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Document Information

Vehicles affected: P15 - Senna

Location: Body & BIW - Active Aero

Concern: Airbrake Fault Warning Message on Driver Display

Condition: Permanent

Diagnostic Trouble Codes: TCU - C100B21 Airbrake position 1 signal low, C101022 Airbrake position 2 signal high

Measure

The McLaren Senna is equipped with an active rear wing panel. The wing is suspended from two pylons mounted directly on the rear chassis of the vehicle, these pylons are with an integral kinematic.

The kinematic is driven by a hydraulic ram mounted within the pylon assembly, this enables the kinematic to rock using a central pin to pivot, the pin is with a D shape so can only insert to the kinematic in one position.

The pin is secured to the kinematic using a locking screw only accessible under the pylon with the kinematic in raised position with the wing panel removed.

Motion and position of the kinematic is monitored by the rotation of the pin using a non-contact hall effect sensor mounted at the side of the pylon. The pin is engaging directly into the positions sensor body.

The position sensors are powered with 5V from the TCU and the TCU also provides a ground and receives the sensor's varying voltage output.

Further system description can be found within KA-01024, System Description - Rear Active Aero.

- The position sensor located on the left pylon = xAirbrakePos 1

- The position sensor located on the right pylon = xAirbrakePos 2

If the following error message is displayed in the driver's display, check in the TCU for DTCs.



If C100B21 Airbrake position 1 signal low and/or C101022 Airbrake position 2 signal high are logged, this can be due to the Drive Pin is not inserted into the sensor correctly. As a result the sensor's output will be at 0.00V.

Care Point: It is not necessary to remove the sensors to diagnose the fault.

If this situation is found, remove the Airbrake Rear Wing following the SIS instructions:

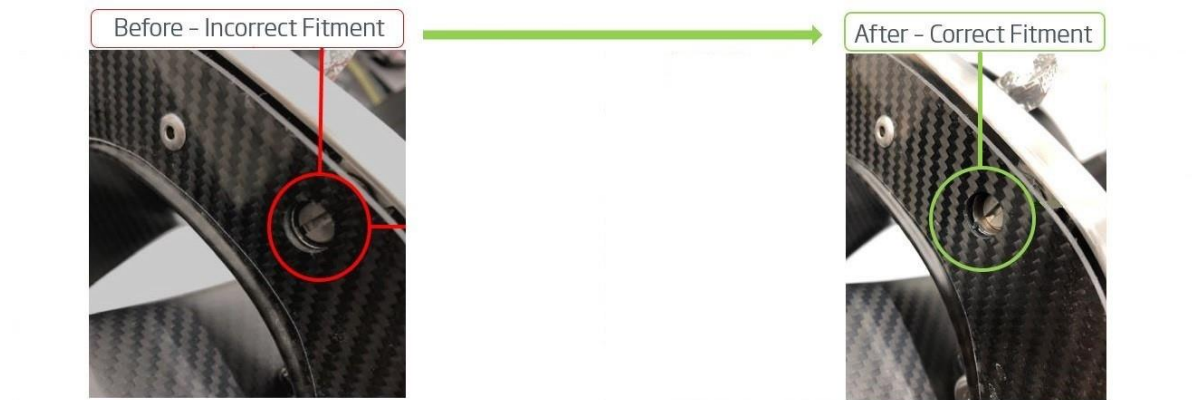
Body Panels and Closures / Active Aero / Rear Active Aero Panels / EA-RM-02A053-03-001 - Remove/Install Panel - Rear Wing

Then, remove the pylon upper aesthetic cover and access to access the airbrake sensors as shown in SIS instructions:

Body Panels and Closures / Active Aero / Rear Active Aero Mechanisms / EA-RM-02A053-04-002 - Remove/Install Position Sensor – Airbrake

