

Profits From Performance

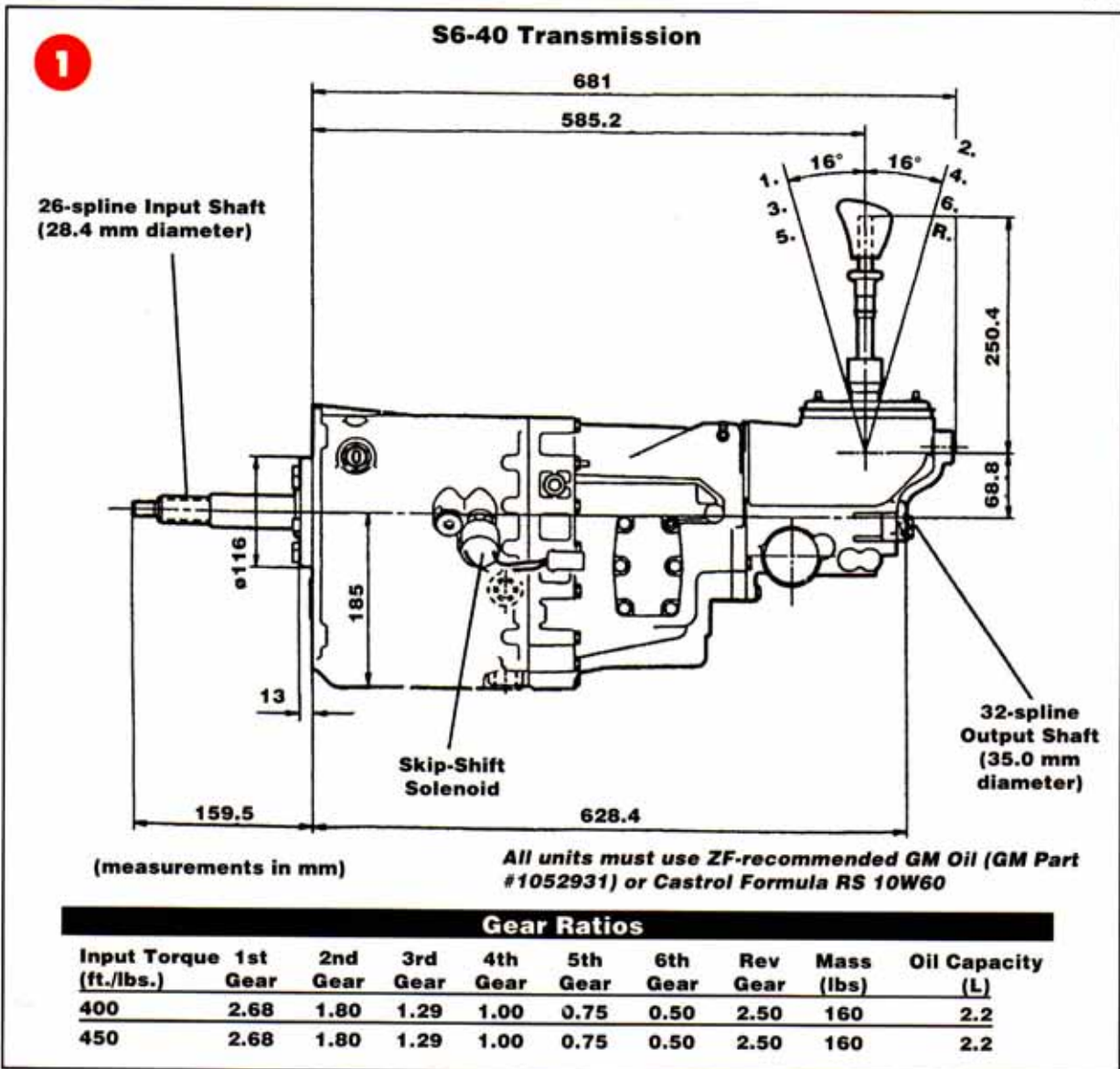
By Mike Weinberg
Contributing Editor

This issue is devoted to the performance side of the transmission industry, and that is what we are going to be looking at in this article. Race season starts traditionally in the winter months with the 24 Hours of Daytona and builds progressively busier schedules until the warm weather hits all parts of the country. At that point there are races going on all over the country in many different classes and types. Drag racing, circle-track (which is divided into dirt and asphalt, short-track and long-track, and stock cars and open-wheel cars), road racing, rallies, auto cross and

