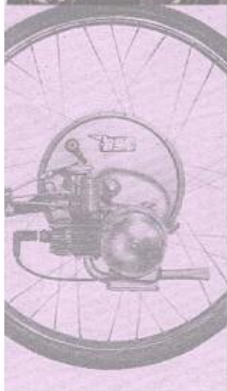


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PHILLIPS

*Gadabout
de Luxe 3*

**RIDERS
HANDBOOK**

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PHILLIPS

*Gadabout
de Luxe 3*



RIDERS HANDBOOK

PUBLISHED BY PHILLIPS CYCLES LTD SMETHWICK . BIRMINGHAM 40

FOREWORD

The Gadabout de Luxe 3 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 6 — 11. You **should** also read page 7 before starting to ride.

Before you ride on public roads you must hold a current driving licence and the Gadabout de Luxe 3 must be taxed, and insured for third-party risks.

2

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.

GENERAL SPECIFICATION

ENGINE UNIT

Type: Rex FM 509, air cooled two-stroke, single cylinder, with unit-construction three-speed gearbox.

Bore: 40.0 mm.

Stroke: 39.5 mm.

Piston Displacement (cubic capacity): 49 cc.

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.

Small-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, 3.08 to 1; middle gear, 1.94 to 1; top gear, 1.63 to 1.

Drive Chain Reduction: 2.166 to 1.

Overall Reductions: Bottom gear, 25.48 to 1; middle gear, 16.05 to 1; top gear, 13.49 to 1.

GENERAL SPECIFICATION

Drive Chain: Heavy duty roller chain, $\frac{1}{2}$ " pitch \times $\frac{3}{8}$ " wide.

Pedal-Drive: Built into rear end of gear box, 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 gauze air-filter and shutter-type choke.

Sparking Plug: 14 mm.

Ignition and Lighting Circuit: Miller flywheel magneto, 6 volt 18 watt (headlamp 6v 15/15 w.: tail lamp 6v. 3w.).

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

4

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.

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. x 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: 9½ pint capacity, with reserve type tap.

Saddle: Wright's E.I. Continental cantilever pattern with rubber top actuated through a central coil spring 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 lighting dipper-switch and horn-button.

Equipment: 3½" Headlamp, with built-in speedometer, tail lamp and horn. Saddlebag, tyre inflator, bipod propstand, tool-kit, carrier, and blank front and rear number plates.

Finish: Flamboyant red enamel, with chromium plated fitments.

RUNNING INSTRUCTIONS

Before starting

1. TYRE PRESSURES

Ensure that tyres are inflated at least to the pressures indicated below, according to the weight of the rider.

<i>Riders weight</i>	<i>Front Tyre</i>	<i>Rear Tyre</i>
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

Use medium grade petrol, but a reputable brand of good quality oil, in the following proportions:

20 parts of petrol to 1 part of 2-stroke self-mixing oil; or
24 parts of petrol to 1 part of S.A.E. 30 motor engine oil.

Self-mixing oil may be poured straight into the tank, but normal engine oil must be first added to the petrol in a separate container and thoroughly mixed before being poured into the tank.

3. GEARCASE 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). When filled to correct level, the oil capacity is about $\frac{1}{2}$ pt. Use oil of S.A.E. 30 viscosity. Gearbox lubrication: Shell X-100 30, Energol S.A.E. 30, Castrol XL, Mobiloil, A, Essolube 30.

4. RUNNING-IN

All new engines have to cover a certain distance before they develop their full power. The Gadabout de-Luxe 3 needs about 600 miles of careful running-in, during which time it should never be allowed to 'race' or to 'labour.'

For the first 200 miles do not exceed:

- 10 m.p.h. in first gear.
- 17 m.p.h. in second gear.
- 23 m.p.h. in top gear.

After this initial 200 miles, top speed may safely be increased to 28 m.p.h. in top gear.

During the running-in period, slightly more oil than normal should be used in the fuel (20% extra).

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

To start

Ensure that fuel tap is pulled out to its open position.

