

JAMES

INSTRUCTION BOOK

FOR

122cc. and 197cc.

M O D E L S

Manufacturers :
THE JAMES CYCLE CO. LTD.
GOUGH ROAD,
BIRMINGHAM, 11, ENGLAND.

Price 1/6

PRINTED IN ENGLAND

SPARES & SERVICE DEPARTMENT

WHEN CORRESPONDING REGARDING
SERVICE OR SPARES

ALWAYS QUOTE

THE COMPLETE ENGINE NUMBER
(Including all letters in it)

THIS ENABLES US TO IDENTIFY THE MACHINE

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Telephone :
VIC. 2211 (5 lines)

Telegrams and Cables :
"Bicycles," Birmingham

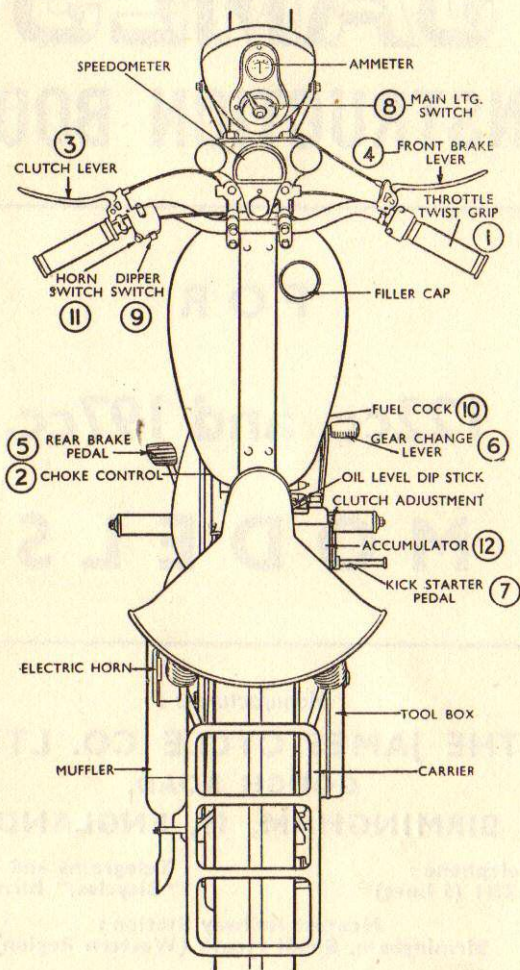
Nearest Railway Station :
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THE JAMES

122cc. — 197cc.

MODELS

CONTROLS



THE JAMES

122c.c. and 197c.c. MODELS

CONTROLS (See illustration).

Before using a machine which may be new and strange, become familiar with the operation and position of the following controls :—

1. Twist Grip Throttle.

Twist inward to open.

2. Choke Control. 122cc. 10D.

This is operated by rotating the slide by means of the tab provided and to close the choke the tab should be pressed downwards.

When the engine is started, rotate the slide in the opposite direction by pulling the tab upwards. The tab is situated on the inner or left side of the choker body, the choke should only be used when starting from cold.

2a. Carburettor Controls.

The carburettor fitted to the 6E engine has separate controls to the throttle and the taper needle. The taper needle should be raised by this control as far as possible by moving to the rich position until the engine is warmed up, after which it must be returned to the weak position.

3. Clutch Lever.

This is the large lever in front of the left hand. This lever should be operated to its full extent when changing gear.

4. Front Brake Lever.

This is the large lever in front of the right hand grip to operate front wheel brake.

5. Rear Brake Pedal.

Depress by left foot to operate rear wheel brake.

6. Gear Change Lever.

This is the lever situated on the right hand side in front of the kick start. To engage low gear pull lever up with toe. To engage second gear lever, push down one notch and to engage high gear, push down again. For engaging low gears, the reverse procedure should be adopted. There is no mark for the neutral position which is situated between low and second gears. When starting from a standstill do not have the engine running fast, when engaging bottom gear. The slower the engine runs the easier the gear will slide in.

7. Kick Starter Pedal.

This is situated on the right hand side of the machine, it is fitted with a hinged pedal.

8. Lighting Switch.

Controls head, tail and parking lamps. See pages 24-25

9. Dipper Switch.

The dip of the head lamp is controlled by Switch 9, situated on the left hand of the handlebars.

10. Fuel Cock.

The fuel is supplied to the Carburettor by pulling out the round end of the cock. Always make the practice of turning off the fuel supply when stopping the engine, by pushing in the fuel cock tap.

11. On no account should the machine be used without muffler as this will spoil the performance of the engine. The muffler is necessary to provide the greatest-possible power.

DATA FOR RIDERS

122 c.c. MODELS

Bore and Stroke	50 mm. x 62 mm.
Capacity	122 cc.—7.44 cu. ins.
Compression Ratio	8 to 1.
Sparking Plug	Lodge H14, 14 mm.
Sparking Plug Gap ... ..	.018"/.025".
Contact Breaker Gap ... ..	.015" maximum separation.
Points Commence to Open	5/32" before T.D.C.
Carburetter	Type 3/4, single lever.
Carburetter Needle	No. 3.
Nominal Needle Setting	2 $\frac{33}{8}$ " out.
Jet Size ... ..	.083".
Engine Sprocket	18 teeth.
Clutch Sprocket	51 teeth.
Front Chain	Endless 64 pitches, $\frac{3}{8}$ " x $\frac{1}{4}$ " x .225" Renold 110038.
Gearbox Ratios	1—1, 1.4—1, 2.66—1.
Final Drive Sprocket	15 teeth.
Rear Sprocket	40 teeth.
Rear Chain	$\frac{1}{2}$ " x .335" x .205" Renold 110044.
Rear Chain Adjustment	$\frac{3}{8}$ " to $\frac{1}{2}$ " slack at tightest point.
Gear Ratios	Top, 7.4 to 1 ; Second, 10.5 to 1 ; Third, 19.5 to 1.
Tank Capacity	2 $\frac{1}{2}$ gallons petrol.
Fuel Mixture	One part recommended oil (see page 15) to 16 parts petrol or four filler cap measures to one gallon or $\frac{1}{2}$ pint oil to one gallon petrol.
Gear Box Capacity	Fill to level mark on dipstick or to oil level plug.
Primary Chaincase	Fill to oil level plug.
Tyres : Standard Model	2.50 x 19 tyres.
De Luxe Model	3.00 x 19 tyres.
Wheelbase	49".
Saddle Height	30".
Ground Clearance	6".
Width over Bars	27".
Overall Length	78".

PERFORMANCE FIGURES OF 122 cc.(Vide *The Motor Cycle Road Test Report*)

Mean Maximum Speed	...	Bottom gear 15 m.p.h.; Second 32 m.p.h.; Top 46 m.p.h.
Mean Speed at End of Quarter-Mile from Rest	... ..	45 m.p.h.
Acceleration	... ..	From 0-30 m.p.h., 9.8 secs.
Petrol Consumption	... ..	At 20 m.p.h., 116 m.p.g.; at 30 m.p.h., 100 m.p.g.; at 40 m.p.h., 92 m.p.g.
Braking	... ..	From 30 m.p.h. to rest : 34' 6" (dry tar macadam surface).

197 cc. Models

Bore and Stroke	... ..	59 mm. x 72 mm.
Capacity	... ..	197 cc.—11.7 cu. ins.
Compression Ratio	... ..	7.5 to 1 (8.25 to 1 on competition).
Sparking Plug	... ..	Lodge HH14, 14 mm.
Sparking Plug Gap	... ..	.018"/.025".
Contact Breaker Gap	... ..	.015" maximum separation.
Points Commence to Open	... ..	5/32" before T.D.C.
Carburetter	... ..	Type 4/5, two-lever.
Carburetter Needle	... ..	4½-needle.
Nominal Needle Setting	... ..	Variable.
Jet Size	... ..	.081".
Engine Sprocket	... ..	19 teeth.
Clutch Sprocket	... ..	38 teeth.
Front Chain	... ..	Endless, 50 pitches, ½" x .335" x .205", Renold 110044.
Gearbox Ratios	... ..	1—1, 1.4—1, 2.66—1.
Final Drive Sprocket	... ..	15 teeth.
Rear Sprocket	... ..	46 teeth (52 teeth on Competition).
Rear Chain	... ..	½" x .335" x .205", Renold 110044.
Rear Chain Adjustment	... ..	⅜" to ½" slack at tightest point.
Gear Ratios	... ..	Top, 5.87 to 1 ; Second, 8.16 to 1 ; Third, 15.61 to 1 (Competition 6.8, 11.5, 22).
Tank Capacity	... ..	2½ gallons petrol.
Fuel Mixture	... ..	One part recommended oil (see page 15) to 16 parts petrol or four filler cap measures to one gallon or ½ pint oil to one gallon petrol.
Gear Box Capacity	... ..	Fill to level mark on dipstick or to oil level plug.
Primary Chaincase	... ..	Fill to oil level plug.

