SAAB 99

1974 OWNER'S MANUAL AND WARRANTIES

IMPORTANT OPERATING, SAFETY AND MAINTENANCE INSTRUCTIONS

OWNER AND CHASSIS INFORMATION

Owner Name Mary K. Lukianuk

Address 45 Mt. Pleasent Drive

City/State Trumbull, Connecticut Zip 06611

Chassis Identification Number 9974201219

Engine # ..... Key Code ..... Model Code 99EMS

Date of Sale 11-12-74

Name of Selling Dealer Manis Motor Sales Code 1270

Dear Saab Owner:

This Manual is an important document; we suggest you carry it in your glove compartment, so it will always be available, especially if warranty work is needed. Your Manual contains the facts you require to "get acquainted" with your car; in fact, you should read it before you turn on the ignition for your first drive.

Saab cars are quality products, designed and built to satisfy exacting demands as to safety, durability, performance and handling characteristics. But no car can perform to its maximum standards if it is not properly maintained and driven. So follow the recommendations given in this Manual, and be sure an authorized Saab dealer is the one who carries out the maintenance, adjustments - and repairs - needed.

In order to assist your dealer, Saab-Scania of America, Inc., has regional offices in key locations. (These offices are also maintained to assist the Saab owners).

We thank you for choosing Saab and wish you many pleasurable, safe, and trouble-free miles of driving.

SAAB—SCANIA of America, Inc.

CONTENTS

Heavy diesel vehicles and separate diesel engines are manufactured by the Scania Division while the Saab Car Division is responsible for the production of Saab passenger cars.

The most recent addition to the company's aircraft product line is the Saab 37 Viggen.

Datasaab D 22 is a civil computer, which is used for both administrative and technical/scientific computer applications.

The Nordarmatur Group manufactures and markets among other things, valves for power plants. NAF wedge gate valves have been installed in the Oskarshamn nuclear power plant.

THIS IS SAAB—SCANIA

During 1972 Saab—Scania AB's gross business amounted to over $1 billion while the total number of employees was about 30,000. Saab—Scania AB is now the largest organization in Scandinavia for advanced development work.

FIVE DIVISIONS

From the organizational aspect the company is divided into five product-oriented divisions: The Saab Car Division with its main site in Nykoping is responsible for the overall design, production, and marketing of Saab cars. The experience gained by the company in the automotive field extends back to 1897 when the first Swedish factory-built passenger car was manufactured in Sodertalje. During recent years Saab car activity has expanded rapidly. In 1972 some 84,000 Saab cars were marketed. Actual development, manufacture, and assembly of Saab cars takes place in Trollhattan. Saab cars are also assembled at the Saab Valmet factory in Finland, and during late 1973 an additional assembly plant was added at Malines, Belgium. About one-half of the total Saab car production is exported abroad with the United States being the largest single export market. Today, the Scania Division is one of the world's leading manufacturers of heavy diesel vehicles with sales in 1972 of about 14,500 trucks and buses. Some 80 per cent of the production of trucks, buses and diesel engines is sold outside Sweden. The main site of the Scania Division is Sodertalje, where the development, production and marketing of trucks and engines takes place. Outside Sweden there are Scania plants in Zwolle, Holland and in Sao Paulo, Brazil. The subsidiary, Scania-Bussar AB, is responsible for the production and marketing of the Scania bus program. The Scania Division is also responsible for the manufacture of engines for the Saab 99, and in this area is one of the first companies in the world to depart from the traditional assembly line system. Instead, the final assembly of Saab 99 engines is done by teams of three or four persons, able to decide among themselves on their work methods. Aircraft manufacture was officially started in 1937, but the actual activity of the Aerospace Group goes back to 1930. After the Second World War the Aerospace Group developed into one of the leading European manufacturers of military aircraft. The Aerospace Group has a substantial developmental and production activity in the fields both of guided missiles and airborne electronics. A thriving new departure in the company's business is the Saab—Scania Computer and Electronics Group, which in a bare ten years has burgeoned into a vigorous Swedish computer enterprise producing equipment for administrative, technical and scientific data processing. The Group also has a division working in the medical field primarily on x-ray television and electromedical equipment. Another division produces numerical and process control systems for the needs of industry. In 1968 Nordarmatur was acquired --- a company which is a leading manufacturer of valves. This company is now merged with Saab—Scania as the Nordarmatur Group. The products of this group cover a wide range, from needle valves for pressure gauges to armatures.

THIS IS SAAB—SCANIA OF AMERICA

Saab—Scania of America, Inc., is a wholly owned subsidiary of Saab—Scania AB of Sweden. Organized in the 50's, Saab—Scania of America has been the importer and distributor of Saab cars in the United States since 1956, when the first Saab came into the United States. Saab Scania of America is selling its products through some 400 dealers nationally. The company is headquartered in Orange, Connecticut, but also operates regional offices and parts depots in several strategic locations throughout the United States, including Torrance,California; Jacksonville, Florida; Schiller Park, Illinois; and Arlington, Texas.

WARRANTY

General Warranty

1974 WARRANTY AND LIMITATION OF LIABILITY

- Disclaimer of Implied Warranties
- Basic Warranty
- Examples of What Is Not Covered Under This Warranty
- What Is the Owner's Responsibility?
- When is this Warranty Null and Void?
- Warranty Information
- Emission Warranty/Maintenance Services and Record Retention

IMPORTANT NOTICE TO OWNER, PLEASE READ

DISCLAIMER OF IMPLIED WARRANTIES

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO YOUR 1974 SAAB AUTOMOBILE (except for the Emission System Warranty) AND IS EXPRESSLY IN LIEU OF ANY WARRANTIES OTHERWISE IMPLIED BY LAW, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. SAAB-SCANIA, AB., Saab-Scania of America, Inc. AND FRANCHISED SAAB DEALERS, DO NOT, INDIVIDUALLY OR COLLECTIVELY, ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR ANY OR ALL OF THEM ANY OBLIGATION OR RESPONSIBILITY TO EITHER THE PURCHASER OF A SAAB AUTOMOBILE OR TO ANY OTHER PERSON WITH RESPECT TO THE CONDITION OF SUCH AUTOMOBILE OTHER THAN AS EXPRESSLY ASSUMED IN THIS WARRANTY.

BASIC WARRANTY

Your 1974 Saab Automobile, manufactured by SAAB-SCANIA AB, of Sweden, and accessories supplied by Saab-Scania of America, Inc., and installed upon it in the process of delivery, are warranted by Saab-Scania of America, Inc., to be free from defects in material and workmanship (except tires which are separately warranted by their manufacturers) for a period of twelve (12) months, unlimited mileage, from the earlier of either (1) the date of the original retail delivery or (2) the date of the original use by Saab-Scania of America, Inc.

Your franchised Saab dealer will repair or replace defective parts at no charge for parts and labor, provided, however, that it is notified of the defect within the above stated warranty period. THIS REMEDY IS THE SOLE AND EXCLUSIVE REMEDY AVAILABLE UNDER THIS WARRANTY AND ALL OTHER REMEDIES ARE HEREBY SPECIFICALLY EXCLUDED. FURTHERMORE, NEITHER SAAB-SCANIA AB, Saab-Scania of America, Inc., NOR ANY FRANCHISED SAAB DEALER SHALL BE RESPONSIBLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM A DEFECT WITHIN THE APPLICABLE PROVISIONS OF THIS WARRANTY.

EXAMPLES OF WHAT IS NOT COVERED UNDER THIS WARRANTY

1. Maintenance items in the owner's manual, including fluids and lubricants; normal wear items, including clutch linings and brake pads, wiper blades, light bulbs, fuses, and drive belts.
2. Adjustments, including adjustment of the clutch, the brakes, transmission controls or bands, wheel balance or front end alignment.
3. Seasonal loss of air conditioning refrigerant.

4. Tire defects. (Tires are covered by a separate warranty by their manufacturers.)
5. Deterioration of paint or bright work on the car due to atmospheric causes or other causes not directly attributable to a manufacturing defect.
6. Loss of use of the vehicle, loss of time, inconvenience, towing, rentals, lodging, commercial loss, or any other consequential or incidental damage.

WHAT IS THE OWNER'S RESPONSIBILITY?

It is your responsibility when requesting warranty service to present this booklet to your Saab dealer since this booklet, along with your receipts for maintenance services, contains information that the dealer must have to perform warranty service. You are also responsible for delivering your Saab to the dealership for repairs during its normal business hours.

When is This Warranty Null and Void

This warranty shall be null and void if the automobile is subjected to misuse, negligence or accident, used in competition of any kind, or repaired or altered outside of a franchised Saab dealer so as, in the judgment of Saab—Scania of America, Inc., to affect its stability or reliability.

This warranty shall also be null and void (particularly in regard to the engine and transmission) if the service recommendations contained in this Owner's Manual are not complied with and evidence of such compliance is not furnished to Saab-Scania of America, Inc.

This warranty shall also be null and void in regard to any automobile purchased in the United States but registered or normally operated in another country.

Warranty Information

This Warranty is provided with this vehicle in order to insure your satisfaction with your Saab automobile. Your selling dealer has the primary responsibility for performing the service and warranty work on your car and values you as a customer. You should contact him promptly if there are any service or warranty questions or if the need for warranty work arises. Occasionally, your dealer will have to contact Saab—Scania of America, Inc. for prior approval to perform warranty work. This is necessary either to allow Saab—Scania of America, Inc. to fully evaluate and investigate the repair to insure accurate technical development of our product or to verify that such work is within the coverage of the Warranty.

Emission System Warranty

Saab—Scania of America, Inc. warrants to the ultimate purchaser and each subsequent purchaser of this vehicle that it (1) has been designed, built and equipped so as to conform at the time of sale with those emission control Regulations issued by the Environmental Protection Agency under authority of Sec. 1857f-1 of Title 42 of the U.S. Code (Sec. 202 of the Clean Air Act, as amended) applicable to the vehicle at the time of its manufacture, and (2) is free from defects in materials and workmanship which would cause it to fail to conform to such applicable Regulations for a period of 5 years or 50,000 miles, whichever comes first. If the vehicle is maintained and operated in accordance with the emission system maintenance instructions in the Owner's Manual, and it fails to conform at any time during the warranty period to the applicable Regulations, and such nonconformity results in the ultimate purchaser (or any subsequent purchaser) having to bear any penalty or other sanction (including the denial of the right to use such vehicle) under State or Federal law, then Saab-Scania shall remedy such nonconformity under this warranty with the cost thereof borne by Saab-Scania.

Provided, however, that failures (other than those resulting from defects in materials and workmanship) including but not limited to those which arise as a result of (1) abuse, (2) use of the vehicle for a purpose for which it was not intended or designed, and (3) failure to properly maintain and use the vehicle in accordance with the required emission system Maintenance Instructions provided by Saab-Scania in the Owner's Manual, are not covered by this Warranty.

If any part of the emission system is determined to be defective by a Ruling of the Environmental Protection Agency, this warranty shall be performed for the ultimate purchaser (or any subsequent purchaser) by the original selling dealer's replacing, adjusting or otherwise repairing, following delivery of the vehicle to his place of business, any part which the Agency has so determined to be defective. No charge for parts or labor shall be made for such replacement, adjustment or repair and Saab parts shall be used. Provided, however, that if the purchaser is traveling, has moved a long distance from the selling dealer, or needs emergency repairs, any authorized Saab dealer shall perform such required work.

Neither Saab—Scania of America, Inc. nor any of its dealers assumes any responsibility under this Warranty for loss of use of the vehicle, loss of time, inconvenience, commercial loss or consequential damages.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND WHATEVER, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, or any guarantee, agreement, or representation by any person with respect to the emissions system or any part thereof.

The remedies provided herein are the sole and exclusive remedies available under this Warranty and all other remedies of any kind whatever are hereby specifically excluded.

Maintenance Services and Record Retention

Section 1857f-a of Title 42 of the U.S. Code (Sec. 207 of the Clean Air Act, as amended) provides that an automobile manufacturer's obligation to remedy non-conformities under its emission system warranty is conditioned upon maintenance of the vehicle in accordance with written emission system maintenance instructions issued by such manufacturer. Accordingly, any claim for replacement, adjustment or repair under this warranty, other than a claim which arises as a result of a defect in material or workmanship, must be accompanied by proof that the required maintenance was performed at the times or mileage recommended in the instructions in the Owner's Manual.

The maintenance record form provided in the Owner's Manual is for your convenience in meeting this requirement. All services which are performed should be recorded, and you should retain receipts for such services and for parts purchased. It is also very important to keep records of any non-scheduled emission system maintenance services.

Your authorized Saab Dealer has the equipment and technicians needed to perform the required maintenance services.

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TAKING DELIVERY

When you arrive to take delivery of your new Saab, someone from either the dealership's sales or service department will be responsible for seeing that you have time to carefully read and sign the Saab—Scania of America "Sales & Service Delivery Record." This is an important document, so be sure of the following:

1. The chassis number (vehicle identification number) on the form matches the number on the car and on the inside front cover of this Manual.
2. The date delivered is correct and matches the date on the inside front cover of this Manual as this is the date your Warranty begins.
3. Your name and address are complete and correct.
4. You have read through the list of applicable pre-delivery checks that your selling dealer is responsible for making before delivering the car to you.
5. The pre-delivery technician and manager have signed the form and completed everything required of them on the form.
6. You are completely satisfied that the dealer has fulfilled all his obligations and that you can signify such by signing the form.

At this time, you are to receive the "customer copy" (see copy at right) of the Pre-delivery Procedures. Keep this copy with your other Saab records.

PRE-DELIVERY PROCEDURES

UNDER CAR INSPECTION AND SERVICES

UNDER HOOD—ENGINE OFF

UNDER HOOD—ENGINE OPERATING AND HOT
IMPORTANT EMISSION CONTROL CHECKS
(LOCAL SPECIFICATIONS)

INTERIOR OF CAR

EXTERIOR OF CAR

INSTALL

ROAD TEST

FINAL CLEANUP—APPEARANCE

CUSTOMER COPY

CUSTOMER COPY DETACH PRE-DELIVERY PROCEDURES PORTION ONLY

STARTING AND DRIVING

BREAK IN

Every new car has a recommended break-in period during which the owner is advised to drive with restraint. Pistons, cylinder walls and bearings need to be in operation for some time to produce smooth and hard-wearing contact surfaces. Placing too much strain on a new engine interferes with this gradual bedding-down process, shortening the life of the car and especially the engine.

DRIVING ECONOMY

For maximum economy of both fuel and wear, the Saab 99, like any other car, needs to be driven with care. Avoid violent acceleration and high engine speeds, especially in the low gears.

Driving in congested areas, starting to drive with a cold engine, studded tires, and driving with roof rack or trailer, all contribute to higher fuel consumption.

STARTING THE ENGINE

SEAT BELT/IGNITION INTERLOCK SYSTEM

This vehicle is equipped with a seat belt/ignition interlock system as required by Federal Motor Vehicle Safety Standard Number 208 - Occupant Crash Protection. The purpose of this standard is to reduce the number and severity of traffic accident injuries through increased usage of seat belt systems.

