

Beam me up

The team at SuperPro have come up with another novel solution, this time for VAG torsion beam rear suspensions. They tell us more.

Since the early days of the Mark I Golf, VW has employed torsion beam rear suspension systems on many of its front wheel drive models. Beam axles are economical to manufacture, deliver increased cabin room and boot space – vital in the competitive small and medium car sectors. And, even though the Mark 5 Golf Platform cars onward have adopted more sophisticated multi-link rear suspensions, VAG are still using the beam axle on cars based on the Polo platform.

Independent movement

The torsion bar beam axle design features a system incorporating two trailing arms linked with a torsion tube or “beam”. The weight of the vehicle bears directly through the springs onto the wheel bearings at the end or near the end of the trailing arms. The roll control of the vehicle is achieved by the beam twisting to limit the independent movement of the trailing arms,

without the need for a rear anti-roll bar.

The system is mounted to the chassis at two fixed points through a uniquely designed rubber to metal pivot bushing. This bush is responsible for locating the axle and also helps control the rear suspension geometry – including allowing a degree of passive rear wheel steer. The importance of the role played by this mounting increases when looking for performance improvements through fitting larger wheels and tyres, firmer springs and dampers or aftermarket anti-roll bars.

Degradation of the beam axle pivot bushing will lead to excessive or incorrect movement in the mounting, which in turn may lead to body roll, erratic rear-steer and potentially unbalanced handling. At best, a worn or tired bush will increase the feeling of vagueness and reduced control in the rear suspension.

It is therefore important that these bushings are inspected at regular intervals for bonding failure of the rubber to outer shells



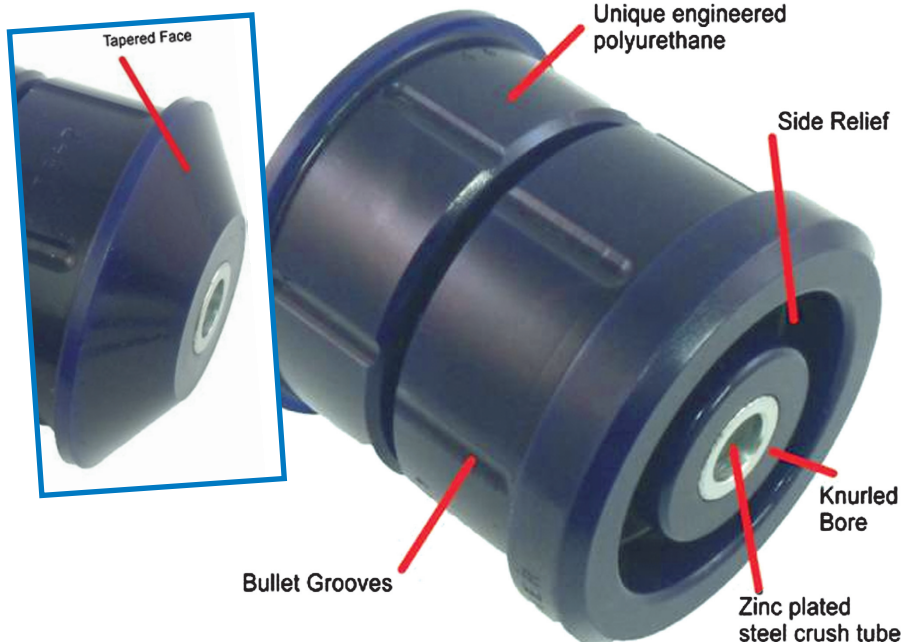
and inner metal tubes and for cracks appearing in the rubber – and not necessarily only at MOT time. Both symptoms will allow excessive flex and torsion beam movement, leading to vague and unpredictable handling or potentially erratic behaviour.

Single solution

VAG have used a range of different design and technology ideas like alloy tubes and composite shells for these bushes in an effort to achieve optimum performance. However, by using polyurethane with unique properties and careful design, SuperPro’s engineers claim to have been able to develop a single solution for both general repair and also higher performance, in particular the well proven MKIV Golf bushes and the soon to be released kit for current Polo 6R based cars are good examples.

The unique designs and materials used by SuperPro allow the torsion beam to locate firmly enough to provide consistent geometry and control while still allowing limited passive rear steer – perfect for normal and performance applications. In addition, free pivoting movement in the vertical plane avoids the creation of unwelcome levels of noise vibration and harshness.

Finally, the two-piece SuperPro design offers easy fitment with installation of the new bush possible without the use of a press – and potentially without completely removing the axle from the car.



A schematic diagram of a VW rear beam axle

MORE INFORMATION

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