

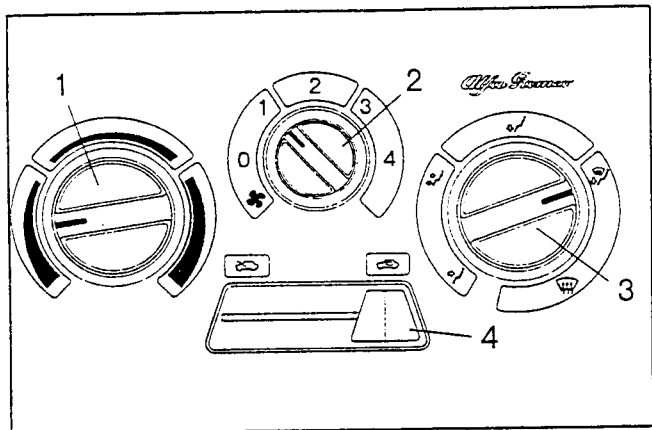
HEATING AND VENTILATION SYSTEM: HEATER - Model Year '97

INDEX

GENERAL DESCRIPTION	31A-2
WIRING DIAGRAM	31A-3
FUNCTIONAL DESCRIPTION	31A-4/2
COMPONENTS AND CONNECTORS	31A-5
LOCATION OF COMPONENTS	31A-7
FAULT-FINDING TABLE	31A-8
CHECKING COMPONENTS	31A-8

GENERAL DESCRIPTION

Climate control through the heater is controlled by three knobs of the control unit located on the panel: these controls act on the heater- distributor -air flow unit as follows:



- the left-hand knob (1) mechanically operates the mixing port for hot (red) and cold (blue) air; when it is turned completely counter-clockwise it shuts off the heater closing a special tap.

NOTE: the heater comprises a heat exchanger which exploits the engine coolant to give off heat to the air sent to the passenger compartment: in fact it is supplied by a special pipe of the engine cooling circuit.

- the centre knob (2) - mechanically operates a flexible transmission - firstly for opening the flaps that adjust the flow of air;

- 0: inlet of outside air without fan (dynamic air)
- from 1 to 4: a switch is controlled which turns on the fan through a four-speed regulator. The regulator and its resistor are fitted on the duct near the fan.
NOTE: the fan can only be turned on with ignition key engaged.

