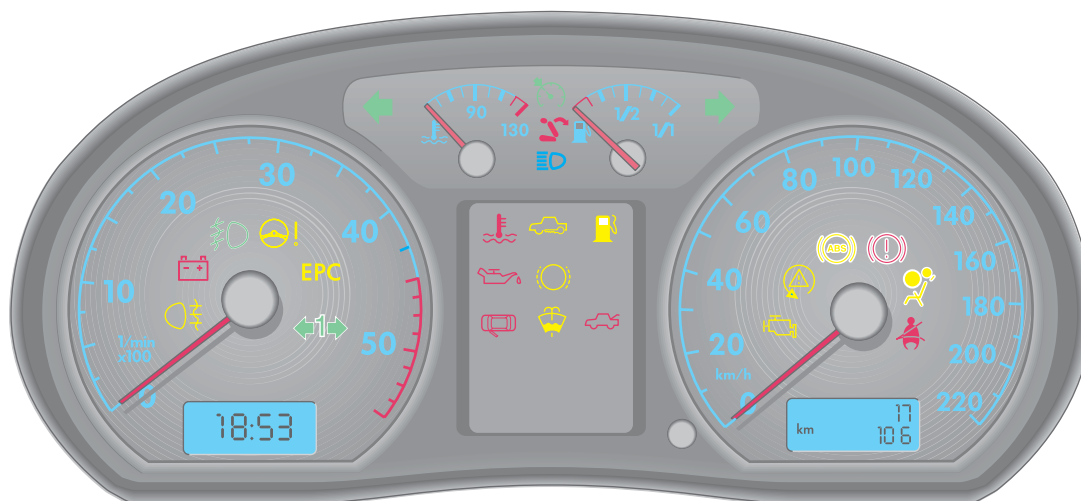












## Dash panel insert

A number of new warning and indicator lamps have been added to the display in connection with the launch of the new vehicle electrical system.



263\_040

Display symbol	Designation/definition	Display symbol	Designation/definition
	Foglights Lamp comes on when foglights are switched on		Electronic immobiliser Lamp comes on when unauthorised car key is used
	Electro-hydraulic power steering Lamp comes on and stays on while steering malfunctions		Brake pad wear indicator lamp Lamp comes on when brake linings reach their wear limit
	Engine oil level/pressure (yellow/red) "Yellow" indicates problem with oil level, "red" indicates problem with oil pressure		Windscreen washer fluid Lamp comes on when washer fluid level in the washer fluid tank drops below min. level
	Cruise control system Lamp comes on when cruise control is on		Door opened Lamp comes on when not all doors are locked
	Rear seat back lock comes on when the middle seat of the rear bench seat is not locked in position		Trailer indicator system Lamp flashes when direction indicator system is operating in trailer towing mode



# Electrical system

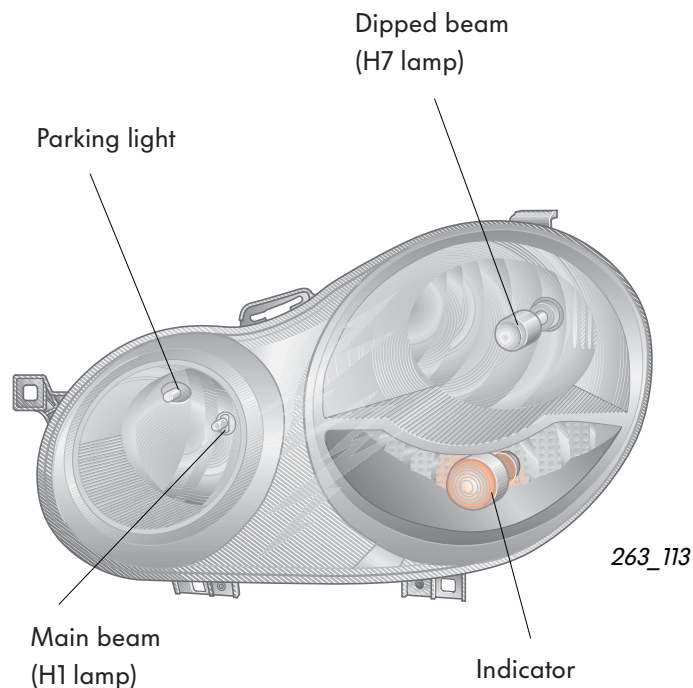
## Headlights

The new headlights are of duplex design and have clear plastic lenses.

The headlight assembly has two reflectors. The reflector for the main beam and parking light consists of a single chamber. The reflector for the dipped beam and indicator is split into two chambers.

The bulb for the indicator is coloured yellow. Light is distributed by the shape of the reflector chamber.

The foglights are integrated in the bumper, not in the headlight assembly.



## Taillights

The reflector consists of a single part and is divided into four main chambers. The chamber for the taillight/rear foglight is again divided internally.

A lamp for the taillight is located in the upper chamber half. A twin-filament lamp for the taillight/rear foglight is located in the lower chamber half.

When the light is on, one filament of this twin-filament lamp comes on as a taillight together with the taillight in the upper chamber half. This serves to enhance safety should a taillight lamp fail.

When the rear foglight is switched on, the second filament of the twin-filament lamp comes on too.

Reflectors are integrated throughout the illuminated area of the taillight assembly.



## CD changer

The new compact disc changer is fitted in the dash panel and holds 6 standard audio CDs in all.

It can only be used in connection with the "BETA" or "GAMMA" radio system.

The previous CD changer can be used in combination with a radio navigation system.

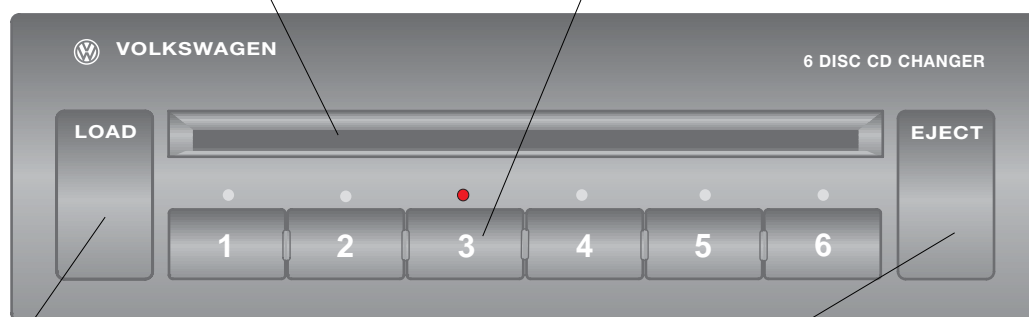


263\_122

### Audio CD tray

### Selector keys for desired CD

If a CD is loaded in a CD tray, the diode above the associated button is lit permanently to indicate this.



