FAILURE DIAGNOSIS

1. In principle, ESP and TCS controls are prohibited in case of ABS failure.
2. When ESP or TCS fails, only the failed system control is prohibited.
3. However, when the solenoid valve relay should be turned off in case of ESP failure, refer to the ABS fail-safe.
4. Information on ABS fail-safe is identical to the fail-safe in systems where ESP is not installed.

Memory of Fail Code

1. It keeps the code as far as the backup lamp power is connected. (O)
2. It keeps the code as far as the HCU power is on. (X)

Failure Checkup

1. Initial checkup is performed immediately after the HECU power on.
2. Valve relay checkup is performed immediately after the IG2 ON.
3. It executes the checkup all the time while the IG2 power is on.

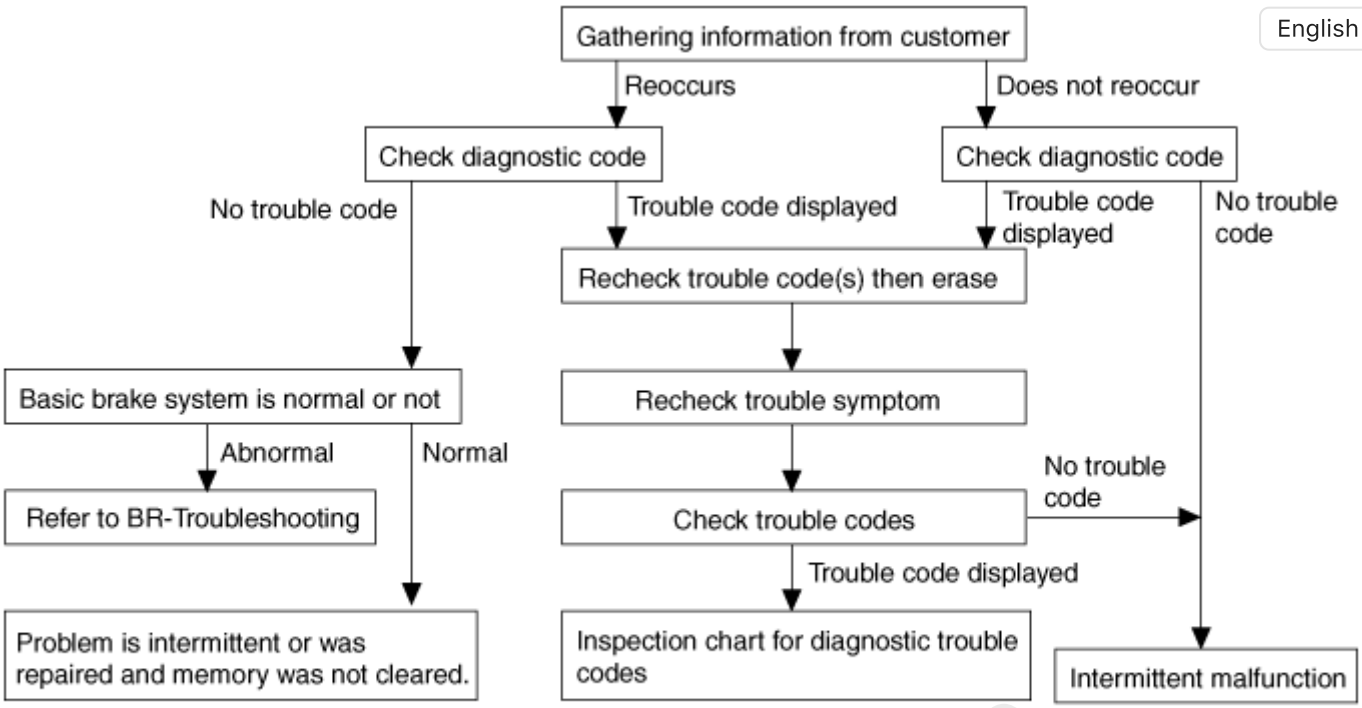
Countermeasures in Fail

1. Turn the system down and perform the following actions and wait for HECU power OFF.
2. Turn the valve relay off.
3. Stop the control during the operation and do not execute any until the normal condition recovers.

Warning Lamp ON

1. ESP warning lamp turn on for 3sec after IGN ON.
2. ESP function lamp blinks when ESP Act.
3. If ESP fail occured, ESP warning turns ON.
4. ESP OFF lamp turn on in case of
   - ESP Switch OFF
   - 3sec after IGN ON

Standard Flow of Diagnostic Troubleshooting



*** Using the customer problem analysis check sheet for reference, ask the customer as much detail as possible about the problem.**

Notes With Regard To Diagnosis

The phenomena listed in the following table are not abnormal.

