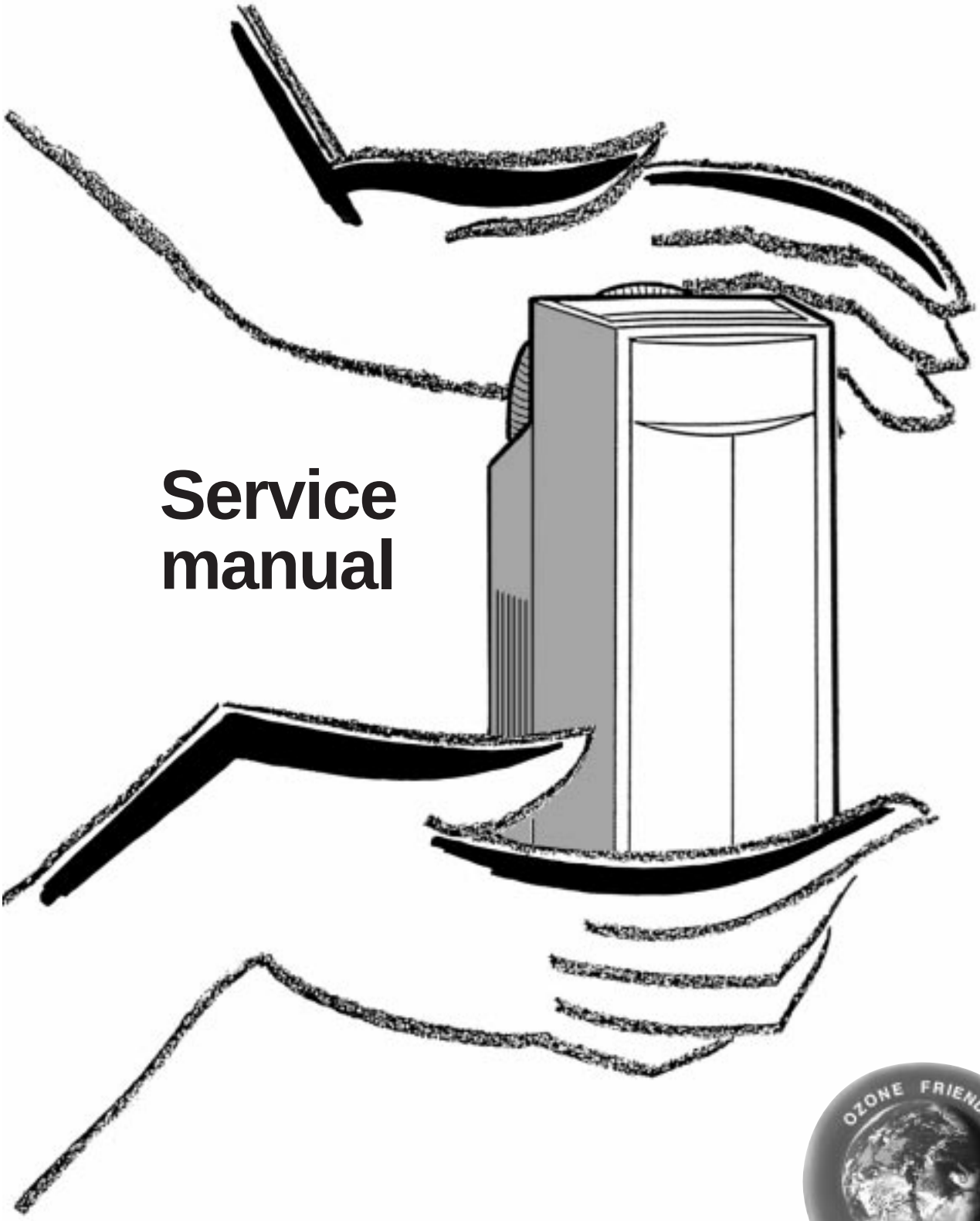


Service manual

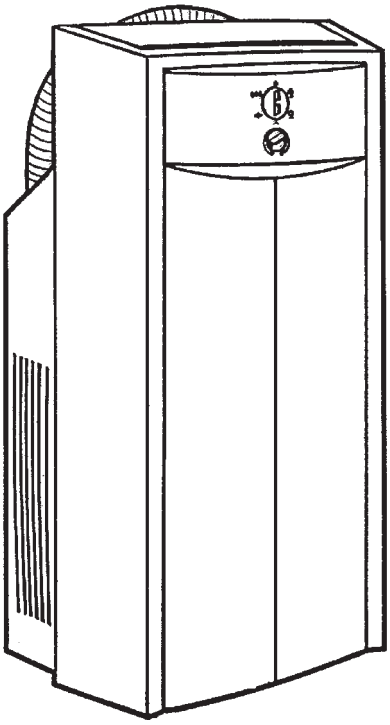
Portable air conditioners

51AKA 006
51AKB 006G
51AKM 006G
51AKB 008G
RTB 165G
RTE 165G
RTB 205C
VTB 075C

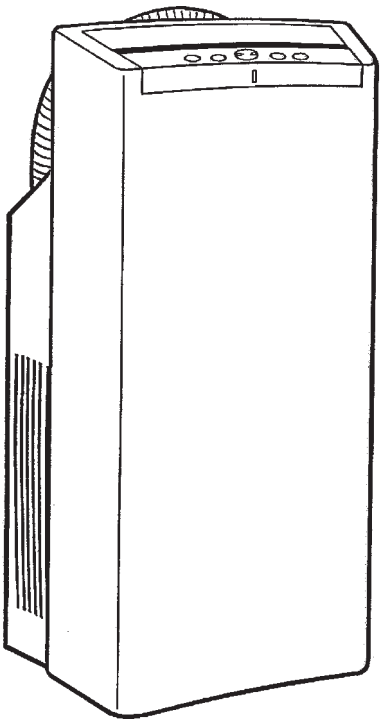
Contents

page

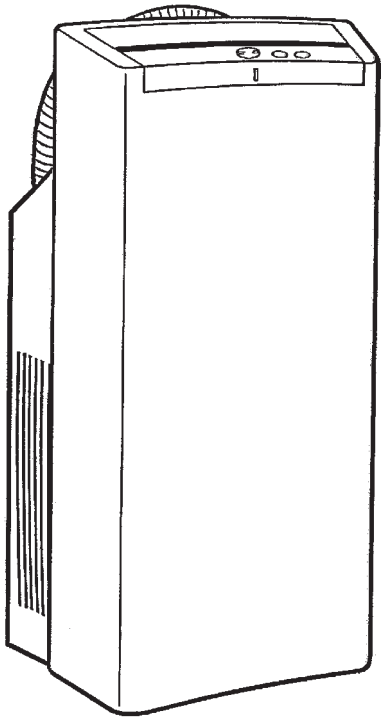
1 ASSEMBLY DRAWINGS



mod. 51AKB 006G
51AKB 008G
RTB 165G
RTB 205C



mod. VTB 075C



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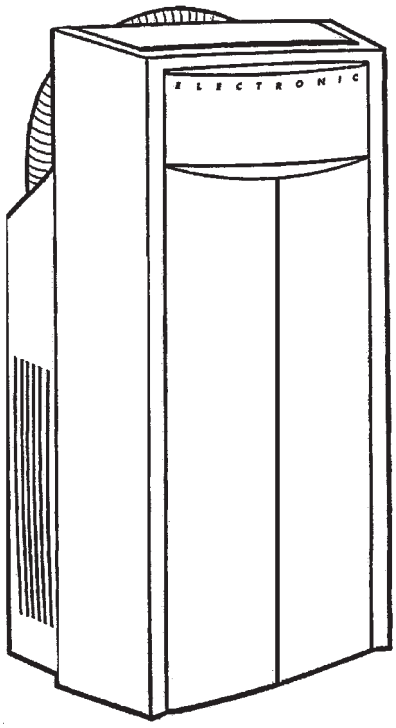

mod. 51AKM 006G
RTE 165G

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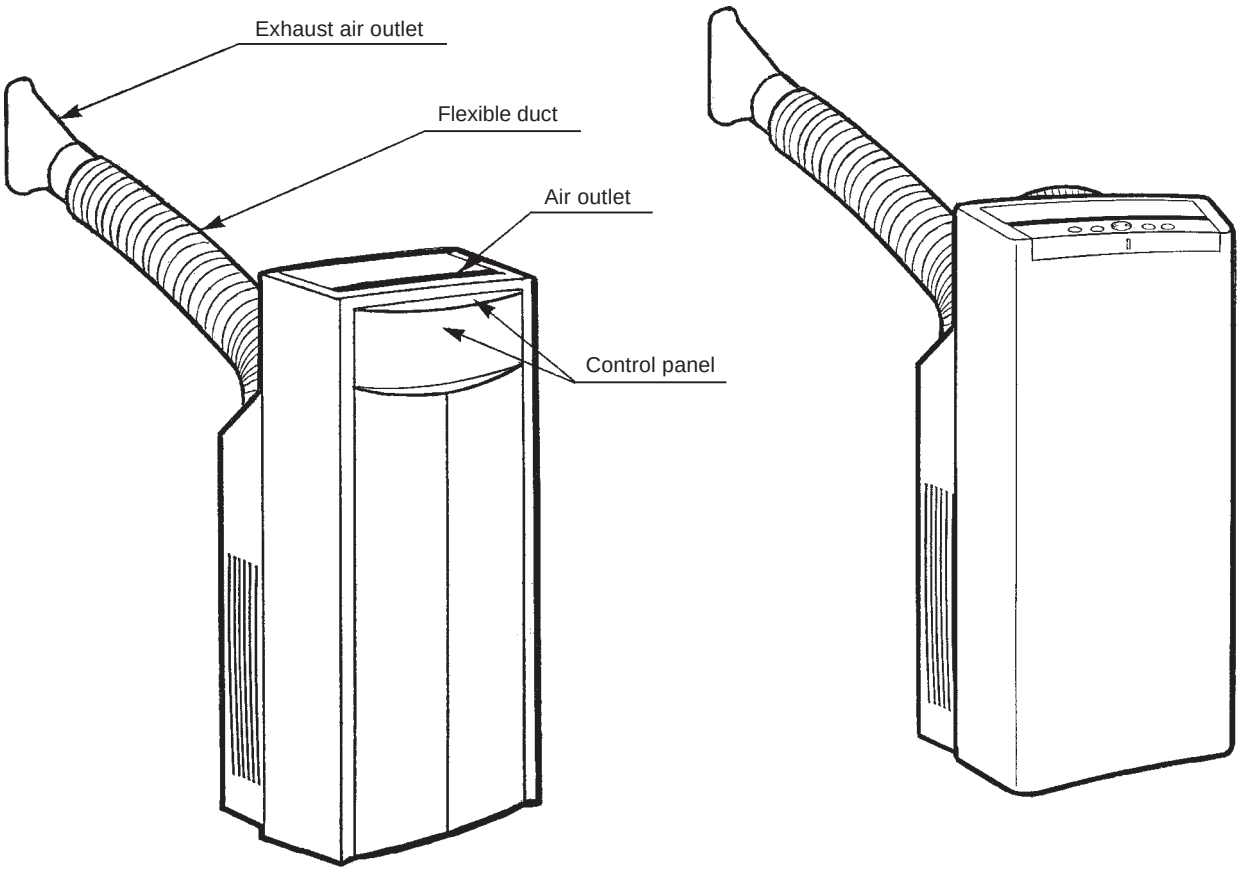

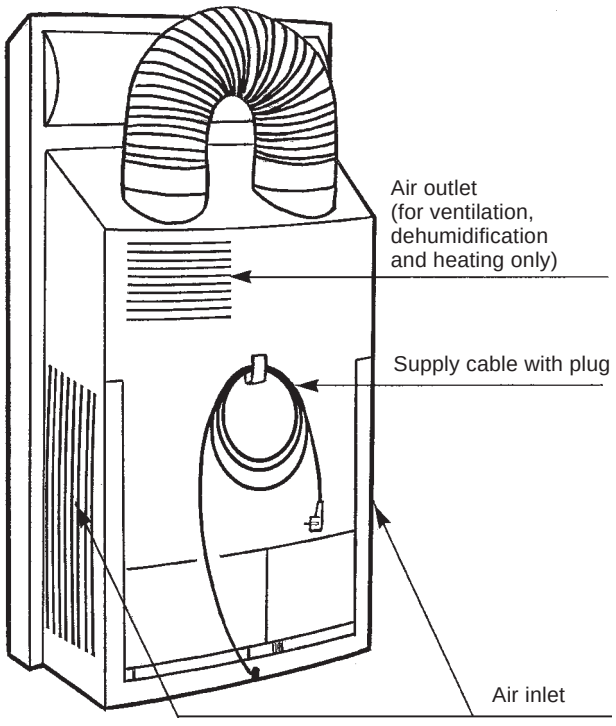

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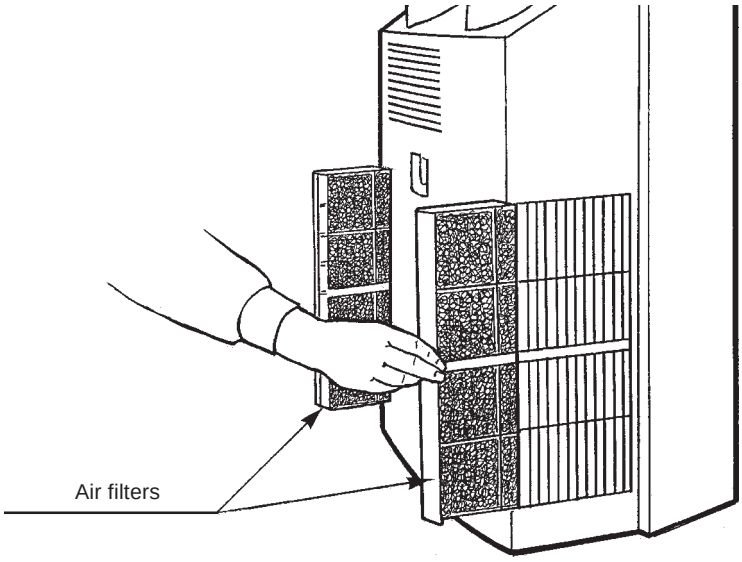
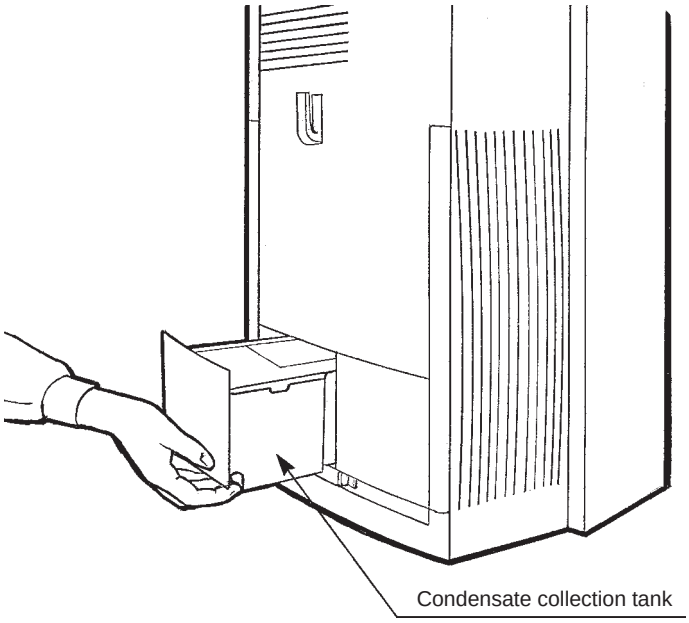
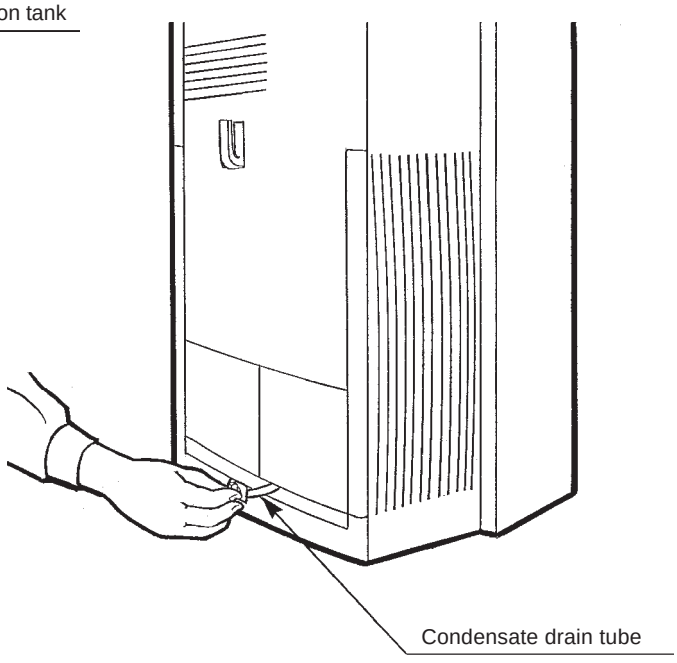
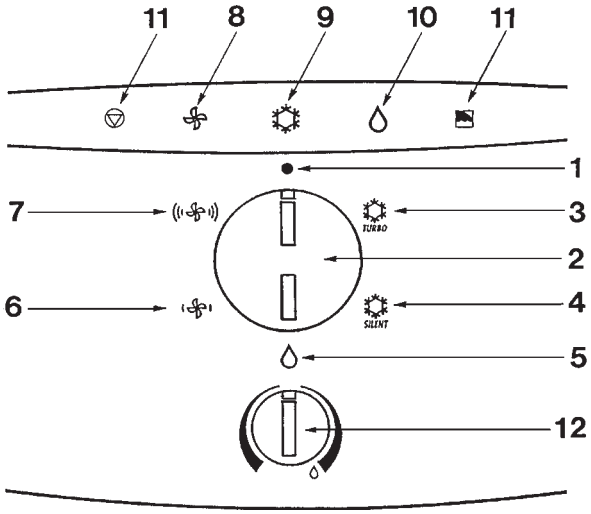




