



Passat 1994 ➤

Heating, air conditioner

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List of Workshop Manual Repair GroupsList of Workshop Manual
Repair GroupsList of Workshop Manual Repair Groups

Passat 1994 ➤

Heating, air conditioner

Repair Group

01 - Self diagnosis

80 - Heating

87 - Air conditioning



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01 - Self diagnosis

1 - Self diagnosis of Climatronic

1.1 - Self diagnosis of Climatronic

Note:

Some components and functions of the Climatronic are not monitored by the self diagnosis. If after interrogating the fault memory no fault is recognized even though there is a specific complaint, carry out further complaint related checks.

=> Fault finding, Heating, Air Conditioning - Binder 2

Further information:

- ◆ Measures to correct current specific faults:

=> Technical Service Handbook

- ◆ Servicing Climatronic=>Page 81
- ◆ Servicing refrigerant system with refrigerant R134a:

=> Air conditioning with refrigerant R134a

1.2 - Function

The Climatronic control unit is supplied with information from electrical and electronic components (information transmitters). The input signals from the information transmitters are processed in the control unit in accordance with specifications and the output signals then control the electrical components (final controls).

The Climatronic control unit -J255- is located behind the control and display panel -E87-.

To enable fault to be rapidly detected if a component fails or there is an open circuit, the control unit is equipped with a fault memory which can be interrogated using the fault reader V.A.G 1551.

Should a fault be detected in one of the sensors or components monitored, it is stored in the fault memory.

If a fault has been stored, the Climatronic will be switched off either partially or entirely depending on the severity of the fault.

If a fault which has a permanent adverse effect on the operation of the Climatronic is stored to memory, the display of the control and display panel -E87- flashes for approx. 15 seconds when the ignition is switched on. In the case of faults that do not cause the display to flash, the Climatronic control unit can allow the Climatronic to continue operating in emergency mode at the adjusted settings.

To commence fault finding, initiate self-diagnosis and retrieve the stored information with the fault reader V.A.G 1551.

The fault information displayed is used to refer to a fault table with notes on the possible causes for directed repair measures.



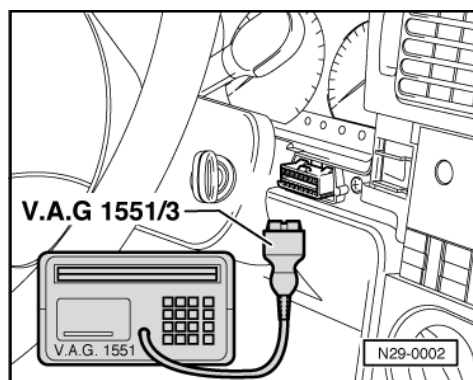
1.3 - Technical data of self diagnosis

Memory:	Non-volatile
Data output:	Rapid data transfer
Final control diagnosis	yes
Read measuring value block	yes

1.4 - Test prerequisites for self diagnosis

- ♦ All fuses according to current flow diagram OK.
- ♦ Battery voltage OK.

1.5 - Connecting fault reader V.A.G 1551 and selecting function



-> With the ignition switched off, connect V.A.G 1551 using cable V.A.G 1551/3 to the diagnostic socket as follows:

- Remove cover for diagnostic connections (in front of display panel right).
- Connect fault reader using cable V.A.G 1551/3.

-> Indicated on display:

V.A.G self-diagnosis	HELP
1-Rapid data transfer*	
2-Flash code output*	

* Is displayed alternately.

Note:

If the display remains blank check V.A.G 1551 voltage supply using current flow diagram.

Notes:

- ♦ Additional operating information can be printed out depending on the programme by pressing the HELP key of V.A.G 1551.
 - ♦ The ➡key is used for advancing the programme sequence.
 - ♦ The PRINT key is used for switching on the printer (warning lamp in key lights up).
- Switch on ignition.
 - Press key -1- for "Rapid data transfer" mode.

-> Indicated on display:

Rapid data transfer	HELP
Enter address word XX	



- Press keys -0- and -8- (08 inputs the address word of the vehicle system to be tested - "Air cond./Heating electronics").

-> Shown in display after input of address word 08:

```
Rapid data transfer
Tester sends address word 08
```

-> Indicated on display:

```
Rapid data transfer    Q
08 Air cond./Heating electronics
```

- Confirm entry with the Q key.

and then the display shows e.g.:

The control unit identification number is displayed:

- ->

```
3A0 907 044    CLIMATRONIC    VXX
```

Vehicles up to 07.95

- ->

```
3A0 907 044A    CLIMATRONIC    VXX
```

Vehicles from 08.95

Note:

```
Rapid data transfer    HELP
Control unit does not answer!
```

-> If one of the fault messages opposite appears in the display, the possible causes of the fault can be printed out with the HELP key.

-> *(The ignition must be switched on!)*

```
Rapid data transfer    HELP
K wire not switching to positive!
```

```
Rapid data transfer
No signal from control unit!
```

-> Faults have occurred at the start of or during the programme (external sources of faults?).

- ->

```
Rapid data transfer
Fault in communication build-up
```

Check diagnostic cables and also voltage supply and earth connection.

- When causes of faults have been eliminated, input address word 08 for "Air cond./Heating electronics" and confirm with Q key.

-> Shown in display after input of address word 08:

```
Rapid data transfer
Tester sends address word 08
```

and then the following appears in the display:

The control unit identification number is displayed:

- ->

```
3A0 907 044    CLIMATRONIC    VXX
```



Vehicles up to 07.95

- ->

3A0 907 044A	CLIMATRONIC	VXX
--------------	-------------	-----

Vehicles from 08.95

- Press =>key.

-> Indicated in display (function selection, e.g. 02 - Interrogating fault memory):

Rapid data transfer	HELP
Select function XX	

Note:

A list of the possible functions is printed out after pressing the HELP key:

1.6 - Chart of functions that can be selected

	Page
01 - Interrogate control unit version =>Connecting fault reader V.A.G 1551 and selecting functions	2
02 - Interrogate fault memory	4
03 - Final control diagnosis	9
05 - Erase fault memory	16
06 - End output	16
08 - Read measured value block	12

Only the functions listed can be used at present for self diagnosis.

After pressing the =>key, the V.A.G 1551 programme returns to the initial position.

-> Indicated on display (function selection, e.g. 02 - Interrogating fault memory):

Rapid data transfer	HELP
Select function XX	

1.7 - Interrogating fault memory

- Connect V.A.G 1551 fault reader, input address word 08 "Air cond./Heating electronics" and press =>until "Select function XX" appears in display => Page 2 .

-> Indicated on display (function selection):

Rapid data transfer	HELP
Select function XX	

- Press keys -0- and -2- (the function "Interrogate fault memory" is entered with 02).

-> Indicated on display:

Rapid data transfer	Q
02 - Interrogate fault memory	

- Confirm entry with the Q key.

-> The number of stored faults or "No fault recognized" appears in the display.

X faults recognized!



No fault recognized!

- Press ⇒key.

The stored faults are displayed and printed out one after the other.

- When the last fault has been displayed and printed out, eliminate faults as described in fault table (=> Page 5).

After the ⇒key is pressed, the programme moves to the initial position as with "No fault recognized":

-> Indicated on display (function selection):

Rapid data transfer HELP
Select function XX

- End output (function 06) => Page 16 .
- Switch off ignition and separate diagnostic connections.

Notes:

- ♦ If a fault was recognized:
- ♦ 1. Rectify fault.
- ♦ 2. Interrogate fault memory (function 02).
- ♦ 3. Erase fault memory (function 05).

1.8 - Fault table

Note:

- ♦ The following table lists all the faults, with the corresponding 5 digit code numbers, that can be recognized by the Climatronic control unit -J255- and printed out by the V.A.G 1551.
- ♦ If a fault does not occur regularly or if the fault memory is not deleted after elimination of fault, these faults are displayed as sporadic faults.
- ♦ Fault codes appear only on print-out.
- ♦ Fault table may also include type of fault.
- ♦ When repair has been carried out, the fault memory must always be interrogated again with the fault reader V.A.G 1551 and erased.
- ♦ If, despite customer's complaint, no fault in Climatronic can be found, carry out "Final control diagnosis" (=> Page 12). If necessary, carry out fault finding for specific complaints without self-diagnosis:

=> Fault finding, Heating, Air Conditioning - Binder 2

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
No fault recognized	If "No fault recognized" appears after performing repairs, the self diagnosis is ended.	
00522 Coolant temperature sender -G62- Open circuit/short to positive1) Short to earth1)	Open circuit or short circuit in wires or connectors to coolant temperature sender -G62- -G62- defective	- Check -G62- using "Read measuring value block" => Page 12 - Check wires and connectors using current flow diagram - Renew -G62-

- 1) One of these read-outs is displayed in addition to relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00766		



V.A.G 1551 printout	Possible cause of fault	Rectifying fault
Vent temperature sender -G152- Open circuit/short to positive1) Short to earth1)	Short circuit or open circuit in wiring or connections to vent temperature sender -G152- -G152- defective	- Check -G152- using "Read measured value block" => Page 12 - Check wires and connectors using current flow diagram - Replace -G152-

1) One of these read-outs is displayed in addition to relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00281 Road speed sender -G68-1)	Short circuit or open circuit in wires or connectors from junction box for speed signal -TV13- to Climatronic control unit Speed sender -G54- defective Speedometer sender -G22-, defective on gearbox (only when speedometer -G21- also malfunctions)	- Check signal from -G22- or -G54- using "Read measuring value block" => Page 12 Check wires and connectors using current flow diagram - Renew -G54- => Repair Group 90; Servicing dash panel insert - Renew -G22- => Repair Group 90; Servicing dash panel insert
Cannot be checked at present	This read out only appears when the final control diagnosis was carried out before interrogation of fault memory and it is irrelevant to self diagnosis. This fault will be erased from control unit fault memory when ignition is switched off.	

1) A fault has been found with speedometer sender -G22- (vehicles with electronic speedometer sender) or speed sender -G54- (vehicles with mechanical speedometer sender) and not from speed sender -G68-. The fault is only recognised if 5 driving cycles take place within 4 minutes after starting engine and no speed signal is measured.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00532 Supply voltage Signal too large1) Signal too small1)	Alternator defective Wires or connectors to Climatronic control unit -J255-	- Check supply voltage using "Read measured value block" =>Page 12 - Check wires and connectors to control unit using current flow diagram - Check alternator: => Current flow diagrams, Electrical fault finding, Fitting locations

1) One of these messages will be displayed in addition to indication of relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00538 Reference voltage Signal too large1) Signal too small1)	Voltage to earth at -T5/2- or -T28a/23- more than 5.2 V (on vehicles from 08.95: more than 5.4 V or less than 4.4 V Short circuit or open circuit in wires or connectors -T5/2- or -T28a/23- on Climatronic control unit -J255- Sunlight penetration photo sensor -G107- or potentiometer -G92- or potentiometer -G112- defective or potentiometer -G113- defective	- Check wires and connectors to control unit using current flow diagram - Unplug connectors of these components one at a time, erase fault memory (=> Page 4). If the "Reference voltage" fault is no longer recognised, the relevant component must be renewed.



V.A.G 1551 printout	Possible cause of fault	Rectifying fault
	Control unit faulty	- Replace control unit if necessary

1) One of these messages will be displayed in addition to indication of relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00779 Ambient temperature sensor -G17- Open circuit/short to positive1) Short to earth1)	Short circuit or open circuit in wiring or connectors to ambient temperature sensor -G17- -G17- defective	- Check -G17- using "Read measuring value block" => Page 12 - Check wiring and connectors using current flow diagram - Renew -G17-

1) One of these messages will be displayed in addition to indication of relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00785 Instrument panel temperature sensor -G56- Open circuit/short to positive1) Short to earth1)	Short circuit or open circuit in wiring or connectors to instrument panel temperature sensor -G56- -G56- defective	- Check -G56- using "Read measuring value block" => Page 12 - Check wiring and connectors using current flow diagram - Renew -G56-

1) One of these messages will be displayed in addition to indication of relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00787 Fresh air intake duct temperature sensor -G89- Open circuit/short to positive1) Short to earth1)	Short circuit or open circuit in wiring or connectors to fresh air intake duct temperature sensor -G89- -G89- defective	- Check -G89- using "Read measuring value block" => Page 12 - Check wiring and connectors using current flow diagram - Renew -G89-

1) One of these messages will be displayed in addition to indication of relevant component.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00792 Pressure switch for air conditioner - F129-1)	Short circuit or open circuit in wiring or connectors to pressure switch for air conditioner -F129 Refrigerant circuit incorrectly charged or refrigerant insufficiently cooled -F129- defective	- Check -F129- with "Read measuring value block" => Page 12 - Check wiring and connectors using current flow diagram - Renew -F129-



V.A.G 1551 printout	Possible cause of fault	Rectifying fault
Cannot be checked at present	This read-out appears only when the final control diagnosis was carried out before interrogation of fault memory and pressure switch could not be checked (e.g. when outside temperature is below 12°C). This fault will be erased from control unit fault memory when ignition is turned off.	

1) This fault cannot be recognized if outside temperature is below 12°C or -G17- and -G89- both malfunction simultaneously.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00796 Temperature sensor blower -V42-	Dust may be blocking blower air intake Short circuit or open circuit in wiring or connectors to temperature sensor blower -V42- -V42- defective	- Carry out visual check; if necessary, clean -V42- - Check wiring and connectors using current flow diagram - Renew -V42-

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
00797 Sunlight penetration photo sensor -G107- Open circuit/short to positive	Open circuit or short circuit in wiring or connectors to sunlight penetration photo sensor -G107- -G107- defective	- Check -G107- using "Read measuring value block" => Page 12 - Check wiring and connectors using current flow diagram - Renew -G107-

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
01271 Temperature flap positioning motor -V68-5)	Short circuit or open circuit in wiring or connectors to temperature flap positioning motor -V68- -V68- incorrectly adjusted -V68- defective	- Check wiring and connectors using current flow diagram - Check and adjust end position of positioning motor -V68- with motor installed in vehicle => Page 101 - Carry out final control diagnosis => Page 9 - Renew -V68-

1) Fault is recognized after 30 seconds at earliest.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
01272 Central flap positioning motor -V70-5)	Short circuit or open circuit in wiring or connectors to central flap positioning motor -V70- -V70- defective	- Check wiring and connectors using current flow diagram - Carry out final control diagnosis => Page 9

Volkswagen Technical Site: <http://vwts.ru> <http://vwts.info>



V.A.G 1551 printout	Possible cause of fault	Rectifying fault
		- Renew -V70-

1) Fault is recognized after 30 seconds at earliest.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
01273 Fresh air blower -V2-	Short circuit or open circuit in wiring or connectors to fresh air blower -V2- Blower control unit -J126- defective -V2- defective Air conditioner pressure switch -F129- defective	- Check wiring and connectors using current flow diagram - Carry out final control diagnosis => Page 9 - Renew -J126- - Renew -V2- - Replace -F129- when 12V is present at input, contact 2, and 5V is present at output, contact 1

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
01274 Air flow flap positioning motor -V71-1)	Short circuit or open circuit in wiring or connectors to air flow flap positioning motor -V71- -V71- defective	- Check wiring and connectors using current flow diagram - Carry out final control => Page 9 - Renew -V71-

1) Fault is recognized after 30 seconds at earliest.

V.A.G 1551 printout	Possible cause of fault	Rectifying fault
65535 Control unit defective	Electrical interference caused by outside sources, poor earth connections or positive connections to control unit -J255- Sunlight penetration photo sensor -G107- or potentiometer -G92- or potentiometer -G112- defective or potentiometer -G113- defective Control unit faulty	- Check wiring and connectors to control unit using current flow diagram - Unplug connectors to these components one at a time, delete fault memory (=> Page 4). If "Control unit defective" fault is no longer recognized, the relevant component must be renewed. - Replace control unit if necessary

1.9 - Final control diagnosis

Note:

- ♦ Final control diagnosis must be carried out with engine stationary.
- ♦ For results to be definitive, final control diagnosis must be carried out at an ambient temperature of at least 12°C as displayed on control and display panel. Operation and function of control and display panel => Page 81
- ♦ Climatronic does not self-adjust during final control diagnosis.
- ♦ If necessary, final control diagnosis can be repeated several times.



Initiating final control diagnosis

- Connect fault reader V.A.G 1551 and select Air cond./Heating electronics (address word 08) => Page 2.

-> Indicated on display (function selection):

Rapid data transfer HELP
Select function XX

- Press keys -0- and -3- (03 selects "Final control diagnosis" function).

-> Indicated on display:

Rapid data transfer Q
03 - Final control diagnosis

- Confirm input with Q key.

-> Indicated on display:

Final control diagnosis
Self test

-> Dependent upon software version alternative indication on display:

Final control diagnosis

The following tests are carried out:

- ♦ Read out in display of control and display panel -E87-=>Page 11
- ♦ Functional test of the 3 positioning motors=>Page 11
- ♦ Current track to fresh air blower -V2- is tested =>Page 11
- ♦ Current track to magnetic coupling -N25- is tested=>Page 12

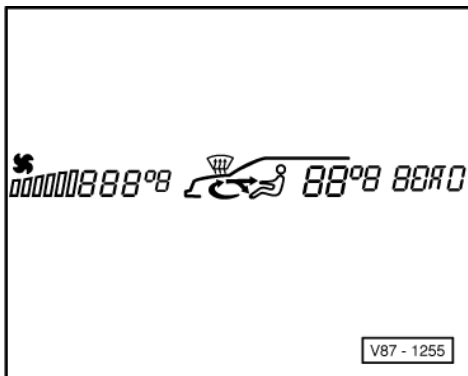
-> Indicated on display:

Function is not recognized or cannot
be carried out at the moment!

- If "Function is not recognized or cannot be carried out at the moment" appears in display, final control diagnosis has been concluded.
- Press => button.

Note:

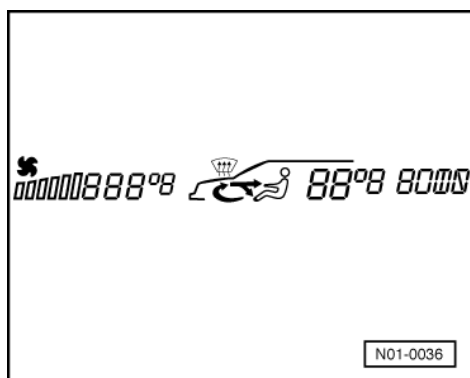
After completing final control diagnosis, interrogate fault memory => Page 4





Check display in control and display panel -E87-

-> Vehicles up to 07.95



-> Vehicles from 08.95

Note:

- ◆ All segments must appear in display. If not, renew control and display panel.
- ◆ After a period in excess of 20 seconds the display will change.

Test of positioning motors

The positioning motors:

- ◆ Temperature flap positioning motor -V68-
- ◆ Central flap positioning motor -V70-
- ◆ Air flow flap positioning motor -V71-

will be moved once over their complete range. The first half of the movement the motors will be fully activated, for the rest driven in stages.

The movement will be completed in approx. 30 seconds and the following end positions attained:

Temperature flap:	Warm air1)
Central flap:	Defrost2)
Air flow flap:	Closed3)

1) If necessary check and adjust end position of temperature flap positioning motor -V68- when installed in vehicle => Page **101**

2) Air flow to windscreen

3) The position of the air flow flap can be checked with the dust and pollen filter removed.

Note:

*If when subsequently interrogating the fault memory (=> Page **4**) no fault is recognized, even though the end positions were not attained, then the appropriate positioning motor or the air flap must be checked for mechanical damage.*

Testing the current track to fresh air blower -V2-

- ◆ During the final control diagnosis the fresh air blower is activated with 3 different voltages. Should a fault be detected in the fresh air blower current track, it will be stored in the fault memory.



Testing the current track to magnetic coupling -N25-

- ♦ The current track is tested from Climatronic control unit -J255- connection T28a/15 to the air conditioner pressure switch -F129-. Should a fault be detected, it will be stored in the fault memory.

Note:

If during the subsequent interrogation of the fault memory (=> Page 4) no fault is detected, even though the magnetic coupling is not being activated during cooling operation, then check wiring from air conditioner pressure switch -F129- via -F163- (not on vehicles with 2-speed radiator fan) and -J293- to magnetic coupling using current flow diagram.

1.10 - Read measured value block

Notes:

- ♦ During the function "Read measuring value block" the Climatronic regulation is in operation.
 - ♦ There are 3 display groups each with 4 measuring values.
 - ♦ To read off the measuring values whilst driving a 2nd mechanic is required.
- Connect fault reader V.A.G 1551 and input address word "08 Air conditioner/Heating electronics" and then press =>key, until "Select function XX" is shown in display => Page 2.

-> Indicated on display (function selection):

Rapid data transfer	HELP
Select function XX	

- Press keys -0- and -8- (08 initiates the "Read measured value block" function).

-> Indicated on display:

Rapid data transfer	Q
08 - Read measured value block	

- Confirm entry with the Q key.

-> Indicated on display:

Read measuring value block
Input display group number XX



Table of selectable display group numbers

Display group number	Display zone	Designation
01	1	Measured value of the ambient temperature sensor -G17-
	2	Measured value of fresh air duct temperature sensor -G89-
	3	Measured value of dash panel temperature sensor -G56-
	4	Vehicles up to 07.95: Measured value of coolant temperature sender -G62- Vehicles from 08.95: Measured value of vent temperature sender -G152-
02 cont.	1	Speed signal from speedometer sender -G22-
	2	Measured value of sunlight penetration photo sensor -G107-
	3	No display
	4	Supply voltage (Term.15)
03	1	No display
	2	Position of air conditioner pressure switch -F129-
	3	A/C readiness/engine start recognized
	4	Kick-down switch

-> Indicated on display:
(Specifications => Test table)

Read measured value block	1
1	2
3	4

Notes:

- ◆ Decoding the figures in the individual display zones => Test table Page 14 .
- ◆ With the printer switched on the information on the display will be printed-out.
- ◆ If the specifications are attained in all display zones:

- Press =>key.

-> Indicated on display (function selection):

Rapid data transfer	HELP
Select function XX	

Note:

After completing the "Read measured value block" function interrogate fault memory => Page 4



Test table

Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
01	1	Measured value for ambient temperature sensor -G17-	Displayed figure corresponds to the ambient air temperature of temperature sensor	... °C	- Check wiring and connections according to current flow diagram Replace -G17-
	2	Measured value of fresh air intake channel temperature sensor -G89-	Displayed figure corresponds to the ambient air temperature of temperature sensor	... °C	- Check wiring and connections according to current flow diagram Replace -G89-
	3	Measured value of dash panel temperature sensor -G56-	Displayed figure corresponds to the ambient air temperature of temperature sensor	... °C	- Check wiring and connections according to current flow diagram Replace -G56-
	4	Vehicles up to 07.95: Measured value of coolant temperature sender -G62- Vehicles from 08.95: Measured value of air vent temperature sender -G152-	Displayed figure corresponds to the temperature of the coolant temperature sender Displayed figure corresponds to the ambient temperature of the air vent temperature sender	... °C	- Check wiring and connections according to current flow diagram Replace -G62- or -G152-

Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
02	1	Speed signal from speedometer sender -G22-	Displayed value corresponds to road speed	... km/h	- Check wiring and connections according to current flow diagram Replace -G22- (only when the speedometer -G21- also does not indicate road speed)
	2	Measured value for photo sensor for sunlight penetration -G107-	The displayed value is dependent upon the light intensity	0..100%	- Check wiring and connections according to current flow diagram Replace -G107-
			Dark	0%	
			Bright	100%	
	4	Supply voltage (on Climatronic control unit, connection - T10a/3-)	Displayed value corresponds to battery voltage	..V	- Check wiring and connections according to current flow diagram Check alternator =>Current flow diagrams, Electrical fault finding, Fitting locations



Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
03 Cont.	2	Switch position of air conditioner pressure switch -F129-	- Refrigerant circuit fault-free Condenser cooling is sufficient (2 bar/32 bar switch part closed, 16 bar switch part open)	101)	"00" indicated on 1551: 2 bar/32 bar switch part open, 16 bar switch part open. The refrigerant circuit is empty and must be taken to a specialist workshop.
			- Refrigerant circuit fault-free Radiator fan increased output stage has switched on (2 bar/32 bar switch part closed, 16 bar switch part closed).	111)	"01" indicated on 1551: 2 bar/32 bar switch part open, 16 bar switch part closed. Condenser cooling insufficient (soiled); if not the refrigerant circuit is over-charged and vehicle must be taken to specialist workshop.

1) The left figure informs of switch part 2 bar/ 32 bar switch position, the right figure informs of switch part 16 bar switch position (1 = closed, 0 = open).

Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
03 Cont.	2				"-0" indicated on 1551: Checking the 2 bar/32 bar switch part is not possible at the moment, because the temperature switch is open. Condenser cooling is sufficient. "-1" indicated on 1551: Checking the 2 bar/32 bar switch part is not possible at the moment, because the temperature switch is open. Radiator fan increased output stage has switched on.



Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
03 Cont.	3	Air conditioner readiness1)/engine start recognized	- Climatronic switched on and engine started2): Climatronic switched on and engine not started: Climatronic switched off and engine not started: Climatronic switched off and engine started:	113) 103) 003) 013)	- If the engine start is not recognized, check the wiring from terminal X to connector -T28a/21- on control unit.

- 1) Air conditioner readiness will be recognized, if voltage is present at connector -T2n/1-
- 2) The magnetic coupling -N25- will only be switched on when the engine start is recognized.
- 3) The left figure informs of whether Climatronic is switched on (1 = Climatronic on, 0 = Climatronic off); The right figure informs of whether the engine is started (1 = Engine started, 0 = Engine not started).

Group number	Display zone	Designation	Test conditions	V.A.G 1551 display specification	Rectifying fault
03	4	Kick-down switch2)	- Kick-down switch operated (full throttle); vehicles with automatic gearbox: Kick-down switch not operated; vehicles with automatic gearbox: Vehicles with manual gearbox:	111) 011) 001)	"10" indicated on 1551: Check wiring from automatic gearbox control unit -J217- to Climatronic control unit -J255- If necessary renew control unit -J255-

- 1) The left figure informs of the Kickdown switch position (1 = closed, 0 = open), the right figure informs on gearbox type (1 = automatic gearbox, 0 = Manual gearbox). If a gearbox, other than indicated, is installed then check wiring according to current flow diagram.
- 2) Test is only possible during test drive.

1.11 - Erasing fault memory, ending output

Prerequisites:

- Fault memory has been interrogated.

Erasing fault memory

- Press ⇒key.

-> Indicated on display (function selection):

Rapid data transfer	HELP
Select function xx	

- Press keys -0- and -5- (the function "Erase fault memory" is entered with 05).

-> Indicated on display:



Rapid data transfer Q
05 Erase fault memory

- Confirm entry with the Q key.

-> Indicated on display:

Rapid data transfer
Fault memory is erased!

-Press ⇒ key.

-> Indicated on display (function selection):

Rapid data transfer HELP
Select function XX

Notes:

◆ ->

Warning!
Fault memory was not interrogated

If this appears in the display, the test sequence is faulty.

- ◆ Follow test sequence precisely: first interrogate fault memory, if necessary eliminate faults, then erase.

Ending output

- Press keys -0- and -6- to end the output.

-> Indicated on display:

Rapid data transfer Q
06 End output

- Confirm entry with the Q key.

-> Indicated on display:

Rapid data transfer Help
Enter address word XX

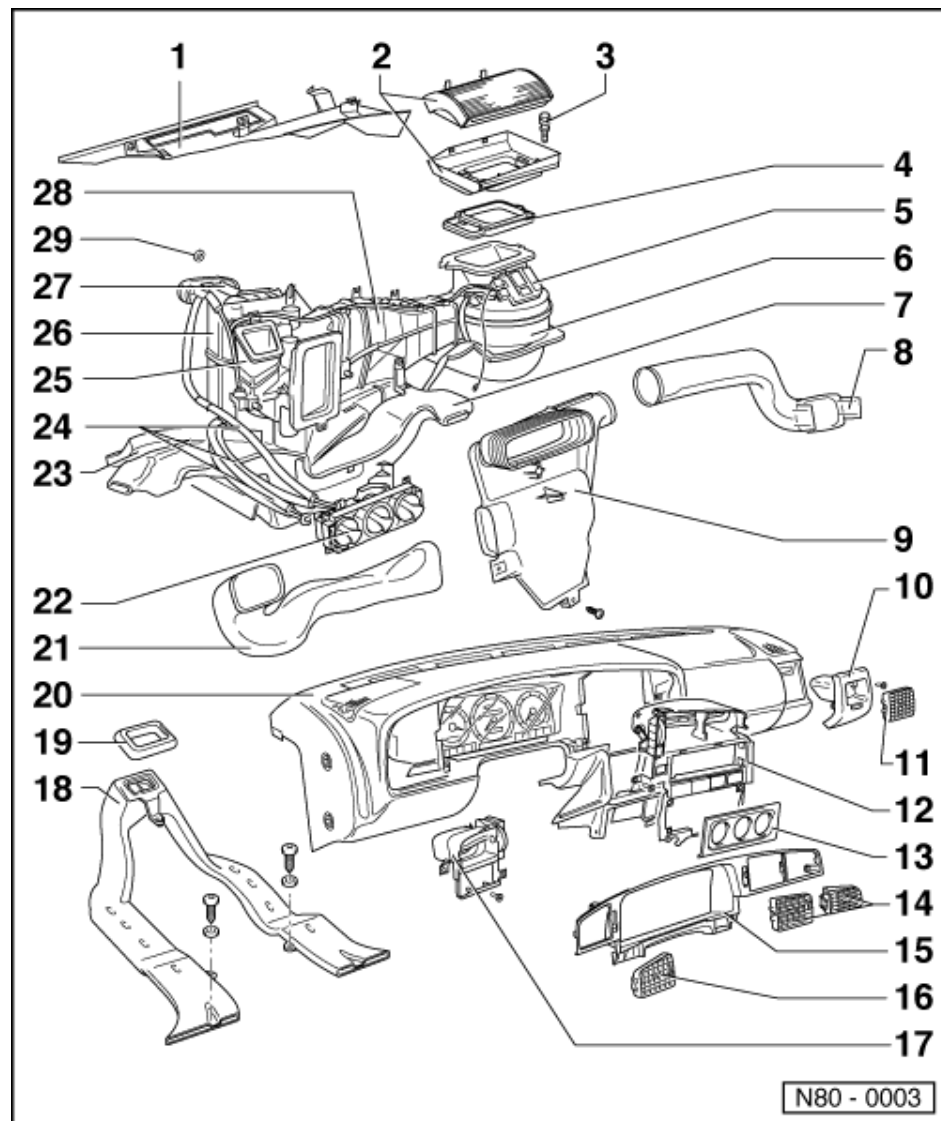
- Switch off ignition.
- Disconnect fault reader V.A.G 1551.



80 - Heating

1 - Servicing heating system

1.1 - Servicing heating system



Warning!
Always disconnect the battery earth strap before working on the electrical system.

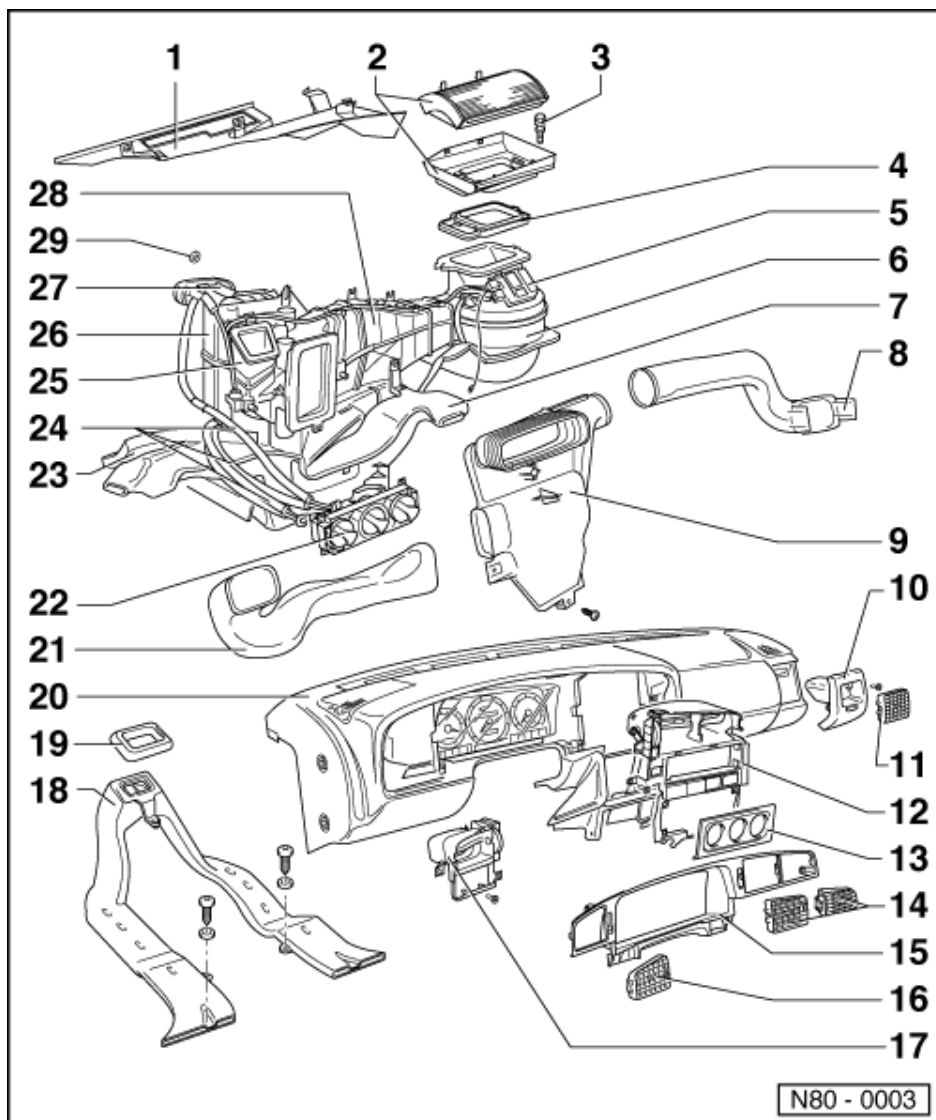
Note:

Before disconnecting battery, obtain radio code for radios with anti-theft coding.

- 1 Plenum chamber cover
- 2 Dust and pollen filter
 - ♦ Removing => Fig. 5
- 3 Hexagon screw with shank M6x22
 - ♦ 5 Nm



4 Gasket



5 Series resistance for fresh air blower with overheating fuse -N24-

- ♦ Removing and installing => Fig. 1

6 Fresh air blower -V2-

- ♦ Removing => Fig. 2

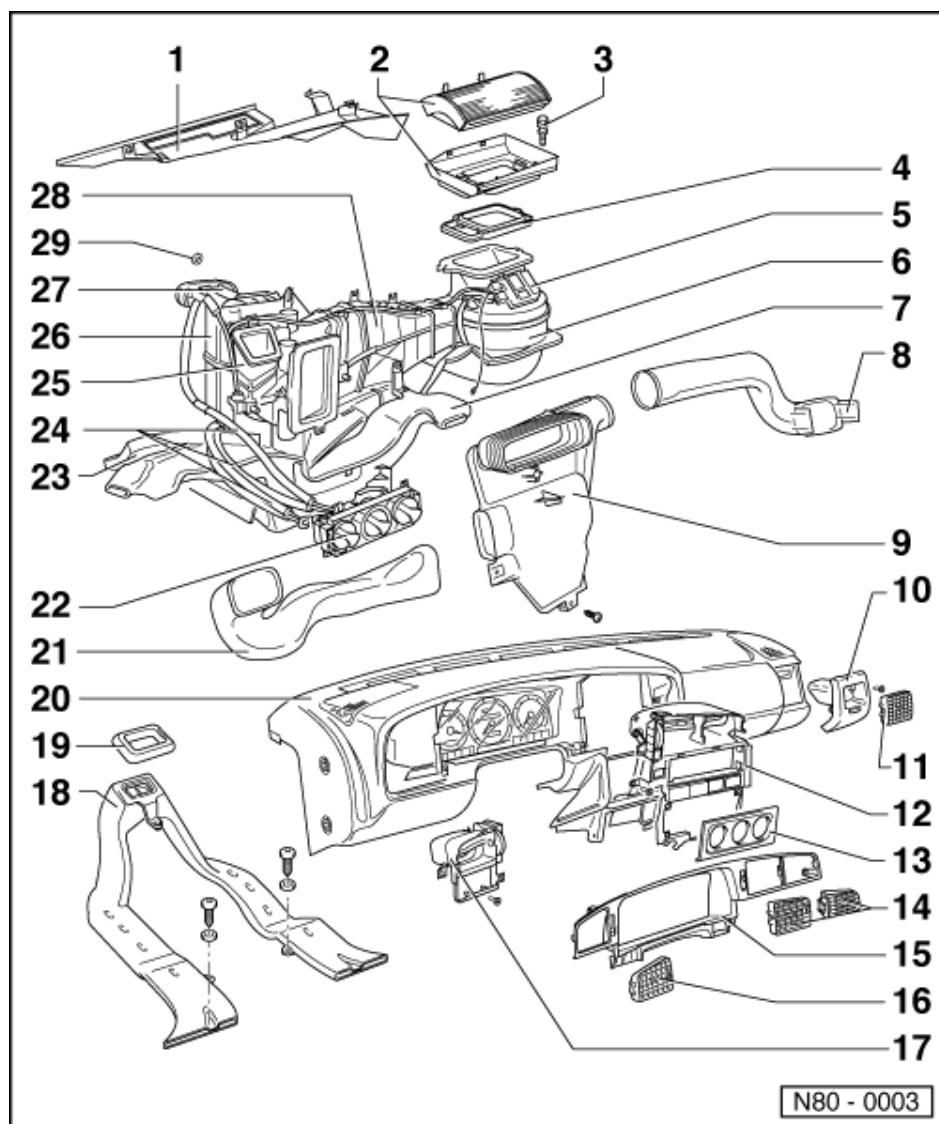
7 Footwell vent

- ♦ Renewing: Remove shelf on drivers' and passenger side, centre console, dash panel bracket and pedal cluster cover - 23 -

8 Air ducting right

9 Air distributor

- ♦ Renewing: Remove centre console, dash panel bracket, central vent -12-, heating and fresh air controls -22-, remove shelf on passenger side; Loosen dash panel -20- and lift



10 Right vent

- ♦ Removing => Fig. 8

11 Grille

- ♦ For right vent

12 Central vent

- ♦ Removing => Fig. 7

13 Control panel trim

14 Grilles

- ♦ For central vent

15 Instrument panel trim

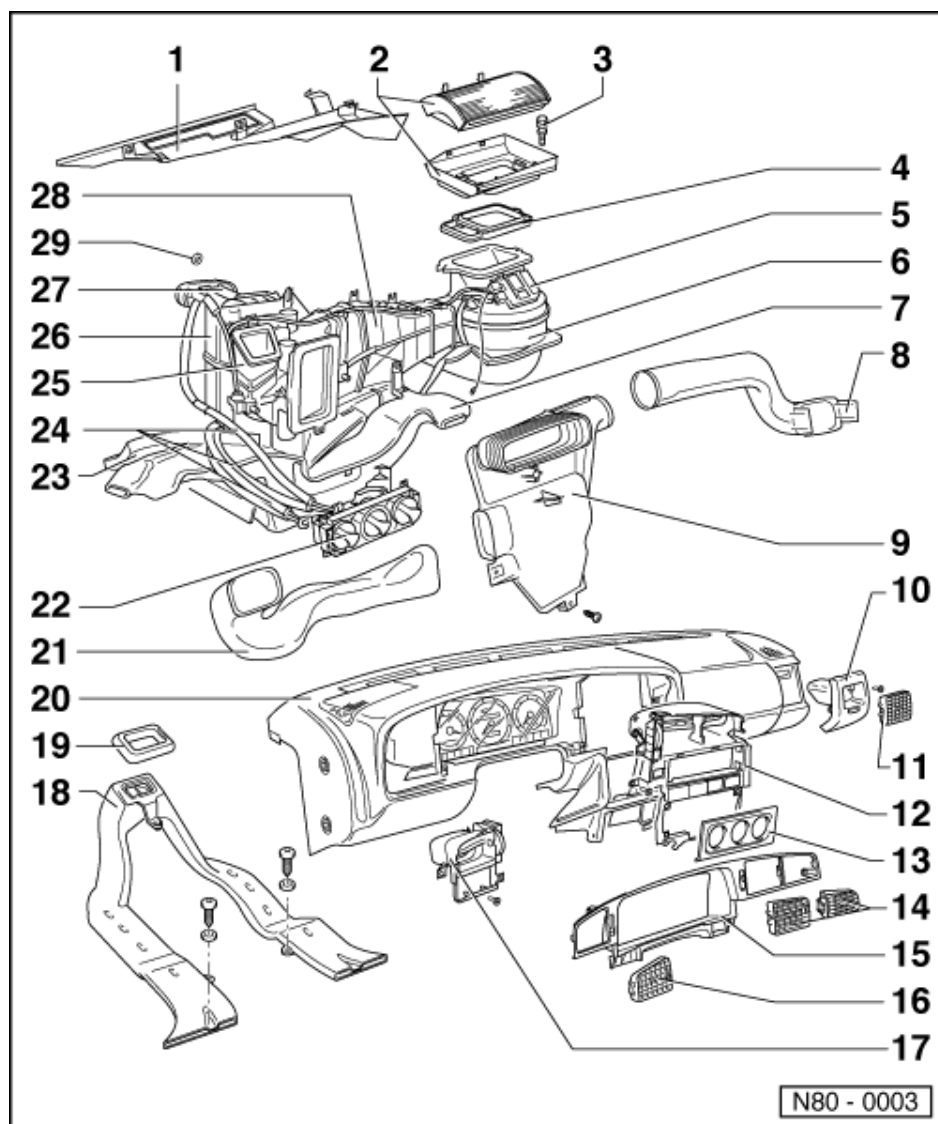
- ♦ Removing => Fig. 4

16 Grille

- ♦ For left vent

17 Air vent left

- ♦ Removing => Fig. 6



18 Rear ducting

- ♦ Renewing: Remove central console, dash panel bracket, pedal cluster cover - 23 -, footwell outlet - 7 -

