UNPRICED EDITION
(Prices on Application)

Francis-Barnett

"POWERBIKE"

INSTRUCTION MANUAL AND SPARES LIST

Manufacturers :

FRANCIS & BARNETT, LTD.

LOWER FORD STREET

COVENTRY

ENGLAND

Telephone : 3054. Telegrams : "Franbar, Coventry."

PRICE - - 2/-

PN

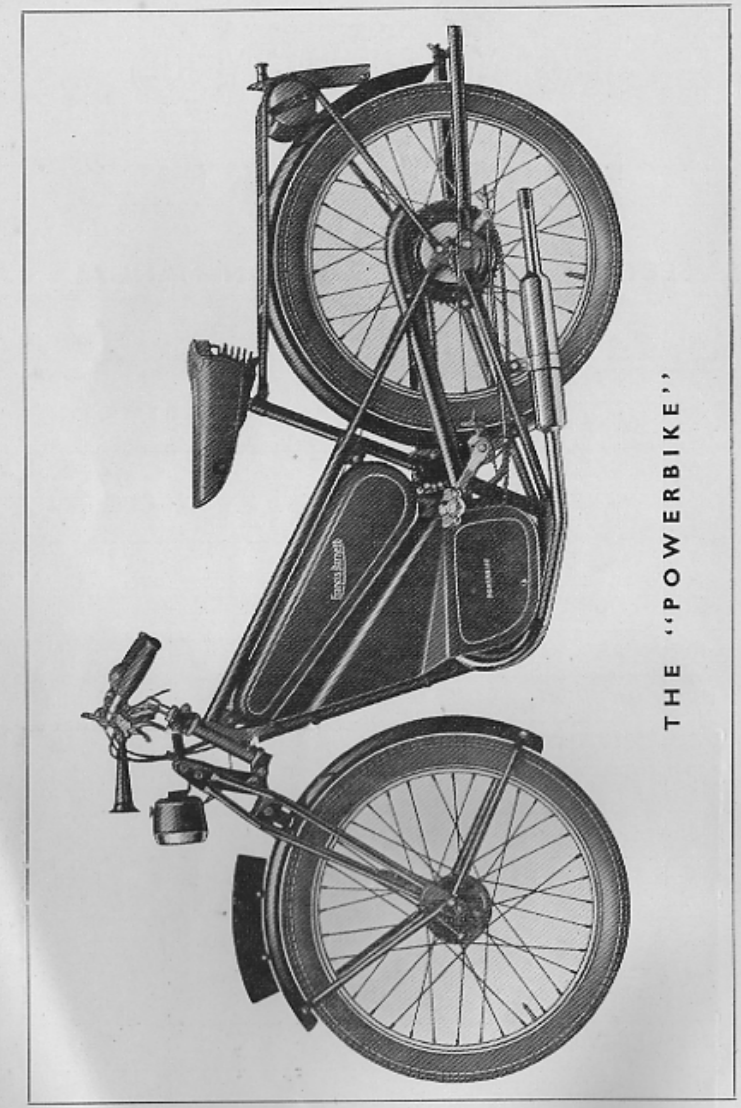
Francis-Barnett

"POWERBIKE"

INDEX

SECTION ONE — INSTRUCTION MANUAL

SECTION TWO — SPARES



THE "POWERBIKE"

I. INTRODUCTION

This manual has been produced mainly for those who have little technical or mechanical knowledge, in the hope that it will help them to understand their machines better and ensure that, by following the simple maintenance routine herein, many miles of trouble-free motoring will be enjoyed.

The " Powerbike " is designed to give satisfaction with minimum attention ; but it must be remembered that no amount of care in design and construction can make up for neglect on the part of the owner. Maintenance and adjustment should be regular and thorough, or else in time there will be much trouble and unnecessary expense.

We hope, therefore, that this volume will, in simple language, provide all the information required to keep the machine in the best of condition with the least trouble and expense.

Particulars of Service and Spares are given, and we will always be pleased to hear from " Powerbike " owners, and to help them with our wide knowledge and experience of motor-cycles.

LUBRICATION

For inter-mixing with the petrol we recommend one of the following brands :—	Castrol XL. Mobiloil A. Price's Energol SAE.40. Essolube 30. Double Shell.
For Chaincase :—	Castrol D. Mobilube C. Price's Energol SAE.140. Essolube Gear Oil 140. Shell Spirax C.

II. GENERAL DATA

Engine	Villiers Mk. 2F.
Bore	47mm. (1.8504 inches)
Stroke	57mm. (2.244 inches)
Capacity	98cc. (6 cu. inches)
Horse Power, maximum ...	2.0 at 3750 r.p.m.
Engine sprocket	17 teeth
Clutch sprocket	42 teeth
Ratio, engine to clutch ...	2.47 : 1
Final Drive sprocket	11 teeth, ½" pitch, Coventry No. 112045.
Final gear ratio	10.76 : 1, with 48T. sprocket.
Tyres	Dunlop Autocycle 2.25×21.
Exhaust pipe	1¼ inch external diameter
Sparking plug	Lodge H14, 14mm. Point gap .018—.025".
Carburettor	Villiers "Junior"
Carburettor jet size	No. 8J
Carburettor taper needle ...	No. 2½, setting 29/32" out.
Ignition timing	⅛" before Top Dead Centre
Contact-breaker	Point gap .015" max.
Lighting set	Head lamp bulb 6v. 12w. S.C.C. Pilot bulb 4v. 0.3 amp. M.E.S. Parking battery Ever-Ready No. 1289.
Petrol tank capacity	1½ gallons (6.8 litres) Reserve capacity approx. 1 pint.
Weight unladen	125 lbs.
Overall length	77¾"
Overall width	23"
Overall height	40"

III. LAYOUT OF CONTROLS

(i) Where the owner has had no previous experience of driving it is advisable to become familiar with the layout of the controls before attempting to ride the machine on the road ; therefore the following should be thoroughly studied before setting out for the first ride.

(ii) THROTTLE CONTROL.—This is situated on the top of the right nand handlebar ; moving the lever towards the rider increases the engine speed.

(iii) CLUTCH—The clutch is operated by lifting the longer lever on the left hand side of the handlebar ; and may be released from permanent disengagement by depressing the small ratchet lever.

When pedalling the machine as a cycle the long clutch lever may be lifted and pulled in to the handlebar, when the ratchet will engage and retain the clutch in disengagement.

(iv) RELEASE VALVE.—This small lever on the left hand side of the handlebar releases engine compression to facilitate starting.

(v) STRANGLER.—The strangler knob protrudes from the underside of the petrol tank on the right of the machine. When pulled out it shuts off most of the air supply to the carburettor, thus creating a very rich mixture for starting from cold. The control knob should be pushed in gradually as the engine warms up. Do **not** use the strangler when starting up on a warm engine.

(vi) BRAKES.—The rear brake is applied by back-pedalling, only slight pressure being necessary. Ensure that the trip lever is in the correct position for braking by making one complete forward revolution of the pedals and back-pedalling gently.

The front brake is actuated by the lever on the right hand side of the handlebar.

(vii) LIGHTING SWITCH—This is situated on the headlamp ; it has three positions, namely :—

(O) Off.
(B) Parking. Dry battery in use.
(D) Main head light.

(viii) PETROL TAP.—The petrol tap has three positions as follows :—

(M) Main supply of fuel.
(OFF)
(R) Reserve supply.

Always run with the petrol supply turned on to " M "; then, should the main supply run out, there will be sufficient fuel in the tank to carry the machine to the nearest garage, once the reserve supply has been turned on.

IV. DRIVING

(i) PRELIMINARIES.

Before use make sure that :—

There is a petrol-oil mixture in the fuel tank.
There is a sufficiency of lubricating oil in the chaincase.

(a) To fill chaincase :—

Remove the chaincase oil filler, situated at the rear of the flywheel (See fig. 1), above the clutch lever cover, and the oil level plug, below and to the left of the filler plug ; and pour in gear oil until it runs out at the level plug hole. Refit plugs securely, and check every 500 miles.

(b) To fill fuel tank :—

Fill up the tank with a mixture of one part of oil to 16 parts of petrol (i.e., half a pint to one gallon). For convenience a measure is attached to the filler cap—use four measures of oil to one gallon of petrol. Put the petrol into the tank first, and take care to turn off the petrol tap before pouring in the oil. Shake the machine from side to side two or three times in order to mix the contents of the tank.

