A QUICKER BIRD PART II

With a strong-running Pure Stock as a base, the jump to a "Stocker" is relatively easy

Text and photos by Bud Lang

The transition from Pure Stocker to true "Stocker" is relatively easy. Most strips ignore the fantasy of the Pure Stocks and just class them as stock cars. In the case of our Plymouth Road Runner, it was always classed as an E/Stock Automatic. The only sane way out of this dilemma was to become a "pure true stocker." At least our little bird would have a chance to show its feathers to some of the cats prowling the drag strips.

Going the route meant pulling the engine for a blueprint job, changing over to 4.56:1 gears (Sure-Grip style), adding headers and running Super Stock slicks. Pulling the engine from the chassis proved to be a real chore; the engine mounts are buried beneath the headers. Evidently no one figured the engine would ever have to come out. Anyway, this feat was accomplished and the mill was stripped down. The crankshaft and rods were delivered to CrankShaft Company, where Hank Bechtloff gave the shaft the super stock treatment, known as their "Thermo-Rev" crank. The block and heads were sent to Gene Ohly, owner of Evans Speed Equipment.

The crankshaft treatment involved magnafluxing the shaft three times: initially, during and after grinding. Next it was stress-relieved (heat-treated) four hours at 1050 degrees to remove stresses and relieve fatigue from prior use. Mains were cross-drilled for 180° oiling and the throws were indexed to bring them within ⅛-degree of 90 degrees. Factory shafts are frequently "out" at this critical point. By grinding the mains and throws .010-inch undersize, the indexing and correction of any errors in stroke length is possible. The journals are ground "under" to give .0025-.0035-inch total racing clearance, too. All factory production Chrysler cranks come with undercut machined radii in the throws and mains to facilitate fast production. CSC grinds new "reverse" radii in the throws, cleaning up the rough factory cut and increasing the fatigue life of the crank by eliminating stress risers.

Other steps taken to preserve the engine included chamfering the oil holes, cross-drilling the mains, grinding the flywheel flange true with the crank axis and having the shaft shot-peened to remove all stress lines (shot-peening was an extra precaution).

After magnafluxing the connecting rods, CSC gave them a "legal" polish along the shanks, shot-peened them, radiused both rod shank and cap where they are machined for the cap bolts and nuts (to remove the sharp shoulders), and resized them to equalize the center-to-center lengths. Final step involved changing to CSC super-duty rod bolts.

Al Teague gave the valves and seats a light touch-up job, following his initial one at Evans Speed Equipment, and rechecked the valve springs for equal pressure and length. George Lynch, another Evans ally, line-bored the cylinder block and then trued the block decks on their Block Master mill. As it turned out, one deck was .009-inch higher at one end. This operation brings the decks in level, in case they are slightly warped, but — of most importance — they are on a parallel axis with the crankshaft. The heads also were milled slightly to bring the cubic centimeter displacement within tolerances; therefore, the manifold sides of the heads and the top side of the block also had to be cut. Bronze valve guides were also installed at Evans's as a means of reducing stem-to-guide clearance, permitting the valves to run truer. Because the bronze inserts are of the spiral type, they hold far more lubricant than the stock guides, thus both cutting friction and allowing these lesser tolerances.

The importance of these milling operations cannot be overstressed. All of these steps are vital if you are serious about running an engine that is "right on." George also honed the cylinder bores on their honing machine. Each bore was precision honed, enlarging the bores .003-inch over the piston size. The crosshatch pattern on the cylinder walls is exactly the same in each cylinder, due to the precision machine operation. This is something that is impossible to achieve by honing the bores by hand.

Lynch also notched the stock pistons, which were fitted with a set of Grant piston rings, to allow additional clearance for the valves. This step was necessary, due to the milling operations just discussed (and the fact that we floated the valves a couple of times).

A set of Smith Brothers pushrods was also installed after we learned the stock rods were too long, again due to the milling of the heads and block surfaces. If not changed, bent pushrods will probably follow.

