Group H.1

RADIO AND RADAR SUPPLIES (CODE RT, RC, DM, IF & RS)

CONTENTS

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TABLE

APPENDICES

A list of Appendices is given at the end of this chapter.

Equipment employed

1. The major components employed in the radio and radar supplies circuits are listed in Table 1, together with the appropriate Air Publications to which reference should be made for detailed descriptions and information on the servicing required to maintain them in an efficient condition.

DESCRIPTION

General

2. The radio equipment in this aircraft comprises both main and standby U.H.F. installations *(Sect.6)*, and incorporates installations, these latter being linked with whichever radio installation is in use by equipment in the radio relay box. Power is supplied to these installations from the supply panel *(Group B.1)* when the battery master switch is on, and is taken through a circuit-breaker, marked U.H.F. services which is mounted below the supply panel, in the radio bay. This circuit breaker feeds the main U.H.F. transmitter-receiver via a further circuit breaker, which is marked ARC.52 and mounted adjacent to the U.H.F. services circuit breaker. The U.H.F. standby installation may, in addition, be operated by an auxiliary supply from a 24 volt standby battery which can be switched into use if the main supply fails. The standby battery is contained in a readily detachable crate, attached to the forward undersurface of the lower radio mounting structure.

Note . . .

When the Type M.6 standby transmitter-receiver is installed, its power supply is taken through an interference filter (Mod. 1226), which is mounted on the front of the set.

3. The radar equipment comprises D.M.E., I.F.F. and radar ranging installations, all of which are described in Sect.6, Chap.2. The D.M.E. installation is supplied from the supply panel via a circuit breaker mounted below the panel. The I.F.F. installation is likewise supplied from the supply panel and protected by a circuit breaker mounted below it. This supply operates the I.F.F. inverter which provides the a.c. supply required by the installation. A further d.c. supply to this installation is taken from a fuse on the cabin starboard shelf.

TABLE 1

Equipment type and Air Publication reference

Equipment type	Air Publication
A.R.I.18124/1 - U.H.F. *(Main)*	
▶ Set selector switch, Rotax Type D.10004 (pre-Mod 1438)	AP 113D-1113-1
Set selector switch, Honeywell Type 2TL1/10A (post-Mod 1438)	AP 113D-0012-1 ◀
Control relays, Type SM.5A-N. 25 and Type S1	AP 113D-1311-1
Press to transmit switch *(part of throttle twist grip)*	
A.R.I.23057 - U.H.F. *(Standby)*	
Standby battery, Type Voltabloc Ref. No. 19-VO-7	AP 113C-0307-1
A.R.I.18012 - Telebriefing	
▶ Telebriefing push switch, Type 1290	AP 113D-1100 Series
Telebriefing indicator lamp, Rotax H.2705, Type A	AP 113F-0600 Series
A.R.I.5877 - Radio compass	
U.H.F. mix switch, C.W.C. Type XD.778	AP 113D-1100 Series
A.R.I.23013 - D.M.E.	
Circuit breaker	AP 113D-0900 Series
A.R.I.5820 - Radar ranging	
Radar ranging ON/OFF switch, type D.5406	AP 113D-1100 Series ◀
Radar supply indicator, type C.5165Y, Mk.1	AP 113E-0615-1
▶ Inverter type 206	AP 113D-0124-1 ◀
Circuit breaker, type A.6	AP 113D-0403-1
Control panel, Type 38	AP 113D-0747-1
A.R.I.5848 - I.F.F.	
Circuit breaker, type A.6	AP 113D-0903-1
Inverter, Type 200	AP 113D-0113-1
Control panel, Type 38	AP 113D-0747-7
Suppressor, Type G.2	AP 113D-1902-1
▶ I.F.F. Master switch, Type XD.779 No.4 I.F.F. I.P. switch, Type XD.781 No.4	AP 113D-1100 Series ◀

The radar ranging installation obtains its supply from No.2 inverter in the a.c. supplies circuit *(Group E.1)* and from an inverter fed from a circuit breaker located below the supply panel.

Radio supplies

Radio relay box

4. The radio relay box is mounted on the underside of the top radio mounting structure, in the radio bay; it contains most of the fuses and the relays that integrate the various circuits of the U.H.F. installation. These are illustrated diagrammatically in fig.3. All the fuses in use except No.1 and No.2 are fed from the U.H.F. services circuit-breaker: No.1 fuse is fed from the standby battery, and No.2 from two linked fuses on the supply panel which are supplied from the fire extinguisher circuit *(Group C.2)* No.2 fuse passes energizing current to relays A and B in the tele-briefing circuit. The other fuses in the relay box, i.e. those fed by the U.H.F. services circuit-breaker, pass current to the associated relays, all of which are contained in the radio relay box. Relay J receives an energizing supply from outside the relay box, i.e. from the hydraulic pressure failure circuit *(Group D.2)*. The resistors and capacitors which form the feed-back loop that is switched by relay J are contained in the relay box, together with two resistors associated with the D.M.E. circuit.

A.R.I.18124/1 – U.H.F. (main)

5. The transmitter-receiver is supplied via the ARC.52 circuit-breaker, located below the supply panel in the radio bay. With the Normal/Standby set selector switch at MAIN, this set becomes operative when the function switch of the U.H.F. control unit is placed to either of its ON positions. Relays D and E *(fig. 1)* which are supplied from fuse No. 12, are energized, and connect the set, in the "receive" condition, to the pilot's mic-tel. socket. If the D.M.E. set is functioning, its output will be fed via contacts on relay C to the transmitter-receiver and from there to the pilot's telephones. The set may be switched to the "transmit" condition by operation of the press-to-transmit switch, thereby energizing relay C. Relay C's operating coil is supplied from fuse No.9, via the set selector switch contacts 4–5 *(pre-Mod 1438)* or 1–2 *(post-Mod 1438)*. With this relay energized, the D.M.E. connection is broken at contacts 5–4, and the pilot's microphone is connected to the transmitter-receiver via contacts 5–6.

6. The hydraulic failure warning circuit *(Group D.2)* supplies the operating coil of relay J, which is connected to earth via a rectifier and contacts 2–1 of relay C. When relay J is energized, its contacts 2–3 or 5–6 connect a resistor-capacitor feed-back loop between the microphone and telephone circuits of the transmitter-receiver in use, thereby providing an audio signal in the pilot's telephone. The audio warning cannot operate during transmission, i.e. while relay C is energized, since its contacts 2–1 are then broken, hence relay J cannot be energized.

A.R.I.23057 – U.H.F. (standby)

7. With the set selector in the STBY position, the supply to the standby set from fuse No.9 is completed, being taken through a resistor which reduces the voltage to 24 volts, and via the set selector switch contacts 4–5 *(pre-Mod 1438)* or 1–2 *(post-Mod 1438)*. Contacts on relays D and E *(which remain unergized)* connect the transmitter-receiver in the "receive" condition, to the pilot's mic-tel. socket. The set may be switched to the "transmit" condition in the same manner as that already described, i.e. by energization of relay C. When the set selector switch is in the S'BY EMGY BATT position, the standby set is supplied by the standby battery, through fuse No. 1 in the radio relay box, via the set selector switch contacts 6–5 *(pre-Mod 1438)* or 3–2 *(post-Mod 1438)*. Connection of the telephone and microphone circuits is the same as for the STBY position.

A.R.I.18012 - Telebriefing

8. The telebriefing plug is connected to the pilot's mic-tel. socket by relays A and B. These relays are supplied through fuse No.2 in the radio relay box; this fuse being supplied from the supply panel; as described in para 4. The relays are energized when, by making the telebriefing plug connection, the earth return of the circuit through the operating coil is completed. The contacts on relay A connect the microphone circuit, while on relay B contacts 2-3 connect the telephone circuit,

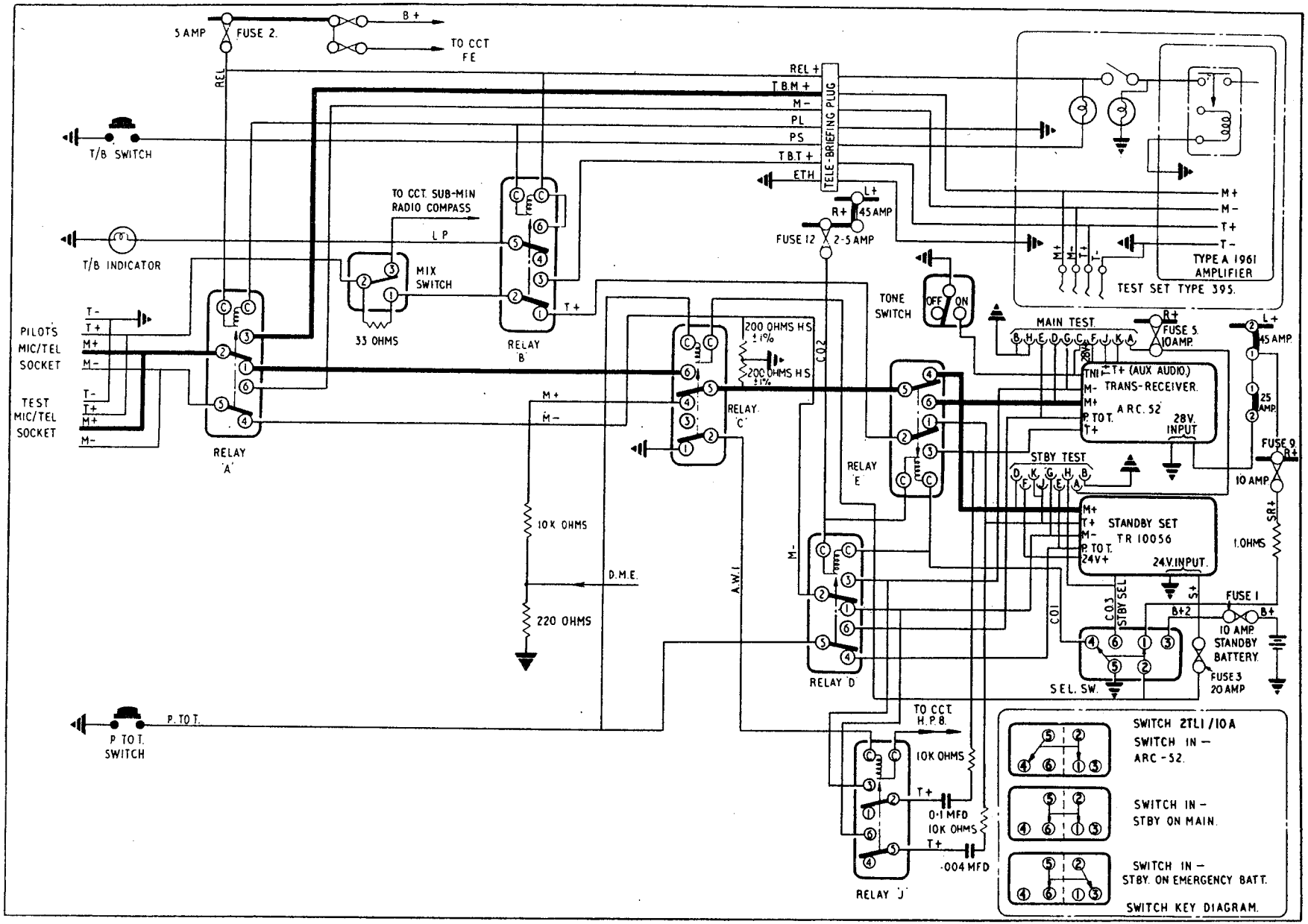
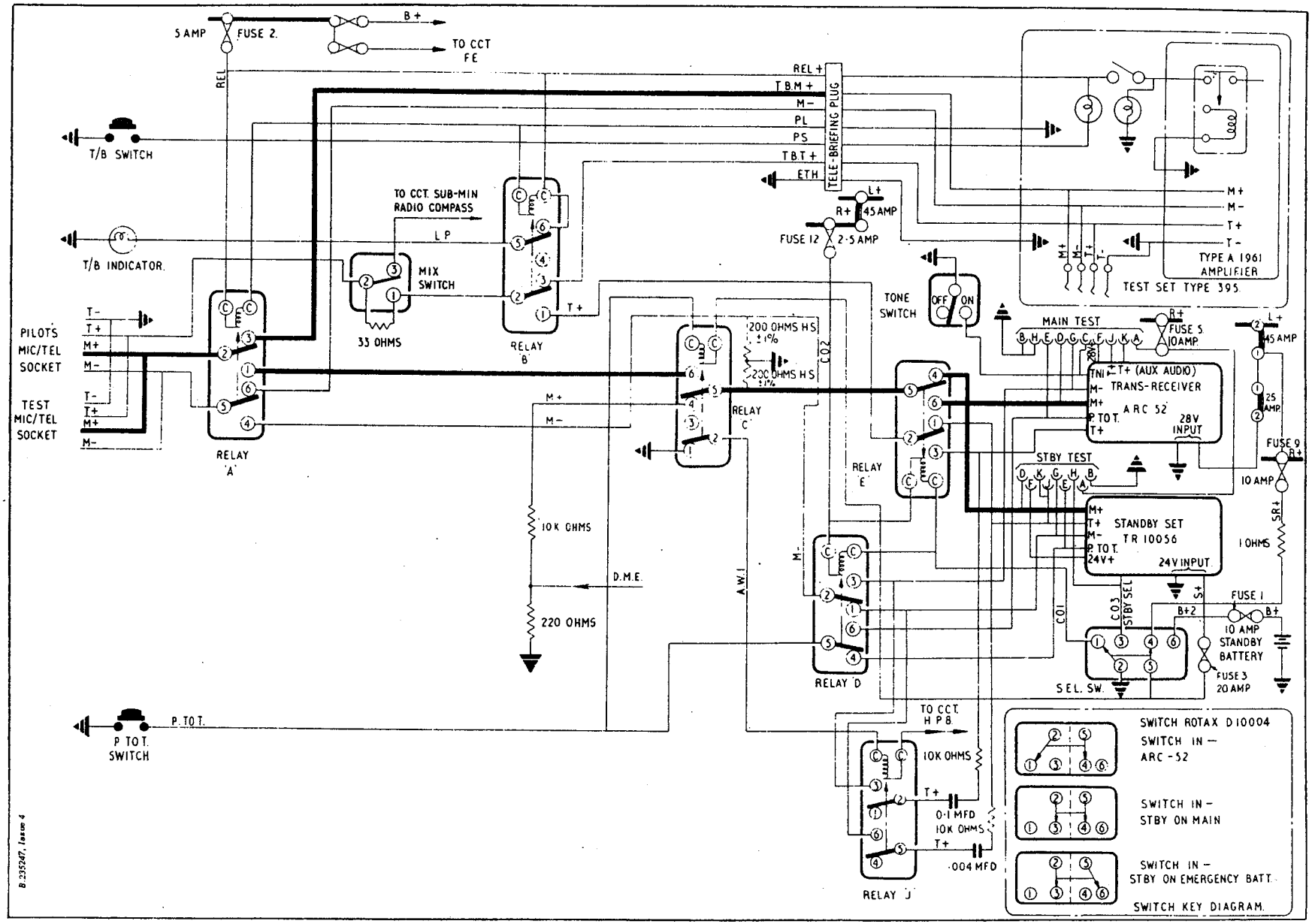


