PHILLIPS

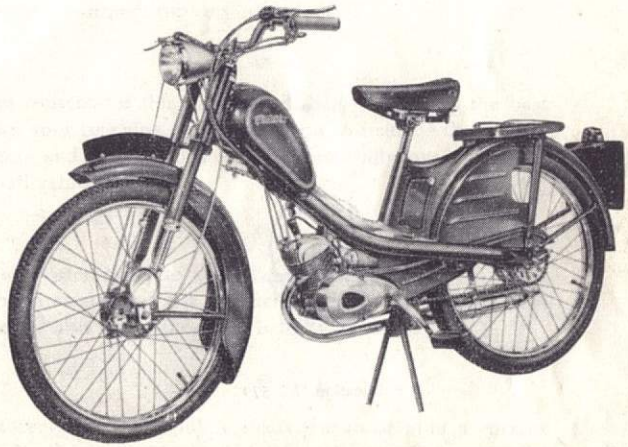
Gadabout

RIDERS HANDBOOK

PRICE TWO SHILLINGS AND SIXPENCE

PHILLIPS

Gadabout



RIDERS HANDBOOK

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FOREWORD

The Phillips "Gadabout" is unsurpassed in the field of Mopeds and Motorised-Cycles 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 15-19. You **should** also read pages 6-14 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 : Air cooled two-stroke, single cylinder, with unit-construction two-speed gearbox.
Bore : 40.0 mm.
Stroke : 39.5 mm.
Piston displacement (*cubic capacity*) : 49 c.c.
Compression ratio : 6.8 to 1.
Maximum Brake Horse-power : 2.1 b.h.p. at 6,000 r.p.m.
Cylinder : Chill cast aluminium alloy, with cast-iron lining.
Cylinder head : Aluminium-alloy, detachable.
Piston : Aluminium alloy, dome-topped, with anchored Gudgeon pin.
Big-end Bearing : Parallel Roller-bearing type.
Little-end Bearing : Phos. Bronze bush type.
Mainshaft Bearings : Ball bearing type.
Clutch : Two-disc, running in oil-bath.
Primary reduction : 3.82 to 1 by single-helical gear running in oil-bath.
Gearbox Reductions : Bottom Gear, 2.73 to 1 ; Top Gear, 1.8 to 1.
Overall Reductions : Bottom Gear, 22.6 to 1 ; Top Gear, 14.9 to 1.
Drive Chain Reduction : 2.166 to 1.
Drive-chain : Heavy-Duty Roller Chain, $\frac{1}{2}''$ pitch $\times \frac{3}{16}''$ wide.
Pedal-drive : Built into rear end of gearbox, with Roller/Wedge freewheel mechanism, and back-pedalling trip-action for rear brake operation. Pedal drive to rear wheel through motor drive-chain.
Carburettor : With oil-wetted gauge air-filter and shutter-type choke.
Sparking-plug : 14 mm.
Ignition and Lighting Circuit : Powered by Bosch Flywheel-Magdyno, 6 volt, 17 watt lighting capacity (Headlamp 6v.15w./15w. Tail lamp 6v. 2w.).
Ignition Setting : 3.2 mm. ($\frac{1}{8}''$) 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.

CHASSIS

Wheelbase : 44″
Length overall : 70″ **Height overall :** 37″
Total weight : 96 lbs. (*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.
Handlebar : Wide-Raised comfort pattern, mounted directly on Telescopic Fork by two-point attachment.
Brakes : Phillips Internal Expanding, hand-operated front, foot operated rear.
Pedals : Phillips "full-rubber" pattern, No. 152.
Tyres : Dunlop 23″ dia. $\times$ 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 : 7 pint capacity, with reserve type tap.
Saddle : Phillips P.21/3, large spring seat. Adjustable for height.
Handlebar-Controls : Carburettor twist-grip control and front brake-lever on right handlebar, gear-change twist-grip control with interlocking Clutch-lever on left, together with Engine Decompressor-lever, lighting dipper-switch and horn-button.
Equipment : $3\frac{1}{2}''$ Headlamp with built-in speedometer (optional), 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.

A

Component parts of the engine unit

The **casing** of the engine is made up of four aluminium pressure die-castings. Included within this casing are the crankshaft, the clutch, the primary-drive, the two-speed gears, and the pedal-shaft and freewheel.

The **cylinder** is of chill-cast aluminium with a cast-iron liner. Deep cooling ribs ensure that the cylinder is kept cool at all speeds.

The **cylinder head,** also of cast aluminium, is detachable. The **sparking plug** is centrally positioned in it, whilst the decompressor valve is to the front.

