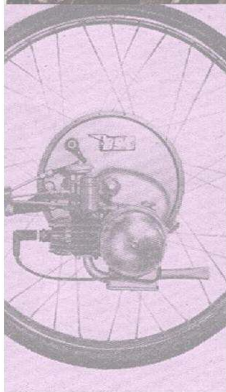


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# PHILLIPS Panda

**RIDERS  
HANDBOOK**

**PRICE 2/6**



# PHILLIPS *Panda*



## RIDERS HANDBOOK

PUBLISHED BY PHILLIPS CYCLES LTD . SMETHWICK BIRMINGHAM 40



Printed in England by Cradley Printing Co. Ltd., Cradley Heath, Staffs.

## FOREWORD

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.

A little time spent on maintaining correct adjustment is more than repaid in longer and better service.

It is also important to remember that extra care is necessary during the first 400 miles or so, i.e., the running-in period, and pages 6 and 7 should be thoroughly read before the engine is first started.

Before you ride on public roads you must hold a current driving licence covering Group G vehicles. You must also ensure that your Panda has a current Road Fund licence, and that you are insured against third-party risks.

## GENERAL SPECIFICATION

### Power Unit

**Type:** Air cooled two-stroke, single cylinder.

**Bore:** 40.5 mm.

**Stroke:** 38.25 mm.

**Cubic Capacity:** 49 c.c.

**Compression Ratio:** 6 : 1.

**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:** Phosphor bronze bush type.

**Mainshaft Bearings:** Ball bearing type.

**Clutch:** Advanced design, dry multi-plate type.

**Gear Ratio:** 17.3 : 1.

**Power Chain:** Extra heavy duty roller chain,  $\frac{1}{2}$ " pitch by  $\frac{3}{16}$ " wide.

**Carburettor:** Bing model No. 1/12/27 with oil moistened air filter. With special enrichment device for starting from cold, self cancelling from twist grip.

**Sparking Plug:** K.L.G. F.20, 14 mm. .015"/.020" gap.

**Ignition and Lighting:** Miller flywheel magneto. 6 volt 18 watt. (Headlamp 6 v. 15/15 w. Tail lamp 6 v. 3 w.)

**Ignition Setting:** 3.2 mm. ( $\frac{1}{8}$ " ) in advance of top dead centre.

**Exhaust Silencer:** Easily dismantled completely for cleaning.

**Lubrication:** Petroil mixture.

## GENERAL SPECIFICATION

### Chassis

**Wheel Base:** 45".

**Length Overall:** 70".

**Height Overall:** 38".

**Total Weight:** Approximately 70 lb.

**Frame:** Tubular cradle pattern with brazed lugs and integral combination bracket for pedal drive, engine rear mounting, and bipod stand.

**Fork:** Heavy duty pattern, with cast crown, butted column, and strengthening liners in fork blades.

**Handlebars:** Heavy duty, Continental high-raised pattern.

**Brakes:** Front— $3\frac{1}{2}$ " dia. internal expanding, hand operated.  
Rear—Coaster hub pattern, foot operated.

**Pedals:** Phillips All-Rubber, No. 153.

**Tyres:** 23" x 2" with Schrader type valves.

**Mudguards:** Deep section pressed steel, with pressed steel channel-section stays.

**Fuel Tank:**  $6\frac{3}{4}$  pint capacity. With reserve tap.

**Saddle:** Large Continental type, rubber top, with front fulcrum springing.

**Handlebar Controls:** Carburettor twist grip control, front brake lever, and engine decompressor lever on right. Interlocking clutch lever on left, together with three-way lighting switch and horn button.

**Equipment:**  $3\frac{1}{2}$ " headlamp, tail lamp, and electric horn. Bipod stand, carrier, front and rear number plates (blank), tyre inflator, large tool-bag and tool-kit.

**Finish:** Silver Grey, with tank and fairings in flamboyant red. Chromium plated fittings.



# RUNNING INSTRUCTIONS

## Before Starting

Check the following points:

### 1. TYRE PRESSURES SHOULD BE:

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:

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.

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 Phillips Panda.

