Are Alignments on Trucks and Buses a GREEN procedure or a Money Drain (Part 13)

New subject: Balance

The concept of balance is to equalize the distribution of weight around the circumference of the tire. This is important to the overall life of the tire and the reduction of vibrations in the vehicle. Early in my career I was told that 10 oz out of balance at 60 MPH on a 24.5 tire translates to a 100lb force each time the heavy spot hits the road. An engineer can probably prove that those numbers are incorrect but the general idea is valid for our purposes. Heavy spots, pounding on the tire 500 times per mile will beat the tire to death .

In addition to the damage to the tires the vibration created by this pounding deteriorate many components on the vehicle including lights, gauges, mirrors, hinges, seams, batteries not to mention the effects on the driver.

I categorize balance systems into two camps: fixed located weights and dynamic balance media.

In the fixed located weights camp you determine where and how much the tire is out of balance and then secure a countering weight to the rim. This measuring process can use bubble levels, free wheeling spindles, computerized spin machines or strobe lights. Some will balance on the truck and include the tires, rims, drums and hubs while most will just balance the tire and rim off the truck. Personally I prefer to balance everything that is spinning because you never know where the extra weight is located. One problem with the fixed located weight system is that it is only right the day you did it. Tires do not wear evenly around their circumference and as time and miles go by the proper location for that weight and the amount changes so you need to periodically rebalance the assembly. My second concern is the need to calibrate the balancing machinery. Many shops assume that since it is giving them numbers, the number must be correct.

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With the dynamic balance system you either mount a ring to the hub with balance media in it or you place some type of media inside the tire. The physics statement for this process is: ***a free floating mass in a spinning assembly will seek equilibrium.*** In other words it self balances. The type of media can affect the net results and many different providers have products for this purpose. As an overall concept I prefer this system since it rebalances the assembly each time you accelerate from a stop.

Preferences aside, in tests we have conducted, if the other tire wear factors have been handled, balance improves tire life on trucks and buses between 10 and 20% compared to no balance. Just remember, balance by itself will not stop all cupping. There are other factors at play in the tire that need to be considered as well.