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## 1996 MAZDA MX-5 / Miata OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
6	<b>VERIFY CURRENT INPUT SIGNAL STATUS OF APP SENSOR</b> • Access the following PIDs using the M-MDS: (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .) — IVS — APP1 — APP2 • Inspect the following: — Is the value for PID IVS Idle when the accelerator pedal is not depressed? — Does the value for PID APP1, APP2 change when the accelerator pedal is continually depressed? • Are all items normal?	Yes	Go to Step 8.
		No	Go to the next step.
7	<b>INSPECT APP SENSOR RELATED WIRING HARNESS AND CONNECTOR</b> • Inspect the wiring harness related to the APP sensor for connector disconnection, short circuit, and poor contact. • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	APP sensor malfunction. • Replace the accelerator pedal, then go to Step 12. (See <b>ACCELERATOR PEDAL REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)
8	<b>VERIFY CURRENT INPUT SIGNAL STATUS OF BRAKE SWITCH</b> • Access the following PIDs using the M-MDS: (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .) — BOO — BPA • Are all PIDs normal? (See <b>PCM INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)	Yes	Go to Step 11.
		No	Go to the next step.
9	<b>INSPECT BRAKE SWITCH</b> • Inspect the brake switch. (See <b>BRAKE SWITCH INSPECTION</b> .) • Is there any malfunction?	Yes	Replace the brake switch, then go to Step 12. (See <b>BRAKE PEDAL REMOVAL/INSTALLATION</b> .)
		No	Go to the next step.
10	<b>INSPECT BRAKE PEDAL PLAY AMOUNT</b> • Inspect the brake pedal play amount. (See <b>BRAKE PEDAL INSPECTION</b> .) • Is the amount of brake pedal play normal?	Yes	Inspect the wiring harness related to the brake switch for connector disconnection, short circuit, and poor contact. • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
		No	Repair or replace the malfunctioning part according to the inspection results, then go to Step 12.
11	<b>VERIFY IF A DTC RELATED TO DRIVE-BY-WIRE CONTROL IS DETECTED</b> • Perform the KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .) • Is a DTC related to the drive-by-wire control present?	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	It is possible that the accelerator and brake pedals have been depressed simultaneously. (during braking operation using left foot) • Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
4	<b>VERIFY DTC TROUBLESHOOTING COMPLETED</b> <ul style="list-style-type: none"> <li>• Always reconnect all disconnected connectors.</li> <li>• Clear the DTC from the PCM memory using the M-MDS. (See <b>CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Perform the KOEO or KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Is the same Pending DTC present?</li> </ul>	Yes	Replace the PCM, then go to the next step. (See <b>PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)
		No	Go to the next step.
5	<b>VERIFY AFTER REPAIR PROCEDURE</b> <ul style="list-style-type: none"> <li>• Perform the "AFTER REPAIR PROCEDURE". (See <b>AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	DTC troubleshooting completed.

Sample

# DTC P0604:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896769

id0102s970580

DTC P0604:00	PCM RAM error
DETECTION CONDITION	<ul style="list-style-type: none"> <li>PCM internal RAM malfunction.</li> </ul> <p><b>Diagnostic support note</b></p> <ul style="list-style-type: none"> <li>This is a continuous monitor (CCM).</li> <li>The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle.</li> <li>FREEZE FRAME DATA/Snapshot data is available.</li> <li>DTC is stored in the PCM memory.</li> </ul>
FAIL-SAFE FUNCTION	<ul style="list-style-type: none"> <li>Restricts the upper limit of the engine speed.</li> <li>Stops the drive-by-wire control (throttle valve is open at approx. 8 ° by return spring force).</li> </ul>
POSSIBLE CAUSE	<ul style="list-style-type: none"> <li>PCM connector or terminals malfunction</li> <li>PCM malfunction                             <ul style="list-style-type: none"> <li>— PCM internal RAM malfunction</li> </ul> </li> </ul>
SYSTEM WIRING DIAGRAM	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>

## Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	<p><b>RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION</b></p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>Recording can be facilitated using the screen capture function of the PC.</li> <li>Record the FREEZE FRAME DATA/snapshot data on the repair order.</li> </ul>	-	Go to the next step.
2	<p><b>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</b></p> <ul style="list-style-type: none"> <li>Verify related Service Bulletins and/or on-line repair information availability.</li> <li>Is any related repair information available?</li> </ul>	Yes	Perform repair or diagnosis according to the available repair information.
		No	Go to the next step.
3	<p><b>INSPECT PCM CONNECTOR CONDITION</b></p> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the PCM connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
4	<b>VERIFY DTC TROUBLESHOOTING COMPLETED</b> <ul style="list-style-type: none"> <li>• Always reconnect all disconnected connectors.</li> <li>• Clear the DTC from the PCM memory using the M-MDS. (See <b>CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Perform the KOEO or KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Is the same Pending DTC present?</li> </ul>	Yes	Replace the PCM, then go to the next step. (See <b>PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .)
		No	Go to the next step.
5	<b>VERIFY AFTER REPAIR PROCEDURE</b> <ul style="list-style-type: none"> <li>• Perform the "AFTER REPAIR PROCEDURE". (See <b>AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>• Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	DTC troubleshooting completed.

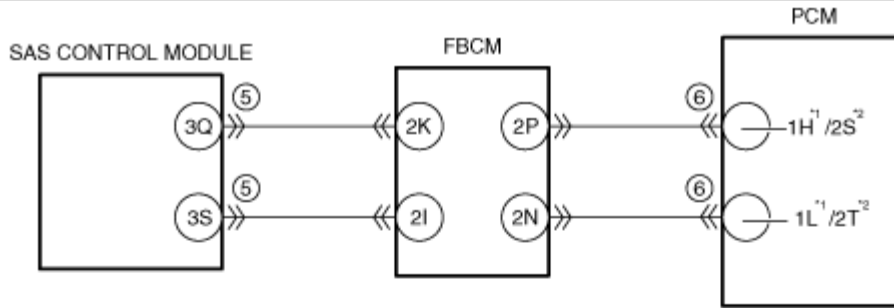
Sample

STEP	INSPECTION	RESULTS	ACTION
1	<p><b>RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION</b></p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>Recording can be facilitated using the screen capture function of the PC.</li> <li>Record the snapshot data on the repair order.</li> </ul>	–	Go to the next step.
2	<p><b>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</b></p> <ul style="list-style-type: none"> <li>Verify related Service Bulletins and/or on-line repair information availability.</li> <li>Is any related repair information available?</li> </ul>	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	<p><b>VERIFY DTC FOR MODULE COMMUNICATION</b></p> <ul style="list-style-type: none"> <li>Switch the ignition off, then ON (engine off).</li> <li>Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any other PENDING CODEs and/or DTCs present?</li> </ul>	Yes	Go to the applicable PENDING CODE or DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	Go to the next step.
4	<p><b>VERIFY DSC HU/CM DTC</b></p> <ul style="list-style-type: none"> <li>Perform the DSC HU/CM DTC inspection using the M-MDS. (See <b>DTC INSPECTION [DSC HU/CM]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [DSC HU/CM]</b> .)
		No	Go to the next step.
5	<p><b>INSPECT DSC HU/CM CONNECTOR CONDITION</b></p> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the DSC HU/CM connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	<p><b>INSPECT PCM CONNECTOR CONDITION</b></p> <ul style="list-style-type: none"> <li>Disconnect the PCM connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
7	<p><b>VERIFY DTC TROUBLESHOOTING COMPLETED</b></p> <ul style="list-style-type: none"> <li>Always reconnect all disconnected connectors.</li> <li>Clear the DTC from the PCM memory using the M-MDS. (See <b>CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Perform the KOEO or KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Is the same Pending DTC present?</li> </ul>	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See <b>PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .) Go to the next step.
		No	Go to the next step.
8	<p><b>VERIFY AFTER REPAIR PROCEDURE</b></p> <ul style="list-style-type: none"> <li>Perform the "AFTER REPAIR PROCEDURE". (See <b>AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	DTC troubleshooting completed.

