

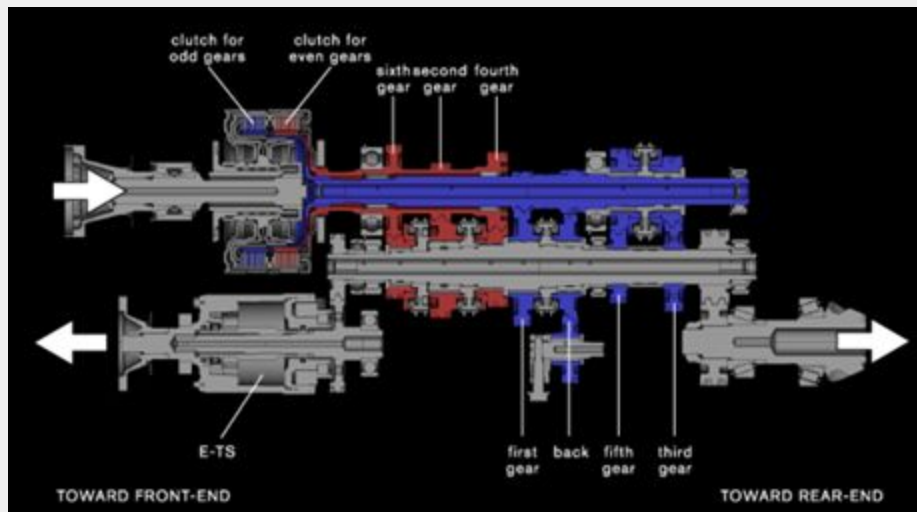
What's a DCT transmission, and makes it so great for both performance and street driving?

What are the differences between a DCT and a manual transmission?

First of all, the dual clutch transmission is basically an automated manual transmission, and has nothing in common with a conventional automatic transmission.

Vw DSG, Porsche PDK, BMW DCT and DKG are all different terms of a dual clutch transmission.

The GR6 dual clutch transmission for Nissan GTR



The extra mechanical stuff compared to a manual:

An oil pump is driven by the input shaft and gives pressure to a HPU inside the transmission.

The HPU (hydraulically pressurized unit) operates the clutches and shift forks.

(In a manual car you operate the clutch by a pedal and the shift forks with your shifter directly)

The dual clutch are connected to two different axles on the input shaft, and they need pressure from the HPU to engage. The clutches are then connected to each set of gears.

One clutch does the odd gears, and the second one does the even gears.

The oil pump, HPU and clutches all generate additional heat inside the transmission, and will need an external oil cooler to control the temperatures in it.

DCT transmission basics



The control side (Short version):

The TCM (transmission control unit) is normally located inside the transmission.

It reads sensor feeds inside the transmission in addition to sensor feeds from the engine and car.

By the use of all these feeds, the TCM controls the transmission with the help of the HPU.

When the transmission shifts from first to second, it basically opens one clutch and closes the other clutch in one operation. Third gear is then selected for the unused clutch, ready for the next shift.

When installing a standalone control unit to the transmission, the stock controller gets removed and the new controller gets wired to the sensors and solenoids.

The standalone controller is usually placed in the cabin of the car.

With a standalone controller you have full adjustability of both the automatic and manual modes.

You can control a DCT to be soft and gentle on low throttle/cruising, and for spirited driving/track it can be quick and responsive.

So you basically get the best of both worlds.

Now, go and get yourself a DCT conversion kit @ HPR-tuning.