Condition	Explanation
System check sound	When starting the engine, a thudding sound can sometimes be heard coming from inside the engine compartment. This is because the system operation check is being performed.
ABS operation sound	1) Sound of the motor inside the ABS hydraulic unit operation (whine). 2) Sound is generated along with vibration of the brake pedal (scraping). 3) When ABS operates, sound is generated from the vehicle chassis due to repeated brake application and release (Thump : suspension; squeak: tires)
ABS operation (Long braking distance)	For road surfaces such as snow-covered and gravel roads, the braking distance for vehicles with ABS can sometimes be longer than that for other vehicles. Accordingly, advise the customer to drive safely on such roads by lowering the vehicle speed.
Diagnosis detection conditions can vary depending on the diagnosis code. When checking the trouble symptom after the diagnosis code has been erased, ensure that the requirements listed in "Comment" are met.	

ABS Check Sheet

English

ABS Check Sheet

Inspector's Name _____

Customer's Name		Registration No.	
		Registration Year	/ /
		VIN.	
Date Vehicle Brought In	/ /	Odometer	Km Miles

Date the Problem First Occurred	/ /
Frequency of Occurence of Problem	☐ Continuous ☐ Intermittent (times a day)

Symptoms	☐ ABS does not operate.	
	☐ ABS does not operate efficiently.	☐ Intermittent (times a day)
	ABS Warning Lamp Abnormal	☐ Remains ON ☐ Does not light up

Diagnostic Trouble Code Check	1st Time	☐ Normal Code	☐ Malfunction Code (Code)
	2nd Time	☐ Normal Code	☐ Malfunction Code (Code)

Problem Symptoms Table

Symptom	Suspect Area
ABS does not operate.	Only when 1 - 4 are all normal and the problem is still occurring, replace the HECU. 1) Check the DTC reconfirming that the normal code is output. 2) Power source circuit. 3) Speed sensor circuit. 4) Check the hydraulic circuit for leakage.
ABS does not operate intermittently.	Only when 1 - 4 are all normal and the problem is still occurring, replace the ABS actuator assembly. 1) Check the DTC reconfirming that the normal code is output. 2) Wheel speed sensor circuit. 3) Stop lamp switch circuit. 4) Check the hydraulic circuit for leakage.
Communication with KDS	1) Power source circuit

is not possible. (Communication with any system is not possible)	2) CAN line
Communication with KDS is not possible. (Communication with ABS only is not possible)	1) Power source circuit 2) CAN line 3) HECU
When ignition key is turned ON (engine OFF), the ABS warning lamp does not light up.	1) ABS warning lamp circuit 2) HECU
Even after the engine is started, the ABS warning lamp remains ON.	1) ABS warning lamp circuit 2) HECU

⚠ CAUTION

- During ABS operation, the brake pedal may vibrate or may not be able to be depressed. Such phenomena are due to intermittent changes in hydraulic pressure inside the brake line to prevent the wheels from locking and is not an abnormality.

ABS Does Not Operate.

Detecting condition

Trouble Symptoms	Possible Cause
Brake operation varies depending on driving conditions and road surface conditions, so diagnosis can be difficult. However if a normal DTC is displayed, check the following probable cause. When the problem is still occurring, replace the ESP control module.	– Faulty power source circuit – Faulty wheel speed sensor circuit – Faulty hydraulic circuit for leakage – Faulty HECU

Inspection procedures

DTC Inspection

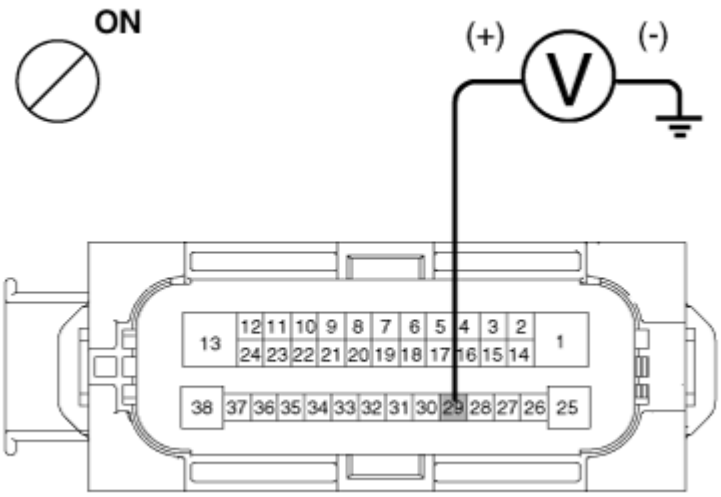
1. Connect the KDS with the data link connector and turn the ignition switch ON.
2. Verify that the DTC code is output.
3. Is the DTC code output?

