

Chapter 8  
A.R.I.18090

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**Introduction**

1. This chapter deals with the A.R.I.18090, which is an airborne radio altimeter Mk.6A. The installation employs a pulse radar technique in a frequency range of 1 600 MHz to 1 660 MHz to measure the height of the

aircraft above the terrain immediately beneath, through a range of 500 to 50 000 ft. A location diagram of the major components is provided in fig.1. A connector table and a routing chart will be found at the end of the chapter.

2. Descriptive and servicing details of the A.R.I. are given in A.P.116B-0210-1, which should be read in conjunction with the information contained in this chapter.

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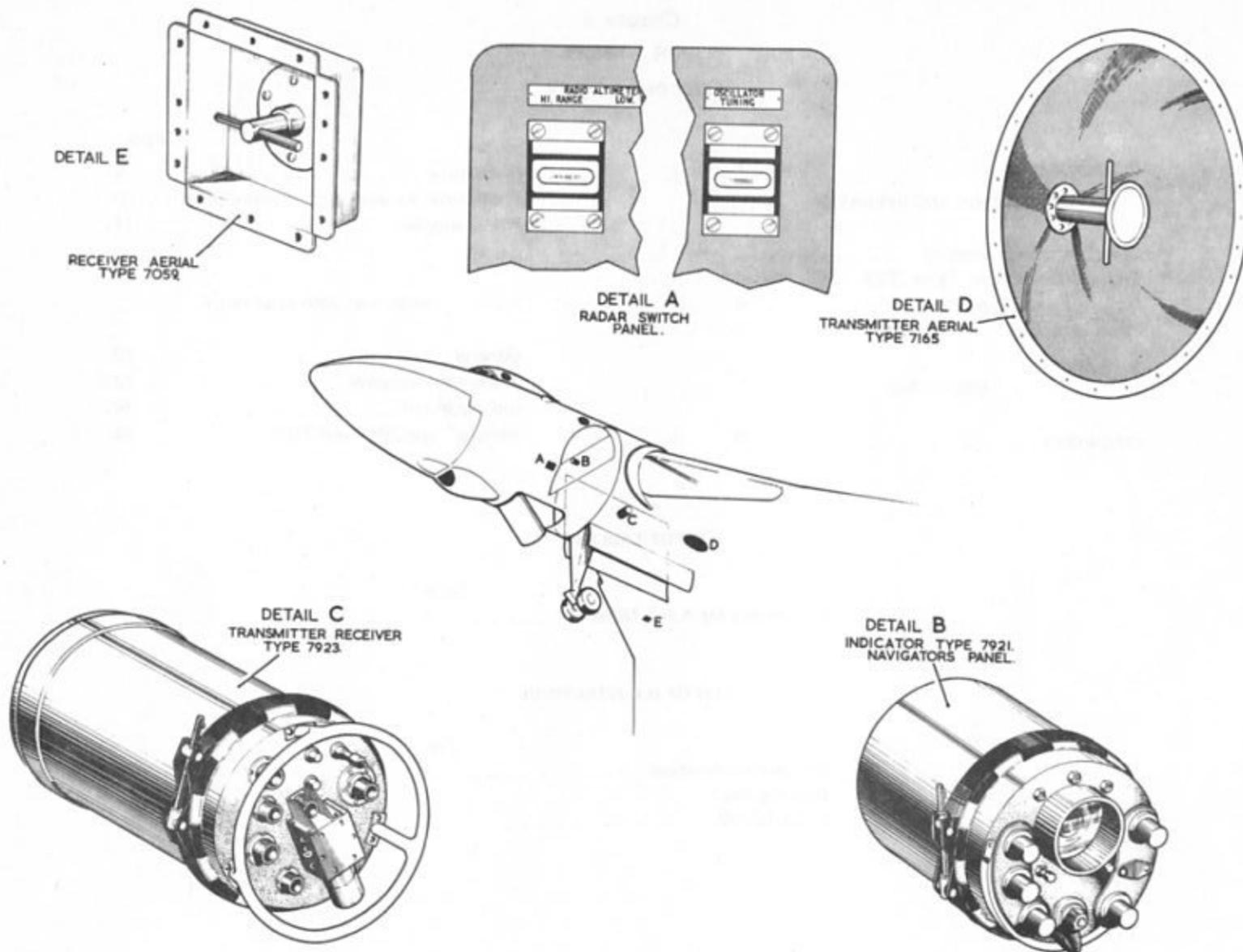


Fig.1 Component location

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## DESCRIPTION AND OPERATION

## CONTROL AND UNIT LOCATION

3. The power supply control switch labelled RADIO ALTIMETER HI. RANGE and the switch labelled OSCILLATOR TUNING are contained in the radio switch panel (between formers 246 and 260) at the navigator bomber's position, starboard side. The indicating unit, C.R.T., Type 7921, is contained in the navigator bomber's main panel. The transmitter-receiver, Type 7923, mounted on an anti-vibration tray, is located in the nose-wheel bay radio crate on the starboard side. Below the engine air intake in the port wing is the transmitting aerial, Type 7165, and in a similar position in the starboard wing is the receiving aerial, Type 7059.