(ii) TO START—(a) Turn on petrol, pull strangler knob, and open the throttle about one third of its travel. Now lift the release valve lever and pedal the machine forward as you would an ordinary cycle. The compression of the engine will tend to make pedalling heavy at first, but after a yard or so the release valve may be lifted and the engine should fire. When the engine has taken up the drive the pedals may be used as footrests. Depress the strangler knob gradually as the engine warms up ; do not keep it out longer than is necessary. It is not necessary to flood the carburettor, and no provision has been made for this in the " Powerbike " design.

(b) An alternative method is to disengage the clutch and pedal the machine forward as an ordinary cycle. Then, as soon as a moderate road speed has been obtained, the clutch lever can be released gradually and the engine will respond to the throttle lever as before.

(iii) TO STOP.—To stop the machine, close throttle, lift clutch when the machine has slowed down, and then gently apply the brake.

(iv) PRECAUTIONS.—(a) If the engine is difficult to start, wheel the machine forward a few yards with the release valve lifted and the engine ticking over. Then attempt a re-start in the usual manner with the controls set as described.

(b) Do **not** start the machine on the stand ; this is quite unnecessary, and only tends to overload the stand which has not been designed for such purposes.

(v) RUNNING-IN.—The useful life of a motor-cycle depends to a great extent upon how it is treated in the first 500 miles of its life on the road, and during this period the engine should not be overdriven, nor the throttle opened fully. The engine must not be allowed to race, or run at a high speed under a light load. After covering about 500 miles it will, very likely, be necessary to weaken the mixture by lowering slightly the taper needle in the carburettor. How to do this is explained in the section dealing with the carburettor.

V. MAINTENANCE SUMMARY

(i) Observation and application of the following periodic maintenance tasks will make for an efficient unit and inexpensive running. It is a wise plan to keep a small notebook and to record therein details of the jobs carried out on your machine, together with the mileage run ; this will make for regular adjustment and speedy maintenance.

(ii) ON COMPLETION OF THE RUNNING-IN PERIOD

Adjust, if necessary, carburettor mixture strength.
Adjust contact-breaker points to .015" and clean.

Instructions for doing this are to be found on page 10.

(iii) WEEKLY.

Tyres—check pressures.
check tread.

(iv) EVERY 1,000 MILES.

All cables : check ; adjust ; oil.
Main chain : check play.
Pedal chain : check for play.
Contact-breaker : check ; adjust to .015".
Engine : check all joints for oil leaks.
Fork links : tighten if necessary.
All nuts and bolts : check and tighten, if necessary.

(v) EVERY 2,000 MILES.
Clutch case : top up oil level.
Petrol filter : clean gauze in banjo union in carburettor.
Air filter : remove and clean.
Sparking plug : clean ; re-set point gap.
Engine : remove cylinder head and scrape out carbon.

(vi) EVERY 4,000 MILES.
Engine : decarbonise.
Clutch case : drain ; re-fill.
Hubs : check end play ; adjust if necessary.
Carburettor : dismantle and clean out.

VI. ENGINE

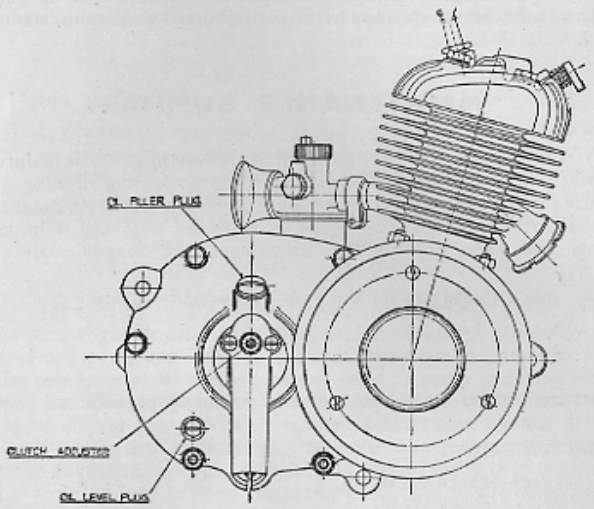


FIG.

(i) ENGINE SHIELDS. To remove engine shields unscrew nuts at the top of the shield rods, below the steering head. Unscrew and remove bolts at the bottom of the shields, and slide shields backwards and outwards to clear top support bracket.

(ii) CLUTCH CASE. This should be inspected periodically for oil level, say every 2,000 miles. For instructions on filling, see Page 6.

(iii) CLUTCH. The clutch is adjusted by means of the screw in the operating lever. First loosen locknut and then turn the screw in a clockwise direction until there is approximately one sixteenth of an inch slack in the cable at the handlebar end. Do not forget to tighten the locknut after correctly adjusting.

(iv) DECARBONISATION. After approximately 4,000 miles the piston, cylinder and cylinder head will require de-carbonising.

Sequence of operations :—

(a) Remove H.T. lead, carburettor, release valve cable and exhaust pipe nut from cylinder.

(b) Slacken cylinder head bolts, a quarter-turn at a time, working diagonally, remove and lift head.

(c) Slacken and remove cylinder base nuts and spring washers in same way as for (b).

(d) Lift cylinder in one steady movement ; do not twist or piston rings may be trapped in ports.

(e) Remove piston by extracting circlips with thin-nosed pliers ; tap gudgeon pin out gently, using **wooden drift,** until piston is loose. It is not necessary to remove gudgeon pin completely.

(f) Remove carbon deposit from cylinder head by tapping and scraping gently.

(g) Carbon will form around the edges of the exhaust port and may, if neglected, build up to constrict the orifice and so hinder the passage of the exhaust gases. This may be removed by chipping carefully with a screw-driver.

(h) The piston may be cleaned in the same way as the cylinder head and the top rubbed gently to remove every trace of carbon. Remove, also, the carbon from inside the piston.

(i) When refitting, replace piston in same way as it was removed. **Refit circlips.** Slide cylinder over rings by pressing side of ring opposite peg and canting cylinder over to retain ring. Press in ring on either side of peg and swivel piston gently to and fro, gradually lowering over ring ; repeat same for lower ring.

(j) Tighten cylinder base and head bolts in same order as they were removed.

Make sure that all faced joints are clean and free from grit when replacing. Always fit new jointing washers where specified.

No washer is fitted between cylinder and head on Villiers engines ; and it is seldom necessary even to make use of any jointing compound.

VII. CARBURETTOR

(i) The instrument fitted is designed specially to suit the "Powerbike" and will call for very little attention apart from an occasional cleanout of the float chamber. It is important to keep the air intake gauze clean and this may be done simply by dipping it in petrol. To adjust the throttle needle in order to alter the carburettor setting, first of all remove the throttle by unscrewing the top ring. At the head of the throttle is a small screw ; turning this screw in a clockwise direction, which lowers the needle, will give a weaker setting. Turning in an anti-clockwise direction will give a richer setting. When experimenting, not more than half a complete turn should be made at one time, as the setting is somewhat sensitive. When re-assembling the carburettor after cleaning, etc., take care not to over-tighten the bottom nut, or the jetpiece thread may be strained. Periodically see that the petrol pipe "banjo" connection is free from dirt, etc., or the petrol will not flow freely.

VIII. IGNITION

(i) MAGNETO.—(a) Generally, the flywheel magneto requires no attention other than occasional adjustment of the contact-breaker points, and the flywheel should not be removed unless absolutely necessary. If, however, the flywheel has to be removed, it is advisable to use a "hammertight" spanner—part No. M.1239—for the centre nut. The centre nut has a right hand thread, and will unscrew a little and then tighten again as the flywheel is extracted. When replacing the flywheel, the correct ignition timing, which is **one eighth of an inch** before Top Dead Centre, is obtained by placing the mark on the flywheel rim opposite mark on armature plate (near the H.T. terminal) with the piston at top of stroke. After checking this, lock up the centre nut, tapping the special spanner smartly with a hammer and using engine compression as resistance.

(b) **Contact breaker.** Access to contact-breaker is obtained by removing the cover from the front of the magneto, this being held by three small screws which must be tight when replaced.

