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2011 MAZDA 3 MPS / MAZDASPEED3 OEM Service and Repair Workshop Manual

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PID name (definition)	Unit/Condition	Operation condition (reference)	Action
WARN_LAMP	OFF/ON/Blinking	• Displays the warning light state	Inspect the AWD control module. (See AWD CONTROL MODULE INSPECTION.)
WSPD_LF	KPH, MPH	• Vehicle stopped: 0 KPH, 0 MPH • Vehicle running: Vehicle speed	Inspect the front ABS wheel-speed sensor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
WSPD_LR			Inspect the rear ABS wheel-speed sensor. (See REAR ABS WHEEL-SPEED SENSOR INSPECTION [AWD].)
WSPD_RF			Inspect the front ABS wheel-speed sensor. (See FRONT ABS WHEEL-SPEED SENSOR INSPECTION.)
WSPD_RR			Inspect the rear ABS wheel-speed sensor. (See REAR ABS WHEEL-SPEED SENSOR INSPECTION [AWD].)

DTC P164D:00 [AWD CONTROL MODULE]

SM2897984

id0302d320010

DTC P164D:00	Configuration data not recorded
DETECTION CONDITION	• AWD control module detects coupling component calibration data error
FAIL-SAFE FUNCTION	• AWD operates by the specified data. • AWD warning light: Illuminated
POSSIBLE CAUSE	• Module configuration procedure is not done properly
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

Step	Inspection	Results	Action
1	COUPLING COMPONENT CALIBRATION DATA WRITING • Write the coupling component calibration data. (See COUPLING COMPONENT CALIBRATION DATA WRITING.) • Clear the DTCs from the memory. (See CLEARING DTC [AWD CONTROL MODULE].) • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Is the same Pending DTC present?	–	Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See CLEARING DTC [AWD CONTROL MODULE].) • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Is the same Pending DTC present?	Yes	Replace the AWD control module. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

DTC P187B:00 [AWD CONTROL MODULE]

SM2897986

id0302d320030

DTC P187B:00	A tire diameter is outside of the allowable range
DETECTION CONDITION	• AWD control module detects a tire diameter is outside of the allowable range
FAIL-SAFE FUNCTION	• Control disabled. • AWD warning light: Illuminated
POSSIBLE CAUSE	• Detects a tire diameter which is outside of the allowable range to switch to 2WD and protect the system. • Flat tire • Wrong tire pressure
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

Step	Inspection	Results	Action
1	INSPECT A TIRE DIAMETER • Is the tire diameter as specified?	Yes	Go to the next step.
		No	Replace with specified tire.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See CLEARING DTC [AWD CONTROL MODULE].) • Drive the vehicle in a straight line at 10 km/h or more for 10 s or more. • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Is the same Pending DTC present?	Yes	Replace the AWD control module. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

DTC P1887:11/P1887:12/P1887:13/P1887:14 [AWD CONTROL MODULE]

SM2897988

id0302d320050

DTC P1887:11	AWD solenoid circuit
DTC P1887:12	
DTC P1887:13	
DTC P1887:14	
DETECTION CONDITION	• P1887:11 — Short circuit to ground is detected in AWD solenoid circuit • P1887:12 — Short to battery is detected in AWD solenoid circuit • P1887:13 — Open circuit is detected in AWD solenoid circuit • P1887:14 — Open circuit or short to ground is detected in power supply circuit
FAIL-SAFE FUNCTION	• Control disabled. • AWD warning light: Illuminated
POSSIBLE CAUSE	• AWD solenoid malfunction • Open circuit or short to ground between AWD control module terminal O and AWD solenoid terminal A • Open circuit or short to ground between AWD control module terminal P and AWD solenoid terminal B • Open circuit or short to ground in harness between battery and AWD control module terminal K • Open circuit between AWD control module terminal N and body ground • Open or short circuit in AWD control module internal circuit • AT 15 A fuse malfunction • AWD control module malfunction • Poor connection of connectors (female terminals)

Step	Inspection	Results	Action
7	**INSPECT AWD CONTROL MODULE POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT OR SHORT TO GROUND** • Verify that the AWD solenoid and AWD control module connectors are disconnected. • Measure the voltage between AWD control module terminal K (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Replace the AWD control module, then go to Step 9. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	**INSPECT FUSE CONDITION** • Is the AT 15 A fuse normal?	Yes	Go to the next step.
		No	• If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between fuse and AWD control module terminal K. **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 ground. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to ground. • Replace the fuse. • If the fuse is damaged: — Replace the fuse. Go to the next step.
9	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Using the M-MDS, clear the DTC from the AWD control module. (See CLEARING DTC [AWD CONTROL MODULE].) • Drive the vehicle. • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Is the same Pending DTC present?	Yes	Replace the AWD control module, then go to the next step. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
10	**VERIFY NO DTC IS PRESENT** • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

Step	Inspection	Results	Action
5	**INSPECT DIFFERENTIAL OIL TEMPERATURE SENSOR GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the differential oil temperature sensor and AWD control module connectors are disconnected. • Inspect for continuity between AWD control module terminal C (wiring harness-side) and differential oil temperature sensor terminal B (wiring harness-side). • 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 AWD control module terminal C and differential oil temperature sensor terminal B. **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 ar open circuit. Go to Step 7.
6	**INSPECT DIFFERENTIAL OIL TEMPERATURE SENSOR GROUND CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the differential oil temperature sensor and AWD control module connectors are disconnected. • Measure the voltage between AWD control module terminal C (wiring harness-side) and body ground. • Is the voltage B+?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between AWD control module terminal C and differential oil temperature sensor terminal B. **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. Go to the next step.
		No	Go to next step.
7	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Using the M-MDS, clear the DTC from the AWD control module. (See CLEARING DTC [AWD CONTROL MODULE].) • Drive the vehicle. • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Is the same Pending DTC present?	Yes	Replace the AWD control module, then go to the next step. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
8	**VERIFY NO DTC IS PRESENT** • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

