motor cycle and cycle trader

TRADER AIDS—THIRD SERIES, 8 SEPTEMBER 1970 *(Revised)*

SERVICE SHEET No. 20-3

Puch Maxi Moped

Importer; Steyr-Daimler-Puch (Great Britain) Limited,
Steyr-Puch House,
211 Lower Parliament Street,
Nottingham NG1 1FZ
Telephone: 0602-56521

INFORMATION

THE Maxi-moped is a new model from the Austrian Puch factory. It is a true moped, designed as such, with simplicity of control very much in mind. A small engine drives through automatic transmission, with pedals for starting and auxiliary alternative propulsion. Other noteworthy points are low weight, good finish, and many thoughtful details in equipment.

The open frame is of pressed steel all-welded construction. The fuel tank forms the main front member; to its lower end is welded a deep inverted-U section pressing to which engine unit, pedals and saddle are fitted, and triangulated seat and chain stays locate the rear wheel. The front wheel is carried by simple telescopic forks with undamped springs.

The engine/gear unit has some interesting features. Cooling is by the draught created by forward motion—unlike some other machines in the same class which have cowled cylinders and fan cooling. The cylinder barrel is of alloy, with a chromed bore, and fins cast in four groups at 90 degrees instead of being radially disposed. The crankcase is split along the centre-lines of the crankshaft and countershaft, the joint being horizontal when the engine is installed.

Transmission comprises helical gears between engine and countershaft, thence by chain to the rear wheel. On the engine shaft is an automatic clutch with two shoes engaged by centrifugal force, with an outer plate moved by cable from a handlebar lever for starting the engine. The clutch runs in oil, an unusual feature.

Starting drill is to pedal the machine off, then engage the clutch by the handlebar lever — this control also operates the decompressor. Once the engine is turning the lever is released and the engines then takes up the drive. The transmission [illegible] ratio of 14:1 approximately, and the engine has been designed to give good pulling at low revs, to provide good acceleration for traffic use. The pedal chain is spring-tensioned and drives through a freewheel on the rear hub.

Both brakes are internal expanding, in full-[illegible] alloy hubs, and are operated by cable from manual, will both be available shortly, and a comprehensive rider's handbook, entitled "Maxi Instructions" will be sent with each machine.

Workshop service tools

The following have been developed especially for the Maxi:

905.6.31.106.2	Jig to support engine unit in vice.
905.6.34.102.0	Extractor for crankshaft main bearings, countershaft bearings and clutch housing.
905.6.33.105.0	Tool for extracting and re-fitting small end bush.

The following are Puch workshop tools, commonly used on their other machines:

320.1.70.012.2	Supporting plate for pressing on new main bearings.
050.7012	Flywheel puller.
905.0.36.101.2	Peg spanner to hold flywheel.
350.1.70.012.0	Sleeve for pressing on new bearings on crankshaft and countershaft.
905.6.35.401.2	Spanner for spoke nipples.
905.6.35.402.1	Spanner for hub cones.
905.0.12.101.0	Ignition timing instrument.
905.6.35.404.0	Rear wheel sprocket tool.

Useful data

Engine: Single cylinder two-stroke, air-cooled. Die-cast alloy head and barrel, with chrome bore for piston. Carburettor mounted on separate alloy manifold. Decompressor operated by cable from handlebar lever.

Bore and stroke: 38mm by 43mm.

Capacity: 48.8cc.

Output: 2.2bhp @ 4,500rpm.

Compression ratio. 9 to 1.

Piston: Die-cast alloy, slightly domed symmetrical top. Two plain rings, identical, pegged. Piston clearance 0.02-0.04mm. Ring gap on assembly 0.15-0.3mm; replace if gap(s) exceed 0.5-0.6 mm.

Ignition: HT coil in flywheel generator. Fixed advance 0.630-0709in (16-18mm) measured on flywheel circumference. Contact breaker gap

engage the clutch by the handlebar lever — this control also operates the decompressor. Once the engine is turning the lever is released and the engines then takes up the drive. The transmission gives a single ratio of 14:1 approximately, and the engine has been designed to give good pulling at low revs, to provide good acceleration for traffic use. The pedal chain is spring-tensioned and drives through a freewheel on the rear hub.

Both brakes are internal expanding, in full-width alloy hubs, and are operated by cable from handlebar levers. All controls are on the handlebars, the throttle having an automatic release for the choke, and both the bars and sprung saddle are adjustable for height.

The flywheel generator provides direct current for a 15 watt headlamp, and an electric horn, and there is a speedometer mounted in the lamp body. Wheels are 21in, with 2in tyres, and an unusual feature is that alloy rims are used. The extensive use of alloy results in a dry weight below 80lbs, and with comparatively large wheels and a low centre of gravity, handling is very safe.

Detail equipment is very complete — a toolkit and pump are concealed beneath the offside plastic engine/chain cover, which like a similar cover on the nearside, is held by thumb-nuts; a wheel-lock is built into the rear frame; the carrier has a spring-loaded "mousetrap" to hold a bag or basket; a minimum-effort centre stand is complemented by twin tubular lifting handles; and there is a large efficient silencer of typical Puch design.

Work on the machine for servicing or repairs is extremely easy because the design and construction are simple and uncomplicated. Screw heads are of the single-slot pattern. There is only one left-hand thread on the machine — the left pedal.

Renewal of parts

All moving parts liable to wear are renewable separately; a worn big-end is replaced by a complete crankshaft assembly, but the little end has a renewable bronze bush. All O-rings, oil seals and circlips should be renewed as a matter of course, once they have been disturbed. There are no paper gaskets — the cylinder head joint is a laminated alloy gasket, and the base is sealed by a Hallite (or equivalent) gasket. These and the inlet manifold washer (composition) may be used again, if in good condition. The exhaust pipe flange also has a thick composition washer; examine this carefully for any sign of deterioration from heat, and replace if in doubt.

Workshop literature

An illustrated spare parts list, and a workshop

Output: 2.2bhp @ 4,500rpm.

Compression ratio. 9 to 1.

Piston: Die-cast alloy, slightly domed symmetrical top. Two plain rings, identical, pegged. Piston clearance 0.02-0.04mm. Ring gap on assembly 0.15-0.3mm; replace if gap(s) exceed 0.5-0.6 mm.

