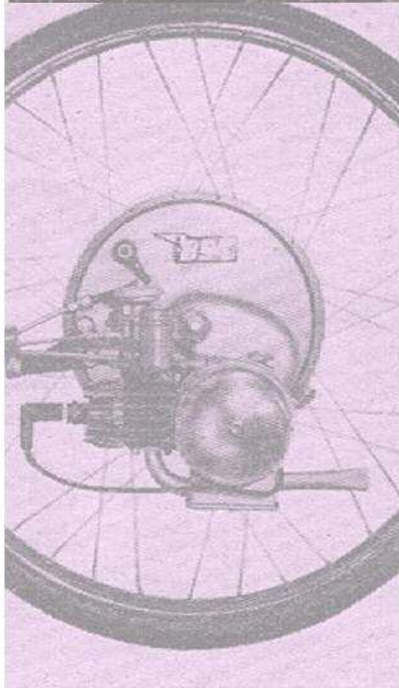
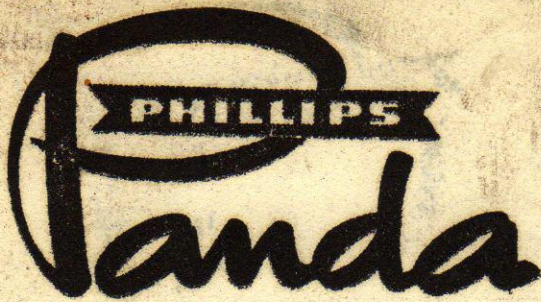


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# SERVICE SHEET

NUMBER 1.

DATE April 1959.

## SUBJECT

## TECHNICAL DATA

APLINS  
395 BATH ROAD  
CL 4  
TEL: 772 5

Type: Air cooled two-stroke, single cylinder.

Bore: 40.5 mm.

Stroke: 38.25 mm.

Cubic Capacity: 49 cc.

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: Phos. Bronze bush type.

Mainshaft Bearing: 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. F/12/27 with oil moistened air filter. With special enrichment device for starting from cold, self cancelling from twist grip.

Sparking Plug: E.L.G. F.20. 14 mm. .015"/.020" gap.

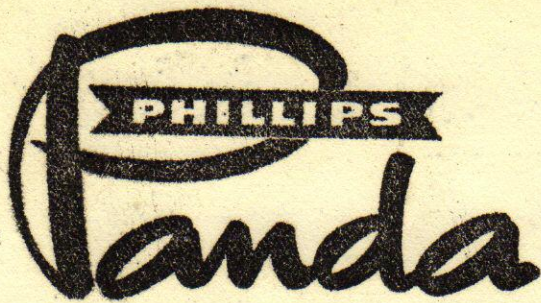
Ignition and Lighting: Miller flywheel magneto. 6 volt 18 watt (Headlamp 6v. 15/15w. Tail Lamp 6v. 3w.)

Ignition Setting: 3.2 mm (1/8") in advance of top dead centre.

Exhaust Silencer: Easily dismantled completely for cleaning.

Lubrication: Petroil mixture.





# SERVICE SHEET

2.

NUMBER

DATE

April 1959.

## SUBJECT

### RUNNING DATA

#### TYRE PRESSURES.

RIDERS 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 and over	..	..	31 lbs./sq. in.	48 lbs./sq. in.

#### PETROL FUEL.

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.

#### 1 to 16 RATIO.

Castrol, two-stroke self-mixing oil.

MobilMix TT.

Esso two-stroke self-mixing oil.

#### 1 to 20 RATIO.

Castrolite.

Mobiloil Arctic.

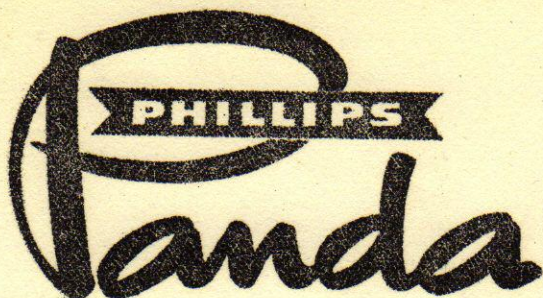
Shell X-100 20/20W.

Essolube.

B.P. Energol SAE. 20.

PHILLIPS  
395 BATH ROAD  
BRI  
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## SERVICE SHEET

NUMBER 3.

DATE April 1959.

### SUBJECT

TO REMOVE THE ENGINE UNIT FROM THE FRAME

Remove R.H. and L.H. fairings.

Remove carburettor complete, by loosening pinch bolt and sliding carburettor off cylinder induction pipe.

Disconnect decompressor and clutch control cables. Disconnect main lighting cable which is joined by the snap connector to a lead from the magneto. Uncouple power chain from sprocket.

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.

Unscrew the four bolts and nuts securing the engine front mounting clip located on the frame down tube. Unscrew the clutch bracket bolt. Unscrew bolt securing the rear mounting plates to the bracket located at the lower end of the seat tube.

The engine may now be completely removed from the machine.

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TEL: 77576





# SERVICE SHEET

NUMBER 4.

DATE April 1959.

## SUBJECT

### TO DISMANTLE THE MAGNETO

When the push-fit flywheel cover is removed, the flywheel will be exposed showing the nut which secures the wheel to the shaft.

