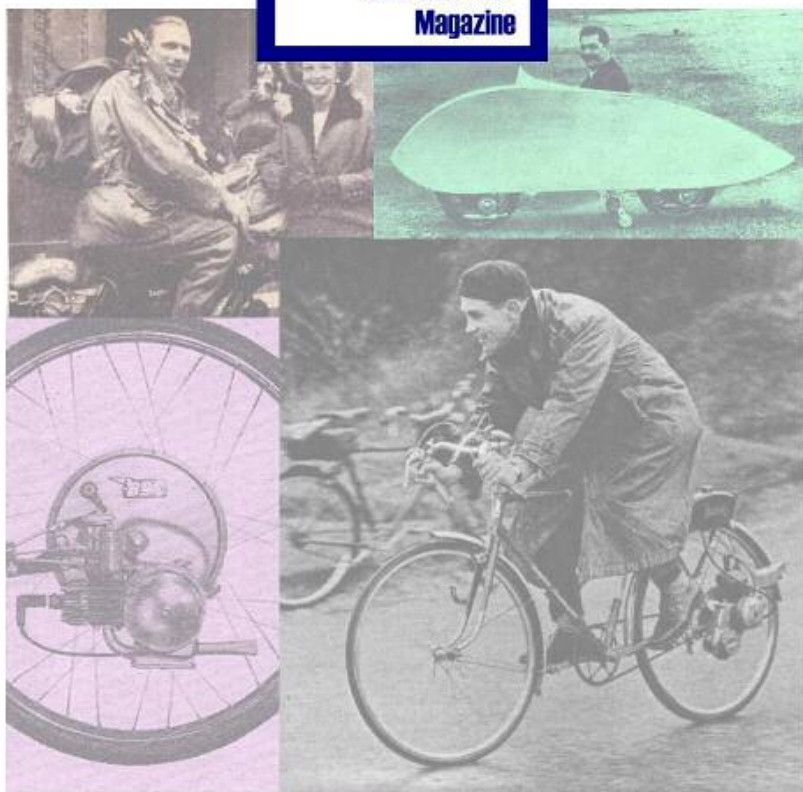


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PHILLIPS

*Gadabout
de Luxe 3*

**SERVICE
MANUAL**

3/6 NET

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FOREWORD

The correct method of removing the engine from the frame of the Gadabout de Luxe 3, and of dismantling and reassembling the component parts of the engine for the purpose of replacing worn components, are fully described and illustrated in this manual.

If these directions are carefully observed, the reader should have little difficulty in servicing the engine as and when necessary to ensure maximum life and efficiency. The rider's handbook includes full instructions on routine cleaning, lubrication and adjustments, and also on decarbonising the engine. These details are therefore not repeated in this manual.

When new parts are required, it is important to use only genuine replacement parts as catalogued in Phillips Spare Parts List (Model P50).

General Specification

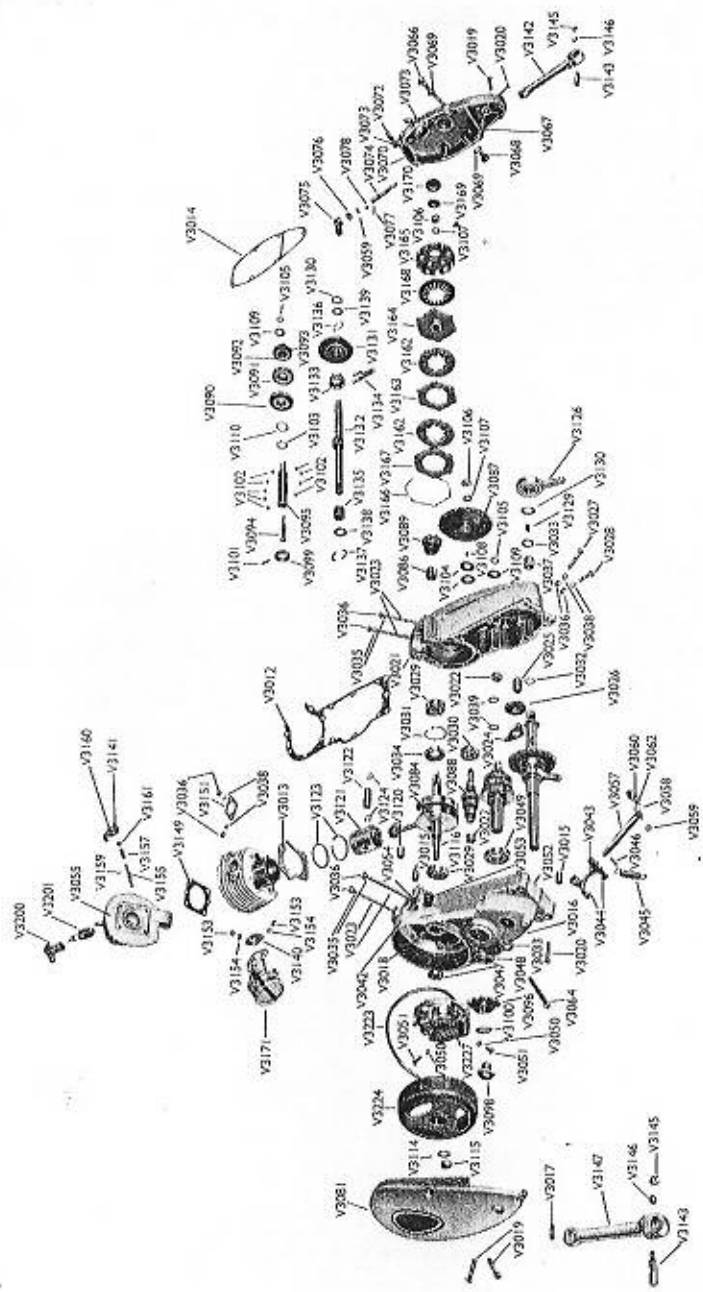
ENGINE UNIT

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.
Drive Chain	Heavy duty roller chain, 4" pitch x $\frac{11}{16}$ " wide.
Pedal-Drive	Build into rear end of gear box, with roller/wedge freewheel mechanism, and back-peddalling 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 6 volt 15/15 watt; tail lamp 6 volt 3 watt).
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.

