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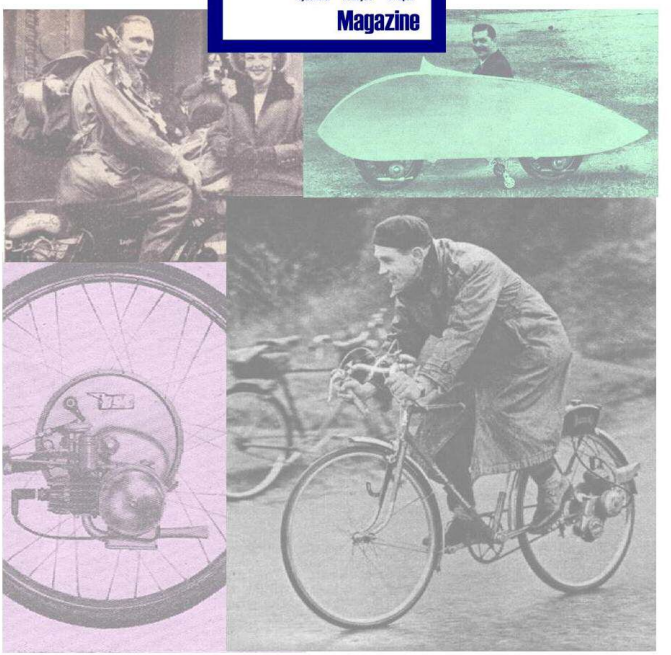

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PHILLIPS Gadabout

RIDERS HANDBOOK

PHILLIPS

Gadabout

RIDERS HANDBOOK

TWO SPEED MODEL P45

PUBLISHED BY PHILLIPS CYCLES LTD · SMETHWICK · BIRMINGHAM 40

Printed in England by Drew & Hopwood Ltd., Birmingham 3

FOREWORD

The Phillips "Gadabout" is unsurpassed in the field of Mopeds for general performance and overall economy. Treated properly, and sensibly maintained, it will amply repay you by giving efficient and pleasant transport for very many miles.

The contents of this booklet will help you to get the best from your machine, and enable you to manage the adjustments and smaller jobs which periodically need attention on all vehicles.

Before attempting to start the engine you MUST, in your own interest, read the instructions on pages 7, 8, 9 and 10. You **should** also read page 11 before starting to ride.

Before you ride on public roads you must hold a current driving licence and the "Gadabout" must be taxed, and insured for third-party risks.

Remember to "run-in" carefully and intelligently for at least the first 600 miles, conform to the lubrication and maintenance instructions, and try to develop that "sixth sense" which all good riders have—of anticipating troubles (both road-troubles and mechanical-troubles) BEFORE they happen. It can be done.

ENGINE UNIT

Type : Villiers Mark 3K, air cooled two-stroke, single cylinder, with unit-construction two-speed gearbox.

Bore : 40.0 mm.

Stroke : 39.7 mm.

Piston displacement (*cubic capacity*) : 50 c.c.

Compression ratio : 7 to 1.

Maximum Brake Horse-power : 2.2 b.h.p. at 5,500 r.p.m.

Cylinder : Cast-iron.

Cylinder head : Aluminium-alloy, detachable.

Piston : Aluminium alloy, flat-topped, with floating Gudgeon pin.

Big-end Bearing : Parallel Roller-bearing type.

Small-end Bearing : Phos. Bronze bush type.

Mainshaft Bearings : Ball bearing type.

Clutch : Two-disc, running in oil-bath.

Primary reduction : 3.6 to 1 by chain running in oil-bath.

Gearbox Reductions : Bottom Gear, 3.06 to 1 ; Top Gear, 1.71 to 1.

Final Drive Chain Reduction : 14 T. to 32 T.

Overall Reductions : Bottom Gear, 25.24 to 1 ; Top Gear, 14.01 to 1.

Drive-chain : Heavy-Duty Roller Chain, $\frac{1}{2}''$ pitch × $\frac{3}{16}''$ wide.

Pedal-drive : Built into gearbox, with automatic engaging and throw out mechanism, and back-pedalling trip-action for rear brake operation. Pedal drive to rear wheel through motor drive-chain.

Carburetter : With oil-wetted gauze air-filter and shutter-type choke. Villiers type SM.10.