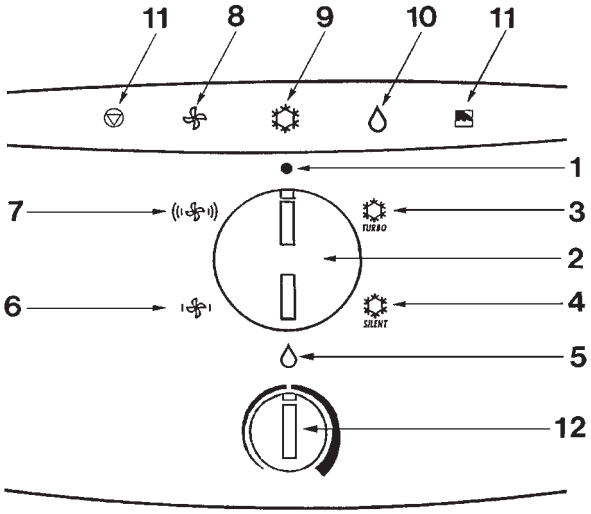


2.1 Control panel

mod. 51AKB 006
RTB 165F



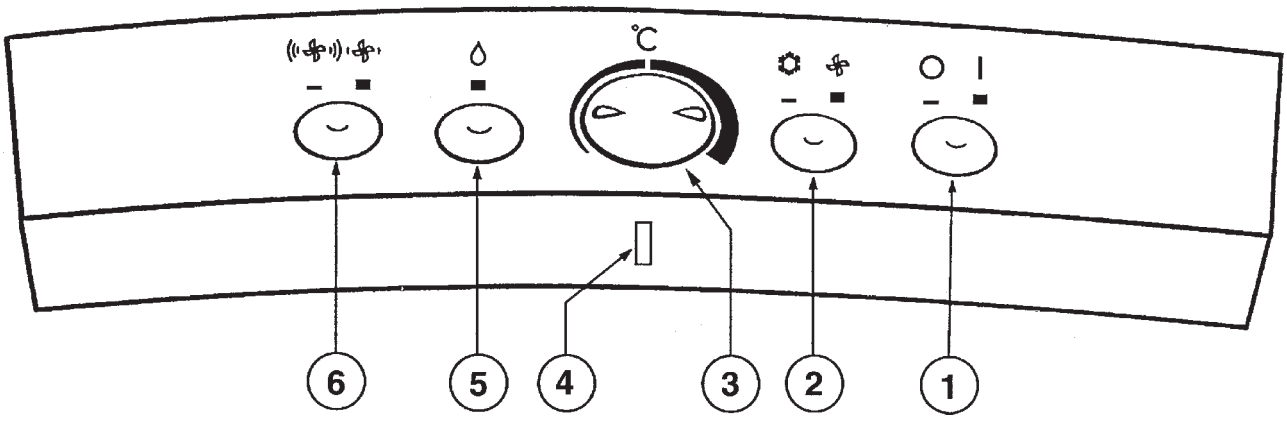
mod. 51AKB 06G
RTB 165G



1. OFF position
2. Mode selector
3. TURBO cooling
4. SILENT cooling
5. Dehumidification
6. Low fan speed
7. High fan speed
8. Ventilation function indicator light
9. Cooling indicator light
10. Dehumidification indicator light
11. Full water tank alarm indicator light
12. Thermostat

---

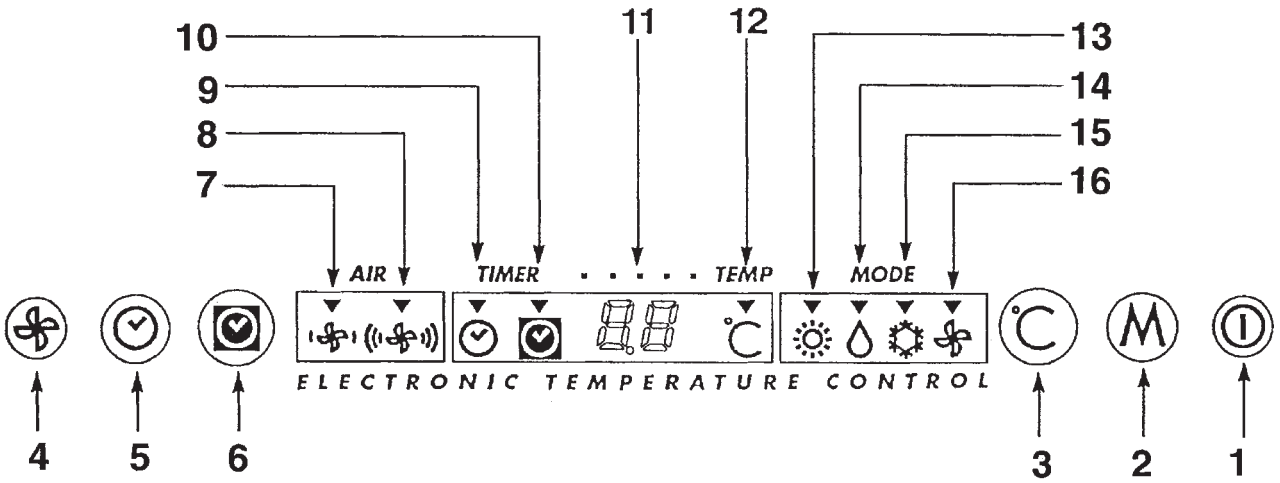
mod. VTB 075F
VTB 075G



1. ON - OFF push button
2. Cooling - fan only push button
3. Thermostat
4. ON and alarm indicator light
5. Dehumidification push button
6. High - low speed fan push button

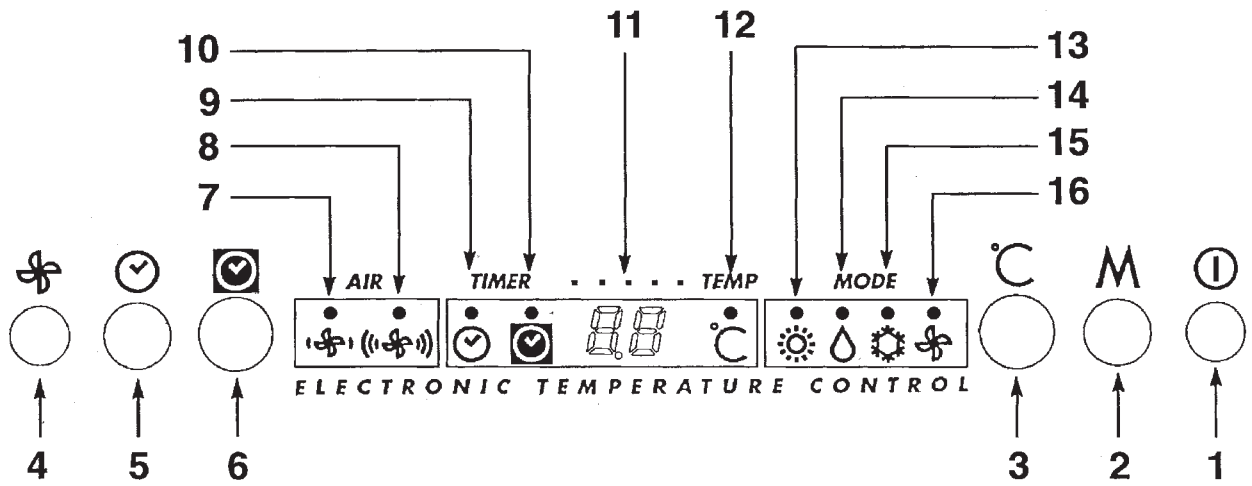
2.1 Control panel

mod. 51AKM 006
51AKM 06G
RTE 165F
RTE 165G

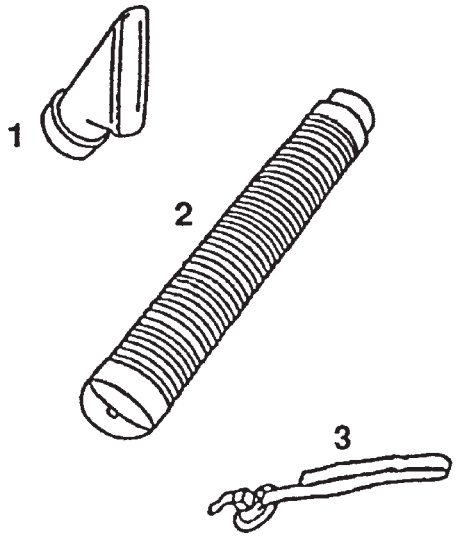


1. ON-OFF button
2. Mode selector
3. Temperature setting button
4. Fan speed setting button
5. Operation on timer
6. Operation off timer
7. Low fan speed LED
8. High fan speed LED
9. ON timer LED
10. OFF timer LED
11. Display of set temperature and programmed operating times
12. Set temperature LED
13. Heating LED
14. Dehumidification LED
15. Cooling LED
16. Fan only LED

mod. VTE 075F
VTE 075G

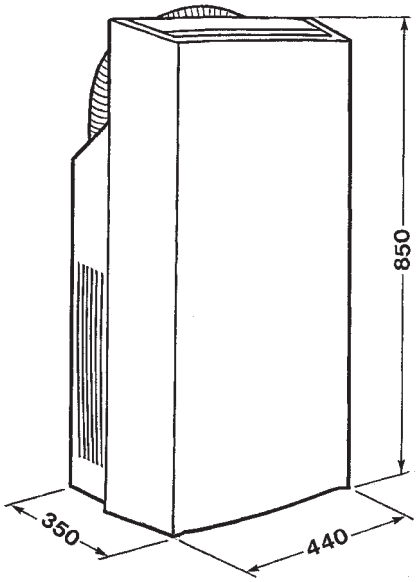


2.2 Accessories supplied



1. Air outlet vent
2. Flexible hose
3. Fastening strap with suction cup

2.3 Dimensions and weight



kg

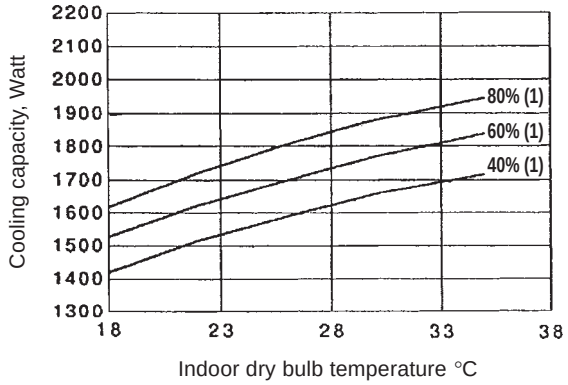
27.5

3 TECHNICAL DATA

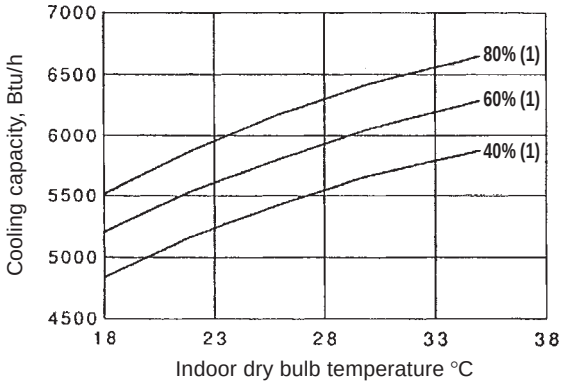
Model		51AKB 006 / 51AKB 06G RTB 165F / RTB 165G VTB 075F / VTB 075G	51AKM 006 / 51AKM 06G RTE 165F / RTE 165G VTE 075F / VTE 075G
Cooling capacity	W (Btu/h)	1830 6300	1830 6300
Heating capacity	W (Btu/h)	--- ---	1000 + 1000 3410 + 3410
Power input – cooling – heating – dehumidification	W	 750 --- 640	 750 1000 + 1000 640
Locked rotor amps	A	16	16
Operating current – cooling – heating – dehumidification	A	 3.3 --- 2.9	 3.3 4,35 + 4,35 2.9
Dehumidification rate – cooling – dehumidification	l/h	 1.1 0.8	 1.1 0.8
Air flow (fan speed) l/s - rpm – high-speed cooling – low-speed cooling – high-speed heating – low-speed heating – high-speed dehumidification – low-speed dehumidification		 88.9 - 1320 72.2 - 1100 --- --- --- 111.1 - 1100	 88.9 - 1320 72.2 - 1100 88.9 - 1320 72.2 - 1100 138.9 - 1320 111.1 - 1100
Recommended fuse size	A	16	16
Supply voltage		230V - 1 - 50Hz	

4 PERFORMANCE DIAGRAMS

Cooling capacity, Watt



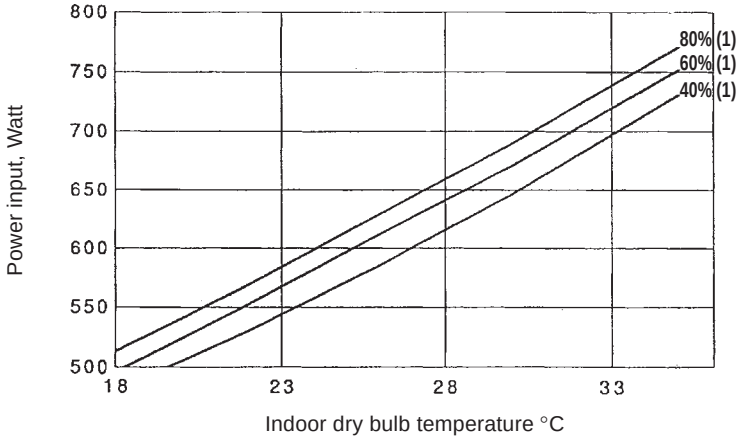
Cooling capacity, Btu/h



(1) Relative humidity

The cooling capacity diagram is based on the room dry bulb temperature for three different relative humidity values.

