

Lumention Optronic Ignition System

PMA 50 Power Module

Not for use on low-resistance electronic coils.

Fitting Instructions

Read carefully all sections before proceeding with any fitting.

How It Works

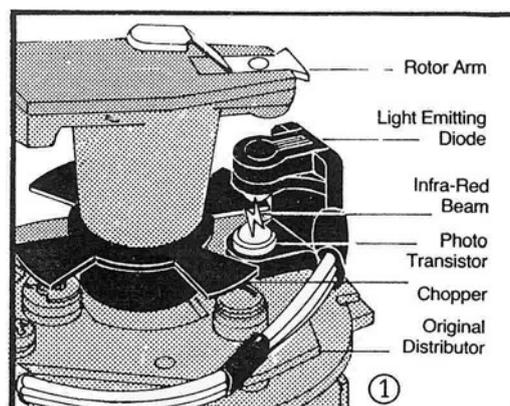
Lumention Optronic Ignition is an electronic ignition conversion principally for cars originally fitted with mechanical distributors using contact breaker points.

The advantage of the Lumention 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 interrupter 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

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SPECIFICATION

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

Power Supply	-ve earth only +12volt supply withstand 28 volts for 1 min withstand -13.5 for 1 hour (reversed connection) Maximum permissible ignition current 7 Amps
Operating switch Temperature module	-40 to +125°C optical -40 to +85°C power
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 Violet coil 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 (i.e. less than 1ohm) electronic ignition

coils ALWAYS keep connectors clean. tight fitting and free from grease.

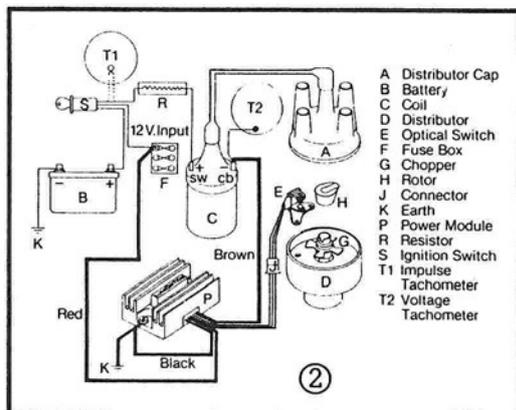
1. Power Module

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

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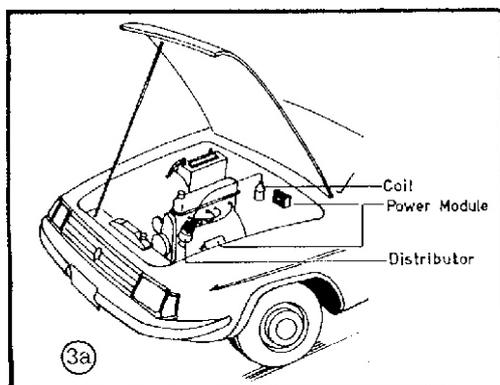
Please note that the Brown wire is a Violet wire on later units.

Referring to Illustration 2

Connect red wire using extension supplied if necessary to either

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

Connect brown 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

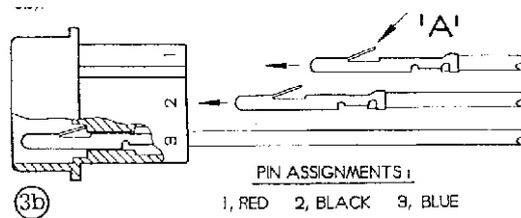
See fitting instructions supplied with fitting kit specified for your application

Fitment of optical switch connector housing

(see illustration 3b)

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- 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

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 wired 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 HT 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

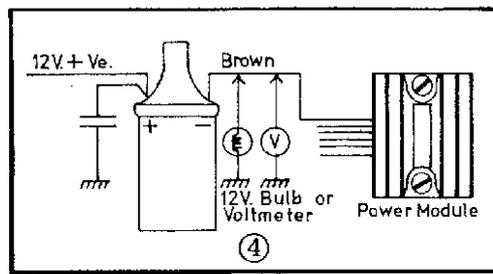
Very gently return the distributor against the direction of rotation to the exact point that the voltmeter reads around 12V or the test bulb lights If you overshoot return far enough to start again otherwise you will time on backlash

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PMA 50 Power Module

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



Please note that the Brown wire is a Violet wire on later 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 HT lead removed from the distributor and held approximately 65mm (1/4 inch) from an earth point such as the engine, but away from the carburetor 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 HT lead to earth

2. To test the power module (and coil)

a) unplug the 3-way connector leading to the distributor

b) 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 HT 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 27v This drops to 10v when the beam is interrupted NB 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

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NOTES

Under no circumstances should:

- (a) 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.
- (b) The coil terminal be short-circuited or the Brown wire (coil -ve) of the power module be connected to full positive feed.

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

CAUTION – H.T. leads 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 LUMENTION UNIT IS APPROVED
FOR ROAD AND MARINE USE ONLY
AND MUST NOT BE USED IN AIRCRAFT OF ANY KIND**

A BRITISH INVENTION
Manufactured by
LUMENTION



Lumention Switzerland

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