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2012 MAZDA 5 / Premacy OEM Service and Repair Workshop Manual

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Step	Inspection	Results	Action
11	INSPECT DRIVER-SIDE BUCKLE SWITCH • Inspect the driver-side buckle switch. (See BUCKLE SWITCH INSPECTION.) • Is the driver-side buckle switch normal?	Yes	Go to the next step.
		No	Replace the driver-side front buckle. (See FRONT BUCKLE REMOVAL/INSTALLATION.)
12	INSPECT DRIVER-SIDE BUCKLE SWITCH GROUND CIRCUIT FOR OPEN CIRCUIT • Verify that the driver-side buckle switch connector is disconnected. • Inspect the wiring harness for continuity between driver-side buckle switch terminal 5A (wiring harness-side) and body ground. • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between driver-side buckle switch terminal 5A and body ground. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit.
13	INSPECT SAS CONTROL MODULE CONNECTOR CONDITION • Disconnect the SAS control module connector. • Inspect the connector engagement and connection condition and inspect the terminals for damage, deformation, corrosion, or disconnection. • Is the connector normal?	Yes	Go to the next step.
		No	Repair or replace the connector.
14	INSPECT DRIVER-SIDE BUCKLE SWITCH CIRCUIT FOR SHORT TO POWER SUPPLY • Verify that the driver-side buckle switch and SAS control module connectors are disconnected. • Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.) • Switch the ignition ON (engine off or on). • Measure the voltage at the driver-side buckle switch terminal 5B (wiring harness-side). • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between driver-side buckle switch terminal 5B and SAS control module terminal 2U. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply.

ELECTRIC PARKING BRAKE CANNOT BE RELEASED [ELECTRIC PARKING BRAKE]

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Note

• If it is necessary to move the vehicle as in an emergency, perform the electric parking brake forced release. (See ELECTRIC PARKING BRAKE FORCED RELEASE PROCEDURE.)
• If there is any vehicle malfunction complaint lodged by a customer, perform FOREWORD [ELECTRIC PARKING BRAKE] malfunction diagnosis according to the troubleshooting procedure. (See FOREWORD [ELECTRIC PARKING BRAKE].)

Description

• The electric parking brake cannot be released even though the electric parking brake release operation has been performed.

Possible Cause

• Electric parking brake operation malfunction (if there is a malfunction in electric parking brake, electric parking brake control modul detects DTC)
• Rear brake sticking (rear disc plate is retained even though electric parking brake motor gear unit operates release)

System Wiring Diagram

• Not applicable

Diagnostic Procedure

Step	Inspection	Results	Action
1	VERIFY ALL SYSTEM DTCs • Switch the ignition off. • Switch the ignition ON (engine off or on) and wait for 10 s or more. • Perform a CMDTC self-test using the M-MDS. (See DTC INSPECTION [ELECTRIC PARKING BRAKE CONTROL MODULE].) • Are any DTCs displayed?	Yes	Repair or replace the malfunctioning part according to the applicable DTC troubleshooting. (See DTC TABLE [ELECTRIC PARKING BRAKE CONTROL MODULE].)
		No	Inspect the rear braking for sticking and repair or replace the malfunctioning location. (See REAR BRAKE DISC REMOVAL/INSTALLATION.) (See REAR BRAKE CALIPER DISASSEMBLY/ASSEMBLY.)

PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)]

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1.The ABS warning light and/or brake system warning light and/or TCS/DSC indicator light and/or TCS OFF indicator light (without Off-road traction assist)/Off-road traction assist indicator light (with Off-road traction assist) illuminate even when the system is normal.

Warning lights/Indicator 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
• ABS warning light • Brake system warning light (*1) • TCS/DSC indicator light	Only the front wheels rotate under the following condition while jacked up, stuck, or on the chassis dynamometer: • Detected 8 times for a continuous 20 s while at a vehicle speed of 20 km/h {12 mph} or more. (One detection period is when ignition is switched from ON to off.)	After turning off the ignition once and then restarting the engine, the vehicle is driven at 10km/h {6.2 mph} or more, and then normal operation is verified.	• 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 Q drops below about 9.5 V. (*2)	Battery voltage rises above about 9.5 V.	• ABS: Operates control. • EBD: Operates control. • TCS: Operates control. • DSC: Operates control.
Brake system warning light	Brake fluid amount is low.	Brake fluid level is with in the specification.	• ABS: Operates control. • EBD: Operates control. • TCS: Operates control. • DSC: Operates control.

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

***2:If battery voltage drops below 10 V while vehicle speed is greater than 3 km/h {2 mph}, DSC HU/CM detects DTC U3003:16.**

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

4.Vibrate the sensor slightly with your finger.