1 to 16 ratio	1 to 20 ratio
Castrol, two-stroke self-mixing oil	Castrolite
MobilMix TT	Mobiloil Arctic
Esso two-stroke self mixing oil	Shell X-100 20/20W
	Essolube 20
	B.P. Energol SAE.20

### 3. RUNNING-IN INSTRUCTIONS

should be carefully studied. All new engines have to cover a certain distance before they develop their full power. The Panda engine requires about 400 miles, during which it should never be allowed to race or labour, and you should not make too heavy demands upon it. For the first 200 miles you should not exceed 16 m.p.h. The next 200 miles the maximum speed may be increased to 22 m.p.h. During the running-in process, 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 after it has been run-in.

**The life and performance of your Panda engine largely depends upon the way you treat it during the first critical 400 miles. Care and patience at this stage will pay good dividends for years to follow.**

## How To Ride

1. Pull out the fuel tap to its open position. Then completely close the twist-grip control and depress choke needle (Fig. 2). Re-open twist-grip control NOT MORE THAN  $\frac{3}{16}$ ". Depress the decompressor lever with thumb, and ensure that the clutch is fully engaged. Sit astride the saddle and start to pedal your Panda as an ordinary cycle. After reaching a speed of approximately 8 m.p.h. release the decompressor lever, when the engine should start. After about five seconds have elapsed, momentarily turn the twist-grip to its fullest extent. This will raise the choke-needle in the carburettor and ensure correct mixture for continued running. The speed of the engine and your rate of travel may now be regulated by

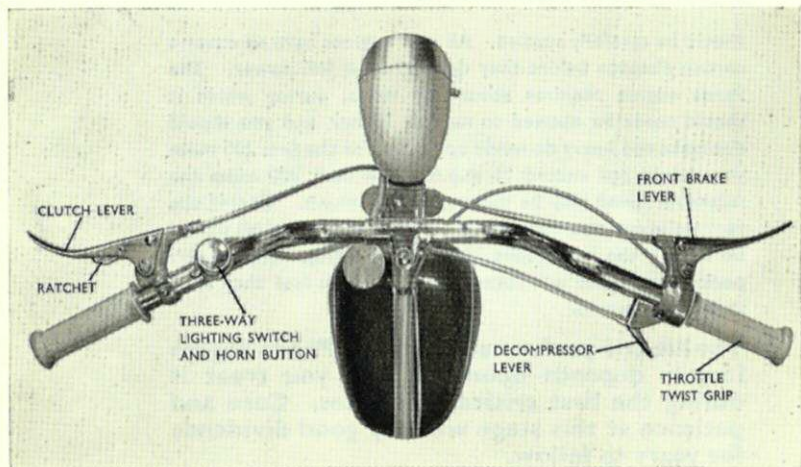


FIG. 1



DEPRESSING CHOKE NEEDLE

FIG. 2

manipulation of the twist-grip. (Remember not to race or labour the engine during the first 400 miles).

2. An alternative method of starting is as follows:  
Put the Panda on its stand. Pull out the fuel tap to its open position. Depress choke needle (Fig. 2). Set pedal to convenient position for pushing forwards and downwards. Engage clutch by releasing ratchet from clutch lever. Press the pedal smartly forwards and downwards. The engine should now start. Be very careful to ensure rear wheel is

clear of the ground while clutch is engaged. Disengage clutch by pulling up the clutch lever and lower the machine from its stand. Allow engine a few seconds to warm up. Sit astride the saddle. Engage the clutch slowly and smoothly with left hand and simultaneously turn throttle twist grip with right hand.

3. A slow-running adjuster is located at left side of carburettor. (See *fig. 3*). Screw in or out as necessary, to adjust idling speed.

## **To Stop**

1. Close the throttle twist-grip, apply the brakes and disengage the clutch. 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 make a short stop, as for instance, at traffic signals or in traffic hold-ups, the throttle twist-grip can be manipulated to keep the engine "ticking over."

3. If you wish to stop the engine, close the throttle twist-grip completely, and disengage the clutch. If your engine continues to tick over, operate the decompressor-lever on the handlebar. Always cut off petrol on stopping engine to prevent oil settling in float chamber of carburettor and thereby preventing a quick re-start.

