

# Alignments Basics QRG

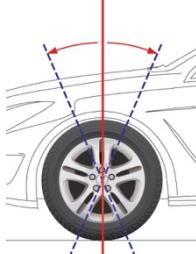
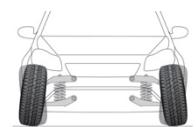
## Overview

How do I know if my car is out of alignment? An alignment refers to the adjustment of a vehicle's suspension. When properly aligned, your suspension points your vehicle's tires and wheels straight down the road. When your suspension goes out of alignment, it causes irregular tire wear and steering inconsistencies. Although commonly referred to as a wheel alignment, the result can affect multiple points on your vehicle.

Proper alignment not only ensures that a vehicle handles safely, efficiently, but also reduces tire wear and fuel consumption.

## Alignment Wear Angles

The table below describes alignment wear angles and their related symptoms.

Angle	Definition	Symptom(s)	Wear Pattern(s)	
<b>Caster</b>		Angle of the steering axis, typically set to a higher positive to help the vehicle return wheels to center and remain in a straight position and maintain directional stability.	Problems with straight line tracking, poor returnability of the steering wheel.	Caster angles have no direct effect on tire when travelling a straight path.
<b>Camber</b>		An assembly's inward or outward tilt of the top of the wheel when viewed from the front or back.	Excessive shoulder wear, tread blocks show a "heel-toe" pattern.	
<b>Toe</b>		The difference in measurements taken across the front of the tires versus a measurement taken across the rear of the same tires.	Feathered wear across the tread (also known as directional wipe) and raised tread block edges.	

## Cross Camber

- Cross camber is the difference in camber angle between left and right front camber measurements
- Can affect a vehicle's handling and tire
- Front cross camber difference of 0.5° or more in left and right may cause a pull or drift to the side with the **most positive** camber setting
- Rear cross camber is not known to be a pulling factor
- If a customer complains of a pull, check for positive cross camber above the OE tolerance

## Cross Caster

- Cross caster is the difference in the left and right front caster measurements
- Can affect a vehicle's handling, as it can cause the vehicle to steer to one side and affect its stability
- A cross caster difference of 0.5° or more may cause a pull or drift to the side with the **least positive** caster setting

## Road Crown

Most roads are higher in the center so that water will runoff. Without any compensation, vehicles would "drift" downhill, towards the ditch.

Cross camber and cross caster help the vehicle travel in a straight line on a crowned road. However, on a flat road, the vehicle would drift to the left.

## Ride Height

Ride height simply refers to the distance between the road and the vehicle frame. The ride height provides reference points for all alignment measurements. Any deviation from the factory ride height, such as lifting or lowering a vehicle, will need to have an alignment check after customizations have been performed.

## Additional Considerations

While we can typically adjust camber, caster, toe, and ride height for most vehicles, there are additional components of a vehicle that can cause it to be misaligned. In these cases, we can inspect and inform the customer. However, we cannot adjust or replace parts for the following vehicle issues:

- Worn out suspension components including but not limited to springs, ball joints, and/or tie rods
- Vehicles with special alignment adjustment components

Discount Tire can check the alignment on most vehicles; however, as technology advances, there are some vehicles that we can be checked but not aligned. The following vehicle features prevent us from aligning certain vehicles - there are lights on the dashboard when the vehicle is started to show the features:

Example Icon	Feature Name	Description
	Parking Assist	A system that typically uses sensors, cameras, or both to detect obstacles around the vehicle.

Example Icon	Feature Name	Description
	Active Steering	A combination of electronic and hydraulic systems to actively adjust the steering angle of a vehicle.
	Lane Departure/Assist	A series of cameras or sensors alerts drivers if the vehicle is drifting out of the lane.
	Adaptive Cruise Control (ACC)	Uses cameras, sensors, and radar to maintain a safe distance from other vehicles by adjusting speed and braking when needed.
	Active Front Steering (AFS)	Uses electronic sensors and motors to adjust the angle of the steering wheel in response to driver input.
	Automatic Emergency Braking (AEB)	Radar, Lidar, and cameras detect potential collisions and automatically apply breaks to avoid a crash.

For additional details on vehicles that have these features, refer to the *Hunter Wheel Alignment Adjustment Guide*.

## Contact

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