hill climbs all provide areas where a transmission shop can bring in some extra revenue and feel "the need for speed."

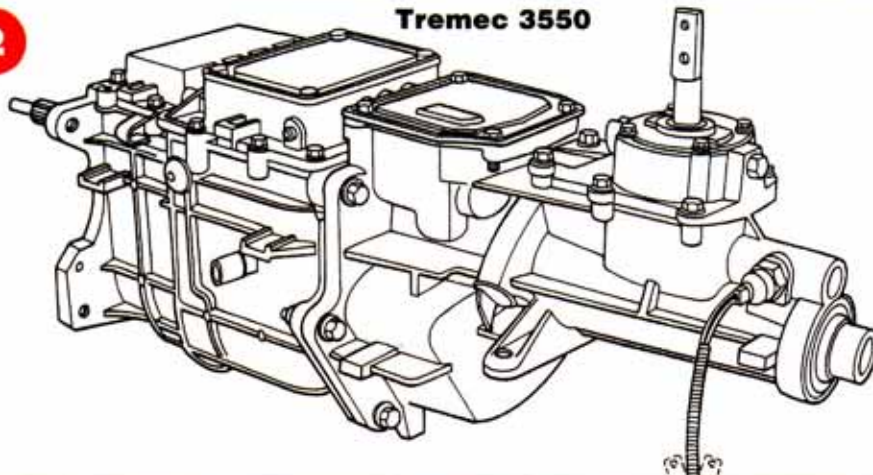
During the year there also is a huge market for customers who are building hotrods and other custom vehicles, or the guy who just wants something more than the factory provided originally. The American love affair with the automobile is far from over, despite the claims of the bureaucrats and Al Gore. What kind of a guy could you be if your goal in life is to "free the