Power input, Watt

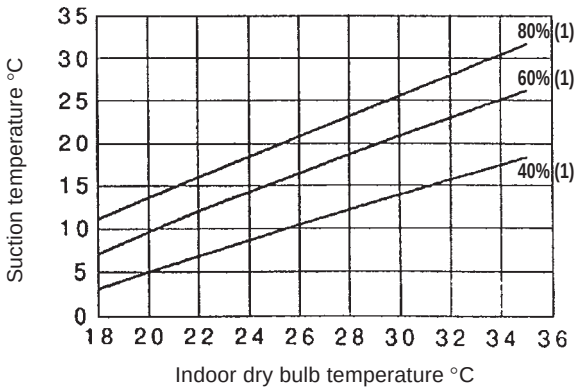


(1) Relative humidity

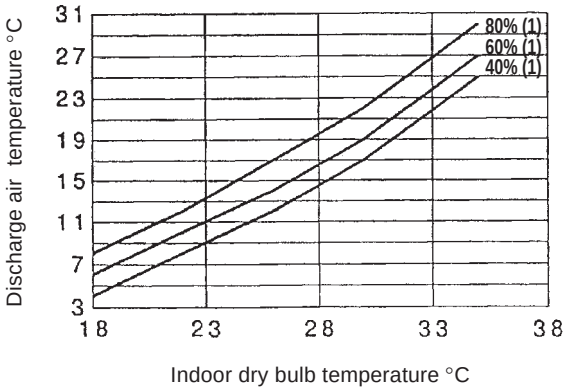
The power input diagram is based on the room dry bulb temperature for three different relative humidity values.

4 PERFORMANCE DIAGRAMS

Suction temperature °C

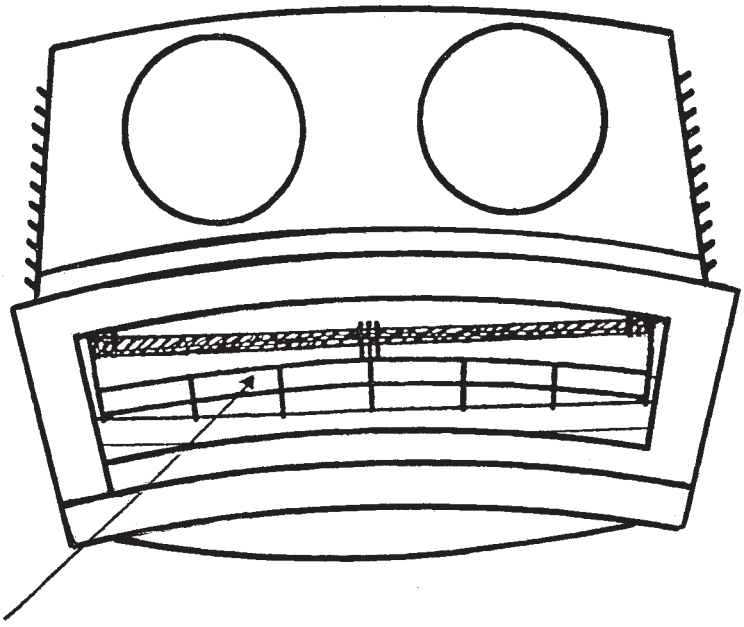


Discharge air temperature °C



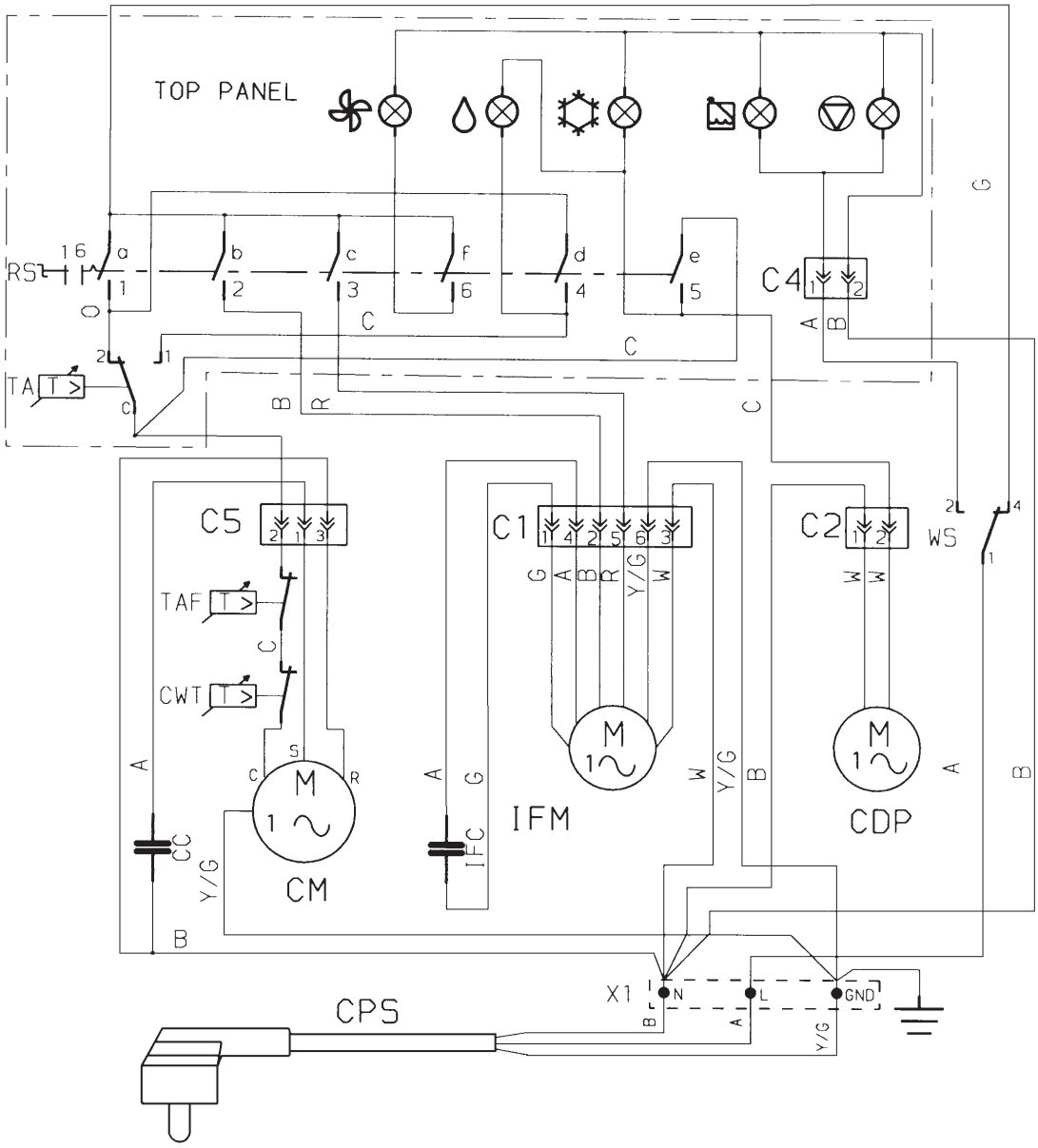
(1) Relative humidity

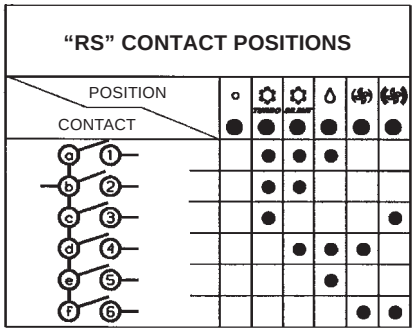
The air discharge temperature diagram is based on the room dry bulb temperature and relative humidity. Due to the temperature differences of the air at the outlet, the thermometer must be placed exactly in the position shown in the sketch.



Discharge air temperature measuring point

mod. 51AKB 006 / 51AKB 06G
mod. RTB 165F / RTB 165G





Legend

CPS	Power supply cable
WS	Full tank switch
CM	Compressor
CC	Compressor capacitor
IFM	Indoor fan motor
IFC	Indoor fan capacitor
TAF	Antifreeze thermostat
CDP	Condensate drain pump
TA	Room thermostat
CWT	Compressor overload protector
RS	Rotary switch
X1	Terminal block
C1	Indoor fan connector
C2	Pump connector
C4	Top panel connector
C5	Compressor connector

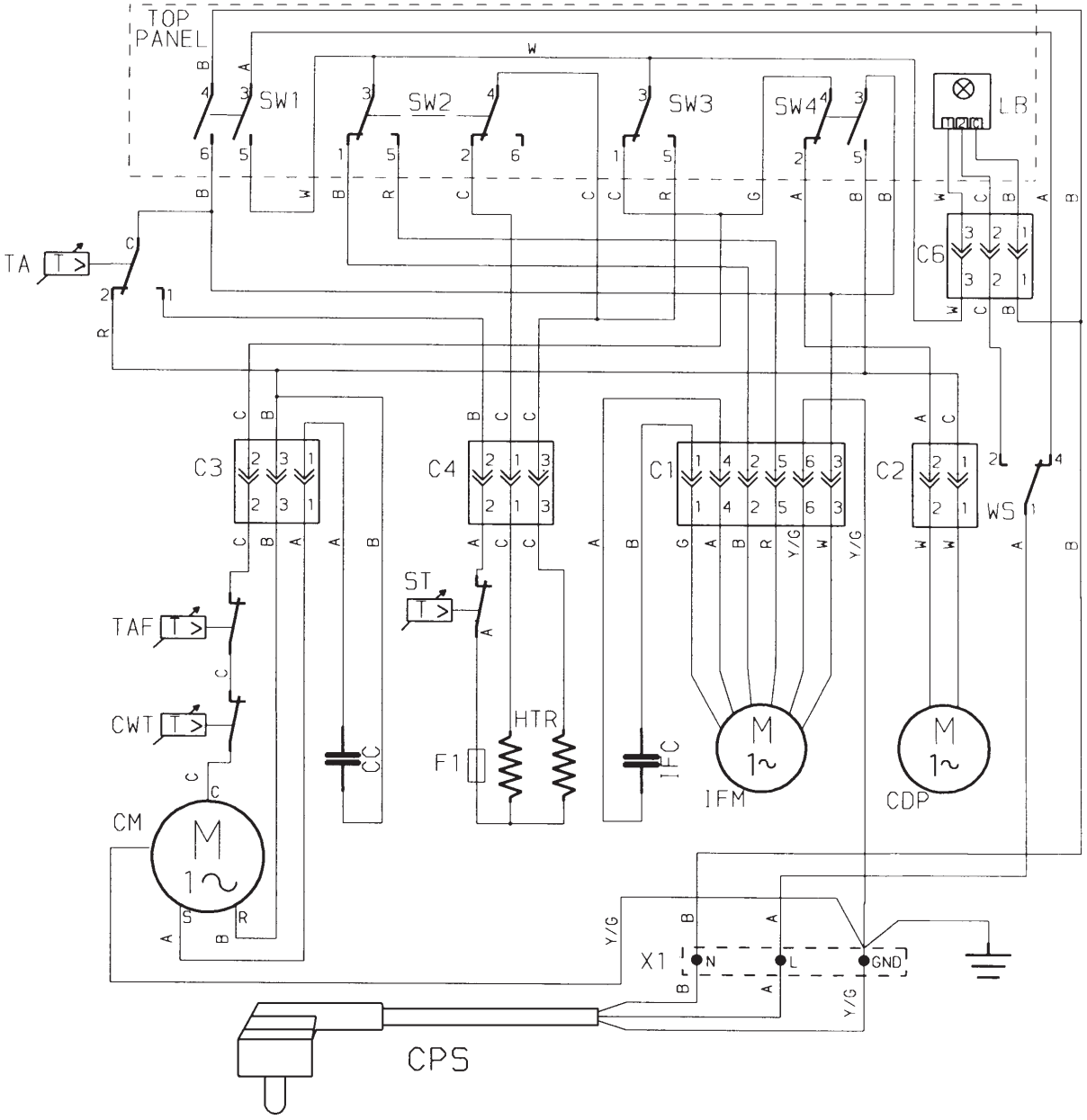
Wire colours

O	Orange
A	Brown
B	Blue
R	Red
C	Black
W	White
G	Grey
Y-G	Yellow-Green

Note:
The connection sequence does not represent the physical layout.

5 WIRING DIAGRAMS

mod. VTB 075F / VTB 075G



Legend

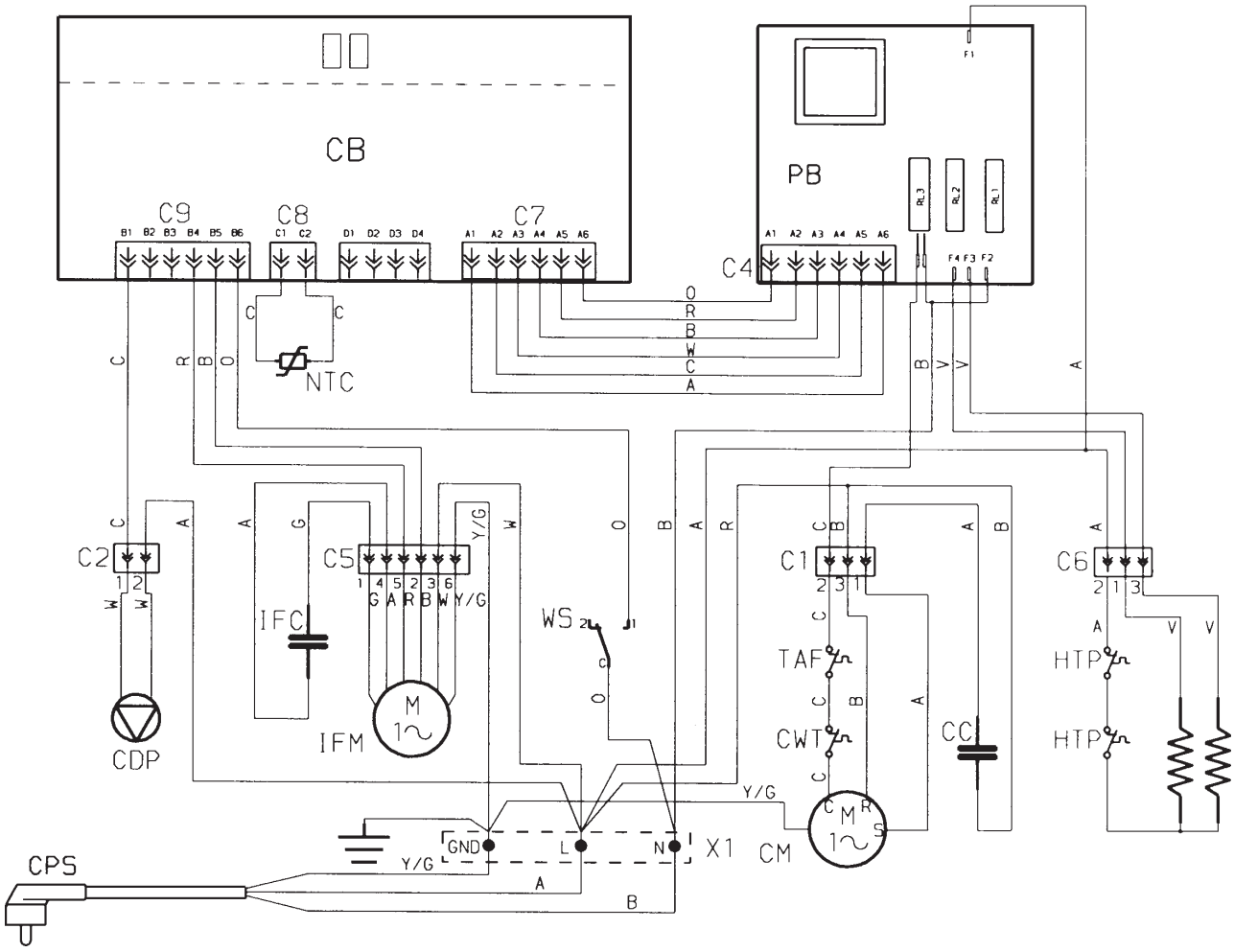
CC	Compressor capacitor
CDP	Condensate drain pump
CM	Compressor
CPS	Power supply cable
CWT	Compressor overload protector
C1	Indoor fan connector
C2	Pump connector
C3	Compressor connector
C4	Heater connector
C6	Lamp board connector
IFC	Indoor fan capacitor
IFM	Indoor fan motor
LB	Lamp board
TA	Room thermostat
WS	Full tank switch
X1	Terminal block
SW1	On-off switch
SW2	Fan speed change switch
SW3	Heat-cool switch
SW4	Dehumidifier switch
HTR	Electric heater
ST	Safety thermostat
F1	Thermal fuse
TAF	Antifreeze thermostat

