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INFANTRY TRAINING

VOLUME I

INFANTRY PLATOON WEAPONS PAMPHLET No 9, PART 1 (Aust)

ANTI-TANK GRENADE No 94 (ENERGA)

1964

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INFANTRY TRAINING

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PAMPHLET No 9, PART 1 (Aust)

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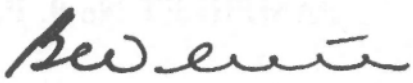
MILITARY BOARD

Army Headquarters,
Canberra
1/3/65

By Command of the Military Board.



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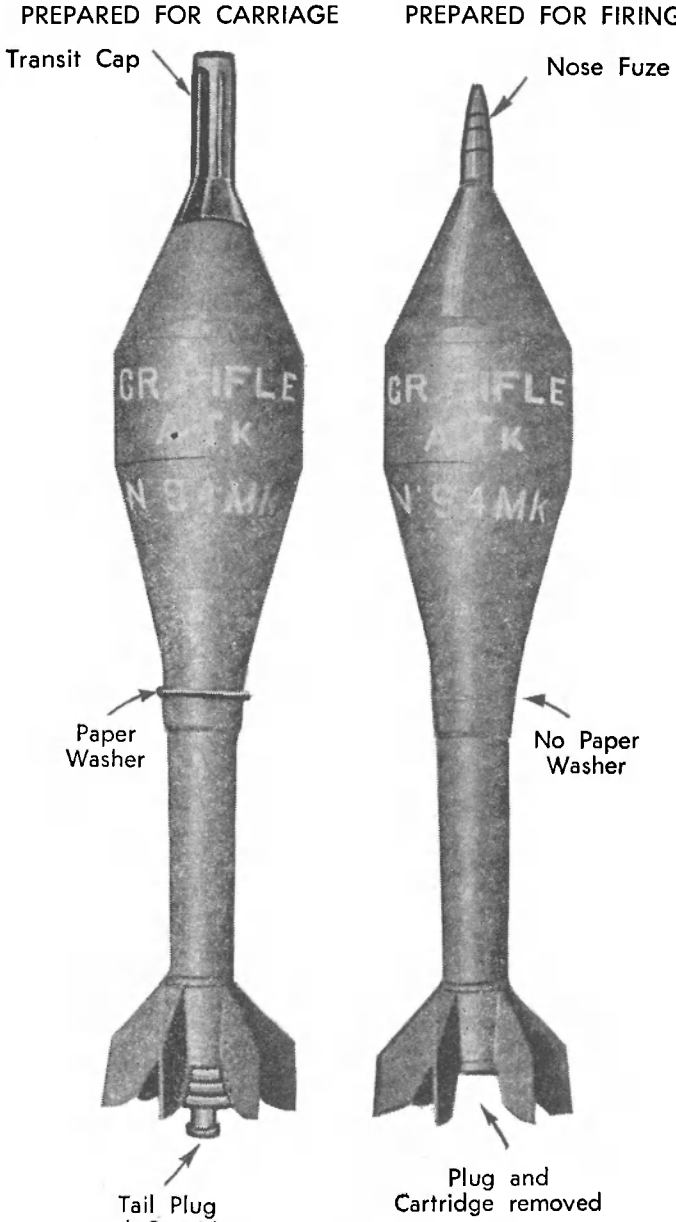
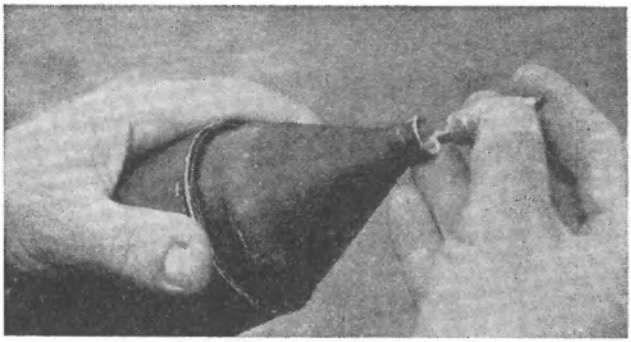


PLATE 1 — GRENADE, ANTI-TANK, No 94 (ENERGA)



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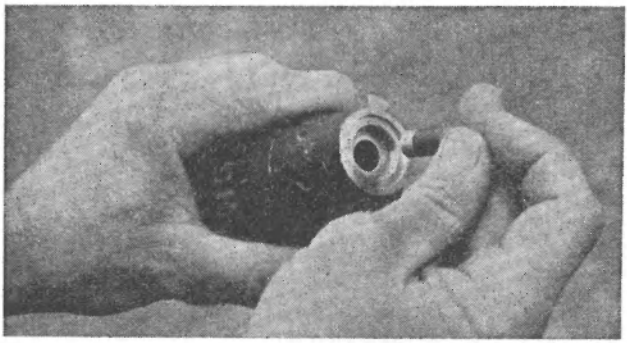

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INFANTRY TRAINING VOLUME 1

INFANTRY PLATOON WEAPONS
PAMPHLET No 9, PART 1

ANTI-TANK GRENADE No 94 (ENERGA)

CHAPTER 1
INFORMATION FOR GENERAL TRAINING

SECTION 1 — INTRODUCTION

1. The grenade has been introduced to provide the infantry section with a powerful and effective anti-tank weapon. It is discharged from a launcher attached to the L1A1 rifle, and fired by means of special cartridge.

General Characteristics

2. The weapon's chief characteristics are its great power and lightness. It is highly efficient against armour, concrete, etc, and can be used against *"thin-skinned"* targets.

3. *Performance.* The grenade will penetrate the sides and rear of the heaviest known tank. The effect of the explosion is to burn a small hole through the armour. Through this hole a high velocity jet of burning gases and molten metal from the grenade is projected into the tank. This, besides causing casualties to the crew, may set fire to the fuel and ammunition.

4. *Accuracy.* The grenade is a first-class and efficient weapon. For an unrotated projectile its accuracy is of high standard. The shock of discharge on firing is not unduly great and the firer, or any observer, can easily follow the flight of the grenade to the target.

5. *Effective Range.* Ideal ranges are from 25 to 50 metres.

6. *Carriage.* The launcher, when not on the rifle, is carried in the equipment. Grenades are carried on the sides of the ammunition pouches in the loops provided.

Scale of Issue

7. The weapon is issued to Infantry units on the following scale of two launchers and four grenades per assault section.

Nomenclature

8. The following nomenclature has been allotted to the launcher, and grenade and its components:

a. Launcher rifle grenade, L1A2.
b. Grenade, anti-tank, No 94 (Energa).
c. Fuze percussion DA, No 9 Mark 1 and Mark 2 for No 94 anti-tank grenade (Energa).
d. Detonator No 107 for No 94 anti-tank grenade (Energa).
e. Cartridge, SA rifle grenade, 7.62 mm.