continues page 22



2

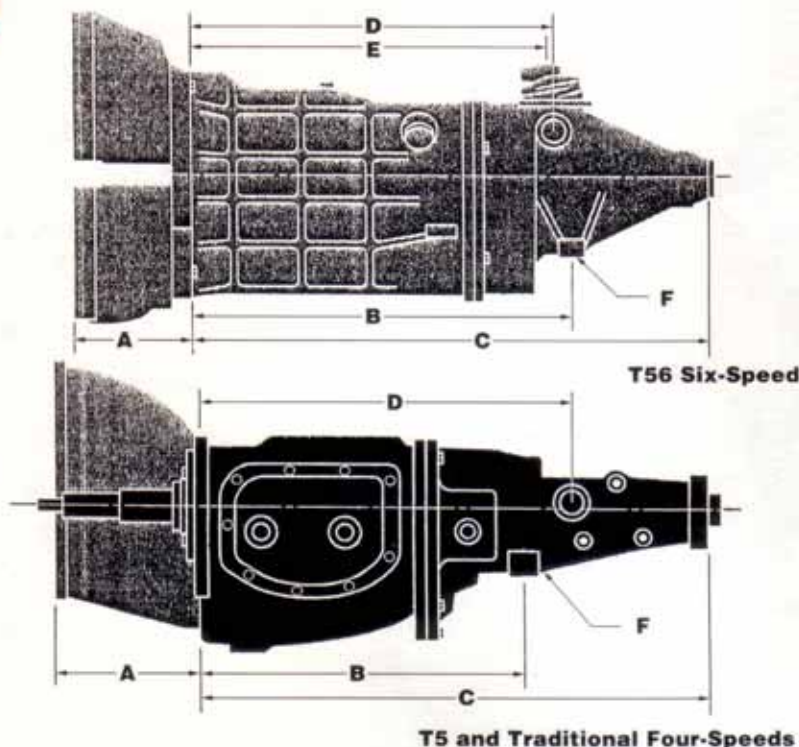
Tremec 3550



earth from the evils of the internal-combustion engine?" For my part, I still earn some money behind the wheel of a race car, and we will be discussing some of the performance options available on the standard-transmission side of this business.

There is an endless variety of types and classes of racing. What I am discussing here is the kind of work that can be profitable for the average

3



Critical Dimensions

Listed below are the T56 in comparison to T5 and traditional four-speed transmissions. Metric dimensions are converted to inches, rounded off to the nearest 0.1 inch.

Trans Model	A	B	C	D	E	F
GM Super T10, Muncie, Saginaw	6.3	14.2	23	N/A	N/A	3.75
GM T5 (V8)	6.3	16	25	19	21.2	3.75
GM T56 F-car (production)	4.9	21	26.4	21.1	23.9	3.75
GM T56 F-car (aftermarket)'	6.3	21.5	27	21.6	21.6	3.75
Ford Toploader	6 ³ / ₈ "	13 ¹ / ₄	25 ³ / ₈	N/A	N/A	5.5
Ford T5 (small-block V8)	6.9	14.5	24.7	15.4	19.5	5.5
Ford T565.3	5.3	21.1	21.7	20.5	21.1	3.75

Notes:

1. Dimensions B through E include 0.5-inch-thick adapter plate.
2. Small-block; big-block is 6 1/2 inches.

transmission shop, without the full-blown engineering skills needed to build a race car from scratch. I am sure every shop across the country is approached a few times a year by car owners who wish to modify their existing street cars, or who have a Sunday toy that they wish to improve upon. Some shops already do a good business with customers who drag race, road race or turn left on circle tracks. Some classes permit both automatics and sticks to run, others demand the use of a stock trans to keep costs down, and some customers want to retrofit stronger transmissions to handle the increased torque of modified engines in their street cars. Whatever the want, there is a way you can fill it with a little look at what is readily available in the marketplace. Rather than discuss full race options (not streetable), we are concentrating on transmission swaps that are readily available to the transmission shop and can be completed without major engineering changes.

ZF S6-40

This 6-speed trans (See Figure 1) was factory equipment in Corvettes from 1988 to 1996 and now is available in complete assemblies and parts. The S6-40 is capable of handling 400-450

