

## LUCAS

### DESCRIPTION

Starter solenoids are electro-magnetic actuators mounted externally on the yokes of pre-engaged starting motors. These solenoids contain a soft iron plunger (linked to engaging lever), starter switch contacts and a coil with two windings (a heavy gauge pull-in winding and lighter gauge hold-in winding). Initially, both windings are energized in parallel when starter device is operated, but the pull-in winding is shorted out by the starter switch contacts at the instant of closure. Solenoids described here are sealed in a rolled steel outer case or body and cannot be disassembled. Most ground return starter solenoids have three terminals (two large and one small) with the exception having an additional small terminal marked "IGN" which is used in conjunction with the ignition coil ballast resistor. These units have an auxiliary phosphor bronze contact which serves to cut out the ballast resistor during starting, thereby ensuring that terminal voltage of the coil remains unaffected by the drop in battery voltage.

### TESTING

#### SOLENOID CONTACTS

1) Disconnect all cables and connectors from solenoid terminals and connect a 10 volt power supply in series with a switch between "STA" terminal and small, unmarked terminal of solenoid. Connect a test lamp across the solenoid main terminals and insert a stop (1/8" thick) between drive end bracket and pinion gear.

2) Close switch to energize series windings and test lamp should light, indicating contacts are closed. Open switch and remove pinion stop. Close switch and hold pinion gear in engaged position. Open switch and light should go out indicating that contacts have opened.

#### WINDING CONTINUITY

Connect ohmmeter between "STA" terminal and a good ground on solenoid body. A reading of 1.01-1.07 ohms should be obtained. If reading is not to specifications, replace solenoid.

#### PULL-IN WINDING

Connect ohmmeter between small unmarked terminal of solenoid and "STA" terminal. If resistance is not within

specifications, closing (series) windings are defective and solenoid must be replaced.

| Vehicle Application | Resistance (Ohms) |
|---------------------|-------------------|
| MGB .....           | .25-.27           |
| TR7, Spitfire ..... | .25-.27           |
| Jaguar V12 .....    | .36-.42           |

#### HOLD-ON WINDING

Connect ohmmeter between small unmarked terminal of solenoid and a good ground on solenoid body. If resistance is not within specifications, hold-on (shunt) windings are bad, replace solenoid.

| Vehicle Application | Resistance (Ohms) |
|---------------------|-------------------|
| MGB .....           | .76-.80           |
| TR7, Spitfire ..... | .76-.80           |
| Jaguar V12 .....    | 1.49-1.71         |

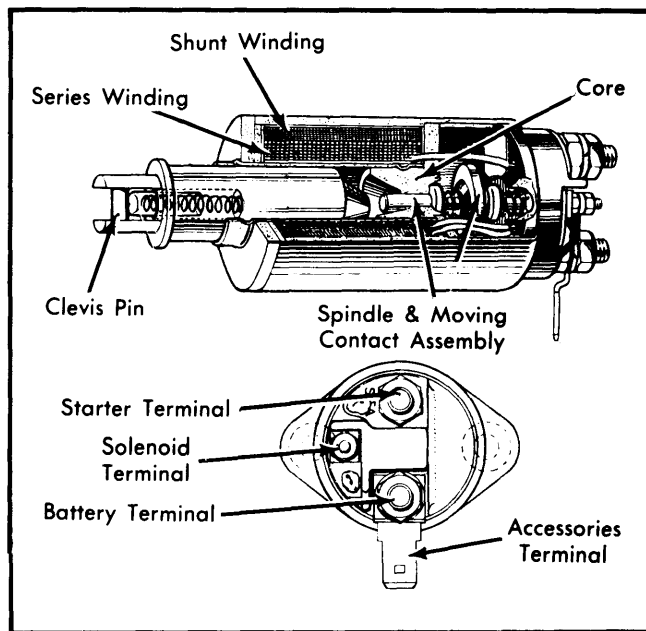


Fig. 1 Lucas Starter Solenoid