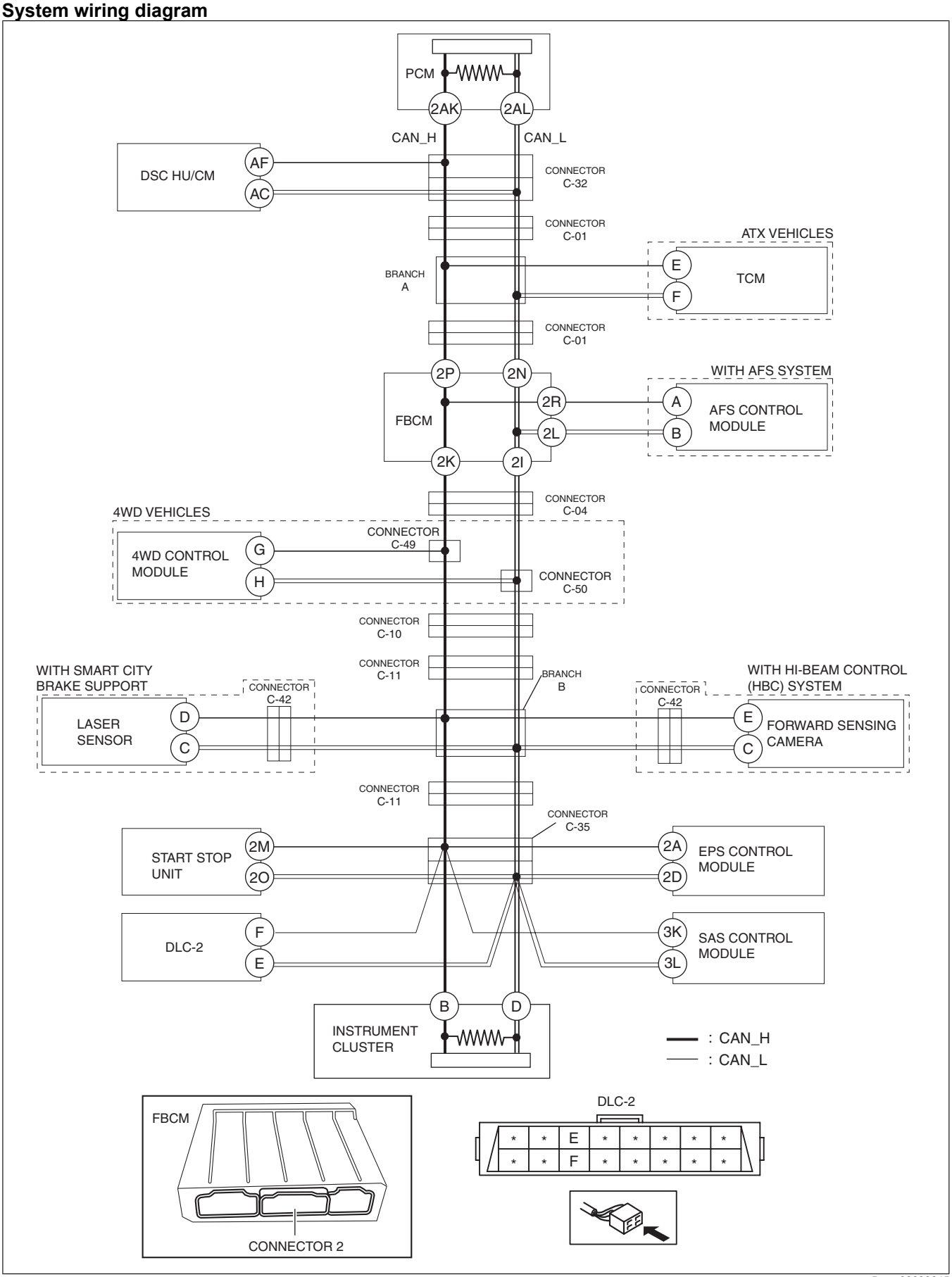
## DETERMINING SHORT BETWEEN CIRCUITS LOCATION (HS-CAN) [SKYACTIV-G 2.0 (L.H.D.)]

id100201000800

**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 (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**<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connector 2 which has front body control module (FBCM) terminals 2K and 2I.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• 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**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Inspect for continuity between front body control module (FBCM) terminals 2K and 2I.<br>• 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).<br>(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**<br>• Inspect for continuity between AFS control module terminals A and B.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 25. |
| 4 | **INSPECT AFS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the AFS control module connector.<br>• Inspect for continuity between AFS control module terminals A and B (wiring harness side).<br>• 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.<br>(See ADAPTIVE FRONT LIGHTING SYSTEM (AFS) CONTROL MODULE REMOVAL/INSTALLATION.) |

| Step | Inspection | | Action |
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| 5 | **INSPECT BETWEEN CONNECTOR C-04 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connector C-04.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• 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**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connectors C-49 and C-50.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• Is the voltage at DLC-2 terminals F and E the same? | Yes | Go to Step 9. |
| | | No | Go to the next step. |
| 7 | **INSPECT BETWEEN 4WD CONTROL MODULE AND CONNECTORS C-49 AND C-50 FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Inspect for continuity between 4WD control module terminals G and H.<br>• 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. |

| Step | Inspection | | Action |
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| 8 | **INSPECT 4WD CONTROL MODULE FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the 4WD control module connector.<br>• Inspect for continuity between 4WD control module terminals G and H (wiring harness side).<br>• 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.<br>(See 4WD CONTROL MODULE REMOVAL/ INSTALLATION.) |
| 9 | **INSPECT BETWEEN CONNECTOR C-10 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connector C-10.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• 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. |
| 10 | **INSPECT BETWEEN CONNECTOR C-11 AND INSTRUMENT CLUSTER FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connector C-11.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• Is the voltage at DLC-2 terminals F and E the same? | Yes | Go to Step 16. |
| | | No | Go to the next step. |

