

Chapter 11
A.R.I.18107/4

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Introduction

1. The A.R.I.18107/4 is a navigational system which provides the tactical navigator with distance and bearing information relative to the surface beacon to which the equipment has been tuned.

2. Any one of 126 crystal controlled channels in the 962 to 1024 and 1151 to

1213 Mc/s. band can be selected by the navigator. Each channel comprises two frequencies, one for air to ground interrogation and the other for ground to air responses. The two frequencies are 63 Mc/s. apart. Each beacon radiates a morse code recognition signal, this can be heard in the navigator's headset as an audio frequency tone and enables him

to confirm the identity of the selected beacon.

3. Bearing and distance information are shown on two electrical indicators (pilot's and navigator's). The pointer's arrow head shows the bearing of the aircraft from the beacon (reciprocal). The pointer has a continuous 360 deg. travel.

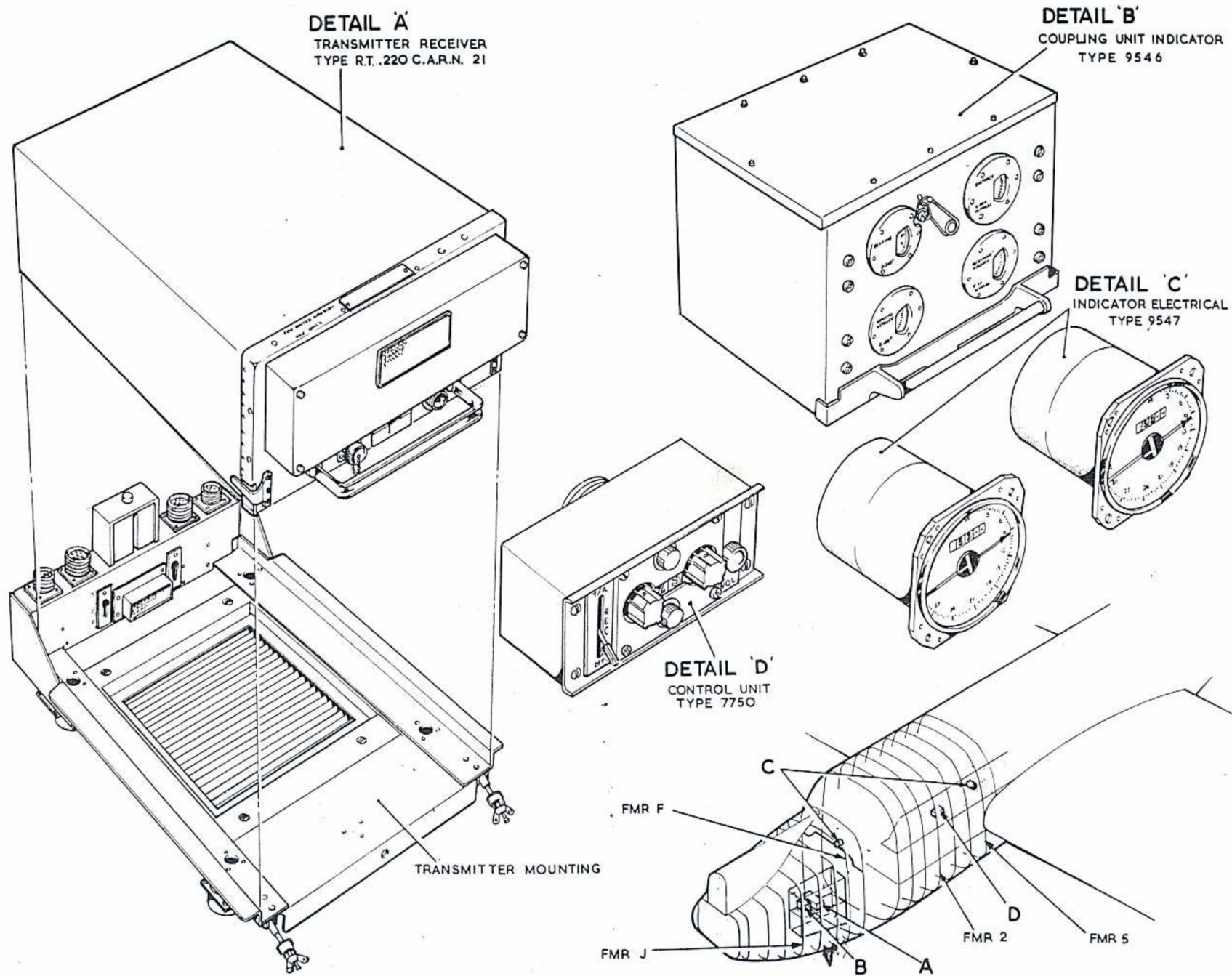


Fig.1 Location of equipment

RESTRICTED

DESCRIPTION AND OPERATION

**Transmitter-receiver,
Type RT-220C/ARN21**

4. The transmitter-receiver is fitted into a mounting, Type 9274. The mounting holds the transmitter-receiver at the rear by two spring loaded locating spigots and at the front by dual-purpose securing screws which engage into fittings on the transmitter-receiver. When these screws are undone, a split skirt on the screw collar engages under a claw on the front of the transmitter-receiver which will then be withdrawn.

5. The rear of the mounting, Type 9274, forms a junction box and mounts four external cable connectors as follows:-

- (1) SK2 a 10-pole socket for inter-connection between the control unit, Type 7750, and the mounting unit.
- (2) SK3 a 19-pole socket for inter-connection between the coupling unit (indicator), Type 9546, and the mounting unit (distance).
- (3) PL1 a 19-pole plug for inter-connection between the coupling unit (indicator), Type 9546, and the mounting unit (distance).
- (4) PL2 a 7-pole plug for connecting the power supplies to the mounting unit.

◀ In addition a 45-pole socket (SK1) mount- ▶

ed on the front of the housing connects all external supplies to the transmitter-receiver.

6. A dust cover (rear) encloses all equipment to the rear of the front panel of the transmitter-receiver. Cooling air is drawn by a fan through an air filter in the mounting tray and a circular grill in the bottom of the dust cover. Warm air is exhausted through louvres in the sides and back. The rear dust cover is secured by three small screws located in slots. A dust cover (front) encloses the units forward of the front panel.

