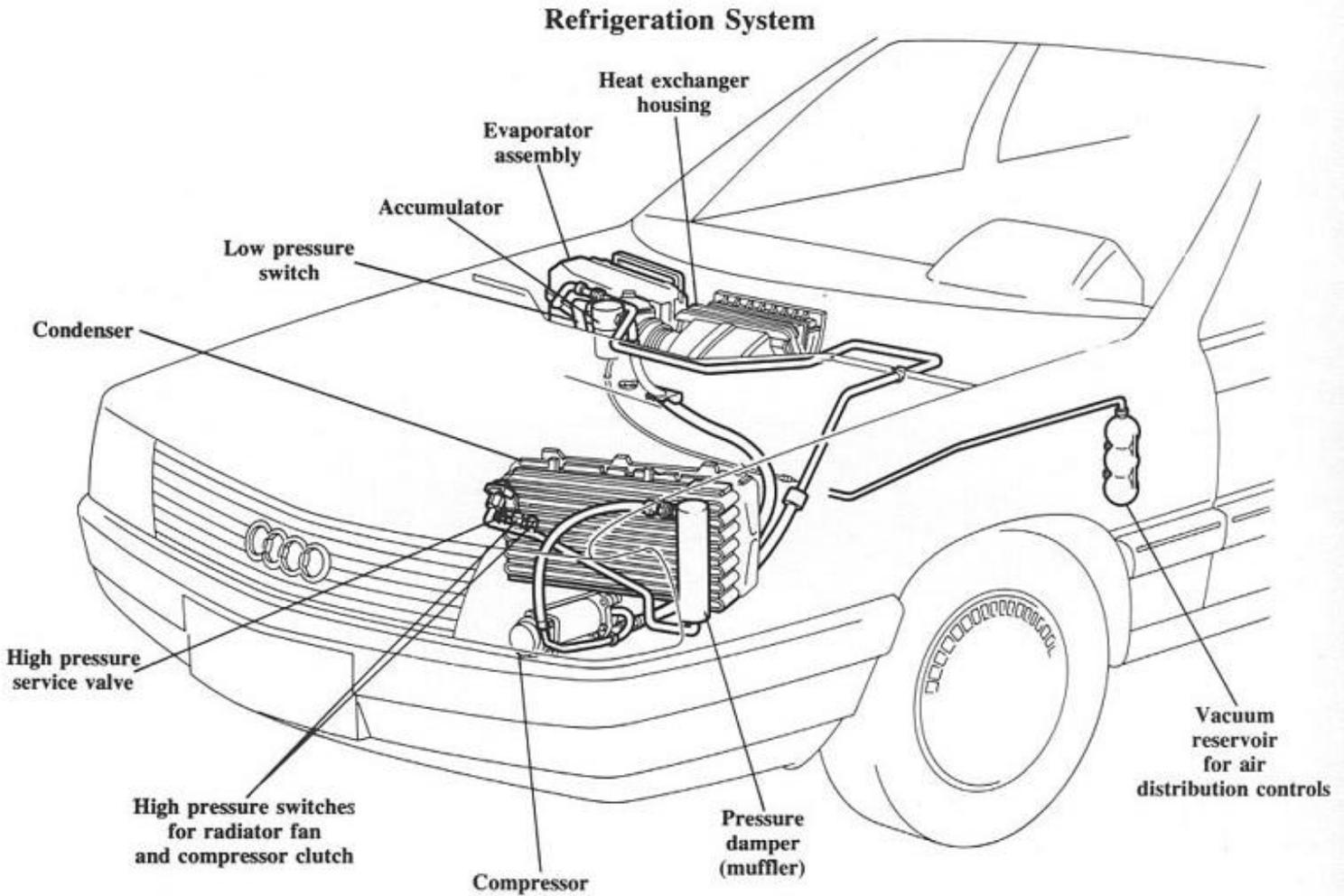


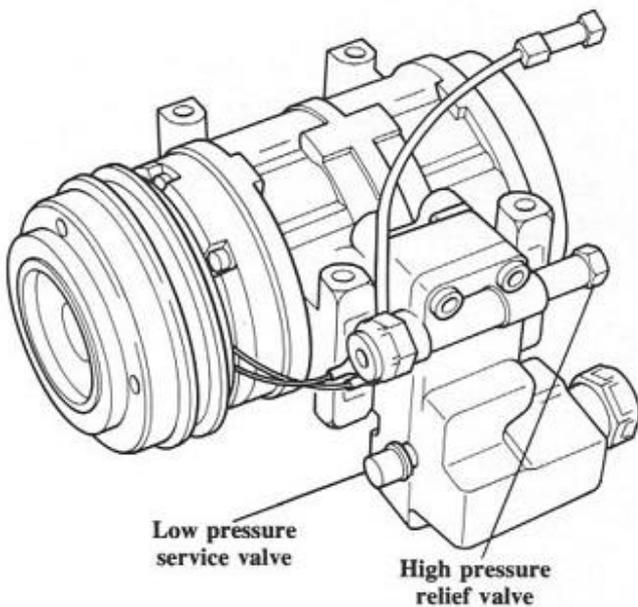
# Air Conditioning



The refrigeration system for the new Audi 100 and Audi 200 is the same basic system as the previous Audi 5000 with some modifications. The system is a CCOT (Cycling Clutch with Orifice Tube) system.

A restrictor (orifice tube) is installed in the inlet line to the evaporator to meter the flow of refrigerant. An accumulator acts as a storage device for the refrigerant after it passes through the evaporator.