아니오 ▶ Check the power source circuit.

예 ▶ Erase the DTC and recheck using KDS.

Check the power source circuit

1. Disconnect the connector from the ESP control module.
2. Turn the ignition switch ON, measure the voltage between terminal 29 of the ESP control module harness side connector and body ground.
   Specification: approximately B+

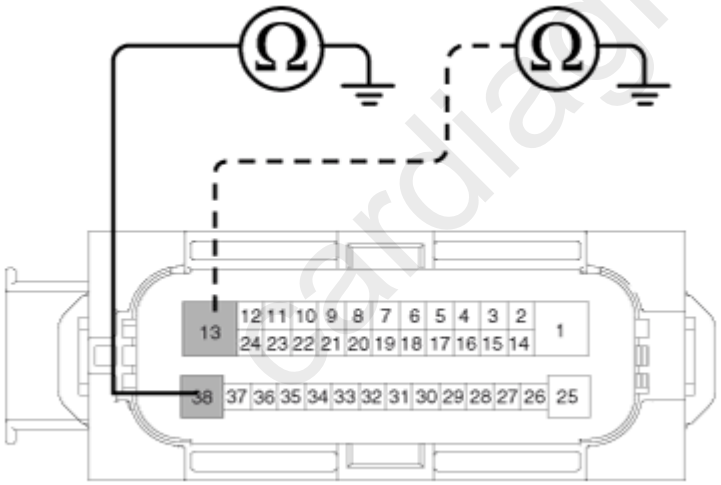


3. Is the voltage within specification?

예	▶ Check the ground circuit.
아니오	▶ Check the harness or connector between the fuse (10A) in the engine compartment junction block and the ESP control module. Repair if necessary.

Check the ground circuit

1. Disconnect the connector from the ESP control module.
2. Check for continuity between terminals 13, 38 of the ESP control module harness side connector and ground point.



3. Is there continuity?

예	▶ Check the wheel speed sensor circuit.
아니오	▶ Repair an open in the wire and ground point.

Check the wheel speed sensor circuit

1. Refer to the DTC troubleshooting procedures.
2. Is it normal?

예	▶ Check the hydraulic circuit for leakage.
아니오	▶ Repair or replace the wheel speed sensor.

Check the hydraulic circuit for leakage

1. Refer to the hydraulic lines.
2. Inspect leakage of the hydraulic lines.
3. Is it normal?

예 ▶ The problem is still occurring, replace the ESP control module.

아니오 ▶ Repair the hydraulic lines for leakage.

ABS Does Not Operate (Intermittently).

Detecting condition

Trouble Symptoms	Possible Cause
Brake operation varies depending on driving conditions and road surface conditions, so diagnosis can be difficult. However if a normal DTC is displayed, check the following probable cause. When the problem is still occurring, replace the ESP control module.	– Faulty power source circuit – Faulty wheel speed sensor circuit – Faulty hydraulic circuit for leakage – Faulty HECU

Inspection procedures

DTC Inspection

1. Connect the KDS with the data link connector and turn the ignition switch ON.
2. Verify that the DTC code is output.
3. Is the DTC code output?

아니오 ▶ Check the wheel speed sensor circuit.

예 ▶ Erase the DTC and recheck using KDS.

