

SUZUKI U50

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GENERAL INFORMATION

THE U50 is an open-frame utility machine which has been adapted from a larger-engined machine, the U70 (not marketed in the UK). The engine-unit has a near horizontal barrel, gear primary drive and a general design similarity to the AS50 (see *Trader* Service Sheet No. 12/3 dated November 4, 1969), and it has also the same bore and stroke of 41 by 37.8 mm, but there the resemblance ends.

As befits a machine designed for everyday transport, often in heavy traffic, the U50 engine has considerable low-speed pulling power, achieved by a fairly low compression ratio of 6.7:1 (corrected) and appropriate port shapes. As a result, it produces 4.1 bhp at 6,000 rpm (compared to the AS50 figures of 4.9 at 8,500) but more important still the torque figure of 3.90 ft/lb (0.54 kg.m) equals that of the AS50 but is developed at 5,000 rpm only. With an automatic clutch and appropriate gearing, this gives effortless performance in stop-start motoring.

The engine retains the well-known Suzuki features of a disc-inlet valve and Posi-force oiling by a mechanical pump with a throttle-controlled output: both of these features contribute to the even two-stroking and good pulling at low revs.

Further refinements are incorporated in the transmission, the automatic clutch having light springs built into it to make its operation jerk-free, and the sliding gear which selects the three ratios runs on inserted ball-bearings for smoothness. With a very rigid shaft assembly in a stiff boxed casting, the engine runs very smoothly, and very quietly, too; thanks to a large silencer.

The frame, fork-girders and rear swinging arm are all of pressed steel, on general lines made familiar by Japanese design. Suspension front and rear is by sealed hydraulic units with external springs. Electrical equipment is simple, but complete in detail, with flashing direction indicators; and considerable use is made of plastic in parts

such as mudguards, legshields etc.

The rear chain is completely enclosed and the rear wheel is detachable without disturbing chain or brake, the 'joint' being the rubber shock absorber. Wheels, hubs and brakes are in fact identical to those on the AS50, and the dry weight is only 150lbs (70 kg).

Servicing

Suzuki dealers will find no problems with this model, which follows existing Suzuki design principles; all parts are accessible and there is no 'juggling' to be done.

All threads are right-hand with one exception, which is the thread on the flywheel, into which the extractor is screwed. All nuts, bolts and screw sizes are of course metric, and most of the screws are the cross-head type.

Note that, on earlier machines, threads of 3-, 4- and 12 mm diameter were not of ISO (International Standard) pitch but peculiar to Suzuki. Later parts where changed to ISO pitch are identified in one of several ways: usually by a punch mark on the screw-head or nut, or an asterisk on a part with a tapped hole.

Where ISO threads are employed, standard metric nuts and bolts can be used as alternatives. The difference in pitch between ISO and Suzuki metric is tiny but sufficient to cause irreparable damage if the wrong component is used.

Service manuals

Workshop staff need two publications for this model. The larger and basic manual is that produced for the U70—it is very thorough in the way in which it describes every operation, these being illustrated and well detailed in words. The smaller book is a supplement dealing with the U50, and this describes and illustrates those parts which on the smaller machine are different. (It also covers the U50D which is the same machine

SERVICING DATA

Renewals

All moving parts liable to wear are renewable as separate items, as are the bearings, with one exception — behind the oil pump is a bronze-bush which supports the kick-starter pinion (which drives the oil-pump). This bush is cast-in to the left-hand crankcase and is not therefore renewable separately, but failure is unlikely as it runs continuously immersed in oil.

The parts list shows individual components as being available for the big-end bearing. However, the policy of the UK company is to provide a service-exchange scheme for complete crankshaft assemblies only.

All circlips, O-rings, oil seals, washers and gaskets should be renewed as a matter of course once they have been disturbed. In this connection the cylinder-head gasket is aluminium and is comparatively thin; it is Suzuki practice to regard this item as expendable, to be renewed if the head is removed.

Special exchange of barrels

Early production models had an iron barrel and some cases of overheating and plug whiskering were traced to use of this part. A lined alloy-barrel is now fitted and cures the trouble. Any iron barrels on stock models can be exchanged free of charge; pistons and rings also will be replaced free if the machine has been used. It is vital that the correct oil is used in the Posi-force tank, as some of those not recommended can cause whiskering.

