

Tire wear, causes, how to remedy the potential problems, rotation, and at what point does uneven wear cause a tire to need replacing

By Dick Lorntson

All too often we get phone calls from RV owners requesting an appointment to have their coach aligned and when they arrive for their appointment, we find one or more tires so badly worn that the tires themselves are the cause of the poor handling. It is disappointing from a tire dealer perspective because we know that had the customer followed some simple guidelines, their tires could have been saved and driven to their true potential. Instead we often hear a complaint about the tire quality or poor manufacturing processes.

When we have these types of jobs in the shop, we have to establish the reason the tires got to this point. There are at least three possible reasons

- A poor alignment caused the funny tire wear or pulling condition
- The tires themselves caused the poor tire wear due to a pulling condition,
- Is there yet a third factor such as loose or worn suspension parts, unusual driving surfaces, etc.

Solving this mystery requires us to start at the very beginning and work through each possibility in an attempt to save the remaining tires preventing the customer from having an unplanned replacement of tires.

The first step in our diagnostic process is to do a test drive and establish a baseline of how the vehicle drives through a variety of different road conditions. Next, we bring the unit into the shop for a complete suspension check. Technicians are looking for anything that is loose, bound, or worn excessively. Finally, our pre-check finishes with a close inspection of each tire. The technician is looking at the inner and outer sidewalls and tread surface to see what shape they are in. It is amazing how often we find tires that have been worn down to the cords on one side, or are chopped, cupped or simply low on air pressure. After this pre-check we like to bring our customers into the shop service area so they can see just what it is that we are seeing and help them to understand what they should be looking for when they check their tires.

“READING” THE SURFACE OF A TIRE

I was at a RV rally in the Fall of 2006 where I simply checked the tires on about 135 coaches as a courtesy to the RV owners and found 7 RV's that had a condition that needed to be checked into, all found by simply “feeling” the tires. Had the owners all understood this concept and used it on a regular basis, I would have found no abnormal wear on the tires. Two or three of the RV's needed tire rotation and several others needed to have tires replaced. This concept works equally well with passenger car and light truck tires along with trailer and 5th wheel RV's as well. It's simple to do and only requires slight caution and a hand washing afterwards

We often hear a lot about checking tire pressure each morning before putting any miles on an RV, but I suggest owners also get in the habit of "feeling" their tires on a regular basis as well. By just running a hand both across the tread side-to-side, and around the tread forward and backwards, an owner can quickly assess how a tire is wearing. So how is this done?

First, a word of warning, please use caution while checking your tires so as to not get poked by a wire cord that may be sticking out of a tire. By using the flat palm of your hands with light pressure in a side-to-side motion across the tread, you should feel the same thing in both directions. This may not make any sense until you try it, but if there is a difference you will know it right away. If the tread feels smooth while moving your hand in but sharp while moving out on the tire, you are feeling a feather edge pattern that usually has only a few causes but is not considered normal.

The first potential cause is incorrect toe-in or toe-out (part of a wheel alignment angle). A second cause may be from a vehicle that pulls in one direction or the other on a regular basis and the feathering is from steering to correct the pull. A third cause may be from fighting a major crosswind for many miles that required a constant steering wheel correction to go in a straight line down the road. The last two are usually identified by an inward feathering on one side and an outward feathering on the other side.

These feathering conditions rarely are found on a rear tire unless you have a major rear wheel alignment issue or the tires were recently rotated to the rear. Check for this type of wear on all tires on a daily basis. If you find this condition we recommend at a minimum you get the tires properly rotated to even the wear and save the remaining tread on them. For this wear condition, correcting the cause of the wear is not enough. The tires will continue to wear in the same manner unless you rotate the tires to the opposite sides in back to reverse the direction the tire rolls.

