CAR and DRIVER®

FEBRUARY 1975 · ONE DOLLAR

Showdown: Monza versus Mustang II

★

Why the 55-mph Speed Limit Won't Work

★

Son of Sedan: AMC's New Pacer

Road Test:

VOLVO 242 GL

Nothing less than the family sedan of the future—and it works.

BY DON SHERMAN

• Want to drive a prototype of Detroit's 1977 LTX Brougham? Just slide on down to your local Volvo dealer and ask for a few minutes behind the wheel of a 242 GL. It's the kind of machine our own Motor City will be building in the not too distant future.

Tomorrow's car will certainly have a "precision-size" interior. The 242 GL already has one precise enough for lanky legs front and rear, and it's packaged in a body five inches shorter than the Granada/Monarch line that inspired the phrase. Efficiency is the game plan for today and the foreseeable future, which means a guarded use of space, material and fuel. As a primary solution, people will be moved by lighter automobiles powered by smaller engines. Right now, the Volvo 242 GL has an engine smaller than any offered in Detroit—a thrifty 2.0-liter four. And it weighs in at a lean 3040 pounds, only slightly heavier than a heavily optioned Pinto.

Volvo introduced the 142—a most logical transportation module that was the 242's predecessor—way back in 1967. But for 1975, some critical improvements have been made that prompt the new series designation and make the Volvo a car of real interest to driving enthusiasts.

The problem with the 142 Volvo was primarily its truck-like steering matched to truck-like handling. Since the 242 is a fresh design forward of the windshield, there was opportunity for improvement, and Volvo took advantage of it. The best news is power steering, an integral rack-and-pinion design

Even though the Volvo 242 GL is the kind of car we expect to see from Detroit in the near future, it still manages to maintain a lot of its curious Swedish personality.

made by ZF, standard on the more luxurious GL models and optional with automatic transmission on the base DL line. The steering is precise and quick, and the efforts required are moderate enough that you don't need Muhammed Ali to fight the wheel in parking.

The handling has also been improved, primarily through a revamped front suspension, but here the gains are not proportional to the substantial mechanical changes. Volvo has chosen a MacPherson strut front suspension for the 242 to replace the unequal-length control arm arrangement used previously. Unfortunately, handling was assigned a fairly low priority in the process; the main concern was safety. Volvo's ESV project revealed some approaches to front structure design that significantly improve its ability to absorb impact energy, but it requires crushable sheetmetal panels where the old suspension used to be. The second consideration was underhood space. Emission controls are demanding a growing share of the engine-compartment volume, so Volvo felt the fender aprons had to be widespread in the new car to open up room for the next-generation thermal reactors or whatever emissions hardware may be necessary. The front track was widened by 2.8 inches, but even so, there was little room left for any suspension but the MacPherson strut.

BMW and Porsche both use the design, but it is most common in Japanese sedans because of its simplicity and low cost. Most manufacturers who aren't so cost-conscious find plenty of reasons to avoid the MacPherson strut. It has quite a high roll center, which increases "jacking"—the tendency for the outside tire to knuckle under in cornering and actually raise the front of the car into a less stable attitude. The MacPherson strut also does not lend itself to optimum suspension geometry. The proper camber pattern and anti-dive control are difficult to achieve with this design. It has ride drawbacks in that any load fed into the MacPherson strut that is not perfectly aligned with its axis induces friction damping (called "stiction") which makes the suspension unnecessarily stiff over small bumps or wavy pavement.

To counteract that tendency, Volvo has offset the coil-spring mounting slightly so that it is not concentric with the shock absorber. This creates a lateral force component that opposes the stiction-inducing loads passing through the strut. Even so, the Volvo's most noticeable ride deficiency is over small bumps, where stiction causes the most trouble. Across the minor undulations known as freeway ripple in Southern California, the suspension seems to go on vacation. You roll down the road gripped by a jittery pitching motion over bumps too small to be seen.

But this is a minor aggravation compared to the handling that comes with the new suspension. The basic problem is heavy understeer in chorus with an awkward list of body during hard cornering. The 242's total roll stiffness is higher than the 142's by about 25 percent, thanks to anti-sway bars front and rear, but it's still not stiff enough to manage the tippiness of the tall body. You feel the lean in every kind of maneuver from a lane change on the freeway to a winding excursion down a country road. The parts to do a better job are available, however—larger anti-sway bars, stiffer springs and stouter shock absorbers available from the Volvo Competition Service (1955 190th Street, Torrance, California 90509).

