Group H.1
RADIO AND RADAR SUPPLIES
(CODE RT, DM AND RS)

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DESCRIPTION

Introduction

1. This group contains a description of the circuits supplying the radio and radar installations fitted in this aircraft. The major components employed 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.

Radio supplies

A.R.I.18064 – V.H.F.

2. The A.R.I.18064 twin V.H.F. installation and the A.R.I.18012 telebriefing installation are separately fused and obtain their supply from the supply panel in the radio bay. The supply for the V.H.F. installation is normally connected to No. 1 transmitter-receiver via fuse No. 1 in the V.H.F. relay box but may be transferred from No. 1 to No. 2 transmitter-receiver by operation of the set selector switch. The set selector switch is situated on the cabin port shelf and a press-to-transmit switch is incorporated in the throttle twist grip.

A.R.I.18012 – Telebriefing

3. The supply to the telebriefing installation is taken from the aircraft's essential load line via fuse No. 5 in the radio relay box and is brought into operation when the telebriefing cable is mated with its plug located in the tail of the aircraft The in-

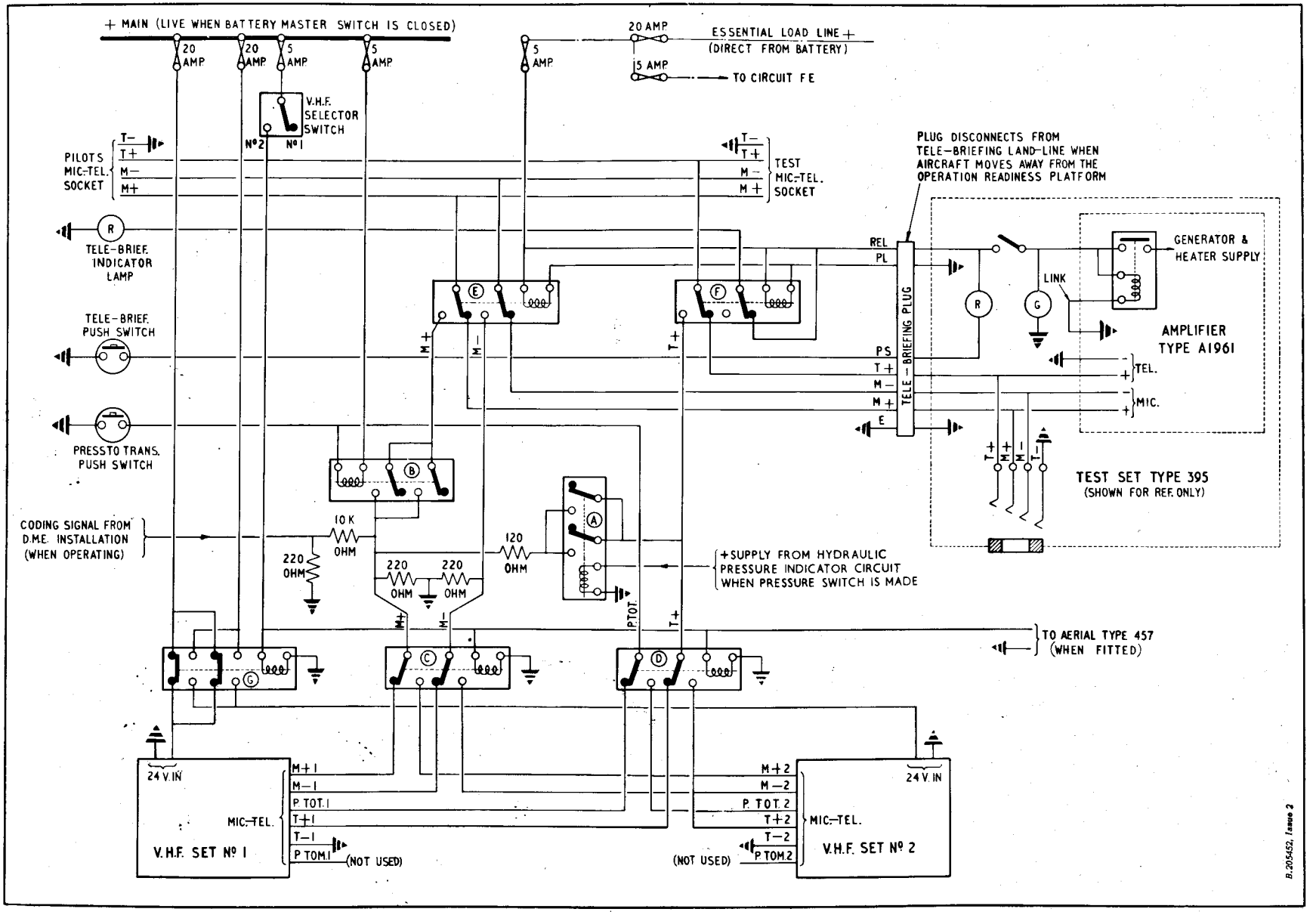

Fig.1 Radio supplies - A.R.I.18064 and 18012 (theoretical)

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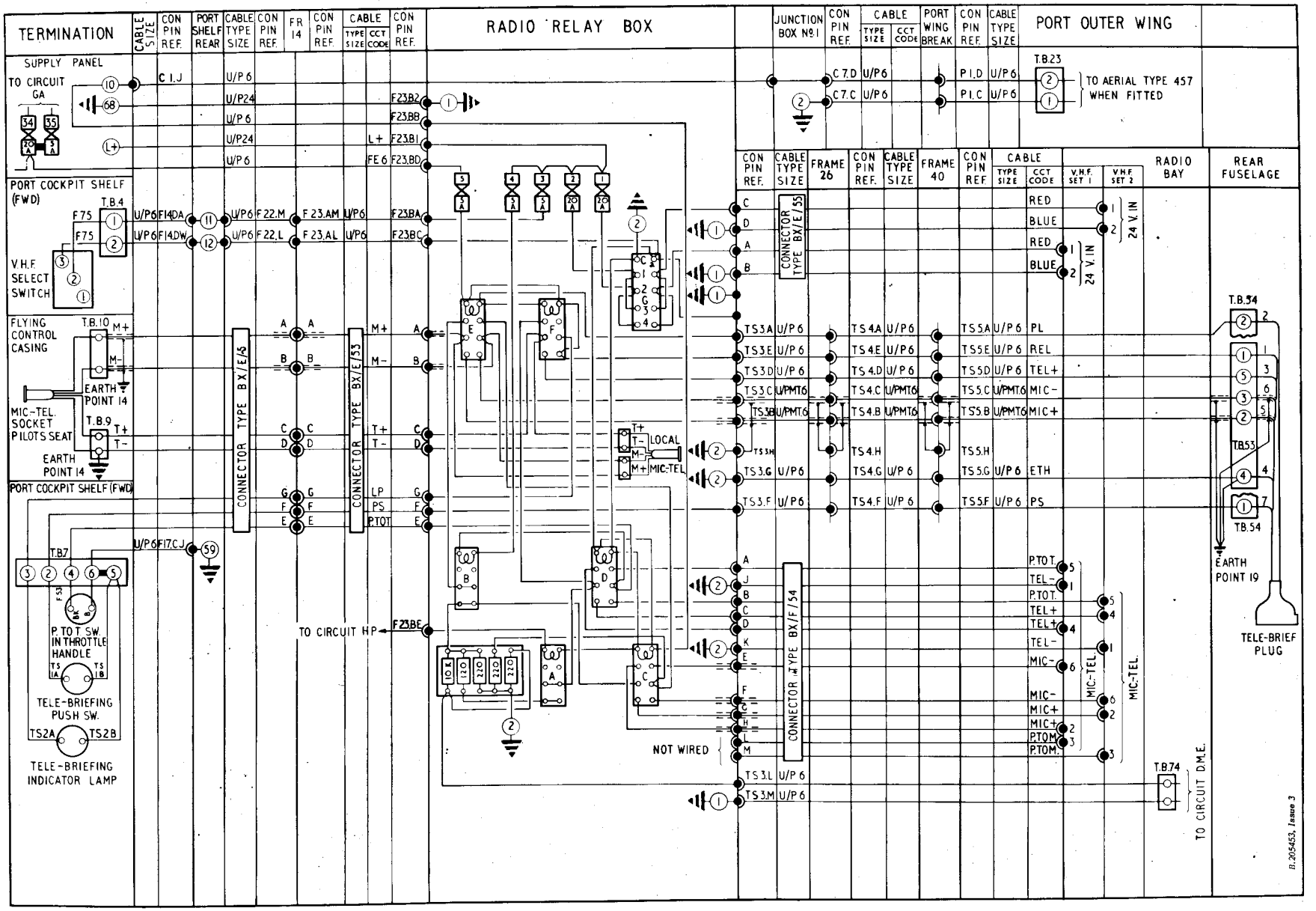

Fig.2 Radio supplies - A.R.I.18064 and 18012 (routeing)

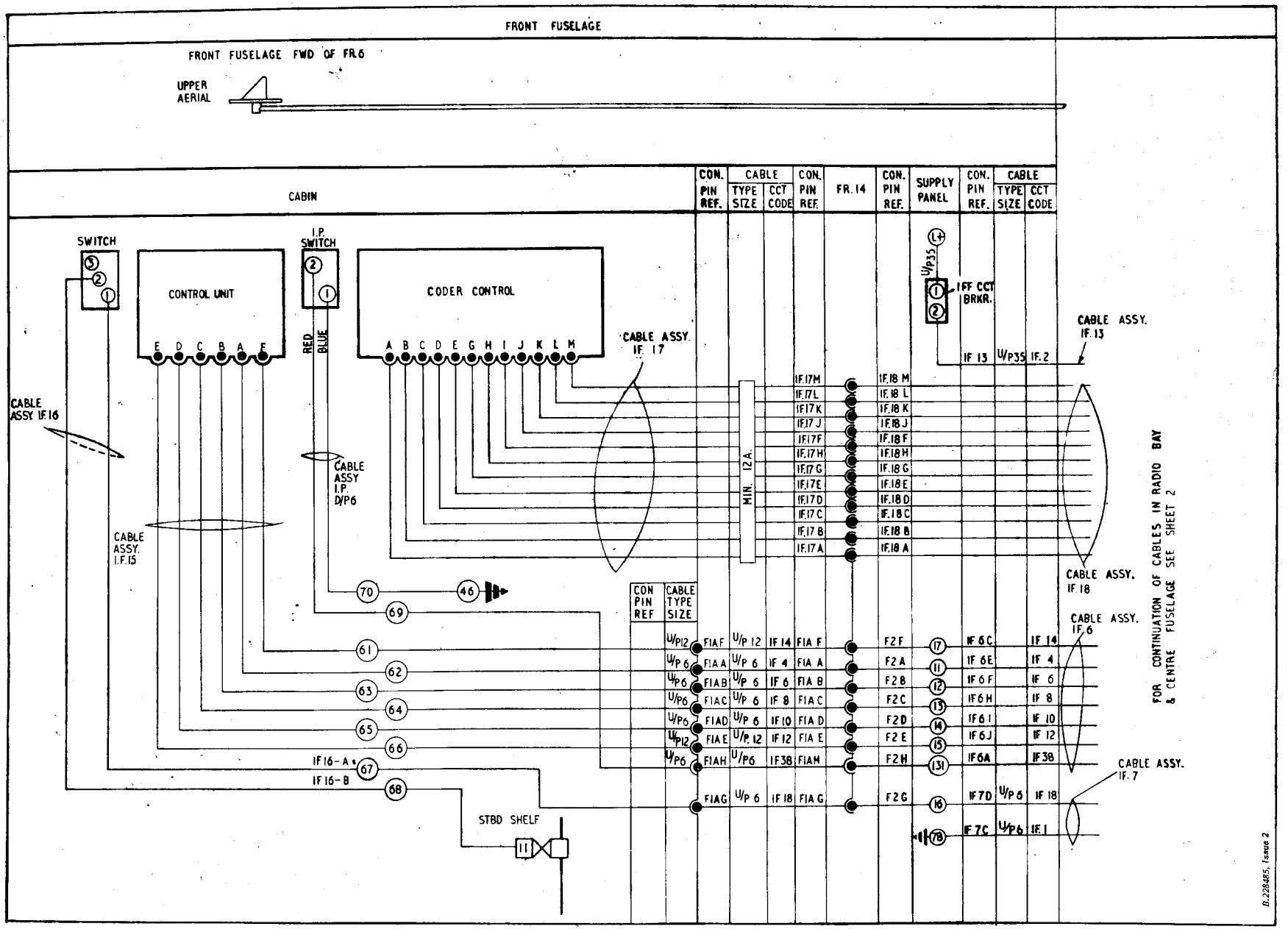

Fig.3 Radar supplies - A.R.I.5848 - I.F.F. (routeing sheet 1)