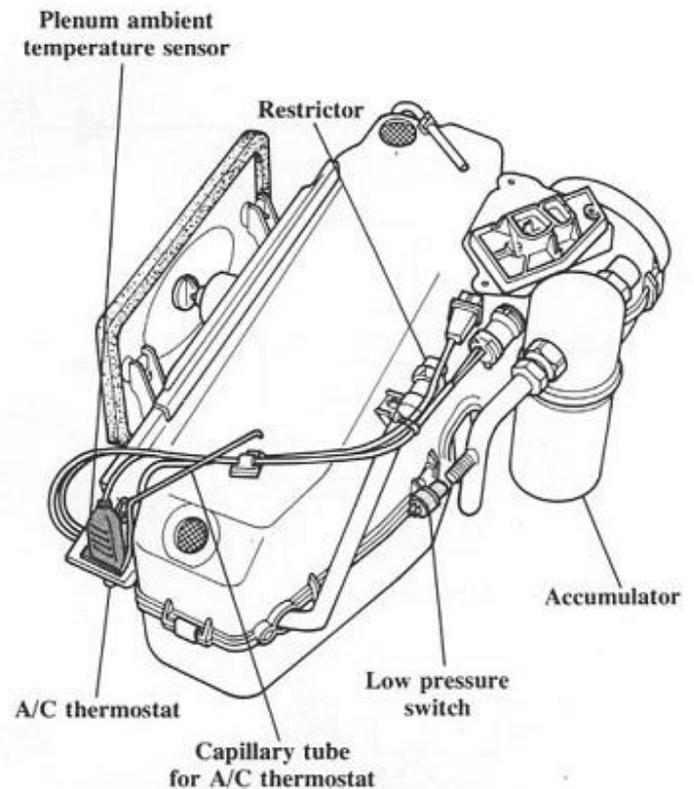
The 10 cylinder A/C compressor is the same type as that used on the Audi 5000 and Audi 80/90. A high pressure relief valve is threaded into the filter which is attached to the compressor. The valve will open to protect the system from damage if the system exceeds approximately 500 PSI (40 bar).



## Evaporator Assembly

A thermostatic switch is used to cycle the compressor clutch and regulate the evaporator temperature between 30° and 40° F (-1° to 4° C). The A/C thermostat is mounted on the right side of the evaporator assembly. Its capillary tube is inserted 180 mm into the evaporator.

A low pressure switch is used to protect the compressor if refrigerant pressure drops too low. The switch opens at about 14.5 PSI (1 bar) and is located next to the accumulator.

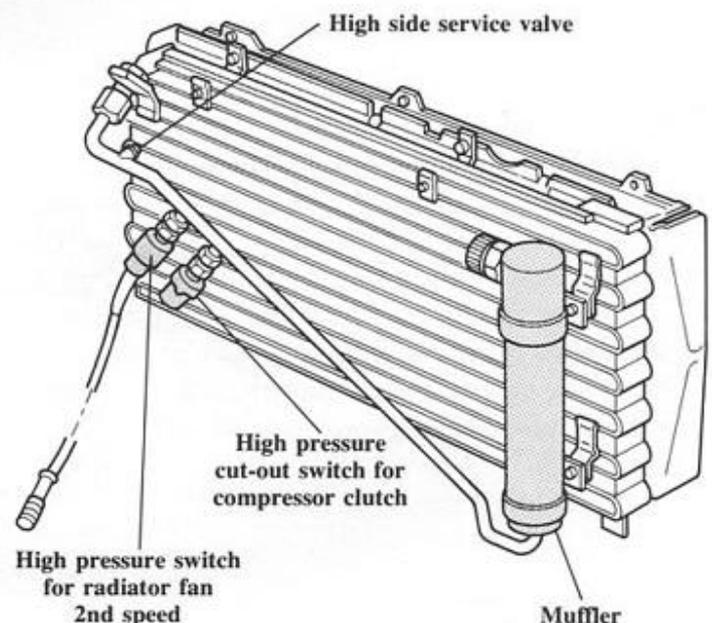


## Condenser Assembly

The radiator fan high pressure switch is located on the high pressure line between the muffler and condenser. This switch turns the radiator fan on 2nd speed when the A/C high pressure reaches about 200 PSI (15 bar).