Ignition: HT coil in flywheel generator. Fixed advance 0.630-0709in (16-18mm) measured on flywheel circumference. Contact breaker gap 0.014-0.017in (0.35-0.45mm), Magnetic flux gap 0.275-0.433in (7-11mm) gap between edge of coil shoe and end of magnetic segment, at moment of points opening.

Sparking plug: Bosch W145 T1. Gap 0.015-0.019in (0.4-0.5mm).

Carburettor: Bing type 1/14/118. Main jet 70, needle jet 220. Needle position—2nd notch from top.

The Maxi is fitted with a main jet No. 70, which is designed for running-in purposes and gives an extra rich mixture. After 1,000 miles it is recommended that the jet is replaced by main jet No. 68 and this is to be found under the left hand cover in the tool kit. The effect of changing this jet is that it gives a better performance.

Transmission: Primary—through centrifugal friction clutch (with separate independently operated starting plate) to helical gears, reduction 5.05 to 1. Clutch and gears run in oil bath. Secondary—by chain $\frac{1}{2}$ by $\frac{3}{16}$in, tensioned by spanner-operated adjusters on rear spindle, reduction 2.81 to 1.

Pedal chain $\frac{1}{2}$ by $\frac{1}{8}$in, tensioned by spring-loaded jockey sprocket, reduction 1.8 to 1.

Suspension: Front — telescopic forks, one undamped compression/tension spring in each leg.

Brakes: Front and rear internal expanding, twin shoes working in 3.14in (80mm) drums cast into alloy hubs.

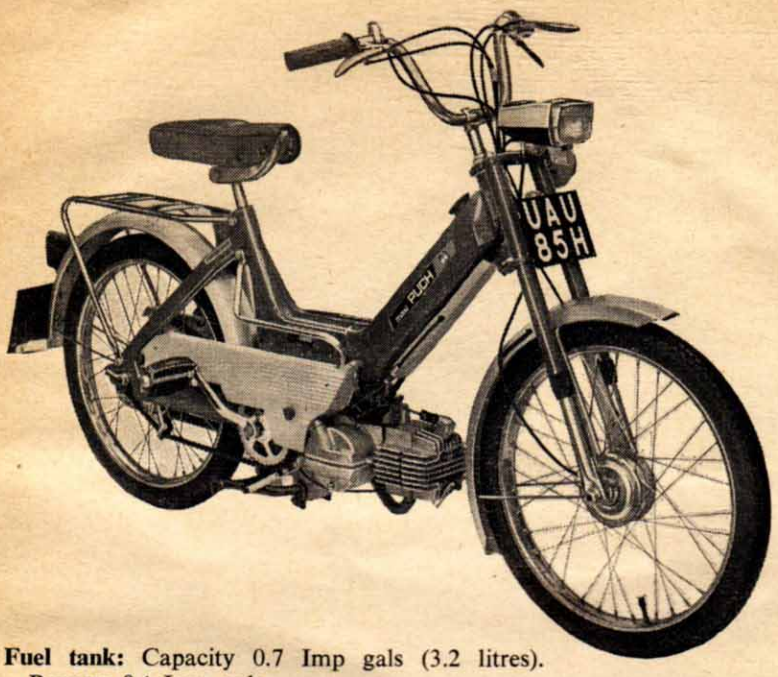
Tyres: Front and rear 2.00 by 21in.

Tyre pressures: Front 25, rear 32 lb/sq in. (1.8 and 2.25 kg/cm respectively.)

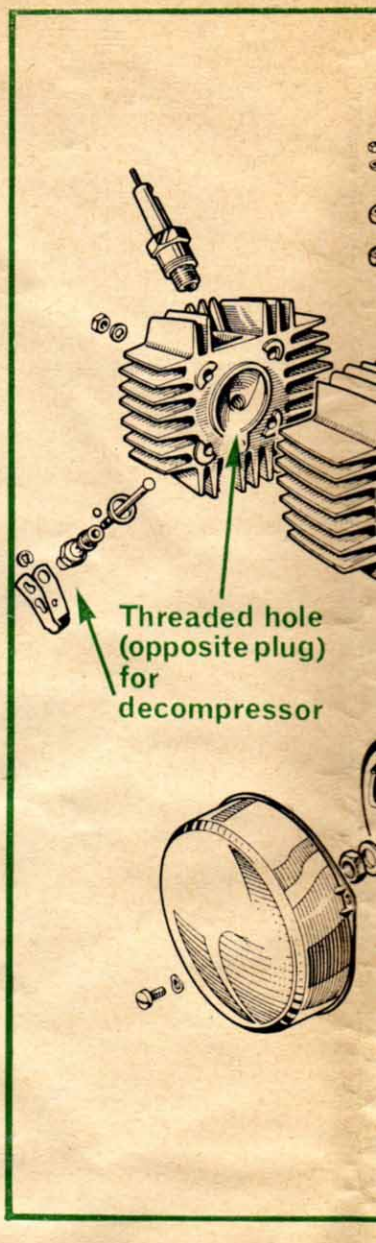
Lighting: Direct from LT coil in flywheel generator, Bosch type RB.1, output 6V 17W. Headlamp 6V 15W, rear lamps 6V 2W, controlled by switch in headlamp.

Lubrication: Engine—petroil in proportions 1 to 25, oil SAE 40 or 50.

Gearbox—quantity 150cc (9.15 cu in), oil Castrol TQ, Esso ATF55, Mobil Fluid 200, Shell Donax T6, or BP Automatic Transmission Fluid. Level plug on outside of clutch housing (clutch also runs in oil).



Fuel tank: Capacity 0.7 Imp gals (3.2 litres). Reserve 0.1 Imp. gals.
Consumption: Up to 177mpg (Imp) (equals 1.6 L/100km).
Top speed: 28mph approx.



MAXI ENGINE. Interesting features include a horizontally split crankcase, alloy barrel with chromed bore and centrifugal clutch running in an oil bath. The oil seal next to the generator should be reversed with lip internal.

Matched pistons and barrels

It is Puch practice to measure items such as cylinder bores, piston and gudgeon pin diameters during manufacture, and to match these items (pistons to barrel, gudgeon pins to pistons) before engine assembly. The different dimensions available are shown in the tables below.

