This lab-on-slicks is no drag!

By Alex Walordy

Holman and Moody's "funny" Mustang test car can be made to wheelstand in any gear

JOHN HOLMAN and Ralph Moody have carved quite a name for themselves on the NASCAR tracks, with some of the hottest machinery going. A few years ago H&M tackled another project, marine racing engines, and met with similar success by winning most of the major events in sight.

Through the years we always kidded John Holman about not being in drag racing as well. He certainly had the facilities. How many speed shops do *you* know of that have their own cam grinders, ultrasonic tanks for cleaning anything up to big 427 engine blocks, dyno's and complete machine shop facilities—not to speak of a fully tooled wheelmaking department?

It took time. But when Holman and Moody did get into drag racing the opening gun went off with a big bang. For most of the A/FX Mustangs with hemi engines have come

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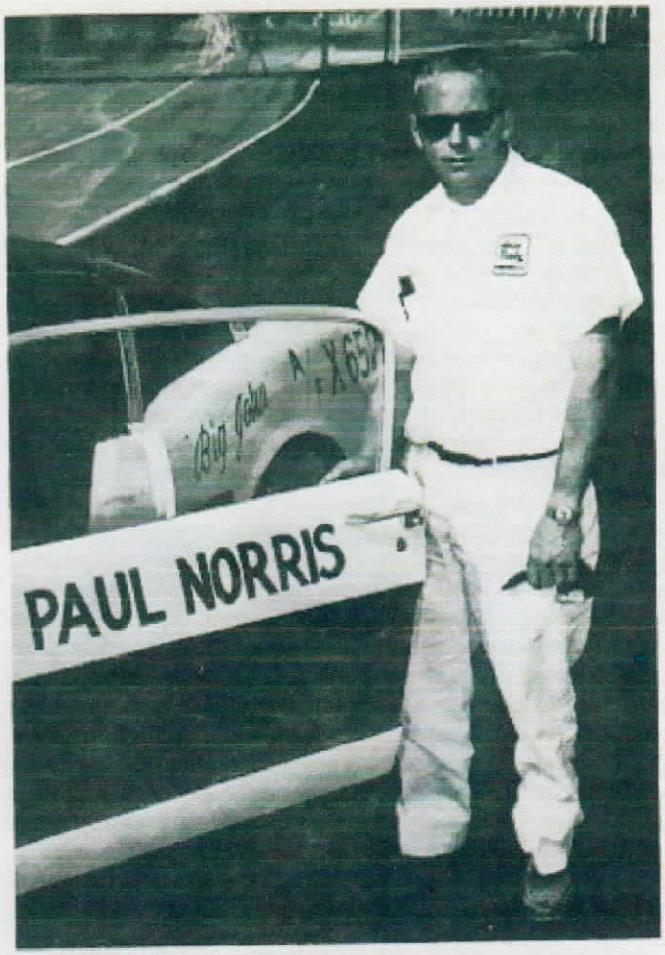
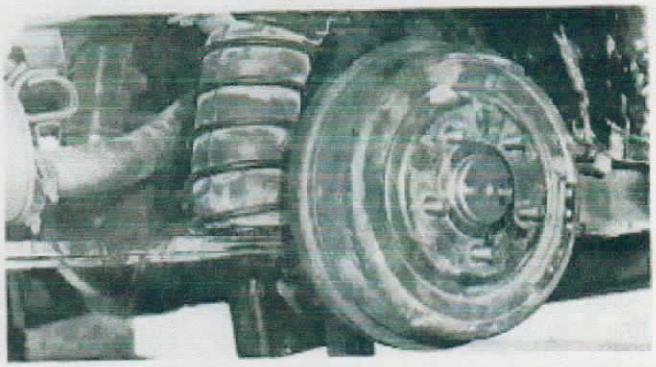
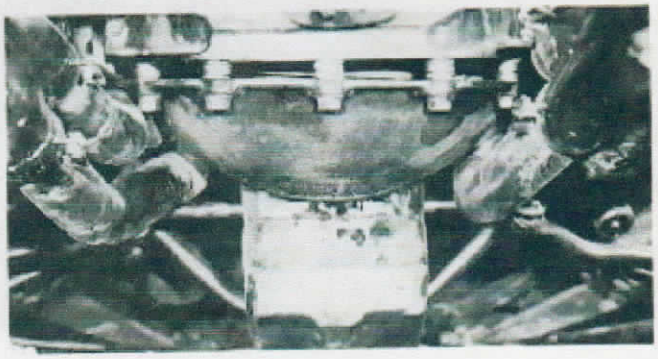