Fig. 1 Radio supplies — U.H.F. and telebriefing (theoretical)

▶ **(Mod 1438 added)** ◀



▶ **Fig. 1A Radio supplies – U.H.F. and telebriefing (theoretical) (pre-Mod 1438)** ◀

and contacts 5-6 supply the tele-briefing indicator lamp from the energizing circuit. This circuit also supplies a relay in the tele-briefing building which operates when the tele-briefing switch in the aircraft is pressed, thereby enabling the pilot to talk back.

9. As the telephones are connected to the telebriefing amplifier, information may be received over the system, but when it is required to talk back over the installation, the aircraft's tele-briefing push switch must be operated. This push switch completes the earth return for a relay within the tele-briefing building, which connects the microphone to the amplifier and also illuminates a lamp in the building to indicate which aircraft's microphone is in circuit.

A.R.I.5877 - Radio compass

10. The radio compass installation is supplied from a fuse situated on the cabin starboard shelf, adjacent to the control unit to which the supply is connected. The supply is available when the battery master switch is on, and the radio compass becomes operative when the ON/OFF switch on its control unit is put to ON. Signals from the installation are fed to the pilot's telephones via contacts 2 and 3 of a U.H.F./MIX switch located on the cabin starboard shelf.

Operation

General

11. If the foregoing descriptions of the switching operations of individual relays are read in conjunction with Sect.6, Chap.1, the operation of the U.H.F. installation as a whole should be clear. The operation of the aircraft's electrical supply system is described in Sect.5, Chap.1, Group B.1.

Radar supplies

A.R.I.23013 D.M.E.

12. The D.M.E. installation is fed from the aircraft's electrical supply panel in the radio bay and is protected by a circuit breaker situated below this panel. As there is no electrical switching of the power supply, further explanation is unnecessary.

A.R.I.5848 - I.F.F.

13. The I.F.F. installation is fed from the aircraft's supply panel in the radio bay and is protected by a circuit-breaker situated below this panel. A further d.c. supply is taken from a fuse on the cabin starboard shelf. As there is no electrical switching of the power supply, further explanation is unnecessary.

A.R.I.5820 - Radar ranging

14. The supply for the radar ranging installation is obtained from No.2 inverter in the a.c. supplies circuit *(Group E.1)* and from an inverter situated in the radio bay. The supply to the latter inverter is taken from a circuit breaker fed from the aircraft's electrical supply panel. This circuit breaker is situated adjacent to the D.M.E. circuit breaker below the supply panel and feeds the inverter via contacts of a relay within the inverter. The inverter is protected from an overload by a fuse carried in a fuse-holder situated on the forward face of the port fuel tank access door on frame 19 in the radio bay.

15. The installation is switched on by a switch marked G.G.S. RADAR RANGE located on the forward portion of the cabin port shelf. A magnetic indicator, marked RADAR SUPPLY IND., is situated adjacent to this switch to show when the installation is switched on and is ready for operation. To enable the ranging information to be isolated from the gun sight, without switching off the installation, an ON/OFF switch marked RADAR PRESENTATION is provided on a bracket attached to the port top longeron just aft of the instrument panel.

Operation

D.M.E.

16. The A.R.I.23013 is switched on and controlled from a control unit located on the cabin starboard shelf as described in Sect.6, Chap.2. The operation of the power supply will be obvious once reference is made to fig.3.

I.F.F.

17. The A.R.I.5848 is switched on and controlled by two switches and a control

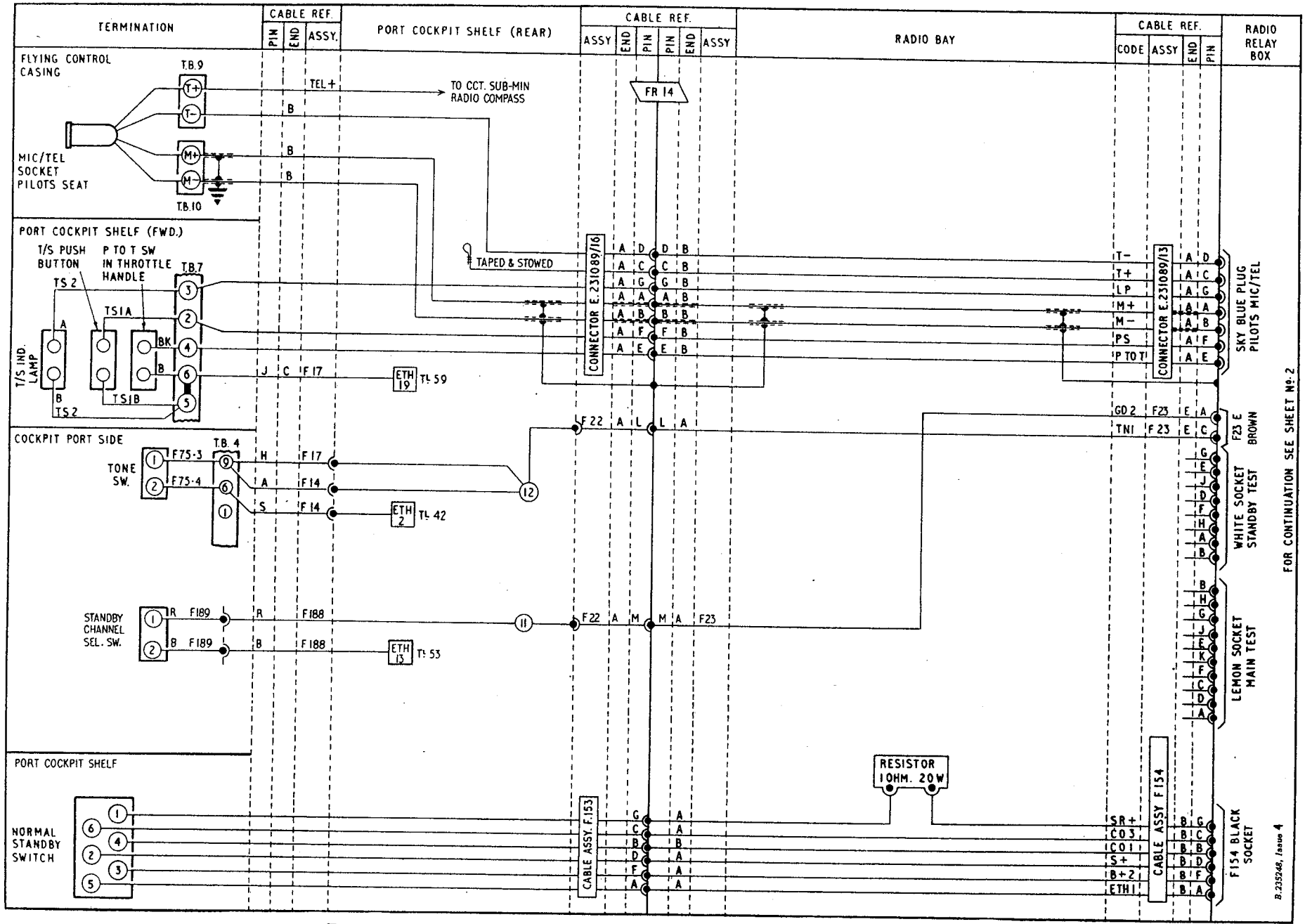
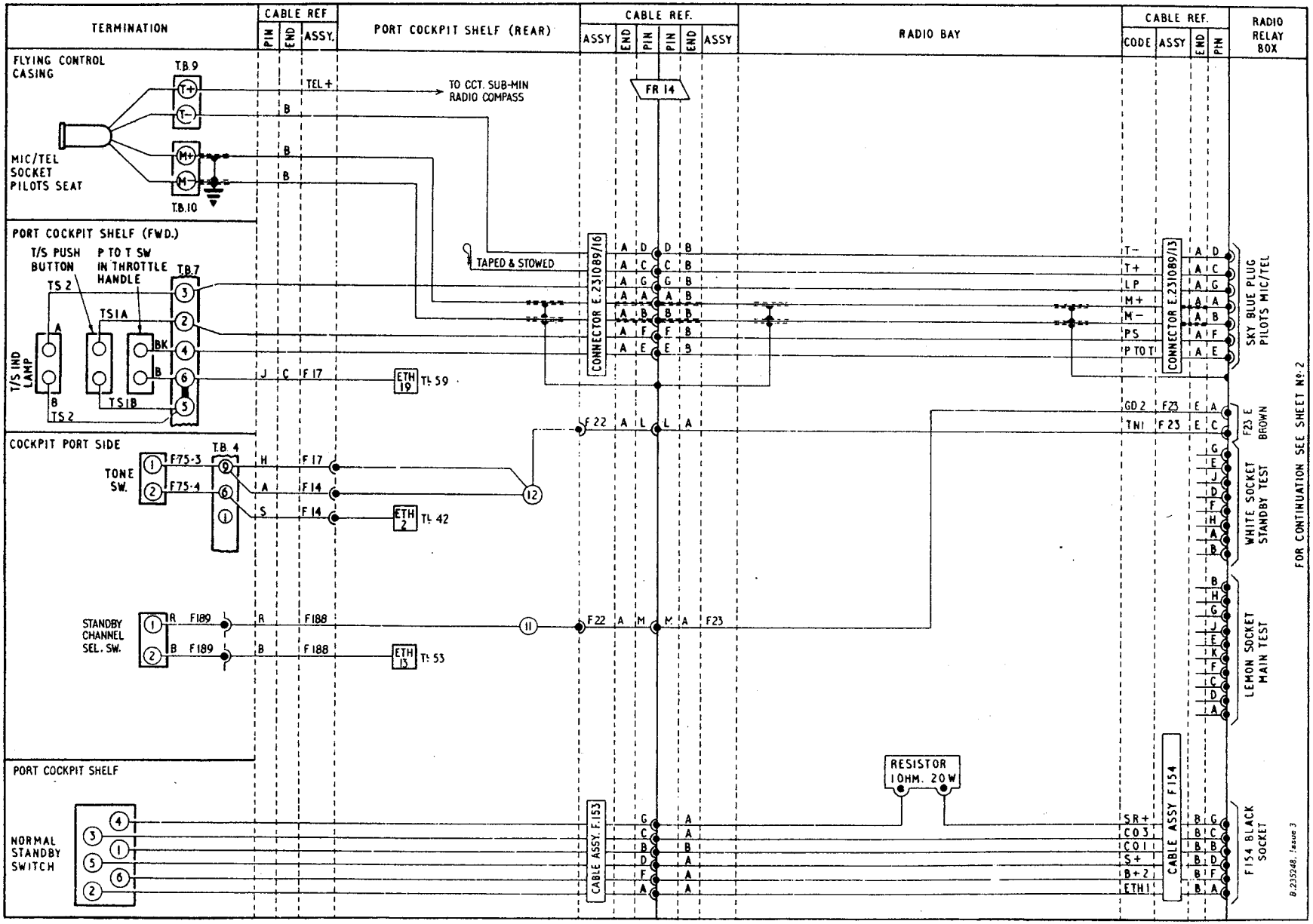


Fig.2 Radio supplies - U.H.F. and telebriefing (routeing sheet 1)

▶ (Mod 1438 added) ◀



▶ Fig. 2A Radio supplies — U.H.F. and telebriefing (routeing sheet 1) (pre-Mod 1438) ◀