Remove the nut by using a good fitting spanner (a 14 mm. socket with wrench is recommended) and turn in an anti-clockwise direction.

(Fig. 1.) The nut will have been tightly secured, and it may be necessary to give the lever of the spanner a sharp tap to release it. (Fig. 2.)

When the nut is removed, screw in the flywheel-extractor making sure that the threads do not cross and also ensure that it is screwed in to the flywheel to its fullest extent. Then screw down the centre bolt of the extractor using the correct size spanner. (Fig. 3.)

When the centre bolt is right home, give the spanner handle a sharp tap to release the flywheel from the engine shaft. The flywheel can then be removed from the machine. Ensure that the magnets do not attract any foreign matter when the flywheel is removed from the machine.

Should it be necessary to remove the stator plate, this is achieved by removing the two securing screws which enter through the slotted holes into the engine casting.

When refitting the magneto, reverse the dismantling process. Check that points start to break at 3.2 mm. ( $\frac{1}{8}$ " ) in advance of top dead centre.

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395 BATH ROAD  
BRISTOL, 4  
TEL: 77378



# PHILLIPS Panda

## SERVICE SHEET

NUMBER 5

DATE APRIL 1959

### SUBJECT:

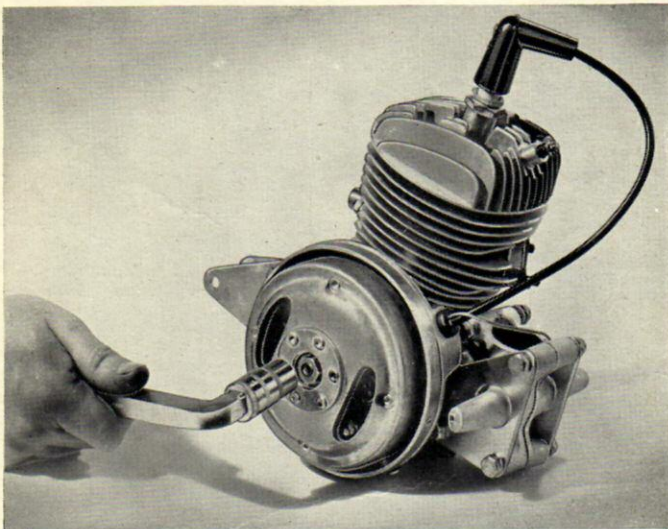


FIG. 1

FITTING THE 14 mm. SOCKET  
WRENCH TO THE FLY-  
WHEEL NUT.

FIG. 2

RELEASING THE  
FLYWHEEL NUT.

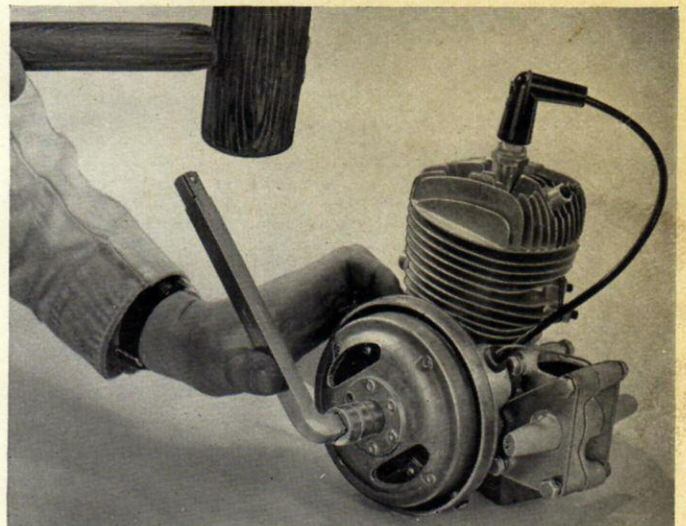
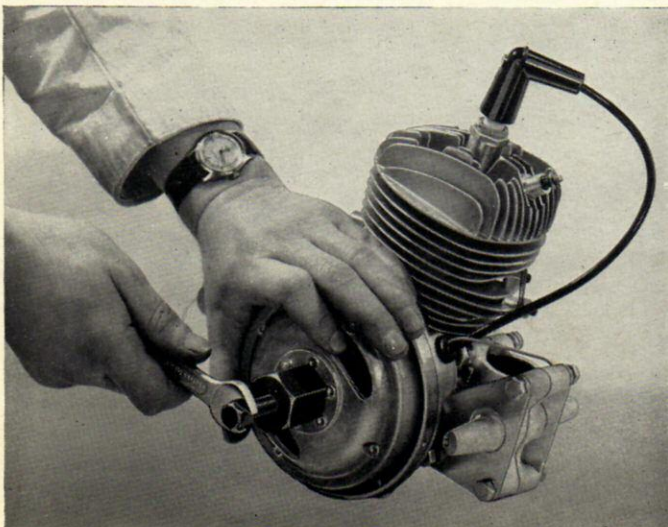


FIG. 3

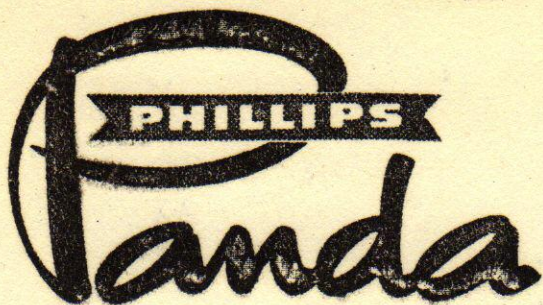
USING THE FLYWHEEL  
EXTRACTOR TO REMOVE  
THE FLYWHEEL.



