

RV Tire Pressure 101

© www.bobog.org
Last Updated March 2023

Disclaimer

What follows are my opinions and are worth what you paid for them. They are based on my 50 years of RVing. I believe them to be factual. If you disagree, do your own research and act accordingly. Your life literally depends on it.

This primer applies to all air-filled tires regardless of what they are mounted on: car, pickup, trailer, RV, semi, wheelbarrow, etc., but the focus is on RV tires.

Nitrogen vs Air

The air we breathe is about 78% nitrogen, 21% oxygen, and 1% other stuff. While oxygen is mildly corrosive at this concentration, tires are manufactured accordingly, and regular air is just fine. Regular air has been used since pneumatic tires were invented in 1888.

Pure nitrogen in tires was first used in Formula 1 car racing and was later adopted by the aircraft industry because temperature induced pressure changes are more predictable. Tire engineers like predictability. It is important when a 500,000 lb airplane smacks the runway at 175MPH on tires that are at -30 temps from flying at altitude, or when a couple of tenths of a PSI makes a difference in race car handling at 200+ MPH.

If pure nitrogen is available at no cost, then it can't hurt. If your service centre wants to charge you extra for it, just say no thanks.

Tread Patterns

In general, the more aggressive the tread pattern, the noisier the tire will be. It also means higher rolling resistance and lower MPG. Unless you need additional traction for special conditions such as snow or sand, regular rib style tread pattern is just fine in all positions.

Years vs Distance

Most commercial trucks travel many tens of thousands of miles each year. The average RV tire covers about 5,000 miles per year. Does this mean an 80,000 mile RV tire will last 16 years? Nope. At least not on my RV!

How old are your tires? The only way to tell is to read the manufacturing date on the tire itself. Each tire has a DOT code imprinted on the tire, near the bead to rim joint. The DOT number shows the manufacturing plant code, tire size code, manufacturer code, and lastly, the manufacturing date code. You can look up the other numbers on the internet if you are curious, but the manufactured date is simply the week and year. So, 0315 means the tire was manufactured in the third week of 2015.

If your DOT code shows only 3 digits like 035, that means the tire was manufactured in the third week of 1995, 1985, etc. Buy new tires. Today! But buy recently manufactured ones.

From a major manufacturer:

MICHELIN® tires contain more than 200 different raw materials to provide superior strength and flexibility throughout the life of the tire. Over time, these components naturally evolve; the evolution depends upon many factors such as the environment, storage conditions, and conditions of use (load, speed, inflation pressure, and maintenance). Therefore, **it is impossible to predict when tires should be replaced based on their calendar age alone.**

Some recreational vehicle owners may choose to operate MICHELIN® tires after the [7 year] tire warranty expires. For consumers who choose to operate tires beyond the tire's warranted life, Michelin recommends frequent tire inspections, especially before long trips. Michelin recommends that **any tires, including spare tires, should be replaced after 10 years of service**, even if they have not reached the legal wear limit.

In addition to frequent tire inspections and proper inflation pressure maintenance, Michelin recommends regular tire inspections by trained tire technicians. Consumers are strongly encouraged to be aware not only of their tire visual conditions and inflation pressures, but also of any changes in dynamic performances which could be an indication that the tires need to be removed from service. Indications include an increased level of noise or vibration, or an increased frequency in loss of inflation pressure (faster than 2 psi per month). For additional assistance, consult a Michelin tire dealer.

(from Michelin RV Tires brochure published June 2019. Emphasis is mine.)

Most prudent RVers will replace their tires between 5 – 10 years, depending on where they live and how they store their rig. Outdoors in Texas is very different than outdoors in Alberta where I live. The significantly higher levels of UV radiation from the sun in southern latitudes accelerate tire aging and cracking necessitating earlier replacement.

RV Tires vs. Truck Tires

What's the difference? There is no mandated difference. Many manufacturers don't make separate lines of tires just for RVs. Those that do, claim that RV tires are specifically designed for better UV resistance to extend their lives.

Tire Size Considerations

Circumference is the distance around the outside of the tire. Your speedometer counts the number of revolutions of your tire per minute and calculates your speed. Changing the tire circumference will cause your speedometer to be wrong.

Load Range (Ply Rating) is the weight a tire is engineered to support. My Bounder has Load Range G tires which, when properly inflated, have more than enough capacity to carry the load. Spending the extra money to buy Load Range H would be a pointless waste of money; like putting premium gas in an engine designed for regular.