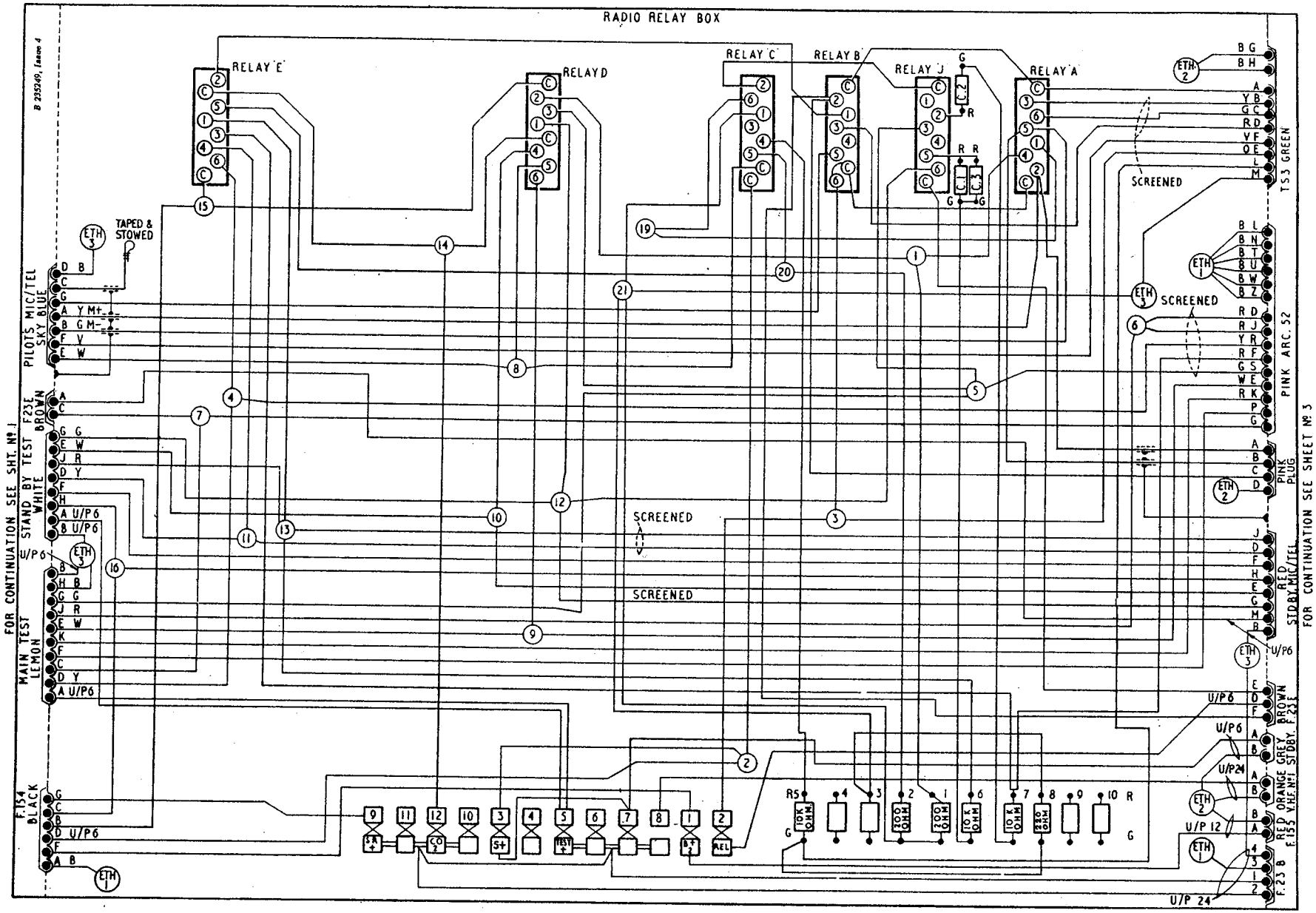


Fig.3 Radio supplies - U.H.F., and telebriefing (routeing sheet 2)

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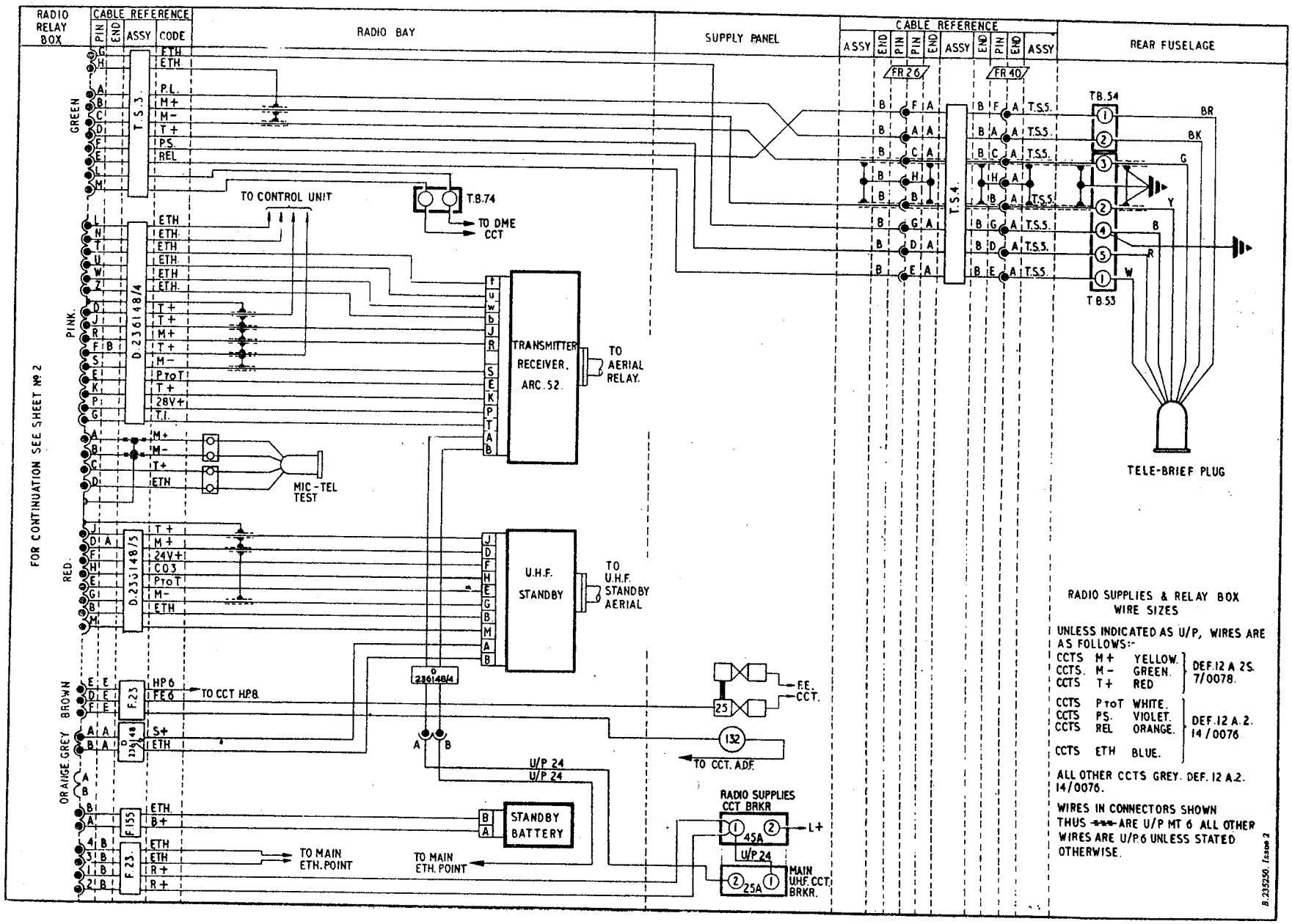

Fig.4 Radio supplies - U.H.F. and telebriefing (routeing sheet 3)

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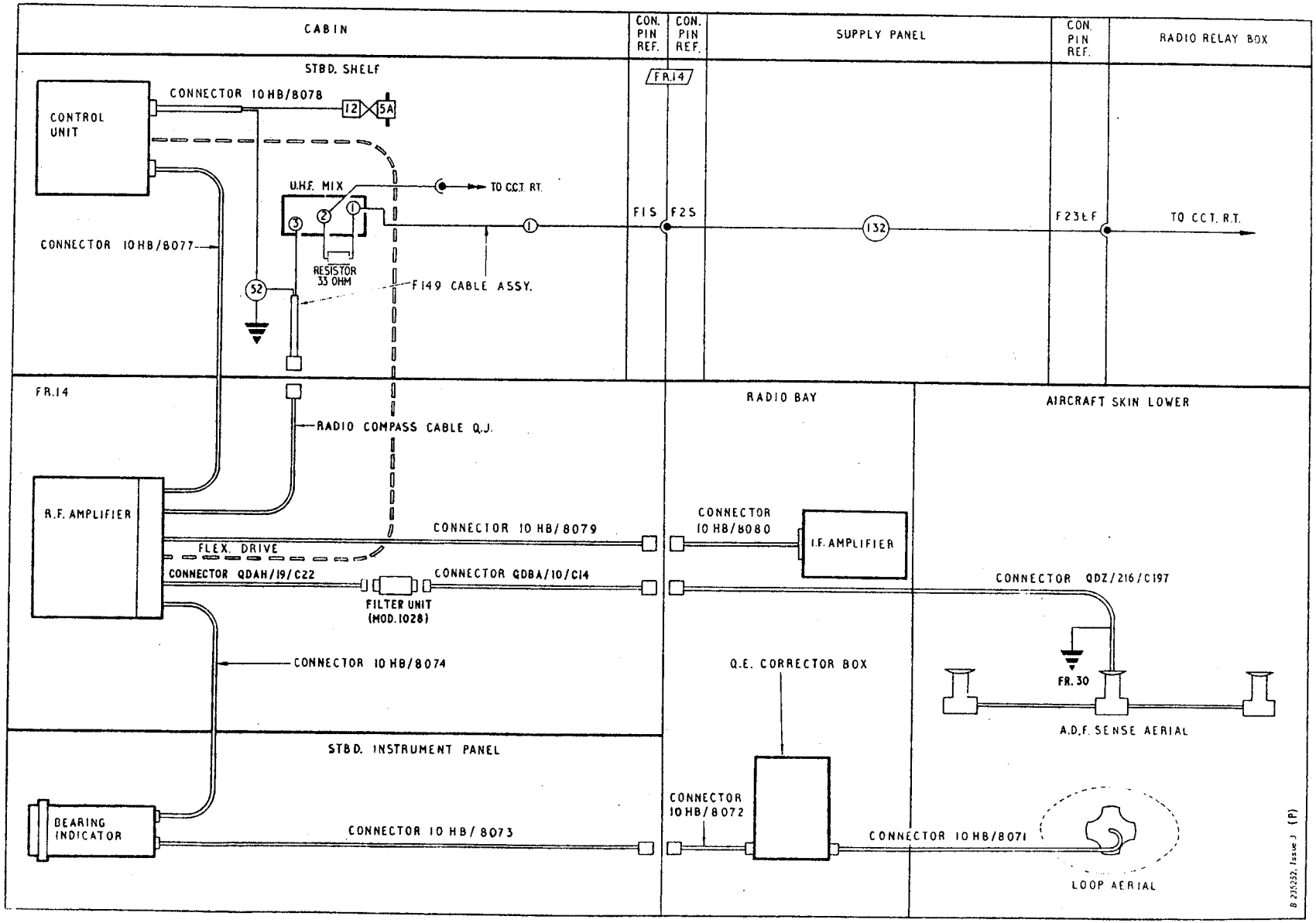

Fig.5 Radio supplies - radio compass (routeing)
◀ (Mod.1028 incorporated) ▶

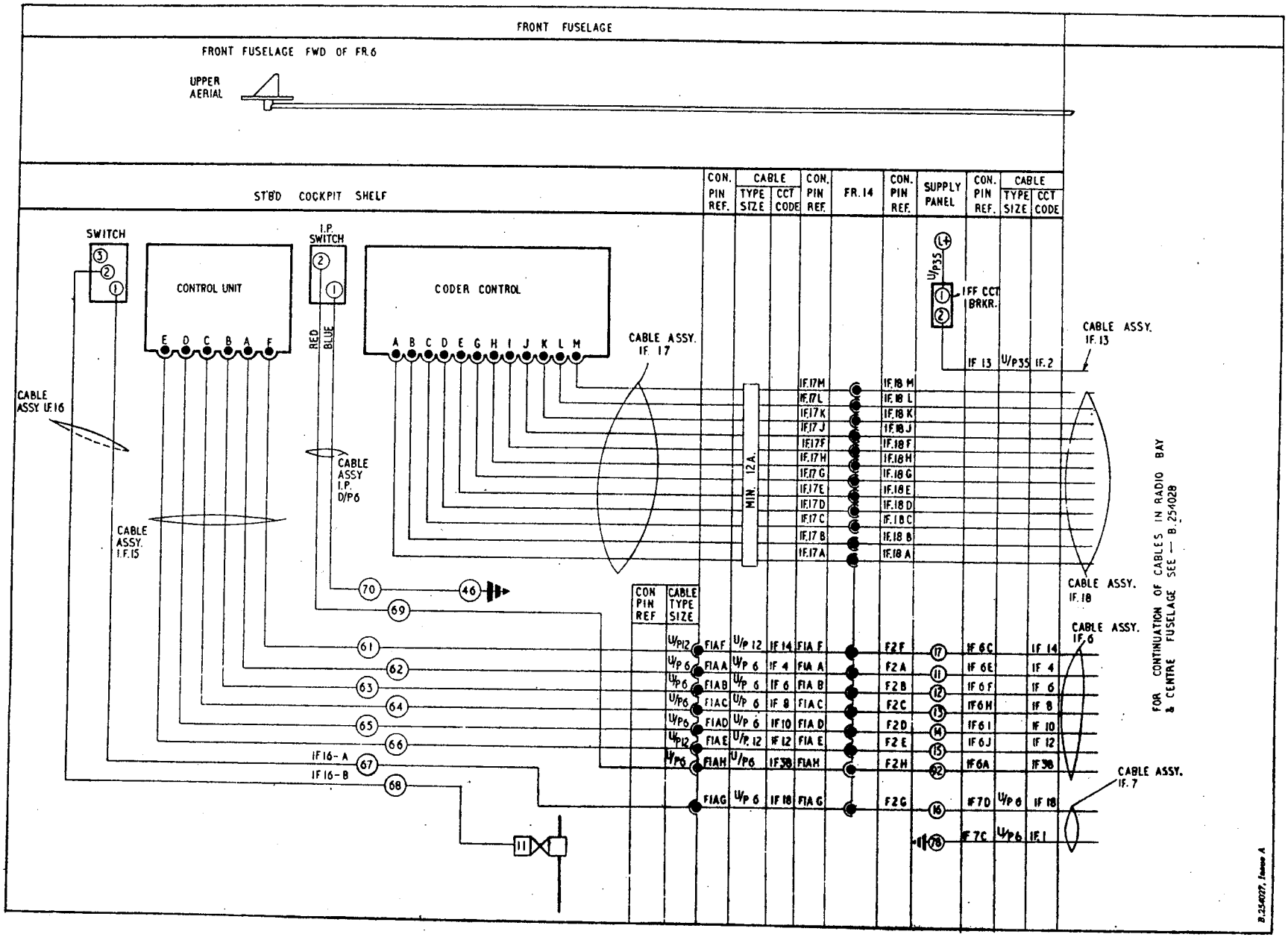

Fig.6 Radar supplies - I.F.F. (routeing sheet 1)

