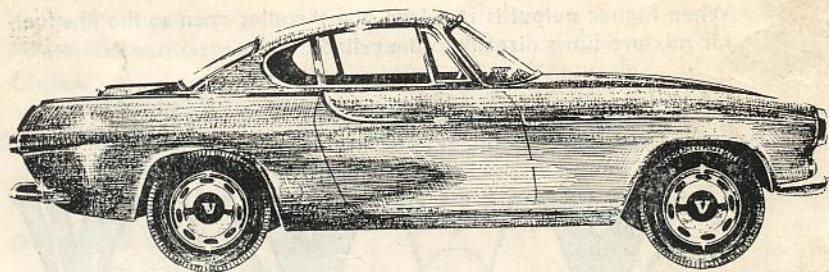


SUPPLEMENT TO INSTRUCTION BOOK

VOLVO 1800 S



To a great extent the instruction book for the Volvo 1800 S (P) applies also to the Volvo 1800 S (S). This supplement deals only with the important differences between the Volvo 1800 S (S) and 1800 S (P) models.

Type designation	Engine	Gearbox
18 — 335 S	B 20 B	M 41

DESCRIPTION

Engine

The Volvo 1800 S is fitted with a new 2-litre, 4-cylinder engine with type designation B 20 B. The engine is fitted with twin carburettors. The B 20 B engine has a higher torque than the previous B 18 B unit.

Exhaust emission control

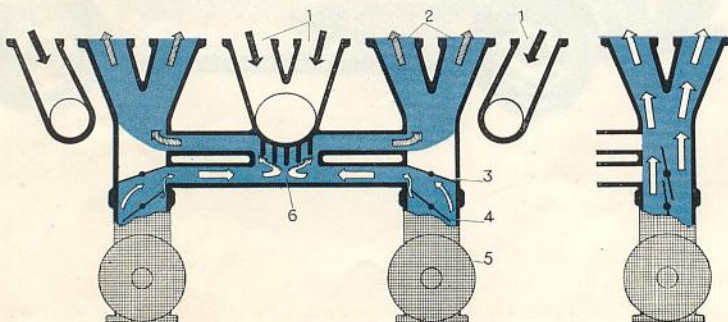
The Volvo 1800 S is now fitted with exhaust emission control, that is, a system which as a result of better mixing and distributing of fuel and air provides a more complete combustion and thereby cleaner exhaust gases.

Exhaust emission control is provided partly through carburettors specially designed for this purpose and partly by the engine having a special induction manifold with throttles and preheating chamber, see Fig. below.

When driving at low speeds the throttles are closed so that the fuel-air mixture is forced to pass the preheating chamber.

When higher output is required, the throttles open so that the fuel-air mixture flows directly to the cylinders.

- | | | |
|---------------------|-----------------------------|-----------------------|
| 1. Exhaust manifold | 3. Intake manifold throttle | 5. Carburettor |
| 2. Intake manifold | 4. Carburettor throttles | 6. Preheating chamber |



Electrical system

The electrical system is of the 12-Volt type and is equipped with a voltage-regulated alternator. When replacing the battery or carrying out any other work with the electrical system, the following should be observed.

1. The battery connection to the wrong terminal will damage the rectifiers. Before connecting up, check the polarity of the battery with a voltmeter.
2. If extra batteries are used for starting, they must be properly connected to prevent the rectifiers from being damaged.
The negative lead from the auxiliary battery for starting must be connected to the negative terminal stud of the car battery and the positive lead from the auxiliary battery for starting to the positive terminal stud.
3. If a fast charger is used for charging the battery, the battery leads should be disconnected.
The fast charger must never be used as an auxiliary unit for starting. If this is not observed, both the alternator and regulator will be ruined.
4. Never disconnect the battery circuit (for example to change the battery) while the engine is running, as this will ruin the alternator immediately.
5. If any electrical welding work is to be carried out on the vehicle, the welding unit must be connected as near as possible to the welding point and on the same main component, for example the chassis or the body, etc. If such an arrangement is not possible, disconnect both battery leads.

