

Ajs/Motobecane vereniging

levert hij een vermogen van 8.5 amp. bij 7 V. De positieve borstel is geaard. De twee aansluitklemmen aan de buitenkant zijn gemerkt "D" en "F", die corresponderen met de respectieve uiteinden van de positieve en velddraden, die naar de aansluitklemmen op de spanningsregelaar lopen, terwijl de aansluitklemmen daar met dezelfde letters zijn gemerkt.

Collector en koolborstels om de 8000 à 10.000 km inspecteren (wordt door de fabrikant aanbevolen)

- dynamo verwijderen (zie hierna);
 - stofband verwijderen om collector en koolborstels te inspecteren.
- De koolborstels worden door middel van veertjes op de collector gedrukt.
- de koolborstels op en neer in hun huis bewegen en controleren of zij geen tegenstand ontmoeten;
 - indien zij vuil zijn, door middel van een doekje, bevochtigd met benzine, de uitgenomen koolborstels reinigen.

De koolborstels weer in hun oorspronkelijke stand zetten, daar zij anders niet volkomen op de collector drukken.

Als de koolborstels zover zijn versleten, dat op het wrijfvlak het koper van de verende draad zichtbaar is, of als de borstels slecht contact met de collector hebben, moeten zij door originele Lucas borstels worden vervangen.

De collector moet volkomen vrij van vet of vuil zijn en dient een hoge glans te bezitten. Een vuile of zwart geworden collector wordt schoongemaakt met een zachte, droge doek, die er tegen wordt gedrukt, terwijl de motor door middel van de kickstarter langzaam wordt rondgedraaid. Het is goed om de bougies van te voren te verwijderen. Als de collector erg vuil is, de doek met benzine bevochtigen.

Om de 15000 km moet de complete dynamo aan een Lucas agent worden afgegeven voor demontage, vervanging van versleten onderdelen, reiniging en smering.

Electrische storing van de dynamo komt zeer zelden voor. Alvorens aan te nemen, dat de dynamo defect is, moet hij als volgt worden gecontroleerd:

- controleren, of de dynamo, spanningsregelaar en accu correct zijn verbonden.

Vervolgens de dynamo testen als volgt:

- a) de twee draden uit de aansluitklemmen van de dynamo trekken en de beide draadeinden met een stukje draad verbinden;
- (b) de motor starten en met normale, stationnaire snelheid laten draaien;
- (c) de —draad van een draaispoel voltmeter (met een schaalverdeling van 0—10 V) met een van de dynamoklemmen en de +draad met een goed punt van de massa op motor of dynamo verbinden;
- (d) het toerental van de motor geleidelijk vergroten, waarbij de voltmeter snel en geleidelijk moet uitslaan.

De voltmeter niet boven 10 V laten aanwijzen.

De motor niet laten razen om het voltage te vergroten. Het is voldoende om de motor tot 1000 t/min. op te voeren.

Als de voltmeter op de genoemde wijze uitslaat, dan is de dynamo in orde.

Als de voltmotor niet uitslaat, de koolborstels controleren.

Als de voltmeter slechts tot circa $\frac{1}{2}$ V uitslaat, dan is de veldwikkeling niet in orde.

Als de voltmeter slechts tot circa $1\frac{1}{2}$ —2 V uitslaat, dan is de ankerwikkeling niet in orde.

Als de hiervoor beschreven tests duldeelijker aantonen, dat de dynamo niet bijlaadt, dan is het gewenst om de dynamo uit de machine te nemen en hem verder te controleren, repareren of onderdelen te vervangen.

Verwijderen en hermonteren van de dynamo

De dynamo rust in een holte van het carter en wordt door middel van een klemband op zijn plaats gehouden, en is met een tapeind bevestigd, dat door het huis van de distributie gaat. De klemband kan versteld worden.

De dynamo wordt gedreven door een tandwiel, dat in het distributietandwiel op de uitlaatnokkenas grijpt.

Na het losmaken van de klemband en het verwijderen van de moer, die zich buitenop het distributiedeksel bevindt, kan de dynamo, compleet met drijftandwiel van het carter worden genomen. De twee draden van de dynamo naar de spannings-

De spanningsregelaar

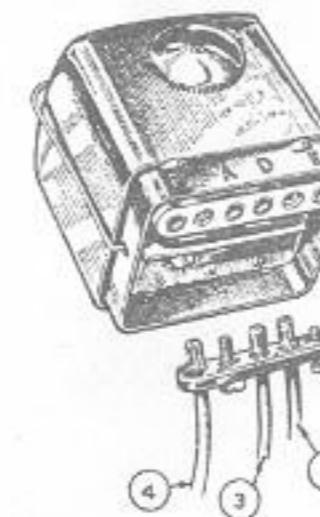
Hoewel de spanningsregelaar en de uitschakelaar één geheel vormen, zijn zij in elektrisch opzicht van elkaar gescheiden.

De regelaar dient om de vastgestelde spanning van de dynamo bij elk toerental te handhaven en het bijladen van de accu door de dynamo te regelen, overeenkomstig de mate waarin de accu geladen is. De bijlading is het grootst, als de accu ontladen is. Automatisch wordt de bijlading verminderd, naarmate de accu meer geladen is en zijn spanning stijgt.

Als de accu in goede staat verkeert, zal de dynamo tijdens het rijden bij dag, slechts weinig spanning afgeven, zodat de ampèremeter zelden meer dan 1 à 2 amp. zal aanwijzen, d.w.z. niet meer dan 1 streepje of nog minder op de schaal uitslaan.

