

UNCLASSIFIED

ARROW 1 SERVICE DATA

SECTION 40

ELECTRONICS

POWER DISTRIBUTION

(This data supersedes previous issue dated 27 May 57)

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ARROW 1 SERVICE DATA
LIST OF REVISIONS

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POWER DISTRIBUTION

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DESCRIPTION

GENERAL

1 Two main junction boxes, R1 and R2, are provided for the electronics equipment. JB R1 is a power distribution junction box and JB R2 is a circuit interconnection junction box. The information contained in this section provides a general reference for the circuits of these boxes.

JUNCTION BOX R1

2 Junction box R1 is located in the electronics equipment bay on the bulkhead at station 255 and contains the circuit breakers and fuses of the supply circuits for the electronic sub-systems. DC power at 28 volts and AC power at 115 volts and 26 volts is distributed from the box. The 28 volts DC and the 115 volts AC power is derived from E28 which is the main power panel of the electrical system. The 26 volts AC is derived from a 115/26 volt step-down transformer mounted on the outside of the box.

3 The electronic system DC and the 115 volts AC loads are divided into three groups. One group constitutes the main load, a second group constitutes the emergency load, and a third group constitutes the sheddable load. Under normal operating conditions, the main AC load requirements are supplied by the RH alternator as is also the emergency AC load. The sheddable AC load requirements are supplied by the LH alternator. In the event of the RH alternator failing, the supply line from the electrical system to the sheddable AC load is automatically disconnected and the LH alternator assumes the main AC load and the emergency AC load. If the LH alternator fails while supplying the main AC load and the emergency AC load, an emergency AC system assumes the emergency AC load. Note that if, when operating under normal conditions, the LH alternator fails, the sheddable load only is disconnected.

4 DC load requirements are supplied by two transformer-rectifier units, one LH and one RH, each of which rectifies a portion of the AC output of the appropriate LH or RH

alternator. In the event of the LH or the RH alternator or transformer-rectifier unit failing, the sheddable DC load is disconnected to ensure that the total possible DC load demand cannot exceed the capacity of one transformer-rectifier unit. In the event of both alternators or transformer-rectifier units failing, the emergency DC load requirements are supplied by the battery.

5 The circuit breakers are grouped on the front panel of the junction box and each group is identified according to whether it constitutes the main, emergency or sheddable load. Individual circuit breakers are identified with the circuit they serve. All circuit breakers are the push-to-reset type and have their trip rating marked on the push button and also between the circuit terminals.

6 The step-down transformer of the 26 volts AC circuits derives its input from the 115 volts AC emergency line. Therefore, the transformer constitutes an emergency load and, under normal conditions, its input is derived from the RH or the LH alternator. In the event that both alternators fail, the input is derived from the emergency AC system. The 26 volt AC circuits are protected by fuses which are located in the lower edge of the junction box. The marking adjacent to each fuse identifies the system it serves.

7 The circuit breaker panel is illuminated by a flood light mounted on the forward face of the bulkhead at station 292. The associated light switch is located on the electronic equipment bay centre access door.

JUNCTION BOX R2 (Fig 2)

8 JB R2 is located on the forward face of the bulkhead at station 255 in the air conditioning bay and serves as the interconnecting point for the circuit wiring of the electronics sub-systems. It also serves as a relay panel.

9 Twelve terminal strips mounted inside the box, and thirteen AN type receptacles mounted on the sides, facilitate interconnection between electronics sub-system components. Where the number of connections to a single junction point exceeds four, two or more

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terminal posts are connected together to form a bus-bar. Each terminal strip is numbered and the terminals in each strip are numbered. This method of identification enables terminals referenced on the routing diagrams to be easily located by giving the strip number and the number of the terminal as a two-figure reference e. g. 2-13 denotes terminal strip 2 terminal 13.

10 Mounted externally on the junction box are six relays type CS-R-1. These relays control the operation of the following circuits:

- (a) Tow vehicle interphone - Item 41
- (b) Starting vehicle interphone - Item 42
- (c) UHF transmit control - Item 43
- (d) Front cockpit RMI needle selector - Item 44
- (e) Rear cockpit RMI needle selector - Item 45
- (f) Ground interphone - Item 46

11 Relay identification numbers are marked both outside and inside the box.

DAMPER CIRCUIT BREAKER PANEL R8 (Fig 3)

12 The power supply for the damper system is distributed from panel R8 which derives AC and DC power supplies from the electronics system power distribution junction box R1.

13 Eight circuit breakers are mounted on the panel, of which four serve the normal damping system and four serve the emergency damping system. Each group of four circuit breakers is marked A, B, C and DC representing 115 volts AC 'A' phase, 'B' phase and 'C' phase supplies and DC supply. The normal damping DC supply is 28 volts, the emergency damping DC supply may be 28 volts or the battery voltage. The power circuits from the panel are connected to the function selector unit of the damper system. See Arrow 1 Service Data, Section 13, Flying Controls - Electrics.

14 The circuit breaker panel is illuminated by two panel lights which are operated by the front cockpit lights dimmer control.

