

**SAAB****MONTERINGSANVISNING · INSTALLATION INSTRUCTIONS
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Saab 9-5

Air conditioning (A/C), basic kit

Accessories Part No.	Group	Date	Instruction Part No.	Replaces
400 107 132 400 107 157 400 107 165 400 107 173	8:70-36	Mar 98	48 68 451	48 68 451 Nov 97

Introduction

The basic A/C kit must be fitted at an authorized SAAB service garage with approved equipment for handling refrigerant.

Important

R134a refrigerant is used in all Saab 9-5 models. Note the following:

- Since the A/C system is highly sensitive to impurities of all kinds, make sure that no dirt and the like get into it.
- The receiver and compressor oil both absorb moisture from the air which cannot later be removed. For this reason, all openings must be plugged until the appropriate components are connected to them.
- All new O-rings should be lubricated with synthetic vaseline, part no. (45) 30 14 286, on assembly.

The removal of components in connection with gaining access to the system, charging the system with refrigerant, fault diagnosis and checking the performance of the system is described in Service Manual 8:3 Climate.

Read all through the fitting instructions before starting work on installing the A/C.

Supplementing the basic kit

A supplementary kit for the car variant concerned must always be fitted in conjunction with the basic kit (400107132).

Supplementary kit:	Cars concerned:
400107157 Mounting kit	R4 engine
400107173 Evaporator kit	LHD
400107165 Evaporator kit	RHD

Procedure

There are two descriptions of the procedure to be followed when fitting the A/C kit:

- Brief fitting instructions, page 13.
- Fitting instructions, page 18.

The brief instructions are for those who have previous experience of installing A/C units.

If no previous experience of fitting A/C units in cars of the type concerned has been acquired, the detailed fitting instructions should be followed.

Contents of basic kit:

- 1 Compressor
- 2 Condenser (incl. receiver and pressure sensor)
- 3 Temperature sensor
- 4 Cooling fan motor
- 5 Expansion valve
- 6 PAD attachment for expansion valve
- 7 Pipe holder, double, 2 pcs.
- 8 Pipe holder, single, 1 pc.
- 9 High-pressure pipe, 2 pcs.
- 10 Low-pressure pipe, 1 pc.
- 11 Screw, M8x90, for compressor, 3 pcs.
- 12 Bolt, M6x16, for condenser, 2 pcs.
- 13 Nut clip, M6, for condenser bolt, 2 pcs.
- 14 T25 screw, M6x16, for cooling fan, 3 pcs.
- 15 M6 nut for A/C pipe joint, 2 pcs.
- 16 Screw, M8x35, for A/C pipe on compressor, 2 pcs.
- 17 Screw, M6x20, for A/C pipe on condenser/receiver, 2 pcs.
- 18 Screw, M6x20, from A/C pipe on expansion valve, 1pc.
- 19 Socket head cap screw, M5x50, for expansion valve, 2 pcs.
- 20 Cable tie, 5 pcs.
- 21 Warning label, 2 pcs.
- 22 Pushbutton switch
- 23 Cooling hose, glove box cooling
- 24 Pipe holder, double, 1 pc.
- 25 Air shield, condenser, 2 pcs.
- 26 Air shield, upper
- 27 Air shield, lower, 2 pcs.

Supplementary kits

Mounting kit R4:

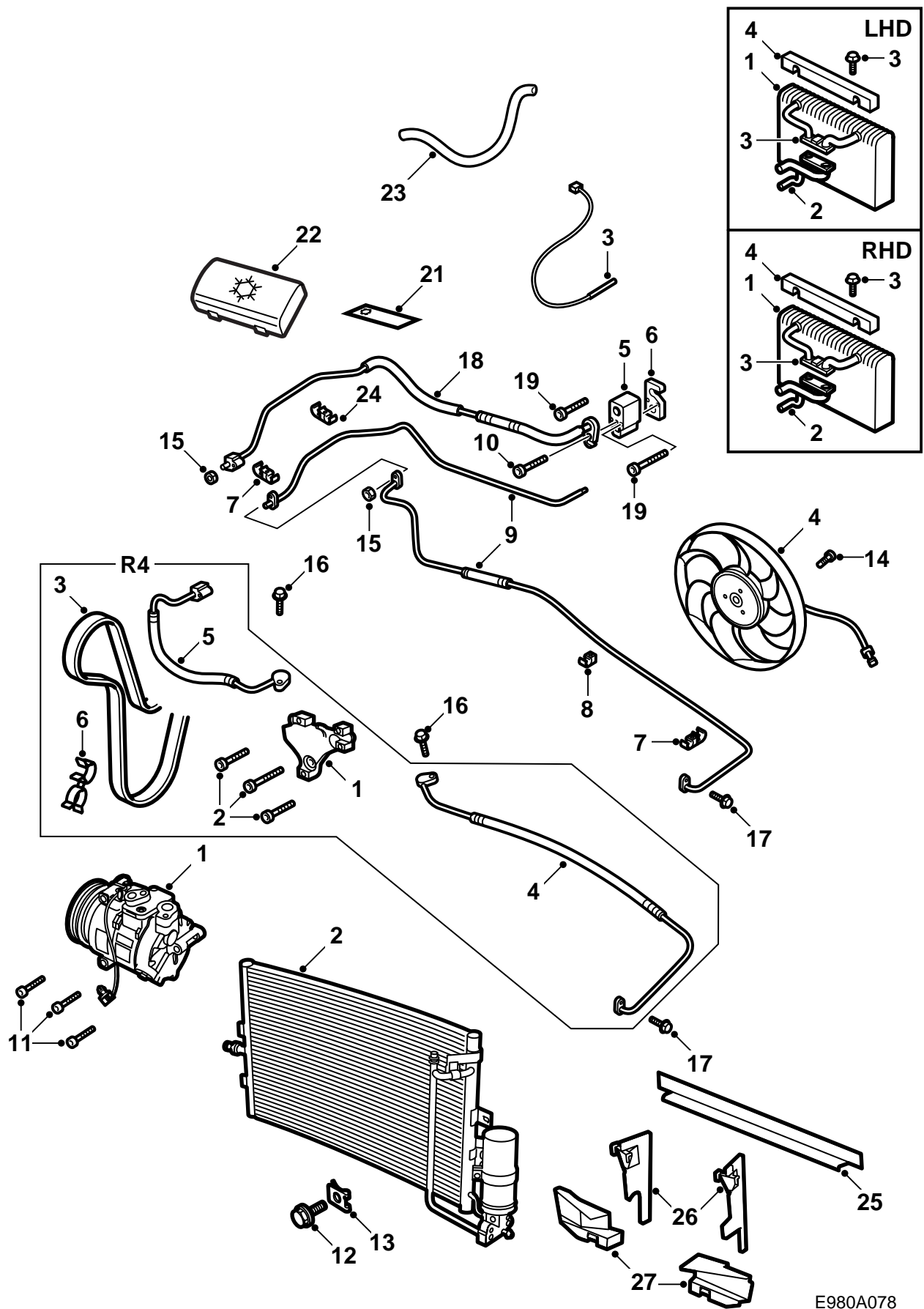
- 1 Bracket for compressor
- 2 Screw, M10x50, for bracket, 3 pcs.
- 3 Multigroove belt
- 4 High-pressure piSpe, 1 pc.
- 5 Low-pressure pipe, 1 pc.
- 6 Spacer clip

Evaporator kit, LHD:

- 1 Evaporator
- 2 Pipe for lead-through in bulkhead
- 3 Screw, M8x50, with washer
- 4 Seal, evaporator

Evaporator kit, RHD:

- 1 Evaporator
- 2 Pipe for lead-through in bulkhead
- 3 Screw, M8x50, with washer
- 4 Seal, evaporator



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Brief fitting instructions

Start by unpacking the A/C kit and carefully reading the fitting instructions.

