

Starters

LUCAS

Jaguar
XJ6
MGB
Triumph
Spitfire
TR7
TR8

DESCRIPTION

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

APPLICATION

| Car Model | Lucas No. | Type |
|------------|-----------|-------|
| Jaguar XJ6 | | 3M100 |
| MGB | | 2M100 |
| Triumph | | |
| Spitfire | 25149 | M35J |
| TR7 | 25703 | 2M100 |
| TR8 | 25724 | 3M100 |

TESTING

PERFORMANCE TESTS

No Load Test — With starter on bench and using a good 12-volt battery, connect an ammeter in series to starter. Starter should rotate smoothly at specified RPM and current draw.

Lock Test — Use suitable tester and set up according to instructions. With starter locked in test stand and voltage adjusted, ammeter and starter torque readings should be as specified. See *Starter Performance Specifications*.

OVERHAUL

DISASSEMBLY

1) Disconnect electrical link between solenoid and starting motor. Remove nuts securing solenoid to end bracket and lift off solenoid, leaving plunger attached to engagement lever. Pry off end cap and spire nut (locking washer). Remove through bolts and end cover with brush holder.

2) Carefully remove brushes from holder. Remove seal between drive end bracket and starter housing. 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 take drive assembly off of armature.

PARTS RELACEMENT AND TESTING

Armature — Check armature for open, shorted or grounded circuits. Check for lifted commutator segments and loose turns in armature winding. Check armature for scoring. A scored armature could indicate a loose pole shoe or a bent armature shaft. Do not attempt to true a distorted shaft or machine armature core; replace if damaged.

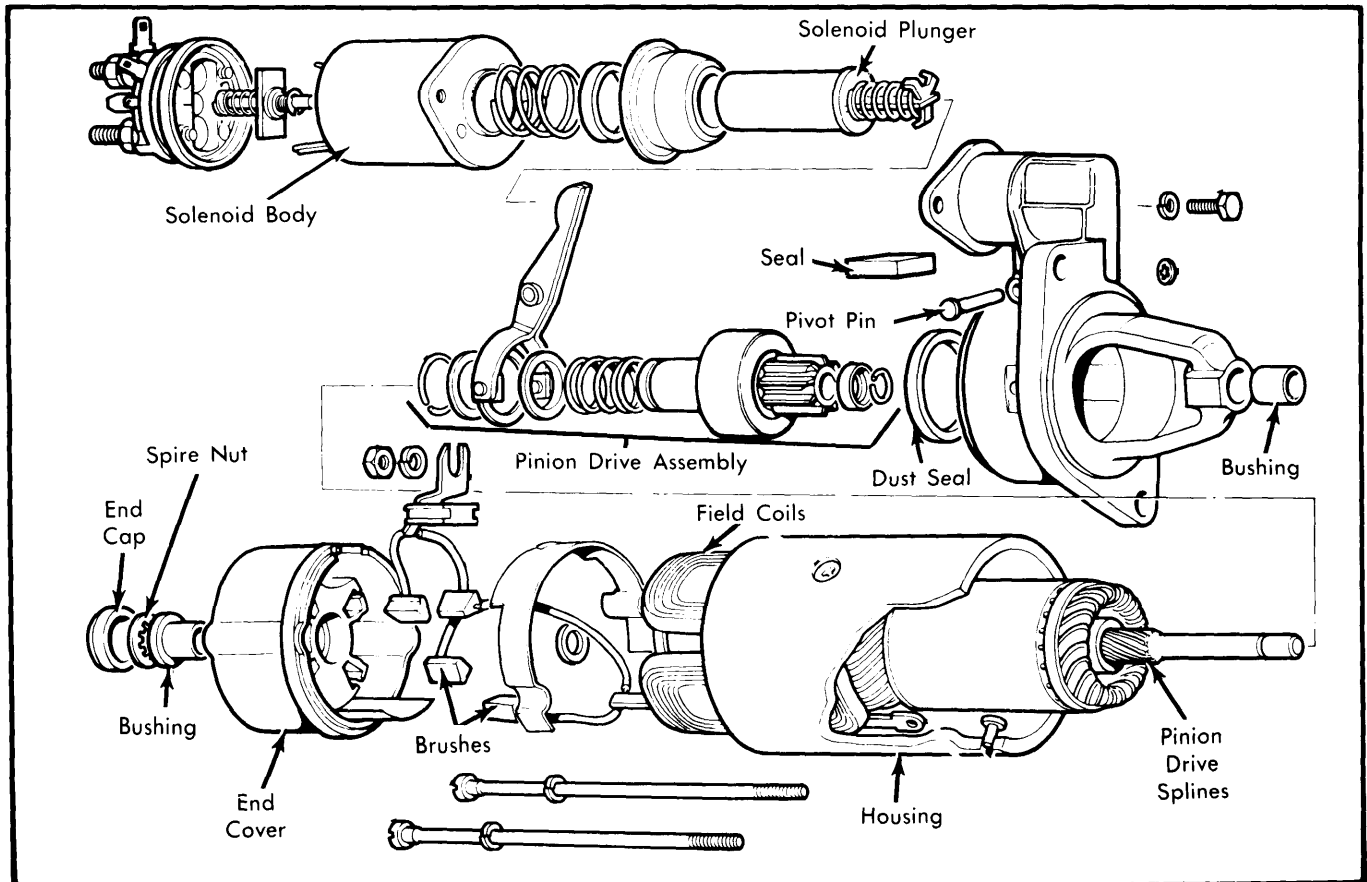


Fig. 1 Exploded View of Lucas 2M100 Starter

LUCAS (Cont.)

