

The Heating Ventilation and Air Conditioning (HVAC) system used by Volvo CE is a manual, stand alone system. The system is controlled by CU8710, and only interfaces with the General Purpose Machine ECU (GPM-ECU) to light an LED showing the system is active.



CU8710 is powered by key dependent fuse feeds at both pins BA:2 and A:1, as well as constant feed at pin BB:2.

The blower motor (MO8701) speed is controlled by a manually operated switch. The switch is connected to a resistor block mounted directly on the blower motor. The resistors in the block are connected in series. The switch position determines how many resistors the electrical current passes through before reaching the blower motor, which controls the speed. The blower motor is capable of 4 fan speeds: low, medium 1, medium 2, and high.

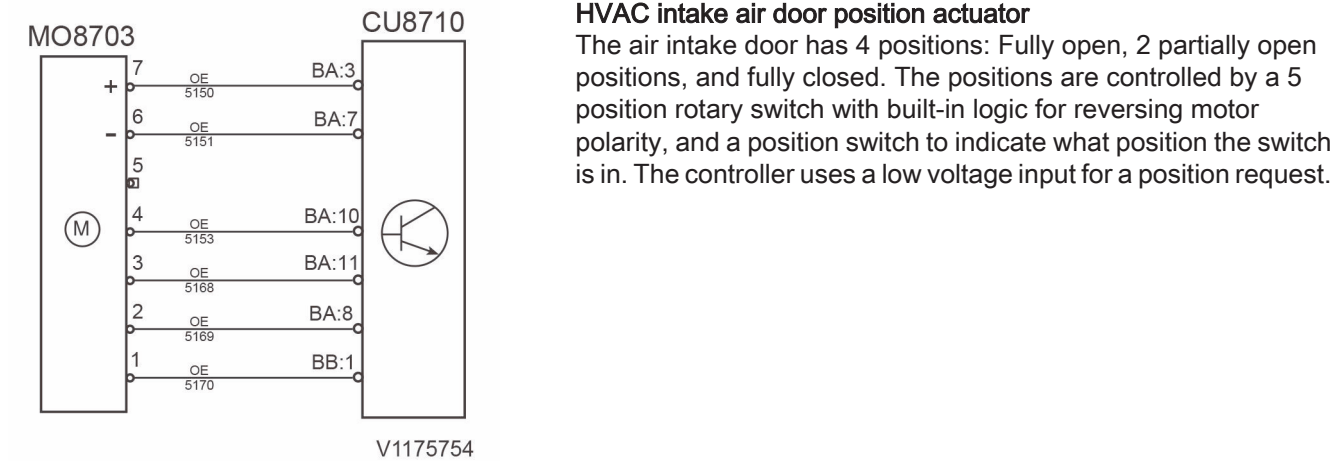
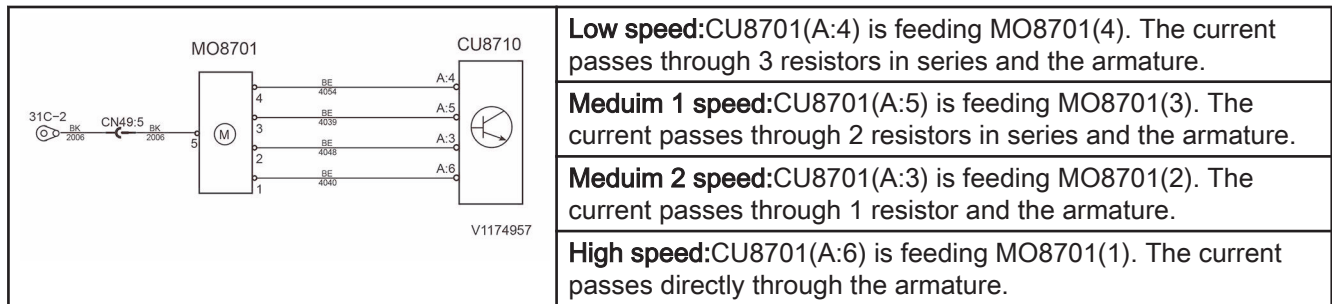


