

SUZUKI AS 50

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GENERAL

Information

THE AS50 is one of several new Suzuki models introduced to the UK market at the Brighton Show in April, 1969, and is now becoming available to dealers. The engine unit has some design similarities to the U50 Suzy, but the AS50 is completely different in conception, being a small sporting motorcycle with a very sophisticated specification, and notable performance for its size.

The engine inhales from an enclosed carburettor through a disc-valve, and is lubricated by a throttle-controlled mechanical pump on the already well-known Suzuki Posi-force system. With a corrected compression-ratio of 6.7, the output is 4.9 bhp at 8500 rpm, which are very creditable figures for an engine with a capacity of only 49cc; but even more noteworthy is the smoothness of the unit, the quietness of the exhaust, and the very even two-stroking at tickover speeds.

The gearbox provides five speeds and is meant to be used—at 30 mph, in top, the engine speed is 4600 rpm, and most of the power is at the top end of the rev scale. Transmission is by primary gears and a secondary chain, the latter covered on the top run only; there is a rubber shock-absorber in the rear hub and the rear wheel comes out without disturbing the chain.

The frame is pressed steel of T-shape; the front forks are of very simple design with hydraulic damping and external springs covered by rubber "gaiters", and conventional rear forks move on rubber bushes against sealed hydraulic units incorporating covered springs. Both tanks are very nicely shaped, and hold 1½ gallons of fuel and 2½ pints of oil respectively.

Both wheels have 2.25 in by 17 in tyres and full-width hubs, the brakes being identical front and rear with drums 110mm (4.35 ins) in diameter with shoes 30mm wide—amply large for a machine which weighs 150 lbs ready for the road.

Service

The design of the AS 50 follows standard Suzuki practice, and dealers who are already familiar with other models of the marque should not have difficulty with any work on this new model. All parts

are accessible and none of the operations requires "juggling".

All threads are right-hand, with one exception, this being the thread on the flywheel into which the extractor is screwed. All nuts, bolt and screw sizes are, of course, metric, the screws being of the cross-head type with one or two minor exceptions.

But note that some threads are ISO pitch, (mostly cross-head screws). These are all clearly shown with an asterisk in the parts list, and the parts themselves can be identified by a punch mark on the heads of screws, on one flat of a nut, and on the head of a bolt which will also have the size stamped on it. The difference in pitch between ISO and unified threads is only ½mm, but irreparable damage could be done to threads in a casting if the wrong screw or bolt is inserted.

Service manual

This is a very comprehensive book, with all the operations described in words and illustrated either by photos or drawings. However, it does not cover the suspension, hubs and steering head, so this sheet gives servicing instructions for these items.

The manual gives many figures for clearances, permissible wear tolerances, and torque settings, and it is therefore considered essential for a dealer to have this book before attempting to do any serious repair or service work on the model.

Workshop service tools

These number 25 and they are listed and illustrated on pp. 5-6 of the service manual. For reasons of space the list is not reproduced here.

Spare parts list

This is produced in two sizes—the larger has stiff covers and loose leaves, approx. 11½ in by 8½ in; with cut-out tabs to identify each section. The smaller, normally issued to dealers, has soft covers and the pages, size 7 in by 5½ in, are stapled into them.

Both books have the same amount and detail of information and the same illustrations; it will obviously be easier to add extra sheets with modifications, amendments and so on, to the larger size with its loose-leaf construction.

Five speeds on a production machine are still comparatively rare, even in 1969. This drawing shows how they are arranged on the new Suzuki AS 50. Inset is the gear-shifter drum and its selector forks which, when assembled, lie inside the gearbox above the two gear shafts.

the cylinder makes it very vulnerable to road dirt.

Loosen the plug. Use the C-spanner (from the workshop-service tools) to undo the exhaust pipe flange nut—inside this is a thick composite washer, which can be used again if in good condition (it does not tend to flatten as a normal washer). Undo the two bolts holding the pipe and silencer, which is a one-piece component.