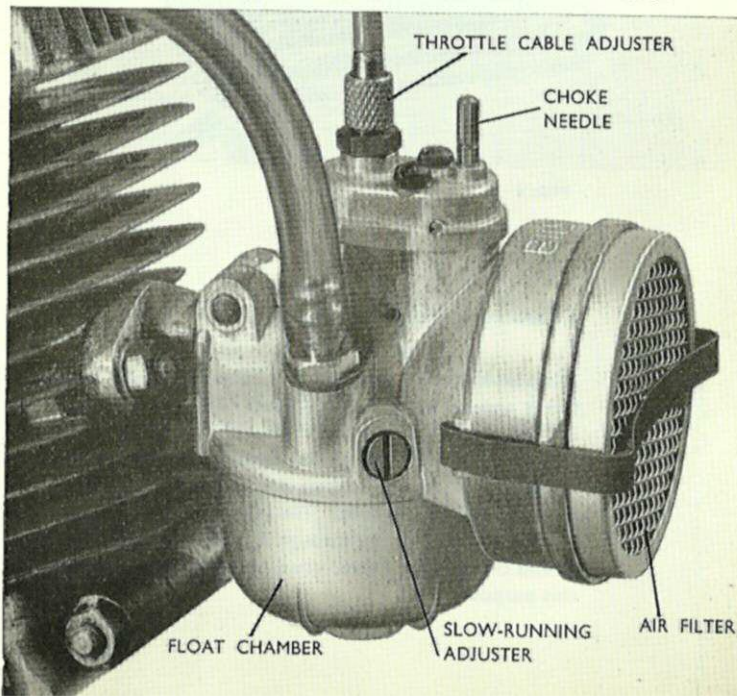
# MAINTENANCE

## Routine Cleaning And Lubrication

### I. ENGINE

As already stated, the cylinder and crank case are lubricated by the petrol fuel and provided that you adhere carefully to the recommended ratio of petrol to oil, the cylinder and crank case require no further lubrication.

FIG. 3



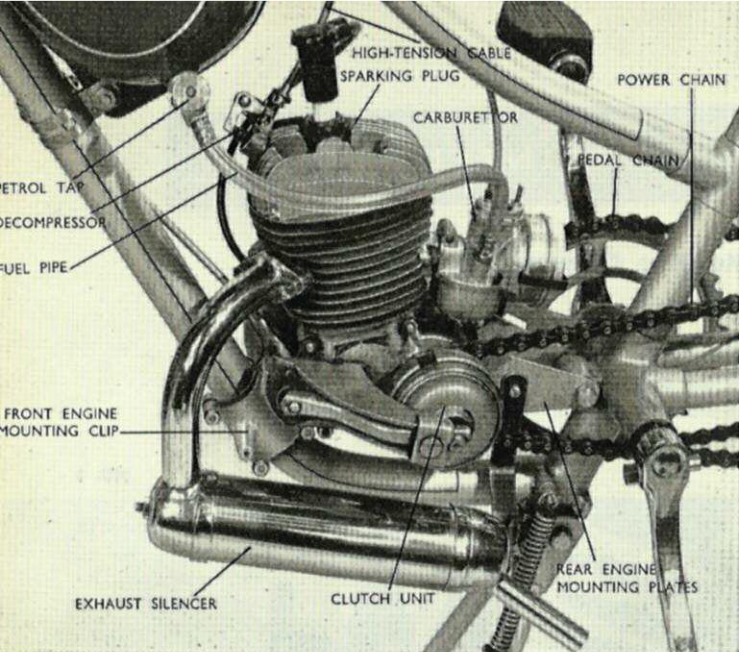


FIG. 4

## 2. CARBURETTOR

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It is possible for very fine impurities to pass through the fuel-filters and to settle at the bottom of the float chamber or in the fuel ducts, or perhaps choke the jet. To clean the float chamber unscrew it by turning the hexagon boss at its base. To clean the jet, use a screw driver to remove it from the lower end of centre tube. The jet should be cleared of any obstruction by blowing through it, or pushing a paint brush bristle through it. Never use a needle or similar article for this purpose.

### **3. 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 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.

### **4. FUEL-FILTER 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.

### **5. CONTROL-CABLES**

The control cables of carburettor, front brake, clutch 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 run down the inner wires of the cables. 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.

