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Section A4

OPTRONIC^ã & PERFORMANCE IGNITION SYSTEMS

Adaptation Guides

Conversion Guides for distributors not included in the standard application list and for which specific fitting kits are not available

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Please note:

The adaptation guides offer examples of Optronic conversions for distributor types currently without standard fitting kits. Some of the adaptations do not allow reversion to points operation. Each adaptation has been demonstrated to work effectively on the target distributor but might not cover all variations of that distributor make and model and should not be considered the only method of conversion.

Autocar Electrical Equipment Co. Ltd. accepts no responsibility for any vehicle damage howsoever caused by application of the adaptation guide to a distributor conversion. It is the responsibility of the distributor modifier to ensure that all work performed with reference to these guides is suitable for conversion of the vehicle to which they are applied.

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Optronic and Performance Ignition System Adaptation Guide for the Lucas DJ6 distributor

Sample Distributor:	Lucas Model DJ6-4, Type AA7-1, No. 10604 232 with manual advance		
Donor Vehicle:	1932 Wolsley Hornet 6 cylinder		
Application Range:	Possibly fitted to other contemporary vehicles		
Rotation:	Clockwise	Vacuum advance:	None
Donor Fitting Kit:	FK116	Ease of conversion	Medium <i>(with substitute distributor)</i>

System Description

An early Lucas small-format bakelite distributor with characteristic omega-shaped cap flange. It has no vacuum or centrifugal advance but has a linkage for a manual advance lever. The shaft drive is an offset blade type. The contact breakers were not supplied with the sample distributor. It has two fixed posts and an angled plate moulded into the "baseplate", all of which would obstruct the rotation of any Optronic ignition system "chopper" fitted to the distributor cam.

Suitability for conversion.

Because of the small dimensions, moulded baseplate and fixed contact breaker posts **conversion of the DJ6 distributor to Lumenition Optronic ignition is not recommended.** However it is possible to replace the distributor with a more modern unit which can be converted.

The construction and dimensions of the DJ6 distributor shaft and drive are very similar to later Lucas 23/25D distributors common on Jaguar, Triumph and BMC vehicles of the sixties and early seventies. A Lucas 20-series distributor from a Triumph engine of that period fits perfectly into the original distributor's cast collar and has the same drive style and blade position.

The suggested distributor will require conversion and an Optronic fitting kit FK116 is suggested as a base fitting kit for that work. It should also be noted that Lucas 20-series distributors are about 4cm taller than the DJ6 and it should be checked that the additional height can be accommodated before conversion is attempted.

This method of conversion through substitution offers a highly reliable and maintenance free ignition system and also a simple return to the original system if desired.

Conversion Notes

Most Lucas 20-series distributors rotate anti-clockwise and not clockwise like the DJ6. Consequently the optical switch will have to be located in a new position on the 20-series baseplate to ensure the rotor and switch are correctly phased – i.e. that the coil fires when the rotor arm is aligned with a distributor cap HT segment. Lumenition Technical Bulletin No.1 discusses the issue of positioning the optical switch and is to be read with this adaptation guide.

The vacuum advance mechanism on the replacement distributor will need to be recovered and a linkage fashioned to connect the advance plate to the existing manual ignition advance lever.

Lumenition Parts available for conversion:

Part No.	Description
FK116	Lucas 25D6 fitting kit
OS50	Optical Switch

Part No.	Description
PMAZ	Power Module

- END -

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Optronic and Performance Ignition System Adaptation Guide for the Lucas DKY4A distributor

Sample Distributor:	Lucas DKY4A		
Donor Vehicle:	Not Known		
Application Range:	UK manufactured vehicles from 1943 to 1952. Eg. MG TC/TD, Alvis 14HP, Citroen 15HP, Healey, HRG, Lea Francis 14/18HP, Morris 10HP and Wolseley 12HP.		
Rotation:	Clockwise	Vacuum advance:	None
Donor Fitting Kit:	Parts Only	Ease of conversion	Medium (Fabrication of new baseplate)

System Description

None.

Suitability for conversion.

The DKY4A is of a suitable size and construction for conversion with the addition of a new baseplate fabricated locally. The cam is slightly larger than later Lucas distributors and any chopper from a Lucas fitting kit will not fit. However a suitable Optronic "chopper" designed for another application has been identified.

Conversion Notes

A flat metal base plate must be fabricated to the same outer dimensions as the original contact breaker baseplate. The plate will carry the OS50 optical switch and a P-clip used to secure the wiring away of the chopper blades. The position of the fixing holes for the optical switch and clip should be decided after fitting the chopper to the cam and in accordance with design guidance in Lumenition Technical Bulletin No.1 (which should be read in conjunction with this adaptation guide).

