Group B A.R.I.5307 (Z.B.X.) INSTALLATION

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LIST OF ILLUSTRATIONS

VE 0602B-1/1

Introduction

1. This group describes the Z.B.X. installation, which is removed when Mod.N346 is incorporated, together with servicing notes and removal instructions. The installation drawing (fig.1) shows the location of the equipment in the aircraft, and the wiring diagram (fig.2) gives the interconnection of units and components, cable breakdown points and a reference to the power supply source.

DESCRIPTION

2. The Z.B.X. equipment functions as a homing device. The receiver is used for the reception of coded signals transmitted from a shore base or an aircraft carrier, which enable the pilot to determine the aircraft's position relative to the source of transmission.

3. The installation comprises essentially a receiver Type 1585, incorporating a motor generator for the H.T. supply, a control unit, Type 345, a mixer junction box, Type 148, and an aerial, Type 221, mounted on the underside of the starboard tail boom. The receiver unit is mounted in a rack, Type 64, fitted to the upper forward face of bulkhead 2, behind the pilot's seat. The control unit, pilot's mixer junction box and the observer's RT/BEACON switch are located on the observer's switch panel on the starboard cockpit wall. A full description of the equipment is contained in A.P. 2538M, Vol.1.

4. The mixer junction box, Type 148, has a three-position selector switch labelled RT, MIX, BEAC. In the RT position the pilot's telephones are connected to the output of the V.H.F. receiver in use (via the junction box, Type 154). At the same time, the Z.B.X. receiver output is disconnected. When the switch is set to the MIX position, the pilot's telephones remain connected to the output of the V.H.F. receiver and the Z.B.X. receiver output is connected to the V.H.F. microphone circuit. In this way the Z.B.X. signals modulate the V.H.F. microphone input and both receivers are heard together. In the BEAC position of the switch, the Z.B.X. receiver output is connected to the pilot's telephones and the V.H.F. receiver output is disconnected. Only

