

AUTO TEST

VOLVO 164E

Stately, Yet Fast

AT-A-GLANCE:

Injection version of 3-litre Volvo, with overdrive and sun-roof standard, refrigeration optional. Clumsy at low speeds, but good fast cruising. Solid feel and level ride; light, rather vague power steering. Good but heavy brakes. Fuel consumption somewhat high, and price very high.

NEXT week Volvo will announce the 1974 versions of their current range, featuring safety modifications which have evolved from their research in this field. In the case of the 164, we will see energy-absorbing bumpers at each end, though the main structure of the car will continue little altered from the present format. We are obliged to await the release date for the full story of the changes, but in the meantime we present a Road Test of the current model, and it may be presumed that in all important matters of performance, behaviour and economy there will be no substantial differences.

We previously tested the 164 with Automatic transmission in April 1970, but since then the six-cylinder model has been offered with



Bosch electronic fuel injection as an option. In this form the car is called the 164E, and develops an additional 30 bhp. The car also has the revised fascia now common to four- and six-cylinder models, and the test car was fitted with the optional refrigeration system.

Manual transmission includes overdrive as standard equipment, though Borg Warner 35 automatic with central floor control — as on our previous test car — is available at £86.99 extra. In contrast with current trends it was delightful to come across a really high-g geared car again, designed to provide fast cruising that really is *cruising* and not just thrashing along within the endurance limits of the engine. The six-cylinder engine will not over-rev even in direct top gear, while downward movement of the column lever to switch in overdrive increases the overall speed per 1,000 rpm from 21.3 to 26.7 mph.

Manual transmission and the additional engine power combine to raise the maximum speed from the mean of 107 mph returned by the previous 164 automatic model, to 118 mph. Even at this speed, engine revs are under 4,500 rpm, and the leisurely 90-100 mph cruising pace in overdrive calls for under 3,800 rpm. The indirect gears are also high and well spaced, having maxima of 36, 60 and no less than 95 mph in third gear. Overdrive is operative only on top gear.

As well as being 11 mph faster on top speed, the 164E offers much better acceleration. Full power takes the car off the line with a squeal of wheelspin, and 60 mph is reached in second gear in just 10sec, while the time to cover a quarter-mile is commendably quick, at 17.5sec. Such techniques, however, are unbecoming to the dignified and rather formal nature of the car. More practical is the really good overtaking performance in third, which will take the car smoothly through from 50 to 80, mph in just over 10sec.

The gear change is sturdy and definite in its movement, and although it often baulks going into gear this is generally because the clutch pedal has not been completely floored. With an operating load of 60lb, the clutch is objectionably heavy and the effort it takes becomes very tiresome. Still more of a problem are the badly designed throttle linkage and slow engine response, which together make

the Volvo extremely difficult to drive smoothly in traffic. If the car is running lightly in first or second gear, and there is need to accelerate, it is necessary to release the clutch, speed up the engine, and feed it in again. Otherwise the engine responds with a jerk causing involuntary reaction on the accelerator, which can develop into violent kangaroo lurches.

When cold, the engine starts promptly with automatic mixture compensation, and pulls cleanly straight away. It is not always so responsive when hot, sometimes needing a lengthy run on the starter before it will fire. Although the slow running adjustment on the test car seemed correct, giving an even tickover at about 600 rpm, the combined drag of the power steering and the refrigeration compressor drive belts seemed too much for it, resulting in stalling when turning or manoeuvring the car. Only one belt is used to drive both the compressor and the power steering pump, and the second pulley provided on the compressor is not used. This is an economy of layout which we fear Volvo will have to change, as although the drive belt was thor-

oughly tight there were often embarrassing shrieks from it on starting up unless the air conditioning was first switched off. These points together considerably spoilt the appeal of the car in low-speed or traffic work, and it was not until it was out on the open road that the car could be enjoyed.

