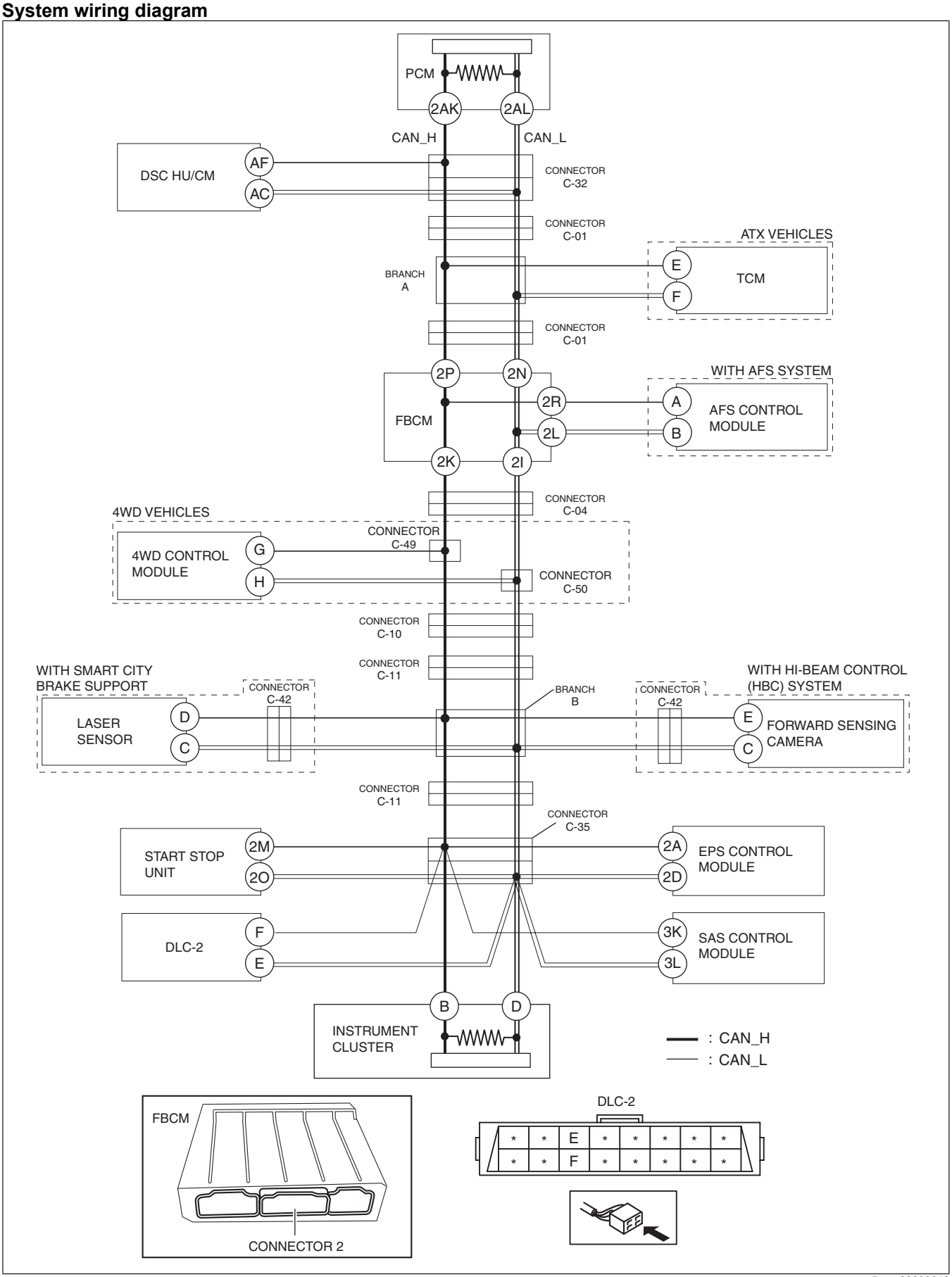
DETERMINING SHORT TO GROUND LOCATION (HS-CAN) [SKYACTIV-G 2.0, SKYACTIV-G 2.5 (L.H.D.)]

id100208000600

Caution

- **Perform the following malfunction diagnosis only when it is diagnosed with a short to ground 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 FOR SHORT TO GROUND BETWEEN FRONT BODY CONTROL MODULE (FBCM) AND INSTRUMENT CLUSTER** • 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 2P and 2N. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Go to Step 5.
		No	Go to the next step.
2	**INSPECT CAN LINE INSIDE FRONT BODY CONTROL MODULE (FBCM) FOR SHORT TO GROUND** • Inspect for continuity at the following terminals: — Between front body control module (FBCM) terminal 2P and body ground — Between front body control module (FBCM) terminal 2N and body ground • Is there continuity?	Yes	Replace the front body control module (FBCM) because there is a short to ground in the front body control module (FBCM). (See FRONT BODY CONTROL MODULE (FBCM) REMOVAL/INSTALLATION.)
		No	Go to the next step.
3	**INSPECT FOR SHORT TO GROUND BETWEEN AFS CONTROL MODULE AND FRONT BODY CONTROL MODULE (FBCM)** • Inspect for continuity at the following terminals: — Between AFS control module terminal A and body ground — Between AFS control module terminal B and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 25.
4	**INSPECT CAN LINE IN AFS CONTROL MODULE FOR SHORT TO GROUND** • Disconnect the AFS control module connector. • Inspect for continuity at the following terminals: — Between AFS control module terminal A (wiring harness side) and body ground — Between AFS control module terminal B (wiring harness side) and body ground • 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 to ground.
		No	Replace the AFS control module because there is a short to ground in the AFS control module. (See ADAPTIVE FRONT LIGHTING SYSTEM (AFS) CONTROL MODULE REMOVAL/INSTALLATION.)

