315 hp fuel-injected V8 plus four-speed transmission and good handling earn America's only sports car respect in the finest circles

by RAY BROCK

Metropolitan Los Angeles has more automobiles than 45 of our 50 states and as you might expect, rush hour traffic can be brutal. Streets often become so snarled that progress from point A to point B a few miles across town requires hundreds of starts and stops. For this reason, the majority of the automobiles in this area are equipped with automatic transmissions. Ours is no exception; we have not owned a clutch-and-stick type car since 1954. Call it laziness if you like, but an automatic transmission in L.A. sure helps in keeping one from becoming addicted to throttles.

We still have an occasional session in a stick-shift model when testing compacts or some of the hot super-stock sedans, but a little traffic tie-up makes us eager to get back in our own car and slip the lever into Drive range. There is one exception to this feeling however and that is when we get behind the wheel of one of DonA. Kent-Buenton's Corvettes. This agile two-seater is fun to drive and one of the best things about it is the close-ratio four-speed transmission.

Just a few hours behind the wheel of a new Corvette and we suddenly realize that we missed our calling in life because surely Don A. Fongie or Stirling Moss could not run up and down through the gears with the finesse we have developed. Yet we get carried away too far and end up in a spin-out, we will slow down right here and investigate this car that causes so much enthusiasm.

When we decided to test the '61 Corvette, we contacted Frank Milne, General Manager of Harry Mann Chevrolet in Los Angeles, and asked if he had a Corvette with the hottest engine and a four-speed transmission which we could borrow for a couple of weeks. Harry Mann is the world's largest Corvette dealer and as we suspected, had just what we wanted in stock. Frank agreed to take the car off the showroom floor and put it into service for demonstration purposes. The Corvette was turned over to us a few days later with less than 250 miles on the odometer. Mann's turn-up department had thoroughly checked injector nozzle flow, adjusted the valves and set the ignition timing according to factory specifications. The only thing needed was some driving.

Basic list price on our test car was $3,934 but the addition of the 315 hp fuel injected engine ($484.20), four-speed transmission ($188.30), Postraction differential ($483.00), radio ($157.75), heater ($202.25), whitewall tires ($21.55) and freight to Los Angeles brought the total suggested list price to $5,978.35. Included in the basic price of the car was a plastic hard top, seat belts and a 4.31 gear axle ratio. The price, although high for the average person, assumes a more reasonable perspective when you consider that this particular car will compete quality-wise and performance-wise with foreign production models that cost twice as much and are not necessarily as "driveable" on the street.

Corvette bodies are molded from fiberglass fibers, just as were the original models back in 1953. Those glass bodies have a very smooth finish and the fit around doors, deck lid, hood and various other parts is much better than on the average steel-bodied automobile. The interior of the '61 Corvette is very high in quality with vinyl-covered bucket seats, vinyl-covered padded instrument panel, and well-fitted floor carpet. The instruments are closely grouped directly in front of the driver and are all easy to read except the top of the speedometer dial for tall drivers. We found that we had to duck down and look through the wheel to check speeds between the 40 and 120 mph points on the dial. The tachometer is mechanically driven from the distributor and is both well-placed and very legible for quick checks of rpms. The oil pressure gauge is direct reading with water temperature and gas gauge electrical. An ammeter completes the instrument cluster in front of the driver; no warning lights are used except for a pair of red banners in the speedo dial to indicate when the parking brake is engaged and the headlights are on high beam.

On the console between the two bucket seats, the shift lever and ash tray are located. On a vertical extension of the console, heat and ventilation controls, radio and clock are located. A small glow compartment is situated between the bucket seat backs. Seat belts are standard equipment and use a metal-to-metal fastening device. Each of the bucket seats is individually adjustable for comfort.