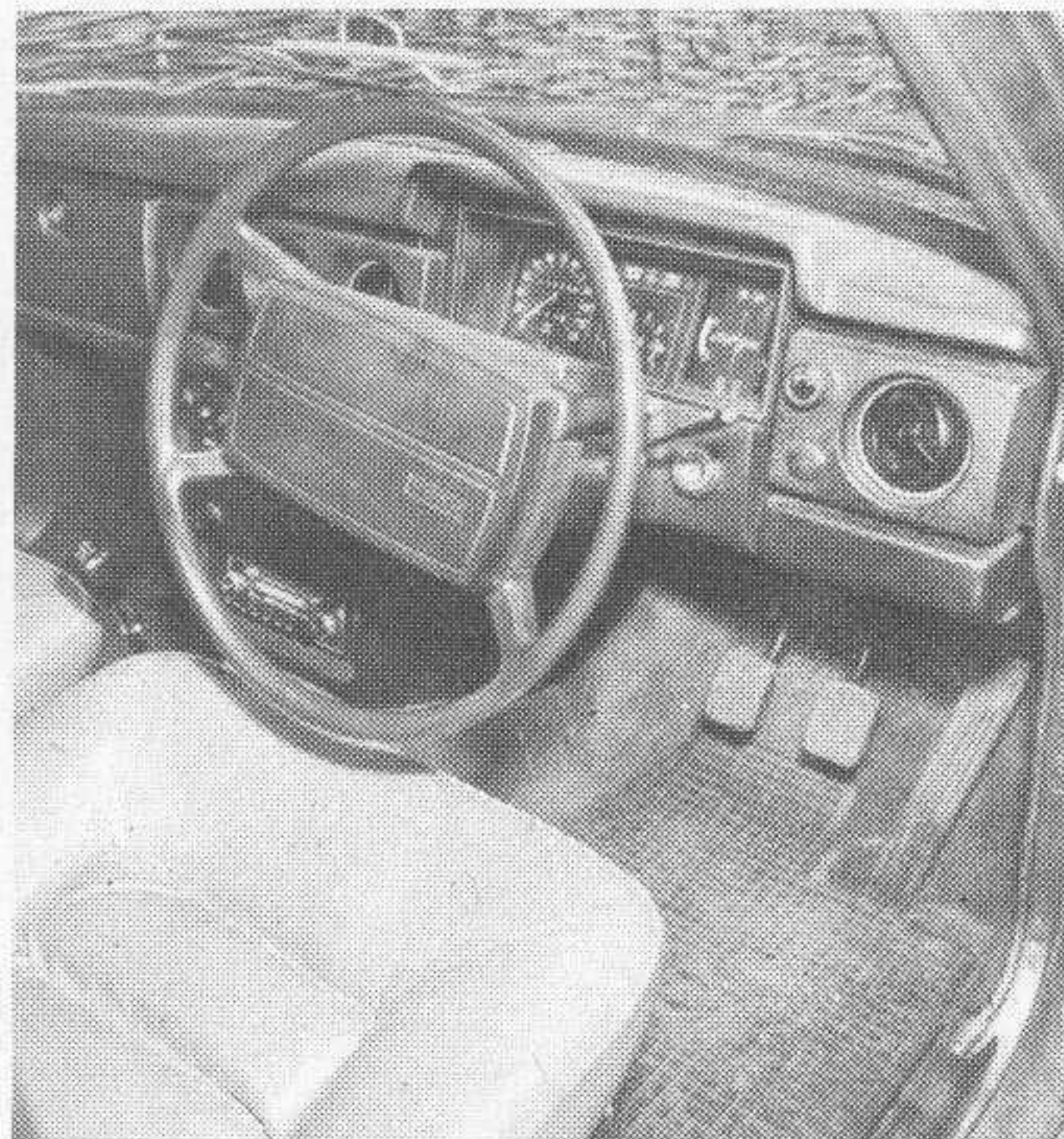
Overdrive engagement is sometimes accompanied by a slight jerk, and it is often difficult to know whether to open or close the throttle in efforts to reduce this. The smoothest engagement is obtained if the overdrive is switched in with the throttle wide open, but at other times it is usually possible to ease the accelerator back at the critical moment to take the load off the engine just as overdrive engages.

Fuel Consumption

Increasing strength and reinforcement for passive accident safety has put the weight of the 164 up by 1.8cwt since we last tested it. With a 3-litre engine in a car of 28.5cwt one cannot hope for too much in the way of economy, and the overall consumption figure of 17.5 mpg is as to be expected. We found that consumption rose in town traffic due to the disproportionate penalty of the air conditioning, and figures of 14-16 mpg were returned. Motorway cruising in the splendidly high overdrive improved this to about 20 mpg, even with regular use of speeds around the 90 mph mark. The engine runs well on premium 4-star fuel; no noticeable oil consumption occurred during the test.

Steering, Ride and Handling

Heavy front end weight distribution gives the Volvo strong understeer and basically good directional stability — factors which, we suspect, contribute to its appeal among drivers who like the "solid feel" of the Volvo. The steering is not particularly precise, but because the car runs so straight and true, little affected by cross winds, one is not too concerned about the slight lost movement present. The power assistance is unobtrusive except in taking the hard work out of turning the wheel, and does not spoil the steering response. Low speed corners do not take much steering effort, although one is aware of countering the strong understeer to pull the front of the car round. The 164 feels very manageable on corners yet does not invite hard driving;



Above: The massive padded boss of the steering wheel is part of the Volvo safety design. Round instruments are set in square dials, with warning telltales above the rev counter. Below: Reversing lamps are standard and as usual the car is supplied with mudflaps as required by Swedish law



AUTOTEST VOLVO 164E . . .

there is a lot of body roll, tyre squeal and steering pull, all combining to give the driver ample warning if he tries to corner too hard. Wet road adhesion is good, and if the car is made to skid it is easily corrected, and the slide is almost gracefully gentle.

The suspension is by coil springs all round, with a live axle on trailing arms and radius rods at the rear. A remarkably "dead" ride is provided, with the suspension soaking up the lesser irregularities of road surface so well as to make them almost imperceptible. The occasional larger bumps are felt as a sharp jerk, jolting the car out of its dignified level running, and occasional wheel patter is felt as a shudder on certain wave sections of road surface. Quite a lot of thumping is heard from the suspension over bumps and cat's eyes. The overall impression is of a very solidly built car which perhaps feels even heavier than it is.

Brakes and Safety Engineering

Disc brakes are fitted all round, with servo assistance. A fairly hard lining material must be used, since braking response was not up to that of the previous model and a woman driver might find it difficult to obtain maximum

efficiency, for which an excessive 130lb pedal load is needed. Ordinary check braking is achieved with quite moderate pedal loads in the order of 50lb, and there is perhaps a measure of safety in the reduced likelihood of locking the wheels in emergency braking. Fade tests produced only a slight increase in pedal loads, accompanied by a cautionary grating noise as the discs became really hot. The handbrake, criticized in our previous Road Test, is now much better and gave an unusually good 0.35g deceleration at 30 mph. It is conveniently located beside the driving seat, and a firm pull holds the car securely on a 1-in-3 gradient.

Separate hydraulic circuits link both front wheels with one rear one. If either circuit fails, a "brake failure" light on the fascia comes on, this light being tested automatically each time the ignition is switched on, before using the starter. There is a separate tell-tale for the parking brake.

In addition to the usual construction of the body with fore-and-aft crumple zones for accident protection, the Volvo has massive girders in the doors to give lateral protection, and the steering column is in parallel sections to reduce intrusion in a frontal collision.

