GROUP B A.R.I. 18049 (V.H.F. HOMING) INSTALLATION

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LIST OF ILLUSTRATIONS

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Introduction

1. This group describes the A.R.I. 18049 (V.H.F. Homing) installation in the aircraft when Mod N346 has been incorporated. It includes a brief description of the operation of the equipment, notes on the servicing that can be done in situ and instructions, where necessary, for the removal and refitting of the main units. Fig.1 shows the location of the units in the fuselage and fig.2 is a diagram showing the interconnections between the units. Full details of the theory of operation, circuit information, bench testing and setting up procedures are given in A.P.2898D, Vol.1.

DESCRIPTION

2. The A.R.I.18049 (V.H.F. Homing) is an installation by means of which the pilot can home on to stations transmitting on any frequency selected on the V.H.F. control unit. The system is virtually a V.H.F. direction finding apparatus the operation of which depends on the phase difference between signals received by two aerials spaced approximately 12 in. apart.

3. The signals are fed into a modulator which converts the phase difference into amplitude modulation of the carrier, which is then passed to the V.H.F. set in use where it is amplified and demodulated. The signal is then fed back to the modulator where it is applied to a discriminator the output of which operates an indicator, deflecting a vertical pointer to left or right depending upon the direction from which the signal originates. A small flag operates in conjunction with the pointer, and drops out of sight when the equipment is functioning satisfactorily.

4. The equipment in the aircraft comprises two aerials Type 408, a modulator, Type 7747, an aerial junction box, Type 7089, a control unit Type 7086 and an indicator, electrical, Type 7. The coaxial feeders from the aerials to the modulator are phase-matched, i.e., they are of the same

electrical length, and must not be altered in any way.

5. The installation operates in conjunction with the A.R.I.5491 V.H.F. airborne relay from which it obtains its power supplies. Two junction boxes, Type 169, provide a distribution point for the H.T. and L.T. supplies from each transmitter-receiver to the modulator and the airborne relay unit. The demodulated signal from the receiver to the modulator unit is also routed via the junction boxes.

Note...
It is important that the V.H.F. transmitter-receiver, Type TR.1934 and 1935, are modified to RMC.1640/1 and 2641/1 standard to enable them to be used with the V.H.F. homing equipment.

6. The aerial junction box is introduced to provide a means of changing over the aerial connections. When the V.H.F. installation is in use the aerials, Type 228 and 229, are connected to their respective sets via the junction box, Type 7089, aerial relay contacts. When the V.H.F. homing equipment is in use a relay in the aerial junction box is energised, disconnecting the aerial and connecting the modulated carrier output from the modulator to the set in use.

7. The control unit, Type 7086, has two controls, a meter deflection switch and a selector switch labelled HOMING 1, NORMAL and HOMING 2. In the NORMAL position, the V.H.F. homing installation is inoperative and the V.H.F. set in use, as selected on the V.H.F. control unit, Type 383, is used for normal communication. In the HOMING 1 or HOMING 2 position, indications are given on the indicator, electrical, Type 7 of the relative direction, to port or starboard, in which a transmitting station lies.

8. The deflection switch has two positions, MIN and MAX. In the MIN position the sensitivity of the indicator is reduced, and in the MAX position normal deflection is restored.

Location of equipment

9. The modulator unit, Type 7747, and the aerial junction box, Type 7089, are located on a shelf on the front face of the rear pressure bulkhead behind the pilot's seat. The shelf is immediately above the A.Y.F. radio altimeter transmitter. The control unit, Type 7086, is located on the pilot's port switch panel at the aft end, and the indicator, electrical, Type 7, is on the pilot's main instrument panel at the top outboard corner, (Sect.1, Chap.1, Fig.3).

10. The aerials, Type 408, are at the aft end of the canopy. They are spaced 12 in. apart $\pm$ 0.1 in. and are raked aft 20°. The rods are secured in bollards attached to the structure inside the canopy. Panel RS, which contains the two junction boxes, Type 169, is located in the space between the starboard ammunition boxes and the starboard fuselage wall.

SERVICING

11. The information under this heading covers the servicing of the V.H.F. homing installation in situ. The servicing and bench testing of the units themselves is described in A.P.2898D, Vol.1.

12. Each unit should be checked for security in its mounting, and the anti-vibration mountings on the modulator tray should be examined for freedom of movement and for effectiveness All plugs and sockets should be check tightened and all connectors clipped securely to the aircraft structure.

13. The aerials should be examined for signs of corrosion or damage, ensuring that the rods are parallel. An area of the wooden fuselage around the base of the aerials is sprayed with metal under the fabric skin to provide a counterpoise for the aerials. This area should be effectively bonded to the aircraft bonding system.

