1968 BARRACUDA 340-S

Best yet of the Barracuda Brigade invites Grand Touring, family style

IN LAST MONTH'S issue (*CL* Nov. '67), the BMW 2000 CS was tested. In that report we stated that the BMW is an outstanding example of a true Grand Touring automobile. This test describes an American car which, at least in its advertised concept, is one domestic example of a Grand Touring vehicle. To properly evaluate any GT car, obviously one should do some real touring in it. Therefore, the subject of this road test was picked up in Detroit, Mich., and driven some 2700 miles to Newport Beach, Calif.

The test Barracuda was equipped with the new-for-1968 340-cid/275-bhp engine. This engine is an extension of the familiar 273-318 cid family, with the same stroke as these two smaller-displacement versions. Bore is increased by 0.64 in. over the 273-cid engine, and 0.13 in. over the 318-cid powerplant. Before any hop-up artists begin formulating plans, it should be emphasized that neither of the two smaller-displacement engines can be bored to 340 specifications with complete safety. If the cylinder cores of a 318 block happen to be perfectly centered, it's possible to open this engine up to 340 cid, but the process is very risky and can cost a block.

The new engine is different in more ways than just bore size. New cylinder heads, with increased port area and larger valves, greatly improve the high-speed breathing ability of the 340 engine. A new single 4-barrel, 2-plane intake manifold is substantially superior to the previous 273 single-plane manifold in both mid-range torque and high-speed output. Increased valve lift and duration are aimed at greater peak power. A different camshaft from that used with the automatic is employed in vehicles equipped with manual transmissions. Timing figures for the manual transmission cam are: 26-70 intake, 78-26 exhaust, 276° intake duration, 284° exhaust duration, 52° overlap, 0.445 in. intake and 0.455 in. exhaust lift. These figures, based on the conservative Chrysler timing system, are indicative of a fairly radical camshaft. For automatic transmission engines, timing figures are shortened by 4°, opening and closing, on both intake and exhaust. Resulting duration figures are 268° intake, 276° exhaust. Lift is also reduced to 0.430 in. intake, 0.445 in. exhaust. The changes improve idle quality and low-speed torque in the automatic transmission version.

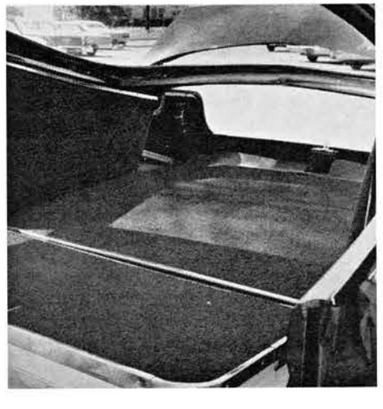
Intake and exhaust valve diameters, 2.02 and 1.60 in. respectively, are up from 1.78 and 1.50 in. for 273- and 318-cid engines. To emphasize the adequacy of the new valve sizes, comparison with the 350-cid Chevrolet engine, long touted for its exceptional breathing ability, is in order. The Chevrolet features valves of 1.94 and 1.50 in. diameter, intake and exhaust. Thus, the new Barracuda 340 engine has exceptionally large valves. Substantial high-speed output was evident in the vehicle's performance.

