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TO: HOLDERS OF COMPONENT MAINTENANCE MANUAL 24-35-01

PART NUMBER:

D717-01-001 / D717-02-001

This letter transmits Revision 11 dated Aug 20/13, to Component Maintenance Manual 24-35-01. Replace revised pages, add and remove the pages as shown below.

REVISED PAGES	DATED
T-1	May 31/13
RR-1	May 31/13
SBL-1	May 31/13
LEP-1, LEP-2	May 31/13
1001, 1002, 1003, 1004, 1005, 1006, 1007, 1009, 1010, 1011, 1012, 1013, 1014, 1016	May 31/13
6001, 6002, 6005, 6006, 6012, 6013, 6014	May 31/13
7003	May 31/13
8001	May 31/13
9001, 9003	May 31/13

ADD PAGES	DATED
1017, 1018	May 31/13
9005, 9006	May 31/13

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COMPONENT MAINTENANCE MANUAL
PART No. D717-01-001 / D717-02-001

TO: HOLDERS OF EMERGENCY POWER SUPPLY, PART NUMBER D717-01-001 / D717-02-001,
COMPONENT MAINTENANCE MANUAL REVISION NO. 10 WITH ILLUSTRATED PARTS LIST
24-35-01.

REVISION NO. 11 DATED August 20/13

HIGHLIGHTS

Pages which have been revised, added, or removed are shown below with the reasons for the changes. Add or remove these pages and record the revision number and the date on the Record of Revisions page.

PAGE	DESCRIPTION OF CHANGE
T-1	Layout and format updated to Boeing Supplier Technical Data Guide D6-54487 Volume 1 Rev D Removed the statement "This manual complies with British Civil is certified as correct" in total and replaced it with "This publication, validated in accordance with company quality documentation, is correct at date of issue. Any subsequent changes to this publication will be made by raising the issue status of the manual."
Record of Revisions	
RR-1	Added Revision No. 11 and date Removed the top paragraph "The introduction of data by revision on separate record sheets."
Service Bulletin List	
SBL-1	Added Issue Date and Title of SB D71702-24-1
List of Effective Pages	
LEP-1	Updated to reflect this revision
LEP-2	Updated to reflect this revision
Testing and Fault Isolation	
1001, 1002	Updated Table 1001 and Note
1003	Updated Figure 1001
1004, 1005	Updated Para. 5 and Table 1004

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PAGE	DESCRIPTION OF CHANGE
1006, 1007	Replaced Figures 1002 and 1003. Moved original Figures 1002 and 1003 to be Figures 9001 and 9003
1009	Updated Para F. (23), (25), (27) and (29)
1010, 1011	Updated Para G. (4), (6), (8), (13), Para. H. (3), (5), (7), (8), (9), (12), (13), (15), (18), (21) and (22)
1012 thru 1014	Updated various Paras
1016 thru 1017	Updated various Paras
Repair	
6001	Updated Modified Jig Part Number in Table 6001
6002	Updated Adhesive Part Number in table 6002
6005	Added Note in Para C.
6006	Updated Adhesive Part Number in para (e)
6012	Added clarification that this procedure may only be conducted on one of the two lugs.
6014	Added Figure 6001
Assembly	
7002	Amended Para B title, added Caution and Note
7003	Added Figure 7001 to identify battery pack connections
Special Tools, Fixtures and Equipment	
9001	Updated Table 9001
9003	Added Figures 9001 and 9002 references to Para C.
9005	Added Figure 9001
9006	Added Figure 9002

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COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST

EMERGENCY POWER SUPPLY PUBLICATION REFERENCE CMM 717-01

PART No.

D717-01-001

D717-02-001

BOEING PART No.

S283W603-1

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This publication, validated in accordance with company quality policy, is correct at date of issue.
Any subsequent changes to this publication will be made by raising the issue status of the manual.

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RECORD OF TEMPORARY REVISIONS

Temporary Revision Number	Issue Date	Date Inserted / Inserted By	Date Removed / Removed By	Date Incorporated

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SERVICE BULLETIN LIST

Service Bulletin / Revision Number	Issue Date	Date Incorporated or No Effect	Title
SB D71702-24-1	Nov 09/12	May 31/13	Emergency Power Supply (EPS) - Printed Circuit Board Change

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Servicing	N/A
Storage	N/A

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INTRODUCTION

1. Introduction

A. General

- (1) This manual supplies data and instructions to do maintenance, tests, and repairs on the component in the shop. The data and procedures are necessary to make sure that the component operates satisfactorily when returned to service. This manual will be revised as necessary to include current information. It contains:
 - Technical data for the component.
 - Testing and fault isolation procedures.
 - Maintenance and repair procedures for the component.
 - An Illustrated Parts List (IPL)
- (2) Refer to the Table of Contents to find page numbers for each section.
- (3) The IPL figure and item number are used to identify parts in all sections of the manual. The introduction to the IPL tells how to use the IPL.
- (4) All weights and dimensions in the manual are in English units with metric equivalents in parentheses, unless stated differently.
- (5) This is a list of abbreviations and acronyms used in the manual:

A/R	As Required
ASSY	Assembly
ATA	Air Transport Association of America
CMM	Component Maintenance Manual
FIG	Figure
IPL	Illustrated Parts List
LH	Left Hand
MTOSS	Maintenance Task Orientated Support System
NHA	Next Higher Assembly
IPL	Illustrated Parts List
PARA	Paragraph
P/N	Part Number
RF	Reference Only
RH	Right Hand

- (6) Verification by Actual Performance:

Testing and Fault Isolation	Verified by shop procedures
Disassembly	Verified by shop procedures
Assembly	Verified by shop procedures

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2. USAGE GUIDE

A. This manual has been compiled in accordance with the general requirements set out in specification ATA iSpec 2200. Refer to the Table of Contents (TOC) to find the necessary maintenance procedures or other data.

- (1) DESCRIPTION AND OPERATION describes the purpose, primary subassemblies, and technical properties of the component.
- (2) TESTING AND FAULT ISOLATION contains bench test and fault isolation procedures.
- (3) SCHEMATICS AND WIRING DIAGRAMS contains diagrams as an aid to fault finding and to identify the components.
- (4) DISASSEMBLY contains procedures to disassemble the component for repair or part replacement.
- (5) CLEANING contains special cleaning and general handling procedures.
- (6) CHECK contains procedures to check parts for damage.
- (7) REPAIR contains general repair procedures and instructions for handling Electrostatic Discharge (ESD) sensitive electronic components.
- (8) ASSEMBLY (INCLUDING STORAGE) contains procedures to assemble the component after repair or part replacement and storage instructions.
- (9) FITS AND CLEARANCES contains a summary list of assembly torque limits and dynamic wear limits.
- (10) SPECIAL TOOLS, FIXTURES, AND EQUIPMENT contains a summary list of all recommended special tools, fixtures, and equipment required for testing, disassembly, repair, and assembly.
- (11) ILLUSTRATED PARTS LIST contains the necessary data for replacement parts for repair or fault isolation. This section also contains the Equipment Designator Index and Numerical Index.

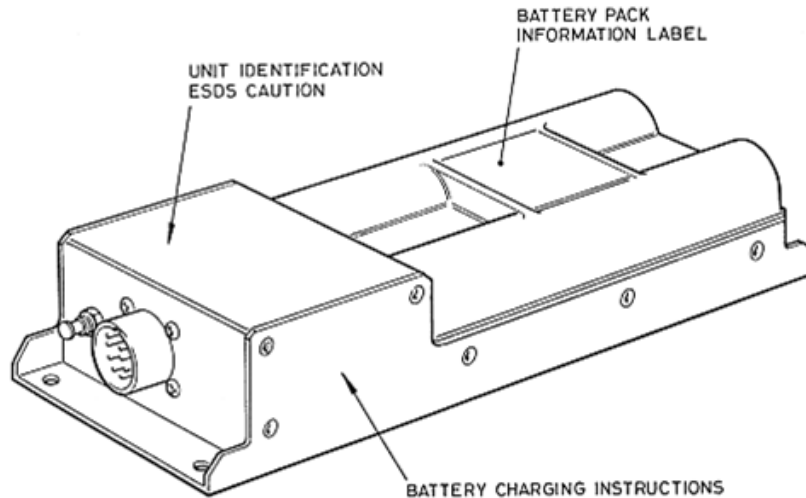
B. WARNINGS, CAUTIONS, and NOTES

- (1) WARNINGS are provided before potentially dangerous materials, methods, and processes, which must be followed precisely to avoid injury.
- (2) CAUTIONS are provided before procedures, materials, methods, and processes, which must be followed precisely to avoid equipment damage.
- (3) NOTES are provided after applicable procedural steps, when necessary, to highlight or clarify information.

DESCRIPTION AND OPERATION1. Description (See Figure 1)

A. General.

- (1) The Emergency Power Supply (EPS) is a battery pack assembly installed on a charger assembly. The charging circuit components are installed on a printed circuit board. This board is fitted to an aluminium chassis made in the shape of a U. A cover subassembly and a cover front plate are attached to the chassis. Installed on the cover front plate are the push-button test switch and the connector J1. The battery pack is fitted to the top surface of the cover and tightened with (Dzus) fasteners. When the battery pack is being positioned, it engages with a connector. All electrical connections between the battery pack and charging/output circuits are made through this connector.



Emergency Power Supply - General View

Figure 1

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B. Output.

- (1) The EPS will supply four fused controlled outputs or uncontrolled outputs. Table 1 shows the controlled outputs produced as a result of the pilot switch position.

Table 1 EPS Outputs

Pilot Switch Position	Input Pins Condition			Output (Pins 9 to 16)
	Pin 3	Pin 4	Pins 2 or 22	
OFF	Grounded	Grounded	<12 Vdc for > 1 sec ----- 18 to 32 Vdc	No output ----- No output
ON	Not Grounded	Grounded	<12 Vdc for > 1 sec ----- 18 to 32 Vdc	6.1 to 6.7 Vdc ----- 6.1 to 6.7 Vdc
ARMED	Not Grounded	Not Grounded	<12 Vdc for > 1 sec ----- 18 to 32 Vdc	6.1 to 6.7 Vdc ----- No output
Fault Condition	Grounded	Not Grounded	<12 Vdc for > 1 sec ----- 18 to 32 Vdc	6.1 to 6.7 Vdc ----- No output

C. Battery Pack.

- (1) When charged the battery pack will be kept fully charged all the time the EPS is connected to the aircraft 28 Vdc supply.

2. Operation (See Figure 2)

A. Battery Pack Outputs.

- (1) The EPS battery pack will supply either controlled outputs or, if a link is connected across pins 18 and 24 of connector J1, uncontrolled outputs.

B. Controlled Outputs.

- (1) The battery pack output is connected through an Output Control circuit to an Output Gate. When the pilot's switch is set to the conditions given in Table 1, the listed outputs will be present at pins 9 to 16. The outputs are monitored by an output sensing circuit. When the battery voltage falls to approximately 75% of its specified value, the Output Gate switches off the outputs. Each pair of outputs is protected by a fuse (Fuses 1 to 4). The controlled outputs will drive up to 7 amps through an applicable lamp load for a minimum of 15 minutes.

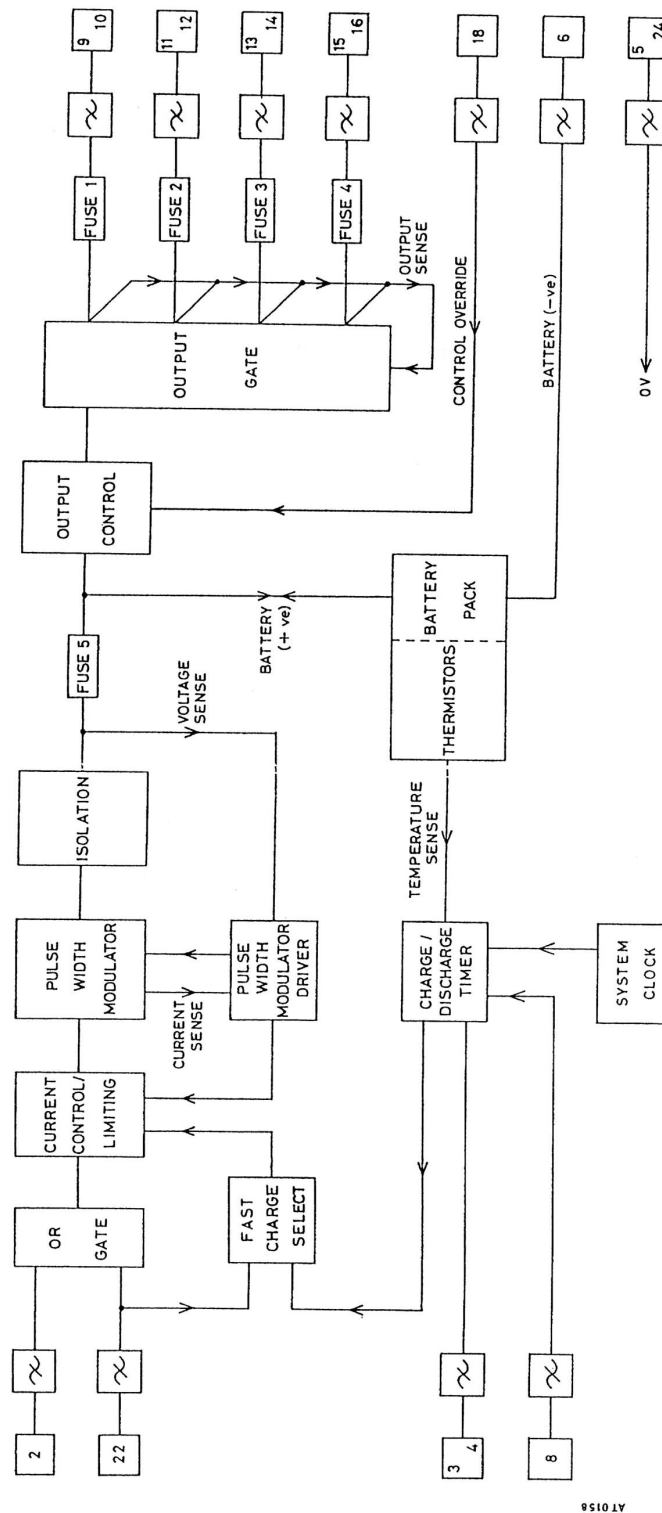
C. Uncontrolled outputs.

- (1) When a link is used to (externally) connect pins 18 and 24 together, a 0 V signal is applied to by-pass the Output Control circuit. The output is then an uncontrolled output of the Battery Voltage (6 Vdc minimum) on all fused output pins.

D. Battery Charging.

- (1) The batteries are charged at a constant current as follows:
 - (a) Normal charge of 0.8 A (maximum) for approximately 4 hours.
 - (b) Fast charge of 2.2 A (maximum) for approximately 90 minutes.
- (2) The rate of charge is selected by applying 28 Vdc to either pin 2 (normal) or pin 22 (fast). This 28 Vdc level is then connected, through the OR gate, to the Current Control/Limiting circuit. If the 28 Vdc is input on pin 22, a fast charge select signal sets the Current Control/Limiting circuit to charge the batteries at the correct current. The Charge/Discharge Timer will then permit battery charging for up to 90 minutes or until the batteries are fully charged. The Charge/Discharge Timer is controlled by the System Clock.
- (3) When the battery pack has reached its fully charged condition, charging is automatically decreased to charge at 1/30th of rated capacity. To monitor the (charge) condition of the batteries, thermistors are used. These thermistors are arranged to show the temperature difference between the batteries and ambient. The temperature sense signal is used in the Charge/Discharge Timer to switch the Current Control Limiting circuit to the correct level. (When the batteries are being charged the terminal voltage is monitored. Battery terminal voltage is limited to prevent damage).

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Functional Block Diagram

Figure 2

3. Leading Particulars

A. Part Numbers

- (1) Emergency Power Supplies: D717-01-001 and D717-02-001

B. Mechanical Properties

- (1) Dimensions (max)

- (a) Length: 10.70 in (271.8 mm)
 - (b) Width: 3.50 in (88.9 mm)
 - (c) Height: 2.00 in (50.8 mm)

- (2) Weights (max)

- (a) Battery Pack Assembly: 1.7 lb (770 g)
 - (b) Charger Assembly: 1.4 lb (635 g)
 - (c) Total Weight: 3.1 lb (1.41 kg)

C. Electrical properties

- (1) Input supply: 28 Vdc (aircraft)

- (2) Battery outputs

- (a) Controlled: 7 A at 6.1 to 6.7 Vdc
(using a 6V lamp load for 15 minutes)
 - (b) Uncontrolled: 6 Vdc
(using 2 x 0.5 ohm loads for 10 ms or 2 x 0.9 ohm loads for 30 ms)
 - (c) Battery Pack Assembly (Pre AR 1767): Seven 1.2 V Ni Cad Cells, 2.8 Ah
 - (d) Battery Pack Assembly (Post AR 1767): Seven 1.2 V Ni Cad Cells, 3.0 Ah

D. Environmental properties

- (1) Temperature ranges

- (a) Operational 30 minutes (short term): 5 to 158°F (-15 to +70°C)
 - (b) Operational (long term): 5 to 131°F (-15 to +55°C)
 - (c) Storage: -67 to 158°F (-55 to +70°C)

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TESTING AND FAULT ISOLATION

1. General

- A. This procedure tells how to test the EPS where it has been repaired/modified or if it is unserviceable.
- B. The tests and fault isolation information will determine the extent of unserviceability and the repair needed.

2. Test Tools, Equipment and Materials

A. Tools, Fixtures and Equipment

NOTE: Equivalent substitutes may be used.