Comfort and Equipment

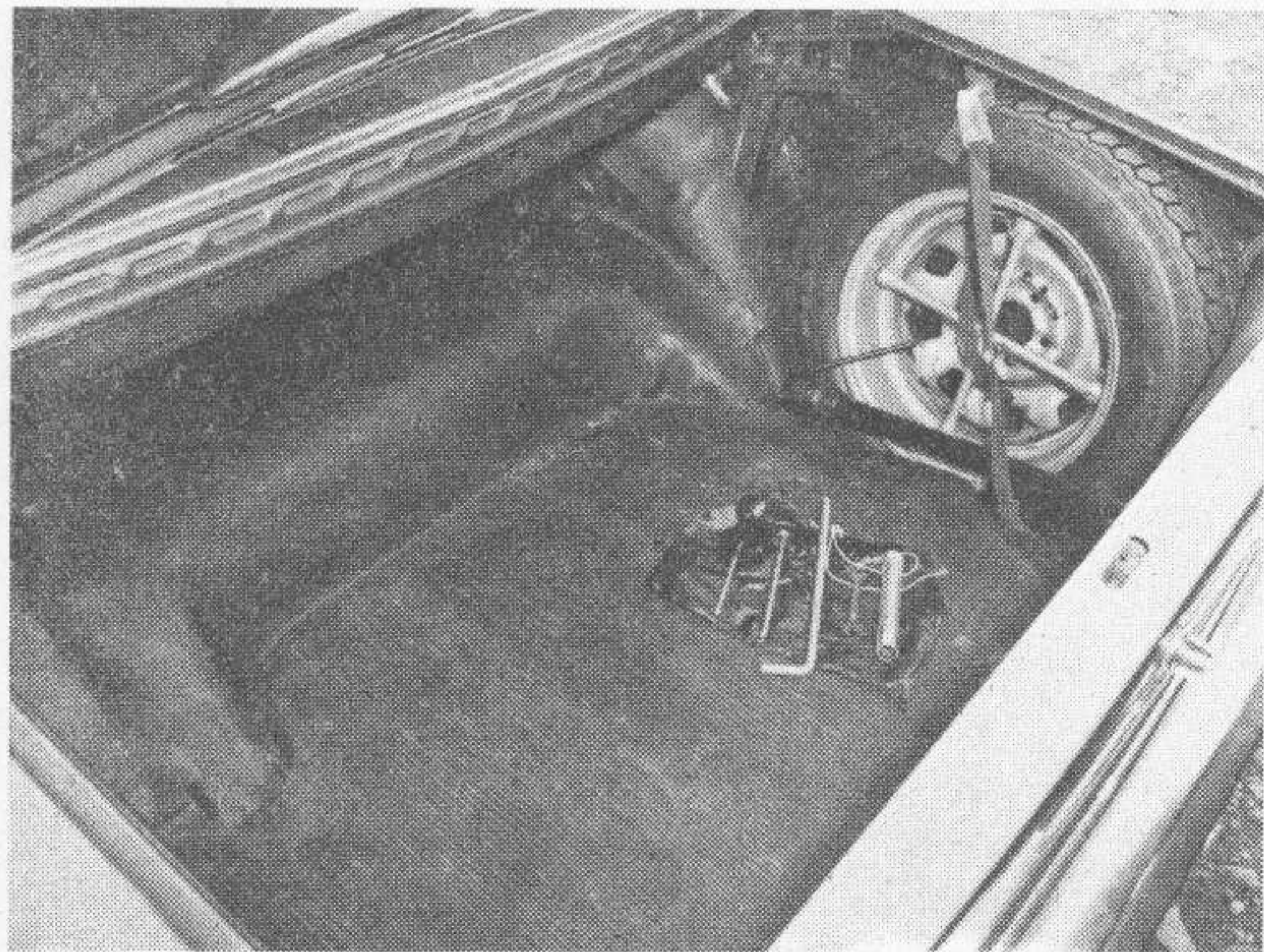
In our earlier test we accepted the driving position with little criticism, but by today's standards it falls a long way short. Even drivers who are long in the leg have to set the seat fairly

far forward to be able to reach the pedals, and the steering wheel is then objectionably near the driver's chest. The pedal angles are awkward, so that the driver finds himself pressing the accelerator with the toe of the foot, and the foot must be raised awkwardly high to transfer to the brake pedal, with risk of catching the welt of the shoe on the side of the pedal.

The seats have infinitely adjustable reclining backrests, controlled by a lever on the outer edge, and a barely perceptible measure of adjustment to the firmness of the lumbar support in the backrest is possible by means of a thumb wheel on the right side of each squab. That on the driving seat is difficult to reach.

Seat adjustment control is different on each side; the driver's seat has a pull-up lever at the front, and the passenger seat a push-down lever at the side. There is also a central lever in front of the driving seat claimed to give a choice of four positions for seat cushion height, but we could find only three settings on the driving seat of the test car, and it would stay only in two of them. The seats themselves are generously upholstered in soft leather and are comfortable to sit on for long journeys, but a little too slippery for good lateral support. Headrests are provided, but they intrude badly into the view of rear passengers; however, they are readily removed.

Inertia-reel seat belts are fitted, with the vertical part of the belt neatly concealed in the trim of the door pillar. If they are not



The spare wheel stows with wheelbrace and the jack to the right of the deep and very spacious boot

