TREMEC TR-9080 DCT

8-Speed Dual Clutch Transmission for Transaxle Applications

Designed for high-performance sports cars and super cars, the new 8-speed TR-9080 DCT is the first transaxle application from TREMEC that combines the transmission, differential and axle drive in one compact package.

Performance

With an automated dual clutch transmission (DCT), engine output is coupled to either of two transmission input shafts. Each clutch functions as both a launch clutch and dynamic shifting clutch, enabling clutch-to-clutch shifts without torque interruption, giving the driver continuous transmission of torque and power to the wheel.

The bespoke TR-9080 DCT provides lightning-fast shifts in less than 100 milliseconds from best-in-class controls software, solenoids and hydraulics.

Control Solutions

The DCT is controlled with a high-performance, 32-bit transmission control unit. All systems - including hardware such as low-leak solenoid valves and electro-hydraulic actuation systems to control systems and software - were internally developed by TREMEC for maximum performance.

To create the optimal performance during launch and shifting, TREMEC developed advanced algorithms capable of calculating torque targets in real time. Fast and repeatable torque control is achieved through model-based control strategies, using detailed knowledge and characterization of all transmission subsystems and components.

Mechanical Design

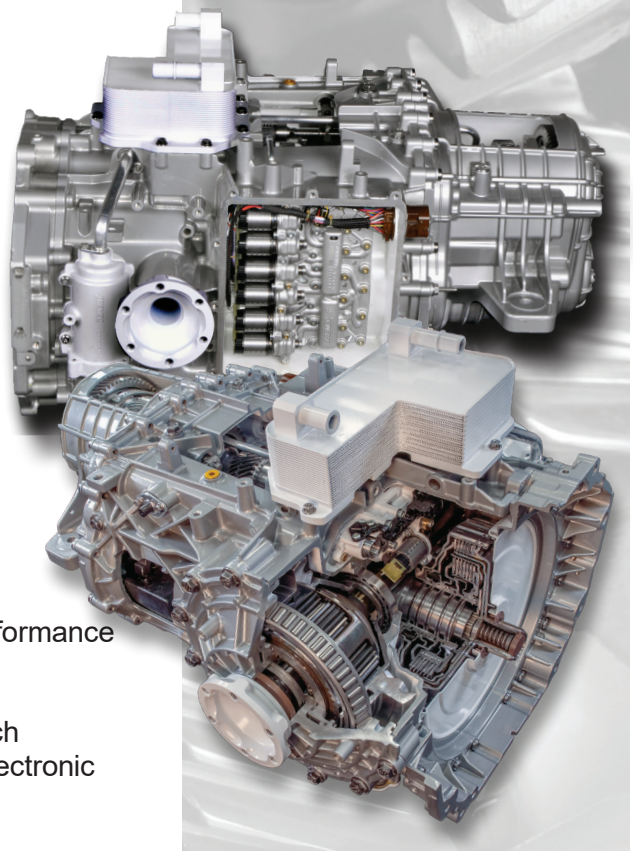
The in-house designed concentric wet dual clutch offers high torque and thermal capacity in a compact package. This innovative wet clutch has TREMEC-proprietary optimized friction materials with the ability to cool the clutches only when needed, boosting efficiency.

TREMEC's vertically integrated manufacturing allows customized gear design and development for tight tolerances and famously robust durability. Power-honed synchro/speed gears give a quiet ride without sacrificing performance.

The TREMEC-designed limited slip differentials feature spiral bevel designs that allow the entire transaxle to use a single fluid, allowing mass savings from a single oil cooler, pump, oil sump and filtration system. The force-cooled electro-hydraulically controlled limited slip differential (eLSD) is integrated with the transmission control system to allow fast responsiveness and fine control of the locking ratio and provides the ability to withstand sustained high-performance driving.

Features at a Glance:

- Continuous torque over a wide ratio range allowing high performance driving and efficient highway driving
- Concentric wet dual clutch arrangement
- Over-torque shifting with torque boost for performance launch
- Offered with mechanical limited slip differential (mLSD) or electronic limited slip differentials (eLSD)
- ISO 26262 and ASIL-D safety standards compliant



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TREMEC TR-9080 DCT Specifications					
Configuration	Eight-speed dual clutch transmission with limited slip differential. Short hydraulic circuits and direct acting solenoids for extremely fast shifts. Controls software with custom driving modes for driving style adaptation.				
Clutch Architecture	Wet dual clutch; two normally open concentric clutches opened by springs, closed by hydraulic pressure on rotating pistons. Centrifugal compensation for each clutch.				
Housings	SAE 306 die cast aluminum				
Final Drive	Final drive is integrated into gearbox. Available with mechanical limited slip differential (mLSD) - standard, or electronic limited slip differential (eLSD) - optional. Common ring and pinion gear ratio for both differential types. Effective final drive ratio accomplished via different transfer gear ratios.				
Overall Length	713.8 mm (28.1 in)				
Axle Centerline to Front Face	175.0 mm (6.9 in)				
Weight		Dry	Filled (11 l oil)		
	mLSD:	139.2 kg (306.9 lb)	148.5 kg (327.4 lb)		
	eLSD:	141.1 kg (311.1 lb)	150.5 kg (331.8 lb)		
Fluid	FUCHS Titan EG FFL-4 Double Clutch Transmission Fluid for TREMEC. Common fluid for entire unit - differential, clutch, controls and gearbox. 11 liter fill volume; additional 2 liter recommended for extended track use.				
Gear Ratios: Electronic Limited Slip Differential (eLSD)	Gear	Gear Ratio	Final Drive Ratio	Transfer Gear Ratio	Ring and Pinion Ratio
	1	2.91	5.2:1	1.46	3.55:1
	2	1.76			
	3	1.22			
	4	0.88			
	5	0.65			
	6	0.51			
	7	0.40			
	8	0.33			
	R	2.63			
Gear Ratios: Mechanical Limited Slip Differential (mLSD)	Gear	Gear Ratio	Final Drive Ratio	Transfer Gear Ratio	Ring and Pinion Ratio
	1	2.91	4.9:1	1.38	3.55:1
	2	1.76			
	3	1.22			
	4	0.88			
	5	0.65			
	6	0.51			
	7	0.40			
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