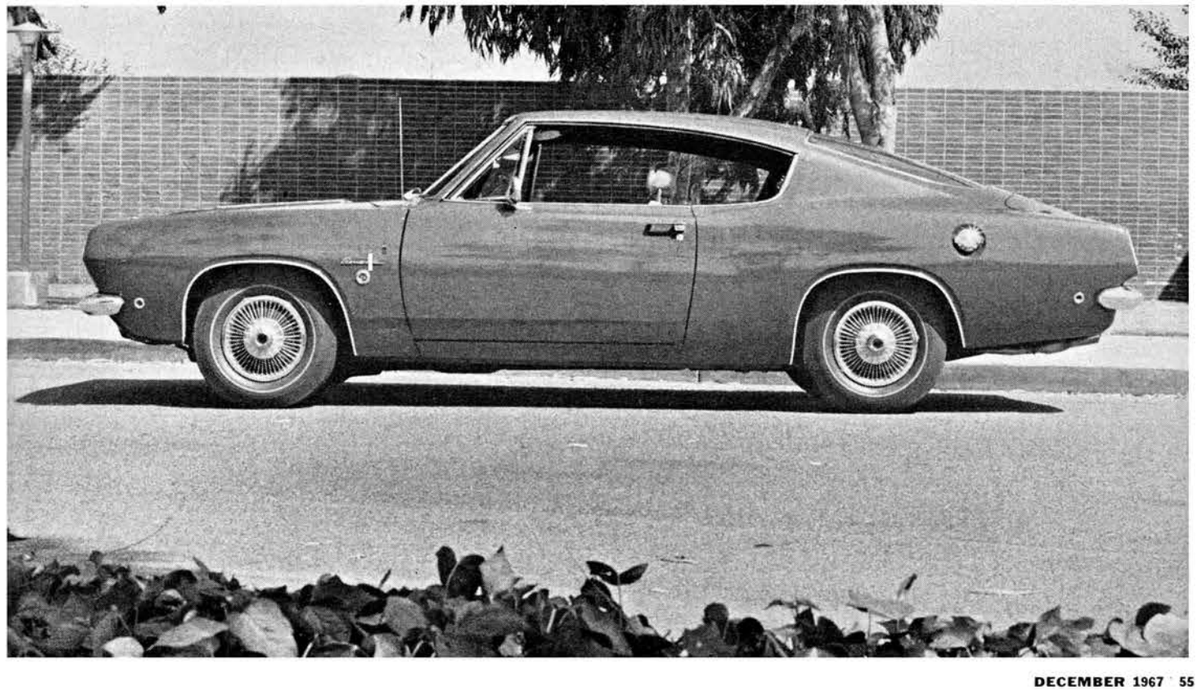
Acceleration testing proved the merits of the new engine's design. Low-speed torque was relatively weak, as it should be in an engine installed in a passenger car with forward weight bias and non-dragstrip rear tires. Full throttle could be used on takeoff, on dry pavement, with slight wheelspin. This was followed by a long, strong pull up to 5500-5800 rpm. This is an example of an engine well suited to a car. This type of performance makes much more sense than the 383-cid Barracuda package that features gobs of low-speed torque to turn rear tires into smoke, yet runs out of breath at 4500 rpm.

