

“The Downhill”

*By Bruce MacInnes**

While every turn has technical challenges, there are very few corners anywhere that require equal measures of Skill, Perfection, and Testicular Fortitude as “The Downhill” at Lime Rock. At Skip Barber we are challenged to dispel the myths, and present a “Procedure” to find the limits of any car/driver/corner combination without ever losing control. Believe-it-or-not, limits can be reached without ever spinning if you apply the techniques taught at the school.

All this starts with the misconception that the Downhill is actually a downhill turn. Under closer examination, you will see that while the approach is steeply downhill the road levels out just after the turning point (cars don't turn the instant you move the steering wheel). Beyond the apex it actually goes slightly uphill and then rolls off-camber before the track-out. One of the basic concepts in Racing is knowing where to go slow to turn a fast lap. On fast sweepers like Lime Rock's Uphill, West Bend, and Downhill a safe bet as you approach the limit is to do all speed adjustments in a straight line and then add power to stabilize to chassis as you turn in. Another concept is that the exit speed of some turns (as proven by our Computer Car's data acquisition system) can actually be slower when successfully taken flat out because of tire scrub. Since this turn leads onto the longest straight, exit speed is all-important. There is no question that some cars can do the Downhill flat but you must not think that this is the goal. You need to know that you are not racing anyone but yourself while developing your skills and use an organized, methodical approach to the limits.

“The Procedure”:

Never believe anyone... If someone says they are flat out anywhere in this world, there are five possibilities; they may be driving a better car, be arriving slower, or perhaps, God Forbid, be a better driver. They may even believe they really are flat. The most likely scenario is that they are lying.

If you don't know whether to brake, lift off the throttle, or take a fast sweeper flat out... why not start by braking and then check your tachometer at the track-out. Use long light braking so you don't upset the balance of the car. If brakes make the turn too easy, revert to a long feather off the throttle and be sure to add power as you turn in to settle the car and enhance the handling. Progressively work toward less speed adjustment and keep checking the tach. Eventually, you may find that a particular turn can be done flat out without a compromise in exit speed, but that can change in a draft or when tires overheat.

Since there is an increase in traction as you initiate the turn at the Downhill, steering input must be reasonably quick to take advantage of the grip. This absolutely is counter-intuitive to the concept that Racing always requires smoothness. Quick hand

speed is OK as long as there is necessary grip at the turning point. It is also required to get cars turned in at hairpin turns. The single biggest line problem in Racing, and especially at the Downhill, is early-apexing simply caused by not looking beyond the apex to where you will track out on the exit. Important: The clipping point is the middle of the inside curbing, not the beginning. Very often drivers will improve the turning point but end up wide of the apex because they don't look ahead and turn in with slow hands. If that happens, simply drive through the problem with a soft throttle adjustment and do not try to get to the apex. Remember there is a slight increase in traction as the pavement rises just beyond the apex, so don't get excited and be a peddle-snapper off the throttle.

Helpful Hints:

The turning point (for good handling cars) is just before the compression.

Some cars react favorably to an almost imperceptible S-turn after the bridge on the hill, before the turning point, to preload the bushings in the chassis and build slip-angle in the tire. This may help the car turn into the corner.

The draft works while you are turning, so never follow cars too closely down the hill. Time your passes so you can track out all the way to the exit curbing and then transition smoothly to make the pass.

If you ever drop your outside tires off the track, turn toward the outside, go to even throttle without initiating "TTO" (Trailing Throttle Oversteer), and be prepared to instantly lock your brakes, and put in the clutch if you spin.

In life as well as Racing: "When it Feels Good-Watch Out".

**Bruce MacInnes has been a Senior Instructor at The Skip Barber Racing School for 30 years. He is a two time Pro-Formula Ford Champion, set 18 lap records, and was voted Formula Magazine's Driver of The Year twice. He currently spends much of his time teaching Skip Barber Programs, Coaching, and flying his homebuilt aircraft. He may be contacted at 1-800-221-1131.*