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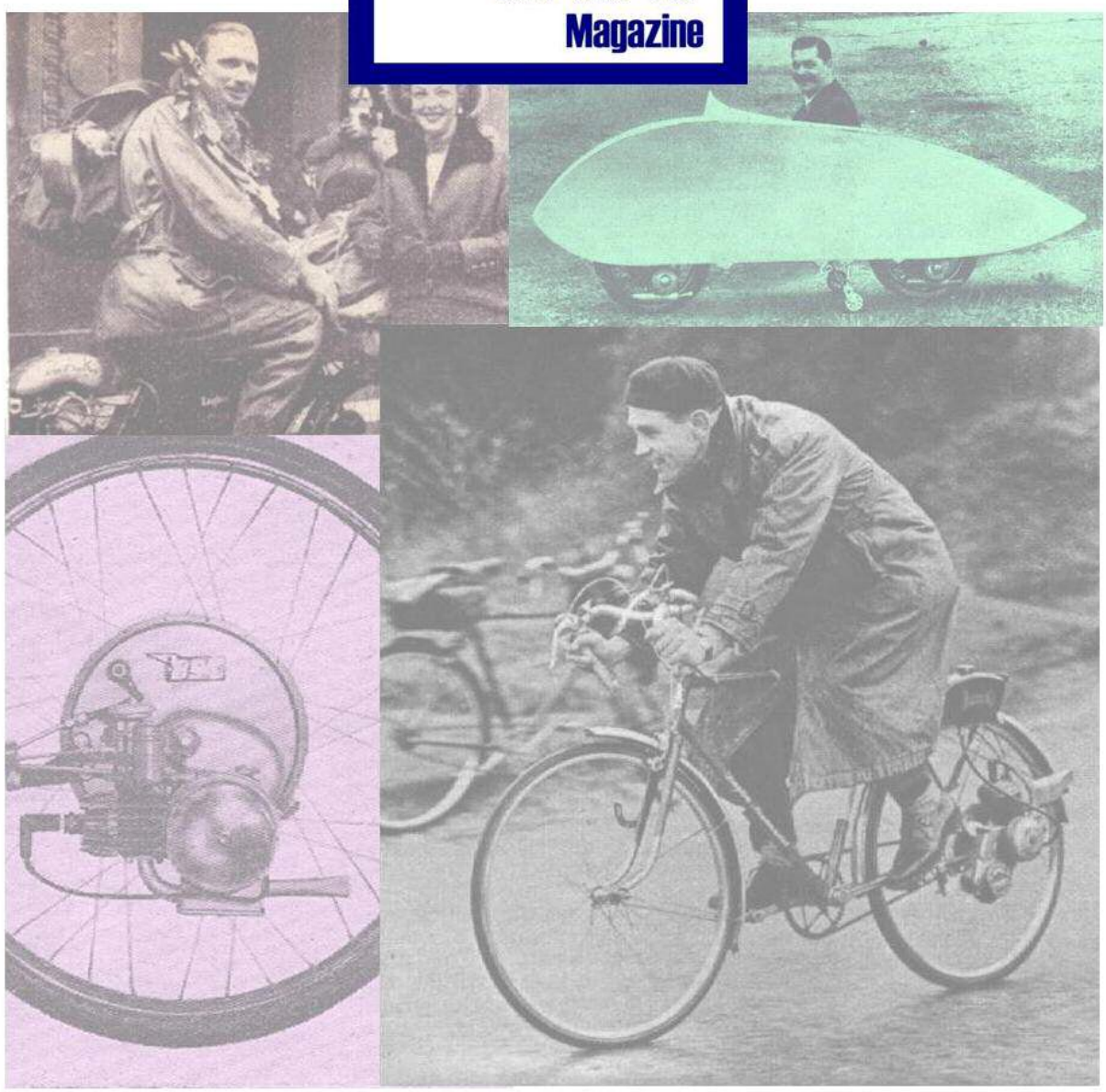

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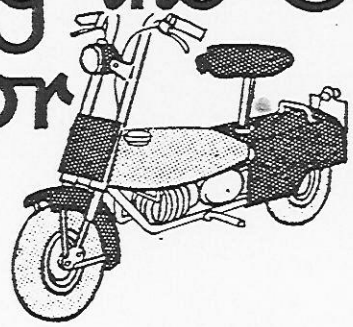
Overhauling the Corgi Folding Motor Cycle



A Useful Machine That Can be Stowed in the Boot of a Car

By M. ROBERTS

THE Corgi was originally designed for dropping by parachute in a cylindrical container, and use by parachute troops, and has some facilities not normally seen on motor cycles. These are handlebar tubes that fold flat, footrests that stow vertically, and a retractable saddle. In civilian use they become useful in stowing the Corgi in the boot of a car, etc.

