

One rat motor plus one Chevelle equals a machine that's just too much. After all, it's . . .

simple addition



by John Dianna

Two years following the mysterious disappearance of Chevy's "mystery engine" in '63 there appeared an all-new, big-block, 396-cubic-inch engine. This production option soon took hold in the high-performance market, and since has grown to a 427 and, more recently, a 454-inch version. Immediately after their release, the 396 engines were used for many swaps, and of course the ever-popular '55 and '57 Chevys accepted the weight of many of these transplants. Both the 396 and 427 found the compartments comfortable in these early "stovebolts."

Well, we suddenly find the '64-'69 Chevelles overshadowing these early swaps. In truth, the earlier-vintage Chevelles—equipped with a tired old six—can be obtained rather inexpensively, usually cheaper than a sano '57 two-door. Couple this with a new or used rat motor, and—poof!—it's 1970 and you find yourself in the midst of many super-car owners. Interested? We were, and so was one of Chicago's largest high-performance automobile dealers. Al Seelig of Nickey Chevrolet spearheaded this swap, just to list all necessary components and give us a critique on the overall handling characteristics of the combination.

Okay, we're gettin' to it, but first we'll give you a quick rundown on a few of the Chevelle's dimensional specifications. The overall length of the '64 model is 193.9 inches, and the '65-'69s are 197 inches long. Body width for the '64s is 74 inches, the '65-'67s are 75 inches in width, and the '68 and '69s were widened to 76 inches. Wheelbase is the same (115 inches) up to '68, when it was shortened to 112 inches on the two-door coupes and convertibles and 116 inches on the four-door sedans and wagons. Curb weight for the '64s and '65s is 3147 pounds. This was increased to 3251 pounds in '66 and '67 model years, and increased again in '68 to 3350 pounds.

In order to keep the costs down, the boys at Nickey chose a '64 Chevelle (model 300) two-door sedan. This car came equipped with a six-cylinder engine and three-speed transmission. Total price . . . \$400.

The engine and transmission were removed, and the entire engine compartment and undercarriage were steam-cleaned and painted. However, none of the front-end work, shock replacing or chassis modifications were attempted

just yet. Al felt this step should be left until the new engine was installed, and then any necessary changes could be made, including the final front-end alignment.

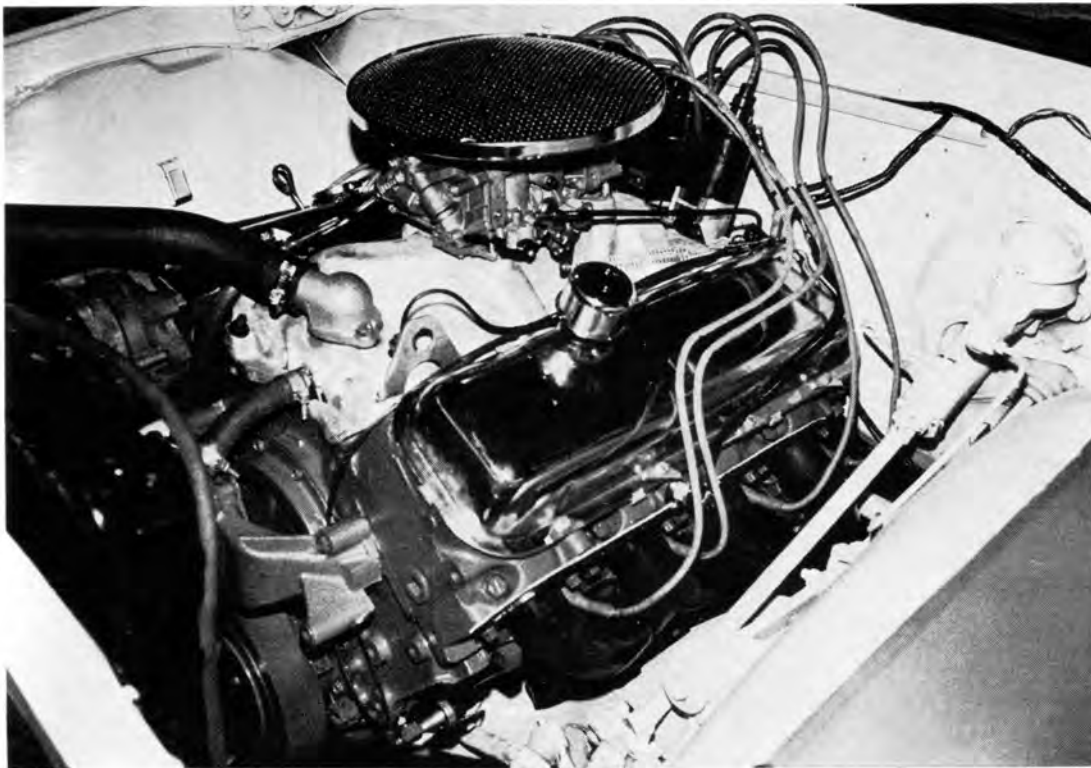
The engine/trans assembly was installed, using parts No. 3960768 (two each) front crossmember engine brackets, No. 3840755 left engine mount, No. 3840756 right engine mount and No. 3792133 rear transmission mount. Actually, the engine assembly chosen for this swap was the 427-cubic-inch, 425-hp item that can be purchased under No. 3833143; but if funds are short, try a little horse-tradin' with your local "boneyard." All clutch linkage can be purchased at your local Chevy parts department. Of course, if the swap is from an automatic to a stick, the clutch pedal and other small items will also be needed. Whatever the case, the clutch linkage creates no major problems, just a little labor . . . very little.

