

INSIDE THE

Chev-Healey

Revitalizing the Performance of a Neat Sports Car Using GM's Small V-8 Bomb

By Douglas Woods

Photos by Skip Overholtzer

SHOW ANY TWO SWAPPERS an engine conversion done by a third and you'll hear of at least four other ways it could have been done. And show any rodder two different swaps into the same basic chassis and he'll start figuring out how to combine the features he likes best for the conversion he's planned for the near-future—when his wallet looks a little greener. It was that possibility that prompted us to follow-up the all-American Healey swap outlined on the preceding pages with the mainly-GM conversion shown here.

When a New York physician decided his '54 Healey was too nice a car to retire, yet was too underpowered to move with the authority a sports car should command, he realized the only practical solution was a swap. Thus began the long process of careful evaluation of each of the many late-model V-8's that might be installed to replace the tired, long-stroke Ambassador overhead-valve six. He discovered, as many swappers had learned the "hard way," that many a swap that looked ideal on paper turned into a monster in metal. He later discovered that even the most careful planning cannot guarantee complete satisfaction—many "minor" difficulties can plague the owner long after the car has been driven home from the swap shop.

Although several big-inch V-8's have been installed in the Healey during the past several years, all were not satisfactory and few warranted duplication. Some threw too much weight on the front end and adversely effected steering and handling—and therefore safety; some developed chronic overheating problems; some had 6 and 12-volt combinations that were electricians' nightmares; and some proved extremely touchy (even though strictly-stock engines) in city driving and dependability suffered.

One-by-one, the various engine possibilities were examined and eliminated. The Cad and Olds, the ohv Fomocos, and the recent Chrysler B engines were considered but cost, weight, external dimensions, and adapting problems were big disadvantages. The question of the sturdiness of the stock gearbox and the 4.1 rear end, when fed by a high-torque V-8, and the suitability of the available ratios were considered serious obstacles. For a time, the AM V-8 seemed a good logical choice; weight was not excessive, power output was good, only minor chassis surgery and minor relocation of the steering box were required for "fit," and it coupled to the stock Nash transmission without difficulty. Cost—well over \$1000, with accessories, at retail—and that question of the "unknown quantity" in gear-load capacity, sadly eliminated it.

This narrowed the choice to Buick, Pontiac, and Chevy—none known as underpowered, and all about the lightest and

most compact engines on the market. Both the Buick and Pontiac carry their starters on the left-side of the block and thus were eliminated to avoid the need of moving the steering. The Chevy's advantages, meanwhile, were multiple: It was the most compact of the new short-stroke engines, was much lighter than the stock Ambassador six, was reasonably-priced new, and had been proved capable of almost fantastic performance by drag strip and stock car racing experience. In addition the Chevy engine was easily fitted with six-volt accessories (the Tornado six-volt starter and a '54 Chevy six-volt generator were used) which avoided the effort and expense of 12-volting the stock heater fan motor, the radio, the windshield wiper motor, and the instruments and lights.

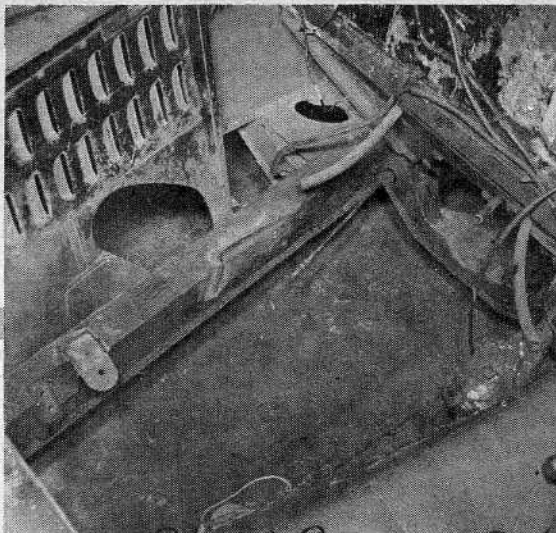
Nevertheless, selection of the 283-cubic inch Corvette V-8 presented a number of drawbacks. The ratios in the Nash box (with overdrive) would have limited the road speed capabilities of the Chevy and this meant some other gearbox was needed. Although the Corvette gearboxes, both the three- and four-speed units, carried the best ratios* the difficulties in converting the Hotchkiss-drive Chevy box to torque tube operation seemed too numerous and costly. The Buick three-speed box was finally elected for its excellent ratios and beefier (than either the Chev or Nash) gears, and for its relatively-easy mating to the Healey torque tube. Perfect alignment of the components was vital, of course.