Gaining access to the system

- 1 Remove the front grille, headlamps, air cleaner intake ducting, bypass pipe, heat shield, fan cowl and centre cover under the radiator.
- 2 Remove the cover panel in front of the windscreen. Also remove the windscreen wiper system and ventilation fan.
- 3 Detach the intake hose with mass air flow sensor (without unplugging the connector), the power steering fluid reservoir and the hoses on the right-hand MacPherson strut tower.
- 4 Take the tension off the belt tensioner. Then remove the multigroove belt.
- 5 Cut the rubber so that the A/C pipes and the expansion valve can be fitted.
- 6 Remove the glove box, filter cover and the cover over the heating and ventilation unit. Cars with automatic transmission: Remove the automatic transmission control module. Remove the screw for the oil pipe in the fan cowl.
- 7 Remove the seal and fit a new one with hole.

Fitting

- 1 Fit the pipe holders on the structural member and subframe. Position the A/C piped in the engine bay but do not fasten them.
- 2 Montera kondensorn med skruv och mutterclips på kylaren. Montera kondensorns två luftskärmar.
- 3 Mount the compressor bracket on the engine block using 3 x M10x50 screws.

Tightening torque 35 Nm

Mount the compressor on the bracket using 3xM8x90screws.

Tightening torque 24 Nm

- 4 Fit the pipe in place from the evaporator housing and out through the bulkhead partition.
Slide the evaporator with filter cassette, without filter, into the evaporator housing.
- 5 Connect the pipes to the evaporator.
- 6 Fit the expansion valve by means of 2xM5x50screws.

Tightening torque 5 Nm

- 7 Connect the pipes to the expansion valve, M6x20 screw.

Tightening torque 8 Nm

- 8 Connect the low-pressure pipe to the compressor, M8x35 screw.

Tightening torque 22 Nm

- 9 Connect the high-pressure pipe to the compressor, M8x35 screw.

Tightening torque 22 Nm

- 10 Connect the high-pressure pipes to the condenser and receiver using 2 x M6x20 screws.

Tightening torque 8 Nm

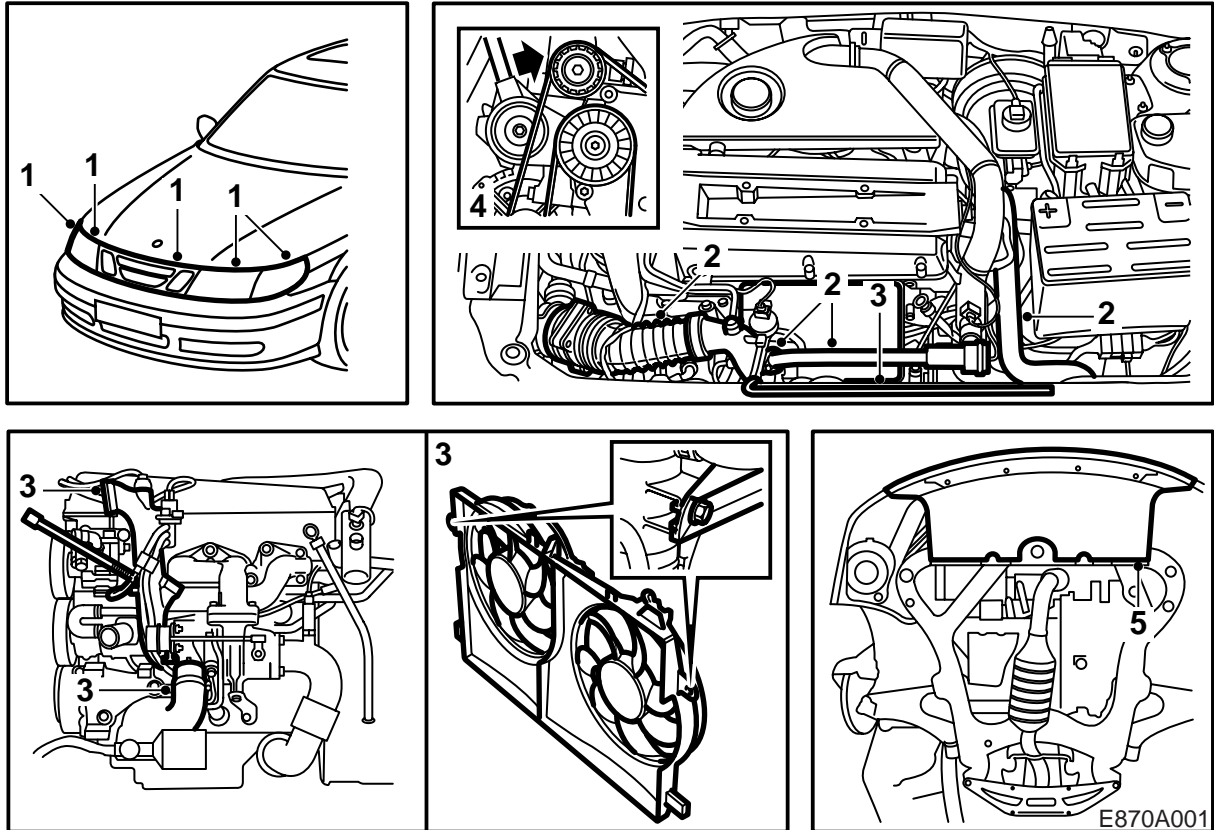
- 11 Mount the connection blocks on the right-hand structural member, M6x20 screws.

Tightening torque 8 Nm

- 12 Remove the holder for the radiator and charge air cooler on the radiator member. Fit the upper air shield on the holder, refit the radiator and charge air cooler.
- 13 Remove the fan resistor and mount the cooling fan on the fan cowl.
- 14 Fit the kit's multigroove belt and release the belt tensioner.
- 15 Plug the compressor lead into the existing connector.
- 16 Connect the existing connector to the pressure sensor on the condenser.

