

retainer weight by 50% which is, you must admit, a fair amount. We cannot make the aluminium retainers, size for size, the same as the steel ones, as they would not be quite strong enough. To compensate for the lower ultimate strength of the aluminium, we should make the retainers thicker on the face that the outer spring beats against see Fig. 45. Only good quality high tensile aluminium alloy such L65 should be used for these retainers, this has a strength in excess of 25 tons per square inch.

### Flywheel

The standard flywheel is, on the six cylinder engines, good for giving a smooth tickover, but for a tuned motor it is unnecessarily heavy. The four cylinder engines also have a heavy flywheel. For these engines, you can have one of two different flywheels depending on the type of clutch fitted, the one being heavier by far than the other. To lighten the flywheel, it is simply mounted in a large lathe and machined as shown

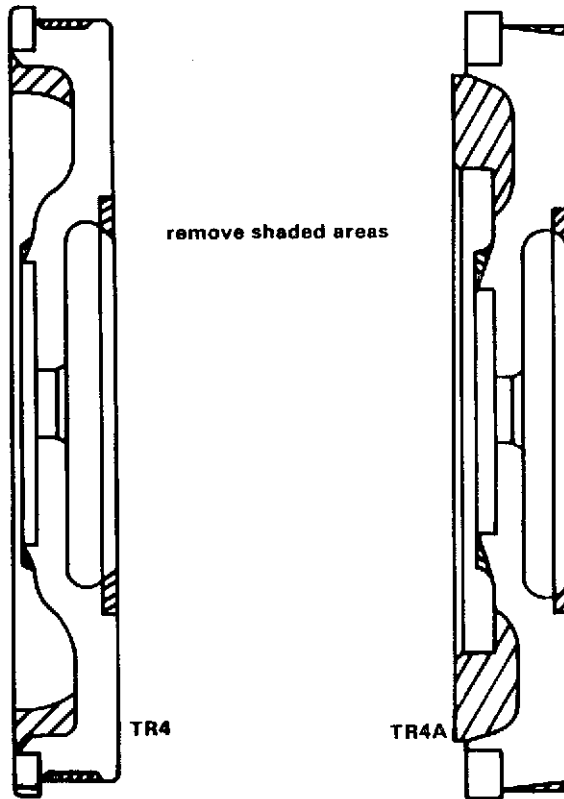


Fig. 46. Flywheel lightening.

for the relevant flywheel in Fig. 46. Practically any motor machine shop has a lathe large enough to tackle such a job, so there should be no problem getting it done. It must be pointed out that a lighter flywheel neither increases the power nor makes the car faster. It does, however, allow the car to accelerate faster because of the reduced mass which the engine has to speed up. The lower gear the car is in the greater the effect of the reduced flywheel weight. To clarify the point a little, let us look at a simple example.

Let us assume that we have reduced the effective weight of a flywheel by 10 lb. While the car is in bottom gear the engine r.p.m. to driving wheel r.p.m. is 16 to 1 i.e. the engine turns 16 revs to the wheel's one

rev. The 10 lb. flywheel weight reduction is equivalent to reducing the weight of the car by 160 lb. that is  $16 \times 10$  lbs. When we change to second gear which, we will say, is about 12 to 1 overall ratio, the gain, because of the lighter flywheel, will be  $12 \times 10$  lbs. which is 120 lbs. By the time we get to top gear, the effect of the lighter flywheel will only be about the same as lightening the whole car by  $4 \times 10$  lbs. or 40 lbs. With the exception of one of the TR4 flywheels the effective weight saving will not be as great as 10 lbs. A more likely figure is between 6-8 lbs., but this is enough to make a noticeable difference. By way of a bonus, the lighter flywheel also enables snappy gear changing when going down the box.