

FITTING INSTRUCTIONS

Read carefully all sections before proceeding with any fitting



OPTRONIC[®] CLASSIC COLLECTION PMC 50

Requires FK fitting kit sold separately



Thank you for purchasing this Lumenition Ignition System designed and manufactured in the United Kingdom.

HOW IT WORKS

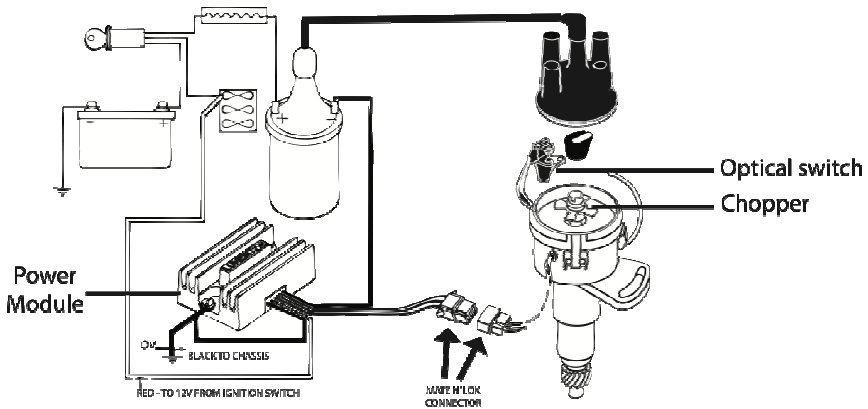
Lumenition Optronic Ignition is an electronic ignition conversion principally for cars originally fitted with mechanical distributors using contact breaker points.

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 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 circuit diagram

The Lumenition Classic Collection contains:

- Power module with mounting kit and fixings
- Optronic lamp assembly switch and chopper
- Wiring with cloth style cable tidy and connectors
- Coil and bracket with fixing screws
- Ballast resistor
- Fitting instructions and Lumenition sticker.

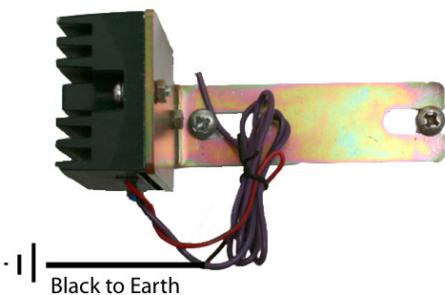
Fitting Procedure

The Classic Collection is supplied with a mounting bracket that allows the fitting of the Lumenition module without drilling holes in the vehicle bodywork. The bracket fits between the coil and bodywork of the vehicle using the original screws. Before fitting the Classic Collection parts you should identify the existing ignition configuration to determine whether:

- a) The vehicle is fitted with a ballast resistor either separate or as part of the wiring.
- b) The vehicle is fitted with a ballast bypass wire from the starter solenoid or relay to the coil.
- c) The vehicle is fitted with an electronic tachometer or rev counter and whether it is current sensing (in line with the ignition supply) or voltage triggered (with a wire to the contact breaker / coil connection).

It is recommended that before any electrical work is carried out on the vehicle that the battery negative terminal is disconnected.

Module and Bracket:

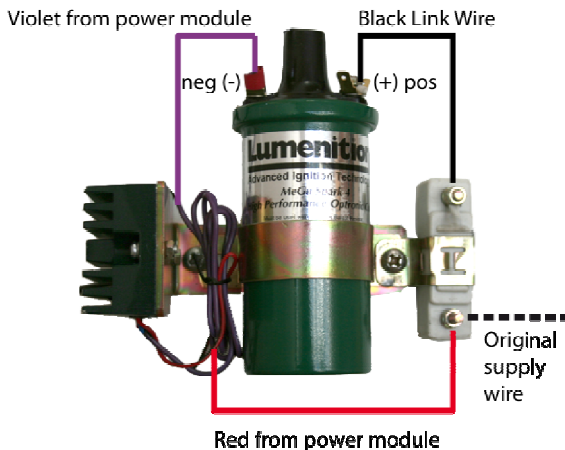


- 1) Offer up the bracket to the coil mount and identify the best orientation (left or right) for the module.
- 2) Fix the module to the outer face of the bracket using the screws and nuts provided.