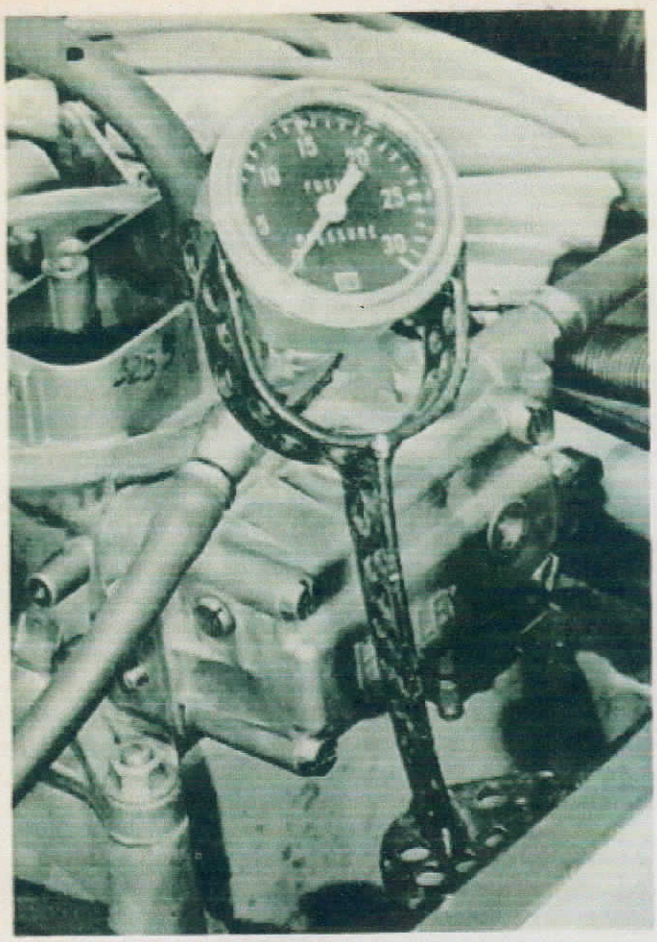


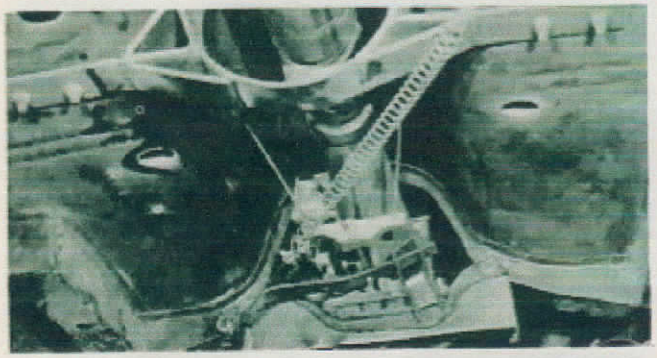
from the big H&M shop in Charlotte, North Carolina.

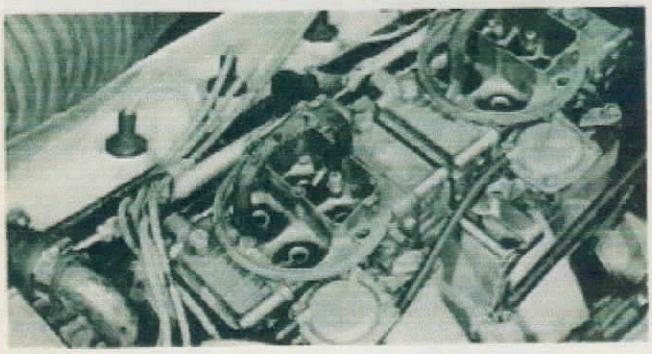
That big CP decal on all Holman and Moody machinery stands for "Competition Proven" and this has always been the final test and measure of success. Best experience and best control are gained by campaigning one's own car. Holman and Moody do it at the tracks. And it was only logical to follow through with a drag machine of their own.