Permissible wear

In each operation section of the service manual there is a small table giving standard dimensions and wear limits for parts which are critical in this respect. (Some other Suzuki manuals collect these figures and print them all together as a complete section).

Engine settings

Carburettor Mikuni type VM 15 SC—main jet 100, air jet 1.2, pilot jet 17.5, needle jet E-4, needle 314-2 in third (middle) groove, throttle-slide 2, starter-jet 40. Pilot air-adjusting screw—screw right in, then slacken back 1¼ turns.

See U70 manual, pp 72-80 inclusive for description and tuning instructions, but settings (above) are given in U50 supplementary manual, p. 10.

Ignition Sparking plug: standard NGK B-7H; alternative Champion L81. Gap 0.020-0.024in (0.5-0.6mm).

Contact-breaker gap 0.014in (0.35mm). Points open 1.56mm (20 degrees) BTDC. Timing must be precisely set for optimum performance, and this is done by moving the stator plate—the points gap may be varied from 0.012-0.016in (0.30-0.40mm) and this is the only tolerance allowed. Aligning marks on flywheel and crankcase are provided, but setting can only be effected accurately with a timing depth-gauge to measure piston travel, and a buzzer or light to give moment of points opening. See service manual, p. 83 (setting figures) and pp 87-89 (procedure).

Transmission Gearbox sprocket 14T, rear wheel sprocket 32T, chain size ¼ in pitch, length 51 pitches plus connecting link.