Concluding work

- 1 Evacuate air from the A/C system and charge it with R134a refrigerant.
- 2 Fit the pushbutton switch in the heating and ventilation panel.
- 3 Refit other parts that have been removed.
- 4 Affix the warning label to the right-hand side of the engine bay.
- 5 Program the DICE control module for A/C and an extra radiator fan.
- 6 Run in the compressor:
 - Turn on the A/C and run it for at least 2 minutes at <1500 rpm.
 - Turn off the A/C.
- 7 Check the functionality of the A/C system.



Installation instructions

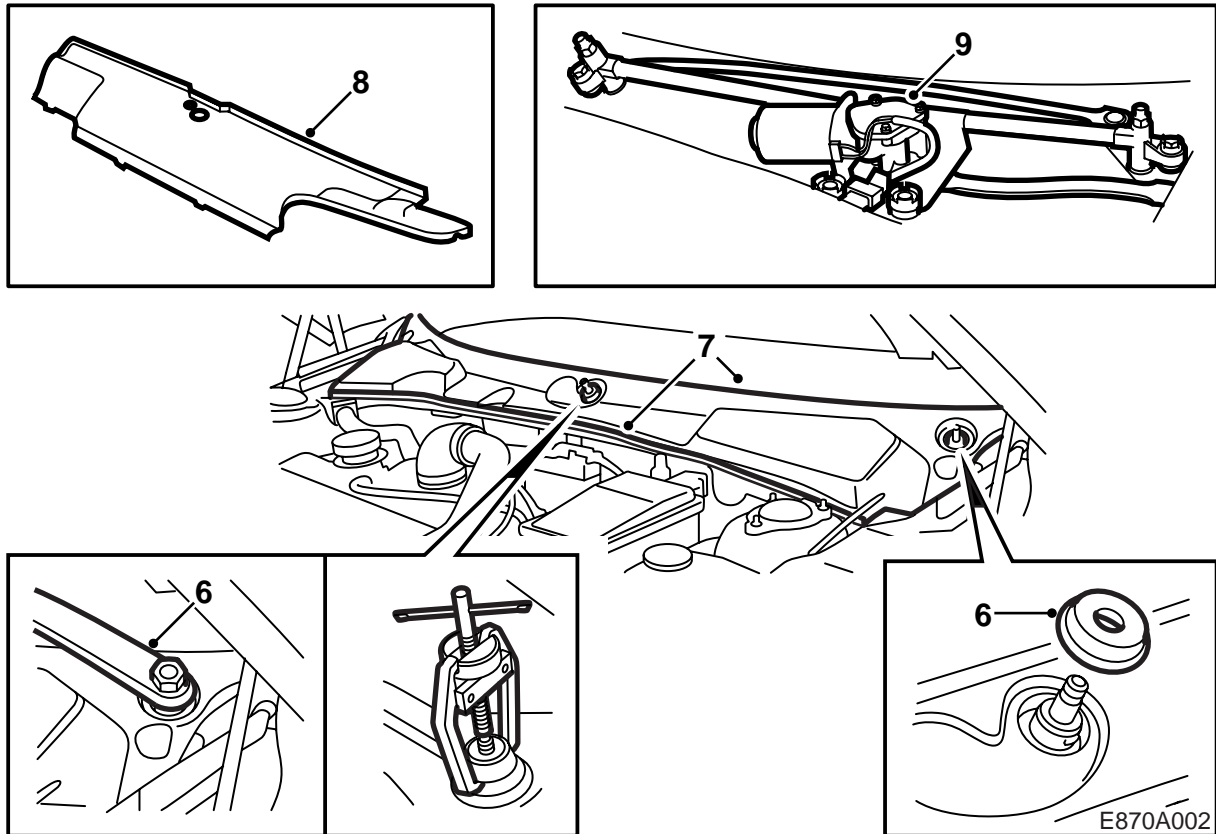
Preparatory work

- Position the car on a lift.
- Make a note of the radio code and any preselected stations.
- Place protective coverings over the carpets and paintwork.
- Disconnect the negative battery cable.

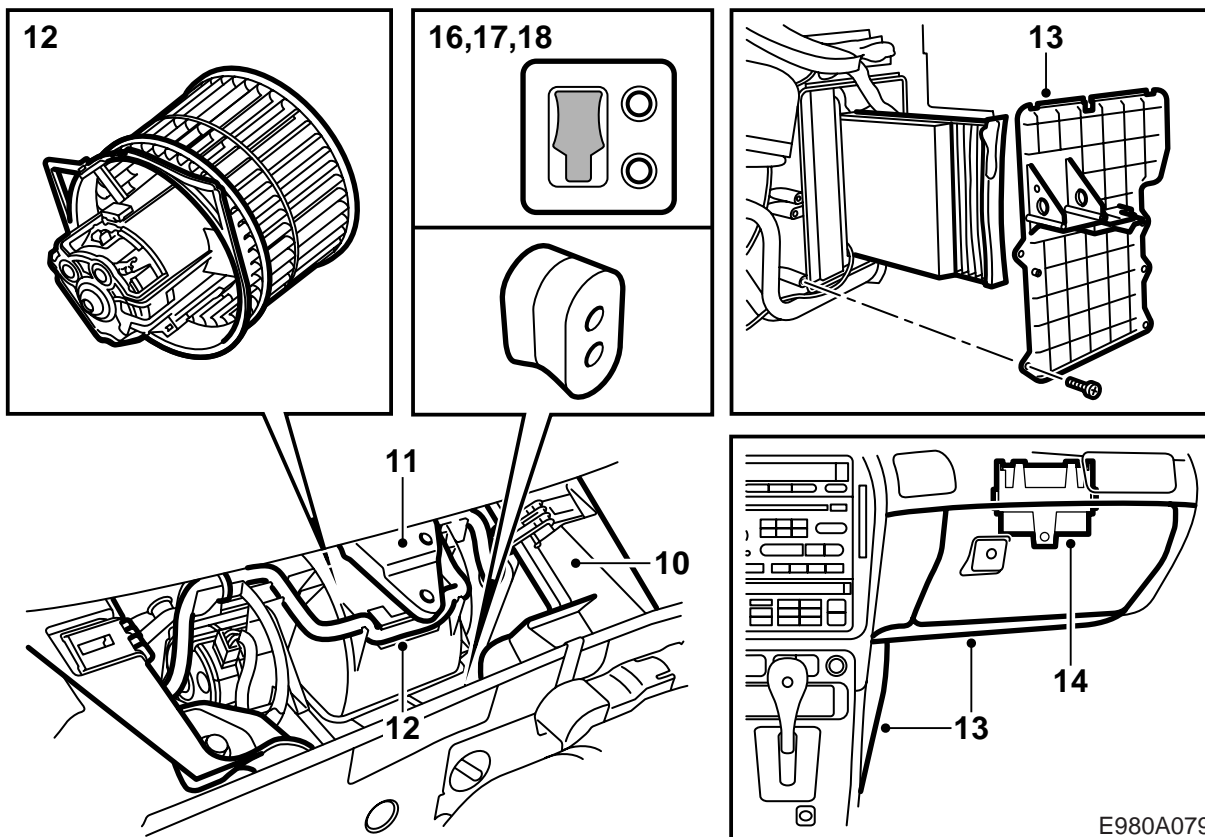
Gaining access to the system

Dismantle or detach and bend aside as follows:

- 1 Remove the front grille, headlamps and light clusters.
- 2 Remove the air cleaner intake ducting, the bypass pipe with valve and the heat shield from the manifold. Also remove the intake air hose with mass air flow sensor without unplugging the connector.
- 3 Detach the hose from the turbocharger, remove the expansion tank's hose from the fan cowl and remove the fan cowl. Cars with automatic transmission: Remove the screw securing the two gearbox pipes to the fan cowl.
- 4 Use special tool 83 95 254 to relieve the belt tensioner of strain.
- 5 Remove the cover under the radiator and sub-frame.



