KA-01889 McLaren Artura Ancillary High Voltage Component Diagnosis

Document Information

Location: Hybrid/High Voltage

Topic: McLaren Artura Ancillary High Voltage Component Diagnosis

Condition: Permanent

Diagnostic Trouble Codes:

Measure

In the event of a Hybrid fault warning being displayed on the vehicles instrument cluster and it is suspected to be caused by one of the vehicles High Voltage (HV) components, please proceed with the following steps to diagnose the concern.

Care Point: A TR must be raised with detailed description of concern and highlight the intention of following this KA BEFORE proceeding.

All testing in this article has been completed with a Fluke 1587 Insulation Tester.
We advise you use the same multimeter where possible and set it up for testing resistance.
The use of other multimeters can provide different readings when compared to the multimeter used in this article and may delay the review of results provided.

The multimeter must be checked to ensure that it is operating correctly before and after the HV resistance measurements to ensure that the internal fuse is not blown causing incorrect readings. The below instructions are provided for the McLaren approved Fluke 1587 Insulation Multimeter. For other multimeter models please refer to the user manual.
The following steps must be carried out before and after completing the HV resistance measurements:

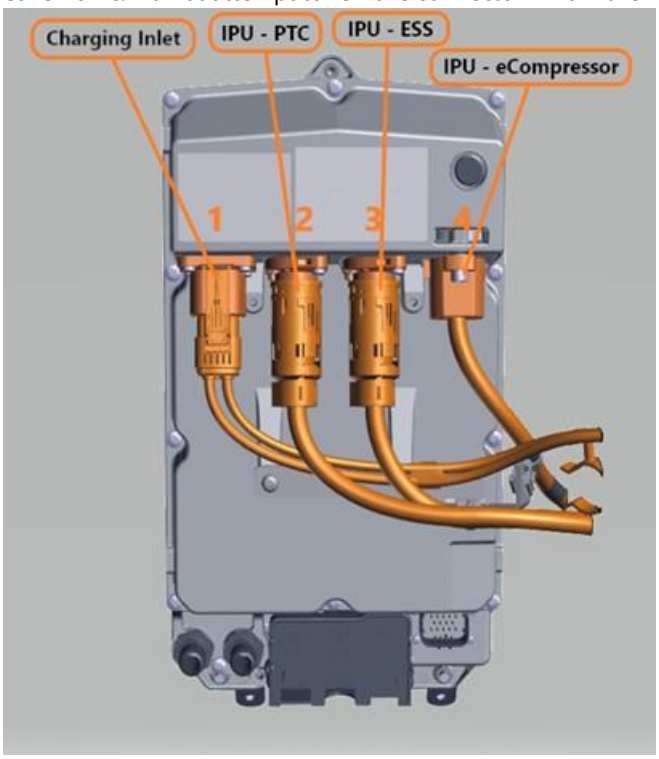
1. Set meter to resistance setting
2. Short the terminals shown below with a test lead (VΩ to mA)
3. “OL” indicates that the fuse has failed and must be replaced before proceeding with the insulation test. Any other resistance reading indicates that the fuse is OK and the insulation test can proceed

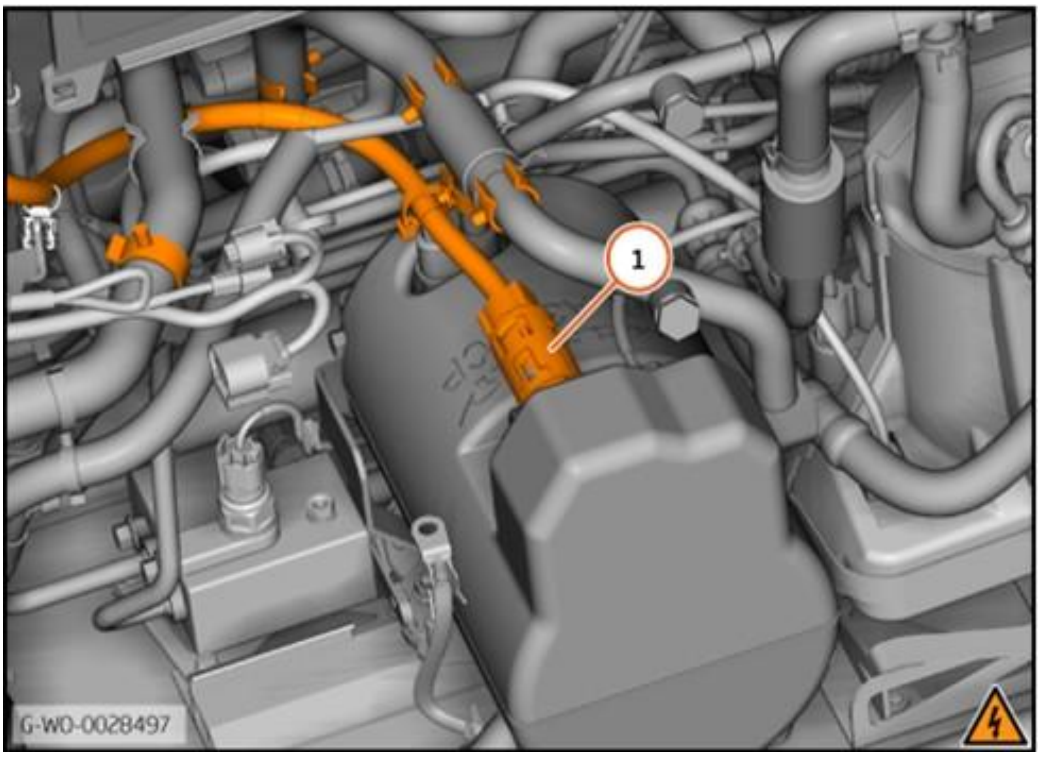
Component Testing

Care Point: Before proceeding to the next steps, ensure the vehicles High Voltage (HV) system has been deactivated following the procedure set out in the McLaren Service Portal (MSP) instructions.