Sparking-plug : 14 mm. Lodge BN—Gap ·018 / ·022″

Ignition and Lighting Circuit : Villiers Flywheel-Magneto Generator, 6 volt, 18 watt lighting capacity (Headlamp 6v.15w./15w. Tail lamp 6v. 3w.).

Ignition Setting : $\frac{3}{32}''$ in advance of top-dead-centre.

Exhaust Silencing : Full-length pipe and large silencer, readily dismantled for cleaning.

Lubrication : Cylinder and Crank-case, by petroil mixture. Clutch, Primary-drive and Gearbox, by sump oil-bath.

Unified Threads : Wherever possible these are used.

CHASSIS

Wheelbase : 44″

Length overall : 70″ Height overall: 37″

Total weight : 96 lb. (*dry*).

Frame : Tubular head, with twin-tube "backbone" carrying pressed saddle-mounting above, and pressed engine-mounting beneath.

Front Fork : Phillips No. 2 Telescopic spring fork, carried by ball-bearing steering-head.

GENERAL SPECIFICATION contd.

Handlebar : Wide-Raised comfort pattern, mounted directly on Telescopic Fork by two-point attachment.

Brakes : Phillips 4″ dia. Internal Expanding, hand-operated front, foot operated rear.

Pedals : Phillips "full-rubber" pattern, No. 153.

Tyres : 23″ dia. × 2.00″ section with Schrader-type valves.

Mudguards : Deep-section pressed steel, with pressed steel channel-section stays. Side valances for front wheel and full-quarter side-panels for rear wheel.

Fuel-tank : $9\frac{1}{4}$ pint capacity, with reserve type tap.

Saddle : Phillips P.65/3, large spring-seat, in Dark Tan colour. With large-dia. chromium-plated coil-springs and rear lifting-bar. Adjustable for height.

Handlebar-Controls : Carburetter twist-grip control and front brake-lever on right handlebar, gear-change twist-grip control with interlocking Clutch-lever on left, together with lighting dipper-switch and horn-button.

Equipment : $3\frac{1}{2}$″ Headlamp with built-in speedometer Tail lamp and Horn. Also tyre-inflator, bipod prop-stand, tool-kit, carrier, and blank front and rear number-plates.

Finish : Flamboyant Red enamel, with chromium-plated fitments.

Before starting

Check the following points :

1. TYRE PRESSURES SHOULD BE BROUGHT TO

Rider's Weight	Front Tyre	Rear Tyre
10 stone or under ..	25 lb./sq. in.	36 lb./sq. in.
11 stone ..	27 lb./sq. in.	40 lb./sq. in.
12 stone ..	29 lb./sq. in.	44 lb./sq. in.
13 stone and over ..	31 lb./sq. in.	48 lb./sq. in.

2. PETROIL FUEL

must be thoroughly mixed and added to the tank in the following proportions :

20 parts of top-grade petrol to 1 part of Two-stroke self-mixing oil; or

24 parts of petrol to 1 part of SAE. 30 Motor-engine oil.

Remember that the special self-mixing oils are the only ones which may be poured **straight into** your tank. Normal engine-oils must be added to the petrol in a separate container and thoroughly shaken up **before** being poured into your tank.

Always use good quality oils ; cheap oils are a false economy.

3. GEARCASE LUBRICATION

The gearcase is usually filled with oil before machine is delivered, but if not Castrol XL (SAE. 30) oil must be poured in through the gearcase oil filler plug after the level plug has been removed. The level plug is the right-hand one of two plugs to be found towards the front underside of the engine. Allow surplus oil to drain from the level hole, with the machine standing on level ground, before replacing both oil level and oil filler plugs. The oil capacity is about $\frac{5}{8}$ pint. Check level every 500 miles and top up if oil is low.

