BSA SERVICE SHEET No. 304

"B" GROUP MODELS

REMOVING ENGINE FROM FRAME AND COMPLETE DISMANTLING

Procedure for removal of the engine from the frame will commence from the point reached on Service Sheet No. 303 where the cylinder head and barrel had been removed.

Drain the oil tank, and disconnect the oil pipes. Detach the leads to the dynamo, and the earth wires situated on the magneto near the contact breaker housing. Then disconnect the ignition control cable at the handlebar end.

Models with Engine Prefix Letters G.B.
After draining the oil tank disconnect the leads to the **alternator** and the contact breaker.

Chaincase Removal
The chaincase and primary transmission should be removed as described in Service Sheets 307 or 310 on primary transmission (on models fitted with alternator refer to Service Sheet No. 315).

Engine Removal
Remove the bolts securing the engine plates to the crankcase and then unbolt and remove the front engine plates. Slacken the gearbox bolts as these tend to clamp the rear engine plates together. The engine is now ready to be lifted from the frame.

Dismantling the Engine
It is advisable, before commencing to dismantle the engine, to construct a simple jig as shown in the accompanying diagram, on which the engine can be mounted (see Fig. B.5). Alternatively one of the crankcase lugs can be clamped in a vice, with the weight of the crankcase being taken by a suitable support.

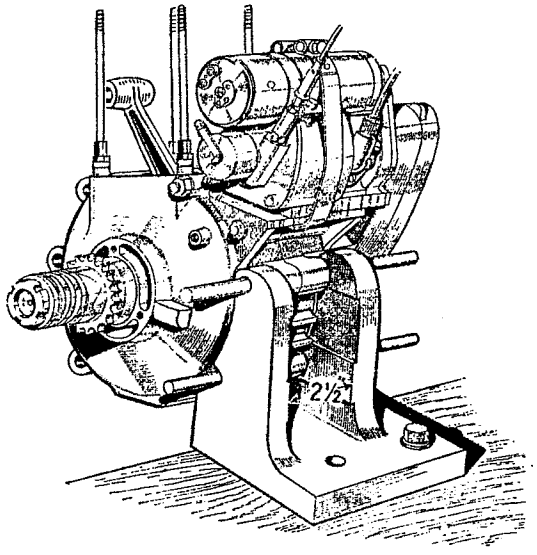

FIG. B.5. *Angle bracket for mounting engine.*

Place a tray underneath the engine to catch any oil which may drip, and then remove the timing cover. Removal of the timing cover screws will be greatly facilitated if a comparatively large screwdriver is used.

Some difficulty may be experienced in removing the timing cover owing to the adhesion of the sealing compound, and in this case the lugs at the end of the cover should be tapped gently to break the joint.

Care should be taken to ensure that the small nozzle in the timing cover which feeds oil to the big-end is not damaged or distorted in any way, as it may subsequently foul the mainshaft and get broken off, and thus starve the big-end and cylinder barrel of lubrication.

Removing Magneto Pinion

This pinion locked on to the magneto shaft by its taper, and after removing the nut, an extractor (61–1903) must be applied to the threads on the inside of the pinion to withdraw the pinion. Next slacken off the magdyno strap bolt, and remove the magdyno as a complete unit.

NOTE:—There is a composition oil seal washer behind the magneto pinion, and there may be shims fitted to the base of the magneto. These items must be replaced when rebuilding.

Models with Engine Prefix Letters G.B.

The contact breaker pinion is secured to its shaft by a pin and circlip and need not be disturbed unless the pinion is to be replaced, the unit can be withdrawn complete with the pinion after the three nuts have been removed. A paper gasket is used between the back of the timing case and the contact breaker.

Out-rigger Plate

Remove the engine mainshaft nut, and the six bolts which hold the plate in position. It will be noted that all these bolts are not alike, and they must be replaced in the same position as prior to removal. The plate and all the pinions with the exception of the timing pinion can now be removed, and to withdraw this pinion an extractor (61–3256) should be applied (see Fig. B.6.).

To obviate the possibility of damage to the mainshaft, a plug of suitable dimensions should be placed in the oil hole of the mainshaft. If the pinions are rebushed they should

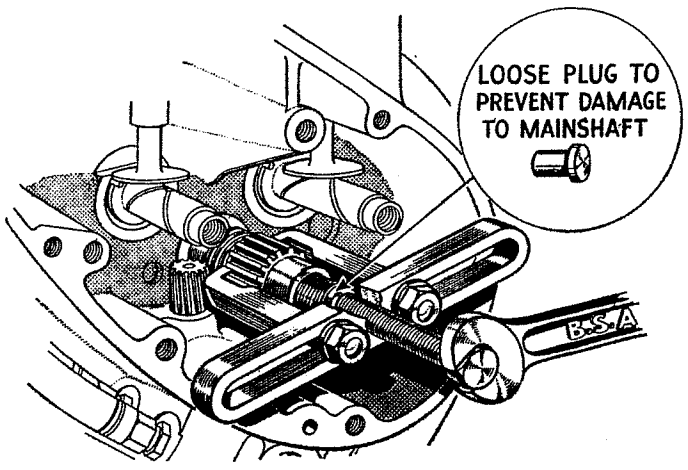

FIG. B.6. *Engine shaft pinion extractor* 61–3256.

be reamed out to .6255—.6250 in. for the cams, and .7505—.7495 in. for the idler pinion. The correct size for the bearing in the out-rigger plate is .815—.814 in.