The Engine-clutch Assembly

The integral engine-clutch assembly is mounted horizontally under the tank giving an overall length of about 52in., normal and folded heights of 37 and 20in. respectively. The engine is a 98 c.c. single cylinder two stroke, with a cast-iron cylinder, aluminium

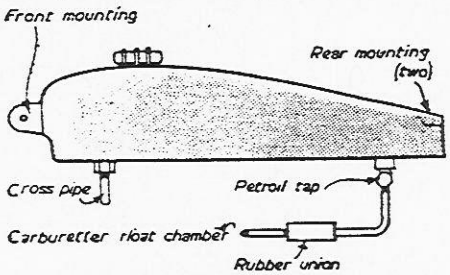


Fig. 1.—The tank is disconnected from the carburetter at the rubber union shown.

cylinder head and domed piston to give a compression ratio of 6.6 to 1, and using 20 parts of petrol to one part of oil.

With its one and only gear ratio it has a top speed of about 35 miles per hour, and a consumption of 140-150 miles per gallon. Later models have 2-speed gearboxes but are not dealt with here.

The first requirement will be to remove the petroil tank held on by three rubber-mounted bolts and nuts. Disconnect the tank from the carburetter at the rubber union (see Fig. 1), and drain the tank. Removal of the cross pipe joining the two halves of the tank, and the three rubber mountings, one at the front and two at the rear, will enable the tank, complete with one petroil pipe, to be lifted clear of the frame.

The tank should be examined for any signs of leakage or fracture from vibration, particularly around the front mounting.

Removing the Engine

To remove the engine from the frame, first remove the portion of exhaust pipe connecting the exhaust port to the condenser. To do this, remove the screw "A" (Fig. 2) completely, then the two bolts at "B" (Fig. 2). Movement of the exhaust port adaptor at "B" in the direction of the arrows in Fig. 2 will allow complete removal of the required exhaust pipe section. The copper asbestos gasket should be replaced by a new one on reassembly, with the foldover away from the cylinder.

Now disconnect the clutch cable at the clutch end, the two ends of the main chain at the connecting link, and the throttle cable, by unscrewing the top of the carburetter, and tie this with string to the handlebar tubes for the moment. All wire connections to the flywheel magneto, except the plug lead, are now disconnected, as is the "free engine mechanism" at the split pin near the right footrest.

The way is now clear for removing the engine from the frame, where it is held at three points only, two on top and one at the lower rear end of the casting. The engine clutch assembly may now be eased out of the frame.

So far instructions have applied both to the Mark I and Mark II Corgi, but from here on we shall be concerned mainly with the Mark II, which has a kick starter and free-engine mechanism fitted as standard.

The Frame Group

Drain the oil from the chaincase by removing the plug on the lower side near to the kick start spindle. Whilst the oil is

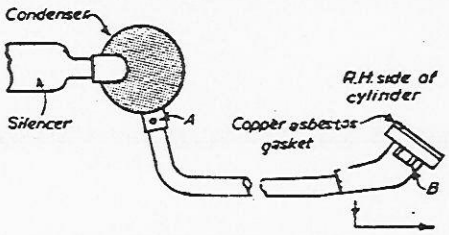


Fig. 2.—Removing the engine from the frame.

draining into a suitable tin, capacity at least ½ pint, the frame group may be attended to.

The rear mudguard and number plate assembly is easily removed, after which it is the turn of the front and rear wheels.

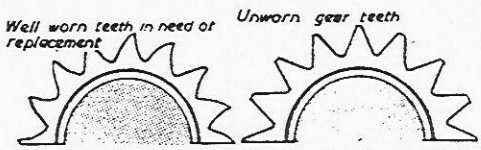


Fig. 3.—Showing wear in the clutch sprocket teeth, as compared with unworn teeth.

The frame members should be thoroughly cleaned with a rag, well soaked in paraffin, and all welds and joins examined closely for any signs of fracture or strain. The steering head can also be dismantled and cleaned, and the ball bearings and races thoroughly examined for any signs of wear or damage. If deemed to be in good condition they can be reassembled with plenty of grease in the usual manner.

The front and rear wheel bearings and axles are dealt with in a similar manner. Careful attention should be paid to the rear

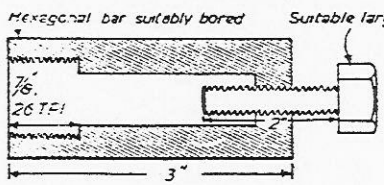


Fig. 4.—The special extractor for the flywheel.

wheel sprocket to ensure there are no broken or missing teeth, and that there is not too much wear on the teeth. Extreme wear will form the teeth into the shape in Fig. 3. If the teeth are badly worn the sprocket should be replaced, as it will only accelerate chain wear if refitted.