Driver Paul Norris, in effect, wheels around not only one of the hottest A/FX machines but one which proves out a number of new drag items at all times. This "funny" Mustang combines many dragster features with lessons learned the hard way on NASCAR tracks. Weight saving has been accomplished wherever possible but not at the expense of safety or overall chassis stiffness. There are reinforcements in the transmission area such as a special crossmember and fish plating, and boxed sections at the torque arms as well as elaborate prop shaft hoops which have long extensions that anchor to the floorboard. Since there is no separate chassis loads must be distributed over a wider area. Hence the large tie-in brackets between the hoop and the floorboard.

Fiberglass doors carry heiarced aluminum window frames and plexi. An Air Lift bag positioned behind the axle centerline improves control so this machine won't porpoise or hop on the roughest strip surface. A series of spacer shims between top and bottom portions of the RC Industries housing result in a cooler-running clutch.







On the other hand no detail is too small in the quest for lighter weight. The car's fiberglass doors, for instance, are fitted with aluminum window frames which were shaped from aluminum channel. The wind vents are fixed and heliarced to the main portions of the window frames. Eventually sliding glass will be used instead of window regulators since the latter impose too much strain on the fiberglass doors. And they add weight. In addition to the weight saving accomplished with a 'glass front end, the stock Mustang grille has been exchanged for an expanded aluminum mesh center section that fits in front of the radiator and leaves two large, unobstructed air inlets to feed the carburetors.

To save weight Holman and Moody use aluminum instead of copper battery cables, an appreciable swap since the lines run almost the full length of the car from trunk to engine compartment. The pulleys for the alternator, crank and water pump were hogged out of aluminum to save 20 pounds. Even the water pump, itself, is fully machined from an aluminum block (not unusual at H&M since they also make prototype aluminum pumps for marine engine use). To keep front end weight at a minimum the radiator was made of

A fuel pressure gauge mounted on a light pedestal can be seen through the hood bubble's rear screening. Weight has been removed only where the rules of safety would permit. Thus the driveshaft hoop was reinforced and bolted to the floor pan. Standpipes bridged by U-shaped hoses with vent holes prevent fuel slosh.

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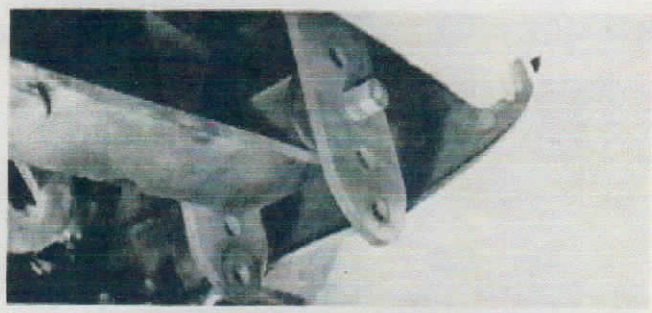
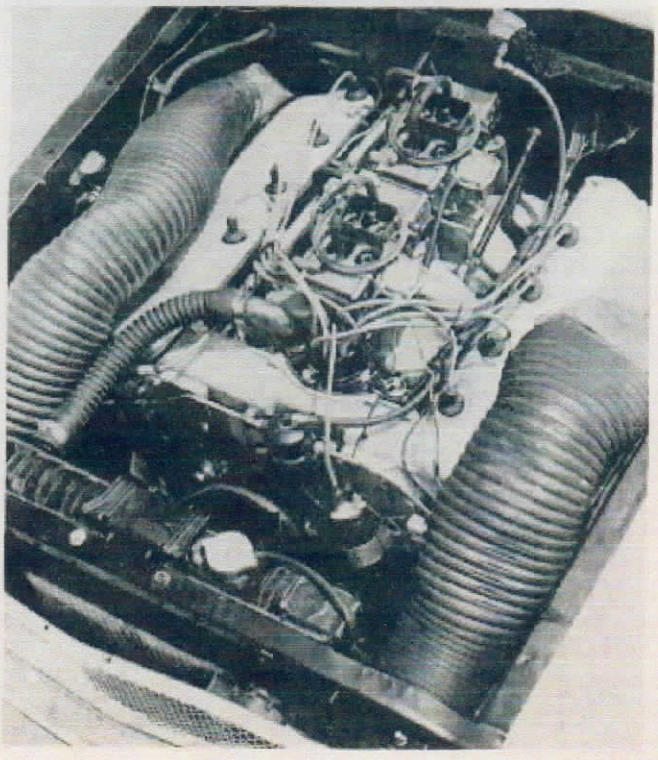


