High mileage investment

. . . accommodation and performance of some 2½/3-litre cars . . . meticulously made . . . fun to drive . . . noisy engine under hard acceleration. . . .

WE wondered at first whether Volvo had chosen the right weapon in their new 144 to spearhead a determined attack on the British 2-litre market (Volvo hope to treble their sales here by 1970). Many people thought that this orthodox, unpretentious 1,800 c.c. saloon seemed a bit expensive on paper to compete successfully against the cheaper—and highly acclaimed—home competition, especially the Rover and Triumph 2000s. On closer examination, however, this initial assessment turns out to be a little misguided. To start with, the 144S we tried has the accommodation and performance of some 2½/3-litre cars without the handicap of excessive fuel consumption (though at 20.1 m.p.g. overall, it is quite heavy for an 1800). In practice therefore it can compete on level terms with bigger machinery as well as with the cheaper 2-litres; to do both without making any sacrifices must give it a very wide market appeal. But there is more.

Volvos are meticulously made, superbly finished without recourse to lavish decoration and, by reputation, among the more durable of cars; the 144S (and presumably the cheaper, slower 144 too) seems to have inherited that curious Volvo mystique which generates loyal fanaticism among Volvo owners who tend to look upon their cars as high-mileage investments as well as enjoyable transport. The 144S is fun to drive too, although like the sometimes mis-judged 122/132 series (which continues in production), it is not really a sporting car. Only the harsh and noisy beat of the engine under hard acceleration gives it a sporting flavour, unwanted by some customers, perhaps.

On Pirelli Cinturato tyres it holds the road very well, in both wet and dry conditions, but rolls quite a lot on its softish suspension so that it tolerates, rather than encourages, really vicious cornering.

Excellent seats—the front ones with unique lumbar support adjusters—and lots of leg room make this a really capacious family car; certain features inherent in the design—such as structural strength, dual-circuit braking, collapsible steering and intelligently applied crash padding—make it a very safe one, too. Yet despite the overall excellence of the design, it is not without minor irritations or omissions. For instance, there is no separate face-level ventilation, the seat belts are awkward to clamp and release and the adjustable seat squabs have no spring loading. Nevertheless, as a mid-range all-rounder, this Volvo has a lot of appeal.

Price: £1,150 plus £265 5s. 2d. tax equals £1,415 5s. 2d. with overdrive total equals £1,489 0s. 2d. as tested.

Performance and economy

The one obvious feature carried through to the 144 is the four-cylinder 1,780 c.c. engine; although it is still remarkably free revving—we used over 6,000 r.p.m. during acceleration tests—it is not as smooth and unobtrusive in its S form as we should have liked. With two 1¾ inch SUs, nominally silenced and positively filtered by a pair of paper element pancake filters, the full-throttle intake noise level is high when accelerating hard. At part-throttle cruising speeds it is rather quieter, particularly in overdrive; even at 80-90 m.p.h. it is still outside the noisy period.

Continued on the next page

Volvo 144S *continued*

Apart from the noise, the acceleration is impressive and not many 3-litre cars can manage to reach 50 m.p.h. in 8.6 seconds. Overtaking is particularly easy with 70 m.p.h. available in third gear even with the lower geared final drive. Acceleration is still quite lively without using either full throttle or full revs—which is the way most owners will drive.

The 144S gains a nominal 14 b.h.p. over the 132, partly because the compression is raised from 8.7:1 to 10:1 which, according to the handbook, necessitates the use of 100 octane fuel. We found that four-star petrol was quite acceptable in that no pinking occurred, although the engine would run-on with anything less. Our overall fuel consumption of 20.1 m.p.g., and even the touring consumption of 26.4 m.p.g. (in overdrive), may be heavier than many people will expect, but then the 144S has the performance, and accommodation of many 2½/3-litre cars which are usually much thirstier. The ease of starting, with only a minimum of choke just for the initial firing, suggests that the carburetters were set slightly rich on our car; we would expect around 25 m.p.g. to be nearer to the enthusiast's norm.

