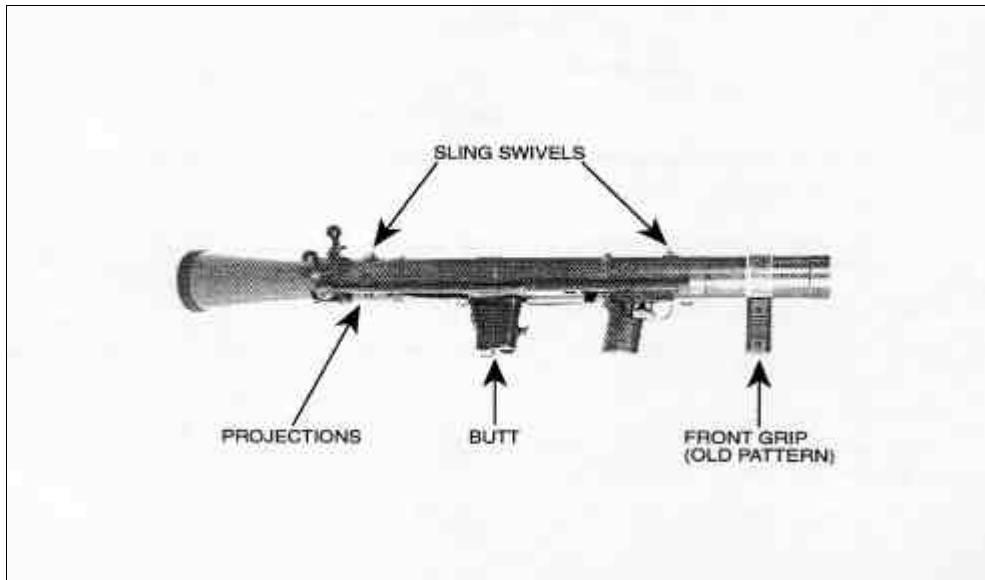


Figure 4-1 Barrel

5. **Description.**

- a. The barrel, Figure 4-1, is a forged steel tube which is shaped internally at the rear end to form a chamber. From the front of the chamber the barrel is rifled out to the muzzle. The rear end of the barrel is enlarged in diameter. Externally, the right side has a guide over which the venturi guideway locates in the closed position. Secured to the bottom of the rear face is a triangular-shaped projection which guides the cartridge rim into its seating. It has a stop face to limit the opening movement of the venturi. On the left side of the barrel two keyways, one wide and one narrow, hold the telescope sight mount and rear sight bracket support. At the front of the barrel a projection forms a housing for the front sight. Two sling swivels are fitted to the barrel for carrying purposes.

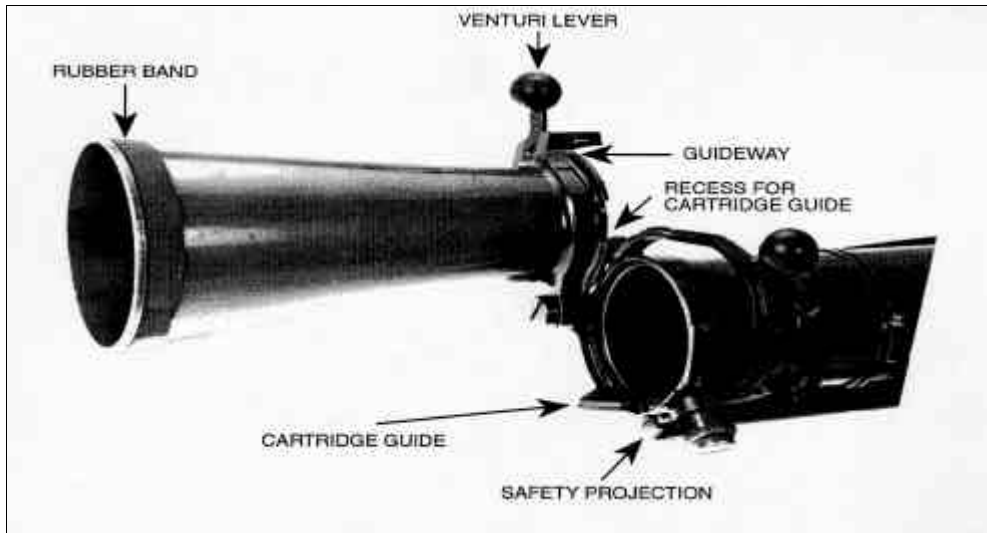


Figure 4-2 Venturi

- b. The venturi, Figure 4-2, is in the form of a cone-shaped cylinder. At the rear end, it is fitted with a rubber band to reduce the metallic sounds which would occur when closing the venturi. Formed between two lugs is a rim which, on one side of the venturi, is cut away to fit over the cartridge guide.

