BSA SERVICE SHEET No. 209

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C Group, 4 Speed (1951-57) & A Group Rigid & Plunger

DISMANTLING AND RE-ASSEMBLY OF GEARBOX AND GEARCHANGE

Removal

In most cases it will be found convenient to dismantle the gearbox while it is in position in the frame. If it is necessary to remove the gearbox sprocket or sleeve pinion on an 'A' Group machine, the engine-gearbox unit must be removed from the frame and the gearbox separated from the crankcase (see SERVICE SHEET No. 206). To remove the gearbox from the frame of a 'C' Group machine for attention to bearings see Service Sheets Nos. 308 and 411.

Dismantling the Gearbox

Move the gears to the neutral position between first and second. Next remove the gearbox outer cover which is held in position by three screws and four nuts. The cover will come away with the kickstarter, the gear change and the clutch lever still in position, and these need not be disturbed unless obviously requiring attention. Note that as the cover is withdrawn, the spring pressure on the kickstarter pedal is released. The clutch operating lever should be pulled out to the fullest extent, allowing the kickstarter lever to come to rest against it, thus preventing the kickstarter return spring from being released.

Pull out the clutch operating rod which passes through the centre of the mainshaft, and then release the nut on the mainshaft which holds the kickstarter ratchet pinion and spring, laying the latter aside. The gearbox partition can then be removed together with the foot gear-change rocking lever M. (Fig. A24).

The rod G is pressed into the gearbox shell at the clutch end and secured by a grub screw which is accessible under the gearbox. Release this grub screw and then pull out the rod. It should then be possible to withdraw the entire gear cluster complete with shafts and the two sliding forks bodily from the gearbox, although, if preferred, the components may be withdrawn separately. This may call for a certain amount of manoeuvring, but the experienced mechanic will have no difficulty. Before removing the gear selector plate H, note the notch in which the gear control plunger engages. This is the neutral position between first and second gear, and the plate must be rotated to this position before the box can be reassembled. Unscrew the selector plunger housing locknut and remove the plunger assembly from the gearbox shell. The gear selector plate will now slide from its pivot. The layshaft bushes are a press fit in the gearbox and if necessary must be driven out with the aid of a soft punch.

The top gear pinion sleeve is now the only part still left in the gearbox, and if the sprocket locknut is unscrewed, after suitable attention to the tab washer, the sprocket may be removed and the pinion tapped into the gearbox with the aid of a wooden mallet.

Do not disturb the ballrace unless it is suspected of being faulty. Wash it thoroughly in paraffin, to remove all traces of oil, and any play will then be immediately detected.

Examine the various parts for wear, and if the forks which actuate the sliding pinions show signs of seizure it will be advisable to replace them. Attempts to erase the seizure marks will result in excessive side play

The fixed pinions on the layshaft and mainshaft are pressed on, and new components must be a tight fit. Examine the selector plate for worn cam grooves and for wear on the ratchet members on the boss in which the selector claw P engages, and replace if necessary. The selector claw should be replaced if the teeth show signs of wear as, of course, should pinions with damaged or worn teeth.

Re-assembly of the Gearbox and Gearbox Mechanism

If it has been decided to fit a new ballrace to the top gear pinion, remove the spring circlip and oil flinger washer with the aid of a screwdriver. In order to remove the ballrace easily, warm the gearbox shell in boiling water. If the sprocket teeth are worn hook-shaped, a new sprocket must be fitted; otherwise rapid chain wear will result. Do not forget to set the lockwasher into the grooves machined in the locknut after the latter has been tightened up. The tabs in the centre of the locknut washer must fit properly into the sprocket splines.

Assemble the layshaft with selector fork "F", with the exception of the low gear pinion (this is the largest on the shaft). Replace the selector plate and gear control plunger, rotating to the neutral position between first and second gears. Slide the layshaft complete with gears and selector fork into the box and engage the fork peg in the track of the cam plate.

Assemble the mainshaft pinions on the shaft and the selector fork "E", and insert the complete assembly into the gearbox shell engaging the peg of the selector fork in the cam plate. Slide the gear control shaft through the selector forks and press home into the gearbox case, replace the grub screw turning the edge of the hole over to prevent loss of the screw Replace the thrust washer and low gear pinion on the layshaft.

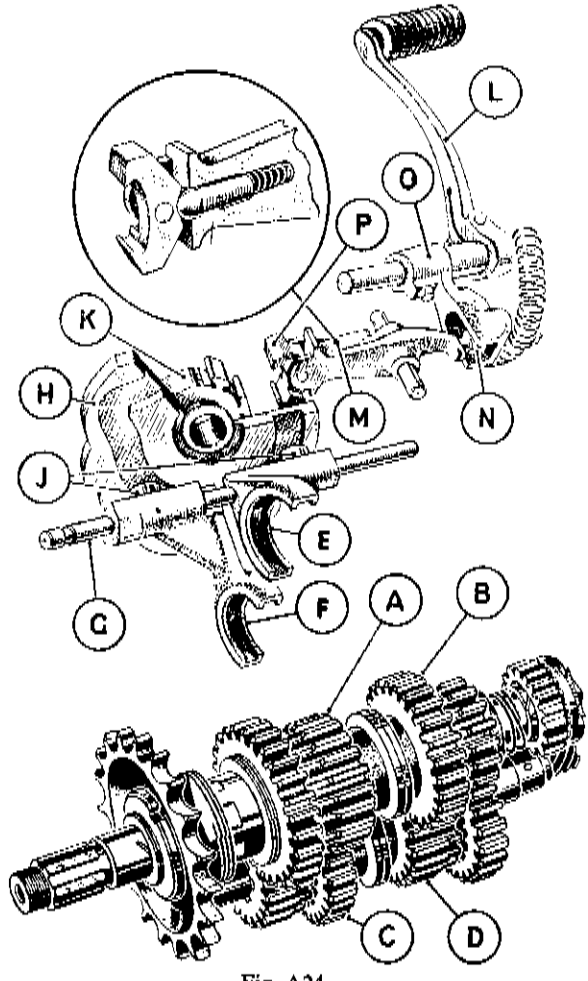

Fig. A24.

The inner cover should next be assembled. Coat the paper washer between the inner cover and the gearbox shell with jointing compound, hold the gear change rocking lever in a central position, slide the inner cover on to the four studs and push it "home". The gear selector claw must engage on the ratchet members on the selector plate boss.

The ratchet mechanism may now be fitted to the mainshaft, the parts assembling in the following order—spacing washer, sleeve bush, spring, ratchet pinion, locking washer, and nut. Tighten the nut and turn over the tab on the washer as a means of locking the nut.

The outer cover can now be replaced. Coat the paper washer with jointing compound. Take up the outer cover with the kickstart lever in the left hand and the footcharge lever in the right hand. Slide the cover onto the gearbox studs and press home, entering the kickstart quadrant in the ratchet pinion and the footcharge slotted lever over the ball end of the rocking lever. Replace the four nuts and three screws on the outer cover.

The unit is now ready for reassembly to the engine (see Service Sheet No. 208).

A.10 & AA.7. Machines

After engine numbers ZA.10-1215, ZA.7-11192 are fitted with a modified layshaft and gear cluster to obtain improved gear selection and the engine number should be specified when ordering spares.

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