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Small Arms Training

Volume I, Pamphlet No. 7

·303-inch Machine Gun

Part II.—Training—1941

Supplement No. 1

Radial Twin Vickers A.A. Mounting

1942

THE WAR OFFICE,
15th July, 1942.

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This supplement is for use by units issued with the radial twin Vickers A.A. mounting.

Arms concerned Scale 10

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NOTES.—1. Lessons 3, 5, and 6 correspond to Lessons 61, 65, and 66 respectively in Part II of Pamphlet No. 7.

2. For full details as to training A.A. machine gunners in the use of the Cartwheel Sight refer to S.A.T., Vol. I, Pamphlet 6, Supplement No. 1, 1942*.

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* In preparation.

RADIAL TWIN VICKERS A.A. MOUNTING

LESSON 1.—GENERAL DESCRIPTION

Instructor's notes :

Stores :—

Mounting complete. 2 guns complete with condenser tubes and blast deflectors. Condenser can, 2 liners, S.A.A. Adjustable spanner.

1. The mounting is designed for use in the rear of the 15-cwt. Bedford truck for A.A. protection.

2. **The mounting** (see plate 1) consists of :—

i. *The pillar and supporting base*

Show how the base is held to the floor of the truck by means of eight bolts with iron plates beneath the floor boards and demonstrate that the eight projections on the base ring afford foothold for the firer.

ii. *The carrier, pivoting*

Explain that this is supported by the pillar by means of an internal bearing at the top of the pillar and that it is able to rotate round it to give 360 degrees traverse. Show also the method of attachment of the seat and condenser can carrier to the carrier, pivoting.

iii. *The cradle*

Show that the cradle is carried by the cradle axis pin which passes through the projections on the top of the carrier, and that it is able to be elevated and depressed through approximately 90 degrees.

Explain also the method of attaching the guns to the cradle by means of joint pins passing through the front and rear gun brackets, and the method of attachment of the liner carriers. The difference in design of the left and right liner carriers will be demonstrated.

Explain the method of attachment of the trigger levers and the method of inserting them between the safety catch and the firing lever of their respective guns.

iv. *The sight unit*

This consists of the arm, carrier sight, which pivots about the cradle axis pin at its forward end, the arm carrier sight stay, the carrier, sight, to which the foresight and backsight are fitted and the rod, connecting carrier, sight.

Show how the sight carrier moves constantly parallel to the guns, and that the backsight moves in an arc which enables the firer to keep his eye pressed into the rubber eyepiece at all angles of elevation when the sight unit is in adjustment.

3. Adjustments

i. *The guns*

Show how the front gun brackets rotate about their axis in order to facilitate the removal and replacement of the gun, and that they are adjustable for elevation by means of the adjusting nut on their spindles.

Show also that the rear gun brackets are fitted in slots to enable lateral adjustment to be made and that they are hinged to allow for adjustment of the guns.

ii. *The sight unit*

Show that the whole sight unit is adjustable for height to suit individual firers by means of the holes in the lower end of the stay, and that the connecting rod is adjustable for length by means of the lock nuts at its forward end.

Demonstrate that the backsight is adjustable for elevation and the foresight for **line**.

NOTE.—All men in the section will be taught to memorize which hole in the stay suits their particular adjustment for height.

4. Maintenance

Explain that—

- i. An oil hole for the lubrication of the main pivot bearing is provided at the top of the carrier, pivoting.
- ii. All joints should be lubricated with light oil.
- iii. All nuts must be kept permanently tight.

LESSON 2.—HARMONIZATION OF SIGHTS AND GUNS

Instructor's notes

Stores :—

As for Lesson 1, and in addition the dial sights of each gun, one clinometer, Vickers, Mark I, and pick helve.

(The guns will not be mounted on the mounting.)

Support the cradle in an approximately horizontal position by inserting a pick helve between the cradle and the arm, carrier, sight. Secure the mounting to prevent its rotation.

1. To adjust the length of the connecting rod

Place the clinometer on the right hand (No. 1) cradle and record the reading.

Place the clinometer on the sight carrier and adjust the length of the connecting rod until the bubble is central. Tighten the locking nuts. During this process the elevation on the cradle should be repeatedly checked. The sight carrier will then move parallel to the cradle at all elevations.

Once this adjustment has been made it should not be necessary to repeat it unless the sight arm carrier, or connecting rod, become damaged or the locking nuts on the connecting rod work loose.

2. To adjust the guns for elevation

Mount the guns on the mounting, ensuring that the adjusting nuts on both the front gun brackets are $\frac{1}{4}$ inch clear of the bottom surface of the gun brackets.