De uitschakelaar is een automatische schakeling tussen de dynamo en de accu. Als de motor zó snel draait, dat de spanning van de dynamo groter is dan die van de accu, dan wordt de accu via de schakelaar door de dynamo bijgeladen. Anderszins, als de motor langzaam resp. stationair draait, verbreekt de schakelaar de verbinding tussen dynamo en accu, waardoor voorkomen wordt, dat de stroom teruggaat van accu naar dynamo, waardoor de accu volkomen ontladen zou worden. De spanningsregelaar en de uitschakelaar zijn in de fabriek nauwkeurig afgesteld, terwijl de beschermkap verzegeld is. Als onder normale rijomstandigheden zou blijken, dat de accu constant te zwak geladen is of constant een te hoge spanning heeft, dan moet de afstelling van de spanningsregelaar door een deskundige worden gecontroleerd en zonodig worden gecorrigeerd. Dit dient zo mogelijk door een Lucas agent te worden gedaan.

Verwijderen van de spanningsregelaar



Verbindingen van spanningsregelaar
en uitschakelaar

- 1 Naar massa
- 2 Naar klem D aan de dynamo
- 3 Naar klem 3 aan de schakelaar
- 4 Naar klem F aan de dynamo

De accu is in het voorste gedeelte van het gereedschapskastje op een platform ondergebracht en wordt door een sterke rubberstrip op zijn plaats gehouden.

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Vergelijking LUCAS-PHILIPS gloeilampen:

LUCAS No.	Volt	Watts	Lampvoet	PHILIPS No.	Watts
168	6	24-24	15 mm	6712	25-25
169	6	30-30	15 mm	6722	35-35
312	6	30-24	LUCAS ring-fitting	6711C of 6721C	25-25 35-35
403	6	35-35		7099	3
983	6	3	9 mm		

ACHTERLAMP:

Type	No.	Achter-licht kap	Glaasje	Rubber pakking	Kabel invoer-rubber	Diverse mon-taged.	Gloeilamp
1949-'52	467 2	53139	572604	572611	572595	572039	572588 980

DIM SCHAKELAAR:

Type	No.
1949-'52	99L2

ELECTRISCHE HOORN:

Gebruik voor vervanging het standaard model met verchroomde rand, type HF1234, bestelnummer 069225, steun 701686.

Onderdelen voor LUCAS-hoorn, type HF1234:

Steun (gebogen, 1 gat)	701636
Steun (recht, 1 gat)	700162
Steun (recht, 2 gaten)	701639
Voorplaat	700213
Onderbreker	700230
Packing, papier	700233
Membraan	701465
Voet (gebogen)	700920
Aansluitblokje	701138
Veertje voor stelschroef van onderbreker	701659
Stelschroef voor membraan	121754

Voor zover bovenstaande onderdelen betrekking hebben op het inwendige van de hoorns, kunnen zij slechts worden gebruikt voor de oudere uitvoeringen. Bij de latere hoorns is het binnenwerk niet demontabel.

HOORN DRUKKNOP:

Type 4A L1, No. 76204, chroom uitv. klembevestiging voor $\frac{1}{4}$ " stuur.
Type HP26 L3, No. 76209, verchroomd, bevestiging met schroefdraad.

BATTERIJ:

1949-'52 type PUZ7E of PUW7E. Zie hoofdstuk BATTERIJEN onder afdeling „Elektrische installaties“, Lucas.

hankelijke delen:

- (1) de ontsteking — magneet, hoogspanningsdraden, bougies en kortsluitcontact.
- (2) het bijladen — dynamo, automatische spanningsregelaar en accu.
- (3) de verlichtingsinstallatie met accessoires — lampen, claxon, schakelaars en bedrading.

De ontsteking

De machine is uitgerust met een Lucas magneet van het type K2F. Het onderdeelnummer voor verwarming is 42230-A en het onderdeelnr. van de complete contactonderbreker is 470534. Smeling en bijstelling is om de 5000 km vereist, de schoonmaakbeurt om de 8000 km. Om de 10.000 km moet de complete eenheid aan een Lucas agent worden afgegeven voor demontage, vervanging van versleten onderdelen, reiniging en smering.

Smeling om de 5000 km

- (a) De nok wordt gesmeerd via een smeerviltje dat in een zak van het onderbrekerhuis is gevat. Een gaatje in de nok, die met een wiek is gemonteerd, stelt de olie in staat om zijn weg naar de vlakken van de nok te vinden.
- het deksel van de onderbreker verwijderen;
- de motor zover draaien, dat het gat in de nok goed zichtbaar komt;
- zorgvuldig een paar druppels dunne machineolie toevoegen.

Het gaatje bevindt zich in het onderste gedeelte van de nokring. Zorgvuldig moet gewaakt worden tegen morsen van olie op de contactpunten.

- (b) Het draaipunt van de onderbrekerhamer vereist eveneens smeling, waartoe de gehele contactonderbreker gedemonteerd moet worden. Daartoe:
 - de zeskantige bout in het midden van de contactonderbreker uitdraaien;
 - de contactonderbreker van de conische as, waarop hij is gemonteerd, afnemen;
 - de borgveer van de onderbrekerhamer opzij drukken;
 - de onderbrekerhamer van zijn lager nemen;
 - het lager met schone motorolie licht insmeren.

Bij het hermonteren van de contactonderbreker, zorgen dat het uitstekende lipje, op het conische gedeelte van de basis van de onderbreker, in de gleuf van de magneetas valt, daar anders de afstelling van de magneet verstord is.