In order to start the engine the following starting sequence must be observed:

1. The driver should take his seat in the vehicle.
2. After the driver is seated he must properly fasten his seat belt (see Seat Belts, on page 26).
3. Any seated front passenger must also properly fasten his seat belt.
4. The engine can now be started.

Do not place heavy objects on the passenger seat as they will make it impossible to start the engine. Failure to follow the proper starting sequence will sound a buzzer and light a red warning lamp on the instrument panel displaying the words FASTEN BELTS when the ignition key is turned to the start position.

Once the engine has been started, a front passenger entering the vehicle, or the driver or front passenger removing their belts, will activate the warning buzzer and light if the handbrake is released (manual transmission) or the gear shift lever is not in the 'P' position (automatic transmission). This will not cause the engine to stop.

Once in the vehicle the driver or front passenger may adjust his position in the seat without affecting the starting sequence or causing the engine to stop.

An alternate starting procedure is available in the event the engine cannot be started either due to a system malfunction or a situation where the proper starting sequence cannot be followed. Both front seats must be unoccupied. The ignition switch should then be turned from the garage position ('G') to the start position ('S') while reaching over the seat. If the vehicle still will not start it will be necessary to contact your nearest Saab dealer to have the seat belt/interlock system serviced.

STARTING PROCEDURE

Once the seat belts have been properly fastened, proceed as follows:

1. Apply handbrake and put the gear lever in neutral (manual transmission) or P or N (automatic transmission). NOTE: Cars with automatic transmission can only be started in P or N.
2. Depress the clutch pedal (manual transmission).
3. Turn the key to start (S), letting it spring back to drive (K) when the engine fires. Do not touch the accelerator pedal. If the engine is warm and the outdoor temperature is high, however, a slight depression of the accelerator pedal will assist starting.

   The electronic fuel injection performs the function of a choke so no special procedures are needed in this regard.

GENERAL

Do not run the starter for more than 20-25 seconds at a stretch; wait 20-30 seconds to let the battery recover before attempting to start again. Make sure that all other current-consuming equipment is switched off during the starting maneuver.

Do not race the engine or make it work too hard while it is still cold; and on no account do so while the oil pressure warning light is still lit. Avoid warming the engine by idling at a standstill; start driving as soon as the oil pressure warning light goes out to get the engine up to its proper working temperature as quickly as possible.

GEAR CHANGING

Manual Transmission

When shifting gears, release the clutch pedal smoothly and carefully. There are only two proper clutch positions for driving; either out (pedal fully depressed) or in (pedal released). It is a bad habit to drive with a slipping clutch or with the foot resting on the clutch pedal, as this causes heavy wear on the clutch assembly. When the car is standing still with the engine running, the gear lever should be in neutral and the clutch pedal released. In all shifts, move the lever gently but firmly and with a slight, barely perceptible, pause in neutral.

Automatic Transmission

The following basic rules for operation of the automatic transmission should be kept in mind:

1. Always press on the footbrake or have the handbrake on when shifting the selector lever if the car is at a standstill with the engine idling. Otherwise the car will start to creep forward when a driving gear is selected, as the torque converter does not disengage the transmission completely.
2. The engine should be at idling speed if you shift the selector lever while the car is at a standstill. If you race the engine while shifting the lever, this is liable to cause abnormal wear on the transmission mechanism. For the same reason you should not shift to R or P while the car is in motion.

Selecting gears

There are six shift lever positions marked on the shift quadrant. Starting from the upper position, they are P R N D 2 1.

D. The D (Drive) position is for normal forward driving. Whichever of the three forward gears best matches the speed and load on the engine is automatically engaged.

2. Position 2 gives automatic shift between first and second gears but top gear cannot be engaged. If the lever

is moved from D to 2 this gives an immediate downshift for more engine braking power. Position 2 must not be selected at road speeds above 55 miles per hour (90km/h).
1. Position 1 is used to obtain maximum engine braking power on steep downgrades. Road speed must be reduced to below about 12 mph (20 km) before 1st gear is selected. This position should also be used for uphill driving on very steep hills to avoid overheating the transmission oil. Second and top gears cannot be engaged when the lever is at 1.
N. In position N (Neutral) no gear is engaged. The starter contact is operative in this position. The handbrake should be applied when the selector lever is in position N to prevent the car from moving if it is standing on a slope.
R. Position R (Reverse) must not be selected unless the car is stationary.
P. Position P (Park) is selected when the car is parked, and the lever must be in this position before the ignition key can be turned to L (Locked) and withdrawn. The selector lever is then locked and the transmission is immobilized. Do not select position P when the car is in motion.

Moving Off
1. Shift the selector lever to the desired position (normally D for forward driving).
2. Release the brake and accelerate.

Kick-down

To obtain maximum acceleration it is possible to effect an instant downshift at speeds below 50—55 mph (80—85 km/h) by pushing the accelerator pedal down hard to the kick-down position. Upshift to the next higher gear is automatic as soon as the engine reaches maximum R.P.M. for the gear engaged or when the pedal is eased up.

WINTER & SLIPPERY ROAD DRIVING TECHNIQUE

To be able to drive a Saab in a safe way requires not only theoretical knowledge but also practice. On slippery roads any car is much more apt to skid than at other times.

The most important thing is to avoid a skid. Nonetheless, winter weather can bring unavoidable slipperiness. Temperatures around the freezing point are the most dangerous, but even lower temperatures can be deceiving, since under snow can lie a dangerous layer of polished ice.

In other words, it is important for you to get to know how a slippery surface can affect a car's handling and how to react as a driver to new situations as they arise.

A SKID

To get into a skid can only mean that the driver has made a mistake. There are a few main reasons why a skid starts. They all have this in common - a faulty maneuver or misjudgment on the part of the driver.

Panic braking by pushing too hard on the brake pedal will often put the car into a skid. The wheels lock and the car may turn broadside. Caution, good common sense and judgement should be used while driving on slippery roads.

Excessive or violent movement of the steering wheel can also result in a skid. Depending on the amount of traction on the front wheels, the result can be a rear end skid, a front end skid, or both.

Steering Characteristics

In order to obtain the maximum traction on slippery roads and steep hills and to increase stability, all Saab automobiles have front wheel drive. This places the weight of the engine and transmission over the front

wheels. Consequently, with the car unladen, 60% of the weight is on the front wheels and 40% on the rear wheels. This weight distribution results in a slight tendency for the automobile when under power to understeer, i.e., for the front wheels to begin sliding before the rear wheels. However, should the rear wheels skid as a result of excessive or violent steering wheel movement, this understeer makes it easy to check the skid and return the vehicle to its correct direction.

Light Feet & Hands

All speed changes must be made carefully during slippery conditions. A heavy foot on the throttle can be just as risky as too heavy a foot on the brake pedal. In slippery conditions all pedal and steering movements must be made especially smooth and with more than the usual care. Try to keep maximum friction between the tires and the road surface.

Driving Position

It is important to sit not just comfortably, but also securely, behind the steering wheel so that when cornering you do not have to hang onto the wheel for support. With the range of seat adjustment in Saabs it is normally possible to get into a good position. Placing your hands at the "10 o'clock" and "2 o'clock" positions on the steering wheel should allow large wheel movements without changing your grip on the wheel. Of course, the seat belt - shoulder harness should be worn, and it should fit firmly across the body so that you need not hang onto the steering wheel during cornering. Hands must be free for the important business of steering. Secure restraints also free your feet from having to hold your body in the seat during braking. Check also that all important controls can be reached with the belt on - even the handbrake.

Rear End Skid

But what if the car is in fact skidding - what then? A natural reaction is to put a foot quickly on the brake pedal. Avoid it, instead use just enough throttle so that the front wheels are neither accelerating or decelerating the car and at the same time steer in the same direction as the rear end is sliding. If the rear end swings to the right, steer to the right; if the rear end swings to the left, steer to the left. This should bring the rear wheels back into line with the front. Gently, the car can now be steered and accelerated in the correct direction. The essential point is to first cure the skid before renewing the attempt to get the car through the curve. Do not swing the steering wheel too hard or another skid will result.

A rear wheel skid will tend to result in the car spiraling inward on a curve.

Front End Skidding

This condition can be more difficult to correct as the car is not now obeying the steering wheel and tending to slide outwards on a curve. To correct this the driver must avoid the natural reaction of turning even more inward as this will simply increase the skidding. It is necessary to release the clutch or ease up on the throttle so that the front wheels devote all their traction toward recovering their sideward grip on the road. At the same time, try to momentarily turn the wheels in the direction of the skid. In this way a new grip on the road can be found. At this point the front wheels can once more be turned in the direction of the curve. Again, the essential point is to first cure the skid before renewing the attempt to get the car through the curve.

To cure a skid can sound quite simple -- but can be very difficult in practice. The best way is to avoid situations which can cause skidding. Be governed by common sense and should a skid occur - remain calm and follow the guidelines given in this manual.

Braking

When braking the car under slippery conditions, use the foot brake rather than the braking effect of the engine. A lot is lost by using the engine as a brake. The first is time and the second is stability. As only the front wheels are being braked, steering becomes more difficult to control.

Brakes must be absolutely reliable. They must under no circumstances show the tendency to pull or grab. At the slightest sign of any trouble in the braking system, have it adjusted or repaired right away. Locked wheels immediately result in loss of traction, both forward and sideward. If wheel lock occurs, quickly release the brakes, momentarily allowing the wheels to regain the road speed, and then reapply the brakes as gently as possible.

Under extreme conditions, a deluge of water or snow can temporarily reduce the efficiency of the brakes. In such conditions, gently tapping the brake pedal will provide heat from friction and dry the braking surfaces.

The handbrake - or emergency brake - should also function freely; therefore use the handbrake as often as possible to keep it from sticking and be sure that it really works.

Winter Driver Equipment

To be able to drive safely it is necessary to secure maximum possible road grip. This means having tires suitable for winter driving. Today's studded tires are a significant contribution to increased protection against loss of traction and skids. Check with your local Motor Vehicle Bureau. Some states forbid the use of studded tires.

The windshield wipers are often needed in winter driving when preceding and oncoming traffic throw up mud or snow over the windshield, especially when the outside temperature is around the freezing point. It is important that wiper blades not be worn out. A working windshield washer is absolutely essential. Some form of anti-freeze additive is needed for the washer to work during cold periods. Before driving, test the washer by spraying a few times.

Also affecting the driver's visibility is an adequate heating and ventilation system. Windows should not be allowed to steam up or become frosty. A properly operating defroster will blow a strong stream of air over the whole length of the windshield. Rear windows should also remain defrosted.

Check the lighting system and see if it functions properly. It is vital to have the best possible lighting when driving on dark winter roads. At the same time take the time to check reflectors and the instrument panel warning lights. Check that both the low and high beam headlights are correctly adjusted, according to local state laws. Low beams can often provide better lighting in fog, rain, or snow than the high beams.

Before venturing out on winter roads you must be able to trust your car. Be sure that it has been gone over thoroughly and is well equipped.

Starting Off

When starting off on a slippery road or in snow use the throttle and clutch pedals gently and carefully. Too much throttle and a jerked clutch quickly cause wheel-spin. If the car is slipping too much to move forward, try backing up a little. Try rolling backwards and forwards to get away from the slippery patch. If caught in a rut or unable to move forward or backward, try turning the front wheels to a right angle with the rut and driving over the edge. The car carpets can be used as skid mats in an emergency.

The following items are worth carrying in the trunk: snow shovel, towrope, sandbags, ice scraper, and warning flares.

DRIVING WITH A TRAILER

A special towing attachment is available as an optional accessory for the Saab 99. Bolt holes are already provided to facilitate mounting of the attachment.

A car with automatic transmission must be fitted with an oil cooler before it can be used to tow a trailer. A suitable cooler is available as an accessory for the Saab 99 automatic. Ask your Saab dealer for details.

It is inadvisable for several reasons to hook an excessively heavy trailer to a car, and the following points should therefore be borne in mind:

1. Legal restrictions on towing speed, trailer weight and trailer braking equipment in the state concerned must of course be complied with.
2. The weight limit of trailer should be approx. 1,000 lbs., without brakes and 2,000 lbs., with brakes.
3. If the car has an automatic transmission, position 1 should be selected for towing on steep gradients, in order to best utilize the braking capacity of the engine. The same applies for down gradients so as to obtain maximum engine braking effect.
4. When towing a trailer, avoid gradients of 15% or more, as in such conditions the weight on the front driving wheels is so low that they may lose traction and stop the car. For the same reason, the handbrake effect may be so reduced that the car and trailer cannot be held stationary on very steep uphill grades by the handbrake alone without the wheels starting to slide. When driving with a trailer on very long hills, you can help the engine keep cool by turning on the fresh air heater for a time and running the ventilator fan at full speed.
5. The load distribution in the trailer is most important. In a two-wheeled trailer the load should be placed low down and concentrated as far as possible over the wheels. The trailer, should be loaded in such a way that 5 - 7% of the weight of the trailer should be on the trailer hitch. The maximum load carried in the car's trunk must be reduced by the same amount.
6. When driving with a trailer, always make allowance for the altered handling characteristics and longer stopping distance. The brakes, suspension, and shock-absorbing equipment and lighting system of the trailer are very important in towing a trailer safely.

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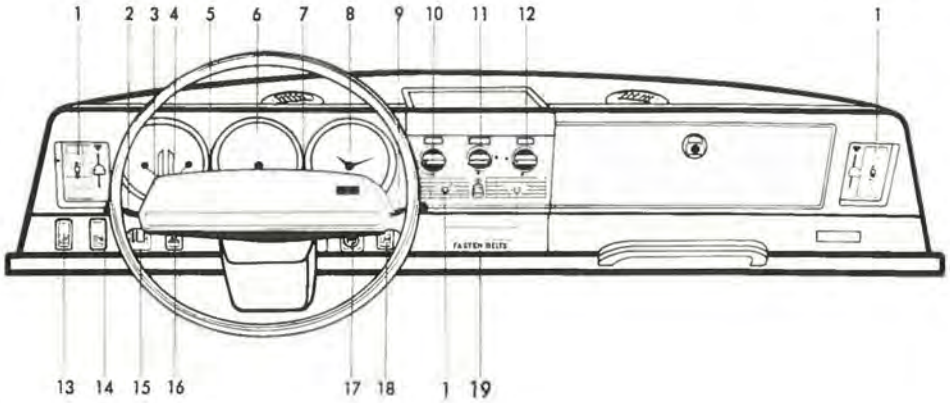
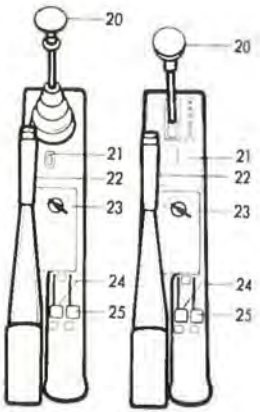
CONTROLS AND FEATURES

1. Fresh air vents
2. Combined direction indicator lever, headlight dimmer and headlight flasher switch
3. Horn control
4. Combination instrument
5. Zero button for trip meter
6. Speedometer
7. Clock adjustment button
8. Clock
9. Windshield wiper and washer control
10. Defroster control for windshield and front side windows
11. Temperature control
12. Ventilation control for front seat floor
13. Headlight and parking light switch
14. Spare switch for cars with fuel injected engines or choke with warning light for cars with carburetored engines.
15. Rheostat for instrument and control illumination
16. Hazard warning signal switch
17. Cigarette lighter
18. Ventilator fan switch
19. Fasten seat belt light
20. Gear (selector) lever
21. Interior lighting switch
22. Handbrake lever
23. Ignition and gear (selector) lever lock
24. Ventilation control for rear seat floor
25. Defroster control for rear window





IGNITION AND GEAR (SELECTOR) LEVER LOCK

The ignition and gear lock key also fits all other locks in the car. The key number is stamped to the plastic lug at the key grip. Detach and keep the lug so that the serial number is available if the key should be lost. Make certain that the serial number is properly registered on page one of this Manual in the space provided.

