Autocar
Road test
NUMBER 2190

VOLVO 145S ESTATE CAR

1,778 c.c.

MANUFACTURER:
A. B. Volvo, Gothenburg, Sweden.

UK IMPORTERS
Volvo Concessionnaires Ltd., P.O. Box 7, Tower Ramparts, Ipswich, Suffolk.

PRICES:

Basic	**£1,235**	**0s**	**0d**
Purchase Tax	**£345**	**2s**	**9d**
Total (in GB)	**£1,580**	**2s**	**9d**

PERFORMANCE SUMMARY

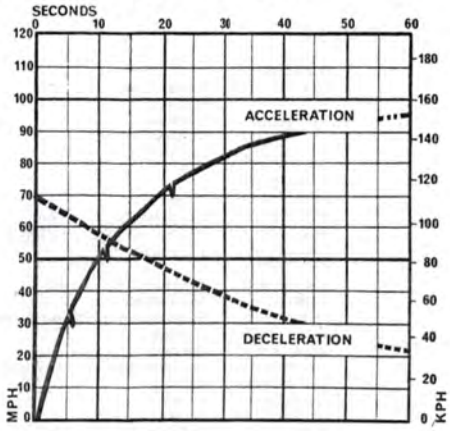
Mean maximum speed	98 mph
Standing start ¼-mile	19.6 sec
0-60 mph	14.5 sec
30-70 mph (through gears)	15.2 sec
Typical fuel consumption	24 mpg
Miles per tankful	320

AT A GLANCE: Big estate car based on Swedish sports saloon. Good performance for its size. Noisy engine has heavy fuel consumption. Fair but noisy ride. Good steering. Heavy controls. Lots of space and some excellent detail design. Good brakes. Expensive in Britain.

A GROWING family or one's job can make a large station wagon the best alternative to a saloon. The Volvo 145S is one of an increasing number of estate car variants offered which, despite more weight, still provide excellent performance as well as a big volume of space. The "S" part of its specification means the 1,778 c.c. four-cylinder engine uses two SU carburettors to provide 100 bhp (net) at 5,600 rpm. Independent front suspension has coil springs and wishbones, with coil springs and trailing arms for the live rear axle, which also has a Panhard rod for lateral location. The slower 145 estate car has a single Stromberg carburettor and only 75 bhp.

Volvo 145S estate car (1,778 c.c.)

PERFORMANCE



MAXIMUM SPEEDS

Gear	mph	kph	rpm
Top (mean)	98	158	6,280
(best)	99	159	6,340
3rd	78	126	6,800
2nd	55	89	7,000
1st	35	56	7,000

Standing ¼-mile 19.6 sec 70 mph
Standing Kilometre 36.0 sec 87 mph

MOTORWAY CRUISING

Error (ind. speed at 70 mph)	73 mph
Engine (rpm at 70 mph)	4,230 rpm
(mean piston speed)	2,120 ft/min
Fuel (mpg at 70 mph)	25.0 mpg
Passing (50-70)	9.6 sec
Noise (per cent silent at 70 mph)	45 per cent

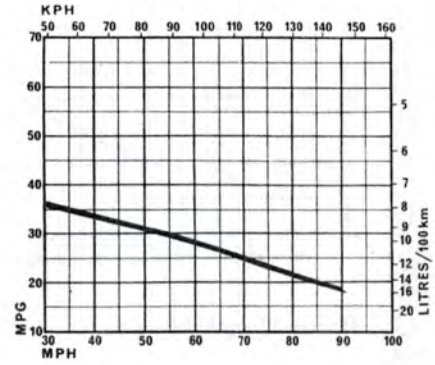
TIME IN SECONDS	0	4.4	7.0	10.0	14.5	19.6	27.8	42.2
TRUE SPEED MPH		30	40	50	60	70	80	90
INDICATED SPEED		33	43	53	63	73	83	92

Test distance 1,682 miles.
Mileage recorder 2.5 per cent under-reading.

