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Servicing data sheet No. 20-2

Honda P50 moped

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USEFUL DATA

Engine: Single-cylinder air-cooled four-stroke. Cast-iron cylinder inclined 10 degrees from horizontal. Aluminium-alloy cylinder head. Chain-driven overhead camshaft.

Bore and Stroke: 42 by 35.6mm (1.65 by 1.40in). Permissible bore wear, 42.01mm (1.655in).

Capacity: 49.3cc (3.00cu.in).

Compression ratio: 8.7:1.

Output: 1.38bhp at 5,000rpm.

Piston: Aluminium alloy, flat top. Two compression rings and one scraper ring. Ring gaps: Top .006in, second and scraper .008in. Max. worn gap permissible .012in.

Lubrication: By splash, returning to integral sump by gravity. Recommended grades:
Above 15°C (60°F) — SAE 30
0-15°C (32-60°F) — SAE 20 or 20W
Below 0°C (32°F) — SAE 10W.

Ignition: Flywheel generator with separate HT coil. Contact breaker gap: 0.3-0.4mm (.012-.016in). Ignition timing: 28° before TDC.

Sparking plug: NGK type C6HB, gap 0.6-0.7 mm (.024-.028in).

Carburettor: Keihin, type DPS131A. Main jet 55 (62 on some recent models, see section on carburettor). Pilot jet 35. Airscrew 1¼ turns unscrewed from closed position.

Transmission: By chain in three stages, giving total ratio of 14:1. Automatic centrifugal clutch on engine shaft (engages 1900-2200rpm, locks 2800-3200rpm). Transmission lock, hand operated, gives positive engine drive or disengages to allow pedalling, incorporated in second stage of drive.

Suspension: Front: bottom leading links, working against coil-springs, no damping.

Brakes: Front, internal-expanding, diameter 60mm. Rear, external contracting, diameter 95mm.

Tyre sizes and pressures: Front: 2.00 by 17, 19lbs sq/in. Rear: 2.25 by 17, 27lbs sq/in.

Lighting: Headlamp: 6v 10w, scc. Rear lamp: 6v 5w, offset pin.

Tank capacities: Fuel: 4.4 pints, oil 1.2 pints.

GENERAL

The Honda P50 moped was introduced to the UK market at the Earls Court Show in 1966. It is marketed as one model only, having a single gear with automatic clutch, and a transmission lock which allows the engine to be disengaged for pedalling. The engine/transmission unit forms the fixed plate to a larger alloy rear wheel hub; the transmission is completely enclosed in an oilbath case, and is lubricated by the engine oil which circulates throughout the unit. The oil tank (or sump) is an integral part of the crankcase casting.

Light alloy is used extensively, notably for the transmission sprockets and for the overhead camshaft, which is also chain driven. All threads are right hand, except the left-hand pedal. Hexagon heads are in metric sizes, and most screws are of the cross-head type.

The notes which follow give the correct sequence for dismantling and re-assembling of all parts which may wear and/or require renewal.

WORKSHOP SERVICE TOOLS

Holding tool — has three studs for clutch, two studs for flywheel.
Flywheel puller.
14mm lock nut spanner — for clutch retaining nut.
Stem-nut spanner—for steering stem lock ring.
Top cone C-spanner.
Pedal remover.
Reamer — 4.8mm for valve guides.
Valve-seat cutters (with holder).
Valve-guide removal and insertion tool.

It will be found well worthwhile to make a single-strut bench jig, comprising a tube with a bracket or plate at one end for fixing to the bench. At the top the tube should be flattened or slotted to accept the n/s rear axle. Half of an old discarded swinging arm may well be found suitable.

The engine unit is held in the jig by the n/s spindle nut, with the cylinder vertical. If the jig is mounted so as to be accessible from both sides, it will be possible to dismantle and reassemble the unit completely without removing it from the jig.

Use of such a jig will effect great saving in workshop time.

RENEWAL OF PARTS

Note will be made in each section of these instructions as to the availability of parts which may require renewal.

All circlips and gaskets should be renewed as a matter of course, once they have been disturbed. The pin keying the flywheel to its shaft, and the pin retaining the camshaft spindle, may be used again if not damaged.

Oil seals, O-rings and rubber sealing washers should only be used again if in perfect condition.

DISMANTLING

The unit must be removed from the frame for decarbonisation, or for attention to the transmission or crankshaft. The contact-breaker or flywheel magneto, and the carburettor, can be reached easily whilst *in situ*, from the nearside, after the appropriate covers have been removed.

Removing unit from frame: Start by draining the oil; remove the sump drain plug, and loosen the filler cap. Next detach the plug lead, and free the decompressor cable, by first removing the outer casing from the handlebar lever, then remove the nipple from the lever on the tappet cover.

Remove the plastic carburettor cover, and the petrol pipe from the tap. Loosen the clips holding the carburettor to the inlet pipe, and above the carburettor on the air cleaner pipe. Lift the carburettor up out of the inlet pipe, then free it from the air cleaner pipe, and lay the instrument out of the way on the bottom bracket.

Detach the rear brake cable from the cam lever and slip the trunnion and wing nut back on to the threaded rod. Slide the rubber cable-cover right off the shoulder on which it locates, then free the cable from its stop and locate it out of the way through the frame.

Now remove the clip on the inlet pipe, which will give adequate room for the cable harness to be freed from its clip and lifted above the frame. Undo the snap connectors, and then push the cables coming from the engine down below the frame.

Undo the two nuts holding the exhaust pipe flange to the head, and on the offside remove the axle nut and the stud supporting the silencer. The pipe and silencer complete can now be removed by twisting it to clear the frame and wheel.

If the silencer becomes choked with carbon (symptom — loss of power after considerable mileage, everything else in order) it cannot be dismantled, but must be replaced.

Lift the pedal-chain jockey pulley and free the chain from the freewheel on the hub.

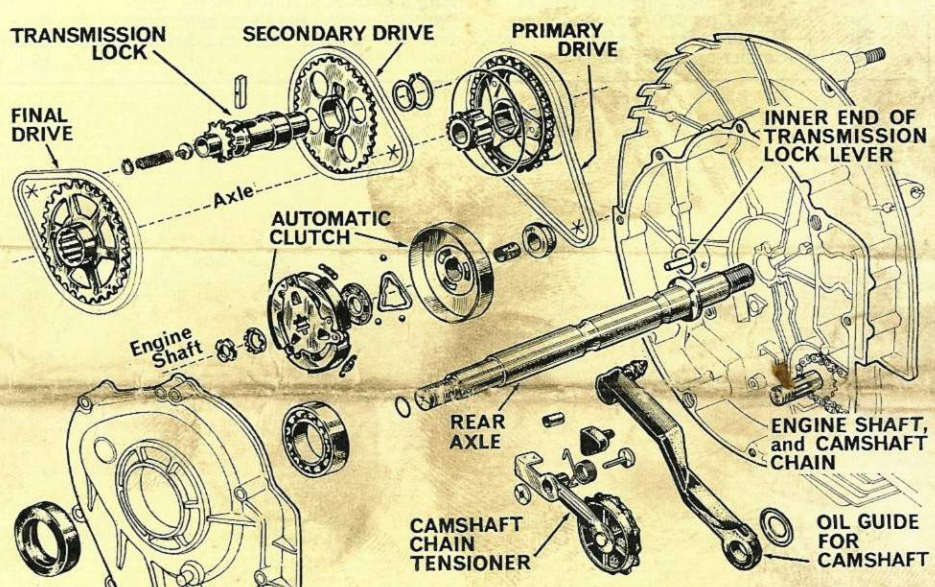
Push the transmission-lock lever down — this will prevent the cylinder swinging down, with possible damage, when the unit is completely free.

