DETERMINING SHORT BETWEEN CIRCUITS LOCATION (HS-CAN) [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)]

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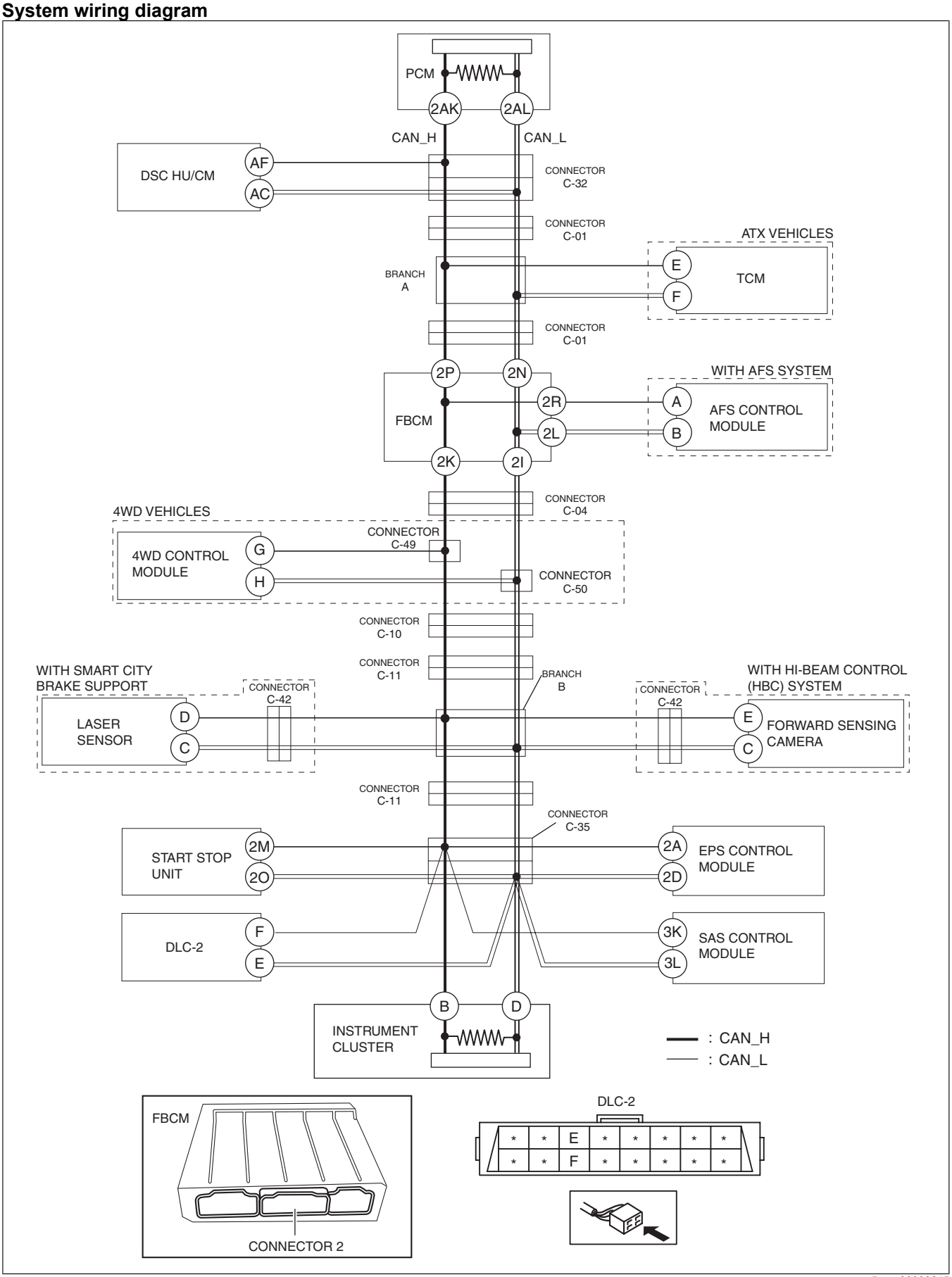
Caution

- **Perform the following malfunction diagnosis only when it is diagnosed with a short between circuits by CONTROLLER AREA NETWORK (CAN) MALFUNCTION DIAGNOSIS FLOW [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)].**

System wiring diagram



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Determination procedure

Caution
- **When disconnecting the connector, verify that there is no looseness, damage, deformation, corrosion, or poor connection of the connector terminals.**
- **When inspecting the DLC-2, touch it with a paper clip or similar thin pin without directly inserting a tester into the terminals.**