NOTE: All test leads used with the test equipment shown in Table 1001 should be kept as short as possible and have a minimum conductor area of 2.5 mm²

Table 1001 Tools, Fixtures and Equipment

Name	Specification or Part Number	Source or CAGE Code	Use
Power Supply 0-18 Vdc at 10 A (PSU 1)	EX1810R	U6706	To supply power for testing
Power Supply 0-32 Vdc at 2 A (PSU 2)	PL 320	U6706	To supply power for testing
Resistance Decade Box (DEC 1 to 3)	1040 (Qty 3)	U1403	To provide resistance for test
Digital Multimeter (DMM 1 to 3)	80 Series III (Qty 3)	KF392	To measure voltage and current
Insulation Resistance Meter	BM80/2	U0146	To measure resistance
Stopwatch	-	Commercially Available	To measure elapsed time
Emergency Power Supply Test Set	A301-460-001	K0673	To interface with EPS to provide facilities for functional testing

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Name	Specification or Part Numbers	Source or CAGE Code	Use
Battery Charger and Load Test Set Up	Refer to Figures 1002, 1003 for connections and Figures 9001, 9002 and Table 9003 for Circuit Diagrams and Components	Commercially Available	To interface with EPS to provide facilities for functional testing
Resistor	28Ω 50W	K0673	To provide resistance for test

NOTE: Test Set A301-460-001 is made as per Figures 9001, 9002 and Table 9003 to provide the interface for functional testing. Alternatively the test set can be constructed locally using the parts and materials listed in Table 9003.

B. Materials

NOTE: Equivalent substitutes may be used.

Table 1002 Materials

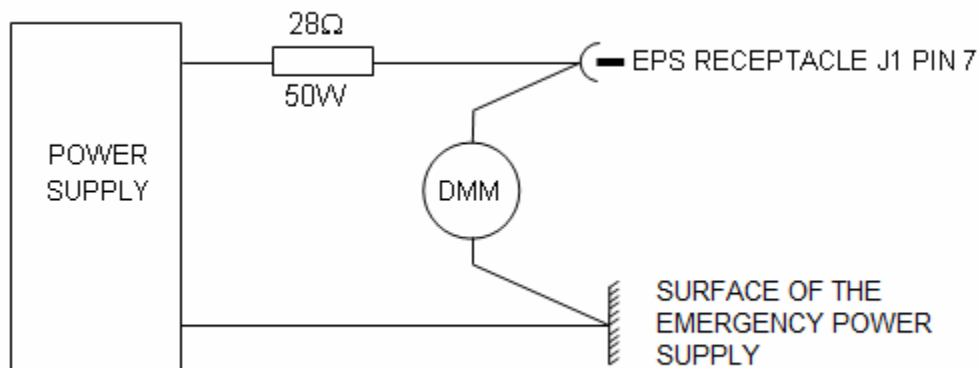
Name	Specification or Part Number	Source or CAGE Code	Use
Varnish	DEF-STD 80-129 Type 2	Commercially Available	To lock components in position

3. Battery Charger (IPL Fig. 1; 15, 15A) Test

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. MAKE SURE THAT ALL THE WORK IS DONE AT A STATIC-FREE WORK STATION AND TAKE ALL THE NECESSARY HANDLING PRECAUTIONS.

A. Bonding Test (See Figure 1001)

- (1) Connect the EPS to the power supply (see Table 1001), DMM (see Table 1001) and resistor (see Table 1001) as shown in Figure 1001.



Bonding Test Set-Up

Figure 1001

- (2) Set the PSU (see Table 1001) to supply 1 A at 28 Vdc.
- (3) Switch on the PSU (see Table 1001) and use the DMM (see Table 1001) to measure the voltage drop between connector J1 pin 7 and the aircraft mounting point. The measured voltage drop must be less than 12.5 mV dc.
- (4) Switch off the PSU (see Table 1001) and disconnect the EPS from the test set-up.

B. Insulation Test

- (1) Connect together the pins of connectors J1 and PL1. Do not connect pin 7 on connector J1.
- (2) Connect insulation resistance meter (see Table 1001) between connector J1 pin 7 and the pins of J1 and PL1 that are connected together.
- (3) The resistance value shown on the insulation resistance meter (see Table 1001) must be more than a 100 M Ω at 100 Vdc.

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C. Continuity Test

- (1) Connect a DMM (See Table 1001) between connector J1 pin 9 and each of the pins shown in Table 1003:

Table 1003 Continuity Test Connections

Connector	Pin
J1	10
J1	11
J1	12
J1	13
J1	14
J1	15
J1	16

- (2) Make sure there is continuity between J1 pin 9 and each pin detailed in Table 1003.

D. Operating Logic Test

NOTE: Make Sure that the 7A load is calibrated. Refer to Para. 6A if calibration is necessary.

- (1) Connect the EPS to the test set-up shown in Figure 1002.
- (2) Set the resistance decade boxes (DEC 1, DEC 2 and DEC 3)(see Table 1001) to 30 k Ω .
- (3) Set switch S6 to NORMAL.
- (4) Set switch S4 to FAST CHARGE.
- (5) Do each of the tests in Table 1004 as follows:
 - (a) Set PSU 2 (see Table 1001) to 32 ± 0.1 Vdc.
 - (b) Set PSU 1 (see Table 1001) to 10.5 ± 0.1 Vdc.
 - (c) Connect DMM 1 (see Table 1001) to measure Input Current using the range for 2Amps max.
 - (d) Connect DMM 2 (see Table 1001) to measure the Battery Current using the range for 10Amps max.
 - (e) Connect DMM 3 (see Table 1001) to measure Battery Voltage between PL1-5 (+ve) and PL1-6 (-ve):
 - 1Set switches S1, S2, S7 and S8 to ON.
 - 2On battery charger and load test set up (see Table 1001) adjust R4 until the voltage shown on the DMM 3 (see Table 1001) is 10.5 ± 0.1 Vdc.
 - 3Disconnect the DMM 3 (see Table 1001) from PL1-5 (+ve) and PL1-6 (-ve).

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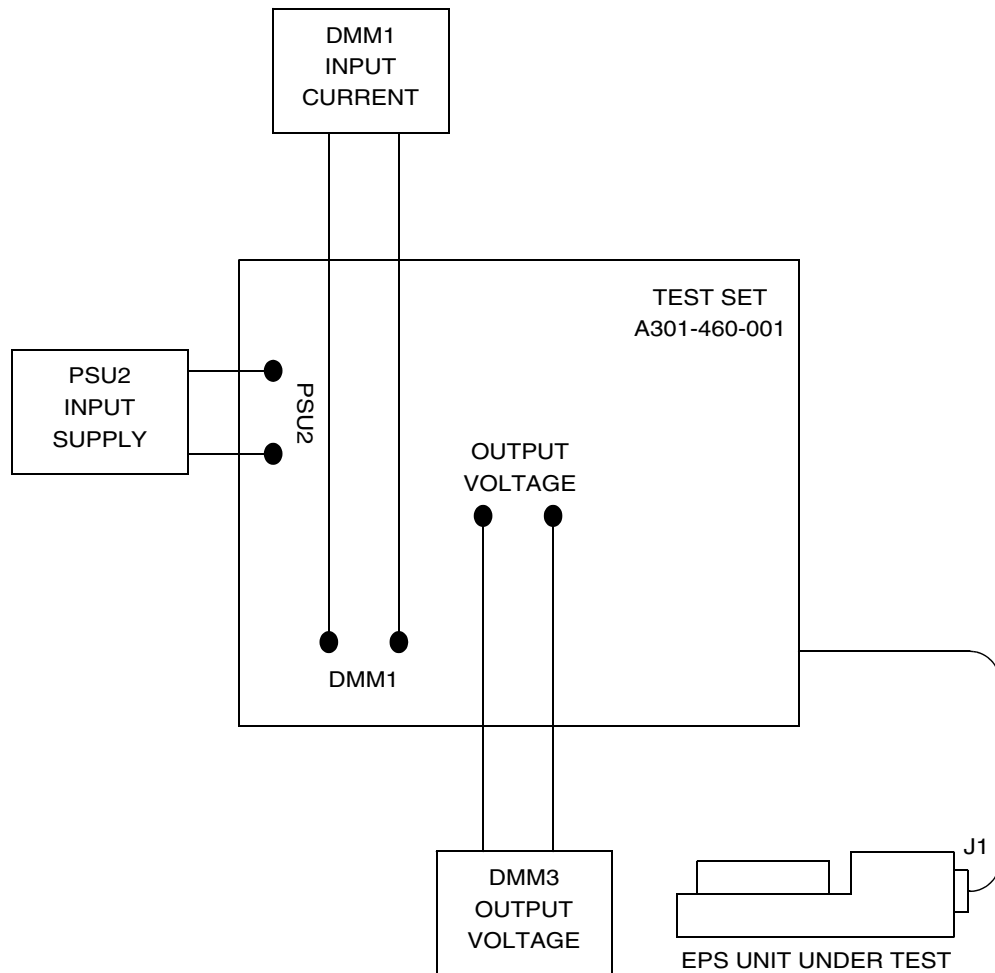
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- (f) Connect DMM 3 (see Table 1001) between J1-1 (-ve) and J1 - 9 to 16 (+ve).
- (g) Set OUTPUT VOLTAGE SWITCH S5 to J9.
- (h) Set switches S1, S2 and S7 as shown in Table 1004.
- (i) Do the tests shown in Table 1004 and check the output voltage on DMM 3 (see Table 1001)

Table 1004 EPS Outputs

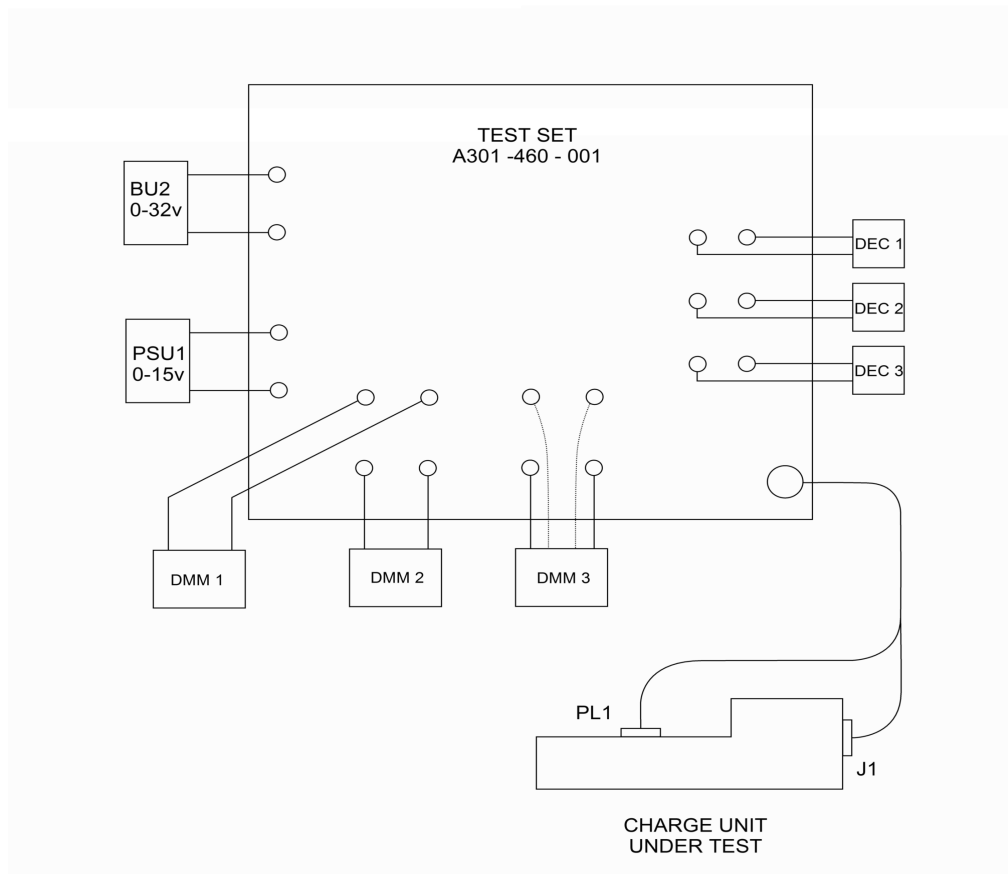
Test	Logic Switches		S7	Output Voltage
	S1	S2		
1	ON	ON	ON OFF	Less than 0.5 Vdc Less than 0.5 Vdc
2	OFF	ON	OFF ON	Between 6.1 and 6.5 Vdc Between 6.1 and 6.5 Vdc
3	ON	OFF	ON OFF	Less than 0.5 Vdc Between 6.1 and 6.5 Vdc
4	OFF	OFF	OFF ON	Between 6.1 and 6.5 Vdc Less than 0.5 Vdc

- (j) Set switches S7 and S8 to OFF.



Test Set-Up Configuration For Testing Emergency Power Supply

Figure 1002



Test Set-UP Configuration For Testing Charger Unit

Figure 1003

E. Fast Charge and Charge Termination Test

NOTE: Make Sure that the 7A load is calibrated. Refer to Para. 6A if calibration is necessary.

NOTE: When the unit is on charge or discharge, DMM 2 (see Table 1001) will move in one of two directions to show positive or negative currents.

- (1) Set PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.
- (2) Set PSU 1 (see Table 1001) to 9.5 ± 0.1 Vdc.
- (3) Set switches S1, S2, S7 and S8 to ON.
- (4) Make sure the current shown on DMM 1 (see Table 1001) is between 0.85 A and 1.35 A and the current shown on DMM2 (see Table 1001) is between 2.05 A and 2.60 A.
- (5) Set DEC 2 (see Table 1001) to 10 k Ω .
- (6) Make sure the current shown on DMM 1 (see Table 1001) is between 60 mA and 100 mA.
- (7) Set switches S7 and S8 to OFF.

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- (8) Set DEC 2 (see Table 1001) to 30 k Ω .
- (9) Set S4 to TRICKLE CHARGE.
- (10) Set PSU 2 (see Table 1001) to 28 \pm 0.1 Vdc.
- (11) Set PSU 1 (see Table 1001) to 9.5 \pm 0.1 Vdc.
- (12) Set switches S7 and S8 to ON.
- (13) Make sure the current shown on DMM 1 (see Table 1001) is between 0.30 A and 0.45 A and the current shown on DMM 2 (see Table 1001) is between 0.6 A and 1.0 A.
- (14) Set DEC 2 (see Table 1001) to 10 k Ω .
- (15) Make sure the current shown on DMM 1 and DMM 2 (see Table 1001) is between 60 mA and 150 mA.
- (16) Set switches S7 and S8 to OFF.
- (17) Set DEC 2 (see Table 1001) to 30 k Ω .
- (18) Set PSU 2 (see Table 1001) to 28 \pm 0.1 Vdc.
- (19) Set PSU 1 (see Table 1001) to 9.5 \pm 0.1 Vdc.
- (20) Set switches S7 and S8 to ON.
- (21) Slowly decrease the resistance of DEC 1 (see Table 1001) from 30 k Ω and check the current shown on DMM 2 (see Table 1001).
- (22) When the current shown on DMM 2 (see Table 1001) is between 60 mA and 150 mA, make sure the resistance shown on DEC 1 (see Table 1001) is between 20.00 k Ω and 22.85 k Ω .
- (23) Set DEC 1 (see Table 1001) to 30 k Ω and make sure the current shown on DMM 2 (see Table 1001) is still between 60 mA and 150 mA.
- (24) Set switches S7 and S8 to OFF.
- (25) Do steps 3E (18) to (24) again with DEC 3 (see Table 1001).

F. Charge Inhibition Test

NOTE: Make Sure that the 7A load is calibrated. Refer to Para. 6A if calibration is necessary.

- (1) Set S4 to TRICKLE CHARGE.
- (2) Set PSU 2 (see Table 1001) to 28 \pm 0.1 Vdc.
- (3) Set PSU 1 (see Table 1001) to 9.5 \pm 0.1 Vdc.
- (4) Set switches S7 and S8 to ON.
- (5) Slowly decrease the resistance of DEC 2 (see Table 1001) from 30 k Ω and check the current shown on DMM 2 (see Table 1001).
- (6) When the current shown on DMM 2 (see Table 1001) is between 60 mA and 150 mA, make sure the resistance shown on DEC 2 (see Table 1001) is between 10.0 k Ω and 12.0 k Ω .
- (7) Increase the value shown on DEC 2 (see Table 1001) by 100 Ω .

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- (8) Make sure the current shown on DMM 2 (see Table 1001) is between 0.6 and 1.0 A.
- (9) Set DEC 2 (see Table 1001) to 30 k Ω .
- (10) Make sure the current shown on DMM 2 (see Table 1001) is still between 0.6 and 1.0 A.
- (11) Slowly increase the resistance of DEC 1 (see Table 1001) from 30 k Ω and check the current shown on DMM 2 (see Table 1001).
- (12) When the current shown on DMM 2 (see Table 1001) is between 60 mA and 150 mA, make sure the resistance shown on DEC 1 (see Table 1001) is between 76.5 k Ω and 88.3 k Ω .
- (13) Set DEC 1 (see Table 1001) to a value 1 k Ω below the resistance value monitored in step 3F (12).
- (14) Make sure the current shown on DMM 2 (see Table 1001) is between 0.6 and 1.0 A.
- (15) Set DEC 1 (see Table 1001) to 30 k Ω .
- (16) Do steps 3F (11) to (15) again with DEC 3 (see Table 1001).
- (17) Set switch S8 to OFF.
- (18) Set S4 to FAST CHARGE.
- (19) Set PSU 1 (see Table 1001) to 6.5 \pm 0.1 Vdc.
- (20) Set DMM 3 (see Table 1001) to voltage and connect between PL1 pins 5 and 6.
- (21) Set switch S8 to ON.
- (22) On the battery charger and load test set up (see Table 1001), slowly adjust R4 and decrease the voltage. Monitor the current on DMM 2 (see Table 1001) and stop the adjustment of R4 when current is less than 200 mA.
- (23) Make sure the voltage shown on DMM 3 (see Table 1001) is between 6.7 and 7.6 Vdc.
- (24) On the battery charger and load test set up (see Table 1001), slowly adjust R4 and increase the voltage. Monitor the current on DMM 2 (see Table 1001) and stop the adjustment of R4 when current is between 2.05 A and 2.6 A.
- (25) Make sure the voltage shown on DMM 3 (see Table 1001) is between 7.7 and 8.6 Vdc.
- (26) On the battery charger and load test set up (see Table 1001), slowly adjust R4 and increase the voltage. Monitor the current on DMM 2 (see Table 1001) and stop the adjustment of R4 when current shown is less than 200 mA.
- (27) Make sure the voltage shown on DMM 3 (see Table 1001) is between 11.8 and 12.7 Vdc.
- (28) On the battery charger and load test set up (see Table 1001), slowly adjust R4 and decrease the voltage shown on the DMM to between 9.4 and 9.6 Vdc.
- (29) Make sure the current shown on DMM 2 (see Table 1001) is between 2.05 A and 2.6 A.
- (30) Set switch S8 to OFF.

