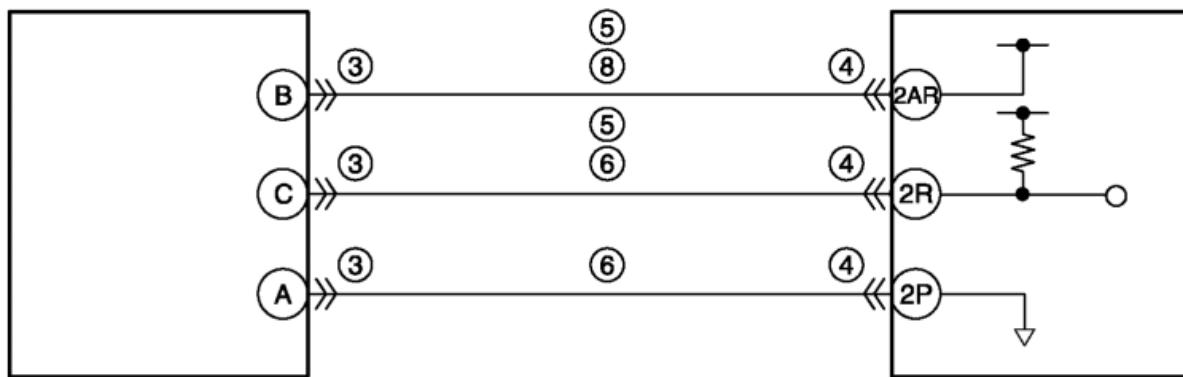


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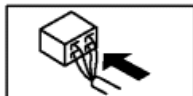
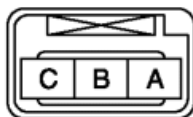
DTC P2016:00 [MZR 2.5]

DTC P2016:00	Variable tumble shutter valve position sensor circuit low input
DETECTION CONDITION	• The PCM monitors input voltage from SCV position sensor. If input voltage is below 0.1 Vfor 4.9 s, the PCM determines that the SCV position sensor circuit has a malfunction. Diagnostic support note • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Variable tumble shutter valve position sensor connector or terminal malfunction • Short to ground in wiring harness between variable tumble shutter valve position sensor terminal B and PCM terminal 2AR • Short to ground in wiring harness between variable tumble shutter valve position sensor terminal C and PCM terminal 2R • PCM connector or terminal malfunction • Short circuit in variable tumble shutter valve position sensor signal circuit and ground circuit each other • Variable tumble shutter valve position sensor malfunction • Open circuit in wiring harness between variable tumble shutter valve position sensor terminal B and PCM terminal 2AR • PCM malfunction

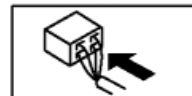
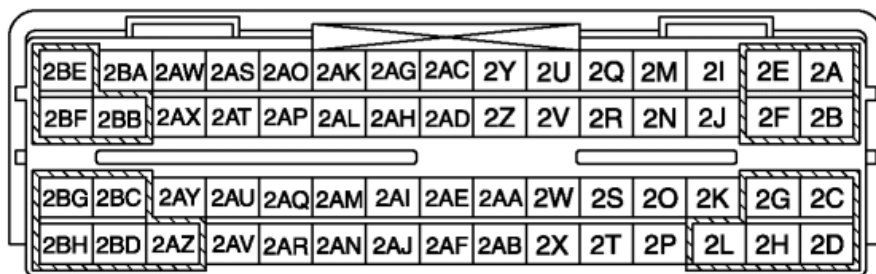
⑦
**VARIABLE TUMBLE
 SHUTTER VALVE POSITION SENSOR**



**VARIABLE TUMBLE
 SHUTTER VALVE POSITION SENSOR
 WIRING HARNESS-SIDE CONNECTOR**



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded?	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 2)/snapshot 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 VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR CONNECTOR CONDITION - Switch the ignition to off. - Disconnect the variable tumble shutter valve position sensor 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.
4	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR CIRCUIT FOR SHORT TO GROUND	Yes If the short to ground circuit could be

	- Variable tumble shutter valve position sensor connector is disconnected. - Inspect for continuity between the following terminals and body ground: - Variable tumble shutter valve position sensor terminal B (wiring harness-side) - Variable tumble shutter valve position sensor terminal C (wiring harness-side) - Is there continuity?	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.
5	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.
6	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR SIGNAL AND GROUND CIRCUITS FOR SHORT EACH OTHER - Variable tumble shutter valve position sensor and PCM connectors are disconnected. - Inspect for continuity between variable tumble shutter valve position sensor terminals C and A (wiring harness-side). - Is there continuity?	Yes Repair or replace the malfunctioning wiring harness, then go to Step 9. No Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR - Reconnect all disconnected connectors. - Inspect the variable tumble shutter valve position sensor. (See VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the variable tumble shutter valve position sensor, then go to Step 9. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT - Switch the ignition to off. - Disconnect the variable tumble shutter valve position sensor and PCM connectors. - Inspect for continuity between variable tumble shutter valve position sensor terminal B (wiring harness-side) and PCM terminal 2AR (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. - 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].)	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.

