# SERVICE BULLETIN

M1458 2017-10-11

## M1458: 2009 - 2018 TRIKE - SERVICE MANUAL SUPPLEMENT UPDATE

### Reason for Revision

Refer to Table 1.

**Table 1. Document History**

| Date | Revision Description |
|---|---|
| 2017-07-11 | Initial release |
| 2018-10-02 | Updated Section Purpose for Service Bulletin |

### Purpose for Service Bulletin

The purpose of this bulletin is to communicate updates to the reverse motor inoperative diagnostic procedure in the service manual supplement. Refer to Section Updated Diagnostic Procedure.

The procedure used in 2016 - 2018 Trike service manual supplements has been updated, however the procedure applies to all 2009 - 2018 Trike models.

This bulletin also provides additional information which should be provided to Trike customers. This information is also in 2018 Trike owner's manuals. Refer to Section Important Information for Customer.

### Cause

A high percentage of reverse motors that have been returned are in good condition. The belief is that the 150 A circuit breaker is tripped, and not fully reset. This is causing the technician to replace good parts that they believe are faulty.

### Vehicles Affected

All 2009 - 2018 Trike models.

### Markets Affected

All markets are affected.

### Required Dealer Action

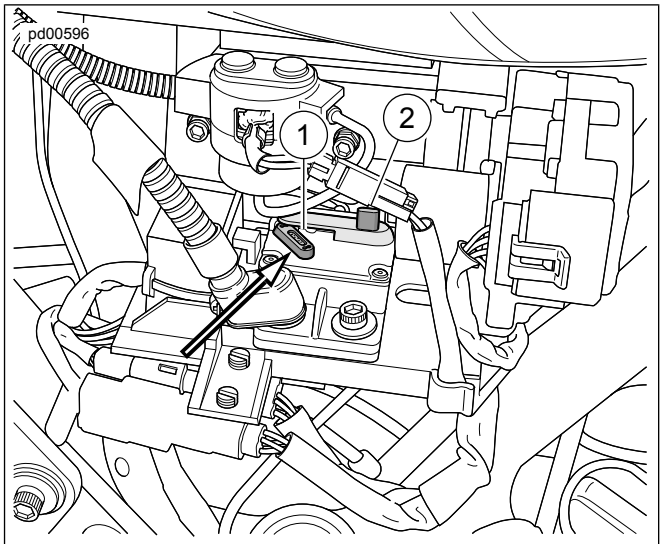
When diagnosing the reverse system, verify the 150 A circuit breaker is working properly by doing the following:

1. Verify battery voltage is greater than 12.5 V when the ignition is OFF.
2. Refer to Figure 1. Push manual trip push button (2).
3. Push reset lever fully in until a audible click is heard and felt (1).

*NOTE*

*If the lever is lightly pushed in, a click may be detected but the circuit breaker may not be reset.*

4. Trip and reset again if unsure.
5. Refer to Figure 2. Test voltage between circuit breaker (2) [252B] and ground.
6. Is battery voltage present?
   a. **Yes.** Circuit breaker is reset.
   b. **No.** Repeat circuit breaker reset procedure. After second attempt with no battery voltage present, replace circuit breaker.




**1. Reset lever (push in direction of arrow to reset)**
**2. Manual trip pushbutton**

**Figure 1. Reverse Motor Circuit Breaker (Typical)**

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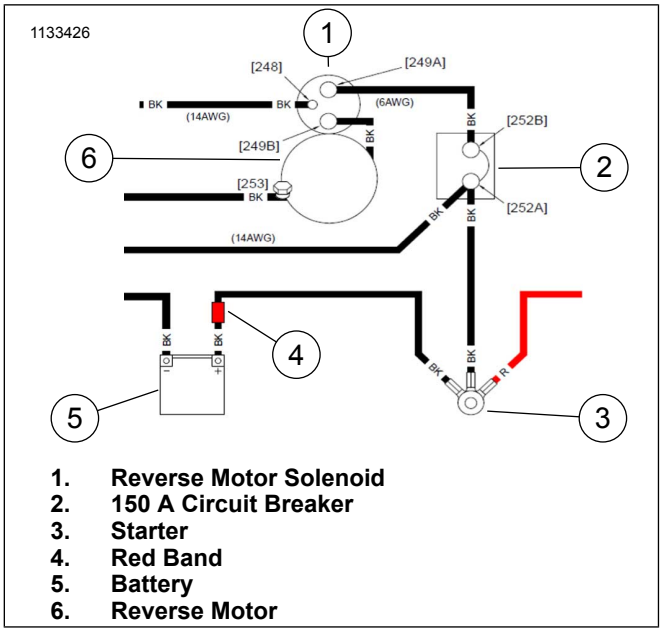
*NOTE*

*In the interest of preserving customer safety and satisfaction, always check for outstanding recalls whenever any motorcycle is brought into your dealership for either maintenance or service.*

| ROUTING | SERVICE MANAGER | SALES MANAGER | PARTS MANAGER | WARRANTY PROCESS MANAGER | LEAD TECHNICIAN | TECHNICIAN NO. 1 | TECHNICIAN NO. 2 | TECHNICIAN NO. 3 | RETURN THIS TO |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL HERE | | | | | | | | | |




1. **Reverse Motor Solenoid**
2. **150 A Circuit Breaker**
3. **Starter**
4. **Red Band**
5. **Battery**
6. **Reverse Motor**

**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 2. 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

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

#### 2. Reverse Switch Function Test

1. Verify conditions are correct to enable reverse. See REVERSE MOTOR SYSTEM DIAGNOSTICS (Page 7-32).
2. Start engine.
3. Activate reverse button on LHCM.
4. Does reverse indicator illuminate?
   a. **Yes. Solid "R".** Go to Test 3.
   b. **Yes. Flashing "R".** Go to Test 16.
   c. **No.** See INDICATOR LAMP DIAGNOSTICS (Page 7-46).

#### 3. RCM Circuit Test

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

#### 4. Reverse Motor High Current Circuit Test

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

#### 5. Ground Circuit Test

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

#### 6. Reverse Motor Solenoid Test

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

#### 7. Reverse Motor Control Circuit Test

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

#### 8. RCM Solenoid Control Circuit Test

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

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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].

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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.

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