Tyres		Pressures :	
Standard Model	... ..	3.00 x 19 tyres.	Front 16 lbs. Rear 21 lbs.
De Luxe Model	... ..	3.00 x 19 tyres.	Front 17 lbs. Rear 21 lbs.
Wheelbase	... ..	49"	
Saddle Height	... ..	30"	
Ground Clearance	... ..	6"	
Width over Bars	... ..	27"	
Overall Length	... ..	78"	

PERFORMANCE FIGURES OF 197 cc.

(Vide *The Motor Cycle Road Test Report.*)

Mean Maximum Speed	... ..	Bottom Gear, 21 m.p.g.; Second 38 m.p.h.; Top 56 m.p.h.
Mean Speed at End of Quarter-Mile Rest	... ..	51 m.p.h.
Acceleration	... ..	From 0-30 m.p.h., 6.8 secs.
Petrol Consumption	... ..	At 30 m.p.h., 110 m.p.g.; at 40 m.p.h., 102 m.p.g.; at 45/50 m.p.h., 90 m.p.g.
Braking	... ..	Front 30 m.p.h. to rest, 34ft. (surface, dry tar-macadam).

A WORD ABOUT ROAD SENSE

Skilled design and construction have made your James lightweight as safe as possible. It has first-class steering and brakes and is very easy to handle in traffic. The very manoeuvrability of your machine makes it necessary to exercise caution at all times. Take a pride in your riding technique: there are, unfortunately, a few motor cyclists whose reckless driving constitutes a menace, not only to themselves, but to other road users. Your example of courteous, careful and unobtrusive riding will materially contribute to road safety and to the reputation of a fine sport.

FOR THE CONVENIENCE OF OWNERS,

SPARES STOCKISTS

ARE APPOINTED FOR MOST DISTRICTS. TO
SAVE DELAY, AND THE DELIVERY SURCHARGE
CUSTOMERS ARE RECOMMENDED TO ALWAYS
APPLY TO THEIR NEAREST SPARES STOCKIST.

STARTING THE ENGINE.

- (a) See that there is sufficient fuel in the tank.
- (b) If machine has been standing for any length of time, shake well to mix the petrol and oil.
- (c) See that the gear lever is in the Neutral position.
- (d) Pull the fuel cock in the "on" position.
- (e) Close the choke on mixture control lever, this is necessary only when the engine is cold. Be sure that the choke is returned to the OPEN position as soon as the engine has run for approximately 30 seconds. Remember that excessive use will cause difficult starting.
- (f) Open the throttle approximately a quarter movement of the twist grip.
- (g) Depress the kick start pedal once or twice, then give it a sharp kick downwards.
- (h) When the engine has been running for a short time, open the choke or mixture control lever.
- (i) DO NOT START THE MOTOR WHILST THE MOTOR CYCLE IS ON THE STAND.

WHEN COLD (122cc. Models).

With fuel cock in the "ON" position, flood carburetter float chamber by depressing tickler.

The carburetter fitted to this engine has 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 COLD (197cc. Models).

The carburetter fitted to this engine has separate controls to the throttle and to the taper needle, and after flooding by depressing the tickler the taper needle should be raised as far as possible by moving the short control lever to the "RICH" position indicated on the top cover so as to give a rich mixture for starting. Open the throttle lever or twist grip about one third and after kickstarting the engine return the needle control lever to about the midway position between "RICH" and "WEAK" When engine is hot return lever to the "WEAK" position.

WHEN HOT.

Do not flood the carburetter, or raise the needle to "RICH," and in the case of the 122cc. Engine, do not 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 spark 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," pages 30—31.

STOPPING THE ENGINE.

When the machine is to be left standing for any lengthy period, i.e., overnight or similar periods during the day, it is advisable to turn off the fuel supply, and allow the engine to use up the supply of petrol in the carburetter, while coming to rest. By this means it avoids the possibility of fuel draining into the engine, with subsequent starting difficulties. Under other circumstances to stop the engine close the throttle.

ON THE ROAD.

Having started and warmed up the engine, sit astride the machine. Free the clutch by pulling the lever on the left bar, and engage the lowest gear, by lifting gear change lever with the right foot. Slowly release the clutch lever and the machine will commence to move forward, at approximately 10 m.p.h. Pull the clutch lever and depress the gear lever one stroke which will put the machine into second gear. Increase speed to 20 m.p.h. and repeat the operation. The machine will then be in high. Slowly release the clutch and open the throttle to increase the speed of the machine. Always endeavour to make the movement on the clutch lever and on the gear lever as simultaneous as possible. Do not race the engine unnecessarily, or let in the clutch suddenly, to cause the rear wheel to spin or cause a jerky start. Take a pride in making a smooth getaway. When changing up to a higher gear as the clutch is free the throttle should be slightly closed so that the engine speed may be reduced to keep in step with high gear ratio, and conversely, when changing down to a lower gear, the above instructions should be followed, but the throttle is to be regulated so that the engine speed is increased to keep in step with the lower gear ratio. Do not slip the clutch to control the road speed.

STOPPING THE MACHINE.

To stop the machine, close the throttle, declutch by lifting the large lever on the left handlebar, and gently apply both brakes, increasing the pressure on them as the speed of the machine decreases. Place gear lever in Neutral position.

Before leaving the machine turn off the fuel supply by pushing in the round fuel cock knob.

When using the machine on wet or greasy roads, it is better to apply BOTH brakes together, because sudden or harsh application of either brake only, under such conditions, may result in a skid.

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 gears in "neutral," lift control lever up against the stop to give first, or low gear, then when under way, press lever DOWN to stop to obtain the second, or middle gear. Press DOWN again to 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 1/16 inch movement at 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, pages 24 and 25. The flywheel should not be removed unless absolutely necessary, and then it is advisable to use a Villers "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 four 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.

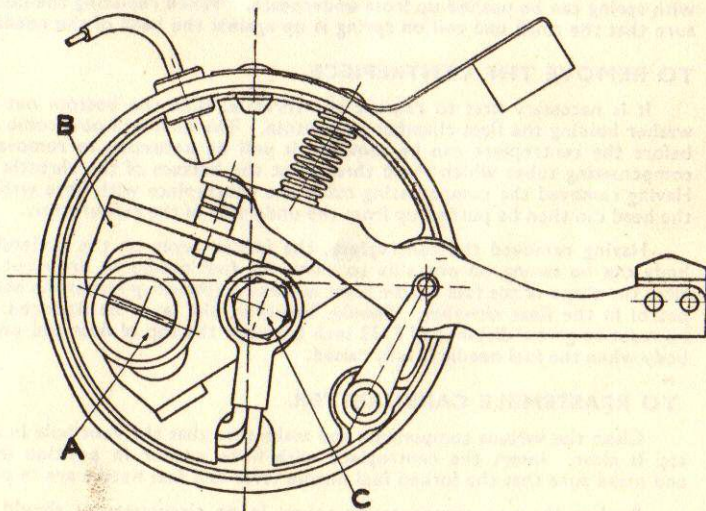
CONTACT BREAKER ASSEMBLY.

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

Turn flywheel until rocker pad is on top of cam profile of flywheel boss. Release the screw "A," see illustration.

Position Bracket "B" with .015" feeler gauge between contact points, tighten screw, taking care not to use too much force. It is not necessary to disturb screw "C" 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.



CONTACT BREAKER ASSEMBLY.

CARBURETTERS.

OPERATION OF CARBURETTER.

The function of the carburetter is to supply a mixture of fuel and air in correct proportion under all conditions. In the Villiers carburetter the float chamber surrounds the centrepiece with jet, and inside the chamber the annular float rises as the fuel enters, until reaching the correct level. The fuel supply is then cut off by the conical ended needle operated by a forked lever resting on top of float. Fuel enters the jet body through a side hole and passes into the centrepiece through a small calibrated hole.

The throttle operated by the cable opens up the air supply to the inlet port and is fitted with a long taper needle which extends below the throttle and into the centrepiece. The combination of suitable jet size, degree of taper and position of taper needle gives a correct mixture strength at all throttle openings.

With the carburetter fitted to the 197cc. Engine the position of the taper needle relative to the throttle can be altered whilst riding by means of the control cable, previously described.

In the case of the 122cc. Engine, a single lever control to throttle is fitted. The position of needle in throttle is adjustable by means of a special screw situated in centre and at top of throttle. The adjustment is provided to suit individual engines and it should not be necessary to alter the makers' setting except after considerable mileage.