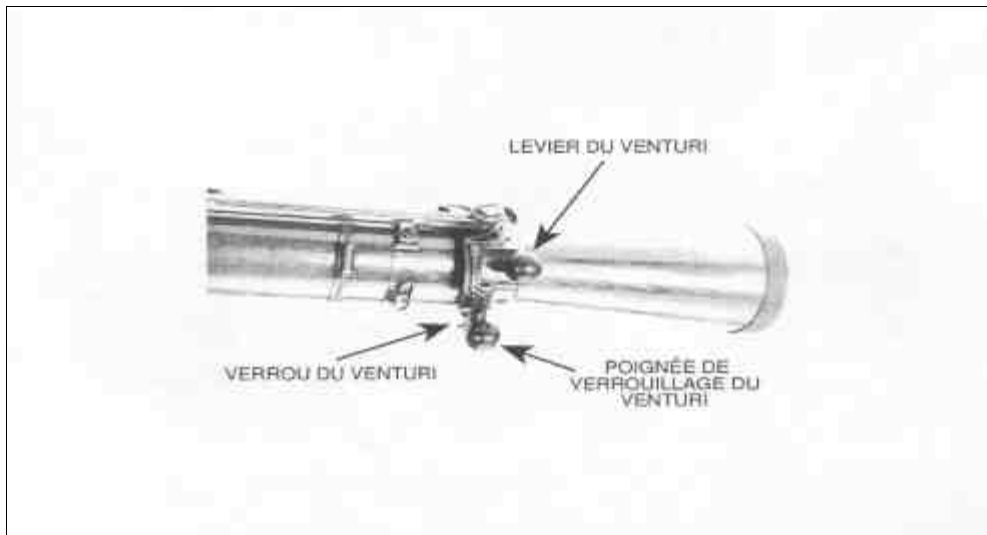


Figure 4-3 Venturi Lock

- c. The venturi lock, Figure 4-3, is semi-circular in shape and has a knob at the top to facilitate movement. At the rear of the housing, the lock is fitted with a safety projection which prevents the gun from being fired while the venturi is open, or before it is fully locked in the closed position. The venturi is locked in the closed position by the venturi lock.

6. **Ammunition.**

a. **Cartridge 84mm, HEAT RAP FFV 551.**

- (1) The shell is fin stabilized and rotates slowly during flight. The rocket motor assist enables the shell to obtain a flat trajectory over its short time of flight.
- (2) The hollow charge explosive filling plus a piezo electric fusing system enables the shell to function at large angles of impact with high penetrating power. Safety features are included in the fusing system which allow the shell to be fired through brush and scrub without igniting.
- (3) The cartridge has the following characteristics:
 - (a) maximum range up to 700 m,
 - (b) time of flight to,
 - 400 m 1.3 sec
 - 500 m 1.6 sec
 - 600 m 1.9 sec
 - 700 m 2.2 sec
 - (c) arming distance 5 to 15 m,
 - (d) maximum angle of impact 80° to normal impact,
 - (e) penetration, solid armour 400mm, and
 - (f) operating temperature range, -40 C to + 60 C.

7. **Description.** The projectile assembly consists of the following main parts:

- a. **Nose.** This consists of a plastic ballistic cap and a light alloy distance tube (shock transmitter). The front end of the distance tube is fitted with an edge of steel to decrease the natural tendency of a shell to slip from the point of impact.
- b. **Projectile Body.** The body is made of light alloy and contains a bursting charge consisting of 500 grams of octol, a copper liner and a booster. The booster is press loaded with 8 grams of tetryl.

- c. **Fuze:**
- (1) The fuze system has a pressure activated (piezo) generator, an arming device with an electric detonator and an inflight safety device.
 - (2) To prevent accidental arming of the rotor in the arming device, there are two mechanical safety devices which function independently of each other.
 - (3) **Rocket Motor:**
 - (a) The motor body is made of light alloy. The base of the shell forms the front closure of the rocket chamber. The aft closure, also of light alloy, has a rocket motor nozzle and contains the delay unit and the ignition charge. The rocket motor charge consists of about 300 grams of smokeless double base propellant.
 - (b) On firing, the propellant gases ignite the delay composition which in turn ignites the ignition charge of the rocket motor through the delay unit intermediate charge. The ignition charge then ignites the rocket motor charge and the pressure rises. To ensure effective ignition of the rocket propellant, the delay unit has been designed to leave the nozzle when the motor pressure exceeds a predetermined figure. The shell is then about 18 metres in front of the gun. On leaving the nozzle, the delay unit continues forward in the line of fire at slow speed. The rocket motor propellant burns for 1.5 seconds.
- d. **Stabilizing Unit.** This unit is fitted to the aft closure of the rocket motor during assembly of the cartridge and consists of a light alloy fin section and a plunger device with two non return gas valves.
- e. **Slipping Ring.** This teflon ring is located externally between the aft closure of the rocket motor and the stabilizing unit. Although the shell is fired from a rifled barrel, the slipping ring ensures that the rate of spin does not reach a rotation that which would degrade the fin stabilization of the shell or the hollow-charge performance of the high explosive.