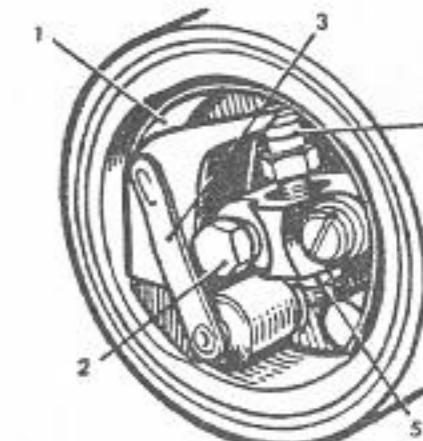
De zeskantige bout moet zorgvuldig worden vastgedraaid; hij mag niet te los zitten, doch mag evenmin te vast worden gedraaid.

Afstelling om de 5000 km

- het deksel van de contactonderbreker verwijderen;
- de motor draaien, totdat de contactpunten volkomen geopend zijn;
- de opening tussen de contactpunten opmeten met behulp van een voeler ter dikte van .012" (aan de sleutel 015023 bevindt zich een voelermaat van deze dikte).

Als de afstand van de contactpunten correct is afgesteld, moet de voelermaat er soepel tussen glijden. Is dit niet het geval, dan moet de afstand opnieuw worden afgesteld.

- de motor in de stand houden, die de grootste opening van de contactpunten oplevert;
- de moer op het vaste contactpunt wat losdraaien;
- door middel van sleutel 015023 de schroef met zeskantige kop zover bijdraaien,



Onderbreker

- 1 veer van onderbrekerhamer
- 2 bevestigingsbout van contactonderbreker
- 3 opsluitveer
- 4 contactpunten
- 5 borgmoer

A.J.S. 20 (1949-1952) MATCHLESS G9 (1949-1952)

Gegevens verstrekken en gecontroleerd door
N.V. Transmark, Bussum
Magneet

1949-'50 type K2F/SM8 linksdraaiend, bestelnummer 42180A/D
1951-'52 " K2F/SM " " 42230B

Overzicht van de voornaamste onderdelen:

No. MAGNEET	42180A	42180D	42230B
Stroomafnemer, rechts	458367	458367	458367
Stroomafnemer, links	458368	458368	458368
Koolborstel met veertje van stroomafnemer	451260	451260	451260
Hoogspannings kabelmoer	410600	410600	410600
Klemveer met steun van stroomafnemer	458370	458370	458370
Onderbrekerdeksel	458619	458619	459037
Klemveer met steun van onderbrekerdeksel	458613	458613	—
Onderbreker	470534	470534	470534
Bevestigingsbout voor onderbreker	122160	122160	122160
Stel contacten	470609	470609	470609
Onderbrekerhamer veertjes	470688	470688	470688
Lagerschild onderbrekerzijde	458726	458726	459036
Onderbrekernok	458725	458725	458725
Stel onderdelen voor ontstekingsverstelling	458728	458728	458728
Massa koolborstel met veertje en houder	455191	455191	455191
Massa koolborstel met veertje	455190	455190	455190
Magneet anker	458333	459004	458333
Ankersasmoeier	170104	170104	170104
Condensator	458339	458339	458339
Sleepring	455361	455361	455361
Kogellager, onderbrekerzijde	189291	189291	189291
Isolatiepapier voor idem	451379	451379	451379
Kogellager, aandrijfzijde	189291	189244	189291
Isolatiepapier voor idem	451379	459005	451379
Rubber oliekering	459031	459002	459031
Diverse montagedelen	458675	458675	458675

Afmetingen van kogellagers: 189244: 15 × 37 × 8 mm
189291: 15 × 35 × 8 mm

Afstelgegevens:
Lichthoogte van onderbreker contacten: 0.012"-0.015" (0.30-0.38 mm)
Capaciteit van condensator: 0.10-0.14 microfarad.

Overzicht van de voornaamste onderdelen:

No. GENERATOR:	20009B
Stofband	200609
Stel koolborstels	200737
Koolborstelbrug	200738
Stel koolborstelveren	220197
Lagerschild, collectorzijde	200713
Kogellager, collectorzijde	189210
Lagerschild, aandrijfzijde	200760
Kogellager, aandrijfzijde	189307
Oliekering	188614
Generator-anker	200712
Veldspoel	200731
Trekbout	200730
Kap, collectorzijde	200718
Diverse montagedelen	200806
SPANNINGSREGELAAR, type MCR2	37097
Kap	391454
Klemveer	391453
Kabelslekkerhulsje	188818

Afmetingen van kogellagers: 189307: 15 × 35 × 11 mm
189210: 8 × 22 × 7 mm

Afstelgegevens:

a) Generator:

Bestelno.	Nominale spanning voit	Sluitspanning van automaat volt	Maximum vermogen omw. min.	Veel. weerstand	Borstel-veer spanning
20009B	6	6,5	1050-1200 Amp. Volt	7 1850-2000	3.2 Ω 448-560 g

b) Spanningsregelaar:

Gegevens kunnen hiervoor niet worden verstrekken; voor afstelling dient men zich tot een LUCAS-agent te wenden.

Verlichting en Diversen

KOPLAMP:	1950.	type SSU700P.	bestelnummer 50788A-
	1951-begin '52	" SSU700P,	" 50945A-
	1952-later,	" SSU700P/1,	" 51104A.

Overzicht der voornaamste onderdelen:

KOPLAMP No.	50788A	50945A	51104A
Lamprand	553248	553248	553248
Glas-klemveertje	504665	504665	504665
Reflector-met-glas	516376	553937	553940
Houder met lampfitting	516368	555009	555005
Lampfitting, groot licht	504001	—	—
Gloeilamp, groot	169	312	403
Gloeilamp, klein	988	988	988
Glaasje voor stadslicht	—	—	516395
Rubber pakking voor idem	—	—	516393
Glas-klemveertje voor idem	—	—	31315
LICHT-SCHAKELAAR	351551	351551	351567
Knop voor idem	351567	351567	36084
AMPEREMETER	36084	36084	36084
SCHAKELBORDJE, compleet	308312	308312	516494

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Maintenance Instructions

for



LUCAS

A.C. LIGHTING-IGNITION EQUIPMENT

for motor-cycles

JOSEPH LUCAS LIMITED • BIRMINGHAM • ENGLAND

Ajs/Matchless vereniging

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.