GENERAL SPECIFICATION *(continued)*

CHASSIS

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 Saddle	9½ pint capacity, with reserve type tap. Wrights' E.1. Continental Cantilever Pattern with rubber top actuated through a central coil spring. Adjustable for weight.
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 fittings.



Engine Parts List

V3064	Crankcase Screw, .65 mm.	V3116	Fly-wheel Location Peg
V3065	Cable Adjusting Screw complete (comp. parts V3072/3)	V3120	Gudgeon Pin Sleeve
V3066	Dip Stick	V3121	Piston only
V3067	Clutch Cover only	V3122	Gudgeon pin
V3068	Drain Plug	V3123	Piston Ring
V3069	Washer, drain plug or dip stick	V3124	Circlip, gudgeon pin
V3070	Retaining Pin, clutch cam spring	V3126	Brake Arm complete
V3071	Cable Adjusting Screw	V3129	Woodruff Key, for pedal shaft
V3072	Cable Adjusting Nut	V3130	Distance Washer, pedal shaft
V3073	Clutch Cam only	V3131	Gear, pedal drive
V3074	Clutch coupling lever	V3132	Shaft, pedal
V3075	Spring, clutch cam	V3133	Clutch Sleeve
V3076	Pin, clutch cam arm	V3134	Spring, clutch sleeve
V3077	Circlip, clutch cam arm	V3135	Distance Sleeve, pedal shaft
V3078	Magneto Cover	V3136	Circlip
V3081	Crankshaft Assembly	V3137	Circlip
V3085	Piston complete (comp. parts V3121—V3124)	V3138	Distance Washer
V3086	Crankshaft pinion sleeve	V3139	Distance Washer, pedal shaft
V3087	Secondary drive gear wheel	V3140	Carburettor gasket
V3088	Gear, counter shaft	V3141	Decompressor Operating Unit (including V3160)
V3089	Pinion, clutch primary drive	V3142	Pedal Crank R.H.
V3090	Gear Wheel I.	V3143	Cotter Pin
V3091	Gear Wheel II.	V3145	Cotter Nut
V3092	Gear Wheel III.	V3146	Cotter Washer
V3093	Gear Pinion, 14T.	V3147	Pedal Crank L.H.
V3094	Select Pin, index gear shaft	V3149	Cylinder Head Gasket
V3095	Index Gear Shaft	V3150	Cylinder with liner
V3096	Sprocket, chain drive 13T (non-standard)	V3151	Exhaust Gasket
V3097	Sprocket, chain drive 12T	V3153	Nut, carburettor junction
V3098	Locking Bolt, drive sprocket	V3154	Washer, carburettor junction
V3099	Gear Shaft King	V3155	Decompressor Valve Comp
V3100	Washer, Locking bolt, drive sprocket	V3157	Decompressor Valve
V3101	Pin, gear shaft ring	V3159	Decompressor Valve Spring
V3102	Ball Bearing	V3160	Split Pin for decompressor valve
V3103	Circlip	V3161	Screw for decompressor arm
V3104	Plate Spring	V3162	Washer, decompressor valve
V3105	Circlip, index gear shaft	V3163	Clutch driving disc
V3106	Hex. Nut, countershaft gear or crankshaft assembly	V3164	Clutch steel disc
V3107	Spring, Washer, countershaft gear or crankshaft assembly	V3165	Support plate
V3108	Woodruff Key, countershaft gear	V3166	Clutch Casing
V3109	Distance Washer, index gear shaft	V3167	Clutch Circclip
V3110	Distance Washer, index gear shaft	V3168	Clutch Pressure Plate
V3114	Washer, Mag. retaining nut	V3169	Clutch Cover Plate
V3115	Magneto retaining nut	V3170	Clutch Pressure Cap
		V3200	Sparkling plug cap
		V3201	Sparkling Plug
V3012	Gasket, crankcase		
V3013	Cylinder Base Gasket		
V3014	Gasket, crankcase, clutch side		
V3015	Guide Tube, lighting connector		
V3016	Screw, crankcase, 20 mm		
V3017	Screw, magneto cover, 25 mm		
V3018	Screw, crankcase, 30 mm		
V3019	Screw, clutch cover, 35 mm		
V3020	Screw, crankcase, 40 mm		
V3021	Half Crankcase, clutch side		
V3022	Bush, gear shaft		
V3023	Cylinder Tie Rod		
V3024	Securing Plate, idler gear		
V3025	Idler Shaft		
V3026	Idler Gear		
V3027	Bolt, long, idler gear plate		
V3028	Bolt, short, idler gear plate		
V3029	Ball Bearing, crankshaft, clutch side		
V3030	Ball Bearing, gear countershaft, clutch side		
V3031	Circclip, crankshaft		
V3032	Circclip, for idler shaft		
V3033	Oil seal, pedal shaft		
V3034	Oil seal, crankshaft, clutch side		
V3035	Washer, cylinder tie rod		
V3036	Nut, cylinder tie rod or Exhaust stud		
V3037	Bush, pedal shaft		
V3038	Washer, idler cover plate bolt		
V3039	Distance Washer		
V3041	Gear Control Shaft with Lever. (comp. parts V3037—V3060 and V3062)		
V3042	Half Crank Case, magneto side		
V3043	Gear Switch, Clamp only		
V3044	Slide Studs for gear switch clamp		
V3045	Torsion Spring		
V3046	Peg for gear switch clamp		
V3047	Oil seal, crankshaft, magneto side		
V3048	Oil seal, indexing gear shaft, magneto side		
V3049	Ball Bearing, gear countershaft, magneto side		
V3050	Washer, stator plate securing pin		
V3051	Pin, stator plate securing		
V3052	Ventilator Insert		
V3053	Rubber Grommet, lighting terminal		
V3054	Rubber Grommet, H. T. lead		
V3055	Cylinder head only, with decompressor valve and spring		

To remove Engine from 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 front chainguard. Uncouple and remove the chain. Disconnect and remove the rear brake rod from the brake lever.