263\_081

### LOAD button

To load a CD, press the **LOAD** button.

### EJECT button

Press the button to select and eject the currently loaded CD.

To eject all CDs, the button must be pressed for longer than 3 seconds.



Detailed information on operating the CD changer can be found in the relevant operating manual.



# Heater, air conditioning system

For the first time, a semiautomatic air conditioning system with automatic temperature control (Climatic) will be used in the Polo.

Whereas the interior temperature is adjusted automatically to the value set on the control panel, the air distribution and fresh air blower speed are adjusted manually.

In addition to the new semi-automatic air conditioning system (Climatic), the fully automatic air conditioning system (CLIMAtronic) or the heater with fresh air/air recirculation mode is available as a possible variant.

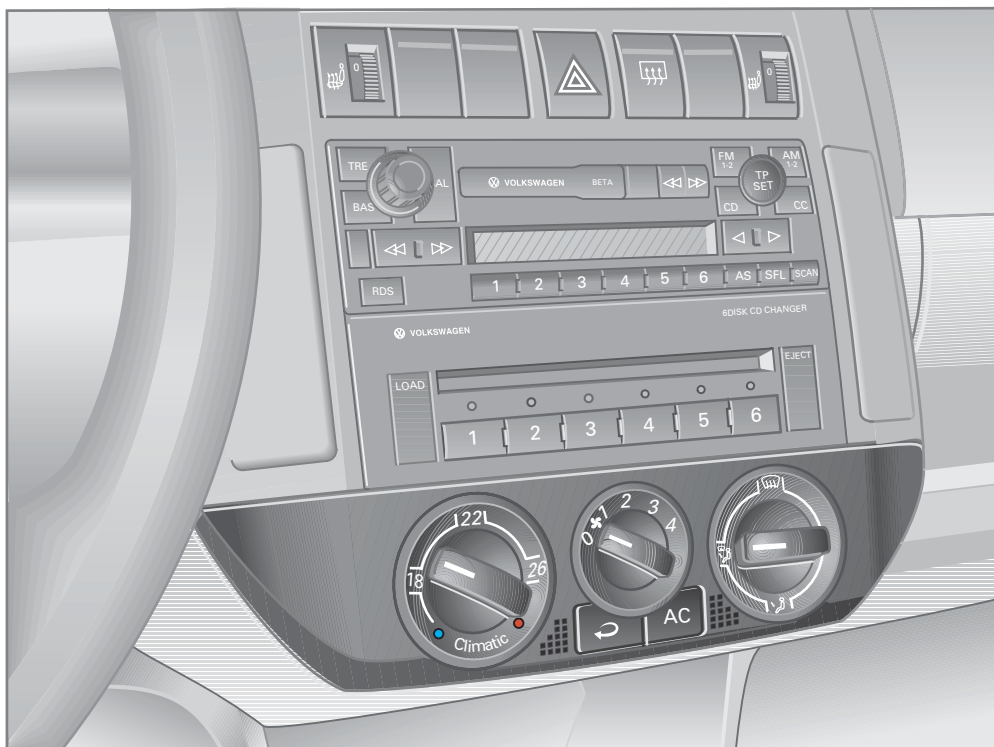
In both air conditioning systems, two new components ensure temperature control in accordance with demand:

- Evaporator vent temperature sender G263
- Externally-controlled compressor with regulating valve N280 and integrated overload protection

The needs-orientated demand temperature control reduces energy consumption and helps to save fuel.

Other innovations are:

- function-enhanced controls matched to the dash panel design
- flexible flap adjustment shafts
- separate fresh air and air recirculation flaps
- dust/pollen filter integrated in the heater and air conditioning system housing



263\_129

## The heater and air conditioning system housing

The housings are designed very similarly. Depending on equipment specification, the housings are specially adapted for operation of the heater or air conditioning system.

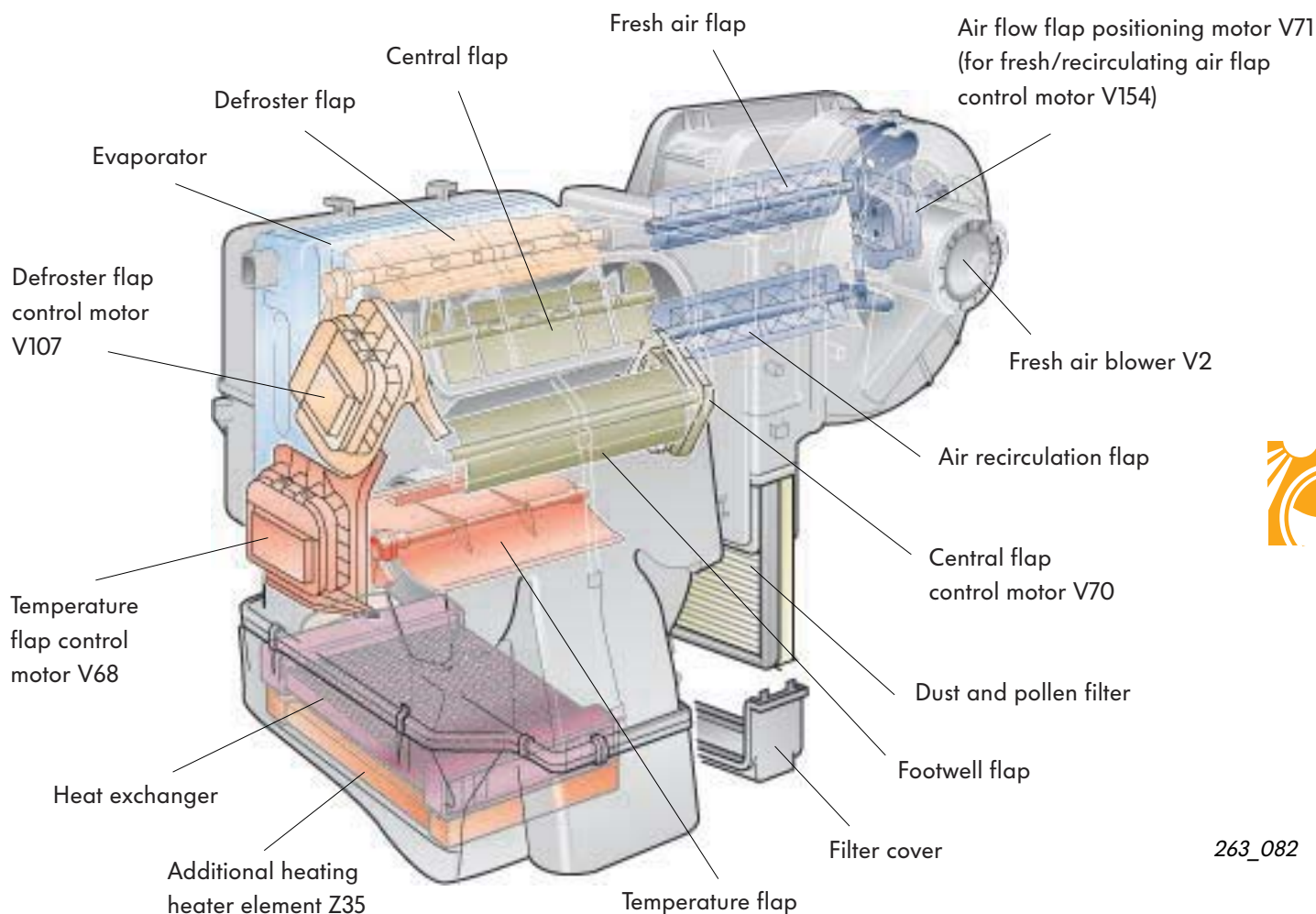
The dust/pollen filter, fitted externally to date, was integrated in the housing, and is located in between the fresh air intake and the distributor housing.

