Chapter 2 RADAR INSTALLATION

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LIST OF ILLUSTRATIONS

INTRODUCTION

1. The information in this chapter describes the aircraft radar installation and covers also the servicing of equipment and its method of removal from the aircraft.

DESCRIPTION

A.R.I.5849 REBECCA Mk. 7 INSTALLATION

2. The Rebecca Mk. 7 equipment fitted in this aircraft is an airborne interrogator-responder which shows, on a meter, the range and heading of the aircraft in relation to a ground transponder. The interrogator (transmitter), and the responder (receiver), both operate on a choice of eight spot frequencies within a specified band, but not at the same frequency at any one time ; this arrangement reduces the possibility of errors from ground reflection. The frequencies are selected by turning the appropriate knobs on the control unit.

3. For the purpose of identifying the ground transponder code pulses, the output from the Rebecca responder, or receiver, is connected to the pilot's telephone terminal block which is a part of the T.R.1934 V.H.F. installation.

4. The installation comprises the following equipment ; a transmitter-receiver, Type 3708, incorporating a junction box, Type 397, a range and heading meter, a control unit, Type 909, and two aerials, Type 91, fitted to the underside of the fuselage, forward of the cannon bay. The illustration (*fig.* 1) shows the location of Rebecca Mk. 7 equipment in the aircraft ; fig. 2 shows the interconnection of units with a reference to power supplies. For a full description of the equipment, together with servicing and setting-up procedures, reference should be made to A.P.2914AF, Vol. 1.

5. The transmitter-receiver is mounted in a rack contained in the nose compartment forward of bulkhead 1. All plugs and sockets, with the exception of the connector to the aerial on the port side of the aircraft, are taken to the junction box on the transmitter-receiver. The connector from the port side aerial is taken to a plug at the rear of the set.

6. The control unit is mounted on the lower forward face of bulkhead 2, port side, and contains all the necessary controls for the operation of the equipment, namely :—

(1) Function and range switch (OFF–SB–200–20)

(2) Transmitter tuning switch (TX)

(3) Receiver tuning switch (RX)

(4) Code switch (CODE–ON–OFF)

(5) Omni-range homing switch (O/R–H)

(6) Strobe release push-button (STROBE)

7. The function and range control is a 4-position rotary switch which selects the following operating conditions :—

(1) OFF—in this position all power is switched off.

(2) SB—standby switching ; power is applied to all valve heaters in the equipment, frequency changing motors, aerial switching relay and the strobe lock indicator.

(3) 200—long range operating position ; searching takes place over a range of 200 nautical miles, each search sweep taking 25 seconds.

(4) 20—short range operating position ; searching takes place over a range of 20 nautical miles, each search sweep taking 8 seconds.

8. The range and heading meter is mounted on the left of the gyro gun sight above the main instrument panel. The meter has a circular scale calibrated from zero to twenty nautical miles, with graduations every five miles and is swept by a single pointer. A small window at the upper centre of the meter shows the lock-on indicator, and an aperture at the bottom of the meter shows the heading pointer, which reads central when the aircraft is on course.

Note . . .

Depending upon requirements, the Rebecca Mk. 7 transmitter-receiver can be removed from its mounting and replaced by an A.R.I. 5848 receiver ; the control units for this equipment being a permanent fixture in the cockpit. Further details concerning A.R.I.5848 will be issued later.

SERVICING

GENERAL

9. The servicing of Rebecca Mk. 7 equipment is confined to *in-situ* checks of units and components. Full testing and servicing information is beyond the scope of this publication, and reference should be made to A.P.2914AF, Vol. 1.

RENDERING THE AIRCRAFT ELECTRICALLY SAFE

10. The aircraft may be rendered electrically safe by opening the battery isolation switch on the main junction box 1.

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11. Access to the Rebecca transmitter-receiver is available after removing the nose fairing (refer to Sect. 3, Chap. 1 of this publication). The set and its mounting should be inspected periodically for signs of damage or corrosion. All plugs and sockets should be disconnected and checked for their condition, ensure that all plug pins are clean and intact and the locking rings on the connectors must be tight. The small springs in each anti-vibration mounting, together with the bonding connections, must be intact if excessive mechanical shock and electrical interference are to be avoided.