Check the wheel speed sensor circuit

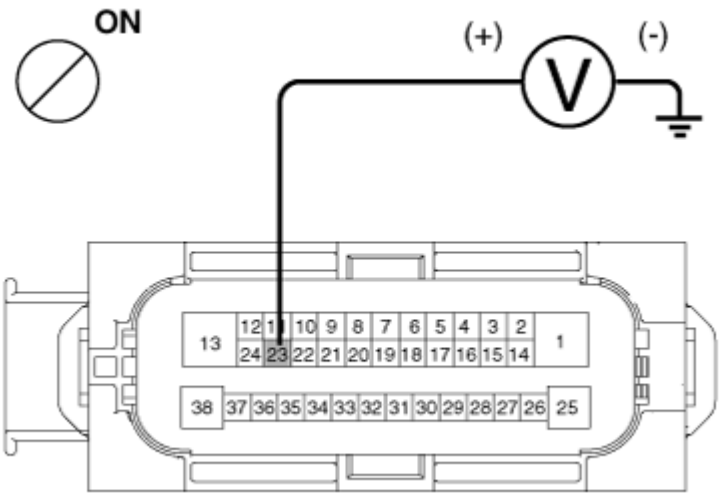
1. Refer to the DTC troubleshooting procedures.
2. Is it normal?

예 ▶ Check the stop lamp switch circuit.

아니오 ▶ Repair or replace the wheel speed sensor.

Check the stop lamp switch circuit

1. Check that stop lamp lights up when brake pedal is depressed and turns off when brake pedal is released.
2. Measure the voltage between terminal 23 of the ESP control module harness side connector and body ground when brake pedal is depressed.
   Specification : approximately B+



3. Is the voltage within specification?

예	▶ Check the hydraulic circuit for leakage.
아니오	▶ Repair the stop lamp switch. Repair an open in the wire between the ESP control module and the stop lamp switch.

Check the hydraulic circuit for leakage

1. Refer to the hydraulic lines.
2. Inspection leakage of the hydraulic lines.
3. Is it normal?

예	▶ The problem is still occurring, replace the ESP control module.
아니오	▶ Repair the hydraulic lines for leakage.

Communication with KDS is not possible.
(Communication with any system is not possible)

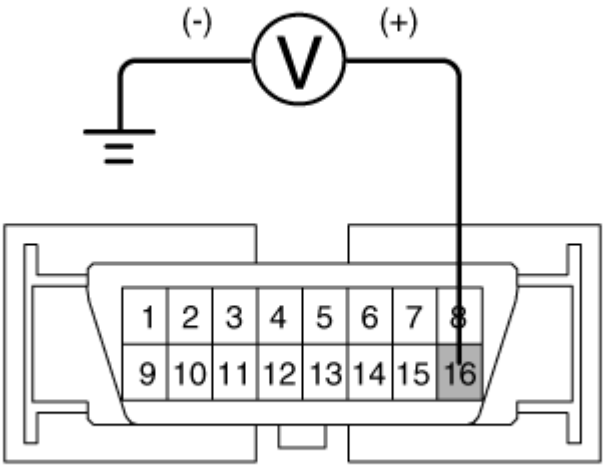
Detecting condition

Trouble Symptoms	Possible Cause
Possible defect in the power supply system (including ground) for the diagnosis line.	– An open in the wire – Poor ground – Faulty power source circuit

Inspection procedures

Check The Power Supply Circuit For The Diagnosis

1. Measure the voltage between terminal 16 of the data link connector and body ground.
   Specification : approximately B+



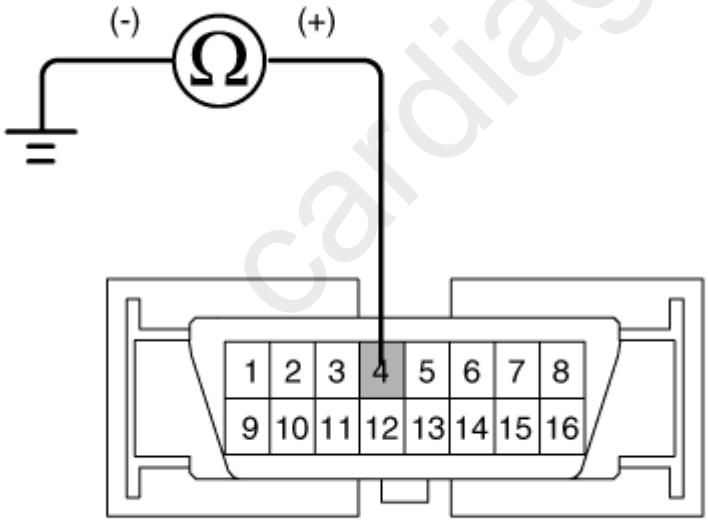
2. Is voltage within specification?

예 ▶ Check the ground circuit for the diagnosis.

아니오 ▶ Repair an open in the wire. Check and replace fuse from the engine compartment junction block.

