

Service Tips from the Pros



Loading, Handling and Abnormal Tire Wear

Automobiles, Motorhomes, and Trucks

This is not an attempt to explain the obvious, but have you ever entertained why a typical automobile, SUV, and light-duty pickup has a defined seating capacity or why the available trunk space provided is so limited on some of these vehicles? With exception of a few imports like a Volkswagen Beetle - with trunks and fuel tanks forward of the driver and copilot seat, nearly all domestic vehicles require that all passengers and baggage be located back in second and third class. This is certainly no accident, but is designed in and it is one reason these vehicles can handle a wide range of loads without sacrificing their good handling and tire wear characteristics.

Unlike automobiles and light-duty pickups, a motorhome chassis is designed to be operated at or near the rated carrying capacity of the chassis. Comparing an RV to a truck is apples and oranges, too - the typical dump truck takes a break/runs empty 50 percent of the time, where the motorhome chassis runs loaded for its entire service life.

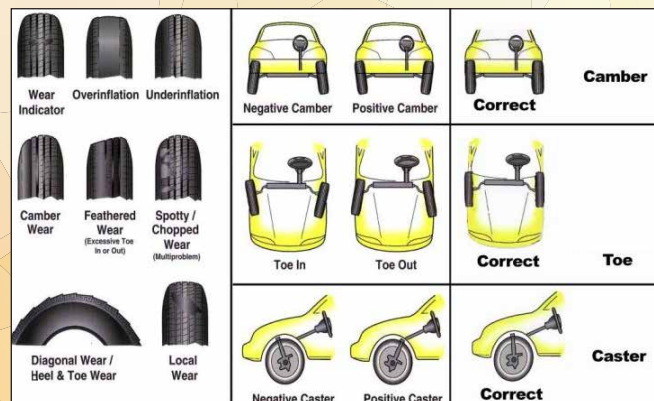
The chassis suppliers understand this and do an excellent job with matching up a variety of hardware (i.e., tires and wheels, suspension components, air versus hydraulic braking systems, gas versus diesel engines with the horsepower/torque and the appropriate transmission and final drive components) and in a wide variety of lengths and wheelbases. This flexibility allows the chassis builder to provide the RV body builder a chassis that fits and built with the reserve capacity where it is needed!

Selection of the right chassis is one of the body builder's primary considerations during the concept and design stages. Estimating the weight of a finished product and having a reasonable payload capacity for the motorhome owner is the goal! The load an owner chooses to carry and the distribution of that weight can have a significant affect on the drivability

and handling characteristics of a coach and it is a factor we cannot control. It is likely the average car owner would be puzzled if asked about Gross Axle, Gross Vehicle, or Gross Combined Weight Ratings, but a motorhome owner does not have that luxury. This is the point an RV owner must be thinking more like a truck driver.

Drivability, Handling, and Abnormal Tire Wear

Have you heard it said, "the motorhome manufacturer overloaded the chassis," or, "I do not need to align my new car, so why should a front-end alignment be necessary on a new motorhome?" It is a fact that during the service life of a motorhome, the owner can subject their coach to a wide range of loads depending on the trip planned. For example, it is likely the owner who is heading out for a week of dry camping will depart full: a full tank of water, LP gas, topped with fuel, plenty of food and personal items, and perhaps a wardrobe dictated by the latest weather forecast. Towing can add significant tongue weight to a hitch installation, which can physically unload weight from the steer axle and hauling the entire Little League team to an away game can easily promote an overloaded vehicle, too! When is the last time you scaled your coach or checked the inflation pressure in the tires or inspected the tire tread for signs of abnormal tire wear?



Winnebago Industries® Alignment

There are many body builders that manufacture motorized RVs, but there is only a modest group of chassis manufacturers that are currently building a chassis for the RV industry. Freightliner Custom Chassis, Ford Motor Company, Dodge, and Mercedes-Benz® are very popular brands these days and each of these chassis OEMs offer a variety of platforms for the RV body builders. The trend towards the smaller and more fuel-efficient RVs has paved the way for several new chassis offerings, including Mercedes-Benz's Sprinter chassis, the Ford Transit chassis, and the Dodge Ram ProMaster chassis. The weight that a body builder adds to the chassis most certainly alters the chassis suspension ride height and the changes are significant enough that the chassis supplier's initial front-end alignment settings may not provide favorable tire wear and handling characteristics. This is the reason that every motorhome must have the front-end alignment checked and reset prior to shipment to the dealer.

A Few Facts About Alignment

- Alignment settings are not permanent. They will change as parts wear in, as friction between leaf springs lessens, and bushings loosen up.
- Alignment is not an exact process. The types of alignment equipment in the field varies greatly and a technician's experience and expertise has a direct bearing on a good result. The printouts can indicate a perfect alignment, yet something as simple as a loose wheel bearing or a defective shock absorber could be the cause for abnormal tire wear or a handling issue.
- An alignment specification is only a "target." It is the chassis manufacturer's engineers that determine the caster, camber, and toe specifications that should result in good handling vehicle and long tire life. Many vehicles with the alignment out-of-spec will exhibit excellent handling characteristics with no adverse tire wear.

Service Tips from the Pros

In some instances, it is necessary to move the alignment settings to a point outside the specifications to optimize the handling characteristics. An experienced alignment technician will read the tire wear for clues and then factor-in those observations along with test driving the vehicle so alignment settings can be optimized for that specific vehicle as it is loaded.

- Winnebago Industries aligns each motorhome as it leaves the assembly plant using precision alignment equipment. The alignment toe is set to the chassis manufacturer's specification for initial delivery to the dealer. Once the vehicle is retailed, it is the owner's responsibility to load the coach for normal travel, verify the weight distribution on the chassis, adjust tire inflation using tire load chart specifications, and testdrive to verify positive handling characteristics.

Winnebago Industries also suggests that the alignment should be verified to maximize tire life.

- Alignment is not considered a warranty item.

In Conclusion

Winnebago Industries' primary goal is to deliver the motorhome to a dealer's location with good handling characteristics and with no abnormal tire wear. It is our dealer's responsibility to note any transportation damage, including abnormal tire wear, prior to accepting delivery of a new coach from the transport company's driver delivering the vehicle. During delivery to the retail customer, it is the dealer's responsibility to review the carrying limitations of the vehicle with the customer and ensure they are aware that checking front-end alignment should be a consideration, both after initial loading of the motorhome and routinely throughout the life of the motorhome.

Ultimately, the end users are responsible for the safe loading of their motorhome. This would include getting the vehicle weighed following the initial "loading" of the new coach, determining and maintaining the correct tire inflation pressure for the steer-axle tires, drive tires, and tag-axle tires, and paying close attention to the tire wear characteristics. Keep it simple if a vehicle handles well and the tires indicate no unexpected or abnormal tire wear, the alignment can/should be left alone.

Extra Credit

For those that would like to expand their understanding of front-end alignment, here is a website that provides a wealth of information that is easy to digest. MD Alignment has participated with Winnebago Industries Service Training in years past and are very proactive with sharing their knowledge. Their videos are very insightful to technicians and for nontechnical folks, too! Here is the link: mdalign.com/videos.php



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