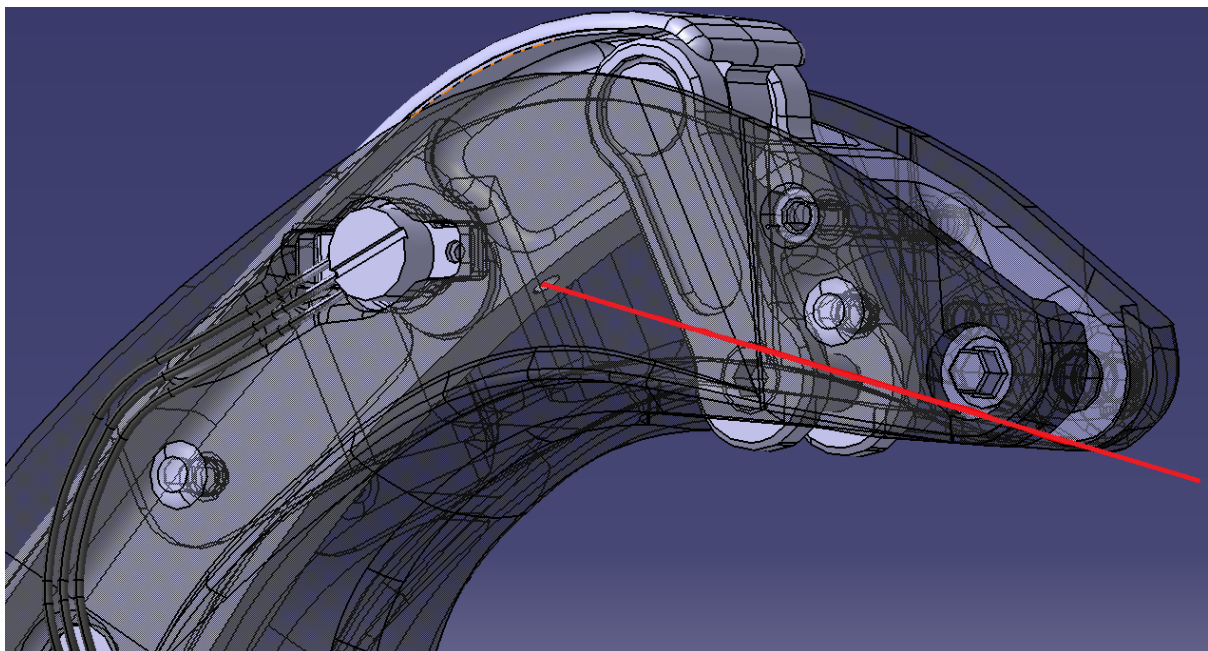
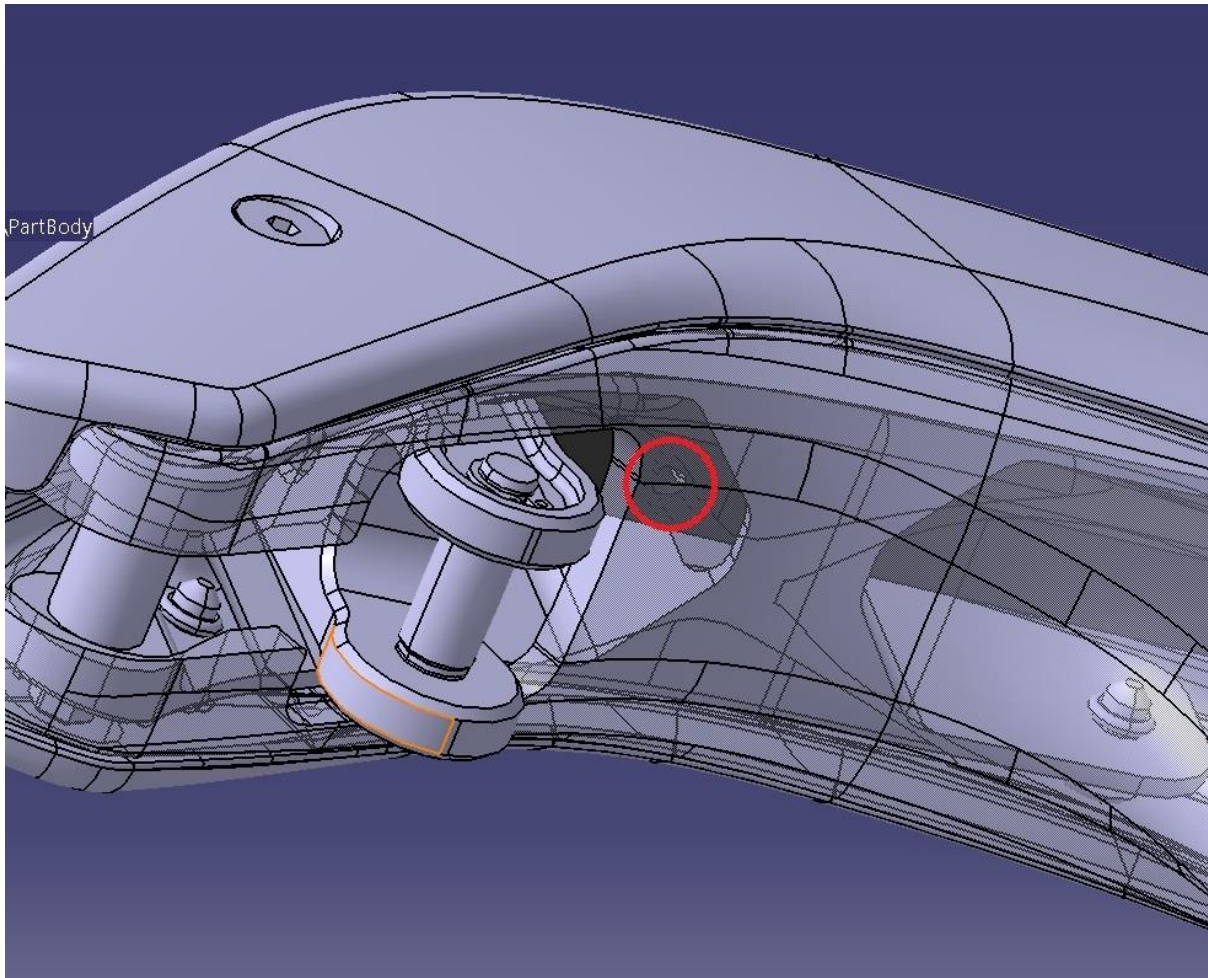
Care Point: Do not remove the airbrake sensors.

