



VOLVO 164E

*Sweden's fuel-injected
luxury transportation machine*



THE FUEL INJECTION is new and there have been some minor trim changes, but the 164E is basically an improved version of Volvo's luxury sedan which we tested shortly after it was introduced in

late 1968.

There is some good news and some not-so-good news regarding the engine, but fortunately the good outweighs the bad in the emissions/performance teeter-totter. The good news is that Bosch electronic fuel injection has been added to the 2979-cc, 6-cyl engine, now called the B30F. And the experience of having a similar system on two 4-cyl cars previously (1800E and 142E) has resulted in modifications and improvements for the fuel injection used on the 164E. An improved cold-start system (fully automatic; the driver doesn't even touch the accelerator when starting up) is one.

Injection timing is also changed; the injectors now squirt on closed intake valves, a trick Volvo found to reduce un-



COMPARISON DATA

	Volvo 164E	BMW Bavaria	Mercedes 250
List price, incl. prep.	\$5080*	\$5485	\$7026*
Curb weight, lb.	3040	3170	3150
0-60 mph, sec.	12.0*	9.3	13.6*
Standing ¼-mi, sec.	18.8*	16.8	19.0*
Speed at end.	76*	82	72*
Stopping distance from 80 mph ft.	397	300	300
Fade in 6 stops from 60 mph, %	12	nil	nil
Cornering capability, g.	0.690	0.726	n.a
Fuel economy, mpg.	17.7*	18.0	16.0*

*automatic transmission

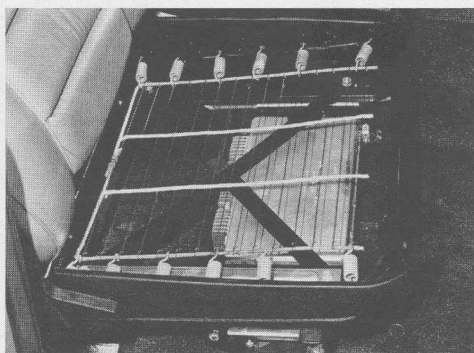
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burned hydrocarbon emissions. A new distributor cam was required for this—making the distributors from fuel injected and carbureted Volvo engines no longer interchangeable.

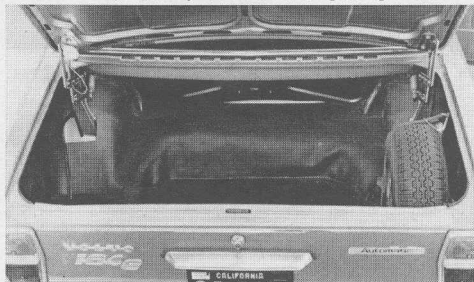
The not-so-good news is that the compression ratio of the 164E, like that of all Volvos this year, has been reduced from 9.2:1 to 8.7:1 to allow the engine to run on 91—octane fuel. This was achieved by raising the height of the cylinder head, which means an enterprising enthusiast wanting more power and better fuel economy could remove the head and have it milled to raise the compression ratio. The results of low compression have been offset somewhat by the fuel injection. For one, the fuel consumption of the 164E with automatic transmission equaled that of the carbureted 164 with 4-speed manual transmission and 9.2:1 compression ratio—17.7 mpg. The rated horsepower (SAE net) is now

springs in front, a live axle with longitudinal and lateral linkage and coil springs in the rear. The brakes are disc, front and rear. The 10.7-in. front discs are now vented for better cooling and more resistance to fade. Although brake fade has not been a problem with Volvos lately, the vented discs do reduce it: in our previous 164 road test the brakes faded 16% in our 6 stops from 60 mph, but the 164E's brakes faded only 12%. Stopping distance from 80 mph was not as impressive, however; the 164E needed a most unsatisfactory 397 feet to stop. This may be the fault of the smallish 165-15 tires, which the brakes can easily overpower and lock up. The 3040-lb car should have larger tires, and we would suggest 185-15 on the 5½-in. rims that are standard.