Slacken the nearside axle nut. Next undo the bolt holding the torque arm to the frame — as this is slackened the unit will rotate and the axle will drop out of the fork ends.

Make sure the electric cables are not trapped. Now tilt the machine to the offside, with the left hand on the saddle, and pull the complete wheel and unit out to the right past the mudguard.

Lean the wheel against the bench leg, grasp the engine by the head and oil-sump and pull gently, it will come away from the wheel.

Note, inside the o/s hub, there is a distance tube and O-ring — remove these and keep until the unit is ready to be re-assembled into the wheel.



COMPONENT PARTS of the transmission, shown "exploded". For clarity, the screws and gasket for the cover have been omitted, and the three endless transmission chains are drawn in diagrammatic form.

DECARBONISATION

Remove the sparking plug. Next remove the two studs holding the tappet cover and lift this off, there is a gasket below it.

Next remove the four cross-head screws holding the rocker-box and lift this off, there is a gasket below it, and two dowels in the holes farthest from the valves. Lift these out.

Next withdraw the camshaft spindle retaining pin — the head of this will be seen projecting from a boss in the head just below the rocker-box joint-face. It can be grasped with pliers.

Now screw a 8mm screw or bolt (one of the rockerbox screws will serve) into the camshaft spindle, the head of which will be seen on the driving side. Grasp the screw with pliers and twist the spindle to withdraw it.

The camshaft is now free and can be moved so that the chain can be eased off the sprocket towards the outside — *do not use force*. When the chain is free, let it rest on top of the rubber oil guide, to which it may be secured with string or soft wire, passed through the spindle hole.

Lift out the camshaft — there is a shim washer between it and the boss in which the retaining pin is located.

The cylinder-head is secured at five points — there is an external cross-head screw on the camshaft driving side (next to the camshaft spindle drilling), and four nuts, one external near the plug, one below the camshaft, and two on the joint face. These nuts each have a thick plain-washer below them. When all these have been removed, the head can be lifted clear — take care not to distort the studs. Lift the head gasket off and remove the two hollow dowels.

Unless it is desired to renew the piston rings, further work on decarbonisation can be done with the barrel in position. Cover the camshaft driving chain and tunnel with clean rag while the carbon is removed from the piston.

Cylinder head: To avoid scratching the valve seatings, clean the carbon from the head before the valves are removed. It is desirable to use a piece of hard wood, suitably shaped, to prevent damage to the surface of the head.

Removing valves: Depress each upper spring-retainer in turn with the thumbs, with the fingers under the valve-head, and move it sideways until the larger hole surrounds the valve-stem, when it will come free; below each valve-spring is a dished-washer.

Before grinding in the valves, inspect the seats and seatings to see how much work is necessary — do the minimum of grinding necessary to ensure a gas-tight seal, this will avoid pocketing of the seats in the alloy head.

Valve guides: The exhaust-valve guide is renewable; it may be removed and a new guide fitted, by using the workshop tool, or by using a long bolt and distance piece. Before fitting a new guide, make sure the circlip is in position in its groove — this circlip locates the guide relative to the head.

On early models, the inlet guide was integral with the head and not renewable, but from frame no. 178600 onwards a separate guide is fitted.

Before re-assembling the valves, pass the reamer through the guides, this will clear any distortion which may have occurred during fitting, or any burrs on the upper ends which are formed sometimes when the rocker box joint is faced off during manufacture.

Re-assembly of valves: Wash all parts clean with petrol before fitting the valves, using new springs if necessary. Do not forget the dished-washer below each spring. When complete, the head may be put to one side if further stripping of the unit is to be done, but if not, proceed as instructed in the section Refitting the Cylinder-head printed later in these notes.

If it is desired to examine the piston, rings and bore, the next step is to remove the cylinder barrel; but if the unit is to be stripped completely, the barrel should not be moved until the flywheel magneto has been removed.

Removing cylinder-barrel: With the piston at TDC, lift the barrel carefully to avoid distorting the holding down studs, and support the piston as it emerges from the barrel. Remove the base gasket — the hollow dowels may be left in position.

Removing piston: The gudgeon-pin is retained by circlips, remove these with a pointed scriber and the pin can be pushed out. If the pin is not to be renewed, ensure it is marked so that it is replaced correctly. There is no bush in the little end of the conrod.

Removing rockers and shaft: The shaft is supported by two bushes in the rocker-box, and prevented from moving laterally by a circlip next to the inlet rocker. The circlip can be removed if the spacer spring is pressed to one side, after which the shaft can be moved sideways to allow both rockers to be removed in turn. If the shaft itself is to be renewed, it can be withdrawn after the cross-head screw on the drive side of the rocker box has been removed. There is a plain washer under the screw head.

Wear in cylinder bore. It should be noted that oversize pistons are *not* available. Therefore, if a barrel has worn more than .010in, it and the piston must be placed with new parts.

REMOVING THE FLYWHEEL MAGNETO

If the unit is to be stripped completely, the flywheel should be removed before the barrel is lifted, to avoid possible damage to conrod and piston.

Remove the flywheel cover, which is held by two cross-head screws. Turn the crankshaft until the piston is at BDC.

The flywheel is retained on a taper by a 14mm nut (with a right-hand thread) and located by a small pin. Hold the flywheel with two studs of the holding tool and use a ring-spanner on the nut, positioning the spanner so that it and the handle of the holding tool can be squeezed with the right hand — use the left hand to press the holding tool firmly on to the flywheel.

Below the nut is a thick plain washer — remove this and then screw the puller into the threaded flywheel boss (right-hand thread). Hold the puller with an open-ended spanner on the flats, and screw in the centre bolt to free the flywheel from the tapered shaft. Once free, use both hands on the flywheel to exert a steady pull against the magnets, making sure the flywheel comes off squarely to avoid damage to the coils.

The flywheel "key" is a short length of rod 4mm. diameter, which locates in a hole bored in the shaft. It should be a tight fit in its hole and should not be disturbed. If it is loose, fit a new pin.

The barrel may now be removed as described above.

REMOVING THE TRANSMISSION

The first step is to remove the rear brake cam spindle. Prise off the arm of the return spring, undo the clamp bolt on the cam lever, and wriggle the lever free of its splines. On the o/s, remove the rear brake shoe return spring by gripping one loop with fine-nosed

pliers — once this is free the spindle can be withdrawn.

The transmission cover is held by nine cross-head screws and with these removed the cover should be eased off. It is located by two hollow dowels, remove these and the gasket.

