



AIRCRAFT MAINTENANCE MANUAL

EXTERNAL POWER - ADJUSTMENT/TEST

EFFECTIVITY: ALL

1. General

- A. This section gives the procedures to do a check of the GPU (ground power unit) overvoltage protection.
- B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	DESCRIPTION	EFFECTIVITY
24-40-00-700-801-A ♦	GPU OVERVOLTAGE PROTECTION - FUNCTIONAL CHECK	ALL

TASK 24-40-00-700-801-A
EFFECTIVITY: ALL
2. GPU OVERVOLTAGE PROTECTION - FUNCTIONAL CHECK
A. General

- (1) The function of this check is to make sure that the GPU overvoltage protection circuit operates correctly.

B. References

<i>REFERENCE</i>	<i>DESIGNATION</i>
AMM MPP 06-41-01/100	-
AMM SDS 31-41-00/1	
AMM TASK 20-40-02-910-801-A/200	STATIC GROUNDING - STANDARD PRACTICES

C. Zones and Accesses

<i>ZONE</i>	<i>PANEL/DOOR</i>	<i>LOCATION</i>
113	113DL	LH Forward Fuselage
113	113EL	LH Forward Fuselage

D. Tools and Equipment

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
GSE 049	Plug-External Power Supply	For connection of the DC power supply to the aircraft	
GSE 210	System Power Supply	To energize the aircraft	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
1	Does the task	Cockpit
1	Increase/Decrease Power Supply Voltage	Power Supply Control

I. Preparation ([Figure 501](#))
SUBTASK 841-002-A

- (1) Open access door 113DL (AMM MPP 06-41-01/100).

- (2) On the Main Battery 2 Relay Box, open the GROUND SERVICE 1, 2, and 3 circuit breakers. This will prevent damage to the ground service bus loads during the GPU Overvoltage Check.

CAUTION: BEFORE YOU DO THIS SUBTASK, MAKE SURE THAT BATTERY 1 IS INSTALLED ON THE AIRCRAFT. IF NOT, THE EXTERNAL POWER OVERVOLTAGE PROTECTION WILL NOT BE AVAILABLE.

- (3) Make sure that Main Batteries 1 and 2 are installed and connected.
- (4) Set the BATT 1 and BATT 2 switches, on the electrical panel, on the overhead panel, to AUTO.
- (5) Make sure that the BACKUP pushbutton, on the electrical panel on the overhead panel is set to ON.
- (6) Set AVIONICS MASTER 1 and AVIONICS MASTER 2 pushbuttons, on the electrical panel on the overhead panel, to ON.
- (7) Set MFD 1 (or 2) to ELEC page ([AMM SDS 31-41-00/1](#)).

CAUTION: MAKE SURE THAT THE MINIMUM VOLTAGE OF BATTERIES IS 24 V DC. IF YOU KEEP AIRCRAFT ENERGIZED BY GPU FOR A LONG TIME, THE BATTERIES VOLTAGE CAN DECREASE BELOW THIS VALUE. IF BATTERY 1 VOLTAGE DECREASES, THE EXTERNAL POWER OVERVOLTAGE PROTECTION WILL NOT BE AVAILABLE. IF YOU DO NOT OBEY THIS PRECAUTION, DAMAGE TO THE AIRCRAFT CAN OCCUR.

- (8) ON MFD 1 (or 2) ELEC page, do the check of the batteries voltage and make sure that the minimum voltage is 24 V DC.
 - (a) **NOTE:** While the GPU is ON, the batteries will not be recharged.
 - 1 If the battery voltage is less than 24 V DC, it is recommended to recharge it.
NOTE: The minimum necessary voltage for APU start is 23.5 V DC
 - 2 If the battery voltage is less than 19 V DC, removed it from the aircraft to be recharged by maintenance persons.
- (9) Make sure that the voltage of the Power Supply (GSE 210) is 28.0 ± 0.5 V DC and that the Power Supply is disconnected from the aircraft.
- (10) Make sure that the EMERG LT switch, on the overhead panel, is set at OFF.

J. Functionally Check GPU Overvoltage Protection ([Figure 502](#))

SUBTASK 720-002-A

- (1) Connect a ground electrical cable to the aircraft ([AMM TASK 20-40-02-910-801-A/200](#)).

- WARNING:** • TO PREVENT INJURY TO PERSONS, DO NOT TOUCH THE PITOT/STATIC SENSOR 3 BECAUSE DURING THE TASK IT WILL BECOME HOT.
- THE PITOT/STATIC SENSOR 3 AND ITS INTERNAL TUBES CAN BE HOT IMMEDIATELY AFTER HEATER POWER REMOVAL AND CAN BURN YOUR HAND IF YOU TOUCH THEM.