After several driving sessions with the Corvette, we came up with some personal opinions on the cockpit design. The seats are very comfortable and provide non-tiring support for prolonged driving. For us, the steering wheel was at first too vertical but we got used to that in time. One thing which we never could get used to was the clearance between wheel and upper lips, especially when we had to take the right hand off the wheel to change gears while driving through twisting mountain sections. We'd get the left hand jammed between wheel and leg without the right hand to help out. For our elbow-swinging habits, the cockpit did not allow enough freedom. The arm rest on the driver's side is too low to be used unless the left hand is taken off the wheel. If it were any higher, though, it would be too much in the way of the elbow for fast cornering. The steering wheel is 17 inches in diameter but if we had a Corvette, we'd try to find one about 15 inches in diameter to permit more arm room.

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JULY, 1961

Photos by Eric Rickman
CORVETTE — HOTTEST THING ON THE ROAD continued

Although the individual bucket seats are comfortable, with the vinyl covering, they do cause considerable “sweating” around the backside on very warm days. Admitting that we are taller than average at 6 feet, 2 inches, we also had a problem of bumping our head every time we hit a fair sized bump due to very little head clearance. Although the inside of the top has foam rubber padding, an unexpected bump makes the driver pull his neck in like a turtle to keep from getting a hard rap on the head.

A rugged frame is concealed beneath the fiberglass body; fully boxed side frame rails are used plus an X-member of I-beam construction beneath the pas-

LEFT — The 315 hp, 283-inch V8 fits snugly with radio interference shielding around secondary ignition wiring making servicing of distributor and spark plugs a very tough operation.

BELOW — Biggest styling change for ’61 was at the rear and the results are quite pleasing especially when taking off in a cloud of rubber smoke.
A weight savings of 15 pounds was effected this year by replacing the cast iron transmission case with aluminum. The bell housing is also aluminum. Corvette frame is boxed with sturdy I-beam X-member to prevent torsional twist.

Corvette rear suspension uses leaf springs mounted outrigger fashion outside frame rails. A radius rod mounts from top of axle to frame on each side. To prevent excessive rebound of the rear axle, webbing limit straps are used.

For several years prior to 1960, Chevrolet offered optional heavy-duty suspension parts for the Corvette owner who wished to compete in racing events. Springs, shock absorbers and stabilizer bars of increased ratings gave the improved handling desired for competition. In recent years, however, the standard suspension system of the Corvette has been improved to such a degree that the heavy-duty components are no longer offered. As you might expect, a standard suspension capable of being used in sports car racing is not velvet-smooth for normal street use. The ride is slightly choppy although not to the extreme. The Corvette is certainly much more at home on city streets than the high priced Italian, German or English production models designed for dual-purpose use.

Corvette steering is precise and requires just the right amount of effort. The Saginaw gear has a ratio of 16:1 and linkage design slows this down to a ratio of 21:0:1 at the wheel. 3.7 turns of the wheel are needed to turn from lock-to-lock. The Corvette will turn around in a 37 foot circle, curb-to-curb. For competition use, an optional steering ratio of 16:3:1 at the wheel is available. The same gear and pitman arm are used but an extension is clamped to the center steering arm at the crossmember to quicken the ratio. This faster ratio requires 3½ turns, lock-to-lock, and also increases the amount of steering effort needed. The faster ratio is not suggested for average use and therefore is available only as part of a heavy-duty brake option.

Standard Corvette brakes are excellent and give rapid, straight-line stops time after time without fading. Drums are 11-inch cast iron, 2 inches wide at the front and 1.75 inches wide at the rear. Asbestos composition lining is bonded to the shoes and total lining area is 157 square inches.

Two brake options are available for the '61 Corvette. Both use sintered iron lining which is unaffected by excessive heat or water. Until this year, the sintered iron linings were not recommended for street use due to erratic behavior when cold. This problem has been conquered to such a degree that the sintered iron can now be used on the street. The option recommended for Corvette owners who abuse brakes badly but do not necessarily use the car in sports car events is R.P.O. (Regular Production Option) 688. Brake drums are the same as standard, cast iron and 11 inches in diameter, but are 2 inches wide both front and rear. Instead of asbestos composition lining, sintered iron segments are welded to the shoes, These segments are 2 inches wide and one inch long for primary shoes, .875 inches long for secondary shoes. Six segments are used on each primary shoe, 10 on each secondary shoe. Total lining area is 114.6 square inches.

