

Manual A/C

Heating and A/C components in passenger compartment, servicing

CAUTION!

Before beginning repairs:

- ◆ **Switch off all electrical consumers.**
- ◆ **Switch off ignition.**
- ◆ **Remove ignition key from ignition switch.**

Notes:

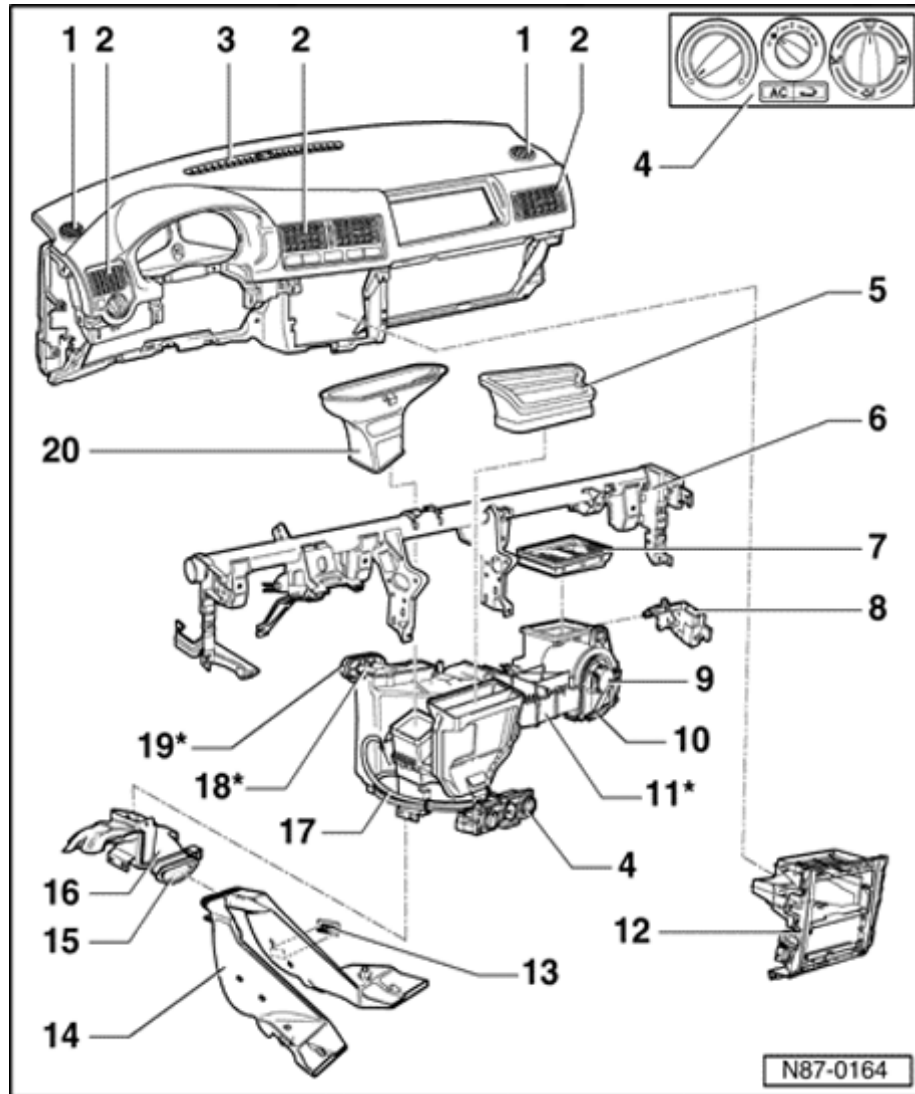
- ◆ *System components marked with an asterisk * can only be serviced or replaced after discharging refrigerant system. Use Kent Moore ACR4 or equivalent.*
- ◆ *Before carrying out any work on the A/C refrigerant system, refer to A/C refrigerant system safety measures ⇒ [Page 87-69](#) .*

1 - Side window air outlet

- ◆ Removing ⇒ [Page 80-6](#) , Fig. 1

2 - Side air outlets

- ◆ Removing ⇒ [Page 80-6](#)



3 - Defroster air outlet

- ◆ Removing and installing

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

4 - Heating and A/C controls

- ◆ With A/C switch -E35-
- ◆ With fresh air blower switch -E9-
- ◆ With fresh air/recirculating flap switch -E159-
- ◆ Removing and installing ⇒ [Page 87-7](#)
- ◆ Assembly ⇒ [Page 87-11](#)
- ◆ Cables, installing and adjusting ⇒ [Page 87-13](#)

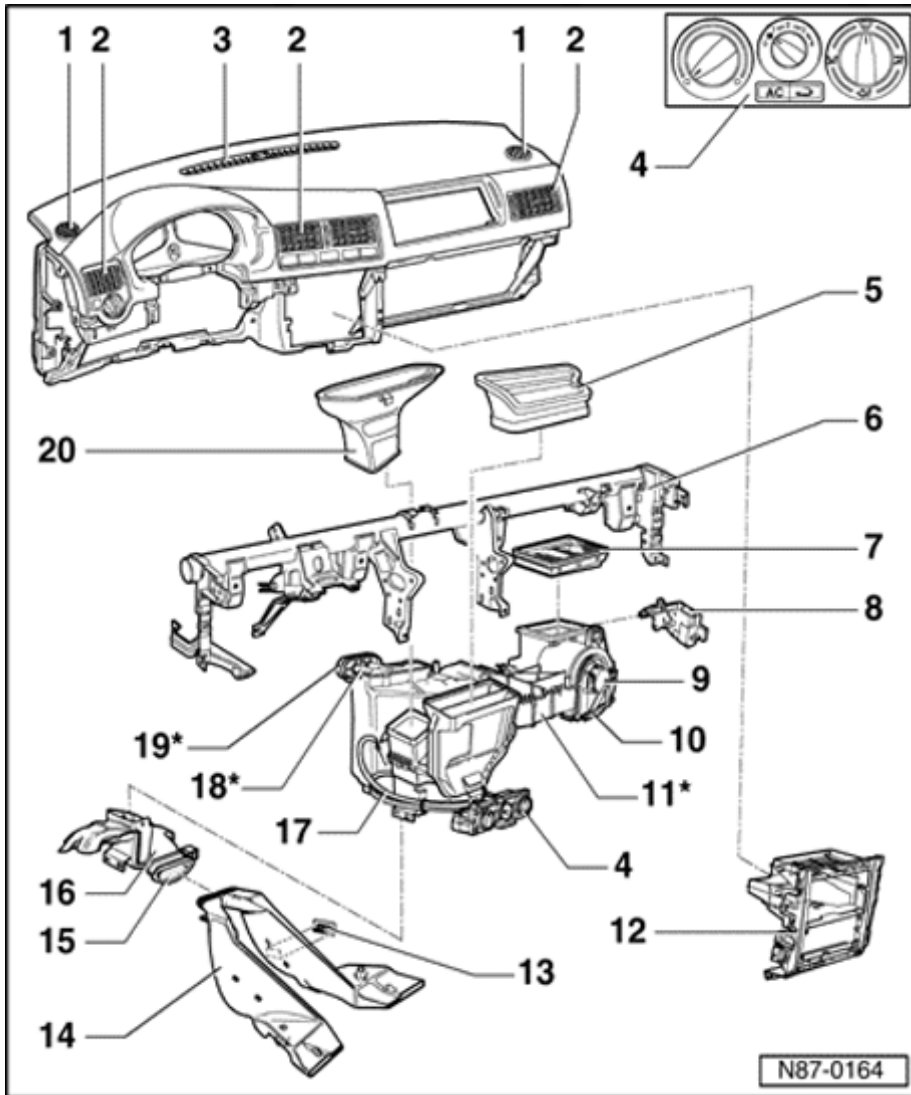
5 - Intermediate duct

6 - Instrument panel cross member

- ◆ Loosening and tightening ⇒ [Page 80-9](#) , Fig. 5

7 - Dust and pollen filter

- ◆ With activated charcoal filter
- ◆ Removing and installing ⇒ [Page 80-8](#) , Fig. 4



8 - Servo motor for fresh/recirculated air door -V154-

◆ Removing and installing ⇒ [Page 87-6](#)

