



INSTRUCTIONS

J06691

2018-02-26



REVERSE MOTOR REPAIR KIT

GENERAL

Kit Number

31400129

Models

For the most up-to-date model fitment information, see the P&A Retail Catalog or the Parts and Accessories section of www.harley-davidson.com (English only).

Additional Parts Required

⚠ WARNING

Rider and passenger safety depend upon the correct installation of this kit. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00308b)

NOTE

This instruction sheet references service manual information. A service manual for this year/model motorcycle is required for this installation. One is available from a Harley-Davidson dealer.

Kit Contents

Refer to Figure 10 and Table 1.

PREPARE

1. Perform the On Vehicle reverse motor tests and diagnostics. See the service manual supplement.

NOTE

If testing and diagnostics lead to an electrically failed reverse motor, proceed to next step.

⚠ WARNING

Disconnect negative (-) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00049a)

2.

NOTE

See the service manual of the year and model vehicle that the service is being performed on for the following steps.

Disconnect negative battery cable.

3. Remove reverse motor.
 - a. Clean all outer surfaces of the reverse motor and solenoid in preparation for disassembly.
4. Perform bench tests and diagnostics for reverse motor to confirm pull in and hold in functions. See the service manual supplement.

NOTE

This motor repair kit will only repair reverse motors that have failed electrically. Perform the reverse motor testing and diagnostics per the service manual supplement to ensure that the balance of the motor is operational. If there is physical damage to the gear housing, planetary gear set, pinion gear or cracked motor mounting bosses on the gear housing, this motor repair kit will not resolve the concern. A reverse motor assembly is required in those instances.

INSTALLATION

1. Place reverse motor in a vise, motor side up.
2. Figure 1 Remove keps nut (1) and motor terminal (2).
 - a. Set aside keps nut.

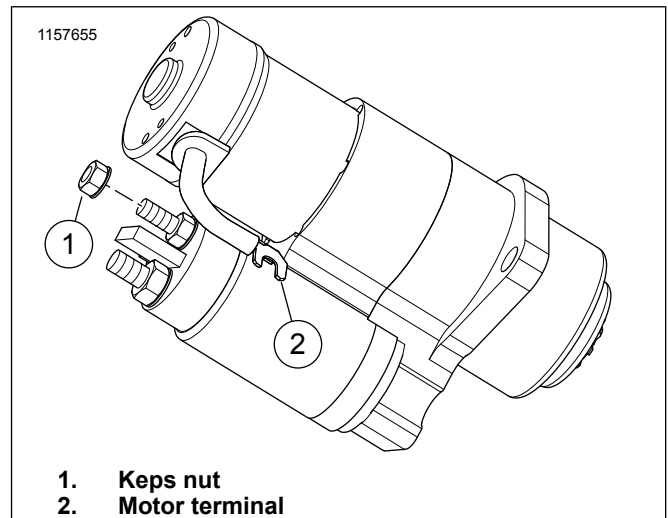


Figure 1. Keps Nut

3.

NOTE

The cap screws are internal hex head screws. **DO NOT** remove the Phillips head screws.

Figure 10 Remove both cap screws and discard.

4. Figure 2 Remove the motor assembly (1).

NOTE

Notice where the motor terminal wire is at before removing. The repair kit will fit both early and late reverse motors, however the routing of the early reverse motor terminal wire will be slightly different than shown.

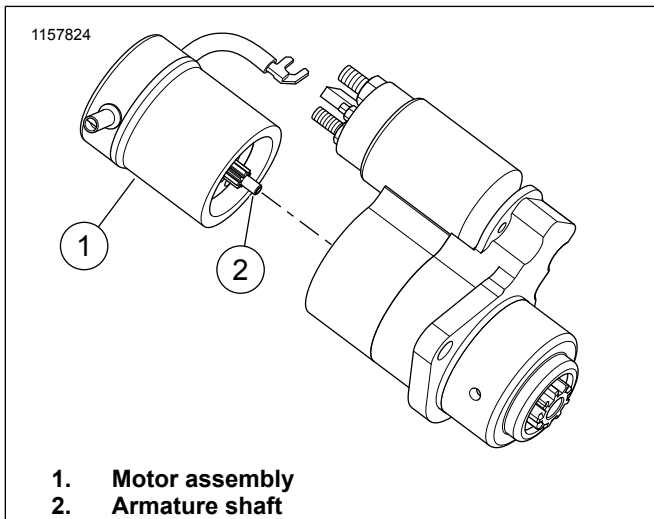


Figure 2. Motor Assembly

5. Figure 3 Remove divider plate (3).
6. Inspect planetary gears.
 - a. If damage in present, stop motor replacement and replace entire reverse motor assembly.
 - b. If damage not present. Go to Step 7.
7. Inspect for ball bearing (1) shaft bore.