G. Self Test Function

NOTE: Make Sure that the 7A load is calibrated. Refer to Para. 6A if calibration is necessary.

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- (1) Set PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.
- (2) Set PSU 1 (see Table 1001) to 10.5 ± 0.1 Vdc.
- (3) Set switch S8 to ON.
- (4) On battery charger and load test set up (see Table 1001) adjust R4 until the voltage shown on DMM 3 (see Table 1001) is 10.5 ± 0.1 Vdc.
- (5) Set switch S7 to OFF.
- (6) Connect DMM 3 (see Table 1001) between J1-1 (-ve) and J1 - 9 to 16 (+ve).
- (7) Turn OUTPUT VOLTAGE SWITCH to J9.
- (8) On the UUT, press and release the self test button adjacent to J1, and make sure DMM 3 (see Table 1001) shows a voltage of less than 0.5 Vdc.
- (9) Press and release S3 (Remote SELF TEST) and make sure voltage value shown is between 6.1 Vdc and 6.5 Vdc.
- (10) Set switch S8 to OFF and then back to ON.
- (11) Set switch S7 to ON.
- (12) Press and release the self test button adjacent to J1 and start the stopwatch (see Table 1001).
- (13) Make sure DMM 3 (see Table 1001) shows a voltage of between 6.1Vdc and 6.5 Vdc for between 50 and 70 seconds.
- (14) Set switches S7 and S8 to OFF.

H. Output

NOTE: Make Sure that the 7A load is calibrated. Refer to Para. 6A if calibration is necessary.

- (1) Set PSU 2 (see Table 1001) to 32 ± 0.1 Vdc.
- (2) Set PSU 1 (see Table 1001) to 10.5 ± 0.1 Vdc.
- (3) Set DMM 3 (see Table 1001) to voltage and connect between PL1-5 (+ve) and PL1-6 (-ve).
- (4) Set S1, S2, S7 and S8 to ON.
- (5) On battery charger and load test set up (see Table 1001), adjust R4 slowly until the voltage shown on DMM 3 (see Table 1001) is 10.5 ± 0.1 Vdc.
- (6) Set S1 to OFF.
- (7) Adjust PSU 1 (see Table 1001) until the voltage shown on DMM 3 (see Table 1001) is 8.0 ± 0.1 Vdc.
- (8) Connect DMM 3 (see Table 1001) between J1-1 (-ve) and J1-9 to 16 (+ve).
- (9) Turn OUTPUT VOLTAGE SWITCH from J9 to J16 and make sure DMM 3 (see Table 1001) reading for each position is between 6.1 and 6.5 Vdc.
- (10) Connect wire link between J1-18 and J1-24.

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- (11) Set S2 to OFF.
 - (12) Connect DMM 3 (see Table 1001) between J1-1 (-ve) and J1 - 9 to 16 (+ve).
 - (13) Turn OUTPUT VOLTAGE SWITCH from J9 to J16 and make sure DMM 3 (see Table 1001) reading for each position is more than 7.4 Vdc.
 - (14) Set switch S7 to OFF.
 - (15) Do step 3H (13) again and make sure DMM 3 (see Table 1001) reading for each pin is between 7.4 and 8.0 Vdc.
 - (16) Disconnect wire link from J1-18 and J1-24.
 - (17) Set S2 to ON.
 - (18) Set DMM 3 (see Table 1001) to voltage and connect between PL1 pins 5 and PL1 pin 6.
 - (19) Set switch S9 to ON.
 - (20) Set S6 to CAL.
 - (21) On PSU 1 (see Table 1001), slowly reduce the voltage output and check DMM 3 and DMM 2 (see Table 1001) readings.
 - (22) Make sure that when the voltage shown on DMM 3 (see Table 1001) across PL1 pins 5 and 6 is between 6.39 Vdc and 6.69 Vdc, and the current value on the DMM 2 (see Table 1001) is less than 20 mA.
- NOTE: The voltage will decrease then increase quickly.
- (23) Set switch S8 to OFF.
 - (24) Remove battery charger (IPL Fig. 1; 15, 15A) from test set-up.
 - (25) Set switch S9 to OFF.
 - (26) Set S6 to NORMAL.

4. Battery Pack Assembly (IPL Fig. 1; 5) Test

A. General

WARNING: HANDLE THE BATTERY PACK ASSEMBLY (IPL FIG. 1; 5) CAREFULLY. THE BATTERIES CONTAIN CADMIUM, WHICH IS DANGEROUS AND CAN CAUSE DAMAGE TO YOUR HEALTH.

- (1) Dispose of unserviceable battery pack assembly (IPL Fig. 1; 5) in accordance with local instructions.

B. Preliminary Operations Test

- (1) Install battery pack assembly (IPL Fig. 1; 5) on battery charger (IPL Fig. 1; 15, 15A).
- (2) Connect the EPS to the test set-up (see Table 1001) shown in Figure 1002.

NOTE: PSU 1 (see Table 1001) and connector PL1 on the EPS are not used during the tests that follow.

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- (3) Set S1, S2, S7, S8 and S9 to OFF.
- (4) Set S4 to FAST CHARGE.
- (5) Set S6 to NORMAL.
- (6) Connect DMM 3 (see Table 1001) between J1 pin 1 (-ve) and J1 pin 9 (+ve).
- (7) Set OUTPUT VOLTAGE SWITCH to J9.
- (8) Set the PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.
- (9) Set S7 to ON then back to OFF again.
- (10) Monitor DMM 3 (see Table 1001), initially it will be 6.1 to 6.7Vdc, and wait until it shows less than 0.5 Vdc.

NOTE: This could be as much as 24 minutes.

- (a) When DMM 3 (see Table 1001) shows between 6.1 Vdc and 6.7 Vdc the battery pack assembly (IPL Fig. 1; 5) has some charge remaining.
- (b) When DMM 3 (see Table 1001) shows 0.5 Vdc or less, the battery pack assembly (IPL Fig. 1; 5) is discharged.
- (11) Disconnect the battery charger (IPL Fig. 1; 15, 15A).
- (12) Disconnect the battery pack assembly (IPL Fig. 1; 5).

C. Battery Pack Assembly (IPL Fig. 1; 5) Charge Test

- (1) Install battery pack assembly (IPL Fig. 1; 5) on battery charger (IPL Fig. 1; 15, 15A).
 - (2) Connect the EPS to the test set-up shown in Figure 1002.
- NOTE: PSU 1 (see Table 1001) and connector PL1 on the EPS are not used during the tests that follow.
- (3) Set PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.
 - (4) Set S7 to ON.
 - (5) Wait until DMM 1 (see Table 1001) shows between 850 mA and 1.35 A then start stopwatch (see Table 1001).

NOTE: There could be a short delay while the voltage and temperature come into the permitted range.

- (6) If DMM 1 (see Table 1001) shows less than 300 mA it could mean the battery pack assembly (IPL Fig. 1; 5) is not fast charging. Do the following steps if DMM 1 (see Table 1001) shows less than 300 mA:
 - (a) Set S7 to OFF then back to ON again.
 - (b) Make sure DMM 1 (see Table 1001) shows between 850 mA and 1.35 A.
 - (c) If DMM 1 (see Table 1001) still shows less than 300 mA, stop the test as the battery pack assembly (IPL Fig. 1; 5) or battery charger (IPL Fig. 1; 15, 15A) are unserviceable.

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(7) After 90 minutes set S7 to OFF.

(8) Remove battery pack assembly (IPL Fig. 1; 5) from battery charger (IPL Fig. 1; 15, 15A).

NOTE: The battery pack assembly (IPL Fig. 1; 5) is now fully charged and ready for use.

D. Battery Pack Assembly (IPL Fig. 1; 5) Discharge Test

(1) Install battery pack assembly (IPL Fig. 1; 5) on battery charger (IPL Fig. 1; 15, 15A).

(2) Connect the EPS to the test set-up shown in Figure 1002.

NOTE: PSU 1 (see Table 1001) and connector PL1 on the EPS are not used during the tests that follow.

(3) Connect DMM 3 (see Table 1001) between J1 pin 1 (-ve) and J1 pin 9 (+ve).

(4) Set PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.

(5) Set S7 to ON then back to OFF again.

(6) Start stopwatch (see Table 1001) and do the following:

(a) Make sure DMM 3 (see Table 1001) shows between 6.1 Vdc and 6.7 Vdc.

(b) Monitor DMM 3 (see Table 1001) and stop the stopwatch when DMM 3 (see Table 1001) shows less than 0.5 Vdc.

(c) Make sure the stopwatch shows more than 15 minutes for the battery pack assembly (IPL Fig. 1; 5) to be declared as serviceable.

(7) Remove battery pack assembly (IPL Fig. 1; 5) from battery charger (IPL Fig. 1; 15, 15A).

E. Battery Pack Assembly (IPL Fig. 1; 5) Serviceability/Capacity Test

NOTE: To check the capacity of battery pack assembly (IPL Fig. 1; 5) the following test must be done in the correct sequence.

(1) Refer to Para. B and do the battery pack assembly (IPL Fig. 1; 5) preliminary discharge test.

NOTE: This test makes sure battery pack assembly (IPL Fig. 1; 5) is in a known condition.

(2) Refer to Para. C and do the battery pack assembly (IPL Fig. 1; 5) charge test.

(3) Refer to Para. D and do a timed discharge.

(4) If the battery pack assembly (IPL Fig. 1; 5) is unserviceable at step 4E (3), do steps 4E (2) and 4E (3) again.

NOTE: Repeating the procedure above can recover some capacity for the battery pack assembly (IPL Fig. 1; 5).

(5) If the battery pack assembly (IPL Fig. 1; 5) is still unserviceable, do steps 4E (2) and 4E (3) again.

(6) If the battery pack assembly (IPL Fig. 1; 5) is unserviceable after step 4E (5), discard the battery pack assembly (IPL Fig. 1; 5) in agreement with the local orders for Nickel Cadmium

(Ni-Cad) batteries.

F. Battery Pack Assembly (IPL Fig. 1; 5) Conditioning Test

NOTE: Follow this test procedure to prepare the battery pack assembly (IPL Fig. 1; 5) for storage or return to operational use.

- (1) Check the battery pack assembly (IPL Fig. 1; 5) for damage. If damaged refer to REPAIR.
- (2) Discharge the battery pack assembly (IPL Fig. 1; 5) at a minimum load of 6 Amps until the battery pack voltage is between 6.5 and 7.0V.
- (3) Charge the battery pack (IPL Fig. 1; 5) between 16 and a maximum of 24 hours at 280 ± 20 mA.

NOTE: If battery charger (IPL Fig. 1; 15, 15A) is used, full charge will be achieved in 90 minutes.

- (4) Perform a capacity test on the battery pack assembly (IPL Fig. 1; 5) as described in para. 4E.
- (5) Place the discharged battery pack assembly (IPL Fig. 1; 5) into storage as detailed in ASSEMBLY Para 5A.
OR
Do the battery pack assembly (IPL Fig. 1; 5) charge test in Para 4C to recharge the Battery Pack ready for use.

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5. Fault Isolation

A. Procedure

- (1) Carry out fault isolation as specified in Table 1005.

Table 1005 Fault Isolation

Test Step	Fault	Possible Cause	Action to Correct
3.A. (3)	Measured bonding voltage values more than 12.5 mV.	Loose or dirty screws (IPL Fig. 1; 160) that secure pcb.	Inspect and clean or tighten screws (IPL Fig. 1; 160) as necessary.
		Damaged wires on panel 'A' (65).	Replace panel 'A' (65).
3.B. (3)	Insulation resistance values out of tolerance.	Dirt, damaged wiring or connector contacts.	Clean, examine and repair if necessary.
3.C. (2)	No continuity between pin(s).	Dirt, damaged wiring or connector contacts.	Clean, examine and repair if necessary.
		Output fuse(s) (IPL Fig. 1; 118, IPL Fig. 2; 125) open circuit.	Check F1, F2, F3 or F4 (IPL Fig. 1; 118, IPL Fig. 2; 125) and replace if necessary.
3.D. 3.E. 3.F. 3.G. 3.H.	EPS operation, charge or output tests unsatisfactory.	Output fuse(s) (IPL Fig. 1; 118, IPL Fig. 2; 125) open circuit.	Check F1, F2, F3 or F4 (IPL Fig. 1; 118, IPL Fig. 2; 125) and replace if necessary.
		Poor or dirty contact between TR3/TR4 (IPL Fig. 2; 112) and pad (IPL Fig. 1; 45) /chassis (IPL Fig. 1; 160).	Inspect and clean or tighten transistor clip (IPL Fig. 1; 55) and screw (IPL Fig. 1; 60) as necessary.
		TR3/TR4 (IPL Fig. 2; 112) unserviceable	Check and replace TR3 and TR4 (IPL Fig. 2; 112) if necessary.
		Damaged wires or connector contacts on J1.	Repair damaged wires / contacts as necessary.
		Unserviceable components on pcb (panel A) (IPL Fig. 1; 65).	Replace pcb (panel A) (IPL Fig. 1; 65).
4.B. 4.C. 4.D. 4.E. 4.F.	Battery pack assembly (IPL Fig. 1; 5) tests unsatisfactory.	Unserviceable thermistor and/or battery pack assembly cells (IPL Fig. 1; 5).	Replace battery pack assembly (IPL Fig. 1; 5).
		OR	
		Damaged wires on the battery pack (IPL Fig. 1; 5).	Replace battery charger (IPL Fig. 1; 15, 15A).
		EPS battery charger (IPL Fig. 1; 15, 15A) unserviceable.	

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Calibration of Constant Current 7 A Load

6.

A. Procedure

- (1) Connect the EPS battery charger assembly (IPL Fig. 1; 15, 15A) to the test set-up (see Table 1001) shown in Figure 1002.
- (2) Set DMM 2 (see Table 1001) to current and connect between the + ve and - ve CAL sockets.
- (3) Connect a wire link between the two sockets (+ ve and - ve) marked MM1.
- (4) Connect a wire link between the two sockets (+ ve and - ve) marked MM2.
- (5) Set the switches as shown in Table 1006

Table 1006 Calibration of Constant Current 7 A Load Switch Positions

Switch	Position
S1 and S2	ON
S4	FAST CHARGE
S5	J9
S6	CAL
S7, S8 and S9	OFF

- (6) Set PSU 1 (see Table 1001) to 11 ± 0.1 Vdc.
- (7) Set PSU 2 (see Table 1001) to 28 ± 0.1 Vdc.
- (8) Set S7 and S8 to ON.
- (9) Set S1 to OFF.
- (10) Set PSU 1 (see Table 1001) to 9.5 ± 0.1 Vdc and make sure DMM 2 (see Table 1001) shows not more than 7.1 A and not less than 6.9 A.
- (11) Do the following steps if DMM 2 (see Table 1001) does not show the correct current value.
 - (a) Set S1 to ON.
 - (b) Set S7 and S8 to OFF.
 - (c) Get access to potentiometer R15 (see Figure 1003).
 - (d) Do steps 6A (6) to 6A(10) again.
 - (e) Slowly adjust R15 (see Figure 1003) until the current shown on DMM 2 (see Table 1001) is $7A \pm 0.1$ A.
 - (f) Lock R15 (see Figure 1003) in position with varnish (see Table 1002).
 - (g) Set S6 to NORMAL and S1, S2, S7 and S8 to OFF.

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- | (12) Disconnect DMM 2 (see Table 1001) and EPS battery charger assembly (IPL Fig. 1; 15, 15A) from the test set up (see Table 1001).
- | (13) Refer to local instructions and record the calibration details.

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DISASSEMBLY1. General

- A. This procedure tells how to disassemble the Emergency Power Supply (EPS).
- B. Ceramic hybrid components are installed on the panel A assembly therefore it is recommended that only panel A is replaced. Instructions for the disassembly of the EPS are restricted to this level of maintenance.
- C. Refer to TESTING AND FAULT ISOLATION to find any fault condition and to do the necessary repair procedure.
- D. Disassemble the EPS only to the level necessary to permit the fault to be repaired.
- E. Refer to IPL Figure 1 for item numbers.

2. Tools, Equipment and Materials

- A. No special tools or equipment are necessary to disassemble the EPS.

3. Battery Pack Assembly (5) Removal

WARNING: HANDLE THE BATTERY PACK ASSEMBLY (5) CAREFULLY, THE BATTERIES CONTAIN CADMIUM WHICH IS DANGEROUS AND CAN DAMAGE YOUR HEALTH.