Disconnect the cables from the decompressor (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). Remove carburettor with 9 mm. spanner.

Disconnect the 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.

Unscrew the three engine mounting bolts and nuts, $\frac{7}{16}$ " B.S.F., removing first the two lower bolts from the bracket at the rear of the engine.

Cylinder and Piston

To dismantle the cylinder unit, slacken the clip-screw and remove the decompressor from the cylinder head. Disconnect the H.T. (ignition) lead from the sparking plug and unscrew the plug from the head.

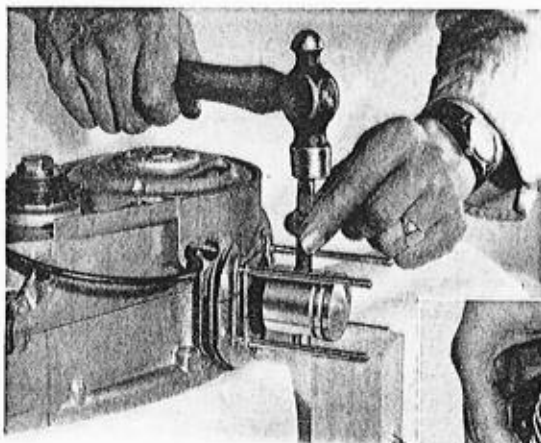
With the 10 mm. tubular spanner remove the four cylinder head nuts and washers and lift the head from the cylinder barrel. Lift off the cylinder head gasket. If the head sticks, ease it off with a screwdriver, but do not use unnecessary force and avoid damaging either the head or the barrel.

Ease the cylinder barrel upwards about 2" on the four studs. As the piston is carried upwards, a slotted block of wood about $\frac{1}{2}$ " thick should be slipped beneath it with the connecting-rod in the slot. If this block is left in position during the subsequent 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.

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

Remove the circlips retaining the gudgeon-pin in the piston. The best procedure for the removal of the gudgeon-pin is to heat the piston to about 175°F (80°C—100°C) and gently push the pin out with a soft drift until the connecting-rod is free. Near-boiling water is a convenient medium for heating operation—the water should be gently trickled on to the piston avoiding so far as possible pouring it on the gudgeon-pin, and not allowing it to get into the crank-

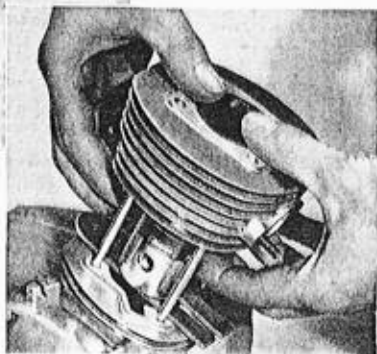


(Above) Removing gudgeon pin. Note that piston is firmly supported by block of wood.

case. Note which way the pin was fitted into the piston, and avoid excessive force.

To reassemble the cylinder unit, fit new cylinder base gasket, carefully noting that the gasket is the right way round. Before the rings are replaced on the piston they should be checked for wear by inserting each ring by the least worn part of the cylinder barrel, *i.e.*, at the bottom and the gap checked with a feeler gauge. Take care that the ring lies square in the bore to obtain correct reading. We recommend that the gap should be from .004" to .008". Fit one circlip and heat piston before placing over connecting rod, ensuring that it is in the correct position as originally fitted. Smear gudgeon pin with engine oil before fitting it into the piston, and then pass it through the connecting lug (small-end bush) until it butts against the

(Below) Refit cylinder barrel. Ensure each piston ring is fully pressed into its groove as the barrel passes over it.



other circlip in the piston. Refit second circlip.

If the original circlips are damaged or bent they should be discarded and new ones fitted. Ensure that the circlips fit snugly into grooves. Smear cylinder bore and piston surfaces with engine oil and fit cylinder barrel over piston. Ensure each piston ring is fully pressed into its groove as the barrel passes over it.

Now replace cylinder head, using a new gasket. Ensure that it is the right way round. Place cylinder head into position, refit plain steel washers and nuts to tie rods. Screw down each nut finger tight and then finally screw down half a turn at a time only until all nuts are fully tight. Clean and readjust spark plug points if necessary and replace.

The Magneto

To dismantle, remove left hand crank and forward chain cover. Remove two countersunk head screws holding magneto cover. The flywheel will now 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 M15—28 is recommended) and turn in an anti-clockwise direction. 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.

When the nut is removed, screw in the flywheel extractor M15—17x 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. 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.