9 - Fresh air blower -V2-

◆ Removing ⇒ [Page 80-7](#) , Fig. 3

10 - Fresh air blower series resistance with fuse -N24-

◆ Removing ⇒ [Page 80-7](#) , Fig. 3, (fresh air blower -V2- removing and installing)

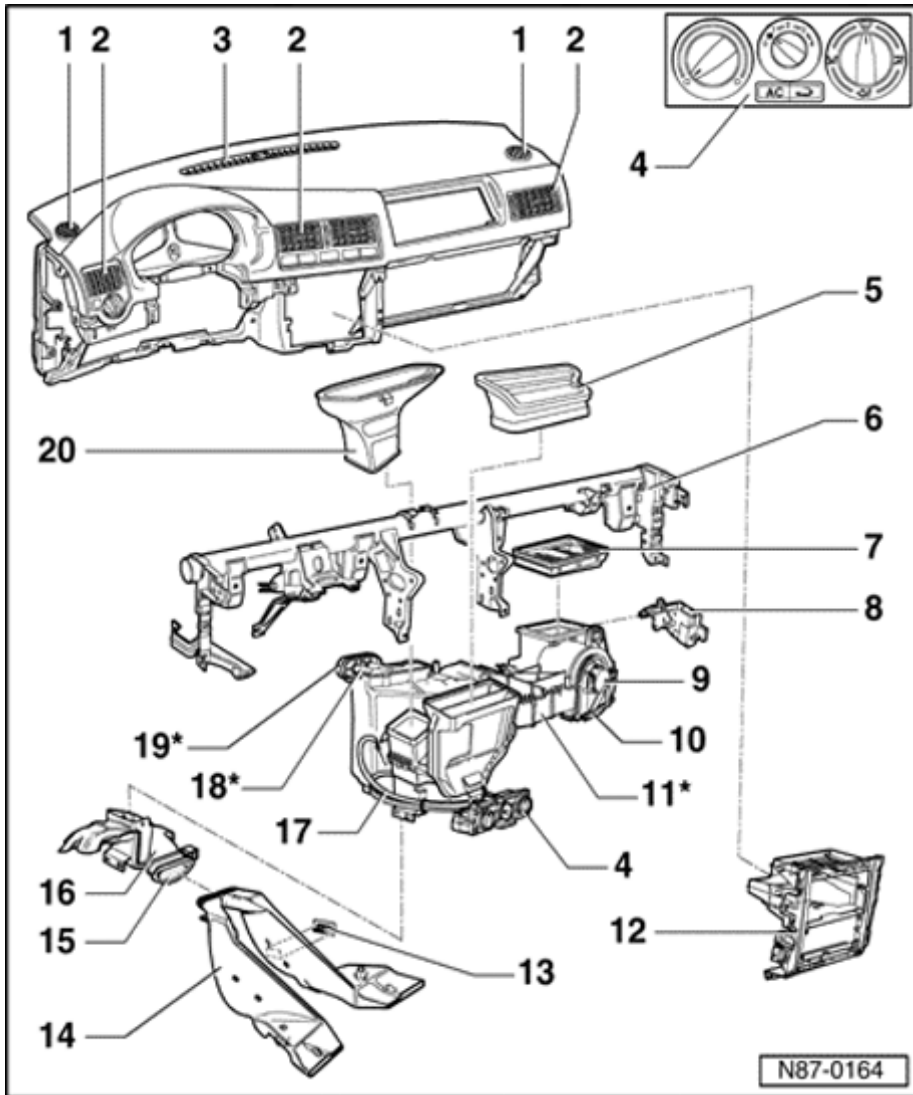
11 - Heating and A/C unit*

◆ With heater core

◆ With evaporator

◆ Removing/assembly ⇒ [Page 87-114](#)

12 - Center trim

**13 - Footwell air outlet**

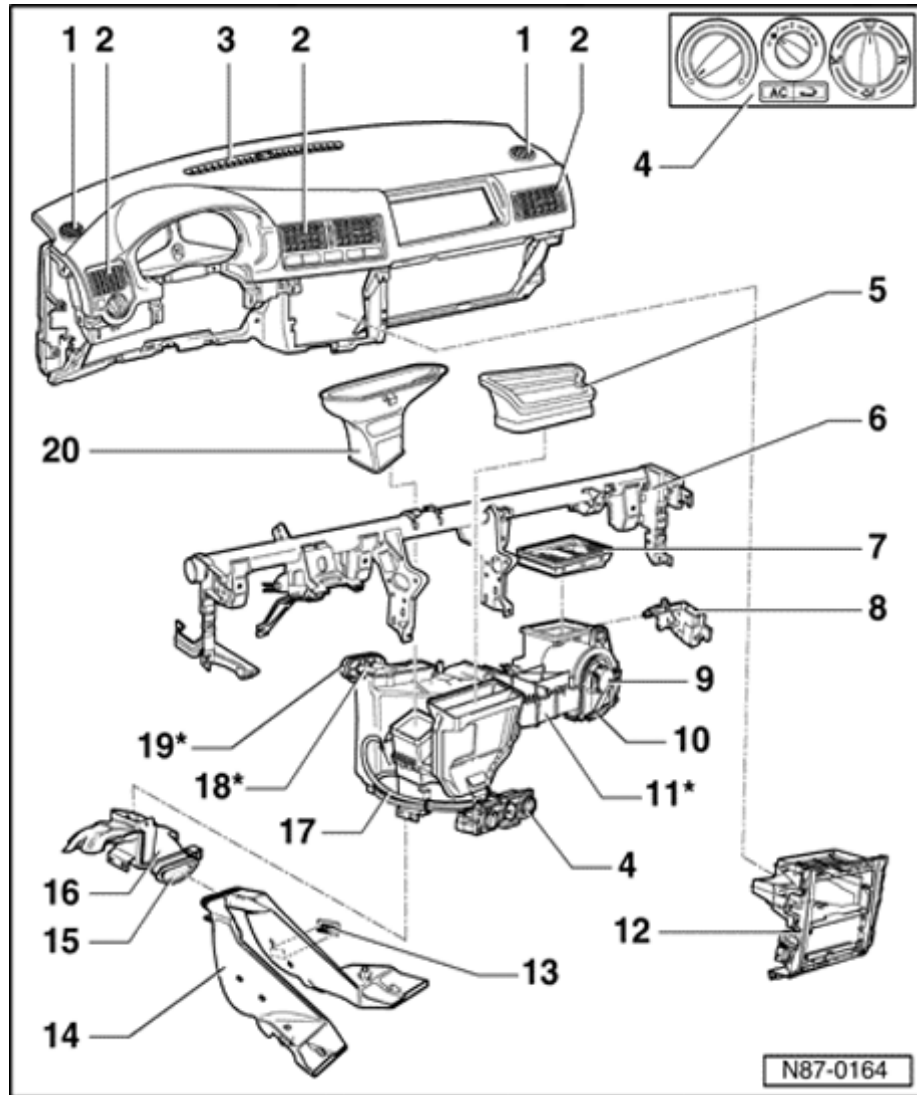
- ◆ Passenger side only

14 - Rear duct**15 - Gasket****16 - Connecting duct**

- ◆ With driver's side footwell air outlet
- ◆ Removing ⇒ [Page 80-10](#) , Fig. 6

17 - Cables

- ◆ Installing and adjusting ⇒ [Page 87-13](#)



18 - Heater core*

◆ Always replace coolant after removal or replacing

◆ Removing:

- First remove heating and A/C unit ⇒ [Page 87-114](#)

19 - Heater core/bulkhead seal*

◆ Installation position ⇒ [Page 80-21](#) , Fig. 2

20 - Defroster duct

◆ Replacing:

- Removing and install instrument panel

⇒ [Repair Manual, Body Interior, Repair Group 70](#)

- Loosen instrument panel cross member ⇒ [Page 80-9](#) , Fig. 5.

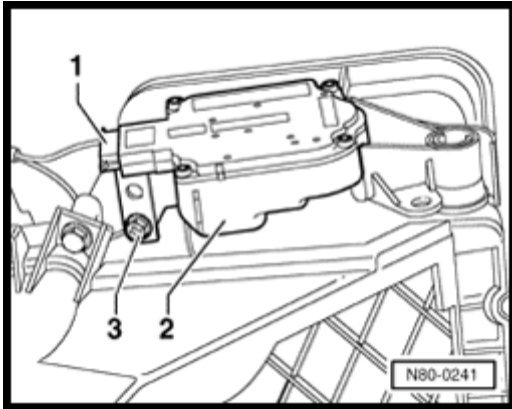
◆ Installation position ⇒ [Page 80-6](#) , Fig. 2

Servo motor for fresh/recirculating air door - V154-, removing and installing

Removing

- Remove glove box.

