

2013 Chevrolet Cruze

2013 ELECTRICAL Power Outlets - Cruze

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SCHEMATIC WIRING DIAGRAMS

CIGAR LIGHTER/POWER OUTLET WIRING SCHEMATICS

Cigar Lighter and Power Outlet

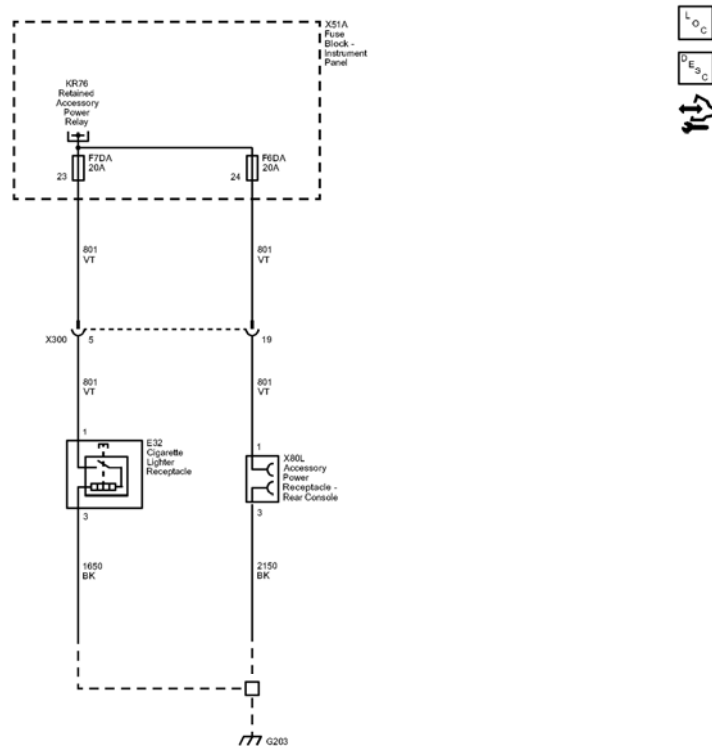


Fig. 1: Cigar Lighter/Power Outlet Wiring Schematics

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
801	Retained Accessory Power Fuse Supply Voltage
CAV_1	1
CAV 1	1
801_VT	801 VT
801_VT	801 VT
801_VT	801 VT
801_VT	801 VT
2150	Ground

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2150_BK	2150 BK
CAV_3	3
1650	Ground
1650_BK	1650 BK
CAV_3	3
CAV_23	23
CAV_24	24
X300	X300
CAV_5	5
CAV_19	19
F7DA	F7DA 20A
F6DA	F6DA 20A
X300	X300
X80L	
E32	
KR76	
X51A	

DIAGNOSTIC INFORMATION AND PROCEDURES

SYMPTOMS - POWER OUTLETS

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.

Visual/Physical Inspection

- Inspect for aftermarket devices which can affect the operation of the power outlets. Refer to **Checking Aftermarket Accessories**
- Inspect the accessible system components or the visible system components for obvious damage or for obvious conditions which can cause the symptom.

Intermittent

Electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**

Symptom List

Refer to **Power Outlet Receptacle Malfunction** in order to diagnose the system.

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POWER OUTLET RECEPTACLE 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 Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	1	1	-	-
Ground	-	1	-	-
1. Accessory Power Receptacle Malfunction				

Circuit/System Description

The vehicle is fitted with a 12 V accessory power receptacle. The accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle is operational when the ignition is turned to either the On or the Accessories positions.

Diagnostic Aids

It may be helpful to discuss with the customer the usage of any device that may have drawn too much current and caused an open fuse.

Reference Information

Schematic Reference

Cigar Lighter/Power Outlet Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Outlets Description and Operation

Electrical Information Reference

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

- **Wiring Repairs**

Circuit/System Verification

1. Ignition ON, connect an appropriate device to the X80 Accessory Power Receptacle.
2. Verify the device is powered by the X80 Accessory Power Receptacle.
 - **If the device is not powered**

Refer to Circuit/System Testing below.

