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FAILURE DIAGNOSIS CONTROL ARM BUSHINGS



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GENERAL INFORMATION

Suspension defects and causes of failure

State-of-the-art suspensions are designed to provide superior driving comfort and safety. But still components can fail as a result of normal wear and tear.

The degree of wear is determined by the operating conditions and influenced by a variety of factors, such as condition of the road surface, loading or driving habits. Another frequent cause of part failure is improper installation and/or the use of incorrect tools.

Frequent causes of suspension damage

- Defective rubber parts
- Corrosion and contamination
- Worn out joints
- Torn-out rubber parts

Diagnosing suspension defects

Despite today's high quality standards in suspension design and manufacture, part damage and normal aging cannot be ruled out.

Troubleshooting suspension damage requires more than a quick look at the vehicle underbody.

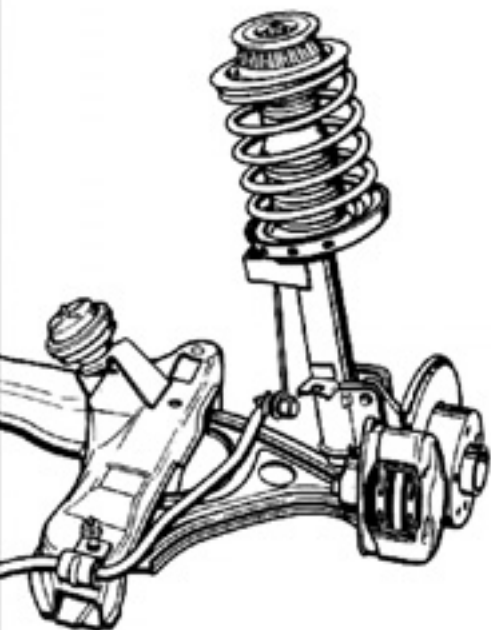
To check for excessive joint play, tensile and pressure load must be applied alternately on all ball joints. To confirm the diagnosis it is recommended to seek help from a professional colleague and to perform a suspension check using a ball joint clearance tester.

Regular inspections play a key role as a preventive measure.

Poor operating behaviour signals damage

Typical signs of a suspension defect are driveability problems and noise generation. Depending on the operating conditions symptoms manifest themselves to a lesser or greater degree.

As suspension defects typically progress slowly and drivers gradually adjust their habits to the changing driving characteristics, suspension damage often goes unnoticed until it is almost too late.





FREQUENT DEFECTS

- Rubber becomes loose
- Rubber parts are torn off
- Porosity of the material

Cause

- Heavy loads
- Other defective suspension components
- Age-related wear and tear

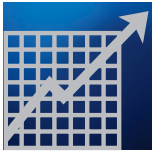
Effect

- Noise generation at the front axle
- Poor driveability
- Irreversible damage to other system components
- Abnormal tyre wear

Remedy

- Replacement of defective components using appropriate tools
- Complete suspension check for consequential damage
- Suspension alignment





DIAGNOSIS

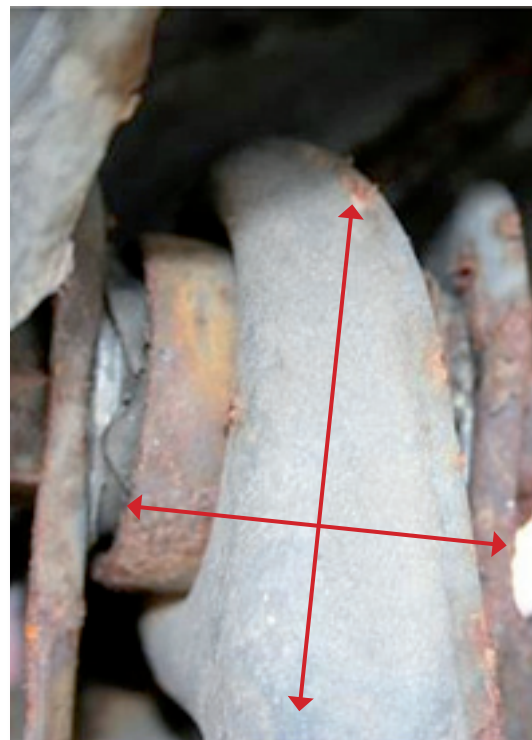
Checking suspension damage

Bushings in state-of-the-art front and rear axles have a tough job to do.

Bushings wear at different rates as a result of the dynamic loads applied during operation and normal ageing.

