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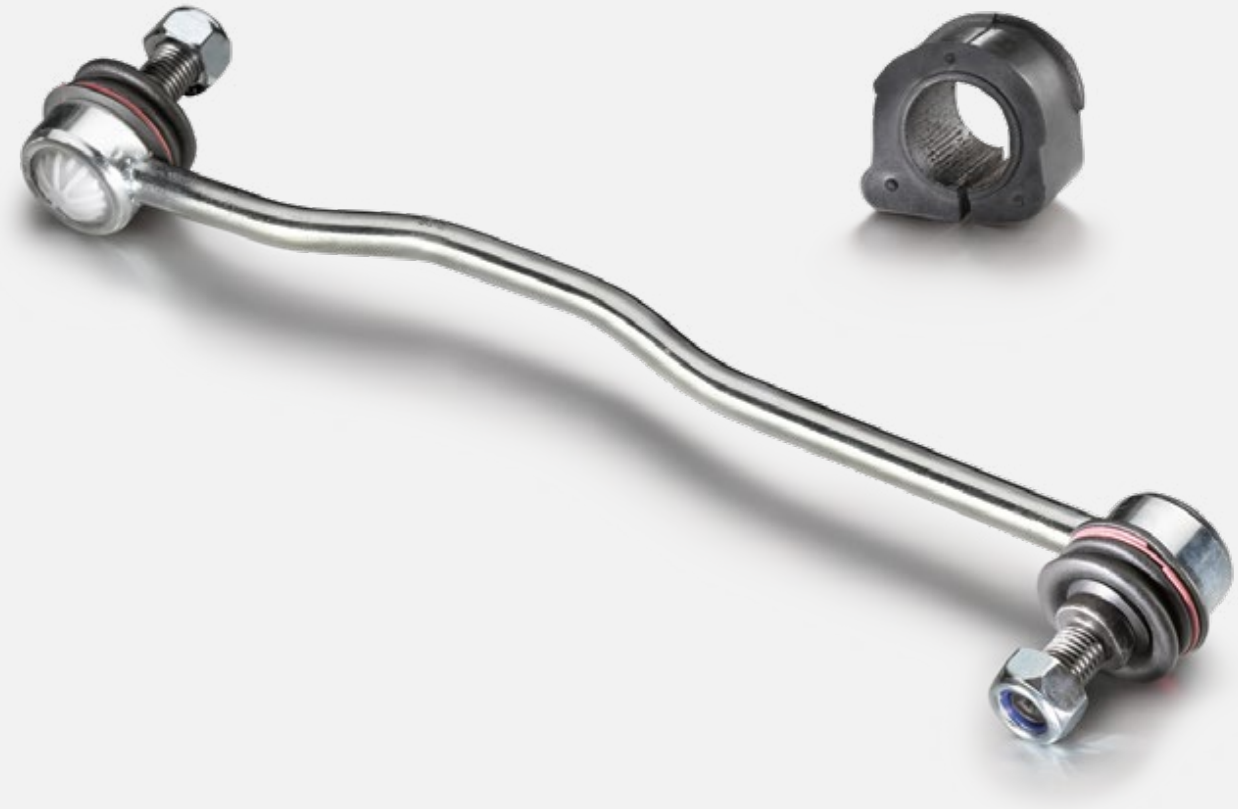
FAG Failure Diagnosis

Coupling Rods and Stabiliser Bushings



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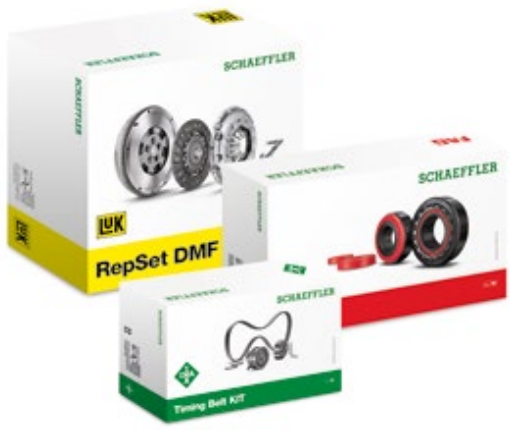

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Our products are based on a comprehensive systems approach. Innovation, technical expertise, and the highest material and manufacturing quality make us not only one of the leading development partners for vehicle manufacturers, but also a pioneering provider of value-retaining spare parts and complete repair solutions for clutches and clutch release systems, engine, and transmission applications, and chassis applications in original-equipment quality – right up to the appropriate special tools.