19 Rear ducting seal

- ♦ Renewing: Remove central console, dash panel bracket, pedal cluster cover - 23 -, footwell outlet - 7 -

20 Dash panel

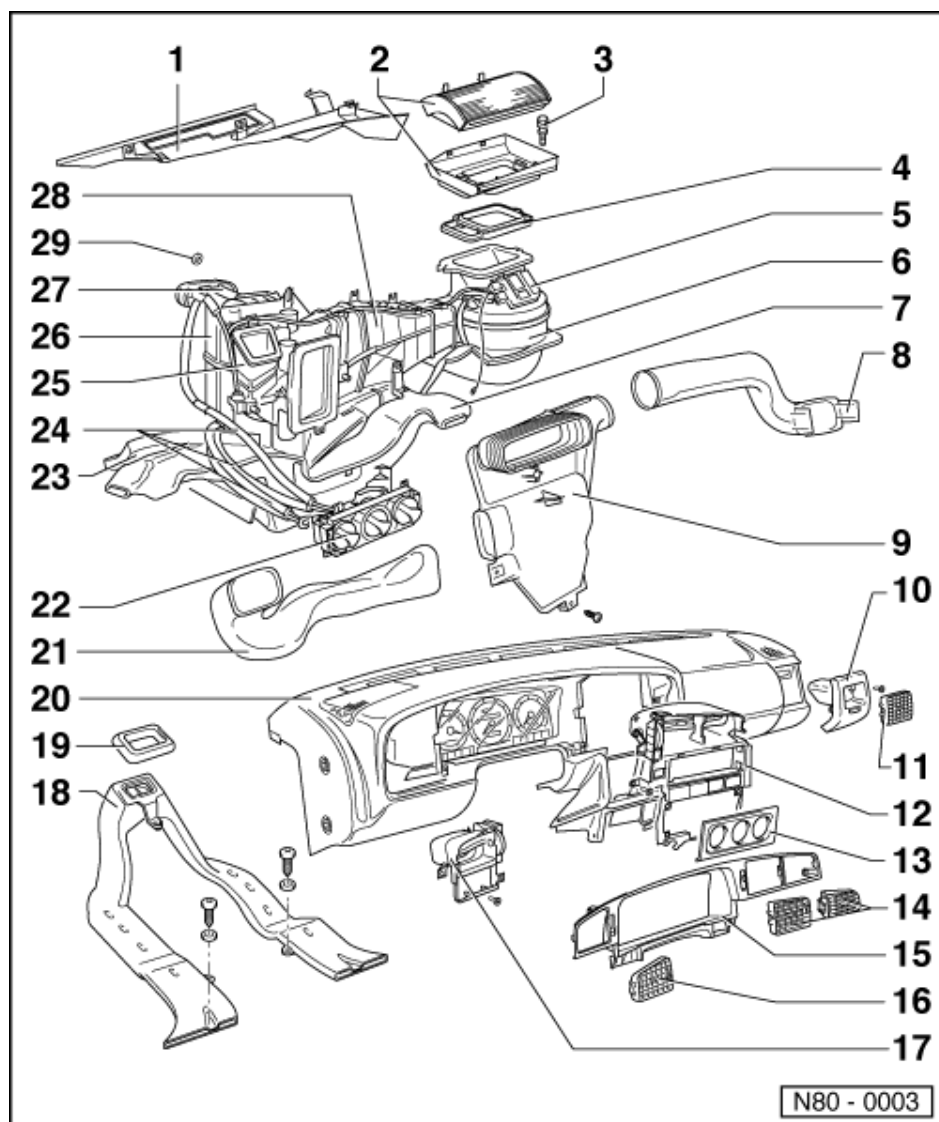
- ♦ Removing and installing

=> General body repairs; Repair Group 70; Removing and installing dash panel Removing and installing dash panel

21 Air ducting left

22 Fresh air and heated air controls

- ♦ Removing and installing => Fig. 3
- ♦ Dismantling and assembling => Page 35
- ♦ Installing and adjusting cables => Page 30



23 Pedal cluster cover

24 Cables

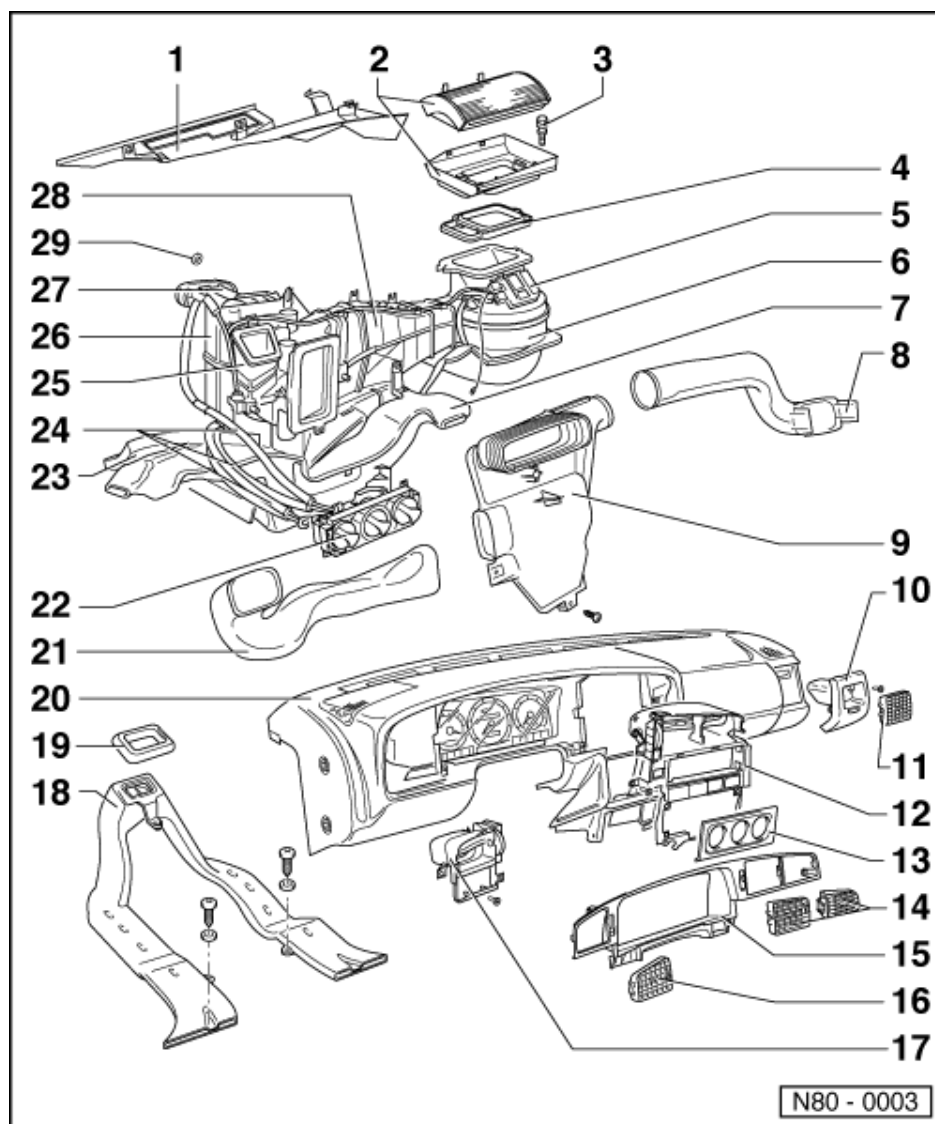
- ◆ Renewing: First remove pedal cluster cover - 23 - and foot well outlet - 7 -
- ◆ Removing and installing => Page 30

25 Intermediate piece

- ◆ With gasket
- ◆ Renewing - remove dash panel beforehand

26 Air distribution housing

- ◆ With temperature flap
- ◆ With central flap
- ◆ With footwell/defrost flap
- ◆ Do not dismantle further
- ◆ Renewing: Remove dash panel and heating items -22- to 28- =>Fig. 9 ; Removing and installing heater
- ◆ Installing: => Page 28 dismantling and assembling heater



27 Heat exchanger

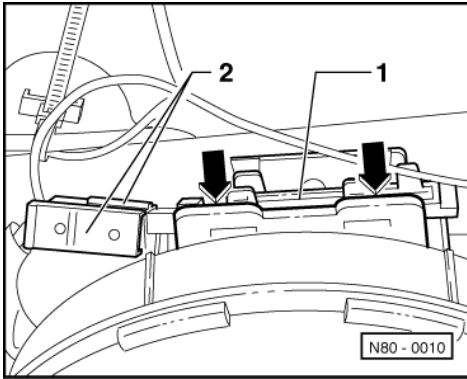
- ◆ Renewing: Remove dash panel and heating items -22- to 28- =>Fig. 9 ; Removing and installing heater
- ◆ Installing: => Page 28 dismantling and assembling heater
- ◆ After removal renew complete coolant

28 Air ducting with main shut-off flap

- ◆ Renewing: Remove dash panel and heating items -22- to 28- =>Fig. 9 ; Removing and installing heater
- ◆ Installing: =>Page 28 ; dismantling and assembling heater

29 Hexagon nut M6

- ◆ 5 Nm



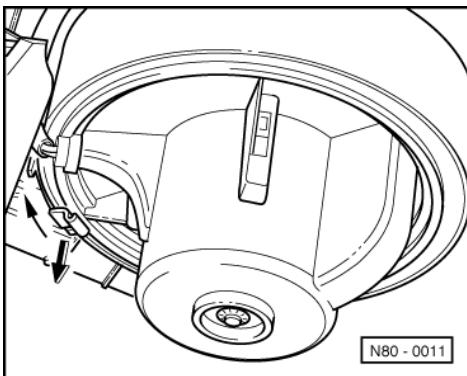
-> Fig.1 Removing and installing fresh air blower series resistance with overheating fuse -N24-

Removing:

- Remove shelf on passenger side
- Pull off connections -2-
- Press retainer -arrow- down and remove series resistance -1-

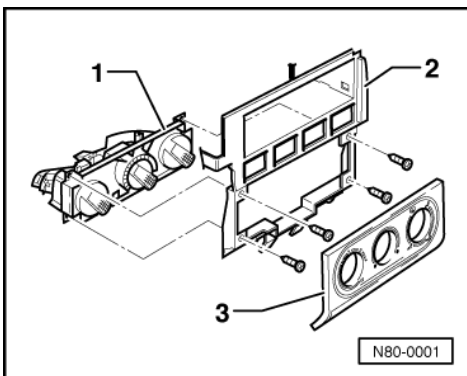
Installing:

- Seal surface between series resistance -1- and air duct before installing with AMV 176 000 05.



-> Fig.2 Removing fresh air blower -V2-

- Remove shelf on passenger side
- Fold air duct cover to side.
- Push retaining clips down with a screwdriver, turn fresh air blower clockwise and remove.





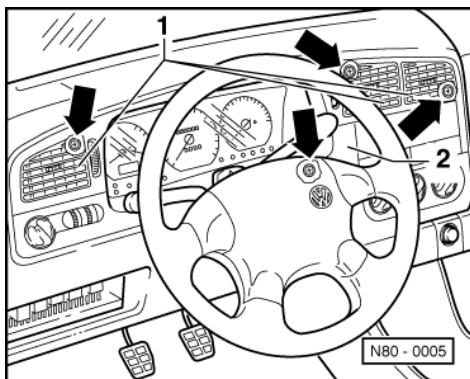
-> Fig.3 Removing and installing fresh and heated air control unit

Removing:

- Pull off heating control trim panel -3-.
- Remove central vent -2- => Fig. 7 .
- Pull controls -1- with cables attached out of dash panel.

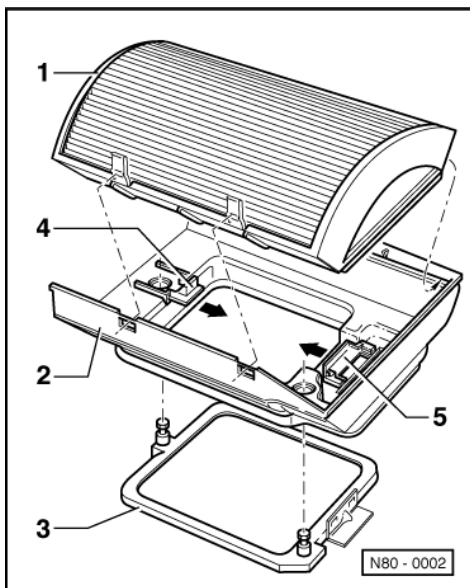
Installing:

- Secure cables to removed controls.



-> Fig.4 Removing instrument panel trim

- Carefully lever out adjustable grilles -1- with long nose pliers.
- Remove trim -2-.
- Remove 4 screws -arrows- and take out instrument panel trim housing.



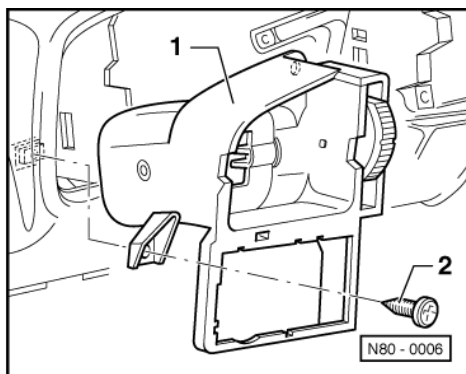
-> Fig.5 Removing dust and pollen filter

- 1 - Filter element
- 2 - Filter housing
- 3 - Gasket
- 4 - Clip



5 - Clip

- Remove filter element.
- Press clips -4- and -5- in direction of arrow and remove filter housing.

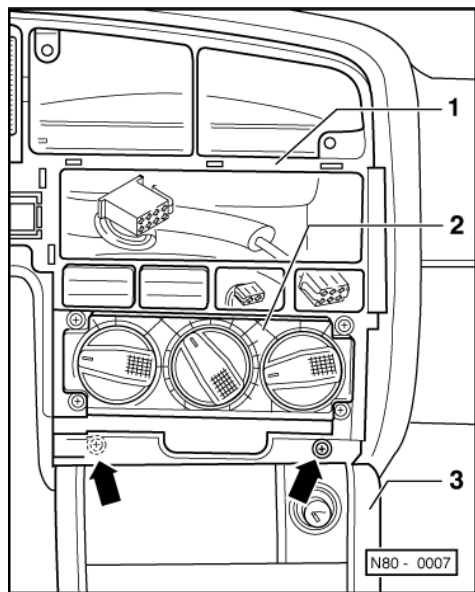


-> Fig.6 Removing left vent

- Remove instrument panel trim => Fig. 4 .
- Remove lighting switch.

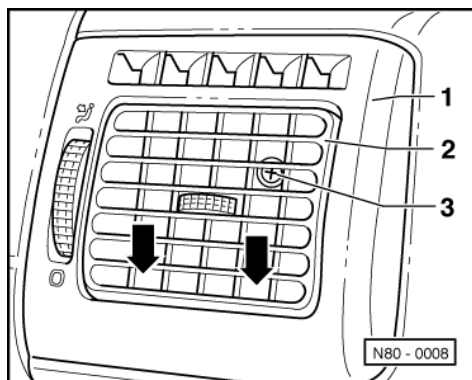
=> Electrical system; Repair Group 96

- Remove bolt -2-.
- Remove vent housing -1-.



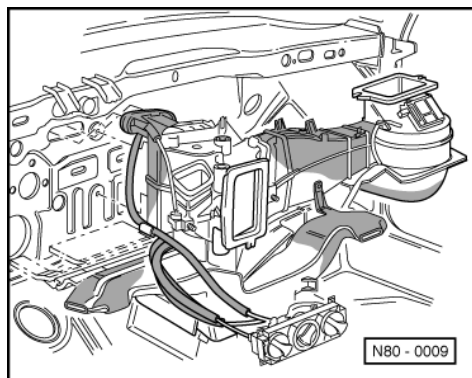
-> Fig.7 Removing central vent

- Remove instrument panel trim => Fig. 4 .
- Remove radio.
- Remove switch.
- Unclip control panel trim.
- Remove control -2-.
- Loosen central console -3-.
- Remove 2 screws -arrows- and take out central vent -1-.



-> Fig.8 Removing left vent

- Carefully lever out adjustable grilles -2- with long nose pliers
- Remove screw -3- and disengage locating lugs -arrows-.
- Remove vent housing -1-.



-> Fig.9 Removing and installing heater

Note:

Close evaporator connections to ensure that no coolant enters passenger compartment when removing.

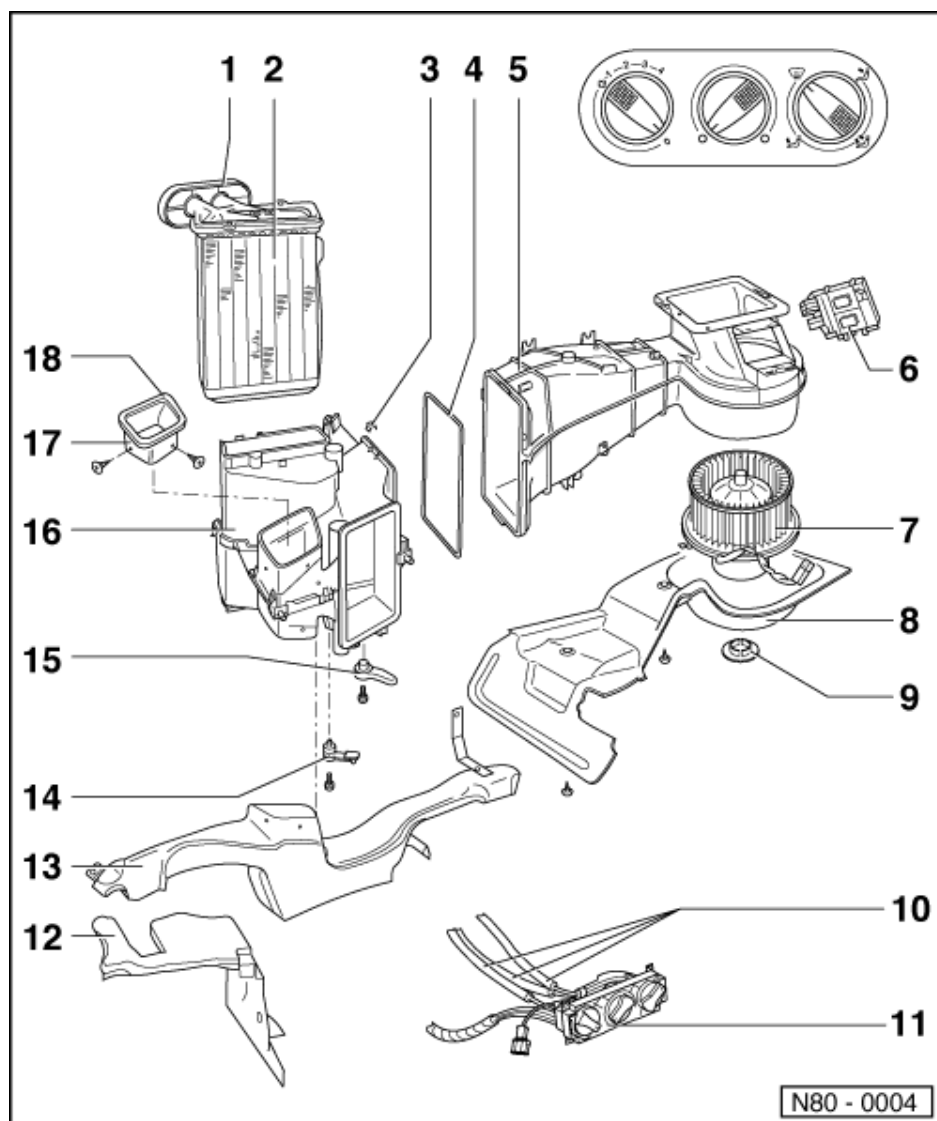
Installing:

- Pre-assemble hexagon nuts on engine bulkhead.
- Tighten hexagon nut, with shank, in plenum chamber.
- Tighten engine bulkhead hexagon nuts.

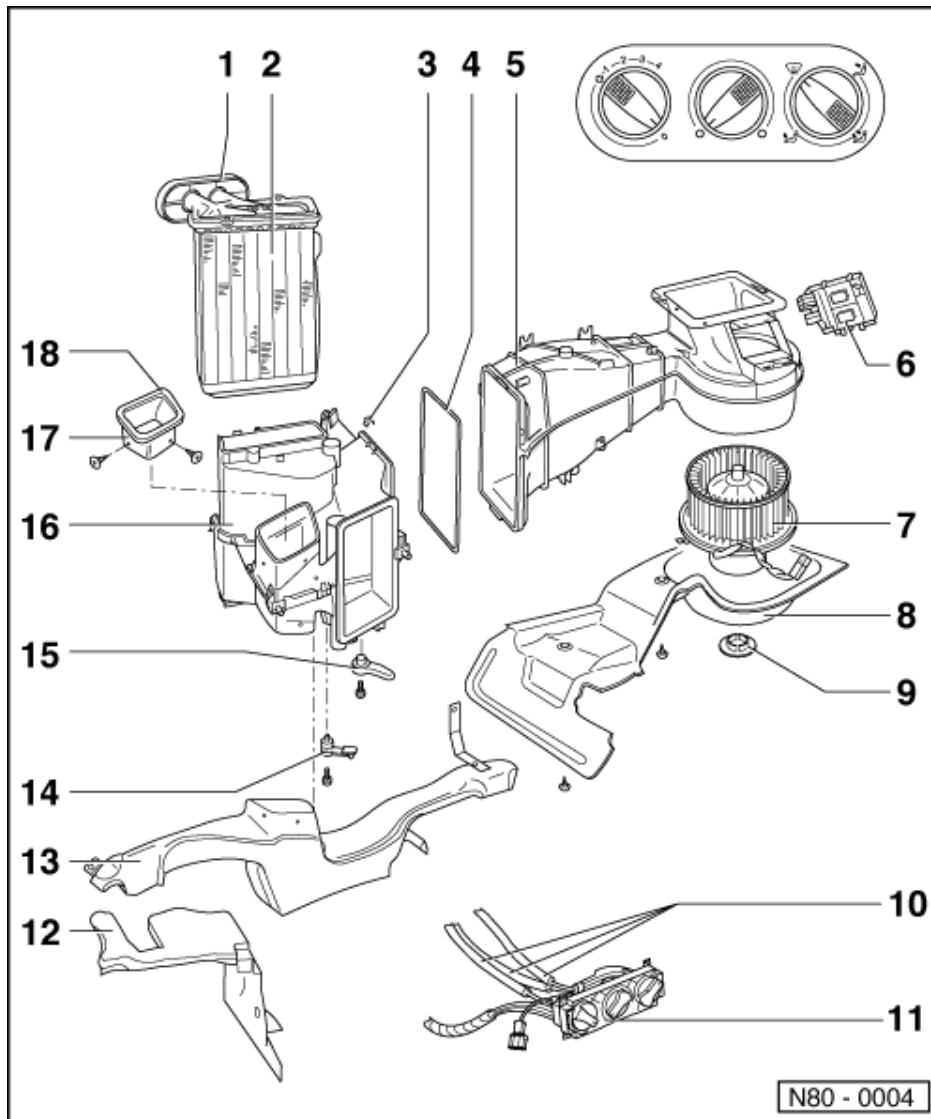


2 - Dismantling and assembling heater

2.1 - Dismantling and assembling heater



- 1 Gasket
 - ◆ Renew
- 2 Heat exchanger
 - ◆ Gaskets must be glued, free of gaps all around.
 - ◆ If catches do not engage when installing, then secure heat exchanger with screws.
- 3 Clip
- 4 Gasket
- 5 Air duct with main shut-off flap
 - ◆ Do not dismantle further
- 6 Series resistor -N24-
- 7 Fresh air blower -V2-

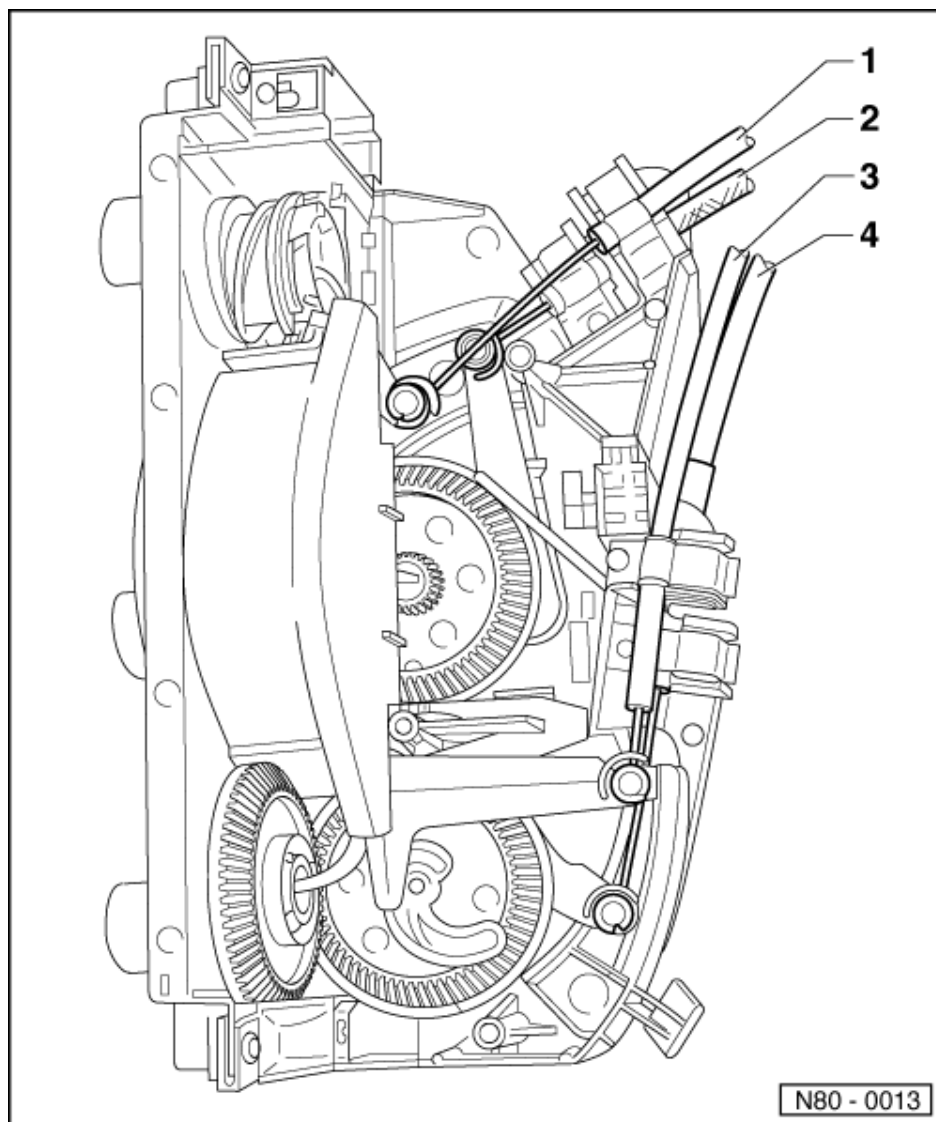


- 8 Air duct cover
- 9 Plug
- 10 Cables
- 11 Fresh air and heated air controls
- 12 Pedal cluster cover
- 13 Footwell vent
- 14 Temperature flap lever
- 15 Central flap lever
- 16 Air distribution housing
 - ♦ Do not dismantle further
- 17 Intermediate piece
- 18 Gasket
 - ♦ Renew



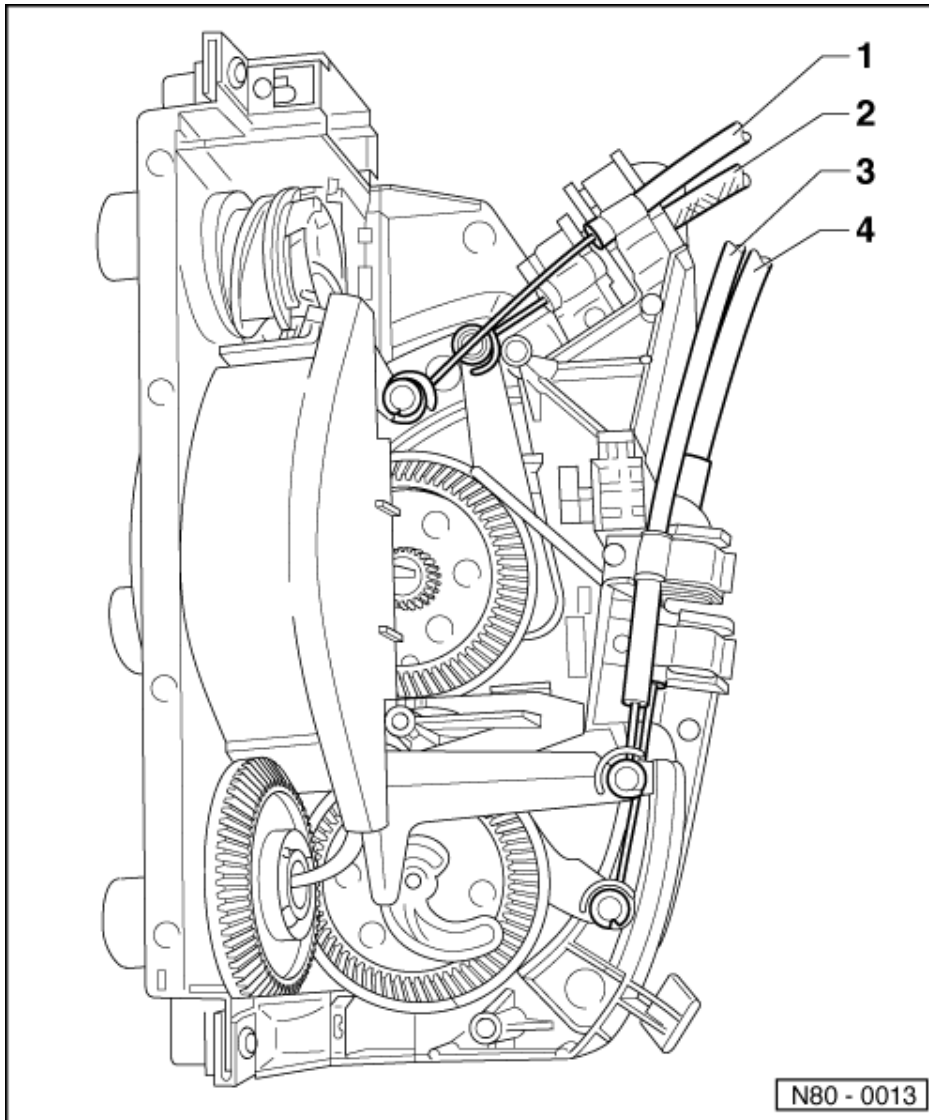
3 - Installing and adjusting cables

3.1 - Installing and adjusting cables



Notes:

- ♦ Attach cables to removed controls first and then adjust on heater levers and secure.
- ♦ Ends of sleeves on cables, which are marked with a stripe of paint, must be secured to the controls.
- ♦ Position sleeves of cables -1-, -2- and -4- at stops on the controls and then secure. Secure sleeve for cable -3- =>Fig. 5.
- ♦ With controls installed adjust cables at levers of flaps.
- ♦ When turning control knobs all flaps must be heard to contact the stops.

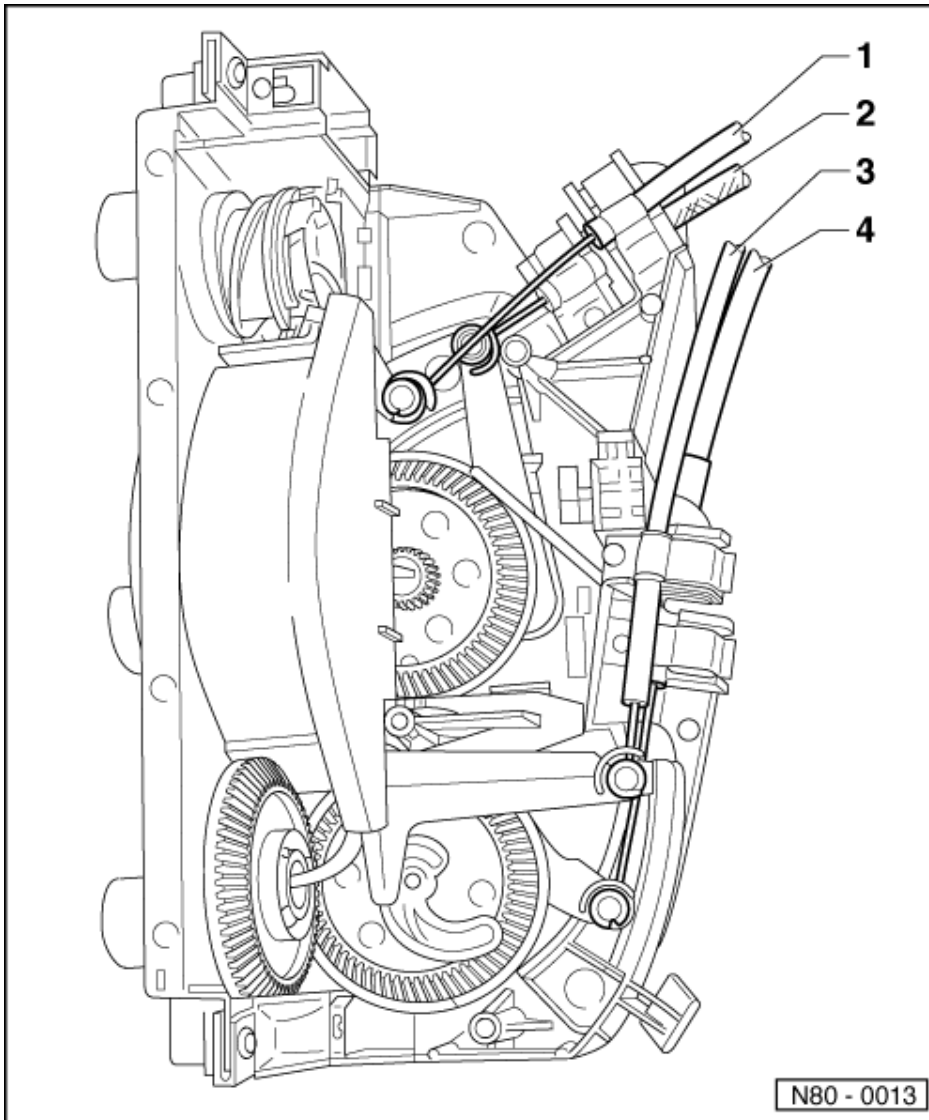


1 Main shut-off flap cable

- ◆ From blower rotary control to main shut-off flap
- ◆ Black sleeve, white marking
- ◆ Adjusting cable at main shut-off flap => Fig. 1

2 Temperature flap cable

- ◆ From temperature rotary control to temperature flap
- ◆ Blue sleeve, white marking
- ◆ Adjusting cable at temperature flap => Fig. 2



3 Footwell/defrost flap cable

- ◆ From air distribution rotary control to footwell/defrost flap
- ◆ Black sleeve, blue marking
- ◆ Adjusting cable at footwell/defrost flap => Fig. 3

4 Central flap cable

- ◆ From air distribution rotary control to central flap
- ◆ Black sleeve
- ◆ Adjusting cable at central flap => Fig. 4

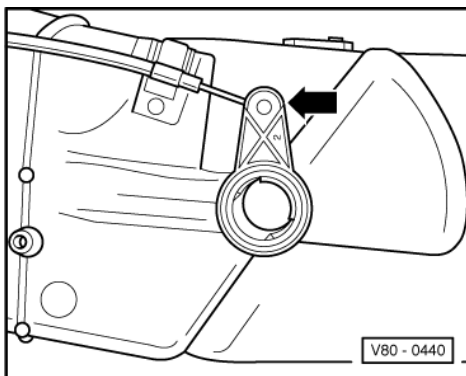
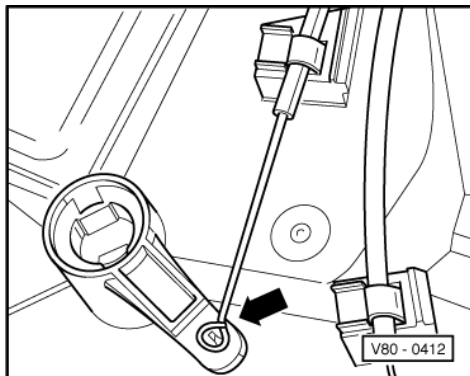




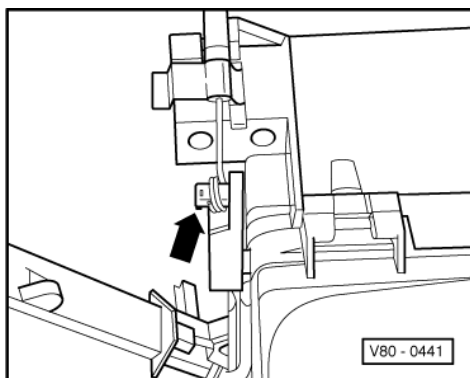
Fig.-> 1 Adjusting cable at main shut-off flap

- Install heated air and fresh air blower controls.
- Turn blower rotary control onto stop at "0" position.
- Push main shut-off flap lever onto stop (arrow) and secure cable sleeve.



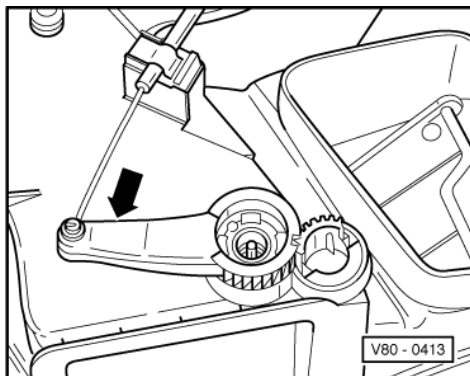
-> Fig.2 Adjusting cable at temperature flap

- Install heated air and fresh air blower controls.
- Turn temperature rotary control onto stop at "cold" position.
- Push temperature flap lever onto stop (arrow) and secure blue cable sleeve.



-> Fig.3 Adjusting cable at footwell/defrost flap

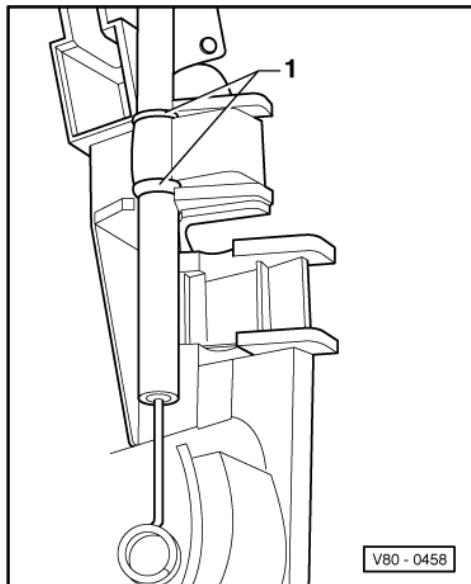
- Install heated air and fresh air blower controls.
- Turn air distribution rotary control onto stop in defrost position.
- Push footwell/defrost flap lever onto stop -arrow- and secure black cable sleeve.





-> Fig.4 Adjusting cable at central flap

- Install heated air and fresh air blower controls.
- Turn air distribution rotary control onto stop in defrost position.
- Push central flap lever onto stop -arrow- and secure black cable sleeve.



