

# **BSA SERVICE SHEET No. 413**

August 1954  
Reprinted Nov., 1959

## **C10L and C11G Models**

### **REMOVING ENGINE FROM FRAME AND COMPLETE DISMANTLING**

#### **Engine Removal**

The procedure for removal and dismantling of the engine will be described from the point reached in Service Sheet No. 405 on decarbonising, when the cylinder head and barrel have been removed.

Remove the primary chaincase as described in Service Sheet No. 409 on Primary Transmission.

Remove the contact breaker cover and disconnect the lead from the terminal. Undo the retaining bolt and place the crankcase and gearbox shield on one side.

Drain the oil tank and disconnect the oil pipes from the crankcase unions.

Remove the nuts securing the front engine plates and the rear crankcase fixing studs. Remove the front engine plates and slacken the frame and gearbox nuts clamping the rear engine plates, as these tend to hold the engine in position. Withdrawal of the rear crankcase securing studs will permit the engine to be lifted from the frame.

#### **Engine Dismantling**

Whilst working on the engine, a simple fixture as illustrated in Fig. C35 will facilitate matters considerably. Alternatively, clamp the engine in a vice by one of the mounting lugs, supporting the engine on a bench.

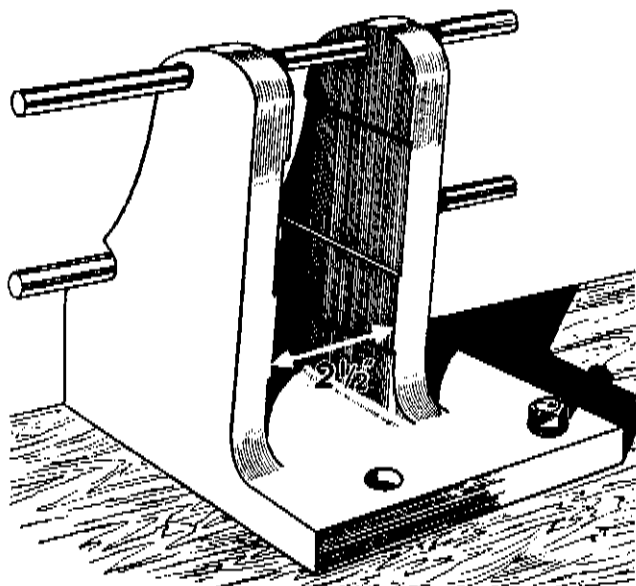


Fig. C35. Angle bracket for mounting engine.

## B.S.A. Service Sheet No. 413 (cont.)

Undo the two screws and withdraw the contact breaker back plate. Then remove the advance and retard mechanism by undoing the central bolt. Resistance will be felt after a few turns of the bolt and further rotation will pull the shaft from its taper.

Early models did not have this self-extracting device, but an effective extractor can be simply made. Remove the retaining bolt and pass a piece of  $\frac{3}{16}$  in. steel rod down the bolt hole as far as it will go. Mark the rod at a point flush with the end of the shaft, then remove the rod and cut it off  $\frac{3}{8}$  in. short of this mark. Replace the rod and screw a  $\frac{5}{16}$  in. C.E.I. bolt into the end of the shaft. As this bolt is tightened down on to the rod it will pull the mechanism from its taper.

Take out the timing cover screws and pull off the cover. Clean it and place on one side. If the oil seal requires replacing, it can be prised from the cover with the aid of a screwdriver.

Withdraw the camshaft complete, then flatten out the tab washer and remove the mainshaft nut. The mainshaft pinion can now be drawn off with the aid of Service Tool, Part No. 61-3256. (See Fig. C36.)