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395 BATH ROAD  
BRISTOL, 4  
TEL: 77318







## SERVICE SHEET

NUMBER

6.

DATE

April 1959.

### SUBJECT

TO ADJUST CONTACT BREAKER POINTS  
AND IGNITION TIMING.

Remove push-fit magneto cover and sparking plug.

The contact breaker will now be visible and accessible through one of the slots in the flywheel casting. Revolve the flywheel so that the contact lever is lifted to its highest position on the cam and then loosen the adjuster contact plate fixing screw just 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 turn in either direction as necessary to obtain the gap of .012" between the points.

To retune the ignition, slacken - but do not remove - the two screws clamping the armature plate unit to the side of the flywheel.

Revolve the flywheel until the piston reaches top dead centre, and then turn the flywheel well forward (clockwise) and then gradually back again (anti-clockwise) until the piston has moved up to 3.2 mm. below and in advance of top dead centre. The positioning of the piston may be checked through the sparking plug hole in the cylinder head. Through the flywheel slots the armature plate may be twisted around (clockwise to retard, anti-clockwise to advance) until the contact breaker points are just beginning to open. Tighten the two clamping screws.

After these adjustments it is recommended that an actual running test is carried out as a final check.

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TEL: 773-8





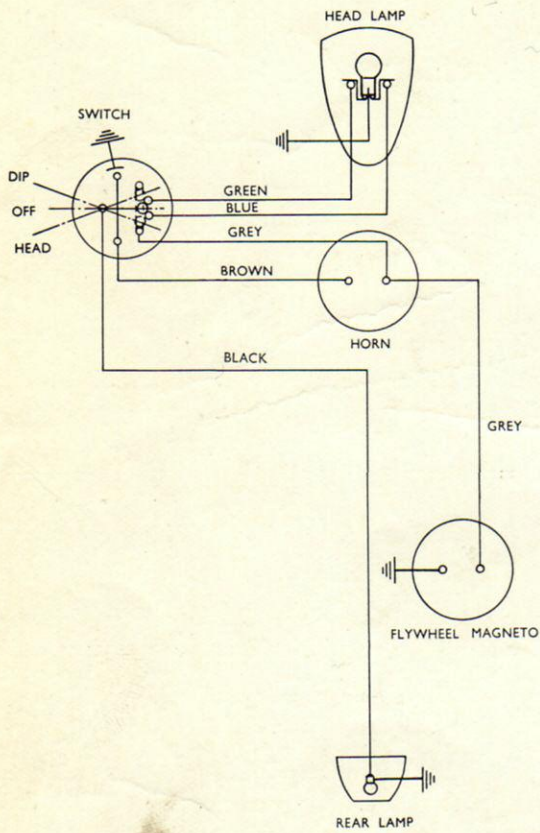
# SERVICE SHEET

NUMBER 7

DATE APRIL 1959

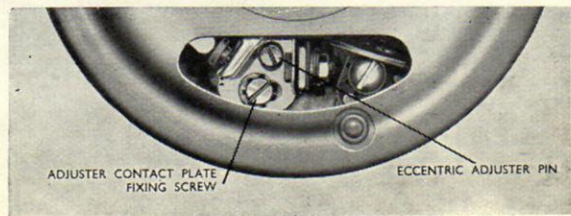
**SUBJECT:** WIRING DIAGRAM AND CONTACT BREAKER ADJUSTMENT

WIRING DIAGRAM FOR PANDA MOPED



WIRING DIAGRAM.

CONTACT BREAKER POINTS  
VISIBLE THROUGH SLOT IN  
FLYWHEEL.



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## SERVICE SHEET

NUMBER 8.

DATE April 1959.

### SUBJECT

#### TO REMOVE AND STRIP THE CLUTCH

Remove left-hand fairing.

Disconnect clutch control cable.

Slacken the bolt holding the clutch arm bracket.

Unhook the wire circlip retaining the clutch cap (Fig. 4.) and pull this cap off complete with centre-stud, thrust-bearing and circlip.

If it is desired to dismantle the centre stud, it is now only necessary to spring open and remove the circlip situated outside the domed cap on the outer end of the centre stud. Before removing the bearing, note which way it is fitted. (Fig. 5.) If it is assembled the wrong way round, the bearing case only, and not the ball race will carry the thrust.

Slacken the grub screw fitted within the end threads of the clutch securing nut. Remove the securing nut, using a 17 mm. socket and wrench. (Fig. 6.)

Lift out the spring carrier plate, springs, spring-cups and pressure plate (or cup.) Note that the raised surface of the spring carrier plate should face inwards.

Remove the clutch plates, noting the order in which they have to be reassembled, i.e., driving friction disc (asbestos fibre faced) innermost, then a driven steel plate (keyed periphery), then another driving friction disc, then a driven steel plate, and lastly the fibre ring.

The clutch outer casing and sprocket complete with roller-bearing and driving sleeve can now be withdrawn from the clutch shaft - preferably with a specially designed clutch extracting tool available to order, from Phillips Service Department. (Fig. 7.)