⇒ [Repair Manual, Body Interior, Repair Group 68](#)



A

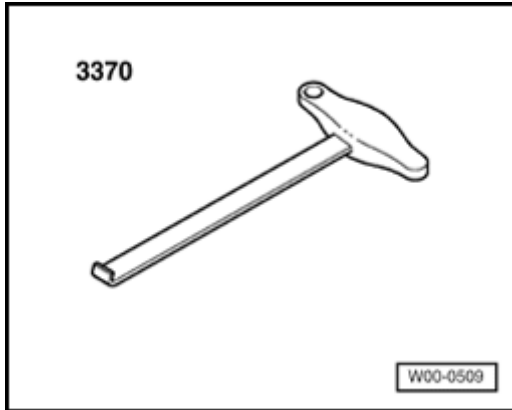
- Disconnect electrical connector -1-.
- Remove screw -3-.
- Swing motor -2- downward.
- Disengage motor -2- from fresh air/recirculation air lever.

Installing

- Engage flap motor -2- to fresh air/recirculation air lever.
- Position fresh air/recirculated air flap lever by hand depending on position of flap motor.
- Install screw -3-.

Heating and A/C controls, removing and installing

Special tools and equipment required

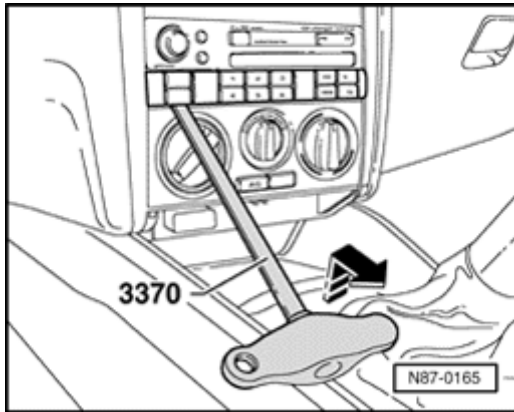
**A**

- ◆ Special hook 3370

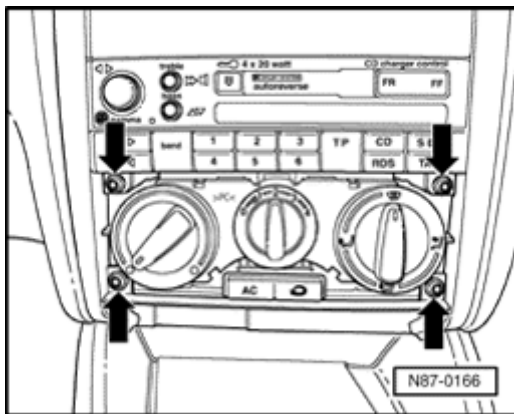
First do the following:

- Remove glove box.
⇒ [Repair Manual, Body Interior, Repair Group 68](#)
- Remove trim under the steering column.
⇒ [Repair Manual, Body Interior, Repair Group 68](#)
- Remove center console.
⇒ [Repair Manual, Body Interior, Repair Group 68](#)

Removing

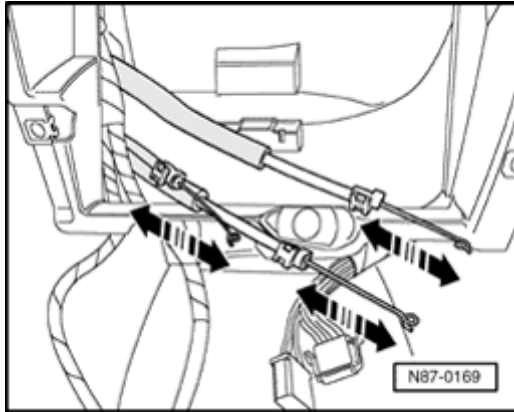


- A - Pull off heating controls trim panel with tool 3370.



- A - Remove screws -arrows-.
- Remove center trim.
- Remove controls with cables attached.
- Disengage cables from controls.
- Disconnect electrical connectors.

After removing controls, check all cables for free movement.



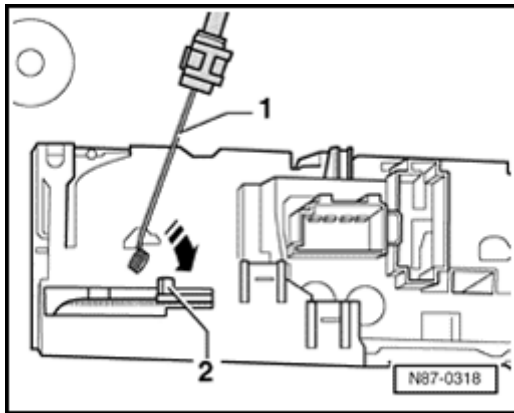
A

- Move cables back and forth in direction of arrows.
- Replace cables that are damaged or hard to move.

Installing

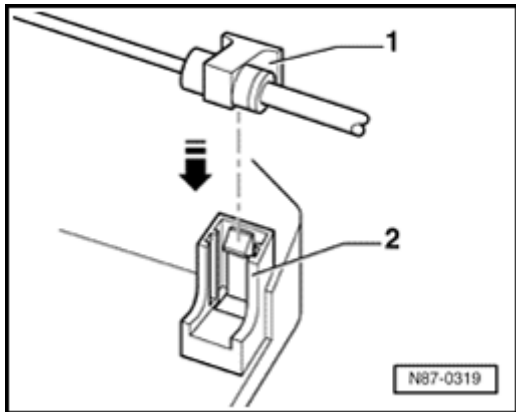
Notes:

- ◆ Cable sleeve ends are color coded.
- ◆ All air flaps must audibly move onto end stops when turning controls.
- ◆ Always check cables before installing. Replace binding or damaged cables.



A

- Hold cable end -1- at an angle and press onto control lever -2-, -arrow-.



A

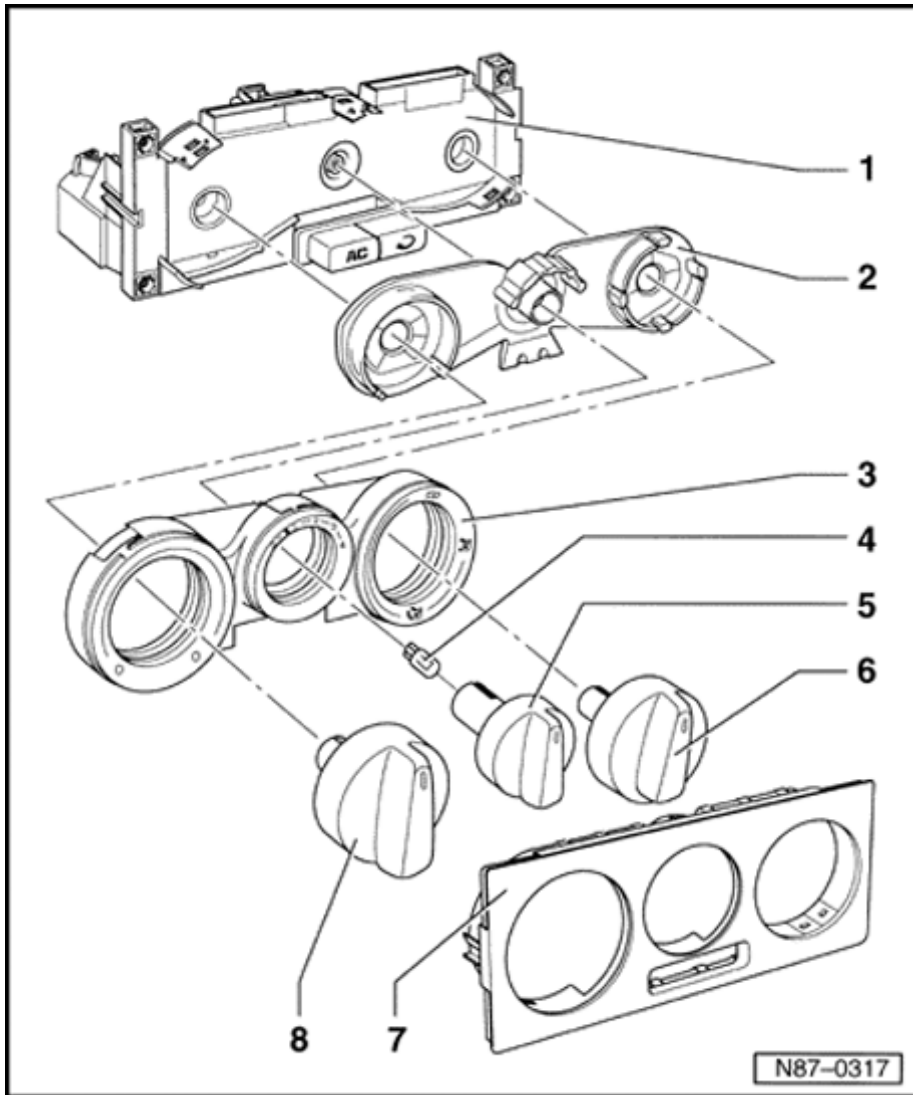
- Insert footwell/defrost flap cable, temperature flap cable, temperature flap cable and central flap cable -1- into clip -2- and press in to stop.