Check the ground circuit for the diagnosis

1. Check for continuity between terminal 4 of the data link connector and body ground.



2. Is there continuity?

아니오 ▶ Repair an open in the wire between terminal 4 of the data link connector and ground point.

Communication with KDS is not possible.
(Communication with ABS only is not possible)

Detecting condition

Trouble Symptoms	Possible Cause

When communication with KDS is not possible, the cause may be probably an open in the HECU power circuit or an open in the diagnosis output circuit.	– An open in the wire – Faulty HECU – Faulty power source circuit

Inspection procedures

Check for Continuity in the CAN Line

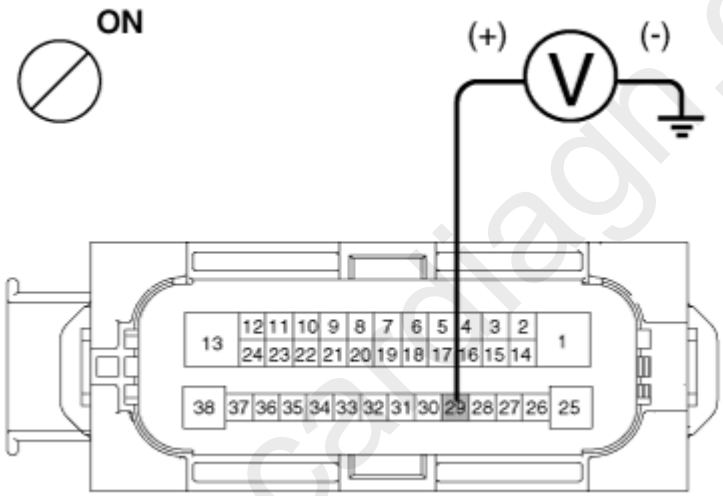
1. Disconnect the connector from the ESP control module.
2. Check for continuity between terminals 26, 14 of the ESP control module connector and 3, 11 of the data link connector.
3. Is there continuity?

예 ▶ Check the power source of ESP control module.

아니오 ▶ Repair an open in the wire.

Check the power source of ESP control module

1. Disconnect the connector from the ESP control module.
2. Turn the ignition switch ON, measure the voltage between terminal 29 of the ESP control module harness side connector and body ground.
   Specification : approximately B+



3. Is voltage within specification?

예 ▶ Check for poor ground.

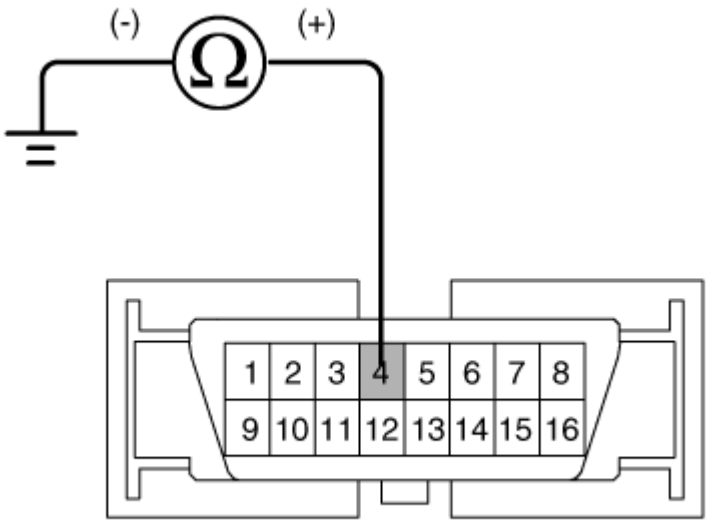
아니오 ▶ Check the harness or connector between the fuse (10A) in the engine compartment junction block and the ESP control module.Repair if necessary.

Check for poor ground

1. Check for continuity between terminal 4 of the data link connector and ground point.

예 ▶ Replace the ESP control module and recheck.

아니오 ▶ Repair an open in the wire or poor ground



When Ignition Key Is Turned ON (engine OFF), The ABS Warning Lamp Does Not Light Up.

