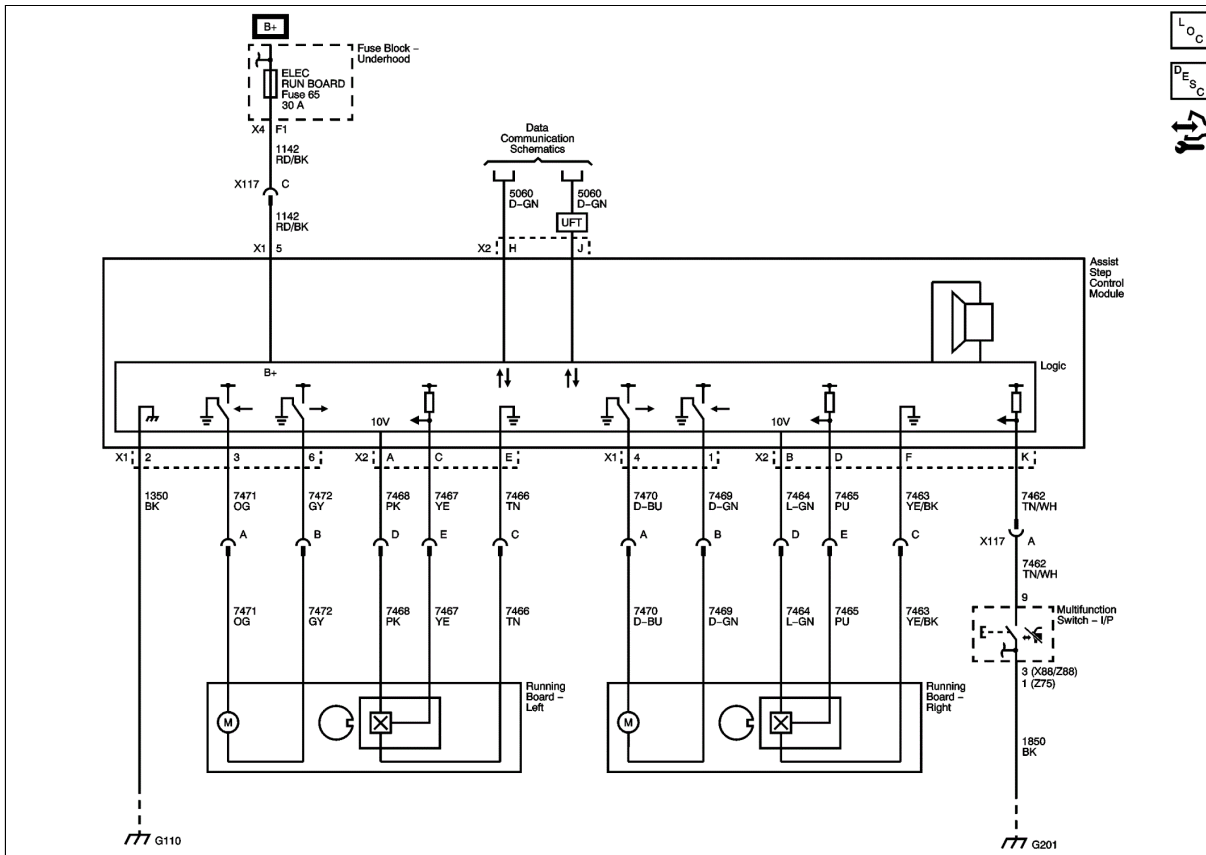


SCHEMATIC WIRING DIAGRAMS > STEP/RUNNING BOARD WIRING

SCHEMATICS > BRS

Fig 1: BRS Wiring Schematic



Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > DIAGNOSTIC INSTRUCTIONS

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	1	1	-	-
Left Side Step 10-Volt Reference	B051C 02	1	B051C 01	-
Right Side Step 10-Volt Reference	B051D 02	1	B051D 01	-
Left Position Sensor Signal	B051C 02	1	1	-
Right Position Sensor Signal	B051D 02	1	1	-
Disable Switch Signal	1	2	-	-
Left Actuator Extend Control	1	B1000 54	1	-
Left Actuator Retract Control	1	B1000 54	1	-
Right Actuator Extend Control	1	B1000 54	1	-
Right Actuator Retract Control	1	B1000 54	1	-
Left Position Sensor Low Reference	1	1	1	-
Right Position Sensor Low Reference	1	1	1	-
Ground	-	1	-	-
1. Assist Steps Inoperative 2. Disable Switch Inoperative				

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The assist step control module (ASC) controls the assist step actuators to extend or retract the assist steps. Each actuator consists of an electric motor and a potentiometer. The module supplies a low reference and 10-volt reference source voltage to the potentiometer. The ASC module monitors the voltage drop across the potentiometer on the position signal circuit. When the actuator shaft rotates, the voltage on the position signal circuit changes. The ASC module supplies the actuator motor with a 12-volt control circuit and a ground control circuit. The ASC module controls the direction of the actuator by changing the polarity of the control circuits.

