

Swapping smaller
lightweight
powerplant, with
modifications, into
'Bird provides power
plus better handling



COBRA 289 for the EARLY T-BIRD

By LeRoi "Tex" Smith

When Los Angeles attorney Watson Thoms, proud owner of a fine little T-Bird, saw that Mustang owners with high performance models were attempting to outdo his 'Bird, he decided to do something about it. He figured out a way to beat the Mustang set at their own game.

While the Mustang crowd was contemplating using a bigger engine (like the T-Bird), Thoms decided to make an engine swap using a 289 Ford engine. Weight differential between the two engines, Thoms figured, would be a definite advantage. The small 289 weighs about 150 lbs. less than the 312 stock engine. It also produces more horsepower and is far more susceptible to the hop-up treatment. Moreover, this basic 289 engine can — without spending much money — be modified to produce well over 350 hp.

A secondary advantage to such an engine swap is the increase in vehicle handling characteristics, brought about by the lighter engine weight, slight relocation of this weight toward the rear, and wider engine rpm flexibility. Too, the smaller outside measurements of the 289 make it ideal for transplanting in most engine compartments, but especially into the early 'Bird.

To perform the swap, Watson called on Don Herbert whose North Hollywood, California, shop specializes in super-sanitary engine conversions. Don had done a number of T-Bird swaps, installing all kinds of powerplants, including a number of 425 Fords. But the 289 would be different.

After the original 312-cubic-inch engine and three-speed Fordomatic transmission were removed, general measurements were taken to see if any major interference would be encountered. Luckily, everything would drop right in without difficulty. Almost. The 260-289 engine design has

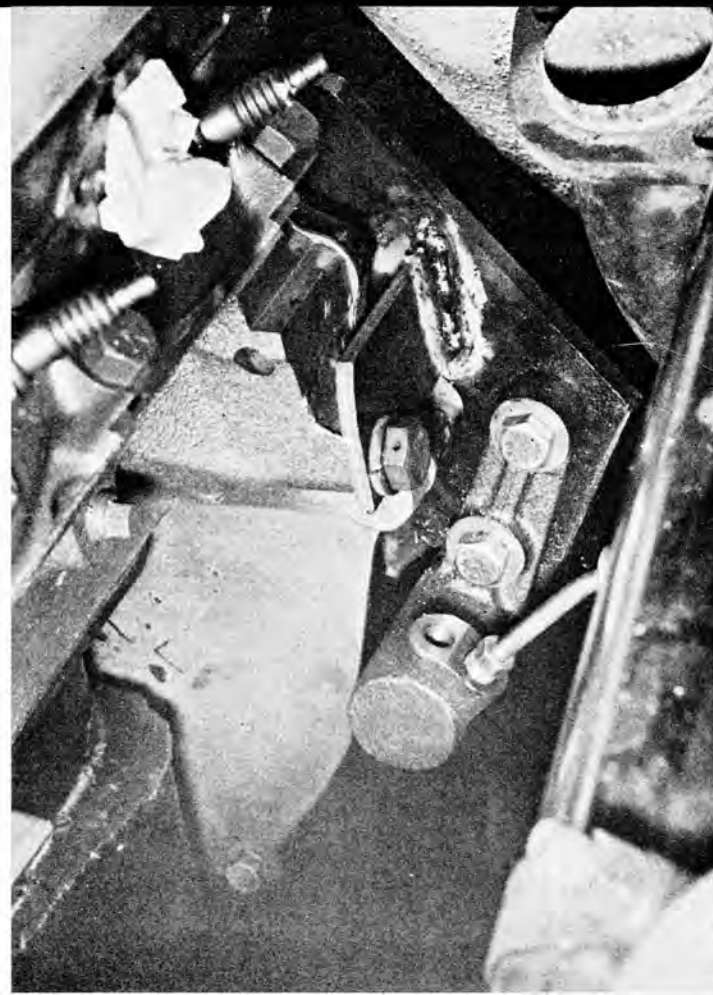


ABOVE — New header pipe from 289 exhaust manifold must be made in S bend.

RIGHT — Exhaust is fitted to engine as final installment of the swap. Original pipes were cut off near frame.

BELOW LEFT — Clutch slave cylinder bolts to 3/8-inch plate alongside flywheel area. Original exhaust header pipe is seen near steering column at upper right.