Attention should also be paid to the tension of the wheel spokes in the case of a Mark I Corgi, the wheels of a Mark II being of disc type.

At this stage the services of a young assistant become useful, though not essential, to remove, clean, oil or grease, and replace all nuts and bolts, etc. This will ensure rattle-free service in the future and facilitate later removal. He can also be well employed cleaning as much carbon as possible from the exhaust pipe section, previously removed, and to dismantle and clean the rest of the exhaust system.

The Engine Dismantling

We return at this stage to the main part of the overhaul, the engine itself, but before we can proceed very far a special extractor tool will be required for the flywheel. One of these may be bought, or borrowed for a small fee (see later), or if workshop facilities are available, may even be made. The essential details are given in Fig. 4.

The engine dismantling is best accomplished in an orderly manner, and to this end, a tray, such as an old oven baking tin, to hold paraffin for cleaning parts, a series of cardboard boxes for the various assemblies, and a bunch of small tie-on labels will be found useful. The labels are for attaching, for identification purposes, to small piece

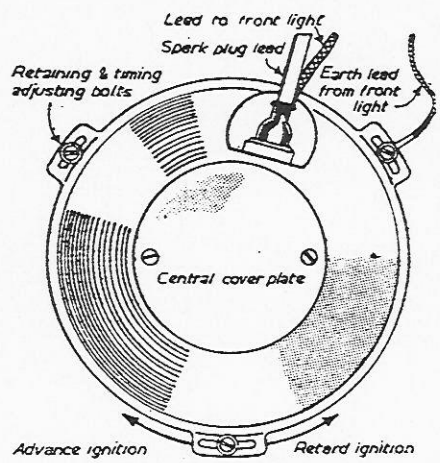


Fig. 5.—Details of the magneto cover.

parts put on one side as requiring attention. It is suggested that it is best to examine each part on removal, and if in need of attention to put it on one side for attention later. It is also best to keep all related parts of an assembly together in a labelled

cardboard box as the period taken over the complete overhaul will depend on the attention required, and parts may get mixed up, or lost.

The reader is warned that a fair number of Woodruff-type keys are used in the engine, and these, being small, are easily lost.

A number of locking tab washers and split pins are also used on the Corgi, and these should be replaced by new ones, as a matter of course, on reassembly. It is all too often one of these apparently insignificant details that cause a major breakdown.

The Carburetter

Begin the dismantling by loosening the clip holding the carburetter body to the cylinder casting, and remove the carburetter and the remaining petroil pipe.

The needle and slide, tied on to the handlebar tubes, are now disengaged from the throttle cable and fitted back on to the carburetter, the whole being cleaned and examined for cracks in the shell, or internal wear, particularly to the needle valve. Wear here could be the cause of the carburetter flooding and, comparatively speaking, a heavy petroil consumption.

Remove the H.T. lead from the magneto; the front cover may need removing for this, and the spark plug, which should be a KLGT/FS/50 or equivalent, from the cylinder head. Clean the plug and adjust the gap to 20 thou. in. (.020in.) before placing in a safe place.

Now unscrew the three screws holding the clutch bridge and operating lever and remove these. Turn the engine on its side and shake out the long and short clutch operating rods

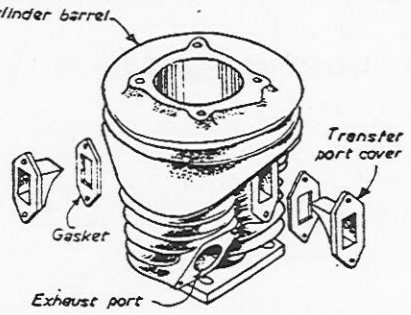


Fig. 7.—Details of the cylinder barrel, showing the position of the port covers.

and 3/16in. ball bearings; note that there is only one ball in the Mark I Corgi.

Removal of the circlips will enable the sliding dog and dogged final drive sprocket to be removed from the splines of the clutch shaft. Take care not to lose any of the needle roller bearings for the main drive sprocket, of which there should be 22 each of 2.5 mm. diameter. Carefully clean the bearing surfaces for these rollers, which should be so smooth as to show a high polish. Any roughness will tend to cause the drive sprocket to be permanently engaged. The teeth of the drive sprocket should be examined for wear, as in Fig. 3, and the dogs for wear shown by the corners becoming either chipped or rounded.

The Kick Start

The kick start assembly is now dismantled in the following order. Remove the special bolt anchoring the kick start return spring and the kick start lever from its splines by loosening the ¼in. B.S.F. hex. head bolt. Removal of the remaining three screws will enable the kick start housing cover to be removed, and the locknut on the clutch shaft to be released. The kick start housing, quadrant, pinion and ratchet spring can now be removed.

