

SAAB

Service Manual Saab 99



M 1975-82

Service

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General hints

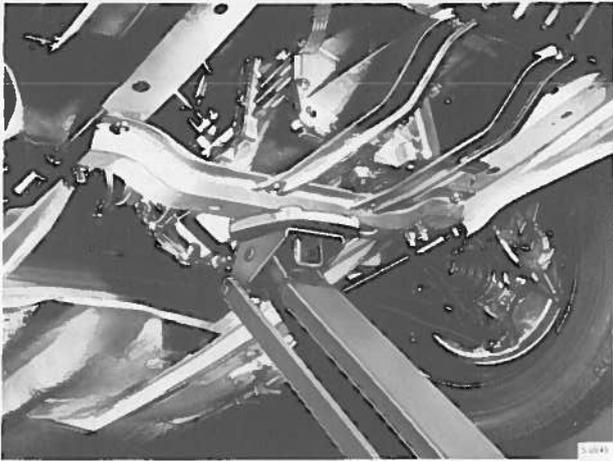
General

A neat and tidy workshop is essential for the proper servicing of vehicles. Some parts of the car need to be treated with special care and effectively protected against dirt and contamination while work is in progress. For the mechanic who may be new to the job the following points may be of help:

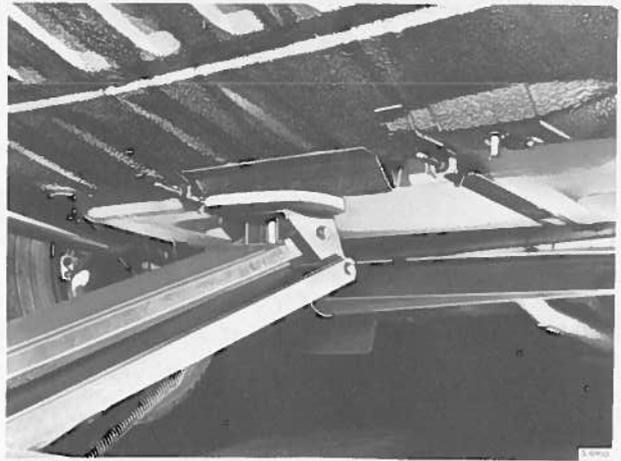
1. Protect fenders and other paintwork with suitable coverings.
2. Lay protective coverings over the seats and upholstery to save them from stains of oil and dirt.
3. Clean the insides of fenders and the space round the rear axle thoroughly before starting to work on wheel hubs and axles. This makes the job easier and prevents grit and dirt from getting into bearings and other susceptible parts.
4. Before unscrewing spark plugs, clean the recess round the plug thoroughly.
5. Every job must have its proper place. It is bad practice, for example, to disassemble an engine or transmission on a bench which is also used for filing, etc. or where filing is done in the immediate neighbourhood.

Jacking and blocking up

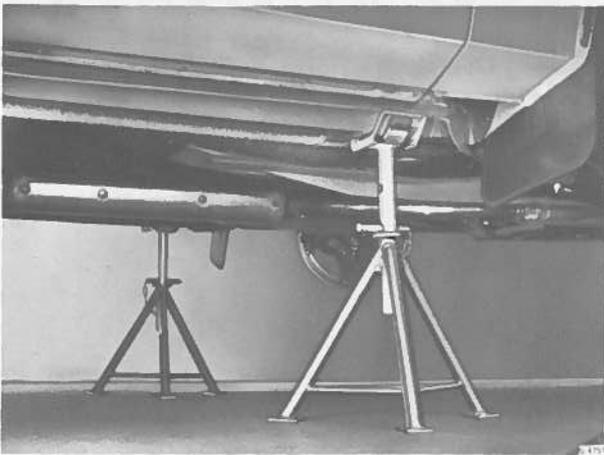
The car has a rigid self-supporting body and this lacks the neutral application points for a jack that a girder chassis provides. There are however two special engagement recesses on each side designed to fit the jack supplied with the car's tool kit; these are intended for use during wheel changing, etc. The engine compartment floor is also reinforced immediately under the cross member that supports the engine to provide an application point for the workshop jack. A similar reinforced jacking point is provided underneath the floor at the back behind the fuel tank. As most workshop jacks have a forked lifting head, it is advisable to lay a wooden block of suitable size across the fork to avoid damaging the floor of the car. For some jobs it is necessary to raise the front or rear end of the car. In such cases the jack engagement recesses under the sills should be utilized.



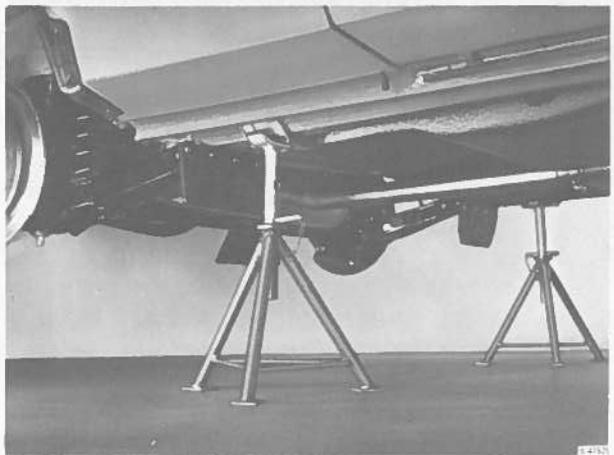
Front end raised



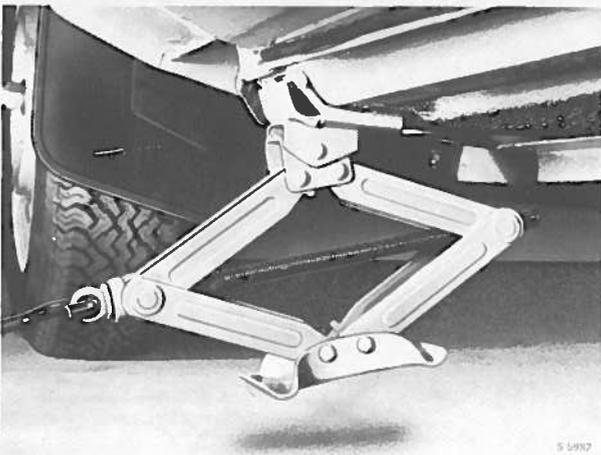
Rear end raised



Front end blocked up on trestles



Rear end blocked up on trestles



One side jacked up

Special tools

General

A list containing special tools is found in each group of the book and in the Spare Parts Catalogue.

The special tools in the Spare Parts Catalogue are classified as follows:

Tools for engine, transmission and chassis work

- Class A0-1 = Tools used very frequently in service work (e.g. adjustment of timing)
- A0-2 = Tools used frequently in maintenance work (e.g. replacement of brake pads)
- A1 = Tools necessary for simple repairs (e.g. replacing the clutch or valves)
- A2 = Tools necessary for qualified repairs (e.g. reconditioning of the gearbox)
- A3 = Tools which are mainly recommended for reasons of operational efficiency

Tools for body work

- Class B1 = Tools necessary for simple body work (e.g. replacement of front fenders)
- B2 = Tools necessary for qualified body work (e.g. alignment work)
- B3 = Tools which are mainly recommended for reasons of operational efficiency.

Tool racks and brackets

Tool racks with suitable brackets and holders for the special tools are recommended for keeping the tools readily accessible and easy to find.

Thread system and wrench sizes

The standard thread system used in Saab cars is mainly the metric thread system ("M") and the width across flats is also measured in mm.

However, UNF and UNC threads with dimensions in inches are to be found in some components.

Special Units

The following units are available for students who are interested in a more advanced study of the subject. These units are designed to provide a more in-depth understanding of the subject matter and are suitable for students who are planning to continue their studies in the field.

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For more information, please contact the Registrar's Office at (555) 123-4567.

Service inspections

Every new car is accompanied by a service card that should be stamped at every service occasion.

Guarantee service at 1,200 miles (2,000 km) is carried out free of charge (except for oils etc. for which a charge is made).

Other periodic maintenance should be performed according to the programmes below and paid for by the customer.

Exhaust emission

Official regulations governing the emission of carbon monoxide, hydrocarbons and nitric oxide in car exhaust fumes are becoming increasingly more stringent. Saab cars are designed and built to meet these requirements on the condition that the engines are correctly tuned.