Tighten the lock nuts of No. 1 gun.

Set the tangent sights on each gun to any suitable range. Select an aiming point at least 400 yds. distant. With the help of an assistant, lay No. 1 gun on the aiming point and adjust No. 2 gun for elevation until it also aims at the same point.

The guns are then harmonized in elevation.

NOTE.—The locking nuts on the rear gun bracket of No. 2 gun must be tight during this operation.

3. To adjust the guns for line

Ensure that the rear gun bracket of No. 1 gun is in the centre of its traverse and tighten the lock nuts. Set the tangent sights of both guns at any suitable range.

Select an aiming point at least 400 yds. distant and lay No. 1 gun on it by moving the mounting and manipulation of the pick helve.

Adjust No. 2 gun for line so that it also is laid on the same point. Tighten all nuts.

The guns are then in adjustment for line.

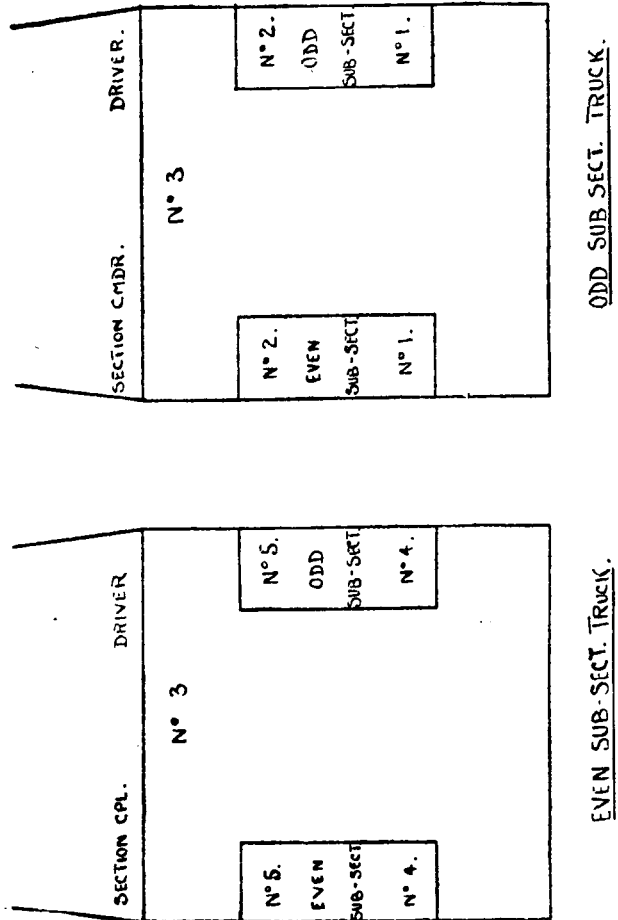
4. To harmonize the A.A. sights

Select an aiming point at least 400 yds. distant and some distance above the guns. This is necessary to avoid obscuration of the line of sight through the A.A. sights by the cradle. Set the tangent sights of both guns at 500 yds.

Lay No. 1 gun at the aiming point and adjust the A.A. sights so that the line of sight through them strikes the same point.

The sights are then harmonized.

POSITION OF PERSONNEL IN TRUCKS. FIG. 1.



LESSON 3.—LOADING TRUCKS

NOTE.—This Lesson corresponds with Lesson 61 in Part II of Pamphlet No. 7. The differences in loads are shown in the attached plates. The differences in the positions of personnel are shown in Figure 1.

LESSON 4.—A.A. ACTION

Instructor's notes

Stores :—

As shown in plates 3 and 4. Two belts filled with drill cartridges.

1. Explain that—

- i. After loading the guns a short length of belt should be pulled from the belt box to ensure no undue drag.
- ii. After engagement of a target the guns, whenever time permits, should be depressed to allow the water to cool the forward end of the barrel.
- iii. Air attack may take place when the vehicle is on the move or when it is halted.
- iv. Guns will normally be kept half loaded unless air attack is imminent when they will be fully loaded.

2. On the move

Section commander

“ **Aircraft action** ”

No. 1 of the even sub-section will jump into the seat, half load, aim, and engage the aircraft.

No. 1 of the odd sub-section will sit on the tripod on the off side of the truck.

Nos. 2 will sit as far forward in the truck as possible.

All numbers will move their legs out of the way of the mounting and allow it to rotate unhindered.

Section commander

“ **All clear** ”

All numbers will resume their normal positions.

3. When halted

Section commander

“ **Aircraft action** ”

No. 1 of the even sub-section will act as above.

No. 2 will remain with him to assist him.