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

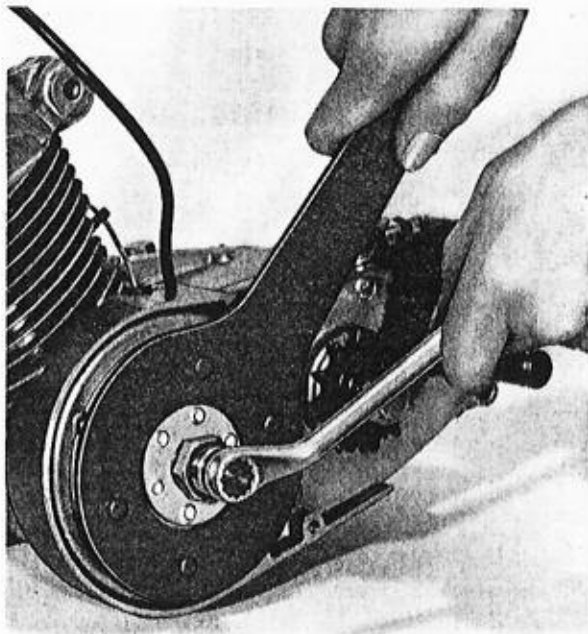
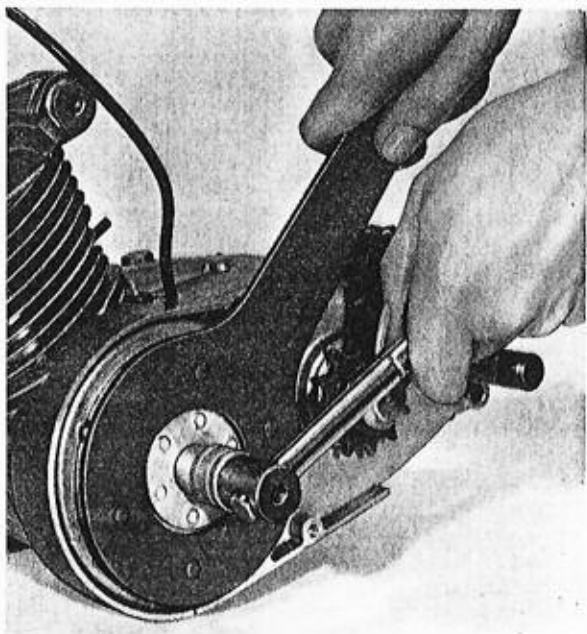
To adjust contact breaker points and ignition timing, remove magneto cover and sparking plug.

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.

*Removing
flywheel nut
using a 14 mm.
socket spanner
and wrench
M15-28.*



*Removing
flywheel by use
of extractor
M15-17x.*

The Clutch

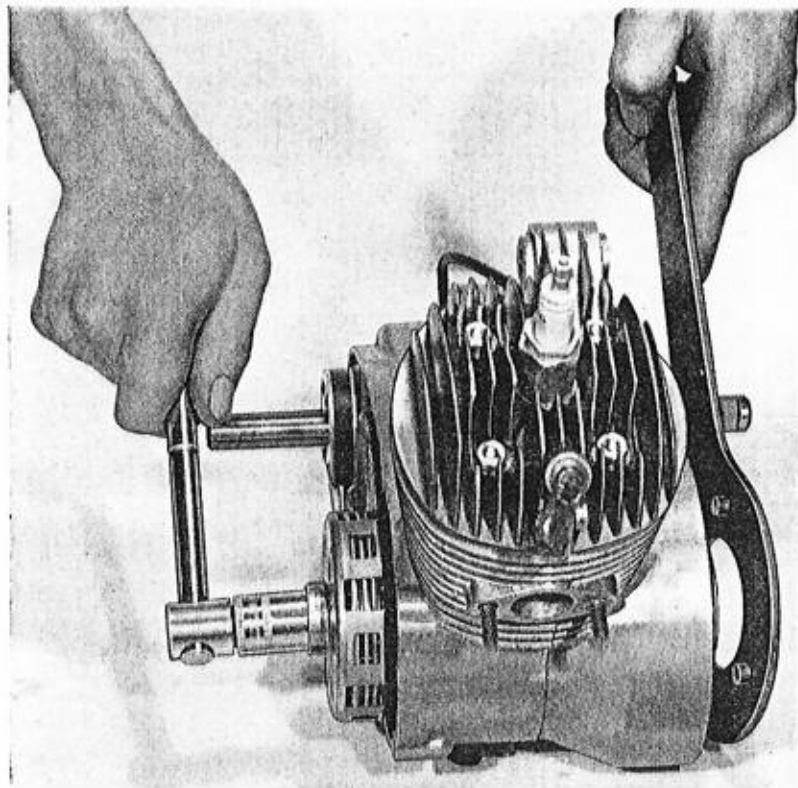
To dismantle the clutch, remove the right-hand crank and drain the oil by unscrewing the drain-plug from the bottom and the filler-plug (with dipstick) from the top of the clutch cover. The seven countersunk screws in the cover should now be undone and the cover removed, taking care when lifting the gasket.

Remove the clutch thrust bearing.

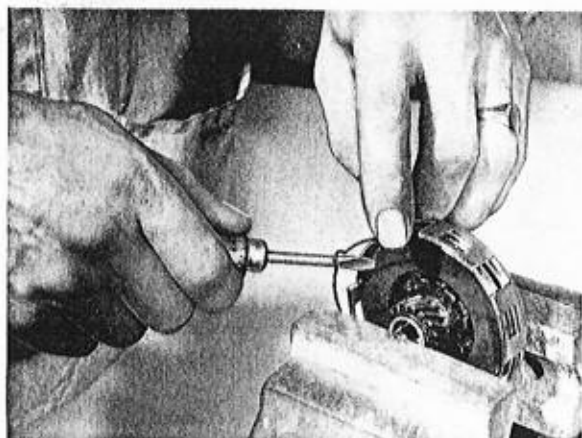
Loosen the clutch-nut (right-hand thread) and spring-washer, locking flywheel with wrench No. M15-28 to prevent shaft from rotating.

The entire clutch may now 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

Loosen clutch nut with 17 mm. socket spanner, and at the same time lock flywheel with wrench M15-28 to prevent shaft from rotating.



*Removing
clutch circlip by use
of screw driver.*



free bush between it and the shaft. Both parts may be removed by hand.

