Starters

LUCAS

Jaguar XJ6, XJS

DESCRIPTION

Starter is a series-wound, 4-pole, 4-brush motor, using either wedge-shaped or conventional brushes. When starter is energized, a housing-mounted solenoid shifts the roller-type starter clutch and pinion, engaging the ring gear.

APPLICATION

Model	Lucas No.	Type
Jaguar		
XJ6		[1] 3M100
XJS		[1] M45

[1] — Pre-engaged type.

TESTING

PERFORMANCE TESTS

No Load Tests

Place starter on bench. Using a fully charged 12-volt battery, connect an ammeter in series to starter. Starter should rotate smoothly at 5,000-6,000 RPM and 100 amp. current flow.

Lock Test

Use suitable tester, and set up according to instructions. Lock starter in test stand. Using fully charged battery, ammeter should register 940 amps. with starter torque reading of 29 ft. lbs. (39 N.m).

OVERHAUL

DISASSEMBLY

1) Disconnect electrical link between solenoid and starting motor. Remove nuts securing solenoid to end bracket. Lift off solenoid, leaving plunger attached to engagement lever.

2) Pry off end cap and spire nut (locking washer). Remove through bolts and end cover with brush holder. Carefully remove brushes from holder. Remove seal between drive end bracket and starter housing.

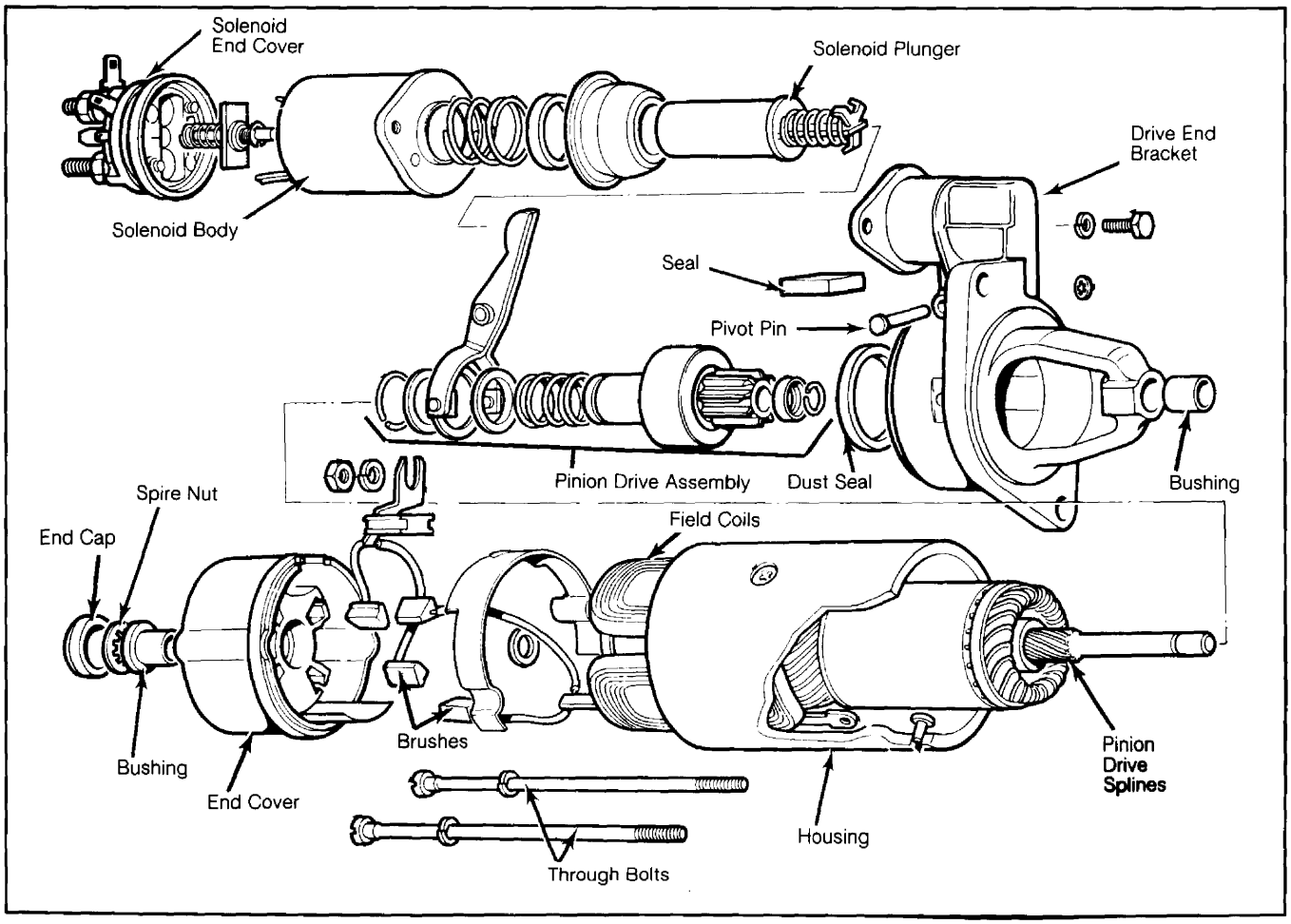
3) Remove engagement lever pivot pin and separate armature with drive assembly from drive end bracket. If removing drive assembly, remove thrust collar and lock ring from armature shaft and lift drive assembly off of armature.