We removed the stock oil pan and windage tray as the engine was going together and fitted same with a deep sump oil pan and pickup assembly by Milodon Engineering. This unit is a must as the stock pan holds but four quarts of oil, and with at least three of these in suspension while running, not much is left to keep the pickup immersed. Hit the binders hard and . . . presto . . . wiped crank and bearings. The Milodon pickup fits in the side of the pan, routing oil through a high-capacity aircraft flex line along the outside of the engine to the Milodon pump body. Their filter

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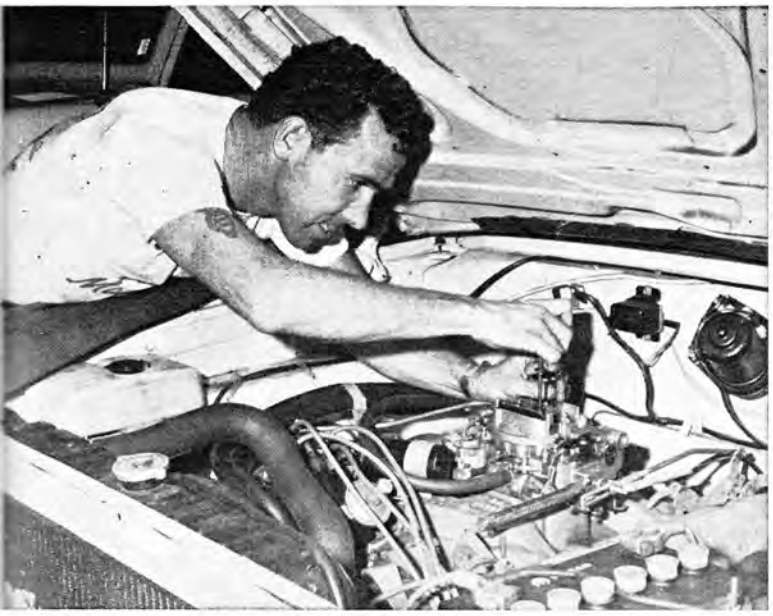
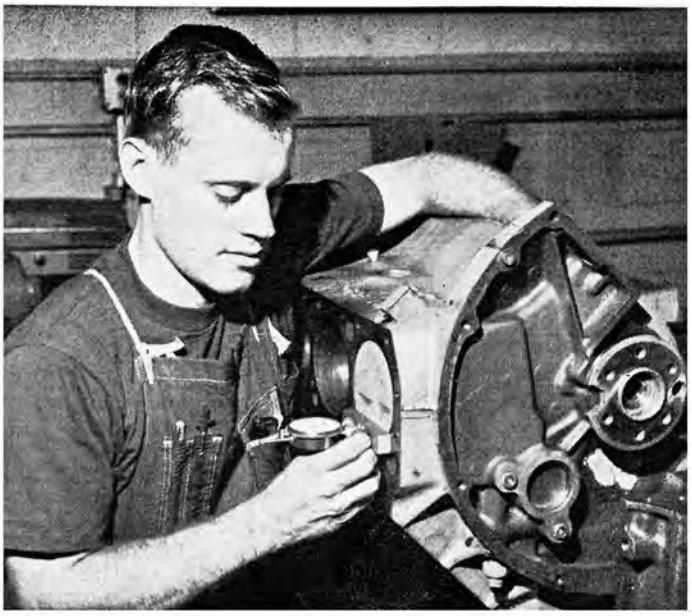
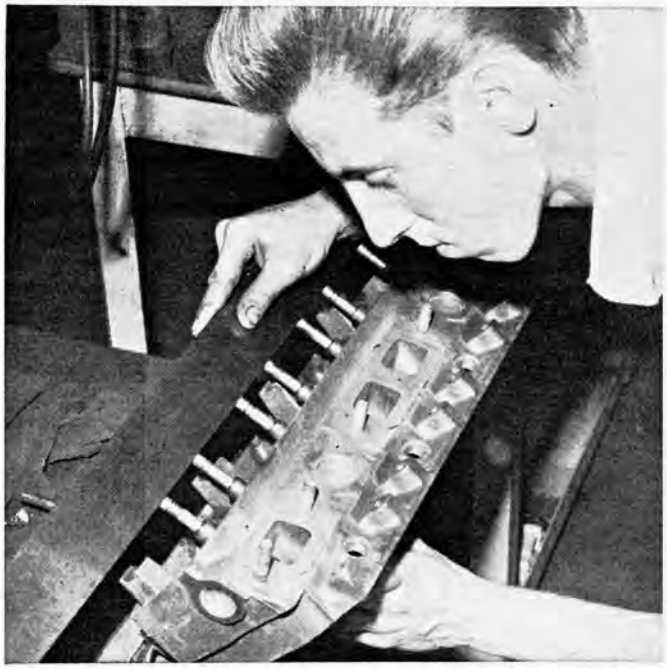
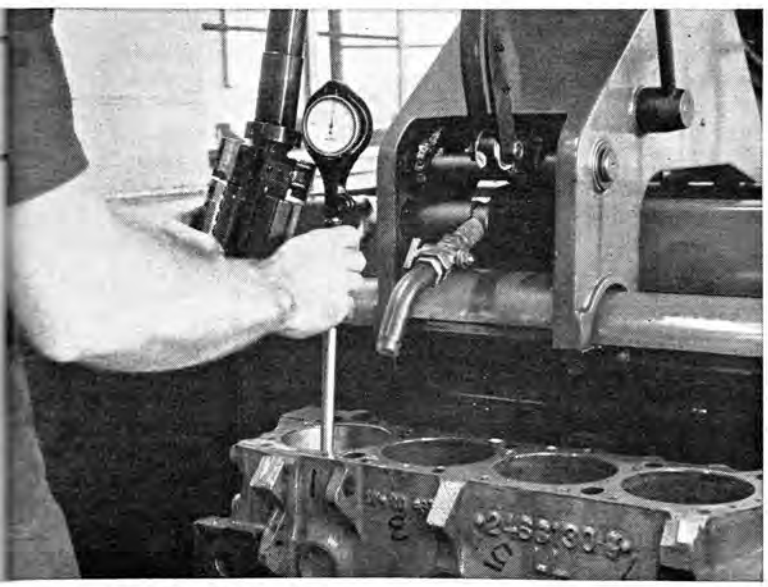
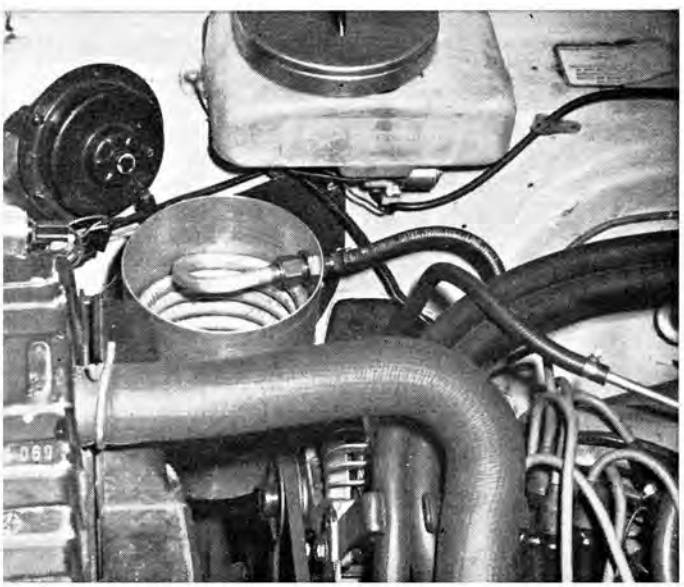