Transmission

With the optional overdrive, the final drive ratio is 4.56:1 and the overdrive reduction nearly 25% giving 21 m.p.h. per 1,000 r.p.m.; without overdrive the ratio is 4.1:1 giving just 17.6 m.p.h. per 1,000 r.p.m. In the latter case the car is geared to reach maximum power at a maximum speed of just over 100 m.p.h., which it may well reach, but with overdrive the gearing is too low in direct top—the engine just runs out of revs—and too high in overdrive to develop enough power. Our

Continued on page 44

Performance

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

Conditions

Weather: Sunny with winds up to 20 m.p.h.
Temperature: 55°–60°F. Barometer: 29.8 in. Hg.
Surface: Dry concrete and tarmacadam.
Fuel: 98 octane (RM) 4-star rating.

Maximum speeds

	m.p.h.
Mean lap banked circuit	97.1
Best one-way ¼-mile	102.3
Direct top gear (at 6,000 r.p.m.)	95.0
3rd gear (at 6,000 r.p.m.)	70.0
2nd gear (at 6,000 r.p.m.)	48.0
1st gear (at 6,000 r.p.m.)	30.5

"Maximile" speed: (Timed quarter mile after 1 mile accelerating from rest)

Mean	96.4
Best	98.9

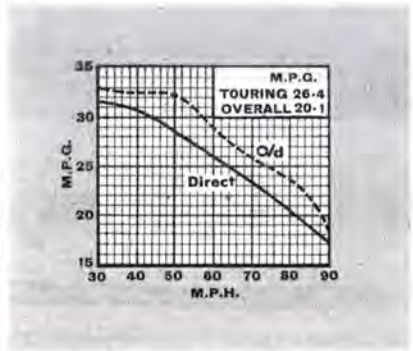
Acceleration times

m.p.h.	sec.
0-30	4.0
0-40	6.0
0-50	8.6
0-60	12.5
0-70	16.9
0-80	23.7
0-90	34.6
Standing quarter mile	18.8

m.p.h.	O/d Top sec.	Top sec.	3rd sec.
10-30	—	—	7.2
20-40	17.8	10.2	6.4
30-50	17.7	9.8	6.4
40-60	17.2	10.1	7.0
50-70	18.8	10.9	8.1
60-80	22.7	12.5	—
70-90	—	17.4	—

Hill climb

At steady speed		lb./ton
O/d top	1 in 17.2	(Tapley 130)
Top	1 in 9.5	(Tapley 235)
3rd	1 in 6.4	(Tapley 345)
2nd	1 in 4.3	(Tapley 460)



Fuel consumption

Touring (consumption midway between 30 m.p.h. and maximum less 5% allowance for acceleration)	26.4 m.p.g.
Overall	20.1 m.p.g. (=14.0 litres/100 km.)
Total test figure	1,224 miles
Tank capacity (maker's figure)	12¾ gal.

Brakes

Pedal pressure, deceleration and equivalent stopping distance from 30 m.p.h.

lb.	g	ft.
25	0.40	75
50	0.77	39
60	0.94	32
Handbrake	0.42	71½

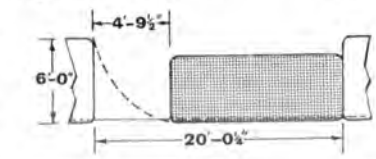
Fade test

20 stops at ½g deceleration at 1 min. intervals from a speed midway between 30 m.p.h. and maximum speed (=63½ m.p.h.)

	lb.
Pedal force at beginning	29
Pedal force at 10th stop	32
Pedal force at 20th stop	33

Parkability

Gap needed to clear a 6 ft. wide obstruction parked in front:



Steering

Turning circle between kerbs:	ft.
Left	29¼
Right	27½
Turns of steering wheel from lock to lock	4.1
Steering wheel deflection for 50 ft. diameter circle	1.15 turns

Clutch

Free pedal movement	=¼ in.
Additional movement to disengage clutch completely	=4 in.
Maximum pedal load	=38 lb.