SECTION 2 — TACTICAL HANDLING

9. The primary role of the section anti-tank weapon is the destruction of tanks. In its secondary role it can be used against thin-skinned vehicles and other targets, such as personnel, houses and concrete emplacements.

10. When the weapon is sited for use in its primary role, the following points must be considered:—

a. It needs a field of fire of about 100 metres.
b. Surprise and concealment are most important.
c. Any obstruction in its path is likely to detonate the grenade before it reaches its target (See Lesson 1, paragraph 42).
d. It must cover likely tank approaches, such as gaps in minefields.
e. It is best to engage the side or rear of a tank.
f. It is normal to fire it from a fire trench.
g. Few grenades are carried, and fire must be held until a kill is certain with each grenade.
h. Some defilade from the front is desirable.

11. The uses of the weapon in its secondary role are manifold. Some suggestions are:

a. House clearing and street fighting.
b. Ambushes
c. Concrete emplacements and fortified houses.
d. Assault boats crossing rivers, and beach landings.
e. Enemy concealed in trees, hedges, etc.
f. Soft-skinned vehicles.

12. When it is decided to use the anti-tank weapon in its secondary role it must never be forgotten that the weapon is primarily anti-tank, and that sufficient grenades must be kept for this purpose.

13. In addition to his anti-tank duties, the No 94 grenade rifleman is a member of the rifle section; if the tank threat is remote, his secton commander will site him as a rifleman rather than a tank killer.

SECTION 3 — TRAINING AND INSTRUCTIONAL LESSONS

The Syllabus

14. The aim of the syllabus should be:

"To train all ranks to hit a tank either on the move or stationary at all ranges up to 75 metres".

15. Subjects necessary to achieve this aim are:

a. The instructional lessons laid down in this section.
b. Practice in the accurate judging of distance to tanks up to 150 metres, and in estimation of speed.
c. Advanced handling exercises.
d. Firing practice with both practice and live grenades from all positions in the open and from cover, at stationary and moving targets, as often as supplies of grenades will allow.

16. All ranks of a rifle company should be trained in the use of the section anti-tank weapon.

LESSON 1 — DESCRIPTION, FUZING, CARE AND CLEANING

INSTRUCTOR'S NOTES

Aim

17. To teach the description of the grenade and launcher; how to fit and remove the launcher; fuzing grenades; care and cleaning of the launcher and safety precautions.

Stores

18. Rifles, drill cartridges, one launcher, drill grenade and drill cartridge for each man and instructor, cleaning rags.

19. Grenade cartridges are blackened on the lower half of the case and crimped on the top. Identification marks, stamped on the base, are; **"7.62, L1A2."** Grenade cartridges are packed in cartons of 40.

20. Grenades are packed in boxes of 12. Each grenade is in a cardboard cylinder. Grenades are packed with a cartridge in the tail plug. Fuzes and detonators are packed in a red tin labelled with the nomenclature of its contents. Fuzes may be packed in a small red tin labelled **"FUZE"**, or each fuze may be packed in a cylinder and clipped to the tail of each grenade. In this case,

detonators will be fitted in the grenade and the paper washer removed. The latest type of packing is a plastic container with two lever caps. A container holding a fuze and a detonator is taped to the tail of each grenade. Practice grenades are packed 50 to a box (with spare tail fins and circlips). Cartridges for practice grenades are issued separately.

21. Drill grenades are painted white, and have the word **"DRILL"** stencilled on the body. Except for the colour they look exactly like live grenades; but they have no explosive in them. Drill grenades must be stripped, assembled and handled carefully; they must NOT be fired. After use the threads on the top and bottom of the body and on the fuze and tail unit must be cleaned with a suitable spirit. (See Lesson 3, Paragraph 82); unless this is done the grenade will soon become unserviceable.

CONDUCT OF THE LESSON

Preliminaries

22. Normal safety precautions with rifles and drill cartridges. Inspect practice grenades and drill grenade cartridges. Issue stores.

Approach

23. The grenade has been produced to provide the section with a powerful and effective anti-tank weapon.

Introduction to the Weapon

24. The section anti-tank weapon consists of a launcher fitted to the ordinary service rifle which fires a light and powerful grenade by means of a grenade cartridge. Although the grenade will penetrate the sides and rear of the heaviest known tank up to its extreme range, the ideal fighting range is between 25 and 50 metres. Two men in each infantry section will be armed with launchers, and will normally each carry two grenades in a container. The grenade weighs 21 oz.

Description of Launcher and Sights

25. The launcher fits onto the rifle and supports the grenade. At one end it has a catch to secure it to the rifle. At the lower end of the launcher is a spring clip which fits into the tail tube of the grenade and prevents it from slipping off.

26. The sight is attached to the launcher and can be raised and lowered as required. It has three semi-circular rings to give ranges of 50, 75 and 100 metres.

Fitting the Launcher to the Rifle

27. To prepare the rifle for firing grenades:

a. Unload the rifle. Leave the magazine off.
b. Turn the gas plug so that the recess on the top face is underneath. This cuts off the supply of gas to the cylinder.
c. Slide the launcher over the flash hider so that the catch engages with the bayonet standard.
d. Raise the sight.

To remove the launcher, lower the sight, press in the catch and slide it off the flash hider. Reposition the gas plug for firing ball ammunition.

28. *Explain:* Although it is safe to fire ball ammunition through the launcher when the grenade is removed, this will be done in an emergency and at close ranges only because of the enlarged grouping capacity of the rifle. **Stress that the firer will be killed should he be foolish enough to fire ball when the grenade is on the launcher.**

29. Practise and question the squad.

Description of Grenade

30. Teach that the grenade is designed on the shaped or hollow charge principle. By this means the force of the explosion is concentrated on one small point of the tank.

31. The grenade consists of a thin metal body which holds the charge and detonator, a tail tube, and fins.

32. There is a percussion fuze in the nose which is protected by a hard rubber cap. This cap is removed before firing. Should the grenade be fired in an emergency or by accident with the cap on, the grenade will still explode against armour, if the angle at which it strikes is not too small.

33. At the rear of the body there is the main detonator assembly.

34. Each grenade is provided with a grenade cartridge which is fitted into a cork or plastic plug in the base of the tail tube.

35. HEAT and training grenades are painted different colours for ease of recognition as follows:

HEAT: Deep bronze green with a red ring and stencilled **"GREN No 94 Mk 2".**

PRACTICE: Turquoise blue. (Earlier models are painted black).

