Group 7 MISCELLANEOUS

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

◀LIST OF APPENDICES

A List of Appendices appears at the end of the Group.▶

Warning

Voltages in excess of 100 *volts a.c. or d.c. can be dangerous under certain circumstances. Personnel should, therefore, ensure that the electrical system is electrically safe before any servicing is attempted. Where it is essential that tests or adjustments are to be made with the electrical power switched on, the greatest care must be exercised.*

Introduction

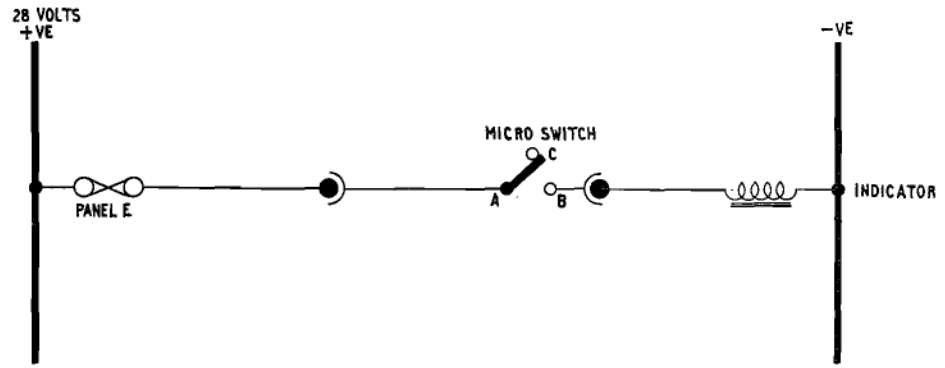
1. Information on the lay-out and interpretation of the schematic wiring diagrams can be obtained from the General Information Group contained immediately after Section 5 marker card. Also to be found in the General Information Group are all the general modifications applicable to all aircraft.

ENTRANCE DOOR INDICATION (*fig.* 1)

2. A micro switch fitted to the entrance door operates when the door is closed, to disconnect a supply from the port fuse panel E to a magnetic indicator on the port coaming panel. The indicator is energized WHITE when the door is open and BLACK when closed. The wiring to the micro switch is taken via a plug and socket in the furnishing on the port side of the aircraft, to provide a break when the door is removed or jettisoned.

RATION HEATERS (*fig.* 2)

3. Five ration heaters, Ref. No. 5V/70, one for each crew member, are installed in the pressure cabin, one behind each ejector seat, one on the rear beam of the pilots' floor to port and one on each of the port and starboard emergency equipment panels. Each is supplied from a separate fuse on the starboard fuse panel D, and is controlled by a switch on the rear face of the starboard console. Above each switch is an indicator lamp which shows green when the switch is put to the ON position.



Fig, 1. Entrance door indicator

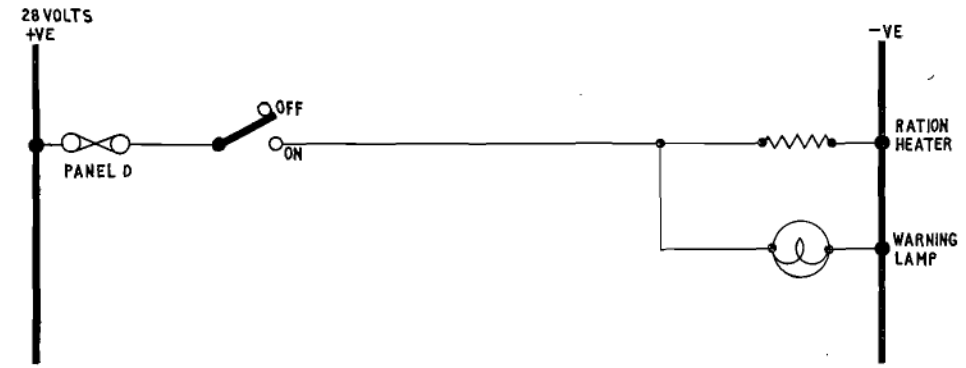


Fig. 2. Ration heater

HOOD DETONATION

4. The pilots' hood is secured by twenty-six explosive bolts arranged symmetrically to port and starboard. Each explosive bolt is connected to its own 2-way terminal block. These terminal blocks are arranged around the inside of the hood coaming along the hood joint line, and are numbered 1 to 13 on each side of the hood from forward to aft. The terminal blocks are each connected to a 15-ohm, 12-watt, resistor mounted in a box at the rear of the hood structure (The resistors are provided to prevent a short circuit of the supply in the event of a bolt welding in).

4A. (1) The detonators must not be handled during removal and replacement, but should be held by the lead ends, which should be twisted together as a safety precaution.

(2) When fitting the detonator to the explosive bolt, the label around the detonator must be removed. It is important that this is done otherwise the detonator can stick inside the bolt resulting in failure to operate.

(3) Further details on removal and replacement of detonators are contained in Sect. 3, Chap. 1.

5. The explosive bolts are fired by pulling upwards either of the controls release and hood jettison levers mounted on the port and starboard consoles, the first part of their travel, switches the normal jettison system and the final travel, switches the emergency jettison system at the same time disengaging the pilot's control handwheels.