With our FAG brand, we are the specialist for chassis repair and supply a wide range of products and repair solutions. Our portfolio for this includes wheel bearings, steering and suspension parts, drive shaft assemblies, and strut mountings. By using state-of-the-art sealing and surface coating technologies, we offer the same high level of quality throughout the entire portfolio. Every individual component, including the smallest accessory part, is developed and tested according to Schaeffler quality standards. Therefore, our products ensure safe and agile road handling in every driving situation.

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Contents

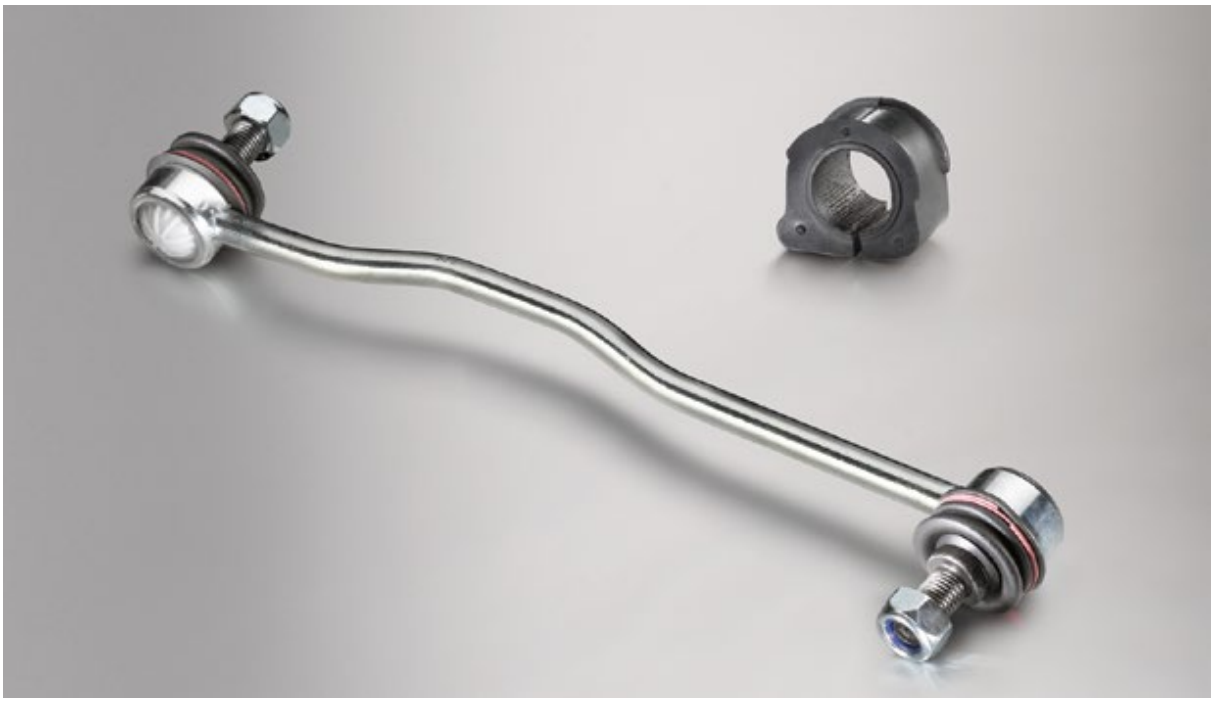
1 General Information

Vehicle stability

Rough and changing road conditions place highest demands on vehicle suspension systems. During operation vehicles roll between the left and right sides. To ensure vehicle stability it is therefore essential to absorb or harmonise rolling motion.
Vehicles lacking stability control pivot about their longitudinal axis which results in unresponsive steering. Rolling motion is neutralised by means of stabilisers which connect to the engine carrier and half axle.