Check the fitment of the drive pin, verify the drive pin is inserted deep into the pylon to enter the sensor, the head of the drive pin should be 6.00 to 6.20mm from the side of the pylon.



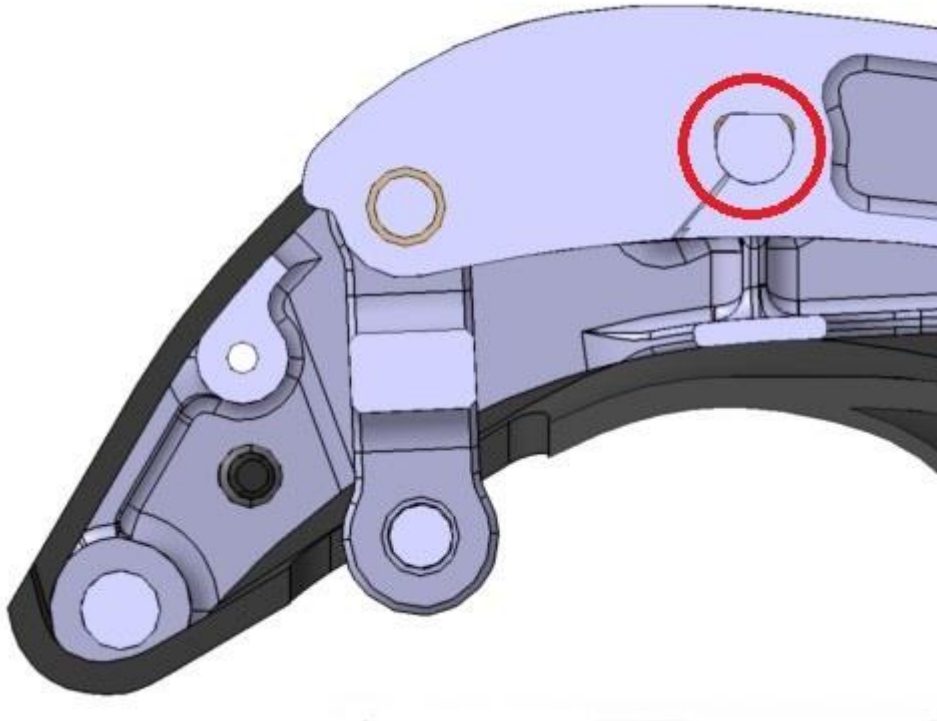
If the drive pin is not inserted to the pylon, it will be necessary to adjust the fitment of the drive pin to the kinematic.

With the kinematic in the raised position it is possible to view from the underside of pylon the locking grub screw.



Release the grub screw from the kinematic and push the drive pin deep into the sensor until the depth of the drive pin head is 6.00mm to 6.20mm from the side of pylon. There should be no reason to remove the sensors.

Care Point: The drive pin is not possible to rotate inside the Kinematic as it is with a D shape, do not attempt to move Kinematic by twisting the drive pin.



Secure the locking grub screw to the kinematic with a small application of Loctite 238 to the threads, tighten the grub screw to 1.6Nm, this will secure the drive pin to the kinematic.