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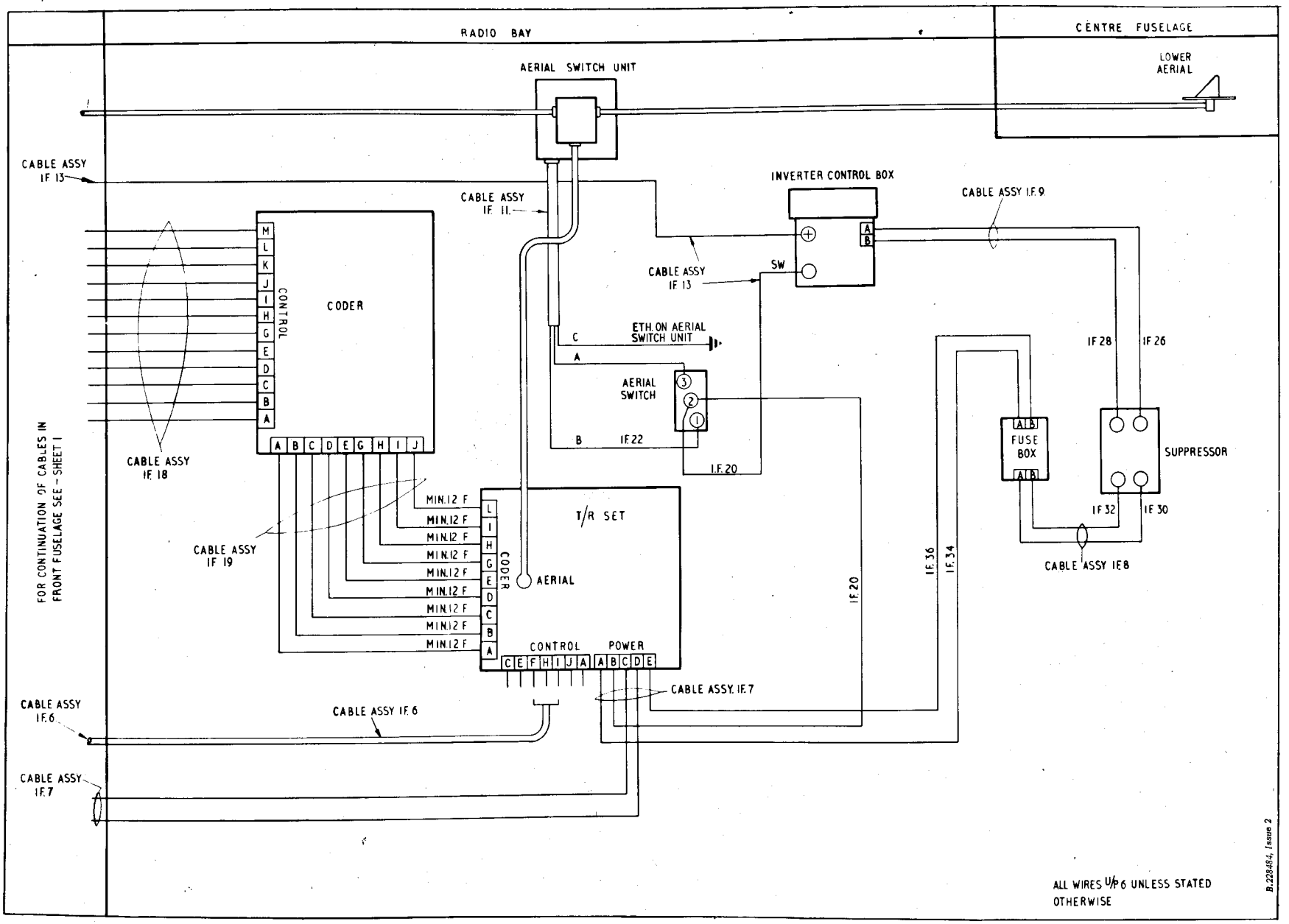

Fig.4 Radar supplies - A.R.I.5848 - I.F.F. (routeing sheet 2)

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stallation includes a push switch and an indicator lamp both of which are located on the cabin port shelf. All the relays for the operation of the radio installations are contained in the V.H.F. relay box which is attached to the lower longeron below the radio mounting structure.

Operation

A.R.I.18064—V.H.F.

4. When the set selector switch is put to the No. 2 position, relays G, C and D are energized. The contacts of relay G transfer the supply from No. 1 V.H.F. set to No. 2, via fuse No. 2 in the relay box and relays C and D transfer the press-to-transmit switch, microphone and telephones from No. 1 to No. 2 set.

5. When the press-to-transmit push switch is pressed it makes the earth return for relay B in the radio relay box and also completes the earth return for the switching relay within the transmitter-receiver in use, via the contacts of relay D. Relay B, when energized, connects the pilot's microphone to the set in use and the relay within the transmitter-receiver switches the set from 'receive' to 'transmit'.

6. The audio warning of hydraulic system failure is accomplished by a feed-back loop formed by interconnecting the microphone and telephone circuits via a resistor. This loop is, however, normally broken at the contacts of the de-energized relay A in the radio relay box and is only completed when the relay is energized as described in Group D.2.

A.R.I.18012—Telebriefing

7. The telebriefing relays E and F are supplied from fuse No. 5 in the radio relay box and are energized when, by the insertion of the telebriefing plug into its socket, their coils are connected to earth. The contacts of these relays transfer the pilot's microphone and telephone circuits from the V.H.F. installation to the telebriefing cable and, at the same time, complete the supply to the aircraft's telebriefing indicator lamp. The telebriefing push switch, completes a supply for a relay in the telebriefing building, which connects the microphone to the telebriefing amplifier and illuminates a lamp to indicate which aircraft's microphone is in circuit.

Radar supplies

A.R.I.23013—D.M.E.

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

TABLE 1

Equipment Type and Air Publication

Equipment Type	Air Publication
A.R.I.18064—V.H.F.	
Set selector switch, Type D.5406	A.P.4343C, Vol. 1, Book 1, Sect. 1
Press-to-transmit switch (part of throttle twist grip) ...	A.P.1275E, Vol. 1, Sect. 7
A.R.I.18012—Telebriefing	
Telebriefing push switch, Type 1290	A.P.4343C, Vol. 1, Book 1, Sect. –
Telebriefing indicator lamp, Type A	A.P.4343E, Vol. 1, Book 4, Sect. 18
A.R.I.23013—D.M.E.	
Circuit breaker, Type A.2	A.P.4343B, Vol. 1, Book 2, Sect. 10
A.R.I.5848—I.F.F.	
Circuit breaker, Type A.6	A.P.4343B, Vol. 1, Book 2, Sect. 10
Inverter, Type 200	A.P.4343B, Vol. 1, Book 3, Sect. 16
I.F.F. master switch, Type XD.779 No. 4 I.F.F. I.P. switch, Type XD.781 No. 4	A.P.4343C, Vol. 1, Book 1, Sect. 1
A.R.I.5820—Radar ranging	
Radar ranging ON/OFF switch, Type D.5406 ...	A.P.4343C, Vol. 1, Book 1, Sect. 1
Radar supply indicator, Type C.5165Y, Mk. 1 ...	A.P.4343E, Vol. 1, Book 4, Sect. 18
Inverter, Type 206	A.P.4343B, Vol. 1, Book 3, Sect. 16
Circuit breaker, Type A.6	A.P.4343B, Vol. 1, Book 2, Sect. 10

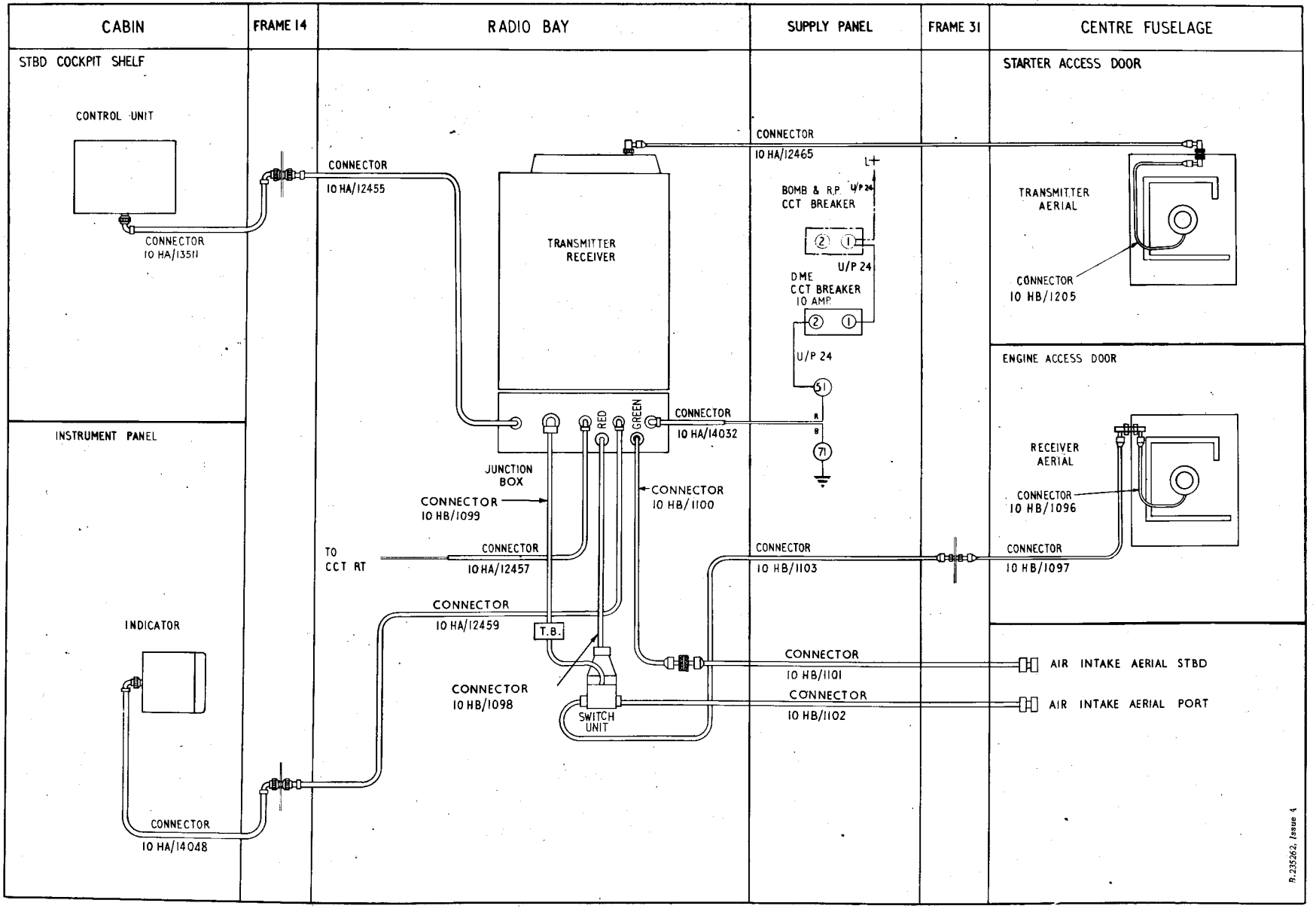

Fig.5 Radar supplies - A.R.I.23013-D.M.E.

