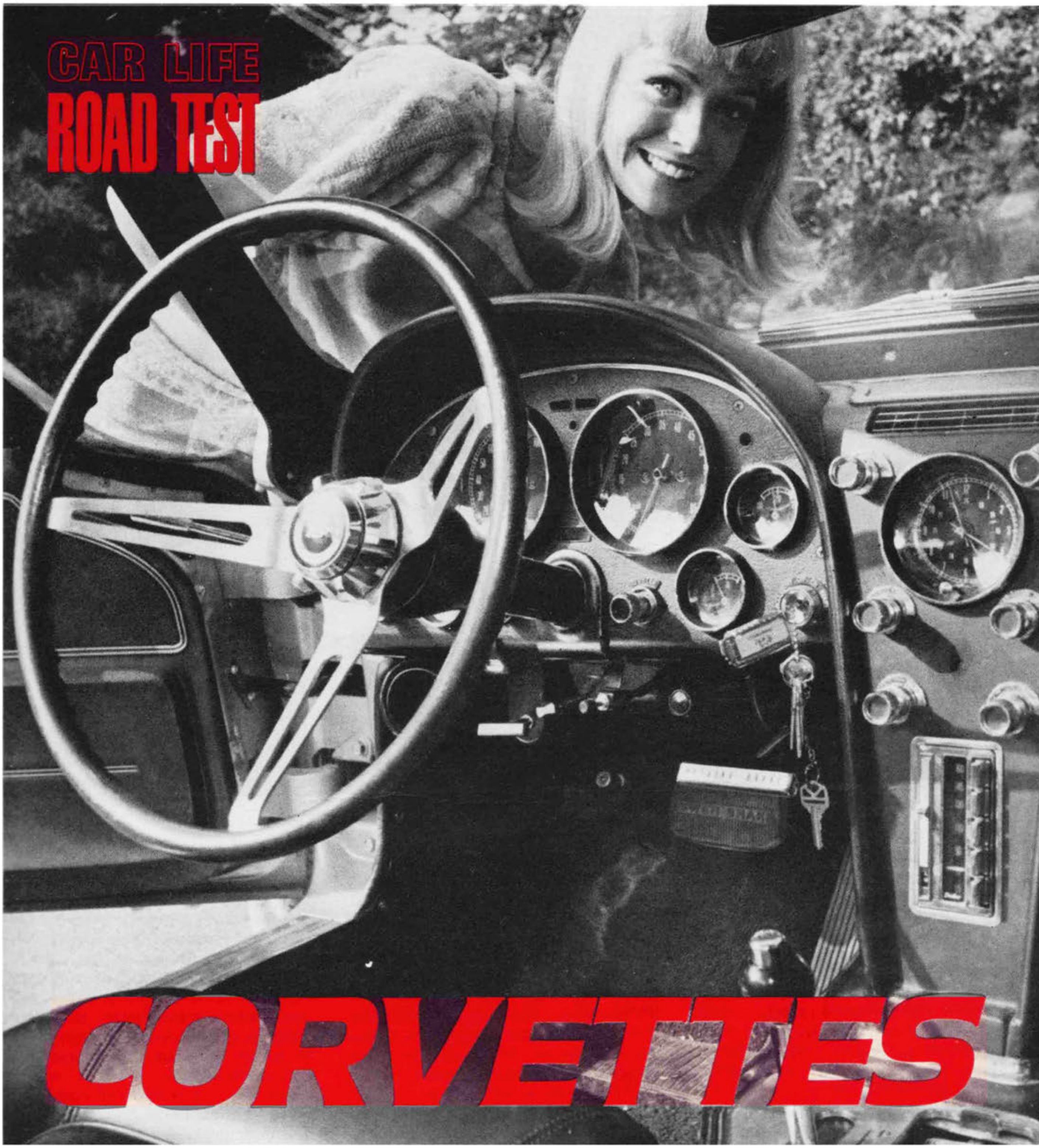
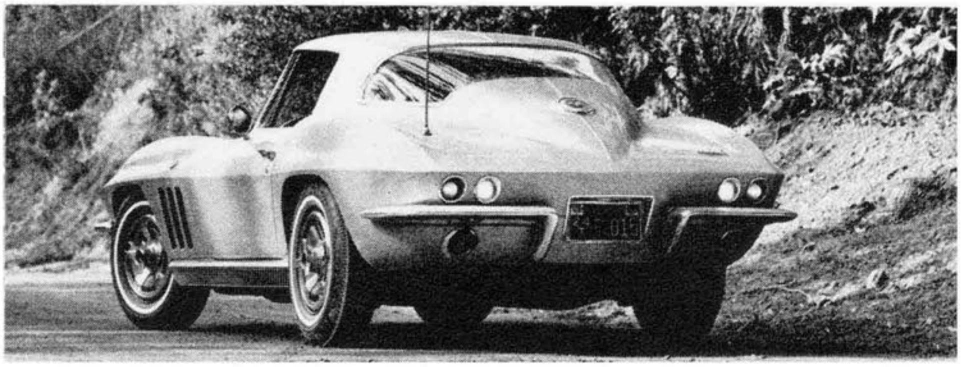


What'll You Have?
427 cu. in. and 4-Speed, or 327 cu. in. and Automatic

THE ONE road test *CAR LIFE* staffmen most look forward to each year is that of the Chevrolet Corvette—this amiable, responsive vehicle never fails to delight its drivers and tickle its testers. It serves to renew their spirits and stir their blood just as a truly sporting car should do. And, of the dozen or so Corvettes *CL* testers have driven in the past half-decade, not a one has been disappointing.

For a car, particularly a car that changes as little as the Corvette, to retain this sort of mystique is enigmatic. Once tried, should not all Corvettes induce similar responses, similar reactions? As they spring from a common mold, should they not all be the same? Is a Corvette, a Corvette, a Corvette?