To dismantle Carburetter—122cc. Engine.

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 small end coil on spring is up against the head of the needle.

TO REMOVE THE CENTREPIECE.

It is necessary first to remove the throttle, then the bottom nut and fibre washer holding the float chamber in position. The float will now come away, but before the centrepiece can be removed it will be necessary to remove the two compensating tubes which stand through at the bottom of the throttle chamber. Having removed the compensating tubes the centrepiece with fibre washer under the head can then be pushed up from the underside of the carburetter.

Having removed the centrepiece, the forked lever on the underside of the body can be swung on one side to allow the fuel needle to drop out. Do not alter the shape of the fuel needle lever as this component governs the height of the petrol in the float chamber. Should, however, the lever be damaged, it should be reset to give a distance of $7/32$ inch between the top of float and underside of body when the fuel needle is fully raised.

TO REASSEMBLE CARBURETTER.

Clean the various components and make sure that the vent hole in the tickler cap is clear. Insert the centrepiece with fibre washer in position under head and make sure that the forked fuel needle lever and fuel needle are in position.

Replace the two compensating tubes, in no circumstances should the holes in the head of centrepiece be plugged. Clean out the float chamber and replace with

large fibre washer at top making sure that the float is in position, now replace bottom nut and fibre washer and tighten, but do not use too much force otherwise there is the danger of stripping the thread of centrepiece. Replace throttle in carburetter body, at the same time guiding the taper needle into the hole in top of centrepiece. 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. 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.

To dismantle Carburetter—197cc. Engine.

TO CHANGE THE TAPER NEEDLE.

Unscrew the top ring on body and pull throttle out complete with the two cables attached. The control cable screwed into centre of throttle and which controls the position of the taper needle has first to be removed. Do this by means of a small spanner on the hexagon extension which is screwed into the throttle. When this has been removed the needle with spring can be pushed up from underneath.

TO REMOVE CENTREPIECE.

Proceed exactly as for the carburetter fitted to the 122cc. Engine except that before the compensating tube can be unscrewed it will be necessary to remove the air cleaner. One compensating tube only is used and this is situated in the air intake of the carburetter. A retaining spring for the compensating tube is fitted, but it should not be necessary to remove this from the tube.

Having removed the compensating tube the centrepiece can be pushed up from underneath.

TO REASSEMBLE CARBURETTER.

This is carried out exactly as for the 122cc. Engine, but in place of the needle adjuster in the centre of the throttle, the hexagon throttle extension is fitted.

Both types of carburetters have a banjo petrol pipe fitting inside of which is a fine mesh filter gauze. This filter should be periodically cleaned by dipping in petrol, and when replacing make sure that the fibre washers make a petrol-tight joint.

AIR CLEANERS.

The Air Cleaner should be removed for cleaning approximately every 2000 miles. Remove by releasing clip bolt, dip the cleaner in petrol and after drying, immerse in thin oil and hang up to drain before refitting to carburetter.

CHAIN LUBRICATION.

The primary chain runs in an oil bath case. See page 8 ref. clutch. The rear chain is not automatically lubricated, and should be removed occasionally for lubrication ; see chart page 15.

PERIODICAL ATTENTIONS.

WEEKLY.

TYRES. Check pressures frequently.

SPARK PLUG. Clean once a week.

BATTERY. Check Electrolyte. Top up with distilled water only.

MONTHLY.

Clean carburetter pipe and filter.

Check rear chain tension.

Check oil level in gearbox. See page 14.

EVERY 1,000 MILES.

BRAKE CAMS. Lubricate with oil can. An excessive quantity of oil should not be used, otherwise this may get through to the brake linings.

TELESCOPIC FORKS—REAR SPRINGING. Insert light grease through nipples provided.

EVERY 2,000 MILES.

AIR CLEANER. The air cleaner which is held on to choker body by a clip, should be removed approximately every 2,000 miles and cleaned by dousing in petrol ; when dry, dip in oil and allow to drain before re-fitting.

Care should be taken when removing the air cleaner not to press the gauze as this will force it away from the end cap and prevent it functioning properly.

EVERY 5,000 MILES (or more frequently under extremely wet or muddy conditions).

HUBS. The hubs are packed with grease during assembly, to lubricate the bearings and prevent the entry of mud and water. A grease nipple on the hub is provided for the periodical injection of fresh grease. The quantity injected must not be excessive—one or two shots of the grease gun will be sufficient—or there will be a tendency for the surplus to work into the brake drum and so cause inefficiency.

GENERAL ATTENTION TO MAINTAIN ENGINE EFFICIENCY.

INSPECT GAS AND OIL JOINTS AND TIGHTEN IF NECESSARY.

1. Cylinder and Head.
2. Cylinder Base Joint. Examine for oil and gas leakage. There are four nuts to check. If after the nuts have been evenly tightened the joint still leaks, the cylinder base gasket may need renewal.
3. Carburetter clip, choker body clip and air cleaner.
4. Exhaust Pipe and Fittings. Use wrench No M.L. 57 for exhaust nut to cylinder ; and wrench M.L. 55 for clip on exhaust pipe and tail pipe.
5. Crankcase Joint. Examine for leakage.

INSPECT ENGINE MOUNTING, AND TIGHTEN IF NECESSARY.

1. Engine frame bolts (3).
2. Crank case bolts.

START ENGINE.

1. Listen for unusual knocks or rattles.
2. Uneven Firing may be caused by :
 - (a) defective spark plug.
 - (b) incorrect gap.
 - (c) defective H.T. cable.
 - (d) dirty or incorrectly adjusted contact breaker points. Use gauge on wrench.
 - (e) obstruction in fuel supply.
 - (f) water or dirt in float chamber.
 - (g) oil content in petrol too great.
 - (h) carburetter flooding.
 - (i) make sure choker control is fully open.
3. Examine exhaust smoke for correct mixture. With the two-stroke engine using petrol mixture a faint blue exhaust smoke will be seen coming from the tail pipe.

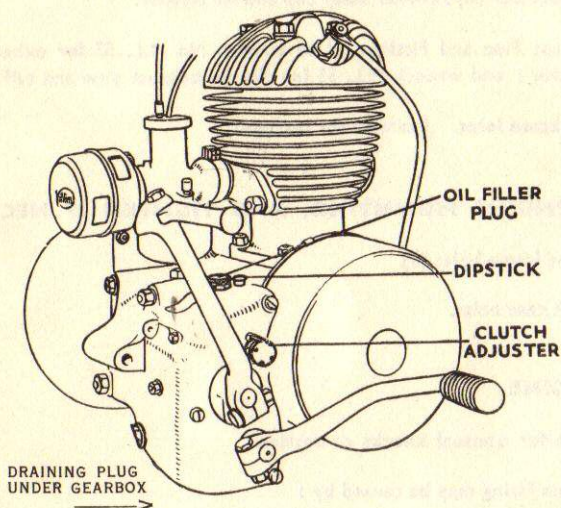
ENGINE AND GEAR BOX LUBRICATION.

BEFORE USE.

It is most essential that these instructions be followed to ensure efficient and satisfactory performance of the engine.

Lubrication of the engine only is effected by the Petroil System. A measure for the Oil is attached to the tank filler cap, and, if the simple instructions are followed, lubrication of all parts of the engine is automatic and efficient. The lubricating oil should be mixed with the petrol, in the proportion of One part of Oil to 16 parts of Petrol, or four measures of Oil to One gallon of Petrol.

The gearbox oil level should be checked by means of the dipstick provided and topped up if necessary. The draining plug is situated underneath the gearbox.



ENGINE "PETROIL" LUBRICATING AND FUEL SYSTEM.

1. Check quantity of fuel in tank. Do not forget that the fuel also serves the purpose of lubricating all internal parts of the engine, and always remember to replenish the fuel tank with the correct mixture of oil and petrol, which should be mixed before putting it into the tank if possible.
2. Security of tank fixing bolts (2).
3. Leaks at taps and unions. Do not over-tighten where fibre washers are fitted. Tighten petrol tap. If petrol tap is loose, slacken petrol pipe before tightening. Check banjo union at carburettor end of pipe. Check nut on base of float chamber.
4. Carburettor flooding (dirt in float chamber, tickler or fuel needle sticking).
5. Throttle cable frayed or sharp bends in cable run. Alter position of clips if necessary.

RECOMMENDED LUBRICANTS

(U.K.)

M.C.