The filter is accessible from the vehicle interior and can be pulled out downwards after detaching the filter cover.

The housing illustrated below shows the CLIMAtronic version.

In all variants, the fresh air and air recirculation flap are adjusted by an electric motor. Both flaps are adjusted in dependence on one another by a common lever mechanism.

The fresh air flap in the CLIMAtronic also serves as a throttle. The faster the vehicle is travelling, the more the flap closes. This keeps the volume of air flowing into the vehicle interior almost constant.



263\_082





# Heater, air conditioning system

## The heater

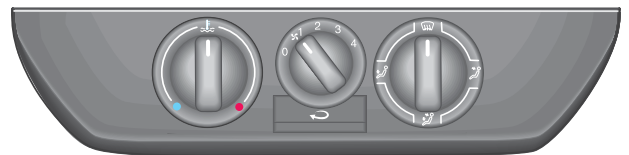
In the heater, the temperature flap and the air distribution flaps are adjusted with the rotary knobs on the control panel. The heater is adjusted by flexible shafts, each of which is engaged in the control panel and the heater and air conditioning system housing. The shafts for the temperature flap and air distribution are not of equal length. To avoid confusion, the plug and socket connections of the shafts are colour-coded.

The flexible shafts have the following advantages over the Bowden cable:

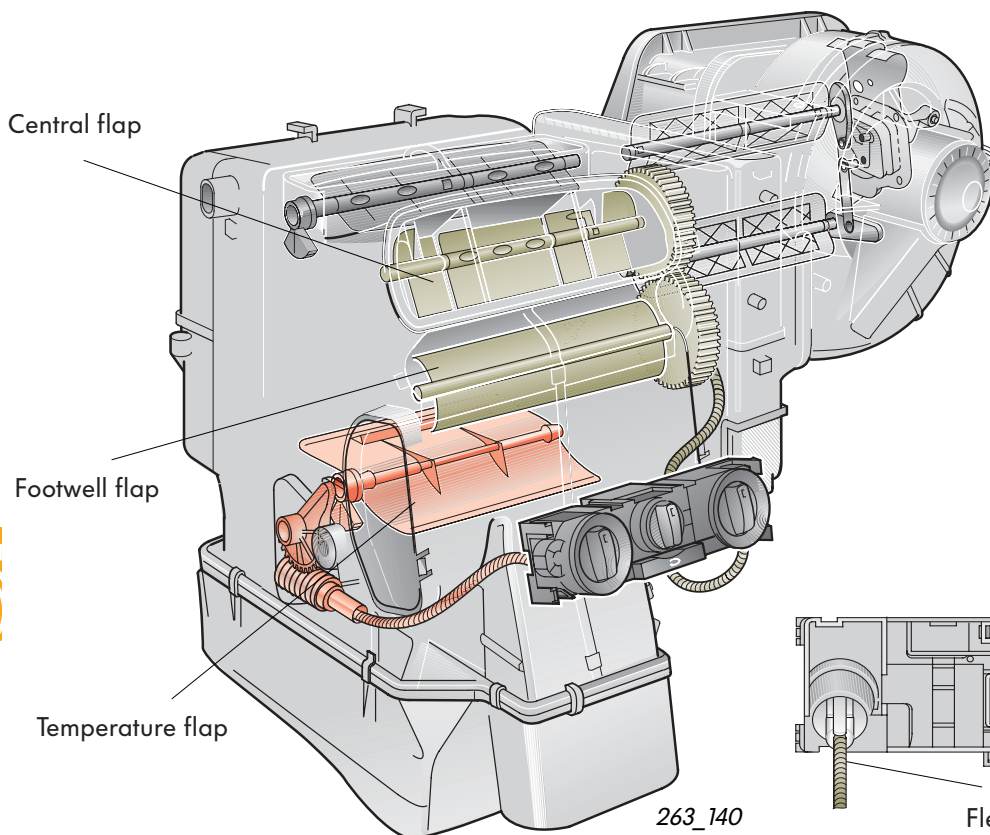
- short routing with narrow curve radius
- no length adjustment is needed

The air recirculation mode can be switched on and off using the air recirculation button.

In diesel engine vehicles, an additional heating element is used in combination with the heat exchanger to warm up the vehicle interior quickly.

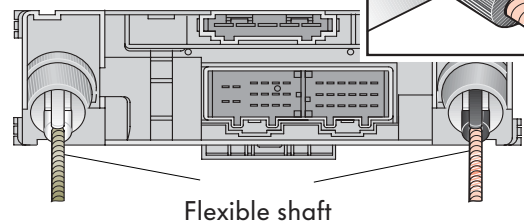
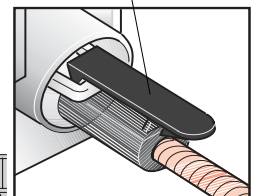


263\_063



263\_140

Flexible shaft coupling



Flexible shaft

263\_153



Before you decouple the shafts from the control panel or from the heater and air conditioning system housing, please follow the inspection and installation instructions given in the Workshop Manual.