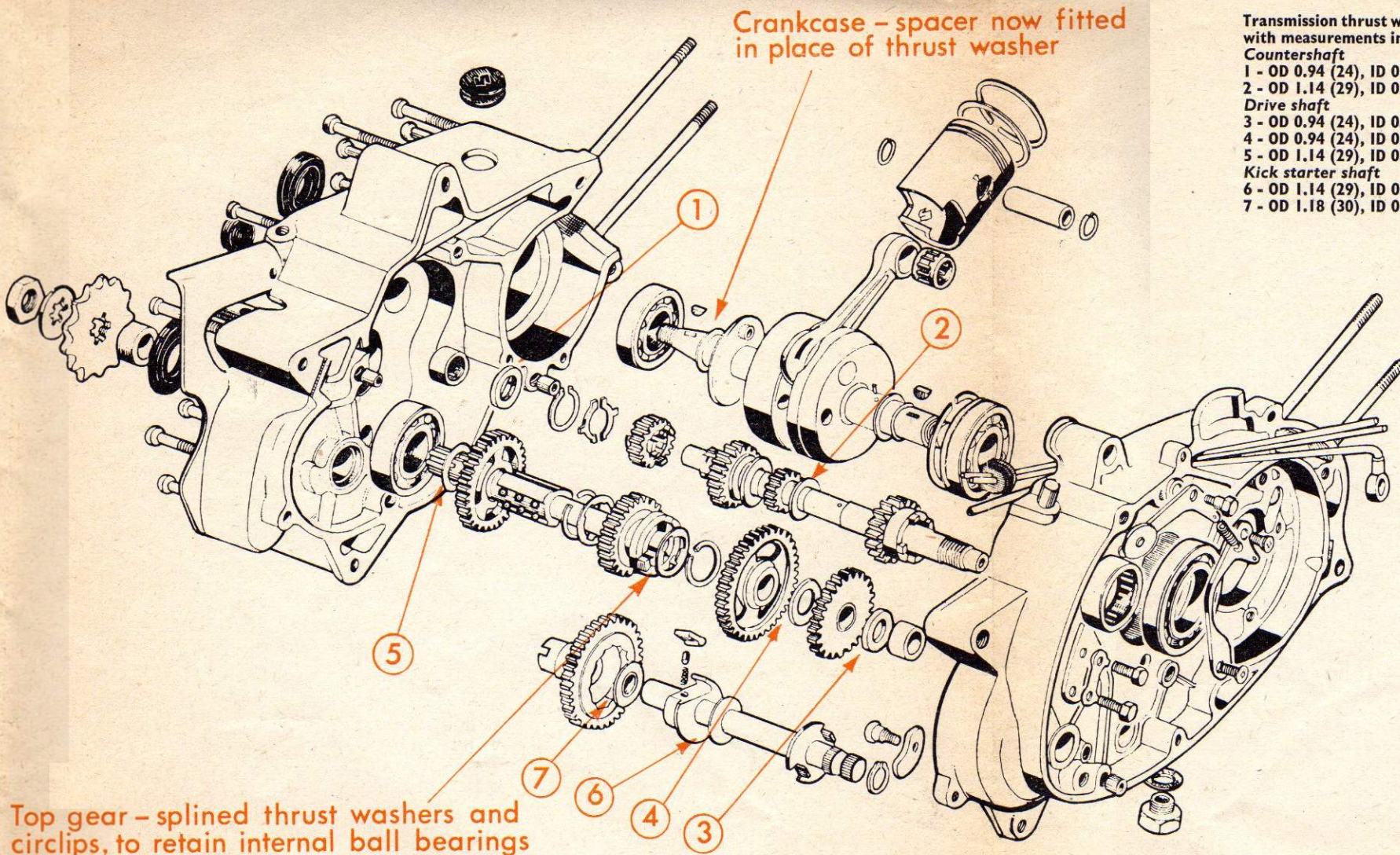
Lubrication

Engine Recommended oils: Shell 2T or Duck-hams Two-Stroke engine oil. The oil tank holds 2½ pts (1.2 litres).

Gearbox Recommended oil: SAE 20W/40 multi-grade. Capacity: 1 pt (550 cc), level plug along-side kickstart spindle. Gearbox oil also lubricates primary-drive gears and clutch.

Torque settings

A table of settings is given on p. 95 of the larger (U70) manual, and the figures are also repeated (in part) where applicable in operation instructions.



Top gear—splined thrust washers and circlips, to retain internal ball bearings

with electric starter and is not marketed in the UK).

All the figures for clearances, wear tolerances and torque settings are in the larger book, and it is considered essential for a dealer to have both books in order to attempt any serious repair or service work on the model.

Neither book deals with the suspension, hubs or steering head, so some instruction for these parts is included in this service sheet.

Workshop service tools

These are listed and illustrated on pp 6-7 of the smaller U50 manual, the tools being the same as those required for work on the U70. Note that a clutch tool, 09920-30211 (to depress the outer plate whilst circlip is removed or fitted) is required but is not shown in the U50 list.

DECARBONISATION

This is not difficult, and as the carburettor is enclosed, only the exhaust pipe and then the cylinder-head and barrel need to be removed.

Start by removing the legshields, this exposes the barrel and head, and these should be given a thorough clean, using an airline if available to get rid of all road dirt, particularly grit. The near-horizontal position of the cylinder makes it very vulnerable.

Loosen the plug. Remove the exhaust-pipe nut, using tool 09913-50610, then slacken two screws on the silencer clamp and swivel the pipe away from the port. Beneath the flange-nut is a thick composite washer which does not tend to flatten in service as does a normal washer, so this may be used again (an exception to the gasket renewal policy) provided it has not deteriorated.

Undo the four head-nuts (which have a spring- and a plain-washer under them), lift the head and joint gasket, then move the barrel carefully up its studs, supporting the piston as it emerges. If the barrel sticks, tap lightly under the exhaust port.

Piston rings Latest production is fitted with two identical keystone tapered rings, with an expander ring behind the lower one. These are stamped R on the upper face, near the gap, and the letter must face upwards when fitted. Note: This supersedes the information given on p. 9 of the U50 supplementary manual.

Checking for wear The U70 manual, pp 21-27 inclusive, give the details of decarbonisation, with figures for measurement of cylinder bore, piston and gudgeon pin. Pistons and rings are available in two stages of oversize, 0.5 and 1 mm, when reboring is undertaken—note particularly that the edges of the ports should be chamfered after

reboring to prevent wear of the rings, and the precise figures are shown in a drawing on p. 23 of the manual.

Standard piston ring gaps are 0.004-0.012in (0.01-0.03 mm) and rings should be replaced when the gaps (measured as described on p. 26) exceed 0.015 in.

Silencer This has the same type of detachable baffle as the AS50, and it suffers from the same weakness, which is that if left too long it will 'seize' in position because of the heavy carbon deposit in the close-fitting silencer outlet, and then it is very easy to break off the small cross-bar which is provided to twist the baffle. If this happens the complete silencer will have to be replaced.

Possible remedies are to break up the carbon with light hammer blows on the end of the baffle—this is difficult because there is no fail safe method of adjustment.

The following notes are supplementary to the manual, and should be read in conjunction with the appropriate section.