Wire colours

A	Brown
B	Blue
G	Grey
R	Red
W	White
Y-G	Yellow-Green
Bk	Black / *Nero*

Note:
The connection sequence does not represent the physical layout.

mod. 51AKM 006 / 51AKM 06G
mod. RTE 165F / RTE 165G
mod. VTE 075F / VTE 075G



Legend

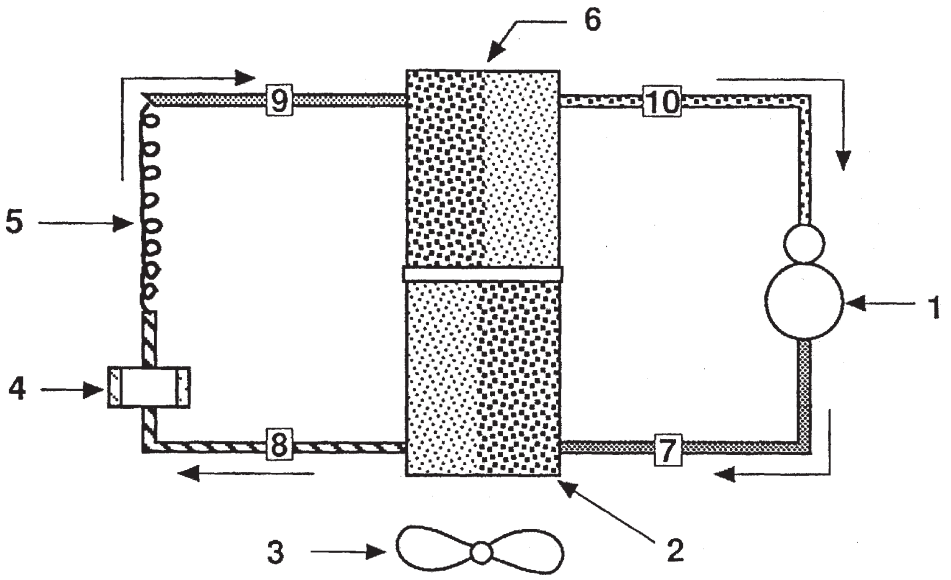
CPS	Power suppply cable
TAF	Antifreeze thermostat
HTR	Electric heater
CC	Compressor capacitor
IFM	Indoor fan motor
WS	Full tank switch
CWT	Compressor overload protector
HTP	Heater thermal protector
IFC	Indoor fan capacitor
CDP	Condensate drain pump
X1	Terminal block
CM	Compressor
NTC	Air sensor
CB	Control board
PB	Power board
C1	Compressor connector
C2	Pump connector
C4	PB connector
C5	Indoor fan connector
C6	Heater connector
C7	CB connector
C8	CB connector
C9	CB connector

Wire colours

A	Brown
B	Blue
R	Red
O	Orange
C	Black
W	White
G	Grey
V	Violet
Y-G	Yellow-Green

Note:
The connection sequence does not represent the physical layout.

6 REFRIGERANT CIRCUIT PRINCIPLE OF OPERATION



1. Compressor
2. Condenser
3. Fan
4. Filter
5. Capillary tube
6. Evaporator
7. Gas discharge
8. Liquid
9. Liquid/gas
10. Gas suction

7 R-407c REFRIGERANT

7.1 General

51AKB06G, 51AKM06G, RTB165G, RTE165G, VTB075G and VTE075G units use the new refrigerant R-407c.

R-407c is a blend of three basic constituents: R32, R125, R-134a with respectively weight composition 23%, 25%, 52%.

R-407c is an HFC refrigerant that does not destroy ozone layer.
General behaviour of R-407c systems is very similar to standard R22 one; system differences linked to R-407c are below:

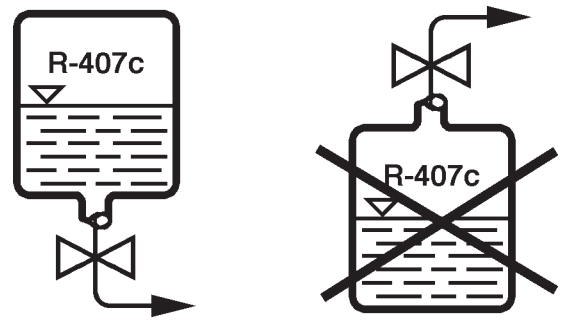
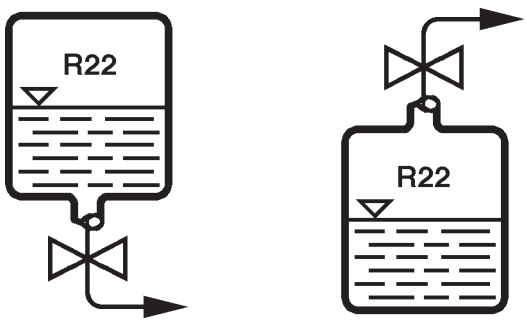
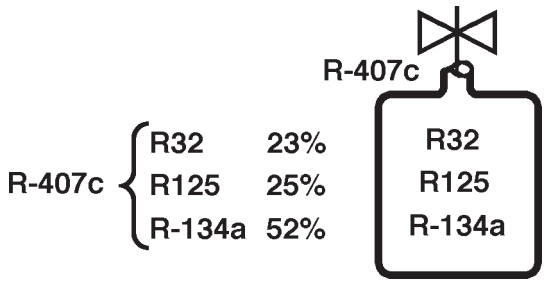
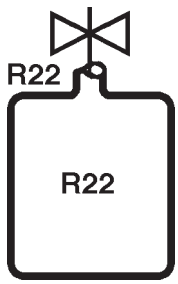
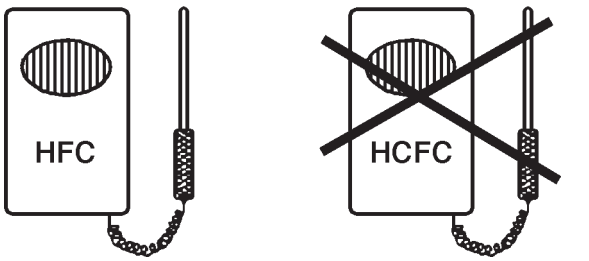
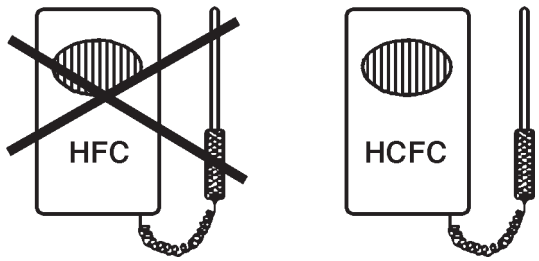
Since R-407c is a zeotropic blend, during phase change, liquid composition is different from vapour one; for this reason in case of leakage in zones with biphase, residual refrigerant composition could be changed.
R-407c phase changes are not at constant temperature as in R22 case, but with increasing temperature during evaporation and with decreasing temperature during condensation (Glide effect).
In case of refrigerant recharge, in order to assure correct composition two following steps will have to be followed:

- Residual refrigerant in the system will have to be pulled out and stored in a disposal cylinder (do not ventilate in ambient).
- **Refrigerant charge will have to be done only with liquid phase** in order to guarantee proper refrigerant composition inside the system; this can be done or using dedicated cylinders with two valves (one for liquid, the other for vapour) or in case of one valve cylinder, put cylinder in up side down position.
- In case of too much refrigerant charged, it is dangerous to remove partially the charge; this could change refrigerant composition inside the sistem; in such case it is suggested to remove completely the refrigerant charge, pull vacuum again and recharge the sistem with proper amount of refrigerant.

Leak detection will have to be carryed-out only with HFC sensitive leak detector.
Even if R-407c refrigerant is ozone friendly, do not ventilate it in the ambient because its warming effect is not zero.

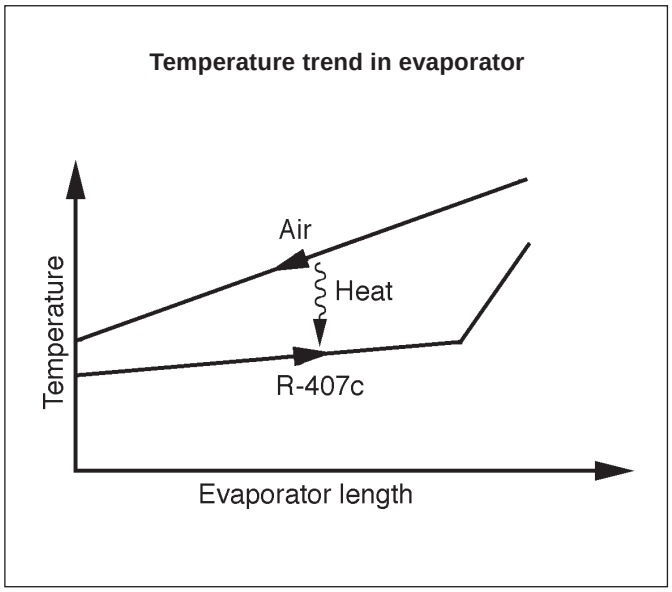
For all other technical details see standard rooles for R22.

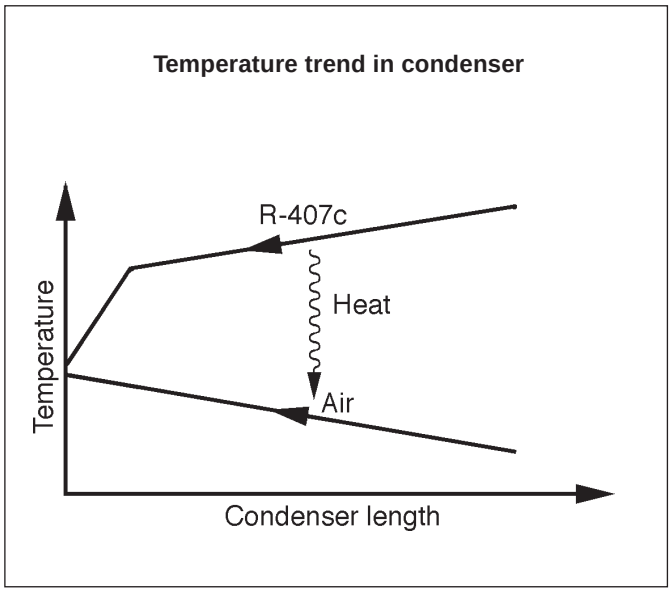
7.2 Main differences between R-407c and R22 refrigerant

R-407c	R22
Refrigerant charging procedure 	**Refrigerant charging procedure** 
Refrigerant composition 	**Refrigerant composition** 
Partial refrigerant charge: **NOT PERMITTED!** **Complete refrigerant charge only.**	**Partial refrigerant charge:** **YES!** **Partial refrigerant charge allowed.**
Leak detector  **Use HFC detector only.**	**Leak detector**  **Use HCFC detector only.**

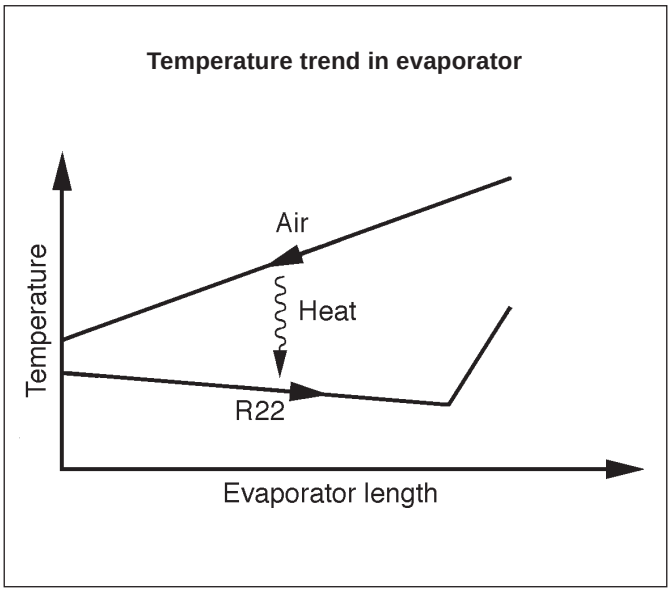
7.2 Differences between R-407c and R22 units

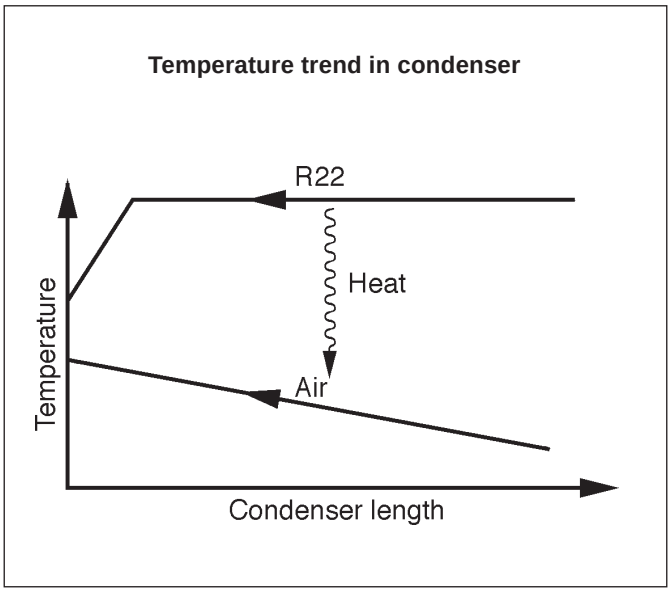
R-407c





R22





8 MICROPROCESSOR CONTROL

8.1 Special functions of the buttons

Pressing two buttons at the same time it is possible to activate some functions which are NOT described in the Instruction Manual.

Self-Test

If the ℃ and "fan speed" buttons are pressed simultaneously the sequence outlined in the table 1 will start.
Press any button to leave the Self-Test mode. At this point the unit will automatically enter the maximum cooling mode.