The **piston** is of aluminium alloy, dome-topped, and fitted with two piston rings which are keyed to prevent their slipping round in the grooves. It is connected by an anchored gudgeon-pin to the connecting rod, the little end of which bears a phosphor-bronze bush.

The **crankshaft** runs on two sets of ball bearings, and the connecting rod big-end bearing runs on parallel rollers.

The **clutch** is inside the engine housing, on the right hand side, and in operation it is partly immersed in oil. It has two friction discs, with a total friction area of 17½ sq. ins., and a special plate spring ensures smooth even engagement and release.

The **primary reduction drive** is performed noiselessly by single-helical pinion and gearwheel running in oil.

The **gearing** is incorporated within the engine casing or crankcase, there being no separate gearbox. There are two speeds with an intermediate neutral position. The gear-shift sleeve has five dogs on each side which engage either

the bottom gear gearwheel or the top gear gearwheel. as selected by the rider. This sleeve is actuated by a gearshift fork operated by the gear-change twist grip on the left side of the handlebar.

The **pedal mechanism** is similarly situated within the engine casing or crankcase, its freewheel mechanism being of the Roller/Wedge type which is completely suited to the almost continuous freewheeling of the "Gadabout." The drive from the pedals is transmitted through the same gears and roller-chain as transmit the engine power, the tensioning of the chain being adjusted by chain adjusters on the rear wheel.

The **flywheel magdyno** provides the current for the ignition, as well as that for the lighting. It comprises a stationary armature plate carrying the magneto armature and dynamo armature, around which the flywheel rotates. The armature plate carries ignition coil, condenser, contact-breaker and lighting coil, whilst the flywheel has four-pole permanent magnets of ALNI-steel cast into it, and the flywheel hub forms the cam which operates the contact-breaker. The output of the lighting system is 6 volt 17 watts which provides excellent lighting for the Moped in the form of 6 volt 15w./15w. (Double filament) Headlamp Bulb, and 6 volt 2 watt tail lamp bulb. If longer bulb life be required, Tail lamp Bulbs of rather greater wattage can be used (e.g. 6 v. 3 w. or 6 v. 6 w.), but such a modification will naturally reduce the lighting proportionately. The correct ignition timing is 3.2 mm. (⅛") before top dead centre and the width of gap between contact points when fully open must be between .015" and .020".

The **Carburettor** accurately controls the fuel/air mixture to the correct proportions under all conditions of speed and loading. A simple air-shutter (or choke) is provided for easy starting from cold, and the air intake is cleaned

by being drawn through an oil-wetted gauze air-filter. Intake noise is reduced by arranging for indirect air-intake through the pressed frame members. Slow running adjustment is regulated by a spring loaded adjuster screw accessibly placed at the side of the carburettor body.
The exhaust silencing consists of full length exhaust pipe and streamlined silencer, both of which are attractively chromium plated. The silencer can be completely and readily dismantled for easy cleaning, and it is extremely efficient, the noise output being kept down to an unusually low level.

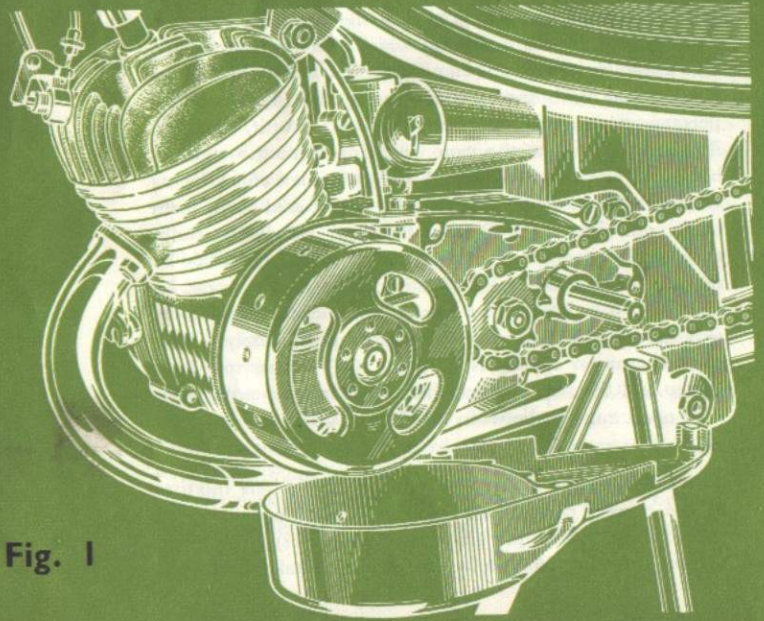

Fig. 1

Working principles of the power unit

B

The engine is of slightly "over square" design, i.e. the diameter of the cylinder bore and piston is slightly greater than the length of the stroke. This is in accordance with the most recent trends in engine design for racing motor-cycles and certain popular motor-cars, and it provides the slick acceleration and good hill-climbing qualities which are so desirable.

