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Maintenance Instructions for

LUCAS

A.C. LIGHTING-IGNITION EQUIPMENT

for motor-cycles

JOSEPH LUCAS LIMITED . BIRMINGHAM . ENGLAND

FOREWORD

Lucas Electrical Equipment is designed and manufactured to give long periods of service with the minimum of attention. As with other parts of the motor cycle, however, occasional minor adjustments, lubrication of moving parts and cleaning should be carried out to ensure that the equipment will operate with the utmost reliability and efficiency.

This Manual gives general information on the various items of equipment and describes the small amount of attention which is required. In addition the recommended procedure is set out for a systematic examination to be adopted in the event of the electrical equipment not functioning correctly.

Any further information will be supplied on application to Joseph Lucas Ltd., Great King Street, Birmingham 19, England.

MAGNETO IGNITION

Some alternator-equipped machines are fitted with magnetos of the types shown in Figs. 1 and 2. With these machines, the only function of the alternator and rectifier is to charge the battery. Since magneto ignition is unaffected by battery condition, no provision is made for emergency starting.

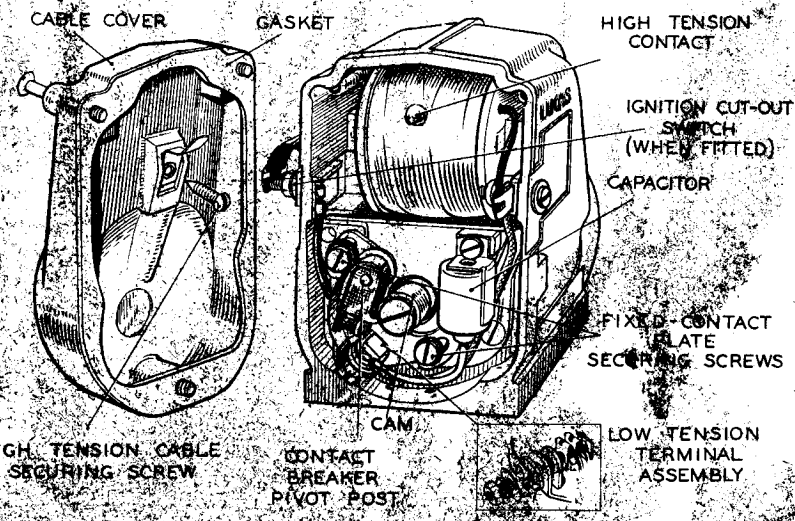

Fig. 1

After First 400 miles and, thereafter, every 3,000 miles.

Check the setting of the contact breaker gap. To do this, remove the cable cover, turn the engine over slowly until the contacts are fully open and insert a 0.010"—0.012" (0.25—0.3 mm.) feeler gauge in the gap. The gauge should be a sliding fit between the contacts.

To adjust the gap, slacken the two fixed contact plate securing screws and move the plate until the gap is set to the gauge thickness.

Apply a spot of clean engine oil to the visible end of the contact breaker pivot post. *No oil must be allowed on or near the contacts.*

Every 6,000 miles.

Remove the cable cover and clean the contacts. To do this, slacken the nut securing the low tension terminal assembly and withdraw the spring and contact breaker lever.

If the contacts are rough or pitted, polish them with fine carborundum stone, silicon carbide paper or emery cloth. Afterwards, clean the contacts with petrol or methylated spirits (denatured alcohol).

Smear the pivot post with Mobilgrease No. 2.

When refitting the contact breaker, see that the components are assembled in the order illustrated.

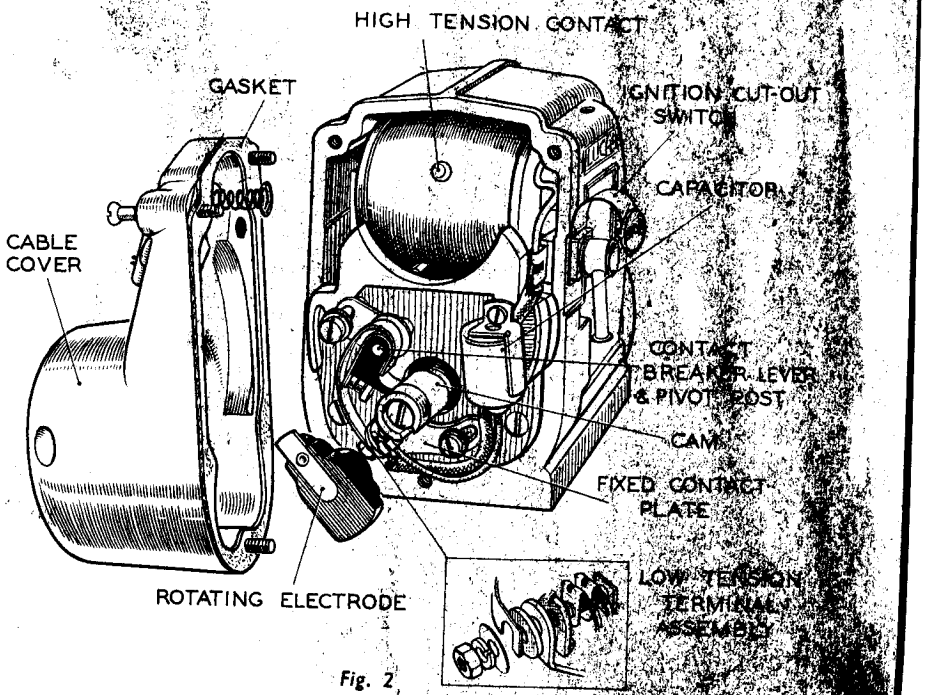

Fig. 2

Every two years.

