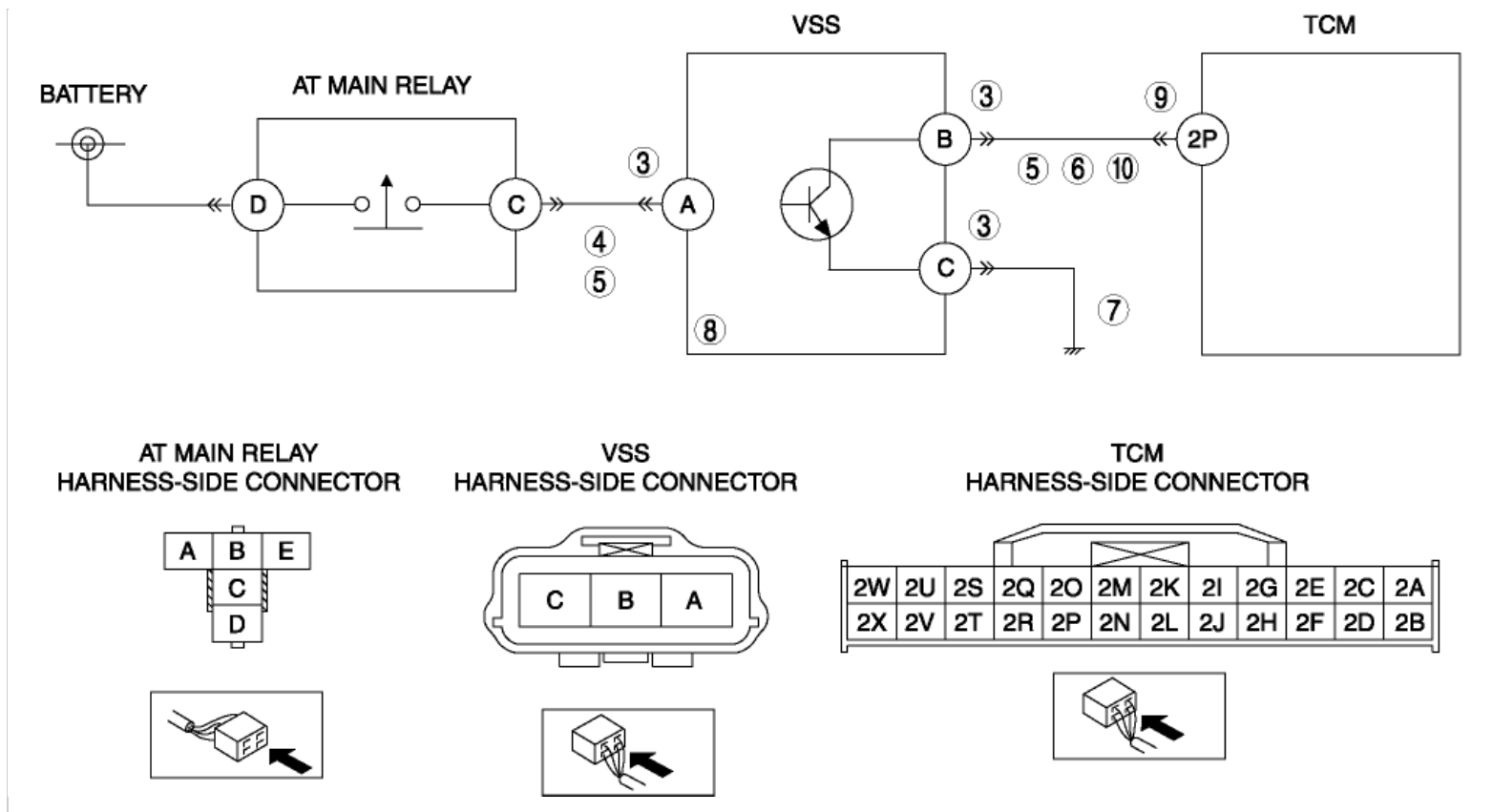


2012 - Mazda6 - Transmission/ Transaxle

DTC P0720:00 [FS5A-EL]

