

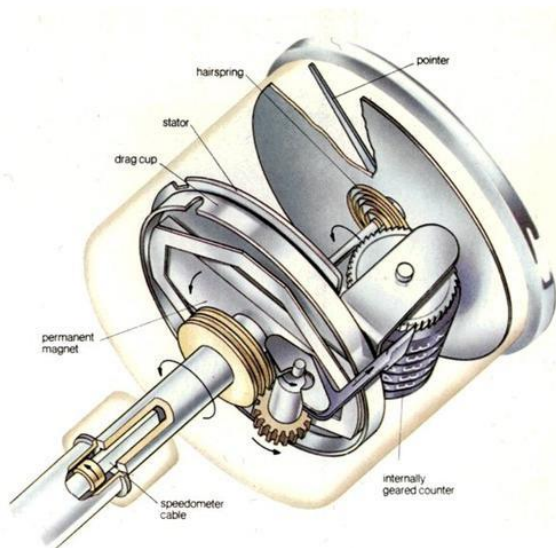
## Triumph Roadster Speedometers and their calibration

by Paul Alting van Geusau

### Triumph Roadster speedo/odometer/clock combination instrument

The instruments for the Triumph Roadster were made by British Jaeger, originally a British arm of the French company, which was acquired by Smiths, the well-known clock-making company in 1927 (In 1931 the business was renamed British Jaeger Instruments Ltd). Therefore, other than the name, little differences can be seen between the Smith and Jaeger instruments.

The speedo/odometer and also the clock are mechanically quite robust but when left un-serviced over very long periods these old instruments can give some minor problems, often related to hardening of lubricant. So when the speedometer needle starts swinging it is not always the speedometer cable that is at fault but rather a dirty speedometer mechanism can be the cause. Another common problem is that when lubricating the speedometer drive cable too heavily, oil can enter the mechanism from the back of the instrument and runs into the cavity between the drive magnets and aluminium cup driving the speedometer needle.



Usually cleaning will be sufficient to put the instrument in order for further use (right picture shows such a dirty instrument). If you want a perfectly working speedometer then have your speedo serviced and many years undisturbed driving pleasure will be the result.

### Four types of Roadster Speedometers

1800 number on the scale 840



1800 number on the scale 1350



2000 number on the scale 860



2000 number on the scale 1400



The number on the scale represents the number of revolutions for traveling 1km (840 for the 1800 and 860 for the 2000) or 1 mile (1350 for the 1800 and 1400 for the 2000). It can easily be checked whether the scale belongs to the instrument by just counting the number of revolutions for 1 mile or 1km leading to a number shift on the counter scale.

Running the speedometers with a speed (rpm) corresponding to the respective numbers gives a speed of 60 km/h or 60 miles/h, respectively. For example when considering the 2000 km speedometer, 860 revolutions represent 1 km, 860 rpm represents 1 km per minute and thus 60 km per hour. Based on these speeds the speedometer can be checked for correct speed indication.

The different numbers between the 1800 and 2000 are the result of different rear axle ratio of the 1800 when compared to the 2000 (4.56 for the 1800, 4.625 for the 2000).

Based on the values given by Standard Triumph for engine speeds in top gear representing a road speed of 10 miles/h the resulting effective tyre circumference is 2090mm. Calculations of the actual road speeds based on the numbers on the scale of the speedometer gives a slightly lower road speed, i.e. the indicated speed is slightly higher than the actual speed. This is just a quite common precautionary measure of the car manufacturer so as to avoid the situation that the indicated speed is lower than the actual speed, which is not allowed by law.

### Calibrating the speed indication

No adjustment is possible for the travelled distance counter because of the fixed gears, but correct indication can be checked in the manner as referred to above.

The only adjustment available for the speedometer is to give it a different position on its shaft. The hairspring has a fixed linear characteristic, measured in **Torque gm/cm/100°** and although different hairsprings are readily available (see [http://www.britishprecisionsprings.co.uk/html/stock\\_spring\\_list.html](http://www.britishprecisionsprings.co.uk/html/stock_spring_list.html)) it would require a lot of trial and error to find the correct spring. Anyhow hairsprings do not change their characteristics other than when damaged so then you need a new spring anyway. That is however a job to be done by the specialist.

What is needed to check the speedometer is a drive and an accurate revolution counter. Nowadays both affordable and accurate electronic tachometers are readily available. Below is a picture of such a model.



I bought mine for 5€ on EBay but even new they do not cost more than about 20€. I used an electric drill as a drive. Together with the tachometer some reflective tape is provided and a small strip was attached to the drill chuck so as to allow the light emitted from the revolution counter to be reflected. When the chuck rotates reflected light pulses are counted and the calculated drive speed is indicated on the lcd screen. Below is a picture of such a very simple calibrating arrangement.





If the needle does not point at the correct speed it can be rotated on its shaft to a position where the 60km/h or 60Miles/h position is correct. Then check at other speeds, say 30 km/h or 30miles/h whether the needle is not too far out of range. If that does not work you probably need a new hairspring (and some cash to have the work properly done).

### Conversion of other speedometers to fit a Roadster model

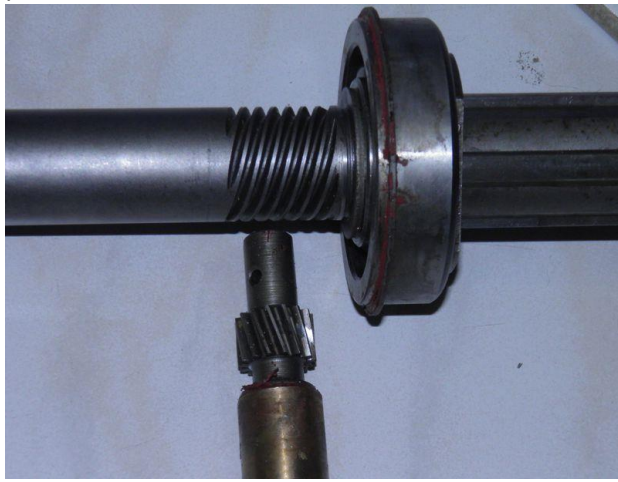
Although it is possible to convert any speedometer to fit the Roadster this is not an easy task. Moreover, so as to not detract from originality, in fact only speedometers from the other Roadsters or from the early saloons (number on scale 1450) are suitable candidates for conversion.

1800 Saloon



1450

speedo drive



If the numbers on the scale differs from what is needed at least a different gearing to the counter is needed and probably a different hairspring has to be mounted. Such modifications go beyond what the amateur can do because it needs remanufacture of the gears and selecting a proper hairspring. George Filbey, whose advertisement is in the Roadster Review, can do such a job. George can also make a new scale, for example if you want a km scale instead of the miles scale. Such a conversion to km also requires new gears for the counter so that kms are indicated instead of miles.

It has been suggested that changing the speedo drive ratio in the gearbox would be an alternative to converting the speedometer. Although in principle this is possible the Roadster speedometer gearbox drive does not allow any easy modification (see picture above).

Another solution would be the use of an intermediate gear arrangement between the gearbox drive and the speedometer. Specialist companies exist that manufacture such intermediate gear boxes for any given ratio. However costs are extremely high, much higher than a conversion of a speedometer as offered by George Filbey.

Comprehensive instructions for Repairing Jaeger & Smiths Speedometers can be downloaded at the following internet address:

[http://www.szott.com/lotusinfo/Smith-jaeger\\_speedo\\_repair.pdf](http://www.szott.com/lotusinfo/Smith-jaeger_speedo_repair.pdf)