**Transmitter-receiver, Type 7923**

4. The T.R. unit consists of a front panel and a main chassis enclosed in a pressurized container. The front panel contains the following:-

Sockets (3)

**Precautions**

8. Servicing personnel in particular are warned that a.c. and d.c. voltages in excess of 100-volts can be dangerous, to the extent of causing personal injury, fatal or otherwise. It is essential that the utmost attention be given to servicing instructions where matters of safety are concerned, and that maximum co-operation be maintained between trades mutually concerned in servicing operations.

Aerial plugs (2)  
Schrader valves (2)  
Desiccator  
Mechanical drive unit

The mechanical drive unit, which contains a d.c. motor coupled to an oscillator tuning unit, is controlled by a three-position, double-pole toggle switch, spring loaded to centre off.

5. The main chassis contains the T.R. and its components, and is fed with both 28-volt d.c. and 115-volt, 1 600 Hz a.c. supplies. The 28-volt d.c. supply operates the power relay and the two blower motors (internal and external) for cooling purposes. The 115-volt, 1 600 Hz, a.c. supply is fed to the power unit to provide the E.H.T., H.T. and L.T. voltages.

**Indicator unit, Type 7921**

6. The indicator unit consists of a front panel with the main chassis enclosed in a pressurized container. The front panel incorporates a cathode-ray tube and the following controls:-

Range switch  
Gain switch  
Circle size switch  
Brilliance switch  
Pre-set trimmers (2)  
Schrader valves (2)  
Desiccator

Of the two concentric scales printed on the face of the cathode ray tube, the outer scale is used for indication in the 0-5 000 ft. range and the inner scale in the 0-50 000 ft. range. Both scales are graduated from 0 to 5.

**Power supplies**

7. The 28-volt d.c. supply is fed from fuse 719 in panel 48P, to the high range altimeter switch terminal 2 and linked to the oscillator tuning switch terminal 5. The 115-volt, 1 600 Hz., a.c. supply is fed from fuse 332 to the high range altimeter switch terminal 4. Power supplies for the installation are shown in the routing chart for unscreened radio supplies contained in Sect.6, Chap.7 of this publication.

## SERVICING

**Installation**

9. The setting up, operating and servicing instructions for the A.R.I. and its components are contained in A.P.116B-0<sup>206</sup>/<sub>210</sub>-1. The security of all components should be checked regularly. All connectors, plugs, sockets and terminal blocks should be examined for damage and ingress of dirt and moisture.

**Transmitter-receiver and indicator units**

10. Check the colour of each desiccator visible through the perspex window. If the desiccant colour is pink, unscrew the container and replace with re-activated desiccant. Check with a suitable gauge, that the air pressure inside each container is 5 p.s.i.a. This pressure can be maintained by means of a hand pump incorporating a desiccator unit, through a Schrader valve mounted on the front of the units.

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### Power supplies

11. In conjunction with the servicing of the system as laid down in A.P.101B-1902-4, and

### General

12. Access to the components is straightforward, but the following points should be observed. When it is necessary to remove or replace any components, secure all loose connectors to the adjacent aircraft structure to prevent damage.

### Transmitter-receiver

13. On the front panel disconnect the six

using a ground supply trolley, the following periodic checks should be carried out. Check with a suitable test meter, that the d.c. output

### REMOVAL AND ASSEMBLY

connectors, unscrew the two knurled screws, take hold of the transport handle and slide the unit off its mounting tray.

### Indicator unit

14. On the front panel disconnect the two connectors, unscrew the two knurled screws, take hold of the unit and slide it off its anti-vibration mounting tray. On replacing the

is 28-volts at T.B.676-D, T.B.1205B, and that the a.c. output is 115-volt, 1 600 Hz at T.B.676-A.

unit, ensure that the locating dowels engage properly, at the rear of the mounting tray.