The substitute chopper identified below will be a tight fit on the DKY4A cam and might require persuasion and de-burring of the plastic shavings generated as it is eased onto the distributor cam. Test assembly has shown that with care it will seat fully on the cam.

The Optical switch should be attached with 2 x 2BA Round head screws or equivalent M5 metric items. The P-clip is secured with a 4BA or M3 round headed screw. The screws should be fitted with shake proof washers and be of a length that does not foul anything under the baseplate.

The suitable grommet has been identified to guide the wires exiting the distributor. This will be trimmed to allow the distributor cap to seat properly on the distributor body.

Lumenition Parts available for conversion:

Part No.	Description
10352	Grommet
16215	P-Clip
20266	Chopper
OS50	Optical Switch

Part No.	Description
80009 (x 2)	Shakeproof washer
80006 (x 2)	2BA Round Head Screw
80080	M3 Screw
PMAZ	Power Module

- END -

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Optronic and Performance Ignition System Adaptation Guide for the Lucas DVXH6A distributor

Sample Distributor:	Lucas DVX6A. LU/40932. Type A170, No. 40157B, 1049		
Donor Vehicle:	Lucas Service Part LV6/MT8, 2920 99 823 4980.		
Application Range:	1950's vehicles. Jaguar XK120/140 1949 – 58, Aston Martin DB2/DB3 1951 – 59, Jensen 541/541S 1956 – 57, Humber, Austin and Lagonda		
Rotation:	Anticlockwise	Vacuum advance:	Yes
Donor Fitting Kit:	Parts Only	Ease of conversion	Medium (Fabrication of new baseplate)

System Description

Typical of a Lucas 1950's heavy body cast distributor with a vacuum plate rotating in a cast-in bearing. The drive on the bottom of shaft is a small blade type. The contact breakers are two piece parts with a fixed post that protrudes from the advance plate.

Suitability for conversion.

The lack of space between the existing baseplate and the HT pickups in the cap is a limiting factor, as is the difficulty of fitting an Optronic kit whilst retaining the option of returning to contact breakers. This distributor is only suitable for conversion if a new advance plate is fabricated without a contact breaker post and mounted lower in the distributor body.

Conversion Notes

The casting holding the vacuum mechanism and contact breaker plate can be separated from the lower distributor casting by removing three countersunk screws. The advance plate is dismantled by removing a circlip and sprung washer from the underside.

There is sufficient room to lower a new advance plate after the removal of the condenser. The position of the fixing holes for the optical switch and wiring clip should be decided after fitting the chopper to the cam and in accordance with design guidance in Lumenition Technical Bulletin No.1 (which should be read in conjunction with this adaptation guide).

Two potential substitute choppers from later Lucas distributor fitting kits have been identified below. Either might be suitable but it will be necessary to grind material from the base of the plastic moulding to allow the choppers to be fully seated on the cam. The fitting kit will also contain parts which will be useful for the mounting of the optical switch.

Lumenition Parts available for conversion:

Part No.	Description
FK116	Lucas 25D6 fitting kit
OS50	Optical Switch

Part No.	Description
FK117	Lucas 45D6 fitting kit
PMAZ	Power Module

- END -

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Optronic and Performance Ignition System Adaptation Guide for the Lucas DVZ6A distributor

Sample Distributor:	Lucas DVZ6A.		
Donor Vehicle:	Green Goddess MOD Fire Vehicle, 1954		
Application Range:	6 cylinder petrol engines made by Bedford for the RL series, common to fleet and military vehicles during the 1950's.		
Rotation:	Anticlockwise	Vacuum advance:	Yes
Donor Fitting Kit:	FK116 or FK117	Ease of conversion	Medium <i>(Fabrication of new baseplate)</i>

System Description

A cast body with separate cast unit fixed to the top of the main body carrying the vacuum mechanism, Cap is Part No. 407043 with acorn lead fitting. The rotor is part no. 415088 marked with a 6 together with a rotation arrow and is hooked forwards. The vacuum unit is marked VCBT 6/11. Two piece contacts are part no. 407050. Drive on the bottom of shaft is a dual dog slot type.

Suitability for conversion.

