



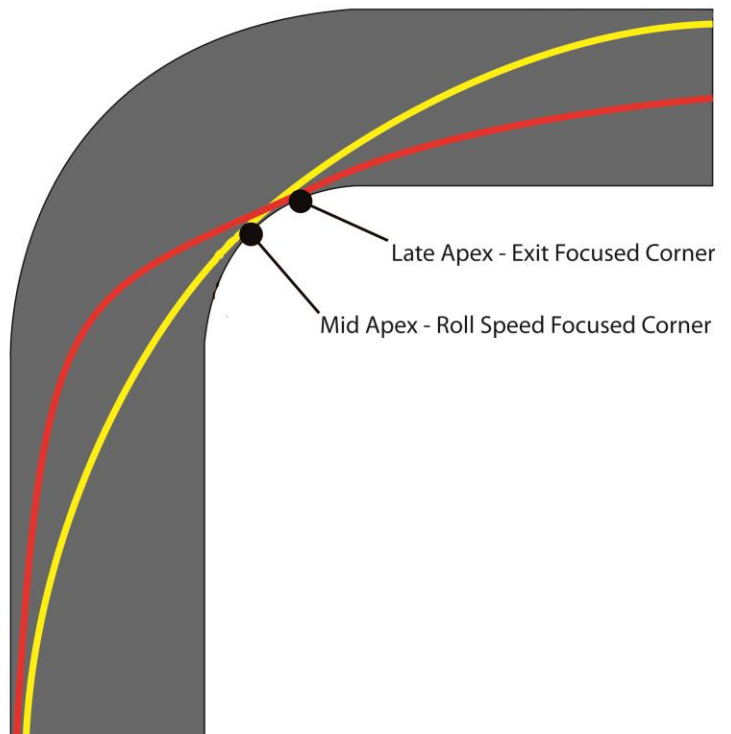
Roll Speed vs Exit Speed Focused Corners

Without a doubt, the number one topic of conversation among track riders is finding the right line. Riders confer with both coaches and each other, looking for reference marks that will guide them around the racetrack faster, safer and with less effort. To help this cause, many track day providers mark up the track with a myriad of X's, chalk marks and even arrows to keep people on line.

Surely reference points are important and nearly every top rider that I know uses them. Even the most perceptive rider cannot accurately gauge speed and distance in every corner, especially when traveling at a high rate of speed or through a section of road that is partially or completely blind on the exit. However, there are times that these dots can become a crutch that riders rely on too heavily.

The best riders use reference points as important guides, but when it comes to planning strategy and making adjustments, it's much more important to understand the primary goal in every corner. When riders identify what they need the bike to do, the line starts to paint itself and instead of following dots they are feeling for feedback and this is where true progress begins. Reference points become just that – points of reference – and not iron clad points that are not deviated from. The focus becomes to identify the type of corner they are working on and then adjust their approach to suit that particular corner type.

There is an important term that we use at Penguin that helps riders determine which strategy to use in certain corners. Every bike has a speed at which it can no longer spin the tire, regardless of lean angle. Of course bar input at the wrong time can always cause a problem, but this speed threshold is based on soft hands at full lean (as you always should have). For a lightweight bike like a Ninja 300 the speed where wheel spin is no longer a risk might be 50 mph. For a 600, it might be 90mph and for a 1000 the bike might have to be going 120 mph before the risk of wheel spin has completely gone away. We call this speed (the speed your bike needs to be going before the risk of wheel spin has largely disappeared), the *Threshold of Traction*. When bikes achieve speeds in excess of this Threshold, line strategy changes. This is the major reason why high horsepower bikes and low horsepower bikes have different lines in certain corners.



Roll Speed Focus

The higher the apex speed of a corner, the more important it is to maintain that speed. Anytime the minimum speed of a corner is above the Threshold speed of your motorcycle, roll speed trumps all other priorities. If you cannot spin the tire, then riders should make the largest radius that they can and choose a mid corner apex. Any line that causes a rider to tighten up their line either before or after the apex take away from the ability to carry speed and will be counter productive to fast lap times.

The major bar input in this type of strategy should be completed early (before the rider gets halfway to the apex from the edge of the track) and the goal is to do all you can to free up traction to allow the bike carve through the corner. The major ways that this is done are by relaxing all bar input to eliminate all extra tire loads and getting off the bike to help keep the bike as upright as possible. The most common mistake riders make in executing this type of corner is performing a slow, prolonged turn in that loads the chassis for an extended period of time and prevents relaxing of the load on the tires.

Another other common corner that uses a roll speed strategy is one that is below the Threshold speed but does not involve significant braking or acceleration. We typically call these corners “connection” corners. Most track have one or two and they typically join two similar speed sections of track. As with the high roll speed corner, the main objective is simply to carve through the corner with as much speed as possible.

Exit focus

The classic race line that is taught around the world is based on an exit-focused strategy. This wide entrance, late apex line is one that is prevalent in many track day environments because it forces riders to slow down on the entry and typically leaves them lots of room on the exit. This strategy should primarily be used in corners that (1) are below the Threshold speed for your bike and (2) lead to a straightaway long enough that you can get your motorcycle wide open for a least a few seconds. Riders who set up wide in a corner that does not have one of these features are giving up speed without the reward of a long drive to recoup that speed. They also load the front tire with extra turning forces when they should instead be working to increase entrance speed.

The true goal of an exit-focused corner is to get the bike upright as early as possible to facilitate an early drive. If you are able to get right back on the gas after your major bar input, then sacrificing entrance speed to square up your drive is the right strategy. If you have to carve through the corner with maintenance throttle before you can apply the throttle, then it is possible that the corner is too “long” for a drive focused entry and you should consider another strategy.

There are many corners that are a roll speed focus strategy on one bike and a drive focus strategy on another. The higher the horsepower of your motorcycle, the more corners will fall under your Threshold of traction speed and the more important it is to square the corners up and use all that horsepower you paid for. If you ride a big bike and apex too early, you will find yourself modulating the throttle late in the drive. If you find yourself in this situation, consider altering your strategy to a more drive focused strategy with a sharper turn in, later apex and earlier application of the throttle.

Conversely, small bikes that are below the Threshold of Traction exact no advantage from a drive focused line. After sacrificing entrance speed for a sharper turn-in and later apex, these riders are “rewarded” with a slothful bogging motor and the desire to paddle themselves up to speed with their

feet. Small bikes thrive on roll speed, and as a result will come through many apexes faster and on a wider trajectory than their high horsepower counterparts.

In future articles we will discuss factors that alter these basic strategies and consider other corner strategies. The next time you ride the track, look at some of the faster corners and consider whether you should employ a roll speed or exit speed focused strategy. A little planning and keeping the goal of the corner in mind, and you can stop focusing on simply connecting the dots and instead concentrate on maximizing traction where you need it most.

Until next time, ride fast – ride safe!

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