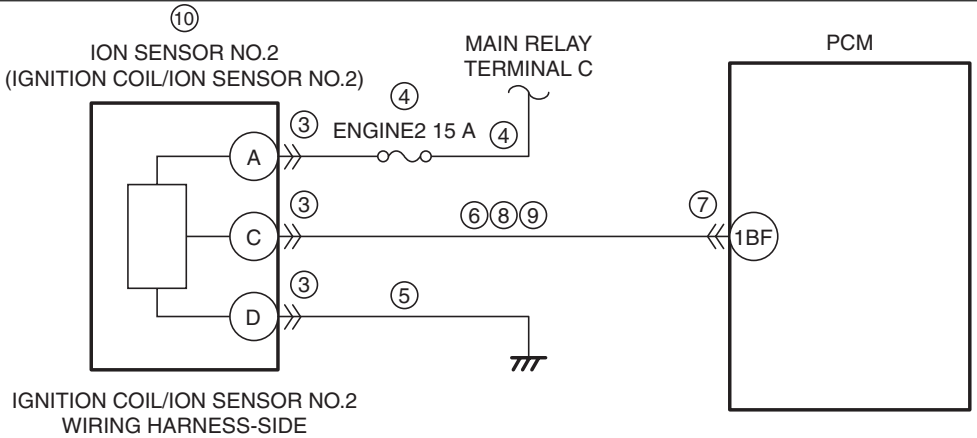
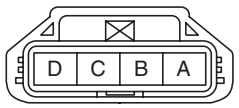
DTC P2305:00 [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

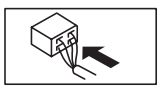
id0102h4743100

DTC P2305:00	**Ion sensor No.2 circuit problem**
DETECTION CONDITION	• After the engine is started, when the engine speed is **2,000 rpm or less**, the signal input to the PCM from ion sensor No.2 is in error. **Diagnostic support note** • This is a continuous monitor (other). • The check engine light does not illuminate. • FREEZE FRAME DATA (Mode 2)/Snapshot data is not available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	Not applicable
POSSIBLE CAUSE	• Cylinder No.2 misfire • Ignition coil/ion sensor No.2 connector or terminals malfunction • Short to ground or open circuit in ion sensor No.2 power supply circuit — Short to ground in wiring harness between ENGINE2 15 A fuse and ignition coil/ion sensor No.2 terminal A — ENGINE2 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and ignition coil/ion sensor No.2 terminal A • Open circuit in wiring harness between ignition coil/ion sensor No.2 terminal D and body ground • Short to ground in wiring harness between ignition coil/ion sensor No.2 terminal C and PCM terminal 1BF • PCM connector or terminals malfunction • Short to power supply in wiring harness between ignition coil/ion sensor No.2 terminal C and PCM terminal 1BF • Open circuit in wiring harness between ignition coil/ion sensor No.2 terminal C and PCM terminal 1BF • Ion sensor No.2 malfunction • PCM malfunction

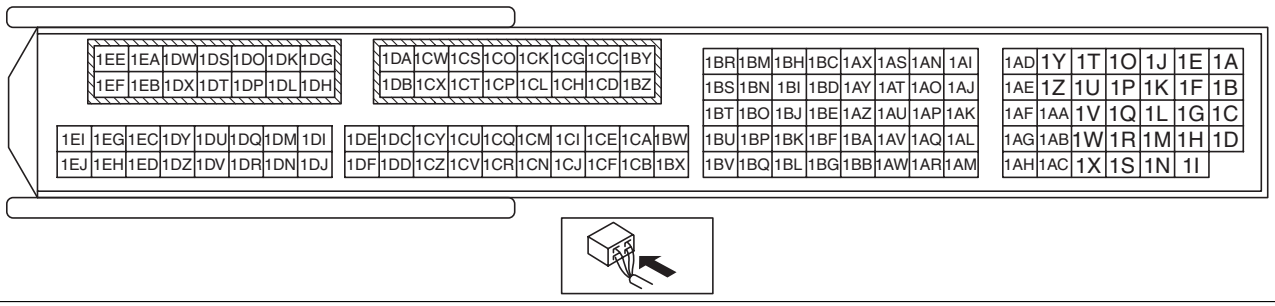


IGNITION COIL/ION SENSOR NO.2 WIRING HARNESS-SIDE CONNECTOR





PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	**VERIFY RELATED SERVICE INFORMATION AVAILABILITY** • Verify related Service Information availability. • Is any related Service Information available?	Yes	Perform repair or diagnosis according to the available Service Information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	**VERIFY RELATED PENDING CODE AND/OR DTC** • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is the PENDING CODE/DTC P0302:00 also present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC P0301:00, P0302:00, P0303:00, P0304:00 [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
3	**INSPECT IGNITION COIL/ION SENSOR NO.2 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the ignition coil/ion sensor No.2 connector. • Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction?	Yes	Repair or replace the connector and/or terminals, then go to Step 11.
		No	Go to the next step.
4	**INSPECT ION SENSOR NO.2 POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Verify that the ignition coil/ion sensor No.2 connector is disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the ignition coil/ion sensor No.2 terminal A (wiring harness-side). • Is the voltage **B+**?	Yes	Go to the next step.
		No	Inspect the ENGINE2 15 A fuse. • If the fuse is blown: — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deteriorated: — Replace the fuse. • If the fuse is normal: — Repair or replace the wiring harness for a possible open circuit. Go to Step 11.
5	**INSPECT ION SENSOR NO.2 GROUND CIRCUIT FOR OPEN CIRCUIT** • Verify that the ignition coil/ion sensor No.2 connector is disconnected. • Switch the ignition off. • Inspect for continuity between ignition coil/ion sensor No.2 terminal D (wiring harness-side) and body ground. • 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.
6	**INSPECT ION SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO GROUND** • Verify that the ignition coil/ion sensor No.2 connector is disconnected. • Inspect for continuity between ignition coil/ion sensor No.2 terminal C (wiring harness-side) and body ground. • Is there continuity?	Yes	If the short to ground circuit could be detected in the wiring harness: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected in the wiring harness: • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Go to Step 11.
		No	Go to the next step.
7	**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 connector and/or terminals, then go to Step 11.
		No	Go to the next step.

STEP	INSPECTION		ACTION
8	**INSPECT ION SENSOR NO.2 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the ignition coil/ion sensor No.2 and PCM connectors are disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the ignition coil/ion sensor No.2 terminal C (wiring harness-side). • Is the voltage **0 V**?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible short to power supply, then go to Step 11.
9	**INSPECT ION SENSOR NO.2 SIGNAL CIRCUIT FOR OPEN CIRCUIT** • Verify that the ignition coil/ion sensor No.2 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between ignition coil/ion sensor No.2 terminal C (wiring harness-side) and PCM terminal 1BF (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 Step 11.
10	**INSPECT ION SENSOR NO.2** • Inspect the ion sensor No.2. (See ION SENSOR INSPECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is there any malfunction?	Yes	Replace the ignition coil/ion sensor No.2, then go to the next step. (See IGNITION COIL/ION SENSOR REMOVAL/ INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	Go to the next step.
11	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Start the engine. • Perform the KOER self test. (See KOEO/KOER SELF TEST [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) Go to the next step.
		No	Go to the next step.
12	**VERIFY AFTER REPAIR PROCEDURE** • Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)
		No	DTC troubleshooting completed.