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THE

Excelsior AUTOBYK

98 c.c. DE-LUXE MODEL S.1
(SINGLE SPEED)

and

98 c.c. SUPER MODEL G.2
(TWO SPEED)

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1-4

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5-15-10

RUNNING INSTRUCTIONS

1957 EDITION

13-10
1-10-0
49-10

The Excelsior Motor Co. Ltd.

Head Office and Works
Kings Road, Tyseley
Birmingham 11
England

Telephone: ACOCKS GREEN 1677-8-9

Telegrams: "MONARCH HAYMILLS"



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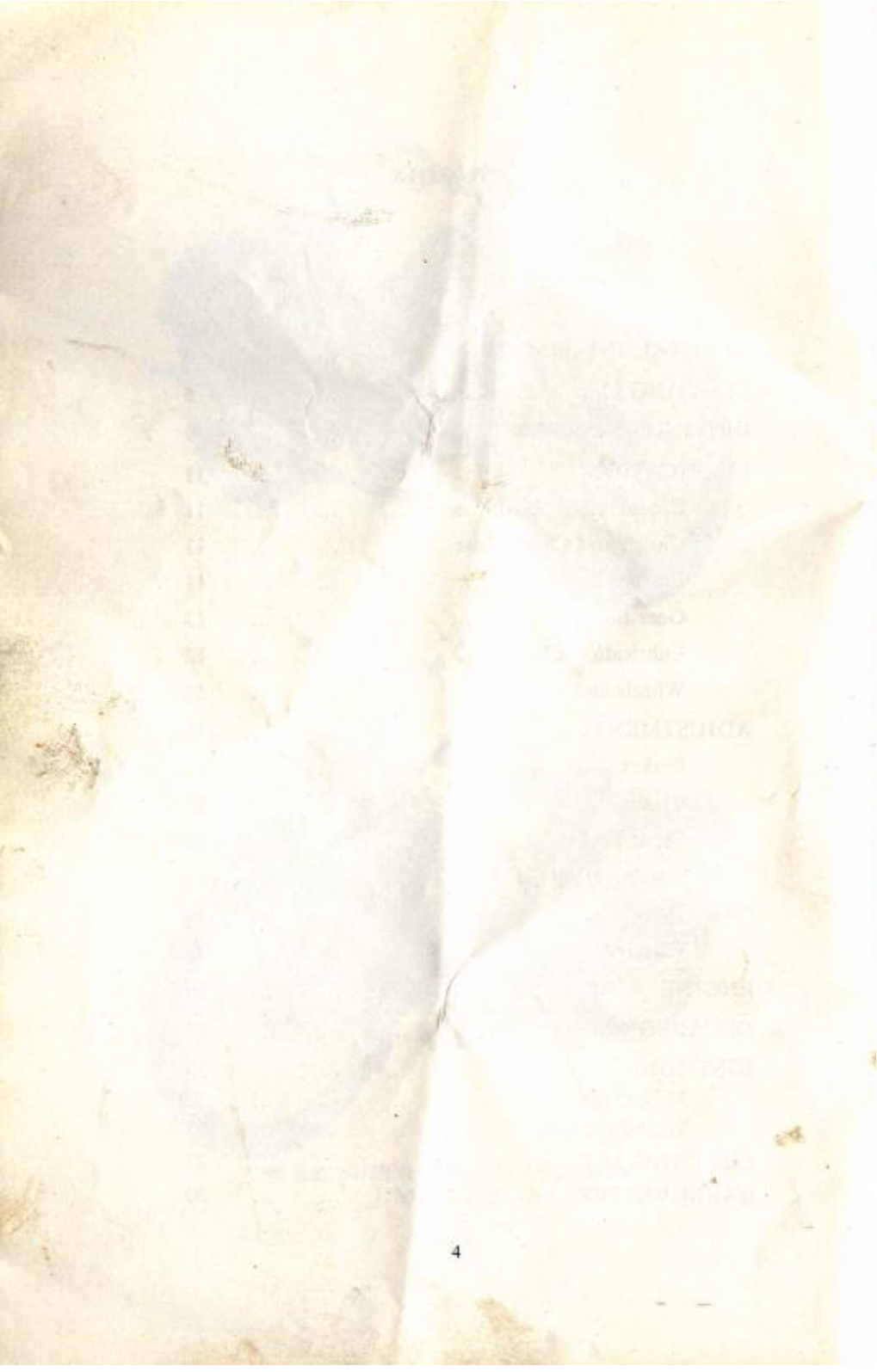
**98 c.c. DE-LUXE AUTOBYK
Model S.1**



**98 c.c. SUPER (2-speed) AUTOBYK
Model G.2**

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GENERAL INFORMATION

Engine and Gear Unit.

EXCELSIOR Two-stroke, 98 c.c., 50 m.m. bore \times 50 m.m. stroke. De-Luxe Model S.1 fitted with single speed "Spryt" Mark II Engine, and Super Model G.2 fitted with "Goblin" Mark I Engine Unit construction. Two-speed gear. Petroil lubrication and Amal lever control carburetter with strangler for easy starting on both models.

Ignition and Lighting.

1949 and earlier models were equipped with the Miller Flywheel FWX type magneto and 9 watt Direct Lighting: parking light bulb 6.2v. .3 amp., tail-lamp bulb 6v. 3 watt. Battery for parking light—type B.34—4½v. Later 1950/6 models are fitted with the Wipac (Wico-Pacy) 6" Flywheel Genimag 6 pole type including a 21 watt A.C. lighting system with parking light. 6" Headlamp with handlebar control switch. Headlamp bulb 6v. 18/18 watt Double Filament. Tail-lamp bulb 6v. 3 watt S.B.C. Parking Light bulb 2.5v. 0.2 amp.

Frame.

High quality weldless steel tube. Exceptionally strong, giving maximum strength and rigidity. Comfortable riding position providing perfect steering control.

Front Forks.

Tubular Girder Fork. Exclusive EXCELSIOR design. Reynolds 531 Steel Tubing. Double band rubber suspension. $\frac{3}{8}$ " diameter spindles top and bottom.

Tank.

All steel welded, arranged for Petroil mixture (20 to 1 or 16 to 1 proportion—see Lubrication Chart). Capacity 11 pints.

Wheels and Tyres.

4" diamter internal expanding brakes front and rear, and rims built up with 12 gauge spokes on both models. Dunlop 26" \times 2" \times 1½" tyres (rim size 26" \times 1½" W.O.) fitted to "De-Luxe" models, and Dunlop 21" \times 2.25" tyres (rim size 21" \times 2.25") fitted to "Super" 2-speed models.

Saddle.

Large supple top with flexible springs.

Handlebars.

Modern "clean" type $\frac{7}{8}$ " dia. bar, adjustable and fitted with rubber grips and lever controls.

Toolbox and Equipment.

Large capacity steel toolbox with full kit of tools, tyre inflator, bulb horn and licence holder.

Finish.

Frame parts rust-proofed and stove enamelled black finish. Chromium plated exhaust pipe. Cream panels to tank and engine shields.

Weight.

With full equipment, "De-Luxe" model 120 lbs. approx. and "Super" model 130 lbs. approx.

Transmission.

Final drive $\frac{1}{2}$ " \times $\frac{3}{16}$ " \times .305" roller chain. Pedalling gear chain $\frac{1}{2}$ " \times $\frac{1}{8}$ ".

TO START

Fill the tank with petrol (a mixture of oil and petrol) in the proportions of one part of oil to twenty parts of petrol. The mixture should be well shaken before it is put into the tank and to enable the correct proportion to be easily determined, an oil measure is provided in the tank beneath the filler cap—the correct quantity is four measures of oil to one gallon of petrol. It is, however, advisable to utilise rather more oil during the running-in period and we suggest for the first 500—800 miles, adding five measures to the gallon.

Use a good quality oil such as Castrol XL, Mobiloil A, Shell X-100, Motor Oil 30, Essolube 30 and B.P. Energol 40, and a straight petrol at all times.

Self mixing oils as marketed by certain of those Companies whose products we recommend are satisfactory but the quantity required is greater than that of ordinary oils and the proportion recommended is one part of oil to sixteen parts of petrol—when running in add $5\frac{1}{2}$ measures of oil to 1 gallon of fuel and subsequently 5 measures. Also certain of those Companies provide dispensing equipment at filling stations which ensures the use of a petrol/oil mixture in the correct proportion as required. Service by means of such equipment is approved by us.

The petrol tap is then turned on by pulling out the knob. It should be noted that the tap is of the reserve type and to bring the reserve of fuel into use the knob is rotated, in a clockwise direction, for a quarter of a turn and then pulled out again to lock in this position, so releasing fuel for a further 10 miles approximately.

In cold weather and when making the initial start for the day, it is necessary to flood the carburetter so that fuel just seeps from the float chamber (but do not over-flood or starting may be very difficult due to a rich mixture), then pull upwards the small lever fitted to the carburetter which closes the strangler. It should not be necessary to use the strangler unless the engine is cold.

