

ITEM 80A/23

SUBJECT: OPERATING INSTRUCTIONS FOR LUCAS ELECTRONIC IGNITION ANALYZER - P/N 60973065  
MODELS: All

WARNING

IGNITION CIRCUITS INDUCE HIGH VOLTAGES WHICH ARE DANGEROUS. BESIDES THE RISK FROM ELECTRIC SHOCK ITSELF, THERE COULD BE SUDDEN UNCONTROLLED BODILY MOVEMENTS CAUSING CONTACT WITH MOVING PARTS. TAKE GREAT CARE WHEN WORKING WITH THE IGNITION SWITCHED ON.

INTRODUCTION

This analyzer is designed to indicate low tension faults on 12 volt - inductive discharge - Electronic Ignition circuits on motor vehicles.

It will not operate satisfactorily on:-

- (a) A conventional ignition system, i.e., those systems where mechanical contact breaker points switch the coil current.
- (b) 6 and 24 volt systems.
- (c) Positive ground systems.
- (d) Capacitive discharge systems.

ANALYZER CONNECTIONS

Connect analyzer leads as follows:-

Red lead (Red sleeve)	Direct supply from battery positive (+)
Green lead (Black sleeve)	Ground (-)
Yellow lead (Red sleeve)	Ignition coil positive (+)
Blue lead (Black sleeve)	Ignition coil negative (-)

NOTE: "Battery On" lamp should light. (This indicates that the battery is capable of running an ignition circuit). If not, check condition of battery. "Amp On" or "Amp Off" lights may illuminate (can be ignored at this stage).

ANALYZER OPERATION - Turn off any electrical load, e.g., air conditioning, CB radio, heated rear window, lights, etc.

1. Set "No of Cylinder" switch to appropriate position for vehicle.
2. Set "Running/Cranking" switch to "Cranking" position.
3. Set "Auto-Reset/Store/Manual-Reset" switch to "Auto-Reset" position.

NOTE: When initial settings are made, if the "Running/Cranking" switch is in the "Running" position, and the Auto-Reset/Store/Manual-Reset switch is in the "Store" position, continuous indications will be given from the "Running test" bank of LED'S. These indications can be ignored, and corrected by changing switch setting to Manual-Reset or Auto-Reset. Operate reset switch several times to ensure elimination of stored data.

4. Switch ignition on.

cont'd . . .

ITEM 80A/23 (cont'd)

5. Cranking Test

Crank engine.

The engine should crank and start running.

The "System OK" lamp only should light and remain illuminated. If this happens, proceed to TEST 6.

NOTE: "Coil/Amp Switching Fault" may flash prior to "System OK" lamp coming on.

"System OK" lamp lights, but engine does not start.  
LT side of ignition is OK.

CHECK: HT  
Fuelling  
Engine condition

If "System OK" lamp does not light but:

- |   |  |
|---|--|
| (i) "Amp On" lamp lights<br>(Amplifier is permanently switched on)                                      | CHECK: Pick-up air gap<br>Amplifier<br>Ballast Resistor                          |
| (ii) "Amp Off" lamp lights<br>(Amplifier is permanently switched off)                                   | CHECK: Ignition circuit<br>connections<br>Drive/Ballast Resistor(s)<br>Amplifier |
| (iii) "Coil/Amp Switching Fault lamp lights.<br>(Amplifier is switching on and off, but not correctly.) | CHECK: Coil<br>Connections<br>Ballast Resistor<br>Amplifier                      |

If any fault is shown (by means of the LED'S) during a "cranking" test, the fault indicated must be located and rectified. The "cranking" test should only be considered satisfactory when the "System OK" lamp is illuminated and the engine runs. The analyzer should not be switched to the "Running" test position until this requirement is achieved.

Failure to do so could result in misleading indications during the "Running" test sequence.

6. Running Test

Set the "Running/Cranking" switch to the "Running" position and maintain Auto Reset on other switch. The "System OK" lamp should extinguish.

7. Run engine over full speed range.

If an LT fault exists, then one or more of the MISFIRE; MULTIPLE SPARK; CYCLIC MISFIRE or SUPPLY FAULT lamps will flash. If none of these lamps illuminate then no fault exists in the LT side of the ignition system. (If complaints are of an intermittent nature refer to TEST 8).

MISFIRE lamp indicates two or more consecutive sparks have been missed.

CYCLIC MISFIRE lamp indicates a misfire on one particular cylinder for at least 2 engine revolutions.

MULTIPLE SPARK lamp indicates that just after the amplifier has switched off to create the spark, it prematurely turns back on, thus interrupting the spark.

SUPPLY FAULT lamp indicates that a wiring fault exists in the 12 volt supply to the ignition system.

If any of the above fault indications occur, check the following items:

- |   |  |
|---|--|
| MISFIRE lamp lights only  | CHECK: Pick-up air gap<br>Pick-up<br>Amplifier                 |
| CYCLIC MISFIRE lamp lights                                      | CHECK: Pick-up air gap<br>Timing rotor<br>Pick-up<br>Amplifier |
| MULTIPLE SPARK AND MISFIRE lamps light together                 | CHECK: Pick-up<br>Pick-up air gap<br>Amplifier                 |
| SUPPLY FAULT AND MISFIRE or CYCLIC MISFIRE lamps light together | CHECK: Connections<br>Ballast Resistor                         |

NOTE: (A) On some 12 cylinder vehicles, with the engine running at high speeds, the MISFIRE lamp may flash. This is because of the low coil stored energy and not because of a faulty ignition circuit.

(B) Radio suppressors (where fitted) can interfere with the low tension circuit and should be disconnected where possible.

### 8. Road Testing

When a fault is of an intermittent nature, the vehicle may need to be road tested in order to locate the fault. Before a road test takes place it is necessary to route the analyzer cables in such a manner that they will not foul or cause fouling to any component fitted in the engine compartment. The analyzer can then be placed inside the vehicle, eg. on the passenger's seat, and the hood closed (ensure cables are trapped, but not damaged). The "Auto-Reset/Store/Manual-Reset" switch must be set to the "Store" position and the "Running/Cranking" switch to the "Running" position. (This precaution enables the vehicle to be driven without continuous observation of the analyzer indications). The vehicle can then be driven until the analyzer gives an indication of a fault, or the engine misses and no analyzer fault is recorded. If the analyzer detects a fault, the fault will be stored and the indicator lamp(s) remain illuminated until either:-

- (a) The Auto-Reset/Store/Manual Reset is put into Manual-Reset or Auto Reset position.
- (b) The battery connections are released.

After road test, ensure the connections to the battery and coil are still secure.