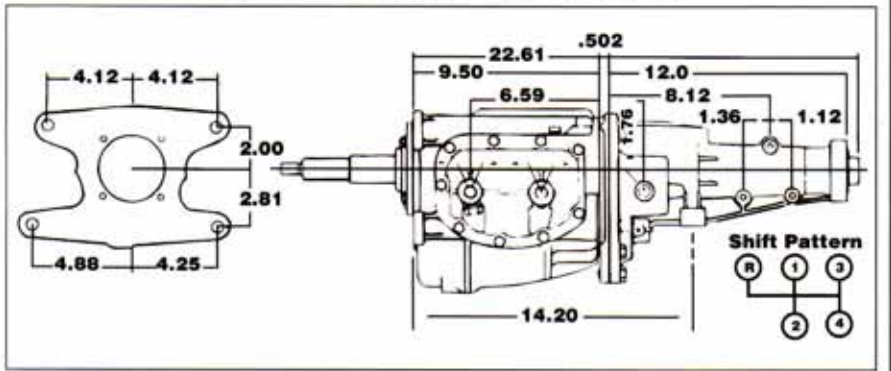
continues page 24



Richmond T-10 Four Speed

4

Four-Speed Mounting Instructions



General Specifications

Part No.	1st	2nd	3rd	4th	Rev.	Torque
1304000070	2.43	1.61	1.23	1.00	2.35	375 fp (51.9 kg.m.)
1304000069	2.64	1.75	1.34	1.00	2.55	325 fp (44.9 kg.m.)
7021090	2.64	1.60	1.23	1.00	2.55	325 fp (44.9 kg.m.)
1304000072	2.88	1.91	1.33	1.00	2.78	300 fp (41.5 kg.m.)
1304000062	2.88	1.74	1.33	1.00	2.78	300 fp (41.5 kg.m.)
1304000071	3.42	2.28	1.46	1.00	3.51	286 fp (39.6 kg.m.)

- Center Distance**3.25 inches (82.55 mm)
- Oil Capacity**2.4 U.S. pints (1.14 liters)
- Approximate Dry Weight**70 lbs. (31.8 kg.)
- Case & Extension Housing**Aluminum
- Controls**Side Lever

lbs.-ft. of torque and has been used in many hotrods and custom vehicles, as well as being race proven for years on road-racing circuits around the world.

The prime benefit the S6-40 provides is a bolt-in replacement for the pathetic Doug Nash 4+3 unit in earlier Corvettes. Any owner of a 4+3 will have had it rebuilt at least twice since owning the vehicle. Parts for the overdrive section are now about extinct. Swapping in an S6-40 6-speed in its place will have the Corvette owner happy with the way it drives for the first time since he bought the car.

Tremec 3550 & TKO

Tremec, a state-of-the-art manufacturer of transmissions for the OE market, is based in Mexico.

Tremec acquired the BorgWarner standard-transmission line and bought the Spicer medium- and heavy-duty transmission line from Spicer. Tremec markets its products through its American sales arm, Transmission Technology Corp.

Since Tremec manufactures the T-5 transmission, it is well aware of its design limits on horsepower and torque rating. Tremec also manufactures the T-56 found in '93 and later GM F cars, the '97-up Corvette and the Dodge Viper.

To replace the T-5 for higher torque and horsepower use, Tremec designed the 3550 (See Figure 2) and TKO transmissions. This 5-speed unit is capable of handling 400+ lbs.-ft. of torque and has been race proven in the Ford Mustang Cobra models. It can replace the T-5 in any Mustang Model, and there is a GM model available from Forte's Performance, Waltham, MA, 781-647-1530. Swapping a 3550 for a T-5 is a direct bolt-in with minimal engineering.

T-56

This 6-speed handles 450 lbs.-ft. of torque, with 5th and 6th gears being overdriven (See Figure 3). Tremec has produced these units in an aftermarket version that can replace a T-5 or a T10 in earlier GM and Ford muscle cars. Do not try to swap a stock T-56 into an earlier Camaro or Firebird. The

late-model F cars use a pull-type clutch and have an electronic speedo. To make this unit work in an earlier vehicle will be a study in engineering. The aftermarket version of the T-56 has an adapter plate to bolt directly to the stock bellhousing and uses a mechanical speedo. On a Camaro or Firebird, the driveshaft and torque arm must be shortened by 1.9 inches, and the cross member needs to be cut, angled and rewelded. The swap into a Mustang is a little more involved, with some exhaust modifications needed. If you are interested in what is involved, circle 75 on the reader card and I will send you step-by-step instructions.

T-10

This 4-speed unit is still alive and well (See Figure 4). Capable of handling NASCAR-type torque loads, it is