The gap at the C.B. points must be .015" (fifteen thousandths of an inch). The points should be kept free of oil.

To adjust C.B. points :—
Turn flywheel until rocker pad is on top of cam profile of flywheel boss. Release screw "A," which see in illustration. Position bracket "B" with .015" feeler gauge between contact points and tighten screw, taking care not to use too much force. It is not necessary to disturb screw "C" when adjusting point gap.

A felt pad is used to keep the cam in a slightly oily condition, and is impregnated when new with grease. This can, if visibly dry, be oiled with a small amount of the heaviest oil obtainable. It is better, however, to soak the pad in a molten high temperature grease, if it is convenient to detach the pad for this operation. If too much oil is put on the felt pad it may creep along the rocker arm, get on the points and so cause ignition trouble.

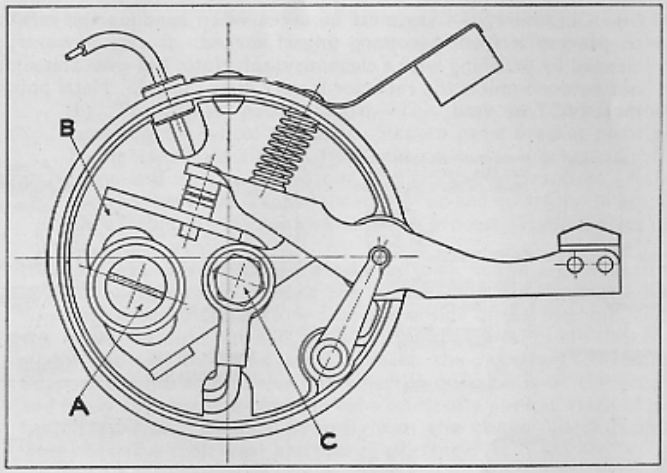


FIG. 2 — CONTACT-BREAKER ASSEMBLY

(ii) SPARKING PLUG.—(a) The plug fitted to the Villiers Mk. 2F. engine is the Lodge H.14, 14mm. short reach. The American equivalent of this plug is the Champion J.10com.

(b) **To clean sparking plug.** Take the plug to pieces and clean the insulator with a rag soaked in petrol : metal parts can be wiped in the same manner or washed in paraffin, or if necessary scraped. After cleaning and before re-assembling the surface of the points should be rubbed over with a piece of fine emery cloth ; and it is advisable to see that there is no grit between the insulator and the body, or it will be difficult to make the plug gas-tight. Never experiment with plugs of a type other than that recommended by the makers—you have our assurance that the type we advise is the most suitable.

IX. LIGHTING

(i) LAMP FRONT REFLECTOR.—To remove, push down the clip at the bottom of the lamp rim, which should then be pulled off from the bottom (the rim pivots on the top when opening). When replacing locate the rim top first, then press on at the bottom and spring the clip into position.

To remove the bulb-holder, turn anti-clockwise to its stop and pull out.

(ii) CLEANING.—Care must be taken when handling the reflector to prevent it from becoming finger marked. It can, however, be cleaned by polishing with a clean, dry, soft cloth, but even this should not be done unless the reflector is very dirty indeed. Metal polishes must NOT be used.

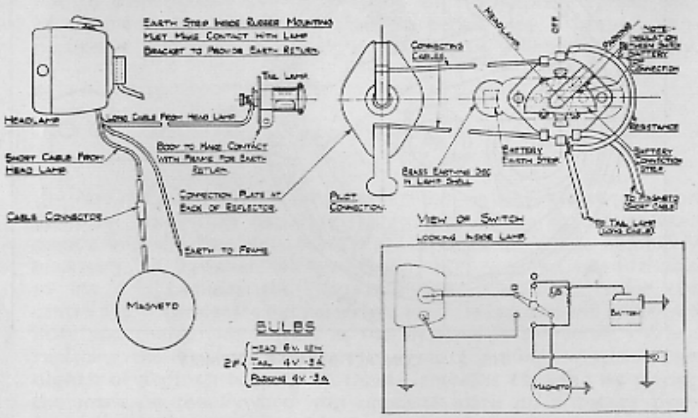


FIG. 3 — MK. 2F WIRING DIAGRAM

X. CYCLE PARTS

(i) LUBRICATION OF CYCLE PARTS.—The only parts of the machine which require occasional lubrication are the chains, bottom bracket, forks and control cables. Do **not** use the oil gun on the wheel hubs, as this will quickly render the brakes inoperative. The hubs are packed with lubricant sufficient for many thousand miles when assembled ; after about 15,000 miles the hub should be stripped and packed with thick grease. A little oil worked between the cam bolts and bushes (say every 2,000) miles will ensure smooth and progressive action of the brakes.

To lubricate the chains efficiently, remove, swill in paraffin for a few moments, dry, and immerse in a mixture of stiff grease and graphite warmed sufficiently to make it fluid. Allow to drain for a few moments and replace.

(ii) CHAINS.—(a) **To adjust main driving chain**—Loosen wheel axle nuts and rear brake anchorage arm slip bolt. Now turn the adjuster screws on either side of the machine the same number of turns in the same direction until there is approximately half an inch of up and down movement in the bottom run of the chain at the **tighest** spot. Check wheel for central alignment in the frame and tighten axle nuts and **brake anchorage arm clip bolt.** Check rear brake for correct adjustment.

(b) **To adjust pedal chain.**—This may be done without loosening the wheel axle nuts. Slacken pedal bracket pivot pin. To tighten chain slacken front nut on pedal bracket adjusting screw and turn rearward nut in a clockwise direction. Adjust chain so that there is approximately $\frac{3}{4}$" up and down play in bottom run of chain. To slacken chain reverse process. Tighten pivot pin.

(iii) WHEEL BEARINGS.—To take up play in the wheel bearings it is not necessary to remove the wheels from the machine. The adjusting cones are to be found on the offside of the machine, and if the wheel outside nut and the adjusting cone locknut are slackened slightly, it will be found easy to make the necessary correction. Support the machine so that the wheel in question is off the ground and freely running, and turn the cone cautiously until all trace of play has disappeared. **Do not over-tighten the cones**—harsh-running wheel bearings spell wear and loss of efficiency.

(iv) REAR BRAKE.—The rear brake mechanism is a patented feature of the machine. To enable the machine to be wheeled backwards, the trip lever attached to the bottom bracket assembly on the left hand side of the machine must be moved to its fully extended clockwise position. To do this it may be necessary to lift the clutch and move the pedals slightly forward. It will then be seen that as soon as the pedals are used, either for starting the engine or propelling the machine, the trip lever is automatically thrown forward, and the brake mechanism is thereby ready for use.

(v) STEERING HEAD.—Construction here very closely follows ordinary cycle practice, but the importance of keeping the head bearing properly adjusted must be emphasized. Determine play in the steering head bearing by rocking the front wheel slightly to and fro with the front brake hard on. A slight " bump " will be felt if any play exists ; adjust by slackening the bolt on the steering head lug and carefully tightening steering head lock-nut. Do not overtighten, or the steering will become stiff and uncontrollable.

(vi) TYRES.

Tyre pressures :— Front ... 18 pounds
Rear ... 30 pounds

Check tyre pressures weekly and at the same time make sure that there are no particles of gravel or other matter trapped between the treads ; these quickly cause premature wear of the outer cover and necessitate early replacements.

(vii) CONTROLS.—Lubricate all controls, wires, brake connection, etc., with engine oil every 1,000 miles in order to ensure at all times complete control of the machine. All control levers should be lubricated from time to time, but excessive use of oil on handlebar levers is to be avoided, as this makes them unpleasant to handle.

NOTE.—It is not considered wise of the amateur mechanic to effect major repairs to his machine. To refit, for example, shafts or a big-end assembly, requires special tools, much experience and great skill.

The dealer from whom the machine was purchased can often be relied upon to give satisfactory service ; and your attention is drawn to details of our service scheme following.