To strip down the clutch, fit primary drive pinion and if the clutch is now clamped 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.

Do not clamp 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 off easily from the clutch-body.

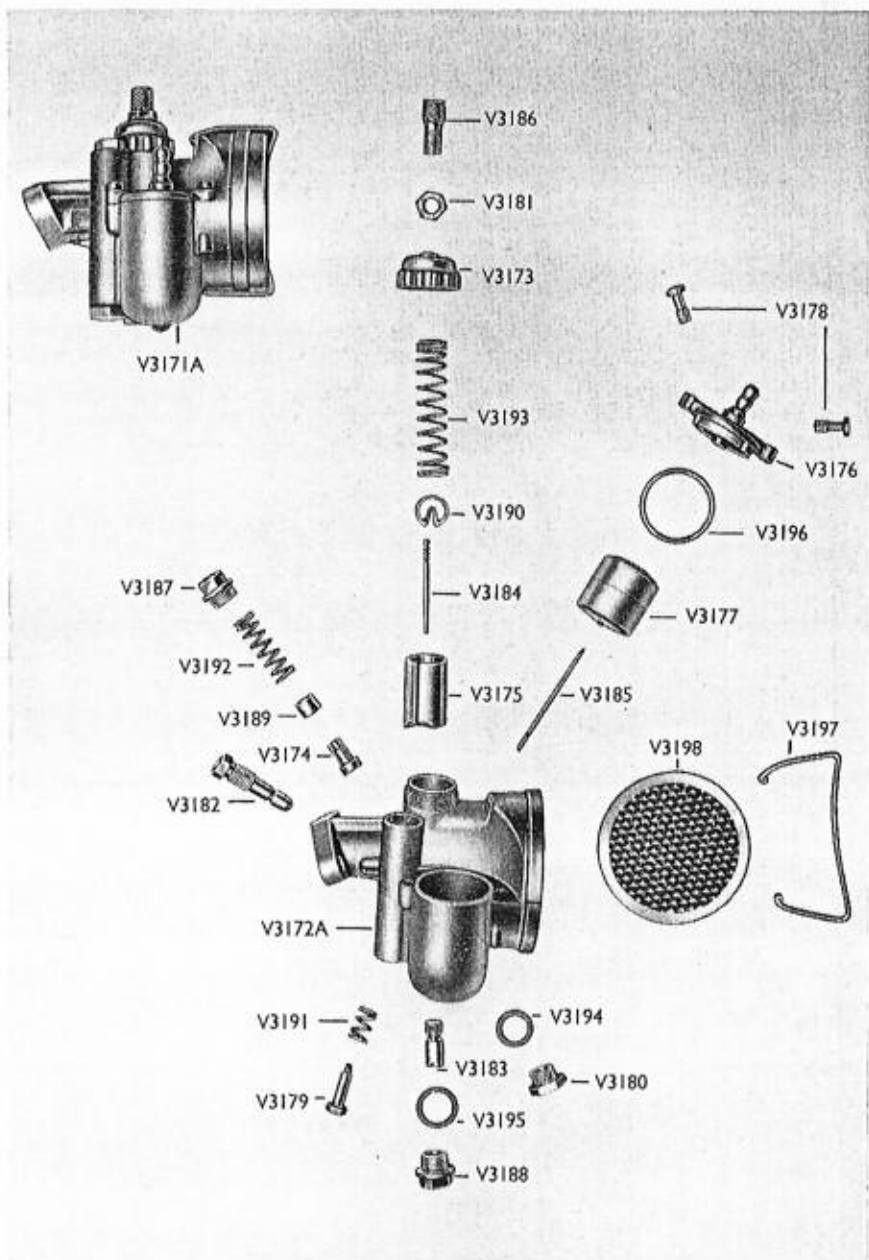
All parts should be thoroughly cleaned in petrol or paraffin.

Order of reassembly, take the casting (V3165) open end uppermost, and place in it spring plate (V3168) with concave side uppermost. Next place

support plate (V3164) and then first clutch plate (V3162). Then fit pinion (V3089) to splines of driving disc (V3162), next fit steel disc (V3163), and finally pressure plate (V3167).

The assembly at this stage should now be fitted into a vice to compress the unit to allow for the fitting of circlip (V3166) into the housing (V3165). The clutch can now be removed from the vice.

To refit clutch to engine, the engine should be upright, *i.e.*, with crankshaft in a horizontal position. Ensure that pinion (V3089), is correctly located inside the clutch assembly and that the pinion sleeve (V3086) is correctly located inside the clutch primary drive pinion (V3089). Insert clutch assembly on to crankshaft, refitting spring washer and clutch nut, and tighten. Refit clutch pressure cap (V3170) and finally clutch cover using a new gasket (V3014).



EXPLODED VIEW OF CARBURETTOR

The Carburettor

The main jet is easily removed without dismantling the carburettor and any foreign matter in the jet can be blown out. Never clean the jet with wire as this will tend to enlarge the hole and affect the strength of the mixture. It is occasionally necessary to strip the carburettor completely for thorough cleaning, or to replace worn parts. The dismantling procedure is as follows:

After removing the carburettor from engine, unscrew threaded cover and withdraw the throttle slide with spring, jet needle and needle clip.

Unscrew top plug and withdraw start piston and spring.

Unscrew slow-running screw and withdraw spring.

Remove air filter spring clip and withdraw air filter.

Unscrew the two screws on top of float chamber and withdraw cover and cover gasket and lift out the float, noting that pointed end of needle is uppermost. Unscrew main jet and withdraw. Unscrew base plugs and withdraw needle jet.