About every two years or when the engine is overhauled, the magneto should be dismantled at a Lucas Service Depot or Agent, where the weights, springs and toggles of the automatic timing control mechanism will be examined and lubricated with medium viscosity engine oil and the rotor bearings repacked with grease.

Replacing High Tension Cable.

When high tension cable shows signs of cracking or perishing, it must be replaced with 7 mm. p.v.c.-covered or neoprene-covered rubber insulated ignition cable. To do this, remove the cable cover, unscrew the cable securing screw and withdraw the defective cable. Cut the new cable to the required length and push one end well home into its terminal. Tighten the cable securing screw, which will pierce the insulation and contact the cable core.

In some earlier magnetos, the rotating electrode shown in Fig. 2 was a common part with coil ignition distributors and the moulded portion carried the words REMOVE TO OIL. This instruction must be ignored on SR magnetos.

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INTRODUCTION

The Lucas A.C. Lighting-Ignition Unit is a 6-pole alternator consisting of a permanent magnet rotor revolving within a wound laminated stator. The rotor is driven by an extension of the engine crankshaft and is built into the crankcase or chain case.

A rectifier is included in the circuit, this being a device for converting the alternating current output of the alternator to uni-directional current which is essential for battery charging.

A technical description of the operation of the equipment is given in Publication No. 1061, which is available on request.

Normal Running.

Under normal running conditions (i.e., ignition switch in IGN position) electrical energy in the form of rectified alternating current passes through the battery from the alternator—the rate of charge depending on the position of the lighting switch. When no lights are in use, the alternator output is sufficient only to supply the ignition coil and to trickle-charge the battery. When the lighting switch is turned, the output is increased by changing the alternator coil connections.

Emergency Starting.

An EMERGENCY starting position is provided on the ignition switch, for use if the battery has become discharged and a normal start cannot therefore be made. Under these conditions, the alternator is connected direct to the ignition coil, allowing the engine to be started independently of the battery. It should be noted that with the ignition switch at EMG and the engine running, the battery receives a charging current, so that its terminal voltage begins to rise. This rising voltage opposes the alternator voltage, and, on single-cylinder machines, in the event of a rider omitting to return the ignition key to IGN after an emergency start has been made, misfiring may occur, so serving as a reminder to do so.

Alternative Battery Charging Rates.

The Lucas A.C. Ignition System is connected to ensure a fully charged battery under all normal running conditions. In the case of machines fitted with the smaller model RM13 alternator, the charge rate may not always be found quite sufficient to meet the requirements of low-speed town work, the " running-in " period, short winter runs involving long periods of parking with the lights on, and similar conditions. In this event, the charge rate can be increased by inter-changing two of the three alternator cables where these are joined by means of snap-connectors to the main harness. To do this, switch off the lighting and ignition switches and disconnect the Dark Green and Medium Green cables by pulling these cables from their snap-connectors. The Dark Green alternator cable must now be connected to the Medium Green harness cable, and the Medium Green alternator cable to the Dark Green harness cable.

If, due to a change in running conditions, the battery is found to be overcharged, as indicated by excessive gassing of the electrolyte and a frequent need for topping-up, the original connections must be restored, colour-to-colour.

THE ALTERNATOR

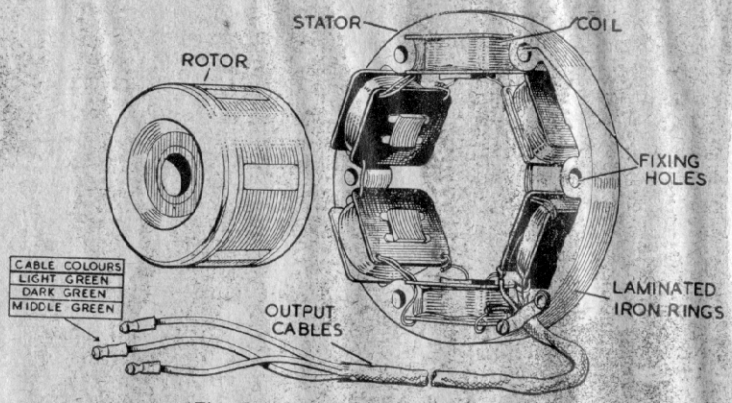

Fig. 1. Alternator Model RM13.

The alternator consists of a spigot-mounted 6-coil laminated stator with a rotor carried on and driven by an extension of the crankshaft. The rotor has an hexagonal steel core, each face of which carries a high-energy permanent magnet keyed to a laminated pole tip. The pole tips are riveted circumferentially to brass side plates, the assembly being cast in aluminium and machined to give a smooth external finish.

There are thus no rotating windings, commutator, brushgear, bearings or oil seals and consequently the alternator requires no maintenance apart from occasionally checking that the snap connectors in the three output cables are clean and tight.

If removal of the rotor becomes necessary for any purpose, there is no necessity to fit keepers to the rotor poles.