8. **Cartridge 84mm TP RAP FFV 552**

- a. **Performance.** The Target Practice (TP) projectile FFV 552 is the practice version of the HEAT round FFV 551 and has the same ballistic characteristics.
- b. The practice projectile resembles the HEAT counterpart only in the area of the rocket motor and aft closure. The remaining components are made largely from

aluminum alloy and contain no explosives. The weight of the omitted explosives are made up by using a thick walled forward portion.

9. **Additional Stripping and Assembling.** Additional stripping of the weapon may be done under supervision by a NCO or officer with the correct qualifications as follows.

- a. Remove the screw and retaining leaf spring from the trigger, and sear axis pins. Remove the safety catch, withdraw the axis pins and remove the trigger with its spring the and sear with its spring.
- b. Unscrew the extractor axis screw and remove the extractor with spring. Separate the extractor and spring by removing the screw.
- c. Assembly is in reverse order, care must be taken when replacing the sear to ensure the claw is towards the venturi, with the spring towards the barrel.
- d. Using the sight adjusting tool, remove the retaining nut and push out the pivot pin. Assemble in the reverse order.
- e. Remove the extractor retaining screw and remove the spring assemble in reverse order.

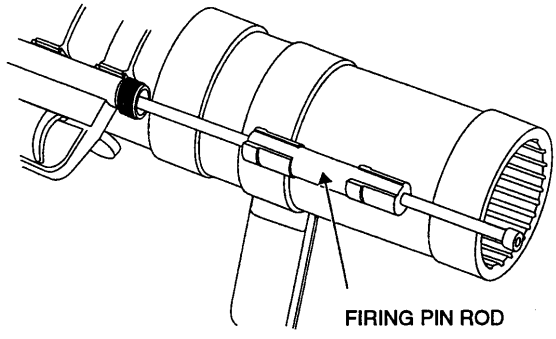
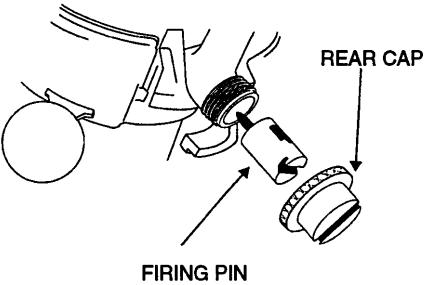
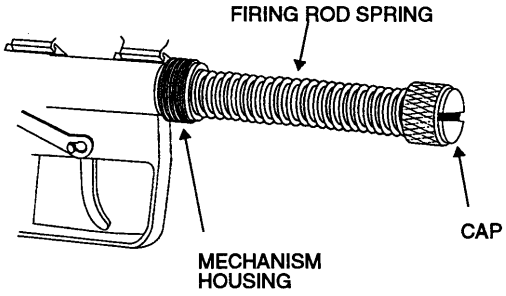


Figure 4-4 Basic Stripping

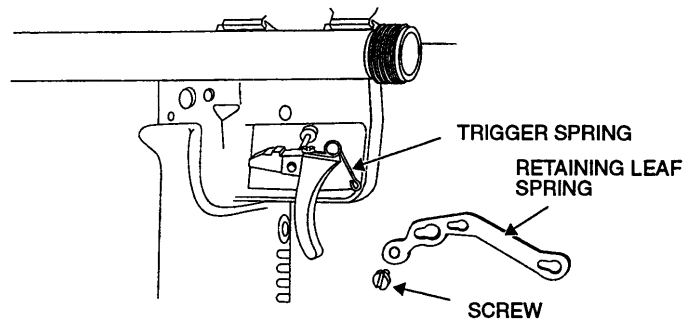
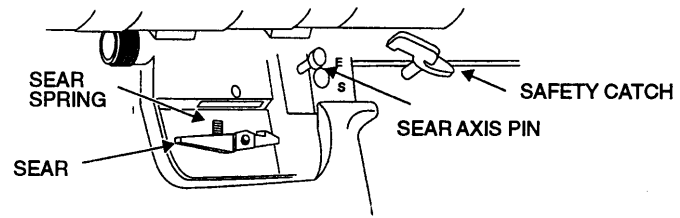


Figure 4-5 Removing Retaining Leaf Spring Safety Catch - Trigger and Sear

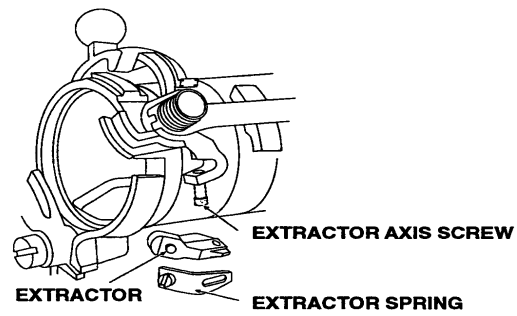


Figure 4-6 To Remove Extractor and Spring

10. **Cleaning.** After carrying out cleaning before firing, the clearance between the front face of the venturi and the rear face of the breech at the venturi axis screw must be checked. With the venturi in the open position the 0.25mm venturi clearance gauge "No Go" is held against the joint, see Figure 4-7. It should not be possible to insert the gauge into the joint. If it can be inserted, the unit weapons technician must be informed and adjustment made to the setting of the venturi axis screw.