DRILL: White with the word **"DRILL"** stencilled in black.

Grenade cartridges have the lower half of the case blackened and have **"7.62 L1A2"** stamped on the base. The mouth is crimped. Only special ballistite cartridges issued for use with No 94 (Energa) grenades will be used. Use of ballistite cartridges issued for firing No 36 grenades from dischargers will cause serious accidents and is forbidden.

36. Question the squad.

Fuzing Grenades

37. Explain and demonstrate. If grenades are issued unfuzed, fuzing consists of fitting the nose fuze and detonator. To fuze them when required, proceed as follows:

a. *Fitting the Nose Fuze:*

(1) Remove the protective cap, which is a push on fit, from the nose of the grenade.

(2) Unscrew the transit plug from the nose. Keep it.

(3) Hold the grenade to the light and look inside to see if the shroud is in position. If it is, the nose of the shroud will reflect the light. If it is not, nothing will be visible. If nothing can be seen, or if, when the grenade is moved gently from side to side, a rattle is heard in the body, the grenade will NOT be fuzed and will be destroyed as a blind.

(4) Screw on the nose fuze by turning the milled portion of the body of the fuze.

(5) Replace the protective cap.

b. *Fitting the main detonator* (if not already fitted):

(1) Keeping the nose of the grenade pointed upwards, unscrew the tail tube, taking care that it is unscrewed at the point where the paper washer is fitted. Remove and keep the paper washer. If the tail is unscrewed in the correct place a rubber or plastic pad is exposed. DO NOT REMOVE IT. The job of this rubber/plastic pad is to hold the detonator in its housing. (This is emphasized because it is possible on occasions to unscrew the tail tube at a point about half an inch below the paper washer).

(2) Keeping the nose of the grenade pointed DOWNWARDS, put a detonator, with its **OPEN** end towards the nose of the grenade, into the detonator housing at the rear end of the body. Great care must be taken that the detonator is inserted correctly, or the grenade will not explode on impact.

(3) Screw on the tail tube, keeping the nose of the grenade pointing downwards. Do not replace the paper washer as the absence of a washer indicates that the detonator has been fitted.

(4) When correctly fitted in the Mark 2 grenade, the detonator should project about ¼ inch outside the detonator sleeve. If it projects more than this amount it is dangerous to screw the tail unit on top of it. When this occurs the detonator is to be returned to Ordnance for inspection.

Fuzes and detonators are sensitive. They should be handled with great care in order to avoid risk of accidents. In particular, care should be taken not to apply any pressure to the striker in the nose of the fuze.

(c) *Fitting of the Cartridge:*

(1) If the cork or plastic holder for the grenade cartridge is not already in the end of the tail tube, put it there.

(2) Place the grenade cartridge in the holder.

Unfuze in reverse order, taking care to replace the transit plug, protective cap, paper washer and tail plug.

38. Practise the squad in fuzing and unfuzing grenades.

Care and Cleaning

39. Teach that the launcher is to be cared for and cleaned like the rifle. Care must be taken that grenades, whether packed or unpacked, are handled with great care. They must not be dropped or roughly handled. A fuzed grenade found to have a damaged tail, or a grenade taken from a badly damaged container, is not to be used and is to be destroyed.

40. Question the squad.

Function of the Grenade

41. *Explain.* The grenade is designed to explode on, and penetrate armour plate and other very hard surfaces, only if the nose fuze obtains an efficient strike; the most efficient strike is when the nose fuze hits a surface at right angles, and this is what the firer should always try to achieve.

42. *The grenade has two safety devices.* One prevents the arming of the fuze until the grenade has been fired, thus avoiding the risk of explosion if the fuzed grenade is dropped while being handled.

The other screens the main detonator until the grenade has travelled five or six feet after firing. After the grenade has travelled this distance the main detonator is exposed. The fuze having been armed on firing, is sensitive and may explode on slight impact. Care must therefore be taken when firing through trees, bushes, etc, when our own troops are in forward positions.

43. *Grenade mechanism.* When the grenade is fired, and the fuze armed, the protective cap (shroud), which covers the main detonator in the body of the grenade, is released and ejected from its housing, unscreening the detonator. On impact the detonator in the fuze moves forward onto the striker, and sends a flash to the main detonator, thus exploding the main charge. The interior shape of the grenade forces the gases of the explosion into a narrow jet of very high temperature which melts a hole through the armour.

44. Question the squad.

Packing and Carriage

45. Grenades are service packed in a wooden, tin lined, airtight sealed box containing twelve grenades and cartridges. Twelve fuzes and detonators are also packed in the box in two tins each containing six fuzes and detonators, or they may be packed in plastic cylinders, each containing one fuze and one detonator, and attached to the tail tubes of the grenades by adhesive tape. The box is opened by unfastening the quick release buckles, opening the lid and then pulling the metal handle found on top of the tin liner. Boxes are coloured natural with yellow markings.

46. Question the squad.

Conclusion

47. Questions to and from the squad.

48. Test on vital points.

49. Sum up.

LESSON 2 — LOADING, UNLOADING, AND AIMING

INSTRUCTOR'S NOTES

Aim

50. To teach loading the grenade, unloading without firing, and aiming.

Stores

51. Rifles, drill cartridges, drill grenade cartridges, one launcher and practice grenade for each man and instructor, suitable tank targets, an aiming rest and diagrams of correct aims.

Instructional Knowledge

52. The use of the sand bag rest, when demonstrating and checking aims, is as for aiming practice with the rifle. The position of the head will vary according to the angle on the rifle.

53. During aiming instruction, it is important that the man views the instructor's aim and that the instructor checks the man's aim from the same position.

54. Tank targets must be of the correct representative size. A simple formula for the correct representative size of targets at reduced range is:—

$$\frac{\text{Actual size of target (in inches) x Range (in metres) to the representative target.}}{\text{Range (in metres) that is to be represented.}}$$

Example. For a tank 20 feet long, ten feet wide and ten feet high at 75 metres range, the formula to determine the size of a representative target which is required for practice at a distance of ten metres is as follows:

$$\frac{20 \times 12 \times 10}{75}$$ for length (side view)

$$\frac{10 \times 12 \times 10}{75}$$ for height and width (front view)

55. Words of command when practising loading and unloading will be "GRENADE — LOAD" and "WITHOUT FIRING — UNLOAD".

CONDUCT OF THE LESSON

Preliminaries

56. Normal safety precautions with rifles and drill cartridges are carried out. Inspect grenades and drill grenade cartridges.

