



# INSTRUCTIONS

-J00062

2005-12-20

## STARTER SOLENOID REBUILD KIT

### GENERAL

#### Kit Number

31603-91, 31605-90, and 31608-90

#### Models

See Table 1.

Table 1. Models

Kits	Models
31603-91	1991-later XLH 1200 1995-later XLH883
31605-90	1981 through 1990 XLH 1991-1994 XLH883
31608-90	1989-1990 Big Twin®

#### ⚠ WARNING

Rider and passenger safety depend upon the correct installation of this kit. Use the appropriate service manual procedures. 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. (00333b)

#### NOTE

This instruction sheet references Service Manual information. A Service Manual for your model motorcycle is required for this installation and is available from a Harley-Davidson dealer.

### Kit Contents

See Figure 3 and Table 2.

### INSTALLATION

#### Remove Existing Components

#### ⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

#### ⚠ WARNING

Do not allow positive (+) battery cable to contact ground with negative (-) cable connected. Resulting sparks can cause a battery explosion, which could result in death or serious injury. (00069a)

1. Remove seat following the instructions in the Service Manual.
2. Disconnect battery cables, negative (-) cable first. Refer to BATTERY in Service Manual.

3. Remove existing starter. Refer to STARTER REMOVAL in Service Manual.

#### Remove Solenoid Plunger and Field Terminal

1. See Figure 1. Remove boot (8) from copper field terminal bolt (1).

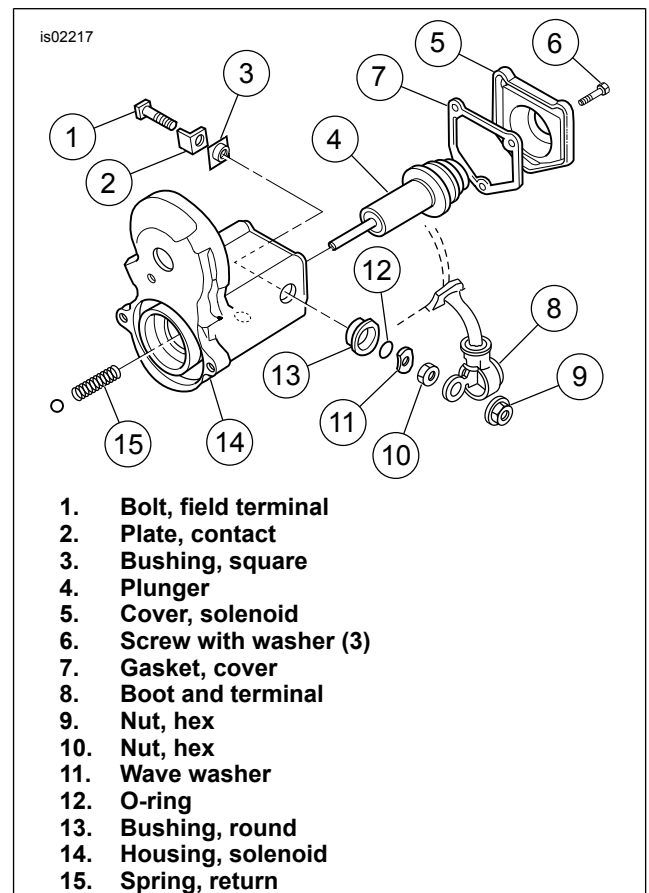


Figure 1. Solenoid Plunger and Field Terminal

2. Remove hex nut (9) holding field wire terminal to bolt.
3. Remove three solenoid cover screws with washers (6), cover (5), and gasket (7). Discard gasket.
4. Remove plunger (4) and return spring (15) from housing (14). Discard plunger.
5. Remove spring from plunger and set aside.
6. Remove and discard field terminal nut (10), wave washer (11), O-ring (12), and round bushing (13).

- Push copper bolt (1), contact plate (2), and bushing (3) out of solenoid housing. Discard bolt, contact plate, and bushing but save solenoid housing for later use.

## Install Field Terminal Parts

- See Figure 3. From inside of solenoid housing, insert center ferrule of square bushing (3) from kit through field terminal bolt hole.
- Position contact plate (2) from kit between bushing and hold-in winding terminal with holes aligned.

### NOTE

Be sure leg of contact plate with curved edge is next to plunger opening.

- Insert copper bolt (1) from kit through hold-in terminal, contact plate, and bushing.

### NOTE

The knurled shaft of the copper bolt is a slight press fit into the contact plate.

