Document Information

Location: Chassis / Electrical

Topic: A guide to aid in the diagnosis of the airbrake system

Condition: Intermittent/Permanent

Diagnostic Trouble Codes: C111492, C101B09, C101B92, C101C92, C101A94, P130164, P130464, P122892, P123B64, P123864, C100B21, C101022

Measure

This guide has been designed to assist diagnosis when experiencing an airbrake concern. Due to the systems complexities, a harmonious environment between systems is essential to ensure full functionality.

The following Knowledge Articles have all been created for specific situations and vehicle projects. Please reference all that apply in an attempt to understand and diagnose the concern you are presented with.

- **KA-01003 Permanent Airbrake Warning Message Being Displayed**

12C Coupe, 12C Spider, 625C Coupe, 650S Coupe, 650S Spider, 675LT Coupe, 675LT Spider

PCCU: C111492 - Airbrake Twist

PCCU: C101B09 - Airbrake System Failure

- **KA-01105 Airbrake Warning Message On Driver's Display**

720S Coupe, 720S Spider, 765LT Coupe, 765LT Spider

TCU:

C101B92 Airbrake move time out

C101C92 Airbrake movement implausible

C101A94 Airbrake not holding position

- **KA-01150 Airbrake Panel Handling Method**

720S Coupe, 720S Spider, 765LT Coupe, 765LT Spider

Various DTC's related to the Airbrake system due to air within the system (Twist, Move Out, Sensor Position)

- **KA-01135 Airbrake Contamination Cleaning**

12C Coupe, 12C Spider

C101A94 Airbrake not holding position.
P130164 Clutch 2 cut-off valve failure.
P130464 Cooling pressure fault.
P122892 Clutch 1 overpressure.
P123B64 Line pressure error high.
P123864 Line pressure too low.

- **KA-01229 McLaren Senna (P15) Airbrake Fault Warning Message**

Senna

TCU C100B21 Airbrake position 1 signal low, C101022 Airbrake position 2 signal high

- **KA-01265 Recurring Airbrake Warning Message On Driver's Display**

720S Coupe, 720S Spider, 765LT Coupe, 765LT Spider

TCU:

C101B92 Airbrake move time out

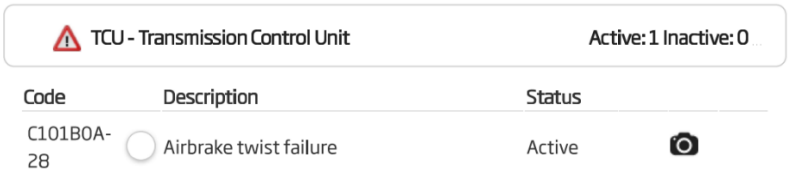
C101C92 Airbrake movement implausible

C101A94 Airbrake not holding position

Care point: The following information has been obtained from a 750s experiencing an airbrake concern. The principles surrounding the diagnostic path can be applied to all projects but MDS value locations may differ

It is crucial that TCU voltage output - in relation to airbrake position - is understood. Airbrake position values alone are not reliable enough to determine and rectify a concern.
The below DTC is an example of when asymmetric operation within the airbrake movement could be suspected as the cause.

1. **DTC's interrogated identifying relative codes.**



2. Airbrake position sensors referenced (fully stowed)

ECU	Signal	Value	Unit
P28_TCU	xAirbrakePos1	0.00000	
P28_TCU	xAirbrakePos2	40.7500	

3. Airbrake position sensors referenced (fully deployed)

ECU	Signal	Value	Unit
P28_TCU	xAirbrakePos1	152.000	
P28_TCU	xAirbrakePos2	140.400	