Cylinders and pistons (mm)

Group	Cylinder diam	Piston diam
1	37.975-37.985	37.945-37.955
2	37.985-37.995	37.955-37.965
3	37.995-38.005	37.965-37.975
4	38.005-38.015	37,975-37.985
5	38.015-38.025	37.985-37.995

Pistons are marked yellow or blue on the gudgeon pin bosses, and the pins themselves are marked with one, two or three lines on an end face. These groups are matched as shown below, the basic diameter of a pin being 12 mm.

Piston group		Pin group	Clearance
yellow	12.0085-12.0060	1) 12.006-12.003	0.0000-0.0055
		2) 12.003-12.000	0.0030-0.0085
blue	12.00660-12.0035	2) 12.003-12.000	0.0050-0.0060
		3) 12.000-11.007	0.0035-0.0090

Small end bearing

Amongst the workshop tools listed is a reamer for this bronze bush, which is renewable. It is not supplied as a matched part with a gudgeon pin, but in the event of wear a new bush is pressed into the eye of the conrod, and then reamed to give appropriate clearance. Clearance limits for a new bush are 0.008-0.020mm.

Torque readings

Flywheel nut ...	...	3.5 mkg	25.3 ft/lb
Crankcase screws	...	1 mkg	7.2 ft/lb
Cylinder head nuts	...	1 mkg	7.2 ft/lb
Clutch centre nut	...	2.7 mkg	19.4 ft/lb

DECARBONISATION

Cleaning

Start decarbonisation, or any other work on the engine, with a thorough clean. As the cylinder is uncowled, and located just behind the front cable (alongside the clutch operating lever) as far as possible, this will give enough slack in the cable for the nipple to be freed from its slot in the decompressor spring.

Remove the plug lead, and loosen the plug, next undo the four nuts holding the cylinder head, each has a plain washer; the head may need a light tap to free it. The gasket is laminated foil, lift it off carefully.

Turn the engine to TDC and use a piece of hard wood to clean the piston crown and head —the alloy is easily scratched, and emery cloth should *not* be used.

Remove the exhaust pipe and silencer, held by one bolt on the silencer, and two nuts on the pipe flange, with Bevelite washers—there is a thick composition gasket under the flange. Now turn the engine to BDC and clean the port.

The silencer should be dismantled, by undoing the nut which retains the central bolt. Pay particular attention to the parts indicated by arrows in the drawing, and use new washers if necessary when re-assembling.

The cylinder head washer may be used again if in good condition, but if the foils appear to be squashed unduly, especially around the bolt holes, fit a new part.

Flywheel nut ...	...	3.5 mkg	25.3 ft/lb
Crankcase screws	...	1 mkg	7.2 ft/lb
Cylinder head nuts	...	1 mkg	7.2 ft/lb
Clutch centre nut	...	2.7 mkg	19.4 ft/lb

DECARBONISATION

Cleaning

Start decarbonisation, or any other work on the engine, with a thorough clean. As the cylinder is uncowled, and located just behind the front wheel, it will become much dirtier than usual, especially from road grit. Be liberal with the paraffin or other cleaning medium, include the carburettor and cylinder base in the work, and make sure the engine really is clean and dry before the spanner work is started.

Scope of work

Normally, a top overhaul will only be necessary, as with other 2-strokes, cleaning head and piston crown and exhaust system. But after a big mileage, or if there is a noticeable falling off in power or increase in fuel consumption, then the barrel should be lifted also and the piston and rings examined.

Top overhaul

After cleaning, remove the offside plastic shield, retained by two thumb screws and a lip on the top edge which engages in a slot in the frame. Screw down the adjuster for the decompressor the engine to BDC and clean the port.

The silencer should be dismantled, by undoing the nut which retains the central bolt. Pay particular attention to the parts indicated by arrows in the drawing, and use new washers if necessary when re-assembling.

The cylinder head washer may be used again if in good condition, but if the foils appear to be squashed unduly, especially around the bolt holes, fit a new part.

Removal of barrel

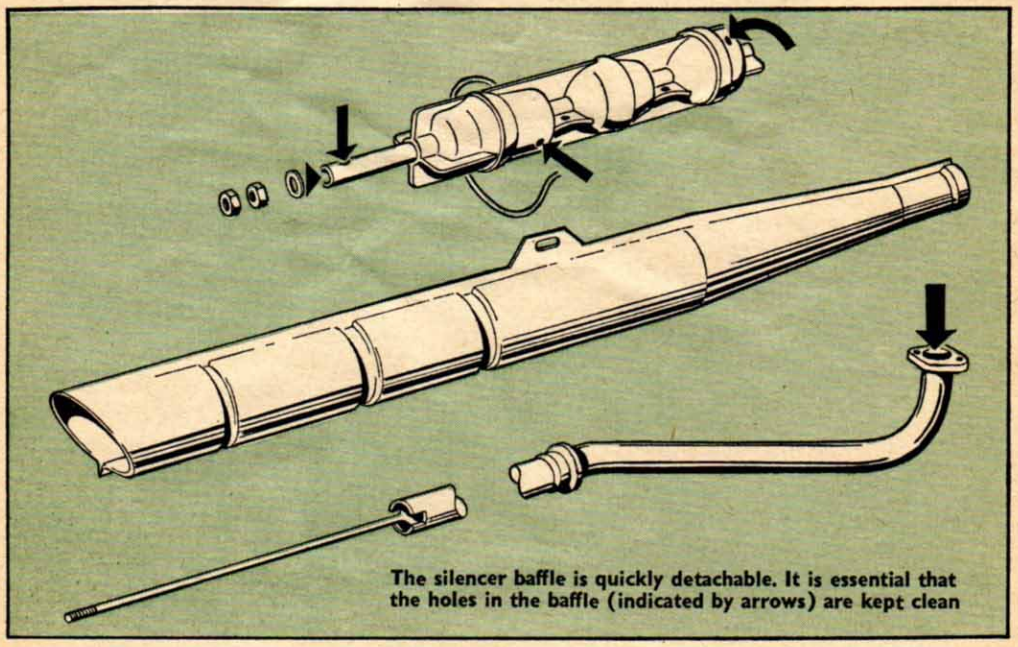
Remove the nearside plastic shield, held by three thumb screws, then slacken the air-cleaner clamp screw and remove the screw which holds the plastic cleaner to the frame (there is also a clip for the rear brake cable on this screw). Lift the cleaner free, there is a corrugated air inlet tube inserted into the frame.

