

# PRECAUTION

B3E040367650W03

## Vehicles with ABS

1. Any one or a combination of the ABS warning and BRAKE system warning lights illuminates even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD control
Either or both of the following lights illuminate: • ABS warning light • BRAKE system warning light (*1)	When the front wheels are jacked up, stuck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun. Parking brake is not fully released while driving. Brake drag. Sudden acceleration/deceleration. Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)	After turning ignition switch off, vehicle is driven at speed <b>greater than 10 km/h {6.2 mph}</b> and normal operation is confirmed.	• ABS: Cuts control. • EBD: 1. Cuts control, in cases where the light may illuminate, only when ABS CM detects that a wheel speed sensor determines that more than two wheels are malfunctioning. 2. Operates control, if wheel speed sensor determines that more than three wheels are functioning correctly.
Both of the following lights illuminate: • ABS warning light • BRAKE system warning light	Battery voltage at ABS HU/CM ignition terminal AK drops <b>below approx. 8 V.</b> (*2)	Battery voltage rises <b>above approx. 8 V.</b>	ABS: Cuts control. EBD: Cuts control.

\*1 : In cases where the light may illuminate, only when ABS HU/CM detects that a wheel-speed sensor determines that more than two wheels are malfunctioning.

\*2 : If battery voltage drops **below 8 V** while vehicle speed is **greater than 20 km/h {12.4 mph}**, ABS HU/CM records DTC B1318.

## 2. Precautions during servicing of ABS

The ABS is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

### (1) Malfunctions in electrical system

- The ABS hydraulic unit and control module (ABS HU/CM) has an on-board diagnostic function. With this function, the ABS warning light and/or BRAKE system warning light will illuminate when there is a problem in the electrical system. Also, past and present malfunctions are recorded in the ABS HU/CM. This function can find malfunctions that do not occur during periodic inspections. Connect the WDS or equivalent to the DLC-2. The stored malfunctions will be displayed in the order of occurrence. To find out the causes of ABS malfunctions, use these on-board diagnostic results.

- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness. The ABS HU/CM usually operates normally. Be careful

when searching for the cause of malfunction.

- After repair, it is necessary to clear the

DTC from the ABS HU/CM memory. Also, if the ABS related parts have been replaced, verify that the no DTC has been displayed after repairs.

- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the ABS CM (ABS motor or ABS motor relay or solenoid valve), the ABS warning light may not go out (\*) even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure that ABS warning light goes out, and then clear the DTC.

\* The BRAKE system warning light also illuminates when any two wheels malfunction, or battery voltage drops **below 8 V**.

- When repairing, if the ABS related connectors are disconnected and the ignition switch is turned to the ON position, the ABS CM will mistakenly detect a fault and record it as a malfunction.

- To protect the ABS HU/CM, make sure the ignition switch is turned off before connecting or disconnecting the ABS CM connector.

(2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in an ABS component or the conventional brake system.

- The ABS hydraulic unit contains delicate mechanical parts. If foreign material enters into the component, the ABS may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the ABS does not. Make sure foreign material does not enter when servicing the ABS (e.g. brake fluid replacement, pipe removal).

## Vehicles with DSC

1. The ABS warning light and/or BRAKE system warning light and/or DSC indicator light illuminate even when the system is normal.

Warning lights that may illuminate and/or flash	Cases in which the light may illuminate	Conditions in which the light will go out	ABS, EBD, TCS and DSC control
<ul style="list-style-type: none"> <li>• ABS warning light</li> <li>• BRAKE system warning light</li> <li>• DSC indicator light</li> </ul>	When the front wheels are jacked up, struck, or placed on a chassis roller, and only the front wheel ABS wheel speed sensors are spun for <b>60 s or more</b> .	After turning the ignition switch off, vehicle is driven at a speed <b>greater than 10 km/h {6.2 mph}</b> and normal operation is confirmed.	ABS: Cuts control. EBD: Cuts control. TCS: Cuts control. DSC: Cuts control.
	Parking brake is not fully released while driving.		
	Brake drag.		
	Sudden acceleration/deceleration.		
	Left/right or front/rear tires are different. (Size, radius, tire pressure, or wear is other than that listed on tire label.)		
	Battery voltage at DSC HU/CM ignition terminal drops <b>below approx. 8 V</b> .	Battery voltage rises <b>above approx. 8 V</b> .	ABS: Cuts control. EBD: Cuts control. TCS: Cuts control. DSC: Cuts control.

2. Precautions during servicing of DSC. The DSC is composed of electrical and mechanical parts. It is necessary to categorize malfunctions as being either electrical or hydraulic when performing troubleshooting.

(1) Malfunction in electrical system

- The control module has an on-board diagnostic function. With this function, the ABS warning light and/or BRAKE system warning light and/or DSC indicator light will illuminate when there is a problem in the electrical system.

Also, past and present malfunctions are recorded in the control module. This function can find malfunctions that do not occur during periodic inspections. Connect the WDS or equivalent to the DLC-2, then turn the ignition switch to the ON position. As a result, the stored malfunctions will be displayed on the WDS or equivalent in numeric order by connecting DLC-2. To find out the causes of DSC malfunctions, use these on-board diagnostic results.

- If a malfunction occurred in the past but is now normal, the cause is likely a temporary poor connection of the wiring harness.

The control module usually operates normally. Be careful when searching for the cause of malfunction.