Cable sleeve end color code:

Footwell/defrost flaps cable: green

Central flap cable: yellow

Temperature flap cable: beige



Heating and A/C controls, assembly

1 - Heating and A/C controls

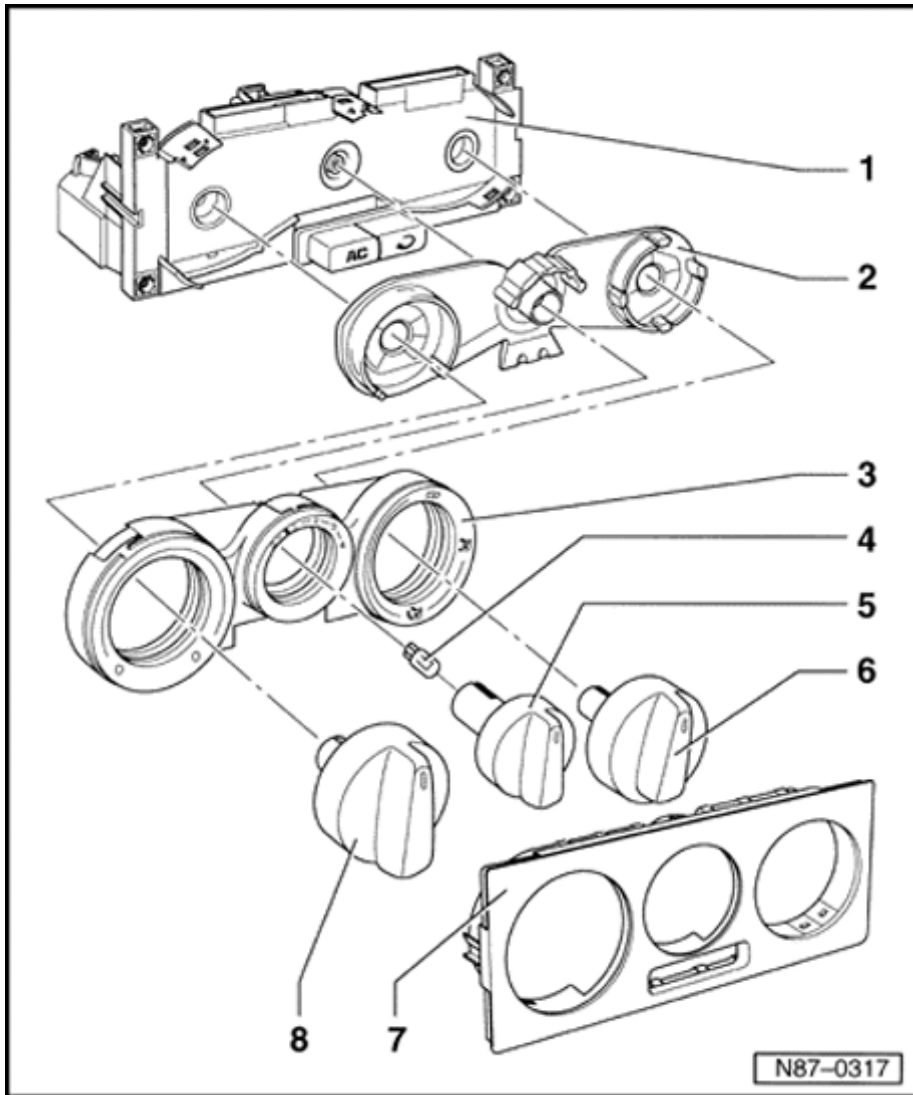
- ◆ With A/C switch -E35-
- ◆ With fresh air blower switch -E9-
- ◆ With fresh air/recirculating flap switch -E159-
- ◆ Removing ⇒ [Page 87-7](#)

2 - Illumination filter

3 - Trim panel

4 - Fresh air control lever light -L16-

- ◆ 12V, 1.2W
- ◆ Replacing:
 - Unclip trim panel -item 7 - and rotary control -item 5 -.
 - Pull out bulb using a piece of fuel hose.



5 - Rotary control

- ◆ For blower speed
- ◆ Removing: Use pliers with plastic or rubber protection for jaws

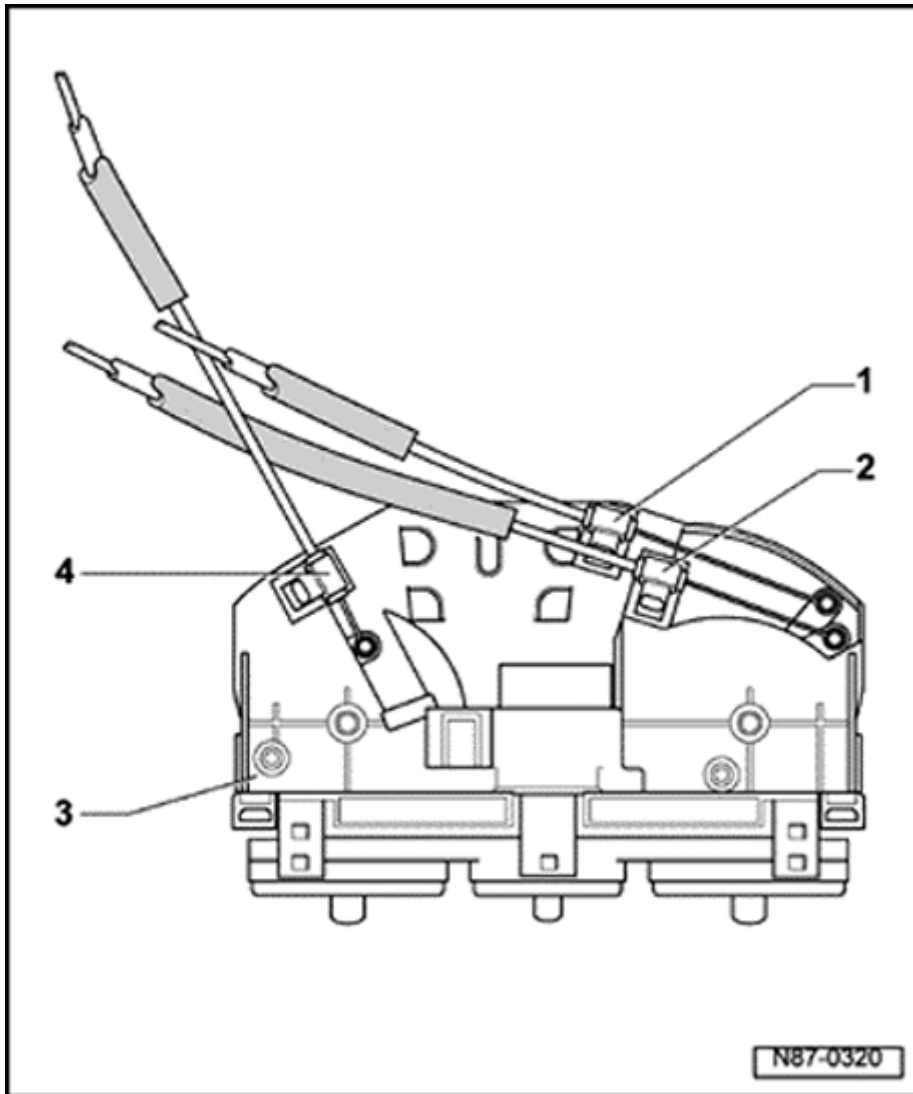
6 - Rotary control

- ◆ For air distribution
- ◆ Removing: Use pliers with plastic or rubber protection for jaws