In this cover there is a brass bush which supports the outer end of the transmission-lock shaft. This bush is cast-in during manufacture and cannot be renewed as a separate item — if it is worn, the complete cover must be replaced.

The outermost chain drive is the final drive of the transmission — remove this by easing the larger sprocket outwards, when it will drop off the shouldered washer which centres it and this will provide enough slack in the chain for it to be eased off the smaller sprocket. Remove the shouldered washer behind the larger sprocket — NOTE: on some assemblies this washer is not a separate part, but is integral with the splined sleeve which carries the small sprocket of the secondary drive.

Pull the chain and sprockets of the secondary drive free — the larger sprocket forms part of the transmission lock mechanism, and the shaft on which it runs will come out of the inner bush before the small sprocket and sleeve are free of the axle.

Transmission lock: This mechanism comprises a hollow-shaft with a diametrical groove milled right through it; in this groove a square-section peg is free to move laterally, but is located radially by a mushroom head plunger, the "stalk" of which seats in a hole in the centre of the peg. A small internal circlip restrains a spring which presses plunger and peg toward the further end of the groove, in which position the protruding ends of the peg fit into two recesses in a sprocket and so lock it to the shaft — the sprocket is located by a large circlip with a thrust washer interposed. Operating the external hand lever (just behind the oil-tank) causes a rod in the hollow shaft to press the peg away from the sprocket, so the latter is "unlocked" and can revolve free on the shaft — the engine is thus dis-connected from the back wheel. All parts of this mechanism are renewable.

The next step is to remove the automatic clutch from the o/s crankshaft. Bend up the tag which locks the retaining nut, and use the three studs of the holding tool to prevent the clutch turning. Use the special clutch nut spanner to undo the nut, remove this and the tagged locking washer behind it. Remove the clutch body and primary drive complete, keeping the centre "spider" in position with the thumbs so that the loose balls inside do not drop out. Behind the clutch is a loose two-diameter distance piece, and there is a loose bush on the shaft.

Automatic clutch: This comprises a drum with a sprocket attached to its back; the drum is free to revolve on a bush on the engine shaft. Within the drum a three-legged "spider" carries three friction shoes; one end of each shoe is retained on a pivot by a circlip, the other end is pulled inwards by a spring. The complete "spider" is splined to the engine-shaft. As the latter speeds up, centrifugal force causes the shoes to move outwards, they then grip the drum and turn it and the primary chain. A small subsidiary clutch is incorporated, to turn the engine to start it; this clutch consists of a friction disc which can be pressed against the inner face of the "spider" by three balls as they run up ramps ground in a disc riveted to the drum. A triangular case keeps the balls in position on the ramps. With the transmission lock in action, turning the pedals causes the drum to turn also, through the transmission chains; the balls are pressed by the ramps against the friction disc, the "spider" turns also, but as soon as the engine starts the "spider" turns faster than the drum and the balls run down the ramps. The engine then runs in neutral, until it is further speeded up to 1900rpm, when centrifugal force cause the shoes to grip the drum and the drive is transmitted to the back wheel.

All parts of the automatic clutch are renewable.

Once the clutch is removed, the camshaft driving-chain can be removed also by holding the spring-loaded tensioner to one side. The rubber oil guide is then removed.

The next step is to remove the crankshaft assembly.

REMOVING THE CRANKSHAFT

The left-hand crankcase half is held on by seven cross-head screws — three of these are inside the transmission case, three are external on the same side and the last is external on the left-hand side, just below the cylinder base joint-face. With these screws removed, the left-hand crankcase half may be pulled free. Remove also the joint gasket, and the two hollow dowels which locate the crankcase half.

Support the crankshaft with one hand and tap it free of the transmission casing with a hide mallet.

The conrod, big-end bearing, crankpin and crankshafts are *not* renewable separately, though they are shown as individual parts in the spares list. If renewal of any part is necessary, a complete assembly is supplied, and this includes the two main bearings and the camshaft chain sprocket already pressed into position.

REFITTING THE CRANKSHAFT

Hold the crankshaft assembly in one hand and use the other to guide the o/s shaft and bearing into its housing. It should be pressed home by steady hand pressure, and as this is done ensure that the conrod is kept upright in the cylinder recess.

Make sure the transmission lock lever is in position in the right-hand crankcase, and fit the two hollow dowels to this case also.

Now fit a new gasket to the right-hand case, using a smear of grease to keep it in position.

Fit a new crankshaft oil-seal, if required, to the left-hand crank-case, and offer up the case, making sure the n/s shaft does not buckle or cut the oil seal as it goes through. There is a rubber grommet surrounding the electrical cables, with a D-shaped groove to locate it — make sure that this grommet does not displace the ends of the joint gasket as the case is pressed home.

Replace the seven cross-head screws — the external screw on the left-hand side is a long one, and so is the screw nearest to the cylinder, internally in the right-hand case. All the others are shorter and are identical in length.

Refit the camshaft chain, holding the spring-loaded tensioner to one side, and refit the rubber oil guide — this can be used to support the upper loop of the chain. Tie the chain with string or soft wire passed through the spindle hole of the guide, to prevent it being displaced during later work.

RE-ASSEMBLING THE TRANSMISSION

On the o/s crankshaft, fit first the distance piece with the larger diameter facing outwards; then the bush for the clutch drum.

Take the clutch in the right hand, using the thumb to press the "spider" inwards and so hold the balls and friction disc in position. Loop the primary chain over the small sprocket, and fit the larger driven sprocket to the loop of the chain, with the damper retaining washers on this sprocket facing outwards. Hold the larger sprocket in the left hand, and fit the complete assembly simultaneously to both shafts. Keep the clutch "spider" pressed inwards as a new lock-washer is fitted to the engine shaft, ensuring that the inner tabs locate between the splines. Fit the clutch nut with the bevelled edge facing inwards. Using the three studs of the holding tool to keep the clutch stationary as the nut is tightened with the special spanner. Bend one of the lockwasher tabs into position on the nut. Check for correct assembly and action by revolving the clutch in both directions — one way it should lock, the opposite way it should be free.

Assemble the secondary chain and sprockets, and holding one sprocket in each hand slide these on to their shafts — the smaller sprocket on its splined sleeve can be easily positioned on the axle whilst the larger sprocket is offered up to the transmission lock engagement rod and then pressed home. The chain must now be moved a little to enable the splines on the sleeve to enter the primary driven sprocket previously fitted.

Now fit on the axle the shouldered washer, with the smaller diameter facing outwards — it has already been noted that on some assemblies this is integral with the splined sleeve.

Loop the final drive chain round the larger sprocket, and fit this to the axle with the chamfer on the splined centre of the sprocket facing *outwards*. Fit the loop of the chain round the small sprocket on the transmission lock shaft, and then lift the larger sprocket and press it home so that its recess locates on the shouldered-washer (or similar shoulder integral with the splined-sleeve).

On the transmission case, fit the two hollow dowels which locate the outer cover, and fit a new gasket, using grease to retain it in position. Fit a new oil-seal, if necessary, to the outer cover.

Offer up the cover — as this is done, the final driven sprocket may drop off its shoulder on to the axle. If this happens, insert a screwdriver through the oil-seal and lift the sprocket back into position, and then press the case home.