Before the oil pump spindle is released it is necessary to remove the locating plunger which is situated in the timing case. This plunger has an internal thread, and a timing cover screw can be inserted and used to pull out the plunger once the washer has been removed (see Fig. B.7).

Pump Removal

Unscrew the four nuts in the base of the crankcase, and remove the pump cover plate with the filter and joint washers. Now the two bolts holding the pump in position can be removed and the pump, together with the spindle, withdrawn from the crankcase.

NOTE:—The bolts holding the pump on to its seating can be identified by the spring washers under the heads of the bolts. The other bolts, which do not have washers under the head, serve to hold the pump together, and these should not be touched unless the pump is faulty and it is necessary to replace the internal parts.

If it is necessary to replace the cylinder holding-down bolts, the originals should now be removed, and the crankcase will be ready for splitting.

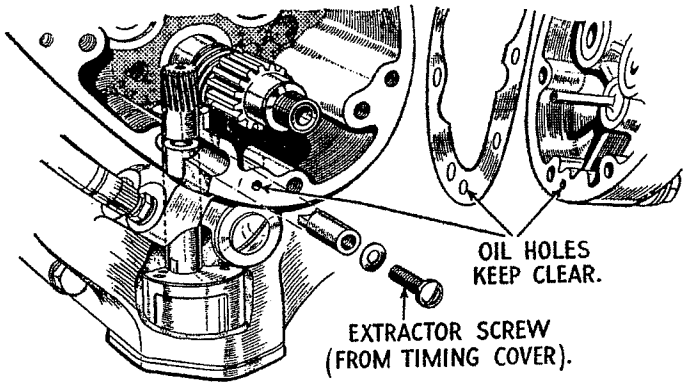

FIG. B.7. *Oil pump spindle locking plunger.*

Splitting the Crankcase

Remove all the bolts around the crankcase joint, and draw each half of the crankcase from the flywheels. It will be noted that the outer races of the drive and gear-side roller bearings will stay in the crankcase. The ballrace in the drive-side crankcase half is held in position by a spring ring, and this ring must be removed before any attempt is made to press out the bearing.

To remove the outer race of the roller bearings, a punch must be applied, as shown in Fig. B.8, and the removal of these races will be greatly facilitated if the crankcase is first heated by immersion in boiling water.

To remove the drive-side ball bearing, take out the distance piece which is normally positioned between the ball and roller bearings, remove the spring ring and use a press tool to press the bearing from its housing.

If it is desired to remove the cam pinion spindles they can easily be withdrawn by means of an extractor (61–691), but do not remove these spindles unless it is absolutely necessary. If it is necessary to replace a tappet, of course, the cam spindles must be removed so that the tappets can be drawn out downwards into the timing cover. When removing tappets it is necessary to unscrew the tappet guides in addition to withdrawing the cam spindles, and in the case of the exhaust guide the timing pinion must also be removed.

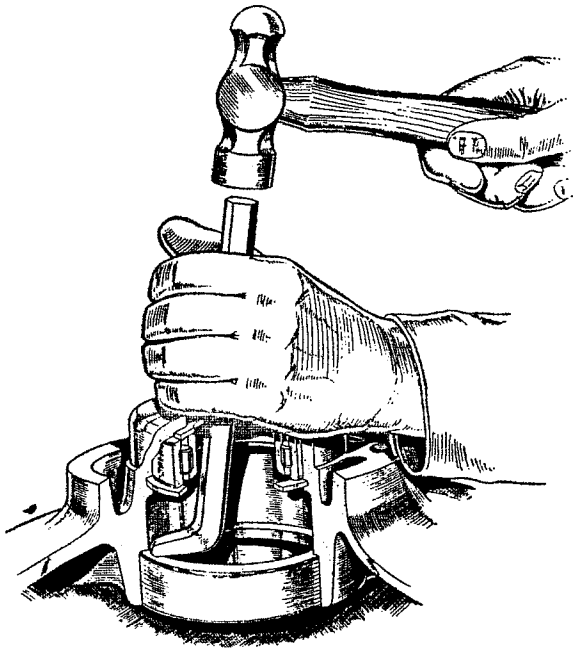

FIG. B.8. *Roller-race extraction (drive-side).*

Parting the Flywheels

Remove the locking plates holding the crankpin nuts, and unscrew the nuts. It will be found that considerable leverage is necessary to unscrew these, and it is suggested that a length of strong tubing of suitable size be applied to the spanner so that the desired leverage may be obtained.

The crankpin is a taper fit in the flywheels, and can be released by being tapped smartly with a mallet.

In the event of big-end wear we do not advise the fitting of oversize rollers, and the whole big-end assembly should be replaced. When a new big-end bearing has been inserted it is necessary for it to be ground out to 1.7702—1.7704 in., as a slight distortion is liable to occur when the bearing is pressed in.

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