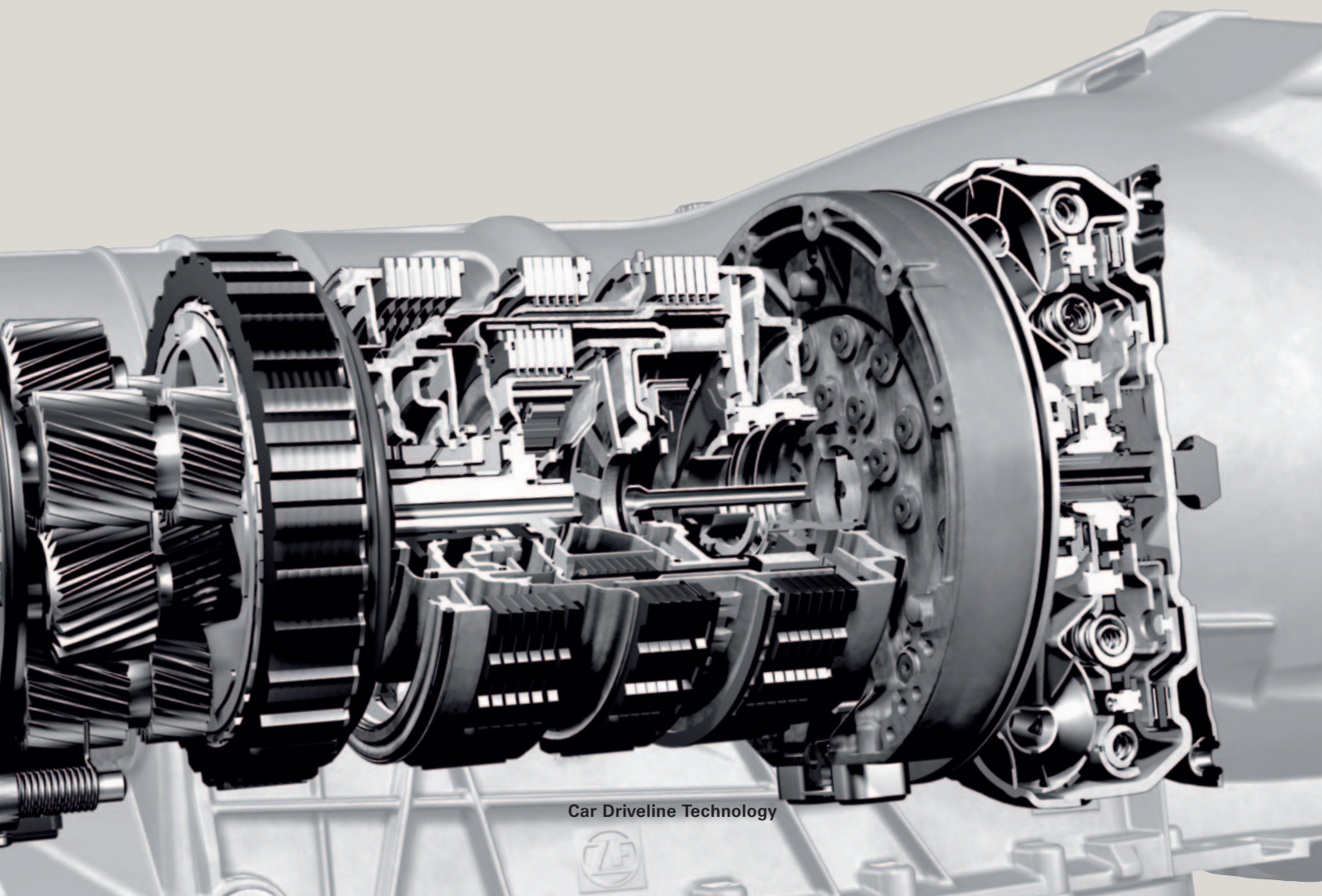




Automatic Driving Pleasure

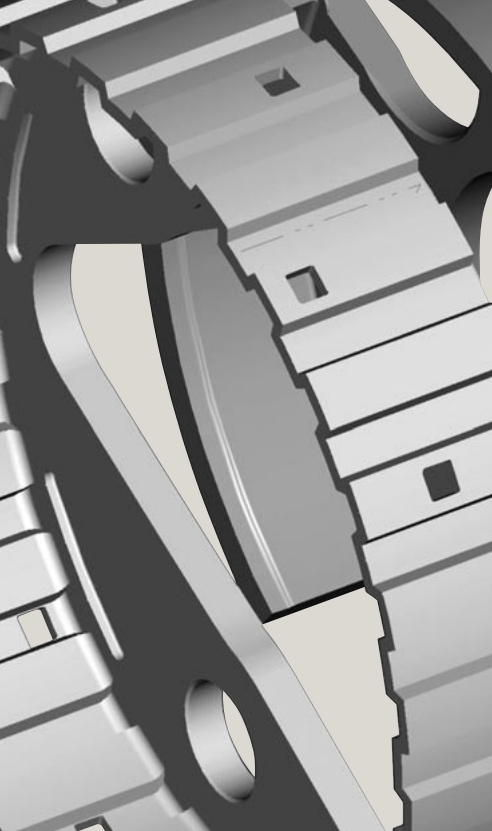


Second Generation of the 6HP:
Performance and Efficiency Increases for 6-Speeds



Car Driveline Technology





Response time of automatic 6-speed transmissions

Response time (ms)

1200

1000

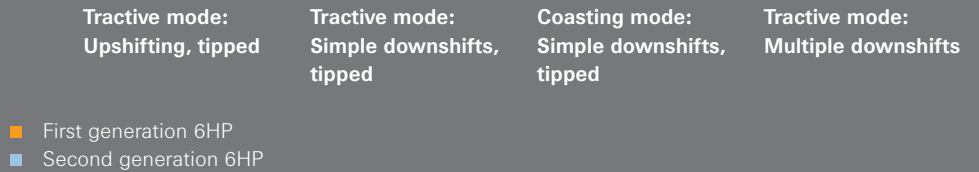
800

600

400

200

0



As Individual as the Driver – Just Much Faster.