Manual transmission

The ignition and gear lever lock has four positions:
L. When the key is in the L position and reverse is engaged, the gear lever is locked and the key can be removed. Parking lights and flashing hazard warning lights can be switched on.
G. Garage position. All lights can be used.
K. Driving position. The entire electrical system, including ignition, is operative.
S. Starting position. The key is spring loaded so that it will return to the K position.

NOTE! To ensure that the car isn't left unlocked, there will be a buzzer activated if the door is opened with the key left in the ignition lock.

Automatic transmission

The ignition and gear selector lock has four positions:
L — G — K — S
L. When the key is in the L position and the gear selector is in the P position, the selector is locked and the key can be removed. Parking lights and flashing hazard warning lights can be switched on.
G. Garage position. All lights can be used.
K. Driving position. The entire electrical system including ignition, is operative.
S. Starting position. The key is spring loaded so that it will return to the K position. The starter motor can only be operated if the selector lever is in the N or P positions.

NOTE! To ensure that the car isn't left unlocked, there will be a buzzer activated if the door is opened with the key left in the ignition lock.

INSTRUMENTS

Combination instrument
TANK = Fuel gauge
TEMP = Coolant thermometer

Brake indicator and warning light. This light glows red when the handbrake is on or to indicate excessive brake pedal stroke. If the light operates because pedal travel is excessive, this may indicate leakage in one of the two brake line circuits (brake pad wear is indicated by increased pedal resistance). The reason should be investigated immediately and any necessary repairs carried out by an authorized Saab dealer.

Direction indicator light. A green flashing light appears in time with the direction indicator lamps.

High beam warning light. A blue light is shown when the headlights are on high beam.

Charge indicator light. If the light glows yellow, the alternator is not charging.

Fuel warning light. Shows a steady red glow when there are less than 2 US gallons (8 liters) left in the tank.

Oil pressure warning light. Glows red to indicate dangerously low oil pressure or oil level. When starting, never move off until this light has gone out. If it lights up while you are driving, switch off the engine at once and investigate the cause.

Speedometer and odometer. The zeroing button for the trip meter is on the left of the speedometer.

Clock. The setting button is located to the left of the clock.

Tachometer. The Saab 99 EMS is equipped with a tachometer.

Combination instrument

Speedometer and odometer


Clock

Tachometer and clock (Saab 99 EMS only)

LIGHTING AND ILLUMINATION SWITCHES

Headlights and parking lights

The tangent switch has three positions: Top pushed in — off. Intermediate position — parking lights on, irrespective of the position of the ignition key. Bottom pushed in — headlights on if the ignition key is in the G or K positions.

NOTE! The headlights are automatically extinguished if the ignition key is turned to the L position. The parking lights can be operated, however, if the switch is moved to the intermediate position.

Headlight dimmer, high beam flasher and direction indicator control

The lever is moved towards the steering wheel when switching from high beam to low beam. The same action provides a warning high beam flash when the headlights are switched off. The direction indicator lights are operated by moving lever in the direction in which the steering wheel is turned.

Rheostat for instrument and control illumination

Turn the knob down to increase the intensity of the illumination. When the knob is in its upper position the light is off. This illumination can only be switched on when the parking lights or the headlights are in operation.

Hazard warning

When the tangent switch is in the operating position all four direction indicator lights flash simultaneously. The warning system should only be used if the car is in a position where it is liable to endanger or obstruct other vehicles as a result of an accident, breakdown, etc.

The interior illumination comprises three lights located: (1) above the left door post, (2) close to the rear-view mirror and (3) beside the ignition switch. This illumination is operated by the switch on the door post lamp. The switch has three positions (see illustration). The interior illumination may also be operated by means of a switch on the console between the front seats (see illustration). This switch can only be operated when the door post lamp switch is in the upper position (1): NOTE! Be certain that the interior lights are switched off when parking the car.

Combined headlight dimmer and flasher switch and direction indicator lever
1. High and low beam, headlight flasher.
2. Left direction indicator. 3. Right direction indicator.

Cars with manual transmission: switch on gear lever console

Door post lamp
1. Interior lights switched on when one of the doors is opened. 2. Interior lights off. 3. Interior lights switched on, irrespective of whether the doors are open or closed.

Cars with automatic transmission: switch on selector console.

HEATING AND VENTILATION CONTROLS

Air circulation in the passenger compartment is achieved by the intake of fresh air through the heating and ventilation system and by extraction through the openings in the rear corner posts. These openings are connected to outlets in the sides of the body (see illustration).

The intake of air into the car is regulated by adjustment of controls marked DEFR and VENT on the instrument panel.

The TEMP control which acts on the thermostatically operated water valve is used to regulate the temperature of the incoming air. The thermostat compensates for variations in air velocity and in water temperature so as to maintain the incoming air at a constant temperature corresponding to the control setting. Maximum heat is obtained if the knob is turned clockwise to the red stop. There is no heating effect when the knob is turned in the opposite direction to the white mark.

The knob marked DEFR regulates the flow of air to the windshield and the front side windows. Full flow is obtained when the knob is in the horizontal position. The air flow is cut off by setting the knob in the vertical position.

The knob marked VENT controls the supply of air to the front floor area. Here too, the horizontal and vertical positions correspond to open and shut respectively.

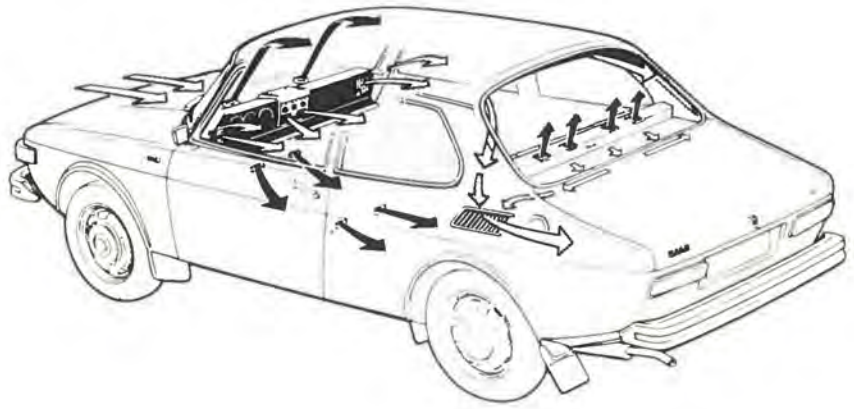


Diagram showing the heating and ventilation system

The supply of air to the rear window and the rear floor space is regulated by the controls located to the right of the handbrake between the front seats. (See Fig. #2). These controls can also be operated by the back seat passenger.

The left-hand control regulates the supply of air to the rear floor area while the right-hand lever regulates the rear window defroster. In both cases the flow of air is completely shut off in the forward position while full flow is achieved in the back position.

The car is equipped with a ventilation fan which boosts the inflow of air, especially at low road speeds. The fan runs at half speed when the switch is in the intermediate position and at full speed when the switch is in the down position.

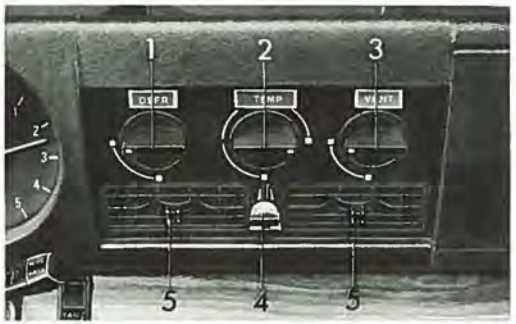


Figure 1

Controls for:
1. Windshield and front side window defroster
2. Thermostat regulated heat control
3. Air flow to floor area
4. Fresh air flow
5. Flow direction

Maximum windshield defrosting effect is obtained with the fan operating at full speed, the DEFR control in the open position and the other air controls on the instrument panel turned off. The air flow can be similarly concentrated to the rear window or the floor areas.

The air vents located at both ends and in the center of the instrument panel admit only unheated air. The center air vents are closed when lever 4 is in the upper position and open when it is down. The outer air vents are opposite the center vents, closed when the lever 4 is down and open when it is up. The air flow can be adjusted by moving control 5 in the required direction.

Figure 2

Rear controls for heating and ventilation
1. Rear floor space control. 2. Rear window defroster control.

Figure 3

Outer fresh air vent
4. Air intake control.
5. Flow direction control

WIPER AND WASHER CONTROLS

The switch controlling the windshield wipers and washers has the following positions:

0. Off position
1. Windshield wipers, low speed
2. Windshield wipers, full speed
3. Windshield wipers, full speed. Windshield washers.
4. Windshield washers

Starting from positions 0, 1 or 2 the windshield washers are operated for as long as the lever is held towards the steering wheel in the spring controlled position. If the lever is moved towards the steering wheel from the 0 position, it is possible to spray the windshield before the wipers are switched on.

WINDSHIELD WIPERS AND WASHERS

Inspect and clean the rubber blades of the windshield wipers at regular intervals. If they show signs of wear, they should be replaced. Soap and water is recommended for cleaning.

Use clean fluid for the washer and make sure that the container is free from dirt. Use suitable anti-freeze in cold weather.

If the washer jets are blocked, the holes can be cleaned and adjusted with a pin or similar tool. If the jets are out of alignment, the adjustable ball nozzles can be turned to the desired position.

GEAR SELECTOR LEVER

Manual transmission

The gear positions are illustrated in the diagram below. To engage reverse, the catch on the gear lever must be pulled upwards first.

Automatic transmission

A scale beside the gear selector lever indicates the various positions by means of symbols.

P	Park	D	Drive	
R	Reverse	2	2nd gear	> forward
N	Neutral	1	1st gear	

The lever can be shifted freely between the N and the D positions. The other positions are blocked by a catch which is released by depressing the button in the center of the selector knob. The lever can, however, be shifted to D or N from positions R, 2 or 1 without pressing down the knob.

Gear positions, manual transmission

Gear selector lever, automatic transmission

SEATS

The backrest and cushion of the driver's seat have thermostat-controlled electric heating elements that warm up automatically when the ignition is switched on. The thermostat ensures that the heaters are switched on only when the seat is cold and switched off when the temperature exceeds 82°.

Both front seats are adjustable as to legroom, and the driver's seat can also be adjusted for height. The backrest angle is continuously adjustable in two separate ranges, upright and reclining.

Legroom adjustment

Release catch 1, see illustration, and slide the seat to the desired position.

1. Legroom adjustment catch. 2. Vertical adjustment handle (driver's seat). 3. Backrest angle adjusting knob. 4. Backrest release (to drop backrest forward or back). 5. Catch.

Moving the backrest forward (2 Door Models)

Push down catch 4 and drop the backrest forward.

Backrest angle adjustment

The backrest angle can be infinitely adjusted between driving and resting position with knob 3. (For bedding down, see under "Luggage and Cargo Space").

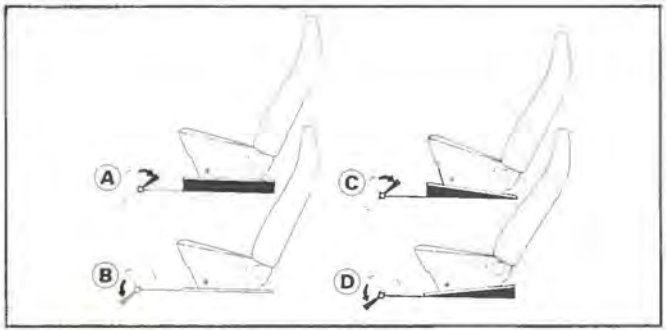
Vertical adjustment

The cushion of the driver's seat can be raised and lowered and also tilted to the front or rear. As the illustration shows, there are four possible positions.

Adjustments are made with the handle (see illustration) at the forward edge of the seat. Release the catch by pushing on the handle and moving it to the intermediate position. The seat can now be adjusted as follows:

A. Raised seat. Move the handle back without pressing down on the seat.

B. Lowered seat. Move the handle forward, pressing down on the seat.



Vertical adjustment of driver's seat

C. Seat tilted back. Move the handle back, pressing down on the seat.

D. Seat tilted forward. Move the handle forward without pressing down on the seat.

To remove driver's seat

1. Disconnect the electric heater wiring (under the seat).
2. Release the seat by moving the handle 2 to the intermediate position.
3. Push back the catches 5 and drop the backrest forward. Lift the seat by the forward edge, tip it backward and free it from its rear attachments. Install in the reverse order.

To remove the front passenger seat

Release the retaining screws from the seat rail, using the special wrench provided in the tool kit. The seat can then be lifted out.

REAR-VIEW MIRRORS

The interior rear view mirror can be deflected to avoid glare by operation of the control button underneath it. The exterior mirrors are anti-glare coated.

1. Day-night button

ASHTRAYS AND CIGARETTE LIGHTER

The front ashtray is located underneath the central section of the instrument panel. The rear ashtrays are recessed into the back seat armrests.

The cigarette lighter is located to the right of the steering wheel.

GLOVE COMPARTMENT

To lock the glove compartment, give the key a quarter turn clockwise. To open the compartment, turn the catch button clockwise.

LUGGAGE AND CARGO SPACE

The back seat area can be converted, if required, into additional cargo space on the station wagon principle by rearrangement of the cushions as follows:

Release the backrest catch and the seat cushion catch (see illustrations). On the 2-door model, lift the front edge of the cushion and tip the cushion forward. On the 4-door model, the seat cushion can be tipped forward directly. The seat cushion should stand on edge behind the front seats. Pull the backrest forward and down. It is also possible to bed down in the cargo space. In the 2-door model, the following rearrangements can be made to gain additional leg room for bedding:

Passenger compartment with normal trunk space

catch, backrest

Slide the front seats as far forward as they will go and drop the backrests forward. Undo the two screws holding the back seat cushion and place the cushion as a bolster between the front and back seats and drop the backrests forward.

Extended cargo space with back seat dropped

Seat cushion catch,
2-door model

Seat cushion catch,
4-door model

DOORS

Two keys are supplied with the car. Both fit the ignition switch and all locks. The serial number of the key will be found engraved on a small plastic lug on the key grip, which should be detached and kept so that the serial number is available if the key should be lost.