CAUTION: TO PREVENT DAMAGE, BEFORE YOU DO THE TASK, REMOVE THE PITOT/STATIC SENSOR 3 PROTECTION COVER BECAUSE IT WILL BECOME HOT DURING THE TASK.

- (2) Do the check as follows:
- (a) Set the BATT 1 and BATT 2 switches, on the electrical panel, on the overhead panel, to AUTO.
Result:
1 The EICAS display shows the SHED BUS 1-2 OFF caution messages.
2 The master CAUTION lights flash.
- (b) Push a master CAUTION light.
Result:
1 The master CAUTION lights go off.
- (c) Set the ESSENTIAL POWER pushbutton, on the electrical panel, on the overhead panel, to ON.
Result:
1 The EICAS display shows the DC BUS 1-2 OFF caution messages.
2 The PFDs and MFDs go off.
3 The master CAUTION lights flash.
4 On the EICAS display, the SHED BUS 1-2 OFF caution messages stay in view.
- (d) Push a master CAUTION light.
Result:
1 The master CAUTION lights go off.
- (e) Open access door 113EL (AMM MPP 06-41-01/100).
- (f) Connect the external power plug (GSE 049) to the aircraft receptacle.
- (g) Turn on the Power Supply (GSE 210).
Result:
1 The GPU AVAIL inscription at the GPU pushbutton, on the electrical panel of the overhead panel, comes on.
- (h) Set the GPU pushbutton, on the electrical panel of the overhead panel, to ON.
Result:
1 The GPU AVAIL inscription, on the GPU pushbutton, goes off.
2 On the EICAS display, the SHED BUS 1-2 OFF and DC BUS 1-2 OFF caution messages stay in view.

- 3 The EICAS display shows the ELEC EMERG ABNORMAL caution message.
- 4 The master CAUTION lights flash.
- (i) Push a master CAUTION light.
 Result:
1 The master CAUTION lights go off.
- (j) Slowly increase the Power Supply voltage.
 Result:
1 When the Power Supply voltage reaches 32.0 ± 0.6 V DC, on the EICAS display, the ELEC EMERG ABNORMAL caution message goes out of view.
2 On the EICAS display, the SHED BUS 1-2 OFF and DC BUS 1-2 OFF caution messages stay in view.
- (k) Slowly decrease the Power Supply voltage.
 Result:
1 When the Power Supply voltage reaches a value from 31.2 V DC to 32.5 V DC, the EICAS display shows the ELEC EMERG ABNORMAL caution message.
2 On the EICAS display, the SHED BUS 1-2 OFF and DC BUS 1-2 OFF caution messages stay in view.
3 The master CAUTION lights flash.
- (l) Push a master CAUTION light.
 Result:
1 The master CAUTION lights go off.
- (m) Set the Power Supply to 28.0 ± 0.5 V DC.
- (n) Set the ESSENTIAL POWER pushbutton, on the electrical panel of the overhead panel, to AUTO.
- (o) Set the BATT1 and BATT2 switches, on the electrical panel of the overhead panel, to OFF.
 Result:
1 On the EICAS display, the SHED BUS 1-2 OFF, DC BUS 1-2 OFF and ELEC EMERG ABNORMAL caution messages go out of view.
2 The PFDs and MFDs come on.
- (p) Set the BATT1 and BATT2 SWITCHES, on the electrical panel of the overhead panel, to AUTO.
- (q) Set the GPU pushbutton to OFF.
 Result:
1 The EICAS display shows the SHED BUS 1-2 OFF caution messages.
2 The master CAUTION lights flash.
- (r) Push a master CAUTION light.
 Result:
1 The master CAUTION lights go off.