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.

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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 to the PILOT or HEAD positions, 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.

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THE ALTERNATOR

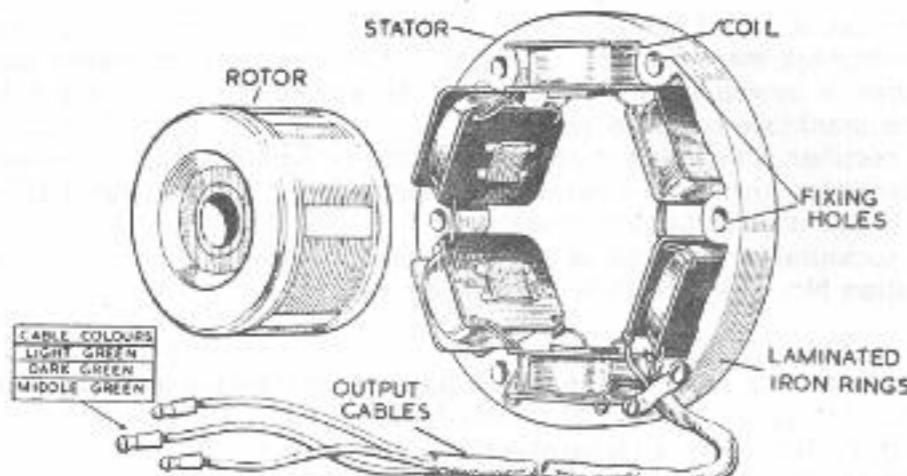


Fig. 1. Alternator Model RM13.

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.

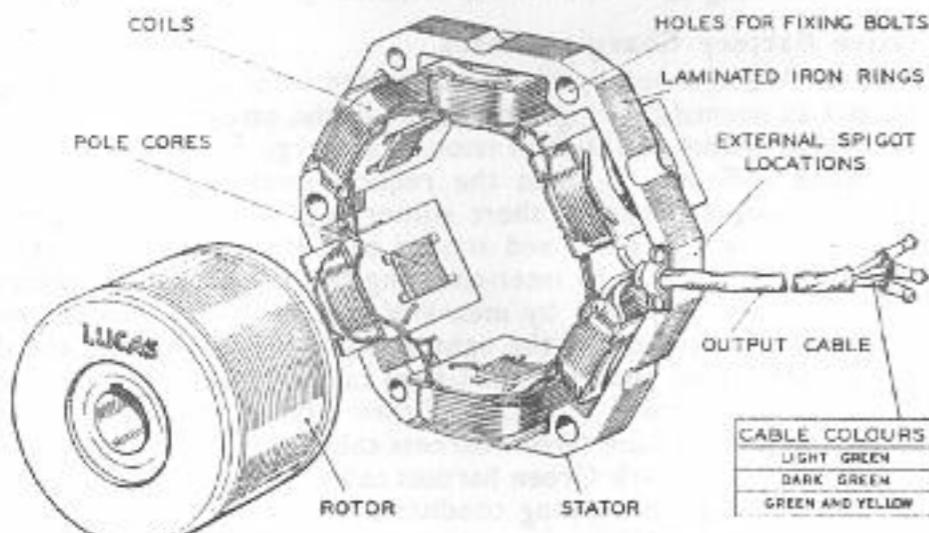


Fig. 2. Alternator Model RM14.

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

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.

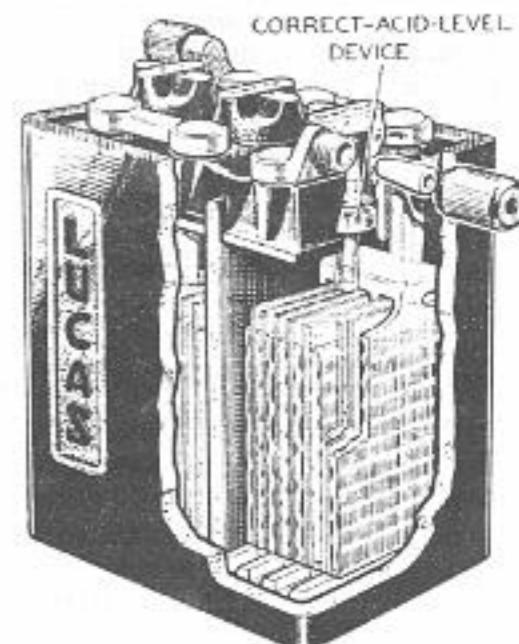


Fig. 3. Battery Model PU7E/9

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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.

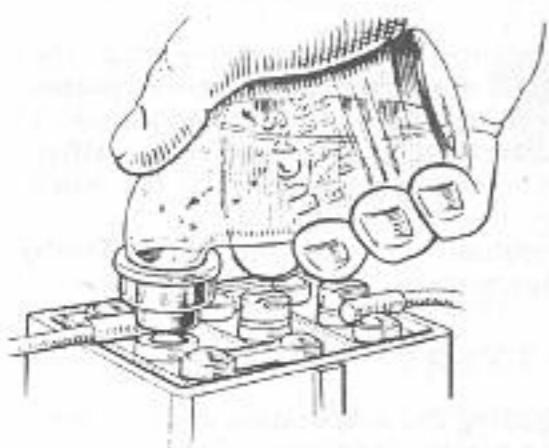


Fig. 4. Using a Lucas Battery Filler.

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.

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.