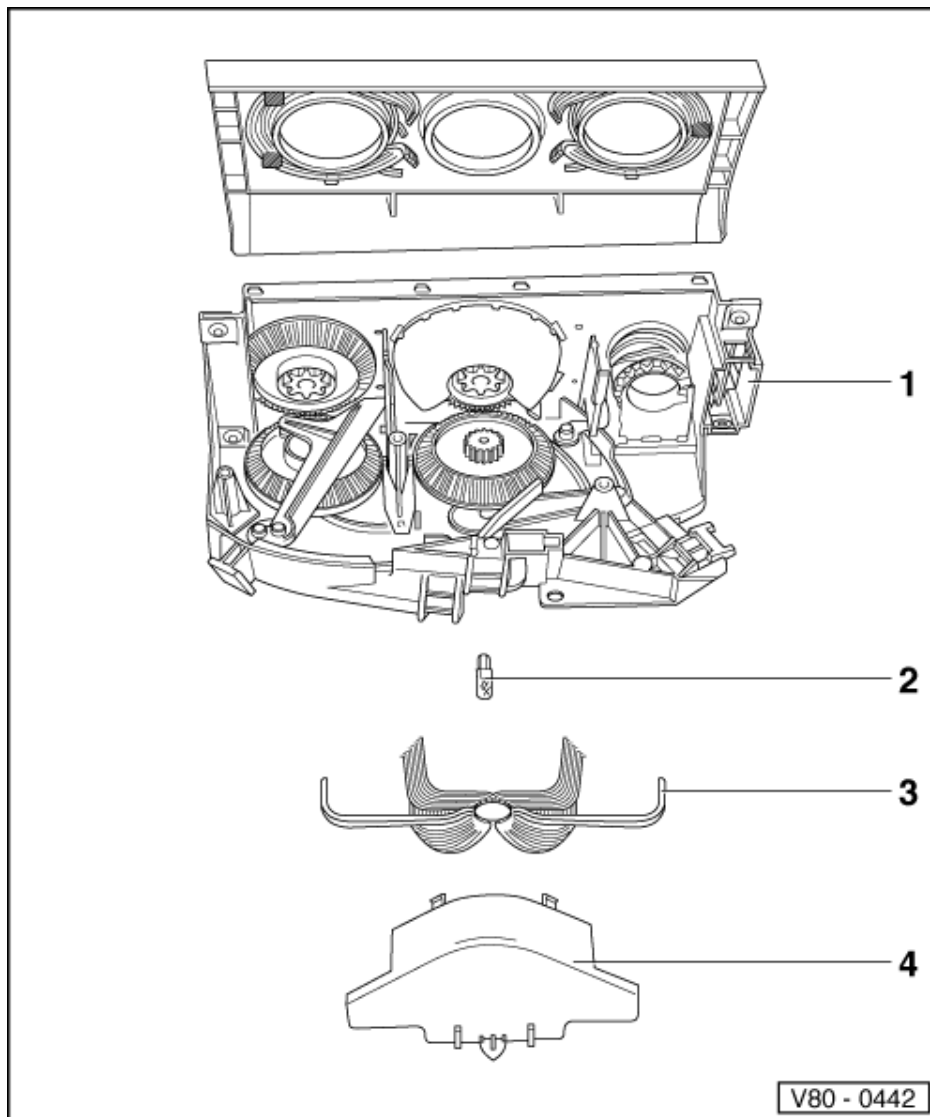
-> Fig.5 Securing footwell/defrost flap cable to control

- Secure cable sleeve at blue marking -1- on control.
- Secure inner cable to upper lever.
- Adjusting cable at footwell/defrost flap => Fig. 3



4 - Dismantling and assembling heated air and fresh air controls

4.1 - Dismantling and assembling heated air and fresh air controls

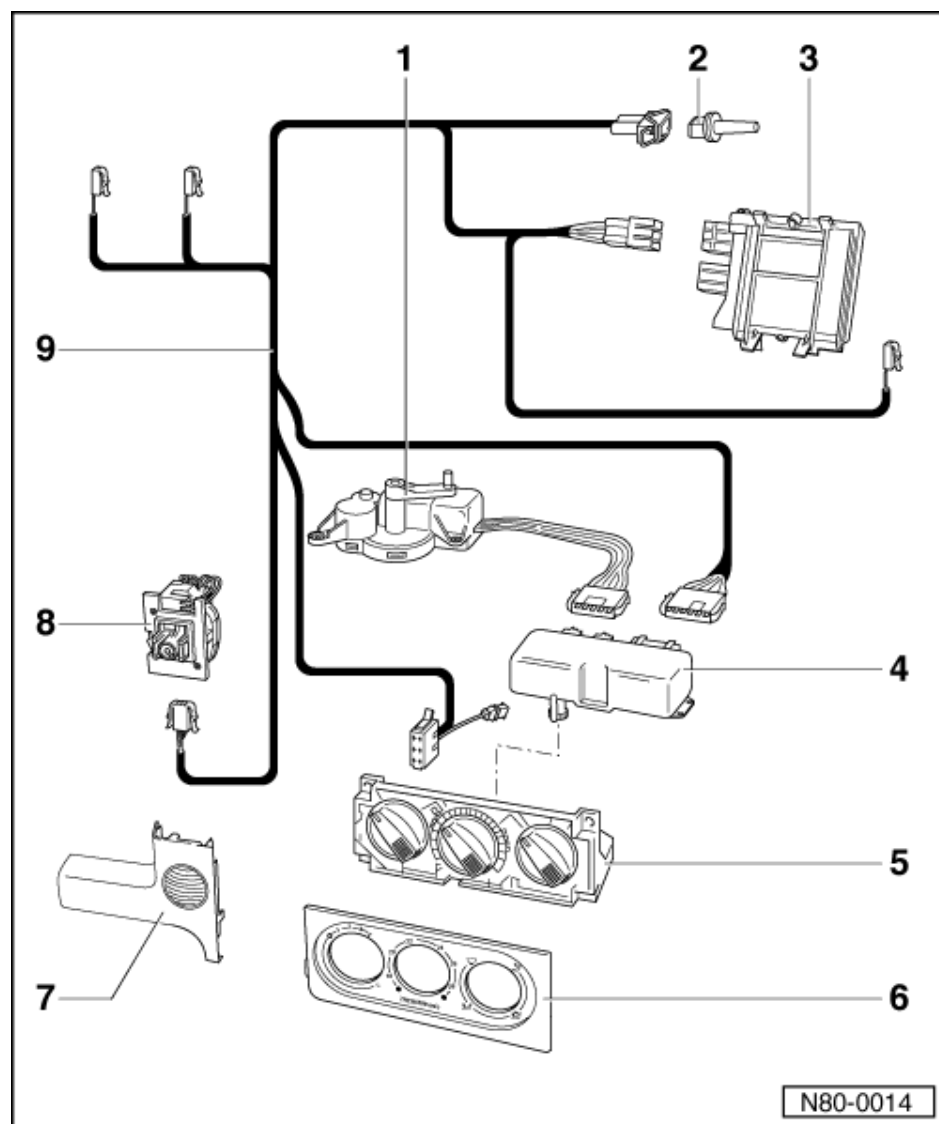


- 1 Controls
 - ♦ Including fresh air blower switch -E9-
- 2 Fresh air control light bulb -L16-
- 3 Light conductor
- 4 Cap



5 - Servicing electronic heater controls - Thermotronic

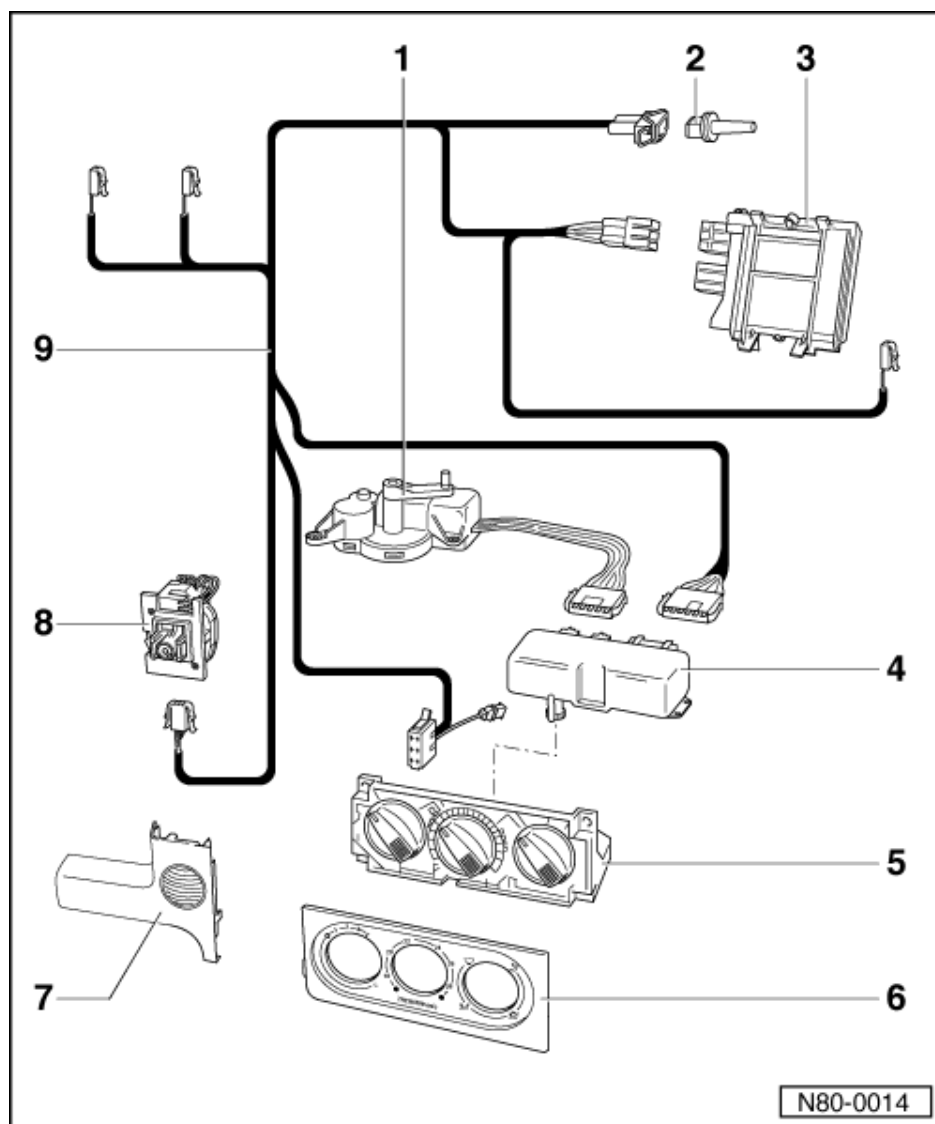
5.1 - Servicing electronic heater controls - Thermotronic



Warning!
Always disconnect the battery earth strap before working on the electrical system.

Notes:

- ♦ Before disconnecting battery, obtain radio code for radios with anti-theft coding.
- ♦ Remove Thermotronic controls for all tests.
- ♦ Use leads from adapter set V.A.G 1594 to connect up testers.
- ♦ Numbers 18 to 28 on the trim are references for the inside temperature. They are not test data.



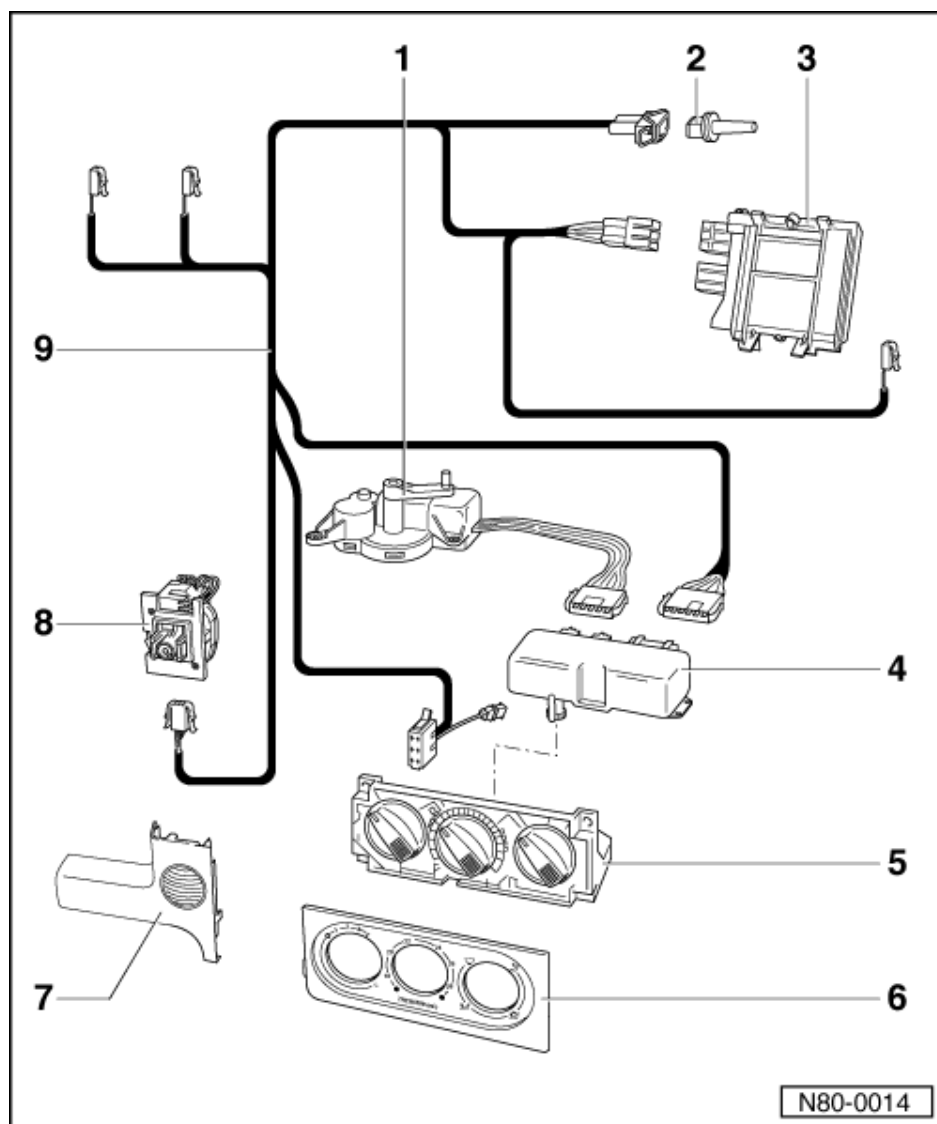
5 Temperature flap control motor -V68-

- ♦ Check end position of control motor when installed =>Fig. 3
- ♦ Check resistance of control motor potentiometer -G92- when installed =>Fig. 4

6 Temperature sensor - fresh air intake duct -G89-

- ♦ Fitting location: in fresh air intake duct behind shelf passenger side.
- ♦ Check: at 25 °C, resistance should be 10 kΩ. Resistance decreases with increasing temperature.
- ♦ Removing and installing: remove cover, right, below dash panel. Turn sensor and pull out of fitting.

Volkswagen Technical Site: <http://vwts.ru> <http://vwts.info>



7 Fresh air fan series resistor with overheating fuse -N24-

- ♦ Removing =>Page 80-1; Servicing heating, Fig. 1

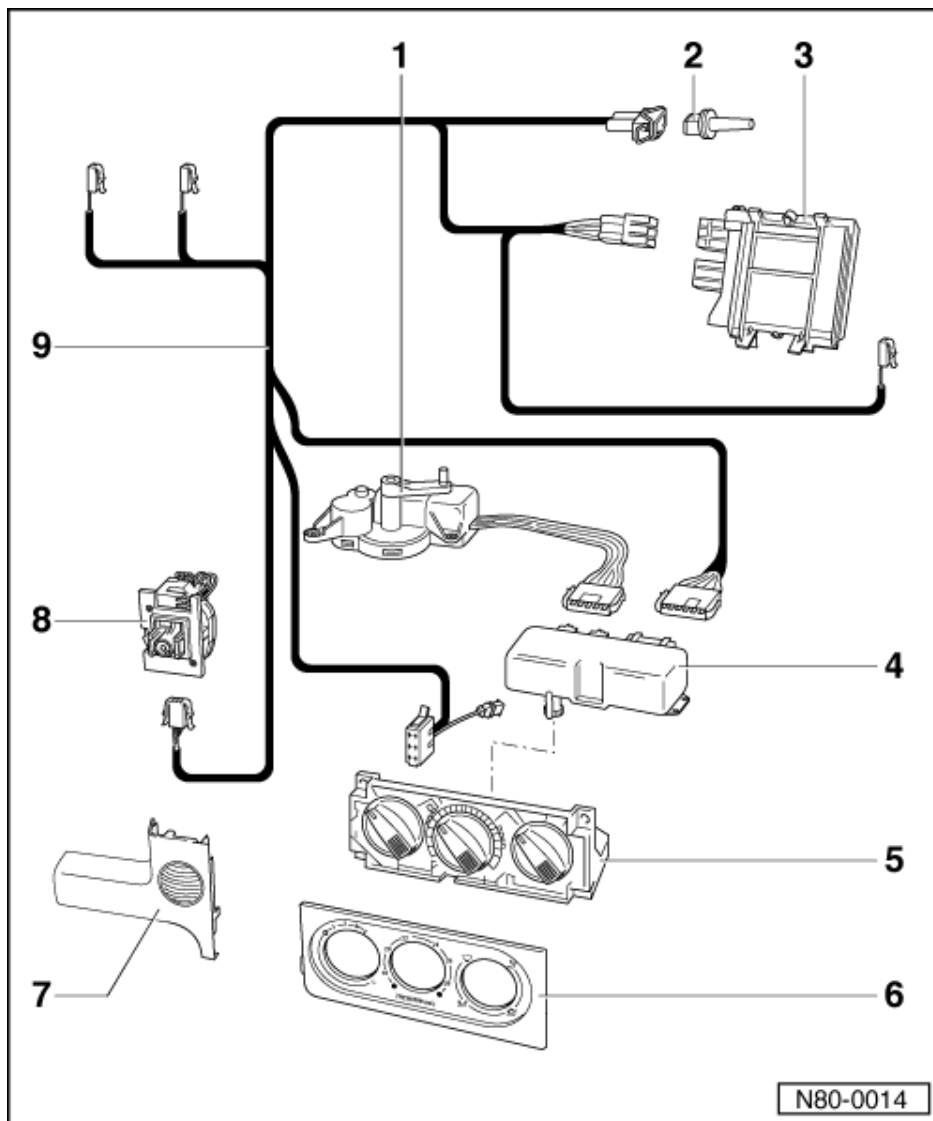
8 Thermotronic control unit -J214-

- ♦ Renewing=>Fig. 2

9 Fresh air and heated air controls

- ♦ The controls are identical to those on the heater system without electronic regulation. The Thermotronic controls also have the control unit -J214- fitted.

10 Control panel trim



11 Trim for dash panel temperature sensor

12 Temperature sensor - dash panel -G56- and blower for temperature sensor -V42-

- ♦ Checking temperature sensor: at 25°C, resistance should be 3 kW. Resistance decreases as temperature increases (measure between chambers 4 and 5).
- ♦ Removing => Fig. 1

13 Thermotronic wiring loom

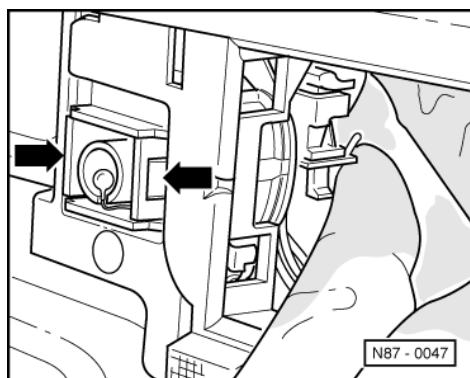




Fig.1 -> Removing dash panel temperature sensor -G56- and temperature sensor blower -V42-

Remove through the radio aperture in the instrument panel

- Remove radio.
- Pull off trim for temperature sensor.
- Release temperature sensor -G56- and blower -V42- with screwdriver (arrows) and take out through radio aperture.

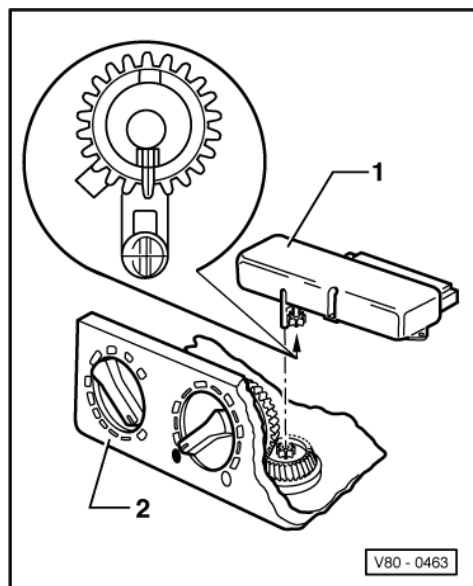


Fig.2 -> Renewing Thermotronic control unit -J214-

- Removing heating and fresh air controls => Page 25 , Fig. 3 .
- Turn Thermotronic centre rotary control -2- past the resistance to the blue end point.
- Turn control unit pinion -1- until the marking and the pin are aligned.
- Assemble control unit -1- and controls -2-.

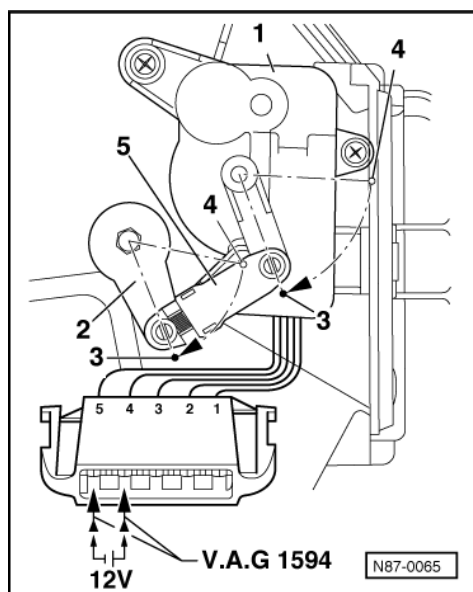




Fig.3 -> Checking end position of control motor -V68- when installed

- Pull 5-pin connector off control unit -J214-
- Connect cables from adapter set V.A.G 1594 to chambers 4 and 5.
- Connect to 12 V supply. Direction of rotation can be changed by reversing polarity of voltage supply.
- Move temperature flap -2- with control motor -1- from heater end position -4- to fresh air end position -3-.
- Check whether the temperature flap lever -2- reaches the stop when at the end position. If necessary, adjust length of connecting rod -5- with temperature flap -2- on stop.

Note:

If the connecting rod has been loosened, the rotary control is to be turned to the blue mark "cold" and the temperature flap lever must be pretensioned by pressing lightly towards cold and secured (4 clips).

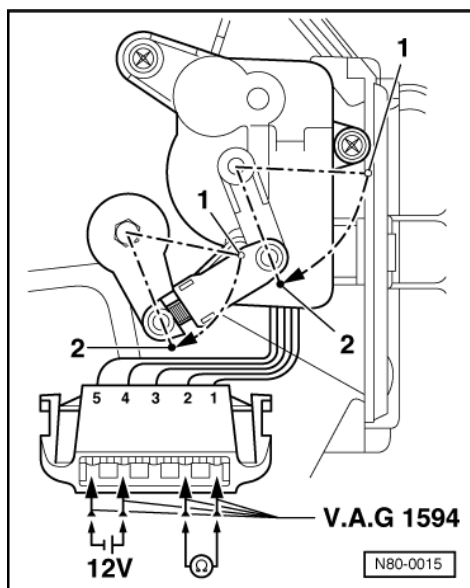


Fig.4 -> Checking resistance of potentiometer -G92- for control motor -V68- when installed

- Pull 5-pin connector off control unit -J214-
- Connect cables from adapter set V.A.G 1594 to chambers 4 and 5.
- Connect to 12 V supply. Direction of rotation can be changed by reversing polarity of voltage supply.
- Measure resistance between chambers 1 and 2 using hand multimeter V.A.G 1526:

Fresh air end position -2-, Specification: 2 k Ω $\pm$ 20%
Heating end position -1-, Specification: approx. 0,2 k Ω



87 - Air conditioning

1 - Notes on repair work to vehicles with air conditioning and on handling refrigerant

1.1 - Notes on repair work to vehicles with air conditioning and on handling refrigerant

The assemblies and pipe work system of the air conditioner are filled with refrigerant R134a (tetrafluoroethane, CF₃-CH₂F or CH₂F-CF₃).

At present the R134a refrigerant pressure vessels are labelled with the following trade names:

- H-FKW 134a
- SUVA 134a
- ARCTON 134a

These trade names may vary from country to country.

Further information:

- ♦ The appropriate fault finding programme can be found in, Fault finding "Heating, Air conditioner - binder 2".
- ♦ The valid current flow diagrams can be found in, Current flow diagrams, Electrical fault finding and Fitting locations binder.
- ♦ Repairs on the air conditioner refrigerant system can be found in Workshop Manual "Air conditioner with R12 refrigerant R134a, May 1992 ➤".

Warning!

Before working on the electrical system disconnect the battery earth strap.

Notes:

- ♦ A notice on the lock carrier plate in the engine compartment provides information concerning the refrigerant and refrigerant oil used (air conditioning using R134a the refrigerant oil is a Poly-Alkylene-Glycol base with additives).
- ♦ The components of the R134a refrigerant circuit are identified by labelling or by green stickers.
- ♦ Before disconnecting the battery, the codes for radios with anti-theft coding are to be obtained.

1.2 - Safety precautions for work on vehicles with air conditioning and when handling refrigerant R134a

The following safety precautions must be observed for the refrigerant (in some countries additional regulations may apply):

If it is necessary to evacuate the refrigerant circuit during repairs to the vehicle, the vehicle must be taken to a specialist workshop!

Reason:

Only specialist workshops are equipped with suitable evacuating equipment to handle the refrigerant competently.

Notes:

- ♦ It is recommended that an eye wash bottle be kept nearby. Should liquid refrigerant contact the eyes, eyes must be thoroughly rinsed with water for approx. 15 minutes.



- ♦ Then apply eye drops and contact a doctor immediately, even if eyes do not hurt. The doctor must be informed that the frost bite has been caused by refrigerant R134a.
- ♦ If, in spite of these safety measures, refrigerant comes into contact with other body parts, these areas must also be immediately thoroughly rinsed with cold water for at least 15 minutes.

Only work on the refrigerant circuit in well ventilated rooms. The refrigerant is not to be stored in shafts or openings leading to cellars.

Reasons:

Refrigerant is odourless and colourless and heavier than air and therefore displaces oxygen. If, even after taking precautions, refrigerant escapes there is a danger of asphyxiation without advance warning in poorly ventilated rooms/pits.

Precautions:

Before working on a refrigerant circuit ensure that there are no cellar openings, pits or shafts within 5 m. Any available extraction systems to be in operation.

Do not weld, braze or soft-solder parts of the charged air conditioner.

This also applies to welding and soldering work on the vehicle when the danger exists that parts of the air conditioner will heat up. During paintwork, object temperatures in the drying oven or in its pre-heating zone must not exceed 80° C.

Reason:

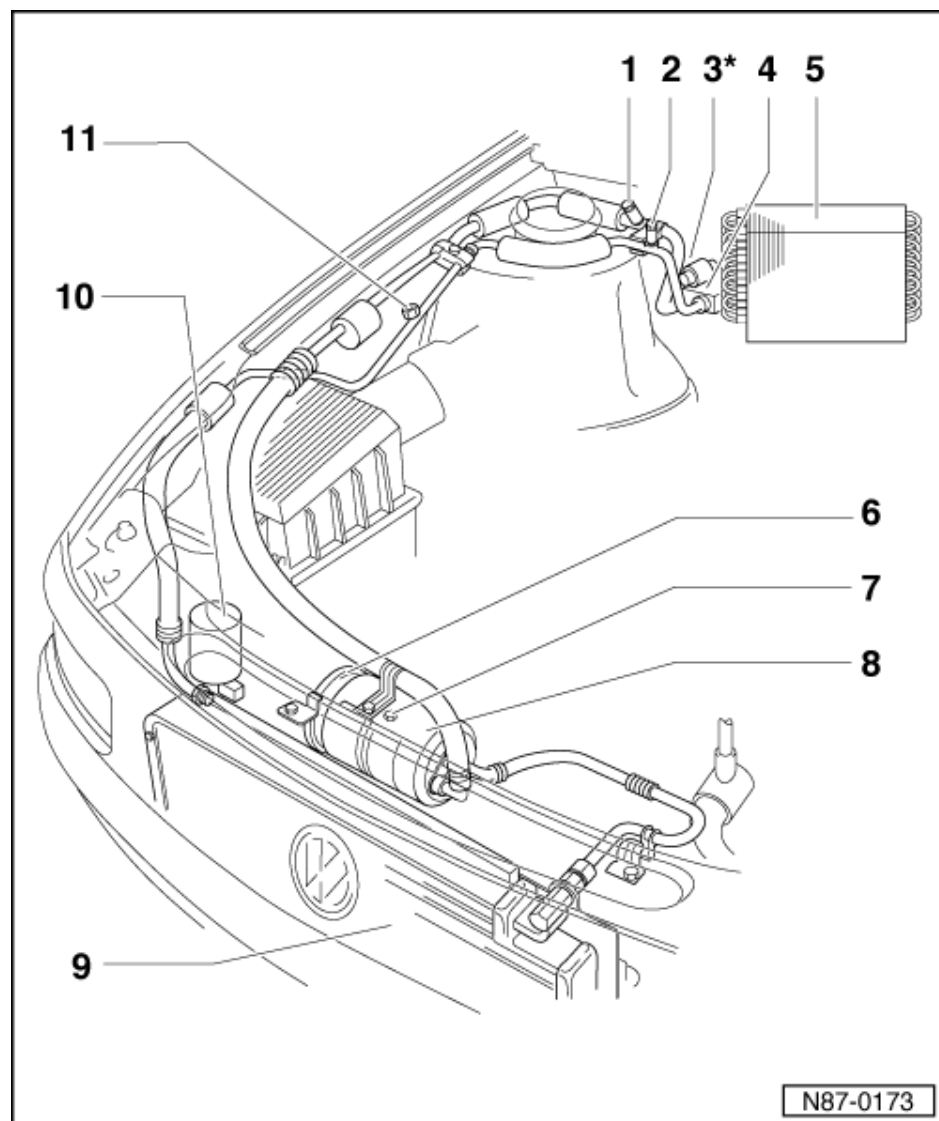
Heating results in high pressure in the system which may lead to pressure relief valve operating. During electrical welding invisible ultra-violet rays are produced, these penetrate hoses and breakdown the refrigerant.

Precautions:

Damaged or leaking air conditioner components are not to be repaired by soldering/welding, they must always be renewed, first evacuate refrigerant from refrigerant circuit using refrigerant evacuation station (take vehicle to specialist workshop).



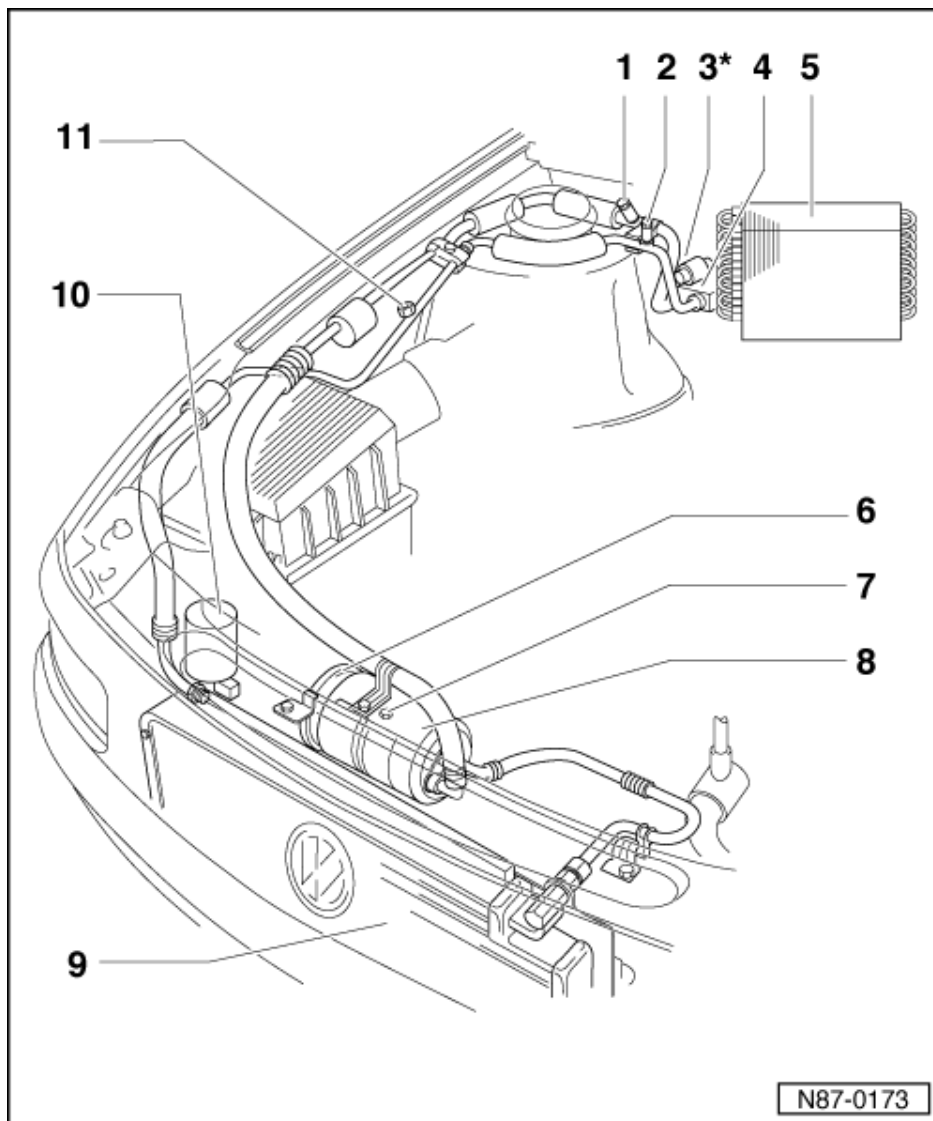
1.3 - Service work on the air conditioner which can only be carried out in specially-equipped workshops



Note:

*Only air conditioner pressure switch -F129- can be renewed in all workshops - marked with *.*

- 1 Evacuating and charging valve**
 - ♦ Low pressure side
- 2 Evacuating and charging valve**
 - ♦ High pressure side
- 3 Air conditioner pressure switch -F129-***
 - ♦ Pressure switch can be removed without evacuating refrigerant from system.

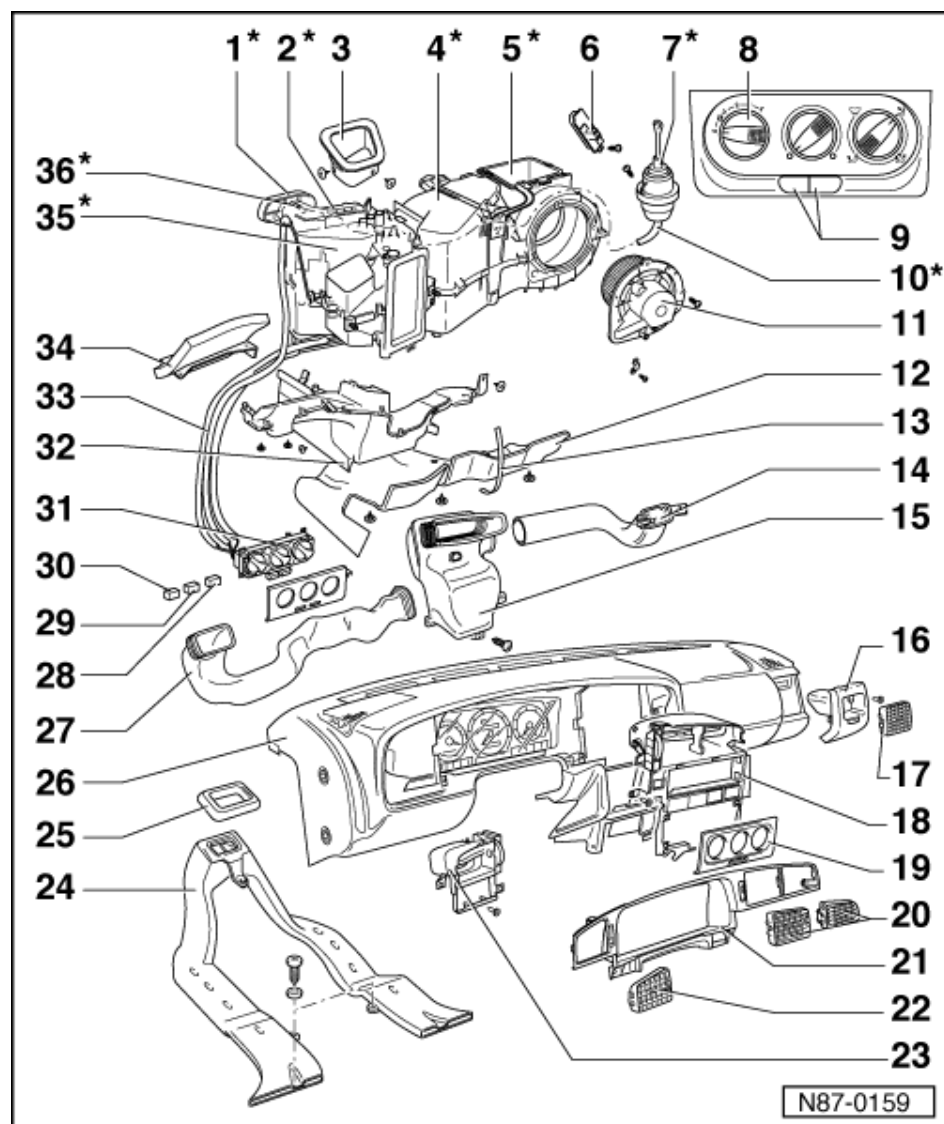


- 4 Expansion valve
 - ♦ Engine compartment right
- 5 Evaporator
 - ♦ In passenger compartment
- 6 Compressor magnetic coupling -N25-
- 7 Oil filling/draining plug
- 8 Compressor
- 9 Condenser
- 10 Fluid container with drier
- 11 Sight glass
 - ♦ Will be discontinued



2 - Air conditioner with manual controls

2.1 - Air conditioner with manual controls

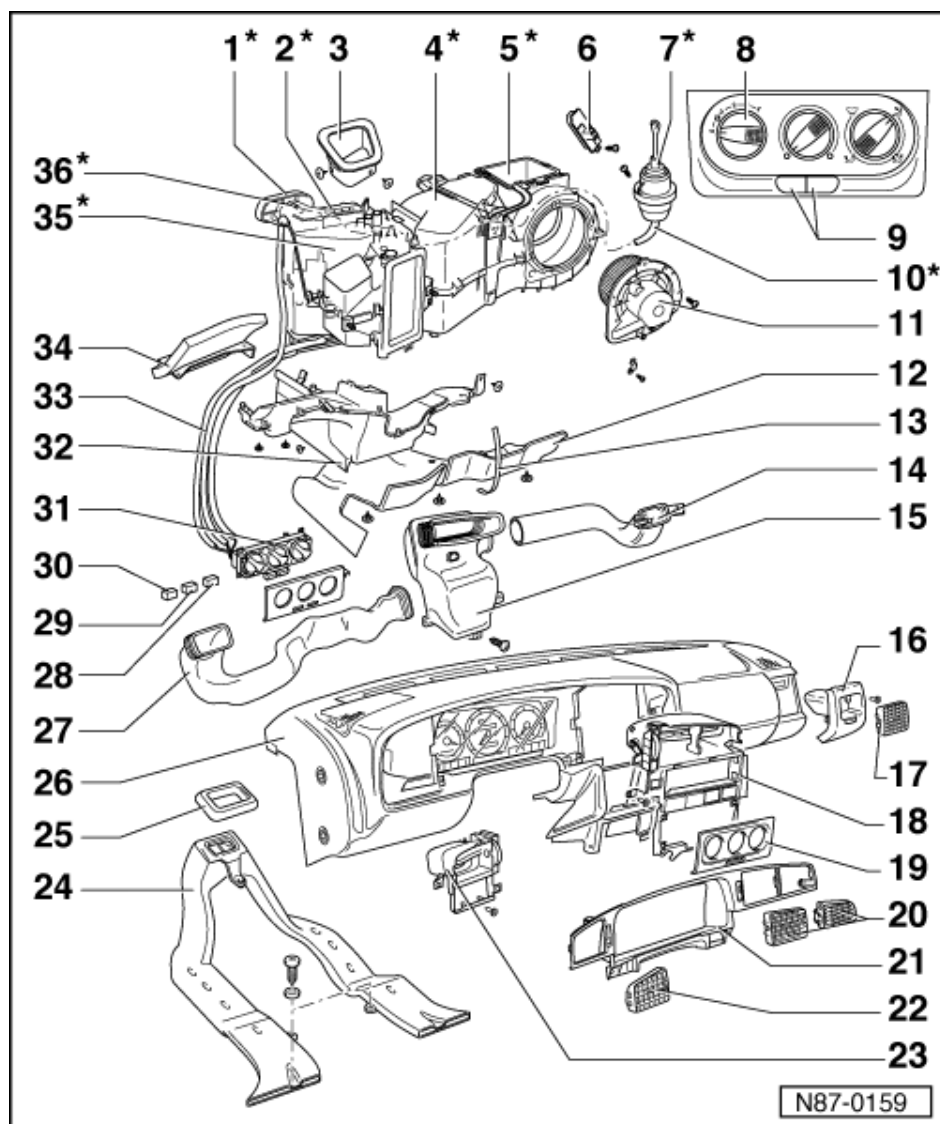


2.2 - Servicing air conditioning and heating - Passenger compartment

Note:

Parts marked with an * can only be serviced by specially-equipped service workshops, since refrigerant circuit must be evacuated beforehand with extraction station V.A.G 1770 or V.A.G 1771.

- 1 Gasket*
♦ Renew



2 Heat exchanger*

- ♦ Gaskets must be bonded gap-free all around.
- ♦ If retaining lugs do not engage when fitting, secure heat exchanger with screws.
- ♦ After removal replace complete coolant.