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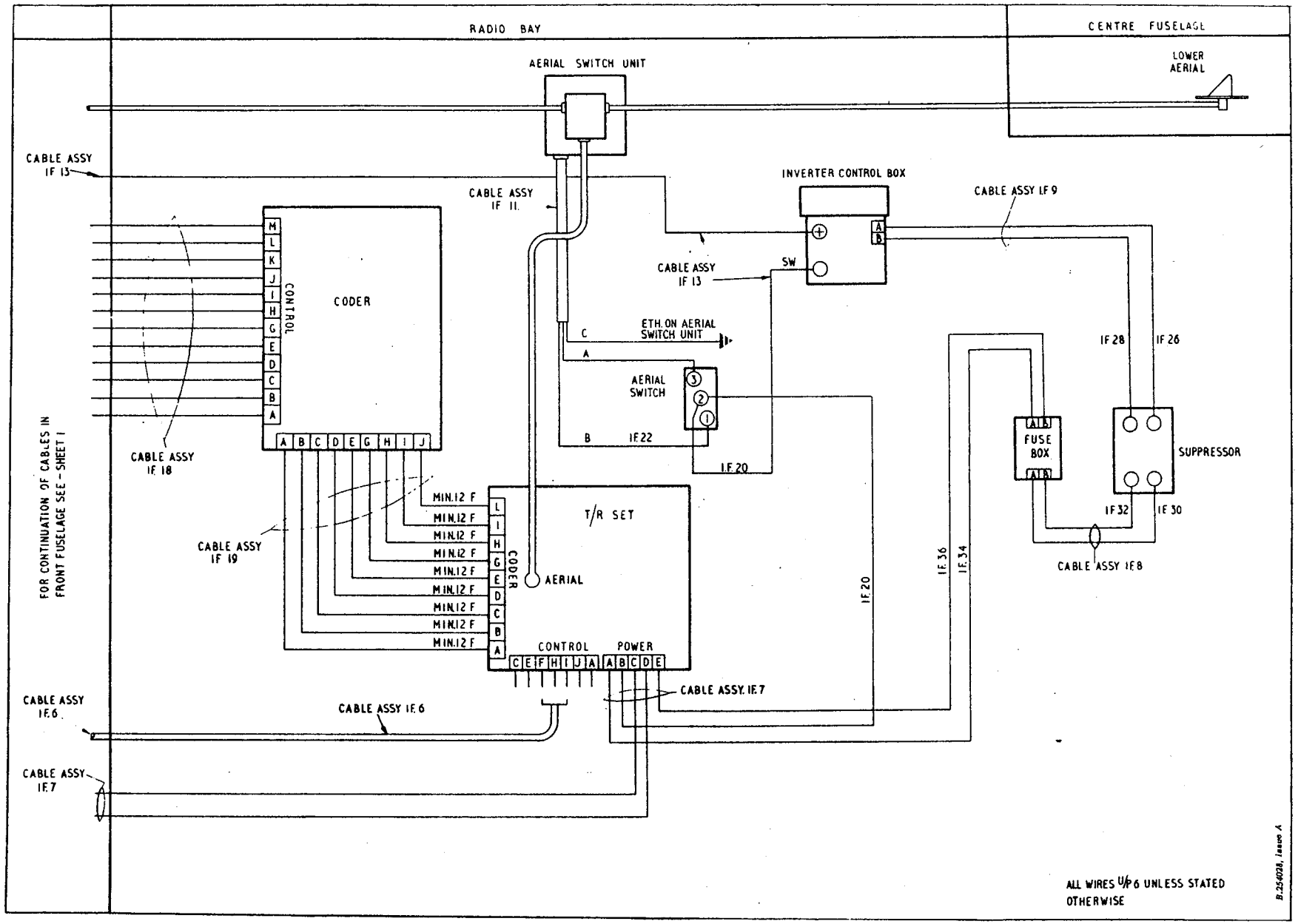

Fig.7 Radar supplies - I.F.F. (routeing sheet 2)

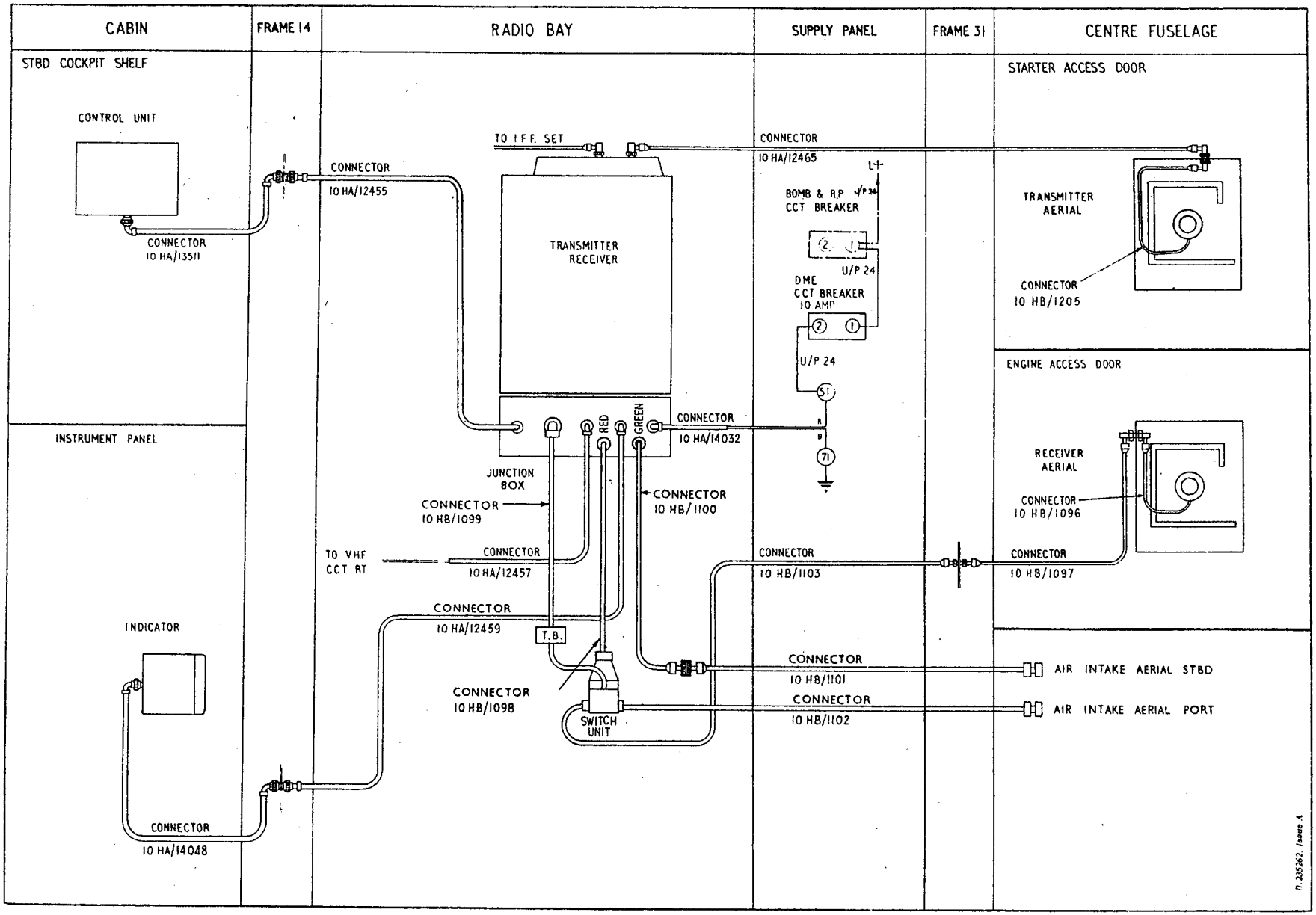

Fig.8 Radar supplies - D.M.E.

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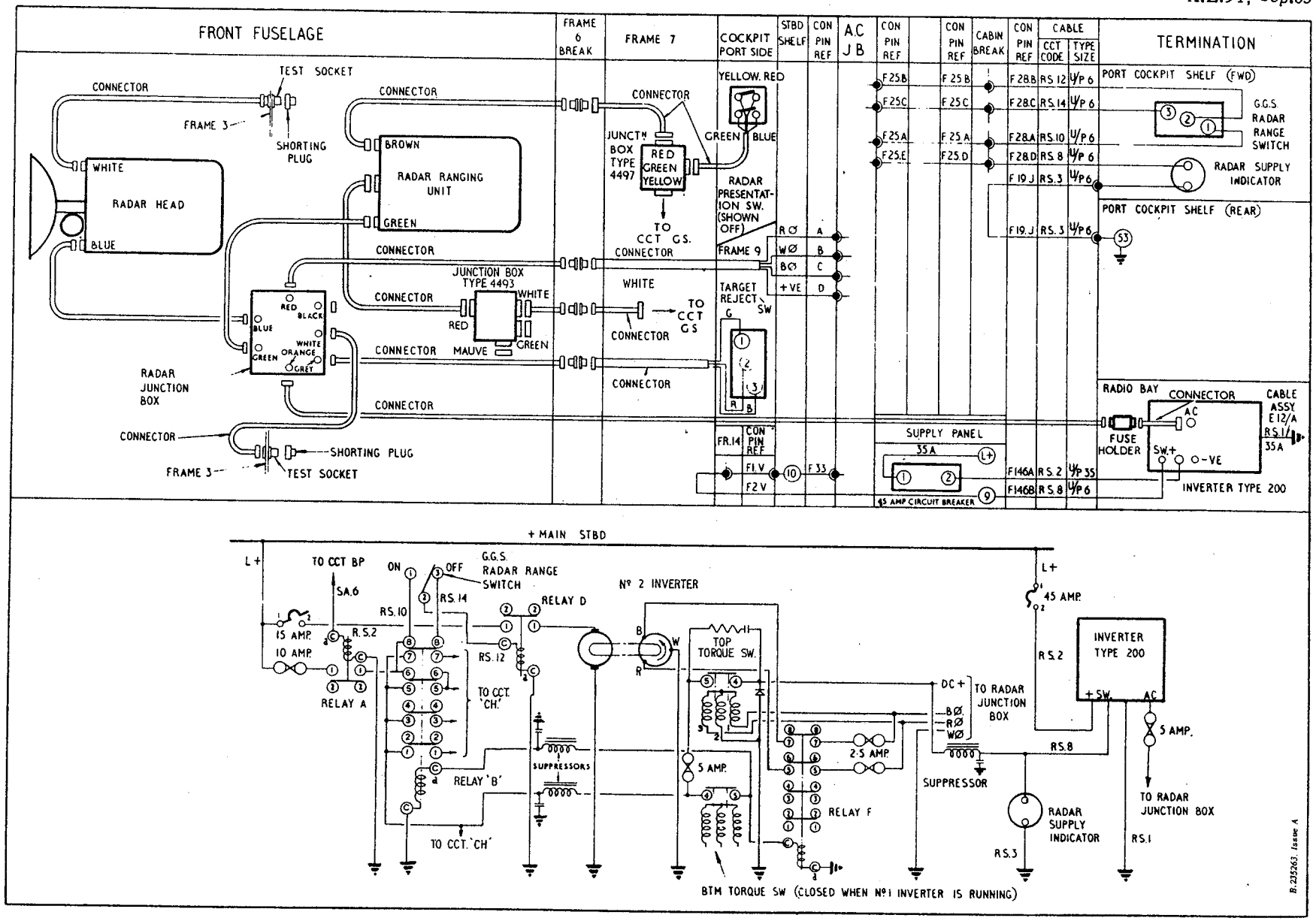

Fig.9 Radar supplies - Radar ranging

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unit, situated on the cabin starboard shelf. The function of these items is described in Sect.6, Chap.2, and the operation of the power supply will be obvious.

Radar ranging

18. The supply for the radar ranging installation, which is obtained from No.2 inverter in the a.c. supplies circuit *(Group E.1)* and from the radar ranging inverter is available only when No.2 inverter is not operating as a standby for No.1 inverter. The supply is controlled by the top torque switch and relay F. When the radar ranging on/off switch is placed in the ON position, relay D is energized and completes the feed to No.2 inverter which commences operation to feed the top torque switch and phase bus-bars in the radar ranging junction box, via the contacts of relay F, which are made while this relay is energized. Relay F is energized while No.1 inverter is operating normally and supplying the aircraft's a.c. equipment.