BELOW RIGHT — Hurst floor shift conversion takes up more space than original automatic floor shifter, so large hole was cut in flooring tunnel, later covered with metal patch.



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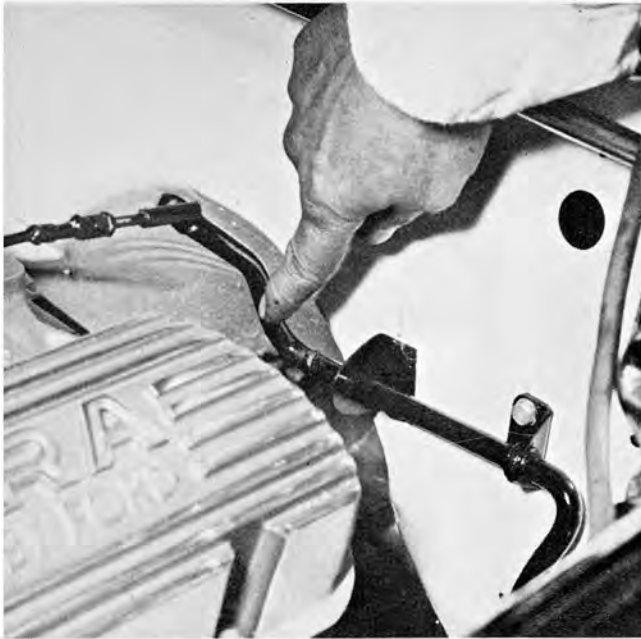
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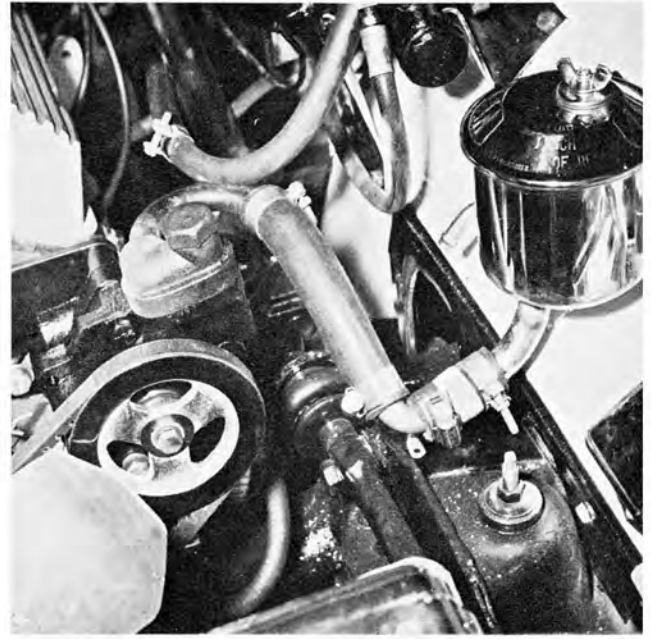
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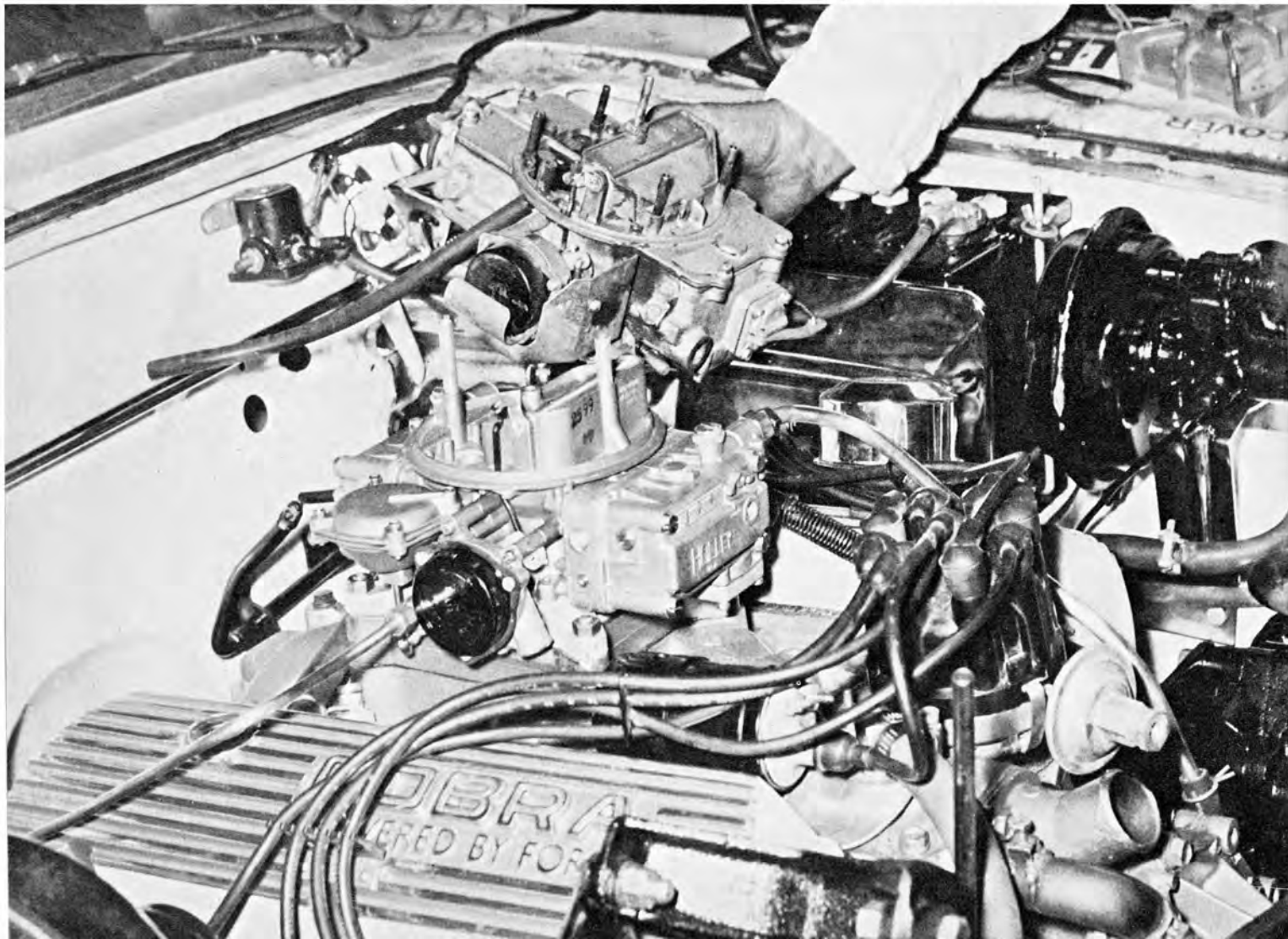


