



grips. Not a difficult thing to copy if you wanted to make your own. Alternatively a couple of old clutch plates could be drilled and bolted together, effectively allowing you to lock the inner and outer drums together. A foot on the rear brake pedal with the bike in gear should then hold everything steady.

Picture 13: With the clutch removed the kickstarter mechanism can be lifted away, giving full access to the gear selector. The selector claw unhooks from the end of the drum and then slides out of the crankcase. Watch for the small springs that hold it in contact with the drum.

Now is a good time to remove the detent roller and spring that clicks the selector drum into position. Watch also for any shims and washers on the input shaft, these will need to re-fitted in the same order during the rebuild.

Picture 14: Releasing this nut from the end of the crankshaft permits removal of the primary drive and oil pump drive gears, which should simply slide off. The primary drive gear is located onto the crank with a woodruff key. Collect it and store it safely for later.

Picture 15: The starter bendix assembly can now be released and lifted off its shaft. On the XS650 the starter motor is bolted underneath

the rear of the crankcase and drive is transmitted to the bendix by a crossover shaft, seen here just to the left of the bendix. The crossover shaft has a splined gear at each end which simply push on to the shaft, the whole thing being located by the small catch plate and single screw seen here. Be careful if you're not intending to strip the engine completely; if you remove the catch plate and slide out the crossover shaft it will be almost impossible to slide it back into engagement.

Picture 16: Now at last I'm ready to remove the engine from the frame. First I make final check around the bike to make sure I've disconnected all electrical connections and control cables. Surprisingly, all the engine bolts loosen off without too much trouble and with the engine plates removed the engine lifts up and clear from the right side of the frame. I was working alone at this point but the assistance of another pair of hands is always useful when lifting an engine out.

Picture 17: With the engine supported on the workbench I can now proceed to strip the top end. Firstly, the cam cover unbolts and lifts clear, revealing the single overhead cam and two-valve-per-cylinder engine layout. The cam followers remain captive in the cover at

this stage I'll put the whole assembly aside for examination later. The outer four cylinder head nuts sit atop rubber washers, these need to be replaced on the same studs on re-assembly to prevent oil leaks.

Picture 18: According to my workshop manuals it is necessary to split the camchain at this stage and rivet it up again during re-assembly. I have an aversion to riveting camchains, preferring to use an endless chain when possible, so I decided to see how far I could strip the engine without splitting the camchain. The camshaft is supported on two pairs of hefty roller bearings, one pair at each side, and with the camchain tensioner removed there's enough slack in the chain to slide the bearings off the ends of the camshaft. With the bearings clear the camchain easily unhooks from the cam drive sprocket and the camshaft can be lifted free.

Picture 19: Now the remaining three small bolts holding the head to the barrels can be removed and the cylinder head lifted clear. Note the big screwdriver I've slid into place to stop the camchain dropping into the crankcase as I lift the head clear.

Picture 20: Removing the barrels is simply a matter of sliding them upwards and off the