TESTING AND SERVICING

GENERAL

15 Function testing of the circuits contained in the junction boxes is adequately covered during function testing of the electronics subsystems and the damping system. However, at the periods specified in the maintenance schedule, check the action of each circuit breaker and inspect the casing for signs of cracks and ruptures. In addition, check the fuses for signs of oxidization.

REMOVAL AND INSTALLATION

GENERAL

16 Removal of the units comprising the power distribution system is straightforward, consisting of disconnection of cables and removal of mounting or securing bolts. Where it is considered necessary, the procedure for removal and installation of various units is described in more detail.

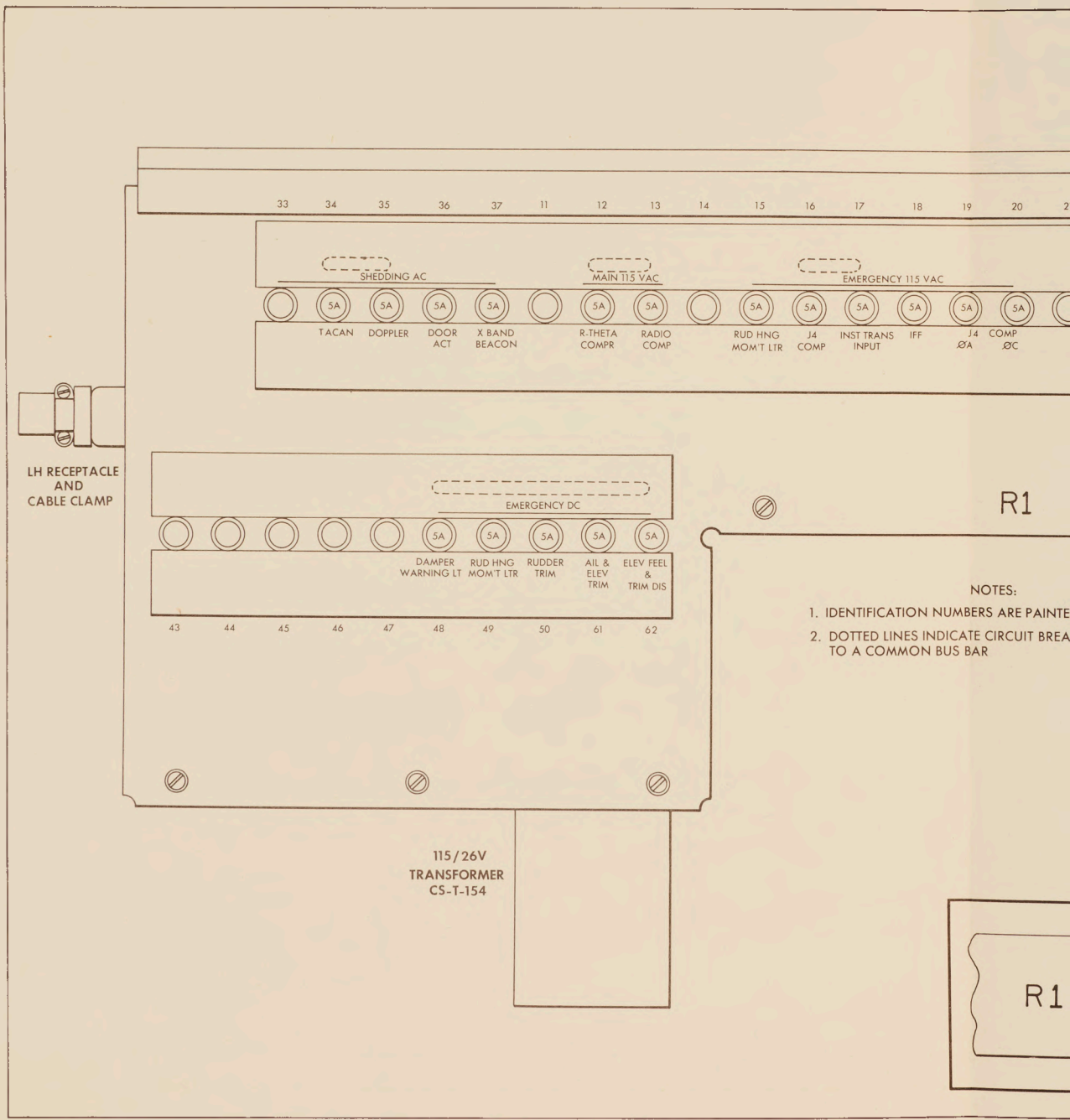
17 As the equipment dealt with in this section contains electrical power supply wiring, the master electrical switch in the front cockpit must be switched off before removal and installation operations are carried out. Where the removal operation entails disconnection of circuit wiring, the bare ends of the wires must be taped when disconnected to avoid accidental short circuits between wires or between wires and ground.

18 Access to junction box R1 is gained by lowering the electronic equipment bay centre access door which is hinged at the aft end to open outwards and secured by 33 camloc fasteners. One fastener, clearly marked, must be released last and secured first. The door is lowered and raised by means of an electric motor actuator which is controlled by a switch located adjacent to the door. Access to the switch is gained by releasing two camloc fasteners securing an access flap.

