

Weight and Balance and How They Effect Tire Safety and Performance

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As many of our readers know, our Chinook Glacier is the third motor coach that Lena and I have owned, and we never hesitate to tell everyone that we like it the most! As long-time members of the Family Motor Coach Association, we have attended several of their Regional (like the Western Region Rally in Indio in January) and National Rallies. At these rallies I have attended the Tire Safety and Performance seminars presented by the **Recreational Vehicle Safety Foundation**. Their experts in this field always put on a very interesting and informative seminar, and at the end of each rally, they set up an arrangement of individual scales upon which they then can weigh each of the wheels on your coach *separately* in order to provide you with accurate information on the loading that you are placing on each of your tires.

If you haven't attended one of these seminars, your next question is likely to be, "why should I care about this much detail, especially if my coach builder has put it on a chassis that is rated to carry the weight?" The short answer is that what *you* do with the coach *after* you bought it probably has more to do with your tire performance and safety than anything that the manufacturer did during its design or production. Over the years statistics continue to confirm that **the vast majority of tire failures** (especially the dramatic ones, like blowouts) **are caused by tires overheating** because they **are either overloaded or under inflated**, or both.

Unfortunately, there isn't enough space here for us to get into this subject in the detail which it deserves, however there are a few elementary steps that each motor home owner can take to enhance both the safety and performance of your tires. Here are my suggestions "for starters":

1. Look up your vehicle's **GVWR** – Gross Vehicle Weight Rating – it's on a placard inside the coach (in our Glacier, it's inside the wardrobe closet), and it may also be on the frame of the driver's door. At the same time, also find the **GAWR** for each axle (yes, you guessed it, it's the Gross Axle Weight Rating, and it was on the sticker on the driver's door frame).
2. Next, look on the sidewall of your tires and write down their load carrying capacity. Presumably, if the tires are a matched set, then you only have to look on one of them to get this information.
3. Now, with your coach *fully loaded* as you would for a trip (full fuel, propane and fresh water tanks), drive it to a local truck scale and weight it **AXLE BY AXLE**. The weigh master at the scale should be able help you position it so that you get *individual axle weights*. In fact, the ultimate situation is if you can actually weigh *each wheel* so that you get individual wheel weights! If the scale platform is flush with the ground and if there is maneuvering room around the sides of the scale, you may be able to move your coach into four separate spots to enable you to get these four weights individually.
4. With your weight information, first add all the weights to make sure that you are not exceeding your Gross Vehicle Weight Rating. It's not good if you exceed this rating, for obvious reasons. If you do, then you need to look at removing some of your less essential "stuff" to get your total weight under your GVWR.
5. Next, look at your axle weights in comparison to the GAWR's for front and back, and again, if you exceed either one by very much, then you need to look at shedding some more "less essential stuff".
6. Now, if you were able to get the weights on the individual wheels, then compare them to the load carrying capacity of your tires. If you could only get axle weights, then approximate your wheel loads by dividing your axle weights in half and compare to the load carrying capacity of your tires. In either case, if you are too heavy on any of your tires, then you should look at shedding load from over that tire.
7. Finally, if you don't already have one, go to a tire store that carries the brand and type of tire on your coach and get a set of inflation tables for your tires. Using the inflation tables, look up the load on each tire in the table and make sure that your tire is inflated to that pressure when the tire is cold (before you take off for the day). Incidentally, our coach came from the Chinook factory with a Ford sticker on the driver's door frame that gave the GVWR, the GAWR for each axle, the tire size and even the correct inflation pressure for the front tires and the rear dual tires. (By the way, the inflation pressure is different for the same load weight depending upon whether it is a single tire or one of a dual pair.)

After reading all this, one might be tempted to ask, "why should I go to all this trouble?" Well, there are many very good reasons in addition the obvious one of trying to avoid a blowout caused by under inflation or overloading.

If your tires are over inflated, that's not good either, because it leads to abnormal wear in the center of the tire tread resulting in your premature "investment" in a new set of tires. Besides, it may also produce an unnecessarily harsh ride. On the other hand, if your tires are under inflated for the loads on them, then the opposite will occur, they will wear excessively on the outsides of the tread, again causing an earlier than desired trip to the tire store for a new set.

To conclude, way too many coaches are running down the road every day overloaded, because their owners never took the time to weight them after they had stuffed them with everything under the sun in preparation for their trip ("just in case we need it while we're on the road") and/or with under inflated tires (because, after all, "lower tire pressure gives us a softer ride," or "who wants to get out in the rain to check the tire pressure anyway, we checked it last summer").

We urge every Chinook owner to take in a national or regional FMCA or Good Sam rally soon and attend the RVSF seminar on Tire Safety, then after the rally get your coach weighed "on all fours" by them so that you can be a safe, smart Chinook owner who gets many, many safe and pleasure filled miles from your tires.

Post Script; November 2006. Last February, in preparation for a new year of driving, we replaced all of our tires. After all, they had over 75,000 miles on them! As is most often the case, we replaced them, not because the tread was worn out, but rather because we were getting noticeable sidewall weather checking (cracking). If you ask any RV tire expert, they will tell you that the vast majority of RV tires require replacement, not because of tread wear, but because of weather damage. Our's were no exception. Anyway, we thought that 75K miles was pretty darned good for a set of RV tires, with never a flat and certainly no blowouts!

We have learned to follow these "cardinal rules;":

1. We always run with **all metal valve stems and metal valve caps!** (Incidentally, most of the Chinooks that we have seen were delivered with rubber valve stems, and we are aware of blowouts on Chinook coaches caused by failure of the valve stem or extension hoses.)
2. We inflate our front tires to **65 psi**. This is the pressure recommended by both the sticker on the door post and the inflation tables from Michelin, using the wheel loads from our "weighing on all fours."
3. We inflate our rear dual tires to **80 psi**, which again is confirmed by both the sticker on the door post and the inflation tables from Michelin, using the wheel loads from our "weighing on all fours."
4. Remember, you inflation pressures could well be different from ours, based upon the actual loads on the wheels of your coach, but I have yet to see another Glacier or Summit that weighs less than ours.
5. When it's time to get new tires on your RV, **insist that the tire dealer install tires that are not more than 90 days old!** This may be a bit of a challenge, because the tire warehouses will probably want to get rid of their oldest inventory first, but insist on the newest tires you can possibly get! All tires have to have stamped into the sidewall rubber their date of manufacture, so confirm it before you have them installed. After all, if your next replacement is going to come because of weather damage (**age**) rather than because of excessive tread wear, then shouldn't you want to start with the youngest tires available?!
6. Avoid another expensive lesson that we learned a month after replacing our tires, by getting the **lug nuts re-torqued at 500 miles, and again at 1,500 miles** after anyone removes any of the wheels from your coach for any reason. This past spring we had to pay a mechanic \$375 to remove and replace two wheel studs on our left rear duals that we had sheared off when we allowed the lug nuts to loosen, because we failed to re-torque the lug nuts after installing the new set of tires. The mechanic told us that the lug nuts on the rear duals have the greater tendency to work loose, but to be safe, I purchased an inexpensive ½" drive torque wrench and a deep socket so that I can periodically check all of the lug nuts on our Coach. The torque wrench and deep socket cost one-tenth what it cost to replace the wheel studs, and I don't have to have nightmares about loosing a wheel at 65 MPH!