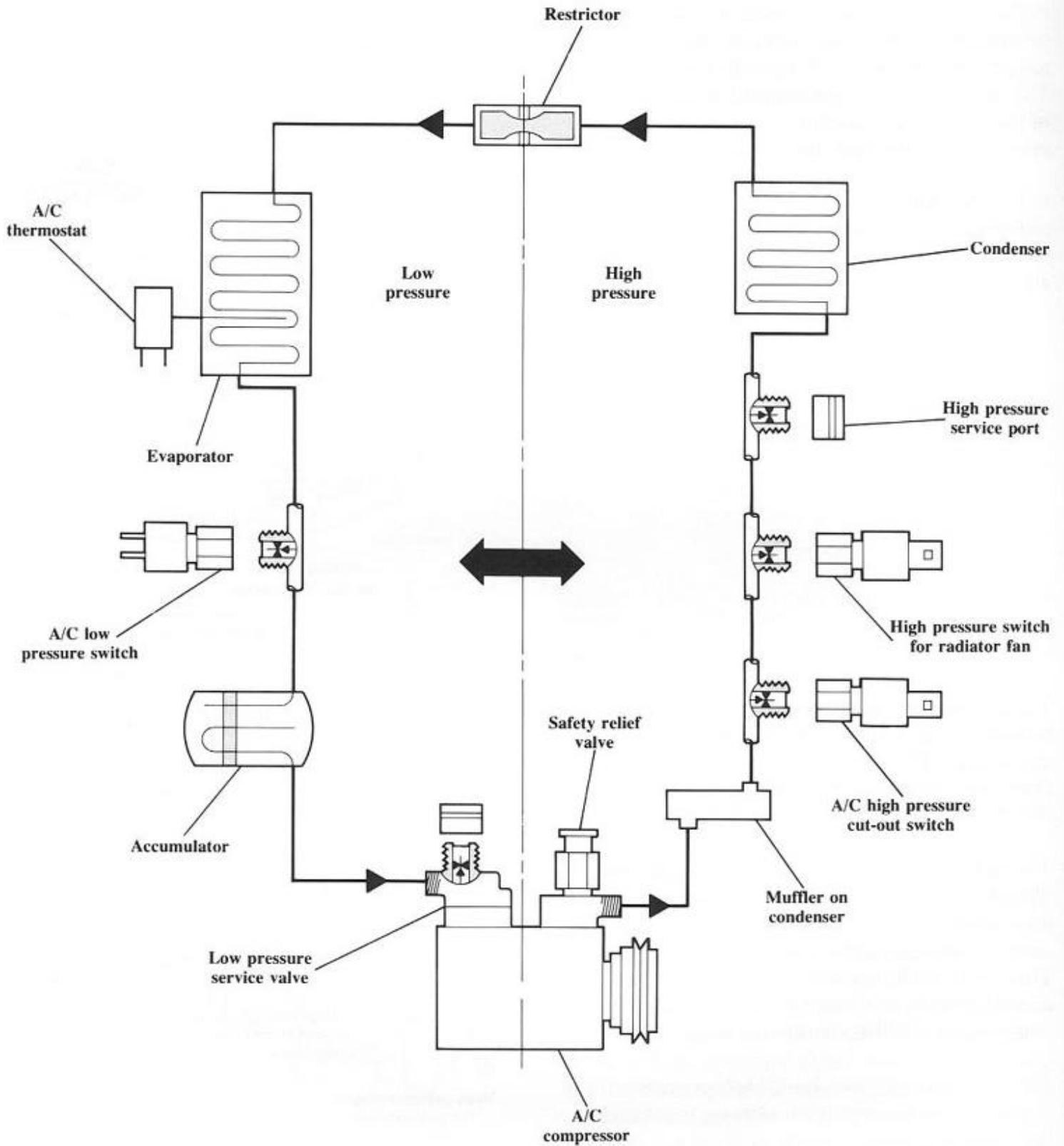
The high pressure sensor that was located in the plenum next to the wiper motor has been eliminated. In its place, a high pressure cut-out switch is located next to the radiator fan switch. This switch will open if A/C pressure exceeds approximately 435 PSI (30 bar) and the A/C compressor will be switched off.

The low pressure and both high pressure switches can be removed without discharging the system.