Undo the four head bolts, lift off the head and washer, then move the barrel carefully up its studs—support the piston as it emerges. If the barrel sticks, tap lightly below the exhaust port.

It is desirable always to remove the barrel, to inspect the condition of the rings.

Piston rings. Both are identical, and must be replaced the right way up—a letter R is stamped on the upper surface near the gap, and this must face upwards.

Pages 31-32 of the service manual give the figures for wear, etc. of barrel, piston and rings. Pistons and ring sets are available in two stages of oversize, 0.5 and 1 mm respectively.

Silencer. The baffle is detachable and is retained by a cross-head ISO screw at the extreme end of the tailpipe. A crossbar in the baffle-end provides a grip for it to be twisted and pulled out—the recommended service interval is 4,000 miles for cleaning, but as the baffle is a tight fit when clean, any build-up of carbon may cause it to "seize" in position.

To avoid this, dealers should recommend owners to clean it more frequently than 4,000 miles intervals. This will, of course, help performance, as a choked silencer will cause carbon to build-up near the port.

REMOVING UNIT FROM FRAME

As detailed on pp. 8-9 of the service manual, the unit need only be removed from the frame if attention is required to crankshaft, gears, gearchange or kick starter; to get at these assemblies the crankcase must be split.

If the work is necessary, it is worthwhile stripping as many components as possible before the three

bolts holding the unit are removed. This method uses the weight of the whole machine as a vice.

The complete dismantling process is shown and described on pp. 10-13 of the service manual, followed by re-assembly instructions on pp. 19-24. The following notes are additional to the manual.

Dismantling

Carburettor. Slacken the throttle slide-rod before the instrument is removed from the inlet manifold.

Oil pump. It is advantageous to loosen the two oil-pipe unions before the pump body is removed from its seating, (service manual, p. 14, para 9). This must be done carefully, to avoid damage to the oil pipes—a thin open-ended spanner is the best tool.

Crankcase cover. The right-hand cover is held by ten cross-head screws, not nine as stated in para 12, p. 14, service manual.

Clutch. Remove the clutch-spring pins diagonally, to avoid possible distortion of the pressure-plate. The clutch push-rod is a two-piece assembly, the pieces are identical, and they press on a larger diameter thimble behind the pressure plate.

Inlet valve outer seat. This is located by a hollow dowel, which is a tight push fit in its recess and can be removed with pliers. Before assembling the workshop service tool for removal of the plate, it is worthwhile fitting two long screws to the threaded bosses, then pulling on these with pliers—sometimes the seat casting is not so tight a fit on its spigot as to need the use of an extractor.

Behind the seat is a large O-ring in a groove, and this must be renewed when re-assembling.

Inlet valve inner seat. This component should not be removed unless it has suffered damage or wear (very unlikely) and must be changed (service manual, p. 17, para 27).