Revision

57. Practise the squad in fitting and removing the launcher and sight. Leave the launchers on at the end of the practice and load with drill cartridges.

Approach

58. Quick loading, accurate aiming and judging distance are of the greatest importance. They must be practised until they become instinctive.

Loading and Unloading

59. Explain and demonstrate with the squad imitating the instructor. The squad should be in any comfortable position.

60. To load with a grenade cartridge and an anti-tank grenade:
   a. Unload ball, leave the magazine off. (Instructor's note: *In due course grenade cartridges may be issued which are the same shape as ball cartridges. When these cartridges are available, they should be placed in an empty magazine or hand fed into the empty magazine through the ejection opening*).
   b. Remove the tail plug, protective cap and spring clip from a fuzed grenade. Retain them.
   c. Slide the tail tube of the grenade over the launcher; make sure the grenade goes fully home. The grenade will then be eased slightly forwards and backwards to ensure that it is free on the launcher.
   d. Pull back the cocking handle, push up the release catch, remove the grenade cartridge from the tail plug; hand feed the cartridge into the chamber through the ejection opening. (It may be necessary to depress the barrel of the rifle slightly to prevent the cartridge from sliding out of the chamber).
   e. Pull back the cocking handle and let it go.
   f. Check that the safety catch is at "S".

61. To unload without firing:
   a. Ensure that the safety catch is at "S".
   b. Unload the grenade cartridge by cocking the rifle. If there are grenade cartridges in the magazine, unload by removing the magazine first and then cock the rifle. Leave the magazine off until the grenade is removed.
   c. Take off the grenade.
   d. Put the safety catch to "R", press the trigger then load with ball.
   e. Replace the tail plug, spring clip, grenade cartridge and protective cap.

62. When there is no further threat of tanks or when ordered:
   a. Re-set the gas plug for ball firing.
   b. Remove the launcher.

63. Each time the rifle is fired it has to be cocked to load a fresh round. A grenade can be fired with a grenade cartridge, with the gas plug set for firing ball, but only do this in an emergency at short range because:

a. The grenade will fall short at longer ranges.

b. The rifle, owing to the increased recoil, is likely to be damaged.

64. Explain that in action, men armed with the section anti-tank weapon may be ordered to have the launcher permanently fitted to their rifles, especially in defence. In the event of an impending tank attack where a high rate of fire may be required, the firer can replace his magazine emptied of ball and refilled with the grenade cartridges from his grenades. Another man can also assist him in loading grenades. Due to its large grouping capacity, ball ammunition is only to be fired through the launcher in an emergency and at close range. When ball ammunition is fired under these circumstances, the sight of the launcher must be lowered. Whatever action is taken, the magazine must not contain ball and grenade cartridges at the same time.

65. Practise the squad.

Aiming

66. *Explain.* The normal point of aim is the centre of the target, but should the range be very close, a vulnerable part of the target should be selected. The parts of a tank which are most vulnerable to the grenade are:

a. The sides and rear of the engine compartment.

b. The sides under the turret where ammunition is stored.

67. The least vulnerable part is the sloping plate (the glacis plate) on the front of the tank. Accurate judging of distance is vital.

68. Explain and using diagrams, demonstrate how to aim.

Stationary Targets

69. The sequence of action is:

a. Judge the range to the target.

b. Select the sight ring which corresponds to the estimated range, and align the top surface of this ring, the centre of the upper edge of the grenade with the centre, or a selected point, of the target.

70. The launcher has no 25 metre ring. To aim at targets below 50 metres, use the 50 metre ring and aim down according to the range.

71. Squad view, and practise.

Moving Targets

72. *Directly approaching and withdrawing targets.* In both cases aim at the centre of the target.

73. *Crossing targets.* It is necessary to aim off at targets crossing the front. The amount of *"aim off"* will depend on the range and speed. The best method is to aim off in target lengths for then the angle at which the target is moving, need not be considered, because the narrower the angle of movement across the front, the smaller is the apparent length of the tank, and the less lateral speed it attains.

74. The following lead table may be used as a guide. (Leads to be taken from the centre of the tank).

Range Metres	Speed MPH	Lead	Speed MPH	Lead
25	10	Front edge of leading track	20	One tank's length
50	10	¾ tank's length	20	1½ tank's length
75	10	One tank's length	20	Two tank's length
100	10	1½ tank's length	20	Three tank's length

75. Squad view and practise at actual tank or proportionate silhouette target.

Conclusion

76. Questions to and from the squad.

77. Test on vital points.

78. Sum up.

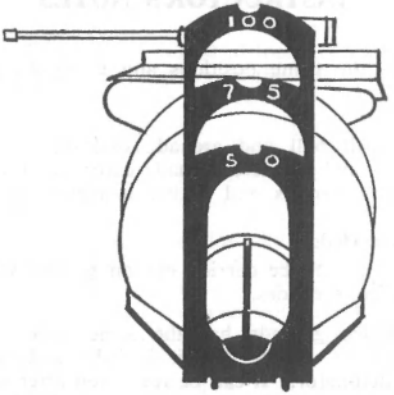

Figure 1 — Correct Aim 75 metres — Stationary Target

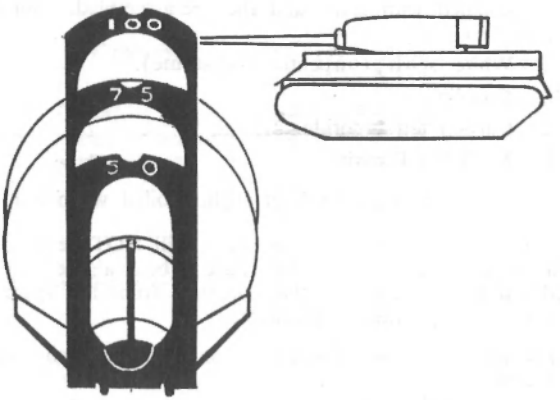

Figure 2 — Correct Aim — Moving Target 75 metres — 10 mph

LESSON 3 — **FIRING**

INSTRUCTOR'S NOTES

Aim

79. To teach the firing positions and firing the grenade.

Stores

80. Rifles, drill ball and grenade cartridges, a launcher, two practice grenades and two live grenade cartridges for each man and instructor, suitable targets and rocket launcher face masks.

Instructional Knowledge

81. This lesson is to be carried out on ground which is suitable for firing practice grenades.

82. The practice grenade has the same general characteristics as the HE grenade, except that it is inert and cannot be fitted with a fuze or detonator. It can be recovered after use, especially if fired to fall on grass, sand or soft earth, and used again, provided it is cleaned and inspected for bulges and dents in the tail tube, and damage to the fins. When grenades are recovered, they should be thoroughly cleaned, the tail unit unscrewed by the armourer and both threads — on the inside of the body and the outside of the tail — thoroughly cleaned with spirit and then re-assembled. Spirits that are suitable are:

a. White spirit (turpentine substitute).

b. Gasoline.

c. Carbon tetrachloride.

d. Methylated spirit.

