CAR LIFE
ROAD TEST

CAMARO Z/28

A pint-size engine with the heart of a tiger gives it a Supercar's performance and sports car's handling

THE Z/28 CAMARO is not cast in the mold of current Detroit space capsules. It is noisy, almost scary in its response to all controls, and delivers a steady barrage of soft blows to the hindsides of its occupants.

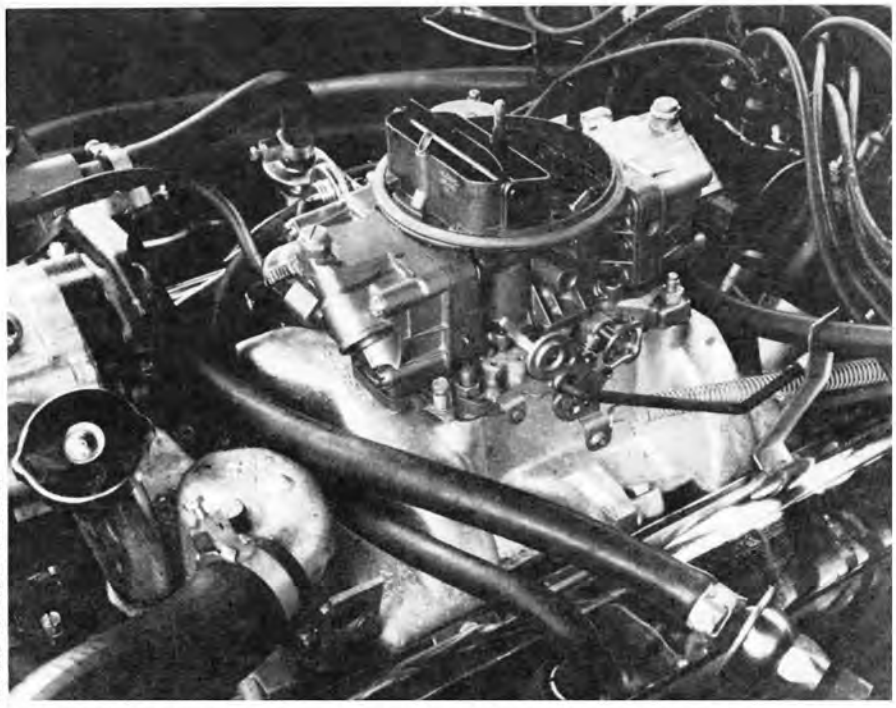
The owner seeking insulation from his roadway environment, the man who wants to be transported to his destination with a minimum of effort and conscious involvement will find the Z/28 totally unsatisfactory. This Camaro needs to be driven, in every sense of the word. To the man capable of extracting them, the Z/28 has a storeroom of treasures. For enjoyment-per-dollar, the Z/28 must be one of the bargains of this decade, not because it's inexpensive (about $3400 base price with Z/28 options) but because it's so excitingly roadable.

The Z/28 Camaro is not a new car. This same basic package formed the basis for the impressively fast sedan racers which conquered the factory-backed Mustangs in the last two races of the 1967 Trans-Am season, and finished 1-2 in the Trans-Am class in the 1968 Sebring 12-hour race. But, in 1967, Chevrolet treated the Z/28 as an illegitimate son. The car has been available for racing for one with the patience and perseverance to wait out delivery of such a rare animal. Yet this fact seems to have escaped many Chevrolet dealers. Some of Chevrolet's smaller dealers didn't even know such a package existed. For them, Z/28 was a cryptic symbol that wide-eyed enthusiasts murmured to baffled sales personnel when discussing Camaros.

For 1968, Chevrolet has decided to market the Z/28 as a true street machine, a recognized addition to the Camaro model lineup. In line with this marketing decision, some of the more costly and impractical (for production) items from the sedan racing package have been relegated to the status of dealer-installed options. Among these are steel tubing exhaust headers (which we had on our test car), fresh-air pickup from the cowl plenum chamber, and some of the other racing

or ultra-performance parts.

The resulting production package is an acceptable everyday transportation vehicle, if the owner is willing to accept a certain amount of low-speed fussiness and lack of torque for easy takeoffs. Above 30 mph, on winding mountain roadways, back country lanes and the rest of the types of roads which make driving worth doing, the Z/28 Camaro is an exhilarating vehicle. Handling is excellent, cornering power is exceptional, and acceleration through the close-ratio gears is amazing for a small engine. There is something very satisfying about a small-displacement engine producing big-displacement power. You feel like the engine is doing something, not lumbering along wasting space and operating inefficiently. The Z/28 engine is a jewel, an outstanding performer by any yardstick. The chassis is even well matched to the powerplant. Suspension, drive train and brakes are all intended to complement the engine, and they do an admirable job.