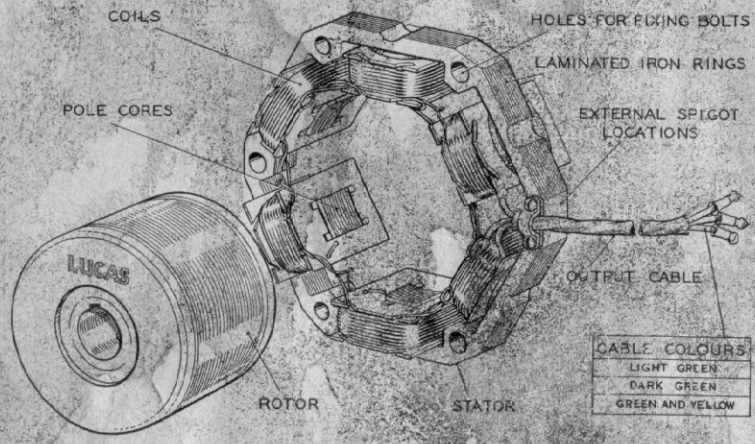

Fig. 2. Alternator Model RM14.

THE RECTIFIER

The rectifier consists of four plates coated on one side with selenium to allow current to flow in one direction only. The plates are connected in the form of a bridge network to provide full-wave rectification of the alternator output current.

The rectifier requires no maintenance beyond checking that the connections are clean and tight. **The nut clamping the rectifier plates together must not under any circumstances be slackened, as it has been carefully set during manufacture to give correct rectifier performance.** A separate nut is used to secure the rectifier to the frame of the motor cycle.

Note : It is important to check periodically that the rectifier is firmly attached to its mounting bracket.

THE BATTERY

Topping-Up.

During charging, water is lost by gassing and evaporation and this must be replaced to maintain the battery in a healthy condition. Once a month, or more often in warm climates, the level of the electrolyte in the cells of the battery must be examined ; if necessary, distilled water must be added to bring the electrolyte just level with the top edges of the separators. Do not use tap water as it may contain impurities detrimental to the battery. In the case of the smaller capacity five-plate batteries (indicated by suffix number 5 added to the Lucas type letters), fitted to certain lightweight motor cycles, it is advisable to make this examination weekly.

Never use a naked light when examining the condition of the cells, as there is a danger of igniting the gas coming from the active materials.

Batteries with Correct-Acid-Level Devices.

A correct acid level device consists of a central tube with a perforated flange which rests on a ledge in the filling orifice. When topping-up a battery fitted with these devices, pour distilled water round the flange (not down the tube) until no more drains through into the cell. This will happen when the electrolyte level reaches the bottom of the central tube and prevents further escape of air displaced by the topping-up water. By lifting the tube slightly, the small amount of water in the flange will drain into the cell and the electrolyte level will then be correct.

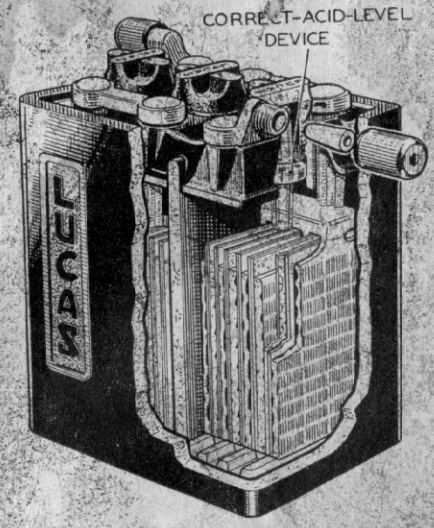

Fig. 3. Battery Model PU7E/9.

Batteries without Correct-Acid-Level Devices.

Remove the battery lid, unscrew the filler plugs, and, if necessary, add distilled water carefully to each cell to bring the electrolyte just level with the top edges of the separators.

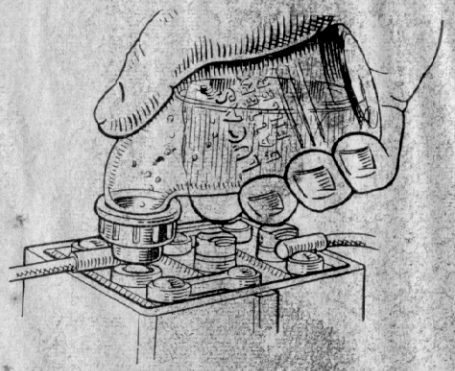

Fig. 4. Using a Lucas Battery Filler.

The use of a Lucas Battery Filler will be found helpful in this topping-up process, since it ensures that the correct electrolyte level is obtained automatically and also prevents distilled water from being spilled over the battery top.

Cleaning.

Wipe away all dirt and moisture from the top of the battery.

Checking the Condition of the Battery.

Occasionally check the condition of the battery by taking measurements of the specific gravity of the electrolyte in each of the cells. A small-volume hydrometer is required for this purpose — this instrument resembles a syringe containing a graduated float which indicates the specific gravity of the acid in the cell from which the sample has been taken. Measurements should not be taken immediately after the cells have been "topped-up," as the electrolyte will not be thoroughly mixed.

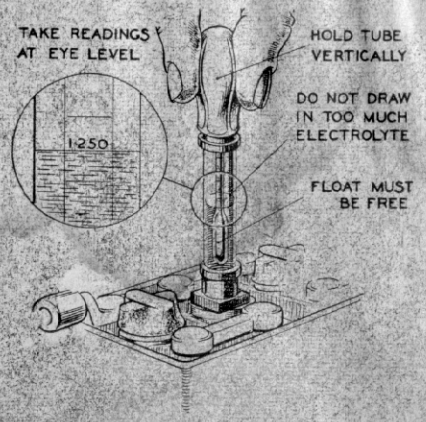

Fig. 5. Taking Hydrometer Readings.

