STRESSES IN PRESS FITTED WHEEL AXLE ASSEMBLIES

3 Dimensional photo elastic models of the wheel/axle interface have been analysed and stress concentration factors have been calculated for single press models subjected to either a static or rotational bending moment. The effect of shear lag, due to rotation has also been demonstrated.

Stress concentration factors have been calculated for single press fit models subjected to either a static or rotational bending moment. The effect of shear lag, due to rotation has also been demonstrated; and multiple press fit models employing gaps and stress relieving grooves between hubs have been analysed.

The report provides several conclusions:

- More overhang of the hubs is required. This is necessary in order to counteract 'bell mouthing' and ensure that the stress relieving groove is used properly as a fretting inhibitor.
- It will be necessary to re-design the stress relieving groove to be used between raised seats for driving axles with axle hung traction motors.
- Cold rolling of the revised shape of groove and the wheelseat should be continued in line with present procedures.
- In the event of a stress relieving groove not being used, then it is marginally better from a stress point of view to have the hubs butted close together rather than separated by a gap.

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