

★ FROM FEB. 1st, 1955, UNTIL FURTHER NOTICE ALL PRICES IN THIS LIST ARE INCREASED BY 5%.

**Villiers**

**CANCELLED**

From the date of this issue, further notice, all prices in this list are increased by 20%

**OPERATING INSTRUCTIONS  
AND SPARE PARTS LIST**

for

**MARK 29C & 30C**

**147c.c. TWO STROKE  
MOTOR CYCLE ENGINES**

**ONE SHILLING 0**

**TWO SHILLINGS**

**THE VILLIERS ENGINEERING CO. LTD.  
WOLVERHAMPTON ENGLAND**

MARCH, 1955.

VIC.32

## *Introduction*

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**Y**OUR Villiers engine is the heart of the machine in which it is installed. It has been manufactured and assembled with great care and precision, and it will give you long and efficient service if it receives the attention it deserves.

This book contains the necessary information to enable you to give your engine this simple, but important routine attention, and you will be well advised to keep the book on hand for consultation when necessary.

After a long period of service, your engine may require overhauling, and it is important always to make sure that only genuine Villiers replacement parts are used. Remember that genuine Villiers spares are made with the same fine workmanship as the original engine components.

**THE VILLIERS ENGINEERING COMPANY LTD.**

**Marston Road, - - - - - Wolverhampton**

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THE

*Villiers*

**MARK 29C & 30C**

147 c.c.

**TWO-STROKE  
MOTOR CYCLE  
ENGINES**

**GENERAL DATA.**  
**MARK 29C and 30C**

Bore	...	...	55 m.m.
Stroke	...	...	62 m.m.
Capacity	...	...	147 c.c. = 9.0 cu. ins.
Engine Sprocket	...	...	23 Teeth— $\frac{3}{8}$ " Pitch.
Clutch Sprocket	...	...	51 " $\frac{8}{32}$ " "
Primary Drive Ratio	...	...	2.21—1.
Gearbox Ratios, Mk. 30C	...	...	1—1, 1.34—1, 2.55—1
" " Mk. 29C	...	...	1—1, 1.35—1, 2.3—1, 3.47—1
Final Drive Sprocket	...	...	15 Teeth— $\frac{1}{2}$ " Pitch For Renold Chain No. 110044.
Final Chain Line	...	...	2 $\frac{3}{16}$ ins.
Exhaust Pipe Dia.	...	...	1 $\frac{1}{4}$ ins.
Carburetter, Mk. 30C	...	...	Villiers Type S.19.
" Mk. 29C	...	...	" " S.25.
Carburetter Needle	...	...	No. 3 $\frac{1}{2}$ .
" Throttle, Mk. 30C	...	...	No. 2 $\frac{1}{2}$ .
" " Mk. 29C	...	...	No. 3.
Main Jet, Mk. 30C	...	...	No. 80.
" " Mk. 29C	...	...	No. 130.
Sparking Plug	...	...	Lodge H14.
Plug Gap	...	...	.018"/.025"
Spark Timing	...	...	$\frac{5}{32}$ in. Before T.D.C.
Contact Breaker	...	...	Points Gap .015 ins. MAXIMUM.
Lubrication, Engine	...	...	Petrol mixture. One part "Castrol" two-stroke Self-Mixing Oil to 16 parts petrol, OR one part "Castrol" "XL" Oil (S.A.E. 30) to 20 parts petrol.
Lubrication, Gearbox and Chaincase	...	...	Castrol "D" Oil (SAE 140) Filled to Level Plugs Provided.

**INSTRUCTIONS FOR USING**  
**THE MARK 29C and 30C UNITS**

**Important.** When the Rectifier Lighting Set is used, the Rectifier and Battery must be connected up before starting the Engine. If the Battery has been removed, the Rectifier must be disconnected from Magneto.

**Fuel Tank.** Fill up Tank with a mixture of oil and petrol, the mixture to be made and well shaken before putting into Tank.

We recommend "Castrol" two-stroke Self-Mixing Oil at a ratio of  $\frac{1}{2}$ -pint to one gallon of petrol (1-16), OR "Castrol" Oil (S.A.E. 30) ratio 1-20.

Due to the Self-Mixing properties of "Castrol" two-stroke Self-Mixing Oil,  $\frac{1}{2}$ -pint to one gallon of petrol represents a ratio of 1-20 actual lubricant to petrol, and **no pre-mixing is necessary**, but it is essential to turn off the Petrol Tap and put the oil into the Tank before the petrol.

**Gearbox.** Remove the oil level dipstick, situated alongside the oil filler plug on top of gearbox and check oil level. The "full" position is indicated by the groove about  $\frac{3}{8}$  in. from end of dipstick. If level is found to be below end of dipstick remove filler plug, top up with Castrol "D" oil (S.A.E. 140). Examine every 1,000 miles approximately, and drain every 5,000 miles by removing plug in bottom of box.

**Chaincase.** Remove filler plug on top at front, and level plug at bottom. With cycle standing vertically, pour in Castrol "D" Oil through top hole until it appears at the bottom level hole. Refit top and bottom plugs. Top up every 1,000 miles and drain by removing front cover every 5,000 miles. (See Fig. 1 below).

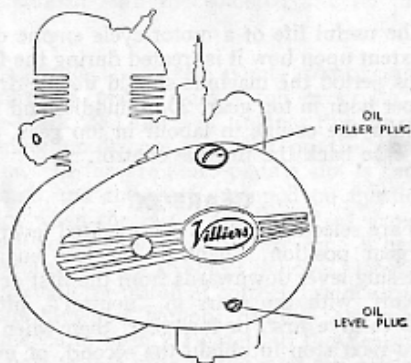


FIG. 1.



## STARTING.

### Mark 29C and 30C.

**When Cold.** Turn petrol tap to the 'ON' position. Flood carburetter float chamber by depressing tickler.

The carburetters fitted to these engines have a single lever controlling the throttle position, and to obtain a rich mixture for starting it is necessary to turn the air filter shutter to the closed position. Having flooded the carburetter, place gear control lever in the "NEUTRAL" or free engine position, open throttle lever, or twist grip where fitted, about one third open and give kickstart lever two or three sharp kicks. Having started the engine, the air filter can gradually be returned to the fully open position as the engine warms up.

**When Hot.** Do not flood the carburetter or close the strangler shutter fitted to air cleaner.

**Failure to Start.** If repeated kicks fail to start after flooding (when cold), turn off fuel supply, open throttle wide, and clear cylinder of excessive mixture by giving a number of kicks to starter lever. Now turn on fuel supply, and after opening throttle a little, try again. If not successful, the sparking plug will probably be found to be wet. If so, remove and dry out, and turn over engine quickly after having removed the drain plug situated at bottom of crankcase, so that accumulated mixture can be blown out. If still not successful after having replaced drain plug the trouble must be found elsewhere, and reference should be made to the "Fault Finding Chart".

**Stopping the Engine.** If the engine is stopped by turning off the fuel supply instead of closing throttle, an easier start will be made if the machine has to stand a long time before again being required.

**Running In.** The useful life of a motor-cycle engine depends to a great extent upon how it is treated during the first 500 miles, and during this period the machine should not be driven at more than 30 miles per hour in top gear, 20 in middle, and 10 in bottom gear. Do not allow the engine to labour in top gear, change to a lower gear and ease back the throttle control.

## GEARBOX.

The gear ratios are selected by the foot operated lever having a positive stop for each gear position, "neutral" or free engine position being obtained by pressing lever downwards from the first or low gear position. When starting off, with the gears in "neutral", lift control lever up against the stop to give first, or low gear, then when under way, press lever DOWN to next stop to obtain the second, or middle gear. Press DOWN again to next stop to obtain third, or top gear. The lever returns under spring pressure to its normal position after each change. When

changing down from top to middle, and middle to bottom gear, LIFT the lever against its stop for each position. The lever is adjustable for position to suit the individual rider, and by releasing the clamp bolt, can be removed from the splined spindle and refitted in an alternative position.

## CLUTCH.

The drive from the engine to clutch is taken by a pre-stretched endless roller chain running in the oil bath chaincase. No attention is necessary beyond that of lubrication, and correct adjustment of push rod to give the necessary clearance to prevent clutch slip. Whilst the clutch is engaged, i.e. driving, there must be clearance between end of pushrod and the clutch lever fitted to gearbox, and a special adjuster having a knurled and slotted head is provided so that adjustment can be made by the hand without having to use tools. There should be about  $\frac{1}{8}$  inch movement at the end of gearbox clutch lever before commencing to depress the clutch springs.

## MAGNETO.

The magneto fitted to both engines is the latest 6-pole pattern providing current for ignition and lighting, the same magneto being used for both the "DIRECT" and "RECTIFIER" lighting sets available with each type of engine. The wiring connections differ, however, and reference should be made to the wiring diagrams Figs 11 and 12. The Flywheel should not be removed unless absolutely necessary, and then it is advisable to use a Villiers "Hammer-tight" spanner on the centre nut which is exposed after removal of flywheel cover. The centre nut is imprisoned in the flywheel and acts as an extractor when turned anti-clockwise.

The armature plate which carries the ignition coil, lighting coils and contact breaker mechanism is secured to the engine crankcase by six screws. The H.T. Lead from ignition coil to sparking plug is detachable by unscrewing from armature plate, and when refitting it is important to make sure that the brass pad carried by the spring and secured to the terminal, makes contact with the soldered disc on the outside of the ignition coil.

### Timing of the Magneto.

The contact breaker points must commence to open before the piston reaches top of stroke. In the case of the Mark 29C and 30C Engines this dimension is  $\frac{3}{8}$  inch.

Timing marks are provided on the armature plate and flywheel rim. In the armature plate a slot is cut in line with the H.T. terminal, and the mark stamped on flywheel rim coincides with the slot when the piston is at TOP of stroke, the necessary amount of advance having been allowed for. When timing ignition, necessary because of the flywheel removal, loosely fit flywheel to shaft, and, having set piston at correct distance BEFORE top dead centre, rotate flywheel without turning the crankshaft until the points commence to open. Tighten up flywheel nut sufficiently to turn crankshaft, rotate until piston is at top of stroke, then timing marks should be opposite one another. Finally, tighten up centre nut with the hammer-tight spanner, and refit flywheel cover.



**Contact  
Breaker  
Assembly.**

This is of the latest type requiring a screwdriver only to adjust the contact points. To adjust the contact points proceed as follows:—

Turn flywheel clockwise until rocker pad is on top of cam profile of flywheel boss. Release the screw "A" (see illustration below). Position bracket "B" by turning adjuster cam "C" until .015" feeler gauge can be inserted between the contact points. Tighten screw "A" and withdraw feeler gauge. It is not necessary to disturb nut "D" when adjusting point gap.

A felt pad is used to keep the cam in a slightly oily condition, and is impregnated when new with grease. This can if visibly dry, be oiled with a small amount of the heaviest oil available. It is better, however, to soak the pad in a molten high temperature grease if it is convenient to detach the box itself for this operation. If too much oil is put on the felt pad it may creep along the Rocker Arm, get on the contact points, and so cause ignition trouble.