Outside, the changes are minor. The door handles are now recessed and that's about the only way to tell a new Volvo from a pre-1972 model. Most people are used to the boxy, rather tall shape by now and it's pleasing enough to look at—if Volvo didn't overdo it with trim, identification badges and vinyl tops. One benefit of the Volvo's nondescript



Electronic box for fuel injection is under the passenger seat.



136 @ 5800 rpm and the torque is 154 lb-ft @ 2500 rpm; the original carbureted 164 did 130 bhp net and 152 lb-ft.

Our test car was equipped with an automatic transmission, a revised 3-speed Borg-Warner unit. Judging from the list of changes in the gearbox, it should be a type 65 but is listed in the specifications as the Borg-Warner type 35. In any case the new gearbox has a wider front band with upgraded friction material and a new governor for improved shift patterns. The rear pump has been deleted (no more push starts) and the front pump enlarged. The torque converter ratio is now 2.3:1 versus last year's 2.1:1.

Suspension remains the same: unequal A-arms and coil

appearance is that it is less likely to be noticed by the local traffic enforcement agency if the speed happens to creep above the posted limit—which is easy enough in the 164E.

It is on the freeways that the 164E, and indeed most Volvos, excel. It offers relaxed cruising at freeway speeds with just a trace of tappet noise and a bit of wind whistle. Too, the people package is so nicely done that the pleasure of owning a Volvo is in using it, not simply looking at it. A plush interior with leather seats, carpeting and nice trim really makes the 6-cyl sedan a truly luxurious car and belies its modest exterior.

In addition to adjustments forward and backward and for ➤

VOLVO 164E

seat back angle, the driver's seat has adjustments for seat cushion height and a firm-to-soft setting for lumbar support. Rear seat passengers won't arrive cramped and crochety; there is plenty of leg and head room. In all, a most practical package.

Overall, the interior quality is good but there are some inconsistencies. The plastic wood on the center console doesn't match the plastic wood on the dashboard. Also on the dashboard there is a perforated rectangle (for the radio, no doubt) that resembles a cereal-box coupon; we kept looking for the words *cut on dotted line*. That is exactly what will happen when the radio is installed. Better buy the Volvo radio or one that fits that space.

The inertia-reel seat belts are a good feature. Not only are they easy to use but they really work. The last time we

ring. One simply reaches over the shoulder and grasps buckle A, pulls it smoothly and slowly across the body and plugs it into receptacle B between the seats. One complaint: the belt tension is too great and it gets tighter and tighter after it is fastened.


Volvo really doesn't need to make the band speedometer accurate; no one seems to know how to read it anyway. Volvo owners tell us they just make an educated guess; some read the pointer of the angled indicator ribbon while others use the area where the ribbon becomes full width. We have had two in a row now that are closest when read at full width and that is where the readings were taken for the data panel.

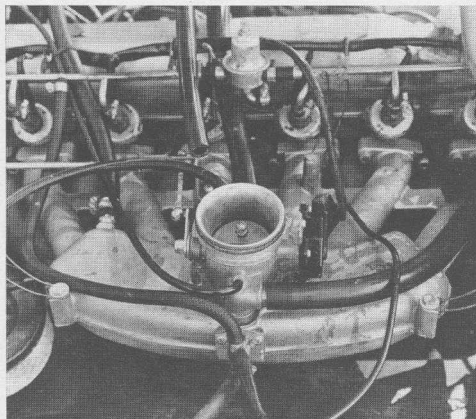
The dashboard seems bare with only fuel-level and coolant-temperature gauges in addition to the speedometer, odometer and excellent trip odometer with pushbutton reset. Even if the driver never knows what his engine speed or oil pressure is, he will know exactly what the heater is doing because Volvo's heater control knobs are large and lighted in the center to eliminate fumbling at night. Just a glance at the panel tells how much heat is dialed in.