4. RUNNING-IN INSTRUCTIONS

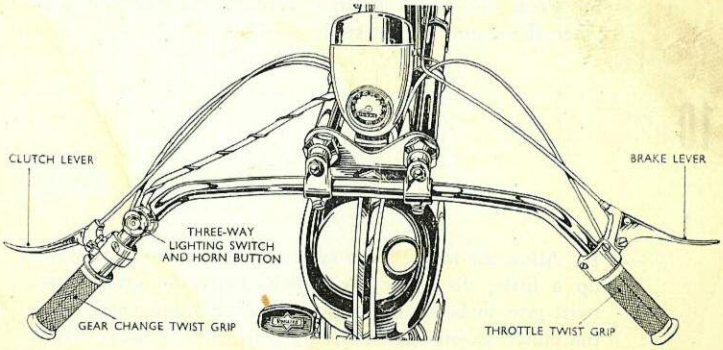
should be carefully studied. All new engines have to cover a certain distance before they develop their full power. The "Gadabout" engine takes about 600 miles, during which it should never be allowed to "race" or "labour" neither should you make too heavy demands upon it. For the first 200 miles you should not exceed 15 m.p.h. in bottom gear or 25 m.p.h. in top, and you should change from bottom to top gear when you have reached 12 m.p.h. After this initial 200 miles, maximum speed may safely be used for short bursts.

On the way you treat the engine during the first critical 600 miles will largely depend the life and performance of the machine. Care and patience at this stage will pay handsome dividends for years afterwards.

IMPORTANT

Do not attempt to engage your gears whilst stationary and with the engine stopped. Serious damage to your gear-box can be caused by you or others endeavouring forcibly to engage either **Bottom Gear** or **Top Gear** under such circumstances. It is, however, quite in order for the gear to be shifted to Neutral—this will **not** cause any damage.

Do not sit on your machine, nor kick-start it, whilst it is merely supported by the prop-stand.



Starting

1. The Fuel-Tap must be pulled out to its open position.

2. The Carburetter Air-shutter must be closed by depressing the plunger on the top of the carburetter body, and your carburetter twist-grip on the right handlebar must be set to a slightly open position.

3. The Gear-change Twist-grip is probably already in Neutral position (marked 0), but if not, disengage the Clutch-lever and shift the gears into Neutral.

4. Sit astride the machine and bring the pedals to a convenient position for kick-starting (in the forward direction). It will assist you when doing this if you de-clutch whilst shifting the pedals around into position, but re-engage the clutch afterwards

5. Press the pedal smartly forwards and downwards, when the engine should start.

To drive away

1. Allow the motor a few seconds to "pick up" and warm up a little, disengage the clutch, twist the gear-change twist-grip to bottom-gear position (marked 1), and let in the clutch slowly and smoothly with the left hand, whilst

simultaneously turning the carburetter twist-grip with the right hand to increase the engine power. The air shutter or choke is designed to open automatically when the throttle is opened.

2. Upon reaching about 12 m.p.h., disengage the clutch, simultaneously closing the carburetter twist-grip a little to prevent "over-revving," and twist the gear-change twist-grip to top-gear position (marked 2). Then let in the clutch slowly and smoothly with the left hand, whilst simultaneously opening the carburetter twist-grip with the right hand until the desired road speed is attained.

Stopping

1. Close the carburetter twist-grip, disengage the clutch, and apply the brakes. Normally, the rear brake operated by back pedalling is sufficient to pull you up satisfactorily, but we do recommend that you get into the habit of applying both brakes, as by so doing you automatically make best use of your braking power should an emergency arise which demands quick action.

2. If you wish to stop for just a few minutes, intending to continue soon afterwards, as for instance, at traffic signals or in traffic hold-ups, the carburetter twist-grip can be manipulated to keep the engine "ticking over," whilst you shift your gear to neutral and hold yourself in readiness to re-engage bottom gear, let in the clutch smoothly, and glide away.

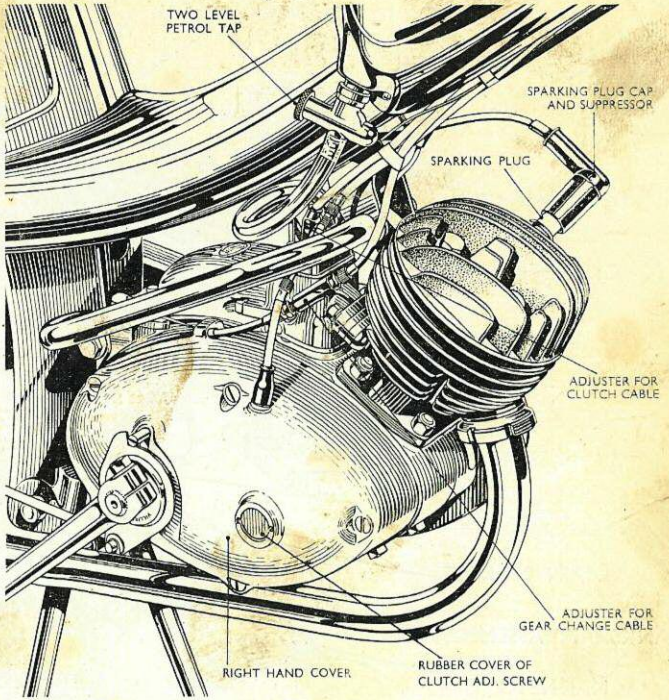
3. If you wish to stop the engine, close the carburetter twist-grip completely, de-clutch and shift the gear to neutral. CLOSE YOUR FUEL TAP.