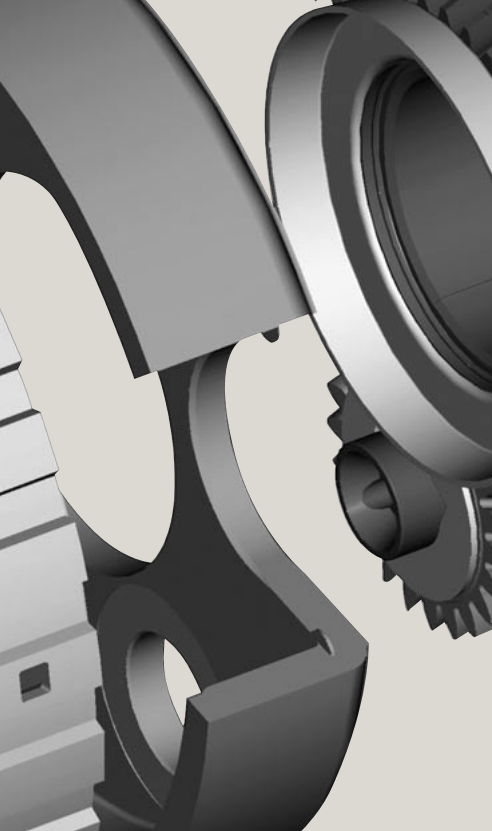
The second generation improves upon the original: Generation 2.0 of the automatic 6HP transmission shifts in milliseconds.

For the 6HP 2.0, response times and shift dynamics have been improved by approximately 50 percent. The overall shift time is considerably shorter which improves driving pleasure, thanks to a highly impressive tractive force in the lower gears.