Power transmission

Clutch

The Volvo 1800 S has a mechanical clutch provided with a cable control. The part of the text in the instruction book which covers the clutch hydraulic system does not apply.

Overdrive

The Volvo 1800 S has been fitted with a new type of overdrive. Besides being stronger, it has a smoother engagement and disengagement than previously. The ratio for the new overdrive has been altered to 0.797:1.

Rear axle

The Volvo 1800 S is fitted with a rear axle with altered ratio 4.3:1.

Brakes

The brake system is a dual-circuit system with disc brakes on the front wheels and drum brakes on the rear wheels. The system is provided with a tandem master cylinder and a direct operating servo cylinder.

The principle for the dual-circuit system is that both front wheels are connected to a rear wheel, that is, should one of the systems cease to function, there is always brake power for both front wheels and a rear wheel.

The delivery lines to the rear wheels are fitted with relief valves which prevent involuntary locking of the rear wheels.

The system also includes a warning lamp mounted to the left of the revolution counter. This warning lamp lights if one of the circuits does not function during braking. The lamp also indicates when the handbrake is applied.

SERVICING

Maintenance system

With effect from the 1969 models, the maintenance system has been modified. Servicing procedure carried out at 5000 km (3000 miles) intervals are omitted. Oil changing for the engine as well as oil level checking for the gearbox, final drive, steering gear and carburettor(s) should take place after every 10000 km (6000 miles), suitably in connection with the 10000 km (6000 miles) inspection. However, as previously, during the running-in period the engine oil should be changed after the first 2500 km (1500 miles) and the oil in the gearbox and final drive replaced after the first 5000 km (3000 miles).

In addition to the above, the following should be checked when filling with fuel:

- the oil level in the engine

- the coolant level

- the brake fluid level

- that the container for the windscreen washer fluid is full

about every 14 days the tyre pressure and the battery acid level.

Oil changing in engine

With a new or newly reconditioned engine the oil should be changed after the first 2500 km (1500 miles). Thereafter oil changing is according to the intervals below.

The intervals for changing will depend to a great extent on the type of oil used. For engine lubrication "For Service MS" should be used. As far as viscosity is concerned a **multigrade oil** should primarily be used. These oils are better suited for demanding operating conditions, for instance, continuous driving in city traffic with incessant stopping and starting and long periods idling.

For engine oil with viscosity SAE 10 W — 30 (multigrade), 10 W — 40 or 20 W — 50 the oil should be changed every 10000 km (6000 miles).

If an engine oil with viscosity SAE 10 W (singlegrade), 20/20 W or 30 is used, the oil should be changed every 5000 km (3000 miles), or at least twice a year.

At very low temperatures ($-20^{\circ}\text{C} = 4^{\circ}\text{F}$) multigrade oil SAE 5 W — 20 is recommended. However, this oil should not be used when the temperature constantly exceeds 0°C (32°F).

Viscosity Oil quality	Temperature range	Oil changing intervals*)	Oil capacity
SAE 10 W — 30 10 W — 40 20 W — 50 "For Service MS"	all the year round	10000 km (6000 miles)	Excl. oil filter 3.25 litres (5.72 Imp. pints = 6.86 US pints)
SAE 10 W 20/20 W 30 "For Service MS"	below -10°C (14°F) between -10°C and $+30^{\circ}\text{C}$ (14°F and 90°F) above $+30^{\circ}\text{C}$ (90°F)	5000 km (3000 miles) (at least twice a year)	Incl. oil filter 3.75 litres (6.60 Imp. pints = 7.91 US pints)

*) During running-in the oil should be changed after the first 2500 km (1500 miles).

Positive crankcase ventilation

The 1800 S is provided with positive crankcase ventilation which has been given a different design in relation to previous models.

The positive crankcase ventilation prevents crankcase gases from being released into the atmosphere. Instead they are sucked into the engine through the intake manifold and participate in the combustion after which they are blown out through the exhaust pipe together with the other combustion gases.