3 Connecting piece

- ♦ With gasket
- ♦ Renewing - remove dash panel beforehand

4 Evaporator housing*

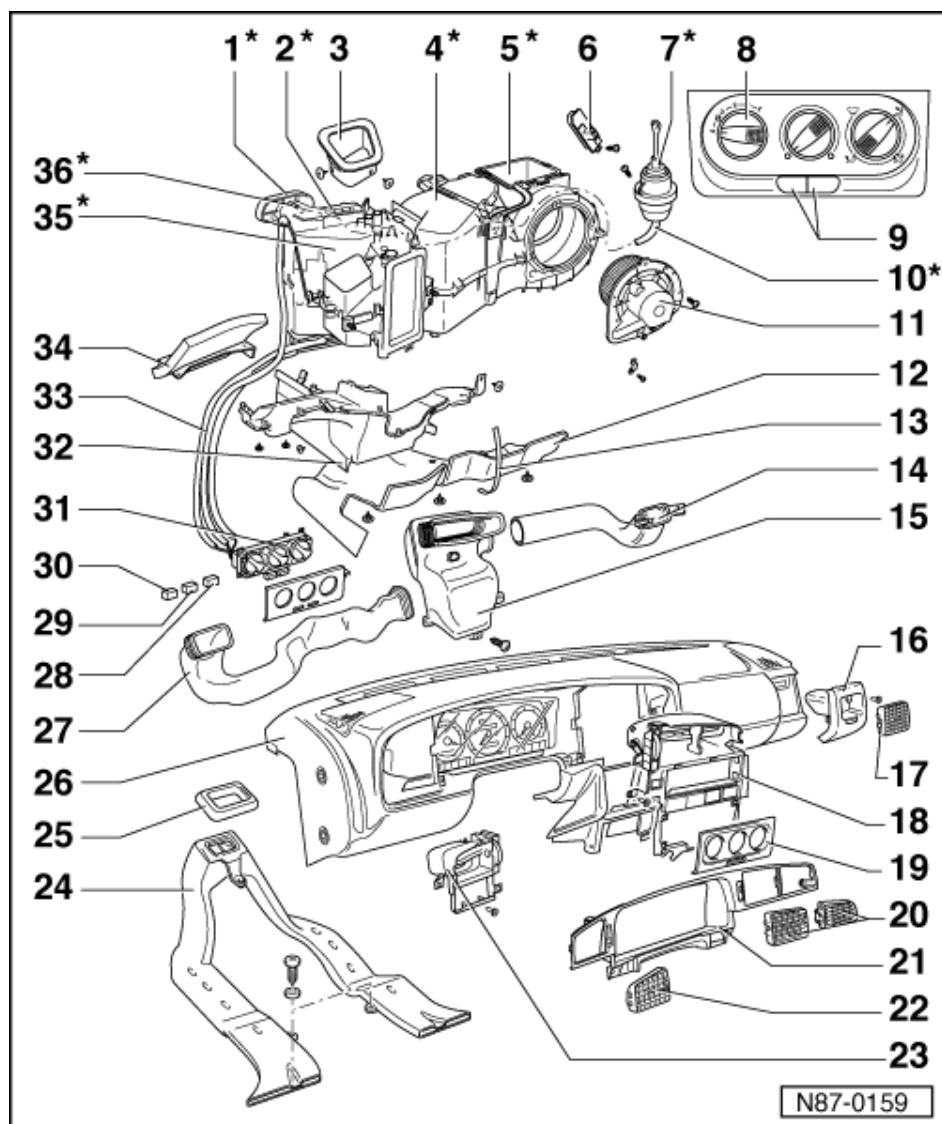
- ♦ With evaporator

5 Air intake*

- ♦ With fresh and recirculating air flap

6 Series resistance -N24-

- ♦ Renewing => Fig. 2



7 Vacuum unit for fresh and recirculating air flap*

- ♦ Ventilated: Fresh air operation

8 Fresh air blower switch -E9-

9 Air conditioner switch -E35-

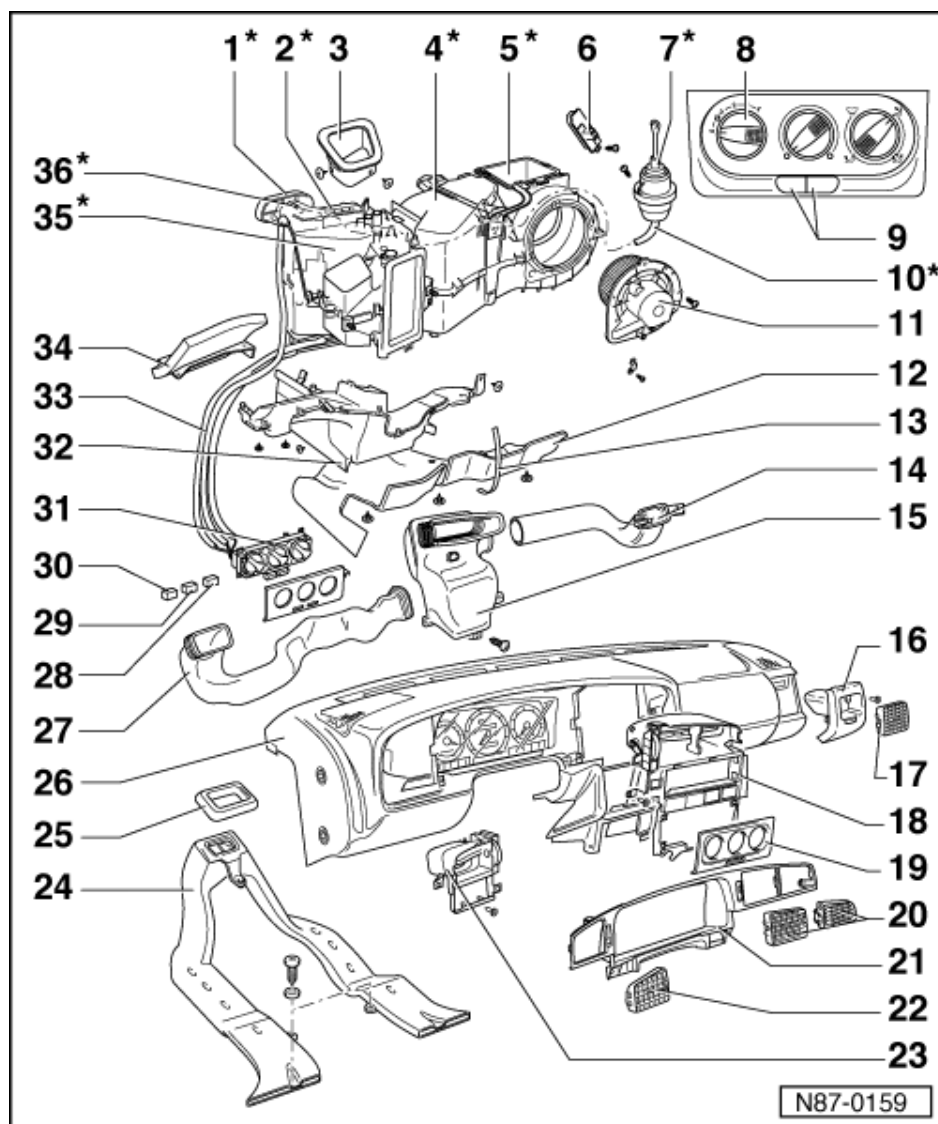
- ♦ With switch for fresh/recirculating air flap -E159-
- ♦ With control lamp for lighting - Air conditioner switch -L43-
- ♦ Removing => Fig. 1

10 Vacuum pipe*

- ♦ Vacuum hose connection diagram => Page 68

11 Fresh air blower -V2-

- ♦ Removing and installation => Fig. 3



12 Evaporator housing cover

- ♦ Renewing: First remove dash panel and footwell outlets - 32 -

13 Retaining strap

- ♦ Renewing: First remove dash panel and footwell outlets - 32 -

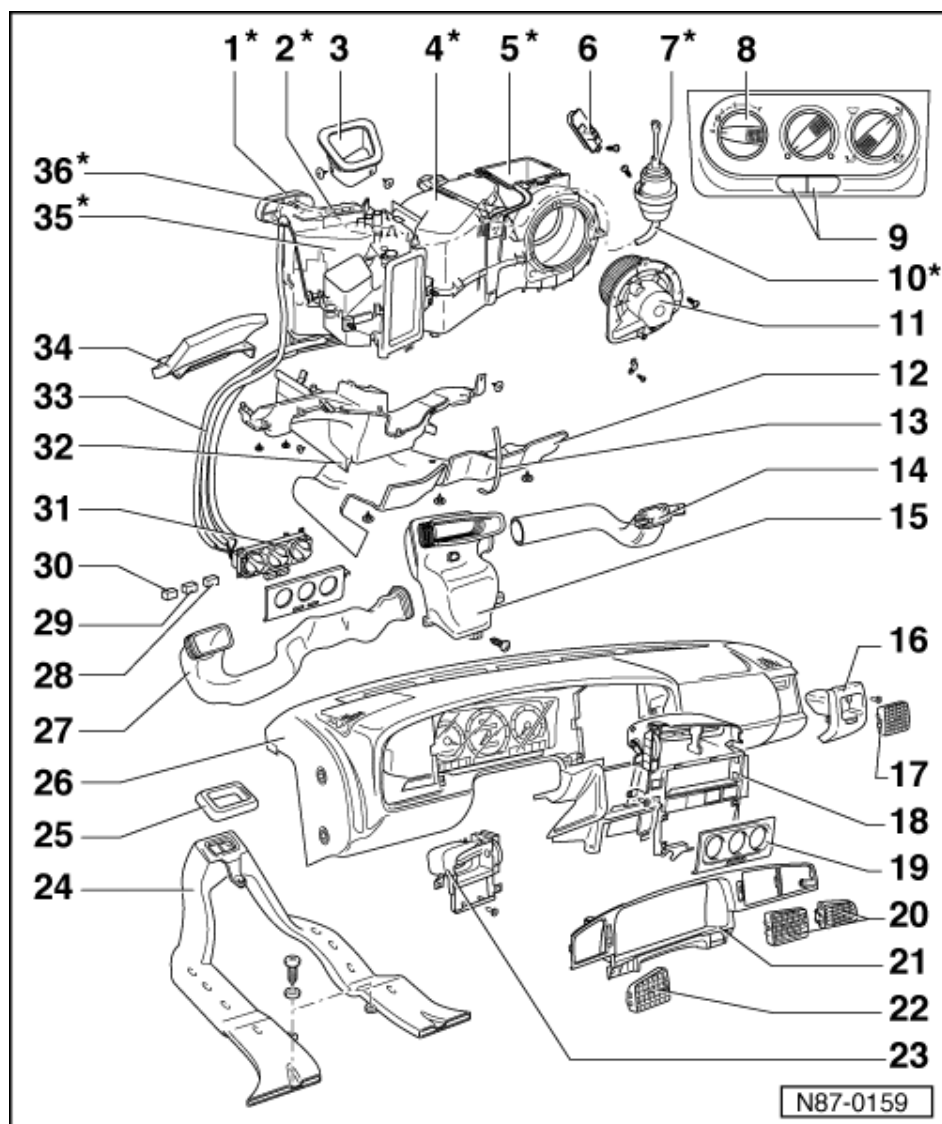
14 Air duct right

15 Air distributor

- ♦ Renewing: Remove centre console, dash panel bracket, central vent -13-, heating and fresh air controls -30-, remove shelf on passenger side; loosen dash panel -26- and lift

16 Right vent

- ♦ Removing => Page 27 , Fig. 8



17 Grille

- ♦ For right vent

18 Central vent

- ♦ Removing => Page 26 , Fig. 7

19 Control panel trim

20 Grilles

- ♦ For central vent

21 Instrument panel trim

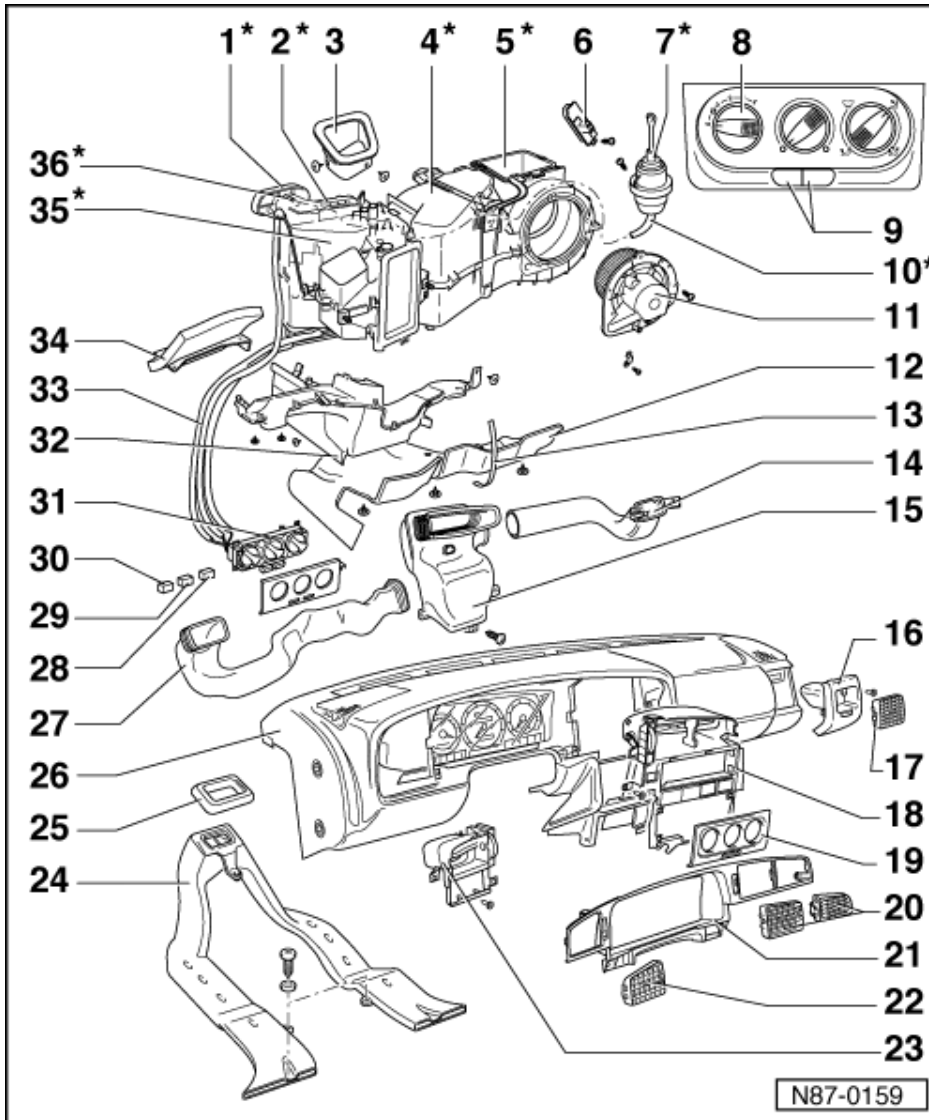
- ♦ Removing => Page 25 , Fig. 4

22 Grille

- ♦ For right vent

23 Air vent left

- ♦ Removing => Page 26 , Fig. 6



24 Rear heater duct

- ♦ Renewing: First remove central console, dash panel bracket, pedal cluster cover - 34 -, footwell outlet - 32 -, seats and carpet

25 Gasket

26 Dash panel

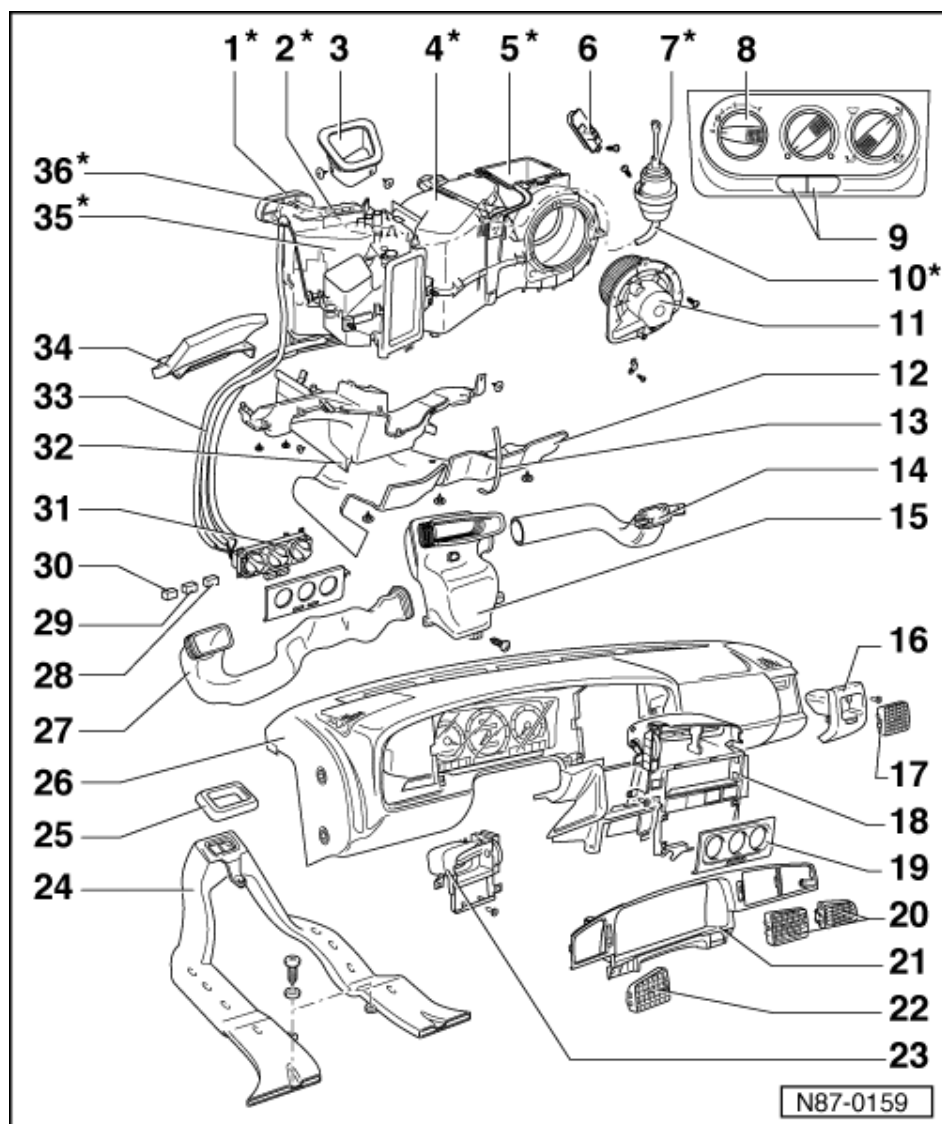
- ♦ Removing and installing

=> General body repairs; Repair Group 70; Removing and installing dash panel Removing and installing dash panel

27 Air duct left

28 Air conditioner switch-off relay -J365-

- ♦ Only on vehicles with code letters AAA, ABV, AEK, ADY and AGG
- ♦ Behind the central console
- ♦ Control number 147



29 Air conditioner shut-off control unit -J314-

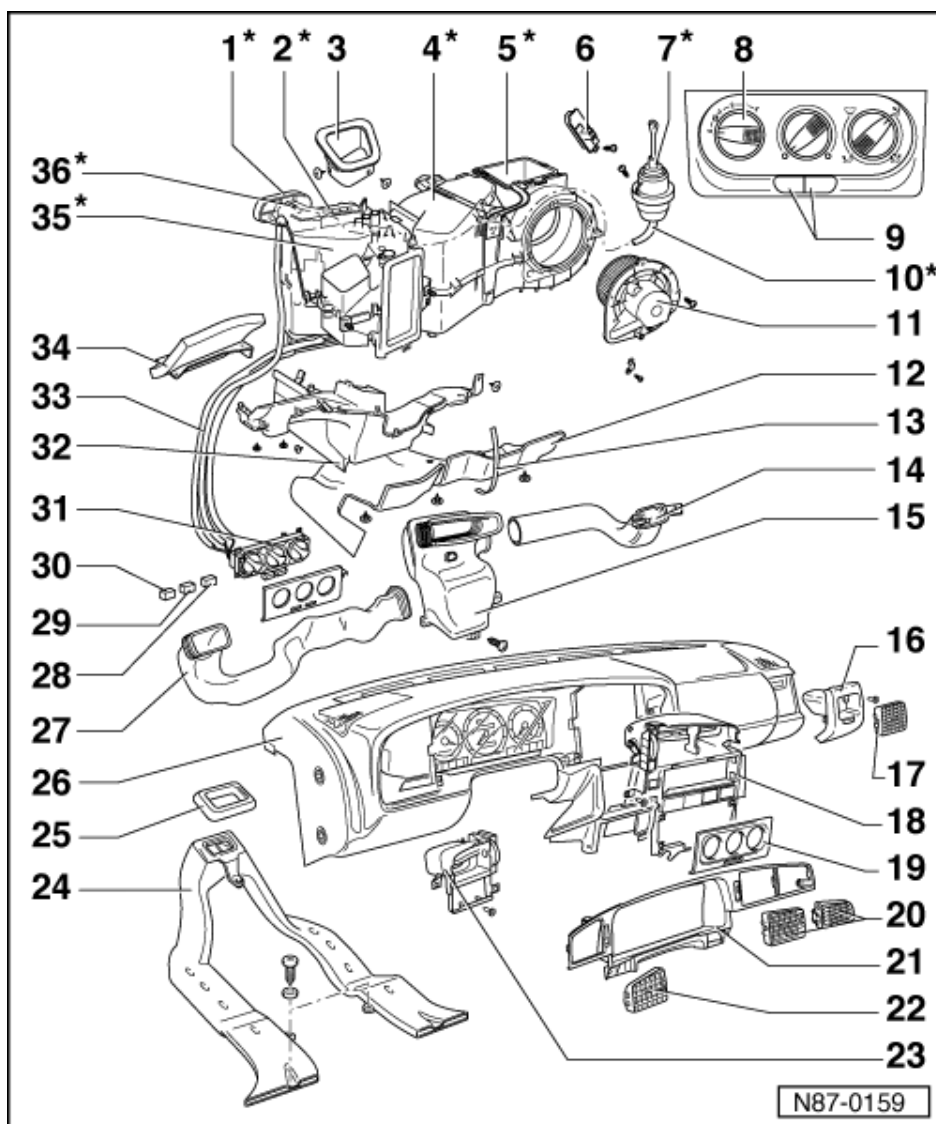
- ◆ Only on vehicles with code letters AAZ and manual gearbox
- ◆ Behind the centre console
- ◆ Control number 129

30 Air conditioner magnetic coupling cut-out relay -J246-

- ◆ Only on vehicles with Diesel engine and automatic gearbox
- ◆ Behind the central console
- ◆ Control number 135

31 Warm and fresh air controls

- ◆ With air conditioner switch -E35-
- ◆ Installing and adjusting cables
=> Page 64
- ◆ Removing and installing
=> Page 25 , Fig. 3
- ◆ Dismantling and assembling => Page 35



32 Footwell outlet

- ♦ Renewing: Remove shelf on drivers' side and passenger side, centre console, dash panel bracket and pedal cluster cover -33-

33 Cables

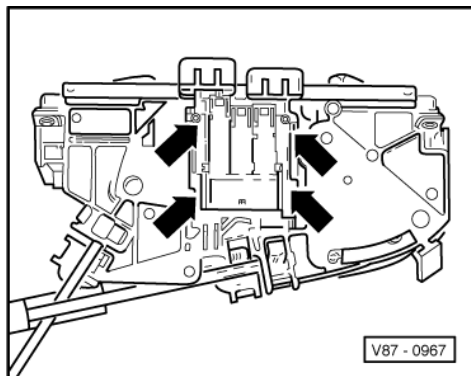
- ♦ Renewing: First remove pedal cluster cover - 34 - and footwell outlet - 32 -
- ♦ Installing and adjusting => Page 64

34 Pedal cluster cover

35 Distributor housing*

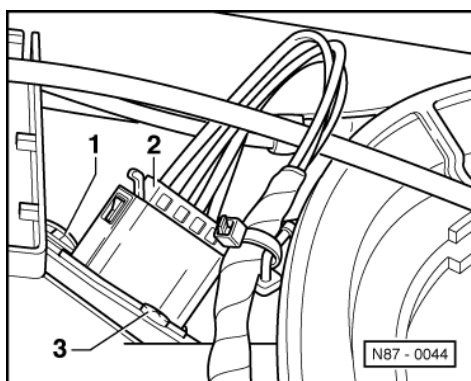
- ♦ With temperature flap
- ♦ With central flap
- ♦ With footwell/defrost flap
- ♦ Do not dismantle further

36 Vacuum pipe connection*



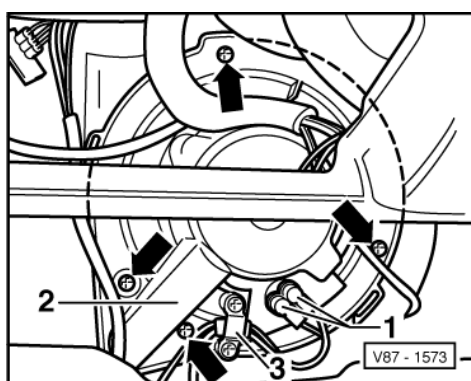
-> Fig.1 Removing air conditioner switch -E35-

Press the switch unit (at the four locating points) against the controls and at the same time towards the buttons.



-> Fig.2 Renewing series resistance -N24-

- Remove shelf on passenger side
- Remove glove box.
- Pull off connector -2- and remove screws -3-.
- Seal surface between series resistance -1- and air duct before installing with AMV 176 000 05.

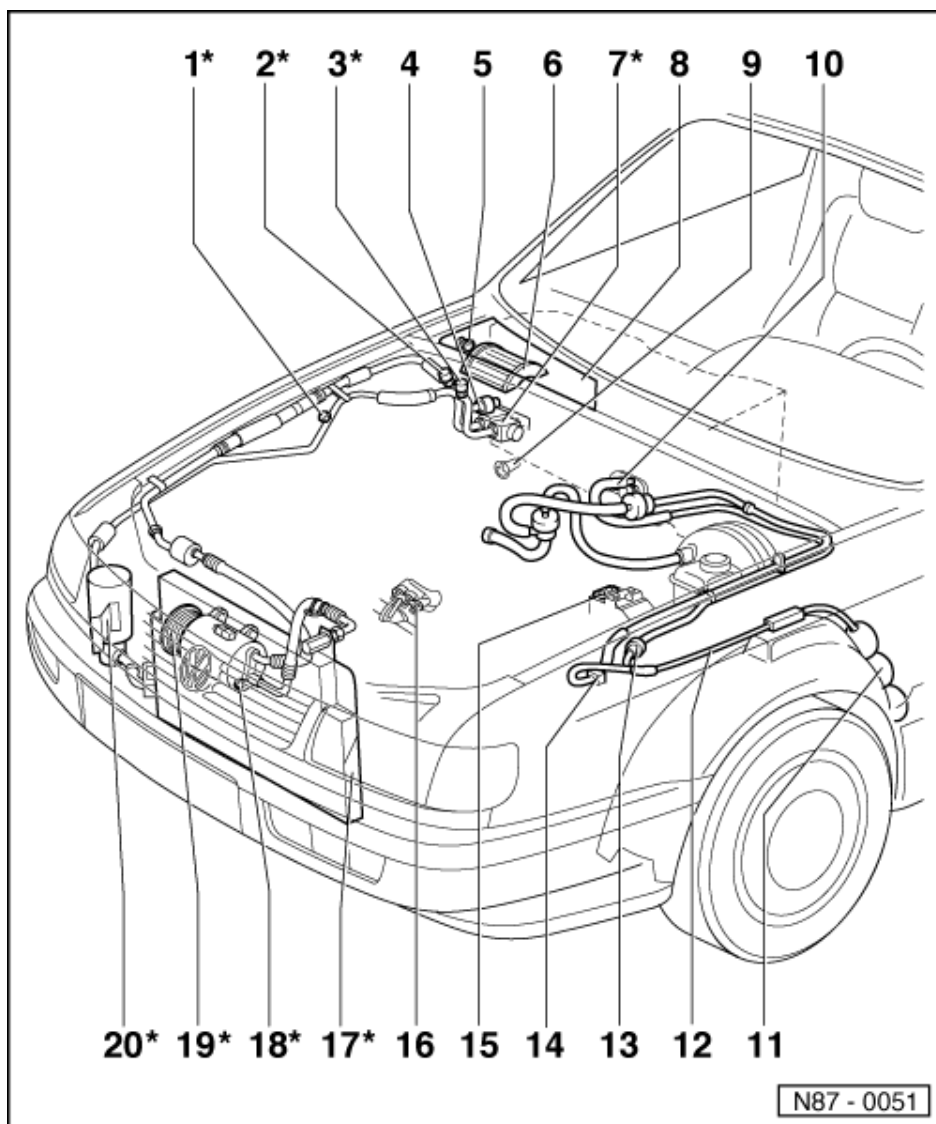


-> Fig.3 Removing and installing fresh air blower -V2-

- Remove shelf on passenger side
- Remove glove box.
- Pull off connector -1-.
- Remove clamp -3-.
- Unscrew Qty. 5 screws -arrows- and remove fresh air blower -2- downwards.



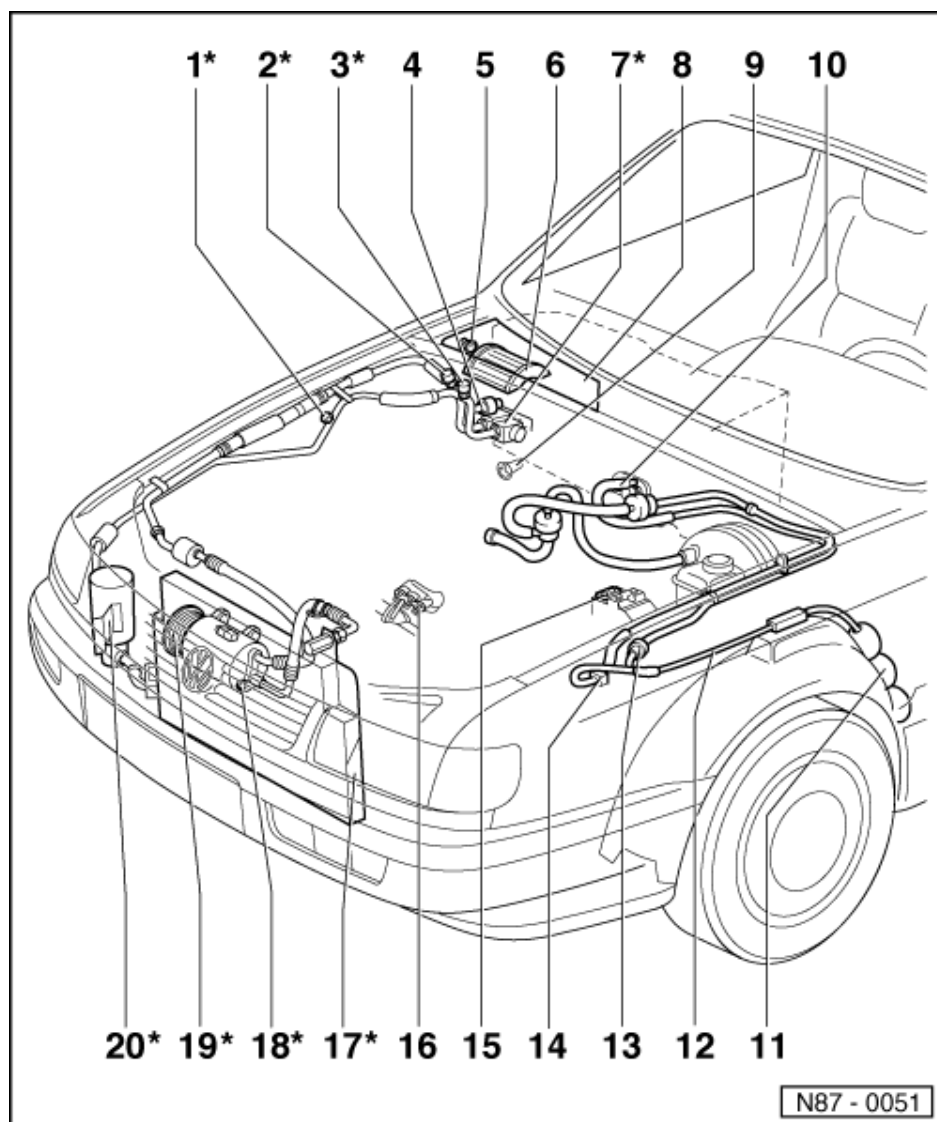
2.3 - Servicing air conditioning and heating - Engine compartment



Note:

*Parts marked with * can only be serviced in specially equipped Service workshops. The refrigerant must be evacuated with Service station V.A.G 1770 or V.A.G 1771.*

- 1 Sight glass***
 - ♦ Will be discontinued
- 2 Evacuating and charging valve***
 - ♦ Low pressure side
- 3 Evacuating and charging valve***
 - ♦ High pressure side



4 Air conditioner pressure switch -F129-

- ◆ Testing => Fig. 2
- ◆ Removing and installing:
 - Tightening torque 8 Nm
 - Renew O ring seal (note Part No.).

5 Ambient temperature switch -F38-

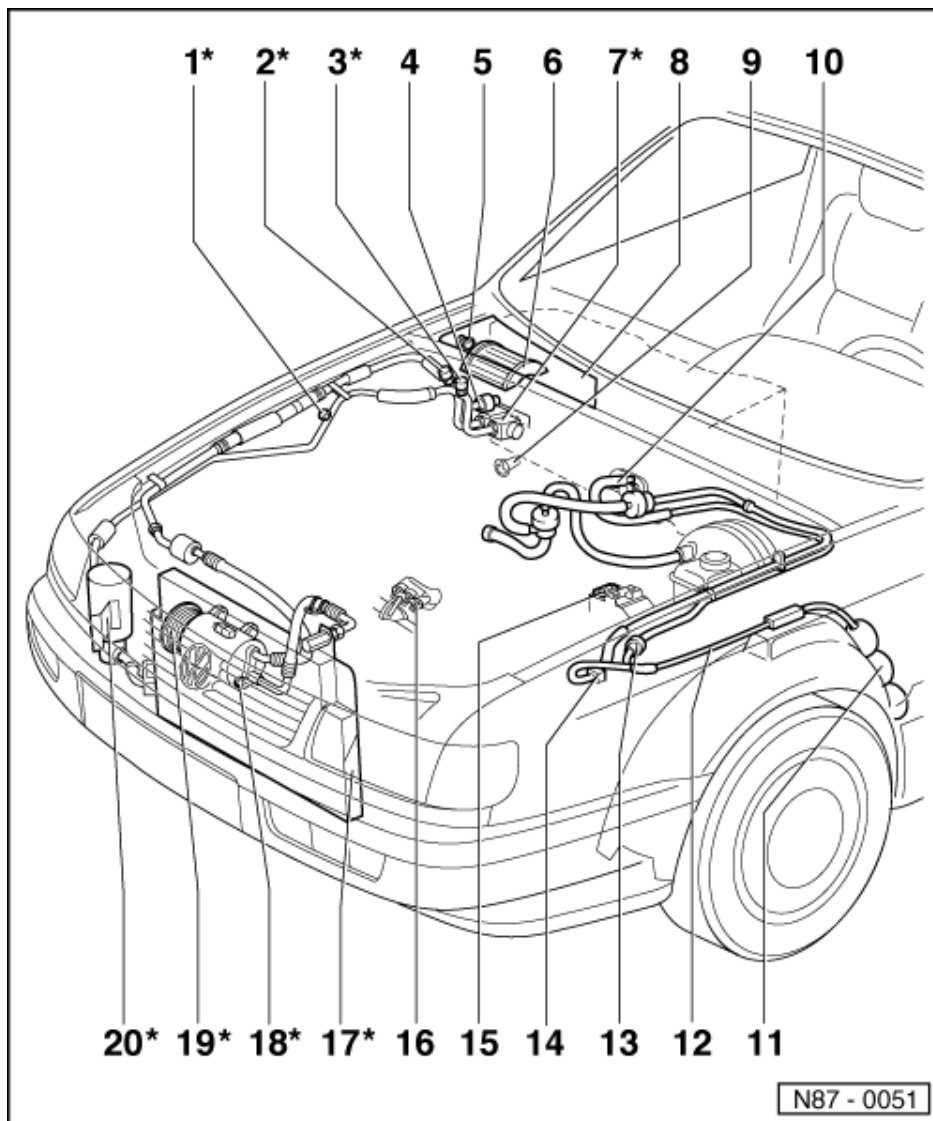
- ◆ Switches off magnetic coupling -N25- at low ambient temperature (off at -1°C, on at +7°C).
- ◆ Removing and installing => Fig. 4

6 Dust and pollen filter

- ◆ Removing => Page 25 , Fig. 5

7 Expansion valve*

- ◆ Opening must be sealed sufficiently to stop water ingress
- ◆ Checking insulation piece for expansion valve => Fig. 6



8 Plenum chamber cover

9 Water drain valve

- ◆ Behind bulkhead insulation
- ◆ Removing and installing => Fig. 3
- ◆ Valve lips must not be sealed with underseal

10 Heat exchanger and vacuum hose guide

11 Vacuum reservoir

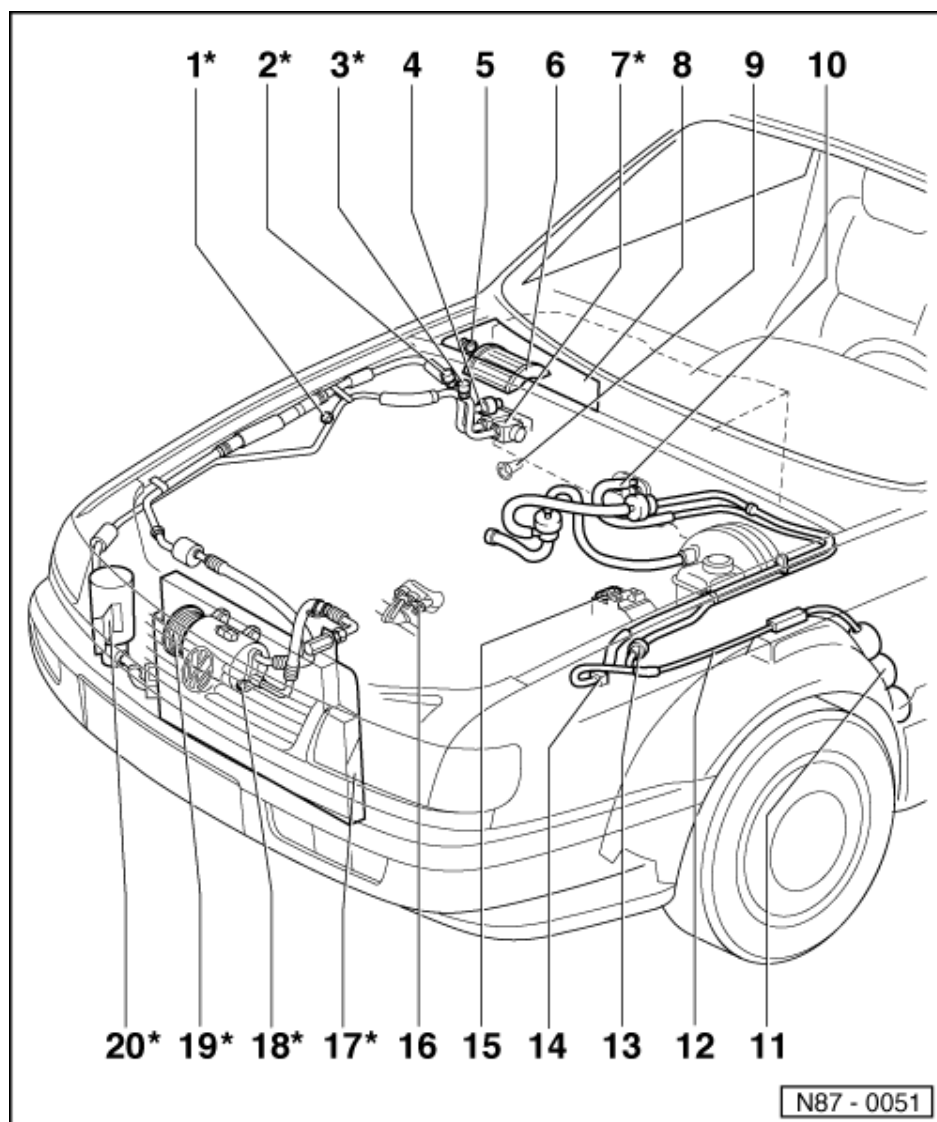
- ◆ Insertion depth for vacuum hose: 30 mm
- ◆ Removing and installing => Fig. 7

12 Vacuum hose

- ◆ Vacuum hose connection diagram => Page 68

13 Non-return valve

Direction of suction indicated by arrow



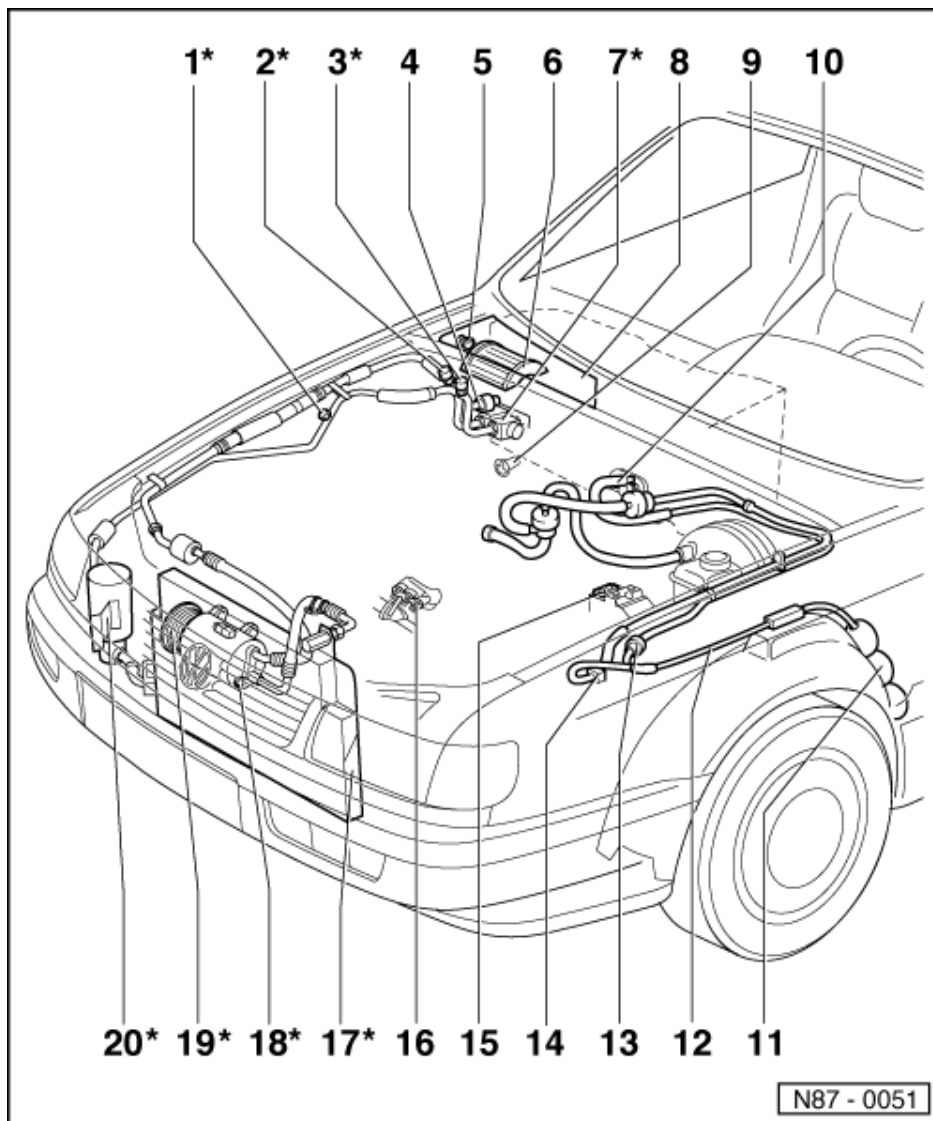
14 Two way valve for fresh and recirculating air flap -N63-