- 6 Remove the windscreen wiper arms using puller 8580144.
- 7 Remove the rubber strip running along the edge of the bulkhead. Remove the cover panel in front of the windscreen and withdraw the bonnet lock cable through the slit.
- 8 Remove the water protection cover fitted over the ventilation fan by undoing the clips at the front of the cover with a screwdriver.
- 9 Remove the windscreen wiper mechanism, 4 screws, and unplug the connector.



10 Remove the frame, 2 retaining clips and 2 screws, the stay and disconnect the leads over the ventilation fan.

11 Undo the 3 screws securing the body bracket for the right-hand windscreen wiper spindle.

12 Remove the ventilation fan's cover, 4 screws, lift up the fan and place it on the left-hand side.

13 Remove the centre console's cover, the glove box and the cover to the heating and ventilation unit. Remove the plastic holder for the lower panel.

Cars with automatic transmission:

Remove the automatic transmission control module.

14 Remove the automatic transmission control module holder.

15 Remove the plastic panel behind the filter holder and the filter holder.

Remove the cover for the glove box cooling from the heating and ventilation unit.

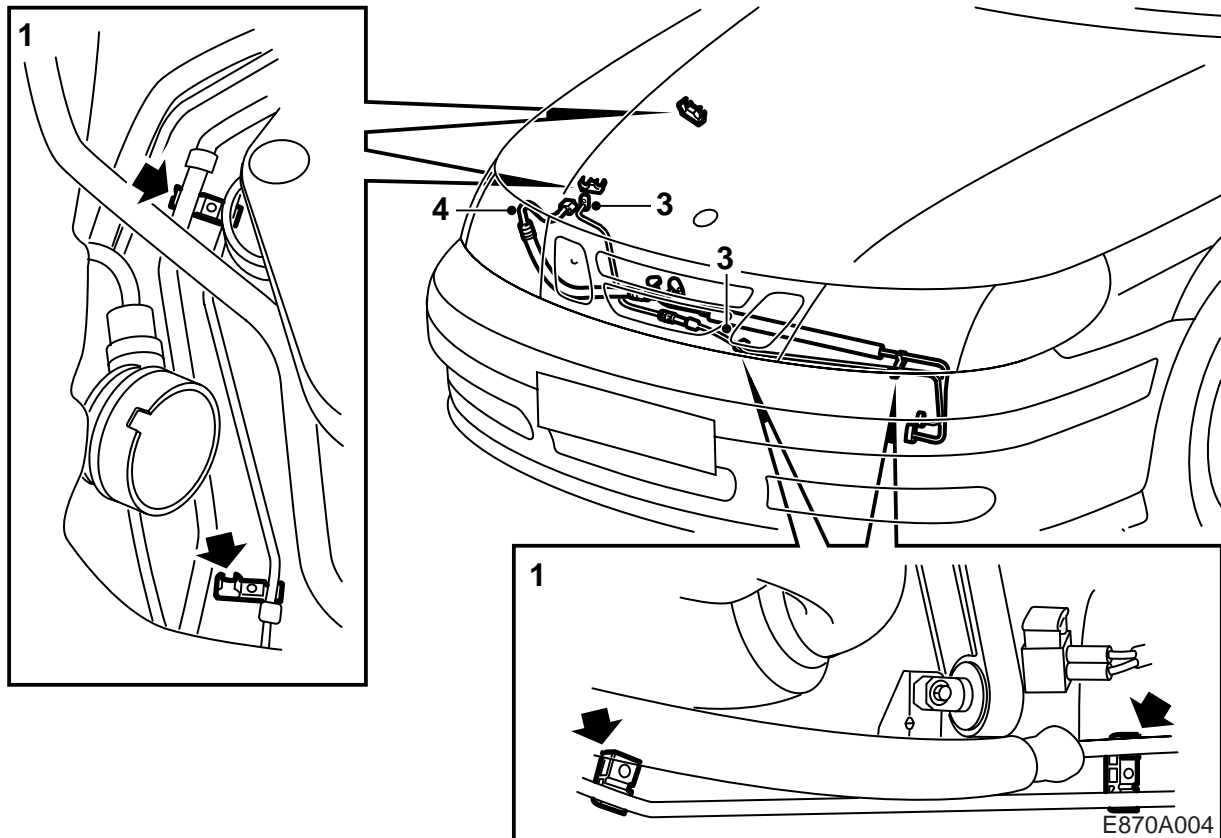
16 Cut away the rubber so that the A/C pipes and the expansion valve can be fitted.

17 Remove the seal by pulling with one hand out from the heating and ventilation unit while pressing with the other hand from the engine bay.