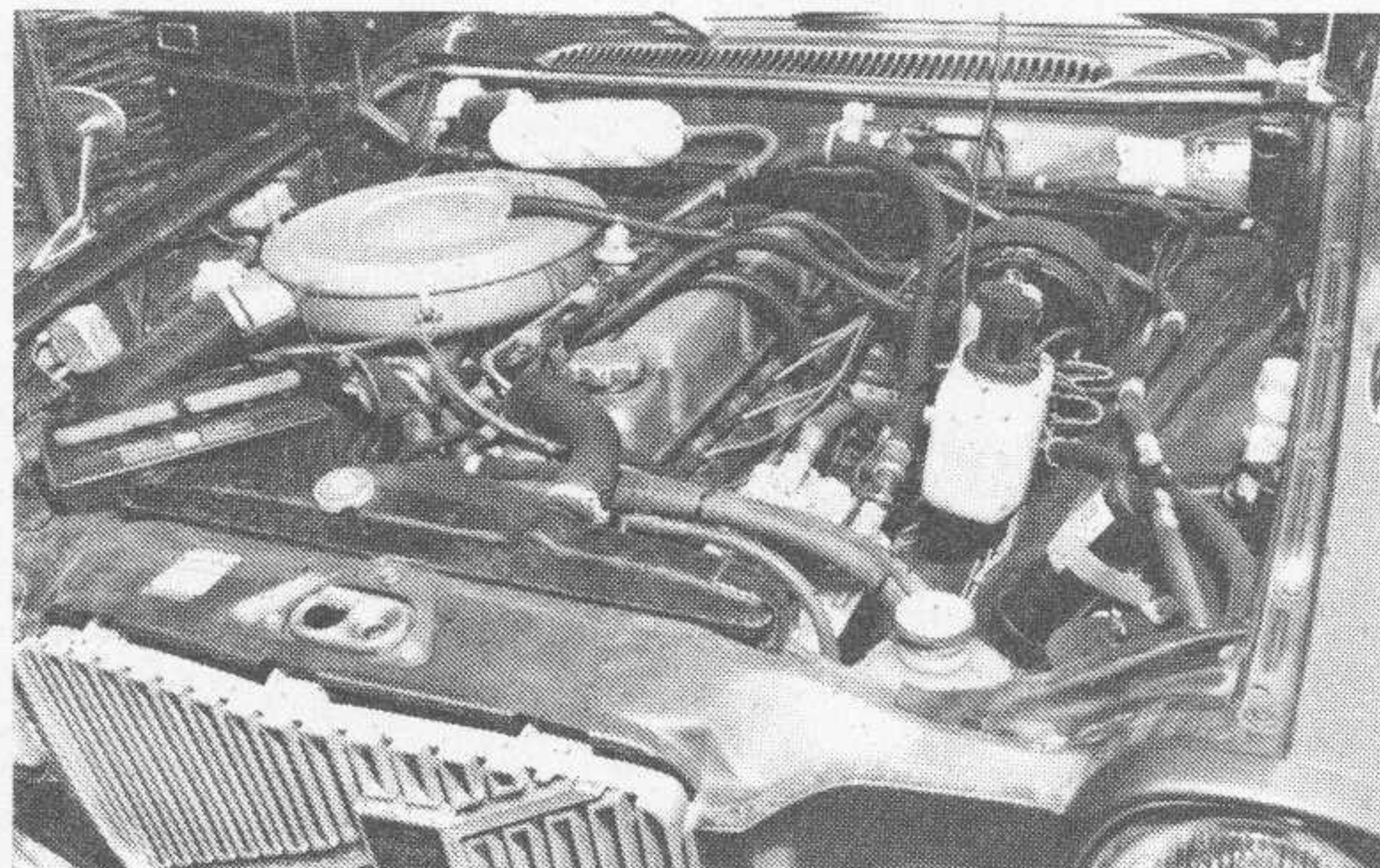


Door handles are recessed and there are substantial door pulls and elastic-top map pockets. Seats are upholstered in soft leather

Rubber faced bumpers were fitted on the test car, but 1974 models will have huge energy-absorbing bumpers to withstand a 5 mph impact. Fog lamps are built in on either side of the radiator



Fuel injection and piping for the optional air refrigeration system makes the under-bonnet treatment look rather crowded, but access is really quite good, particularly to such items as the battery, dipstick and windscreen washer reservoir



worn, a "Fasten Seat Belts" light on the fascia comes on when any forward gear is selected and is extinguished each time the gear passes through neutral. A switch in the passenger seat detects when the seat is occupied, but this proved sensitive enough to turn the seat belts light on because a light briefcase had been put on the front seat.

Ventilation controls are simplified by use of a single but insensitive rotary knob for water valve temperature control, and there is a three-position fan switch without any variation of ram air supply to the interior. However, the incoming air can be switched off conveniently in a moment by pressing a button marked "REC" (for recirculating air), often useful before going into a tunnel. The fan is scarcely audible on low speed, and produces a torrent of air on its number three setting. Other vacuum-operated, ventilation control buttons are marked "FLOOR" and "DEF", for normal ram ventilation and to close off the floor vents for maximum air to the screen respectively.

As mentioned, the car was equipped with air conditioning, which costs some £250 extra, including dealer fitting. A separate switch is provided to engage the refrigeration compressor clutch, and when used there is a noticeable reduction in tickover speed. Cool air is then admitted from the outlet on the floor (if switched on) and through the four eyeball nozzles on the fascia; it was greatly appreciated during the warm weather of the test. The "REC" button is pressed to obtain maximum efficiency from the system, which cools the interior down within a minute or two. The "FLOOR" button can then be pressed to pass outside air through the refrigeration system.

In addition to this luxury, the 164E is supplied

as standard with a winding sun roof by Golde. We found this combination of air conditioning and radiant sunshine particularly pleasant in hot weather. As the panel winds back, a draught deflector pops up at the front, and there is very little buffeting with the roof fully open. Wind roar increases markedly, however, becoming sufficient to encourage one to close



Above: In the rear compartment there is a large folding armrest in the centre of the shaped bench seat, and there are door armrests as well. String nets on the backs of the front seats provide further stowage for papers or maps. Below: A winding sunshine roof is fitted as standard on the 164E

the roof above about 60 mph. There is again a lot of wind noise from the rather angular styling of the car, and around the closed quarter vents, once the speed is taken above about 80 mph, even with the roof closed. This is all the more noticeable on account of the mechanical quietness when cruising fast.

A clearly marked circular speedometer and much smaller rev counter are set in square dials, easily seen through the top half of the steering wheel. Matching dials on the right are the thermometer and fuel gauge, with tell-tales for the oil pressure and generator between them at the top. Below is a green light for the overdrive, which is simply a "position of switch" indicator, on all the time the switch is down, although overdrive only engages with top gear. The speedometer contains the usual Volvo total mileometer boasting six figures, and the trip mileometer beneath it is reset at the touch of a button.