XI. TRACING TROUBLES

(i) OPERATION OF TWO-STROKE ENGINE.—In the cylinder walls are arranged four holes or ports, namely, one exhaust port through which the burned charge is allowed to escape, two transfer ports which, through passages on the side of the cylinder, are in communication with the crankcase, and one inlet port which permits the air-fuel mixture to enter the crankcase. Movement of the piston in a vertical direction is arranged to cover and uncover the ports at suitable times so that the mixture is first drawn from the carburettor through the inlet port into the crankcase. There it is compressed and then forced through the transfer passage into the cylinder above the piston, where it is further compressed. It is then ignited by a spark from the plug, and after expansion due to heat, escapes through the exhaust port into the silencer.

(ii) For the satisfactory running of any Villiers engine it is essential that three main conditions are fulfilled, and by making a systematic and intelligent investigation the faults can usually be located and rectified. Often when the engine stops, symptoms give a clue to the cause, but where this is not the case the trouble can be more easily diagnosed by following a definite mode of investigation.

The three conditions mentioned in the preceding paragraph are as follows :—

1. The required quantity of combustible mixture (petrol and air) must enter the engine, which means that a sufficiency of fuel must be available at the carburettor and that the throttle should open and close freely.

2. There must be a good spark at the plug points, when under compression, and at the correct time in relation to the position of the piston on its upward stroke.

3. The engine must be in a good mechanical condition, there must be good compression in the cylinder and crankcase, and no air leaks at the various joints.

When the cause of the trouble is not evident carry out a preliminary examination covering the following points, but if this fails to trace the cause reference must be made to the Fault Finding Chart.

Having made sure that there is Petroil in the tank, and the tap is in the "ON" position, depress the tickler to see if there is any stoppage or obstruction in the fuel supply either in the tap, fuel pipe, banjo union or fuel needle seating.

Being satisfied that fuel is reaching the carburettor, next unscrew the sparking plug, and, with the high tension lead attached, lay on the cylinder head in such a position that the central pole of the plug will not be earthed on the cylinder head. Test by turning engine by pedals with the cycle on stand, and if the spark is satisfactory it is possible that the timing is incorrect. Finally examine the carburettor controls to make certain the throttle is actually opening when the control lever is moved.

XII.

FAULT FINDING CHART

Sequence of Testing.	Possible Trouble.	Remedy.
ENGINE WILL NOT START.		
Depress tickler on carburettor to check whether fuel is reaching carburettor.	No fuel reaching carburettor. Air lock in petrol pipe.	Turn tap to ON, refill tank, clear air vent in filler cap. Turn on reserve tap where fitted.
If no fuel, even when tap is on and fuel is in tank.	Choked petrol pipe, filter on tap, filter in banjo. Fuel needle sticking in seating.	Remove and clean out. Dismantle carburettor and fit new needle.
Test for spark by holding sparking plug body on cylinder head.	Leak along insulation of plug or high tension lead.	Try a new plug of the type recommended and/or new H.T. Lead.
If still no spark : Test for spark at end of H.T. lead held $\frac{1}{8}$ inch from cylinder fins.	Plug points may be oily or sooted up. If no spark at end of H.T. lead, contact breaker point gap may be too narrow or points pitted or dirty, or oily.	Clean plug or fit new one.
	Moisture on insulation of condenser box.	Clean and dry out.
	High tension pick up not making good contact on ignition coil due to corrosion or misplacment.	Clean and dry out.
	Cracked insulation of adjustable contact breaker point.	Renew.
	Damaged insulating sleeve on wires connecting contact breaker to coil or condenser.	Replace with new sleeving.
	Faulty connection of low tension wire to ignition coil.	Correct.
	Faulty condenser.	Replace.
	Faulty ingition coil.	Replace.
If above tests are OK but engine will not start.	Mixture may be too rich due to use of strangler, or incorrect setting of taper needle.	Open throttle wide and pedal with engine in gear to clear engine of petroil mixture, adjust taper needle, drain crankcase.
	Air leaks at carburettor stub or manifold joint, causing weak mixture.	Correct.
	Incorrect ignition timing due to flywheel having slipped on driving shaft taper.	Check, following instructions given on page 10.
ENGINE FOUR OR EIGHT STROKES.		
Strangler may not be fully open. Air filter where fitted may need cleaning.	Mixture too rich.	Lower taper needle by adjuster screw fitted in throttle.
Check by watching for excessive smoke from exhaust pipe.	Engine may four-stroke for a little while after standing due to accumulation of oil in crankcase.	Usually ceases when engine has been running for a few minutes unless too much oil has been mixed with the petrol.
	Flooding of carburettor.	Persistent flooding is usually due to dirt under fuel needle seating, or sticking fuel needle, or damaged seating or punctured float.
ENGINE LACKS POWER.	Engine out of tune, bearings worn. Unsuitable sparking plug.	Overhaul. Replace with recommended type.
	Loss of compression.	Tighten cylinder head bolts. Worn piston rings.
	Incorrect "Petroil" mixture.	Correct mixture is 1 part oil—16 parts petrol.
	Excessive carbon deposit on piston crown.	Decarbonise.
	Exhaust system choked with carbon.	Clean out silencer and exhaust pipes.
	Incorrect carburettor setting.	Check.
	Air cleaner choked.	Wash in petrol, drain and dip in thin oil.
	Obstruction in fuel supply.	Clean out tap, fuel pipe and filters.
	Brakes binding.	Adjust.
	Driving chains too tight.	Adjust.
ENGINE WILL NOT RUN SLOWLY.	Weak mixture due to air leaks at carburettor stub, manifold joint or crankcase and cylinder base joints.	Tighten all joints.
	Crankcase drain screw loose or missing.	Tighten or replace.
	Worn crankshaft bearings or leaking compression gland.	Replace.
	Ignition timing too far advanced.	Correct.
ENGINE SUDDENLY STOPS FIRING.	Sparking plug lead detached.	Replace and tighten nut.
	Plug points bridged by oil, carbon, or deposit caused by use of leaded petrol.	Clean or replace.
	Short circuit of high tension current by water on H.T. lead.	Dry out.

NOTES

PART TWO

SPARES LIST

Cuando se piden piezas de recambio basta mencionar el número completo del motor y los números de las piezas de repuesta que se necesitan.

Naar reservedele ordres er det tilstraek keligt at anfore det kømplette nummer af motoren og nummeret af de ønskede reservedele.

Lors d'une commande de pièces detachées, il suffit de mentionner le numéro complet du moteur et les numéros des pièces detachées requises.

Bij de bestelling van motoronderdeelen behoort het nummer van de motor en het onderdeelnummer aan te geven.

Bei der Bestellung von Ersatzteilen genügt es Motornummer und Nummern der gewünschten Ersatzteile anzugeben.

Always quote the frame number and prefix of your machine when ordering spares. This is to be found stamped on the **left hand side of the steering head.** The engine number, for use when ordering engine spares, is situated on the **left hand crankcase half,** immediately below the cylinder base.

I. POWERBIKE SERVICE

(i) The importance of obtaining the utmost possible use of your machine with the least expense is a matter which has received our careful attention, and a most efficient and up-to-date Service Department is at your disposal. All repairs are carried out by experts ; your difficulties, should they arise, are attended to by specialists.

There is no economy in fitting cheap, imitation parts ; we accept no responsibility whatever for breakage or consequential damage resulting from the use of spare parts other than those manufactured or supplied by us. **Always obtain your spares** from the appointed FRANCIS-BARNETT dealer in your district or from us.

(ii) REPAIR SERVICE.—It will be the wish of the owner to have all repairs and adjustments on his machine carried out efficiently to ensure the utmost reliability. Machines sent to us are attended to by experts who specialise in repair work. All repairs are carried out under the terms of the guarantee set out at the end of this booklet—see concluding paragraph headed " Repairs."

In connection with servicing the clutch the following special prices are offered :—

Re-corking clutch sprocket	3/6
Re-centring clutch sprocket	3/-
Re-corking clutch plate	3/6

Cylinder boring, together with a suitable oversize piston, is undertaken at a cost of 31/6. Normally a service exchange scheme is employed enabling us to offer service by return.

II. ORDERING SPARES

(i) PROCEDURE.—We can supply **all spares** for the POWERBIKE including engine parts. When ordering, note carefully the following points :—

(a) Always state **part number** and description **as given in spares list.**

(b) Always quote the **frame number** of the machine. This is stamped on the left hand side of the steering head.

(c) If engine parts are required, state the **engine number.** This is stamped on the left hand crankcase half, immediately below the cylinder base.