To dismantle the roller bearing and driving sleeve, spring open and remove the circlip situated alongside the face of the sprocket - circlip pliers are recommended for this job.

When reassembling the clutch unit, always use new pressed circlips.

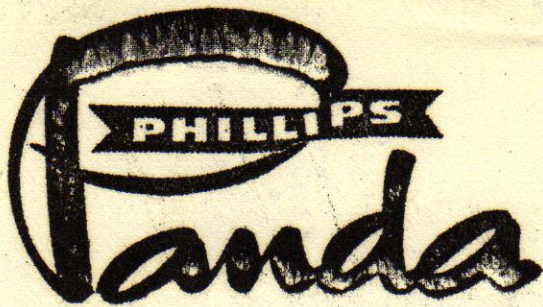
Do not allow oil, grease or paraffin to reach the clutch plates, otherwise clutch slip will occur.

Ensure that the centre elongated holes in the friction faced discs are not deformed.

continued .....

APLINS  
395 BATH ROAD  
BRISTOL, 4  
7376





## SERVICE SHEET

NUMBER 8. (cont...)

DATE April 1959.

**SUBJECT** TO REMOVE AND STRIP THE CLUTCH. (Cont...)

The springs should be replaced if broken, bent, or shortened through fatigue. (Correct length, 31/32".)

The edges of the slots in the outer casing should be smooth. If rough, the clutch will not operate satisfactorily.

The driving sleeve should be examined for play in its bearing. Excessive play is usually due to wear on the side-thrust washer.

The sprocket teeth should be examined for wear. Hook shaped teeth will denote this.

Assembly should be carried out in the reverse order to dismantling.

A smear of grease should be applied to the driving sleeve bearing. The centre-stud thrust-bearing can be lubricated by means of a grease gun applied to the outer end of the centre stud, but only a small amount of grease should be applied. It will help assembly if the springs, spring caps, spring plate and pressure plate are put together before being placed inside the clutch casing. Make sure that the clutch retaining nut is tight before screwing in the grub-screw.

PHILLIPS  
593 BATH ROAD  
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# PHILLIPS Panda

## SERVICE SHEET

NUMBER 9

DATE APRIL 1959

### SUBJECT:

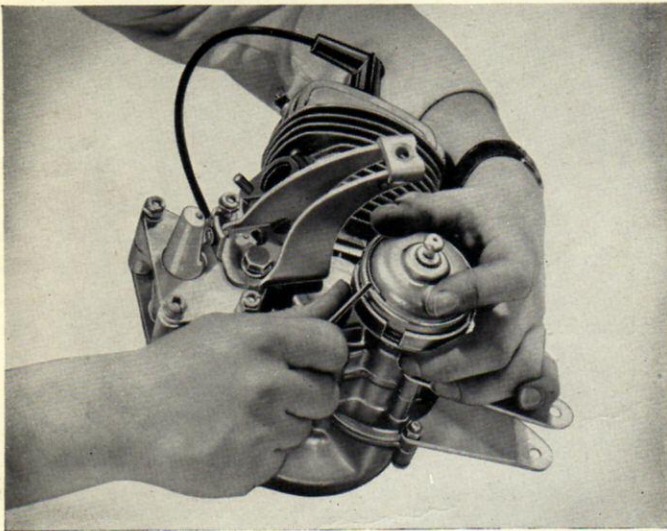


FIG. 4

FIG. 4

REMOVING WIRE CIRCLIP FROM DOMED CLUTCH CAP.

FIG. 5

SHOWING THE CORRECT WAY TO ASSEMBLE THE CLUTCH THRUST BEARING AND CENTRE PIN.

FIG. 6

RELEASING THE CLUTCH NUT.

FIG. 7

REMOVING THE CLUTCH OUTER CASING USING SPECIAL EXTRACTOR.