Only modification to throttle arm was to raise it from straight out position. Finger points to where cut was made.



Power steering pump was fitted, equipped with remote reservoir so air conditioner pump could be bolted.

Special 390 Holley high performance carburetor was installed, replacing stock carb (shown in hand).

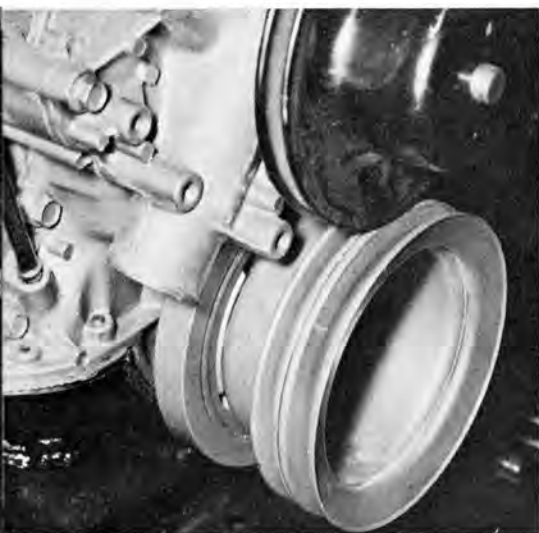




Ford pickup swinging pedal brake and clutch assembly were bolted in.



Another view of stock T-Bird header pipe. Pickup slave cylinder operates stock 289 throwout arm.



Crank pulley from 289 fits directly over original 312 engine front motor mount on crossmember.



Stock 289 pan has sump in front. This pan was cut in two, one-inch section added for more depth, then sump put in rear to clear crossmember.

a front oil pan sump. The T-Bird engines have a rear sump. And a great big round crossmember that falls smack in the way!

