

OVERVIEW OF FRONT-END ALIGNMENT

Design of automobiles, motor homes, trucks – they are different!

Have you heard it said, “the motor home manufacturers overload the chassis,” or “I don’t need to align my new car, so why should I need to have a front-end alignment performed on my new motor home?” It is a fact that a motor home chassis is subject to a wide range of “loads,” and it is dependent on the individual user. It may run with full water, LP gas, food, fuel, personal items and may tow a trailer, adding significant tongue weight. The owner may have added equipment like an awning or hydraulic leveling jacks, and motor homes with generous amounts of interior and exterior storage capacity could promote overloading of the chassis. Payload capacity of a motor home is determined by weight, not by volume.

Winnebago Industries design engineers must consider many factors when designing a motor home. They target specific floor plan, features and convenience items, plus the available option packages they want to offer. A chassis selection is an important consideration because the completed motor home must “fit” the chassis carrying capacity with enough reserve capacity available for an owner’s additional items. It is in the concept and design stages that designers must forecast a completed motor home’s projected gross weight – will it exceed gross vehicle weight rating? How about the side-to-side weight distribution – will the vehicle lean? What about each axle’s respective gross axle weight rating? Will one axle be too heavy? Each of these is an important factor and within our control, but the one we can’t control is the individual owner’s loading of the motor home.

A car’s seating capacity and trunk space tend to limit what an owner can carry in a car, but we still see the occasional overloaded car or light pickup. The average car’s

design dictates that the rear axle will carry the highest percentage of a payload. It’s obvious that with the exception of the co-pilot seat, any additional passengers or baggage must be located rear of the driver’s seat. This is no accident, but is designed in, and is one reason a car can handle a variety of loads without sacrificing its good handling and tire wear characteristics.

Most trucks are engineered and built for specific tasks so they can be operated continuously at their rated capacity while providing a long service life. A truck chassis can be customized according to its specific service application. This is accomplished by matching or sizing items such as tires and wheels, suspension components, the type of braking system, the engine’s horsepower and torque, the transmissions and final drives, and more. This flexibility allows a truck to be built with reserve capacity where it is needed.

Winnebago Industries Alignment

Winnebago Industries builds motor homes on rail chassis and cutaway chassis purchased from our respective chassis suppliers. Due to this added “load,” the chassis suspension compresses assuming a new ride height. This change is significant enough that the chassis supplier’s initial front-end alignment settings may not provide favorable tire wear and handling characteristics.

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.** Alignment equipment requires calibration on a regular basis, and this is often overlooked. Error can occur. Printouts can indicate a perfect alignment, and tire wear and handling can still be an issue.

- **An alignment specification is only a “target”** which should insure that caster, camber and toe

are within a window where the tires will wear well, and desirable handling characteristics will result. Many vehicles with their alignment “out of spec” exhibit excellent handling characteristics with no adverse tire wear. In some instances, it’s necessary to adjust a vehicle’s alignment specification outside the recommended specifications to optimize tire wear and handling. An experienced alignment technician can “read the wear” on tires for clues so alignment settings can be optimized for the particular vehicle.

- **Winnebago Industries aligns each motor home** 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 travel and to have the alignment verified.

- **Alignment is not a warranty item.**

Conclusion

Winnebago Industries’ primary goal is to deliver the motor home to a dealer’s location with good handling characteristics and with no abnormal tire wear. It’s the dealer’s responsibility to note any abnormal wear when accepting the coach. If a vehicle handles well and the tires indicate no unexpected or abnormal tire wear, leave the alignment alone.

Ultimately, the end user is responsible for good judgment regarding the safe loading of the motor home and should monitor handling and tire wear characteristics following the initial “loading” of the new coach.

It is the dealer’s responsibility to review the loading limitations and alignment with the customer during delivery and insure they are aware that checking front-end alignment should be a consideration, both after initial loading of the motor home and routinely throughout the life of the motor home.