FIG. 5

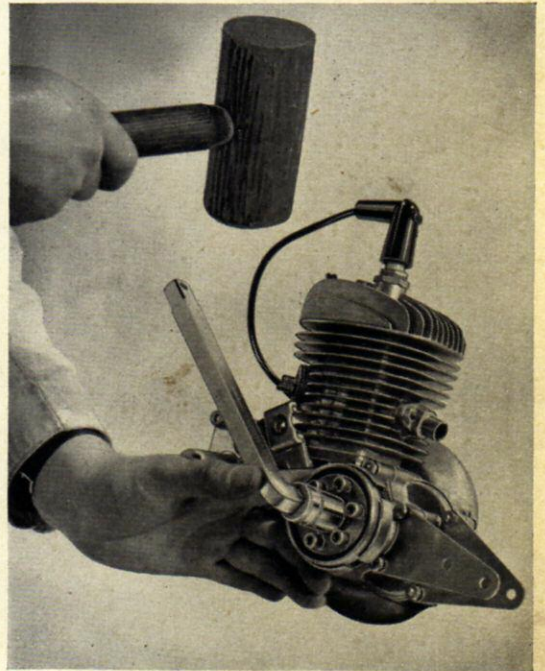
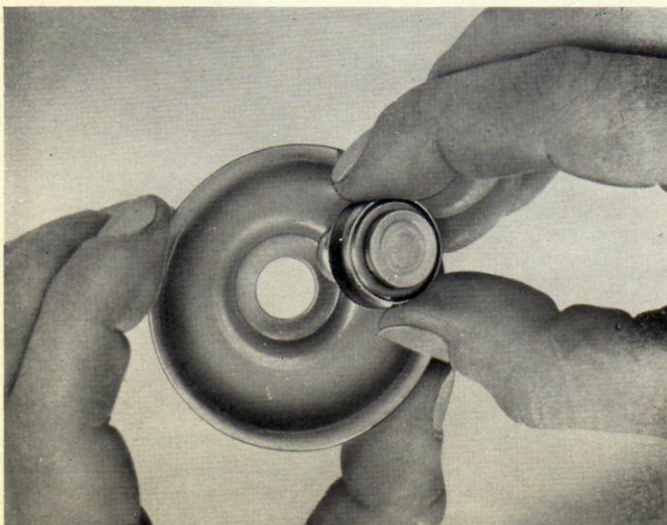
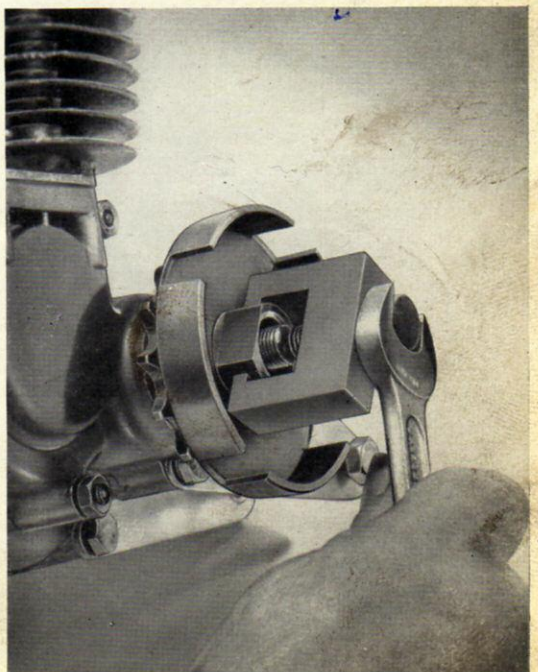


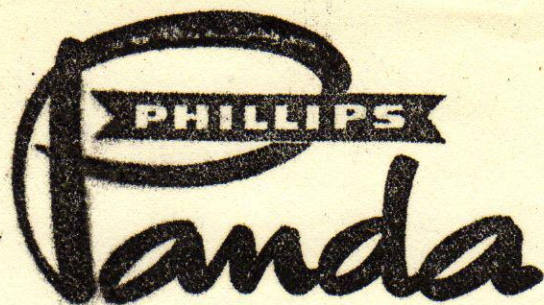
FIG. 6

PHILLIPS  
H ROAD

FIG. 7







## SERVICE SHEET

NUMBER

10.

DATE

April 1959.

### SUBJECT

#### TO REMOVE CYLINDER AND PISTON

Remove the engine unit from the frame. (see Sheet No. 3.)

With a screwdriver, slacken off the screw attaching the decompressor to the cylinder head, and remove this unit from the head.

Disconnect the H.T. (ignition) lead from the sparking-plug and with the tubular plug-spanner, unscrew the plug from the head.

If you wish to remove the induction-pipe, unscrew with the 9 mm. tubular spanner, the two nuts attaching it to the rear of the cylinder-barrel.

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. If the head sticks, it can be eased off with a screwdriver, but do not use unnecessary force and take care to avoid damaging either the head or the barrel.

Ease the cylinder-barrel upwards about 2" on the four tie rods. As the piston is carried upwards inside the barrel, a piston support-plate can be slipped beneath it with the connecting-rod in the slot of the plate. (see Fig. 8.) If this plate is left in position during the subsequent workshop operations as long as possible, it will prevent movements of the piston and damage to the piston-skirt and/or upper face of the crankcase, as well as preventing grit or small parts falling down into the crankcase. As an alternative to the support-plate, use a piece of wood approx. 1.1/2" wide x 3/8" thick, slotted for the connecting-rod.

Remove the cylinder and rubber ring.

Note which way round the piston and gudgeon-pin are fitted before you attempt to remove them, as they must be put back the same way. A shallow scratch marked on the forward part of the piston top will help you to distinguish the front from the back.

Remove the circlips retaining the gudgeon pin in the piston. (Fig.9.) For this operation use circlip pliers. Tap out the gudgeon pin with soft drift (Fig.10.) until the connecting rod is free, meanwhile supporting the piston assembly by a block of wood or other soft medium. Note which way the pin was fitted into the piston, and avoid excessive force, which could damage the connecting-rod or piston. NEVER maltreat the parts with hammer and hardened punch.

If the small-end shows signs of wear, the bush can be removed from the connecting rod by using a soft drift of suitable diameter. When fitting a new bush, note that one end is chamfered to facilitate fitting to connecting rod. As the bush is made from soft metal

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BRISTOL, 4  
TEL: 77376

continued .....





## SERVICE SHEET

NUMBER 10. (cont...)

DATE April 1959.