Twist beam rear suspensions are an exemption from the rule: with this suspension set-up, which is typically found on front-wheel driven vehicles, connection between the left and right-hand sides is ensured by the axle body itself which also acts as integrated torsion spring.

On all other axle setups rolling motion is minimised using stabiliser bars which connect to the control arm directly or via stabiliser links.



2 Frequent defects

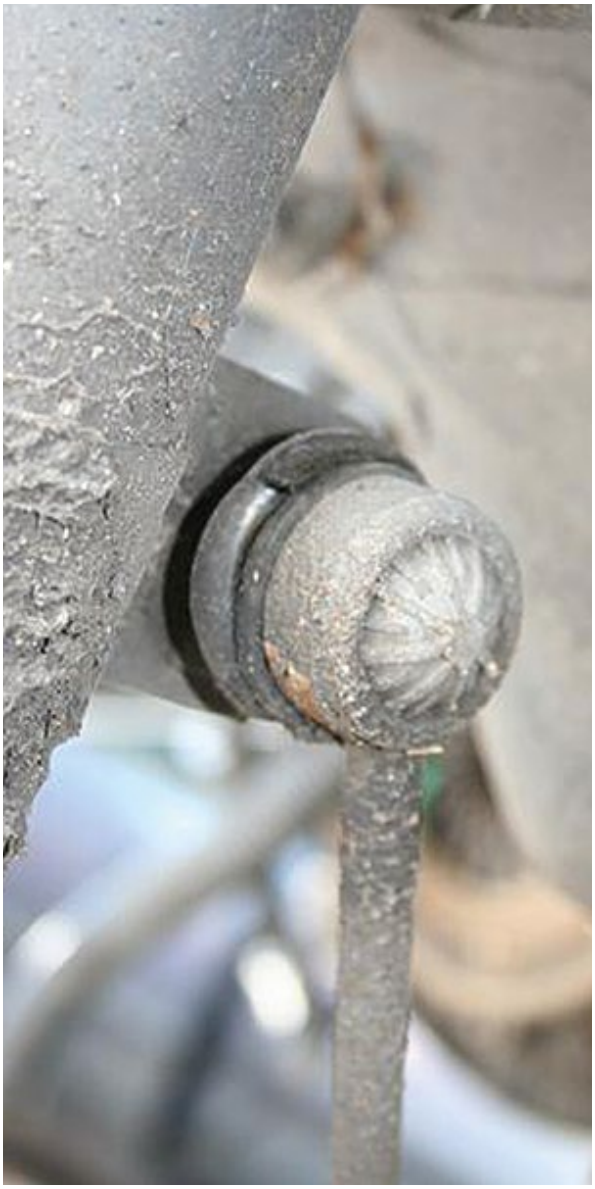
Coupling rods

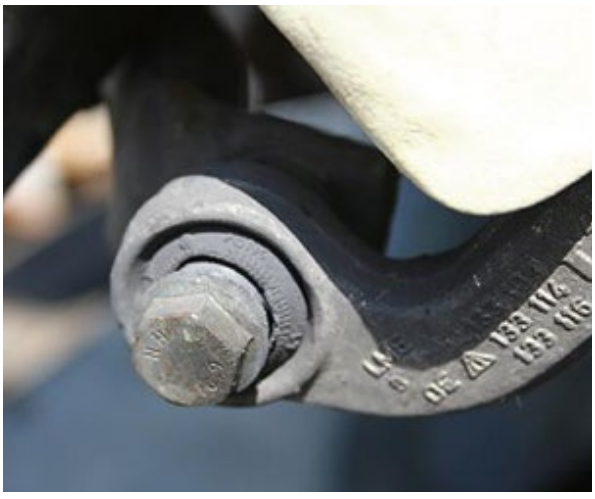
Possible defects
- Worn out ball heads
- Fracture or distortion
- Bushing have come loose
- Porous bushings