If you detect any irregular running of the machine, or any unfamiliar noise, or anything which may make you think that all is not right, get it seen to at once—do not wait until a minor fault develops into something serious. Regular maintenance is of the greatest importance in avoiding mechanical troubles, and the following reminders will help you to keep your machine in good order.

A. ROUTINE CLEANING AND LUBRICATING

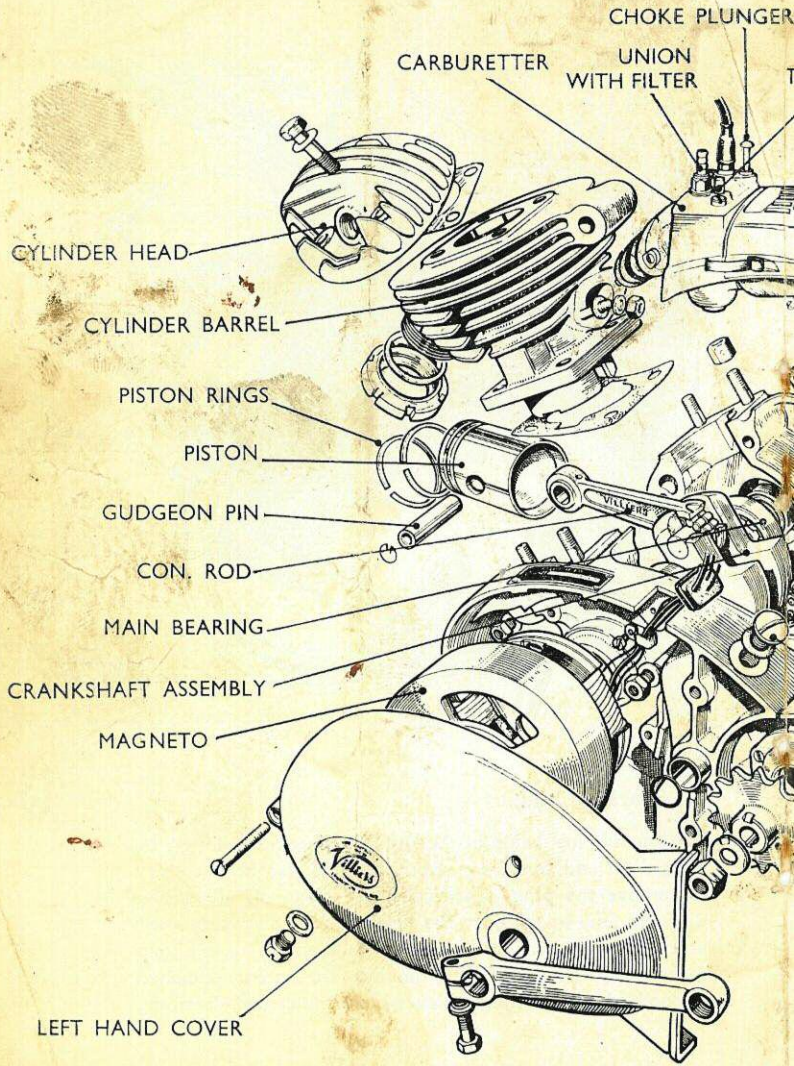
1. Power Unit

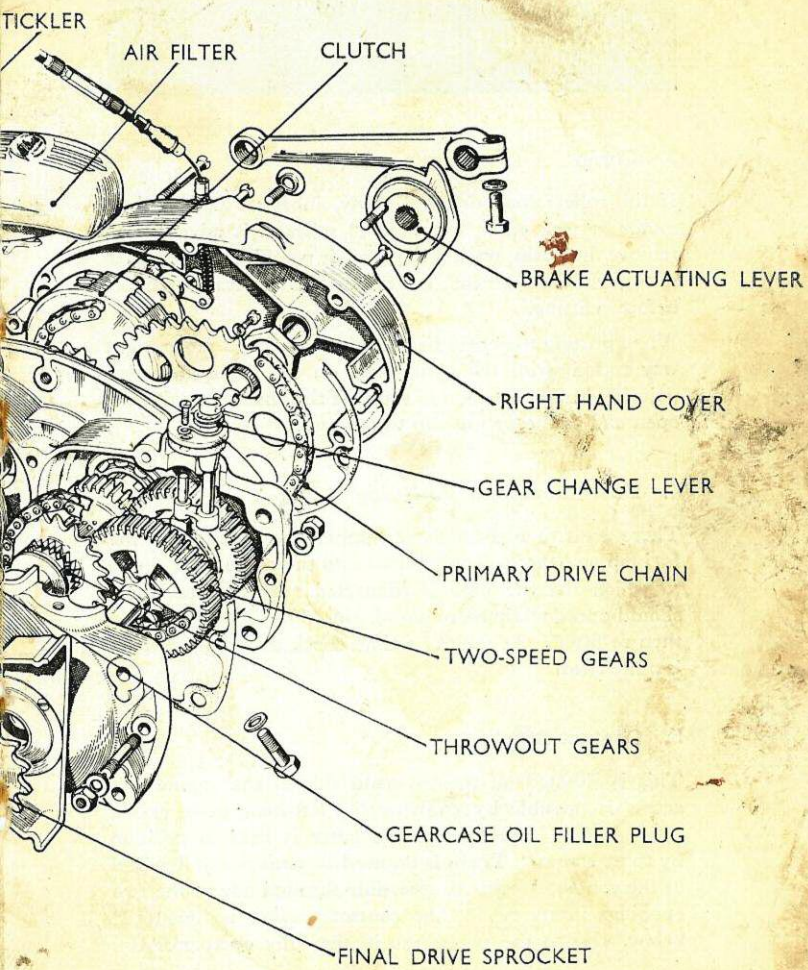
As already described in earlier sections, the cylinder, piston and crankshaft are lubricated by the petroil fuel, and provided you adhere to the recommended petrol/oil ratios for the respective oils they should require no further attention. The clutch, primary-drive and gears which run in oil should, however, have the sump oil-bath drained after the first 600 miles (i.e. when running-in is completed), and thereafter every 1,000 miles. This is best carried out after completion of a run when the oil is warm and thin, and the impurities well stirred up in it. The drain plug is on the underside of the gearcase at rear of engine. Refill to oil level plug, with an SAE. 30 oil.



2. Sparking Plug