### SUBJECT

TO REMOVE CYLINDER AND PISTON (Cont...)

do not use excessive force. After fitting the bush, the oil holes in the connecting rod should be extended through the newly fitted bush. The existing holes in the connecting rod will serve as a location for the drill. The bush will also be required to be reamed before it will accept the gudgeon-pin. Use an expanding reamer. Take care not to remove too much metal - the gudgeon pin should fit easily into the bore of the bush but there should be no play. Before re-fitting the piston apply three or four drops of oil to the small-end bush.

The piston rings should be free in their grooves. Check that the ends of the piston rings are not chipped or broken.

If there is a definite step near the top of the cylinder bore, marking the limit of upward travel of the top piston ring, this denotes that the cylinder bore is enlarged through wear, and a re-bore is probably required. After the cylinder has been re-bored, it must be fitted with an oversize piston and rings. When the cylinder bore is worn we do not recommend that an attempt should be made to restore the engine performance merely by fitting new oversize piston rings.

The gap between the ends of each piston ring should be not less than .007". To measure the gap push the ring into the bottom end of the cylinder bore, using the skirt-end of the piston for this purpose. The gap should be measured with a feeler gauge.

To remove the decompressor valve, compress the spring, remove the split pin and release the spring. Parts can then be taken out of the cylinder head. The valve and its seat should be cleaned and free from carbon. If the valve or its seat are pitted, they should be ground in with smooth grinding paste. Fit a new split pin when re-assembling the decompressor unit.

Before refitting the cylinder, apply a film of oil to the cylinder walls. Remove carbon from inside the cylinder head and ensure that the hole running from the exhaust port to the decompressor port is unobstructed. Remove carbon from exhaust port. When reassembling the cylinder, use a new rubber ring and cylinder head gasket. Tighten each cylinder head nut in turn, a little at a time. Do not fully tighten one nut before starting the next.

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TEL: 77376



# PHILLIPS Panda

## SERVICE SHEET

NUMBER 11

DATE APRIL 1959

### SUBJECT:

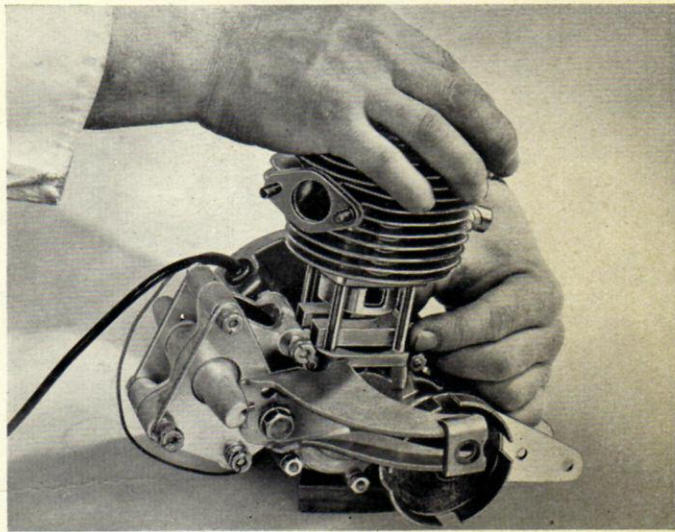


FIG. 8  
INSERTING THE PISTON  
SUPPORT PLATE.

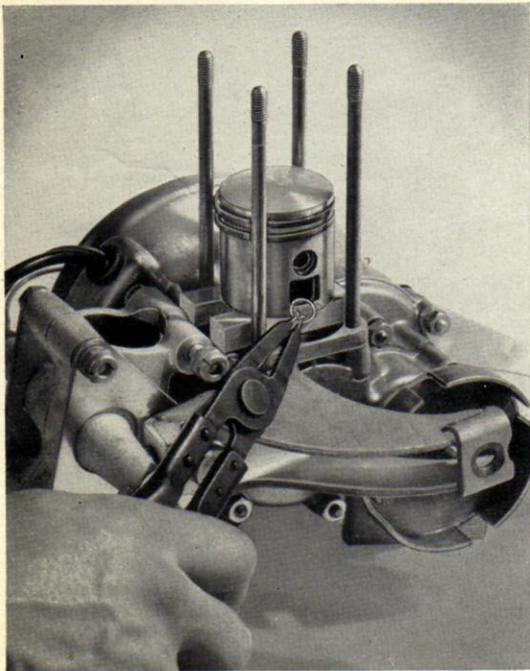


FIG. 9  
REMOVAL OF GUDGEON  
PIN CIRCLIP.

