

# Lumenition

## OPTRONIC<sup>®</sup> IGNITION

INFRA-RED SOLID STATE BREAKERLESS IGNITION SYSTEM

90175

**LCK.828**  
SEV 6 CYLINDER  
TWIN CASSETTE DISTRIBUTOR

# POWER MODULE

## FITTING INSTRUCTIONS

Read carefully all sections before proceeding with any fitting

A BRITISH INVENTION  
manufactured by:  
**LUMENITION**

Division of **Autocar** Equipment Ltd.  
77-85 Newington Causeway  
London, SE1 6BJ, England

Patent Nos. 1219833, 1252324, 1252559, 1279385, 1330453  
1410782, 1417857, 1420814, 1437770.

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# Lumenition

OPTRONIC<sup>®</sup>  
IGNITION

## How it works

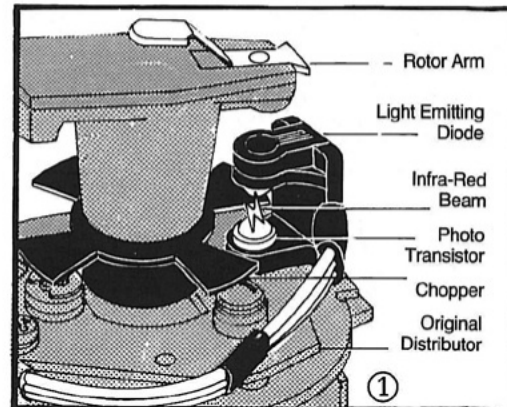
Lumenition Optronic Ignition is an electronic ignition conversion principally for cars originally fitted with mechanical distributors using contact breaker points.

The advantage of the Lumenition system is that it contains no wearing parts, requires no adjustment or maintenance during service and once ignition timing is set it will remain permanently in tune.

The engine will run better, more economically through improved efficiency, last longer and start better.

There are only three components, very compact and simple to fit.

1. First is the optical switch, this contains a light emitting diode (LED) which sits in the switch bracket opposite a matching silicon phototransistor. When the ignition is switched on, the LED emits an invisible infra red beam towards the silicon phototransistor which receives or 'sees' the beam.
2. Secondly an interruptor called a chopper (which generally is fitted over the cam) rotates interrupting the beam of light causing a pulse. It has one blade for each cylinder of the engine.
3. Thirdly a power module receives this pulse via its internal electronic device which switches the ignition coil on and off. The coil produces a high tension spark when switched off and is recharged when switched on.



Typical Distributor Installation

## SPECIFICATION

The important performance parameters of Lumenition are given below as a guide to its correct use:—

Power Supply -Ve earth only  
+12 volt supply  
withstand 28 volts for 1 min  
withstand -13.5 for 1 hour  
(reversed connection)  
Maximum permissible ignition current  
7 Amps

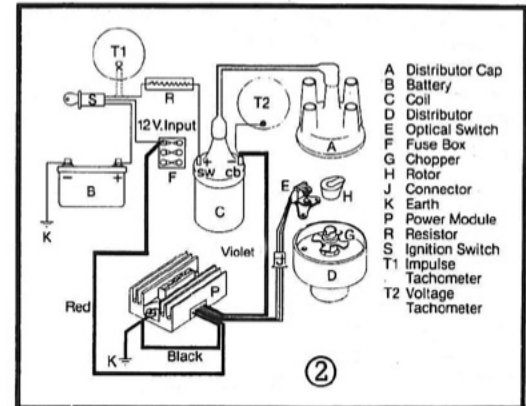
Operating Temperature -40 to +125°C optical switch  
-40 to +85°C power module  
Ignition Timing Dwell angle 65° on 4 cylinder  
45° on 6 cylinder  
35° on 8 cylinder

Accuracy ±1° crank at 3000 rpm  
Note: Dwell angle refers to "coil on"  
(recovery) time and may differ from the recommended dwell with contact breakers.

Environment Humidity to BS2011  
Vibration to BS2011.

## PRECAUTIONS

- NEVER: connect brown coil -ve lead to 12v +ve supply.
- SUITABLE: for coils or coil/ballast combinations of not less than 3 ohms.
- NOT SUITABLE: for use with low resistance (ie less than 1 ohm) electronic ignition coils.
- ALWAYS: keep connectors clean, tight fitting and free from grease.