Causes
- Defective rubber sleeve
- Contamination by dirt or moisture
- Destruction by foreign bodies
- Fracture or wear of the ball socket
- Mechanical stress
- Incorrect mounting position

Effects
- Joints wear out
- Increased load applied on the stabiliser mount
- Loud clattering noise
- Detachment from the stabiliser

Remedy
- Regular inspection of suspension components
- Adherence to specified maintenance intervals
- Immediate replacement of defective parts





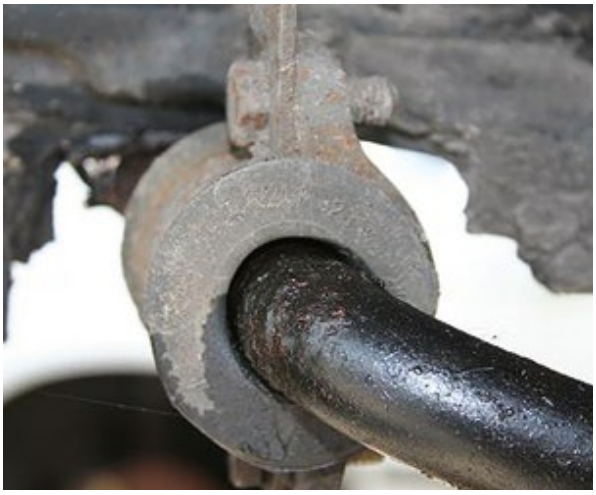
Stabiliser bushings

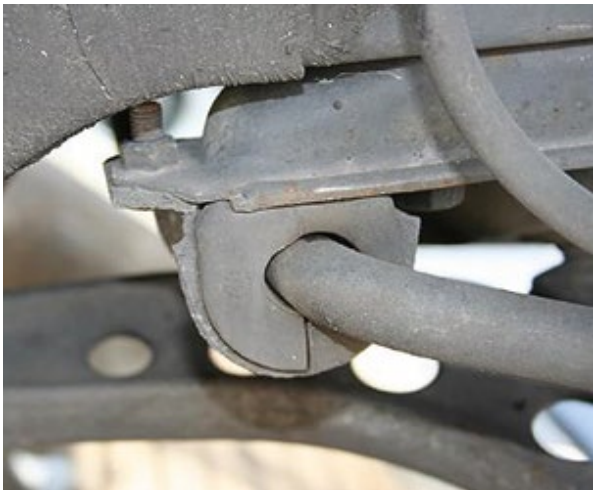
Potential damage
- Flaring of the rubber
- Deformation of the bushing
- Dissolving of the bushing
- Porous rubber bushings

Cause
- Bushing soaked by leaking oil
- Wear caused by vehicle rolling motion
- Service life of the rubber material has expired

Effect
- Cluttering noise at the front axle
- Increased mechanical stress on the coupling rods
- Driveability may be impaired

