

Subject:

Opportunities for repairs and performance upgrades

Unit:

Tremec T56

Essential Reading:

- Shop Owner
- Center Manager
- Rebuilder
- Diagnostician
- R & R (Installers)

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Rockland Standard Gear
Contributing Editor



The Tremec T56 Six-Speed: Revolution and Evolution

The T56 has been around for more than a decade. It originally was designed by BorgWarner as a six-speed evolution of the T5, with greater torque and horsepower capacity and 5th and 6th gears being over-driven. BorgWarner subsequently sold its manual-transmission division to Tremec in Mexico.

Tremec, also known as Transmission Technology Corp., is a major producer of manual-transmission and drivetrain components. Tremec operates a world-class plant that is producing transmission products for many of the world's major auto and truck manufacturers.

Tremec has taken the T56 to new levels of production and development, and this unit is now the six-speed of choice for many of the popular sports and performance vehicles on the road today. As such, this unit offers opportunities for repairs in your shop and for performance upgrades that you can offer your customers to add to your profits.

The T56 was used first in GM's F-body Camaro and Firebird models behind the LT1 engine and later coupled to the LS1 and LS6 engines. GM later had Tremec develop the T56 for use in the C5 generation of Corvettes. This unit was mounted behind the

Part No.	Customer	Application	Engine	Spline		Torque lb.-ft.	Gear Ratios						Weight Lbs.	Install Inches	Lube/ Pints	
				1	0		1	2	3	4	5	6				Rev
T-56																
1386-000-011	Aftermarket	F-Car		26	27	400	2.97	2.07	1.43	1	0.80	0.62	3.28	110	26.26	8.13
1386-000-012	Aftermarket	Mustang	5.0L V-8	10	31	400	2.97	2.07	1.43	1	0.80	0.62	3.28	129	32.47	8.13
1386-000-016	GM	F-Car 1993-97	5.7L LT1	26	27	350	2.66	1.78	1.30	1	0.74	0.50	2.90	129	29.81	8.13
1386-000-017	GM	F-Car 1998	5.7L LS1	26	27	350	2.66	1.78	1.30	1	0.74	0.50	2.90	129	29.81	8.13
1386-000-020	GM	F-Car 1999 (Hurst Shifter)	5.7L LS1	26	27	350	2.66	1.78	1.30	1	0.74	0.50	2.90	130	29.81	8.13
1386-000-023	GM	Corvette C5	5.7L LS1	26	27	375	2.66	1.78	1.30	1	0.74	0.50	2.90	115	19.29	7.31
TUET1259	Ford Aftermarket	Cobra-R (Mech. Speedo)	4.6 2V	10	31	400	2.97	2.07	1.43	1	0.80	0.62	3.28	115	32.47	8.13
TUET1260	Ford Aftermarket	Cobra-H (Elec. Speedo)	4.6 2V	10	31	400	2.97	2.07	1.43	1	0.80	0.62	3.28	115	32.47	8.13
TUET1694	Ford	Cobra	4.6L 4V	10	27	425	2.66	1.78	1.30	1	0.80	0.62	2.90	115	32.47	8.13
TUET2062	DCX - Service	Viper (One piece C/S)	V-10	26	30	550	2.66	1.78	1.30	1	0.74	0.50	2.90	110	27.15	8.13

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driver and mated directly to the differential to give the 'Vette better balance and weight distribution. It is the transmission used in the new generation of C6 Corvettes.

The General also used the T56 in the new Cadillac CTS-V performance model, which uses a Corvette Z06 engine and drivetrain, and in the new Pontiac GTO. Chrysler uses the T56 behind its Dodge Viper V-10 and in the new sport pickup truck that uses the same engine. Ford uses the T56 in the Cobra R Mustangs and the later-model Mustangs, and Aston Martin uses a version of the T56 equipped with an extension housing that contains a number of shift solenoids to enable "paddle-shift" capability from the steering wheel.