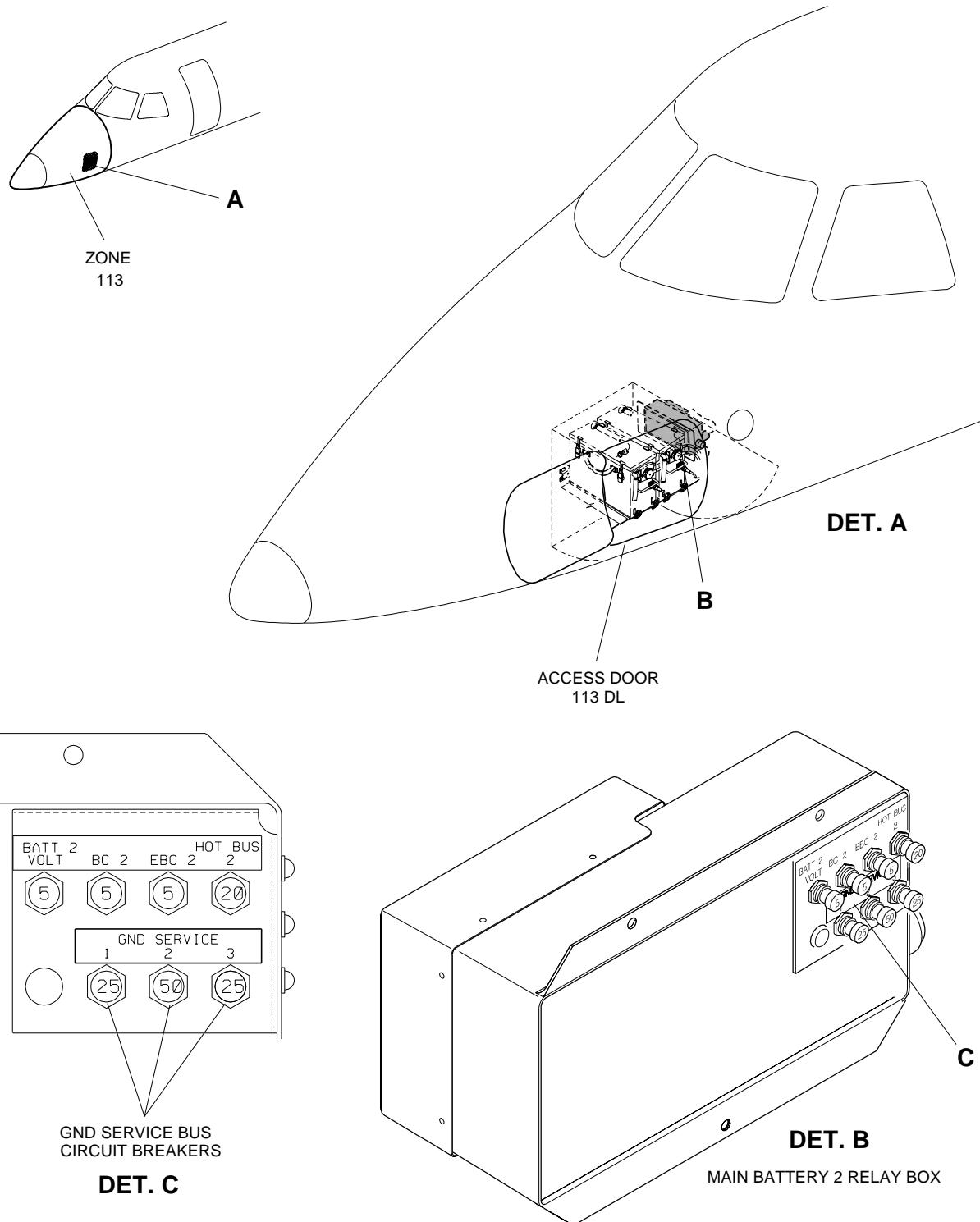
AIRCRAFT
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K. Follow-on ([Figure 501](#)) ([Figure 502](#))

SUBTASK 842-002-A

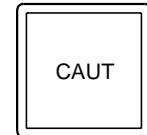
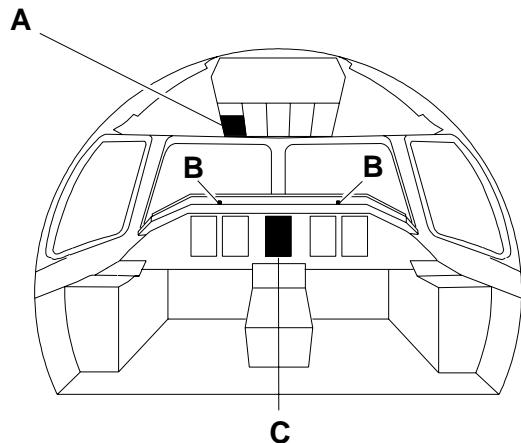
- (1) Disconnect the external power plug to the aircraft receptacle.
- (2) Set the BATT 1 and BATT 2 switches, on the electrical panel of the overhead panel, to OFF.
- (3) Close the GROUND SERVICE 1, 2, and 3 circuit breakers, on the Main Battery 2 Relay Box.
- (4) Close access doors 113DL and 113EL (AMM MPP 06-41-01/100).

