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Caution

- When performing configuration, it is necessary to read the coupling component calibration data from the AWD control module before replacing it. Connect the M-MDS to the vehicle and perform vehicle identification before removing the AWD control module. The coupling component calibration data is temporarily stored in the M-MDS.

1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the initial screen of the M-MDS.
 1. Select "Module Programming".
 2. Select "Programmable Module Installation".
3. Then, select the following from the screen menu.
 1. Select "4X4M".
4. Perform the configuration according to the directions on the screen.

Caution

- When the configuration is performed, CAN communication between the AWD control module and control module connected to the CAN line is cut temporarily, and communication error DTCs may be detected. After performing the configuration, verify the DTCs for the control module connected to the CAN line and clear it if any DTC is detected.
5. Verify all the DTCs for the control module connected to the CAN line.
 - If any DTC is stored, clear it.
 - If the DTC is cleared, finish the procedure because the configuration is completely normally.
 - If the DTC remains, perform troubleshooting according to the DTC.

■ AWD CONTROL MODULE INSPECTION

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Note

- AWD CM terminal voltage can vary depending on measuring conditions and vehicle aging, resulting in misdiagnosis. Therefore, it is necessary to perform an overall inspection of the input/output systems and AWD CM to determine which part is malfunctioning.

- With the AWD CM connector connected, measure voltage by connecting the voltmeter negative (-) lead to the body ground and positive (+) lead to each AWD CM terminal.

1. Measure voltage or resistance at each AWD CM terminal using a voltmeter and an ohmmeter.

- If not as specified, replace the AWD CM.

Terminal Voltage List (Reference)



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Terminal	Signal	Input / output	Connected to	Measuring item	Test condition		Voltage (V)/ Continuity	Inspection location in case of failure
A	Differential oil temperature sensor signal	Input	Differential oil temperature sensor	Voltage	Ignition key ON (engine off or on)	Differential oil temperature	3.0	<ul style="list-style-type: none">• Inspect differential oil temperature sensor• Inspect related harness
						20°C {68°F}		
						Differential oil temperature	1.3	

						re 60°C {140°F}		
B	—	—	—	—	—	—	—	—
C	Differential oil temperature sensor GND	—	Differential oil temperature sensor	Continuity	Any condition		Yes	• Inspect related harness
D	—	—	—	—	—	—	—	—
E	—	—	—	—	—	—	—	—
F	—	—	—	—	—	—	—	—
G	CAN_H	Input / output	—	Perform measurement during DTC inspection.				—
H	CAN_L	Input / output	—	Perform measurement during DTC inspection.				—
I	Power supply (Ignition switch)	Input	Ignition key	Voltage	Ignition key ON (engine off or on)		B+	
					Ignition key OFF			1.0 or below

J	—	—	—	—	—	—	—	—
K	Power supply (Main)	Input	Battery	Voltage	Any condition	B+	<ul style="list-style-type: none"> • Inspect fuse • Inspect related harness 	
L	—	—	—	—	—	—	—	—
M	—	—	—	—	—	—	—	—
N	Ground	—	Ground	Voltage	Any condition	0	<ul style="list-style-type: none"> • Inspect related harness 	
O	AWD solenoid (+)	Output	AWD solenoid	Voltage	Ignition key ON (engine off or on)	B+		
					Ignition key OFF		1.0 or below	
P	AWD solenoid (-)	Output	AWD solenoid	Voltage	Ignition key ON (engine off or on)	B+		
					Ignition key OFF		1.0 or below	

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Caution

- When performing configuration, it is necessary to read the coupling component calibration data from the AWD control module before replacing it. Connect the M-MDS to the vehicle and perform vehicle identification before removing the AWD control module. The coupling component calibration data is temporarily stored in the M-MDS.
- If the configuration was not performed after replacing with a new AWD control module, the following conditions can be considered as occurring because the coupling component calibration data was not recorded in the AWD control module.
 - System does not operate normally.
 - Problem with coupling component durability may occur.

