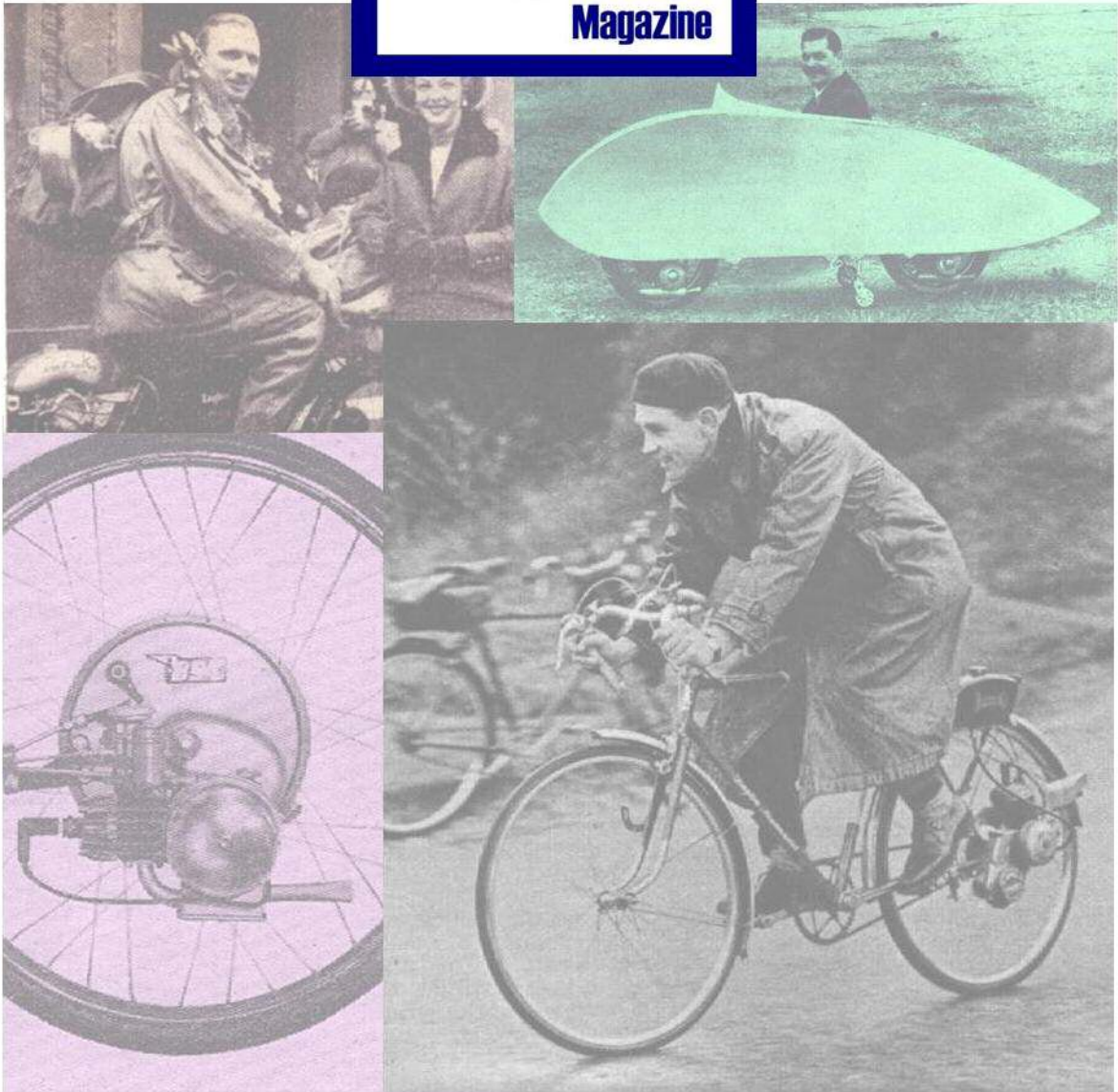


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PHILLIPS
Gadabout

SERVICE SHEETS



SERVICE SHEET

NUMBER INDEX

DATE JUNE 1956

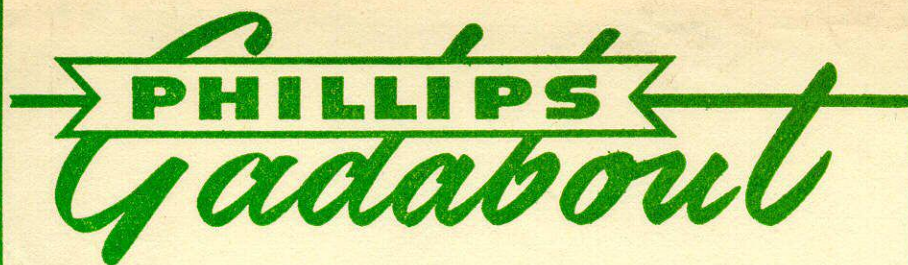
SUBJECT

I N D E X T O S H E E T S

SHEET No.

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2	RUNNING DATA
3	EXPLODED VIEW AND PART NUMBERS
4	REMOVING ENGINE UNIT FROM FRAME
5	REMOVING AND STRIPPING THE CLUTCH
6	ILLUSTRATIONS
7	ADJUSTMENT OF CONTACT BREAKER AND IGNITION TIMING
8	DISMANTLING THE FLYWHEEL MAGDYNO
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SERVICE SHEET

NUMBER 1.

DATE JUNE 1956

SUBJECT

TECHNICAL DATA.

Engine Unit:	Air cooled two-stroke; single cylinder, with unit-construction two-speed gearbox.
Bore:	40.0 mm.
Stroke:	39.5 mm.
Piston Displacement:	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 Bearings:	Phosphor Bronze bush type.
Mainshaft Bearings:	Ball bearing type.
Clutch:	Two-disc, running in oil-bath.
Primary Reductions:	Bottom Gear, 2.73:1 Top Gear 1.8:1
Overall Reduction:	Bottom Gear, 22.6:1 Top Gear 14.9:1
Drive Chain Reduction:	2.166:1
Drive Chain:	Heavy-Duty Roller Chain, $\frac{1}{2}$ " pitch x $\frac{3}{16}$ " 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. 2.w).
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.



SERVICE SHEET

NUMBER 2.

DATE JUNE 1956

SUBJECT RUNNING DATA.

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 S.A.E. 20 motor engine oil.
or 24 parts of top grade petrol to 1 part of SAE 30/40 motor engine oil.

Ratio 1:16 Castrol two-stroke self-mixing oil. -
 Esso two-stroke self-mixing oil.

Ratio 1:20 Castrolite
 Mobiloil Arctic
 Shell X-100 20/20W
 Essolube 20
 B.P. Energol SAE 20

Ratio 1:24 Castrol XL
 Mobiloil B.

Gearbox and Clutch Lubrication.

Oil S.A.E. 30

Capacity 1/2 pt. approx.

Tyre Pressures

<u>Rider's Weight</u>	<u>Front Tyre.</u>	<u>Rear Tyre.</u>
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.