12. Check that the control unit is secure in its mounting. The rotary controls and switches should be manipulated to ensure correct operation. The plug and socket connection at the side of the unit should be disconnected and checked for its condition.

13. The range and heading meter is a precision instrument and should be treated as such during servicing or removal ; however, very little in the way of servicing can be carried out on this component apart from checking its general condition.

14. Access to the aerials in the gun bay is gained after the gun bay doors and the outboard guns have been removed. The aerial mountings should be checked for security and the connections at each aerial must be clean and tight. The aerial proper should be free from corrosion or rust caused by external conditions.

REMOVAL AND REFITTING

GENERAL

15. There is no set procedure for removing equipment from the aircraft. Providing due care is taken during each operation, little difficulty should be experienced.

A.R.I.5849 REBECCA Mk. 7 INSTALLATION

16. After the nose fairing has been detached the transmitter-receiver may be removed as follows :—disconnect all plugs and sockets at the junction box and at the rear of the unit. Unscrew the two spin nuts on the front of the mounting and lift the unit clear. Refitting is the reverse of removal.

17. The control unit is secured to its mounting on the front of the aircraft by four screws which take-up on anchor nuts on the underside of the mounting. To remove the control unit, disconnect the plug and socket to the unit and detach the fixing screws. Refitting is the reverse of removal.

18. The range and heading meter is held in place by a circular clamp fitted to the aircraft structure. To remove the meter, disconnect the plug and socket at the rear of the meter and loosen the clamp securing screws sufficiently to allow the meter to slide clear.

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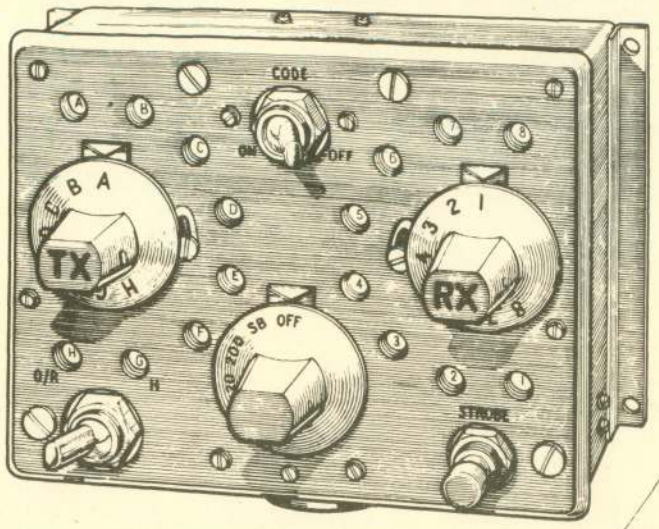
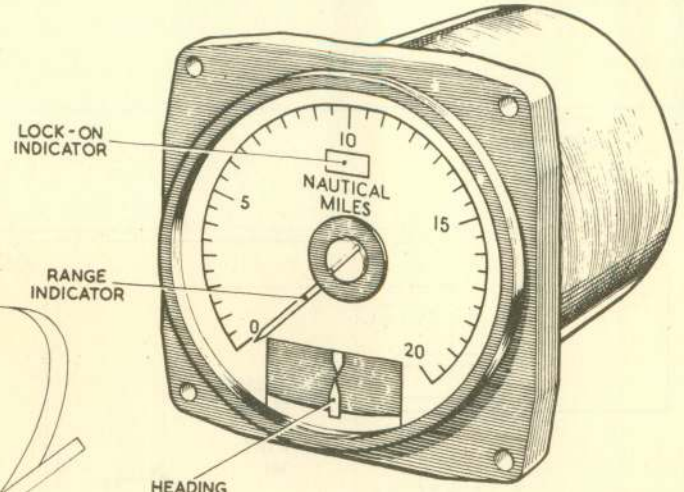