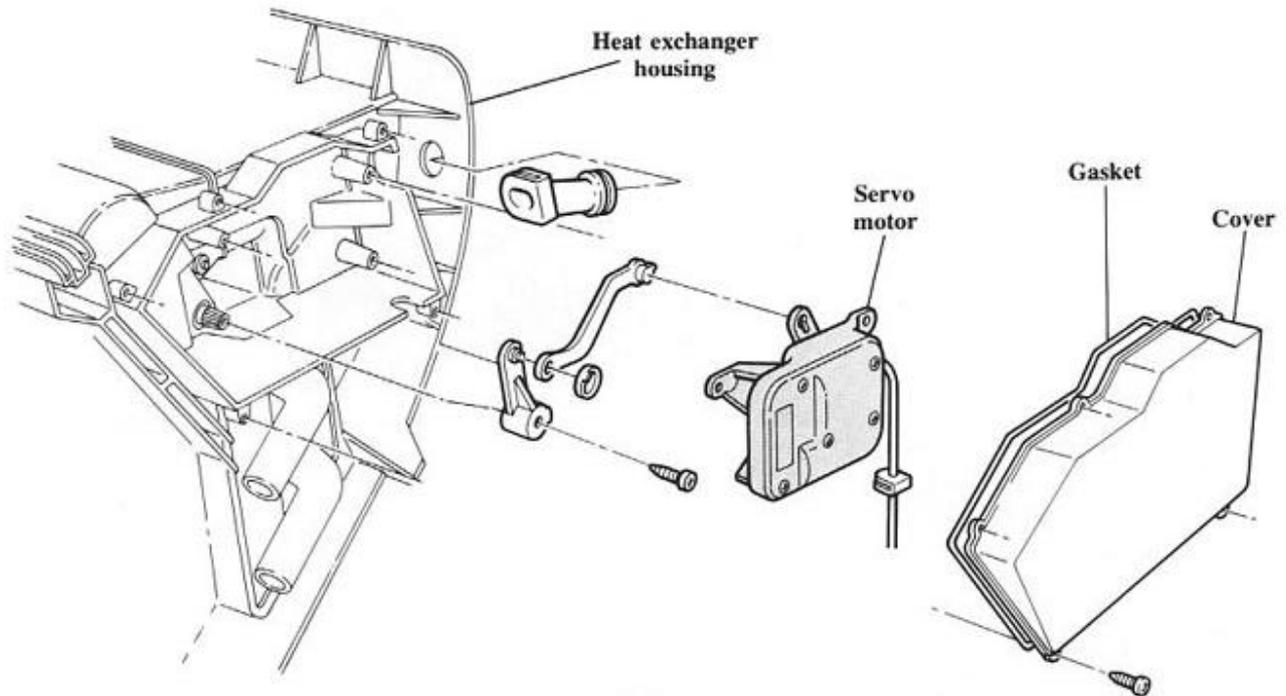


# Air Conditioning

## Refrigeration System



## Servo Motor For Temperature Regulation



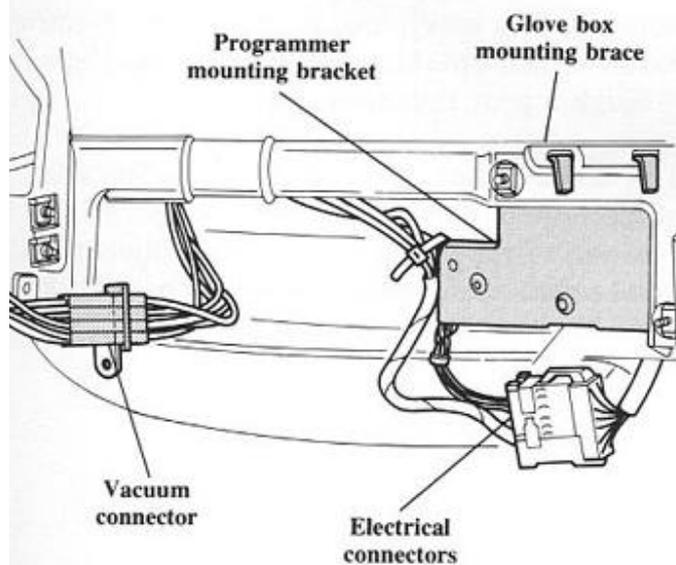
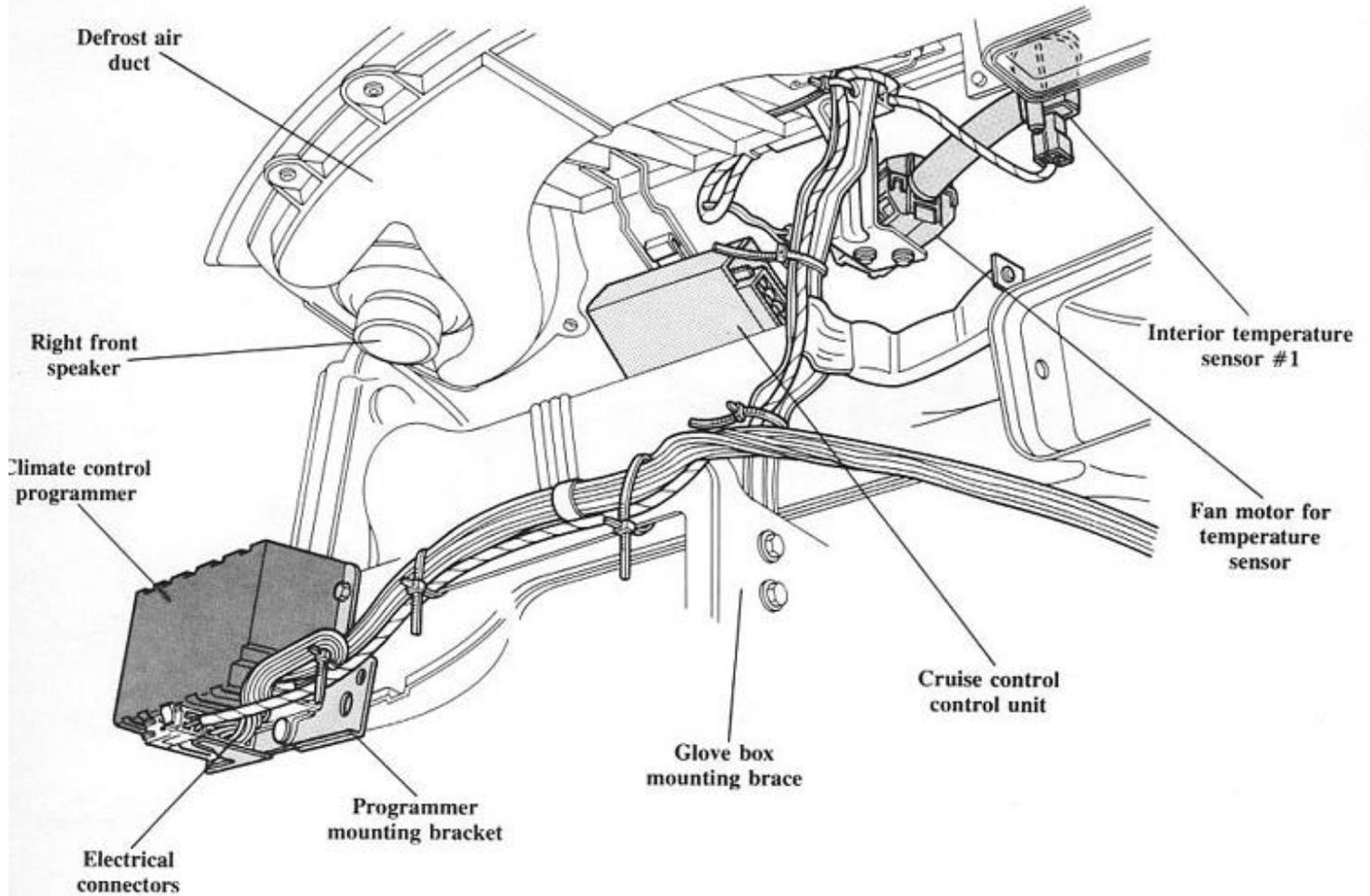
The Audi 100/200 climate control system is different from the digital version used on the previous Audi 5000. This third generation digital system operates basically the same as the previous system, however, many of the components are new or modified.

The servo motor for temperature regulation is no longer in the climate control programmer. It is now mounted directly to the heat exchanger

housing. The servo motor contains an electric motor which operates the temperature flaps through a gear reduction set.