The tail tubes must be kept slightly oiled when not in use.

83. A grenade with a bulged tail tube will NOT be used again, as the tube may burst on firing. Dents are to be straightened out, and damaged tail fins replaced by the armourer from the spare set of fins issued with the practice grenades.

84. The scale of issue of spares is one tail and two circlips to each grenade.

85. The method of changing the tails of practice grenades is:

a. Open the circlip in front of the tail fins and slide it forward along the tail tube. Push the tail fins as far forward as possible.

b. Remove the second circlip which will now be exposed in the rear of the tail tube.

c. Slide off and remove the old tail fins and replace with a new set.

d. Replace the circlip in rear of the tail fins and make certain it is engaged in its grove on the tail tube. Draw the fins to the rear to cover this circlip.

e. Replace the circlip in front of the tail fins and so lock the tail into position. Draw the front circlip back until it re-engages the smaller part of the tail tube (in front of the tail fins), thus locking the fins into position.

86. Targets for practice grenades should be six foot double hessian screens, securely wound round (not nailed to) stout poles. The outline of a tank may be marked on them. A moving target apparatus is shown in Infantry Training, Volume III, Pamphlet No 33, Range Construction and Regulations, (All Arms) current edition.

87. During the practice stage, members of the squad should first practise in their own time and then by word of command, eg, "TANK — SEVENTY FIVE METRES — FIRE". It must be explained that on service, men will normally have to fire without orders.

88. Live grenade cartridges must be kept in a separate container, away from the squad, until required.

CONDUCT OF THE LESSON

Preliminaries

89. Normal safety precautions with rifles and drill cartridges are carried out. Inspect practice grenades and drill grenade cartridges. Order the squad to fit the launcher, loosen slings and load with drill cartridges.

Revision

90. Aiming, grenade loading and unloading. Leave rifles *"Grenade Loaded"*.

Approach

91. As the grenade is a short range weapon (the ideal range being from 25 to 50 metres), concealment of the firer before opening fire is of the utmost importance. The lesson will deal with various positions for firing, but on service the firer must decide what position to use according to the circumstances. THE GRENADE MUST NEVER BE FIRED FROM THE SHOULDER OR WITH THE BUTT PLATE IN CONTACT WITH ANY PART OF THE BODY.

The Standing Position

92. Explain that the standing position is taught in the open for ease of instruction in the basic principles of holding the rifle. It may have to be used in an emergency on service.

93. Explain and demonstrate with squad imitating the instructor:—

a. Lower the backsight and place the feet and body and rifle in the "on guard" position. Tuck the butt well up under the armpit.

b. Hold the head up and well back in such a position that the face is clear of the rifle and the sights can be aligned correctly.

c. Put the safety catch to "R" and hold the pistol grip firmly as for normal firing.

d. To fire at targets above or below, keep the butt under the armpit and move the upper part of the body backwards or forwards according to the position of the target.

94. Practise the squad.

95. *Firing at stationary targets:*

a. Estimate the range to the target.

b. By moving the rifle, aim as taught.

c. When the aim is correct, operate the trigger, keeping the rifle still.

d. If a misfire occurs, load immediately with another grenade cartridge.

96. *Firing at moving targets:*

a. To fire at approaching or withdrawing targets, aim at the centre or a selected point of the target. If the target is approaching or withdrawing on rising or falling ground retain the aim by moving the rifle, and fire without checking the movement.

b. To fire at crossing targets, align the sights on the target, then by pivoting the body at the hips, swing the rifle in the direction of the target's movement, and fire when the rifle is passing the required lead. Continue to swing until the grenade has left the launcher.

97. Explain that when firing live or practice grenades, the next action would be to load with another grenade and grenade cartridge or with ball, but for instructional purposes practice in firing will continue until "WITHOUT FIRING — UNLOAD" is ordered.

98. Practise the squad in holding and firing.

Kneeling and Sitting Position

99. *Explain.* The kneeling and sitting positions can be used in the open, in a shallow trench, or behind a bank.

100. Explain and demonstrate with the squad imitating the instructor:

a. For kneeling or sitting, adopt the normal firing position. When kneeling, the body need not be resting on the heel, nor the left elbow on the knee.

b. Holding and firing are the same as the standing position.

101. Practice the squad in kneeling and sitting positions.

102. The rifle can be used to fire anti-tank grenades from the prone position as follows:

a. Adopt the normal prone position but place the butt underneath the armpit. Make sure that no part of the butt plate is touching the body.

b. Hold, aim and fire as in other positions. The actual position adopted will depend on the type of ground or cover being fired from as on certain slopes the pistol grip may prevent the firer from depressing the muzzle sufficiently when the target is at close range or is below him. Whatever position is adopted the firer must be careful that his face is well clear of the rifle and that the butt plate is not touching his body.

103. Practise the squad.

Firing from a Fire Trench

104. *Explain.* In defence, the normal position from which the grenade is fired will be from a fire trench. As concealment before the grenade is fired is vital, the firer should remain concealed, then, as the target comes within range, quickly rise, take aim, and fire before the target can shoot back. If the first grenade misses, then, provided the position has been properly prepared, a fresh grenade can be loaded and fired at the rear of the target, after it has passed.

105. Steadier holding, and therefore more accurate shooting, can be obtained if the butt is rested against a firm, but soft stop such as the rear bank of a fire trench. Whatever type of stop is used it should not be hard and unyielding, such as a wall or tree or the rifle will be damaged.

106. Demonstrate firing from a fire trench or bank with and without a stop for the butt.

107. Practise the squad.

Team Work

108. Explain that should it be necessary to fire grenades quickly, two men can work together, one loading grenade cartridges, aiming and firing, while the other loads the grenades onto the launcher. The grenade cartridge must be taken from the grenade and loaded into the firer's rifle.

109. Explain and demonstrate (with one of the squad acting as the firer) in any position. (In order to reproduce actual conditions, a member of the squad is to be told to remove the drill grenade from the launcher when the firer operates the trigger):

a. The loader gets into a position from which he can load the grenades. On service this should be under cover.
b. As soon as the grenade is fired, the assistant will load another grenade, and, when his hand is well clear of the rifle, call "Loaded". The firer is then to load with a grenade cartridge and fire.