The space between each separator is not wide enough to permit the nozzle of a hydrometer to be inserted. Before taking a sample, tilt the battery to bring sufficient electrolyte above the separators.

Specific gravity readings and their indications are as follows :—

Climates under 90°F.		Climates over 90°F.
1.270—1.290	Cell fully charged	1.210—1.230
1.190—1.210	Cell about half discharged	1.130—1.150
1.110—1.130	Cell fully discharged	1.050—1.070

The reading for each of the cells should be approximately the same.

If one cell gives a value very different from the rest, it may be that acid has been spilled or has leaked from the particular cell, or there may be a short circuit between the plates, and in this case the battery should be examined by a Lucas Service Depot or Agent.

Never leave the battery in a discharged condition. If the motor cycle is to be out of use for any length of time have the battery fully charged and every fortnight give it a short refreshing charge to prevent any tendency for the plates to become permanently sulphated.

Detachable Cable Connectors.

When connecting batteries with detachable cable connectors, unscrew the knurled nut and withdraw the collet. Bare the end of the cable and thread the bared end through the knurled nut and collet. Bend back the cable strands and insert the collet and cable in the terminal block. Secure the connection by tightening the knurled nut.

Battery Earth.

The A.C. Lighting-Ignition Unit has been designed for positive (+ve) earth systems. If the battery connections are reversed the equipment will be damaged.

IGNITION EQUIPMENT

The ignition equipment comprises an ignition coil and a contact breaker unit, and in the case of twin- and four-cylinder machines, a high tension distributor. The contact breaker, together with an automatic timing control, may be housed in a separate unit or built-in to the engine timing case.

The automatic timing control is centrifugally operated and varies the firing point according to the speed of the engine.

Lubrication — to be carried out every 3,000 miles.

No grease or oil must be allowed to get on or near the contacts when carrying out the following procedure.

Smear the surface of the cam very lightly with Ragosine Molybdenised non-creep oil, or, if this is not available, clean engine oil may be used.

Place a spot of Ragosine oil or clean engine oil on the contact breaker pivot.

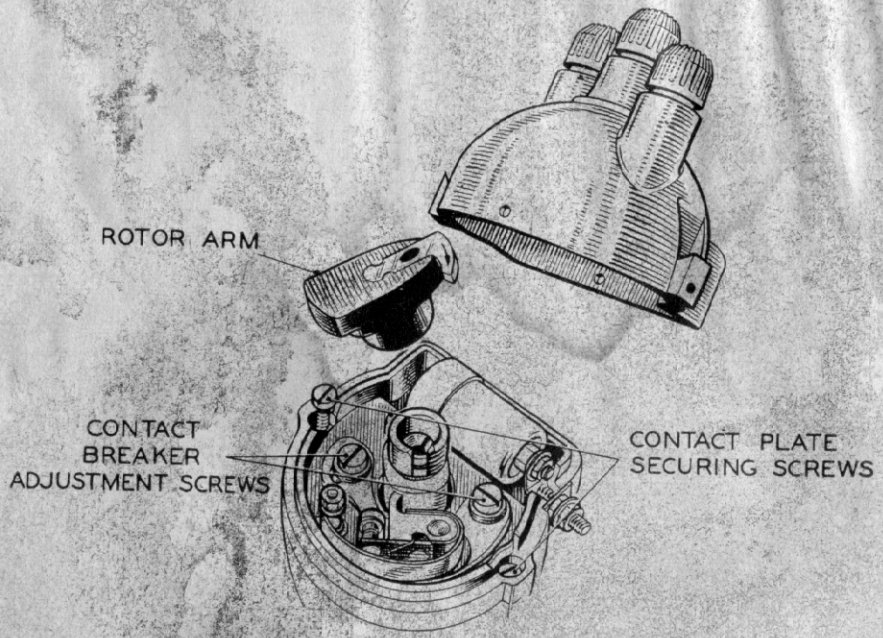

Fig. 6. Distributor Model DKX2A with cover removed.

Automatic Timing Control.

DKX2A and 4A types: Lift off the rotor arm, and unscrew the two screws securing the contact breaker base plate to the distributor. Lubricate

the automatic timing control, thus exposed, with Ragosine Molybdenised non-creep oil or clean engine oil, paying particular attention to the pivots. Refit the base plate, and secure by means of the fixing screws. Refit the rotor arm.

