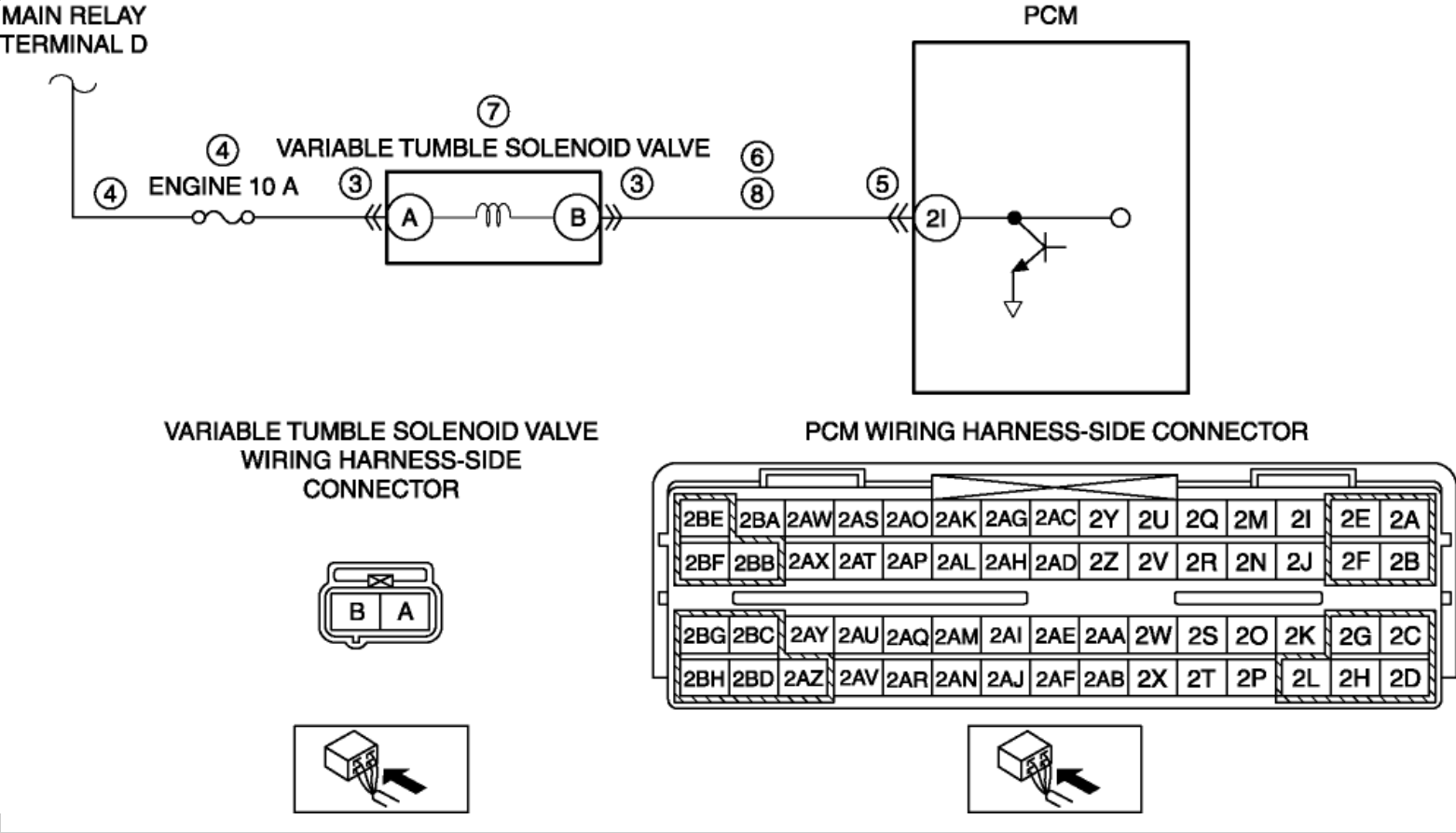


2012 - Mazda6 - Engine

DTC P2009:00 [MZR 2.5]