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. MAKE SURE THAT ALL THE WORK IS DONE AT A STATIC-FREE WORK STATION AND TAKE ALL THE NECESSARY HANDLING PRECAUTIONS.

A. Procedure:

- (1) Undo the two Dzus fasteners on the battery pack (5).

CAUTION: BATTERY PACK MUST BE KEPT PARALLEL TO, AND LIFTED STRAIGHT AWAY FROM, THE CHARGER ASSEMBLY. ALIGNMENT PINS CAN BE BROKEN OFF IF THE BATTERY PACK IS LIFTED FROM ONE END.

- (2) Carefully lift the battery pack assembly (5) off the charger assembly (15) and remove.
- (3) Place the battery pack assembly (5) in an anti-static bag or container until required.

4. Cover Subassembly (20) Removal

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES.
MAKE SURE THAT ALL THE WORK IS DONE AT A STATIC-FREE WORK STATION AND
TAKE ALL THE NECESSARY HANDLING PRECAUTIONS.

A. Procedure:

- (1) Remove and keep the 10 screws (25).
- (2) Remove and keep the cover subassembly (20).

NOTE: Do not move the screw (60) which is used to attach the transistor clip (55).

COMPONENT MAINTENANCE MANUAL
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- A. This procedure tells how to clean the Emergency Power Supply (EPS).
- B. The EPS does not need to be regularly cleaned. However if the unit has been removed from the aircraft for repair on modification, the opportunity must be taken to clean it.

2. Cleaning

A. Equipment

NOTE: Equivalent substitutes may be used.

Table 4001 Equipment

Name	Specification or Part Number	Source or CAGE Code	Use
Hand held low pressure cold air blower	-	Commercially Available	To remove unwanted material
Nylon bristle brush	-	Commercially Available	To clean EPS

B. Materials

NOTE: Equivalent substitutes may be used.

Table 4002 Materials

Name	Specification or Part Number	Source or CAGE Code	Use
Lint-free cloth	-	Commercially Available	To clean EPS
Isopropyl Alcohol (IPA)	-	Commercially Available	To clean EPS

3. Cleaning

A. Procedure.

WARNING FOLLOW THE MANUFACTURERS' HEALTH AND SAFETY INSTRUCTIONS WHEN USING IPA.

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. MAKE SURE THAT ALL THE WORK IS DONE AT A STATIC-FREE WORK STATION AND TAKE ALL THE NECESSARY HANDLING PRECAUTIONS.

- (1) Remove dust and unwanted material using the low pressure cold air blower (see Table 4001).
- (2) Use IPA (see Table 4002) and a clean, lint-free cloth (see Table 4002) to clean the chassis subassembly (IPL Fig. 1; 160). If necessary use nylon bristle brush (see Table 4001) to help the cleaning procedure.
- (3) Dry the chassis subassembly (IPL Fig. 1; 160) with the low pressure cold air blower (see Table 4001).

CHECK1. General

- A. This procedure look for defects or damage in the Emergency Power Supply (EPS).
- B. These instructions apply to initial and new components. Replace or repair any part suspected of unserviceability.

2. Tools, Equipment and Materials

- A. No special tools or equipment are necessary to check the EPS.

3. Check

A. Procedure

- (1) Use standard industry practices and the instructions that follow to visually examine all parts, as applicable, for:
 - (a) Cleanliness.
 - (b) Wear.
 - (c) Distortion.
 - (d) Cracks.
 - (e) Corrosion.
 - (f) Security.
 - (g) Serviceability of screw threads/inserts.
 - (h) Deterioration of protective finish.
- (2) Additionally, check electrical components and wiring for:
 - (a) Deterioration of insulation.
 - (b) Security of terminations.
 - (c) Security if pins and plugs in the connector cores.
 - (d) Signs of overheating.

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REPAIR

1. General

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES.
MAKE SURE THAT ALL WORK IS DONE AT A STATIC-FREE WORK STATION AND TAKE
ALL THE NECESSARY HANDLING PRECAUTIONS.

- A. This procedure tells how to repair the EPS.
- B. Use only serviceable items/spare parts and make sure all screws/nuts are not tightened too much.
- C. Refer to IPL Figure 1 for item numbers.

2. Repair Tools, Equipment and Materials

- A. Tools, Fixtures and Equipment

NOTE: Equivalent substitutes may be used.

Table 6001 Tools, Fixtures and Equipment

Name	Specification or Part Number	Source or CAGE Code	Use
Temperature Controlled Soldering Iron	-	Commercially Available	To install electrical components
Hot Air Gun	-	Commercially Available	
Torque Tool 0-10 lbf in. (0-1.13 Nm)	-	Commercially Available	To torque tighten nuts/screws
Extraction Tool	294-89	K1100	To remove connector contacts
Insertion Tool	T13769	K0673	To install connector contacts
Crimp Tool	294-542	K1100	
Crimp Tool Locator	294-1889-01	K1100	
Jig, Modified Transistor (FET) Soldering Fixture	T15421	K0673	To hold and align the transistors until soldered in place during a repair process

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B. Materials

NOTE Equivalent substitutes may be used.

Table 6002 Materials

Name	Specification or Part Number	Source or CAGE Code	Use
Flux Cored Solder	IPC J-STD-004 Sn63W RMAP2	Commercially Available	To install electrical components
Isopropyl Alcohol (IPA)	-	Commercially Available	To clean components
Conformal Coating	Humiseal IB31	Commercially Available	To protect electric circuitry
Adhesive (Hardener)	Hysol HD3475	Commercially Available	To bond components
Adhesive (Resin)	Hysol RE2038	Commercially Available	To bond components
Adhesive (Thread Locker)	Loctite 242	Commercially Available	To lock screw threads
Guidelace Nylon Lacing Tape (Red)	MIL-T-43435	Commercially Available	To Group wires
Heatshrink sleeve (ID 1.6 mm)	Versafit 1/16 BK	Commercially Available	To Insulate wires
Heatshrink sleeve (ID 3.2 mm)	Versafit 1/8 BK	Commercially Available	To Insulate wires
Equipment wire size 7/0.2, 19/0.2 and 19/0.16	MIL-W16878 Silver Plated TYPE E (colours as necessary)	Commercially Available	To replace wires
Disposable Syringe	-	Commercially Available	To apply adhesive
Soft Bristle Brush	-	Commercially Available	To apply conformal coating
Lint free Cloth	-	Commercially Available	To clean components
Glass Paper	-	Commercially Available	
Spatula	-	Commercially Available	

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Name	Specification or Part Number	Source or CAGE Code	Use
Adhesive (2 part)	Araldite 2014	Commercially Available	To bond components
Adhesive Pigment Paste (Black)	Araldite DW0137 BK	Commercially Available	To colour Araldite 2014 adhesive
Rotring White Karant Ink	Art R591 018	Commercially Available	To mark components

3. Panel A (65) Replacement

WARNING: WHEN APPLYING HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002), DO NOT GET THE LIQUID ON YOUR SKIN OR IN YOUR EYES. DO NOT BREATHE IN THE GAS GIVEN OFF BY THE LIQUID. DO NOT USE NEAR OPEN FLAMES. WEAR PROTECTIVE CLOTHING AND OBEY THE SAFETY INSTRUCTIONS GIVEN ON THE CONTAINER LABEL.

CAUTION: IF PANEL A (65) IS DAMAGED DURING REPAIR, THE CONFORMAL LAYER MUST BE REPAIRED. APPLY A NEW LAYER OF HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002) OVER THE DAMAGED AREA.

A. Removal of Panel A (65).

(1) If fitted, remove the battery pack assembly (5) in accordance with the procedures given in DISASSEMBLY.

(2) Remove the cover (20) in accordance with the procedure given in DISASSEMBLY.

CAUTION: DO NOT PUT TOO MUCH FORCE ON RELATED CABLE LOOM.

(3) Remove the two screws (40) at the bottom of the cover front plate (35) and keep them. Carefully move the cover front plate (35) until it is clear of the chassis (160).

(4) Hold the transistor clip (55) which attaches the modified transistors (IPL Fig. 2; 112) to the chassis (160). Remove and keep screw (60), transistor clip (55), and pad (45).

(5) Remove two nuts (IPL Fig. 2; 180) and two washers (IPL Fig. 2; 190) from connector PL1 (IPL Fig. 2; item 170) on panel A (65). Keep two nuts (IPL Fig. 2; 180) and discard two washers (IPL Fig. 2; 190).

(6) Disconnect plain nut (80) and the washer (85) from terminal E1 and remove the green lead. Keep plain nut (80) discard washer (85).

(7) Remove and keep the remaining seven nuts (90) that attach panel A (65) to the chassis (160).

(8) Carefully lift panel A (65) out of the chassis (160).

(9) Remove and keep the nut that attaches the push button switch (IPL Fig. 2; 210) identified TEST SWITCH to the cover front plate (35). Move the push button switch (IPL Fig. 2; 210) out of the cover front plate (35).

- (10) Remove four screws (135), four washers (140) and nut plate (145) from connector J1 (IPL Fig. 2; 195). Keep screws (135); discard nut plate (145) and washers (140). Move connector J1 (IPL Fig. 2; 195) out of the cover front plate (35).

NOTE: Check the position of connector J1 (IPL Fig. 2; 195) keyways before removing the connector.

- (11) Remove and keep the cover front plate (35).

B. Installation of Panel A (65).

CAUTION MAKE SURE THAT THE FLAT SURFACES OF TR3 AND TR4 (IPL FIG. 2; 112) ARE POSITIONED HARD AGAINST, AND IN THE CENTRE OF, THERMAL PAD (45). BAD CONTACT BETWEEN TR3/TR4 (IPL FIG. 2; 112) AND THE THERMAL PAD (45) WILL CAUSE THEM TO BECOME TOO HOT.

- (1) On a new panel A (65), connector PL1 (IPL Fig. 2; 170) and the modified transistors TR3/ TR4 (IPL Fig. 2; 112) are secured in position for shipping. Remove the shipping components as follows:
 - (a) At connector PL1 (IPL Fig. 2; 170), discard parts that secure PL1 (IPL Fig. 2; 170) to panel A (65). Keep the two spacers (IPL Fig. 2; 175).
 - (b) At the modified transistors TR3/TR4 (IPL Fig. 2; 112), discard parts that secure TR3 and TR4 (IPL Fig. 2; 112) to panel A (65).
 - (c) Make sure SW1 (IPL Fig. 2; 210) and ET1 (IPL Fig. 2; 225) are free.
- (2) Insert connector J1 (IPL Fig. 2; 195) into the cover front plate (35). Make sure the large keyway is in the highest position.
- (3) Attach connector J1 (IPL Fig. 2; 195) to the cover front plate (35) with four screws (135), four new washers (140) and a new nut plate (145). Fully tighten four screws (135), then loosen each screw (135) one quarter of a turn and tighten.
- (4) Install push button switch (IPL Fig. 2; 210) into the cover front plate (35) and attach with supplied nut. Torque tighten the nut to 3.01 lbf in (0.34 Nm) with torque tool (see Table 6001).
- (5) Make sure spacer (100) is on spigot E1 on chassis subassembly (160).
- (6) Make sure insulator (110) and spacer (105) are on the two spigots of chassis subassembly (160) at the position shown in IPL Fig. 1 illustration.
- (7) Make sure spacer (95) is on each of the other seven remaining spigots on chassis subassembly (160).
- (8) On Panel A (65), put spacers (IPL Fig. 2; 175) between connector PL1 (IPL Fig. 2; 170) and panel A (65) with the chamfered edge against connector PL1 (IPL Fig. 2; 170).
- (9) Engage new panel A (65) onto the spigots of chassis subassembly (160).
- (10) Connect the green wire, from connector J1 (IPL Fig. 2; 195) to terminal E1 with a new washer (85) and nut (80). Torque tighten nut (80) to 5.49 lbf in (0.6 Nm) with torque tool (see Table 6001).
- (11) Apply Loctite 242 (see Table 6002) to the threads of the two chassis subassembly (160) spigots that engage with connector PL1 (IPL Fig. 2; 170).

- (12) Attach connector PL1 (IPL Fig. 2; 170) to the two chassis subassembly (160) spigots with two new nuts (IPL Fig. 2; 180) and two new washers (IPL Fig. 2 item 190). Torque tighten each nut (IPL Fig. 2; 180) to 3.27 lbf in (0.37 Nm) with torque tool (see Table 6001).

NOTE: Make sure that no less than one chassis subassembly (160) spigot thread is visible when nuts (IPL Fig. 2; 180) are tightened.

- (13) Attach seven nuts (90) to remaining chassis subassembly (160) spigots. Fully tighten nuts (90), then loosen each nut (90) one quarter turn and tighten again.
- (14) Put pad (45) on the chassis subassembly (160) surface behind the modified transistors (IPL Fig. 2; 112). Make sure the installation hole aligns with the chassis subassembly (160) hole.

- (15) Apply Loctite 242 (see Table 6002) to the threads of screw (60) and hold the transistor clip (55) in the position shown in IPL Fig. 1 illustration.

NOTE: Make sure the position of transistor clip (55) is in line with the plastic shape of the modified transistors TR3 and TR4 (IPL Fig. 2; 112).

- (16) Carefully attach transistor clip (55) to the chassis subassembly (160) with screw (60). Torque tighten screw (60) to 5.31 lbf in (0.6 Nm) with torque tool (see Table 6001). Make sure modified transistors TR3 and TR4 (IPL Fig. 2; 112) are secured tightly against pad (45).

NOTE: Pad (45) is used to give good thermal conductivity for modified transistors TR3 and TR4 (IPL Fig. 2; 112).

- (17) Carefully move the cover front plate (35) to the correct position and attach to the chassis subassembly (160) with two screws (40). Fully tighten two screws (40), then loosen each screw one quarter of a turn and tighten.
- (18) Install cover (20) in accordance with the procedure given in ASSEMBLY.
- (19) If necessary, install battery pack assembly (5) in accordance with the procedure given in ASSEMBLY.

C. Repairs to panel A (65).

NOTE: Components on panel A (65) are installed with hand soldering procedures. Capacitors C1, C2 (IPL Fig. 2; 45A), EMC screen (IPL Fig. 2; 215) and C3, C4 (IPL Fig. 2; 50) are also bonded in position. Hybrids IC1 (IPL Fig. 2; 115) and IC2 (IPL Fig. 2; 120) are assembled with surface mount procedures.

NOTE: A circuit diagram for panel A is shown in Figure 6001. Refer to IPL Fig.2 for the individual component.

- (1) Replace wire(s) on panel A (65) as follows:.

NOTE: Before replacing wire(s), write down the position of the ferrite core(s) that may be positioned on the wire(s).

- (a) Remove unserviceable wire(s) from panel A (65).
- (b) Refer to Table 6003 and prepare the correct length of new wire.
- (c) Install the new ferrite core(s) detailed in Table 6003 on the new wire(s).

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- (d) Refer to Table 6003 and solder the wire(s) in the correct position(s) using a temperature controlled soldering iron (see Table 6001) and flux cored solder (see Table 6001).

WARNING: REFER TO THE MANUFACTURER'S HEALTH AND SAFETY INSTRUCTIONS WHEN USING HD3475 AND RE2038 ADHESIVES (SEE TABLE 6002).

- (e) Mix the adhesives HD3475 and RE2038 (see Table 6002) according to the manufacturers instructions.
- (f) Use a disposable syringe (see Table 6002) and carefully apply enough adhesive to bond the ferrite core(s) to the wire(s) in the positions recorded.
- (g) Leave the bond to air dry for a minimum of 24 hours at 77°F (25°C).

Table 6003 Wire Specifications - Panel A Repair

From Panel A Pad	Wire			Related Ferrite Core Designation	To Panel A Pad
	Size	Colour	Length		
F1	19/0.2	Red	7.5 In	L17	F1
F2	19/0.2	Green	7.0 In	L18	F2
F3	19/0.2	Orange	6.75 In	L19	F3
F4	19/0.2	Yellow	6.5 In	L20	F4
+28 V	7/0.2	Red	1.5 In	L1	+28 V
RET	7/0.2	Black	1.5 In	L1	RET
6	19/0.2	Brown	8.5 In	-	N/C

4. Modified Transistors TR3 and TR4 (IPL Fig. 2; 112) Replacement

WARNING: WHEN APPLYING HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002), DO NOT GET THE LIQUID ON YOUR SKIN OR IN YOUR EYES. DO NOT BREATHE IN THE GAS GIVEN OFF BY THE LIQUID. DO NOT USE NEAR OPEN FLAMES. WEAR PROTECTIVE CLOTHING AND OBEY THE SAFETY INSTRUCTIONS GIVEN ON THE CONTAINER LABEL.

CAUTION: IF PANEL A (65) IS DAMAGED DURING REPAIR, THE CONFORMAL LAYER MUST BE REPAIRED. APPLY A NEW LAYER OF HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002) OVER THE DAMAGED AREA.

A. Removal of Modified Transistors TR3 and TR4 (IPL Fig. 2; 112).

- (1) Remove panel A (65) in accordance with Para. 3A.
- (2) Carefully remove the conformal coating from the pins of modified transistors TR3 and TR4 (IPL Fig. 2 item 112) on panel A (65).

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- (3) Use a temperature controlled soldering iron (see Table 6001) and standard shop procedures to remove the solder from the pins of the modified transistors (IPL Fig. 2 item 112). Remove modified transistors TR3 and TR4 (IPL Fig. 2 item 112).

B. Installation of Modified Transistors TR3 and TR4 (IPL Fig. 2; 112).

- (1) Install panel A (65) on ten spigots at the bottom of jig T14228 (see Table 6001).

NOTE: Jig T14228 (see Table 6001) is the same shape as chassis subassembly (160). This makes sure during installation of panel A (65), the flat surfaces of the modified transistors TR3 and TR4 (IPL Fig. 2; 112) are aligned with the mating surface on pad (45) /chassis (160).