PHOTOS BY SCOTT MALCOLM

CENTER-PIVOT Holley carburetor atop aluminum high-rise intake manifold gives 302-cid Z/28 engine tremendous high-speed power output, up to 7000 rpm.

The Z/28 powerplant has 302 cid, obtained by installing the crankshaft from the old 283-cid V-8 in a current 327-cid cylinder block. Bore and stroke are 4.00 x 3.00 in., giving low piston speed at high revs and a bore large enough to accommodate big valves. Cylinder heads used on the Z/28 are the units produced for the 327-cid/350-bhp engine available in Corvettes and Chevy IIs in 1967. Valve sizes are 2.02 in. intake, and 1.60 in. exhaust. Stiff valve springs are used, along with a mechanical-lifter valve train. A maximum of 7200 rpm was reached during the test period, and even at this speed there wasn't a ▶

FOUR WHEEL drifts or tail-out powerslides can be done in complete control with the roadable Z/28 Camaro. Standard Z/28 suspension and tire package give high cornering power, yet break-away is smooth and predictable.

INTERIOR PACKAGE is attractive, and most controls are conveniently placed. Testers disliked Muncie shift linkage and console-mounted instruments.

CAMARO Z/28

continued

trace of valve float to be heard.

Two camshafts are cataloged for the Z/28 engine, but only one is mild enough to be considered for street use. The test car had this standard camshaft, which has duration figures of 346°, intake and exhaust. Valve lift is 0.460 in., for both intake and exhaust, at normal operating clearances. The long duration figures made themselves evident in the test car's lumpy 1000-rpm idle, and its lack of torque below 3000 rpm. From 4000 to 7000 rpm, power output was fantastic. Quarter-mile elapsed times were below 15 sec., despite a very slow takeoff. Trap speeds of well over 100 mph indicate the power at the high end. To reach 100 mph in the quarter, with 302 cid, in a car weighing almost 3700 lb. with two-man test crew is almost incredible.

The Z/28 engine's 290-bhp rating must be taken with a grain of salt. Dynamometer tests on similar engines, completely stock but with all clearances optimized, indicate a true power potential of about 400 bhp.

The standard rear axle ratio is

1968 CAMARO Z/28

DIMENSIONS

Wheelbase, in.	108.0
Track, f/r, in.	59.6/59.5
Overall length, in.	184.6
width	72.3
height	50.9
Front seat hip room, in.	20.5 x 2
shoulder room	56.7
head room	37.0
pedal-seatback, max.	40.0
Rear seat hip room, in.	54.1
shoulder room	53.6
leg room	29.2
head room	36.7
Door opening width, in.	38.2
Trunk liftover height, in.	31.6

PRICES

List, FOB factory	$2694
Equipped as tested	$4086

Options included: Z/28 engine and performance package, 4-speed trans., light monitor system, power disc brakes, steering; am radio, quick steering, console; air spoiler.

CAPACITIES

No. of passengers	5
Luggage space, cu. ft.	8.3
Fuel tank, gal.	18.5
Crankcase, qt.	4
Transmission/dif., pt.	3/3.5
Radiator coolant, qt.	16

CHASSIS/SUSPENSION

Frame type: Unitized, front stub.
Front suspension type: Independent by s.l.a., coil springs, telescopic shock absorbers.
ride rate at wheel, lb./in. n.a.
antiroll bar dia., in. 0.688
Rear suspension type: Hotchkiss live axle, multileaf springs, staggered shock absorbers.
ride rate at wheel, lb./in. n.a.
Steering system: Integral assist recirculating ball gear, parallelogram linkage behind front wheels.
overall ratio 17.0:1
turns, lock to lock 2.8
turning circle, ft. curb-curb 37.0
Curb weight, lb. 3355
Test weight 3695
Distribution (driver), % f/r 55.7/44.3

BRAKES

Type: Disc front, single leading shoe, cast iron drum rear.
Front rotor, dia. x width, in. 11.0 x 2.21
Rear drum, dia. x width 9.5 x 2.0
total swept area, sq. in. 332.4
Power assist: Integral vacuum.
line psi at 100 lb. pedal 790

WHEELS/TIRES

Wheel rim size 15 x 6
optional size none
bolt no./circle dia. in. 5/4.75
Tires: Goodyear Wide Tread GT.
size E70-15
normal inflation, psi f/r 24/28
Capacity @ psi 4980 @ 24/28

ENGINE

Type, no. of cyl. ohv 90° V-8
Bore x stroke, in. 4.00 x 3.00
Displacement, cu. in. 302
Compression ratio 11.0:1
Fuel required premium
Rated bhp @ rpm 290 @ 5800
equivalent mph 107
Rated torque @ rpm 290 @ 4200
equivalent mph 77
Carburetion: 1x4 Holley.
throttle dia., pri./sec. 1.69/1.69
Valve train: Mechanical lifters, pushrods and overhead rocker arms.
cam timing deg., int./exh. 60.8-105.3/108.8-57.3
duration, int./exh. 346.2/346.2
Exhaust system: Dual, transverse mount reverse-flow muffler.
pipe dia., exh./tail 2.25/2.25
Normal oil press. @ rpm 40 @ 1500
Electrical supply, V./amp 12/37
Battery, plates/amp. hr. 54/45

