

Can I change from ST to LT tires on my Trailer or 5ver? – Part 1

Monday, June 23, 2014 with Roger Marble

This question is a real "Hot Button" on a number of RV forums and blogs. People ask this question because they want a better or alternate selection of brands or they want to improve the durability of their tires.

The answers given seem to range from "Sure, Why not" to "Absolutely Not, Never do it" and some will even offer that they think you are breaking some law if you make any change from the type, size, Load Range or cold inflation from the OE tire information shown on the tire Placard.

As we all should know by now answers about tires are never simple and straight forward and changing tires is definitely one of the more involved answers.

First off, I am not a lawyer but an Engineer and as such I form opinions based on data and facts. So here is the answer based on my 40 years experience as a Tire Design Engineer.

Yes you may be able to change tires ...



there are some things you **MUST** do to ensure that any change you make will actually improve your probability of having better tire durability.

My plan is to provide an outline of the steps you need to take before you make any change. I will try and include each step and each of the points of data you need to collect and evaluate. If you skip a step you may end up with a less durable tire selection which could lead to tire failure, RV damage and even an accident.

Before we start you need to consider that the most conservative approach is to **make no change** and to simply use the tire Construction (Bias or Radial), Type (ST or LT) and size and Load Range and inflation as specified on the placard and specification documents. This represents the RV manufacturers recommendation based on a number of assumptions as well as some legal regulations the RV MFG must follow plus in many or some cases a desire on the Mfg part to keep their costs as low as possible.

So if you still want to move forward here are the steps you need to take:

1. You need to know the actual load on each tire. This is important because
 - A. we will be basing some decisions on the tire loading and
 - B. It is possible that there is a significant unbalance in the tire loading which may be the cause of poor tire durability.

With sufficient unbalance it may be impossible to provide a tire selection that would lower the probability of having problems.

To learn the actual individual tire loads you need to either find a company such as [RV Safety and Education Foundation](#) or other agency that has individual scales or to follow the steps outlined on worksheets such as this one. I have heard some people say that they have been able to get the individual tire loads from their state police or state DOT.

2. Knowing the ACTUAL LOAD on each tire you need to confirm that no single tire is loaded more than the max load molded on the tire sidewall. This is an absolute rule. If any tire is overloaded you should not move the trailer until you either change the load or change the tire.

3. Assuming no tire is overloaded we want to make sure that all tires on an axle are inflated to the same inflation. For multi-axle trailers you can lower the internal tire structural shear forces (the forces trying to tear the tire apart) by running the inflation molded on the tire sidewall. Sometimes this is stated as the Max PSI and other times it is stated as the PSI for the max load. For our purposes we will consider this the proper cold inflation you should always run.

4. We should have "Headroom" or "Reserve Load" or "Safety Margin" on the tire loading. I suggest 15%. However I know that for many trailers 15% extra capacity above the actual load is very hard to do. Especially since some RV MFG manage to so under-size the tires that even when the trailer is empty they may not have 15% margin.

5. If you don't have at least a 10% margin I would strongly suggest you need to consider changing tires to something with more load capacity when inflated to the sidewall PSI.

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I will assume you have confirmed the actual individual tire loading and have moved some heavy items around to end up with a reasonable balance of loads,

I will also assume you still want to change from ST type to LT type tires which means you must increase the Load Range and or increase the tire size to get a load capacity in the LT to match or exceed the capacity of the OE ST type tires.

Now before we move on you need to realize that "LT" is a designation used here in the US and European and some Asian countries have what they call "Commercial" tires. These Commercial sizes do not start with LT or CO but will probably look like 7.00R15 or for metric sizes 205/75R16C The "C" in this case is not the Load Range but stands for "Commercial". The Load Range will be identified as normal LR-C, LR-D etc or possibly with RL or XL for Reinforced or Extra Load. To make this post easier to read I will limit my comments to LT type tires. Just remember there are other options that may be better for those with 15" or 14" wheels that do not want to change rims.

NOTE: All of these letters and numbers are important when selecting a size so be sure you record them all when doing your research.

So on to step

6 Dimensions. There are two key dimensions Outside Diameter or OD and Width. Now I am confident that we all understand OD but width can be a bit confusing. Depending on the wheel well contour the overall maximum width or "Section Width may be most important. Some tires may have a narrower clearance nearer the tread so they will need to do some actual measurements at a number of locations. It may be easiest to use the dimensions for OD and Section published for your current tires and just do a confirmation with your tape measure. Remember tire "width" is not the same as tread width.

You need to be sure the tires NEVER contact any portion of the RV frame wheel well or bodywork. You should try to have equal or greater clearance with the new tires that you have on your original size.

7. The challenge

When moving from ST type to LT type you will need to move up in Load Range or up in Size or both.

Now comes the research to see what your options are

8. Knowing the target Load Capacity and the maximum OD and Section width, it's time to use the Internet to do some research. The objective is to find tires that meet your needs for the numbers and that are appropriate tread pattern. You certainly don't need Snow Tires or heavy traction tread pattern. I would suggest that the tread be identified for "All Position" or Steer for your trailer application. You can go to web sites from large dealers such as Tire Rack, Pep Boys, WalMart, NTB, Discount Tire, or similar. You might also just Google "Trailer Tire" + the name of a large city or town near your location. Once on their web site find the various possible tires that meet your needs.

9. If you are increasing the Load Range with the associated increase in inflation you need to confirm the wheel can manage that higher inflation. The info may be marked on the back side of the wheel or you may need to contact the wheel seller or manufacturer or you may need to get different wheels if your OE seller doesn't know what the rating is for the OE wheels

10 Finally, you need to make your purchase decision not just on lowest price but need to consider the tire warranty, even if there is a Road Hazard Warranty. Also how easy will it be to get a replacement if your tire gets a sidewall cut or unrepairable puncture.