The three methods of starting are described in "A," "B" and "C."

A.—Open throttle lever on handlebars R.H.S. (right-hand side) to about one-third open.

Lift decompressor lever on handlebar L.H.S. using thumb only.

Lift clutch on handlebar L.H.S. and sitting on the saddle, pedal off the machine, releasing first the clutch lever (as soon as the machine is moving at walking pace) and then the decompressor, when the engine will start. Continue to pedal till machine gets under way and then open the strangler immediately, or partially if weather is very cold.

B.—It is possible to make a push start with the machine by following the above directions, but pushing the machine smartly at walking pace, allowing the clutch to engage first, and finally the decompressor, when engine will start BUT the clutch lever must immediately be lifted when engine will continue to run with machine standing still, and rider may sit on saddle and glide away by means of releasing the clutch gradually.

C.—It is also possible to start the engine with the machine lifted on to the rear stand. When the machine is on the stand release the clutch lever, lift the decompressor lever, sit on the saddle and pedal the machine. When sufficient momentum is reached release the decompressor lever when the engine will start. Lift the clutch lever and then push the machine off the stand with the engine running. Release the clutch lever gently when the machine will glide away.

CLUTCH START—With Engine Running.

To accomplish an easy clutch start from the stationary position, open the throttle to at least half-way, and as the engine revs. increase, allow the clutch lever **slowly** to return to its normal position; the machine will then glide off: pedals may be used to assist this start if the machine is on a steep gradient, and to relieve the clutch of some of its work, but good riders will rarely find this necessary.

The De-Luxe model is fitted with a ratchet clutch lever which enables the clutch to be kept in the withdrawn position when required, without it being necessary to keep the hand upon the

lever. When the large lever is pulled up, the ratchet automatically comes into operation. To release, pull up the small trigger lever with the finger, and allow both to resume their normal position, when the clutch will re-engage.

It is important that as soon as engine is warm, the strangler be kept completely open at all times. If engine is very stiff when making initial start, due to cold weather, it will be found that this may be freed considerably by opening the throttle half-way, flooding the carburetter slightly, and pushing the machine for a few yards with decompressor open and clutch engaged.

When re-starting the machine with the engine HOT do NOT flood the carburetter, and see the the strangler on the carburetter is in the OPEN position.

Three methods of actual starting are also available on the Super 2-speed model; and these can be varied to suit the rider according to whether a start is being made on the level, on a down grade, or uphill.

A.—Engage “high” gear (control lever knob in uppermost position), lift small decompressor thumb trigger on L.H. handlebar, sit on saddle and pedal machine to walking pace, release decompressor trigger and as engine fires, lift clutch lever on L.H. handlebar. The gear lever can now be moved to “neutral” position and clutch lever released when the engine will remain running with the machine stationary.

B.—Engage “low” gear (control lever knob in lowest position) —follow instructions as in “A” above BUT push the machine while walking alongside instead of pedalling.

C.—Lift machine up onto rearstand—engage “high” gear, and proceed as in “A,” remembering to put gear lever in “neutral” position before wheeling machine off stand. This is the best method if the machine has to be re-started on an up-grade. It is important that as soon as engine is warm, the strangler be kept completely open at all times, i.e., strangler pushed right down.

FAILURE TO START.

- (1) No fuel in petrol tank, or the main supply has become exhausted and it is necessary to turn the small lever at the top of the petrol tap to the position marked “Res” which brings in the Reserve Supply.
- (2) If machine is pedalled with decompressor open for any length of time, it is likely that too much fuel has been drawn into

the engine and crankcase will have pure petrol in it. It is necessary to drain crankcase by means of removing the crankcase drain plug which will be found on the nearside (left-hand) of the engine at the base of the crankcase itself. The clutch should then be engaged and with the machine on the stand, the engine rotated by means of pedalling to clear the crankcase of superfluous petrol, then re-insert the drain plug.

- (3) Throttle too wide open for effective starting.
- (4) Pushing or pedalling machine too slowly.
- (5) Magneto contact breaker points pitted or badly adjusted (clean and adjust to .012" Miller magneto, or .015" Wico-Pacy magneto).
- (6) Plug oiled up, or insulation cracked due to blow or faulty use of spanner.
- (7) Fuel supply blocked up due to dirt from fuel in lower portion of tank, the petrol tap, the petrol pipe, or the point where the petrol pipe joins carburetter.
- (8) Plug terminal missing and H.T. wire not attached to plug.
- (9) Incorrect timing of the magneto.

DRIVING

IMPORTANT.

To ensure easy starting and satisfactory running of the 1949 and earlier models, the contact breaker points of the MILLER magneto should be adjusted to open only .12" (12 thousandths of an inch) and the sparking plug points .015".

The speed of the machine is governed entirely by the throttle and will run from 8/25 m.p.h. according to throttle opening and the condition of the road or gradient, a larger throttle opening being necessary, of course, when ascending hills.

DRIVING THE SUPER-AUTOBYK.

To start away from a standstill. With engine running (ticking over, not racing) in "neutral" gear position as described above, lift clutch lever (L.H. handlebar) and move gear lever to "low" gear position, opening throttle at the same time—then gently releasing clutch lever, when the machine will move forward. A little practice will soon enable the driver to give just the right amount of throttle needed as the clutch engages to ensure a smooth getaway. When starting away on an up-grade, more throttle opening will, of course, be required.

ENGINE.

The engine is lubricated by the petroil system—i.e., lubricating oil mixed with petrol and known as the "Petroil" system, and the oil should at all times be thoroughly mixed with the petrol before being poured into the tank. It is advisable, while the engine is new, that the proportion of oil to petrol should be a little more than recommended for general use when the engine is run in, although this must never be more than 16 to 1 (half-pint of oil to one gallon of petrol) and never less than 20 to 1. (The former proportion when the engine is brand new and the latter when the engine is run in).

CLUTCH AND CLUTCH CASE.

The clutch requires lubrication and the type of oil to be used appears in the lubrication chart.

The oil level in the clutch case should be checked periodically. Remove filler plug on magneto side just to the rear of the flywheel, and insert as much oil as will enter, the plug hole being so placed as to act as a level with the machine standing vertically.

This should only be necessary about every 2,000 miles. Make sure the oil level is correct before starting engine for the first time, but do not overfill.

WHEELS AND FORKS.

The wheel hubs and front fork spindles are provided with grease nipples and grease should be inserted every 500 miles in the case of the front fork spindles and in the case of the wheel hubs, every 2,000 miles. For this purpose we recommend the following greases: either Shell Retinax A, Castrolase Heavy, Esso Grease Belmoline C or Mobilgrease No. 2.

CHAINS.

The final drive and pedalling chains should be lubricated occasionally with a little oil or one of the graphite compounds sold for this purpose. If oil is used we recommend a gear oil of SAE140 viscosity.

PRIMARY CHAIN.

The primary chain is lubricated by the oil in the clutch case, the replenishment of which is dealt with above, although it is advisable that this chain cover should be drained after the first 500 miles and subsequently, every 2,000 miles and the case itself

refilled to the correct level with one of the recommended oils. The drain plug for the chain cover will be found on the rear half of the cover itself, immediately below the filler plug.

GEARBOX (Two-Speed Super Autobyk).

Pour in any of the recommended oils until the gearbox is half full, i.e., until the oil is just covering layshaft. Check oil level every 500 miles.

A drain plug is provided underneath gearbox—all oil should be drained away and the box replenished with fresh oil at the end of the first 500 miles. This operation should be repeated at the end of each subsequent 2,000 miles. When refilling the gearbox after all the oil has been drained out, the correct amount of oil required to refill is exactly one measureful of the small measure beneath the filler cap of the petrol tank.

COUNTERSHAFT HOUSING (Single Speed De-Luxe Autobyk).

Similar instructions apply for the replenishment of the lubricant in the countershaft housing fitted to the "Spryt" engine, but this does not have a drain plug although the level should be periodically inspected to ensure that it is half-way up the countershaft itself, replenish as necessary to bring up to the correct level.

ADJUSTMENTS

STEERING HEAD.

This is a ball bearing packed with grease and requires very little attention other than to keep the adjustment close and with no play whatever in the column. There should be no up and down movement when the handlebars are lifted. To take up any play due to normal wear, slacken off the pinch bolt in the head clip bracket, screw down the top race housing (which has a knurled edge for this purpose) and then screw down tight the large hexagon nut on the top of the steering column. Re-tighten the pinch bolt afterwards.

BRAKES.

Internal expanding brakes are fitted to front and rear wheels. A screwed control adjuster is fitted at the bottom end of the front brake cable. Hold the bottom hexagon nut with a small spanner, turn the hexagon portion of the adjuster to the desired extent in a anti-clockwise direction, and the adjustment is made. The rear brake being a back pedalling unit is automatically operated by the pedals and requires no special adjustment.