1.270—1.290	Cell fully charged
1.190—1.210	Cell about half discharged
1.110—1.130	Cell fully discharged

Climates over 90°F.

1.210—1.230
1.130—1.150
1.050—1.070

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

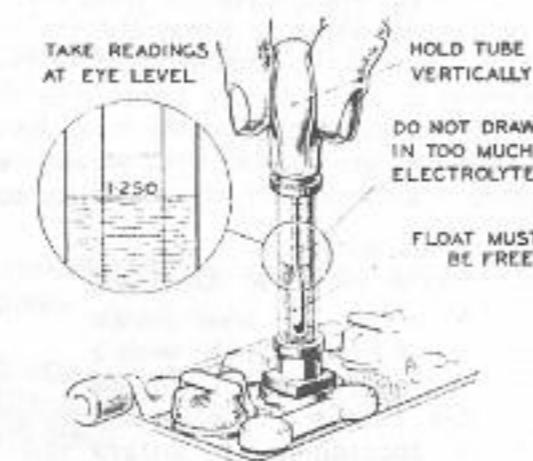


Fig. 5. Taking Hydrometer Readings.

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 or cone-shaped insert, noting that it is not interchangeable with the collet in the other terminal. Bare the end of the cable for about one inch and thread the bared end through the knurled nut and collet. Bend back the cable strands over the narrow end of the collet 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.

Ajs/Matchless vereniging

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.

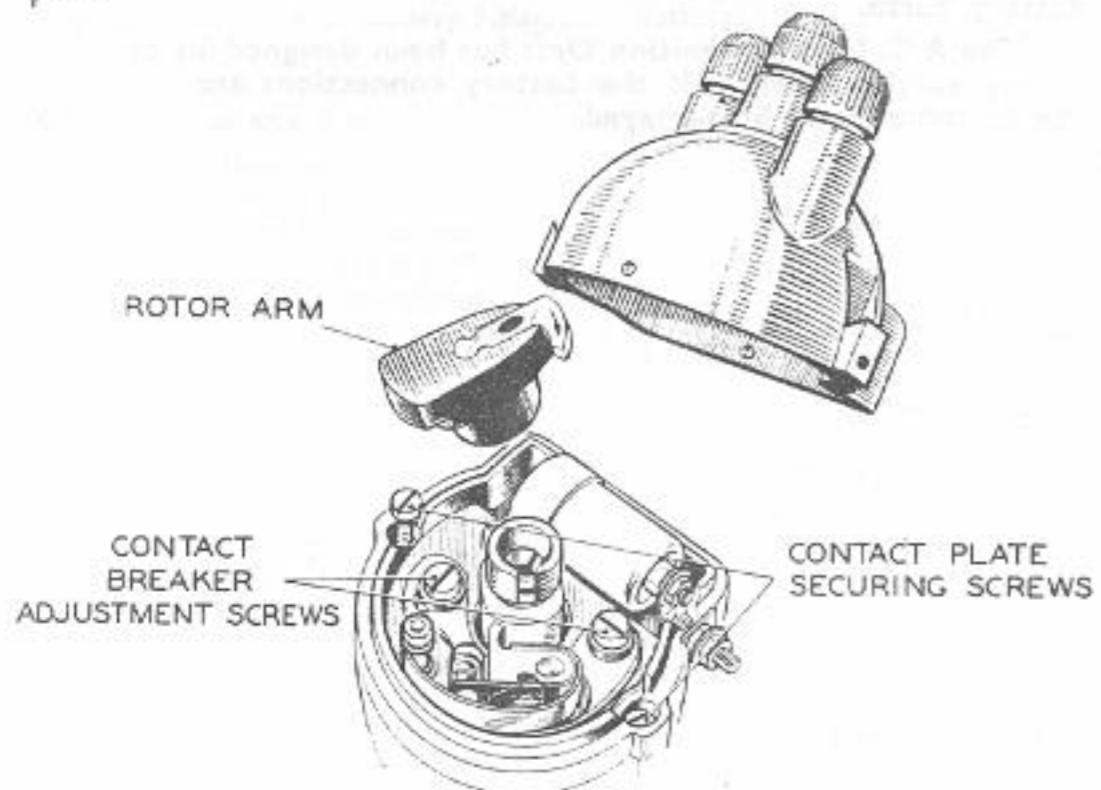


Fig. 6. Distributor Model DKX2A with cover removed.

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.

