



## Ross Bentley's High Performance Driving Tips - #6

# SHIFTING TECHNIQUES

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You can tell a lot about a driver's abilities and skill by the smoothness and finesse of his or her shifts. The first rule in shifting is: speed is not as important as a good clean shift. You won't gain anything with a real fast shift, other than possibly a broken transmission. Smoothness, precision and finesse are the keys. Treat the shifter like it is an eggshell - be gentle, and firm with the movements.

Three very important rules to remember here: First, when finished making a shift, get your right hand back on the steering wheel! Don't ride the shifter. If it's not shifting, it should be steering. Second, don't ride the clutch pedal with your left foot! Use the "dead pedal", or rest pad, to the left of the clutch pedal to brace your body when not shifting. And third, don't slip the clutch! It's better to briskly let out the clutch than to slip it. It will last much longer that way.

Proper downshifting is a must for extracting the full potential of your car. It is not easy - it requires timing, skill and practice - but once mastered, smoothness and improved car control will result. It is also something you can practice every time you get behind the wheel.

Most drivers think the reason for downshifting is to use the engine to help slow down the car. Wrong! In fact, by doing so you can actually hinder accurate brake modulation and balance. Think about it. How many wheels does the engine help slow down? Two. How many does the brakes slow down? Four. The engine is meant for increasing speed, the brakes for decreasing speed. A good driver downshifts during the approach to a corner so that he or she will be in the proper gear, at the optimum RPM range, to allow smooth, balanced acceleration on the exit.

The objective then, when approaching a corner is to shift down to a lower gear while maintaining maximum braking, smoothly, without upsetting the balance of the car. If you simply dropped a gear and let out the clutch while braking heavily, the car would nose-dive - upsetting the balance - and try locking the driving wheels because of the extra engine compression braking effect. So, what is required is for the engine revs to be increased by stabbing the gas pedal with the right foot. This is called "blipping" the throttle. What you are doing is matching the engine RPM with the driving wheel RPM.

Now, to continue maximum braking and blip the throttle at the same time requires a technique called "heel and toeing", which I'll discuss in a future column.

But, now that you know how to shift, what about *when* to shift? Rule number one in downshifting: "brake first, then downshift". If you don't follow this rule, you will end up badly over-revving the engine. Think about it. If you are at maximum RPM in fourth gear and you immediately downshift to third without slowing the car, the engine is going to over-rev. Again, downshifting is not a means of slowing the car - unless you have no brakes.

Always complete your downshift prior to turning into the corner. If you have ever released the clutch after a downshift in the middle of a corner, and had the car begin to skid sideways, you know why I stress this point. You should have the downshift totally completed with your left foot off the clutch and back on the dead pedal before turning into the corner.

Now, what about skipping a gear when downshifting - going directly from fourth to second, for example, when approaching a second gear corner. I definitely recommend it as long as you are proficient at good, smooth downshifts, and realise you must then slow the car down even more with the brakes before dropping the two gears. And, in fact, the less downshifting you do while approaching a corner, the less likely it is you will make a mistake, and it will be easier to modulate the brakes smoothly.

As you can see, shifting is not quite so simple and easy as you once may have thought. But the good thing about it is, you can practise it everyday. That's what makes a good driver.

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