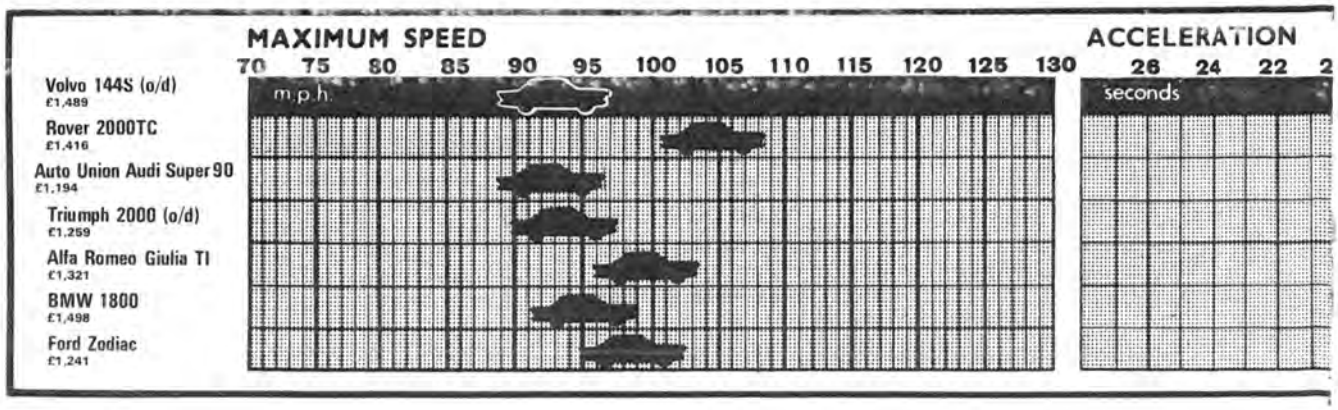
Speedometer

Indicated	10	20	30	40	50	60	70	80	90
True	11	15	25	35	45½	54½	64	74	84

Distance recorder: accurate

Weight

Kerb weight (unladen with fuel for approximately 50 miles)	22.4 cwt.
Front/rear distribution	51/49
Weight laden as tested	26.2 cwt.

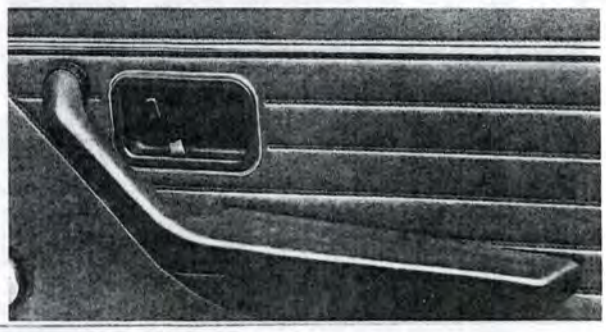


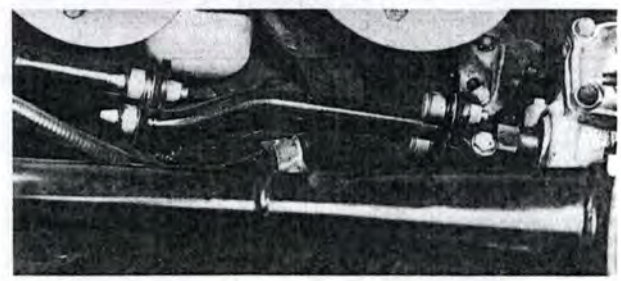
Below: Five foot nine in relaxed position finds the steering wheel just silhouetted on the road above the bonnet. Volvo's lap and diagonal belts hold the body well but adjustment is difficult and unfortunately essential if the belt is to be tight. Lumbar support adjuster can be seen on the side of the back rest.

The seats will recline right down to this level if you lift the back seat first. The back rest can be locked in any position.