Thinking in terms of performance, 2-inch-diameter equal-length four-tube headers were used in preference to the stock cast iron manifolds. Due to the breathing restrictions normally found in a standard exhaust system, it's recommended that an adequate street system using high-capacity mufflers and at least 2½-inch-diameter tailpipes be designed.

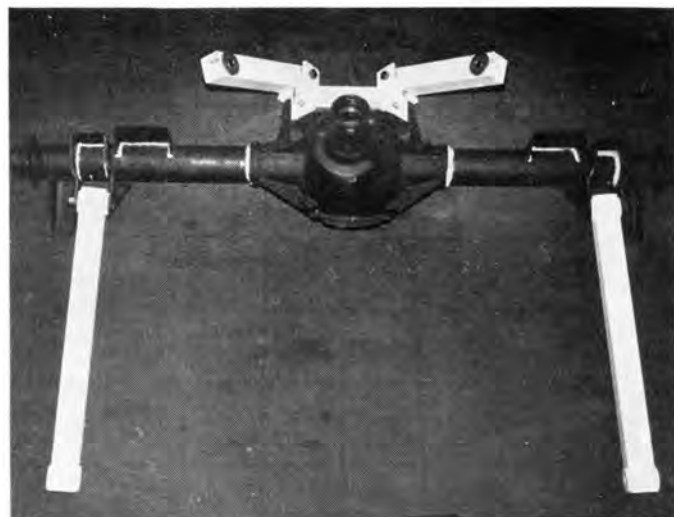
The six-cylinder radiator was replaced with the larger eight-cylinder unit (parts No. 3001411). The V8 radiator is 5 inches wider and ¼-inch thicker, but the core support opening will accommodate the full frontal area of the larger core. The fan shroud was also removed and can be discarded, since this setup (eight-cylinder radiator and 15-pound cap) was found to cool the big engine in the 170-180-degree range. In addition, a No. 3947824 water-pump fan pulley, No. AC6183 fiberglass fan (18⅝-inch diameter), No. 3927794 fan spacer, No. 3955292 crankshaft pulley and No. 3905826 fan belt provided satisfactory alignment of the fan belt on all drive and driven pulleys. This group of parts allows the proper fan-to-radiator clearance (1¼-inch) and fan-to-alternator clearance (1⅛-inch).

The generator/alternator system from the original six-cylinder engine can be used on the big-blocks. The only modifications needed were to relocate the alternator to the right side (passenger side) of the 427 engine and lengthen

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Replacing the original 6-cylinder engine, the new 427 fits quite comfortably in the '64 Chevelle engine compartment. Easy access to most engine components (including the spark plugs) is just one of the plus features of this swap. Any late-model Chevy V8 can be installed in place of the 427 engine, and all are bolt-in operations. Certain rear suspension modifications were needed to contain the added torque of the 427. First off, the axle housing was beefed by welding areas where extreme loading is evident (black marked areas). All original upper and lower control arms were replaced with control arm bars manufactured by Mann Made Enterprises. These bars eliminate the eight rubber bushings which allow the differential tube to rotate. Airlift bags were installed for stiffness, and a set of Delco shocks complete the setup.