In truth, no two Corvettes can be ▶

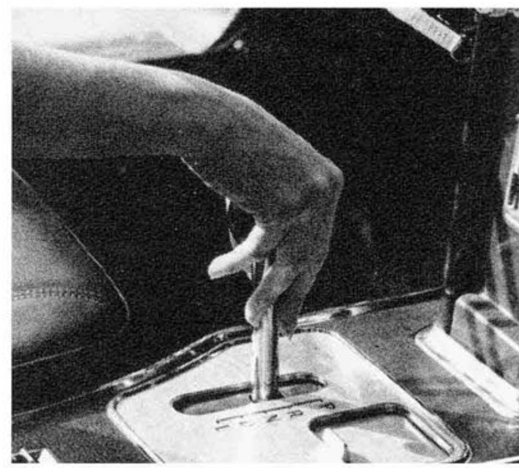


STING RAY fastback coupe has been a leader in a styling revolution.

CHAN BUSH PHOTOS

HUSTLECAR 427/425 Corvette eats up dragstrips in 14-sec. gulps.

AUTOMATIC'S shift lever is in console along with air conditioner, radio controls.



alike for only mere statistics and apparent lines resemble each other; each car tends to develop its own personality. Substitute an optional engine for a standard one and the car's character begins metamorphosis. Replace an automatic transmission with a close ratio 4-speed gearbox and the character takes on subtle but definite shading. Change crisply tailored white-sidewall tires for husky gold-striped blackwalls and personality begins to emerge; wrap the cockpit in a collapsible fabric top instead of a sleek, firm fastback cloak and the true Corvette stands pulsating, ready to obey its master's bidding.

In essence, those are the distinctions between *CAR LIFE*'s two test Corvettes. One is the sleek, torpedo-tailored towncar, the other a muscular, no-nonsense, do-it-right-now hustlecar. The difference in characters is accomplished by a wave of the option list and a flip of the computer's punchcard. The Corvette can be just what the doctor ordered, or it can be a psychotraumatic experience.

Naturally, the drive-line combination most affects the vehicle's personality. Where *CL*'s fastback Sting Ray Sports Coupe had the standard 327-cu. in./300-bhp and an automatic transmission, its Sting Ray Convertible had the top-option 427/425 with a 4-speed, close-ratio manual transmission. The coupe could slip along in silent, powerful surges where the 427 convertible tended to take things in great growling rushes.

The 427, along with 100 cu. in. and 125 bhp more, represents the very latest generation of engines for Chevrolet and the Corvette. The 327i harks back to the days (1955) of the 265-cu. in. Chevrolet V-8 although little but the basic proportions have remained the same. Light weight, great durability and relatively high output make the 327/300 a bargain in any Chevrolet, but particularly so in the Corvette. On test the 327 performed most adequately, making up in enthusiasm for what the 2-gear torque converter Powerglide lacked in versatility. With any transmission it would be a good performer.

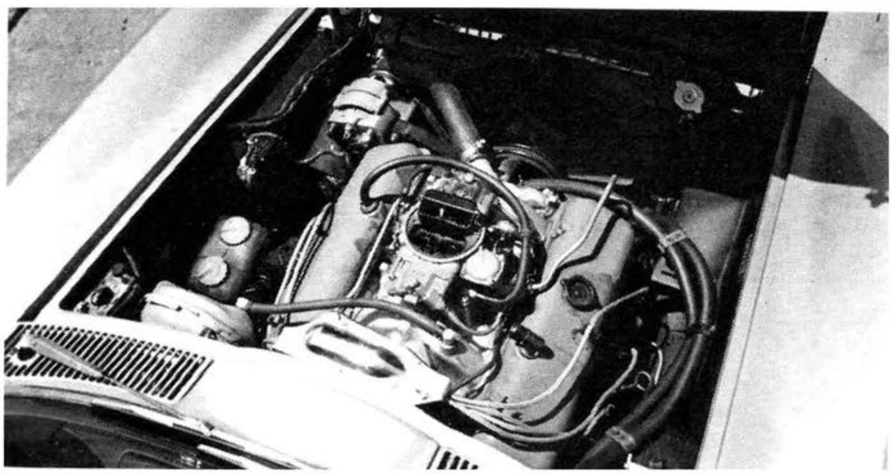
However, a drive in the 427 can convince anyone with a drop of sporting blood in his veins that an overabundance of power can be controllable and greatly invigorating. There is nothing like turning on the valve of 425 bhp when the emphasis is on rapid departure from a fixed position. And, the 4-speed transmission makes the selection of how much power you want to put on the road at what speed just that much easier.

The 427 is a new-for-'66 option. An outgrowth of 1965's 396/425, it has its power peak at a lower rpm and a wider range of torque delivery. This makes the maximum muscle option more compatible to everyday driving yet doesn't seem to hamper its ultimate activity. Upper rev limits, however, are the same and this engine can safely turn 6500 rpm for brief spurts. Mechanical lifters facilitate this capacity and a big Holley carburetor, strong cam timing, special exhaust headers and a transistorized magnetic pulse ignition make it possible.

There are actually three transmission options for the Corvette. Standard is an all-synchromesh 3-speed (2.54

INSTALLATION of standard 327-cu. in. engine leaves enough extra space for air conditioner, emission-control pump and power accessories.

FILLING UP the engine space is no problem with 427—it uses up most of it in cast iron. Dual master cylinder and power booster are at left.



first, 1.50 second); the two 4-speeds also have synchromesh on all forward gears but vary in ratios—2.52, 1.88 and 1.46 for the wide ratio set, and 2.20, 1.64 and 1.27 for the closer set. The automatic has a single 1.76:1 intermediate gear plus a torque converter stall ratio of 2.1:1. The two 427 engine options include a 4-speed transmission (wide ratio with the 390-bhp version, close ratio with the 425) but Powerglide can only be ordered with the 327/350. A modified Powerglide was to have been included for the 427/390 at mid-year.