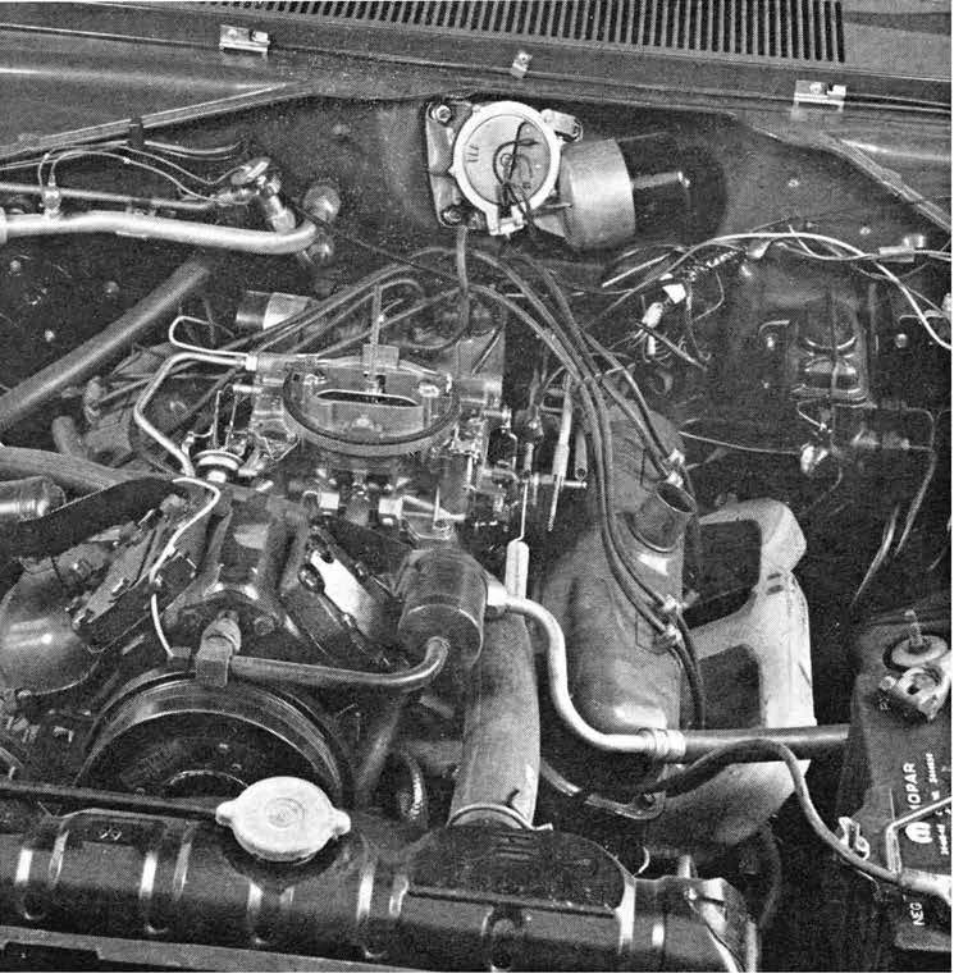
Times and speeds in the quarter-mile were eye-openers for a relatively small engine. With the usual two passengers and test gear load, the Barracuda 340-S buzzed through the lights in the high 14-sec. bracket at speeds around 95 mph. Both elapsed time and top speed were substantially superior to a 383-engined 1967 Barracuda briefly examined by *CAR LIFE*. An added bonus with the new 340-cid engine is a weight saving of approximately 100 lb. Thus, handling and traction are noticeably improved. Also, since the 340 has external dimensions similar to the 273, standard power steering equipment can be fitted, a worthwhile addition to the car, and one which was impossible with the much larger 383-cid engine.

Excellent quarter-mile performance of the 340-S complemented its exceptional high-speed cruising ability. The ▶

SCOTT MALCOLM PHOTOS







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new 340-cid engine is very flexible, and runs freely at high engine speeds. Cruising at 4000 rpm was quite effortless, although such speeds are grossly illegal in most states. Still, it's significant that the 340-S chassis was capable of smooth, steady performance and good stability at sustained 100-mph speeds. This certainly indicates satisfactory performance at normal 60-70 mph limits.

High average speeds were aided by the abundance of passing power available in the 340-S. Kickdown provided plenty of acceleration for pulling around slow traffic in a minimum distance. Actually, the reserve power of this automobile was sufficient to warrant some care in application on wet roads. A stretch of wet Oklahoma highway showed the 340-S to be capable of breaking the rear tires loose when kickdown was used at 50-60 mph. This kind of power is very desirable, but must be used with reasonable care.

Winding Arizona mountain roads provided the opportunity to thorough-

1968 PLYMOUTH
BARRACUDA 340-S 2-DOOR HARDTOP

DIMENSIONS

Wheelbase, in.....108.0
Track, f/r, in.....57.4/55.6
Overall length, in.....192.8
width.....71.6
height.....52.8
Front seat hip room, in.....23.0 x 2
shoulder room.....55.4
head room.....37.2
pedal-seatback, max.....40.0
Rear seat hip room, in.....48.5
shoulder room.....55.4
leg room.....31.1
head room.....36.5
Door opening width, in.....41.7
Ground clearance, in.....6.2
Trunk liftover height, in.....24.3

PRICES

List, FOB factory.....n.a.
Equipped as tested.....n.a.
Options included: 340-S package, air conditioning, TorqueFlite, disc brakes, am radio, power steering, head rests, SureGrip rear axle.