The above photo of a '65 Chevelle rear axle housing clearly shows all areas that require the additional welding. Notice the axle tube is welded to the banjo section; spring perches are reinforced, as are the lower control arm attaching brackets. The complete Mann traction bar assembly is also shown in its correct location. All bars, including the short upper arms, feature steel bushings in place of rubber and are relatively easy to install. The wider and thicker V8 radiator (parts No. 3001411) replaces the original 6-cylinder unit without alterations. To obtain a satisfactory fan belt alignment and proper fan-to-radiator clearance, use the recommended components listed in the parts list. For Nickey's swap, the original alternator (6-cylinder) worked fine. This was a money-saver.

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CLUTCH COMPONENTS

YEAR	MAKE	QUANTITY	DESCRIPTION	PARTS NO.	PRICE LIST
1964-'66	Chevelle	1	Fork pushrod	3849703	\$1.00 ea.
1967	Chevelle	1	Fork push adj. rod	3840843	.70 ea.
1964-'67	Chevelle	1	Fork push adj nut	124829	.10 ea.
1964-'69	Chevelle	1	Fork push adj. retainer clip	3749084	.15 ea.
1964-'69	Chevelle	1	Clutch fork	3892632	4.30 ea.
1964-'66	Chevelle	1	Clutch pedal	3841214	3.00 ea.
1964-'68	Chevelle	1	Clutch pedal shaft retainer	3828428	.10 ea.
1964-'67	Chevelle	1	Clutch pushrod spring	9776993	.25 ea.
1964-'67	Chevelle	1	Clutch pushrod return spring	3849704	.25 ea.
1964-'69	Chevelle	1	Stud, clutch shaft to frame	3898610	.50 ea.
1964-'69	Chevelle	1	Stud, clutch shaft to engine	3866568	.70 ea.
1964-'69	Chevelle	2	Seat, stud to cross shaft	3743349	.10 ea.
1964-'69	Chevelle	1	Washer, stud seat retainer	3750696	.05 ea.
1964	Chevelle	1	Seal, stud to cross shaft	3743355	.05 ea.
1964-'67	Chevelle	1	Bracket, to frame	3840841	.50 ea.
1964-'67	Chevelle	1	Clutch cross shaft	3840836	3.85 ea.
1964-'67	Chevelle	1	Clutch pedal pushrod	9774625	2.00 ea.

COMPONENTS PARTS LIST

QUANTITY	DESCRIPTION	PARTS NO.
1	Engine assembly, 427-cu.-in., 425-hp	3833143
1	Oil pan	3958637
2	Engine brackets on front crossmember	3960768
1	Engine mount (L)	3840755
1	Engine mount (R)	3840756
2	Bolts and nuts, 3/4 x 3 1/2 in.	
6	Bolts and nuts, 3/4 x 3/4 in.	
6	Bolts and nuts, 3/4 x 1 in.	
1	Lakewood clutch housing	1503
1	Clutch pressure assy., 11 in.	3884598*
1	Clutch disc, 11 in.	3908960*
1	Clutch throwout bearing	907963*
1	Clutch fork	3892632*
1	Flywheel, 11 in.	3889694*
*Included in engine assembly		
1	Clutch shaft ball stud	3866568
1	Four-speed (2.20:1 1st gear) transmission	3964506
1	Transmission mount	3792133
2	Bolts and nuts, 3/4 x 1 in.	
2	Bolts and nuts, 3/4 x 1 1/2 in.	
1	Water pump fan pulley	3947824**
1	Fiberglass fan, 5-blade, 18 3/4 in.	AC6183**
1	Fan spacer	3927794**
1	Crankshaft pulley	3955292**
1	Fan belt	3905826**
1	Starter motor	1108366**

**Use of this group of parts will provide satisfactory alignment of fan belt on all drive and driven pulleys and 1 1/4-inch fan-to-radiator and 1 1/4-inch fan-to-alternator clearance.