Undo the two nuts, with spring washers, holding the inlet pipe to the barrel, and lift the pipe clear of the studs. (The carburettor may be left suspended by the petrol pipe and throttle cable).

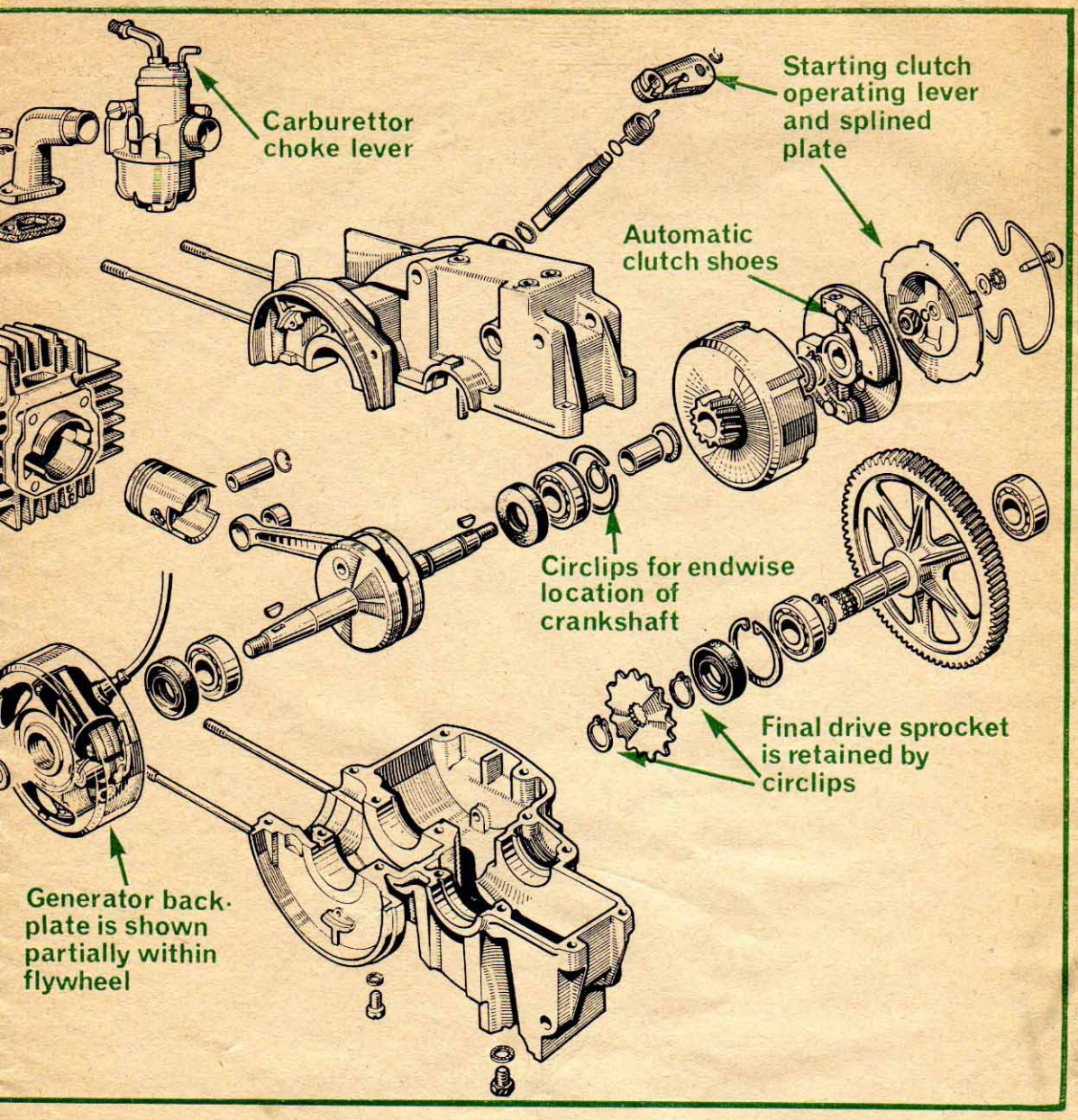
Tap the barrel lightly if necessary to "break" the base joint, and lift it clear—take care to support the piston and not to distort the four long studs. Remove the piston by first removing both circlips, the gudgeon pin is a firm push fit in the piston.

Examination for wear

Check gudgeon pin in the small end, if clearance



The silencer baffle is quickly detachable. It is essential that the holes in the baffle (indicated by arrows) are kept clean



exceeds 0.020mm a new bush must be fitted and reamed to size. Check both piston rings by pushing them up the bore, if the gap at the top of the piston travel exceeds 0.5-0.6mm new rings should be fitted.

While the barrel is off, check the big-end for condition—if undue play is felt, the engine should be dismantled. The big-end is renewed by fitting a complete new crankshaft assembly.

Re-assembling

Note that the piston is re-fitted with both ring gaps facing toward the exhaust port, e.g. downwards with the engine in the frame.

The cylinder bas gasket is a thick one, examine it carefully and replace if damaged, or if compressed and hardened.

The cylinder head nuts should be tightened finally using a torque wench, set to 1 mkg (7.2 ft/lbs).

Decompressor

The valve works in a ported guide which is screwed into the head, and its travel is limited by a small O-ring in a groove in the stem. A circlip retains the hairpin spring which is also the anchor for the cable nipple.

The valve is best left undisturbed unless the

The float chamber screws on to the body of the instrument—when removed the main jet will be seen in the centre of the float.

DISMANTLING ENGINE

This will be necessary if any work is required on the big-end, crankshaft or bearings, clutch, and countershaft and bearings. Any work on the flywheel magneto can be done with the engine in position, but of course the complete generator must be removed, as will be described, when the engine is stripped.

Cleaning

Both plastic shields and the air-cleaner should be removed, and the whole of the engine unit and surrounding frame then cleaned thoroughly. This is most important.

Preliminary work

If the head and barrel and piston have been already stripped (as described under "Decarbonisation"), the sequence of work may be carried on as appropriate. But it will be found more convenient to remove the engine with the barrel and head in position, and then remove these parts on the bench.

The cylinder head nuts should be tightened finally using a torque wench, set to 1 mkg (7.2 ft/lbs).