18 Compress a new seal (with hole) and fit it.

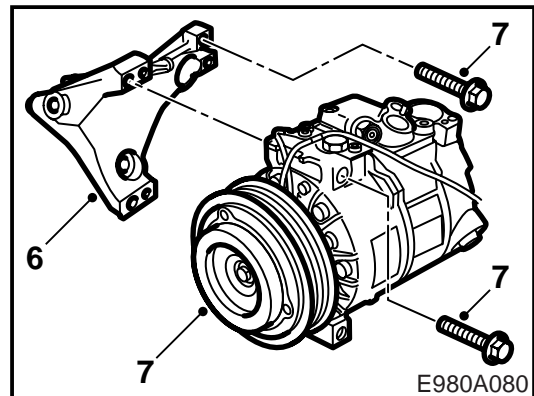
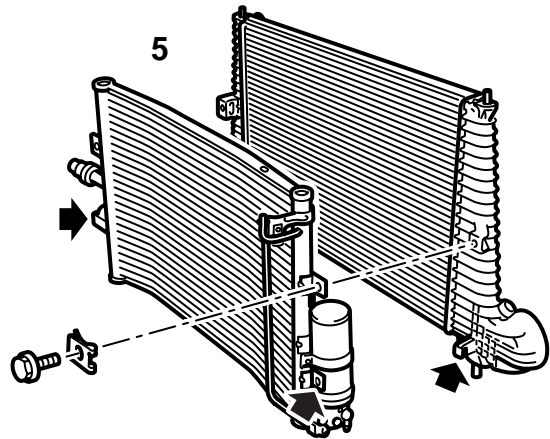
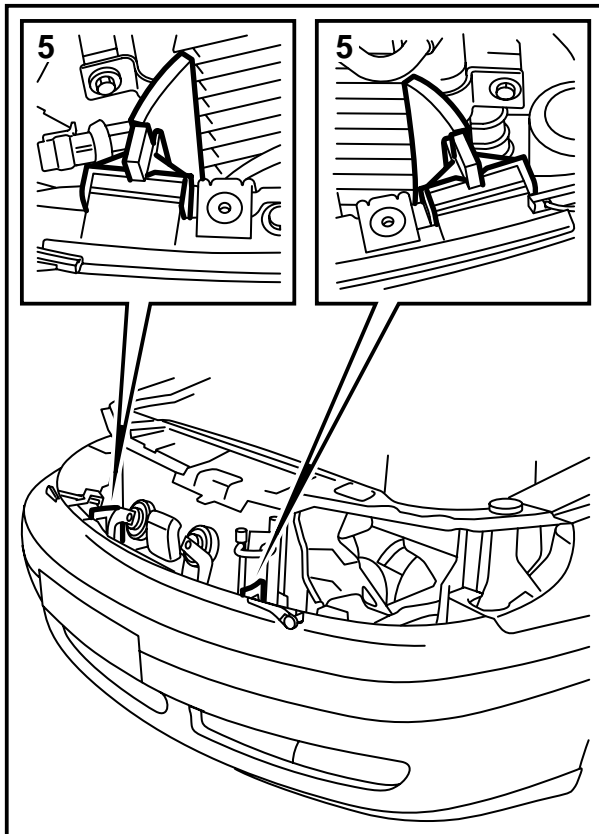
Important

The holes must be vertical.



Fitting

- 1 Remove the existing pipe holder for the power steering hoses. Fit the pipe holder from the kit onto the pre-fitted screws.
 - 2 x double pipe holders on the right-hand structural member/MacPherson strut tower.
 - 1 x double holder on the left-hand part of the subframe.
 - 1 x single holder at the centre of the subframe.
- 2 Position the A/C pipes in the engine bay but do not press them home in their holders. Exercise care with the pipes that are bent to shape.
- 3 Fit the high-pressure pipe from the condenser to the connection block into place, inserting it downwards from the left and up into position in front of the pipe holder. The low-pressure pipe from the condenser to the compressor is inserted into the engine bay from the left-hand side to the compressor.
- 4 Pass the low-pressure pipe/hose (from the connection block to the compressor) down inside the right-hand wing in front of the air cleaner and then into the engine bay up to the compressor. Make sure that the hose passes over and behind existing hoses and pipes.



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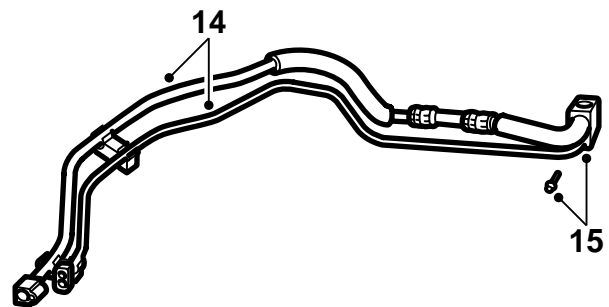
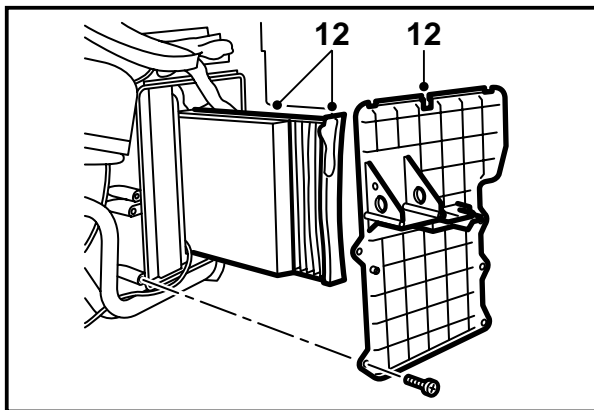
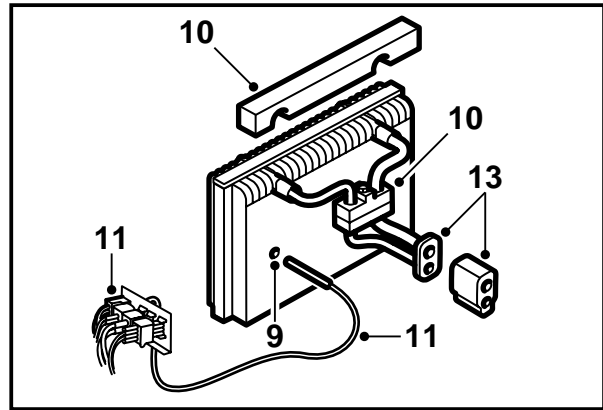
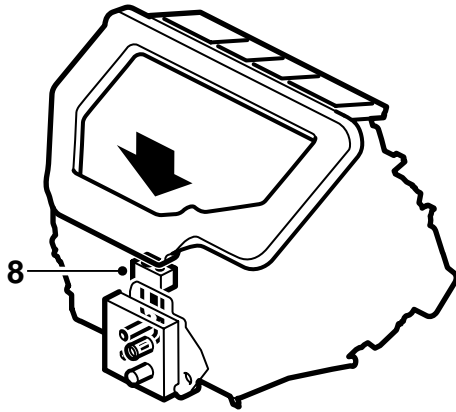
5 Offer up the condenser from below in front of the radiator until it is seated in the lower locating grooves. Press the nut clips into the upper mounting points on the radiator header tank and screw the condenser in place. Fit the two air shields into their grooves in the bumper member.

6 Fit the compressor bracket, 3x M10x50 screws. Clean or scrape the mating surfaces on the engine block if necessary.

Tightening torque 35 Nm

7 Suspend the compressor from the bracket's hook and fit the upper screw. Secure the compressor in place with 3x M8x90 screws.

Tightening torque 24 Nm



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8 Pass the pipe from the evaporator housing through the bulkhead partition. Apply a little Vaseline on the pipes and push the pipe as far forward as possible to make room for the evaporator.

Important

The ends of the pipe must remain plugged the whole time.