The reasoning behind the dropping of the old fuel injection 327 in favor of the 390/425 and subsequent 427/425 was obvious concern with price. Where the fuel injection engine cost the Corvette buyer an additional $600, the "full-house" 427 adds only $313 to his contract. Comparing performance results with earlier *CL* tests shows that more inches and reduced complexity have been beneficial. Where a 4.11:1-geared, fuel-injected '64 Corvette thrashed through the standing quarter-mile in 14.6 sec. with a terminal velocity of 98 mph, the test of the 390/425 (3.70 gears) last year got 14.1 sec. and 104 mph. The '66 model, with its bigger but more docile engine and "economy" gearing of 3.36:1, ripped off 14 sec. flat and 102 mph. With the optional 4.11s and some drag-slick tires, it could cut that down to 115 and the mid-13s.

The Corvette's great accelerative performance, while the most readily demonstrated, is not necessarily its most outstanding attribute. Rather, its maneuverability, braking and superb handling must share equal positions of exaltation. It takes high-speed travel over a variety of roads and through a combination of curve radii to appropriately reveal the car's inner beauty. In this context, either the 327/automatic or 427/4-speed can give its owner that sense of pride which comes from any superior creation.

The superior handling of the all-independently sprung Corvette chassis has to be experienced to be completely understood. And, once sampled, it makes a driver into a believer in this way of doing that job. That it does a superior job no longer can be doubted; that the independent system's advantages are not in wider use can only be decried. The same attitudes must apply to the 4-wheel disc brakes. Again, this has proved, both in development (see Page 50) and in actual usage, a superior way of doing the job. *CL*'s usual deceleration tests for brakes from 80 mph gave consistent, superior rates of stopping; only when we made a series of consecutive stops from 120 mph did demon fade rear his smelly head. Two of those were enough to produce a markedly spongy pedal on the 427. Consider, however, that these were the standard pads and discs, not the heavy-duty competition components which don't fade even under that sort of abuse.

As sophisticated as is the Corvette chassis, the two test cars presented something of a paradox. The lower-powered coupe was quiet, smooth and pleasant riding where the big-power convertible jerked and jounced its passengers and subjected them to unnecessary wind noise. The wind-catching differences between the smoothly fitted fiberglass coupe top and the overlapping-edged convertible top no doubt accounted for the greater noise level. The riding differences must be traced to the chassis itself.

Very few changes in basic chassis components are made between the two versions, the most significant one being a rear axle anti-roll bar with the 427-cu. in. engines. This link-type stabilizer is 0.562 in. in diameter and helps offset the understeering effect of their greater concentration of weight on the front wheels. The 427-equipped Corvettes also have a larger diameter front anti-roll bar, 0.875 vs. 0.75 in., so perhaps the cumulative effect of the two is what makes the 427s feel harsher. Ride rates at the wheels, usually good indicators of the relative firmness of spring action, are listed as the same figures—80 lb./in. front, 123 lb./in. rear.

This brings out another enigma of the Corvette chassis, its inability to transmit a feeling of structural integrity to its driver. Workings of the marvelous suspension systems, unequivocally the best produced in the U.S. today, are felt as separate bumps and thumps. Power applications and withdrawals are sensed as additional pulses. The driver senses every movement, every sound. In fact, the driver gets the impression he is sitting on the car, rather than being in, and an integral part of it. Perhaps this stems from the Corvette's separate, massive, ladder-type frame, a virtual bridge-truss which constitutes the strength of the car. The fiberglass body panels carry no structural loading, so the frame must do all the work. Whenever a ▶

AIR-CONDITIONED and power-assisted, this Corvette is the torpedo-tailored towncar of docile alacrity.

vibration or bump strikes this big anvil, the driver, sitting on top of it, vibrates with the shock wave. It definitely lacks the all-of-a-piece feeling common to unitized body-chassis constructions.

Externally and internally, Corvette styling has remained little changed from 1963. The shark-like curvatures of the body panels are unchanged, though some of the gill openings have been modified. The vents just behind the coupe's doors were eliminated for '66. The 427-equipped models have a distinctive badge in their bulging hoods—the blister is necessary to provide adequate clearance for the carburetor air cleaner. Inside, control and instrument arrangements are identical to previous models. Both test cars were fitted with the optional telescopic steering column, a handy device where drivers of differing stature use the same car.

Finish of the exterior was characteristic of large molded fiberglass paneling; it was minutely rippled and inaccurately fitted. Apparently, this rippling is something Corvette owners always will have to accept. It has marked the Corvette from the very first and has shown little improvement in the intervening 12 years. The fit and finish of the interior, however, was as good as or better than previous models. Though the instrument panel layout still leaves something to be desired (particularly in the placement of the auxiliary, engine condition

1966 CHEVROLET
CORVETTE SPORT COUPE

DIMENSIONS

Wheelbase, in..................98.0
Track, f/r, in..............56.8/57.6
Overall length, in..............175.1
width.......................69.2
height......................49.6
Front seat hip room, in........2 x 21
shoulder room...............48.4
head room..................37.0
pedal-seatback, max..........45.0
Rear seat hip room, in..........
shoulder room...............
leg room....................
head room...................
Door opening width, in..........31.0
Floor to ground height, in........8.3
Ground clearance, in.............5.0

PRICES

List, fob factory..............$4395
Equipped as tested.............5573
Options included: Air cond., Positraction axle, emission control, tinted glass, am/fm radio, telescopic steering shaft, wsw tires, Powerglide, power windows, brakes & steering.