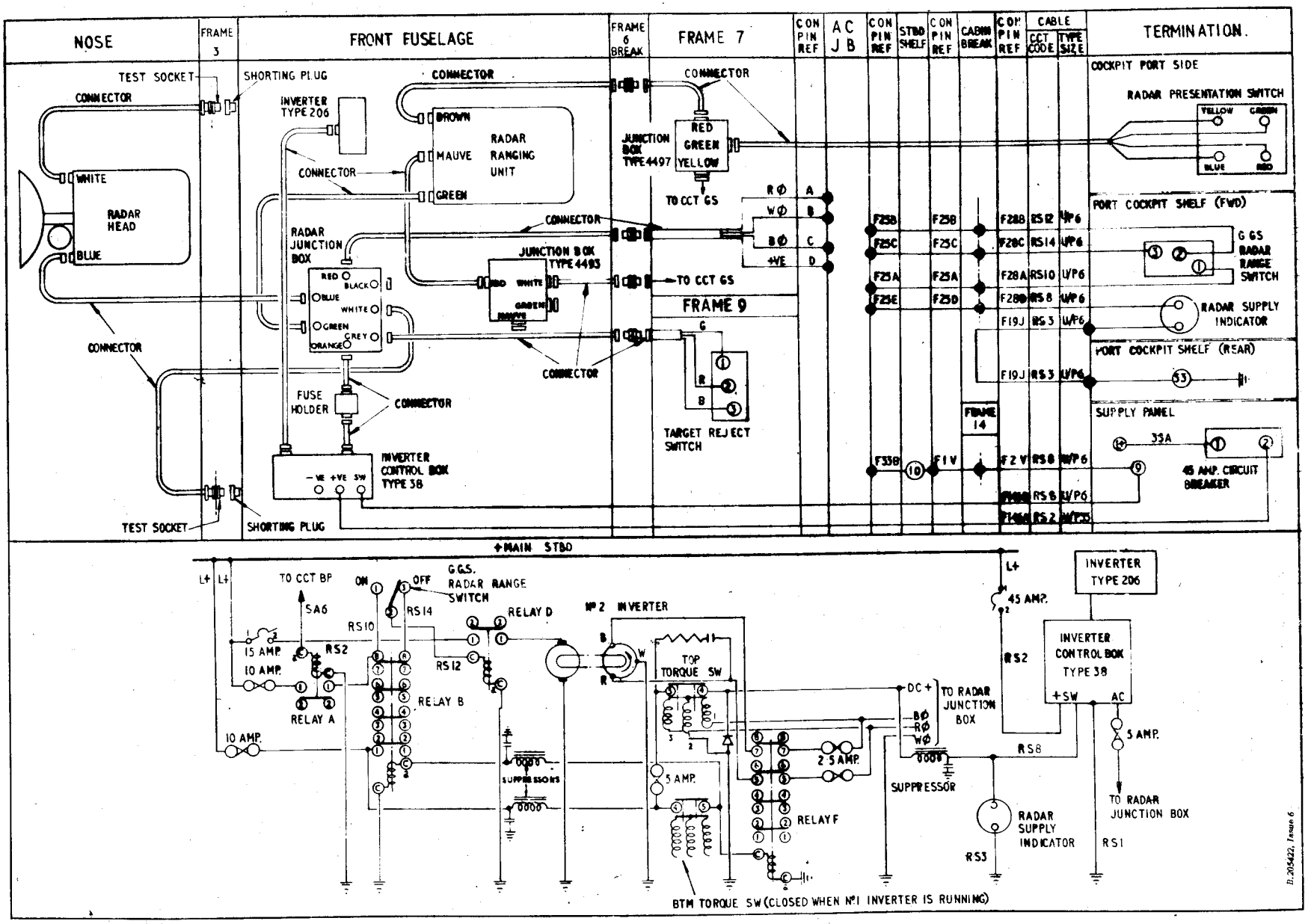

Fig.6 Radar supplies - A.R.I.5820 - Radar ranging

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A.R.I.5848—I.F.F.

9. 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

10. 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 nose wheel 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 fuseholder mounted on frame 6 in the nose wheel bay.

11. 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

A.R.I.23013—D.M.E.

12. 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. Reference to Fig. 5 will make further explanation unnecessary.

A.R.I.5848—I.F.F.

13. The A.R.I.5848 is switched on and controlled by two switches and a control 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 if reference is made to Figs. 3 and 4.

A.R.I.5820—Radar ranging

14. 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 busbars 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.

15. 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.

16. 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 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

17. 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

18. 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.

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Appendix 1 - MODIFICATION 968

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Introduction

1. The appendix contains a description of the radio installation in aircraft that have had Mod. 968 incorporated. This modification requires that the VHF radio installation be replaced by an UHF communication installation with which is associated a standby UHF system and a telebriefing system. The major components employed 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 UHF installations and incorporates telebriefing. 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 UHF SERVICES, which is mounted below the supply panel in the radio bay. This circuit breaker feeds the main UHF transmitter-receiver, via a further circuit breaker, which is marked ARC.52 and mounted adjacent to the UHF services circuit breaker. The UHF standby installation may, in addition, be operated by an auxiliary supply from a 24 volt 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.

Radio supplies

Radio relay box

3. 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 UHF installation. These are illustrated diagrammatically in fig. 3. All the fuses in use except No. 1 and No. 2 are fed from the UHF 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 telebriefing circuit. The other fuses in the relay box, i.e. those fed by the UHF services circuit breaker, pass current to the associated relays, all of which are contained in the radio relay box. Relay J receives energizing supply from outside the relay box, i.e. from the hydraulic pressure failure circuit *(Group D.2)*. The resistors and capacitors forming the audio warning feedback loop which is switched by relay J are contained in the relay box.

ARI 18124/1 – UHF (main)

4. 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 UHF control unit is placed to either of its ON positions. Relays D and E *(fig. 1)* which are supplied from fuse 12, are

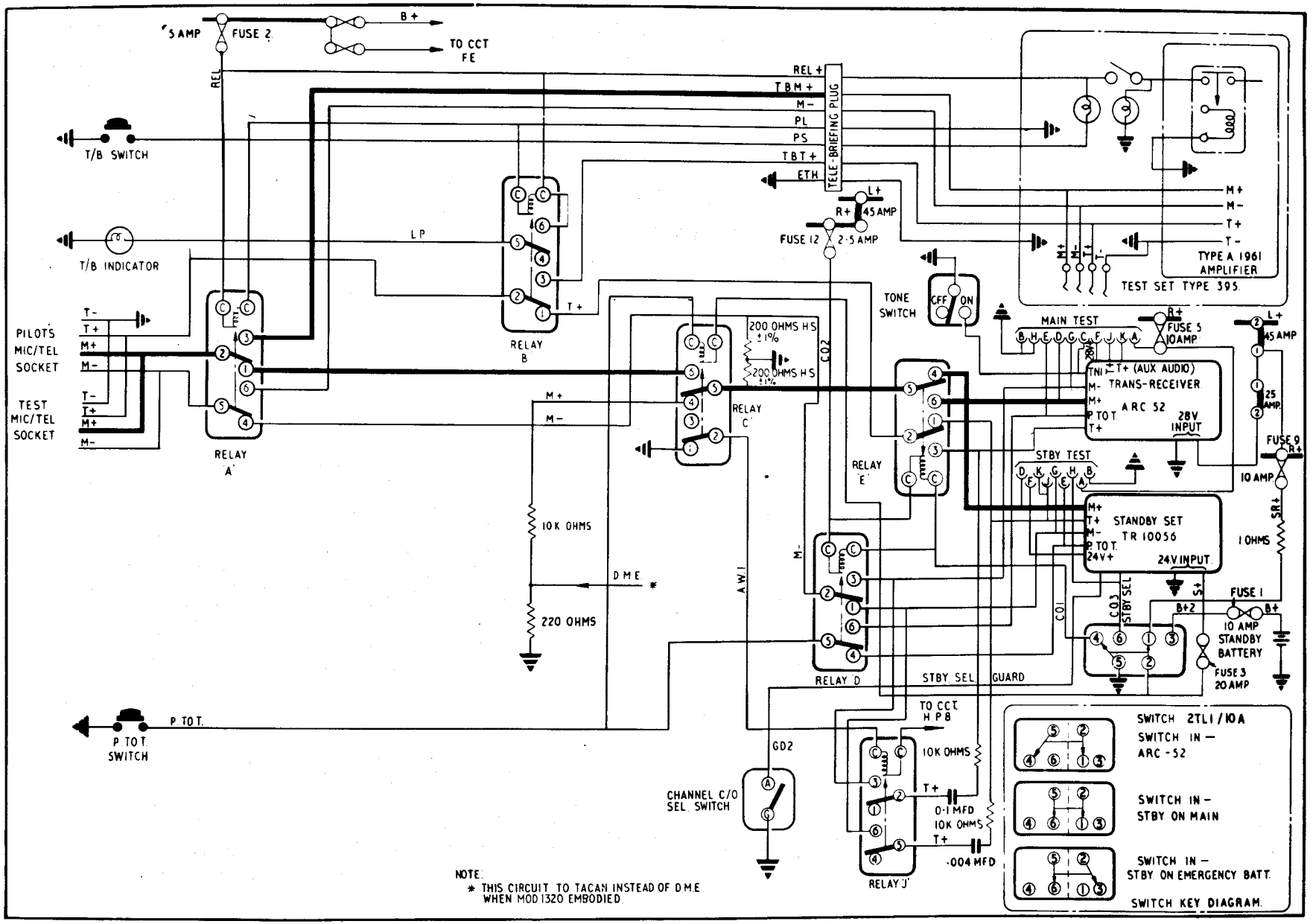
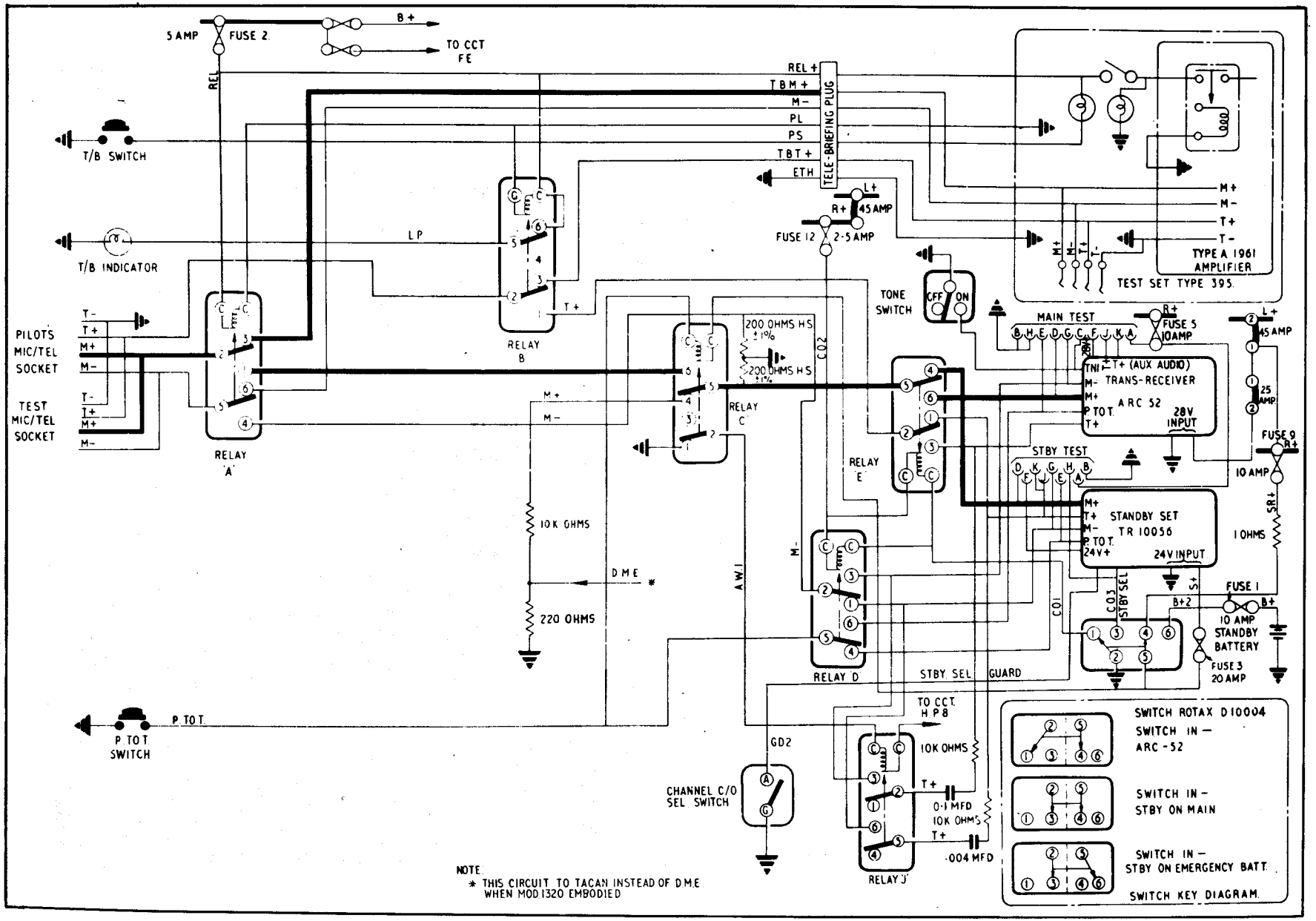


Fig. 1 Radio supplies — U.H.F. and telebriefing (theoretical)

▶ **(Mod 1438 added)** ◀



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

energized and connect the set, in the 'receive' condition, to the pilot's mic-tel. socket. 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 pilot's microphone is connected to the transmitter-receiver via contacts 5–6.

