

INFORMATION ON HIGH RATIO AXLE GEARS FOR DERBY BENTLEY 3 ½ AND 4 ¼ CARS

We offer a high ratio crown wheel and pinion cut to the original Gleason system and manufactured to original drawings.

To replace these gears entails dismantling the axle and differential assembly and the opportunity is taken of replacing worn bearings and thrust washers etc. where necessary, and reducing all lash; effectively bringing the axle up to new car specification. It is obviously sensible to check these components, and deal with them if necessary, whilst the axle is apart.

Apart from higher cruising speeds the main advantage is in reduced engine revs at any given speed, giving a quieter and less “nervy” ride, plus significantly better fuel consumption.

Long stroke engines such as were in use at the time suffer much higher piston speeds at high revs and this gives rise to vibration and discomfort at speed with accelerated wear and tear on engine components. It is therefore desirable to drive at lower revs to keep within the engine torque range which, on this type of engine, is where the best performance is obtained, together with optimum fuel consumption. The high ratio axle is designed to achieve these advantages.

We are often asked about the advantages of a change of axle gear ratio as against an overdrive installation and in our view the following points should be carefully considered.:-

1. There is no added weight, extra controls or electrical switches etc., and structural alterations are not required to your car’s original components as with an overdrive; above all reliability is absolute, as with the original.
2. There are no extra components which require maintenance, or which could potentially fail - oil, filter, seals, universal joints, electrical circuitry and components etc. - which there are with an overdrive; also these proprietary components will not be engineered to the same standards as the rest of your car.
3. There is no power loss in the system - the extra gear set, clutch and oil pump contained in an overdrive can be expected to carry a significant penalty at the rear wheels.

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4. When considering an overdrive installation thought should be given to whether the axle may also require attention. The extra rpm being delivered to the axle with an overdrive unit will certainly exacerbate any wear which exists and bring closer the probability of an expensive and unwelcome surprise which can be added to the overdrive cost.
5. First gear on the standard pre war Rolls-Royce and Derby Bentley is of little use in these days of smooth and level roads and there is no gradient now existing (which we know of) where first gear is essential, so cars effectively have only three useful gears. The higher ratio axle makes first gear both useful and usable.
6. With an overdrive which works on top gear only the gearbox ratios feel inappropriately low.
7. Rolls-Royce themselves produced high ratio gears and the axle casings are spaced to accept these. However, with road speeds of around 40mph at the time, it is understandable that they were not made available to the public generally.
8. With high ratio gears no extra stress is placed on any component, with the possible exception of the tyres, which is a normally accepted running cost.
9. Safety. In the event of failure of an overdrive the effect on the brakes would be serious due to loss of brake servo assistance and the possible consequence to road users.
10. The cost of fitting a high ratio gear set, *including overhauling the axle assembly*, is seldom more, and often less, than the cost of fitting an overdrive unit.

High ratio gears are also produced for Silver Ghost and Phantom I, II and III and Bentley 3 1/2 and 4 1/4 and Mk VI.

If you require any further information or would like to discuss the pros and cons generally please do not hesitate to call us on +44 (0)1189 625747 or email on info@maggsvintage.com.