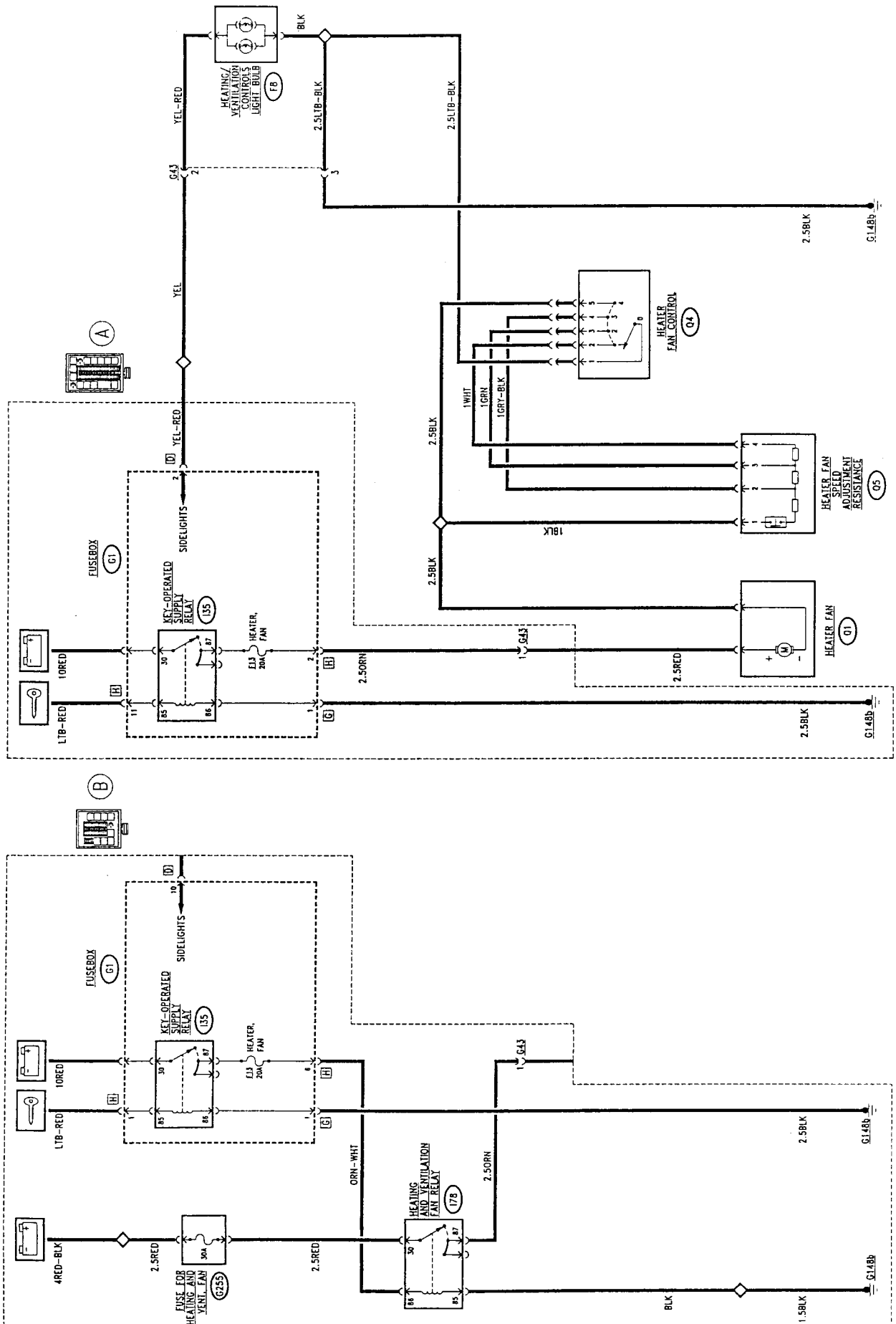
- the right-hand knob (3) adjusts the distribution of the flow acting, still by a mechanical transmission, on the distribution ports, sending air into the passenger compartment in the directions shown schematically on the ideograms.

- the recirculation function (4), is engaged through the lever (4) which operates a special port. This acts by closing the outside air duct and simultaneously opening the one for recirculating air from inside the passenger compartment (lever (4) completely to the right).