Access
gain

Access
thru

1024-1



LH RECEPTACLE
AND
CABLE CLAMP

115/26V
TRANSFORMER
CS-T-154

R1

NOTES:

1. IDENTIFICATION NUMBERS ARE PAINTED
2. DOTTED LINES INDICATE CIRCUIT BREAK TO A COMMON BUS BAR

R1

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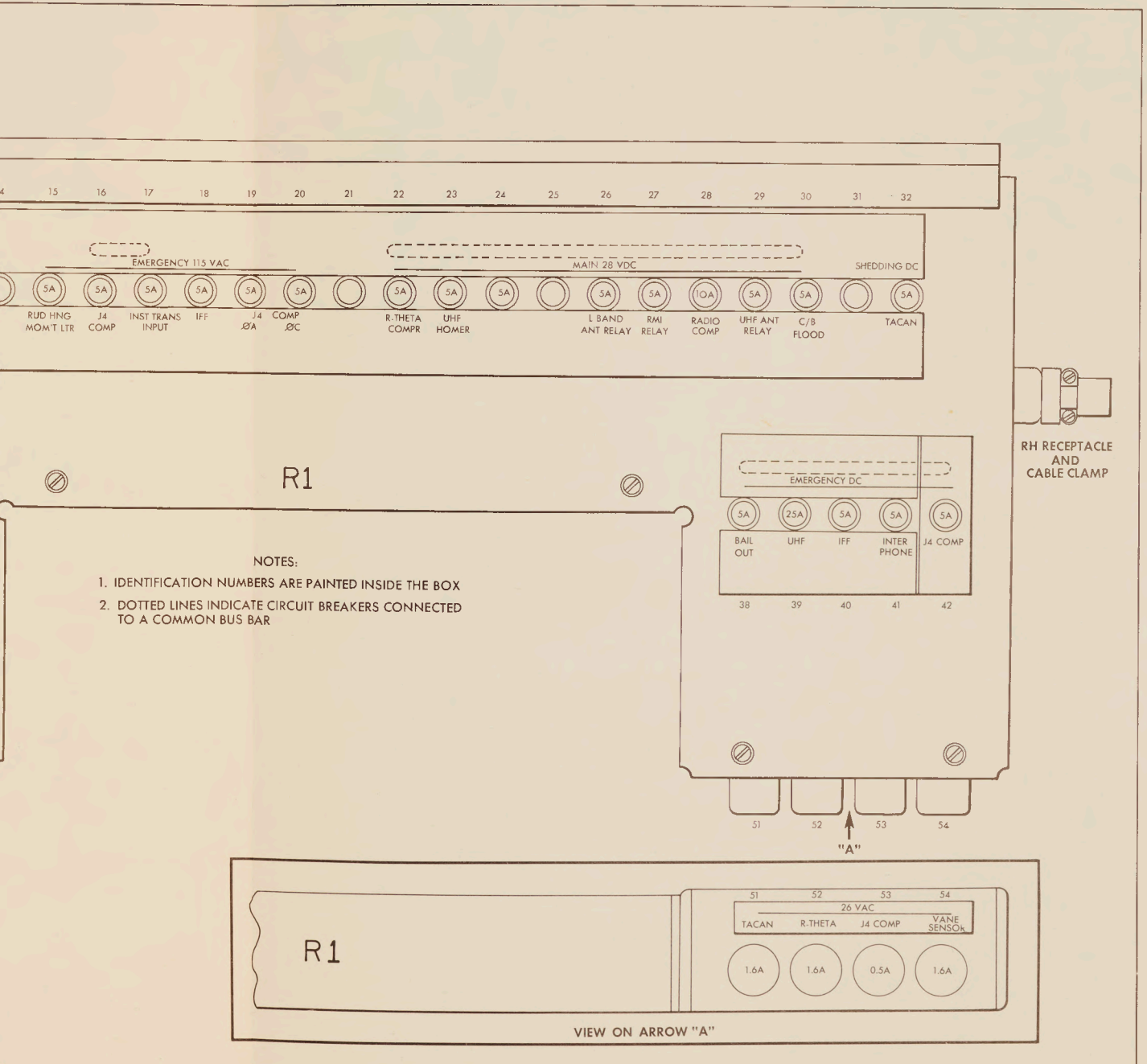


FIG. 1 JUNCTION BOX R1

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JUNCTION BOX R1 - REMOVAL

19 To remove junction box R1 from the bulkhead at station 255 in the electronic equipment bay proceed as follows:

- (a) Open the lid of the junction box.
- (b) Release the cable clamps holding the cables at the two AN type receptacles on the sides of the box.
- (c) Disconnect the circuit wiring from the terminal strips inside the box.
- (d) Carefully withdraw the wires through the receptacles and tape the bare ends.
- (e) Remove six mounting screws and detach the junction box from the bulkhead.

