

SECTION C-II
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LUCAS

Quality

EQUIPMENT

VOLUME 2

WORKSHOP INSTRUCTIONS

DISTRIBUTOR

MODEL D2A4



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LUCAS WORKSHOP INSTRUCTIONS

DISTRIBUTOR

MODEL D2A4

1. GENERAL

AUTOMATIC TIMING CONTROL

A centrifugally operated timing control mechanism is mounted on the driving shaft immediately beneath the contact breaker. The mechanism consists of a pair of spring-loaded governor weights linked by lever action to the contact breaker cam. At low engine speeds the spring force maintains the cam in a position in which the spark is slightly retarded. At high engine speeds the governor weights swing outwards to turn the contact breaker cam and thereby to advance the spark.

METALLISED PAPER CAPACITOR

The capacitor is of metallised paper construction. This has the property of being self-healing. In the event of a dielectric breakdown occurring, the metallic film around the point of rupture is vaporised away by the heat of the spark. In this way, permanent short-circuits are prevented.

RESISTIVE PICK-UP BRUSH

The high tension pick-up brush is of composite construction. The centre portion is made of a hard resistive carbon compound whilst the end portions are of soft carbon. Since the brush is in circuit between the ignition coil and distributor high tension terminals, it provides a measure of radio interference suppression.

A short non-resistive brush must never be used to replace a long resistive brush.

2. ROUTINE MAINTENANCE

(a) CHECKING CONTACT BREAKER—AFTER FIRST 500 MILES

The contact breaker gap should measure 0.014"–0.016" when fully opened. Access to the contact breaker is gained by springing back the two side clips and lifting off the moulded cover.

To check the setting, turn the engine slowly by hand until a position of maximum opening is reached and then insert a feeler gauge between the contacts. Due to the initial bedding-in of a new contact set, the gap may need resetting. To do this, slacken the two screws which secure the fixed contact plate. Reposition the plate—which has two slotted holes and rotates about

the contact breaker lever pivot post—until the gauge can be inserted as a sliding fit between the contacts. Re-tighten the two screws.

After adjustment, it is advisable to re-check the gap to ensure that no movement has taken place whilst tightening the screws. Refit the moulded cover.

(b) LUBRICATION—EVERY 3000 MILES

Do not allow oil or grease on or near the contacts when carrying out the following lubrication.

(i) Remove the moulded cover and withdraw the rotor arm.

(ii) Cam Bearing

To lubricate the cam bearing, inject a few drops of thin machine oil into the rotor arm spindle. Do not slacken or remove the screw located inside the spindle—a passage is provided beneath the screwhead to allow the lubricant to reach the cam bearing.

(iii) Cam

Lightly smear the outside faces of the cam with Mobilgrease No. 2 or with clean engine oil.

(iv) Centrifugal Timing Control

Inject a few drops of thin machine oil into the aperture in the contact breaker base plate through which the cam protrudes.

(v) Contact Breaker Pivot

Place a spot of Mobilgrease No. 2 or clean engine oil on the tip of the contact breaker lever pivot post.

(vi) Refit the rotor arm, carefully locating its moulded projection in the spindle keyway and pushing it on as far as it will go.

(vii) Refit the moulded cover.

(c) CLEANING—EVERY 6000 MILES

(i) Moulded Cover

Remove the moulded cover and clean inside and outside with a soft dry cloth. Pay particular attention to spaces between the terminals. Check that the high tension pick-up brush can move freely in its holder.



LUCAS WORKSHOP INSTRUCTIONS

(ii) Contact Breaker

Remove the rotor arm and examine the contact breaker. Rough, burned or blackened contacts can be cleaned with fine carborundum stone or emery cloth. After cleaning, remove any grease or metallic dust with a petrol-moistened cloth.

Contact cleaning is made easier by removing the lever to which the moving contact is attached. To do this, slacken the low tension terminal nuts and lift the lever from its pivot and the end of the spring (which is slotted) from the terminal.

After cleaning and trimming the contacts, smear the pivot post with Ragosine Molybdenised Non-creep oil or with Mobilgrease No. 2. Reassemble the contact breaker and check the gap setting as previously described, para. 2 (a).

Refit the rotor arm and moulded cover.

(iii) Withdraw the screw from inside the cam spindle and lift out the cam, toggles, springs and weights.

(iv) Knock out the driving dog securing pin and, when fitted, the collar securing pin and withdraw the dog and collar from the lower end of the shaft. The shaft and action plate can now be withdrawn from the body.

(v) The single long porous bronze bearing bush can be pressed out of the shank with a shouldered mandrel. If the bush is removed, a new bush must be fitted on reassembly.

3. DESIGN DATA

- (a) (i) Firing Angles: $0^\circ, 90^\circ, 180^\circ, 270^\circ, \pm 1^\circ$
- (ii) Type of cam profile: 'High Lift'
- (iii) Closed periods: $60^\circ \pm 3^\circ$
- (iv) Open periods: $30^\circ \pm 3^\circ$
- (b) Contact breaker gap: 0.014"—0.016"
- (c) Contact breaker spring tension, measured at contacts: ... 18—24 oz.
- (d) Capacitor: ... 0.18—0.23 mfd.
- (e) Automatic Timing Control: ... Refer to Publication SB222, against the appropriate distributor Service No., for details of operating range, etc.