If the gear change twist grip is not in the neutral position (marked O), depress the clutch lever and twist the grip until indicator points to O, operating the trip lever* and rocking machine if necessary.

Sit astride the machine, depress clutch lever, and bring the pedals to a convenient position for quick starting (in forward direction). Release clutch lever.

Thrust pedal smartly forwards and downwards, and at the same time:—

- a. Keep enrichment valve lever depressed with right thumb and do not release it until engine has run for a few seconds.
- b. Depress the decompressor lever with left thumb and release it about half way through the downward thrust.

The engine should now start, and after allowing it to warm up for about half a minute, the machine will be ready to drive away.

* The gear change assembly incorporates a stop mechanism to prevent the rider missing the gear required, and the purpose of the trip lever is to release this mechanism when the rider wishes to change direct from top to bottom gear without engaging the intermediate second gear. If the twist grip is forced past the positive stop without operating the trip-lever, the mechanism may be seriously damaged.

To drive away

Depress the clutch lever and twist gear change grip to bottom gear (marked 1). Release clutch lever slowly and smoothly with left hand and at the same time, with the right hand turn the carburettor twist grip inwards to increase the speed of the engine.

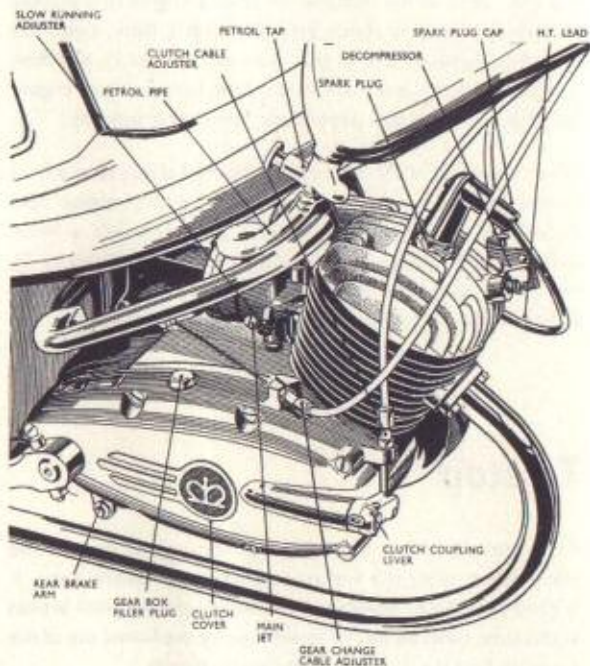
When the speed of the machine has reached about 7 m.p.h. in first gear, depress the clutch lever, reduce engine revs slightly by turning the carburettor grip outwards a little, twist the gear change grip to second gear position (marked 2), and then release the clutch lever and at the same time increase engine speed by turning the carburettor twist grip inwards.

When the speed of the machine has reached about 15 m.p.h. in second gear, depress the clutch lever, reduce engine revs slightly by turning the carburettor grip outwards a little, twist the gear change grip to top gear position (marked 3), and then release the clutch lever and at the same time increase engine speed by turning the carburettor grip inwards.

To stop

Close the carburettor twist grip (turn outwards), depress the clutch lever, apply the brakes, and change to neutral gear. It is good practice to develop the habit of applying both brakes at the same time, so that in an emergency the fullest use of the available braking power is made automatically.

For stops of short duration, keep the engine running quietly (idling) by manipulating the carburettor twist grip, turn the gear change grip to neutral (mark O) and release clutch lever. To stop the engine, turn the carburettor twist grip outwards to the fullest extent, and depress clutch lever. If engine continues running, operate the decompressor lever. Close the petrol tap.

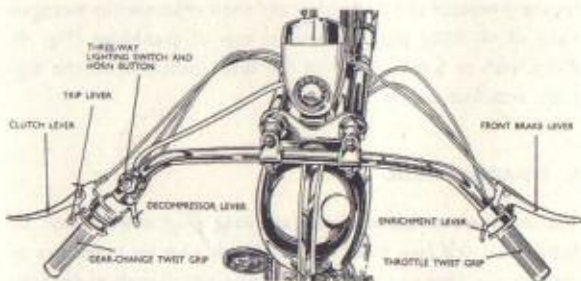


Do not

. . . . attempt to engage the gears when the engine is not running. To do so may damage the gear box. It is in order to change from first, second or third gear to neutral—see instructions under TO START, par. 2.