CAPACITIES

No. of passengers.....5
Luggage space, cu. ft.....varies
Fuel tank, gal.....18.0
Crankcase, qt.....4.0
Transmission/dif., pt.....17.5/4.0
Radiator coolant, qt.....19.0

CHASSIS/SUSPENSION

Frame type: Unitized.
Front suspension type: Independent by s.l.a., torsion bar springs and telescopic shock absorbers.
ride rate at wheel, lb./in. .....n.a.
antiroll bar dia., in.....0.88
Rear suspension type: Hotchkiss type, live axle, multileaf springs and telescopic shock absorbers.
ride rate at wheel, lb./in. 132
Steering system: Integral assist recirculating ball gear, parallelogram linkage behind wheels.
overall ratio.....18.79:1
turns, lock to lock.....3.5
turning circle, ft. curb-curb....38.0
Curb weight, lb.....3470
Test weight.....3840
distribution (driver), % f/r 56.9/43.1

BRAKES

Type: Two-line hydraulic, vented disc front, cast iron drum rear.
Front rotor, dia. x width, in.....10.79 x 1.84
Rear drum, dia. x width...10.0 x 1.75
total swept area, sq. in.....314.7
Power assist: None.
line psi at 100 lb. pedal.....800

WHEELS/TIRES

Wheel rim size.....14 x 5.5J
optional size.....none
bolt no./circle dia. in.....5/4.0
Tires: Goodyear Speedway Wide Tread
size.....E70-14
normal inflation, psi f/r.....24/24
Capacity @ psi.....n.a.

ENGINE

Type, no. of cyl.....ohv, 90° V-8
Bore x stroke, in.....4.04 x 3.31
Displacement, cu. in.....339.446
Compression ratio.....10.5:1
Fuel required.....premium
Rated bhp @ rpm.....275 @ 5000
equivalent mph.....116
Rated torque @ rpm.....340 @ 3200
equivalent mph.....74
Carburetion: Carter AVS 1x4.
throttle dia., pri./sec.....1.44/1.69
Valve train: Hydraulic lifters, pushrods and overhead rocker arms.
cam timing
deg., int./exh.....22-66/74-22
duration, int./exh.....268/276
Exhaust system: Dual, reverse-flow mufflers and resonators.
pipe dia., exh./tail.....2.25/1.88
Normal oil press. @ rpm..45 @ 2000
Electrical supply, V./amp.....12/37
Battery, plates/amp. hr.....54/48

DRIVE TRAIN

Clutch type:
dia., in.....
Transmission type: Three-speed automatic with torque converter.
Gear ratio 4th ( ) overall
3rd (1.00:1).....3.23:1
2nd (1.45:1).....4.69:1
1st (2.45:1).....7.92:1
1st x t.c. stall (2.10:1).....16.61:1
Shift lever location: Console.
Differential type: Hypoid, limited slip.
axle ratio.....3.23:1