DTC P0720:00	VSS circuit malfunction
DETECTION CONDITION	- The TCM detects no signal from the VSS for 4.5 s when the following conditions are met. - Engine coolant temperature: 60 °C {140 °F} or more - D or M position - Intermediate speed: 1,500 rpm or more Diagnostic support note - The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. - The AT warning light illuminates. - PENDING CODE is available. - FREEZE FRAME DATA is available. - The DTC is stored in the TCM memory.
POSSIBLE CAUSE	- VSS connector or terminal malfunction - Open circuit in wiring harness between VSS terminal A and AT main relay terminal C - Short to GND in wiring harness between VSS terminal A and AT main relay terminal C - Short to GND in wiring harness between VSS terminal B and TCM terminal 2P - Short to power supply in wiring harness between VSS terminal B and TCM terminal 2P - Open circuit in wiring harness between VSS terminal C and body GND - VSS malfunction - TCM connector or terminal malfunction - Open circuit in wiring harness between VSS terminal B and TCM terminal 2P - TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA been recorded on the repair order?	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT VSS CONNECTOR FOR POOR CONNECTION - Switch the ignition off. - Disconnect the VSS connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion) - Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 11.
		No Go to the next step.
4	INSPECT VSS POWER CIRCUIT FOR OPEN CIRCUIT - Switch the ignition to ON (Engine off). - Measure the voltage between VSS terminal A (wiring harness-side) and body GND. - Is the voltage B+ ?	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
5	INSPECT VSS CIRCUIT FOR SHORT TO GND Switch the ignition off.	Yes Repair or replace the wiring harness for a possible short to GND, then go to Step 11.

