

**Owner
Service (III)
Villiers
50 c.c.
Moped
engine
by
Brian Young**

THE Villiers Mk.3K 50 c.c. Moped engine is the first of its type to be put into quantity production in Great Britain. The unit departs from the usual Villiers practice most particularly in that the clutch is mounted on the crankshaft and a "cross-over" gearbox is used. In common with the well known 98 c.c. F range of engines, unit construction is used.

The engine specification closely resembles the continental Moped units in having two speeds controlled by a handlebar operated cable. The bore and stroke are 40 mm. and 39.7 mm. respectively, so that the engine is virtually square; the power output of 2 B.H.P. compares favourably with other 50 engines. Primary drive is by chain, the larger primary sprocket driving the gearbox countershaft. Gear engagement is achieved by a sliding hub with face dogs, as in the 98 c.c. F units.

Servicing the engine is essentially simple and should present no diffi-

culties to the average owner. The special tools required will be noted in the body of this article.

1. *Decarbonising.*—The cylinder head may be removed by unscrewing the four bolts, but it should be noted that these bolts are Unified thread, and a special spanner should be used. We would point out that throughout the unit, Unified threads are used where possible. The front upper engine attachment bolt passes through a lug cast on the rear of the cylinder barrel, and must be removed to detach the barrel. When decoking, always clean the transfer and exhaust ports carefully. Later units are fitted with an aluminium cylinder head gasket, which may be used on earlier engines.

2. *Carburettor.*—This unit is of Villiers make and is fitted with an air cleaner contained in a plastic moulding. A strangler plate is fitted which returns automatically as the throttle slide is lifted. Little maintenance is required to the

carburettor apart from cleaning from time to time: later carburettors are fitted with a tickler. It should be noted that two thick insulation washers are fitted between the carburettor and the cylinder. Some very early units had only one such washer, and the air filter was flush with the crankcase; in such cases it is advisable to fit the extra washer to raise the filter off the case. New induction flange studs will have to be used (Part No. E. 11715). As the fuel pipe banjo union is very easily broken, care should be exercised when tightening this part.

3. *Magneto.*—Further work on the engine involves the removal of the side covers, and hence the pedal cranks. These are splined onto the pedal shaft and held by a clamp pin, which should be frequently checked for tightness. The magneto (left hand) cover may be taken off by the removal of the three countersunk screws.

Adjustment of the contact breaker gap (.012"/.015") may be made through the slots in the flywheel, but the fitting of new parts requires that the flywheel be removed. A special extractor is used for this purpose. Note that the flywheel retaining nut has no washer

beneath it. If the stator plate is to be removed, light chisel marks should be made on the edge of the plate and the crankcase boss so that the timing is not altered on re-assembly. Should faults be suspected in any component of the stator plate, it is advisable to take the complete magneto to the nearest Villiers stockist for testing. New points may be fitted by the owner, but care should be taken to see that the actual points are in line. Shims may be fitted to the rocker arm pivot pin to correct misalignment. The correct ignition timing is $3/32''$ before T.D.C., but note that the rotation of the crankshaft is in the opposite sense from the rotation of the cycle wheels.

4. *Clutch and gearbox.*—The clutch consists of two Ferodo friction plates interspersed with steel plates and located in a cage which floats on the crankshaft. Behind the cage is fixed a small sprocket and centrally a splined hub is locked onto the crankshaft taper. Operation of the clutch is achieved by a lever with a ground face which lifts on a cam and peg when the cable is operated. The clutch case forms a common oil reservoir with the gearbox. Care should be taken not to overfill the gearbox with oil, or faulty clutch operation may result. As a result of there being a crankshaft clutch and chain drive, transmission noise is usually quite noticeable with this unit. This noise is not a fault, and does not imply the need for repair. Later units have a modified primary ratio to reduce the noise level, and the ground faces of the clutch operating lever and the clutch sprocket boss have slots cut in them to improve lubrication.