The workshops hold a key position in being able to limit the emission of toxic gases from cars and therefore make a contribution to keeping pollution down. Remember that a correctly tuned engine also ensures that the car runs smoothly and with low fuel consumption.

The relevant adjustments are described in the service programme. We would particularly like to emphasize the importance of adjusting the **ignition system** and the **fuel system** in according with the specifications.

Delivery inspection

1. Check the function of all lights, instrument lighting, control and indicator lights, horn, ventilator fan, interior and ignition switch lighting, windshield and headlight washers/wipers, license plate illumination, trunk lighting and electrically heated rear window.
2. Check the brake pedal pressure.
3. Check the gear selector lever positions (automatic transmission).
4. Check the differential oil level (automatic transmission).
5. Check the engine oil level.
6. Check the transmission oil level.
7. Check the power steering fluid level.
8. Check the oil level in the carburetor damping cylinder(s).
9. Check the battery electrolyte level and tighten the holder hooks.

10. Tighten the terminals and cable lugs on battery, starter motor, alternator and voltage regulator.
11. Check the radiator coolant level and freezing points.
12. Test the cooling system for leaks (pressure test).
13. Check the windshield washer fluid container level.
14. Check the brake master cylinder fluid level.
15. Turbo: Check the pressure switch function and charge pressure regulator seal.
16. Check the ignition setting.
17. Make sure that the tool kit, warning triangle, Owners Manual and Service Card are in place.
18. Check the funktion of all locks.
19. Check doors, trunk lid and sunroof for leaks and closing power.
20. Check the carburetor synchronizing (twin-carburetor engines only).
21. Check the engine idling/fast idling speed.
22. Turbo: Check the fuel enrichment function.
23. Check the inlet air preheating for Summer/Winter position.
24. Tighten the wheel bolts/nuts.
25. Check the tire pressure (incl. spare wheel).
26. Check the headlight alignment.
27. Test run incl. general function check (especially clutch, transmission, brakes, wheel balancing, instruments, direction indicator return, etc.).
Check for rattle, wind or other disturbing noise.
Check the steering wheel center position.

Other delivery measurements:

Dewaxing, polishing incl. check of painted and bright parts, loose equipment and license plates.

Guarantee inspection 1,200 miles (2,000 km)

1. Check the functions of all lights, instrument lighting, control and indicator lights, horn, ventilator fan, interior and ignition lighting, windshield and headlight washers/wipers.
2. Drain the engine oil.
3. Drain the transmission oil. Clean the magnetic drain plug.
4. Check the engine and transmission for leaks.
5. Change the differential oil (automatic transmission).

6. Check the condition of the rubber bellows on steering gear, inner and outer universal joints, rubber seals of ball joints and the tie rod ends.
7. Tighten the lower control arm bolts to the body (from beneath).
8. Tighten the exhaust system suspension bolts and pipe clamps.
9. Tighten the bolts for the rear axle suspension in the body.
10. Change the oil filter cartridge (H-engine only).
11. Engine: fill up with fresh oil.
12. Manual transmission: fill up with fresh oil.
13. Check the power steering fluid level.
14. Check the battery electrolyte level and grease the cable lugs.
15. Check the V-belt tension.
16. Check the radiator coolant level and test the cooling system for leaks (pressure test). Tighten hose clamps.
17. Check the brake master cylinder fluid level.
18. Tighten the inlet manifold and carburetor flange nuts.
19. Tighten the exhaust manifold retaining bolts.
20. Tighten the exhaust pipe flange nuts.
21. Tighten the turbo charger retaining bolts.
22. Tighten the cylinder head nuts and bolts to prescribed torque.
23. Check the valve clearance.
24. Check the front wheel alignment (camber, caster and toe-in).
25. Tighten the tie rod end nuts.
26. Tighten the upper control arm retaining bolts.
27. Grease the distributor breaker cam and lubricating felt. Check the dwell angle and ignition setting.
28. Check the exhaust system for leaks.
29. Tighten the engine mount retaining bolts.
30. Check the deceleration device, engine idling speed and CO emission at 2,000 r/min.
31. Check the inlet air preheating for Summer/Winter position.
32. Adjust, if necessary, the door lock striker plate.
33. Turbo: Check the charging pressure.

Automatic transmission:

34. Check the gear selector lever positions.
35. Check the throttle cable clearance and movement.
36. Check the transmission oil level.

37. Tighten the exhaust pipe clamp nuts at the gearbox and test for leaks.
38. Test run incl. general function check (especially clutch, transmission, brakes, wheel balancing, direction indicator return, etc.)
Check for rattle, wind or other disturbing noise.

Regular maintenance inspection up to model year 1979

Every 6,000 miles (10,000 km)

Engine

1. Change oil (at least twice a year) and oil filter.
2. Clean air cleaner insert.
3. Clean fuel pump filter (carburettor engine).
4. Check fuel lines in engine compartment for leakage.
5. Check and if necessary top up oil level in carburettor damping cylinder.
6. Check the exhaust system for condition and leaks.
7. Pressure test of the cooling system (check the condition of the hoses).
8. Check coolant freezing point.
9. Tighten cylinder head bolts (only first 6,000 miles/10,000 km).
10. Check and if necessary adjust carburettor synchronization (two-carburettor engine).
11. Adjust deceleration-valve (only first 6,000 miles/10,000 km as from model 1976).
12. Check and if necessary adjust engine idling speed and the emission of carbon monoxide (CO) at idling.

Electrical system

1. Check condition of V-belts and adjust belt tension if necessary.
2. Check and if necessary adjust headlight alignment. Inspect condition of headlights by eye.
3. Adjust spark plugs.
4. Check condition of breaker points. Lubricate distributor breaker cam and lubricating felt. Check and if necessary adjust dwell angle and ignition timing.
5. Check battery electrolyte level and top up if necessary. Tighten and grease cable lugs.

6. Check operation of parking, brake and rear lights, licence plate illumination lights, direction indicators, horn, back-up lights, hazard warning flashers, interior lighting, warning and indicator lights, windshield and headlight washers and wipers, brake warning light, instrument lighting, luggage compartment lighting and ventilator fan.
7. Check condition of washer jets and rubber wiper blades.

Transmission

1. Manual transmission: Check fluid level and if necessary replenish brake fluid in clutch master cylinder.
2. Manual transmission: Check and if necessary adjust clutch release bearing play (only up to and incl. model year 1975).
3. Check transmission oil level and top up if necessary (also final drive in automatic transmission).

Brake system

1. Check level in master cylinder, top up with brake fluid if necessary.
2. Check and if necessary adjust parking brake (only up to and incl. model year 1974).
3. Remove wheels and check thickness of brake pads.
4. Check brake lines and hoses for condition and leaks.

Steering, front suspension and tires

1. Check and if necessary adjust toe-in.
2. Check condition of rubber bellows on steering gear and inner and outer universal joints, and of rubber seals for ball joints and tie-rod ends.
3. Check depth of tire tread patterns.

Body

1. Lubricate door stops, door hinges and hood lock mechanism.

Test driving

1. Test drive car on road and check operation of all systems, especially brakes and clutch and operation of automatic transmission.

Supplementary inspection Every 12,000 miles/20,000 km.

To be carried out in connection with the regular 6,000 miles/10,000 km inspection

1. Change spark plugs.
2. Change breaker points.
3. Change oil in manual transmission, clean magnetic drain plug (at least once a year).
4. Change oil in final drive of automatic transmission.
5. Check and if necessary adjust camber and caster.
6. Adjust deceleration-valve.

Supplementary inspection Every 24,000 miles/40,000 km.

To be carried out in connection with the regular 6,000 miles/10,000 km inspection and the supplementary 12,000 miles/20,000 km inspection.

1. Check and if necessary adjust valve clearances.
2. Change air cleaner insert.
3. Change fuel filter (injection engine).
4. Check and if necessary replenish steering gear oil level.
5. Change brake fluid (at least once every second year).

Periodic servicing as from model year 1979

The maintenance programme lists the most important things that need to be done to ensure enjoyable and trouble-free motoring at minimum cost. The 1,200 miles (2,000 km) coupon in the Service Card entitles to guarantee check-ups free of charge (except for oils and filters for which a charge is made). The guarantee is not valid if these check-ups are not made. Subsequent check-ups at 10,000 miles (15,000 km) intervals will be charged for.

If less than 10,000 miles (15,000 km) are covered in one year, one engine oil change must be carried out and one complete service should in any case be carried out in the year.

