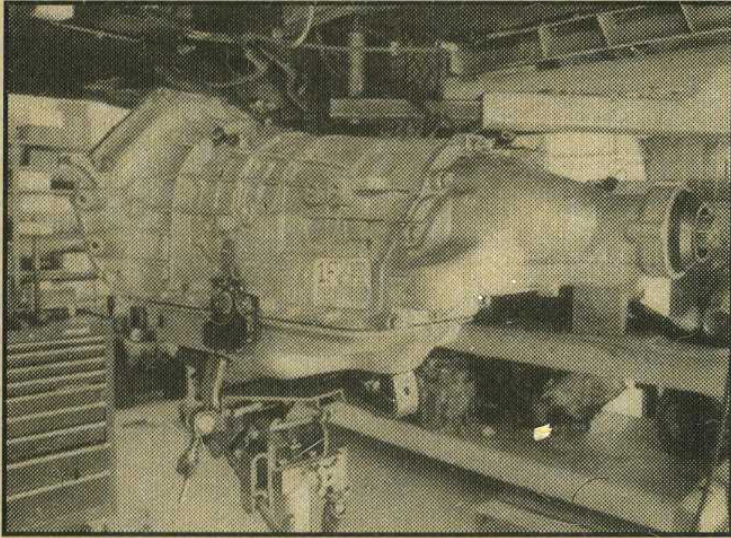
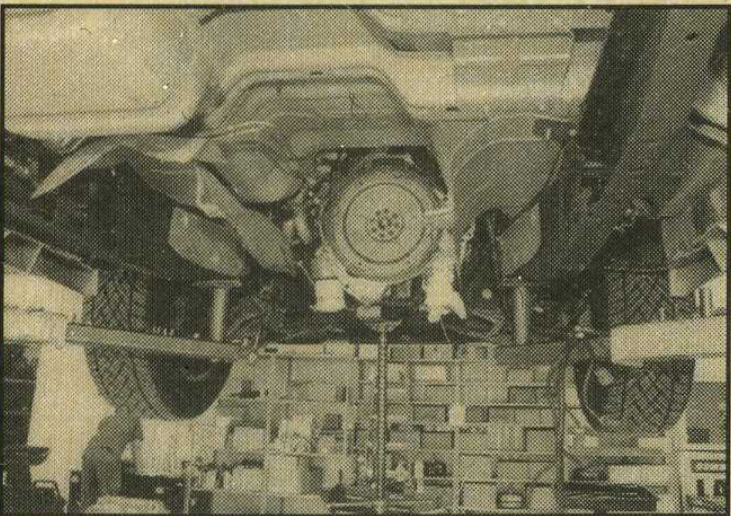


SLIPPING AWAY



Barrett's crew worked non-stop to get us back on the road quickly. And in less than 24 hours the 4R100 was together and back in the hands of Vernon Newhall. Barrett told us the rebuild unit can take all we can throw at it. Thankfully I can't powershift this thing!



Home sweet home.



Newhall guided the big automatic back into place with a new Precision Industries converter. Our old converter was stalling too high (almost 3000 rpm with slicks, 2800 on radials) so Barrett recommended a tighter unit. The new unit stalls to about 2300 rpm on street tires and we'll let you know what it does with slicks in the next issue.



When all the bolts were tight he filled the unit with about 15 quarts of Merkon V transmission fluid.



SLIPPING AWAY

Rebuilding our slipping 4-speed overdrive 4R100 Lightning transmission with Level 10 Performance Transmissions.

BY EVAN J. SMITH
PHOTOGRAPHY BY THE AUTHOR

It was during the JDM Lightning Shootout in March that Pat Barrett of Level 10 Transmissions approached me and offered to rebuild the 4R100 overdrive transmission in "The Fridge", our project Lightning F-150. Barrett's offer struck me as odd because the 4-speed box was only two years and 25,000 miles old, and it made nary a miss. Nevertheless, Barrett was adamant about us getting the truck to his Hamburg, N.J., shop for a look-see, so I told him I'd call and schedule a day at Level 10.