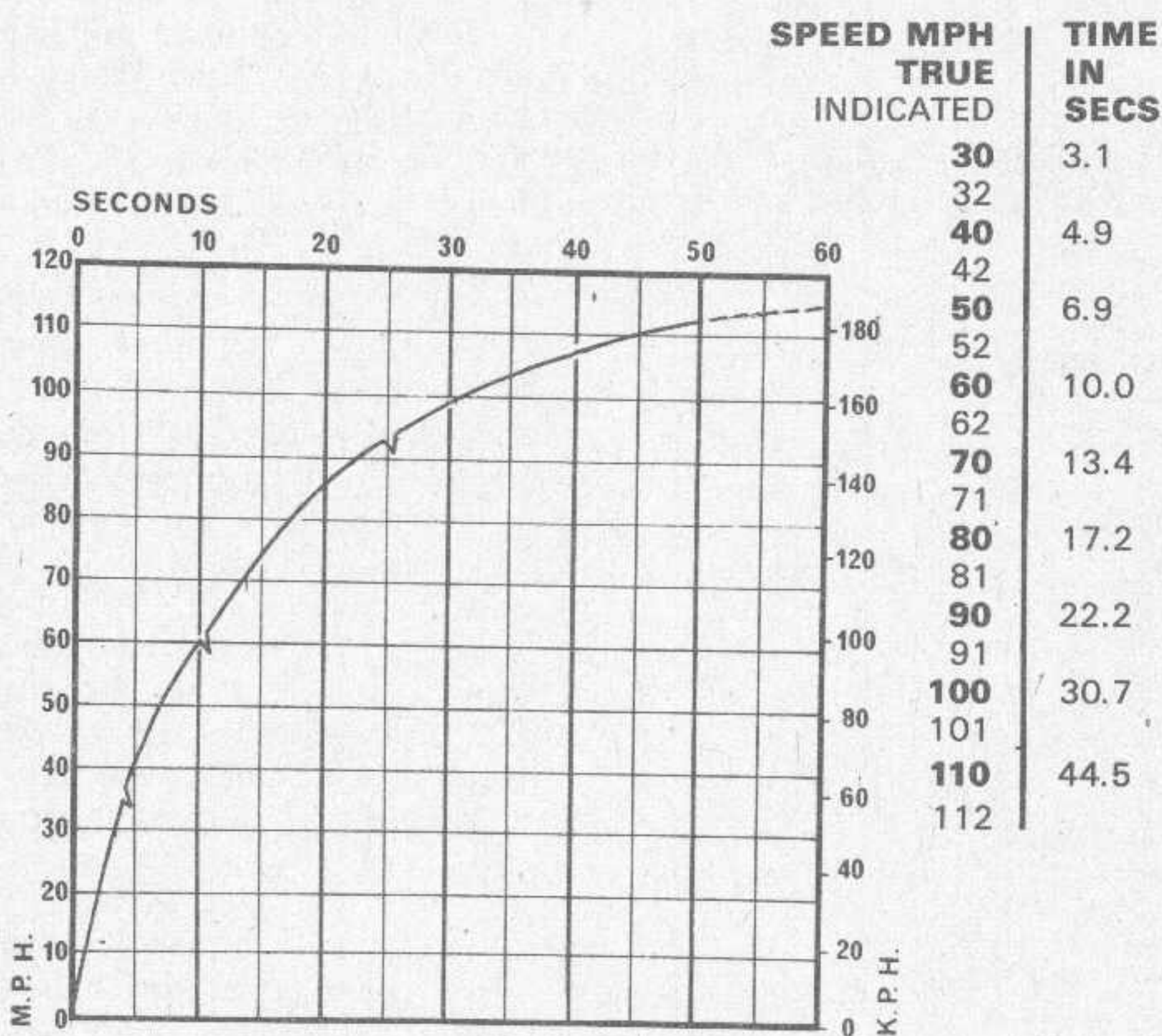
British drivers may take a little while to get used to having the indicators switch on the left side of the steering column; it is raised to flash the headlamps. Beneath the overdrive switch on the right is the three-position two-speed wiper switch, which is raised to work electric screenwashers. The huge central padded boss on the steering wheel is pressed to sound the twin-tone horns.

Visibility is only fair. The opening quarter vents and flattish, rather upright windscreen with thick pillars afford only reasonable vision on the quarters. The driver's windscreen wiper clears a good area, but that on the passenger side does not go far enough towards the left edge of the screen. Most of the wide bonnet deck is in view, and the corner positions are easy to judge.



VOLVO 164E (2,978 c.c.)

ACCELERATION



mph	GEAR RATIOS AND TIME IN SEC			
	O.D.	Top	3rd	2nd
10-30	—	9.7	6.9	3.9
20-40	12.9	9.4	6.2	3.8
30-50	12.2	8.6	5.9	3.7
40-60	12.1	8.6	6.0	4.1
50-70	14.0	9.2	6.6	—
60-80	16.4	10.5	7.5	—
70-90	19.5	12.2	9.0	—
80-100	25.9	14.5	—	—
90-110	—	21.8	—	—

Standing 1/4-mile
17.5 sec 81 mph
Standing Kilometre
32.2 sec 101 mph
Test distance
1,058 miles
Mileage recorder
accurate

PERFORMANCE

MAXIMUM SPEEDS			
Gear	mph	kph	rpm
O.D.			
Top (mean)	118	190	4,400
(best)	120	193	4,500
Top	118	190	5,550
3rd	95	153	6,000
2nd	60	97	6,000
1st	36	58	6,000

BRAKES

FADE (from 70 mph in neutral)
Pedal load for 0.5g stops in lb

Gear	1st	2nd	3rd	4th	5th
30-25	6	7	8	9	10
37-30	37-30	37-30	40-32	40-35	40-35

RESPONSE

(from 30 mph in neutral)

Load	g	Distance
20lb	0.23	131ft
40lb	0.42	72ft
60lb	0.67	45ft
80lb	0.70	43ft
100lb	0.80	37ft
130lb	0.92	32.8ft
Hand brake	0.35	86ft
Max. Gradient	1 in 3	

CLUTCH

Pedal 60lb and 6in.

