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7G-TRONIC: Mercedes-Benz presents the world's first seven-speed automatic transmission for passenger cars

- Fitted as standard in five eight-cylinder models from autumn 2003
- Fuel saving of up to 0.6 litres per 100 kilometres
- Even shorter acceleration times and quicker intermediate sprints

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The world's first standard-fitted seven-speed automatic transmission for passenger cars will make future Mercedes models even more economical and further boost their acceleration. In addition, the new transmission variant will also considerably enhance shifting comfort still further.

The new 7G-TRONIC seven-speed automatic transmission will be a standard feature of the E 500, S 430, S 500, CL 500 and SL 500 models from autumn 2003, replacing the five-speed automatic version currently fitted.

The newly developed seven-speed automatic transmission reduces fuel consumption in the NEDC driving cycle by as much as 0.6 litres per 100 kilometres (depending on the car), increases acceleration from 0 to 100 km/h by up to 0.3 seconds and allows significantly quicker intermediate sprints from 60 to 120 km/h. At the same time, shifting is even smoother, and therefore more comfortable, than with the automatic transmission presently used.

The Mercedes engineers have achieved these advances above all through the use of seven gear ratios. These allow the automatic transmission to retain the small increases in engine speed which are important in ensuring optimum gear ratios, whilst at the same time offering a larger ratio spread between the lowest and highest gear. This gives the electronic control unit more flexibility to adjust shifting in such a way as to keep fuel consumption low and the transmission's reactions fast. What's more, it also lowers the average engine speed – a clear plus point in terms of both cutting fuel consumption and keeping the lid on noise levels.

Fast gear-change using the principle of repeated downshift

When the driver switches down rapidly through the gears (kickdown), the new transmission does not always select the individual gears in strict order. Instead, 7G-TRONIC will miss out a particular gear if necessary, switching from seventh gear straight down to fifth, for example, and from there directly to third. In this situation, only two gear changes are actually required – instead of the normal four – in order to accelerate quickly using kickdown.

Shift quality, meanwhile, also hits new heights. The new transmission glides through the gears extremely smoothly and yet with impressive speed. Gear-change is barely noticeable, especially in the higher gears.

Torque converter lockup from first gear

As in its predecessor, one outstanding feature of the new seven-speed automatic transmission is a lockup clutch in the hydrodynamic torque converter. In many situations, this system largely eliminates slip between the pump and turbine rotor. It does this by establishing a virtually fixed connection wherever possible between the engine shaft and transmission shaft, creating an extremely effective barrier to output loss. In contrast to conventional automatic transmissions, in which torque converter lockup is only possible in higher gears, the lockup clutch in the new seven-speed automatic transmission from Mercedes-Benz is active from the first gear up.

Despite these significant technical advances, the 7G-TRONIC automatic transmission is barely any larger or heavier than the five-speed automatic transmission currently fitted in Mercedes passenger cars. Credit for this impressive achievement goes in particular to the transmission casing, which is constructed in lightweight magnesium – also a world premiere in volume production.

Mercedes has produced eleven million automatic transmissions since 1959

The 7G-TRONIC transmission development represents the fifth generation of automatic transmissions made by the Mercedes-Benz brand, and in so doing continues an impressive tradition. Since 1959, the Stuttgart-based car maker has produced over eleven million automatic transmissions. Whilst the automatic transmission is part of the standard equipment in the S-Class, around 88 percent of all Mercedes E-Class customers currently order their car with automatic transmission, whilst the figure stands at some 65 percent for the C-Class Saloons, Estates and Sports Coupés – and this figure is on the rise.

The new seven-speed automatic transmission will be produced at the Mercedes plant at Stuttgart-Untertürkheim, the original location of the company's very first production facility. DaimlerChrysler has invested some 400 million euros at the plant in the construction of a new complex of buildings containing state-of-the-art production equipment and installations for around 1100 employees.