Next, move your hands in a forward and backward motion along the top $\frac{3}{4}$ of the tire and check for bumps, chops or ripples. These wear patterns are not normal on the center of the tire and are an indication of something in need of correction. A ripple on the extreme inside or outside of the tire in the first $\frac{1}{4}$ to $\frac{3}{4}$ inch of the tread may indicate "River Wear". This type of wear is not necessarily an indication of anything in need of correction. Some tires wear in this manner and it is considered irregular but acceptable wear. If it gets extreme, the cure is a tire rotation.

If by rubbing the tread in the same forward and backward motion you feel chopping or cupping, you have something going on that should be addressed as soon as possible. Causes of this type of wear may be, improper mounting of the tire on the wheel, a tire that is or has become out of balance, bad shock absorbers, incorrect air pressure, or a defect in the tire itself. Worn shock absorbers will not cause the wear themselves, but may contribute to the wear because they can no longer hold the tire to the road surface correctly.

If any of these unusual wear patterns are detected, you may need to seek professional

advise and have the problem corrected. By performing this quick check of your tires on a regular basis you will "get to know" your tires and will find many potential problems long before the condition get to the point of the tire needing to be replaced.

A WORD ON TREAD DEPTH AND TIRE ROTATION

Tire with less than 4/32" of tread on them should never be left on the front of the vehicle and those with less than 2/32 should be replace ASAP. If you have a wear condition on the front tires but have more than 4/32" of tread left, you can and should rotate the tires to the back (provided the back tires also have more than 4/32" of tread and are wearing evenly). If you have marginal tread left and you are planning on replacing your tire or they are more than 5 years old, you might as well just finish using up the remaining wear and then replace them. It makes no sense to rotate a tire that needs replacing. If you put a tire on the rear that should have been replaced, you may be setting yourself up for tire failure that could be prevented. If the front tires have some abnormal wear and the rear tires are in good shape, it does make sense to rotate the fronts to the rear and rears to the front, if you follow some cautions.

Not all RV's need to have their tires rotated on a regular basis. If all tires are wearing evenly and are properly balanced, (no vibrations noticeable) leave them be! There is no recognized mileage requirement between rotations for RV tires but if you need to rotate you tires, here are two tips:

Reverse the direction of rotation

Before putting the front tires on the rear, flip the tire on the rim to help the wear become more even, more quickly. The rotational direction of the rear tires coming up to the front is not as important because the rear tires normally do not develop bad wear patterns on their own. We do it this way to keep the rear tires that are bolted together at as close to the same circumference as possible so as to not cause that to be a problem.

Rotate tires to the back as matched pairs

If your front tires have some wear patterns on them that require rotating, we take the front pair and match them up on one side in the rear and bring that rear side dual pair up to the front. If you put one front tire on one side of the rear and the other front tire on the other side of the rear, you may now have pairs of tires bolted together that have more than a 1/2 inch circumference difference. The two tires in the pair will "fight" each other as they go down the road. This can cause the smaller of the two tires to wear out faster as it has slightly less weight on it (due to the diameter difference) and the smaller tire has to "slip" in order to keep up with larger tire.

We had a customer that had two different size tires on the rear of a cube van due to a flat tire. The smaller tire was completely worn out in less than 5 days, from trying to keep up with the tire next to it. Do not worry if the circumference of the pair of tires varies from side to side. The differential can make up that difference with no problems.

THE TIRE BALANCING DILEMMA

A subject that is widely debated among the RV crowd is tire balancing. From my perspective, putting up with a vibration in the unit that could cause other things to shake loose or increase driver fatigue just to save a few bucks is a poor decision. An out of round or out of balance tire will cause vibrations in the unit that are bothersome or destructive to the rest of the RV. During the balancing process, it is important to watching the tire rotation to check for out of roundness. Too often, inexperienced tire technicians are only focused on what the machine is telling them, not what the tire is doing. A proper tire balance will lead to longer life for the tire and a nicer ride overall in you unit. Both are big pluses. There are different philosophies on how to balance tires and most of them work quite well, so how you balance the tires is not the issue, just get them balanced and keep them balanced.

Next month's article will be on tire replacement options and how to get the most tire for your dollar based on your driving habits. We will be focusing on how to identify the best tire value for your driving needs.

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