Driver's Ed. Education
A Series of Specifics for Success
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#18 - Heel & Toe – A Shift in Time!

You've all heard of it. All the hot shoes do it. You'll have to learn it eventually if you want to be a really swift and skilled driver. Those who can't Heel & Toe must brake to the desired speed, then do their downshift, then turn in, or simply choose a gear and let the clutch out while braking. The former takes a long time because each operation is performed separately. The latter is hard on the driveline. The idea behind optimized corner setup is to accomplish both braking to cornering speed and downshifting to the proper gear simultaneously, thereby shortening the distance needed for these tasks. Pretty ingenious, and simple in theory. Yet, there is so much mystery surrounding it that it warrants close scrutiny. Let's start by clearing up the misnomer.

The term Heel & Toe comes from a distant time when car companies had varying ideas on many topics, including what would be a standard pedal placement. There was also different equipment in those days. In general the phrase stems from many cars having their throttle between the clutch pedal on the left and the brake on the right. The pedals were arranged thusly to facilitate stepping on the brake while also engaging the starter, which was often a button or lever on the floor to the right of the brake pedal! Some slick dude figured out he could brake and match revs (or double-declutch for those old crash boxes) at the same time. Heel on the central gas pedal, Toe on the brake, the right foot tipped top-to-the-right in a very natural position.

Even now that our pedals are conventionally located as they are, there are still people that learn it the "old way" in terms of foot position; with the top of their foot out to the right; but Heel on the brake, Toe on the gas. I do not recommend this at all, because the heel will never have the braking sensitivity to allow for variations in braking traction and the minute and instantaneous adjustments that this calls for. Modulation of the pedal is accomplished far more easily and accurately with the articulated ankle than by lifting the entire leg. That is my opinion, and I stand by it! Now let's get into some of the difficulties before we cover the sequence of events.

First, let's dispel another myth. You are not trying to literally "match revs." To sit there and try to exactly match the engine speed with the driveline takes far too much time, and more importantly, concentration. The idea is to reduce the length of time in the braking zone, and trying to get a perfect match is just wasting too much time. You are merely getting the engine revs up in the neighborhood of the driveline speed, and ideally slightly higher. Instead of gradually bringing the revs up to a perfect spot, you simply slip over and give the gas a good hearty boot. Don't fluff it… WING IT!

Second, it is very helpful to be on the brakes hard enough that the pedals are close to the same level. This makes it hard to learn on the street because one seldom if ever reaches the kind of speeds necessary to generate that kind of braking. As a result, many people are tempted to play with the pedal height adjustments, but I would suggest you not do so, as the stock heights are very well chosen for track use. Under full compression, you always want the brake higher by at least half an inch than the gas. For instructional purposes, you might attach a small block to the gas pedal to bring it closer to brake height. This could easily be removed when you've got it down to a science, and would greatly assist you in learning how to Heel & Toe on the street. Incidentally, the track is NOT the place to learn it, as you've got a bit much to think about at a 100+ mph to try something new and tricky!

Now, the actual positioning of the feet is not difficult *per se,* but crucial. Some cars are better configured for this purpose than others. 911s can be tricky because of the pedals being a little right of the driver centerline, and because they pivot off the floor instead of hanging from under the dash. 944 pedals are pretty well situated, but are not perfect. They are slightly too wide apart for lightening quick no-brainer shifting. Many people are tempted to add all kinds of crazy things like wings, extensions, or other home made or store bought contraptions to the existing pedals. I suggest you refrain from using these, as they often bring about unintended and unforeseen consequences. If anything, simply get a piece of 3/16th aluminum and make a cover for the brake pedal that is the same shape, but slightly wider. Bolt it to the surface and you're on your way!

Now, the idea is for the ball of your right foot to be on the brake pedal. If you are wearing a proper thin-soled rubber shoe, you can even "hook" the ball of the foot on the edge of the pedal. You should have plenty of surface area to work with, and lots of feel. When you have slowed to the proper speed and it comes time to blip the throttle, you simply roll your foot over to engage the gas pedal. Again, it helps to be on the brakes hard so the pedals are close to the same height. Also, remember not to pussy-foot the thing. Give it a good boot and try to raise the engine revs slightly higher than the driveline RPM. This is the easy part.

The real trick is in the timing. You have four functions that will be undertaken. 1) The ball of your right foot is stepping on the brakes hard as you slow for the impending corner. The right edge of that foot lurking over the throttle, 2) ready for the blip. 3) Your left foot will be moving to the clutch. 4) Your right hand will move to the shifter in due course. #1 is the only portion that is continuous. The others are not implemented until they are called for, and quite importantly; are then done simultaneously. A fraction-of-a-second after you quickly depress the clutch, your right foot rolls over and boots the throttle as your right hand selects the proper gear. Immediately after the gear is selected, the clutch is released and the corner is engaged in earnest.

If you've fouled up the timing, you'll know soon enough; the graunch of gears or the lurch of improper revs telling you it didn't quite come together. Don't try to do it too quickly at first. Concentrate more on the timing, as it is the most crucial ingredient in the mix. Remember, declutch, then immediately blip and shift simultaneously, then immediately release the clutch.

Incidentally, for those students and their instructors who are experiencing drama and angst regarding the task of downshifting for a corner… Don't! Most any car you'd care to drive on the track will make it around at a decent pace in 3rd or 4th gear. Sure, this may be a little slow, not as viscerally satisfying, and you may find a few spots on the track where you can't seem to get out of your own way. Don't worry about it! This is about learning, remember? If shifting problems are getting in the way of your learning how to drive well, eliminate the problem for a while and just stay in a median gear.

They say A Shift in Time Saves Nine. I don't know what that phrase means in the larger scheme of things, but I know in terms of performance driving, it means a good corner setup, and a real savings to your equipment!