5,000 miles (7,500 km) service

Change engine oil in Saab 99 Turbo cars and cars driven under unusually demanding conditions, such as driving in extremely hot weather, driving at high speeds for a considerable distance, and driving over short distances in extremely cold weather.

10,000 miles (15,000 km) Service

To be carried out by authorized Saab Dealer.

Engine

1. Change oil and oil filter (at least once a year).
2. Clean air cleaner insert.
3. Clean fuel pump filter (carburettor engine).
4. Check fuel lines in engine compartment for leakage.
5. Check the damper oil level. Top-up if necessary.
(Carburettor engine).
6. Check engine idling speed setting and check emission of carbon monoxide as prescribed by the authorities (where applicable).
7. Check the exhaust system for condition and leaks.
8. Pressure test of the cooling system (check the condition of the hoses).
9. Check coolant freezing point.
10. Check hoses and nipples for the crankcase ventilation.
11. Adjust deceleration valve.
12. Check the synchronizing of the carburettors (twin-carburettor engine).
13. Check the choke control.
14. Check the tightness of the valve cover screws.
15. Saab 99 Turbo: Check the seal on the charge pressure regulator.
16. Saab 99 Turbo: Check the charging pressure and adjust as necessary.
17. Saab 99 Turbo: Check the pressure guard and the fuel enrichment device.

Electrical system

1. Check condition of V-belts and adjust belt tension if necessary.
2. Check and if necessary adjust headlight alignment.
3. Adjust spark plugs.
4. Check the breaker points. Lubricate distributor breaker cam and lubricating felt. Check and if necessary adjust dwell angle and ignition timing.
5. Check battery electrolyte level and top up if necessary. Tighten and grease cable lugs.

6. Check operation of parking, brake and rear lights, licence plate illumination light, direction indicators, horn, back-up lights, hazard warning flashers, interior lighting, warning and indicator lights, windshield and headlight washers and wipers, brake warning light, instrument lighting, luggage compartment lighting and ventilator fan.
7. Check the vacuum hoses and their connections.
8. Check the condition of the ignition cables.

Transmission

1. Check transmission oil level and top up if necessary (also final drive in automatic transmission).

Brake system

1. Check level in master cylinder, top up with brake fluid if necessary.
2. Remove wheels and check thickness of brake pads.
3. Check brake lines and hoses from condition and leaks.
4. Lubricate the front wheel brake units.

Steering, front suspension and tyres

1. Check condition of rubber bellows on steering gear and inner and outer universal joints, and of rubber seals for ball joints and tie-rod ends.
2. Check depth of tire tread patterns.
3. Check the tire pressure in the spare wheel.
4. Check the fluid level in the power steering fluid container.
5. Check the wear in inner and outer steering joints.

Body

1. Lubricate door stops, door hinges and hood lock mechanism.
2. Check condition of washer jets and rubber wiper blades.

Test driving

1. Test drive car on road and check operation of all systems, especially brakes and clutch.

20,000 miles (30,000 km) service

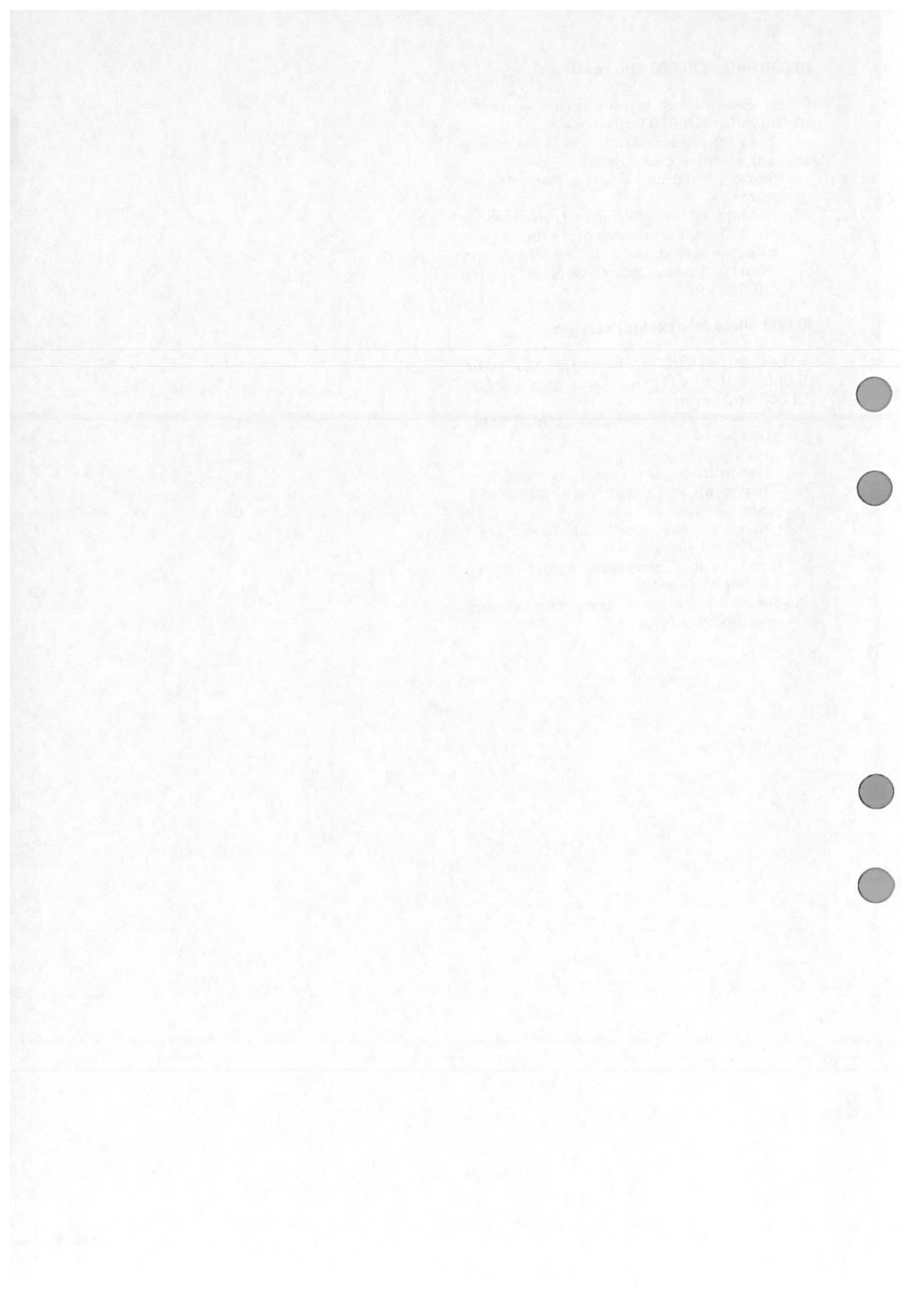
To be carried out in connection with the 10,000 miles (15,000 km) service.

1. Saab 99 Turbo: Check and if necessary adjust valve clearances.
2. Saab 99 Turbo: Change air cleaner insert.
3. Change oil in automatic transmission, clean filter and magnet. Adjust gear selector cable, rear brake lining and throttle cable. Only first 20,000 miles (30,000 km).

30,000 miles (45,000 km) service

To be carried out in connection with the 10,000 miles (15,000 km) and 20,000 (30,000 km) service.

1. Check and if necessary adjust valve clearances.
2. Change air cleaner insert.
3. Change fuel filter (injection engine).
4. Change oil in final drive of automatic transmission.
5. Change brake fluid (at least once every two years).
6. Check and if necessary adjust toe-in, camber and caster.
7. Saab 99 Turbo: Clean the charge pressure regulator.