1. THE CYLINDER, PISTON UNIT AND CARBURETTOR

The cylinder barrel contains four channels or "ports," one port leading from the carburettor for gas intake, one to the exhaust for the expulsion of burnt gas, and the other two (known as transfer ports) connecting the chamber above the piston (the combustion chamber) with the chamber below the piston (the crankcase). The cylinder head is drilled for the decompressor and the sparking plug. Cylinder and cylinder head are firmly bolted together, the joint being sealed by a gasket. Both cylinder and cylinder head have deep cooling fins to ensure satisfactory cooling.
The carburettor is mounted to the rear of the cylinder. Its function is to atomise the fuel and to mix it with air so as to produce an explosive mixture. The fuel enters the carburettor from the tank by way of the fuel tap and the fuel feed pipe. This pipe is connected to the carburettor by a union, containing a fine filter to remove any impurities which may remain after the fuel has passed through the first filter on top of the fuel tap. The supply of air is drawn

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indirectly through the under pressing of the frame before passing through an oil-wetted air-filter at the extreme rear of the carburettor. An air shutter or "choke" is incorporated in the carburettor. By pressing down the trigger which protrudes through the left side of the carburettor body, a rich mixture is drawn into the engine, as needed for easy starting from cold. After the engine has started to fire, the choke must be opened, thus obtaining the correct mixture for normal running. It is unnecessary to use the choke when re-starting a warm engine. The dome-topped aluminium piston carrying two compression rings slides up and down in the cylinder, or, more precisely, in the cylinder liner. It sucks the petrol-oil-air mixture, or "gas" into the bottom chamber beneath the piston and cylinder (the crankcase), and compresses the gas in the top chamber (combustion chamber). A spark then makes this gas explode, which pushes the piston down again. The result is that the mixture which has been previously drawn into the crankcase is compressed (pre-compressed). The mixture thus pre-compressed is carried into the top part of the cylinder by way of the twin transfer-ports which, by entering the cylinder at an angle, ensure efficient flow of the fuel gases (petrol vapour) during the engine operating cycle. The piston is returned to the top by the momentum of a flywheel and the process is repeated in rapid succession. The little-end bearing has a phosphor-bronze bush with an alloy steel gudgeon pin retained by spring circlips, whilst the big-end bearing runs in parallel rollers. The mainshaft and magneto shaft is carried on ball races, the mainshaft being counter-balanced to reduce vibration. Synthetic rubber seals effectively seal off the crankcase from the magneto unit and the clutch housing.

2. CRANKCASE, CLUTCH AND GEARING

In the crankcase below the cylinder, the vertical reciprocating motion of the piston, caused by the force of the explosion, is converted into a rotary motion of the crankshaft. A two-disc clutch and gears transmit the drive from the crankshaft to the output-shaft, reducing the number of revolutions according to which gear is engaged. The clutch, gears and ball bearings in the gear housing are constantly running in oil. We recommend you to leave it to an expert to open the crankcase and inspect the clutch or gears.

3. THE IGNITION SYSTEM

On the left-hand side of the **crankcase** is the housing for the ignition (and lighting) system. Within this housing, mounted on an extension of the engine crankshaft, is the flywheel, which rotates around a stationary armature plate (for a more detailed description see page 7). A small location peg in the tapered portion of the mainshaft fits into a keyway in the flywheel and gives an approximately correct ignition timing. The precise ignition timing is arrived at by slackening the two small screws which retain the stationary armature plate, slightly twisting round this unit clockwise to advance the timing (anti-clockwise to retard the timing), and re-tightening the two screws. The rotation of the flywheel magneto about the magneto armature generates an electrical current in the armature which is passed through a coil and a condenser. This current is interrupted (controlled) by a contact breaker, the correct width of gap between contact points when fully open being .015″/.020″. The controlled current is conducted by a high-tension cable and terminal to a sparking plug screwed into a hole in the centre of the cylinder head. The bottom end of the plug protrudes into the top chamber of the cylinder, in which the gas is compressed by means of the piston. From the end of the plug project two pin-shaped electrodes which are insulated from each other and have a gap of .020″/.024″ between their ends. When the contact breaker opens, an electric spark jumps across this gap between the sparking plug electrodes and explodes the gas in the combustion chamber.

4. THE SPARKING PLUG

The process of combustion in the cylinder chamber results in a deposit of carbon on the electrodes. As carbon is a conductor of electricity, the insulation could eventually become ineffective. The plug should therefore be just hot enough to burn away the carbon deposit, but not hot enough for the gas to be ignited by mere contact with red-hot parts (pre-ignition).