110. Practise the squad in pairs.

Firing Practice Grenades

111. Each member of the squad will fire at least two practice grenades, the first standing in a fire trench with a stop for the butt, the second standing in the open.

112. **Procedure:**

a. Target. A six-foot hessian screen at 75 metres.
b. Instructor demonstrates by firing two practice grenades, the first one from a fire trench, the second in the open.
c. The squad will be organized in details of two.
d. Instructor orders "1st DETAIL — GRENADE — LOAD" "No 1 — PREPARE TO FIRE" "FIRE". "No 2, etc —" "DETAILS CHANGE" etc.
e. The instructor must check:
   (1) That the gas plug is set for firing grenades.
   (2) Each man carefully to see that he is holding the rifle firmly with both hands, particularly with the right hand on the pistol grip and that the firer's face is always well clear of the rifle.
f. Actions and accuracy to be criticized after each detail has fired.
g. Details waiting to fire must be at least five metres behind the firing point.

113. Practical cleaning after firing, including cleaning and inspection of recovered practice grenades.

Conclusion

114. Questions to and from the squad.

115. Sum up.

LESSON 4 — HANDLING

Aim

116. To teach the employment of the section anti-tank weapon within the section.

Stores

117. Sections equipped as for section handling, two men in each section being armed with a launcher and two practice No 94 grenades.

Instructional Knowledge

118. This lesson consists of exercises designed to train the section in the use of the section anti-tank weapon against tanks.

119. After the initial opening talk, exercises should take the form of small section schemes, in which the section is called upon to take up defensive positions against tanks.

120. The ground should be carefully chosen to bring out the required lessons, and should be as varied as the circumstances will allow.

121. Men are to be taught that grenades are to be carried on the outside of the ammunition pouches with the nose of the grenade pointing downwards and the tail assembly secured by the straps provided on the pouches.

Preliminaries

122. Inspect all weapons and equipment.

Approach

123. The lessons and firing taught so far have been elementary; now the men must be exercised in using the weapon within the section and from varying types of ground and cover.

Organization and Handling

124. *Explain.* Two men of each section are armed with launchers and normally carry two No 94 grenades each. There are two grenades for each section in company reserve. In a defensive

position where attacks by tanks are likely, it is probable that the reserve of grenades will be with the section in addition to any others that may be available.

125. It is the platoon commander's responsibility to co-ordinate the fire of his launchers. The section commander, having been allotted his area and tasks, will site his own weapons, but each man in the section must know how to do this.

126. The primary role of the weapon is anti-tank, but it can be used against other targets, such as personnel, houses and concrete emplacements. Nevertheless, owing to the small number carried, grenades are not to be wasted against such targets unless the likely results justify their use and a tank attack is not imminent.

Siting for Anti-Tank Role

127. Explain and show on the ground the points to be considered when the weapon is sited against tanks:

a. A field of fire up to 100 metres only is required.

b. The position must be carefully concealed, because, owing to the short effective range and the small number of grenades carried, it is important to get the tank well within range in order to make certain of a *"kill"* with the first shot.

c. The weapon must be sited to cover likely tank approaches such as gaps in minefields.

d. When possible the position should be defiladed from the front, thus giving a better chance of engaging enemy tanks from the flanks and rear.

e. The normal firing position will be from a fire trench. The normal two-man fire trench can contain one man armed with the anti-tank weapon, as well as another man who can act as loader if required and be ready to take over the weapon.

128. Question the squad.

Method of Conducting Exercises

129. Exercises will be conducted similar to those laid down for section handling. The position can be prepared, eg, a series of fire trenches, or a position making use of natural cover.

130. The instructor points out the arc of fire, probable tank approaches, the section position to be occupied, and the position of the other sections of the platoon. He then gives the section about five minutes to decide where, within the section position, the anti-tank weapons should be sited.

131. Each individual of the section then gives his plan, and the instructor selects a solution which he thinks will bring out the lessons he wants to teach.

132. The section then takes up positions.

133. The instructor then gathers the section around the anti-tank weapons and brings out by discussion whether they are sited so that they can properly carry out their allotted tasks.

Points for Discussion

134. a. All points of elementary weapon training.

b. The anti-tank weapon:

(1) Field of fire.

(2) Can the weapon cover the tank approach?

(3) Concealment.

(4) The actual position in the fire trench or natural cover.

(5) Does the position chosen give the best chance of engaging the tank in the sides and rear?

(6) Are there any obstructions to the line of flight of the grenade?

(7) Where and when will the man open fire, and will *"misses"* endanger the other sections of the platoon?

135. Both anti-tank weapon positions should be viewed from the front at ranges up to 100 metres.

136. Further practice should take place on different ground.

Conclusion

137. Questions to and from the squad.

138. Sum up lessons learnt.

CHAPTER 2

INFORMATION FOR INSTRUCTORS

SECTION 4 — INTRODUCTION

General

1. The following information has been included to assist instructors to understand fully the internal mechanisms of the No 94 Grenade.

2. While this detail is not intended as essential information to be given to recruit soldiers, the use of diagrams, designed from the various figures in this chapter, would assist in their instruction.

SECTION 5 — DETAILED DESCRIPTION

Body (Figure 3)

3. This is of aluminium alloy and made in two halves. The cone shaped front half is internally threaded at the nose to take the fuze and the cup shaped rear half is internally threaded at the rear to take the tail adaptor. Inside the rear half is a copper cone narrowing at the rear to take the safety shroud, behind which is the detonator housing.

4. The shaped charge is made up of two elements. The main element of RDX/TNT 80/20, or PETN/WAX 90/10 surrounds the copper cone and the smaller or intermediary element of RDX/TNT 97/3 surrounds the detonator housing at the rear.

Detonator (Figure 3)

5. The Mk 2 detonator consists of a copper tube containing two filling elements. It is 1.4 inches long and is sealed with a brass distance piece which extends inside the body of the detonator. The join between the distance piece and detonator is clearly distinguishable and is a ready means of identification. The latest type of Mk 2 detonator has a black spot painted on its base (in addition to annular swelling).

6. The Mk 1 detonator is similar in general appearance to the Mk 2 but is sealed by a steel washer and there is no visible join. It is 1.8 inches long.

Safety Shroud (Figure 4)

7. The safety shroud is situated in front of the detonator in the body of the grenade and serves to screen the detonator from the fuze until the grenade has been fired and has left the launcher.

8. The shroud is contained in a housing and is supported by a steel shroud spring. At the rear of the shroud are two steel retaining pins which engage in specially shaped channels in the sides of an inner sleeve, the curved portion of which forms a safety channel, and a zig-zag portion which forms a delay channel.