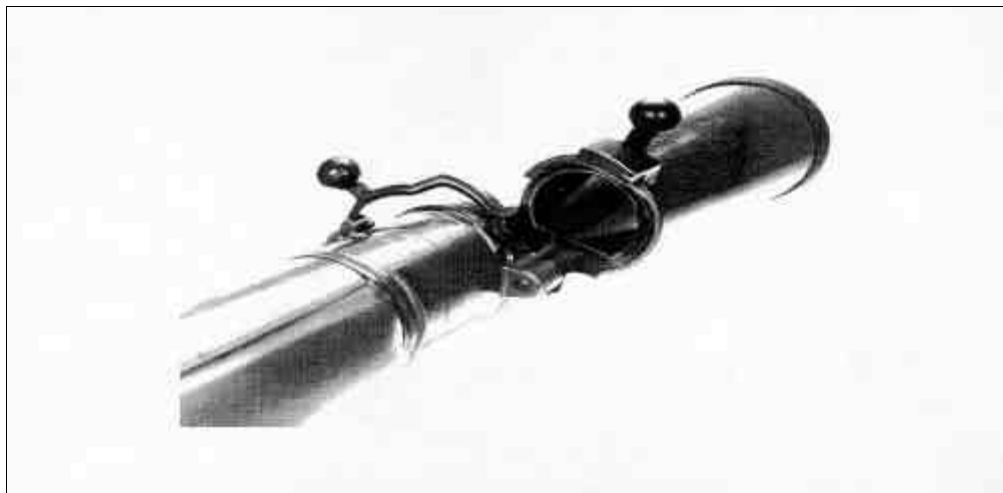


Figure 4-7 Checking Venturi

11. Number two spare part bag, which also has one metal spare parts box, contains the items listed in figure 4-8.

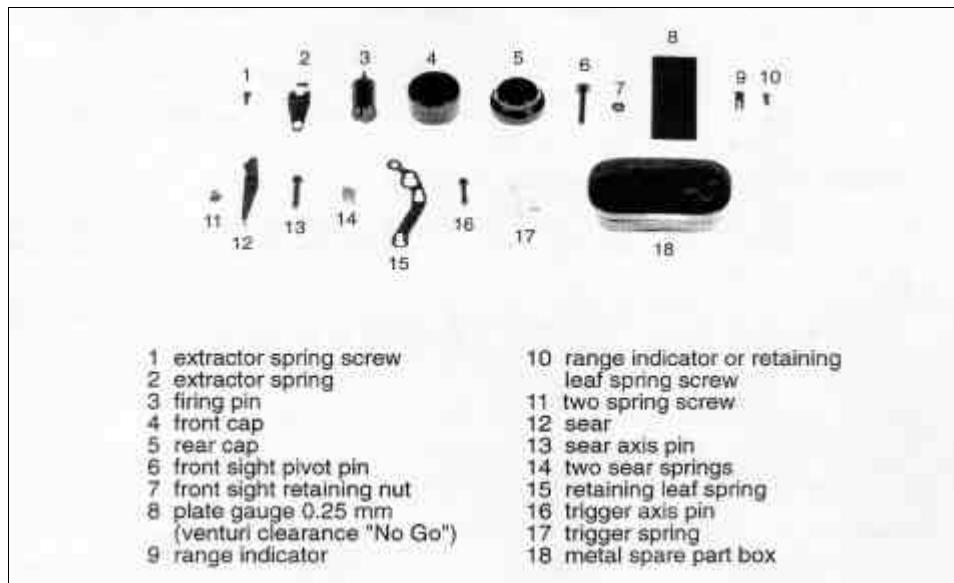


Figure 4-8 Spare Parts and Box

12. **General.**

a. The use of the subcalibre adapter is an economical way in which to practice weapon crews in engaging targets and weapon drills. In addition, weapon crews become familiar with the weapon prior to firing full-calibre ammunition. To obtain best results, the subcalibre adapter must be zeroed to the gun with which it is normally used.

b. **Adjustment During Zero:**

(1) There are four zeroing screws at right angles around the front of the casing of the adapter held by grub screws through the front of the casing. Copper locking plugs are placed between the grub screws and zeroing screws, to avoid damaging the zeroing screws. The zeroing screws are in opposing pairs and adjustment of these screws will move the MPI laterally and vertically.

(2) Before adjustments are made on the zeroing screws, the grub screws must be loosened and after every adjustment they must be tightened.