CAPACITIES

No. of passengers..................2
Luggage space, cu. ft...........10.6
Fuel tank, gal..................20.0
Crankcase, qt.....................5.0
Transmission/diff., pt........3.0/3.7
Radiator coolant, qt............19.0

CHASSIS/SUSPENSION

Frame type: Ladder, 5 crossmembers.
Front suspension type: Independent by s.l.a., coil springs, telescopic shock absorbers, link-type stabilizer.
ride rate at wheel, lb./in.........80
anti-roll bar dia., in...........0.75
Rear suspension type: Independent with lateral struts, U-jointed axle shafts, transverse leaf spring, telescopic shock absorbers.
ride rate at wheel, lb/in.......123
Steering system: Linkage-assisted power, recirculating ball-nut, parallelogram linkage; spherical joint knuckles. Telescopically adjustable column.
gear ratio.....................16.0
overall ratio..................17.6
turns, lock to lock.............2.9
turning circle, ft. curb-curb....39.6
Curb weight, lb.................3210
Test weight.....................3620
Weight distribution, % f/r....52/48

BRAKES

Type: Dual-line hydraulic; caliper discs on radially vented rotors.
Front rotor, dia., in............11.75
Rear rotor, dia. 11.75
total swept area, sq. in.......461.2
Power assist.......integral, vacuum
line psi @ 100 lb. pedal.......500

WHEELS/TIRES

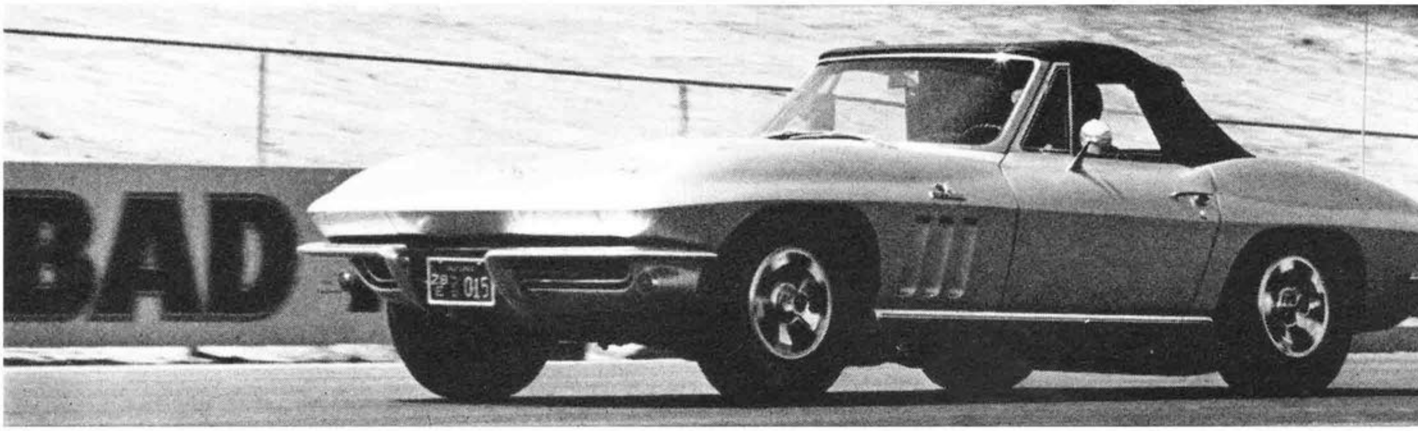
Wheel size...............15 x 5.5K
optional size available.....15 x 6L
bolt no./circle dia., in. 5/4.75
Tires: B. F. Goodrich Siivertown 660
size.......................7.75-15
recommended inflation, psi.....24
capacity rating, total lb.......4400

ENGINE

Type, no. cyl................V-8, ohv
Bore x stroke, in..........4.00 x 3.25
Displacement, cu. in..............327
Compression ratio...............10.25
Rated bhp @ rpm.......300 @ 5000
equivalent mph..................115
Rated torque @ rpm.....360 @ 3400
equivalent mph...................78
Carburetion..............Holley, 1x4
barrel dia., pri./sec....1.562/1.562
Valve operation: Hydraulic lifters, pushrods, overhead rockers.
valve dia., int./exh. 1.94/1.50
lift, int./exh. 0.399/0.399
timing, deg...........32-87, 74-45
duration, int./exh. 300/300
opening overlap..................78
Exhaust system: Dual, reverse flow mufflers.
pipe dia., exh./tail 2.5/2.0
Lubrication pump type...........gear
normal press. @ rpm...30 @ 1500
Electrical supply..........alternator
ampere rating....................37
Battery, plates/amp. rating ...66/61

DRIVE-TRAIN

Transmission type: Torque converter with automatic planetary gearbox.
Gear ratio 4th (   ) overall.....
3rd (   )..........
2nd (1.00)...........3.36
1st (1.76)...........5.92
1st x t.c. stall (2.10).........12.42
synchronous meshing?...planetary
Shift lever location..........console
Differential type: Hypoid, overhung pinion, semi-floating axles.
axle ratio......................3.36



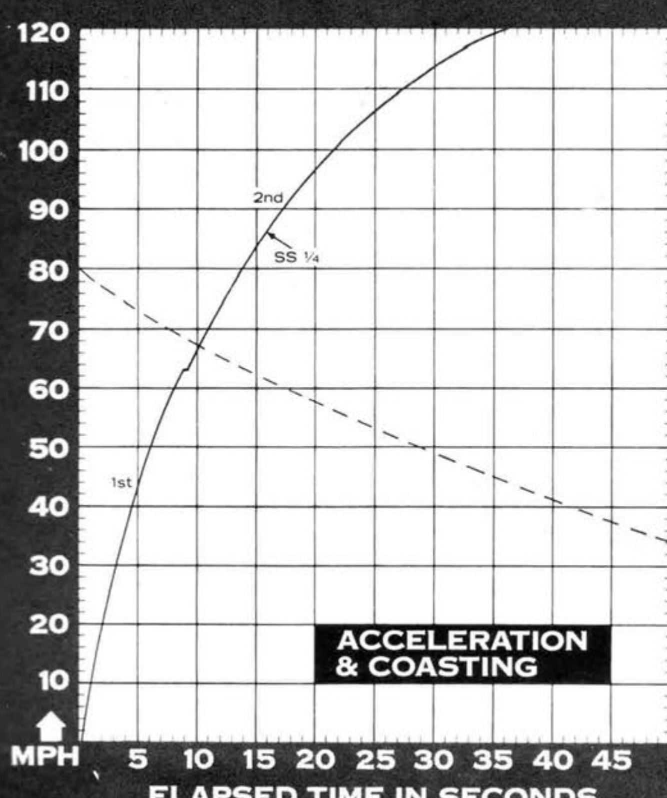
TAKE AWAY those whitewalls and add a folding top and the Sting Ray begins to look mean and purposeful.

instruments) it still presents the driver with complete information as to what is going on. Perhaps what was most appreciated was the big, round tachometer with green, yellow and red areas brightly marked off, stuck right up where the driver can see and utilize it.

