

M.D. Alignment

As-Driven Solutions™



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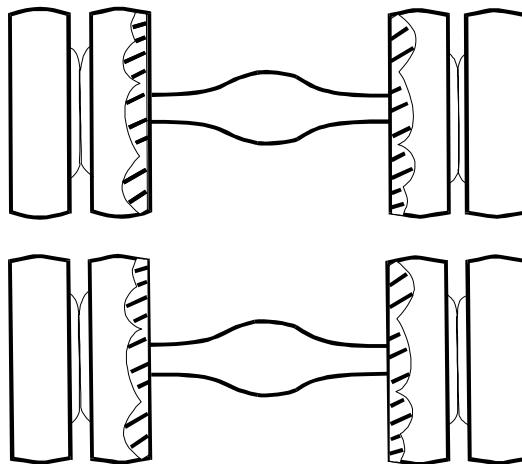
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Inside Edge Wear on Dual Wheel Applications

For ten years now I have advocated tightening wheel bearings to less than 5 thousands end play to reduce or eliminate inside cupping on trailer and drive tires.



But lately we have run into situations where cupping exists but the bearings are not loose. It appears there was a change in the industry while I was otherwise occupied.

You might notice that Tech Bulletin #3 has been removed from this site. In it I proposed that axle manufacturers were building lighter axles and the result was excessive camber flex causing inside wear. One axle builder admits making lighter products but two others indicate that they have not changed anything in their spec for 10 years.

The confusion for me is that I am sure the people who mount the tires are not smart enough to put all the bad tires on the inside with the bad edges close to the frame. At the same time, if the bearings are tight, there is only one other condition I am aware of that will wear the inside edge of the inside tire, excessive negative camber. Pure negative camber should wear smoothly around the circumference of the tire, however, if the camber changes due to loose bearings or axle flexing, the wear pattern can display as a cupping wear.

Additional confusion, some trucks with identical axle specs and tires show the pattern while sister trucks in the same fleet do not.

How wide spread is this problem? Hard to say. I have received requests for help from across the continent but I don't maintain proper files on all calls and we don't go out and measure vehicles involved so we don't have measurements to provide empirical data for the engineers. What data would be helpful? Camber measurements, both loaded and empty, on vehicles displaying the problem and those NOT showing the problem need to be accumulated. The line specs on the units as well as make and model of the tires and type of application the vehicle is used in. This will eventually allow the industry to isolate what the root cause of the problem is.

Some of the numbers I have taken or received from clients indicate that inside edge wear on duals shows up when the loaded camber is greater than .5 degrees per wheel end or 1.0 degree combined total camber. For example, one fleet with the problem had 1.2 to 1.4 degrees camber on the units showing the problems and .9 to 1.1 degrees on those without the problems. Another had 1.5 to 1.8 degrees on units with the problem. This fleet has not returned numbers on those without the wear pattern yet.

As I indicated at the beginning, loose wheel bearings were a simple solution for years but latterly, the last 3 to 4 years, more and more complaints are not being solved by this procedure. What has changed? At this stage I wish I knew. Has there been a change in the tires, axles, loads or something else?