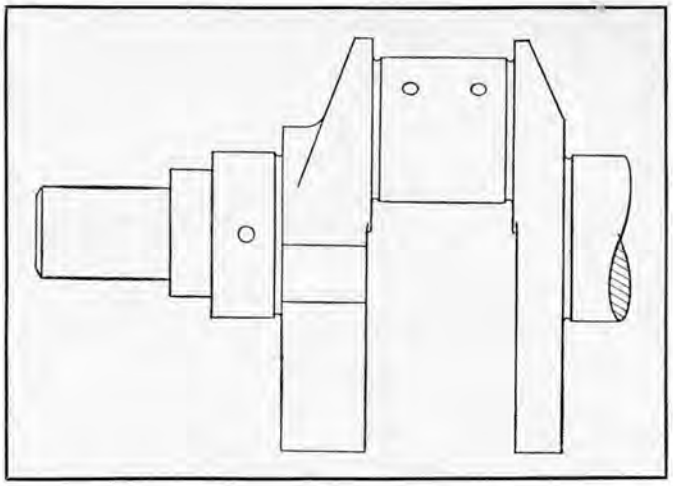




Of late, when not behind his desk, the author can be found under the hood of the Plymouth Road Runner. At left, Steve Hassler, an associate, leaves the line at Orange County. George Lynch, at Evans Speed Equipment, above right, checks the deck height of each piston in preparation for surfacing the block and equalizing deck heights. Upon completion of a valve job, Al Teague, also of Evans, lays a straightedge along the valve stem tips. Should one or more valves be too deep, he will clean up the tips to guarantee that the rocker arm geometry will remain constant. At lower left, Lynch checks the cylinder bore size during the honing operation with a precision dial bore gauge. Their super-accurate Sunnen honing machine was used to match the bores to the pistons, allowing .003-inch piston-to-wall clearance. The resulting crosshatch on the cylinder walls was also identical, so we knew the Grant piston rings would all seat at the same time. Below is the location of the Milodon Engineering fuel cool can, connected to the radiator brackets and right fender panel with a large hose clamp and section of sheet metal. They recommend using methanol and dry ice as a coolant, but if you have anything against methanol, water will work nearly as well. And if you can't find dry ice, empty the ice cubes from that soft drink chest.