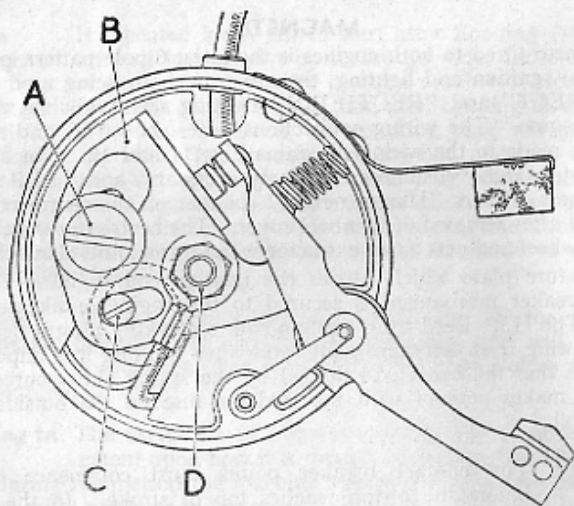


Fig. 2  
CONTACT BREAKER ASSEMBLY

**CARBURETTERS.**

The Carburetter fitted to the Mark 30C Engine is the Type S.19, and for the Mark 29C Engine, Type S.25. In both Carburetters the position of taper needle in relation to the throttle is adjustable by means of the special screw situated in centre at top of throttle. This adjustment is provided to suit individual engines, and it should not be necessary to alter the makers setting except after considerable mileage. The standard setting from throttle to end of taper needle is 2.015 ins. for the Mk. 30C and 1.95 ins. for the Mk. 29C.

**Operation  
of  
Carburetter.**

The handlebar twistgrip (or lever) control operates the throttle slide and thereby regulates the amount of mixture entering the engine, whilst the carburetter itself automatically meters and atomises the correct amount of fuel to give the necessary mixture strength. To achieve this automatic control of the mixture strength, two separate fuel systems are fitted, namely the main-jet and pilot-jet systems. At idling speeds the carburetter draws fuel from the pilot-jet and, as the throttle is gradually opened, the fuel is then drawn in turn from the pilot "progression" hole and the main-jet system. The operation of the two systems is given below:—

**1(a) Pilot-Jet System.**

At idling speeds, when the throttle is nearly closed, the pilot outlet hole (A) Fig. 3 is subject to the very high engine suction, and petrol is, therefore, drawn from the float chamber through the pilot tube (B), and the pilot outlet hole. The calibrated pilot-jet is contained in the top of the pilot tube. At the same time, a filtered supply of air is drawn from the mouth of the carburetter through passage C, through the variable air-jet D, and is then pre-mixed with the fuel in the small chamber E. The pilot adjuster screw F varies the size of the pilot air jet, and therefore, the pilot mixture strength—to richen mixture, turn screw clockwise.

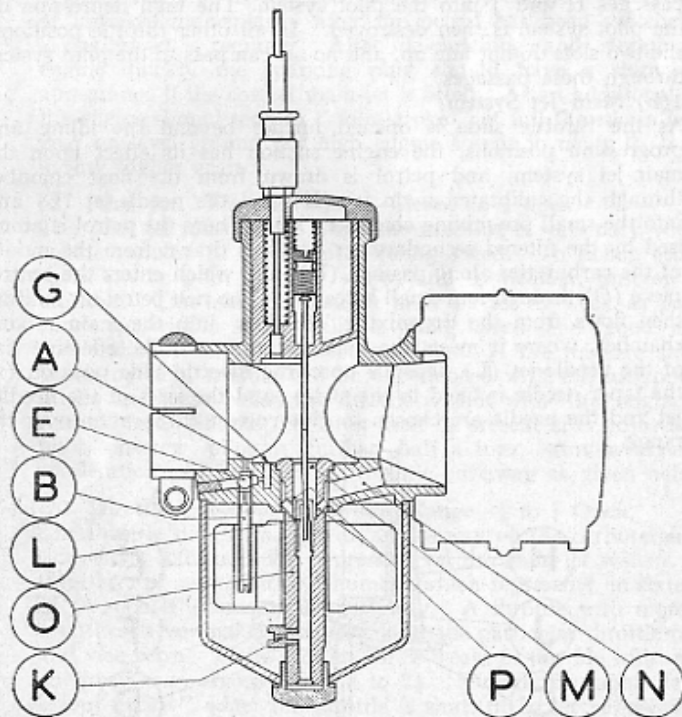


Fig. 3.

When the throttle slide is opened a small amount beyond that required for idling, the suction on the pilot outlet hole is reduced, but at the same time, the suction on the pilot "progression" hole (G) increases. A further supply of petrol is, therefore, drawn through the "progression" hole, and prevents the weak spot which would otherwise occur due to the fall off in supply from the pilot hole before the main jet comes into full operation.

It follows from the preceding remarks that whenever the throttle is shut off whilst the engine speed is high (such as on long downhill sections), the pilot system is subject to the full engine suction, and petrol will flow into the engine from the pilot outlet hole. As the engine is not firing under these conditions, this fuel supply will tend to build up in the crankcase and cylinder and cause severe "four-stroking" or "eight-stroking" when the throttle is opened again. To overcome this fault in the present range of Villiers Carburetters, an automatic air bleed to the pilot has been incorporated, which relies upon the matching of two slots, one in the throttle slide and the other in the carburetter body. When the throttle slide is shut, these two slots line up and air can flow from the front of the Carburetter through the throttle slide and down passages H and J into the pilot system. The high depression on the pilot system is then destroyed. In all other throttle positions, the two slots do not line up, and no air can pass to the pilot system through these passages.

#### 1(b) Main Jet System.

As the throttle slide is opened further beyond the idling and progression positions, the engine suction has its effect upon the main-jet system, and petrol is drawn from the float chamber through the calibrated main jet (K) and the needle-jet (L) and into the small pre-mixing chamber (M). There the petrol is atomised by the filtered secondary air which is drawn from the mouth of the carburetter along passage (N), and which enters the centre-piece (O) through four small holes (P). The rich petrol-air mixture then flows from the pre-mixing chamber into the main mixing chamber, where it meets the main air stream. The effective size of the needle-jet (L) depends upon the throttle slide position (as the taper needle is fixed to the slide), and the sizes of the needle-jet and the needle are chosen to give correct carburation over the range.

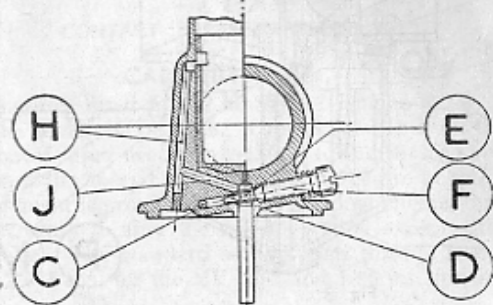


Fig. 4.

**Tuning Carburetter.** Before any attempt is made to tune the Carburetter it is essential that the engine is in a good mechanical condition.

This means that there should be no air leaks at any of the joints, there should be a good spark at the plug points and also that there is no restriction in the fuel supply. It is also important, of course, that the carburetter is clean internally, and that the air filter is not obstructed.

There are four adjustments for tuning the carburetter, but each of these has its full effect at a particular part of the throttle range, and should, therefore, only be used for tuning that particular part of the range. There is also a definite sequence for the tuning, and this also must be adhered to in order that the results achieved with one adjustment are not upset by the next adjustment.

The sequence of tuning with the necessary adjustments is given below:—

#### (1) Main Jet. Throttle Range— $\frac{3}{4}$ to Full.

In order to obtain the correct main jet size, the engine must be tested at full throttle in top gear. If the engine lacks power, detonates badly or runs better with the strangler slightly closed, a larger main jet is required. Should the engine "four-stroke" or improve momentarily after the petrol has been switched off, a smaller jet is required. After de-clutching and stopping the engine quickly the sparking plug should have a shiny black appearance if the correct main-jet is fitted. As an additional guide the engine should tend to "four-stroke" at full throttle in bottom gear on level ground (or high engine speeds in neutral), but not in any higher gears.

#### (2) Pilot Jet. Throttle Range—Closed to $\frac{1}{2}$ open.

The pilot jet must be set when the machine is stationary with the engine running at the required idling speed. To richen mixture, screw in the pilot adjuster screw, and to weaken, unscrew pilot adjuster. The mixture strength must be set as weak as possible consistent with a steady reliable idling speed and good engine acceleration from this throttle position. If the mixture strength is set too rich, trouble will be experienced with the fuel build-up in the crankcase when the throttle is shut with the engine still running fast. Should this latter fault be present after adjusting the pilot, unscrew pilot a further half a turn. Any weakness on acceleration can be cured by throttle cut away as given below:—

#### (3) Throttle Cut-Away. Throttle Range— $\frac{1}{2}$ to $\frac{3}{4}$ Open.

The throttle slide is made with a cut-away on the carburetter inlet side which influences the depression on the main-jet system. The throttles are marked with a number which represents, in sixteenths of an inch, the amount of cut-away. A throttle with more cut-away will give weaker mixtures (over the particular throttle range) and vice-versa. If the acceleration is weak, fit throttle with smaller cut-away, e.g. change from 3 to  $2\frac{1}{2}$ . Should the engine tend to "four-stroke" when the throttle is shut, fit larger cut-away.



**(4) Needle Adjustment:— Throttle Range— $\frac{1}{4}$  to  $\frac{1}{2}$  Open.**

The needle is adjusted by the grub screw in the top of the throttle—screw down to weaken mixture, and vice-versa. The needle controls the mixture strength over most of the "cruising range" and must be correct for good fuel consumption and acceleration. After carrying out the above adjustments, it is wise to go back and re-check the pilot adjustment to see that this has not been affected by other adjustments.

**To Change the Taper Needle.** Remove throttle from body after unscrewing the top ring, and in the centre at top of throttle will be found a small slotted screw. This is the adjuster referred to in the previous paragraph, and when this is removed by unscrewing, the needle with spring can be pushed up from underneath. When replacing the needle make sure that the needle collar is in position.

**To Remove Fuel Needle.** If it is necessary to remove the fuel needle the first step is to remove the bottom nut and fibre washer which enables the float chamber to be taken off.

To detach the float the main jet must be unscrewed from the side of the centrepiece. The forked lever which is interposed between the fuel needle and float is split to enable it to be pulled clear of its retaining pin. After this has been done the fuel needle will drop away.

**DO NOT REMOVE THE CENTREPIECE FROM THE CARBURETTER BODY.**

**To Reassemble Carburetter** Clean the various components and make sure that the tickler vent hole is clear. Insert the fuel needle and refit the forked fuel needle lever. Place float in position, this is marked "top," and replace main jet in side of centrepiece. Clean out the float cup and replace with large fibre joint washer at top. Replace bottom nut and fibre washer but do not use too much force, otherwise there is the danger of stripping the thread of centrepiece. Replace throttle in body at the same time guiding the taper needle into hole in top of centrepiece. A guide screw in the carburetter body will prevent the throttle being replaced unless it is correctly positioned. Locate top disc in top of body and screw on top ring. If the carburetter has been removed from the engine, make sure when refitting that the body is pushed on to the manifold as far as possible, and that it is set upright. There are four narrow slots in the body to allow the securing clip to function, and if the manifold stub does not extend past the end of the slots, air will be sucked in causing hard starting and erratic running.

The carburetter has a banjo petrol pipe fitting inside of which is a fine mesh filter gauze which should be periodically cleaned by dipping in petrol. Be sure that when replacing the petrol pipe the fibre washers make a petrol tight joint, otherwise fuel will be wasted.

The air filter should be cleaned every 2,000 miles by washing in petrol. Following this the filter should be dipped in thin oil and allowed to drain before refitting.