Dual Wheel Spacing needs to be enough to prevent rear tires from touching under any circumstances. Touching tires will destroy themselves quickly. Properly spaced tires have reduced weight carrying

capacity compared to single tires (like on the steer axle) because they do not shed heat as well. Larger/wider tires reduce the dual spacing and therefore tire carrying capacity. Stick with OEM specs.

Keeping Them Pretty

If you've spent hours washing and waxing to make your RV pretty, you want the tires to look good too. Wash them with the same soapy water you used for the body and a scrub brush of some sort. Just leave them to dry for a nice matte black appearance.

If you want them to pop a little, use a tire dressing that does not contain petroleum products, alcohol, or silicones. Over several years these things can cause premature aging and sidewall cracking by the chemical reaction that the product can have with the antioxidant waxes found in the tire.

Weight

The tires' job is to safely support the weight of your vehicle. The pressurized air in the tire provides that support. In general, the higher air pressure in the tire, the more weight it can support, up to the weight limit stated on the tire.

Tires that are inadequate due to size, Load Range, pressure, condition, or age will eventually fail. They fail by exploding. An exploding dual rear tire may only damage your RV's exterior, wiring, fuel, brake, water, or sewer lines. An exploding front tire can do all that damage plus send you off the road at highway speeds. That is a bad day.

As stated above, more air in the tire means carrying more weight safely. To determine how much air you need, you must know how much weight you are carrying on each axle. Do not rely solely on the RV manufacturer's weight label because it does not take into consideration the weight of vehicle options, you and your family, water, propane, firewood, beer, groceries, tools, the BBQ and all the other junk we all carry around with us.

Fully load up your rig and weigh it! In a perfect world, you would weigh each tire position separately but that's not always easy to do. At a minimum, weigh each axle and record the weights. You'll need these numbers to calculate the minimum safe tire pressure described below.

The engineers at the chassis manufacturer (who are smarter than you) have set the maximum allowable weight (GAWR) for each axle. This number cannot be changed, period. Adding heavier tires, springs, etc. does not change the GAWR or GVW set by the chassis manufacturer. At best, these modifications will simply move the weak link from one component (like springs) to another (like brakes). Your local DMV, police, and insurance company will not be happy if you are overloaded.

If you are too heavy on one axle, move some stuff to the other end of the RV. If both axles are overloaded, put your RV on a diet until you are legal and safe. Here's my Bounder's numbers as an example:

Gross Axle Weight Rating (GAWR) front – 8,000 lbs

Actual front axle fully loaded weight – 7,040 lbs

Gross Axle Weight Rating (GAWR) rear – 14,500 lbs

Actual rear fully loaded weight – 14,080 lbs

Gross Vehicle Weight Rating (GVWR) – 22,000 lbs (not 22,500)

Actual fully loaded vehicle weight – 21,120

The Best For Last – Tire Pressure

Look at the weight carrying information embossed into your tires. It states the maximum weight the tire can support, and the corresponding minimum tire pressure required to support that weight. Note this is not the tire’s maximum pressure, it is the minimum pressure for the maximum load. The higher the Load Range of a tire, the higher the weight it can support at the correspondingly higher pressure.

Tire weight carrying capacity is lower if it is used in a dual configuration like this (-)(-)==()-(). Why? Because dual tires cannot shed heat as easily as single tires do. Higher heat in a tire equals lower safe weight carrying capacity.

So, once you know how much weight your tires carry, you can calculate the minimum air pressure required to safely carry that weight. Do this for each axle even if you know individual wheel weights – just use the heavier side’s weight. All tires on an axle must have equal pressure whether there are 2 tires or 4. Your tire manufacturer’s web site will have a load inflation table for your specific tire.

If you cannot find a load inflation table for your specific tire, I believe it is acceptable to use one from a competing manufacturer for the exact same size and Load Range with a similar tread pattern. Every table I have looked at is within 100 lbs of the others, so my pressure recommendation below still holds.