Refit the nine screws which retain the cover — there are two long screws and seven short ones, and the long screws pass through the two hollow dowels.

Refit the brake cam-operating spindle. Grease the spindle lightly, spread the shoes apart and insert the spindle with the punch mark on the n/s splined end facing downwards. Fit the brake-shoe return-spring, using pliers to fit the loops over the hooks.

Fit the brake-cam lever, ensuring that the punch mark on its face registers with the punch mark on the spindle, tighten the clamp bolt and lastly, hook the lever return spring back into position.

REFITTING THE PISTON AND CYLINDER

If the piston has been removed from the conrod, it will be found easier to fit the rings to it on the bench. Before fitting the rings, check the gap of each by pushing it to the top of the cylinder-bore with the piston to ensure the ring is lying squarely. Each ring has a T stamped on its top face. If the gap of any ring, when in the bore, exceeds .012in it should be scrapped and a new ring fitted.

The top ring is chrome, the second is plain and the lower ring is a scraper, chamfered on its upper edge. Correct ring gaps are: Top, .008in, second and scraper, .006in. Replacement rings are supplied correctly gapped.

When the ring gaps have been checked, fit the rings to the piston, and then fit the latter to the conrod, making sure that the arrow head on the piston crown points to the left when viewed from the magneto side with the cylinder upright in the bench-jig.

If the original gudgeon pin is to be used, make sure it is replaced in its original position, using the mark made during dismantling. Fit two new circlips.

Check that the dowels are in position on the

two cylinder-studs on the left, looking from the magneto side. Fit a new cylinder-base gasket.

Position the ring gaps at an equal distance from each other (at 120°) round the piston, and smear a little clean oil on them. Now lower the cylinder carefully, compressing each ring in turn as it enters the bore. At the same time, the cylinder must be held squarely, so that the holding down studs are not distorted or the camshaft chain disturbed (it may be found convenient to do this with the piston at TDC).

Once the scraper ring is entered, lower the cylinder and press it firmly on to the base gasket.

The next job is to refit the flywheel magneto and check the ignition timing.

REFITTING THE FLYWHEEL MAGNETO

First check the fit of the flywheel-key to its recess in the shaft. Make sure the tapers in the flywheel and on the shaft are clean and dry, then fit the flywheel making sure that the key is not displaced as this is done.

Fit the thick plain washer and then the flywheel nut and tighten this, holding the flywheel with two studs of the holding tool.

Do not over-tighten the nut — on no account should a hammer be used on the spanner. If a torque wrench is used the setting is 14/15lb.ft.

Checking the ignition timing: On the flywheel-rim, two marks will be seen, each with a letter alongside it. The mark F is used to check the ignition setting.

Turn the flywheel until the F mark is opposite a line cast in the crank case, just below the cylinder base. If the timing is correct, at this position the points should be just starting to open. An exact check on this can be made by connecting a 6V battery and bulb, say 6V 18W, in series with the black lead from the flywheel. When the battery is earthed to the frame, the bulb will light — as the flywheel is turned the bulb will dim as the points open.

If the timing is incorrect, adjust the points—the gap should be .012in-.016in. Slacken the slotted cheese-head screw, just behind the points —this screw holds the fixed contact-plate. When slackened, the plate can be moved with a screwdriver until the gap is correct. Tighten the screw and re-check the gap.

Now turn the flywheel one complete revolution, and check the opening of the points with the F line opposite its crankcase mark.

The next job is to replace the cylinder-head and camshaft and to time the valves.

REFITTING THE CYLINDER HEAD

It is assumed that any work necessary on the cylinder head has been completed, as described earlier, e.g. valves removed, ground-in and replaced, and exhaust valve guide renewed if necessary.

Make sure the two locating dowels are in position on the studs, one near the inlet port, the other near the exhaust.

Fit a new head-gasket, making sure it lies flat on the joint face of the barrel. Lower the head into position carefully, to ensure the studs are not distorted, or the camshaft chain disturbed.

Fit the four plain washers and nuts to the studs, and the cross-head screw which is external on the camshaft drive side. Tighten these down evenly.

REFITTING THE CAMSHAFT AND TIMING THE VALVES

Lay the camshaft in the head, with the two holes drilled through the sprocket in line with the joint face — recent camshafts have an indented line, instead of two holes, in the face of the sprocket, this line must be parallel to the joint face.

Turn the engine until the mark T on the flywheel is opposite the line on the crankcase casting. Now remove the string or wire used to hold the camshaft chain during assembly, and ease the chain over the sprocket from the outside, making sure the sprocket does not turn while this is done. When the chain is in position, check that the holes or marking on the sprocket-face are still correctly in line with the joint-face.

Insert the camshaft-spindle from the outside through the rubber chain guide, and the camshaft — when it is flush with the end of the camshaft insert the shim washer between the end of the camshaft and the head, and push the spindle right home into its boss.

Now align the hole in the boss with the hole in the spindle, by turning the latter — the screwdriver slot on the drive end of the spindle is at 90° to the hole at the other end. When the holes are in register insert the pin which retains the spindle — it may be found convenient to use thin-nosed pliers — and tap the pin home lightly.

COMPLETING THE ENGINE ASSEMBLY

Fit the two dowels into the head and fit a new gasket. Fit the rocker box and the four cross-head screws which hold it (the two longer ones go through the dowels) and tighten down evenly.

If the valves have been ground-in, undo the tappet adjusters before checking the clearance. Now turn the engine until the T mark on the flywheel is opposite the line on the crankcase, and set each tappet to give .002in clearance, using a small screwdriver on the tappet and 9mm ring spanner on the lock nuts. Recheck the clearance after turning the engine one complete revolution with the T mark again in register.

If correct, fit a new tappet cover gasket and the cover, which is held by two 6mm studs.

Fit the sparking plug, and the flywheel cover which is held by two cross-head screws. Remove the unit from the bench jig.

The next job is to fit the unit to the rear wheel, and then back into the frame.

RE-ASSEMBLING THE UNIT INTO THE FRAME

Lean the rear wheel against the bench leg, with the interior of the hub facing toward you. Hold the engine unit by the head and oil sump, and insert the axle through the extended hub sleeve — it will be necessary to turn the unit, one way or the other, to make the splines of the hub sleeve engage in the final driven sprocket inside the unit.

With the unit firmly home, place a new O-ring on the exposed o/s end of the axle — make sure the ring is pushed on to the larger diameter of the axle before sliding on the tubular distance piece with the chamfered end inwards, otherwise the ring will be trapped against the shoulder on the axle.

Push the transmission lock lever down, to engage the drive. Now insert the complete wheel into the frame with the cylinder horizontal, by leaning the machine toward the o/s, and loop the pedal-chain over the axle-end.

Stand astride the machine and with the right hand lift the wheel and enter the axle into the fork ends. With the left hand, insert the torque-arm anchor-bolt. Hold the unit in this position while the n/s axle nut is done up finger tight. Now sit on the rear of the tank and press both machine and wheel down until the wheel is on the ground — continue to press down while the axle nut and the torque arm nut are tightened. If the axle is not pressed firmly home into the fork ends before the nut is tightened, the unit will vibrate badly when started up.

