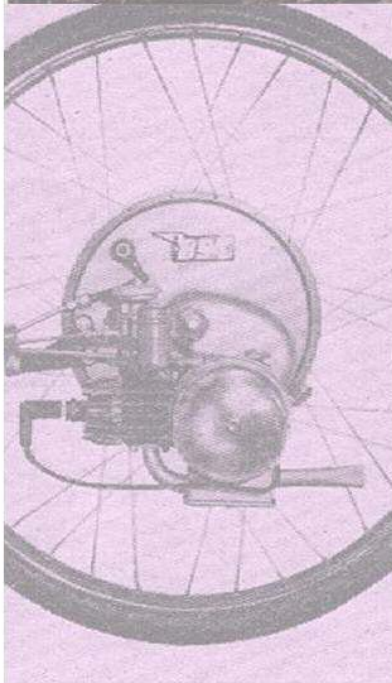


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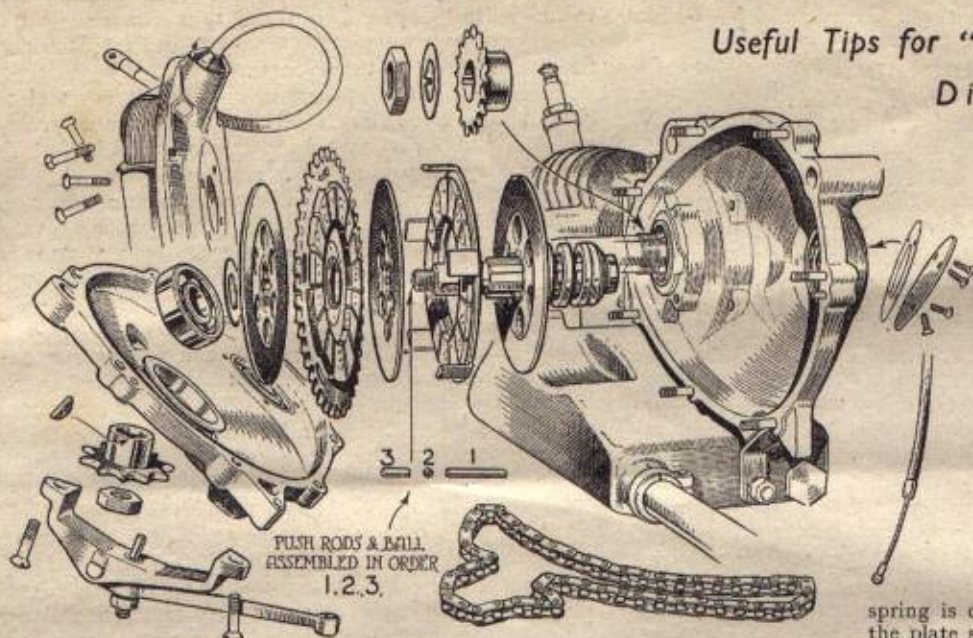


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# THE VILLIERS "JUNIOR" CLUTCH

Useful Tips for "Wilfred" Owners—  
Dismantling and  
Assembling



How the various parts of a Wilfred clutch, as fitted to Villiers "Junior" units, are arranged. The construction is simple and dismantling and assembly should give no trouble if care is exercised.

FROM time to time we receive in this office inquiries from Wilfred owners on the subject of mechanical matters. Contrary to general impression, there are numbers of owners of these little models who are very mechanically minded and wish to investigate the innermost details of their mounts. Among these inquiries the clutch figures largely—not because it is prone to give trouble, but because it is the only portion of Wilfred's mechanism, apart from the simple two-stroke engine, which could ever require attention.

Therefore, those owners of models fitted with Villiers Junior units, who desire to dismantle the clutch, should proceed as follows:—

Remove the flywheel and place a "keeper" (a piece of iron will do) across the magnets. This is most important or the instrument may lose some of its efficiency. Take out the four countersunk screws in the back plate and slip off the latter; the bridge-piece carrying the clutch-operating arm is next removed, followed by the short push-rod, which should be put in a place of safety. The final drive sprocket can be taken off its shaft, care being exercised to preserve the key.

If the engine has not been taken out of the frame the bolts which hold it must be removed, together with the studs holding the chain-case. When the cover comes off, do not lose or damage the paper washer. Turn back the engine sprocket lock-nut washer-tag, unscrew the nut and, before removing it, tap the end of the shaft to loosen the sprocket.

On the back of the chain-case, on the off side of the unit is a cover plate, which must be unscrewed to reveal the end of the countershaft on which the

clutch runs. A tap on this with a wooden drift will drive it out of its bearing, and as the clutch and shaft come away take off the engine sprocket nut and let the sprocket slip off with the chain, which is endless.

Now you will be able to take the clutch apart, making a careful note of how each plate comes away; a glance at the illustration above will show the order in which they are assembled. Do not lose the clutch push-rods and intermediate ball. If the corks in the plates are worn or charred they must be replaced. Spare plates can be obtained

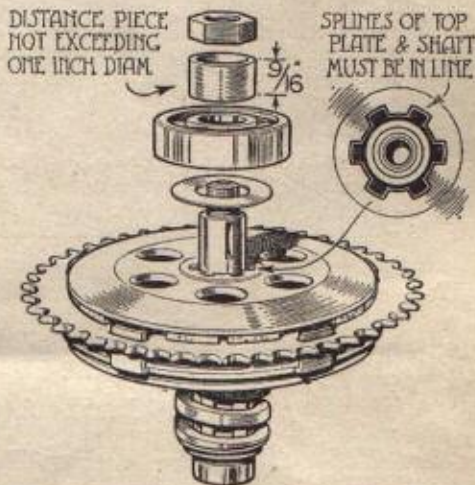
(Right) How to assemble the clutch in order to compress the spring. The details are described in the column on the right and will be clear upon reference to the sketch.

from service dealers, or the old plates can be dispatched to the factory for re-corking.

There is no object in dismantling the clutch spring unless it is broken. If it must be taken off, the shaft will be found to be slotted, a transverse withdrawal key working in the slot under the pressure of the push-rod. To remove the key place the shaft, end-on, on the bench and while you press down the plate someone else can nip out the key. The spring pressure is determined at the works and no adjustment is provided or is necessary.

Having replaced any weak or damaged parts and thoroughly cleaned and slightly oiled the various pieces, thread the plates back on to the shaft. It will be found that the last, or pressure plate, will not go on until the

spring is compressed. First "sight" the plate so that the splines will enter their slots in the centre when the next operation is performed. Before this, however, the clutch shaft ball-race (which fits into the outer chain-case cover) must be pressed on, preceded by a thin, flat washer. A distance-piece of the correct size is fed on to the shaft and the final drive sprocket nut is screwed on. Tightening the nut will force the clutch plates along the shaft against the spring and the top plate splines should mate up with the shaft.



This assembly with chain and engine sprockets can then be replaced in the case. Refitting the outer case can be done provided the distance-piece used to assemble the clutch plates does not exceed 1 in. in outside diameter. When the case is bolted up the nut and distance-piece can be removed and the rear-chain sprocket put on. Care must be taken to replace the push-rods correctly. First a long rod, then the ball and, lastly, a short rod. A third rod operates in the clutch arm bridge.