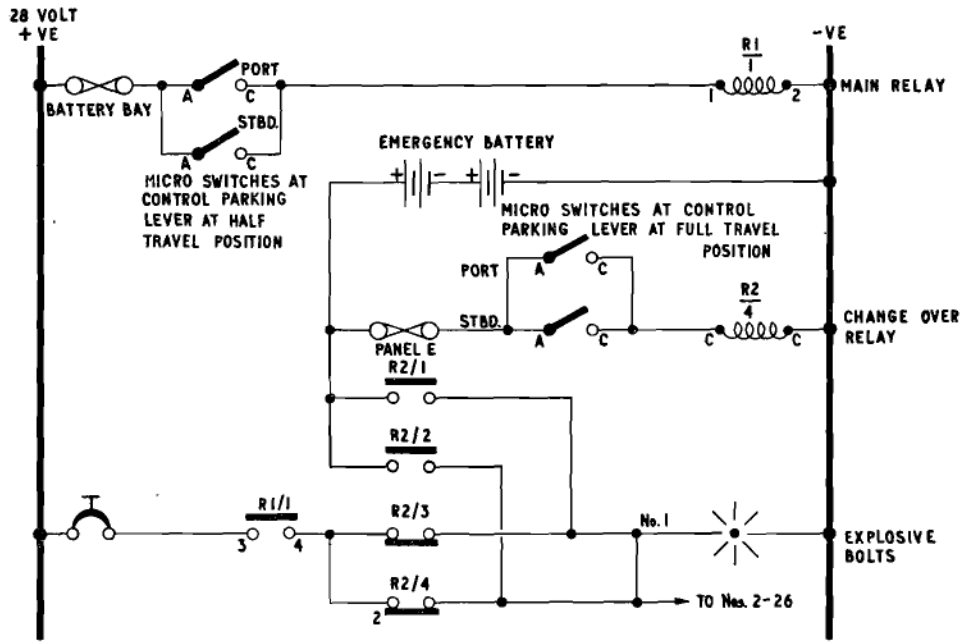


Fig. 3. Hood detonation (pre-Mod. 2004)

Circuit operation

Pre-Mod. 2004 (*fig.* 3)

6. When either of the controls release levers is raised to the first part of its travel it closes a micro switch (which is connected in parallel with a similar switch operated by the alternative release lever) which connects a supply from the 12-way fuse box on the 24-volt battery control panel, to the operating coil, R1, of a Type P1 relay also mounted on the 24-volt battery control panel. When the relay operates (R1/1), the supply obtained from the 24-volt battery via a 45-amp. circuit breaker on the 24-volt battery control panel is connected through the resistance to the explosive bolts, via the normally closed terminals, R2/3, R2/4, of a Type S2 relay. The relay is mounted on the hood coaming below the explosive bolts resistance box.

7. When the release lever is raised further to the end of its travel, a second micro switch (also in parallel with a similar switch on the alternative release lever) is operated which puts an independent supply of 24 volts from two emergency hood detonation accumulators in series, mounted behind the sextant dome, via a fuse on panel E on to the operating coil R2 of the Type S2 relay. When the relay closes, the 24-volt supply is connected (R2/1, R2/2), to the explosive bolts via the resistances.

Post Mod. 2004 (*fig.* 4)

8. Note . . .

Cable tags for this circuit are now 2Z/8452, 2Z/8453 *and* 2Z/8454 *in lieu of tags* Z.54994, Z.54995 *and* Z.54996 *respectively AMP type in lieu of Plessey type. Mod.* 2004 *alters the connections on the starboard console panel B for certain aircraft. When servicing the circuit, reference should be made to the table at the end of this group giving the aircraft numbers and the connections applicable to them.*

When either of the controls release levers is operated, two micro switches are closed when the lever is at the half travel position (these micro switches are connected in parallel with those on the alternative release lever). One micro switch connects a supply from a circuit-breaker on the 24-volt battery control panel and a fuse on the hood detonation relay panel via the normally closed contact R3/1 of the change-over relay, Type S2 on the hood coaming, to the coils R1 and R2 of relays B and C, Type P1, mounted on a panel behind the pilots hood coaming. The other micro switch completes the negative return circuit from these relays.

9. Relay C closes its contact R2/1 to connect the supply from the circuit-breaker in the battery bay to the explosive bolts via their individual resistances whilst relay B closes its contact R1/1 to complete the negative return circuit.

10. As the controls release lever reaches the full travel position, a second set of micro switches is operated (these micro-switches are also connected in parallel with similar micro switches on the alternative release lever). One micro switch connects an independent 24-volt supply, from two 12-volt emergency hood detonation batteries in series, to the coils R3 and R4 of the changeover relay Type S2, and relay A, Type P1 respectively. The other micro switch completes the negative return circuit from these relays to the battery.

11. Relay A closes its contact R4/1 to connect the battery supply to the explosive bolts via their individual resistances whilst the change-over relay closes its contact R3/2 to complete the negative return circuit to the battery and opens its contact R3/1 in the supply circuit to the coils R1 and R2

