



# febiEXAKT



## Wheel fastening



### >> PROBLEM:

The underestimated risks of an under or over tightened wheel, is either losing the wheel or plastic deformation of the wheel fastening.

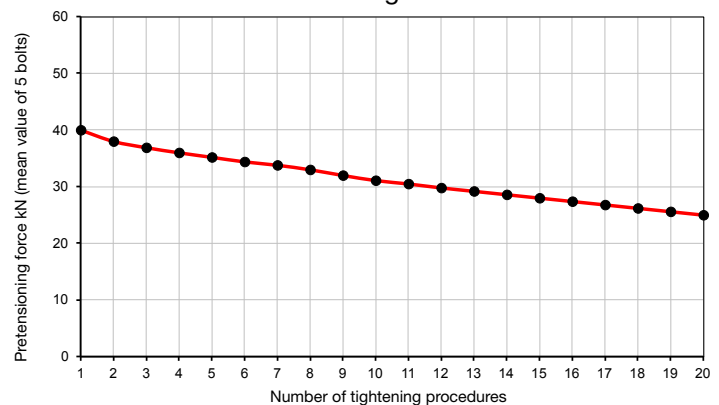
### >> CAUSE:

The curve of the pretensioning force changes when a wheel fastening is tightened several times. The surface of the thread is "damaged" each time it is tightened or loosened which increases the friction value in the thread and under the head. The torque wrench releases sooner than specified due to the increased friction value in the wheel fastening's thread. As a result, it is no longer possible to achieve the vehicle manufacturer's envisaged pretensioning force at the junction between wheel hub – rim – wheel fastening (see chart).

The friction value increases enormously in the case of rusted, dirty or damaged wheel fastenings and the result here, of course, is a drop in the pretensioning force (see Figs. 1 and 2).

Precisely the opposite happens with wheel fastenings that are subsequently lubricated. Here, the friction value decreases with the result that the wheel fastening is pretensioned too much even when using a torque wrench. It may be assumed in the case of wheel fastenings that are tightened without using a torque wrench that the bolt will be overtightened. This leads to lengthening of the fastening culminating in plastic deformation (see Fig. 3).

Pretensioning force curve



### >> SOLUTION:

Look for damage to the wheel fastening before each tightening procedure! It is advisable to replace the wheel fastening in the event of rust and any plastic deformations. The wheel hub should also be replaced if its thread is damaged.

### >> PLEASE NOTE:

You must adhere to the vehicle manufacturers' recommended tightening torques.

Ask your febi partner for the Tightening Torques workshop poster, febi no. 90793.