Step	Inspection		Action
1	**INSPECT BETWEEN FRONT BODY CONTROL MODULE (FBCM) AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connector 2 which has front body control module (FBCM) terminals 2K and 2I. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Go to Step 5.
		No	Go to the next step.
2	**INSPECT FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Inspect for continuity between front body control module (FBCM) terminals 2K and 2I. • Is there continuity?	Yes	Replace the front body control module (FBCM) because there is a short between circuits in the front body control module (FBCM). (See FRONT BODY CONTROL MODULE (FBCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	**INSPECT BETWEEN AFS CONTROL MODULE AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between AFS control module terminals A and B. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 25.
4	**INSPECT AFS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS** • Disconnect the AFS control module connector. • Inspect for continuity between AFS control module terminals A and B (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the AFS control module and front body control module (FBCM) because the wiring harness is shorted between circuits.
		No	Replace the AFS control module because there is a short between circuits in the AFS control module. (See ADAPTIVE FRONT LIGHTING SYSTEM (AFS) CONTROL MODULE REMOVAL/INSTALLATION.)

Step	Inspection		Action
5	**INSPECT BETWEEN CONNECTOR C-04 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connector C-04. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between the front body control module (FBCM) and connector C-04 because the wiring harness is shorted between circuits.
6	**INSPECT BETWEEN CONNECTORS C-49 AND C-50 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connectors C-49 and C-50. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Go to Step 9.
		No	Go to the next step.

Step	Inspection		Action
7	**INSPECT BETWEEN 4WD CONTROL MODULE AND CONNECTORS C-49 AND C-50 FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Inspect for continuity between 4WD control module terminals G and H. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-04 and connectors C-49 and C-50 because the wiring harness is shorted between circuits.
8	**INSPECT 4WD CONTROL MODULE FOR SHORT BETWEEN CIRCUITS** • Disconnect the 4WD control module connector. • Inspect for continuity between 4WD control module terminals G and H (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the 4WD control module and connectors C-49 and C-50 because the wiring harness is shorted between circuits.
		No	Replace the 4WD control module because there is a short between circuits in the 4WD control module. (See 4WD CONTROL MODULE REMOVAL/ INSTALLATION.)
9	**INSPECT BETWEEN CONNECTOR C-10 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connector C-10. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connectors C-49 and C-50 and connector C-10 because the wiring harness is shorted between circuits.

Step	Inspection		Action
10	**INSPECT BETWEEN CONNECTOR C-11 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connector C-11. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Go to Step 16.
		No	Go to the next step.
11	**INSPECT BETWEEN CONNECTOR C-11 AND FORWARD SENSING CAMERA/LASER SENSOR FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Inspect for continuity between forward sensing camera terminals E and C (with high beam control (HBC) system). • Inspect for continuity between laser sensor terminals D and C (with smart city brake support). • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-11 and connector C-10 because the wiring harness is shorted between circuits.
12	**INSPECT BETWEEN LASER SENSOR AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS** • Disconnect connector C-42. • Inspect for continuity between laser sensor terminals D and C. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 14.
13	**INSPECT LASER SENSOR FOR SHORT BETWEEN CIRCUITS** • Disconnect the laser sensor connector. • Inspect for continuity between laser sensor terminals D and C (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the laser sensor and connector C-42 because the wiring harness is shorted between circuits.
		No	Replace the laser sensor because there is a short between circuits in the laser sensor. (See LASER SENSOR REMOVAL/INSTALLATION.)
14	**INSPECT BETWEEN FORWARD SENSING CAMERA AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between forward sensing camera terminals E and C. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-11 and connector C-42 because the wiring harness is shorted between circuits.