DRIVE TRAIN

Clutch type: Single dry disc, diaphragm-type pressure plate.
dia., in. 11.0
Transmission type: Four-speed fully synchronized.
Gear ratio 4th (1.00:1) overall 4.10:1
3rd (1.27:1) 5.21:1
2nd (1.64:1) 6.72:1
1st (2.20:1) 9.02:1
Shift lever location: Console.
Differential type: Hypoid, limited-slip.
axle ratio 4.10:1

DEEP GEARING is evident in picture of indicated 130 mph speed at 6300 rpm. Great Z/28 engine was still pulling at this speed, and running free and smooth.

SPOILER on deck lid is appropriate addition to race-oriented Z/28.

3.73:1, and although this seems like a very high ratio, it is a good choice for the engine's high-speed characteristics. The test car had a 4.10:1 rear axle, and this was a little too high. It seems strange at first to be driving down the road at 70 mph with about 3500 rpm showing on the tachometer. But the Z/28 engine is still only halfway up in its operating range, instead of being nearly wound out as are most domestic production V-8s. Also, the Z/28 runs at 3500 rpm very freely and effortlessly. The standard 3.73:1 ratio would have eased cruising, without sacrificing too much acceleration, and we would have preferred this ratio in the test car.

The only operational flaw in the test car's power train was a peculiar unbalance which caused a severe cyclic vibration from 3500 rpm up. This may have been a clutch/flywheel assembly unbalance condition. While it was very annoying, the unbalance did not seem to affect performance or the engine's willingness to run to high speeds.

Behind the Z/28's free-revving engine is the familiar close-ratio Muncie gearbox. This is one of the few American automobiles that genuinely needs close ratios. The Z/28 engine has to be kept up in speed, due to the lack of low-speed torque. The close-ratio ▶

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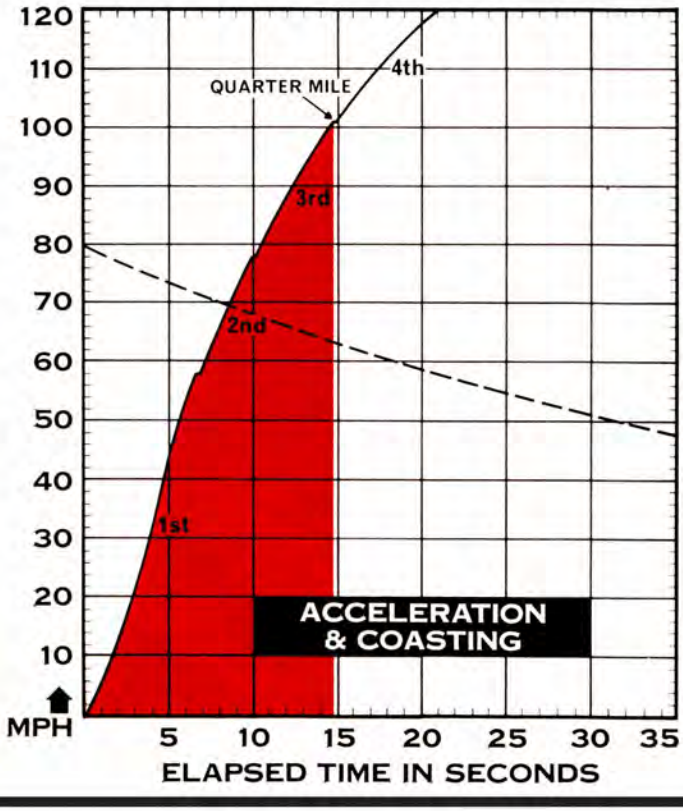

CALCULATED DATA

Lb./bhp (test weight)	12.7
Cu. ft./ton mile	154.3
Mph/1000 rpm (high gear)	18.4
Engine revs/mile (60 mph)	3260
Piston travel, ft./mile	1630
CAR LIFE wear index	53.2
Frontal area, sq. ft.	20.8

SPEEDOMETER ERROR

30 mph, actual	30.6
40 mph	40.6
50 mph	50.2
60 mph	59.3
70 mph	69.7
80 mph	78.9
90 mph	88.7