In dramatic contrast to its somewhat clumsy handling attitudes is the smooth efficiency of the Volvo 242 GL's power train. This is a manual-transmission kind of car, for the power-to-weight ratio is low enough that you need to shift for yourself to keep from feeling trapped in the slow lane. There simply isn't any extra energy to waste on an automatic transmis-

PHOTOGRAPHY: KEN BIGGS

sion. It's just as well, because the 242 GL has one of the finest manual gearboxes on the road. Its ratios are perfectly matched to the engine, and the linkage feels like it was made by Hurst. You heel-and-toe your way through every gear change just to exercise the well-located pedals, the responsive engine and the solid-feeling shifter. And for the road there is one more gem of mechanical perfection: overdrive. It is electrically controlled by a James Bond-type switch on top of the shift knob and effects an 0.80 taller gear ratio on fourth gear only. So in essence, the transmission is a five-speed with the top gear shiftable by the flick of a switch; no lifting of the throttle or clutching is necessary. The combination is particularly handy for passing on the highway or maintaining an even load on the engine over hilly terrain.

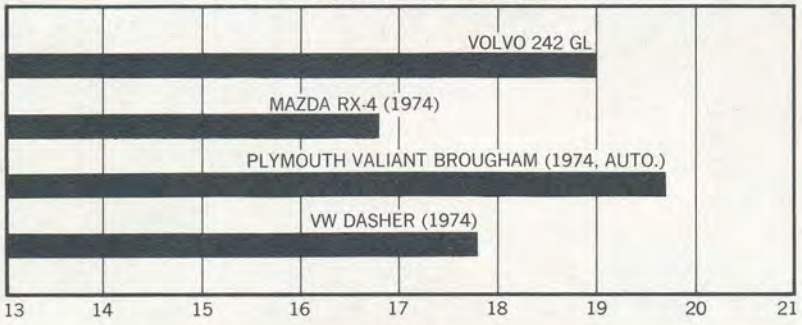
Part of the reason the overdrive gearbox feels so competent is the proficiency of the engine. The basic design looks about as elegant as a steam iron: It is a pushrod engine with a non-crossflow head and its valves neatly aligned in a row. All major castings are iron and the displacement is a small two liters, so its pavement-ripping potential is low. Yet through the years Volvo has lavished refinement on the engine to the point that it is quite a well-mannered device for 1975. The Bosch continuous fuel injection (K-Jetronic) was added in 1974, replacing a more complex electronic system. The K-Jetronic senses air flow mechanically and adjusts fuel delivery from that information only. The injection is a continuous mist into the intake manifold instead of a timed pulse with the electronic system. For 1975, a breakerless electronic ignition is new, along with a monolithic catalytic converter, air pump and substantial amounts of exhaust gas recirculation—all with an eye toward tighter control of exhaust emissions.

Even though the engine bears the responsibility of making clean air, it feels quite lively. It is smooth and strong at the low end and rushes eagerly to the 6500-rpm redline. Quarter-mile acceleration is a matter of 19.0 seconds with a terminal speed of 72.2 mph—about in the range of the slower super coupes. But largely due to the mechanical harmony between the small but energetic engine and its overdrive transmission, the car doesn't feel sluggish, even at highway speeds.

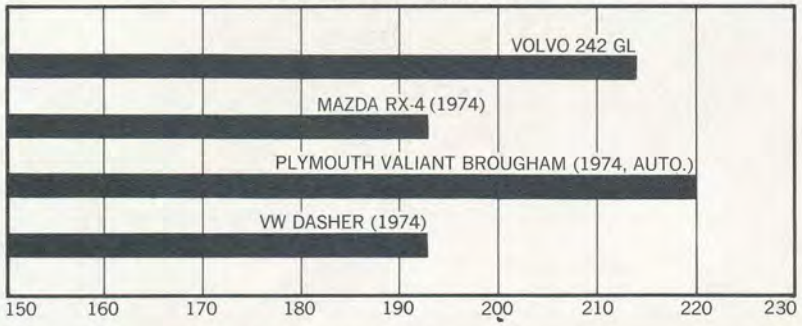
The fifth gear you control with a little black switch is a fine device. It allows gearing for good acceleration in town and quiet, efficient cruising on the road. When you flip the switch at 70, the revs drop by 800 rpm and the interior sound level falls from 77 dBA to 75.5, a noticeable difference. And in the highway driving portion of the *C/D* Driving Cycle, the Volvo 242 GL turned in 22 mpg (20 mpg for the full city/highway test). Overdrive is the quite logical approach to economy that Chrysler and AMC have turned to for 1975, with GM's upcoming five-speed due by the middle of this year.