Note

- The AWD control module prior to replacement stores the coupling component calibration data.
- The characteristic value of the coupling component is not stored in the new AWD control module.
- If coupling component calibration data from the AWD control module prior to replacement cannot be read, perform the coupling component calibration data writing. (See COUPLING COMPONENT CALIBRATION DATA WRITING.)

1. When replacing the AWD control module, perform the configuration. (See AWD CONTROL MODULE CONFIGURATION.)

2. Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

3. Remove the front scuff plate (RH). (See FRONT SCUFF PLATE REMOVAL/INSTALLATION.)

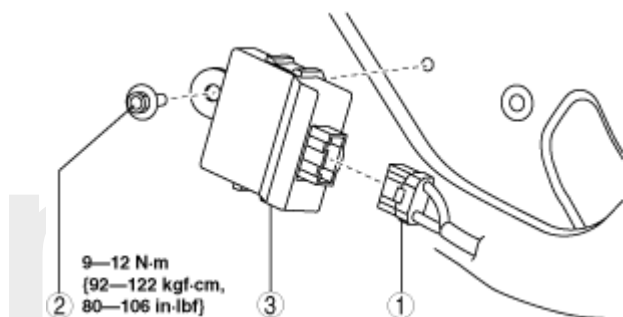
4. Remove the front side trim (RH). (See FRONT SIDE TRIM REMOVAL/INSTALLATION.)

5. Remove in the order indicated in the table.

6. Install in the reverse order of removal.

Note

- If configuration cannot be performed by reading/writing of the coupling component calibration data, perform the coupling component calibration data writing. (See COUPLING COMPONENT CALIBRATION DATA WRITING.)

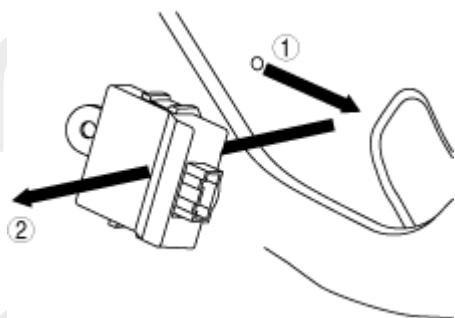


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1	Connector
2	Bolt
3	AWD control module (See AWD Control Module Removal Note.)

AWD Control Module Removal Note

1. Slide the AWD control module toward the connector, and remove it.



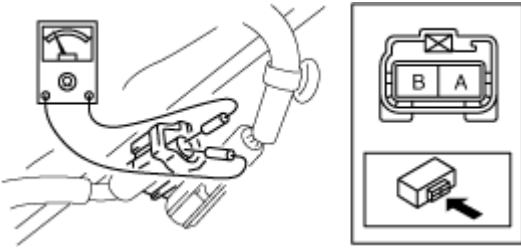
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■ AWD SOLENOID INSPECTION

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1. Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)
2. Disconnect the AWD solenoid connector.
3. Measure resistance between AWD solenoid connector terminals A and B.



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- If the resistance is not within the specification, replace the coupling unit.

AWD solenoid resistance

2.2—2.7 ohms

(Rear differential oil temperature at 20°C {68°F})

4. Connect the AWD solenoid connector.
5. Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

■ COUPLING COMPONENT CALIBRATION DATA WRITING

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1. Connect the M-MDS to the DLC-2.
2. After the vehicle is identified, select the following items from the toolbox of the M-MDS.
 1. Select "Chassis".
3. Then, select items from the screen menu in the following order.
 1. Select "4WD/AWD".
 2. Select "Coupling Calibration Data Writing".
4. Perform the Coupling calibration data writing according to the directions on the screen.
5. Verify all the DTCs for the control module connected to the CAN line.
 - If any DTC is stored, clear it.
 - If the DTC is cleared, finish the procedure because the configuration is completely normally.
 - If the DTC remains, perform troubleshooting according to the DTC.