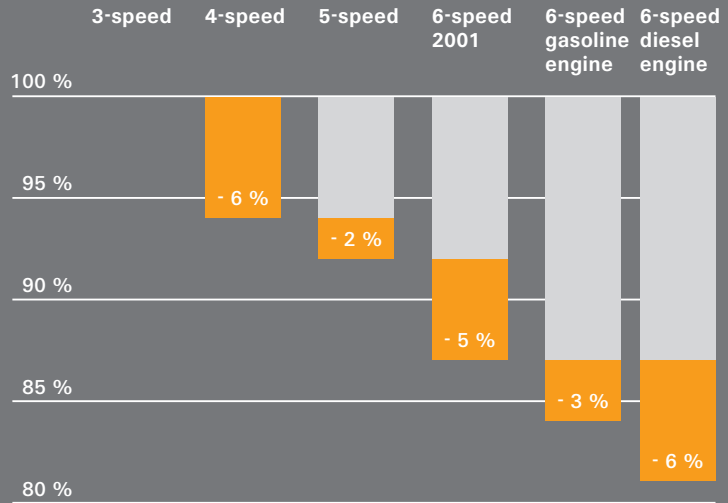
And, the response time for downshifts is now below the threshold of perception at approximately 80 milliseconds.

10 million automatic transmissions produced – evidence enough to show ZF innovation. In 2001, ZF introduced the world's first 6-speed automatic transmission for passenger cars into volume production: The myTronic®. Since then, ZF stayed true to this mission. The 6HP 2.0 – the performance icon – again sets new standards for automatic transmissions.

Now, drivers can determine shift dynamics based on specific, driver-selected parameter sets: Comfort shifts, Sports Shifts, Sports shifts, and Supersports shifts now provide a higher level of individuality and driving pleasure. But that's still not good enough: The Adaptive Shift Strategy (ASIS) of the 6HP 2.0 analyzes personal driving style and driving situation to determine the perfect shift, creating an intelligent transmission control unit which responds to current road conditions.



In relation to the predecessor: Fuel savings generated by the automatic ZF transmission.



High Spirits: Get the Green Light – and Fuel Savings.

Thanks to the use of the new twin torsional damper (Twin TD) with diesel engines, it is now possible to minimize the typical slip of automatic transmissions.

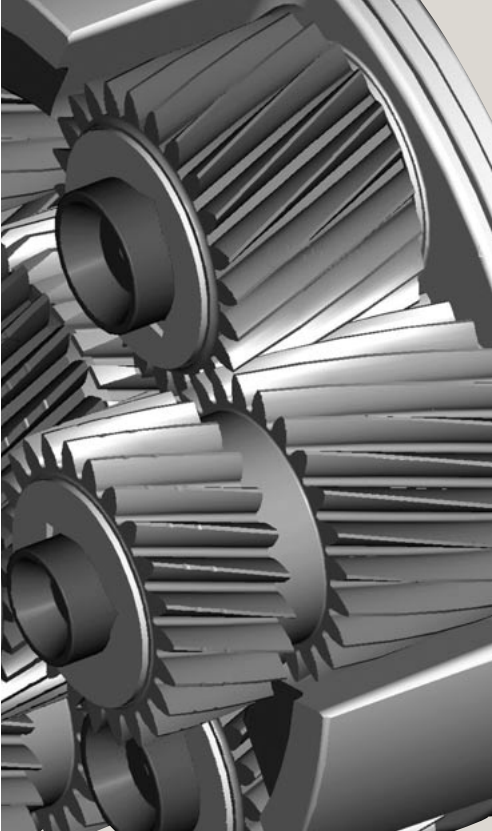
With the 6HP 2.0, the clutch for torque converter lock-up occurs earlier than before, reducing the subjectively felt delay in acceleration for diesel engines, while also reducing fuel consumption. In addition, the twin torsional damper (Twin TD) reduces torsional vibration, improving vehicle acoustics. Moreover, the Neutral Idle Control (NIC) – which decouples the engine from the driveline once the vehicle is standing still – complements the performance portfolio and spares the driver from additional unnecessary vibrations. For gasoline engines, ZF further developed two-stage turbine torsional dampers which also improve fuel economy.