PARTS REPLACEMENT AND TESTING

Armature

1) Check armature for open, shorted or grounded circuits. Check for lifted commutator segments

Fig. 1: Exploded View of Lucas Starter



Starters

LUCAS (Cont.)

and loose turns in armature winding. Check armature for scoring.

2) A scored armature could indicate a loose pole shoe or a bent armature shaft. Do not attempt to true a distorted shaft or machine the armature core. Replace it, if damaged.

Commutator

1) Clean commutator with cloth moistened in suitable solvent. If necessary, use fine sandpaper.

2) If further clean up is necessary, turn down in lathe, removing only as much metal as is absolutely necessary. Do not undercut insulators between commutator segments.

Brushes & Springs

1) Check that brushes move freely in holders. Hold back brush springs, and pull gently on connecting wires. If movement is sluggish, remove brush from holder and clean with solvent moistened cloth.

2) Replace brushes if less than 3/8" (9.5 mm) long. Replace springs if tension is less than 36 ozs. (800 g).

Field Coils

1) Using a test lamp or voltemeter with a battery connected in series, check for open or grounded coils. If any coil is defective, replace all coils. Mark housing and pole shoes for installation in original position.

2) Remove pole piece screws, and pry pole shoes, coils, and insulation pieces from housing. To install, reverse removal procedure.

Bushings

1) In event of excessive wear or damage, remove old bushings with suitable mandrel or extractor.

CAUTION: New porous bronze bushings must be soaked in light engine oil for at least 24 hours before installation.

2) Press bushings into position. Fit new bushing, using highly polished mandrel .0005" (.013 mm) larger than diameter of shaft.

NOTE: To prevent loss of porosity, do not ream bushing after its installation.

Starter Solenoid

1) Disconnect all cables and connectors from solenoid. Connect a 12-volt power supply between starter terminal and small unmarked solenoid terminal.

2) Connect a test lamp across main terminals. Test lamp should light, indicating contacts are closed. Disconnect power from small solenoid terminal, and lamp should go out, indicating contacts have been opened.

3) To check winding continuity, connect ohmmeter between starter terminal and ground on solenoid body. Resistance should be 1.01-1.07 ohms.

4) To check pull-in winding, check across small unmarked terminal and starter terminal. Resistance should be .36-.42 ohm.

5) To check hold-in winding, connect ohmmeter between ground on solenoid body and unmarked terinal. Resistance should be 1.49-1.71 ohm.

REASSEMBLY

1) Be sure that all parts are clean. Reverse disassembly procedure, using a new lock ring and spire nut. Lightly lubricate bearing surfaces and pivot pin.

2) Armature end play should be adjusted to maximum end play of .010" (.25 mm) by driving retaining ring (spire nut) to proper position.

Fig. 2: Cutaway View of Lucas Starter Solenoid