

Simple Stuff

Double Clutching

by Bob Vitrikas

In my last article we discussed the history of synchronized gearboxes but what about non-synchronized gearboxes? How did we manage to cope with those for so many years? The answer is simple, we double-clutched our way down the road! Here's how that lost art works.

Inside our gearboxes are gears, imagine that, that are permanently meshed but spin at different speeds depending on the number of teeth they have. This presents a problem that is all too obvious when we try to shift gears without synchronizing the gears and the gears and shafts in the gearbox. It's called grinding the gears, something today's young drivers rarely experience, much to the relief of their driving instructors. So what's the solution? Pretty simple really. Let me illustrate the technique on downshifting which is far more challenging than upshifting.

It's all about matching the spinning of the gears to the engine speed. Ready? Here we go! Push in the clutch to disengage the gears from the engine, move the gearshift into neutral, release the clutch and 'blip' the throttle to speed up the engine and hence the transmission input shaft, shift into the lower gear and release the clutch. Upshifting is easier. Just skip the 'blip' the throttle bit, pause a moment to let the engine revs slow down, and into the higher gear you go. If you are really an 'ace' driver, like Mario Andretti, you can shift up or down without even using the clutch. Truckers call this 'floating the gears'. I was never brave or rich enough to learn this technique myself! Do it right, match the revs going into the gearbox with the spinning of the desired gear and you have a smooth, quiet downshift or upshift. A thing of beauty and oh so satisfying when you get it right. There is an added benefit of not disturbing the car's balance, essential to maintaining control on slippery surfaces or on the racetrack. Pretty simple, eh?

Here's an excellent YouTube video on the subject of double clutching with an added bonus instruction on heel and toe downshifting. <https://www.youtube.com/watch?v=H07MrJbFkzQ> FYI this fellow is a surgeon and he goes off script and talks about how he honed his suturing skills while in med school. Interesting but not essential to the subject at hand. See what I did there?

What's heel and toe downshifting you ask? Well it isn't very simple.... Imagine having to double clutch, and blip the throttle while pressing on the brake pedal at the same time and shifting as well as steering. Just watch the video, it's simpler than me explaining it!