SPEED RANGE, GEAR RATIOS AND TIME IN SECONDS

mph	Top (4.10)	3rd (6.20)	2nd (9.07)	1st (14.27)
10-30	13.6	9.4	5.5	3.6
20-40	12.3	7.7	4.9	—
30-50	11.3	7.2	5.4	—
40-60	11.7	8.0	—	—
50-70	13.1	9.1	—	—
60-80	15.6	—	—	—
70-90	22.2	—	—	—

CONSUMPTION



FUEL

(At constant speeds—mpg)	
30 mph	34.8
40 mph	33.1
50 mph	31.2
60 mph	28.0
70 mph	25.0
80 mph	21.6
90 mph	19.0

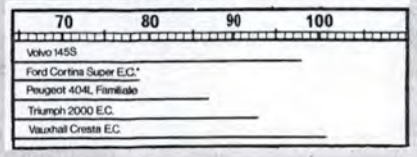
Typical mpg . . 24 (11.8 litres/100km)
Calculated (DIN) mpg . 22.7 (12.5 litres/100km)
Overall mpg . . 20.7 (13.7 litres/100km)
Grade of fuel: Super Premium 5-star (min 100RM)

OIL

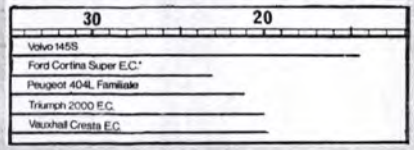
Miles per pint (SAE 10W/30) 700

HOW THE CAR COMPARES

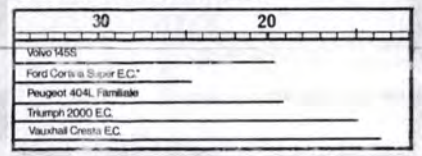
Maximum Speed (mph)



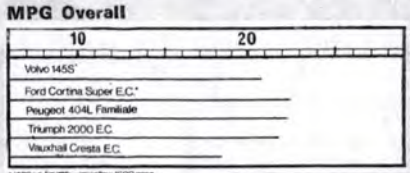
0-60 mph (sec)



Standing Start ¼-mile (sec)



MPG Overall



* 1500cc figures; crossflow 1600 price

PRICES

Volvo 145S	**£1,580**
Ford Cortina Super E.C.*	**£978**
Peugeot 404L Familiale	**£1,399**
Triumph 2000 E.C.	**£1,514**
Vauxhall Cresta E.C.	**£1,514**

*** 1500 figures; 1600 crossflow price**

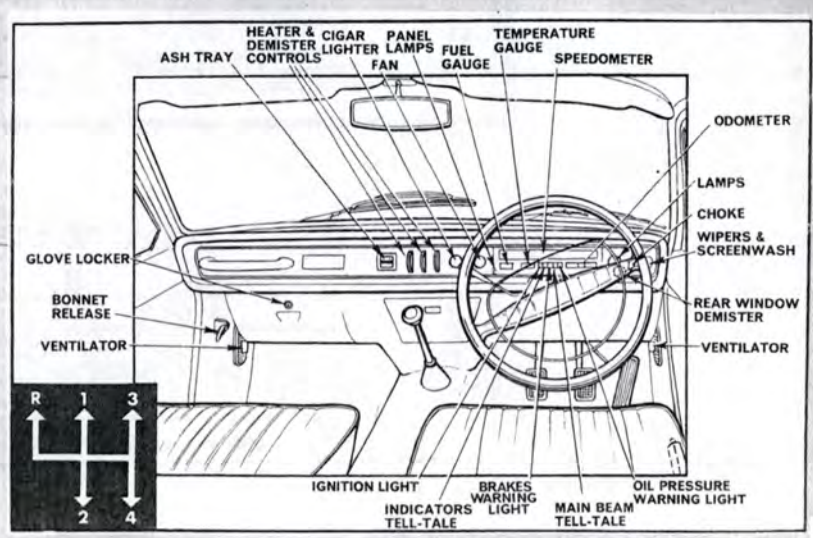
TEST CONDITIONS Weather: Cloudy bright. Wind: 0-3 mph. Temperature: 20 deg. C. (68 deg. F.). Barometer: 29.5in. Hg. Humidity: 60 per cent. Surfaces: Dry concrete and asphalt.

WEIGHT Kerb weight: 23.9cwt (2,678lb-1,216kg) (with oil, water and half-full fuel tank). Distribution, per cent: F, 47.1; R, 52.9. Laden as tested: 27.3cwt (3,065lb-1,389kg).

Test distance 1,682 miles.
Figures taken at 5,000 miles by our own staff at the Motor Industry Research Association proving ground at Nuneaton.