Four-wheel disc brakes are slowly gaining acceptance in Detroit with six car lines offering the system for 1975 and more inevitably on the way. Volvo, however, has used a disc for each wheel for eight years and goes one step further with backup plumbing that keeps braking on three wheels when there is a failure in either half of the split system. The braking effort is strongly biased toward the front so that even with a light load there is no tendency toward rear-wheel lock-up or loss of directional stability during a hard stop. The tactile response through the pedal is excellent, but even so, stopping

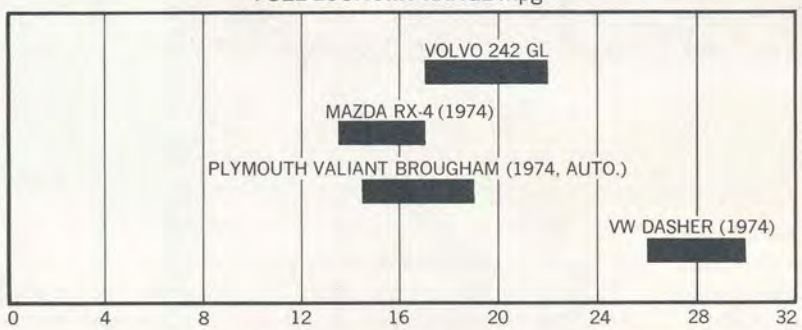
ACCELERATION standing ¼ mile, seconds



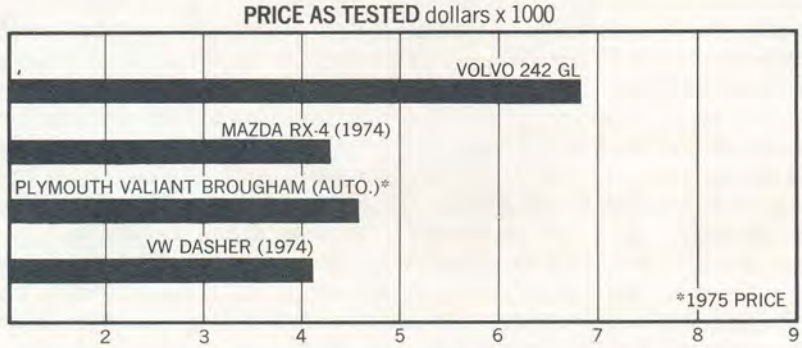
BRAKING 70-0 mph, feet



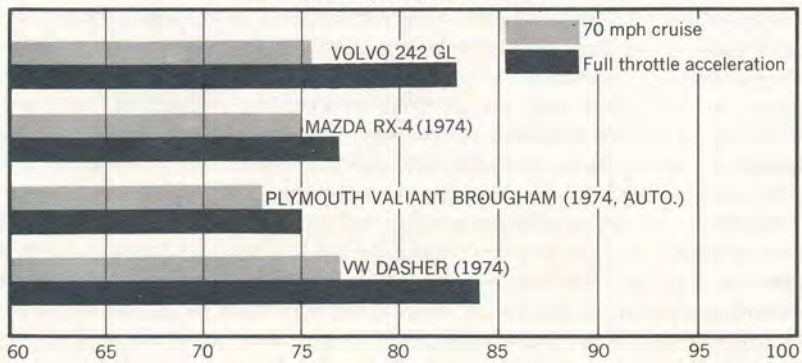
FUEL ECONOMY RANGE mpg



PRICE AS TESTED dollars x 1000



INTERIOR SOUND LEVEL dBA



Volvo 242 GL

Importer: Volvo of America Corporation
Rockleigh, New Jersey 07647

Vehicle Type: front engine, rear-wheel-drive, 5-passenger 2-door sedan

Price as tested: $6845.50
(Manufacturer's suggested retail price, including all options listed below, dealer preparation and delivery charges, does not include state and local taxes, license or freight charges)

Options on test car: base Volvo 242 GL, $6395.00; AM/FM stereo cassette player, $235.50; destination charges, $140.00; dealer preparation, $75.00