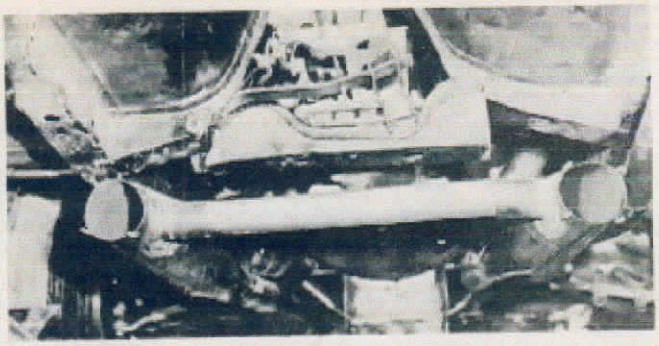


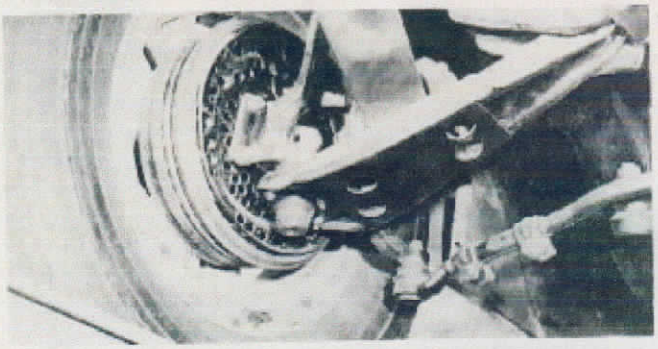
aluminum. Such weight saving provided the leeway for putting in a beefier roll bar that's soon to be converted to a full NASCAR-style roll cage for improved weight jacking.

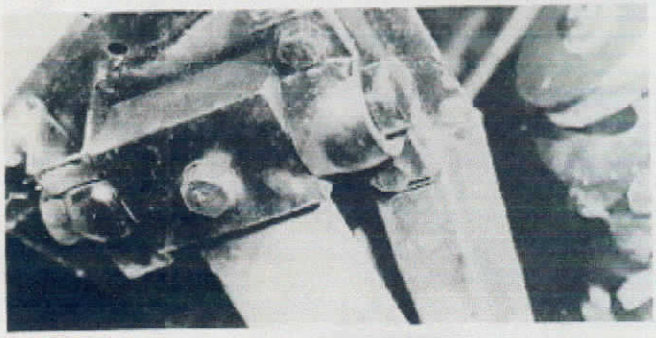
At first glance this Mustang's rear suspension looks like that of any other hot FoMoCo drag product. However a number of detail changes have been made with telling results. There is no wheel hop off the starting line or porposing as the car travels down the strip. Since the torque arms are welded to the chassis and do all the work, spring pads would just put the springs in constraint. On their own car the Holman and Moody crew removed the pads, thus allowing the axles to roll on the springs.

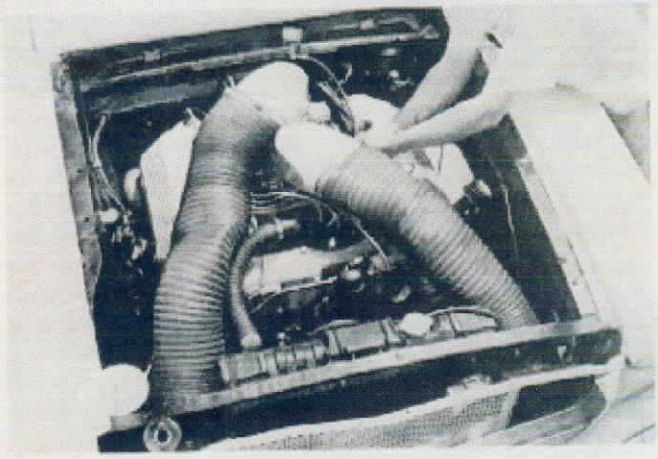
Air lifts are clamped to the leaf springs behind the rear axle. This move gained additional room, provided added leverage for the air lift and also added a certain amount of damping action to the springs. Torque arms welded to the rear axle forced the axle housing to act as a king sized anti-roll bar, making it difficult to preload the right rear. Added flexibility was gained by using large bushings at the torsion bar pivots. If need be, dual rate bushings can be used that have more rubber in the vertical than in the fore and aft direction