To adjust the MPI always move the barrel in the direction the shot is to go that is, if the MPI is to move to the right, loosen the right hand screw and tighten the left.

- (4) One half turn of the zeroing screws will move the MPI approximately 250mm at 100 metres. A correctly zeroed adapter will have the MPI fall on the CZP which is level with the point of aim and 100mm to the right of it. This compensates for the distance between the line of sight and axis of the barrel which are theoretically parallel after boresighting. The permissible variation at 100m is 100mm in all directions from the CZP.
- (5) Both the casing and adapter are numbered; hence prior to use, ensure that the numbers correspond.
- (6) The correct sequence of zeroing is to first rough zero and then zero, as described in the present chapter. The gun must be boresighted before starting.

c. **Rough Zeroing the Device.** Explain and demonstrate:

- (1) Place the front boresight in the muzzle of the weapon. Remove the adapter from the device and place the device in the weapon. Close the venturi and place the rear boresight in the back of the venturi.
- (2) Sight through the rear boresight down the barrel of the device to the muzzle boresight. Remove the device and bring the centre of the barrel onto the centre of the front boresight with the zeroing screws by trial and error. Replace and remove as necessary.

d. **Zeroing.** Explain and demonstrate:

- (1) prepare the device for firing and carry out loading drills,
- (2) with the telescopic sight unit set at 100 metres fire a three round group,
- (3) check the MPI of the group and make lateral and vertical adjustments as necessary to superimpose the MPI on the CZP. Fire a three round group after each adjustments,
- (4) when the zero has been established with the telescopic sight unit, a group should be fired using the open sight to check its zero. If it has been boresighted correctly, it should be aligned, and
- (5) the 6.5mm tracer projectile does not conform exactly to full calibre ballistics at all ranges.

13. **Subcalibre Firing Mechanism.**

- a. **Cocking Action:**
- (1) By drawing back on the cocking cap with the cocking tool, the entire firing pin housing is drawn to the rear. This compresses the firing pin spring between the firing pin and the firing spring rear seating.
 - (2) When the firing pin housing has been drawn approximately half way to the rear, the hooked end of the safety sear clears its safety cocking notch, allowing it to rotate under the influence of its sear spring so that the hooked end is in front of and in line with its safety cocking notch. This prevents the accidental firing of the device.
 - (3) When the firing pin housing has been drawn fully to the rear of the toe of the cocking sear it rotates under the influence of its sear spring. When the cocking tool is removed, the firing pin housing moves forward until the cocking notch bears against the toe of the cocking sear holding the firing pin to the rear. The mechanism is now cocked.
- b. **Safe Position.** With the firing mechanism of the adapter is positioned at "S", both the cocking sear and the safety sear are positioned out of alignment with their respective firing plunger. Neither sear can become disengaged.
- c. **Action When Rotating from "S" to "F".**
- (1) When the mechanism is rotated from "S" to "F", the cocking and safety sears are moved into alignment with their respective firing and safety plungers.
 - (2) The action of rotating the mechanism to the "F" position must be done prior to inserting the body fully into the parent weapon because, once the adapter is fully inserted into the gun, the safety plunger protrudes through the inside of the casing of the adapter thus restricting the rotation of the mechanism. There is still no danger of accidental firing as the safety sear is still in position to arrest the forward movement of the firing pin housing.
- d. **Action When Fully Inserted into the Parent Weapon.**
- (1) When the adapter is fully inserted into the weapon, the safety plunger is forced by the side of the barrel to bear against the safety sear and pivot out of alignment with its cocking notch. The mechanism is now positioned for firing.
 - (2) The safety sear is made up of two pieces, with a spring which causes them to work together as long as the hooked end of the sear is not engaged in the safety cocking notch. When the hooked end is engaged, the rear portion

will rotate but the sear will not move from in front of its cocking notch, thus preventing accidental firing on insertion into the weapon should the cocking sear be disengaged.

14. **Firing Action.**

- a. When the firing pin of the 84mm strikes the firing plunger, it forces the plunger through its recess in the body to strike the cocking sear.
- b. The toe of the cocking sear is forced out of engagement with its cocking notch. The firing pin spring reasserts itself, forcing the firing pin violently forward to strike the cap of the round.

CARL GUSTAV M3 SYSTEM

GENERAL

15. These notes introduce the lightweight Carl Gustav M3.

16. **Purpose.**

- a. The Carl Gustav M3 is lightweight and is operated in the same manner as the Carl Gustav.
- b. It is capable of destroying APC MBT, fortified bunkers, field fortifications, buildings and crew served weapon positions.
- c. It has a long effective range.
- d. It is able to fire illumination and smoke rounds.

17. **Role.** The Carl Gustav M3 is a multipurpose, close support anti armour - gun.

18. **Operational Environment.** The Carl Gustav M3 is designed to withstand arctic, tropic and desert conditions.

19. **Maintenance.** Operator maintenance is to be done daily. Tools and spare parts needed for cleaning and repair are contained in the two bags.

