

Component Procedures: Hydraulic Brake Booster Pump

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Component Procedures: Hydraulic Brake Booster Pump

Power Brake Booster Auxiliary Pump Replacement (Article 10689)

Removal Procedure

- Remove the air cleaner resonator and outlet duct. Refer to Air Cleaner Resonator and Outlet Duct Replacement or Air Cleaner Outlet Duct Replacement . Click for full-size image
- Release the power brake booster vacuum pump hose quick connect (1).
- Disconnect the power brake booster vacuum pump hose from the auxiliary pump.
- Disconnect the power brake booster vacuum pump electrical connector.
- Remove the power brake booster vacuum pump bracket M6 bolt (1). Click for full-size image
- Remove the power brake booster vacuum pump bracket M12 bolt (2).
- Remove the power brake booster vacuum pump from the engine.
- Remove the power brake booster vacuum pump bolts (1) and nuts (2). Click for full-size image
- Release the power brake booster vacuum pump electrical harness connector retainer from the bracket.
- Remove the power brake booster vacuum pump bracket (1). Click for full-size image
- Remove the power brake booster vacuum pump insulator sleeves (1). Click for full-size image
- Remove the power brake booster vacuum pump insulators (2).

Installation Procedure

- Assemble the power brake booster pump sleeves (1) to the insulators (2). Click for full-size image
- Install the power brake booster pump insulators.
- Install the power brake booster vacuum pump bracket (1). Click for full-size image
- Install the power brake booster pump bolts (1) and nuts (2) and tighten to 22 Nm (16 lb ft) . Click for full-size image
- Install the power brake booster vacuum pump electrical harness connector retainer to the bracket.
- Position the power brake booster vacuum pump to the engine. Click for full-size image
- Loosely install the power brake booster vacuum pump bracket M6 bolt (1).
- Loosely install the power brake booster vacuum pump bracket M12 bolt (2).
- Tighten the power brake booster vacuum pump bracket M6 bolt to 10 Nm (89 lb in) .
- Tighten the power brake booster vacuum pump bracket M12 bolt to 70 Nm (52 lb ft) .
- Install the power brake booster vacuum pump hose. Click for full-size image
- Connect the power brake booster vacuum pump hose quick connect (1).
- Connect the power brake booster vacuum pump electrical connector.
- Install the air cleaner resonator and outlet duct. Refer to Air Cleaner Resonator and Outlet Duct Replacement or Air Cleaner Outlet Duct Replacement .

Brake Booster Pump Motor Malfunction (Article 10644)

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.

Circuit/System Description

The electronic brake control module monitors the control circuit of the brake booster pump relay. The electronic brake control module supplies ground through the pump relay control circuit which then supplies B+ voltage to actuate the brake booster pump. B+ voltage is supplied at all times to the coil side of the pump relay.

Reference Information

Schematic Reference

Hydraulic Brake Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Brake Booster Vacuum Assist Description and Operation

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

Circuit/System Verification

- Ignition ON.
- Verify the brake booster pump motor turns ON and OFF when commanding the brake booster electric vacuum pump ON and OFF with a scan tool.
- If the brake booster pump motor does not turn ON and OFF Refer to Circuit/System Testing.
- If the brake booster pump motor turn ON and OFF
- All OK.

Circuit/System Testing

- Ignition OFF, disconnect the KR14 Brake Booster Pump Motor Relay, ignition ON.
- Verify that a test lamp illuminates between the B+ circuit terminal 30 and ground.
- If the test lamp does not illuminate and the circuit fuse is good
- Ignition OFF.
- Test for less than 2 Ω in the B+ circuit end to end.
- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.
- If the test lamp does not illuminate and the circuit fuse is open
- Test for infinite resistance between the B+ circuit and ground.
- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance,
- Ignition OFF, disconnect the harness connector at the G6 Brake Booster Pump-Auxillary.
- Test for infinite resistance between the control circuit terminal 87 and ground.
- If infinite resistance, test or replace the G6 Brake Booster Pump-Auxillary.
- If the test lamp illuminates
- Verify that a test lamp illuminates between the B+ circuit terminal 85 and ground.
- If the test lamp does not illuminate Test or replace the X50A Fuse Block-Underhood
- If the test lamp does illuminates
- Test for less than 1 V between the control circuit terminal 87 and ground.
- If 1 V or greater Repair the short to voltage on the circuit.
- If less than 1 V
- Test for less than 10 Ω between the G6 Brake Booster Pump-Auxillary ground circuit terminal 2 and ground.
- If 10 Ω or greater
- Test for less than 2 Ω in the ground circuit end to end.
- If less than 2 Ω , repair the open/high resistance in the ground connection.
- If less than 10 Ω
- Connect the harness connector at the G6 Brake Booster Pump-Auxillary.
- Ignition ON, connect a 20 A fused jumper wire between the KR14 Brake Booster Pump Motor Relay B+ circuit terminal 30 and the control circuit terminal 87.
- Verify the G6 Brake Booster Pump-Auxillary activates.
- If the G6 Brake Booster Pump-Auxillary does not activate
- Ignition OFF, remove the jumper wire, disconnect the harness connector at the G6 Brake Booster Pump-Auxillary.
- Test for less than 2 Ω in the control circuit end to end.
- If less than 2 Ω , test or replace the G6 Brake Booster Pump-Auxillary.
- If the G6 Brake Booster Pump-Auxillary activates
- Ignition OFF, connect the KR14 Brake Booster Pump Motor Relay. Disconnect the harness connector at the K17 Electronic Brake Control Module, ignition ON.
- Verify the G6 Brake Booster Pump-Auxillary is not activated.
- If the G6 Brake Booster Pump-Auxillary is activated
- Ignition OFF, disconnect the KR14 Brake Booster Pump Motor Relay.
- Test for infinite resistance between the control circuit terminal 36 and ground.
- If infinite resistance, test or replace the KR14 Brake Booster Pump Motor Relay.
- If the G6 Brake Booster Pump-Auxillary is not activated
- Connect a 3 A fused jumper wire between the control circuit terminal 36 and ground.
- Ignition OFF, remove the jumper wire, disconnect the KR14 Brake Booster Pump Motor Relay, ignition ON.
- Test for less than 1 V between the control circuit terminal 86 and ground.
- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 2 Ω , test or replace the KR14 Brake Booster Pump Motor Relay.
- Test or replace the K17 Electronic Brake Control Module.

Repair Instructions

- Perform the Diagnostic Repair Verification after completing the repair.
- Electrical Relay Replacement

- Control Module References for Engine Control Module replacement, programming and setup.