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MORE FUN WITH FUEL INJECTION

Our '67-72 5.3L LS Install Continues

BY GRANT PETERSON

A few months ago in our March '09 issue, I introduced the 5.3L LS Chevy engine I was planning on dropping in my '72 C-10. For those who missed it (you may need to find a back issue to get up to speed), I went to Dave's Goldenwest Truck, a local Orange County, California, wrecking yard, and picked up a 5.3L engine that



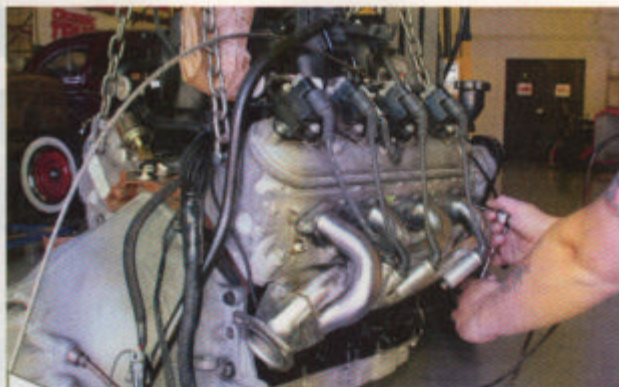
Obviously the old engine needs to come out, but there's plenty to be done before grabbing the cherry picker. This entails the radiator, throttle linkage, wiring, and disconnecting hoses.



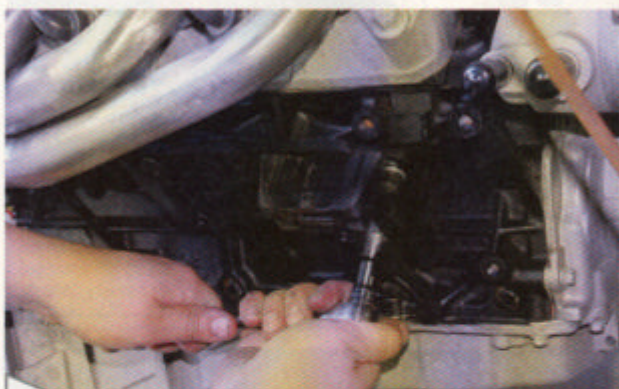
Many can get away with modifying their existing exhaust, but I'll be totally redoing mine. The long headers come out easier from the bottom. The motor and tranny mount bolts need to be taken out as well as the driveshaft removed.



At last count, I was getting about 9 mpg ON THE FREEWAY with the 700-R4 and a 3.42:1 ring-and-pinion, which was appalling to say the least. Plus, recalling the last dyno, it had but a mere 113 hp at the rear tires. It will be interesting to see what the LS can do.



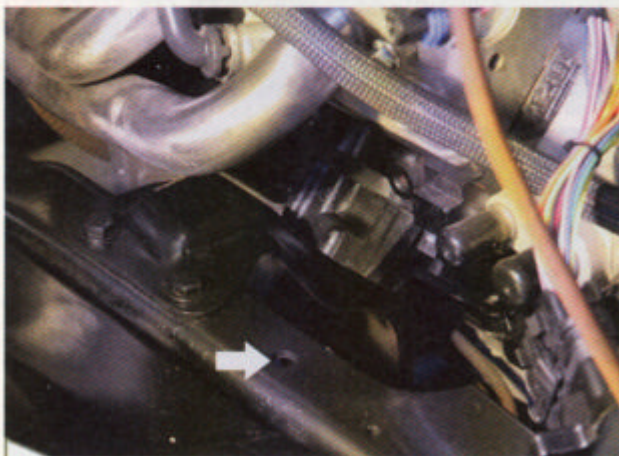
After installing the crank spacer into the back of the crank, bolting the torque converter to the LS flex plate, and mating the LS engine to the transmission, I installed the Sanderson headers. This is all mock-up at this point to make sure everything is going to jive; later I'll add the gaskets and the rest of the header bolts.



The motor mount adapter plates simply bolt to each side of the block. Next, the traditional small-block rubber mounts get bolted to the adapter plates.



The moment of truth (or fiction) was soon upon me as I lowered the freshly joined LS/700-R4 combo into the engine bay of the '72.



As I mentioned earlier, the engine in my truck was set back farther than all of the C-10s I'd seen. The stamped-steel mount bracket is obviously an OEM piece, but I don't know what the reason is. At any rate, most small-blocks in '67-'72 C-10s use the front two of the three factory holes in the top of the framerrail.



Since my mounts won't work in the forward position, I went to CPP and got a set of their tubular small-block C-10 mounts. Their mounts come complete with grade 8 hardware.



The CPP or stock forward mounts share the middle of the three holes with the rear position mounts, basically like so. It's just a bit of a headache to switch the mounts out with the engine in the truck, but it needs to be done.



The CPP mounts also use the passenger car style rubber mounts (bottom), which have a horizontal bolt to connect them to the mounts on the frame. The stock truck rubber mounts have a bolt that goes into the rubber.