**LIGHTING SETS.**

Two types of lighting sets are supplied for use with the Mark 29C and Mark 30C Engines, and although the magnetos are identical for both engines and lighting sets, there is a difference to be noted when making the connections.

**"Direct" Lighting Set.**

In this Set alternating current is taken direct from magneto to lamps via the head lamp switch, and it will be seen on reference to the Wiring Diagram M.2222D, Fig. 12, that the end of cable from magneto is joined to the cable from head lamp (yellow ring), No. 2 terminal switch. There is now no separate earthing cable, the lighting coil windings are earthed inside magneto.

**Lighting Bulbs for "Direct" Set.**

Head Lamp ...	6 Volt—30/30 Watt Double Filament	S.B.C.
Pilot Lamp ...	3.5 Volt—.15 amp.	M.E.S.
Tail Lamp ...	6 Volt—3 Watt	M.B.C.
Speedo ...	6 Volt—.17 amp.	M.B.C.

**"Rectifier" Lighting Set. (Head Lamp Type 575).**

In this Set the current from the lighting coils is converted to D.C. by passing through a Selenium type Rectifier, and then used for charging a 6 Volt 10 amp/hr. battery. The rectifier casing MUST be insulated from the cycle frame. When connecting up the magneto follow the Wiring Diagram M.2232D, Fig. 11. The cable from magneto, and the cable (green ring) from No. 2 terminal in switch are connected to one of the rectifier lugs. The two rectifier leads are joined to the cable (purple ring) from the No. 4 terminal in switch. The positive side of battery is EARTHED.

**Lighting Bulbs for "Rectifier" Set.**

Head Lamp ...	6 Volt—24/24 Watt Double Filament	Pre-Focus.
Pilot Bulb ...	6 Volt—3 Watt	M.B.C.
Tail Bulb ...	6 Volt—3 Watt	M.B.C.
Tail Bulb		
Stop Light ...	6 Volt—3W/18W Double Filament	
Speedo ...	6 Volt—.17 amp.	M.B.C.

**Rectifier.** The casing of rectifier must not make contact with any portion of the cycle frame. Various methods are adopted to ensure this by the manufacturers of the motor cycle, and any insulating pads or washers must be replaced in position should at any time the rectifier have to be removed.

**Care of Battery.** Once a month unscrew filler caps of each cell and pour in a small quantity of distilled water to bring the acid level with the tops of the separators. Do not use tap



water as it contains impurities detrimental to the battery. Acid should not be added unless this is accidentally spilled out of the battery.

This should be replaced by diluted sulphuric acid of the same specific gravity as in the cells. Keep the battery terminals clean. Many lighting troubles can be traced to unseen corrosion between the surfaces of a perfectly tight joint, and in the case of the battery this corrosion takes place much more frequently than at other electrical contacts. The positive is earthed to reduce this effect to a minimum.

### TRACING TROUBLES.

For the satisfactory running of any Villiers Engine it is essential that three main conditions are fulfilled, and by making a systematic and intelligent investigation the faults can usually be located. If the engine stops, symptoms will generally give a clue to the cause, but where this is not the case, the trouble can be more easily traced by following a definite method of investigation. The three conditions mentioned above are as follows:—

(1) The required quantity of petrol-and-air mixture must enter the engine, which means that a proper supply of fuel has to be available from the carburetter, and that the throttle should open and close freely.

(2) The sparking plug must give a good spark, at the right time in relation to the position of the piston on its upward stroke.

(3) The engine must be in good mechanical condition, with no air leaks at the various joints.

There must also be efficient compression of the air in the cylinder and crankcase. This can be easily checked by putting the gear-box into the neutral position, and rotating the crankshaft by means of the kickstarter. On every revolution a definite resistance should be felt, caused by the air in the cylinder being compressed.

**Making a Preliminary Check.** When the cause of the trouble is not evident, carry out a preliminary check covering the following points. If this fails to trace the cause, reference should be made to the Fault Finding Chart (pages 13 and 14).

Having made sure that there is "petrol" in the tank, and that the tap is in the "ON" position, depress the tickler on the carburetter to ensure that there is no blockage in the fuel supply, either in the tap, fuel pipe, banjo union or fuel needle seating. If the fuel supply is clear, fuel will spurt from the vent hole in the side of the tickler cap.

Being satisfied that fuel is reaching the carburetter, next unscrew the sparking plug, and with the high tension lead still attached, lay the plug on the cylinder head. Turn the engine by means of the kickstarter, and if there is a good spark, it is possible that the ignition timing is incorrect.

Finally, examine the carburetter controls to make certain that the throttle is actually opening when the control lever is moved.

## FAULT FINDING CHART.

Sequence of Testing.	Possible Trouble.	Remedy.
<b>Engine will not Start.</b>		
Depress tickler on carburetter to check whether fuel is reaching carburetter.	No fuel reaching carburetter, air lock in petrol pipe.	Turn tap to ON, refill tank, clear air vent in filler cap. Turn on reserve tap where fitted.
If no fuel, even when tap is on and fuel is in tank.	Choked petrol pipe, filter on tap, filter in banjo. Fuel needle sticking in seating.	Remove and clean out. Dismantle carburetter and fit new needle.
Test for spark by holding sparking plug body on cylinder head.	Leak along insulation of plug or high tension lead.	Try a new plug of the type recommended and/or new H.T. lead.
If still no spark: Test for spark at end of H.T. lead held $\frac{1}{2}$ " from cylinder fins.	Plug points may be oily or sooted up. If no spark at end of H.T. lead, contact breaker point gap may be too narrow, or points pitted or dirty or oily.	Clean plug or fit new one. Adjust point gap to .015 inches. Clean.
	Moisture on insulation of condenser.	Clean and dry out.
	High tension terminal not making good contact on ignition coil.	Clean and correct.
	Cracked insulation of adjustable contact breaker point.	Replace.
	Damaged insulating sleeving on wires connecting contact breaker to coil or condenser.	Replace with new sleeving.
	Faulty connection to low tension wire of ignition coil.	Correct.
	Faulty condenser.	Replace.
	Faulty ignition coil.	Replace.
If above tests are satisfactory but engine will not start.	Mixture may be too rich due to use of strangler, or incorrect setting of taper needle.	Open throttle wide and depress kickstarter several times to clear engine of petrol, adjust taper needle, drain crankcase.
	Air leaks at carburetter stub or manifold joint causing weak mixture.	Correct.
	Incorrect ignition timing.	Check, following instructions given.

**FAULT FINDING CHART—(continued).**

Sequence of Testing.	Possible Trouble.	Remedy.
<b>Engine Four or Eight Strokes.</b>		
Strangler may not be fully open or taper needle in a too high position. Air filter may need cleaning.	Mixture too rich.	Lower taper needle by moving to a WEAKER position. Lower needle by adjuster screw fitted in throttle.
Check by watching for excessive smoke from exhaust pipe or silencer.	Engine may four stroke for a little while after standing due to accumulation of oil in crankcase.	Usually ceases when engine has been running for a few minutes unless too much oil has been mixed with the petrol.
	Flooding of carburetter.	Persistent flooding is usually due to dirt under fuel needle seating, or sticking fuel needle, damaged seating or punctured float.
<b>Engine Lacks Power.</b>		
	Engine out of tune, bearings worn. Unsuitable sparking plug. Loss of compression.	Overhaul. Replace with recommended type. Tighten cylinder head bolts. Replace worn piston rings.
	Incorrect "petrol" mixture.	Correct mixture is 1 part oil, 20 parts petrol.
	Excessive carbon deposit on piston crown and cylinder head.	Decarbonize.
	Exhaust system choked with carbon.	Clean out silencer and exhaust pipes.
	Incorrect carburetter setting.	Check and adjust.
	Air cleaner choked.	Wash in petrol, drain and dip in thin oil.
	Obstruction in fuel supply.	Clean out tap, fuel pipe and filters.
	Incorrect ignition timing.	Check and adjust.
	Brakes binding.	Adjust.
	Driving chains too tight.	Adjust.
<b>Engine will not run Slowly.</b>		
	Weak mixture due to air leaks at carburetter stub or manifold joint, crankcase and cylinder base joints.	Tighten all joints.
	Crankcase drain screw loose or missing.	Tighten or replace.
	Worn crankshaft bearings or leaking seal.	Replace.
	Ignition timing too far advanced.	Correct.
<b>Engine Suddenly Stops Firing.</b>		
	Sparking plug lead detached.	Replace and tighten nut.
	Plug points bridged by oil, carbon, or deposit caused by use of leaded petrol.	Clean or replace.
	Short circuit of high tension current by water on H. T. lead.	Dry out.

**VILLIERS "DIRECT" LIGHTING SET.**

Wiring Diagram M.222D—Fig. 12 (Page 37).

Mark 29C and 30C.

Component.	Part No.
Headlamp Complete, M35 - - - -	060088
Rim, Chrome, Less Glass - - - -	608157
Wire, Glass Fixing - - - -	600308 (Set of 4)
Packing, Glass - - - -	612220
Glass - - - -	612103
Main Bulb Holder - - - -	612171
Pilot - - - -	608025
Reflector - - - -	612172
Lighting Switch, U39 L18 - - - -	31157A
Dipper Switch, No. 99 - - - -	380501
Cable Grommet - - - -	CM2
Lamp Fixing Screw - - - -	612230
Plain Washer - - - -	137141
Shakeproof Washer - - - -	188471
Rim Catch Spring - - - -	612218
Rim Catch - - - -	612217
Terminal Sleeve - - - -	188818
Battery Contact - - - -	612222
Main Bulb, 6 V.—30/80 Watt S.B.C. - - - -	No. 169
Pilot Bulb, 3½ V.—.15 Amp. M.E.S. - - - -	No. 974
Cable Harness - - - -	993701
Switch Handle Assembly - - - -	351567
"    "    Screw - - - -	105751
Sleeve Terminal - - - -	188818
Tail Lamp, Type 529 - - - -	53256
Front Assembly - - - -	526300
Body Assembly - - - -	526317
Rubber Grommet - - - -	526302
Bulb, 6 V.—3 Watt M.B.C. - - - -	No. 200
Front Assembly - - - -	526295
Body Assembly - - - -	526292
Rubber Grommet - - - -	526302
Harness - - - -	997101

For use with Magneto having one Lighting Cable only.

## VILLIERS AC/DC LIGHTING SET WITH RECTIFIER

Wiring Diagram M.2232D—Fig. 11 (Page 36).

Mark 29C and 30C.

Component.	Part No.
Headlamp Complete, Without Underslung Pilot—Less Switch and Harness - -	51005A
Headlamp Complete, With Underslung Pilot—Less Switch and Harness - -	51032A
Headlamp Rim Assembly - - -	534343
Rim Fixing Wire - - - - -	504665
Light Unit - - - - -	552507
„ „ Underslung - - - - -	552495
„ „ Adaptor - - - - -	860360
„ „ „ Underslung - - - - -	859598
Main Bulb, 6V.—24/24 Watt - - -	No. 166
Pilot Bulb, 6V.—3 Watt - - - -	No. 988
Ammeter - - - - -	36084
„ Rubber Ring - - - - -	523986
Screw, Panel Fixing - - - - -	186128
Rubber Seal, Panel - - - - -	516442
Switchbox - - - - -	31309
Spring, Switchbox Fixing - - - -	308234
Rubber Ring - - - - -	523986
Lamp Fixing Screw - - - - -	112201
Washer for Screw - - - - -	137141
Bulb Holder - - - - -	553780
Lens - - - } Underslung Pilot	516386
Rubber Bead - - - } Only	516395
Lens Fixing Wire - - - - -	516393
Tail Lamp, Standard Type 529 - - -	53256
Bulb, 6 V.—3 Watt M.B.C. - - - -	No. 200
Front Assembly - - - - -	526300
Body Assembly - - - - -	526317
Rubber Grommet - - - - -	526302
Tail Lamp, Stop Light, Type 525 - -	53269
Bulb, 6 V.—18/3 Watt - - - - -	No. 190
Rectifier - - - - -	2L985

MOST COMPONENTS ARE INTERCHANGEABLE BETWEEN BOTH THE MARK 29C AND 30C UNITS BUT WHERE THIS IS NOT SO IT IS INDICATED IN THE FOLLOWING PAGES.