Should the plug show a persistent tendency to oil up, fit the next hotter or "softer" grade in the Heat Range Charts, as published by all leading sparking-plug Manufacturers. In the event of the plug becoming overheated to the extent of causing pre-ignition, fit the next cooler or "harder" grade.

The sparking plug normally supplied with this engine is the

14 mm. Bosch W.175/T.1.

If this is not obtainable, any of the following will prove satisfactory :

14 mm. Lodge C-N.
14 mm. Champion L.10 or XI..10.
14 mm. K.L.G. F.50.

Component parts of the chassis

C

The **frame** is designed with two oval-section tubes running in "side by side" relationship from tubular steering-head to rear-axle in a continuous unbroken sweep ; with a deep box-section pressing carried above for mounting saddle and rear-guard unit and housing the tool kit whilst another pressed unit is slung beneath for mounting the engine-unit and bipod prop-stand.

The telescopic forks are fully shock absorbing, incorporating fully enclosed springs arranged to work in tension as well as compression. This ensures that after a road shock has been absorbed by the springs, the subsequent re-bound is cushioned to exactly the same extent by the same springs. The sliding movement of the telescopic action is carried in upper and lower phosphor bronze bearing bushes, and grease nipples are fitted for pressure gun lubrication.

The **handlebar bend** has a two-point attachment directly on to the spring anchorages at the top of the fork thus adopting for the first time on a British Moped the method of handlebar fixing which has become accepted as standard practice on full size motor cycles.

The **brakes** are internal expanding in both front and rear wheels. The front one is hand-operated by lever on the right handlebar and adjusted by means of a cable-adjuster on the side of the hub-brake, whilst the rear one is foot-operated by backward pressure on the pedals applying a brake rod, and it is adjusted by a knurled thumb-nut at the rear end of this brake rod.

The **chaincover and mudguards** are of pressed steel, ribbed and beaded for rigidity, and of generous design to give adequate protection and smart appearance.

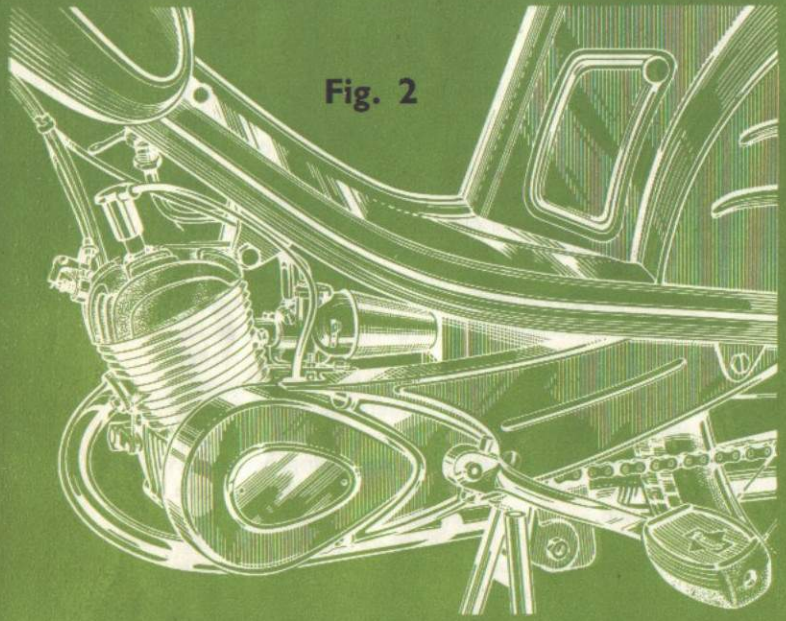

Fig. 2

The **saddle** is a large spring-seat model, specially designed for Mopeds to give a large seating area combined with the necessary freedom for pedalling. It has a swivelling front connection, and double-girder base mounted on two rear spiral-coil springs.

Before starting

A

Check the following points :

1. TYRE PRESSURES SHOULD BE BROUGHT TO

Rider's Weight	Front Tyre	Rear Tyre
10 stone or under ..	25 lbs./sq. in.	36 lbs./sq. in.
11 stone ..	27 lbs./sq. in.	40 lbs./sq. in.
12 stone ..	29 lbs./sq. in.	44 lbs./sq. in.
13 stone ..	31 lbs./sq. in.	48 lbs./sq. in.
14 stone ..	33 lbs./sq. in.	52 lbs./sq. in.
15 stone ..	35 lbs./sq. in.	56 lbs./sq. in.
16 stone ..	37 lbs./sq. in.	60 lbs./sq. in.