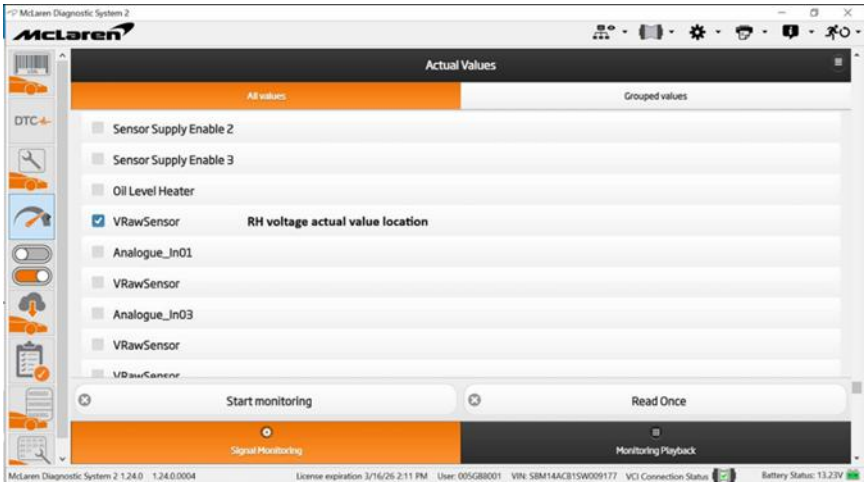
It is known that airbrake position sensors display 152 degrees when fully deployed and 0 degrees when fully stowed, an offset greater than 5 degrees will cause a concern. Instinctively, if you are presented with the above scenario, next actions are to ensure position sensors are operational and aligned with the physical airbrake position.

Position sensor health can be confirmed by removing the sensors from their installation site. Whilst actively monitoring, manually rotate to ensure limit values of 0-152 degrees are achieved. If not plausible, explore reasons for inactivity or behaviour.
Potential reasons for this behaviour are below:

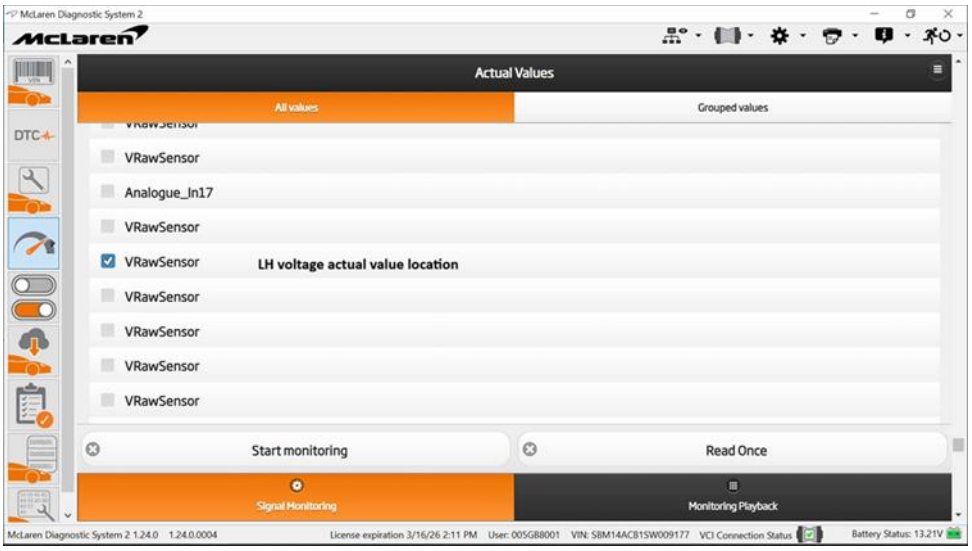
- Irregular 5v sensor supply or an unhealthy grounding path
- Sensor concern - Interchanging of sensors if concern specific to one sensor, allowing for a possible migration to be observed
- Mechanical defect within airbrake assembly

Assuming the above suggestions have no impact, unsuccessful calibration attempts persist or position sensors do not retain plausible limit values, it is advised to review the TCU voltage outputs in relation to position sensor value.