(d) If possible, send the old parts as a pattern, and attach securely the name and address of the sender. Post full instructions under separate cover. Such **old parts will not be returned** unless specifically requested by the owner at the time of sending.

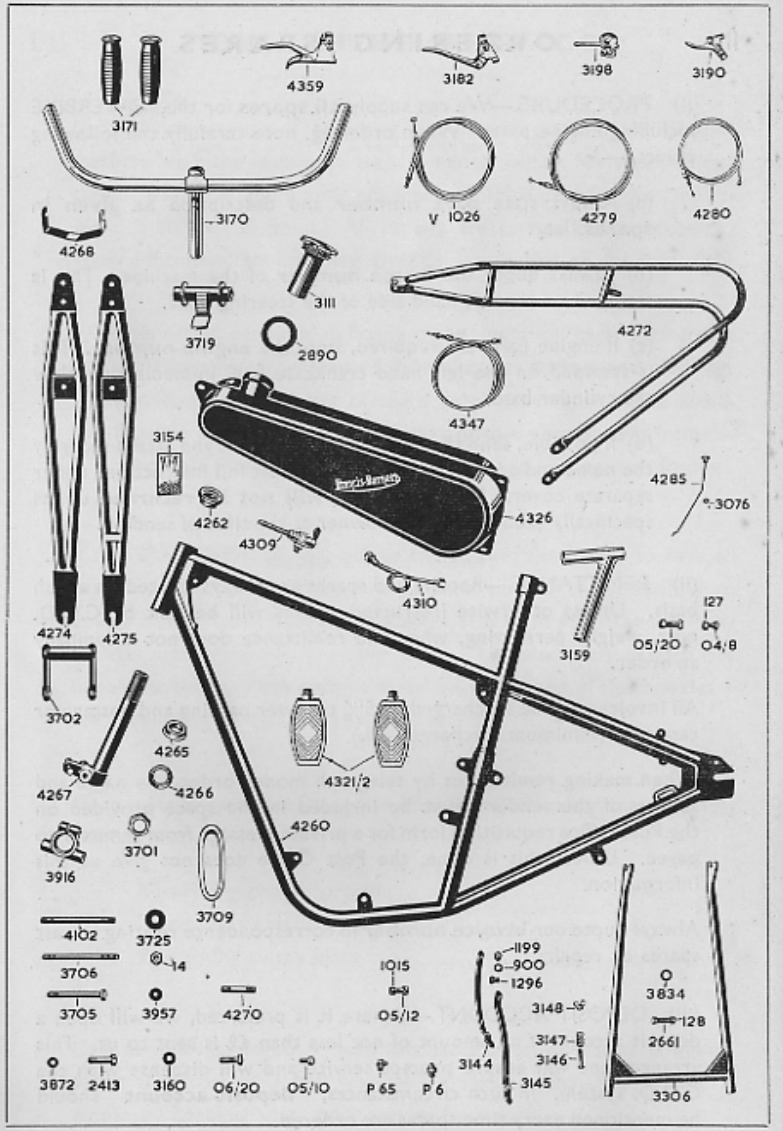
(ii) REMITTANCE.—Repairs and spares are always treated on a cash basis. Unless otherwise instructed, spares will be sent by C.O.D. post, weight permitting, when the remittance does not accompany an order.

All invoices will be surcharged by 5% to cover packing and postage or carriage. (Minimum surcharge—6d.)

When making remittances by telegraph money order, the name and address of the sender **must** be included in the space provided on the Post Office requisition form for a private message from remitter to payee. Unless this is done, the Post Office does not give us this information.

Always quote our **invoice number** in correspondence relating to past spares or repairs.

(iii) DEPOSIT ACCOUNT.—Where it is preferred, we will open a deposit account if an amount of not less than £2 is sent to us. This arrangement will ensure prompt service and will dispense with the C.O.D. system. In such circumstances, " **deposit account** " should be mentioned every time spares are ordered.



Always quote the Frame Number when ordering Spares.

III.

SPARE PARTS PRICE LIST

(SUBJECT TO VARIATION)

(5% should be added to cover carriage and packing)

FRAME

Part No.	Description	£ s. d.
4260	Frame assembly only	each
3154	Balls for steering head (46 in set)	set
4262	Frame races, top and bottom	each
06/20	Front engine bolt	,,
14	,, ,, ,, nut	,,
4270	Bottom engine stud	,,
14	,, ,, ,, nut	,,
2413	Rear engine bolt	,,
14	,, ,, ,, nut	,,
2661	Chain adjuster screw	,,
128	,, ,, ,, nut	,,
3159	Saddle pillar	,,
05/20	,, ,, lug bolt	,,
1015	,, ,, ,, ,, nut	,,

STAND AND CARRIER

3306	Rear stand	each
127	,, ,, pin nut	,,
3160	,, ,, spring washer	,,
2963	,, ,, split pin	,,
3118	Rear stand clip complete	,,
3144	,, ,, plate—outer	,,
3145	,, ,, ,, —inner	,,
3146	,, ,, clip bolt	,,
3147	,, ,, ,, ,, spring	,,
3148	,, ,, ,, ,, wing nut	,,
4272	Luggage carrier	,,
04/8	,, ,, bottom fixing bolt	,,
127	,, ,, ,, ,, nut	,,

FRONT FORK

4395	Front fork assembly complete	each
4274	Fork girder—R.H.	,,
4275	,, ,, —L.H.	,,
4267	Steering stem and bottom lug	,,
3916	,, ,, top lug	,,
2413	,, ,, ,, ,, clip bolt	,,
14	,, ,, ,, ,, ,, nut	,,
3701	Steering stem top nut	,,
3702	Fork link assembly—top and bottom	,,
3705	,, ,, bolt—top and bottom	,,
14	,, ,, nut	,,

Always quote the Frame Number when ordering Spares.

Part No.	Description	£ s. d.
3706	Fork link front pin—top and bottom	each
14	,, ,, ,, ,,—nut	,,
3709	Fork rubber band	,,
3719	Lamp bracket assembly	,,
4102	,, ,, ,, through stud	,,
14	,, ,, ,, ,, nut	,,
3725	Band anchorage bottom tube washers	,,
3981	,, ,, ,, split pin	,,
3957	Fork link hardened steel washers	,,
P6	Grease nipple—straight	,,
P65	,, ,, —cranked	,,
4265	Steering head top cone	,,
4266	,, ,, bottom cone	,,
3154	Balls for steering head	set
4268	Front mudguard bracket	each

HANDLEBAR AND CONTROLS

3170	Handlebar only	each
3171	,, grips	per pair
4359	Clutch lever complete	each
4397	,, cable stop—threaded	,,
4396	,, lever with ratchet	,,
3173	,, ,, body only	,,
3175	,, ,, ratchet plate	,,
3176	,, ,, top clip	,,
3177	,, ,, ,, ,, screw and nut	,,
3178	,, ,, fulcrum screw and nut	,,
4279	Clutch cable complete	,,
3187A	,, ,, adjuster and nut	,,
3182	Handbrake lever complete	,,
3181	,, ,, cable stop	,,
2400	,, ,, only	,,
3183	,, ,, body only	,,
3176	,, ,, top clip	,,
3177	,, ,, ,, ,, screw and nut	,,
3184	,, ,, fulcrum pin and nut	,,
4347	Handbrake cable complete	,,
3187	,, ,, adjuster and nut	,,
3190	Release valve trigger complete	,,
3191	,, ,, ,, only	,,
3192	,, ,, ,, body only	,,
3193	,, ,, ,, top clip	,,
3194	Release valve trigger top clip screw	,,
3195	,, ,, ,, fulcrum screw and nut	,,
4280	Release valve cable complete	,,
V1026	Throttle control cable complete	,,
3198	,, ,, lever assembly complete	,,
V1076	,, ,, body	,,
V1077	,, ,, lever only	,,
V1078	,, ,, body clip	,,
VJ4	,, ,, ,, ,, screw	,,
V1079	,, ,, ,, ,, top cover	,,
V1080	,, ,, ,, friction plate	,,
V1081	,, ,, ,, spring washer	,,
V45	,, ,, ,, top screw	,,
V1082	,, ,, ,, fibre washer	,,

Always quote the Frame Number when ordering Spares.