- **If the device is powered**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate X80 Accessory Power Receptacle or E32 Cigarette Lighter Receptacle.
2. Test for less than 10 ohms between the ground circuit terminal C and ground.
 - **If greater than 10 ohms**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify that a test lamp illuminates between the control circuit terminal A and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the control circuit end to end.
 - If greater than 2 ohms, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse. Refer to **Retained Accessory Power Malfunction** .
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF.
 2. Test for infinite resistance between the control circuit terminal A and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the appropriate X80 Accessory Power Receptacle.
 - **If the test lamp illuminates**
5. Replace the appropriate X80 Accessory Power Receptacle or E32 Cigarette Lighter Receptacle.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Accessory Power Receptacle Replacement

REPAIR INSTRUCTIONS

ACCESSORY POWER RECEPTACLE RETAINER REPLACEMENT

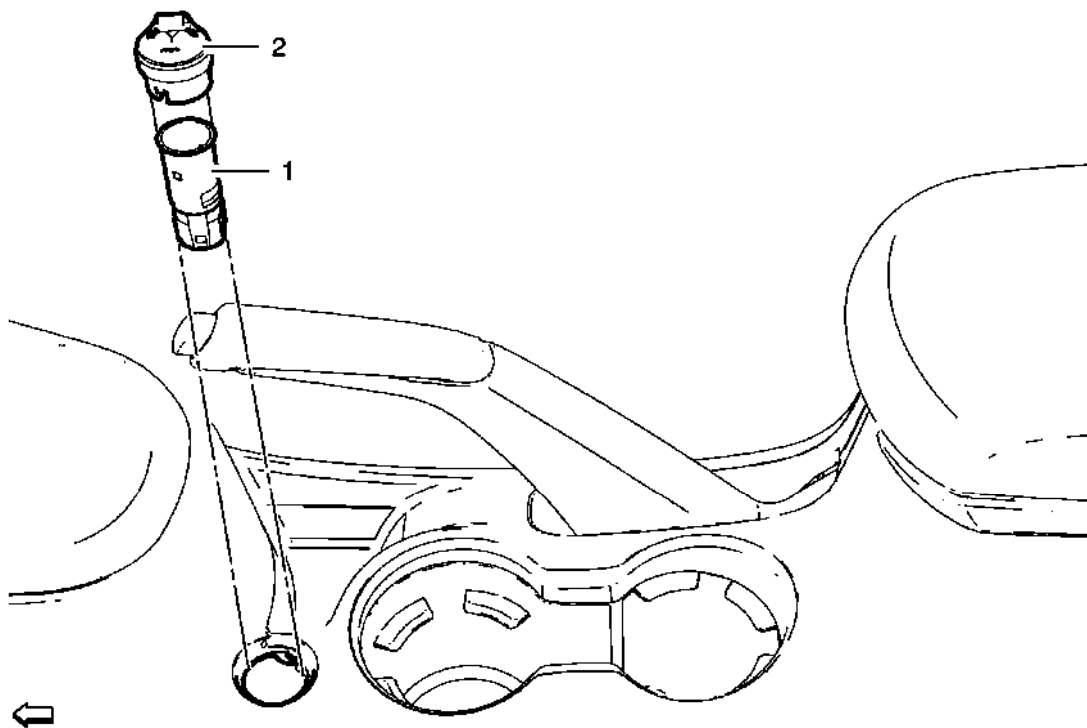


Fig. 2: Identifying Accessory Power Receptacle Retainers
Courtesy of GENERAL MOTORS COMPANY

Accessory Power Receptacle Retainer Replacement

Callout	Component Name
Preliminary Procedures Disconnect the negative battery cable. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
Special Tools BO-48871 Accessory Power Receptacle Remover For equivalent regional tools, refer to <u>Special Tools</u> .	
1	Accessory Power Receptacle Retainer Procedure Disconnect electrical connector.
2	Accessory Power Receptacle Retainer