### POINTS TO NOTE WHEN ORDERING SPARES

1. Please quote your Engine No.
2. See that your Order shows your Name and Address.
3. If in doubt as to the actual part required, please send a pattern.
4. Make all Postal Orders, etc., payable to "The Villiers Engineering Co. Ltd.", and cross them.



## SPARE PARTS FOR MARK 29C ENGINE

DESCRIPTION.	PART No.	PRICE EACH	E S. d.		
			E	S.	d.
Cylinder Head (for R/Valve) ...	B.9258 (Replaces B.8338)	1	1	15	0
Cylinder ... ..	A.9256 (Replaces A.9020)	1	3	15	0
Inlet Pipe ... ..	D.7944	1	10	0	0
.. .. Nut ... ..	E.3961	2		2	
.. .. Stud ... ..	E.363	2		3	
.. .. Washer ... ..	E.1050	2		1	
.. .. Joint Washer ... ..	E.7341	1		3	
Release Valve Body ... ..	E.3064	1	3	9	
.. .. Stem ... ..	E.1280	1	2	0	
.. .. Spring ... ..	E.1163	1		3	
.. .. Cable Nut ... ..	E.1276	1	1	0	
.. .. Clamp ... ..	E.1545	1		9	
.. .. Clamp Screw ... ..	E.6737	1		3	
.. .. Joint Washer ... ..	E.3318	1		2	
Chaincase Back Half ... ..	C.8428 (Replaces B.8259)	1	1	10	0
Clutch Centre Assembly ... ..	E.8429 (Replaces D.7329/1)	1	1	10	0
* Push Rod Long 7 $\frac{3}{8}$ " ... ..	E.8599 (Replaces E.7372)	1	1	0	
* .. .. Long 7 $\frac{1}{2}$ " ... ..	E.8655	1	1	0	
* .. .. Long 7 $\frac{5}{8}$ " ... ..	E.8656	1	1	0	
.. .. Mushroom Head ... ..	E.4465 (Replaces E.7439)	1		9	
Mainshaft Nut ... ..	E.8614	1		6	
.. Spring Washer ... ..	E.8615	1		1	

Other Engine Components as Mk 30C.

\* Please state length required.

## SPARE PARTS LIST. MARK 30C ENGINE

**Note:**—When ordering spares, always quote the engine number. This is stamped on the crankcase lug. **Always** quote the part number and description, not the illustration number, which is only for your assistance.

ILLUS. No.	DESCRIPTION.	PART No.	Qty.	PRICE EACH		
				E	S.	d.
1	Cylinder Head Bolt ... ..	E.7339	4			10
2	Washer ... ..	E.5808	4			1
3	Cylinder Head (no decompressor) ... ..	B.8338	1	1	12	6
4	Gasket for Cylinder Head ... ..	E.9034	1			6
5	Cylinder ... ..	A.9020	1	3	15	0
6	Washer ... ..	E.4453	1			4
7	Nut for Exhaust Pipe ... ..	E.8629	1		3	6
8	Gasket for Cylinder Base ... ..	E.7306	1			3
9	Piston, Standard ... ..	C.9002	1	1	2	0
—	.. .015" oversize ... ..	D.9264	1	1	2	0
—	.. .030" .. ..	D.9265	1	1	2	0
10	.. Ring, Standard ... ..	E.6928	2		1	9
—	.. .015" oversize ... ..	E.7319	2		1	9
—	.. .030" .. ..	E.7323	2		1	9
11	Expander Ring ... ..	E.9043	1		1	0
12	Gudgeon Pin ... ..	E.5042	1		2	6
13	Circlip ... ..	E.4047	2			3
14	Connecting Rod, Bushed, .001" oversize ... ..	D.8665	1	1	0	0
15	Small End Bush ... ..	E.1729/1				2
16	Rollers for Crankpin—steel ... ..	$\frac{1}{4}$ " x $\frac{1}{4}$ "	12 Set			3
16	.. .. —bronze ... ..	E.1899	6 Set			2
17	Crankpin, .001" oversize ... ..	E.8666	1		5	0
18	.. Plug ... ..	E.7229	2			3
19	Crankshaft—Right Hand ... ..	D.8385/1	1	1	4	0
20	.. —Left .. ..	D.8384/1	1	1	4	0
21	Key for Engine Sprocket ... ..	E.5581	1			3
22	Ball Bearing ... ..	6204	2			*
23	.. ..	6204	1			*
24	Distance Piece for Bearings ... ..	E.8390	1		1	0
25	Oil Seal—Crankshaft Drive End ... ..	M1.100162	1		3	3
26	.. .. Magneto End ... ..	MIS.012	1		2	3
27	Shim for Engine Sprocket ... ..	E.4160	As Reqd.			2
28	Engine Sprocket ... ..	E.9263	1		6	6
29	Spring Washer ... ..	E.5706	1			1
30	Nut ... ..	E.3931	1			6
31	Crankcase, right and left-hand halves, less fittings ... ..	C.9270/1	1	3	10	0
32	Stud (fitted) securing crankcase halves ... ..	E.7210	2			6
33	Washer ... ..	E.2924	2			1
34	Nut ... ..	E.2539	2			2

\* Manufacturers' Current Price.

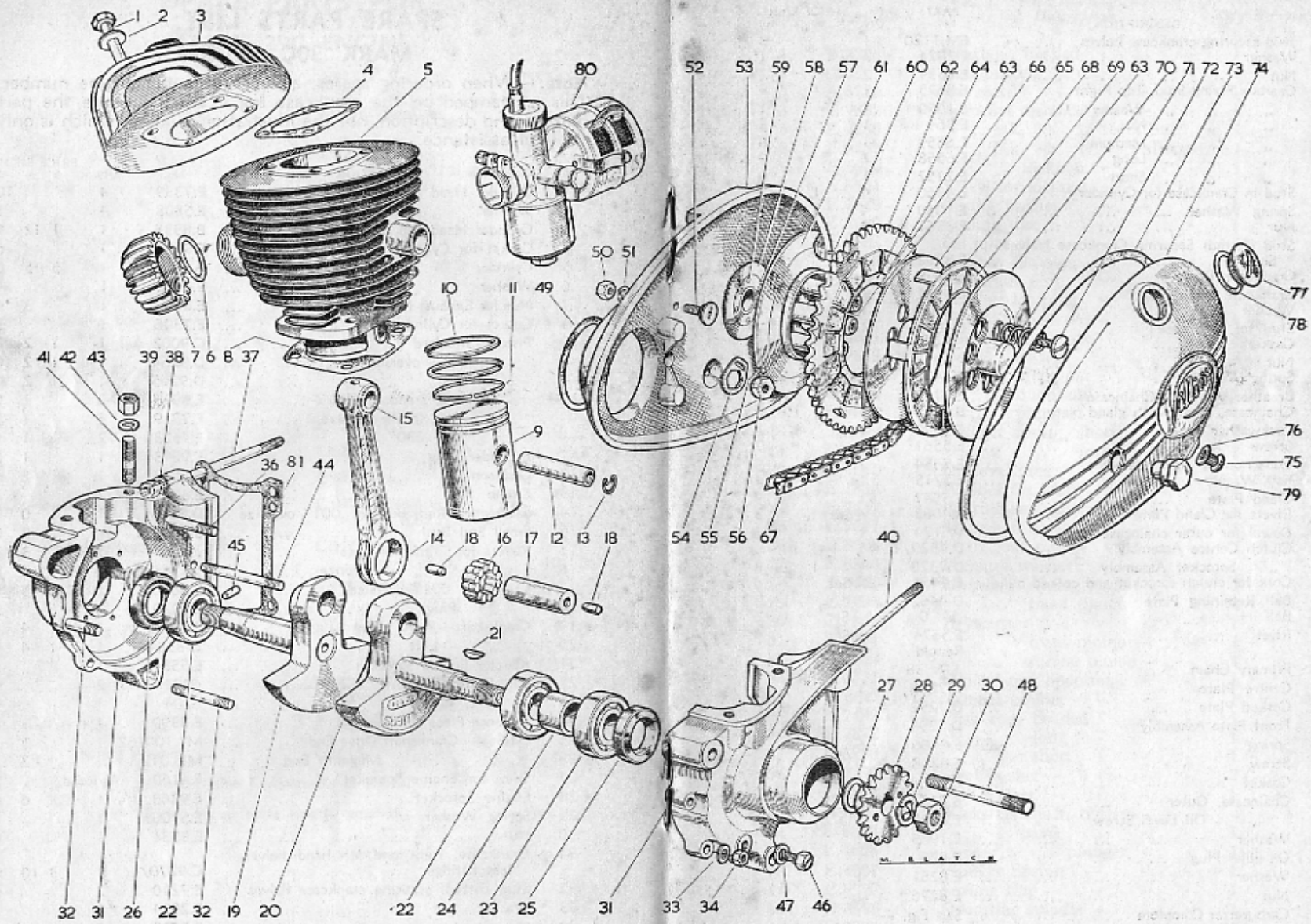


Fig. 5. ENGINE PARTS.