- ◆ Open when electrically connected
- ◆ Vacuum hose connection diagram => Page 68
- ◆ Installing => Fig. 5

15 Radiator fan control unit -J293-

16 Thermo switch for air conditioner cut-off -F163- and thermo switch for coolant fan, 3rd speed -F165-

- ◆ Thermo switch for air conditioner shut-off -F163- only on vehicles with engine codes AAA, AAZ or ABV
- ◆ Thermo switch for coolant fan, 3rd speed -F165- only on vehicles with 3-speed fan motor



- ♦ -F165- switch coolant fan: into 3rd speed as temperature increases (on at 112°C, off at 108°C).
- ♦ -F163- switches off magnetic coupling -N25- at excessively high coolant temperature (off at 119°C, on at 112°C).
- ♦ Removing and installing on vehicles with engine code AAA => Fig. 1

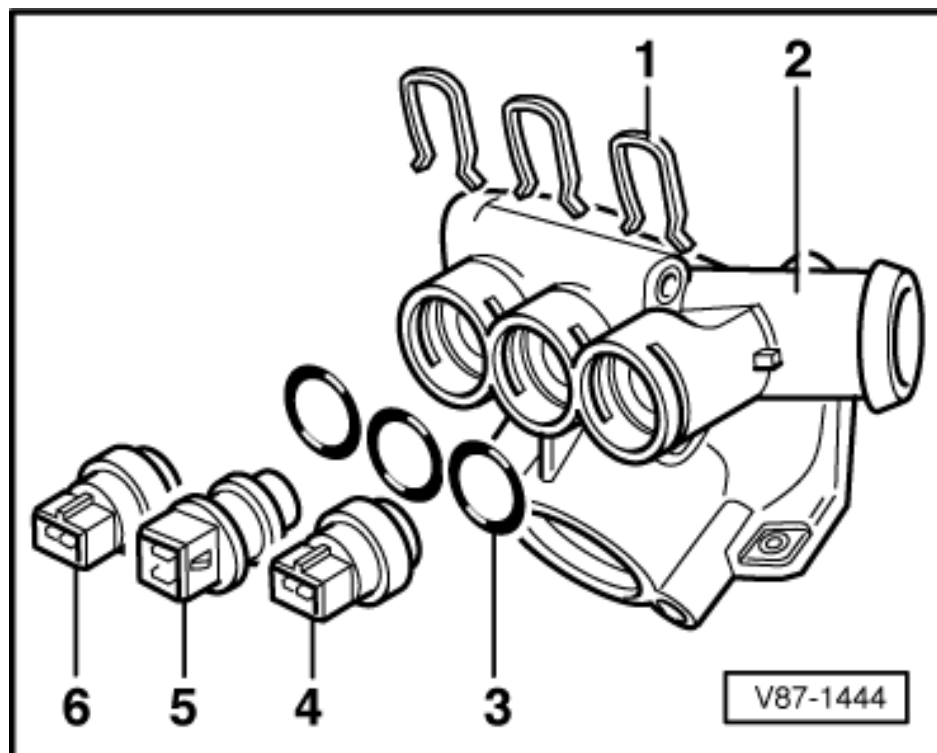
17 Condenser*

18 Pressure relief valve*

- ♦ Checking => Fig. 8

19 Magnetic coupling -N25-*

20 Fluid reservoir with drier*

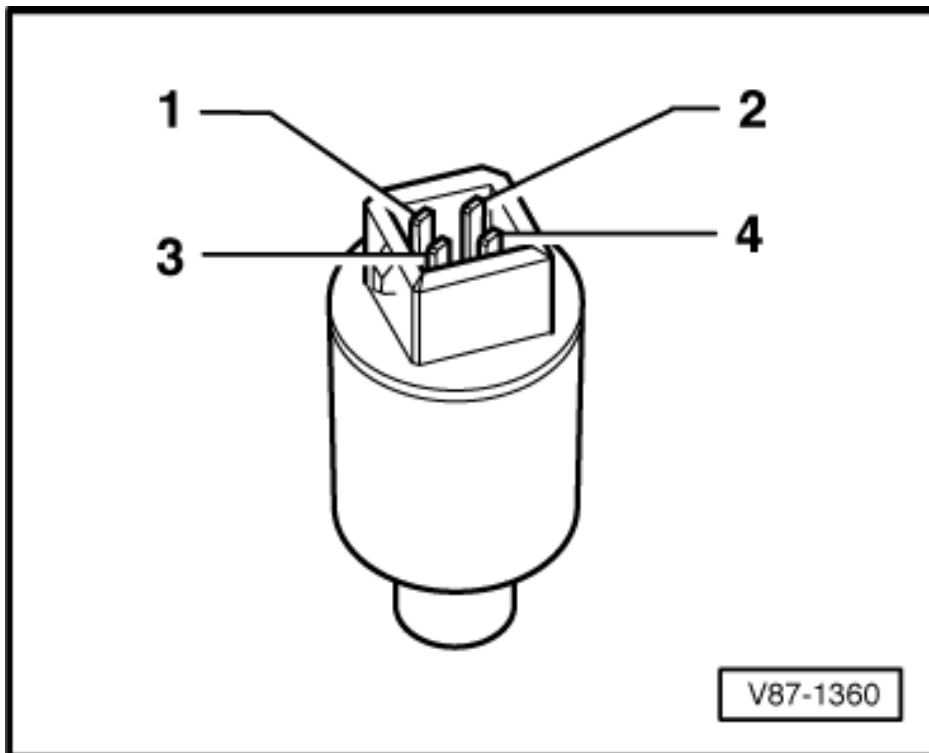


-> Fig.1 Removing and installing thermo switch for air conditioner shut-off -F163- and thermo switch for coolant fan, 3rd speed -F165- on vehicles with engine code AAA

Notes:

- ♦ Cooling system is pressurized when engine is warm. If necessary, release pressure before carrying out repairs.
- ♦ Refill with coolant after installing thermo switch.

- 1 - Clip
- 2 - Thermostat housing
- 3 - O ring
- 4 - Thermo switch -F163-/-F165-, brown
- 5 - Temperature sender switch -G2-/-F87-, yellow
- 6 - Coolant temperature sender -G62-, blue



→ Fig.2 Checking air conditioner pressure switch -F129-

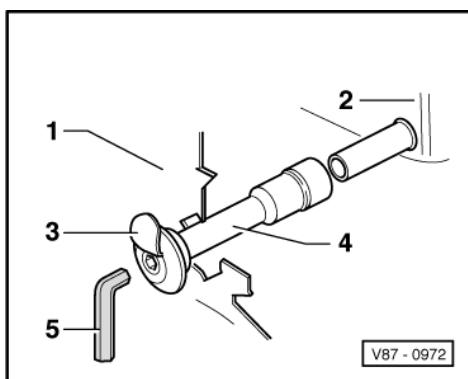
- ◆ Visual check: Ensure that O-ring (colour: red) 10.8 mm x 1.8 mm is seated in groove

Switch part between contacts -T4a/1- and -T4a/2- of connector housing switches magnetic coupling -N25- off when refrigerant circuit insufficiently filled or pressure too high.

- Opens below 1.2 bar and closes again above 2.4 bar (switching threshold)
- Opens above 32 bar and closes again below 24 bar (switching threshold)
- Briefly bridge circuit between chambers 1 and 2 with engine running. If the magnetic coupling -N25- switches on, the refrigerant system is empty. Take vehicle to specialist service workshop.

Switch part between contacts -T4a/3- and -T4a/4- of connector housing switches the coolant fan -V7- to second speed if the pressure in the refrigerant circuit increases.

- Closes above 16 bar and opens below 12.5 bar (switching threshold)



→ Fig.3 Removing and installing water drain valve

- 1 - Bulkhead
- 2 - Evaporator housing
- 3 - Valve flap, shown raised



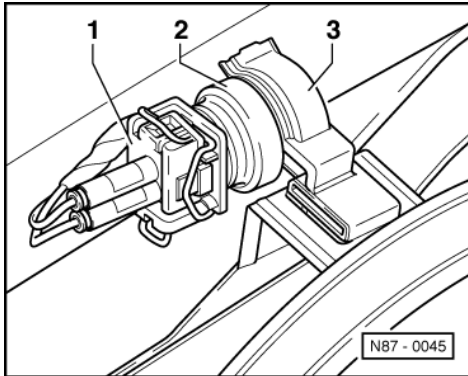
- 4 - Water drain valve
- 5 - Hexagon key 14 mm

Removing:

- Turn valve 45° with hexagon key -5- and pull out.

Installing:

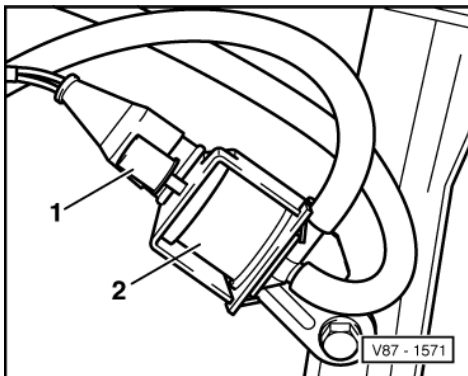
- When installing ensure lip lies downward.



-> Fig.4 Removing and installing ambient temperature switch -F38-

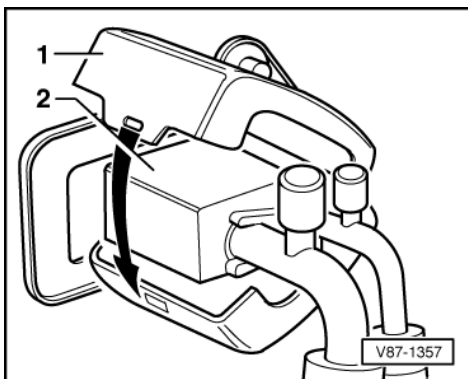
Installed in plenum chamber right

- 1 - Connector
- 2 - Ambient temperature switch
- 3 - Retainer



-> Fig.5 Installing fresh air and recirculating air flap two-way valve -N63-

- 1 - Cap
- Check air passage slot
- 2 - Two-way valve (other designs possible)

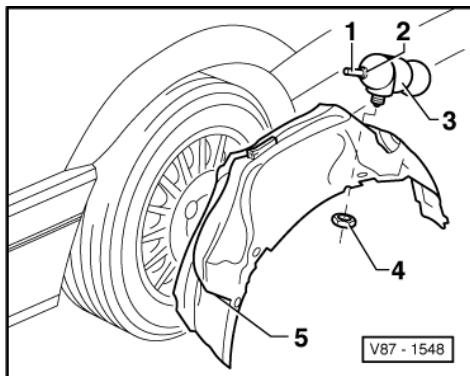




-> Fig.6 Checking expansion valve insulation piece

- 1 - Insulator
- 2 - Expansion valve

- ♦ The insulator prevents drop in air conditioner efficiency caused by increasing temperatures in the engine compartment.

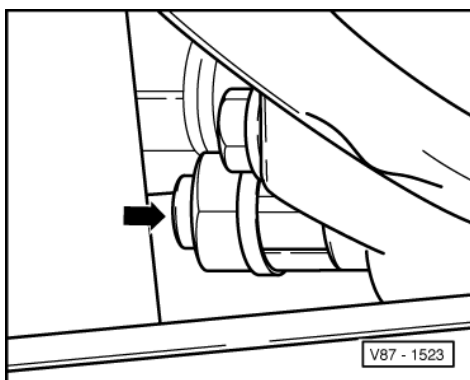


-> Fig.7 Removing and installing vacuum reservoir

- 1 - Plastic pipe
- Installation depth: 30mm
- 2 - Rubber seal
- 3 - Vacuum reservoir
- 4 - Nut
- 5 - Wheel housing liner

- ♦ Removing and installing wheel housing liner

=> General body repairs; Repair group 66; removing and installing wheel housing liner removing and installing wheel housing liner

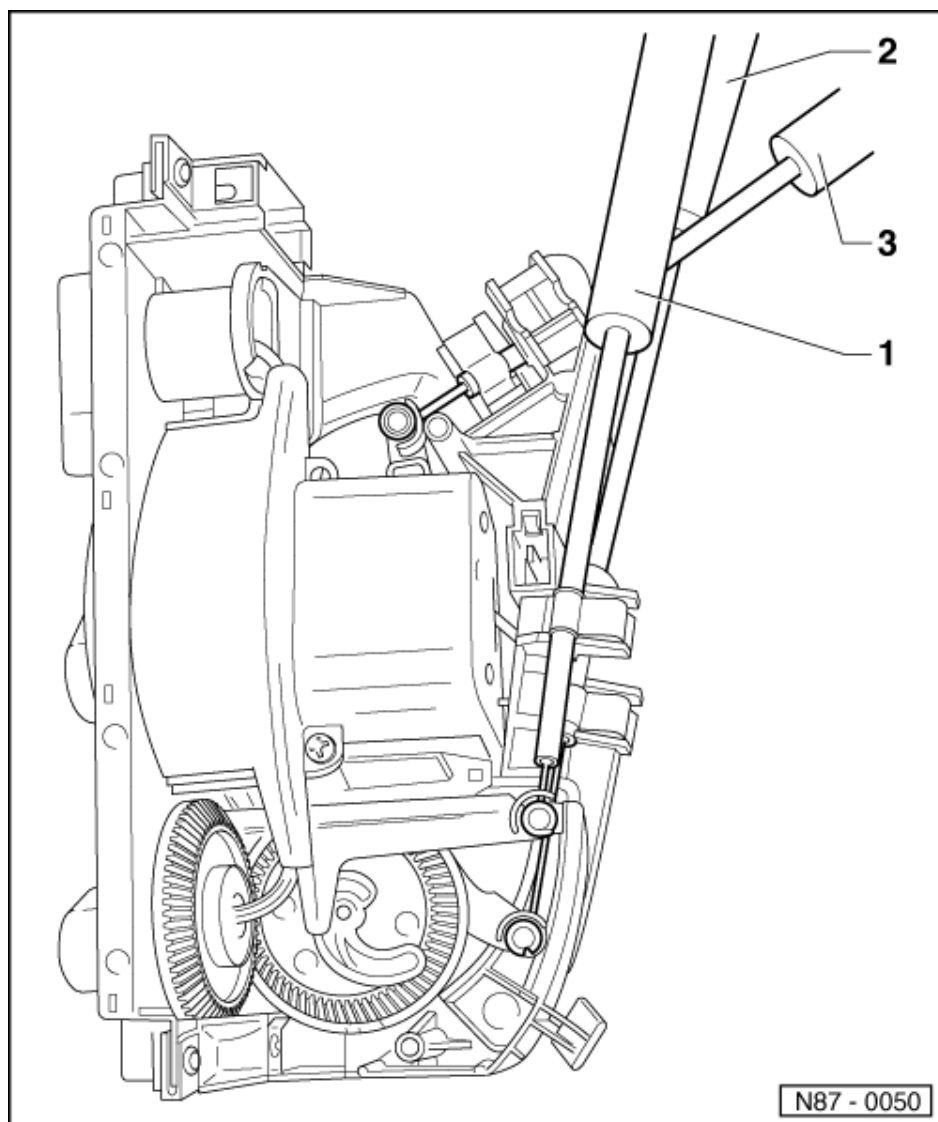


-> Fig.8 Checking pressure relief valve on compressor

- ♦ Task: protects refrigerant circuit against over-pressure
- ♦ The pressure relief valve tell-tale indicates if valve has operated. An adhesive attached plate is pushed out. In this case take vehicle to specialist workshop.

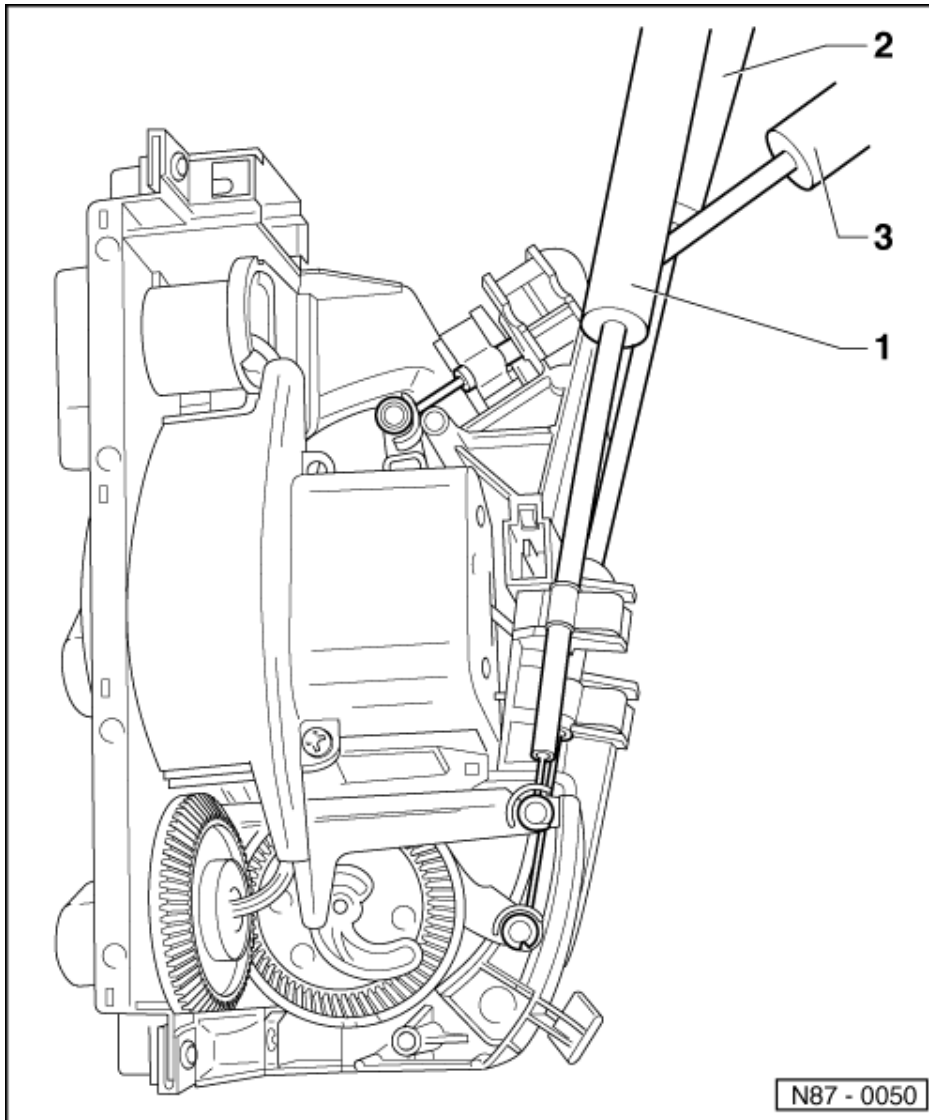


2.4 - Installing and adjusting cables



Notes:

- ♦ First connect cables to removed controls then adjust and secure cables to levers on air conditioner.
- ♦ Sleeve ends of cables which are marked with a coloured line are attached to the controls.
- ♦ Position cable sleeves -2- and -3- at stops on the controls and then secure. Secure sleeve for cable -1- =>Fig. 4 .
- ♦ Adjust cables at flap levers with the controls installed.
- ♦ All flaps must audibly contact stop when controls are turned.



1 Footwell/defrost flap cable

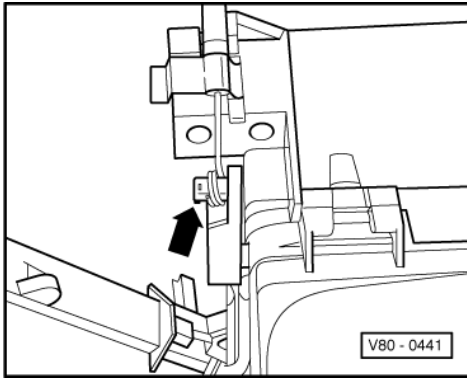
- ◆ From air distribution rotary control knob to footwell/defrost flap
- ◆ Black sleeve
- ◆ Adjusting cable at footwell/defrost flap => Fig. 1

2 Cable for central flap

- ◆ From air distribution rotary control knob to centre flap
- ◆ Black sleeve
- ◆ Adjusting cable at central flap => Fig. 2

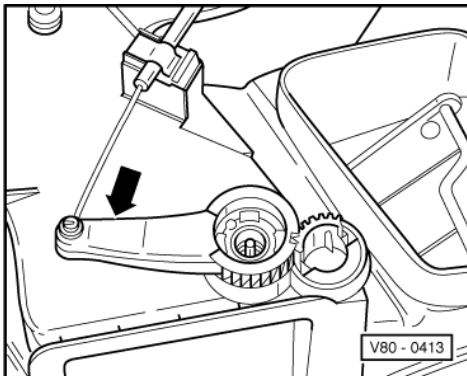
3 Temperature control flap cable

- ◆ From temperature rotary control knob to temperature control flap
- ◆ Blue sleeve
- ◆ Adjusting cable at temperature control flap => Fig. 3



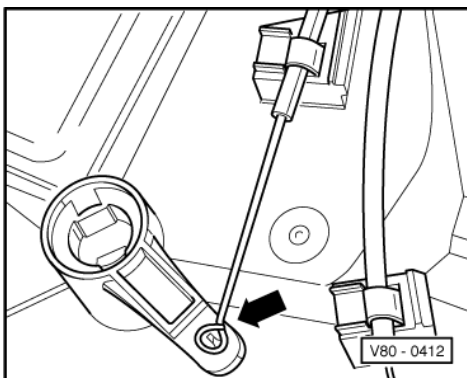
-> Fig.1 Adjusting cable at footwell/defrost flap

- Install warm and fresh air controls.
- Turn air distribution rotary control knob to stop at "defrost" position.
- Press footwell/defrost flap lever onto stop -arrow- and secure black cable sleeve.



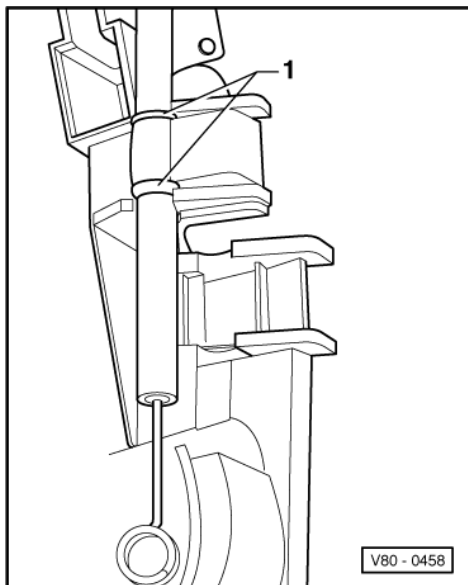
-> Fig.2 Adjusting cable at central flap

- Install warm and fresh air blower controls.
- Turn air distribution rotary control knob onto stop at "defrost" position.
- Press central flap lever onto stop -arrow- and secure black sleeve.



-> Fig.3 Adjusting cable at temperature flap

- Install warm and fresh air blower controls.
- Turn temperature rotary control knob to stop at "cold" position.
- Press temperature flap lever onto stop -arrow- and secure blue cable sleeve.

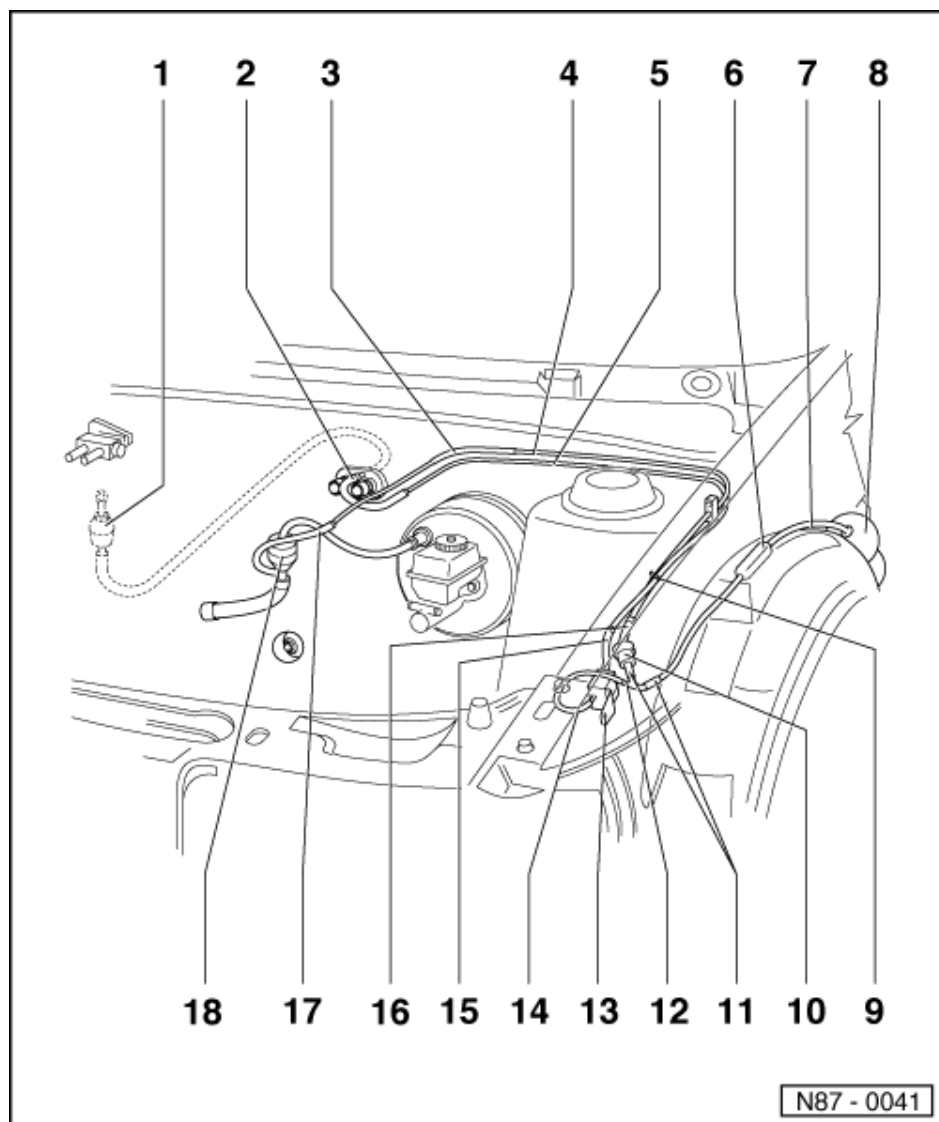


-> Fig.4 **Securing footwell/defrost flap cable to control**

- Secure cable sleeve at blue marking -1- on control.
- Secure inner cable to upper lever.
- Adjusting cable on footwell/defrost flap => Fig. 1



2.5 - Vacuum hose connection diagram



Notes:

- ♦ Insertion depth of vacuum hose in vacuum reservoir: 30 mm. Overlap of vacuum hose on plastic pipe: onto stop (approx. 15 mm)
- ♦ Vacuum is produced by petrol engines in the intake manifold and by Diesel engines via an exhauster

4 Vacuum unit for fresh and recirculating air flap*

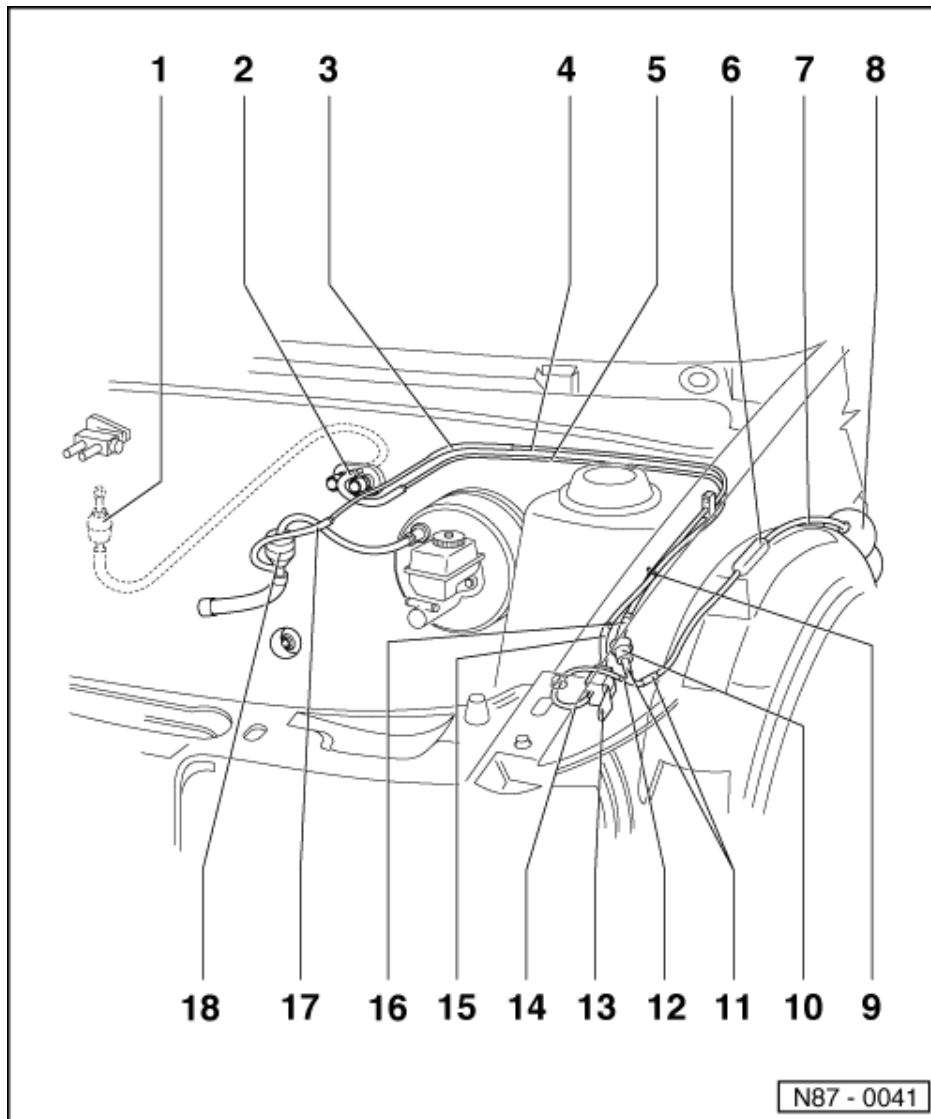
5 Reduction hose

6 Hose

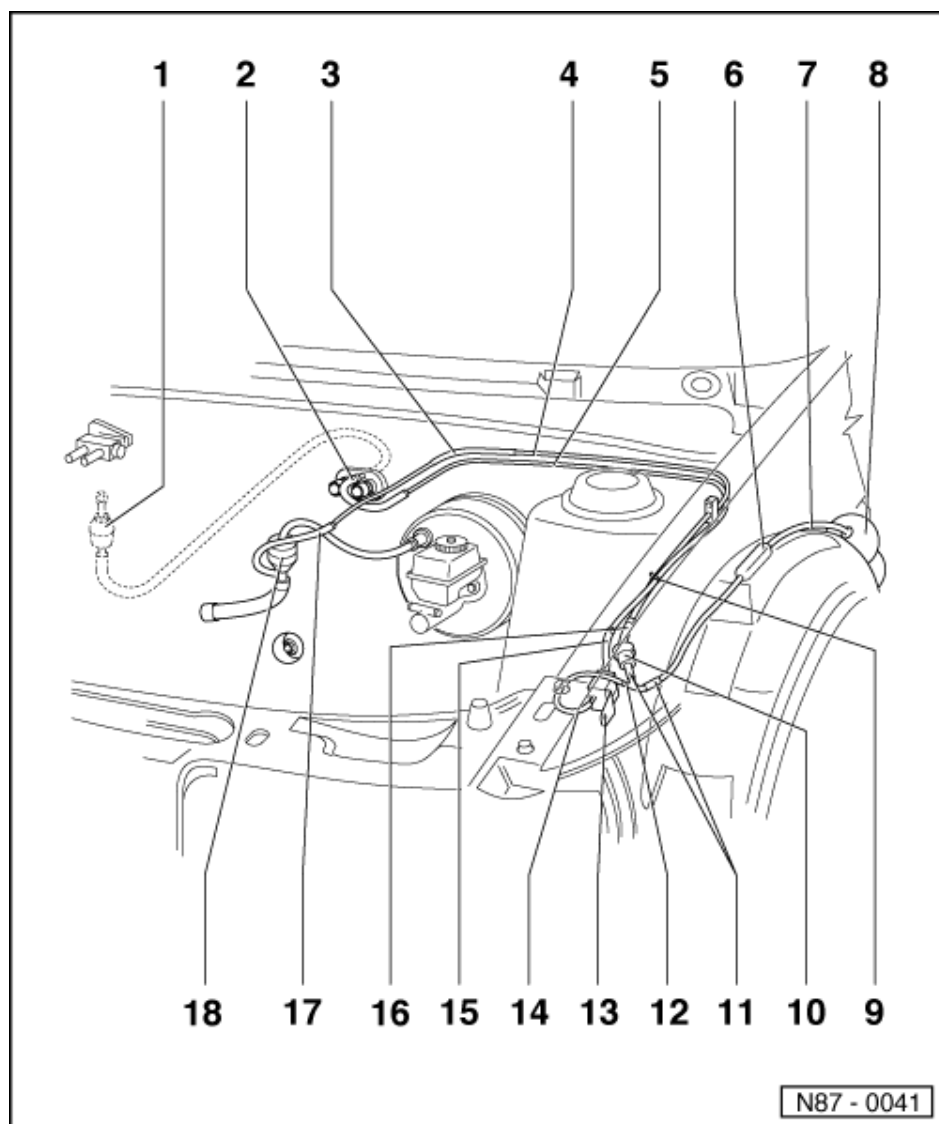
3.5 x 2 x 90 mm

7 Plastic pipe

4 x 1 x 950 mm



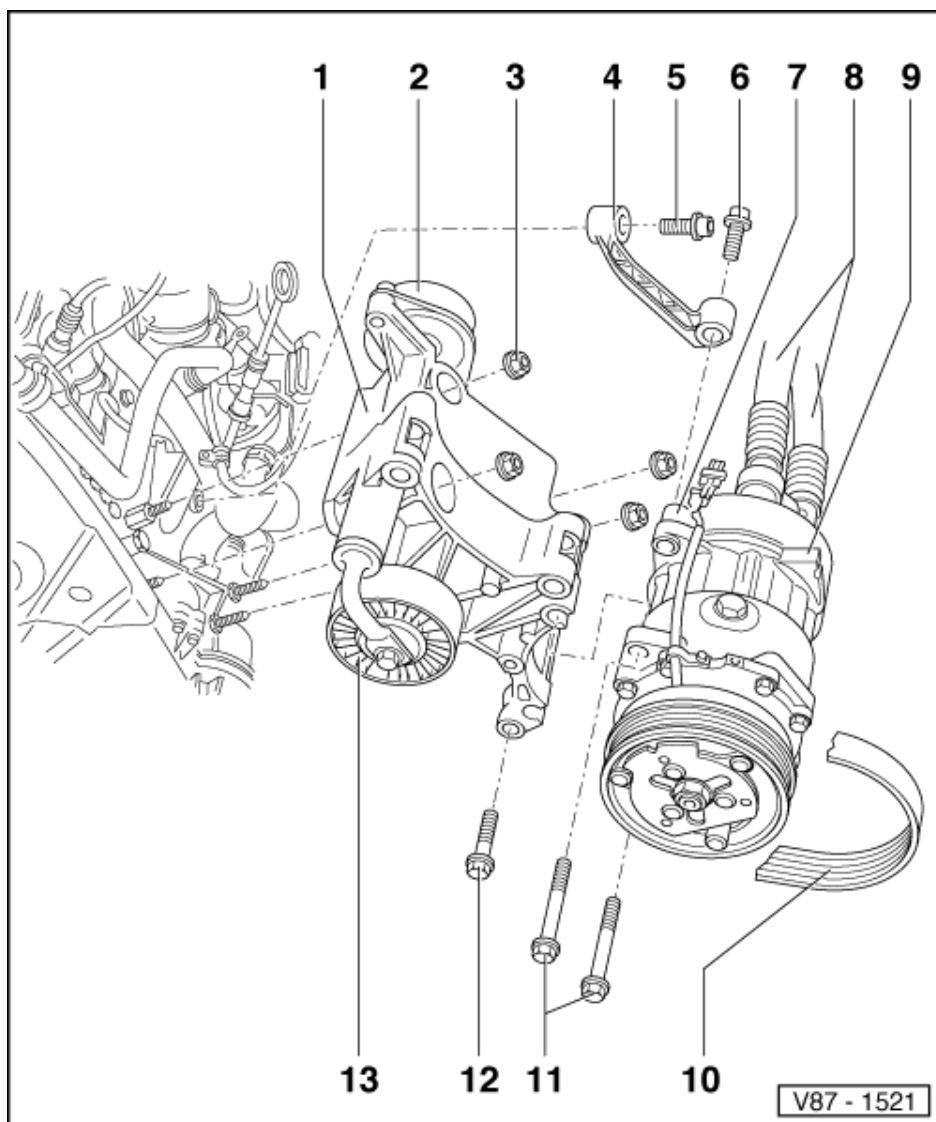
- 8 Plastic pipe**
4 x 1 x 1030 mm
- 9 Foam pipe**
- 10 Plastic pipe**
4 x 1 x 490 mm
- 11 Vacuum reservoir**
- 12 Cable tie**
- 13 Non-return valve**
Direction of suction indicated by arrow
- 14 Hose**
3.5 x 2 x 40 mm
- 15 T-connection**
- 16 Two way valve for fresh and recirculating air flap -N63-**



- 17 Hose**
3.5 x 2 x 350 mm
- 18 Hose**
3.5 x 2 x 245 mm
- 19 Hose**
3.5 x 2 x 116 mm
- 20 Hose**
3.5 x 2 x 116 mm
- 21 Non-return valve**



2.6 - Removing and installing compressor bracket - 4 Cyl. petrol engine



Note:

The compressor bracket and related components can be removed and installed without having to open the refrigerant circuit

1 Alternator and compressor bracket

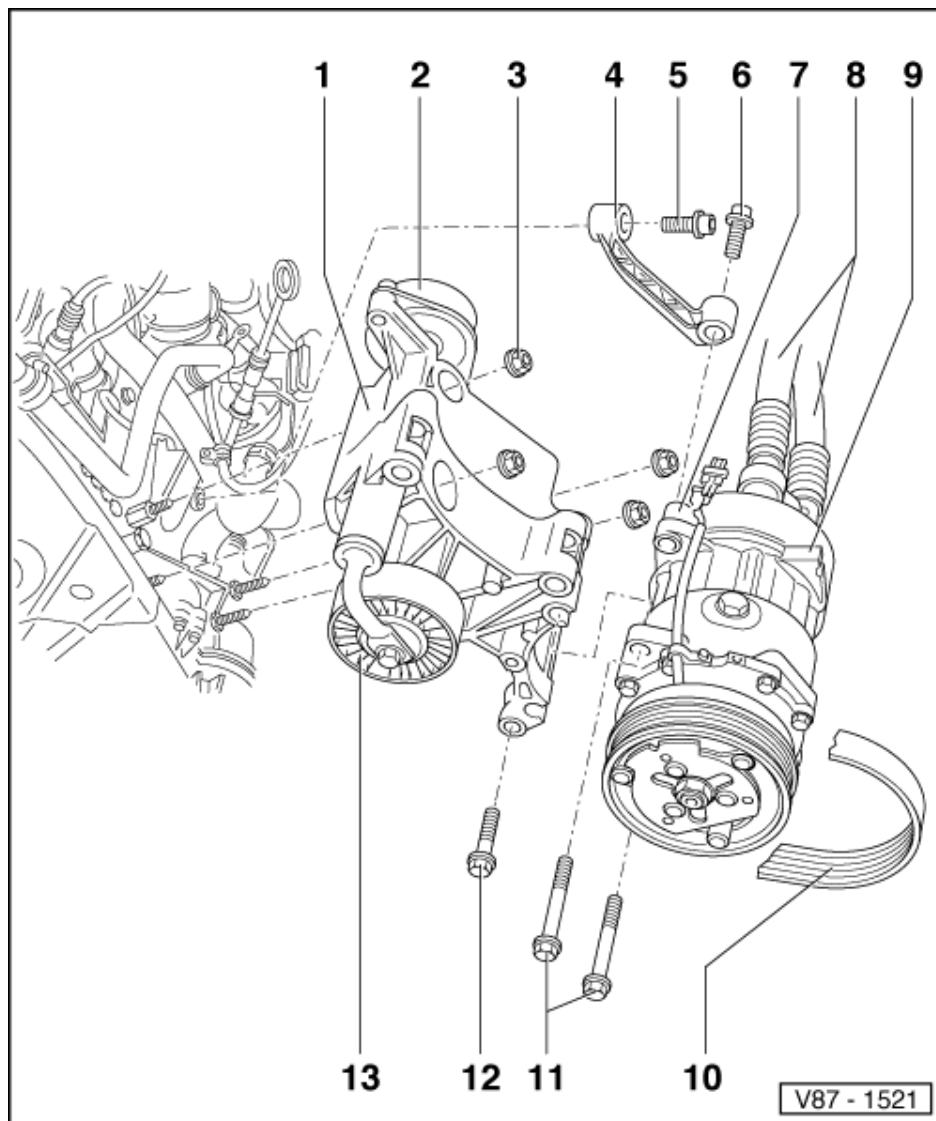
- ♦ Removing and installing alternator

=> Repair group 27

2 Tensioning element for tensioner

3 Hexagon nut M8

- ♦ 30 Nm



4 Compressor bracket

◆ Installing:

- Insert bolts - 5 - and - 6 - 2 to 5 turns.
- Screw in bolt -6- until bracket contacts threaded bush - 7 -.
- First tighten bolt - 5 - to 45 Nm, then tighten bolt - 6 - to 45 Nm.