The top bolt holes in the Buick case had to be elongated slightly to line-up for correct attachment to the Chevy bell-housing and new bolt holes had to be drilled and tapped in the housing to accept the lower attaching bolts.

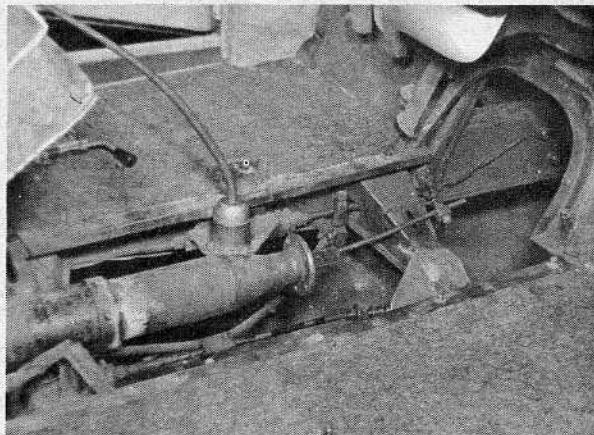
One mistake was made in the original installation, and the difficulties it created had to be rectified several months after the swap was "completed." The Buick box originally used in the Healey swap was a '48 side-shift unit which required a complex linkage to operate from the floor-lever. Play, which quickly developed in the linkage, produced uncertain shifting action that was far from pleasant. After much reworking of this linkage, without satisfactory results, the owner decided to replace the box with a '37 Buick top-shifter. The '48 gears and tail-shaft housing fitted the '37 case, but the larger diameter '37 input shaft had to be used. A special throw-out bearing sleeve was fabricated and fitted to the front bearing retainer. A stock Chevy clutch currently squeezes a 10-inch International (Continued on Page 49)

*Ratios are as follows: N-H box—2.57 (first), 1.55 (second); Three-speed Chev—2.2 (first) and 1.31 (second); Four-speed Chev—2.2 (first), 1.68 (second), and 1.3 (third); Buick—2.39 (first) and 1.53 (second).

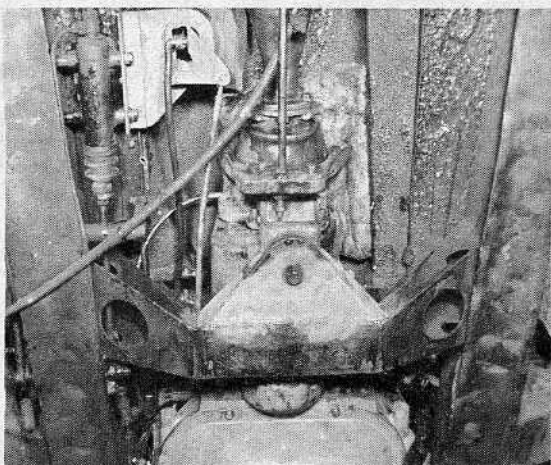
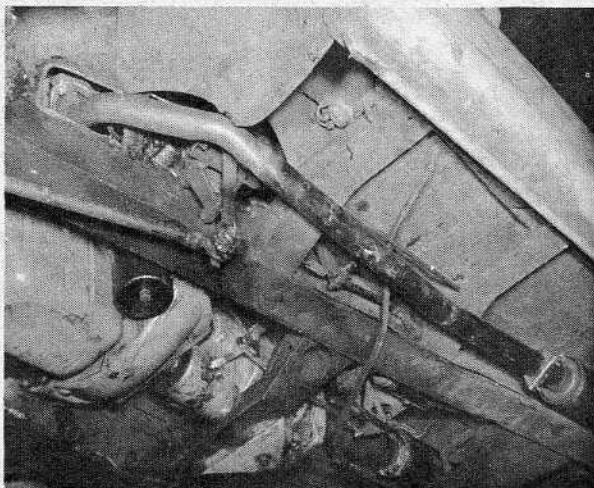
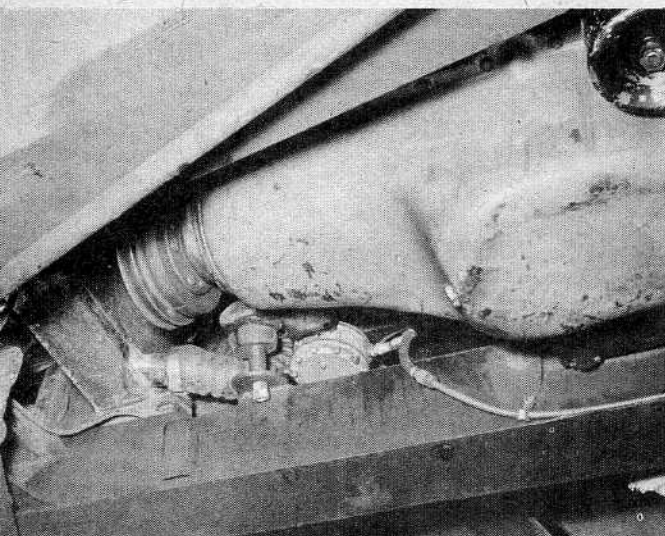
The WORLD of SWAP