Step	Inspection		Action
5	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-04 AND INSTRUMENT CLUSTER** • Disconnect connector C-04. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	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 to ground.
6	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-49 AND C-50 AND INSTRUMENT CLUSTER** • Disconnect connector C-49 and C-50. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Go to Step 9.
		No	Go to the next step.
7	**INSPECT FOR SHORT TO GROUND BETWEEN 4WD CONTROL MODULE AND CONNECTORS C-49 AND C-50** • Inspect for continuity at the following terminals: — Between 4WD control module terminal G and body ground — Between 4WD control module terminal H and body ground • 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 to ground.
8	**INSPECT CAN LINE IN 4WD CONTROL MODULE FOR SHORT TO GROUND** • Disconnect the 4WD control module connector. • Inspect for continuity at the following terminals: — Between 4WD control module terminal G (wiring harness side) and body ground — Between 4WD control module terminal H (wiring harness side) and body ground • 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 to ground.
		No	Replace the 4WD control module because there is a short to ground in the 4WD control module. (See 4WD CONTROL MODULE REMOVAL/ INSTALLATION.)
9	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-10 AND INSTRUMENT CLUSTER** • Disconnect connector C-10. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	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 to ground.
10	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-11 AND INSTRUMENT CLUSTER** • Disconnect connector C-11. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Go to Step 16.
		No	Go to the next step.

Step	Inspection		Action
11	**INSPECT FOR SHORT TO GROUND BETWEEN LASER SENSOR AND CONNECTOR C-42** • Disconnect connector C-42. • Inspect for continuity at the following terminals: — Between laser sensor terminal D and body ground — Between laser sensor terminal C and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 13.
12	**INSPECT CAN LINE INSIDE LASER SENSOR FOR SHORT TO GROUND** • Disconnect the laser sensor connector. • Inspect for continuity at the following terminals: — Between laser sensor terminal D (wiring harness side) and body ground — Between laser sensor terminal C (wiring harness side) and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between the laser sensor and connector C-42 because the wiring harness is shorted to ground.
		No	Replace the laser sensor because there is a short to ground in the laser sensor. (See LASER SENSOR REMOVAL/INSTALLATION.)
13	**INSPECT FOR SHORT TO GROUND BETWEEN FORWARD SENSING CAMERA AND CONNECTOR C-42** • Inspect for continuity at the following terminals: — Between forward sensing camera terminal E and body ground — Between forward sensing camera terminal C and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 15.
14	**INSPECT CAN LINE IN FORWARD SENSING CAMERA FOR SHORT TO GROUND** • Disconnect the forward sensing camera connector. • Inspect for continuity at the following terminals: — Between forward sensing camera terminal E (wiring harness side) and body ground — Between forward sensing camera terminal C (wiring harness side) and body ground • 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 to ground.
		No	Replace the forward sensing camera because there is a short to ground in the forward sensing camera. (See FORWARD SENSING CAMERA (FSC) REMOVAL/INSTALLATION.)
15	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTORS C-11 AND C-42** • Connect connector C-42. • Inspect for continuity at the following terminals: — Between forward sensing camera terminal E and body ground (with high beam control (HBC) system) — Between forward sensing camera terminal C and body ground (with high beam control (HBC) system) — Between laser sensor terminal D and body ground (with smart city brake support) — Between laser sensor terminal C and body ground (with smart city brake support) • Is there continuity?	Yes	Repair or replace the wiring harness between connector C-11 and connector C-42 because the wiring harness is shorted to ground.
		No	Repair or replace the wiring harness between connector C-10 and connector C-11 because the wiring harness is shorted to ground.
16	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTORS C-35 AND DLC-2** • Disconnect connector C-35. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between connector C-35 and DLC-2 because the wiring harness is shorted to ground.
		No	Go to the next step.