R.P.O. 687 is the second heavy-duty brake option and includes the special adaptor to speed up the steering. Cast iron drums are used but these are of special design with cooling fins cast into their outer diameter to dissipate heat. A stamped steel fan between the drum and wheel pulls cool air through the vented wheel to aid cooling. Another extra with the 687 option is the use of vented backing plates with air scoops extending beneath the car to

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pick up cool air and direct it over the shoes. Sintered iron segments for the primary shoes are slightly longer than those used in the 686 option with a resultant increase in total lining area to 124 square inches. Brake effectiveness for this heavy-duty 687 option is 62% on the front wheels versus 55.5% for the standard and R.P.O. 686 brakes.

Although the 686 optional brakes can be ordered on any Corvette models, the 687 option is designed strictly for racing use and can be ordered only when the engine and transmission to be used are also of a similar nature. The engine must either be the 270 hp, dual four-barrel V8 with special camshaft or the 315 hp, fuel injected engine with special camshaft. The transmission carburetion (or injection), camshaft and cylinder heads account for differences in horsepower from 230 to 315. The standard engine is rated 230 horsepower at 4800 rpm and has 9.5:1 compression, hydraulic lifter camshaft and a single four-barrel carburetor. Maximum torque is 300 pounds/foot at 3000 rpm. This engine is designed for good low rpm torque and smooth, quiet operation. Although at the low end of Corvette's horsepower scale, when combined with Corvette's weight of less than 3100 pounds, performance is quite good.

The first optional engine in order of horsepower is rated 245 at 5000 rpm with 300 lbs/ft of torque at 3000 rpm. This engine is identical to the 230 hp standard engine except that dual four-barrel carburetors are used. The compression is 9.5:1 and the camshaft is hydraulic.

Another dual four-barrel equipped engine is offered as an option but this one uses a Duntov high performance camshaft with mechanical lifters. The horsepower rating is 270 at 6000 rpm and maximum torque is 285 at 4200 rpm. The compression ratio is still a modest 9.5:1 for this engine. Straight-through mufflers with less restriction are used with the 270 engine. Although all Corvettes have dual exhausts as standard equipment, those using hydraulic camshafts are fitted with quieter, reverse-flow mufflers that have more restriction.

Fuel injection by Rochester is used on the 275 horsepower (at 5200 rpm, 305 lbs/ft torque at 4400 rpm) engine is 295 lbs/ft at a broad rpm spread from 4700 to 5100 rpm. Pop-up pistons are used to give a compression ratio of 11:1; the special Duntov camshaft is used with mechanical lifters; special cylinder heads with larger ports and intake valves improve performance; heavy-duty aluminum inserts are used for both rod and main bearings; and a dual-point distributor with mechanical advance only is used.

The 315 cylinder heads are cast iron and use the same design that was originally planned for aluminum heads in 1960. The aluminum heads could not be produced in volume so were dropped but the re-contoured intake and exhaust ports and the larger valves were incorporated in this new cast iron head. The ports are not appreciably larger than those in the heads used on the other
Ray Brook points out the air cleaner for Rochester fuel injection unit which uses a paper element to filter air ducted from behind grille. All models use an aluminum radiator with expansion tank and temperature controlled fan.

There is much more space for luggage in the ’61 Corvette thanks to new tailend styling. Spare tire fits in a well beneath the floor and it plus tire tools are securely fastened in place to eliminate rattles. Deck lid fit is good.

engines but they have been shaped to flatter gradually in cross sectional area so that flow is not disturbed. The intake valves for the 315 are 1.940 inches in diameter versus 1.720 for the standard heads; exhausts are the same size for both heads, 1.500 inches.