ILLUS. No.	DESCRIPTION	PART No.	Qty.	PRICE EACH.		
				£	s.	d.
36	Stud securing crankcase halves ...	EM.1120	1		5	
---	Washer ...	E.2924	2		1	
---	Nut ...	E.2539	2		2	
37	Gearbox Fixing Stud, Top Right ...	E.8625	1		9	
38	" " " Washer ...	E.1050	1		1	
39	" " " Nut ...	E.364	1		2	
---	" " " Medium ...	E.6559	1		9	
40	" " " Long ...	E.6558	1		9	
---	" " " Short ...	E.2152	1		3	
41	Stud in Crankcase for Cylinder ...	E.4160	4		3	
42	Spring Washer ...	E.1050	4		1	
43	Nut ...	E.3961	4		2	
44	Stud (Fitted) Securing Crankcase Halves— Short ...	E.8392	2		6	
45	Crankcase Dowel ...	E.7619	2		3	
46	Crankcase Drain Plug ...	E.1962	1		3	
47	Washer ...	E.1905	1		1	
48	Stud for Chaincase ...	E.4093	1		7	
49	Gasket ...	E.8401	1		1	
50	Nut ...	E.401	1		2	
51	Spring Washer ...	E.1430	1		1	
52	Breather Valve for Chaincase ...	E.7703	1	1	0	
53	Chaincase, inner, with gland plate ...	B.8259	1	1	10	0
54	Lockwasher ...	E.5599	1		3	
55	Screw ...	E.5561	1		2	
56	Cone nut for inner chaincase ...	E.5354	1		5	
57	Felt Washer ...	E.5715	1		4	
58	Gland Plate ...	E.5547	1		9	
59	Rivets for Gland Plate ...	E.4083	4 Set		3	
60	Dowel for outer chaincase ...	W.174	1		2	
61	Clutch Centre Assembly ...	D.7329/1	1	1	10	0
62	" Sprocket Assembly ...	D.7328	1	1	2	6
63	Cork for clutch sprocket and corked plate ...	E.4464	30 Set		2	6
64	Ball Retaining Plate ...	D.4462	2		1	3
65	Ball ...	$\frac{3}{8}$ " Dia.	50 Set		1	6
66	Rivet ...	E.5574	15 Set		4	
---	Renold		1			
67	Primary Chain ...	110038	(66 Pitches)	*		
68	Centre Plate ...	D.7293	1		5	0
69	Corked Plate ...	D.7292	1		6	6
70	Front Plate Assembly ...	D.7294	1		8	0
71	Spring ...	E.4466	6		4	
72	Screw ...	E.4208	6		7	
73	Gasket ...	C.7304/1	1		1	0
74	Chaincase, Outer ...	B.8258	1		17	6
75	" Oil Level Screw ...	E.8275	1		3	
76	Washer ...	E.1905	1		1	
77	Oil Filler Plug ...	E.8260	1		1	3
78	Washer ...	E.8261	1		2	
79	Nut ...	E.8276	1		9	
80	Carburettor Complete ...	See Fig. ---				
81	Joint Washer—Crankcase/Gearbox ...	D.7461	1		2	

\* Manufacturers' Current Price.

### MARK 30C. 3 SPEED GEARBOX.

Fig. 5. Illus. pages 24-25.

illus. No.	Part No.	Description.	Qty.	Price Each.			
				£	s.	d.	
1	B.8298	Gearbox, bushed - - -	1	2	10	0	
2	6205	Ball bearing - - -	1			*	
3	A.3235	Oil seal - - -	1			3	0
4	E.7882	Sprocket distance piece - - -	1			1	3
5	E.8230	" Mk. 30C, 15 teeth Std.	1			6	0
5	E.8231	" Mk. 30C, 17 teeth alternative	1			6	0
6	E.6930	" locknut - - -	1			1	0
7	E.5561	Screw for locknut - - -	1			2	
8	E.7529	Spring washer - - -	1			1	
9	Z.1009 x 9	Sealing disc - - -	1			3	
10	E.6592	Oil filler plug - - -	1			1	3
11	E.6593	Washer for plug - - -	1			1	1
12	E.6292	Oil drain plug - - -	1			1	3
13	V.107 x 3	Washer for plug - - -	1			1	
14	E.6528	Layshaft bush - - -	1			5	0
15	E.4011	Stud for end plate - - -	3			3	
16	E.7619	Dowel - - -	2			3	
17	E.8296/7	Selector pivot pin - - -	1			2	0
18	D.8290	" quadrant - - -	1	1	0	0	
19	E.7948	" plunger - - -	1			6	0
20	M.1564	Plunger spring, short - - -	1			2	
21	E.6296	" " long - - -	1			2	
22	E.1962	Oil level plug - - -	1			3	
23	E.1905	Washer for plug - - -	1			1	
24	E.7347	Bearing sealing washer - - -	1			4	
25	C.7281/1	Mainshaft - - -	1	1	0	0	
26	D.8508	High gear pinion - - -	1	1	0	0	
27	E.6566	Pressure washer - - -	1			9	
28	D.6525	Mainshaft sliding pinion - - -	1			11	0
29	E.7286	" fixed pinion - - -	1			7	6
30	C.7282	Layshaft - - -	1			17	6
31	E.7714	" fixed pinion - - -	1			7	6
32	D.6524	" sliding pinion - - -	1			11	0
33	E.6531	Sliding gear operator - - -	1			2	6
34	D.6523/1	Ratchet pinion - - -	1			18	6
35	E.7439	Push rod, headed - - -	1			9	
36	E.7372	" " long - - -	1			8	
37	E.5263	" " short - - -	1			5	
38	E.5257	Steel washer - - -	2			1	
39	E.6564	Felt washer - - -	1			1	
40	D.6526/1	Kickstart shaft, bushed - - -	1	1	4	0	
41	E.6882	" pawl - - -	1			1	9
42	E.4908	" " plunger - - -	1			4	
43	E.4907	Plunger Spring - - -	1			1	
44	E.8777	Sealing ring - - -	1			8	
45	D.6536	Operating spindle - - -	1			14	0
46	E.8776	Sealing ring - - -	1			8	
47	E.4150	Pressure washer - - -	1			8	

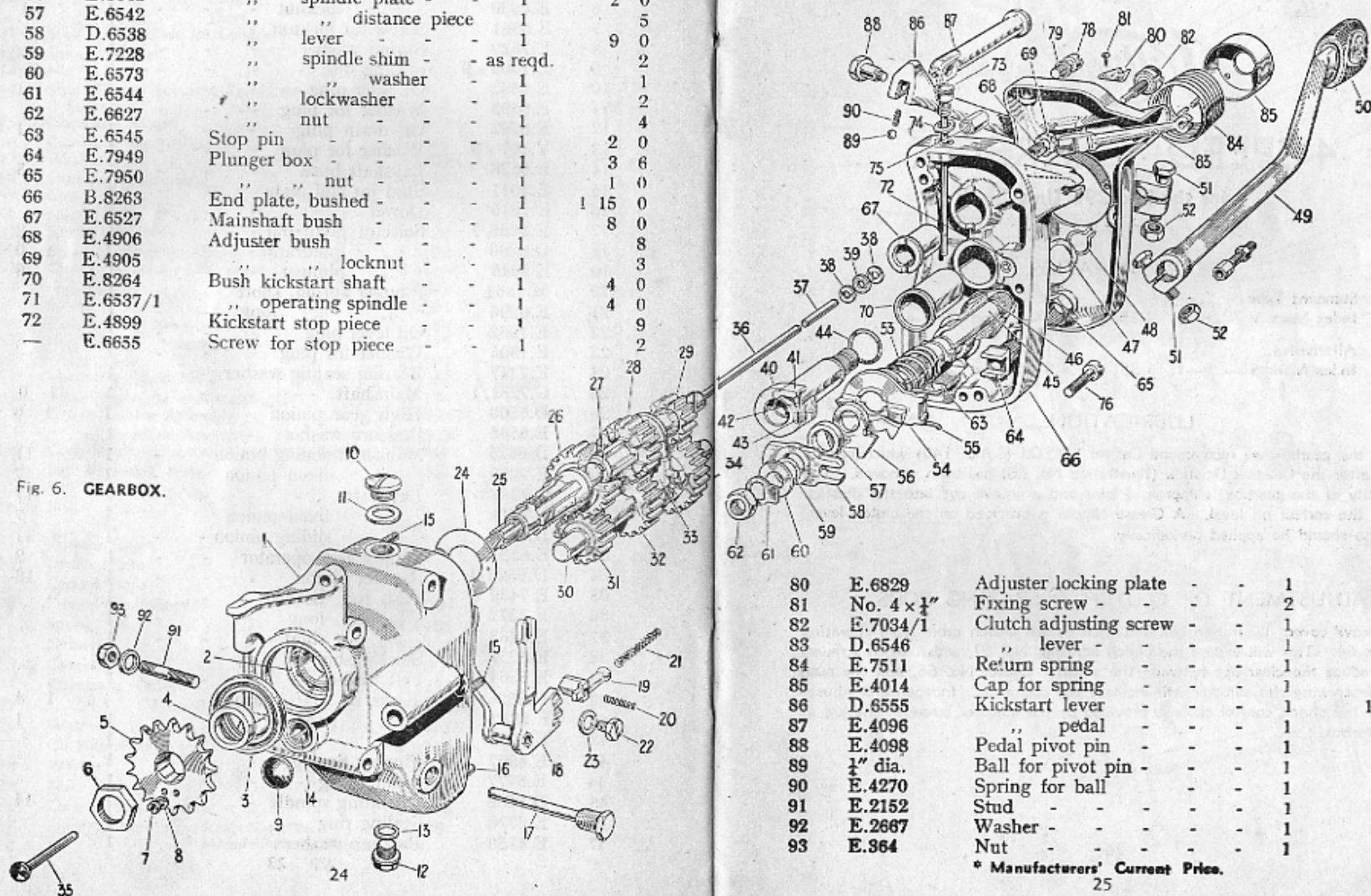


GEARBOX—continued.

Illus. No.	Part No.	Description.	Qty.	Price Each.
				£ s. d.
48	E.6552	Spindle circlip	1	2
49	D.6996	Foot change lever	1	10 0
50	D.6861	Rubber for lever	1	1 6
51	E.4251	Bolt for foot lever	2	8
52	E.4252	Nut for bolt	2	4
53	E.6543	Ratchet spring	1	6
54	D.7951	Operating pawl	1	12 0
55	E.7437	" " spring	1	1 0
56	E.8642	" spindle plate	1	2 0
57	E.6542	" distance piece	1	5
58	D.6538	" lever	1	9 0
59	E.7228	" spindle shim	as reqd.	2
60	E.6573	" washer	1	1
61	E.6544	" lockwasher	1	2
62	E.6627	" nut	1	4
63	E.6545	Stop pin	1	2 0
64	E.7949	Plunger box	1	3 6
65	E.7950	" nut	1	1 0
66	B.8263	End plate, bushed	1	15 0
67	E.6527	Mainshaft bush	1	8 0
68	E.4906	Adjuster bush	1	8
69	E.4905	" locknut	1	3
70	E.8264	Bush kickstart shaft	1	4 0
71	E.6537/1	" operating spindle	1	4 0
72	E.4899	Kickstart stop piece	1	9
—	E.6655	Screw for stop piece	1	2

Illus. No.	Part No.	Description.	Qty.	Price Each.
				£ s. d.
73	E.7471	Dipstick	1	1 9
74	V.476	Washer for dipstick	1	1
75	E.6547	End plate nut	3	4
76	E.6561	" " screw	3	4
77	C.6506	Dust cover	1	10 6
78	E.6562	" " screw	3	3
79	V.157 x 2	Washer for screw	3	1

Fig. 6. GEARBOX.



80	E.6829	Adjuster locking plate	1	3
81	No. 4 x 1/4"	Fixing screw	2	1
82	E.7034/1	Clutch adjusting screw	1	1 9
83	D.6546	" lever	1	3 0
84	E.7511	Return spring	1	1 0
85	E.4014	Cap for spring	1	1 3
86	D.6555	Kickstart lever	1	11 0
87	E.4096	" pedal	1	5 0
88	E.4098	Pedal pivot pin	1	7
89	1/2" dia.	Ball for pivot pin	1	1
90	E.4270	Spring for ball	1	1
91	E.2152	Stud	1	3
92	E.2667	Washer	1	1
93	E.364	Nut	1	2

\* Manufacturers' Current Price.

# SPARE PARTS LIST

for the



## 4-SPEED GEARBOX

for the Mk. 29C Unit

### GEARBOX RATIOS.

Standard Type

Index Mark V — 1—1, 1.35—1, 2.3—1 and 3.47—1.

Alternative

Index Mark S — 1—1, 1.35—1, 1.8—1 and 2.93—1.