Re-assembly **Crankshaft spacer** On latest production there is a spacing collar about ¼ in deep inside the oil thrower ring on the left-hand mainshaft, behind the main-bearing. This is in place of the thrust washer, part no. 08221-20285, which is specified, but the new part no. of the spacer was not known at time of going to press.

Oil-pump The following sequence makes this easier. Fit the inlet and outlet unions to the pump, making sure first that the correct rubber grommets are in position on the pipes. The inlet pipe is the thicker of the two and this fits on the upper union. Ensure there is a gasket washer on each side of each banjo union, then do up the union bolts finger tight.

Offer up the pump to the crankcase (with a new gasket in position), making sure the nylon driving-piece is in position on the (kick-start) driving-shaft, and that the tongues on the pump-rotor engage the nylon piece. Insert the two fixing screws (the longer goes on the right), and then push the pipe grommets into their locations before tightening the two union bolts—the thin open-ended spanner will be needed, and the unions must be held to prevent distortion of the pipes. Note: the manual recommends fitting the unions before the pump is fitted (p. 32), and gives a torque figure for the bolts. The disadvantage of this method is that the unions must be positioned precisely to avoid straining the pipes, and to do this requires great care and experience.

Bleeding the oiling system Follow the instructions on p. 33 of the manual, and for adjustment the sequence is detailed on pp 32-33.

Transmission The transmission as a whole is dealt with in seven separate sections in the U70 manual. The sections are: clutch pp 37-44, kick starter 44-45 and 58-61, gear-change (shifter) 45-47 and 65-67, primary drive 48, and gears, shafts and bearings 54-57. The information given is very complete, and includes figures for clearances and wear limits and methods of adjustment.

Dismantling **Clutch** Some of the parts on the U50 are different from those on the U70, and these are illustrated on p. 11 of the U50 supplementary manual; in particular, the rubber shock-absorber assembly is omitted and there are only nine centrifugal rollers. (Note: The spare-parts list, p. 2 of the U50 section, wrongly gives the number as six rollers).

Thrust washers There are two on the counter-shaft, three on the drive-shaft, and two on the kick-starter shaft, the sizes and positions being identified on p. 54 (gears) and p. 58 (kick-starter) of the manual, and they are also shown in the large illustration above.

Clutch One cork plate is thicker than the other five (0.014in or 3.7 mm thick), and this must be fitted first into the housing.

To operate properly the clutch must have clearance between the plates of 0.055-0.071in (1.4-1.8 mm), and this can be measured with a feeler gauge (see p. 43). To adjust the clearance, two thicknesses of steel plate are available, and the effects of different combinations of these are given in two starred paragraphs at the top of p. 44.

Clutch lubrication When running, oil passes along the countershaft and out through two transverse drillings to lubricate the clutch. It is therefore important that the spacer sleeve (on which the housing runs) and the hub are fitted so that their oil holes are aligned with those in the shaft.

Gear-shaft bearings When inspecting parts for possible renewal, note that on the U50 the countershaft (left-hand end) and drive-shaft (right-hand end) both run in plain bearings (instead of needle-roller on the U70) and these plain bushes are renewable. They

Transmission thrust washers are shown in correct positions, with measurements in inches, and millimetres in brackets.

Countershaft
1 - OD 0.94 (24), ID 0.47 (12), T 0.06 (1.5)
2 - OD 1.14 (29), ID 0.67 (17), T 0.04 (1.0)
Drive shaft
3 - OD 0.94 (24), ID 0.47 (12), T 0.06 (1.5)
4 - OD 0.94 (24), ID 0.47 (12), T 0.04 (1.0)
5 - OD 1.14 (29), ID 0.67 (17), T 0.06 (1.5)
Kick starter shaft
6 - OD 1.14 (29), ID 0.55 (14), T 0.06 (1.5)
7 - OD 1.18 (30), ID 0.47 (12), T 0.06 (1.5)

Crankcase screws are all 6mm metric, fitted through the left-hand case

Left-hand crankcase covers—all screws are 6mm metric

Legshield bracket

Right-hand crankcase cover—the eight outer screws are all 6mm metric

Legshield bracket

5mm metric screws, both 40mm long

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Fit the spacer-sleeve with the oil-hole nearer the outside, so that the oil-hole is still visible when the sleeve is pushed right home. Now fit the housing with all its plates. Next fit a thrust-washer, then the hub with the projecting boss inwards — it is easy to see that the oil-hole are in line, and the housing can be turned a little to allow the plates to engage with the outer splines of the hub.