	SHELL	WAKEFIELD	VACUUM	PRICE'S	ESSO
ENGINE ... (All Seasons)	Double Shell	Castrol XL	Mobiloil A	Energol SAE 40	Essolube 40
GEARBOX ...	Shell Dentax 140	Castrol D	Mobilube C	Energol SAE 140	Esso Gear Oil 140
CHAIN CASE EXPOSED CHAINS ...	Shell Dentax 140	Castrol D	Mobiloil A	Energol SAE 40	Essolube 40
	Shell Retinax CD	Castrol ease Graphited	Mobilgrease No. 2	Belmoline C	Esso Grease
GREASE GUN	Shell Retinax CE	Castrol ease CL	Mobilgrease No. 2	Belmoline C	Esso Grease
WHEEL HUBS	Shell Retinax RB	Castrol ease Heavy	Mobil Hub Grease	Belmoline C	Esso Grease
OIL CAN ...	Double Shell	Castrol XL	Mobiloil A	Energol SAE 40	Essolube 40

(OVERSEAS)

	SHELL	WAKEFIELD	VACUUM	ENERGOL	ESSO
ENGINE ... (All Seasons)	Shell X-100 SAE 30	Castrol XL	Mobiloil A	Energol Motor Oil SAE 40	Essolube 40
GEARBOX ...	Shell Dentax 140	Castrol D	Mobilube C	Energol Transmission Oil SAE 140	Esso Gear Oil 140
CHAIN CASE EXPOSED CHAINS ...	Shell Dentax 140	Castrol D	Mobiloil A	Energol Motor Oil SAE 40	Essolube 40
	Shell Retinax CD	Castrol ease Graphited	Mobilgrease No. 2	Energol C3	Esso Chassis Grease
GREASE GUN	Shell Retinax CD	Castrol ease CL	Mobilgrease No. 2	Energol C3	Esso Chassis Grease
WHEEL HUBS	Shell Retinax RB	Castrol ease Heavy	Mobil Hub Grease	Energol C3	Esso Bearing Grease
OIL CAN ...	Shell X-100 SAE 30	Castrol XL	Mobiloil A	Energol Motor Oil SAE 40	Essolube 40

CLUTCH AND BRAKE LEVERS AND CONTROLS.

EXAMINE CONTROLS.

1. Examine handlebar control levers for tightness on handlebar, freedom of operation of clutch, brake, correct friction on twist grip.
2. Put a spot of oil on the end of each control wire and on the pivot pins for clutch and brake.

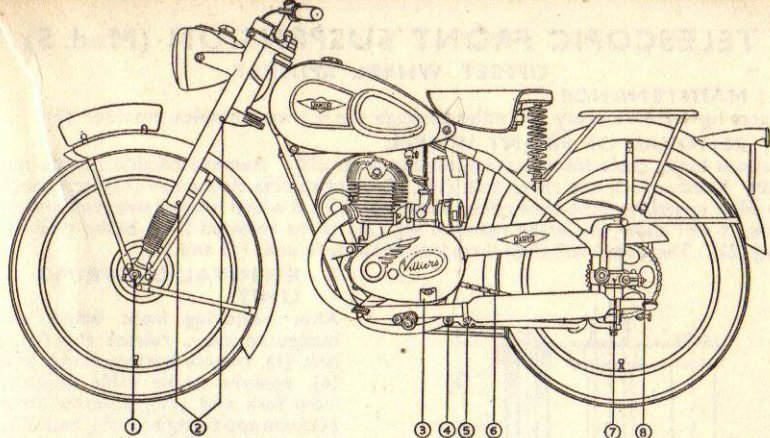
IGNITION SYSTEM SPARK PLUG.

MAGNETO (Incorporated in Flywheel). TIMING OF THE MAGNETO.

1. The contact breaker points must commence to open before the piston reaches top of stroke, in the case of the 122cc. and 197cc. Engines this dimension is $5/32$ 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 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 centre 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.
2. Remove flywheel plate (3 screws). Inspect contact breaker for correct operation. Inspect operation while slowly turning the engine. Examine for burnt or pitted contact points. Check gap between points when fully open with gauge on wrench. Clearance should be $.015''$.
3. Check tightness of flywheel nut (right-hand thread).
4. Inspect insulated wires for :—
 - (a) shorts, cracks, frayed or rubbed portions,
 - (b) or, contact with cylinder or exhaust pipe.

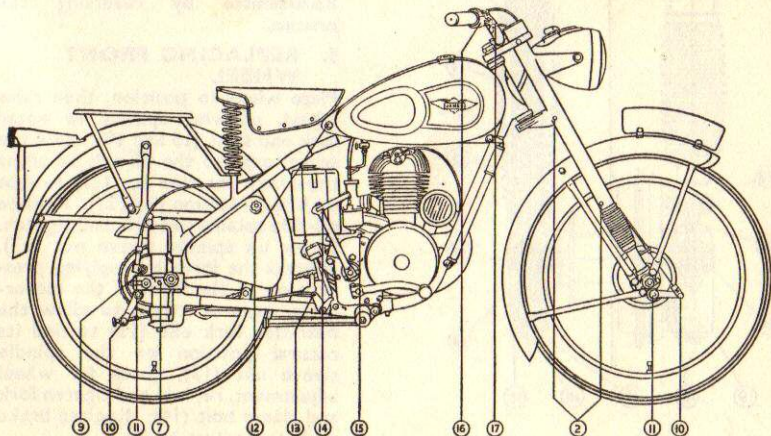
SPARK PLUG.

1. Remove with special wrench and check gap ($.018''$ — $.025''$). When adjusting plug gap set side points, not central electrode.
2. Inspect for cleanliness and cracked insulator.
3. Replace and check for leaks. Tighten gland if necessary.



LUBRICATION POINTS

1	Front Hub	Light Grease
2	Fork Leg Nipples	Oil
3	Front Chaincase	See Chart p. 15
4	Brake Pedal Shaft	Light Grease
5	Stand Bearings	Oil
6	Rear Chain	See Chart p. 15
7	Rear Suspension	Light Grease
8	Rear Hub	Light Grease
9	Speedo Drive Gear Box	Light Grease
10	Brake Lever Rollers (Front and Rear)	Oil
11	Brake Cams (Front and Rear)	Oil
12	Saddle Pivot... ..	Oil
13	Rear Brake Rod Pivot	Oil
14	Kick Start Pedal	Oil
15	Gearbox	See Chart p. 15
16	Throttle Control	Oil
17	Brake and Clutch Levers	Oil



TELESCOPIC FRONT SUSPENSION (Mod. 5)

OFFSET WHEEL SPINDLE

1. MAINTENANCE

Insert light grease every 500 miles through the 4 grease nipples provided (9).

2. REMOVAL OF FRONT WHEEL

Release brake cable from brake actuating lever (18). Remove off-side spindle nut (20). Remove fork end clamp bolt (14). Release spindle sleeve nut (13) far enough to allow spindle to drop through fork end slot (15). If wheel is eased over to the near side, it will allow the brake reaction lug (21) to be released from brake reaction peg (22). The wheel will then drop free of the fork ends (15 and 19).

3. REMOVAL OF SPRING UNIT

After removing front wheel and mudguard stays, release top fixing bolt (1), release bottom clamp bolt (6), remove brake cable adjuster from fork end (19), unscrew strut (4) from top fixing bolt (1), and slide strut out of bottom clamp (7). Remove outer strut top cap (2), pull out top post (3) from outer strut (4), remove nut (17) at base of inner strut (11), release spring unit by turning adaptor (16) clockwise by means of screwdriver.

Re-assemble by reversing the process.

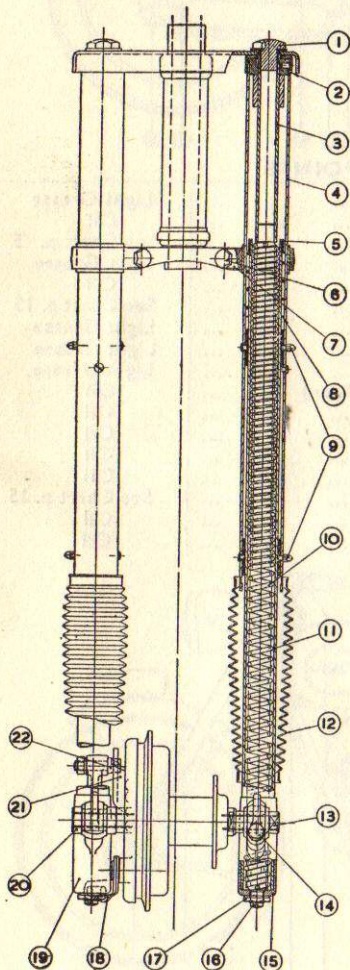
4. REMOVAL OF INNER STRUT

After removing spring unit, release rubber gaiter (12) from outer strut (4), remove recoil spring retainer (5). The inner strut (11) will then be free to be pulled out from bottom of outer strut (4), leaving recoil spring (8) free inside the outer strut (4).