TURNING CIRCLES

Between kerbs: L, 30ft 9in.; R, 30ft. 10in.
Between walls: L, 32ft 10in.; R, 32ft 11in.
Steering wheel turns, lock to lock: 4.2



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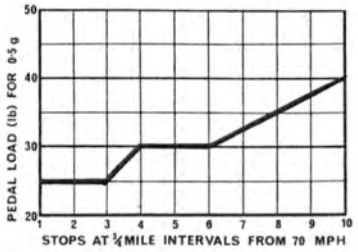
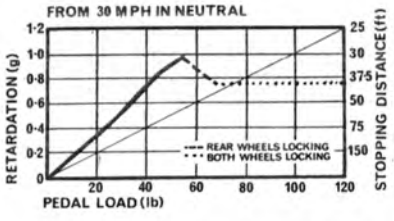
BRAKES



(from 30 mph in neutral)

Load	g	Distance
20lb	0.26	116ft
30lb	0.52	58ft
40lb	0.71	42ft
50lb	0.90	33ft
55lb	0.96	31.4ft
Handbrake	0.31	97ft

Max. gradient: 1-in-4
Clutch: 40lb and 6.25in.



SPECIFICATION

FRONT ENGINE, REAR-WHEEL DRIVE

ENGINE

Cylinders	4, in line
Main bearings	5
Cooling system	Water; pump, fan and thermostat
Bore	84.1mm (3.31in.)
Stroke	80.0mm (3.15in.)
Displacement	1,778 c.c. (108.5 cu.in.)
Valve gear	Overhead, pushrods and rockers
Compression ratio	10.0-to-1; Min. octane rating: 100RM
Carburettors	Twin SU HS6
Fuel pump	AC mechanical
Oil filter	Volvo full-flow, renewable element
Max. power	100 bhp (net) at 5,600 rpm
Max. torque	107 lb.ft. (net) at 3,500 rpm

TRANSMISSION

Clutch	Borg and Beck diaphragm spring 8.5in. dia.
Gearbox	Four speed, all-synchromesh
Gear ratios	Top 1.0 Third 1.36 Second 1.99 First 3.13 Reverse 3.25
Final drive	Hypoid bevel, 4.10-to-1

CHASSIS and BODY

Construction	Integral, with steel body

SUSPENSION

Front	Independent, wishbones, coil springs, anti-roll bar, telescopic dampers
Rear	Live axle, coil springs, twin trailing arms, Panhard rod, telescopic dampers

STEERING

	Gemmer cam and roller
Wheel dia.	16.5in.

BRAKES

Make and type	Girling discs front and rear, divided hydraulic circuits, drum handbrake
Servo	Girling vacuum
Dimensions	F. 11.6in. dia. R. 11.6in. dia.
Swept area	F. 212 sq.in.; R. 198 sq.in. Total 410 sq.in. (300 sq.in/ton laden)

WHEELS

Type	Pressed steel disc, 4-stud fixing 4.5in. wide rim
Tyres—make	Goodyear
—type	G8 cross-ply tubeless
—size	165-15in.

EQUIPMENT

Battery	12 volt 60 Ah
Alternator	SEV-Motorola 30-amp a.c.
Headlamps	Bosch sealed beam 180/160-watt (total)
Reversing lamp	Twin standard
Electric fuses	8
Screen wipers	Two-speed, self-parking
Screen washer	Standard, electric
Interior heater	Standard, thermostatic water valve
Heated backlight	Standard
Safety belts	Standard
Interior trim	Pvc-textile seats, pvc headlining
Floor covering	Rubber
Starting handle	No provision
Jack	Screw pillar
Jacking points	Two each side under sills
Windscreen	Laminated
Underbody protection	Galvanised sills; rubberised paint on surfaces exposed to road