Here is an example of a load inflation table:

Fronts/singles **Max for Load Range G**

Wheel Diameter 19.5"	PSI	65	70	75	80	85	90	95	100	105	110	115	120	MAXIMUM LOAD AND PRESSURE ON SIDEWALL	
	kPa	450	480	520	550	590	620	660	690	720	760	790	830		
225/70R19.5 LRG XZE	LBS SINGLE	2795	2895	3045	3195	3315	3450	3640	3715	3845	3970			S	3970 LBS AT 110 PSI
	LBS DUAL	5200	5440	5720	6000	6230	6490	6830	6980	7230	7500			D	3750 LBS AT 110 PSI
	KG SINGLE	1250	1310	1380	1450	1500	1570	1650	1690	1740	1800			S	1800 KG AT 760 kPa
	KG DUAL	2360	2460	2600	2720	2820	2940	3100	3160	3280	3400			D	1700 KG AT 760 kPa
245/70R19.5 LRH XZE	LBS SINGLE			3390	3570	3750	3925	4100	4270	4440	4610	4775	4940	S	4940 LBS AT 120 PSI
	LBS DUAL			6420	6760	7100	7430	7760	8080	8400	8720	9040	9350	D	4675 LBS AT 120 PSI
	KG SINGLE			1540	1610	1700	1770	1860	1930	2000	2090	2150	2240	S	2240 KG AT 830 kPa
	KG DUAL			2920	3060	3220	3360	3520	3660	3780	3960	4080	4240	D	2120 KG AT 830 kPa
265/70R19.5 LRG X MULTI Z	LBS SINGLE	3570	3755	4000	4185	4430	4605	4850	5025	5190	5420				5510 LBS AT 112 PSI
	LBS DUAL	6735	7085	7460	7900	8365	8705	9145	9475	9810	10240				5205 LBS AT 112 PSI
	KG SINGLE	1620	1705	1815	1900	2010	2090	2200	2280	2355	2460				2500 KG AT 775 kPa
	KG DUAL	3055	3215	3430	3585	3795	3950	4150	4300	4450	4645				2360 KG AT 775 kPa
285/70R19.5 LRH X MULTI Z	LBS SINGLE			4460	4670	4935	5135	5400	5595	5785	6050	6235	6490		6610 LBS AT 123 PSI
	LBS DUAL			8330	8715	9215	9590	10085	10445	10810	11285	11640	12110		6175 LBS AT 123 PSI
	KG SINGLE			2025	2120	2240	2330	2450	2540	2625	2745	2830	2945		3000 KG AT 850 kPa
	KG DUAL			3780	3955	4180	4350	4575	4740	4905	5120	5280	5495		2800 KG AT 850 kPa

Rears/duals

Source: https://www.michelinb2b.com/wps/b2bcontent/PDF/RV_Tires_Brochure.pdf

Note this chart shows Michelin brand tires, your (and my) brands may be slightly different.

You can see that higher pressures support more weight, which makes sense. You can also see that additional pressure does not increase a tires capacity beyond its listed maximum in each Load Range. If you need to support more weight without exceeding the GAWR, buy tires with a higher load range.

Using my 245/70R19.5 Load Range G tires as an example, they can support 4,270 lbs each on the front axle and 4,040 lbs each on the rear axle when inflated to at least 100 psi. That's 8,540 lbs maximum across the front axle, and 16,160 lbs across the rear axle. Both are more than my GAWR which is a good thing.

My loaded front axle weighs 7,040 lbs supported by 2 single tires so the minimum pressure I need to support that 3,520 lbs per tire is about 80 psi. No RV has perfect left to right weight balance so to allow for that heavier side, I increase my tire pressure to 100 psi in the front tires. Actually, 90 psi would be adequate, but I prefer the steering feel at 100 psi.

My loaded rear axle weighs 14,080 lbs supported by 4 (dual) tires so the minimum pressure I need to support that 7,040 lbs per set of duals is about 85 psi. Again, to allow for side to side imbalance, I increase my rear tire pressure to 95 psi.

To Sum Up

I check my tire temperatures every couple of hours using a no-touch infrared thermometer when on the road. Why every 2 hours? Either the dog or I have to pee! Tire temperatures are always about 30 deg C warmer than the ambient air temperature. They feel warm to the touch, never hot. An underinflated tire is a hot tire. I am confident my RV tire pressures are correct.

To determine your correct tire pressure:

1. Weigh each axle of your fully loaded rig,
2. Make sure your tires are in good condition, not too old, and have the proper capacity,
3. Look up the inflation chart for your tires,
4. Add 10 psi to compensate for side to side imbalance
5. Hit the road!