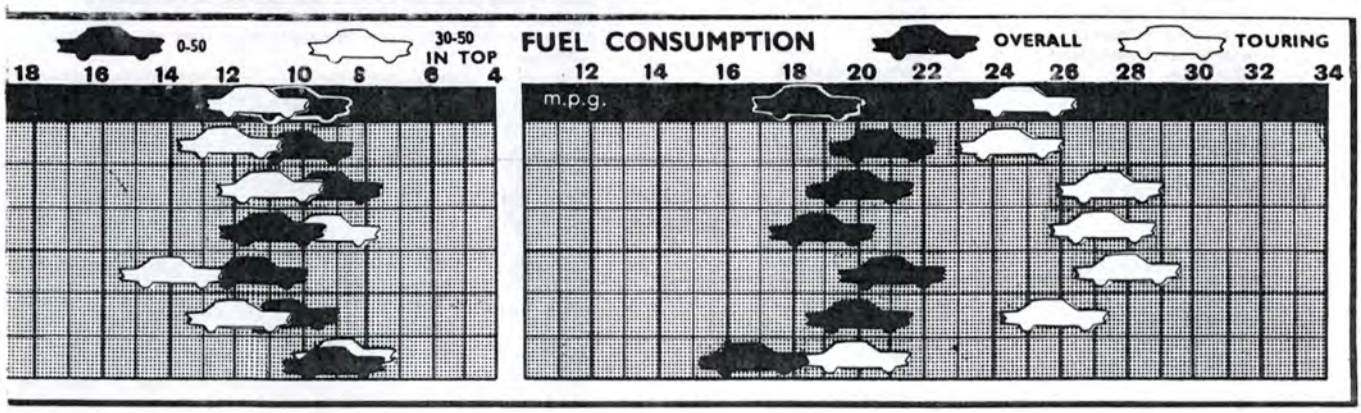
A unique feature? The fuses are all immediately accessible and spare ones can be carried in the cover. The deep glove tray/ locker is well padded to protect passenger's knees. Exposed sectors of the heater controls have a transparent red strip to show position and this is illuminated when panel light is on.

Detail of door trim showing concealed handle and convenient arm rest cum door pull.





Volvo's collapsible steering column.



This view shows the square lines of the 144 which make for easy and accurate manoeuvring; parking is further assisted by the excellent turning circle.

Volvo 144S *continued*

maximum therefore dropped to just over 97 m.p.h. Maximum speed is a fairly academic point in any country, but if you insist on a genuine 100 m.p.h. car choose the one without overdrive. If you prefer relaxed cruising, as we do, choose the overdrive model—it is also theoretically quicker away from rest and should help the fuel consumption. In favourable conditions it can pull an easy 100 m.p.h. anyway.

Under power the overdrive comes in remarkably smoothly and it is only the rev and noise drop which confirms that the change has taken place; on the overrun or when changing at steady speed it is kinder to treat the column stalk as another gear lever and use the clutch as well. With the gearing as it is, one uses direct top for cornering or overtaking on the open road for which there is plenty of torque.

The gearbox itself has well chosen ratios which, even with the lower final drive, allows nearly 50 m.p.h. in second, a useful overtaking gear for the inevitable lorry on a hill. Selection by the long direct-acting lever is smooth and easy against a strong spring loading away from the 1-2 plane. The synchromesh works powerfully on all the forward ratios and there is little apparent noise from either the gearbox or the final drive.

Despite a maximum pressure of 38 lb., the clutch does not feel heavy and grips very gently on take-off however low the revs. Gear changing requires a little more hand and foot co-ordination than usual for the smoothest changes; the deliberate angular play in the mounting of the axle casing cushions the take up shocks but gives an impression of hanging on to the gear before.