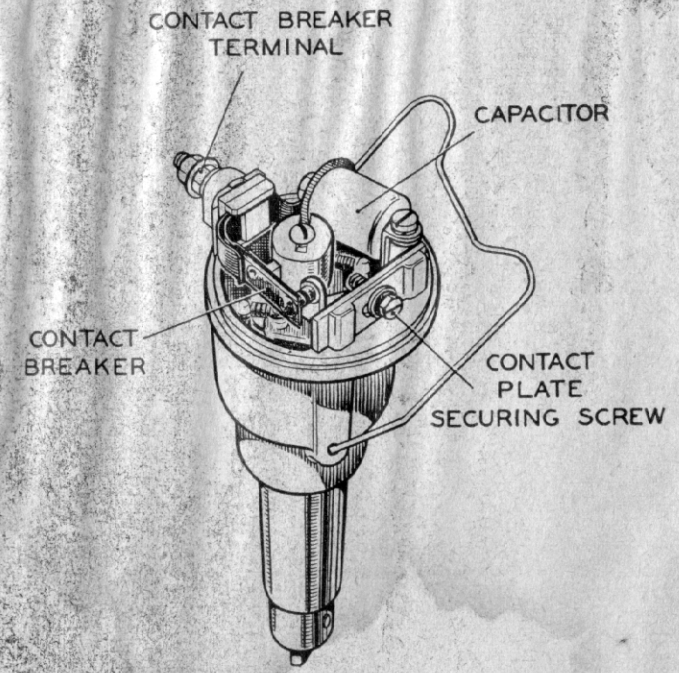

Fig. 7. Contact Breaker and Automatic Advance Unit, Model 15DI, with cover removed.

Model 15DI: Remove the contact breaker cover and lubricate the automatic timing mechanism in the base of the unit. Use Ragosine Molybdenised non-creep oil or, if this is not available, clean engine oil may be used.

Model CA1A: Remove the central fixing bolt and inject a small amount of Ragosine Molybdenised Non-Creep oil or clean engine oil into the hole thus exposed. When the fixing bolt has been replaced and the engine run for a few minutes, the oil will be forced out over the automatic advance mechanism by centrifugal force.

Cleaning — every 6,000 miles.

Remove and clean the cover. On twin- and four-cylinder units, pay particular attention to the spaces between the metal electrodes in the cover, and check that the small carbon brush moves freely in its holder.

Examine the contact breaker. The contacts must be free from grease or oil. If they are burned or blackened, clean with fine carborundum stone or very fine emery cloth, afterwards wiping away any trace of dirt or metal dust with a clean petrol-moistened cloth. Cleaning of the contacts is made easier if the contact breaker lever carrying the moving contact is removed.

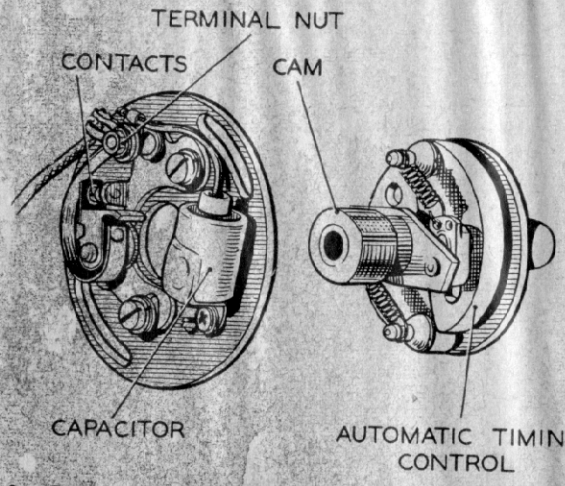

Fig. 8. Contact Breaker and Automatic Advance Mechanism Model CA1A, removed from engine.

To remove the moving contact from models DKX and CA1A contact breaker plates, unscrew the nut securing the end of the spring and remove the nut, spring washer and bush. Lift the contact breaker lever off its pivot.

To remove the moving contact from model 15D1, remove the terminal nut and withdraw the nylon washer. The contact breaker spring and heel can now be lifted out of the unit body.

After cleaning, check the contact breaker setting.

Contact Breaker Setting.

The contact breaker gap should be checked after the first 500 miles running and subsequently every 6,000 miles. To check the gap, turn the engine over slowly until the contacts are seen to be fully open, and insert a feeler gauge between the contacts. The correct gap setting is 0.014"—0.016". If the gap is correct, the gauge should be a sliding fit.

To do this on models DKX and CA1A, keep the engine in the position giving maximum contact opening and slacken the two screws securing the fixed contact plate. Adjust the position of the plate until the

gap is set to the thickness of the gauge, and tighten the two locking screws.

On model 15D1, keep the engine in the position giving maximum opening and slacken the screw at the side of the fixed contact plate. Slide the fixed contact carrier in its slotted holes, until the correct gap is obtained. Retighten the screw.

The Ignition Coil.

The coil requires no attention whatever beyond keeping its exterior clean, particularly between the terminals, and occasionally checking that the terminal connections are tight.

Renewing High Tension Cables.

When the high tension cable shows signs of perishing or cracking it must be replaced, using 7 mm. neoprene-covered rubber ignition cable. To connect the cable to the ignition coil and to distributors having vertical outlets, remove the metal washer and moulded terminal nut from the defective cable. Thread the new cable through the moulded terminal nut and cut back the insulation for about $\frac{1}{4}$-in. Pass the exposed strands through the metal washer and bend them back radially. Screw the terminal nut into the pick-up moulding.

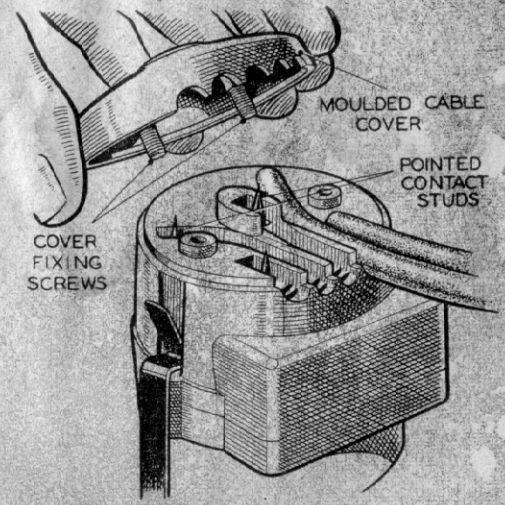

Fig. 9. Fitting High Tension Cables to Distributor Cap.