7 - Trim panel

8 - Rotary control

- ◆ For interior temperature control
- ◆ Removing: Use pliers with plastic or rubber protection for jaws



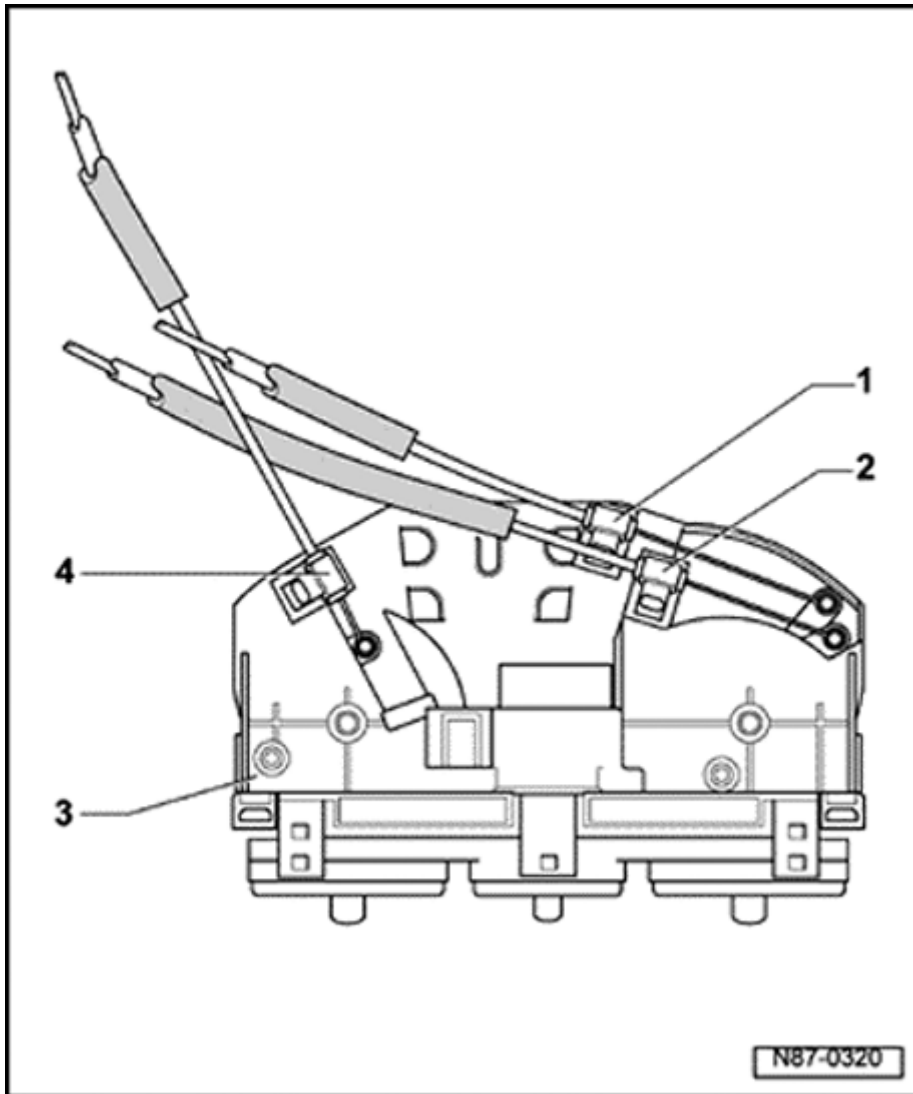
Cables, installing and adjusting

Note:

- ◆ Cable sleeve ends are color coded.
- ◆ Always check cables before installing. Replace stiff or damaged cables.
- ◆ First connect cables to removed controls, then adjust and secure cables to levers for A/C.
- ◆ When turning control knobs, all flaps must be heard to contact stops.

1 - Central flap cable

- ◆ From air distribution rotary control to central flap
- ◆ Cable sleeve marking: yellow
- ◆ Installing and adjusting ⇒ [Fig. 3](#)



2 - Footwell/defroster flap cable

- ◆ From air distribution rotary control to footwell/defroster flap
- ◆ Cable sleeve color: green
- ◆ Replacing:

- Remove heating and A/C controls ⇒ [Page 87-7](#)
- Remove trim under steering column.

⇒ [Repair Manual, Body Interior, Repair Group 68](#)

- Unclip cable at heating and A/C unit.

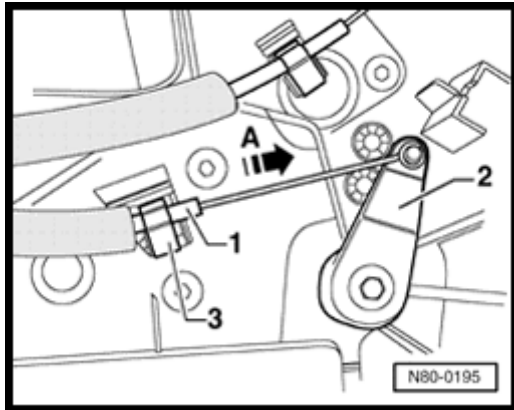
- ◆ Installing and adjusting ⇒ [Fig. 2](#)

3 - Heating and A/C controls

- ◆ Removing ⇒ [Page 87-7](#)

4 - Temperature flap cable

- ◆ From temperature rotary control to temperature flap
- ◆ Cable sleeve color: beige
- ◆ Installing and adjusting ⇒ [Fig. 1](#)



A

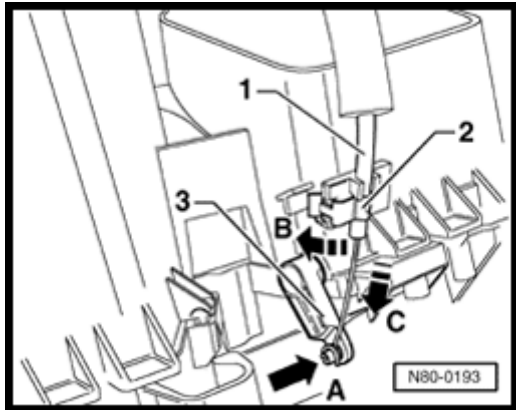
Fig. 1 Temperature flap cable, installing and adjusting

Prerequisites:

- ◆ Heating and A/C controls are installed.
- ◆ Connecting duct removed ⇒ [Page 80-10](#) .

Adjusting

- Turn temperature rotary control knob to left onto stop.
- Attach center wire of cable -1- to temperature flap lever -2-.
- Push temperature flap lever -2- to stop -arrow A- and secure outer cable -1- with clip -3-.
- Turn temperature rotary control knob to left and right onto stops.
 - When turning the rotary control knob, both end stops must be reached.



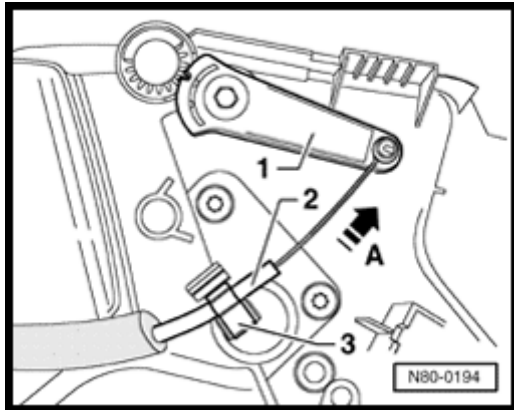
A

Fig. 2 Footwell/defroster flap cable, adjusting**Prerequisite:**

- ◆ Heating and A/C controls are installed.

Adjusting

- Turn air distribution rotary knob to left onto stop.
- Attach wire end of cable -1- to temperature flap lever -3-, arrow -A-.
- Push footwell/defrost flap lever to stop -arrow C- and attach outer cable -1- with clip -2-, -arrow B-.
- Turn air distribution rotary control knob to left and right onto stops.
 - When turning the rotary control knob, both end stops must be reached.