Remedy
- Replacement of the bushings
- Check of the coupling rod condition



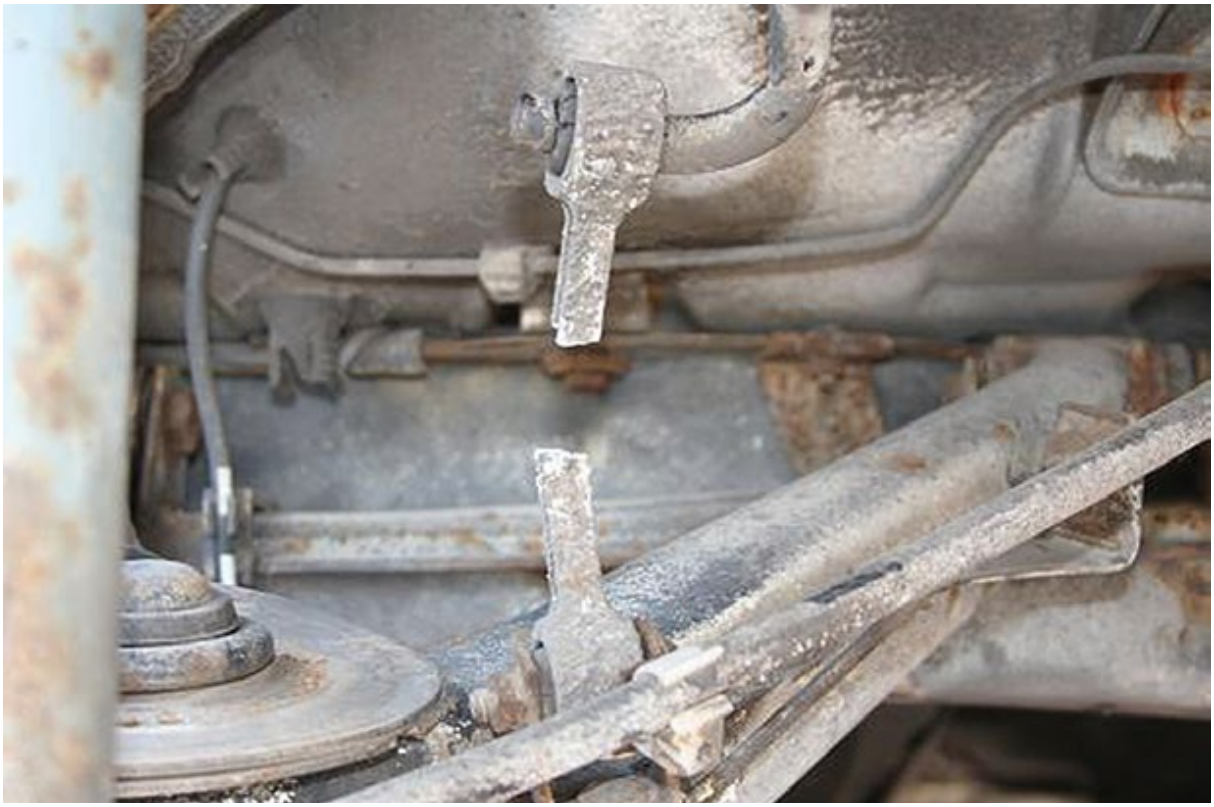


3 Diagnosis

Coupling rods are also known as stabiliser links, sway bars or anti-roll bars. Despite their different names, they have one task: ensuring connection between the axle and the stabiliser. As with other suspension damage, defective coupling rods or stabiliser mounts result in loud noise emitted at the affected axle. Suspension defects often go unnoticed as changing vehicle handling characteristics normally manifest themselves only after the coupling rod joint has been destroyed and the ball extracted from the socket.

Owing to the direct linkage between the coupling rod and strut mount or control arm, undesirable play in the coupling rod or defective stabiliser mounts are frequently passed to the steering system and become perceptible as steering knocks. This is why a defect of the components forming the steering trapeze is often diagnosed. However, inspection frequently shows this is not the case.

If rocking the stabiliser results in a dull noise at its linking to the coupling rod, excessive clearance in the coupling rod is the root cause. If, however, the coupling rods are in good working order, the coupling rod mounts are the likely cause of the damage. In many cases the rubber bushings are flared, porous or damaged by oil or other aggressive media.