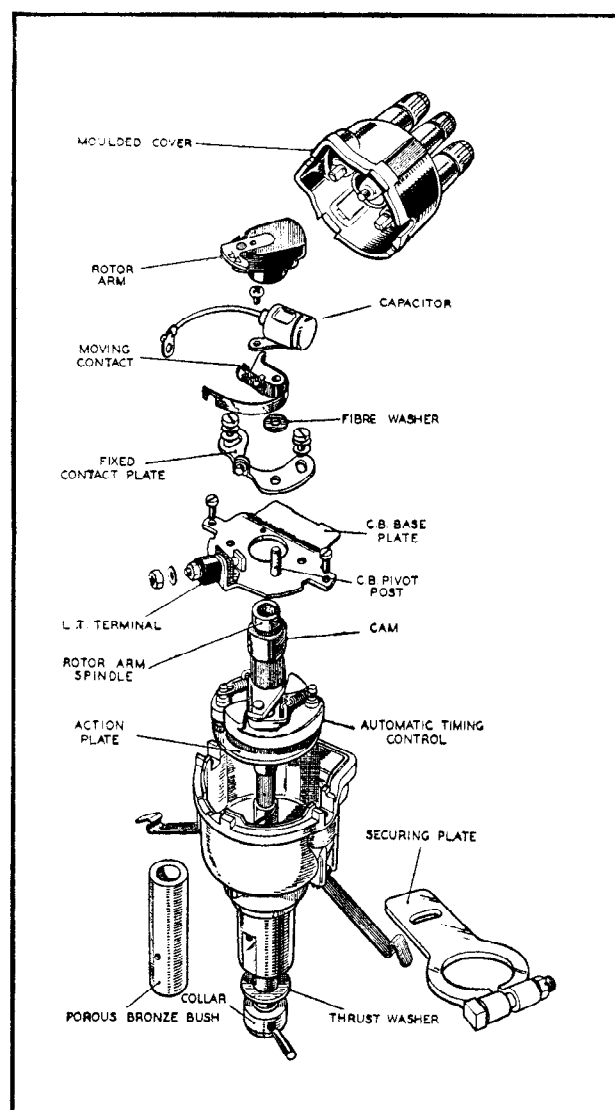
4. SERVICING

(a) DISMANTLING

When dismantling, note carefully the positions in which the components are fitted in order to ensure their correct reassembly.

(i) Remove the moulded cover and withdraw the rotor arm.

(ii) Remove the contact breaker base plate, complete with contacts, capacitor and terminal assembly. The plate is secured by two screws to the distributor body.



Distributor, dismantled.



LUCAS WORKSHOP INSTRUCTIONS

(b) REASSEMBLY

In general, reassembly is the reversal of dismantling. The following details, however, should be noted.

(i) Bearing Replacement

A replacement bush must be allowed to soak for at least 24 hours, completely immersed in medium viscosity (SAE 30-40) engine oil. On occasions of urgency, this period can be shortened by heating the oil to 100°C. for 2 hours and then allowing the oil to cool before removing the bush.

Using a shouldered mandrel, press the new bearing into the shank. The mandrel should be hardened and polished and approximately 0.0005" greater in diameter than the distributor shaft. To prevent subsequent withdrawal of the bush with the mandrel, a stripping washer should be fitted between the shoulder of the mandrel and the bush.

Important: A bush must never be over-bored by reamering or by any other process, since this will impair the porosity and therefore the effective lubricating quality of the bush.

(ii) Drilling a New Shaft

A shaft and action plate must be free to rotate without excessive end-play. To obviate binding on the one hand and excessive end-play on the other, a 0.002" gauge should be inserted before drilling as a temporary spacer between the dog or collar and the fibre thrust washer. Whilst drilling, the shaft and action plate must be pushed down from the cam end and the dog or collar to be hard against the thrust washer and 0.002" spacer. After drilling, remove the spacer.

The maximum permissible end-play is 0.006".

(iii) Refitting Low Tension Terminal Assembly

The slotted end of the contact breaker spring, together with the capacitor connector tag, must be located between the squared end of the terminal stud and the fibre insulating piece.

(iv) Replacement Contacts

Contact breaker contacts must be renewed as a pair and not individually. The gap must be set to 0.014"—0.016" and re-checked after 500 miles.

5. TIMING

(a) FITTING TO ENGINE

(i) Place the distributor in position on the engine and align the zero mark on the securing plate with the zero mark on the engine. Secure the plate in this position.

(ii) Slacken the securing plate bolt and rotate the distributor until the angular position to obtain the engine manufacturer's recommended timing is reached. Re-tighten the bolt.

(b) ADJUSTMENTS IN SERVICE

A slot in the securing plate enables minor alterations to the timing to be carried out in service and provides for changes in engine conditions and fuel.

As an aid to adjustment, a graduated scale is provided along the length of the slot. The scale is not calibrated in engine degrees but serves to provide a few fixed reference points.

If the firing is found to be a little too far advanced or retarded, the adjustment should be altered by not more than half a division on the scale at a time. The engine should be started after each adjustment and the effect of the new timing position noted before making further adjustments. Movement toward the engine zero mark of the letter 'A' causes the timing to be advanced and, of the letter 'R', retarded.