JUNCTION BOX R1 - INSTALLATION

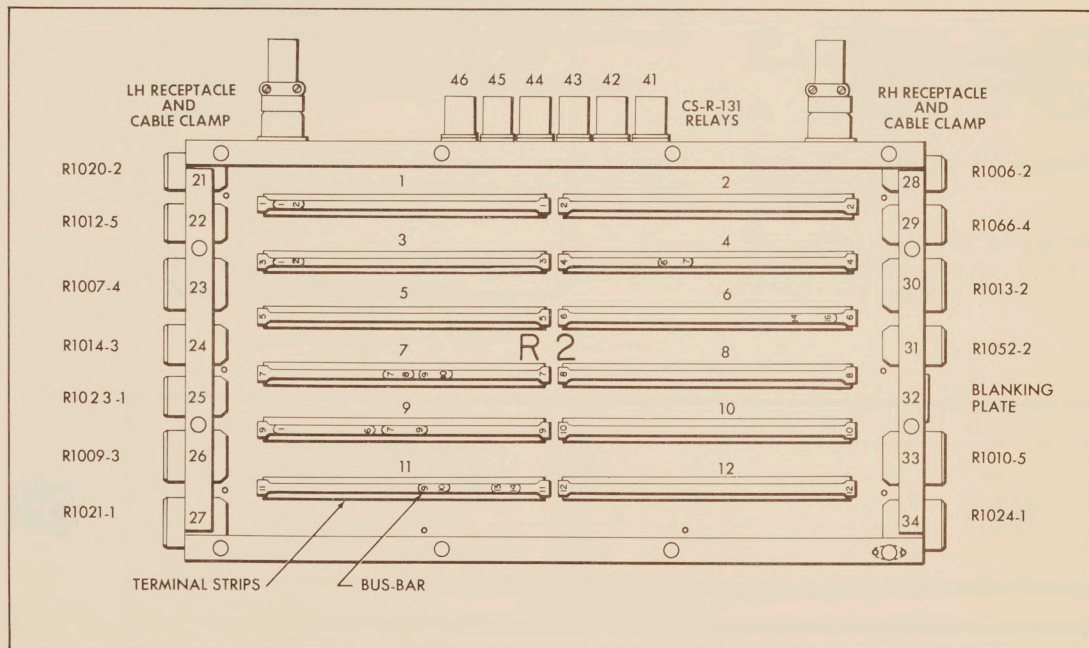
20 The procedure for installing junction box R1 is the reverse to that given for removal.

JUNCTION BOX R2 - REMOVAL

21 Access to junction box R2 is gained by releasing the air conditioning bay access panel which is secured by 76 screws.

22 To remove junction box R2 from the forward face of the bulkhead at station 255 in the air conditioning bay proceed as follows:

- (a) Disconnect the antenna cable assembly R1102-2 at the L-Band antenna.
- (b) Remove the lid of the junction box by releasing 12 camloc fasteners.
- (c) Disconnect 13 AN type connectors.
- (d) Release the cable clamps holding the cables at the two AN type receptacles.
- (e) Disconnect the circuit wiring from the terminal strips inside the box.
- (f) Carefully withdraw the wires through the AN type receptacles and tape the bare ends.



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FIG. 2 JUNCTION BOX R2

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6.4

3.2

52.2

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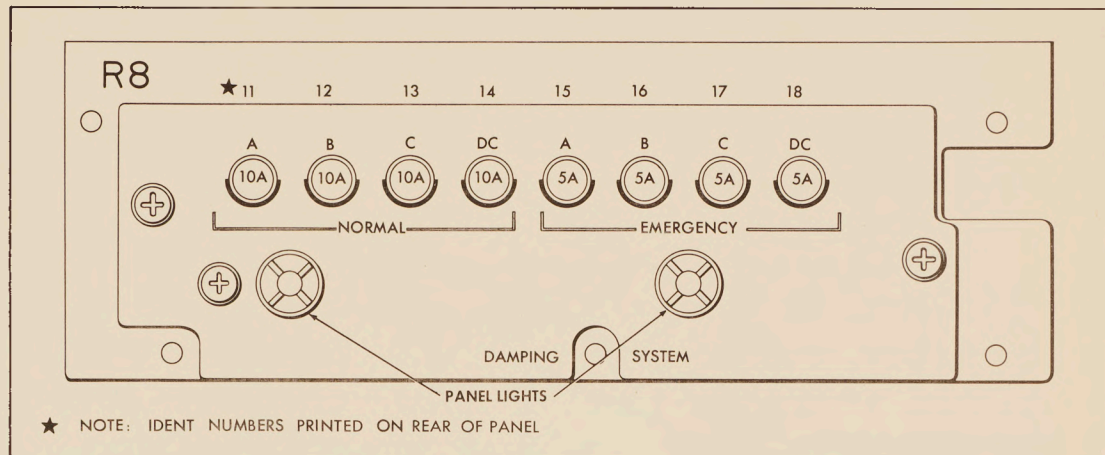
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FIG. 3 DAMPER CIRCUIT BREAKER PANEL R8

(g) Remove 12 mounting screws and detach the junction box from the bulkhead.