Step	Inspection		Action
15	**INSPECT FORWARD SENSING CAMERA FOR SHORT BETWEEN CIRCUITS** • Disconnect the forward sensing camera connector. • Inspect for continuity between forward sensing camera terminals E and C (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the forward sensing camera and connector C-42 because the wiring harness is shorted between circuits.
		No	Replace the forward sensing camera because there is a short between circuits in the forward sensing camera. (See FORWARD SENSING CAMERA (FSC) REMOVAL/ INSTALLATION.)
16	**INSPECT BETWEEN DLC-2 AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Disconnect connector C-35. • Inspect for continuity between DLC-2 terminals F and E. • Is there continuity?	Yes	Repair or replace the wiring harness between DLC-2 and connector C-35 because the wiring harness is shorted between circuits.
		No	Go to the next step.
17	**INSPECT BETWEEN START STOP UNIT AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between start stop unit terminals 2M and 2O. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 19.
18	**INSPECT START STOP UNIT FOR SHORT BETWEEN CIRCUITS** • Disconnect the start stop unit connector. • Is there continuity between start stop unit terminals 2M and 2O (wiring harness side)? • Is there continuity?	Yes	Repair or replace the wiring harness between the start stop unit and connector C-35 because the wiring harness is shorted between circuits.
		No	Replace the start stop unit because there is a short between circuits in the start stop unit. (See START STOP UNIT REMOVAL/INSTALLATION.)
19	**INSPECT BETWEEN EPS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between EPS control module terminals 2A and 2D. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 21.
20	**INSPECT EPS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS** • Disconnect the EPS control module connector. • Is there continuity between EPS control module terminals 2A and 2D (wiring harness side)? • Is there continuity?	Yes	Repair or replace the wiring harness between the EPS control module and connector C-35 because the wiring harness is shorted between circuits.
		No	Replace the EPS control module because there is a short between circuits in the EPS control module. (See STEERING WHEEL AND COLUMN REMOVAL/ INSTALLATION.)
21	**INSPECT BETWEEN SAS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between SAS control module terminals 3K and 3L. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 23.
22	**INSPECT SAS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS** • Disconnect the SAS control module connector. • Is there continuity between SAS control module terminals 3K and 3L (wiring harness side)? • Is there continuity?	Yes	Repair or replace the wiring harness between the SAS control module and connector C-35 because the wiring harness is shorted between circuits.
		No	Replace the SAS control module because there is a short between circuits in the SAS control module. (See SAS CONTROL MODULE REMOVAL/ INSTALLATION.)

Step	Inspection		Action
23	**INSPECT BETWEEN INSTRUMENT CLUSTER AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS** • Inspect for continuity between instrument cluster terminals B and D. • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness between connector C-11 and connector C-35 because the wiring harness is shorted between circuits.
24	**INSPECT INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS** • Disconnect the instrument cluster connector. • Is there continuity between instrument cluster terminals B and D (wiring harness side)? • Is there continuity?	Yes	Repair or replace the wiring harness between the instrument cluster and connector C-35 because the wiring harness is shorted between circuits.
		No	Replace the instrument cluster because there is a short between circuits in the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
25	**INSPECT BETWEEN CONNECTOR C-01 AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Connect connector 2 which has front body control module (FBCM) terminals 2K and 2I. • Disconnect connector C-01. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Repair or replace the wiring harness between connector C-01 and the front body control module (FBCM) because the wiring harness is shorted between circuits.
		No	Go to the next step.
26	**INSPECT BETWEEN TCM AND CONNECTOR C-01 FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Inspect for continuity between TCM terminals E and F. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 28.
27	**INSPECT TCM FOR SHORT BETWEEN CIRCUITS** • Disconnect the TCM connector. • Inspect for continuity between TCM terminals E and F (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the TCM and connector C-01 because the wiring harness is shorted between circuits.
		No	Replace the TCM because there is a short between circuits in the TCM. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [FW6A-EL, FW6AX-EL].)

Step	Inspection		Action
28	**INSPECT BETWEEN CONNECTORS C-32 AND C-01 FOR SHORT BETWEEN CIRCUITS** • Connect connector C-01. • Disconnect connector C-32. • Connect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Switch the ignition ON (engine off). • Measure the voltage at DLC-2 terminals F and E. • Is the voltage at DLC-2 terminals F and E the same?	Yes	Repair or replace the wiring harness between connector C-32 and connector C-01 because the wiring harness is shorted between circuits.
		No	Go to the next step.
29	**INSPECT BETWEEN DSC HU/CM AND CONNECTOR C-32 FOR SHORT BETWEEN CIRCUITS** • Switch the ignition off (LOCK). • Disconnect the negative battery cable. (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].) (See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (WITHOUT i-stop)].) • Inspect for continuity between DSC HU/CM terminals AF and AC. • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 31.
30	**INSPECT DSC HU/CM FOR SHORT BETWEEN CIRCUITS** • Disconnect the DSC HU/CM connector. • Inspect for continuity between DSC HU/CM terminals AF and AC (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the DSC HU/CM and connector C-32 because the wiring harness is shorted between circuits.
		No	Replace the DSC HU/CM because there is a short between circuits in the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)
31	**INSPECT PCM FOR SHORT BETWEEN CIRCUITS** • Disconnect the PCM connector. • Inspect for continuity between PCM terminals 2AK and 2AL (wiring harness side). • Is there continuity?	Yes	Repair or replace the wiring harness between the PCM and connector C-32 because the wiring harness is shorted between circuits.
		No	Replace the PCM because there is a short between circuits in the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)