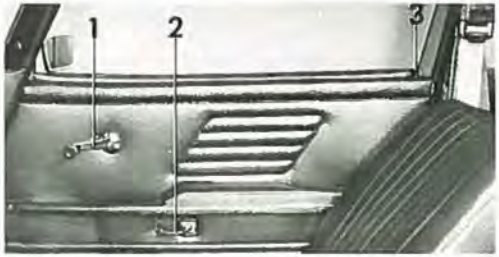
Both side doors have lockable handles. These are locked and unlocked as follows:

To lock: Give the key a quarter turn rearward and let it spring back to the vertical position.

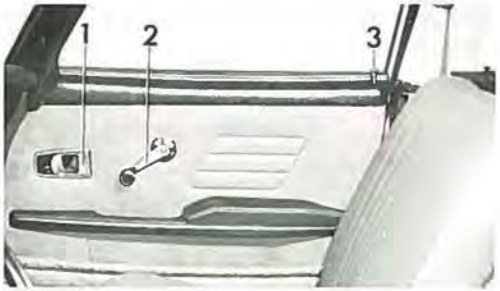
To unlock: Give the key a quarter turn forward and let it spring back to the vertical position.

The doors are fitted with safety lock buttons.

Door lock, left-hand door 1. unlock, 2. lock



Inside of door, 2-door model
1. Window crank. 2. Inside door handle. 3. Door lock button.



Inside of door, 4-door model
1. Inside door handle. 2. Window crank. 3. Door lock button

The doors are fitted with safety lock buttons with which they can be locked from the inside when closed.

The rear doors of the 4-door model are provided with safety catches to prevent the doors from being unintentionally opened from the inside by children. When the catch is in the lower position (A), the doors can be opened from both in-and outside, but when the catch is in the upper position (B), the door can only be opened from the outside.

Catch, rear door, 4-door model

TRUNK LID

The trunk is locked and unlocked in the same way as the doors.

(The spare wheel is carried in the trunk and the jack and tool kit are stored in a covered compartment beside the spare wheel).

1. Lock. 2. Unlock

HOOD

The hood lock handle is located under the instrument panel next to the inner left wheel housing.

To open the hood, proceed as follows:

1. Pull the handle under the instrument panel. The hood will then open to the half-locked position, retained by a safety catch at the leading edge.
2. Press the leading edge of the hood down slightly and push back the safety catch. The hood will then spring up and can be tilted forward without effort.

SEAT BELTS

For Driver and Front Seat Passenger

The seat belt system consists of a continuous belt which forms both the seat and shoulder belts, a retractor mechanism which adjusts both sections of the belt, and a locking mechanism which locks the belt in emergency situations. To put the belt on, first grasp it near the shoulder belt guide loop and pull out a sufficient length of belt to reach the latch mechanism between the front seats. One section of the belt should now be lying over the hips and the other over the shoulder nearest the guide loop. Place the folded belt end under the latch bar as illustrated below and press the bar down until it is locked in place. The retractor mechanism will now automatically adjust both the lap and shoulder sections of the belt for optimum restraint effectiveness. The belt is released by pressing the red button marked PRESS. The retractor will return the belt to its stored position.

When the belts are in use the retractor mechanism is normally unlocked. This allows complete freedom of movement within the vehicle. The belts will be locked automatically in the event of an accident. The belt locking mechanism is activated by rapid belt motion and/or changes in vehicle motion. The vehicle motion sensor will also cause the belts to lock during severe braking or when the vehicle is climbing or descending steep grades.

If the driver or front passenger does not have his seat belt fastened, a buzzer will sound and a red warning lamp on the instrument panel will light displaying the words FASTEN BELTS when the ignition is on and the handbrake is released (manual transmission) or the gear selector is moved from the 'P' position (automatic transmission).

This vehicle is equipped with a seat belt/ignition interlock system. The engine can be started only if the front seat belts are fastened and the proper starting sequence is observed. This system is described in detail in Starting and Driving section.

1. Belt Catch 2. Belt Release


Seat belt in locked position.

Rear Seat Passengers

Two lap belts of the retractor type are provided for the outer passengers. There is also a lap belt which the third passenger, sitting in the middle, must adjust manually. The rear seat belts are not connected to the warning or seat belt/ignition interlock systems.

Warning

Avoid parking the car on grades steeper than 16 degrees (30%). This can cause the retractor mechanism to lock making it impossible to withdraw the belt the next time the vehicle is used.

No alterations or additions should be made to this belt system.

The webbing must not be bleached or re-dyed.

The belt is meant for one person only. The shoulder belt and lap belt must be used together. If in doubt on any matter concerning this belt or its use, please consult your Dealer.

POWER PLANT
(DRIVELINE AND ELECTRICAL SYSTEMS)

ENGINE

The car has a four cylinder, in-line, liquid cooled engine with overhead camshaft.

The cylinder block is canted 45° to the right and the cylinder head is of a cross-flow type; i.e., with inlet ports on one side and exhaust ports on the other. The crankshaft has five main bearings. The engine has a separate idler shaft that drives the oil pump, water pump and distributor through gears.

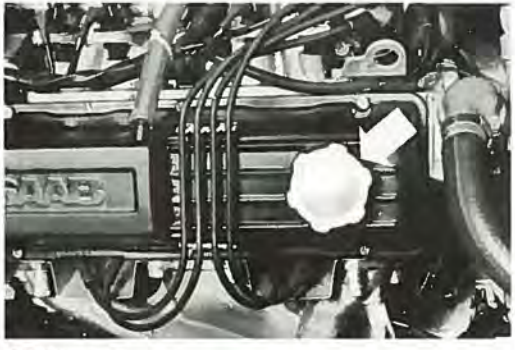
The engine has fully enclosed crankcase ventilation.

The clutch is mounted at the front end of the transmission, forming an integral assembly.

Engine oil

Check the oil level at regular intervals, after the engine has been stopped for at least one minute. Do not permit the level to fall below the lower mark on the dipstick, but do not fill beyond the upper mark; this will cause excessive oil consumption. The distance between the upper and lower marks corresponds to a volume of approx. 1 US quart (approx. 1 liter). Top up with oil of recommended grade as necessary. (See section "K").

NOTE! Do not confuse the engine and transmission drain plugs. See Page 30 for location of plug.



Oil filter cap

Oil dipstick, engine

COOLING SYSTEM

The cooling system is of a pressurized type with a cross-flow radiator and expansion tank.

Until the engine has reached its operating temperature, the radiator inlet is closed by a thermostat and the coolant circulates through the engine and the fresh air heater until it reaches the temperature at which the thermostat opens.

The radiator fan is electrically operated and is regulated by a thermostatic switch. The fan is only operative when the temperature of the radiator coolant is higher than the cut-in temperature of the thermostatic switch.

The cooling system must not be screened!

NOTE
Always loosen the cap gently and allow steam to escape before taking the cap off. The coolant level in the expansion tank should be between half and full (cold engine) or full (warm engine).

Checking the coolant level

Check regularly to make sure that the coolant is up to the recommended level. When necessary, top up with equal parts of clean water and coolant. (See Recommendations in Technical Data Section). After an empty expansion tank has been topped up, the engine should be run until warm and the tank topped up again.

CHANGING COOLANT

Draining

1. Set the heater control to maximum heat.
2. Loosen the pressure cap on the expansion tank 3 (see illustration).
3. Open the radiator drain cock (13) which is located towards the bottom of the radiator on the left-hand side (see illustration).
4. Open the engine drain cock (14) located to the left of the engine, under the exhaust manifold (see illustration).

Filling

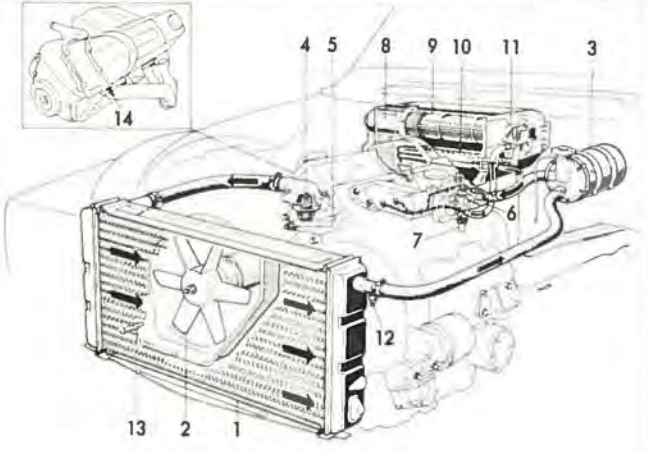
1. Close the drain cock and ensure that the heater control is set to maximum heat.
2. Fill the system with coolant until the expansion tank is filled. Replace cap.
3. Run the engine until warm, remove the pressure cap, and top up the expansion tank.
4. Switch off the engine and check coolant level in the expansion tank. The expansion tank should be between half and full (cold engine) or full (warm engine).

ANTI-FREEZE COOLANT MIXTURES

Cars delivered from the factory are filled with anti-freeze coolant mixtures year round.

During the cold season the coolant must be mixed with anti-freeze, as pure water is liable to freeze and burst the radiator and the cylinder block. Ethylene glycol is recommended as an anti-freeze fluid. For maximum security against freezing and rusting, the glycol dosage should be 4-5 US quarts (3.5 - 4.5 liters); i.e., 40 - 50% Use only glycol recommended. The anti-freeze can be used all year round but should be changed once a year. If pure water is used during the summer season, a rust-proofing agent should be added.

NOTE! When anti-freeze is added, it must first be mixed with a suitable quantity of water, as full circulation cannot take place until the thermostat opens. If pure anti-freeze is added, there is still a risk of the engine being damaged by ice if the anti-freeze does not mix with the engine coolant quickly enough.



Cooling and heating system

1. Radiator
2. Radiator fan
3. Expansion tank with pressure cap
4. Thermostat
5. Temperature transmitter
6. By-pass line
7. Coolant pump
8. Fan motor
9. Impeller
10. Heater core
11. Thermostatically controlled valve
12. Thermostat switch, radiator fan
13. Radiator drain cock
14. Engine drain cock

FUEL SYSTEM

The engine is fitted with Bosch electronically controlled fuel injection equipment or with a Zenith-Stromberg carburetor.

The fuel tank is placed underneath the car, between the rear wheels. The fuel level transmitter is fitted on top of the tank.

The evaporation loss control unit includes a charcoal canister which is placed in the engine compartment. It absorbs the vapor from the tank when the engine is not running. The charcoal is purged when the engine is running. This is achieved by fresh air which is sucked through to the air cleaner.

The fuel filter (fuel injected engine only) and the canister filter should be replaced at intervals according to the directions given in the maintenance program.

Air Cleaner

The air cleaner is located on the left-hand side of the engine. The replaceable cleaner insert should be changed in accordance with the maintenance program. If the car is often driven on dusty roads, the filter should be changed more frequently. The filter element is made of a special type of paper and must not be washed or moistened, although it may be carefully cleaned with low pressure compressed air. The air cleaner housing and cover should be wiped off from time to time.

The fuel pump for the fuel injected engine is electrically operated and is located behind the fuel tank, together with a separate filter. A lid in the trunk provides access to the filter which should be changed in accordance with the maintenance program. The fuel pump for the carburetor equipped engine is mechanically operated and located on the engine cylinder block.

TRANSMISSION

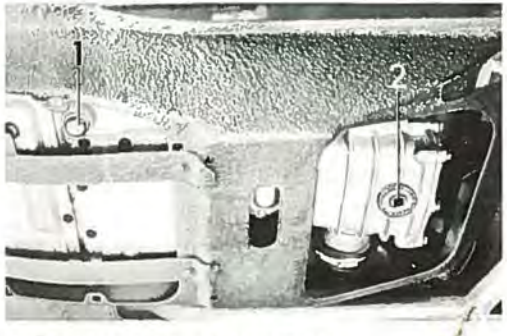
The transmission and differential are located beneath the engine and assembled to form an integral unit with the engine. Part of the transmission case serves as the engine oil sump. The forward part of the transmission comprises a primary gear section delivering power from the engine to the gearbox.

The car is supplied either with a 4-speed, all-synchromesh manual transmission or with a 3-speed, automatic transmission.

Oil filling and level plug, manual transmission

Oil level plug, final drive, automatic transmission

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

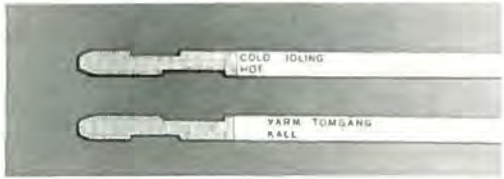


Drain plugs, automatic transmission
1. Engine. 2. Final drive

See the Service and Maintenance Section for details of oil changing and oil level checking.

A special wrench is required for the transmission drain plugs. This is to avoid confusion between the engine and transmission drain plugs.

Location of dipstick, automatic transmission



Dipstick, automatic transmission

The automatic transmission has different graduations for hot and cold oil levels. Use the following procedure for checking the oil level:

1. Run the engine for a few minutes at idling speed with the selector in P position.
2. Switch off the engine and check that the oil level is between the maximum and minimum marks on the dipstick. The distance between the marks is equivalent to 1 US quart of oil. Oil is refilled through the pipe in which the dipstick is located.
3. If the oil needs topping up, the engine must be idled again before the oil level is rechecked.

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

The most scrupulous cleanliness must be observed during filling.

In cars with manual transmission the clutch fluid container should be well filled with a recommended brake fluid (see section "K").

4. The clutch pedal should have 1.6" (40mm) play. Adjustment of clutch pedal play must be carried out by an authorized Saab dealer.

POWER STEERING (Optional)

The steering gear which is of rack and pinion type is equipped with a servo unit in order to facilitate maneuvering at low speeds. The oil level in the power steering fluid container (see illustration) should be checked in accordance with the maintenance program. The oil should be level with the strainer in the container. The container should be topped up with automatic transmission fluid. See Technical Data Section.