**RECOMMENDED LUBRICANTS FOR
"DE-LUXE" AND "SUPER" MODELS**

	VACUUM	SHELL	WAKEFIELD	BP ENERGOL	ESSO
Engine:					
U.K.	Mobiloil A	Shell X-100 SAE 30	Castrol XL	Energol SAE 40	Essolube 30
Overseas . . .	Mobiloil A	Shell X-100 SAE 30	Castrol XL	Energol Motor Oil SAE 40	Essolube 30
Gearbox or Counter- shaft	Mobiloil A	Shell X-100 SAE 30	Castrol XL	Energol Motor Oil SAE 40	Essolube 30
Clutch and Primary Chaincase . . .	Mobiloil A	Shell X-100 SAE 30	Castrol XL	Energol Motor Oil SAE 40	Essolube 30
Rear Chain . . .	Mobilube C	Shell Demax 140	Castrol D	Energol SAE 140	Esso Gear Oil 140
Wheel Hubs . . .	Mobilgrease No. 2	Shell Retrax A	Castrolase Heavy	Belmoline C or Energolase C3	Esso Grease or Esso Bearing Grease
Front Forks . .	As Wheel Hubs				

IMPORTANT : Self mixing oils now marketed by several Companies must be mixed in a ratio of one part oil to 16 parts fuel.

refilled to the correct level with one of the recommended oils. The drain plug for the chain cover will be found on the rear half of the cover itself, immediately below the filler plug.

GEARBOX (Two-Speed Super Autobyk).

Pour in any of the recommended oils until the gearbox is half full, i.e., until the oil is just covering layshaft. Check oil level every 500 miles.

A drain plug is provided underneath gearbox—all oil should be drained away and the box replenished with fresh oil at the end of the first 500 miles. This operation should be repeated at the end of each subsequent 2,000 miles. When refilling the gearbox after all the oil has been drained out, the correct amount of oil required to refill is exactly one measureful of the small measure beneath the filler cap of the petrol tank.

COUNTERSHAFT HOUSING (Single Speed De-Luxe Autobyk).

Similar instructions apply for the replenishment of the lubricant in the countershaft housing fitted to the "Spryt" engine, but this does not have a drain plug although the level should be periodically inspected to ensure that it is half-way up the countershaft itself, replenish as necessary to bring up to the correct level.

ADJUSTMENTS

STEERING HEAD.

This is a ball bearing packed with grease and requires very little attention other than to keep the adjustment close and with no play whatever in the column. There should be no up and down movement when the handlebars are lifted. To take up any play due to normal wear, slacken off the pinch bolt in the head clip bracket, screw down the top race housing (which has a knurled edge for this purpose) and then screw down tight the large hexagon nut on the top of the steering column. Re-tighten the pinch bolt afterwards.

BRAKES.

Internal expanding brakes are fitted to front and rear wheels. A screwed control adjuster is fitted at the bottom end of the front brake cable. Hold the bottom hexagon nut with a small spanner, turn the hexagon portion of the adjuster to the desired extent in a anti-clockwise direction, and the adjustment is made. The rear brake being a back pedalling unit is automatically operated by the pedals and requires no special adjustment.

CHAINS.

Each chain has its own separate adjustment. The rear drive chain is adjusted by chain adjusters fitted in the fork ends of the frame. Before making this adjustment it is, of course, necessary to slacken off the hub spindle fixing nuts and the pin holding the brake retaining arm to the frame clip. These nuts should be re-tightened securely after the adjustment is made.

The pedalling chain is tensioned by means of a swinging bottom bracket. To make an adjustment, first slacken off the long bolt securing the bracket to the frame, then screw in or out as necessary the adjuster screw in the bracket itself, turning in a clockwise direction takes up play, and turning in an anti-clockwise direction slackens the chain. It will be seen there is a locking nut on the adjuster screw and don't forget to re-tighten the frame bolts afterwards. Oil-less bushes are fitted in the bracket and no lubrication is normally required, but an oil hole is provided for supplementary lubrication should this be deemed necessary. Always keep the chains well lubricated and reasonably tight—about one inch up and down movement is allowable on the rear driving chain.

TYRES.

Always keep the tyres fully inflated. This is important. Under-inflation will quickly ruin a tyre and the rear tyre will have a tendency to creep. The correct tyre pressures for current models are as follows:—

Model	Front Wheel	Rear Wheel
"De-Luxe" S.1	... 25 lbs.	... 38 lbs.
"Super" G.2	... 18 lbs.	... 28 lbs.

CLUTCH.

It is important and necessary to keep the clutch adjusted so that there is always about $\frac{1}{16}$ " of play in the clutch operating lever. A spot of oil between the clutch operating pin and the push rod itself is advisable.

The clutch is a single-plate, cork-inserted type, running in oil. All faces and corcks are ground when manufactured, with the result that the clutch is very smooth in action and has a long life, demanding the minimum of attention. After a long period of use, or partial clutch slip due to misuse, a certain amount of wear is likely to take place on the cork faces, which will result in the necessary slackness of the clutch cable being taken up, and constant clutch slip will be experienced if not adjusted. This is adjusted by means of the small screw (provided with a lock-nut) placed in the clutch operating arm on the gearbox and the adjuster on the clutch cable. The adjust-

ment should be made so that there is $\frac{1}{16}$ " slack movement on the cable itself before lifting the lever and is carried out as follows:—

Release lock-nut and unscrew the adjusting screw with screwdriver by turning anti-clockwise until the operating lever has approximately $\frac{1}{16}$ " of free movement at its bottom end; then tighten lock-nut, whilst holding the centre screw firm with the screwdriver. It is usual, however, for some initial stretch to take place in the clutch cable and for this reason, it is provided with an adjuster—and to retain the correct angle of the clutch operating arm, it is advisable upon occasions, to turn this adjuster in an anti-clockwise direction, to take up the play which has developed in addition to correctly adjusting by means of the clutch adjusting screw.

It may be necessary at some time to remove the internal clutch operating rod. This is a two-piece rod and when re-fitting, it is important to see that the $\frac{3}{16}$ " ball bearing is re-inserted (if this has been removed or fallen out) in between the two pieces of the rod **before** putting the adjuster end rod back in position. Note that whereas the clutch push rod is in two parts, between which is superimposed a $\frac{3}{16}$ " ball bearing, the internal part, of mushroom shape, cannot be removed unless the clutch is dismantled.

FRONT FORKS.

The front fork spindles should be kept well lubricated with the grease recommended through the greasers provided and also lubricated with oil through the oil hole provided in the latest type of fork. Any excessive side play which may develop with use can be easily taken up by means of the adjustment provided in the shackle pins and side links. Each of the four side links has a plain hole drilled in one end and a threaded hole in the other end, and each of the four shackle pins is hexagon headed one end and screwed at the other.

It is only necessary to slacken off the locking nuts on the threaded portion of the pins, turn each pin by means of the hexagon head until the excessive play is taken up and then re-tighten the locking nuts. Care should be taken to see there is sufficient clearance to enable the spacing washers to be turned by hand after the adjustment has been made.

WHEELS.

The front and rear wheel hubs are equipped with grease lubricators and should be greased every 2,000 miles with the recommended grades. This will also lubricate the free wheel mechanism, but here a warning note must be given, as too much grease applied to the hub will find its way to the brake shoes and will, in con-

sequence, make them almost ineffective. Whenever the rear hub is lubricated, always put a few drops of OIL on to the brake cam itself. Any excessive play in the wheels can be taken up by means of the adjustable cone in the hubs. The spindle locking nuts will, of course, have to be slackened off before the adjustable cone can be turned. It is most important to see the cones are not adjusted up too tightly, and there should always be $\frac{1}{16}$ " lateral movement measured at the RIM of the REAR wheel. If the cones are adjusted up too tightly it will affect both the efficiency AND OPERATION of the brake.

ENGINE

Excelsior "Spryt" and "Goblin" Engines. (For sectional drawings see end of book.)

The "De-Luxe" Model S.1 is now fitted with the EXCELSIOR "Spryt" Mark II Single Speed engine, and the "Super" Model G.2 with the "Goblin" Mark I Two Speed gear unit engine.

Both are two-strokes and have a bore and stroke of 50 m.m. \times 50 m.m.=98 c.c.

Many features of advanced design are incorporated in these engines which provide an outstanding power output combined with perfect two-stroking at all speeds, and perusal of the sectional drawing of the "Spryt" Mark II engine published in this booklet will enable you to follow closely the operational and constructional details of this outstanding unit.

The "Goblin" Mark I engine has a unit construction two-speed gear incorporated and is fundamentally the same in operational detail.

The cylinder head is detachable and deflector plugs of special design are fitted to the transfer ports of the 98 c.c. "Spryt" and "Goblin" engines to give turbulence and efficient scavenging. These deflector plugs are detachable and should be removed and carefully polished when decarbonising the engine.

The gudgeon pin is fully floating with phosphor-bronze small-end bush and the big-end is built up with steel and phosphor-bronze rollers placed alternately and mounted on a hardened and ground crank pin.