The outside insulation of the sparking plug must always be kept clean and free from water. It will also be necessary to remove the plug periodically and clean off all carbon deposits and to readjust the point gap to between .018″ and .022″ checked with gauge. Adjustment of the gap must only be done by moving the point attached to the body of the plug. Never bend the centre electrode.


CHOKE PLUNGER
CARBURETTER
UNION
WITH FILTER
CYLINDER HEAD
CYLINDER BARREL
PISTON RINGS
PISTON
GUDGEON PIN
CON. ROD
MAIN BEARING
CRANKSHAFT ASSEMBLY
MAGNETO
LEFT HAND COVER


TICKLER
AIR FILTER
CLUTCH
BRAKE ACTUATING LEVER
RIGHT HAND COVER
GEAR CHANGE LEVER
PRIMARY DRIVE CHAIN
TWO-SPEED GEARS
THROWOUT GEARS
GEARCASE OIL FILLER PLUG
FINAL DRIVE SPROCKET

3. Chain

If the rollers look dry and shiny, lubricate with a little motor or gear-oil. Every 3,000 miles it is advisable to remove the chain, wash it in petrol or paraffin, and immerse it in warm chain grease. Let the surplus lubricant drain off before refitting.

When putting the chain back, make sure that it is the right way round, with the spring clip on the connecting link pointing in the direction of travel of the chain, i.e. with the open end of the spring clip to the rear.