After the drive pin is secured to the kinematic, allow the kinematic to return to the rest position, refit the Rear Wing following the procedure within SIS:

Body Panels and Closures / Active Aero / Rear Active Aero Panels / EA-RM-02A053-03-001 - Remove/Install Panel - Rear Wing

Using the MDS access the TCU actual values and view:

Airbrake_Sensor_Inputs_Read:

xAirbrakePos1 = 0.00

xAirbrakePos2 = 0.00

Take a print of the actual values as a PDF.

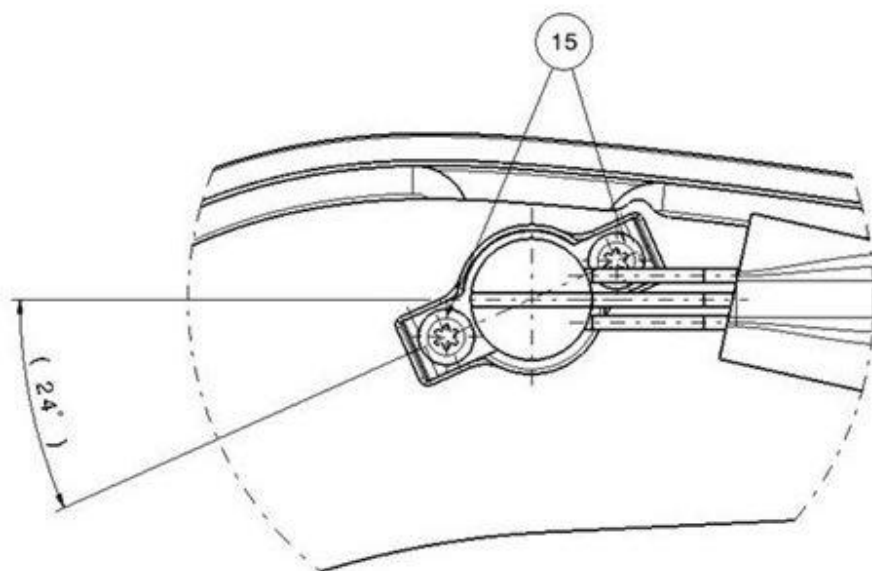
Execute the following sequence:

1. Bleed Airbrake
2. Sleep Car

3. Calibrate Airbrake
4. Sleep Car
5. View Actual values and clear DTC
6. Start engine and verify correct operation of the Rear Wing, confirm no further DTC and Print Actual values.

If the above procedure does not solve the problem or the Airbrake Position sensor was previously removed from the pylon, it will be necessary to align the sensors to give the correct voltage reading.

This is achieved by refitting the sensor to the pylon, with the mounting screws loose the body of the sensor is possible to rotate within its mounting plate.





1. Connect the PCCU/TCU breakout box pt # 11S3639CP, 11S3637CP, 11S3794CP between the vehicle harness and the TCU.

2. Press Start/Stop button until Ignition State 5 is achieved.

3. Ensure the kinematics are in the lowest position.

Left Pylon = Sensor 1 - using a voltmeter connect:

- a) Negative probe = Connector TR001 - Pin 18
- b) Positive probe = Connector TR001 - Pin 45
- c) Rotate sensor until the voltage reading = 2.3V to 2.5V
- d) Tighten sensor mounting plate fixing screws to 1.6Nm.

Right Pylon = Sensor 2 - using a voltmeter connect:

- a) Negative probe = Connector TR001 - Pin 67

- b) Positive probe = Connector TR001 - Pin 96
- c) Rotate sensor until the voltage reading = 2.7V to 2.9V
- d) Tighten sensor mounting plate fixing screws to 1.6Nm.

4. Verify voltages again, turn off ignition, allow car to sleep.

Disconnect breakout box from TCU and vehicle harness, refit the TCU.

Using MDS tester execute the following TCU Sequences:

- 1. Bleed Airbrake
- 2. Sleep Car
- 3. Calibrate Airbrake
- 4. Sleep Car
- 5. Clear DTC, view Actual values, confirm and print to PDF:

Airbrake_Sensor_Inputs_Read

xAirbrakePos1 = 0.00

xAirbrakePos2 = 0.00

Reinstall the pylon upper aesthetic cover.

Warranty Information

The total time that can be claimed for the above repair is 1.00 hour. For any additional time, ensure the breakdown of the time and explanation is recorded in the Job Card.

Cause: Improper fitting

Rectification: Repair

Parts Information

N/A

Attachments

N/A

KA Updates Information

28/02/2019 - Formatting changes

21/04/2021 - Formatting updates

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