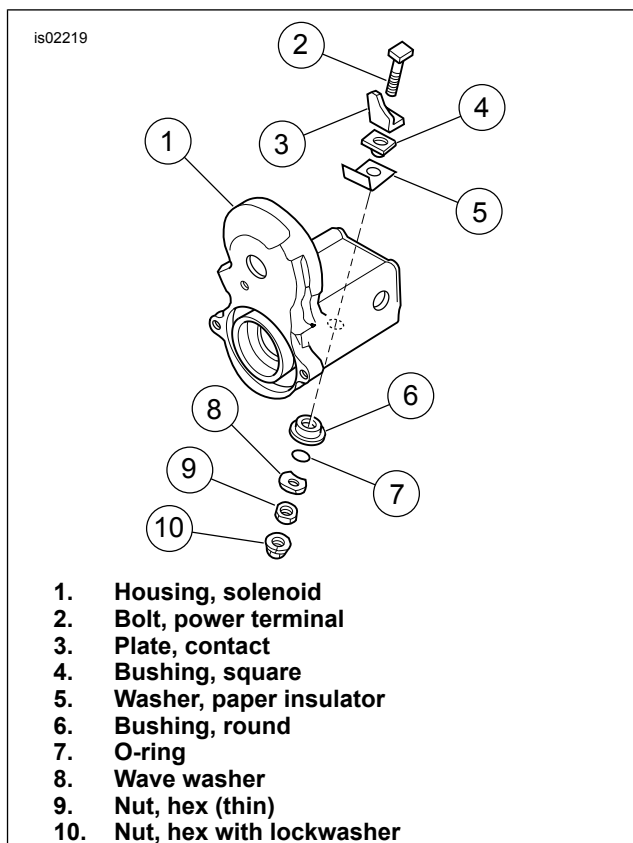
- From outside of housing, place center ferrule of round bushing (8), O-ring (9), and wave washer (10) (all from kit) over bolt threads.
- Thread thin hex nut (11) from kit onto bolt. Snug into place, but do not tighten.

## Remove Power Terminal Parts

- Kit 31603-91:** See Figure 2. Remove hex nut with lockwasher (10) from copper power terminal bolt (2).
- All Kits:** See Figure 2. Remove and discard power terminal nut (9), wave washer (8), O-ring (7), and round bushing (6).
- Push copper bolt (2), contact plate (3), and bushing (4) out of solenoid housing (1). Discard bolt, contact plate, and bushing.
- Kit 31603-91:** See Figure 2. Remove and discard paper insulator washer (5).

## Install Power Terminal Parts

- See Figure 3. Locate 27 mm long copper bolt (4), and contact plate (5) from kit.
- Place contact plate over slightly open jaws of a vise with hole side flat and leg upward.
- Insert bolt threads down through hole in contact plate, and tap bolt into hole until bolt head touches plate.
- From inside of solenoid housing, insert center ferrule of a square bushing (3) from kit through power terminal bolt hole.
- Insert threads of bolt and contact plate assembly through bushing (and paper insulator, item 13, if applicable), with contact leg positioned with curved edge toward plunger opening. Hold in this position.
- From outside of housing, place center ferrule of round bushing (8), O-ring (9), and wave washer (10) (all from kit) over bolt threads.
- Thread thin hex nut (11) from kit onto bolt. Snug into place, but do not tighten at this time.



- Housing, solenoid
- Bolt, power terminal
- Plate, contact
- Bushing, square
- Washer, paper insulator
- Bushing, round
- O-ring
- Wave washer
- Nut, hex (thin)
- Nut, hex with lockwasher

Figure 2. Power Terminal

## Install Solenoid Plunger, Gasket, and Cover

- Place original return spring over new plunger (6) from kit. Insert plunger into opening in solenoid housing, spring end first. Be sure spring is seated all the way into the guide hole.
- While holding pressure inward on the plunger, tighten nuts (11) on terminals to 65-80 **in-lbs** (7.3-9.0 Nm). This will ensure alignment of contact plates (2 and 5) to plunger washer.
- Place new gasket (7) from kit in solenoid cover.
  - Position cover and gasket against housing with holes aligned.
  - Position clip over unpainted hole in cover.
- Fasten cover, clip, and gasket to solenoid housing with three screws and washers previously removed. Tighten screws securely.
- Place field wire terminal over copper bolt (1). Thread on hex nut removed earlier and tighten to 65-80 **in-lbs** (7.3-9.0 Nm). Place boot over terminal.

## Final Assembly

- Install starter on the vehicle. Refer to STARTER INSTALLATION in Service Manual.