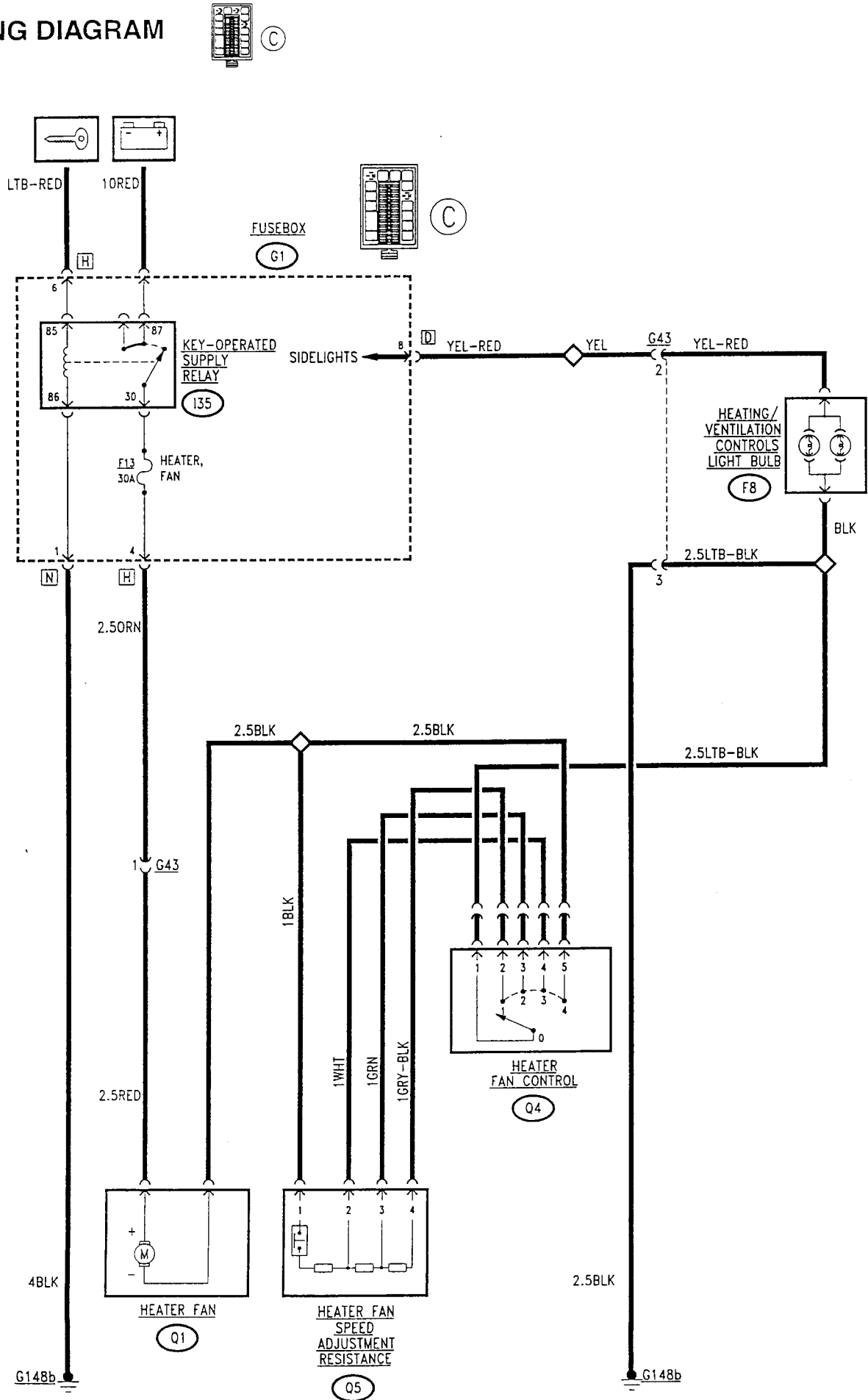
The recirculation function makes it possible to withdraw the air to be treated from inside the passenger compartment, shutting off the flow of outside air which under certain circumstances might be unwanted: bad smells, smoke, unventilated tunnels, etc.

NOTE: If the lever (4) is left in an intermediate position it may adversely affect operation of the system.

WIRING DIAGRAM



WIRING DIAGRAM



FUNCTIONAL DESCRIPTION

Fan:

The heating and ventilation fan **Q1** is supplied with battery voltage via the key-operated services relay **I35** - located in fusebox **G1** -; in addition to the relay, the supply line also crosses fuse **F13** of fusebox **G1**.

In the versions with fusebox "B" there is a specific relay **I78** which exploits the previous line in terms of energization and supplies the fan as a direct line protected by fuse **G255** (30A).

The fan motor **Q1** is operated with an earth signal from the control knob **Q4**. This signal crosses the speed regulator **Q5**, comprising three resistances in series, the crossing of which determines the four different speeds, depending on the signal from the knob **Q4**: from pin 1 (1st speed) , from pin 2 (2nd speed) , from

pin 3 (3rd speed) and lastly from pin 4 (4th speed) with a direct signal that does not cross the regulator **Q5**.