5. The hydraulic failure warning circuit *(Group D.2)* supplies the operating coil of relay J, which is connected to earth, via 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)

6. With the set selector switch in the STBY position, the supply to the standby set from fuse 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 un-energized)* 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

7. 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. 3. 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. Contacts 2–3 of relay B connect the telephone circuit, and contacts 5–6 supply the telebriefing indicator lamp from the energizing circuit. This circuit also supplies a relay in the telebriefing building which operates when the telebriefing switch in the aircraft is pressed, thereby enabling the pilot to talk back.

8. 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 telebriefing push switch must be operated. The push switch completes the earth return for a relay within the telebriefing 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.

Operation

General

9. If the foregoing descriptions of the switching operations of individual relays are read in conjunction with Sect. 6, Chap. 1, Appendix 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.

SERVICING

General

10. Testing and servicing of the U.H.F. standby battery should be carried out periodically, in accordance with the instructions given in AP 113C–0307–1. 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 the radio installation 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

11. 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 most of the radio supply equipment and the removal of the U.H.F. standby battery is described in Sect. 6, Chap. 1, App. 1.

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)*	A.P.113D–1113–1
Set selector switch, Honeywell Type 2TL1/10A *(post-Mod 1438)* ...	A.P.113D–0012–1
Control relays, Type SM.5A–N.25 and Type S1	A.P.113D–1113–1
Press-to-transmit switch (part of throttle twist grip)	A.P.113D–1609–1
A.R.I.23057–U.H.F. (Standby)	
Standby battery, Type Voltabloc, Ref. No. 19–VO–7	A.P.113C–0307–1
A.R.I.18012–Telebriefing	
Telebriefing push switch, Type 1290	A.P.113D–1100 series
Telebriefing indicator lamp, Type A	A.P.113F–0600 series

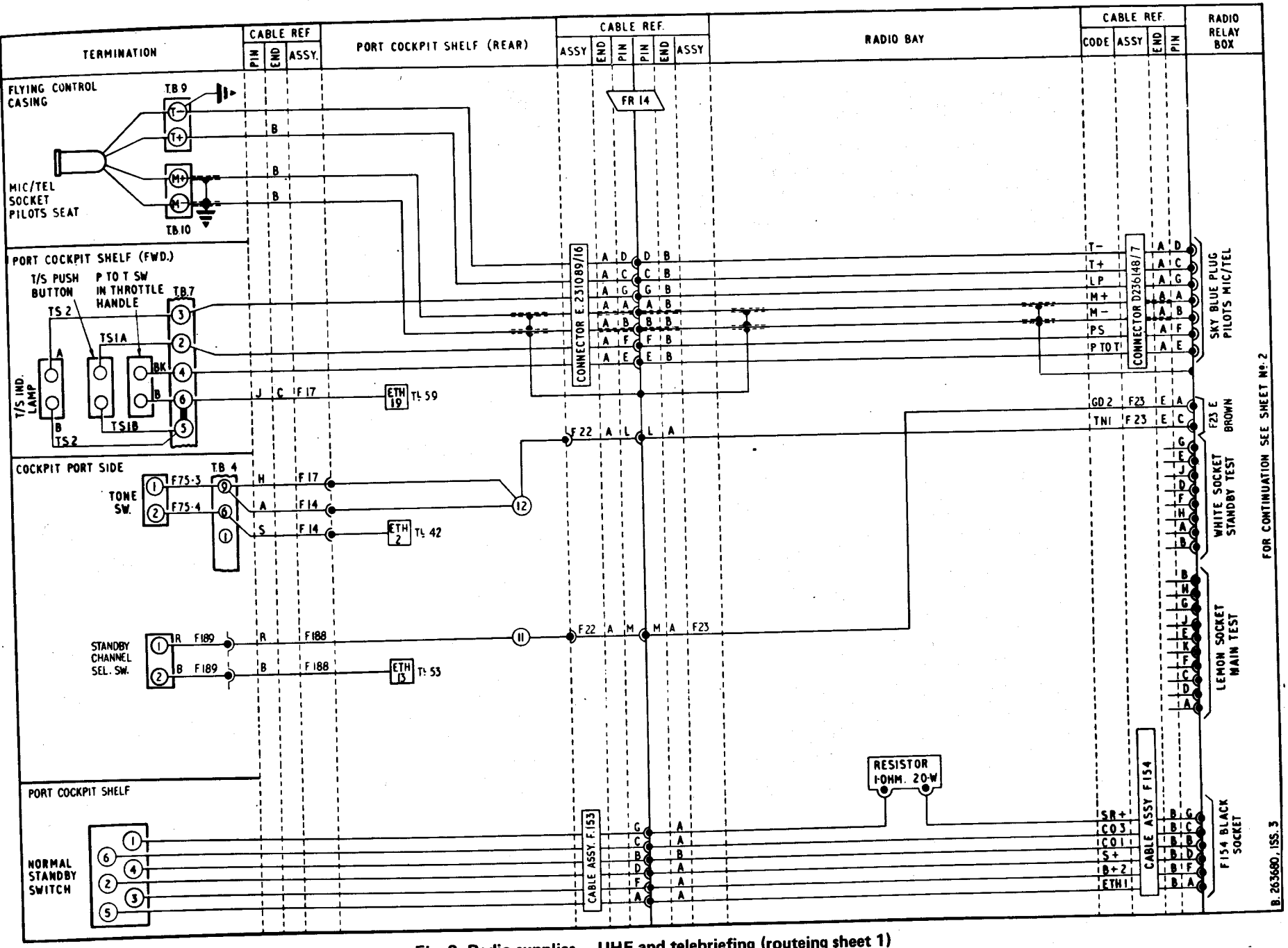
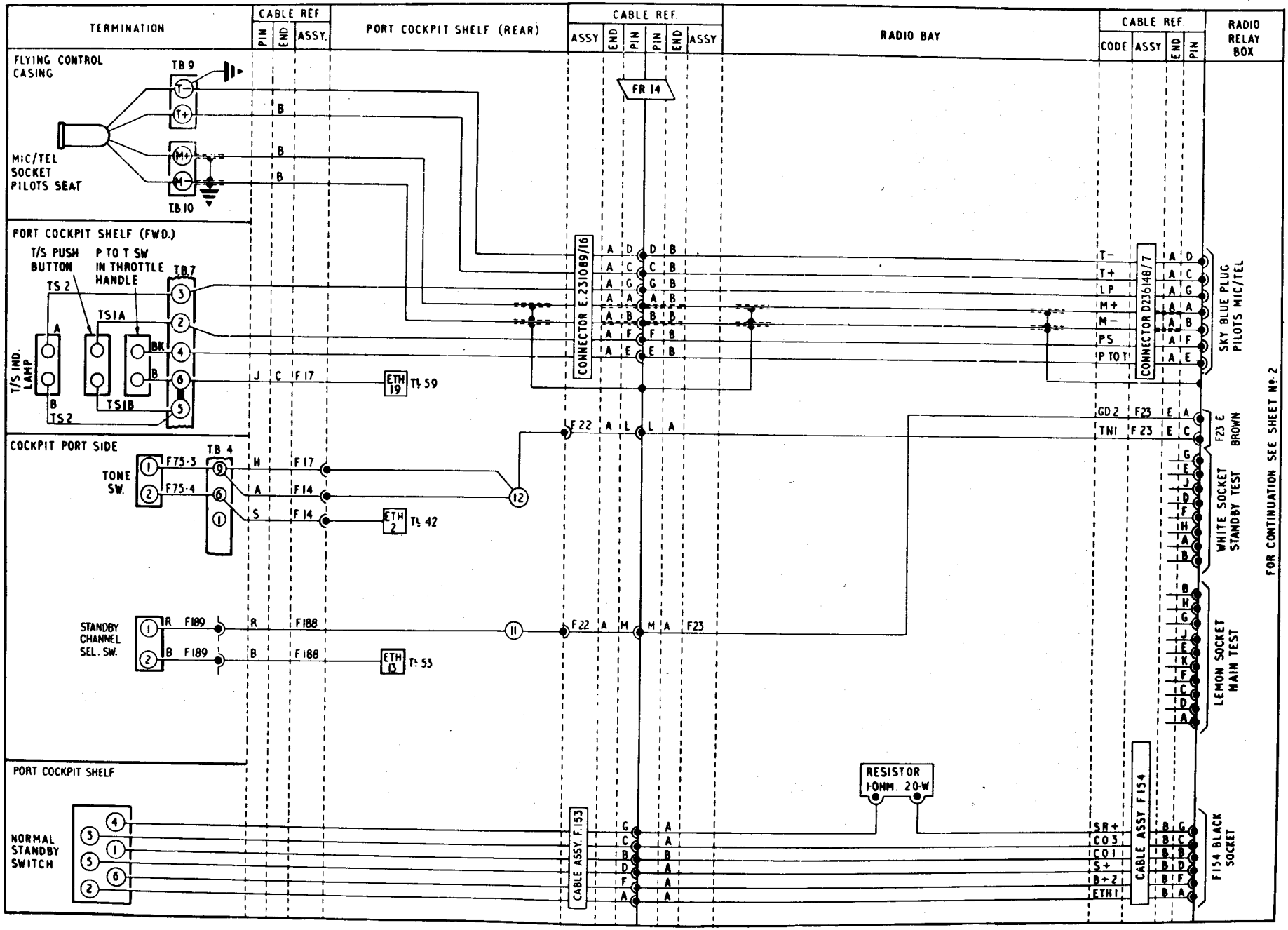


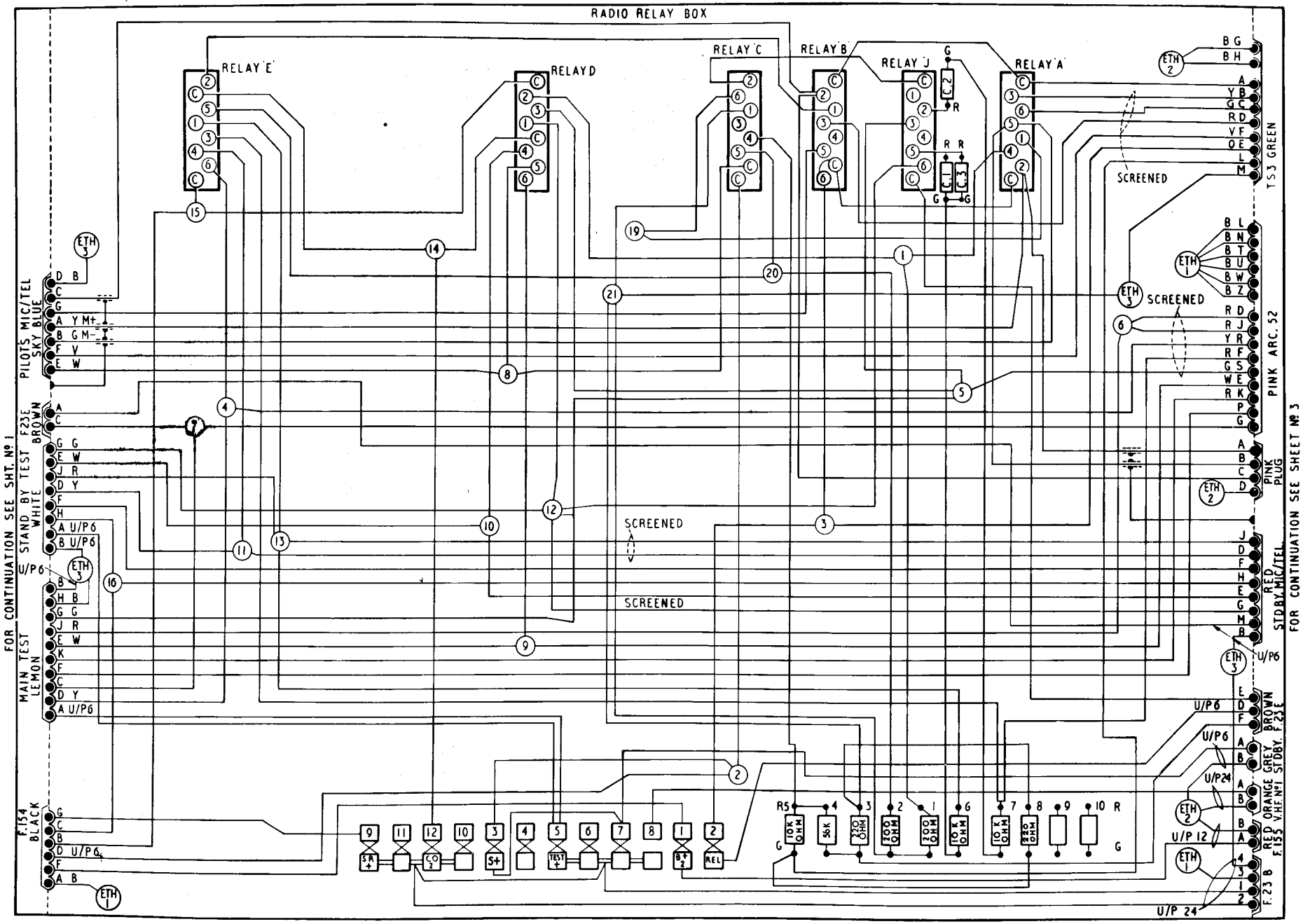
Fig. 2 Radio supplies — UHF and telebriefing (routeing sheet 1)