No phenomenon but sheer innovation.

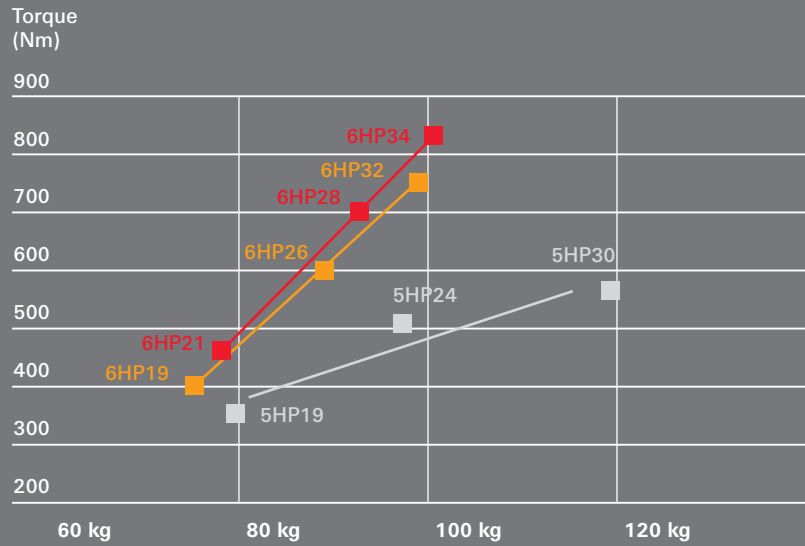
The 6HP 2.0 offers enhanced performance at less weight.

Thanks to space-saving planetary gear sets (Lepelletier system) and the elimination of components, the first 6HP generation was 13% lighter than the previous automatic 5-speed transmissions. Moreover, it used 5% less fuel. The new torque converter strategy, design optimization, and the new hydraulic shift unit generate – for the second 6HP generation – a fuel-economy improvement of an additional 3-6%.





Comparison of the power to weight ratio of automatic ZF transmissions.



Top Performance from the Outset – Benefit even more from Available Options.

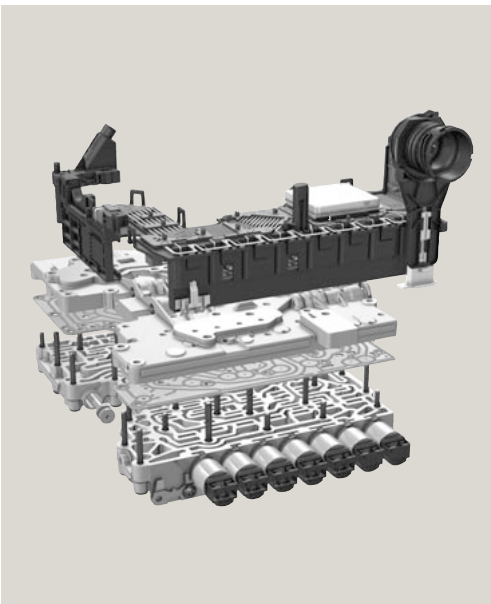
Good news for high-performance drivers.