The remainder will jump out of the truck and take cover.

Section commander**“ All clear ”**

All numbers will resume their normal positions.

NOTE.—On all occasions when air attack is likely the No. 1 of the even sub-section will sit in the mounting seat and the guns will be fully loaded.

SECTION DRILL DIRECT FIRE**LESSON 5.—PREPARE FOR ACTION AND ACTION**

Stores :—

As for Lesson 65, S.A.T. Vol. I, Pamphlet No. 7, Part II, but packed as in Plates 3, 4 and 6, 7.

Section corporal

(having dismounted) **“ . . . belts prepare for action.”**

He will move to a position in front of the trucks and supervise the “ prepare for action.”

As soon as the stores have been inspected and reported correct, he will dispose of the trucks as ordered, warning drivers where to return when signalled for. If the covered position for the trucks is some distance from the gun position, the spare parts box will be removed before the trucks move off.

The driver of the even sub-section truck

Will lower the tailboard, and when the stores ordered have been removed, will fasten the tailboard and await orders from the section corporal.

The driver of the odd sub-section truck

Will act as above, but before raising the tailboard, will remove the trigger levers, place them on the seats, and replace the retaining pins.

Nos. 1

Will place the strap of the dial sight case over the right shoulder, remove the tripod and double forward to a position indicated by the section corporal.

Nos. 2

Will place the strap of the spare parts case over the right shoulder.

Unload the guns and remove them from the A.A. mounting. Double forward to a suitable position a few paces to the right of Nos. 1.

Nos. 3

Will take the condenser can and one ammunition box.

(No. 3 of the odd sub-section will take the aiming post), and double forward to a suitable position in rear of Nos. 1 and 2.

Nos. 4

Will remove ammunition boxes not taken by Nos. 3, return to a central position in rear and await orders from the section corporal.

LESSON 6.—CEASE FIRING AND ON TRUCK

Stores :—

As for Lesson 5.

Section commander

Will signal trucks. When section corporal acknowledges, section commander will order "**Cease firing.**"

If the aiming post has been put out, the section commander must first give the orders, "**Unload, clear guns, remove dial sights.**"

Section commander

"**Cease firing**"

Drivers

Will drive their trucks to the position previously ordered and lower the tailboard.

Nos. 1, 2 and 3

Will cease firing as in elementary gun drill: Nos. 3 will make as many journeys as necessary to remove the condenser can and ammunition boxes from the gun position.

No. 3 of the odd sub-section will first bring in the aiming post if in use.

"**On truck**"

Nos. 1

Will double to the truck but stand clear until the Nos. 2 have mounted. When Nos. 2 have mounted, Nos. 1 will replace the tripods and dial sights and will themselves mount when the Nos. 2 have replaced the guns on the A.A. mounting. They will then assemble the trigger levers of their respective guns.

Nos. 2

Assisted by No. 3 of the odd sub-section will replace the guns on the A.A. mounting, half load the guns and return the spare parts cases to their correct positions.

Nos. 3

No. 3 of even sub-section will return the condenser can and as many ammunition boxes as he can carry. No. 3 of odd sub-section will return the condenser can and aiming post, mount and assist No. 2 to replace the guns on the A.A. mounting.

Nos. 4

Will return all ammunition boxes left behind by Nos. 3. No. 4 of the odd sub-section will return the aiming lamp, if in use, on his first journey.

Drivers

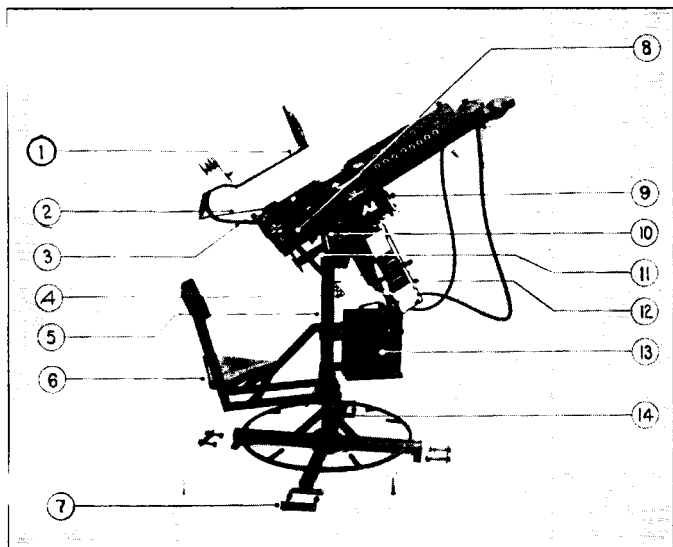
Will fasten the tailboards when all Nos. are on the trucks.