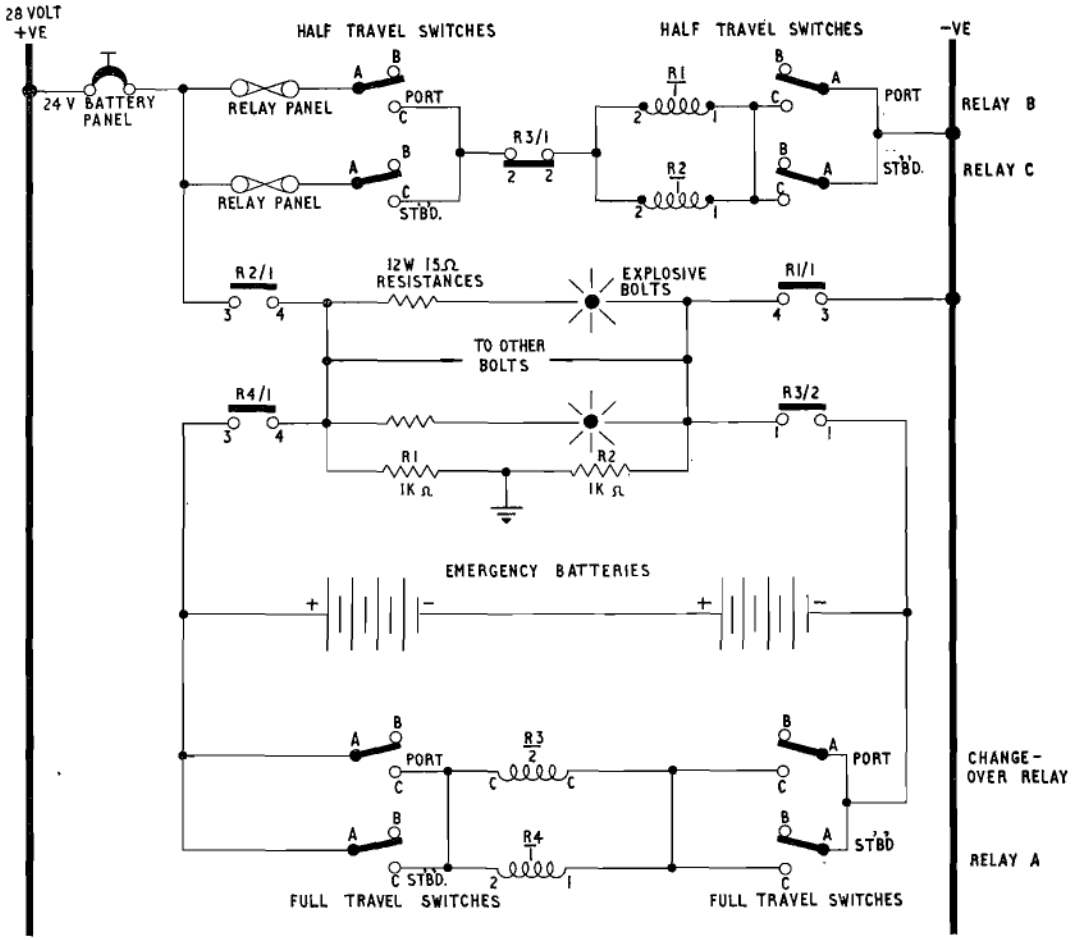


Fig. 4. Hood detonation (post mod. 2004)

of relays B and C. Relays B and C are thus de-energized and their contacts R1/1 and R2/1 are opened. Contact R2/1 thus opened, prevents a feed back from the emergency batteries to the normal 28-volt circuits and to any earth fault there may be on that system caused by the emergency necessitating the abandonment of the aircraft.

SERVICING

WARNING . . .

Before electrical tests of any kind are applied to the detonator circuits, or the circuits associated with them, the detonators must be removed and their leads shorted together. Tests other than those prescribed or recommended must not be applied nor should soldered joints be made with electric soldering irons.

Introduction

12. The General Information group, contained in Book 2, immediately after Section 5 marker card, gives a detailed description of the general tests to be applied to all aircraft circuits and the procedure to be adopted when servicing special circuits.

ENTRANCE DOOR INDICATOR

13. (1) Check the circuit fuse and connect a 28-volt d.c. supply to the external connection.

(2) With the door open the indicator should show WHITE.

(3) Operate the door micro switch and check that the indicator shows BLACK.

Note . . .

For setting instructions for the door micro switch refer to Book 1, *Sect.* 3.

RATION HEATERS

14. (1) Connect a 28-volt d.c. supply to the external connection.

(2) Check the circuit fuses.

(3) Disconnect the ration heaters and connect 28-volt test lamps in their places.

(4) Select the ration heater switches to ON. Check that the test lamp and green indicating lamp lights when each heater is selected ON.

(5) Return the switches to OFF.

(6) Disconnect the test lamps and reconnect the heaters.

HOOD DETONATION

Note . . .

(1) *For setting instructions for the micro switches, refer to Book* 1, *Sect.* 3.

(2) *Detonators should be renewed at the periods laid down in the current Servicing Schedule for this class of equipment.*

WARNING . . .

Detonators must not be handled during removal or replacement, they must only be held by their connecting wires.

15. (1) Disconnect the electrical supplies from the aircraft and remove the emergency batteries.

(2) Disconnect the detonators from their respective terminal blocks round the hood joint.

(3) SHORT CIRCUIT THE TWO LEADS OF EACH DETONATOR.

(4) Record the data of manufacture of the detonators on the history sheet for the test.

(5) Check the circuit fuses and that the circuit breaker on the 24-volt battery panel is reset.

(6) Connect a 28-volt d.c. supply to the external connection.

(7) Operate the port jettison lever to approximately its half-travel position.

Note . . .
When operating the lever, hold the port control column and allow to move forward gently as the elevator control is released.

(8) With the lever at this position, measure the current between the terminals of each bolt terminal block using a test motor or an ammeter reading 0 to 5 amps. The reading should be 1·4 to 1·7 amps. approximately.

(9) Release the port jettison lever and repeat the test using the starboard jettison lever.

(10) Release the starboard jettison lever and disconnect the external supply.

(11) Replace the emergency batteries.

(12) Repeat the test with the jettison levers, in turn, at their full-travel position.

(13) On completion of the tests, ensure that with the jettison levers at the normal position, the micro switches are free from the operating cams and that the circuits are thereby broken.

(14) Remove the shorting links from the detonators, or fit new detonators if the ' life ' has expired for the old ones.