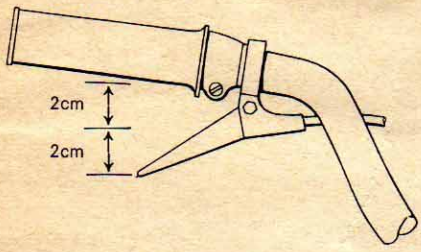
Decompressor

The valve works in a ported guide which is screwed into the head, and its travel is limited by a small O-ring in a groove in the stem. A circlip retains the hairpin spring which is also the anchor for the cable nipple.

The valve is best left undisturbed unless the condition of the engine is such that inspection of the rings is necessary, e.g. there is lack of power and excessive fuel consumption. Dismantling is straightforward, the valve should be cleaned and its seating in the head inspected—very light grinding-in using metal polish only may be necessary to make the valve gastight.

Decompressor control

After refitting the control cable, adjust this so that the valve starts to work in the first 2cm of travel of the handlebar lever, as shown in the drawing printed here (also shown on p. 118 of service bulletin sheet).



When working on the combined decompressor/ starting clutch lever (above) care should be taken to see that the first 2cm of movement operates the decompressor and the next 2cm the starter clutch.

Air cleaner

The two parts of the plastic case are "sprung" together, and secured by a screw and nut. Inside the case will be found two wire-gauze discs, located by a spring. Clean the gauzes in petrol and re-oil before re-assembling.

Carburettor

If it is wished to remove this from the machine for cleaning, first remove the air cleaner, then pull off the plastic fuel pipe. Slacken the clamp screw (on the inlet pipe), and twist the carburettor with the float chamber toward the clutch. It may now be pulled off the inlet pipe.

The throttle cap is held by two screws, remove these and the throttle slide, needle, and choke complete can be lifted out.

is most important.

Preliminary work

If the head and barrel and piston have been already stripped (as described under "Decarbonisation"), the sequence of work may be carried on as appropriate. But it will be found more convenient to remove the engine with the barrel and head in position, and then remove these parts on the bench.

Remove the grub-screw holding the upper end of the clutch/decompressor cable to the handlebar lever, and pull down some slack in the cable at the operating lever — the nipple cannot be freed from its slot until the upper engine bolt has been removed to give working clearance.

Remove the nuts holding the inlet pipe and allow the carburettor to hang on the petrol pipe and throttle cable. Remove the plug terminal and free the wire from above the petrol pipe. Loosen the plug. Disconnect the yellow lighting wire by undoing one terminal of the junction block, above the crankcase. Disconnect the rear chain by removing the spring link.

Undo the nuts, with spring washers, on the three engine bolts—one nut is partially hidden by the pedal chain wheel. Remove the top bolt.

The machine must now be lifted, either by a second mechanic, or by means of a rope from the roof to the carrier, in which case some sideways support will also be required.

Once the weight is off the centre stand (which is bolted to the engine) the two remaining engine bolts can be withdrawn, and unit pulled forwards out of the frame.

Free the clutch cable nipple from its slot in the operating lever—this requires care to avoid bending or distorting the cable.

Drain the gearbox oil, and fit the engine to jig 905.6.31.106.2 and fasten this in the vice. It may now be found convenient to unhook the spring of the centre stand and remove the latter by undoing the three nuts and pivot block.

Removing generator

Remove the cover, held by two screws with spring washers. Hold the flywheel with spanner 905.0.36.101.2 whilst the nut is undone, there is no washer behind the nut. Use extractor 050.7012 to pull the flywheel from its taper—support the conrod and/or piston if the head and barrel have already been removed. The flywheel key may be left in position if it is a firm fit in its keyway.

Next remove the plug terminal from the ignition lead. Place the grommet for the two

electric wires free of its housing behind the flywheel, and slide the grommet up the wires and right off.

Mark the position of the stator-plate with a scriber at some convenient position, say on one of the bosses for the fixing screws. There are three of the latter, with spring washers; when removed the stator-plate may be lifted free, pulling the two electric wires through the hole in the housing. Place the stator-plate in the inverted flywheel.

Next remove cylinder head, barrel and piston, if this has not already been done.

Splitting the crankcase

The two crankcase halves are held together by 14 slotted screws, one of which has a locknut which secures a bracket which is the stop for the clutch cable. Undo this locknut and lift off the plain washer and bracket.

The crankcase screws are torque-tightened; to remove them use a screwdriver with a very close fitting blade, with a spanner to provide additional leverage—if necessary grind a screwdriver blade to fit properly in the slots, otherwise the latter can easily be damaged.

Remove all 14 screws, then tap the crankcase joint lightly all round to "break" it—lift off the upper half carefully, the crankshaft and countershaft may come with it, or may remain in the lower half.

There is no washer to the joint, and locating dowels are not used.

Removal of clutch

Clamp the offside crank-cheek firmly and squarely in the vice, using clams, and with the clutch uppermost. Remove the centre-pin and washers from the outer plate, then remove the large circlip and the plate itself.

Use a socket or ring spanner to remove the nut holding the clutch drum (there is no washer), then fit the drilled and threaded block of tool 905.6.34.102.0 to the drum with the two screws provided. Fit the large threaded centre bolt of the tool, and hold the block with a spanner whilst the drum is pulled off its taper. The operation is illustrated on p. 114 of Service bulletin sheet referred to earlier. Prise the key out of its keyway.

The clutch bell-housing is retained by a small circlip and runs on a floating bronze bush. There is a steel thrust washer at each end of this bush —the inner washer, behind the primary drive pinion, has a larger internal diameter than the outer washer.

Note: when re-assembling, the clutch nut must be tightened with a torque wrench set to 2.7 mkg (19.4 ft/lb).

Removal of crankshaft bearings

Both bearings are of the same single-row type, and diameters, but differ in design. The offside (clutch side) bearing locates the crankshaft endways; the inner race is retained by a small circlip in a groove in the shaft, the outer race is grooved to accept a large circlip which also seats in a groove milled in the crankcase. There is an oilseal between this bearing and the crank cheek. The nearside bearing has no retaining circlips, and the oilseal is fitted outside the bearing.

Either bearing may be removed, after first removing the circlip(s) or oilseal as necessary, by using tool 905.6.34.102.0, using the tubular extension, with its ears gripped in the vice, to surround the bearing.

light smear of white grease will help it to slide down the wires into position.