Now run the pedal chain over the freewheel and engage the jockey sprocket with the chain.

From the o/s, fit the silencer and exhaust-pipe, twisting the latter to pass it across the front of the wheel. When in position fit the o/s axle nut and the silence support stud, but do not tighten.

Fit the exhaust pipe to the port, using a new gasket washer between the end of the pipe and the face of the port. Hold the exhaust pipe flange in position while the two nuts which hold it are tightened. Now tighten the silencer support stud and then the o/s axle nut.

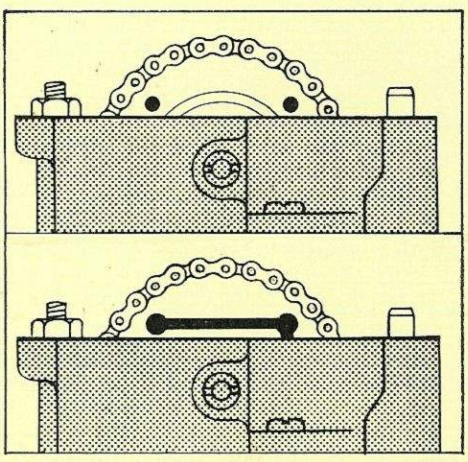
On the n/s, lift the electric wires leading from the engine up above the frame tube, and re-connect the snap connectors to the harness — slide the insulating tube over the connectors and push the complete assembly down behind the frame tube so that it can be secured by the clip on the frame.

Re-connect the rear brake cable — first remove the wing-nut and trunnion from the end of the cable, then fit the trunnion to the brake-cam lever. Now insert the cable through the slotted stop, guiding the end through the trunnion. Push the outer casing stop into position and slide the rubber cover up so that it seats on the exposed end of the stop. Lastly, fit the wing nut and adjust the brake.

Next, on the inlet pipe, fit the clip previously detached. Fit the carburettor first to the air-cleaner hose, then allow it to drop into the inlet pipe. Tighten both clips, and refit the petrol pipe to the tap. Press the plastic cover back into position.

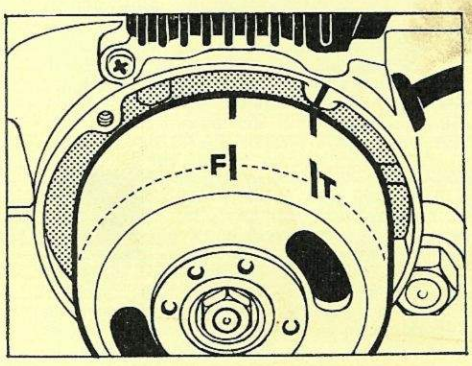
Re-connect the decompressor cable to the lever on the tappet cover, and fit the outer casing back into its stop on the handlebar lever.

Fit the plug lead, and fill the sump with 1¼ pints of oil.



VALVE TIMING—showing the correct position for the marks on the camshaft sprocket. The lower part of the drawing shows the slightly different marks of recent production models.

IGNITION TIMING—showing, exaggerated, the "F" and "T" marks on the flywheel. The "T" mark is in register with the line on the crankcase.



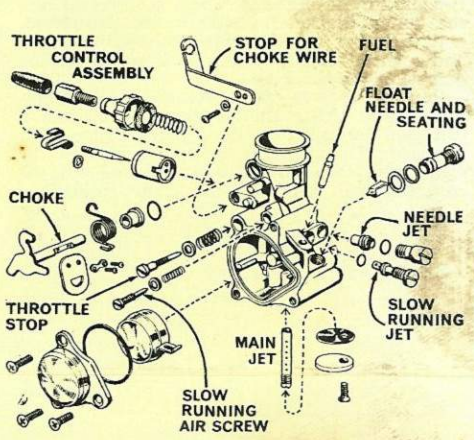
CARBURETTOR

The Keihin carburettor type DPS.131.A is shown in exploded form. Recent production models have been fitted with an instrument of different construction, but working on the same principle. The constructional differences are enumerated below. Any replacement carburettors supplied will be of the new type.

On both types the throttle needle, needle jet, slow-running jet and main-jet are all replaceable if desired, but the actual parts are not interchangeable between the two instruments. Needle jets have the same value — 35 — on both types, but the 55 main jet of the old type is now replaced by a 58 or 62 on the new model.

Tickover adjustment: The screws which adjust the idler air bleed and the throttle stop are accessible through the circular hole in the plastic carburettor shield. Make the adjustment with the engine hot. The idler air-screw is the longer, turn this either way to increase the engine speed, then reduce this to tickover speed by adjusting the throttle stop.

Cleaning: To do this, the instrument must be removed from the engine, following the instructions given under Dismantling at the beginning of these notes.



THE CARBURETTOR shown here is the early type, with the float chamber cast integrally with the main body. Differences between this and the later type are described in the text.

Checking float-level: This is done with the instrument upside down on the bench, e.g. the engine inlet pipe is upwards. Fit the float needle and then the float, so that the latter presses the needle on to its seating. There should be 3.5mm (.014in) clearance between the top of the float and the float chamber — check this by inserting a rod of correct diamter. If the level is incorrect, adjustment can be made by very carefully bending the float pivot with fine pliers.

Construction — old type: The float chamber is integral with the body of the instrument, with a flat cover retained by three c/sunk screws. The cover seals against an O-ring.

The float has an integral central pivot on which the needle bears. The needle seating is of brass and can be unscrewed from outside, it has a fibre washer and an O-ring to seal it. It can be detached for cleaning.

The main jet is below the float chamber, parallel to the choke, and is screwed into the inner side of a recess, the outer side being sealed by a circular rubber washer and alloy cover, both retained by an offset c/sunk screw.

The slow-running jet is to the left of the needle jet, when both are viewed from below the throttle slide.

Construction — new type: The float chamber is completely separate from the body of the instrument, to which it is fixed by two cross-head screws with spring washers. It seals against an O-ring. There is a third, cross-head screw, slightly larger, with a fibre-washer, which is a drain plug.

The float has an integral offset pivot, with two protruding ears, one of which is slotted to accept the flanged end of the needle. The needle seating is cast-in with the chamber, it is not renewable, and can only be cleaned by blowing through with an airline. If the seating is damaged, the complete float-chamber must be replaced.

The main jet is located inside the float-chamber, and screws into the body at right angles to the choke.

The slow-running jet is to the right of the needle jet, when both are viewed from below the throttle slide.

In this instrument both the throttle-stop screw and the throttle-needle are slightly shorter than the same parts in the older carburettor, and the needle-jet and slow-running jet with its holder are different in appearance and dimensions. The throttle-slide also differs in construction slightly, and is not interchangeable with one from the older instrument.

Inlet pipe: This must be changed if a new type carburettor is fitted, as there is a difference in external diameter (and of the securing clip), of the pipe.

AIR FILTER

This is situated below the saddle, in a circular recess in the frame. There is a cover-plate retained by a cross-head screw, with this removed the filter element can be withdrawn.