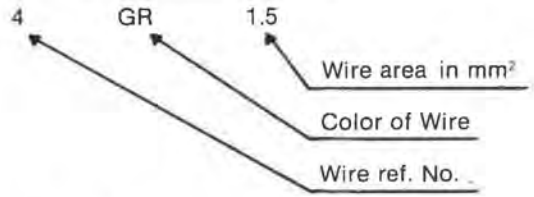
ELECTRICAL SYSTEMS

FOR FUEL INJECTED MODELS

WIRING DIAGRAMS

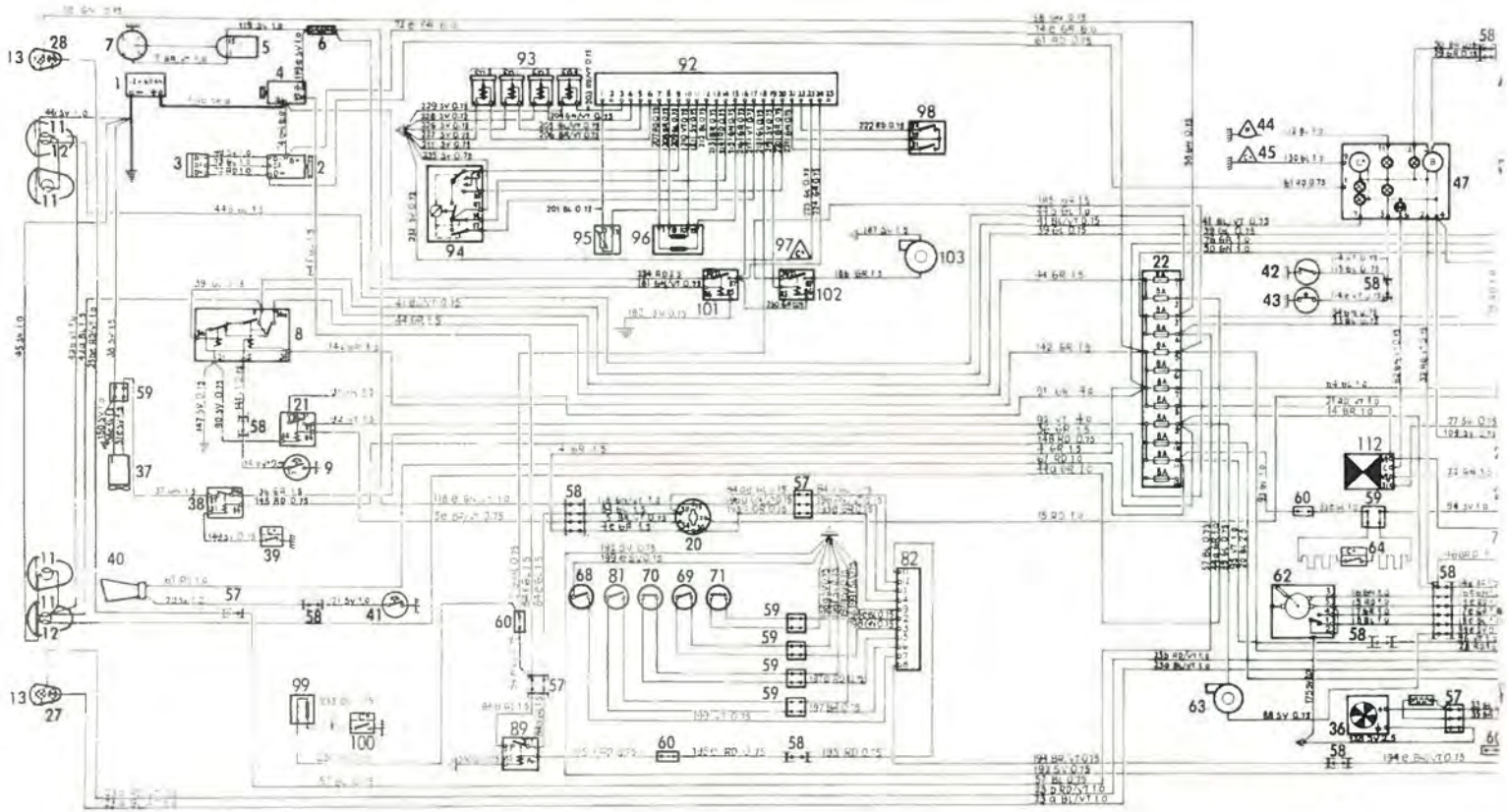
Color code

BL	Blue
BR	Brown
GL	Yellow
GN	Green
RD	Red
SV	Black
VT	White
BL/VT	Blue/White
BR/VT	Brown/White
GN/VT	Green/White
RD/VT	Red/White

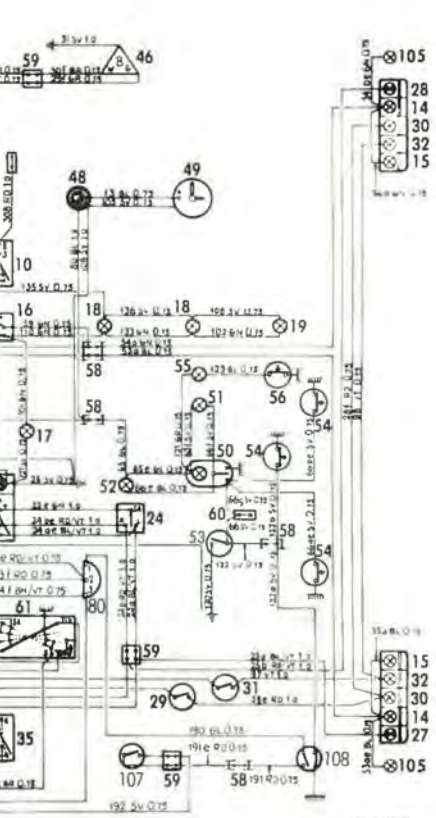


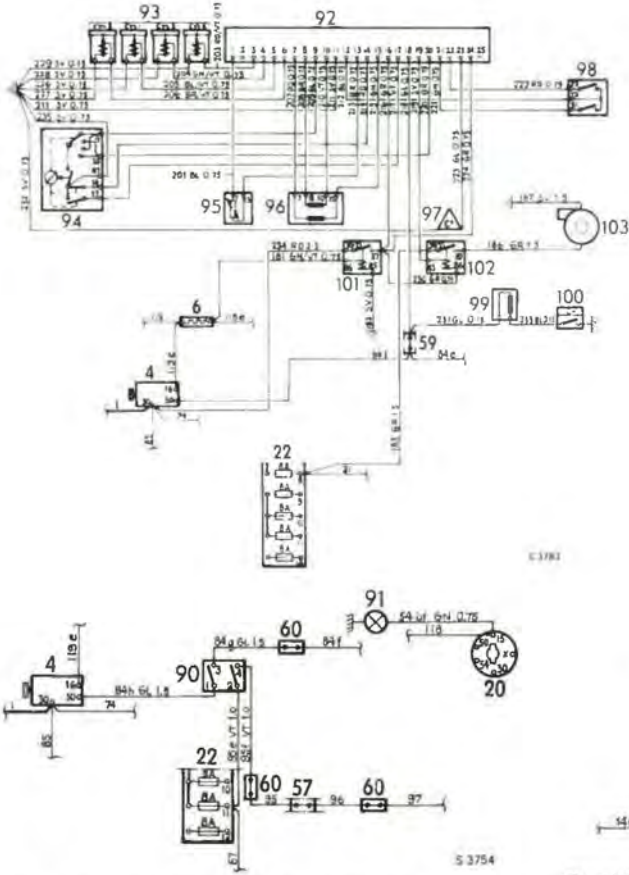
1. Battery
2. Alternator
3. Voltage regulator
4. Starter motor
5. Ignition coil
6. Series Resistor
7. Ignition distributor
8. Lighting relay
9. Headlight dimmer/flasher switch
10. Light switch
11. High beam
12. Low beam
13. Front parking light
14. Tail light
15. License plate light
16. Rheostat switch, instrument panel illumination
17. Switch light
18. Instrument panel light
19. Glove compartment and heater control lights
20. Ignition switch
21. Ignition switch relay
22. Fuse box
23. Direction indicator flasher unit
24. Direction indicator switch
25. Hazard warning signal switch
26. Hazard warning signal repeater
27. Direction indicator lights L
28. Direction indicator lights, R
29. Stop light switch
30. Stop lights
31. Backup light switch
32. Backup lights
35. Ventilator fan switch
36. Ventilator fan motor
37. Radiator fan motor
38. Radiator fan relay
39. Radiator fan thermostat switch
40. Horn
41. Horn contact
42. Brake warning switch
43. Handbrake switch
44. Oil warning switch
45. Temperature transmitter
46. Fuel level transmitter

47. Combination instrument: fuel gauge, fuel warning light, temperature gauge, oil warning light, charging light, brake warning light, high beam indicator light, direction indicator repeater
48. Cigarette lighter
49. Clock
50. Roof light, center
51. Roof light, forward
52. Ignition switch light
53. Interior lighting switch
54. Door switch, interior lighting
55. Trunk light
56. Trunk light switch
57. 12-pole connector
58. 8-pole connector
59. 2-pole connector
60. 1-pole connector
61. Wiper system switch
62. 2-speed windshield wiper
63. Washer motor
64. Seat heating element with thermostat
68. Handbrake or gear selector contact
69. Seat contact, passenger seat
70. Belt contact, driver
71. Belt contact, passenger
72. Warning light, belt warning system
80. Buzzer, belt warning system
81. Seat contact, driver's seat
82. Logic Relay
89. Starter relay
90. Start inhibitor and backup light contact
92. Control unit
93. Injection valve
94. Throttle contact
95. Temperature transmitter (injection)
96. Pressure transmitter
97. Temperature transmitter (coolant)
98. Impulse switch (distributor)
99. Starter valve
100. Thermostat switch
101. Master relay
102. Pump relay
103. Fuel pump
105. Side position light (rear)
106. Buzzer
107. Key contact (buzzer)
108. 2-pin door contact
110. Tachometer
112. Electronic direction indicator flasher unit

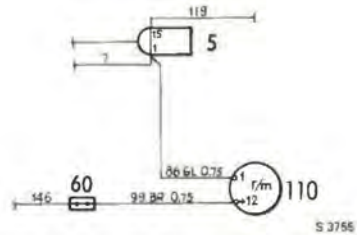


Saab 99 - 2 Door and 4 Door Models
FUEL INJECTED ENGINE





Special details of wiring diagram for cars with automatic transmission



Special details of wiring diagram, Saab 99 EMS

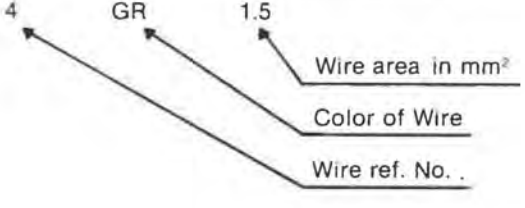
ELECTRICAL SYSTEMS

FOR CARBURETED ENGINES

WIRING DIAGRAMS

Color code

BL	Blue
BR	Brown
GL	Yellow
GN	Green
RD	Red
SV	Black
VT	White
BL/VT	Blue/White
BR/VT	Brown/White
GN/VT	Green/White
RD/VT	Red/White



1. Battery
2. Alternator
3. Voltage regulator
4. Starter motor
5. Ignition coil
6. Series Resistor
7. Ignition distributor
8. Lighting relay
9. Headlight dimmer/flasher switch
10. Light switch
11. High beam
12. Low beam
13. Front parking light
14. Tail light
15. License plate light
16. Rheostat switch, instrument panel illumination
17. Switch light
18. Instrument panel light
19. Glove compartment and heater control lights
20. Ignition switch
21. Ignition switch relay
22. Fuse box
23. Direction indicator flasher unit
24. Direction indicator switch
25. Hazard warning signal switch
26. Hazard warning signal repeater
27. Direction indicator lights L
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29. Stop light switch
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31. Backup light switch
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35. Ventilator fan switch
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38. Radiator fan relay
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40. Horn
41. Horn contact
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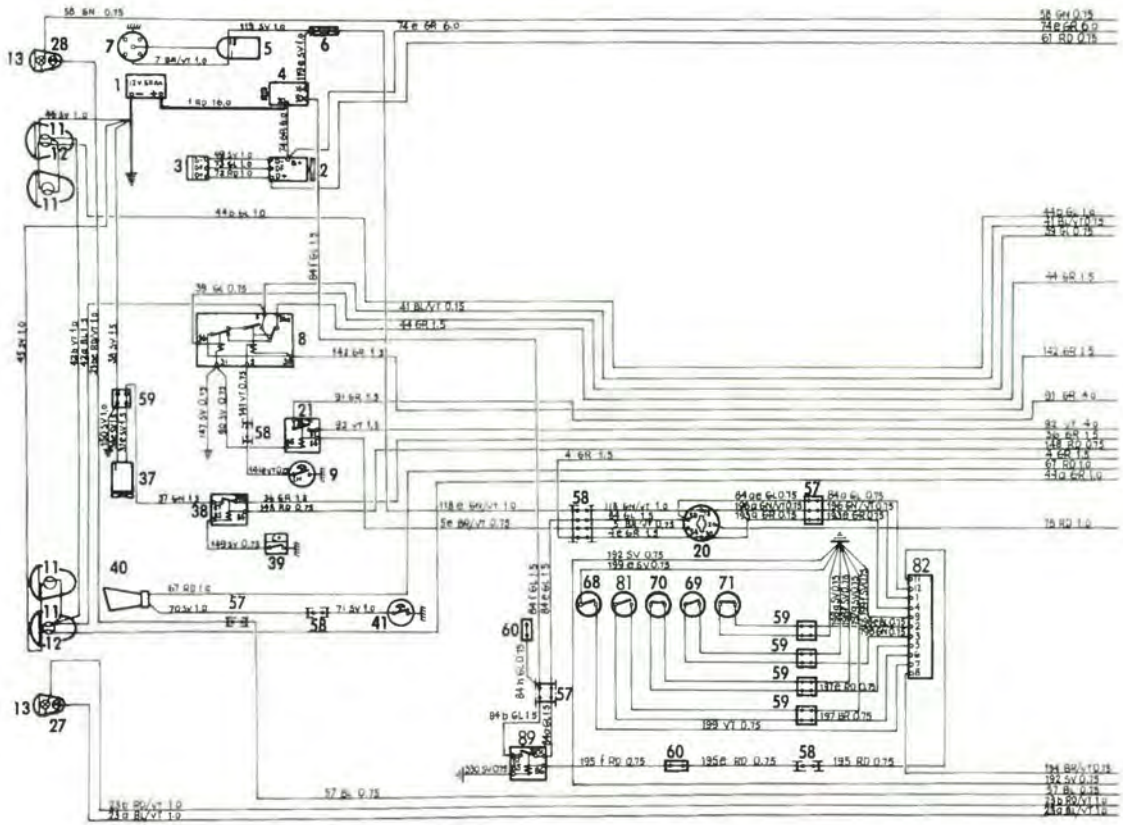
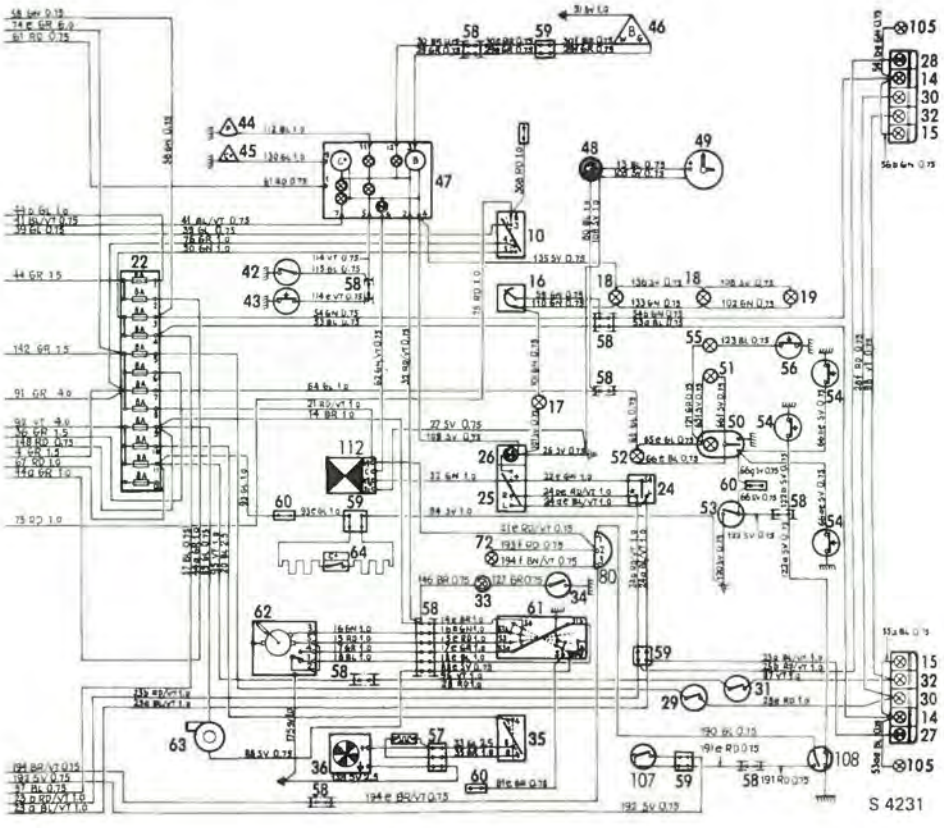
105. Side position light (rear)
106. Buzzer
107. Key contact (buzzer)
108. 2-pin door contact
112. Electronic direction indicator flasher unit



Saab 99 - 2 Door and 4 Door Models

CARBURETED ENGINE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ALTERNATOR

The alternator is driven by a V-belt from a pulley on the crankshaft. It is important to keep the proper tension. To tighten the belt, if too slack, loosen the screws marked 1 and 2 in the illustration below and move the alternator outwards. The belt should be tight enough so that it can be pressed down about ½" by a force of 3.5 lb. (1.5 kpm).