Coupling unit, Type 9546

7. This unit is secured to a horizontal mounting, Type 9545, by dowels at the rear and a spring-loaded device at the front. The coupling unit comprises a case containing two complete servo links and their associated gear trains to operate the indicators, Type 9547, and is electrically coupled to the transmitter-receiver. One servo link is used to provide bearing data. The other servo link provides distance information.

Indicator electrical, Type 9547

8. Two indicators are fitted, one on the centre pilot's instrument panel and the other on the tactical navigator's panel. Bearing information is displayed from 0 - to 360 deg. and distance information from 0 to 195 nautical miles. A failure or warning bar is also provided

over the distance window to show when the distance circuits are non-operational.

Control unit, Type 7750

9. This control unit contains the necessary switches and controls to operate the equipment as follows:-

- (1) Three - position switch identified OFF-REC-T/R.
- (2) Channel selection controls coarse and fine. The right hand fine control sets the 'units' and the left hand coarse control sets the 'tens'. The channel number selected appears in an illuminated window.
- (3) The identity tone level control identified VOL is used to adjust the level of the tone in the headset.

Aerial omni, Type 100A

10. This is a small metal blade aerial in the shape of a shark's fin approximately 3 inches high from its mounting base and mounted below the fuselage between formers F and G (stbd.).

Power supplies

11. Power supplies at 28-volt d.c. are from the aircraft bus-bars whilst a.c. at 115-volt, 400 c/s is from the No.4 inverter, Type 108. Full details will be found in Book 2, Sect.6, Chap.2B and 2C.

SERVICING

General

12. Before any attempt is made to

service equipment, the general precautions and instructions outlined in Chapter 1 should be noted.

Transmitter-receiver

13. Inspect the transmitter-receiver and the mounting to make sure that they

are secure and free from damage. All connections should be tight and free from corrosion. The space below the mounting should be clear to allow free circulation of air through the filter.

Controller

14. Check the control unit to make sure that it is secure and free from damage and that the connector is tight and free from corrosion. Check the panel lights to see that they are serviceable. Check the controls for freedom of movement.