### **6. CHAINS**

If the rollers look dry and shiny, lubricate with a little motor or gear-oil. Apply oil sparingly to power chain, otherwise it



may seep through to the clutch plates and cause them to slip. Every 3,000 miles it is advisable to remove the chains, wash in petrol or paraffin, and immerse in a warm chain grease. Let the surplus lubricant drain off before refitting. It is important, when replacing the chains, to make sure that the spring clips of the connecting links are the right way round—with the open end of the spring to the rear, in relation to the forward movement of the chain.

#### **7. HUB BEARINGS**

Three or four drops of oil should be applied to the lubricator caps located in the barrels of the hubs, every 1,000 miles or so. It is most important that not more than three or four drops are applied to the front hub at any one time, otherwise there is a danger of the oil seeping through to the brake linings and thereby rendering the front brake ineffective.

## MAINTENANCE contd.

### Routine Adjustments

#### I. FRONT BRAKE

The adjusting device is located at the end of the cable cover on the right hand side of the hub brake. Slacken the hexagon lock nut and screw back the knurled adjuster until the lining

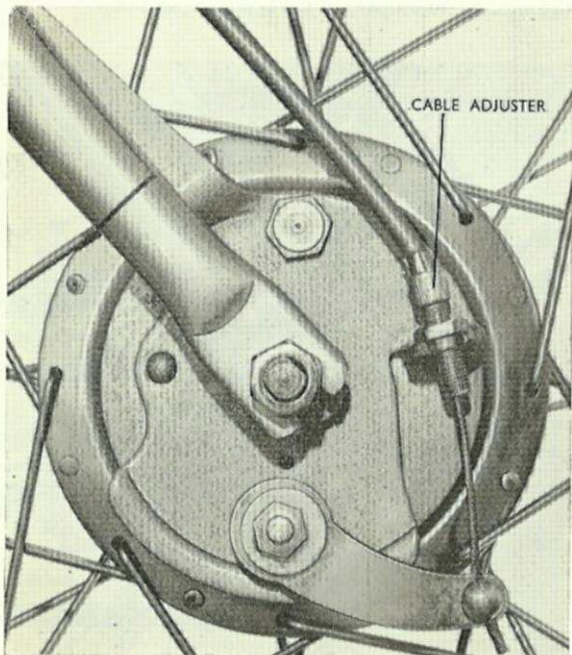


FIG. 5.

begins to rub inside the brake drum, then ease down the adjuster about one turn to clear the lining from the drum. Re-tighten the lock nut. If, after several adjustments have been made it is found the adjuster has reached the limit of its upward 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

The Coaster pattern hub-brake is so designed as to obviate the need for adjustment of the braking mechanism.

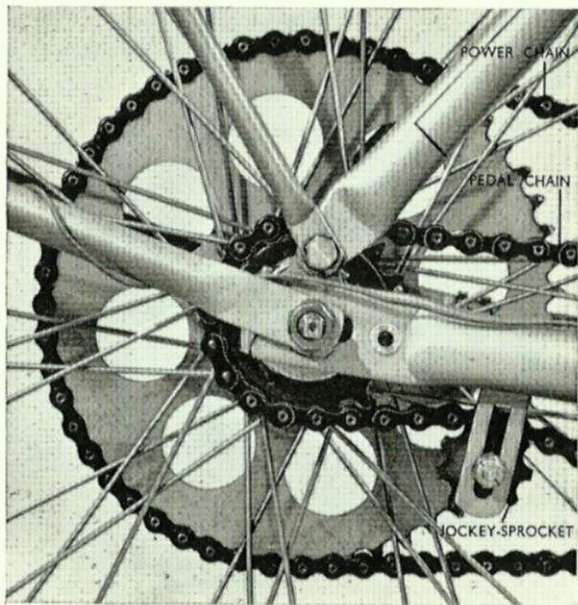


FIG. 6

### **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 situated 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 in use, to ensure that the valve is fully seated and gas-tight. If this is not so, loss of power will result and the valve and seating will become burnt. In extreme cases, it will be impossible to start the 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. 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 top of the carburettor.