RH sensor voltage actual value location

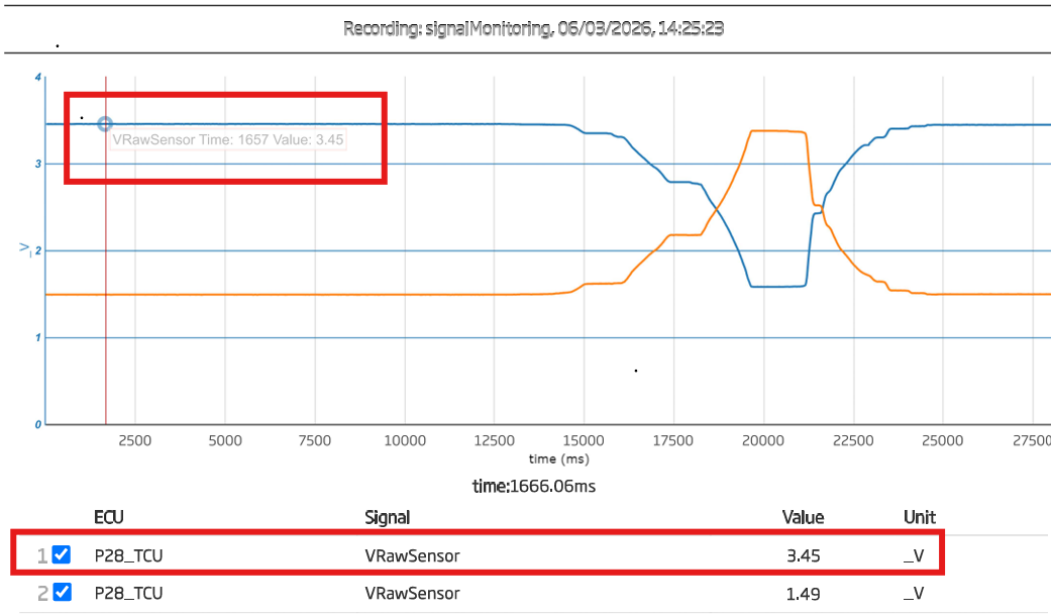


LH sensor voltage actual value location

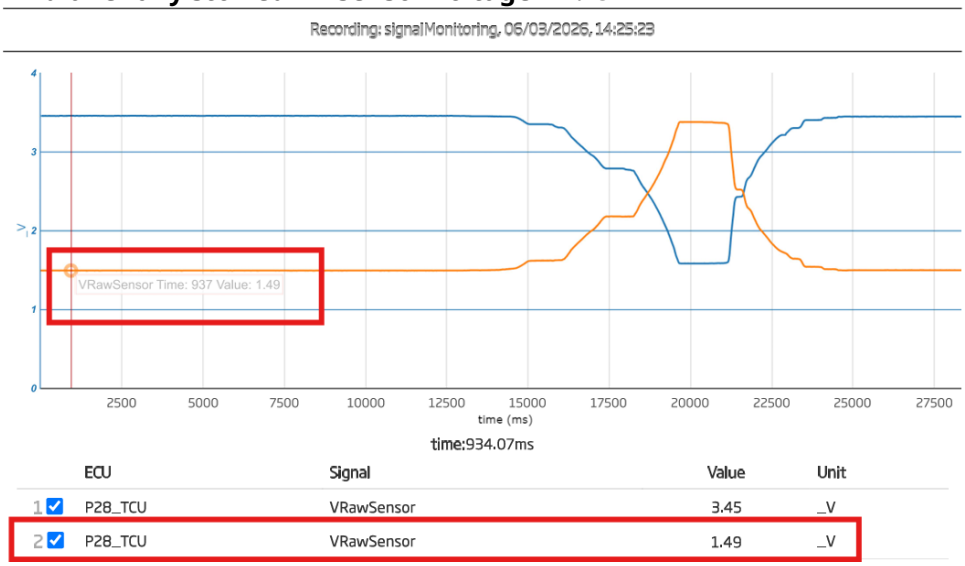


The expected voltage reads should equate to approximately 5v. The following extracts display correct voltage outputs in relation to the airbrake position.

Airbrake fully stowed RH sensor voltage = 3.45v



Airbrake fully stowed LH sensor voltage = 1.49v



On a fully functional system and when the airbrake is raised, the output voltages will be seen to transfer whilst always equating to 5v.
Therefore the below values will be observed:

Airbrake fully deployed RH sensor voltage = 1.49v
Airbrake fully deployed LH sensor voltage = 3.45v

If this behaviour is unusual and not as expected, it is recommended to check the supply voltage as the next action. Confirming directly at the sensor and also the TCU will determine if a volt drop is present within the harness.

Care point: Please reference the latest MSP schematics to determine correct measurement locations

If despite the above information the airbrake continues to exhibit a concern, please submit a Technical Request. Please include a comprehensive issue description ensuring the diagnostic path and results are documented for review.

Parts Information

N/A

Attachments

N/A