## Microswitches for the additional heating element and defroster

The microswitches are located in the control panel housing. The microswitch is pressed against the electrically-conductive contact surface by a cam on the rotary knobs for temperature selection or air distribution. The control electronics utilise the earth signal generated simultaneously as a criterion for activating the additional heating element "ON" function, or recirculating air mode automatic "OFF" when this is adjusted to Defrost mode.

The air recirculation function can be activated by again pressing the air recirculation button in the Defrost position.

Both microswitches work according to the same principle.

The mode of operation of the microswitch is described on the following pages using the additional heating element "ON/OFF" function as an example.

### Contact open

The contact is open when the rotary knob is in the operating range 'Cooling' and heating output is up to approx. 90%.

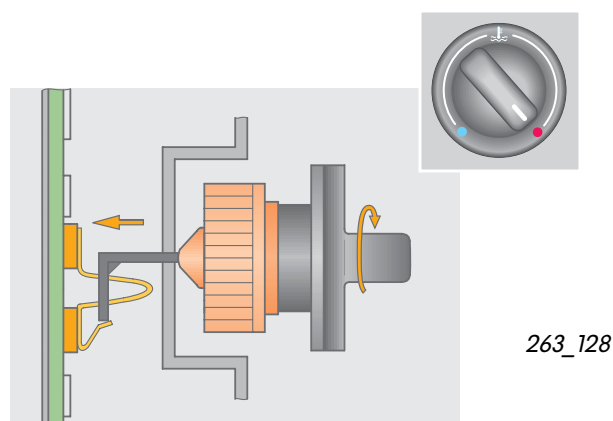
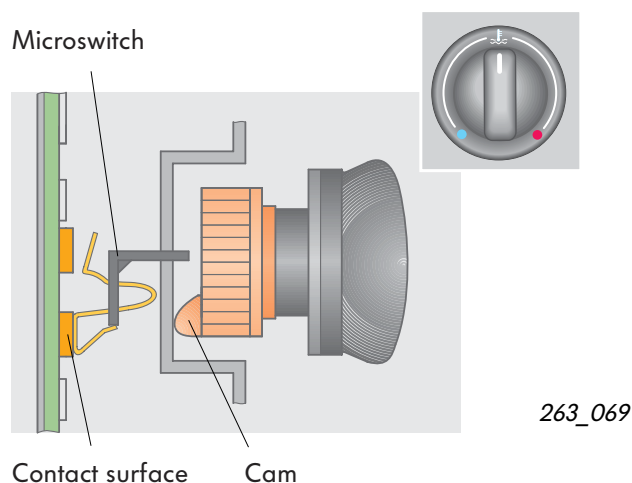
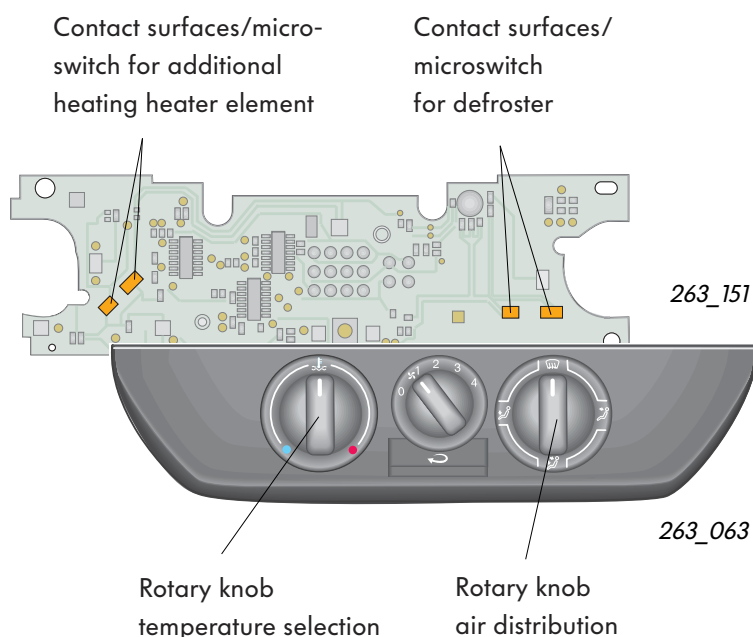
This breaks the signal earth contact to the engine control unit.

The additional heater heating element does not cut in within this operating range.

### Contact closed

The contact switch is closed in the operating range Cooling and between 90% and 100% heating output.

When the contact switch is in this state, the earth signal is present at the engine control unit. If all these switch-on conditions are met, the additional heating element switches on.



# Heater, air conditioning system

## Additional heating element Z35

### Heating output control

Approximately 10 seconds after the engine is started, the diesel direct injection system control unit enables the additional heating element. This ensures that the engine runs properly straight away.

If the rotary knob for interior temperature is positioned to 90 -100% heating output and higher, the additional heating element switches on under certain conditions.

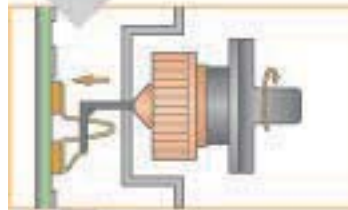
### Switch-on conditions

Rotary knob for temperature selection



Position of rotary knob:  
between 90% and 100% heating output

Microswitch for additional heating element



Contact switch opened  
90% heating output and higher

Diesel direct injection system control unit J248



The control unit checks the following signals as switch-on conditions



Coolant temperature  
less than 80°C



Battery voltage  
greater than 11 V



3-phase AC alternator load factor  
not higher than 50% (terminal DF)



Engine speed  
higher than 450 rpm

Additional heating element Z35



If all these switch-on conditions are met, the additional heating element is switched on.

263\_065



## Air conditioning system

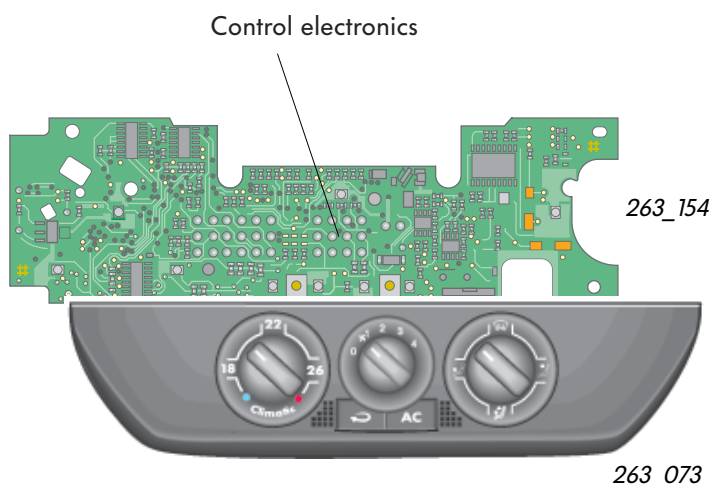
### Climatic

The control electronics with the air conditioning system control unit J301 are located behind the control elements.