The clutch cover with cable must be removed to inspect the clutch. The clutch cap nut may be removed by means of a special peg spanner, and the clutch plates inspected. Note the order of fitting of the various clutch plates. When re-assembling do not overtighten the cap nut (12-18 ft. lbs. moment).

The primary chains supplied as spares are fitted with a spring link, so that removal of the primary sprockets is not necessary in order to replace the chain. A special tool is required to remove the clutch hub.

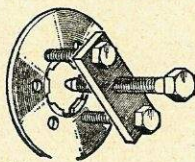
It is assumed that further work will not be attempted by the owner, and hence complete overhaul details will be omitted here. For the adventurous a Workshop manual is available, but whilst it is true that the British are a race of mechanics, most dealers will agree that the results of home repairs are frequently disastrous, and the initial saving of labour charges is outweighed by the cost of damaged parts. Always use the correct tools, since the cost is usually slight.

Finally, always keep in mind the following points:—

1. Clean every part thoroughly before assembly.
2. Always fit new gaskets.
3. Carefully examine all parts before assembly, and if in doubt ask your Villiers stockist for advice.
4. Work slowly and carefully and check at every move.

Special Tools for Villiers 50

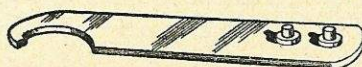
Clutch
Hub
Extractor
ST.2301



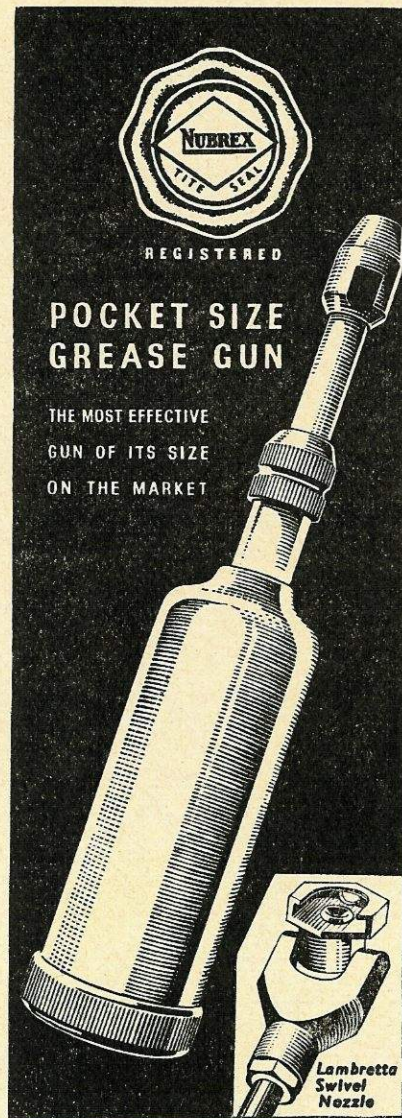
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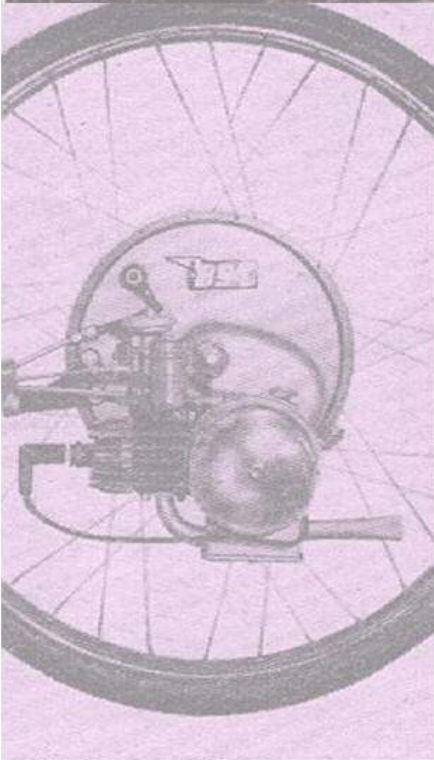
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