

ABS MODULE DTC C0051 STEERING ANGLE CONCERNS WITH THE PSCM - ELECTRICAL

**ABS Module DTC C0051 Steering Angle Concerns With The PSCM - Electrical**

**Pinpoint Test Applicability**

This test applies to electrical concerns with the PSCM resulting in ABS module DTC C006B:xx, ABS module DTC C0051:xx or ABS false activation only.

**DTC Trigger**

ABS module DTCs C006B:xx and C0051:xx set when the comparison between the ABS module steering angle information and the PSCM steering angle information is outside of the expected range. Both mechanical and electrical components may cause this concern.

**Pinpoint Test Purpose**

This pinpoint test checks both the PSCM and the associated electrical wiring which can affect the steering wheel angle comparison between the ABS module and the PSCM.

**Possible Causes**

- PSCM Internal Failure DTCs
- PSCM Network Lost Communication DTCs
- PSCM Network Invalid Data DTCs
- PSCM Voltage DTCs
- Starter, alternator, charging system voltage levels low
- Steering wiring harness, grounds or connectors
- Non-steering wiring harness, grounds or connectors

**NOTICE**

Use the correct probe adapter(s) when taking measurements. Failure to use the correct probe adapter(s) may cause damage to the connector.

**Note:**

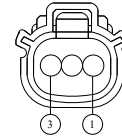
Refer to Wiring Diagrams Cell 43 for schematic and connector information.

**Note:**

Failure to disconnect the battery when instructed results in false resistance readings.

**PSCM-A Connector - C1463A**

Harness Side

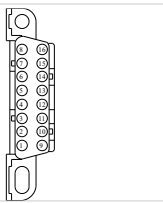


N8112304

Circuit	Pin
HS-CAN2- (High Speed Controller Area Network 2 Low) - V DB26	3(GRAY/BLUE)
HS-CAN2+ (High Speed Controller Area Network 2 High) - VDB25	2(GREEN/ORANGE)

**Data Link Connector (DLC) Connector - C251**

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Harness Side

Circuit	Pin

**AH1 : GUIDED DIAGNOSTIC QUESTION**

- Has pinpoint test AG been carried out?

Yes	No
Go to AH2.	GO to Pinpoint Test AG

**AH2 : VERIFY BATTERY VOLTAGE LEVELS**

- Inspect the battery connections and battery wiring. Refer to Battery, Mounting and Cables.
  - Verify the connections are clean and tight.
  - Verify the connections and cables are free from corrosion, cuts, and other damage.
- Inspect the generator connections and generator wiring. Refer to Generator and Regulator.
  - Verify the connections are clean and tight.
  - Verify the connections and cables are free from corrosion, cuts, and other damage.
- Verify the battery and charging system are providing the correct voltage to the vehicle.
- Are the battery, generator and wiring in good condition, and is the system providing the correct voltage?

Yes	No
Go to AH3.	DIAGNOSE and REPAIR the battery or charging system. REFER to Charging System - General Information. Go to AH3.

**AH3 : RETRIEVE THE PSCM DTCS**

- Ignition ON, engine OFF.
  - Clear the PSCM DTCs.
  - Ignition OFF.
  - Wait at least 90 seconds for all modules to shut down.
  - Ignition ON, engine running.
  - Drive the vehicle, attempt to replicate the customer's driving conditions.
- Carry out the PSCM self-test.
- Does the PSCM respond to the diagnostic scan tool?

Yes	No
Go to AH4.	GO to Pinpoint Test A

**AH4 : CHECK THE PSCM FOR INTERNAL FAULTS OR PROGRAMMING FAULTS**

- Ignition ON, engine running.
- Carry out the PSCM self-test.
- NOTE: This question does not apply to DTCs in history.
- Are any of the following DTCs currently present and active in the PSCM ; C102D, C1B00, C200B, C200C, C200D, P07AE, U2100, U2011, or U3000?

Yes	No
DIAGNOSE the PSCM DTCs .GO to the PSCM DTC Chart.	Go to AH5.