### ⚠ WARNING

Connect positive (+) 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. (00068a)

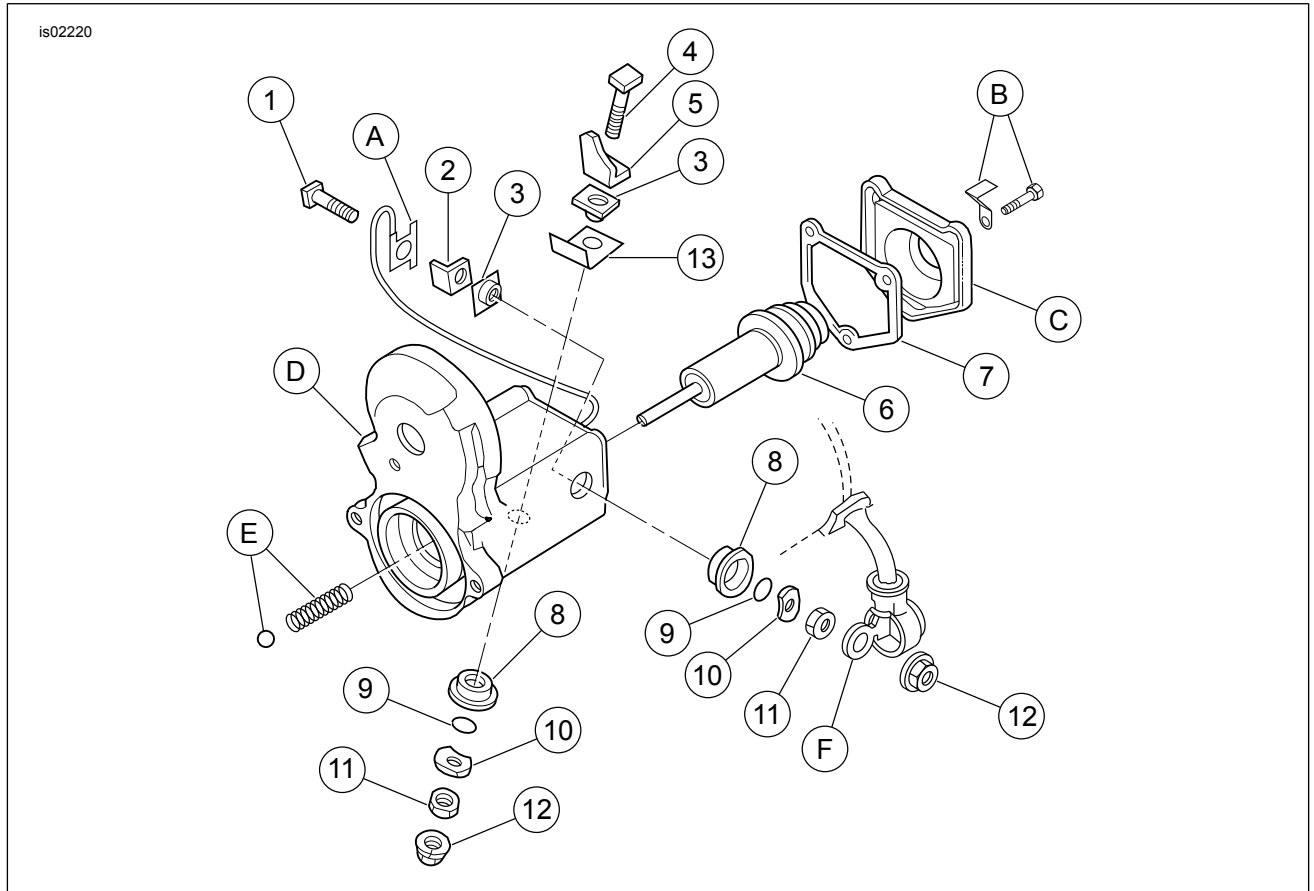
- Connect the battery cables, positive (+) cable first.

**▲ WARNING**

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

3. Install seat following the instructions in the Service Manual.

**SERVICE PARTS**



**Figure 3. Service Parts: Starter Solenoid Rebuild Kit**

**Table 2. Service Parts: Starter Solenoid Rebuild Kit**

Item	Description (Quantity)	Part Number
1	Bolt, copper, field terminal, with smooth shoulder	Not Sold Separately
2	Plate, contact, field terminal	Not Sold Separately
3	Bushing, square (2)	Not Sold Separately
4	Bolt, copper, power terminal, 27 mm long, with knurled shoulder	Not Sold Separately
5	Plate contact, power terminal	Not Sold Separately
6	Plunger	Not Sold Separately
7	Gasket, cover (Kit 31603-91)	31687-90
	Gasket, cover (Kits 31605-90 and 31608-90)	Not Sold Separately
8	Bushing, round (2)	Not Sold Separately
9	O-ring (2)	Not Sold Separately
10	Washer, wave (2)	Not Sold Separately
11	Nut, hex (thin) (2)	Not Sold Separately
<b>Kit 31603-91 includes items 12 and 13.</b>		
12	Nut, hex with lockwasher (2)	Not Sold Separately
13	Washer, paper insulator	6217
<b>Reference items:</b>		
A	Hold-in terminal	
B	Screw and clip	
C	Solenoid cover	
D	Solenoid housing	
E	Return spring and ball	
F	Field wire terminal	