NOTES.—1. When firing the Vickers M.M.G. from the A.A. mounting it will usually be found necessary to increase the weight of the fuze spring. This will not affect the normal firing of the guns when in action on the ground.

2. Mark VII Tracer ammunition will never be fired in conjunction with Mark VIII ammunition.

Mark VII ammunition will never be fired from barrels which have fired Mark VIII ammunition.

THE RADIAL TWIN VICKERS MOUNTING

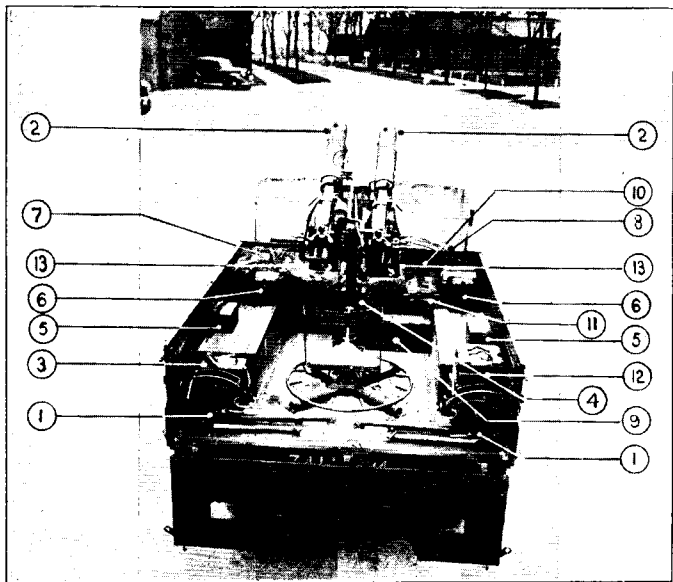


- | | |
|-------------------------------------|--|
| 1. Carrier, sight. | 8. Lever, trigger. |
| 2. Rod, connecting, carrier, sight. | 9. Bracket, front gun, and pin, cross-head, joint. |
| 3. Arm, carrier, sight. | 10. Bracket, rear gun, and pin, elevating, joint. |
| 4. Stay, arm, carrier, sight. | 11. Cradle. |
| 5. Carrier, pivoting. | 12. Carrier, liner. |
| 6. Seat. | 13. Carrier, can, condenser |
| 7. Bolts and plate, holding down. | 14. Pillar. |

ODD SUB-SECTION TRUCK

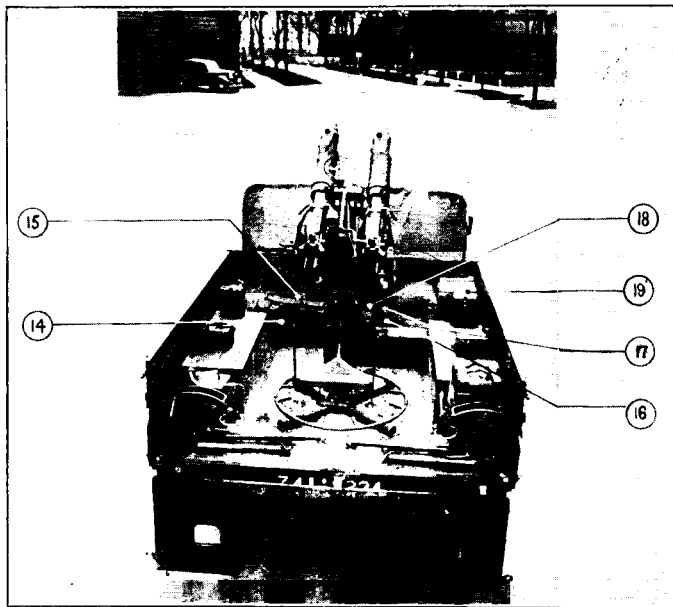


ODD SUB-SECTION TRUCK, TOP LAYER (STORES)



- | | |
|--|---|
| 1. Tripod. | 8. Two umbrellas. |
| 2. Gun (half loaded) and condenser tube. | 9. Thompson machine carbine and ammunition. |
| 3. Condenser can. | 10. Aiming post. |
| 4. Condenser can (spare). | 11. Bonnet cover. |
| 5. Dial sight. | 12. Ammunition box. |
| 6. Spare parts case. | 13. Liners in liner carriers. |
| 7. Camouflage nets (2 gun and 2 truck). | |

ODD SUB-SECTION TRUCK, BOTTOM LAYER (STORES)