A

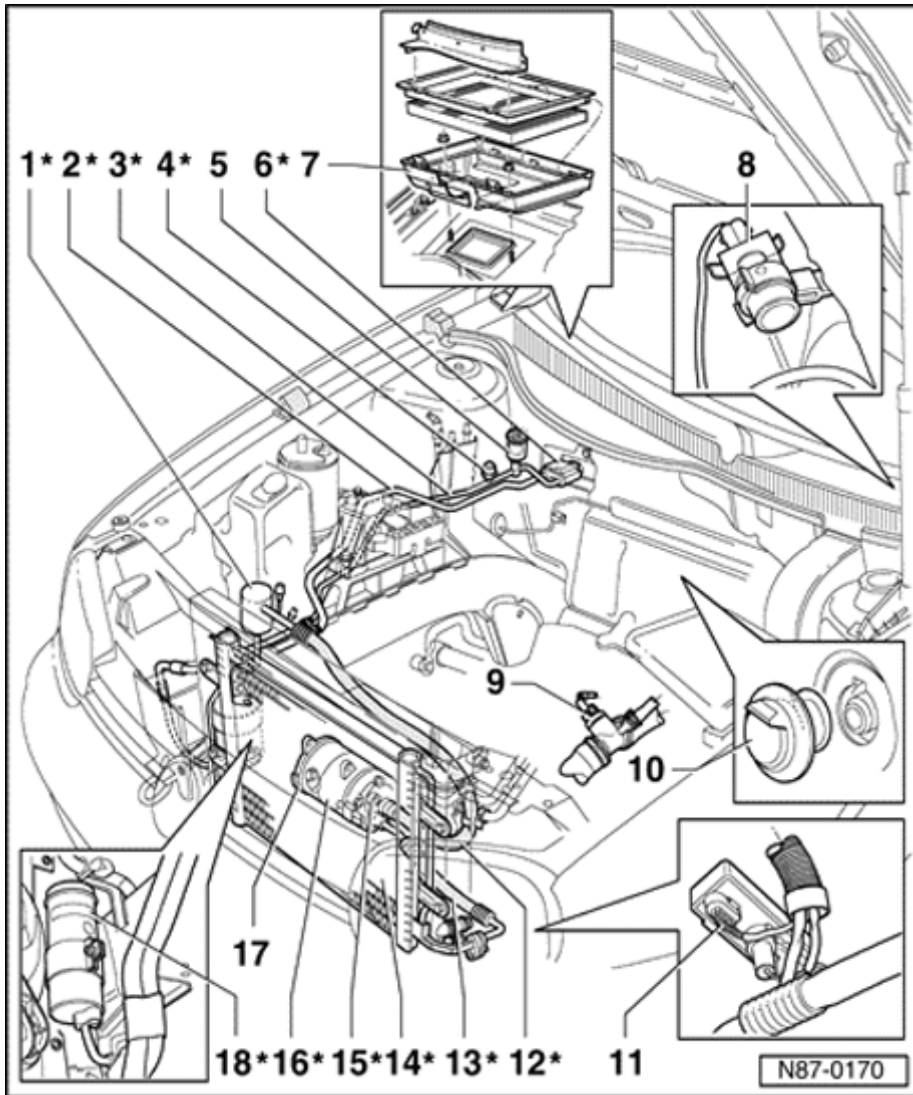
Fig. 3 Central flap cable, installing and adjusting

Prerequisites:

- ◆ Central flap lever correctly adjusted ⇒ [Page 80-21](#) , Fig. 1.
- ◆ Heating and A/C controls are installed.
- ◆ Connecting duct removed ⇒ [Page 80-10](#) .

Adjusting

- Turn air distribution rotary control knob to left onto stop.
- Attach center wire of cable -2- to the central flap lever -1- .
- Push central flap lever to stop -arrow A- and attach outer cable -2- with clip -3-.
- Turn air distribution rotary control knob to left and right onto stops.
 - When turning the rotary control knob, both end stops must be reached.



Heating and A/C components in engine compartment, servicing

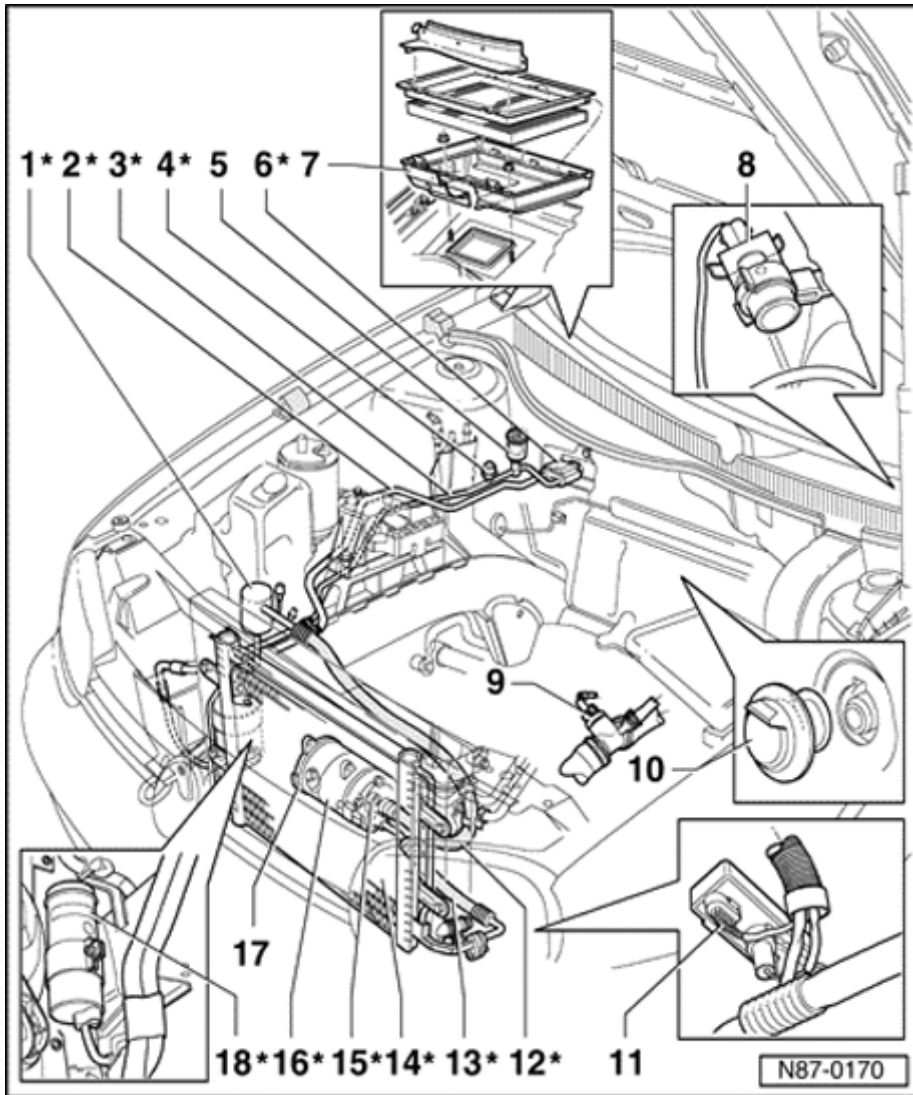
CAUTION!

