The majority of these tips have appeared in club newsletters over the years. Please note that you use them at your own risk as neither the Bristol Austin 7 Club nor the authors can be responsible for the results of trying to follow the instructions given.

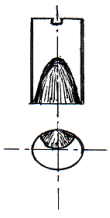
Gearbox - springs - by Ron Hayhurst

REPLACING GEARBOX SPRINGS

For comprehensive information on all aspects of gearbox jobs, the “Austin Seven Manual” by Doug Woodrow is recommended - see the advert in the Association Magazine. If the main problem is a slipping gear, or non-existent synchromesh, these thoughts may help.

That annoying habit of flying out of gear is mainly to be found on the synchro-mesh boxes. In these boxes the gears are cut on a helix, giving an axial thrust through the box that tries to push the selected pair out of mesh. This should be countered by the spring-loaded ball in the selector fork (probably with some assistance from the synchro hub springs) but, when this is broken/weakened/ gunged up, this function is lost. The three speed boxes, with their straight cut gears don’t have this axial thrust but nevertheless can almost fall out of gear when the selector springs are no longer doing their job.

The first tip is to make a small tool to help to trap the new spring and ball in the fork when offering up the selector rod. On the synchro boxes the rod is ½” in diameter, so obtain a 6” length of ½” bar or a scrap selector rod and nip up tight in the vice. With the end cut off square, attack it with an angle grinder to cut a U shaped grove in the end, with a taper back to a full diameter over a ⅝” length as per sketch. Cut off to make it about 1” long and put in a saw cut to make a screwdriver slot. For a 3 speed box the diameter is 7/16”.



To assemble, place the forks in the gearbox, pop the spring and ball in position keeping your finger over the end nearest the ball and tipping the box slightly, to keep the ball at that end. Push the tool through the fork, so that the groove passes over the ball, insert a screwdriver and twist the tool through half a turn to force the ball down into its “housing”. Remove the screwdriver and thread in the selector rod. Tap it gently forward to run past the ball and push out the tool.

To improve the synchromesh, it will be necessary to take apart the two halves of the hub, replace the springs and balls and thoroughly clean all parts including the oil holes at the base of the springs. Examine the teeth of the outer part and replace this part if they are badly worn. It’s a good idea to make a quick sketch of the hub first to ensure correct assembly later. On the gears, check that the bronze cone and associated gear ring are still a tight fit. If loose or seriously worn you will need to get hold of a replacement gear and cone.

When replacing the synchromesh springs, a useful tip is to make a tool to help with this hub strip and stop the balls flying all over the place when the two halves are separated. Procure a baked bean tin or similar, which will just happen to be the right size to accommodate the inner part of the hub. Drill a 5/16” hole about one inch in from one of the ends. Take out the remaining end and neatly tap down the rough ends where the tin was opened. Now partially separate the two halves of the hub by tapping the inner part so that about ⅛” is exposed. Insert this into the tin and, keeping outer part of said tin firmly in close contact, whack the inner part down into the tin. Set aside the outer and draw back and rotate the inner hub until it presents a ball bearing at the 5/16” hole. Be ready to catch it and then hook out the spring. A stripped third motion shaft is a useful tool for rotating the hub inside the cylinder. Repeat for the remaining five springs and balls.

Examine the outer part of the hub, note the shiny part in six places in the centre ring, between the two rows of teeth, where the balls used to engage. When reassembling it on to the inner hub, consider arranging for an unused section to be used. In doing this it may make gear changing a little stiff for a while, so some may care to re-assemble the two halves “as found”.

The reverse of the above procedure is used to get all six springs and balls held inside the tin cylinder. Again give it a tap to expose ⅛”of inner hub, check your sketch for correct alignment, and offer up to the outer hub. A smart whack, with tool and hub in close contact, will bring the two components together.