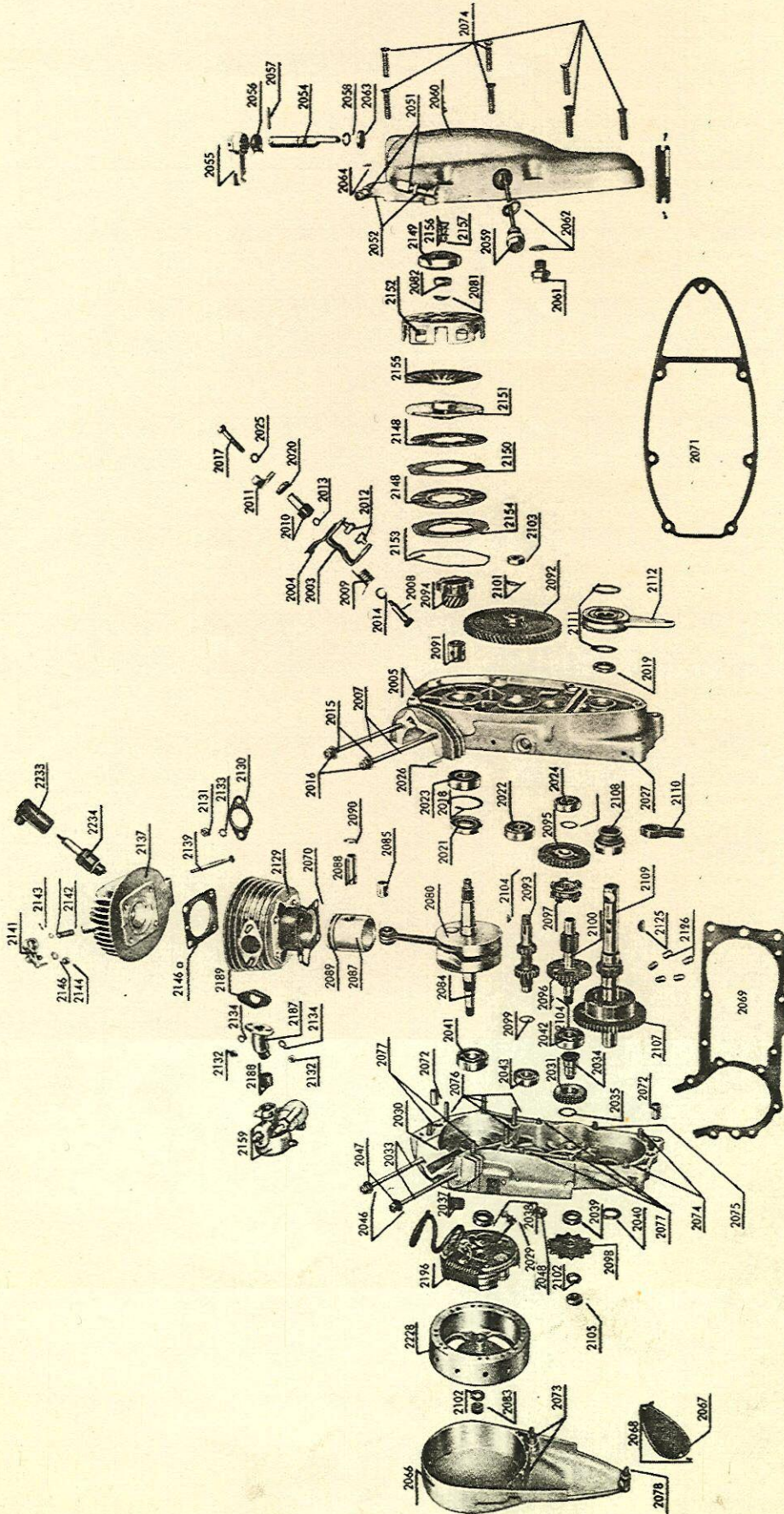
Sparking Plugs

14 m.m. Bosch W.175/T.I.
or 14 m.m. Lodge C-N
or 14 m.m. Champion L.10 or XL.10.
or 14 m.m. K.L.G. F.50.

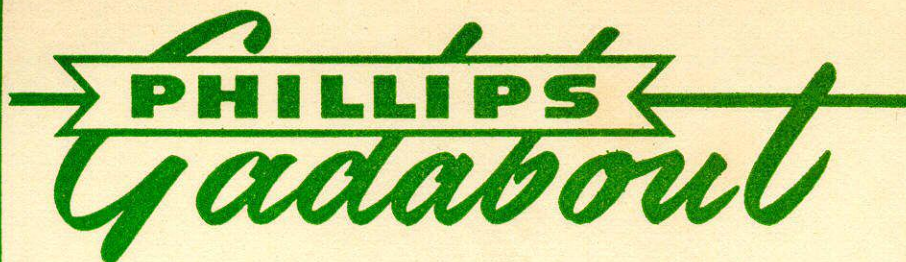
PHILLIPS *Gadabout*

SERVICE SHEET

NUMBER 3.



Exploded view and part numbers of engine unit.



SERVICE SHEET

NUMBER 4

DATE JUNE 1956

SUBJECT

TO REMOVE THE ENGINE UNIT FROM THE FRAME.

After ensuring that the petrol tap is fully turned off to zero position (Z), pull off the petrol pipe from the carburettor union.

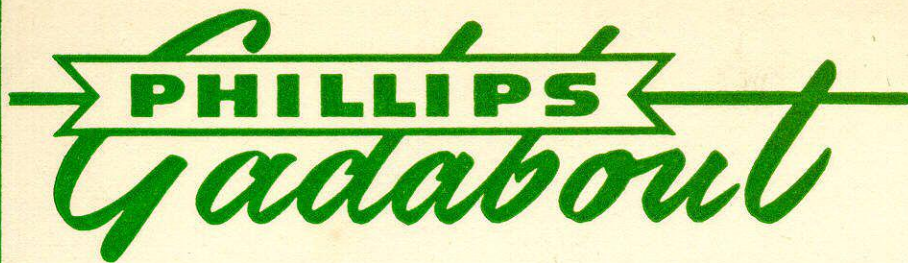
Remove the chainguard covering the forward position of the drive-chain, uncouple the chain and remove it from the machine.

Disconnect the rear-brake operating-rod from the back-peddalling actuator-arm and remove it from the machine.

Disconnect the control-cables from the decompressor-unit (on the cylinder-head), the gear-selector arm (on top of the gearbox), the clutch-operating arm (on the forward part of the clutch-cover), and after removing the small countersunk-head screw from the top of the carburettor, withdraw the cable complete with the carburettor top-cap and slide (or piston).

Disconnect the lighting-cable from the electric terminal mounted on top of the left-half of the crankcase just to the rear of the cylinder, and then remove the exhaust-pipe from the front part of the cylinder.

It only remains now to unscrew the three engine-mounting bolts and nuts (14.m/m hex.), removing first the two lower mounting-bolts from the pressed box-section engine-mounting bracket which is situated to the rear of the motor, and then removing the upper mounting-bolt or stud which is connected to the lifting handle of the moped.



SERVICE SHEET

NUMBER 5.

DATE JUNE 1956.

SUBJECT REMOVING AND STRIPPING THE CLUTCH.
(Illustrations on Sheet No. 6).

Remove the right-hand crank and drain the oil by unscrewing the drain-plug from the bottom and the filler-plug (with dip-stick) from the top of the clutch cover.

(N.B. The drain-plug must not be confused with the selector-fork guide screw, which is located towards the middle of the underside of the motor in the gear-box/crankcase half-casting. This guide screw should not be touched except when completely dismantling the engine and gear box.)

The seven countersunk screws in the cover should now be undone and the cover removed, taking care when lifting the gasket.

Remove the clutch thrust-pin and thrust bearing (fig. 1), carefully noting the disposition of any shim-washers between thrust-pin and thrust-bearing. These must subsequently be re-assembled in exactly the same way.

Remove the clutch-nut (right hand thread) and its spring-washer (fig. 2), using a clutch-anchorage plate to prevent the clutch, crank-shaft, etc. rotating.

The entire clutch may then be drawn from the spline of the crank-shaft extension complete with the clutch centre drive pinion. This clutch centre drive pinion does not run directly onto the shaft but has a free bush between it and the shaft. Both parts may be removed by hand...

TO STRIP DOWN THE CLUTCH take a round ring, block, or pad of suitable size, i.e. between 2" and $2\frac{1}{2}$ " dia.; to seat upon the first clutch-plate and comfortably clear the spring-wire circlip. If the clutch and ring are now clamped together in a vice, the pressure of the clutch-spring will be overcome, permitting the circlip to be easily removed with a screwdriver or other pointed tool (fig. 3).