Re-assemble by reversing the process.

5. REPLACING FRONT WHEEL

Place wheel in position, then raise wheel, allowing spindle to enter fork end slots (15 and 19). Ease the wheel over to the off-side to allow the brake reaction lug (21) to seat on brake reaction peg (22). Replace off-side spindle nut (20) and tighten. Screw up spindle sleeve nut (13), depress the forks by applying pressure on to the front of the motor-cycle, once or twice, to allow the near-side fork end (15) to find its natural position on the spindle sleeve nut (13), check for wheel adjustment, replace and tighten fork and clamp bolt (14). Replace brake cable and adjust brake.



TELESCOPIC FRONT SUSPENSION (Mod. 6)

MAINTENANCE

Insert oil with oil gun every 200 miles through the four nipples provided (6).

REMOVAL OF FRONT WHEEL

Place motor-cycle on stand, release brake cable from brake actuating lever (9) and reaction plate (12), remove fork end clamp bolts (8 and 10), release spindle nuts (7 and 11) far enough to clear fork end slot, let wheel drop, easing it over to clear brake reaction plate (12) from inner strut (13).

REPLACING FRONT WHEEL

Place wheel in position, then raise wheel, allowing spindle to enter fork end slots, making sure that brake reaction plate (12) locates on to inner strut (13). Tighten spindle nuts (7 and 11), depress forks by applying pressure on the front end of the motor-cycle, once or twice, to allow near-side fork end to find its natural position on spindle nut (7). Replace and tighten fork end clamp bolts (8 and 10). Replace brake cable and adjust brake.

REMOVAL OF SPRING UNIT

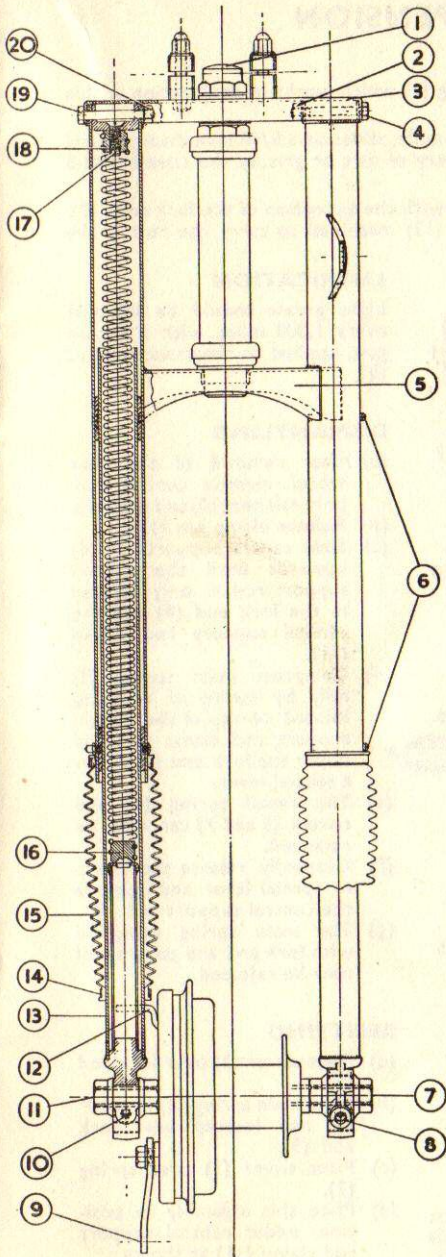
Place motor-cycle on stand, place suitable pad between mudguard and bottom plate (5), remove head lock nut (1) and washer, remove speedo cable from speedo head, remove top fixing pins (4 and 19) by releasing nuts (2 and 20). This will enable top plate to be removed sufficiently for access to spring unit. A downward pressure on the forks will allow spring top adaptor (18) to rise above the top of the outer strut. The spring unit may then be removed by turning the spring in an anti-clockwise direction, releasing it from the bottom adaptor (16).

Reassemble by reversing the process, making sure that the spring is screwed right home on the bottom adaptor (16).

REMOVAL OF INNER STRUT

Place motor-cycle on stand, remove front wheel, remove gaiter bottom clip (14) from gaiter (15), turn strut in anti-clockwise direction, this will release inner strut (13), remove inner strut (13) by drawing it out of outer strut.

Reassemble by reversing the process, making sure that the spring is located fully onto adaptors (14 and 18). If for any reason the fork ends do not line up, do not rectify by turning fork end until pin (17) has been released. Retighten pin (17) after fork end has been adjusted.



REAR SUSPENSION

REAR SPRINGING

The rear springing consists of a main spring (2) which works in conjunction with a recoil spring (6).

The fork end (9) which carries the wheel spindle, slides on a 9/16 inch diam. central support rod (4) which is shielded from entry of dirt or grit by the covers (1-3 and 7).

The left and right hand units are identical, with the exception of the fork ends (9). The right hand fork end having a groove (13) machined to carry the rear brake locating boss (15).

LUBRICATION

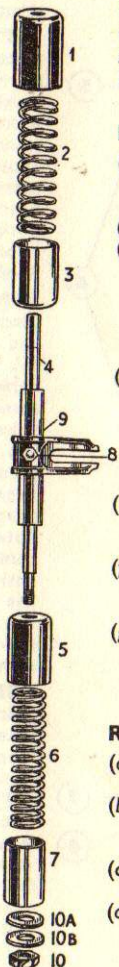
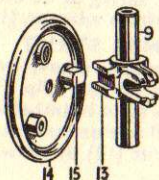
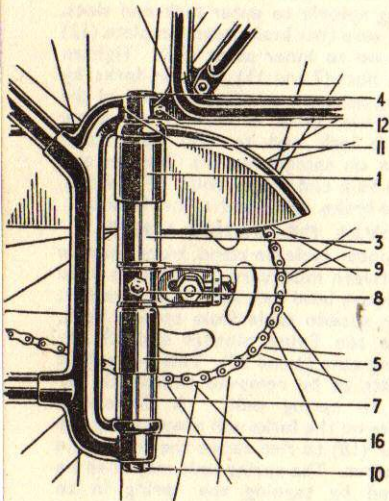
Light grease should be injected every 1,000 miles with a grease gun, applied to the grease nipples (8).

DISMANTLING

- After removal of the rear wheel, remove central support rod nut (10) and washers.
- Release clamp nut (12).
- Slide central support rod (4) upwards until the central support rod is only located in the fork end (9) and the central support rod clamp (11).
- Compress main spring (2) fully by means of a clamp located on top of the central support rod clamp (11) and under the fork end (9) or by a special lever.
- The recoil spring (6) and covers (5 and 7) can then be removed.
- Gradually release the clamp or special lever and remove the central support rod (4).
- The main spring complete with fork end and covers will now be released.

REFITTING

- Place cover (3) over fork end (9).
- Place main spring (2) in cover (3) and located over fork end (9).
- Place cover (1) over spring (2).
- Place this assembly in position, under central support rod clamp (11) as shown.



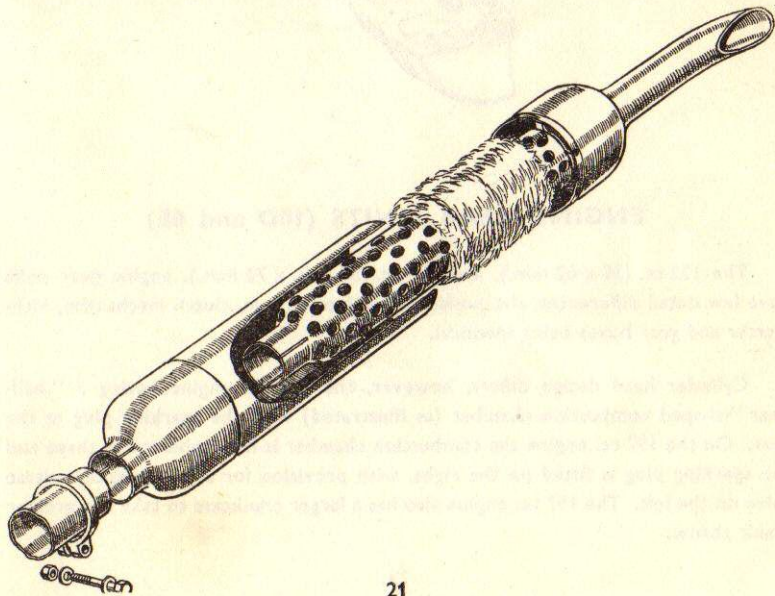
- (e) Slide central support rod (4) with thread pointing downwards and pass through clamp (11) and assembly until central support rod just locates in the fork end hole (9).
- (f) Compress by means of clamp or special lever, as explained in (d) **Dismantling**. Note that clamp will not foul the cover (5).
- (g) Place recoil spring (6) in cover (7).
- (h) Place cover (5) over spring (6).
- (j) Now slide assembly over fork end with cover (5) uppermost.
- (k) Compress spring (this can be done by hand) and slide over the bottom lug (16).
- (l) Push the central support rod (4) downwards until the threaded portion passes through the bottom lug (16).
- (m) Remove clamp or special lever.
- (n) Place nut and washers (10) on central support rod end (4).
- (o) Tighten clamp nut (12).