Still, the truck had recently run a best ET of 12.55 with a trap speed of 108 mph, so I didn't see a reason to yank the huge slush-box from the truck. It upshifted crisply on cue, and locked in overdrive like it was designed to. I mentioned all this to Barrett, but he insisted that I get the truck to him for a closer inspection.

Ironically enough, the situation changed over the next two months. I noticed that maybe, just maybe, the transmission was not 100 percent. As Barrett predicted the 4R100 developed a noticeable slip when the transmission upshifted from third into overdrive. This didn't occur until the truck was a few months older, but the slip was for real. In addition, I noticed a drop in finish line trap mph at the track, a sure sign that something evil was lurking inside the big automatic.

What Barrett noticed on that day in March was simple given his many years of experience with drag racing and automatic transmissions. What he noticed was a potentially serious problem on the rise. "These [Lightning] trucks are like diesel trucks," Barrett proclaimed. "They are heavy, and they make loads of torque at low rpm so the converter and transmission needs to be

different than in a light drag car. Actually, I could hear the transmissions slipping on most of the modified trucks that day," he added. "What we learned is that a really loose torque converter doesn't make a Lightning run quick quarter-mile times. You do need a little more slip than stock to get the truck going, but then you want the converter to be tight."

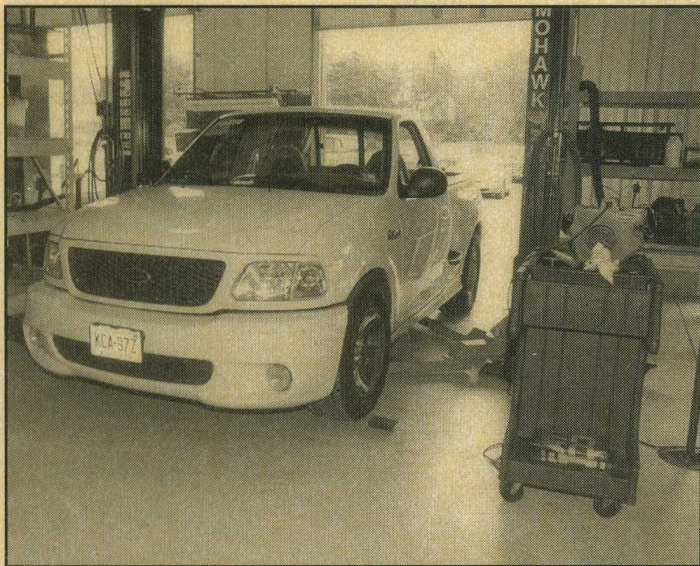
The 4R100 transmission found in all 1999-present Lightning trucks is the same unit Ford installs in all diesel and V8 trucks. It's a monster as far as size goes and its parts are plenty beefy. But some of the internals are not up to the rigors of racing, or even hard street/strip usage.

Lightning owners have found it quite easy to add serious power, and if you add power to any vehicle without upgrading the transmission, it will ultimately fail. As an example, take a look at our truck. Currently, The Fridge is putting roughly 380 horsepower and 440 lbs.-ft. of torque to the rear wheels. That translates into about 475 horsepower and 560 lbs.-ft. of torque respectively at the flywheel. Transmitting the power is a Precision Industries torque converter and a 4R100 transmission with a Level 10 shift kit.

Nevertheless, our transmission was slipping. And, in addition, the recent upgrade in torque from the 2001 intake system and new chip was causing the torque converter to stall to almost 3000 rpm. While 3000 rpm of stall would be great for a lightweight small-block Mustang, it was too much for our 4700-lb. F-150. So, Barrett's plan was to rebuild the transmission with his Performance Transmission System and swap in a lower stall converter.