### LUBRICATION.

For the gearbox we recommend Castrol "D" Oil (S.A.E. 140) which can be inserted after the Gearbox Dipstick (Illustration No. 26) has been removed. The oil capacity of the gearbox is approx.  $\frac{1}{2}$  pint and a groove cut into the dipstick indicates the correct oil level. A Grease Nipple is provided on the clutch lever and grease should be applied periodically.

### ADJUSTMENT OF CLUTCH OPERATING RODS.

Remove cover, illustration No. 74; then detach clutch cable from operating lever No. 64. This will expose the clutch adjuster, No. 67, which when screwed in will reduce the clearance between the adjuster sleeve, No. 66, and the push rods. Unscrewing the adjuster will increase the clearance. Independent adjustment for the clutch control cable is provided by the adjuster screw in the lug at top of gearbox.

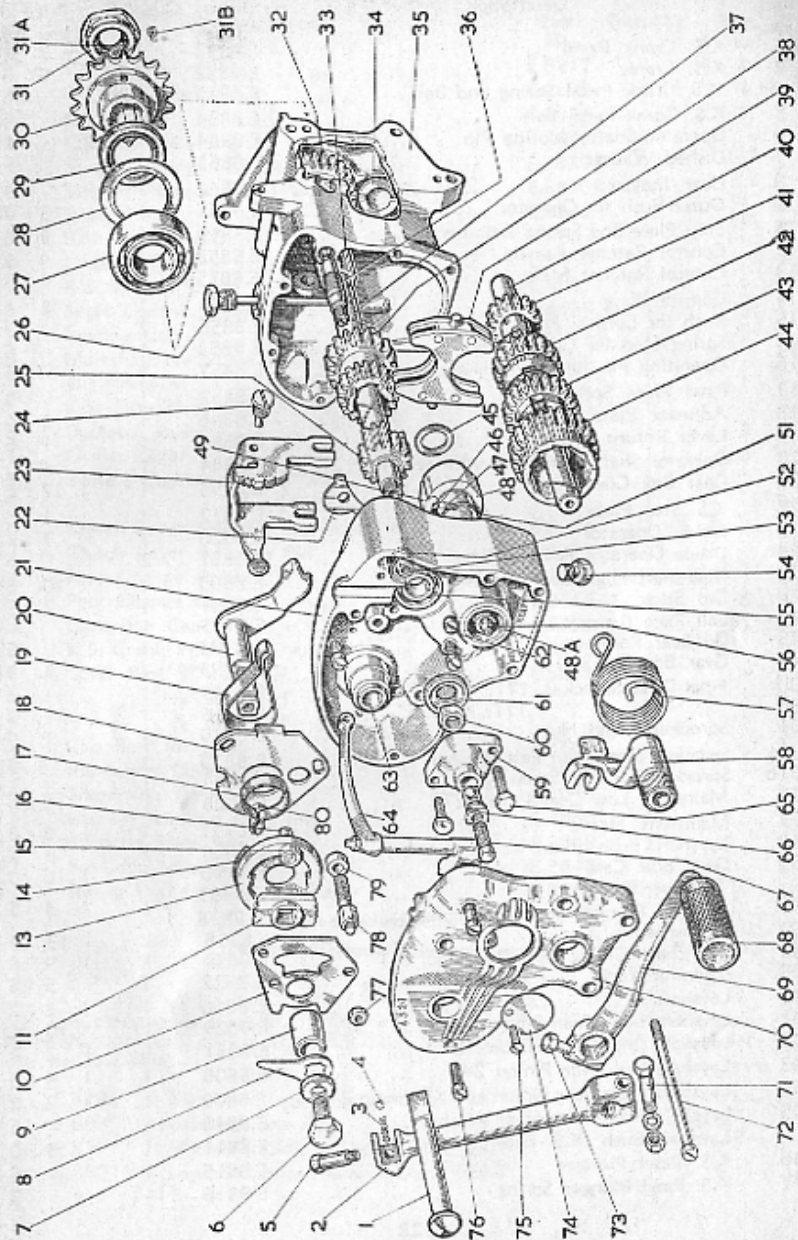


Fig. 7.

Illus. No.	Description.	Part No.	Quantity	Price		
				E	s.	d.
1	K.S. Crank Pedal ... ..	E.8833	1		2	3
2	K.S. Crank ... ..	E.8832	1		9	0
3 and 4	K.S. Crank Pedal Spring and Ball ... ..	E.8835	1		5	9
5	K.S. Crank Pedal Bolt ... ..	E.8834	1		9	0
6	Operator Shaft Securing Pin ... ..	E.8864	1		9	9
7	Dished Washer ... ..	E.8863	1		9	9
8	Gear Indicator ... ..	E.8862	1		9	9
9	Outer Bush for Operator ... ..	E.8861	1		3	0
10	Stop Plate and Spring Retainer ... ..	E.8859	1		3	0
11	Control Ratchet Female ... ..	E.8858	1		4	6
13	Control Ratchet Male ... ..	E.8855	1		6	0
14	Control Plate ... ..	E.8854	1		2	3
15	Bush for Control Plate Pin ... ..	E.8856	2		3	3
—	Spring Stop for Control Plate ... ..	E.8853	1		6	6
16	Operating Pin for Pawl Plate ... ..	E.8857	1		6	6
17	Pawl Plate Spring ... ..	E.8852	1		9	9
18	Adjuster Plate ... ..	E.8846	1		3	0
19	Lever Return Spring ... ..	E.8851	1		1	6
20	Operator Shaft (Complete with lever) ... ..	E.8844	1		6	0
21	Gear Box Cover ... ..	E.8791	1	1	17	6
22	K.S. Stop Plate ... ..	E.8812	1		1	6
23	Inside Operator ... ..	E.8820	1		7	2
24	Inside Operator Anchor Pins ... ..	E.8821	2		6	6
25	Mainshaft High Gear Pinion 15T ... ..	E.8800	1		10	6
26	Dip Stick ... ..	E.8841	1		2	3
27	Ball Race (Large) ... ..	E.8795	1		*	
28	Oil Seal Retainer ... ..	E.8794	1		5	5
29	Gear Box Oil Seal ... ..	E.8793	1		2	3
30	Final Drive Sprocket, 17T. x .195" wide ... ..	E.8868	1		11	3
30	" " " " 17T. x .295" " ... ..	E.9016	1		11	3
31	Sprocket Gland Nut ... ..	E.8869	1		1	9
31a	Sprocket Gland Nut Felt Washer ... ..	E.8870	1		5	5
31b	Sprocket Locking Screw ... ..	E.8871	1		2	2
32	Mainshaft Low Gear Pinion 27T ... ..	E.9028	1		15	9
33	Mainshaft Sleeve ... ..	E.8797	1		1	6
34	Layshaft Bush (Box) ... ..	E.8804	1		3	0
35	Gear Box Case ... ..	E.8790	1		1	16
	Selector Plunger ... ..	E.8837	1		3	5
36	Selector Plunger Box—Assembled ... ..	E.8838	1		3	5
37	Mainshaft ... ..	E.8798	1		1	13
38	Mainshaft Sliding Gear 23T and 18T ... ..	E.9030	1		1	9
39	Operator Fork ... ..	E.8822	1		5	8
40	Layshaft ... ..	E.8806	1		1	2
41	Layshaft Low Gear Pinion 14T ... ..	E.9029	1		10	6
42	Layshaft 2nd Gear Pinion 18T ... ..	E.9031	1		1	2
43	Layshaft 3rd Gear Pinion 24T ... ..	E.8808	1		1	4
44	Layshaft High Gear Pinion and KS Pinion 27T ... ..	E.8809	1		1	2
45	Layshaft Bush Penn Steel Washer ... ..	E.8810	1		5	5
	*Layshaft Bush (K.S. End) ... ..	E.8811	1		3	0
46	K.S. Pawl Plunger ... ..	E.8815	1		6	6
47	K.S. Pawl Plunger Spring ... ..	E.8816	1		5	5

Illus. No.	Description	Part No.	Quantity	Price		
				E	s.	d.
48	K.S. Shaft ... ..	E.8817	1	1	1	9
48a	K.S. Shaft Bush ... ..	E.8819	1		5	3
49	K.S. Pawl ... ..	E.8814	1		3	0
51	K.S. Oil Seal Ring ... ..	E.8818	1		9	9
52 & 53	Selector Plunger Spring ... ..	E.8839	1		5	5
	Selector Plunger Box Washer and Nut ... ..	E.8840	1		9	9
54	Drain Plug ... ..	E.8842	1		9	9
55	Ball Race (Small) ... ..	E.8801	1		11	8
56	Grease Nipple ... ..	E.8850	2		9	9
57	K.S. Return Spring ... ..	E.8831	1		1	6
58	Short Control Lever ... ..	E.8849	1		5	3
59	Bearing Cap ... ..	E.8824	1		5	3
60	Mainshaft Nut, Left Hand Thread ... ..	E.8803	1		6	6
61	Oil Thrower ... ..	E.8802	1		1	6
62	K.S. Stop Plate Pin ... ..	E.8813	1		3	3
63	Operator Bush ... ..	E.8843	1		3	0
64	Clutch Lever ... ..	E.8828	1		6	9
65	Bearing Cap Pins 1" x 1/4" HEX ... ..	E.8825	1		5	5
	3/8" x 1/4" HEX ... ..	"	1		5	5
66	Clutch Lever Adjuster Sleeve and Ball ... ..	E.8826	1		2	3
67	Clutch Lever Adjuster Pin ... ..	E.8827	1		9	9
68	Foot Change Rubber ... ..	E.8867	1		1	6
69	Foot Change Lever ... ..	E.8865	1		6	9
70	Gear Box Cap ... ..	E.8792	1		15	0
71	K.S. Crank Pinch Pin, Nut ... ..	E.8836	1		9	9
72	Cover Pins 3" x 1/4" CH ... ..	E.8823	4		6	6
	1 1/8" x 1/4" CH ... ..	"	2		6	6
	7/8" x 1/4" CH ... ..	"	3		6	6
73	Clip Bolt for Lever ... ..	E.8866	1		3	3
74	Inspection Cover ... ..	E.8829	1		5	5
75	Inspection Cover Pin ... ..	E.8830	1		2	2
77	Nut for Adjuster Plate Pin ... ..	E.8860	2		2	2
78	Adjuster Plate Pin ... ..	E.8848	2		9	9
79	Bush for Adjuster Pin ... ..	E.8847	2		2	2
80	Spring Stop for Adjuster Plate ... ..	E.8845	1		3	3

\* Not supplied separately.

\* Manufacturers' Current Price.