To connect high tension cables to distributors having the horizontal type of outlet illustrated in Fig. 9, remove the two screws securing the moulded cable cover on to the distributor cap. Cut the cables off flush to the required length and locate them in the recesses in the distributor moulding. Refit the cover. This presses the cables on to pointed metal studs which make good contact with the cable core.

HEAD LAMPS AND PARKING LIGHTS

On some machines the headlamp body has been dispensed with and a nacelle type extension of the forks provides a housing for the Lucas Light Unit and switch gear.

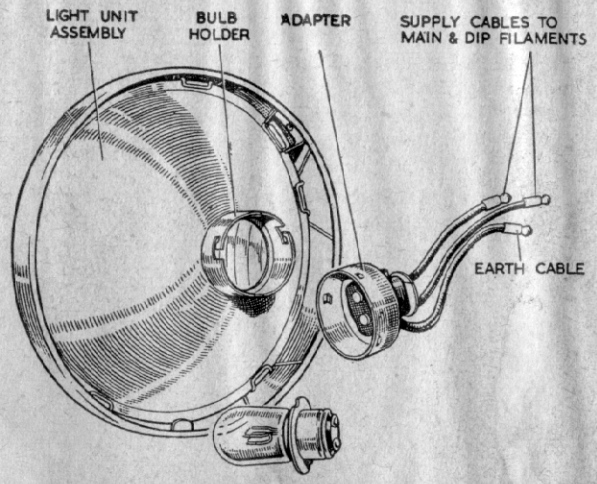

Fig. 10. Model F700 Light Unit and Rim removed from Lamp Body.

Lucas motor cycle headlamps are all arranged to incorporate the Lucas Light Unit, which consists of a combined reflector and front lens assembly. A special " prefocus " bulb is used with the Light Unit, ensuring that when the bulb is fitted, the filament is correctly positioned in relation to the reflector, and no focusing is necessary. The parking light bulb is mounted either in the rear of the Light Unit, or behind a separate lens built into the headlamp mounting.

Setting.

The best way of checking the setting of the lamp is to stand the motor cycle in front of a light-coloured wall at a distance of about 25 feet. If necessary, slacken the bolts securing the headlamp and move the lamp until with the main driving light switched on, the beam is projected straight ahead and parallel with the ground. With the lamp in this position, the height of the beam centre from the ground should be the same as the height of the centre of the headlamp from the ground. It is advisable to carry out this adjustment with the normal loading.

On machines where the Light Unit is mounted in a nacelle or other special fitting, the motor cycle manufacturer's handbook should be referred to for instructions on setting the lamp.

Removing Headlamp Front.

Slacken the rim securing screw located at the top or bottom of the lamp body. On model MCF575 headlamps the securing screw at the bottom of the lamp should be unscrewed completely.

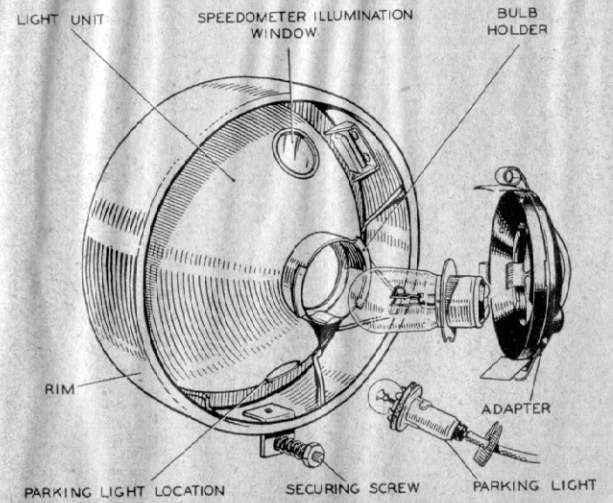

Fig. 11. Model F575P Light Unit and Rim removed from Lamp Body.

It will then be possible to detach the front rim complete with Light Unit assembly. To replace, locate the Light Unit assembly in the lamp body, press the front on and secure in position by tightening the securing screw.

Replacement of Bulbs.

When the replacement of a bulb is necessary, it is important not only that the same size bulb is fitted, but also that it has a high efficiency and will focus in the reflector. Cheap and inferior replacement bulbs often have the filament of such a shape that correct focusing is not possible ; for example, the filament may be to one side of the axis of the bulb, resulting in loss of range and light efficiency.

Lucas Genuine Spare Bulbs are specially tested to check that the filament is in the correct position to give the best results with Lucas lamps. To assist in identification, Lucas bulbs are marked on the metal cap with a number. When fitting a replacement, see that it has the same number as the original bulb.

To gain access to the headlamp bulb, remove the front rim and Light Unit assembly as previously described. Push on the adapter and twist it in an anti-clockwise direction to take it off. The bulb can now be removed from the rear of the reflector. Place the correct replacement bulb in the holder, engage the projections on the inside of the adapter, press on and secure by twisting to the right.