The servo motor also contains an adjustable potentiometer for feedback of the motor's position to the control head. This adjustment must be checked whenever any repair work is done to the heat exchanger housing or servo motor.

# Climate Control

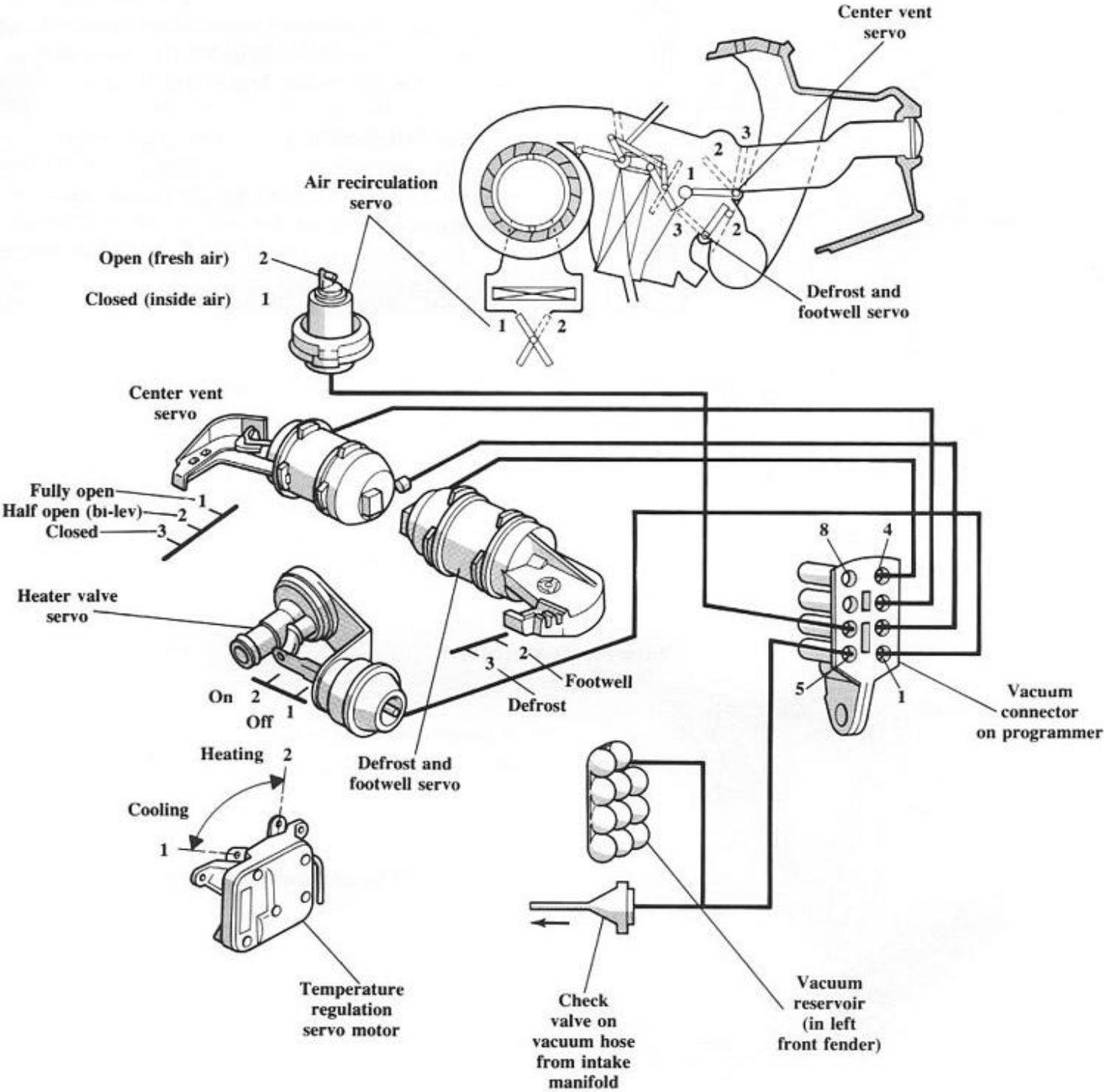


The climate control programmer is also new. The unit contains five solenoids which operate the vacuum servos for air distribution and the heater valve.

Based on input signals it receives, the programmer also switches on the A/C compressor, radiator fan 1st speed and controls the servo motor for temperature regulation.

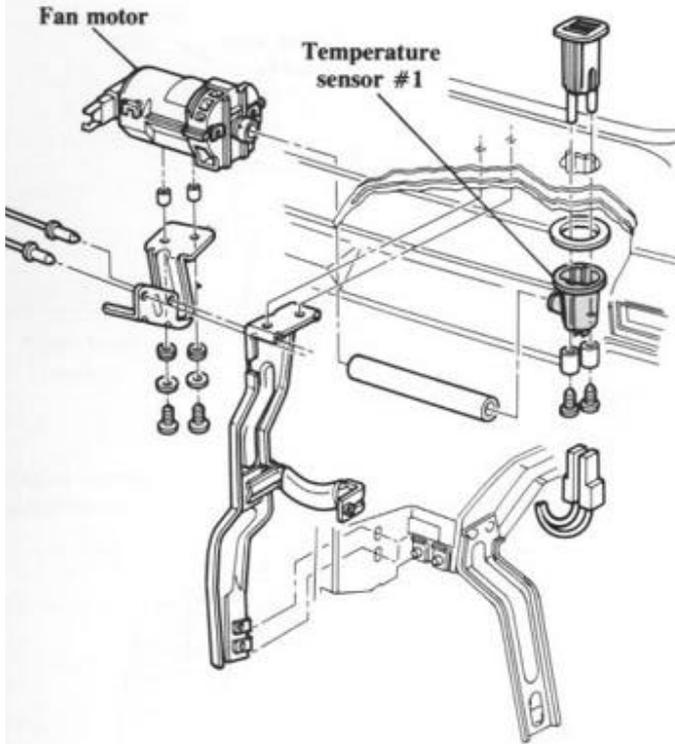
The programmer is located on a mounting bracket behind the right side of the glove box.