To adjust the mixture of petrol and air, *i.e.*, to enrich or weaken as required by local conditions, remove threaded cover and withdraw together with threaded head, spring, jet needle and needle clip. Note that the needle clip fits into one of the grooves of the needle. To enrich the mixture, *i.e.*, to increase proportion of petrol to air, transfer the needle into the next groove below. To weaken the mixture, *i.e.*, to reduce the proportion of petrol to air, transfer the needle clip to next groove above.

CARBURETTOR PARTS LIST

V3171A	Carburettor complete (Type 1/13/3)	V3184	Jet Needle
V3172A	Carburettor body (Type 1/13/3)	V3185	Float Needle
V3173	Threaded Cover	V3186	Cable Adjuster
V3174	Start Piston	V3187	Top Plug (Enrichment Chamber)
V3175	Throttle Slide	V3188	Plug Screw
V3176	Float Chamber Cover	V3189	Bush
V3177	Float	V3190	Needle Clip
V3178	Cover Screw	V3191	Throttle Slide Spring
V3179	Throttle Slide Screw	V3192	Spring
V3180	Base Plug (Enrichment Chamber)	V3193	Spring Throttle
V3181	Nut, cable adjuster	V3194	Washer, plug screw (V3180)
V3182	Jet	V3195	Washer, plug screw (V3188)
V3183	Needle Jet	V3196	Gasket, float chamber
		V3197	Air Filter Spring Clip
		V3198	Air Filter

Pedal Drive Gearwheel

To dismantle pedal drive gear wheel and rear brake lever, remove the clutch lever and clutch thrust bearing. Using a 17 mm. socket spanner unscrew the gearwheel nut, and to prevent shaft rotating, lock flywheel with wrench M15-28. Complete this operation before removing clutch.

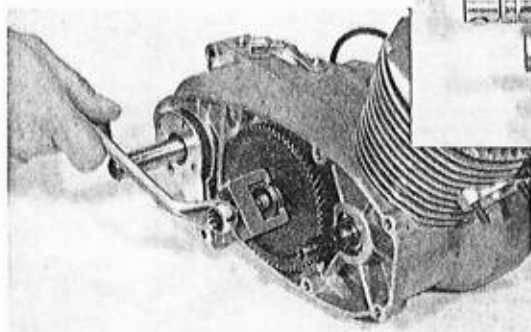
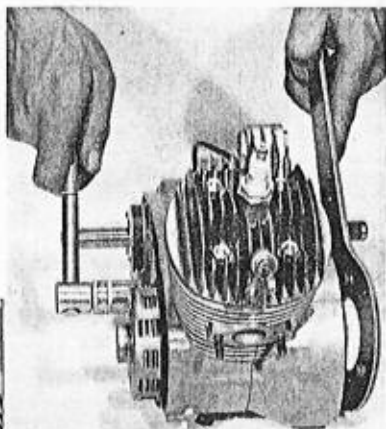
Remove the clutch, as described on page 10 and with the sprocket remover M15-26x draw the gearwheel from the countershaft, carefully removing woodruff key and spacer washers, noting that the first washer is concave towards the gearwheel and the second washer is

concave towards the bearing.

The rear brake lever is 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. Remove shim washers. It is advisable to mark the outer side of the lever to ensure correct re-fitting.

To reassemble pedal drive gearwheel and rear brake lever, follow the foregoing procedure in reverse, paying particular attention to the fitting of the woodruff key.

(Right) Removing pedal drive gearwheel nut.



(Left) Using a $\frac{5}{16}$ " B.S.F. spanner and sprocket remover M15-26x to remove pedal drive gearwheel.

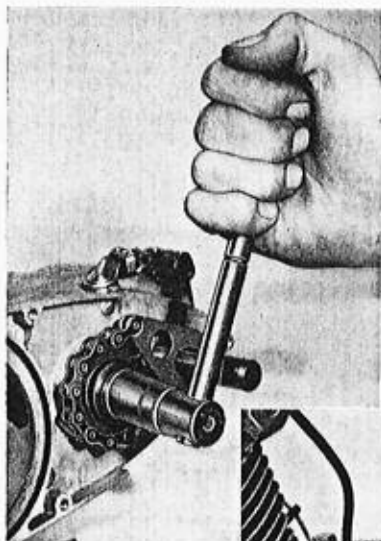
Chain Drive Sprocket

To dismantle the chain drive sprocket, remove the left-hand crank and magneto cover, and partly unscrew sprocket bolt using a 17 mm. socket spanner. If the engine has not been removed from the frame, the bolt will be easily loosened if first gear is engaged. A further resistance will be offered, if necessary, by applying the rear brake. If the engine has been removed from the frame, but provided the cylinder and cylinder

head are still fitted, the bolt will be loosened by giving the spanner handle several sharp taps with a hammer or mallet against compression of engine. If the cylinder has been removed, it will be necessary to anchor the chain drive sprocket when loosening the bolt, and the illustration on this page shows a suitable tool for this purpose—sprocket anchorage tool, M15—30x.

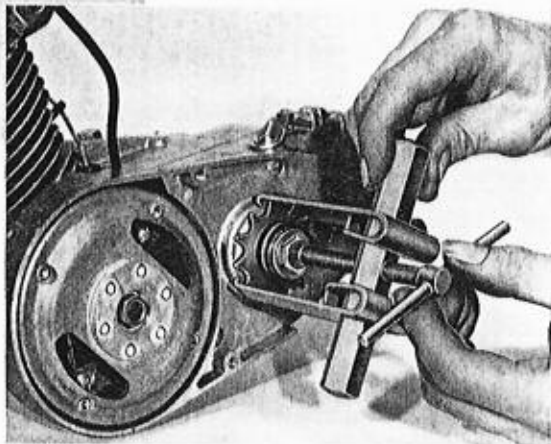
After partly unscrewing the sprocket bolt, the sprocket may now be loosened from its taper on the output shaft by use of a sprocket remover. Remove sprocket bolt and sprocket.