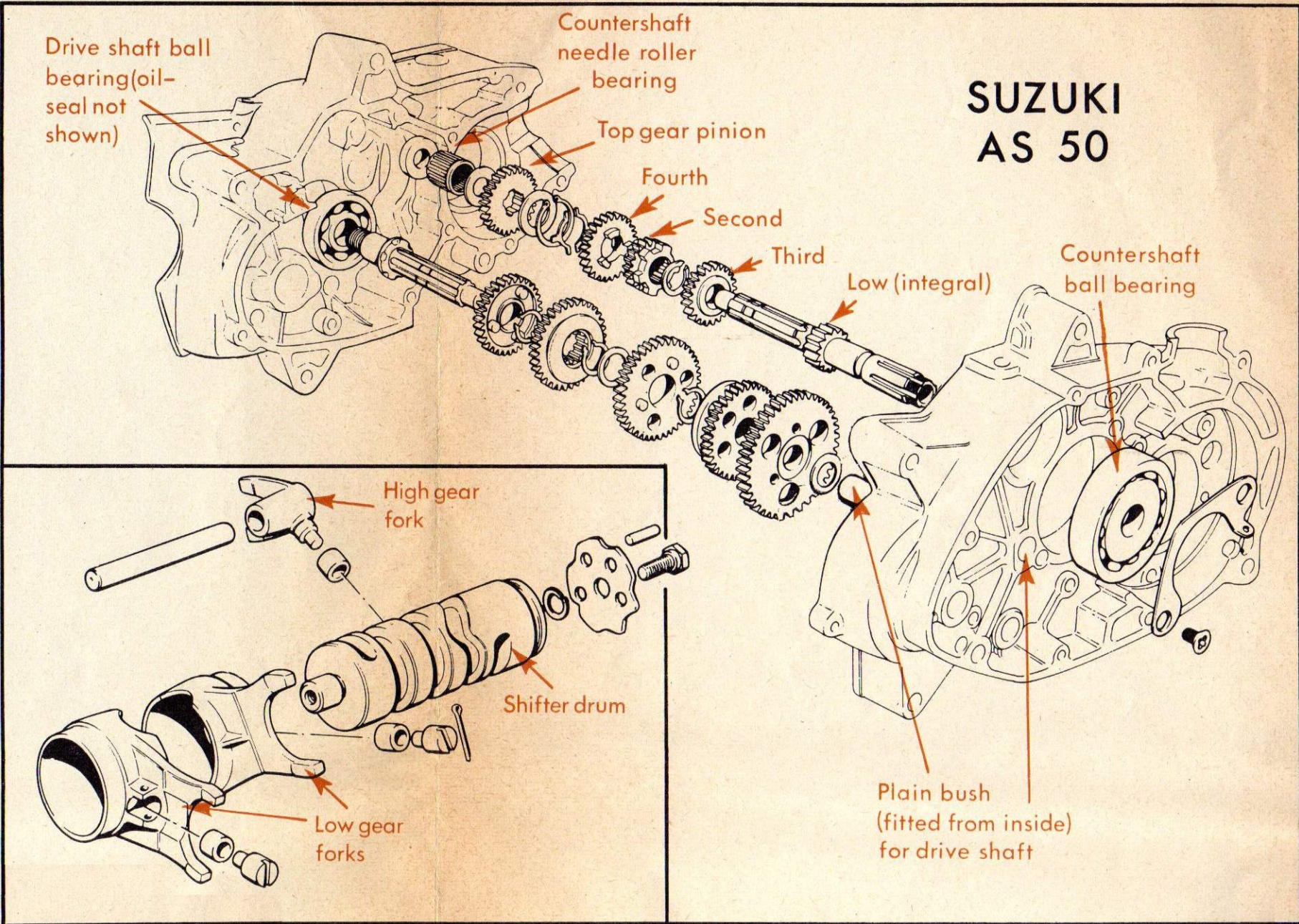
Dismantling gears

After parting the crankcase halves (service manual p. 18, para 28), the crankshaft, both gear shafts, gearchange selector drum, and kick starter shaft, will all remain in position in the right-hand case.

First, remove the kickstarter pinion, which has a loose thrust-washer inside it. This exposes the pawl, plunger and spring, in a slot in a boss integral with the shaft; remove these three parts carefully, holding the plunger against the spring as the pawl is lifted out. The shaft is retained in the case by a circlip.

The two gear shafts and the selector drum may now be removed as one assembly, using one hand to lift, and the other to press on the ends of the shafts. When removed, the selector forks may be freed from their grooves, allowing the assembly to be separated into individual parts.

The countershaft runs on a ball-bearing and a needle-roller bearing, the driveshaft has a bronze bush and a ball-bearing, all four being renewable. If the pinions are removed from the shafts, note that



five circlips altogether are used, four being identical and the fifth is larger—their positions are shown in the drawing in the spare parts list.