■ COUPLING COMPONENT REMOVAL/INSTALLATION

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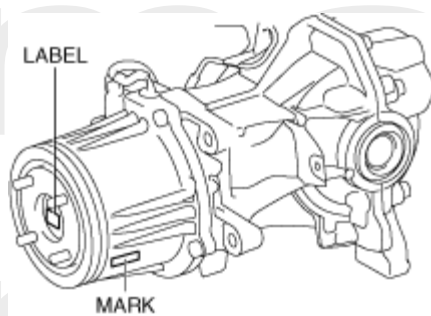
Oil and Chemical Type

Sealant

Type: TB1217C or equivalent

Caution

- If the characteristic value of a new coupling component is not input to the AWD control module or the characteristic value is input incorrectly after replacing the coupling component, it could result in the following conditions:
 - The system does not operate normally.
 - A problem with durability of the coupling component occurs.
- After replacing the coupling component, read out the characteristic value of a new coupling component and write it to the AWD control module. (See COUPLING COMPONENT CALIBRATION DATA WRITING.)
- Read out the characteristic value of the coupling component from the label or mark shown in the figure.



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Note

- The AWD control module stores the characteristic value of the coupling component before replacement.
- If the characteristic value of a new coupling component is not written, the AWD control module does not store the value.

1.Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

2.Drain the rear differential oil into a container.

3.Remove the following parts:

(1)Floor under cover No.1 (See FLOOR UNDER COVER REMOVAL/INSTALLATION.) (2)Floor under cover No.2 (See FLOOR UNDER COVER REMOVAL/INSTALLATION.) (3)Insulator (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) (4)Tunnel member (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) (5)Brace bar (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)

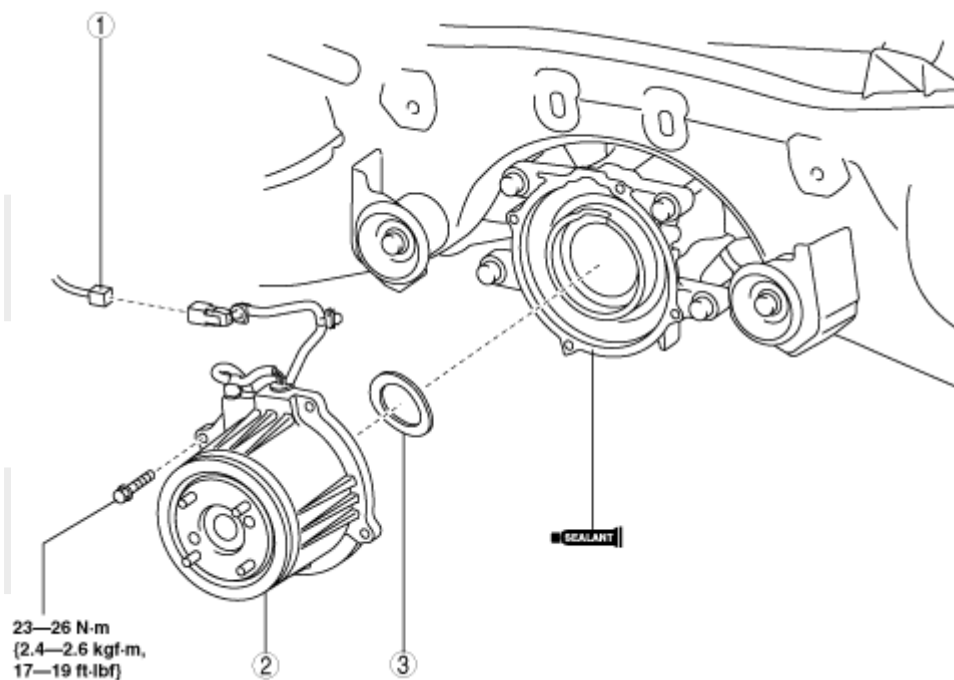
4.Remove the propeller shaft. (See PROPELLER SHAFT REMOVAL/INSTALLATION.)