### **6. CHAINS**

#### **Power Chain**

Slacken rear hub spindle nuts and pin of the brake anchor arm clips, and also slacken pedal chain by means of jockey sprocket. Tighten chain-adjuster nuts by an equal amount to provide for about  $\frac{3}{8}$ " of play in the chain at its tightest point.

Retighten spindle nuts and brake anchor arm clip pin.  
Retension pedal chain.

## Pedal Chain

Slacken jockey sprocket and move up or down, as required, to provide correct tension as described above for driving chain.

## 7. WHEEL BEARINGS

### Front

Loosen outside spindle nut on left side of hub. Loosen lock-nut on inside of fork blade. Gradually tighten the cone with a cone spanner. Note that the left hand cone is flatted for this purpose. Spin the wheel to make sure that it revolves freely. Re-tighten first the lock-nut and then the outside spindle nut.

### Rear

Loosen outside spindle nut on left side of rear hub. Loosen knurled lock ring located inside rear stays. Fit square in spanner P321 on square at opposite end of spindle and turn until bearings are correctly adjusted. Tighten knurled lock ring, holding spanner firmly on spindle square whilst this is done. Spin wheel, holding the pedal stationary. The wheel should run freely but should stop instantly when back pressure is applied to the pedals. Spin wheel to make sure that it revolves freely.

## 8. STEERING HEAD BEARINGS

Loosen the hexagon lock nut and gradually tighten the knurled screw-race to take up any play in the head bearings. Remember to re-tighten the hexagon head lock nut.

## Ignition

### 1. 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 (see *fig. 8*) 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 a 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 ( $\frac{1}{8}$ " ) into the eccentric adjuster pin and revolve in either direction to obtain contact breaker gap of .012".

### 2. SPARKING PLUG

The electrodes must be kept clean and the gap between them maintained at .015"/.020". Detach high tension cable and unscrew plug from cylinder head. Use a wire brush to clean, and correct width of gap by bending the side electrode toward or away from the centre electrode, as necessary. Do not attempt to bend the centre electrode. If a new sparking plug is required, a K.L.G. F.20 is recommended.

# WIRING DIAGRAM FOR PANDA MOPED

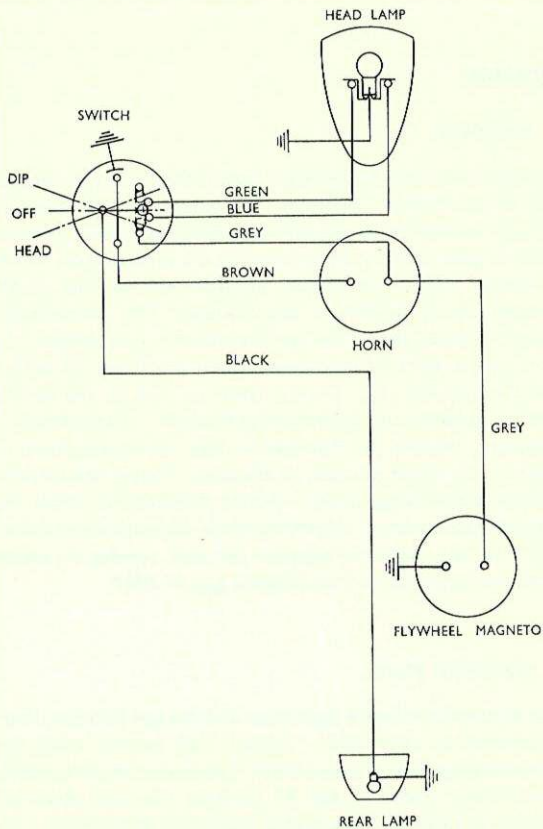


FIG. 7

The ignition system and sparking plug may be tested by re-connecting the high tension cable to the sparking plug which should then be placed against the cylinder—metal to metal. The engine should then be turned by means of the pedals, and the efficiency of the ignition system and sparking plug will be confirmed if a strong blue spark jumps across the electrodes.