- After repair, it is necessary to clear the DTC from the control module memory.

Also, if the DSC related parts have been replaced, verify that the no DTC has been displayed after repairs.

- After repairing the ABS wheel-speed sensor or ABS sensor rotor, or after replacing the control module, the ABS warning light may not go out even when the ignition switch is turned to the ON position. In this case, drive the vehicle at a speed of **10 km/h {6.2 mph} or more**, make sure the ABS warning light goes out, and then clear the DTC.

- When repairing, if the DSC related connectors are disconnected and the ignition switch is turned to the ON position, the control module will mistakenly detect a fault and record it as a malfunction.

### Caution

- In DSC vehicles, when the DSC HU/CM, combined sensor is replaced, perform the initialization procedure for each sensor. (See [COMBINED SENSOR INITIALIZATION PROCEDURE](#).) (See [BRAKE FLUID PRESSURE SENSOR INITIALIZATION PROCEDURE](#).)

- To protect the control module, make sure the ignition switch is turned off before connecting or disconnecting the control module connector.

#### (2) Malfunctions in hydraulic system

- Symptoms in a hydraulic system malfunction are similar to those in a conventional brake malfunction. However, it is necessary to determine if the malfunction is in a DSC component or the conventional brake system.

- The hydraulic unit contains delicate mechanical parts. If foreign material enters the component, the DSC may fail to operate. Also, it will likely become extremely difficult to find the location of the malfunction in the event that the brakes operate but the DSC does not. Make sure foreign materials does not enter when servicing the DSC (e.g. brake fluid replacement, pipe removal).

## Intermittent Concern Troubleshooting

### Vibration method

- If malfunction occurs or becomes worse while driving on a rough road or when engine is vibrating, perform the steps below.

### Note

- There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to inspect are:

- Connectors not fully seated.
- Wiring harness not having full play.
- Wires laying across brackets or moving parts.
- Wires routed too close to hot parts.

- An improperly routed, improperly clamped, or loose wiring harness can cause wiring to become pinched between parts.

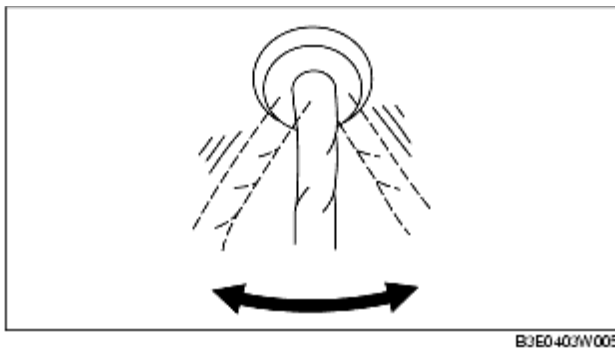
- The connector joints, points of vibration, and places where wiring harness pass through the firewall, body panels, etc. are the major areas to be inspected.

### Inspection method for switch connectors or wiring harnesses

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

### Note

- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
  4. Turn switch on manually.
  5. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



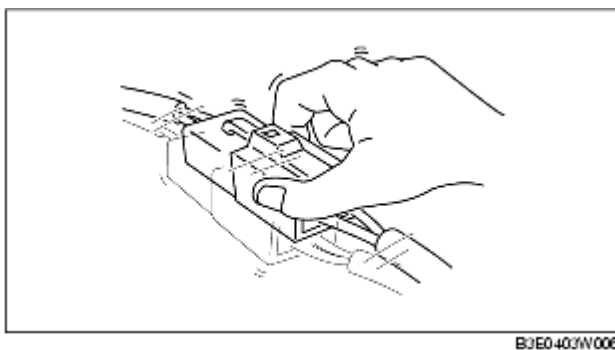
- If the PID value is unstable, inspect poor connection.

### Inspection method for sensor connectors or wiring harnesses

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

### Note

- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
  4. Slightly shake each connector or wiring harness vertically and horizontally while monitoring the PID.



- If the PID value is unstable, inspect poor connection.

### Inspection method for sensors

1. Connect the WDS or equivalent to the DLC-2.
2. Turn the ignition switch to the ON position (Engine OFF).

### Note

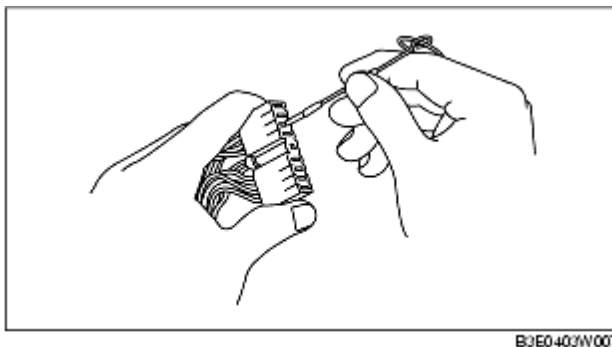
- If engine starts and runs, perform the following steps at idle.
3. Access PIDs for the switch you are inspecting.
  4. Vibrate the sensor slightly with your finger.
    - If the PID value is unstable or malfunction occurs, inspect the sensor for poor connection and/or poor mounting.

### Malfunction data monitor method

1. Perform malfunction reappearance test according to malfunction reappearance mode and malfunction data monitor. The malfunction cause is found in the malfunction data.

### Connector terminal inspection method

1. Inspect the connection condition of each female terminal.
2. Insert the male terminal to the female terminal and Inspect the female terminal for looseness.



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