The high tensile steel crankshaft runs on journal ball bearings. Oil seals are provided on the crankshaft to prevent loss of gas from

the crankcase and leakage of oil into the flywheel magneto. The clutch is of the single plate type with cork inserts and runs in oil.

Engine lubrication is by the "Petrol" system and the proportion advised for general use is 20 to 1. Use only the recommended grades of oil.

The housing for the two-speed gear is die cast integral with the crankcase, and the single plate cork insert clutch is operated by push rod through the short mainshaft. Clutch adjustment is carried out by means of an adjuster screw which is also provided with locking nut. The clutch operating rod is made in two pieces with a $\frac{3}{16}$ " ball bearing inserted between the rods.

All the bearings in the engine are renewable, but it is not proposed in this booklet to detail the procedure to be followed in stripping down the engine as this calls for special skill and care and consequently should only be undertaken by a skilled mechanic.

We therefore confine further information on the engine to decarbonising, which can be successfully undertaken by the average rider.

DECARBONISING

This may be necessary with new engines after the first 1,000 miles and every 2-3,000 miles thereafter, depending upon the type and quality of the fuel used and the conditions of usage.

After approximately 1,000 miles have been covered, the carbon deposit in the cylinder head and on the piston crown may be only light and if this is so, then no purpose will be fulfilled in removing this deposit and it will be satisfactory for the decarbonisation to be deferred until 2-3,000 miles have been covered.

Commence by detaching both engine shields, and the flywheel cover, which are secured by one nut each side attached to the bottom support bar—the shields can then be lifted out of the clips on the tank. Disconnect the petrol pipe where it is attached to the float chamber and then slacken off the carburetter clip clamp bolt so allowing the carburetter to be gently rotated backwards and forwards so that it may be detached from the induction manifold. The carburetter can then be supported, from a frame tube, with a cord out of the way of subsequent operations. Note that all threads to be dealt with whilst decarbonising are right-hand. Now remove

the sparking plug and completely slacken off the four cylinder head bolts when the head can be removed—it is advisable to mark the bolts and washers so that they can be replaced in their original positions. The carbon can then be scraped from the head, using a soft metal scraper, taking care not to damage the surfaces, particularly at the joint face—here it will be noted that a gasket is fitted between the head and the cylinder barrel.

Unscrew both exhaust flange bolts, there is a copper and asbestos washer between the flange and the cylinder, and then turn the exhaust pipe so that afterwards the cylinder can be lifted clear. Remove the four cylinder base nuts and plain washers and lift the cylinder clear, taking care to support the piston as it emerges. Do not twist or rotate the cylinder when lifting or the ends of the piston rings may become trapped in the ports and either become broken or score the cylinder bore. Fill the crankcase throat around the connecting rod with clean rag to prevent ingress of foreign matter. Unless the machine has seen some considerable service, when carbon will have accumulated in the piston ring grooves and on the piston faces above and around the gudgeon pin bosses where the piston is oval turned, it should not be necessary to detach the piston from the connecting rod. Initially cleaning of the piston crown will suffice, taking care to avoid scratching the surface. If there are any brown patches on the bearing surfaces of the rings indicating leakage or they appear to have lost their "spring," then it is essential for efficiency, to fit new piston rings and these being required, then it is necessary that the grooves are thoroughly cleaned to ensure that the rings do not bottom on carbon which has accumulated, and this operation can be more readily carried out if the piston is detached. First remove one gudgeon pin circlip with narrow-nosed pliers or a spoke which has the end ground so that it will enter the ear of the circlip and push out the gudgeon pin from the opposite side. Should the gudgeon pin be stiff, do not use force but warm the piston by holding round it a rag soaked in hot water and the pin will then slide out easily. Mark the crown of the piston to indicate the front so that it may afterwards be replaced in the same position. (This can be checked by noting that the peg in the **BOTTOM** ring slot is facing the front—exhaust side of the engine.) Carefully remove the piston rings, and if it is intended to use them again, they should be marked "top" and "bottom." Clean all carbon deposits from the crown and ring grooves—a piece of old piston ring being particularly useful for the latter operation. A final clean with metal polish on the piston crown can be contemplated, if time allows, as this acts as a deterrent to the adhesion of carbon and assists in future decarbonising.

The exhaust, transfer and inlet ports of the cylinder barrel should be thoroughly cleaned, paying attention to avoidance of

damage to the bore. Wash all parts when clean in either petrol or paraffin to remove traces of carbon dust and dry thoroughly.

To re-assemble, fit the rings in their respective grooves (not applicable when new rings are used), copiously lubricating these with clean engine oil and treating the gudgeon pin and small end bush in a similar fashion. Place the piston in position over the connecting rod and slide the gudgeon pin fully home. Use a new circlip, utilising the old one is false economy, and refit with a rotary motion to ensure that it beds down in the groove. See that the cylinder base and crankcase faces are clean and undamaged, fit a new cylinder base washer, lightly smearing this, both sides, with engine oil, remove the rag from the crankcase throat and smear the cylinder bore and working surfaces of the piston with clean oil.

Fully compress the rings, one at a time will be easier, then gently slide the cylinder barrel over the piston, lowering it onto the base studs, replace the cylinder base nuts and washers, working diagonally, so that the cylinder is evenly secured. Ensure that the cylinder head joint faces are clean, fit a new cylinder head gasket and replace the cylinder head with fixing bolts and washers in their correct position and tighten down evenly in the same manner as the cylinder base nuts, refit the sparking plug.

Swing the exhaust pipe back into position, securing this to the cylinder by means of the exhaust flange and bolts, and, again, for preference using a new gasket. Clean the induction manifold, place the carburetter in position on it, making sure that it is vertical and fully home on the manifold before tightening the clamp bolt.

Finally refit the petrol pipe and engine shields.

IMPORTANT.

It is essential that the silencer and exhaust pipe are cleared of carbon regularly otherwise back pressure will cause marked deterioration in performance, heavy petrol consumption and overheating to the general detriment of the engine.

The greatest accumulation of carbon in the exhaust pipe will usually take place nearest the cylinder, and scraping away will suffice for about 5,000 miles, although during this period carbon will have adhered to relatively inaccessible parts of the exhaust pipe and silencer and the most satisfactory method of removing this is by utilising a strong solution of caustic soda. The chemical should be strictly prepared in accordance with the directions on the tin in which it is purchased. Having already removed the exhaust pipe and silencer from the machine and plugged the leading end of the exhaust pipe with such as a cork and the outlet slot of

the silencer packed tightly with rag, stand the parts in a corner and fill with the solution. Leave for at least 12 hours, preferably 24, pour away contents, remove plugging and flush with clean water when the carbon will be removed.

IGNITION

FOR ALL 1949 AND EARLIER MODELS HAVING MILLER IGNITION AND LIGHTING EQUIPMENT.

FLYWHEEL MAGNETO AND LIGHTING SET.

A Miller type FWX flywheel magneto is fitted to both the 1946-1949 "De-Luxe" and "Super" AUTOBYKS and only in case of absolute necessity should it be removed.

This magneto will generate sufficient spark energy to ensure starting at normal pedalling speed providing it has been correctly timed to instructions and maintenance instructions carried out.

ADJUSTMENT OF CONTACT BREAKER POINTS.

First remove cover plate which is secured by four screws. Turn the flywheel until the contact breaker is seen.

The correct gap between the points is .012"—which must always be maintained. To alter gap, loosen adjuster fixing screw, move contact breaker assembly into the required position, and then re-tighten screw.

LUBRICATION (every 500 miles).

The only part which needs lubrication is the flywheel cam-hub centre. Apply a little grease to this with the finger or by other means. This will prevent the contact breaker heel pad wearing excessively. Do not use more grease than enough to put a thin film on hub-cam centre. On certain models an oil-impregnated felt pad is provided to lubricate the cam-hub centre. This needs only a few spots of oil occasionally, and particular care should be taken not to over-lubricate.

SPARKING PLUGS.

Both the "Spryt" and "Goblin" engines are fitted with a K.L.G. type FE70D as standard for all-round use, but if the machine is generally used for short journeys, or at slow speeds in top gear, then a K.L.G. type FE50D is more suitable and should be used. It is important that the clearance at the plug points should be maintained at .015".

MISFIRING.

If the engine does not start easily, does not fire, or fires erratically:—

1. See that the clearance at the contact breaker point is **.012"** and at the sparking plug points **.015"**.
It is **most important** that the contact breaker points are kept absolutely clean and free from oil and dirt at all times. This is often the cause of difficult starting.
2. Rest the sparking plug on the cylinder head with the lead attached, but see that no part of the lead terminal is touching the cylinder. Turn the engine over briskly. If a spark is seen at the plug points the ignition is in order.
3. If no spark occurs, detach the H.T. lead from the sparking plug and, being careful not to actually touch the terminal, hold the end of the lead $\frac{1}{8}$ " away from the cylinder.
4. If no spark still occurs examine the H.T. lead for breaks. If, when the engine is revolved, a spark is seen, the plug is faulty and a new sparking plug should be fitted.
5. Check the ignition timing and also the carburation.