Such a problem wasn't unusual, however, so Don's son Andy solved it in a normal way. The pan was cut in two pieces about one-inch below the mounting flange, with the bottom piece turned 180 degrees placing the sump at the rear. In addition to this normal procedure, a two-inch section was added between the two pan halves for increased oil capacity (the dipstick was not lengthened, as only oil top level is measured).

The oil pump pickup was mounted to a bracket in the relocated sump and connected to the pump via high pressure oil hose (this hose is of the rigid housing design, so that it will not collapse).

Thoms had purchased the engine in excellent condition from a wrecked '65 Mustang but decided the stock three-speed transmission just wouldn't do the chore. A call to Shelby-American turned up a late-model four-speed transmission that would bolt right to the engine without modification.

Andy Herbert lowered the new engine/transmission combo into the

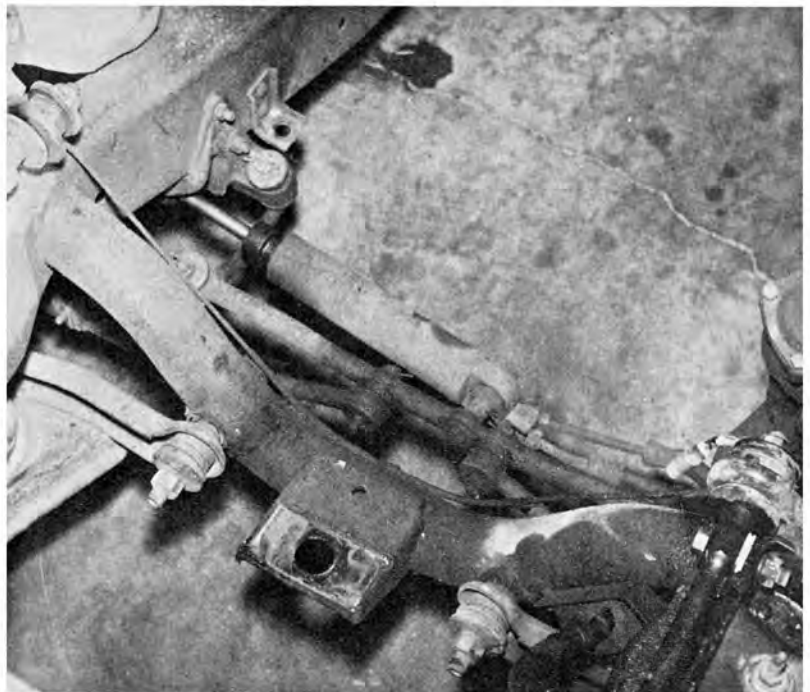
chassis, slid it to the rear until the transmission rear mount aligned with the stock frame trans mount and stood back to take stock of the situation. There were only two areas where some small interference would be possible — between the left exhaust header and the steering, and between the stock oil filter and the front crossmember. Both problems were easily solved. For header clearance, the engine was offset to the right a half-inch. For oil filter clearance, the engine was moved less than a quarter-inch to the rear. Finally, the engine was raised until the carburetor was level, which resulted in more clearance between the filter and crossmember. (This is side clearance, and has no effect on filter replacement.)

With the engine in position, it was found that the transmission mount would actually be one and a half inches forward of the stock frame mount (the four-speed selected happened to have the short-mount tailshaft housing; otherwise the mounts would have mated exactly). To compensate for this deviation, quarter-inch plate was welded and braced off the front of the stock transmission frame mount.

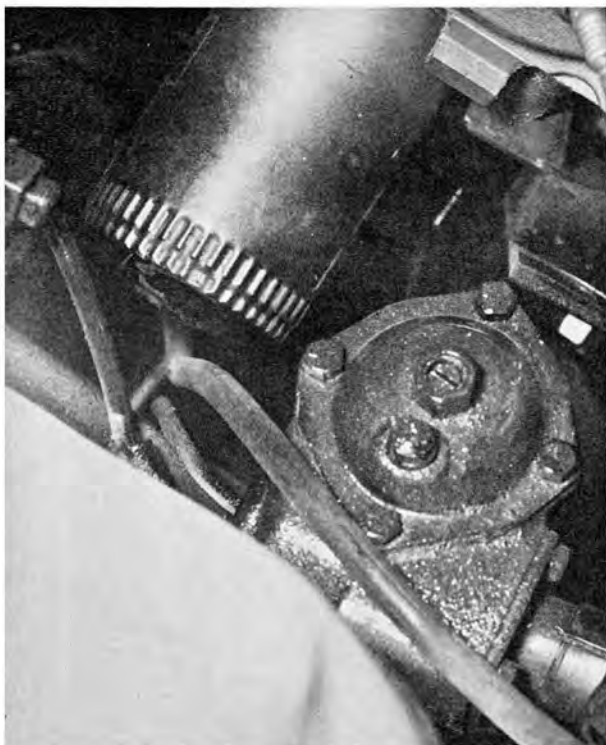
As with all such swaps, Herbert prefers to use stock engine mounts wherever possible. Andy did some figuring and decided to use one and a half to two and a half-inch, .125 wall rectangular tubing as the basic engine



