

MOTOR LIFE  
DRIVES THE TOP  
**SUPER  
STOCK**

*Here's what it's like  
to hold the reins on the  
new 409-inch Chevy*

by Wayne Thomas

WHEN WE CLIMBED ABOARD the hottest stock drag racer in the country and took a firm seat for a quarter-mile spin, something sensational was bound to happen. We weren't disappointed. No one in his right mind would be while clocking a 13.9-second ET and a top speed of 103 mph as a passenger — this in a car dead stock according to the stringent rules of the NHRA. With the exception of a set of custom headers, strictly within the rules, there was nothing on this car that can't be purchased at your friendly Chevrolet dealer — without referring to a multi-item list of options of doubtful availability at fancy prices.

"Hottest" in this case refers not to type or model, but to the actual car, a 409-cubic-inch Chevy Impala coupe that shut out everything else in the Super Stock class at the recent Pomona WINTERNATIONALS. The 409 is Chevrolet's newest, hottest and biggest-ever engine, a bored and stroked successor to their highly successful 348-inch mill. Except for this new engine, the car was mechanically identical, with the Impala coupe we tested in the February MOTOR LIFE (*Hot Chevy*). Because that test

*Butyl tires leave streaks of wispy black tread as they bite in under maximum acceleration of the 409-inch Chevy engine.*

thoroughly explored the car's overall personality, we will concern ourselves with how and why this one is quicker.

As with any winning combination in sports, it took more than the price of an entry to beat the competition. It took, in fact, a unique three-way partnership to bring home the Stock Eliminator trophy. Chevy enthusiast and speed equipment builder Bill Thomas of Arcadia, Calif., bought the engine fresh from the factory — one of the very first on the West Coast. Don Nicholson, who operates a dyno tune shop at Service Chevrolet in Pasadena, had the drag driving experience and the urge to go racing. Finally, but by no means the least of it, Don Steves, a racing enthusiast and Chevrolet dealer in nearby La Habra, was fast-talked into furnishing the car, a

brand-new stripped Impala that originally contained a 348-inch engine. If Steves had any misgivings about putting together an untried mechanical combination (and he did), he shed them completely in the jubilation of winning.

The Wednesday night before Friday's races Nicholson installed the new engine. It had the same external dimensions as the 348 and bolted right into place. This left all day Thursday for tuning and break-in, finding bugs, rest and relaxation. It should be added that Don had spent a few days preparing the engine in anticipation of finding a car to house it. The result is in the record books. His best time (although he didn't run this fast while winning) was 109.48 mph in 13.19 seconds, a speed which rocked the spectators no more than if

a DC-3 had broken the sound barrier.

What happened to the engine? Here's what Don did — none of it is magic, just sound speed tuning. Although allowed a .060 overbore, he only honed the cylinders for clearance. Naturally there was a full balancing job and a careful valve grind. He made sure that main bearing clearances measured .003 with rods at .0025. The wrist pins were a bit snug so they got a minute .0009. Ignition wiring was changed, eliminating the resistor wire (who listens to a radio on the drag strip anyway?). The four-barrel carburetor came in for some attention. Don reworked the metering rods in the primary side to enrich the mixture at the top end; also the secondary jets were drilled .003. The advance curve was reduced in an amount

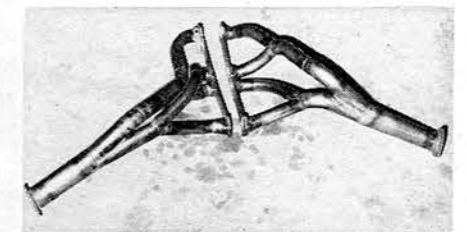
*continued on page 82*



*Open exhaust headers scatter dirt along the edge of Riverside drag strip as test driver Wayne Thoms revs the 409-cubic-inch Chevy engine, tuner Don Nicholson gives pointers.*

**PERFORMANCE**

<b>ACCELERATION (2 aboard)</b>			
0-30 mph	.....	2.5	secs.
0-45 mph	.....	3.8	
0-60 mph	.....	5.75	
Standing start 1/4-mile 13.9 secs. and 103 mph			
<b>Speeds in gears @ 5200 rpm</b>			
1st	.....	43 mph	3rd ..... 72
2nd	.....	57	4th ..... 95

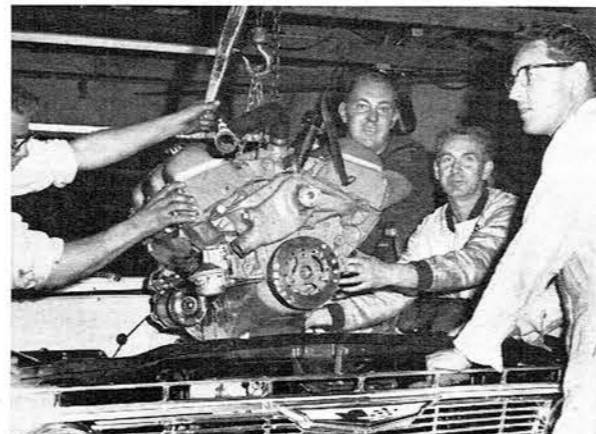


*Beautifully formed Jardine custom headers offer minimum restriction and smooth flow, are designed to clear engine compartment obstructions and exhaust outward just to rear of front wheels. Engine (below) fits perfectly on stock 1961 Impala mountings.*