- (2) Put the new modified transistors TR3 and TR4 (IPL Fig. 2; 112) in the component side of panel A (65).
- (3) Carefully put the tufnol transistor template over modified transistors TR3 and TR4 (IPL Fig. 2; 112) and make sure that each spigot is engaged with the related transistor (IPL Fig. 2; 112) heat sink hole.
- (4) Carefully install the tufnol transistor template and transistors TR3 and TR4 (IPL Fig. 2; 112) to jig T14228 (see Table 6001) and make sure the spigots are aligned in the correct holes.

NOTE: Make sure that the flat surfaces of the modified transistors TR3 and TR4 (IPL Fig. 2; 112) are aligned with and against the smooth surface of jig T14228 (see Table 6001).

- (5) Turn jig T14228 (see Table 6001) so that the ends of transistors TR3 and TR4 (IPL Fig. 2; 112) that come out of panel A (65) are visible through the opening of the jig T14228 (see Table 6001) bottom.
- (6) Use standard shop procedures to attach the modified transistor TR3 and TR4 (IPL Fig. 2; 112) terminals in the correct positions.
- (7) Remove panel A (65) from jig T14228 (see Table 6001).

WARNING: WHEN APPLYING HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002), DO NOT GET THE LIQUID ON YOUR SKIN OR IN YOUR EYES. DO NOT BREATHE IN THE GAS GIVEN OFF BY THE LIQUID. DO NOT USE NEAR OPEN FLAMES. WEAR PROTECTIVE CLOTHING AND OBEY THE SAFETY INSTRUCTIONS GIVEN ON THE CONTAINER LABEL.

- (8) Apply Humiseal 1B31 conformal coating (see Table 6002) to the soldered connections with a clean brush (see Table 6002).
- (9) Let panel A (65) dry in the air for a minimum of 24 hours.
- (10) Replace panel A (65) in accordance with Para. 3B.

5. Push Button Switch and related wires (IPL Fig. 2; 210) Replacement

WARNING: WHEN APPLYING HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002), DO NOT GET THE LIQUID ON YOUR SKIN OR IN YOUR EYES. DO NOT BREATHE IN THE GAS GIVEN OFF BY THE LIQUID. DO NOT USE NEAR OPEN FLAMES. WEAR PROTECTIVE CLOTHING AND OBEY THE SAFETY INSTRUCTIONS GIVEN ON THE CONTAINER LABEL.

CAUTION: IF PANEL A (65) IS DAMAGED DURING REPAIR, THE CONFORMAL LAYER MUST BE REPAIRED. APPLY A NEW LAYER OF HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002) OVER THE DAMAGED AREA.

NOTE: Write down the position of the Guidelace Nylon Lacing Tape (see Table 6002) and the wire routing before replacing any wires.

A. Removal of push button switch (IPL Fig. 2; 210).

- (1) Remove battery pack assembly (5) in accordance with the procedures given in DISASSEMBLY.
- (2) Remove cover (20) in accordance with the procedure given in DISASSEMBLY.
- (3) Remove panel A (65) in accordance with Para. 3A.

CAUTION: MAKE SURE THE SOLDERING IRON (See Table 6001) TEMPERATURE IS NOT MORE THAN 554° F (290° C). HIGHER TEMPERATURES WILL DAMAGE THE SWITCH.

- (4) Use a temperature controlled soldering iron (see Table 6001) and standard shop procedures to remove solder before removal of the red and blue wires from the push button switch (IPL Fig. 2; 210) contacts.
- (5) Remove push button switch (IPL Fig. 2; 210).
- (6) If required, remove the red and blue wire(s) from push the button switch (IPL Fig. 2; 210) as follows:
 - (a) Carefully remove the conformal coating from the solder connection.
 - (b) Use a temperature controlled soldering iron (see Table 6001) and standard shop procedures to remove solder before removal of wires(s).

B. Installation of push button switch (IPL Fig. 2; 210).

- (1) If required, install new wire(s) between the push button switch (IPL Fig. 2; 210) and panel A (65) as follows:
 - (a) Prepare the correct length of new wire(s) (see Table 6004).
 - (b) Install the new wire in the correct position (see Table 6004).

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Table 6004 Wire Specifications - Push button (IPL Fig. 2; 210) installation

From Connector SW1	Wire			To Panel A
Contact	Size	Colour	Length	Terminal
N/O	7/0.2	Red	3.25 In	TEST+
N/O	7/0.2	Blue	3.00 In	5

CAUTION: MAKE SURE THE SOLDERING IRON (See Table 60021) TEMPERATURE IS NOT MORE THAN 554° F (290° C). HIGHER TEMPERATURES WILL DAMAGE THE SWITCH.

- (2) Put a Versafit 1/16 BK sleeve (see Table 6002) 3/8 inch long on each of the red and blue wires. Solder the wires to the terminals of the push button switch (IPL Fig. 2; 210) with a temperature controlled soldering iron (see Table 6001) and flux cored solder (see Table 6001). Heatshrink the sleeves to cover the joints.
- (3) Replace Panel A (65) in accordance with Para. 3B.
- (4) Install cover (20) in accordance with the procedure given in ASSEMBLY.
- (5) Install battery pack assembly (5) in accordance with the ASSEMBLY procedures.

6. Fuses F1 to F4 (IPL Fig. 2; 125) Replacement

A. Removal of Fuses F1 to F4 (IPL Fig. 2; 125).

- (1) Remove battery pack assembly (5) in accordance with the procedures given in DISASSEMBLY.
- (2) Carefully pull out the fuse(s) (IPL Fig. 2; 125) to be replaced.

B. Installation of Fuses F1 to F4 (IPL Fig. 2; 125).

- (1) Push each new fuse (IPL Fig. 2; 125) into the socket (165) on the panel A and make sure it is fully engaged.
- (2) Install battery pack assembly (5) in accordance with the ASSEMBLY procedures.

7. Connector J1 (IPL Fig 2. ;195) and Related Wires Replacement

WARNING: WHEN APPLYING HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002), DO NOT GET THE LIQUID ON YOUR SKIN OR IN YOUR EYES. DO NOT BREATHE IN THE GAS GIVEN OFF BY THE LIQUID. DO NOT USE NEAR OPEN FLAMES. WEAR PROTECTIVE CLOTHING AND OBEY THE SAFETY INSTRUCTIONS GIVEN ON THE CONTAINER LABEL.

CAUTION: IF PANEL A (65) IS DAMAGED DURING REPAIR, THE CONFORMAL LAYER MUST BE REPAIRED. APPLY A NEW LAYER OF HUMISEAL 1B31 CONFORMAL COATING (SEE TABLE 6002) OVER THE DAMAGED AREA.

NOTE: Before replacing wire(s), write down the position of the ferrite core(s) that may be on the wire(s).

NOTE: Write down the position of the Guidelace Nylon Lacing Tape (see Table 6002) and the wire routing before replacing any wires.

A. Removal of Connector J1 (IPL Fig. 2; 195) and related wires.

- (1) Remove battery pack assembly (5) in accordance with the procedures given in DISASSEMBLY.
- (2) Remove cover (20) in accordance with the procedure given in DISASSEMBLY.
- (3) Remove panel A (65) in accordance with Para. 3A.
- (4) Use extraction tool 294-89 (see Table 6001) to carefully remove contact(s) from connector J1 (IPL Fig. 2; 195).
- (5) If require, remove defective wire(s) connected between J1 (IPL Fig. 2; 195) and panel A (65) as follows:
 - (a) Carefully remove the conformal coating from plated holes and terminal pins that the connector J1 (IPL Fig. 2; 195) wires are connected to.
 - (b) Use a temperature controlled soldering iron (see Table 6001) and standard shop procedures to remove solder before removal of wires(s)

B. Installation of connector J1 (IPL Fig. 2; 195) and related wires.

- (1) If required, install new wire(s) between connector J1 (IPL Fig. 2; 195) and panel A (65) as follows:
 - (a) Prepare the correct length of new wire(s) (see Table 6005).
 - (b) Install new ferrite core(s) on the new wires (see Table 6005).
 - (c) Install the new wire in the correct position (see Table 6005).
- (2) Use insertion tool T13769 (see Table 6001) to put free contact(s) into the connector shell of connector J1 (IPL Fig. 2; 195).
- (3) Refer to Para. 3C and bond the new ferrite core(s) in the position recorded before the removal of connector J1 (IPL Fig. 2; 195)
- (4) Wind nylon lacing tape (see Table 6002) around the group of wires and make sure the routing is as recorded before removal of connector J1 (IPL Fig. 2; 195).

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Table 6005 Wire Specifications - Connector J1 (IPL Fig. 2; 195) installation

From Connector SW1	Wire			Associated Ferrite Core	To Panel A
Contact	Size	Colour	Length	Designation	Terminal
1	19/0.16	Grey	3.0 In	L4 AND L5	1
2	19/0.16	Violet	3.0 In	L4 AND L5	2
3	7/0.2	Orange	3.25 In	L6 AND L7	3
4	7/0.2	Green	3.25 In	L6 AND L8	4
5	19/0.2	Black	2.25 In	-	5
6	19/0.2	Brown	-	-	Pad 6
7	19/0.2	Green	3.0 In	-	Earth Tag
8	7/0.2	White	3.0 In	-	8
9	19/0.2	Red	2.5 In	L9	9
10	19/0.2	White/ Red	2.5 In	L10	10
11	19/0.2	Green	2.0 In	L11	11
12	19/0.2	White/ Green	2.0 In	L12	12
13	19/0.2	Orange	2.25 In	L13	13
14	19/0.2	White/ Orange	2.25 In	L14	14
15	19/0.2	Yellow	2.5 In	L15	15
16	19/0.2	White/ Yellow	2.5 In	L16	16
18	7/0.2	Brown	3.0 In	-	18
22	19/0.16	Blue	3.0 In	L4 AND L5	22
24	7/0.2	Black	2.25 In	-	5

NOTE: On connector J1 (IPL Fig. 2; 195) pins 17, 19, 20, 21 and 23 are not used.

- (5) Replace Panel A (65) in accordance with Para. 3B.
- (6) Install cover (20) in accordance with the procedure given in ASSEMBLY.
- (7) Install battery pack assembly (5) in accordance with the ASSEMBLY procedures.

8. Adhesive Tape (30A) Replacement

A. Removal of adhesive tape (30A).

- (1) Carefully remove old adhesive tape (30A) from cover (20).

WARNING: REFER TO THE MANUFACTURERS' HEALTH AND SAFETY INSTRUCTIONS WHEN USING ISOPROPYL ALCOHOL (IPA) (SEE TABLE 6002).

- (2) Moisten a lint free cloth (see Table 6002) and wipe cover (20) clean.

B. Installation of adhesive tape (30A).

- (1) Carefully apply the required length of adhesive tape (30A) to the top surface of the cover (20).
- (2) Apply enough light hand pressure to remove air bubbles and make the adhesive tape (30A) smooth.
- (3) Use a sharp knife to carefully cut the adhesive tape (30A) to the shape of the six cover (20) holes.
- (4) Remove cut adhesive tape (30A) from over the cover (20) holes.

9. Battery Pack Assembly (5) Repair

NOTE: DISASSEMBLY Para 3. A. details how protruding lugs of battery pack assembly (5) can be broken off during removal or replacement. Service Letter SL717-01-009 details an interim repair to allow continued use of battery pack assembly (5). This repair can only be done on one of the two lugs. There must be no damage to one of the two lugs to do this repair. This repair procedure is suitable for filling a hole up to a maximum of 4 mm diameter. It must be noted that, whereas the battery pack will continue to function electrically, it is possible that older battery packs may suffer from the effects of vibration.

A. Procedure.

- (1) Make sure that the battery pack assembly (5) has been fully discharged.

CAUTION: EXTREME CARE MUST BE TAKEN TO MAKE SURE THAT NO FOREIGN OBJECT DAMAGE (FOD) IS ALLOWED TO INGRESS THROUGH THE HOLE OF BATTERY PACK ASSEMBLY (5).

- (2) Remove any remaining lug material that may be protruding above the level of the surface of battery pack assembly (5).

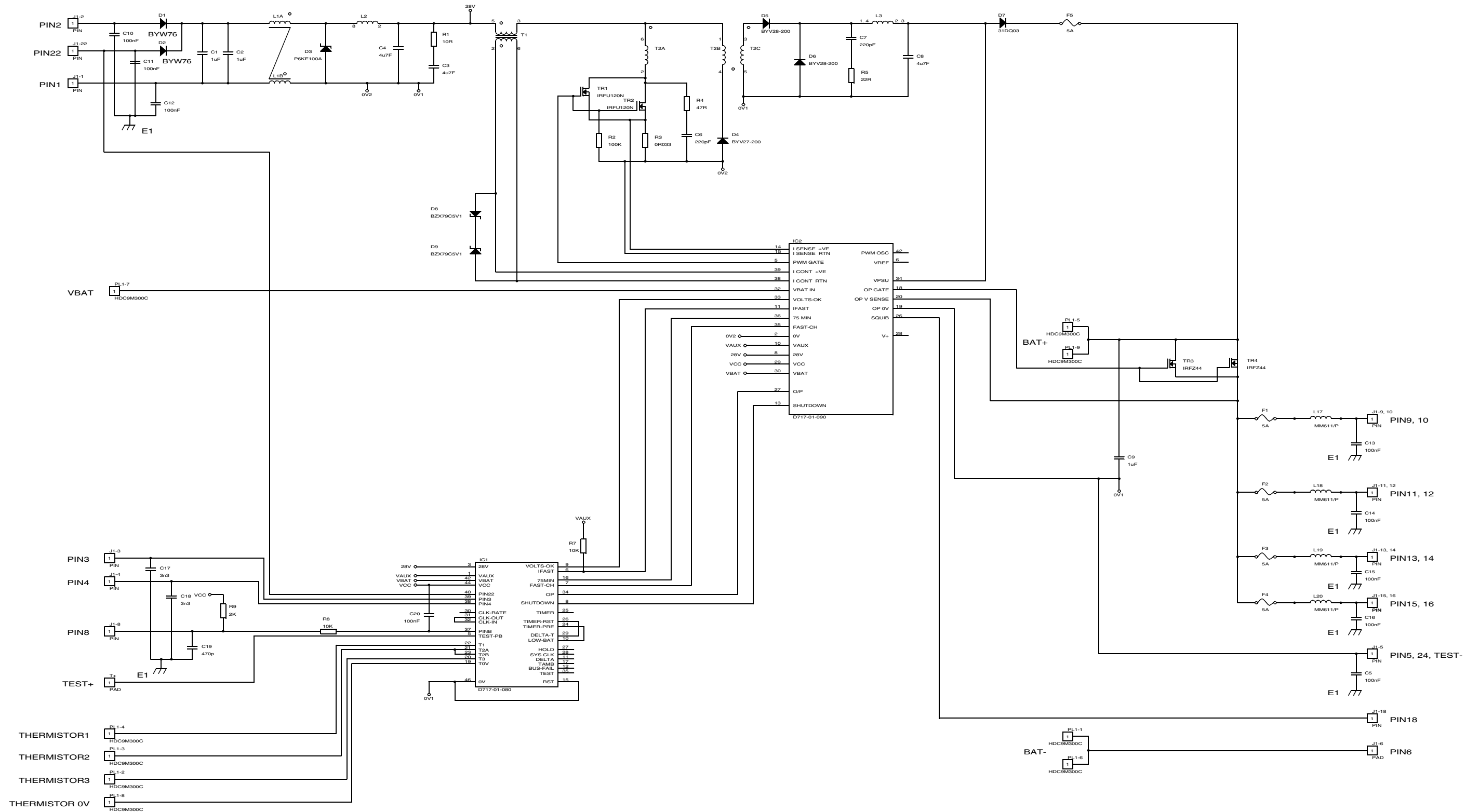
WARNING: REFER TO THE MANUFACTURERS' HEALTH AND SAFETY INSTRUCTIONS WHEN USING ISOPROPYL ALCOHOL (IPA) (SEE TABLE 6002).

- (3) Moisten a lint free cloth (see Table 6002) and carefully wipe battery pack assembly (5) repair area clean.

- (4) Observing the manufacturers instructions, mix together a ratio of 2:1 Araldite resin (2014A) and hardener (2014B) (see Table 6002) with approx 1% to 3% of pigment paste (DW0137 BK) (see Table 6002).

NOTE: The Araldite adhesive (2014) (see Table 6002) is supplied with a mixer nozzle which mixes the correct ratio. The final 'mix' must be 'thick' enough to make sure that it does not run through into the interior of the battery pack assembly (5).

- (5) Carefully fill the hole in the battery pack assembly (5), until it is level with the surface.
- (6) Cure the battery pack assembly (5) at a temperature of 74°F (23°C) for 5 hours.
- (7) Using white karant ink (see Table 6002) mark the battery pack assembly (5) with the legend 'AS12707'.
- (8) When the repair has fully cured, charge and test the battery pack assembly (5) in accordance with the procedures given in TESTING AND FAULT ISOLATION.



Circuit Diagram - Panel A

Figure 6001

ASSEMBLY
(INCLUDING STORAGE)1. General

WARNING: HANDLE THE BATTERY PACK ASSEMBLY (5) CAREFULLY, THE BATTERIES CONTAIN CADMIUM WHICH IS DANGEROUS AND CAN DAMAGE YOUR HEALTH.

CAUTION: THE UNIT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. MAKE SURE THAT ALL THE WORK IS DONE AT A STATIC-FREE WORK STATION AND TAKE ALL THE NECESSARY HANDLING PRECAUTIONS.