NOTE: Do not clamp up in the vice any tighter than is necessary to release the pressure on the circlip, or you may weaken or split the clutch spring.

Upon removal from the vice, it will be found that the clutch-plates, drive plate and spring can be lifted out easily from the clutch-body.

NUMBER 6.

DATE JUNE 1956.

SUBJECT ILLUSTRATIONS

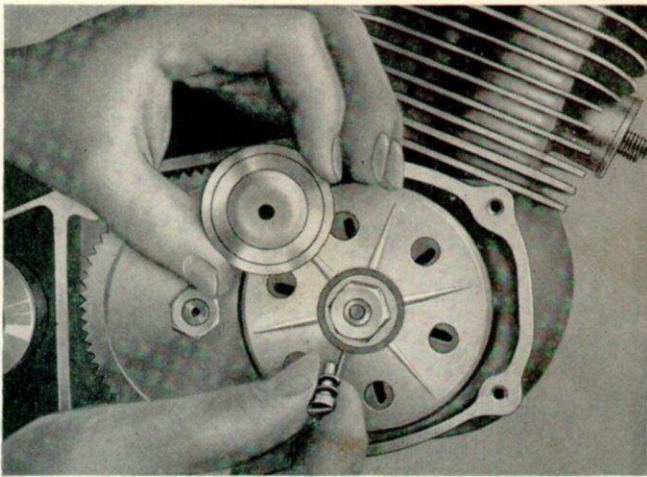


Fig. 1.
Removing the clutch thrust pin
and thrust bearing.

Fig. 2.
Removing the clutch nut.

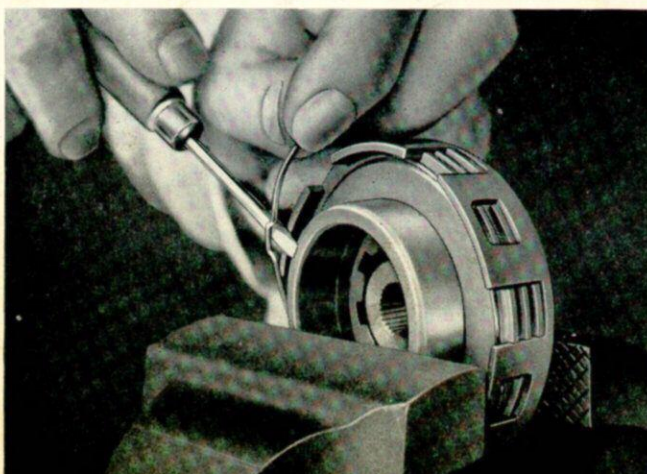
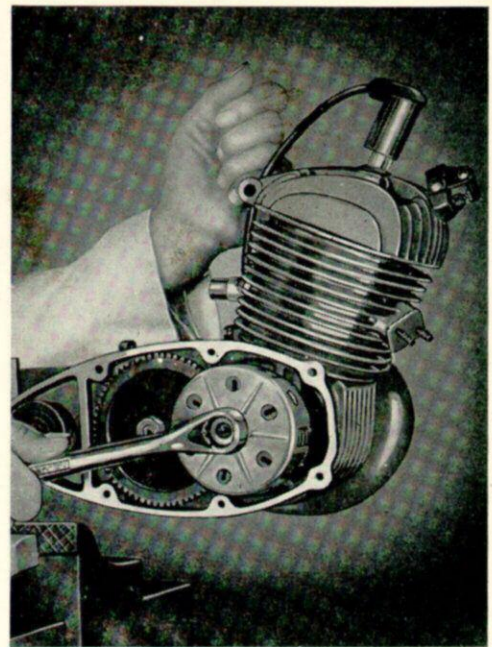
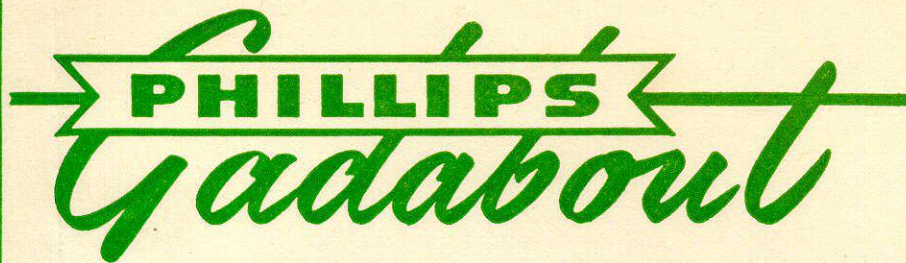


Fig. 3.
Removing the clutch circlip.



SERVICE SHEET

NUMBER 7.

DATE JUNE 1956

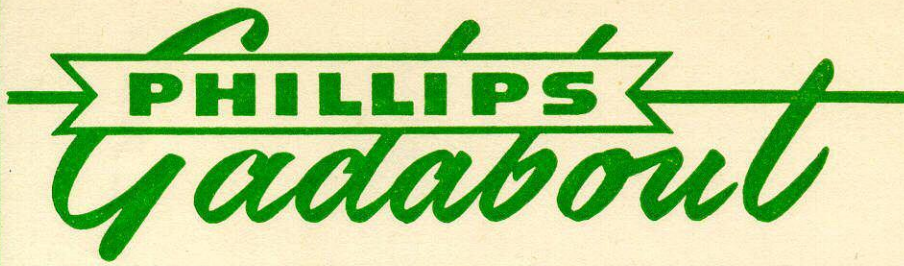
SUBJECT TO ADJUST THE CONTACT-BREAKER POINTS AND THE IGNITION-TIMING.

It is not necessary to dismantle the flywheel magdyno or remove the flywheel in order to make either of these adjustments. Merely remove the magneto cover (see Sheet No. 4) and the sparking plug.

TO RE-SET THE CONTACT-BREAKER POINTS turn the flywheel until these points are fully open and the flywheel is in a position convenient to get at the contact-breaker. Then slightly slacken off (but do not remove) the screw clamping the stationary point. This point will then move, under spring action, to close the gap, but with your screwdriver ease it back again against this spring action and insert a .020" feeler-gauge between the two points. With the feeler-gauge nipped between the two points, re-tighten the screw which clamps the stationary point, and then pull out the feeler-gauge. Your gap will now be set at the .015"/.020" recommended.

TO RE-TIME THE IGNITION, first slacken - but do not remove - the two screws clamping the entire armature-plate unit to the side of the flywheel. Now turn the flywheel until the piston reaches top dead centre and then turn it backwards (opposite direction to arrow) until the piston has moved down 3.2 m/m ($\frac{1}{8}$ ") below and in advance of top dead centre - this positioning of piston can be checked through the sparking-plug hole in the cylinder head. Through the flywheel slots, the armature-plate may be twisted around (clockwise to advance, anti-clockwise to retard) until the contact-breaker points are just beginning to open. Tighten the two clamping-screws.

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



SERVICE SHEET

NUMBER

B.

DATE JUNE 1956.

SUBJECT

DISMANTLING THE FLYWHEEL MAGDYNO.

(Illustrations on Sheet No. 9)

Remove the left-hand crank as for a pedal-cycle, and after unscrewing the three screws lift off the magneto cover.

Hold the flywheel unit with the flywheel holder, unscrew the locknut (right-hand thread) with a 14 mm box-spanner, and remove the lockwasher (fig. 4).

Take the flywheel remover and screw its centre-bolt well back, then thread it into the 22mm x 1.5mm thread of the flywheel, holding the flywheel steady with the flywheel holder. Screw in the centre-bolt of the remover (fig. 5) until the flywheel is drawn off the shaft.