## Vacuum Diagram



# Climate Control

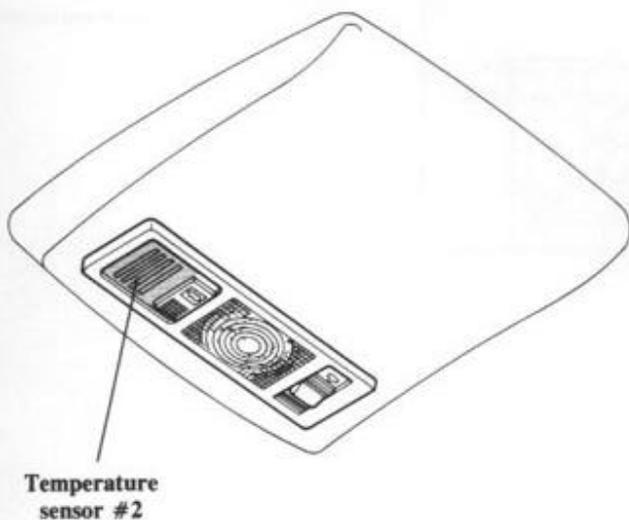
## Interior Temperature Sensor #1



The climate control system uses two interior temperature sensors. Temperature sensor #1 is located in the dashboard and is the same as that used on the previous Audi 5000 system.

A small suction fan is used to draw interior air over the sensor to ensure accurate measurement. The fan operates when the ignition is turned on.

## Interior Temperature Sensor #2



A second interior temperature sensor is mounted next to the front interior dome light. This sensor has the same resistance values as the sensor in the dashboard.

The control head receives the signals from both sensors and uses the mean value to calculate the interior temperature.

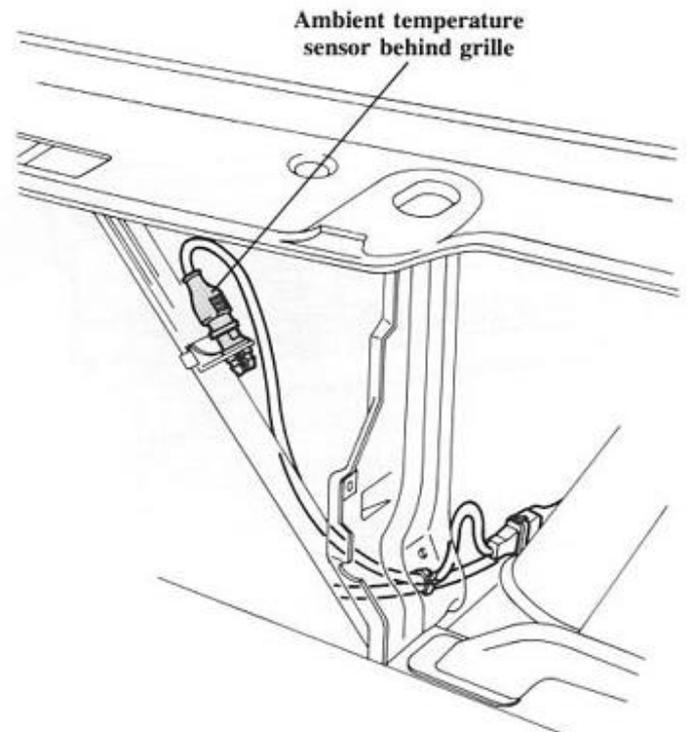
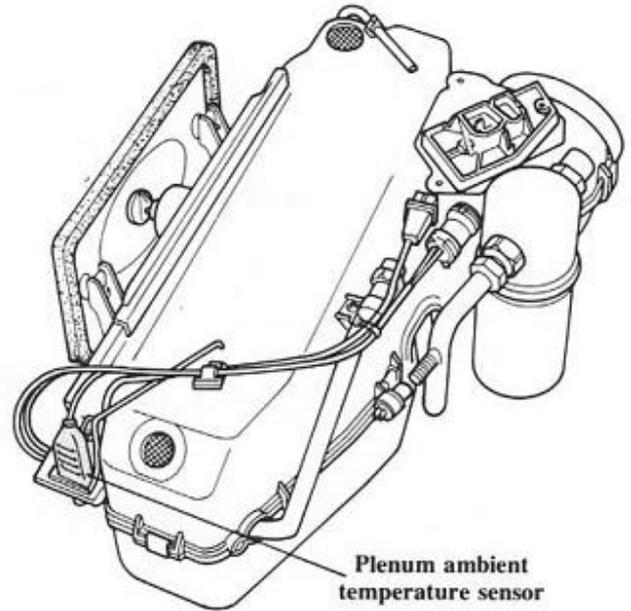
## Outside Temperature Sensors

Two identical sensors are also used to measure outside ambient temperature. One sensor is located in front of the radiator and the other on the evaporator in the plenum chamber.

The control head measures both sensors and uses the lowest value to calculate outside ambient temperature. This information is then used to make small adjustments to interior temperature regulation, air distribution and blower speed.