PETROL TANK

Part No.	Description	£ s. d.
4326	Petrol tank only	each
4309	Petrol tap, two level, complete	,,
4365	,, ,, fibre washer	,,
4310	,, pipe, complete	,,
3111	Filler cap assembly	,,
2890	,, ,, washer	,,
3076	Strangler control grommet	,,
4285	,, ,, wire	,,
1896	FRANCIS-BARNETT transfers for tank	per pair
05/10	Petrol tank fixing bolt, front and rear	each
3872	,, ,, ,, ,, plain washer	,,
1015	,, ,, ,, nut	,,
902	,, ,, ,, spring washer	,,
05/12	,, ,, bottom fixing bolt	,,

WHEELS

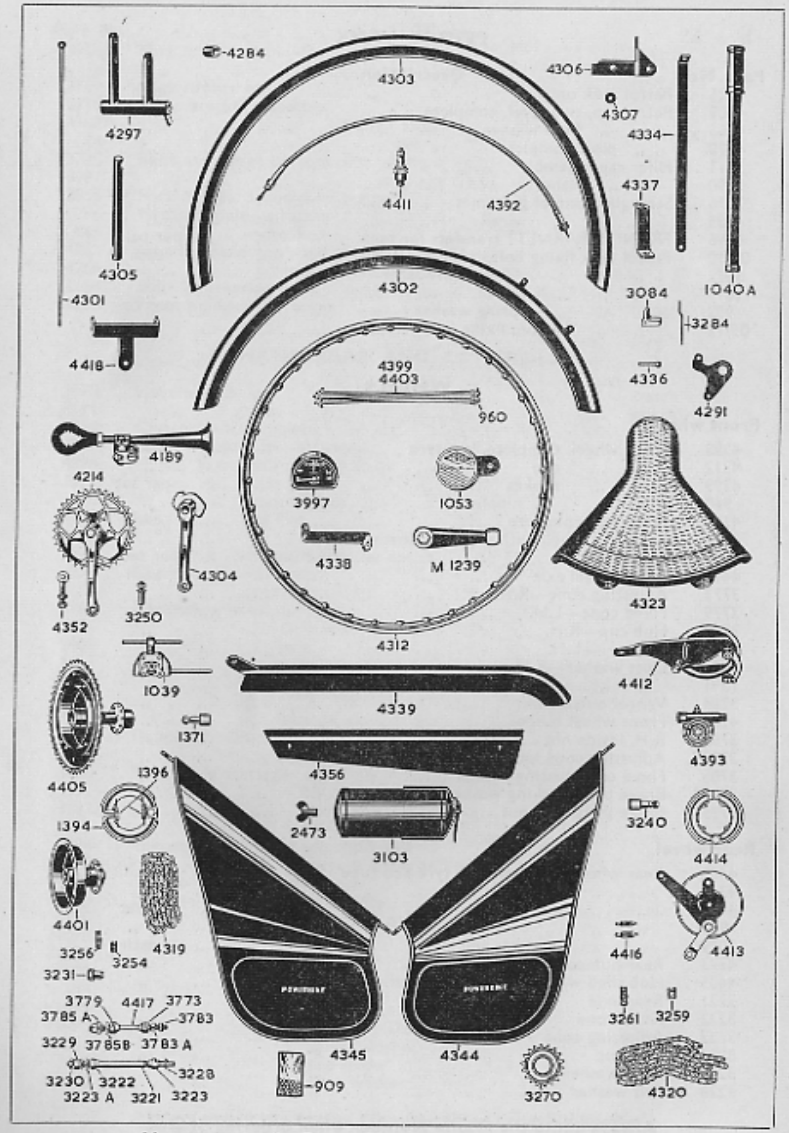
Front wheel.

4398	Front wheel complete, less tyre	each
4312	,, ,, rim	,,
4399	,, ,, spokes	per set
960	,, ,, ,, nipples	,,
4278	Front hub complete	each
4401	,, ,, shell with cups and dust washers	,,
909	Balls	per set
4417	Front wheel axle	each
3773	Adjusting cone—R.H.	,,
3779	Fixed cone—L.H.	,,
3780	Hub cup—R.H.	,,
1390	,, ,, —L.H.	,,
3781	Dust washer—R.H.	,,
1391	,, ,, —L.H.	,,
3784	Wheel outside nut	,,
4269	Front wheel bushes	,,
3783A	R.H. inside nut	,,
3783	Adjusting cone lock nut	,,
3785	Fixed cone spacing washer	,,
3785A	Brake plate packing washers (2)	,,
3785B	Brake plate lock nut	,,

Rear wheel

4402	Rear wheel complete, less tyre and tube	each
4312	,, ,, rim	,,
4403	,, ,, spokes	per set
960	,, ,, ,, nipples	,, ,,
3079	,, ,, sprocket and rivets	each
4343	Rear hub complete	,,
4405	Hub shell with cups and dust washers	,,
3221	Rear axle	,,
3222	Fixed cone	,,
3223	Adjusting cone	,,
3224	Hub cup	,,
3225	Dust washer	,,
3226	Felt washer	,,

Always quote the Frame Number when ordering Spares.



Always quote the Frame Number when ordering Spares.

Part No.	Description	£ s. d.
3228	Adjusting cone lock nut	each
3223A	Fixed cone spacing washer	,,
3229	Brake plate distance piece	,,
3230	,, ,, lock nut	,,
3231	Outside sleeve nut	,,
3231A	,, ,, ,, washer	,,
909	Balls	per set

BRAKES

Front brake.

4412	Front brake plate with anchor arm only	each
1371	Cam bolt with nut and washer	,,
1372	Front brake operating arm	,,
1394	Brake shoes and liners	per pair
1395	Brake liners and rivets	,,
	Brake liners fitted to service shoes	,,
1396	Brake shoe springs	per pair
3803	Handbrake lever yoke	each
3800	,, ,, ,, pin	,,
2963	,, ,, ,, split pin	,,

Rear brake.

4413	Rear brake plate with cam and lever	each
3240	Cam bolt with nut and washer	,,
3241	Brake operating lever and roller	,,
4414	Brake shoes and liners	per pair
4415	Brake liners and rivets	,,
	Brake liners fitted to service shoes	,,
4416	Brake shoe springs	,,
04/10	Brake anchor clip bolt	each
127/901	,, ,, ,, nut and spring washer	,,
4301	Rear brake rod	,,
2473	,, ,, ,, adjusting nut	,,
1094	,, ,, ,, hinge pin	,,
904/2963	,, ,, ,, ,, ,, washer and split pin	,,
3284	Trip lever spring	,,
4336	,, ,, hinge pin	,,
4330	Trip ratchet	,,
4331	,, ,, spring	,,
4328	,, ,, striker pin	,,
3084	,, lever only...	,,
3096	Brake operating lever buffer	,,
3982	Bifurcated rivet for buffer	,,
4291	Brake operating lever front	,,

MUDGUARDS, ENGINE SHIELDS AND CHAINGUARDS.

4302	Front mudguard	each
4334	,, ,, stay	,,
04/8	,, ,, ,, top bolt	,,
127/904	,, ,, ,, ,, nut and washer	,,
04/12	,, ,, ,, Bottom bolt	,,
1285	Front number plate	,,
1296	,, ,, ,, bolt	,,
1199/900	,, ,, ,, nut and spring washer	,,

Always quote the Frame Number when ordering Spares.

Part No.	Description	£ s. d.
4303	Rear mudguard	each
04/8	,, ,, bolt	,,
3594	Rear number plate	,,
04/14	,, ,, ,, top bolt	,,
127/904	,, ,, ,, ,, nut and spring washer	,,
1296	,, ,, ,, bottom bolt	,,
1199/900	,, ,, ,, ,, nut and washer	,,
4306	Engine shield support bracket	,,
4307	,, ,, ,, ,, grommet	,,
4344	Engine shield—R.H.	,,
4345	,, ,, —L.H.	,,
127/904	,, ,, top nut and washer	,,
04/8	,, ,, bottom bolt	,,
4337	,, ,, ,, support bracket—R.H.	,,
4338	,, ,, ,, ,, ,, —L.H.	,,
4339	Rear chainguard	,,
04/8	,, ,, bolt—front	,,
900	,, ,, ,, washer	,,
1296	,, ,, ,, rear	,,
1199	,, ,, ,, nut	,,
4356	Pedal chainguard	,,
1296	,, ,, bolt	,,
1199	,, ,, nut	,,
900	,, ,, spring washer	,,
3979	,, ,, plain washer	,,

PEDALS, CRANKS AND TRANSMISSION.