Tail Unit (Figure 3)

9. This consists of the tail and an adaptor for fixing it to the body of the grenade.

Tail Adaptor (Figure 3)

10. External threads on a small diameter take the grenade body, and internal threads in the cup shaped rear portion receive the tail. A recess in the adaptor takes a rubber pad to form a support for the detonator when it is assembled. The pad is cemented in, backed by a steel disc and secured by a sealing ring. On the latest type of grenade the rubber sealing ring and rubber pad have been replaced by a one-piece plastic component.

Tail (Figure 3)

11. This is a metal tube, the front end of which is externally threaded to enter the adaptor. Around the rear, six stabilizing fins are fastened securely.

Fuze Mk 2 (Figure 5)

12. The body is threaded externally to enter the grenade, and a ring is milled on the outside as a finger grip when assembling the grenade. Internal threads at the front take a cap.

13. The cone shaped cap has two internal diameters; the rear and larger diameter accommodates the front portion of a sliding arming sleeve, and the forward and smaller diameter a moveable striker assembly. The arming sleeve is flanged at the rear to fit the inside of the fuze body and has four lugs to the rear for forcing into a groove round the outside of a striker guide.

14. The front of the striker guide is a sliding fit within the arming sleeve and a flange at the rear is a similar fit within the fuze body. The front surface is chamfered internally to partially house eight steel arming balls in the safe position. Immediately behind the groove for the arming sleeve lugs, the diameter is slightly increased to take an arming spring and an internal platform has a central hole for the rear of the striker to pass through. Behind the platform, the striker guide is threaded internally to take a pellet holder containing an inertia pellet. The inertia pellet is slotted longitudinally

on the outside to form an air release and contains a detonator consisting of a copper tube filled with mercury fulminate.

15. The arming spring surrounds the rear of the striker guide, bearing on its flange at the rear and the arming sleeve in front.

16. The striker is flanged externally to fit inside the front of the cap and embedded in the front is a steel head, the tip of which is made of tungsten carbide and is serrated. The rear of the striker is reduced in diameter with a flange to partially house the balls in the safe position and has a pointed end to fire the detonator.

17. A striker spring surrounds the rear of the striker between the rear flange of the striker and the platform of the striker guides.

18. The latest type of fuze, the Mark 2/L9A3 differs from the L9A2 in that it is fitted with a spring clip to stop the arming sleeve from setting back during storage and handling. This clip must be removed before firing. When in position the jaws of the clip fit in slots cut into the nose of the fuze.

SECTION 6 — OPERATION

Fuze Mk 2 (Figures 6, 7, 8 and 9)

19. *Before firing.* The arming spring keeps the arming sleeve in the forward position to retain the balls between the sleeve and the rear of the striker. This effectively prevents any movement, the striker remaining forward and the striker guide containing the inertia pellet and detonator to the rear.

20. *On firing.* The sudden acceleration causes the arming sleeve to set back against its spring and forces the lugs into the groove of the striker guide, locking together the sleeve, spring and guide. The balls are thus freed and only the light striker spring keeps the striker and striker guide apart and the striker point from the detonator. Thus the fuze is armed.

21. *On graze.* The sudden deceleration causes the striker guide with inertia pellet, arming spring and sleeve, to move forward against the striker spring to fire the detonator by forcing it on to the point of the striker.

22. *On impact.* The hard serrated head of the striker digs into the target, driving the point of the striker towards the detonator, whilst at the same time, the violent deceleration throws the striker guide and detonator forward the striker spring is overcome and the detonator fired.

Safety Shroud (Figure 4)

23. *Before firing.* The shroud is retained in the safe position by the retaining pins engaging in the safety channels of the inner sleeve by pressure of the shroud spring. In this way, the main detonator is screened and could not be fired nor could the main explosive filling be initiated even if the fuze were accidently or prematurely fired.

24. *On firing.* The sudden acceleration causes the shroud to set back against its spring and the retaining pins to move back to the junction of the safety and delay channels.

25. *In flight.* The pressure of the shroud spring forces the shroud forward and the retaining pins commence to move up the delay channels. When the pins reach the tops of the channels, the spring ejects the shroud from its housing and it falls into the body of the grenade, uncovering the main detonator.

26. The slight delay caused by the erratic movement of the retaining pins up the delay channels ensures that the main detonator is not uncovered until the grenade has left the launcher and is at least five feet from the muzzle.

Main Explosive Filling

27. Flame from the fuze detonator fires the main detonator in the grenade to detonate the explosive filling, which because of its shape, (See Figure 3), projects forward a jet of gases and molten metal of very high temperature and velocity; the gases are the product of combustion of the explosive filling, and the metal, from the copper cone. This jet is projected through armour and is capable of inflicting serious injuries to personnel and of setting fire to fuel and ammunition.

