



Figure 2. 150 A Circuit Breaker

Important Information for Customer

- Reverse is not intended for extended operation. Usage should be limited to 20–30 s with a few minutes allowed for cool down.
- Reverse is not intended to be activated and deactivated in rapid bursts. The button should be pushed and held, not bumped in repeatedly in rapid succession.
- The customer should be shown the location of the 150 A circuit breaker at delivery of the vehicle.

Updated Diagnostic Procedure

REVERSE MOTOR INOPERATIVE

Table 1. Reverse Motor Inoperative Diagnostic Faults

POSSIBLE CAUSES
Reverse motor solenoid malfunction
Short to voltage in ground circuit
Reverse motor malfunction
Circuit breaker is tripped

1. Circuit Breaker Reset Test

- Reset 150 A reverse motor circuit breaker.
- Verify reverse function.
- Is reverse motor working?
 - Yes.** Circuit breaker was reset.
 - No.** Go to Test 2.

2. Reverse Switch Function Test

- Verify conditions are correct to enable reverse. See REVERSE MOTOR SYSTEM DIAGNOSTICS (Page 7-32).
- Start engine.
- Activate reverse button on LHCM.

4. Does reverse indicator illuminate?

- Yes. Solid "R".** Go to Test 3.
- Yes. Flashing "R".** Go to Test 16.
- No.** See INDICATOR LAMP DIAGNOSTICS (Page 7-46).

3. RCM Circuit Test

- With reverse drive button pressed and using TEST CONNECTOR KIT (PART NUMBER: HD-41404), test voltage between reverse motor solenoid [248] and ground.
- Is voltage greater than 10 V?
 - Yes.** Go to Test 4.
 - No.** Go to Test 7.

4. Reverse Motor High Current Circuit Test

- With reverse button pressed, test voltage between reverse motor solenoid [249B] and ground.
- Is voltage greater than 10 V?
 - Yes.** Go to Test 5.
 - No.** Go to Test 13.

5. Ground Circuit Test

- Turn IGN OFF.
- Test resistance between reverse motor mounting bolt [253] and ground.
- Is resistance less than 0.5 Ω?
 - Yes.** Go to Test 6.
 - No.** Clean/repair mounting bolts and mounting surface.

6. Reverse Motor Solenoid Test

- Perform reverse motor solenoid test. See REVERSE MOTOR TESTING (Page 7-43).
- Did reverse motor solenoid pass test?
 - Yes.** Replace reverse motor.
 - No.** Replace reverse motor solenoid.

7. Reverse Motor Control Circuit Test

- Start engine.
- With reverse button pressed, test voltage between reverse control solenoid [251A & B] and ground.
- Is voltage greater than 10 V at both terminals?
 - Yes.** Repair open between [251B] and [248] (BK) wire.
 - No, only terminal [251A].** Go to Test 8.
 - No, neither terminal.** Go to Test 12.

8. RCM Solenoid Control Circuit Test

- Turn IGN OFF.
- Disconnect [246].
- Start engine.
- With reverse switch pressed, test voltage between [246B] terminal 1 (TN/R) wire and ground.

5. Is voltage greater than 10 V?

- a. **Yes.** Go to Test 9.
- b. **No.** Go to Test 11.

9. RCM Solenoid Ground Circuit Test

1. Turn IGN OFF.
2. Test resistance between [246B] terminal 2 and ground.
3. Is resistance less than 1 Ω ?
 - a. **Yes.** Replace RCM solenoid.
 - b. **No.** Go to Test 10.

10. RCM Ground Circuit Test

1. Disconnect [245].
2. Test resistance between [245B] terminal 8 and [246B] terminal 2 (TN/GY).
3. Is resistance less than 0.5 Ω ?
 - a. **Yes.** Replace RCM.
 - b. **No.** Repair open in (TN/GY) wire.

11. RCM Solenoid Control Circuit Open Test

1. Turn IGN OFF.
2. Disconnect RCM [245].
3. Test resistance between [246B] terminal 1 and [245B] terminal 7 (TN/R).
4. Is resistance less than 0.5 Ω ?
 - a. **Yes.** Replace RCM.
 - b. **No.** Repair open in (TN/R) wire.