The control unit evaluates the signals from the sensors and actuators and controls the automatic interior temperature regulation.

The temperature flap is adjusted by an electric motor.

The central flap, footwell flap and the defrost flap are adjusted by a flexible shaft with a rotary knob for air distribution.

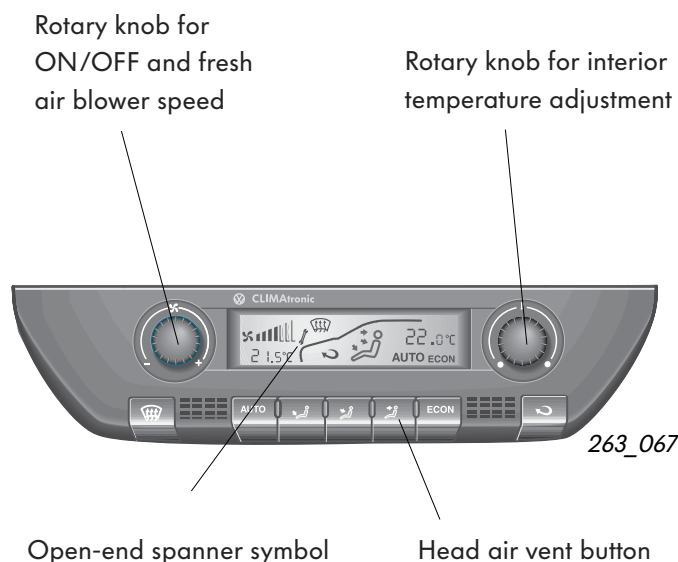


### CLIMAtronic

The CLIMAtronic control panel was revised in terms of its function and design, and has the following new features:

- blower output adjustment by rotary knob
- temperature adjustment in 0.5 °C increments
- head air vent button
- enlarged display
- an open-end spanner symbol is displayed when the fault reader is connected

As before, all functions of the CLIMAtronic are controlled fully automatically.

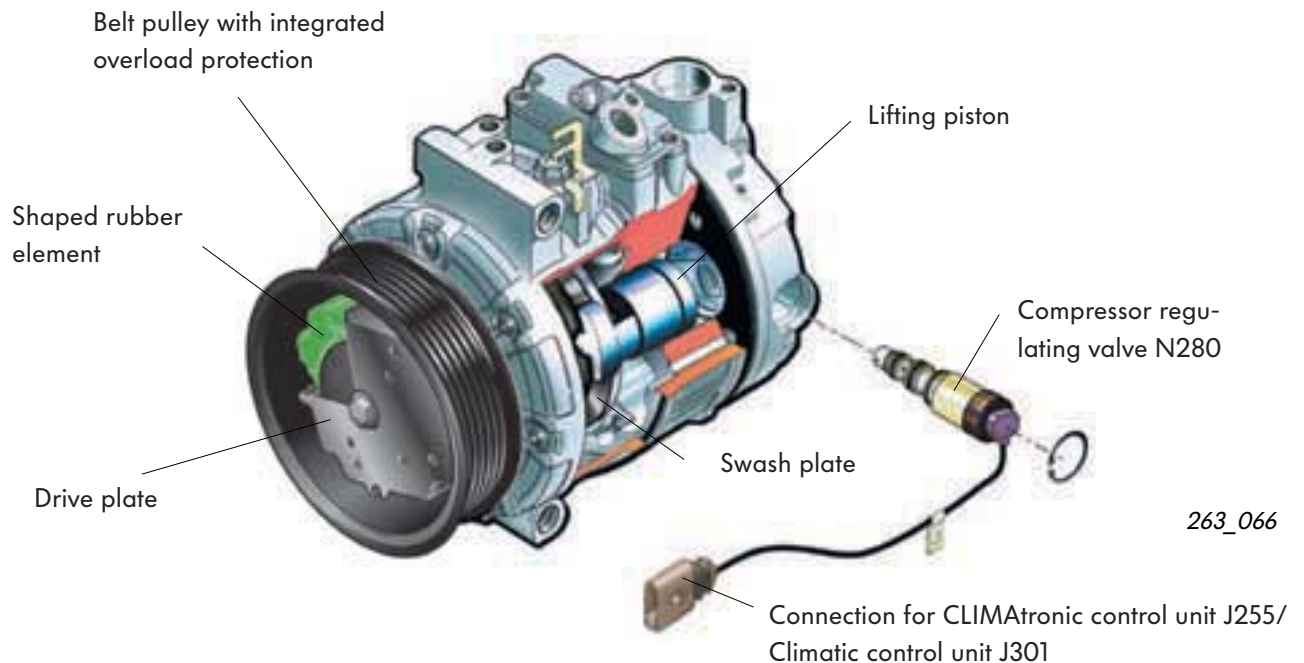


# Heater, air conditioning system

## Externally regulated compressor

The compressor basically operates according to the drive plate principle. The design features which distinguish this compressor from the internally-regulated compressor are as follows:

- one-sided drive plate compressor with 6 lifting pistons
- variable cubic capacity for adaptation to refrigerating demand
- hollow pistons
- pulley drive with integrated overload protection and no magnetic clutch
- external compressor regulating valve N280 for control of the pressure conditions inside the compressor



## Function

The CLIMATronic control unit J255 or the Climatic J301 activates the compressor regulating valve N280 in continuously variable mode.

The pressure conditions on the low pressure side are adjusted via a control voltage depending on the following parameters:

desired temperature setting, exterior and interior temperature, evaporator temperature and refrigerant pressure in the refrigerant circuit.

The variable swash plate inclination defines the working volume, and therefore the refrigeration capacity.