The heavy-duty bearing inserts are Morraine 400 aluminum and are used to protect against the heavier bearing loads of the high performance 315 engine. These same bearings are also standard for the 270 hp engine with special cam. Air intake for the Rochester fuel injection system is ducted from behind the grille so that the coolest available air is used to ensure the heaviest intake charge. The distributor used for the 315 engine has dual breaker points and no vacuum advance mechanism. A maximum of 22° centrifugal advance is reached at 6000 rpm and combined with 18° initial timing, gives a total of 40° advance. A dual-breaker fully centrifugal distributor is also used for the 270 horsepower engine but for the dual carburetion, less initial advance is used, (12° BTC) and more in the distributor (28° at 3700 rpm).

While in the engine compartment, there are a few other items which are interesting. First of all, the aluminum radiator which was used in 1960 only for the 315 engine is now standard for all ’61 Corvettes. This radiator is only about half as heavy as a copper-core radiator. Also, a temperature-controlled viscous drive is used for the fan. The drive never exceeds 3200 rpm regardless of engine rpm or temperature. When radiator air temperatures are below 140°, the fan free-wheels to save power. The purpose of this fan is to make available more power at high rpm’s, speed engine warmup and give quieter operation.

A three-speed transmission is standard equipment for the Corvette and ratios have been changed for 1961. The new ratios are 2.47 in first, 1.53 in second and direct in third. Old ratios were 2.20, 1.32 and 1:1. The reason for the change in ratios is that a 3.36 axle ratio is standard for three-speed transmissions this year whereas a 3.70 ratio was standard last year. With the higher (lower numerically) axle ratio, lower ratios were needed in the transmission to provide the best starting and acceleration performance. The three-speed transmission is available with all ’61 Corvette engine options.

For those prospective customers who desire the sportiness of a Corvette but get a little shell-shocked from heavy traffic as we do occasionally, Chevrolet offers the Powerglide automatic transmission. The Powerglide has a two-speed planetary gear set and a torque converter. Gear ratios are 1.82:1 and 1:1 with a maximum stall ratio of 2.1:1 in the converter. This gives a maximum torque multiplication of 3.82:1 in low gear, plenty low enough for the roughest occasion. This automatic is optional only with the standard 230 hp and the dual-quad 245 hp engines. Positraction cannot be ordered with the Powerglide.

If we were to choose the one item that has made Corvette in sports car society, it would be the four-speed transmission. Synchronous meshing in all four gears, the transmission not only raised Corvette performance to the point where it could compete in bonafide sports car races but also made the car a real pleasure to drive. As we indicated at the start of this story, a short session running up and down through the gears of a Corvette four-speed gives anybody a new outlook on life.

This four-speed is made for Chevrolet by Borg-Warner. For 1961, the entire case is made of aluminum. Prior to ’61, only the tailshaft housing was aluminum so the lighter case represents a weight savings of almost 15 pounds. Incidentally, the aluminum bell housing introduced last year is still retained. Ratios for the four-speed are 2.20 in first, 1.66 in second, 1.31 in third and direct in fourth. Reverse is 2.26:1. The close ratios provide an ideal gear for any occasion and despite the relatively “high” 2.20 first, the Corvette will get off the mark with the best of them. Cockpit location of the four-speed shift lever is perfect, just where the right hand can drop on the lever from the wheel. A T-handle just under the shift knob provides a mechanical lockout to prevent accidental engagement of reverse. To use reverse, the lever must be lifted up, then the lever moved to the left and forward. Corvette’s four-speed can be ordered with any engine option.

Three and four-speed transmissions are driven by the same clutch. It is a Borg and Beck unit with 1620 pounds initial spring pressure and centrifugal assist. The disc diameter is 10 inches with an inner diameter of 6.5 inches. The clutch in our test car was smooth, positive, yet did not require excessive pedal pressure to operate. The most apt description we can use would be to say that it was perfect.

As we mentioned, standard axle ratio

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for the three-speed transmission is 3.86:1, 4.11 and 4.56 ratios with the optional Positraction limited-slip differential are available for this transmission. For the Powerglide automatic transmission, only the standard 3.55 ratio is factory offered, without Positraction. The standard factory ratio for Corvettes equipped with four-speed transmissions is 3.70:1 and this ratio as well as the 4.11 and 4.56 are available with Positraction.