With HV deactivated, disconnect connectors 1-3 of the Integrated Power Unit (IPU) and carry out the following **resistance** measurements of the components. Please download the table and fill in your measured results.

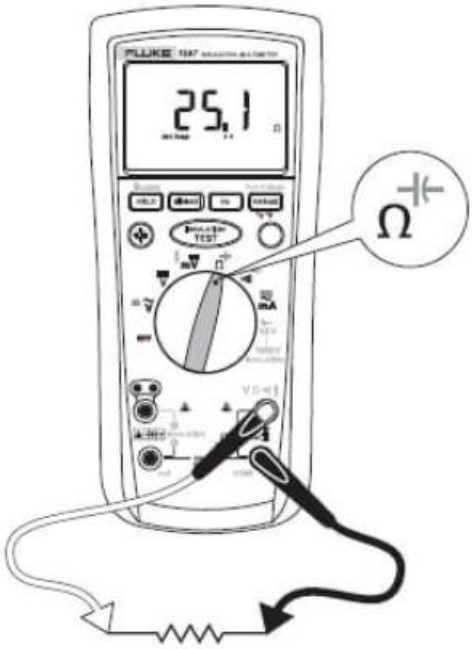
Care Point: Do not attempt to remove connector 4 from the IPU, please disconnect the HV cable on the eCompressor (1)





Set the multimeter in resistance mode (min/max mode off) as per the image and instructions below:

1. Turn the dial to Ω function.
2. Inside the COM jack insert the black lead.
3. Inside the V Ω jack insert the Red lead.



Charging Inlet

Please measure the resistance between pins 1 and 2 of the HV plug on the harness (not IPU) this should read just under 1MΩ.

PTC Heater

Please measure the resistance between pins 1 and 2 of the HV plug on the harness (not IPU), this should be over 300KΩ.
If you find the resistance reading to be low, this would indicate a fault with the PTC heater or the cable between the PTC heater and IPU.
Please gain access to the PTC heater according to the McLaren Service Portal (MSP) instructions HV connector and disconnect the PTC heater.
Repeat the resistance measurement between pins 1 and pin 2 with both ends of the cable disconnected.
If the measurement displayed is “OL”, the cable is OK and the concern lies within the PTC heater.

Please watch the instructional video on how to successfully complete the PTC heater tests and ESS Auxiliary Fuse test.

If a PTC heater short circuit is suspected, please obtain the following information from the customer:

- Did the concern occur when the heating was turned on? If yes, how long after it was turned on did the failure occur? Whattemperature and fan power was the heating set to?
- Was this the first time turning the heating on in some time (i.e. First time after summer)? If yes, approximately how long has itbeen since the heating was turned on last?
- Is this the vehicles first winter since delivery to the customer or has the heating been used frequently before without failure?

ESS Auxiliary Fuse

Please measure the resistance between pins 1 and 2 of the HV plug on the harness (not IPU), this should read above 100KΩ.
This is testing the fuse in the ESS, an open circuit or “OL” would indicate the fuse is blown due to a fault in the HV system.

HVAC eCompressor

Please measure into the eCompressor using suitable pins. Back probe pins have been used and found to provide good results. See images below:

Once a good connection has been established, please measure the resistance between pin 1 to chassis ground, pin 2 to chassis ground and finally between pin 1 and pin 2. Results will be reviewed once submitted.

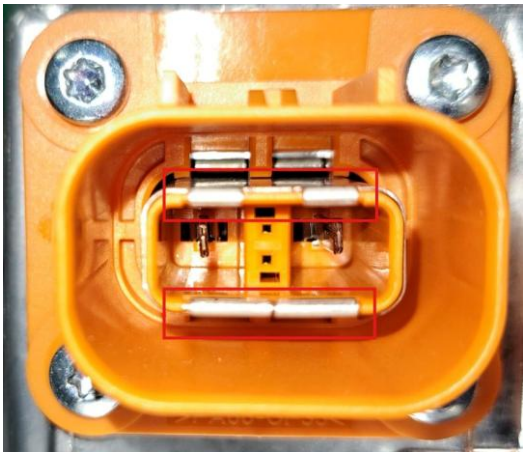
IPU Testing

With the connectors still removed from the IPU, please carry out **resistance** measurements directly into the IPU connections and fill out your measured results.

IPU Connector 1

Using suitable male terminals, measure the resistance between pin 1 and chassis ground, pin 2 and chassis ground and finally measure the resistance between pins 1 and pin 2 (over 100KΩ).

Care Point: Be careful when completing the above measurement not to short the pin to the plug casing as outlined in the image below. It is strongly advised to use suitable male terminals to ensure an accurate measurement.



eCompressor Connector (into connector)

Please complete this measurement into the connector at the eCompressor measuring back into the IPU.
Please measure the resistance between pin 1 and chassis ground (open circuit), pin 2 and chassis ground (open circuit) and finally measure the resistance between pins 1 and pin 2 (very high resistance in the KΩ - MΩ range).

Once all measurements are completed, please update the TR with your findings and attach your completed table to the TR for review.

Parts Information

N/A

Attachments

HV Component Resistance Measurements Table
Artura PTC Heater and Auxiliary Fuse Diagnosis video