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The Forgotten Overdrive



Bulletproofing a TH200-4R Automatic

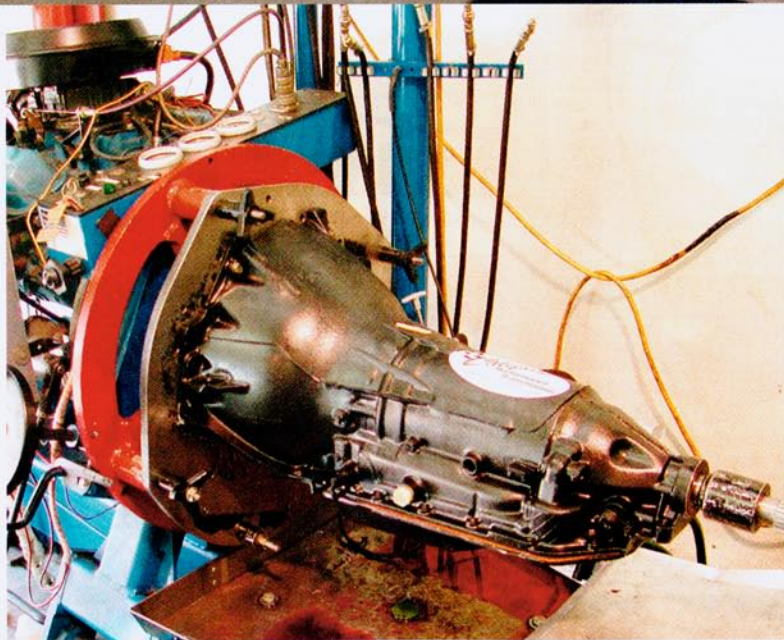
By Jeff Smith

Photos by Jeff Smith

When it comes to GM performance automatic overdrive transmissions, most discussions center around the TH700-R4. While this four-speed auto has its merits, the TH200-4R offers equal if not greater strength with a slightly different set of ratios. In fact, long-time transmission expert Art Carr believes the TH200-4R is potentially a far better performance automatic.

Carr has been in the automatic transmission business for decades. A few years ago, he sold his original transmission business to the company in Texas that still carries his name. But Carr couldn't stay away from performance automatics for long, and he created a new company called California Performance Transmissions (CPT) located in Huntington Beach, California. This time around, Carr is focusing his attention on the TH200-4R.

Why? To begin with, if you look at our included gear-ratio chart, the TH200-4R employs a more reasonable First gear ratio, along with a



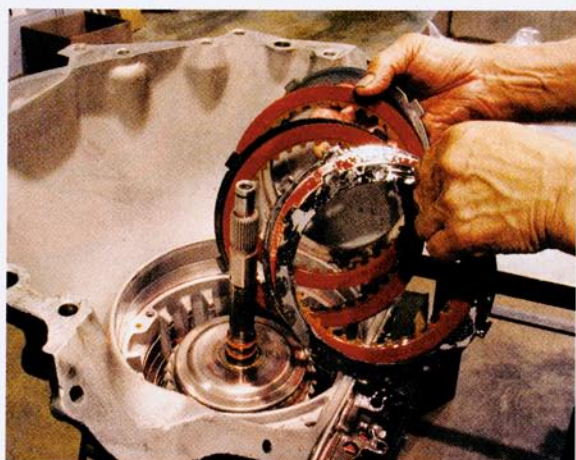
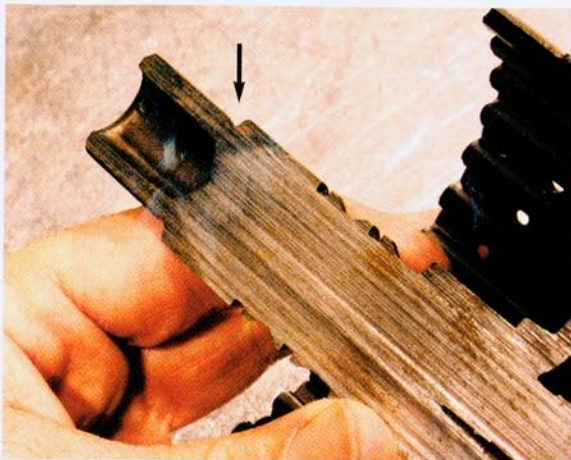
California Performance Transmissions (CPT) dyno-tests each of its custom-built automatics on this trans dyno to ensure proper shift operation and line pressure.

slightly deeper Overdrive ratio compared to the TH700-R4. This taller First gear makes the TH200-4R slightly more durable. However, Carr is quick to point out that the TH200-4R still requires several modifications to make it capable of handling the 800 hp he claims it can withstand if

properly built and maintained.

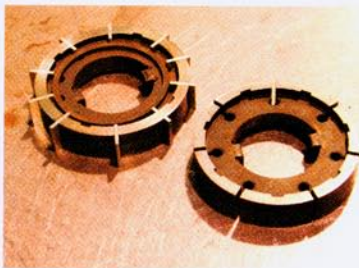
Converter Chronicles

Carr is a firm believer in reducing the size and weight of the torque converter on the way to creating the ultimate TH200-4R. Factory lockup torque converters use a large overall



CPT's George Imazaki took us through a guided tour of a CPT TH200-4R. This cutaway shows the weak spot (*arrow*) in the TH200-4R's intermedicate drum assembly. CPT invests in a hardened support that more than triples its torque capacity to resist breakage.