REPLACING REAR WHEEL

Place wheel spindle in fork end slots with locating boss (15) which is fixed to rear brake plate (14) in line with the groove (13) on fork end (9). Slide wheel forward, making sure boss (15) is engaged in groove (13). Adjust and tighten wheel, in the usual manner.

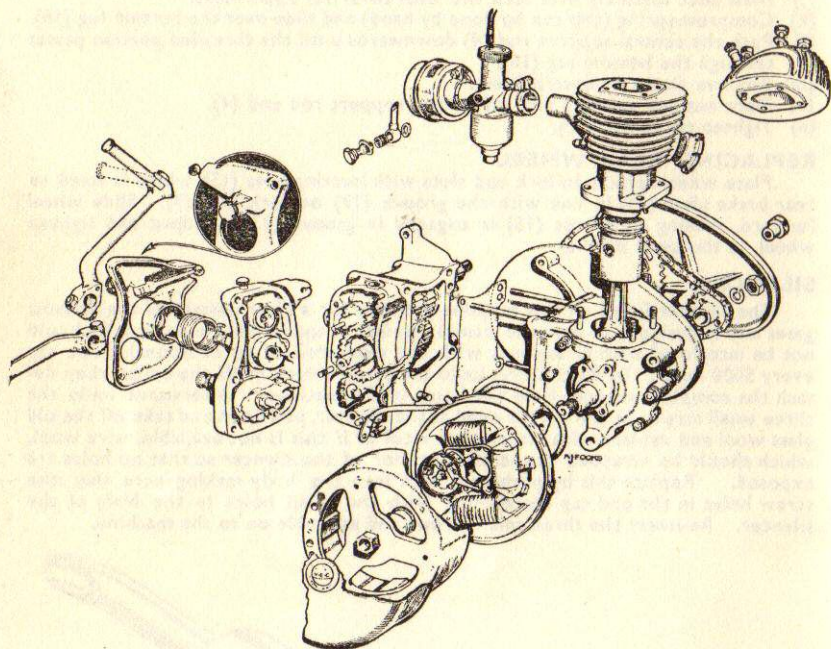
SILENCER.

The silencer fitted on this machine provides for a clear passage of the exhaust gases and is designed to give the utmost power output from the engine; it should not be interfered with in any way with the exception of an occasional clean, say every 5000 miles. To do this first undo the screw which holds the collar, then detach the complete silencer from the frame of the machine. Afterwards undo the three small screws at the tail pipe end of the silencer, pull apart and take off the old glass wool and replace with either glass wool or if this is not available, wire wool, which should be wrapped round the interior of the silencer so that no holes are exposed. Replace this by pushing it back into the body making sure that the screw holes in the end cap correspond with the small holes in the body of the silencer. Re-insert the three small screws and assemble on to the machine.



THE VILLIERS POWER UNIT

INCORPORATING 3-SPEED GEAR.



ENGINE GEAR UNITS (10D and 6E)

The 122 cc. (50 x 62 mm.), and 197 cc. (59 mm. x 72 mm.), engine gear units have few detail differences, the positive stop foot change, clutch mechanism, kick-starter and gear boxes being identical.

Cylinder head design differs, however, the 122 cc. engine having a "half-pear"-shaped combustion chamber (as illustrated) with the sparking plug at the rear. On the 197 cc. engine the combustion chamber is hemispherical in shape and the sparking plug is fitted on the right, with provision for a compression release valve on the left. The 197 cc. engine also has a larger crankcase to take the greater crank throw.

Both engines have cast-iron cylinders with detachable light alloy heads and flat-topped pistons. The cylinder is retained to the crankcase by four studs and the porting consists of an inlet port at the rear, a single exhaust port at the front of the cylinder and two transfer ports situated on either side. The transfer passages originate as cutaways in the crankcase, the passages proper are formed by the cylinder spigot and then continued through the cylinder casing. The outlets of these passages in the cylinder are designed so that an outward and rearward swirl is given to the incoming charge, directing it towards the cylinder head to facilitate complete scavenging.

The carburetter stub is a light alloy casting fixed by two studs, a single lever carburetter with air filter and strangler being fitted to the 122 cc. engine and a Middleweight two-lever pattern on the 197 cc.

Crankcases are die-cast aluminium alloy. The left hand crankcase has two 20 mm. spaced ball races and carries the engine sprocket. On the right hand side, a single ball race is provided and the flywheel magneto is fitted on the tapered end of the shaft. The crank pin itself is hollow and parallel in diameter and is an interference fit in the crankshaft webs. In the end of the pin, hardened taper plugs are fitted. The "big end" consists of two rows of uncaged $\frac{1}{4}$ " x $\frac{1}{4}$ " rollers and a phosphor bronze bush is fitted at the small end. The gudgeon pin is hollow, fully floating, and is held in the piston boss bushes by circlips.

The clutch is a two-plate type with cork inserts and runs in oil. Six springs are fitted and the thrust lever is carried in the outer end cover of the gear box, the thrust rod operating through the centre hole of the mainshaft. The pivot pin has an adjuster for hand setting, adjustment being maintained by a flat spring which locates in four cutaways in the adjuster.

Although self-contained, the three-speed constant mesh gearbox is bolted to the crankcase and forms a complete engine gear unit.

The mainshaft at the cover end, and the layshaft at both ends, are carried by phosphor bronze bushes. The other end of the mainshaft rotates without a bush directly in the top gear sleeve, and is lubricated by a spiral groove in the mainshaft journal. A 25 mm. ball race forms the top gear sleeve bearing. The oil filler cap is at the top of the gear box case and the oil level can be checked by means of the dipstick provided.

LIGHTING SETS.

Two types of lighting sets are supplied with the 122cc. and 197cc. models, the "Standard" machines having Direct Lighting and "De Luxe" versions being fitted with A.C./D.C. rectifier lighting equipment.

"DIRECT" LIGHTING SET

In this set the alternating current is taken direct from magneto to lamps via the head lamp switch, and it will be seen on reference to wiring diagram Fig. 1 that the ends of the twin cable from magneto are joined together before connecting to the head lamp cable. The single lead coming from back of armature plate is EARTHED by attachment to frame of cycle.

A twin cell cycle type battery housed in the headlamp provides current for parking lights.

A.C./D.C. RECTIFIER LIGHTING SET.

This system enables the rider to be completely independent of the state of charge of the battery for night riding, and the headlamp bulb may be illuminated either by—

A.C. current direct from the generator (switch position marked "Direct")
or

D.C. current from the battery (switch position marked "H").

Parking lights and all other accessories are always operated from current obtained from the battery (switch position marked "P").

When the switch is in the "Direct" position no light can be obtained at the main bulb when the engine is not running, because, in this position the headlamp bulb is not connected to the battery and no current is being produced by the generator. In all the other switch positions the lamps are independent of engine speed, as they are connected to the battery through the headlamp switch.

It is recommended that the "Direct" position should be used on every possible occasion, as by this means no current is being taken from the battery by the headlamp. In addition to this, a small charge will also be given to the battery when the engine is running at moderate speeds.

There are two very important precautions which MUST be observed in the assembly of this type of lighting set.

1. **THE RECTIFIER CASING MUST BE COMPLETELY INSULATED FROM THE FRAME.** The essential is that there should be no direct metallic connection between the casing of the rectifier and any part of the motorcycle.
2. **THE POSITIVE TERMINAL OF THE BATTERY MUST BE CONNECTED TO EARTH.**

Note : In some cases the lead shown on the diagram connecting the generator to the rectifier, may be replaced by a lead from the generator to the No. 2 terminal in the switch. This, of course, does not affect the operation in any way.

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.