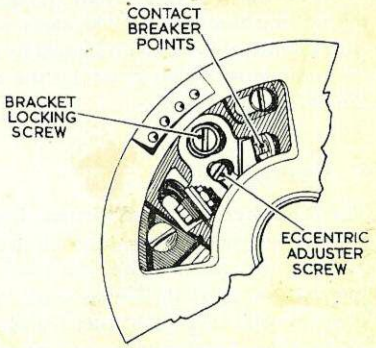
4. Fuel-filters and Fuel-pipe

There are two fuel-filters, the upper one fitted on to the fuel tap and the lower one fitted into the carburetter union to which the fuel-pipe is connected. Both these filters should occasionally be removed, rinsed in clean petrol and then re-fitted. At the same time check that the fuel-pipe is quite clear.

5. Contact Breaker

This is situated on the left-hand side of the engine and access is possible by removing the left-hand pedal crank, marked "L", and casing; the latter is held in position by three screws. There is no need to remove the flywheel as the contact breaker is accessible through one of the two openings in its face. The contact breaker is illustrated below. When the points are in the fully open position,

with piston at top of stroke, the gap should be .012" to .015". If adjustments are necessary slacken the bracket fixing screw and turn the eccentric point gap adjuster screw until the correct gap is obtained, then re-tighten the bracket fixing screw and re-check settings. The rocker arm should be free to move on its pivot pin. Ensure that the points themselves are clean and free from oil. Note when replacing cover that the rubber sealing ring must first be inserted into the pedal shaft housing and carefully worked over the shaft with the cover.



6. Air Filter

The oil wetted filter traps any dust which may be present in the air from passing into the carburetter and thus into the engine. At 1,000 to 3,000 mile intervals, according to prevailing conditions, the filter must be cleaned. To do this release the two clips and take filter away from carburetter. Pull out the plastic plugs from the two drain holes in underside of filter, wash the whole filter in petrol and dip in petroil. Allow surplus petroil to drain away for about a quarter of an hour before replacing plastic plugs. Ensure that the rubber ring, sealing the joint between filter and carburetter, is in place when re-fitting the filter.

7. Carburetter

Despite the two fuel-filters, it may be found that after some time, very fine impurities have managed to pass through them, settling in a fine deposit at the bottom of the float-chamber or in the fuel ducts, and are perhaps choking the jet. The carburetter can be readily dismantled for rinsing out in clean petrol, but it is worth noting that the main jet screws into the right side of the carburetter body and can be easily removed for cleaning without removing or dismantling the carburetter. A choked jet can be cleared by blowing through it. The taper needle in the tnrottle slide has five grooves and is located by a small cranked plate, the position of which is set by the makers and generally should not be altered.

8. Control-cables

The control cables of carburetter, front-brake, clutch and gear-change should all occasionally have a few drops of oil run into their upper ends, the controls meanwhile being operated to assist the oil to carry into the cable cover. There are also several force-feed oilers on the market which can be used if preferred, and which make a very thorough job of cable lubrication.

The speedometer drive cable should also be lubricated periodically and kept straight and free from "kinks."

9. Hubs

Both front and rear hubs are pre-packed with grease before leaving the factory and no further attention should be needed for the first 3,000-5,000 miles. The wheels should then be removed, the hub-bearings cleaned out, re-packed with a soft grease and carefully re-assembled. This should be repeated at 3,000-5,000 mile intervals.

B. ROUTINE ADJUSTMENTS

1. Front brake

As already described in earlier sections, an internal expanding hub-brake is used in the front wheel. It is cable operated by hand-lever, and brake-lining wear is merely taken up by the cable adjuster on the right hand side of the hub-brake. Slacken the lock-nut, screw back the adjuster until the linings begin to rub inside the brake-drum, then ease down the adjuster about one turn to clear the linings from the drum, and re-tighten the locknut. If, after some adjustment has been taken up, it is found the adjuster has reached the limit of its outward travel, screw it right down to the bottom, slacken the anchor-nut attaching the cable to the brake-arm, pull the cable further through the anchor bolt to take up the cable slack, re-tighten the anchor-nut, and adjust as before.

2. Rear brake

As described earlier, a foot operated internal expanding brake is built into the rear wheel. Brake-lining wear is taken up by the large knurled thumb nut on the rear end of the operating rod.

3. Clutch cable

There must always be approximately $\frac{1}{16}$" to $\frac{3}{16}$" free movement of the clutch lever, and this is obtained by means of the cable adjuster screws ; this setting will, however, only be effective if the clutch unit in the engine has been correctly set.