Lubrication, lubricants

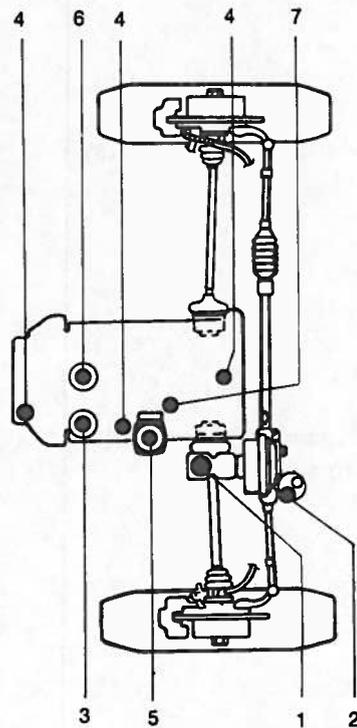
Lubrication in connection with service inspection

Ref.	Lubrication point	Oty.	Lubricant	Instructions
1	Brake system	1	Brake fluid, grade DOT 4.	Brake fluid to be changed every 24,000 miles (40,000 km) up to model year 1978, every 30,000 miles (45,000 km) from model year 1979 or at 2-year intervals, whichever comes first.
	Front wheel brake yoke	2	Gleitmo 540	Lubricate the sliding surfaces between yoke and brake housing.
2	Hydraulic clutch operation		Brake fluid, grade as above.	
3	Engine	1	Follow recommendations, see later on in this section	Change the oil and the oil filter cartridge every 6,000 miles (10,000 km) up to model year 1978, every 10,000 miles (15,000 km) from model year 1979. Every 5,000 miles (7,500 km) on turbo models and cars used in severe driving conditions. Note: Use only genuine Saab filter cartridges.
4	Manual transmission		Follow recommendations, see later on in this section.	Up to model year 1978 check the oil level every 6,000 miles (10,000 km) change it every 20,000 miles (30,000 km). From model year 1979, check the oil level every 10,000 miles (15,000 km), change it every 30,000 miles (45,000 km).
	Automatic transmission			Up to model year 1978, check the oil level every 7,000 miles (10,000 km), change it every 20,000 miles (30,000 km) in connection with special inspection. From model year 1979, check the oil level every 10,000 miles (15,000 km), change it every 20,000 miles (30,000 km), in connection with special inspection.

Ref.	Lubrication point	Oty.	Lubricant	Instructions
	Final drive, automatic transmission		Follow recommendations, see later on in this section.	Up to model year 1978, check the oil level every 6,000 miles (10,000 km), change it every 20,000 miles (30,000 km). From model year 1979, check the oil level every 10,000 miles (15,000 km), change it every 30,000 miles (45,000 km). Check in connection with inspection.
5	Carburettor (oil damper)	1	Automatic transmission oil, type Ford M2C.33G	
6	Distributor, breaker cam	1	Bosch Ft 1 v 4.	Grease the cam.
	Distributor, lubr. felt	1	SAE 40 oil.	Oilcan, sparingly.
7	Throttle control, pulley bearing	1	SAE 40 oil.	Oilcan (do not oil the throttle wire).
	Hood lock mechanism	1	SAE 40 oil.	Oilcan.
	Door hinges and door stops	4+4 or 8+8	SAE 40 oil.	Oilcan.

Note

Saab special chassis grease must be used with care, as it is apt to discolor the paintwork of the car.



S 3894

Every 10,000 miles (15,000 km) or at least twice a year

1. Brake system:

- The brake fluid reservoir shall be kept topped up. Check the level in the reservoir and make sure that the hole in the cap is not clogged. Follow the recommendations in the lubrication chart as regards brake fluid.
- Lubricate the sliding surfaces between the front brake yoke and the brake pads as follows:
 - a. Remove the front wheel.
 - b. Wash off any loose dirt round the sliding surfaces of the yoke in the brake housing.
 - c. Press the yoke back and forth against the yoke spring, applying drops of lubricant to the sliding surfaces at the same time.
 - d. Refit the wheel.

2. Hydraulic clutch:

Check that the reservoir is full.

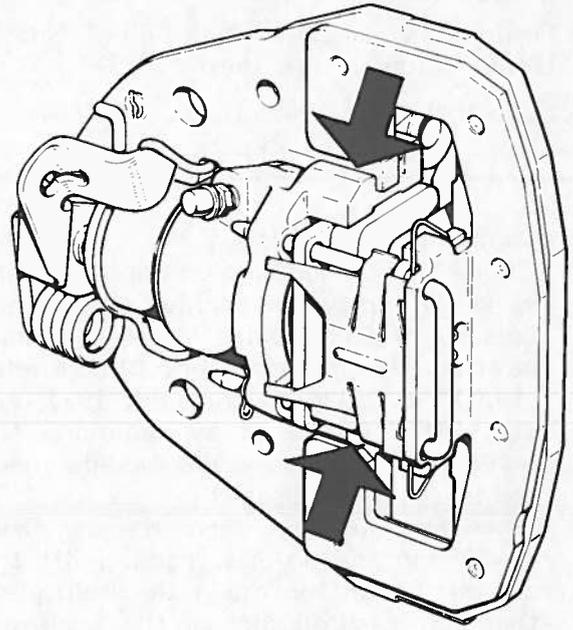
3. Engine:

Oil capacity: 6 Imp. pints (3.5 litres) inclusive of oil filter.

For oil specifications see "Lubricants general". Check the engine oil level at regular intervals. The engine should be at a standstill for about one minute before the check is made. The level should never be allowed to drop below the lower mark on the dipstick but neither should the oil be filled above the level of the upper mark as this will result in abnormally high oil consumption. The distance between the upper and lower marks corresponds to a volume of one liter (roughly 1 3/4 Imp. pints). Top up with oil of the recommended grade as necessary. The first oil change should be carried out after 1,200 miles (2,000 km). The oil should subsequently be changed every 6,000 miles (10,000 km) up to model year 1978 and every 10,000 miles (15,000 km) from model year 1979 or at least once a year.

When changing the oil, the oil filter cartridge should also be changed.

The drain plug in the engine block has a hexagon head.



S 6672

Tightening torques

Drain plug, engine	22-30 ft.lb., 30-40 Nm (3-4 kpm)
Drain plug, transmission	30-45 ft.lb., 40-60 Nm (4-6 kpm)
Level/filler plug	22-30 ft.lb., 30-40 Nm (3-4 kpm)

4. Manual transmission:

Check the oil level in conjunction with servicing (up to and including 1978 models every 6,000 miles (10,000 km) and as from 1979 models every 10,000 miles (15,000 km). Up to and incl. 1977 model, check the level by removing the level plug. As from 1978 models check the level on the dipstick.

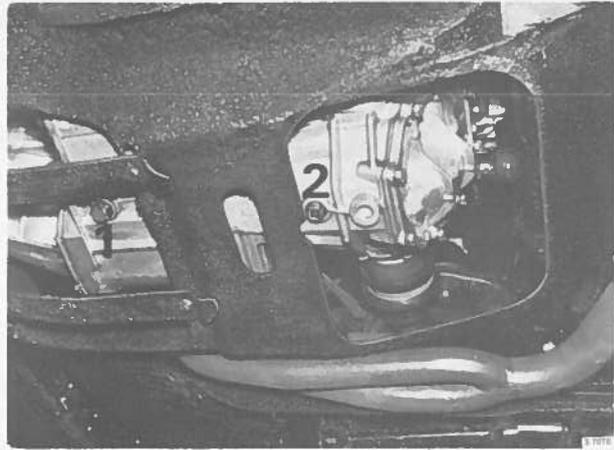
When changing oil, drive the car from 15-20 minutes before draining off the old oil. Clean the magnetic drain plug, then add fresh oil through the transmission filler plug opening until it runs out of the level plug opening. Remember that it takes some time for the oil to run from the primary gear housing into the transmission case.

Transmissions with gear-train primary gear hold 3.0 litres of oil, and transmissions with chain-drive primary gear, 2.5 litres. The first oil change should be carried out after 1,200 miles (2,000 km). Subsequent oil changes should be made every 20,000 miles (30,000 km) up to model year 1978, every 30,000 miles (45,000 km) from model year 1979. Oil specifications, see "summary of lubricants".

Automatic transmission:

Check the oil level in the automatic transmission in conjunction with servicing up to and including 1978 models every 6,000 miles (10,000 km) and as from 1979 models every 10,000 miles (15,000 km). Concerning oil changes, see "Inspection of automatic transmission every 20,000 miles (30,000 km)". The filler tube with graduated dipstick is located immediately behind the radiator.

Apply the handbrake. Run the engine for at least 15 seconds at idling speed with the gear selector in position D. Then at least 15 seconds in position R and 15 seconds in position P, following which the oil level should be checked with the selector still in position P. The



Drain plugs, cars with manual transmission
1. Engine
2. Transmission



Drain plugs, cars with automatic transmission
1. Engine
2. Transmission
3. Final drive

graduations are for cold oil 100°F (+40°C) and hot oil 195°F (+90°C). Note that at extremely low temperatures, the oil level may therefore be appreciably below the cold level, which applies to a temperature of 100°F (+40°C). The difference between MIN and MAX marks is pint (0.5 litres).

