



# The king of cast iron

This is the fifth article in an occasional series that will spotlight people or companies best known to the racers they serve.

After 15 years of developing the same size and type of Pro Stock engine — since the 500-cubic-inch maximum rule was adopted for the 1982 season — drops in e.t. are getting smaller and harder to come by. It's not as simple as installing a bigger camshaft and maximizing compression ratio. That's a given.

Lately, horsepower gains have come from an increase in rpm, from about 8,300 to 9,200. One result of that increase has been a switch to camshafts with a bigger diameter to better withstand the strain of spinning at almost 10,000 rpm against open valve-spring tensions of 900 pounds. In addition to strength, a larger diameter camshaft gives a smoother transition between the opening and closing of the valve — a necessity when intake lobes measure more than three-quarters of an inch (.850-inch). Along with overboring the cam tunnel in cylinder blocks 1/8-inch, from 2.125 to 2.250 inches, a more exact placement and alignment of the lifters over the lobes has become a necessity.

"These engines love camshaft," said David Nickens, the former Winston Comp champion and engine builder who embraced Pro Stock in 1996. "If you're off a little bit on the valvetrain geometry, you end up replacing the intake springs after every run. It's one of the most important aspects of building a Pro Stock engine. Straightening the lifter bores and getting everything running true helps us make horsepower in the right place."

The fastidious relocation of lifters over camshaft lobes complements the relocation of the cylinder heads over the bores for a custom fit on the piston, unshrouded valves, and proper valvetrain geometry. Pro Stock teams get unfinished DRCE or Dart cylinder blocks that have not been drilled for lifters or head bolt holes and have stock-size cam-tunnel bores. The machining of these three critical operations, measured in fractions of a degree, requires a machinist who never says, "That's close enough."

Charlie Weston works in an unmarked building not much bigger than his customers' race-car transporters on an industrial side street not far from Old Bridge Township Raceway Park. The freight-truck drivers know where Weston Machine is in Piscataway, N.J. It's one of their regular stops; they drop off and pick up heavy crates for Weston's customers, who include Dale Eicke, Steve Schmidt, Sonny Leonard, Mark Pawuk, Bill Orndorff, Richard Maskin, Bill Jenkins, and Larry Morgan. Tom Martino teammates Wayne and Danny Jesel from nearby Lakewood, N.J., were original Weston customers. Some of his customers have tried to hire him. Orndorff has called him the "king of



Steve Millwright photo

*When Pro Stock engine builders need a difficult machining job done perfectly, they send the piece to New Jersey and Charlie Weston*

by Bruce Dillashaw

*The development of higher-rpm Pro Stock engines has made custom precision machining a necessity. For that service, almost every engine builder in the class sends his blocks to Charlie Weston's small, unpretentious shop in New Jersey. Here, Weston performs one of his specialties, overboring the camshaft tunnel, on a machine he built himself.*

cast iron." Friend, customer, and A/Altered record holder Bob Rossi says Weston's machines are his race cars.

For Weston, a 44-year-old New Jersey native, machining metal is more than a career; it's his calling. After graduating first in his class from Perth-Amboy Vocational-Technical High School, he furthered his knowledge by working for others for the next 10 years — in commercial machine shops, job shops, fabrication shops, tool-and-die shops, and finally, an automotive shop. A fondness for hot rods steered him toward that kind of work exclusively. He began working for himself 15 years ago, machining cylinder heads and blocks in his garage at home.

He built his own machine for boring camshaft tunnels. His small shop also holds a CNC-controlled machine for drilling head bolt holes, four Bridgeport mills, a CK-10 honing machine, a balancer, two engine lathes, and a 10,000-pound lifter boring machine, the mass of which is a key to its accuracy.

Weston's machining skills and equipment allow him to produce work that is highly accurate and consistent. Paul Hoskins, an engine builder for Maskin, said that of the 30 blocks Weston has machined for them, the lifter bores have been within 15 minutes, or a quarter of a degree, of perfect. Those kinds of tolerances allow cam

degreeting within an eighth of a degree.

"There are a lot of shops that could do what he does, but Charlie takes the extra effort," Hoskins said.

Weston and his three employees specialize in the difficult; approximately 50 percent of his revenue is from high-performance automotive work.

"I can't say enough good about the guy," said Pro Mod and Pro Stock engine builder Leonard. "He does very precise work, and his word is good. He has a machine just for blocks that is bigger and has more rigidity than other machine-shop equipment. That produces closer tolerances."

Jenkins, who has seen enough finished parts throughout the years to know the difference between good and best, concurred. "Other shops don't have the machinery he has. He makes his own and knows how to do the job right."

That is high praise from racers in such a competitive class who are as obsessive about thousandths in the shop as they are at the dragstrip.

"You don't want to do the same thing as the guy down the street," said Weston of his specialty. "There is too much competition nowadays, and it's not as interesting. These Pro Stock guys are a pleasure to deal with."



(Above) Weston, who likes what he does as much as his customers like their race cars, has been the best at what he does since he was in high school. (Right) Custom drilling lifter bores in semifinished blocks is another of Weston's specialties. This extremely stable 10,000-pound machine contributes to hole-alignment accuracy that is measured in minutes of a degree.