DIRECT LIGHTING

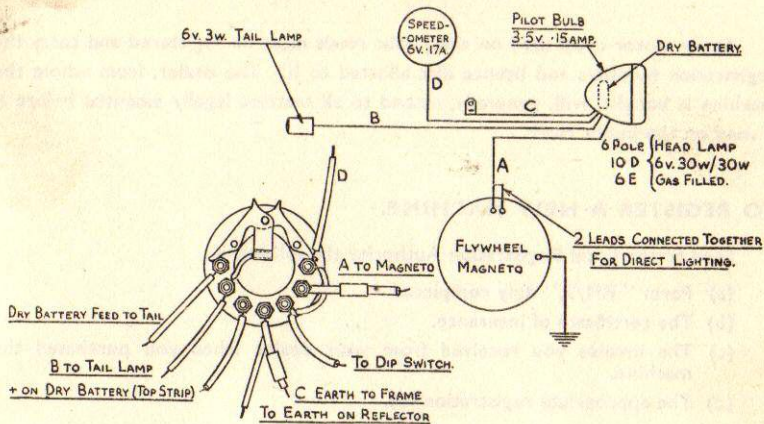


Fig. 1

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	S.B.C.
Speedo	...	6 Volt—.17 amp. Miniature B.C.	

RECTIFIER LIGHTING

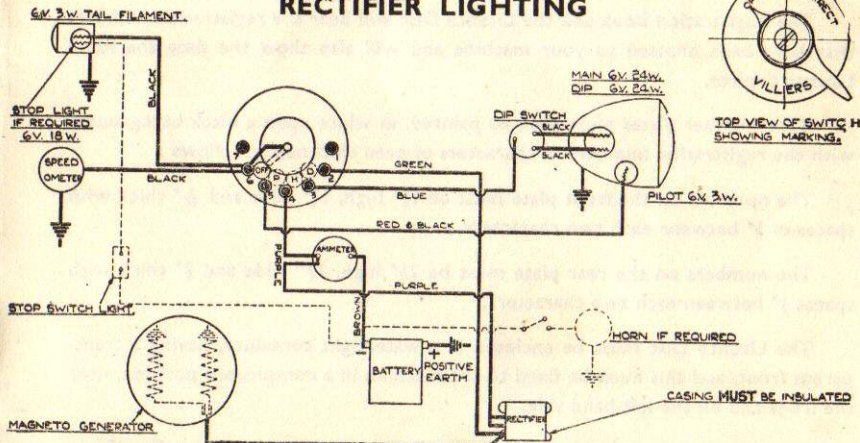


Fig. 2

LIGHTING BULBS FOR "RECTIFIER" SET.

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

THE MACHINE AND THE LAW

Every motor cycle used on the public roads must be registered and carry the registration numbers and licence disc allotted to it. The dealer, from whom the machine is bought, will, generally, attend to all matters legally essential before it is used on the public roads.

TO REGISTER A NEW MACHINE.

Send to the Local Registration Authority the following :

- (a) Form "RF1/2," duly completed.
- (b) The certificate of insurance.
- (c) The invoice you received from your dealer when you purchased the machine.
- (d) The appropriate registration fee.

In due course you will receive :

- (1) A Registration Book. (Commonly called the "log" book.)
- (2) A Licence Disc.
- (3) Your Insurance Certificate.
- (4) Your Invoice.

The Registration Book and the Licence Disc will bear the registration numbers that have been allotted to your machine and will also show the date the Road Licence expires.

Your number plates must then be painted, in white upon a black background, with the registration numbers in characters of even thickness as follows :

The numbers on the front plate must be $1\frac{3}{4}$ " high, $1\frac{1}{4}$ " wide and $\frac{5}{16}$ " thick with spaces of $\frac{1}{2}$ " between each two characters.

The numbers on the rear plate must be $2\frac{1}{2}$ " high, $1\frac{3}{4}$ " wide and $\frac{3}{8}$ " thick with spaces $\frac{1}{2}$ " between each two characters.

The Licence Disc must be enclosed in a watertight container, having a transparent front, and this must be fixed to the machine in a conspicuous position, near the front and on the left-hand side.

It is not legally necessary to carry your Driving Licence, Insurance Certificate and Registration Book while driving your machine.

SPEEDOMETER.

A speedometer MUST be fitted to all motor cycles over 100 c.c.

LAMPS.

During the official "**LIGHTING UP**" hours the machine must exhibit a white light facing forwards and a red light facing rearwards. The rear number plate must be adequately illuminated by a white light.

Each electric light bulb **MUST** be marked with its "Wattage." (Beware of cheap, imported, bulbs that do not have this marking.)

All motor cycles made by us have electric equipment that complies with the law regarding position, size of bulbs, marking on bulbs and the correct illumination of the rear number plate.

THE DRIVER AND THE LAW

The driver of a motor cycle **MUST** be **INSURED** against Third Party Claims and **MUST** be able to produce an **INSURANCE CERTIFICATE** showing that such an insurance is in force.

If your Insurance Certificate specifies you can only drive one particular machine you **MUST NOT DRIVE** any other machine unless its owner has a current Certificate covering "**ANY DRIVER**" and it is advisable to remember that, in the absence of such a provision the penalties for doing so are very heavy.

The driver of a motor cycle **MUST** hold a current **DRIVING LICENCE**. If you are a learner and hold a Provisional Driving Licence, your machine must show, front and back, the standard "L" plates in red and white and you must not take a **PILLION PASSENGER** unless that passenger is the holder of a current **UNRESTRICTED** driving licence.

As soon as you receive your driving licence, sign it in the appropriate place and do so each time it is renewed. It is an offence not to.

Make sure you are well acquainted with the recommendations set down in the "Highway Code," a copy of which can be obtained from any main Post Office.

FREE SERVICE SCHEME

FREE SERVICE SCHEME

All owners of **NEW MODELS** are entitled to one **FREE SERVICE AND INSPECTION** at 500 miles, or, at latest, three months after taking delivery.

This service is arranged by the supplying dealer to whom the **Free Service Voucher** must be handed. This voucher will be found in the tool box upon taking delivery of a new motor cycle.

The **INSPECTION AND SERVICE** consists of :

- (a) Check, and, if necessary, adjust :
- | | |
|-----------------------------|------------------------------|
| (1) Contact breaker points. | (6) Brakes. |
| (2) Sparking plug. | (7) Forks and steering head. |
| (3) Clutch | (8) Alignment of wheels. |
| (4) Chains. | (9) Tyre pressures. |
| (5) Wheel bearings. | |
- (b) Tighten all external nuts and bolts, including cylinder bolts.
(c) Check all lighting equipment.
(d) Clean out carburetter and adjust mixture.
(e) Adjust and lubricate all cables.
(f) Grease all nipples.
(g) Check oil level in front chaincase.
(h) Top-up gear box.
(i) Test machine on the road.

NOTE.—Oils, greases and materials used are chargeable to the customer.

FOR THE CONVENIENCE OF OWNERS,

SPARES STOCKISTS

ARE APPOINTED FOR MOST DISTRICTS. TO SAVE DELAY, AND THE DELIVERY SURCHARGE CUSTOMERS ARE RECOMMENDED TO ALWAYS APPLY TO THEIR NEAREST SPARES STOCKIST.

SPARES & SERVICE DEPARTMENT

WHEN CORRESPONDING REGARDING
SERVICE OR SPARES

ALWAYS QUOTE

BOTH ENGINE & FRAME NUMBERS
(including all letters)

THIS ENABLES US TO IDENTIFY THE MACHINE

When in doubt regarding the name of the parts you require, please send the old parts to serve as patterns.

Hours of Business for Callers :

8-30 a.m. to 12-30 p.m. 1-30 p.m. to 5-30 p.m.
MONDAYS TUESDAYS WEDNESDAYS
THURSDAYS FRIDAYS

(Not open on National Holidays).

TRACING ENGINE TROUBLES

The locating and rectification of troubles with the Villiers Engine can be made very simple by systematic and intelligent investigation. It is true that the symptoms of engine stoppage will usually give a clue to its cause, and that considerable experience may be needed to realise which of the number of possible eventualities has occurred, but by following a definite method of approach it is fairly easy to diagnose the cause of the trouble.

It is best to carry out tests bearing in mind that an engine will only start and run satisfactorily :—

- (1) If there is a supply of fuel at the carburetter, and that it is introduced into the engine with a suitable quantity of air to make a combustible mixture.
- (2) If a good spark occurs at the spark plug in the cylinder at the correct time, that is, in this particular engine, when the piston is $1/8$ " before the top of its stroke.
- (3) If the engine is in mechanically good condition, that is, freedom from air leaks, has good compression both in cylinder and crankcase.

In the case of trouble, the cause of which is not evident, proceed as follows :—

Work carburetter control to and fro to test that cable is not damaged, and that throttle slide is working freely. Make sure that there is fuel in the tank and that the tap is turned on, depress tickler on carburetter to check that petrol has reached there and is not obstructed by a stoppage in the fuel pipe or filter in banjo union.