EFFECTIVITY: ALL
Ground Service Circuit Breakers
Figure 501

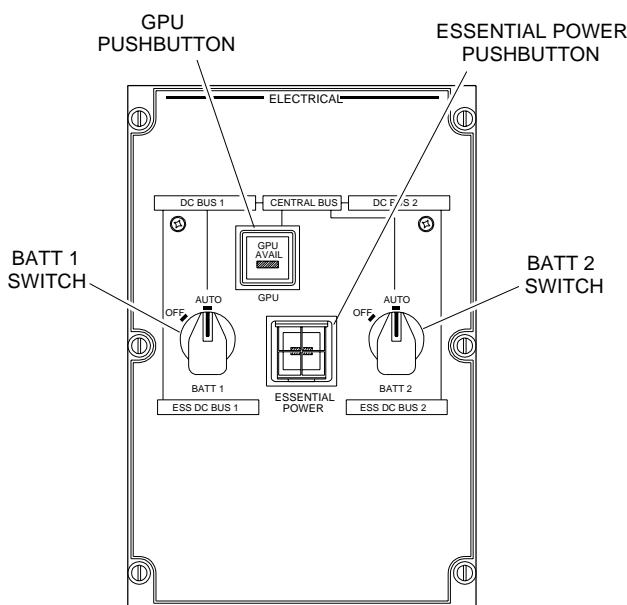


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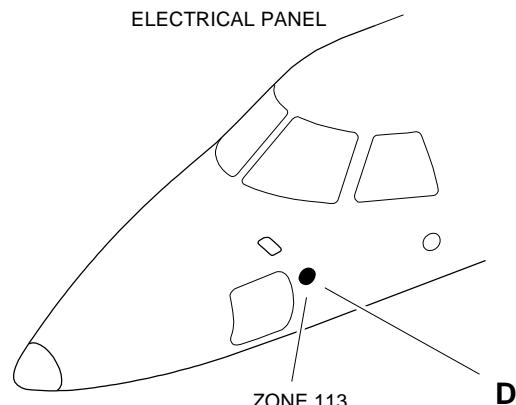
EFFECTIVITY: ALL
GPU Overvoltage Protection Functional Check
Figure 502



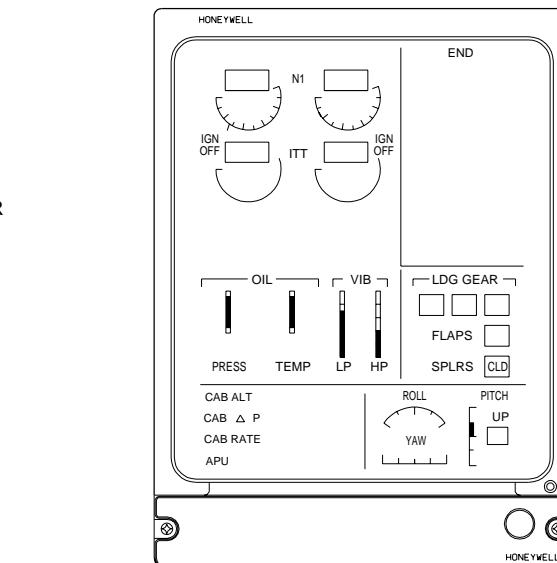
DET. B
MASTER CAUTION
LIGHT



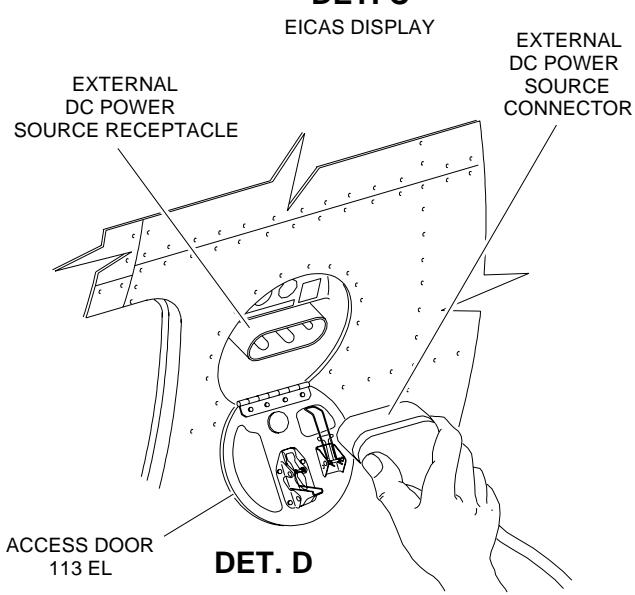
DET. A
ELECTRICAL PANEL



D



DET. C
EICAS DISPLAY



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