Checking alternator belt tension

BATTERY

WARNING

Do not misconnect the battery. If the cable connections are reversed, even momentarily, this will damage the alternator. The insulated positive cable must be connected to the positive (+) post of the battery and the ground cable to the negative (-) post. If a spare battery is temporarily connected to the car battery, e.g., to assist starting, the connection must be made positive to positive and negative to negative. The battery must not be connected to or disconnected from the electrical system of the car while the engine is running. During rapid charging the positive battery cable must be disconnected.

The battery is one of the most important components of the car and should be given the most careful attention. Check the electrolyte level at least once a month in winter and every two weeks in summer. It should be 1/4" — 1/3" (6—8mm) above the tops of the cell plates. Top up as necessary using **DISTILLED WATER ONLY.**

You should check the state of charge from time to time. Grease the post screws and clamps with vaseline to prevent oxidation, removing any old oxide deposits before applying the vaseline. Check that the battery is securely retained and that the post clamps and ground connections are fully tightened.

Avoid prolonged and heavy discharge of the battery. When making repeated attempts to start, give the battery a chance to "recover" between discharges.

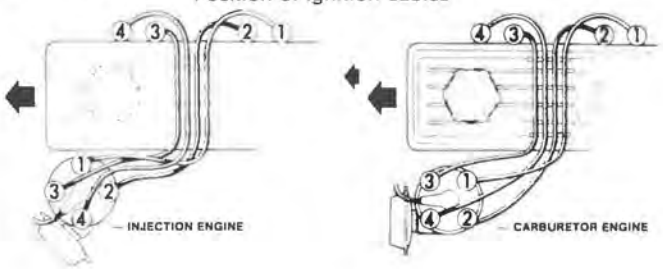
SPARK PLUGS

The spark plugs have been carefully selected to obtain maximum power from the engine, the recommended types of plugs must be used. If the electrode gap is incorrect, the side electrode should be adjusted.

NOTE! If the spark plugs are removed, be very careful to see that no dirt enters the cylinders.

The order of firing is 1—3—4—2 (cylinder No. 1 at rear of engine).

Position of ignition cables



HEADLIGHTS, BULBS, FUSES

The headlights are mounted in the front plate and are provided with two adjustment screws which are accessible after removal of the headlight trim. The upper screw is used for horizontal adjustment and the lower screw for vertical adjustment.

It is extremely important that the headlights be correctly adjusted to achieve the best possible lighting effect without any risk of blinding oncoming drivers.

All adjustments should be done by an authorized Saab dealer, according to specifications and/or applicable state laws.

Instrument illumination, control illumination and indicator warning lights

All the bulbs in the instrument assembly are mounted in bayonet fittings and are accessible from the back of the panel. The switch illumination bulb is located at the rear of the panel below the speedometer. The heater control and glove compartment illumination bulb is accessible when the cover in the left-hand wall of the glove compartment is removed.

Changing other light bulbs

Loosen the fixing screws and remove the glass. Change the bulb and check that the new one is securely fitted and makes good contact. Wipe off the lamp assembly and replace the glass making sure that it fits tightly.

Fuses

The electrical system is protected by twelve fuses including one spare fuse for extra equipment. These are grouped in a box mounted on the left wheel housing under the hood. The fuse holder is labelled to show the parts of the system protected by each fuse.

If a circuit goes dead but the fuse is intact, the cause may be a bad contact in the fuse holder or a cable connection. Check these points to make sure they are not oxidized and that terminals are tightly secured. When fitting a new fuse, see that it makes proper contact with the holder.

If the same fuse blows repeatedly, take the car to a Saab dealer as soon as possible for insulation testing of wiring and equipment.

BRAKES

The car is delivered with a set of brake linings designed for minimum fade; i.e., they can tolerate high temperatures without serious loss of effect. Always make sure, when changing brake pads, that original Saab spare parts are fitted.

To avoid subjecting the brakes to excessively high temperatures, e.g. when driving downhill in mountainous

country, you should utilize the braking power of the engine by shifting to a lower gear. For cars with automatic transmission, use position "1" or "2".

IMPORTANT

It is good policy to check the brakes occasionally when driving to make sure that they are working properly, especially if they have been subjected to heavy splashing with water or if you are driving through snow or salty slush, as braking power may be temporarily reduced in conditions of this kind. The brake system is equipped with power assist, but the added power from this is only available when the engine is running. It takes much greater pressure on the pedal to brake the car when the engine is switched off.

HANDBRAKE

The handbrake lever is located between the front seats. The handbrake operates on the front wheels. A red warning light glows when the handbrake is on and the ignition key is in the K position.

WHEELS AND TIRES

Cars leaving the factory are equipped with tubeless radial tires.
Sizes:
Saab 99 L 165SR15 textile cord except Calif. See Technical Data Section.
Saab 99 EMS 165SR15 with steel cord.

When a tubeless tire suffers a puncture, the air usually escapes very slowly, as the internal pressure tends to seal the hole in the synthetic rubber.

Fitting and repair of tubeless tires should be entrusted to a workshop equipped to handle such work.

The tires incorporate a profile depth indicator; when the tread pattern is worn down to 1/16" (1.6mm), unpatterned cross bars appear. This is a signal that it is time to fit new tires.

Tire pressures

Check the tire pressures regularly. See Technical Data Section for pressures.

Overinflated tires give a bumpy ride and wear excessively at the center of the tread. Underinflated tires suffer heavy wear on the shoulders and may cause the car to sway when cornering.

A correctly inflated tire wears evenly and grips the road over the full width of the tread and thus assists good road holding.

Rotation of wheels and tires

The front-wheel drive causes the front tires to wear more than the rear tires. If it is desired to have the tires wear evenly, they should be changed around after a certain period of driving so that the least worn tires are at the front. By switching the tires in this manner, the working life of all four tires will remain approximately

equal. Make sure however that the tires still have the same direction of rotation - the left front wheel should be changed with the left rear wheel.

WHEEL CHANGING

The tool bag and jack are stored under the floor of the trunk; the rear section of the floor lifts out easily. The spare wheel is carried upright in the trunk.

If you have to jack up the car, e.g. to change a wheel or inspect the brakes, locate the jack in one of the attachment points (front or rear) underneath the side members (see illustration).

1.

2.

3.

Positioning of jack

1. Apply the handbrake. Slide the jack into the attachment point and crank it down until it touches the ground.
2. Before lifting, make sure that the upturned edge of the head of the jack is engaged inside the flange of the side member (see illustration) and that the whole foot is in contact with the ground. Slacken the wheel nuts slightly before lifting.
3. Crank up the jack until the wheel clears the ground. Then unscrew the wheel nuts and take the wheel off.

To remove the hub cap, use the wheel nut socket wrench; insert the chisel-shaped end under the rim of the wheel cover, press the wrench against the tire, and strike the free end with your hand.

If a garage jack is used, the lifting heads must be located under the reinforced parts of the underbody.

Never get underneath the car when it is jacked up.

Order of tightening wheel nuts

SERVICE AND MAINTENANCE

Regular maintenance is necessary for safe, economical and continued trouble-free service from your Saab automobile.

This maintenance is best performed by an authorized Saab dealer. He has factory trained mechanics, specialized tools, and is continually made aware of the latest information from the factory concerning maintenance techniques and product improvements.

The maintenance program is divided into the following three areas:

Regular maintenance
Emission system maintenance
Extra oil changes

Regular maintenance

Regular maintenance is concerned with maintaining the safe operating condition of the vehicle through careful examination, maintenance and repair of all safety related components. Adherence to this maintenance program will also ensure economical operation of the vehicle and long and dependable service from all vehicle components.

Emission system maintenance

Built into your new vehicle is an emission control system that has been certified as complying with all applicable federal and state laws and regulations in effect at its time of manufacture.

Uncontrolled vehicles discharge pollutants into the air through the engine exhaust, fuel vents, and crankcase vents. Through careful design of the internal components of the engine and the addition of external control systems, the discharge of these pollutants is drastically reduced. The exhaust emission systems effect a more complete combustion of fuel. In addition, crankcase vapors and gasoline vapors are returned to the engine combustion chambers.

The required emission system maintenance services outlined in this Owner's Manual are designed to insure that the exhaust emission system will meet the emission standards under which it was designed for the useful life of the vehicle. Adherence to this maintenance schedule will also maintain performance, insure economical operation of the vehicle, and a long and trouble-free life from the engine.

Extra oil change

In normal service, engine oil will maintain the properties needed for proper protection and lubrication of the engine for 6 months or 6,000 miles. The oil filter is also capable of functioning properly for this same period when in normal service. In severe driving conditions, the service time during which oil maintains the needed proper-

ties and the filter functions properly is greatly reduced. It is recommended that the oil and filter be changed at three months or 3,000 miles when the vehicle is used in severe service as outlined below:

a. Extended periods of idling or low speed driving (stop and-go or city driving especially in cold weather).
b. Towing recreational or other vehicles for long periods of time.
c. Extended periods of driving in excess of 70 mph.

REGULAR MAINTENANCE

1,000 mile inspection (no labor charge)

1. Check function of headlights, stop lights, directional lights, warning flashers, back-up lights, indicator lights, warning lights and buzzers, windshield wipers/washer, heater fan, and horn.
2. Adjust the tension of the V-belts.
3. Check the battery electrolyte level.
4. Check the fluid level and, if necessary, replenish brake fluid in the master cylinders for brakes and clutch.
5. Adjust the clearance of the release bearing. (not automatic transmission).
6. Measure camber, caster and toe-in. Adjust if necessary.
7. Change the gearbox oil . (Manual transmission). Oil to be paid for by the car owner. Clean the magnetic plug. Do not confuse the drain plugs for engine and gearbox.
8. Tighten the bolts for the rear axle cross bar.
9. Tighten the bolts that hold the control arms to the body (front) and the bolts that hold the spring links to the body (rear).
10. Tighten the exhaust pipe flange bolts and test the exhaust system for leakage.
11. Tighten the bolts for all engine brackets.
12. Check the rubber bellows at outer and inner drive shaft joints.
13. Check the brake hoses and lines. Check tightness of fittings.
14. Check the headlight alignment.
15. Test drive the car on the road and check its condition, especially the function of brakes and clutch.

Additional information for cars equipped with automatic transmission:

16. Adjust the gear selector wire.
17. Retighten the bolts for the covers under the gearbox.
18. Check the oil level in the automatic transmission and the differential.

EMISSION SYSTEMS REQUIRED MAINTENANCE SERVICES

Fuel Injection Engine
Free service inspection 1,000 miles

1. Tighten the cylinder head bolts and manifolds to the prescribed torque.
2. Check cooling system hoses and connections for leaks (pressure test). Check coolant level and anti-freeze contents.
3. Check, clean and adjust the spark plugs. Check the cable terminals.
4. Check condition of breaker points. Set dwell angle and ignition timing. Lubricate the distributor.
5. Check idle speed and CO content.
6. Change the engine oil. Oil to be paid for by the car owner.

REGULAR MAINTENANCE

	6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles
Engine								
1. Check, if necessary, adjust the tension of the V-belt	●	●	●	●	●	●	●	●
2. Test the exhaust system for leakage	●	●	●	●	●	●	●	●
Transmission, manual								
1. Adjust the clearance of the release bearing	●	●	●	●	●	●	●	●
2. Change the gearbox oil. Clean the magnetic plug. Do not confuse the drain plugs for the engine and gearbox		●		●		●		●
3. Check gearbox oil level	●		●		●		●	
Transmission, automatic								
1. Check the gearbox oil level	●	●	●	●	●	●	●	●
2. Check the differential oil level	●		●		●		●	
3. Change the differential oil		●		●		●		●
Electrical system								
1. Check the battery electrolyte level Tighten cable terminals and grease with vaseline	●	●	●	●	●	●	●	●
2. Check function of headlights, stop lights, directional lights, warning flashers, back up lights, indicator lights, warning lights and buzzers, windshield wipers/washer, heater fan and horn	●	●	●	●	●	●	●	●

6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles

3. Check condition of the headlights. Check, if necessary, adjust the headlight alignment .....

Chassis

1. Check, if necessary, adjust toe-in .....

2. Measure, if necessary, adjust camber, caster and toe-in .....

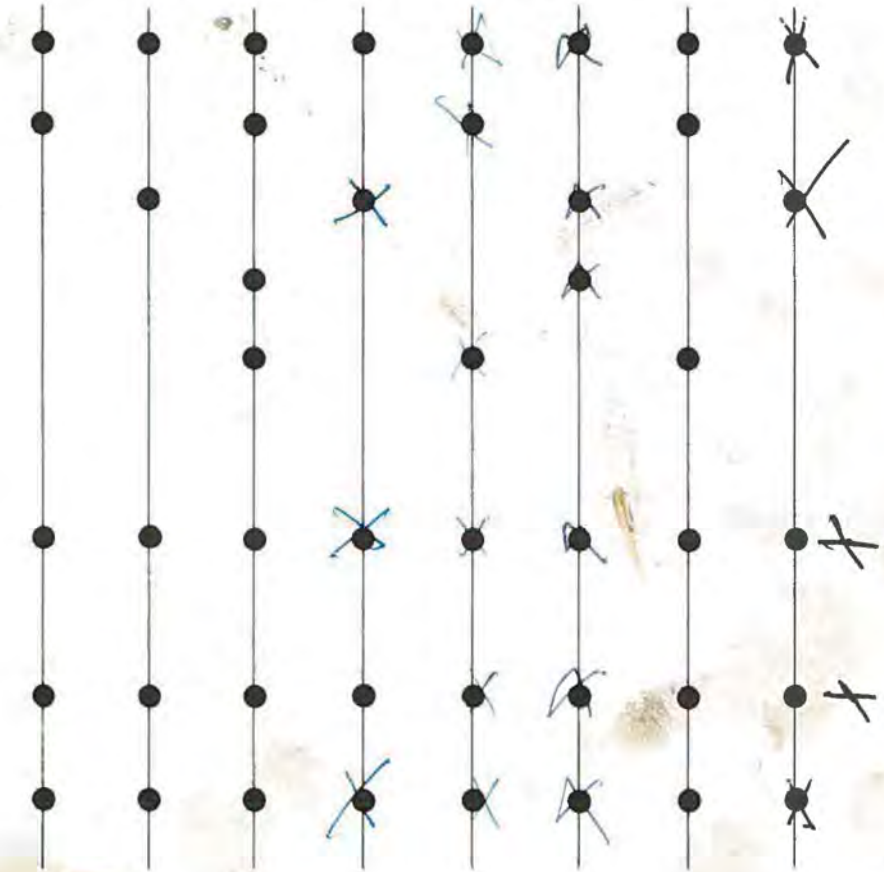
3. Check upper and lower ball joints and tie rod ends on both sides for wear .....

