

Over and Under - Understeer and Oversteer

You may remember I mentioned these two terms last month while trying to explain how to drive a race track racing “line”. Since I didn’t have the space, the context or the inclination to explain these important terms, I thought I’d give it a whirl here just in case you’ve always wanted to know and I just KNEW you did, but were afraid to ask. ☺ More physics cause and effect stuff but The Wench will try to simplify the terms for you.

Definition: Understeer and oversteer are vehicle dynamics terms used to describe the sensitivity of a vehicle to steering. And for your NASCAR fans, that’s “push” (understeer) and “loose” (oversteer).

Understeer: in vehicle dynamics terminology, understeer occurs when a car turns (steers) less than (under) the amount you want it to, i.e., the car does not turn enough, takes an arc greater than desired (an understatement) and runs off the road, not especially helpful when cornering on a race track! When an understeer car is taken to the limit of tire grip where it is no longer possible to increase lateral acceleration, it will follow a path with a radius larger than intended and there ain’t a damn thing you can do about it (been there, done that). That’s the physics part. Although it can’t increase lateral acceleration, it is actually dynamically stable. See below:

EXAMPLE OF UNDERSTEER: (per Wikipedia)

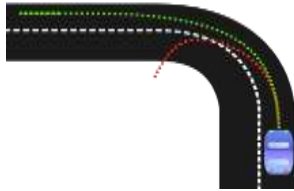


Oversteer: Guess what? I bet you’ve done this on an icy or wet road at least once during your driving life. ☺

Oversteer occurs when a car turns by more than (over) the amount you want it to, i.e., the car turns more sharply than intended and could get into a tail-end spin out. So simply stated, oversteer occurs when the rear tires break traction in a corner before the front tires do. When an oversteer car is taken to the limit of the tire grip, it will become dynamically unstable and “spin out” and off the track/road. Skilled race drivers can counter-steer and maintain control past the

point of instability by the use of throttle or brakes. (Not me, at least not yet!) This is called “drifting” and you may have seen famous professional rally car driver, Ken Block, do this in *YouTube* videos. If you haven’t, check him out by googling “Ken Block San Francisco” and watch the video. You will be absolutely astounded and entertained at his hilarious driving ability.

EXAMPLE OF OVERSTEER: (per Wikipedia)



As an auto racer friend once said to me, “Oversteer is when your rear bumper hits the wall and understeer is when your front bumper hits the wall! “ In summary, don’t try this at home if you can help it, Kids.