4. Clutch unit adjustment

With the engine in neutral, slacken off the clutch cable by means of the adjusters. Remove the rubber plug in the right-hand cover exposing the clutch adjuster screw. Turn the screw either to the right, loosening the clutch plates, or to the left which tightens them, until the pedals can be made to slip without rotating the engine—very little movement only is necessary. Next take up cable slack completely by means of the cable adjusters, then rotate the clutch screw to the left, anti-clockwise, $\frac{1}{4}$ turn. Replace the rubber sealing plug and adjust the clutch cable to allow $\frac{1}{16}$" to $\frac{3}{16}$" free movement of the lever.

5. Gear-change cable

This cable should be just slightly slack when TOP gear is engaged. This will ensure that both gears and neutral are correctly engaged when the control lever is shifted into these positions. The adjustment is made at the handlebar end of the cable, just beneath the gear-change twist-grip.

6. Carburetter cable

This cable must also have a slight slack when the twist-grip is in the fully closed position, the cable adjuster being situated at the handlebar end of the cable just beneath the carburetter twist-grip.

C. DECARBONISING

Depending upon the conditions under which the machine is used, i.e. for short town journeys or long distance hard riding, the periods between decarbonising may well vary

between 1,500 to 3,000 miles. However, the point at which decarbonising is necessary will be when the engine loses power and is generally sluggish.

We recommend that when this time comes, you arrange with your Phillips dealer to have this done by him, for he will have been selected as competent to perform such maintenance jobs as this, and will, moreover, have all the necessary tools and spare parts available.

If, however, you feel competent to undertake this job yourself, we suggest it be tackled in the following stages:

(*a*) First obtain the following item from your dealer: Exhaust gasket.

(*b*) Get together the necessary tools, namely, a tubular plug spanner, a special "C" spanner for exhaust nut, $\frac{1}{2}$" A.F. tubular spanner, pliers, an old knife or scraper, and a screw driver. A wiper or clean piece of rag will also be useful.

(*c*) Disconnect the H.T. (ignition) lead from the sparking-plug.

(*d*) With the "C" spanner, remove the exhaust-pipe attachment-nut from the forward part of the cylinder-barrel.

(*e*) Unscrew the lower bolt, washer and nut of the Silencer rear-support-clip, and remove Exhaust-pipe and Silencer from the machine.

(*f*) With the tubular plug-spanner unscrew the plug from the cylinder-head.

(*g*) With the $\frac{1}{2}$" A.F. tubular spanner remove the four cylinder-head nuts and washers, and lift the head from the cylinder-barrel.

(*h*) By turning the rear wheel with the clutch engaged, bring the piston to the position where it is just a little below the exhaust port.

(*i*) Carefully scrape away the carbon deposit from within the exhaust port, finishing off by drawing a narrow strip of cloth through it to remove the loose carbon.

(*j*) Bring the piston up to the top of its stroke, by turning the rear wheel with the clutch engaged.

(*k*) Carefully scrape away the carbon deposit from the top of the piston, finishing off by wiping it clean.

(*l*) Scrape away the carbon deposit from inside the cylinder-head, and wipe clean.

Now dismantle your silencer by removing the small screw and nut at tail end. Pull out the internal tube and clean thoroughly.

(*m*) Re-assemble the silencer.

(*n*) Re-assemble the cylinder-head to the cylinder-barrel.

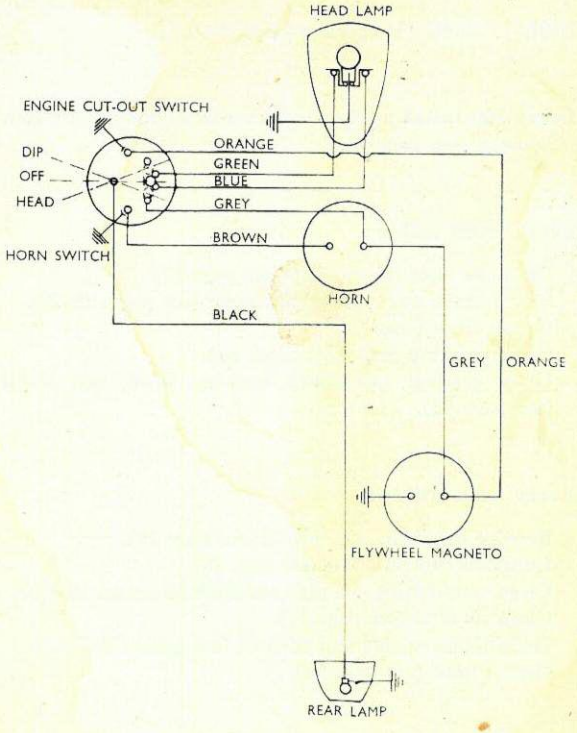
(*o*) Replace the exhaust pipe on the front of the cylinder-barrel, using the new exhaust gasket.