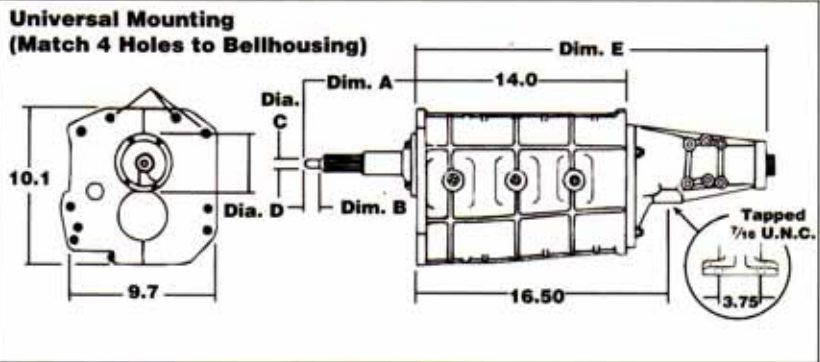
continues page 26

5



Richmond Street Five Speed

Transmission Mounting Specifications



Center Distance3.50 Inches
Oil Capacity2 Quarts
Approximate Dry Weight95 lbs.
ControlsSide Lever

Appl.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Input Splines	Output Splines
AMC	8.48	1.19	.748	4.677	21.57	1 $\frac{1}{8}$ -10	1 $\frac{3}{8}$ -32
Ford	6.49*	1.14*	.668	4.849	24.00	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
Ford**	7.18	1.14	.668	4.850	24.00	1 $\frac{1}{16}$ -10	1 $\frac{3}{8}$ -32
GM	6.66	1.06	.590	4.683	21.57	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
MOPAR	8.57	2.54	.748	4.807	24.00	1 $\frac{3}{16}$ -18	1 $\frac{3}{8}$ -32

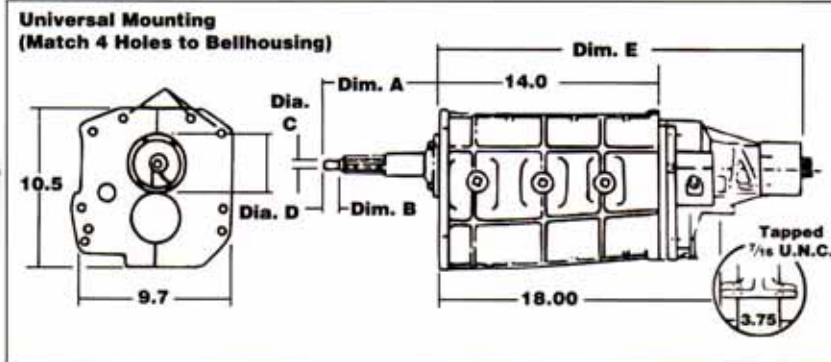
*For small-block engines – For big-block cut pilot (Dim. B) by .38 in.
**78-Up 5.0L

6



Richmond Six Speed

Transmission Mounting Specifications



Center Distance
3.50 inches

Oil Capacity
2 quarts (2 $\frac{1}{2}$ for GM T-5 version)

Approximate Dry Weight
108 lbs.

Case & Extension Housing
Aluminum

Controls
Side Lever

Appl.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Input Splines	Output Splines
AMC	8.48	1.19	.748	4.677	21.57	1 $\frac{1}{8}$ -10	1 $\frac{3}{8}$ -32
Corvette	6.66	1.06	.590	4.683	23.50	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
Ford	6.49*	1.14*	.668	4.849	24.00	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
Ford**	7.18	1.14	.668	4.849	24.00	1 $\frac{1}{16}$ -10	1 $\frac{3}{8}$ -32
Ford T-5**	7.18	1.14	.668	4.849	24.00	1 $\frac{1}{16}$ -10	1 $\frac{3}{8}$ -32
GM	6.66	1.06	.590	4.683	21.57	1 $\frac{1}{8}$ -10	1 $\frac{3}{8}$ -32
GM	6.66	1.06	.590	4.683	21.57	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
GM T-5	6.66	1.06	.590	4.683	24.00	1 $\frac{1}{8}$ -26	1 $\frac{3}{8}$ -32
GM Truck	6.66	1.06	.590	5.124	21.57	1 $\frac{1}{8}$ -10	1 $\frac{3}{8}$ -32
MOPAR	8.57	2.54	.748	4.807	24.00	1 $\frac{3}{16}$ -18	1 $\frac{3}{8}$ -32

* For small-block engines – For big-block cut pilot (Dim. B) by .38 in.
** 78-Up 5.0L

being manufactured by Richmond Gear. You can have this unit in six different ratios, and parts are available. The T-10 can be used to replace 3- and 4-speed Saginaws, and the 4-speed Muncie on early GM cars. The only engineering involved is to match up clutch and output splines, and to set up the proper shifter.