Typical Circuit Diagram

## FITTING PROCEDURE

### 1. POWER MODULE

Disconnect the battery negative terminal.

Drill 2 holes, 3.5mm diameter (9/64"), to fit power module to a flat surface on wheel arch or bulkhead, away from the battery, aerial and exhaust but as close to distributor as possible (see illustration 3).

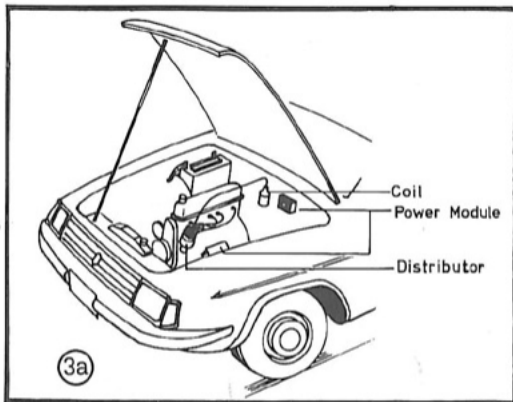
Fit power module using self-tapping screws supplied and placing eyelet of short black wire beneath one screw head as earth, tighten down securely ensuring a good earth. With fibre glass bodied cars run a heavy duty earth wire or braid from mounting screw of power module direct to the battery negative terminal or good earth point.

Referring to Illustration 2:

Connect red wire using extension supplied if necessary to either:

- Feed side of ignition terminal (F) of fuse box
- Ignition switch side of ballast resistor (R) (NOT COIL SIDE)
- Ignition terminal of ignition switch (S) DO NOT connect to auxiliary terminals which switches "off" in start or cranking position.

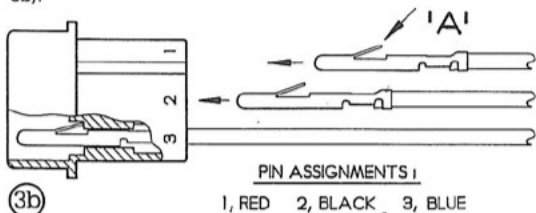
Connect Violet wire to the wire from which the contact breaker assembly was removed (D). This goes to the negative terminal of the coil, sometimes via the tachometer.



## 2. OPTICAL SWITCH

See fitting instructions supplied with fitting kit specified for your application.

Fitment of optical switch connector housing (see illustration 3b):



- Ensure tags 'A' are opened out as illustrated.
- Fit pins of optical switch wires into connector in accordance with pin assignments until tags click into position.
- Pull back on wires to ensure that pins have locked into housing.
- Check that wire colours correspond to power module connector.

Should removal of terminals from housing be necessary, depress tags 'A' using a small probe to withdraw. DO NOT CUT WIRES.

## 3. On completion of 1 and 2:

Join and lock connectors (13) of power module assembly and optical switch. A smear of silicon or petroleum jelly is recommended for terminal protection.

Neatly trace wires avoiding belts, pulleys, manifolds and hinges.

The vehicle is now ready for tuning to manufacturer's specification.

## TUNING & PREPARATION

For ultimate efficiency, ignition timing should be set to vehicle manufacturer's specification only.

In some countries the lead content (anti-knock additive) has been considerably reduced and may cause pinking. It is then advisable to retard ignition timing 2° at a time until pinking is no longer evident.

Correct spark plug gaps are also important, preferably .025 (0.6mm).

## STATIC IGNITION TIMING:

Use a voltmeter or 12V bulb not exceeding 6W wire between the ignition coil negative terminal and earth (see illustration 4).

Turn engine and align timing marks making sure the rotor tip is pointing to the H.T. pick-up segment in the distributor cap of the recommended firing plug, normally No. 1.

With distributor cap removed the leading edge of the chopper blade should be 2/3rds across the lensed units in the direction of rotation.

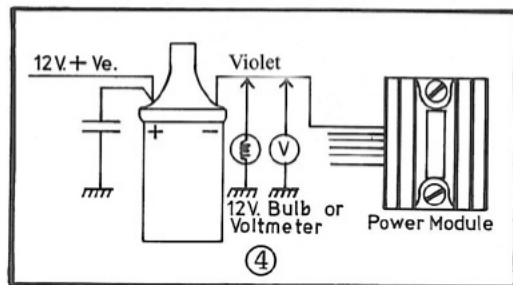
Slacken distributor clamp bolt and very slightly turn distributor in direction of rotor rotation. This is just enough to bring the chopper blade before the point of passing between the lensed units.