19. When the output from No.2 inverter reaches 100 volts, the top torque switch will make contact to supply d.c. to the radar ranging junction box, radar supply indicator and to the relay within the radar ranging inverter. When the latter relay is energized its contacts complete the supply from the radar ranging circuit breaker to the inverter and this inverter then operates to supply the radar ranging installation.

20. If No.1 inverter fails, relay F will be de-energized, as described in Group E.1, and automatically off-load the radar ranging installation to allow No.2 inverter to feed the equipment normally supplied by No.1 inverter. When this occurs, the top torque switch, the radar supply indicator and the relay within the radar ranging inverter will all be de-energized. The radar ranging inverter will, therefore, cease operation and stop supplying the radar ranging installation.

SERVICING

General

21. Testing and servicing of the U.H.F. standby battery should be carried out periodically, in accordance with the instructions given in A.P.4343A. In addition, all components of the installation should be kept clean, and the standard routine tests for security and serviceability as described in the appropriate Air Publications listed in Table 1, should be applied. When a fault is reported in either the radio or radar installations, the supply circuits should first be checked, to ensure that the fault does not lie in these circuits. Ensure also that all connectors are correctly mated, and test the voltage, both on and off load. General servicing of the electrical system is described in Group A.1.

REMOVAL AND ASSEMBLY

General

22. Once access has been obtained, the removal and assembly of the electrical components forming the radio and radar supply circuits should present no difficulties. The removal of the I.F.F. inverter is described under the removal of the gun firing panel in Group A.2 and the removal of the radio relay box, which carries the majority of the radio supply equipment, is covered in Sect.6, Chap.1. Removal of the U.H.F. standby battery is also described in Sect.6, Chap.1.

LIST OF APPENDICES

Appendix 1

TEMPORARY V.H.F. RADIO SUPPLIES (CODE RT)

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

Introduction

1. This group describes the supply circuit for the temporary V.H.F. radio installation fitted to aircraft incorporating Mod.973. The installation is supplied through the radio services circuit breaker and employs adapter cables for connection with the existing U.H.F. radio connections and relay box *(Group H.1)*.

DESCRIPTION

Radio supplies

2. The A.R.I.18065 is a twin V.H.F. communication system and comprises two transmitter-receivers, Set No.1 and Set No.2. They obtain their supply from the aircrafts' electrical system and are protected by separate fuses located in the radio relay box in the radio bay. A standby battery is provided as an emergency supply for the press-to-transmit switch control circuit.

3. The majority of the supply fuses for the V.H.F. installation are contained, together with the control relays, in the radio relay box, The supply is connected to the transmitter-receivers through fuses No.7 and No.8, which are fed, via the radio services circuit breaker, located below the aircraft's electrical supply panel in the radio bay.

4. The set in use is switched from receive to transmit by a press-to-transmit push switch incorporated in the throttle twist grip. The press-to-transmit switch and mic.-tel. socket are transferred from one set to the other by operation of a set selector switch situated on the cabin port shelf. The operation of the set selector switch and the control relays in the radio relay box is described in para.6 to 10, and a description of the temporary V.H.F.

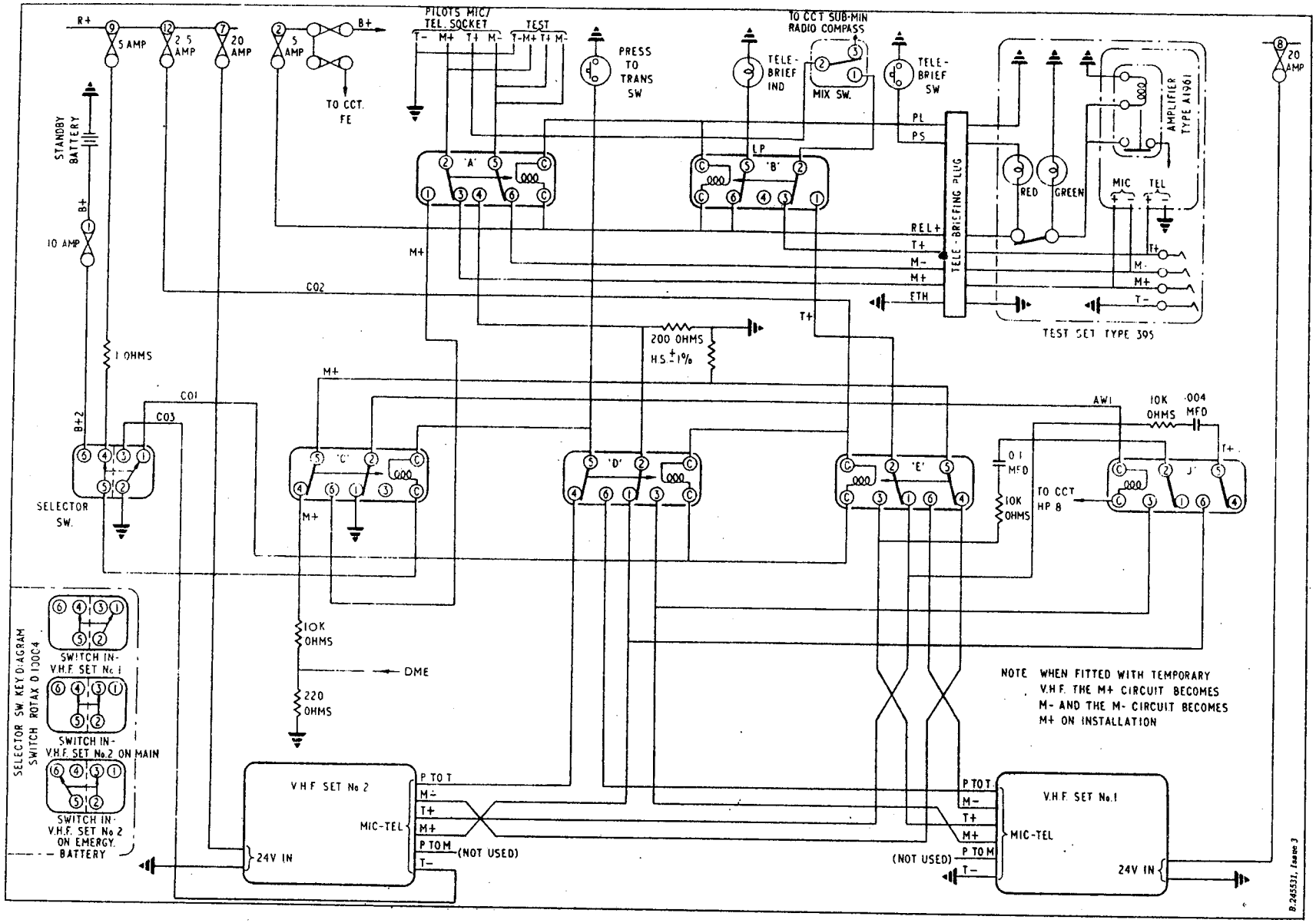

Fig. 1 V.H.F. radio (theoretical)

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installation will be found in the Sect.6, Chap.1.A.

Operation

5. The two transmitter-receivers are controlled via relays in the radio relay box, as described in the following paragraphs. Reference should also be made to fig.1 while reading this description to ensure a full understanding of the circuit.

6. With the battery master switch in the ON position and the set selector switch in the No.1 SET, position as shown on fig.1, relay C will be in the de-energized state and relays D and E energized. The microphones, telephones and press-to-transmit push switch will thus be connected to transmitter-receiver No.1. Rotation of the selector switch knob of No.1 control unit from OFF to any one of the other ten positions will select No.1 transmitter-receiver to the channel allocated for that particular position of the control switch. When a channel is selected, signals should be heard, as the transmitter-receiver is automatically in the receive condition once it has been selected for use.

7. When the press-to-transmit push switch is pressed it makes the earth retum for relay C in the radio relay box and also completes the earth retum for the switching relay within the transmitter-receiver in use, via the contacts of the energized relay D. The relay within the transmitter receiver, when energized, switches the set from "receive" to transmit. Relay A when de-energized connects the microphone to No.1 transmitter-receiver, via the contacts of relay C, which is still in the energized state.

8. When the set selector switch is in the No.2 position relays D and E in the radio relay boxare de-energized to transfer the press-to-transmit switch, microphone and telephones to No.2 transmitter-receiver. Rotation of the selector switch knob of No.2 control unit from OFF to any one of the other ten positions will select No.2 transmitter-receiver to the channel allocated for that particular position of the control switch. When a channel is selected signals should be heard, as this transmitter-receiver is also automatically in the receive condition once it has been selected for use. The press-to-transmit switch controls the switching relay within No.2 transmitter-receiver, via the contacts of the de-energized relay D and the microphone is connected to No.2 transmitter-receiver via the contacts of de-energized relay E.

9. The audio warning of hydraulic system failure is accomplished by a feed back loop formed by interconnecting the microphone positive line with the telephones via a resister and capacitor network. This loop is, however, normally broken at the contacts of the de-energized relay J in the radio relay box and is only completed when this relay is energized as described in Sect.5, Chap.2, Group 5.A.

10. Should fuse 9. (fig.1) blow, the press-to-transmit switch facility may be maintained by switching the selector switch to No.2 SET.ALTVE. The supply will now be obtained from the standby battery to energize relay C, when the press-to-transmit switch is operated similar to that explained in para.6 and 7.

SERVICING

General

11. For general servicing of the electrical system, reference should be made to Group A.1. Apart from keeping all the components clean and carrying out the standard routine tests of security and serviceability no further servicing should be necessary. Should a fault be reported in the radio installation, the supply circuit should be checked before any other tests are made, to ensure that the failure is not located in these circuits. Ensure that the connectors are correctly mated and test the voltage, both on and off load.

REMOVAL AND ASSEMBLY

General

12. Once access has been obtained, the removal and assembly of the electrical components forming the radio supply circuits should present no difficulties. The removal of the radio relay box, which carries the majority of the radio supply equipment, is covered in Sect.6, Chap.1.

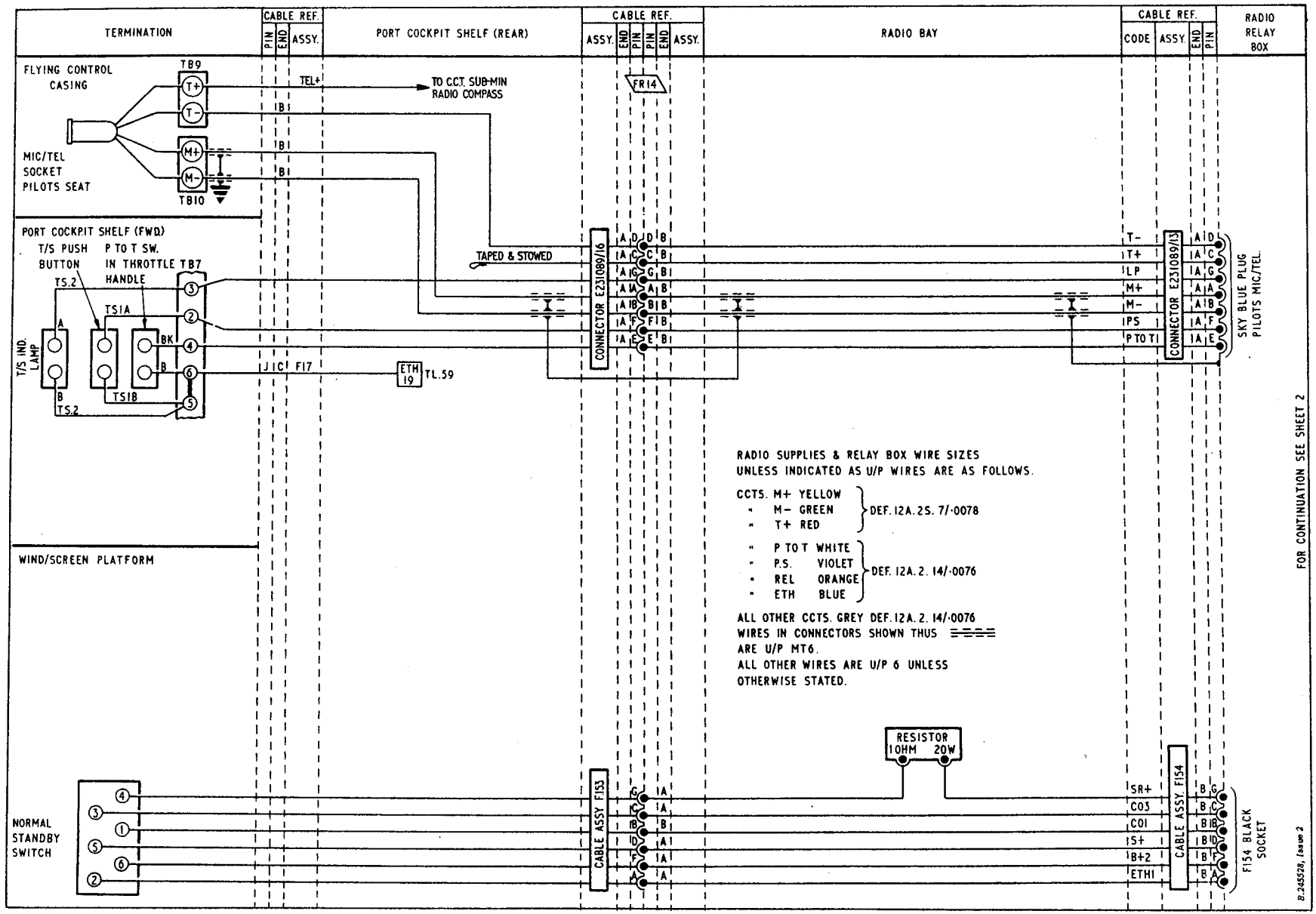

Fig. 2 V.H.F. radio (routeing sheet 1)