(15) Check that the detonator leads, visible through the perspex protective covers, are not trapped or kinked and that the insulation is sound.

(16) Re-engage the control columns including the emergency severing spring (*See Book* 1, *Sect.* 3, *Chap.* 4).

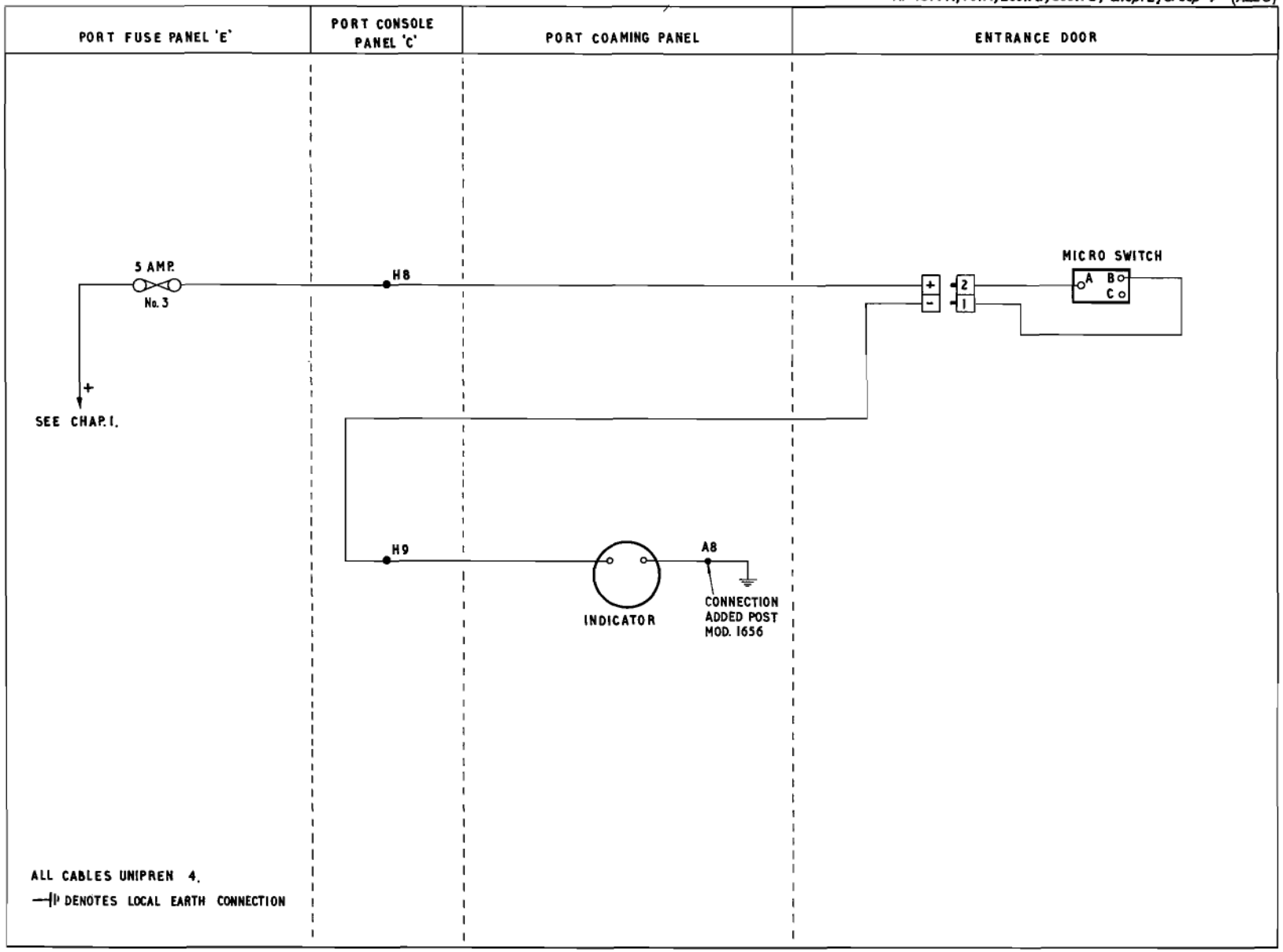


Fig. 5. Entrance door warning indicator

RESTRICTED

8166 347862 12/58 625 C.B.&S. LTD. GP824

(A.L. 28, JAN'58.)