Re-assembling gears

The service manual does not cover this in detail, though paras A, B and C on p. 20 give essential information on circlips and thrust washers.

Assemble the two gearshafts, and the selector-drum with its two forks engaged in grooves in the drive shaft pinions. Offer up the complete assembly to the two shaft bearings in the right-hand case. Next, fit the high gear-fork by entering its jaws into the groove in the second pinion (countershaft), then turn it until the roller on the peg can be dropped into the cam groove in the shift drum. Now, fit the fork spindle through the pivot hole into the boss in the right-hand case—press hard on the spindle to ensure all air is expelled from below it.

Refit the kickstarter shaft if it was removed; a thrust-washer and a spring-plate lie below the retaining circlip. Refit the spring and plunger to the shaft boss, and hold them down whilst the pawl is fitted into its slot. Lastly, fit the kickstarter pinion with its internal thrust washer.

If the crankshaft is in position, the two case halves can now be joined—service manual, p. 21, para 5 onwards.

Gearchange stopper plate. This can be fitted wrongly because the four holes are symmetrical. The punch mark near the teeth must face outwards.

Clutch. Each pushrod half has a square and a

CARBURETTOR

The Mikuni type VM 16 sc carburettor fitted to the AS 50 is extremely simple in design and straightforward in construction. It is illustrated on p. 27 of the service manual.

The float chamber has a drain-plug, so that it is a comparatively easy matter to flush out the chamber if it is suspected that dirt has affected the performance.

Tuning and setting

As delivered, the carburettor is set for optimum performance and it is unlikely that any significant gain would be achieved by alterations to the settings. But individual machines may require small adjustments, such as raising or lowering of the needle, or similar.

Pages 38-39 of the service manual cover tuning and setting very thoroughly.

Petrol level

It is important that this is maintained accurately, as it is the only setting which can alter gradually by

rounded end. Fit them into the countershaft with the square ends touching.

After checking the clutch springs (service manual, p. 22, para 15A) fit the pins so that they are at right-angles to their loops.

Clutch cable. The easiest method of re-fitting this is to remove the two cross-head screws holding the quick-thread mechanism, fit the cable to the lever, then swivel the mechanism round the cable nipple until the two screws can be inserted.

Oil pump

Use the following sequence when re-fitting. First, connect the outlet union with the bolt threads just started, then offer up the pump making sure the driving tongue engages with the nylon driving-piece; next, fit the inlet union and slide its pipe grommet into position; lastly, fit the two crosshead pump fixing screws. Both are ISO thread, and the longer fits on the right of the pump. Tighten the fixing screws, then the outlet and inlet unions in that order, making sure that the pipes are not distorted.

The pump must be "bled" if air has got into the inlet pipe—being transparent, air bubbles can be seen if present. Air will get in if the pipe is disconnected at either end, or if the tank is allowed to run dry. The bleed-bolt has a hexagon head and is located below the right-hand fixing screw; it is not listed as a separate spare part. Make sure there is plenty of oil in the tank, then slacken the bolt one turn or more and allow oil to run out until no more air bubbles are seen, then tighten the bolt.

itself, and in doing so may affect the performance. Para 3 on p. 39 of the service manual describes and illustrates how to make the setting.

Air cleaner

The element can be removed for cleaning by undoing the central cap nut on the left-hand cover of the cleaner housing. The owners' manual recommends that this should be done every 1,000 miles; the element is plasticised paper and is cleaned by blowing with an air jet. On no account should petrol or water be used, nor should the element be left out in an effort to improve performance. No element is as bad as a choked-up one.

Petrol filter

Always use a ring spanner to remove the filter bowl, which has a hexagon head formed in the metal—never use an open-ended spanner which may distort the thin metal, (unfortunately, the owners' manual shows the bowl being undone with pliers. Dealers should discourage owners from following this barbarous method).

FRONT FORKS AND STEERING HEAD

The service manual does not cover any of the cycle parts, but these are all straightforward in design and construction so service or repair work poses no great problems.