This transmission is available in several ratios:

2.97 1st, 2.07 2nd, 1.43 3rd, 1-1 4th, 0.80 5th, and 0.62 6th, 3.28 reverse

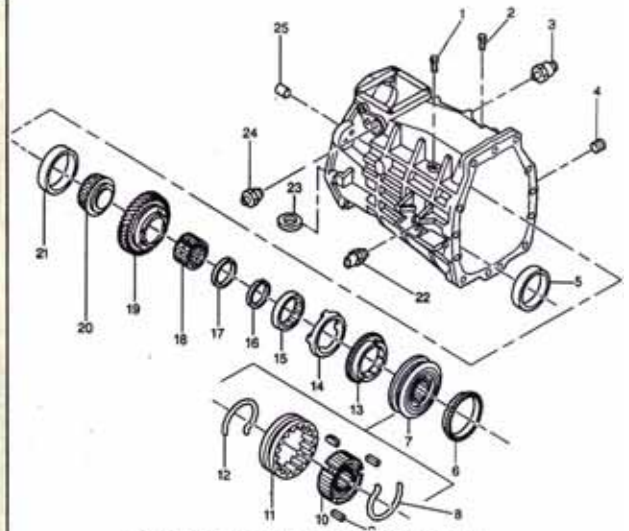
2.66 1st, 1.78 2nd, 1.30 3rd, 1-1 4th, 0.74 5th, and 0.50 6th, 2.90 reverse

Equipped with an aluminum case, extension housing and bell-housing, the T56 uses advanced synchronizer technology and a single-rail shift system. The synchronizers are double-lined rings using steel inner and outer cones on 1st and 2nd gears. The linings on the synchro rings were paper clutch material on early production units, and Tremec has upgraded that to carbon-fiber linings. The shift forks are aluminum for 1-2 and 3-4, and reverse is synchronized for smoother engagement. This unit is specified to use synthetic ATF for lubricant.

There are two solenoids on the transmission. The reverse-lockout solenoid is by the shift tower. The shift pattern locates reverse to the right of the 5th-gear slot on the shifter. Reverse has a 45-lb. spring load on the gate to keep the driver from catching reverse when mak-

Legend

- 1 5th/6th lever guide bolt
- 2 Interlock guide bolt
- 3 Computer-aided gear-select solenoid
- 4 Oil-fill plug
- 5 Countershaft-bearing race
- 6 2nd-gear synchronizer blocking ring
- 7 1st/2nd synchronizer assembly
- 8 1st/2nd synchronizer spring
- 9 1st/2nd synchronizer key
- 10 1st/2nd synchronizer hub
- 11 1st/2nd synchronizer sleeve
- 12 1st/2nd synchronizer spring
- 13 1st-gear synchronizer blocking ring
- 14 1st-speed drive gear friction cone
- 15 1st-speed drive gear inner cone
- 16 Synchronizer retainer ring
- 17 1st-speed drive gear bearing spacer
- 18 1st-speed drive gear needle bearing
- 19 1st-speed drive gear
- 20 Mainshaft rear bearing
- 21 Mainshaft rear-bearing race
- 22 Backup-lamp switch
- 23 Magnet
- 24 Shift-detent switch
- 25 Case rear-extension pin



ing a shift to 5th. During a shift to reverse, the solenoid will activate, overcoming the spring tension and allowing reverse to be reached with fingertip effort.

The other solenoid, on the transmission main case, is the "skip-shift" feature. This is an attempt to meet stricter environmental and pollution regulations. Automatic transmissions shift at open-throttle position; manual gearboxes always shift at closed throttle. Since closed-throttle positions generate more pollution, the skip-shift solenoid was added to try to control throttle opening and shift position. If you drive the vehicle at normal rates of acceleration or beyond, the skip-shift solenoid will not function. At very light throttle, the computer will activate the solenoid in 1st gear, forcing the driver to shift from 1st to 4th, which shuts down the fuel in the engine-management system to prevent an over-rich condition. The only people who will see the skip-shift activate have to be driving like the proverbial "old lady."

On the C5 generation of Corvettes, Tremec developed triple-ring synchronizer technology. This consists of an inner lined steel cone that rides on the cone of the speed gear, a double-lined synchro ring and an outer steel cone. This effectively triples the friction capacity of the syn-

chronizer and makes for very smooth shifts at high engine speeds. This was necessary in the C5 and C6 Corvettes because of the high driveline inertia generated by connecting the differential directly to the transmission.

Without the conventional drive-shaft and mounts to absorb some of the torque, synchronizer capacity had to be raised to overcome the driveline inertia prevalent during downshifts.

New for the C6 Corvettes is an internal oil pump that is driven by the front of the countershaft.

A positive-displacement pump provides pressurized feed to a transmission cooler and then back to the unit, similar to cooling for automatic transmissions.

The T56 is an excellent transmission for the performance cars it was designed for, but it is easily adaptable for a variety of other performance uses. With two overdrive gears it provides excellent fuel economy, which at current gas prices is a big plus. Also, this unit is adaptable to a wide variety of cars for which it was never intended. The double overdrive gives the hot-rodder with a radically cammed engine the ability to cruise without the valves climbing out onto the hood. There are any number of kit cars, hot rods and older muscle cars that the T56 can be used in to replace the four-speeds and T5s that they were built with.