2. PETROIL FUEL

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

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

20 parts of top-grade petrol to 1 part of SAE.20 Motor-engine oil ; or

24 parts of top grade petrol to 1 part of SAE.30/40 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. The following grades are approved for your Moped :

1 to 16 ratio	1 to 20 ratio	1 to 24 ratio
Castrol, Two-stroke self-mixing Oil	Castrolite	Castrol XL
Esso Two-stroke self-mixing Oil	Mobiloil Arctic Shell X-100 20/20W Essolube 20 B.P. Energol SAE.20	Mobiloil B

3. GEARBOX AND CLUTCH LUBRICATION

is normally carried out at the factory, but if not the oil must be brought up to the level indicated on the Dip-stick attached to the hexagon headed Filler-plug. This screws into the top of the cast aluminium cover enclosing the primary drive and clutch, and is situated to the right of the gearbox. Fig. 4 clearly shows the position of Filler-plug, and Dip-stick. Use oil of S.A.E.80 viscosity. When filled to correct level, the oil capacity is about ½ pt.

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 10 m.p.h. in bottom gear or 16 m.p.h. in top, and you should change from bottom to top gear when you have reached 7 m.p.h. After this initial 200 miles, the maximum speed may safely be increased to 22 m.p.h. in top gear. Whilst running-in, a slightly greater proportion of oil should be used in the fuel (about 20 per cent extra). During this period the engine will consume rather more fuel than it will after it has been run in.

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.

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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.

B

To start the motor

1. The Fuel-Tap must be turned to its open position, with its lever pointing straight downwards.

2. The Carburettor Air-shutter must be closed by depressing the trigger on the left side of the carburettor body, to the bottom of its slot, and your carburettor 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. Stand on the left side of the machine and lower it off the prop-stand. Then 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. Under very cold conditions, suitable manipulation of the Decompressor lever may assist starting, but this is rarely necessary with engines of this small capacity.

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C

To drive away

1. Allow the motor a few seconds to "pick up" and warm up a little, then open the Carburettor Air-shutter and sit astride the "Gadabout", 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 opening the carburettor twist-grip with the right hand.

2. Upon reaching about 7 m.p.h., disengage the clutch, simultaneously closing the carburettor 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 carburettor twist-grip with the right hand until the desired road speed is attained.

D

To stop

1. Close the carburettor 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 carburettor 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.

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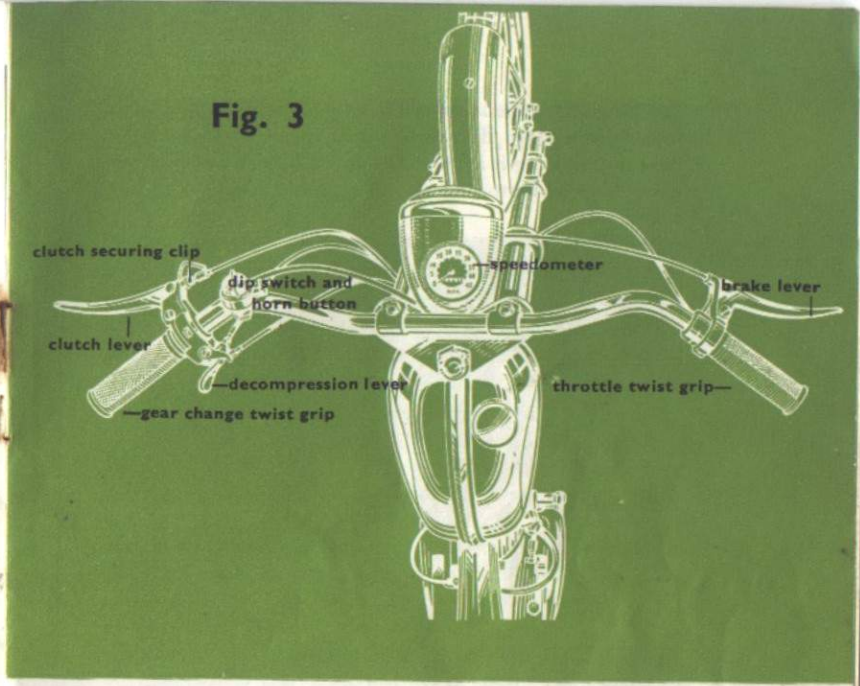
3. If you wish to stop the engine, close the carburettor twist-grip completely, de-clutch and shift the gear to neutral. If your engine continues to tick over, operate the decompressor-lever on the left handle-bar. TURN OFF YOUR PETROL-TAP TO ZERO POSITION, making sure that you have not merely turned it on to RESERVE.

Fig. 3



To pedal the Gadabout

E

1. Pedal assistance will be necessary only when the engine is labouring on very steep hills. In such cases one merely starts pedalling when the engine revolutions have dropped to a level to which one's pedalling can keep pace.