▶ (Mod 1438 added) ◀



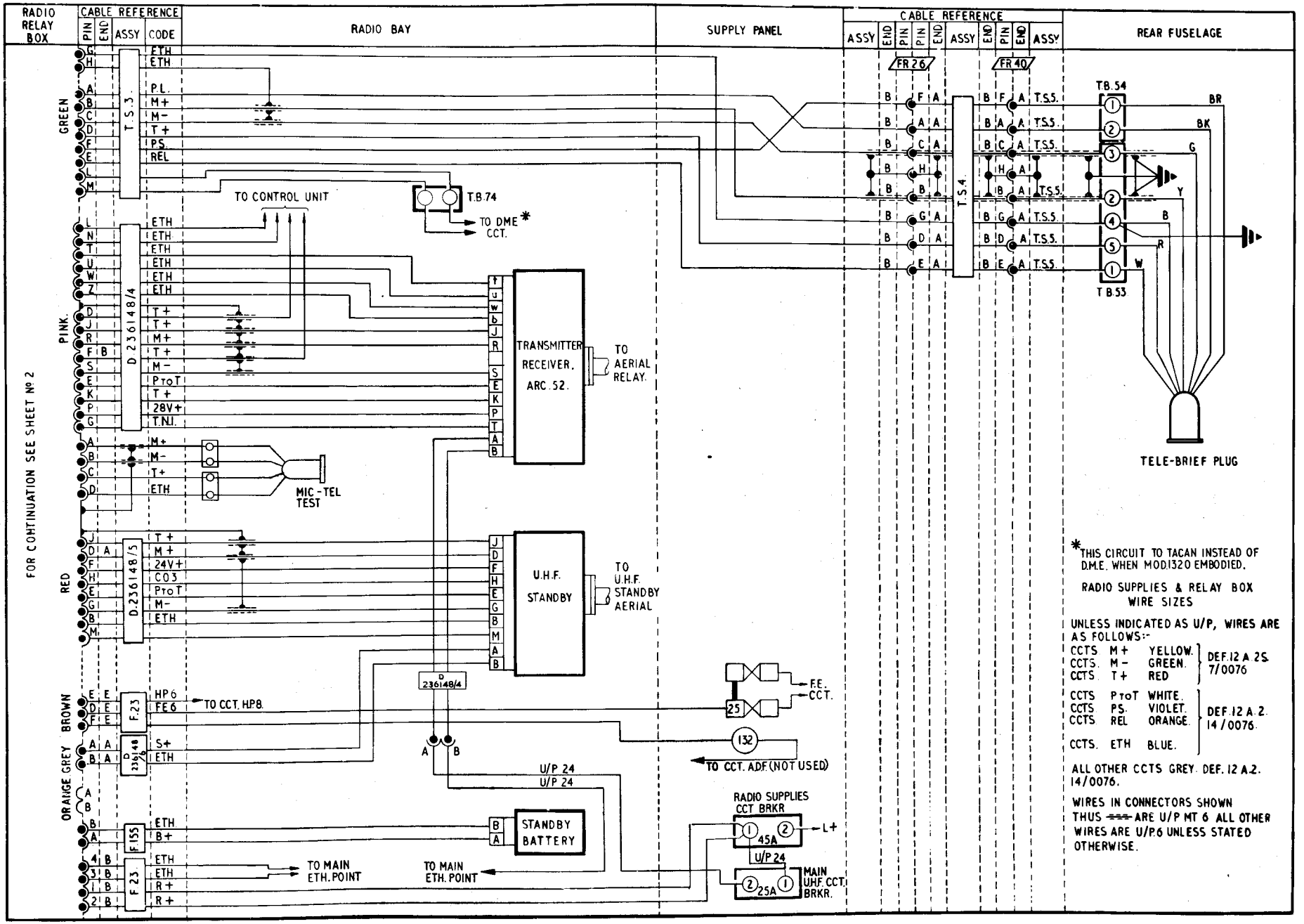
TP(E) 25117

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



T.P.(E) 11039

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



T.P.(E) 11040

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

Appendix 2 - MODIFICATION 1320 (S.O.O.)

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LIST OF ILLUSTRATIONS

TABLE

Introduction

1. This appendix contains the description, and operation of the Tacan supply circuits introduced by Mod. 1320 together with information on the servicing required to maintain the equipment in an efficient condition. Routeing and theoretical circuit diagrams are included. For a description of the aircraft electrical system reference should be made to Groups A.1, A.2 and A.3. Detailed information on the standard items of equipment employed will be found in the Air Publications listed in Table 1.

DESCRIPTION

Tacan supplies

2. The Tacan inverter supply is derived from a 125 amp. fuse mounted on the forward face of frame 16 in the radio bay, and the d.c. supply to the equipment via a fuse in the Tacan a.c. junction box.

3. The a.c. supplies provided by the inverter and its control panel feed the installation via a further fuse in the Tacan a.c. junction box. The inverter is switched on and off by the use of start and stop push switches and a starter circuit, which includes a starter unit, and thermal delay unit. When the inverter is running and a.c. supplies are available at the Tacan equipment this condition is shown by a magnetic indicator on the instrument panel.

4. The inverter, control panel, starter unit, a.c. junction box, thermal delay unit and relay are all mounted on the underside of the Tacan panel. The start-stop push switches and the a.c. supplies indicator are mounted on the starboard instrument panel. The control relays A, B and C, diodes D1, D2 and D3 and the a.c. and d.c. fuses for the Tacan supplies and test sockets are contained in the Tacan junction box.

Operation

General

5. The Tacan supplies are switched on by pressing the start push switch, the push switch should be held for a few seconds, in order to allow the inverter output voltage to build up, after which a relay in the control panel provides a circuit to hold the inverter starting system in the running condition. Reference should be made to the theoretical and routeing diagrams fig. 1 and 2 when reading the following description to ensure a full understanding of the circuits.

Invertor control

6. When the generators come on line, relays A.2 and B.2 (*Group E.1*) are energized allowing a d.c. supply to be fed through their contacts to the stop push switch. The supply then passes via the normally closed contacts of this switch through contacts 1–2 and 21–22 of the de-energized relay B, to the operating coil of relay A. When relay A is energized its contacts disconnect the a.c. supply line from the Tacan equipment.

7. When the start push switch is pressed a supply is passed via diode D1 and contacts 21–22 of the de-energized relay C to the operating coil of relay B energizing the relay which now passes a d.c. supply via contacts 2–3 and 22–23 and a fuse to the Tacan equipment. The relay is now held in the

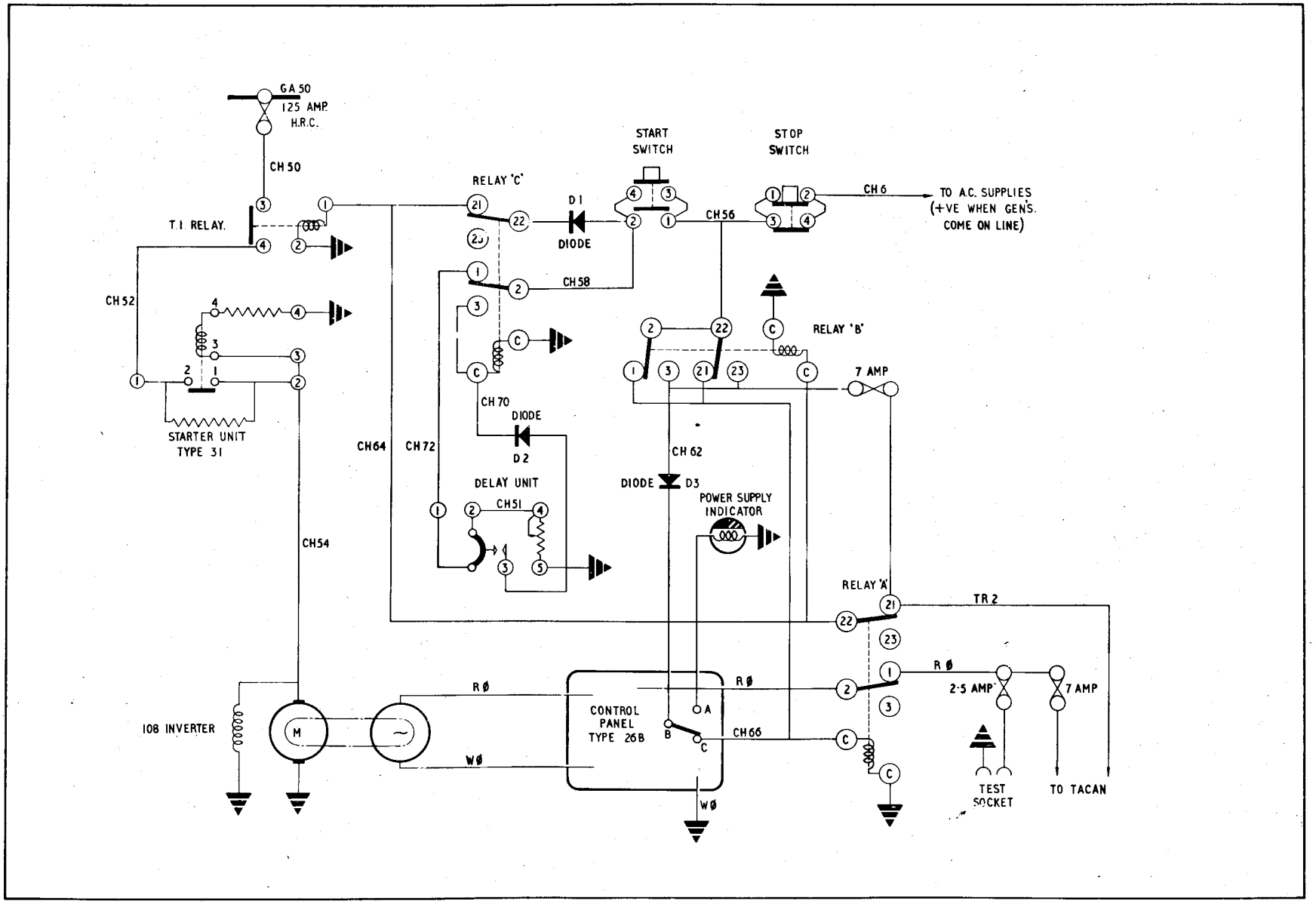


Fig.1 Tacan supplies (theoretical)

operated position by a d.c. supply via diode D.3 and contacts B–C of the relay in the control panel, hence the a.c. line to the Tacan equipment remains isolated. Contacts 21–22 of relay C also pass a supply to the operating coil of the Type T1 relay which is then energized, a d.c. supply is now available via the 125 amp. fuse to the starting unit, energizing the unit and starting the inverter. After the start push switch has been held for a few seconds the inverter voltage builds up, the relay in the control panel operates, passing a supply via contacts A–B to the operating coil of the a.c. supplies indicator and removing the supply from the operating coil of relay A. When relay A is de-energized contacts 1 and 2 are made passing the a.c. supply to the Tacan equipment. Contacts 21–22 are also made providing a holding circuit to the operating coil of relay B and the Type T1 relay so that when the start push switch is released the inverter continues to run. When the stop push switch is pressed the d.c. supply to the Tacan equipment is disconnected, the supply to the Type T1 relay operating coil is removed and the relay is de-energized breaking the circuit to the inverter. The supply to the operating coil of relay B is also removed and the relay is de-energized, thus isolating the d.c. supply line from the Tacan equipment. When the stop switch is released a supply is passed via contacts 1–2 and 21–22 of relay B to the operating coil of relay A, contacts 1–2 of relay A open isolating the a.c. line to the Tacan equipment. As the inverter output voltage decreases the relay in the control panel is de-energized removing the supply from the a.c. supply indicator.