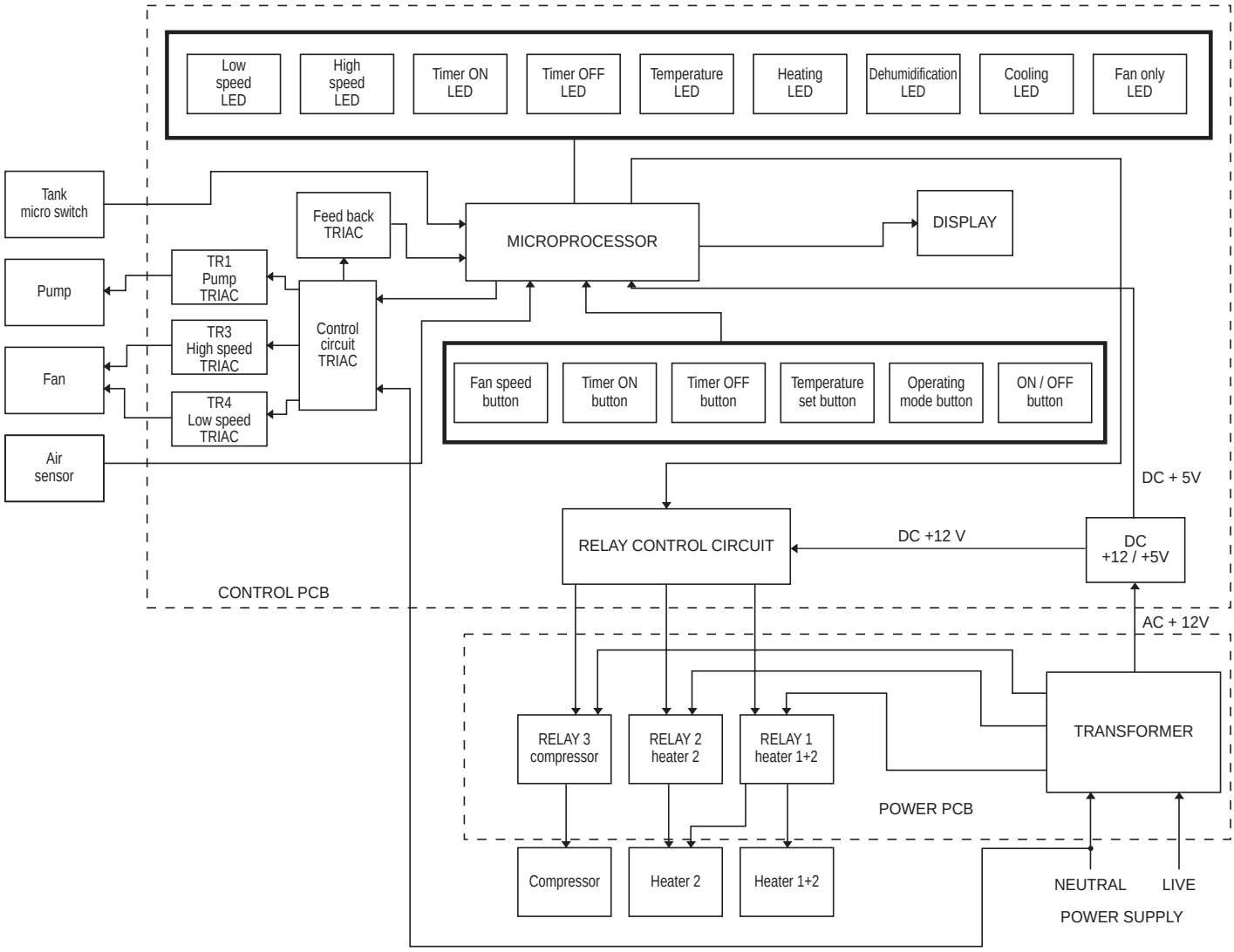
Reset

If the Timer On and Timer Off buttons are pressed simultaneously the unit will return to the same condition it was in just after the first time the plug was connected to the socket: cooling mode, hi-speed fan and 22 °C room temperature set point.
Provided the pressure difference between discharge and suction is acceptable (because the compressor worked for few seconds), it is possible to restart the unit in this way even if three minutes have not yet elapsed from the previous stop.

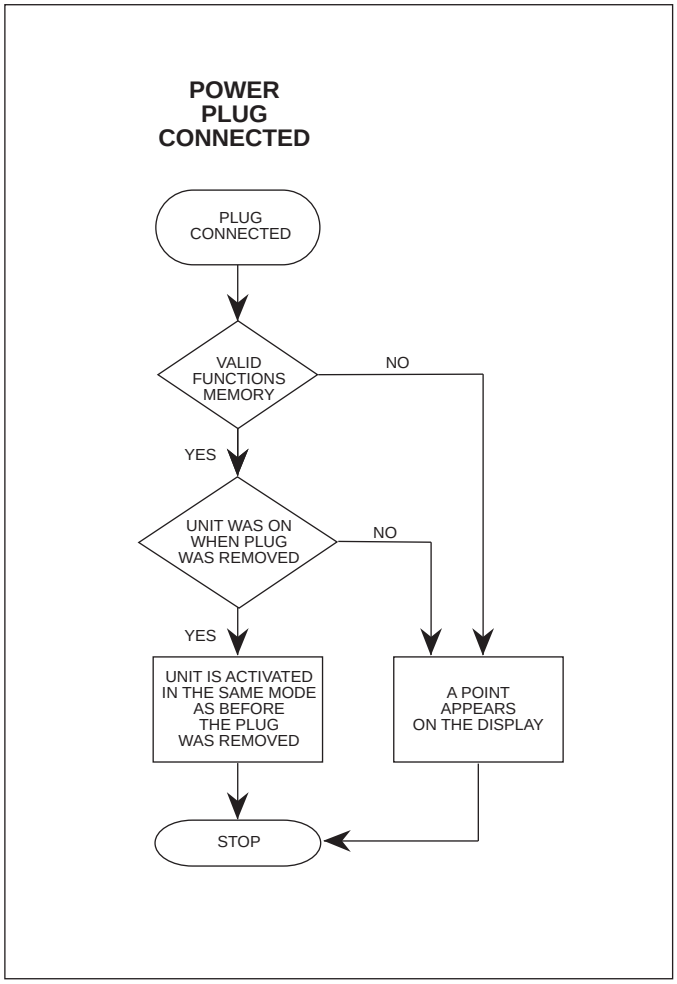
Table 1

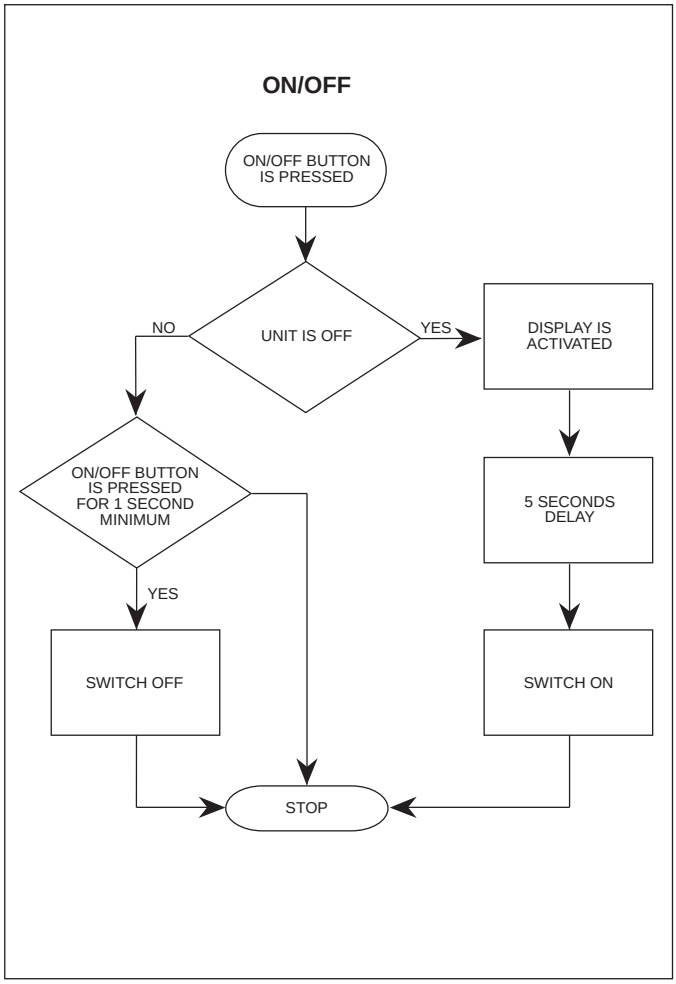
Test	Activated function	Duration
1	electric heater + LOW SPEED fan (only for models with electric heaters)	7 seconds
2	LOW SPEED fan	7 seconds
3	HI SPEED fan	7 seconds
4	compressor + HI SPEED fan (dehumidification)	7 seconds
5	compressor + HI SPEED fan condensate drain pump (maximum cooling WITHOUT thermostat)	continuous

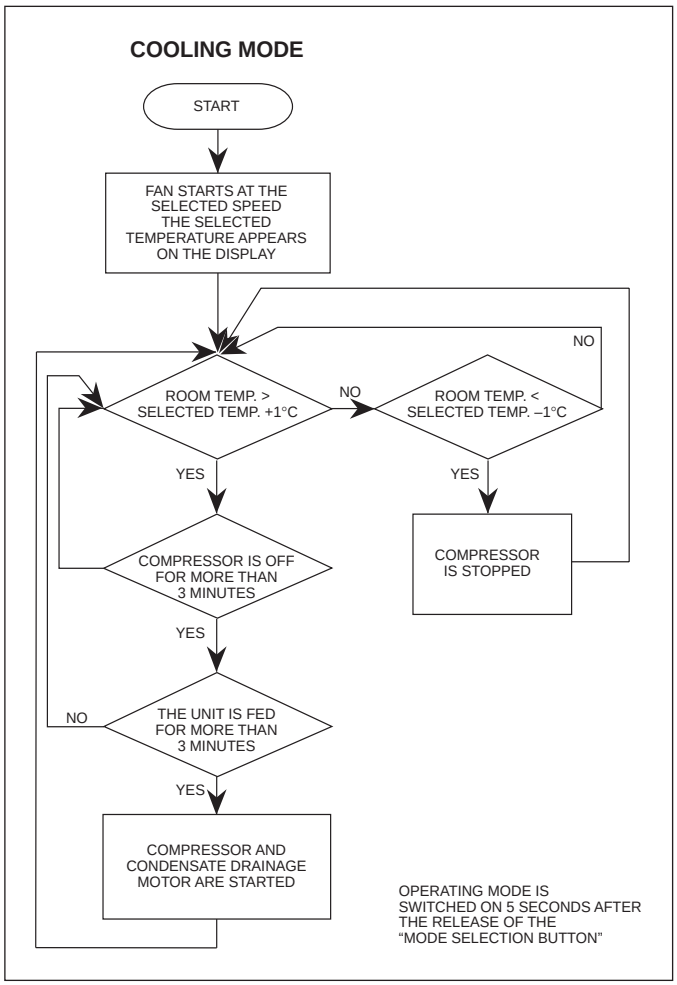
8.2 Logic connection diagram

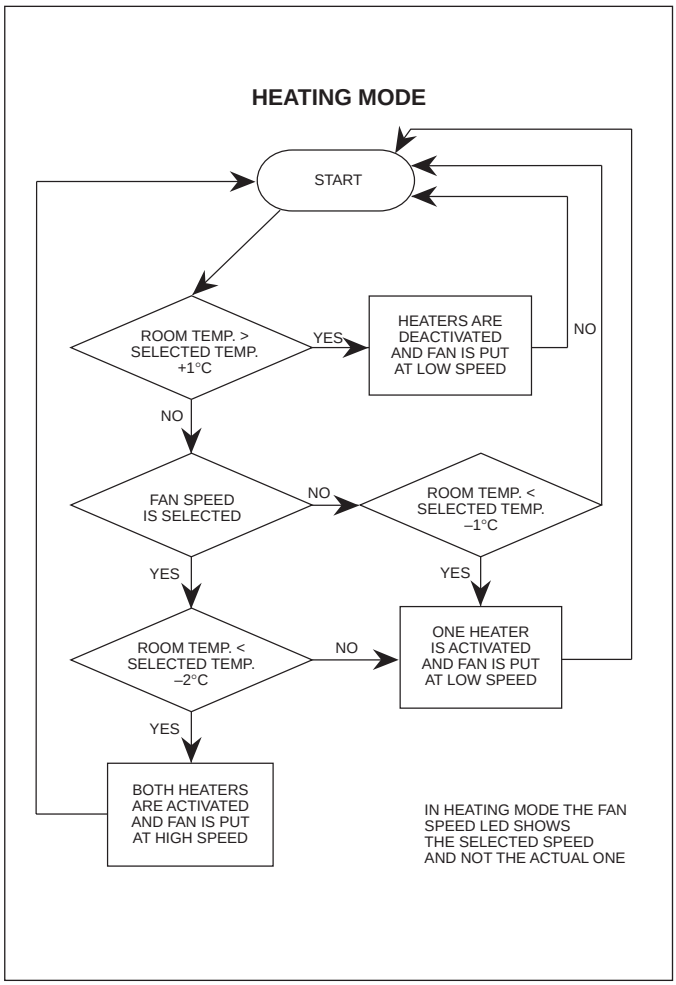


8.3 Flow charts



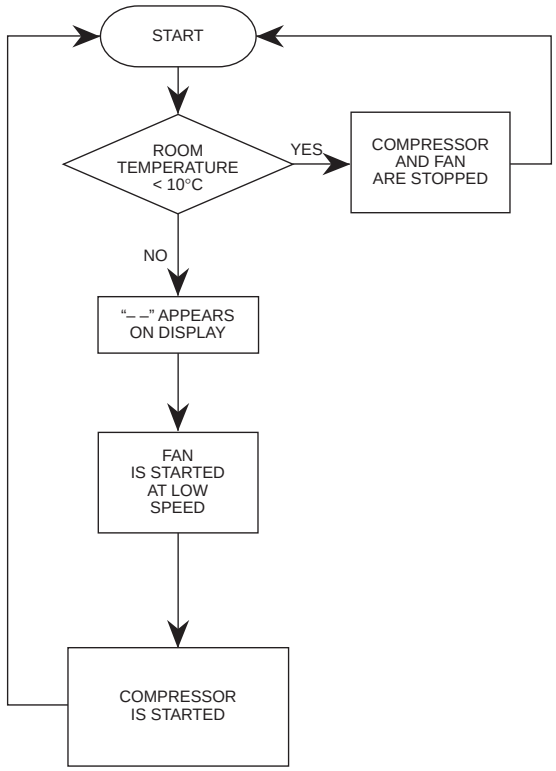






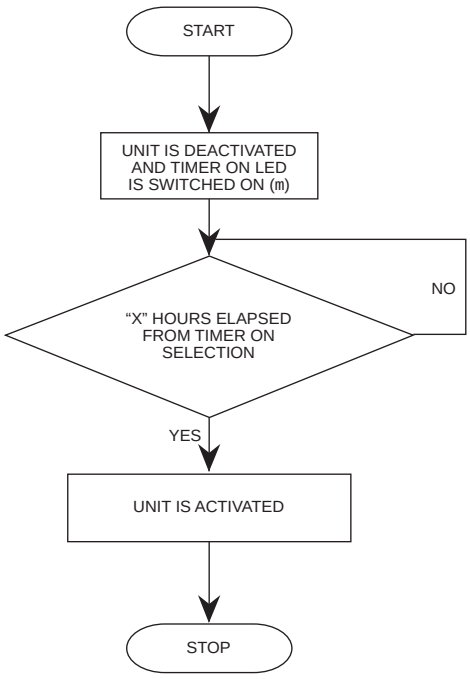
8.3 Flow charts

DEHUMIDIFICATION MODE



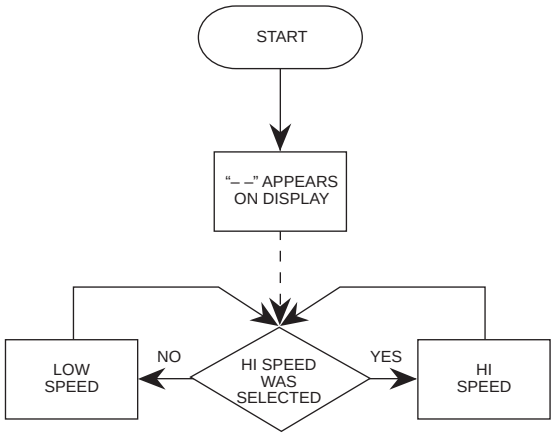
SELECTING DEHUMIDIFICATION MODE
FAN WORKS AT LOW SPEED.
FAN SPEED CAN BE CHANGED LATER.