Mark I Corgis not fitted with kick starters will be simpler, but may be fitted with a conversion set.

The Magneto

Attention is now switched to the magneto and we begin, having removed the central cover, by releasing the cheese-headed screw, with washers, retaining the contact breaker cam and extracting these. Care should be taken not to lose the small Woodruff key. The front of the magneto may now be gently prised off, after unscrewing the three retaining bolts around the circumference (see Fig. 5). Examination will show this part to carry three coils, one each on three laminated "legs of man," the contact breaker assembly, and the spark quenching capacitor. Two of the coils are connected in series between the frame and terminal, from which power for the lights is drawn. The other

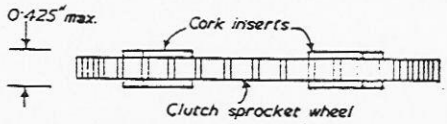


Fig. 6.—Showing the clutch plate refitted with cork inserts. Adjust to not greater than 0.425 in.

"coil" is really two, wound to form a transformer, and four leads will be seen to emerge from it. Two of these should go to the chassis, the third is the H.T. lead to the sparking plug, and the fourth is connected to the contact breaker. Examine all leads for good, solid connections, soldered wherever possible, and for signs of cracking in the insulation.

The Flywheel

The flywheel is now revealed and may be extracted using the special tool mentioned earlier. Removal may prove fairly difficult, and care should be taken not to damage other parts of the casing. The adaptor plate, held by four countersunk screws, may now be removed.

The two halves of the chaincase may now be separated, by removing the five bolts and two screws, all of ¼in. B.S.F., holding them together, thus releasing the mounting plates connecting the casting to the lower frame fixing point. Two grooves are provided for prising the two halves apart without damaging the mating surfaces. Simultaneously with the crankcase splitting, the clutch shaft should be gently and steadily tapped out of the chaincase cover, so as to keep the clutch lined up with the crankshaft sprocket, and not strain the primary chain.

The Clutch

The clutch can now be removed from the primary chain and dismantled, by unscrewing the four spring-loaded screws. The clutch will be seen to be fitted with 15 cork inserts, which had best be renewed. When these are refitted the clutch plate should be shimmed between two flat pieces of wood carrying glasspaper sheets, to not greater than 0.425in., this being the maximum dimension that will enable the clutch to operate (see Fig. 6). If the clutch sprocket is worn, as in Fig. 3, it is probably easier to obtain a new one already fitted with inserts.

The Crankshaft

The cylinder head and cylinder may now be removed complete, by freeing the cylinder at the base. Later the cylinder head and transfer port covers may be removed from the cylinder and cleaned in the normal "decoke" manner. Caustic soda solution must not be used on the aluminium cylinder head, and care should be taken in replacing the port covers in the correct way on reassembly (see Fig. 7). A portable drill and wire brush attachment will be found useful for cleaning off the carbon. Ovality of the bore may be noted, and the ridge at the top of the cylinder wall estimated with a finger nail, in this way the question of a "rebore" can be settled.

The crankcase cover may now be removed by unscrewing the five bolts, and the crankshaft sprocket retaining nut removed. It may be necessary to jam a piece of wood between the end of the chaincase and the piston skirt to do this, the piston having been left on the connecting rod for this purpose. The sprocket is again examined for wear and the necessary decision made.

The crankcase may now be gently knocked out of the chaincase, and the piston and gudgeon pins dismantled. The gudgeon pin is fully floating, being retained only by the two circlips. The piston rings may now be removed and cleaned, as well as the grooves in the piston, the domed head of which may be polished,

Both primary and main chains will now be available for examination and may be tried for wear in the normal manner.

Reassembly

To reassemble the engine the above procedure is reversed, all parts being well oiled or greased before fitting. All surfaces sealed by gaskets or sealing compound will need to be similarly sealed on reassembly. As previously stated, all tab locking washers should be renewed. Do not forget the ⅛ pint of S.A.E.30 oil for the chaincase.

To retime the engine after reassembly the maximum contact breaker gap should be adjusted to 15 thou. (0.015in.) and the front of the magneto rotated for the points just to open with the piston at 3/16in. before T.D.C.

Any errors in this setting may be corrected later by rotation of the magneto cover for optimum performance. The carburetter needle should be held at the middle groove.

The front and rear brake shoes and drums have not been dealt with, these being deemed to be familiar to most.

Spare parts can be obtained from Brockhouse Engineering Ltd., of Victoria Works, Hill Top, West Bromwich, Staffs, or from George Wm. Wall, of 17, York Road, Southport, Lancs, who will also lend out the necessary special tool mentioned previously at a small fee.

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