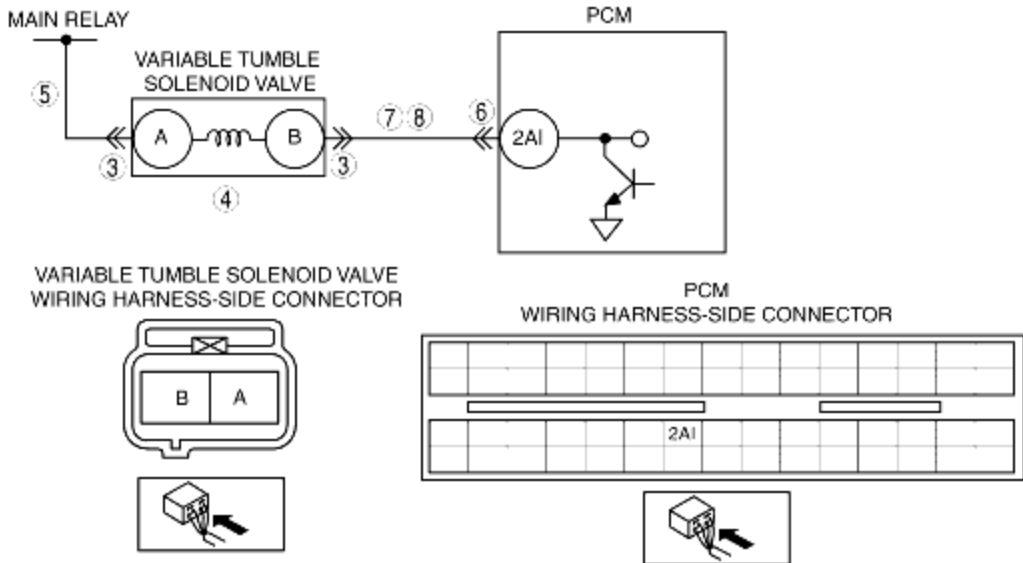


DTC P2009 [LF]

B3E010202000W02

DTC P2009	Variable tumble solenoid valve circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors variable tumble solenoid valve control signal at PCM terminal 2AI. If the PCM turns variable tumble solenoid valve off but voltage at PCM terminal 2AI still remains low, the PCM determines that variable tumble solenoid valve circuit has malfunction. Diagnostic support note <ul style="list-style-type: none"> 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 first drive cycle. FREEZE FRAME DATA is available. The DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Poor connection of connectors at PCM and/or variable tumble solenoid valve Short to ground in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2AI Open circuit in wiring harness between main relay and variable tumble solenoid valve terminal A Open circuit in wiring harness between variable tumble solenoid valve terminal B and PCM terminal 2AI Variable tumble solenoid valve malfunction PCM malfunction
	

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has FREEZE FRAME DATA been recorded? 	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 <ul style="list-style-type: none"> Verify related service repair information availability. 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.

	• Is any related repair information available?	No	Go to the next step.
3	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there malfunction? 	Yes	Repair or replace the terminal, then go to Step 9.
		No	Go to the next step.
4	INSPECT VARIABLE TUMBLE SOLENOID VALVE <ul style="list-style-type: none"> • Perform the variable tumble solenoid valve inspection. (See VARIABLE TUMBLE SOLENOID VALVE INSPECTION [LF].) • Is variable tumble solenoid valve normal? 	Yes	Go to the next step.
		No	Replace the variable tumble solenoid valve, then go to Step 9.
5	INSPECT VARIABLE TUMBLE SOLENOID VALVE POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Disconnect the variable tumble solenoid valve connector. • Turn the ignition switch to the ON position (Engine off). • Measure the voltage between variable tumble solenoid valve terminal A (wiring harness-side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace the wiring harness for open circuit, then go to Step 9.
6	INSPECT PCM CONNECTOR FOR POOR CONNECTION <ul style="list-style-type: none"> • Turn the ignition switch off. • Disconnect the PCM connector. • Inspect for poor connection at PCM terminal 2AI. (such as damaged/pulled-out pins, corrosion). • Is there malfunction? 	Yes	Repair the terminal, then go to Step 9.
		No	Go to the next step.
7	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND <ul style="list-style-type: none"> • Inspect for continuity between variable tumble solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity? 	Yes	Repair or replace the wiring harness for short to ground, then go to Step 9.
		No	Go to the next step.
8	INSPECT VARIABLE TUMBLE SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT <ul style="list-style-type: none"> • Connect variable tumble solenoid valve connector. • Turn the ignition switch to the ON position (Engine off). • Measure voltage between PCM terminal 2AI (wiring harness side) and body ground. • Is the voltage B+? 	Yes	Go to the next step.
		No	Repair or replace wiring harness for open circuit, then go to the next step.
9	VERIFY TROUBLESHOOTING OF DTC P2009 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the WDS or equivalent. • Start the engine. • Is the PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [LF] .)
		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [LF].) • Are any DTC present? 	Yes	Go to the applicable DTC troubleshooting. (See DTC TABLE [LF] .)
		No	Troubleshooting completed.