Safety check list

Steering assembly	
Steering box position	Level with front of engine
Steering column collapsible?	Yes
Steering wheel boss padded?	Yes
Steering wheel dished?	Yes
Instrument panel	
Projecting switches?	None
Sharp cowls?	None
Effective padding?	Yes—at top and bottom of facia and at knee level
Windscreen and visibility	
Screen type	Laminated
Pillars padded?	Yes
Standard driving mirrors?	No
Interior mirror framed?	Yes
Interior mirror collapsible?	Yes
Sun visors	Soft and crushable
Seats and harness	
Seat attachment to floor	Sliding runners
Do they tip forward?	No—reclining back rests
Head rest attachment points?	No
Back of front seats	Firmly padded
Safety harness	Lap and diagonal with pillar mounting and joint mounting in centre for front seat occupants
Harness anchors at back?	Yes
Doors	
Handles recessed?	Yes
Quarter light catches	Plastic locking knobs
Burst proof?	Yes
Child proof?	Optional

Handling and brakes

A new car of the Volvo class might well have adopted an independent rear suspension layout and perhaps have gained in ride comfort but it takes a good i.r.s. to beat a well located live axle on every count. On the 144 the roadholding is very good but the ride, particularly at low speeds, could be less bouncy and we were surprised that there should be so much radial ply thump round towns on bad bumps and ridges. At speed there

A large square boot takes 13.1 cu.ft. of our standard luggage, which packs in quite easily. The toolkit is fairly nominal, but the spanner is adjustable one end and multi-sized the other. There is a useful tommy bar for the wheelbrace which provides good leverage. There are two jacking points per side.

is a slight tendency to wander in side winds but not enough to require much correction and the car feels generally very stable; the ride is better at speed too as the harshness disappears and the suspension swallows up bumps and undulations in a very comfortable big-car fashion.

Although the steering felt quite low geared round street corners it was still heavy for parking manoeuvres, but as speed rises response quickens and the steering feels more direct if a little rubbery just in the straight ahead position. On wet roads you can feel the loss of adhesion if the front end should start to run wide; there is some kickback on bumpy surfaces which, although it rocks the steering wheel, does not affect directional stability. The turning circle with a mean of 28½ ft. is exceptionally good and really assists parking in tight places.

It appears to be an accepted characteristic of fast road cars that they should corner with initial understeer at moderate cornering forces followed by final oversteer coming in controllably as the limit is approached. The previous Volvo reached the final stage rather early with a slightly uncomfortable roll oversteer, but the 144 feels much happier and can be cornered very quickly although with more roll than before at the final oversteer stage. The car does the same in the wet and the oversteer is just as controllable without ever having to resort to opposite lock. Throughout such manoeuvres and in fast starts the rear axle behaves extremely well with no tramping on bumpy corners and the back end stays in check even with deliberate throttle provocation.

Twin circuit braking is employed whereby each circuit operates one of the two pistons in each front disc caliper and one rear

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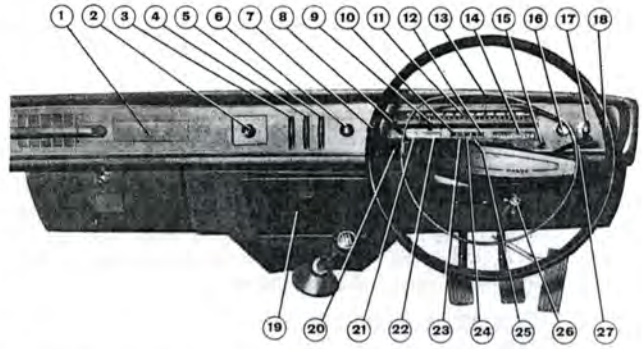


1, slot for radio. 2, ashtray. 3, heater temperature control. 4, front and rear screens air control. 5, front and rear compartments foot level air control. 6, cigar lighter. 7, two speed heater fan. 8, indicator/flasher/dipswitch stalk. 9, speed limit indicator. 10, generator warning light. 11, speedometer. 12, oil pressure warning light. 13, horn ring. 14, total and trip mileage recorders. 15, trip zero (push-button). 16, light switch. 17, choke. 18, two speed wiper (pull) and washer (twist). 19, fuse compartment cover. 20, panel light rheostat. 21, fuel gauge. 22, water temperature gauge. 23, indicator tell-tale. 24, handbrake and brake circuit malfunction warning light. 25, main beam tell-tale. 26, ignition key/starter/steering lock. 27, overdrive (top gear only).