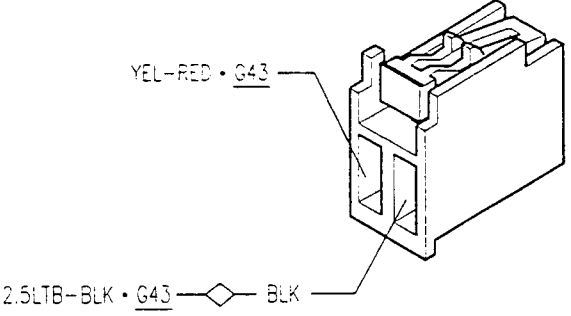
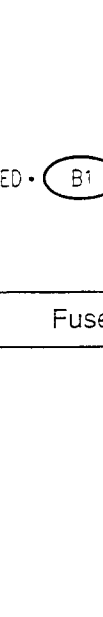
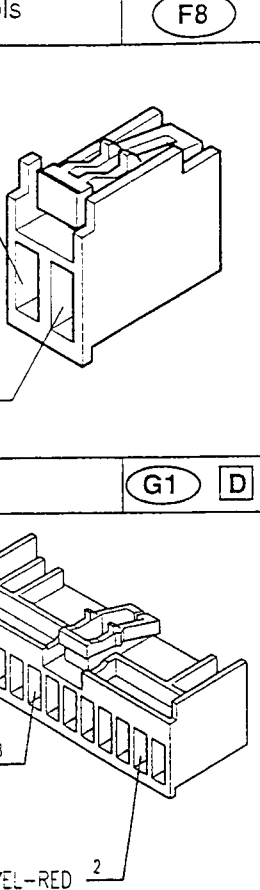
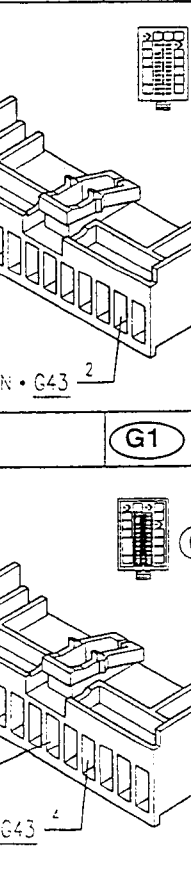
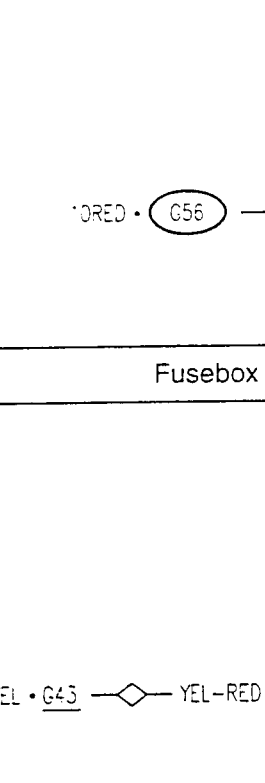
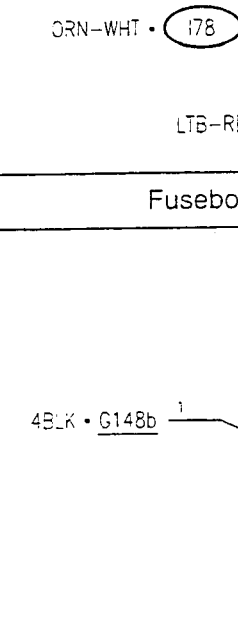
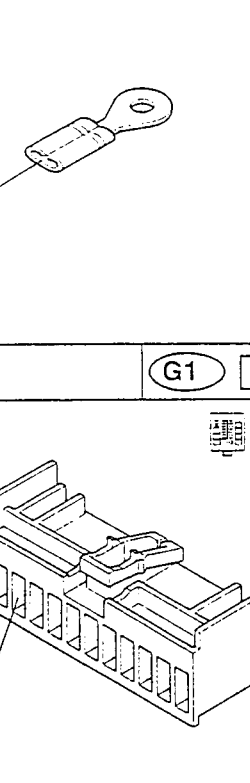
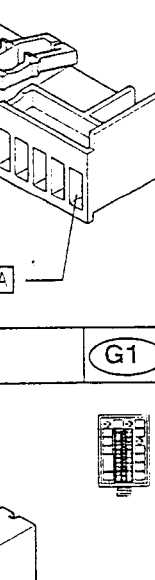
Recirculation:

N.B. recirculation is operated mechanically through a special cable.