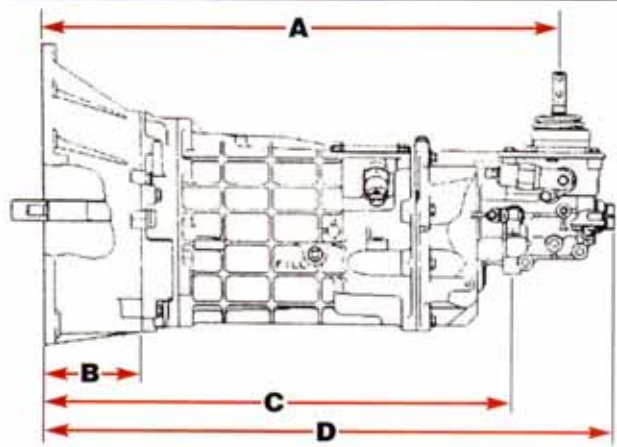
The T56 is capable of handling

up to 550 lb.-ft. of torque as it comes from the factory. We have modified many of these units to handle up to 800-900 lb.-ft. of torque.

The performance aftermarket in this country generates \$67 billion a year. As you fight your daily battle for repair business in your market, it might be wise to study this market and see where you can find yourself some extra sales. Tremec has designed two aftermarket units that will replace T5s and four-speed Saginaws, Muncies and T10s with a minimum of engineering work. If you have a customer with a late-model Mustang with a 3650 trans, the T56 can be a direct replacement offering a six-speed and better performance. You can up your customer's performance and fuel economy at the same time, all the while dealing with people who are eager to spend money on their toys.

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Installation Dimensions Tremec T56



Dimensional data shown in millimeters

Application	Model #	A	B	C	D
Camaro aftermarket	1386-000-011	549.2	N/A	547.2	682.6
5.0 Mustang aftermarket	1386-000-012	671.5	135.0	669.5	840.0
1993-97 Camaro/Firebird	1386-000-016	717.9	124.0	658.5	793.9
1998 Camaro/Firebird	1386-000-017	746.6	140.0	674.5	809.9
Viper	1386-000-018	636.1	129.0	651.8	818.7
1999 F-car	1386-000-020	746.6	140.0	674.5	809.9
Aston Martin	1386-000-021	662.0	154.9	677.7	844.6
4.6L Mustang (gear-driven speedo)	TUET 1259	671.5	135.0	669.5	840.0
4.6L Mustang (electronic speedo)	TUET 1260	671.5	135.0	669.5	840.0

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LIBERTY - KJ-NV231J, NV242J

GRAND CHEROKEE - ZJ, MJ, WK-NV140J, NV147J, NV231J, NV242J, NV245J, NV247J, NV249J

CHEROKEE/WAGONEER/L10 - NP206J, NP219J, NP228J, NP229J

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EXPEDITION, NAVIGATOR - BW4405F, BW4410F

AVIATOR - BW4410F, BW4411F

BRONCO - NP208F, BW1358F, RANGER-BW1359F, BW1354F, BW4405F

BRONCO II - BW1359F, BW1354F

AEROSTAR - RA23F

PICKUP - NP208F, BW1345F, BW1359F, BW4405F, BW4407F, BW4410F, NV271F, NV272F

EXCURSION - NV271F, NV272F



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DAKOTA - NV231D, NV233D, NV242D, NV244D

RAM PICKUP - NV241DLD, NV241DND, NV271D, NV273D

RAM QUAD CAB - NV231DHD, NV241DLD, NV243D, NV244D

RAMCHARGER - NP208D, NV241D



Model	Torque Range (lb.-ft.)	Dry Weight (lbs.)	Spline Count		Gear-Ratio Chart						
			Input	Output	1st	2nd	3rd	4th	5th	6th	Rev
1386-000-011	450	115-129	26	27	2.97	2.07	1.43	1.00	0.80	0.62	3.28
1386-000-012	450	115-129	10	31	2.97	2.07	1.43	1.00	0.80	0.62	3.28
1386-000-016	450	115-129	26	27	2.66	1.78	1.30	1.00	0.74	0.50	2.90
1386-000-017	450	115-129	26	27	2.66	1.78	1.30	1.00	0.74	0.50	2.90
1386-000-018	450	115-129	26	30	2.66	1.78	1.30	1.00	0.74	0.50	2.90
1386-000-020	450	115-129	26	27	2.66	1.78	1.30	1.00	0.74	0.50	2.90
1386-000-021	450	115-129	25	30	2.66	1.78	1.30	1.00	0.80	0.62	2.90
TUET1259	450	115-129	10	31	2.97	2.07	1.43	1.00	0.80	0.62	3.28
TUET1260	450	115-129	10	31	2.97	2.07	1.43	1.00	0.80	0.62	3.28