**AH5 : CHECK THE PSCM FOR COMMUNICATION FAULTS OR INVALID DATA FAULTS**

- Using the results from the previous step, determine if any lost communication, invalid data, or voltage DTCs are present in the PSCM.
  - Lost communication DTCs indicate the PSCM is missing messages from another module within a certain expected time frame.
  - Invalid data DTCs indicate the PSCM received messages from another module but the data in the message is outside the expected content.
  - Voltage DTCs indicate the PSCM received voltages outside the expected range.

**PSCM COMMUNICATION AND INVALID DATA DTCS**

Lost Communication DTCs	Invalid Data DTCs	Voltage DTCs	Control Module DTCs
U0100	U0401	B1304	U3001
U0102	U0403	U3003	
U0121	U0415		
U0122	U0422		
U0126	U0423		
U0137	U0428		
U0140	U0447		
U0146	U0452		
U0151	U045A		
U0155	U053B		
U0159	U053C		
U019B	U0553		
U0212	U0554		
U023A			
U023B			
U0252			
U0253			

- Are any of the DTCs from the above table either currently or previously present in the PSCM?

Yes	No
If communication or invalid data DTCs are present in the PSCM without any voltage DTCs, Go to AH10. If ANY voltage DTCs are present in the PSCM, Go to AH6.	Go to AH6.

**AH6 : CHECK THE PSCM FOR VOLTAGE FAULTS**

- Using the results from the previous step, determine if any voltage DTCs are present in the PSCM.
- Is DTC U3001 or U3003 either currently or previously present in the PSCM?

Yes	No
Go to AH7.	The PSCM circuit is working correctly at this time and is not a root cause of the ABS module DTC or steering sensor concern. Go to AH10.

**AH7 : PSCM CIRCUIT VERIFICATION - FUSES**

NOTE: Refer to Wiring Diagrams Cell 43 for schematic and connector information.

- Inspect battery mounted fuse link 2 (125A) and BJB fuse 19 (10A).
  - Make sure both fuses are fully seated.
  - Make sure both fuses are not open.
  - Make sure both fuses are undamaged.

- Are both fuses fully seated, undamaged and not open?

Yes	No
Go to AH8.	REINSTALL or INSTALL new fuses as necessary. Go to AH8.

**AH8 : PSCM CIRCUIT VERIFICATION - POWER WIRING AND CONNECTIONS**

NOTE: Refer to Wiring Diagrams Cell 43 for schematic and connector information.

- Visually check both power wiring and ground wiring for chaffing or pinching on other components.
- Verify the power and ground connections are clean, fully seated or tightened, and free of corrosion.
- Are the power and ground wiring and connections free from damage and correctly seated and tightened?

Yes	No
Go to AH9.	REPAIR or INSTALL new connectors or wiring as necessary. Go to AH9.

**AH9 : PSCM CIRCUIT VERIFICATION - POWER AND GROUND INTERNAL CIRCUIT CHECK**

NOTE: This test verifies whether there is unseen, internal damage to the wiring harness.

- Make sure the front wheels are on the ground and the vehicle is not being supported by other means.
  - Make sure the front tires are clean and dry.
  - Make sure the ground under the front tires is clean and dry.
- Ignition ON, engine running.
- Take the following measurement while turning the steering wheel back and forth, lock to lock, continuously at 1 revolution per second.
- Measure the voltage between:

(+)	(-)
Vehicle Battery Positive terminal	Vehicle Battery Negative terminal

- Access the PSCM and monitor the MOD\_SUP\_V (VOLT) PID.
- Compare the measured battery voltage with the PID display.
- Do the measured battery voltage and the PID display voltage differ by more than 1.5 volts?

Yes	No
INSTALL a new PSCM wiring harness. REPEAT this pinpoint test step to verify the new harness is also free from internal damage. If the communication concerns are still present, Go to AH10. If the voltage concerns are resolved, Go to AH12.	The PSCM power and ground circuits are working correctly at this time and are not root cause of the ABS module DTC. If communication or invalid data DTCs are NOT present in the PSCM, Go to AH12. If communication or invalid data DTCs are present in the PSCM, Go to AH10.

**AH10 : PSCM CIRCUIT VERIFICATION - COMMUNICATION CONNECTIONS**

NOTE: Refer to Wiring Diagrams Cell 43 for schematic and connector information.