NOTE.—*On really phenomenal hills which prove to be outside the capabilities of Moped and rider, it is worth remembering that even although the rider walks up such hills beside his machine the engine will do all the work of pushing it up the hill for him if he has it running along in bottom gear beside him.*

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2. To pedal without using the engine, depress the clutch lever, and engage the small wire clip provided near the nose for retaining it in the "withdrawn" position. Engage, either Top or Bottom Gear and continue as with a pedal-cycle.

MAINTENANCE

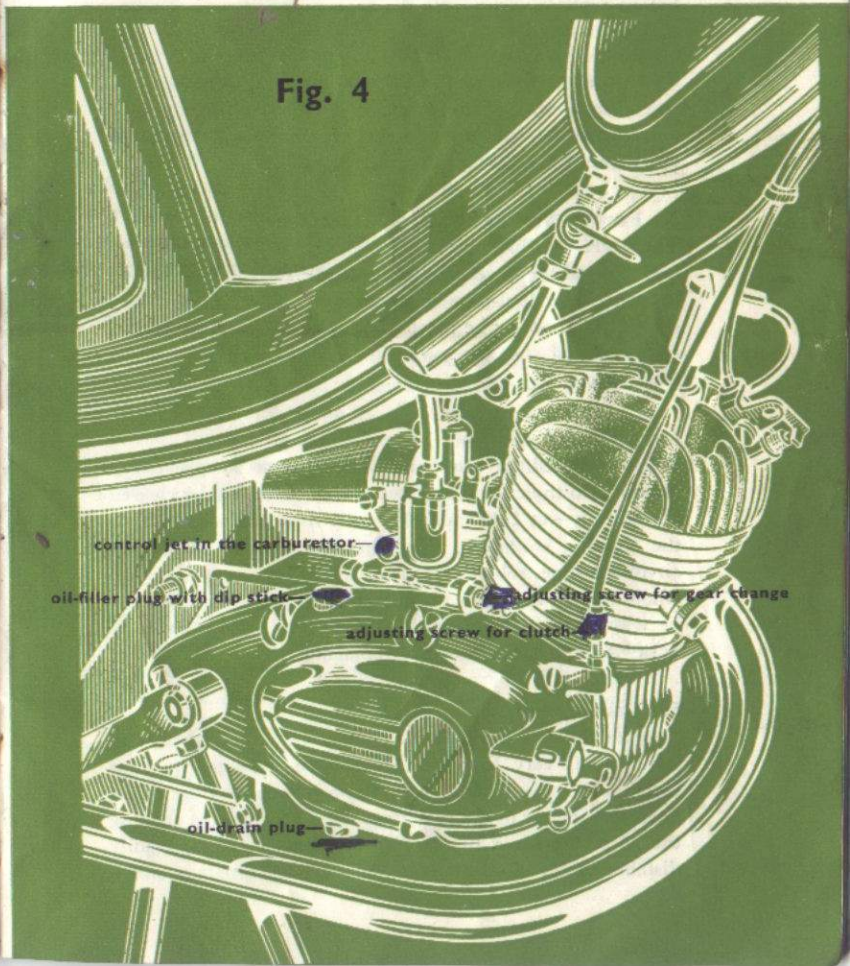
If you detect any irregular running of the machine, or any unfamiliar noise, or anything which may make you think that all is not right, get it seen to at once—do not wait until a minor fault develops into something serious. Regular maintenance is of the greatest importance in avoiding mechanical troubles, 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, crankcase and crankshaft are lubricated by the petrol 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 gearbox 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 clutch cover (see fig. 4). To do a really thorough job, one can use one of the excellent flushing oils which are on the market before re-filling to the level indicated on the dipstick (see fig. 4) with an SAE. 80 oil.

WARNING.—*The 11 mm. hexagon-headed bolt also beneath the clutch cover is NOT the drain-plug and must NOT be loosened.*



2. 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.

WARNING

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.

3. 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 carburettor 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.

4. Air-filter

The oil-wetted air-filter absorbs the dust to prevent it getting into the engine, and accordingly it has to be cleared periodically—at 1,000 to 3,000 mile intervals according to the running condition. To do this, remove the rubber air-intake pipe, release the clamp collar screw and take the whole filter away from the carburettor. The filter should be washed in petrol, dipped in engine oil, and allowed to drain for a few hours before replacing.

5. Carburettor

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 or the spray tube. The carburettor can be readily dismantled for rinsing out in clean petrol, but it is worth noting that the jet screws into the right side of the carburettor body (see fig. 4) and can be easily removed for cleaning without your having to remove or dismantle the carburettor. A choked jet can be cleared by blowing through it, or threading a paint-brush bristle through it.