TIMER ON *



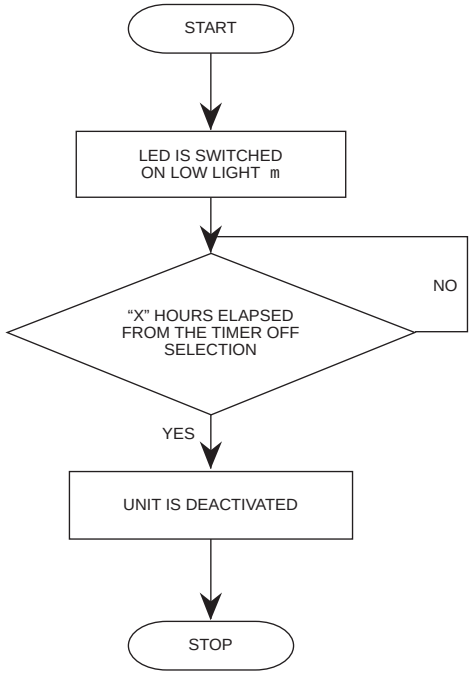
* SUPPOSING THAT TIMER ON
WAS SET TO ACTIVATE THE UNIT
AFTER "X" HOURS.
FAN SPEED LED AND
OPERATING MODE ACCORDING
TO SELECTION DONE.

FAN ONLY MODE



FAN SPEED IS CHANGED
AFTER 1 SECOND DELAY.

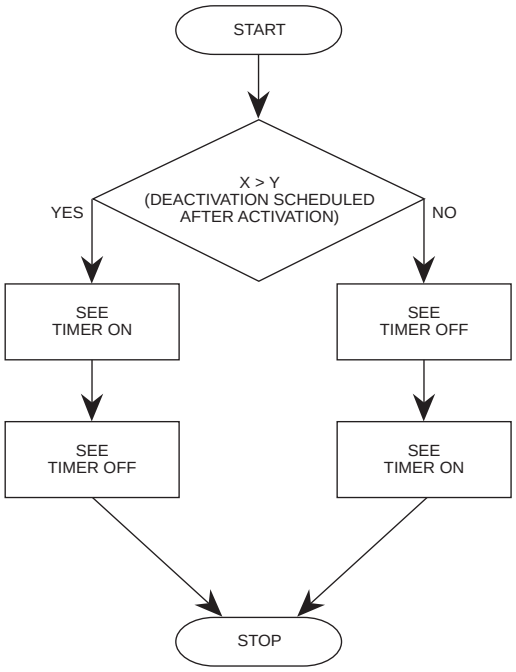
TIMER OFF *



* SUPPOSING THAT TIMER OFF WAS SET
TO DEACTIVATE THE UNIT AFTER "X" HOURS.
TIMER OFF, FAN SPEED LED
AND OPERATING MODE ACCORDING
TO THE SELECTION DONE.

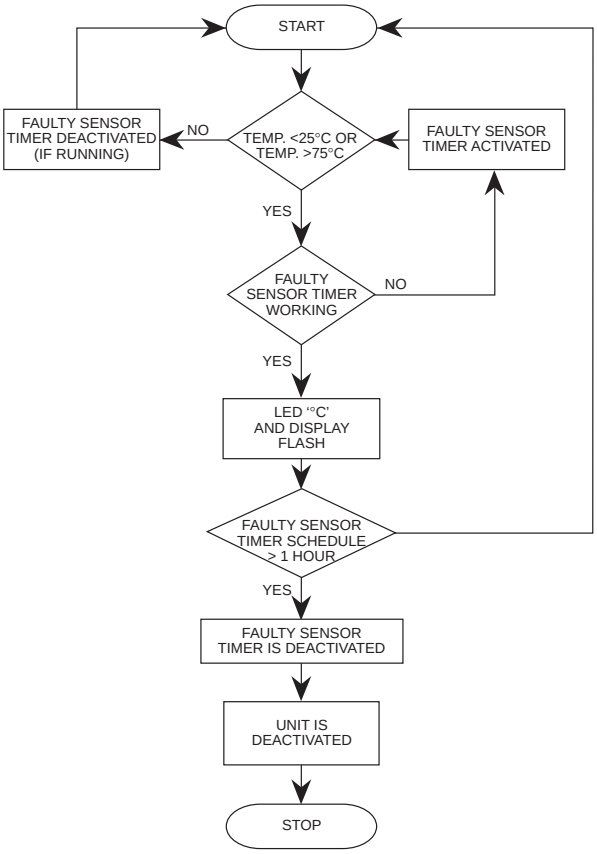
8.3 Flow charts

COMBINED TIMER *

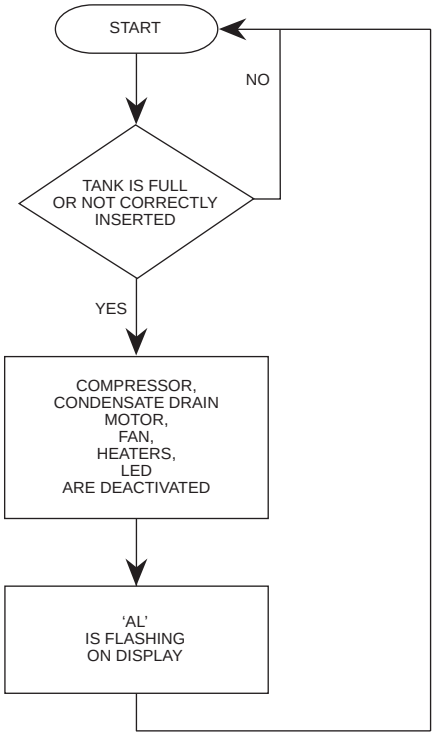


* SUPPOSING THAT TIMER ON WAS SET TO:
DEACTIVATE THE UNIT AFTER “X” HOURS
ACTIVATE THE UNIT AFTER “Y” HOURS.

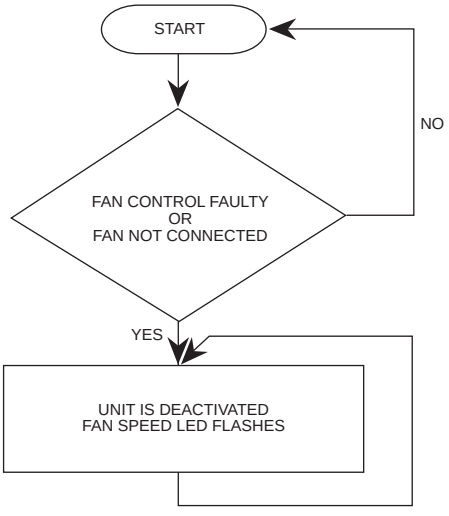
FAULTY SENSOR DIAGNOSIS



TANK ALARM



FAN CONTROL DIAGNOSIS

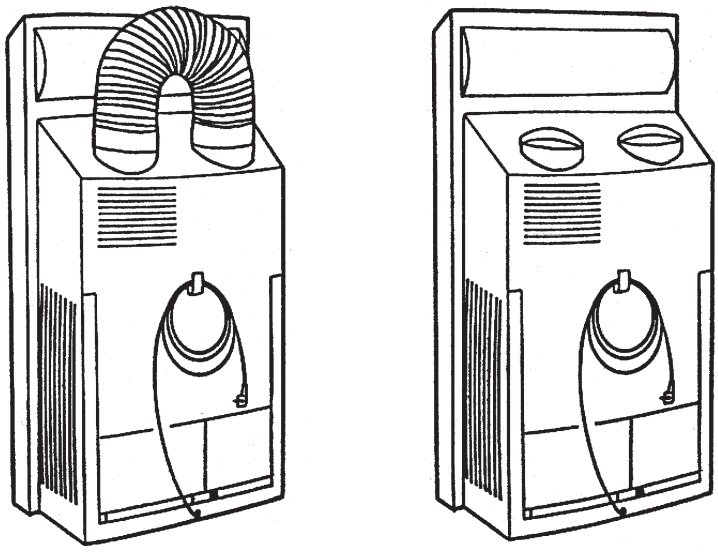


TO LEAVE THE ALARM CONDITION IT IS NECESSARY
TO REMOVE THE PLUG FROM THE POWER SUPPLY SOCKET,
ELIMINATE THE CAUSE OF THE FAULT
AND RE-INSERT THE PLUG IN THE SOCKET.

8.4 Resistance values of room temperature sensor

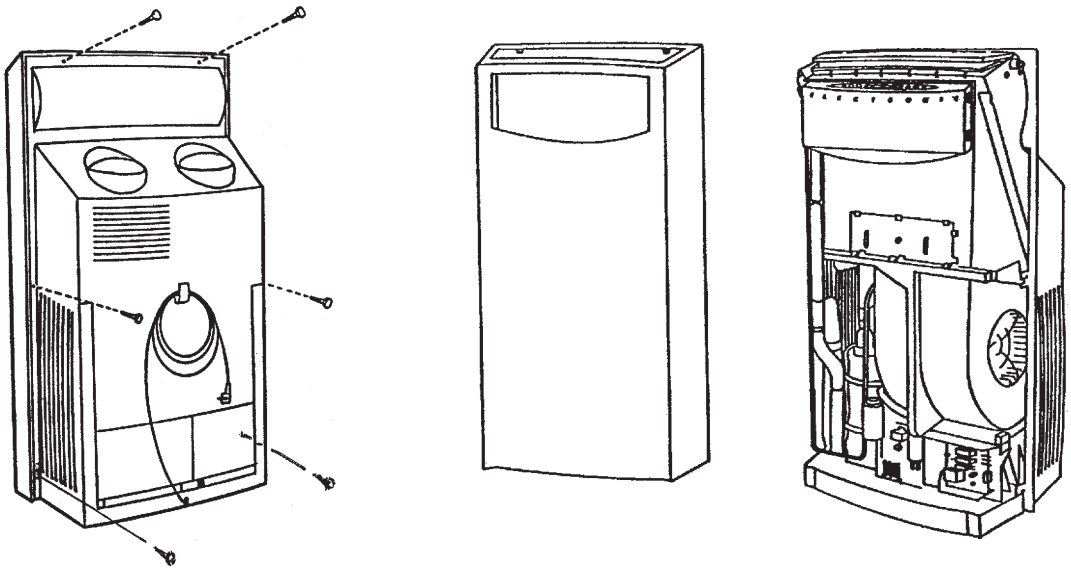
TEMPERATURE °C	MINIMUM RESISTANCE VALUE (ohm)	NOMINAL RESISTANCE VALUE (ohm)	MAXIMUM RESISTANCE VALUE (ohm)
15	14792	15824	16734
16	14131	15092	15949
17	13505	14399	15206
18	12910	13743	14502
19	12346	13120	13835
20	11809	12530	13203
21	11300	11970	12604
22	10815	11439	12036
23	10355	10934	11497
24	9917	10455	10985
25	9500	10000	10500
26	9103	9568	10039
27	8726	8157	9601
28	8366	8766	9185
29	8024	8394	8790
30	7697	8041	8414
31	7386	7704	8056
32	7090	7384	7716
33	6807	7079	7392
34	6537	6788	7084
35	6279	6511	6791

9 UNIT DISASSEMBLY

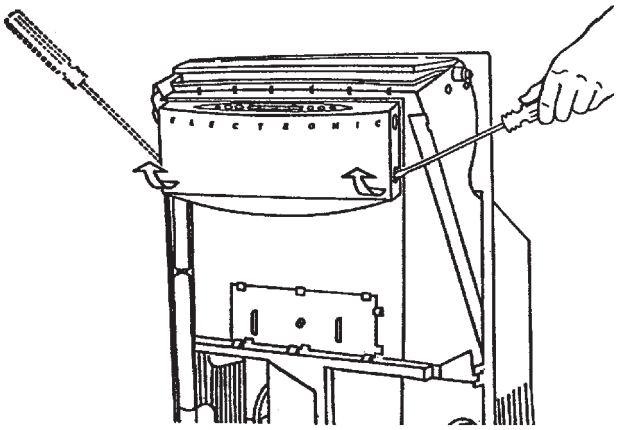


Remove the plug from socket.
It is not necessary to remove the exhaust air flexible duct from its housing (two holes).

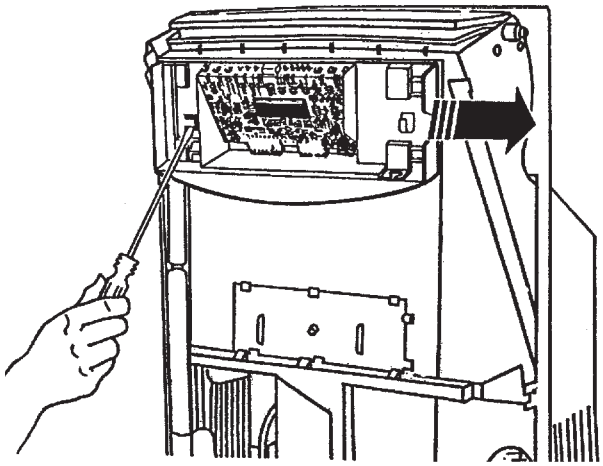
9 UNIT DISASSEMBLY



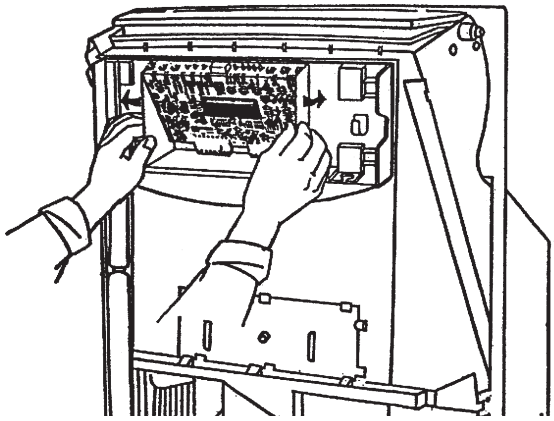
Front panel removal
Unscrew the six screws placed on unit back and remove the front panel.



Control panel template removal
Remove the control panel template levering on the two hooks placed in its lower part.
In this way all the electrical and electronic parts of control panel can be reached and it is also possible do all checks and parts substitutions of the same panel.

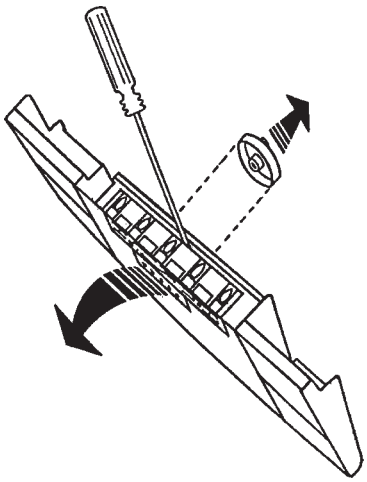


Control panel removal
Release the control panel pushing the plastic tab with a screwdriver and extract the panel sliding it towards the right.