MAINTENANCE

Engine oil, miles/days	6000/120
oil filter, miles/days	6000/120
Chassis lubrication, miles	6000
Antismog servicing, type/miles	replace PCV valve/12,000, tighten belts, clean air injection system, tune check/12,000
Air cleaner, miles	replace/24,000
Spark plugs	AC44.
gap, (in.)	0.035
Basic timing, deg./rpm	4BTC/700
max. cent. adv. deg./rpm	32/4400
max. vac. adv., deg./in. Hg.	15/17
Ignition point gap, in.	0.019
cam dwell angle, deg.	28-32
arm tension, oz.	19-23
Tappet clearance, int./exh.	0.025/0.025
Fuel pressure at idle, psi	5.0
Radiator cap relief press., psi	15

PERFORMANCE

Top speed (7200), mph	133
Test shift points (rpm) @ mph	
3rd to 4th (7000)	101
2nd to 3rd (7000)	78
1st to 2nd (7000)	58

ACCELERATION

0-30 mph, sec.	3.5
0-40 mph	4.5
0-50 mph	5.7
0-60 mph	7.4
0-70 mph	8.9
0-80 mph	10.5
0-90 mph	12.5
0-100 mph	14.2
Standing ¼-mile, sec.	14.85
speed at end, mph	101.4
Passing, 30-70 mph, sec.	5.4

BRAKING

Max. deceleration rate from 80 mph ft./sec./sec. 25

No. of stops from 80 mph (60-sec. intervals) before 20% loss in deceleration rate 8-no loss

Control loss? Slight.

Overall brake performance: very good

FUEL CONSUMPTION

Test conditions, mpg	12.4
Normal cond., mpg	12-15
Cruising range, miles	200-250

DRAG FACTOR

Total drag @ 60 mph, lb. n.a.

transmission does just this, keeping the engine up in the peak of its power band all the way through the gears. Perfect synchronization, low-effort shifting and reasonable gear noise are all characteristic of the Muncie unit. Unfortunately, the Z/28 suffers from the same malady as all Chevrolets, except Corvette, in its use of terrible shift linkage. The test car not only suffered from binding and lack of precision in shifting, but the linkage came loose during the test period and made selection of first and second gears nearly impossible. Tightening the shift rods brought the linkage back to its original state of barely acceptable operation. An enthusiast should install the excellent Hurst linkage assembly used on Pontiacs, or some equally good mechanism.

The Z/28 comes equipped with 15 x 6 in. rims, fitted with special E70-15 low profile tires. Wide Tread GT tires are Goodyear's latest, and feature steep cord angles for improved handling response. Cornering power is very high primarily due to the wide contact patch of these tires. Traction on takeoff is also good (the test car needed 3500 rpm at clutch engagement to keep the engine from bogging).

Our test car had power brakes, with discs at the front and drums in the rear. This is a mandatory option with the Z/28 package, and proved to be a good brake system. Maximum deceleration rate was 25 ft./sec.^{2}, and fade was negligible through CAR LIFE's standard eight-stop, 80-0 mph panic stop test cycle. This performance puts the Z/28 among the better domestic passenger cars, and matches the performance of the two Corvettes tested last month. For all-out racing, the Z/28 is available with discs all around, but this option requires a completely different rear axle housing. We tried a Z/28 with all-disc setup at the GM Proving Grounds at Mesa, Ariz., this spring and found them to offer fantastic fade resistance and even higher maximum deceleration than the standard disc/drum setup. However, four-wheel discs are sure to be an expensive and difficult-to-obtain option on the Z/28.

The test Z/28 had power steering. Chevrolet engineers have developed a system which affords low effort, fast steering and refuses to lose assist even during rapid maneuvering. Most domestic systems can be "beaten" during quick steering reversals. The Camaro always delivered consistent boost, except for some high effort which occurred only while the engine was idling.

ALTHOUGH TEST CAR did not have four-wheel discs, earlier drive at GM's Mesa, Ariz., test track with rear-wheel disc option (above) was totally satisfying.

Camaro handling, with standard Z/28 suspension, is impeccable on smooth surfaces. Slight understeer can easily be neutralized by application of small amounts of throttle. If oversteer is desired, to negotiate a tight turn even more rapidly, a sharp stomp on the accelerator pedal will force the rear end out to any degree the driver desires. Only Corvette, among domestic automobiles we have tested, affords this degree of agility and controllability. Steering response is well above other Ponycars, and cornering power is higher than any passenger car (except Corvette) that we've tested this year. And the Z/28 is an easy car to drive very fast. Cornering does not require lightning-quick reactions, the Z/28 moving into each phase of its cornering performance with predictability and smoothness.

Only on rough surfaces did the Z/28 tend to lose its grip on the road. Rear axle hop on rough roads was noticeable—and objectionable. The front end washed out entering tight, bumpy turns, and directional stability over rough pavement was slightly skittery. On most highways and back roads, however, the Z/28 handled beautifully. ■

EXTENDED TOURING in the Z/28 requires that the rear seat be used for luggage. Trunk cavity is small, and not shaped to accept standard luggage pieces.