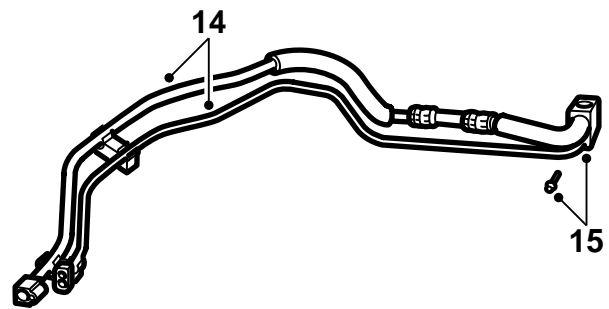
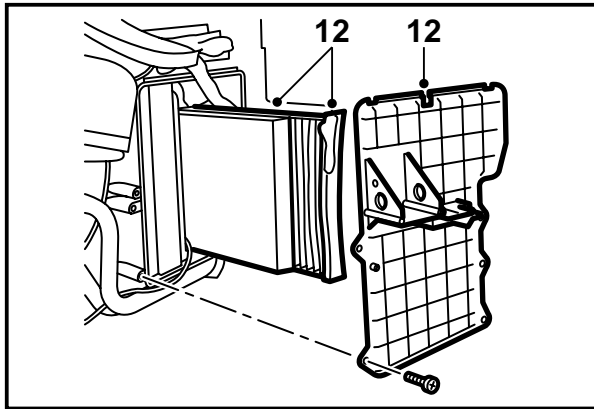
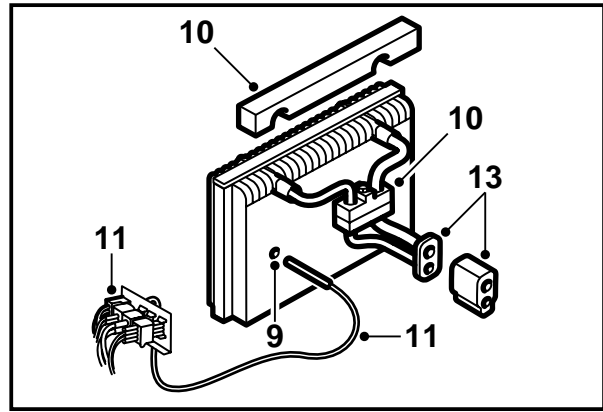
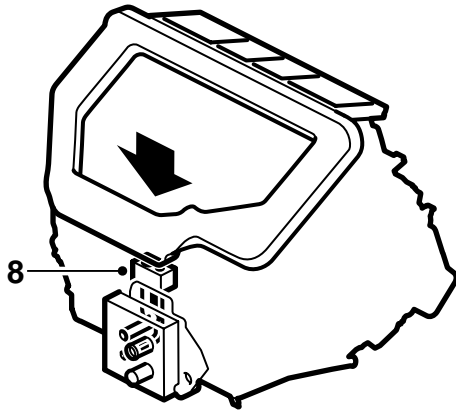
9 Prepare a hole for the temperature sensor in the evaporator in the middle of the 5th cooling fin. Use a tool with a rounded tip, such as a cross-point (Phillips) screwdriver having a diameter of 4.5 mm.

10 Remove the foam rubber seal on the filter holder. Fit a new foam rubber seal on the evaporator pipe (openings facing down). Fit the filter holder and filter on the evaporator. Remove the plugs from the evaporator. Lubricate the O-rings on the ends of the pipes. Carefully insert the evaporator into the heating and ventilation unit.

Note

Be careful not to damage the evaporator.

Put together the connection blocks and fit the screw in the connection block from the engine bay.



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- 11 Remove the connector from the blind switch and pull off the rubber grommet from the sensor. Pull the sensor through the existing rubber grommet in the connector holder. Fit the connector into the connector holder and plug it into the existing wiring harness, 2-pin connector red/green and blue/white.

Thread the grommet onto the sensor. Remove the filter. Insert the sensor between the filter cartridge and the evaporator. Fit the sensor in the prepared hole in the evaporator and replace the filter. Fit onto the heating and ventilation unit.

Observera

Check that the temperature sensor grommet is correctly seated to avoid air leakage from the heating and ventilation unit.

- 12 Fit the heating and ventilation unit cover. Attach the cooling hose to the glove box and connect the hose to the outlet on the heating and ventilation unit. Refit the glove box and other parts in the cabin that have been removed.

- 13 Fit the PAD attachment on the connecting pipes through the bulkhead partition from the engine bay.

Lubricate the O-rings in the expansion valve and press it home against the PAD attachment on the pipe.

Lubricate the expansion valve with a little Vaseline and screw on the valve.

Tightening torque 5 Nm

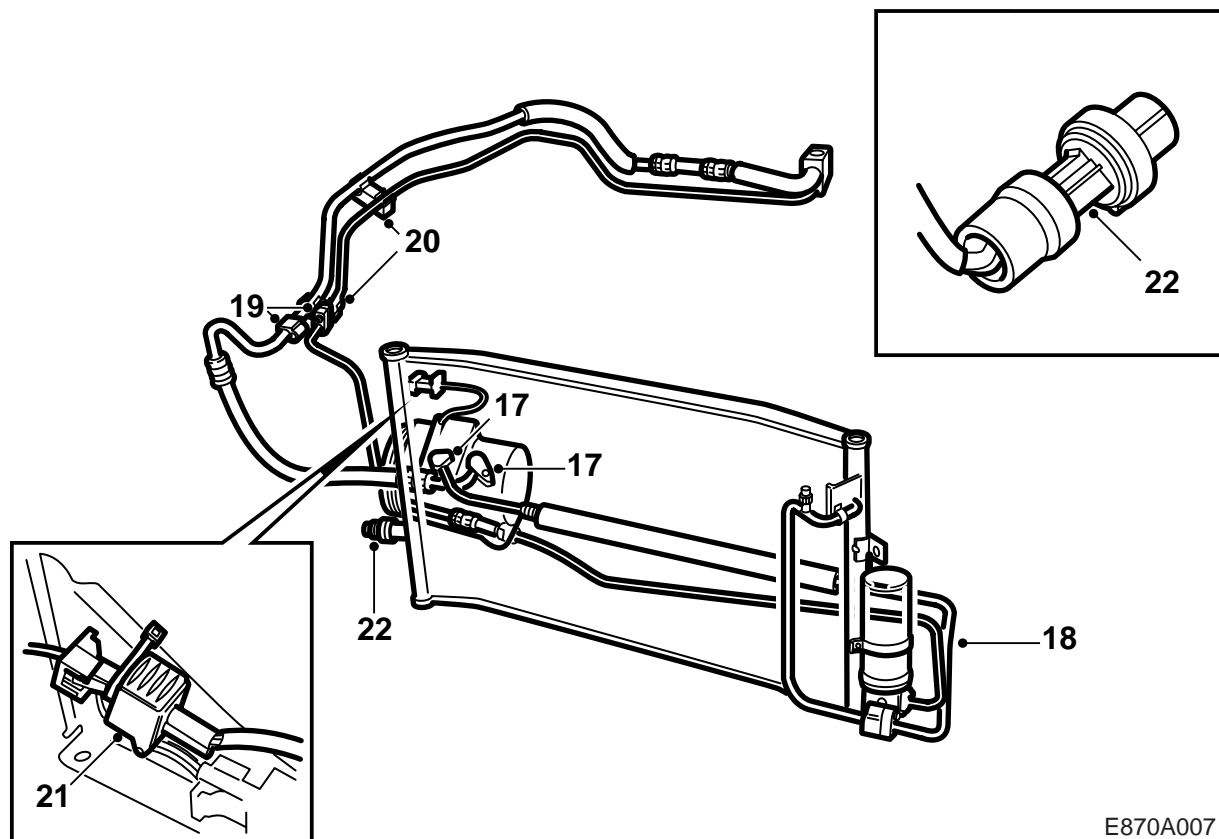
- 14 Remove the plugs from the pipes for the expansion valve. Lubricate the O-rings and press them into the valve.