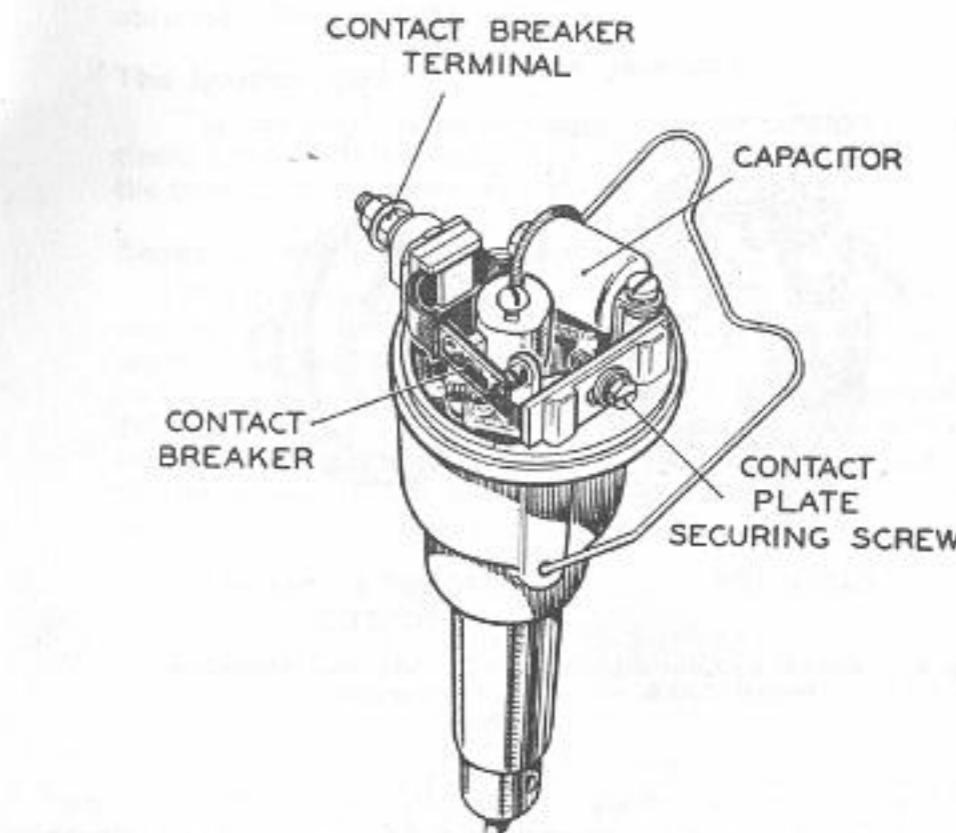


Fig. 7. Contact Breaker and Automatic Advance Unit, Model 15D1, with cover removed.

Model 15D1: 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.

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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.

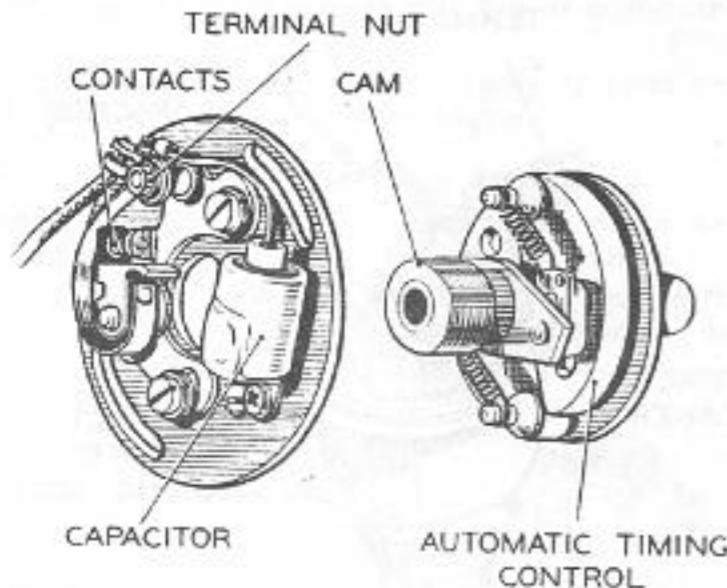


Fig. 8. Contact Breaker and Automatic Advance Mechanism Model CAIA, removed from engine.

To remove the moving contact from models DKX and CAIA 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 15DI, 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, but if the gap width varies appreciably from the gauge thickness, the setting must be adjusted.

To do this on models DKX and CAIA, 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 15DI, 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 $\frac{1}{2}$ -in. Pass the exposed strands through the metal washer and bend them back radially. Screw the terminal nut into the pick-up moulding.

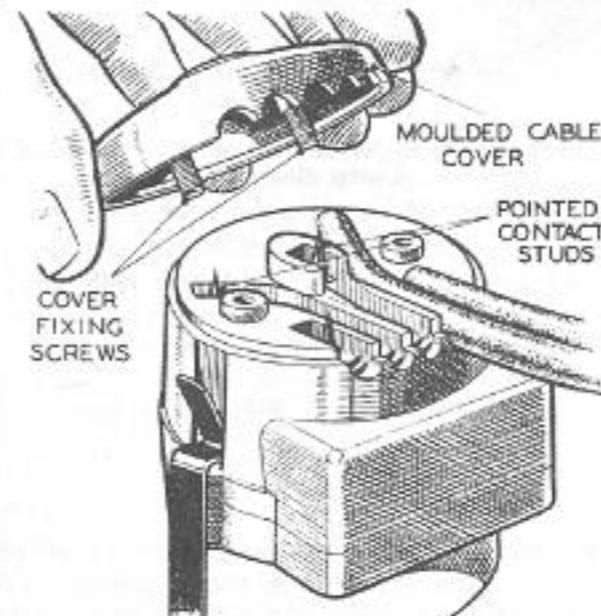


Fig. 9. Fitting High Tension Cables to Distributor Cap.

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.

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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.

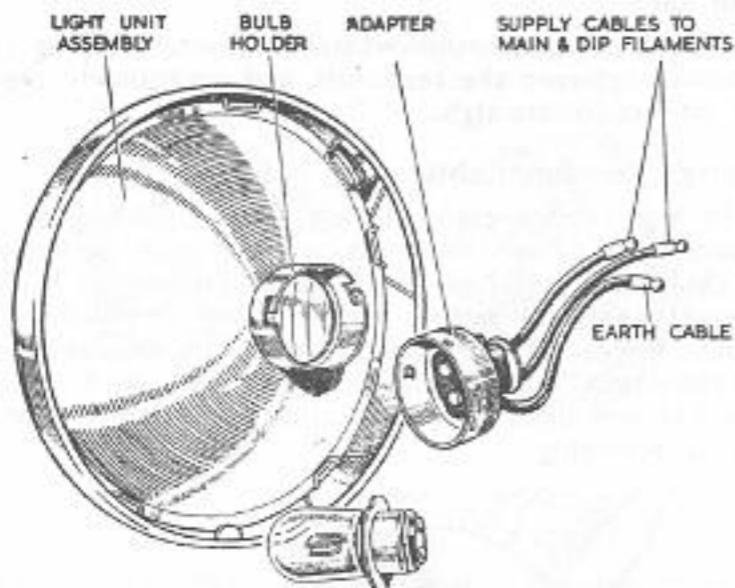


Fig. 10. Model F700 Light Unit and Rim removed from Lamp Body.