Fig.2 Diagram, MO8703

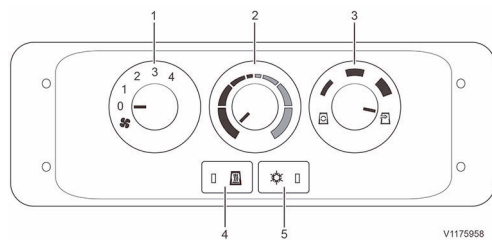


Fig.3 HVAC control panel

- 1 Blower motor speed selection
- 2 Temperature selection
- 3 Intake air door position
- 4 Defrost on/off (not used in this application)
- 5 Air conditioning on/off

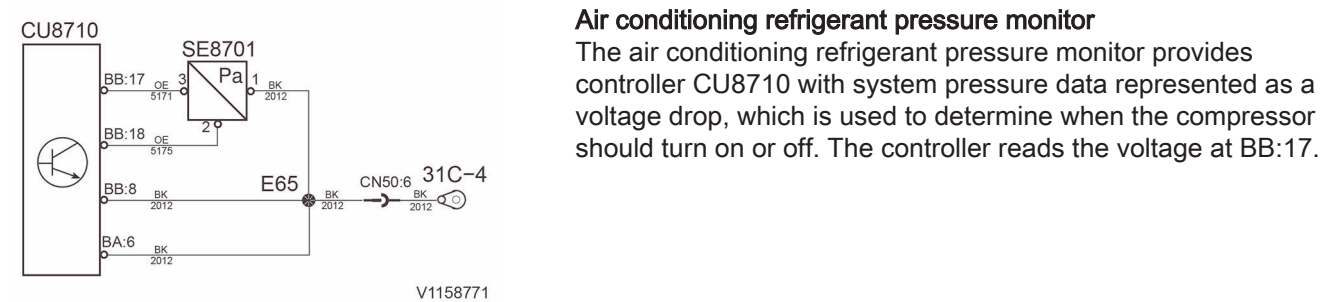
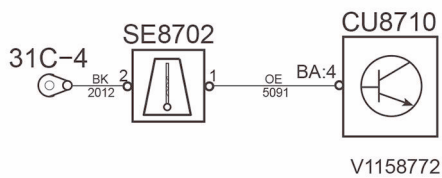


Fig.4 Diagram, SE8701

Condition	Pressure, Pa	Pressure, PSI	Voltage
Compressor off, low	155 KPa	22.48	0.33 V
Compressor on, low	220 KPa	31.91	0.43 V
Compressor on, high	1.59 MPa	230.03	2.43 V
Compressor off, high	2.24 MPa	325.03	3.34 V

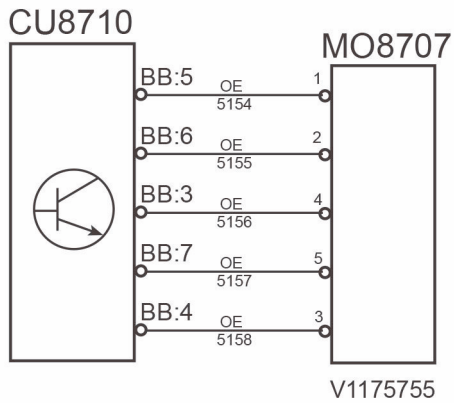


HVAC temperature sensor

The air conditioning temperature sensor provides controller CU8710 with evaporation temperature data which is used to determine when the compressor should turn on or off. The controller reads the temperature as a voltage range at pin BA:4.

Fig.5 Diagram, SE8702

Condition	Temperature °C	Temperature °F	Voltage
Compressor off	3 °C	37 °F	2.39 V
Compressor on	7 °C	45 °F	2.15 V