TIMING.

The contact breaker points should be just separating when the piston is rising and is $\frac{3}{16}$ " before T.D.C.

It is only necessary to re-time if the flywheel has been moved or when replacing after removal.

REMOVAL OF FLYWHEEL.

Use a robust spanner, preferably of the "ring" type, to undo the centre nut. After turning the nut in an anti-clockwise direction about one turn, give the spanner a sharp blow, this will free the wheel from the tapered shaft, then continue to turn nut until flywheel is withdrawn.

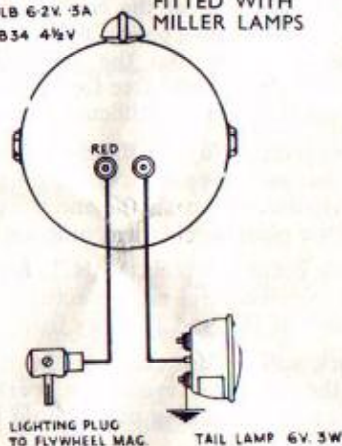
TO RE-TIME.

Make sure the armature back plate fixing screws are tight. then put flywheel on tapered shaft, but do not at this stage fully tighten the nut. Revolve engine until piston is at top of the stroke, then turn flywheel (making sure the piston does not move) until the mark on the rim of the flywheel is in line with the centre of the H.T. terminal fitted to the armature backplate, then re-tighten centre nut. After re-checking, make sure nut is well secured by giving handle of spanner a sharp blow in a clockwise direction. **THIS AUTOMATICALLY GIVES THE CORRECT TIMING OF $\frac{3}{16}$ " BEFORE T.D.C.**

LIGHTING SET.

HEADLAMP 6 R.B.
MAIN BULB 6V. 6W.
PILOT BULB 6.2V. .3A
BATTERY B34 4½V

WIRING DIAGRAM
FOR AUTO CYCLES
FITTED WITH
MILLER LAMPS



The lighting coil of this magneto is arranged to give an output of 9 watts at average speeds. The bulbs to be used are:—

Head Lamp: 6v.—6w. S.C.C.

Pilot Bulb: 6.2v.—.3 amp. M.E.S. or (4v.—.3 amp. M.E.S.).

Tail Lamp: 6v.—1.8w. or 3w. S.C.C.

Perusal of the wiring diagram illustrated in this booklet will enable you to trace the lighting circuit.

IGNITION

FOR ALL MODELS HAVING THE WICO-PACY 6" FLYWHEEL GENIMAG EQUIPMENT.

FLYWHEEL MAGNETO AND LIGHTING SET.

Wipac Flywheel Ignition including a 21 watt A.C. lighting system, 6" headlamp with control switch for full, dipped and parking light. Provision is made in the lamp for a standard 2.5 volt twin cell dry battery for parking.

The Wipac 6" Flywheel Genimag is of the 6-pole type supplying normal ignition and A.C. lighting.

A good starting spark is generated at normal pedalling speeds. A feature of this genimag, a higher plug voltage is obtainable when the lighting coils are being used. This is an advantage during starting with oiled or dirty plugs.

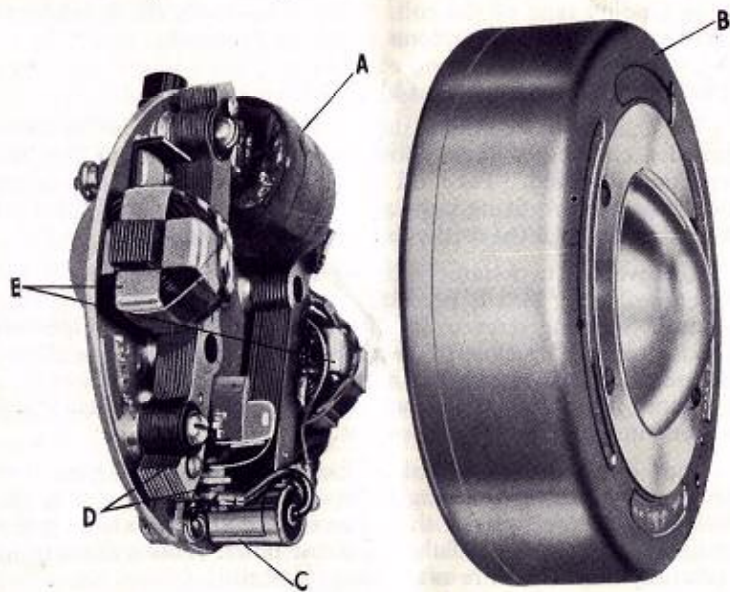
A characteristic of the magneto is that its spark output will not vary over a wide timing range thus rendering frequent adjustment of the contact breaker unnecessary and at the same time allowing a fair tolerance for the accuracy of the setting. A further feature of the magneto is the accessibility and ease of adjustment of the contact breaker and other parts without the necessity of removing the flywheel at any time.

The magneto requires very little maintenance and if the following notes are observed, the life of the unit should prove trouble-free.

Check, and if necessary, re-adjust the contacts once every 2-3,000 miles. Occasionally clean the contacts by inserting a dry smooth piece of paper between them and withdrawing while the contacts are in the closed position. Do not allow the engine to run with oil or petrol on the contacts or they will start to burn and blacken and if they do, lightly polish with a piece of smooth emery cloth.

Moisten the cam bearing pad with a few drops of thin oil every 2-3,000 miles.

Do not run with a faulty or damaged high tension lead and occasionally clean away mud and dirt from around the high tension insulator. If the magneto requires any attention beyond the replacement of contact breaker points or condenser, it is recommended that the complete unit should be sent to us or to the manufacturers: The Wico-Pacy Sales Corporation Limited of Bletchley, Bucks.



Checking the Magneto for Spark.

If the engine fails to start and there is an indication of the magneto causing trouble, the spark can be checked by holding the H.T. lead $\frac{3}{16}$ " away from a point on the engine. When the engine is turned over in the usual way a spark should jump this gap. If no spark is visible, see that the H.T. lead is in good condition and examine the contact breaker. Make sure there are no metallic particles inside the housing and that the contacts are perfectly clean, and the gap is correct to the recommended setting. If the contacts are found to be in a burnt or badly pitted condition, a faulty condenser is indicated. If the contact breaker appears to be in order, the flywheel rotor may be removed from the engine by means of the captive extractor nut, allowing full examination of the stator assembly. The leads of the ignition coil should be examined to ensure that there is no break in the wiring. One lead will be found to be jointed to a tab which is held securely by one of the four main core screws which anchor the stator to the stator housing. If this is in order check the other end of the primary ignition coil which is connected to the insulated post together with the condenser lead, the insulated post thus forming part of the contact breaker assembly.

If both these leads are connected and the tabs are not earthing on the stator plate or core, the ignition coil should be in working order. In the unlikely event of the H.T. insulation of the secondary coil breaking down, it may be possible to detect signs of charring on the binding tape of the coil. Should, however, the breakdown be internal, then these symptoms will not be present.

Replacement of Ignition Coil. (A)

To remove the coil the stator assembly should be removed from the crankcase, thus allowing maximum freedom for the operations involved. Take off the H.T. insulator moulding by unscrewing the two fixing nuts, and free the live primary lead from the insulated post fitted to the fixed contact breaker plate.

Remove the two stator securing screws on either side of the ignition coil core, and if necessary just slacken off the remaining two stator securing screws. It is now possible to ease the ignition coil core clear of the two "Tee" shaped laminated stacks. There is no need to entirely remove the two stator securing screws which are remote from the coil, enough clearance being obtained if the foregoing instructions are carried out.

Four dowel pins are used to locate the iron circuit, so that when the four stator securing screws are re-tightened down, the positioning of these stacks should not have altered, assuring the correct air gaps on each of the six stator poles. This point should be carefully noted when re-assembling the stator.

To re-fit the ignition coil proceed as follows:—

Assemble the ignition coil core to the coil, care being taken to see that the positioning of the coil H.T. terminal and coil core is in correct relation to mating parts. Now gently push the ignition coil core into its seating, and re-insert the securing screws on either side of the ignition coil. If the coil core is difficult to push right home, then a few taps on either end of the core should be sufficient to push it completely home. Finally, tighten up all four stator screws, care being taken to see that the ignition coil primary earth tab, and the lighting coil earth tab, are secured by the two screws holding down the right hand stator stack as observed when removing the flywheel rotor, and are clear of the rotor. Replace the high tension insulator moulding making sure that it is possible to observe the high tension terminal contact at the bottom of the ignition cable lead in. Replace the nuts and lock washers and tighten firmly down.

Any wire loops or wires that could come into contact with the flywheel rotor should be pushed back behind the radius of the stator to prevent fouling and electrical breakdown.