Place the flywheel on a large sheet of clean paper, taking care that no iron filings or such like can be attracted to it, as subsequent removal of such foreign matter from the magnets is an unnecessary trouble.

If the timing does not need to be altered, the arrangement of the armature-plate and its exact fitting into the housing can be marked on the edge of the plate, thus simplifying its subsequent re-assembly. Disconnect the terminals of the lighting cable socket, and screw all parts together again in the right order to avoid loss or damage.

Unscrew the holding screws of the armature-plate and after removing the plug-cap from the ignition lead (or cable) draw this lead in through the aperture in the magneto housing-case and lift out the armature-plate, otherwise the tag of the cable from the ignition coil can become damaged. Moistening the ignition lead with soapy water will help you slide it easily through the rubber grommet of the housing-case. The armature must always be lifted out carefully, to avoid damaging the windings and other delicate parts.

NUMBER 9.

DATE JUNE 1956

SUBJECT ILLUSTRATIONS

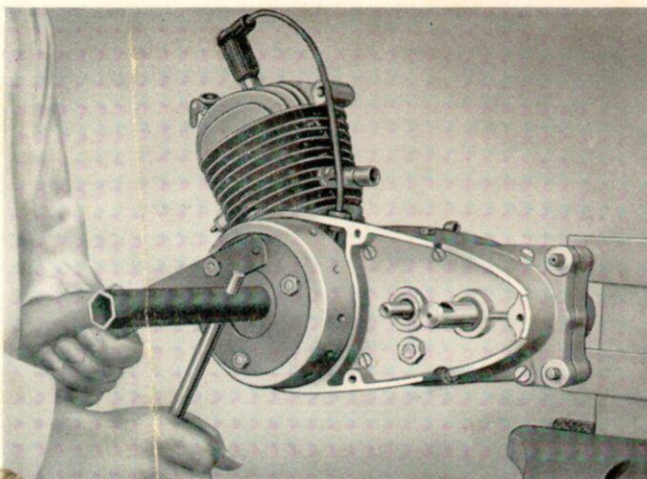


Fig. 4.
Unscrewing the flywheel nut.

Fig. 5.
Removing the flywheel unit.

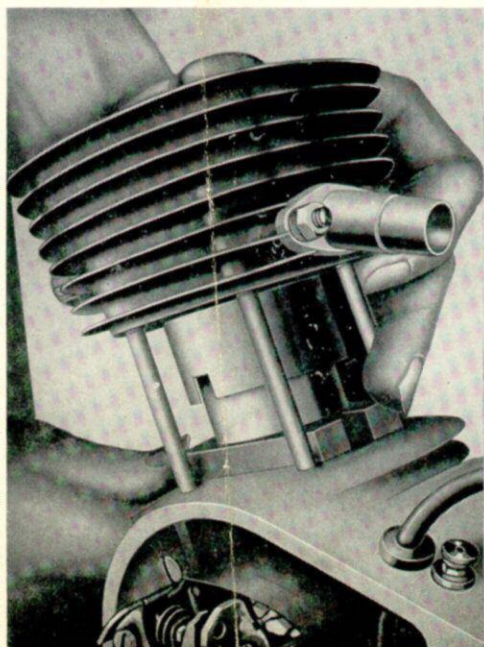
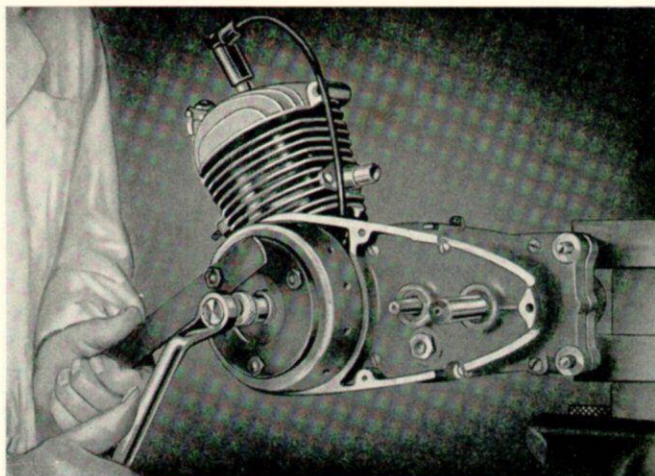


Fig. 6.
Removing the cylinder and
inserting a support plate.