20. **Specifications.**

- a. Weight of gun with gun mount and telescope approx 10 Kgs,
- b. Length of gun 101 cm, and
- c. Weight of transport package with one weapon approx 22 kgs.

21. **Ammunition.** Capable of firing any of the following rounds:

- a. HEAT FFV 651,
- b. HEAT FFV 551,
- c. HEAT FFV 441 B,
- d. SMOKE FFV 469,
- e. ILLUM FFV 545,
- f. HEDP FFV 502,
- g. HEAT FFV 751, and
- h. TP RAP FFV 552.

22. **Barrel.** The barrel consists of a steel liner around which is wound a laminate of epoxy and carbon fibre and has 24 right hand twist rifling grooves.

USE OF 25 METRE RANGES AND INDOOR TRAINING

GENERAL

23. The purpose of this section is to provide additional information and guidance for instructors to conduct these types of SRAAW(M) ranges.

24. **Safety.**

- a. For safety reasons the SCTD 7.62mm Tracer and 6.5mm Tracer rounds must not be used on 25M outdoor or indoor ranges. This is due to the tracer content in the round. The only SCTD ammunition allowed to be used on an indoor range or a 25 metre outdoor range is the 6.5mm gallery round.
- b. Ammunition must be checked before firing. The 6.5mm gallery round has a small metal slug with no tracer content.
- c. When using the FATS no ammunition is allowed in the training room.

25. **Use of Ranges.**

- a. Information given applies equally to the indoor range and 25 metre outdoor range. Boresighting is to be carried out as taught in Lesson 5.

- b. The imagination of the instructor can add a great deal of realism to these range practices. For example, tape recorders may be used to simulate small arms fire, armour on the move and other battle sounds.

26. **Zeroing.** Unzeroed guns and devices will be too inaccurate to achieve worthwhile results. Zeroing is explained in Section 2 of the Instructor's Notes.

27. **Targets.**

- a. Representative targets must be of the correct size. A simple formula for finding the correct size of target is:

$$\frac{\text{ACTUAL SIZE OF TARGET X RANGE TO THE REPRESENTATIVE TARGET}}{\text{RANGE TO BE REPRESENTATIVE}} = \text{REPRESENTATIVE TARGET SIZE}$$

- b. **Example.** A tank 6 metres long, 3 metres high and 4 metres wide is to be represented at 300 metres. You want to shoot from 25 metres:

- (1) for height:

$$\frac{3 \times 25}{300} = 0.25 \text{ metres high}$$

- (2) for width:

$$\frac{4 \times 25}{300} = 0.33 \text{ metres wide, and}$$

- (3) for length:

$$\frac{6 \times 25}{300} = 0.5 \text{ metres long.}$$

- c. For a front view of the tank the height and width are required. Therefore, the representative in this case would be .25 metres high and .33 metres wide.

- d. For the 6.5 SCTD, the MPI is as follows for a correctly zeroed gun:
- (1) at 25 metres: 10 cm right and 5 cm below the POA,
 - (2) at 15 metres: 10 cm right and 2.5 cm below POA,
 - (3) at 10 metres: 10 cm right and level with POA,

28. **Scoring:**

- a. Keeping in mind the information in (d) above the rounds will not land on POA. A piece of talc will be required to mark targets for scoring, see Figure 4-9.
- b. To use the talc scoring sheet:
 - (1) place the talc on the target with the correct range mark on the POA, and
 - (2) the MPI should be within the circle on the score sheet.

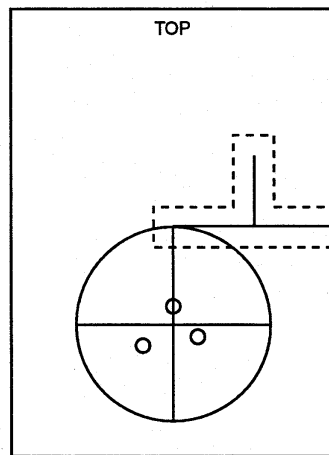


Figure 4-9 6.5mm MPI Scoring Trace

CHAPTER 5

RANGE PRACTICES

INTRODUCTION

1. All range practices should be conducted as an extension of previously taught lessons. Prior to any live firing, commanders should examine the aim of the range practice to be conducted and review the appropriate lessons.

AIM

2. Live fire range practices are designed to confirm and assess:
- a. the basic skills of the gun crew in target engagement by day and night, and
 - b. the ability of gun controllers in fire control.

GENERAL

3. **Stores.** A standard set of stores required for every range practice includes:

- | | | |
|----|--------------------------|------------------|
| a. | SRAAW(M) complete | 1 per gun crew, |
| b. | ear protection | 1 per soldier, |
| c. | first aid kit/stretchers | 2, |
| d. | binoculars | 1 per gun, |
| e. | cleaning materials | as required, |
| f. | targets | as required, |
| g. | ammunition | as required, and |
| h. | flags | as required. |

4. **Preparation.** Prior to the day of firing:

- a. confirm the range booking, ammunition request and the targets required;
- b. read Range Standing Orders;

- c. read range practice; and
- d. receive the range allotted.

