

# MD Alignment

Are Alignments on Trucks and Buses a GREEN procedure or a Money Drain  
(Part 17)

Loose Components continued: Wheel Bearings

There are three types of wheel bearings used in the North American truck market today. Unitized, adjustable and bearings with a spacer or sleeve between the inner and outer bearing. Unitized and sleeved bearings are not adjustable. You simply tighten the adjustment nut to the prescribed torque setting and the job is complete. Adjustable bearings, whether grease packed or oil bath types, with single nut or double nut fasteners, require a complicated process to obtain the proper end play.

The vast majority of wheel bearings are of the adjustable type and in our experience 80% are set too loose. This creates major tire wear issues in addition to grease seal leaks, ABS brake problems, vibrations, and irregular brake shoe wear. There seems to be an institutionalized fear of setting the bearings too tight and as a result the industry sets them too loose.

Consider two factors in bearing adjustment. First thread pitch. On most axles in North America (I will not speak for the rest of the world) there are 2 commonly used spindle threads, 12 TPI and 18 TPI. The standard bearing adjustment procedure directs the technician to tighten the adjustment nut to 200 ft LBS to pre-seat the bearing and seal. Then you are to back off one revolution of the nut followed by tightening to 50 ft LBS and then back off  $\frac{1}{4}$  to  $\frac{1}{2}$  turn depending on which instruction you are reading. It is then directed that you should use a dial indicator to check the end play and insure that it is within 1 to 5 thousandths. The difficulty is that with and 12 TPI backing off  $\frac{1}{4}$  turn will move the nut 21 thousandths and  $\frac{1}{2}$  turn moves it twice that much to 42 thousandths. 18 TPI moves the nut 14 thousandths in  $\frac{1}{4}$  turn and 36 thousandths in  $\frac{1}{2}$  turn.

The second factor is weight. If you are installing the hub without drums or rims or tires, the amount of torques required to reach zero end play by compressing the tapered roller bearings is much less than if you have a loaded assembly. And yet there are no distinctions in the installation instructions to

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allow for this variation. An empty or bare hub might weigh 30 to 50 LBS while a drive or trailers wheel end with dual tires mounted on it can weigh upwards of 600 LBS. 50 Ft LBS of torque should zero the end play on an empty hub but there is no way that much force could lift and center the hub with the tires on.

Even if you always adjusted the bearings with an empty hub, if you back off more than 5 thousands the bearing is too loose and  $\frac{1}{4}$  turn is at least 3 times the maximum end play specified.

Combining these two factors in the field means that most wheel ends are too loose and the resultant tire wear and handling issues fall back on the alignment tech or get blamed on defective tires.