ACCESSORY POWER RECEPTACLE REPLACEMENT

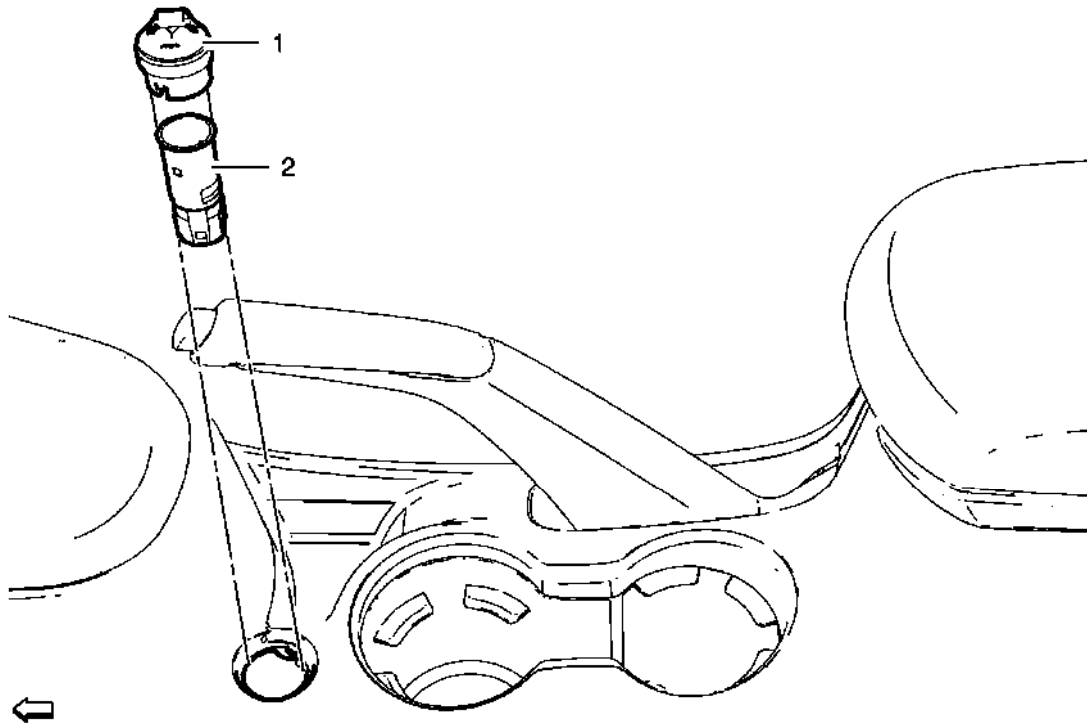


Fig. 3: Identifying Accessory Power Receptacle And Retainer
Courtesy of GENERAL MOTORS COMPANY

Accessory Power Receptacle Replacement

Callout	Component Name
Preliminary Procedures Disconnect the negative battery cable. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
Special Tools BO-48871 Accessory Power Receptacle Remover For equivalent regional tools, refer to <u>Special Tools</u>	
1	Accessory Power Receptacle Retainer
2	Accessory Power Receptacle Procedure Disconnect electrical connector.

DESCRIPTION AND OPERATION

POWER OUTLETS DESCRIPTION AND OPERATION

12 Volt Power Outlet Receptacle Description and Operation

The 12 V accessory power receptacles are supplied with power by the accessory relay.

The vehicle is fitted with a cigarette lighter and/or with a 12 V accessory power receptacle. The cigarette lighter

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and accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle and cigarette lighter are operational when the ignition is turned to either the On or the Accessories positions. To operate the cigarette lighter, press in the lighter knob. When the element is hot, the lighter automatically pops out and is ready for use.

110 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle - 110 V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 110 V at 60 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 150 watts of power. The accessory power receptacle - 110 V AC provides the usual connection for AC powered devices.

110 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle - 110 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle - 110 V AC, the normally open switch in the accessory power receptacle - 110 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle - 110 V AC switch, the inverter module begins to supply 110 V AC to the accessory power receptacle - 110 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

110 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 110 V circuit for a short to vehicle chassis ground. If a 110 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Overload Shutdown

The accessory DC/AC power inverter module will turn OFF if the current in the 110 V circuit is greater than 3.8 A for 1 s, or 2.5 A for 10 s. The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the outlet, and then plugged into the outlet.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

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Illustration	Tool Number/ Description
	BO-48871 J-42059 Accessory Power Receptacle Remover