- 3) The short black earth lead of the module may be taken to the module mounting point. It is recommended that the supplied earth lead extension is used to connect this point to a secure earthing point on the chassis of the vehicle.

Coil and Ballast Resistor:

- 4) Remove the HT lead from the coil tower.
- 5) Remove the original coil. Note the wire colours and source of the existing wiring to the coil.
- 6) Place the supplied coil clamp onto the Lumenition coil and gently tighten the screw enough to hold the coil in place without crushing the body.
- 7) Using the original screws, mount the coil to the vehicle body with the bracket in place between. The supplied ballast resistor (if required) should be mounted using the mounting screw on the opposite side of the coil to the power module.



Wiring:

- 8) The black link wire from the ballast resistor should be connected to the coil terminal marked '+'.
9) The violet wire from the module should be connected to the coil terminal marked '-'.
10) The red wire from the module should be connected to the terminal on the ballast resistor that is not linked to the coil. If the original ballast resistor or wire has been retained the red wire must be connected to the ignition switched 12v side of that device. A red extension wire is provided for use if required. Suitable supply points are:

- a) Feed side of ignition terminal (F) of fuse box.
- b) Ignition switch side of ballast resistor (R).
- c) Ignition terminal of ignition switch (S). DO NOT connect to auxiliary terminal which often disconnects power in the start or cranking position.

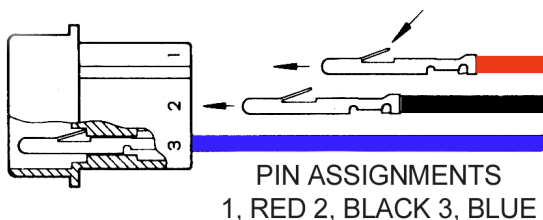
Referring to your notes made previously:

- 11) Connect the original supply wire (removed from the coil) to the ballast resistor terminal with the module red wire. If the original ballast resistor or wire has been retained this wire will be connected directly to the coil positive terminal.
- 12) A voltage triggered tacho may be connected to the coil negative terminal with the module violet wire. This wire may be shared with the original contact breaker wire. If this is the case, ensure that the free end of the wire is insulated and tied back.
- 13) A wire from the starter motor or starter relay may be connected to the coil positive terminal which is linked to the ballast resistor. If the vehicle was not fitted with a ballast bypass system the STA001 from Lumenition can be fitted to further improve spark energy during starting.
- 14) Refit the HT lead to the coil tower.

Optical Switch:

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

Fitment of optical switch connector housing (see below.)



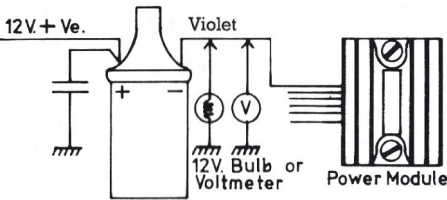
Should removal of terminals from housing be necessary, depress tags 'A' using a small probe to withdraw. DO NOT CUT WIRES.

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

Join and lock connectors 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 using the cloth style cable tidy supplied. The vehicle is now ready for tuning to manufacturer's specification.

TUNING & PREPARATION

STATIC IGNITION TIMING:



Use a voltmeter or 12V bulb not exceeding 6W wired between the ignition coil negative terminal and earth.

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 and 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):

(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 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.**

Further help including Technical Bulletins on specific issues and frequently asked questions can be found at www.lumenition.com.

Lumenition is manufactured and distributed throughout the world by:
Autocar Electrical Equipment Co Ltd.
49-51 Tiverton Street
London SE1 6NZ

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 volts for 1hour (reversed connection)
Maximum permissible ignition current 7 Amps

Operating Temperature -40 to +125°C for optical switch
-40 to +85°C for power module

Ignition Timing Dwell angle 65° on 4 cylinder
45° on 6 cylinder
35° on 8 cylinder
Accuracy $\pm 1^\circ$ 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

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 terminals be short-circuited or the violet 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. 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 LUMENITION UNIT IS APPROVED FOR ROAD AND
MARINE USE ONLY AND MUST NOT BE USED IN
AIRCRAFT OF ANY KIND**