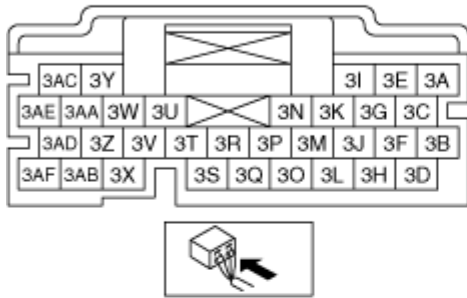
STEP	INSPECTION	RESULTS	ACTION
2	<b>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</b> <ul style="list-style-type: none"> <li>Verify related Service Bulletins and/or on-line repair information availability.</li> <li>Is any related repair information available?</li> </ul>	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
3	<b>VERIFY DTC FOR MODULE COMMUNICATION</b> <ul style="list-style-type: none"> <li>Switch the ignition off, then ON (engine off).</li> <li>Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any other PENDING CODEs and/or DTCs present?</li> </ul>	Yes	Go to the applicable PENDING CODE or DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	Go to the next step.
4	<b>VERIFY EPS CONTROL MODULE DTC</b> <ul style="list-style-type: none"> <li>Perform the EPS control module DTC inspection using the M-MDS. (See <b>DTC INSPECTION [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [ELECTRIC POWER STEERING (EPS) CONTROL MODULE]</b> .)
		No	Go to the next step.
5	<b>INSPECT EPS CONTROL MODULE CONNECTOR CONDITION</b> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the EPS control module connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	<b>INSPECT PCM CONNECTOR CONDITION</b> <ul style="list-style-type: none"> <li>Disconnect the PCM connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
7	<b>VERIFY DTC TROUBLESHOOTING COMPLETED</b> <ul style="list-style-type: none"> <li>Always reconnect all disconnected connectors.</li> <li>Clear the DTC from the PCM memory using the M-MDS. (See <b>CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Perform the KOEO or KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Is the same Pending DTC present?</li> </ul>	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See <b>PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .) Go to the next step.
		No	Go to the next step.
8	<b>VERIFY AFTER REPAIR PROCEDURE</b> <ul style="list-style-type: none"> <li>Perform the "AFTER REPAIR PROCEDURE". (See <b>AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
1	<p><b>RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION</b></p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>Recording can be facilitated using the screen capture function of the PC.</li> <li>Record the snapshot data on the repair order.</li> </ul>	–	Go to the next step.
2	<p><b>VERIFY RELATED REPAIR INFORMATION AVAILABILITY</b></p> <ul style="list-style-type: none"> <li>Verify related Service Bulletins and/or on-line repair information availability.</li> <li>Is any related repair information available?</li> </ul>	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	<p><b>VERIFY DTC FOR MODULE COMMUNICATION</b></p> <ul style="list-style-type: none"> <li>Switch the ignition off, then ON (engine off).</li> <li>Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See <b>ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any other PENDING CODEs and/or DTCs present?</li> </ul>	Yes	Go to the applicable PENDING CODE or DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	Go to the next step.
4	<p><b>VERIFY INSTRUMENT CLUSTER DTC</b></p> <ul style="list-style-type: none"> <li>Perform the instrument cluster DTC inspection using the M-MDS. (See <b>DTC INSPECTION [INSTRUMENT CLUSTER]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	<p>DTC U0100:00 is displayed:</p> <ul style="list-style-type: none"> <li>CAN communication line can be considered the cause.</li> <li>— Repair or replace the wiring harness between PCM and instrument cluster, then go to Step 7.</li> </ul> <p>DTC other than U0100:00 is displayed:</p> <ul style="list-style-type: none"> <li>Go to the applicable DTC inspection. (See <b>DTC TABLE [INSTRUMENT CLUSTER]</b>.)</li> </ul>
		No	Go to the next step.
		No	Go to the next step.
5	<p><b>INSPECT INSTRUMENT CLUSTER CONNECTOR CONDITION</b></p> <ul style="list-style-type: none"> <li>Switch the ignition off.</li> <li>Disconnect the instrument cluster connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to Step 7.
		No	Go to the next step.
6	<p><b>INSPECT PCM CONNECTOR CONDITION</b></p> <ul style="list-style-type: none"> <li>Disconnect the PCM connector.</li> <li>Inspect for poor connection (such as damaged/pulled-out pins, corrosion).</li> <li>Is there any malfunction?</li> </ul>	Yes	Repair or replace the connector and/or terminals, then go to the next step.
		No	Go to the next step.
7	<p><b>VERIFY DTC TROUBLESHOOTING COMPLETED</b></p> <ul style="list-style-type: none"> <li>Always reconnect all disconnected connectors.</li> <li>Clear the DTC from the PCM memory using the M-MDS. (See <b>CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Perform the KOEO or KOER self test. (See <b>KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Is the same Pending DTC present?</li> </ul>	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See <b>PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]</b> .) Go to the next step.
		No	Go to the next step.
8	<p><b>VERIFY AFTER REPAIR PROCEDURE</b></p> <ul style="list-style-type: none"> <li>Perform the "AFTER REPAIR PROCEDURE". (See <b>AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b>.)</li> <li>Are any DTCs present?</li> </ul>	Yes	Go to the applicable DTC inspection. (See <b>DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]</b> .)
		No	DTC troubleshooting completed.