If the oil-holes are not aligned, the clutch may seize through lack of oil.

CARBURETTOR

The Mikuni type VM 15 SC carburettor is similar to other instruments of the same make, and any routine attention is very easy because of straightforward design and construction.

The float-chamber has a drain-plug so that it is easy to flush out the chamber if it is suspected that dirt is present.

Petrol level This is the only setting on the carburettor which can alter gradually by itself, and it should therefore be checked periodically. The process is described and illustrated on p. 77 of the manual.

Air cleaner To remove this for cleaning remove the two outer screws on the cover, which then comes away with the element attached. The

Gear shift cam-pins There are three long and one short pin. If they have been removed, the correct position for the short pin is diametrically opposite the contact spring groove of the neutral indicator switch. This is illustrated on p. 67 of the manual.

Gear shift cam bearing Note that on the U50 this part is supported by a large needle roller bearing in the right-hand crankcase, unlike the AS50 or A100 on which the cam rotates direct in the alloy.

FRONT FORKS AND STEERING HEAD

The service manual does not give any instruction on any of the cycle parts, but all of these are simple and straightforward in design and construction. All parts liable to wear are renewable, as separate items, except the hydraulic dampers to the forks which are sealed units and are renewed as a complete assembly.

Front forks The two pressed-steel girders are welded to the lower fork-crown on to which the steering column is also welded. The tops of the girders are linked by a welded-on bridge, and a deep, stiff pressed-box structure (named 'steering-stem head' in the parts list) is then bolted to the bridge and the column to complete the assembly.

Forged leading-links move on pivots within the open lower end of each girder, against springs surrounding the damper units, and the wheel is secured by a knookout spindle.

Link pivot The bush is of nylon, pressed into the eye of the link, with an inner steel tube which is fractionally longer, and a felt washer and dust cap on each side. The 14 mm pivot bolt is drilled and fitted with a grease nipple, and is secured by a nut with spring washer (beneath which the lower mudguard stay is held).

Damper pivots The lower pivot bush is in the link and also nylon with a slightly longer inner steel tube and felt washers and dust caps. The grease nipple is screwed into the outside of the eye of the link. The pivot bolt is 12 mm with a flat cross-head top, this screws into the inner flange of the damper knuckle and is locked by a locknut and the bolt is then centre-punched. The upper bush is rubber and is pressed into the eye of the damper, with the usual steel tube within it. The bolt is 12 mm and has a large rounded chrome-plated cross-head top, with a shoulder which locates in a hole in the girder. The bolt screws into a 'nut' welded to the inside of the girder, and a lock-nut and large plain washer under which the upper plastic mudguard stay is held.

Rebound buffer This is a large circular rubber held by a 12 mm bolt and lock-nut in the girder, above the main pivot.

Dismantling From the description above it will be clear that stripping to renew any worn or damaged part presents no difficulty.

When re-assembling, fit the lower end of the damper unit to the link and centre-punch the end of the bolt to secure the nut. Then fit the damper upwards into the girder, followed by the link—care must be taken to make sure both pivot dust-caps remain in position. Use a 14 mm tommy-bar or rod to align the pivot-bush with the holes in the girder before the pivot-bolt is inserted and secured. Finally, the upper eye of the damper must be aligned with its fixing holes before the bolt is inserted, when it is halfway through press down on the link so that the bolt lines up with the threads in the girder.

Steering-head The two bearings are straightforward cup-and-cone type with loose balls, and stripping and rebuilding presents no great problems, but unless all the electrical wires and the three handlebar-control cables are disconnected, the fork girders and steering column assembly cannot be lifted completely clear of the machine. The electrical wires all have snap-connectors.

Dismantling—handlebars and controls Disconnect the throttle-cable by undoing the screws holding the halves of the twist-grip clamp; slide the grip off the bar, lift the nipple carrier out

BRAKES, HUBS AND REAR SUSPENSION

able. Care should be taken not to mix parts.

Dealers should therefore refer to the *Trader* Service Sheet No. 12/3 dated November 4 1969, where a section was devoted to these parts.

ELECTRICAL

Reference has already been made to the wiring diagrams which are printed as full-colour pullout sheets in the service manuals and the owner's handbook.