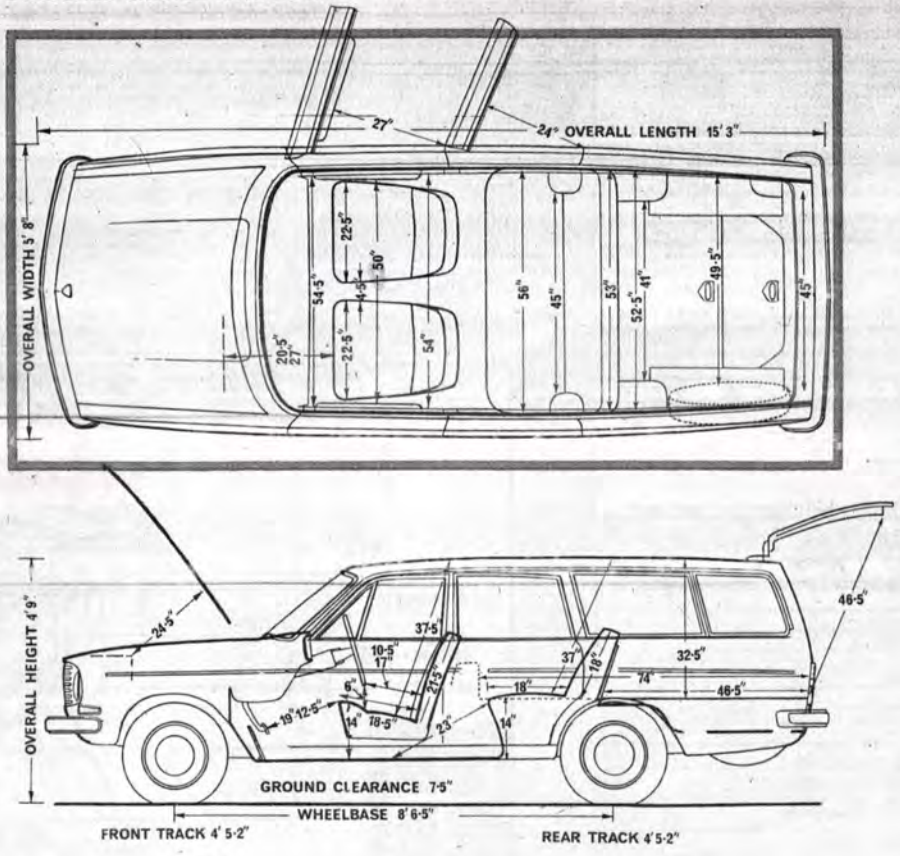
MAINTENANCE

Fuel tank	13.5 Imp. gallons (no reserve) (58 litres)
Cooling system	15 pints (including heater)
Engine sump	6.5 pints (3.75 litres) SAE 10W/30. Change oil every 3,000 miles. Change filter element every 6,000 miles
Gearbox	1.25 pints SAE 30. Change oil every 25,000 miles
Final drive	2.25 pints SAE 90. No change needed
Grease	No points
Tyre pressures	F. 20; R. 24 psi (normal driving) F. 24; R. 28 psi (fast driving) F. 28; R. 36 psi (full load)
Max. load	1,000lb (454kg)

PERFORMANCE DATA

Top gear mph per 1,000 rpm	15.6
Mean piston speed at max. power	3,150 ft/min
Bhp per ton laden	73

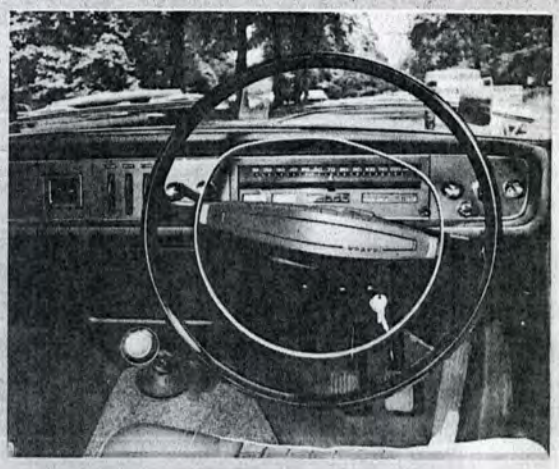
STANDARD GARAGE 16ft x 8ft 6in.



SCALE
0.3in. to 1ft
Cushions uncompressed

1

3



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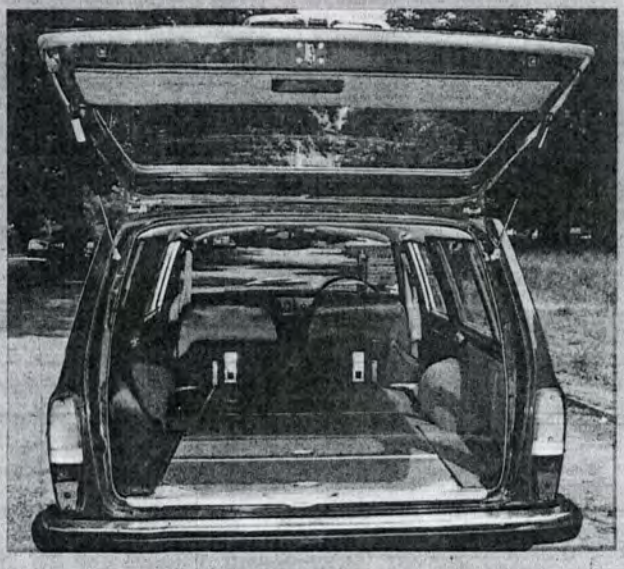