Switch on ignition taking care not to crank the engine.

Very gently return the distributor against the direction of rotation to the exact point that the voltmeter reads around 12V or the test bulb lights. If you overshoot return far enough to start again otherwise you will time on backlash.

When correct, tighten clamp, remove voltmeter/bulb, replace cap and the engine will be ready for starting.

It can be noted that the coil is switched off (spark occurs) when the leading edge of the chopper blade is 2/3rds through the lensed units.



## FAULT FINDING

If the newly installed system appears not to work, first recheck all connections then carry out the following tests:-

All tests are carried out with the ignition switched on and the centre H.T. lead removed from the distributor and held approximately 6.5mm (1/4 inch) from an earth point such as the engine, but away from the carburettor region.

### 1. To test the complete system:-

With the distributor cap removed and out of strong sunlight, a piece of opaque material such as a piece of black card, is passed between the lenses of the optical switch. This should produce a spark from the H.T. lead to earth.

### 2. To test the power module (and coil):

- unplug the 3-way connector leading to the distributor.
- connect (by means of a small piece of wire) the blue wire to the black wire leading to the power module. As this connection is made, a spark is produced at the H.T. lead. If no spark is produced, the power module is suspect. If a weak spark is produced, the coil may be suspect.

### 3. To test the optical switch:-

The optical switch must be connected to a good power module. With a sensitive voltmeter measure the voltage between the blue and black leads. When the infra-red beam is not interrupted, the voltage is approximately 2.7v. This drops to 1.0v when the beam is interrupted. N.B. The voltage on the red lead is approximately 7.5v.

### 4. Do not leave the ignition on for more than 15 minutes with the optical switch assembly disconnected.

## NOTES

Under no circumstances should:-

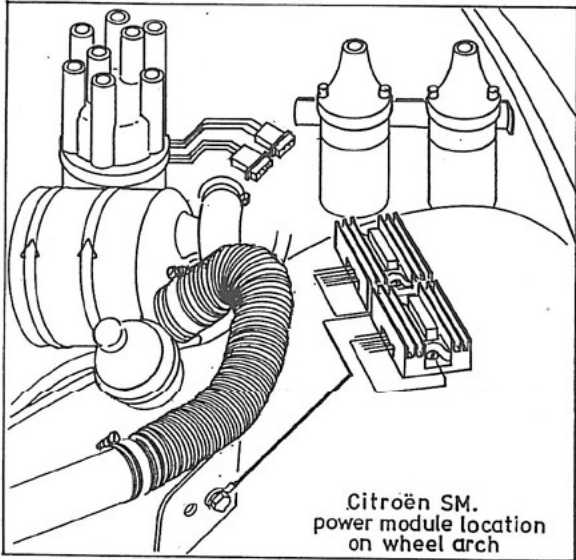
- a full positive feed be applied to any connection other than the red positive wire of the power module supplied with a male lucar terminal.
- the coil terminals be short-circuited or the brown wire (coil -ve) of the power module be connected to full positive feed.

Failure to observe the notes will result in irreversible damage to the power module, invalidating the warranty.

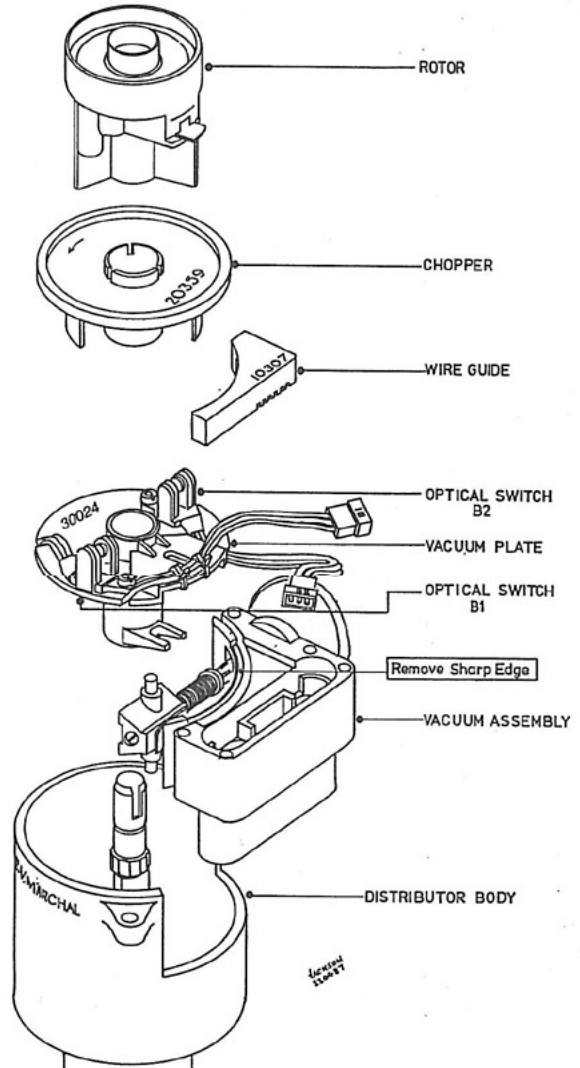
**CAUTION:** H.T. can be dangerous and can jump 25mm (1 inch). Leads should be handled carefully.