75836 SHT. 168-D
67436 SHT 168-E

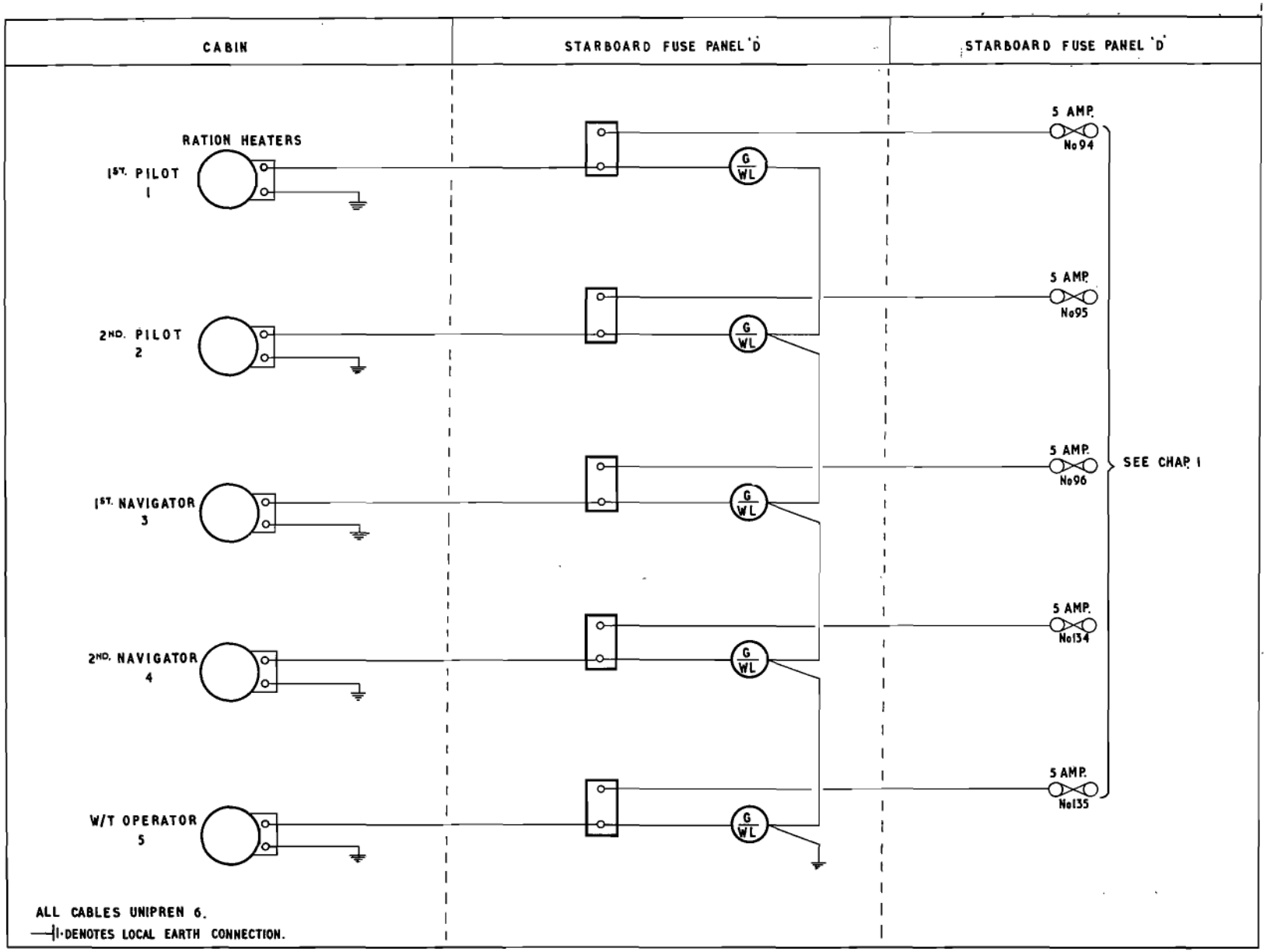


Fig. 6. Ration heaters

RESTRICTED

75836 SHT 129-B