Use a nylon rag, lint-free paper or chamois leather to wipe off the dipstick - do not use rags that may leave fluff on the dipstick.

If it is necessary to top up the oil, use only special oil for automatic transmissions as in the following recommendations: automatic transmission oil to Ford specification M2C.33G.

The most scrupulous cleanliness must be observed during filling.

The oil in the final drive unit must be checked:

- Up to and including 1978 models every 6,000 miles (10,000 km).
- as from 1979 models every 10,000 miles (15,000 km) and changed:
- Up to and including 1978 models every 20,000 miles (30,000 km)
- as from 1979 models every 30,000 miles (45,000 km).

Use EP-oil SAE 80 W according to API-GL-4.

5. Oil damper in carburetor:

Type M2C.33G automatic transmission oil or the equivalent should be used. The oil level should be at least 0.4 in. (10 mm) below the top of the damper cylinder.

6. Distributor, breaker cam:

Lightly grease the cam. Apply a small amount of grease to the rivet securing the pad to the contact breaker.

Distributor, lubricating felt pad: Apply a few drops of oil.

7. Throttle control:

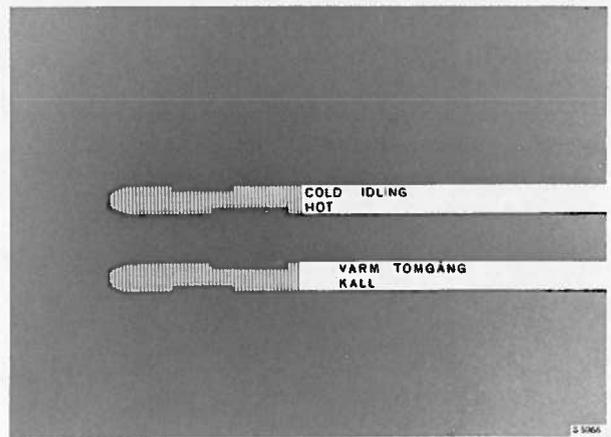
Lubricate the cable bearing (do not lubricate the cable itself).

Hood lock mechanism:

Lubricate by means of oil can.

Door hinges, door stops:

Oil the hinges through the lubricating groove in the top of the hinge pin. The hinges are accessible once the hood has been opened.



S 1 001

20,000 miles (30,000 km) inspection - automatic transmission

To ensure good automatic transmission operation and long life, the following additional work is recommended in connection with the regular 20,000 miles (30,000 km) service.

1. Drain the oil.
2. Remove the protective plate and front oil sump.
3. Clean the filter and the magnet.
4. Check the setting of the gear control. Adjust if necessary.

For type 393 and type 399 automatic transmissions, the following applies:

- a. Feel for the centre of the D position in the manual valve of the automatic transmission with the pawl button depressed.
- b. Release the pawl button. Move the lever back against the stop in the selector lever housing and note the clearance.
- c. Feel for the centre of the N position in the manual valve with the pawl button depressed.
- d. Release the pawl button. Move the lever forward against the stop in the selector housing and note the clearance.

The clearances noted should be the same. Adjust as described in the workshop manual, section 444. For type 487 and type 489 automatic transmissions, the following applies (introduced from chassis numbers 99781015740, 99786007567).

- a. Feel for the centre of the N position in the manual valve with the pawl button depressed.
- b. Release the pawl button and check that the N position of the manual valve, and the depression in the lever segment which marks the N position of the selector housing, coincide.

For adjustment, see section 444.

5. Check the rear band and adjust if necessary.
6. Check the movement and setting of the throttle cable. The clearance between the clip on the wire and the threaded part of the sheathing should be 1-2 mm. Adjust if necessary.
7. Fit the front oil sump and protective plate in position. Fill up with fresh oil.
3.0-3.5 litres for type 393 and type 399 automatic transmissions.
2.5-3.0 litres for type 487 and type 489 automatic transmissions.

Steering gear, check oil level (up to model year 1978)

Interval: every 12,000 miles (20,000 km)

1. Raise the car until the front wheels are clear of the floor.
2. Turn the steering wheel to full right lock and undo the bellows clamp on the left-hand tie rod.
3. Check the oil level by inserting a screwdriver between bellows and tie rod. If grease drops out, refit the clip. If necessary, pack with grease (max 1.5 dl).
4. Fit the clip in place. This will be facilitated if the steering wheel is turned slightly back to the centre position.
5. Lower the car to the floor.

Lubricant:

Manual steering gear:

BP energrease FGL, part No. (45) 30 08 703

Power steering gear:

API service GL5 SAE 75 or SAE 80/90

In conjunction with overhaul

The following lubrication points should be repacked with chassis grease in conjunction with an overhaul.

Tie rod ends and upper and lower ball joints:

Pack the bellows 3/4 full.

Lubricant: Saab special chassis grease.

Rear wheel bearings:

Pack with grease.

Lubricant: Saab special chassis grease.

Inner universal joint:

Pack with grease. The correct quantity will be obtained by fully packing the axle shaft. Remove any surplus grease once the drive shaft has been fitted.

Lubricant: A soft EP grease with a lithium-lead base and which can withstand wide variations in temperature and load. Consistency type ESSO Beacon EP 2, or the equivalent.

Outer universal joint:

The correct quantity of grease will be obtained if the ball retainer is fully packed with grease.

Lubricant: Saab Special chassis grease.

Alternatives:

ESSO EF 125 (NEBULA EP2)

OPTIMOL OLISTAMOLY 2LN 584

K.S. PAUL G 800

MOLYCOTE VN 2461 C

Release bearing (model year 1975):

Fill the groove $\frac{3}{4}$ full.

Lubricant: Saab special chassis grease.

(From model year 1976 the release bearing is permanently lubricated).

Steering gear

Manual steering gear

After an overhaul the steering gear should be filled with 5.3 fl.oz. (1.5 dl) BP Energrease FGL liquid grease.

Grease inner ball joint sockets and balls with molybden paste.

Power-assisted steering gear

(type Adwest up to model year 1978)

In connection with reconditioning the steering gear, fill one of the rubber bellows with 6.5 fl.oz. (2 dl) of lubricant. Type of lubricant: EP oil SAE 75 or SAE 80/90.

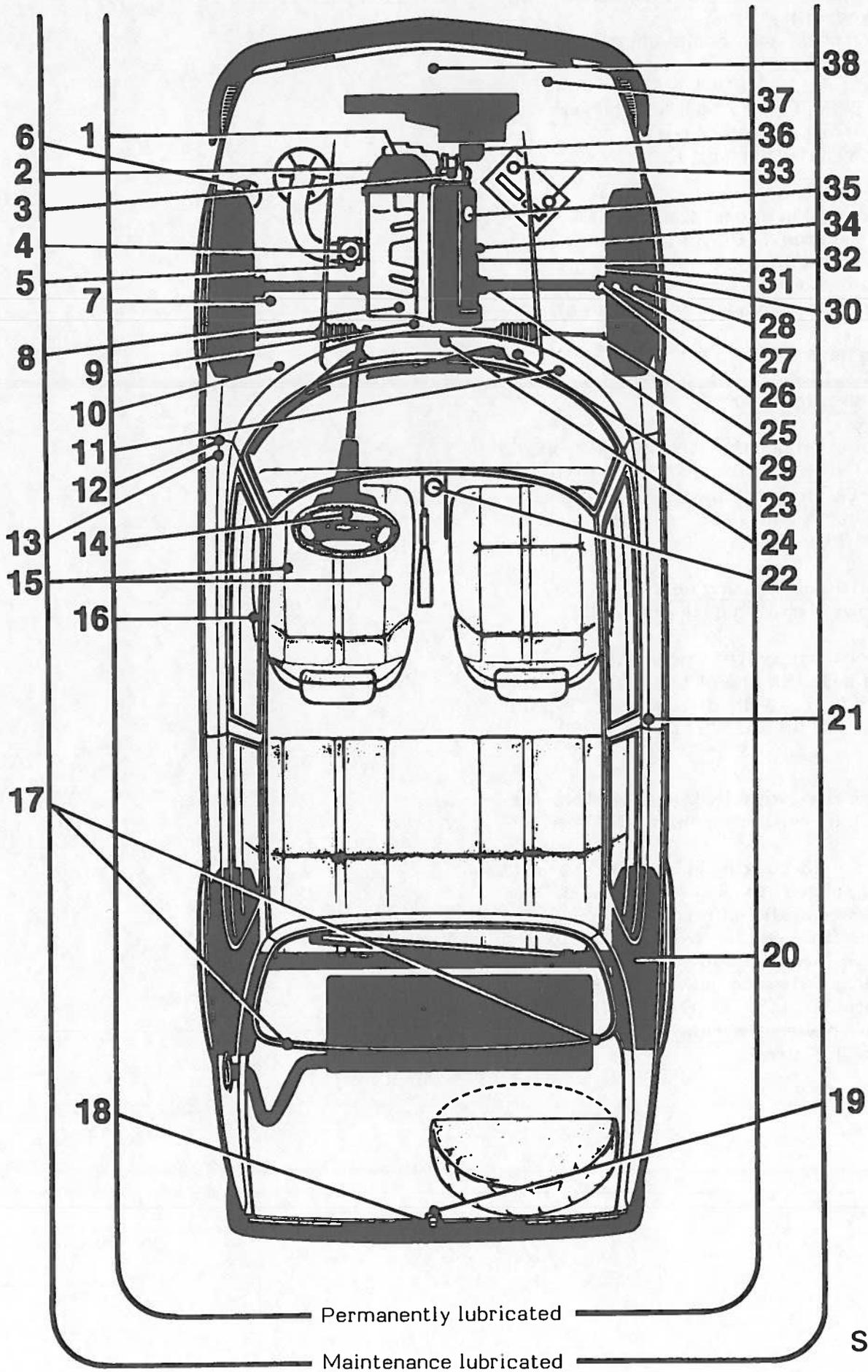
Servo oil:

In connection with hydraulic system service, fill up with hydraulic fluid as follows:

1. Add fluid to a level approx. 0.4 in (1 cm) above the lower part of the strainer in the oil reservoir.
2. Start the engine and top up to the above-mentioned level.

Type of oil: Texaco power steering fluid 4634 part No. (45) 30 09 800. The entire hydraulic power steering system contains 2.0 pints (1.2 litres).

Table of lubricants



S 1/003

	Lubrication point	Lubricant
1	Clutch Release bearing Disc shaft splines Thrust bearing in flywheel	(Saab Special Chassis Grease for model year 1975) Permanently lubricated, do not wash Molybdenum paste part No. (45) 30 06 632 Permanently lubricated, do not wash
2	Automatic transmission	Automatic transmission oil to Fords specification M2C.33G
3	Distributor, breaker cam lubricating felt	Bosch grease Ft 1 v 4 Engine oil
4	Carburettor, oil damper	Automatic transmission oil
5	Throttle control	Engine oil (Note! Do not lubricate throttle wire)
6	Power steering, hydraulic reservoir	Saginaw hydraulic fluid (Texaco Power steering fluid 4634), part No. (45) 30 09 800
7	Handbrake wires	Chassis grease EP 2
8	Final drive, automatic transmission	EP oil SAE 80 W as per API-GL-4
9	Alternator, ball bearings	Bosch grease Ft 1 v 34
10	Brake light contact	Battery pole grease (Vaseline) part No. (45) 30 06 665
11	Windshield wiper motor	Permanently lubricated (special grease)
12	Door contact, interior lighting	Battery pole grease (Vaseline) part No. (45) 30 06 665
13	Door hinges	Engine oil
14	Horn slip ring and connection brush	Battery pole grease (Vaseline) part No. (45) 30 06 665
15	Seat rails	Chassis grease (sparingly)
16	Reclining seat fittings	Permanently lubricated, lubricate if necessary with thin penetrating oil
17	Hinges, luggage compartment	Chassis grease (on assembly)
18	Door contact, luggage compartment lighting	Battery pole grease (Vaseline) part No. (45) 30 06 665
19	Luggage compartment lock mechanism	Thin penetrating oil
20	Rear wheel hubs, packing with grease in connection with assembly	Saab special chassis grease (Esso Nebula EP2)
21	Door lock mechanism	Mobilplex 47, part No. (45) 30 06 624 or Saab Special Chassis Grease
22	Gear selector housing	Soft EP1 grease
23	Engine, ventilation fan	Permanently lubricated, (Special grease)

	Lubrication point	Lubricant
24	Steering gear, manual (rack, pinion and bearings) Steering gear, manual (inner ball joint) Steering gear, power assisted	BP Energrease FGL part No. (45) 30 08 703 Molybdenum paste part No. (45) 30 06 632 Shell EP2 B2 Lithium Grease code 71303 (Shell Retinax A) or equivalent
25	Tie rod ends	Saab Special Chassis Grease (Esso Nebula EP2)
26	Steering knuckle joints	Saab Special Chassis Grease (Esso Nebula EP2)
27	Outer driveshaft joint	Esso Nebula EP2, Molykote VN2461c Optimol Olistamoly 2LN 584 or K.S. Paul-G800.
28	Front wheel bearings	Permanently lubricated (Saab Special Chassis Grease, Esso Nebula EP2)
	Front wheel bearings, bearing seat	Molybdenum paste, part No. (45) 30 06 632
	Front wheel bearings, hub splines	Molybdenum paste, part No. (45) 30 06 632
29	Inner driveshaft joint	Esso beacon EP2 equivalent "lithium-lead Grease" which withstands severe temperature and load variations
30	Brake yoke slide bearing	Gleitmo 540, part No. (45) 30 08 612
31	Cam housing, handbrake adjusting mechanism	Girling Special Grease, part No. (45) 30 07 770 or disposable package, part No. 89 94 782
32	Manual transmission	SAE 10 W 30 or 10 W 40 engine oil as per API service SE or SF or to Ford specification ESE-M2C-101C or EP transmission oil SAE 75 as per API-GL4
	Automatic transmission, final drive-unit	EP oil SAE 80 as per API-GL4 or GL 5
33	Battery	Battery pole Grease (Vaseline)
34	Starter motor, bushes	Bosch oil 01 v 13
	thrust bearings, links springs	Bosch Grease Ft 2 v 3
35	Engine	SAE 10 W 30, 10 W 40 or 5 W 30 engine oil as per API service SE or SF or to Ford specification ESE-M2C-101C (do not use any "additive")
36	Cooling fan	Permanently lubricated (Special Grease)
37	Headlamp wiper motors	Permanently lubricated (Special Grease) Calypsol H 529
38	Hood lock, hinges	Engine oil
	Locking pin, hood	Chassis Grease

Lubrication to prevent seizing

Screw connections which are subjected to large temperature variations may show a tendency to seize and render dismantling difficult at the next scheduled service.

Screw connections of this type are:

EGR valve connections

The Lambda sensor (cars prepared for California)

The charge pressure regulator pipe connections and nuts on the charge pressure regulator valve (Turbo cars)

Recommended lubricants:

NEVER SEIZE or MOLYCOTE 1000

Underbody and rust-preventing treatment

Touching-up of underbody coating

To retain the advantages afforded by underbody composition, the underbody, too, should be regularly inspected and the coating touched up as necessary. Apart from protecting against corrosion, the coating improves sound insulation. This protection is particularly important with regard to the fenders, which are continuously exposed to wear from a constant barrage of flying stones and gravel. Before covering worn or bare parts with fresh underbody composition, clean the metal thoroughly with a scraper and a steel-wire brush and then wash with gasoline or suchlike. Before applying fresh composition, coat the metal with a reputable make of rust inhibitive, and then apply about 0.06 in (1.5 mm) thick coating of composition before the rust inhibitive has dried. Excessive application will result in the composition running and it may even pull right away from the metal which it is intended to protect.

Naturally, new metal panels, such as fenders, must always be treated in a similar manner after fitting. If underbody coating is applied prior to spraying it is essential that all composition be washed off the surfaces which are to be enameled.

Rust-preventing treatment

The cars are treated with a rust preventive agent before leaving the factory. Spraying with rust-preventive oil has been greatly increased. The underside of the floor is sprayed after the underbody compound is applied. The rust preventing treatment which the car receives at the factory should be repeated within 12 months after delivery. The reason for this is that some settlement of the electrophoretic paint may occur in the welded body joints after the car has been driven for some time. Provided that this treatment is performed in accordance with the instructions issued by Saab-Scania, further spraying with rust-preventive oil will only be necessary every second or third year.