To reassemble chain drive sprocket, follow the foregoing procedure in reverse.



(Left) Partly unscrewing the chain sprocket bolt, using sprocket anchorage tool M15-30x.

(Below) Loosening sprocket from taper on output shaft, using sprocket remover SP.1.



The Crank Case

To dismantle, slacken the twelve countersunk-head screws clamping the side of the crankcase, six of them being within the magneto housing recess, and the remaining six being around the chain drive/pedal drive area. It will probably be found that they have been very firmly tightened up and resist 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. On the clutch side of crankcase there is a circlip with shim washers fitted to the end of the index gear shaft, and they must be removed at this stage. Now remove the twelve countersunk head screws, already slackened.

A few sharp light blows on the diecast crankcase, avoiding its edges, or on the end of the pedal axle with a wooden or rawhide mallet should suffice to separate the two crankcase half castings. Do not use a hammer

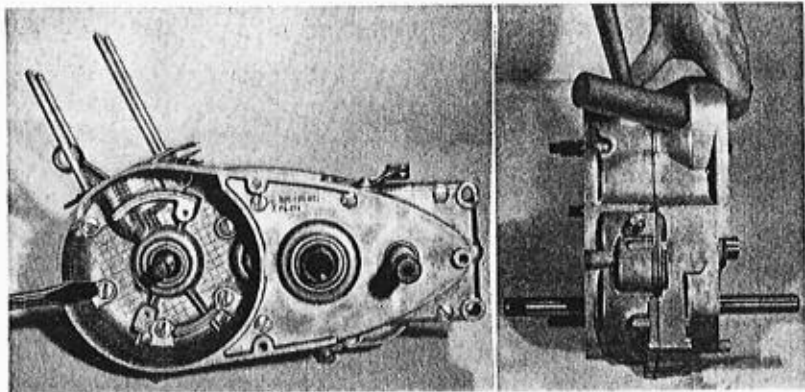
or other metal object, and do not be too vigorous when performing this operation.

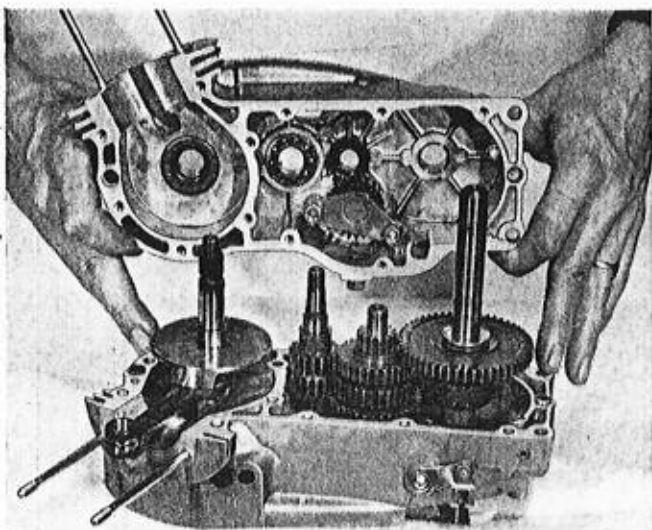
Place the engine with its left side downwards and lift off the right half of the crankcase, while pushing the pedal axle down so that it remains in the left half of the casing. Carefully remove the gasket making sure that no part of it remains adhering to the crankcase joint faces.

In the right half of the crankcase note the shims over the index gear shaft bush (adjacent to idler gear) and also over the pedal drive shaft bush and remove them. Remove idler gear by unscrewing the two hexagon nuts holding the retaining plate.

From the left half of the crankcase withdraw the treble geared countershaft and lift out the pedal axle with its freewheeling unit, noting the disposition of the shim washers to facilitate their correct re-assembly.

(Below left) . . . slacken the twelve countersunk-head screws . . . six of them being within the magneto housing. (Below right) Separating the two crank case half castings.





View of crankcase interior as right half is about to be removed.

Remove crankshaft assembly.

Remove gear pinion (14T), third gear wheel, second gear wheel and first gear wheel. On the latter, note that shoulder is uppermost. Remove the nine ball bearings now visible. The index gear shaft may now be withdrawn from the crankcase.

The gear control unit is now accessible and ready to be removed from the crankcase. Remove spring and location peg and withdraw shaft.

To dismantle index gear shaft, remove location tubular peg (V3101) using a nail or a metal rod, $\frac{1}{8}$ " dia. and $1\frac{1}{2}$ " long. Remove gear shift ring and selector pin.

To reassemble replace gear control mechanism into the left hand crankcase in reverse order of dismantling.

Replace index gear shaft noting that gear control mechanism should be located in the gear shift ring.

Lightly tap shaft into its bearing. Insert grease into the nine holes of the shaft and first replace three steel balls in the three holes nearest gear shift ring.