Richmond 4+1

Richmond Gear makes a 5-speed trans called the 4+1 that comes in variations for street, drag race and road race (See Figure 5). Capable of handling massive amounts of torque and produced in a number of ratios, this unit has a universal mounting plate that will bolt up to GM, Ford, Chrysler and AMC vehicles. There also is a 4WD adapter setup to allow this unit to go into various Jeep and off-road vehicles. Using a "suitcase" split-case design, the 4+1 is a very simple trans to work on.

Richmond ROD

This is another aftermarket 6-speed available as a replacement for 4- and 5-speeds on early muscle cars. This is a 4+1 with an additional gear for 6th. See Figure 6 for mounting dimensions.

We have just scratched the surface on what is available in the aftermarket for the customer who wants more out of his vehicle. The 6-speed units are

particularly flexible for customers who wish to run tall differential gears or a radical cam package and still be able to cruise the streets. On the T-56, with 5th and 6th gears being overdrives, it is possible to cruise the highways without having the valves climbing out of the engine and increase the fuel efficiency of these cars.

These transmissions are not cheap, and they are not for everybody. There is, however, a huge market out there for shops that want to do quality work and aren't afraid of talking over big-ticket items with the customer. The only difference between men and boys is the price of the toys. **TD**

THE BOTTOM LINE:

Tell us your opinion of this article:

Circle the corresponding number on the free information card.

- 87 Useful information.
- 88 Not useful information.
- 89 We need more information.

Sell The BEST Remanufactured Transfer Cases & Transmissions in the Business...

Switch To

ROCKLAND STANDARD GEAR!

Higher Quality, Service & Profits • Custom Units Our Specialty!

Put an End to Transfer Case Failures FOR GOOD!

• Extreme HD • AWD-To-Part-Time Conversions • Slip-Yoke Eliminator Kits • AWD Low-Range Lockups • AWD Viscous Eliminators



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

Ford Transfer Cases



All Ford Transfer Cases are Remanufactured with the Latest O.E. Borg Warner Components

*Includes New Morse Chain
Models Available: 1350, 1354, 1356, 4404, 4405, 4406, 4407, 4410, 4411, 4416

GM Transfer Cases



All GM Transfer Cases are Remanufactured with the Latest O.E. Components with Updated Clutch Packs to Eliminate Chatter Problems

* Includes New Morse Chain
Models Available: 136GM, 226GM, 246GM, non-clutch style 231C-263GMXHD

Dodge Transfer Cases



All Dodge Transfer Cases are Remanufactured with O.E. Components

• Durango RT – Converts Full Time AWD to Select Trac or Command Trac
* Includes New Morse Chain
Models Available: 231D, 231DHD, 241DLD, 241DHD, 242 Select Trac

RSG Has A Full Line Of Remanufactured Transmissions IN STOCK – READY TO SHIP!



- Ford M5R1 & M5R2
- ZF 5 & 6-Speeds (Ford Full-Series)
- AX5 & AX15 (Dodge & Jeep)
- New Venture 4500 (GM & Dodge)
- Call for other models!
- 3-Day Delivery – Same Price as Ground
- We Drop Ship & Handle Core Returns

CALL THE TC SPECIALISTS FOR LOWEST PRICES!

Call 1-800-227-1528

Fax 1-877-774-3294 (TOLL FREE)

ONLINE AT www.regear.com

Largest Inventory of Stock & Custom Applications