The 10-Second Trip

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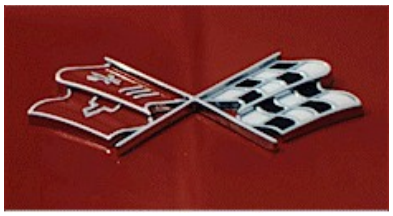

The way to do it was like this: You brought the car up to starting line until the man said you were staged. You set the brake and brought the engine up to about a 2800 rpm stall where it would just start to pull the front wheels into the timing lights. It all happened so fast. Time compressed down into about two crucial seconds when you could feel the car begin to slip forward, and nailed the accelerator. With one tremendous hop, the machine leaped forward, shifted into second and then third and you were immediately down in the "eyes" taching 7100 rpm @ 127 mph in 10.99-11.00 seconds!

At least that was the way you did it to begin with. Then Gib Hufstader, Corvette project engineer wondered how the slightly reworked Turbo Hydra-Matic would take a neutral start. After that, you brought the rpms up to 6000 and pulled the shift lever into drive. Kapow! The brilliant red Corvette exploded from the line and faded. Inside, driving it always felt at the start as if the car were weaving a bit on the course. But from behind the runs were arrow straight. The 10.65 XS-12 Racemaster slicks, set at six psi have a natural tendency to act a little spongy, like driving on Jello. When you got back you found you had gone 130mph in 10.89 seconds.

This wasn't the fantastic Chevy race-what-they-brung press day, it was better. At the original bash somebody took out the top-speed lights so we never got a chance to run the hottest drag car of the program – the ZL 1 super 'Vette. Enthusiasts that they were, the Corvette guys took pity on us and mentioned that if we could get back a few days later when they were going to run some header evaluations, we might get another shot at driving it. As we got further into the deal, we learned, that no one at the press day had bothered, or dared, ask what was actually in the car. Pretty amazing, because the people in the 'Vette group were proud of their blazer and had the information.

On the appointed day, Gib Hufstader, Tom Langdon, Project Engineer for high-performance engines,. Bob Clfft. Corvette engineer who has been with them since the airport racing days back in the '50s, and the ultra flat-rater of all times, mechanic Bob Keithman, showed up with –cars. Swelling this group were about a dozen more interested parties, Chevy engineers who hadn't had a chance to run the hot stuff at the show and wanted to now.

The plan was to make some base-line runs with the 'Vette using a set of frantic sounding 180 degree design headers made by Custom Equipment in Lansing and then switch to a normal set of collector type pipes. After everyone had gotten his jollies, a base elapsed time of 11.01 seconds was averaged before the car was taken back to the garage so change the exhaust. During the initial runs an oil line began to leak and we retired with Tom Langdon to an Impala with air to get the engine story while it was repaired.

"The engine is a prototype 1970 - let's just say very similar to a current ZL 1 all aluminum unit. The aluminum cylinder heads are the same as currently released in the ZL 1, as is the camshaft, but this particular car has a special induction and exhaust system. A normal Tufftrided crankshaft is used and four-bolt main bearing caps – literally the same cylinder case. One new thing it does have is an aluminum water pump.

"The pistons are very similar to what we have now – TRW forged aluminum, using the same ring set and connecting rods. Modifications to the engine include what most people would call a blueprint job - the piston to bore clearance set at .007 to .0075-inch and bearing clearances in a range from .002-.003-inch. The cylinder 'bores are finished with a fine 500 grit honing stone. Cylinder decks are such that the flat on the piston protrudes approximately .005-.010 inch above the cylinder deck in conjunction with a .042 inch Victor core gasket as currently released for ZL 1.

"Cylinder heads have undergone what you might say is a minor amount of rework which we felt would get the most reward for a minimum amount of effort. The exhaust ports have been deburred, all the sharp edges are removed together with any sharp corners, although no enlargements are made to either the intake or exhaust ports. Inlet and exhaust valves are seated on their outer edge on .040 and .060-inch wide seats respectively.

"A double angle is cut on both valves (221/2 degrees), in addition to their 45 degree seat. The head seat is 451/2 degrees so we have a half-degree interference between the valve and the insert. Then, after the valves are double cut, seats lapped in on the outer edge, they're hand-lapped onto the valve seat insert. A 65~ stone is used to open the insert out to within .010-inch of the lap line. Cylinder heads are then cc'd and brought down to minimum specification. On these heads the ccs are running just about 115 on an average yielding a 11:45:1 compression ratio.