Front forks

Construction is described below and an "exploded" leg is illustrated in the spare parts list.

Construction. Each leg is based on a long tubular stanchion, clamped in the lower fork crown and held to the upper crown by a bolt which is also the oil filler plug. The lower end of the stanchion has a fixed bush for the wheel slider which carries the spindle, and which has a flanged bush at its top held

Renewals. The lower bush is a fixture on the stanchion, which must be replaced complete if wear takes place.

The rebound circlip has not been numbered in the drawing in the spare parts list, or given a part number.

Dismantling. Note there are no drain plugs for the oil, so care must be taken to avoid spillage when the legs are dismantled.

Support the crankcase with a block and remove the front wheel and mudguard.

Undo the 22mm bolt in the upper fork crown; there is a spring-washer in a recess under the head and a thick plain washer. Slacken the pinch-bolt in the lower crown, and pull the leg downwards—the lamp and brackets will remain trapped between the fork crowns. In a recess in the top of the stanchion there is a thick-rubber sealing-washer.

On top of the spring is a white nylon washer with a shoulder which locates in an inverted metal cup, this cup is a tight fit in the rubber gaiter. Remove the nylon washer, then invert the leg over an oil-tray and allow it to drain.

Next clamp the spindle lug in a vice and free the lower end of the gaiter from its groove in the tube nut. The gaiter and spring can be lifted clear, revealing the oil seal in the tube nut.

A clamp-wrench for the tube nut is amongst the service tools. Undo the nut and the stanchion can be lifted out of the slider, exposing the two bushes and the circlip between them. The tube nut has an O-ring in a chamfered recess in its lower edge.

Reference to parts list

In the drawing in the list dated March, 1968, all the parts referred to above are shown, but not entirely in the correct order of assembly. No. 13 ("inner-tube shock damper") is the rubber sealing washer for the top of the stanchion; no. 11 ("spring guide") is the shouldered nylon washer above the spring; no. 26 ("fork-spring guide") appears to be the metal cup which locates the gaiter but is not clearly drawn; no. 12 ("fork-dust seal") was not used on the forks we dismantled and may have been omitted from current production; no. 8 ("fork oil seal") is the seal in the tube nut; no. 9 ("oilseal lower O-ring") should be shown below the tube nut;

and the un-numbered circlip is shown between the two bushes.

Re-assembly

This is a straightforward reversal of the sequence of dismantling. Take care with the following points: (1) Make sure the lip of the tube-nut oilseal is not damaged by the sharp edge of the top of the stanchion—it would be worthwhile to chamfer this edge slightly with a file.

(2) The spring is fitted with the three tight coils at the bottom.

(3) The stanchion should be filled with oil before it is fitted to the fork crowns, because without drain plugs any over-filling can only be corrected by inverting the assembly. The quantity and grade is 130cc of SAE 30 for each leg, up to 13cc excess is allowable. The service tools include an oil level gauge.

(4) When fitting the complete leg, check that the rubber washer at the top of the stanchion is fitted with its chamfered edge upwards.

(5) The service tools include a long 22mm bolt with T-handle, which is used to pull the stanchion through the lower crown against the compression of the spring. The clamp bolt is then tightened enough to hold the stanchion whilst the top bolt is fitted and tightened.

(6) After fitting mudguard and wheel, bounce the forks a few times with the crown bolts slack. This will bed down the stanchions in their positions, and the four crown bolts can then be tightened.

Steering head

Each bearing has 22 loose balls, and the actual inner and outer races are identical top and bottom. Note that the spare parts list does not identify the lower outer race, either with a number on the drawing or a part number—the latter is 51621-05000 as for the upper outer race.

The races are held and adjusted by two grooved nuts, for which a C-spanner is provided in the service tools; there is a tongued washer between them, and a dust cover for the upper race below them.

Above these nuts the upper fork crown is held by a bolt which screws into an internal thread in the steering column.