Holes and rubber plugs in the body

The parts of the body which must be sprayed with rust-preventive oil are listed under the heading Points of Treatment. In the body, holes equipped with slitted rubber plugs are provided. Spraying of enclosed spaces is carried out through these holes.

Preliminary work

1. Clean the underbody, wheel housings and engine compartment, panel welds in the front floor, wheel housings and front fenders.
2. Remove the scuff plates, turn up the floor mats at the sills and seal the four drain holes in the sills (two in each sill), see fig.

Worksite: Grease pit or lift.



Drain holes in the sills

3. Remove the wheels.
4. Mask the brake discs.
5. The reel on 2-door models should be completely pulled out and remain out until the treatment is finished.

Oil, pressure and temperature

About 3 1/2 pints (3 dm³; liters) of oil are used in the treatment. Information on pressure for spraying should be obtained from the oil manufacturer. Use heavy oil for the underbody and wheel housings and lights oil for the members, cavities and welds. Heavy oil should be used for application with a brush or oil can. In order to assure sufficient penetration, the temperature of the car should not be less than 50°F (+10°C).

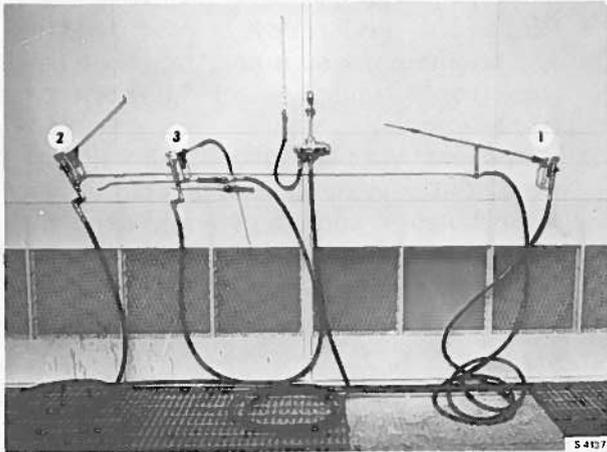
Equipment

2 high-pressure compressors for airless spraying with a 40:1 pressure increase for heavy oil and 48:1 for light oil.

2 spray guns.

Nozzles which permit access to cavities, members, doors and through slitted rubber plugs.

Oil can and brush for treatment of welds between wheel housings and fenders.



Equipment for rust-preventive treatment

1. Nozzle for spraying doors
2. Nozzle for spraying members and cavities
3. Nozzle with reduced pressure for treatment of welds between wheel housings and fenders. Can be substituted by brush or oilcan.

Oil spraying

The treatment is divided up into four groups. In group 1, the treatment is done from below, in group 2 from the sides and in groups 3 and 4 (horizontal reference line) from inside the engine compartment. The underbody and wheel housings are sprayed externally.

Cavities and members are sprayed internally. The welds between the front floor and the wheel housings are sprayed in the engine compartment.

Treated areas shall have a coat at least 30 um thick. The points of attachment between Z-beams and the floor shall be oiled liberally. All doors are oiled through holes in the end, about 4 in. (100 mm) from the bottom edge. A thin coat of oil shall be applied to the inside of the doors.

Treatment with brush or oilcan

A brush or an oilcan is used to treat the weld between the wheel housing and the front fender in the engine compartment and the weld between the wheel housing and the outer side panel in the luggage compartment. The oil is applied liberally to the uppermost point of the weld so it runs down along the weld.

Points of treatment

Note

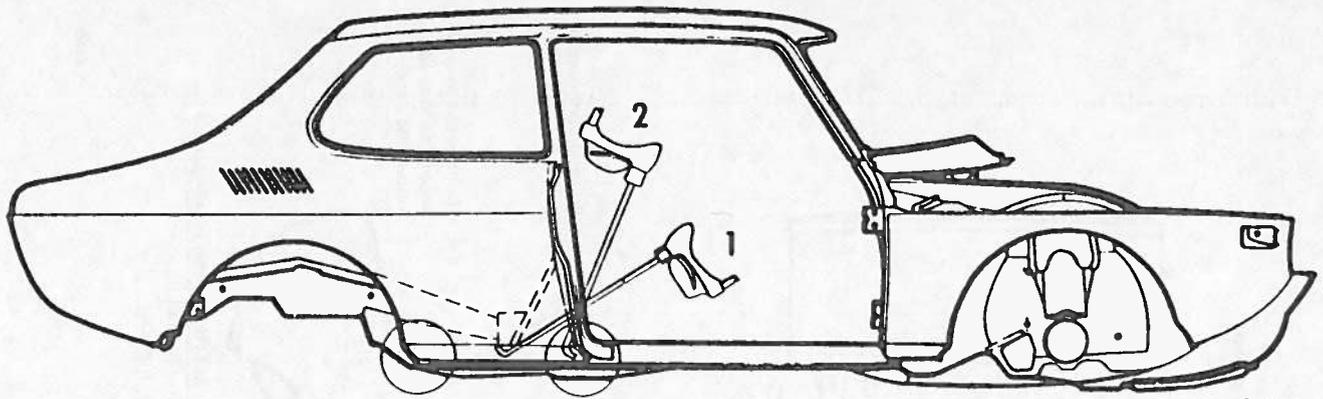
Points of treatment with slitted plugs can be treated through the plug if the right nozzle is used.

Group 1 (from below)

- 1.1 The cavity formed by the front engine member up against the front floor panel.
A hole 1.4 in. (35 mm) in dia. is provided in the front floor panel.
- 1.2 The front floor, the wheel housings and the entire underbody are sprayed with oil. Special care must be taken in treating Z-beams, the cross member in the engine compartment, jack attachment points (including the rear attachment point) and the linkage arm attachment point in the middle of the floor.
- 1.3 Cross bar member.
The cavity in the cross bar member is treated through the 0.4 in. (11 mm) dia. hole in the middle of the member.

Group 2 (from the sides)

- 2.1 The inside of the scuff plates is treated through the 0.8 in. (20 mm) holes in both ends on 2-door models.
- 2.2 The cavity formed by the outer side panel against the outer scuff plate is treated through the 0.8 in. (20 mm) dia. hole in the front edge.
Insert the nozzle through the hole in the end of the side panel. Hold the gun as in fig. 1 and spray, then twist the gun a half turn and spray again (fig. 2.) The oil stream should hit the outlined areas. Any other spray direction will cause oiling of the seat belts, side boards and adjoining trim. Only airless spraying may be practised.



Treatment of side panel

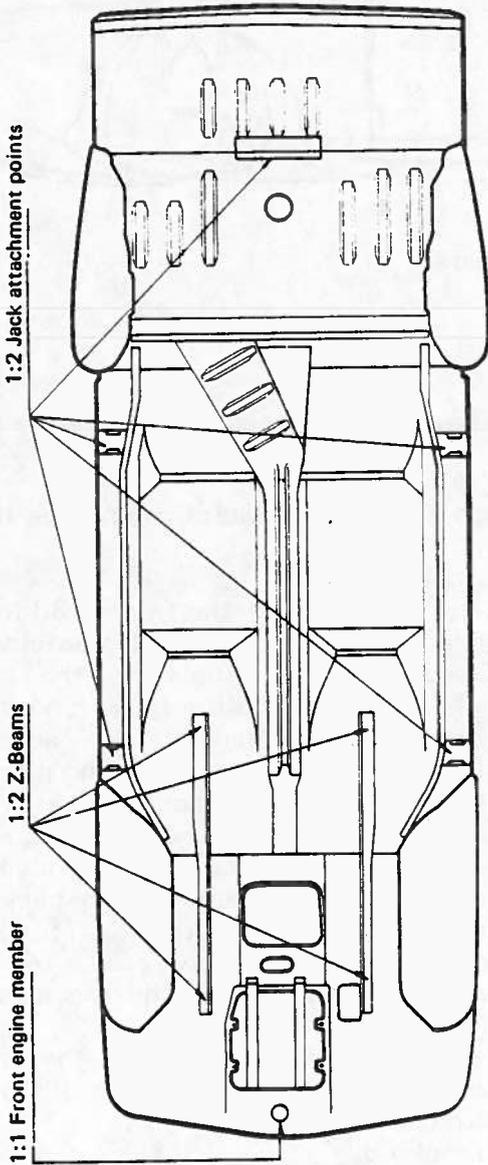
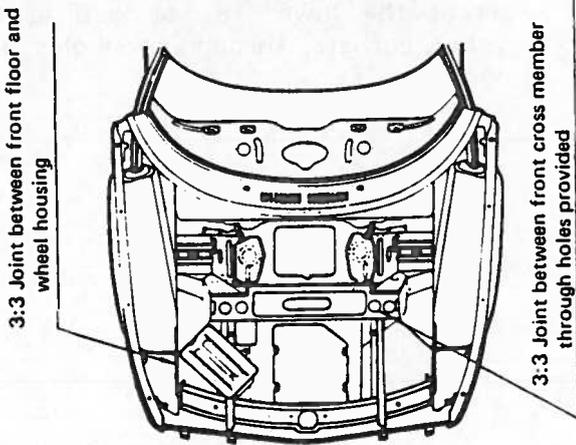
Caution

Point 2.2, 2-door models: Because of the location of the reel belt next to the side panel, only the lower part of the side panel may be sprayed.