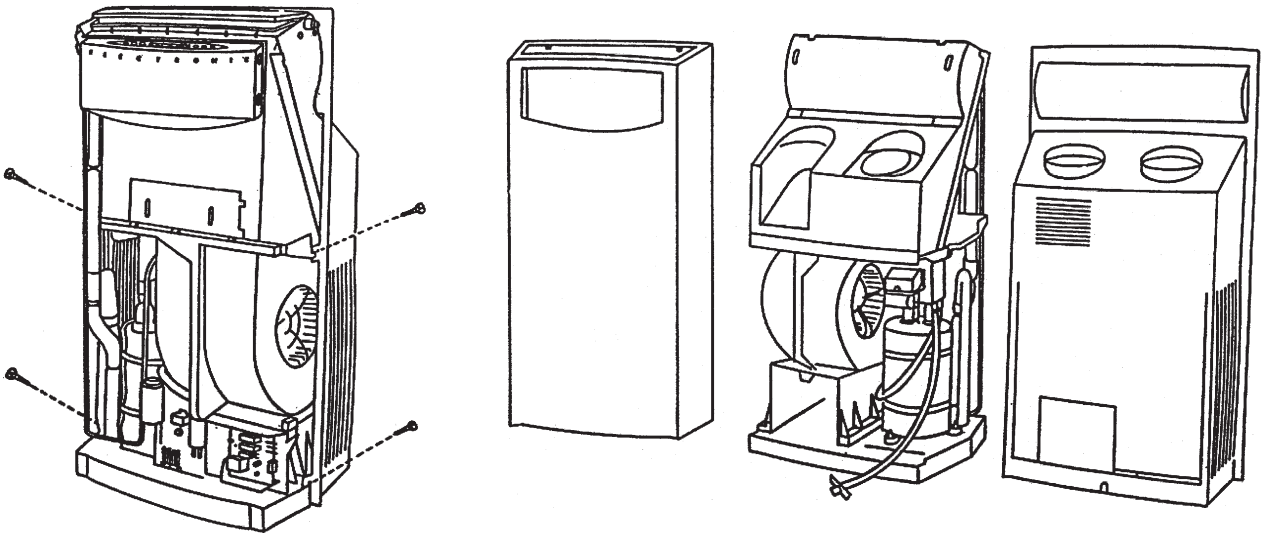


Control PCB removal
Important: Discharge the body static electricity touching a metal part before touching the PCB.
Slightly pull apart the two plastic body sides which fasten the PCB in order to release and remove it.

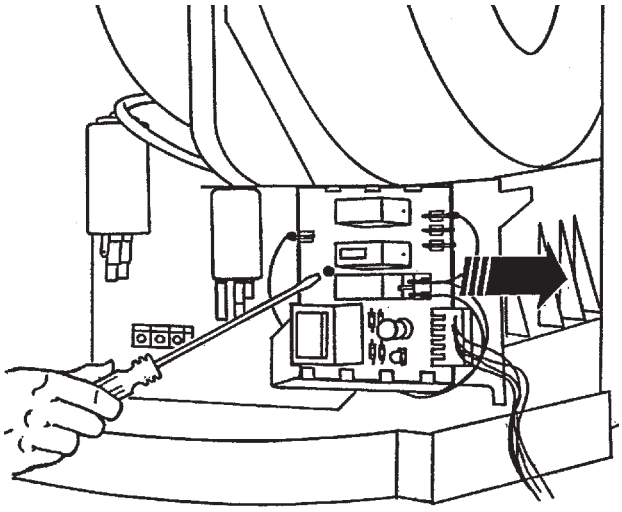
9 UNIT DISASSEMBLY



Electromechanical control removal
Remove the plug-in switch knob, release the plastic tab and remove the switch end the board.

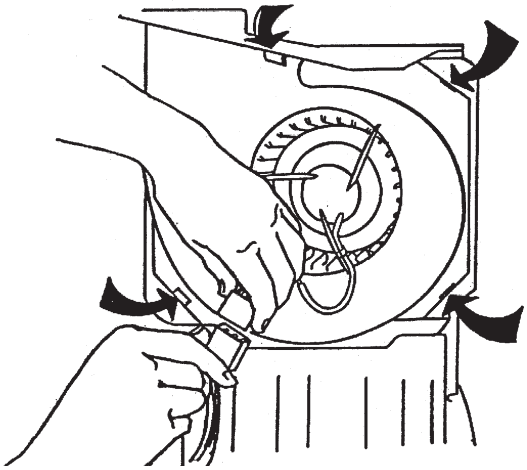


Rear panel removal
Remove the condensate tank in the rear of the unit.
Unscrew the four side clamping screws, lift the back panel about 10 mm and finally remove it.
At this point it is possible to make any check and/or service operation on the unit.

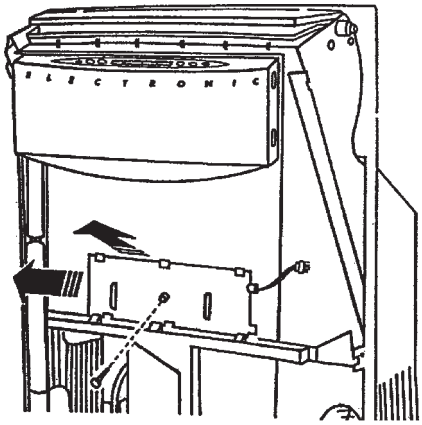


Power PCB replacement
Important: Discharge the body static electricity touching a metal part before touching the PCB.
Disconnect polarized connector of power PCB.
Then disconnect the four cables complete with terminals.
Push with a sharp tool in the hole in order to release the PCB from the clamp and to extract it.

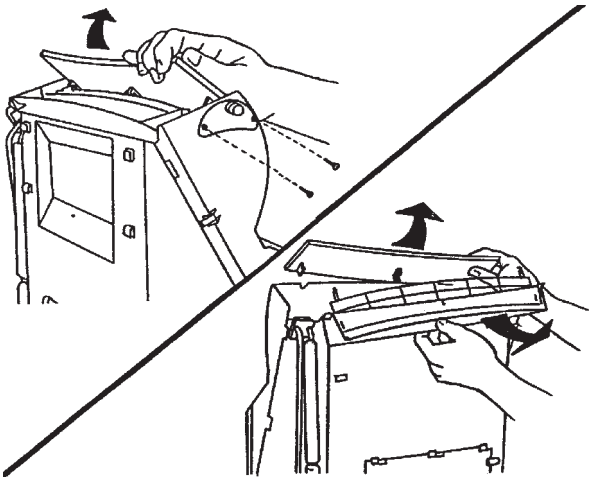
9 UNIT DISASSEMBLY



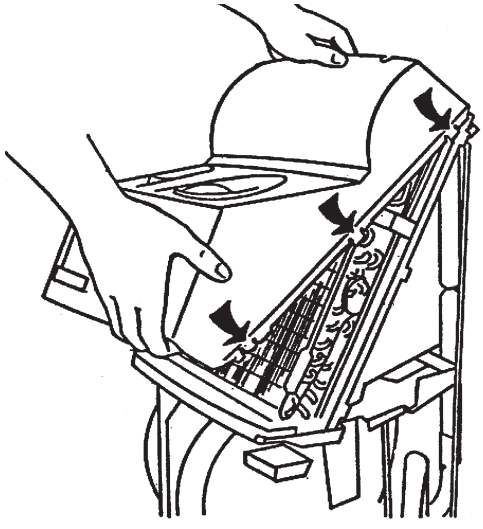
Fan motor replacement
Disconnect the polarized electronic connector and TH sensor.
Using a screwdriver release the four plastic tabs that keep the half scroll of the fan in place.
In this way it is possible to extract the motor from the rubber vibration isolators which are supporting it.
If one or more plastic tabs of the half scroll of the fan are broken, the half scroll can be secured by similar screws to the ones used in the unit, during the re-assembly.



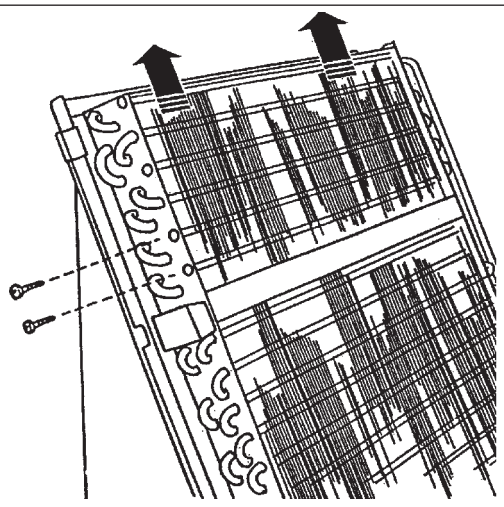
Electric heater removal
(models 51AKM 006, 51AKM 06G, RTE 165F, RTE 165G, VTE 075F, VTE 075G)
Disconnect the polarized electric connector.
Remove the securing screw, release the plastic tab, slide the electric heater compartment toward the right and then remove the electric heater compartment and the heater itself.



Coil removal
Remove the air flow flap and its holder.



Remove the pipe conduit plate releasing the six plastic tabs which secure it to the unit.



Extract the refrigerant from the unit using a suitable device and avoiding to exhaust it in the atmosphere.
Unsolder and disconnect coil piping and then remove it.

Autodiagnostic

In the event of malfunctions, a warning will be given automatically on the display.

SIGNAL	CAUSE	REMEDY
– AL flashes on the display and LEDs off	– Water tank full or not correctly inserted	– Empty the water tank or check that it is correctly inserted
– Display and °C LED flashing	– Ambient air thermostat not working (the unit will operate for 1 hour)	– Replace the room temperature sensor
– Fan speed LED flashing	– Electronic Printed Circuit Board defective or fan not connected	– Replace the control PCB or connect the fan

Attention
The operation outlined by * requires momentary connection between parts under voltage and therefore they must be executed with caution.
In case of difficulties with the connection it is better to replace the power PCB.
If the trouble disappears the problem is solved. If not reutilize the old power PCB and replace the control PCB.

Trouble	Action	Remedy
Unit does not work at all.	Check the supply voltage.	Call an electrician in case it is more than 15% less than the nominal voltage.
	Disconnect connector A on the power PCB and verify that there are 12 VAC between the pin A4 and the pin A2 (or between pin A4 and the quick connector F2).	Replace the power PCB if there are not 12 VAC. If not replace the control PCB.
Compressor and fan do not work in Cooling and in Dehumidification modes.	Verify if Timer On was activated.	Deactivate Timer On pushing the corresponding button until the message 0.0 appears on the display.
	The message AL blinks on the display and the LEDs are on (Dehumidification mode only)	Unit cannot run in the Dehumidification mode when the temperature is less than 10 °C.
	The message AL flashes on display and the LEDs are off.	Empty the condensate tank or place it in the correct position.
Compressor does not work and the fan is working in Cooling and in Dehumidification modes.	Check the supply voltage.	Call an electrician in case it is more than 15% less than the nominal voltage.
	Check the resistance of air sensor.	Replace air sensor if necessary.
	Check if there is voltage between quick connector F1 and both the quick connectors of relay RL3.	
	If voltage is found, check if compressor thermal protection is closed.	Replace compressor thermal protector if necessary.
	If compressor thermal protector is okay, check compressor winding resistance (see Table 2 of page 57).	Replace compressor if necessary.
	* If no voltage is found disconnect connector A on the power PCB, connect contact A3 of the power PCB to quick connector F2 and check if relay RL3 trips or not.	If relay does not trip it is necessary to replace the control PCB otherwise the power PCB.

10 TROUBLESHOOTING
Mod. 51AKM 006, 51AKM 06G, RTE 165F, RTE 165G, VTE 075F, VTE 075G

Trouble	Action	Remedy
Unit does not work and both fan speed LEDs are blinking.	Check the start capacitor.	Replace start capacitor if necessary.
	Connect the fan motor directly to the supply.	Replace the motor in case it does not work; if motor works replace the control PCB.
Fan motor is continuously cycled on-off by its built-in overload protector.	Check the supply voltage.	Call an electrician in case it is more than ±10% of the nominal voltage.
	Check if run capacitor is shorted or grounded.	Replace capacitor if necessary.
	Check the maximum motor speed.	Replace motor in case speed is too low.
	Ensure that the coils are clean and their fins are not damaged.	Clean or straighten the fins.
Compressor motor is continuously cycled on-off by its built-in overload protector.	Check supply voltage	Call an electrician in case it is more than ±10 of the nominal voltage.
	Check if air temperature is lower than maximum allowed one.	
	Check fan speed. (A low speed might cause discharge pressure increase).	If fan speed is too low at maximum speed it is necessary to replace the motor
	Ensure that the condenser coil is clean and its fins are not damaged.	Clean or straighten the fins.
	Check compressor and condenser.	Replace it if it does not work.
	Check if refrigeration circuit is partially or totally clogged.	Replace the clogged parts and recharge the circuit.
The cooling effect is not sufficient.	Air filter is clogged.	Clean or replace the air filter.
	Ensure that the condenser and cooler coils are clean and their fins are not damaged.	Clean or straighten the fins.
	Compressor motor is continuously cycled on-off by its overload protector.	See previous trouble.
	Refrigerant charge is not sufficient.	Remove the charge, identify and repair any possible leaks and recharge the circuit.
	Check fan speed when motor is at maximum speed and supplied right voltage.	If speed is too low, lubricate with oil the bearing. If speed is still too low it is necessary to replace the motor.
	Check if refrigeration circuit is partially or totally clogged.	Replace the clogged parts and recharge the circuit.
	Too much frost on cooler.	See separate section “Too much frost on cooler”.
	Compressor is unable to create the necessary pressure differential.	Check compressor current and replace compressor if necessary.

10 TROUBLESHOOTING
Mod. 51AKM 006, 51AKM 06G, RTE 165F, RTE 165G, VTE 075F, VTE 075G

Trouble	Action	Remedy
Too much frost on cooler.	Air filter is clogged.	Clean air filter.
	Check fan speed.	Replace motor if fan speed is too low.
	Outside air temperature is too low.	Put the unit in Fan Only mode until outside coil is defrosted.
	Compressor relay contacts are welded.	Replace power PCB.
	Cooler fins are bent and they partially close the air passage.	Straighten the fins.
	Refrigerant charge is not sufficient.	Remove the charge, identify and repair any possible leaks and recharge the circuit.
Unit does not cool at all.	Compressor does not work.	See section “Compressor does work and the fan is working in Cooling and in Dehumidification modes”.
	The charge is too low or has escaped.	Add refrigerant, identify and repair any possible leaks and recharge the circuit.
	Check if refrigeration circuit is partially or totally clogged.	Replace the clogged parts and recharge the circuit.
Unit is too noisy.	The fan hits the scroll.	Set the fan position in the scroll.
	The copper lines vibrate and touch parts of the unit.	Set the copper line position.
	The noise is due to the compressor.	Replace the compressor.
The fan does not work in Fan Only mode.	Verify if Timer On was activated.	Deactivate Timer On pushing the corresponding button until the message 00 appears on the display.
The heater and the fan do not work in Heating mode	Verify if Timer On was activated.	Deactivate Timer On pushing the corresponding button until the message 00 appears on the display.
The heater does not work when fan is operating at low speed and the low or high speed was selected.	Remove and insert the plug into the socket in order to reset PTC protection.	If heater restarts clean filters and fins.
	Select high fan speed and set the thermostat at 27 °C in order to activate both the stages of the heater.	Clean filters and fins and replace the heater if fan works at high speed and only one or none of the heater stages operates.
	Check air temperature sensor.	Replace air temperature sensor if necessary.
	Check if there is voltage between quick connectors F1 and F4.	Replace the heater, clean filters and fins if voltage is present.
	* Disconnect connector A on the power PCB, connect contact A5 of PCB to quick connector F2 and check if the relay RL2 trips if no voltage is found.	Replace control PCB in case relay RL2 trips; if not replace power PCB.
One of the heater stages does not work when fan is operating at high speed and the high speed was selected.	Check if there is voltage between quick connectors F1 and F4.	Replace the heater, clean filters and fins if voltage is present between quick connectors F1 and F4.
	* Disconnects connector A on the power PCB, connect contact A5 of PCB to quick connector F2 and check if relay RL2 trips in case no voltage is present.	Replace control PCB in case relay RL2 trips; if not replace power PCB.
Both heater stages do not work when fan is operating at low speed and the high speed was selected.	Check if there is voltage between quick connectors F1 and F3.	Replace the heater, clean filters and fins if voltage is present.
	* Disconnects connector A on the power PCB, connect contact A3 of PCB to quick connector F2 and check if relay RL1 trips in case no voltage is present.	Replace control PCB in case relay RL1 trips; if not replace power PCB.