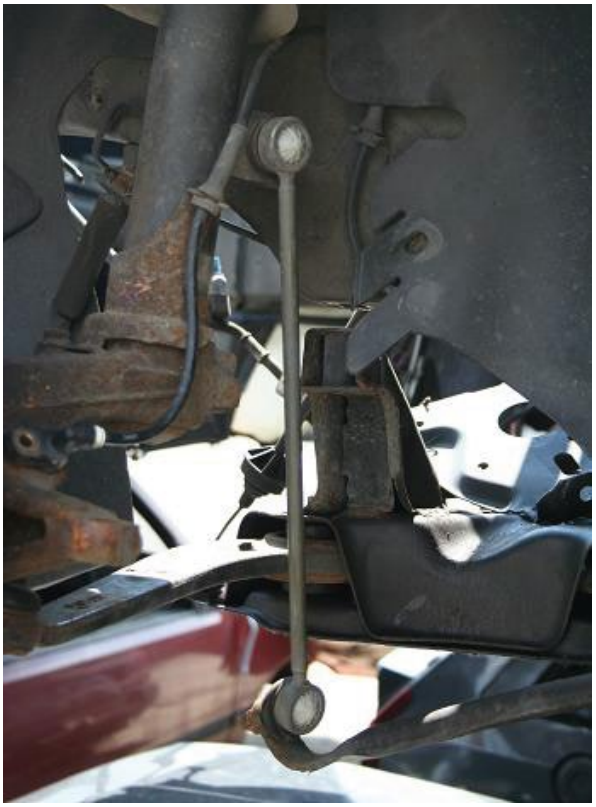
Particular stress is applied on coupling rods and stabiliser mounts on vehicles with lowered suspensions or with broken suspension springs.

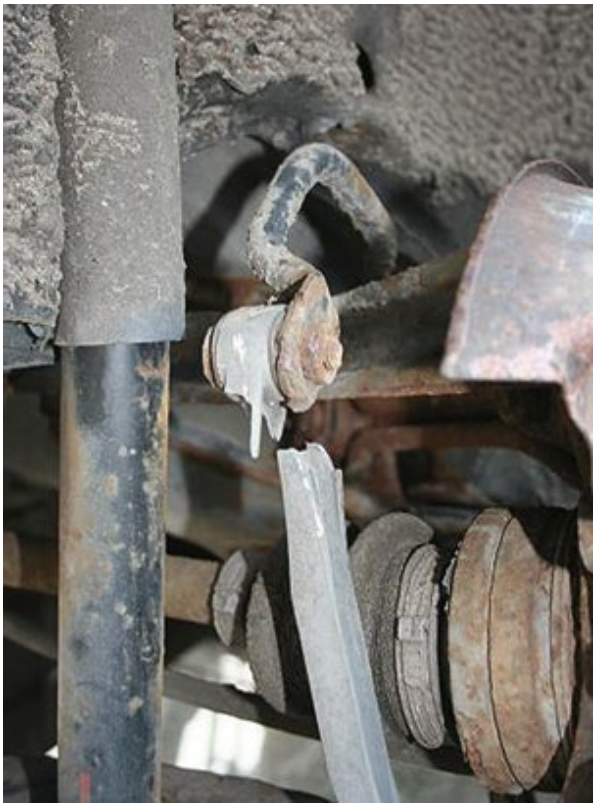
Suspension springs on lowered cars are generally harder than original equipment springs. With the suspension springs on one side of the vehicle compressed, the springs on the other side exert a higher opposite force than in OE set-ups which entails higher stress on the suspension when driving on bumpy or uneven roads.

Similar problems are caused by broken suspension springs. Here, preload is generated by an oblique vehicle axis.

