

# EXPERT ADVICE – STEERING AND SUSPENSION COMPONENTS

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## Fault diagnosis for steering and suspension components



### DAMAGED DUST SEAL/ BUMP STOP

**Causes:**

- External influences (stone chipping, salt, etc.)
- Embrittlement as a result of aging
- Extreme compression and rebound

**Consequences:**

- Increased wear on the piston rod; reduces the service life of the shock absorber



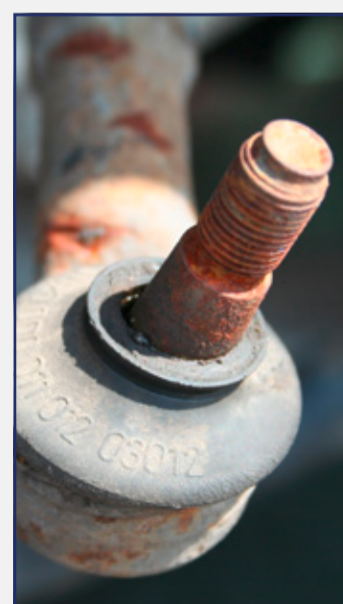
### DAMAGED/WORN BOOT ON LOWER BALL JOINT

**Causes:**

- Influence of water/road salt
- Material wear related to aging

**Consequences:**

- Premature wear of the ball joint/socket
- Noise during load cycles or when driving on uneven surfaces
- Other bushes/joints are also affected



### WORN TRACK ROD END

**Causes:**

- Impact of increased steering forces on the joint (bumping into curbs)
- Steering mechanism overload
- Stone chipping
- Porosity

**Consequences:**

- Wear in ball and socket joint
- Corrosion/formation of surface rust
- Excessive steering play
- Unstable driving behavior



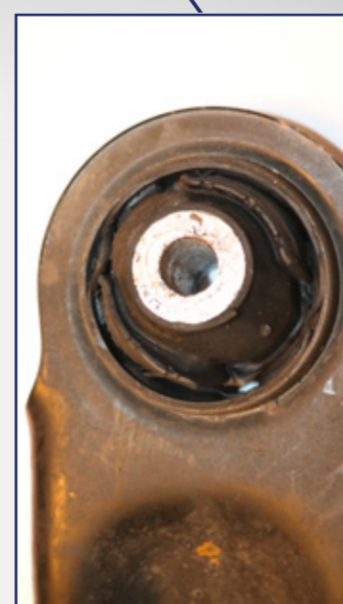
### WORN ENGINE/TRANSMISSION SUPPORT BEARINGS

**Causes:**

- Faulty rubber doughnut and universal joint on rear wheel drive vehicles: increased vibration load on the bearings
- Corrosive substances (oil, salt)
- Porosity

**Consequences:**

- Noise during load cycles
- Loss of comfort



### WORN WISHBONE BUSH

**Causes:**

- Corrosive substances (oil, salt)
- Frequent overloading (excessive loading, towing a trailer, off-road driving)
- Installation error (Incorrect preload/torque)
- Porosity

**Consequences:**

- Vehicle pulls to one side
- Noticeable increase in steering play
- Other bushes/joints are also affected



### DAMAGED/WORN STABILIZER MOUNTINGS

**Causes:**

- Embrittlement with increasing mileage/age
- Excessive loading on one side of the vehicle – left/right (broken chassis springs)

**Consequences:**

- e.g. noise (rattling)



### WORN/DAMAGED STABILIZER BEARING ASSEMBLY

**Causes:**

- Wear related to aging
- Damage resulting from stone chipping

**Consequences:**

- Minor steering vibration



### WORN/DAMAGED CV BOOTS OR STEERING GAITERS

**Causes:**

- Stone chipping
- Installation error
- Porosity

**Consequences:**

- Premature wear
- Dirt ingress leading to contamination/corrosion of internal components

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## Fault diagnosis and repair suggestions for steering and suspension components

### STEERING WHEEL IS DIFFICULT TO TURN

POSSIBLE CAUSES	REMEDY
Not enough oil in the power steering system	Check the system for leaks and rectify/check the oil level and top up with oil if necessary
The drive belt for the servo pump is cracked or damaged	Replace the drive belt for the servo pump
The toe or camber settings of the wheels are incorrect/misaligned	Check for play in the system and rectify/then set the toe/camber settings in accordance with the specifications from the vehicle manufacturer

### VEHICLE PULLS TO ONE SIDE WHILE DRIVING

POSSIBLE CAUSES	REMEDY
The toe or camber settings of the wheels are incorrect	Check for play in the system and rectify/then set the toe/camber settings in accordance with the specifications from the vehicle manufacturer
Tire pressure is too low	Increase the tire pressure in accordance with the specifications from the vehicle manufacturer

### STEERING WHEEL VIBRATION

POSSIBLE CAUSES	REMEDY
Worn chassis components	Check the chassis and replace the faulty components/align the axle
Worn steering linkage	Check the steering system and replace faulty components/align the axle
Wheels not set to correct toe angle; axle misaligned	Check for play in the system and rectify/then set in accordance with the specifications from the vehicle manufacturer

### VEHICLE BOUNCES

POSSIBLE CAUSES	REMEDY
Worn shock absorber, e.g. due to a faulty dust seal	Replace the shock absorber, dust seal and top strut mounting/align the axle if necessary
Broken or bent shock absorber, e.g. due to an accident	Replace the shock absorber, dust seal and top strut mounting/align the axle if necessary

## Wear Profiles on Tires

### WEAR ON THE INSIDE OF THE TIRE

POSSIBLE CAUSES
Toe/camber set incorrectly
Negative camber is too high



### WEAR ON THE OUTSIDE OF THE TIRE

POSSIBLE CAUSES
Toe/camber set incorrectly
Positive camber is too high



### WEAR ON THE INSIDE AND OUTSIDE OF THE TIRE

POSSIBLE CAUSE
Tire pressure is too low



### WEAR TO THE CENTER OF THE TIRE

POSSIBLE CAUSE
Tire pressure is too high



### SELECTIVE TREAD WEAR IN THE CENTER OF THE TIRE

POSSIBLE CAUSE
Worn/faulty shock absorber (undamped compression and rebound)



### WEAR INDICATOR IN THE TIRE TREAD (min. 1.6 mm)

POSSIBLE CAUSE
Normal wear that causes the tire tread depth to become lower than the required depth.