A. This procedure tells how to assemble the Emergency Power Supply (EPS).

B. Refer to IPL Figure 1 for item numbers.

2. Tools, Equipment and Materials

A. No special tools or equipment are necessary to assemble the EPS.

3. Cover Subassembly (20) Assembly

A. Procedure:

- (1) Install the cover subassembly (20) at the correct position on the charger assembly (15).
- (2) Attach the cover subassembly (20) to charger assembly (15) with the 10 screws (25). Fully tighten the screws, then loosen each screw one quarter of a turn and tighten again.

4. Battery Pack (5) Assembly

NOTE: After release from storage, and before operational use, refer to TESTING AND FAULT ISOLATION for the battery pack assembly (5) serviceability/capacity test procedure and charging.

A. Procedure:

- (1) Carefully place the battery pack assembly (5) on charger assembly (15) and make sure the two plastic projections on the battery pack assembly (5) engage the two holes in the cover subassembly (20).
- (2) Make sure the connector on battery pack assembly (5) is correctly lined up with connector PL1 on the charger assembly (15).
- (3) Push the battery pack assembly (5) gently to engage the connectors.
- (4) Turn the two Dzus fasteners to attach the battery pack assembly (5) to the charger assembly (15).

5. Storage

A. EPS Storage:

NOTE: If the EPS is being packed for storage, make sure the battery pack assembly (5) is discharged. Refer to TESTING AND FAULT ISOLATION.

- (1) Make sure connector J1 (IPL Fig. 2; 195) is fitted with a conductive cap (165).
- (2) Make a written record of the data given on battery pack label (10A).
- (3) Put the EPS into an anti-static bag. Place the anti-static bag into a polythene bag and remove as much air as possible. Seal using heat.
- (4) Wind layers of aircap plastic sheeting around the EPS. Put the EPS into a cardboard container with layers of aircap sheeting on all sides.
- (5) Put the applicable documents in the container and seal with waterproof tape.
- (6) Put all the data recorded at step 5A (2) on a label and attach it to the cardboard container.
- (7) Store the EPS in the following conditions:

- (a) Temperature range:

NOTE: To make best use of battery pack assembly (5) capacity, battery pack assembly (5) should be stored (discharged) at lowest possible temperature.

- 1 EPS (Charger only): -67°F to 158°F (-55°C to +70°C)
 - 2 EPS (Charger and Battery Pack): -22°F to 122°F (-30°C to +50°C)
 - 3 Battery pack only: -22°F to 122°F (-30°C to +50°C)
- (b) Relative humidity: 45% to 80%
- (c) Atmospheric pressure: 600 to 800 mm Hg.

B. Optional procedure for storage of battery pack assembly (5) in Stand-By Mode (ready for immediate use):

- (1) Charge the battery pack (5) between 16 and a maximum of 24 hours at 280 ± 20 mA.

NOTE: If battery charger (15, 15A) is used, full charge will be achieved in 90 minutes.

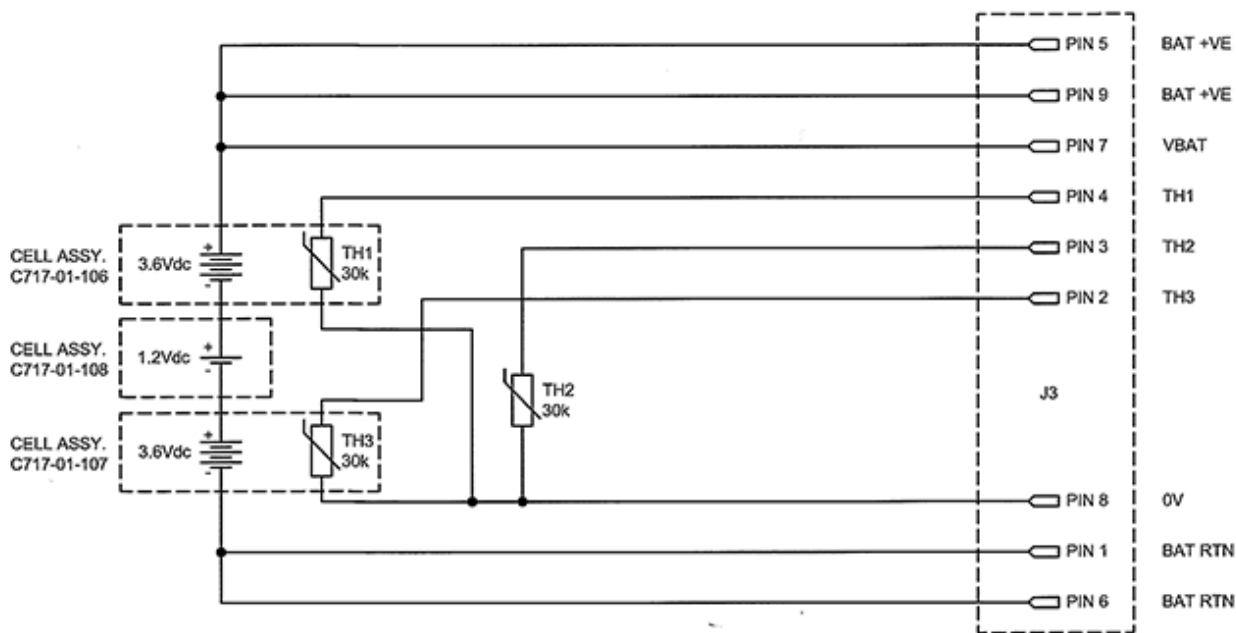
CAUTION: Take care when connecting to test equipment other than the battery charger (15, 15A).

- (2) Connect the battery pack assembly (5) and keep it maintained on a continuous constant current charge of 75 ± 5 mA for a period not to exceed six months. If, after six months the battery pack assembly (5) has not been put into operational use, carry out the battery pack assembly (5) testing as specified in TESTING AND FAULT ISOLATION.

NOTE: The battery pack assembly (5) storage area must be maintained below 25°C.

NOTE: If the charge current is off for any period of time during storage in stand-by mode, it may be necessary to carry out the battery pack assembly (5) testing as specified in TESTING AND DEFAULT ISOLATION.

NOTE: Refer to Figure 7001 to identify connections to the battery pack assembly (5).



Battery pack connections

Figure 7001

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FITS AND CLEARANCES1. General

A. A.This section gives the torque values necessary to perform maintenance on the EPS.

B. Refer to IPL Figures 1 and 2 for item numbers.

2. Tools, Equipment and Materials

A. No special tools or equipment are necessary for establishing required torque values.

3. Torque Values

A. Refer to Table 8001 for torque values.

Table 8001 Specific Item Torque Values

IPL Figure Number - Item Number	Name	Torque Value $\pm 10\%$ Pound-Inches (Newton-Meters)
1 - 60	Screw	5.31 (0.60)
1 - 80	Nut	5.49 (0.62)
2 - 180	Nut	3.27 (0.37)
2 - 210	Nut (Part of push button switch)	3.01 (0.34)

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COMPONENT MAINTENANCE MANUAL

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SPECIAL TOOLS, FIXTURES AND EQUIPMENT1. General

- A. Refer to Table 9001 for a list of the special tools, fixtures, and equipment necessary for maintenance of the EPS.

NOTE: Equivalent substitutes may be used.

Table 9001 Tools, Fixtures and Equipment

Name	Specification or Part Number	Source or CAGE Code	Use
Power Supply 0-18 Vdc at 10 A (PSU 1)	EX1810R	U6706	Testing and Fault Isolation
Power Supply 0-32 Vdc at 2 A (PSU 2)	PL 320	U6706	Testing and Fault Isolation
Resistance Decade Box (DEC 1 to 3)	1040 (Qty 3)	U1403	Testing and Fault Isolation
Digital Multimeter (DMM 1 to 3)	80 Series III (Qty 3)	KF392	Testing and Fault Isolation
Insulation Resistance Meter	BM80/2	U0146	Testing and Fault Isolation
Stopwatch	-	Commercially Available	Testing and Fault Isolation
Emergency Power Supply Test Set	A301-460-001	K0673	Testing and Fault Isolation
Battery Charger and Load Test Set Up	Refer to Figures 1002, 1003 for connections and Figures 9001, 9002 and Table 9003 for components	Commercially Available	Testing and Fault Isolation
Resistor	28Ω 50W	Commercially Available	Testing and Fault Isolation
Hand held low pressure cold air blower	-	Commercially Available	Cleaning
Nylon bristle brush	-	Commercially Available	Cleaning

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Name	Specification or Part Number	Source or CAGE Code	Use
Temperature Controlled Soldering Iron	-	Commercially Available	Repair
Hot Air Gun	-	Commercially Available	Repair
Torque Tool 0-10 lbf in. (0-1.13 Nm)	-	Commercially Available	Repair
Extraction Tool	294-89	K1100	Repair
Insertion Tool	T13769	K0673	Repair
Crimp Tool	294-542	K1100	Repair
Crimp Tool Locator	294-1889-01	K1100	Repair
Jig, Modified Transistor (FET) Soldering Fixture	T15421	K0673	Repair

B. Refer to Table 9002 for the tool supplier information.

Table 9002 Tool Supplier Information

CAGE Code	Supplier Name	Supplier Address
U6706	Thurlby Thandar Instruments Ltd.	Glebe Road, Huntingdon Cambridgeshire PE18 7DX UK
U1403	Time Electronics Ltd.	Botany Industrial Estate Tonbridge Kent TN9 1RS UK
KF392	Fluke (UK) Ltd.	52 Hurricane Way Norwich Norfolk NR6 6JB UK

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CAGE Code	Supplier Name	Supplier Address
U0146	Megger Instruments Ltd.	Archcliffe Road Dover Kent CT17 9EN UK
K1100	Amphenol Ltd.	Thanet Way Whitstable Kent CT5 3JF UK
K0673	Page Aerospace Ltd.	Forge Lane Sunbury on Thames Middlesex TW16 6EQ UK

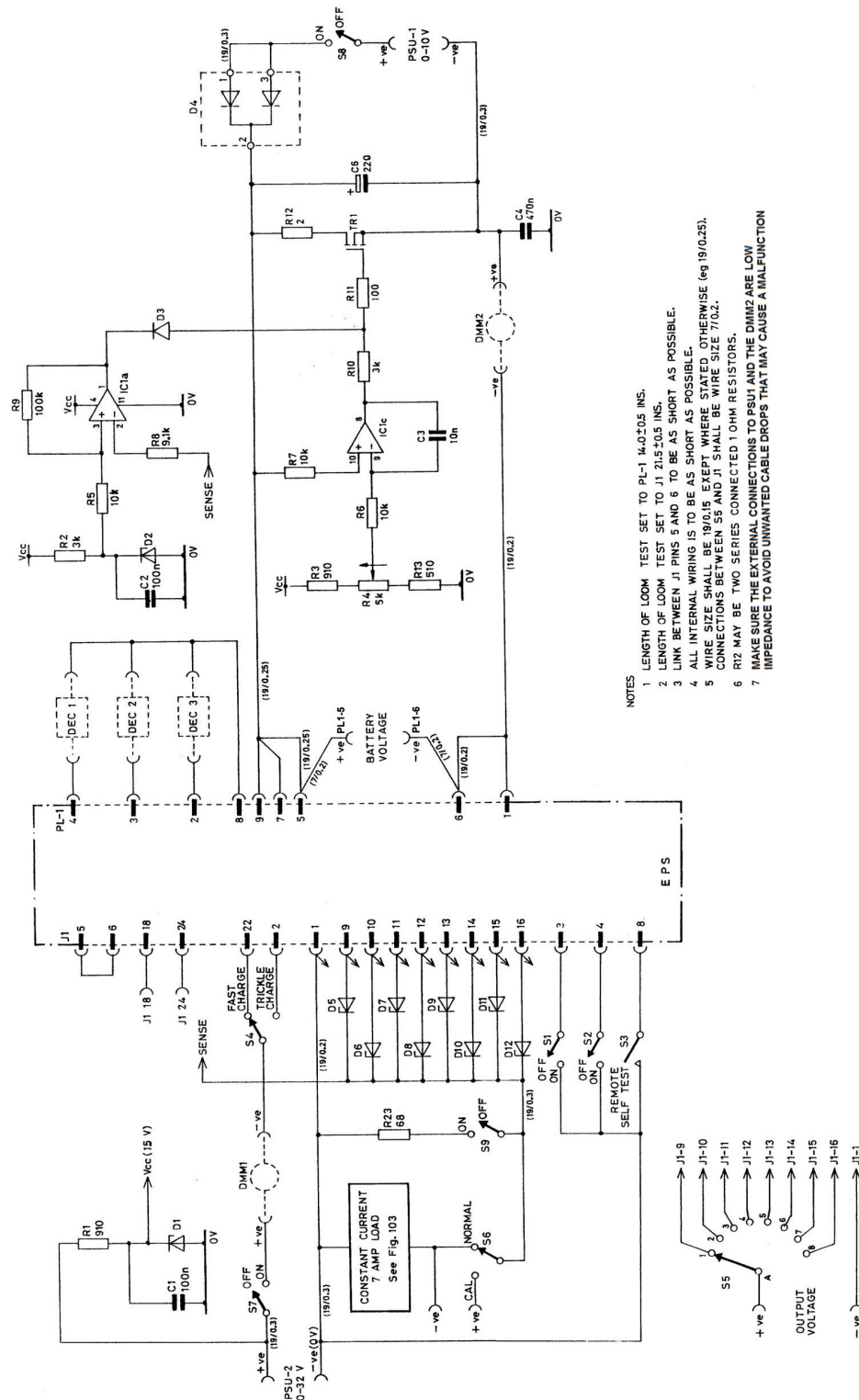
- C. Refer to Table 9003 for components used to make the Battery Charger and Load Test Set (Fig. 1002 and Fig. 1003) used in TESTING AND FAULT ISOLATION and Fig. 9001 and Fig. 9002 for the Circuit Diagrams.

Table 9003 Test Set Components

Nomenclature	Circuit Reference	Qty
Switch SPDT RS 316-973 - 250 Vdc, 6 A	S1, S2 and S4	3
Push Switch RS 331-758 - momentary action 250 Vac, 3A	S3	1
Rotary switch 1 pole 12 way - RS 320-679 - 5 A	S5	1
Switch DPDT RS 518-5320 - 24 Vdc, 10 A	S6	1
Switch SPST 250 Vac, 15 A - APEM X12CPN	S7, S8, S9	3
Integrated Circuit, DIP 14 - National Semiconductor LM 324N Low power quad op. amp	IC1	1
Zener Diode BZX79C15V RS 446-8775 - 15 V 5% 400 mW	D1	1
Zener Diode BZX79C3V3 RS 283-609 - 3.3 V 5% 400 mW	D2	1
Diode BAV21 - General purpose 0.2 A, VR = 200 V	D3	1
Diode BYV32-200 - Power rectifier 10 A, VR = 200 V TO-220 package. Use with heatsink FARNELL 177-005 and retaining clip FARNELL 177-008.	D4	1
Diode BYV28-200-Epitaxial avalanche 3.5 A, VR = 200 V	D5 thru D12	8

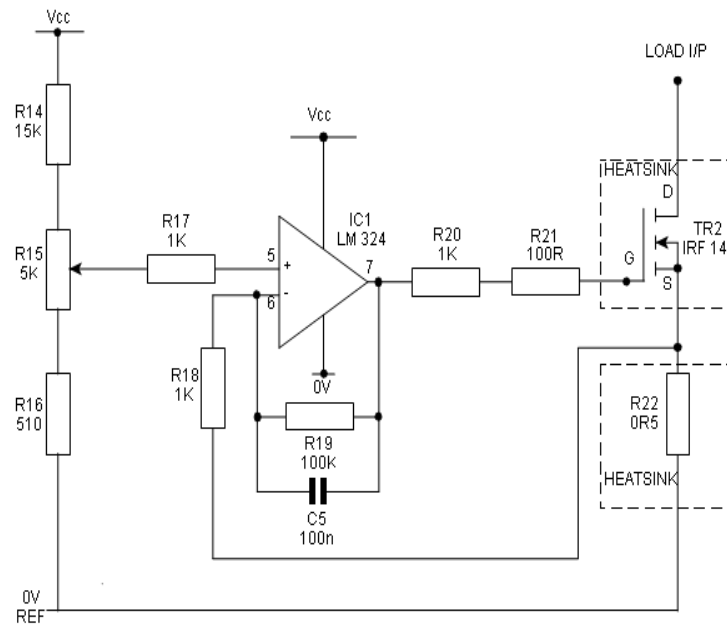
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Nomenclature					Circuit Reference	Qty
Field Effect Transistor IRF140 - IR = 28 A, VDS = 100 V TO-3 package. Use on heatsink RS 692-5084					TR1	1
Capacitor		100 n	10%	63 V	C1 and C2	2
Capacitor		10 n	10%	63 V	C3	1
Capacitor		470 n	10%	63 V	C4	1
Capacitor	RS 394-872	220μ	20%	35 V	C6	1
Resistor		910	1%	0.5 W	R1	1
Resistor	RS 148-613	3 K	1%	0.25 W	R2, R10	2
Resistor	RS 148-499	910	1%	0.25 W	R3	1
Potentiometer	RS 460-7582	5 K	10 TURN	1.5W	R4	1
Resistor	RS 148-736	10 K	1%	0.25 W	R5, R6 and R7	3
Resistor	RS 148-720	9.1 K	1%	0.25 W	R8	1
Resistor	RS 148-972	100 K	1%	0.25 W	R9	1
Resistor	RS 148-269	100	2%	0.25 W	R11	1
Resistor	RS 157-522	2	5%	25 W	R12	1
Resistor	RS 148-433	510	1%	0.25 W	R13	1
Resistor	RS 159-427	68	5%	6 W	R23	1
Connector P/N C48-16R16-24S and Cable Clamp P/N C48-2344 (CINCH)					P1	1
Connector D type P/N 446-349 and Connector Hood P/N 469-566 (RS)					P2	1
Constant current 7 A load					7 A load	
Resistor	RS 148-770	15 K	1%	0.25 W	R14	1
Potentiometer	RS 160-089	5 K	25 TURN	0.5 W	R15	1
Resistor	RS 148-433	510	1%	0.25 W	R16	1
Resistor	RS 148-506	1 K	2%	0.25 W	R17, R18, R20	3
Resistor	RS 148-972	100 K	1%	0.25 W	R19	1
Resistor	RS 148-269	100	2%	0.25 W	R21	1
Resistor	RS 158-452	0.5	5%	50 W	R22	1
Capacitor		100n	10%	63 V	C5	1
Field Effect Transistor IRF140 - IR = 28 A, VDS = 100 TO-3 package. Use on heatsink RS 401-403					TR2	1



Battery Charger and Load Test Set Circuit Diagram

Figure 9001



Constant Current 7A Load Circuit Diagram

Figure 9002

ILLUSTRATED PARTS LIST1. Introduction

A. General

- (1) This Illustrated Parts List (IPL) gives illustrations and a breakdown, in disassembly sequence, of all assemblies that can be disassembled, repaired or replaced, and reassembled.
- (2) A Numerical Index is included which contains all the part numbers which appear in the Detailed Parts List.
- (3) Supplier (vendor) information includes the name, address, and CAGE code for each Supplier.