COMPARISONS

MAXIMUM SPEED MPH

Jaguar XJ6 4.2 o/d	(£3,094)	123
Rover 3500S	(£2,175)	122
Volvo 164E	(£2,915)	118
Ford Granada	(£1,906)	113
Triumph 2.5 P.I.	(£2,038)	106

0-60 MPH, SEC

Jaguar XJ6 4.2 o/d	8.7
Rover 3500S	9.1
Ford Granada	9.1
Volvo 164E	10.0
Triumph 2.5 P.I.	11.5

STANDING 1/4-MILE, SEC

Jaguar XJ6 4.2 o/d	16.5
Rover 3500S	16.8
Ford Granada	16.8
Volvo 164E	17.5
Triumph 2.5 P.I.	18.1

OVERALL MPG

Triumph 2.5 P.I.	21.8
Rover 3500S	20.1
Ford Granada	19.1
Volvo 164E	17.5
Jaguar XJ6 4.2 o/d	16.0

GEARING

(with 175 HR 15in. tyres)

O.D. Top	26.7 mph per 1,000 rpm
Top	21.3 mph per 1,000 rpm
3rd	15.9 mph per 1,000 rpm
2nd	10.1 mph per 1,000 rpm
1st	6.0 mph per 1,000 rpm

CONSUMPTION

Constant speed figures not measured as our flowmeter is incompatible with fuel injection.

Typical mpg	18 (15.7 litres/100km)
Overall mpg	17.5 (16.1 litres/100km)
Grade of fuel	Premium, 4-star (min. 97 RM)

OIL

Consumption (SAE 10W/30) . negligible

TEST CONDITIONS:

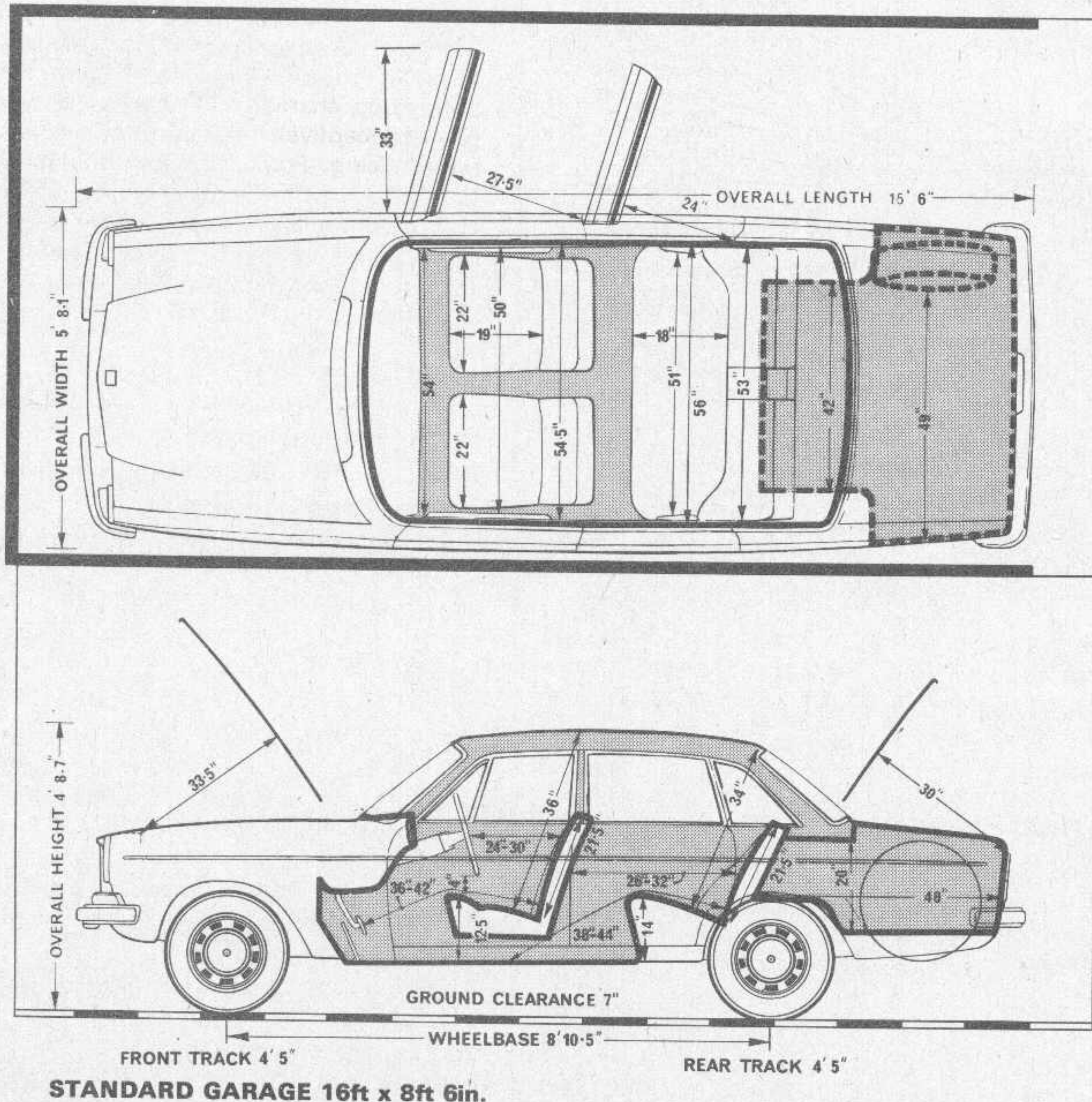
Weather: Fine and Sunny. Wind: 0-5 mph.
Temperature: 25 deg. C. (77 deg. F).
Barometer: 29.75in. hg. Humidity: 50 per cent.
Surfaces: Dry Concrete and Asphalt.

