



VOLVO 164 E

FOR Excellent performance; outstanding top gear flexibility; very well made; quiet and comfortable.

AGAINST Rather expensive in the UK; poor warming up; excessive body roll; notchy gearchange.

Volvo have an almost legendary reputation for building cars that last. What they haven't been noteworthy for in our view is producing vehicles with much driver appeal as well.

In our road test of the standard 164 shortly after its introduction in 1969, we praised the superb finish and construction but not the performance — especially when compared to that of British rivals. In answer to this criticism Volvo announced an optional uprated version, the 164E, at the last Motor Show. The E stands for fuel injection which adds £187 to the price, now £2623 in all. Clearly the car is aimed at the owner who wants to keep up with his neighbour's Rover 3500S.

This isn't to say that Volvo have transformed the 164 into a four-seater sports car; far from it. What they have done is to give their biggest car a much higher performance without sacrificing comfort and luxury or, we assume, reliability.

In addition to the Bosch electrical fuel injection, several other changes have been made to the engine, including an increase in compression ratio (10:1 instead of 9.3:1) and a hotter camshaft. This all adds up to a healthy power output of 160 bhp (DIN) at 5500 rpm (the 164 engine gives 130 at 5000 rpm), and 170 lb.ft. of torque at 2500 rpm (152 lb.ft. at 2500 rpm). Volvo have also managed to achieve an extremely flat torque curve — over 168 lb.ft of torque is produced between 2200 rpm and 4300 rpm.

The very sophisticated injection system monitors various parameters affecting the quantity and timing of the squirts of petrol into the engine; these include induction air temperature, inlet manifold depression, throttle valve position, coolant temperature, and timing from contacts incorporated in the distributor. These signals are interpreted by a control unit which sends impulses to the solenoid-operated injectors mounted in the inlet ports just above the inlet valves.

Cold starting enrichment is achieved by a valve which injects extra fuel into the inlet duct, the amount depending on the initial temperature of the engine. Our test car always started easily from cold after about three or four seconds' cranking. It is, however, important to follow Volvo's starting procedure rigorously and not touch the accelerator or make repeated short bursts on the starter; such treatment floods the engine. Once the engine has started, the throttle must be treated with considerable respect; if it is opened too suddenly and too wide the

engine tends to cut and then restart as the revs drop; both classic symptoms of over-weakness. Compounded by some transmission wind-up (due to flexing of the rear axle upon its mountings), this fault can make driving in heavy traffic immediately after a cold start rather jerky and tiresome if you don't treat the throttle delicately.

But this is really the only major criticism of an otherwise excellent car. Once it is warm (which doesn't take long) the engine is extremely smooth and tractable, and gives the car a significantly better performance than that of the ordinary 164. Although a maximum speed of 112.5 mph is about average for a 3-litre, it's a considerable improvement on the 105.7 mph that the carburetted 164 managed. But it is on acceleration that the E really shows up well, witness its outstanding 0-50 mph time of 6.4 sec. We got our best figures by slipping the clutch slightly at the start and thus completely eliminating wheelspin, even though the track was wet. (Perhaps the acceleration times would be even better under more favourable conditions.) Even so our comparison chart shows that the 164E is quicker to 50 mph than even the redoubtable Jaguar XJ6; they have the same 0-60 mph time of 8.8 sec. and it is only about this speed that the Jaguar begins to pull away, reaching 100 mph in 24.1 sec. against the Volvo's 27.9 sec., a very respectable figure.

Top gear times are similarly impressive. Each 20 mph increase up to 60 mph takes

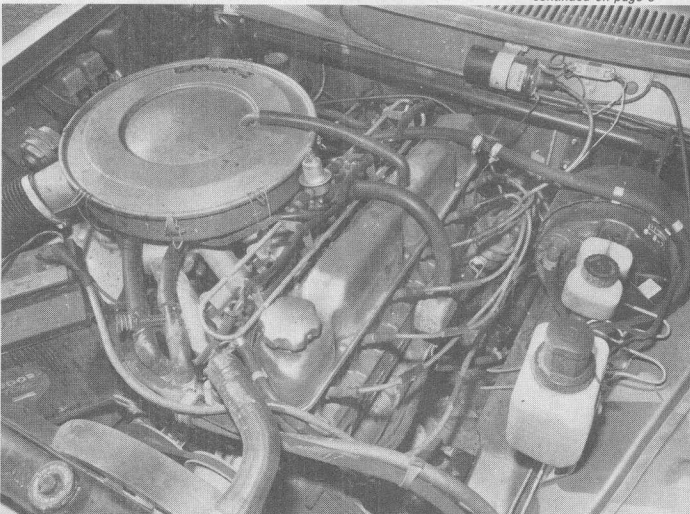


7.5 sec., reflecting the benefit of such a flat torque curve. Even the 70-90 mph time is under 10 sec.