NOTE: The PSCM receives messages from other modules through 3 connectors connected to the HS-CAN wiring:

- PSCM connector C1436A at the steering gear carries messages to and from the steering gear.
- In-line connectors C144 and C237 carry messages to and from the vehicle network.

- Ignition OFF.
- PSCM\_A connector disconnected. (C1463A)
- PSCM\_B connector disconnected. (C1436B)
- Disconnect all applicable in-line electrical connectors as indicated above.
- Inspect all disconnected electrical connectors for the following:
  - Pushed-out pins, loose pins, spread terminals, water ingress or corrosion.
  - Missing or loose latches, broken or cracked connector housings.
- Inspect the HS-CAN wiring for:
  - Pinched or cut wiring under brackets, air cleaner boxes, battery trays, engine pulleys, etc.
  - Loose wiring harness anchoring locations in the engine compartment.
- Repair connectors or wiring as required.
- PSCM\_A connector connected. (C1463A) Make sure the connector seats and latches correctly.
- PSCM\_B connector connected. (C1436B) Make sure the connector seats and latches correctly.
- Connect all disconnected, in-line electrical connectors. Make sure the connectors seat and latch correctly.
- Ignition ON, engine OFF.
- Clear the PSCM DTCs.
- Ignition OFF.
- Wait at least 90 seconds for all modules to shut down.
- Ignition ON, engine running.
- Drive the vehicle, attempt to replicate the customer's driving conditions.

Carry out the PSCM self-test.

NOTE: This question does not apply to DTCs in history.

- Are there any lost communication or invalid data DTCs currently present and active in the PSCM?

Yes	No
Go to AH11.	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. Go to AH12.

**AH11 : PSCM CIRCUIT VERIFICATION - COMMUNICATION WIRING**

- Ignition OFF.
- Visually inspect the HS-CAN wiring is not pinched, chaffed, chewed by animals, damaged near or under the battery tray or other nearby components.
- Disconnect the battery negative cable. Refer to the General Procedure, Battery Disconnect in Workshop Manual Section 414-01.
- GWM connector disconnected. (C2431)
- PSCM\_A connector disconnected. (C1463A)
- Measure the resistance between:

(+)	(-)
PSCM_B (C1436B) Connector, Harness Side	GWM (C2431) , Harness Side
HS-CAN2-	HS-CAN2- - VDB26 - Pin 17
HS-CAN2+	HS-CAN2+ - VDB25 - Pin 18

- Measure the resistance between:

(+)	(-)
PSCM_A (C1463A) Connector, Harness Side	GWM (C2431) , Harness Side
HS-CAN2- - V DB26 (GRAY/BLUE) - Pin 3	HS-CAN2- - VDB26 - Pin 17
HS-CAN2+ - VDB25 (GREEN/ORANGE) - Pin 2	HS-CAN2+ - VDB25 - Pin 18

- Is the resistance less than 3 ohms?

Yes	No
The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. Go to AH12.	REPAIR the circuit. Go to AH12.

**AH12 : CHECK FOR ABS MODULE AND PSCM DTCs**

- GWM connector connected. (C2431) Make sure the connector seats and latches correctly.
- PSCM\_A connector connected. (C1463A) Make sure the connector seats and latches correctly.
- Connect the battery negative cable. Refer to the General Procedure, Battery Disconnect in Workshop Manual Section 414-01.
- Ignition ON, engine OFF.
- Clear the PSCM DTCs.
- Ignition OFF.
- Wait at least 90 seconds for all modules to shut down.
- Ignition ON, engine running.

Carry out the ABS self-test.

Carry out the PSCM self-test.

NOTE: This question does not apply to DTCs in history.

- Are any lost communication or invalid data DTCs currently present and active in the PSCM or are any C006B:xx or C0051:xx DTCs currently present and active in the ABS module?

Yes	No
The PSCM wiring harness circuit evaluation is complete and not contributing to the ABS module DTC. GO to the workshop manual section corresponding to the module name in the remaining lost communication or invalid data codes to continue the diagnostics.	The PSCM wiring harness circuit adjustments or repairs have resolved the lost communication, invalid data or ABS module steering angle sensor concerns with the PSCM .