4. Check, if necessary, adjust the handbrake .....

5. Check in the brake system: Condition of brake lines and hoses, tightness of master cylinder and wheel brake cylinders and also the screw caps. Change brake fluid after about 24,000 miles or after two years .....

6. Remove the wheels and check the thickness of the brake pads. Change pads when thickness of the very lining is less than ⅛ in. Check the depth of the tread pattern on tires .....

7. Check the fluid level and if necessary replenish brake fluid in the master cylinders for brakes and clutch .....



	6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles
8. Check the rubber bushings of the shock absorbers		●		●		●		●
9. Check power steering fluid	●	●	●	●	●	●	●	●
19. Check the rubber bellows for outer and inner drive shaft joints and steering gear, the rubber sealing for ball joints and tie rod ends	●	●	●	●	●	●	●	●
Miscellaneous								
1. Lubricate sparingly the door stops and hinges, throttle control and engine hood lock mechanism	●		●		●		●	
2. Test drive car on road and check its overall condition, especially the function of brakes and clutch	●	●	●	●	●	●	●	●

EMISSION SYSTEMS REQUIRED MAINTENANCE SERVICES

ENGINE

To be carried out at specified mileage or time intervals, whichever comes first.

1. Tighten the cylinder head bolts and manifolds to the prescribed torque	●							

	6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles
2. Check, if necessary adjust the valve clearance (cold engine). Wash and blow clean the camshaft cover	●			●				●
3. Check the connections and hoses for the crankcase ventilation		●		●		●		●
4. Measure engine compression, all cylinders. Repair any cylinder below specifications				●	●	●	●	●
5. Check vacuum hoses and connections of servo assistance		●		●		●		
6. Check cooling system hoses and connections for leaks. Replace hoses if necessary. Check coolant level and anti-freeze contents	●	●	●	●	●	●	●	●
7. Replace engine coolant	ANNUALLY							
8. Check, clean and adjust the spark plugs, replace if necessary. Check the cable terminals	●		●		●		●	
9. Replace spark plugs and set gaps		●		●		●		●
10. Check the breaker points and condensor, replace if necessary. Set dwell angle and ignition timing. Lubricate the distributor	●		●		●		●	

	6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles
11. Replace the breaker points and condensor. Set dwell angle and ignition timing. Lubricate the distributor		●		●		●		●
12. Clean and inspect distributor cap and rotor for cracks, carbon build-up and erosion		●				●		
13. Replace distributor cap and rotor if needed				●				●
14. Check, clean and inspect the secondary ignition wires looking for cuts, burns, abrasions and punctures. Check resistance of ignition wires, replace if necessary				●				●
15. Replace air cleaner insert		●		●		●		●
16. Replace fuel filter (Fuel Injection Engine Only)	●	●	●	●	●	●	●	●
17. Check fuel system cap, tank lines and connection for leakage	●	●	●	●	●	●	●	●
18. Replace evaporative emission control canister				●				●
19. ~~Carbureted Engine - Check mechanical spark control system and adjust if necessary.~~ Injection Engine - Check mechanical and vacuum spark control system and adjust if necessary.		●		●		●		●

	6,000 miles	12,000 miles	18,000 miles	24,000 miles	30,000 miles	36,000 miles	42,000 miles	48,000 miles
20. Oil and oil filter change. Normal driving conditions: 6 months or 6,000 miles, whichever comes first	●	●	●	●	●	●	●	●
21. Check choke control operation and clearance of fast idle cam ..... Carbureted Engine Only		●		●		●		●
22. Check air inlet preheater position ..... Carbureted Engine Only	●	●	●	●	●	●	●	●
23. Check deceleration valve operation and adjust if necessary ..... Carbureted Engine Only	●	●		●	●	●		●
24. Check the carburetor vacuum piston and diaphragm. Replace diaphragm if necessary and replenish damper oil ..... Carbureted Engine Only	●	●	●	●	●	●	●	●
25. Check idle speed and CO-HC contents ..	●	●	●	●	●	●	●	●
Extra oil and oil filter change. Severe driving conditions: 3 months or 3,000 miles, whichever comes first.								

TROUBLE SHOOTING

Fuel Injected Engine

1. Engine fails to start even though cranked by starter at normal speed.

a. Check that there is fuel in the tank and that the charge indicator lamp lights up when the ignition is switched on.

b. Disconnect the cables from one spark plug at a time and operate the starter. A spark should then jump the gap when the cable is held close (approx. ⅛") to the terminal on the plug.

c. If only a feeble spark is obtained, or none at all, check whether the ignition cables are properly plugged into the ignition coil and the distributor. Check the low voltage connections to the ignition coil.

d. Take off the distributor cap and wipe off any moisture. Check that the cap is not cracked and that the breaker points open when the engine is cranked. Clean the contact surfaces.

e. If the engine has been cranked for some time without firing, fuel mixture may have flooded the cylinder and fouled the spark plugs. Unscrew the spark plugs and blow the cylinders clean by cranking the engine with the starter. Dry the plugs and check that the electrode gap is correct, or fit new plugs if available.

2. If the engine still refuses to start, check the fuel system.

a. Check whether the fuse for the electric fuel pump (fuse No. 8) is intact. Scrape off any oxide deposits by rotating the fuse a few times in its holder. (It is usually possible to hear whether the fuel pump is working, as it runs for about one second when the ignition is switched on before stopping automatically).

b. Check whether the cable terminals are properly plugged into the pressure transmitter (located forward on the left wheel housing), the coolant temperature transmitter (located under the intake manifold) and the starter motor. These terminals are designed to fit one way only and must not be pushed in by force.

c. Check the wiring connection to the fuel pump (accessible through a lid in the floor of the trunk).

d. Check that none of the hoses in the fuel system has worked loose.

e. A simple check on the operation of the injection system can be made as follows:

Switch on the ignition (key to K). Open the hood and work the throttle control up and down. A clicking sound should then be heard from two of the injection valves. To cut in the other two injection valves, the engine must be cranked one revolution.

3. Engine misfires, power is lost or engine runs roughly. Check that:

a. None of the ignition cables has worked loose.

b. None of the spark plugs is defective or in need of adjustment.

c. There is no arcing in the ignition system.

d. There is good contact in the low-voltage connections to the ignition coil.

e. None of the injection valve cables have worked loose.

4. Charge indicator lamp fails to light up when ignition is switched on. Possible causes:

a. Discharged battery or loose battery cable.

b. Burnt-out fuse for charge indicator light.

c. Poor wiring contact at ignition switch or charge indicator lamp.

d. Burnt-out light bulb.

c. Wiring to voltage regulator open circuit.

5. Charge indicator lamp lights up when engine is running. Possible causes:

a. Broken or slack alternator drive belt.

b. Defect in voltage regulator.

c. Defect in alternator.

6. Battery is discharged. Possible reasons:

a. Slipping alternator drive belt.

b. Low electrolyte level in battery.

c. Frequent use of high-drain equipment, combined with short journeys.

d. Defect in voltage regulator or alternator.

TROUBLE SHOOTING

Carbureted engine

1. Engine fails to start even though cranked by starter at normal speed.

To get the engine started quickly, it is most important to follow the starting instructions.

a. Check that there is fuel in the tank and that the charge indicator lamp lights up when the ignition is switched on.

b. Check that the fuel pump is feeding fuel by disconnecting the fuel hose at the carburetor and letting the starter turn the engine a few times (without depressing the accelerator pedal).

c. Disconnect the cables from one spark plug at a time, and operate the starter. A powerful spark should then jump the gap when the cable is held close to the terminal on the plug.

d. If only a feeble spark is obtained, or none at all, check whether the ignition cables are properly plugged into the distributor and ignition coil. Check the low-voltage connections to the ignition coil.

e. Take off the distributor cap and wipe off any moisture. Check that the cap is not cracked and that the breaker points open when the engine is cranked. Clean the contact surfaces.

f. If the engine has been cranked for some time without firing, fuel mixture may have flooded the cylinders and wetted the spark plugs. Unscrew the spark plugs and blow the cylinders clean by cranking the engine with the starter. Dry the plugs and check that the electrode gap is correct, or fit new plugs if available.

2. Engine misfires, power is lost or engine runs roughly. Check that:

a. None of the ignition cables has come loose.

b. None of the spark plugs is defective or in need of adjustment.

c. There is no arcing in the ignition system.

d. There is good contact in the low-voltage connections to the ignition coil.

e. The carburetor has not iced up (may happen in damp weather). Remedy by switching the air preheater to winter setting.

f. The oil level in the carburetor damping cylinder is not too low.

g. The rubber diaphragm of the carburetor vacuum piston is intact.

3. Charge indicator lamp fails to light up when ignition is switched on. Possible reasons:

a. Battery is discharged or a battery cable has worked loose.

b. The indicator light fuse is burnt out.

c. Poor cable contact at the ignition switch or the charge indicator light.

d. Burnt-out light bulb.

e. Wiring to voltage regulator open circuit.

4. Charge indicator lamp lights up when engine is running. Possible reasons:

a. Slipping alternator drive belt.

b. Defect in voltage regulator.

c. Defect in alternator.

5. Battery discharged. Possible reasons:

a. Broken or slack alternator drive belt.

b. Electrolyte level too low.

c. Frequent use of high-drain equipment, e.g. parking heater, combined with short journeys.

d. Defect in voltage regulator or alternator.

Care of paintwork

To keep its gloss and finish, the paintwork needs proper care.

If the paintwork is damaged, e.g. by a flying stone, the spot can be cleaned and covered with air-drying touch-up paint. Touch-up in the standard Saab colors can be purchased from your Saab dealer.

Washing

The car should be washed frequently. When it is new, it should be washed by hand using only cold water and a clean, soft brush attached to a hose. Automatic car washes should be avoided during the first few months. After five to six months the paintwork has hardened and to make washing easier, a car shampoo or mild washing-up liquid may be added to the water, which may be warm but not hot. Even the underbody should be washed regularly and special attention should be given to the wheel housings. This is particularly necessary when automatic car washes are used as these do not generally include washing of the underbody.

Never wash the car in strong sunlight, and always wipe it dry with a clean chamois leather if streaks on the paintwork are to be avoided.

Windows are best cleaned with a chamois leather or soft linen cloth moistened in water.

Polishing

The general rule is that synthetic lacquer should not be polished until it is absolutely necessary. In any event, it should not be polished until it has aged properly, which takes five or six months. Never use a polish containing

abrasive substances on a new car. Only after some years may this be necessary to remove oxide and other deposits. The paintwork must be thoroughly cleaned before being polished as otherwise it may be scratched.

A new car must not be waxed until the paintwork is at least five or six months old.

Maintnenace of undercoating

In addition to its rustproofing properties, undercoating has an important soundproofing function. To preserve its effectiveness it should be regularly inspected and touched up if necessary. This applies particularly to the fenders and wheel housings, which are constantly exposed to abrasion by flying gravel, etc. If the composition has worn or flaked off, the steel must be thoroughly cleaned and dried before a fresh coat is applied. The cleaning is best done with a scraper and a steel wire brush, followed by washing with solvent. Apply the new coating thinly, as otherwise it may run off or fall off when dry.

Rustproofing

All Saab cars undergo rustproofing treatment before leaving the factory. However, to prevent corrosion the treatment should be repeated within 12 months from delivery. This is necessary partly because rustproofing must be completed quite early in the life of the car and partly due to settlement of the underseal in bodywork joints. If the above recommendations are carried out in good time, then subsequent rustproofing need only be carried out every two or three years.

The engine compartment should be cleaned with an engine detergent and then hosed with hot water. Cover the headlights and the throttle valve switch before washing the engine. If you use a high-pressure hose, avoid directing the jet straight onto the distributor, alternator, starter motor, voltage regulator, headlights or at the electrical fuel system components.

Textile carpets should be cleaned with a brush or sponge with carpet shampoo and then rinsed thoroughly with water. Stubborn grease or oil stains can be removed with trichlorethylene.

Care of upholstery

The cloth upholstery may be effectively cleaned with a cloth moistened in soap solution. Use lukewarm water.

Grease and oil stains can be removed with trichlorethylene.

Wet stains such as oil or lemonade should be dried up immediately with an absorbing paper or similar material then apply a stain remover.

Plastic surfaces can be easily cleaned with lukewarm water and a synthetic detergent. A semistiff brush may be used.

Seat belts

Clean the seat belts with soap and lukewarm water.

Travelling

A list of authorized sales and service dealers is available for those planning to travel in the United States from your local Saab dealer.

General advice

1. Make sure that the ignition is switched off when the engine is not running. Otherwise the ignition coil and breaker contacts may be damaged.

2. Keep the battery well charged at all times. You may have trouble starting if the charge is low. With regard to the battery connections, see "Battery".

3. In wintertime you should take steps to prevent the door and trunk locks from freezing. Suitable de-icing preparations are sold by most service stations. If a lock cylinder should freeze up, be careful not to damage the key. Melt the ice by warming the lock or the key.

4. The use of gasoline anti-freeze is recommended in the winter to remove accumulated water from the fuel system.

5. If winter tires are used they should be fitted to both front and rear wheels. Studded winter tires should not be fitted unless they are used on all four wheels.

6. Tire chains. (In states where permissible).

Snap-on links must not be used due to space requirements, as they will damage the disc brakes. Use ordinary snow chains instead; these can be fitted to both the front and rear wheels. Be careful when driving with snow chains, as they may foul the bodywork at extreme spring compression and extreme steering lock.