Early types of filter had an element of plasticised paper, which had to be discarded if choked. Recently, an element of soft sponge plastic has been supplied — this can be cleaned in water and detergent, and should be squeezed and allowed to dry before being replaced.

If the carburettor has had to be removed several times, it may be found that distortion of the air-cleaner hose has caused it to become

chafed through against the frame. The hose is secured by a clip top and bottom. To gain access to the top clip, remove the filter element, then with pliers grip the flange of the plastic inlet pipe, on the left of the body. Once the inlet pipe is removed, the body can be moved outwards enough to enable the hose clip to be undone. The new hose can be inserted from below, and re-assembly is obvious and straightforward.

CONTROL CABLES

There are five control cables on the machine. They all differ in length and detail, and replacements are supplied only as complete assemblies, including adjuster, rubber cover, etc. as appropriate.

The throttle, choke, decompressor and rear brake cables are all led through the hollow tunnel of the frame, the apertures at each end being sealed by rubber grommets.

A new cable is best fitted by attaching it with soft thin wire to the lower end of the old cable, which can then be used to pull the new one into position. The apertures in the frame are big enough to allow this to be done, once the grommets are removed.

Throttle twist grip: To remove this for fitting a new cable, first peel back the rubber grip from the shoulder on which it locates. Now undo the cross-head grub screw below the handlebar, this releases the twist-grip sleeve and the loose thrust ring. Push the outer cable into the handlebar, to give enough free length for the nipple carrier and then the cable stop to be removed. Pull the old cable out of the bar and insert the new one, pushing it through to give plenty of free length. Fit first the cable-stop and then the nipple-carrier.

Now pull the outer cable gently back through the bar with one hand, guiding the stop and carrier into the slot with the other hand. Slide on the twist-grip sleeve, engaging the nipple-carrier in the internal helical groove. Now align the holes in the thrust-ring, cable stop and twist-grip sleeve with a piece of stiff wire, when they are in register insert and tighten the grub screw. Slide the rubber-grip back into position.

Finally, attach the lower end of the new cable to the throttle slide, first threading it through the adjuster and screwed cap.

Choke control: This is located behind the handlebar, and is secured with a cross-head screw. As the new cable is supplied complete with knob and fixing plate, it can only be inserted from the top; attach a length of soft wire to the old cable before withdrawing it, the wire can then be used to pull the new cable through the frame into position. Secure the fixing plate at the top, and then connect the lower end of the cable to the control — this is straightforward.

PEDALLING GEAR

Bottom bracket. The pedal shaft runs on two hard nylon-bearings, which are pressed into the bottom-bracket tube. They are shouldered, and each has a soft rubber dust-seal washer, and a metal collar, seating in a recess on the outside of the bearing.

Replacement of these bearings is straightforward, as either can be knocked out with a drift and hammer once the pedal-shaft has been removed. This is done by first removing the chain, and then on the n/s. knocking out the cotterpin and removing the crank, using the pedal-remover if necessary.

End play in these bearings is controlled by moving the n/s crank inwards, with the cotterpin slackened.

Jockey sprocket: Early type sprockets have a blind central hole, so that in effect they run on a stub axle. They are quite satisfactory in use provided the jockey arm is not bent or distorted — if this happens the sprocket will run off.

Recent assemblies have a sprocket which is bored right through — this is assembled with a soft dust-cover on the inner side and a large plain washer outside, and the end of the pivot is rivetted over the washer: the sprocket is thus captive.

There is no adjustment for the pedal chain except the tension of the jockey sprocket. The chain is not endless, but has a connecting link of normal pattern.

REAR HUB AND BRAKE

The rear hub is in two parts, one being the large alloy-casting which in size mates with the engine unit; this casting has two spoke-flanges round its outer periphery.

The second part is the hub proper, made of iron, and secured to the casting by five bolts and nuts through a flange, which also acts as the drum for the external contracting rear brake. On the outer side of this flange is an extension, which provides externally a bearing surface for the freewheel — this is located by two circlips, and internally is the hub bearing, also located by a circlip and protected by an oil seal.

On the inner side of the flange is an extension with external splines which, when the wheel is assembled to the engine unit, take the drive from the final transmission sprocket. Another oil-seal is positioned within the splined extension.

The freshwheel comprises a sprocket formed externally on a ring, with internal ratchet-teeth which can engage with two pawls — these are positioned in grooves milled in the hub, and their movement is controlled by a spring. All these parts, plus the thrust washers and circlips which retain the whole assembly, are renewable in the event of wear.

The main hub bearing is easily removed for renewal, if this is done the circlip and oil seal should also be renewed.

The nuts on the five bolts securing the centre hub are locked by a tab on a large lock-washer — these nuts should be done up very tight, and in addition to bending down the locking-tabs, it is recommended that the ends of the bolts are centre-punched. If these bolts come loose during running, the holes in the alloy wheel hub will quickly elongate. The hub must then be replaced.

The brake shoes are located on a common pivot opposite the cam, and secured by a washer and split-pin. Replacement is easy.

FRONT BRAKE AND HUB

To remove the front wheel, first slacken the brake-cable adjuster to allow the nipple to be freed from the cam lever, then remove the cable from its stop. Remove the speedometer drive by slackening the cross-head screw in the boss on the brake plate, this will allow the drive to be withdrawn from the hub.

Use two spanners on the spindle, one to hold the head while the nut is removed; then withdraw the spindle to the o/s. As this is done a distance piece will drop out on the n/s. Pull out the wheel forwards.

The brake plate floats on the spindle and can be lifted out. The shoes are retained by a hair-pin spring, once one end of this is levered free the shoes can be removed.

The speedometer driving-pinion can be removed by tapping the brake-plate downwards on the bench, if it will not lift out. There is a shim-washer behind it and an oil-seal in the recess. The speedometer-drive spindle can be pushed out by lodging a screwdriver in the teeth and pressing firmly toward the open end of the boss in which it lies.

The hub bearings are located on a shouldered distance tube; use a mandrel and hammer on one end of this tube to drive out the opposite bearing. The remaining bearing can then be removed by driving it out from the opposite site. The two oil-seals will come out as well.

All these parts mentioned can be renewed in the event of wear.

Re-assembly of hub and brake: Insert a new bearing in the o/s of the hub and tap this down evenly until there is room for the oil seal outside it. Insert one end of the distance tube partially into the other new bearing, and apply some grease to the inside of this and the bearing in the hub. Offer up the free end of the tube through the hub from the n/s, using it as a guide — when it has penetrated the inserted o/s bearing, the n/s bearing can be registered with the hub and driven home. Put some grease round the outside of each bearing and fit new oil-seals.

From the o/s, insert speedometer drive pinion into the hub, making sure that the two protruding ears enter the slots on the hub. Put a little grease on the pinion. Check that the large oil-seal, surrounding the speedometer-drive, is in position and fit the brake-plate, turning it a few degrees either way to mesh the teeth.

When refitting the wheel to the forks, make sure the slot on the outside of the brake plate registers with the lug on the inside of the o/s fork link, as the wheel is pushed into position. Hold the wheel with one hand whilst the spindle is inserted from the o/s, when the spindle end is flush with the n/s hub insert the tubular distance piece, then continue pushing the spindle in. Tighten the spindle nut, using another spanner on the head if necessary.