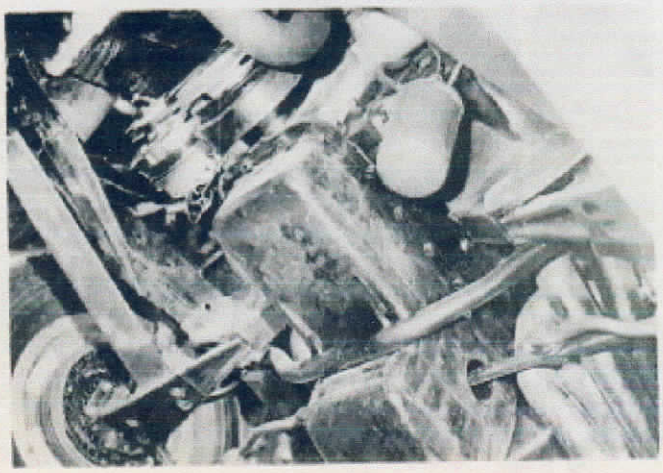
A minimum number of gauges tell Paul Norris all he needs to know on a fast run. This A/FXer follows big car practice with adjustable spring shackles for wedging the right rear wheel. With hoses removed you get a good look at the SOHC mill. Its radiator is aluminum.











in which drive thrust is transmitted to the chassis. This would allow more windup without adding sponginess to the drive.

The rear left spring has a higher rate than the right one but the right one was recambered to keep the car on an even keel. A new version now under study would use coil spring and shock absorber assemblies to cut down on unsprung weight. The rear spring shackles have several pin locations which allow quick changes in the car's height and in spring rates. The change in rates stem from the shackles assuming a different angle when pivot locations are changed.

The original traction bars used on hot Mustangs were fairly short to clear the floorboard. John Wanderer, who sets up the H&M Mustangs, added 31-inch-long traction bars and made up new floor pan sections to cover the new pivot point locations. A series of pivot points are provided so that the height to which the rear will rise under acceleration can be adjusted.

One interesting detail worth noting is that the drillings for the pivot points are disposed around a 31-inch radius so that the bars can be moved up or down without altering the wheelbase. A certain amount of cushioning action was attained by using a rubber-mounted driveshaft in conjunction with a solid plate clutch disc.

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The oil pan sump was deepened and moved rearward. Flexible ducts supply air to aluminum scoops. A torsion bar spring pivots in two planes on its hanger. The front backing plate is drilled out for weight saving and cooling. A removable member supports the rear trans mount.

NIGHT RIDERS

"It's not just a matter of changing tires and gassing when the driver pulls in. If the radiator is clogging you have to have a man ready to hose it down and also clean the grille with a wire brush. When it gets dusty you have to watch out for filter problems.

The driver has trouble reading your signs at night because of the lighting and we often have trouble seeing in the pits. We usually have large flashlights on hand for use in emergencies.

"When the track is rough it tears a car apart if your driver is out there honking. And that's the *only* way we race — flat out as long as possible. After a dirt track race we have to return home and replace all of our suspension parts. Sometimes sheet-metal, too."

Owens will also tell you it's worth all of the trouble. As a driver he was one of the best dirt track chargers in NASCAR history. Now, as a mechanic, he has few peers when it comes to setting up a car for the dirt. His cars are always the cars to beat on the night circuit.

LAB-ON-SLICKS

There is probably very little actual windup, but the few degrees of "free" motion eliminates a lot of axle snatching.