BRAKES, HUBS AND REAR SUSPENSION

Brakes

Brake design is conventional, so service work is straightforward with no special techniques involved.

Some parts of both brakes are identical and interchangeable, notably the shoes which have bonded linings, and small parts such as shoe return springs, camshafts, etc.

The brake plates are substantial alloy castings, and float on the spindles. The operating levers are splined to the camshafts, with a pinch-bolt fastening, and so can be moved round one serration if necessary to compensate for lining wear.

Front hub

The crankcase must be supported before the front wheel is removed, as the centre stand is not exactly on the machine's point of balance.

The spindle will pull out after the split-pinned nut has been undone, and on the right-hand side of the hub is a metal dust cover which will become free as the wheel drops out. The bearing on the brake side is a sealed type, so a replacement must be fitted with the seal facing outwards. On the other end the bearing has an oil seal with three conical lips which seat on a short spacing collar.

The speedometer-drive pinion is retained within the brake plate by a circlip, and the two driving dogs engage with very wide indents in the hub so that the chances of distorting them when replacing the plate are very small. The recess in the plate containing the speedo drive has a very large oilseal.

Rear hub

The rear wheel itself has an alloy hub, with cast-in brake drum, which runs on two sealed bearings (fitted with the seals facing outwards) separated by a spacer tube. The brake-plate floats on the spindle,

and between plate and fork-end is a loose spacing collar.

The left-hand side of the hub is shaped to accommodate the push-drive rubbers, which form the "joint" between wheel and sprocket.

The sprocket is held by four bolts, with spring washers and locknuts, to an alloy drum which has recesses on its inner side to accept the push-drive rubbers. The drum runs on one bearing, on a short hollow shouldered shaft held in the left-hand fork-end by a nut. There is an oilseal outside the bearing, with its lips seating on a short spacing collar.

The wheel can be detached without disturbing the chain or its adjustment, the assembly being held by a long pull-out axle which threads into the sprocket-drum shaft and also has a split-pinned locknut on the left-hand side.

A smear of soap or liquid detergent on the push-drive rubbers makes the job of replacing the rear wheel easy.

Rear suspension

The rear fork moves on rubber bearings, with a long bolt passing through them and a tubular lug on the main frame. The bolt is a tight push fit, and has a locknut which is tightened to the end of the thread on the bolt. There is a tubular rubber cover for the protruding end of the frame lug, to prevent damage and noise by the chain at extreme movement of the suspension.

The rear suspension units are sealed, and can only be replaced as complete assemblies, though the springs are listed as separate parts. The upper lugs of the units are held by a long bolt passing through them and a tube welded into the end of the main frame; the lower ends have short bolts screwing into lugs on the swinging arm, with locknuts.