ENGINE SWAP DATA

Engine	Displacement	Horsepower	Weight	HP-to-Weight Ratio
Chevy V8	283	220	580	2.64:1
Chevy V8	327	350	610	1.74:1
Chevy V8	350	295	620	2.10:1
Chevy V8	396	325	680	2.09:1
Chevy V8	396 & 427	360	680	1.89:1

SWAY BAR PARTS LIST

YEAR	APPLICATION	DESCRIPTION	PARTS NO.	PRICE LIST
1964-'65-'66-'67		Stock front sway bar is 3.4 in.	397703	\$ 9.30
1965 (396) & 1969 8-cyl. except El Camino			394926	11.25
1965			3859143	6.25
1966-'67 (396)			397705	11.25
1968-'69		Except high-performance suspension	398499	11.25
1969		With high-performance suspension	402544	11.75

the electrical connections. To complete the wiring, cut off the terminals (connected to the alternator), leaving a few inches of wire extending from the clips. Add the necessary lengths of at least 16-gauge wire, and route the extended wires along the front radiator support. Attach the terminals to the lengthened wires. Be sure to solder all connections or use approved electrical quick-connects.

The '64 Chevelle's original driveshaft is interchangeable from the standard three-speed to the Muncie four-gear box. In fact, no change in the rear transmission support to frame member is required. A No. CS-4692M Hurst shifter and No. T-1 tunnel kit will quickly solve any shift linkage problems. Carb linkage or any odds-and-ends items that you may need to complete the swap can be purchased from Chevrolet.

In keeping with a total-performance package, the suspension must undergo certain modifications in order to contain the additional torque supplied by the big-block. Starting with the rear suspension, the upper and lower control arm assemblies are discarded, and the differential housing should be beefed by welding the coil spring perches, lower control arm attaching brackets and banjo section (see photos). The welding is necessary for additional strength to eliminate the possibility of bracket or tube twist in the banjo (center) section under hard acceleration. In place of the original control arms, Nickey selected control arm bars manufactured by Mann Made Enterprises. The main reason for removal of the original equipment suspension arms is because the eight rubber bushings in these arms (1 27/32-inch diameter) will allow the differential tube to rotate. This is an undesirable feature in any high-performance vehicle, as it will cause the rear wheels to leave the ground intermittently under severe acceleration, and while the differential tube is rotating, will cause the differential pinion shaft, universal joint and driveshaft to operate at too sharp an angle. This of course results in excessive vibration of the U-joints and severe driveshaft oscillation. Discarding the rubber bushings and using the Mann-type bars should eliminate any wheel-hop problems and the undesirable differential tube twist.

The original 7.35 x 14 rear tires (mounted on 5-inch rims) were replaced with a set of J70 x 14 tires and 7-inch rims (parts No. 3966936). With this tire/wheel combination, ground tread contact area is increased by over 40%. However, the installation does require trimming the flange at the wheel housing opening.

For the front, a high-performance sway bar is recommended (for cornering purposes). When replacing the sway bar, be sure to apply a coating of rubber lubricant to the rubber insulators mounted in the frame brackets, just forward of the front suspension. Another important but often misunderstood component (concerning ride and chassis control) is the shock absorber. With today's varying percentages of uplock/downlock and, most recently, shock absorbing kits (complete with all the necessary parts to change valving for various types of control), you would be wise to decide on the intended purpose of the car and buy the necessary shocks accordingly.

Raising the front suspension to carry the heavier engine can be accomplished by using parts No. 3859074 ('64-'68 Chevelle) front springs. Due to interference with the steering tie rods, the wide rims were not used for the front tires. The original 5-inch wheels and 7.35 x 14 tires were retained. Rounding out the complete suspension package, Nickey used 90/10 Cure-Ride front shocks, Delco heavy-duty rear shocks and a set of PC504 Air Lift bags in the rear coil springs.

Although Nickey selected a new 427-inch, 425-hp engine for this swap, it is not absolutely necessary to use this one in particular. A 396-incher will fit; so will the small-blocks in 265, 283, 327, 302, 350 and the new 400-cubic-inch versions. Most of these engines can be purchased used, and either up-graded or rebuilt. It's simply a matter of your own specifications and performance requirements. Look around you... suddenly it's 1955 — only with a kick.