Step	Inspection		Action
17	**INSPECT FOR SHORT TO GROUND BETWEEN START STOP UNIT AND CONNECTOR C-35** • Inspect for continuity at the following terminals: — Between start stop unit terminal 2M and body ground — Between start stop unit terminal 2O and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 19.
18	**INSPECT CAN LINE IN START STOP UNIT FOR SHORT TO GROUND** • Disconnect the start stop unit connector. • Inspect for continuity at the following terminals: — Between start stop unit terminal 2M (wiring harness side) and body ground — Between start stop unit terminal 2O (wiring harness side) and body ground • 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 to ground.
		No	Replace the start stop unit because there is a short to ground in the start stop unit. (See START STOP UNIT REMOVAL/INSTALLATION.)
19	**INSPECT FOR SHORT TO GROUND BETWEEN EPS CONTROL MODULE AND CONNECTOR C-35** • Inspect for continuity at the following terminals: — Between EPS control module terminal 2A and body ground — Between EPS control module terminal 2D and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 21.
20	**INSPECT CAN LINE IN EPS CONTROL MODULE FOR SHORT TO GROUND** • Disconnect the EPS control module connector. • Inspect for continuity at the following terminals: — Between EPS control module terminal 2A (wiring harness side) and body ground — Between EPS control module terminal 2D (wiring harness side) and body ground • 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 to ground.
		No	Replace the EPS control module because there is a short to ground in the EPS control module. (See STEERING WHEEL AND COLUMN REMOVAL/ INSTALLATION.)
21	**INSPECT FOR SHORT TO GROUND BETWEEN SAS CONTROL MODULE AND CONNECTOR C-35** • Inspect for continuity at the following terminals: — Between SAS control module terminal 3K and body ground — Between SAS control module terminal 3L and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 23.
22	**INSPECT CAN LINE IN SAS CONTROL MODULE FOR SHORT TO GROUND** • Disconnect the SAS control module connector. • Inspect for continuity at the following terminals: — Between SAS control module terminal 3K (wiring harness side) and body ground — Between SAS control module terminal 3L (wiring harness side) and body ground • 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 to ground.
		No	Replace the SAS control module because there is a short to ground in the SAS control module. (See SAS CONTROL MODULE REMOVAL/ INSTALLATION.)
23	**INSPECT FOR SHORT TO GROUND BETWEEN INSTRUMENT CLUSTER AND CONNECTOR C-35** • Inspect for continuity at the following terminals: — Between instrument cluster terminal B and body ground — Between instrument cluster terminal D and body ground • 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 to ground.

Step	Inspection		Action
24	**INSPECT CAN LINE IN INSTRUMENT CLUSTER FOR SHORT TO GROUND** • Disconnect the instrument cluster connector. • Inspect for continuity at the following terminals: — Between instrument cluster terminal B (wiring harness side) and body ground — Between instrument cluster terminal D (wiring harness side) and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between the instrument cluster and connector C-35 because the wiring harness is shorted to ground.
		No	Replace the instrument cluster because there is a short to ground in the instrument cluster. (See INSTRUMENT CLUSTER REMOVAL/ INSTALLATION.)
25	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-01 AND FRONT BODY CONTROL MODULE (FBCM)** • Disconnect connector C-01. • Connect connector 2 which has front body control module (FBCM) terminals 2P and 2N. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between connector C-01 and the front body control module (FBCM) because the wiring harness is shorted to ground.
		No	Go to the next step.
26	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTOR C-01 AND TCM** • Inspect for continuity at the following terminals: — Between TCM terminal E and body ground — Between TCM terminal F and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 28.
27	**INSPECT CAN LINE IN TCM FOR SHORT TO GROUND** • Disconnect the TCM connector. • Inspect for continuity at the following terminals: — Between TCM terminal E (wiring harness side) and body ground — Between TCM terminal F (wiring harness side) and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between the TCM and connector C-01 because the wiring harness is shorted to ground.
		No	Replace the TCM because there is a short to ground in the TCM. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [FW6A-EL, FW6AX-EL].)
28	**INSPECT FOR SHORT TO GROUND BETWEEN CONNECTORS C-32 AND C-01** • Disconnect connector C-32. • Connect connector C-01. • Inspect for continuity at the following terminals: — Between DLC-2 terminal F and body ground — Between DLC-2 terminal E and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between connector C-32 and connector C-01 because the wiring harness is shorted to ground.
		No	Go to the next step.
29	**INSPECT FOR SHORT TO GROUND BETWEEN DSC HU/CM AND CONNECTOR C-32** • Inspect for continuity at the following terminals: — Between DSC HU/CM terminal AF and body ground — Between DSC HU/CM terminal AC and body ground • Is there continuity?	Yes	Go to the next step.
		No	Go to Step 31.
30	**INSPECT CAN LINE IN DSC HU/CM FOR SHORT TO GROUND** • Disconnect the DSC HU/CM connector. • Inspect for continuity at the following terminals: — Between DSC HU/CM terminal AF (wiring harness side) and body ground — Between DSC HU/CM terminal AC (wiring harness side) and body ground • 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 to ground.
		No	Replace the DSC HU/CM because there is a short to ground in the DSC HU/CM. (See DSC HU/CM REMOVAL/INSTALLATION.)

Step	Inspection		Action
31	**INSPECT CAN LINE IN PCM FOR SHORT TO GROUND** • Disconnect the PCM connector. • Inspect for continuity at the following terminals: — Between PCM terminal 2AK (wiring harness side) and body ground — Between PCM terminal 2AL (wiring harness side) and body ground • Is there continuity?	Yes	Repair or replace the wiring harness between the PCM and connector C-32 because the wiring harness is shorted to ground .
		No	Replace the PCM because there is a short to ground in the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0, SKYACTIV-G 2.5].)