To gain access to the parking light bulb (if it is situated in the headlamp reflector) remove the front rim and Light Unit assembly and withdraw the bulb holder from the reflector in which it is a push-fit. With parking lights of the type illustrated in Fig. 12 access to the bulb is gained by slackening the screw at the rear of the body shell and pulling the bulb holder, rim and lens away from the lamp.

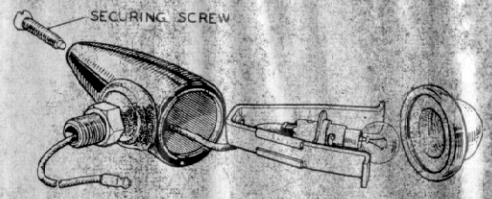

Fig. 12. Parking Light Model 516.

Certain motor cycles have flush-fitting parking lights (see Fig. 13), pressed into sockets in the headlamp nacelle. To reach the bulb in these lamps remove the chromium-plated rim and peel back the rubber surround to release the frosted-glass lens.

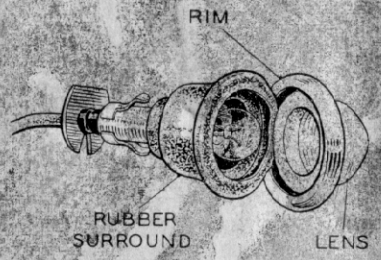

Fig. 13. Parking Light Model 550.

The correct parking light bulb replacement is Lucas No. 988 6-volt 3-watt miniature bayonet cap. The size of headlamp bulb varies with the type of alternator and the conditions under which the motor cycle is used.

Dipper Switch.

Every 5,000 miles the moving parts of the dipper switch should be lubricated with thin machine oil.

REAR LAMPS

Replacement Bulbs.

In the United Kingdom, the correct size of bulb to be used in rear lamps is based on the cubic capacity of the engine. Solo machines of 250 c.c. or less may be fitted with 3-watt bulbs. Combinations and machines exceeding 250 c.c. are required to be fitted with 6-watt bulbs.

Bulbs can be identified by a number, usually stamped on the metal cap. When changing a defective bulb, the replacement should bear the same number as the original.

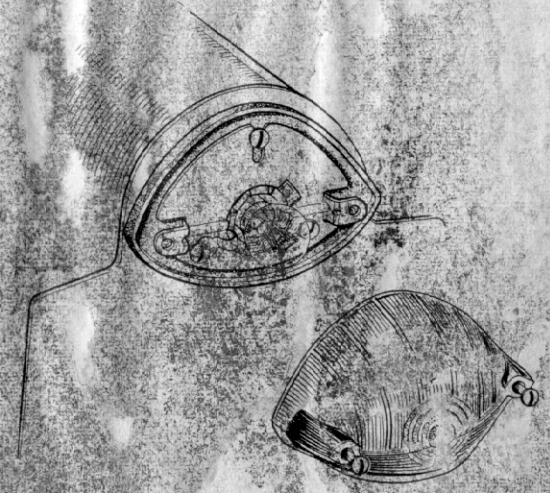

Fig. 14. Stop-Tail Lamp Model 529.

Fig. 15. Stop-Tail Lamp Model 564 incorporating Reflex Reflector.

ELECTRIC HORNS

Horns, before being passed out of the Works, are adjusted to give their best performance, and will give a long period of service without attention.

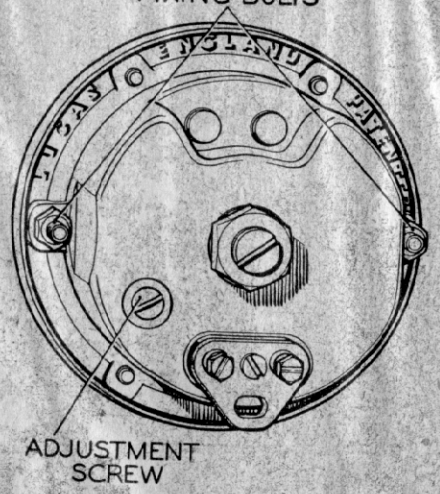

Fig. 16. Rear view of Horn Model HF1234.

If the horn becomes uncertain in its action, giving only a choking sound, or does not vibrate, it does not follow that the horn has broken down. First ascertain that the trouble is not due to some outside source, e.g., a discharged battery, a loose connection, or short-circuit in the wiring of the horn. In particular, ascertain that the hornpush bracket is in good electrical contact with the handlebars.

It is also possible that the performance of a horn may be upset by its mounting becoming loose.

Adjustment (Model HF1234 only).

The following adjustment will not alter the note of the horn. It will take up any wear of the moving parts which, if not corrected, may result in roughness and loss of power.

Accurate adjustment requires the use of a 0-10 amp. d.c. ammeter—the maximum permissible current consumption being 6 amperes at 6 volts—but the owner-rider, who may not possess one of these instruments, can carry out the following procedure if the horn performance is considered to have deteriorated :—

Operate the horn push and turn the adjustment screw anti-clockwise until the horn just fails to sound. Release the horn push and turn the adjustment screw clockwise for six notches, i.e., a quarter of a turn, when the original performance should be restored. If further adjustment is necessary, turn the screw one notch at a time.

If the original performance cannot be restored by adjustment, do not attempt to dismantle the horn, but return it to a Lucas Service Depot for examination.