JUNCTION BOX R2 - INSTALLATION

23 The procedure for installing junction box R2 is the reverse to that given for removal.

DAMPER CIRCUIT BREAKER PANEL R8 - REMOVAL

24 Access to the damper circuit breaker panel R8 on the left hand console in the front cockpit is unobstructed.

25 To remove the damper circuit breaker panel proceed as follows:

(a) Remove three mounting screws and detach the panel from the console.

(b) Disconnect the connector R1068-1 from the receptacle on the panel.

(c) Disconnect the connector R8-1 from the receptacle on the cockpit floor.

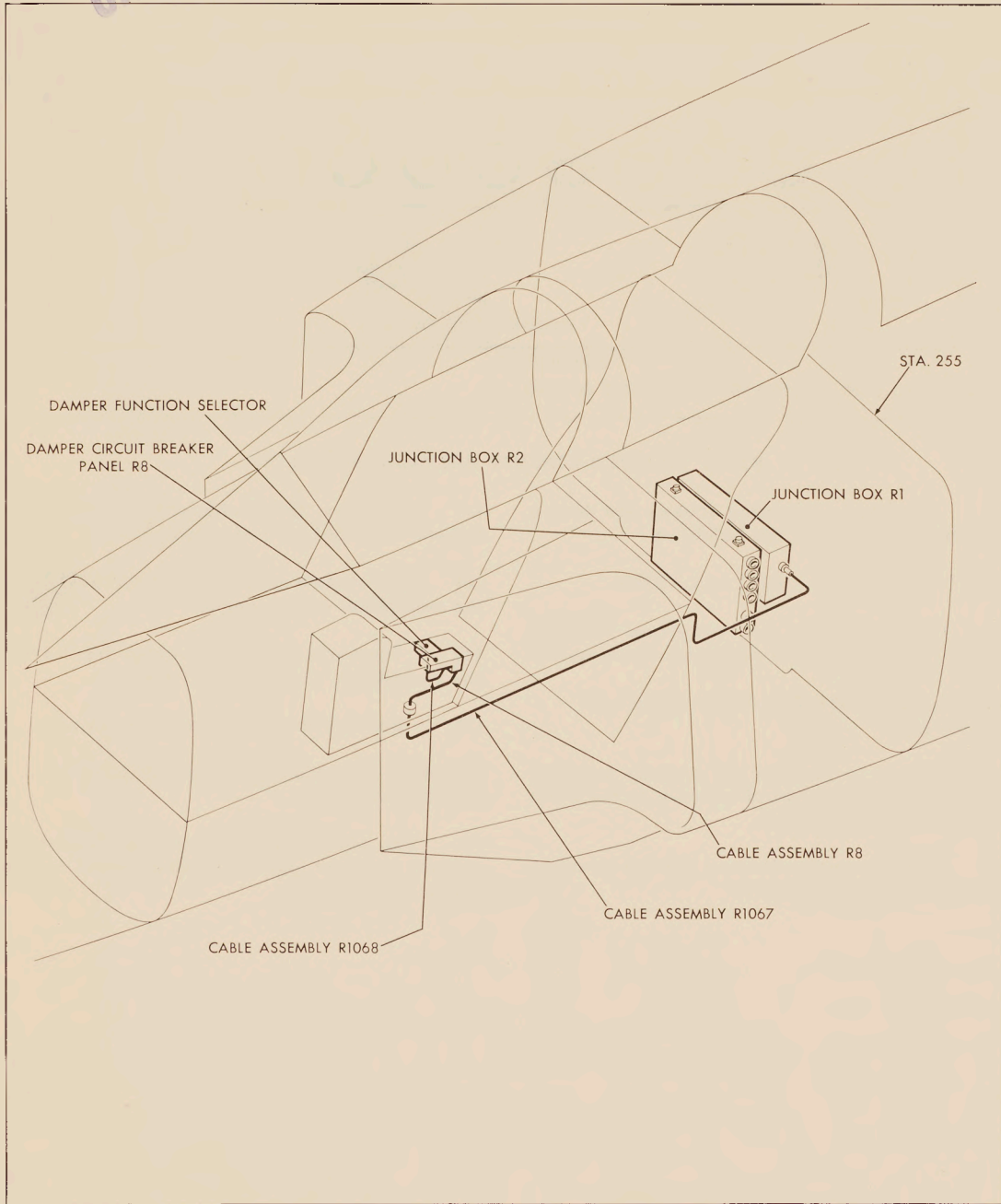
(d) Remove the panel from the console.