**NOTE.**

In cases where a Mark 29C Engine is supplied with a Gearbox having closer ratios than standard, part numbers E.9028, E.9029, E.9030 and E.9031 are replaced by the following:—

			E	s.	d.
E.8796	Mainshaft Low Gear Pinion	26.T		15	0
E.8805	Layshaft Low Gear	16.T		10	6
E.8799	Mainshaft Sliding Gear	21 & 18.T		1	9
E.8807	Layshaft Second Gear	21.T		1	2



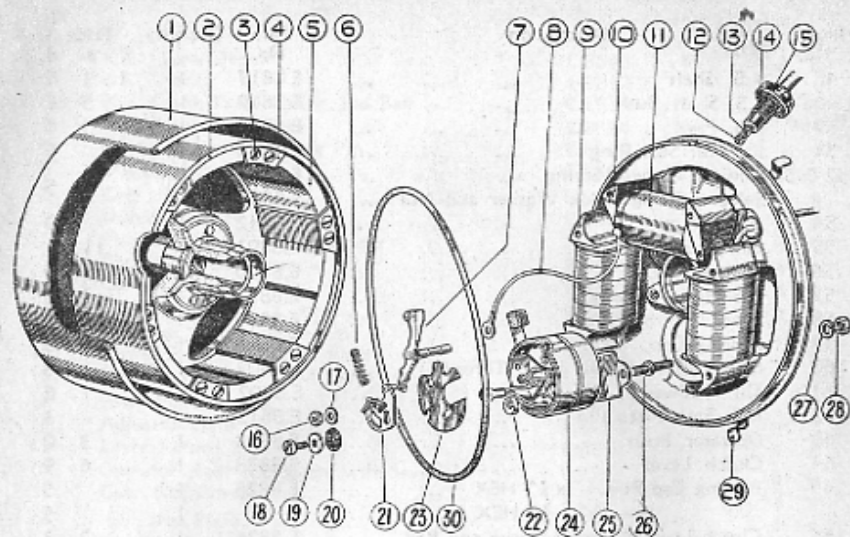


Fig. 8. MAGNETO.

### MAGNETO.

#### MARK 29C and 30C ENGINES

Illus. No.	Part No.	Description.	Qty.	Price Each.
				£ s. d.
1	M.1970	Flywheel cover	1	7 6
2	R.120	„ assembly Mk. 30C.	1	6 2 6
—	R.117	„ „ Mk. 29C	1	6 7 6
3	M.1797	Screw, pole shoe	12	4
4	M.1822	Top plate, pole shoe, iron	5	3
4	M.1411	„ „ „ „ brass	1	4
5	M.1468	Magnet	6	9 0
6	M.2090	Rocker arm spring	1	2
7	M.1632	Rocker arm	1	4 0
8	482	Low tension lead	1	6
9	M.2259	Lighting coils with cheeks	1 pr.	1 6 0
10	M.1856	H.T. coil end—left-hand	1	2 9

Illus. No.	Part No.	Description.	Qty.	Price Each.
				£ s. d.
10	M.1856	H.T. coil end—right-hand	1	2 9
11	M.1361	„ coil Mk. 30C	1	1 10 0
—	M.2306	„ „ Mk. 29C	1	1 15 0
12	1046 x 13	„ terminal pad	1	2
13	1010 x 11	„ „ spring	1	1
14	E.869	„ „ felt washer	1	1
15	1124 x 8	„ terminal	1	1 0
—	M.2110	„ „ cover	1	7
16	1113 x 4	Nut, L.T. lead	1	2
17	1113 x 5	Brass washer	1	1
18	M.1801	Lockscrew, point bracket	1	2
19	M.1802	Brass washer	1	1
20	M.1805	Insulating washer	1	1
21	M.2313	Point bracket	1	2 3
22	M.2311	Point Bracket Adjuster Cam	1	6
23	M.2309	Insulating pad	1	4
24	M.2505	Condenser box	1	4 6
—	M.2503	„ „ assembly	1	18 6
—	M.2506	Condenser Box unit, condenser fixing studs, nuts, washers, oil pad and L.T. lead	1	10 0
25	M.1750	Condenser	1	4 9
26	1053 x 1	„ box fixing stud	2	3
27	1002 x 13	Washer for stud	2	1
28	1002 x 15	Nut for stud	2	2
29	M.1297	Flywheel cover clip	3	4
—	M.1535	Cotter for clip	3	1
30	M.2304	Cover joint ring	1	8
—	M.2288	„ badge washer	1	3
—	A.123	Armature plate assembly with lighting and ignition coils Mk. 30C	1	5 10 0
—	A.124	Armature plate assembly with lighting and ignition coils Mk. 29C	1	6 0 0
—	M.2341	Armature vent tube	1	6
—	1124 x 9	Coil end screw, $\frac{3}{16}$ " dia.	2	3
—	M.1383	„ „ „ $\frac{3}{32}$ " dia.	2	3
—	494	H.T. lead complete	1	4 0

**MARK 29C ENGINE.  
CARBURETTER, TYPE S.25.**

Fig. 9.

Illus. No.	Part No.	Description.	Qty.	Price Each.	
				£	s. d.
1	Quote Engine Spec. No.	Throttle cable complete assembly - - - - -	1	5	0
2	V.826	Rubber cover, cable adjuster - - - - -	1		4
3	V.105 x 1	Cable adjuster - - - - -	1		8
4	V.105 x 2	Locknut for adjuster - - - - -	1		1
5	V.815E	Top ring - - - - -	1	1	3
6	V.108 x 15	Cable nipple - - - - -	1		1
7	V.739E	Top disc - - - - -	1		6
8	V.828E	Top disc fibre washer - - - - -	1		1
9	V.786E	Needle adjusting screw - - - - -	1		6
10	V.107 x 8	Throttle spring - - - - -	1		3
11	V.748E	Needle - - - - -	1		9
12	V.787E	Needle collar - - - - -	1		2
13	V.801E	Needle spring - - - - -	1		3
14	V.725D	Throttle - - - - -	1	4	0
15	V.834D	Carburetter body - - - - -	1	15	0
16	V.125 x 8	Cup washer - - - - -	1		3
17	V.383E	Banjo washer—small hole - - - - -	1		1
18	V.404E	Petrol filter - - - - -	1		8
19	H.104 x 8E	Banjo washer—large hole - - - - -	1		1
20	V.382E	Banjo bolt - - - - -	1	1	3
—	V.381E	Banjo union - - - - -	1	2	0
21	V.754E	Body clip screw - - - - -	1		5
22	V.818E	Body clip - - - - -	1	2	6
23	V.742E	Tickler - - - - -	1		6
24	V.829E	Guide screw (Throttle) - - - - -	1		2
25	V.827	Centrepiece - - - - -	1	5	0
26	V.749E	Spring for pilot needle - - - - -	1		2
27	V.775E	Pilot needle jet - - - - -	1	10	
28	V.830E	Tickler spring - - - - -	1		2
29	1/4" No. 4	Screw for tickler spring - - - - -	1		1
30	V.717E	Pilot jet - - - - -	1	1	0
31	V.774E	Main jet - - - - -	1		6
32	V.777E	Float - - - - -	1	5	0
33	V.773E	" cup - - - - -	1	3	0
34	V.107 x 3E	Bottom nut washer - - - - -	1		1
35	V.361E	Bottom nut - - - - -	1		9
36	V.355	Fuel needle - - - - -	1	10	
37	V.738E	" " lever - - - - -	1		8
38	V.375E	" " " pin - - - - -	1		2
—	V.897	Air filter - - - - -	1	11	0
—	V.790	" " clip - - - - -	2		2
—	V.831	Screw for clip - - - - -	2		2
—	S.25	Carburetter complete - - - - -	1	4	0 0

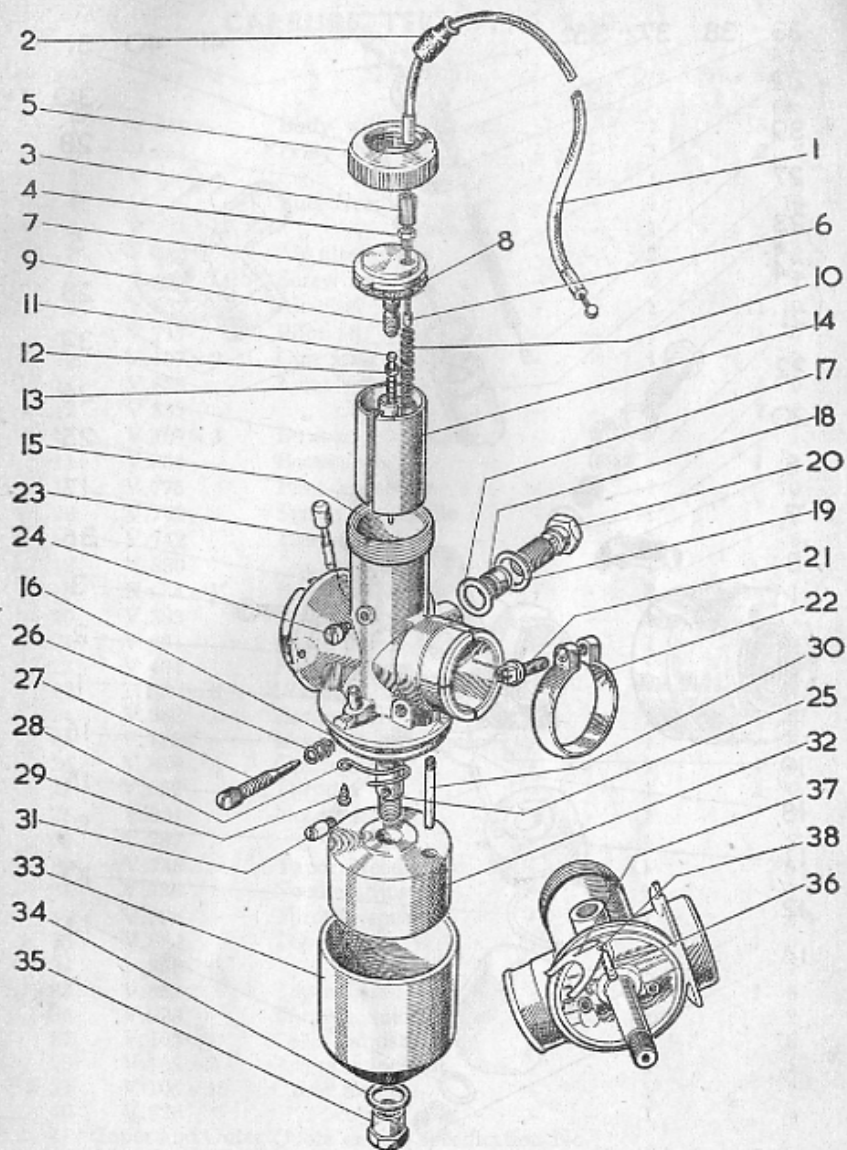


Fig. 9. CARBURETTER, TYPE S.25 PARTS.