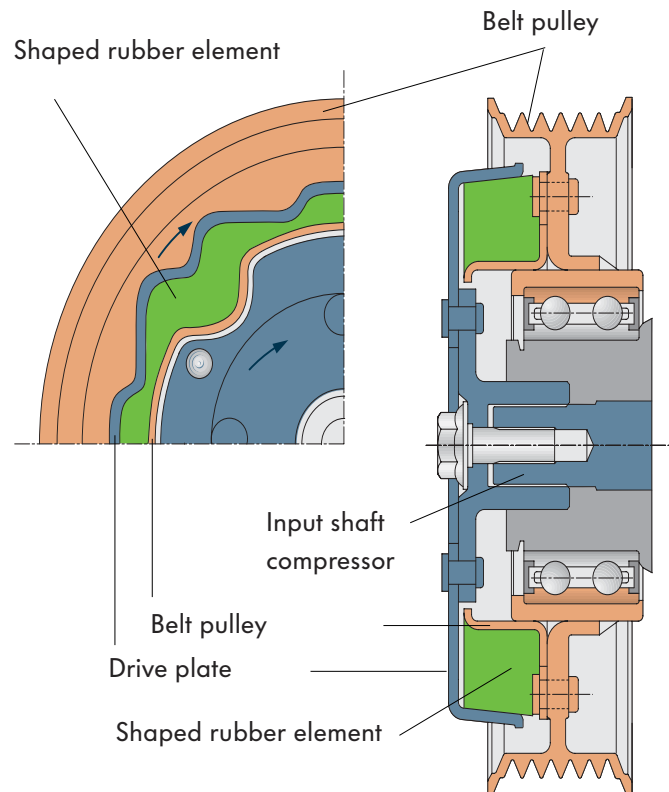
The compressor continues to run via the V-belt drive when the air conditioning system is switched off. The delivery volume of the refrigerant is set to less than 2%.

## Overload protection

### Compressor in operation

The ribbed belt pulley and the drive plate are positively connected by a shaped rubber element.

When the compressor is functional, the two plates rotate in unison.



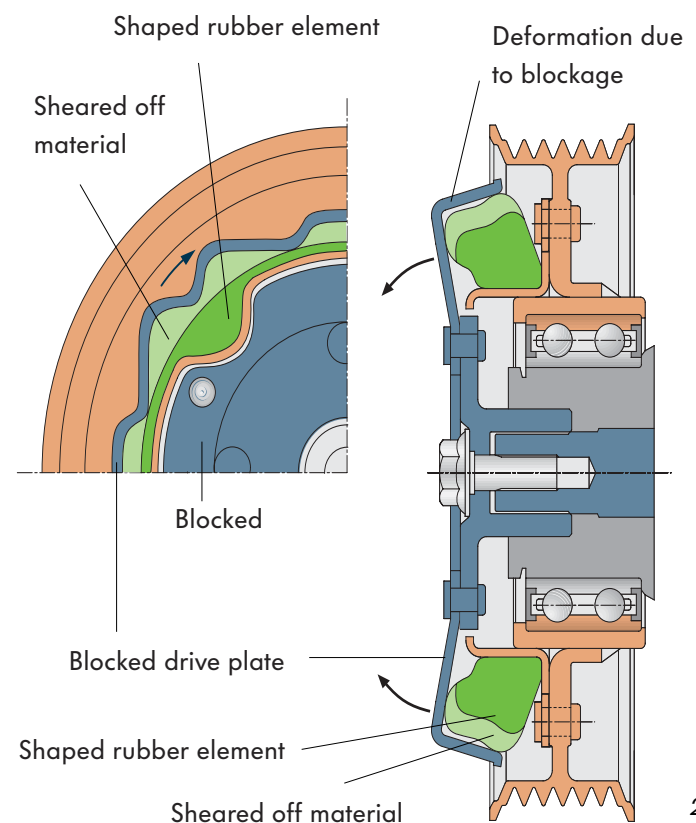
### Compressor blocked

If the compressor becomes damaged internally, the drive gears may block. The drive plate is also brought to a halt.

This increases considerably the transmission forces between the belt pulley and the drive plate. The belt pulley pushes the shaped rubber element towards the blocked drive plate in the direction of rotation.

The outside parts of the rubber element are sheared off, and the belt pulley and drive plate are disconnected. The belt pulley continues to rotate unobstructed.

This prevents the V-belt and the engine from damage.



# Heater, air conditioning system

## Evaporator control circuit

When the CLIMAtronic/Climatic is switched on, the cooling requirements are determined and adjusted on the basis of the temperature setting and various influencing factors.

The components described on the following pages form a closed control loop and facilitate needs-orientated temperature control.

## Compressor regulating valve N280

The external regulating valve is the interface between the low-pressure side and the high-pressure side of the compressor. It has a pressure-equalising function.

If increased cooling is required, the CLIMAtronic control unit J255 or the Climatic control unit J301 activates the regulating valve.

A actuating rod in the regulating valve is moved when a control voltage is applied to the solenoid regulating valve.

The period over which the control voltage is applied defines the adjustment range. The adjustment affects the cross section between the low-pressure and high-pressure sides in the valve. The high pressure increases with decreasing low pressure, and increases the drive plate inclination via the piston stroke.

CLIMAtronic control unit J255



263\_080



Compressor regulating valve N280

263\_068

#### Influencing factors:

desired temperature input  
ambient temperature  
interior temperature  
air conditioner vent temperatures  
the pressure level in the refrigerant circuit

#### Evaporator vent temperature sender G263

Evaporator vent temperature sender G263 is built into the ventilation duct behind the evaporator and measures the vent temperature downstream of the evaporator.

It performs two important tasks:

- It ensures that the air conditioning system cuts out at a temperature of approx. 0 °C downstream of the evaporator and that icing does not occur.
- In connection with the externally-regulated compressor, the vent temperature downstream of the evaporator can now be adjusted to between 0 °C and approx. 10 °C downstream of the evaporator.

#### Advantage:

It is no longer necessary for cold air to be "reheated" by the heat exchanger to achieve specific desired temperatures.

All in all, the evaporator control circuit helps to reduce energy consumption, and thus saves fuel.