DAMPER CIRCUIT BREAKER PANEL R8 - INSTALLATION

26 The procedure for installing the damper circuit breaker panel is the reverse to that given for removal.

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FIG. 4 LOCATION OF EQUIPMENT POWER DISTRIBUTION

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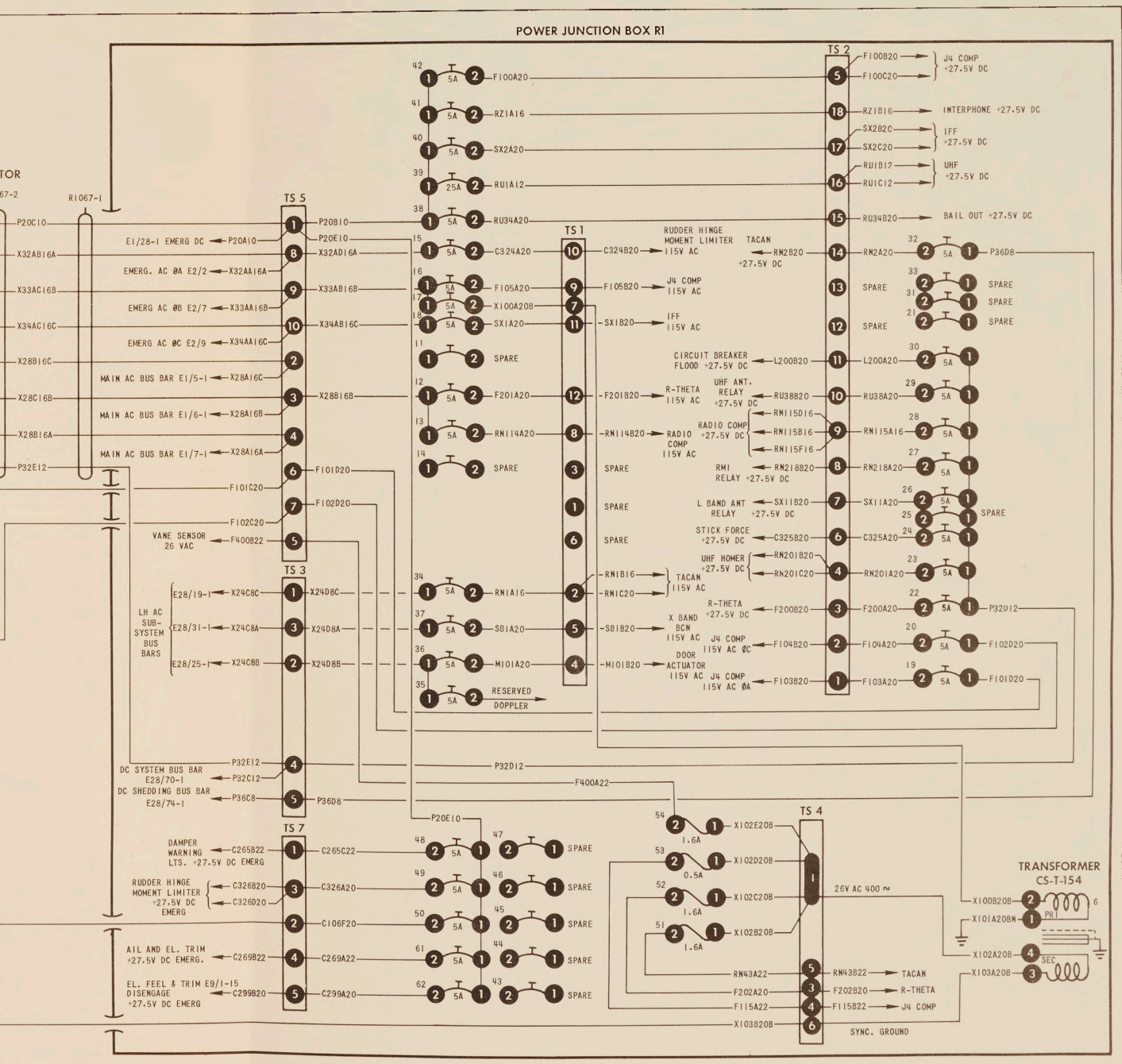


FIG. 5 POWER DISTRIBUTION

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EQUIPMENT LIST

COMPONENTS

| PART NO. | MANUFACTURER | NOMENCLATURE | UNITS PER ASSEMBLY |
|-----------------------|--------------------|----------------------------|--------------------|
| 7-1354-43 | Avro Aircraft Ltd. | Junction Box R1 - Complete | 1 |
| AN3436-2-12 | | Terminal Strip | 1 |
| AN3436-2-18 | | Terminal Strip | 1 |
| AN3436-4-5 | | Terminal Strip | 1 |
| AN3436-2-6 | | Terminal Strip | 1 |
| AN3436-4-10 | | Terminal Strip | 1 |
| AN3436-2-10 | | Terminal Strip | 1 |
| MS25017-5 | | Circuit Breaker 5 amp | 29 |
| MS25017-10 | | Circuit Breaker 10 amp | 2 |
| MS25017-25 | | Circuit Breaker 25 amp | 1 |
| CS-T-154 | | Transformer 115/26V | 1 |
| 442006 | Littelfuse | Fuse Holder | 4 |
| 41301-6 | Littelfuse | Fuse 1.6 amp | 3 |
| 413-500 | Littelfuse | Fuse 0.5 amp | 1 |
| 7-1352-11 | Avro Aircraft Ltd. | Junction Box R2 - Complete | 1 |
| AN3436-2-15 | | Terminal Strip | 12 |
| CS-R-131 | | Relay | 6 |
| CS-C-3102E 22-14S | | Connector | 1 |
| CS-C-3102E 22-14SW | | Connector | 1 |
| CS-C-3102E 28-15P | | Connector | 1 |