ENGINE

Type: 4-in-line, water-cooled, cast iron block and head, 5 main bearings
Bore x stroke ..... 3.50 x 3.15 in, 88.9 x 80.0 mm
Displacement ..... 121 cu in, 2000cc
Compression ratio ..... 8.7 to one
Carburetion ..... Bosch K-jetronic mechanical fuel injection
Valve gear ..... pushrod-operated overhead valves, solid lifters
Power (SAE net) ..... 94 bhp @ 6000 rpm
Torque (SAE net) ..... 105 lbs-ft @ 3500 rpm
Specific power output ..... 0.78 bhp/cu in, 47.0 bhp/liter
Max. recommended engine speed ..... 6500 rpm

DRIVE TRAIN

Transmission ..... 4-speed, all-synchro with overdrive
Final drive ratio ..... 4.30 to one

Gear	Ratio	Mph/1000 rpm	Max. test speed
I	3.41	5.1	33 mph (6500 rpm)
II	1.99	8.8	57 mph (6500 rpm)
III	1.36	12.8	77 mph (6500 rpm)
IV	1.00	17.4	99 mph (5700 rpm)
V	0.80	21.8	94 mph (4300 rpm)

DIMENSIONS AND CAPACITIES

Wheelbase ..... 103.9 in
Track, F/R ..... 55.9/53.2 in
Length ..... 192.8 in
Width ..... 67.2 in
Height ..... 56.5 in
Ground clearance ..... 7.0 in
Curb weight ..... 3040 lbs
Weight distribution, F/R 52.6/47.4%
Fuel capacity ..... 15.8 gal
Oil capacity ..... 4.0 qts
Water capacity ..... 9.9 qts

SUSPENSION

F: ..... ind., MacPherson strut, coil springs, anti-sway bar
R: ..... rigid axle, 4 trailing links, coil springs, anti-sway bar

STEERING

Type ..... rack-and-pinion, power assisted
Turns lock-to-lock 3.5
Turning circle curb-to-curb ..... 32.1 ft.

BRAKES

F: ..... 10.4-in dia. solid disc, power assisted
R: ..... 11.0-in dia. solid disc, power assisted

WHEELS AND TIRES

Wheel size ..... 5.5 x 14-in
Wheel type ..... stamped steel
Tire make and size ..... Michelin X, 185SR-14
Tire type ..... steel-belted radial ply, tubeless
Test inflation pressures, F/R ..... 26/32 psi
Tire load rating ..... 1360 lbs per tire @ 32 psi

PERFORMANCE

Zero to	Seconds
30 mph	3.7
40 mph	6.0
50 mph	8.8
60 mph	12.7
70 mph	17.8
80 mph	25.7
90 mph	36.7

Standing ¼-mile ..... 19.0 sec @ 72.2 mph
Top speed (observed) ..... 99 mph
70-0 mph ..... 214 ft (0.76G)
Fuel mileage ..... 17-22 mpg on lead-free fuel
Cruising range ..... 270-350 mi

distances are not particularly short (214 feet from 70 mph, 0.76 G). The tires may be the reason. The Michelin X 185SR-14 rubber on the test car was tall and narrow in profile with a fairly slim footprint on the road.

Even though the Volvo 242 GL is the kind of car we expect to see from Detroit shortly, it manages to maintain a lot of its Swedish personality. The Scandinavian winters have obviously influenced a number of design areas. The car has a tremendous heater that invades about a third of the total legroom between the front doors and pumps air into the interior through 12 outlets. (Summer ventilation, however, is not as good as you might expect from such a system, and the blower must be used for adequate airflow.) Under the hood lies the world's largest windshield washer solvent reservoir; its generous capacity is needed to wash off the splash so common on the snow-covered secondary roads of Sweden's highway system. On the outside, mud flaps—required by law in Sweden—are also standard equipment on U.S. models. Good ground clearance is essential to traverse snow-covered highways, so the 242 GL body is a high seven inches from the ground. This unquestionably influences its tall and tippy stature. As do the seats. They are chair-high by design with more adjustments than a Nikon camera. You can alter the pitch of the bottom cushion with independent front and rear height adjustments. There is also a variable tension control for the lumbar support springs, as well as conventional fore-and-aft and backrest angle settings.

There is, of course, a price for this practicality in design—one that has till now delayed the incorporation of some of the Volvo's functional purity in American cars. It is style. Insiders from the Swedish company volunteer the opinion that their cars are "ugly." And in light of the truncated ESV nose and rubber-covered bumper car extremities, there would be no argument from Detroit. So when you see the Volvo's domestic successors—both the ones that Detroit will surely produce as well as models from Volvo's own planned Virginia assembly plant—expect their square corners to be rounded off a bit. Function may ultimately outrank the pursuit of sculptural excellence in American automobiles, but it will never completely bury Detroit's quest for elegance. •