5. **Miscellaneous:**

- a. all range staff are to be fully conversant with the range practice and weapon; and
- b. maintain backblast safety awareness throughout the range practice.

**RANGE PRACTICE 1
STATIONARY TARGETS 100 TO 300 METRES
FIRE ARMS TRAINING SYSTEM (FATS)**

AIM

To practice the gun team in engaging stationary targets at representative ranges of 100 to 300 m and from varying fire positions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling Sitting	100 m	4	100 m Representative	Weapon drills to be done as taught in Chap 2. Discuss and record results.
2	Kneeling Standing	100 m	4	200 m Representative	As for Serial 1.
3	Standing	100 m	4	300 m Representative	As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. No stores required. 3. Ammunition. Nil. 4. Targets. Nil. 5. Standards: <ol style="list-style-type: none"> a. acceptable - 8, and b. desirable - 10. 					

**RANGE PRACTICE 2
MOVING TARGETS 100 TO 300 METRES
FIRE ARMS TRAINING SYSTEM (FATS)**

AIM

To practice the gun team in engaging moving targets at representative ranges of 100 to 300 m from varying fire positions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling	100 m	2	100 m Representative	Weapon drills to be carried out as taught in Chap 2. Discuss and record results.
2	Sitting	200 m	2	200 m Representative	
3	Kneeling	200 m	2	200 m Representative	
4	Kneeling	300 m	2	300 m Representative	
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. No stores required. 3. Ammunition. Nil. 4. Targets. Nil. 5. Standards: <ol style="list-style-type: none"> a. acceptable - 4, and b. desirable - 6. 					

**RANGE PRACTICE 3
FIRING IN A NBC ENVIRONMENT
FIRE ARMS TRAINING SYSTEM (FATS)**

AIM

To confirm aiming and firing drills at various ranges and in varying fire positions under NBC conditions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling	300 m	2	300 m Representative	NBC State - TOPP Low. Weapon drills to be carried out as taught in Chap 2. Discuss and record results.
2	Sitting	300 m	2	As for Serial 1	NBC State - TOPP Medium. As for Serial 1.
3	Fire Trench	400 m	2	400 m Representative	NBC State - TOPP High. As for Serial 1.
4	Standing	200 m	2	200 m Representative	NBC State - TOPP High. As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. NBC equipment. 3. Ammunition. Nil. 4. Targets. Nil. 5. Miscellaneous. Have the soldiers at various states of readiness during the exercise. <ol style="list-style-type: none"> a. acceptable - 4, and b. desirable - 6. 					

**RANGE PRACTICE 4
100 M GALLERY RANGE
ZEROING 7.62 OR 6.5MM SUB-CALIBRE DEVICE**

AIM

To zero the sub-calibre device and confirm, the gun teams can aim, fire the gun, achieve an acceptable standard of grouping, and confirm cleaning after firing.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Sitting	100 m	6	Screen-tank silhouette with aiming mark.	Weapon drills to be done as taught in Chap 2. Discuss and record results. No 1 and No 2 change positions and repeat.
2	Kneeling	100 m	6	As for Serial 1	As for Serial 1.
3	Standing	100 m	6	As for Serial 1.	As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. <ol style="list-style-type: none"> a. Boresighting equipment, b. sub-calibre devices - 7.62 or 6.5mm, and c. sub-calibre tools. 3. Ammunition. 7.62 or 6.5mm tracer 18 rounds per firer. 4. Targets. One per gun. See Instructor's Notes on description. 5. Miscellaneous. When exercise complete change No 1 and No 2 around. Repeat exercise. 6. Zeroing. The zeroing procedure in Chap 4 must be followed. 7. Standards: <ol style="list-style-type: none"> a. Practice 1 - 200mm, b. Practice 2 - 225mm and c. Practice 3 - 375mm. 					

RANGE PRACTICE 5
STATIONARY TARGETS - 6.5MM OR 7.62MM SUB-CALIBRE DEVICE
(GALLERY ROUND)

AIM

To practice the gun team in engaging stationary targets at representative ranges of 100 to 300 m from varying fire positions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling and Sitting	25m	4	100 m Representative.	Weapon drills to be carried out as taught. Discuss and record results.
2	Kneeling	25m	4	200 m	As for Serial 1.
3	Standing Trench	25m	4	300 m Representative	As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. No stores required. <ol style="list-style-type: none"> a. Boresighting equipment, b. sub-calibre devices, and c. sub-calibre tools/rolls. 3. Ammunition. 6.5 or 7.62mm gallery rounds only 12 rounds per firer. 4. Targets. See Instructor's Notes on make-up of targets. 5. Standards: <ol style="list-style-type: none"> a. acceptable - 8 hits, and b. desirable - 10 hits. 					