*The men behind the project: master tuner and driver Don Nicholson (left), engine owner Bill Thomas (center), Chevrolet dealer Don Steves.*



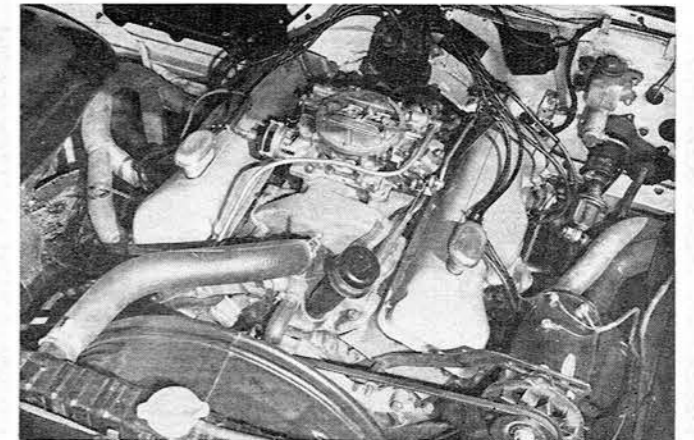
*In she goes — Don Nicholson supervises installation of Chevrolet's newest engine in brand-new 1961 Impala coupe.*



**SPECIFICATION COMPARISON**

	409 CU. INS.	348 CU. INS.
Horsepower	360 @ 5800 rpm	350 @ 6000 rpm
Torque	409 ft. lbs. @ 3600 rpm	364 ft. lbs. @ 3600 rpm
Bore & Stroke	4.3125 x 3.50 ins.	4.125 x 3.25 ins.
Lifters	Solid	Solid
Rocker ratio	1.75:1	1.75:1
Intake valve duration	345 degrees	316 degrees
Exhaust valve duration	294 degrees	290 degrees
Valve overlap	85 degrees	80 degrees
Valve lift	.4396 ins.	.4058 ins.
Outer valve springs (Intake & exhaust)		
Valves closed	130-138 lbs.	76-84 lbs.
Valves open	273-285 lbs.	155-165 lbs.
Carburetor (Carter 4-barrel)		
Primary barrel dia.	1.62 ins.	1.56 ins.
Secondary barrel dia.	1.68 ins.	1.68 ins.
Clutch diameter	10.5 ins.	10.5 ins.
Clutch plate pressure	2275 lbs.	1725-1875 lbs.

May, 1961



**ELECTRIC WELD - BRAZE & CUT**  
REPAIR MOST EVERYTHING MADE OF METAL



Home appliances, Auto parts, Farm-garden equipment, toys. Make and repair play-ground equipment, lawn chairs, tables, ornamental iron work, gates, wagons, etc. Solder, heat, bend and straighten with terrific heat from arc torch. Cut and weld up to 1/4" steel plate. A million uses for Home, auto, farm, inventors, factories, etc. Works from any home 110 volt plug-in. Complete with dark welders mask, arc torch, supply of welding and brazing rods. Solder, flux, and complete Welding Instruction Book. Attractive—portable—efficient 1 yr. guarantee. Wt. 4 lbs.

SEND ONLY \$3.00 cash, ck. mo. and pay postman \$9.95 plus C.O.D. pstg. on arrival or send \$12.95 for P. Paid Delivery. Ideal gift for mechanically minded home owners, relatives, friends. Order now for early delivery. Available only from:

**MIDWAY WELDER DEPT. DAG-5 Kearney, Neb.**

**GUNK**® removes grease like no detergent can!



Clean power mowers, engines, garage floors, kitchen walls and exhaust ducts, paint brushes, furnace filters, grills or ovens. GUNK chemically changes grease into soap; rinses completely away with water. In handy aerosol or pour-spout cans at auto supply, farm, or hardware stores everywhere!

GUNK CHICAGO CO., River Forest, Ill. serving the Midwest and Southwest  
RADIATOR SPECIALTY CO., Charlotte, N.C. serving the East, Southeast and Far West

**CHROME SCAVENGER PIPES** \*FIT ALL CARS  
LATEST CALIFORNIA CUSTOMIZING IDEA



(A) FLARED "venturi-type" ends SCAVENGE exhaust quickly. (B) Installed straight back (below axle), you eliminate usual binds, less back pressure, more performance. (C) Imparts good looks to your car, a fine-sounding throaty rumble to your exhaust. Specify 1 1/2" or 2" dia., 4 ft. long. Each—\$3.95. Shorty—98c. Catalog FREE with order otherwise send only 25c.