With the vent window open there is some face-level ventilation, but the wind noise makes passengers wish for stale air again. The lower vents provide ventilation below the knees only; it is fitting, however, as they can be operated with the toe of a shoe. We could find no specific instructions for opening the vents but the lever has a rubber pad and looks as if it should be opened and closed with the feet.

Saddled with an automatic transmission, the 164E's performance suffers somewhat. We expect the performance of a 164E with the 4-speed transmission would be considerably better. Even with the automatic it's not underpowered; 0-60 mph in 12.0 seconds and 18.8 seconds at 76 mph in the quarter-mile. It will keep up with traffic in town and cruise quietly past it on the freeway. At low speeds (under 50 mph) the automatic transmission whines softly—probably a normal operating noise. The Pirellis also hum slightly at 65 mph and transmit the freeway expansion-joint bumps rather strongly through the steering wheel. The ZF power steering, by the way, is excellent, as we found in our earlier 164 test.

For states west of the Mississippi the 164E will be the only 164 available; elsewhere in the U.S. both carbureted 164 and the E are on the market—the lingering result of California's threatened 91—octane limit that didn't materialize.

The 164E is a comfortable, medium-size sedan with a price tag of \$5050 which includes either the 4-speed manual transmission or the 3-speed automatic, leather seats and trim, radial tires, styled steel wheels and, in general, complete equipment. There are only two options: radio and air conditioning. The 164E is priced just under the BMW Bavaria and significantly below the Mercedes-Benz 250 sedan. The Volvo is quicker than the Mercedes, slower than the BMW, roomier than either, and neither as stylish nor as good-handling as the two German sedans. Overall, it is a fine luxury transportation package that should be durable and won't go out of style tomorrow. 



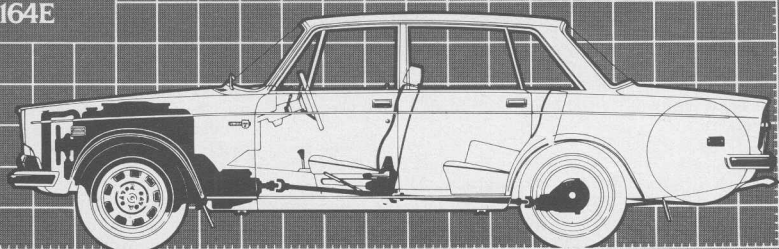
164E manifold has large intake orifice and long runners.

tried these belts was during last year's 142E test and then we found them erratic; one worked some of the time and one didn't work at all. These, however, worked perfectly. It is a one-hand operation to bring them into place; no excuse here for not using them. The belt is rolled in a plastic housing at the base of the center body pillar (no stylish "hardtops" from Sweden!) and threaded up and along the pillar to about shoulder height where it passes through a





ROAD TEST VOLVO 164E



SCALE: 1/8" DIVISIONS

PRICE

List price, west coast \$5050
Price as tested, west coast . \$5080
Price as tested includes standard equipment (automatic transmission, radial tires, leather upholstery, rear window defroster), dealer prep (\$30)

IMPORTER

Volvo Inc., Rockleigh, N.J. 07647

ENGINE

Type ohv inline 6
Bore x stroke, mm 89.0 x 80.0
Equivalent in 3.50 x 3.15
Displacement, cc/cu in 2979/182
Compression ratio 8.7:1
Bhp @ rpm 138 @ 5800
Equivalent mph 115
Torque @ rpm, lb-ft. 154 @ 2500
Equivalent mph 51
Fuel injection Bosch electronic
Type fuel required: regular, 91-oct
Emission control fuel injection, engine mods

DRIVE TRAIN

Transmission automatic; torque converter with 3-sp planetary gearbox
Gear ratios: 3rd (1.00) 3.31:1
2nd (1.45) 4.80:1
1st (2.39) 7.90:1
(2.39 x 2.3) 18.20:1
Final drive ratio 3.31:1

