What Is a Dual-Clutch Transmission (and Is It Better?)

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What Is a Dual-Clutch Transmission?

A dual-clutch transmission is one approach to an automatic
transmission. Think of it as a manual transmission controlled by a computer, but instead of one clutch, it has two. One clutch controls the even gears, and the other controls the odd gears.

Dual-clutch transmissions are designed to shift between gears faster and be more fuel-efficient than a conventional automatic, though that’s not always what happens.

(A clutch is a mechanical part that can connect and disconnect the engine from the transmission, allowing it to shift gears.)

**How They Compare to a Single-Clutch Automated Manual Transmission**

When automakers first began developing automated manual transmissions for modern drivers, the systems had a single clutch. These transmissions had individual gears for each ratio, just like a manual transmission. The shifting process, though, was automated, as with a conventional automatic transmission.

The dual-clutch version essentially splits the transmission into two separate parts, with two separate clutches. There’s one clutch for the odd-numbered gears and one for the even-numbered gears. Adding a second clutch is meant to make the shifting smoother and quicker.

**What Are the Disadvantages of a Dual-Clutch Transmission?**
A dual-clutch automated manual transmission may shift more smoothly than a single clutch automated manual, but both typically don’t shift as smoothly as a conventional automatic transmission does.

Also, automakers can only stuff a limited number of individual gears into a dual-clutch transmission. Conventional automatics, on the other hand, work with planetary gear sets, which allow engineers to pack more gears into a smaller space. Where it would take 10 individual gear sets to provide 10 forward speeds in a dual-clutch setup, the latest automatics can achieve the same thing with four planetary gear sets.

Some dual-clutch transmissions have had reliability problems. Ford has faced lawsuits for the dual-clutch transmissions in its cars, including the Ford Focus (below). Owners have also reported problems with dual-clutch transmissions in the Acura TLX.
Are Dual-Clutch Transmissions Better Than Regular Automatic Transmissions?

They do have benefits: Dual-clutch transmissions often have better fuel economy and faster shifting.

Better Fuel Economy

In small cars like the 2018 Ford Focus (above), the vehicle’s optional six-speed dual-clutch transmission has fuel-economy benefits compared to a traditional automatic. A dual-clutch transmission is directly connected to the engine. Regular automatics rely on a middleman – known as the torque converter – to get engine power to the wheels. The engine pressurizes transmission fluid, which then spins the driveshaft and makes the wheels turn. That extra step requires extra fuel.

Faster Shifting

With a dual-clutch transmission, the car essentially has two automated manual transmissions working together. That means while one gear is engaged, the next one is waiting, yielding lightning-quick shifts. For high-end performance cars, including the 2018 BMW M3 (below), the difference can be just a tenth of a second or two, yet each tick counts for hardcore enthusiast drivers.
Traditional Automatics Are Catching Up in Performance

The latest automatic transmissions offer better fuel economy and faster shifting than ever before, narrowing the gap separating them from dual-clutch transmissions. Some experts note that the latest, smartest automatic transmissions can shift nearly as quickly as dual-clutch units, and that even faster ones are on the way.

One of those experts is BMW’s Peter Quintus, vice president of sales and marketing for the automaker’s high-performance M division. Quintus, in talking with the Australian automotive news source Drive.com.au, indicates that dual-clutch transmissions have something else in common with their manual predecessors: Both are a dying breed.
Just Another Type of Automatic

Automotive terminology can sometimes be pretty confusing, so it would be no surprise if the idea of a dual-clutch transmission scares some shoppers away. People avoid manual transmissions because of the hassle of using a clutch pedal – having to deal with two clutches sounds twice as complicated.

But a dual-clutch transmission is a breeze to operate. From the driver’s seat, it functions similarly to a traditional automatic gearbox, with only two pedals and no manual intervention required (unless you want to shift yourself). Shoppers who encounter one in our Used Car Listings should give it a test drive before writing it off.

Shopping Tools From Carfax

There are a number of ways to tell which type of transmission a given vehicle includes. You can find this information on an automaker’s website, a printed brochure or the window sticker if it’s a new vehicle. If you’re shopping for used cars, it may require added research. Fortunately, our Car Research and Used Car Listing sections provide full details on most models on the market.