The result of this excellent flexibility on the road is minimal use of the gearlever — all that is needed for most circumstances is a quick flick down from overdrive fourth to direct top (the overdrive does not operate on third). Unlike the 164 we tested before, our 164E had a rather stiff and over-baulked gear change, although it did improve during the test; this in itself was a slight deterrent to over-exuberant use of the gearbox.

You can't achieve a top gear performance like this merely through excellent torque — well chosen gear ratios are needed, too, and these the Volvo has. Top gear gives 19.6 mph/1000 rpm so that at the maximum speed in this gear (112 mph) the engine is spinning at 5700 rpm, just past maximum

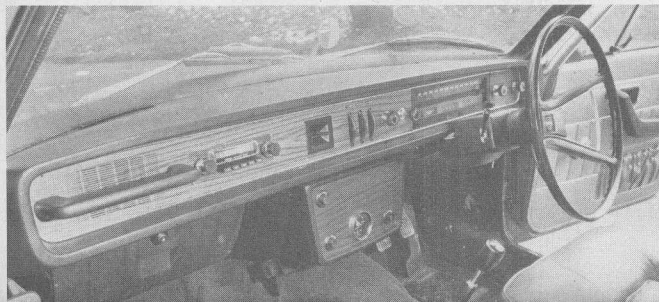
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The D30E engine is most impressive to look at. On the left of the engine, where the long inlet tracts meet the cylinder head, the row of solenoid operated injectors can be seen



Top: Although roll is considerable when pressing the car hard, handling is always controllable and safe even over slippery salt-covered surfaces



This group of three photographs shows the sumptuously finished interior of the 164E. Note the deeply padded seats adjustable for rake, height, length and (above) lumbar support.

Although not the most modern of designs, the fascia is well laid out with minor controls that are pleasant to use. All 164s are now equipped with a supplementary panel above the gearbox incorporating three switches and a clock.

Motor Road Test 15/72: Volvo 164E

Maximum speed mph	100	108	110	116	130	128	130
Jaguar XJ6 4-2 Litre	£2087						
Rover 3500S	£1917						
Citroen DS 21 Pallas EFI 139	£2082						
NSU Ro80	£2083						
Volvo 164E	£2023						
Triumph 2-5 PI	£1902						
Peugeot 504 FI	£1788						

Acceleration sec	2	4	6	8	10	12	14
Volvo 164E	0-50 90-60 in top						
Jaguar XJ6 4-2 Litre							
Rover 3500S							
Triumph 2-5 PI							
Peugeot 504 FI							
Citroen DS 21 Pallas EFI 139							
NSU Ro80							

Fuel consumption mpg	0	5	10	15	20	25	30
Triumph 2-5 PI							*
Citroen DS 21 Pallas EFI 139							*
Rover 3500S							
Peugeot 504 FI							*
Volvo 164E							*
NSU Ro80							
Jaguar XJ6 4-2 Litre							

* Not available: fuel injection on these models

Conditions

Weather: Poor — wet track and strong breeze
 Temperature: 40-43°F
 Barometer: 28.8-28.9 in. Hg.
 Surface: Wet
 Fuel: 101 octane (RM) 5 Star rating

Maximum Speeds

mph	kph
Mean lap banked circuit	112.5 181.2
Best one-way $\frac{1}{4}$ mile	115.5 185.9
Direct top gear	112.0 180.3
3rd gear at	86
2nd gear 6000	59
1st gear rpm	38
"Maximile" speed: (Timed quarter mile after 1 mile accelerating from rest)	
Mean	112.5 181.2
Best	113.9 183.3

Acceleration Times

mph	sec	Top 3rd
0-30	2.9	
0-40	4.5	
0-50	6.4	
0-60	8.8	
0-70	11.9	
0-80	15.3	
0-90	20.7	
0-100	27.9	
Standing quarter mile	16.9	
Standing Kilometer	30.7	

mph	Top sec	Top 3rd sec
10-30	—	5.7
20-40	11.1	7.5
30-50	10.7	7.5
40-60	10.9	7.5
50-70	12.2	8.2
60-80	14.0	9.0
70-90	16.8	9.9
80-100	12.8	—

Fuel Consumption

Overall	17.7 mpg
(=16.0 litres/100km)	
Fuel tank capacity	12.80 galls
Total test distance	963 miles

Performance

Performance tests carried out by *Motor's* staff at the Motor Industry Research Association proving ground, Lindley.

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Make: Volvo

Model: 164E

Makers: Aktiebolaget Volvo, Goteborg, Sweden

Concessionaires: Volvo Concessionaires Ltd., Raeburn Road, Ipswich, Suffolk

Price: £2097.00 plus £526.10 purchase tax equals £2623.10

Chassis and body

Construction Unitary, all steel

Brakes

Type Split circuit servo assisted discs all round. Drums for handbrake.