DTC P2009:00	Variable tumble solenoid valve circuit low input
DETECTION CONDITION	- The PCM monitors variable tumble solenoid valve control signal. If the PCM turns variable tumble solenoid valve off but voltage still remains low, the PCM determines that variable tumble solenoid valve circuit has malfunction. Diagnostic support note - This is a continuous monitor (CCM). - The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. - PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. - FREEZE FRAME DATA (Mode 2)/Snapshot is available. - The DTC is stored in the PCM memory.
POSSIBLE CAUSE	- Variable tumble solenoid valve connector or terminal malfunction - Short to ground or open circuit in variable tumble solenoid valve power supply circuit - Short to ground in wiring harness between main relay terminal D and variable tumble solenoid valve terminal A - ENGINE 10 A fuse malfunction - Open circuit in wiring harness between main relay terminal D and variable tumble solenoid valve terminal A - Short to ground in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I - PCM connector or terminal malfunction - Variable tumble solenoid valve malfunction - Open circuit in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I - PCM malfunction



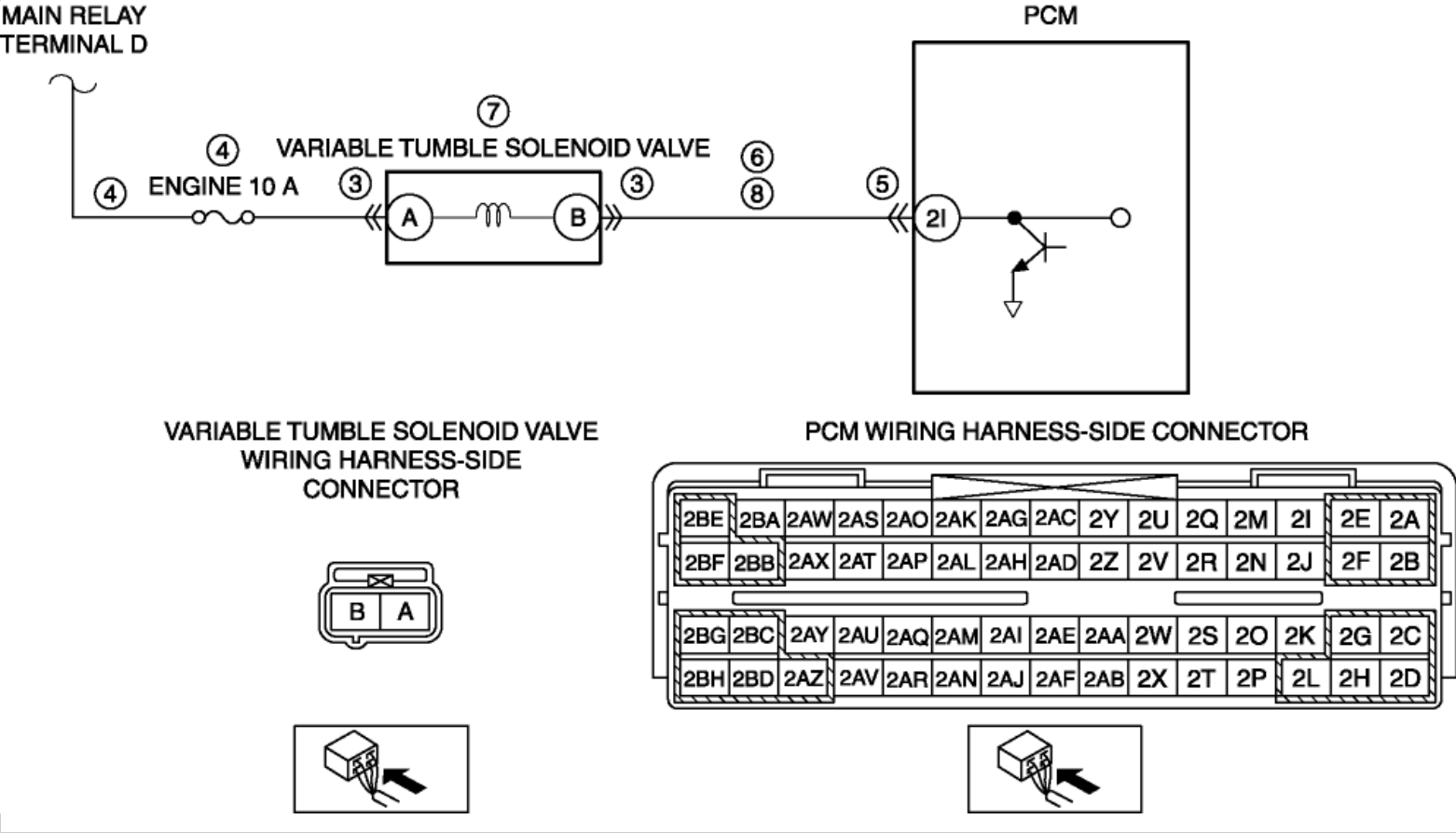
	• Measure the voltage between variable tumble solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+ ?	▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: ▪ Replace the fuse. • If the fuse is normal: ▪ Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND • Variable tumble solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes If the short to ground circuit could be detected: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: • Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to Step 9. No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 9. No Go to the next step.
7	INSPECT VARIABLE TUMBLE SOLENOID VALVE • Inspect the variable tumble solenoid valve. (See VARIABLE TUMBLE SOLENOID VALVE INSPECTION [MZR 2.5].) • Is there any malfunction?	Yes Replace the variable tumble solenoid valve, then go to Step 9. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.
8	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT • Variable tumble solenoid valve and PCM connectors are disconnected. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and PCM terminal 2I (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.
9	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all disconnected connectors.	Yes Repeat the inspection from Step 1. • If the malfunction recurs, replace

	• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) • Perform the KOEO or KOER self test. (See KOEO/ KOER SELF TEST [MZR 2.5].) • Is the PENDING CODE for this DTC present?		the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZR 2.5].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5] .)
		No	DTC troubleshooting completed.

2012 - Mazda6 - Engine

DTC P2009:00 [MZR 2.5]

DTC P2009:00	Variable tumble solenoid valve circuit low input
DETECTION CONDITION	- The PCM monitors variable tumble solenoid valve control signal. If the PCM turns variable tumble solenoid valve off but voltage still remains low, the PCM determines that variable tumble solenoid valve circuit has malfunction. Diagnostic support note - This is a continuous monitor (CCM). - The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. - PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. - FREEZE FRAME DATA (Mode 2)/Snapshot is available. - The DTC is stored in the PCM memory.
POSSIBLE CAUSE	- Variable tumble solenoid valve connector or terminal malfunction - Short to ground or open circuit in variable tumble solenoid valve power supply circuit - Short to ground in wiring harness between main relay terminal D and variable tumble solenoid valve terminal A - ENGINE 10 A fuse malfunction - Open circuit in wiring harness between main relay terminal D and variable tumble solenoid valve terminal A - Short to ground in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I - PCM connector or terminal malfunction - Variable tumble solenoid valve malfunction - Open circuit in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2I - PCM malfunction



	• Measure the voltage between variable tumble solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+ ?	▪ Repair or replace the wiring harness for a possible short to ground. ▪ Replace the fuse. • If the fuse is deterioration: ▪ Replace the fuse. • If the fuse is normal: ▪ Repair or replace the wiring harness for a possible open circuit. Go to Step 9.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND • Variable tumble solenoid valve connector is disconnected. • Switch the ignition to off. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes If the short to ground circuit could be detected: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected: • Replace the PCM (short to ground in PCM internal circuit). (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to Step 9. No Go to the next step.
6	INSPECT PCM CONNECTOR CONDITION • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal and/or connector, then go to Step 9. No Go to the next step.
7	INSPECT VARIABLE TUMBLE SOLENOID VALVE • Inspect the variable tumble solenoid valve. (See VARIABLE TUMBLE SOLENOID VALVE INSPECTION [MZR 2.5].) • Is there any malfunction?	Yes Replace the variable tumble solenoid valve, then go to Step 9. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.
8	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT • Variable tumble solenoid valve and PCM connectors are disconnected. • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and PCM terminal 2I (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.
9	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all disconnected connectors.	Yes Repeat the inspection from Step 1. • If the malfunction recurs, replace

	• Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [MZR 2.5].) • Perform the KOEO or KOER self test. (See KOEO/ KOER SELF TEST [MZR 2.5].) • Is the PENDING CODE for this DTC present?		the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZR 2.5].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5] .)
		No	DTC troubleshooting completed.