TClinic

GEARS

In the rear axle of every car there lives a set of gears called the "ring and pinion." The pinion gear is connected to the drive shaft, which in turn is connected to the engine via the transmission, so that the pinion turns at the same speed as the engine when the car is in high gear. The ring gear and pinion gear are meshed together, and since the ring gear is always larger than the pinion, it turns more slowly than the pinion. This is expressed as a gear ratio of 2:1.

If you think about this for awhile, you can see that by changing the ratio of the ring and pinion you can tailor a car to suit the conditions under which it is usually run. For example, if you run your car at highway speeds over fairly level ground you don't need a lot of torque multiplication. However, if most of your driving is stop and go traffic or in hilly country, you will need more power at the rear wheels. This multiplies the engine torque more, so that you get quicker acceleration and more power on the hills. The problem with this is that with the 3:1 ratio, the engine turns at a higher speed making it less suitable for high speed highway use. This is where this article applies to our old classic MG's.

Most of our old MG's use ratios somewhere around 5:1, which means that at modern highway speeds our engines are turning over at high RPM's which they were never meant to hold for long periods of time. Remember that these cars were designed for the English roads of 25 years ago: narrow, winding, with relatively low speed limits.

The MG Car Company made several alternate ratios for the T-series, and although they are no longer available at your friendly neighborhood dealer's parts counter, they can still be found if you try hard enough.

There were two gearsets made which fit the TA, TB and TC rear end. An 8/41 (5.125:1) ratio was standard on the TB and TC, and with the standard 4.50x19 tires this gives you 15.84 MPH road speed for every 1000 RPM engine speed. An 8/39 (4.875:1) ratio was standard on the TA, giving 16.67 MPH per 1000 RPM. The 8.39 gears will fit the TB and TC, giving the same speed as the TA.

There were other optional ratios made for these cars, but they were intended for slow mud-slogging trials work and are not at all suitable for road use as they produce low road speeds at comparatively high engine RPM's.

Notice that there were 8/41 and 8/39 gearsets made for all models. They are not all interchangeable. All TA-TB-TC gearsets are interchangeable, and all TD-TF gearsets are interchangeable, but they are not interchangeable between those two groups since they use two entirely different types of rear axle assemblies.

The following charts show what effect these different gear ratios have on the car. The first chart shows the different engine speeds you will get at road speed 60 MPH with the different ratios. The charts are accurate only if the original tire sizes are used.

ENGINE SPEEDS AT 60 MPH

Gear Ratio	TA-TB-TC
8/41 (5.125:1)	3839 RPM
8/39 (4.875:1)	3599 RPM
9/41 (4.555:1)	– – – – –

Or if you prefer to look at it from a different angle, the next chart shows the road speeds you will get at engine speeds of 3000 RPM and 4000 RPM with the different ratios. Most of us seem to cruise somewhere in this RPM range.

Road speeds at 3000 & 4000 RPM

TA-TB-TC

Gear Ratio	3000 RPM	4000 RPM
8/41 (5.125:1)	47.5 MPH	63.4 MPH
8/39 (4.875:1)	50.0 MPH	66.7 MPH

The larger the diameter of the tire you use, the higher the road speed will be at any given engine RPM. For example, a TA, TB or TC with the 8/39 gears and standard 4.50 tires goes 66.7 MPH at 4000 RPM. A half inch difference in tire size makes almost a 3 MPH difference in road speed. Before you all rush out to buy high speed ring and pinion gears for your cars, you should consider the disadvantages. First, it isn't easy to swap those gears. The second disadvantage is that changing to a high speed rear end ratio either by re-gearing or by fitting larger tires) will enable you to travel faster at any given RPM, but it will cost you some acceleration and hill climbing power. For general around town puttering, where the RPM's never get very high anyway, you will probably be happier with the original ratio. But, if you enjoy the open road, or if you drove to work every day on a superhighway, you will probably appreciate the lower RPM's you get at high speeds with the 8/39 or 9/41 gears and/or larger tires. Even if it means you might have to shift down more often in traffic and on hills.

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Roger Furneaux of Mad Metrics (in England) had some 4.55 CWP sets made up to fit a TC if you wish to go that high. Not for a weak engine though. A 4.55 Morris Minor 1000 differential center will also fit a TC housing with some minor machine work. Same goes for a Sprite center with a 4.2 ratio.