WEIGHT:

Kerb Weight 28.5cwt (3,192lb-1,450kg) (with oil, water and half full fuel tank).
Distribution, per cent F, 53.7; R, 46.3.
Laden as tested: 32.1cwt (3,590lb-1,630kg).

TURNING CIRCLES:

Between kerbs L, 33ft 3in.; R, 34ft 6in.
Between walls L, 35ft 5in.; R, 36ft 8in.
Steering wheel turns, lock to lock 3.75.
Figures taken at 9,000 miles by our own staff at the Motor Industry Research Association proving ground at Nuneaton.



SPECIFICATION

ENGINE	
Cylinders	6 in-line
Main bearings	7
Cooling system	Water: pump, fan with viscous coupling, and thermostat
Bore	88.9mm (3.50in.)
Stroke	80.0mm (3.15in.)
Displacement	2,978 c.c. (182 cu. in.)
Valve gear	Overhead, pushrods and rockers
Compression ratio	10-to-1. Min. octane rating: 97 RM
Carburation	Bosch electronic fuel injection
Fuel pump	SU electric
Oil filter	Full flow
Max. power	160 bhp (DIN) at 5,500 rpm
Max. torque	170 lb.ft. (DIN) at 2,500 rpm

TRANSMISSION

Clutch	Single diaphragm spring, 9.5in. dia.
Gearbox	Four-speed all-synchromesh
Gear ratios	Top 1.0 OD top 0.797
	Third 1.34
	Second 2.12
	First 3.45
	Reverse 3.45
Final drive	3.45 to 1

CHASSIS and BODY

Construction	Integral with steel body
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SUSPENSION

Front	Independent, double wishbones, coil springs, telescopic dampers, anti-roll bar
Rear	Live axle, trailing links, radius rods, coil springs, telescopic dampers

STEERING

Type	ZF power-assisted recirculating ball
Wheel dia.	15.8 in.

BRAKES

Make and type	Girling or ATE front and rear
Servo	Girling vacuum
Dimensions	F 10.7 in. dia. discs R 11.6 in. dia. discs
Swept area	F 212 sq. in., R 198 sq. in. Total 410 sq. in. (256 sq. in./ton laden)

FRONT ENGINE, REAR-WHEEL DRIVE

WHEELS

Type	Pressed steel disc
	5½J. in. wide rim.
Tyres—make	Pirelli
—type	Radial ply tubeless
—size	175 HR 15 in.

EQUIPMENT

Battery	12 volt 60 Ah. Negative earth
Alternator	55 amp a.c.
Headlamps	45 watt (total)
Reversing lamp	Standard 15 watt
Electric fuses	9
Screen wipers	Two-speed
Screen washer	Standard, electric
Interior heater	Standard, water valve type
Heated backlight	Standard
Safety belts	Standard, inertia reel
Interior trim	Leather seats, pvc headlining
Floor covering	Carpet
Jack	Screw pillar type
Jacking points	2 each side, under sills
Windscreen	Laminated
Underbody protection	Underseal

MAINTENANCE

Fuel tank	12.8 Imp. gallons (58 litres)
Cooling system	11 pints (inc. heater)
Engine sump	5.3 pints (24 litres)
	SAE 10W/30. Change oil every 6,000 miles. Change filter every 6,000 miles.
Gearbox and Overdrive	1.1 pints. SAE 90. Change every 25,000 miles.
Final drive	2.8 pints. SAE 90. Change after first 1,500 miles.
Grease	None required.
Valve clearance	Inlet 0.020 to 0.022 in. (warm). Exhaust 0.020 to 0.022 in. (warm).
Contact breaker	0.010 in. gap; 40 deg. dwell.
Ignition timing	10 deg. BTDC (stroboscopic at 600-800 rpm).
Spark plug	Type: Bosch 225 T35. Gap 0.028 to 0.032 in.
Compression pressure	156-185 psi.
Tyre pressures	F 27; R 27 psi (normal driving) F 29; R 29 psi (full load).
Max. payload	770 lb (340 kg)

Living With the Volvo 164E

Running-in advice allows 70 mph for the first 600 miles, increased to 80 mph until 1,200 miles have been completed. Maintenance is required every 6,000 miles, when the engine oil should be changed, other oils checked (in gearbox, overdrive and back axle), and various body lubrication points are to be attended to. From the way in which the oil level remained constant throughout the test, there should be little need to open the bonnet, which is perhaps as well since its release beneath the fascia on the driver's side requires a superhuman pull, and the lid is heavy to lift.

The boot may be left unlocked, and its lid is strongly spring-assisted to remain open. Luggage has to be lifted over a high sill, but the compartment is generously deep and spacious. Thick rubber matting lines the boot floor and sides, leaving no bare paintwork exposed. Boot illumination is shared with the number plate lighting, and is not much help for loading up at night. The spare wheel stows neatly at the side of the boot on the right and there is a sturdy wheelbrace. The winding pillar jack is easy to use, and there are a few hand tools including a plug spanner in the tool kit.

The doors open wide for easy access, and the front doors have two-position "keeps", holding them open securely in the halfway position for access in car parks or confined spaces. The doors can be locked without the key by depressing the button and closing the door with the handle held up. Thick rubber facings on the bumpers extend well round the corners. Under-bonnet access is fairly good, although the dipstick is rather buried beneath the ignition leads. The windscreen washer reservoir holds three pints and is conveniently placed at the left side of the compartment, while the battery, right at the front, is even easier to check and top up.

Conclusion

Several who drove the Volvo 164E compared it with the obsolete Rover 3-litre, since it has the same feeling of great strength and robustness. With the fuel injection engine, the slightly ponderous character of the car is changed to one of deceptively brisk performance and relaxed fast cruising. From the way in which it covers the ground without stress, the 164E should also prove durable, and it offers a good blend of performance and comfort, spoilt only by the dated driving position and the erratic response at low speeds. □

MANUFACTURER:

AB Volvo, 405 08 Goteborg, Sweden.