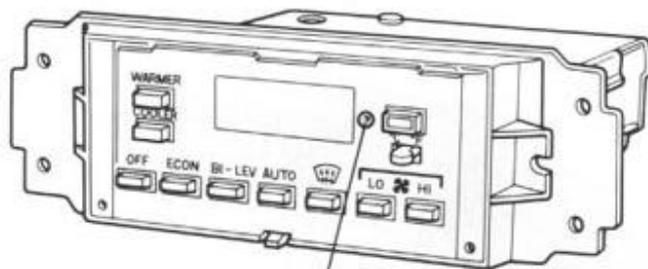
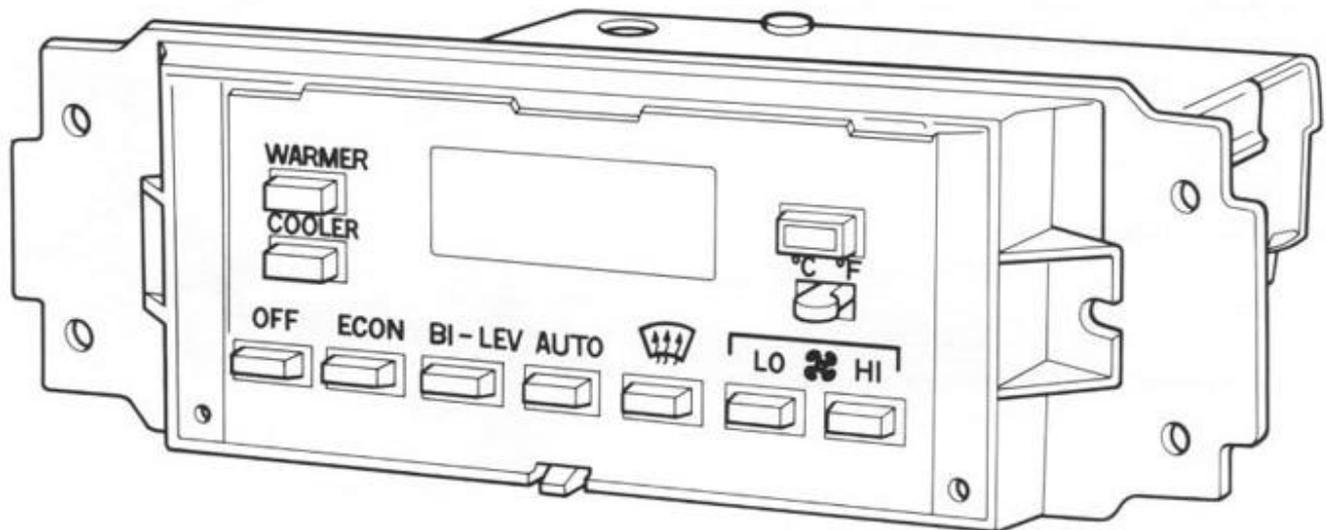
The values received from these sensors are also used for the outside temperature display and compressor clutch operation. The A/C compressor clutch will not operate when outside ambient temperature falls below 38° to 33° F (1° to 3° C).

The outside ambient temperature switch that was previously located on the evaporator is no longer used on cars with electronic climate control.



# Climate Control

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Outside temperature display light

The Audi 100/200 climate control system has a fault memory that is similar to the previous Audi 5000 system. This fault memory monitors the system's components. If a problem or fault develops, the memory will store this information and take corrective action, if necessary. This fault memory is in the circuitry of the control head.

If a fault occurs that will affect the interior temperature regulation, the outside temperature display light will flash for about 60 seconds. This will happen each time the ignition is turned on and when the fault first occurs.

Other faults will not cause the light to flash but will be stored in the memory. The memory is not completely permanent. Most intermittent faults will be erased when the ignition is turned off.

## Fault Memory (Cont'd.)

Information stored in the fault memory can be displayed on the control head panel by pressing some of the buttons in a certain sequence. To activate the fault memory:

- Drive the car or run the engine until it is fully warmed, then leave the engine running
- Press and hold the **OUTSIDE TEMPERATURE** display button
- Press and hold the **OFF** button and then release the **OUTSIDE TEMPERATURE** display button

The display will then show a channel number. There are 21 channels available. The display of a channel number can be identified by the vertical segment that is displayed at the upper left of the number.

To display the information from a channel, press the **OUTSIDE TEMPERATURE DISPLAY** button.

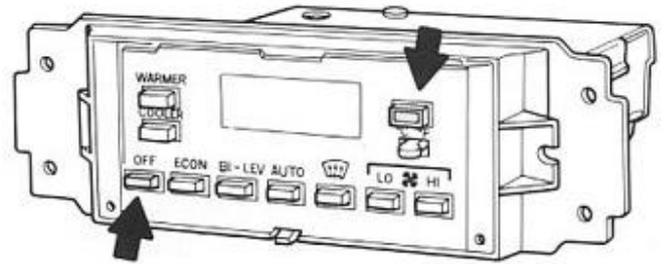
The display is limited to 2.5 digits. When a number higher than 199 is displayed, the first digit on the left will be shown as a horizontal and vertical symbol.

