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

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5-6 minutes



2018 BMW M3 / Credit: BMW

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](#).





2018 Ford Focus / Credit: Ford

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.





2018 BMW M3 / Credit: BMW

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](https://www.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.