Refitting the brake-cable is straightforward. When inserting the speedometer drive, turn the wheel slowly, to allow the internal square spindle to enter the hollow cable—do not force the end of the cable inwards, it should enter the boss on the brake plate easily. Insert and tighten the cross-head screw which locates the drive.

FRONT FORKS AND STEERING HEAD

Dismantling front forks: Start by removing the front wheel as described in the preceding section.

Next undo the nuts on the inside of the fork link pivot bolts; there is a spring washer under each nut. Pull out the bolts (these also anchor the mudguard, early models had a metal stay with a plain washer, recent mudguards are all plastic and for these there is a shouldered washer which prevents the plastic from being crushed).

Now, on each side in turn, undo the nut on the top of each spring box, there is a plain washer under each nut. Pull downwards on the fork-link to free the spring.

Fork-link pivot-bearings: Each bearing comprises two shouldered nylon-bushes, with an internal steel-tube to prevent crushing by the pivot

bolt. Outside each nylon-bush is a soft-rubber seal-washer, and there is a grease-nipple for each bearing. All parts are renewable.

Fork-spring mountings: The upper mounting is a steel tube with an external scroll thread on to which the spring is screwed. Above the scroll is a D-shaped plate, the straight sides of which prevent the mounting from turning, with an integral bolt. Inside the tube is a rubber-buffer which prevents "bottoming" of the forks.

The lower mounting is much simpler, comprising a short steel-rod with an external scroll-thread, welded to an inverted U-shaped bracket which is drilled to take a pivot-bolt. This bearing also uses two shouldered nylon-bushes with soft-rubber seals outside, but the pivot-bolts are also shouldered to prevent the bearings from being crushed, and there is no washer under the pivot-bolt nut. There is a grease-nipple on each bearing. All parts are renewable.

Rebound snubbers: Inside each fork-leg, above the main pivot, there is a circular rubber-insert, and an extended ear on each fork-link presses on this when the links reach the position of full rebound.

Rebuilding the front forks: If the springs have been changed, fit the new springs to the upper and lower scrolls, making sure the rubber buffer is in position inside the upper scroll. Fit the lower scroll-pivot to the fork links, make sure the soft seal-washers are lying flat between the bushes and the links, insert the pivot-bolts and do the nuts up tight against the shoulders.

Insert each spring into its box on the fork legs, noting that the squared ends of the D-washer are facing inwards. When the bolts appear through the top of each box, put on the plain-washer and run the nuts down finger tight.

Fit the pivot bolts to the mudguard stay, using a plain-washer for a metal stay, and shouldered washer for the plastic guard. Press the front of each link down and using the rebound rubber as a fulcrum, align the main pivot-bushes with the holes in the fork leg — when these register push the bolt home. Put on the spring-washer and nut, but before tightening, check that the rubber seal washers are properly in position, then tighten the nuts and those holding the tops of the springs.

Brake anchorage: The o/s link has a lug which mates with a slot on the brake plate. The n/s link is plain.

Stripping the steering head: If this is necessary, the front-forks do not necessarily also have to be dismantled completely as has been described. However, the front wheel and mudguard must be removed first — the lower mudguard mountings are on to the fork-link pivot-bolts, which must be removed. The other mounting is to the fork-crown, where two cross-head screws with shouldered washer must be removed. The mudguard is now free.

Next, undo the throttle-ring on the carburettor, and pull the slack of the throttle-cable gently through the frame below the steering head — this will allow the bars to be removed later.

Disconnect the decompressor and both brake cables from the handlebar levers. Remove the clip holding the horn bracket, fix the horn to the bars with a rubber band or soft wire.

Remove the head lamp — on early models it is bolted to a bracket integral with the bars, on recent production the bracket is separate, held under the stem expander bolt. Fix the lamp to the frame with a rubber band or soft wire.

With the expander-bolt slackened, tap its head with a hide mallet to free the taper expander in the stem.

Stand facing the machine, grip the fork crown with the knees, and wriggle the handlebars to and fro, lifting at the same time. When the bars are free, lay them behind the steering head.

Turn the forks to full left-lock, and use the stem nut spanner to slacken the slotted ring which locks the top bearing. Remove the ring.

Now hold the fork crown with the left hand, pulling the forks upwards, and start to undo the slotted cone of the top bearing. Hold the forks firmly until this is completely free, then lower the forks carefully, clear of the steering head.

Steering-head bearings: This is a simple cup-and-cone assembly, with 23 balls in each bearing. The balls are identical, but the upper and lower cups and cones are all different — they can easily be identified. All these parts are renewable.

Re-assembly of steering-head: Use grease to hold the balls in the cup at the top of the head, and on the cone on the bottom of the column. Insert the column from below, and when the lower race is home, refit the upper cone and do it up fingertight. Refit the locking ring, but before tightening, hold the upper cone with the C-spanner. Check the adjustment of the assembly, there should be just no shake — if necessary slacken the locking-ring, tighten the upper cone a fraction and retighten the locking ring, holding the cone steady with the C-spanner. Check the adjustment again — if correct fit the handlebars, noting the three marks H, M and L (High, Medium and Low) which limit the adjusted height. Refit the headlamp and tighten the handlebar expander bolt, ensuring that the bars are at right angles to the forks and wheel. Refit the throttle cable to the carburettor.

Refit the horn, front mudguard and then the front wheel, and reconnect the front brake and speedometer drive.

ELECTRICAL EQUIPMENT

Headlamp: The rim, front glass and reflector are in one unit, which is retained in the lamp shell by a small cross-head screw. The "nut" for this screw is a tag at one end of an earth lead, the other end being a dished washer which fits under the head of the main lamp fixing bolt.

If the lamp is removed from its bracket, note the following order of assembly for the fixing bolt: below the nut is a spring washer and a plain washer, then the bracket, then a dished washer facing upwards to fit the plastic lamp shell, then inside the lamp the dished earth lead washer immediately below the shaped bolt head.

Do not over-tighten the nut when re-assembling, as it is easy to pull the bolt head through the shell—if this occurs, a new shell may be needed as the plastic will tear round the hole.

The bulb-holder is located by a pip which engages with a slot in the centre of the reflector, this slot is wider than the others round it, and is immediately below the aperture in the reflector which allows the bulb to illuminate the speedometer.

The switch may be pressed out from inside, and if faulty is replaced by a complete unit complete with short lead attached. When refitting, note that it is positioned by a shallow projection on its body, which mates with a groove in the lamp shell.

All parts mentioned above are renewable.