Detecting condition

Trouble Symptoms	Possible Cause
When current flows in the HECU the ABS warning lamp turns from ON to OFF as the initial check. Therefore if the lamp does not light up, the cause may be an open in the lamp power supply circuit, a blown bulb, an open in the both circuits between the ABS warning lamp and the HECU, and the faulty HECU.	– Faulty ABS warning lamp bulb – Blown fuse is related to ABS in the engine compartment junction block – Faulty ABS warning lamp module – Faulty HECU

Inspection procedures

Problem verification

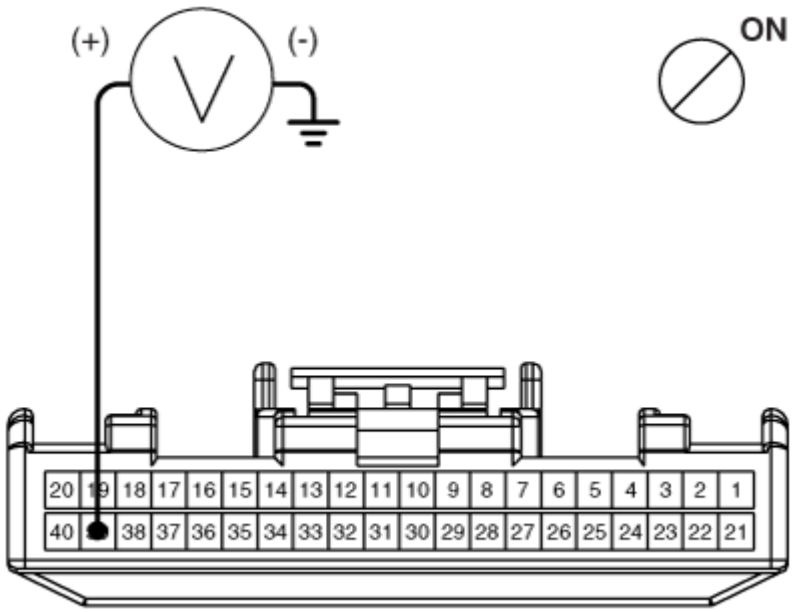
1. Disconnect the connector from the ESP control module and turn the ignition switch ON.
2. Does the ABS warning lamp light up?

예 ▶ Inspectagain after replacing the ESP HECU.

아니오 ▶ Check the power source for the ABS warning lamp.

Check the power source for the ABS warning lamp

1. Disconnect the instrument cluster connector (M08) and turn the ignition switch ON.
2. Measure the voltage between terminal (M08) 39 of the cluster harness side connector and body ground.
   Specification : approximately B+

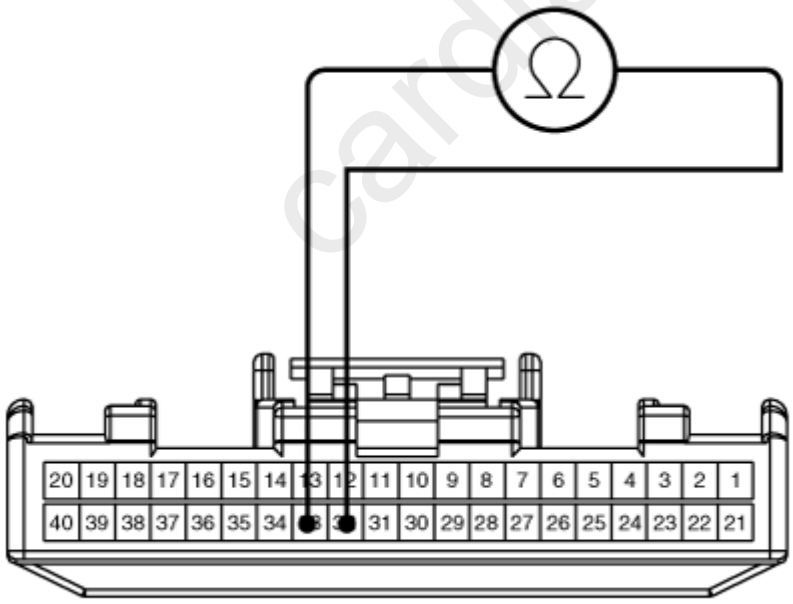


3. Is voltage within specification?

예	▶ Check the CAN circuit resistance for ABS warning lamp.
아니오	▶ Check for blown fuse.

Check the CAN circuit resistance for ABS warning lamp

1. Disconnect the instrument cluster connector (M08) and turn the ignition switch OFF.
2. Measure the resistance between terminal (M08) 32 and 33 of the cluster harness side connector.
   Specification : 60Ω



3. Is resistance within specification?

예	▶ Repair ABS warning lamp bulb or instrument cluster assembly.
아니오	▶ Check the CAN circuit wiring for ABS warning lamp.