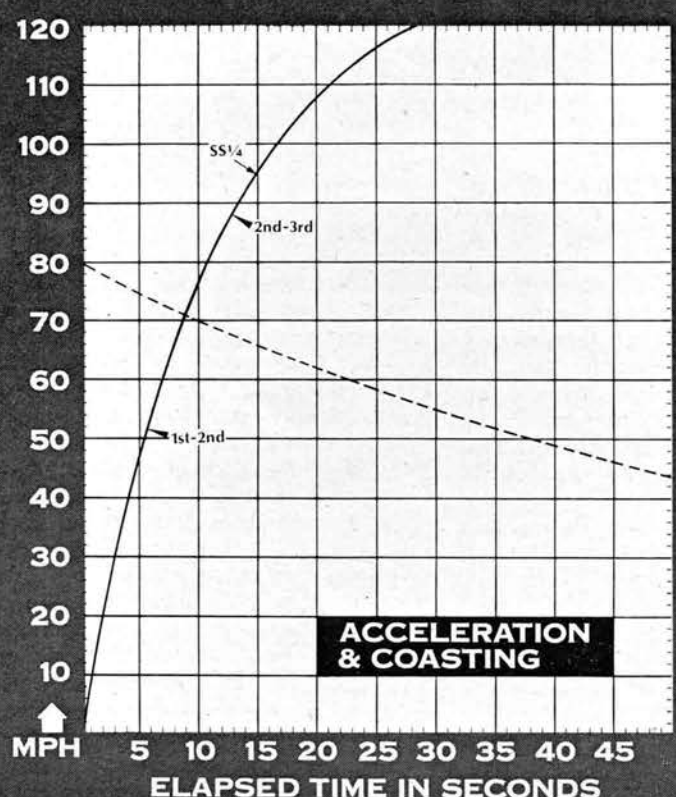
ly check out the handling ability of the 340-S chassis, and the Barracuda came through in fine fashion. The Barracuda, while not a sports car, negotiated many curves at speeds that would give some accepted "sports cars" considerable strain. The Barracuda is relatively large and heavy, compared with other GT cars, and these characteristics are evident when driving through tight curves. A lack of agility is apparent, but driver confidence remains intact. The driver soon gets the feeling that it would take some incredible occurrence to make the Barracuda lose its grip on the pavement.

Fairly strong understeer is dominant, although slow turns can be taken in an oversteering attitude by applying large amounts of power to the rear tires. One of the prime attributes of the 340-S was that, even with closed throttle in a fairly hard turn, the car refused to roll, tuck a wheel under, or slide smartly off the road.

The Barracuda 340-S is a fun car, an eminently safe car, and a car that Joe Average can do some spirited motoring in with complete confidence. No one can ask much more from a family carrier.

Much of the excellent stability of the 340-S apparently has been ▶

CAR LIFE ROAD TEST



CALCULATED DATA

Lb/bhp (test weight)	14.0
Cu. ft./ton mile	132.9
Mph/1000 rpm (high gear)	23.2
Engine revs/mile (60 mph)	2590
Piston travel, ft./mile	1429
CAR LIFE wear index	37.0
Frontal area, sq. ft.	21.0
Drag class, NHRA-AHRA	n.a.

SPEEDOMETER ERROR

30 mph, actual	29.7
40 mph	39.8
50 mph	49.6
60 mph	59.5
70 mph	68.9
80 mph	78.3
90 mph	88.0

MAINTENANCE

Engine oil, miles/days	4000/90
oil filter, miles/days	8000/180
Chassis lubrication, miles	36,000
Antismog servicing, type/miles	tuneup check, 12,000; replace PCV valve, 12,000
Air cleaner, miles	24,000 replace
Spark plugs: Champion N-9Y. gap, (in.)	0.035
Basic timing, deg./rpm	5 BTC/650
max. cent. adv., deg./rpm	23/4000
max. vac. adv., deg./in. Hg.	17/10.5
Ignition point gap, in.	0.015
cam dwell angle, deg.	37-42
arm tension, oz.	17-21
Tappet clearance, int./exh.	0/0
Fuel pressure at idle, psi	5
Radiator cap relief press., psi	16

PERFORMANCE

Top speed (5500), mph	127
Test shift points (rpm) @ mph	
3rd to 4th ( )	
2nd to 3rd (5500)	88
1st to 2nd (5500)	52

ACCELERATION

0-30 mph, sec.	3.0
0-40 mph	4.2
0-50 mph	5.5
0-60 mph	7.0
0-70 mph	8.7
0-80 mph	10.7
0-90 mph	13.2
0-100 mph	16.4
Standing ¼-mile, sec.	14.97
speed at end, mph	95.4
Passing, 30-70 mph, sec.	5.7