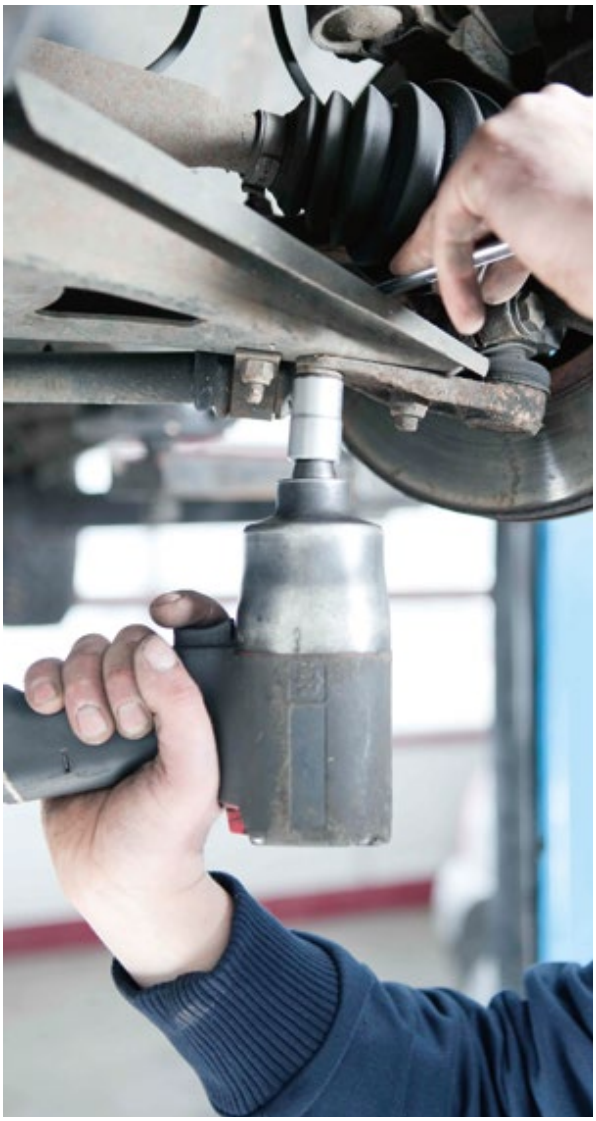
It is essential to diagnose worn out or broken coupling rod bushings in due time to avoid serious consequential damage such as punctured tyres or broken coupling rods.

Caution
Suspension components are safety-critical parts and require utmost caution!





4 Fitting instructions

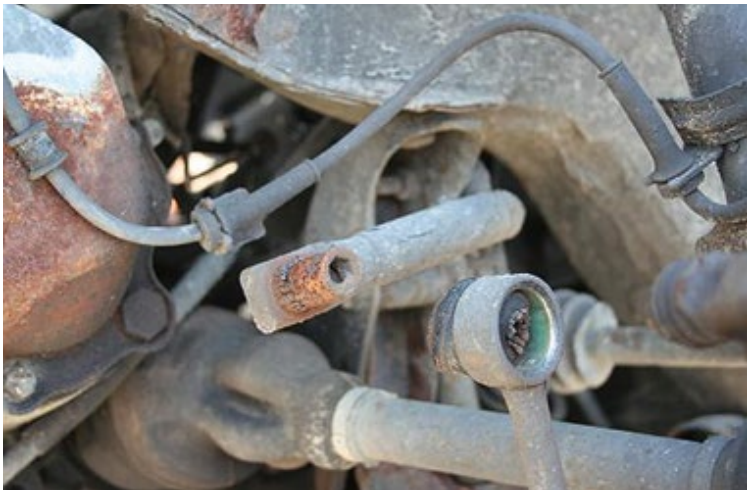


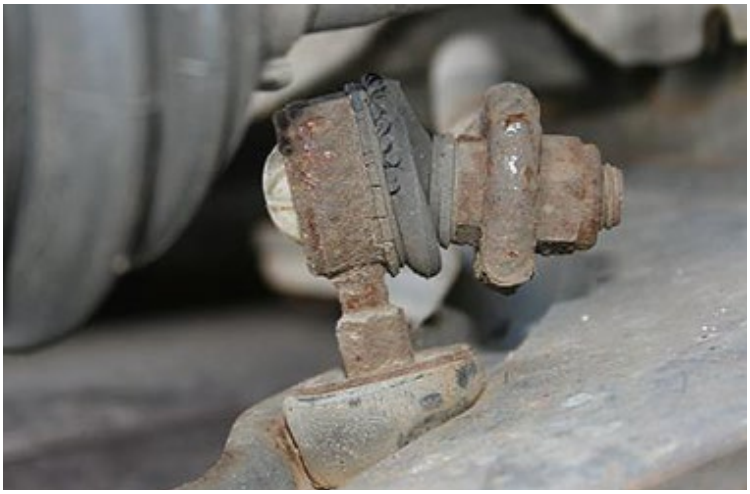
How to replace coupling rods and stabiliser mounts

- Secure stabiliser and other components from falling off
- Do not use aggressive lubricants when mounting rubber bushings
- Different alloy materials can cause bimetallic corrosion. To ensure maximum component life only use special bolts.
- Always use new bolts and nuts.
- Always tighten the bolts and nuts to the specified torque.
- Adhere to the manufacturer’s specifications at all times.
- On vehicles with headlamp levelling make a test drive to check the headlight settings and adjust if necessary.