Check the CAN circuit wiring for ABS warning lamp

1. Disconnect the instrument cluster connector (M08) and ESP HECU connector, and then turn the ignition switch OFF.
2. Check for continuity between terminal (M08) 32 of the cluster harness side connector and terminal 26 of ESP HECU harness side.
   Check for continuity between terminal (M08) 33 of the cluster harness side connector and terminal 14 of ESP HECU harness side.
   Specification : Below 1Ω
3. Is resistance within specification?

예 ▶ Repair short of wiring between terminal 26, 14 of ESP HECU harness connector and ABS warning lamp module.

아니오 ▶ Repair open of wiring between terminal 26, 14 of ESP HECU harness connector and ABS warning lamp module.

Even After The Engine Is Started, The ABS Warning Lamp Remains ON.

Detecting condition

Trouble Symptoms	Possible Cause
If the HECU detects trouble, it lights the ABS warning lamp while at the same time prohibiting ABS control. At this time, the HECU records a DTC in memory. Even though the normal code is output, the ABS warning lamp remains ON, then the cause may be probably an open or short in the ABS warning lamp circuit.	– An open in the wire – Faulty instrument cluster assembly – Faulty ABS warning lamp module – Faulty HECU

Inspection procedures

Check DTC Output

1. Connect the KDS to the 16P data link connector located behind the driver's side kick panel.
2. Check the DTC output using KDS.
3. Is DTC output?

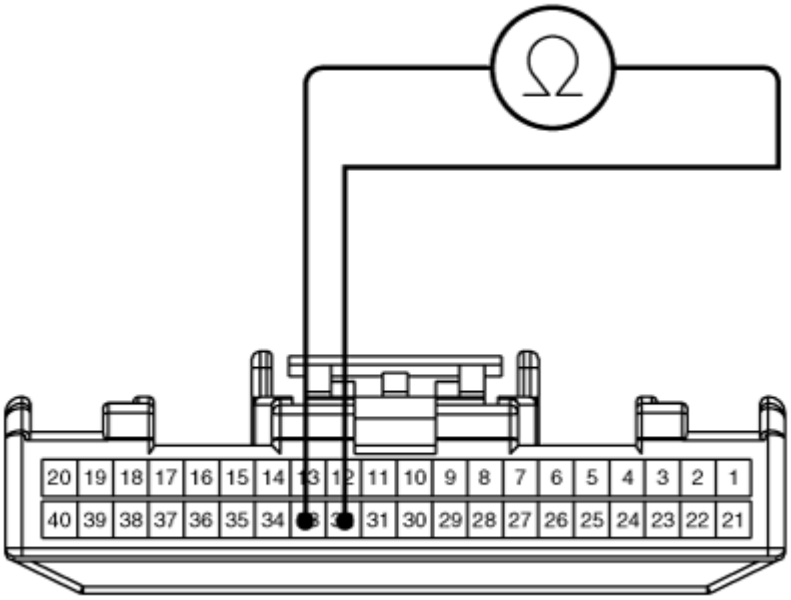
예 ▶ Perform the DTC troubleshooting procedure (Refer to DTC troubleshooting).

아니오 ▶ Check the CAN circuit resistance for ABS warning lamp.

Check the CAN circuit resistance for ABS warning lamp

1. Disconnect the instrument cluster connector (M08) and turn the ignition switch OFF.
2. Measure the resistance between terminal (M08) 32 and 33 of the cluster harness side connector.
   Specification : 60Ω

English



3. Is resistance within specification?

예	▶ Repair ABS warning lamp bulb or instrument cluster assembly.
아니오	▶ Check the CAN circuit wiring for ABS warning lamp.

Check the CAN circuit wiring for ABS warning lamp

1. Disconnect the instrument cluster connector (M08) and ESP HECU connector, and then turn the ignition switch OFF.
2. Check for continuity between terminal (M08) 32 of the cluster harness side connector and terminal 26 of ESP HECU harness side.
   Check for continuity between terminal (M08) 33 of the cluster harness side connector and terminal 14 of ESP HECU harness side.
   Specification : Below 1Ω
3. Is resistance within specification?

예	▶ Repair short of wiring between terminal 26, 14 of ESP HECU harness connector and ABS warning lamp module.
아니오	▶ Repair open of wiring between terminal 26, 14 of ESP HECU harness connector and ABS warning lamp module.

*** Thanks for your cooperation for the more quality. Please surely rate this document before closing.**