Apart from the mechanism by which the centrifugal advance is operated the distributor is exactly the same format as the DVXH6A used on 50's Jaguars and Aston Martin. The lack of space between the existing baseplate and the HT pickups in the cap is a limiting factor, as is the difficulty of fitting an Optronic kit whilst retaining the option of returning to contact breakers. This distributor is only suitable for conversion if a new advance plate is fabricated without a contact breaker post and mounted lower in the distributor body.

Conversion Notes

There is sufficient room to lower a new baseplate after the removal of the condenser. The position of the fixing holes for the optical switch and wiring clip should be decided after fitting the chopper to the cam and in accordance with design guidance in Lumenition Technical Bulletin No.1 (which should be read in conjunction with this adaptation guide).

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Lumenition Parts available for conversion:

Part No.	Description	Part No.	Description
FK116	Lucas 25D6 fitting kit	FK117	Lucas 45D6 fitting kit
OS50	Optical Switch	PMAZ	Power Module

- END -

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Optronic and Performance Ignition System Adaptation Guide for the Magnetti Marelli S139A distributor

Sample Distributor:	Magnetti Marelli S139A		
Donor Vehicle:	Lancia Fulvia Coupe HF 1600		
Application Range:	fitted to Lancia Fulvia 1600cc and 1200cc engines		
Rotation:	Clockwise	Vacuum advance:	No
Donor Fitting Kit:	FK720	Ease of conversion	Easy

System Description

A cast 4-cylinder distributor of medium size and proportions.

Suitability for conversion

The S139A is easily converted to Optronic operation using the PMA60 and fitting kit FK720.

Conversion Notes

The additional instructions detailed below will enable a PMA60 and Optronic fitting kit FK720 to be used on the S139A distributor.

Additional Installation Notes.

- a) When fitting the kit parts to the distributor follow diagram 6C.
- b) Fit the adaptor plate to the distributor using M4 x 6mm pozi-pan head screw and washer supplied.
- c) Fit the Lumenition optical switch to the plate and distributor using M4 x 12mm pozi-pan head screw and washer.
- d) Ensure that the pip on the bottom of the optical switch is correctly located in the hole provided on the adaptor plate.
- e) Route the optical switch wires around the distributor in a clockwise direction to the exit hole.
- f) Use the P-clip and M4 x 6mm pozi-pan head screw to fix the wires at the condenser mounting point.
- g) Fit the grommet to the distributor and pass the wires through ensuring that they remain clear of the rotating parts when the distributor shaft is reassembled.
- h) All other relevant instructions regarding fitting chopper and electronic parts are as supplied.

Lumenition Parts available for conversion:

Part No.	Description
PMA60	Optronic optical switch and power module

Part No.	Description
FK720	Fitting kit

- END -

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Optronic and Performance Ignition System Adaptation Guide for the Delco Remy 6 cylinder distributor

Sample Distributor:	Delco Remy 6 Cylinder marked 1110161 19255		
Donor Vehicle:	Believe fitted to Fighting Vehicle Tank engine		
Application Range:	-		
Rotation:	Clockwise	Vacuum advance:	No
Donor Fitting Kit:	FK318 & FK317	Ease of conversion	Medium

System Description

Base Plate Diameter 75mm fixed into body by three vertical ears. Two of which provide fixing for cap clips, third put just off 90 degrees to clips. Brass pivot post fitted to baseplate to carry contacts approximately 17mm high. No Cap, Rotor arm or Contact Set supplied with sample.

Suitability for conversion

Without access to the distributor cap presumptions have been made about rotor phasing, etc. If these are correct conversion is very straightforward. If not additional holes will have to be drilled and tapped in the baseplate for the new optical switch positions.

Conversion Notes

Use the FK318 kit for conversion which includes a replacement baseplate. The chopper from FK317 should be used with this kit (ignoring the arrow moulded into the chopper indication normal direction of rotation).

On fitting the following checks should be performed:

- 1) Check that the Rotor arm tip is aligned with (or diametrically opposite to) the keyway in top of distributor shaft.
- 2) Check the HT cap pickup segments are symmetrical to cap clips and that on static timing that the rotor is positioned opposite one of those segments.
- 3) Check the rotor arm tip and HT segment widths are sufficient to maintain close contact at position of spark.

If any of the above are not true, the optical switch will need to be re-positioned and new fixing holes drilled and tapped in the baseplate. The position of the optical switch (and possibly a wiring clip) should be decided after reading the design guidance in Lumenition Technical Bulletin No.1 which should to in conjunction with this adaptation guide..

Lumenition Parts available for conversion:

Part No.	Description
PMA50	Optronic optical switch and power module
FK318	Fitting kit

Part No.	Description
FK317	Fitting kit

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