5 Socket head combi-bolt M10x30

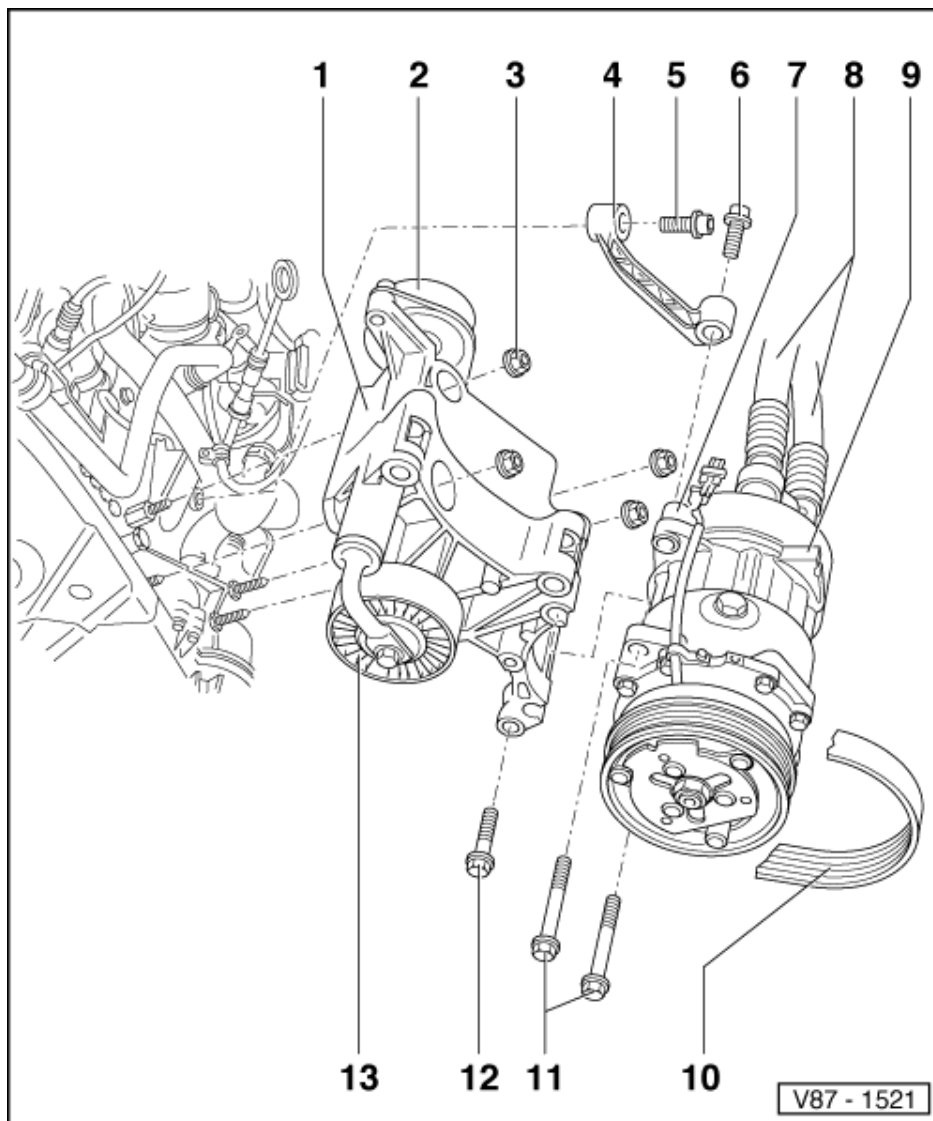
- ◆ 45 Nm

6 Socket head combi-bolt M10x30

- ◆ 45 Nm

7 Threaded sleeve

8 Refrigerant hoses



9 Compressor

- ♦ Removing:
 - Loosen hexagon bolt - **11** - a couple of turns and knock-back threaded sleeve - **7** - from compressor. Then remove hexagon bolts.

10 Ribbed belt

- ♦ Removing and installing

=> Repair group 13

11 Hexagon bolt M10x112

- ♦ 45 Nm

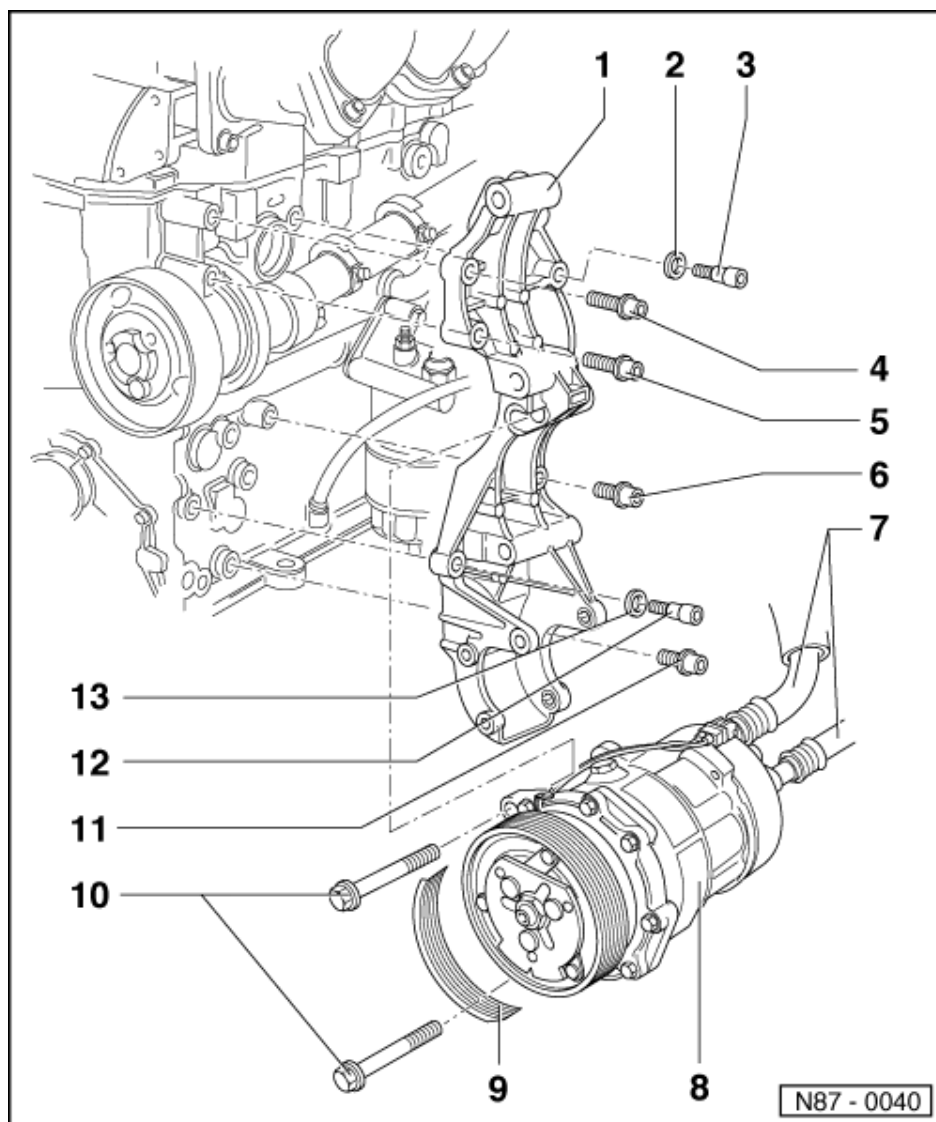
12 Hexagon bolt M8x42

- ♦ 25 Nm

13 Tensioner



2.7 - Removing and installing compressor bracket - 6 Cyl. petrol engine



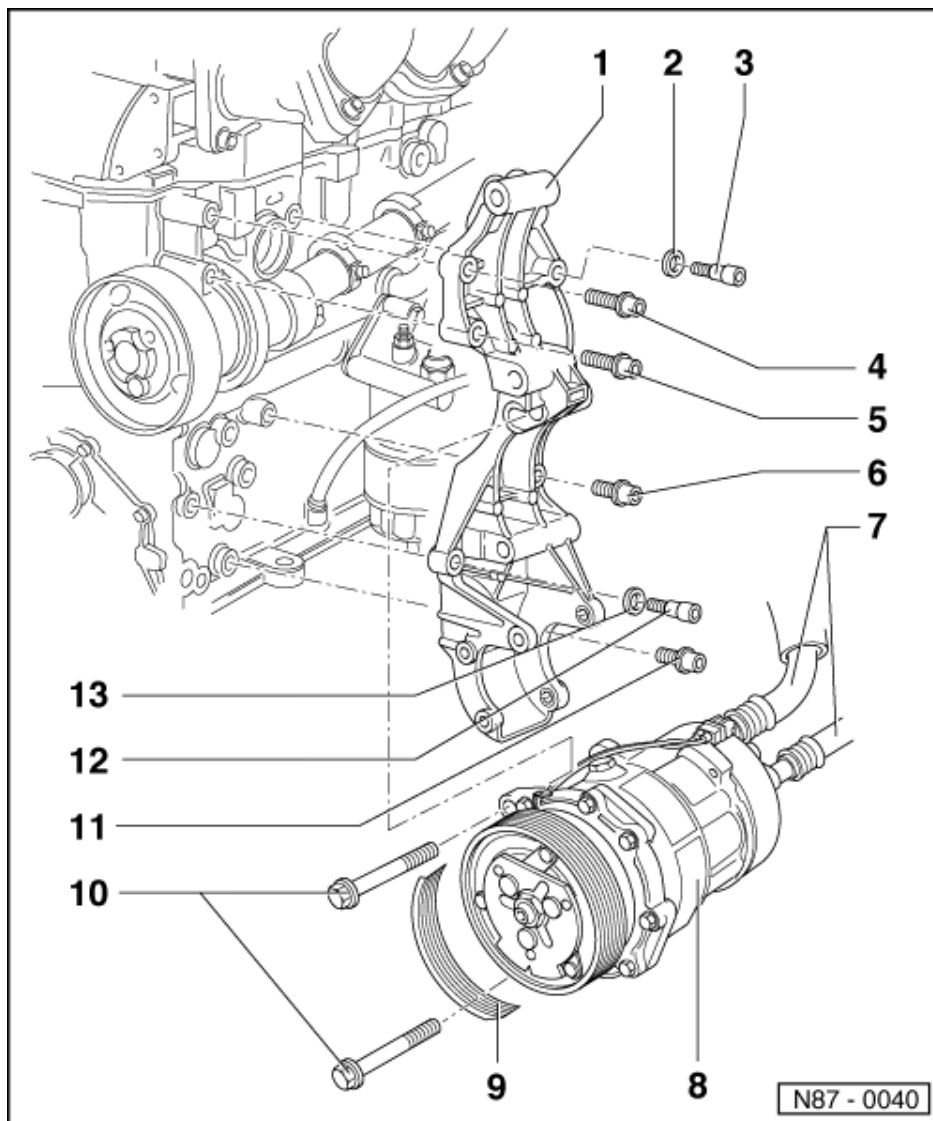
Note:

Compressor and related parts can be removed and installed without having to open refrigerant circuit

1 Alternator, compressor and P.A.S. vane pump bracket

- ♦ Removing:
 - First remove alternator, compressor - **8** - and P.A.S. vane pump
 - Removing and installing alternator

=> Electrical system; Repair Group 27; Removing and installing alternator Removing and installing alternator

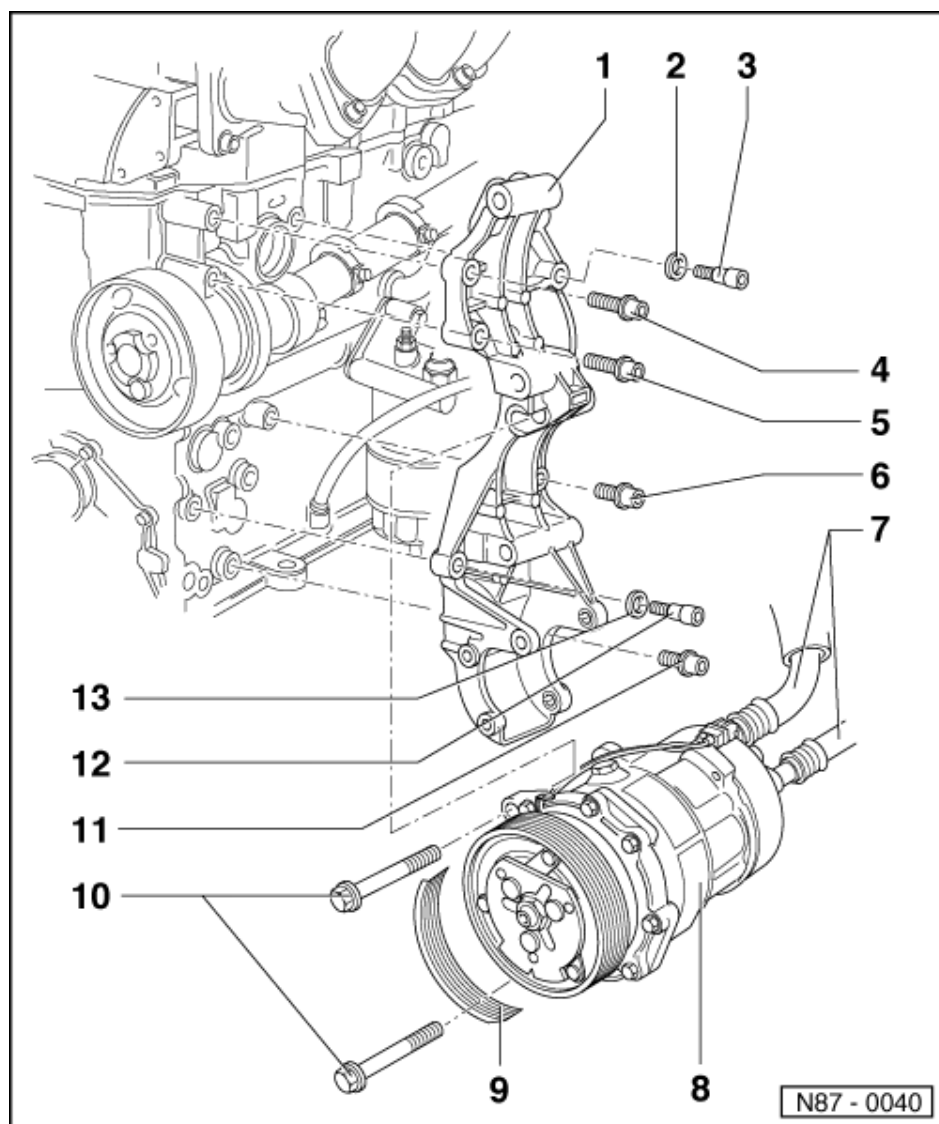


- Removing and installing P.A.S. vane pump

=> Repair Group 48; Removing and installing P.A.S. vane pump, vehicles with 128 kW engine
Removing and installing P.A.S. vane pump, vehicles with 128 kW engine

- ♦ Installing:
- First, fit "fitted bolts" - 3 - and -12-.

- 2 Washer 8.4x16x1.6**
- 3 Fitting bolt M8x28**
 - ♦ 25 Nm
- 4 Socket head combi-bolt M8x30**
 - ♦ 25 Nm
- 5 Socket head combi-bolt M8x30**
 - ♦ 25 Nm
- 6 Socket head combi-bolt M8x38**
 - ♦ 25 Nm



7 Refrigerant hoses

8 Compressor

♦ Removing:

- First remove front bumper

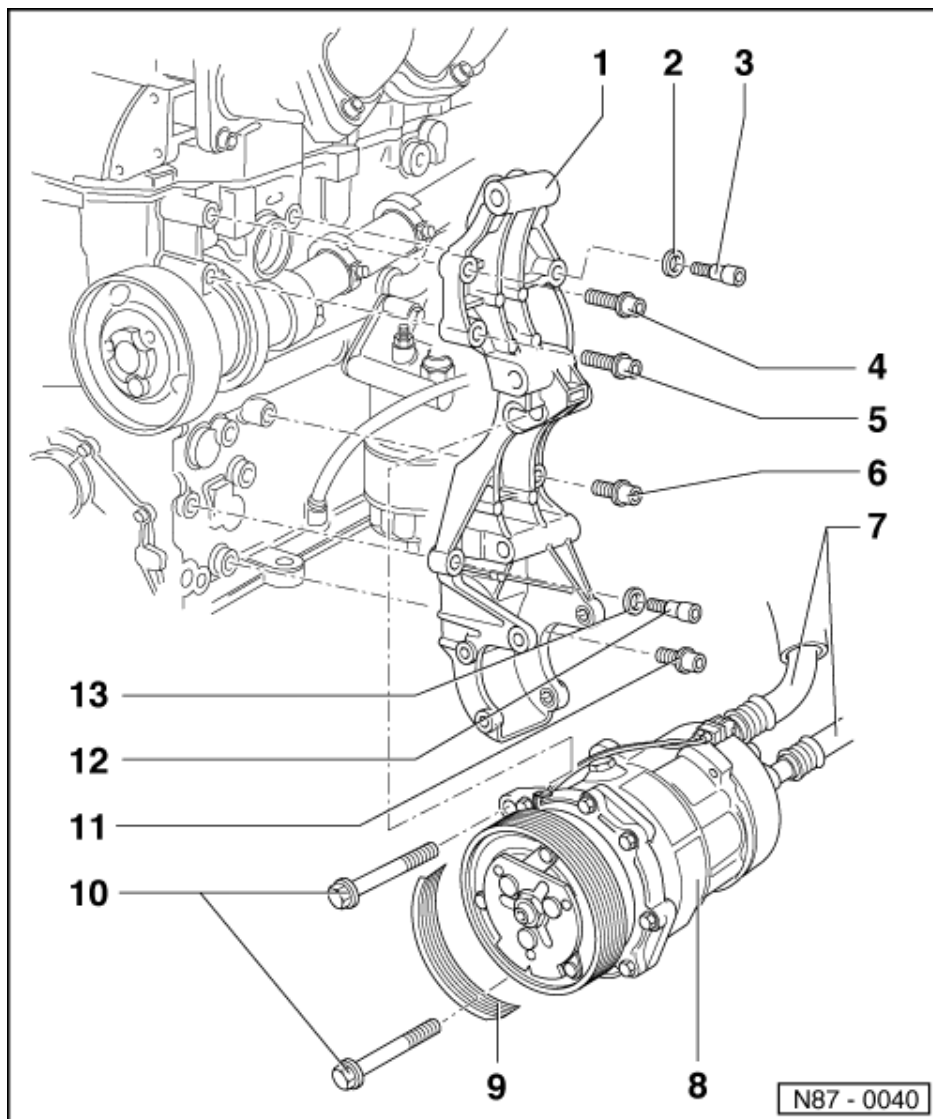
=> General body repairs; Repair Group 63; Servicing bumpers Servicing bumpers

- Loosen bonnet lock carrier and pull forward
- Remove headlight housing

=> Electrical system; Repair Group 94; Servicing headlights Servicing headlights

- Remove double ribbed belts - **9** -
- Remove alternator

=> Electrical system; Repair Group 27; Removing and installing alternator Removing and installing alternator



- Loosen hexagon bolts - **10** - a couple of turns and knock-back threaded sleeves from compressor. Then remove hexagon bolts.

9 Double ribbed belts

- ♦ Removal and installing

=> 6-cylinder injection engine, Mechanics; Repair Group 13; Removing and installing ribbed belts Removing and installing ribbed belts

10 Hexagon bolt M10x112

- ♦ 45 Nm

11 Socket head combi-bolt M8x30

- ♦ 25 Nm

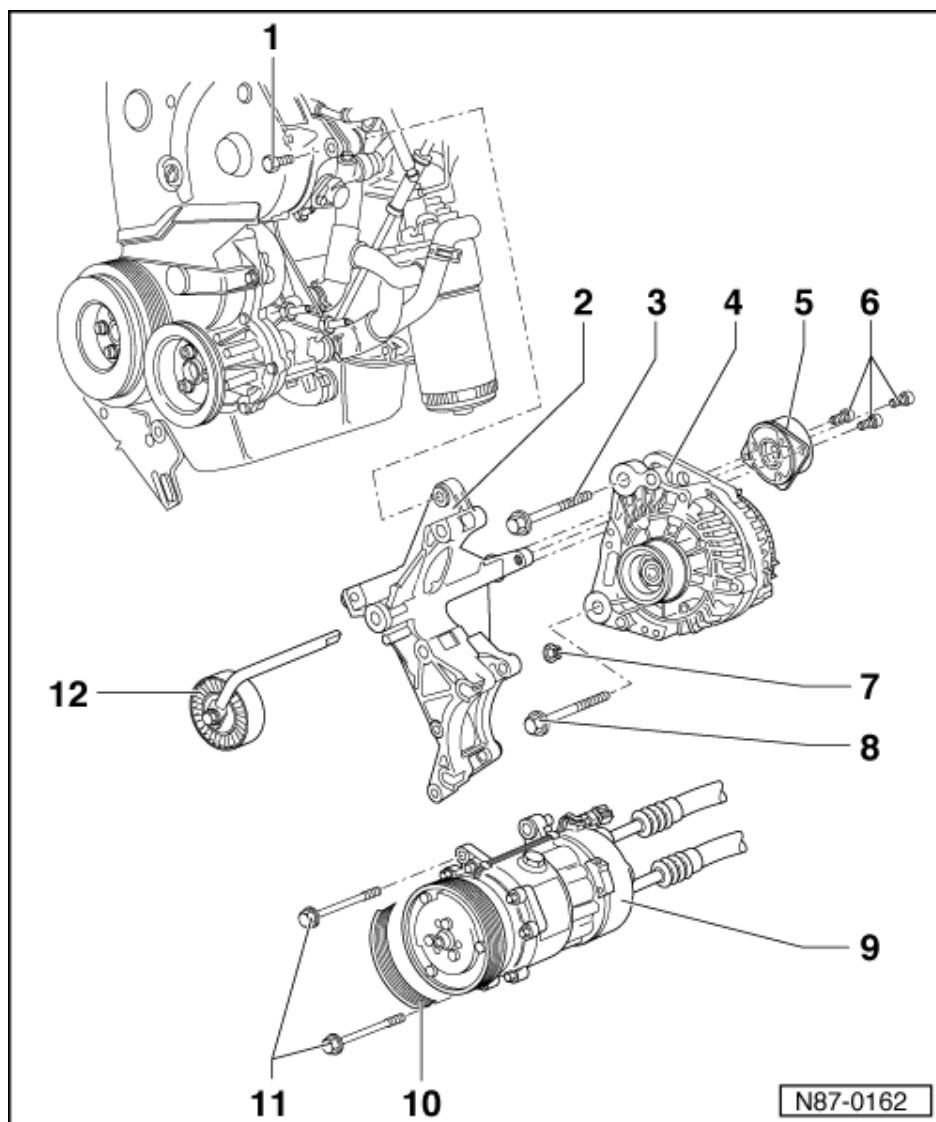
12 Fitted bolt M8x20

- ♦ 25 Nm

13 Washer 8.4x16x1.6



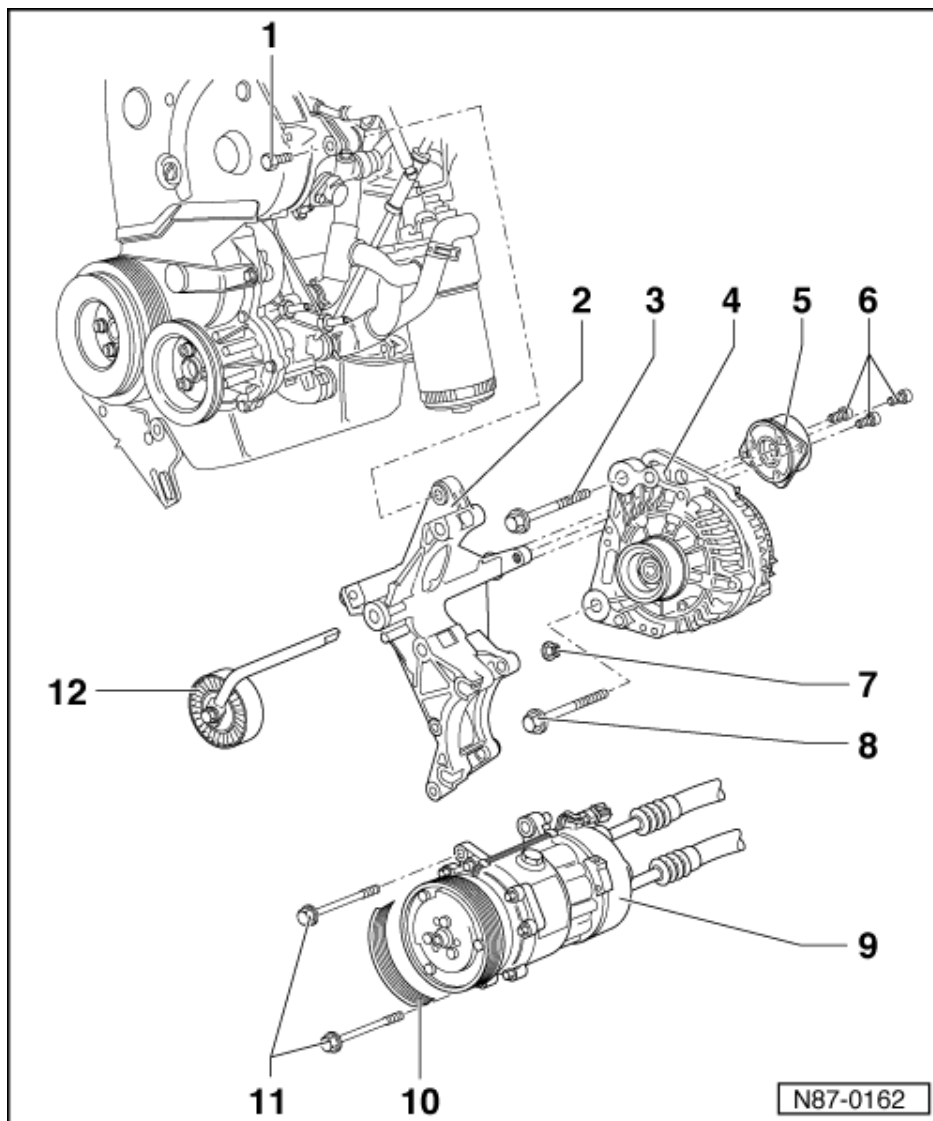
2.8 - Removing and installing compressor bracket - Turbo Diesel engine



Engine codes AAZ and 1Z

The compressor bracket and related components can be removed and installed without having to open the refrigerant circuit

- 1 Hexagon bolt M8 x 22
 - ♦ 25 Nm
- 2 Alternator and compressor bracket
 - ♦ Removing:
 - First remove alternator - 4 - and compressor - 9 -.
- 3 Hexagon bolt M8 x 85
 - ♦ 25 Nm



4 Alternator

- ♦ Removal and installing

=> Electrical system; Repair group 27; Removing and installing alternator Removing and installing alternator

5 Tensioning element for tensioner

6 Socket head bolt M8 x 22

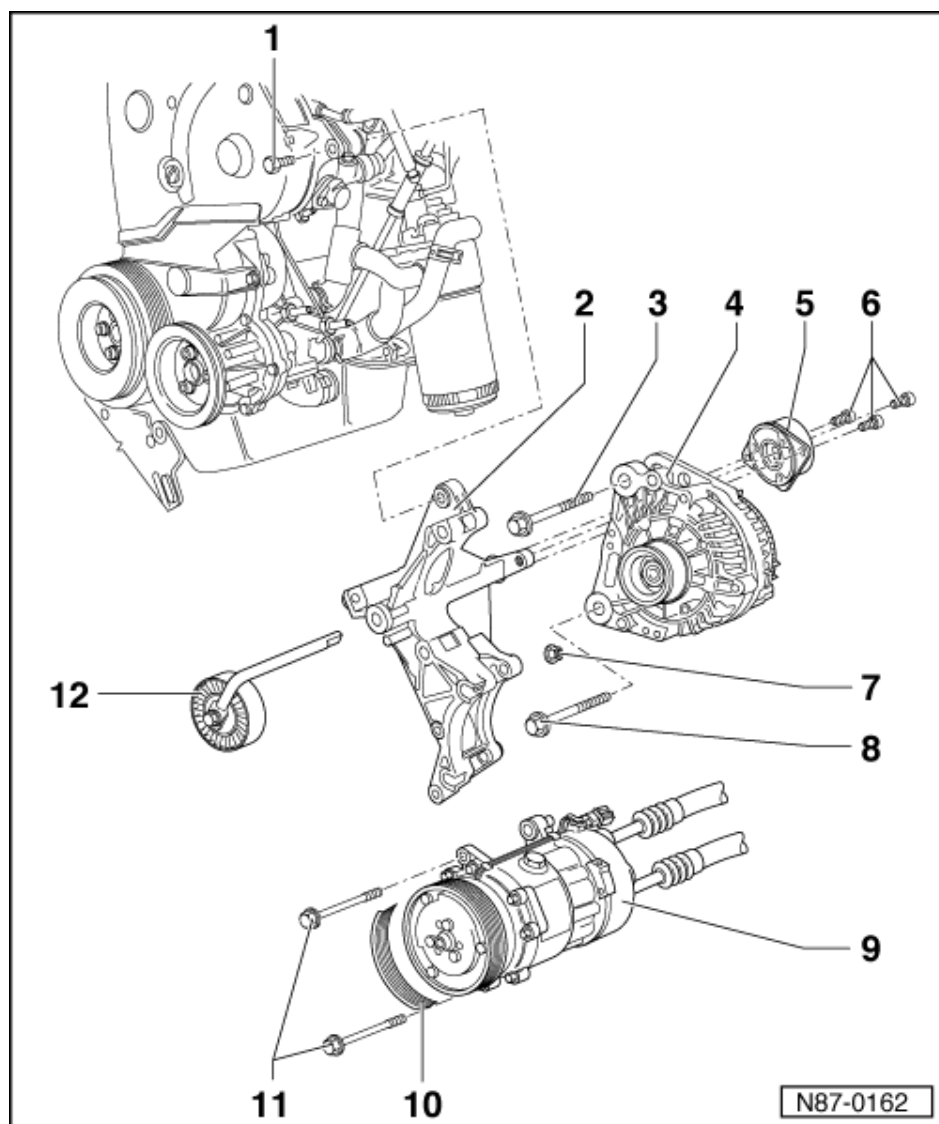
- ♦ 25 Nm
- ♦ Qty. 3

7 Hexagon nut M8

- ♦ 30 Nm
- ♦ Qty. 4

8 Hexagon bolt M8 x 85

- ♦ 25 Nm



9 Compressor

- ♦ Removing:
 - Loosen hexagon bolt - **11** - a couple of turns and knock-back threaded sleeve from compressor. Then remove hexagon bolts.

10 Ribbed belt

- ♦ Removing and installing

=> Repair group 13

11 Hexagon bolt M10x112

- ♦ 45 Nm
- ♦ Qty. 2

12 Tensioner

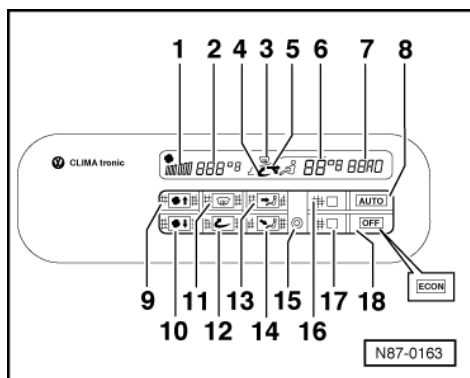
- ♦ Removing:
 - First loosen M6 x 16 socket head bolt on tensioning roller tensioning element and knock-back tensioning roller with rubber hammer.



3 - Climatronic - air conditioner with automatic regulation

3.1 - Climatronic - air conditioner with automatic regulation

3.2 - Control and function of the control and display unit



1 - Blower speed indicator

Displays a medium speed in automatic operation -7-, independent of actual blower speed.

2 - Ambient temperature indicator

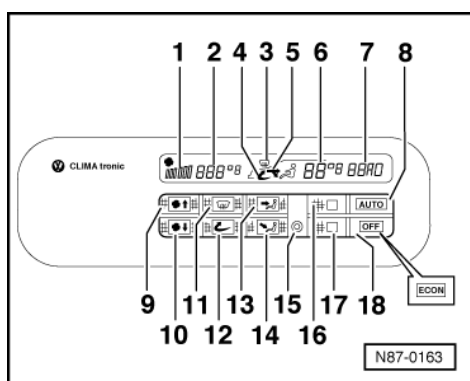
Ambient temperature is measured by ambient temperature sensor -G17-. In event of failure, temperature sensor in fresh air intake duct -G89- takes over the function. If both temperature sensors fail, "--" appears in the display.

If road speed drops to below 5 km/h, the value displayed will not change. The actually measured value is not displayed as this is affected by heat from the engine at low speeds.

3 - Windscreen defrost indicator

4 - Air recirculation indicator

5 - Air flow direction indicator



6 - Selected interior temperature

7 - Vehicles up to 07.95:

Display "AUTO" (automatic operation) or "OFF" (system off)

Vehicles from 08.95:

"AUTO" (automatic operation) or "ECON" (compressor only switched off)

8 - "Automatic operation" button

9 - "Blower speed higher" button

10 - "Blower speed lower" button

(the system is also switched off with this button)

11 - "Defrost windscreen" button

12 - "Air recirculation" button

13 - "Air flow to upper body" button

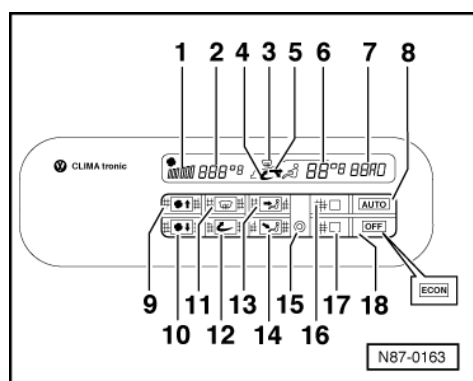
14 - "Air flow to foot well" button

15 - Celsius/Fahrenheit selector button

Volkswagen Technical Site: <http://vwts.ru> <http://vwts.info>



16 - "Warmer" button



17 - "Colder" button

18 - Vehicles up to 07.95:

OFF button for "System on/off"

Vehicles from 08.95:

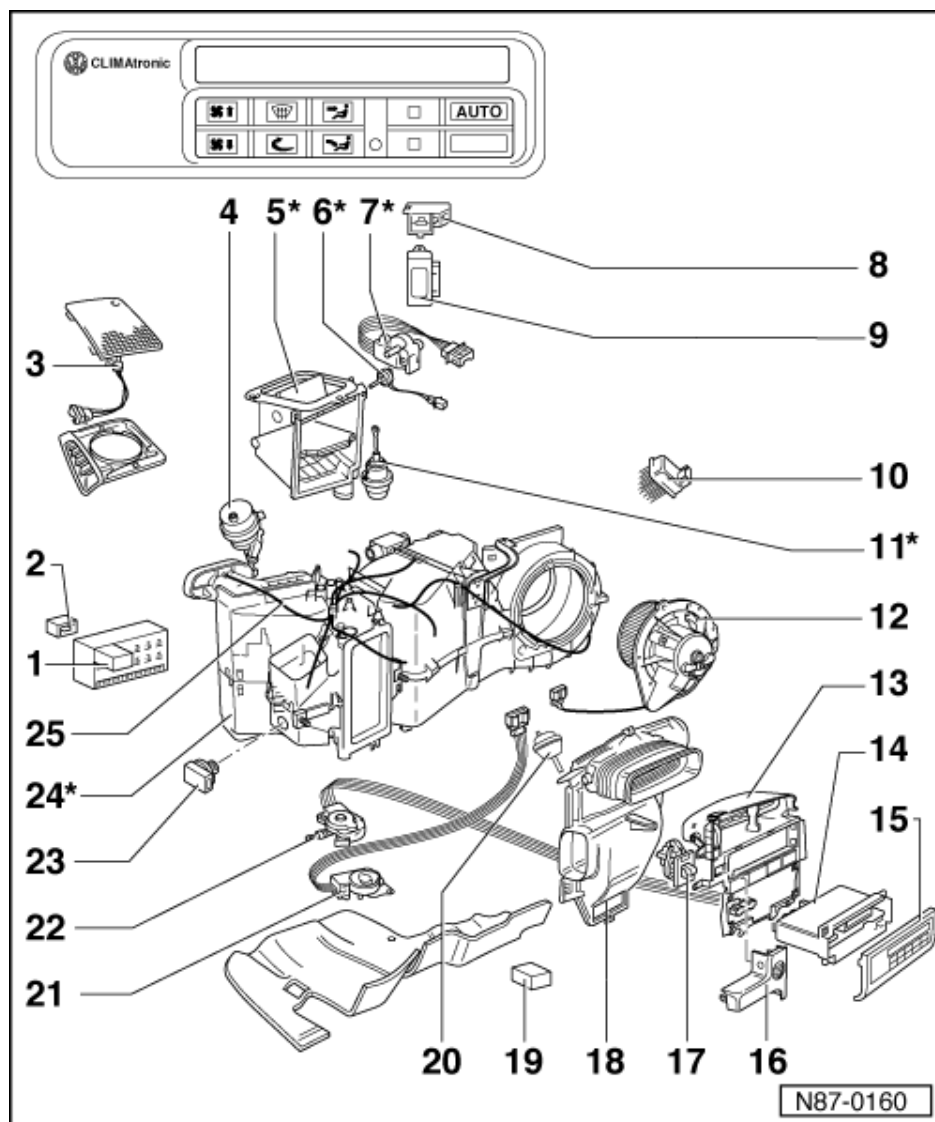
ECON button for "Switching compressor on/off"

Notes:

- ♦ The automatic operation of the Climatronic can be influenced with buttons 9 - 14.
- ♦ When deviating from automatic operation the display "AUTO" -7- will disappear; the control of the Climatronic continues to function under the programmed restrictions.
- ♦ Returning to automatic operation is only possible by pressing button -8-.
- ♦ On vehicles from 08.95 the Climatronic can only be completely switched off with button 10.
- ♦ In ECON operation only the compressor is switched off, the heating and ventilation operation continues to be controlled electronically.