4297	Pedal bracket assembly	each
4284	,, ,, bushes	per pair
4333	,, ,, hinge pin	each
4352	,, ,, adjuster	,,
127	,, ,, ,, nut	,,
06/12	,, ,, ,, hinge pin	,,
14	,, ,, ,, ,, ,, nut	,,
4305	Crank axle	,,
4214	R.H. crank, 36T. chain wheel	,,
4304	L.H. crank assembly	,,
4321	Rubber pedal complete—R.H. } Sold only in pairs ...	pair
4322	,, ,, ,, —L.H. }	
4319	Pedal chain 86p.	each
3254	Single connecting link	,,
3256	Double cranked link	,,
3257	Spring clip	,,
4320	Main drive chain, 116p.	,,
3259	Single connecting link	,,
3261	Double cranked link	,,
3262	Spring clip	,,
3250	Cotter pin, nut and washer	,,
P6	Pedal bracket oil nipple	,,
3270	Villiers de Luxe free-wheel, 18T.	,,

Always quote the Frame Number when ordering Spares.

SUNDRIES.

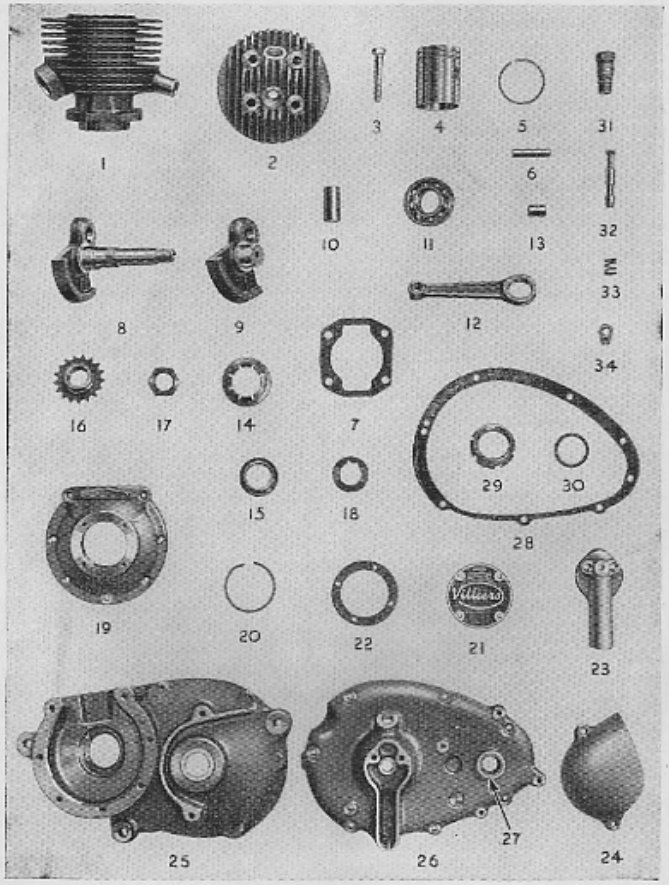
Part No.	Description	£ s. d.
4323	Saddle complete	each
4406	,, coil springs	per pair
4407	,, seat springs	each
4408	,, hinge pin	,,
4409	,, ,, ,, nut	,,
4482	Speedometer complete	,,
3997	,, head	,,
4392	,, cable	,,
4393	,, gearbox	,,
J3159/3	,, bulb holder	,,
4418	,, bracket	,,
4189	Bulb horn complete	,,
1053	Licence holder complete	,,
2109	,, ,, glass	,,
1040A	Tyre inflator complete...	,,
1040B	,, ,, connection	,,
3103	Toolbox complete	,,
2705	,, lid	,,
3627	Rear mudguard cable clips	,,
3976	POWERBIKE transfers for engine shields	each
4467	Lodge H14 sparking plug	,,

TOOLS

		NOT Supplied as spares.
4346	Toolkit complete	
2810	Sponge cloth	,,
3277	No. 2 block spanner	,,
3977	No. 8 four hole spanner	,,
2811	Cone spanners (2)	,,
3279	Screwdriver	,,
3978	Box spanner, 5/16" x 3/8" whit.	,,
3940	Tommy bar	,,
4348	Spark plug spanner	each
4204	Point spanner and gauge	,,
7MC	Oil gun	,,
M.1239	Hammer-tight spanner	,,
1039	Chain rivet extractor	,,
3845	Shrader tyre pressure gauge	,,

Always quote the Frame Number when ordering Spares.

ENGINE.

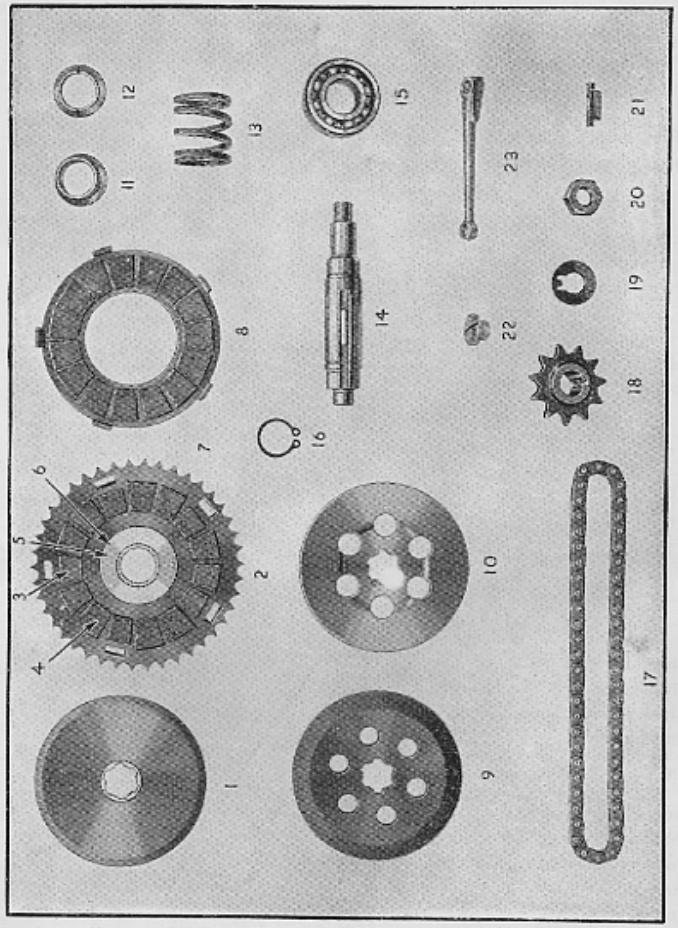


ENGINE

Description.	Illus. No.	Part No.	No. per Set.	Price Each £ s. d.
Engine complete				
Cylinder	1	B7261/2	1	
,, head	2	B7455	1	
,, ,, bolt	3	E3907	4	
Piston, bushed, standard size	4	C7045	1	
,, ring, standard size	5	E6141	2	
,, .015" oversize	5	E7516	2	
,, ,, .03" ,, ...	5	E7518	2	
Gudgeon pin	6	E7198	1	
Joint washer, cylinder base	7	E7168	1	
Driving shaft, right hand	8	D7266	1	
,, ,, left hand	9	D7267	1	
Crankpin, .001" oversize	10	E7493	1	
Ball bearing, driving shaft	11	6205	2	
Con. rod, .001" Oversize	12	D7494	1	
,, ,, small end bush	13	E6192	1	
Crankcase gland spring	14	E6221	1	
,, ,, bush	15	E6724/1	1	
Engine sprocket	16	E6725	1	
,, ,, nut...	17	E6930	1	
,, ,, lockwasher	18	E7197	1	
Crankcase, left hand	19	B7262	1	
,, bearing circlip	20	E7189	1	
,, end plate	21	E7275	1	
,, ,, ,, washer	22	E7276	1	
Clutch bridge	23	D7410	1	
Chain cover	24	D7413	1	
Crank and clutchcase	25	A7408	1	
Clutch cover	26	A7409	1	
,, ,, bush	27	E7385	1	
,, ,, washer	28	C7417	1	
Nut, exhaust pipe	29	E3934	1	
Washer for nut	30	E4453	1	
Body, release valve	31	E3064	1	
Stem, ,, ,, ...	32	E1280	1	
Spring, ,, ,, ...	33	E1163	1	
Nut, ,, ,, ...	34	E1276	1	

Always quote Engine Number when ordering spares.