Running counterclockwise, taking it from the top, is the 383 crank with CrankShaft Company's "reverse ultra-duty radii." Grinding the throws in this manner increases fatigue life of the crank. A complete Milodon deep sump oil pan and pickup assembly were obtained to replace the stock units. These are a must. CrankShaft Company gave the stock rods their super-duty treatment, which includes chamfering both rods and caps to prevent cracks and installing stronger rod bolts. The stock piston valve reliefs were cut .090-inch deeper by Evans to allow for enough clearance due to milling.

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adapter is fitted with a Chrysler high-performance filter. MoPar high-performance oil protects the Federal-Mogul main and rod bearings selected for the engine.

After the engine was assembled and dropped back into the chassis, a set of Horsepower Engineering headers, the old Tri-Y design, was installed. Besides helping the engine breathe, they make changing spark plugs a joy. Now we wait maybe five minutes after a run to pull the plugs in safety. Before, the cast iron headers held the heat for like what seemed forever. Hot headers smart! The fuel line between the pump and carburetor was also cut, and a Milodon cool can was installed, being attached to the fender panel adjacent to the radiator. Filled with methanol and dry ice, it really keeps the heat down. If you can build an ice can around the fuel pump, this will help too. Around back, we split the fuel line close to the tank and slipped in a pair of Bendix electric fuel pumps, mounted tandem. The pumps deliver plenty of gas to the stock pump, and the cool can chills all that passes by. With this team you can't go wrong.

Other changes involved installing steel core plug wiring to fire our Champion J11Y and J12Y spark plugs. Then a pair of Bruce cheater slicks were mounted up and slipped on the rear end. You "old-timers" will recall that Bruce's Racing Tires was one of the first companies to produce slicks. Another change, if one can call it that, was the removal of the sound deadener material from beneath the hood. In the initial article, we recommended that the air cleaner be removed but the support plate be retained. What no one informed us of, though, was the fact that the 383 engine has enough suction to literally tear the padding from the hood. And that fuzzy blanket is hard to digest. So off came the deadener.

At this stage of the game, we ventured out to Orange County International Raceway for a series of time trials. Jacking around with air pressure in the rear tires was mandatory. Even with 25 pounds pressure, we found it hard to get a full "footprint," so we ended up running 31 pounds. Our best times achieved at Orange County Raceway the first time out as a Stocker were 13.56 and 104.09. Not bad for a car weighing 3750 pounds (against a factory shipping weight of only 3425), but still not good enough. Our biggest problem seemed to be getting a bite.

At this point we received a competition TorqueFlite transmission from Fairbanks America in Stamford, Connecticut. They also provided us with a hemi converter and flex plate. In addition to providing a more positive-shifting trans, this unit features a reversed forward gear pattern. When using the stock column shift handle, you move from first gear into second, then into drive. In the event you use too much pressure (due to the heat of battle) during that second shift (into drive gear), it's a snap to bang it into *neutral*. Now when you're shifting at 5500 rpm, that isn't the thing to do. A lot of guys have lost engines, or at least ruined a set of valves and perhaps pistons, missing shifts. By running a reversed forward pattern, you move the shift indicator to the drive position (now first gear), shift into second as normal, then bring it down to the first gear position (now drive). Actually only drive and first gear are changed in the trans valve body. A strip of tape over the indicator panel, marked with the reversed pattern, might be a wise move, especially if more than one guy pilots the car.

Following a little more tuning, jacking around with plugs, tire pressure, etc., we finally got the Road Runner going the best we could. Best times at Orange County were 13.28 and 106.32. When compared to the NHRA E/SA records of 12.79 and 109.75, held by Joe Coletti of Oregon, with a '68 Barracuda, we're losers. On the other hand, it's probably safe to say we are hauling more weight, etc. Well, we tried, anyway. ■■