The Corvette still does not have an outside trunk access, which may well be the only real design flaw in the whole concept. Entrance to the luggage area, which is ample on roadster and coupe bodies, is through the door and over the seat.

The biggest problem with the Corvette, however, has nothing to do with either its design or construction. Rather, it concerns the dealer-service situation after purchase of the car. Few Corvette buyers *CL* has encountered seem to have been satisfied by dealer treatment; most have some sort of complaint, whether or not justified. Generally, the complaint is simply that the dealer was far more interested in selling the car than in giving it proper and satisfactory service. "I felt as if I'd bought an imported car," was how one owner put it. Another had to take her '66 Corvette back to the shop a half-dozen times—each time to get things fixed from the mistreatment of the car during the last time the car was in for shopwork. Long delays for parts also have been reported to *CL*, along with dealer refusals to fix things because "they're all that way—there's nothing we can ▶

CAR LIFE ROAD TEST



CALCULATED DATA

Lb./bhp (test weight)	12.1
Cu. ft./ton mile	143
Mph/1000 rpm (high gear)	22.9
Engine revs/mile (60 mph)	2620
Piston travel, ft./mile	1420
Car Life wear index	37.2
Frontal area, sq. ft.	19.2
Box volume, cu. ft.	348

SPEEDOMETER ERROR

30 mph, actual	26.5
40 mph	37.5
50 mph	47.3
60 mph	57.9
70 mph	68.7
80 mph	78.8
90 mph	91.0

MAINTENANCE INTERVALS

Oil change, engine, miles	6000
trans./diff.	12,000/as req.
Oil filter change	6000
Air cleaner service, mo.	6
Chassis lubricaton	6000
Wheelbearing re-packing	as req.
Universal joint service	none
Coolant change, mo.	24

TUNE-UP DATA

Spark plugs	AC-44
gap, in.	0.033-0.038
Spark setting, deg./idle rpm	6/500
cent. max. adv., deg./rpm.	30/5100
vac. max. adv., deg./in. Hg.	15/12
Breaker gap, in.	0.019
cam dwell angle	28-32
arm tension, oz.	19-23
Tappet clearance, int./exh.	0/0
Fuel pump pressure, psi	5.25-6.50
Radiator cap relief press., psi	15

PERFORMANCE

Top speed (5000), mph	115
Shifts (rpm) @ mph	
3rd to 4th ( )	
2nd to 3rd ( )	
1st to 2nd (4850)	63

ACCELERATION

0-30 mph, sec.	3.4
0-40 mph	4.7
0-50 mph	6.4
0-60 mph	8.3
0-70 mph	10.8
0-80 mph	13.8
0-90 mph	17.3
0-100 mph	21.5
Standing ¼-mile, sec.	15.7
speed at end, mph	86
Passing, 30-70 mph, sec.	7.4

BRAKING

(Maximum deceleration rate achieved from 80 mph)

1st stop, ft./sec./sec.	28
fade evident?	no
2nd stop, ft./sec./sec.	28
fade evident?	no

FUEL CONSUMPTION

Test conditions, mpg	13.8
Normal cond., mpg	14-16
Cruising range, miles	280-320

GRADABILITY

4th, % grade @ mph	
3rd	
2nd	18 @ 72
1st	30 @ 51

DRAG FACTOR

Total drag @ 60 mph, lb.	150

do about it." Satisfied customer? No.

Doubtlessly there are two sides to the coin. However, the fact remains that these people are buying sophisticated, expensive cars and deserve reasonably satisfactory service for them. True, these people are usually people who like cars for their technical and/or romantic attributes and the purchase of a Corvette is more emotionally involved than the purchase of a more mundane vehicle for mere transportation. Thus they probably ar: more pernickety when it comes to their cars.

What's ahead for the Corvette in the face of the proliferation of the small, 4-seater sporting type of car? The forthcoming "Panther" will be in the same showrooms, and will compete in some ways, but will be lower priced, not as luxurious in concept or appointment, and not nearly as pleasing to the automotive enthusiast. *CL* thinks it will only serve to whet the appetite for the real thing. Corvette sales have climbed steadily even in the Mustang sales boom.

What will the Corvette of the future look like? Take a good look at the Mako Shark exhibition/experimental car being shown by General Motors. It could soon replace the Sting Ray. ■

Developing the Discs

IT WOULD BE difficult to pinpoint the exact moment when Chevrolet Division research engineers began working on the idea of disc brakes for Corvettes. The practical, production-line application of disc brakes to sporting-type cars had been around longer than the Corvette itself. Doubtlessly, the successful use of discs on European sports/racing cars implemented their thoughts, particularly those of Zora Arkus-Duntov whose specific responsibility has been development of the Corvette chassis. Himself a sports/racing driver of note on those same European race courses, Arkus-Duntov directed several special Corvette competition projects before the 1963 Sting Ray Grand Sport effort was undertaken.

The Grand Sport, it will be remembered, was to be a limited series of special, lightweight, purely competition-oriented Corvettes capable of achieving worldwide winners' circles. Development, testing and construction was well under way when General Motors' famous no-racing edict stopped the project early in 1964. A good portion of that early development and testing had been devoted to braking systems, in particular the disc brake.