Power failure

8. Failure of either the a.c. or d.c. supply to the Tacan equipment will cause both a.c. and d.c. supply lines to the equipment to be isolated and the inverter to stop. In the event of a d.c. failure, the supply to the Type T1 relay hold line will be removed and the relay will be de-energized breaking the circuit to the inverter. In the event of an a.c. supply failure the relay in the control panel becomes de-energized passing a supply to the operating coil of relay A and removing the supply from the a.c. supplies indicator. When relay A is energized the a.c. line is isolated from the Tacan equipment and the supply to the operating coil of the Type T1 relay is removed and the supply to the inverter is broken. The supply to the operating coil of relay B has also been removed, the relay is de-energized and the d.c. supply line to the Tacan equipment is isolated.

Circuit protection

9. The circuit is protected by a time delay unit; if the start switch is pressed for more three seconds and the inverter voltage does not build up a d.c. supply is passed via contacts 1–2 of relay C to the delay unit which is in series with the operating coil of relay C, after three seconds the delay unit operates passing a supply via contacts 1–2 to the operating coil of relay C via diode D2, relay C is energized and holds through its own contacts. Contacts 21–22 of relay C are then opened de-energizing the Type T1 relay and thereby ending the starting sequence. When the start switch is released the supply is removed from the operating coil of relay C, the thermal delay unit resets automatically, so that after a short interval a futher attempt may be made to start the inverter.

TABLE 1
Equipment type and Air Publication reference

Equipment Type	Air Publication
Inverter, Type 108, Rotax S.3303/2	A.P.4343B, Vol. 1, Book 3, Sect. 16
Control panel, Type 26B, Rotax U.1509	A.P.4343B, Vol. 1, Book 2, Sect. 7
Switch starting, Type 1A No. 5, Rotax U-2005/1 ...	A.P.4343C, Vol. 1, Book 3, Sect. 7
Relay switch, Type T1	A.P.4343C, Vol. 1, Book 2, Sect. 3
Thermal delay unit, Rotax D.11201	A.P.4343C, Vol. 1, Book 2, Sect. 3
Push switches, Dowty D.5162Y	A.P.4343C, Vol. 1, Book 1, Sect. 1
Magnetic indicator, Dowty DN.1245Z Mk. 62	A.P.4343E, Vol. 1, Book 4, Sect. 18

SERVICING

General

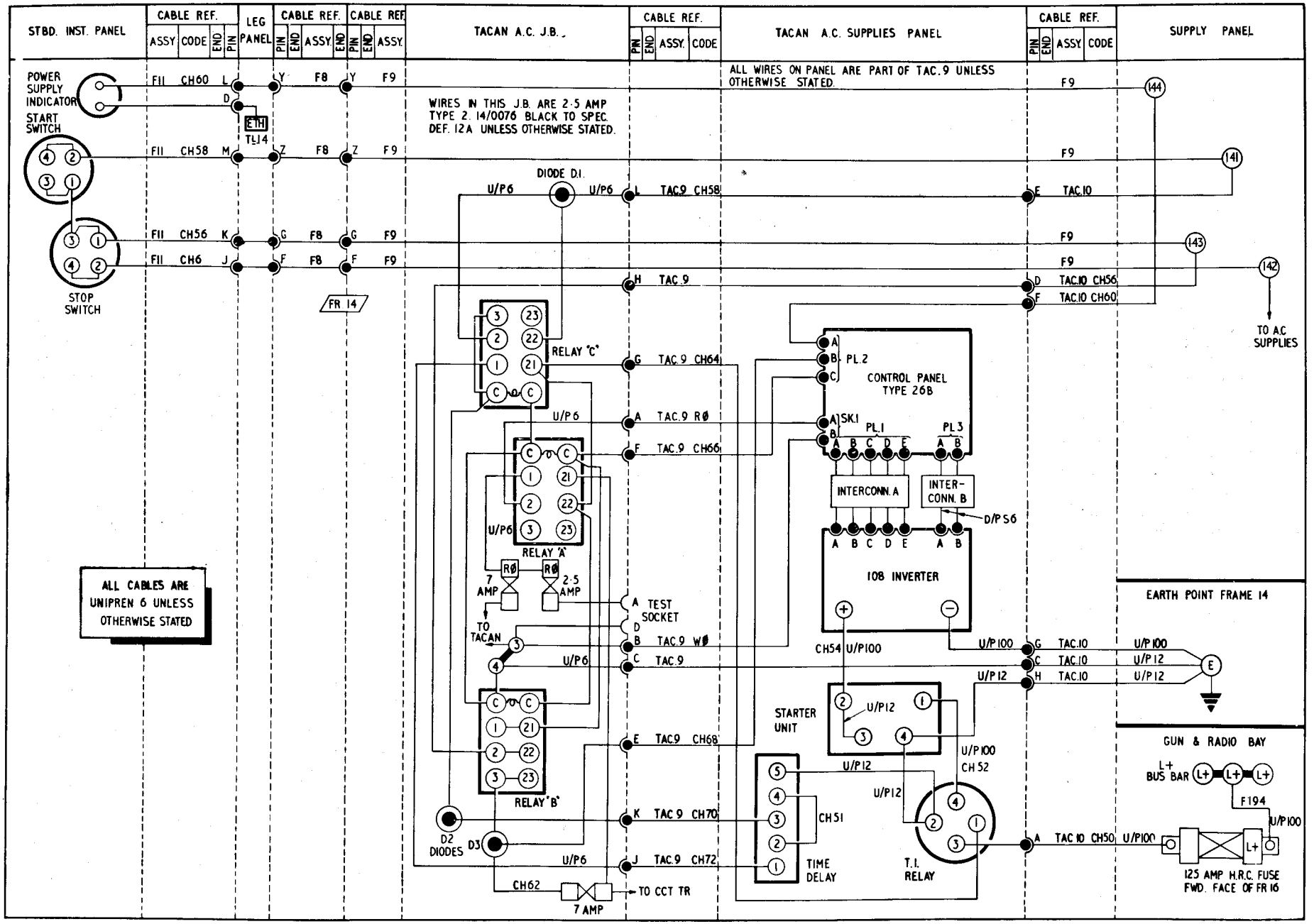
10. Standard routine tests for security and serviceability should be carried out as described in the appropriate Air Publications listed in Table 1. When a fault is reported in the Tacan installation, the supply circuits should first be checked to ensure that the fault is not in these circuits. Ensure 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.

Ground testing

11. During daily servicing and before each flight, the operation of the Tacan equipment and control circuit should be tested for correct functioning. Ground testing should be carried out with the engine stopped, the battery master switch OFF and an external supply connected to the aircraft (*Group B.1*). When an external supply is connected, hold-off relay Q is energized and a supply is then available from a fuse on the generator control panel, via the inverter test switches, contacts 1a–1 and 3a–3 of relay Q, to the coils of relays A.2 and B.2. The ground test procedure is as follows:—

(1) Ensure that the battery master switch is OFF, and that an external supply is connected to the ground supply plug.

(2) Hold No. 1 test switch on the generator control panel to the TEST position and operate the start push switch on the starboard instrument panel. Check that the inverter runs and the indicator shows BLACK.



T.P.(E) 11043

Fig.2 Tacan supplies (routeing)

(3) Operate the stop push switch. Check that the inverter stops and the a.c. supplies indicator changes over.

(4) Release No. 1 test switch and repeat tests (*2*) and (*3*) with No. 2 test switch.

(5) Return No. 2 test switch to the NORMAL position and disconnect the external supply plug.

Note . . .

The operation of either test switch will also cause No. 1 inverter (Group E.1) to run unless the inverter selector switch is placed to the STANDBY *position before the test commences.*

Setting up invertors

12. The procedure for setting up the inverter on the bench, is given in the Air Publications listed in Table 1.

REMOVAL AND ASSEMBLY

General

13. To gain access to the equipment on the Tacan panel, the Tacan Bay access door must be removed as described in Sect. 3, Chap. 1, also the Tacan panel must be lowered as described in Sect. 6, Chap. 2, Appendix 1, in order to gain access to securing bolts.

Inverter

14. The recommended method of removing the inverter is as follows :—

(1) Render the aircraft electrically safe as described in Group A.1.

(2) Remove the two connectors from the suppresor unit, fit approved caps and covers to the plugs and sockets and stow the connectors clear of the inverter.

(3) Remove the cover from the suppressor unit, disconnect the d.c. supply cables, insulate their terminals with insulating tape and stow clear of the aircraft structure. Replace the cover of the suppressor unit.

(4) The inverter may now be removed from the aircraft by unscrewing the four stiffnuts from the bolts securing it to the panel. Replace the stiffnuts to retain the eight washers.

Note . . .

When re-assembling the inverter to the panel the four washers, Part No. SP.16/G are to be fitted under the feet of the inverter, otherwise the clamp rings for the cover and outlet will be jammed against the mounting plate.

Inverter control panel

15. To remove this control panel proceed as follows :—

(1) Render the aircraft electrically safe as described in Group A.1.

(2) Disconnect the four connectors clear of the control panel, fit approved caps and covers and stow the connectors clear of the control panel.

(3) Remove the locking wire from the knurled screws on the front of the panel mounting and unscrew the screws until they clear the catches, then using the handle on the front of the panel withdraw the panel from its mounting.

Tacan a.c. junction box

16. To remove this junction box proceed as follows :—

(1) Render the aircraft electrically safe as described in Group A.1.

(2) Disconnect the three connectors from the front of the junction box, fit approved caps and covers to the plugs and sockets and stow the connectors clear of the junction box.

(3) Unscrew the stiffnuts from the bolts securing the junction box to the panel and remove the junction box from the aircraft. Replace the nuts to retain the washers.

17. Once access has been obtained the removal of the other components forming the Tacan supply circuits will present no difficulty.

Appendix 3 – I.F.F./S.S.R.–Mod.1343

(A.R.I.23134/3)

(Mod.1375 incorporated)

LIST OF CONTENTS

Introduction

1. This appendix contains the description and operation of the supply circuits for the I.F.F./S.S.R. *(A.R.I.23134/3)* introduced by modification number 1343 for Hunter F Mk.6 aircraft, together with information on the servicing required to maintain the equipment in an efficient condition. Theoretical and routeing circuit diagrams are included. For a description of the aircraft electrical system, reference should be made to Groups A.1, A.2 and A.3 of this Air Publication. Detailed information on the standard items of equipment employed in the installation will be found in the Air Publications listed in Table 1, although it should be noted that some of the A.P. references quoted will become obsolete when the new A.P. coding system is complete.