- If PID value is unstable or malfunction occurs, check for poor connection and/or poorly mounted sensor.

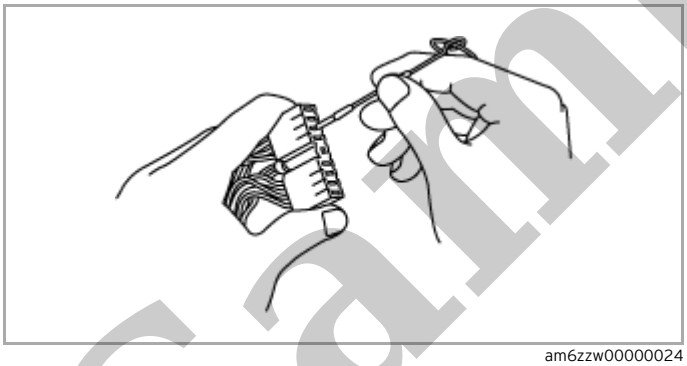
Malfunction data monitor method

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 check method

1.Check the connection condition of each female terminal.

2.Insert male terminal; fit female terminal size to female terminal and check to see whether malfunction is in female terminal or not.



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Short to ground in wiring harness between brake fluid level sensor and front body control module (FBCM)			×					
There is a mechanical malfunction in system				×				
Incorrect ABS wheel-speed signal is inputted to DSC HU/CM		×			×	×		×
There is a difference in size, air pressure or wear conditions between front and rear tires					×	×		×
There is a malfunction in engine control system (TCS malfunction)					×			
Poor installation with SAS control module (yaw rate sensor, low-G sensor)						×		×
DSC HU/CM initial setting has not been performed after replacing DSC HU/CM		×				×		×
Input signal malfunction from electric parking brake control module (electric parking brake switch signal)			×					×
Input signal malfunction from PCM (reverse gear signal)								×
Communication error between DSC HU/CM and front body control module (FBCM)			×					×
Communication error between DSC HU/CM and PCM		×						×
Low-G sensor initialization has not been performed after replacing SAS control module		×					×	×

NO.3 BRAKE SYSTEM WARNING LIGHT STAY ON [DYNAMIC STABILITY CONTROL (DSC)]

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3	Brake system warning lights stay on
POSSIBLE CAUSE	• Brake fluid amount is low. • Electric parking brake does not release. • Electric parking brake switch or brake fluid level sensor stuck on. • Short to ground in following circuit: — Between brake fluid level sensor and front body control module (FBCM) • No connection at DSC HU/CM connector (When DSC HU/CM connector comes off, ABS warning light, brake system warning light, TCS/DSC indicator light, and TCS OFF indicator light (without Off-road traction assist)/Off-road traction assist indicator light (with Off-road traction assist) illuminate.) • DSC HU/CM detected malfunction. (Input and output device malfunction) • DSC HU/CM detects low voltage in power supply. • DSC HU/CM ground malfunction (When DSC HU/CM ground is not securely connected, ABS warning light, brake system warning light, TCS/DSC indicator light, and TCS OFF indicator light (without Off-road traction assist)/Off-road traction assist indicator light (with Off-road traction assist) illuminate but diagnostic trouble code does not display.) • DSC HU/CM does not operate. • Front body control module (FBCM) detected malfunction. • DSC HU/CM internal malfunction • Instrument cluster detected malfunction

Diagnostic procedure

Step	Inspection	Results	Action
1	INSPECT BRAKE FLUID AMOUNT AND VERIFY THAT ELECTRIC PARKING BRAKE RELEASED • Inspect the brake fluid amount and verify that the electric parking brake released. • Is the brake fluid amount normal? • Is the electric parking brake released?	Yes	Go to the next step.
		No	Add the brake fluid or release the electric parking brake. If the brake fluid refilled: • Inspect and repair the brake line for leakage.
2	CONFIRM DSC HU/CM DTC • Retrieve the DSC HU/CM DTC using the M-MDS. (See DTC INSPECTION [DSC HU/CM].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [DSC HU/CM].)
		No	If communication error message is displayed on the M-MDS screen: • Go to the next step. If communication error message is not displayed: • Go to Step 4.
3	INSPECT CONNECTION OF DSC HU/CM CONNECTOR • Inspect for connection of the DSC HU/CM connector. • Is the DSC HU/CM connector connected securely?	Yes	Go to the next step.
		No	Connect the DSC HU/CM connector securely, then go to the next step.