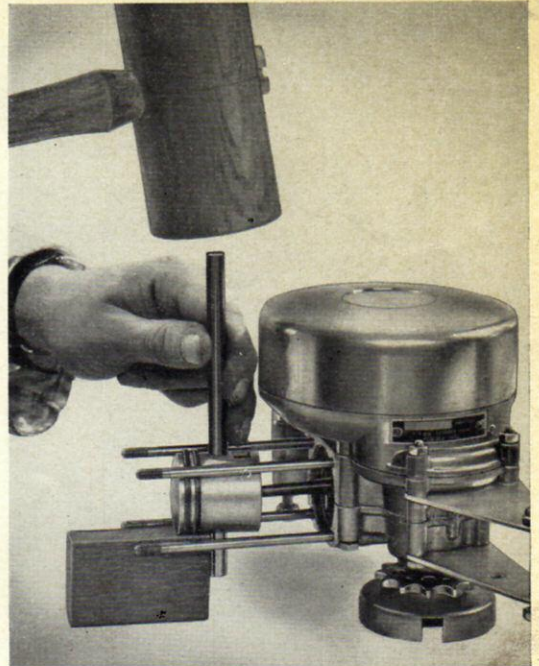
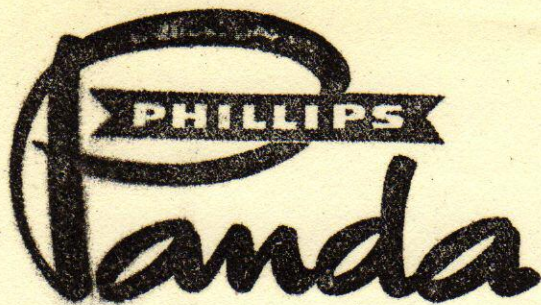


FIG. 10  
REMOVING THE GUDGEON  
PIN.

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# SERVICE SHEET

NUMBER 12.

DATE April 1959.

## SUBJECT

### THE CRANKCASE

Remove engine unit from frame. (Sheet No. 3.)

Remove magneto. (Sheet No. 4.)

Remove clutch and bracket. (Sheet No. 8.)

Remove cylinder. (Sheet No. 10.)

Unscrew the four nuts and four bolts on the drive side of the crank case. Remove engine mounting plates, noting their positions. Hold the flywheel case, and with the engine just clear of the bench, sharply tap the end of the crankshaft with a mallet. (Fig. 11.) This will free the flywheel case from the crankcase.

To separate the two halves of the crankcase, hold flywheel side uppermost, grip top half, and sharply tap the end of the crankshaft with mallet. (Fig. 12.)

To remove crankshaft from its bearing, hold crankshaft and sharply tap the crankcase half with mallet. (Fig. 13.)

To remove clutch shaft, hold the shaft and sharply tap the flywheel case with mallet.

The cases and bearings should now be cleaned in paraffin and examined for wear.

The bearings (except end-bearings) and oil seals, if worn, can be removed with a shouldered drift of suitable diameter.

The end-bearings can be removed by heating the aluminium cases and tapping them against a block of soft wood. New bearings should be inserted at once, before the aluminium has cooled and contracted.

Bearings removed by heat cannot be used again.

No useful purpose would be served by attempting to strip the crankshaft assembly, as special equipment is required to assemble the component parts comprising connecting rod, big-end bearing, crank pin and crankshaft.

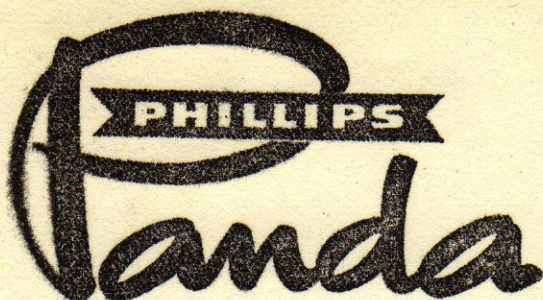
Examine the crankshaft assembly for signs of end play in the big-end bearing after it has been thoroughly swilled in paraffin. (Side play in this bearing will not affect the running of the engine.)

continued .....

APLINS  
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BRISTOL, 4

TEL: 77376





## SERVICE SHEET

NUMBER 12. (cont...)

DATE April 1959.

### SUBJECT

THE CRANKCASE (Cont...)

If it is necessary to renew the main bearings and/or the crankshaft assembly, it may also be necessary to replace the shim washers located on either side of the bob weights. They are available in varying thicknesses and the correct thickness should be selected to eliminate side play of the crankshaft assembly inside the crankcase.

Before re-assembling the crankcase, check that the mating faces of the two halves and of the flywheel case are clean and free from damage. Use new gaskets and ensure that the joints are airtight. Check that the flywheel location peg is not sheared. Before closing the crankcase, apply two or three drops of oil to each bearing.

The order of re-assembly is the reverse of the order of dismantling except for the magneto which should be left till last and immediately adjusted for correct timing and correct gap between contact breaker points.

#### NOTE:

In the above notes reference is made to the use of a mallet. The head of the mallet should be made of leather hide, rubber or soft wood. On no account must metal or hard material be used.

APL 11 5  
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BRISTOL, 4  
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### SUBJECT:

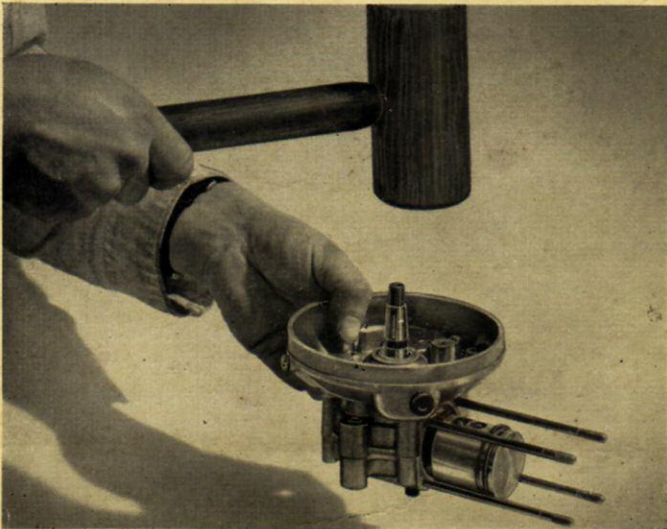


FIG. 11

REMOVING THE FLYWHEEL  
CASE FROM CRANKCASE.