The wiring is very simple, and it follows the normal Suzuki practice of being colour-coded and divided up into easily removable sections

of its slot and remove it from the nipple. Next, undo the centre screw of the choke control, there is a loose wavy friction washer under it, then disconnect the nipple from the lever.

Remove the front wheel, and unhook the handlebar-lever nipple. The front mudguard may also be removed, but this is not strictly necessary.

Next remove the lamp rim (one cross-head on top of the housing, and another similar screw below the rim). Remove the bulb-carrier, then undo the three cross-head screws holding the lamp housing (two at the top, one below the horn grille) and remove the housing. This allows access to all the snap-connectors which connect the main loom wires to the handlebar switches, head-lamp, horn and speedo.

Undo the two nuts, with plain and rubber washers, holding the handlebars and they can be lifted away, taking with them the speedo cable—the throttle cable must be eased out of its entry-hole in the right-hand bar.

Dismantling steering head Within the box-like steering-stem head is a nut on the column, locked by a bent-up tab-washer. This nut will require tool 09940-10121 (T-055A) or a similar socket spanner to undo it. The front of the head is held by two hexagon bolts with spring washers to the top bridge-piece of the girders. Undo these and lift away the head.

On the column is a spacer washer and then a castellated nut, for which tool 09902-06000 is required, and below this is an inverted dust cap. (Note: on the machine stripped by the *Trader* this nut was more easily undone with tool 09910-60610, the exhaust pipe wrench, and it is possible that the nut, which was not very large in outside diameter, was a 'foreigner').

Support the column underneath as the nut is undone, to prevent loss of the uncaged balls.

Steering-head races The two inner races are identical and interchangeable, but the two outer races are not. Each bearing contains twenty-two ¼ in balls.

Re-assembly This is a straight-forward process, reversing the dismantling sequence, and should not present any problems.

Once the column and races are refitted, fit the steering-stem head and its nut and lock-washer, then carefully adjust the bearings to give just no shake before the lock-nut is tightened and the tab-washer secured. Next fit the handlebars, feeding the throttle cable into the right-hand handlebar before the rubber washers and securing nuts are tightened.

All electrical wires are colour-coded, and reference to the wiring diagram, at the back of the service manual or owner's handbook, will confirm the connections.

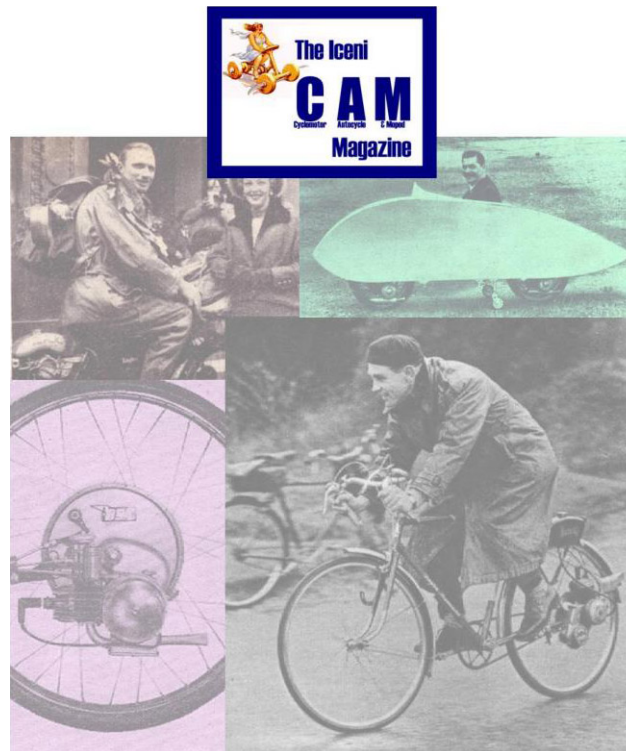
Routine adjustment of steering head

The procedure described above need not be followed in its entirety. Remove the lamp-front and lens-unit; then undo the handlebar fixing nuts and remove these and the rubber washers. The handlebars can now be lifted a few inches, restrained only by the speedo cable and the control cables and wires. Undo the knurled collar on the speedo cable but secure it with a turn of wire or tape or it will slide down into the steering column. The handlebars can now be lifted forward and allowed to hang over the lamp housing.

Knock down the tab washer on the steering-column nut, and slacken this, and the two bolts holding the stem head to the fork girders.

The castellated nut below the stem head can now be turned with tool 09902-06000, to adjust the bearing.

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