ELECTRICAL

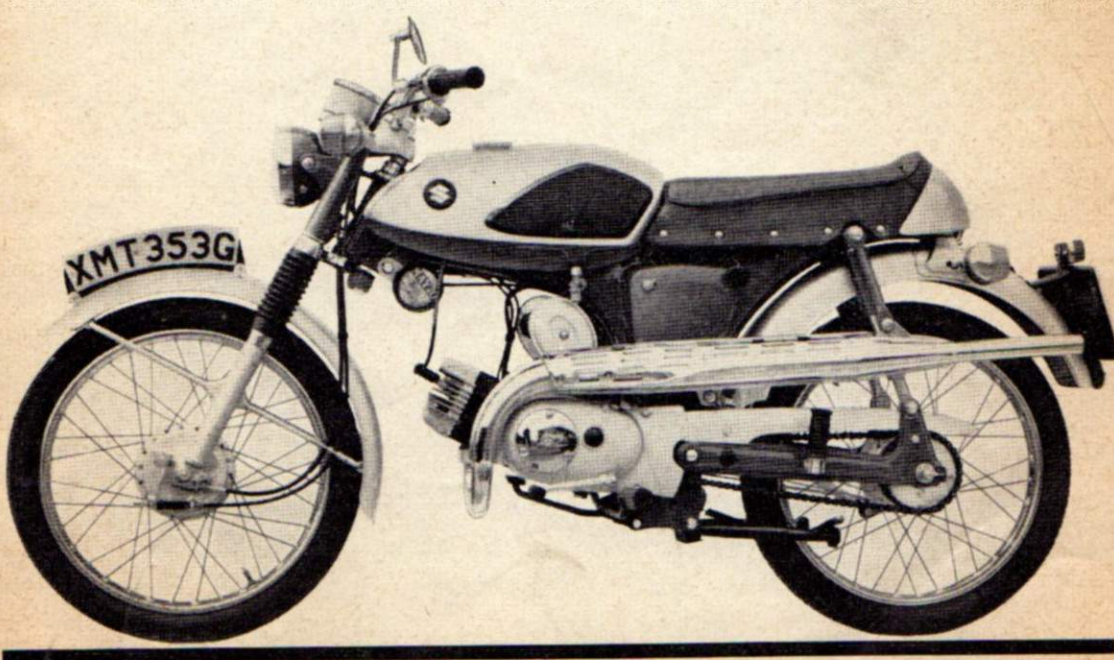
The service manual and the owners' manual both have a wiring diagram, from which it will be seen that the electrical circuits are the normal ones for this type of machine.

The flywheel generator has two LT coils. One feeds the ignition, with the contact-breaker and condenser in circuit, the HT coil being bolted to the hollow spine of the frame under the fuel tank. The other LT coil feeds direct current to head and tail

lamps, and also energises the battery through a rectifier. The battery supplies the neutral light, turn indicators, brake lamp and horn.

A series of electrical tests and checks are described on pp. 35-37 of the service manual.

The owners' manual emphasises that the battery breather-pipe must not be pinched or obstructed, this would not allow the battery to "gas" freely.



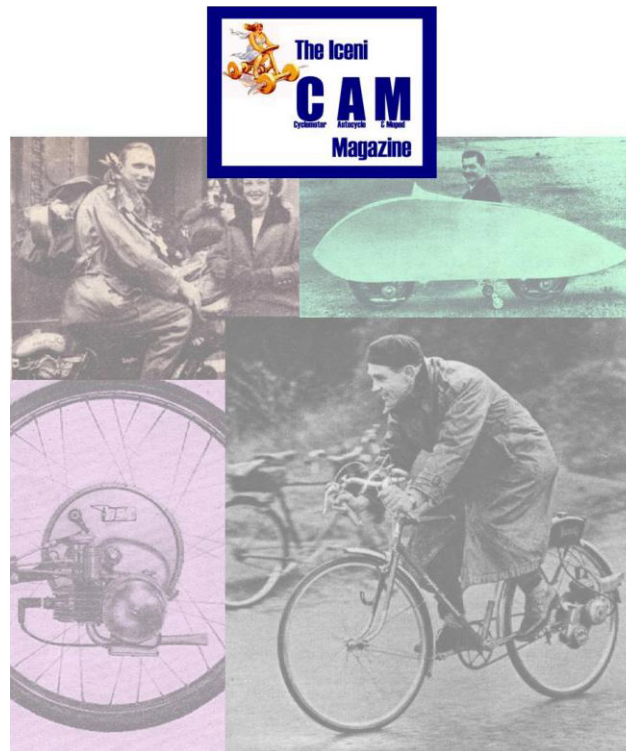
This is an extremely easy job, the carburettor being enclosed in the crankcase, only the exhaust pipe and cylinder need to be removed.

Start with a thorough clean of the barrel and surrounding crankcase, using an airline if available to get rid of all grit. The near-horizontal position of

Diagrams (not to scale) showing the lengths in mm, and positions for the cross-head screws which hold the crankcase halves and the crankcase covers.

DECARBONISATION

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