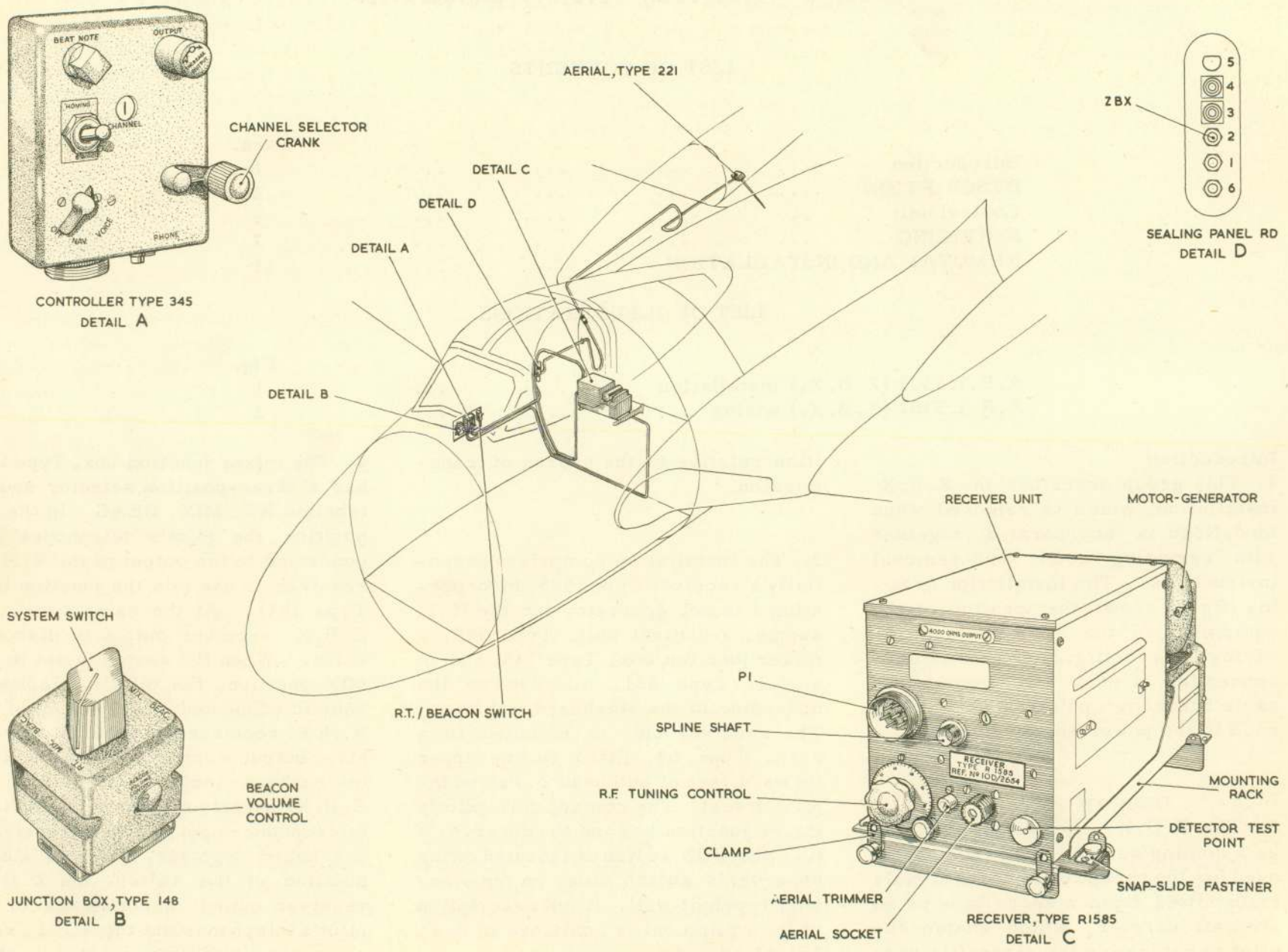

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Fig. 1 A.R.I. 5307 (Z.B.X.) installation

RESTRICTED

the Z.B.X. can be heard. It will be seen that with the switch on junction box, Type 148, in the MIX position, any signals received by the Z.B.X. equipment will modulate the V.H.F. transmitter output if either press-to-transmit switch is operated. For this reason the Z.B.X. receiver output is interrupted via contacts on the pilot's press-to-transmit relay RQ-A and the observer's press-to-transmit relay RR. A pre-set volume control is incorporated in the junction box, Type 148, so that the ratio of Z.B.X. signal strength to V.H.F. signal strength can be adjusted to a convenient level.

5. In the RT position, of the observer's RT/BEAC switch the V.H.F. receiver output is connected to the observer's telephones and in the BEACON position, the Z.B.X. receiver output is connected.

Note...
When the selector switch on the pilot's junction box, Type 148, is in the MIX position, the observer will also hear both receiver outputs if his RT/BEACON switch is in the RT position.

Control unit

6. The Z.B.X. control unit, Type 345, carries the following controls for the remote operation of the Z.B.X. receiver :-

(1) OFF/NAV/VOICE switch. In the NAV or VOICE position power is supplied to the receiver. In the NAV position the receiver beat frequency oscillator is operative and homing signals can be heard. In the VOICE position, the oscillator is switched off for the reception of telephony signals. Such signals are not normally used, and the VOICE setting will only be used if instructions to that effect are previously issued.

(2) HOMING/BA switch. This brings the automatic gain control in the receiver into operation on the BA position (not normally used) and disconnects it when HOMING is selected.

(3) OUTPUT CONTROL. This control varies the gain of the receiver and is used as a volume control to adjust the Z.B.X. signals to a comfortable level.

(4) BEAT NOTE CONTROL. This control varies the pitch of the received signal when the OFF/NAV/VOICE switch is in the NAV position.

(5) CHANNEL SELECTOR. This is a crank driven gear mechanism which rotates through a flexible drive to turn a selector switch in the Z.B.X. receiver. The control selects one of six pre-set modulation frequencies and the channel in use is indicated on a numbered disc visible through a window on the front of the receiver and control unit.