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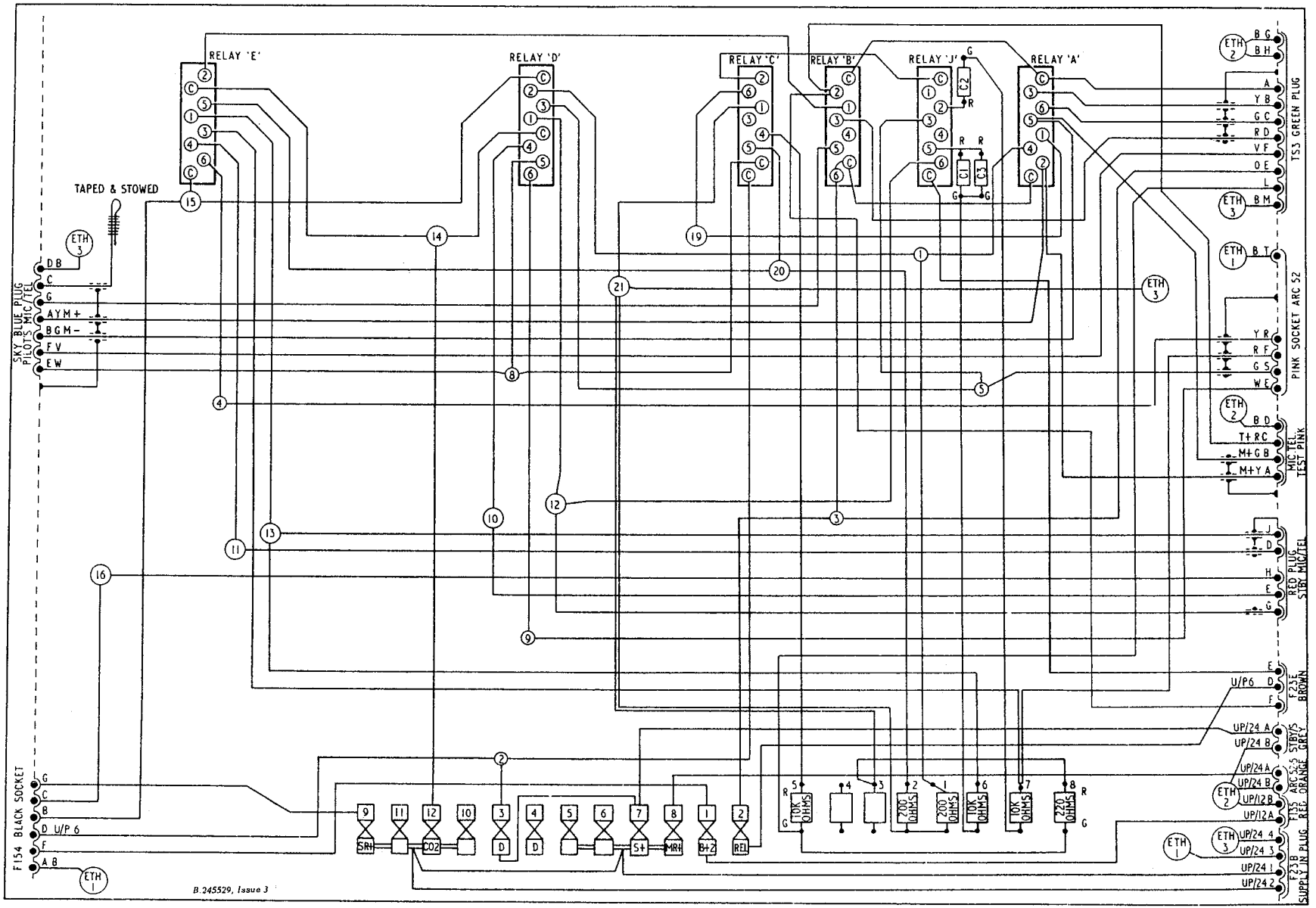

Fig. 3 V.H.F. radio (routeing sheet 2)

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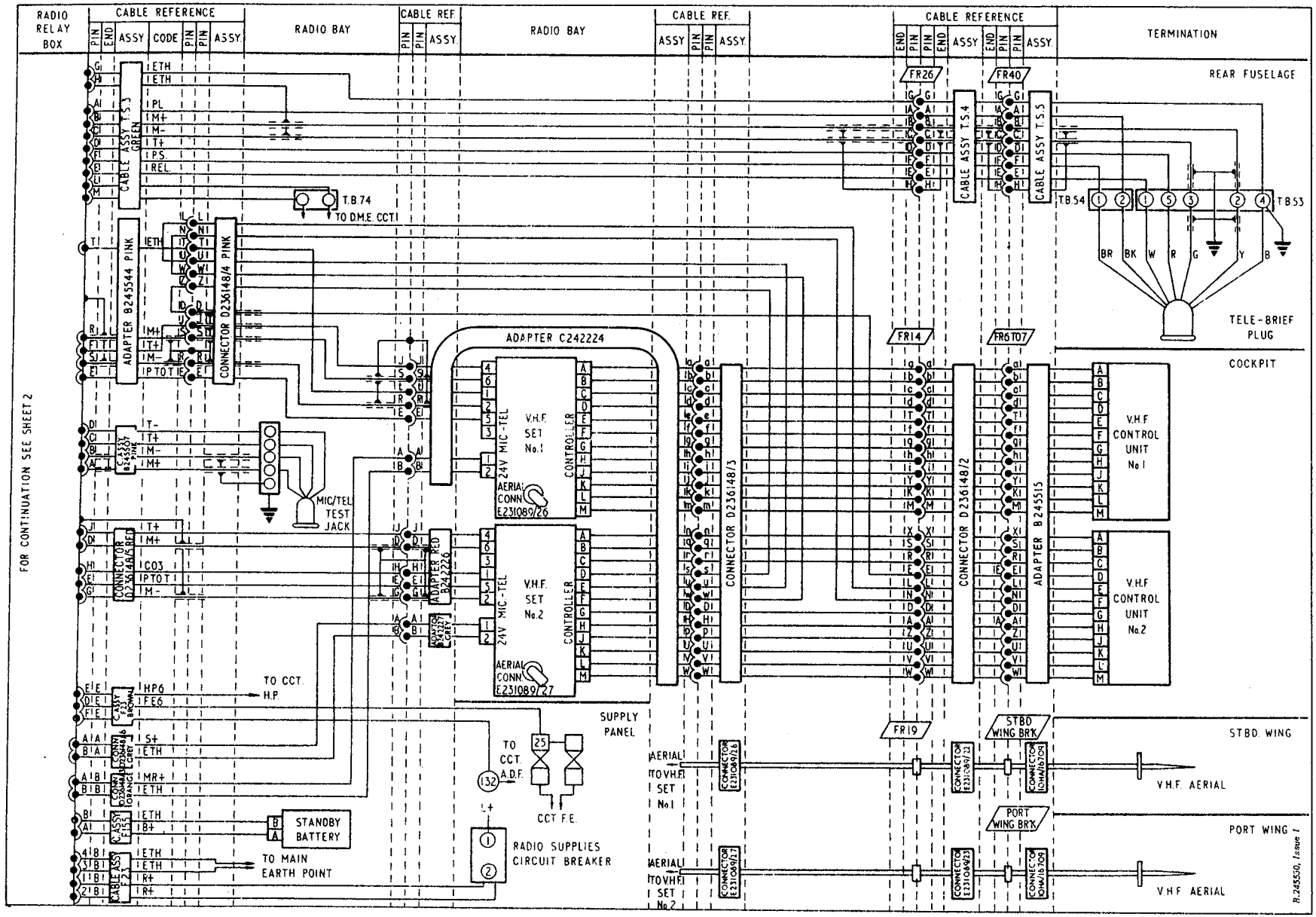

Fig. 4 V.H.F. radio (routeing sheet 3)

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Appendix 2 – MOD.1369

(IFF/SSR 1520 – ARI 23134/3) (CODE IF)

LIST OF CONTENTS

Introduction

1. This appendix contains the description and operation of the supply circuits for the IFF/SSR installation as fitted to the Mk.9 aircraft together with information on the servicing required to maintain the equipment in an efficient condition. Theoretical and routeing illustrations of the circuits are included and if further information on the installation is required reference should be made to SRIM 3729. For a description of the aircraft electrical system, reference should be made to Groups A.1, A.2 and A.3 and further information on the standard items of equipment used on the installation will be found in the Air Publications listed in Table 1.

Note . . .

The IFF Mk.10 equipment (ARI 5848) described in Group H.1 is removed from the aircraft on the incorporation of Mod.1369.

DESCRIPTION

General

2. The IFF/SSR (Identification Friend or Foe/Secondary Surveillance Radar) installation (ARI 23134/3) forms the airborne part of the IFF/SSR system the purpose of which is to enable an aircraft to self identify rapidly and automatically when challenged by appropriately equipped ground installations. When interrogated by the ground station the airborne equipment responds by transmitting the appropriate reply signal.

Equipment and supply

3. The installation transponder is installed transversely on the upper radio mounting immediately forward of frame 19. It is slid into an anti-vibration mounting tray and held in

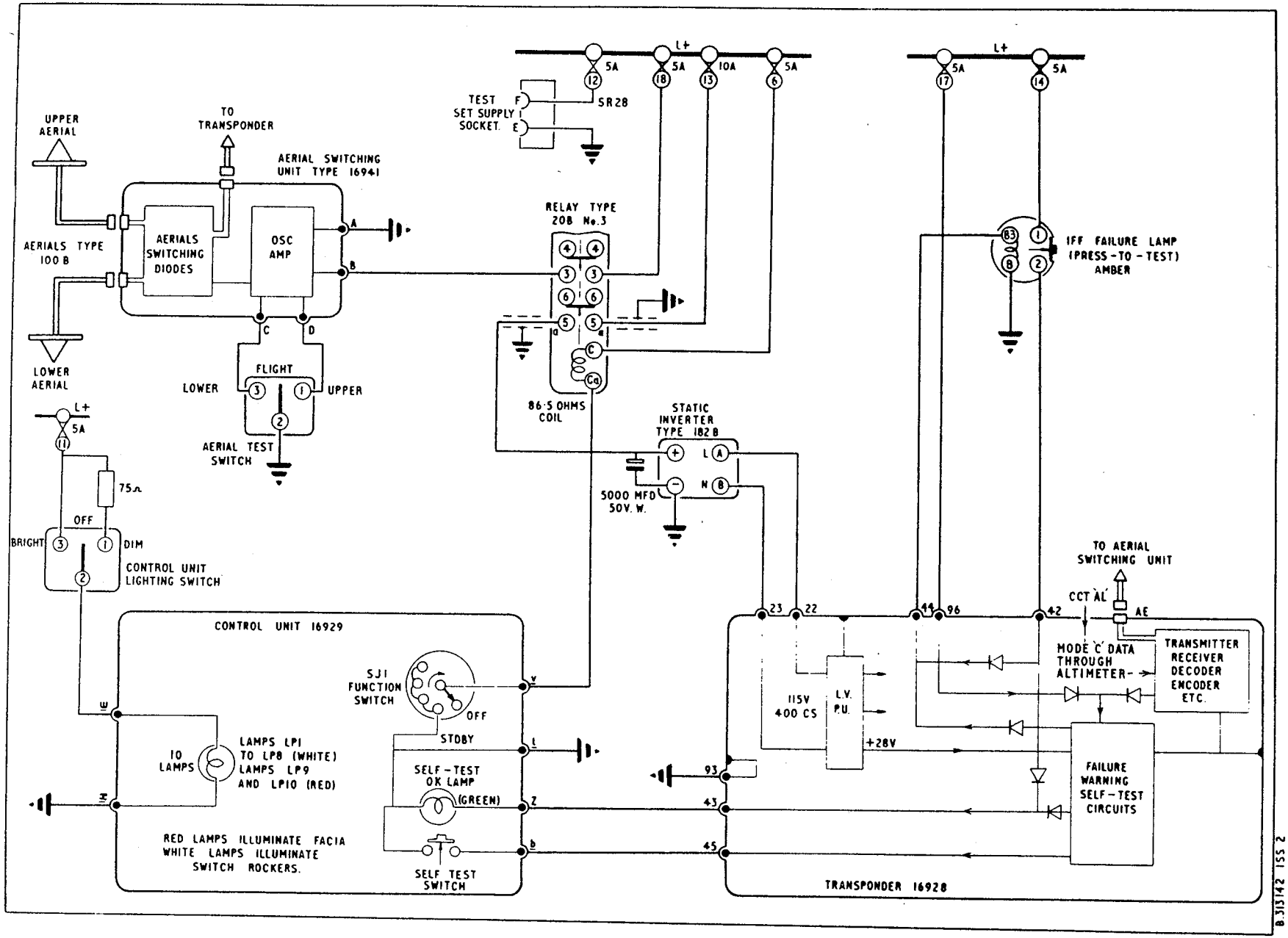


Fig. 1 IFF/SSR supplies (theoretical)
◀ (minor amendment) ▶

position at the inboard end by two knurled catches. Electrical connections is by a single 98-way pin and socket connector, incorporating the input from the height encoding altimeter (group 3.A refers), mounted at the outboard end. A co-axial connector connects the transponder to the aerial switching unit. The 115V single phase static inverter and tray are mounted transversely on the upper radio mountings forward of the transponder and secured by two bolts. Electrical input and output connections are by screw down connectors at the outboard end of the inverter. The 28V d.c. input to the inverter is from fuse 12 in the supply panel via the control relay.