. . . . sit astride the moped, nor kickstart it while it is supported only by the prop stand.

. . . . wheel the moped backwards while in gear and with clutch lever depressed. This may damage the rear brake mechanism.



MAINTENANCE

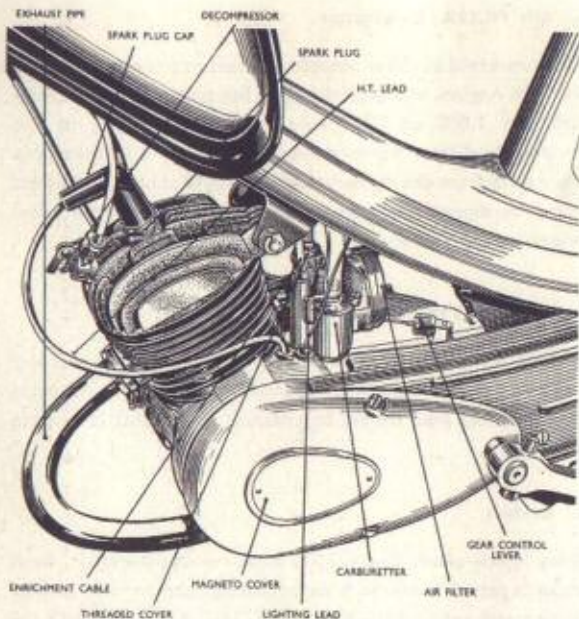
Routine Cleaning and Lubrication

1. POWER UNIT

The cylinder, piston and crankshaft are lubricated by petrol fuel and provided that the recommended ratio of petrol to oil is always carefully observed when refuelling, they should require no further attention. The clutch, primary drive and gears, run in oil and the sump oil bath should be drained after the first 600 miles, *i.e.*, the completion of the running-in period, and thereafter every 1,000 miles. To empty the sump unscrew the hexagon head of the drain plug located on the underside of the crank case. It is recommended that this operation be performed when the engine is warm. To refill, securely replace the drain plug and then unscrew the hexagon head of oil filler plug located at top of crankcase (Fig. 4). Refill with an S.A.E. 30 oil to the level indicated on the dipstick attached to oil filler plug.

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 re-adjust 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.



3. CARBURETTOR

Very fine impurities may settle in a fine deposit at the bottom of the float-chamber or in the fuel ducts, and perhaps choke the jet or the spray tube. The carburettor may 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 and can easily be removed for cleaning without having to remove or dismantle the carburettor. A choked jet can be cleared by blowing through it.

4. AIR FILTER Carburettor

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. Remove the spring clip 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. FUEL FILTER AND FUEL PIPE

The fuel filter is fitted to the fuel tap and should be occasionally removed, rinsed in clean petrol and then refitted. At the same time the fuel pipe should be checked to see that it is quite clear.

6. CHAIN

Keep lightly oiled. Every 3,000 miles remove the chain, wash clean in petrol, immerse in warm chain grease, remove surplus grease and refit. ENSURE THAT THE CLOSED END OF THE SPRING LINK FACES DIRECTION OF TRAVEL.

7. CABLES

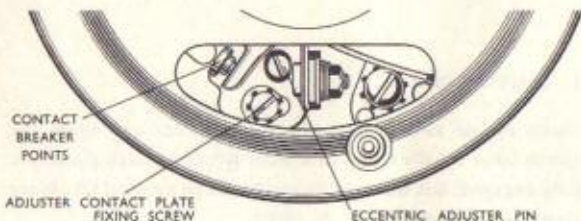
The control cables of carburettor, front brake, clutch and gear change should be lightly oiled at monthly intervals. Apply the oil to the inner wires on the upper ends of the cables and at the same time manipulate the levers to assist the oil to travel downwards inside the cable cover. The use of a force-feed oiler is an alternative method, and whilst not absolutely essential, the force-feed oiler does provide a greater degree of efficiency.

