Failure Diagnosis

Wheel Bearings for Commercial Vehicles

FAG

Worn wheel hub

CAUSE

- Bearing and/or outer race has turned in the hub

IMPACT

- Incorrect fit
- Excessive load on the inner race (fretting corrosion)

REMEDY

- Check the condition of the hub before installation
- Check all surrounding components
- Replace the hub and bearing

Oil leaking from the wheel hub

CAUSE

- The sealing (rotary shaft seal) is damaged due to incorrect fitment

IMPACT

- Damage to the shaft seal ring allows oil into the bearing
- Grease is washed away, no longer ensuring adequate lubrication
- The running surfaces of the bearing are exposed to increased wear

REMEDY

- Observe the manufacturer's installation instructions
- Use of the correct special tools is absolutely essential
- Replace the bearing

Premature wheel bearing failure

CAUSE

- Excessive torque appplied

IMPACT

- Bearing overheats
- Wheel bearing starved of lubrication

REMEDY

- Use the correct torque specifications – e.g. via RepXpert
- Replace the bearing, check the condition of the hub

Wheel bearing malfunction

CAUSE

- Increased axial clearance
- Bearing not secured / clamped correctly

IMPACT

- High torque load and axial load of the inner bearing with the result that the tapered rollers are forced out and seize
- As the damage worsens, it can lead to elevated temperatures, as well as the lubricating grease leaking out and the simultaneous evaporation of the base oil

REMEDY

- Replace the bearing
- Check the condition of the wheel hub and replace if necessary

Inadequate lubrication or dirt contamination

CAUSE

- Dust, dirt and other abrasive substance contamination from a dirty working environment
- Insufficient lubrication
- Dirty hands or tools
- Foreign additives in lubricants

IMPACT

- Indentation on rollers and raceways causes vibrations
- Discoloured rollers (blue/brown) and running marks
- Excessive wear of the rollers, races and cages are caused by overheating and total failure of the lubrication

REMEDY

- Use the right amount of the correct lubricant
- A clean workplace, tools and hands will reduce the risk of contamination
- Keep bearing in the original sealed packaging before fitment
- Mount the bearing in a clean environment, protected from dirt ingress
- Keep open, mounted bearings covered during any fitment interruption

Excessive preload, overload

CAUSE

- High load
- Misalignment
- Concentrated localized stress

IMPACT

- Temperatures exceeding 200°C detrimentally affect the hardness and resistance of the material and can cause the bearing to fail
- In extreme cases the bearing components will become distorted
- High temperatures can deteriorate or destroy the lubricant

REMEDY

- Check preload to reduce bearing temperature
- Avoid overload
- Use the correct torque specifications – e.g. via RepXpert