Corvettes, at that time, already boasted one of the finest competition brake systems in existence—a $600 option which put heavy-duty, sintered-iron linings inside special finned drums with forced draft ventilation. These duo-servo shoes required a fairly high operating temperature for stabilized braking and the resultingly high hydraulic pressure requirement sometimes caused cracked drums. However, in terms of heat capacity and lining area, these were the best available for a car of the Corvette's weight and speed potential. Thus, the Sebring 12-Hour Race type of usage (maximum decelerations from 150 to 25 mph) was established as the standard.

According to Arkus-Duntov, one of the major reasons for disc braking is for its better modulation; i.e., the ratio of stopping power vs. pedal pressure required. "Duo-servo brakes do not lend themselves to good modulation," Duntov wrote in an SAE paper

1966 CHEVROLET
CORVETTE CONVERTIBLE

DIMENSIONS

Wheelbase, in.	98.0
Track, f/r, in.	56.8/57.6
Overall length, in.	175.1
width	69.6
height	49.8
Front seat hip room, in.	2 x 21
shoulder room	48.4
head room	38.5
pedal-seatback, max.	45.0
Rear seat hip room, in.	
shoulder room	
leg room	
head room	
Door opening width, in.	31.0
Floor to ground height, in.	8.3
Ground clearance, in.	5.0

PRICES

List, fob factory	$4295
Equipped as tested	5401

Options included: 427/425 V-8, Positraction, tinted windshield, trans. ignition, am/fm radio, telescopic steering shaft, gold stripe nylon tires, 4-speed close ratio, power brakes, steering and windows.

CAPACITIES

No. of passengers	2
Luggage space, cu. ft.	8.1
Fuel tank, gal.	20.0
Crankcase, qt.	5.0
Transmission/diff., pt.	2.5/3.7
Radiator coolant, qt.	22.0

CHASSIS/SUSPENSION

Frame type: Ladder, 5 crossmembers.

Front suspension type: Independent by s.l.a., coil springs, telescopic shock absorbers, link-type stabilizer.

ride rate at wheel, lb./in.	80
anti-roll bar dia., in.	0.875

Rear suspension type: Independent with lateral struts, U-jointed axle shafts, transverse leaf spring, telescopic shock absorbers, 0.562-in. stabilizer.

ride rate at wheel, lb./in.	123

Steering system: Linkage-assisted power, recirculating ball-nut, parallelogram linkage; spherical joint knuckles. Telescopic column.

gear ratio	16.0
overall ratio	17.6
turns, lock to lock	2.9
turning circle, ft. curb-curb	39.6
Curb weight, lb.	3270
Test weight	3610
Weight distribution, % f/r	52.4/47.6

BRAKES

Type: Dual-line hydraulic; caliper discs on radially vented rotors.

Front rotor, dia., in.	11.75
Rear rotor, dia.	11.75
total swept area, sq. in.	461.2
Power assist	integral, vacuum
line psi @ 100 lb. pedal	500

WHEELS/TIRES

Wheel size	15 x 5.5K
optional size available	15 x 6L
bolt no./circle dia., in.	5/4.75

Tires: UniRoyal Laredo

size	7.75-15
recommended inflation, psi	24
capacity rating, total lb.	4400

ENGINE

Type, no. cyl.	V-8, ohv
Bore x stroke, in.	4.25 x 3.76
Displacement, cu. in.	427
Compression ratio	11.0
Rated bhp @ rpm	425 @ 5600
equivalent mph	128
Rated torque @ rpm	460 @ 4000
equivalent mph	92
Carburetion	Holley, 1x4
barrel dia., pri./sec.	1.686/1.686

Valve operation: Mechanical lifters, pushrods, overhead rockers.

valve dia., int./exh.	2.19/1.72
lift, int./exh.	0.5197/0.5197
timing, deg.	54-102, 102-54
duration, int./exh.	336/336
opening overlap	108

Exhaust system: Dual, reverse flow mufflers.

pipe dia., exh./tail	2.5/2.0
Lubrication pump type	gear
normal press. @ rpm	50 @ 2000
Electrical supply	alternator
ampere rating	37
Battery, plates/amp. rating	66/61

DRIVE-TRAIN

Clutch type: Single disc, dry, centrifugal.

dia., in.	10.5

Transmission type: Manual, 4-speed

Gear ratio 4th (1.00) overall	3.36
3rd (1.27)	4.27
2nd (1.64)	5.51
1st (2.20)	7.38
synchronous meshing	all four
Shift lever location	console

Differential type: Hypoid, overhung pinion; semi-floating axles.

axle ratio	3.36

on Corvette disc brake development. Without the inherent self-energization of the duo-servo brake, the disc system achieves a more linear relationship of stopping power to pedal effort. The driver simply gets only as much braking as his foot demands.

Virtually all early production types of disc brakes utilized a spot pad caliper clamping on a solid rotor. GM tests of these systems revealed a need for far greater capacity and durability if they were to be successfully adapted to the larger, heavier domestic product. Delco Moraine Division, which tested its first disc brakes in 1937, produced a vented disc in 1954 and subsequently installed 4-wheel sets on Buick, Oldsmobile, Cadillac and Corvette test cars with varying degrees of success. The radially vented rotor was first seen publicly on the Firebird II experimental car in 1955.

Calculations for the design objective of 1 G (32 ft./sec./sec.) deceleration showed that the higher heat rejection abilities of the vented disc had to be utilized for the Corvette Grand Sport. They also showed that the Corvette brake had to have the largest lining area compatible with two pistons per pad. Other design parameters included: Satisfactory operation without power assist, instantaneous pedal response, freedom from pad "knock-back" by heavy cornering loads, and low sensitivity to weather and icing conditions. Unit cost, as always, was a major consideration.