DETAIL A



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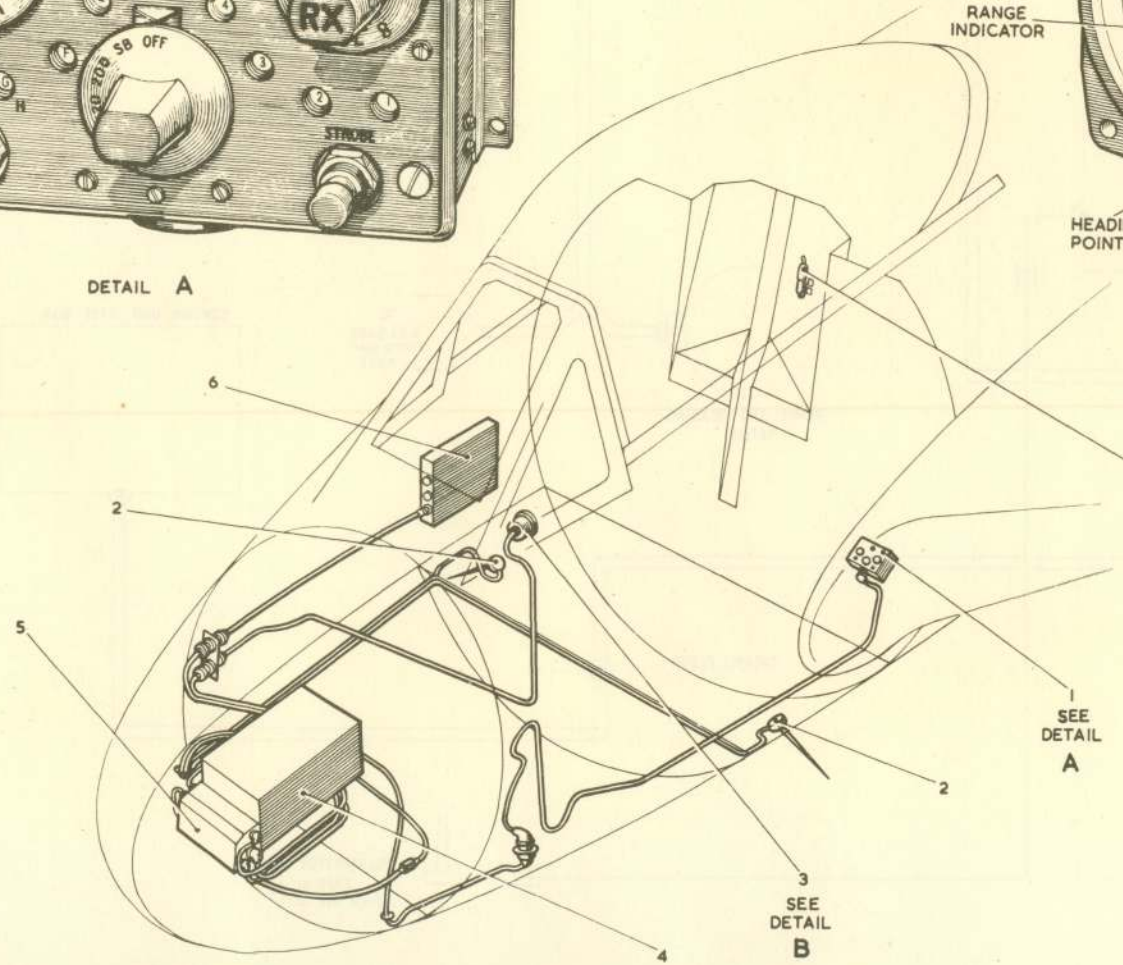

1 CONTROL UNIT, TYPE 909
2 AERIAL, TYPE 91
3 RANGE AND HEADING INDICATOR
4 TRANSMITTER RECEIVER, TYPE 3708
5 JUNCTION BOX, TYPE 397
6 MAIN JUNCTION BOX 1
7 MIC.-TEL. CONNECTOR AND T.B.'S

