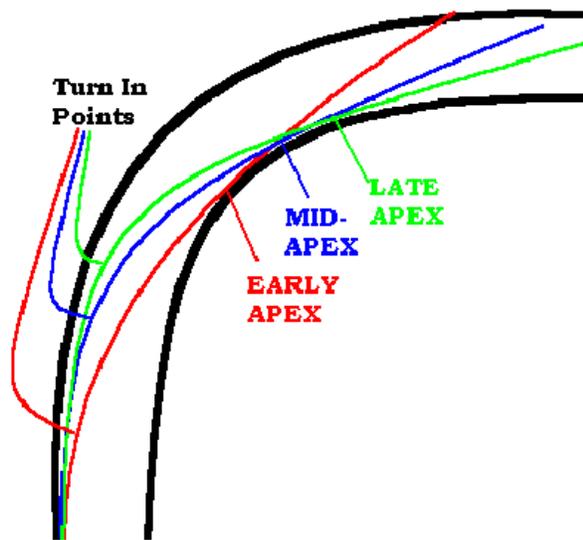


Just The Basics – 7 – Components of a Turn

The Components of a Turn – “Turn In, Apex and Track Out”, along with “Friction Circle” & “Slip Angle” are terms that are commonly used with regards to track work. Even if you are not planning on taking your car on the track, these are good terms to know. They will come into play when driving in adverse weather conditions or emergency situations. Having at least a passing knowledge of them is necessary when discussing the limits of a car or tires.

In every kind of racing (except drag racing) and in virtually all daily driving encounters, the biggest concern is efficiently and effectively negotiating turns. Stomping on the throttle in a street car takes little skill, while handling a curve at speed or in adverse conditions requires great skill. Especially in a car without the “Nannies”. See “Alphabet Soup” for more.

The racer “daffy-nition” of a turn is “the entrance to a straight”. The more speed you can carry through a turn, especially at the end of the turn, the faster you will be at the end of the following straight. “Slow in - fast out” is the mantra. For today’s purposes, we will be considering a basic ‘single apex’ turn. A turn is comprised of three components: turn in, apex and track out.



is also where you will have the most steering input available. You will want to steer toward the inner most point of the turn, or Apex.

Apex. This is the inner most point of the turn and where you start coming out of the turn. If you are on the track, as you approach the Apex, you will want to start rolling on or adding some throttle. As you start adding throttle, the car will start shifting its weight to the rear wheels, giving you more grip on the rear. Assuming no further steering input, the car will start straightening itself out as you start to add more throttle. As you come through the apex, you will want to be adding more and more throttle and straightening out the steering wheel. The car will start straightening itself out and will move to your Track Out point.

Track Out is the point where the turn has been completed. The steering wheel is normally straight.

When driving in inclement weather, you want to approach it the same way: brake in a straight line, turn in, even throttle through the apex and add throttle as you track out. If you are braking while turning, you are asking your tires to do two things at once. If you are in a low grip situation, like water, snow or ice, there is a much better chance you will lose control.

Turn In. As you are approaching the end of a straight, you will brake and downshift as needed. Remember to blip the throttle and let out the clutch! (See “Fancy Footwork”) This will be the slowest point of the turn, and you want to be at the outer most point in the road. This is also the point where your tires will have the most grip (remember this in rain or snow!)

When you start adding steering input, this is your Turn In point. You should be off the brakes (clutch out if so equipped) and “feathering” the throttle or “even throttle”. This is not accelerating nor letting the engine drag to further slow you down. This helps maintain even balance - front to rear - in the car and allows for the most lateral grip of the tires. This

As a rule of thumb, where you start your Turn In will dictate where your Apex and Track Out points will be.

Late Apex. This is the safest, usually the fastest, and the preferred line for most drivers. It allows plenty of room after the Apex to correct mistakes or regain control if the front or rear starts to lose traction. If you come through OK, you can roll on full throttle very early, which means you will be going much faster at the end of the straight. It will also let you know where you can pick up some more speed through the turn, safely. A Drivers Education instructor will most likely teach you a Late Apex line.

Mid-Apex. This is occasionally the fastest line. There is little room for error. If you are off line just a little bit, or a touch too fast, it can be difficult to recover. You will lose a lot of speed down the following straight, and there can be some tense moments. Racers usually favor a mid-apex because it helps prevent the car behind them from sticking their nose underneath going into the turn and attempting a pass. In DE situations there is no passing allowed in the turns so this is not an issue.

Early Apex. This is the slowest line and the most dangerous. It is also the line most novice drivers want to take and what drivers tend to take in adverse conditions. Novice drivers tend to want to come into the turn faster than is prudent. They also want to get started in the turn. The problem is when you hit the early apex, you will not have enough steering input to complete the turn. You will need to increase the steering input in the middle of the turn, which usually results in the car sliding off the outer edge of the track. The other option is to hit the brakes in the middle of the turn, which causes a sudden shift of the weight of the car to the front and the back end of the car comes around, and you spin toward the inside of the turn.

See the article #9 - "Loose and Poosh" for more information about dealing with situations when you start losing control of your car in adverse weather conditions.