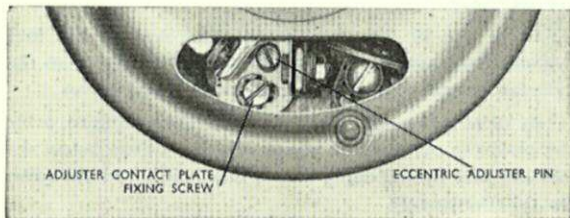


FIG. 8

## Decarbonising

1. Every 2,000 miles or so your engine will need decarbonising and the need for this operation will be indicated by a loss of power and general sluggishness.

2. Your Phillips dealer will be pleased to undertake this work for you at a reasonable charge, but if you feel competent to tackle this job yourself, it should be undertaken as follows:

(a) Before starting, new gaskets for the cylinder head and exhaust pipe should be obtained from your Phillips dealer. The following tools will also be required. 10 mm. tubular spanner, tubular plug spanner,  $\frac{5}{16}$ " B.S.F. 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.



- (b) Remove engine fairings.
- (c) Remove decompressor from cylinder head and disconnect ignition cable from sparking plug.
- (d) Detach exhaust pipe and silencer by using the 10 mm. tubular spanner to remove the two hexagon nuts and washers holding the exhaust pipe to the cylinder barrel, and unscrewing the bolt, washer and nut attaching the silencer to its support bracket.
- (e) Using tubular plug spanner, unscrew the plug from the cylinder head.
- (f) Using the 10 mm. tubular spanner, remove the four cylinder head nuts and washers, and lift the head from the cylinder barrel. Also remove the cylinder head gasket.
- (g) 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).
- (h) 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.
- (i) 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).
- (j) Carefully scrape away the carbon deposit from the top of the piston, finishing off by wiping it clean.
- (k) Now scrape away the carbon deposit from inside the cylinder-head, and wipe clean.
- (l) 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.
- (m) Clean out the decompressor port (which connects up to the exhaust port), taking care not to damage the valve seating of the cylinder head.

(n) 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.

(o) Re-assemble the silencer.

(p) Re-assemble the cylinder-head to the cylinder-barrel using a new cylinder-head gasket.

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

(r) Re-connect the silencer to its support bracket.

(s) Screw the sparking-plug firmly back into the cylinder-head, after having cleaned the points and set the gap to .020".

**Do not omit** the copper washer from the bottom of the sparking-plug. Re-connect the ignition cable.

(t) Fit decompressor to cylinder-head.

The engine is now ready for use again.

## MAINTENANCE SUMMARY

### Daily:

Check tyre pressures. (Page 6).

### Every 1,000 Miles:

Clean air filter. (Page 13).

Lubricate, and if necessary, adjust control cables. (Page 13).

Clean sparking plug and adjust gap between points. (.015"/.020"). (Pages 19 and 21).

Adjust front brake, if necessary. (Pages 15 and 16).

Detach and clean silencer. (Page 21 and 22).

### Every 2,000 Miles:

Decarbonise engine, if necessary. (Pages 21 — 23).

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### Every 3,000 miles:

Clean carburettor, fuel pipe and filter. (Pages 12—13).

Clean and lubricate chains. (Page 13 and 14).

Lubricate hub bearings. (Page 14).

Adjust wheel bearings, if necessary. (Page 18).

Adjust steering head bearings, if necessary. (Page 18).

Adjust contact breaker points, if necessary. (Page 19).

## 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 12).*

Fuel pipe blocked.

*Clean fuel pipe, tap, and tap filter. (See page 13).*

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 but quickly 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.*

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### Engine runs with reduced power

Carburettor jet blocked.

*Unscrew jet and clean by blowing through it. (See page 12).*

Air filter blocked.

*Clean and oil air filter.*

Exhaust system blocked.

*Clean exhaust port and silencer. (See pages 22 and 23).*

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 pages 22 and 23).*

Carburettor flooding.

*Check and adjust carburettor. (See page 12).*

### **Engine pulls poorly**

Fuel supply inadequate.

*Clean fuel pipe, tap and tap filter. (See page 13).*

Carburettor blocked.

*Unscrew jet and clean by blowing through it. (See page 12).*

Clutch slipping.

*Adjust clutch cable, or renew discs. (See page 17).*

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 pages 6 and 7).*

## **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 13).*

## **Engine only runs 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 thick wire or nail to remove stoppage.*

## **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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