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COMPONENTS (Cont'd)

| PART NO. | MANUFACTURER | NOMENCLATURE | UNITS PER ASSEMBLY |
|-----------------------|--------------------|---|--------------------|
| CS-C-3102E 22-19P | | Connector | 1 |
| CS-C-3102E 22-19SW | | Connector | 1 |
| CS-C-3102E 28-21S | | Connector | 1 |
| CS-C-3102E 28-12S | | Connector | 1 |
| CS-C-3102E 22-14SX | | Connector | 1 |
| CS-C-3102E 22-14SY | | Connector | 1 |
| CS-C-3102 28-21SW | | Connector | 1 |
| CS-C-3102E 22-14SZ | | Connector | 1 |
| CS-C-3102E 28-21PX | | Connector | 1 |
| CS-C-3102E 28-15PW | | Connector | 1 |
| 7-1252-259 | Avro Aircraft Ltd. | Damper Circuit Breaker Panel R8 - Complete | 1 |
| CS-C-3106E 2-8-1S | | Connector | 1 |
| CS-C-3102E 22-19S | | Connector | 1 |
| MP-703C | Littelfuse | Circuit Breaker | 4 |
| MP-701C | Littelfuse | Circuit Breaker | 4 |
| MS 25010-3A | | Light | 2 |
| CS-T-137-11 | | Ground Stud | 1 |

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LIST OF CABLE ASSEMBLIES

| CABLE ASSEMBLY | PART NO. | LOCATION REFERENCE | |
|----------------|--------------|--|---------|
| | | SUB-SYSTEM | SECTION |
| R173 | CG-131/ARN-6 | Radio Compass AN/ARN-6 | 41 |
| R1005 | 7-1350-15 | UHF Homer Adaptor AN/ARA-25 | 43 |
| R1006 | 7-1350-16 | UHF Homer Adaptor AN/ARA-25 | 43 |
| R1007 | 7-1350-17 | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | UHF Command Radio AN/ARC-34 | 44 |
| | | IFF AN/APX-6A | 45 |
| | | Interphone AN/AIC-10 | 46 |
| | | J4 Gyrosyn Compass | 47 |
| | | J4 Gyrosyn Compass | 47 |
| | | J4 Gyrosyn Compass | 47 |
| R1010 | 7-1350-21 | Radio Compass AN/ARN-6 | 41 |
| | | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | UHF Command Radio AN/ARC-34 | 44 |
| | | Interphone System AN/AIC-10 | 46 |
| R1011 | 7-1350-22 | Interphone System AN/AIC-10 | 46 |
| R1012 | 7-1350-23 | Radio Compass AN/ARN-6 | 41 |
| R1013 | 7-1350-24 | Radio Compass AN/ARN-6 | 41 |
| | | X-Band Beacon | 42 |
| | | J4 Gyrosyn Compass | 47 |
| R1014 | 7-1350-25 | Provision for Tacan AN/ARN-21 | |
| R1015 | 7-1350-26 | Provision for Tacan AN/ARN-21 | |
| R1016 | 7-1350-27 | Electronic equipment bay door actuator | |

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LIST OF CABLE ASSEMBLIES (Cont'd)

| CABLE ASSEMBLY | PART NO. | LOCATION REFERENCE | |
|----------------|------------|--|---------|
| | | SUB-SYSTEM | SECTION |
| R1017 | 7-1350-28 | Interphone AN/AIC-10 | 46 |
| R1018 | 7-1350-29 | UHF Command Radio AN/ARC-34 | 44 |
| R1019 | 7-1350-31 | Interphone AN/AIC-10 | 46 |
| R1020 | 7-1350-32 | Interphone AN/AIC-10 | 46 |
| R1021 | 7-1350-33 | Provision for Tacan AN/ARN-21 | |
| R1022 | 7-1350-34 | Electronic equipment bay door actuator | |
| R1023 | 7-1350-35 | Provision for Tacan AN/ARN-21 | |
| R1024 | 7-1350-36 | J4 Gyrosyn Compass | 47 |
| R1025 | 7-1350-37 | UHF Command Radio AN/ARC-34 | 44 |
| R1026 | 7-1350-38 | Electronic equipment bay door actuator | |
| R1027 | 7-1350-123 | Radio Compass AN/ARN-6 | 41 |
| R1028 | 7-1350-41 | J4 Gyrosyn Compass | 47 |
| R1029 | 7-1350-42 | Radio Compass AN/ARN-6 | 41 |
| R1030 | 7-1352-49 | Provision for R-Theta | |
| R1031 | 7-1352-51 | Provision for R-Theta | |
| R1032 | 7-1352-52 | Provision for Tacan AN/ARN-21 | |
| R1033 | 7-1352-53 | Radio Compass AN/ARN-6 | 41 |
| | | UHF Homer Adaptor AN/ARA-25 | 43 |
| R1034 | 7-1352-54 | UHF Command Radio AN/ARC-34 | 44 |
| R1035 | 7-1352-55 | UHF Command Radio AN/ARC-34 | 44 |
| | | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | J4 Gyrosyn Compass | 47 |
| R1036 | 7-1352-56 | Interphone AN/AIC-10 | 46 |