Specification

Engine

Cylinders	4
Bore and stroke	84.14 mm. x 80 mm.
Cubic capacity	1,780 c.c.
Valves	Pushrod o.h.v.
Compression ratio	10.0:1
Carburetter(s)	Twin HS6 SU
Fuel pump	AC Mechanical
Oil filter	Volvo full flow
Max. power (net)	100 b.h.p. at 5,600 r.p.m.
Max. torque (net)	107 lb. ft. at 3,800 r.p.m.

Transmission

Clutch	Borg and Beck 8½ in. dia.
Top gear (s/m)	1.00:1 (overdrive, 0.756)
3rd gear (s/m)	1.36:1
2nd gear (s/m)	1.99:1
1st gear (s/m)	3.13:1
Reverse	3.25:1
Overdrive	Laycock
Final drive	Hypoid bevel 4.56:1 (4.1:1 without O/d)
M.p.h. at 1,000 r.p.m. in:—	
O/d top gear	21.0
Top gear	15.9
3rd gear	11.7
2nd gear	8.0
1st gear	5.1

Chassis

Construction	Unitary

Brakes

Type	Girling discs all round with twin circuits.
Dimensions	11.6 in. dia. front and rear.
Friction areas:	
Front	23 sq. in. of lining operating on 212 sq. in. of disc
Rear	14½ sq. in. of lining operating on 198 sq. in. of disc

Suspension and steering

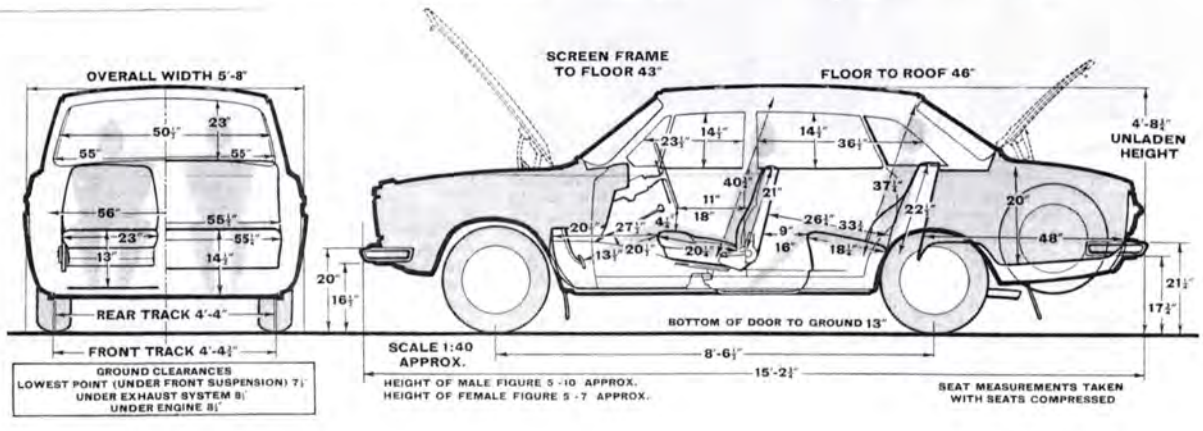
Front	Independent with wishbones and coil springs and anti-roll bar.
Rear	Live axle located by upper and lower radius arms and Panhard rod: anti-roll bar
Shock absorbers:	
Front, Rear	Telescopic
Steering gear	Gemmer cam and roller
Tyres	Pirelli Cinturato 165 x 15
Rim size	4½J—15

Coachwork and equipment

Starting handle	No
Jack	Screw pillar
Jacking points	Under door sills adjacent to wheels
Battery	12 volt negative earth, 60 amp hrs capacity
Number of electrical fuses	9
Indicators	Self-cancelling flashers
Screen wipers	Electric 2-speed
Screen washers	Electric pump
Sun visors	Two padded
Locks:	
With ignition key	Steering lock
With other keys	Doors and boot
Interior heater	Fresh air type
Upholstery	PVC
Floor covering	Rubber with carpet over transmission tunnel
Alternative body styles	None