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- ◆ **Switch off ignition.**
- ◆ **Remove ignition key from ignition switch.**

Notes:

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- ◆ *Before carrying out any work on the A/C refrigerant system, refer to A/C refrigerant system safety measures ⇒ [Page 87-69](#) .*



1 - Damper with low pressure service valve*

- ◆ In refrigerant hose from expansion valve to compressor.
- ◆ Only use Kent Moore ACR4 or equivalent

2 - Refrigerant hose*

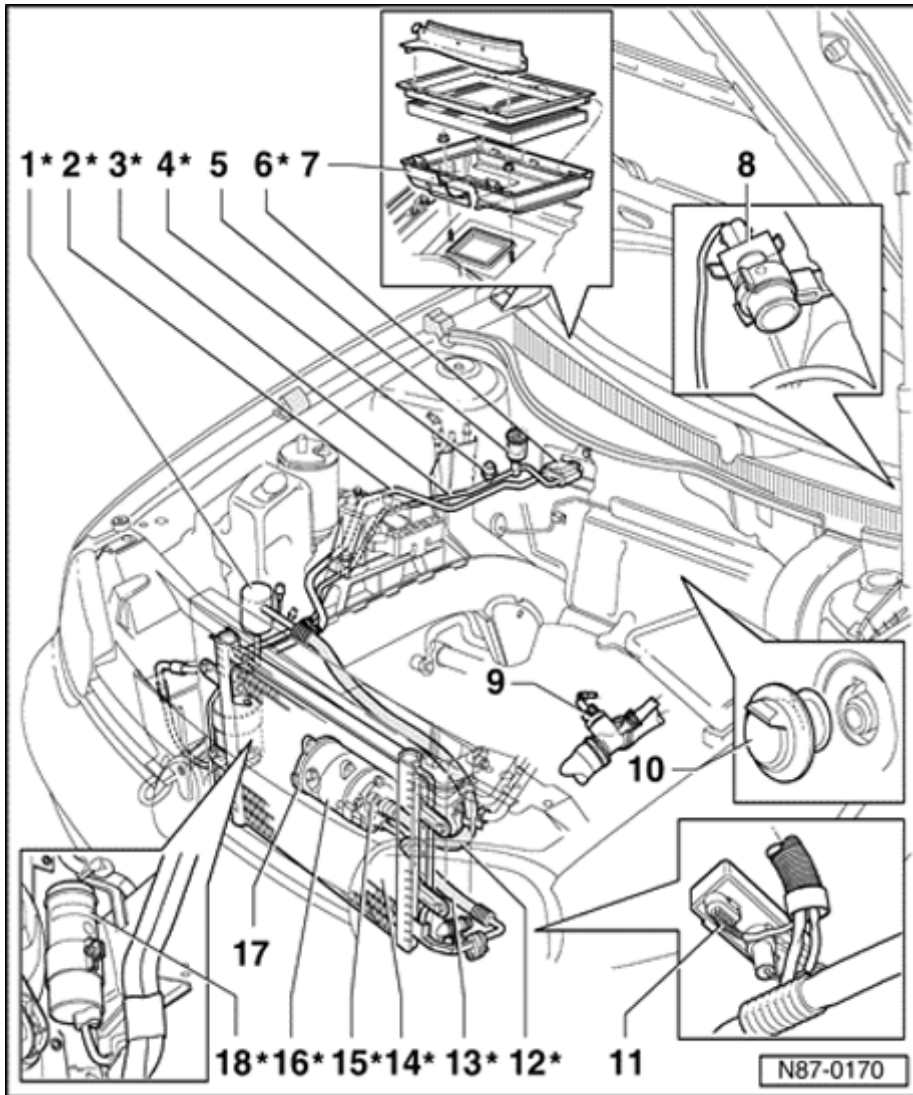
- ◆ From expansion valve to compressor
- ◆ With damper

3 - Refrigerant pipe*

- ◆ From receiver dryer to expansion valve

4 - High pressure service valve*

- ◆ Only use Kent Moore ACR4 or equivalent

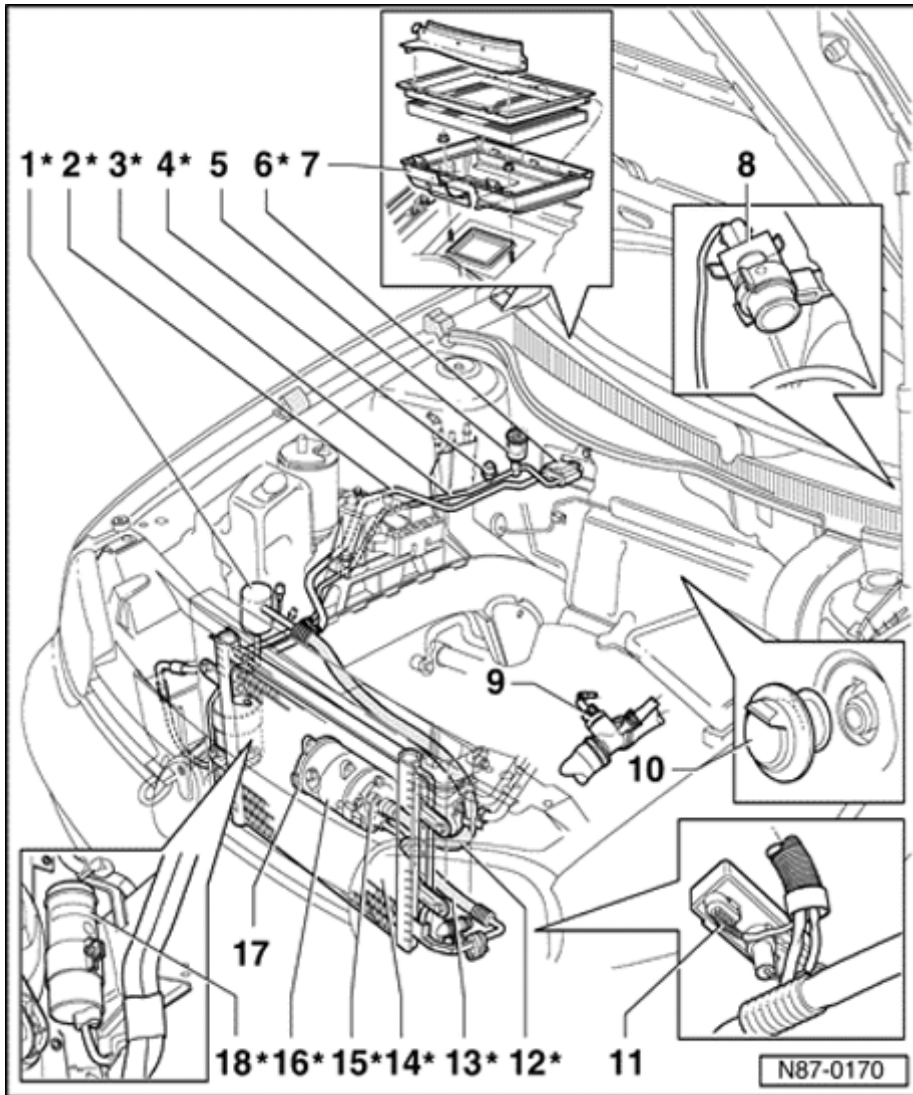


5 - A/C pressure switch -F129- or high pressure sensor - G65-

- ◆ Switch/sensor can be removed without discharging refrigerant system.
- ◆ Tightening torque 8 Nm (71 in.lb)
- ◆ Always replace O ring.
- ◆ -F129- checking ⇒ [Page 87-100](#)
- ◆ -G65- checking ⇒ [Page 87-102](#)
- ◆ -F129- and -G65- can also be checked using VAS 5051 in mode "Guided Fault Finding".
- ◆ -G65- is monitored by OBD of ECM.

Function:

- ◆ -F129- switches coolant fan -V7- to the next higher speed when pressure increases in refrigerant circuit.
- ◆ -F129- switches off A/C clutch whenever excessive refrigerant system pressure is present (e.g.: insufficient air flow over condenser or if system is overcharged).
- ◆ -F129- switches off A/C clutch whenever insufficient refrigerant system pressure is present (e.g.: refrigerant has leaked out).
- ◆ -G65- supplies refrigerant system pressure signal to coolant fan control module -J293- and engine control module.



6 - Expansion valve*

- ◆ Removing ⇒ [Page 87-107](#)

7 - Dust and pollen filter

- ◆ With activated charcoal filter
- ◆ Removing and installing ⇒ [Page 80-8](#) , Fig. 4.