Example: 285 is shown as  $\neg 85$

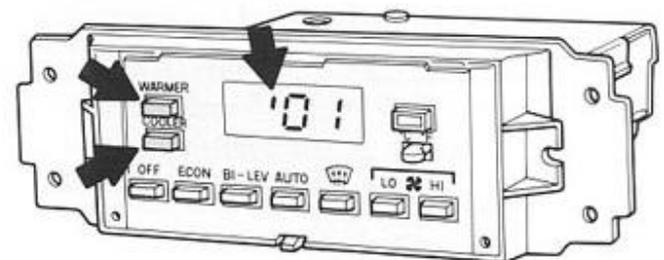
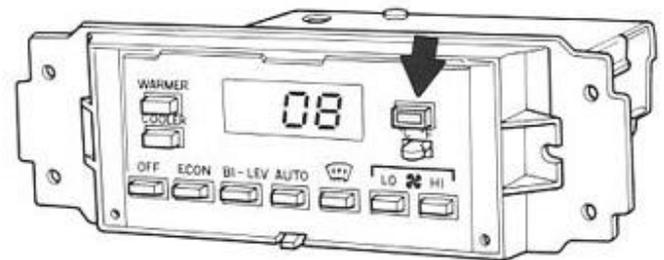
To advance to the next channel, press the **WARMER** button.

To back down to the next lower channel, press the **COOLER** button.

To leave the fault display, turn off the ignition or push any one of the mode buttons.

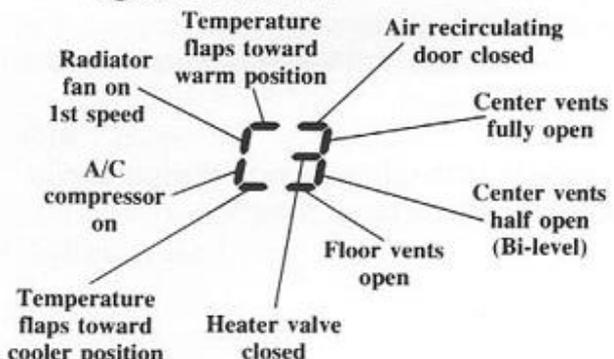


Note: The climate control system will continue to operate at the previous temperature and mode when the fault display is activated.



# Climate Control

## Fault Codes

CHANNEL NUMBER	COMPONENT CHECKED	INFORMATION DISPLAYED
1	System faults	See page 36
2	Inside temperature sensor #2 (next to dome light)	Number will change based on temperature. See the repair information for a value chart. The display number may stay at 128 if the memory has registered a fault with the sensor.
3	Inside temperature sensor #1 (in dashboard)	Same as channel #2
4	Outside temperature sensor on evaporator	Same as channel #2
5	Outside temperature sensor behind grille	Same as channel #2
6	Coolant temperature sensor	<p>Some models will have a coolant temperature sensor in the small coolant hose between the cylinder head and the heat exchanger. See the repair information for a value chart.</p> <p>Vehicles without the sensor will display 255.</p>
7	Output signals from control panel head	<p>A graphic display of the control panel head output signals is shown.</p> 

## Fault Codes

CHANNEL NUMBER	COMPONENT CHECKED	INFORMATION DISPLAYED
8	Position of temperature regulation servo	A numerical value for the position of the servo motor is shown.
9	The specified position of the temperature regulation servo	The position of the servo motor specified by the control head is shown. The actual position measured in channel #8 must not differ by more than 3. If so, the servo motor potentiometer adjustment should be checked. This check should only be made when the value in channel #8 is between 30 and 200.
10	Specified blower motor voltage	The specified voltage for the blower motor is shown. By multiplying the coded number times 0.3 then subtracting 2, the approximate blower voltage specified by the control head can be calculated. See channel #15.
11	Vehicle electrical system voltage	The vehicle's system voltage will be shown. Only values between 9.5 to 16 volts will be shown.
12	Low voltage incidents	The number of times that vehicle voltage drops below 9.5 volts will be shown.
13	Not used	Any values shown in this channel are not used.

# Climate Control

## Fault Codes

CHANNEL NUMBER	COMPONENT CHECKED	INFORMATION DISPLAYED
14	A/C high pressure switch	Position of high pressure switch is shown. 0 to 5 is closed, higher value means switch is open.
15	Blower voltage	The actual voltage that should be present at the blower motor is shown.
16	Not used	Any values shown in this channel are not used.
17	A/C compressor shut-off conditions	<p>A graphic display of conditions that could cause the A/C compressor to be shut-off is shown.</p>
18	Output signals from programmer	<p>A graphic display of the electrical output signals from the programmer is shown.</p>
19	A/C compressor shut off	Number of times compressor has shut off because of excess pressure.
20	A/C compressor shut off	Number of times compressor has shut off because of excess pressure since ignition has been turned on.
21+22	Not used	Any values shown in these channels are not used.

\* Only occurs when high cooling or heating is needed.

## Fault Codes In Channel #1

CODE DISPLAYED	FAULT	RESULT
00	No faults in system	
01	Interior sensor in dashboard open circuit	Display in channel #3 is 128
02	Interior sensor in dashboard short circuit	Display in channel #3 is 128
03	Outside sensor on evaporator open circuit	Other sensor is used
04	Outside sensor on evaporator short circuit	Other sensor is used
05	Outside sensor behind radiator open circuit	Other sensor is used. If both sensors are faulty, 128 is shown in channels #4 and #5.
06	Outside sensor behind radiator short circuit	Same as above
07	Temp. regulation servo potentiometer open circuit	250 or greater shown in channel #8. Channel #9 shows 128.
08	Temp. regulation servo potentiometer shorted	4 or less shown in channel #8. Channel #9 shows 128.
09	Coolant sensor open	Early production cars without this sensor will show this code.
10	Coolant sensor shorted	
11	Interior sensor in headliner open circuit	Channel #2 shows 128
12	Outside sensor in headliner short circuit	Same as above
13	Battery voltage below 10.5 volts	Code remains until ignition is turned off
14	Excess system pressure	High pressure switch has opened 8 times. A/C compressor switched off until engine restarted.
15	Temp. regulation servo position incorrect	
16	High pressure open	A/C compressor off