Details of ignition timing and adjustments are given in the section headed "Electrical Equipment."

Refit the centre stand and spring.

Refitting the engine to the frame

Position the unit near enough to the frame to allow the clutch cable nipple to be fitted to the operating lever. Support the frame firmly, and insert the crankcase into it upwards and backward, from the front. Insert the upper engine bolt, from the nearside, when the crankcase and frame holes have been aligned. Now move the unit a little until the other two bolts can be inserted—the centre bolt has a plain washer under its head.

The centre stand may now be brought into use to support the machine.

Fit the spring washers and nuts to the three engine bolts, and tighten these.

The remainder of the work is a reversal of the dismantling process.

This comprises a single countershaft, driven at one end by helical gears from the engine, and on the nearside end a sprocket, on splines, drives a chain to the rear wheel.

The countershaft runs on two single-row ball bearings identical in size to those on the crankshaft. The nearside bearing, behind the sprocket, locates the shaft endwise in the same manner as the crankshaft was located; a small circlip locates the inner race, and a large circlip aligns the outer race with a groove in the housing. There is an oilseal between the bearing and the sprocket. The offside bearing is quite plain, and has no oilseal, as it is pressed into a blind hole in the housing.

The sprocket is held on the splines by two small circlips which allow it a small amount of lateral movement.

Renewal of bearings

The countershaft is of course exposed when the crankcase is split—it need not be disturbed if work on the crankshaft only is required, or vice versa.

If the countershaft bearings have to be renewed, they are pulled off the shaft by using tool 905.6.34.102.0 in the same way as for the crankshaft bearings. New races are fitted using sleeve 350.1.70.012.2 and support plate 350.1.70.012.0.

Pedal shaft

This runs in two flanged nylon bearings pressed into a transverse tube welded into the frame members. Replacement of these bearings, if necessary, is straightforward.

ELECTRICAL EQUIPMENT

Wiring for the lighting and horn circuits is very simple, as will be seen from the diagram. Inside the headlamp, connections are made to either side of the switch by screwed terminals, making disconnection of any part very easy.

Ignition timing

Although the timing is fixed in the sense that the flywheel is keyed to the crankshaft in one position only, the timing is variable within limits by adjustment of the contact breaker gap and also by movement of the stator-plate which has slotted holes for its fixing screws.

The makers put great emphasis on ensuring that the timing is as accurate as possible, and

grooved to accept a large circlip which also seats in a groove milled in the crankcase. There is an oilseal between this bearing and the crank cheek. The nearside bearing has no retaining circlips, and the oilseal is fitted outside the bearing.

Either bearing may be removed, after first removing the circlip(s) or oilseal as necessary, by using tool 905.6.34.102.0, using the tubular extension, with its ears gripped in the vice, to surround the bearing.

New bearings are fitted by using tool 350.1.70.012.0 to press the bearing on to the shaft, the latter being supported on plate 320.1.70.012.2.

These operations are illustrated on p.114 of service bulletin sheet referred to under workshop literature.

Both oilseals should be renewed before the crankshaft is re-fitted.

Re-assembly of crankshaft

Before fitting the crankshaft, clean all traces of jointing compound carefully from both halves of the crankcase—take care not to scratch the joint-faces, as there is no washer.

Paint an even, thin, coating of non-setting jointing compound to the face of the half held in the vice-jig, then fit the crankshaft, complete with bearings, oilseals and clutch to this half.

Make sure the bearings and locating circlips for crankshaft and countershaft are properly seated in the fixed half of the case, before lowering the other half into position. As there are no dowels, the upper half of the case must be seated exactly on to the lower fixed half, before the retaining screws are fitted.

The 14 screws are of two lengths, the dimensions and positions being: Four 2in screws secure the crankshaft bearing housings, the fifth 2in screw fits behind the clutch housing, with a locknut and washer to hold the clutch cable stop-bracket. The remaining nine screws are all $1\frac{3}{16}$in long.

Run down all screws fingertight, then use a torque wrench set to 1mkg (7.2 ft/lb) to tighten finally, working diagonally as far as possible.

Re-assembly of engine unit

Refit the piston, barrel and head, to avoid possible damage to the conrod when the flywheel is refitted.

Fit the generator stator-plate, registering the two scribe marks before the fixing screws are tightened. Fit the flywheel key (if removed), the flywheel and its shouldered nut. Tighten this with a torque wrench set to 3.5 mkg (25.3 ft/lb), holding the flywheel with peg spanner 905.0.36.101.2.

Refit the grommet to the electrical wires — a

Ignition timing

Although the timing is fixed in the sense that the flywheel is keyed to the crankshaft in one position only, the timing is variable within limits by adjustment of the contact breaker gap and also by movement of the stator-plate which has slotted holes for its fixing screws.

The makers put great emphasis on ensuring that the timing is as accurate as possible, and amongst the workshop tools is an instrument comprising a buzzer and a small dry battery in a case, with twin wires carrying crocodile clips. The clips are connected one to a contact point, the other to earth, whereupon the buzzer sounds —as the points open or close the note of the buzzer changes. Failing possession of this instrument, accurate indication of points opening can always be obtained by using a small lamp in circuit with a battery, the wires being attached as described above — most workshops will already possess equipment of this sort.

The makers recommend attention to the following three points:

a) Accurate setting of contact breaker gap.
b) Correct ignition advance.
c) Correct break of magnetic flux.

Contact breaker gap

Correct gap is .014-.017in (0.35-0.45mm). The points can be adjusted through one of the holes in the flywheel after the cover has been removed. The fixed point is held by a screw close to the point itself; above this screw is a notch into which a screwdriver blade can be inserted to move the carrier plate.

