

# TREMEC TR-9070 DCT

## 7-Speed Dual Clutch Transmission

TREMEC dual-clutch technology has transformed automated manual transmissions with the new TR-9070 DCT. The innovative transmission provides extreme performance with 900 Nm torque capacity and lightning fast shift transitions of less than one-tenth of a second.

Depending on the requirements of the situation and mode, the fun-to-drive 7-speed dual-clutch transmission thinks, learns and performs - whether it be normal driving, sporty driving, drag racing or track racing.

### Layout

The main objective of the DCT layout is to make the transmission as light and compact as possible. To this aim, all hydraulics, sensors and clutches are fully integrated into the gearbox. A successful light-weighting strategy incorporates die cast aluminum housings, a compact gear-train arrangement, hollow shafts, a plastic sump pan, and more.

### Control packages

The DCT is controlled with a high-performance, 32-bit transmission control unit. The TCU controls all functions of the gearbox, including the hydraulic system, the two clutches, the eight gears (first through seventh and reverse) and the park lock. All systems and subsystems - including hardware such as low-leak solenoids and electro-hydraulic actuation systems, to control systems and software - were internally developed for maximum performance.

### Software solution

In order to create the desired feel during launch and shifting, TREMEC engineers developed advanced algorithms to calculate torque targets, in real time. An underlying torque chain converts the targets into an electrical target for the control valves, making torque control fast and repeatable.

### Clutch design

The clutch design marries the benefits of wet and dry clutch technologies into a hybrid design. A highly efficient wet clutch system with optimized friction materials have the ability to cool the clutches with lubrication individually and only when needed. The end result is a controllable thermal load and much lower drag.

### Features at a Glance:

- Performance oriented gear ratio; custom ratios available
- Torque capacity of 900 Nm (664 lb-ft)
- 9,000 RPM maximum input speed
- Integrated mechatronics
- Highly efficient wet dual-clutch
- TREMEC proprietary paper-based friction materials for control and thermal capacity
- Optimized oil management system for extreme performance in racetrack gravitational force (g-force) conditions
- ISO 26262 and ASIL-D safety standards compliant
- Fast and accurate low-leak solenoids
- Responsive and durable electro-hydraulic actuation system
- Sophisticated transmission control unit and control software
- Fast and precise clutch control systems



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## 7-Speed Dual-Clutch Transmission



Torque Transfer Solutions®

### TREMEC TR-9070 DCT Specifications

Type:	Rear-wheel drive, seven-speed dual clutch transmission		
Clutch architecture	Parallel wet dual clutch - normally open with separator springs to eliminate drag		
Clutch cooling	With engine torque control, thermal events are predicted and controllable. Cooling is proactive (not reactive) for long life and high efficiency. Parallel architecture allows ability to cool clutches individually only as needed, which increases efficiency.		
Housings	SAE 308 die cast aluminum		
Dual counter-shaft design	85 mm and 90 mm center distances		
Overall length*	786 mm <i>*For reference only. Dependent on bell housing and flange requirement.</i>		
Lubricant type	Pentosin FFL-4; DCT formulated		
Weight	Wet: 104.2 kg (229.25 lb); Dry:		
Available Gear Ratios <i>Alternative ratios available upon request; may result in different maximum input torque</i>	Gear	Ratio A	Ratio B
	1	3.14	3.24
	2	2.05	2.02
	3	1.43	1.45
	4	1.10	1.08
	5	0.86	0.81
	6	0.68	0.63
	7	0.56	0.50
	R	2.76	2.93
	Gear Ratio Span	5.6	6.5
Torque Capacity	900 Nm 664 lb-ft	900 Nm 664 lb-ft	