Maintenance

Sump	6.6 pints SAE 10/30
Gearbox	3.2 pints SAE 10/30 or 30
Rear axle	2.3 pints SAE 90 hypoid
Steering gear	SAE 90 hypoid
Cooling system	15 pints (drain taps 2)
Chassis lubrication	None
Minimum service interval	3,000 miles
Ignition timing	17-19° b.t.d.c. at 1,500 r.p.m.
Contact breaker gap	0.016-0.020 ins.
Sparking plug gap	0.028 ins.
Sparking plug type	Bosch W225T1
Tappet clearances (cold)	Inlet 0.020 in.: Exhaust 0.020 in.
Valve timing:	
Inlet opens	t.d.c.
Inlet closes	40°a.b.d.e.
Exhaust opens	40°b.b.d.c.
Exhaust closes	t.d.c.
	With 0.057 in. valve clearance
Front wheel toe-in	Nil
Camber angle	0° to +½°
Castor angle	0° to +1°
King pin inclination	7.5°
Tyre pressures:	
Front	23
Rear:	26



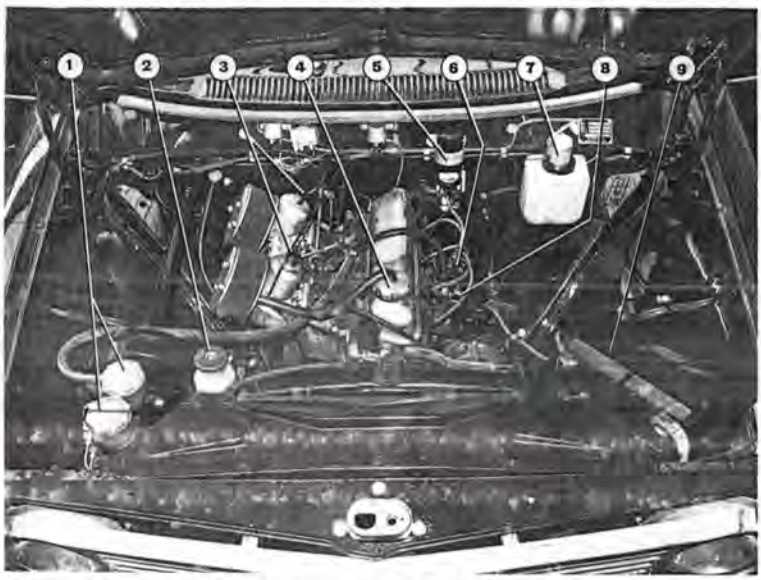
disc brake, so that if a line should fail you can still get 80% braking. Such a safety feature is not obvious in normal use, but the brakes worked very well and the pressure required, with a servo, is on the lighter side of average. The handbrake, a convenient pull-up lever on the driver's right, held the car easily on a 1 in 3 hill and provided a good emergency stop; the rear discs have special small diameter handbrake drums.

Comfort and controls

Deficiencies of the low speed ride are alleviated by the excellent seats which provide a combination of adjustment more or less unrivalled; the sliding adjustment allows a good choice of position for all heights and the seat moves on inclined runners which lift the shorter drivers as they move forward. The backrests recline right down and can be locked in any position. There is also a special lumbar pad which can be made firm or soft according to taste; those with less sensitive backs derived no great benefit however—it was comfortable either way.

Not only is the access to the rear seats very good through large doors, but, once installed, you find masses of room in all directions either for a very comfortable two with the arm rest down, or for a quite reasonable three—a low prop shaft tunnel makes the central position better than that on many cars. Knee room is also unusually good for any non-limousine car irrespective of class.

We criticized the previous model for its rather claustrophobic accommodation; the high waist line and the rather beetle-browed screen top combined to produce this effect, but despite the high steering wheel and bonnet, the new 144 is a veritable sun house by comparison with large areas of glass which leave no blind spots; it is also easy to see the rear deck for reversing. An inadvertent nudge would not affect either car anyway as both bumpers are covered by full length rubber strips. Although the pedals (offset to the right), gear lever and handbrake are well placed, the steering wheel is still too high for smaller drivers unless they sit rather upright and the flattened horn ring partially obscures the speedometer.