14. Panel RS, in the starboard ammunition compartment is secured in position by a wing-type Oddie fastener. Ensure that the panel is secure in its

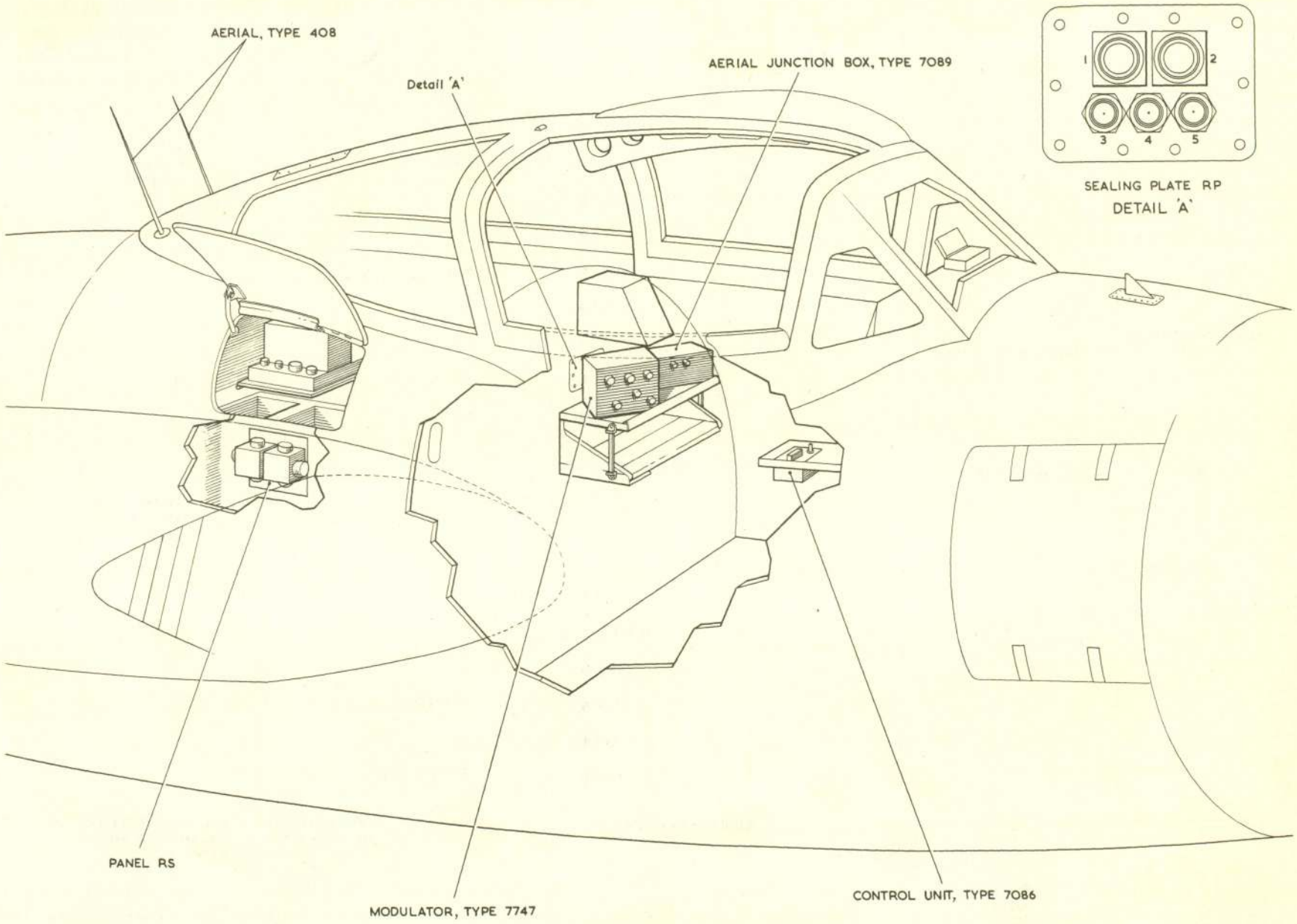

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Fig. 1 A.R.I. 18049 (V.H.F. Homing) installation