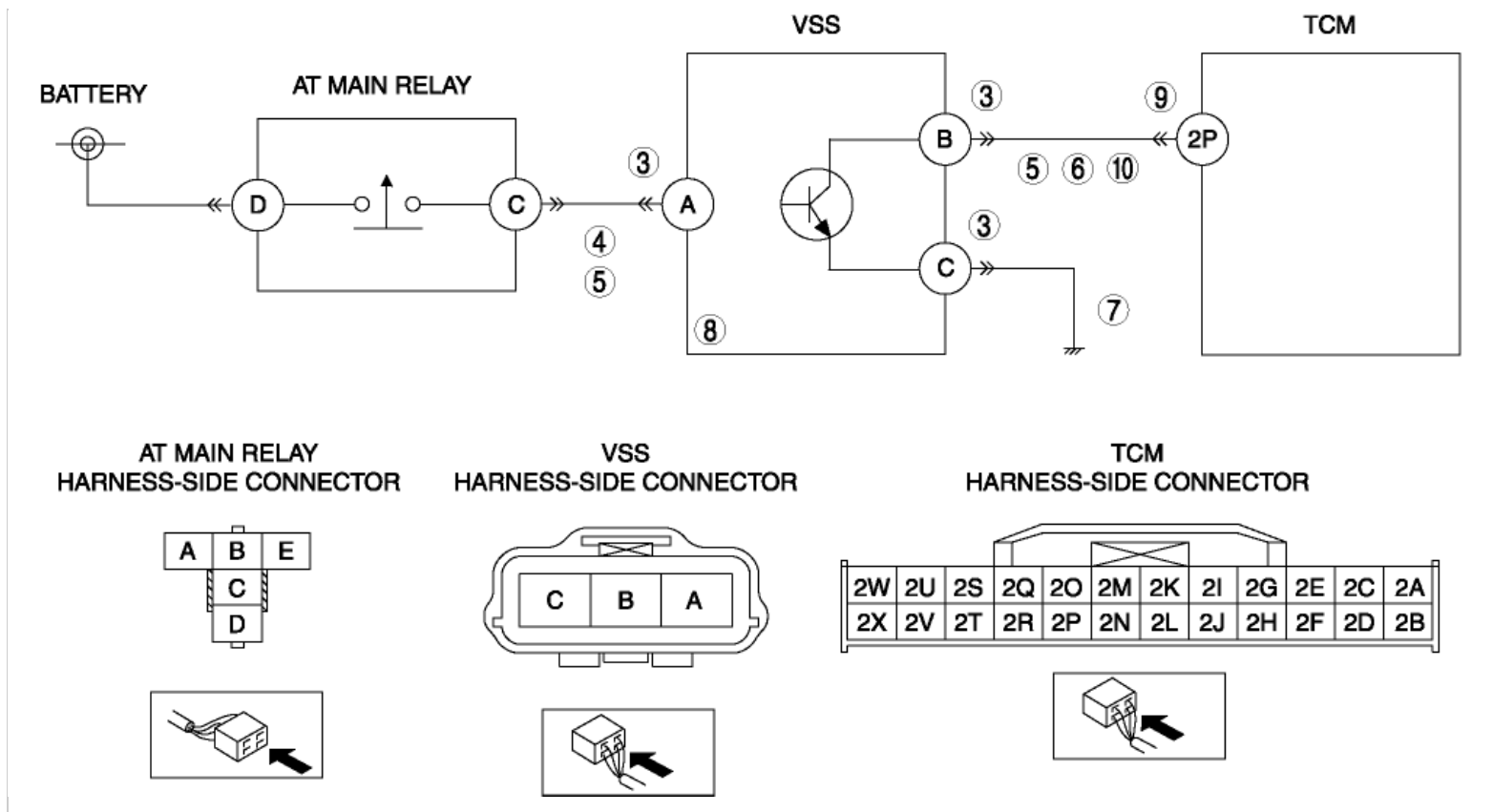
	- Inspect for continuity between the following circuits: - VSS terminal A (wiring harness-side) and body GND - VSS terminal B (wiring harness-side) and body GND - Is there continuity?	No	Go to the next step.
6	INSPECT VSS SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY - Switch the ignition to ON (Engine off). - Measure the voltage between VSS terminal B (wiring harness-side) and body GND. - Is the voltage B+ ?	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
7	INSPECT VSS GND CIRCUIT FOR OPEN CIRCUIT - Switch the ignition off. - Inspect for continuity between VSS terminal C (wiring harness-side) and body GND - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
8	INSPECT VSS - Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL] .) - Is there any malfunction?	Yes	Replace the VSS, then go to Step 11. (See VEHICLE SPEED SENSOR (VSS) REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
9	INSPECT TCM CONNECTOR FOR POOR CONNECTION - Switch the ignition off. - Disconnect the TCM connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion) - Is there any malfunction?	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
10	INSPECT VSS CIRCUIT FOR OPEN CIRCUIT - Switch the ignition off. - Inspect for continuity between the VSS terminal B (wiring harness-side) and TCM terminal 2P (wiring harness-side). - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0720:00 COMPLETED - Make sure to reconnect all the disconnected connectors. - Clear the DTC using the M-MDS. - Perform the following procedure to ensure that the DTC has been resolved: - Start the engine. - Warm-up the engine until the engine coolant temperature reaches 60 °C {140 °C} or more. - Select the selector lever to D or M position. - Drive the vehicle with intermediate speed at 1,500 rpm or more for 4.5 s or more. - Is the same DTC present?	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
12	VERIFY NO DTCs ARE PRESENT Perform the "Reading DTCs Procedure".	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE

	(See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL] .)	[FS5A-EL] .)
	• Are any DTCs present?	No DTC troubleshooting completed.