After assuring yourself that petrol is reaching carburetter, test for a good spark by holding sparking plug body on to cylinder head, and depressing kick starter sharply. If the spark is satisfactory it is quite possible that the petrol-air mixture is incorrect, or that the engine is not mechanically sound. If the above quick checks fail to find the cause of the trouble, reference should be made to the charts specially prepared for the diagnosis of all kinds of troubles that can occur. If you are not able to locate the trouble the dealer who supplied this motor cycle to you should be consulted for any advice or assistance necessary to ensure your satisfaction with the machine.

ENGINE WILL NOT START.

Sequence of Testing.
Depress tickler on carburetter to check whether fuel is reaching carburetter

If no fuel even when tap is on and fuel is in tank :
Test for spark by holding spark-plug body on cylinder head.

If still no spark : Test for spark at end of spark plug wire held $1/8$ " from cylinder head.

Possible Trouble.

No fuel reaching carburetter.

Choked fuel pipe, filter or carburetter fuel needle sticking.

Leak along insulation of plug or spark plug wire or high tension lead.

Trouble may be faulty plug, oily or sooted points, slight short on insulation inside plug. If no spark at end of spark plug wire contact breaker points may not be opening sufficiently, or points dirty or pitted.

Moisture on insulation of condenser box.
Contact Breaker grounded or short-circuited by the points being bridged by metal particles.

High tension pickup not making good contact on coil due to corrosion or misplacement.

Cracked insulation of adjustable contact breaker point. Insulating sleeve on wires connecting contact breaker to coil or condenser damaged.

Faulty connection to low tension wire of coil.

Faulty coil.

Mixture may be too rich due to use of strangler when engine is warm or incorrect needle setting or water in fuel.

Remedy.

Turn on fuel tap, refill tank.

Remove and clean out.

Try another plug of the recommended type, and/or new spark plug wire.

Try another plug.

Adjust to .015".

Clean.

Clean and dry out.

Remove.

Clean or correct.

Renew.

Replace.

Correct.

Replace.

Replace.

Open strangler and depress kick starter several times with throttle wide open to clear engine. Adjust needle, drain and remove fuel.

Air leaks at carburettor stub joints, causing weak mixture. Incorrect fuel, i.e., kerosene or alcohol. Flywheel slipped giving incorrect ignition timing.

ENGINE FOUR-STROKES.

Make sure strangler is open and air cleaner not choked.

Check to see if there is excessive smoking at the exhaust.

Too rich mixture.

N.B. Engine may four-stroke for a little while after standing due to accumulation of oil in crankcase.

Flooding of carburettor.

ENGINE LACKS POWER.

Engine out of tune, due to wear, etc. Unsuitable plug. Loss of compression.

Incorrect mixture of oil and fuel. Excessive carbon deposit on piston and cylinder head. Exhaust system choked. Incorrect carburettor setting. Air cleaner choked. Brakes binding on motor cycle. Obstruction in fuel supply. Incorrect ignition timing.

ENGINE WILL NOT RUN SLOWLY.

Weak mixture due to air leaks at carburettor stub, crankcase, and/or cylinder base joints or name plate on left hand crankcase, drain screw missing. Faulty crankshaft gland. Ignition timing too far advanced.

ENGINE SUDDENLY STOPS.

Spark plug wire disconnected. Spark plug points bridged by oil or foreign matter.

Water causing short circuit of spark plug wire.

ENGINE MISFIRES.

Defective spark plug. Loose connection in ignition circuit. Intermittent grounding of spark plug wire. Contact breaker gap insufficient. Fuel mixture too weak, indicated by back firing in carburettor.

Correct. Fill up with correct fuel. Check. Timing marks on flywheel and armature plate should coincide when piston is at top of stroke.

Try lowering jet needle by screwing down screw in centre of throttle slide. Usually ceases when engine has been running for a few minutes.

If persistent, flooding may be due to dirt under fuel needle seating, or sticking fuel needle, or damaged seating, or punctured float in carburettor.

Overhaul. Replace with recommended type. Check cylinder head bolt tightness. Worn piston rings.

Use correct mixture— $\frac{1}{4}$ pt. oil to 1 gal. of petrol. Decarbonise. Clean out silencer and exhaust pipe. Check with recommendations. Wash in petrol, drain and re-oil. Adjust. Clean out fuel pipe and filter. Check and correct.

Tighten up all joints.

Replace. Correct.

Replace. Remove spark plug from cylinder head and clean the points. Dry and remove all water.

Try new plug. Check over all joints in wiring. Replace spark plug wire if damaged. Adjust point gap to .015". Raise throttle needle by undoing screw in top of slide.

THE JAMES GUARANTEE AND CONDITIONS OF SALE.

We give the following guarantee with our motor cycles, motor cycle combinations, and sidecars, including all accessories and component parts other than tyres, saddles, chains, and lighting and electrical equipment, and other than accessories and component parts supplied to the order of the Purchaser and differing from those comprised in the standard specifications supplied with our motor cycles, motor cycle combinations and sidecars, but including accessories and parts supplied by way of exchange as hereinafter provided. This guarantee is given in place of any implied conditions or warranties or any liabilities whatsoever statutory or otherwise: no guarantee except that hereinafter contained and no conditions or warranty whatsoever statutory or otherwise is given or is to be implied, nor are we to be under any liability whatsoever except under the guarantee hereinafter contained. Any statement, description, condition, or representation contained in any catalogue advertisement, leaflet or other publication shall not be construed as enlarging, varying or overriding anything herein contained. In the case of machines (a) which have been used for "hiring out" purposes or (b) any motor cycle and/or sidecar used for any dirt track, cinder track or grass track racing or competitions (or any competition of any kind within an enclosure for which a charge is made for admission to take part in or view the competition) or (c) machines from which the trade mark, name or manufacturing number has been altered or removed or (d) any machines in which parts have been used not supplied by or approved by the motor cycle manufacturer, or (e) any machine from which the silencing system as fitted by the manufacturer has been partially or wholly removed or interfered with, no guarantee, condition or warranty of any kind statutory or otherwise is given or is to be implied nor are we to be under any liability whatsoever in respect of any such machine.

We guarantee, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, but this guarantee is to extend and be in force for six months only from date of purchase, or date of exchange in case of any accessory or part supplied by way of exchange as hereinafter provided, and damages for which we make ourselves responsible under this guarantee are limited to the free repair of or supply of a new part or accessory in exchange for the part of the motor cycle, motor cycle combination or sidecar or accessory which may have proved defective. We undertake, subject to the conditions mentioned below, to make good in manner aforesaid any part or accessory covered by this guarantee which has proved defective within the said period of six months. We do not undertake to replace or refix, or bear the cost of replacing or refixing any such new part or accessory in the motor cycle, motor cycle combination or sidecar. As motor cycles, motor cycle combinations and sidecars are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse or neglect.

The term "misuse" shall include, amongst others, the following acts:—

1. The attaching of a sidecar to a motor cycle in such a manner as to cause damage or calculated to render the latter unsafe when ridden.
2. The use of a motor cycle or of a motor cycle and sidecar combined, when carrying more persons or a greater weight than that for which the machine was designed by the manufacturers.
3. The attaching of a sidecar to a motor cycle by any form of attachment not provided, supplied, or approved by the manufacturers, or to a motor cycle which is not designed for such use.

We do not guarantee tyres, saddles, chains or lighting and electrical equipment or any accessories or component parts supplied to the order of the Purchaser differing from those comprised in the standard specifications supplied with our motor cycles, motor cycle combinations or sidecars. As regards all such tyres, saddles, chains, lighting and electrical equipment, accessories and component parts, no guarantee, condition or warranty of any kind statutory or otherwise is given or is to be implied, and we are to be under no liability whatsoever in respect thereof.

CONDITIONS OF GUARANTEE

If a defective part or accessory should be found in our motor cycle, motor cycle combinations or sidecars, or in any part or accessory supplied by way of exchange as before provided, it must be sent to us CARRIAGE PAID, and accompanied by an intimation from the owner that he desires to have it repaired or exchanged free of charge under our guarantee and he must also furnish us at the same time with the number of the machine, the date of the purchase or the date when the alleged defective part or accessory was exchanged as the case may be.

Failing compliance with the above, such articles will lie here at THE RISK OF THE OWNER, and this guarantee and any implied guarantee, warranty or condition shall not be enforceable.

REPAIRS

Any motor cycle, motor cycle combination or sidecar sent to us to be plated, enamelled or repaired will be repaired upon the following conditions, i.e., we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, such guarantee to extend and be in force for three months only from the time such work shall have been executed, and this guarantee is in lieu and in exclusion of all conditions and warranties statutory or otherwise and all liabilities whatsoever and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.

For the convenience of Owners

SPARES STOCKISTS

are appointed for most districts, to save delay, and the delivery surcharge. Customers are recommended to apply always to their nearest Spares Stockist.