12. Circuit Breaker Supply Voltage Test

1. Test voltage between circuit breaker [252A] and ground.
2. Is voltage greater than 10 V?
 - a. **Yes.** Repair open between [251A] and [252A] (BK) wire.
 - b. **No.** Repair open between [252A] and starter (BK) wire.

13. Reverse Motor Solenoid Test

1. Start engine.
2. With reverse button pressed, test voltage between reverse motor solenoid [249A] and ground.
3. Is voltage greater than 10 V?
 - a. **Yes.** Replace reverse motor solenoid.
 - b. **No.** Go to Test 14.

14. Reverse Motor Circuit Solenoid Test

1. With reverse button pressed, test voltage between circuit breaker [252B] and ground.
2. Is voltage greater than 10 V?
 - a. **Yes.** Repair open between [249A] and [252B] (BK) wire.
 - b. **No.** Go to Test 15.

15. Circuit Breaker Test

1. With reverse button pressed, test voltage between circuit breaker [252A] and ground.
2. Is voltage greater than 10 V?
 - a. **Yes.** Replace circuit breaker.
 - b. **No.** Repair open in (BK) wire between [252A] and starter.

16. Neutral Circuit Test

1. Verify transmission is in neutral.
2. Is neutral lamp functional?
 - a. **Yes.** Go to Test 17.
 - b. **No.** See neutral lamp diagnostics.

17. Accessory Circuit Open Test

1. Turn IGN OFF.
2. Disconnect RCM [245].
3. Turn IGN ON.
4. Test voltage between [245B] terminal 2 (R/Y) wire and ground.
5. Is voltage greater than 10 V?
 - a. **Yes.** Go to Test 18.
 - b. **No.** Repair open in (R/Y) wire.

18. Ground Circuit Open Test

1. Turn IGN OFF.
2. Using TEST CONNECTOR KIT (PART NUMBER: HD-41404), test resistance between RCM [245B] terminal 5 and ground (BK) wire.
3. Is resistance less than 0.5 Ω ?
 - a. **Yes.** Go to Test 19.
 - b. **No.** Repair open in (BK) wire.

19. Backup Light Power Test

1. Connect [245].
2. Connect BREAKOUT BOX (PART NUMBER: HD-50390-1) and BCM CABLE (PART NUMBER: HD-50390-2) to wire harness [242B], leaving [242A] disconnected.
3. Verify BCM OVERLAY (PART NUMBER: HD-50390-2-P) is in position on BOB.
4. Start engine.
5. With reverse button pressed, test voltage between BOB terminal G2 and ground.
6. Is voltage greater than 10 V?
 - a. **Yes.** Go to Test 20.
 - b. **No.** Replace BCM.

20. Reverse Enable Feedback Test

1. Turn IGN OFF.
2. Remove BCM BOB, and connect [242].

3. Connect BREAKOUT BOX (PART NUMBER: HD-50390-1) and BCM CABLE (PART NUMBER: HD-50390-2) between wire harness [78B-1], [78B-2], [78B-3] and ECM [78A-1], [78A-2], [78A-3].
4. Verify BCM OVERLAY (PART NUMBER: HD-50390-2-P) is in position on BOB.
5. Start engine.
6. With reverse button pressed, test voltage between BOB [78-3] terminal 4 and [78-2] terminal 18.
7. Is voltage greater than 10 V?
 - a. **Yes.** Go to Test 21.
 - b. **No.** Replace RCM.

21. Reverse Activate Test

1. Press reverse button two times, test voltage between BOB [78-3] terminal 16 and ground.
2. Is voltage between 4–6 V?
 - a. **Yes.** Go to Test 22.
 - b. **No.** Replace ECM.

22. Reverse Activate Input Open Test

1. Turn IGN OFF.
2. Disconnect RCM [245].
3. Test resistance between BOB [78-3] terminal 16 and [245B] terminal 4.
4. Is resistance less than 0.5 Ω ?
 - a. **Yes.** Replace RCM.
 - b. **No.** Repair open in (TN) wire.