2012 - Mazda6 - Transmission/ Transaxle

DTC P0720:00 [FS5A-EL]

DTC P0720:00	VSS circuit malfunction
DETECTION CONDITION	• The TCM detects no signal from the VSS for 4.5 s when the following conditions are met. ▪ Engine coolant temperature: 60 °C {140 °F} or more ▪ D or M position ▪ Intermediate speed: 1,500 rpm or more Diagnostic support note • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates. • PENDING CODE is available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
POSSIBLE CAUSE	• VSS connector or terminal malfunction • Open circuit in wiring harness between VSS terminal A and AT main relay terminal C • Short to GND in wiring harness between VSS terminal A and AT main relay terminal C • Short to GND in wiring harness between VSS terminal B and TCM terminal 2P • Short to power supply in wiring harness between VSS terminal B and TCM terminal 2P • Open circuit in wiring harness between VSS terminal C and body GND • VSS malfunction • TCM connector or terminal malfunction • Open circuit in wiring harness between VSS terminal B and TCM terminal 2P • TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA been recorded on the repair order?	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY - Verify related Service Bulletins and/or on-line repair information availability. - Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT VSS CONNECTOR FOR POOR CONNECTION - Switch the ignition off. - Disconnect the VSS connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion) - Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 11.
		No Go to the next step.
4	INSPECT VSS POWER CIRCUIT FOR OPEN CIRCUIT - Switch the ignition to ON (Engine off). - Measure the voltage between VSS terminal A (wiring harness-side) and body GND. - Is the voltage B+ ?	Yes Go to the next step.
		No Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
5	INSPECT VSS CIRCUIT FOR SHORT TO GND Switch the ignition off.	Yes Repair or replace the wiring harness for a possible short to GND, then go to Step 11.

	- Inspect for continuity between the following circuits: - VSS terminal A (wiring harness-side) and body GND - VSS terminal B (wiring harness-side) and body GND - Is there continuity?	No	Go to the next step.
6	INSPECT VSS SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY - Switch the ignition to ON (Engine off). - Measure the voltage between VSS terminal B (wiring harness-side) and body GND. - Is the voltage B+ ?	Yes	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
		No	Go to the next step.
7	INSPECT VSS GND CIRCUIT FOR OPEN CIRCUIT - Switch the ignition off. - Inspect for continuity between VSS terminal C (wiring harness-side) and body GND - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 11.
8	INSPECT VSS - Inspect the VSS. (See VEHICLE SPEED SENSOR (VSS) INSPECTION [FS5A-EL] .) - Is there any malfunction?	Yes	Replace the VSS, then go to Step 11. (See VEHICLE SPEED SENSOR (VSS) REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
9	INSPECT TCM CONNECTOR FOR POOR CONNECTION - Switch the ignition off. - Disconnect the TCM connector. - Inspect for poor connection (such as damaged/pulled-out pins, corrosion) - Is there any malfunction?	Yes	Repair or replace the terminal, then go to Step 11.
		No	Go to the next step.
10	INSPECT VSS CIRCUIT FOR OPEN CIRCUIT - Switch the ignition off. - Inspect for continuity between the VSS terminal B (wiring harness-side) and TCM terminal 2P (wiring harness-side). - Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to the next step.
11	VERIFY TROUBLESHOOTING OF DTC P0720:00 COMPLETED - Make sure to reconnect all the disconnected connectors. - Clear the DTC using the M-MDS. - Perform the following procedure to ensure that the DTC has been resolved: - Start the engine. - Warm-up the engine until the engine coolant temperature reaches 60 °C {140 °C} or more. - Select the selector lever to D or M position. - Drive the vehicle with intermediate speed at 1,500 rpm or more for 4.5 s or more. - Is the same DTC present?	Yes	Replace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [FS5A-EL] .)
		No	Go to the next step.
12	VERIFY NO DTCs ARE PRESENT Perform the "Reading DTCs Procedure".	Yes	Go to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE

	(See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [FS5A-EL] .)	[FS5A-EL] .)
	• Are any DTCs present?	No DTC troubleshooting completed.