ENGINE—*Contd.*

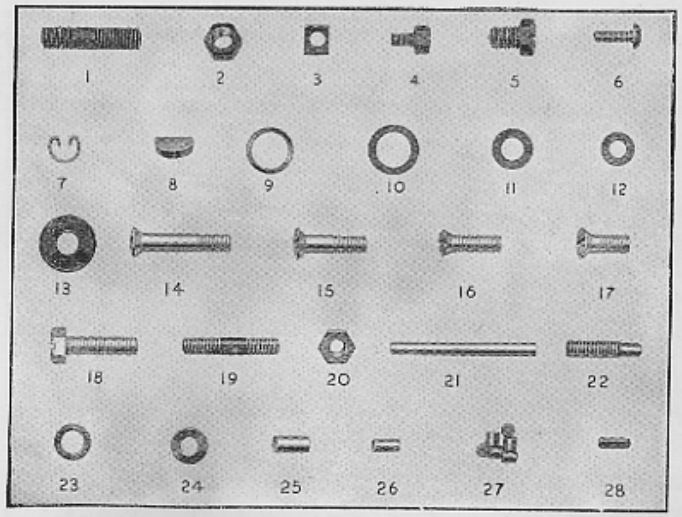


ENGINE—*Cont.*

Description.	Illus. No.	Part No.	No. per Set.	Price Each £ s. d.
Clutch plate, outer	1	D5433	1	
Clutch sprocket, assembly	2	D5232	1	
„ cork, small	3	E5220	5	
„ „ large	4	E4960	25	
„ sprocket side plate	5	E4955	2	
Rivet for side plate	6	E5001	5	Set
Sprocket ball race	7	E4948	1	
Clutch plate, corked	8	D5233	1	
„ „ outer	9	D4951	1	
„ „ centre, dished	10	D4954	1	
Clutch spring bush, long	11	E5556	1	
„ „ „ short, split	12	E7608	1	pair
Clutch spring...	13	E5558/1	1	
Clutch shaft	14	C7411/1	1	
„ „ ball bearing	15	6204	2	
„ „ circlip	16	E7454	1	
Primary chain, 54 pitches	17	110037	1	
Drive sprocket, 11 teeth	18	D7415	1	
„ „ lockwasher	19	D6125	1	
„ „ nut	20	E3931	1	
Clutch cotter...	21	E4944	1	
Oil filler plug...	22	E4104	1	
Clutch lever	23	D7412	1	

Always quote Engine Number when ordering spares.

ENGINE—*Contd.*



Description.	Illus. No.	Part No.	No. per Set	Price Each £ s. d.
Cylinder base stud	1	E363	4	
Nut for stud	2	E3961	4	
Clamp, release valve	3	E1545	1	
„ screw, release valve	4	E6737	1	
Oil level plug...	5	E1962	1	
Screw, crankcase end plate	6	E7530	4	
Circlip, gudgeon pin	7	E5218	2	
Key, drive sprocket	8	E5581	1	
Joint washer, release valve	9	E3318	1	
„ „ oil filler plug	10	V107 × 3	1	
„ „ level screw	11	E1905	1	
„ „ crankcase drain screw	12	V476	1	
Washer, cylinder head bolt	13	E5808	4	
Crankcase screw, 1 5/16" × 90°	14	E7271	2	
„ „ 3/4" × 90°	15	E7128	4	

ENGINE—*Contd.*

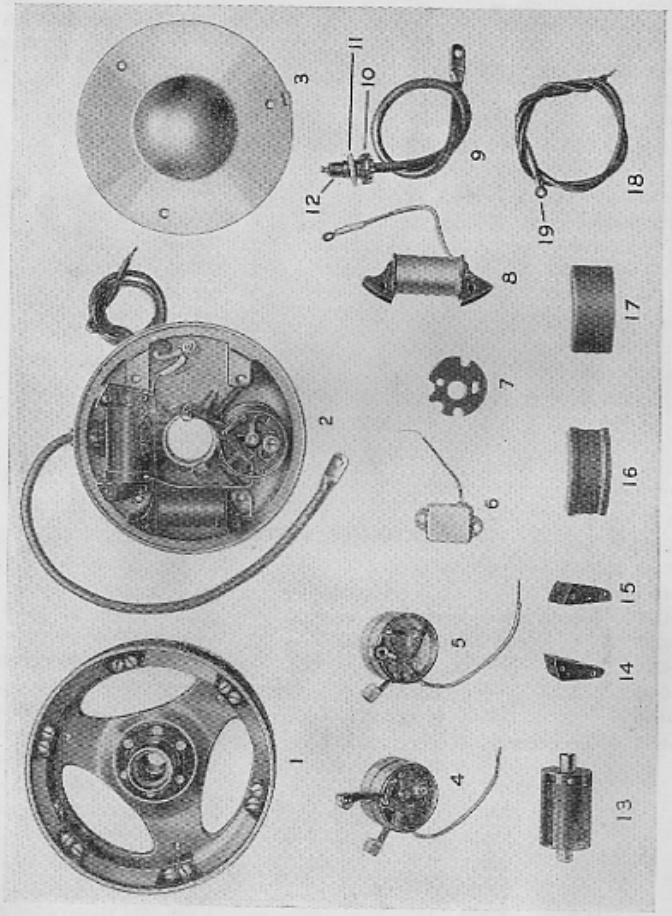
Description.	Illus. No.	Part No.	No. per Set	Price Each £ s. d.
Clutch bridge screw, 1 3/16" × 60°	16	E4934	4	
Clutch cover screw, 1" × 90°	17	E7326	2	
Clutch cover bolt and drain screw	18	E3222	4	
Stud, clutch cover, 1/4" × 1 5/16"	19	E5107	2	
Nut for stud, small hex.	20	E2539	2	
Nut for clutch adjuster screw	20	E401	1	
Clutch operating rod	21	E7414	1	
„ adjuster screw	22	E6567	1	
Spring washer, 5/16"	23	E1050	4	
Plain washer, 1/4"	24	E2924	5	
Dowel, clutch case	25	E7619	2	
„ crankcase	26	E2677	1	
Crankpin roller	27	E7452	28	
Key, engine sprocket	28	E5124	1	

EXHAUST SYSTEM

Part No.	Description	£ s. d
4277	Exhaust system assembly ... ... „	
4287	„ pipe nut (from engine) ... ... „	
4271	„ „ clip ... ... „	
04/8	„ „ „ bolt ... ... „	
04/10	„ „ „ fixing bolt ... ... „	
E4453	C/A washer ... ... „	

Always quote Engine Number when ordering spares.

MAGNETO.



MAGNETO.

Description.	Illus. No.	Part No.	No. per Set.	Price Each £ s. d.
Flywheel assembly, *less* cover	1	R110	1	
Armature plate assembly	2	A107	1	
Flywheel cover	3	M1580	1	
Con. box assembly	4	M1864	1	
„ „ only with oil pad	5	M1872	1	
Condenser	6	M1750	1	
Insulating pad, con. box	7	M1803	1	
Lighting coil assembly	8	M2049	1	
H.T. lead complete	9	1148 × 4	1	
„ terminal	10	1124 × 8	1	
„ „ felt washer	11	E869	1	
„ spring	—	1010 × 11	1	
„ „ pad	12	1046 × 13	1	
„ „ screw	—	$\frac{5}{8}$" × No. 2	1	
„ coil	13	M1361	1	
„ coil end, left hand	14	M1855	1	
„ „ „ right hand	15	M1856	1	
Dummy magnet	16	M1553	2	
Magnet	17	M1354	4	
Lighting lead	18	125/114	1	
„ „ terminal	19	M1291	1	

Always quote Engine Number when ordering spares.