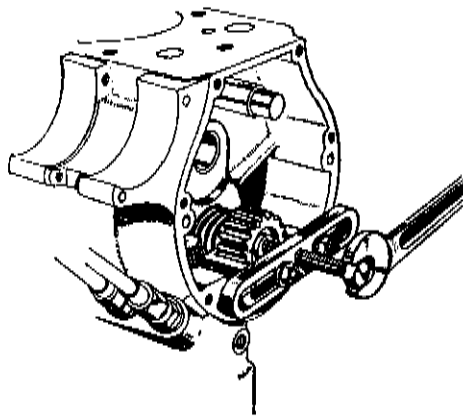


Fig. C36. Engine shaft pinion extractor (Service Tool 61-1735)

The oil pump driving spindle is located by a dowel situated in the bottom left-hand edge of the timing chest. Screw one of the timing screws into the dowel and use it to pull the dowel from the crankcase. The pump driving spindle can then be drawn upwards into the timing chest (Fig. C37.). In some instances the dowel will be found to be covered by a small washer which must be removed before the screw can be inserted.

Before parting the crankcase halves remove any distance washers from the drive side crankshaft and withdraw the sleeve which projects through the crankcase oil seal.

Remove the nuts from the crankcase studs and take out the free studs, noting their locations. The halves may now be separated. This may be somewhat difficult but a little care will allow them to be parted without damage. A few careful blows with a hide mallet will serve to break the joint if the jointing compound prevents separation.

Pull the gearside crankcase half away from the flywheel assembly, then lift the flywheel assembly from the other crankcase half, taking care not to lose the oil retaining washer which lies between the flywheel and the mainshaft ball bearing.

Take off the four nuts and lock washers at the base of the gearside crankcase, and remove the base plate and filter.

The two bolts retaining the pump can be unscrewed to permit the pump to be withdrawn, but it should not be removed unless it requires attention. The bolts retaining the pump in position can be identified by the spring washers underneath their heads.

If the drive side ballrace requires replacing, remove the retaining circlip and after heating the case in a degreaser or hot water, the bearing should be driven out with a suitable drift applied from the outside of the case. The new bearing should be fitted while the case is still warm, and the drift used should fit the outer race of the bearing. Do not omit the oil retaining washer behind the bearing.

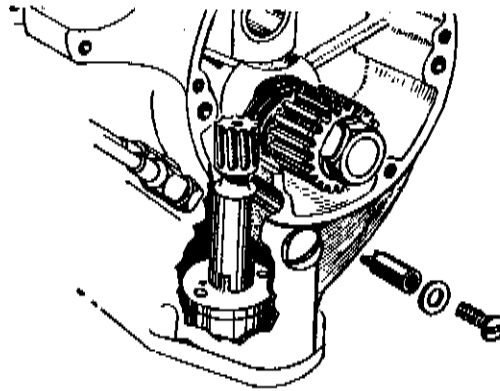


Fig. C37. Oil pump spindle locking plunger.

The case should also be heated before attempting to remove any of the bushes in the timing side crankcase half or timing cover.

The cam pinion spindles should also be inspected for wear and, if necessary, removed while the case is hot.

Finally, if the flywheels are to be separated they must be held securely on the bench, as extreme pressure will be required to released the crankpin nuts.

Special spanners are used, and it is usually necessary to add a piece of tubing to obtain additional leverage.

The crankpin is a taper fit in the flywheels, and can be released by a sharp blow with a mallet.

It is now only necessary to decide which parts require renewal, and the following may assist you in your decision:

## B.S.A. Service Sheet No. 413 (cont.)

We do not advise the fitting of over-size rollers to the big end assembly. The whole assembly, comprising crankpin, connecting rod and rollers, should be changed. All these components are carefully matched, working to one ten-thousandth part of an inch, and supplied in complete sets, ready for fitting.

If the bore of the cylinder, when measured at right angles to the gudgeon pin, shows wear to the extent of .010 in. or more, the cylinder should be rebored, and an oversize piston fitted. (Oversize pistons are available in 0.5 mm. (.020 in.) and 1 mm. (.040 in.).

Wear in mainshaft bearings or bushes will be readily apparent, and bearings showing signs of damaged balls, rollers or tracks should be replaced.

Special clearances are specified for mainshaft bearings used on B.S.A. motor cycles, and it is NOT advisable to fit other than genuine B.S.A. replacements.