### Aerials, Type 7059 and 7165

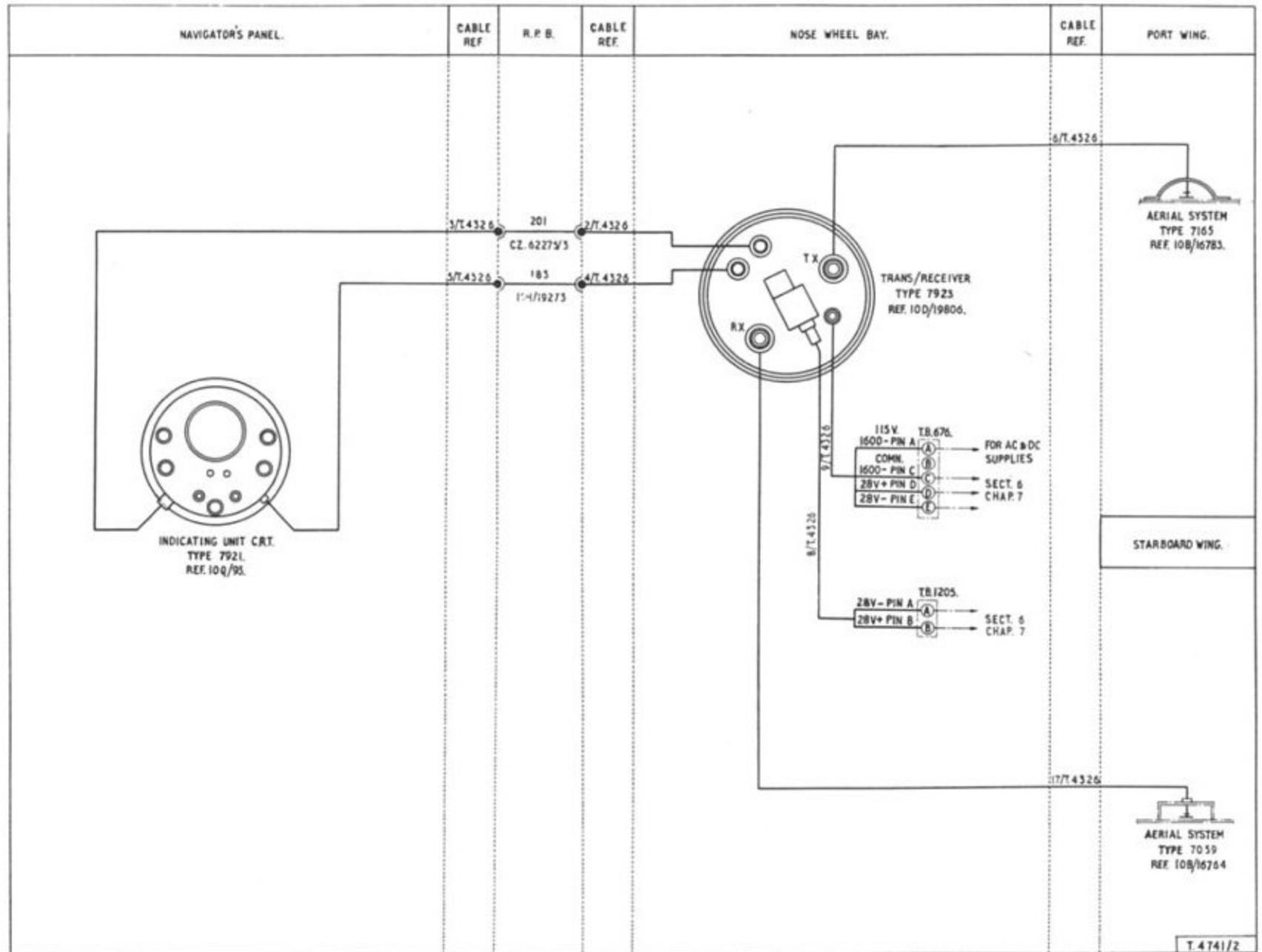
15. For removal and assembly of these aerials refer to Chap.7 of this section.

TABLE 1

Connectors for A.R.I.18090

Part No.	Cableform		Connecting
2/T4326	12 Metvinsmall 2.5	T.R. unit	to R.P.B. plug 201
3/T4326	12 Metvinsmall 2.5	Indicator unit	to R.P.B. plug 201
4/T4326	Uniradio 70	T.R. unit	to R.P.B. plug 183
5/T4326	Uniradio 70	Indicator unit	to R.P.B. plug 183
6/T4326	Uniradio 65	T.R. unit T.X.	to port aerial
8/T4326	Unipren 6 2 off	T.R. unit	to T.B. 1205
9/T4326	Miniature 4c	T.R. unit	to T.B. 676
17/T4326	Uniradio 65	T.R. unit R.X.	to starboard aerial

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Fig.2 A.R.I. 18090  
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