Features and Benefits	
Six-speeds	Applicable to a wide range of vehicle requirements
Double overdrive	Provides extended ratio coverage and allows for closer ratio steps
Aluminum die-cast housings	Lightweight, durable construction
Internal, single-rail shift system	Enhanced shift feel, improved durability
Tapered roller bearings on shafts	Reduced noise and improved durability
Constant-mesh, synchronized reverse	Positive engagement, improved durability and reduced noise
Integral clutch housing w/adaptor ring	Increased driveline bending strength with mounting flexibility
Overdrive synchronizers placed on countershaft	Lower shift effort and reduced noise
Advanced synchronizer technology:	
• Powdered-steel formed blocker rings	Consistency, high quality
• Organic friction material	Improved durability
• Double-cone design	Lower shift effort
• Patented strut-type design	Improved durability

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Jeep Transfer Cases



- 231J Command Trac
- 242J Select Trac
- 247J Pump Coupler AWD
- 249 J AWD

Rockland Standard Gear can custom fit all of these transfer cases to any TJ, YJ, ZJ, WJ, XJ & KJ model

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Dodge Transfer Cases



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* Includes New Morse Chain
Models Available: 231D, 231DHD, 241DL, 241DHD, 242 Select Trac

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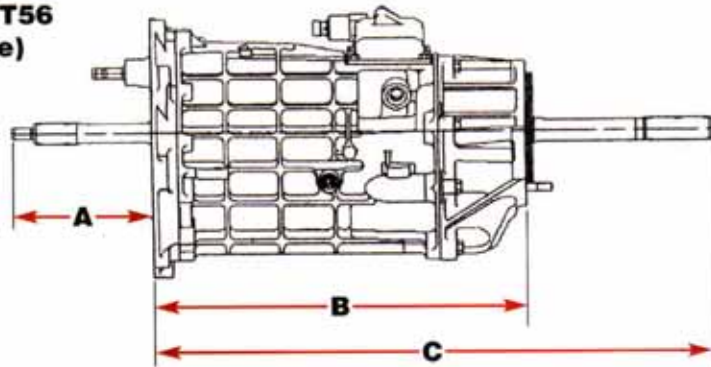
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For the C5 Corvettes there is available a 300 moly output shaft that is capable of withstanding abuse and racing and is a must for Corvettes that have had their horsepower increased with turbos,

Installation Dimensions Tremec T56 (Corvette)



Dimensional data shown in millimeters				
Application	Model #	A	B	C
Corvette	TUET 1452	185.15	490.01	739.33
Corvette Euro	TUET 1453	185.15	490.01	739.33
Corvette Z06	1386-000-025	185.15	490.01	739.33

Model	Torque Range (lb.-ft.)	Dry Weight (lbs.)	Spline Count		Gear-Ratio Chart						
			Input	Output	1st	2nd	3rd	4th	5th	6th	Rev
TUET 1452	385	115	26	27	2.66	1.78	1.30	1.00	0.74	0.50	2.90
TUET 1453	385	115	26	27	2.66	1.78	1.30	1.00	0.74	0.50	2.90
1386-000-025	385	115	26	27	2.97	2.07	1.43	1.00	0.84	0.56	2.90

Features and Benefits

Six-speeds	Applicable to a wide range of vehicle requirements
Double overdrive	Provides extended ratio coverage and allows for closer ratio steps
Aluminum die-cast housings	Lightweight, durable construction
Internal, single-rail shift system	Enhanced shift feel, improved durability
Tapered roller bearings on shafts	Reduced noise and improved durability
Constant-mesh, synchronized reverse	Positive engagement, improved durability and reduced noise
Overdrive synchronizers placed on countershaft	Lower shift effort and reduced noise
Needle bearings under speed gears	Improved high-speed performance and reduced shift effort

Advanced synchronizer technology:

- Powdered-steel formed blocker rings Consistency, high quality
- Organic friction material Improved durability
- Triple-cone design Lower shift effort
- Patented strut-type design Improved durability

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