3.3 - Servicing Climatronic - passenger compartment



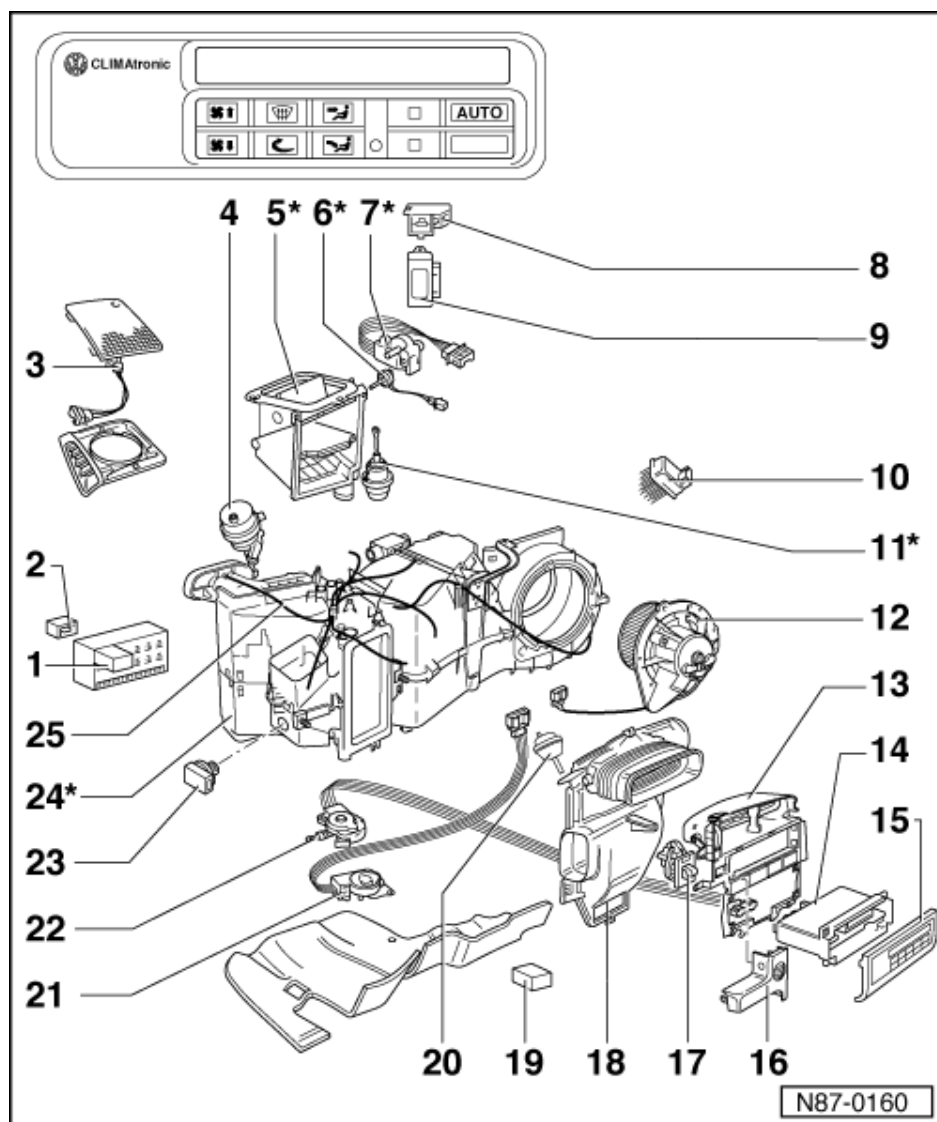
Notes:

- ♦ Parts marked * can only be serviced in specially equipped Service workshops, as the refrigerant must be evacuated with Service station V.A.G 1770 or V.A.G 1771.
- ♦ Removing and installing components without item numbers =>Page 46

1 Climatronic relay -J254-

2 Heating and air conditioning fuse -S23-

- ♦ Only installed in vehicles up to 07.95



3 Sunlight penetration photo sensor -G107-

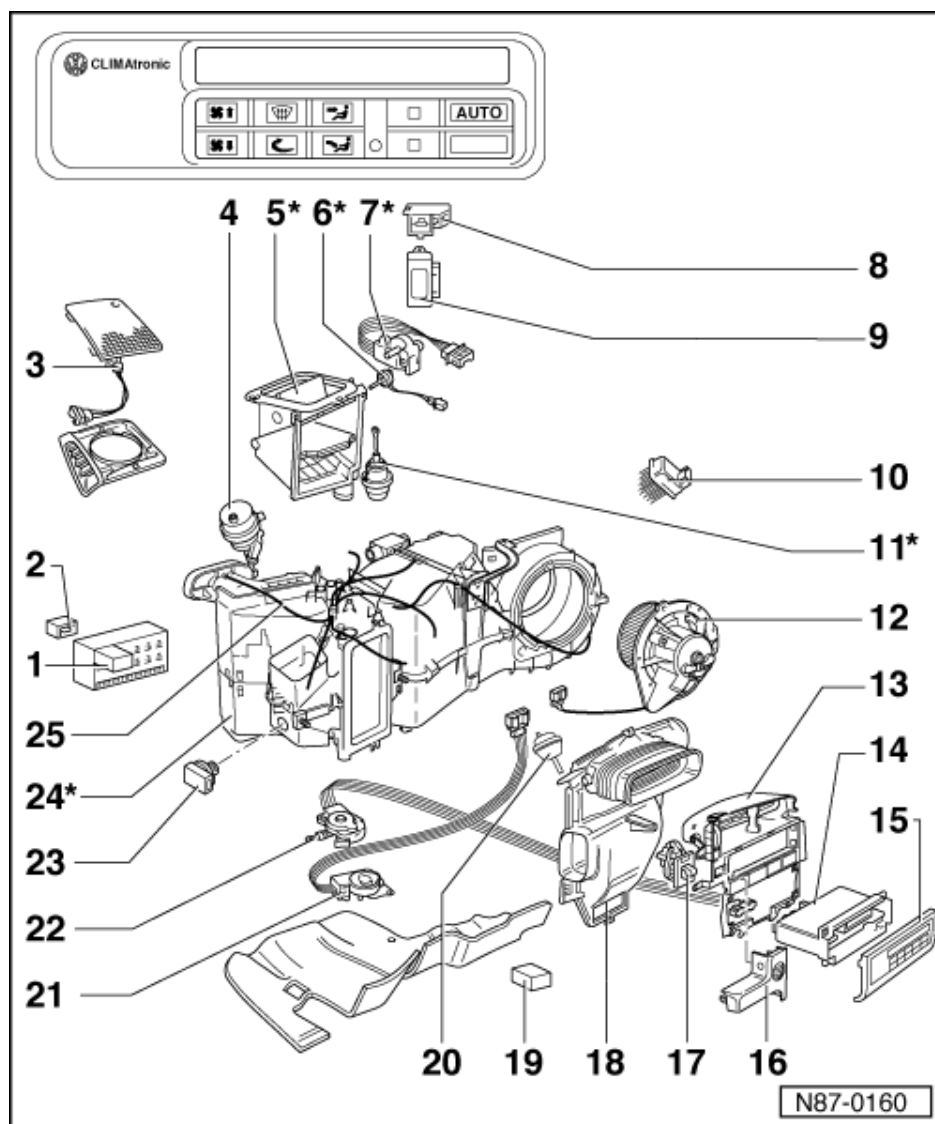
- ♦ Tasks: controls temperature flap and fresh air blower depending on light intensity
- ♦ In event of failure: control unit -J255- assumes fixed value
- ♦ Checking: self diagnosis using V.A.G 1551

4 Double vacuum unit - foot well/defrost flap

- ♦ Vacuum hose connection diagram => Page 102
- ♦ Removing and installing => Fig. 6

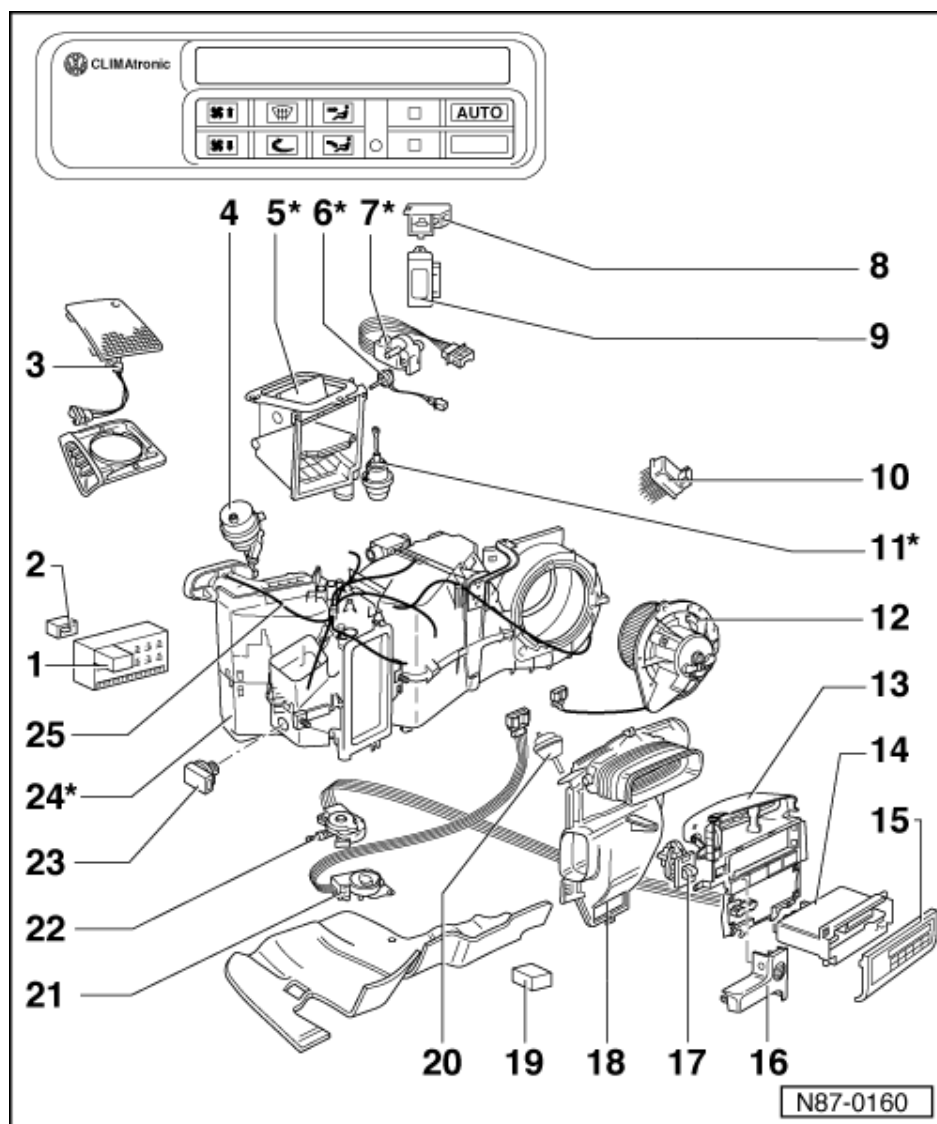
5 Air intake*

- ♦ With fresh air and recirculating air flap and air flow flap



6 Fresh air intake duct temperature sender -G89-*

- ♦ Task: temperature sensor controls temperature flap and fresh air blower depending on temperature
- ♦ In event of failure: ambient temperature sensor -G17- takes over task. If both sensors are defective, operation continues assuming value of +10°C. Air recirculation is not possible. Control and display unit -E87- reads: "---"
- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing: first remove air flow flap positioning motor - 7 -.



7 Air flow flap positioning motor -V71-*

- ♦ Checking: Self diagnosis using V.A.G 1551
- ♦ Removing: first remove dash panel and complete air conditioner

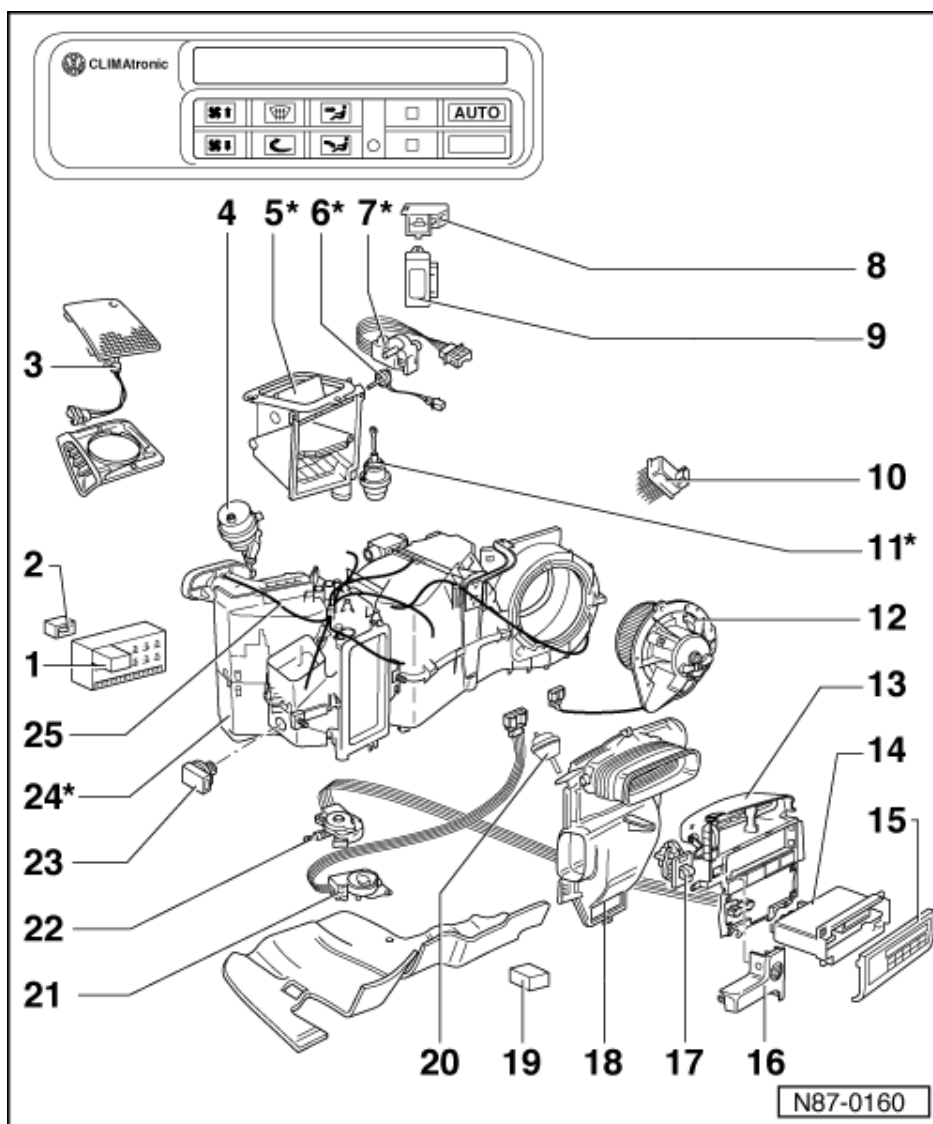
8 Valve block bracket

9 Valve strip -N53-

- ♦ If no current is flowing in the valve strip, no vacuum is created
- ♦ Removing and installing=> Fig. 5
- ♦ Vacuum hose connection diagram => Page 102

10 Blower control unit -J126-

- ♦ Task: precisely controls fresh air blower speed depending on voltage
- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing => Fig. 2



11 Vacuum unit for fresh and recirculating air flap*

- ♦ Removing: first remove dash panel and complete air conditioner
- ♦ Vacuum hose connection diagram => Page 102

12 Fresh air blower -V2-

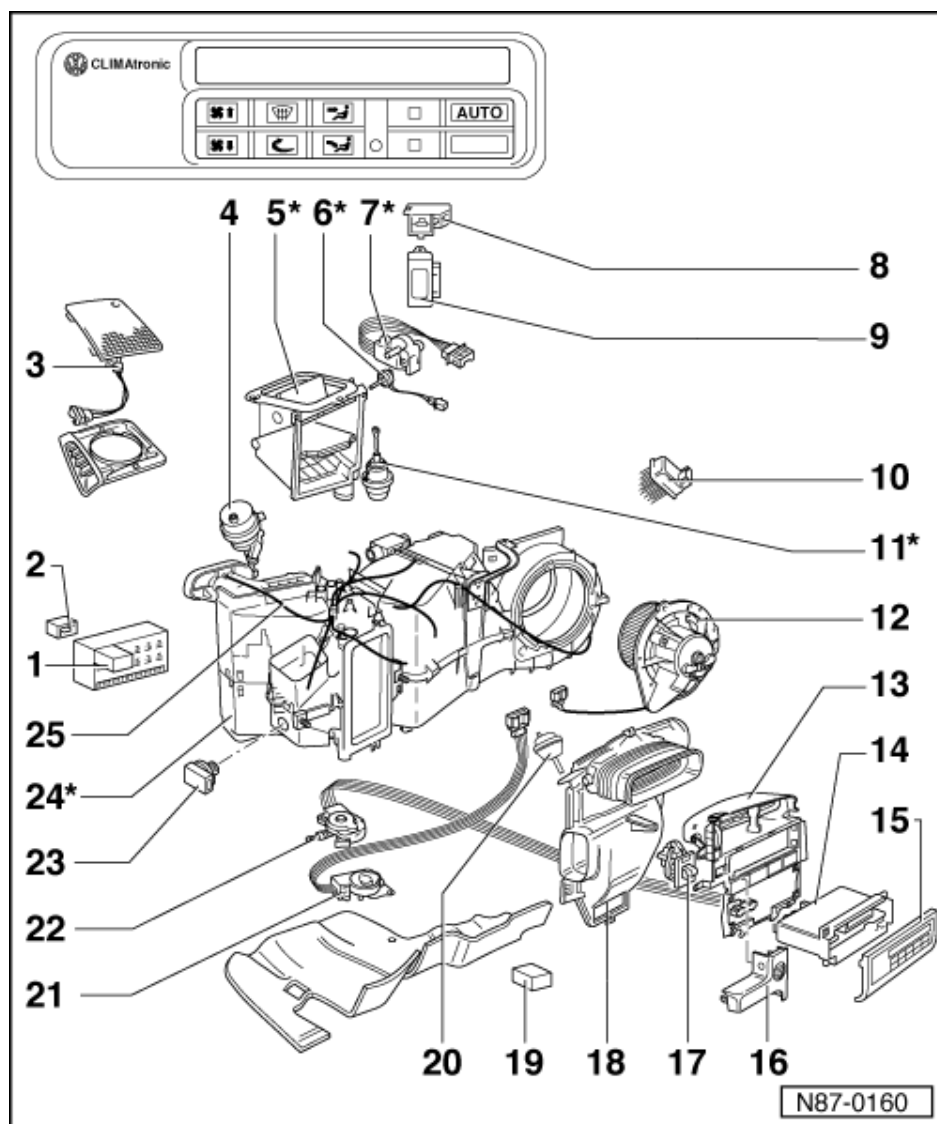
- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing=> Page 54 , Fig. 3

13 Central vent

- ♦ Removing => Page 26 , Fig. 7

14 Climatronic control unit -J255-

- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing => Fig. 1



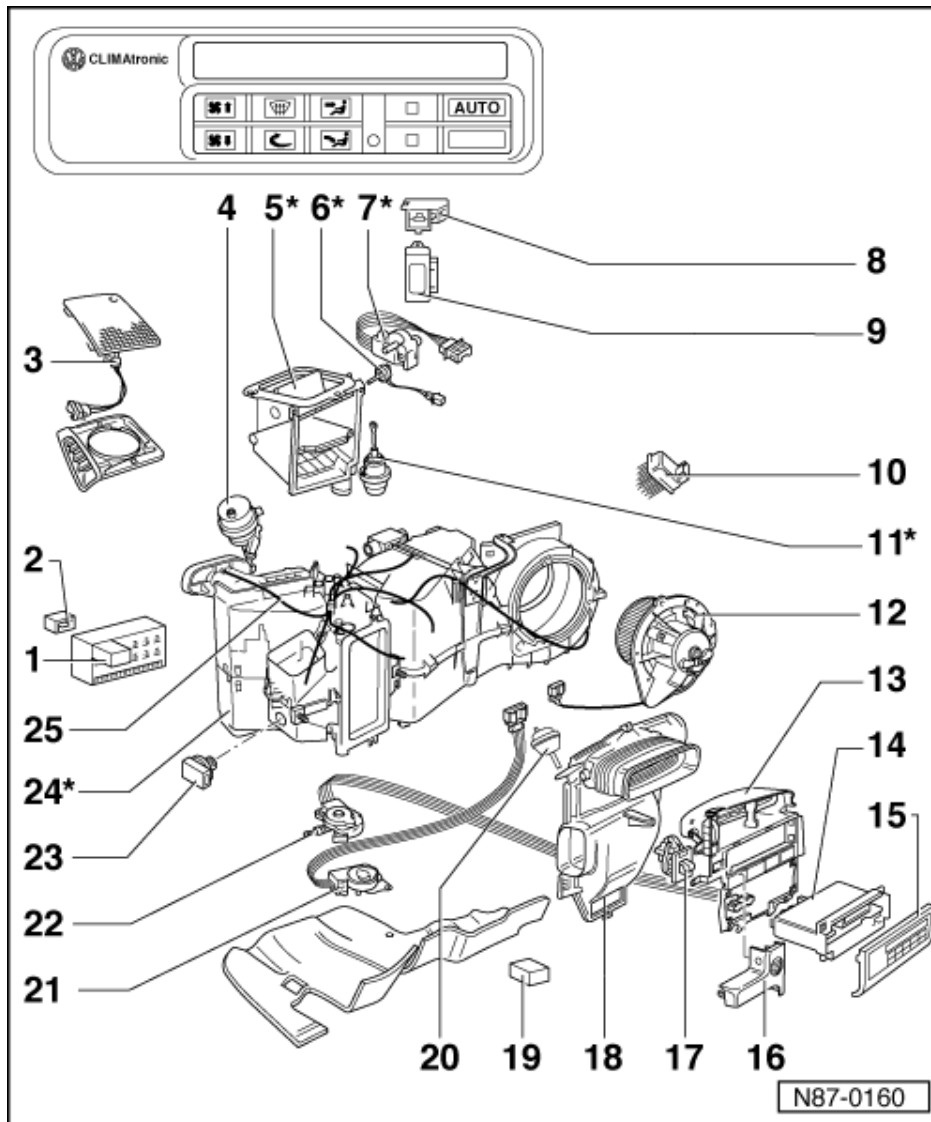
15 Control and display unit -E87-

- ♦ Operation and function => Page 81
- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing => Fig. 1

16 Dash panel temperature sensor trim

17 Dash panel temperature sensor -G56- with temperature sensor fan -V42-

- ♦ Task: Temperature sensor controls temperature flap and fresh air blower in dependence on temperature
- ♦ In event of -G56- failure: continued operation assuming value of +24°C
- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing => Fig. 3



18 Air distributor

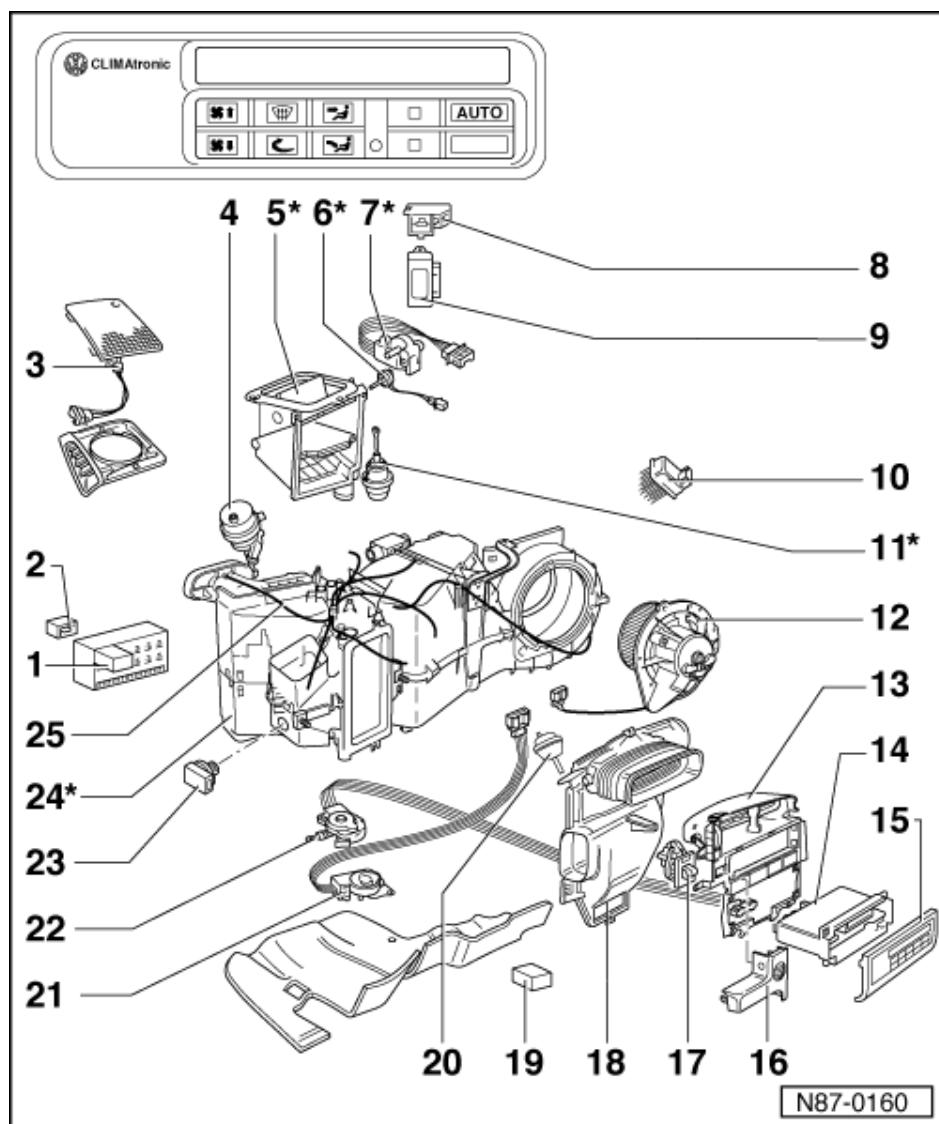
- ♦ Removing => Fig. 49 , item 15

19 Air conditioner switch-off relay -J365-

- ♦ Only on vehicles with ADY and AEK engines up to 07.95
- ♦ Behind the central console
- ♦ Control number 147

20 Central vent vacuum unit

- ♦ Removing: Remove dash panel insert, rotate, pull out
- ♦ Vacuum hose connection diagram => Page 102

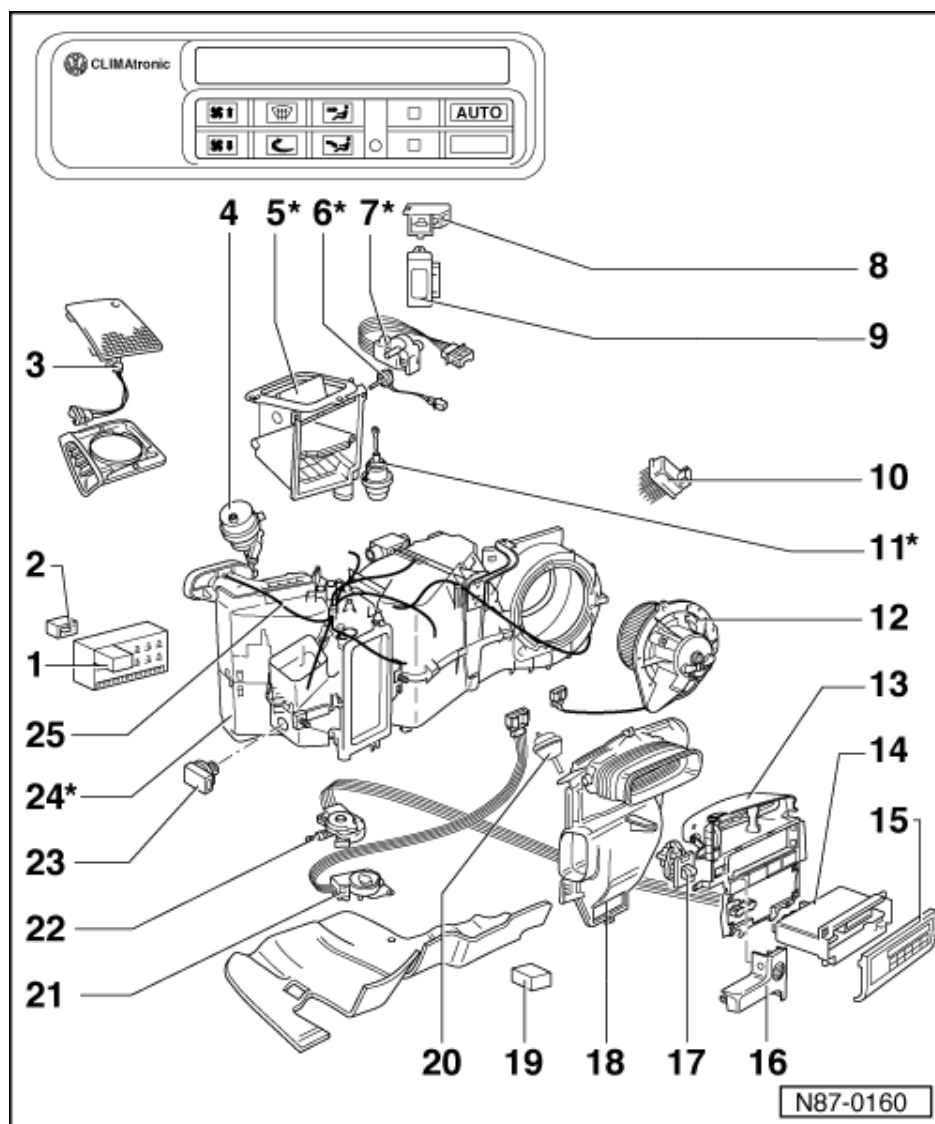


21 Central flap positioning motor -V70-

- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Removing and installing => Fig. 4

22 Temperature flap positioning motor -V68-

- ♦ Checking: self diagnosis using V.A.G 1551
- ♦ Checking and adjusting end position of installed positioning motor =>Page 101
- ♦ Removing: first remove central console and footwell vent (removing footwell vent) =>Page 53 , item 32)



23 Front vent temperature sender -G152-

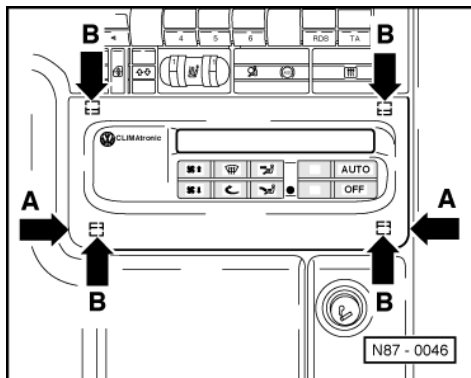
- ◆ Only installed in vehicles from 08.95
- ◆ Function: Controls the air distribution defrost/footwell and the fresh air blower speed dependent upon the vent temperature.
- ◆ Emergency running in event of front vent temperature sender-G152- failure: Continued operation assuming value of +80°C
- ◆ Checking: self diagnosis using V.A.G 1551
- ◆ Removing and installing=> Fig. 7

24 Distributor and evaporator housing*

- ◆ With heat exchanger
- ◆ with evaporator

25 Vacuum pipe

- ◆ Vacuum hose connection diagram => Page 102



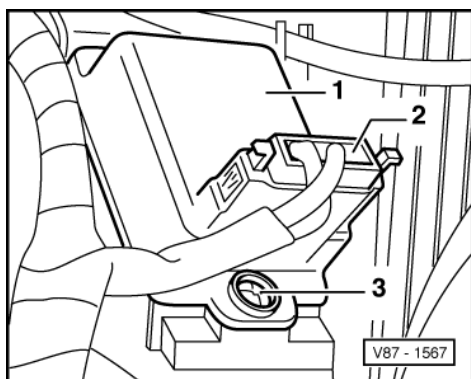
-> Fig.1 Removing Climatronic control unit -J255- and control and display unit -E87-

- Lever out control and display unit from below with screwdriver (arrows -A-)

Note:

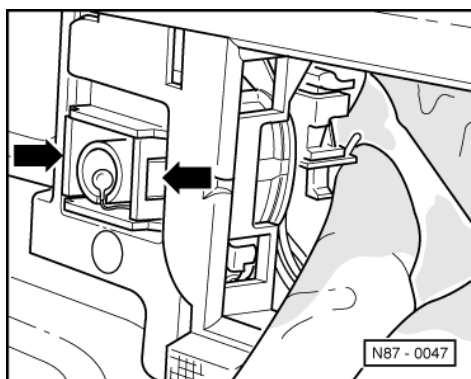
Control and display unit cannot be levered out from above as this could damage the display.

- Release connectors and pull off.
- Press control unit clips (arrows -B-) together.
- Remove control unit.



-> Fig.2 Renewing blower control unit -J126-

- Remove shelf on passenger side
- Remove glove compartment.
- Pull off connector -2- and remove screw -3-.
- Seal area between series resistor -1- and air duct with AMV 176 000 05 before fitting.

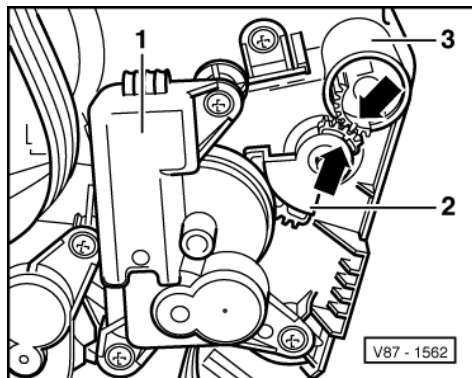




-> Fig.3 Removing dash panel temperature sensor -G56- and temperature sensor blower -V42-

Remove through the radio aperture in the Climatronic instrument panel

- Remove radio.
- Remove temperature sender trim.
- Release temperature sensor -G56- and blower -V42- with a screwdriver (arrows) and take out through radio aperture.



-> Fig.4 Removing and installing central flap positioning motor -V70-

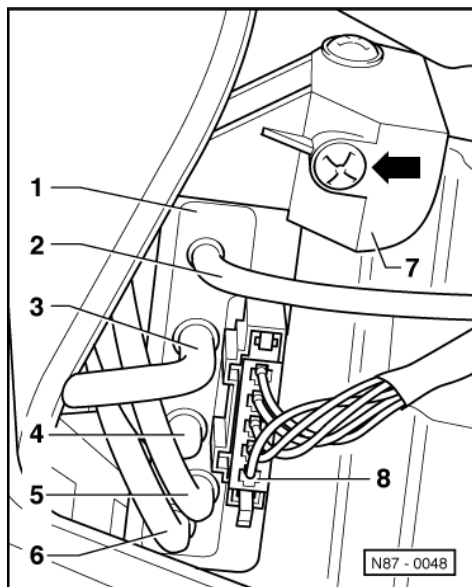
- 1 - Central flap positioning motor
- 2 - Intermediate gear
- 3 - Central flap bearing

Removing:

- First remove central console and footwell vent.

Installing:

For correct setting of central flap markings (arrows) must be aligned.



-> Fig.5 Removing and installing valve strip -N53-

- 1 - Valve strip
- 2 - Vacuum hose, white
- 3 - Vacuum hose, red



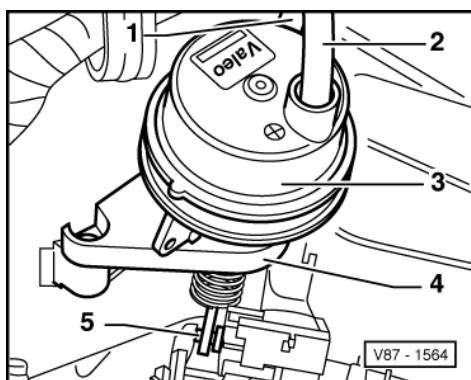
- 4 - Vacuum hose, green
- 5 - Vacuum hose, black
- 6 - Vacuum hose, yellow
- 7 - Valve block bracket
- 8 - Connector

Removing:

- Remove shelf on passenger side
- Remove glove compartment.
- Pull off vacuum hoses and connections.
- Unscrew valve block -arrow-.

Installing:

- Use valve block 357 907 533 as replacement part.
- Connect up vacuum hose according to colour coding on connection pipes.

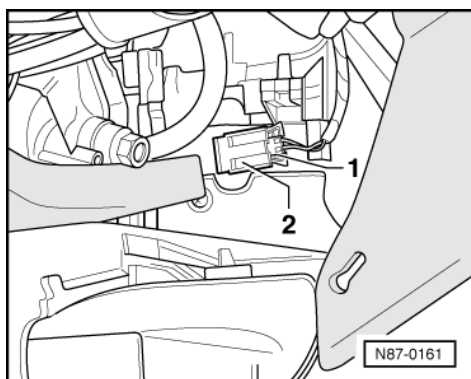


-> Fig.6 Removing and installing double vacuum unit

- 1 - Vacuum hose, green
- 2 - Vacuum hose, yellow
- 3 - Double vacuum unit
- 4 - Retainer
- 5 - Lever for footwell/defrost flap

Removing:

- First remove dash panel and heating and air conditioning unit



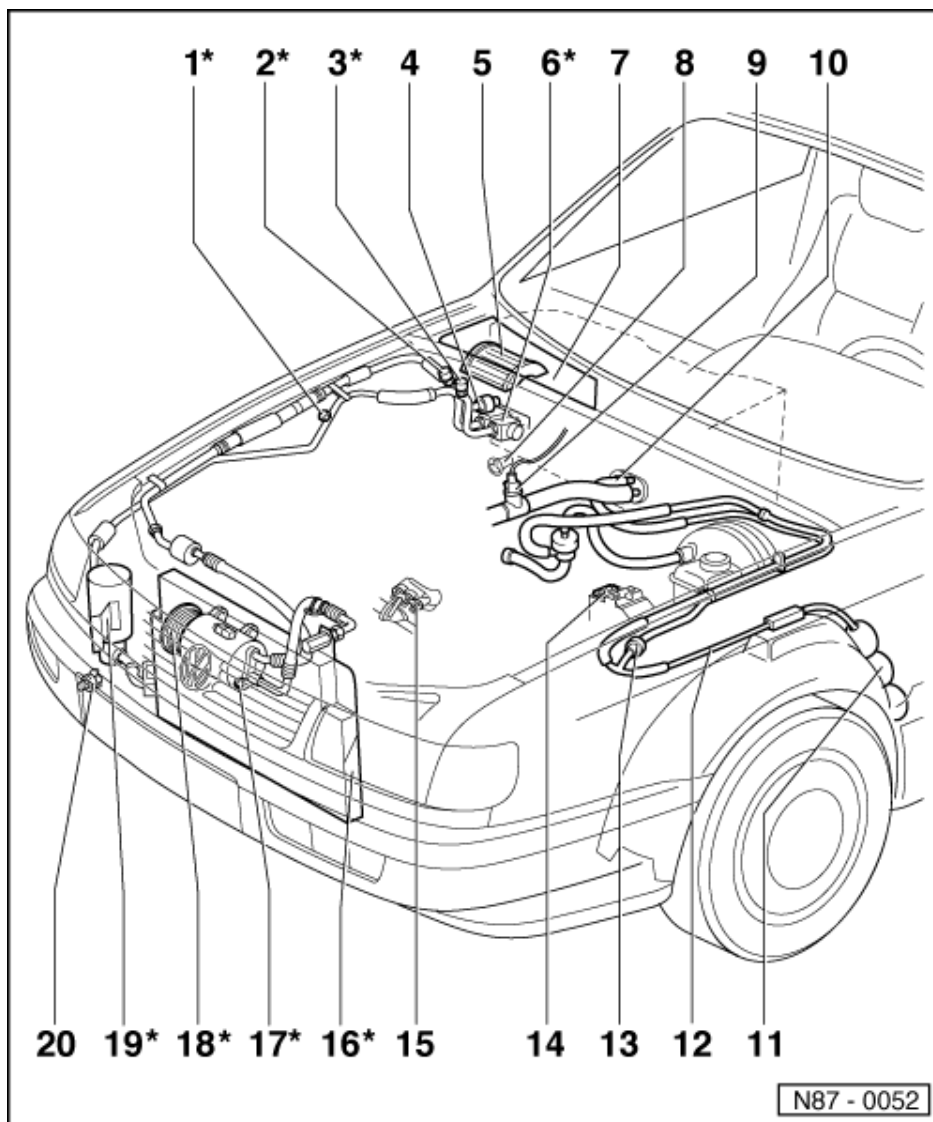
-> Fig.7 Removing and installing front vent temperature sender -G152-

- Remove front left footwell trim
- Pull connector -1- off front vent temperature sender -G152- -2-



- Turn front vent temperature sender -G152- -2- by 90° and remove

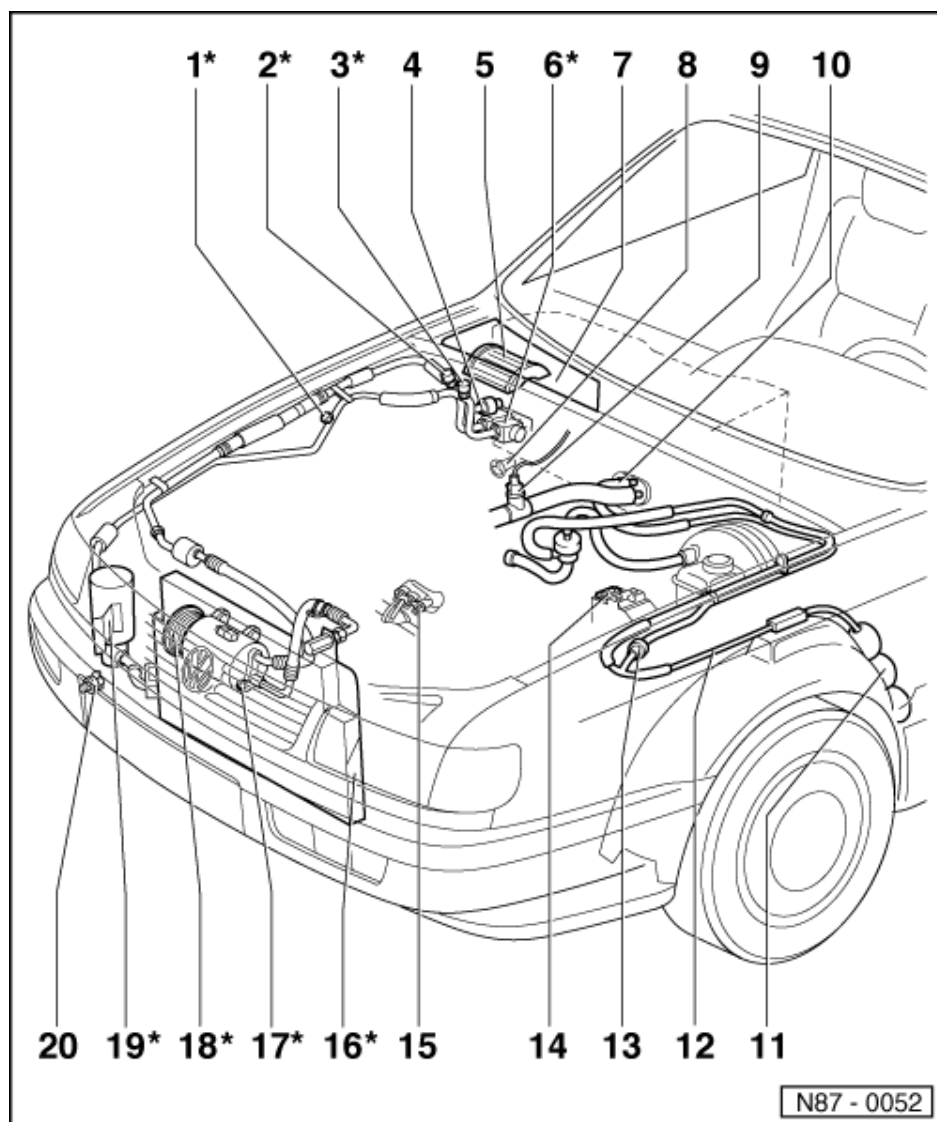
3.4 - Servicing Climatronic - engine compartment



Note:

Parts marked with * can only be serviced in specially equipped Service workshops. The refrigerant must be evacuated with Service station V.A.G 1770 or V.A.G 1771.