BRAKING

Max. deceleration rate from 80 mph ft./sec./sec.	22
No. of stops from 80 mph (60-sec. intervals) before 20% loss in deceleration rate	3
Control loss? None.	
Overall brake performance	fair

FUEL CONSUMPTION

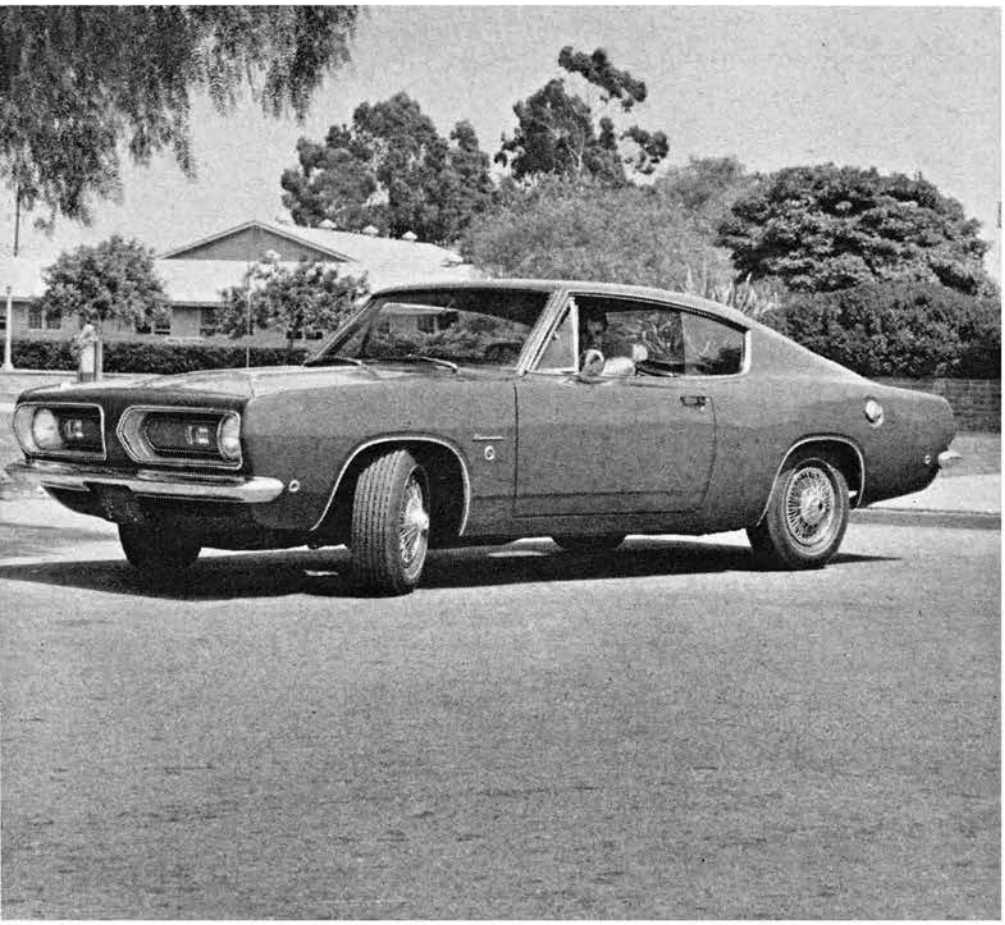
Test conditions, mpg	13.5
Normal cond., mpg	13-17
Cruising range, miles	230-300

GRADABILITY

4th % grade @ mph	
3rd	18 @ 55
2nd	24 @ 36
1st	off scale

DRAG FACTOR

Total drag @ 60 mph, lb.	170



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achieved through high spring rates. This became obvious when traversing the first stretch of bumpy roadway. The 340-S was quite harsh over small-amplitude irregularities, though the firm damping was appreciated on undulating highways. It would seem that some additional suspension system compliance could be applied to the Barracuda to lessen ride harshness without losing a significant amount of handling precision. If this cannot be accomplished, then *CAR LIFE* would rather have the package left alone. When faced with a choice between handling stability and ride smoothness, safety and driving enjoyment considerations certainly dictate a bias toward the former.