SUPPRESSION can be fitted if necessary between coil positive (switch terminal) and earth, usually 1.5 to 2.0 Mfd.

THIS LUMINATION UNIT IS APPROVED  
FOR ROAD AND MARINE USE ONLY  
AND MUST NOT BE USED IN AIRCRAFT  
OF ANY KIND



*Illustration One*



*Illustration Two*

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A BRITISH INVENTION

# LCK.828

## SEV 6 CYLINDER TWIN CASSETTE DISTRIBUTOR

SEV 6 CYLINDER  
TWIN CASSETTE DISTRIBUTOR

**NOTE . . .** This kit can only be used with 3-vane rotors.

**Contents:** Please check that you have the following items before proceeding with the installation.

- 2 Power Modules
- 1 Dual Cassette fitted with 2 Optical Switches
- 1 Chopper
- 1 Cable Guide
- 1 Red Adaptor Lead
- 1 Black Extension Lead
- 5 Cable Ties
- 1 Double Lucar Terminal
- 4 Self Tapping Screws

### Fitting Procedure

**WARNING:** Disconnect battery negative connection before commencing any electrical work.

#### 1) Power Module

The position for the power module is shown in illustration 1.

They are mounted on the wheelarch behind the headlamp damper. Drill two holes 3.5mm (9/64") for each power module and attach to the wing with the self tapping screws provided. Grease may be used to prevent rusting of the body.

#### 2) Distributor

Remove leads from distributor cap noting the positions. (only necessary for fuel injection models).

Remove distributor cap.

Remove rotor arm.

Remove contact breaker leads from between condensers and coils.

Remove leads from bottom of condensers.

Remove points cassette and condenser carrier by sliding both units upwards together.

Separate points cassette and condensers from the carrier.

To prevent chafing of the optical switch wires the upper, inside edge of the carrier should be chamfered using a small file. (see illustration 2).

Fit the chopper onto the bottom of the rotor, locating the rotor vanes fully into the vertical slots in the chopper.

Locate the Lumenition cassette onto the carrier lugs with the optical switches uppermost.

Locate cable guide over the optical switch wires in position over the condenser carrier.

Holding guide in place, slide this assembly into the distributor ensuring the unit is correctly located.

Fit rotor and chopper to distributor shaft.

Replace distributor cap, clamping wire guide securely in place.

Push condenser earth wires safely into the carrier condenser holes.

Replace distributor leads into the correct positions on the distributor cap.

#### 3) Electrical Connections

Connect the black earth leads of each power module together under a power module fixing screw with one end of the earth extension wire provided.

Connect the remaining end of the earth extension wire under the chassis bolt indicated in illustration 1 ensuring good metal contact.

Connect the red power leads of each power module to an ignition switched, non fused positive supply (ie. supply to coils) using the adaptors provided. (This car is not usually fitted with a ballast wire).

Connect the optical switch marked B1 to one of the power modules and connect the Violet lead from this module to the negative terminal of the coil that supplies high tension to the point on the distributor cap marked B1.

Connect the other optical switch and power module in the same way for B2.

After checking all the electrical connections, reconnect the battery negative connection, the engine may now be started.

A slight adjustment in timing may be necessary and can be checked and adjusted using the normal methods.

The timing need only be set for bank 1 as the firing angle between banks is set during manufacture. **WARNING . . . Do not attempt to alter this setting, serious engine damage may result.**

When the system is working the wires can be secured into a safe position using the cable ties provided.