At the front one finds the standard A/FX Mustang leaf springs used in torsion. But here, too, the Holman & Moody touch is made evident by changes. The lower control arms are reinforced by steel plates which help box them in under the spring anchor areas. Front spring pivot points have been moved forward to increase the caster and hardened steel strips were added at the line where the springs contact the lower control arms to cut down on fretting wear.

To change front spring height when wedging the car a thicker, hardened shim can be used. However adjustable front spring mounts are planned for quick height changes at the strip. Support brackets at the front of the torsion type leaf springs are designed to eliminate beaming action in the springs while they twist. This was achieved by using a pair of large, spherical bushings at the sides of the supporting blocks which allow rotation and compensate for misalignment. Pins with teflon bushings fit where the springs anchor to the blocks. These features have been retained in the H&M redesign. But the assembly is simpler and lighter.

The current front suspension uses two leaves in each spring. More thinner leaves may be used to reduce stresses. We were puzzled by the fact that only one retaining bracket is used at each front spring anchor with the other bushing not being supported. John Wanderer explained that the spring is loaded upward on that side by its torsional action and that it does not lose contact even at full rebound with the suspension against the stops. Fairlane ball joints have built-in retaining tangs or extensions leading from the ball joint caps, which adds considerably to strength in the lower control arm assembly. The upper portion of each ball joint cap is ground out to allow increased angularity with the raised front end.

Some interesting precautions were taken to anchor 10.50 X 15 Goodyears on their mag wheels. The wheels are knurled around their circumferences and the edges of the heads. Before they are inflated tires and rims are coated with adhesive cement (Goodyear or Ford). Next, a series of 10.32 screws are installed. Here, too, is a neat H&M touch. These screws are ground to a concentric needle point and driven in with the tires inflated to 60 psi, and thus are seated fully against the beads.

If the point on the screw is not concentric the screw will tend to "walk" around and cut a larger hole in the tire than it should. Tapped holes in the wheels were drilled .030-inch under size so each tap and screw would have a tight fit.

Keeping the rear axle together under maximum torque application calls for more than just installing the proper pieces. The pinion is shimmed inward against the ring gear more than the specs call for since the wedging action of the gear tends to push it forward. Similarly, backlash is set at zero at the closest point of the gears. This would be poor practice on a street machine which piles up considerable mileage under light cruising and coasting conditions. But in a drag rear which always operates under full load the gears spread apart, making their own clearance. By keeping clearances at a minimum you arrive at optimum "under load" tooth contact.

Several changes have been made in the engine department. Probably the most noticeable one is a deep sump oil pan fitted with a tunnel for the drag link. The sump portion of the pan has been moved to the rear, where it belonged in the first place, and a substantial amount of baffling has been added. As a result oil stays where it belongs and oil temperatures are low. To make room for the deeper pan the crossmember under the engine was modified.

Big Holleys used on Ford's OHC engines have tall vents leading from their fuel bowls. However under the fierce acceleration rates delivered by a "funny" Mustang fuel tends to rise and spill through the vents. To prevent this, yet allow adequate venting, Paul Norris fashioned a set of rubber tubes bent in inverted horseshoe shape, then fitted them over the standpipes. Three holes cut in the top of the "U" provide venting, but at a height sufficient so that fuel cannot spill.

Most people are content to make their accelerator linkages out of thin rods. The H&M Mustang has beefy tubular connections with hemi ball sockets and an equally hefty lever leading from the accelerator pedal. Fuel pump pressure seems to be a critical item and a gauge has been fitted under the hood just behind the screened opening of the bubble so that the driver can watch it during the run. A paper type fuel filter similar to the one run in NASCAR cars is used in conjunction with an aluminum ice bucket.

Clutch linkage was reinforced to take out all deflections, which allowed improved disengagement and less drag on the synchro's during shifts. A full scattershield such as the cast RC is a great safety item but *does not* allow a sufficient flow of air to cool the clutch, especially during a series of elimination runs. To solve the problem the cover has been shimmed down with stacks of flat washers. There isn't enough room for pieces to fly out. Yet air can get in.

Performance? "Big John's" Mustang can lift up its front end in any gear and is a consistent winner besides being a source of new information for all FoMoCo drivers.