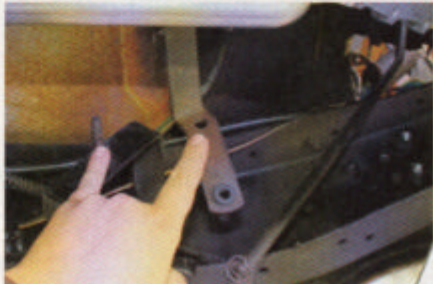
After jacking up the engine and replacing both the frame and rubber engine mounts, here's how things are looking. The CPP mounts fit quite well once they were in place and look neat to boot.



Whether you are removing the old mounts or installing new ones, there is a third bolt down on the crossmember that goes through to the bottom side. You won't get the old ones out if you forget this.



After the engine placement setback the transmission crossmember needed to move forward an equal amount (4 inches). This actually put the rear mounting hole in the crossmember right where the front one was. Now I just need to drill new holes in front.



The shift linkage to the 700-R4 needs to be addressed now since the pivot bracket on the frame doesn't line up with the bracket on the trans.



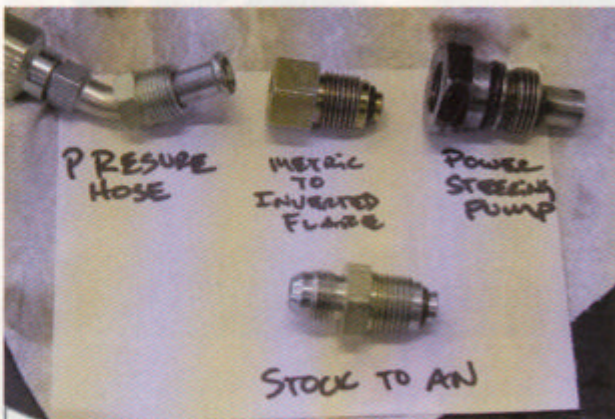
Now that I knew the difference was 4 inches and seeing all the other factory holes in the frame-rail, to my surprise, there were holes 4 inches from the two mounting holes for the pivot bracket on the frame.



With a slight amount of tweaking, the brackets went back to how they should be. Now I just needed to adjust the shifter rod coming off the column shift linkage.



From here on out it is basically making the new work with the old. The power steering was one of those things. I got this universal power steering hose kit from CPP that is basically a replacement for '60-'70 GMs.



The fitting in the late model power steering pump goes from metric threads with an O-ring to a male AN fitting, which won't work with the old style hoses. CPP has a metric O-ring to SAE inverted flare adapter that replaces the AN fitting, making everything jive. Just remember that most all the nuts and bolts on the LS engine are metric, with the exception of bellhousing bolts (but that may have changed as well).

was from an '01 Suburban. I took the engine to Turn Key Engine Supply in Oceanside, California, so they could walk us through what it takes to get rid of all the non-important stock pieces. This wound up being quite the striptease, which included the stock EFI harness. Turn Key makes their own neat and compact harness for LS engines that simplifies the whole shootin' match, not to mention their cool layman's version of a fuel system for non-stock applications.

This was all fine and dandy, but I knew I was going to have to hunt down a few more items before pulling the very tired old small-block out of the truck. The stock radiator had seen bet-

ter days and had started acting up, so I ordered an aluminum Griffin radiator from Southern Rods and Parts along with two 14-inch electric fans that fit perfectly in the width of the radiator

core. The Turn Key harness comes with another mini-harness for two electric fans and the fuel pump, so I didn't need anything additional there. Turn Key also provided the LS engine mount adapter



Now the pressure (bottom) and return (top) hoses can be tightened into the power steering pump. Of course if you don't have power steering you can skip this—or take the time to upgrade to it.



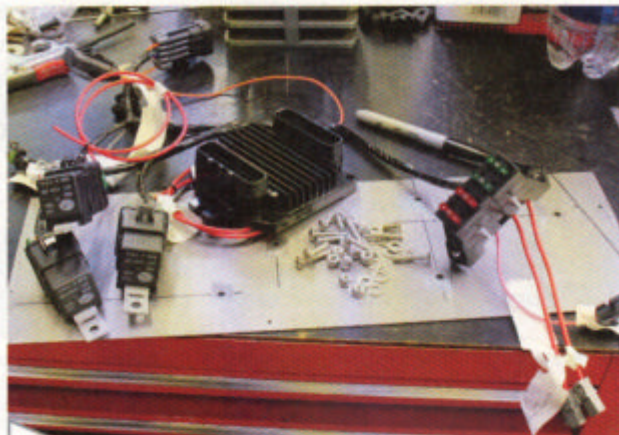
The other side of the low pressure return hose simply gets cut to length and tightened down with a hose clamp onto the tube coming out of the pump reservoir.