"Ford really designed a great unit," Barrett says, "but it's only set up to handle the output of a stock engine, or maybe a little more than that. Once you add power, especially torque, the transmission

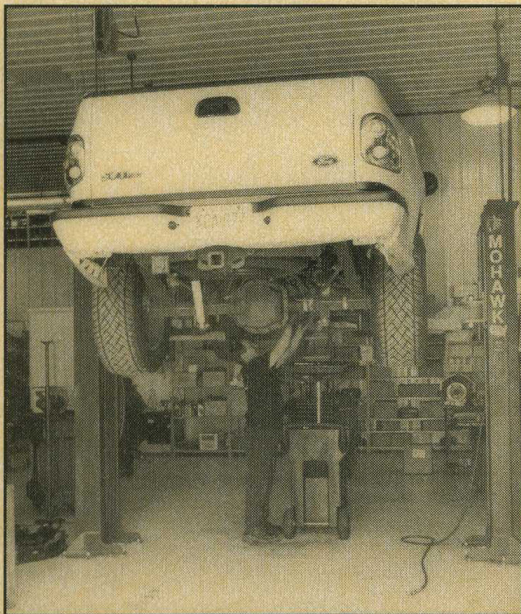
SLIPPING AWAY



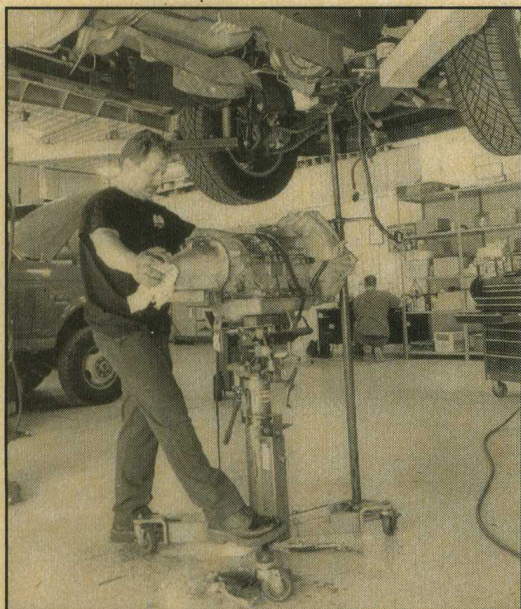
Minutes after arriving at Level 10, The Fridge was set up on the lift and the action was underway.



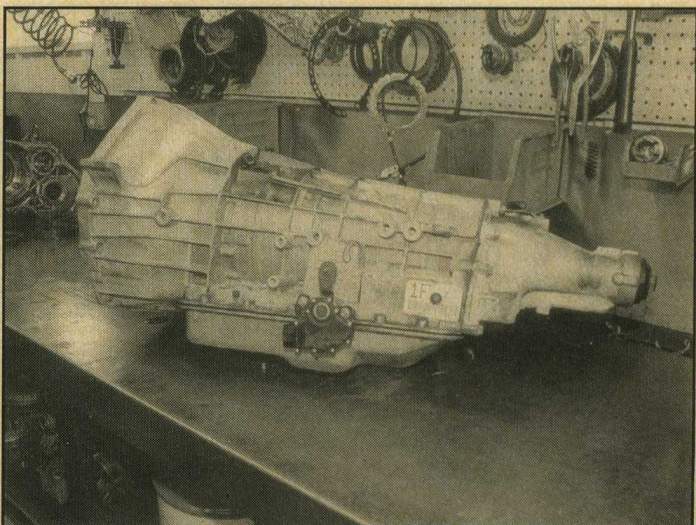
Vernon Newhall of Level 10 Performance Transmissions worked with lightning quick speed and had the R4100 transmission out in less than one hour.



Here are some of the major components of the Level 10 PTS (Performance Transmission System) kit. Not shown are the PTS one-sided clutches because the last set in stock went in to our transmission.



Newhall lowered the transmission from the truck and handed it over to Jim Nidelko, who tore down the monster and rebuilt it.



The 4R100 is installed in all Ford V8 trucks including diesels. There are some internal differences from model to model, but all in all it's a pretty strong unit that, when properly built, can handle 11s in a 4700-lb. truck—not bad.