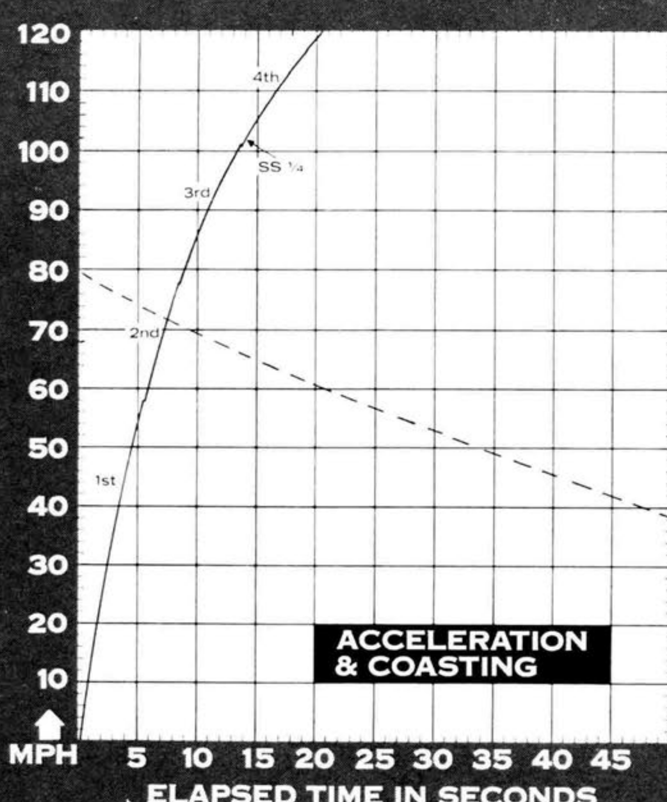
Balancing of the 4-wheel system was based on 1 G braking conditions where 66% of the weight, because of forward inertia, was concentrated onto the front wheels. To achieve a 65/35 balance, front caliper pistons were specified at 1.875 in. diameter, the rear pistons at 1.375 in. Total piston (there were four per caliper) area was 33.9 sq. in., which produced a 43.2:1 hydraulic ratio and 196:1 overall ratio. This gave 0.005 in. of brake pad movement for every inch of pedal movement. And, by keeping pads in slight but constant contact with the rotors, the maximum caliper piston travel necessary was only 0.01 in. Thus total pedal movement was less with the discs than had been necessary with drums.

Keeping the pad in light contact was one of the more radical and origi- ▶

FIRESTONE PHOTO

CORVETTE DISC brakes work to perfection in competition, helped George Wintersteen drive to GT class victory in '66 Daytona Continental.

CAR LIFE ROAD TEST



CALCULATED DATA

Lb./bhp (test weight)	8.5
Cu. ft./ton mile	180
Mph/1000 rpm (high gear)	22.9
Engine revs/mile (60 mph)	2620
Piston travel, ft./mile	1640
Car Life wear index	43.0
Frontal area, sq. ft.	19.3
Box volume, cu. ft.	351

SPEEDOMETER ERROR

30 mph, actual	30.1
40 mph	41.1
50 mph	51.7
60 mph	62.0
70 mph	72.2
80 mph	84.0
90 mph	94.8

MAINTENANCE INTERVALS

Oil change, engine, miles	6000
trans./diff.	as req.
Oil filter change	6000
Air cleaner service, mo.	6
Chassis lubrication	6000
Wheelbearing re-packing	as req.
Universal joint service	none
Coolant change, mo.	24

TUNE-UP DATA

Spark plugs	AC-43N
gap, in.	0.033-0.038
Spark setting, deg./idle rpm	8/800
cent. max. adv., deg./rpm.	28/4600
vac. max. adv., deg./in. Hg.	15/12
Breaker gap, in.	(transistorized magnetic pulse)
cam dwell angle	
arm tension, oz.	
Tappet clearance, int./exh.	0.024/0.028
Fuel pump pressure, psi	5.5-7.0
Radiator cap relief press., psi	15

PERFORMANCE

Top speed (5660), mph	130
Shifts (rpm) @ mph	
3rd to 4th (5600)	108
2nd to 3rd (5600)	78
1st to 2nd (6000)	58

ACCELERATION

0-30 mph, sec.	2.6
0-40 mph	3.5
0-50 mph	4.6
0-60 mph	5.7
0-70 mph	7.0
0-80 mph	8.7
0-90 mph	10.7
0-100 mph	13.4
Standing ¼-mile, sec.	14.0
speed at end, mph	102
Passing, 30-70 mph, sec.	3.4

BRAKING

(Maximum deceleration rate achieved from 80 mph)

1st stop, ft./sec./sec.	26
fade evident?	no
2nd stop, ft./sec./sec.	27
fade evident?	no

FUEL CONSUMPTION

Test conditions, mpg	11.6
Normal cond., mpg	11-13
Cruising range, miles	220-260

GRADABILITY

4th, % grade @ mph	20 @ 94
3rd	25 @ 81
2nd	33 @ 68
1st	off scale at 52

DRAG FACTOR

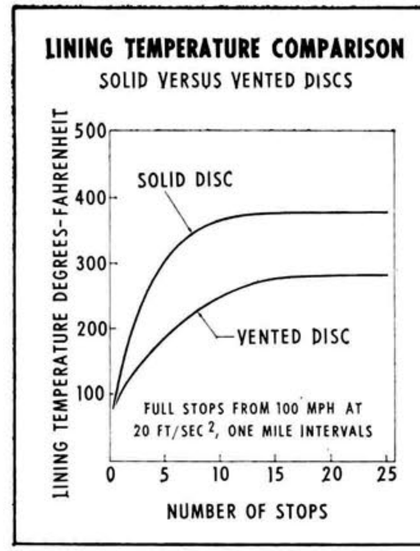
Total drag @ 60 mph, lb.	135

Developing the Discs

nal ideas in the development. It resulted in solutions to a good many of the operational problems previously thought insurmountable. The contact cost about 0.8 bhp at 100 mph—so little it could not be measured in normal fuel consumption tests—but in return it kept the rotor wiped clean of moisture and ice and pre-heated to an operating optimum (30-40° F above ambient air temperature). Pedal travel was reduced and the knock-back problem, where deflection of the disc by wheel distortion causes the piston to be pushed back into its cylinder, eliminated. Lining life, after 127 different compounds had been tried to find the best one, proved above expectations; tests showed 50,000 miles minimum.