Fig.1. ARI 5849 (Rebecca Mk.7) location

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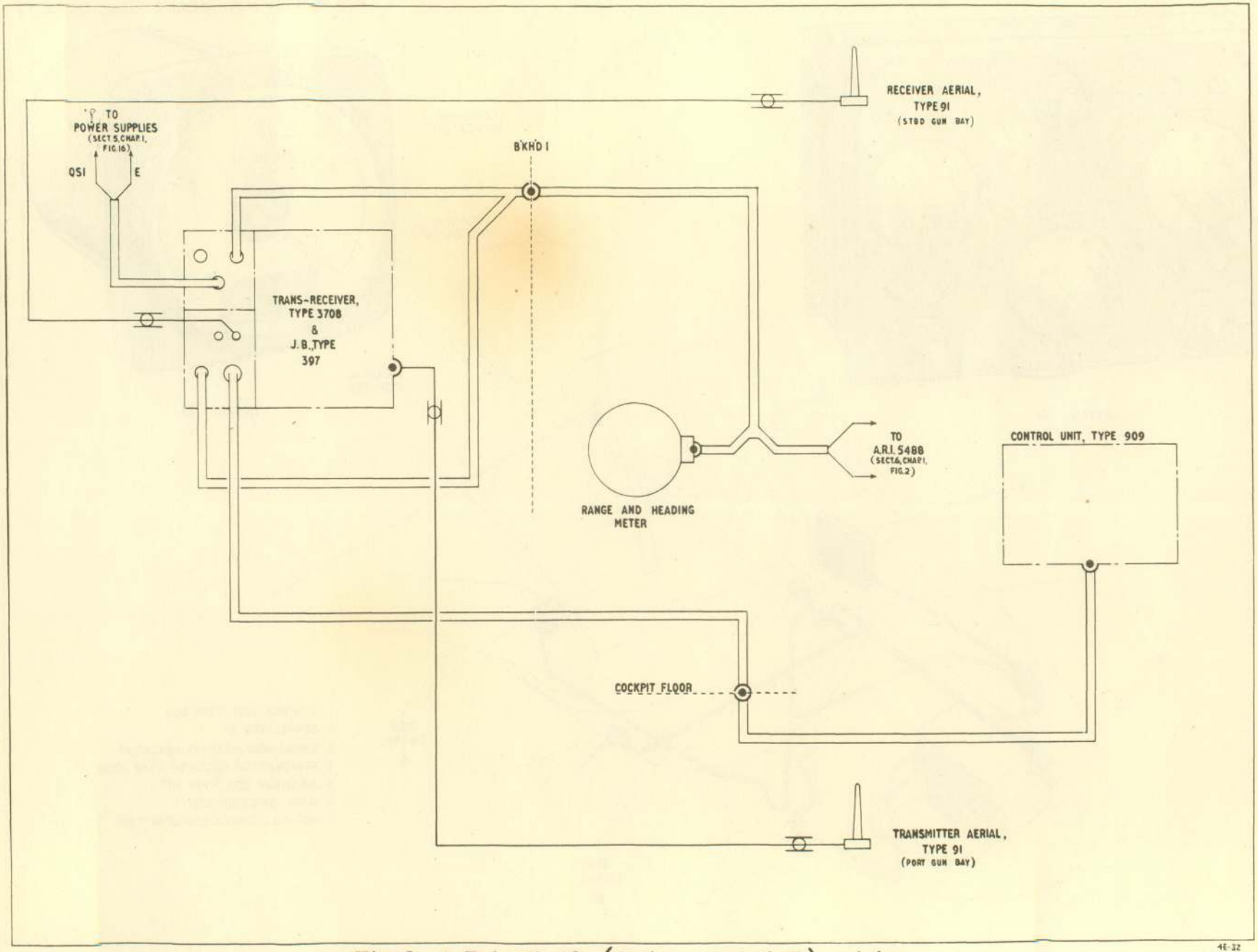

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Fig.2. ARI 5849 (Rebecca Mk.7) wiring

RESTRICTED