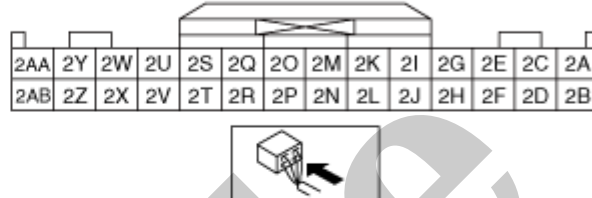




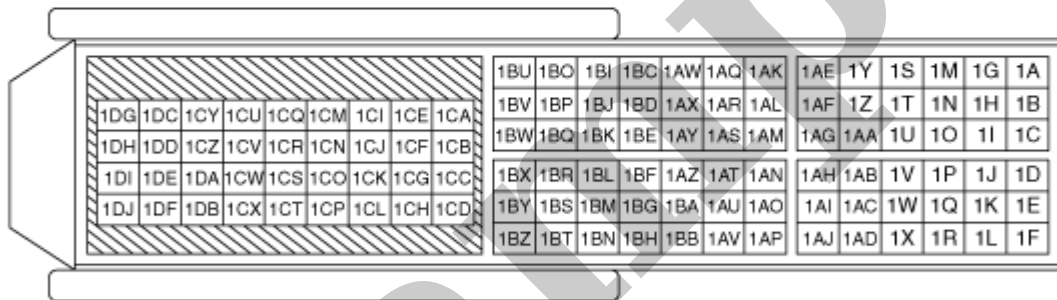
SAS CONTROL MODULE WIRING HARNESS-SIDE CONNECTOR



FBCM WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



¹ : With EGR cooler

² : Without EGR cooler

# DTC P0628:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896666

id0102s914860

DTC P0628:00	Fuel pump control module circuit low input
DETECTION CONDITION	<ul style="list-style-type: none"> <li>When the PCM outputs a duty signal to the fuel pump control module, the difference in voltage between fuel pump unit terminals A and B is less than 1.5 V for a continuous 5 s.</li> </ul> <p><b>Diagnostic support note</b></p> <ul style="list-style-type: none"> <li>This is a continuous monitor (CCM).</li> <li>The check engine light does not illuminate.</li> <li>FREEZE FRAME DATA is not available.</li> <li>Snapshot data is available.</li> <li>DTC is stored in the PCM memory.</li> </ul>
FAIL-SAFE FUNCTION	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
POSSIBLE CAUSE	<ul style="list-style-type: none"> <li>Fuel pump unit connector or terminals malfunction</li> <li>Fuel pump unit malfunction</li> <li>Fuel pump control module connector or terminals malfunction</li> <li>Short to ground in wiring harness between fuel pump unit terminal A and fuel pump control module terminal 2C</li> <li>Open circuit in wiring harness between the following terminals:                             <ul style="list-style-type: none"> <li>Fuel pump unit terminal A–Fuel pump control module terminal 2C</li> <li>Fuel pump unit terminal B–Fuel pump control module terminal 2D</li> </ul> </li> <li>Fuel pump control module malfunction</li> <li>PCM malfunction</li> </ul>