UK CONCESSIONAIRES:

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

PRICES

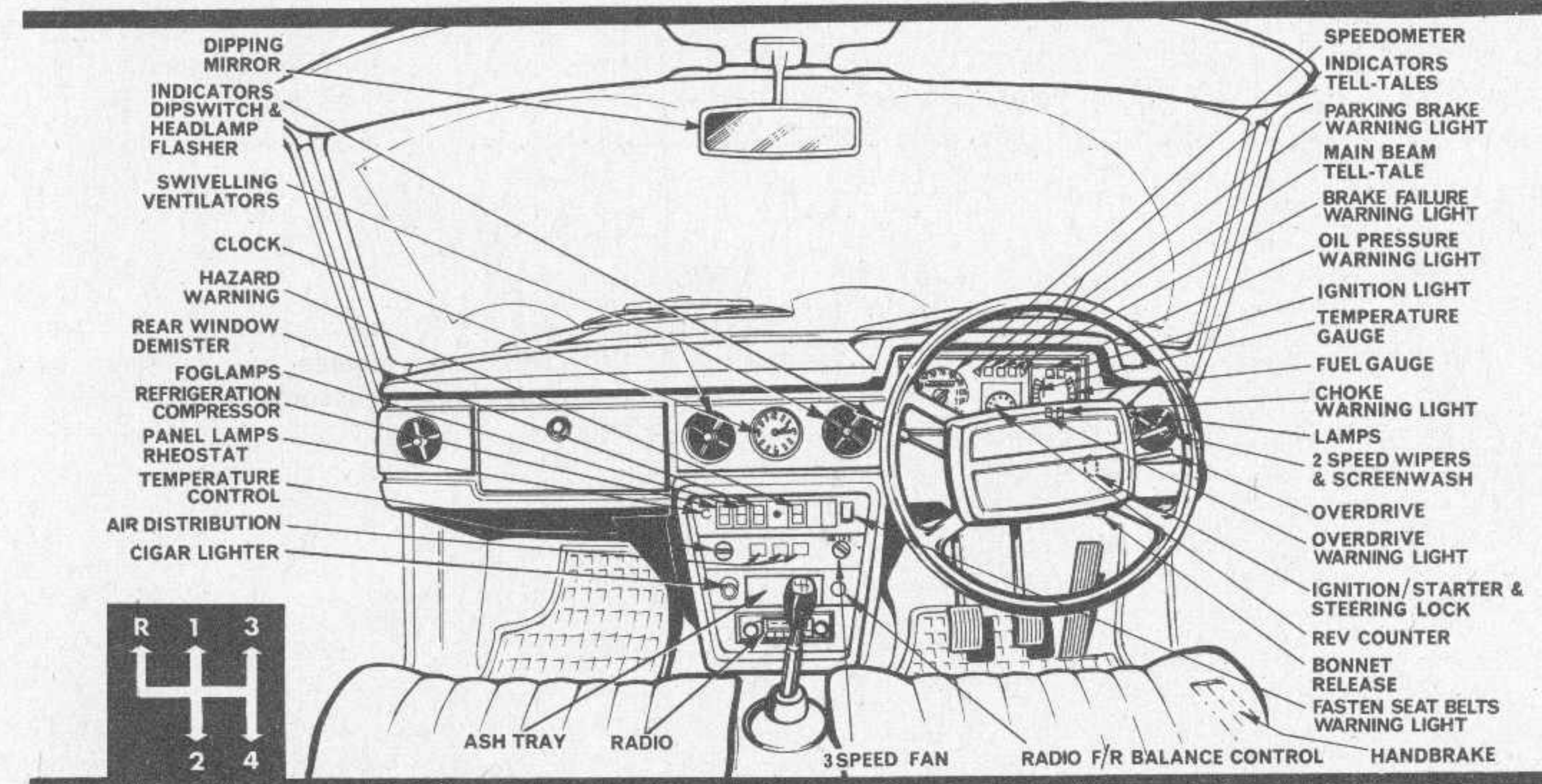
Basic	£2,446.00
Car Tax	£203.83
VAT	£264.98
Total (in GB)	£2,914.81
Seat Belts	Standard
Licence	£25.00
Delivery charge (London)	£20.00
Number plates	£6.50
Total on the Road (ex. insurance)	£2,966.31
Insurance	Group VII

EXTRAS (inc. VAT)

*Refrigeration (approx. inc. fittings)	£248.93
*Fitted to test car	

TOTAL AS TESTED ON THE ROAD

£3,215.24



	6,000 miles	12,000 miles	24,000 miles
Service Interval			
Time Allowed (hours and mins)	2.30	2.30	2.30
Cost @ £3.30 per hour	£8.25	£8.25	£8.25
Oil Change	£1.66	£1.66	£1.66
Oil Filter	£1.21	£1.21	£3.91
Air filter	—	—	£0.87
Contact breaker points	—	£0.87	£0.87
Sparking plugs	—	£1.80	£1.80
Total Cost:	£11.12	£13.79	£17.70

	Time hr min	Cost (labour)	Spares	TOTAL
Routine Replacements				
Brake Pads — Front (set)	0.30	£1.65	£4.42	£6.07
Brake Pads — Rear (set)	0.30	£1.65	£4.62	£6.27
Exhaust System	1.15	£4.13	£34.41	£38.54
Clutch	2.30	£8.25	£24.27	£32.52
Dampers — Front (pair)	0.30	£1.65	£5.18	£6.83
Dampers — Rear (pair)	0.30	£1.65	£4.96	£6.61
Replace Half Shaft	2.15	£7.43	£18.50	£25.93
Replace Alternator	0.30	£1.65	£62.70	£64.35
Replace Starter	0.30	£1.65	£70.25	£71.90