6. Control-cables

The control cables of carburettor, front-brake, clutch, gear-change and decompressor 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."

7. 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 locknut, 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 a slight cable slackness when the clutch lever is fully home, to ensure that the clutch plates are fully engaged and capable of transmitting the whole of the engine power without slipping. The correct cable adjustment can be effected by a cable-adjuster (fig. 4) situated on top of the front end of the clutch cover, or by another cable-adjuster carried in the nose of the clutch lever mounted on the handlebar. Do not, however, have too much slackness, as this will prevent the complete disengagement of the clutch in the free position.

4. Decompressor cable

This cable must also always have a slight slackness of adjustment when the decompressor is not being used, to ensure that the valve is fully seated and gas-tight. If this is not so, then loss of power will result, whilst running the valve and seating will become burnt, and in extreme cases it will be impossible to start your engine. Adjustment of this cable is made by drawing it as required through the "pinch bolt" terminal carried by the hand-lever on the handlebar.

5. Gear-change cable

This cable also 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. Carburettor 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 carburettor twist-grip.

C. DECARBONISING

After not less than 1,500 miles, poor performance and general sluggishness in your engine may show that it needs decarbonising. We cannot emphasise too strongly that there is no point in doing this before it is really necessary, and in fact 2,000 or even 3,000 miles may frequently be travelled before this point is reached.

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 items from your dealer : Cylinder-head gasket ; Exhaust gasket and Asbestos packing.

(*b*) Get together the necessary tools, namely, a 10 mm. tubular spanner, tubular plug spanner (½" B.S.F. size), 14 mm. tubular (or open jaw) spanner, pliers, an old knife or scraper, and a screw driver. A wiper or clean piece of rag will also be useful.

(*c*) With the screwdriver, slacken off the clip-screw which attaches the decompressor actuating-unit to the cylinder head, and remove this unit from the head.

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

(*e*) With the 10 mm. tubular-spanner, remove the two exhaust-pipe attachment-nuts and washers, from the forward part of the cylinder-barrel.

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

(*g*) With the 14 mm. tubular or open-jaw spanner, remove the mounting-bolt connecting the cylinder-head to the frame.

(*h*) With the 10 mm. tubular spanner remove the four cylinder-head nuts and washers, and lift the head from the cylinder-barrel. Lift off the cylinder-head gasket.

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

(*j*) 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 (whilst doing this, it is advisable to hold down the cylinder-barrel).

(*k*) 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.

(*l*) Bring the piston up to the top of its stroke, by turning the rear wheel with the clutch engaged. (Hold down the cylinder-barrel whilst doing this, otherwise it may move upwards with the piston).

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

(*n*) Now scrape away the carbon deposit from inside the cylinder-head, and wipe clean.
If you have reason to suspect that your decompressor valve is no longer gas tight (i.e. if cylinder compression has been poor), this is now a good time to examine it, proceeding as follows :

(*o*) Compress the decompressor spring and washer, and with the pliers withdraw the split-pin from the cross-hole in the valve stem. Remove the decompressor valve from the cylinder-head.

(*p*) Clean out the decompressor port (which connects up to the exhaust port), taking care not to damage the valve seating of the cylinder head.

(*q*) Examine the conical head of the decompressor valve. If it is burnt or pitted you will need a new one, but if it is in good condition it can be re-assembled into the cylinder-head.

Now dismantle your silencer by removing the nut from the screwed centre-rod with the 10 mm. tubular spanner. Lift out the internal parts and clean them thoroughly.

(*r*) Re-assemble the silencer, using the new asbestos packing.

(*s*) Re-assemble the cylinder-head to the cylinder-barrel, using a new cylinder-head gasket, and re-fit the mounting-bolt connecting head to frame.

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

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

(*v*) Screw the sparking-plug firmly back into the cylinder-head, after having cleaned the points and set the gap to .020: (see pages 11-12). DO NOT OMIT the copper washer from the bottom of the sparking-plug. Re-connect the H.T. (ignition) lead.

(*w*) Return the decompressor actuating-unit to its operating position on the cylinder-head, and re-tighten the attachment-clip screws.

The engine is now ready for starting up.

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.

MAINTENANCE SUMMARY

Daily : Check tyre pressures (see page 15).

Every 500 miles : Check oil level in gearbox and clutch housing (see page 16).

Every 1,000 miles :

Clean air filter if necessary (see page 22).
Check brake and clutch adjustment (see pages 23-24).
Grease front forks.
Clean sparking plug, and check gap.
Drain gearbox and clutch housing, flush, and re-fill (see page 20).