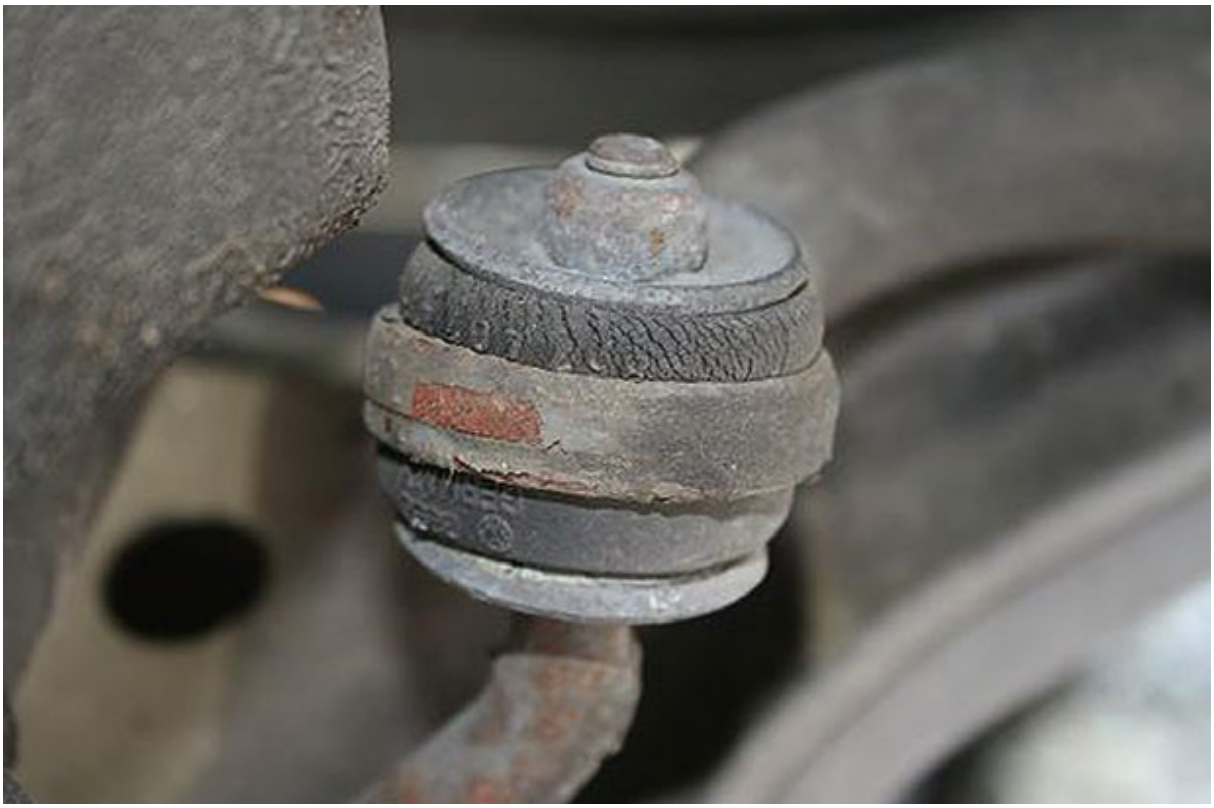
5 Damage patterns

The most frequent causes of coupling rod damage are porous and/or torn sleeves and bushings. Ingressing dirt and moisture take their toll on the joints and make components fail prematurely. If the coupling rods detach from the stabiliser, this can entail serious accidents.





Failure to ensure correct linking between the coupling rod and stabiliser significantly deteriorates vehicle driveability and leads to increased rolling motion of the vehicle body.



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