Every 40000 km (25000 miles) the components for the positive crankcase ventilation should be cleaned and this operation ought to be done in a Volvo workshop.

Air cleaner

The engine has a new type of air cleaner, a so-called rod-type cleaner which is the same for both the carburettors.

The air cleaner consists of a plastic casing with replaceable paper cleaner insert.

The insert should be replaced after every 40000 km (25000 miles). If the car is run mainly on roads which are very dusty, the cleaner, however, should be replaced more often.

To change the cleaner, slacken the clamps retaining the upper part of the air cleaner so that the upper part can be taken off. The insert is now available for replacement.

Draining the coolant

The coolant should be changed every other year. To drain the coolant, open a cock on the right-hand side of the engine and release the hose connected to the lower part of the radiator. There is no drain plug on the radiator.

Carburettors

The carburettors on the Volvo 1800 S models are set and tested with a CO-gauge at the factory. Any subsequent checking or adjustment of the carburettor's setting need not be done other than when carrying out repairs to or replacement of the carburettors.

The only measure required to be carried out at regular intervals is a check on the oil level in the damping cylinders, this being carried out every 10000 km (6000 miles).

Replacing the servo cylinder air cleaner

Normally, the servo cylinder air cleaner should be replaced every 40000 km (25000 miles). When driving mainly on dusty roads replacement should take place more often. The servo cylinder air cleaner should be replaced at a Volvo workshop having the proper equipment for this purpose.

Brake fluid

The brake system is fitted with twin brake fluid containers, one for each circuit. The brake fluid level can suitably be checked when filling fuel in connection with the oil level check for the engine. The fluid should be between the Max. and Min. marks.

As far as the hydraulic brake system is concerned, only brake fluids meeting the requirements according to SAE 70 R 3 may be used. **N. B.** Do not use brake fluids with designation SAE 70 R 1, HD or similar. From a traffic safety point of view, it is very important that brake fluid of inferior value is not used. A first-class brake fluid must, namely, fulfil the heavy demands made by temperature variations and in addition must not have a damaging effect on the rubber components in the brake system.

SPECIFICATIONS

Engine

Type designation	Volvo B 20 B
Output (DIN) at r.p.m.	105 h.p./5500
Output (SAE) at r.p.m.	118 h.p./5800
Max. torque (DIN) at r.p.m.	16.5 kpm/3500 (119 lb.ft.)
Max. torque (SAE) at r.p.m.	17 kpm/3500 (123 lb.ft.)
Bore	88.9 mm (3.5")
Stroke	80 mm (3.15")
Displacement.....	1.99 litres
Compression ratio	9.5:1
Valve clearances, warm and cold, inlet.....	.50—.55 mm (.020—.022")
Valve clearances, warm and cold, exhaust50—.55 mm (.020—.022")
Idling speed, warm engine.....	800 r.p.m.

Fuel system

Carburettors, type	Horizontal
designation	Zenith-Stromberg 175 CD 2 SE
Fuel, octane rating, min.....	100

Cooling system

Thermostat begins opening at ...	approx. 82° C (179° F)
fully open at	approx. 95° C (204° F)

Ignition system

Ignition setting, stroboscope setting (vacuum governor disconnected).	10° B.T.D.C. at 600—800 r.p.m.
Spark plug, normal driving	Bosch W 200 T 35*)
hard driving	Bosch W 225 T 35*)
electrode gap7—.8 mm (.028—.032")
tightening torque ...	3.5—4.0 kgm (25—29 lb. ft.)

POINTS

.45 mm (.018")

Electrical system

Battery, electrolyte specific gravity	1.28
recharged at.....	1.21
Alternator, current rating max. .	35 A
output max.	450 W

Gearbox

Type designation	M 41
Ratio, 1st speed	3.13:1
2nd speed	1.99:1
3rd speed	1.36:1
4th speed	1:1
4th speed with overdrive..	.797:1
reverse	3.25:1

Final drive

Ratio:	
with gearbox M 41	4.3:1

*) Or corresponding



AB VOLVO GÖTEBORG SWEDEN