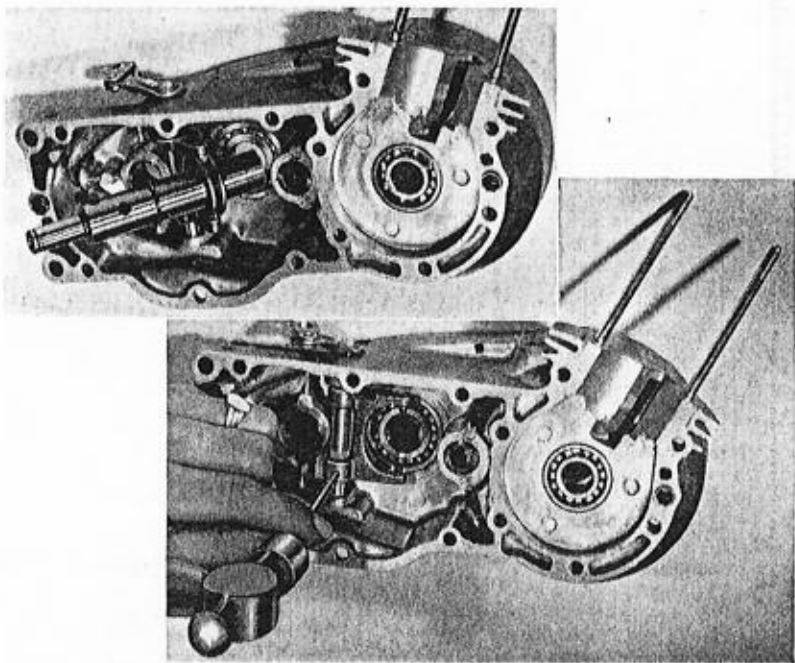
Now replace first gear wheel, ensuring shoulder is uppermost. Insert a further three steel balls into shaft and replace second gear wheel. Insert last three balls into shaft and replace third gear shaft, with splined bore uppermost. Refit 14T gear pinion.

Replace treble gear countershaft, meshing cogs with gear wheels on index gear shaft.

Replace crankshaft assembly, with splined end of shaft uppermost.

Lightly smear the left hand crankcase joint face with thick grease and fit *new* gasket ensuring that all bolt holes are clear.

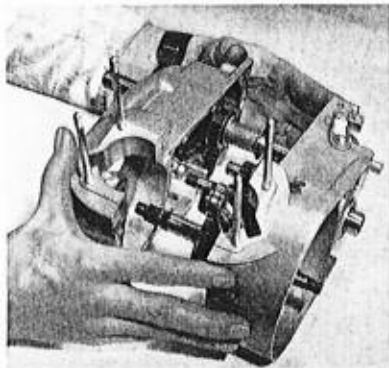
Into right hand crankcase refit the idler gear and securing plate.



Lightly smear index gear shaft bush (adjacent idler gear) with thick grease and replace shim washers.

Refit shim washers into pedal shaft assembly and replace the latter into crankcase with clutch

Refitting the two halves of crankcase.



(Top) Replacing index gear shaft.

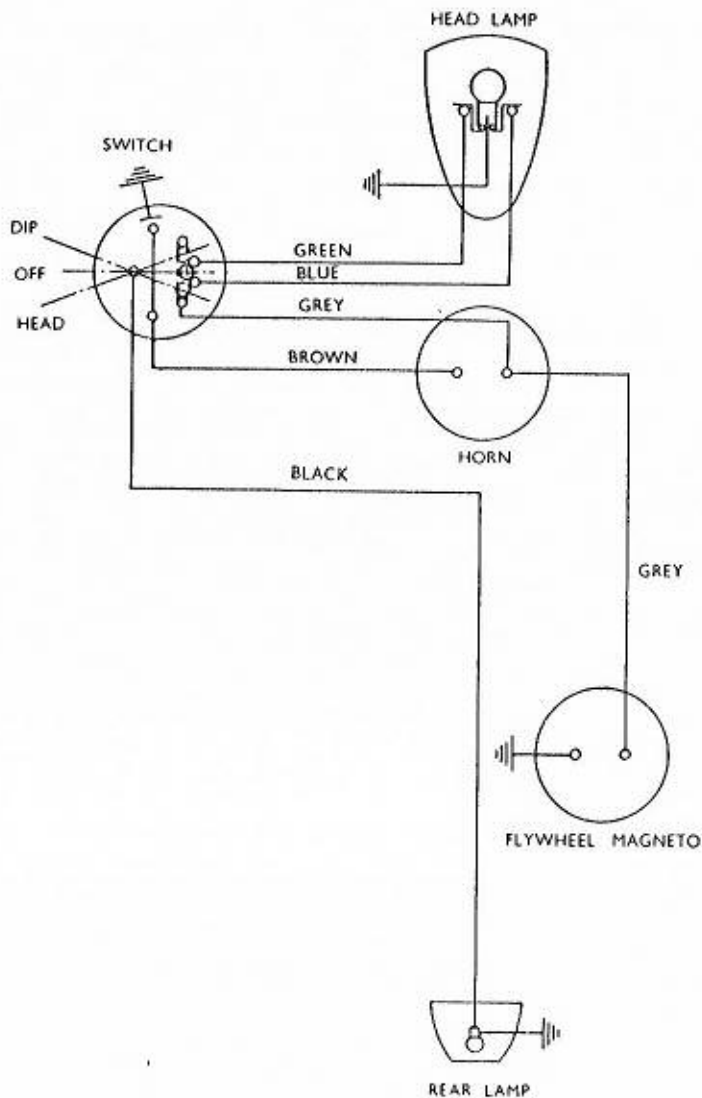
(Bottom) Removing location tubular peg, using a $\frac{1}{8}$ " punch.

sleeve spring uppermost, and fitting into its groove. Ensure that teeth of pedal drive gear are meshed with teeth of idler gear.

The two halves of crankcase should now be joined together. If they do not immediately close up flush to each other, turn each shaft in turn to rotate gears until the cogs mesh. The two halves of crankcase will now fit flush together. Replace the twelve countersunk head screws and turn to finger tightness. Then turn each a few threads at a time in sequence until fully tightened.

Replace shims and fit new circlip to end of index gear shaft on clutch side of crankcase.

Wiring Diagram for Gadabout de luxe 3



List of Tools

Special workshop tools recommended for use when servicing the Gadabout de Luxe 3.

M15-17x	Flywheel Extractor
M15-26x	Sprocket Remover
M15-28	Flywheel Wrench
M15-30x	Sprocket Anchorage Tool
S.P.1	Sprocket Extractor