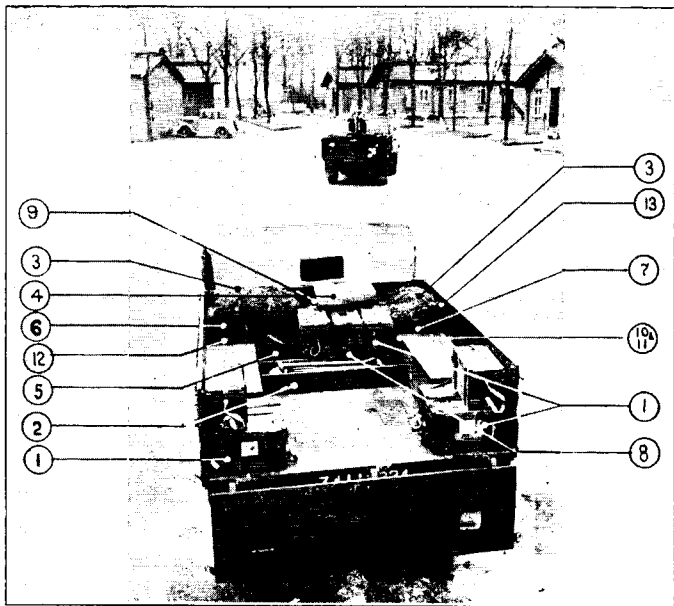
14. Seven packs.
 15. Matchet, wire cutters,
 and rattle.
 16. Night aiming box.

17. Cooker.
 18. Instrument box.
 19. Three ammunition boxes.

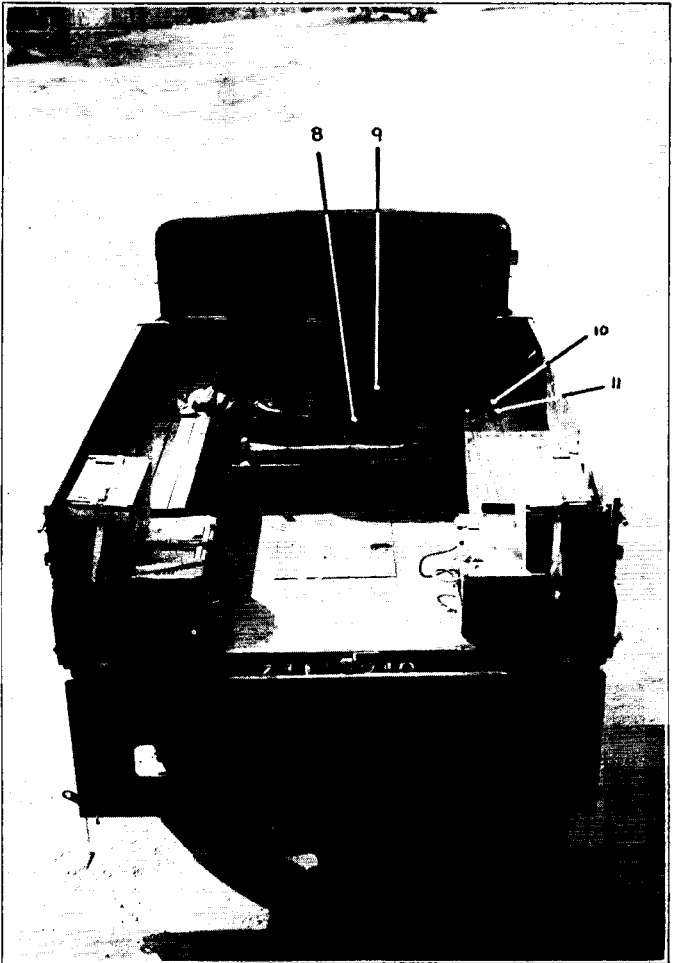
EVEN SUB-SECTION TRUCK



EVEN SUB-SECTION TRUCK, TOP LAYER (STORES)



- | | |
|------------------------------------|--|
| 1. Three ammunition boxes. | 8. Eight metal belt boxes (under ammunition boxes). |
| 2. Four picks and four shovels. | 9. Case, cans, oil. |
| 3. Two camouflage nets (truck). | 10. Spare parts box { (under net). |
| 4. Bonnet cover. | 11. Cooker |
| 5. Condenser can. | 12. Two pairs of gloves and two capas. |
| 6. Six packs. | 13. Matchet. |
| 7. One pack (under net). | |

EVEN SUB-SECTION TRUCK, BOTTOM LAYER
(STORES)

8. Eight metal belt boxes.
9. Case, cans, oil.

10. Spare parts box.
11. Cooker.