SERVICING

7. The servicing of the Z.B.X. equipment is confined to in situ checks of the main units and associated components. The full servicing and testing procedures are beyond the scope of this publication and reference should be made to the specialist Air Publication, A.P. 2538M, Vol. 1. Before the servicing instructions and removal procedures are carried out the aircraft must be rendered electrically safe by opening the battery isolation switch.

8. The receiver and motor-generator should be inspected periodically for signs of damage and deterioration. All plugs, sockets and connectors should be examined for signs of dirt or corrosion, plug pins clean, locking rings tight and cable insulation and screening intact. The receiver mountings should be inspected for damage and the anti-vibration shock-mounts for effectiveness. The slide fasteners at each corner of the mounting tray should be securely wire-locked, and the securing screws at the front of the receiver tight. The bonding connection between the rack and mounting tray should be checked for security.

9. The instructions in para. 8 apply similarly to the control unit, Type 345. All switches and controls should be manipulated to ensure that their mechanical operation is correct. The telephone output jack should be a reasonably tight fit in its socket and

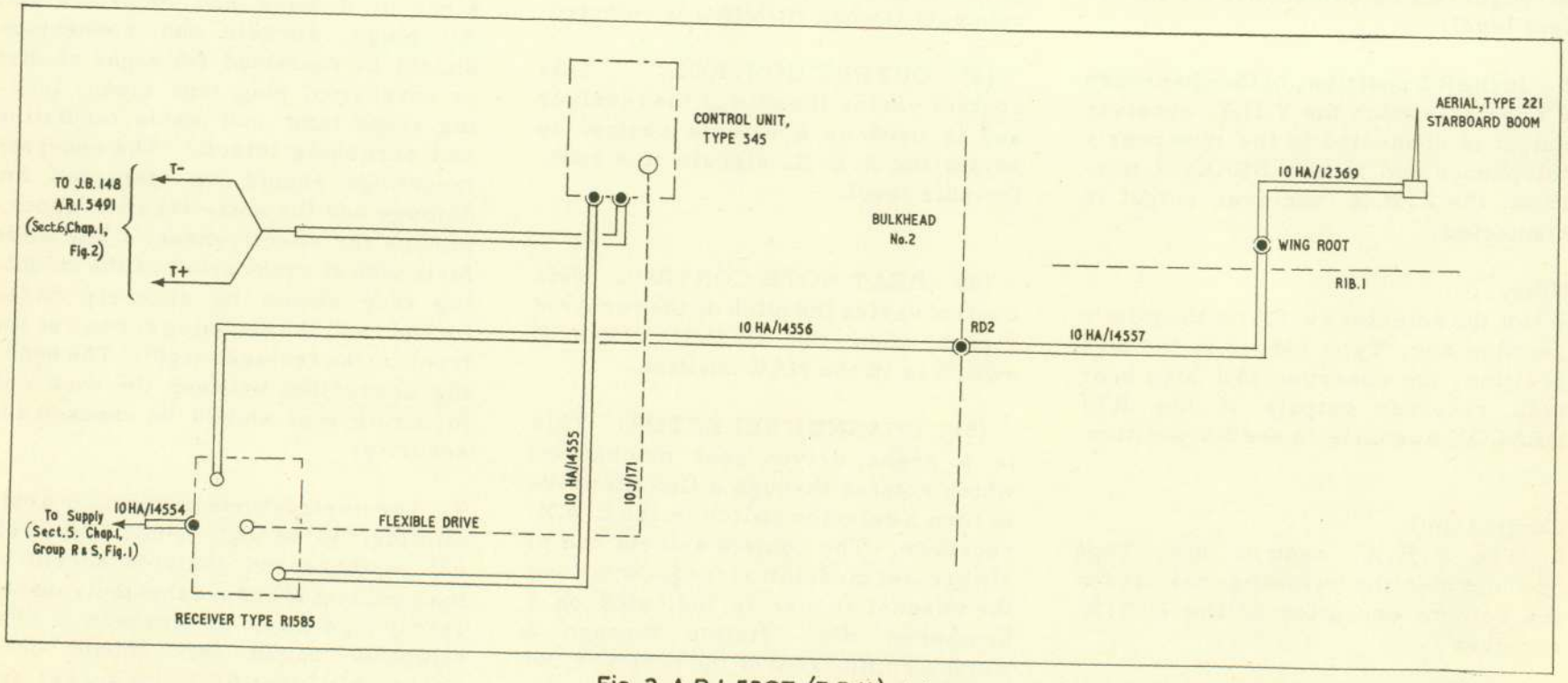

Fig. 2 A.R.I. 5307 (Z.B.X.) wiring

the single slide fastener at the lower edge of the mounting plate wirelocked. A check should be made to ensure that the channel indicated in the control unit corresponds with that in the receiver. If it does not, disconnect the torsional drive at the control unit end and turn the handle until the channel indicated in the two units correspond. Replace the torsional drive.

10. The aerial should be inspected for rigidity in its mounting, for corrosion, damaged or perished grommet or grommet plate and security of the base block in its mounting. Access to the aerial base and mounting is obtained by removing the inspection panel on either side of the tail boom adjacent to the aerial.

REMOVAL AND INSTALLATION

11. Before removing the Z.B.X. receiver it is necessary to remove the observer's ejector seat to allow the set to be withdrawn from its mounting rack. When the seat has been removed disconnect all plugs and sockets on the front of the receiver as well as the torisonal drive adapter. To remove the receiver and motor generator only, unscrew the two small knurled nuts at the front end of the mounting, allowing the securing links to disengage from the spigots on the front of the receiver. The receiver and