8 - Ambient temperature switch -F38-

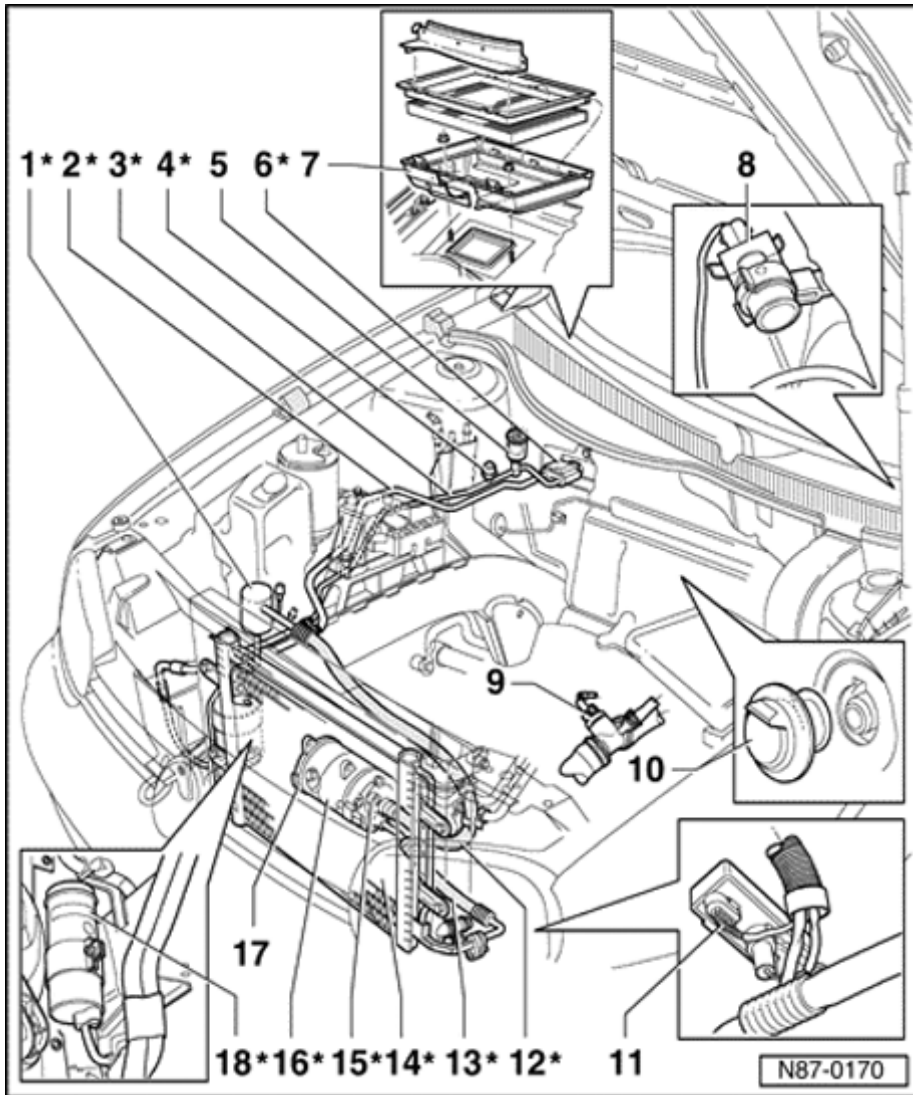
- ◆ Switches off A/C clutch -N25- at low outside temperatures.
- ◆ Off at -1°C (30°F).
- ◆ On at $+7^{\circ}\text{C}$ (45°F).

9 - A/C cut-out thermal switch -F163- through 04.99

- ◆ Switches off A/C clutch -N25- at excessively high coolant temperatures.
- ◆ Off at 119°C (246°F)
- ◆ On at 112°C (234°F).

Note:

-F163- deleted from 05.99. Thermal cut-out function assumed by Engine Coolant Temperature (ECT) Sensor -G62- via Engine Control Module (ECM).



10 - Evaporator water drain valve

- ◆ Checking ⇒ [Fig. 1](#)

11 - Coolant Fan Control (FC) Control Module -J293-

12 - Refrigerant hose*

- ◆ From expansion valve to compressor
- ◆ With damper

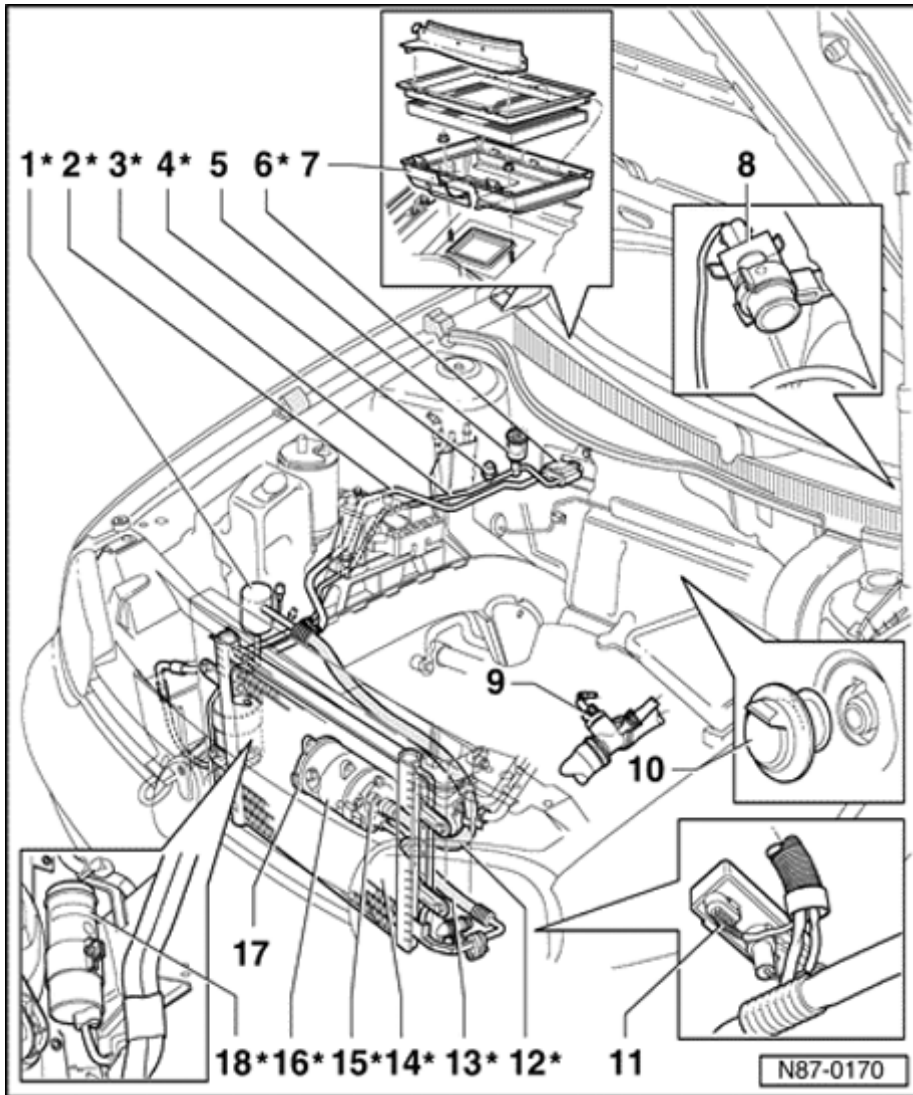
13 - Refrigerant hose*

- ◆ From compressor to condenser

14 - Condenser*

15 - Pressure relief valve*

- ◆ Checking ⇒ [Page 87-99](#) , Fig. 3



16 - Compressor*

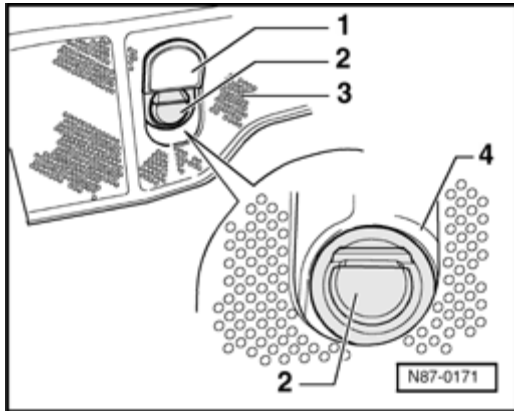
- ◆ Manufacturer: Sanden, designation: SD7V16
- ◆ Manufacturer: Zexel, designation: DCW-17D

17 - A/C clutch -N25-

- ◆ Sanden, servicing: ⇒ [Page 87-158](#) .
- ◆ Zexel, servicing: ⇒ [Page 87-166](#) .

18 - Receiver drier*

Fig. 1 Evaporator water drain valve, checking



A

- Fold cover -1- in bulkhead insulation mat -3- upwards.
- Remove drain valve -2- from opening in bulkhead -4-.

Check water drain valve as follows:

- ◆ The water drain valve must not be stuck.
- ◆ Insulation mat must not be deformed or damaged in area of valve.
- ◆ The opening in the sealing cap of the water drain valve must point down.

Note:

When the cover cap -1-is closed, it must be flush with the insulation matting. If the cover cap -1- is pushed in too far, the water drain valve sealing cap -2- can jam.