1 *Underfloor space is useful for hiding valuables. Note the recessed handles in the backrest*

2 *With the back seat folded forward, a very simple job, the Volvo has a very great load length*

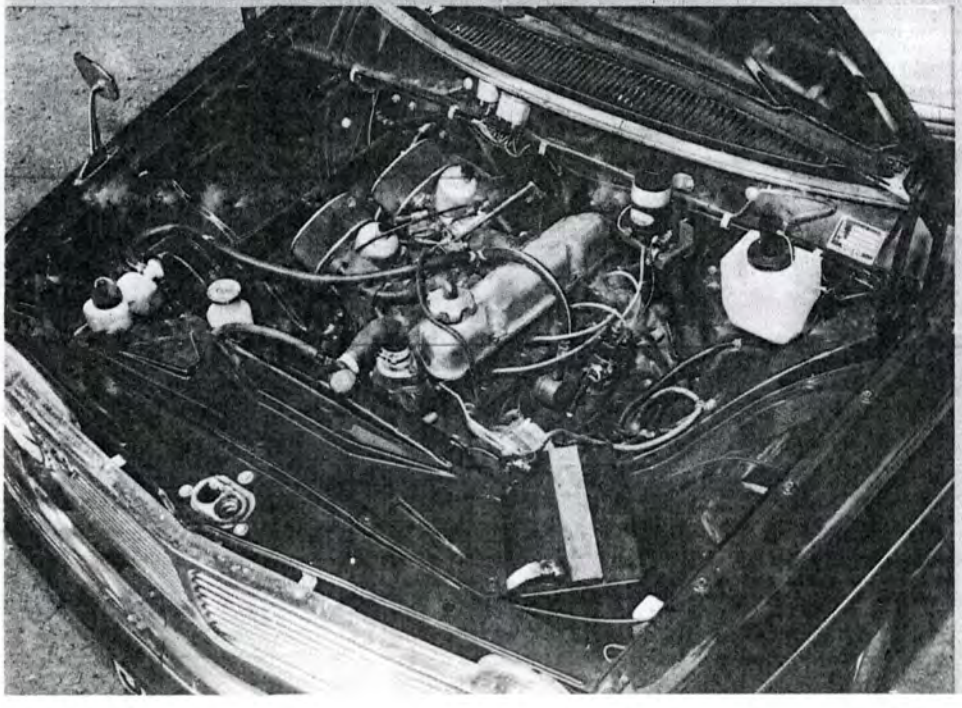
3 *Driver's view of the dashboard. Switches all have a good positive action and are identified. Note the unusual heater controls in the middle of the dash over the fuse box*

4 *Engine accessibility is excellent, and the large panel above and behind the grille makes a convenient place to put tools whilst working. The brake servo is mounted well forward on right-hand drive models in order to clear the small carburettor air cleaners*

5 *The handbrake is to the right of the seat and the back rest clamping lever can be seen by the door pillar*

6 *Small gas springs support the tailgate when it is open*

4



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6

Although the large overhang at the rear and four pillars each side do not please the eye, the 145S is a strikingly styled "clean" design

VOLVO 145S ESTATE CAR . . .

So that it can cope with the very great loads it is capable of carrying, the estate car 145S has a lower final drive ratio (4.56-to-1) than the 144S saloon tested by *Autocar* nearly a year ago. The maximum speed of 98 mph is therefore well and truly over the peak of its power curve and compares well with the saloon which was only 3 mph faster. Maximum cruising speed is between 75 and 80 mph which it will keep up all day long without being tiring. Heavy loads do slow it, but not so much that it becomes embarrassing in hilly country. The standing start quarter-mile time of 19.6sec is good for this sort of car and is only 1sec longer than for the saloon. The engine is quite flexible, accelerating well from 10 mph in top gear with only slight initial pinking despite 100-octane 5-star fuel in the tank.

Steady-speed fuel consumption is understandably inferior to that of the saloon with 25.0 mpg at 70 mph instead of 28.2 mpg. Average figures for a fast journey can drop to as low as 20 mpg. A typical figure for normal use would seem to be around 24 mpg.