7. Keep the brakes in good condition at all times. Check regularly to make sure that:

a. the brake pedal does not continue to go down under constant pressure.
b. braking effect is satisfactory.
c. the car does not pull to one side when braking.
d. the brake warning light works.
e. the handbrake is working properly.

See also under "Brake system".

f. Proper brake fluid level is maintained in master cylinder reservoir.

If you have any trouble with the brakes have them checked by an authorized Saab dealer.

8. Avoid driving with the trunk lid open, as exhaust gases may then be sucked back into the car. If for any reason you have to drive with the trunk lid open, you should take the following precautions:

a. Keep all windows closed.
b. Open the fresh air vents, set the defroster controls to wide open, and run the ventilator fan at full speed.

OWNER ASSISTANCE

Saab-Scania of America, Inc. assumes that every owner of a Saab car should not have to be satisfied with less than fine quality service. As a subsidiary of Saab-Scania AB (Sweden), we are responsible for the importation, sale and distribution of Saab cars to our dealer network. The dealers, in turn, are responsible to you for the servicing of Saab cars.

Your goodwill, therefore, is extremely important both to those dealers and to us. The dealers will do their best to solve your problems, but despite these efforts and good intentions, misunderstandings can occur. We therefore urge you, in such situations, to take the following measures:

FIRST - Speak to a representative of the dealership management. This person can often function as an intermediary to resolve a communication breakdown.

SECOND - If it appears your problem cannot be resolved at the dealership, contact Saab-Scania of America, Saab Drive, P. O. Box 697, Orange, Connecticut 06477, att'n: Consumer Relations Department, telephone number (203) 795-5671.

Be sure to provide the following information:

* Your name, address and telephone number
* Chassis (vehicle identification) number (located on vehicle registration, title or the plaque on left above instrument panel which can be seen through the windshield). Also located inside of front cover, 1974 Owner's Manual.
* Vehicle delivery date and mileage
* Selling dealer name and location
* Service dealer name and location
* Nature of problem

A consumer relations coordinator will be able to help you go about resolving your problem. If necessary, this person can also notify a Saab-Scania, Inc. Regional Office of your need for assistance. Please remember, however, that your difficulty will be finalized at the dealership level, through the use of the dealer's equipment and facilities and by his personnel.

Saab-Scania of America, Inc and its dealers wish to express our sincere appreciation to you for choosing our product; we will do our best to assist you in achieving full satisfaction with your car.

MODEL DESIGNATION, CHASSIS NUMBER, ETC.

Please quote the model designation and chassis number in all correspondence concerning your car.

Transmission number, automatic transmission

Transmission number, manual transmission

Engine number

Color code and chassis number signs

Chassis number punched in car body, 2-door model (under back seat cushion)

Chassis number punched in car body, 4-door model (under back seat cushion)

TECHNICAL DATA

GENERAL

Overall length incl. bumpers	(4425 mm)	174"
Overall width	(1690 mm)	66.5"
Overall height (empty)	(1440 mm)	56.5"
Road Clearance (curb weight)	(175 mm)	6.75"
Track, front wheels, Saab 99 L	(1390 mm)	54.75"
Track, front wheels, Saab 99 EMS	(1400 mm)	55.25"
Track, back wheels, Saab 99 L	(1400 mm)	55.25"
Track, back wheels, Saab 99 EMS	(1410 mm)	55.75"
Wheelbase	(2473 mm)	97.5"
Turning radius	(5.3 m)	209"

WEIGHT

Curb weight	(1120-1200 kg)	2470-2650 lb.
Gross vehicle weight rating:		
2-door model	(1545 kg)	3400 lb.
4-door model	(1595 kg)	3510 lb.
Gross axle weight rating:		
Front axle	(880 kg)	1940 lb.
Rear axle	(800 kg)	1770 lb.
Vehicle capacity weight:		
Without air conditioning	(410 kg)	900 lb.
With air conditioning	(385 kg)	850 lb.
Weight distribution by curb Weight		front 61-63%
Weight distribution by gross Vehicle weight rating		front 52-55%
Trunk Volume (SAE)	($0.347 m^3$)	11.8 cu. ft.
Max. roof rack load	(100 kg)	220 lb.

FUEL INJECTION ENGINE

Type	4-cyl., 4-stroke with overhead camshaft and fuel injection	
Power rating, SAE net at 5500 rev/min	(110 hp)	81 kw
Maximum power on driving wheels		
automatic transmission	(72 hp)	53 kw
manual transmission	(77.5 hp)	57 kw
Max. torque at 3700 rev/min	(167 Nm)	123 ft. lb.
Compression ratio		8.7:1
Number of cylinders		4
Cylinder bore	(90.0 mm)	3.543"
Stroke	(78.0 mm)	3.071"
Cylinder volume	(1985 cc)	121 cu. in.
Valve clearance, cold engine:		
Inlet	(0.15-0.30 mm)	0.006-0.012"
Outlet	(0.35-0.50 mm)	0.014-0.020"
Order of firing (cyl. 1 farthest to the rear of the engine)		1-3-4-2-

Engine idling speed:
Cars with manual transmission ..... 850 rev/min
Cars with automatic transmission ..... 800 rev/min
Oil volume incl. oil filter ..... (3.5 liters) .. 4 US quarts

Oil viscosity
Hot weather ..... SAE 10W 40
Normal ..... (Alt. SAE 10W 30) . SAE 10W 40

Cold weather
Below 0° F ..... SAE 5W 20

CARBURETED ENGINE

Type ..... 4-Cyl., 4-stroke with overhead camshaft
Power rating, SAE net at 5200 rev/min (95 hp) .... 70 kW Max. torque at 3500 rev/min ..... (157 NM) .... 115 ft.lb.
Compression ratio 8.7:1
Number of cylinders 4
Cylinder bore ..... (90.0 mm) .... 3.543"
Stroke ..... (78.0 mm) .... 3.071"
Cylinder volume ..... (1985 cc) .... 121 cu. in.
Valve clearance, cold engine:
Inlet ..... (0.15—0.30 mm) .... 0.006—0.012"
Outlet ..... (0.35—0.50 mm) .... 0.014—0.020"
Order of firing (cyl. 1 farthest to the rear of the engine) 1-3-4-2-
Engine idling speed:
Cars with manual transmission ..... 850 rev/min
Cars with automatic transmission ..... 800 rev/min
Oil volume ..... (3.5 liters) .... 4 US quarts

FUEL SYSTEM — INJECTION ENGINE

Fuel tank capacity ..... (45 liters) ... 11.8 US gal

Fuel injection:
Type ..... Jetronic
Manufacturer ..... Bosch, electronic
Fuel recommendation:
Regular, minimum 91 Research Octane, (leaded or lead free)

FUEL SYSTEM — CARBURETOR ENGINE

Fuel tank capacity ..... (45 liters) .... 11.8 US gal.
Horizontal carburetor ..... Zenith-Stromberg 175CD-2S
Fuel pump, mechanical ..... AC Delco type Unitac
Fuel Recommendation:
Premium-minimum 95 Research Octane, (leaded or lead-free)

COOLING SYSTEM

NOTE! The radiator must not be screened off.
Coolant volume incl. heating system. ..... (9.5 liters) ... 10 US quarts

Thermostat opens at ..... (85° C) ..... 185° F

Glycol Anti-Freeze coolant
Permanent type MIL - E 5559

MANUAL TRANSMISSION

Type ..... 4-speed, all-synchromesh with final drive and differential
Oil capacity ..... (3.0 liters) . . 3 US quarts

Oil specification ..... EP oil SAE 75 in accordance with API-GL-5
Hydraulic clutch ..... single dry plate with spring-loaded hub

Gear ratios, total
- 1st gear 13.4:1
- 2nd gear 8.1:1
- 3rd gear 5.4:1
- 4th gear 3.9:1
- Reverse gear 14.7:1

Final drive ratio 3.89:1
Road speed at 1000 rev/min engine speed:
- 1st gear ..... (8.7 km/h) ..... 5.4 mph
- 2nd gear ..... (14.5 km/h) .... 9.0 mph
- 3rd gear ..... (21.6 km/h) ... 13.5 mph
- 4th gear ..... (30.0 km/h) ... 18.7 mph
- Reverse gear ..... (7.9 km/h) .... 5.0 mph

AUTOMATIC TRANSMISSION

Type ..... 3-speed with torque converter, final drive and differential
Selector positions ..... P R N D 2 1
Oil volume, automatic transmission (8.0 liters) 8.5 US quarts

Grade of oil ..... Type "A" or Dextron
Oil volume, final drive ..... (1.25 liters) . . 1.3 US quarts

Grade of oil ..... EP oil SAE 75 or 80 in accordance with API-GL-5

Torque ratios total
- D 17.29-3.79
- 2 ..... 17.29-5.49
- 1 ..... 17.29-9.04
- R 15.13-7.92

Torque converter ratio 1.91:1-1:1
Primary gear ratio 0.97:1

Gear ratios
- 1st gear 2.39:1
- 2nd gear 1.45:1
- 3rd gear 1:1
- Reverse gear 2.09:1

Final drive ratio 3.89:1
Idling speed ..... 800 rev/min with gear selector lever P or N

Shift speeds

	Upshift speed	
	1st-2nd	2nd-3rd
Full throttle	about 25 mph (45 km/h)	about 47 mph (75 km/h)
Kick-down	about 35 mph (60 km/h)	about 65 mph (105 km/h)
	Downshift speed	
	3rd-2nd	2nd-1st
Full throttle		
Kick-down	about 55 mph (90 km/h)	about 25 mph (40 km/h)

Brake system
Make ..... ATE
Footbrake ..... hydraulic disc brakes with power assist, two - circuit system serving diagonally opposed pairs of wheels

Brake and clutch fluid ..... in accordance with spec. DOT3 or DOT4

Disc diameter ..... (269.5 mm)..... 10.63"

Friction areas:

Front wheels .....(1215 cm²)..... 188 sq. in.

Rear wheels .....(1095 cm²)..... 170 sq. in.

Total .....(2310 cm²)..... 358 sq. in.

Handbrake ..... mechanical drum brake acting on front wheels

SUSPENSION

Suspension elements, front and rear ..... coil springs

Total spring compression/ elongation:

Front .....(160 mm)..... 6.33"

Rear .....(180 mm)..... 7.1"

Shock absorbers

Type ..... hydraulic, telescopic

Max. working stroke, fitted to car:

Front .....(91 mm)..... 3.6"

Rear ..... 6.2" (158 mm)

Steering mechanism

Steering gear ..... rack-and-pinion type

Wheels turns lock-to-lock 3.7

WHEELS AND TIRES

Type ..... disc wheels

Rim dimensions, Saab 99 L 4 1/2 J FHA x 15"

Rim dimensions, Saab 99 EMS 5 J FHA x 15"

Tires ..... tubeless

Factory-fitted tires:

Saab 99 L* ..... 165SR15 (textile cord)

Saab 99 EA* ..... 165SR15 (textile cord)

Saab 99 EMS ..... 165SR15 (steel cord)

Front wheel alignment:

Toe-in, measured at tims .....(0 ± 1 mm).... 0±0.04"

Camber ..... 3/4 ± 1/4°

Caster ..... 3/4 ± 1/4°

King pin inclination ..... 11.5 ±1°

*Cars sold in California - Same as 99 EMS.

TIRE PRESSURES

Cars without air conditioning:

Light load, front and rear ..... 27 psi (1.9 bar)

Max. load, front and rear ..... 30 psi (2.1 bar)

Cars with air conditioning:

Light load, front and rear ..... 28 psi (2.0 bar)

Max. load, front and rear ..... 30 psi (2.1 bar)

The pressure refer to cool tires

ELECTRICAL SYSTEM

Voltage 12V

Battery capacity ..... 60 AH

Starter ..... 0.7 kw (1 hp)

Alternator, max. charging/ current voltage ..... (Fuel injection engines) .. 55 A/14V

Alternator, max. charging/ current voltage ..... (Carbureted engines)... 35A/14V

Distributor contact gap ..... (0.3 - 0.4 mm) .. 0.012-0.016"

Order of firing (cyl. 1 farthest to the rear of the engine 1-3-4-2

Spark plugs:
Type ..... NGK BP-6ES

Thread ..... M 14
Thread length ..... (18 mm) ..... 0.7"

Electrode gap ..... (0.6 - 0.7 mm) .. 0.024 - 0.028"

Ignition advance:
Basic setting ..... 4° BTDC@800 RPM

POWER STEERING

Grade of oil ..... ATF type 'A' or Dextron

LIGHT BULBS

	Power	SAE Trade No.	Qty.
Headlight, sealed beam High beam	37.5 W	4001	2
High and low beam	37.5/50 W	4002	2
Front direction indicator ..	21 W	1073	2
Front parking light	5 W	67	2
Rear direction indicator, stop and back-up lights	21 W	1073	6
Tail light and number plate light	5 W	67	4
Side position light, rear	4 W	S7	2
Dome light	10 W	Cartridge blub	1
Trunk light	5 W	Cartridge bulb	1
Heater control illumination	1.2 W	Glass fitting	1
Ignition switch illumination	2 W	Miniature bulb	1
Rear view mirror light	5 W	Miniature bulb	1
Instrument and indicator lights	1.2 W	Glass fitting	8

Hazard warning signal switch	1.2W	Glass fitting	1
Switch illumination	1.2W	Glass fitting	1

TOOL KIT

Jack in bag with crank handle
Tool kit in bag, comprising:
- Adjustable wrench
- Combination pliers
- Philips screwdriver
- Screwdriver
- Socket wrench for wheel nuts
- Socket wrench for spark plugs
- Socket screw key for removing and installing front passenger seat

ALPHABETICAL INDEX

CUSTOMER PAID
Regular Service

1,000 miles free inspection

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

EXTRA OIL CHANGE (Stamp)
Mileage.....

6,000 miles (6 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

EXTRA OIL CHANGE (Stamp)
Mileage.....

12,000 miles (12 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

EXTRA OIL CHANGE (Stamp)
Mileage.....

18,000 miles (18 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

EXTRA OIL CHANGE (Stamp)
Mileage .....

24,000 miles (24 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

EXTRA OIL CHANGE (Stamp)
Mileage .....

30,000 miles (30 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage .....

EXTRA OIL CHANGE (Stamp)
Mileage .....

36,000 miles (36 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date 9-27-76
Mileage 38941

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date 9-27-76
Mileage 38941

EXTRA OIL CHANGE (Stamp)
Mileage.....

42,000 miles (42 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date 3-29-77
Mileage 42796

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date 3-29-77
Mileage 42796

EXTRA OIL CHANGE (Stamp)
Mileage.....

48,000 miles (48 months)

EMISSION MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

REGULAR MAIN-TENANCE SERVICE (Stamp)
Date .....
Mileage.....

EXTRA OIL CHANGE (Stamp)
Mileage.....

12-27-78 Oil, Filter Change at 61,258 miles.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