Controls lighting:

Lights **F8**, inside the control panel are supplied by the sidelights circuit - connector D of fusebox **G1** (also see "Lighting of controls and Indicators").

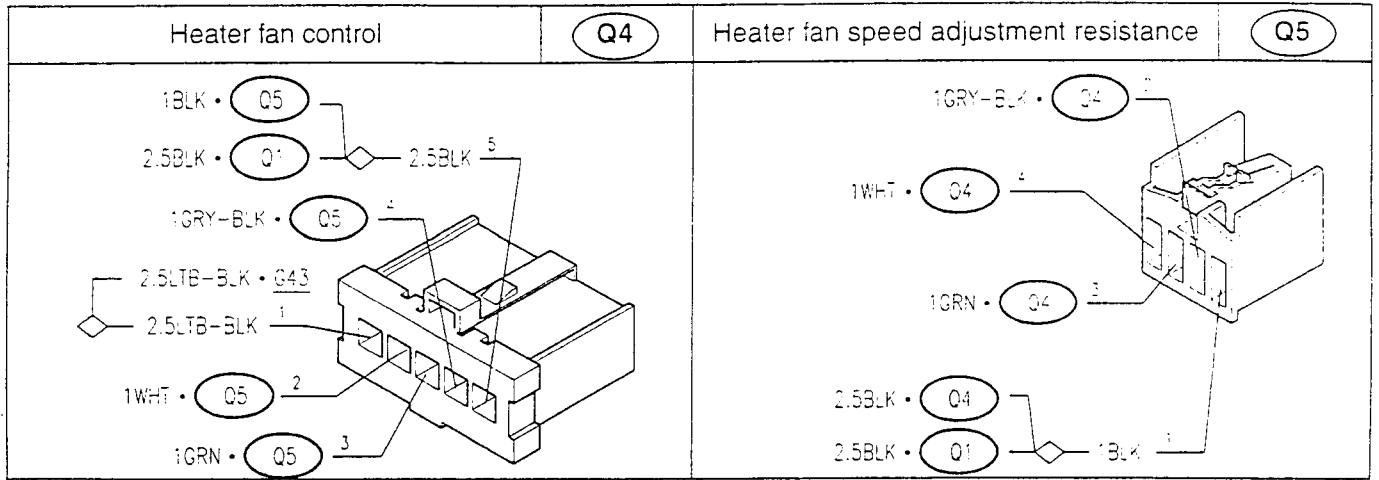
COMPONENTS AND CONNECTORS

Heating/ventilation controls light bulb	F8	Fusebox	G1
 <p>YEL-RED • G43</p> <p>2.5LTB-BLK • G43 - BLK</p>	 <p>RED • G56</p>	Fusebox	G1 D
 <p>YEL • G43</p> <p>YEL-RED</p> <p>8</p> <p>2</p>	 <p>YEL • G43</p> <p>YEL-RED</p> <p>10</p>	Fusebox	G1 H
 <p>LTB-RED • B1</p> <p>2.5ORN • G43</p> <p>11</p> <p>2</p>	 <p>ORN-WHT • i78</p> <p>LTB-RED • B1</p> <p>6</p> <p>1</p>	Fusebox	G1 H
 <p>LTB-RED • B1</p> <p>2.5ORN • G43</p> <p>6</p> <p>4</p>	 <p>4BLK • G148b</p> <p>1</p>	Fusebox	G1 N