Unfortunately one is not encouraged to drive at anything more than half throttle because of considerable engine noise. This comes mostly from the two SU carburettors which have only small sports-type pancake air filters. There is plenty of room for a normal single combined air filter and intake silencer, yet none fitted. The resulting roar at large throttle openings might be acceptable in a sports car but not here; there is is also pronounced hiss at low speeds and, as one opens up from three-quarter throttle, a muffled whistle.

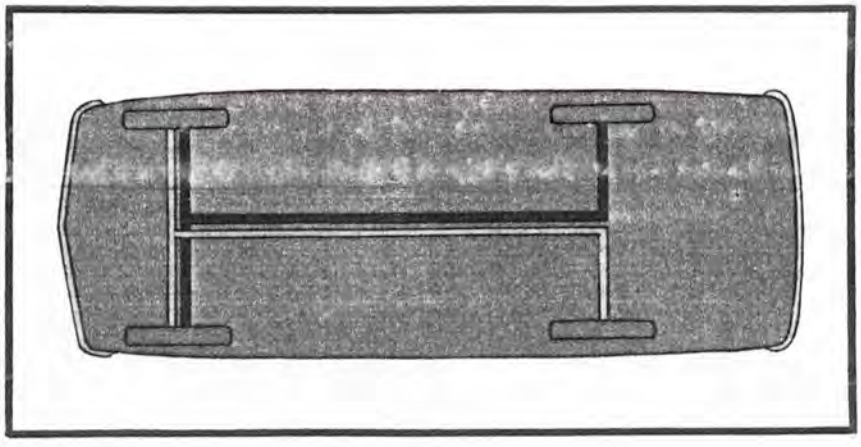
As on most cars with SU carburettors, starting was excellent though warm temperatures during the test period prevented us trying its cold-weather abilities. The engine warms up quickly, little enrichment being needed at any time. Tickover on the test car was uneven but reliable, with some clatter from valvegear. The clutch pedal needs 40lb to release it which is heavy by current standards. The drive begins to take up very near to the bottom of its long (6¼in.) travel, and doesn't completely connect until near-fully released. This does not bother one on a long run but is unduly tiring in traffic. Unless the pedal is pushed right to the floor the gearchange is sticky and awkward. It has a long but quite rigid lever, is reasonably precise and the synchromesh is powerful.

Suspension characteristics are an odd mixture. On poor roads the car copes well, its high ground clearance, robust rattle-free "feel" and firm but not harsh movement over most obstacles are impressive. On better roads, such as the majority of British trunk routes, there is a noticeable amount of small, relatively high frequency motion, especially where one crosses concrete corrugations. There is a large amount of bump-thump and road roar even on the cross-ply Goodyear G8 tyres fitted to the test car. A full load makes little difference to the ride, except to raise the nose a bit if the heavier parts of one's luggage are placed on the considerably overhanging rear end.

Roadholding is remarkably good whether the car is laden or not. There is a very slight amount of the rear end patter usually present in unladen live axle estate cars, but this is only met on rare combinations of severe bump and sharp corner taken unusually fast. The car rolls noticeably, but not too badly when driven fast through bends. It understeers slightly all the way to its limit when an inside rear wheel lifts enough to spin and prevent one cornering any faster. Steering is on the heavy side, especially when manouvring, but it is direct, accurate and free from play, though quite low geared at 4.2 turns on a surprising compact 30ft 9in. turning circle.

Girling servo-assisted disc brakes are used at front and rear with divided hydraulic circuits as a safety measure. They work very well, needing only 55lb pedal effort to achieve a maximum retardation of 0.96g with the front wheels on the point of locking. Fade resistance is good, the load required after ten 0.5g stops from 70 mph having risen from 25 to 40lb which is still within manageable proportions. All-disc braking systems are often found to be poorly hand-braked, but not on the Volvo. This is because small drum brakes are built into the rear discs, making acceptable braking (0.31g) available. Although the clutch won't grip enough to re-start on anything steeper than a 1-in-4 hill, the handbrake held easily on the 1-in-3.

Hydraulic circuits on the Volvo are divided on a semi-duplicate basis so that if one half fails only 20 per cent of the braking effect is lost



Door openings are generous, making entry and exit easy. Note the carefully contoured front seat and the knob (visible on the far backrest) for adjusting lumbar support

VOLVO 145S ESTATE CAR . . .