67436 SHT 129-D

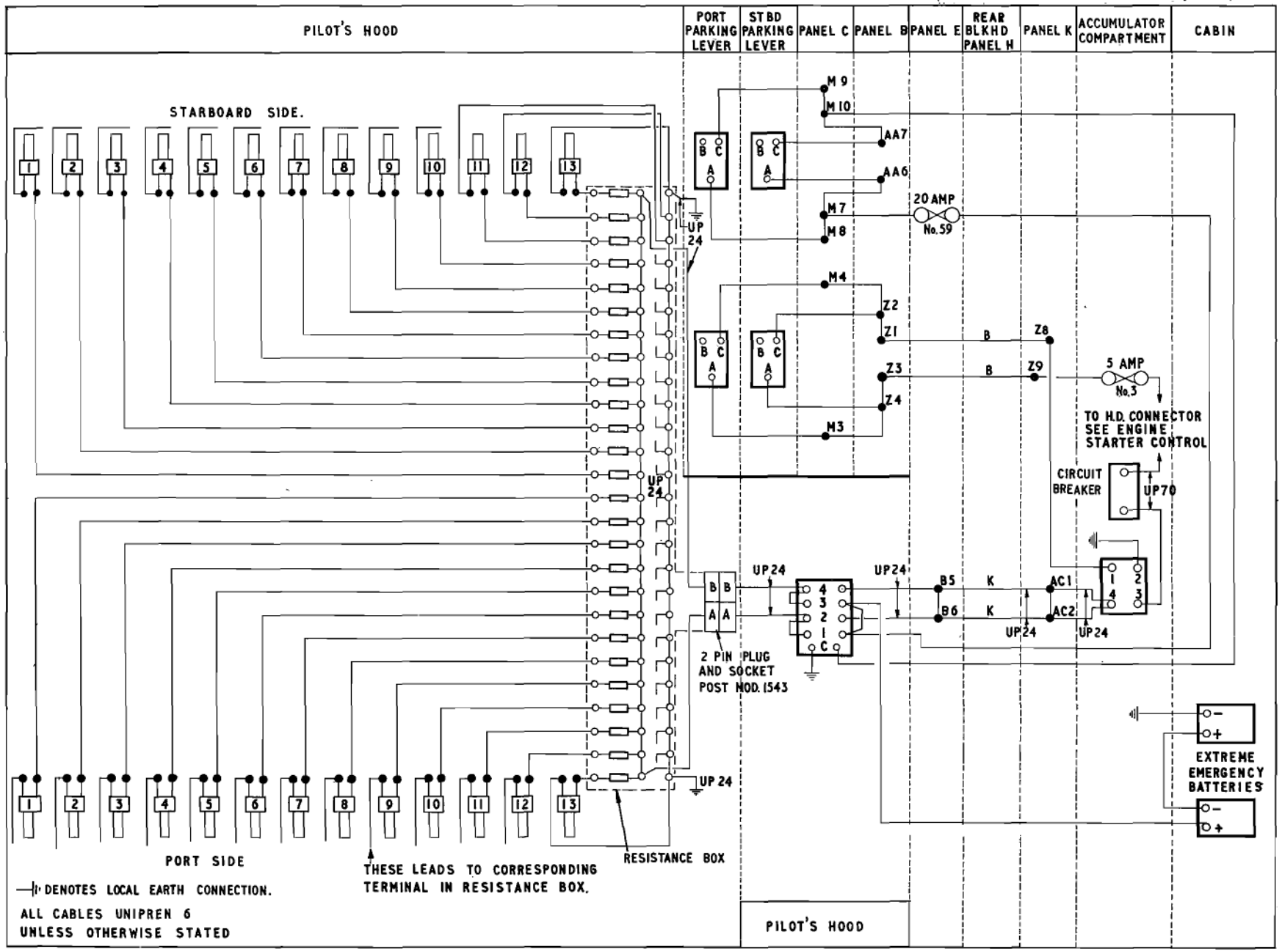
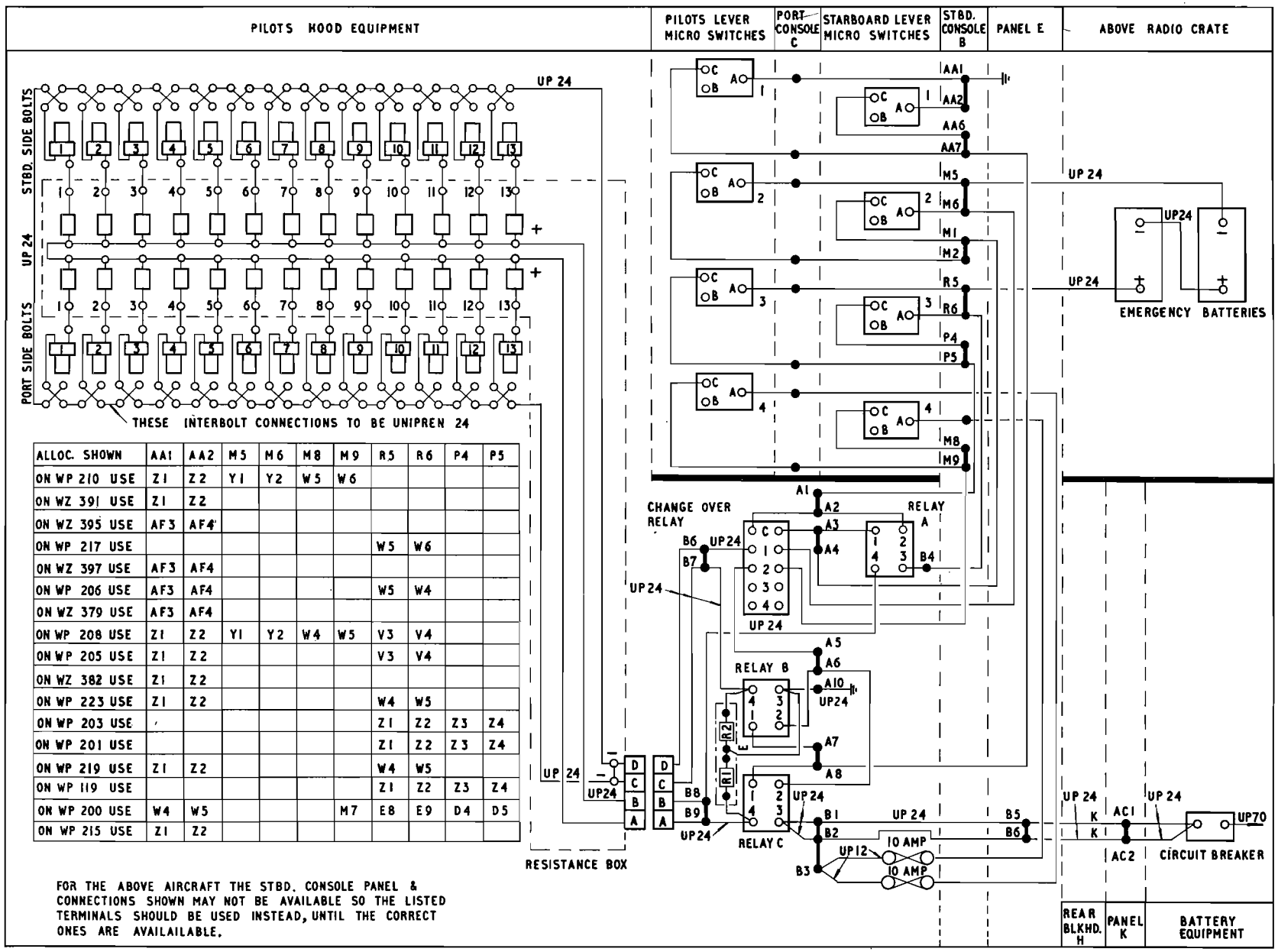


Fig.7. Hood detonation (pre Mod 2004)