Testing the Sting Ray's disc brake system was as unique as its development. Because of its capabilities, the system was immediately found to exceed all current braking standards, so, new standards had to be devised. The two major phases of testing were on-the-vehicle at the proving grounds, and laboratory dynamometer evaluation. The proving grounds checked the system as a whole, the laboratory exams were vital in selecting rotor configuration and pad material. The dynamometer schedule was developed to closely simulate both SAE and GM proving ground brake test programs; it accurately evaluated such things as fade, effectiveness, noise and wear; 173 programs were run on lining.

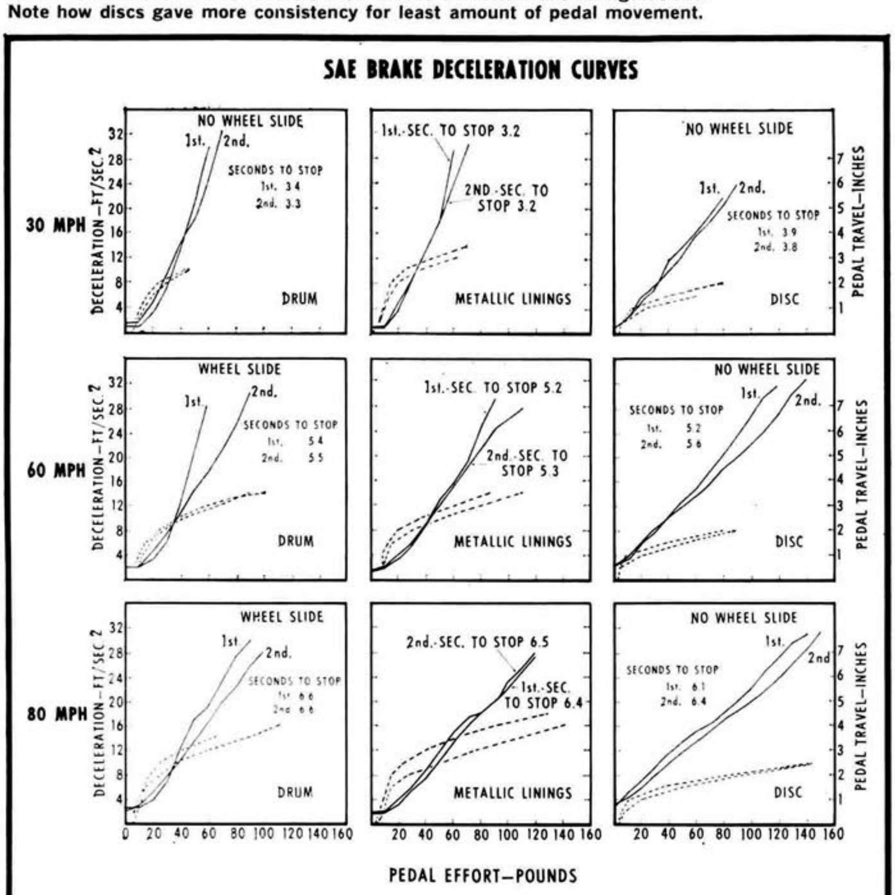
Proving ground tests always are the more dramatic. Yet the standard tests revealed no discernible fade in the fade-and-recovery section so a special abuse test was incorporated. This consisted of 20 stops from 100 mph at 1-mile intervals at a deceleration rate of 20 ft./sec./sec. (0.625 G). Fade and recovery characteristics proved far superior to the previously used drum brakes. Durability tests surpassed the Chevrolet standard of 36,000 miles. Dust tests, at GM's Mesa, Ariz., facility, consisted of 1700 miles at 50 mph with a stop every mile: Lining wear was slight and disc wear only 0.001 in. for the total distance. City traffic conditions were sampled in



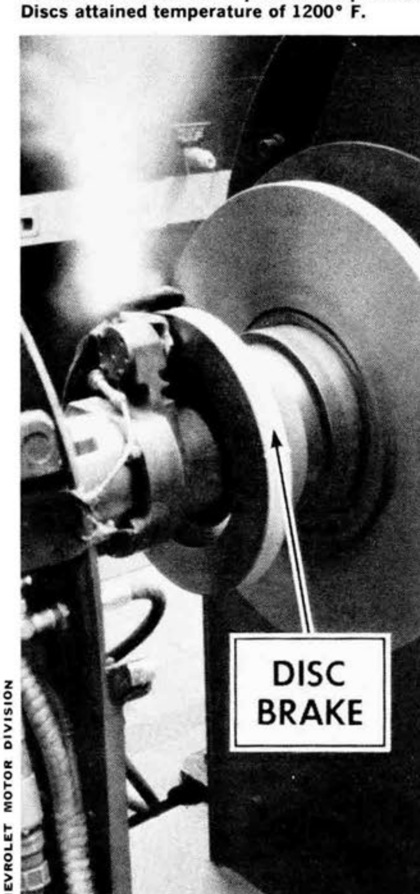
VENTED DISC gave significant reduction in lining temperatures during testing.

Phoenix and Los Angeles. The final acceptance came at Pikes Peak in Colorado. Runs were made from the summit (14,110 ft. elevation) to the gate house at the base of the peak with the transmission in neutral whenever braking was required. Full brake effectiveness was available at the end of each run, the SAE paper said. ■

CURVES COMPARE results of tests with various Corvette brake configurations. Note how discs gave more consistency for least amount of pedal movement.



BRAKE DYNAMOMETER proved components. Discs attained temperature of 1200° F.



CHEVROLET MOTOR DIVISION