motor generator can then be withdrawn from its rack. The motor-generator may now be detached from its mounting by removing the locking wire from the four slide fasteners on the base of the unit and releasing the slide fasteners. This will enable the motor-generator to be unplugged from its mounting. To remove the rack, Type 64, from the aircraft, proceed as follows. Remove the receiver and motor-generator, as already described, disconnect the supply socket from the after side of the rack, release the bonding link from the spring plunger terminal on the forward side, remove the locking wire from the four corner slide fasteners, release the fasteners and withdraw the rack. Reverse the procedure when refitting, taking care to wire-lock the slide fasteners on completion.

12. To remove the control unit, Type 345, from the radio panel, disconnect the plug and socket, the torsional drive adapter and the telephone jack at the base of the unit, remove the locking wire and release the slide fastener. Refitting is the reverse of removal.

13. The mixer junction box, Type 148, may be removed from the radio panel by first disconnecting the leads from the terminal blocks on the underside of the unit. Ensure that these leads are correctly identified. Detach the two 4 B.A. screws securing the junction box to the panel. Refitting is the reverse of removal. Care must be taken to reconnect the leads to their correct terminal blocks.

14. The Z.B.X. aerial, Type 221, is mounted in the starboard boom with the whip projecting through a rubber grommet and grommet plate in the lower skin. Access to the aerial is through inspection holes in the boom, one on either side. Each panel is secured by 16 csk/hd. screws. To remove the aerial, adopt the following procedure :-

(1) Remove the Bakelite cover on the aerial mounting block by unscrewing the three cheese head screws. Remove the large nut at the base of the aerial rod, and the saddle clip securing the coaxial ferrule and disconnect the coaxial cable.

(2) Remove the four 2 B.A. csk/hd. screws securing the aerial mounting bracket to the boom. The screws are located on the undersurface of the boom at the base of the whip.

(3) Withdraw the aerial assembly complete with mounting bracket. The whip only, may be removed by loosening the locknut at the base of the rod and unscrewing the rod through the base block. The complete aerial may be removed from the mounting bracket by unscrewing the four 2 B.A. bolts at each corner of the base block. Reverse the procedure when refitting the aerial, taking care to seat the bonding strips under the appropriate nuts and washers.