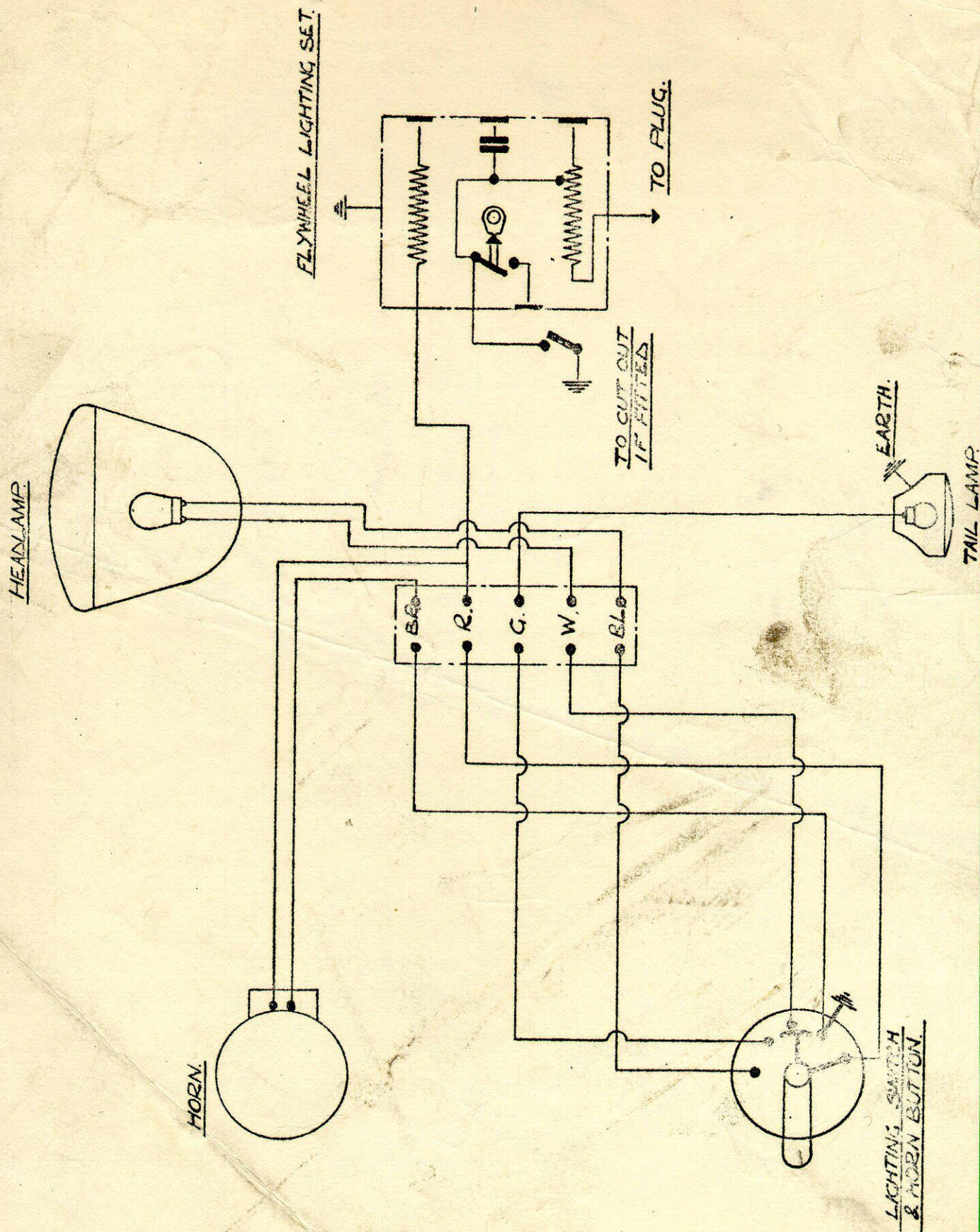
PHILLIPS Gadabout

SERVICE SHEET

NUMBER

DATE

SUBJECT WIRING DIAGRAM

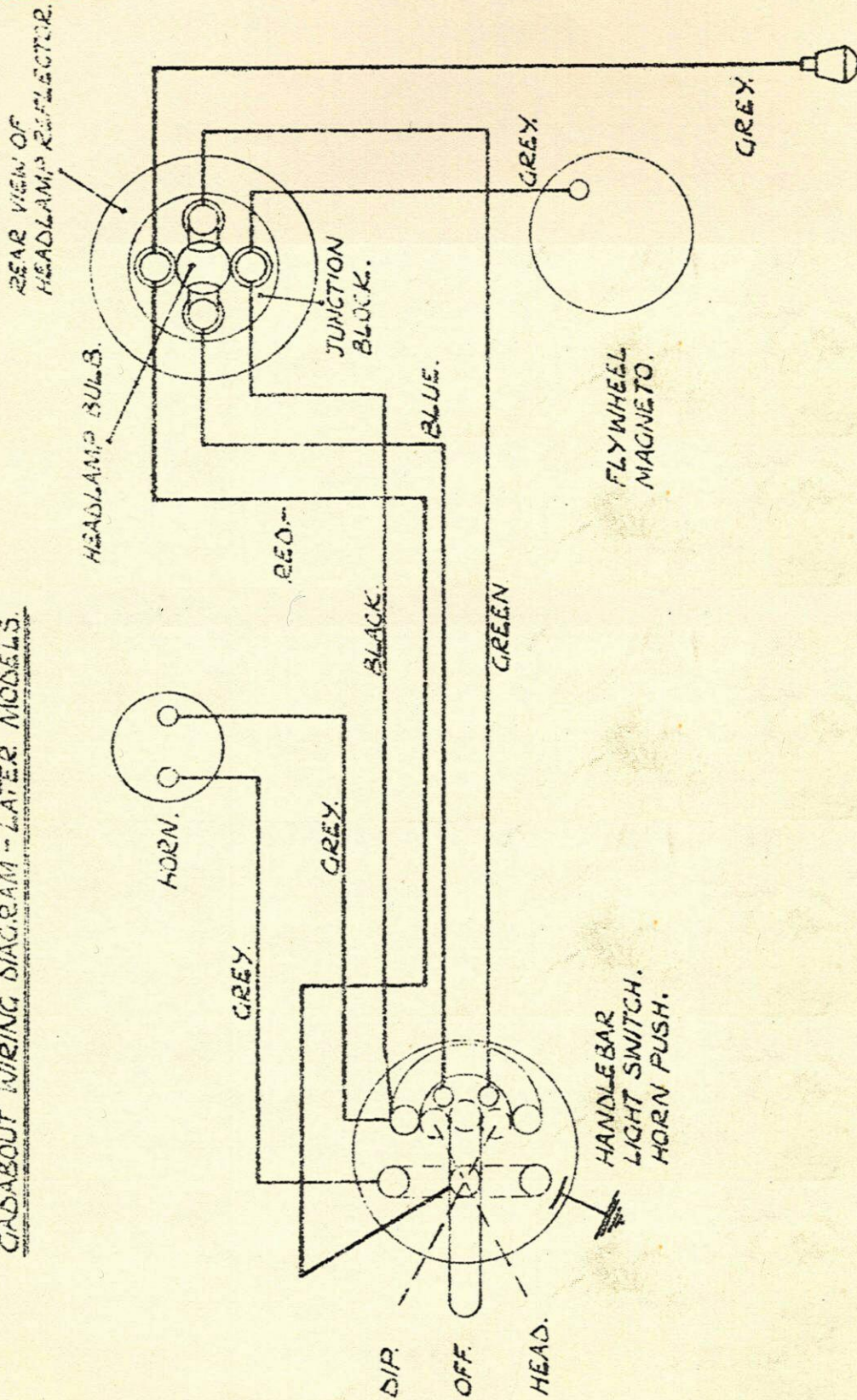


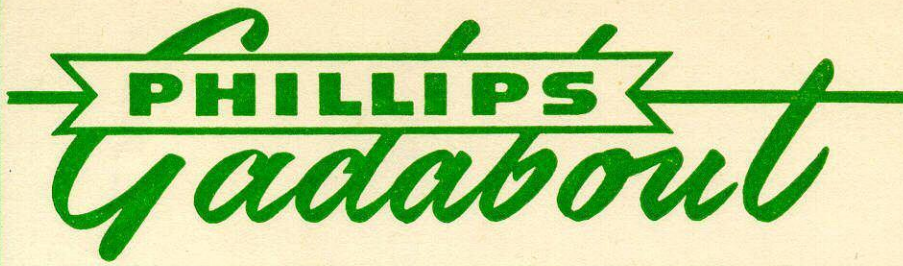
NUMBER

DATE

SUBJECT

GADABOUT WIRING DIAGRAM - LATER MODELS





SERVICE SHEET

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NUMBER JUNE 1956.

DATE

SUBJECT

CYLINDER AND PISTON REMOVAL (Illustrations on Sheet No. 9)

Remove the engine unit from the frame (See Sheet No.4)

With a screwdriver, slacken off the clip-screw attaching the decompressor actuating unit 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.

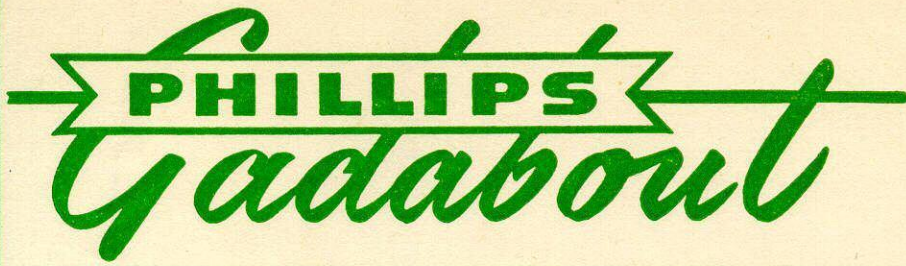
The Carburettor can now be removed, by slackening with a screwdriver the screw clamping it to the induction-pipe. If you wish also to remove the induction-pipe, unscrew with the 9 mm. tubular spanner the two nuts attaching it to the rear of the cylinder-barrel.

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 holding-down studs. 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.6) If this plate is left in position during the subsequent workshop operations as long as possible, it will prevent movement 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 into the crankcase. Alternatively to the support-plate, one can use a piece of wood approx. 1.1/2" wide x 3/8" thick, slotted for the connecting-rod.

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.

With a pair of round-nosed pliers, remove the circlips retaining the gudgeon-pin in the piston. The best procedure for the removal of the gudgeon-pin is first to warm up the piston to about 175° F - 212° F (80°C - 100°C) and gently to push the pin out with a soft drift until the connecting-rod is free. Near-boiling water is a convenient medium for this heating operation - the water should be gently trickled on to the aluminium piston avoiding so far as possible pouring it on the gudgeon-pin, and not allowing it to get into the crankcase. Note which way the pin was fitted into the piston, and avoid excessive force, which can damage the connecting-rod or piston. NEVER maltreat the parts with hammer and punch.



SERVICE SHEET

NUMBER 12

DATE JUNE 1956

SUBJECT TO REMOVE THE CHAIN-DRIVE SPROCKET, ~~THE~~ PRIMARY-DRIVE GEARWHEEL AND REAR-BRAKE ACTUATING-UNIT.