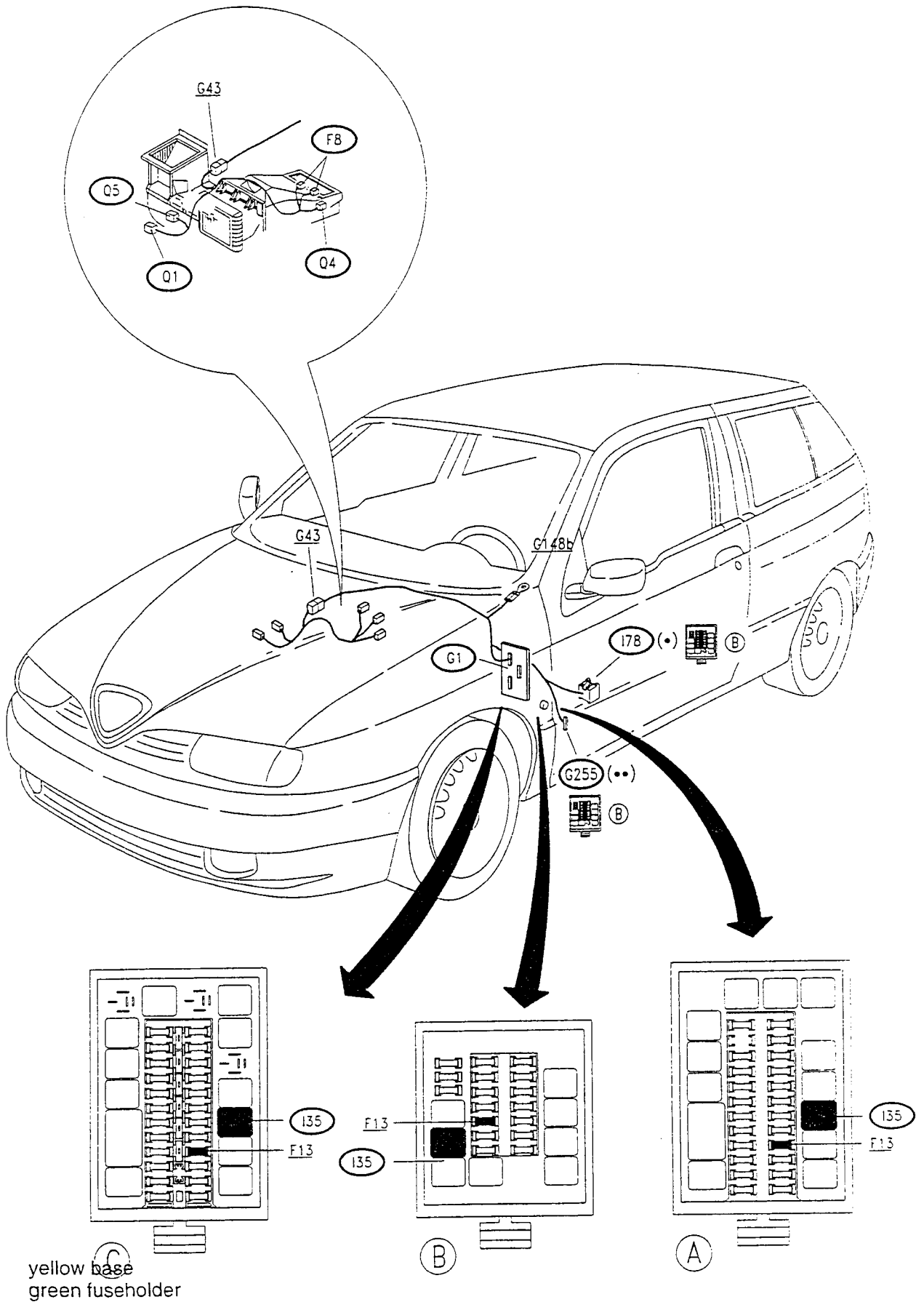
COMPONENTS AND CONNECTORS (cont.d)