NO.5 ABS OR TCS*1 OPERATES FREQUENTLY/TCS DOES NOT WORK CORRECTLY *1: DSC SYSTEM FUNCTION CONTAINS TRACTION CONTROL FUNCTION, TCS/DSC INDICATOR LIGHT GOES ON AND OFF WHILE TCS OPERATES [DYNAMIC STABILITY CONTROL (DSC)]

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5	ABS or TCS*1 operates frequently TCS does not work correctly *1: DSC system function contains traction control function, TCS/DSC indicator light goes on and off while TCS operates
POSSIBLE CAUSE	• There is a difference in size or air pressure between front and rear tires. • Incorrect ABS wheel-speed signal is inputted to DSC HU/CM. • There is a malfunction in engine control system. (TCS malfunction)

Diagnostic procedure

Step	Inspection	Results	Action
1	CONFIRM DSC HU/CM AND PCM DTC • Retrieve the DSC HU/CM DTC using the M-MDS. (See DTC INSPECTION [DSC HU/CM].) • Retrieve the PCM DTC using the M-MDS, if the traction control function has problem. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [DSC HU/CM].) (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-D 2.2)].) (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)
		No	Go to the next step.
2	INSPECT TIRE SIZE AND AIR PRESSURE • Inspect tire size and air pressure. (See WHEEL AND TIRE SPECIFICATION.) • Are the tire size and air pressure as specified?	Yes	Go to the next step.
		No	Replace with specified tires and adjust tire air pressure. (See WHEEL AND TIRE REMOVAL/INSTALLATION.) (See TIRE PRESSURE ADJUSTMENT.)

Step	Inspection	Results	Action
5 *	INSPECT ABS WHEEL-SPEED SENSOR OUTPUT PULSE • Perform the Sensor Output Value Inspection for each ABS wheel-speed sensor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION [2WD].) (See REAR ABS WHEEL-SPEED SENSOR INSPECTION [AWD].) • Is the output value normal?	Yes	Found malfunctioning part according to the "INTERMITTENT CONCERN TROUBLESHOOTING". (See PRECAUTION [DYNAMIC STABILITY CONTROL (DSC)].
		No	Repair or replace any malfunctioning parts according to the inspection result. (See FRONT ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION.) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION [2WD].) (See REAR ABS WHEEL-SPEED SENSOR REMOVAL/INSTALLATION [AWD].)

• When performing an asterisked (*) troubleshooting inspection, shake the wiring harness and connectors while doing the inspection to discover whether poor contact points are the cause of any intermittent malfunctions. If there is a problem, check to make sure connectors, terminals and wiring harness are connected correctly and undamaged.

Step	Inspection	Results	Action
1	VERIFY DTC FOR RELATED MODULES • Retrieve the DSC HU/CM, PCM, TCM and electric parking brake control module DTC using the M-MDS. (See DTC INSPECTION [DSC HU/CM].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-D 2.2)].) (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (FW6A-EL, FW6AX-EL)].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [TCM (GW6A-EL, GW6AX-EL)].) (See DTC INSPECTION [ELECTRIC PARKING BRAKE CONTROL MODULE].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [DSC HU/CM].) (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) (See DTC TABLE [PCM (SKYACTIV-D 2.2)].) (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (FW6A-EL, FW6AX-EL)].) (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [TCM (GW6A-EL, GW6AX-EL)].) (See DTC TABLE [ELECTRIC PARKING BRAKE CONTROL MODULE].)
		No	Go to the next step.
2	VERIFY IF FALSE DETECTION OF INCLINATION ANGLE CAUSED BY MALFUNCTIONING SAS CONTROL MODULE INSTALLATION • Inspect the SAS control module installation condition for the following: — Is the module installed with any twisting? — Is the module installed correctly?	Yes	Go to the next step.
		No	Repair the SAS control module installation condition. (See SAS CONTROL MODULE REMOVAL/INSTALLATION [STANDARD DEPLOYMENT CONTROL SYSTEM - MEXICO SPEC.].) (See SAS CONTROL MODULE REMOVAL/INSTALLATION [TWO-STEP DEPLOYMENT CONTROL SYSTEM - US/CANADA/ISRAEL SPEC.].)
3	VERIFY IF MALFUNCTION CAUSED BY INITIALIZATION PROCEDURE FOR LOW-G SENSOR NOT PERFORMED • Verify if malfunction caused by initialization procedure for low-G sensor not performed. • Has the initialization for the low-G sensor been performed after replacing the DSC HU/CM and the SAS control module?	Yes	Go to the next step.
		No	Perform the initialization procedure. (See DSC RELATED PARTS SENSOR INITIALIZATION PROCEDURE.)