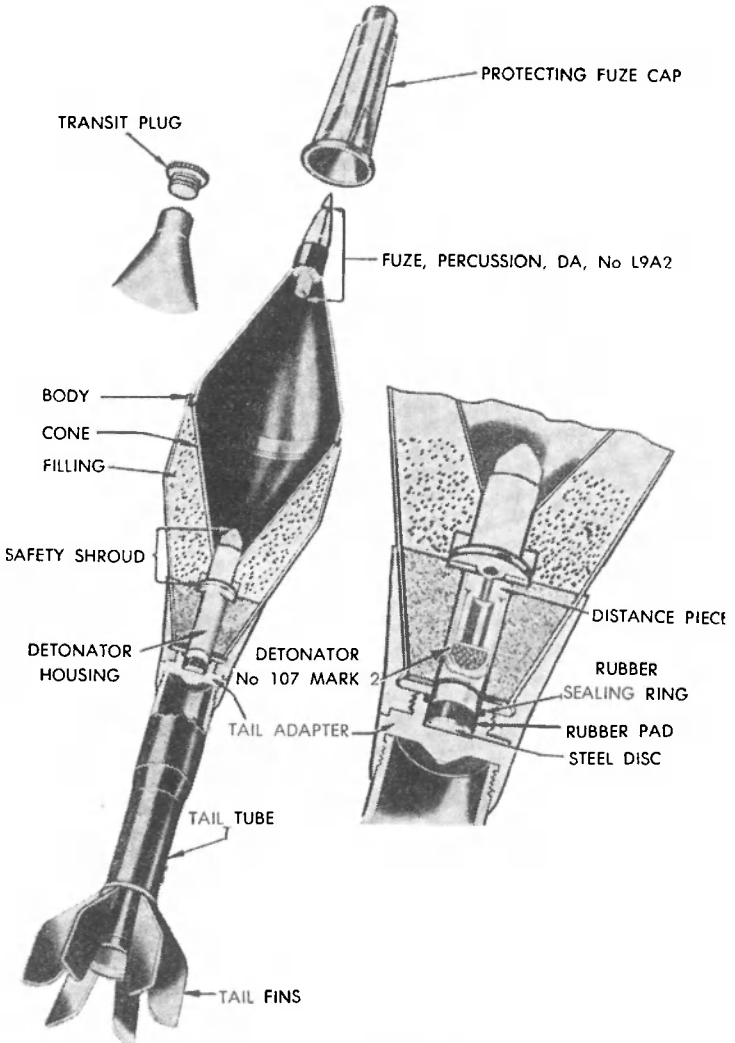

Figure 3 — The No 94 Grenade

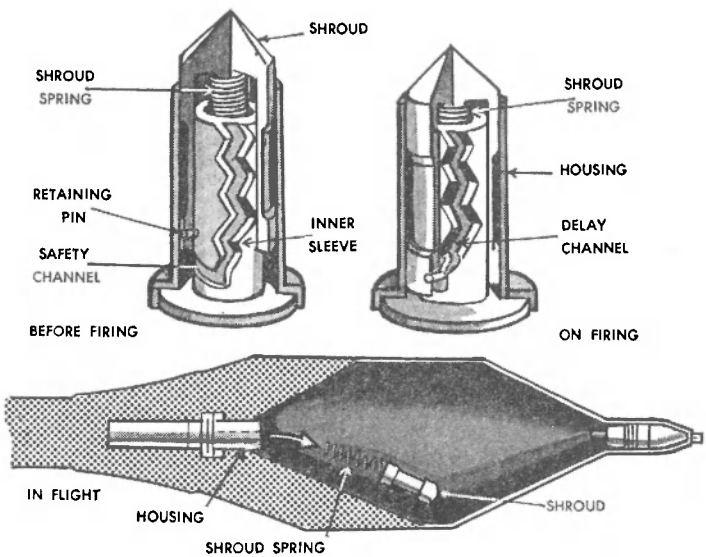

Figure 4 — Safety Shroud

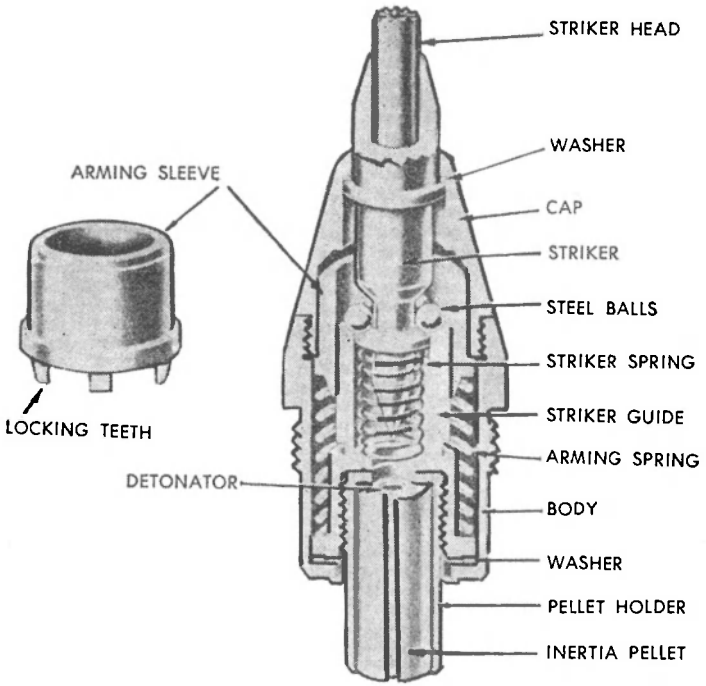

Figure 5 — Fuze Mark 2

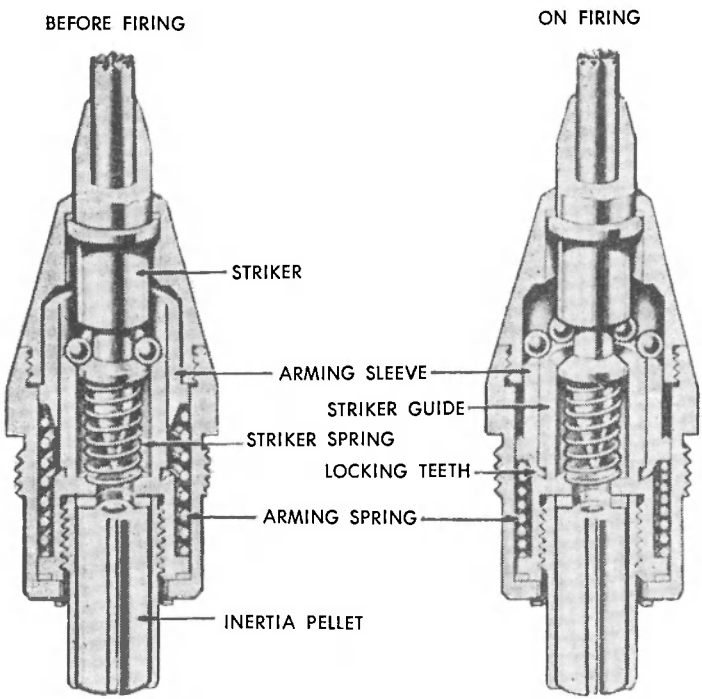

Figure 6 — Before Firing

Figure 7 — On Firing

ON GRAZE

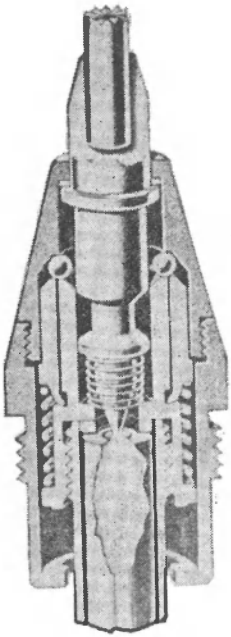

Figure 8 — On Graze

ON IMPACT

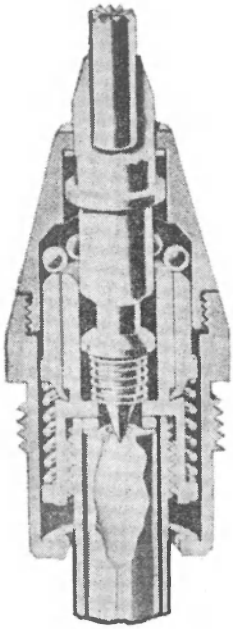

Figure 9 — On Impact

1 B P Coy—636/64—12m