We logged several hundred miles in a hurry on the new Corvette we borrowed and found it to be a terrific car on the open road and especially through the twisting, mountainous sections. The slightly choppy ride reassured us that the suspension system was designed to handle the worst of roads with maximum safety. Corvettes do not lean on corners, they remain flat right up to the point where they lose traction. Our test car had been equipped with Butyl rubber tires by the dealer in case we wanted to do some drag racing (we did) and we found that these Butyl tires gave too much front wheel traction on tight corners. With power applied to the rear wheels, the rear of the car would "get loose" but the front would "stick" too well and cause oversteer. Other Corvettes we have driven in recent years maintained a more equal balance between front and rear.

Since we had the Butyl tires that offered such good traction, we decided to try a few runs at a drag strip. The Corvette was not equipped with a belly-housing scatter shield as required at most strips so we made arrangements on a weekday to have our own private drag event on one of the L.A. area strips. Conversations we have had with clutch experts point out the fact that

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clutches "blow up" only when they have been abused repeatedly causing warpage and cracks, or when pressures have been dangerously increased, or when a shift is missed causing excessive rpm's. We were not worried about the fact that we were running minus shield since the clutch in our car had not been abused, it hadn't been modified and we don't throw the wild shifts so didn't plan to miss one.

Although the Corvette had been driven less than 1000 miles, it had been sharpened up by Mann's mechanics and readied for the strip. Everything was to factory specifications except the valve lash; intake valves were set at .008-inch instead of the reomended .012, exhausts were set at factory recommended .018-inch. The reason for closer intake adjustments was to increase effective intake timing slightly. Everything else was absolutely stock; no open exhausts, spare tire in place and the car had almost a half tank of fuel. Elapsed time clocks were not hooked up but top time traps were and we made three runs with a reading of 104.86 mph tops. Not bad for a beginner.

We have witnessed some of the 315 hp '61 Corvettes at the local strips turning top times around 110 mph with e.t.'s under 13 seconds. These cars are of course well-broken-in, have open exhaust systems and have been cared for by some of the sharpest boys in the drag business so the fact that we clocked 105 the first time out made us well satisfied.

Despite the fact that this car had the hottest engine available, we had no undesirable experiences even in the slowest traffic. The idle was a little ragged and fast (about 950 rpm) but with the high performance camshaft and closer than stock intake valve setting of .008-inch, this was to be expected. We noticed a slight "surge" at highway cruising speeds of 60-65 mph.

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but this, too, we are sure was the result of valve setting. Again we mention that this setting was for drag strip performance; the factory setting of .012 would undoubtedly have given the 315 cruising smoothness.

We did not have the opportunity to make a cross-country cruise of any length to check mileage but on one tank-full around the Los Angeles area with plenty of starts, stops and Fangio-type driving through the gears, we came up with an average of 11.5 miles per gallon. Considering traffic conditions, the engine design and the 4.11 axle ratio, this isn’t bad mileage at all.

We have had several experts tell us how to start a Corvette with fuel injection after the engine has been running and then shut off for a half hour or so, but we still occasionally have trouble. Some say “leave the throttle shut,” others say “crack it just a little,” and still others tell you to “give it half throttle.” We tried them all and finally made out best by flooring the throttle until the engine came to life. Cold starts were no trouble.

A Corvette is a welcome part of any family’s stable for reasons other than the fact that it’s fun to drive. It is just under six feet wide and less than 15 feet long so leaves a lot more room in the average cramped garage. Even with its smallness though, getting behind the wheel when there’s another car parked close by is a chore. You have to sort of bend down to get under the top, then sneak under the wheel and unless you can get the door fully opened, you’re in trouble. The best solution is to get the soft top Corvette, then leave the top down so that you can remain upright as you step in. This is a particularly good idea because unless the weather outside is nasty, driving a Corvette with the top down is just what the doctor ordered.

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