(Illustrations on Sheet No. 13)

First remove the clutch-cover, clutch thrust pin, and clutch thrust-bearing, as described on Sheet No. 5.

Using the clutch anchorage-plate to prevent rotation, unscrew and remove the gearwheel-nut and washer.

Remove the clutch, as described on Sheet No. 5, and with the sprocket and gearwheel remover (fig. 8) draw the gearwheel from the countershaft.

The rear-brake actuating-unit is simply a keyed-sliding fit on to the pedal-drive axle, and therefore can be pulled straight off, but remember to lift its Woodruff key from the axle, placing it carefully where it will not get lost.

First remove the left-hand crank and magdyno cover. Then, using the sprocket anchorage-plate to prevent rotation, unscrew and remove the sprocket-nut and washer (fig. 7). The sprocket may now be drawn from the output shaft by the sprocket and gearwheel remover.

SUBJECT ILLUSTRATIONS

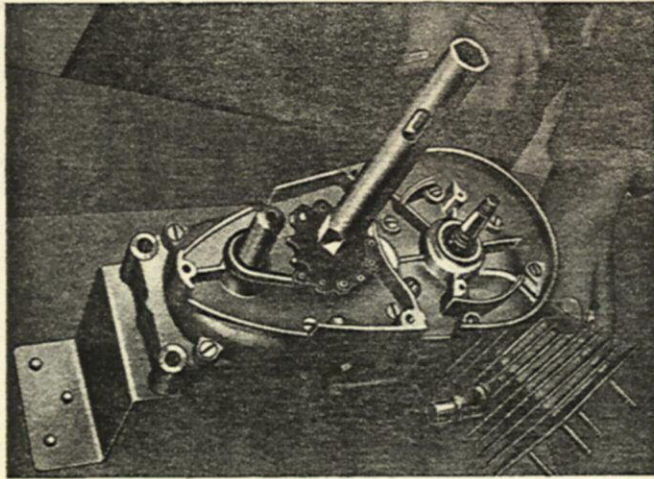


Fig. 7.
Holding the sprocket fast when fastening or undoing the lock nut.

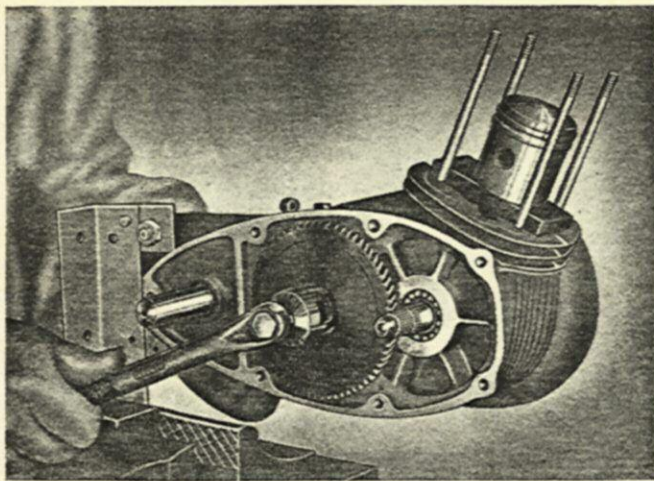
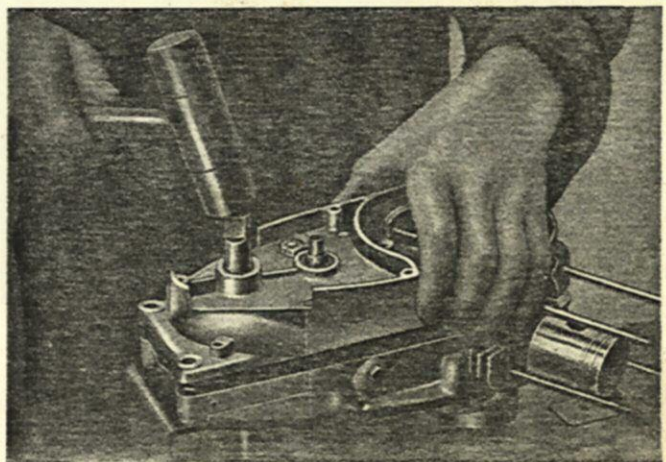
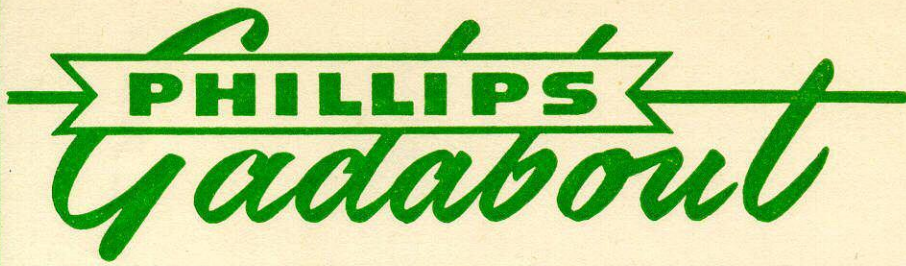


Fig. 8.
Removing the primary drive gearwheel.

Fig. 9.
Loosening the crankcase half-piece with a wooden mallet.





SERVICE SHEET

NUMBER 14

DATE JUNE 1956

SUBJECT TO OPEN CRANKCASE AND GEARBOX.
(Illustrations on Sheet Nos. 13 & 15)

Remove the engine unit from the frame (see Sheet No. 4.)

Remove the cylinder (see Sheet No. 11)

Remove the flywheel magdyno (see Sheet No. 8)

Remove the chain drive sprocket (see Sheet No. 12)

If it is required to strip the gearbox and crankshaft, also

Remove the clutch (see Sheet No. 5)

Remove the primary drive gearwheel and rear brake actuating unit
(see Sheet No. 12)

Slacken by about three or four threads the twelve countersunk-head screws clamping the side of the crankcase, six of them being within the magdyno housing-recess, and the remaining six being around the chain-drive/pedal-drive area. It will probably be found that these screws have been very firmly tightened up and resist all attempts to slacken them with an ordinary screwdriver. In such a case, a brace should be used fitted with a screwdriver-blade which has been filed exactly to fit the screw-slots (fig. 10)

A few sharp light blows on the diecast crankcase, avoiding its edges, or on the end of the pedal-axle (figs. 9 & 11) with a wooden or rawhide mallet should suffice to separate the two crankcase half castings. Never strike them with hammer or other metal object and do not be too vigorous when performing this operation.

Now place the engine with its right side downwards and lift off the left half of the crankcase whilst pushing the pedal-axle down so that it remains in the right half of the casing (fig. 12). Carefully remove the gasket making sure that none of it remains adhering to the crankcase joint-faces.

NUMBER 15.

DATE

SUBJECT ILLUSTRATIONS

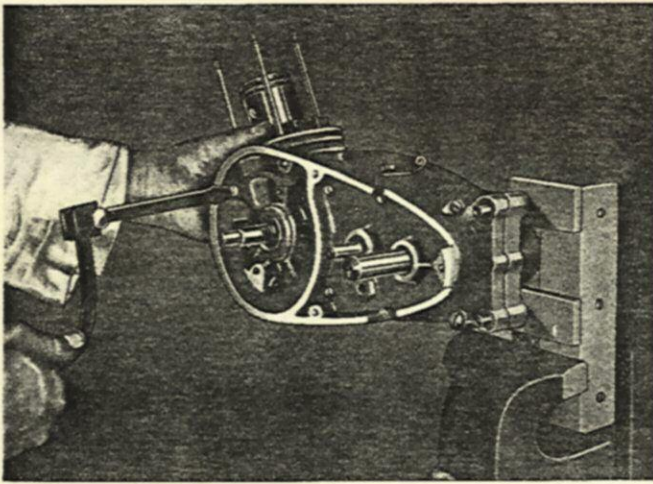


Fig. 10.
Removing the engine housing bolts.