8. 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, re-packed with a soft grease and carefully re-assembled. This should be repeated at 3,000—5,000 mile intervals.

9. MAGNETO

The electric current for ignition, horn and lighting is generated by a Miller flywheel magneto. The current is controlled by contact breaker which requires occasional attention. Remove push-fit cover by levering off with a screw driver or similar tool. The contact breaker will now be visible through one of the slots in the flywheel. The points of the contact breaker should be free from burnt oil or grease. To clean, use a piece of fine emery cloth and finish off with petrol-moistened rag. Do not leave any lint on the points. The gap between the points should be $.012''$. If adjustment is necessary, revolve the flywheel so that the contact lever is lifted to its highest position on the cam. Loosen the adjuster contact plate fixing screw. Adjust sufficient to allow the contact plate to move. Insert the blade of a small screw driver ($\frac{1}{16}''$) into the eccentric adjuster pin and revolve in either direction to obtain contact breaker gap of $.012''$.



Routine adjustments

1. FRONT BRAKE

The internal expanding hub brake is used in the front wheel, it is cable operated by a hand lever. Brake lining wear is taken up by the cable adjuster on the right-hand side of the hub brake. Slacken the lock nut, tighten the adjuster until the linings begin to rub inside the brake drum, then ease the adjuster one turn and retighten the lock nut. When eventually all the adjustment has been taken up by this method, slacken the adjuster to the full extent of its travel, slacken the nut attaching the cable to the brake arm, pull the cable further through the anchor bolt to take up the cable slack and tighten the nut and adjust as before.

2. REAR BRAKE

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

3. CLUTCH CABLE

There should always be a slight cable slackness when the clutch lever is fully home to ensure that the clutch plates are fully engaged, but over slackness should be avoided to ensure complete disengagement of clutch.

4. DECOMPRESSOR CABLE

When the decompressor is not in use the cable should be slightly slack. Adjust as necessary by drawing the cable wire through the pinch-bolt located in the handle lever.

5. GEARCHANGE CABLE

This cable should be slightly slack when top gear is engaged. The adjuster is located beneath the handle twist grip control.

6. THROTTLE CABLE

When the twist grip is in a fully closed position, the cable should be slightly slack. The adjuster is located beneath the throttle twist grip.

7. ENRICHMENT VALVE CABLE

This cable should also be slightly slack when not in use. Adjust as necessary by drawing the cable wire through the pinch-bolt located in the handle lever.

Decarbonizing

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Every 2,000 miles or so the engine will need decarbonizing and the need for the operation will be indicated by loss of power and general sluggishness.

Any authorized Phillips Dealer will be pleased to undertake this work at a reasonable charge, but if the owner feels

competent to tackle the job at home it should be undertaken as follows:—

(a) First obtain new gaskets for the cylinder head and exhaust pipe from an authorized Phillips dealer. The following tools will also be required. A 10 mm. tubular spanner, a tubular plug spanner, a $\frac{1}{4}$ " B.S.F. tubular spanner, a $\frac{5}{16}$ " B.S.F. tubular or open jaw spanner, a pair of pliers, an old knife or scraper, a screw-driver and wiper or clean piece of rag.

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

(c) Disconnect the H.T. (Ignition) lead from the sparking plug.

(d) With the 10 mm. tubular spanner, remove the two exhaust pipe attachment-nuts and washers 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 $\frac{5}{16}$ " B.S.F. tubular or open-jaw spanner, remove the mounting-bolt connecting the cylinder head to the frame.

(g) 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.

(h) With the tubular plug spanner unscrew the plug from the cylinder head.

(i) 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).

(j) 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.

(k) 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).

(l) Carefully scrape away the carbon deposit from the top of the piston, and wipe clean.

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

(n) 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.

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

(p) Examine the conical head of the decompressor valve. Replace if it is burnt or pitted, but if it is in good condition it can be re-assembled into the cylinder head.

