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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 chan-

nels 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), and has a continuous 360 deg. travel.

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DESCRIPTION AND OPERATION

external supplies to the transmitter-re-ceiver.

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

7. The Type 9546 coupling unit is secured to a horizontal mounting, Type 9545, by dowels at the rear and a springloaded device at the front. The 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

8. Two indicators, Type 9547, 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

SERVICING

Transmitter-receiver

13. Inspect the transmitter-receiver and the mounting to make sure that they are free from damage. All connections should be tight and free from corrosion. The space below the mounting should be clear distance window to show when the distance circuits are non-operational.

Control unit

9. The Type 7750 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

10. The Type 100A aerial is a small metal blade in the shape of a shark's fin and is approximately 3 in. high from its mounting base. It is mounted below the fuselage, between formers E and F on the centre line of the aircraft (fig.2).

Power supplies

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

to allow free circulation of air through the filter.

Controller

14. Check the control unit to ensure that

Transmitter-receiver

4. The Type RT-220C/ARN - 21C transmitter-receiver (fig.1) 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 released, 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) SK.2 a 10-pole socket for interconnection between the control unit, Type 7750 and the mounting unit.
- (2) SK.3 a 19-pole socket for interconnection between the coupling unit (indicator), Type 9546, and the mounting unit (distance).
- (3) PL.1 a 19-pole plug for interconnection between the coupling unit (indicator), Type 9546, and the mounting unit (distance).
- (4) PL.2 a 7-pole plug for connecting the power supplies to the mounting unit.

In addition a 34-pole socket (SK.1) mounted on the front of the housing connects all

General

12. Before any attempt is made to service equipment, the general precautions and instructions outlined in Chapter 1 should be noted.



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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 Chapter 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 poles of 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 outwards and then to the right will release the coupling unit from the grip of four heavy-gauge springs which holds 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 SK.1. Installation is the reverse of the



Fig.2 Assembly of aerial

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above instructions making sure that the poles of 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.

TABLE 1

Major items of equipment

Equipment	Туре	Ref.No.		A.P. Reference
Transmitter-receiver	R.T.220C/ARN-21C	10D/22927)	
Tray mounting	9274	10AJ/251)	
Control unit	7750	10L/16310)	A.P.116B-0304-1
Coupling unit	9546	10D/22534)	
Indicator (2)	9547	10Q/16355	Ś	
Aerial omni	◀ 100B	10B/20275)	

TABLE 2

Connectors for A.R.I. 18107/4

Part No.	Cable form	Connection
2/T.5963	Miniature 18H	Transmitter-receiver to indicator coupling unit (plug 2)
3/T.5963	Miniature 12C	Indicator coupling unit (plug 3) to indicator (pilot's)
4/T.5963	Miniature 18H, 2 core uninyvin (twisted)	Transmitter-receiver to indicator coupling unit (plug 4) and T.B.721 (A and C)
5/T.5963	Uninyvin 20	Transmitter-receiver to T.B.721 (A, B, D and E)
6/T.5963	Uninyvin 20 and Uninyvinmetsheath 20	Transmitter-receiver to control unit, dimmer switch, T.B.477(C) and T.B.479(E)
7/T.5963	Uniradio 67	Transmitter-receiver to aerial (omni)
8/T.5963	Miniature 12C	Indicator coupling unit (plug 1) to indicator (navigator's)

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