

Advisory Wire

REFERENCE NO:	AW300-30-0328	INFORMATION TYPE:	Maintenance Operational
ATA:	30-41	EFFECTIVITY:	Challenger 300 (20003 – 20500) Challenger 350 (20501 – 20999)
SUBJECT:	Windshield Heat Fail CAS Messages		

1. REFERENCES:

- 1.1. AW300-30-0018 Windshield and Side-Window Heater Ground Wire Terminal Loose.
- 1.2. AMM 56-11-01-400-802 Installation of the Windshield.
- 1.3. SPM-MM 20-21-00-910-801 Torqueing of Threaded Fasteners.
- 1.4. SPM-MM 51-80-00-760-801 Electrical Bonding Test.

2. INTRODUCTION:

This Advisory Wire (AW) is to inform operators of potential causes of Windshield Heat Fail CAS messages that can occur in flight or on ground.

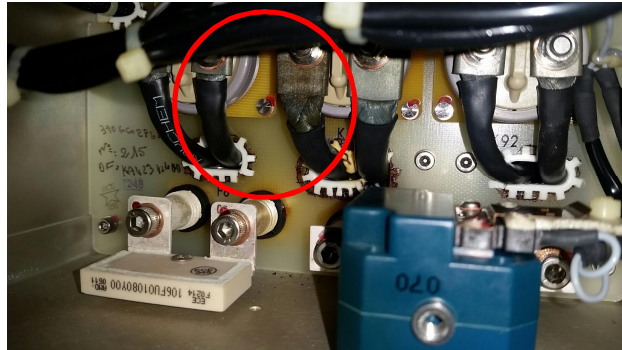
3. DESCRIPTION:

After a recent increase of Windshield Heat Temperature Controllers (WHTCs) being removed for Windshield Heat Fail CAS messages, an investigation was launched by Bombardier and PPG to determine the root cause. The initial investigation revealed that most of the WHTC were either found NFF or showed a failed MOSFET (power supply of the windshield heaters) that was likely caused by a voltage surge or an overcurrent condition.

During the investigation, a series of tests were carried out to find the cause of the voltage surge and overcurrent. The analysis did not reveal any issues with the controller, however it was observed that when any lug in the circuit was under-torqued it would generate a higher current draw on the MOSFETs.

Some operators who experienced the Windshield Heat Fail CAS messages were asked to inspect all connections in the WHTC circuit and report their findings. The observations revealed some anomalies in the circuit. Overheating and/or arcing was observed on the power relays of the Secondary Power Center (SPC), on the lugs and terminal studs of the WHTC, on the terminal blocks and on the windshield connectors.

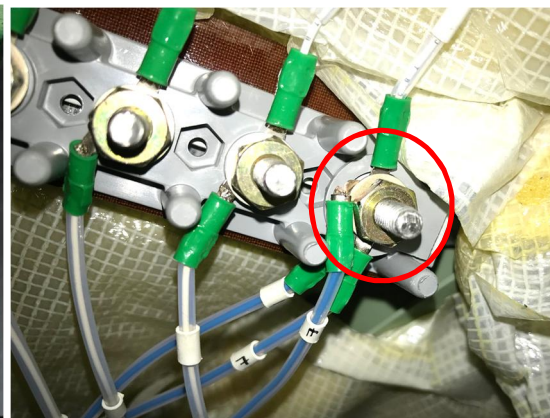
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Sign of overheat on relay of the SPC



Electrical lug and WHTC stud damaged



Sign of overheat on a windshield connector – Terminal lug stressed

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4. ACTION:

In order to determine the root cause of a Windshield Heat Fail CAS message, it is recommended to inspect the electrical connections of the system circuitry as follows (even if the WHTC is confirmed at fault after swapping or replacement):

1. Verify the torque value of the screws on the windshield contacts and the resistance of the windshield sensors and heater elements per ref.1.2.
2. Verify the electrical connections at terminal blocks TB3 and TB4, at ground studs GS2269, GS2270, GS2273 and GS2274 per ref.1.1.
3. Verify the torque of the nuts on the WHTC studs per ref.1.3.
4. Perform the bonding check on the WHTC per ref.1.4.
5. Inspect relays K63/K64, K106/K107 in the SPC for signs of overheat.

While PPG is still investigating failures of the WHTC, Bombardier is evaluating the installation of the system and validating the torque values of the electrical connections.

This AW will be revised as the investigation progresses and new information becomes available.