(*p*) Re-connect the Silencer to its rear-support-clip.

(*q*) Screw the sparking-plug firmly back into the cylinder-head, after having cleaned off all carbon and set the gap to ·018″ to ·022″ (see page 13). DO NOT OMIT the copper washer from the bottom of the sparking-plug. Re-connect the H.T. (ignition) lead.

The engine is now ready for starting up.

WIRING DIAGRAM FOR 'P45 GADABOUT' MOPED



MAINTENANCE SUMMARY

Daily : Check tyre pressures (see page 7).

Every 500 miles : Check oil level in gearbox and clutch housing (see page 8).

Every 1,000 miles :

Clean air filter if necessary (see page 17).
Check brake and clutch adjustment (see pages 19-20).
Grease front forks.
Clean sparking plug, and check gap.
Drain gearbox and clutch housing, flush, and re-fill (see page 12).

Every 3,000 miles :

Remove the chain and clean it (see page 16).
Lubricate control cables (see page 18).
Clean carburetter, fuel pipe and filter (see page 16-18).
Clean air filter (see page 17).
Decarbonise engine and silencer (see pages 20-21-22).
Grease hubs (see page 18).

After the first 600 miles :

Drain gearbox and clutch housing and re-fill (see page 12).

FAULTS and their CORRECTION

If the engine will not start

1. See that there is fuel in the tank.
2. See that the fuel tap is open.

If it still does not start it may be due to any of the following :

Carburetter blocked.
Unscrew jet and clean by blowing through it (see page 18).

Fuel pipe blocked.
Clean fuel pipe, tap, screen filter and strainer (see page 16).

Ignition cable disconnected or faulty.
Adjust or renew the cable.

Sparking plug defective.
Remove the plug and clean it, and check the gap. If the plug is faulty, renew it (see page 22).

If the engine starts but quickly stops again

Fuel pipe blocked.
Clean fuel pipe, tap and filter (see page 16).

Sparking plug dirty.
Clean or replace plug.

Blocked air hole in tank filler cap.
Remove the filler cap, and clean the vent hole.

If the engine runs at reduced power

Carburetter jet blocked.
Unscrew jet, and clean by blowing through it (see page 18).
Sparking plug fouled.
Clean and reset or replace.
Air filter blocked.
Clean and oil air filter (see page 17).
Exhaust blocked.
Clean exhaust port and silencer (see pages 21-22).
Contact Breaker not adjusted.
Correct the gap and clean contacts (see page 16).

If the engine runs unevenly

Sparking plug dirty.
Clean or replace plug.
Ignition system faulty.
Check ignition cable and connection. If this is all right, have the ignition system checked by your dealer.

If the engine "four-strokes" and pulls badly

Exhaust blocked.
Decarbonise exhaust port and silencer (see pages 21-22).
Carburetter flooding.
Remove the float casing cover, clean and check needle seating. If the float leaks fit a new one.
Carburetter jet loose.
Tighten jet.

Engine pulls poorly

Fuel supply inadequate.
Clean fuel pipe, filter and tap (see page 16).

Carburetter jet blocked.
Clean jet (see page 18).

Clutch slipping.
Adjust clutch unit and cable (see pages 19-20).

Engine "back-fires"

Sparking plug fouled.
Clean and reset or replace (see page 22).

Fuel supply inefficient.
Check and clean fuel pipe (see page 16).

Engine cannot be started or clutch slips

Clutch slips.
Check clutch cable adjustment.
Gearcase oil too thick.
Fill with oil of viscosity SAE. 30.

SPARE PARTS

Do not attempt to use spare parts which are not intended for this engine. There are plenty of the correct parts available from appointed Phillips agents, and the use of any incorrect parts will invalidate our guarantee. Always quote the engine number and frame number of your machine when ordering spare parts.

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