Stock motor mounts were retained, new frame mount towers built from rectangular tubing.

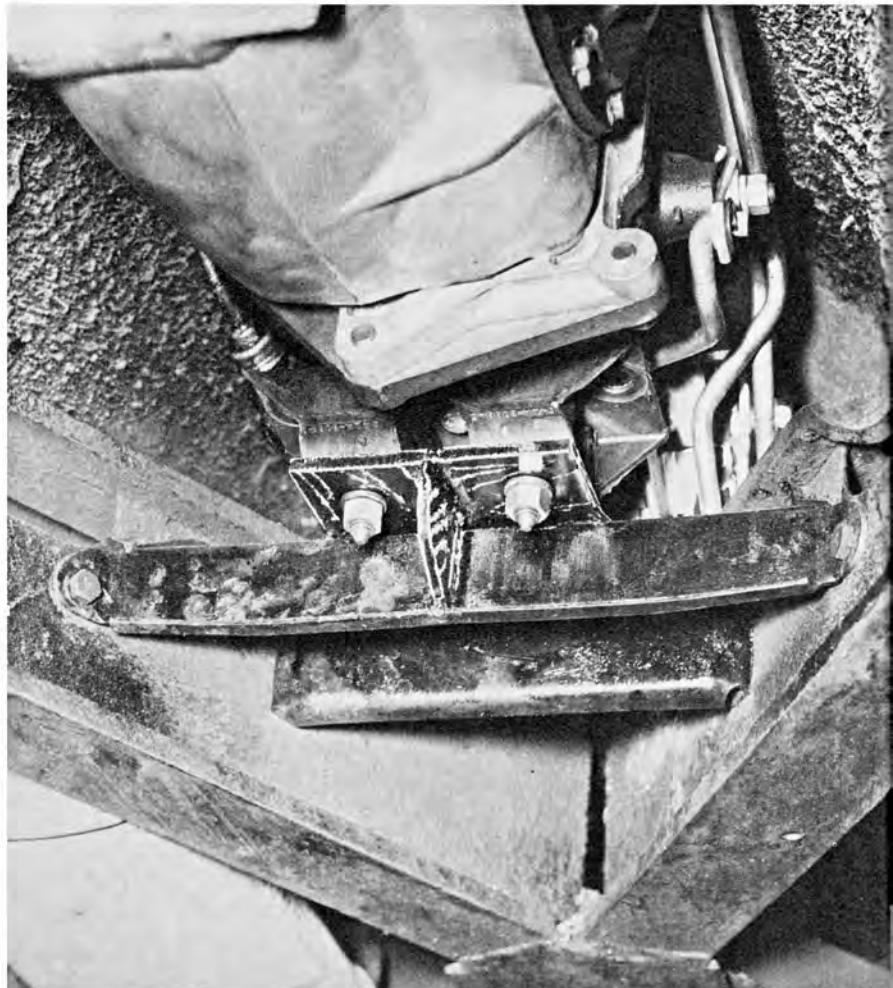


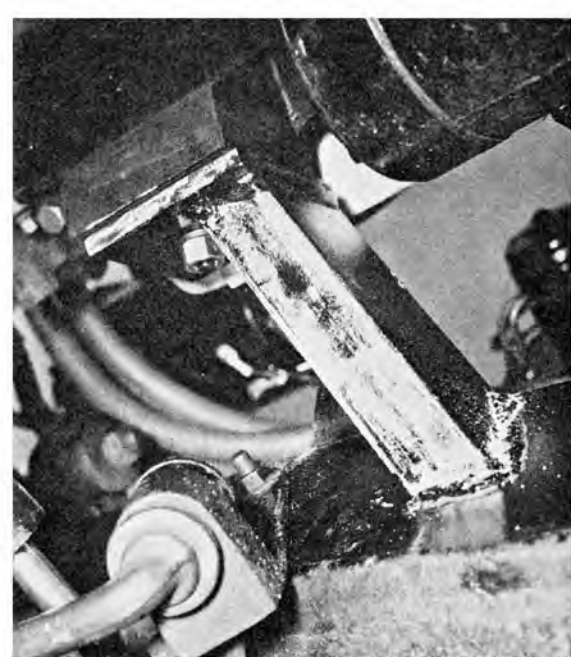
With 312 engine removed, cavity looked big enough to hold just about any engine — which it is.