Fig. 11.
Loosening the crankcase half-piece with a wooden mallet.

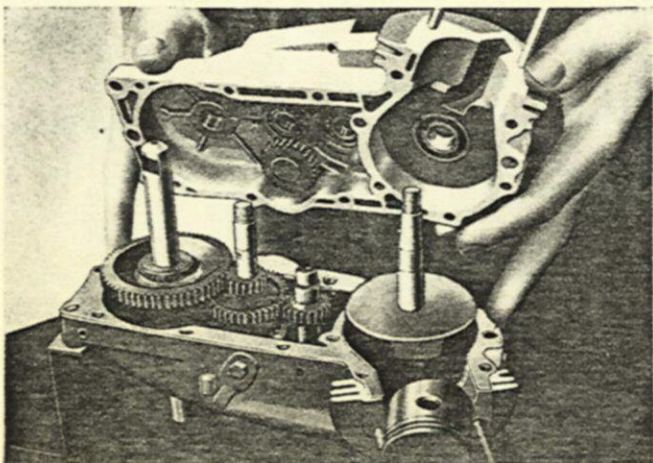
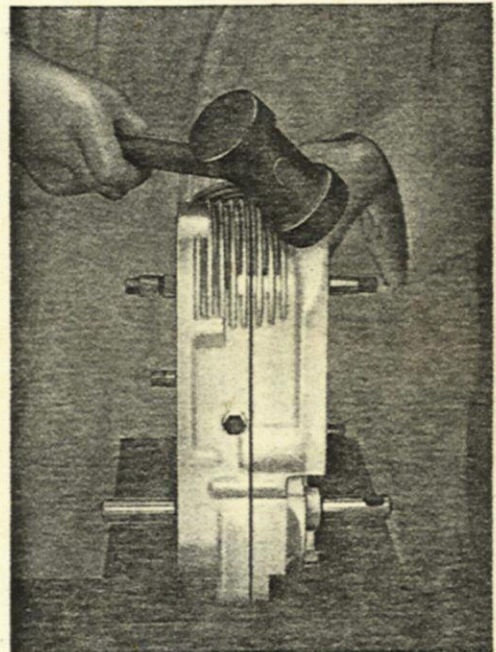
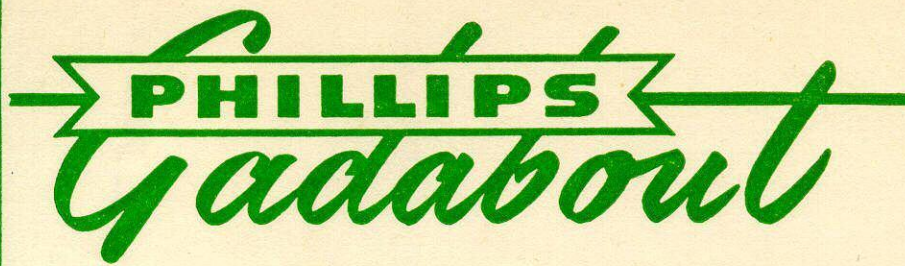


Fig. 12.
Lifting the left hand side of the crankcase.



SERVICE SHEET

NUMBER 16

DATE JUNE 1956

SUBJECT TO DISMANTLE THE GEARS AND CRANKSHAFT (Illustrations on Sheet No. 17)

Remove the engine unit from the frame (see Sheet No. 4).

Open the crankcase and gearbox (see Sheet No. 14).

Withdraw the double-gearred countershaft, carefully noting the arrangement of shim-washers so that they can subsequently be re-assembled in exactly the same way.

Lift the pedal-axle complete with its freewheeling unit. This freewheel is of Roller/Wedge design, and in order to prevent its five small rollers from falling out, it is advisable to ease the drag-spring upwards from out of its anchorage recess with a screwdriver holding it firmly up against the large geared freewheel-body on the pedal-axle (fig.13). Again note the disposition of the shim-washers, to facilitate their correct re-assembly.

Remove the top-gear gearwheel, withdraw the splined output-shaft, remove the selector-sleeve and the two small selector-guides (fig.14). The bottom-gear gearwheel can also now be lifted out and the disposition of the shim-washers beneath it carefully noted.

The gear-selector unit is now accessible and ready to be dismantled. First loosen (but do not completely remove) the upper fulcrum-bolt. Then screw out the lower fulcrum-bolt whilst supporting the gear return-spring to prevent it flying out. Unscrew the upper fulcrum-bolt from the selector-fork, and withdraw it from the top of the gearbox together with its shake-proof washer and the outer selector-arm. The spring, selector-fork and gear stop-plate can now be lifted out together with the fulcrum-bush (fig.15).

NOTE: a small rubber sealing-ring is fitted between the upper surface of the stop-plate and the fulcrum-bush in order to prevent oil creeping up the bore of the fulcrum bush, around the upper fulcrum-bolt. Put this ring carefully on one side for it is important that it is not omitted when the gearbox is subsequently re-assembled. There is also a rubber/metal oil-seal pressed into the top of the gearbox casing to prevent oil creeping up the outside of the fulcrum-bush, but it is unlikely that this will ever need to be removed or replaced.

The crankshaft unit can now probably be withdrawn without any difficulty from the crankcase half-casting, but if it is a little tight within the main-bearing it may be gently tapped out from the other side, with a wood or rawhide mallet. Never use a hammer or other metal object for doing this, and avoid excessive force which might damage the bearing. The gudgeon-pin and piston can be removed, (see Sheet No. 11) but the separation of connecting-rod, big-end bearing, crank-pin, and the two half pieces of the crankshaft should not be attempted in the normal work-shop, as the assembly of them is a specialised factory operation.

SUBJECT ILLUSTRATIONS

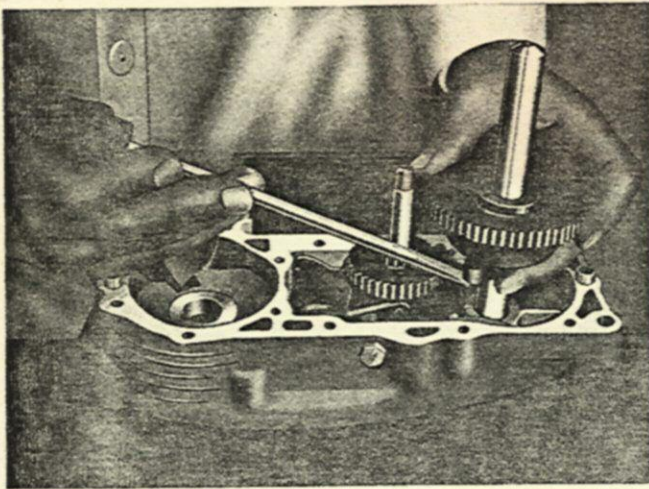


Fig. 13.
Dismantling (or assembling) the pedal-axle and freewheel unit, with drag spring supported to retain rollers in position.

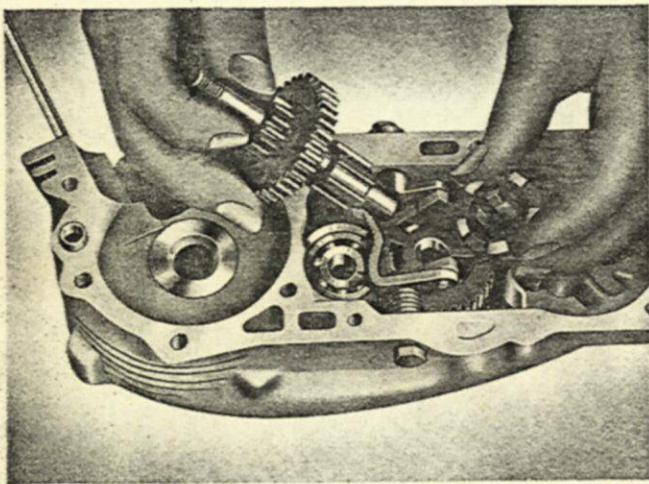


Fig. 14.
Dismantling (or assembling) gear wheels, splined output shaft, selector sleeve, and selector guides.