4. The supply control relay and 5000 mfd. capacitor are mounted on a tray secured to the underside of the bottom radio mountings below the transponder. The d.c. test socket is also mounted on this tray on pre mod. 1375 aircraft. A post Mod.1375 the d.c. socket is located with the a.c. test socket and battery volts test socket on the underside of the battery mounting. The supply control relay controls 28V d.c. supply to the aerial switching unit and to the static inverter. Switching of the relay is in turn controlled by the installation control unit function switch. The 5000 mfd. capacitor is connected across the input to the static inverter and the test socket provides 28V d.c. supply for use of the installation test set. Supply to the control relay coils is from fuse 6 and to test socket from fuse 12, both fuses being on the supply panel.

5. The single pole three-position aerial test switch is mounted on the forward face of frame 19 near the bottom of the frame on the starboard side. It is engraved UPPER/FLIGHT/LOWER and the switch toggle is normally locked in the FLIGHT position by a spring loaded guard. It is not selected from this position except for servicing or testing. The switch markings refer to the aerial which is connected to the transponder and in the FLIGHT position aerial switching is controlled by the aerial switching unit.

6. The aerial switching unit is bolted to the upper aft face of frame 16. It has three co-axial connectors, one to each aerial and one to the transponder. An additional pin and socket connector provides electrical supply. The switching unit contains solid state circuits which alternatively switch the upper or lower aerial to the transponder when the aerial test switch is in the FLIGHT position. Supply to operate the switching unit is from fuse 18 in the supply panel via the control relay.

7. The IFF/SSR control unit is mounted on a support bracket on the starboard wall of the cabin above the forward end of the shelf. The control unit, contains all switches necessary for operation of the installation in flight and electrical connection is by a single multi-pin connector on the underside of the unit. The installation failure warning lamp and control unit lighting switch are mounted on an ancillary switch bracket immediately above the control unit. The failure lamp has an amber lens and the lighting switch is single-pole three-position marked BRIGHT/OFF/DIM. The 75 ohm resistor in the DIM circuit and its terminal block are mounted on the back of a small panel aft of the ancillary switch bracket. Supply to the lighting switch is from fuse 11 on the starboard shelf and for the filament press-to-test facility of the failure lamp from fuse 14 on the starboard shelf.

8. The two aerials used by the IFF/SSR installation protrude through the fuselage skin, the upper aerial on top of the nose section between frames 4-5 and the lower aerial, on the underside of the fuselage between frames 22-23. Electrical connection in each case is by co-axial cable.

Operation

9. With 28V d.c. supply to the busbar and the IFF/SSR control unit function switch OFF, both the amber IFF FAIL lamp and green TEST lamp in the cabin will glow. The circuit for the FAIL lamp is from fuse 17 to pin 96 of the transponder through the failure circuits of the transponder to pin 44 then to earth through the FAIL lamp filament. The circuit for the green TEST lamp on the control unit is from fuse 17 to pin 96 of the transponder, through the failure warning circuits to pin 43, then to pin z of the control unit and through the green filament to earth via pin t. Selection of the function switch to STDBY provides a circuit to energize the coil of the control relay Type 20B from fuse 6 in the

TABLE 1

Equipment type and Air Publication reference

Equipment Type	Air Publication
Inverter, static, Ekco Type E182B Mounting rack Type-M228/A	A.P.113D--0306–13A
Aerial test switch Ref.5CW/6431	
Failure warning lamp/switch, Ref.5CW/9743	
Control unit lights switch, Ref.5CW/9327	
Control relay, Type 20B, No.3	A.P.113D–1309–1

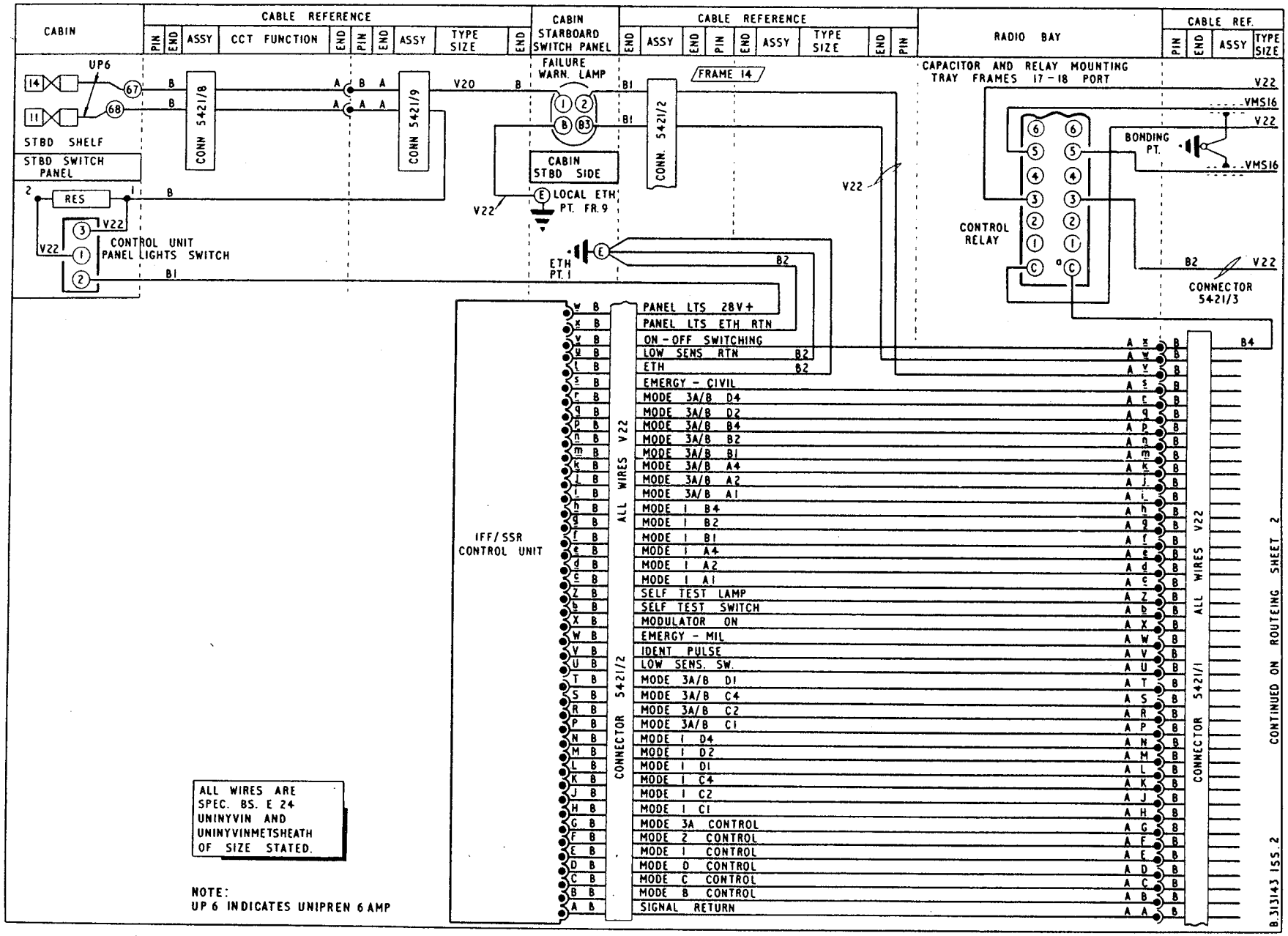


Fig. 2 IFF/SSR supplies (routeing – sheet 1)
◀ (minor amendment) ▶

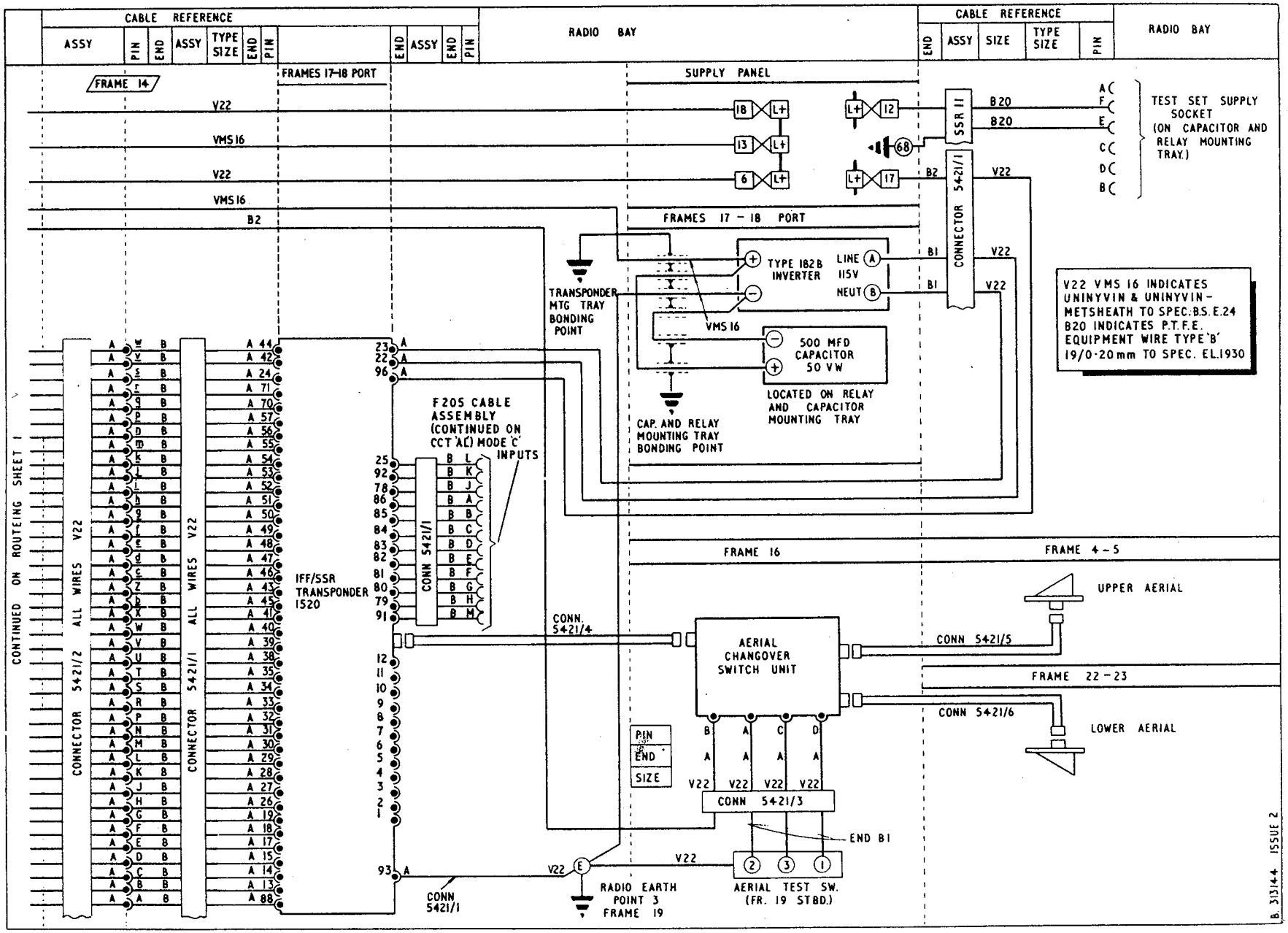


Fig. 3 IFF/SSR supplies (routeing – sheet 2)
◀ (minor amendment) ▶

supply panel to pin v of the control panel and through the arm of the switch to earth via pin t. With the control relay energized a circuit to operate the aerial switching unit is completed from fuse 18 in the main fuse box, across closed contacts 3a-3 of the control relay to pin B of the aerial switching unit. The circuit is completed to earth via pin A. A circuit is also completed to the input side of the Type 182B inverter from fuse 13 in the supply panel across closed contacts 5a-5 to the inverter which will commence to operate ans supply single phase 115V 400Hz a.c. to the low voltage power unit of the transponder via pin 22. Neutral between the inverter and transponder is completed at pin 23 of the transponder.

10. Once the installation is switched to STDBY and warmed up the amber IFF FAIL lamp and green TEST lamp will extinguish but the filaments can be checked for serviceability by depressing the body of the IFF FAIL lamp. The test circuit for the amber filament is from fuse 14 in the supply panel across contacts 1-2 of the lamp/switch to pin 42 of the transponder, returning via pin 44 and through the lamp filament to earth. For the green TEST lamp the circuit is similarly to pin 42 of the transponder then from pin 43 to pin z of the control unit and through the green filament to earth via pin t of the control unit. Illumination of the IFF FAIL lamp when the installation is operating indicates failure of the installation. The green TEST lamp is used to check the self test circuits as outlined in the functional checks in Sect.6, Chap.2, App.1 and has a press-to-test facility for this purpose.

SERVICING

General

11. Standard routine tests for security and serviceability should be carried out as described in the appropriate Air Publications listed in Table 1. When a fault is reported in the ARI 23134/3 the supply circuit should first be checked to ensure that the fault is not in these circuits. Ensure also that all connectors are correctly mated and test the voltage both on and off load. General servicing of the aircraft electrical system is described in Group A.1.

REMOVAL AND ASSEMBLY

General

12. Removal and assembly of all components of the ARI 23134/3 is detailed in Sect.6, Chap.2, App.1 of this A.P.

Appendix 3 – Mod.1379

(A.R.I.18012)

CONTENTS

Introduction

1. This modification which is associated with S.R.I.M. 3821 is designed to remove a functional limitation inherent in the telebriefing circuit described in Group H.1. Mod.1379 introduces an additional relay *(Relay F)* and a diode into the Radio Supplies and Relay Box, and re-routes the telebriefing control circuit.