RESTRICTED



ALLOC. SHOWN	AA1	AA2	M5	M6	M8	M9	R5	R6	P4	P5
ON WP 210 USE	Z1	Z2	Y1	Y2	W5	W6				
ON WZ 391 USE	Z1	Z2								
ON WZ 395 USE	AF3	AF4								
ON WP 217 USE							W5	W6		
ON WZ 397 USE	AF3	AF4								
ON WP 206 USE	AF3	AF4					W5	W4		
ON WZ 379 USE	AF3	AF4								
ON WP 208 USE	Z1	Z2	Y1	Y2	W4	W5	V3	V4		
ON WP 205 USE	Z1	Z2					V3	V4		
ON WZ 382 USE	Z1	Z2								
ON WP 223 USE	Z1	Z2					W4	W5		
ON WP 203 USE							Z1	Z2	Z3	Z4
ON WP 201 USE							Z1	Z2	Z3	Z4
ON WP 219 USE	Z1	Z2					W4	W5		
ON WP 119 USE							Z1	Z2	Z3	Z4
ON WP 200 USE	W4	W5				M7	E8	E9	D4	D5
ON WP 215 USE	Z1	Z2								

FOR THE ABOVE AIRCRAFT THE STBD. CONSOLE PANEL & CONNECTIONS SHOWN MAY NOT BE AVAILABLE SO THE LISTED TERMINALS SHOULD BE USED INSTEAD, UNTIL THE CORRECT ONES ARE AVAILAILABLE.

Fig.8. Hood detonation (post Mod. 2004)

RESTRICTED

75836 SHT. 144 – R

LIST OF APPENDICES

Appendix 1

ABANDON AIRCRAFT WARNING SYSTEM (MOD. 2828)

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

Introduction

1. This Appendix describes the visual warning signs for crew escape, introduced by Mod. 2828. An associated emergency lighting system introduced by Mod. 2876 is described in Group 1, App. 2.

2. Schematic and routeing diagrams are included in this Appendix (*fig.* 1 *and* 2) and the position of equipment is shown in the Group 8 location diagrams.

DESCRIPTION AND OPERATION

Abandon aircraft signs

3. Two ABANDON AIRCRAFT signs are mounted, one at the 1st Navigator's station on the radio crate and one at the bomb aimer's prone position. The signs are, essentially, engraved red cobex panels behind which are mounted filaments.

Flasher unit, Type A

4. The filaments, which are connected in parallel, are controlled by a flasher unit, Type A, located on the cabin floor below the pilots platform, port side. The flasher unit supply is controlled by an ABANDON AIRCRAFT switch fitted to the pilots port fuel panel. A full description of the flasher unit may be found in A.P.4343C, Sect. 3, Chap. 86.

Supplies

5. The circuit is supplied with 24-volts from two 12-volt, 7 A.H. lead acid accumulators connected in series. The accumulators are mounted within a box located below the pilots platform, port side.

Circuit operation (fig. 1)

6. With the ABANDON AIRCRAFT switch selected to ON the supply is connected (2–1) via the flasher unit relay (A/2) to the three filaments. Simultaneously the supply is connected (A/1) to the coil of the relay. Operation of the relay breaks (A/2) the filament supply and connects (A/1) the 140μF capacitor in series with the relay coil. When the voltage build-up across the capacitor becomes equal to that across the relay coil, the relay is de-energized. This sequence is repeated approximately 100 times per minute to flash the filaments until the ABANDON AIRCRAFT switch is selected to OFF.

Printe for H.M. Stationery Office by McCorquodale Printers (Crewe) Ltd.
(30/4/63). 90182. Wt. 24219–2145. 625. 12/7/63. 375/6.