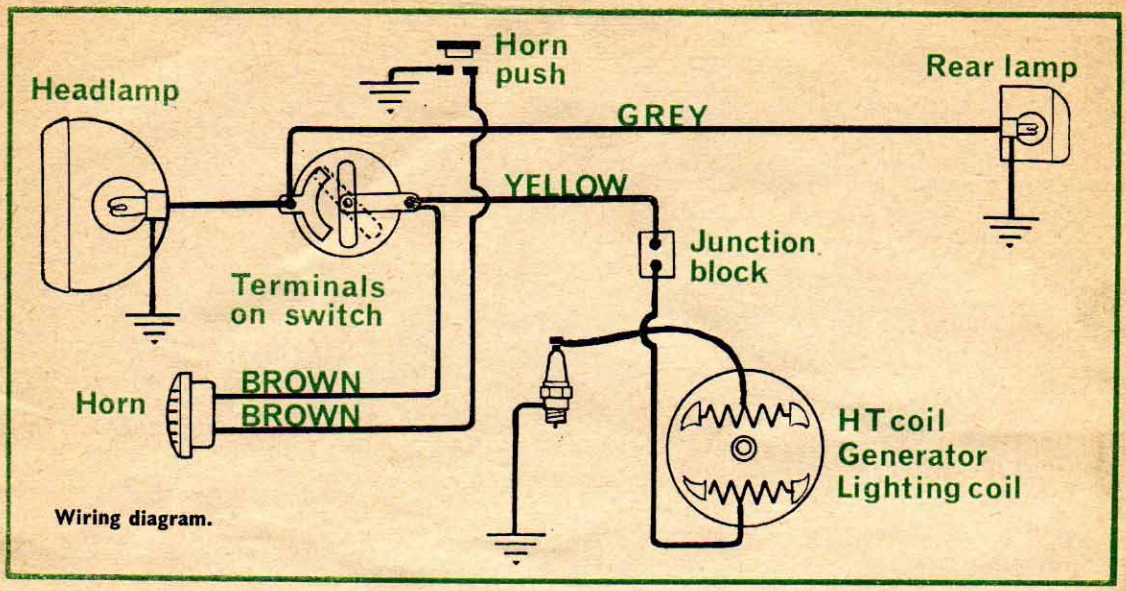
Ignition advance

The flywheel should carry two marks, one lettered OT (this is TDC), the other lettered VZ (which is ignition advance). The marks register with the crankcase joint, in front of the rear sprocket.

Method of checking the advance is to set the engine on TDC (OT mark aligned with joint), connect up buzzer or light indicator, turn the engine **anti-clockwise** until the points close (buzzer note changes or light comes on), then turn the engine **back slowly** clockwise until the buzzer or light shows that the points have just opened, when the mark VZ should be opposite or very close to the crankcase joint.

Correct ignition advance is 0.63-0.71in (16-18mm) measured on the flywheel circumference, and this measurement can be adjusted by moving the stator-plate, clockwise if the points open too early (more than 18mm before TDC) or anti-clockwise if the points open too late (less than

Printed in Great Britain by Eden Fisher (Southend) Ltd., Sutton Road, Southend-on-Se



Wiring diagram.

16mm before TDC).

Note: If the flywheel has no marks and letters as described, these should be put on using pencil. It is important to find TDC as accurately as possible — on either side of TDC of the big-end, angular movement of the conrod is so small that often there is only infinitesimal movement of the piston crown, so that checking the piston through the plug hole is not always accurate.

The most accurate method is to fit a 360 degree disc to the flywheel with a fixed pointer, remove the head, hold a bar across the barrel mouth, move the piston up until it just touches the bar and note the disc reading, then turn the engine back one revolution until the piston again just touches the bar and again note the reading. Halfway between these two readings is TDC of the big-end, which is what is wanted.

If time does not allow this method to be used, remove the inlet pipe of the Maxi and, using a torch, observe the movement of the piston and conrod through the inlet port. This will give a reasonably accurate reading and the flywheel can then be marked.

Correcting break of magnetic flux

This is determined by the gap between the end of the magnetic segment and the coil shoe at the moment when the points open—if correct the points will open when the flux is at its strongest, hence the strongest spark is obtained.

The illustration shows the gap and its correct permitted dimensions which are 0.275-0.433in (7-11mm). The gap should always be checked after the contact breaker has been reset—as there is a tolerance of three thousandths of an inch on the points gap, it should be possible to set these so that the magnetic flux gap is also within the limits shown.

If it proves impossible to get both these settings correct it will be necessary to fit new points, probably owing to wear of the points and/or breaker heel. This should only occur after a big mileage.

After getting these settings right, it may be necessary to adjust the ignition advance, by moving the stator-plate, as already described.

All these operations are described and illustrated on pages 116 and 117 of service bulletin sheet.

The drawing below shows the position of the

construction. Each fork leg is a tube, flattened and slotted at one end to accept the wheel spindle; two nylon flanged bushes are spaced out on each tube. The spring is screwed on to a scroll formed internally near the top of each leg; the upper end of the spring carries a circular collar with a central threaded hole, into which a set bolt is screwed, passing through the upper fork crown. The legs move up and down in tubular stanchions which are welded to the lower fork crown.

A steering head lock is now being fitted.

Dismantling front forks

First remove the front wheel — disconnect brake cable, and speedo drive from the hub-gearbox. Undo both wheel nuts, which must come right off to allow the looped mudguard stays to be freed. The wheel will now drop out; do not lose the loose distance-piece outside the speedo gearbox locknut.

Undo both bolts in the upper fork crown. Use a piece of wood to push the plastic dirt gaiter off the bottom of each stanchion. Each leg can now be pulled down out of its stanchion.

Renewal of springs and/or nylon bushes is straightforward.

Note that the springs must be screwed tightly into the scrolls in the legs, because the spring anchorage controls rebound movement. Therefore, when inserting the legs into the stanchions, push them straight up without twisting. Then re-fit the front wheel, (making sure the brake plate anchor slot is mated with the lug on the inside of the leg) and tighten the spindle nuts, before tightening the two spring anchor bolts in the upper crown.

Dismantling steering head

First remove the front wheel and fork legs as described above.

Next disconnect all control cables from the handlebar levers, and remove the horn push. Loosen the centre bolt of the handlebars, and remove these from the column.