(q) Detach silencer from exhaust pipe by loosening centre clip and remove nut from centre rod by inserting tubular spanner ($\frac{1}{2}$ " B.S.F.) into forward end of silencer.

(r) Pull the two halves of the silencer apart, thoroughly clean the interior. Pay particular attention to the clearing of the holes in the centre tube, using a nail or piece of wire for this purpose. The glass fibre inserts should be soft and pliable to be efficient. If they have become hardened through carbon or burnt oil they should be replaced.

(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) Re-assemble exhaust and silencer unit and reconnect the silencer to support bracket attached to frame and the exhaust pipe to front of silencer barrel using new exhaust gasket.

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

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

MAINTENANCE SUMMARY

Daily

Check tyre pressures. (Page 6).

Every 1,000 Miles

Clean air filter. (Page 14).

Lubricate, and if necessary, adjust control cables. (Page 14).

Clean sparking plug and adjust gap between points.
(.015"/.020"). (Pages 12 and 15).

Adjust front brake, if necessary. (Page 16).

Detach and clean silencer. (Page 19).

Every 2,000 Miles

Decarbonise engine, if necessary. (Pages 17 - 20).

Every 3,000 Miles

Clean carburettor, fuel pipe and filter. (Page 14).

Clean and lubricate chains. (Page 14).

Lubricate hub bearings. (Page 15).

Adjust contact breaker points, if necessary. (Page 15).

FAULTS and their CORRECTION

Engine will not Start

No fuel in tank.

Refill.

Fuel tap shut.

Open fuel tap.

Carburettor jet blocked.

Unscrew jet and clean by blowing through it. (See page 13).

Fuel pipe blocked.

Clean fuel pipe, tap, and tap filter. (See page 14).

Ignition cable disconnected or faulty.

Adjust or renew the cable.

Sparking plug dirty.

Remove plug and clean. Check the gap. if plug is faulty renew it.

Engine starts and stops

Fuel pipe blocked.

Clean fuel pipe, tap and tap filter.

Blocked air hole in tank filler cap.

Remove filler cap and clean air hole.

Engine runs with reduced power

Carburettor jet blocked.

Unscrew jet and clean by blowing through it. (See page 13).

Air filter blocked.

Clean and oil air filter.

Exhaust system blocked.

Clean exhaust port and silencer. (See page 19).

Ignition timing incorrect.

Consult your Phillips dealer.

Decompressor valve seated incorrectly.

Remove decompressor and clean. Replace valve if severely burnt or pitted.

Engine runs unevenly

Sparking plug dirty.

Remove plug and clean. Check the gap, if plug is faulty renew it.

Ignition system faulty.

Consult your Phillips dealer.

Engine four-strokes

Exhaust blocked.

Decarbonise exhaust port and silencer. (See page 19).

Carburettor flooding.

Check and adjust carburettor. (See page 13).

Engine pulls poorly

Fuel supply inadequate.

Clean fuel pipe, tap and tap filter. (See page 14).

Carburetor blocked.

Unscrew jet and clean by blowing through it. (See page 13).

Clutch slipping.

Adjust clutch cable, (See page 16), or renew discs (Consult Phillips dealer).

Oil seals worn, indicated by trace of oil inside magdyno cover.
Oil seals to be renewed. (Consult your Phillips dealer.)

Petrol mixture incorrect.
Check proportions of petrol and oil. (See page 6).

Engine back-fires

Sparking plug over-heating.
Clean or replace plug and check ignition timing.

Fuel supply inadequate.
Clean fuel pipe, tap and tap filter. (See page 14).

Engine runs only on rich mixture

Induction pipe gasket incorrectly seated.
Remove induction pipe and replace gasket.

Decompressor ineffective

Escape duct choked.
Remove cylinder head and note escape duct ($\frac{1}{8}$ " dia.) in cylinder casing. Poke with wire or nail to remove stoppage.

SPARE PARTS

The use of spare parts which are not intended for this engine will invalidate our guarantee. The correct parts are available from appointed Phillips dealers. Always quote the engine and frame numbers of your moped when ordering spare parts.

WIRING DIAGRAM FOR GADABOUT DE LUXE 3