Every 3,000 miles :

Remove the chain and clean it (see page 22).
Lubricate control cables (see page 23).
Clean carburettor, fuel pipe and filter (see page 22).
Clean air filter (see page 22).
Decarbonise engine and silencer (see pages 25-27).
Grease hubs (see page 23).

After the first 600 miles :

Drain gearbox and clutch housing, flush and re-fill (see page 20).

FAULTS & 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 :

Carburettor blocked.
Unscrew jet and clean by blowing through it (see pages 22-23.
Fuel pipe blocked.
Clean fuel pipe, tap, screen filter and strainer (see page 22).
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 12).

If the engine starts but quickly stops again

Fuel pipe blocked.
Clean fuel pipe, tap and filter (see pages 22-23).
Sparking plug dirty.
Clean or replace plug.
Blocked air hole in tank fillter cap.
Remove the filler cap, and clean the vent hole.

If the engine runs at reduced power

Carburettor jet blocked.
Unscrew jet, and clean by blowing through it (see pages 22-23).
Sparking plug overheating.
Replace plug with one of the correct heat value (see page 12).
Air filter blocked.
Clean and oil air filter (see page 22).
Exhaust blocked.
Clean exhaust port and silencer (see pages 26-27).
Contact Breaker not adjusted.
Correct Contact Breaker and clean contacts (see page 11).

Decompression valve leaks.
Remove the valve and clean it (see pages 26-27).

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 26-27).
Carburettor flooding.
Remove the float casing cover, clean and check needle seating. If the float leaks fit a new one.
Carburettor jet loose or too large.
Tighten jet or fit a smaller size.

Engine pulls poorly

Fuel supply inadequate.
Clean fuel pipe, filter and tap (see page 22).
Carburettor jet blocked.
Clean jet (see pages 22-23).
Clutch slipping.
Adjust clutch-cable or renew discs (see page 24).

Engine "back-fires"

Sparking plug overheating.
Replace plug with one of the correct operating temperature (see page 12).
Fuel supply inefficient.
Check and clean fuel pipe (see page 22) *or fit a larger carburettor jet* (see pages 22-23).

Engine cannot be started or clutch slips

Clutch slips.
Check clutch cable adjustment.
Gearcase oil too thick.
Fill with oil of viscosity SAE 80

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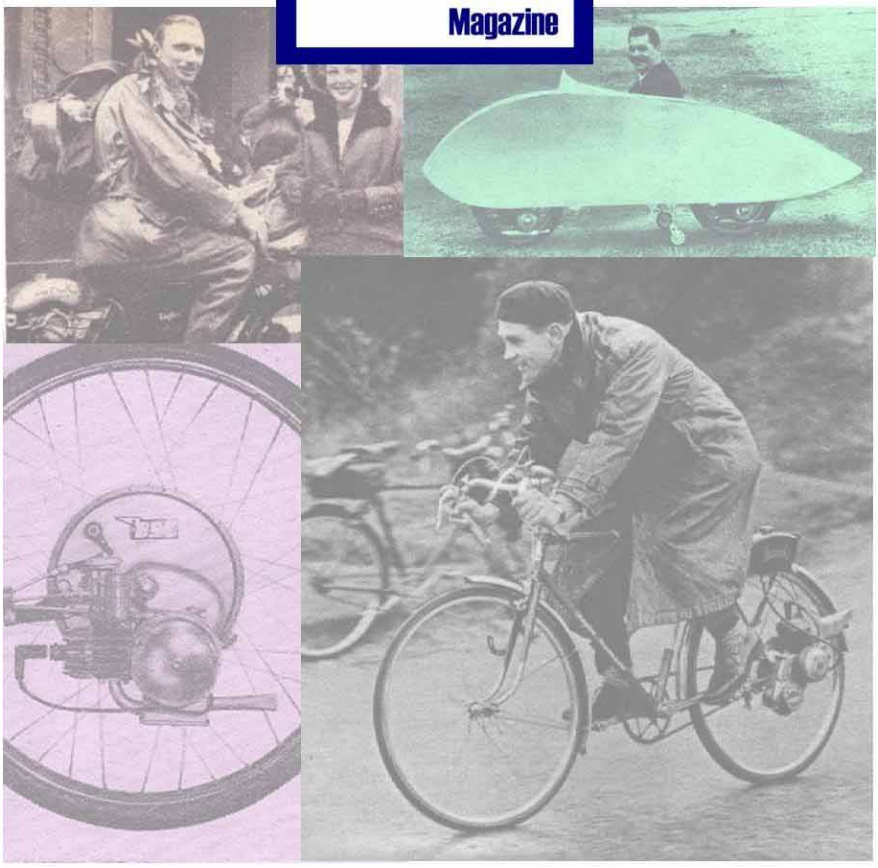

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