Motorized heater valve

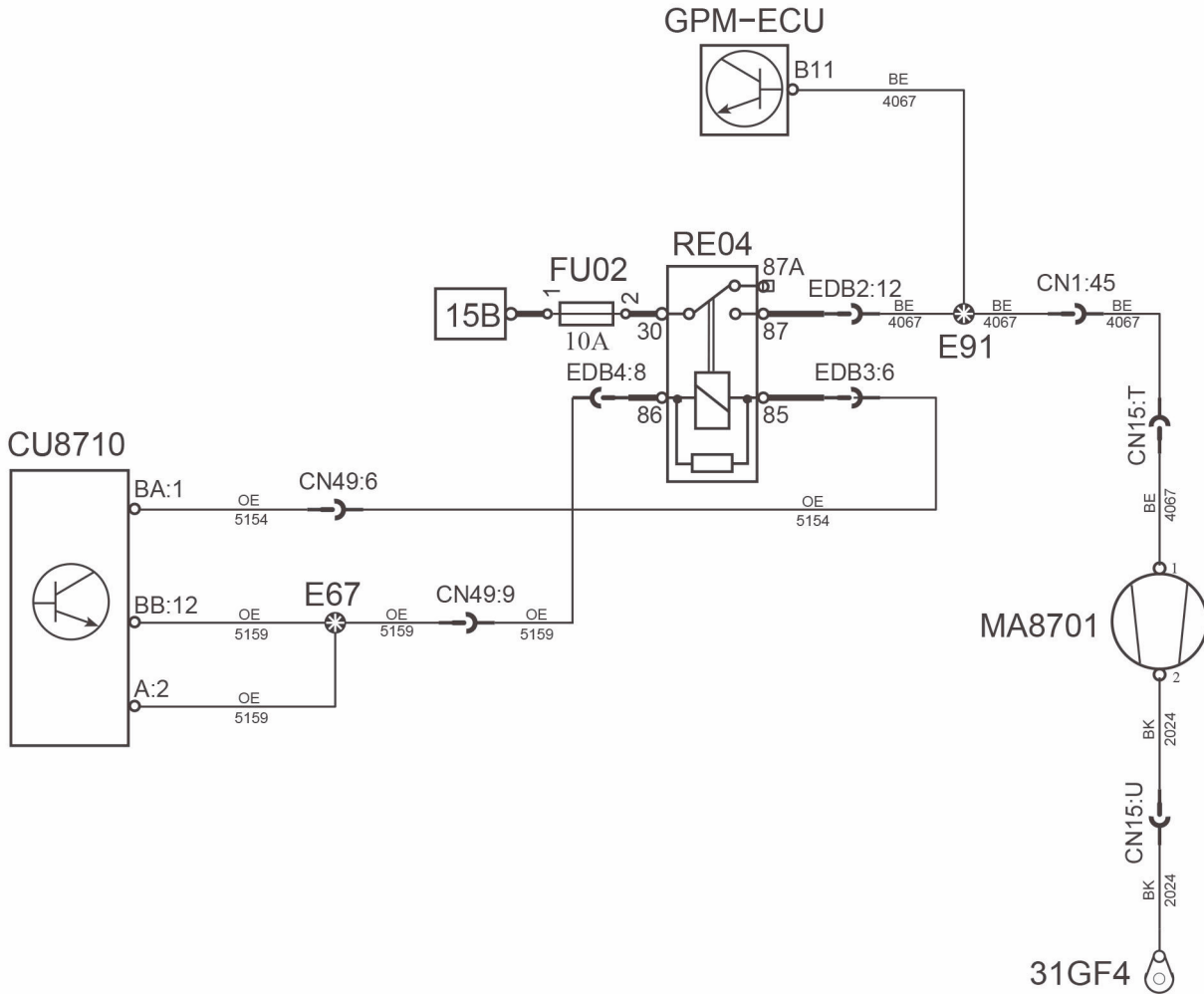
The controller is looking for input from the temperature control switch. Based on the input provided, the controller can operate the coolant flow control valve motor in either direction by reversing the polarity of the motor. The controller is informed of the valve position by a position sensor built into the motor housing.

Fig.6 Diagram, MO8707

CU8710 pin	Function
BB:3	Motor position ground
BB:4	Motor position signal
BB:5	Motor polarity control
BB:6	Motor polarity control
BB:7	Motor position reference voltage (5V)

Relay RE04

When the blower is in the on position, voltage is fed to terminal 86 of the relay. When the A/C button is pressed, the controller provides ground to 85 on the relay, energizing the relay coil. The energized coil pulls the relay contact closed, providing power to the A/C compressor. Circuit 4067 also provides an input to the GPM-ECU. If the evaporation temperature or refrigerant pressure exceeds set limits, the controller will remove the ground from pin 85, turning off the compressor. When either temperature or pressure falls to normal limits, ground will be restored, enabling the compressor.



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Fig.7 Diagram, Relay RE04