Coupling unit

15. Inspect the coupling unit to make sure that it is secure and free from damage. Check that the connector is tight and free from corrosion.

Indicators

16. The indicators should be checked for security and damage. Inspect the connector for tightness and corrosion.

◀ REMOVAL AND INSTALLATION ▶

General

17. Before any attempt is made to remove items of equipment the general precautions and instructions outlined in Chap.1 should be noted.

Transmitter-receiver

18. The transmitter-receiver can be removed without difficulty. Loosen the two dual-purpose securing screws at the front of the mounting when the transmitter-receiver will be gently withdrawn, final removal being by means of the transport handles. When refitting make sure that the pins on the 45-pole plug at the rear of the transmitter-receiver are not damaged.

Coupling unit

19. The coupling unit can be released by means of the quick release lever situated underneath the mounting.

20. Pulling the lever outward and then to the right will release the coupling unit from the grip of four heavy-gauge springs which hold the plugs and sockets in their mating position. The coupling unit will now be free to be lifted from its mounting.

21. When refitting the coupling unit the lever is pushed sideways and to the left over the dead-centre position of the linkage. The coupling unit will now be held rigidly in its mounting.

Control unit

22. The control unit is easily removed.

Four quick release screws hold the unit into its mounting. With these screws released the unit is withdrawn and the cable connector plug removed from the socket SK1. Installation is the reverse of the above instructions making sure that the pins on the plug are not damaged in any way.

Indicators

23. Removal instructions are not considered necessary for the indicators.

Aerial

24. When removing or refitting the aerial reference to fig.2 should be made.

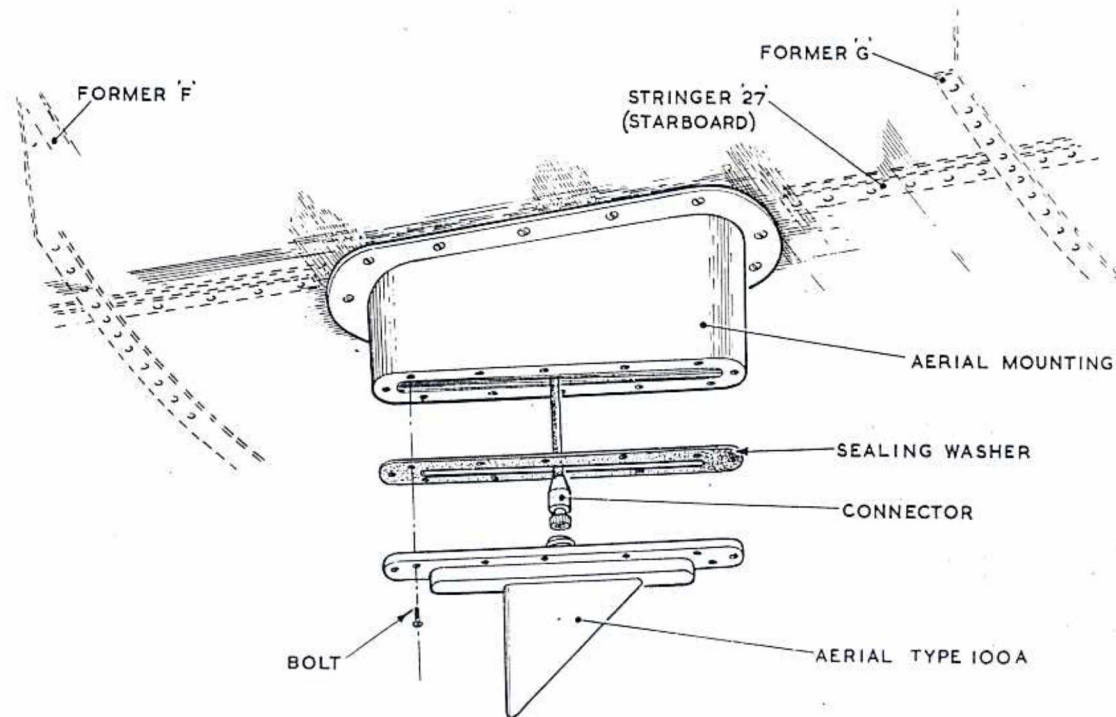


Fig.2 Assembly of aerial

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