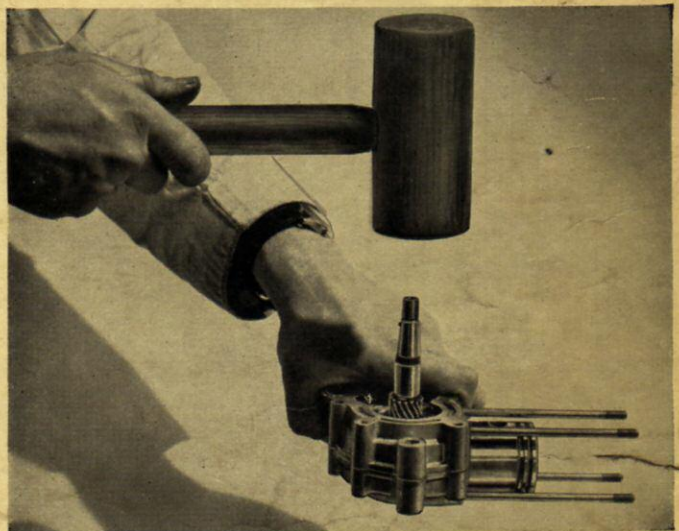


FIG. 12

SEPARATING THE CRANK-  
CASE HALVES.

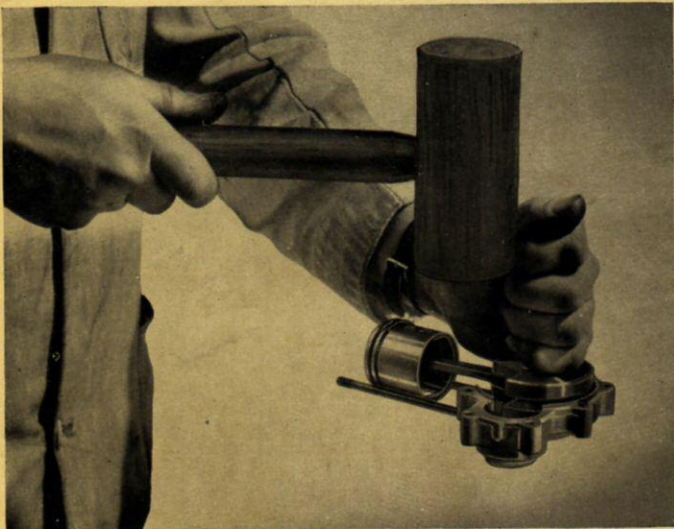


FIG. 13

REMOVING THE CRANK-  
SHAFT FROM ITS BEARING  
IN THE NEAR-SIDE CRANK-  
CASE HALF.

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## SERVICE SHEET

NUMBER 14.

DATE April 1959.

### SUBJECT

SERVICING THE CARBURETTOR.  
Bing Model No. 1/12/27

Unscrew the two small screws at top of carburettor and remove the cover complete with gasket, throttle slide, spring, needle, needle clip, choke, choke plunger, choke plunger clip, cable adjuster and lock nut. Remove the filter spring clip and air filter. Unscrew and remove the float chamber with float. Withdraw the hinge pin and remove the main jet by unscrewing with a screw-driver, and the needle jet by unscrewing with a small box-spanner. The slow running adjuster and spring are removable by unscrewing, as also are the petrol feed nipple, washer and filter. Disconnect the control cable from the throttle slide and remove the slide, spring, needle and clip. Remove the choke, plunger clip (noting its position) and choke plunger, if necessary.

Clean all the parts, except gaskets, in petrol.

Do not attempt to clean the jets by poking wire through them. Blow through them, preferably using an air compressor, or failing that an ordinary cycle pump.

Ensure that the two air-ways running from the back of the air filter chamber into the float chamber are clear; also the holes across the wall of the mixing chamber, and the petrol feed hole.

Clean out the float chamber, and ensure that the two small holes in the bottom are clear.

The petrol and air filters should both be washed in clean petrol. Return the petrol filter immediately to its position in the base of the petrol-feed nipple. The air filter should be allowed to dry and then dipped in machine oil. Drain off surplus oil.

Examine the needle jet for wear, and replace if necessary.

Note that there are four alternative positions for the clip on the needle. The bottom groove provides for the richest mixture and the top groove for the weakest. This adjustment is effective between approximately  $\frac{1}{4}$  and  $\frac{3}{4}$  throttle opening.

When reassembling, place the float needle in position, point uppermost before fitting the hinge plate and hinge pin. When replacing the hinge plate the angle edges should face towards the bottom of carburettor. If the main jet has been removed do not screw it home too tightly when replacing.

After reassembling the carburettor and refitting it to the engine, reset the slow running adjuster. Run the engine until warm and obtain slow idling speed for screwing adjuster in or out as necessary.

When investigating petrol starvation, provided that petrol is in the tank, the first item to be checked should be the filter in the petrol feed nipple, before stripping the rest of the carburettor.

APLINS  
395 EATH ROAD