5.Remove in the order indicated in the table.

6.Install in the reverse order of removal.

7.Add rear differential oil. (See DIFFERENTIAL OIL REPLACEMENT.)

8.If the coupling component is replaced, write the characteristic value of a new coupling component to the AWD control module. (See COUPLING COMPONENT CALIBRATION DATA WRITING.)

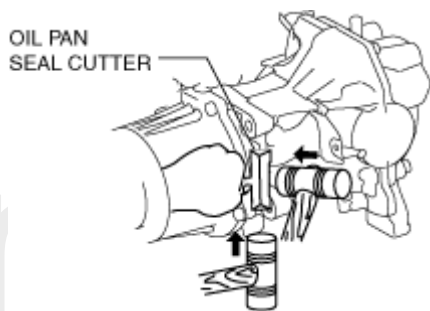


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1	AWD solenoid connector
2	Coupling component (See Coupling Component Removal Note.) (See Coupling Component Installation Note.)
3	Washer

Coupling Component Removal Note

- 1.Support the coupling unit with a transmission jack.
- 2.Cut away the coupling unit using an oil pan seal cutter.



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Coupling Component Installation Note

Note

- Clean away the remaining silicone sealant before applying new silicone sealant.
- Install the coupling component before the applied silicone sealant starts to harden.
- Add rear differential oil after the silicone sealant hardens.

1. Apply a thin layer of silicone sealant (TB1217C or equivalent) to the contact surfaces of the coupling component and the rear differential.

2. Install the coupling component to the differential.

Tightening torque

23—26 N·m {2.4—2.6 kgf·m, 17—19 ft·lbf}

■ DIFFERENTIAL OIL TEMPERATURE SENSOR INSPECTION

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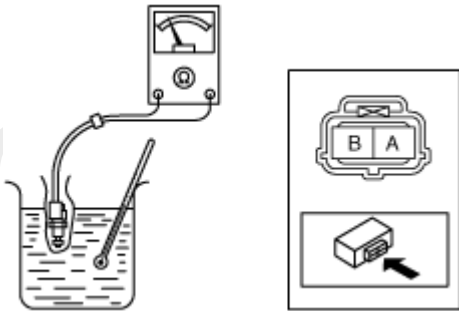
Warning

- Hot differential oil may cause severe burns. Do not perform maintenance while differential oil is hot.

1. Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

2. Disconnect the differential oil temperature sensor connector and remove the differential oil temperature sensor.

3. Wrap the differential oil temperature sensor with plastic wrap and immerse it into a beaker filled with water. Gradually raise the water temperature, and measure resistance between differential oil temperature sensor terminals A and B.



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- If not as specified, inspect the harness for continuity. If there is normal continuity between the terminals, replace the differential oil temperature sensor.

Differential oil temperature sensor specification

Water temperature (°C {°F})	Resistance (kilohm)
0 {32}	91—100
10 {50}	56—61
20 {68}	35—39
30 {86}	23—25
40 {104}	15—16
50 {122}	10—11
60 {140}	7.1—7.9
70 {158}	5.0—5.6
80 {176}	3.6—4.0

4. Install the differential oil temperature sensor and connect the connector.

5. Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

■ DIFFERENTIAL OIL TEMPERATURE SENSOR REMOVAL/INSTALLATION

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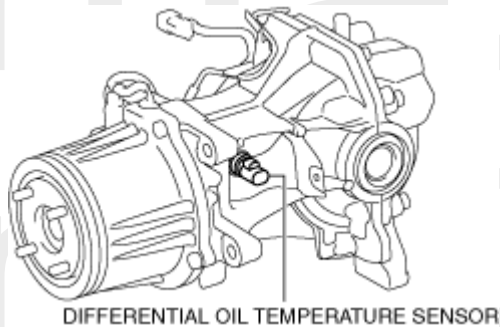
Warning

- Hot differential oil may cause severe burns. Do not perform maintenance while differential oil is hot.

1. Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

2. Disconnect the differential oil temperature sensor connector.

3. Remove the differential oil temperature sensor.



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4. Install the differential oil temperature sensor.

Tightening torque

13—17 N·m {133—173 kgf·cm, 116—150 in·lbf}

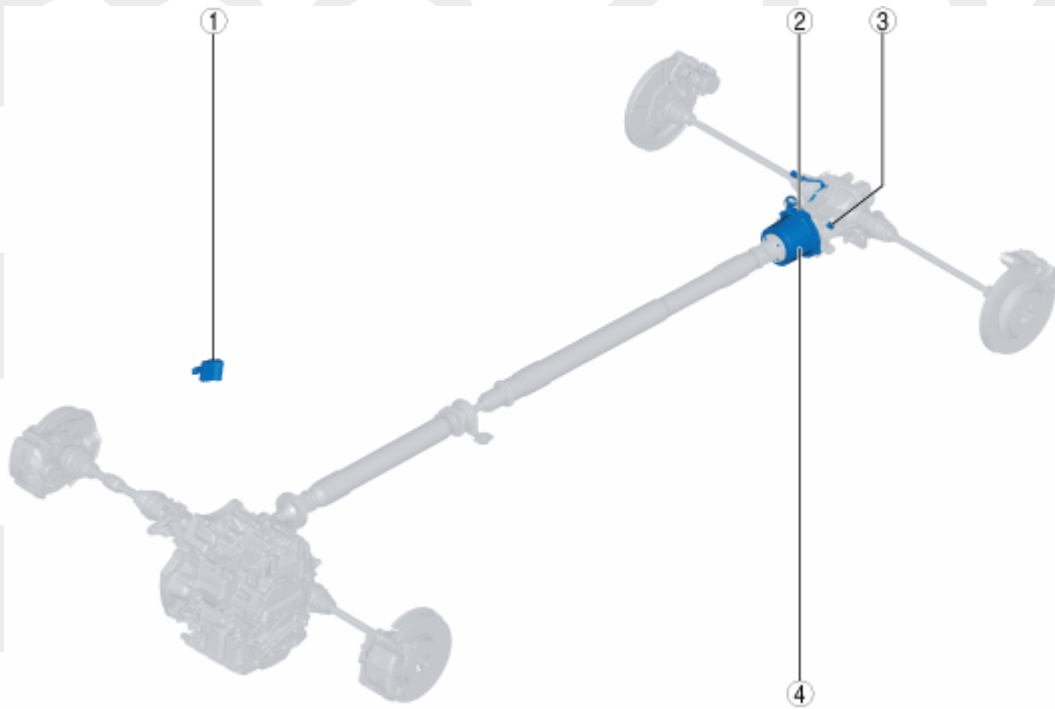
5. Connect the differential oil temperature sensor connector.

6. Connect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

■ ELECTRONIC AWD CONTROL SYSTEM LOCATION INDEX

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1	<p>AWD control module (See AWD CONTROL MODULE INSPECTION.) (See AWD CONTROL MODULE REMOVAL/INSTALLATION.) (See AWD CONTROL MODULE CONFIGURATION.)</p>
2	<p>AWD solenoid (See AWD SOLENOID INSPECTION.)</p>
3	<p>Differential oil temperature sensor (See DIFFERENTIAL OIL TEMPERATURE SENSOR INSPECTION.) (See DIFFERENTIAL OIL TEMPERATURE SENSOR REMOVAL/INSTALLATION.)</p>
4	<p>Coupling component (See COUPLING COMPONENT REMOVAL/INSTALLATION.) (See COUPLING COMPONENT CALIBRATION DATA WRITING.)</p>