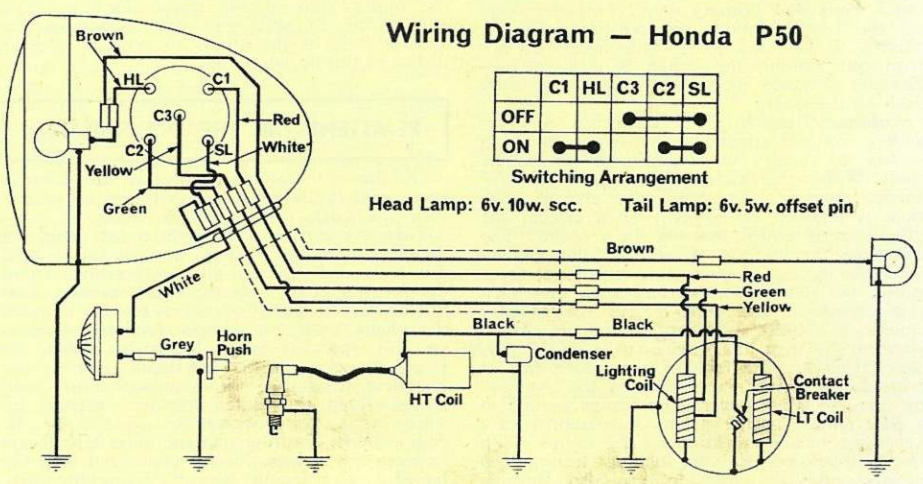
Rear lamp: The red lens is held by two long cross-head screws which are threaded into a cast-alloy back-plate. The latter is retained by two short cross-head screws which pass through the reflector, then through the bracket on the number plate and then into lugs on the back plate. Each of these screws has a flat rubber-washer between the reflector and the bracket. An earth lead from the bulb holder (which is integral with the reflector) is held under one screw.

When checking a faulty rear lamp, make sure the earth connections are good, by checking first the short lead and screw mentioned above, then check that a little enamel has been cleaned away where the number plate bracket is fixed to the petrol-tank and again where the front of the tank is fixed to the frame.

Wiring harness: This enters the frame below the steering-head through a rubber grommet, and emerges behind the bottom bracket where it is held by a clip (mentioned under dismantling) inside the n/s rear fork. There are five wires in the harness, colour coded, and joined by snap-connectors inside the head lamp and outside the engine unit to short leads from the switch and generator, respectively, and to the rear lamp lead.

Flywheel magneto: The contact breaker, primary coil and lighting coil are all separate parts, which are renewable. With the flywheel removed, and engine in frame, the primary coil is on the right, and has a single black wire leading from it. The lighting coil is on the left, and has three leads (yellow, green and red).

Wiring Diagram — Honda P50



	C1	HL	C3	C2	SL
OFF			●	●	
ON	●	●		●	

Switching Arrangement

Head Lamp: 6v. 10w. scc. Tail Lamp: 6v. 5w. offset pin

TRADER SERVICE-SHEETS

Second Series

20-2 Honda P50 moped

Printed in Great Britain by Eden Fisher (Southend) Ltd., Sutton Road, Southend-on-Sea, and published by Iliffe Specialist Publications Ltd., Dorset House, Stamford Street, London, S.E.1.

The contact-breaker assembly is held by one slotted screw, with a spring and a plain washer under its head. The coils are each held by two cross-head screws — one of these, on the lighting coil, also holds a plate with a felt pad, which lubricates the cam; it should be oiled lightly.

These parts may be renewed without removing the engine from the frame, by first removing the flywheel cover and flywheel. If the coils are to be renewed, push the wires down through the rubber grommet so that the coil may be freed after its screws have been removed. Replacement coils have only a short length of wire attached to them, and a soldered joint must be made to the appropriate wire or wires leading out through the grommet to the snap connectors.

Checking flywheel ignition coil: This can be checked in position by connecting the black wire coming from it to a 6V 3W bulb which is earthed to the frame. Rotation of the engine will cause the bulb to flash intermittently as the points open and close.

Ignition-coil and condenser: These two parts are mounted on a sub-frame to form one unit, which is located inside the lower frame tube just behind the bottom brackets. The unit is retained by two studs which pass through the frame, with nuts and spring-washers.

If a faulty coil and/or condenser is suspected, it can be checked by taping a new unit to the frame and connecting it to the wiring-harness and sparking-plug, and adding an external earth lead.

To remove the coil sub-unit if required, proceed as follows: first remove the exhaust pipe and silencer, then remove the lower mudguard fixing bolt below the frame. The guard can now be bent carefully to allow room to remove the spring of the plastic cover plate to be removed. This will give enough room to allow the coil sub-unit to be withdrawn. When re-assembling first fix a length of wire to one end of the cover plate spring — fit the other end of the spring to the frame hook, then use the wire to stretch the spring so that the plate can be attached.

Horn button: This is held to the handlebar by a small cross-head screw, with spring washer, inside the bar. This screw is acessible if the front brake lever is removed. The button is renewable as a complete unit.

SPEEDOMETER AND DRIVE

The speedometer head is a tight push fit in the plastic head-lamp shell, and is located by two raised projections on the outside of the head which mate with grooves in the lamp shell. To remove, first remove the lamp-rim, then undo the milled collar nut securing the drive. The speedometer-head can now be pressed out from inside.

The head is renewable as a complete unit, but the inner- and outer-drive cables are available as separate items.

When re-connecting the drive to the head, turn the wheel gently, to engage the squared end of the inner cable before tightening the milled collar nut

SOME DO'S AND DON'TS

DON'T overfill the sump — it will cause excessive oil-drag within the engine.

DON'T over-tighten the head-lamp fixing bolt, or the flywheel nut.

DON'T raise the saddle above the line mark on the stem.

DON'T raise or lower the handlebar beyond the limit marks.

DON'T engage the drive-lock with the engine running — if you do, one of the drive-chains may be broken.

DO make sure the rear axle is right home in the fork ends before tightening the axle nuts.

DO tell your customers to bring their P50's in regularly for servicing.

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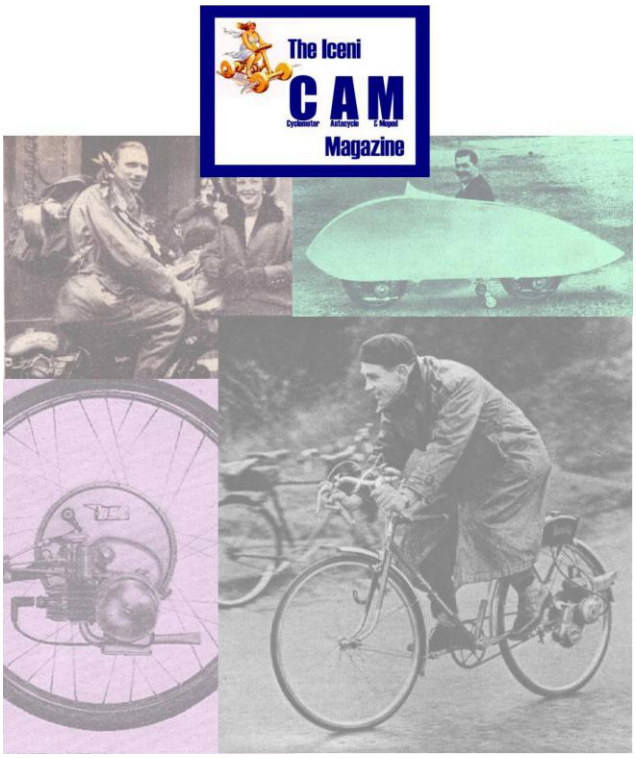

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