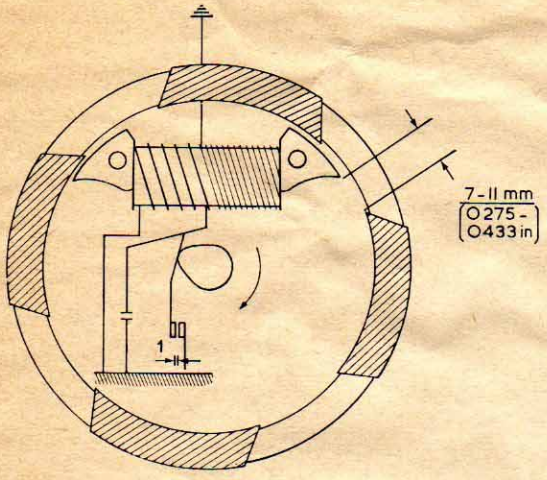
Remove headlamp front and disconnect all wires from the terminals on each side of the switch—this will allow the reflector unit complete to be removed, and also allow the remaining wires to be pulled downwards out of the lamp shell. Remove the lamp shell from fork crown, to which it is held by a bolt and nut, and remove it com-

correct it will be necessary to fit new points, probably owing to wear of the points and/or breaker heel. This should only occur after a big mileage.

After getting these settings right, it may be necessary to adjust the ignition advance, by moving the stator-plate, as already described.

All these operations are described and illustrated on pages 116 and 117 of service bulletin sheet.

The drawing below shows the position of the flywheel at the moment of points opening.



HUBS AND BRAKES

Both hubs are alloy castings with cast-in brake drums; the rear hub is much wider than the front, and on the nearside has a flange to which the sprocket is bolted and on the offside an extension on to which the pedal chain freewheel is screwed.

The bearings are of the cup-and-cone type, each having loose balls of $\frac{7}{32}$in diameter. The cones are locked by nuts in the usual way, and the bearings are protected by pressed-in washers which must be levered out before a new bearing can be fitted.

Brakes

Both brakes are of twin shoe pattern, the shoes being held in position by twin tension springs.

Note that the cam spindle is allowed to float in a slot in the cast brake plate. If the brakes are dismantled, check that the spindle can float and is not seized in one position, before re-assembly.

Both brake plates are anchored by slotted torque arms engaging with lugs.

FRONT FORKS, STEERING HEAD

The telescopic forks are extremely simple in

Next disconnect all control cables from the handlebar levers, and remove the horn push. Loosen the centre bolt of the handlebars, and remove these from the column.

Remove headlamp front and disconnect all wires from the terminals on each side of the switch—this will allow the reflector unit complete to be removed, and also allow the remaining wires to be pulled downwards out of the lamp shell. Remove the lamp shell from fork crown, to which it is held by a bolt and nut, and remove it complete with speedo head and drive cable.

Remove the horn from the lower crown and disconnect the wires from the terminals.

Undo the sleeve nut, with plain washer below it, from the top of the steering column. Support the column from below whilst the knurled cone nut is undone; when completely free the column may be lowered out of the steering head.

The head bearings are cup-and-cone, each having loose balls of 0.4mm diameter. Removal and replacement of cups and cones is straightforward.

Re-assembly of the head, forks, lights, etc, is a reversal of the dismantling sequence, and should present no difficulty.

CONTROL CABLES

There are five cables on the machine, viz. throttle, front and rear brake, clutch, and decompressor.

Below the fuel tank the cables are run in a plastic cover held by two screws.

All these have soldered nipples at each end except the clutch cable which is secured in the handlebar lever by a grub-screw. The lower end of this cable has a plain straight-sided nipple which seats in a loose circular nipple holder, which in turn seats in the end of the operating lever. This arrangement ensures freedom of movement for the cable when a straight pull is required on a short radius lever.

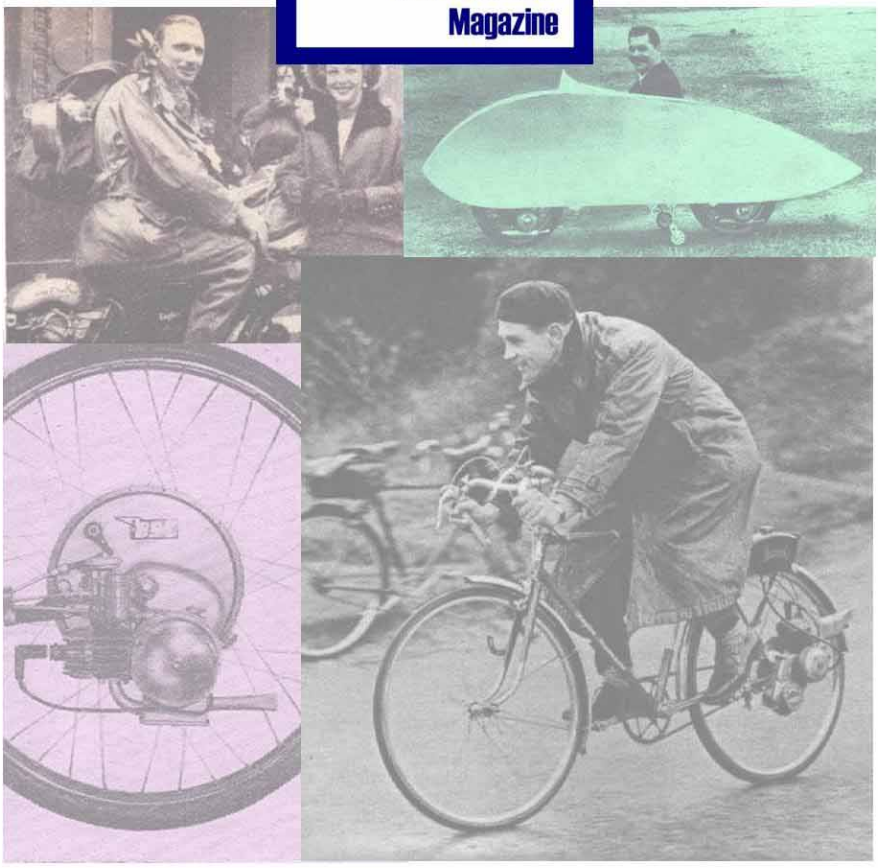
All the cables are available as complete units, and in the event of breakage of an inner cable only, it is recommended that the complete assembly is replaced.

The decompressor cable forms a continuation of the clutch cable, as it is anchored halfway along the clutch operating lever. Each of these cables has an adjuster, and after any work involving either cable it is essential that the adjusters are used so that the movement of the handlebar lever is as shown in the drawing — the first 2cm of movement should open the decompressor, the next 2cm should operate the clutch.

ea, and published by IPC Specialist and Professional Press Ltd., 161-166 Fleet Street, London EC4.

IceniCAM
Information Service

The Iceni CAM Magazine
Cyclemotor Autocycle C Moped



www.icenicam.org.uk