

Simple Stuff

Smooth Operator

by Bob Vitrikas

Manual transmissions are considered a theft protection device these days since so few know how to use a stick shift. A lost art some would say. Long before there was an automatic gearbox, there was the stick shift which used a “crash” gearbox. It earned its name for the grinding or clashing of gears when newly minted drivers tried to make their way forward, usually accompanied by a lot of ugly noises coming from the gearbox, sometimes with disastrous results!

New drivers needed to master the manual gearbox and the clutch, both of which had to be operated in perfect harmony. A sensitive feel for both was required and acquired with lots of practice, and patience. One of the chief difficulties was smoothly moving the gearshift from one gear to another, a skill made more difficult because the gears were not synchronized. On the upshift, the driver needed to carefully gauge the rotational speed of the gears and upshift at just the right time to silently mesh the gears. This could most easily be done by simply letting the inertia of the gears and engine slow down to the desired rotational speed. Downshifting into a lower gear, say from third to second, was much more challenging requiring the engine and gears be sped up to match the higher rotational speed of the lower gear. This is known as double clutch downshifting. Say what? Here’s the procedure: Push in the clutch, shift into neutral, release the clutch, blip the throttle to raise engine speed and spin up the gears, push in the clutch, shift into the lower gear and release the clutch and off you go. Sounds complicated but it’s kinda simple once you get the hang of it. The hard part is matching engine revs with the transmission gear’s speed.

Solution? Synchromesh gearboxes that synchronize the rotational speed of the gear without all that complicated double clutching stuff. A tip of the hat to American engineer Earl Avery Thompson who invented the synchromesh gearbox in 1919 and patented it 1922. Cadillac, ever the innovator, introduced the synchromesh gearbox, “Silent Synchro-Mesh” in its 1928/29 Cadillac and LaSalle cars. Initially the synchro gears were just in second and third and were quickly adopted by North American car manufacturers in the 1930s. First gear synchros would have to wait a few years. Porsche famously patented a split ring all synchronized gearbox on their 1952 model 356. MG enthusiasts would have to wait until 1967 when all four forward gears would be synchronized. Sigh...