B. Explanation and Usage

- (1) An illustration is provided on which the replaceable items in the unit are shown. These illustrations identify the parts using item numbers. The physical location and the item number of each part is thus determined by examination of the appropriate illustration.
- (2) The illustration is followed by a detailed parts list which lists all the parts in item number sequence. From this list the user can obtain the part number, description, usage and quantity of each item.
- (3) The "IPL FIG. & ITEM NO." column shows the figure and item number for each part. The figure number is shown once in the header row. Each part is identified by an item number. A part that is not illustrated will have a dash (-) before the item number.
- (4) Alpha variants, letters A through Z (but not I and O), are used with an item number to show:
 - (a) Configuration differences
 - (b) Alternative parts
 - (c) Optional parts
- (5) The PART NUMBER column shows the part number for each part. The true part number will be given in the NOMENCLATURE column when:
 - (a) The part number contains characters that are not permitted by ATA 2000 Specification: for example, a slash (/).
 - (b) The part number has more than 15 characters.
 - (c) The part number contains a dash (-) between a number and a letter.
- (6) The AIRLINE PART NO. column is a blank column with space for 11 characters. The airline Customer can use this space to record their stock numbers.

- (7) The NOMENCLATURE column gives this type of information about the part:
- (a) The indenture level shows how the part is related to the next-higher assembly. For example:
 - 1 2 3 4 5 6 7
 - Assembly
 - . Detail Parts for Assembly
 - . Subassembly
 - . Attaching Parts For Subassembly
 - . . Detail Parts For the Subassembly
 - . . Sub-subassembly
 - . . Attaching Parts For Sub-subassembly
 - . . . Detail Parts For Sub-subassembly
 - (b) Attaching parts are indicated with the text "ATTACHING PARTS". The following parts are attaching parts of the previous item. The end of the attaching parts list is indicated by a pattern of three asterisks: * * *
 - (c) The true part number if not given in the part number column.
 - (d) ESDS designation, if the electronic part is electrostatic discharge sensitive.
 - (e) The values and tolerances permitted for electrical and electronic parts, such as resistors and capacitors.
 - (f) The CAGE code for parts made by other vendors; for standard parts (AN, MS, or NAS), no CAGE code is given.
 - (g) Applicable service bulletins; PRE SB XXXX shows the initial configuration and POST SB XXXX identifies assemblies and parts after the service bulletin has been completed. If a service bulletin is related to an Airworthiness Directive (AD), then the AD number is identified as AD XXXX.
 - (h) Interchangeability data (how the parts relate to each other). A list of the terms, abbreviations, and definitions is shown below in Paragraph C.
 - (i) Figures or CMMs are referenced to show that more breakdown information is available.
- (8) The EFF CODE column is used to show limited interchangeability only. It identifies different configurations in each figure and shows how parts relate to item 1 (or an alpha variant of item 1) in that figure only. A code letter A through Z (but not I and O) identifies each configuration. The same code is used in this figure to show all parts for a specified configuration. A blank space shows that the part is used on all configurations in that figure.
- (9) The UNITS PER ASSY column gives the quantity of the specified item number used on one next-higher assembly, subassembly, or sub-subassembly. The letters AR (as required) are for bulk items, and RF indicates that the item is shown for reference only.

C. Interchangeability Terms, Abbreviations, Definitions, and Related T-File Explanation Codes (EC)

- (1) The codes are given in the Supplier Provisioning Data Instruction Manual (D6-48056).

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Term	Abbreviation	Definition	EC
Alternate	ALT	The part agrees with all functional and structural specifications, but the external dimensions, connection installation, and/or mounting provisions are different. Rework or possible changes can be necessary.	36
Optional	OPT	The part is fully interchangeable in form, fit, and function with other item numbers shown.	39
Preferred	PRFD	The part is preferred over the other optional parts shown.	71
Replaced By	REPLD	The part is replaced and is two-way interchangeable with the item number shown (old part number can replace either old or new part number when removed).	02
Replaces	REPLS	The part replaces and is two-way interchangeable with the item number shown (new part number is acceptable replacement for old or new part number).	02
Superseded By	SUPSD BY	The part is superseded by and is one-way interchangeable with the item number shown (old part number can be used as replacement only where old part was installed).	01
Supersedes	SUPSDS	The part supersedes and is one-way interchangeable with the item number shown (new part number is acceptable replacement for old or new part number).	01
Service Bulletins	SB PRE SB POST SB RWK	Identifies when a service bulletin (SB) has an effect on a part. PRE shows the condition of the part before the work in the service bulletin is done; POST shows the condition after the work is done; RWK shows that the part is reworked by the service bulletin.	

D. List of Abbreviations

(1) The following abbreviations have been used in the illustrated parts list of this manual.

Abbreviation	Definition
A/R	As Required
ASSY	Assembly
ATA	Air Transport Association of America
CMM	Component Maintenance Manual

COMPONENT MAINTENANCE MANUAL PART No. D717-01-001 / D717-02-001

Abbreviation	Definition
EC	Explanation Code
FIG	Figure
IPL	Illustrated Parts List
LH	Left Hand
LTD	Limited
NHA	Next Higher Assembly
OPP	Opposite
OPT	Optional
PARA	Paragraph
P/N	Part Number
RF	Reference Only
RH	Right Hand

E. Vendor Codes, Names and Addresses

K0512	International Rectifier Co Ltd The Omnibus Building Lesbourne Road Reigate Surrey RH2 7JP UK
K1010	Tyco Electronics UK Ltd. Faraday Road, Dorcan Swindon SN3 5HH UK.
K1100	Amphenol Ltd Thanet Way, Whitstable Kent CT5 3JF UK
K4184	Vishay Ltd. Pallion Industrial Estate Sunderland SR4 6SU UK

K8473	Littelfuse UK Ltd Hargreaves Road Groundwell Industrial Estate Swindon SN25 5BF UK.
KD176	Caplugs Ltd. Unit 7 Over field Industrial Estate Thorpe Way Banbury OX16 4XR UK
KD690	Laird Technologies Ltd 2 Kelvin Park South Kelvin Business Park Glasgow Lanarkshire UK
U0419	Glenair UK Ltd 40 Lower Oakham Way Oakham Business Park Mansfield Nottingham NG18 5BY UK
U1487	Arcoelectric Switches Ltd 61 Central Avenue West Molesey Surrey KT8 0RF UK
U1579	Syfer Technology Ltd Stoke Holy Cross Road Arminghall Norwich Norfolk NR14 8SQ UK
U1718	Cinch Connectors Ltd Shireoaks Road Worksop Notts S80 3HA UK

U2685 Augat Interconnection Components Ltd
Sunrise Parkway
Linford Road
Wood East
Milton Keynes
Bucks
MK14 6LF
UK

U8295 AVX Ltd
Admiral House
Harlington Way
FleetHampshire
GU51 4BB
UK.

U8439 BHC Components Ltd
20 Cumberland Drive
Granby Industrial Estate
Weymouth Dorset
DT4 9TE
UK

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EQUIPMENT DESIGNATOR INDEX

EQUIPMENT DESIGNATOR	FIGURE - ITEM NO.	EQUIPMENT DESIGNATOR	FIGURE - ITEM NO.	EQUIPMENT DESIGNATOR	FIGURE - ITEM NO.
C1, C2	2-45	D8, D9	2-105	R2	2-10
C3, C4, C8	2-50	F1 - F4	2-125	R3	2-15
C5, C10 - C16, C20	2-55	F5	2-130	R4	2-20
C6, C7	2-60	IC1	2-115	R5	2-25
C9	2-65	IC2	2-120	R7	2-30
C17, C18	2-70	J1	2-195	R8	2-35
C19	2-75	L1, L4, L5, L6	2-155	R9	2-40
D1, D2	2-80	L2	2-145	SW1	2-210
D3	2-85	L3	2-150	T1	2-135
D4	2-90	L7 - L20	2-160	T2	2-140
D5, D6	2-95	PL1	2-170	TR1, TR2	2-110
D7	2-100	R1	2-5	TR3, TR4	2-112

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NUMERICAL INDEX

PART NUMBER	AIRLINE PART NUMBER	FIGURE NUMBER	ITEM NUMBER	TOTAL REQUIRED
AT 283-16		1	145	1
A111-126		1	100	1
A111-158		1	115	
		2	175	2
A111-199		2	175A	2
A112-67		1	95	7
A242C-1068		2	15A	1
A255C-0030		2	165B	1
A282-34-0005		1	30A	A/R
A717-01-047		1	110	1
A717-01-048		1	105	1
A717-01-052		1	45	1
BSA103AT		1	70	
		2	180	2
BYV27-200		2	90	1
BYV28-200		2	95	2
BYW76		2	80A	2
BYW95C		2	80	2
B120-58		1	90	7
B123-143-008		1	60	1
B127-03		2	220	12
B138-14		2	225	1
B200-44		2	50A	3
B208-113-01		2	155	4
B215-06		1	120	
		2	125	4
B290-01-030		2	170	1
B717-01-043		1	35	1
B717-01-044		2	215	1
B717-01-053		1	50	2
		2	112	2
B717-01-115		1	10	1
B717-01-125		1	10A	1
B717-12-031		1	117	RF
CAPCDP1048		2	65	1
CAPCDP1501		2	60	2
		2	60B	2
CEC-16		1	165	1
CEC-18		1	165A	1
C208-154		2	135	1
C208-156		2	145	1
C208-164		2	140	1
C208-166		2	150	1
C717-01-033		1	20	1
C717-01-039		1	160	1
C717-01-114		1	30	1
C717-02-033		1	20A	1
DCC01		1	175	1
DCC11		1	170	1
D717-01-001		1	1	RF

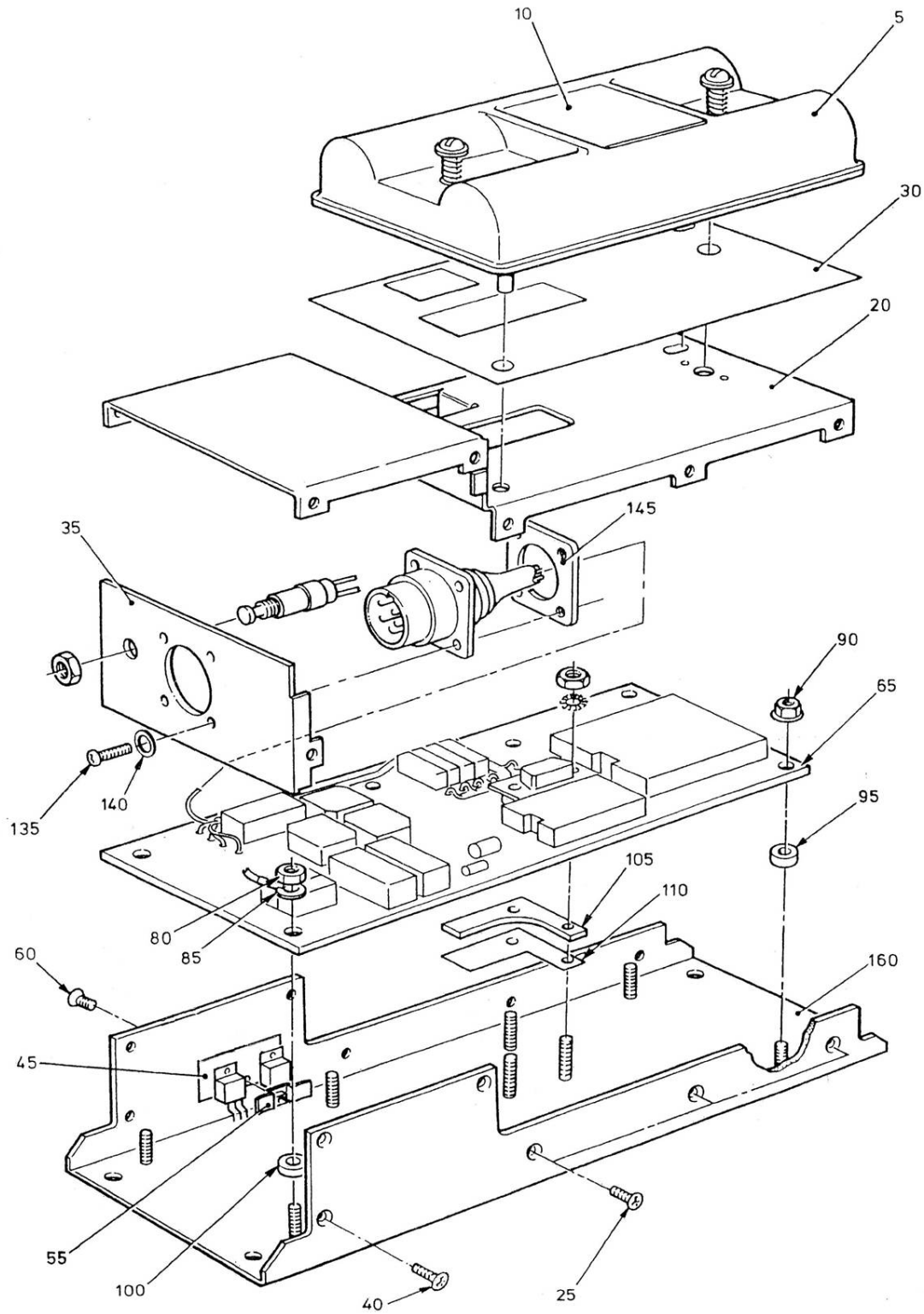
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PART NUMBER	AIRLINE PART NUMBER	FIGURE NUMBER	ITEM NUMBER	TOTAL REQUIRED
D717-01-020		1	65	1
		2	1	RF
D717-01-023		2	230	1
D717-01-030		1	15	1
D717-01-080		2	115	1
D717-01-090		2	120	1
D717-01-100		1	5	1
D717-02-001		1	1A	RF
D717-02-020		1	65A	1
		2	1A	RF
D717-02-023		2	230A	1
D717-02-030		1	15A	1
D717-02-120		1	65B	1
IRFU120		2	110	2
		2	110A	2
MMK15		2	45A	2
MM611T3		2	160	14
MSP121CRT		1	119	RF
MS24254-20P		1	155	
		2	205	19
MS24264R16B24PN		1	130	
		2	195	1
MS24693C3		1	25	10
		1	40	2
MS27186-1		1	150	
		2	200	5
MS35649-244		1	80	1
MS51957-14		1	135	4
MS51957-17		2	185	2
NAS6714		2	180A	2
P6KE100A		2	85	1
RESMOF0017		2	20	1
RESMOF0130		2	5	1
RESMOF0138		2	25	1
RESMOF0185		2	40	1
RESMOF0202		2	30	1
		2	35	1
RESMOF1947		2	10	1
SA101A471JAA		2	75B	1
SA101A471KTA		2	75A	1
SA101C332KAA		2	70A	2
SA101C332KTA		2	70	2
SA101C471KTA		2	75	1
SA301C104KAA		2	55A	9
SA301C104KTA		2	55	9
TC2		1	55	1
		1	55B	1
TSC607ZP		1	55A	1
T0916SORD		1	125	
		2	210	1

PART NUMBER	AIRLINE PART NUMBER	FIGURE NUMBER	ITEM NUMBER	TOTAL REQUIRED
ZDX0147		2	105	2
077723A		2	165	1
1-1437542-1		2	165A	1
2222-373-21155		2	45	2
2222-373-21475		2	50	3
25040R033G		2	15	1
251-005		2	130	1
31DQ03		2	100	1
5310-99-9713720		1	75	
		1	85	1
		1	140	4
		2	190	2
8133Z1000221KC		2	60A	2

I

DETAILED PARTS LIST



Emergency Power Supply

Figure 1

COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
1					
-1	D717-01-001		EMERGENCY POWER SUPPLY	A	RF
-1A	D717-02-001		EMERGENCY POWER SUPPLY	B	RF
5	D717-01-100		..BATTERY PACK ASSEMBLY		1
10	B717-01-115		..LABEL BATTERY PACK (SUPSD BY ITEM 10A)		1
-10A	B717-01-125		..LABEL BATTERY PACK (SUPSDS ITEM 10)		1
-15	D717-01-030		..CHARGER ASSEMBLY	A	1
-15A	D717-02-030		..CHARGER ASSEMBLY	B	1
20	C717-01-033		..COVER SUBASSEMBLY	A	1
-20A	C717-02-033		..COVER SUBASSEMBLY	B	1
25	MS24693C3		ATTACHING PARTS ..SCREW CSK HD, ST. STL. 4-40 UNC X 5/16 LG (MS24693C3 IS THE REF/CODE NO. FOR MS24693-C3)		10
30	C717-01-114		*** ..PAD (SUPERSEDED BY ITEM 30A)		1
-30A	A282-34-0005		..TAPE, ADHESIVE PTFE 0.0035 x 3.5 IN. WIDE (SUPSDS ITEM 30)		A/R