RANGE PRACTICE 6
25 METRE RANGE
FIRING IN A NBC ENVIRONMENT - 6.5MM OR 7.62MM SUB-CALIBRE
DEVICE
(GALLERY ROUND)

AIM

To confirm aiming and firing drills at various ranges and in varying fire positions under NBC conditions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling	25m	2	300 m Representative.	TOPP Medium. Weapon drills to be carried out as taught.
2	Sitting	25m	2	As for Serial 1.	TOPP Medium. As for Serial 1.
3	Fire Trench	25m	2	400 m Representative	TOPP Medium. As for Serial 1.
4	Standing	25m	2	200 m Representative	TOPP High. As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. <ol style="list-style-type: none"> a. Boresighting equipment, b. sub-calibre devices, and c. sub-calibre tools/rolls. 3. Ammunition. 6.5mm or 7.62mm gallery x 8 per firer. 4. Targets. Tank representative. See Instructor's Notes. 5. Miscellaneous. Various states of readiness should be employed during this practice. This practice should be done outdoors. 6. Standards: <ol style="list-style-type: none"> a. acceptable - 4, and b. desirable - 6. 					

**RANGE PRACTICE 7
CONVENTIONAL GALLERY RANGE
ENGAGING STATIONARY TARGETS - 7.62 OR 6.5MM SUB-CALIBRE
DEVICE**

AIM

To practice the gun team in engaging stationary and moving targets at ranges of 100 to 500 m, from varying fire positions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Fire Trench or Standing	400 m	2	Stationary Tank	Weapon drills to be done out as taught in Chap 2. discuss and record results.
2	Fire Trench or Kneeling	500 m	2	Stationary Tank	As for Serial 1.
3	Standing	100 m	2	Moving Tank	As for Serial 1.
4	Sitting	200 m	2	Moving Tank	As for Serial 1.
5	Kneeling	300 m	2	Moving Tank	As for Serial 1.
6	Kneeling	400 m	2	Moving Tank	As for Serial 1.
7	Lying	400 m	2	Moving Tank	As for Serial 1.

NOTES

1. **Safety.** Normal
 2. **Additional Stores.**
 - a. Boresighting equipment,
 - b. sub-calibre devices - 7.62 or 6.5mm, and
 - c. sub-calibre tools/rolls.
 3. **Ammunition.** 6.5mm or 7.62mm tracer x 14 per firer.
 4. **Targets.** Tank representative, one per gun.
 5. **Miscellaneous.** The guns must be boresighted before commencing to fire.
- Standards:**
6.
 - a. acceptable - 8, and
 - b. desirable - 10.

**RANGE PRACTICE 8
CONVENTIONAL GALLERY RANGE
ENGAGING MOVING TARGETS - 7.62 OR 6.5MM SUB-CALIBRE
DEVICE**

AIM

To practice the gun team in engaging moving targets at various ranges from 100 to 300 m and from varying fire positions.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling	200 m	2	Tank Rep. on moving apparatus	Weapon drills to be carried out as taught. Discuss and record results.
2	Sitting	300 m	2	As for Serial 1	As for Serial 1.
3	Kneeling	300 m	2	As for Serial 1.	As for Serial 1.
4	Kneeling	400 m	2	As for Serial 1.	As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. <ol style="list-style-type: none"> a. boresighting equipment, b. sub-calibre devices, and c. sub-calibre tool/rolls. 3. Ammunition. 6.5mm or 7.62mm tracer x 8 rounds per firer. 4. Targets. See Instructor's Notes. 5. Miscellaneous. 6. Standards: <ol style="list-style-type: none"> a. acceptable - 4, and b. desirable - 6. 					

**RANGE PRACTICE 9
TP RAP FFV 552 FIRING**

AIM

To practice firing a full calibre round at stationary and moving targets as available.

SER	PRACTICE	RANGE SETTING	ROUNDS	TARGET	INSTRUCTIONS
1	Kneeling	300 m	1	As available on Range moving if available.	Weapon drills to be carried out as taught in Chap 2. Discuss and record results.
2	Standing	300 m	1	As for Serial 1	As for Serial 1.
NOTES					
<ol style="list-style-type: none"> 1. Safety. Normal 2. Additional Stores. <ol style="list-style-type: none"> a. boresighting equipment, and b. steel helmet. 3. Ammunition. <ol style="list-style-type: none"> a. TP RAP FFV 552 - 2 rounds per firer, b. HEAT RAP FFC 551 - 3 rounds for demonstration, and c. HEDP RAP FFV 502 - 3 rounds for demonstration. 4. Targets. Hard targets as available on the range. SAAB Targets for moving. One bunker for the HEDP RAP FFV 502. TP only. 5. Miscellaneous. The guns must be boresighted prior to firing. 					

THIS PAGE IS INTENTIONALLY LEFT BLANK