NOTE

Ball bearing may be stuck on the tip of the armature shaft removed earlier.

- a. Verify that ball bearing is present.
- b. If ball bearing is present. Go to Step 8.
- c. If ball bearing is not present in the bore, and not stuck to the tip of the armature shaft. Go to Sub-Step d.
- d. Inspect the complete planetary gears area for the ball bearing.

NOTE

If the ball bearing is not in the bore of planetary gear set, inspect complete planetary gear area to prevent future damage.

- e. Figure 10 Insert **new** ball bearing (2) into bore.

NOTE

New ball bearing provided in kit is only needed if original is lost or missing.

- f. Coat planetary gear set and ball bearing using the grease package (6).

8. Install divider plate.
9. Clean grease and debris from armature side of divider plate.
10. Figure 3 Inspect attachment screw tabs (2) for cracks or damage.
 - a. If tabs are damaged, stop motor replacement and replace entire reverse motor assembly.

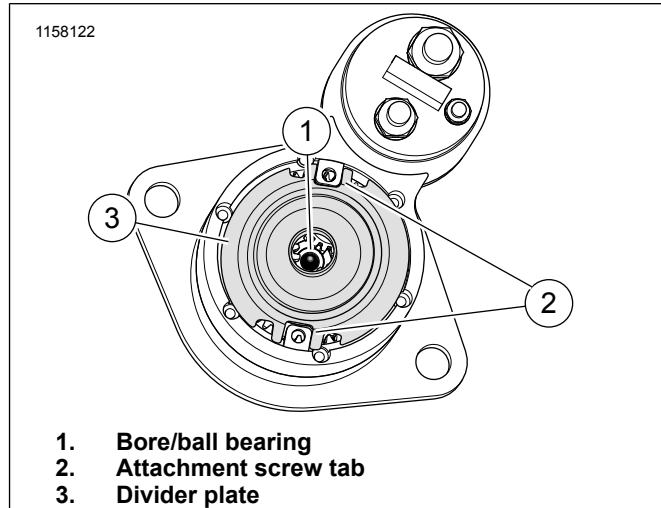


Figure 3. Armature Shaft Ball Bearing

11. Figure 4 Remove magnet from old armature.

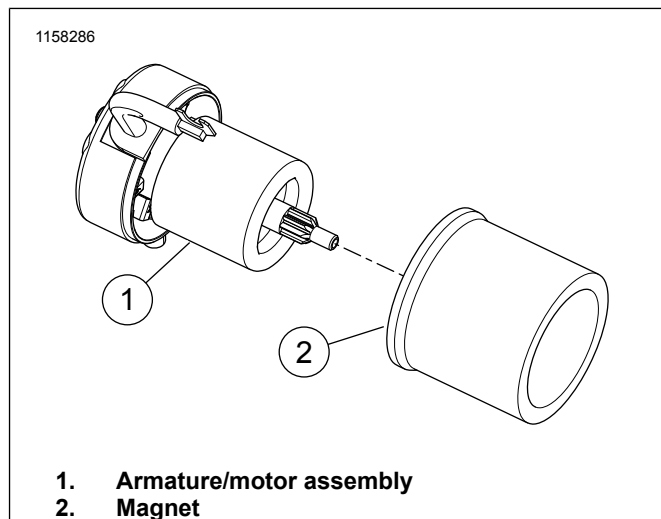


Figure 4. Magnet - Armature

12. Figure 5 Install magnet into the solenoid/gear housing. Verify aligning pin (1) and housing notch (2) align.

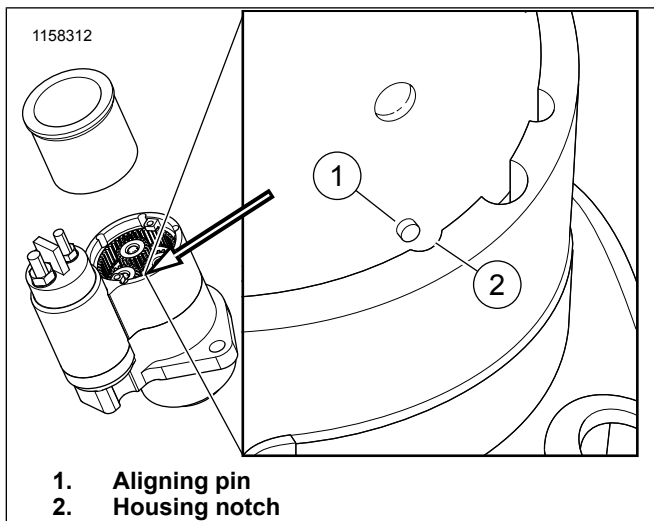


Figure 5. Magnet Verifying Alignment

13. Figure 6 Place larger of the inboard sleeve (1) on motor end of reverse motor. Align smaller opening with solenoid (2).
14. Push inboard sleeve downward until fully seated.
15. Figure 10 Lightly cover the **new** armature shaft gear end in the motor assembly (5) using the grease package (6).
16. Figure 4 Install the **new** motor assembly (1) into the magnet (2).