Dimensiona Front 10.70 in. dia.; Rear 11.60 in. dia.

Suspension and steering

Front Coil springs, wishbones with anti-roll bar

Rear Coil springs, live axle located by four parallel links and Panhard rod

Shock absorbers Telescopic

Steering Cam and roller, power assisted

Tyres Goodyear Grand Prix 185/70-15 Pressed steel

Wheels 5J

Coachwork and equipment

Starting handle No

Tool kit contents Box spanner for plugs and wheel nuts; tommy bar for box spanner; Phillips screwdriver; two open-ended spanners.

Jack Screw pillar

Jacking points 4

Battery 12 volt negative earth 60 amp hrs capacity

Number of electrical fuses 12

Fuseamps 45/40W

Indicators Self cancelling flashers

Reversing lamp Yes; operated automatically by gear lever

Screen Wipers Electric speed

Screen washers Electric

Sun visors Two

Locks: Ignition Key steering/ignition lock

with other keys doors, boot, glove box

Interior heater Fresh air with two speed fan

Upholstery Leather

Floor covering Carpet

Alternative body styles None

Maximum load 770lb

Maximum roof rack load 220lb

Major extras available Automatic transmission

Maintenance

Fuel tank capacity 12.8 galls

Sump 5.3 pints SAE 20W/50

Gearbox 1.1 pints SAE 20W/50

Rear axle 2.8 pints SAE 90

Steering gear 2.1 pints ATF Type A

Coolant 11 pints (2 drain taps)

Chassis lubrication None

Maximum service interval 6000 miles

Ignition timing 10° BTDC at 7000 rpm

Contact breaker gap 0.010in.

Spark plug gap 0.028-0.032in.

Spark plug type Bosch W22E35

Tappet clearance (cold) Inlet 0.021in. Exhaust 0.021in.

Rear wheel toe-in Parallel

Front wheel toe-in 0°0'-20'

Camber angle 0°0'-0°3'

Castor angle 0°0'-1°3'

King pin inclination 7.5° with no camber

Tyre pressures:

Front: 27 psi (1-3 persons) 29 psi (fully loaded)

Rear: 27 psi (1-3 persons) 34 psi (fully loaded)

power; 112.5 mph in overdrive top represents a mere 4450 rpm, suggesting that downhill autoroute stretches will allow the car to go much faster without over-revving. At 70 mph in overdrive top the engine is only doing 2800 rpm which makes for a very relaxed cruising at the legal limit.

The 164E is a very comfortable car. Everyone who drove it praised the seats — there's plenty of adjustment to suit all shapes and sizes. The driver's is not only adjustable for reach and rake but also for height (four positions) and lumbar support. Moreover, even with the front seats pushed right back there is plenty of room in the back for adults. The only criticisms we have of the seating are that the highest setting for the cushion brings the driver's thighs too close to the large steering wheel (those who like to drive high up and close to the wheel could be in trouble here), and of poor lateral support, accentuated by considerable roll when cornering hard.

By giving the suspension lots of travel and soft springs, Volvo have achieved quite a good ride for a live axled car. Most disturbances are soaked up without a flinch — the only time that it does get caught out is over long undulations at high speed which can create a floating motion at the front.

The 164E is equipped as standard with Goodyear Grand Prix 185/70 — 15 radials (instead of the Pirelli Cinturato 165 — 15 tyres of the 164) which generally improve the handling. Understeer is still predominant but is kept down to a level that creates a lot of confidence, especially as the power steering has excellent feel. Even so, there is room for further improvement as the occasional floating action of the front suspension when cornering hard at high speed can create quite dramatic understeer; due care and anticipation can avoid it. Pressing the car to the limit causes the tail to drift out in such a mild way that a reduction in lock will curb it. In the wet it doesn't happen quite so slowly and controllably and you have to be fairly cautious with your right foot to avoid a sudden transition to pure oversteer.

Overall, the 164E is a quiet car. Some wind noise above 80 mph is evident but it's not obtrusive and the excellent radio was perfectly audible until well over 90 mph. At low speeds engine and mechanical noise is very low indeed and low speed road thump and roar, evident on the 164, has been reduced to an insignificant level.

Volvo adhere to an arrangement of push/pull minor controls that most rivals abandoned years ago. Although perhaps lacking the aesthetic appeal of a neat group of rocker switches, they feel nice to operate but they can be difficult to reach — especially when the inertia reel seat belts lock up, something they did infuriatingly easily on our car.

In conclusion, the Volvo 164E is a car that can hold its own in terms of performance as well as comfort and luxury. But in this country it is expensive for a car in its class; the Rover 3500S is £239 cheaper, the Triumph 2.5 PI over £700 less. To compensate for this there is, of course, Volvo's reputation for longevity, neatly reflected by the car's odometer; while other manufacturers are satisfied to provide mileage recording to 99,999 miles before zero returns, the 164E's will go to 999,999 miles.