DESCRIPTION

General

2. The I.F.F./S.S.R. *(Identification Friend or Foe/Secondary Surveillance Radar)* installation *(A.R.I.23134/3)* forms the airborne part of an I.F.F./S.S.R. system. The purpose of this system is to enable an aircraft to identify itself rapidly and automatically when challenged by an

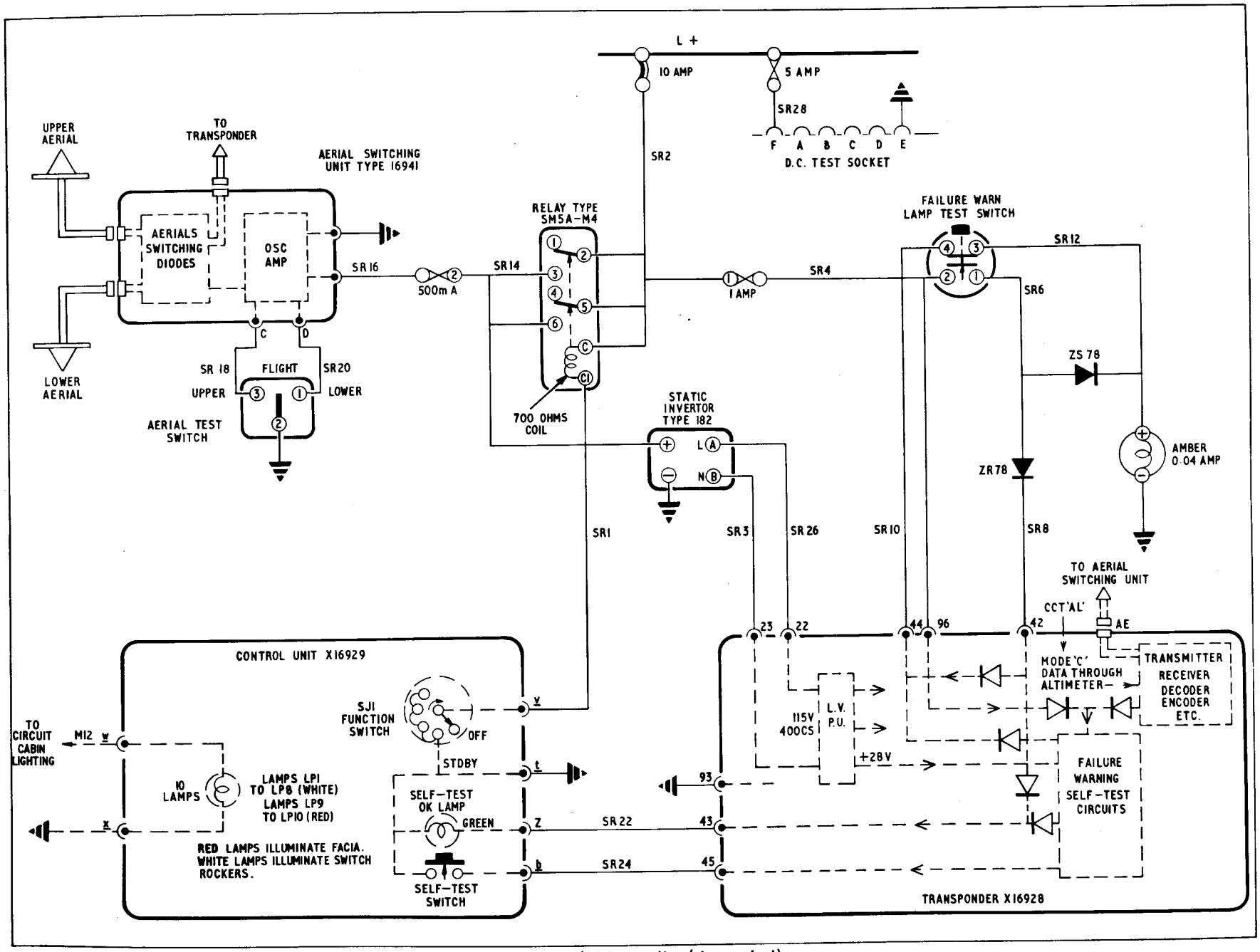


Fig. 1 IFF/SSR supplies (theoretical)
◀ (minor amendment) ▶

T.P.(E) 24973

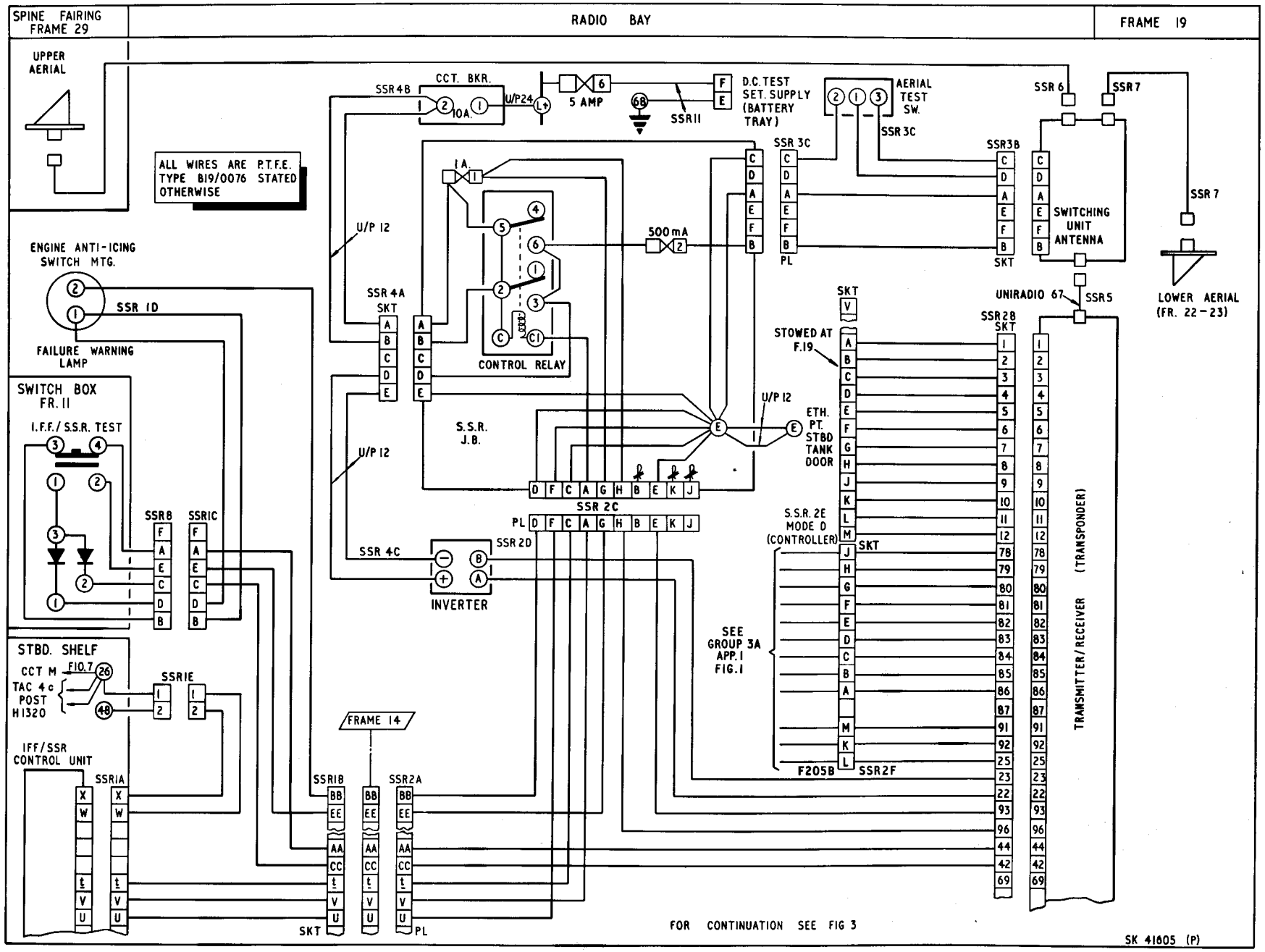


Fig.2 I.F.F./S.S.R. (routeing sheet 1)

◀ (Mod.1375 added) ▶

T.P.(E) 22933

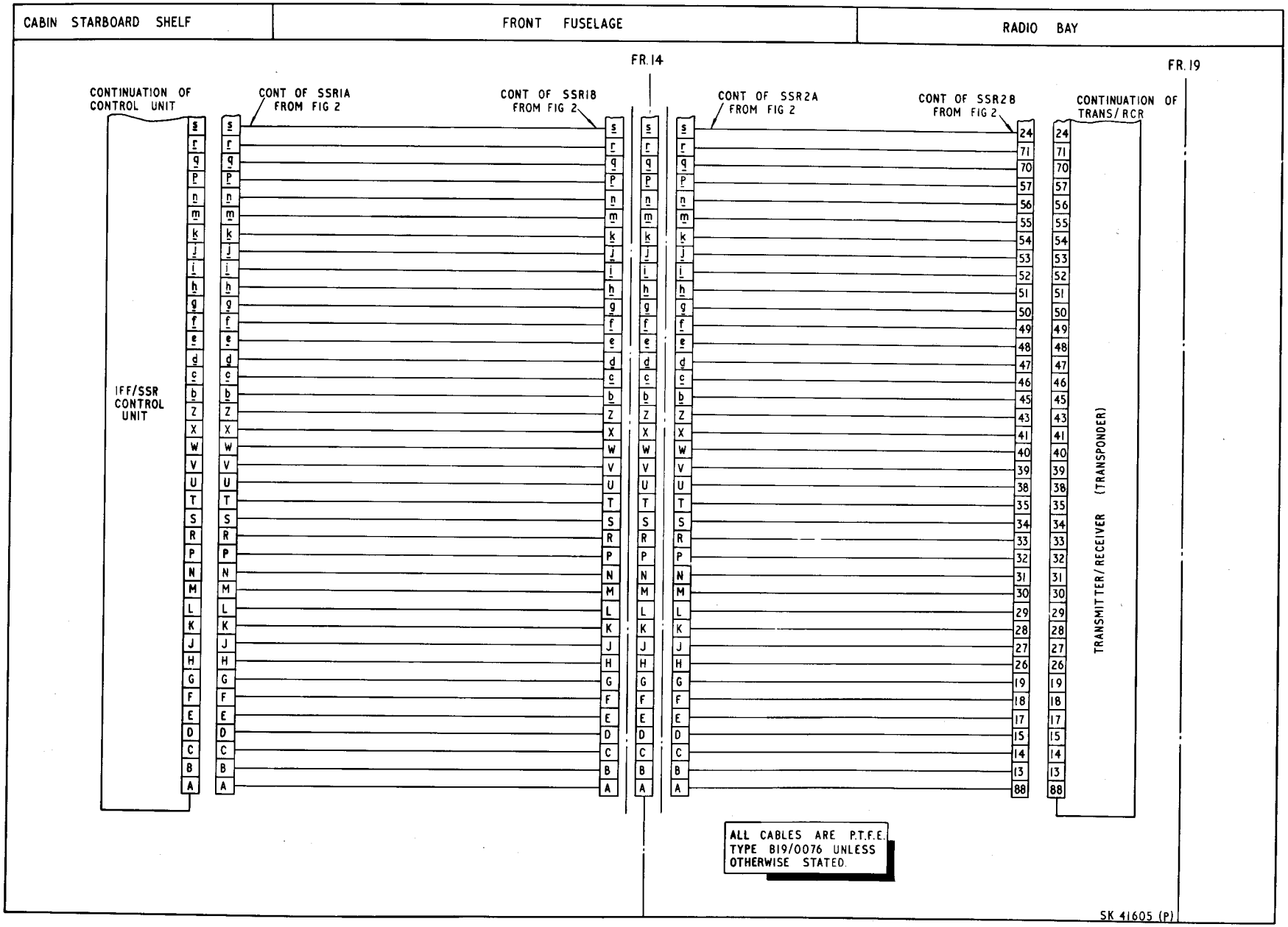


Fig.3 I.F.F./S.S.R. (routeing sheet 2)

green self test lamp on the control unit will be illuminated. The circuit for the failure lamp is via the 1 amp fuse, terminal 96 of the transponder, the internal self test circuit of the transponder to terminal 44 then across closed terminals 4-3 of the FAILURE LAMP TEST switch to earth through the filament of the lamp. The circuit for the green SELF TEST lamp is similarly to terminal 96, through the transponder internal circuit to terminal 43 and to earth via the lamp filament. The function of the amber lamp is to indicate failure of the transponder and the green lamp is used during functional checks detailed in Sect.6, Chap.2, App.2.

9. Selection of the rotary FUNCTION switch (*fig.1*) on the IFF/SSR control unit in the cabin from OFF to any other selection provides an earth return to energize the coil of the control relay in the IFF/SSR J.B. With this relay energized supply is available from the circuit breaker and relay contacts 2-3 to bring the Type 182 inverter on line and power the transponder. The aerial switching unit supply is also from the circuit breaker via contacts 5-6 of the control relay and a 500 mA fuse in the installation J.B. When the installation is switched on and operating correctly, the amber failure lamp will extinguish but the serviceability of the lamp may be checked by depressing the FAILURE LAMP TEST switch, when a circuit through the filament will be completed from the 1a fuse in the J.B. via switch contacts 2-1 and one of the blocking diodes to earth. Pressing the test switch will also test the serviceability of the green self test lamp via the second diode on the diode platform, pins 42-43 of the transponder and through the filament to earth. After a short warming up period the installation is ready for use. Details of the operating procedure and a description of the components of the IFF/SSR installation will be found in Sect.6, Chap.2, App.2.

SERVICING

General

10. Standard routine tests for security and serviceability should be carried out as described in the appropriate Air Publication listed in Table 1. When a fault is reported in the A.R.I. 23134/3 the supply circuits 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

11. Removal and assembly of all components of the A.R.I.23134/3 is detailed in Sect.6, Chap2, App.2 of this Air Publication.