- 1 Sight glass***
 - ♦ Will be discontinued
- 2 Evacuating and charging valve***
 - ♦ Low pressure side
- 3 Evacuating and charging valve***
 - ♦ High pressure side



4 Air conditioner pressure switch -F129-

- ◆ Checking: self diagnosis using V.A.G 1551
- ◆ Removing and installing:
 - Tightening torque 8 Nm
 - Renew O ring seal (note Part No.).

5 Dust and pollen filter

- ◆ Removing => Page 25 , Fig. 5

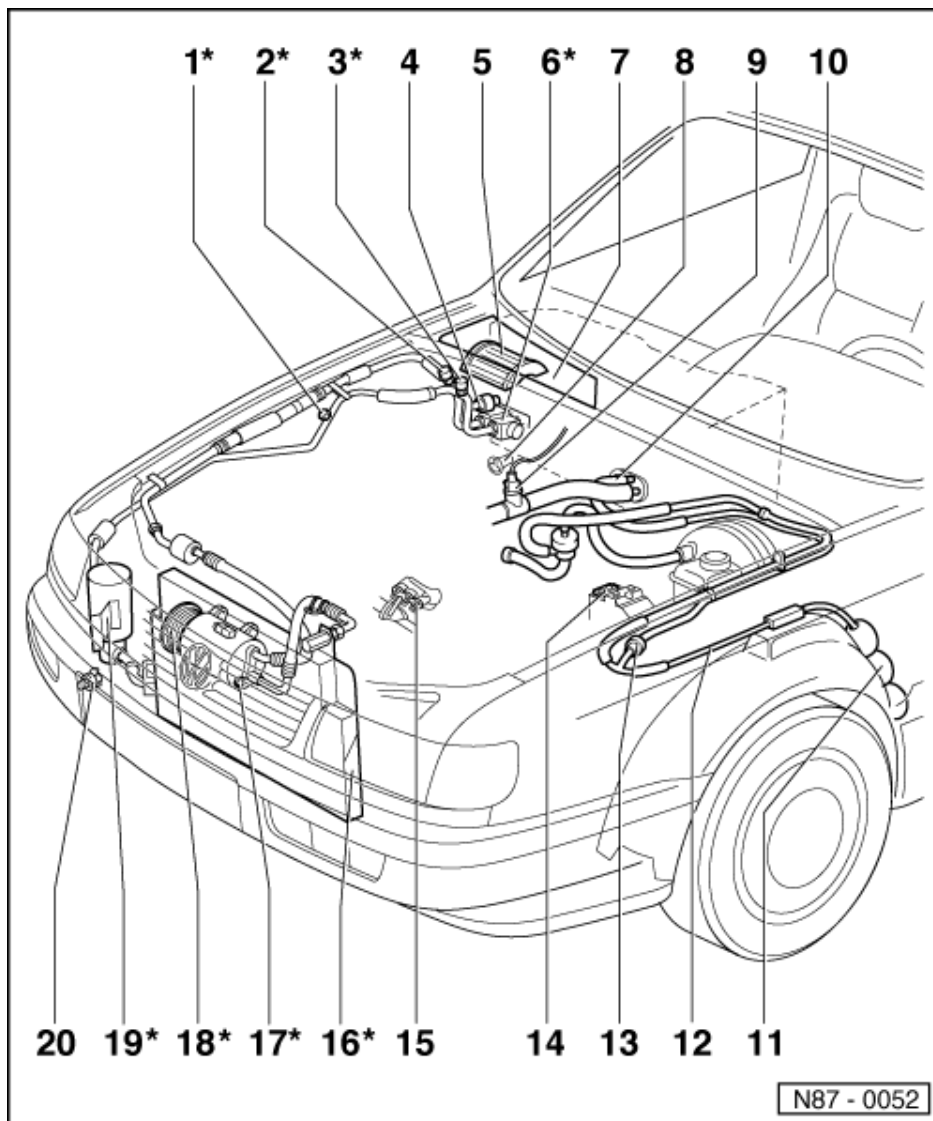
6 Expansion valve*

- ◆ Checking insulation piece for expansion valve => Fig. 6

7 Plenum chamber cover

8 Water drain valve

- ◆ Behind bulkhead insulation
- ◆ Removing and installing => Page 61 , Fig. 3



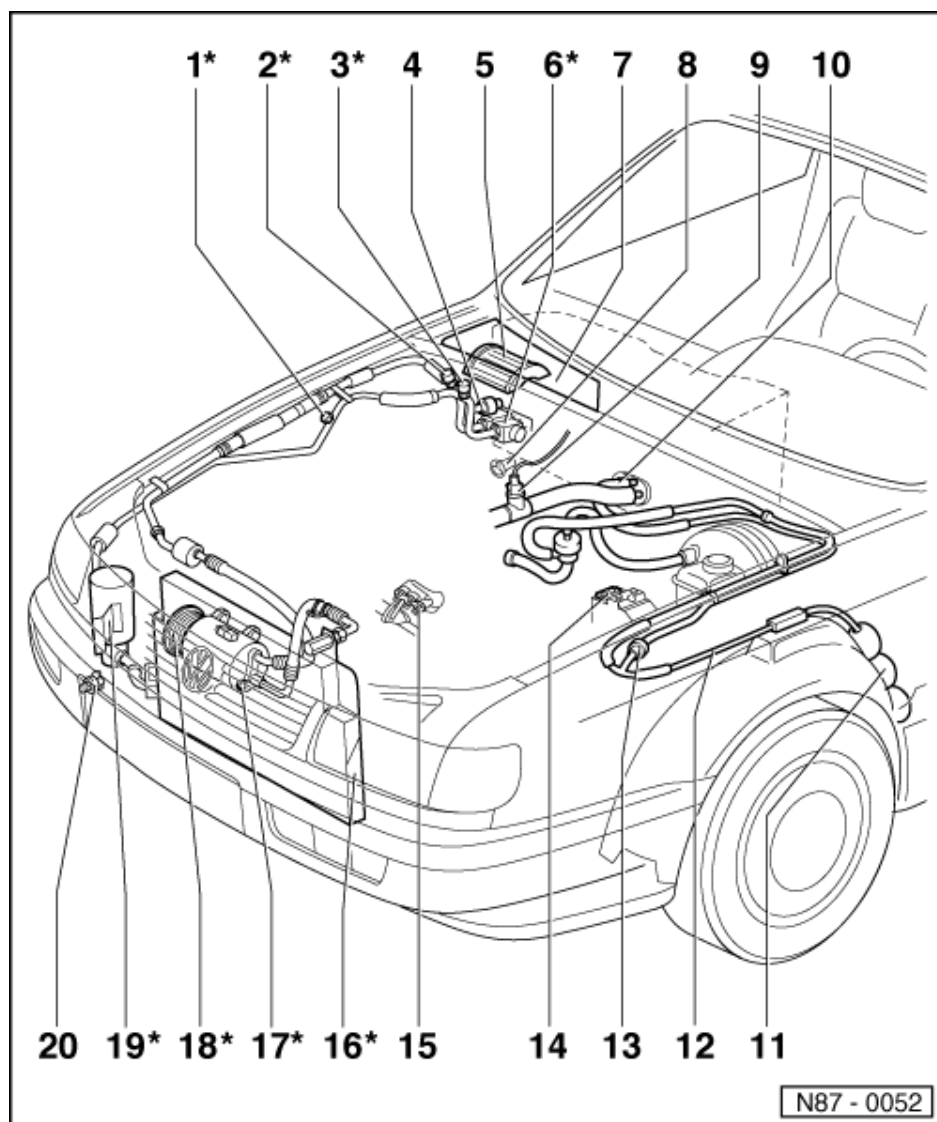
9 Coolant temperature sender -G62-

- ◆ Only installed in vehicles up to 07.95
- ◆ Checking: self diagnosis using V.A.G 1551
- ◆ Task: coolant temperature sender controls air distribution defrost/footwell and fresh air blower speed depending on temperature
- ◆ In event of -G62- failure : operation continues assuming a value of +125°C
- ◆ Removing and installing on vehicles with engine code ABF => Fig. 8

10 Heat exchanger and vacuum hose guide

11 Vacuum reservoir

- ◆ Insertion depth for vacuum hose: 30 mm
- ◆ Removing and installing => Page 63 , Fig. 7



12 Vacuum hose

- ♦ Vacuum hose connection diagram => Page 102

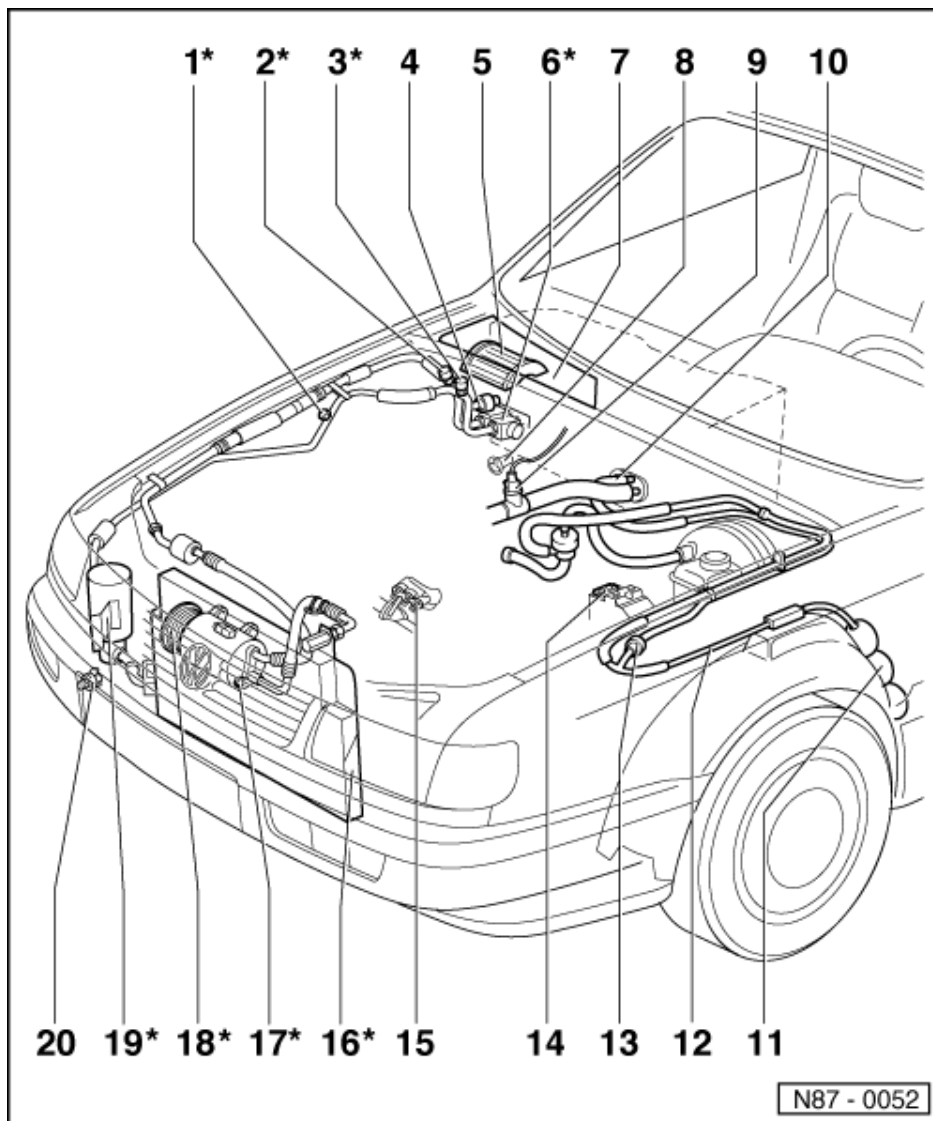
13 Non-return valve

- ♦ Arrow points in direction of vacuum

14 Radiator fan control unit -J293-

15 Thermo switch for air conditioner cut-off -F163- and thermo switch for coolant fan, 3rd speed -F165-

- ♦ Thermo switch for air conditioner shut-off -F163- only on vehicles with engine codes AAA, ABV or AAZ
- ♦ Thermo switch for coolant fan, 3rd speed -F165- only on vehicles with 3-speed fan motor



- ♦ -F165- switch coolant fan: into 3rd speed as temperature increases (on at 112°C, off at 108°C).
- ♦ -F163- switches off magnetic coupling -N25- at excessively high coolant temperature (off at 119°C, on at 112°C).
- ♦ Removing and installing on vehicles with engine code AAA => Page 60 , Fig. 1

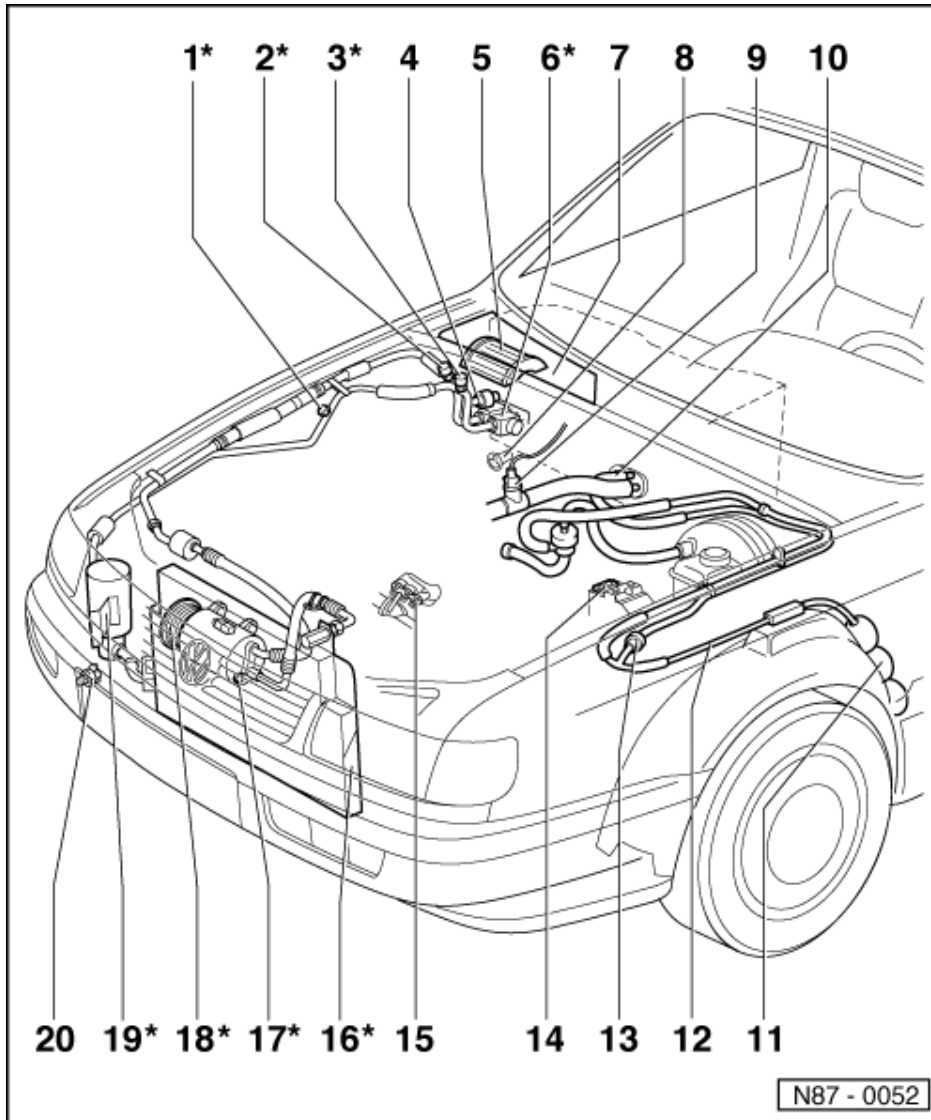
16 Condenser*

17 Pressure relief valve*

- ♦ Checking => Page 63 , Fig. 8

18 Magnetic coupling -N25-*

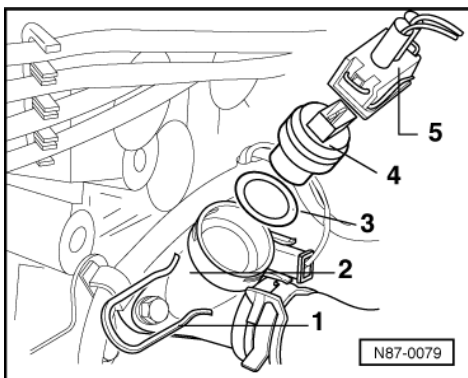
- ♦ Checking: self diagnosis using V.A.G 1551



19 Fluid reservoir with drier*

20 Ambient temperature sensor -G17-

- ♦ Function: temperature sensor controls temperature flap and fresh air blower, depending on temperature
- ♦ In event of failure: fresh air intake duct temperature sensor -G89- takes over task. If both sensors are defective, operation continues assuming a value of +10°C. Air recirculation not possible. Control and display unit -E87- indicates: "..."
- ♦ Checking: self diagnosis using V.A.G 1551





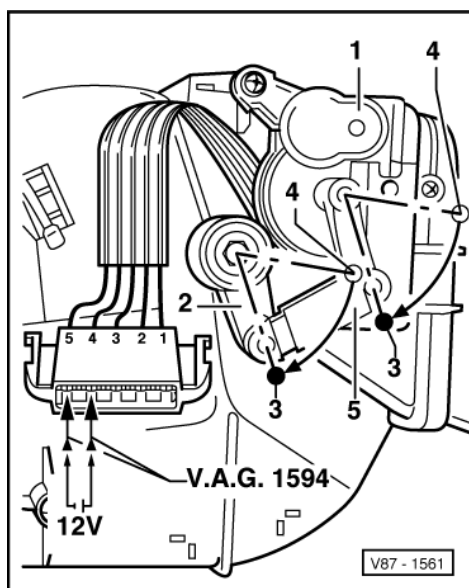
→ Fig.8 Removing and installing coolant temperature sender -G62- on vehicles with engine code ABF

Notes:

- ♦ Cooling system is pressurized when engine is warm. If necessary, release pressure before carrying out repairs.
- ♦ Refill with coolant after installing thermo switch.

- 1 - Clip
- 2 - Connection
- 3 - O ring
- 4 - Coolant temperature sender -G62-
- 5 - Connector

3.5 - Checking and adjusting end position of installed temperature flap positioning motor



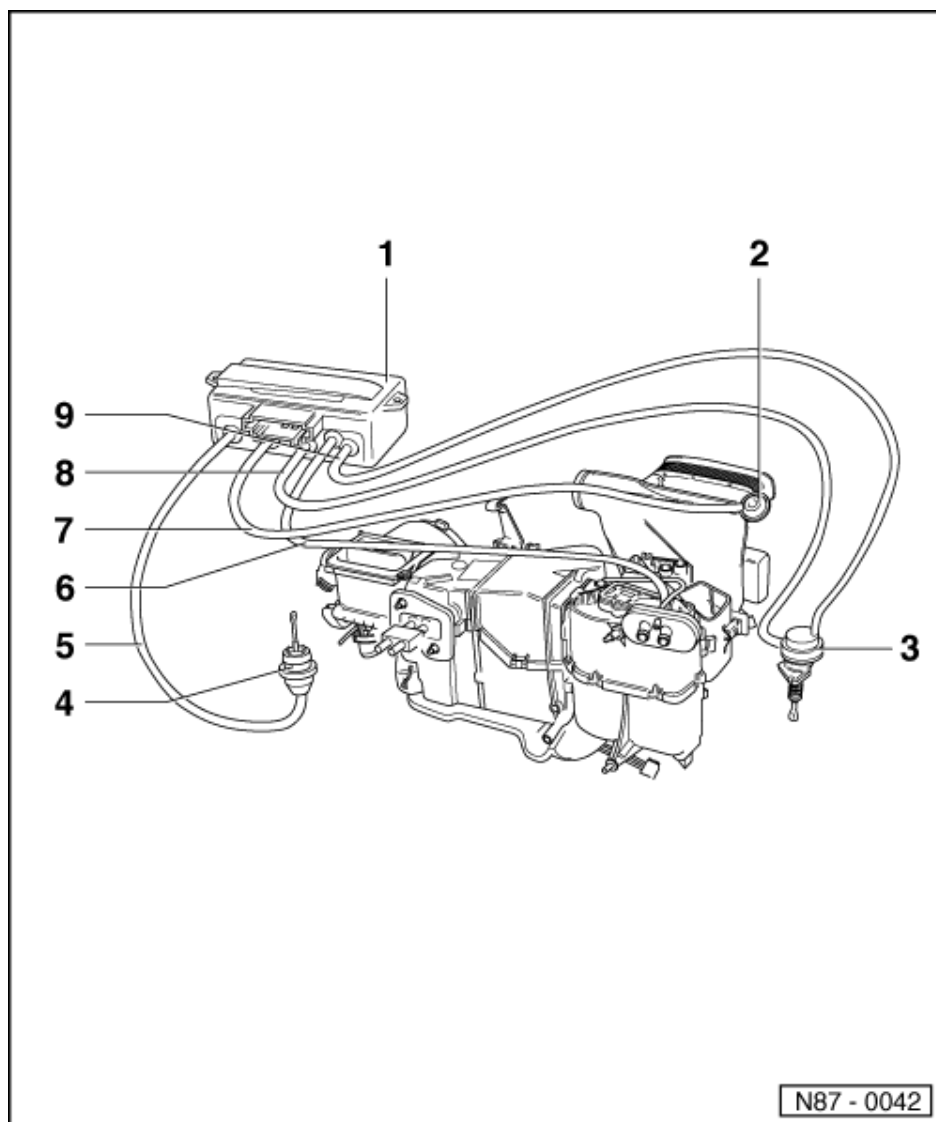
- Remove footwell vent => Page 46 , item 32
- Pull 5-pin connector off control unit -J255-
- Connect cables from adapter set V.A.G 1594 to chambers 4 and 5.
- Connect to 12 V supply. Direction of rotation can be changed by reversing polarity of voltage supply.
- Move temperature flap -2- with control motor -1- from heater end position -4- to fresh air end position -3-.
- Check whether the temperature flap lever -2- reaches the stop at the end position. If necessary, adjust length of connecting rod -5- with temperature flap -2- on stop.

Checking:

By reversing polarity of 12V voltage, positioning motor must move to both end positions.



3.6 - Vacuum hose connection diagram



Vacuum hoses in passenger compartment

Notes:

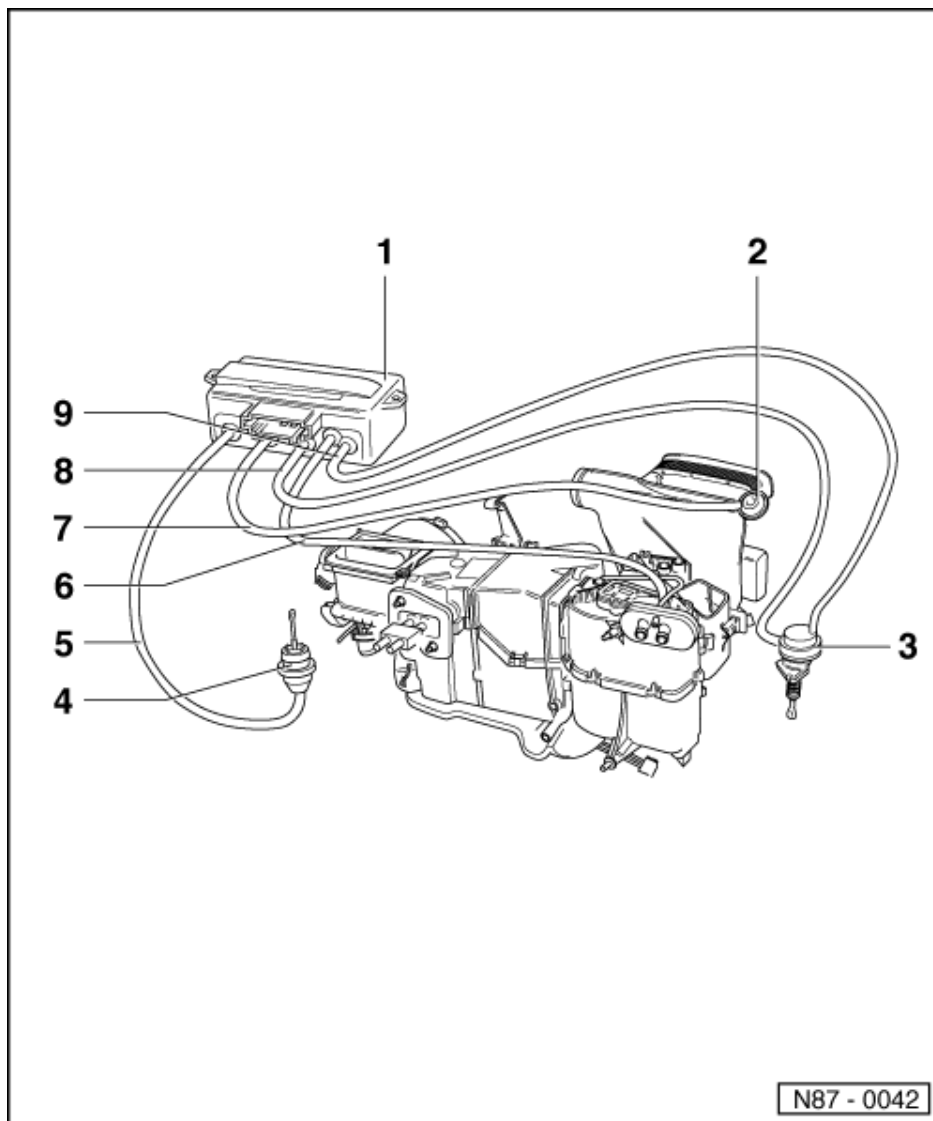
- ♦ Plug vacuum hoses onto valve strip and vacuum hoses to the stop.
- ♦ Vacuum hose connections in engine compartment => Page 105

1 Valve block -N53-

- ♦ Connections for vacuum hoses colour-coded

2 Central vent vacuum unit

- ♦ Remove dash panel insert



3 Vacuum unit for footwell/defrost flap

- ♦ Remove dash panel

4 Vacuum unit for fresh and recirculating air flap

- ♦ Remove dash panel, air distributor housing and evaporator housing, but first evacuate refrigerant circuit

5 Vacuum hose, white

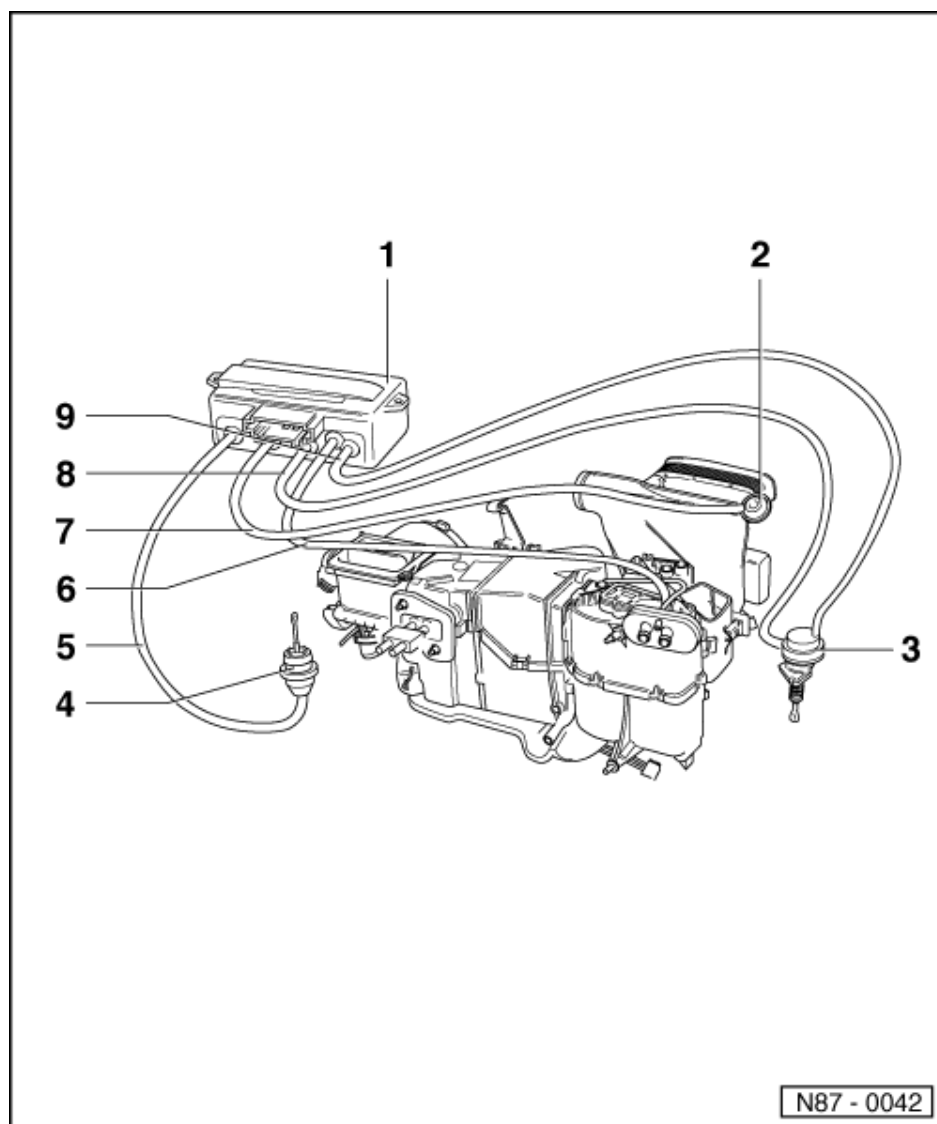
- ♦ From valve strip -N53- to fresh air and air recirculation flap vacuum unit

6 Vacuum hose, black

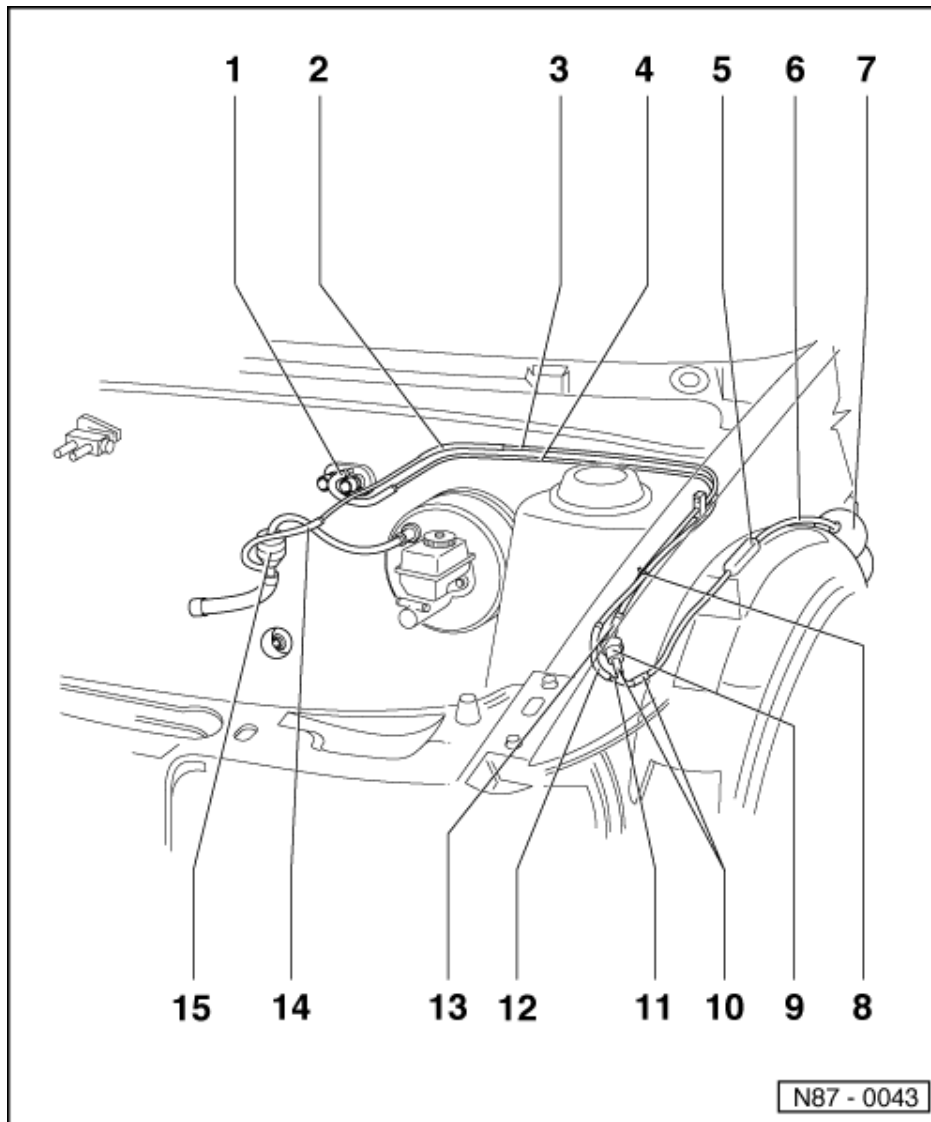
- ♦ From vacuum reservoir in engine compartment to valve strip -N53-

7 Vacuum hose, red

- ♦ From valve block -N53- to centre vent vacuum unit



- 8 Vacuum hose, green**
♦ From valve strip -N53- to vacuum unit for footwell/defrost flap
- 9 Vacuum hose, yellow**
♦ From valve strip -N53- to vacuum unit for footwell/defrost flap



Vacuum hoses in engine compartment

Notes:

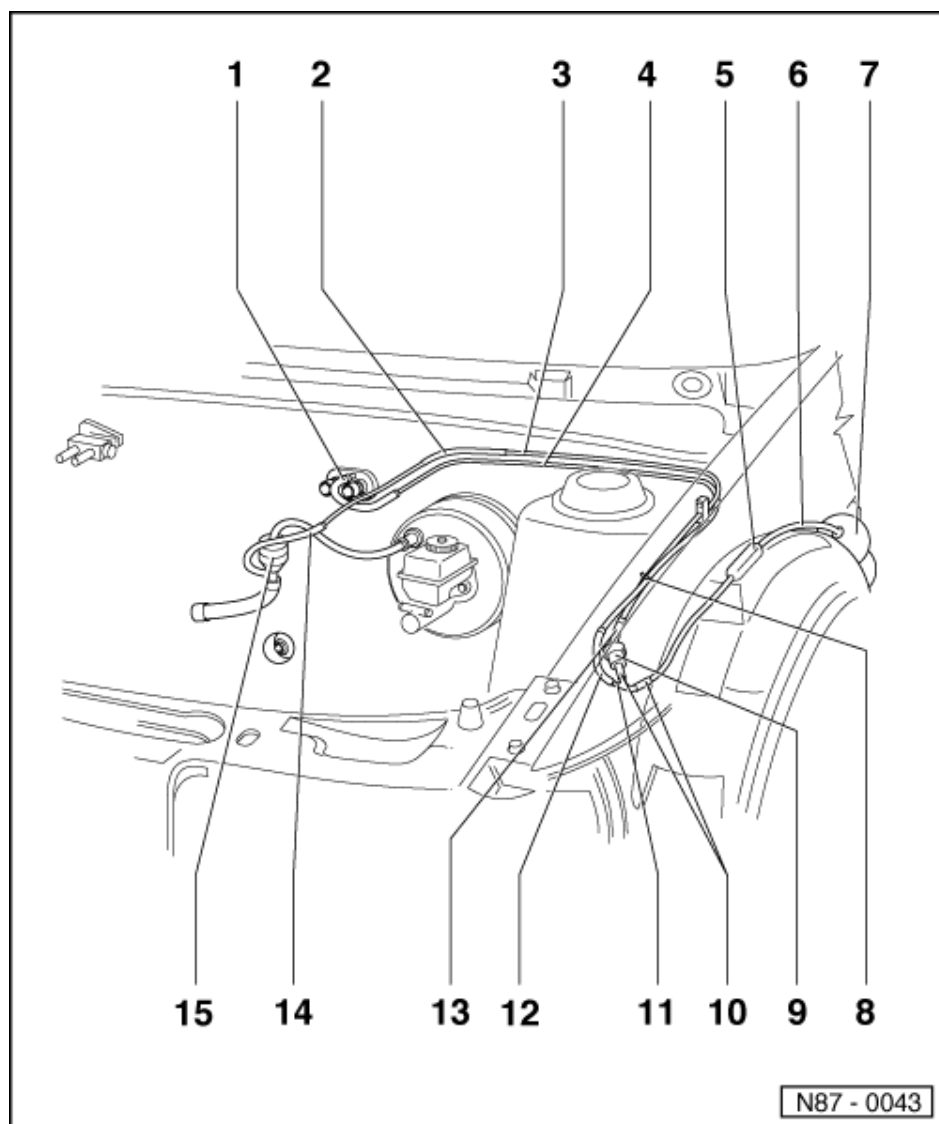
- ♦ Insertion depth of vacuum hose in vacuum reservoir: 30 mm. Overlap dimension of vacuum hose on plastic pipe: onto stop (approx. 15 mm)
- ♦ Vacuum hose connections in passenger compartment => Page 102
- ♦ Vacuum is produced by petrol engines in the intake manifold and by Diesel engines via an exhauster.

1 Reducing hose

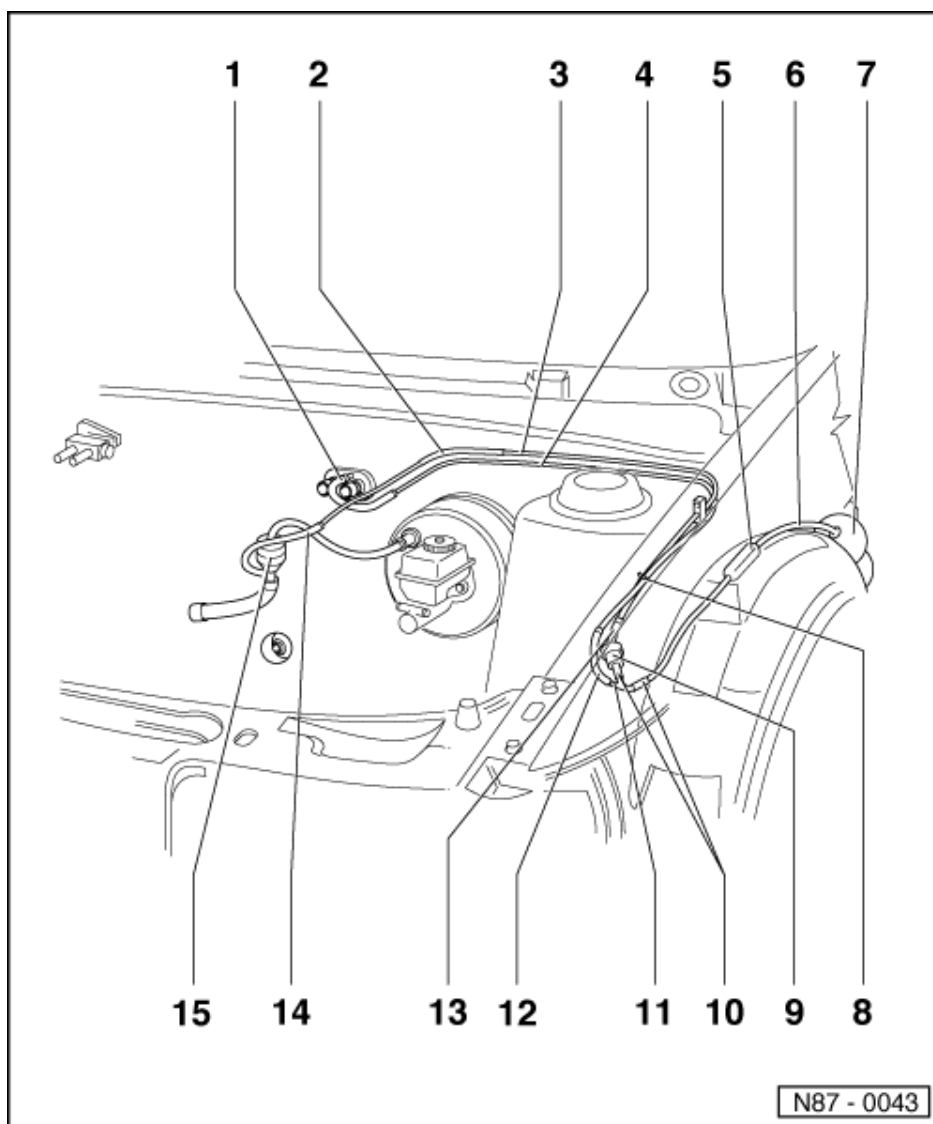
- ♦ Vacuum hose to valve strip -N53- (in passenger compartment)

2 Plastic pipe

4 x 1 x 540 mm



- 3 Plastic pipe
4 x 1 x 950 mm
- 4 Plastic pipe
4 x 1 x 1030 mm
- 5 Foam pipe
- 6 Plastic pipe
♦ 4 x 1 x 490 mm
- 7 Vacuum reservoir
- 8 Cable tie
- 9 Non-return valve
Stamped-on arrow indicates direction of suction
- 10 Hose
3.5 x 2 x 40 mm
- 11 T-connection



12 Hose

3.5 x 2 x 245 mm

13 Hose

3.5 x 2 x 160 mm

14 Hose

3.5 x 2 x 116 mm

15 Non-return valve