Replace the live primary ignition lead and the condenser lead on the insulated post which also carries the contact breaker return spring and tighten up the nut, making sure that the terminal tabs do not come into contact with any earth point. Make sure that all tabs are clean and all clamped connections are tight.

Removal of Flywheel Rotor. (B)

Only in the case of absolute necessity should the flywheel be removed. Use a suitable spanner to undo the centre extracting nut.

Turn the nut in an anti-clockwise direction firmly holding the rotor until the rotor is felt to give from the taper then continue to turn the nut until the rotor is free of the shaft.

Removal of Condenser. (C)

Remove rotor as described above. Slacken off the nut of the insulated post, thus freeing the condenser lead. Unscrew condenser case fixing screw and withdraw condenser.

When re-assembling, firmly re-tighten nut and screw, and make sure that the condenser lead is pushed back clear of the rotor.

Adjustment and Replacement of Breaker Points. (D)

The only adjustable part of the magneto is the breaker plate which provides for the setting of the breaker points.

To set these points proceed as follows:—

Turn the engine over until the points are fully open, and insert the feeler gauge. Slacken off the locking screw which is to be found immediately above the points and if the gauge is tight, adjust the fixed contact plate by means of a suitable screwdriver engaged in the recess provided, in an anti-clockwise direction until the correct

setting of .015" is obtained. Tighten up the locking screw. The breaker point setting should be adjusted in the manner described, and at no time should the fixed contact platform be bent to provide adjustment.

The moving contact is integral with the breaker arm. If the points need replacement, it is recommended that both fixed and moving contacts be replaced at the same time.

Before assembling the breaker arm to the pivot pin, smear the pin with oil or soft grease. An occasional smear of oil on the exposed end of the pivot pin will allow sufficient ingress of lubricant to prevent the parts running dry.

The contact breaker return spring is slotted to allow easy assembly of the moving contact assembly. Care should be taken to note that when fitting a new contact breaker, the insulation washers of the insulated post assembly are correctly placed, otherwise the primary winding will be permanently earthed. Tighten up the fixing nut, pushing the condenser lead behind the radius of the stator poles.

The Lighting Coils. (E)

These coils are of robust construction, and are therefore **unlikely to develop faults under normal conditions in use.**

The coils are secured to the iron core by means of a varnish adherent, and are therefore not readily removed. In addition, the construction of the stator is such that the iron core must be taken off the stator plate before the coil can be removed from the core.

In order to be sure of sound assembly of coil to core, and to avoid damage to the paper former, the replacement lighting coil is supplied complete with core. Ample lead lengths are supplied for the necessary cross connecting, the coils being in series.

When fitting a new coil and core assembly, proceed as follows:

Remove the stator securing screws of the coil core affected, and gently ease the core up to bring the dowel pins clear of the back plate. Refit the dowel pins to the new core and connect the new coil in circuit, care being taken to note that the finishes of the coils are connected together, and well insulate all connections.

Lower the core back into position and firmly screw home the stator securing screws. If difficulty is experienced in locating the core, slacken off the securing screws of the opposite core, when the replacement core will readily find its seating.

Tighten up all four stator screws, seeing that the earth tabs of all lighting coils and ignition primary winding are in place and free of the flywheel rotor.

Bend all stray loops of wire and leads that can come into contact with the rotor, well clear behind the radius of the stator.

The Flywheel Rotor. (B)

The robust construction of the rotor reduces the possibility of any faults on this unit to a minimum. The three powerful magnet inserts are cast in the rim of the wheel and it is not possible to demagnetise them by ordinary usage. No keeps are necessary when the rotor is removed from the stator.

The boss of the flywheel rotor which carries the cam, is located on the crankshaft by a taper and locked by the captive extractor nut of the rotor.

It is unnecessary to remove the flywheel unless at any time the engine has to be dismantled, or a fault develops in the magneto itself. No timing is necessary, the cam being keyed to the rotor boss. Contact setting is done through the ports provided in the rotor. When replacing, the rotor must be perfectly clean inside and out.

TIMING.

It is only necessary to re-time if the flywheel has been moved or when replacing after removal.

Make sure the armature back plate fixing screws are tight, then put flywheel on tapered shaft, but do not, at this stage, fully tighten the nut. Revolve engine until piston is at top of the stroke, then turn flywheel (making sure the piston does not move) until the mark on the rim of the flywheel is in line with the centre of the H.T. terminal fitted to the armature backplate, then re-tighten centre nut. After re-checking, make sure nut is well secured by giving handle of spanner a sharp blow in a clockwise direction.

LIGHTING SET

The Wipac 6" Flywheel Genimag is designed for a 21 watt load. In this set the alternating current is taken direct from the Genimag to the lamps via the headlamp switch.

SERVICING INSTRUCTIONS—1950—EARLY 1953 MODELS.

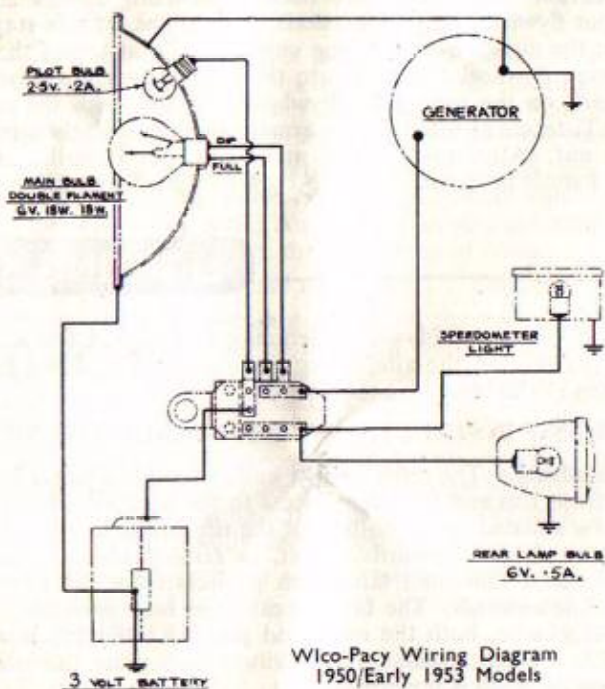
Headlamp.—The reflector and bulb assembly bracket is housed in the front rim and to obtain access to the headlamp bulbs loosen the screw situated at the bottom of the rim of the lamp and lift the rim outwards and upwards. Next, to remove the bulb assembly bracket, bend the small tab which projects from the base of the reflector downwards. The bracket can then be removed by turning it anti-clockwise, both the main and parking bulbs are now easily accessible. When replacing the main bulb be sure that the word "top" on the bulb is uppermost.

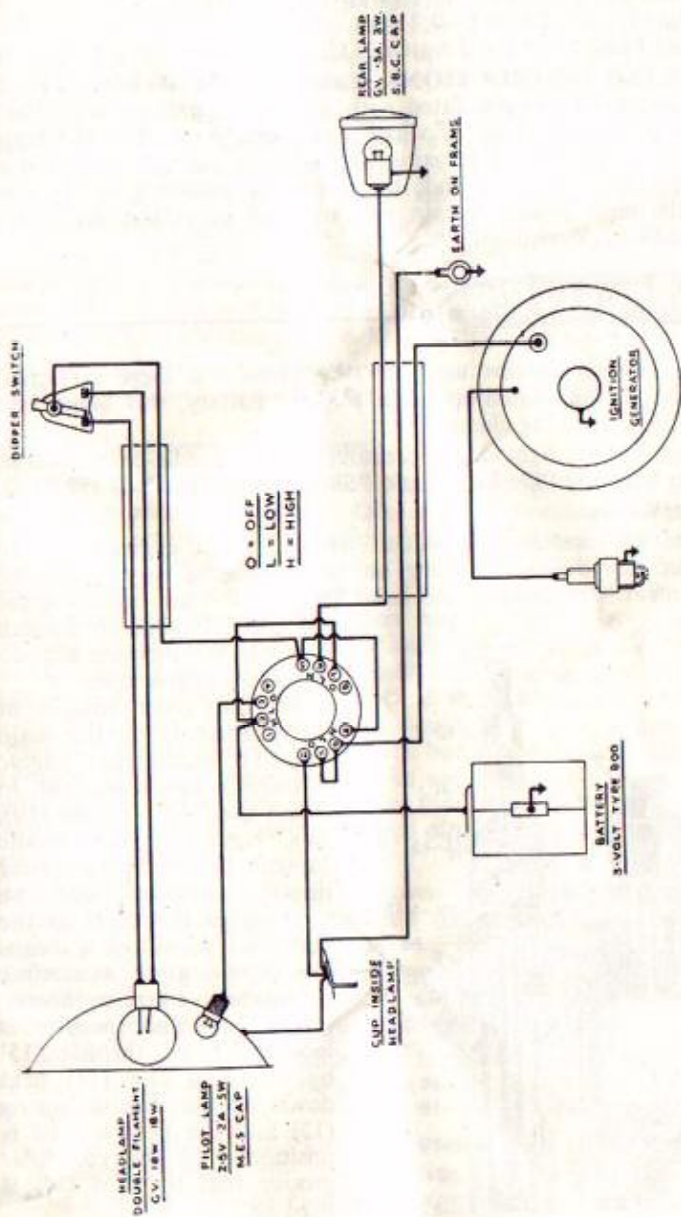
Tail Lamp.—To remove the rim of the lamp, turn the rim to the left, it can then be easily withdrawn. The bulb holder is of the bayonet pattern and the bulb is removed by the usual push-and-turn method.