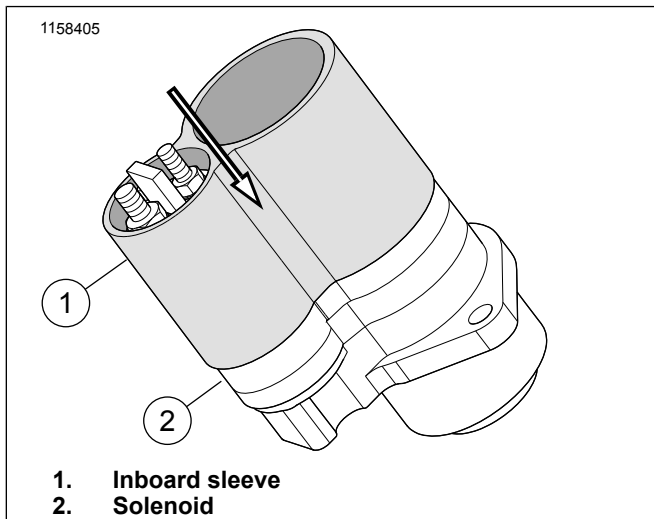


Figure 6. Place Inboard Sleeve on Reverse Motor

17. **NOTE**
Verify that motor terminal wire is in the notch closest to the solenoid. Figure 1

Figure 10 Apply a light coat of thread lock on the **new** cap screws (1).

Consumable: LOCTITE 222 LOW STRENGTH THREADLOCKER (PURPLE) (99811-97)

18. Install cap screws. Tighten.
Torque: 1.7–1.9 N·m (15–17 in-lbs)

19. Figure 10 Locate the end-cap (3).
20. **If necessary:** Spray the inside of the end-cap with a silicone spray.

NOTE

If a spray is necessary **DO NOT** use a petroleum-based spray.

21. Figure 7 Insert the motor terminal wire through the smaller of the two holes inside the end-cap.
22. Pull the end-cap over the motor.

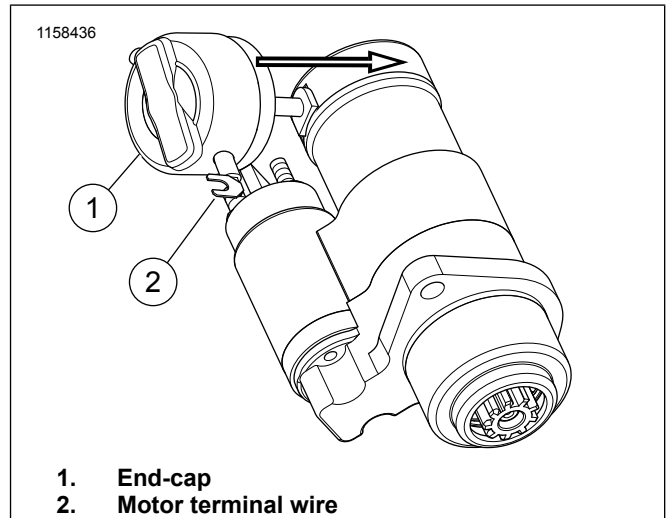


Figure 7. Installing End-Cap

23. Figure 8 Pull the end-cap (2) over the drain tube (1).

NOTE

Take care when moving the drain tube, excessive force causes the tube to tear.