"We seem to gain horsepower up to around 11.5:1 to 11.75:1 compression and over that point on the dynamometer we see no change. I would say that in the field it's very possible you would see a loss due to inability to get fuel with enough octane to he able to run optimum spark for compression ratios over 12:1. This may or may not be true for drag racing but I would say it's definitely a factor for oval truck or Can-Am races. With the majority of average premium fuels that are available we don't feel we can run over an 11.5:1 compression ratio.

"This car has a current production L88 or ZL 1 transistor ignition distributor and runs around 12 degrees initial and 40 degrees total which comes in maximum of 5000.

"Our inlet manifold is shielded with a steel pan under the inlet manifold which keeps the hot oil off. It's in the parts book. There are some very slight gains to be had by opening up the passages on the inlet manifold to match the side gasket. The manifold carburetor pad was milled off and a 3/4-inch spacer plate welded back and then bored with four two-inch holes to accept this Holley model 4500 NASCAR-type carburetor. The 4500 has two-inch throttles and 1 1/16 butterfly.

"Holley claims the flow rate to be 12-1400 cfm. As you can see, even with the automatic, the thing seems to respond well at low rpm. We had a very minimum of work to do on this carburetor at the strip here. All we did was set the fuel level in the car and re-time the primary accelerator pump. Incidentally, this carburetor has two accelerator pumps exactly like our currently released ZL 1 carburetors and the secondaries are staged to come slightly later than the primary so you have a primary pump, a time lapse and then another secondary pump.

"The exhaust headers are one of the most interesting things on this car. We've been playing around with them on the dyno for some time to learn if appreciable gains could be realized by using a 180 degrees exhaust. But we were restricted because we never had a vehicle or never found a person with a vehicle who was willing to go through the work that it takes to build the first set. Most of the people who were drag oriented didn't have the money or didn't want to spend the time to make this possible for the additional gain in power.

"I understand it has been tried in the past by several people and some have had good results with it and some haven't. After doing the development on the dynamometer, I understand why this is true. In the car, the system gets quite lengthy if you don't pay attention to the length and know that this is important. It becomes more critical on a 180-degree system like this to correlate your diameter lengths with each other.

"This particular car has 21/8 inch o.d. tubing and the pipe lengths run from 36 to 38 inches measured from the flange to the collector. The collector in total length is 45 inches. The reduction cone is nine inches long and the megaphone exit is 36 inches long and it necks down to a 2 1/2 inch diameter where it fits together."

When the oil line was repaired, by the simple expedient of blocking it, the group adjourned hack to the garage to switch to the normal collector system that uses identical diameter pipes as the 160~ but two inches shorter. While the car was on the hoist, Gib Hufstader enumerated the changes that had been done to the car's suspension. In back, the F-41 spring (3828811) with two leafs is used with F-41 shocks (3171489). A two-inch metal block is bolted to the top of the hub carrier which, after traveling about two inches, meets a three-inch rubber bumper. This car has absolutely no wheel hop.

In the differential is a set of 4.68:1, 4650 high nickel alloy gears that are a standard option. Gib took pains to point out that these Chevrolet gears are the best available and that the serious tuner would be money and time ahead to use them. Eight and half inch wide American mags are on the back with seven-inch in front. With a 400-pound load, 0-degrees camber is maintained in the rear suspension for square bite. On the front en4 three degrees positive caster is recommended with 0-degrees camber and 1/16-inch toe in per wheel.

In what was probably one of the most rewarding days of our lives, several things stand out. The performance of the car (3000 pounds with gas), as consistent and fantastic as it

was, was overshadowed by the performance of the men, Hufstader, Langdon and Clift, who flogged the car right along with Keithman, the mechanic. They all exhibited the same sort of boyish enthusiasm and dedication to their jobs as the guys you find at Indy, Daytona, Laguna Seca or Lions.

You could see it whenever it got down to the short hairs. The 180 degree exhaust has gotten oil spotted and the replacement looked a little faded and that just wouldn't have looked right in the pictures. So a can of white exhaust paint was hunted up and the situation corrected. It's the little things that make you a champion.

As always happens, the old fashioned headers ran as good or slightly better than the super-science 180 degree type 11.01 compared to 10.90s. (The neutral starts were just an after- thought.) With a slightly higher stall speed converter, the all- time best for the car is 10~80 seconds @ 132 mph. Which, against a national class record of 10.75 @ 128~75, is impressive. The fact that almost anybody who knows how to drive could jump in and duplicate this run after run, may be the most shattering aspect of all.

Perhaps that is why Chevrolet has been No.1 for so long, they build some pretty darned good iron. Or, perhaps it is all the Gib Hufstaders, Bob Clifts and Tom Langdons. We probably better ask Zora Duntov, he would know.