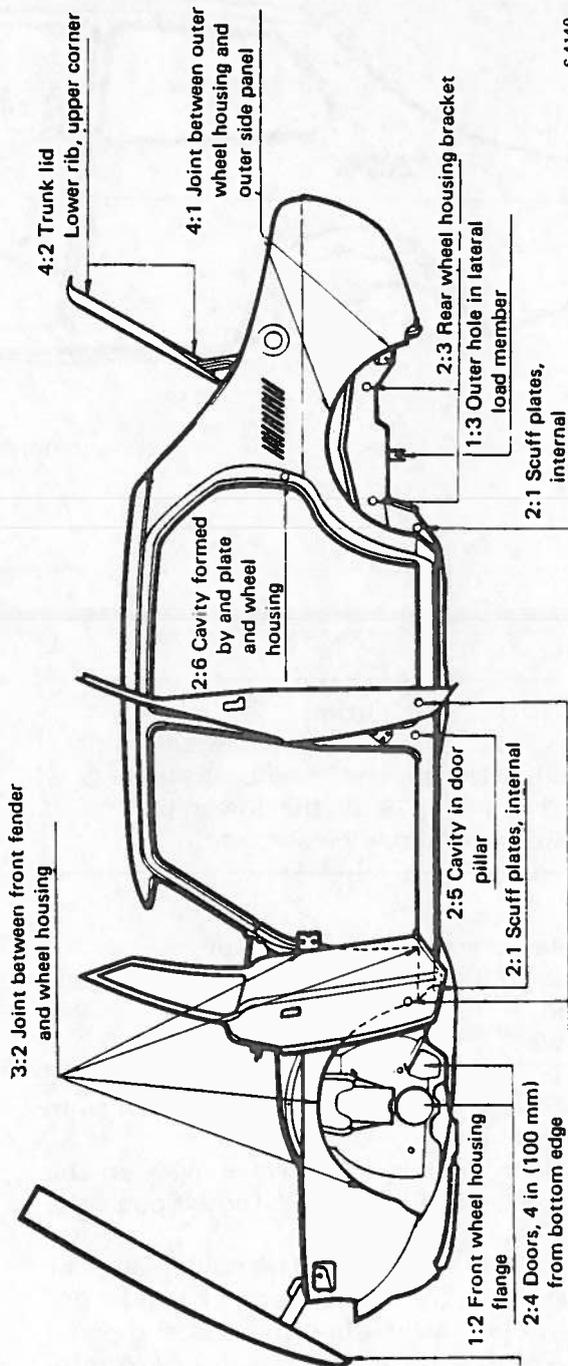
- 2.3 Rear wheel housing bracket.
Two 0.8 in. (20 mm) holes are provided.
- 2.4 Doors.
2- and 4-door models are treated through the 0.8 in. (20 mm) holes in the rear ends.
- 2.5 4-door models only: The cavity in the lower rear pillar is treated through the 0.4 in. (11 mm) hole.
- 2.6 4-door models only: The cavity up near the door frame between the side panel, outer wheel housing and end panel is treated through the 0.8 in. (20 mm) dia. hole in the end panel.

Groups 3 and 4 (horizontal reference line)

- 3.1 Hood.
The front part of the front hood frame is treated through the holes provided.
- 3.2 Treat the joint between the outer wheel housing and the front fender and between the front fender and the fender end and the reinforcing piece in the wheel housing panel beneath the bracket for the lower door lunge.
- 3.3 Treat the joint between the front floor and the inner wheel housing back towards the bearing bracket. Treat the cross member connected to the bearing brackets through the existing holes.
- 4.1 Treat the joint between the outer wheel housing and the outer side panel from the trunk.
- 4.2 Trunk lid.
Treat the lower rib, as well as the other corners, through the holes provided.



1:2 Entire underbody + wheel housing is sprayed with oil



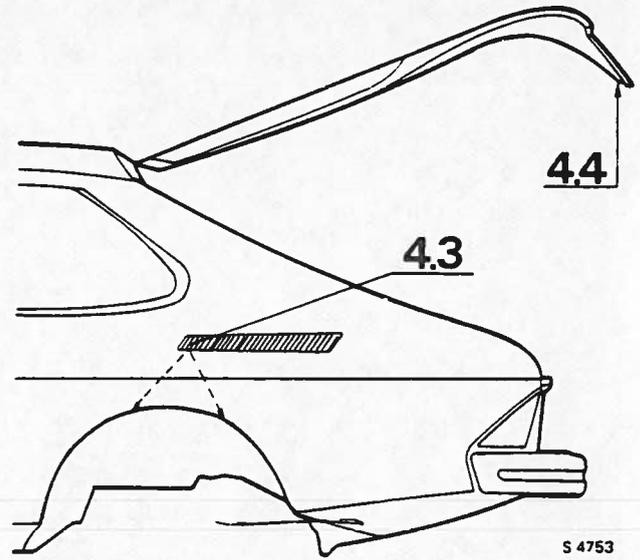
Deviations, Saab 99 Combi Coupé

- 4:3 Treat the joint between the outer wheel housing and the outer side panel through the hole for the evacuation box after the latter has been removed.
- 4:4 Treat the trunk lid through the lower hole in the inner panel of the lid.

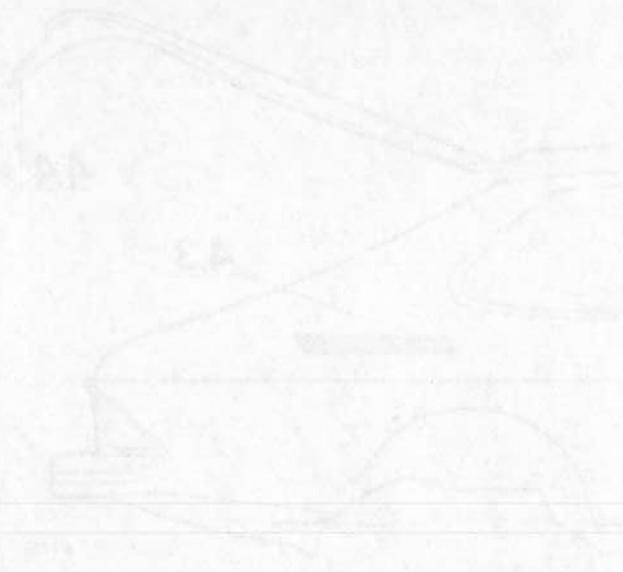
Subsequent treatment

Dry off the oil from the oiling points along the sides of the fenders and on the painted surfaces. Use a rag dipped in paint thinner. Remove the masking from the brake discs and fit the wheels. Remove the seals in the drain holes in the scuff plate members and clean off the oil which has run out. Put back the floor mats and fasten the scuff plates.

Note! Oil draining must have ceased when the sealing plugs are removed. Oil which runs out through the scuff plate member drain holes will dissolve the insulation mat in the front and middle floor.



Deviations, Saab 99 Combi Coupé



1. The first part of the structure is a smooth curve, which is labeled '42'. This curve starts at a high point on the left and slopes down to the right, ending in a small peak. The second part, labeled '43', is a more complex profile that starts with a horizontal line, followed by a series of steps and curves, ending in a rounded top.

Structural Analysis

The structure is analyzed in two parts. The first part, labeled '42', is a smooth curve. The second part, labeled '43', is a more complex profile. The analysis shows that the structure is stable and can support a load of 1000 units. The maximum stress is found at the base of the structure, where it reaches a value of 100 units. The minimum stress is found at the top of the structure, where it reaches a value of 0 units. The structure is designed to be safe and reliable, and it can be used for a wide range of applications.

SAAB