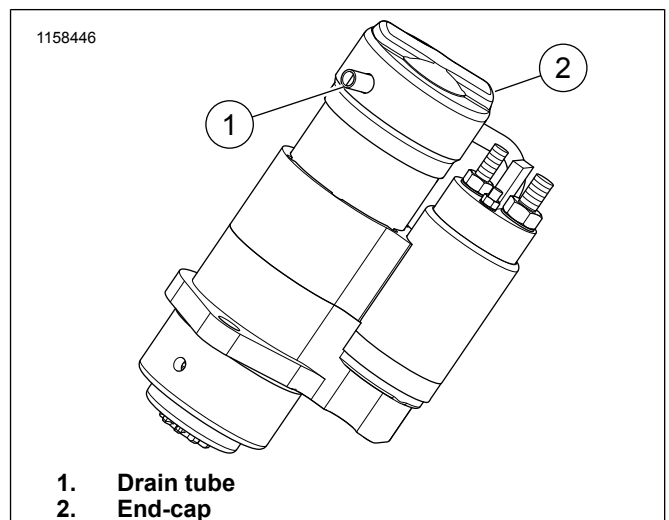


Figure 8. Installing Drain Tube

24. Figure 9 Notice location of the inboard sleeve on the assembly to verify proper installation.

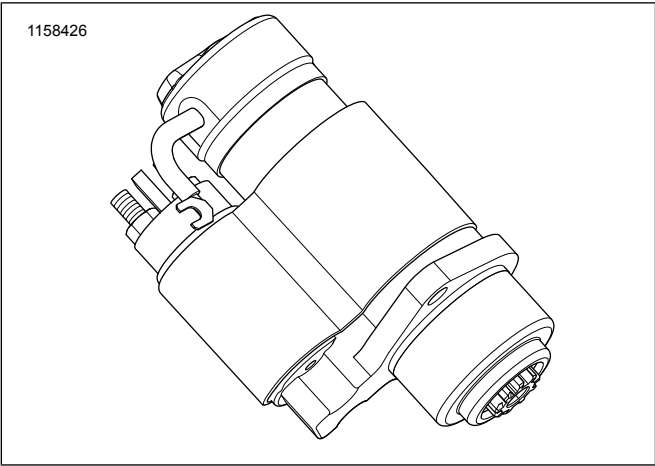


Figure 9. Proper Installation

25. Figure 1 Install motor terminal and keps nut. Tighten.
Torque: 5.4–8.1 N·m (48–72 in-lbs)

26. Using a flat-head screwdriver, bend the motor terminal down so it does not contact the magnet housing.

COMPLETE

1. Perform bench test on reverse motor. See the service manual supplement.
2. Install reverse motor. See the service manual supplement.
3. Install negative battery cable.

NOTE

See the service manual of the year and model vehicle that the service is being preformed on for the following steps.

SERVICE PARTS

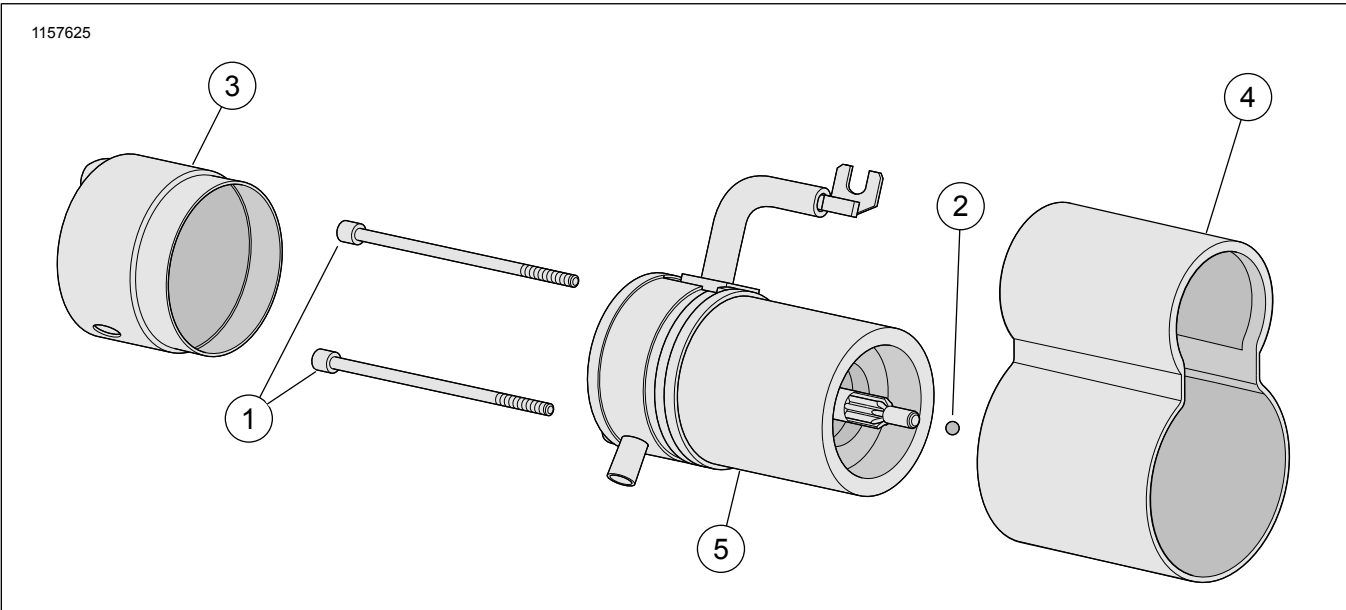


Figure 10. Service Parts: Reverse Motor Kit

Table 1. Service Parts Table

Item	Description (Quantity)	Part Number
1	Screw, cap (2)	Not Sold Separately
2	Ball bearing	
3	End-cap	
4	Inboard sleeve	
5	Motor assembly	
6	Grease package (Not shown)	