

Lumenition Optronic^â and Performance Ignition System

Design Criteria for Lumenition Optronic and Performance Ignition Fitting Kits

1. Introduction

Lumenition Ignition system fitting kits have been designed for a considerable number of distributors and are available for over 500 makes and models of vehicle. However, there are a number of less common distributor models for which Lumenition have not created fitting kits.

This guidance sheet has been created for people who wish to make their own fitting kit for distributors not covered by the Lumenition application list. It briefly describes the issues to be considered when creating a fitting kit using the optical switch from the Optronic ignition PMA50 kit or the Performance Ignition CEK150 kit.

Some basic engineering skills and facilities are normally necessary to produce a satisfactory solution.

Please note that Lumenition products are part of Autocar Electrical Equipment Co. Ltd and that Autocar cannot provide any assistance in the creation of a fitting kit other than these guidance notes. Please also note that Autocar cannot accept any responsibility for any problems or issues that may arise from the application of these guidance notes.

2. Main Considerations

Three main areas that need to be addressed are as follows:

- The "Chopper" materials and fitment over the distributor shaft
- The provision of an adaptor plate
- The fitment of the optical switch.

3. The Chopper

THE RATIO OF BLADE TO GAP

This is generally 2/3rds gap to 1/3rd blade. This is not applicable to 1 or 2 cylinder engines where ratio is decided by coil duty cycle.

BLADE TO CYLINDER RELATIONSHIP:

This is normally 1 blade per cylinder.

ANGULAR ACCURACY BETWEEN BLADES:

Variation should be no greater than 15 minutes (1/4 degree).

BLADE HEIGHT:

Blades should pass perpendicular to and through middle of optical switch lenses.

Note: Where excessive end float on distributor shaft is evident, position blade to give clearance at both top and bottom lenses.

CHOPPER BARREL:

The wall thickness of the barrel of the chopper (which fits over the distributor shaft) should be the maximum possible and give a minimum clearance of 1.0mm from optical switch.

BLADE DIAMETER:

This should be long enough to completely obscure the beam of light from the optical switch and have a minimum clearance of 1.0mm between the top and bottom of the blade and the optical switch

BLADE LOCATION:

Wall thickness above cam shoulder should be maximum achievable without raising rotor arm. Chopper should be positively located and free from Radial or Axial movement.

CHOPPER MATERIAL:

Chopper material must be opaque to infra red light, remain rigid to 150 c and be resistant to Ozone, Petrol, Oil, Brake Fluid etc.

PHASING:

This is the position of the rotor arm with respect to pick up segment when coil switches off.

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With Luminition the coil switches off when the leading edge of the chopper blade travelling in the direction of distributor rotation is 2/3rds though the lenses. At this point the centre of the rotor tip should be pointing to the centre of an appropriate pick up segment.

Phasing position can be adjusted by changing the radial position of the chopper blade relative to the distributor cam/rotor arm or changing the mounting position of the optical switch if adjustment of chopper blade is not possible

4. Adaptor or Mounting Plate

PLATE ATTACHMENT

Plate should be positively located with either two screws, one screw and one pin or similar. Screw lengths should not obstruct vacuum movement or interfere with any distributor component.

PLATE LOCATION

Plate position should allow for positioning of the optical switch ideally between and not directly below any H.T. segments. If this is not possible maximum clearance must be obtained by utilising a thinner gauge mounting plate.

PLATE MATERIALS

Plate material ideally should be electro plated steel, plastic to chopper spec, or aluminium but whatever material is used this should be capable of secure fixing into by screws etc.

Plate thickness should be maximum possible to allow for fixings but as a general rule, plate thickness should not be less than two (2) complete threads of the fixing screw used to secure the optical switch. Wherever possible fixing holes should be tapped to recognised thread form and optical switch fitting is No. 2 British Association (2BA) thread on later units. To prevent distortion of the plate or the optical switch housing the screw securing the optical switch to the adaptor plate should not protrude below the base of the plate. Lock washers should be used where possible.

Note: Where specified in instruction leaflets for particular items and applications, mounting faces of plate should be coated with heat sink compound.

5. Optical Switch Fitment

Optical Switch should be positioned as stated in plate section with the following additions:

1. Wire should be routed clear of any moving or rotating parts.
2. Wire should be held down by "P" Clips, cable ties or similar clips where possible, allowing for movement of vacuum advance etc.
3. Wire should not be tightly bent back upon itself or stretched during fitment or to allow vacuum movement
4. Wire exit should be fitted with a suitable grommet to stop any chafing of insulation
Note: Silicone wire used is operational to 270 C but has very poor cut through resistance.
5. Optical Switch should not foul either when stationary or throughout vacuum movement.