Important

Exercise extreme care! Dirt could easily get into the system.

- 15 Position the PAD attachment and screw the fitting in place.

Tightening torque 8 Nm



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17 Remove the plugs from the compressor and the PAD attachments on the low-pressure and high-pressure pipes. Lubricate the O-rings. Mount the low-pressure fitting on the compressor. Mount the high-pressure fitting on the compressor.

Tightening torque 22 Nm

18 Remove the plugs from the high-pressure pipes and lubricate the O-rings. Then fit the pipes on the condenser/receiver.

Tightening torque 8 Nm

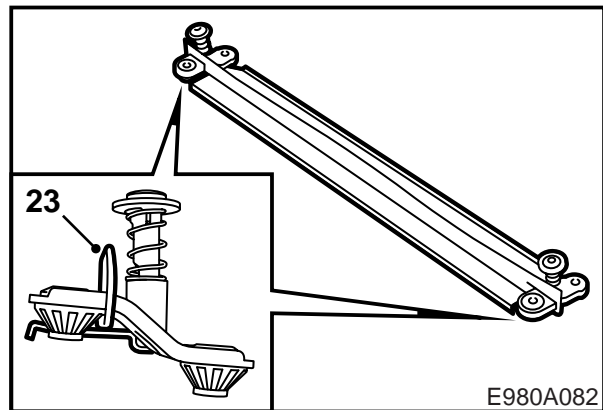
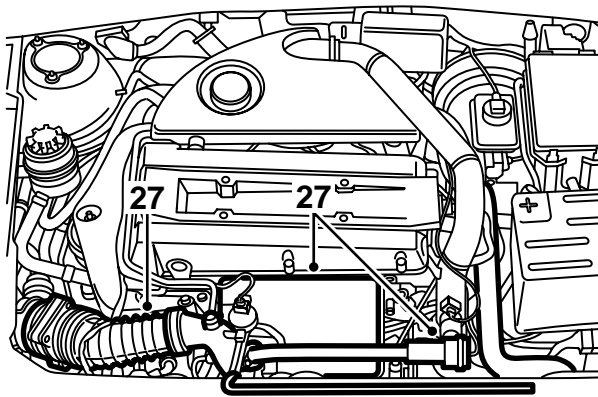
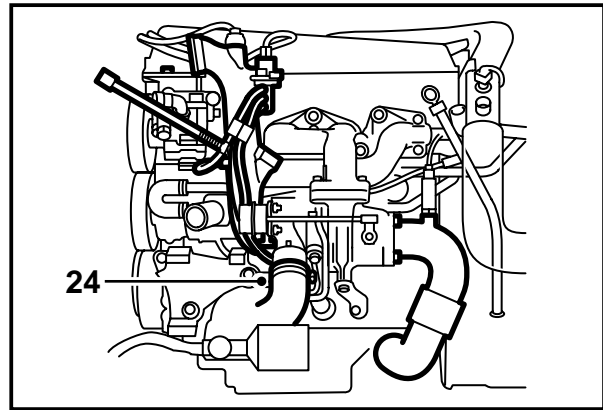
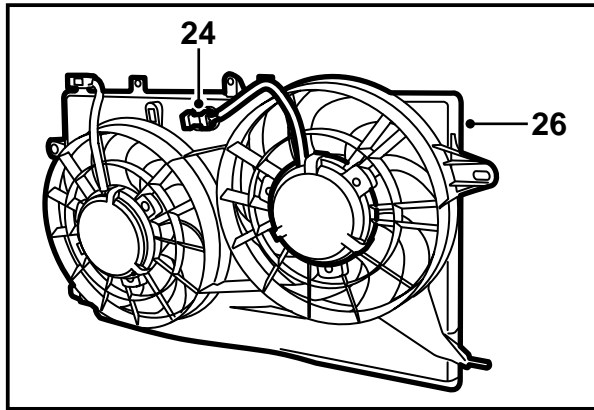
19 Remove the plugs and lubricate the O-rings. Then fit together the connection blocks on the right-hand structural member.

Tightening torque 8 Nm

20 Check that all pipes are correctly positioned and press them into the pipe holders. If necessary, secure them with cable ties.

21 Connect the compressor lead to the existing wiring harness. 2-pin connector behind the right-hand headlamp (yellow lead). Secure to the holder by means of a cable tie.

22 Connect the existing wiring harness to the pressure sensor on the condenser's right-hand tank. 3-pin connector (blue/yellow, blue/green and orange lead).

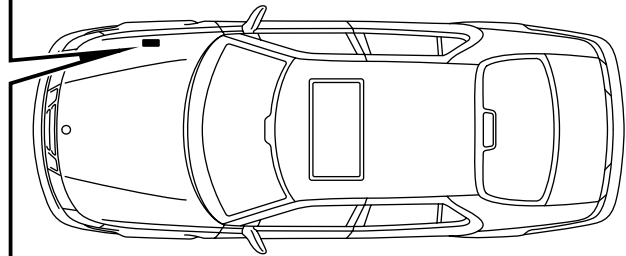
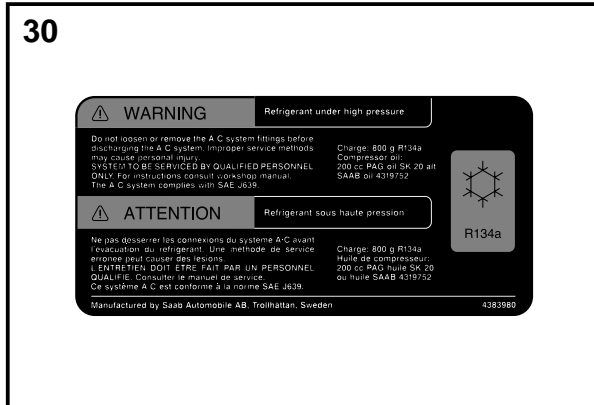
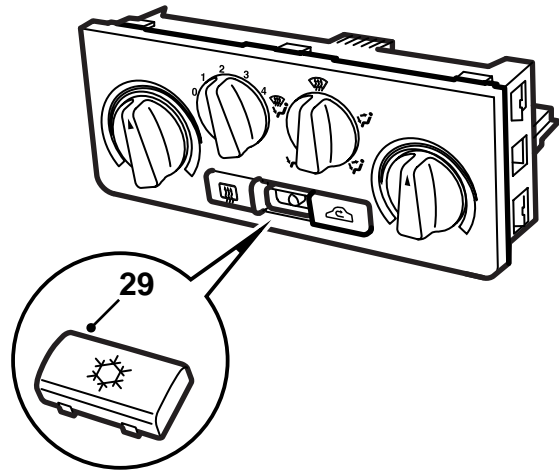
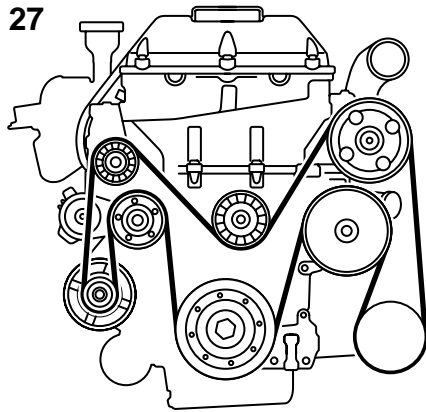