2. The theoretical circuit of the radio supplies is shown in Fig.1, and the internal wiring of the Relay Box, is shown in Fig.2.

DESCRIPTION

Pre-Mod 1379

3. Telebriefing is the facility which provides direct communication by cable between the pilot and the ground control. When the aircraft is at rest on the ground, interconnection is made at the telebriefing plug located in the rear fuselage. In the pre-Mod 1379 installation the insertion of the ground line socket completes the circuits to energise relays A and B to automatically switch the pilots mic/tel facility to telebriefing reception. The energising circuits of relays A and B are supplied from the aircraft essential load bus bar which is effective irrespective of the position of the Battery Master Switch thus the relays would remain energised for long periods during which time normal radio communications ceases to be available.

Post Mod 1379

4. Mod. 1379 ensures that when the interconnection of the telebriefing land line is made the relays are not energised until the telebriefing push switch is depressed, so ensuring normal R/T communication is available.

TABLE 1

Equipment type and Air Publication reference

Equipment Type	Air Publications
Control relays, Type SM 5A–N–H96	A.P.113D series
Diode, CV 9117 (Rectifier ZS78 Ferranti)	

OPERATION

General

5. The energising supplies for relays A, B and F are routed to the relay operating coils from fuse F2. To select telebriefing the T.B. push switch is depressed and released. This action completes the earth return circuit to the operating coil of relay F through the diode and the T.B. push switch. With relay F energised it will remain in the closed position through its own contacts 2–3 and the earth return completed through the telebriefing land line. Relays A and B are energised through the contacts 2–3 of relay F and the telebriefing land line. The T.B. indicator lamp, located in the cockpit, is illuminated through contacts 5–6 of relay B.

SERVICING

General

6. This modification has no effect on servicing which remains as described in Group H.1. For information to all circuits routed into the Radio Supplies and Relay Box refer to Group H.1, Fig.2 and 4.

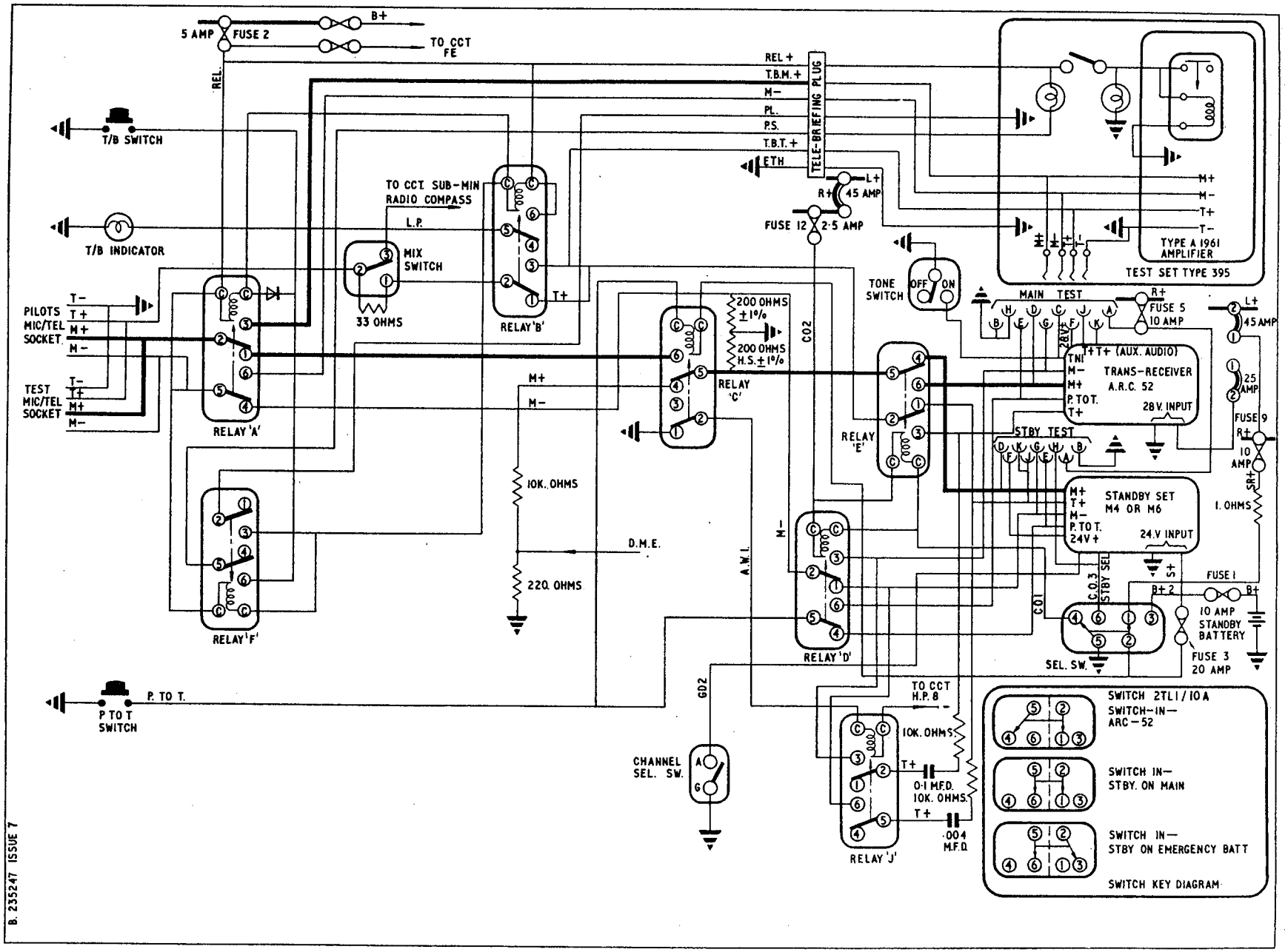
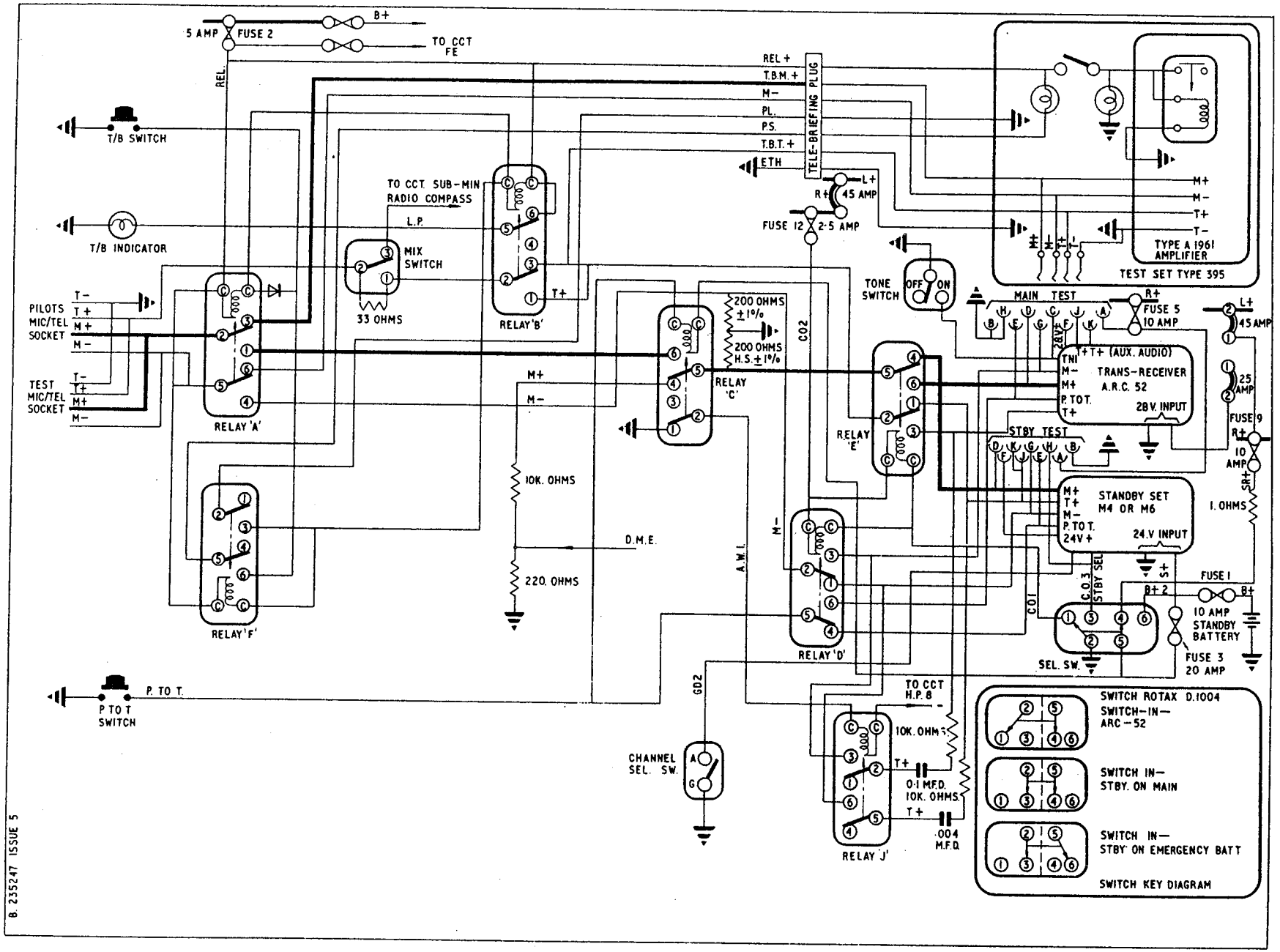


Fig. 1 Radio supplies — U.H.F. and telebriefing (theoretical)

▶ (Mod 1438 added) ◀



▶ Fig. 1A Radio supplies — U.H.F. and telebriefing (theoretical) (pre-Mod 1438) ◀

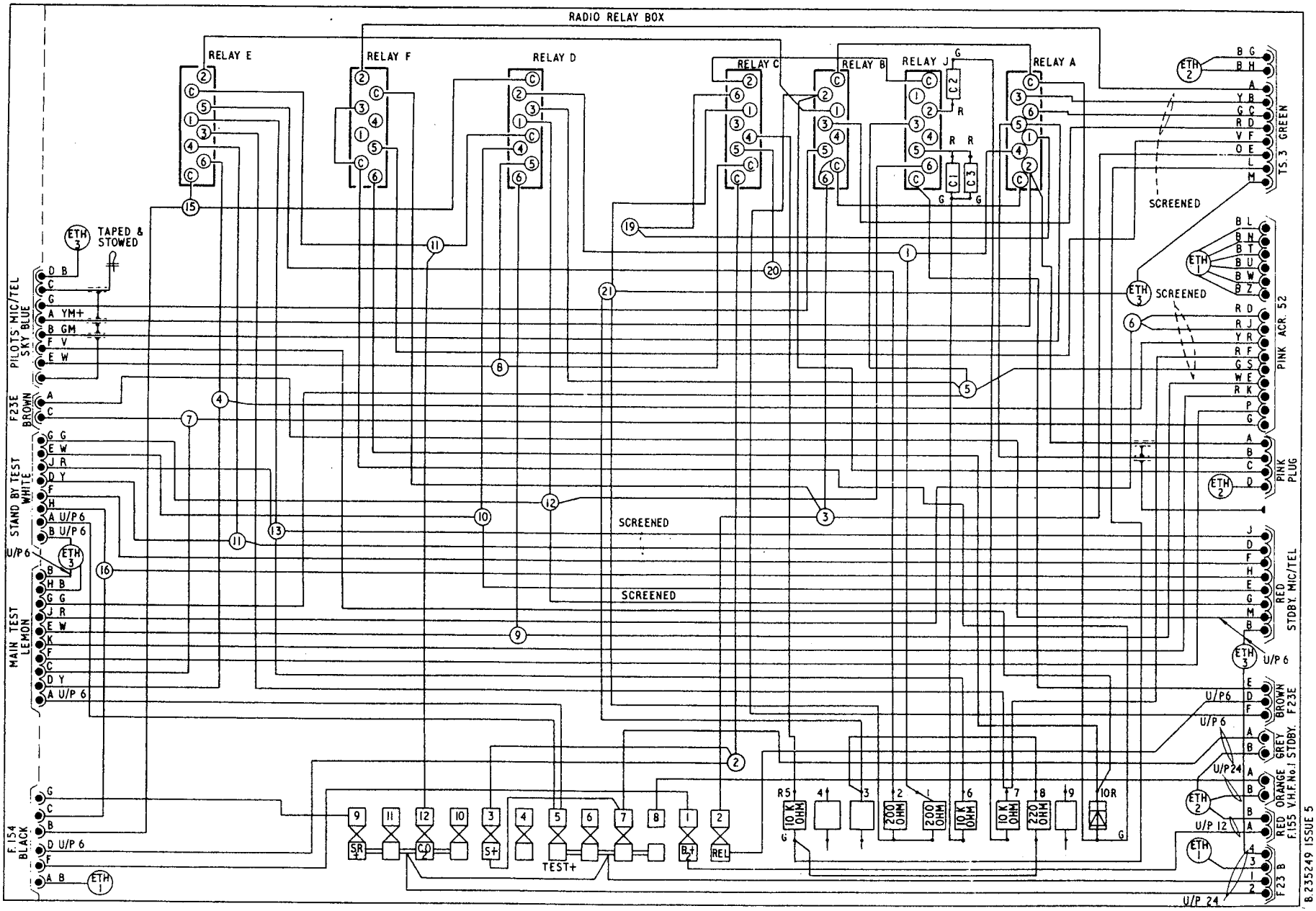


Fig. 2 Radio supplies and relay box (routeing)