| Step | Inspection | | Action |
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| 11 | **INSPECT BETWEEN CONNECTOR C-11 AND FORWARD SENSING CAMERA/LASER SENSOR FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Inspect for continuity between forward sensing camera terminals E and C (with high beam control (HBC) system).<br>• Inspect for continuity between laser sensor terminals D and C (with smart city brake support).<br>• 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**<br>• Disconnect connector C-42.<br>• Inspect for continuity between laser sensor terminals D and C.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 14. |
| 13 | **INSPECT LASER SENSOR FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the laser sensor connector.<br>• Inspect for continuity between laser sensor terminals D and C (wiring harness side).<br>• 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.<br>(See LASER SENSOR REMOVAL/INSTALLATION.) |
| 14 | **INSPECT BETWEEN FORWARD SENSING CAMERA AND CONNECTOR C-42 FOR SHORT BETWEEN CIRCUITS**<br>• Inspect for continuity between forward sensing camera terminals E and C.<br>• 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. |
| 15 | **INSPECT FORWARD SENSING CAMERA FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the forward sensing camera connector.<br>• Inspect for continuity between forward sensing camera terminals E and C (wiring harness side).<br>• 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.<br>(See FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.) |
| 16 | **INSPECT BETWEEN DLC-2 AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Disconnect connector C-35.<br>• Inspect for continuity between DLC-2 terminals F and E.<br>• 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. |

| Step | Inspection | | Action |
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| 17 | **INSPECT BETWEEN START STOP UNIT AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS**<br>• Inspect for continuity between start stop unit terminals 2M and 2O.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 19. |
| 18 | **INSPECT START STOP UNIT FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the start stop unit connector.<br>• Is there continuity between start stop unit terminals 2M and 2O (wiring harness side)?<br>• 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.<br>(See START STOP UNIT REMOVAL/INSTALLATION.) |
| 19 | **INSPECT BETWEEN EPS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS**<br>• Inspect for continuity between EPS control module terminals 2A and 2D.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 21. |
| 20 | **INSPECT EPS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the EPS control module connector.<br>• Is there continuity between EPS control module terminals 2A and 2D (wiring harness side)?<br>• 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.<br>(See STEERING WHEEL AND COLUMN REMOVAL/ INSTALLATION.) |
| 21 | **INSPECT BETWEEN SAS CONTROL MODULE AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS**<br>• Inspect for continuity between SAS control module terminals 3K and 3L.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 23. |
| 22 | **INSPECT SAS CONTROL MODULE FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the SAS control module connector.<br>• Is there continuity between SAS control module terminals 3K and 3L (wiring harness side)?<br>• 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.<br>(See SAS CONTROL MODULE REMOVAL/ INSTALLATION.) |
| 23 | **INSPECT BETWEEN INSTRUMENT CLUSTER AND CONNECTOR C-35 FOR SHORT BETWEEN CIRCUITS**<br>• Inspect for continuity between instrument cluster terminals B and D.<br>• 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**<br>• Disconnect the instrument cluster connector.<br>• Is there continuity between instrument cluster terminals B and D (wiring harness side)?<br>• 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.<br>(See INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.) |

| Step | Inspection | | Action |
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| 25 | **INSPECT BETWEEN CONNECTOR C-01 AND FRONT BODY CONTROL MODULE (FBCM) FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Connect connector 2 which has front body control module (FBCM) terminals 2K and 2I.<br>• Disconnect connector C-01.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• 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**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Inspect for continuity between TCM terminals E and F.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 28. |
| 27 | **INSPECT TCM FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the TCM connector.<br>• Inspect for continuity between TCM terminals E and F (wiring harness side).<br>• 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.<br>(See CONTROL VALVE BODY REMOVAL/ INSTALLATION [FW6A-EL, FW6AX-EL].) |
| 28 | **INSPECT BETWEEN CONNECTORS C-32 AND C-01 FOR SHORT BETWEEN CIRCUITS**<br>• Connect connector C-01.<br>• Disconnect connector C-32.<br>• Connect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Switch the ignition ON (engine off).<br>• Measure the voltage at DLC-2 terminals F and E.<br>• 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. |

| Step | Inspection | | Action |
|---|---|---|---|
| 29 | **INSPECT BETWEEN DSC HU/CM AND CONNECTOR C-32 FOR SHORT BETWEEN CIRCUITS**<br>• Switch the ignition off (LOCK).<br>• Disconnect the negative battery cable.<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0].)<br>(See NEGATIVE BATTERY CABLE DISCONNECTION/CONNECTION [SKYACTIV-G 2.0 (WITHOUT i-stop)].)<br>• Inspect for continuity between DSC HU/CM terminals AF and AC.<br>• Is there continuity? | Yes | Go to the next step. |
| | | No | Go to Step 31. |
| 30 | **INSPECT DSC HU/CM FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the DSC HU/CM connector.<br>• Inspect for continuity between DSC HU/CM terminals AF and AC (wiring harness side).<br>• 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.<br>(See DSC HU/CM REMOVAL/INSTALLATION.) |
| 31 | **INSPECT PCM FOR SHORT BETWEEN CIRCUITS**<br>• Disconnect the PCM connector.<br>• Inspect for continuity between PCM terminals 2AK and 2AL (wiring harness side).<br>• 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.<br>(See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) |