In braking, the Barracuda 340-S scored something less than top marks. On seeing the car for the first time, it appeared that the combination of disc front and drum rear brakes, with no power assist, would be an excellent system for the sporting driver. In actual testing, fade resistance was rather poor, for a disc/drum system, and pedal efforts to maintain high deceleration rates with well-warmed brakes bordered on the fantastic. To reach a deceleration rate of 16 ft./sec.^{2} on the third panic stop from 80 mph required both feet of a reasonably strong test driver. Concern over seatback failure was voiced during such Herculean brake applications. Apparently a booster is necessary to stop a 3000-lb. vehicle with a reasonable-sized disc/drum system. In any event, *CAR LIFE* recommends this option to prospective purchasers of disc-braked Barracudas.

The power steering fitted to the test car proved to be a mixed blessing. As already stated, this is a worthwhile addition to a car of this bulk, particularly if the distaff side of the household uses the car for errand running. The unit on the test car, however, failed after about 2500 miles, resulting in non-assisted, very fast-ratio steering. The effort required with the non-assisted system was high. Of course, a visit to the local dealer resulted in replacement of the offending parts without charge, and restoration of proper steering assist. Aside from this small problem, the car remained trouble-free throughout the test period. This is commendable, since the test Barracuda was picked up in Detroit with only 28 miles on the odometer and in a state of "unsorted" newness. Few instances of shoddy assembly were noted and squeaks and rattles remained pleasantly absent despite our vigorous and lengthy testing procedure.

Interior trim was sumptuous, sporting all-white vinyl on seats, trim panels and headliner. The instrument panel was in contrasting black, with imitation wood inserts adding a touch of traditional elegance. Instrumentation was complete and legible. The center-mounted tachometer, though rather small, was accurate and stable. All in all, the interior of the Barracuda 340-S was attractive and fairly functional. The only real complaint concerned the too-vertical seats, which caused considerable discomfort on long trips. An owner could shim the tracks to provide more seat rake, and then enjoy the otherwise well-designed and adequately padded individual seats.

The exterior appearance of the 340-S won almost unanimous praise. Essentially unchanged from 1967, the fastback Barracuda is clean, well-proportioned and sporty. The brilliant blood-red finish of the test car added greatly to its attraction and the hood inserts proclaiming the presence of the 340-cid engine were immediately noticeable, if a bit garish. Imitation wire wheel covers added little, if anything, to the attractiveness of the car, but the wide-tread Goodyear tires gave the Barracuda a purposeful appearance. The new grille is a subtle, but tasteful, change.

In final analysis, the 1968 Barracuda 340-S is a good example of the better Grand Touring automobiles available on the domestic market. Suspension fell short in ride comfort and handling over rough surfaces, but these are relatively rare in long-distance touring across the U.S. Brake performance was not outstanding, but could be greatly improved with power assist. Engine performance was excellent, whether measuring performance in terms of acceleration, cruising ability or top speed. Interior accommodation was good, adequate for family usage without unnecessary total vehicle bulk. Long days behind the wheel brought a real appreciation of the Barracuda's high-speed stability, and the air conditioning system afforded genuine comfort over long stretches of 110° desert terrain.

One could not help wondering how long the average European GT car could stand up to this type of long, hard touring. The Barracuda gave a feeling of effortless performance, regardless of the demands placed on it. Somehow it seems that American cars offer more for the American driver on American roads. In the Barracuda 340-S, the driver can enjoy an exceptional car in many ways, an adequate car in nearly all ways, and a real value in the field of high-performance automobiles. ■