The factory Fourth gear apply clutch uses only two clutches, so CPT increases that to three (a 50 percent increase in surface area) and also uses stronger Red Eagle clutch material along with Kolene steel separator plates. This additional holding power makes the trans more durable, especially when shifting into Overdrive at wide-open throttle.



To ensure increased line pressure of 270 versus 190-210 psi stock (a 31 percent increase), CPT builds its own 10-vane pump (*left*) to replace the stock seven-vane unit. The additional vanes reduce pressure fluctuations, which makes for smoother trans operation.



Not all TH200-4R valvebodies are designed for performance use. The final digit in the casting number helps identify the better valvebody. According to CPT, valvebody casting numbers ending in 7 through 12 are the best.



To match CPT's top-of-the-line TH200-4R is a Heavy Duty Mega Torque 10-inch converter. This smaller converter is custom-matched for your application for stall-speed and torque multiplication. In the application on Kris Shields' El Camino, it works extremely well.

diameter as a way to ensure efficiency. Another advantage to a large converter is increased surface area for the internal lockup clutch. Unfortunately, a large converter pays a hefty weight penalty compared to a smaller converter.

One easy way to create additional stall speed is to use a smaller converter, such as a 10-inch versus an OEM 12-inch. Since the smaller converter is also much lighter, it allows the engine to accelerate more quickly, improving dragstrip e.t. and speed.

We followed along as CPT bolted in

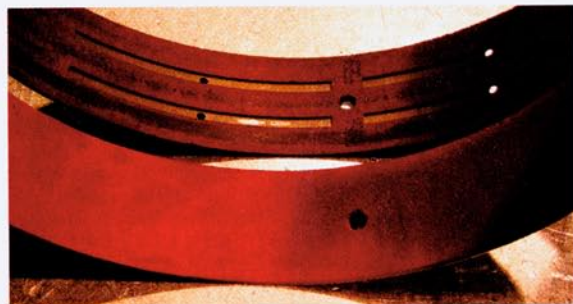
one of Carr's latest performance-built TH200-4R automatics in a super-charged small-block '65 El Camino. Its owner, Kris Shields, had suffered through three crippled TH700-R4s. While Shields' El Camino is more of a road car than a dragstrip hero, the trans and converter conversion was worth a solid half-second improvement in quarter-mile acceleration, not to mention making the car much more durable and fun to drive.

The CPT Extreme Duty TH200-4R with a custom-calibrated converter, TV cable, and dipstick-tube assembly

bottom-lines at \$2,400, so it's no budget beater. The company also offers many of the individual components from the Extreme Duty upgrade, so you can improve your trans as you go. Since few enthusiasts build their own transmissions, we're not going to detail every step and modification that CPT performs on each ultimate TH200-4R. However, we will take a look at a few of the more important upgrades so you can get an idea of the number of modifications CPT includes in each of its performance rebuilds. Check it out.



CPT also builds a billet servo valve (right) with a larger surface area to move more fluid to the Second-gear band apply for a firmer shift into Second gear.

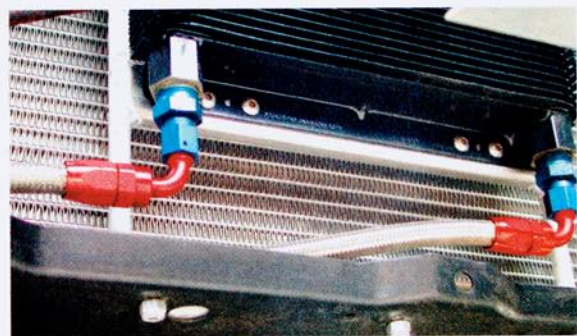


Along with the larger billet servo, CPT also uses a stronger Second-gear apply band with 20 percent more friction material surface area on the band for better holding power. In addition, CPT ensures that the surface area of the forward clutch drum is smooth for full contact with the band.

With more horsepower, torque, and stall speed also comes more slippage and heat. A high-efficiency trans cooler is an absolute necessity to ensure long transmission life.



This is the boost valve, which is increased in size to raise line pressure along with a taller spring. CPT also increases the diameter of the stock throttle valve (TV) in the valvebody to handle the increased load on the transmission.



Another advantage of the TH200-4R is that most of the cases are drilled with universal bellhousing bolt patterns that will fit Buick, Chevy, Olds, Pontiac, and even Cadillac bellhousings. A TH200-4R is the same overall length as a TH350 with the same output-shaft spline, so you can use your existing driveshaft.

CC



Automatic Ratios

Transmission	Gear Ratios			
	1st	2nd	3rd	4th
Powerglide	1.72	1:1	—	—
	1.82	1:1	—	—
TH350	2.52	1.52	1:1	—
TH400	2.48	1.48	1:1	—
TH700-R4	3.06	1.63	1:1	0.70
TH200-4R	2.74	1.57	1:1	0.67
4L80-E	2.48	1.48	1:1	0.75

Note that the TH700-R4 has a deeper First gear ratio that might appear to be better than the TH200-4Rs. The 700 was originally designed to compensate for use with small-displacement engines with minimal torque. The disadvantage to the deep First gear is the larger rpm drop between First and Second—46 percent. The TH200-4R First-to-Second gear spread is a slightly tighter 42 percent. For comparison, the TH350 experiences a

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