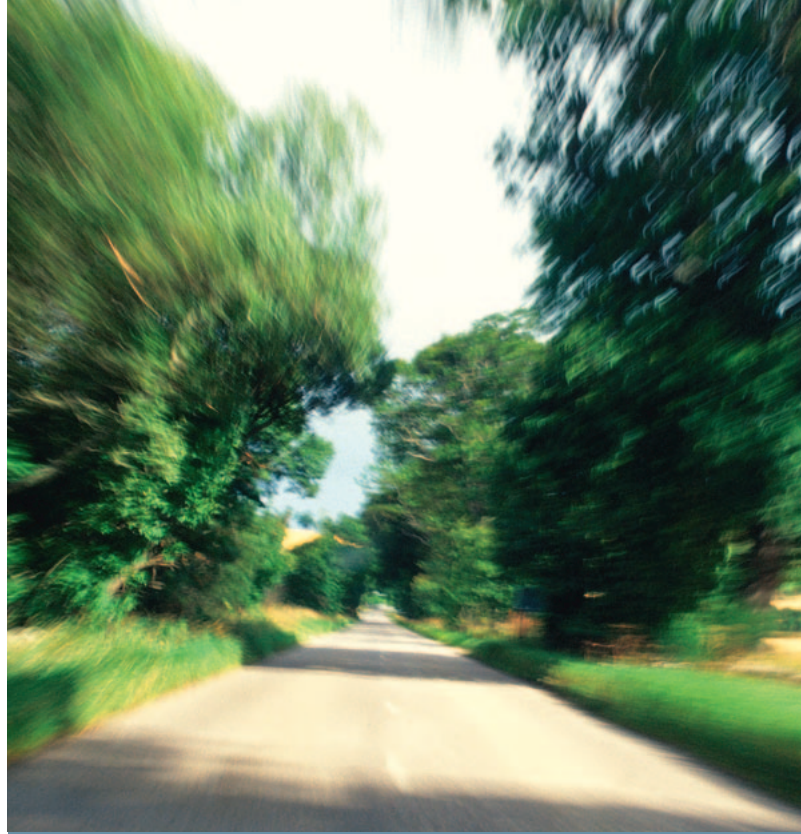
The individual 6HP 2.0 models are suitable for higher torque – high-performance vehicles.

For high-performance sedans and sports cars, the real difference lies in the upper torque range. Now, the second generation 6HP offers 700 Nm input torque as a standard feature for the mid-sized vehicles, and 850 Nm for larger vehicles. To maintain on-road control and optimal performance, ZF has improved the robustness and shift quality of the new 6HP transmissions.

Total enthusiasm. The 6HP 2.0 offers maximum efficiency and reliability.

Mechatronics – the mechanical electronics within the transmission – control shift quality and ride comfort. The combination of a hydraulic shift unit and integrated electronics enables extremely fine-tuned control of shift processes despite substantial engine power. This process is controlled by the Adaptive Shift Strategy (ASIS) which is at the center of the new electronic system. The ASIS, along with optimized hydraulics provide the ultimate level of reliability and performance.





The New Trend in Excellence: Thrilling Dynamics!

Input torque	6HP21 max. 450 Nm 6HP28 max. 700 Nm 6HP34 max. 850 Nm
Ratio spread	6.04
Acceleration values	Improved acceleration thanks to significantly reduced response times and optimized torque converter designs.
Reduction in response times	up to 50%, in the case of downshifts even below the threshold of perception.
Fuel consumption savings	3 % (gasoline), 6 % (diesel)
Stand-by-Control/NIC (Neutral Idle Control)	Decoupling of the converter at standstill which leads to a reduction in fuel consumption.
Cooling oil volume control	Upon request, increase of cooling oil through-flow e.g. up to 50 % (from 10 to 15 l/min).
Shift sequence types (label sets)	Comfort/Sports/Supersports – free choice offered to the driver.

“The reengineered automatic 6-speed transmission excels through halving the shift times.”
(AUTO ZEITUNG magazine, no. 17, 2006)

“The automatic 6-speed transmission excels thanks to its smooth shifting characteristics, rapid gear shifts, and as of a speed above 80km/h, the completely slip-free operating converter. There is no other automatic transmission which responds so swiftly to the accelerator pedal.” (AUTO BILD magazine, no. 27, 2006)

“Hydraulics, electronics, and the torque converter are designed for sportiness. (...) Even fuel consumption of the automatic transmission is half a liter below the one of the manual counterpart.” (Yahoo! Autos, July 6, 2006)

“Perfection for driving: The excellent automatic 6-speed transmission: Just as aggressive and direct as the six-cylinder itself. So why would you want a direct shift transmission? The automatic transmission does precisely what the driver requests - particularly in the sports mode.”
(Süddeutsche Zeitung newspaper, BMW 335i Coupé drive report, July 6, 2006)

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Driveline and Chassis Technology