Intake air

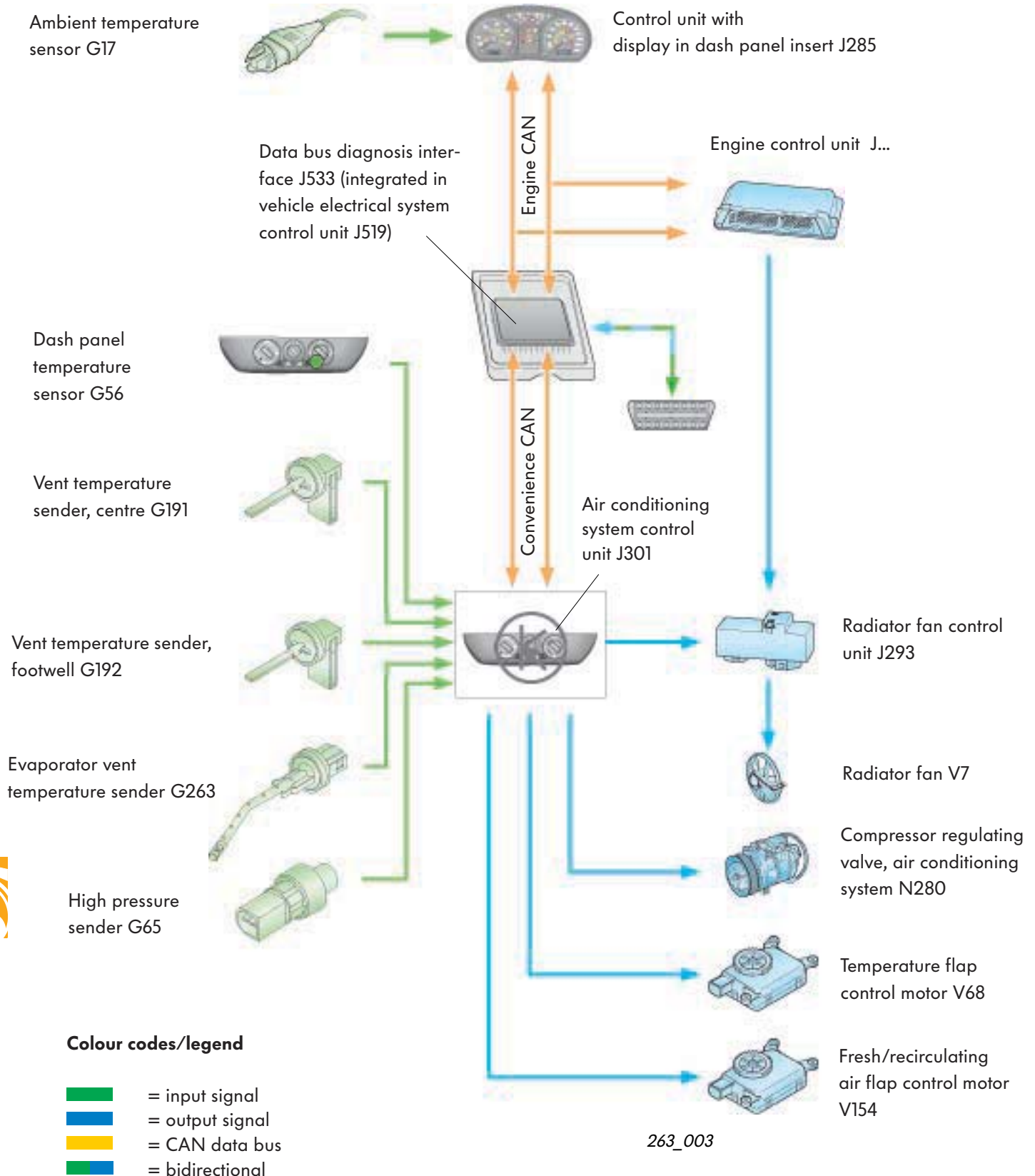
Cooled air

Evaporator vent  
temperature sender  
G263



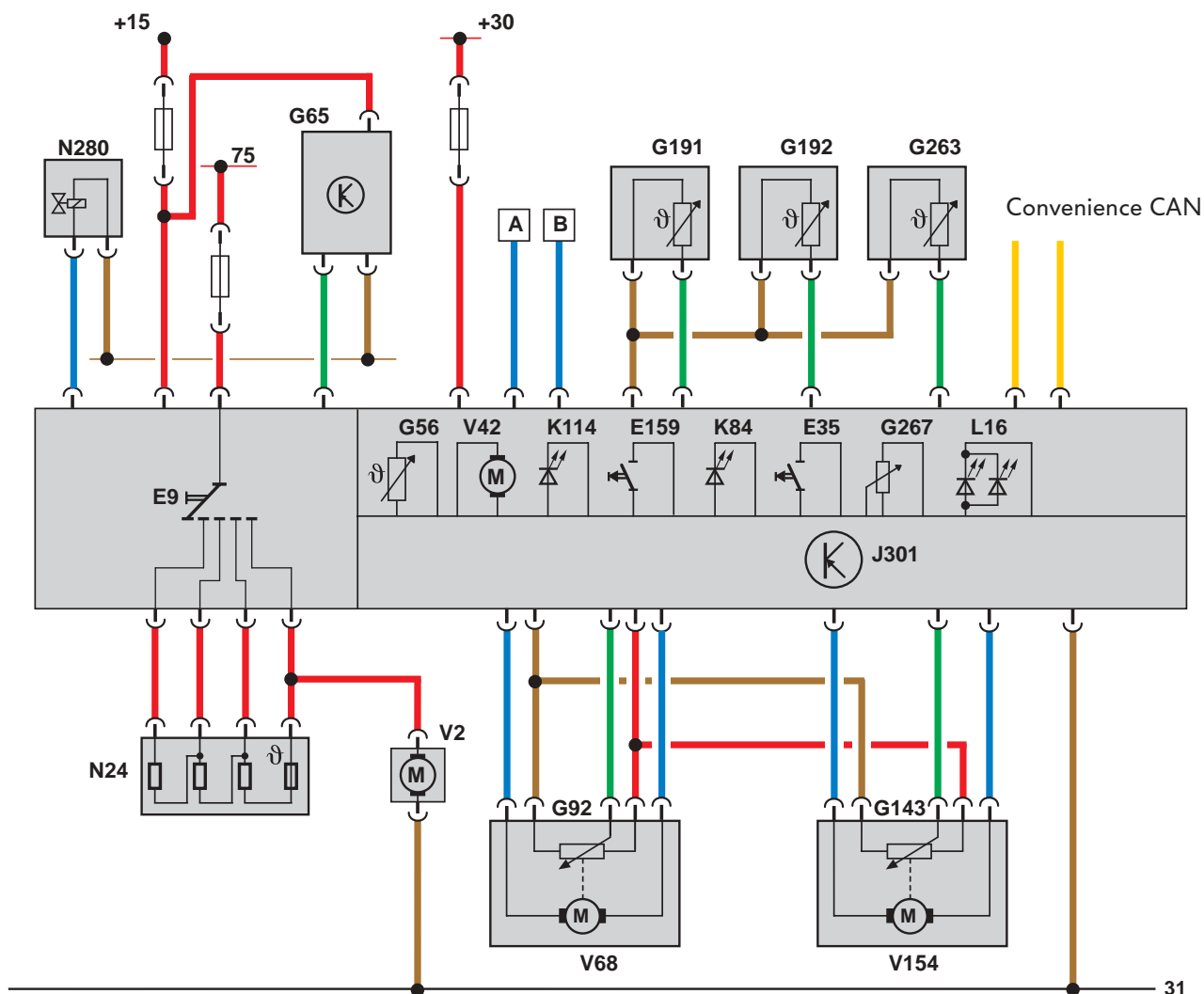
# Heater, air conditioning system

## System overview - Climatic





## Function diagram - Climatic



263\_027

### Components

E9	Fresh air blower switch	N24	Fresh air blower with overheating fuse series resistor
E35	Air conditioner switch	N280	Compressor regulating valve, air conditioning system
E159	Fresh air/air recirculating flap switch	V2	Fresh air blower
G56	Dash panel temperature sensor	V42	Temperature sensor blower
G65	High pressure sender	V68	Temperature flap control motor
G92	Control motor potentiometer for temperature flap	V154	Fresh/recirculating air flap control motor
G143	Control motor potentiometer, air recirculation flap		
G191	Vent temperature sender, centre		
G192	Vent temperature sender, footwell		
G263	Evaporator vent temperature sender		
G267	Rotary knob temperature selection potentiometer		
J301	Air conditioning system control unit		
K84	Air conditioning system warning lamp		
K114	Fresh air/air recirculation warning lamp		
L16	Fresh air controls light bulb		

### Code codes/Legend

<span style="color: green;">—</span>	= input signal
<span style="color: blue;">—</span>	= output signal
<span style="color: red;">—</span>	= positive
<span style="color: brown;">—</span>	= earth
<span style="color: yellow;">—</span>	= CAN data bus

### Auxiliary signals

<span style="border: 1px solid black; padding: 2px;">A</span>	Fan speed 1
<span style="border: 1px solid black; padding: 2px;">B</span>	Fan speed 2



## Extended service intervals

All engines used in the Polo Model Year 2002 feature extended service intervals (ESI).

- The service interval of petrol engine vehicles are 15,000 km/year to max. 30,000 km/2 years.
- The service interval of diesel engine vehicles are 15,000 km/year to max. 50,000 km/2 years.



Detailed information about extended service intervals can be found in Self-Study Programme No. 224.

To enable the two TDI engines with unit injector system to achieve service intervals up to 50,000 km, the following components of the engines with unit injector system were improved:

- The friction created by the drive of the unit injector on account of low surface pressure was reduced by enlarging the radii of the pressure pin (also refer to page 25 "New features of unit injector").
- By widening the connecting rod head, the contact surface of the piston pin was enlarged in relation to the small end.
- Piston cooling has been improved by a revised cooling channel in the piston and modified oil spray nozzles.