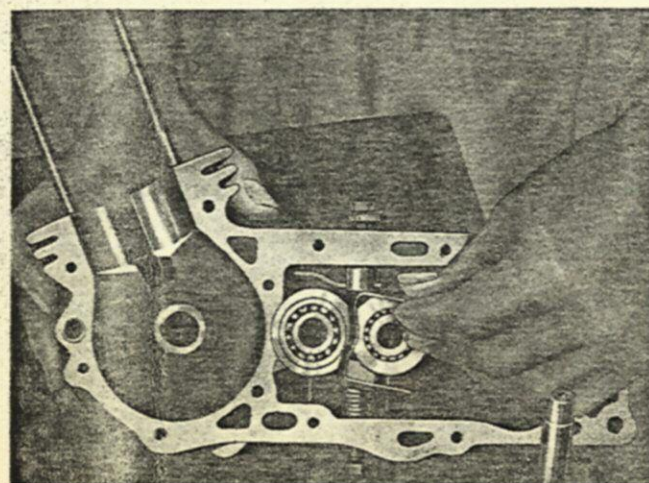
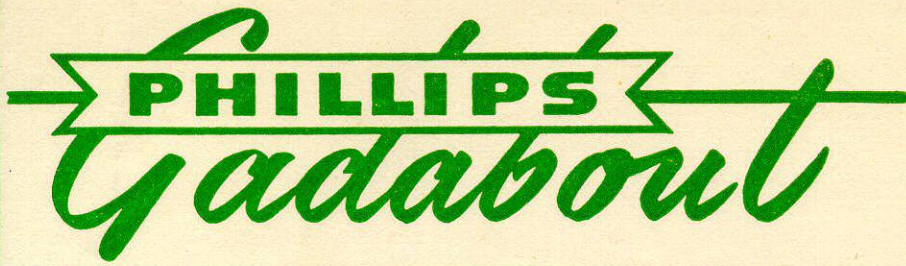


Fig. 15.
Dismantling (or assembling) the selector fork.



SERVICE SHEET

NUMBER

18.

DATE

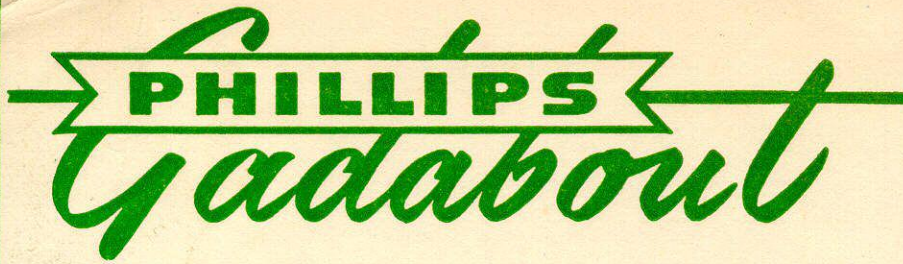
JUNE 1956.

SUBJECT TO DISMANTLE THE CARBURETTOR

After removing the carburettor from the motor (page 4), unscrew the small countersunk-head screw from the top of the carburettor, lift off the top cap, and withdraw the slide (or piston) complete with its slide-spring from the carburettor-body. Slacken the attachment-screw at the side of the air-intake and remove the wire-gauze air-filter. If it is required to take out the air-strangler shutter, it is only necessary to remove the shouldered fulcrum-screw situated inside the air-intake, but note the spring-washer under the screw-head which must be replaced when rebuilding the carburettor.

Now unscrew the fuel-pipe union from the top of the float-chamber and carefully prise the small gauze-filter from it. Note the fibre washer fitted to this union to ensure a petrol-tight joint. Unscrew the two countersunk-head screws from the top of the float-chamber, lift off the cover together with its gasket and needle-valve setting, and then lift out the float.

The main jet can be unscrewed from the side of the carburettor adjacent to the float-chamber, and the centre spray-tube can be unscrewed from the bottom of the carburettor, both these components carrying a rubber sealing-ring which must be maintained in good unbroken condition. A small cheese-head screw may be removed from the end of the spray-tube for cleaning purposes. Finally, unscrew the slide stop-screw with its retainer-spring, from alongside the spray-tube boss.



SERVICE SHEET

NUMBER

DATE

SUBJECT WORKSHOP TOOLS.

REQUIRED FOR:-

Removing Flywheel.
Cylinder Head Nuts.

TOOL.

Flywheel Extractor.
Small box spanner.

REF. NO.

V.7372

THE ABOVE ARE OBTAINABLE FROM J.A. PHILLIPS & CO. LTD. BRIDGE STREET, SMETHWICK.

Gearshift lever-bolt (top of gear box)	Double Offset Ring-Spanner.(10m/m x 11m/m)	DDn.210
Gear Rocker-bolt (beneath gear-box)		
Some Exhaust pipe nuts. Seat-pillar bolts.		
Filler-plug, drain-plug, prop-stand nuts, upper nut of petrol-tap union, Engine-mounting nuts and bolts, head-lamp attachment nut.	Combination Spanner (14m/m)	CTM.214.
Prop-stand nuts, engine drive sprocket nut, primary gearwheel nut, clutch nut, lower nut of petrol tap union, engine mounting nut.	Combination Spanner (17m/m)	CTM.217.
Cable adjusters and adjuster locknuts of motor control cables.	Double Open-ended spanner.(8m/m x 9m/m)	ODM.208
Cable adjuster locknut, some exhaust pipe nuts.	Double Open-ended spanner (10m/m x 11m/m)	ODM.210
Magdyno-flywheel nut.	Socket, $\frac{1}{2}$ " square drive (14m/m)	HSM.214
Sparking Plug nut.	Socket $\frac{1}{2}$ " square drive (14m/m plug)	HSS-214.
Crank cotter nuts, front brake cam arm nuts and cable adjuster locknut, front fork lubricators, numerous small nuts on mudguards, horn, brake cable, front fork etc.	Double open-ended spanner (.340"x.445")	ODM.202
Some engine-mounting bolts and nuts, some prop stand nuts, hub spindle nuts, retainer bolts nuts on tele. fork. Helmet nuts clamping handlebar bend.	Double Open-ended spanner. (.525" x .600")	ODW.204.
Spindle nuts of 4" dia. hub brake.	Double open-ended spanner.(.710" x .920")	ODW.2067
Head locknut, housing tube nuts and locknuts of tele. fork.	Double open-ended spanner. (1.300" x 1.480") Carbon steel Chrome plated.	OCW.212
$\frac{1}{2}$ Square Cranked Driver (Handle for Socket $\frac{1}{2}$ " square drive spanner)		SLS.208
Also recommended:		
One King Dick adjustable spanner.		AKD.204
1 Pr. King Dick Pliers 6"		KDP.206

ALL THE ABOVE ARE OBTAINABLE FROM ABINGDON KING DICK LTD. KINGS ROAD, BIRMINGHAM.11.

Removing engine drive sprocket and primary gear wheel.	Puller.	SP.1.
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THE ABOVE IS OBTAINABLE FROM M.C.A. (ASTON) LTD. 10, ASTON ROAD NORTH, BIRMINGHAM,6.

Also recommended are Circlip Pliers for Gudgeon Pin (Model S.I.S.) and for clutch shaft (Model S.E.B.) obtainable from Messrs. Buck & Hickman Ltd., 29/32, Whittall Street, Birmingham, 4.