LOCATION AND REMEDY OF FAULTS

Although every precaution is taken to eliminate all possible causes of trouble, failure may occasionally develop through lack of attention to the equipment, or damage to the wiring. The following pages set out the recommended procedure for a systematic examination to locate and remedy the causes of some of the more probable faults. The sources of many troubles are by no means obvious, and in some cases a considerable amount of deduction from the symptoms is needed before the cause of the trouble is disclosed.

When checking the continuity of circuits, a flashlamp battery and bulb should be used. On no account must the end of a live cable be flicked to earth against the motor cycle frame. This practice, known as " flashing," can cause heavy currents to flow round the alternator windings and result in the partial demagnetisation of the rotor and reduction of output. If a separate motor cycle battery is used, a low wattage test lamp must be included in the circuit.

If, after carrying out the examination, the cause of the trouble is not found, the owner is advised to get in touch with the nearest Lucas Service Depot or Agent.

IGNITION CIRCUIT

Engine will not start in IGN Position.

(*a*) Turn switch to EMG position. If the engine will now fire, the alternator and rectifier are operating correctly and the indication is a discharged battery ; this can be confirmed by poor light from the lamps and hydrometer readings below 1.200. Recharge the battery if necessary.

(*b*) Remove the H.T. cable from the sparking plug terminal and hold it about ⅛-in. away from some metal part of the engine while the latter is slowly turned over. If sparks jump the gap regularly, the ignition equipment is functioning correctly. Check for engine defects or examine sparking plug.

(*c*) If sparks do not occur in test (*b*), check for a fault in the low tension wiring, i.e., from battery to switch, coil and contact breaker. If the wiring proves to be in order, examine the contact breaker ; if necessary clean the contacts and adjust the gap setting.

(*d*) If, after carrying out these checks, the ignition system is still inoperative, have it examined by a Lucas Service Depot or Agent.

Engine will not start in EMG Position.

(*a*) Remove the H.T. cable and test as described under (*b*) above : if sparks appear, then the trouble is due to engine defects, etc.

(*b*) If the ignition equipment is not operative in the above test, check the snap connectors, rectifier connections and other wiring. All connections must be clean and tight.

(*c*) Examine the contact breaker, if necessary clean the contacts and adjust the gap setting.

(*d*) Make sure ignition timing is correct to engine maker's specification.

(*e*) See that the alternator rotor is fitted the correct way round on the engine shaft.

(*f*) If the ignition system is still inoperative, have the equipment examined by a Lucas Service Depot or Agent.

Engine misfires.

(*a*) Examine the contact breaker ; if necessary, clean the contacts and adjust the gap.

(*b*) Remove the sparking plug (or each plug in turn), rest it on the cylinder head and observe if a spark occurs at the plug points when the engine is turned. Irregular sparking may be due to dirty plugs, which may be cleaned and adjusted, or to defective high tension cables. Any cable on which the insulation shows signs of deterioration or cracking should be renewed.

(*c*) If sparking is regular at each plug when tested as described in (*b*), the trouble is probably due to engine defects, and the carburetter, petrol supply, etc., must be examined.

(*d*) If misfiring occurs after the engine has been running for some time, check that the ignition switch is in the normal IGN position. If run continuously in the EMG position, the rising voltage of the battery may eventually cause misfiring to occur.

CHARGING CIRCUIT

Battery in low state of charge.

(*a*) This state will be shown by poor or no light from the lamps when the engine is stationary, with a varying light intensity when the motor cycle is running.

(*b*) If the engine starts and runs in the EMG position, this indicates that the rectifier is functioning correctly.

(*c*) Check the condition of the battery with a hydrometer. Top up, if necessary, and have battery recharged.

(*d*) Check wiring from battery to switch, rectifier and alternator, tightening any loose connections or replacing broken cables.

(*e*) If the cause of the trouble is still not apparent, have the equipment examined by a Lucas Service Depot or Agent.

Excess Circuit Voltage.

(*a*) This will be indicated by burnt-out or blackened bulbs, and possibly poor engine performance due to burned ignition contacts.

(*b*) Examine all wiring for loose or broken connections.

(*c*) Check the earthing of battery and rectifier.

(*d*) Examine the battery, removing any traces of corrosion.

(*e*) If the ignition is affected, clean the contact breaker contacts or if necessary renew them.

(*f*) If the fault persists, have the equipment examined by a Lucas Service Depot or Agent.

THE BATTERY POSITIVE (+ve) TERMINAL IS EARTHED TO THE MACHINE. UNDER NO CIRCUMSTANCES MUST THE NEGATIVE (—ve) TERMINAL BE EARTHED.

LIGHTING CIRCUITS

Failure of lights (machine stationary).

(*a*) If only one bulb fails to light, replace with new bulb.

(*b*) If all lamps fail to light, test the state of charge of battery, recharging it if necessary either by a long period of daytime running or from an independent electrical supply.

(*c*) Examine the wiring for a broken or loose connection, and remedy.

Lamps light when switched on, but gradually fade.

Test the state of charge of the battery, recharging if necessary.

Brilliance varies with speed of motor cycle.

Test the state of charge of the battery, recharging if necessary.

Lights flicker.

Examine the wiring for loose connections, or short circuits caused by faulty cable insulation.

Headlamp illumination insufficient.

(*a*) If the bulb is discoloured or filaments have sagged as a result of long service, a new bulb of the same type should be fitted.

(*b*) Check the setting of the lamp.

LUCAS

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