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Step/Running Board Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Running Board Description

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Observe the scan tool ASC Disable Switch parameter while activating and deactivating the power assist steps. The reading should change between Active and Inactive.
 1. If the parameter does not change between the specified values, refer to ASC Disable Switch Circuit Test
2. Power assist steps enabled, OPEN and CLOSE each vehicle door, the assist steps should extend when the door is OPENED, and retract when the door is CLOSED.
 1. If the function does not perform as specified, refer to ASC Actuator Circuit Test .

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > CIRCUIT/SYSTEM TESTING

ASC Disable Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the IP multifunction switch.
2. Test for less than 10 ohms between the listed ground circuit terminal and ground.
 1. X88/Z88 Terminal 3
 2. Z75 terminal 1

1. If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool ASC Disable Switch parameter is Inactive.
 1. If not the specified value, test the signal circuit terminal 9 for a short to ground. If the circuit tests normal, replace the ASC module.
4. Install a 3A fused jumper wire between the signal circuit terminal 9 and ground. Verify the scan tool ASC Disable Switch parameter is Active.
 1. If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the ASC module.
5. If all circuits test normal, test or replace the IP multifunction switch.

ASC Actuator Circuit Test

1. Ignition OFF, disconnect the harness connector at the appropriate actuator.
2. Scan tool disconnected, test for less than 20 ohms between the low reference circuit terminal C and ground.
 1. If greater than the specified range, test the low reference circuit for an open/high resistance. If the circuit tests normal, replace the ASC module.
3. Ignition ON, command the appropriate actuator with a scan tool while using the DMM Min/Max function to capture voltage. Test for greater than 9 volts between the 10-volt reference circuit terminal D and ground.
 1. If less than the specified range, test the 10-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the ASC module.
4. Command the appropriate actuator with a scan tool while using the DMM Min/Max function to capture voltage. Test for greater than 9 volts between the signal circuit terminal E and ground.
 1. If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the ASC module.
5. Using a scan tool, command the appropriate actuator both directions while using the DMM Min/Max function to capture voltage. Test for greater than 2 volts between the control circuit terminal A and ground.
 1. If less than the specified range, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the ASC module.
6. Using a scan tool, command the appropriate actuator both directions while using the DMM Min/Max function to capture voltage. Test for greater than 2 volts between the control circuit terminal B and ground.
 1. If less than the specified range, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the ASC module.

7. If all circuits test normal, replace the ASC actuator.

DIAGNOSTIC INFORMATION AND PROCEDURES > POWER ASSIST STEP MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Assist Step Motor Replacement (Power BRS)
- Control Module References for ASC module replacement, setup, and programming

DESCRIPTION AND OPERATION > RUNNING BOARD DESCRIPTION > OPERATION

A power extend operation will occur with the opening of either the front or rear doors on the assist step on that side of the vehicle. A power retract operation will occur with the closing of both doors on the assist step on that side of the vehicle. A door open/close status switch input is received by the assist step controller through the GMLAN serial data line. The park brake switch and vehicle speed inputs are also received by the assist step controller through the GMLAN serial data line. The assist steps will be disabled when the disable switch is pushed once. The assist steps will be enabled with a second push of the disable switch.

Each assist step has a bi-directional motor and a hall-effect sensor to detect the position of the assist step. The hall-effect sensors are included with the motor assembly. The polarity on each motor is switched to reverse the direction of assist step travel.

DESCRIPTION AND OPERATION > RUNNING BOARD DESCRIPTION > LEARN PROCEDURE

When the assist step controller is replaced, or loses battery power, the assist step controller must learn the position of both assist steps. At least one door must be opened and closed on each side of the vehicle for both assist steps to go to a learn procedure. Each assist step will extend and then retract after a door is opened and closed on that assist steps side of the vehicle. Each assist step will learn its own position with the learn procedure