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- 23 Press down the two spring-loaded holders for the radiator and charge air cooler and move them back towards the engine. Remove the holders.

Insert the holders into the grooves on each end of the upper air shield. Fit the air shield and holder onto the radiator and move it back towards the radiator member until the holder snaps onto the member.

- 24 Remove the fan resistor and fit the kit's radiator fan in the cowl with 3 screws. Place the lead in the channel and secure the connector to the cowl. The fan resistor must not be refitted.
- 25 Fit the hose on the turbocharger.
- 26 Fit the fan cowl. Plug in the 2-pin connectors. Brown/white and black leads connect to the radiator fan and grey/red and green/red to the original fan. Cars with automatic transmission: Fit the screw securing the two gearbox pipes to the fan cowl.
- 27 Fit the heat shield and bypass pipe as well as the vent hose to the expansion tank.
Fit the intake air hose with mass air flow sensor.



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27 Fitting the kit's multigroove belt:

- Turn the right-hand front wheel outwards and detach the power steering fluid pipe from the subframe.
- Drive in a wedge between the oil sump and subframe.
- Remove the right-hand engine mounting with yoke and hose holder.
- Remove the existing multigroove belt.
- Fit the new multigroove belt as illustrated and tension it by releasing the belt tensioner.
- Check that the drive belt is correctly positioned on all pulleys.
- Refit the right-hand engine mounting.

Tightening torque 50 Nm

- Drive out the wedge and mount the power steering fluid pipe on the subframe.

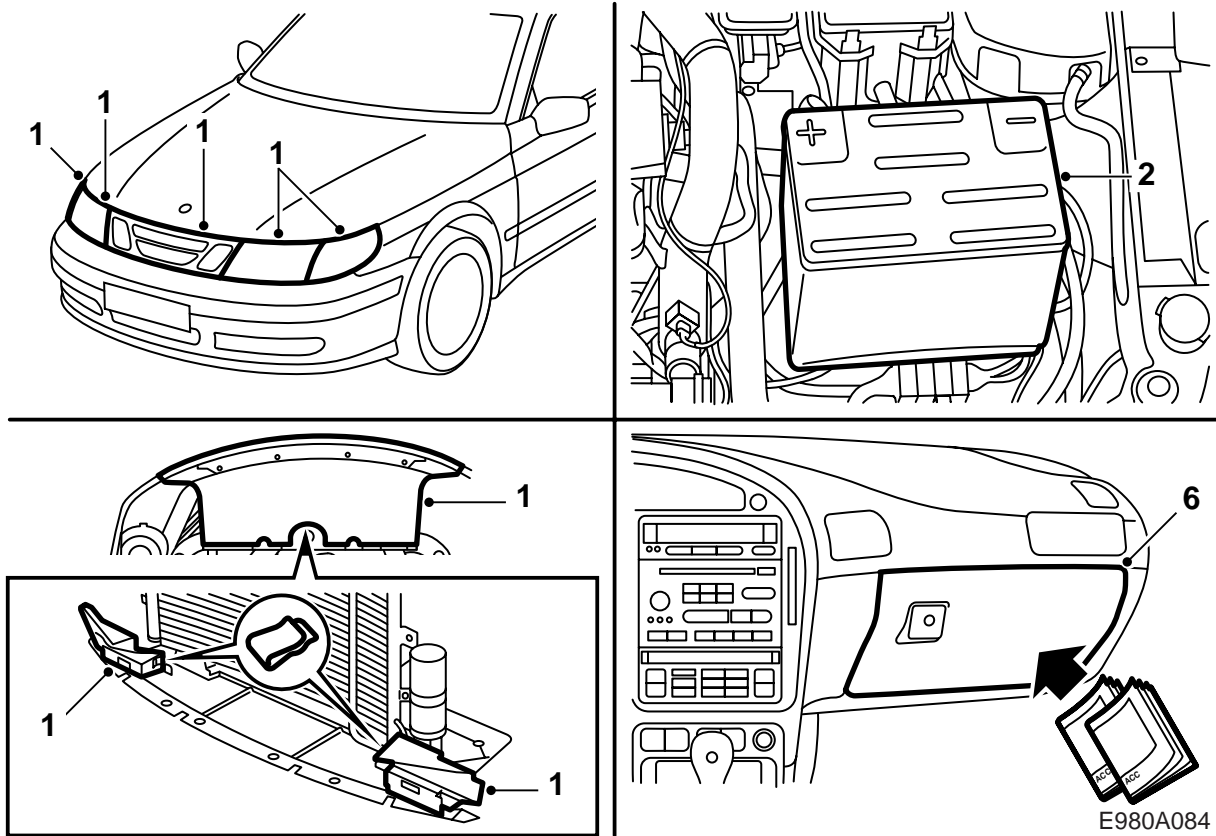
- 28 Replace the blanking piece on the heating and ventilation control panel with the A/C pushbutton switch.

Check the grooves on the switch with the grooves in the panel.

- 29 Affix the warning label.

WARNING

Affix the label on the right-hand side as illustrated.



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Concluding work

- 1 Fasten the outer air shields with clips on the lower air shield. There is a hole in left-hand outer air shield. Fit the lower air shield in place together with the outer air shields and remaining parts.
- 2 Reconnect the battery's ground cable.
- 3 Remove protective coverings, etc.
- 4 Decode the radio and reset any preselected stations.
- 5 Place the installation instructions in the glove box.
- 6 Program the DICE control module for A/C and extra radiator fan as described in Service Manual 3:5 DICE Dashboard electronics, "Fault diagnosis, general".

- 7 Evacuate air from the A/C system and charge it with refrigerant as described in Service Manual 8:3 Climate, "Heating and Ventilation, A/C".
- 8 Start the engine and check all functions. Refer to Service Manual 8:3 climate, "Heating and Ventilation, A/C, Performance test, A/C system" for fault diagnosis if necessary.

Important

Unless the DICE control module is programmed, the A/C system will not operate.