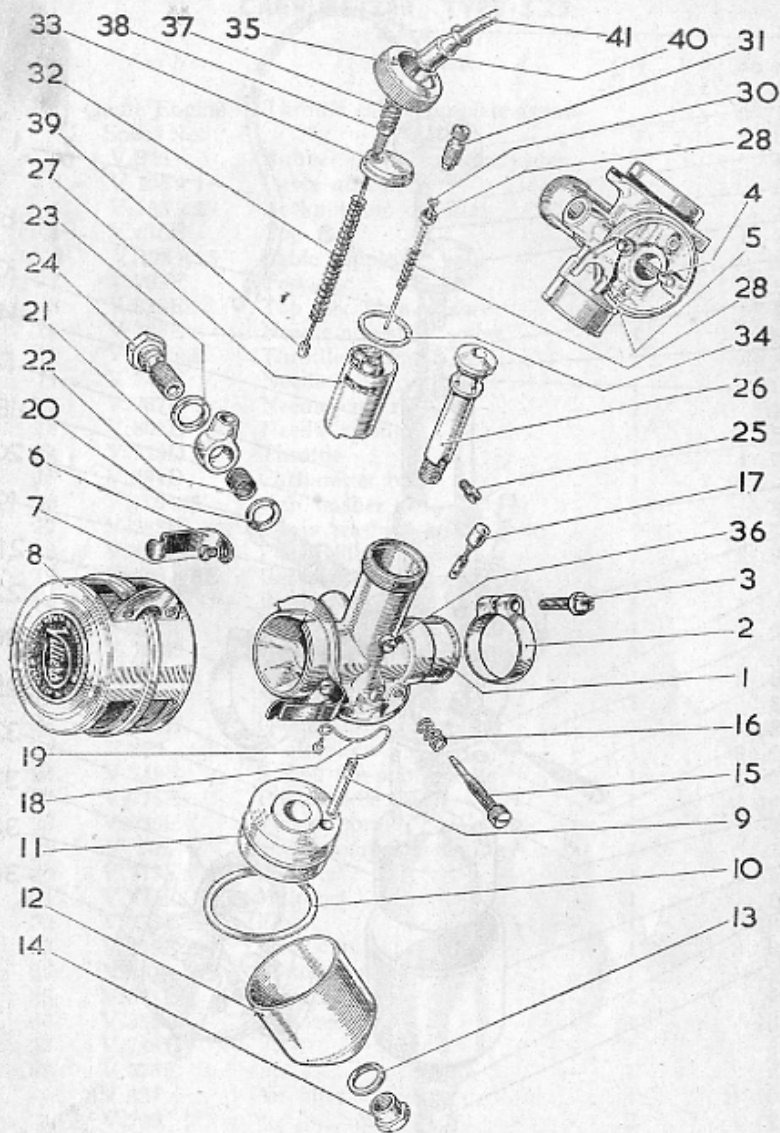


Fig. 10. CARBURETTER, TYPE S.19.

### MARK 30C ENGINE CARBURETTER, TYPE S.19.

Fig. 8.

Illus. No.	Part No.	Description.	Qty.	Price Each.		
				£	s.	d.
1	V.840	Body with fuel bush	1	15	0	0
2	V.854	Body clip	1	2	3	
3	V.754	" screw	1			6
4	V.355	Fuel Needle	1			10
5	V.738	" lever	1			8
6	V.790	Air filter clip	2			3
7	V.831	Screw for clip	2			1
8	V.837	Air filter	1	11	0	
9	V.717	Pilot jet	1	1	0	
10	V.107 x 2	Cup joint washer	1			2
11	V.839	Float	1	4	0	
12	V.857	" cup	1	2	6	
13	V.107 x 3	Bottom nut washer	1			1
14	V.361	Bottom nut	1	1	0	
15	V.775	Pilot jet needle	1			10
16	V.749	Spring for needle	1			2
17	V.742	Tickler	1			6
18	V.830	" spring	1			2
19	No. 4 x 1/4"	Screw for spring	1			1
20	V.388	Washer, small hole	1			1
21	V.381	Banjo union	1	2	0	
22	V.404	Filter gauze	1			8
23	H.104 x 8	Washer, large hole	1			1
24	V.382	Banjo bolt	1	1	8	
25	V.1152	Main jet, centrepiece	1			6
26	V.848	Centrepiece	1	4	0	
27	V.952	Throttle	1	4	0	
28	V.801	Needle spring	1			2
29	V.787	" collar	1			2
30	V.748	Taper Needle No. 3 1/2	1			9
31	V.786	Needle adjuster	1			7
32	V.586	Throttle spring	1			4
33	V.850	Top disc	1	1	0	
34	V.856	" washer	1			1
35	V.852	Top ring	1	1	6	
36	V.829	Throttle guide screw	1			2
37	V.105 x 1	Cable adjuster	1			8
38	V.105 x 2	Adjuster locknut	1			1
39	V.108 x 15	Cable nipple	1			1
40	V.826	" cover	1			4
41	Inner and Outer Cables	Quote engine specification No. when ordering.				
—	S.19	Carburetter Complete	1	3	5	0



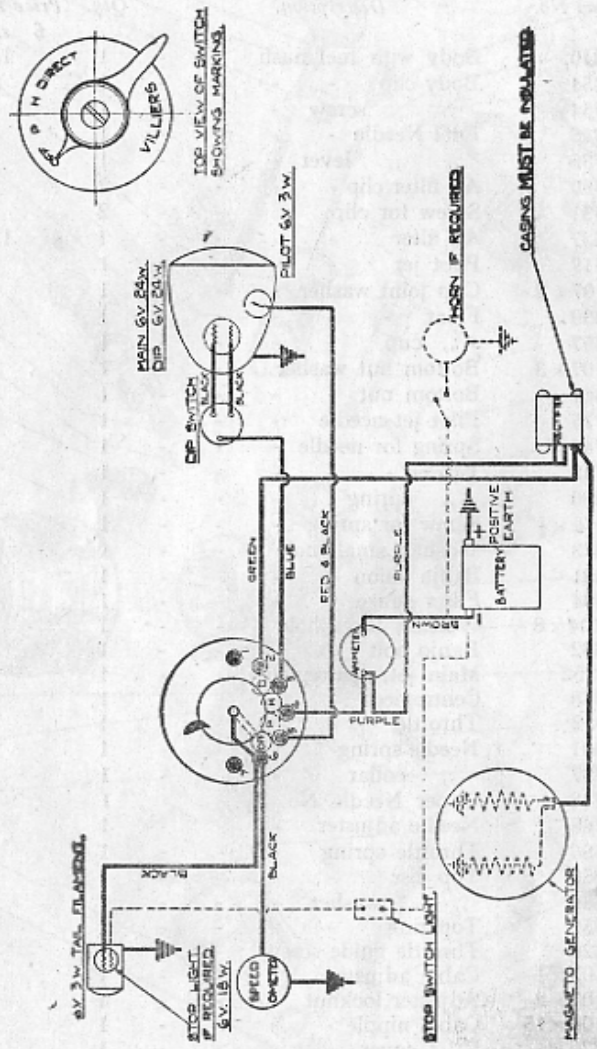


Fig. 11. "RECTIFIER" LIGHTING SET. WIRING DIAGRAM. M.2232D.

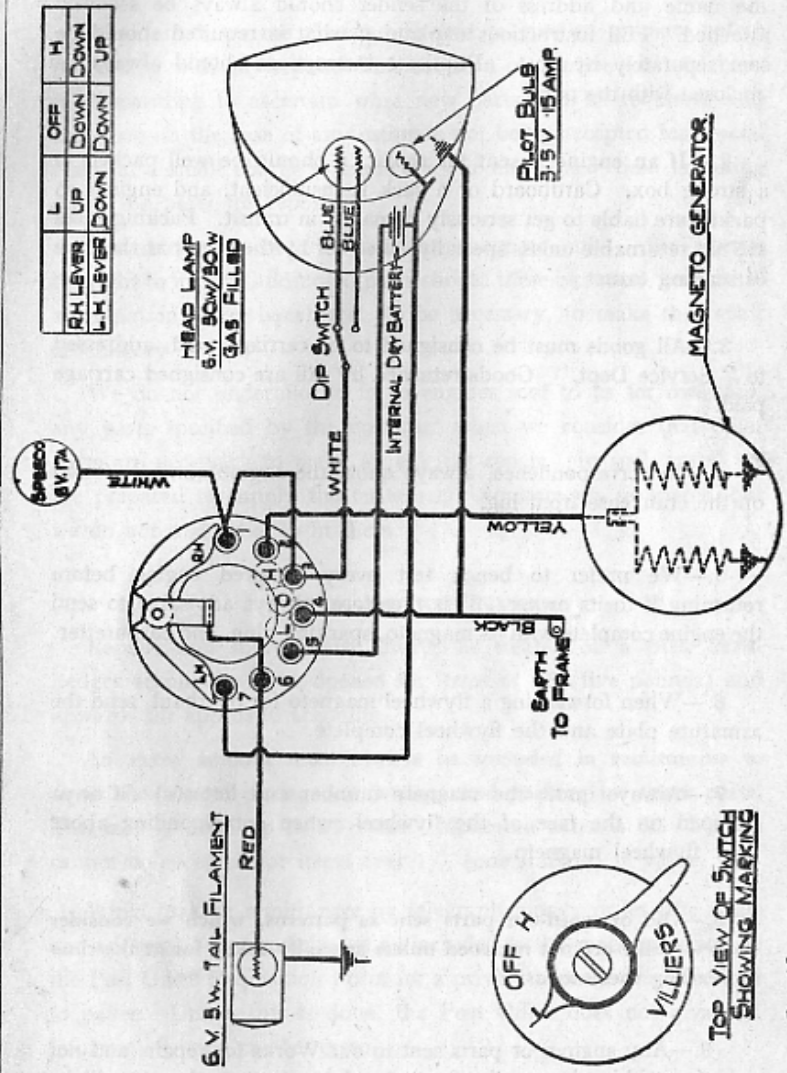


Fig. 12. "DIRECT" LIGHTING SET. WIRING DIAGRAM. M.2222D.

## IMPORTANT.

1.—When sending parts for replacement, repair, or as pattern, the name and address of the sender should always be securely attached. Full instructions explaining what is required should be sent separately by post. Duplicate instructions should always be enclosed with the parts.

2.—If an engine is sent for repair, it should be well packed in a strong box. Cardboard or a sack is insufficient, and engines so packed are liable to get seriously damaged in transit. Packing cases are not returnable unless specially asked for by the owner at the time of sending to us.

3.—All goods must be consigned to us carriage paid, addressed to "Service Dept." Goods returned by rail are consigned carriage paid.

4.—In correspondence, always quote the engine number, found on the crankcase front lug.

5.—We prefer to bench test every repaired engine before returning it to its owner. It is therefore, always advisable to send the engine complete with its magneto, sparking plug, and carburetter.

6.—When forwarding a flywheel magneto for overhaul, send the armature plate and the flywheel complete.

7.—Always quote the magneto number and letter(s) (if any) stamped on the face of the flywheel, when corresponding about your flywheel magneto.

8.—Old or worn-out parts sent as patterns, which we consider unserviceable are not returned unless specially asked for at the time of sending them to us.

9.—Any engines or parts sent to our Works for repair, and not paid for within six months from the date of our estimate, will be offered for sale by us elsewhere to defray expenses.

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## ESTIMATES.

If required, we are always prepared to give an estimate before proceeding with any repair. This entails a certain amount of labour in dismantling to ascertain what new parts will be required, and therefore, in the case of any estimate not being accepted for special reasons, a small charge is made for our mechanics' time in taking down the parts for report.

Estimates must be treated as approximate only. We reserve the right to include additional parts should these be found, on further examination or on bench test, to be necessary, to make the repair satisfactory.

We do not undertake to fit to engines sent to us for overhaul, any parts specified by the customer when we consider that other parts are necessary to make an efficient repair. In such cases, we are prepared to supply the customers' requirements in spares, but we do not undertake to fit them.

## TERMS OF BUSINESS.

Repairs and spares must always be treated on a cash basis. Ledger accounts will be opened for items of £5 (five pounds) and upwards for approved accounts.

An extra amount must always be included in remittances to cover the cost of postage or carriage and packing on spare parts. This is 5% extra up to £5 value. Minimum extra is 6d. Stamps cannot be accepted for items over 1/- (one shilling) in value.

When making remittances by telegraph money order, the name and address of the sender must be included in the space provided on the Post Office Requisition Form for a private message from remitter to payee. Unless this is done, the Post Office does not give this information upon the telegram.





*Villiers*

*The Power and the Heart  
of a Fine Machine*