Fusebox		G1 G
<p>2.5BLK • G148b 1</p>		
Connector for heating and ventilation control wiring		G43
<p>2.5BLK • G148b 3</p> <p>2.5ORN • I78 1</p> <p>2.5ORN • G1 1</p> <p>2.5RED • Q1 1</p> <p>2.5LTB-BLK • Q4 3</p> <p>BLK • F8 3</p> <p>YEL-RED • G1 2</p> <p>YEL 2</p> <p>YEL-RED • F8 2</p>		
Earth under LH dashboard	G148b	Heater fan fuse G255
<p>2.5BLK • G1 (A)</p> <p>2.5BLK • G43</p> <p>BLK • I78 (B)</p> <p>1.5BLK</p> <p>4BLK • G1 (C)</p>		<p>2.5RED • I78</p> <p>4RED-BLK • G56</p> <p>2.5RED</p>
Heater fan relay	I78	Heater fan Q1
<p>1.5BLK • G148b</p> <p>BLK 85</p> <p>2.5ORN • G43 87</p> <p>ORN-WHT • G1 86</p> <p>2.5RED • G255 30</p>		<p>1BLK • Q5</p> <p>2.5BLK • Q4</p> <p>2.5RED • G43</p>

COMPONENTS AND CONNECTORS (cont.d)



LOCATION OF COMPONENTS



FAULT-FINDING TABLE

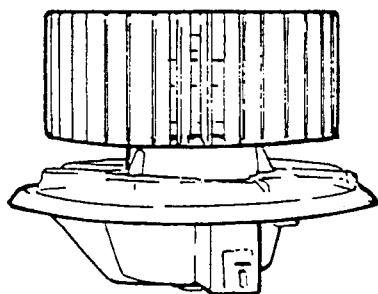
NOTE: air distribution to the passenger compartment and air heating/cooling are controlled mechanically. Therefore for failures such as the lack of heating/ventilation, incorrect air distribution, etc....., see Group 50 "HEATING AND VENTILATION"

Fault	Component to be checked						
	F13	G255 (B)	Q1	I78 (B)	Q5	Q4	F8
Fan engagement	•	•	•	•		•	
Fan engagement at different speeds					•	•	
Control panel lighting							•

(B) only for fusebox "B"

CHECKING COMPONENTS

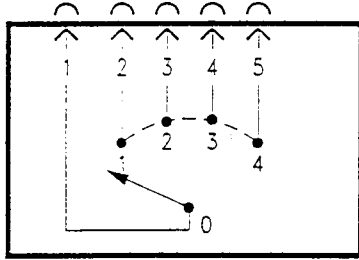
Heater fan **Q1**



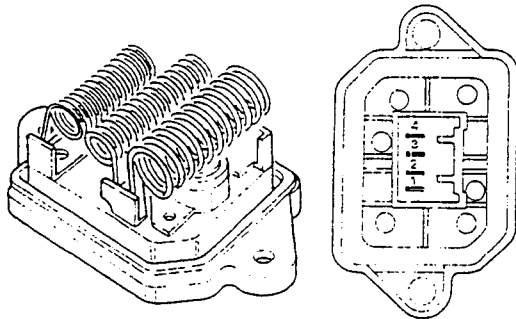
SPECIFICATIONS	
Nominal voltage	12V
Maximum current	16.5 A
Speed at 12V/25°C in free air with impeller and support	3230 ÷ 3570 rpm
Motor direction of rotation	leftwards impeller side

Heating/ventilation fan control (Q4)

Check the contacts corresponding to the different positions of the knob.



Heating/ventilation fan speed adjustment resistance (Q5)



SPECIFICATIONS		
Piece crossed	Total resistance	Fan speed
4-1	3.55 Ω	1. ^a
3-1	1.35 Ω	2. ^a
2-1	0.35 Ω	3. ^a
none	-	4. ^a
Thermal fuse cut in temperature		98°C