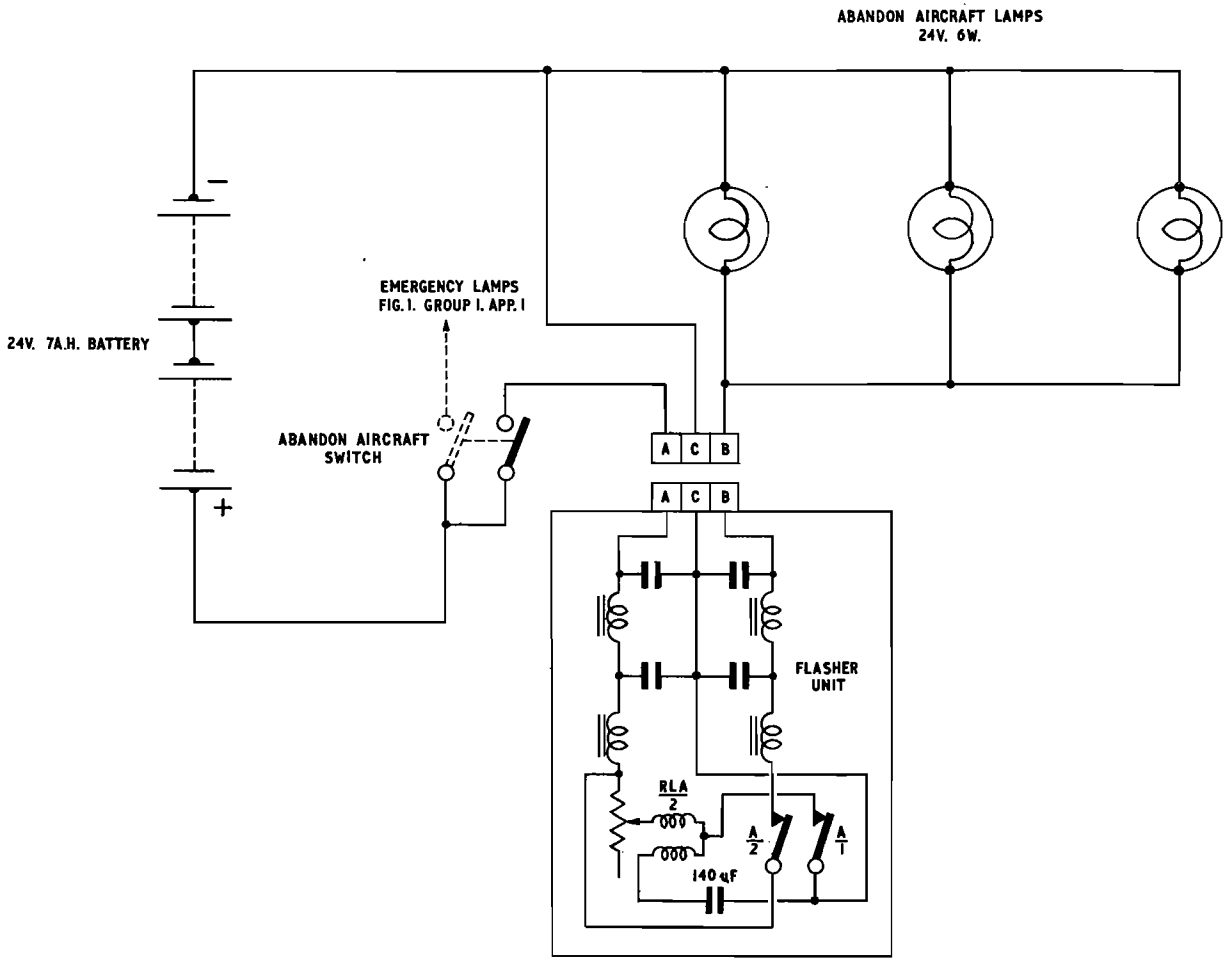


Fig. 1. Abandon Aircraft warning

Dd.2146. 281513. 4/63. J.L.Ltd.

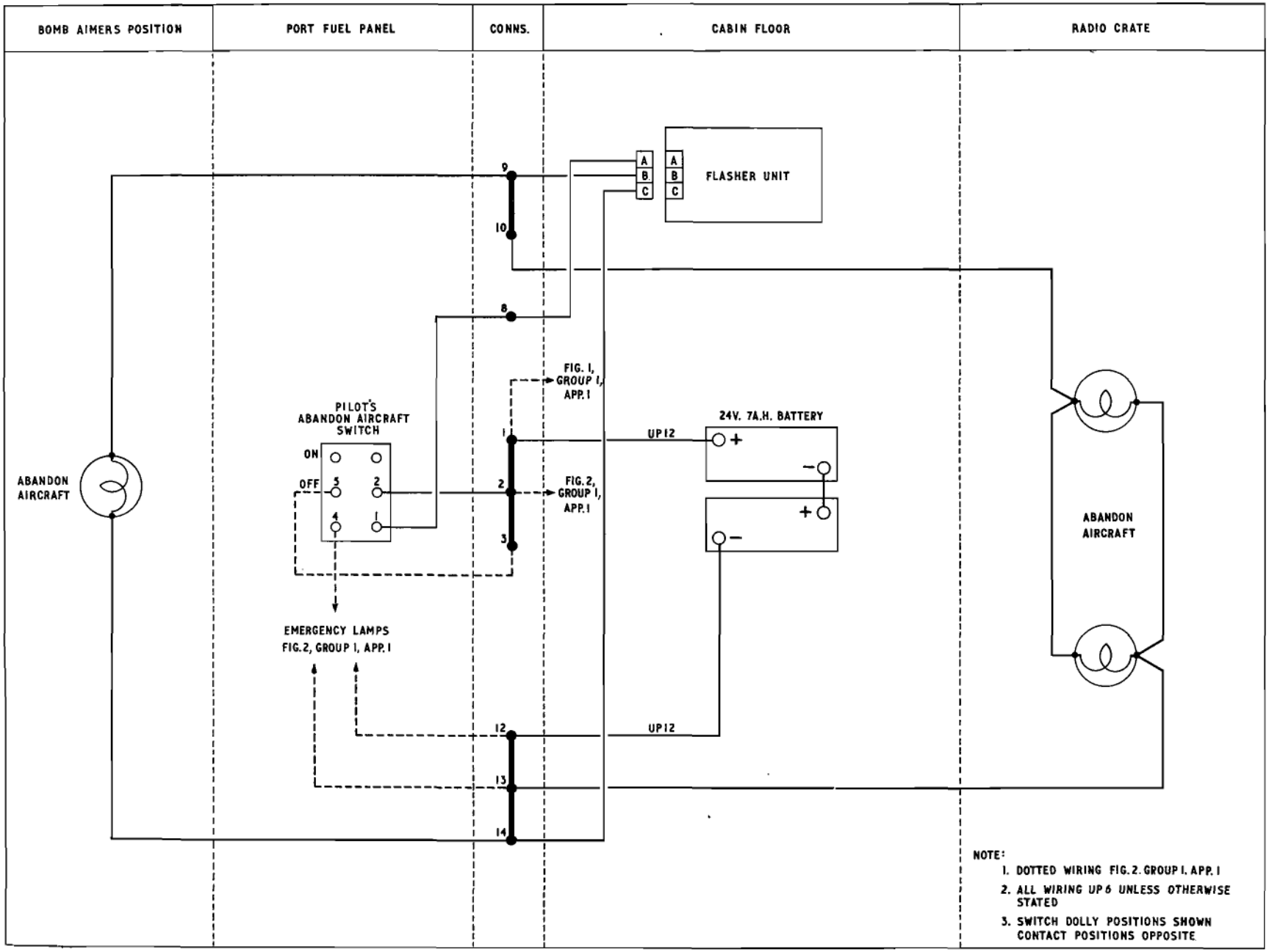


Fig. 2. Abandon Aircraft warning

RESTRICTED