Above: Notch in right frame gives clearance for Chevy starter. Mounts are $\frac{1}{4}$ -inch steel; welded to top of frame. Below: Rubber cushions are located well-above frame mounts to "level" engine and to give sufficient clearance for fuel pumper.



Use of short Buick gearbox required lengthening Healey torque tube and driveshaft by $10\frac{1}{4}$ inches using part of '53 Buick shaft and tube. Shift set-up was fabricated from sheet stock and Ford parts; bolted to master cylinder. Below: Two-inch tubing carries exhaust from stock dual manifolds to '57 Chevy glass-packs.



Above: Rear transmission mount, fabricated from 3/10-inch steel, employs both Ford and Chrysler front mounts. Sloppy shift action eventually caused owner to switch to '37 Buick top-shift box (right) eliminating need for extra linkage. The steady rod, set between box and cross-member, was beefed-up.



Inside the Chev-Healey

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Harvester truck disc for smooth delivery of power.

Coupling the Buick box to the Healey rear was a matter of grafting a front section from a '53 Buick tube to the Healey tube and mating a '53 Buick driveshaft to the Healey unit. Construction of a new mount for the transmission completed the initial work at the rear. Later it was discovered that the steady rod, mounted between the transmission and a chassis crossmember, did not have enough beef to handle the correct fore-aft positioning of the engine. The occasional clutch chatter permitted by the light steady rod was minimized by brazing a sturdy tube over the rod for greater rigidity.

Speed Mechanics

The Corvette engine purchased for the conversion was a '58 version with full-flow oil filter, hydraulic valve lifters, and a dual-point, centrifugal-advance distributor—but minus carbs, generator, and starter. An Edelbrock three-pot manifold was buttoned into place and three late-model Stromberg duals (with 1-3/16-inch venturis) were installed and set up for progressive action via an Elco linkage kit.

A notch was cut in the right frame member to clear the starter, new front mounts were welded to the top of the frame, and the Chev was eased into place with nary a squeak to indicate a too-close clearance. Everything, includ-

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(Continued from Preceding Page)
ing the oil filter and the squat fuel pump, cleared the frame very neatly. Waste gases pump through stock manifolds into straight-through mufflers on each side of the frame and exit just forward of the rear tires.

Up top, some cutting and bending of the left-side inner fender panel was required to clear the generator, and the radiator was moved about four inches rearward to get it closer to the fan. The radiator outlet was moved to the right side and one of the inlets was plugged. Although no overheating problems have developed, the present set-up is not the most efficient and later work may relocate the core still closer to the fan or a proper shroud may be installed. A new accelerator pedal was fitted and hooked

into the Eelco linkage and the battery was relocated.

In all fiction stories, the owner of the newly-completed swap turns the key, presses the starter button, and the engine booms to life. Silently he slips into first cog, pops the clutch, and he's off in a cloud of dust leaving two rubber marks on the driveway of the swap shop. The facts of swap life are not always that pleasant. Sometimes the problem of tracking down annoying rattles, loosening binding linkages, smoothing out engine idle, and the dozens of other minor adjustments, tightening of connectors and re-aligning of components that must be made, can produce a series of headaches that seem endless.

But perfection is not achieved by wishing for it. It's got to be patiently and persistently pursued and that process is continuing in the Chev-Healey, even as you read this. In a sense, an engine swap, particularly one that is a "first," is much like a new design from Detroit. Despite the fantastic amount of testing before production, many of the new designs develop a number of "bugs" when first delivered to the public—usually they are corrected if the service department and the owner stick with it. The Chev-Healey is not yet completely free of "bugs," but it's a better performer than it ever was when powered by the stock six and each adjustment or new modification brings it a step closer to that elusive stage—perfection. ♦♦