**Newhouse**  
AUTOMOTIVE INDUSTRIES  
SERVING ALL OVER THE COUNTRY

5605 E. Beverly Blvd., Dept. X, Los Angeles 22, Cal.

**STOP FAN BELT SQUEAK!**

**BELT-TITE** STOPS SLIP  
ADDS GRIP  
to all V-Belts  
at all Auto & Hardware Outlets

**U.S. POLYMER CORP. · ROCKAWAY · N. J.**

Works in seconds!

**Loosens Rusted Bolts**  
nuts, screws, "frozen" parts!

**LIQUID WRENCH**  
SUPER-PENETRANT

The super-penetrating rust solvent that quickly loosens rust and corrosion.

**AT ALL HARDWARE AND AUTO STORES**  
RADIATOR SPECIALTY COMPANY  
CHARLOTTE, N. C.



**NEXT MONTH**  
**Complete ROAD TESTS**

- Mercury Monterey
- Rambler American
- Studebaker Hawk
- Maserati 3500

**June MOTOR LIFE**  
**On Sale MAY 18**

## Top Super Stock

continued from page 63

that he would rather not mention, preferring to let any competition work it out for themselves. No porting or polishing was allowed.

On his arrival at the strip Don installed 8.50 x 14 Firestone Butylaire tires on the rear, pumped them to 50 psi, put 60 pounds in the front, and he was ready to go — after unplugging the headers. The headers, built by Jerry Jardine of Garden Grove, Calif., are worth 20 extra hp at the rear wheels on the 348-inch engine, probably a bit more on the bigger mill. Strangely enough, best power results have been obtained with header tubing 1/8-inch-diameter smaller than the 1 3/4-inch exhaust ports.

In the interests of better weight transfer to the rear wheels, Don performed some practically unnoticeable spring modifications, raising the front end by about 1 1/2 inches and lowering the rear approximately two inches. While suspension must remain stock, minor mods of this sort are permitted. A must for maximum acceleration is a limited-slip differential; the Impala came equipped with Positraction and a 4.56:1 ratio.

At this point all that remained was to bury the right foot in the go pedal and pop the clutch for a first gear take-off. Except that it wasn't quite that simple. Watching Don ease smoothly off the line with almost no wheelspin may not have looked as spectacular as the eager beavers whose rear tires disintegrated in clouds of smoke, but it's more practical. We proved it. With evenly matched stockers, the race is usually won off the starting line by the driver who has the best bite. Don's method is to rev the engine to 2500, then release the clutch, simultaneously feeding as much power as possible just short of wheelspin. This technique gave us a zero to 30 time of 2.5 seconds; employing a rubber-burning start

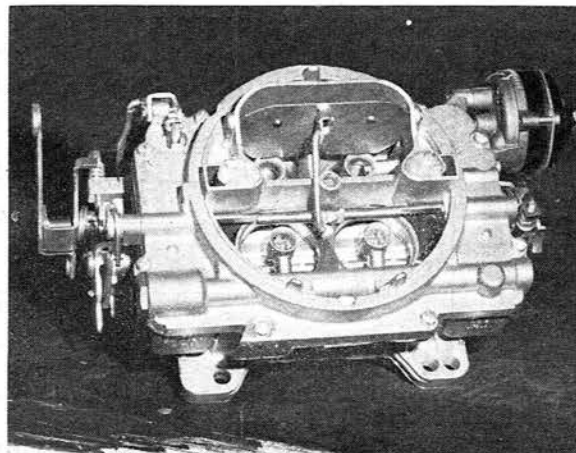
brought up 30 mph in 2.8 — more than enough extra to lose a race a quarter mile away. The variation between Don's officially-clocked Pomona time and our slower fifth wheel time at the Riverside Raceway requires an explanation. First, Riverside is at slightly higher altitude, enough to cut into performance; second, the extra weight of a passenger is a big factor.

It would seem that since the engine reaches its power peak at 5800 rpm, that would be the ideal shift point. But carefully watching the tach while Don drove, and later when we took the wheel ourselves, we proved that the most effective shift point is about 5200. In fourth gear at the end of the quarter the tach will read right on 6000 in a well driven solo run; about 56-5700 while hauling a passenger. This checks out with our observed 18.25 mph at 1000 rpm in fourth gear.

The most remarkable sensation in a remarkable car is acceleration through second gear. It takes less than two seconds to peak the engine in second and seems even shorter; you're no sooner in it than it's time to reach for third. This car does take advantage of the aluminum transmission case and Corvette ratios which may be ordered and are more suitable for all-out competition work.

From the comparison table between the 348 and 409-inch engines it can be seen that the 409 is more of almost everything: wilder valve timing, heavier valve springs, bigger carburetor and heavier clutch. Only the compression ratio remains unchanged at 11.25:1. But, as they sing about Kansas City, they've gone about as far as they can go.

There's no question that this is the most exciting stock domestic we've driven to date. What makes it especially intriguing is that the car is very evenly matched with the hottest versions of Ford and Pontiac for '61. Who'll be top dog at the drags may well be decided by driver skill and car preparation. •



Big four-barrel carb, with larger everything than model used with 348-inch engine, has enlarged jets, metering rod changes.