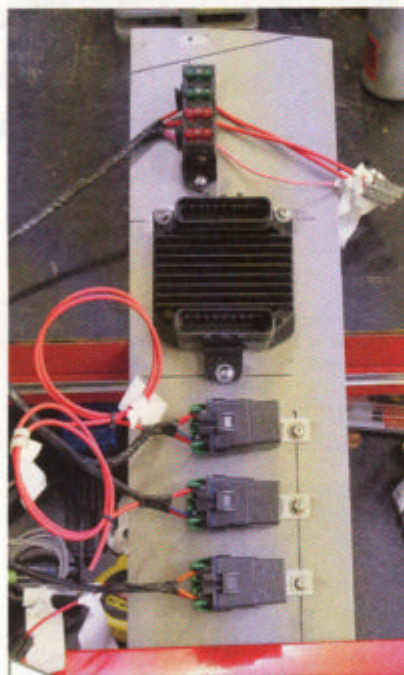
This is the pressure side of the pump where the adapter fitting is. It is a tight fit from the 45-degree bend in the line and the motor mount, but it worked. For final tightening I used a flare nut wrench to avoid rounding off any of the fittings.



In the box is all the stock stuff we eliminated from the stock 5.3L LS engine down at Turn Key; their svelte new harness is below. The Turn Key harness makes the wiring and controls of the LS a fairly straightforward deal.



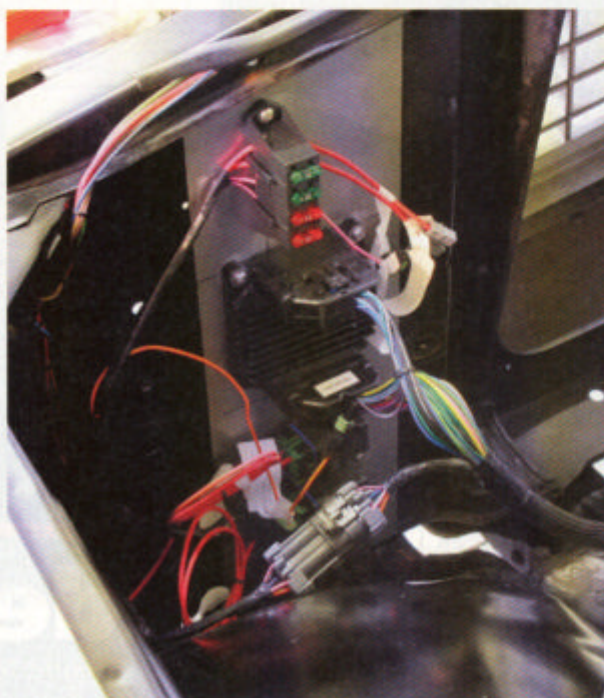
Also mentioned earlier was a separate, smaller harness from Turn Key that is basically the relays for two electric fans, the fuel pump, and a small four-fuse panel for the incoming power supply. All of these things need to be mounted somewhere along with the Delfi ECU, which is quite small.



I figured a simple sheetmetal panel mounted on the back of the radiator core support would suffice. After cutting the panel to size, I began laying out the parts in an orderly fashion using a tape measure and a square before drilling any holes. Stainless 10-24 button head Allens, washers, and Nyloks mount everything nice and solid. Don't forget antiseize on the stainless.



We'll get into wiring the power and grounds of the harness next month, but here's a glimpse of how clearly everything is labeled from Turn Key. This makes it quite easy to follow their schematic.



Looking at the back side of the core support from the driver side, we see the panel that mounts the relay harness and fuel injection ECU. Once the panel is painted black and the wiring tidied up, it'll look right at home. You could mount this stuff just about anywhere the ample lead on the harness will allow. Under the dashboard would work well too.

plates. These allow the transmission to stay in place and the LS engine to drop onto the stock engine mount location using the old-style rubber mounts. Headers were another "maybe" as far as what I needed, but Sanderson Headers had a late-model LS truck shorty version for me to try out.

For most of you, this would be what's needed for the majority of the initial LS conversion, but of course nothing is easy for me. A few years ago I found out that my C-10 had the engine mounted in the rear of two possible positions, but most '67-72 C-10s I've seen since have their engines in the forward position, 4 inches forward to be exact. I was hoping the LS engine would also fit in the rear location that my 350 was in, but in the back of my mind I knew it wasn't gonna happen—if for no other reason than Murphy's Law, which proved to have the upper hand. So, I went over to Classic Performance Products and got a set of their tubular motor mounts that replace the stock, forward-position, stamped-steel mounts. No, biggie, but this also meant I'd have to move the transmission crossmember, mess with the shift linkage, and get a longer driveshaft.

The other part to the install was getting the LS engine to work with the non-electronic 700-R4 trans already in the truck. I got the transmission from Gear Star a few years ago and have been nothing but pleased with it, thus wanted to keep it in the truck in lieu of going to a modern electronic overdrive automatic like what would have been behind the 5.3L from the factory. This shouldn't be a problem, but there are two things that need to be taken care of: the TV cable and the installation of a spacer between the crank of the LS and the torque converter of the 700-R4. The latter of the two is easy thanks to Turn Key having the adapter that taps into the back of the crank. The matter of the TV cable I'm still working on, but should have it figured out for next month's hopeful LS conversion conclusion, which will also cover the fuel system, exhaust, and final wiring. Hang in there!