Switching.—Adjustment will rarely be necessary, but should the switch lever ever require adjustment to synchronise with the switch itself it can easily be carried out by adjusting the screw which connects the Bowden cable to the lever assembly. First of all loosen the adjusting screw locknut and then turn the screw in or out to the required position. It is best to carry out this adjustment with the engine running.

Parking Battery.—This is a 3 volt bicycle battery, type 800. To fit a new battery, hold it so that the vertical contact strip faces towards the lamp, the battery should then be positioned in the holding bracket in such a manner so that the vertical contact connects with the metal battery holder at the rear of the lamp, while the horizontal contact fits underneath its corresponding contact.

Never allow a discharged battery to remain in the lamp, this will corrode and damage the lamp body.





Wico-Pacy Wiring Diagram
late 1953, 1954 and 1955 Models.

LIGHTING BULBS.

Head Lamp: 6 volt—18/18 watt Double Filament.

Pilot Lamp: 2.5 volt—0.2 amp.

Tail Lamp: 6 volt—3 watt S.B.C.

SERVICING INSTRUCTIONS. Late 1953-1956 Models.

These machines are fitted with a different pattern Wico-Pacy headlamp, the switching of which is all incorporated in the lamp itself. The lamp front remains basically the same, no change is made in the rear lamp and, therefore, the previous instructions for bulb replacement remain relevant and of course no switch synchronising is required.

CARBURETTER

The lighting bulbs used are the same and there is similar provision in the headlamp for a parking battery, this being held by clips and securing clamp.

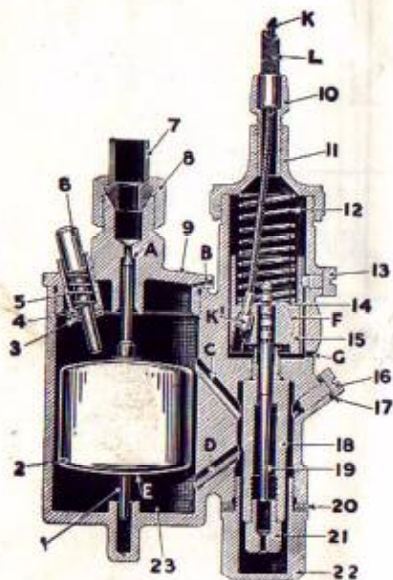
The AMAL lightweight carburetter with needle-controlled jet fitted to both the "De-Luxe" and "Super" models is No. 359/001B.

How It Works.

The carburetter is designed to suit small engines and to eliminate any difficulty arising out of the use of very small jets. The control is automatic, the hand lever on the bar operating the

throttle (15), which in its turn controls the mixture according to the engine speed.

The full power control of the mixture is by the main jet (21) feeding the engine through a needle-jet (18), in which there is a needle (19). The taper on the needle controls the mixture at lesser throttle openings, and the position of the taper in the needle jet, providing a means for richening or weakening the mixture at various throttle positions. The needle is located in the throttle (15) by a spring clip (14) held down by the throttle spring (12) and the needle itself is positioned by the particular groove that the clip (14) is fixed to.



For idling, the fuel supply is controlled by the parallel portion of the needle (19) entering the bore of the needle jet (18), the difference in diameter being the jet orifice, which is small—although in case of obstruction or gumming up due to the petrol and oil system, it can be instantly cleared by opening the throttle.

The petrol feed is into the top of the float chamber (7) where constant levels are maintained, and the petrol at these levels flows to the main jet (21) through a passage D, and air locks are liberated through the passage C back into the float chamber at the top.

The jets (21 and 18) can be got at by undoing jet plug (22). The throttle (15) and adjustable needle (19) can be removed by unscrewing the mixing chamber top (11). The throttle is guided by screw (13) working in a groove in the throttle and the slot in the throttle itself enables the cable K to be quickly detached.

The intake of the carburetter has an air cleaner and a strangler for closing off the air only for starting when cold.

General Maintenance Instructions.

Keep the float chamber free from impurities, which are the commonest cause of flooding. Otherwise, if flooding takes place, remove the petrol pipe connection from the lid and clean out all the passages. See that the float needle is not bent, nor the float petrol logged. If the needle seating is at fault, rub the needle lightly in by twisting it between the finger and thumb. (Never use any grinding compound.) If the needle itself has a deep groove in it on the taper end, a new needle (and float) may be necessary. Also see that the tickler works freely and springs back, and that the air hole in the rim of the lid is clear. Clean out impurities that may have accumulated in the needle guide at the bottom of the float chamber. Before replacing the float chamber lid see that the blunt end of the float needle is in the guide hole at the foot of the float chamber and then guide the lid over the tapered end of the needle before screwing down.

If the carburetter is ever removed from the induction pipe, see that it is pushed right home onto the pipe, before locking the ring clip. Never fit the carburetter to a pipe on which it is slack, or drive it on to a tight one. A carburetter should be a good push fit on to the inlet pipe, and should be pushed on true with a screwing motion after having put a little oil on the pipe.

Keep the air intake or gauze free from obstruction and see that the air strangler remains firmly open when the lever is moved to the open position.

If the throttle should become slack after years of use, it should be replaced, otherwise the slow running may be interfered with. Also, if a throttle has become badly worn, it may be advisable in

addition to replace the needle-jet, as this might wear slightly large in diameter through the movement of the needle, thus causing a richer mixture than necessary.

Bad petrol consumption will be apparent if the throttle needle-jet (8) has worn; it may be remedied or improved by lowering the needle in the throttle, but if it cannot be—then the only remedy is to get a new needle-jet.

Tracing Faults.

ASSUMING ENGINE IN GOOD CONDITION AND EXHAUST SYSTEM NOT CHOKED.

- (1) Assure yourself of ample petrol supply, good compression, clean sparking plug and good spark at the points. Also rectify if flooding and verify complete closing and opening of throttle and air strangler, and that the air intake gauze is clean.
- (2) Verify carburetter to be clean internally and that jet and passages are clear and that there is no air leak at the fitting of the carburetter to the engine. Also verify that main jet and needle-jet are screwed up firmly, but do not overtighten or damage will result.
- (3) When the above points are in order, there are only two possible faults in carburation—either the mixture is RICH or WEAK, and you must determine which of the two is causing inefficient running and at what throttle opening, so that the carburetter can be tuned correctly. Indications are as follows:—

For Richness.

Petrol spraying out of carburetter.
“ Four-stroking.”
Heavy petrol consumption.
Sparking plug sooty.
Heavy lumpy running.

For Weakness.

“Spitting” in the carburetter.
Erratic slow running.
Poor acceleration.
Engine runs better at less than full throttle opening.
Overheating.
Sparking plug dry grey colour around the points.

- (4) Some causes for above producing:—

Richness.

Punctured float or bent float needle.
Tickler stuck down.
Needle (19) raised too much.
Main jet (21) too large or not screwed up.
In old machines, needle-jet (18) worn.
Air filter choked.

Weakness.

Air leaks.
Petrol supply or jet partially choked.
Impurities in needle guide under float chamber prevent float from dropping or bent needle.
Too small main jet (21).
Needle (19) in too low position.
Air gauge or filter been removed.
Using petrol with water in it.

- (5) If engine "idles" better after tickling the float and gives better power with air shutter partially closed, the mixture is weak. Idling better with petrol turned off temporarily and no suspicion of spitting when opening throttle quickly when engine is cold—the mixture is rich.
- (6) Trouble at half to full throttle is more likely to be connected with the main jet (21) supply. Trouble at quarter to three-quarters throttle opening will be due to needle position. If the power is good at full throttle, very poor acceleration is the effect of too low a needle position which can be remedied. Bad slow running will probably be due to air leak.

Dismantling Instructions.

The main jet (21) is removed for cleaning, but first of all unscrew the large nut (22) at the bottom of the mixing chamber; the jet is then exposed and can be unscrewed from the jet holder (18) by means of the special jet spanner provided in the tool kit. Do not forget to see that the fibre washer is in place before screwing up the jet base plug nut (22).

To remove the throttle valve (15) and the parts which are attached to it, it is first necessary to unscrew the knurled mixing chamber top (11) and if adjustment is needed to the throttle needle then it becomes necessary to first detach the cable nipple from the throttle valve. The needle itself is secured by a small brass clip which locates in one of five grooves in the needle, this normally being set in the centre groove.