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LIST OF CABLE ASSEMBLIES (Cont'd)

| CABLE ASSEMBLY | PART NO. | LOCATION REFERENCE | |
|----------------|-----------|-------------------------------|---------|
| | | SUB-SYSTEM | SECTION |
| R1037 | 7-1352-57 | Interphone AN/AIC-10 | 46 |
| R1038 | 7-1352-58 | Radio Compass AN/ARN-6 | 41 |
| R1039 | 7-1352-59 | J4 Gyrosyn Compass | 47 |
| R1040 | 7-1352-61 | IFF AN/APX-6A | 45 |
| R1041 | 7-1352-62 | Radio Compass AN/ARN-6 | 41 |
| | | UHF Homer Adaptor AN/ARA-25 | 43 |
| R1042 | 7-1352-63 | Provision for Tacan AN/ARN-21 | |
| R1043 | 7-1352-64 | Provision for Tacan AN/ARN-21 | |
| R1044 | 7-1352-65 | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | IFF AN/APX-6A | 45 |
| | | Interphone AN/AIC-10 | 46 |
| R1045 | 7-1352-66 | Radio Compass AN/ARN-6 | 41 |
| R1046 | 7-1352-67 | Provision for R-Theta | |
| R1047 | 7-1352-68 | Provision for R-Theta | |
| R1048 | 7-1352-69 | Interphone AN/AIC-10 | 46 |
| R1049 | 7-1352-71 | Interphone AN/AIC-10 | 46 |
| R1050 | 7-1360-11 | Radio Compass AN/ARN-6 | 41 |
| | | X-Band Beacon | 42 |
| | | J4 Gyrosyn Compass | 47 |
| R1052 | 7-1350-45 | J4 Gyrosyn Compass | 47 |
| | | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | Radio Compass AN/ARN-6 | 41 |
| R1053 | 7-1360-12 | X-Band Beacon | 42 |

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LIST OF CABLE ASSEMBLIES (Cont'd)

| CABLE ASSEMBLY | PART NO. | LOCATION REFERENCE | |
|----------------|------------|-------------------------------|---------|
| | | SUB-SYSTEM | SECTION |
| R1054 | 7-1360-46 | IFF AN/APX-6A | 45 |
| R1055 | 7-1350-47 | Interphone AN/AIC-10 | 46 |
| R1056 | 7-1350-48 | IFF AN/APX-6A | 45 |
| R1101 | 7-1350-51 | Provision for Tacan AN/ARN-21 | |
| R1102 | 7-1350-52 | IFF AN/APX-6A | 45 |
| R1103 | 7-1350-53 | IFF AN/APX-6A | 45 |
| R1104 | 7-1350-54 | IFF AN/APX-6A | 45 |
| R1105 | 7-1350-55 | IFF AN/APX-6A | 45 |
| R1106 | 7-1360-13 | IFF AN/APX-6A | 45 |
| | | UHF Command Radio AN/ARC-34 | 44 |
| R1107 | 7-1383-83 | UHF Command Radio AN/ARC-34 | 44 |
| | | IFF AN/APX-6A | 45 |
| R1108 | 7-1350-128 | Radio Compass AN/ARN-6 | 41 |
| R1109 | 7-1350-129 | Radio Compass AN/ARN-6 | 41 |
| R1110 | 7-1350-46 | Radio Compass AN/ARN-6 | 41 |
| R1111 | 7-1360-15 | Radio Compass AN/ARN-6 | 41 |
| R1112 | 7-1350-58 | UHF Homer Adaptor AN/ARA-25 | 43 |
| R1113 | 7-1350-59 | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | UHF Command Radio AN/ARC-34 | 44 |
| R1114 | 7-1350-61 | UHF Homer Adaptor AN/ARA-25 | 43 |
| | | UHF Command Radio AN/ARC-34 | 44 |
| R1115 | 7-1350-62 | UHF Command Radio AN/ARC-34 | 44 |
| R1116 | 7-1350-63 | UHF Command Radio AN/ARC-34 | 44 |

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LIST OF CABLE ASSEMBLIES (Cont'd)

| CABLE ASSEMBLY | PART NO. | LOCATION REFERENCE | |
|-------------------|-----------|-----------------------------|---------|
| | | SUB-SYSTEM | SECTION |
| R1117 | 7-1350-64 | UHF Command Radio AN/ARC-34 | 44 |
| R1118 | 7-1360-16 | UHF Command Radio AN/ARC-34 | 44 |
| R1119 | 7-1383-81 | UHF Command Radio AN/ARC-34 | 44 |
| R1120 | 7-1360-17 | X-Band Beacon | 42 |
| R1122 | 7-1350-66 | UHF Homer Adaptor AN/ARA-25 | 43 |