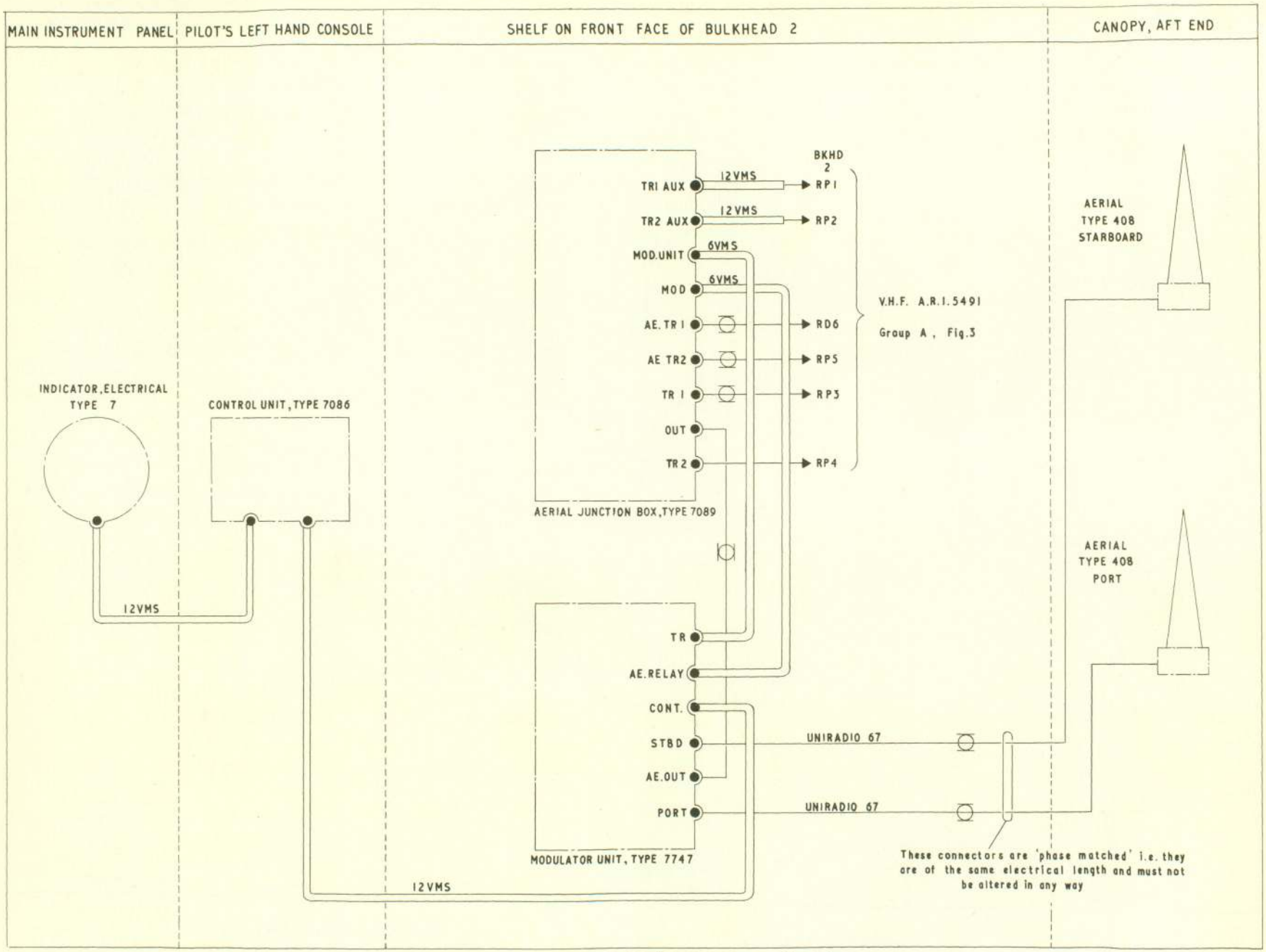

Fig. 2 A.R.I.18049 (V.H.F. Homing) wiring

housing and that the connections to the junction boxes are tight. A careful examination should be made of the surplus connector lengths below the panel. Ensure that they are well clear of the control cables that pass through the compartment.

15. The aerial feeders should be run together where possible to avoid any unbalancing effects due to adjacent circuits. They should not be altered in any way and if one feeder is damaged enough to require replacement both feeders should be replaced by a new "matched pair".

REMOVAL AND INSTALLATION

16. The removal of the modulator unit, the aerial junction box, the control unit and the indicator presents no special problem, the method of removal being obvious when viewed on the aircraft. Panel RS can be removed after opening up the starboard ammunition bay access door. Release the wing-type Oddie fastener holding the panel in its mounting frame and lift the panel to a position where the plugs and sockets can be easily detached. When refitting the panel particular care must be taken when re-connecting the plugs and sockets, as the two junction boxes are identical. Connectors from No. 1 set must go to No. 1 junction box. When lowering the panel back into its mounting frame ensure that the surplus connector lengths in the space below are well clear of the control cables.

17. It will be necessary to remove the access panel in the canopy roof aft of the canopy jettison mechanism to gain access to the V.H.F. homing aerial attachments. To remove either aerial, unscrew the locknut securing the feeder to the base of the aerial and remove the securing clamp holding the ferrule which terminates the braided cover.

18. Remove the remaining lock-nut on the base of the aerial rod and unscrew the rod from the bollard. To remove the bollard unscrew the two 2BA bolts securing it in the mounting bracket. When refitting the bollards remember that they are handed i.e. port and starboard. Ensure that the correct bollard is fitted in each side. The bonding tags should be cleaned locally to effect an efficient bond to the aircraft's bonding system when the aerial is refitted.