Removal of the float chamber top first requires the removal of the petrol pipe gland nut (8) when the float chamber top (9) itself can then be unscrewed, revealing the float and needle which are combined. Particular attention should be paid to the foregoing instructions on re-assembly of the float chamber. The throttle can be adjusted if desired to allow the engine to tick-over when the throttle lever is in the fully closed position and the gear in neutral. A screwed cable adjuster (10) for this is provided on top of the throttle chamber and it is only necessary to unscrew the adjuster (which raises the throttle slide) to give the degree of tick-over required or alternatively to screw the adjuster down to close the throttle entirely.

Service Department

OUR SERVICE DEPARTMENT is always available for advice, service and spares, and we invite all EXCELSIOR owners to take full advantage of the facilities offered.

Much trouble and delay will be saved if the following points are noted:—

SPARES: When ordering, give full details as to model, year of manufacture, engine and frame numbers (WITH prefix letters). If possible with old machines, send the old parts as patterns. Remittances should include sufficient to cover postage.

REPAIRS: Machines of components must be sent **CARRIAGE PAID**, with a label attached bearing the sender's full name and address. A covering letter should be sent giving detailed instructions as to whether an **ESTIMATE** is required, or whether we may proceed with the work immediately.

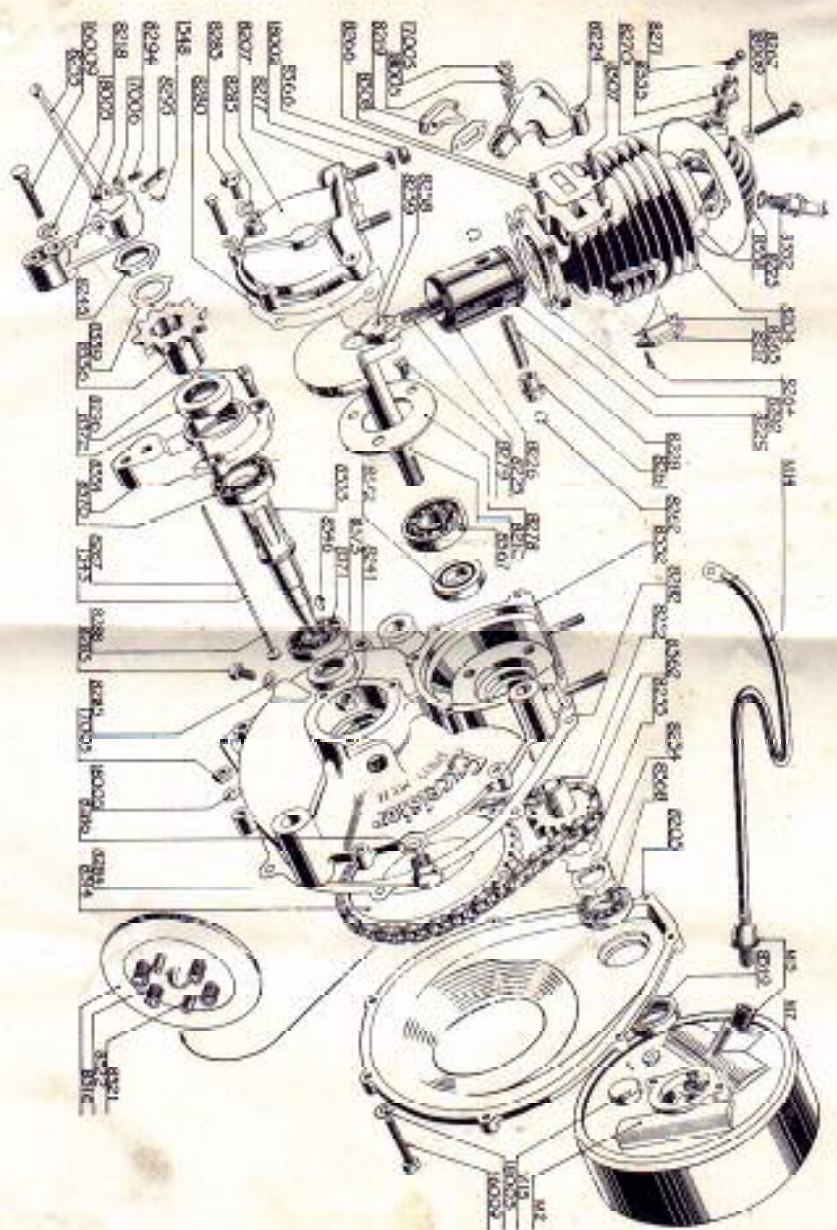
**REPLACEMENTS
UNDER
GUARANTEE:**

Any defective part must be sent with the request to be replaced free of charge, stating engine and frame numbers, the name and address of the Dealer from whom it was obtained, and the date of purchase. We do not undertake to FIT such replacement parts, and if you wish to send the complete machine, the Mechanic's Time in dismantling and re-assembling will be charged for. Carriage both ways to be paid by the Sender.

Any machines or components sent not complying with the above procedure, will remain **AWAITING IDENTIFICATION AT SENDER'S RISK.**

REMITTANCES. Cheques and Postal Orders should be made out to "THE EXCELSIOR MOTOR CO. LTD." and crossed "& Co."

C.O.D. SERVICE. Spares may be despatched C.O.D. if required.



ENGINE UNIT, EXCISIDE "SPORT" MK. II SINGLE SPEED

Guarantee

NOTICE

We do not appoint agents for the sale on our behalf of our Motor Cycles or other goods but we assign to Motor Cycle Dealers areas in which we supply to such dealers exclusively for re-sale in such areas. No such Dealer is authorised to transact any business, give any warranty, make any representation or incur any liability on our behalf.

CONDITIONS OF SALE AND GUARANTEE

We give the following guarantee with our motor cycles, motor cycle combinations, and sidecars including all accessories and component parts other than tyres, saddles chains and lighting and electrical equipment and other than accessories and component parts supplied to the order of the Purchaser and differing from those comprised in the standard specifications supplied with our motor cycles, motor cycle combinations and sidecars, but including accessories and parts supplied by way of exchange as hereinafter provided. This guarantee is given in place of any implied conditions or warranties or any liabilities whatsoever, statutory or otherwise; no guarantee except that hereinafter contained and no condition or warranty whatsoever statutory or otherwise is given or is to be implied, nor are we to be under any liability whatsoever except under the guarantee hereinafter contained. Any statement, description, condition or representation contained in any catalogue advertisement, leaflet or other publication shall not be construed as enlarging, varying or over riding anything herein contained. In the case of machines (a) which have been used for "hiring out" purposes or (b) any motor cycle and/or sidecar used for any dirt track, cinder track or grass track racing or competitions (or any competition of any kind within an enclosure for which a charge is made for admission to take part in or view the competition) or (c) machines from which the trade mark, name or manufacturing number has been altered or removed or (d) any machine in which parts have been used not supplied by or approved by the motor cycle manufacturer, or (e) any machine from which the silencing system as fitted by the manufacturer has been partially or wholly removed or interfered with, no guarantee, condition or warranty of any kind statutory or otherwise is given or is to be implied nor are we to be under liability whatsoever in respect of such machines.

We guarantee, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, but this guarantee is to extend and be in force for six months only from date of purchase, or date of exchange in case of any accessory or part supplied by way of exchange as hereinafter provided, and damages for which we make ourselves responsible under this guarantee are limited to the free repair of or supply of a new part or accessory in exchange for the part of the motor cycle, motor cycle combination or sidecar or accessory which may have proved defective. We undertake, subject to the conditions mentioned below, to make good in manner aforesaid any part or accessory covered by this guarantee, which has proved defective within the said period of six months. We do not undertake to replace or refix, or bear the cost of replacing or refixing any such new part of accessory in the motor cycle, motor cycle combination or sidecar. As motor cycles, motor cycle combinations and sidecars are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse or neglect.

The term "misuse" shall include amongst others the following act—The use of a motor cycle when carrying more persons or greater weight than that for which the machine was designed by the manufacturers.

We do not guarantee tyres, saddles, chains or lighting and electrical equipment, or any accessories or component parts supplied to the order of the Purchaser differing from those comprised in the standard specifications supplied with our motor cycles, motor cycle combinations or sidecars. As regards all such tyres, saddles, chains, lighting and electrical equipment, accessories and component parts, no guarantee, conditions or warranty of any kind statutory or otherwise is given or is to be implied, and we are to be under no liability whatsoever in respect thereof.

CONDITIONS OF GUARANTEE

If a defective part or accessory should be found in our motor cycles, motor cycle combinations or sidecars or in any part or accessory supplied by way of exchange as before provided, it must be sent to us CARRIAGE PAID and accompanied by an intimation from the owner that he desires to have it repaired or exchanged free of charge under our guarantee, and he must also furnish us at the same time with the number of the machine, the date of the purchase or the date when the alleged defective part or accessory was exchanged as the case may be.

Failing compliance with the above, such articles will lie here at THE RISK OF THE OWNER, and this guarantee and any implied guarantee, warranty or condition shall not be enforceable. All machines are despatched Carriage Paid to nearest Railway Station Great Britain.