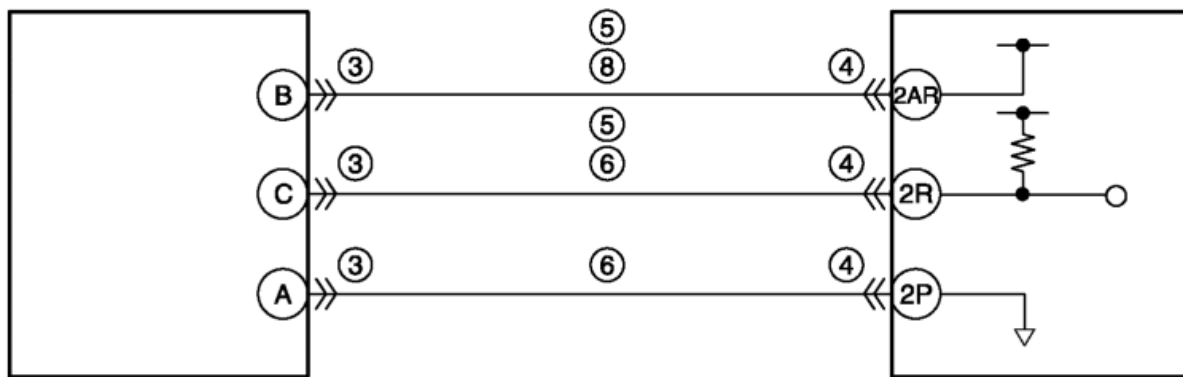
	Is the same DTC present?		No	Go to the next step.
10	VERIFY AFTER REPAIR PROCEDURE - Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZR 2.5].) - Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [MZR 2.5] .)	
		No	DTC troubleshooting completed.	

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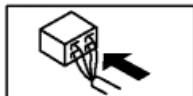
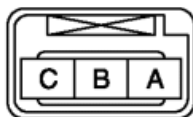
DTC P2016:00 [MZR 2.5]

DTC P2016:00	Variable tumble shutter valve position sensor circuit low input
DETECTION CONDITION	• The PCM monitors input voltage from SCV position sensor. If input voltage is below 0.1 Vfor 4.9 s, the PCM determines that the SCV position sensor circuit has a malfunction. Diagnostic support note • This is a continuous monitor (CCM). • The MIL illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
POSSIBLE CAUSE	• Variable tumble shutter valve position sensor connector or terminal malfunction • Short to ground in wiring harness between variable tumble shutter valve position sensor terminal B and PCM terminal 2AR • Short to ground in wiring harness between variable tumble shutter valve position sensor terminal C and PCM terminal 2R • PCM connector or terminal malfunction • Short circuit in variable tumble shutter valve position sensor signal circuit and ground circuit each other • Variable tumble shutter valve position sensor malfunction • Open circuit in wiring harness between variable tumble shutter valve position sensor terminal B and PCM terminal 2AR • PCM malfunction

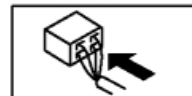
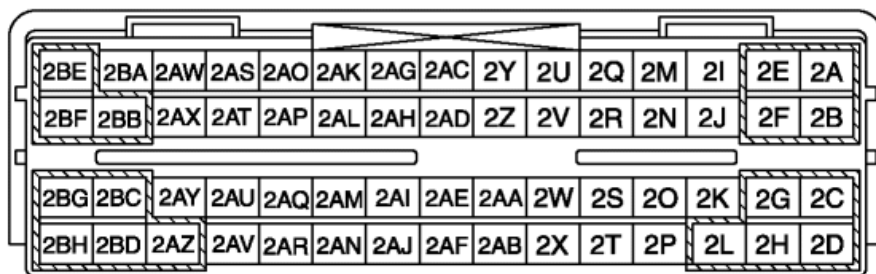
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**VARIABLE TUMBLE
 SHUTTER VALVE POSITION SENSOR**



**VARIABLE TUMBLE
 SHUTTER VALVE POSITION SENSOR
 WIRING HARNESS-SIDE CONNECTOR**



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA (Mode 2)/snapshot data been recorded?	Yes Go to the next step. No Record the FREEZE FRAME DATA (Mode 2)/snapshot 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 VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR CONNECTOR CONDITION - Switch the ignition to off. - Disconnect the variable tumble shutter valve position sensor 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.
4	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR CIRCUIT FOR SHORT TO GROUND	Yes If the short to ground circuit could be

	- Variable tumble shutter valve position sensor connector is disconnected. - Inspect for continuity between the following terminals and body ground: - Variable tumble shutter valve position sensor terminal B (wiring harness-side) - Variable tumble shutter valve position sensor terminal C (wiring harness-side) - Is there continuity?	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.
5	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.
6	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR SIGNAL AND GROUND CIRCUITS FOR SHORT EACH OTHER - Variable tumble shutter valve position sensor and PCM connectors are disconnected. - Inspect for continuity between variable tumble shutter valve position sensor terminals C and A (wiring harness-side). - Is there continuity?	Yes Repair or replace the malfunctioning wiring harness, then go to Step 9. No Go to the next step.
7	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR - Reconnect all disconnected connectors. - Inspect the variable tumble shutter valve position sensor. (See VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR INSPECTION [MZR 2.5].) - Is there any malfunction?	Yes Replace the variable tumble shutter valve position sensor, then go to Step 9. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [MZR 2.5].) No Go to the next step.
8	INSPECT VARIABLE TUMBLE SHUTTER VALVE POSITION SENSOR POWER SUPPLY CIRCUIT FOR OPEN CIRCUIT - Switch the ignition to off. - Disconnect the variable tumble shutter valve position sensor and PCM connectors. - Inspect for continuity between variable tumble shutter valve position sensor terminal B (wiring harness-side) and PCM terminal 2AR (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. - 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].)	Yes Repeat the inspection from Step 1. If the malfunction recurs, replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZR 2.5].) Go to the next step.

	Is the same DTC present?		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.	