

## DRAG RACE HISTORY, SLIDE VALVE ENGINE, MUFFLER TUBE FRAMES

'The first car race occurred when the second car was made' is the thought by many. The first and second cars were in the later 1800's. The drag racing disease caught me in the early '60s, and the few publications of the era introduced custom street rods with only brief drag race coverage. But I was hooked from that point on. Many of you know the disease. You have it too.

Looking back before that, the first drag racing writings were about the sport starting in the '40s. Keep in mind that hot rod mechanics had no vision or guide to race vehicle evolution that was to occur. One common engine was the flat head Ford V-8. Modifications were those beautiful finned aluminum high compression cylinder heads, multiple carburetors, camshaft upgrades, and magneto ignition improvements. One hot transmission was the La Salle three speed. Quarter mile drag race speeds for a sedan in the 80 MPH range were an achievement. ET's in the high 15-second range were a thrill.

In the late '40s, Olds and Cadillac came out with overhead valve V-8's. An Olds Coupe was formidable. The transmission was either a three speed on the column or a 4-speed Hydromatic. The Hydromatic was a very interesting choice. It was equipped with a 1st gear ratio of around four to one. With a three to one rear end, that left a 12 to one first gear (3:1 x 4:1 = 12:1). That put first gear performance into the spectacular category, but only up to a speed of about 30 MPH where the engine was screaming at around 5,000 RPM. Second gear would kick in and take the racer to about 60 MPH. Third gear was a dramatic 3000 RPM drop. It would take you to around 100 MPH. Then 4th gear would take you up to about 115 in a stocker.

Stories are everywhere where they hit 120, 130 and higher. Those claims were often based on incorrect speedometers, but they were good memories of many. Early in the '50s, Chrysler came out with the Hemi. A Lincoln OHV V-8 was introduced. Studebaker came out with a V-8. I believe Packard did a V-8 also as well as several other GM, Ford, and Chrysler models. Speeds were climbing to 100 MPH in the quarter and ET's were hitting the 14-second range. I recall a ride in a dual quad '57 Chevy that hit in the 90's and 15's in the quarter. It was a highlight of my teens. It was awesome.

Throughout this were a bunch of IHRA eventuals who were putting these engines into lighter cars and in many instances, gasser, altered, roadsters, and finally dragsters. The first nine second ET appeared and soon 150 MPH. In the '50s, nitro was discovered by many which would kick a dragster up to 160 MPH. Very innovative racers and manufacturers made dragster frames and sedan roll bars. Unfortunately there were no IHRA rules or standards. Often these frames were made of thin muffler tubing. More than one injury or fatality is written about from this.

The Roots supercharger found its way onto

everything from sedans to dragsters. On gas, methanol, or nitro, top speeds continued to climb, and each threshold, 170, 180, 190, ... never remained as the record for very long. Realizing that this template of today could not be envisioned at the time, these racers operated in a discovery mode, probably in the same frame of mind as Christopher Columbus in the 1400's.

Today we race according to many proven standards that specify vehicle design, safety, and class fit. In the '40s, '50s, and '60s, those did not exist. Back then, stronger metals as well as non-metals were getting developed (much from aerospace). Those materials made possible more horsepower per pound that could not be achieved in the past.

I recall a book written by an engine developer who started a project in the 20's and continued into the '40s. The engine was a single cylinder slide valve design. For those unfamiliar with that, it is a piston that rides inside a reciprocating cylinder in the engine block. Valving is done by uncovering ports at the top, near the combustion chamber. With clever cylinder reciprocation, the ports are uncovered for intake and closed for compression. Exhaust on the other side of the cylinder is uncovered for scavenging and closed at the start of the intake cycle. Enormous intake and exhaust porting can be made with literally no engine speed limit from valve springs since there are none.

Both the Towle Auto Museum in Sacramento, CA and the Crawford Auto-Aviation Museum (downstairs) in Cleveland, OH have working models to observe the unique mechanisms. I believe this particular engine was a 2 cycle with forced induction. Throughout that era, the developer's engine power level increased with continued research. However, it only increased to the limit of the strength of materials. In the '40s, this engine hit 5000 RPM that was considered an achievement. I faintly recall that the engine made about 250 horsepower from about 60 cubic inches that, today, is even spectacular.

IHRA racers are again up against the strength of materials limit. Ask any Top Fuel racer. Power levels are so high that engine block dimensional changes can occur after only one run. A three thousand dollar super alloy crank shaft may get to 10 passes if you are lucky. The metal used to make the crankshaft is in the "unobtainium" category. Valve springs are one of those component sets in most IHRA engines that also limit the vehicle performance. Today suppliers are using almost pure steel alloys to make these parts absent most any internal metallurgical flaws that would otherwise lead to breakage. Advanced electronics are everywhere. Ignition systems operate from enough power to weld.

In the '40s and '50s, who ever thought that a 175 pound 4130 tubular frame in 2006 would hold a 200 MPH driver's seat and 1500 foot-pounds of torque? That frame is common in IHRA Top Dragster and Top Sports-

man classes. Both of those classes are levels that even a grass roots racer can compete in; tough to win, but you can get into the show.

In the '40s and '50s, whoever thought that a race track surface would be checked with a light ray and accurately ground so smooth that rain drops define a near perfect quarter mile level (recall our previous article in DRM issue #23, 2005 about Rockingham)! That a sticky surface of glue and rubber would be applied that provides race vehicle 60-foot times from launch in less than one second. That provides enough traction for a power-restricted stocker to lift the front wheels on launch. Aaron Polburn, where are you taking us next?

As a courtesy from IHRA to our readers, previous Tech Stop articles can be viewed or downloaded from our website [www.racecarbook.com](http://www.racecarbook.com) click on Articles.



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