Commutator — Clean commutator with cloth moistened in suitable solvent and, if necessary, with fine sandpaper. If further clean up is necessary, turn down in a lathe, removing only as much metal as is absolutely necessary. Do NOT undercut insulators between commutator segments.

Brushes & Springs — Check that brushes move freely in holders by holding back brush springs and pulling gently on connecting wires. If movement is sluggish, remove brush from holder and clean with solvent moistened cloth. Replace brushes if less than $\frac{3}{8}$ " (9.5 mm) long and springs if tension is less than 36 ozs. (800 g).

Field Coils — Check for open or grounded coils using test lamp or voltmeter and battery connected in series. If any coil is defective, replace all coils. Mark housing and pole shoes for installation in original position. Remove pole piece screws and pry pole shoes, coils and insulation pieces from housing. To install, reverse removal procedure.

Bushings — In event of excessive wear or damage, remove old bushings with suitable mandrel or extractor. Ensure that new porous bronze bushings have been soaked in light engine oil for at least 24 hours and press into position. Fit new bushing using highly polished mandrel .0005" (.013 mm) larger than diameter of shaft.

NOTE — Do NOT ream bushing after fitting due to possible damage to porosity of new bearing.

Starter Solenoid — 1) With all cables and connectors disconnected from solenoid, connect a 12 volt power supply between starter terminal and small unmarked solenoid terminal. Connect a test lamp across main terminals and note test lamp lighted, indicating contacts are closed. Disconnect power from small solenoid terminal and lamp should go out, indicating contacts have been opened.

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

across small unmarked terminal and starter terminal. Resistance should be .36-.42 ohms for Jaguar and .25-.27 ohms for other models.

3) To check hold in winding, connect ohmmeter between ground on solenoid body and unmarked terminal. Resistance for Jaguar should be 1.49-1.71 ohms and .76-.80 ohms for remaining models.

REASSEMBLY

Ensure that all parts are clean and reverse disassembly procedure, using new lock ring and spire nut. Lightly lubricate bearing surfaces and pivot pin. Armature end play should be adjusted to maximum end play of .010" (.25 mm) by driving retaining ring (spire nut) to proper position.

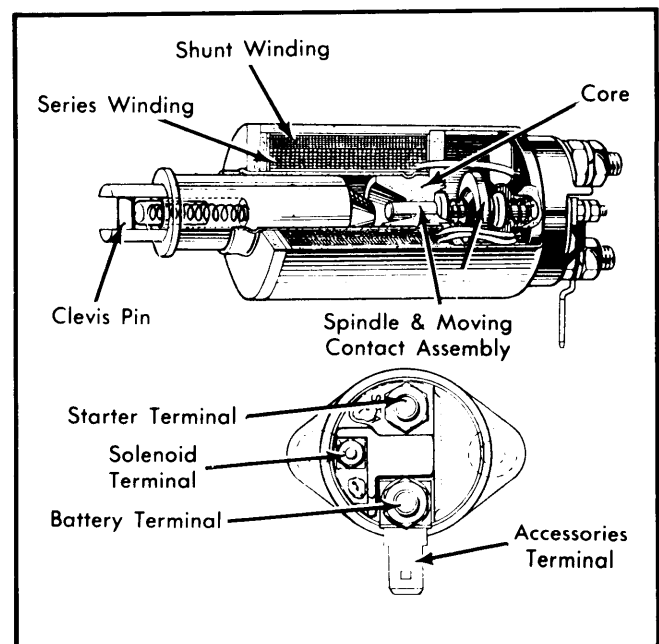


Fig. 2 Lucas Starter Solenoid

| STARTER PERFORMANCE SPECIFICATIONS | | | | | |
|------------------------------------|-------------------|--------------|-----------|-------|---------------|
| Model | No Load Test ① | | Lock Test | | |
| | Amps. | RPM | Amps. | Volts | Torque |
| 2M100 | 100 | 6,000 | 463 | ① | 14.4 ft. lbs. |
| 3M100 | 100 | 5,000-6,000 | 940 | ① | 29.0 ft. lbs. |
| XJ6 | 65 | 6,000 | 545 | ① | 16.5 ft. lbs. |
| TR8 | 65 | 8,000-10,000 | 350-375 | ① | 7 ft. lbs. |
| M35J | | | | | |

① — Use 12 volt fully charged battery.