Appendix 4 – Mod. 1379
(A.R.I. 18012)

CONTENTS

ILLUSTRATIONS

TABLE

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 communications by cable between the pilot and 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 relay 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 communication 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 Publication
Control relays, Type SM.5A–N–H96	A.P.113D Series
Diode CV9117 (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 circuit 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 relating to all circuits routed into the Radio Supplies and Relay Box refer to Group H.1, App.1, Fig.2 and 4.

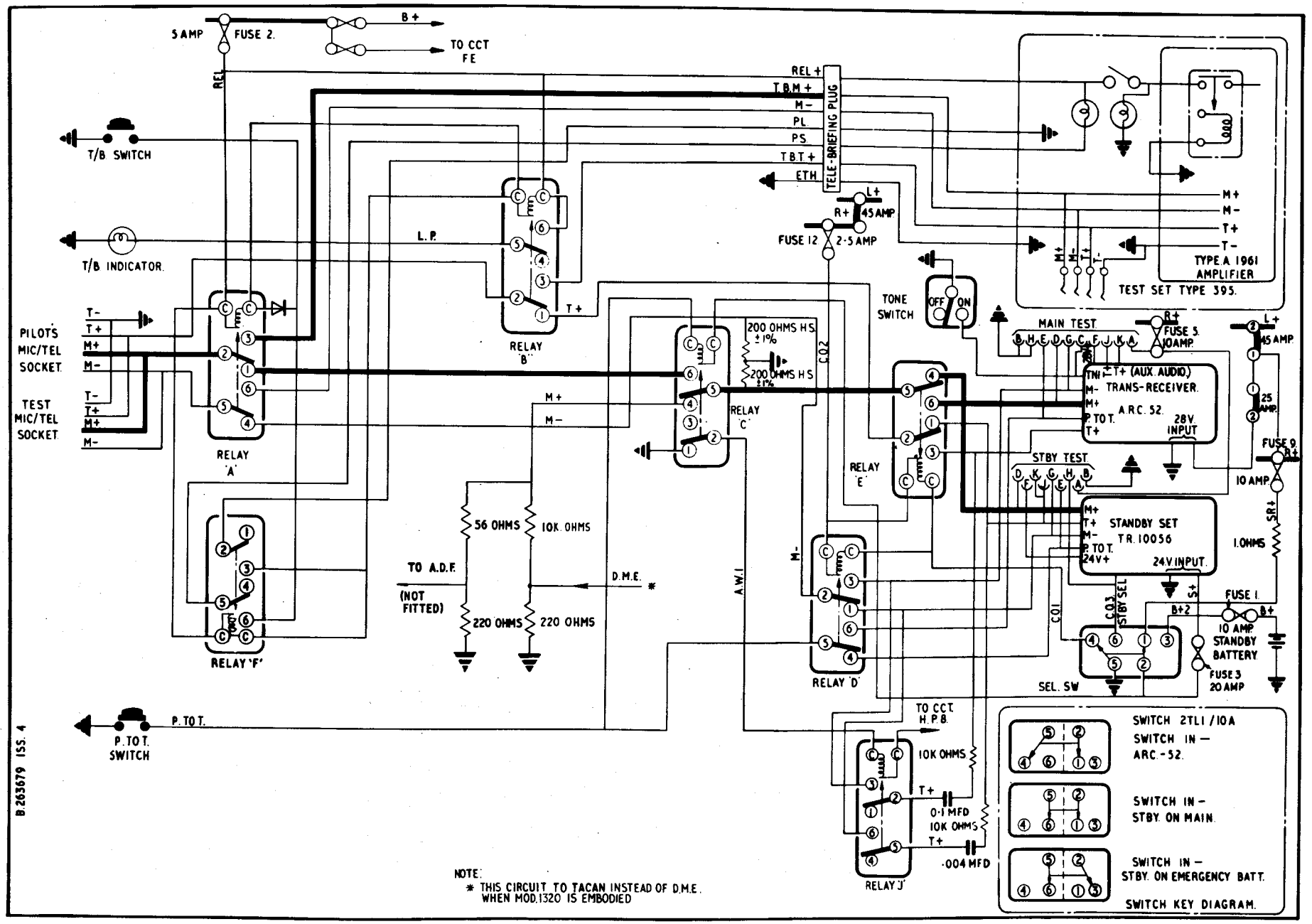
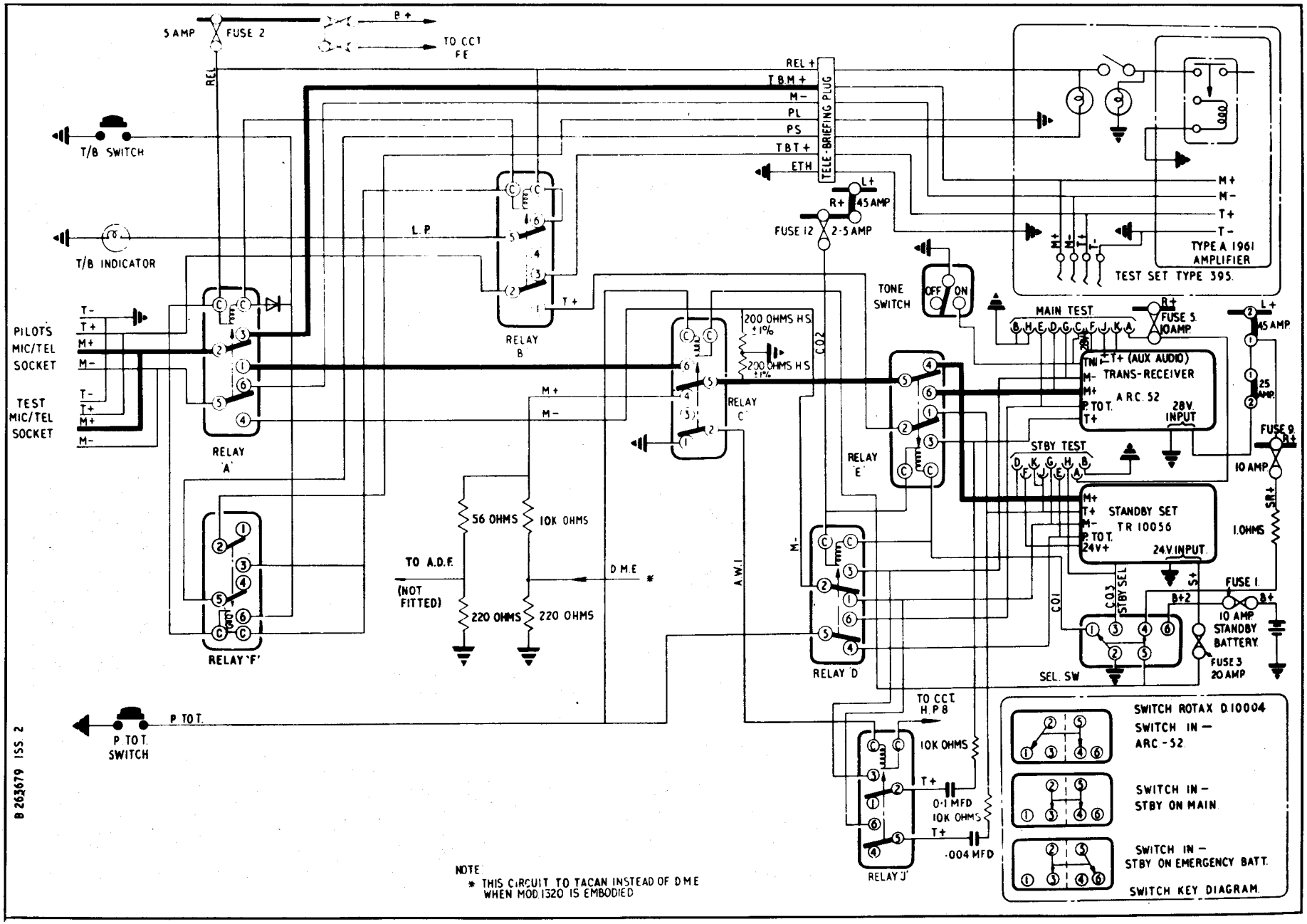


Fig. 1 Radio supplies — U.H.F. and telebriefing (theoretical)

▶ **(Mod 1438 added)** ◀



NOTE
* THIS CIRCUIT TO TACAN INSTEAD OF D.M.E WHEN MOD 1320 IS EMBODIED

▶ **Fig. 1A Radio supplies — UHF and telebriefing (theoretical) — pre-Mod 1438** ◀

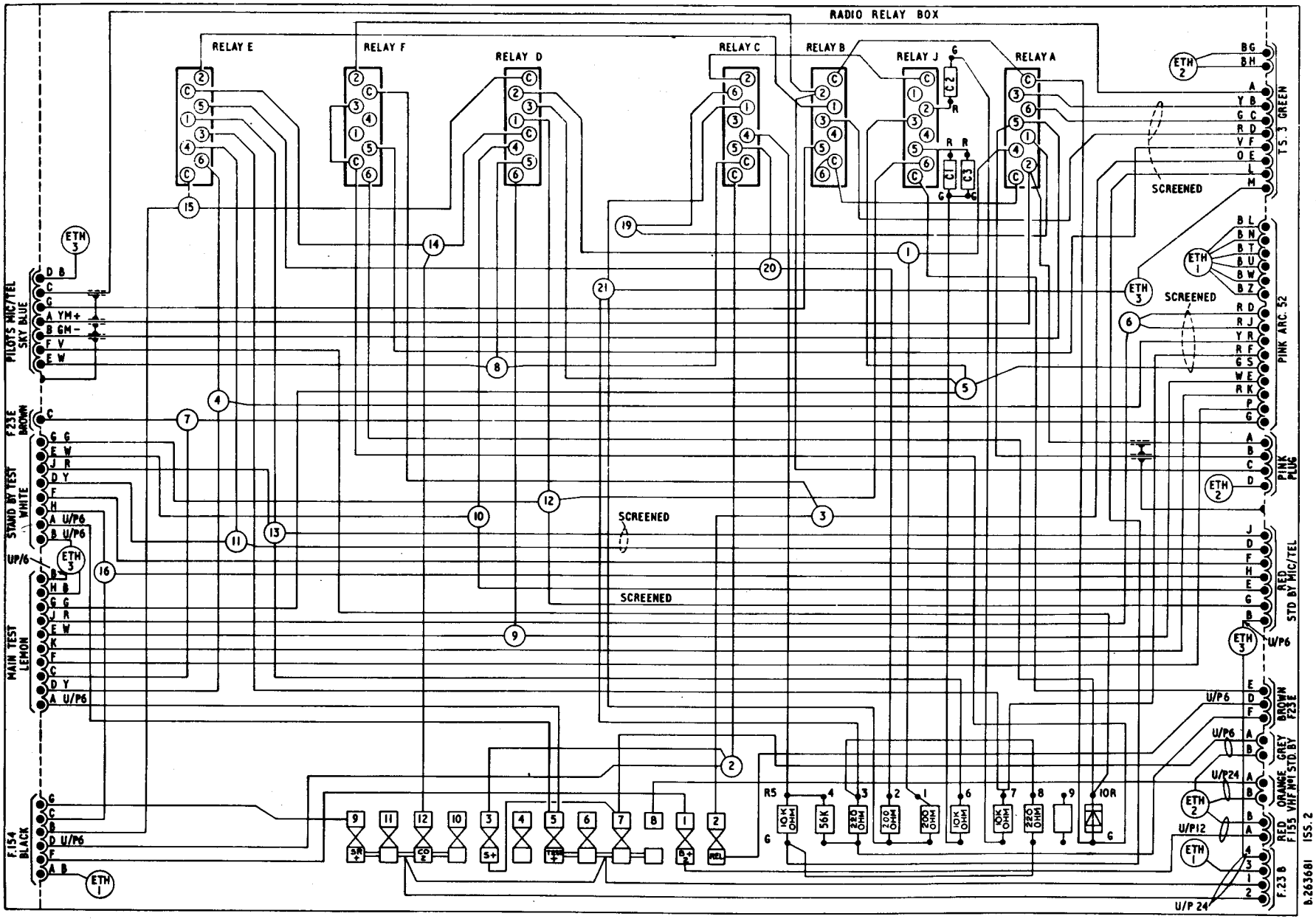


Fig. 2 Radio supplies and relay box (routeing)