1, twin brake fluid reservoirs for the dual circuit braking system. 2, sealed cooling circuit reservoir. 3, twin HS6 SUs. 4, oil filler cap with breather pipe to carb. air filter. 5, coil. 6, distributor. 7, screen washer reservoir with electric pump. 8, dipstick. 9, battery.

MAKE VOLVO: MODEL 144S: MAKERS Aktiebolaget Volvo, Göteborg, Sweden. CONCESSIONAIRES Volvo Concessionaires Ltd., P.O. Box 7, Tower Ramparts, Ipswich, Suffolk.

Although there is no face level ventilation the rest of the system is so good that the air does not get stuffy and the windows all stay clear of mist. The unusual heater controls—large knurled wheels with sectors sticking out of the facia—are quite easy to operate; at night an illuminated strip in part of their circumference shows their position clearly. One controls temperature, the second regulates air to both front and rear passengers and the screen control has outlets on the rear parcel shelf as well. Unlike some such designs which rely on optimism and a ram effect equivalent to 200 m.p.h., the Volvo transmits air along all the channels at quite moderate speeds. A two-speed booster fan improved the flow even at 50 m.p.h. if the windows are all shut for, despite outlets in the rear quarters, the flow is improved if the internal pressure is further relieved. There are separate cold air vents at leg level whose levers cannot unfortunately be reached when the belts are fastened—since these lap and diagonal belts have a rather clumsy adjustment one does not readily re-fasten them while moving.

Apart from the earlier criticism of intake noise obtruding under hard acceleration (but not when cruising at a steady 70 m.p.h.) noise level is comfortably low and the 144 is an untiring car to drive long distances. At night good lights maintain the effect and in rain the two-speed wipers sweep a large area.

Fittings and furniture

The Volvo interior shows plenty of thought to safety requirements; all controls have flat knobs which do not project beyond the facia padding and both they and the instruments are easily read and found. Useful padding is also provided at leg level for those in the front seats, and grab handles are provided for all.

There is quite a deep glove tray in front of the passenger and some oddments could fit on the parcel shelf, but the capacious boot can easily take anything else. A capacity of 13.1 cu. ft. is remarkably good and a further indication of clever space planning; women may find the boot sill too high to lift heavy luggage over, though.

Servicing and maintenance

A particularly good point on the Volvo is the accessibility of most of the components; there is plenty of room round the engine and the fuse block is mounted behind a panel on the facia. The handbook gives any information you could need about servicing and it seems reasonable to do the 3,000-mile checks oneself, but there are a number of items in the 6,000-mile checks that should be left to a competent mechanic with the proper tools. Other service schedules might neglect some of the items or have them at less frequent intervals, e.g. compression test, front wheel alignment, etc., but the proper servicing of a good investment is itself a good investment.

Insurance

AOA Group rating	Not yet decided (to be published later)
Lloyd's	144—group 4; 144S—group 5

Routine service

Engine. Every 3,000 miles—change engine oil. Every 6,000 miles—replace oil filter, clean fuel filter, check valve clearances, check fan belt tension, carry out compression test, check carburetters. Every 12,000 miles—change air cleaners. Every 25,000 miles—clean filter in oil filler cap, service crankcase ventilation system. Every autumn—change coolant.

Transmission. Every 3,000 miles—check oil levels in gearbox and back axle. Every 6,000 miles—check clutch yoke travel, check prop. shaft. Every 25,000 miles—change gearbox oil.

Steering and suspension. Every 3,000 miles—check oil level. Every 6,000 miles—check front wheel alignment, check all steering and suspension joints.

Wheels and brakes. Every 6,000 miles check and overhaul brakes. When refuelling—check tyre pressures.

Electrical. Every 6,000 miles—check plugs, contact breaker points and timing, check battery charge and headlamp alignment. Every 12,000 miles—change plugs.

General. Every 6,000 miles—lubricate body (door locks, hinges, etc.).