DTC U0401:68 [AWD CONTROL MODULE]

SM2897992

id0302d320120

DTC U0401:68	Abnormal message from PCM
DETECTION CONDITION	• Correct data cannot be received from PCM
FAIL-SAFE FUNCTION	• Control disabled.
POSSIBLE CAUSE	• PCM malfunction • AWD control module malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

Step	Inspection	Results	Action
1	INSPECT FOR PCM MALFUNCTION • Switch the ignition to off. • Using the M-MDS, perform the DTC inspection for the PCM. (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 detected?	Yes	Go to applicable DTC inspection. (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	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See CLEARING DTC [AWD CONTROL MODULE].) • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Are the same DTCs present?	Yes	Replace the AWD control module. (See AWD CONTROL MODULE REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

DTC U0415:68 [AWD CONTROL MODULE]

SM2897994

id0302d320140

DTC U0415:68	Abnormal message from DSC HU/CM
DETECTION CONDITION	• Correct data cannot be received from DSC HU/CM
FAIL-SAFE FUNCTION	• Control disabled.
POSSIBLE CAUSE	• DSC HU/CM malfunction • AWD control module malfunction
SYSTEM WIRING DIAGRAM	Not applicable

Diagnostic procedure

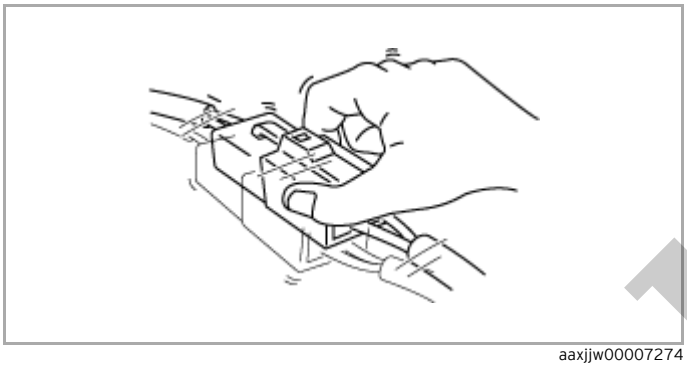
Step	Inspection	Results	Action
1	INSPECT FOR DSC HU/CM MALFUNCTION • Switch the ignition to off. • Using the M-MDS, perform the DTC inspection for the DSC HU/CM. (See DTC INSPECTION [DSC HU/CM].) • Are any DTCs detected?	Yes	Go to applicable DTC inspection. (See DTC TABLE [DSC HU/CM].)
		No	Go to the next step.
2	VERIFY THAT THE SAME DTC IS NOT PRESENT • Clear the DTCs from the memory. (See CLEARING DTC [AWD CONTROL MODULE].) • Using the M-MDS, perform the AWD control module DTC inspection. (See DTC INSPECTION [AWD CONTROL MODULE].) • Are the same DTCs present?	Yes	Repeat the inspection from Step1. If the malfunction recurs, replace the DSC HU/CM, then go to the next step. (See DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) (See DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) (See DSC HU/CM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
3	VERIFY THAT NO OTHER DTCS ARE PRESENT • Are any other DTCs output?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [AWD CONTROL MODULE].)
		No	DTC troubleshooting completed.

*1:(See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-A (SKYACTIV-G 2.5)].) (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-A (SKYACTIV-G 2.5T, SKYACTIV-D 2.2)].) (See CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [TYPE-B].)

Action for Non-repeatable Malfunction

• If the malfunction does not recur, verify the malfunction cause by performing the following actions:

— Based on the repair order form, attempt to drive the vehicle or perform tests to replicate the malfunction, record the data at that time, and detect the malfunction cause.
— Shake the wiring harness or connector of the electrical component which is suspected to be the cause of the malfunction, and inspect for occurrence of any malfunction or DTCs.



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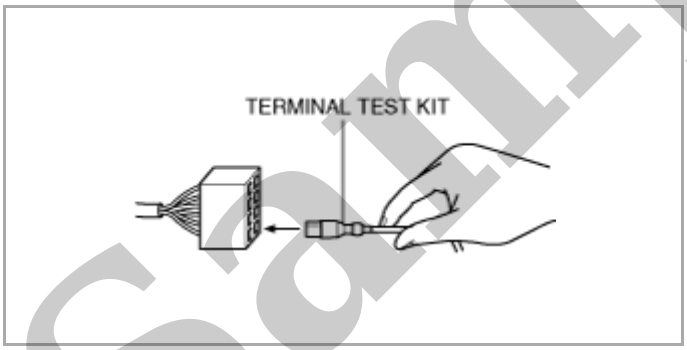
— Inspect the female terminals on the connector of the electric component which is suspected to be the cause of the malfunction for poor connection. (See ELECTRICAL SYSTEM.)

Note

• Tool used (Reference): terminal test kit (49US-15-KIT)



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