Diesel engines with a unit injector system **and** extended service intervals must be filled with long-life engine oil compliant with the VW 50601 standard.

This oil can also be used for diesel engines with extended service intervals which do not have a unit injector system.



263\_084



Engines **without** extended service intervals should not be filled with long-life engine oil.

Please pay attention to the oil standards prescribed in the Workshop Manual.

## Service Interval Display

A new symbol and other display parameters have been added to the flexible Service Interval Display in the Polo.

The driver's personal driving style is taken into account to determine the service intervals besides the individual conditions of use and the quality of the engine oil.

### Service advance warning

If a service is due shortly, a spanner symbol and the mileage to next service in "km" appears in the kilometre counter on the dash panel insert.



263\_136

After 10 seconds, the display changes. A clock symbol and the number of days to the next service are then displayed.



263\_137

On vehicles with an on-board computer, the following message appears in the display on the dash panel insert:

Service in 2000 km or 40 days  
(Service in 2000 km oder 40 Tagen)



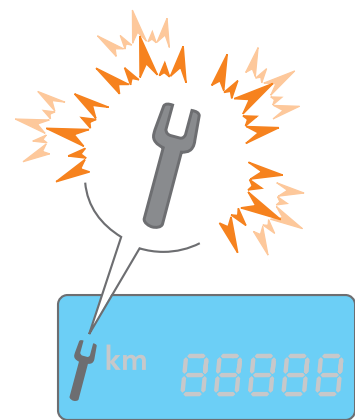
263\_138



# Service

## Service due

If a service is due, a gong signal sounds and a flashing spanner symbol appears in the kilometre counter on the dash panel insert for 20 seconds.



263\_145

The following message appears on the display of the dash panel insert.

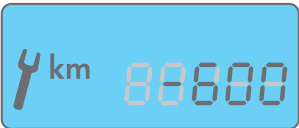
Service now  
(Service jetzt)



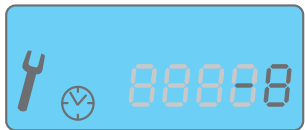
263\_146

## Service overdue

An overdue service is indicated by a minus sign before the displayed number of kilometres or days to the next service.



263\_147



263\_148

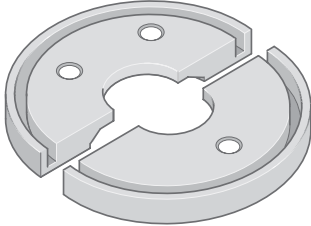
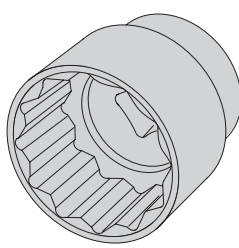
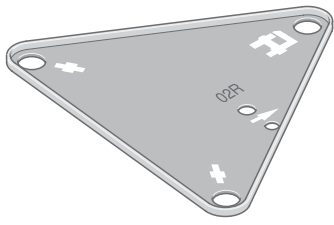
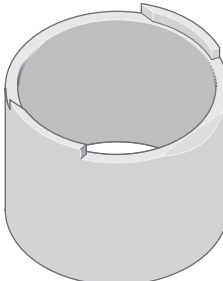
The following message appears on the display of the dash panel insert.

Service since 600 km or 8 days  
(Service seit 600 km oder 8 Tagen)



263\_146

## Special tools

Designation	Tool	Use
T10064/6A 2-piece backing plate		For removing the wheel bearing
T10125 Socket		For mounting the double hexagon nut to the outer CV joint the wheel hub
T30020 Adjustment plate		For removing and installing 5-speed manual gearbox 02R
T30035 Thrust piece		For mounting the bonded rubber bush to the axle bracket





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140.2810.82.20 Technical status 09/01

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