CHASSIS & BODY

Layout front engine/rear drive
Body/frame unit steel
Brake type 10.7-in vented disc front, 11.6-in disc rear; vacuum assisted
Swept area, sq in 433
Wheels steel disc, 15 x 5 1/2 J
Tires Pirelli Cinturato 165 SR-15
Steering type recirculating ball, power assisted
Overall ratio 15.7:1
Turns, lock-to-lock 3.7
Turning circle, ft. 32.8
Front suspension: unequal-length A-arms, coil springs, tube shocks, anti-roll bar
Rear suspension: live axle with trailing arms & Panhard rod, coil springs, tube shocks

ACCOMMODATION

Seating capacity, persons 4+1
Seat width,
front/rear 2 x 21.5/55.5
Head room, front/rear 39.0/35.5
Seat back adjustment, degrees 90

INSTRUMENTATION

Instruments: 0-120 mph speedo, 99,999 odd, 999.9 trip odo, coolant temp, fuel level, clock
Warning lights: oil pressure, alternator, brake fluid loss, brake-on, high beam, directionals, hazard flasher, seat belts

MAINTENANCE

Service intervals, mi:
Oil change 6000
Filter change 6000
Chassis lube none
Minor tuneup 6000
Major tuneup 12,000
Warranty, mo/mi 6/unlimited

GENERAL

Curb weight, lb 3404
Test weight 3420
Weight distribution (with driver), front/rear, % 54/46
Wheelbase, in 107.1
Track, front/rear 53.2/53.2
Overall length 185.6
Width 68.1
Height 56.7
Ground clearance 7.1
Overhang, front/rear 29.8/48.7
Usable trunk space, cu ft 23.2
Fuel tank capacity, U.S. gal 15.3

CALCULATED DATA

Lb/bhp (test weight) 24.8
Mph/1000 rpm (3rd gear) 20.1
Engine revs/mi (60 mph) 2980
Piston travel, ft/mi 1560
R & T steering index 1.22
Brake swept area sq in/ton 253

RELIABILITY

From R&T Owner Surveys the average number of trouble areas for all models surveyed is 11. As owners of earlier model Volvos reported 10 trouble areas, we expect the reliability of the Volvo 164E to be average.

ROAD TEST RESULTS

ACCELERATION

Time to distance, sec:
0-100 ft. 4.5
0-250 ft. 7.5
0-500 ft. 10.7
0-750 ft. 13.5
0-1000 ft. 16.1
0-1320 ft (1/4 mi) 18.8
Speed at end of 1/4 mi, mph 76.0
Time to speed, sec:
0-30 mph 4.9
0-40 mph 6.7
0-50 mph 9.0
0-60 mph 12.0
0-70 mph 15.8
0-80 mph 21.1
0-90 mph 29.1
Passing exposure time, sec:
To pass car going 50 mph 6.0

FUEL CONSUMPTION

Normal driving, mpg 17.7
Cruising range, mi. 270

SPEEDS IN GEARS

3rd gear (5800 rpm) 115
2nd (6000) 89
1st (6000) 57

BRAKES

Panic stop from 80 mph:
Max. deceleration rate, % g 84
Stopping distance, ft. 397
Control very good
Pedal effort for 50%-g stop, lb. 25
Fade test: percent increase in pedal effort to maintain 50%-g deceleration rate in 6 stops from 60 mph 12
Parking: Hold 30% grade? yes
Overall brake rating fair

HANDLING

Speed on 100-ft radius, mph 32.1
Lateral acceleration, g 0.690

SPEEDOMETER ERROR

30 mph indicated is actually 31.0
40 mph 40.5
50 mph 50.0
60 mph 59.0
70 mph 68.5
80 mph 78.0
Odometer, 10.0 mi. 9.8

ACCELERATION