If you are fairly tall then the 145S driving position seems quite satisfactory but if not, it is too high-waisted on all sides. The steering wheel is big (16½in. dia) and its bottom rim makes entry slightly awkward for all sizes whilst the top is high for the shorter drivers. People who like to be near the wheel will be happy with its position but others will find it too close. It is a two-spoked padded and dished design on the end of a fairly horizontal steering column which has a simple but effective crash-absorption section under the bonnet. Apart from the high waist the large windows make visibility good; wiper arcs are well placed for this country, leaving little glass unswept probably because the car began life whilst Sweden was still driving on the left.

Like nearly everything on this car, the pedals are big and strong-looking and well placed except again for the shorter drivers who find that the long clutch travel means that they have to compress the seat cushion. There is plenty of room for one's left foot beside the clutch. The throttle pedal is the organ type, mounted so that heel and toe changes are possible; it needs an appreciable effort for normal running but not to any unpleasant degree. The handbrake lever lives well out of the way—except of the driver's foot as he gets out—on the right of the seat. It has a nice plastic handle with an effective guard which prevents one releasing it with the inevitable kick. The gearlever is spring-loaded strongly towards the 3rd-4th gear side of the gate and makes a slight rubbery squeak as it is moved.

Volvo advertisements are always referring to their seats, which in front are remarkably good. Their only real fault is that they do not "breathe" nearly enough in hot weather, so that after an hour of driving one gets very sticky. Their virtues are considerable. Immediately you sit down you feel very comfortable. No part of one's body between the knee and high up the back is unsupported. The springing around the area in the small of the back can be adjusted for stiffness. Though limited in range and a little difficult to work this is a good, indeed unique, idea. There is plenty of sideways location without any tendency to favour small people at the expense of large or vice versa. The reclining mechanism for the seat back has a notchless variable clutch arrangement with a sensibly large-sized lever to clamp it. The only limitation is that the seat does not slide quite far enough forward to let the back lie flat and make a bed—a pity this, for in all other respects it is ideal for the purpose.

The Volvo is a true family car with a roomy back seat. With front seats moved fully back there is still 2in. clear ahead at one's knees, and there is enough width for three abreast. Back passengers sit a little higher than those in the front, but still with enough head room. There is no centre armrest but door grab handles double as small side elbow rests. Roof grab handles are provided, carrying small loose plastic coat-hooks. There are ashtrays in each back door and a long narrow one in the middle of the dash.

In front there isn't very much parcel space, only a drop-down locker. A removable panel in the middle of the lower facia hides a neatly labelled transparent fuse box. A pushbutton trip zeroing knob at one end of the strip speedometer is so much easier to use than the usual knurled winder that one wishes others would copy it.

As our drawing shows, the rear load space is generous, even with the back seat in use. Turning the car into a two-seater luggage carrier is simple and quick. The rear cushion lifts up and turns right over first, then, by moving one of the recessed levers on each side of the seat back (it doesn't matter which as they are inter-connected) one releases the back to let it drop forward on to positive stops. It therefore folds down flat and solid, with a flap bridging the gap left, to provide a really long flush floor with a small ledge at the front to stop things sliding forward. There are no unneccessary obstructions or projections. The spare wheel is housed right out of the way in the left-hand "wing" with a neat cover to hide it. This makes a big double-hatched underfloor space available in which to hide valuables; not just small valuables either—there's room for large cine cameras, portable typewriters or even gold bars. The only snag here is that one cannot fully open the smaller rear section without opening the front one, which could well be under the load. Tools and the jack are kept in the right-hand rear "wing".

The tailgate has gas springs on either side to help in lifting it but these do not start to work until the door is some way up, which makes the initial movement very heavy. It can be opened from inside as well as outside. A heated rear window is standard equipment. Underbonnet accessibility is very good, and for once the bonnet release in the cockpit is clearly labelled and easily found. Heater controls are knurled wheels, each with a translucent red strip which is lit up at night; temperature control is not very progressive and it is necessary to open a quarterlight or one of the rear side windows slightly to obtain any through-flow. Headlamps give a good spread and are dipped by working the flasher stalk, a Bosch accessory which works with pleasing precision though the flasher relay is noisy.

The Volvo 145S is not an estate car which one likes right away. Take it for a long weekend in the country, away from traffic jams, and one grows to respect the considerable care and thought which has gone into its design in so many ways. It is in Britain a very expensive car but deserves consideration. Our only serious complaint is of the excessive engine noise. □