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.

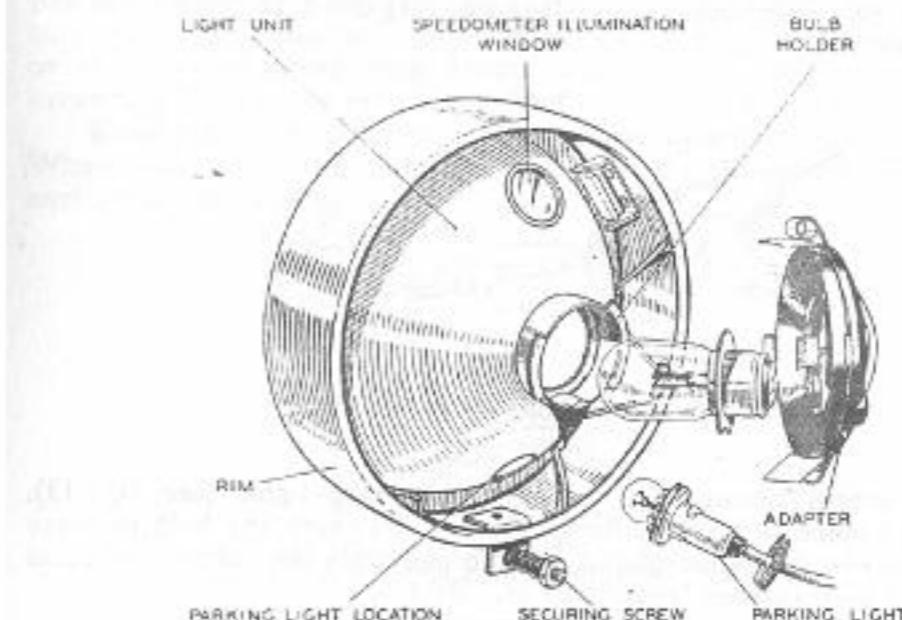


Fig. 11. Model F575P Light Unit and Rim removed from Lamp Body.

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.

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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.

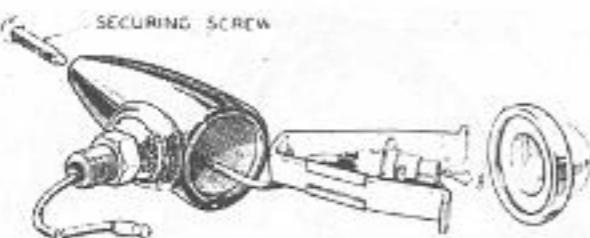


Fig. 12. Parking Light Model 516.

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.

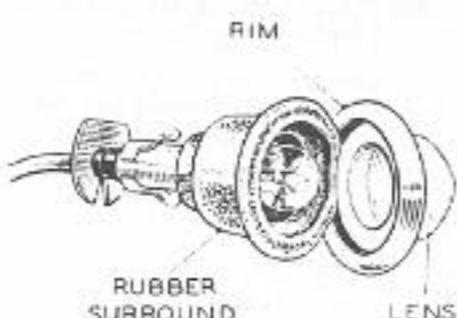


Fig. 13. Parking Light Model 550.

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.

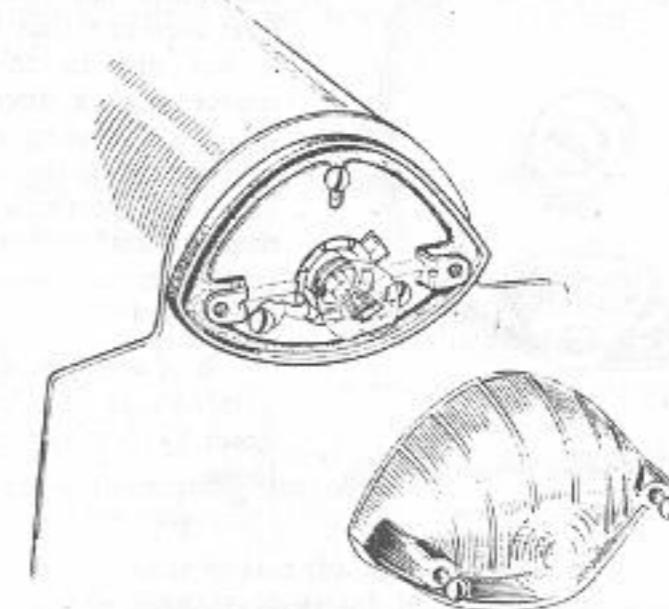


Fig. 14. Stop-Tail Lamp Model 529.

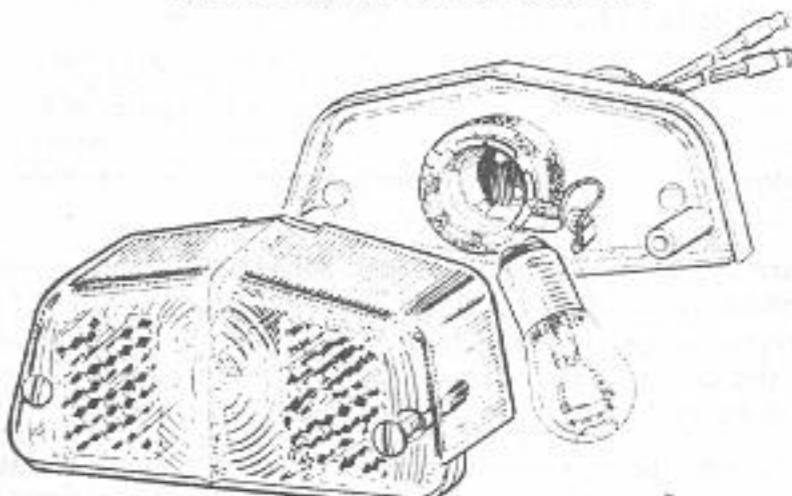


Fig. 15. Stop-Tail Lamp Model 564 incorporating Reflex Reflector.