- ITEM NOT ILLUSTRATED

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
1 35	B717-01-043		..COVER, FRONT PLATE SUBASSEMBLY		1
40	MS24693C3		ATTACHING PARTS ..SCREW CSK HD, ST. STL. 4-40 UNC X 5/16 LG (MS24693C3 IS THE REF/CODE NO. FOR MS24693-C3)		2
45	A717-01-052		*** ..PAD		1
-50	B717-01-053		..MOVED TO FIGURE 2		2
55	TC2		ATTACHING PARTS ..TRANSISTOR CLIP (SUPERSEDED BY ITEM 55A)		1
-55A	TSC607ZP		..TRANSISTOR CLIP (VKD690) (TSC607ZP IS THE REF/CODE NO. FOR TSC607-ZP) (SUPERSEDED BY ITEM 55B)		1
-55B	TC2		..TRANSISTOR CLIP (SUPERSEDES ITEM 55A)		1
60	B123-143-008		..SCREW M3X8, SKT CSK HD ST. STL		1
65	D717-01-020		*** ..PANEL 'A' ASSEMBLY (PRE SB D71702-24-1) (REPLD BY ITEM 65B) (SEE FIG. 2 FOR DETAIL BREAKDOWN)	A	1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
1 -65A	D717-02-020		..PANEL 'A' ASSEMBLY (PRE SB D71702-24-1) (REPLD BY ITEM 65B) (SEE FIG. 2 FOR DETAIL BREAKDOWN)	B	1
-65B	D717-02-120		..PANEL 'A' ASSEMBLY (POST SB D71702-24-1) (REPLS ITEMS 65, 65A)		1
-70	BSA103AT		ATTACHING PARTS ..MOVED TO FIGURE 2		
-75	5310-99-9713720		..MOVED TO FIGURE 2		
80	MS35649-244		..NUT PLAIN 4-40 UNC		1
85	5310-99-9713720		..WASHER CRINKLE, 4 UN (5310-99-9713720 IS THE REF/CODE NO FOR NSN 5310-99-971-3720)		1
90	B120-58		..NUT 4-40 UNC C/W CAPTIVE WASHER		7
95	A112-67		..SPACER		7
100	A111-126		..SPACER		1
105	A717-01-048		..SPACER		1
110	A717-01-047		..INSULATOR		1
-115	A111-158		..MOVED TO FIGURE 2		

- ITEM NOT ILLUSTRATED

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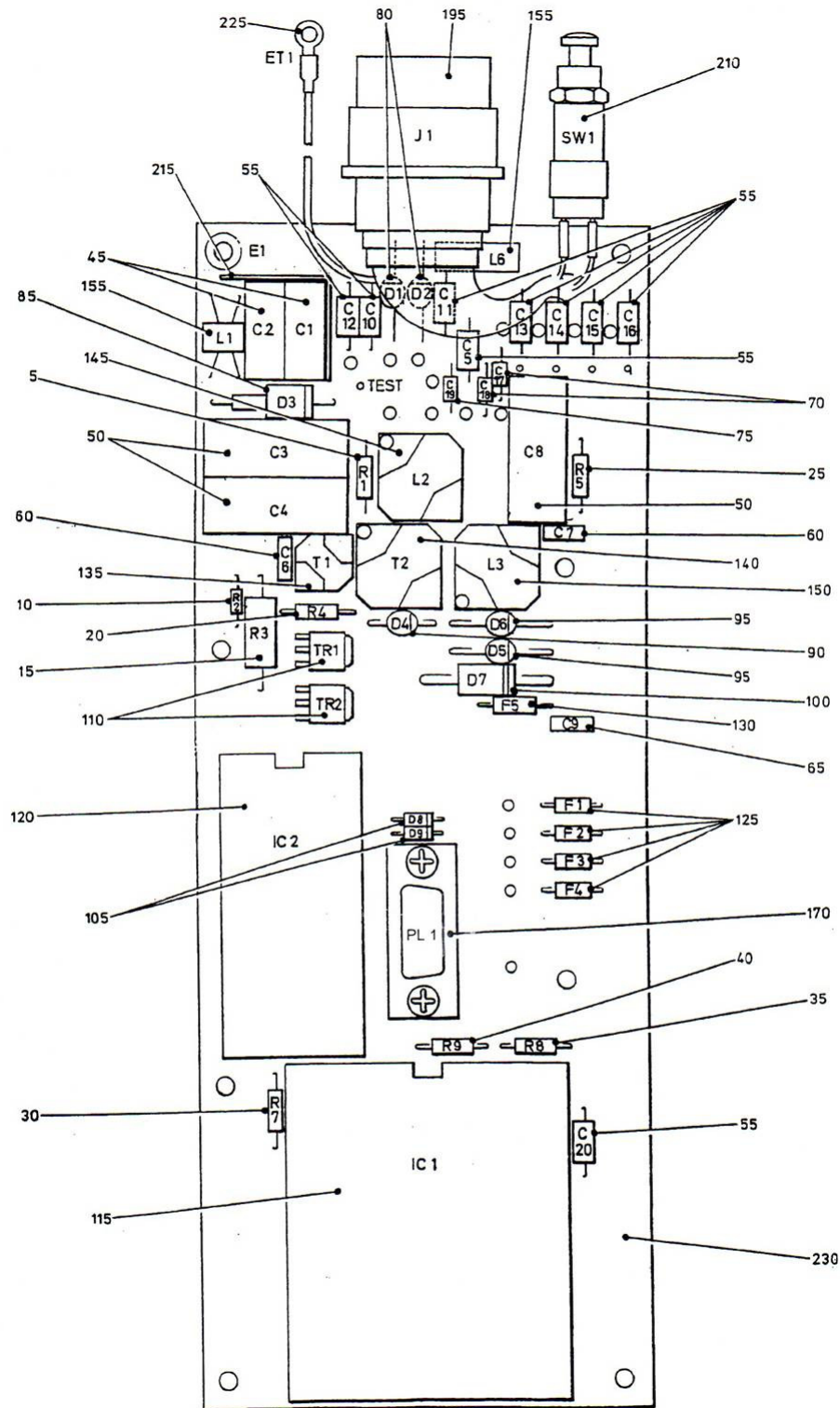
FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
1 -117	B717-12-031		*** ...KIT OF ATTACHING PARTS (USED ON ITEM 65B)		RF
-118	B215-06		...FUSE, 5AMP (F1 TO F4) (USED ON ITEM 65B)		RF
-119	MSP121CRT		...SWITCH, PUSH BUTTON N/O (SW1) (USED ON ITEM 65B)		RF
-120	B215-06		..MOVED TO FIGURE 2		
-125	T0916SORD		..MOVED TO FIGURE 2		
-130	MS24264R16B24P N		..MOVED TO FIGURE 2		
135	MS51957-14		ATTACHING PARTS ..SCREW PAN HD, ST. STL. 4- 40 UNC X 5/16 LG		4
140	5310-99-9713720		..WASHER CRINKLE, 4 UN (5310-99-9713720 IS THE REF/CODE NO FOR NSN 5310-99-971-3720)		4
145	AT 283-16		..NUT PLATE (VU0419)		1
-150	MS27186-1		*** ...MOVED TO FIGURE 2		
-155	MS24254-20P		...MOVED TO FIGURE 2		
160	C717-01-039		..CHASSIS, SUBASSEMBLY TRANSIT PARTS		1

- ITEM NOT ILLUSTRATED

COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
1 -165	CEC-16		.CONDUCTIVE CAP (SUPSD BY ITEM 165A) (KD176) (FOR CONNECTORS ON ITEM 15)		1
-165A	CEC-18		.CONDUCTIVE CAP (SUPSDS ITEM 165) (KD176) (FOR CONNECTORS ON ITEM 15)		1
-170	DCC11		.CONDUCTIVE CAP (KD176) (FOR CONNECTORS ON ITEM 15) (DCC11 IS THE REF/CODE NO. FOR DCC-11)		1
-175	DCC01		.CONDUCTIVE CAP (KD176) (FOR CONNECTOR ON ITEM 5) (DCC01 IS THE REF/CODE NO. FOR DCC-01)		1

- ITEM NOT ILLUSTRATED



Panel Assembly 'A'

Figure 2

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2					
-1	D717-01-020		PANEL ASSEMBLY 'A'	A	RF
-1A	D717-02-020		PANEL ASSEMBLY 'A'	B	RF
5	RESMOF0130		.RESISTOR 10R, 2%, 250 mW TO FX BSCECC40101-019 (R1) RESMOF0130 IS REF/CODE NO. FOR RES-MOF-0130		1
10	RESMOF1947		.RESISTOR 100k, 2%, 125 mW TO BSCECC40101-019 (R2) RESMOF1947 IS REF/CODE NO. FOR RES-MOF-1947		1
15	25040R033G		.RESISTOR 0.033R, 2%, 4W (R3) (SUPSD BY ITEM 15A)		1
-15A	A242C-1068		.RESISTOR 0.033R, 2%, 4W (R3) (SUPSDS ITEM 15)		1
20	RESMOF0017		.RESISTOR 47R, 1%, 250 mW TO BSCECC40101-019 (R4) RESMOF0017 IS REF/CODE NO. FOR RES-MOF-0017		1

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COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 25	RESMOF0138		.RESISTOR 22R, 2%, 250 mW TO BSCECC40101-019 (R5) RESMOF0138 IS REF/CODE NO. FOR RES-MOF-0138		1
30	RESMOF0202		.RESISTOR 10k, 2%, 250 mW TO BSCECC40101-019 (R7) RESMOF0202 IS REF/CODE NO. FOR RES-MOF-0202		1
35	RESMOF0202		.RESISTOR 10k, 2%, 250 mW TO BSCECC40101-019 (R8) RESMOF0202 IS REF/CODE NO. FOR- RES MOF-0202	B	1
40	RESMOF0185		.RESISTOR 2k, 2%, 250 mW TO BSCECC40101-019 (R9) RESMOF0185 IS REF/CODE NO. FOR RES-MOF-0185	B	1
45	2222-373-21155		.CAPACITOR NP 1 μ 5, 10%, 100VW (VK0004) (SUPSD BY ITEM 45A)		2
-45A	MMK15		.CAPACITOR NP 1 μ 5, 10%, 100VW (C1 AND C2) (VU8439) MMK15 IS THE REF/CODE NO. FOR MMK15 155K100B10L4 (SUPSDS ITEM 45)		2

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COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 50	2222-373-21475		.CAPACITOR NP 4 μ 7, 10%, 100VW (C3, C4 AND C8) (SUPSD BY ITEM 50A) (VK4184)		3
-50A	B200-44		.CAPACITOR NP 4 μ 7, 10%, 100VW (C3, C4 AND C8) (SUPSDS ITEM 50)		3
55	SA301C104KTA		.CAPACITOR 100n, 10%, 100VW (C5, C10-C16 AND C20) (VU8295) (SUPSD BY ITEM 55A)		9
-55A	SA301C104KAA		.CAPACITOR 100n, 10%, 100VW (C5, C10-C16 AND C20) (VU8295) (SUPSDS ITEM 55A)		9
60	CAPCDP1501		.CAPACITOR 220p, 10%, 100VW PATT B TO BS9075 N0024 (C6 AND C7) CAPCDP1501 IS REF/CODE NO.FOR CAP-CDP-1501 (SUPSD BY ITEM 60A)		2
-60A	8133Z1000221KC		.CAPACITOR 220p, 10%, 100VW PATT B TO BS9075 N0024 (C6 AND C7) (VU1579) (SUPSD BY ITEM 60B)		2

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COMPONENT MAINTENANCE MANUAL
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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 -60B	CAPCDP1501		.CAPACITOR 220p, 10%, 100VW PATT B TO BS9075 N0024 (C6 AND C7) CAPCDP1501 IS REF/CODE NO. FOR CAP-CDP-1501 (SUPSDS ITEM 60A)		2
65	CAPCDP1048		.CAPACITOR 1μ0, 10%, 50VW PATT B TO BS9075 N0024 (C9) CAPCDP1048 IS REF/CODE NO.FOR CAP-CDP-1048		1
70	SA101C332KTA		.CAPACITOR 3n3, 10%, 100VW (C17 AND C18) (VU8295) (SUPSD BY ITEM 70A)		2
-70A	SA101C332KAA		.CAPACITOR 3n3, 10%, 100VW (C17 AND C18) (VU8295) (SUPSDS ITEM 70)		2
75	SA101C471KTA		.CAPACITOR 470p, 10%, 100VW (C19) (VU8295) (SUPSD BY ITEM 75A)		1
-75A	SA101A471KTA		.CAPACITOR 470p, 5%, 100VW (C19) (VU2109) (SUPSDD BY ITEM 75B)		1

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 -75B	SA101A471JAA		.CAPACITOR 470p, 5%, 100VW (C19) (VU2109) (SUPSDS ITEM 75A)		1
80	BYW95C		.DIODE 600V 3A (D1 AND D2) BYW95C IS REF/CODE NO. FOR BYW95-C (SUPSD BY ITEM 80A)		2
-80A	BYW76		.DIODE 600V 3A (D1 AND D2) (SUPSDS ITEM 80)		2
85	P6KE100A		.DIODE ZENER 100V (D3)		1
90	BYV27-200		.DIODE 200V 2A (D4)		1
95	BYV28-200		.DIODE 200V 3A5 (D5 AND D6)		2
100	31DQ03		.DIODE SCHOTTKY 30V 3A (D7) (VK0512)		1

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 105	ZDX0147		.DIODE ZENER TO NEN CECC 50 005-005 BZX79C5V1 (D8 AND D9) ZDX0147 IS REF/CODE NO. FOR ZDX-0147		2
110	IRFU120		.TRANSISTOR N-CH HEXFET (TR1 AND TR2) (SUPSD BY ITEM 110A)		2
-110A	IRFU120N		.TRANSISTOR N-CH HEXFET (TR1 AND TR2) (VK0512) (SUPSDS ITEM 110)		2
-112	B717-01-053		.TRANSISTOR, MODIFIED (TR3 AND TR4) (BRACKET AND SCREWS THAT SECURE ITEMS TO PANEL ARE ONLY FOR SHIPPING)		2
115	D717-01-080		.HYBRID (IC1) CONTROL BOARD,		1
120	D717-01-090		.HYBRID (IC2) PSU CONTROL BOARD,		1
125	B215-06		.FUSE 5A (PREFORMED) (F1 TO F4)		4
130	251-005		.FUSE 5A (F5) (VK8473)		1

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 135	C208-154		.TRANSFORMER, CURRENT (T1)		1
140	C208-164		.TRANSFORMER, POWER (T2)		1
145	C208-156		.INDUCTOR, INPUT (L2)		1
150	C208-166		.INDUCTOR, OUTPUT (L3)		1
155	B208-113-01		.FERRITE RING, CORE (L1, L4, L5 AND L6) (P/N CORRECTION)		4
-160	MM611T3		.FERRITE RING, CORE (L7 TO L20) MM611T3 IS REF/CODE NO. FOR MM611/T3		14
-165	077723A		.SOCKET, IC (8 DIL) FOR FUSES F1 TO F4 (VU2685) (SUPSD BY ITEM 165B)		1
-165A	1-1437542-1		.SOCKET, DIP GOLD PLT FOR FUSES F1 TO F4 (VK1010) (SUPSD BY ITEM 165B)		1
-165B	A255C-0030		.SOCKET, DIP GOLD PLT FOR FUSES F1 TO F4 (SUPSDS ITEM 165A)		1
170	B290-01-030		.CONNECTOR, 9 WAY D PLUG (PL1)		1

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FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2			ATTACHING PARTS		
-175	A111-158		.SPACER (SUPSD BY ITEM 175A)		2
-175A	A111-199		.SPACER (SUPSDS BY ITEM 175)		2
-180	BSA103AT		.NUT THIN 4-40 UNC ST BSA103AT IS REF/CODE NO. FOR BSA103-A (PRFD)		2
-180A	NAS6714		.NUT THIN 4-40 UNC ST NAS6714 IS REF/CODE NO. FOR NAS671/4 (ALT)		2
-185	MS51957-17		.SCREW PAN HD SO 4-40 UNC X 1/2 LG		2
-190	5310-99-9713720		.WASHER CRINKLE, 4 UN 5310-99-9713720 IS THE REF/CODE NO FOR NSN 5310-99-971-3720		2

195	MS24264R16B24P N		.CONNECTOR, BULKHEAD 16-24P (J1) (VU1718)		1
-200	MS27186-1		..FILLER PLUG (VK1100)		5
-205	MS24254-20P		..PIN (VK1100)		19

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COMPONENT MAINTENANCE MANUAL
PART No. D717-01-001 / D717-02-001

FIG.-ITEM	PART NUMBER	AIRLINE PART NUMBER	NOMENCLATURE 1234567	USAGE FROM TO	UNITS PER ASSY
2 210	TO916SORD		.SWITCH, PUSHBUTTON N/O RD (SW1) (VU1487) TO916SORD IS REF/CODE NO. FOR TO916 SO/RD		1
215	B717-01-044		.SCREEN, EMC		1
-220	B127-03		.PIN TERMINAL, SWAGED		12
225	B138-14		.TAG, SOLDER		1
230	D717-01-023		.PANEL 'A' DRILLING	A	1
-230A	D717-02-023		.PANEL 'A' DRILLING	B	1

- ITEM NOT ILLUSTRATED

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