Steering box was cleared by moving engine half-inch to right. Oil filter just clears steering.

Rear crossmember was untouched, except to add extension plate to forward edge for trans stock mount.





Angled plate on end of new motor mount tower has slotted hole so rubber mount can settle.



Clearance between reworked oil pan and steering links/crossmember is more than enough (about 2-1/2 inches).

frame mounts. These mounts are at a 45-degree angle to the frame, angling inward at the top to the engine mount pads, and are five inches long. Quarter-inch plate is welded to the ends of the tubing, with the actual mounting bolt hole slotted to alleviate any specific weight strain on the bolt as the engine settles on the rubber mount cushion during use.

Since the original transmission had been automatic, some kind of provision for the clutch was necessary. Young Herbert selected the complete clutch/brake pedal assembly from a 1956 half-ton pickup Ford, including master cylinders and a hydraulic slave cylinder for the clutch. This slave cylinder was mounted to a 3/8-inch bracket ahead of the clutch fork. The main hydraulic cylinders were bolted to the firewall after the latter had been reworked slightly to accept the additional cylinder. A small clearance problem cropped up at this time because the original battery was too long and hit the front of the added hydraulic cylinder. Installation of a shorter Buick Special battery cured that.

The driveshaft was sent out to C-T Automotive to be lengthened (yes, it was too short) and balanced. While this was being taken care of, a Hurst shifter was bolted to the transmission.

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Eaton seven-blade temp-a-trol fan was installed. It fits well behind stock radiator location.



Don Herbert (left) and son, Andy, put final touch on the engine swap.

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COBRA 289 T-BIRD

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Another small clearance problem. The back-up light switch just barely touched the lower lip of the frame X-member (just below and to the rear of the shifter), so a small portion of the lip was torched away. That concluded the modifications necessary below the car.

Inside the cockpit, a hole was cut in the transmission floor hump for maximum clearance around the new shifter, then a cover plate formed from 16-gauge sheet steel. Nothing else was needed.

The 'Bird was equipped with a power steering unit, so Andy hooked up a 1963 Falcon (all the mounts bolt right on) power steering pump to the left side of the engine. Because an air conditioner will be added later, and the A/C pump must mount directly above this power steering pump, the steering pump reservoir was remotely mounted to the nearby splash pan. On the other side of the engine, a '63 Falcon generator and bracket were installed with no clearance trouble.

Western Radiator Company installed a heavy-duty core between the original radiator tanks (again, because of the air conditioner) and modified the stock hose outlets. The bottom outlet was moved from the left to right side and reduced from two inches to one and three-quarter-inch. The top outlet was changed from one and three-quarters to one and one-half-inch. A seven-blade Eaton Tempatrol fan was added to insure maximum cooling with minimum horsepower absorption. If cooling (or safety) becomes a problem at a later date, a special shroud will be built between the fan and the radiator.

A transistor ignition was installed, followed by a 390 hp Ford Holly four-port carburetor in place of the stock 289 four-barrel. This last addition has proven very satisfactory in nearly all Ford applications, giving the engine a healthy boost in power.

The original throttle lever at the firewall pointed straight forward and must be cut and rewelded to point upward. Connection to the carburetor is then merely a matter of a short adjustable rod.

Magic Muffler Service was given the detail of making the exhaust hook-up between the stock muffler and the new engine headers. The head pipes were cut off just above their first bend (and only bend) and a piece of tubing bent for the connection.

The engine was primed lightly and fired at the first flick of the key, running smoothly as you could please. A test hop showed engine response superior to the original combination, with none of the little idiosyncrasies likely to develop in a swap. The little 289 was an absolute gentleman.

A note of warning to all you Mustang owners. Don't tangle with white '56 T-Birds with black tops. One of them just might be Watson Thoms!