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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.

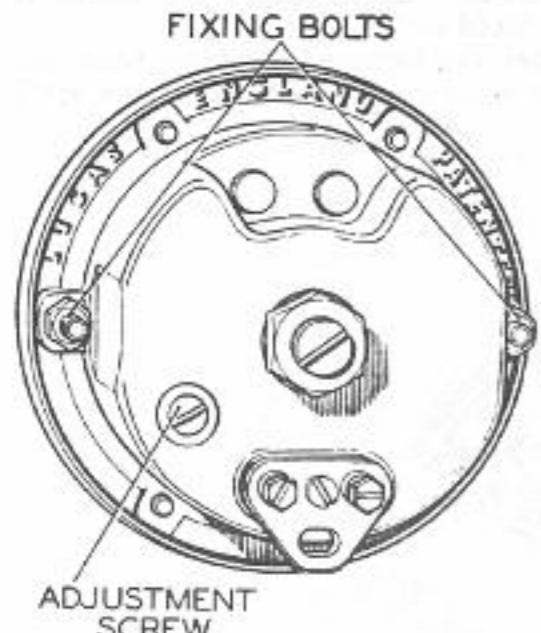


Fig. 16. Rear view of Horn Model HFI234.

Adjustment.

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.

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 $\frac{1}{2}$ -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.

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- (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.

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Lager "papiertjes" :

<u>lagernr.</u>	<u>mm</u>	<u>papiernr.</u>
189 244	40	459 005
189 289	30	451 378
189 291	35	451 379
189 294	37	463 932

Oliekeerringen :

- N1 : 458 375
 SR1-2 : 459 031 of 458 375 (heel zelden)
 K2F : 459 002 of 459 031 (meestal)

Koolborstels :

- K2F + N1 (magnete earth) brush & spring : 455 190
 K2F + N1 (pick up) " " : 451 260
 K2F alleen (earth) " " : 470 537

LUCAS DYNAMO'S.

- éencylinders E3AR en E3N
 tweecylinders E3L

Toegepaste dynamolagers :

<u>type</u>	<u>commutator-end</u>	<u>drive-end</u>
E3AR	189 284	189 289
E3N	189 210	189 307
E3L	189 210	189 307

Maten van Lagers :

189 284	A8	8 x 27 x 7	SKF E8 (magneetlager)
189 289	A13	13 x 30 x 7	SKF E13 ("")
189 210	108	8 x 22 x 7	SKF 608 - W608 - W60822
189 307	115	15 x 35 x 11	SKF 6202

Oliekeerring :

Voor tweecylinderdynamo E3L : 188 614

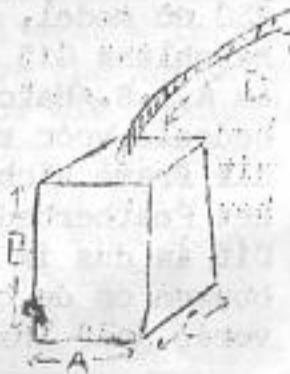
200 573 (heel zelden)

Koolborstels : (maten in inches)

200 290 = 2x 200 275	$\frac{1}{2} \times .372 \times .247 \times 2.937$
200 737 = 2x 200 736	$.562 \times .497 \times .247 \times 3.250$

Koolborstelveertjes :

- 200 079 voor borstels 200 290
 200 197 voor borstels 200 737



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LUCAS - ONDERDELEN

DETAALNUMMER VAN HET MATCHLESS

Beste mensen,

Hierbij een heleboel cijfertjes. 1) : om deze aanschouwlijker te maken verdient het aanbeveling dit overzicht te gebruiken naast de vorig jaar in dit clubblad gepubliceerde tekeningen.
Het zijn de originele LUCAS-onderdeelnummers van de belangrijkste onderdelen van de diverse Matchless en A.J.S. magneten en dynamo's.
Het onderdelenfonds zal de meeste van deze onderdelen in voorraad krijgen. Mocht iemand nog andere LUCAS-onderdelen in voorraad gezien willen hebben, dan horen we het wel.
Als er iemand nog LUCAS-onderdelen te koop weet (niet te duur dus, zo van f 1,- = de kilo) dan horen we dat ook nog wel.
In de hoop de aankoop van LUCAS-onderdelen hiermee te vergemakkelijken voor A.J.S. en Matchlessrijders wens ik iedereen nog een prettige vakantie.

LUCAS MAGNETEN.

ééncylinders	1940-1953	N1
	1954-1957	SR1 of SR2

tweecylinders

Toegepaste lagers :

type	drive end	contactbreaker-end
SR1-2	189 291	189 289
N1	189 291	189 291
K2F	189 291	189 291
	189 291	189 294
	189 244	189 291
	189 244	189 294

Maten van lagers :

189.244	R18	18 x 40 x 9	voorheen SKF E 18 (uit prod.)
189 289	A13	13 x 30 x 7	SKF E13
189 291	A15	15 x 35 x 8	SKF E15
189 294	N3048	15 x 37 x 8	nergens verkrijgbaar
LUCAS contactpunten :			
N1	: 484 098		
SR1-2	: 458 053		
K2F	: 470 609		

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