To locate damage which is not immediately visible to the naked eye it is recommended to use a ball joint clearance tester or tyre lever.

Position the vehicle over a pit or on a lifting platform and engage the brakes to block the wheels. One mechanic turns the steering wheel from right to left while another inspects the axle. A bushing is defective, if you can see or feel it slipping. To simulate loads as occurring during operation it is useful to employ a tyre lever. A defective part must be replaced immediately. Make sure not to damage adjacent components when carrying out tests and assembly work.





FITTING INSTRUCTIONS

HOW TO REPLACE CONTROL ARM BUSHINGS

Removal

Secure any loose components from falling off when removing the control arm.

There are various control arm designs. Therefore it is important to observe the vehicle-specific installation situation when removing and re-installing control arms.

Important note:

Whenever performing repair and assembly work it is essential to adhere to the manufacturer's specifications at all times.

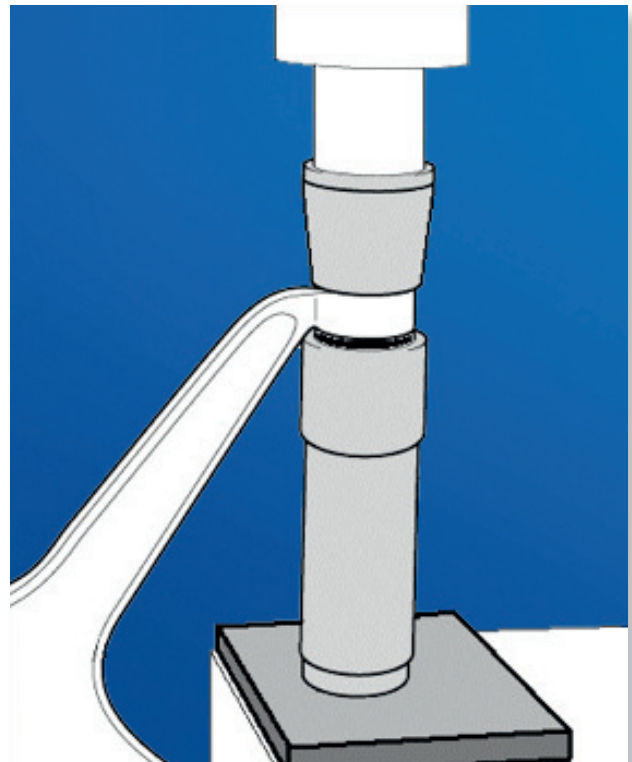
Rubber-to-metal bushings

Secure the control arm against lateral displacement when pressing out/in rubber-to-metal bushings.

Be careful to apply pressure only on the metal rim of the bushing to prevent damage to the new part. Use graphite grease to ease installation. Bushings with raised edge must be pressed in to the stop.

Important note

Risk of accident!





Rubber bushings

Use an impact hammer to drive out rubber bushings.

Secure the control arm in a vice with protective jaws to provide sufficient retention.

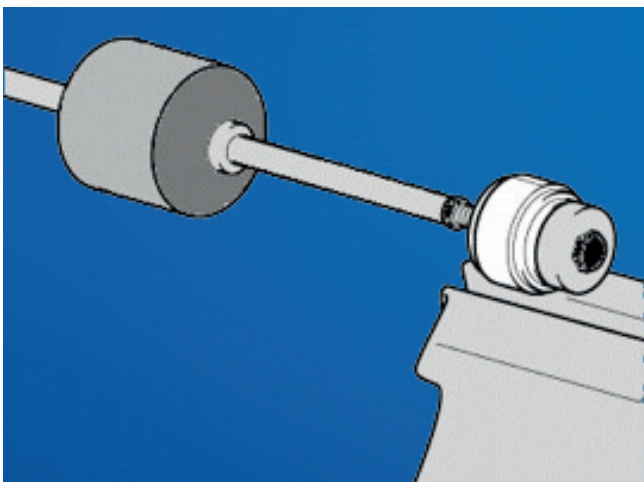
Press the new rubber bushing in the control arm. Use silicon as a lubricant. Also here, make sure that control arm and bushing are secured against lateral displacement.

Important note:
Risk of accident!

Fitting

After replacing the bushings re-install the control arm. Lower the car to the ground and only then tighten the bolts and nuts of the wheel suspension to the specified torque. This prevents warping in zero-point position and twisting of the rubber.

Important note:
Whenever performing repair and assembly work it is essential to adhere to the manufacturer's specifications at all times.



Removal of control arm rubber bushings by means of a customary impact hammer