10 TROUBLESHOOTING
Mod. 51AKM 006, 51AKM 06G, RTE 165F, RTE 165G, VTE 075F, VTE 075G

Trouble	Action	Remedy
The condensate tank is filled in Cooling Mode.	Place the exhaust air duct in vertical position and pour a glass of water on the condensing coil. Connect the condensate drain pump directly to the supply.	Replace the control PCB in case the motor works (the noise of the drained water can be easily heard). Replace the motor in case it does not work.
The condensate tank is properly positioned and empty, the message AL blinks on display in any working mode.	LEDs are on. Check the tank microswitch in case the LEDs are not on. Check microswitch wiring.	Unit cannot work in Dehumidification Mode if temperature is lower than 16 °C. Replace microswitch if necessary. Restore wiring if open, or replace the wiring itself if necessary. Replace the control PCB if the wiring is okay.
Both the display and the LEDs are off, but the unit is properly working.		Replace the control PCB.

10.1 Component testing procedure (all models)

A) Leaks

Torch leak detector use

To carry out a leak test of a refrigerant circuit it is necessary to move the sensor pipe terminal of the leak detector along all the joints and the parts containing refrigerant.
Maximum sensitivity of the detector can be obtained by keeping the flame high enough to get a red copper plate. The flame is blue if there is no refrigerant in the air.

When the sensor pipe draws in air containing refrigerant the colour of the flame changes according to the concentration of the refrigerant in the air.

1. A small leak will cause the flame colour to switch from blue to green.
2. A large leak will cause the flame colour to switch from blue to violet.

Attention! Do not inhale the fumes of the leak detector when the sensor pipe is drawing in air heavily polluted with refrigerant.

B) Electric parts

In case of a fault of any electric component, to identify the problem and to solve it apply the procedures described on the next pages. To carry out these tests it is necessary to remove unit front panel.

Supply cable

Check the voltage at the terminals while the plug is connected to the socket.

Electric conductors

Remove the plug from the socket and check the continuity of all the conductors and jumpers.

Available power supply

Low voltage is the most common problem.

Voltage must be read by an accurate and reliable voltmeter when the unit is working in Cooling Mode. The meter sensors must be inserted in the sensor in parallel with the unit.

Components tests

In case of a suspected electric fault first test the circuit to identify the faulty part.

The tests must be carried on using a TESTER suitable for troubleshooting.

Change-over switch

1. Remove the plug from the socket.
2. Insert the tester in the different positions of the change-over switch shown in the wiring diagram to check the continuity between the contact and the corresponding position of the change-over switch.
   This test must be carried out only when all cables are disconnected from the change-over switch.

Room thermostat
(mod. 51AKB 006, 51AKB 06G, RTB 165F, RTB 165G, VTB 075F, VTB 075G only)

1. Remove the plug from the socket.
2. Insert the tester according to the wiring diagram indication and put the thermostat knob to the maximum cooling position to check the continuity between thermostat contacts.
   This test must be carried on only when all cables are disconnected from the thermostat.

■ 10.1 Component testing procedure

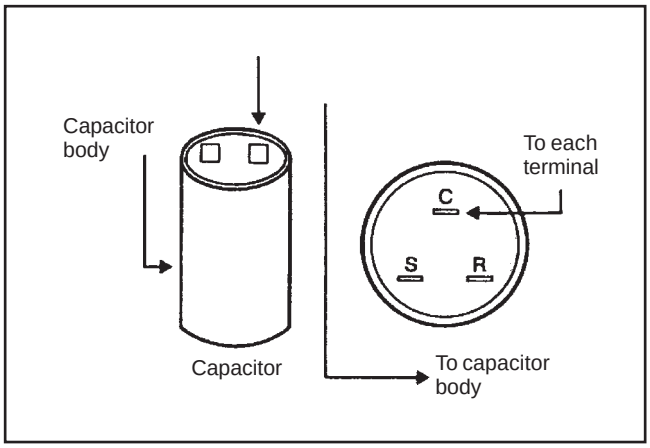


Fig. 1

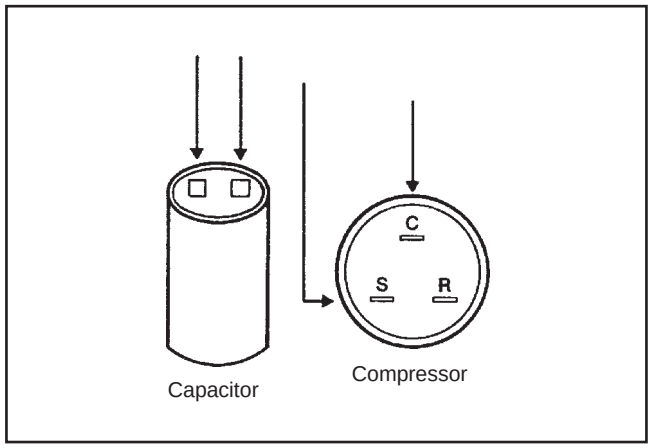


Fig. 2

Capacitors

Remove the plug from the socket and remove the cables from the capacitor. Discharge the capacitor, shortcircuiting its terminal with the blade of a screwdriver.
Take an Ohmmeter and select the x 100 scale. Then connect the sensors of the Ohmmeter to two terminals of the capacitor.

a) If the capacitor is in order the needle will go immediately
to zero and then will indicate high resistance.
b) If the capacitor is shorted the needle will go to zero and stop in that position.
c) To check if a capacitor with metallic body is shorted it is necessary to put a sensor of the Ohmmeter in contact with a terminal of the capacitor and the capacitor body. If capacitor is shorted the instrument will indicate the electric continuity.
d) To check the capacitor polarity it is necessary to put the Ohmmeter terminals on the capacitor terminals, verifying
that the needle goes to zero and then indicates the maximum resistance.

Then reverse the position of the Ohmmeter sensor on the capacitor terminals: the needle will go to zero and then come back to the normal position.

In this way the capacitor will be discharged and then recharged by the Ohmmeter battery.

Compressor thermal overload protection

The test of the compressor thermal overload protection (Klixon) must be carried on before the continuity test; remove the plug and the connection cables from the thermal overload protection. Be sure that the protection is cool and closed. If necessary the Klixon must be removed from the compressor body and cooled before the test.

Fan motor

Before the test it is necessary to rotate the fans by hand to ensure that their bearings are not seized and their wheels do not touch the housing.

Remove the plug and check the run capacitor to be sure that it is properly working; then:

1) Connect the motor with the run capacitor directly in the circuit. If the motor does not work it has to be replaced.
2) In case the motor works but the current drawn is too high it is necessary to see if the motor is shorted checking all connecting cables.

Compressor

Before carrying out the test all cables must be disconnected from the compressor, and its motor must be checked to be sure that its windings are not shorted and/or interrupted. Then:

1) Put a lead of the test circuit in contact with the compressor body in an unpainted area in order to check the insulation.

2) Put one of the leads on terminal “C” and the other one on terminal “S” of the compressor in order to check the continuity of the start winding.

3) Secure one of the leads on the compressor terminal “C” and the other one on terminal “R” of the compressor in order to check the continuity of the run windings.

Check that winding resistances correspond to the figures given in the table 2 and that there is no ground leakage.

Air temperature sensor
(mod. 51AKM 006, 51AKM 06G, RTE 165F, RTE 165G, VTE 075F, VTE 075G only)

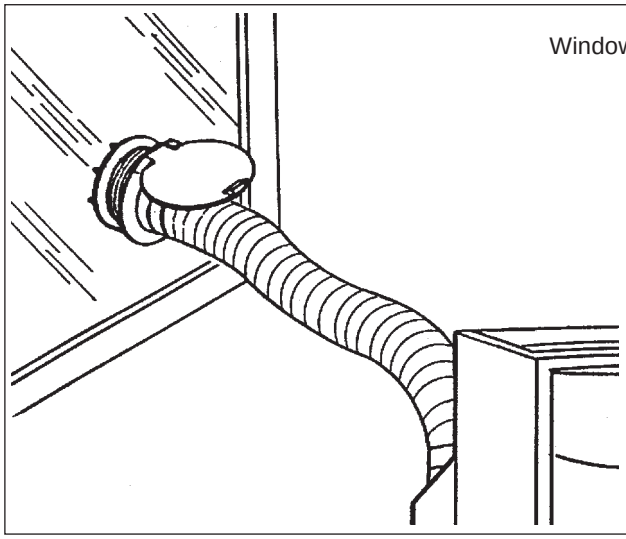
Disconnect the sensor and using a tester in Ohmmeter mode check that the sensor resistance corresponds to the figure stated in the table on page 21.

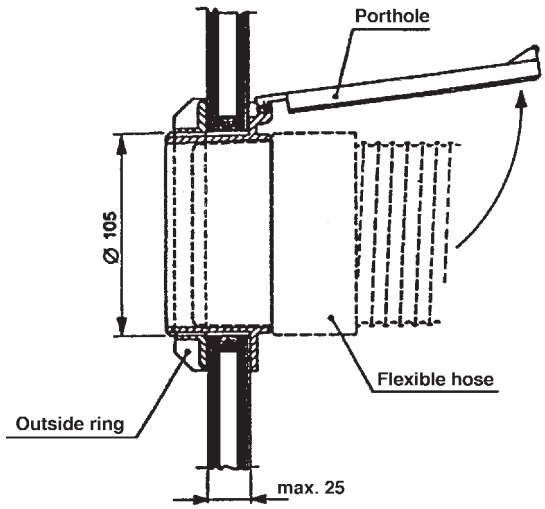
Table 2
Winding resistance at 25°C

Compressor	C - R	4.81 Ω
	C - S	7.08 Ω
Fan	White - Grey	125 Ω
	White - Blue	146 Ω

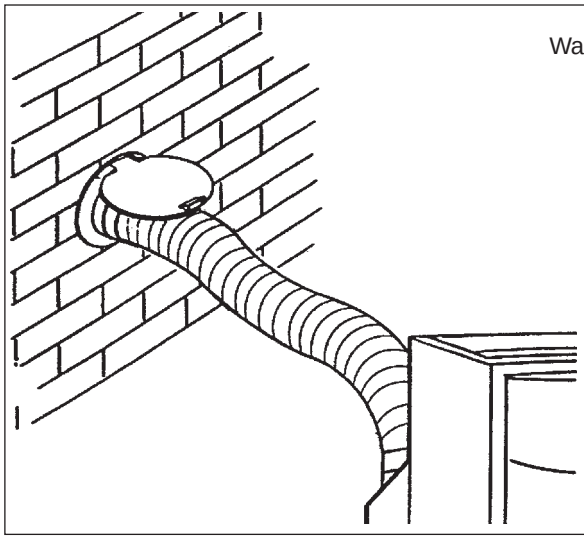
11 OPTIONAL ACCESSORIES

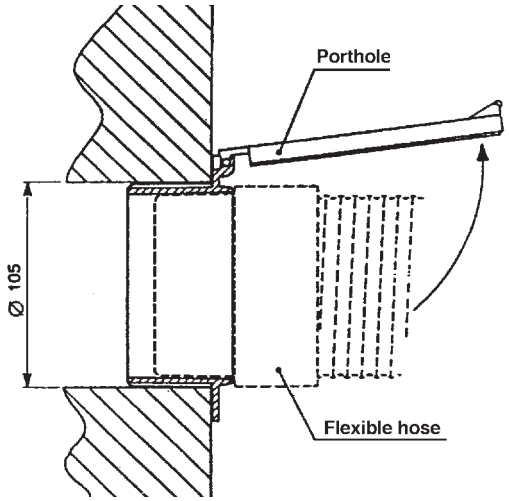
Window installation

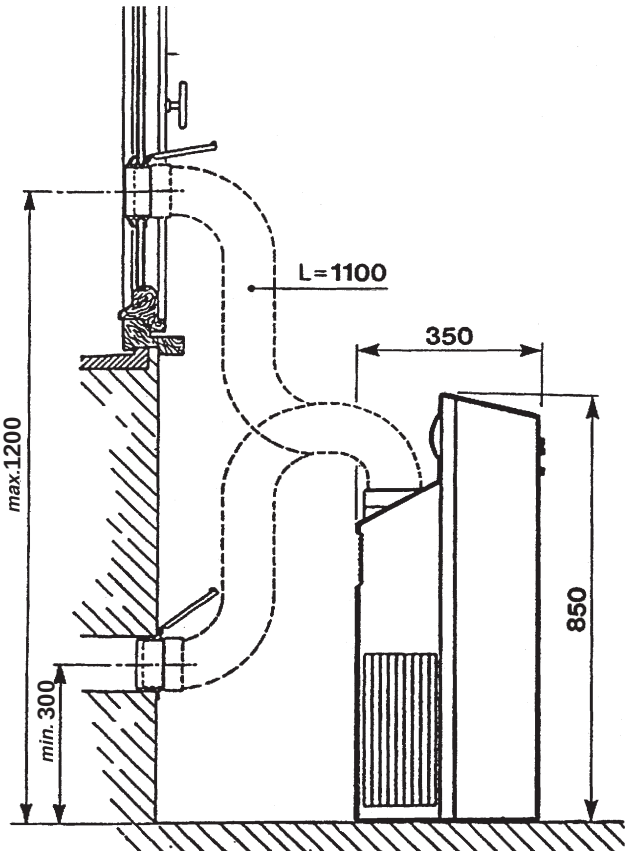




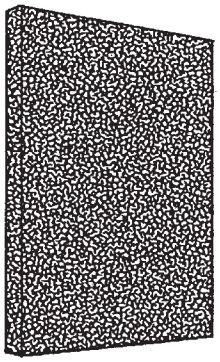
Wall installation



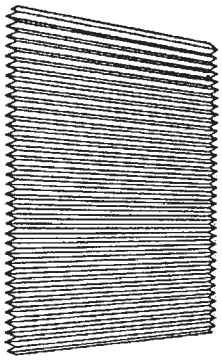




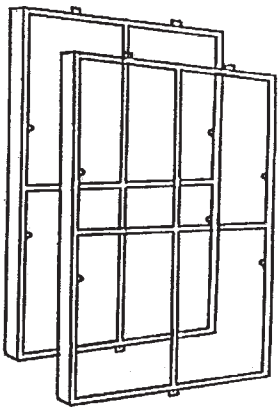
Filter kit



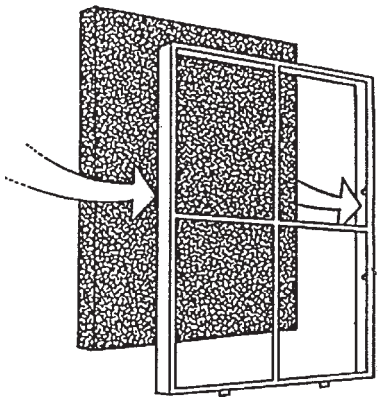
Activated carbon filter

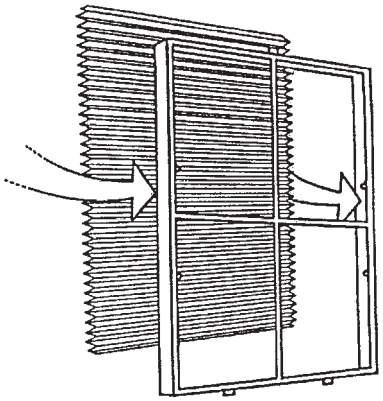


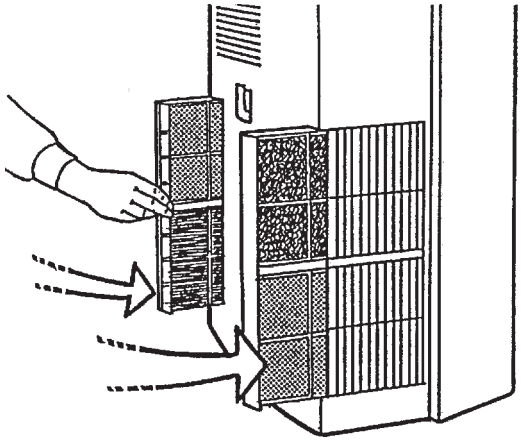
Electrostatic filter



Filter frames







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Order No. 15173-74, March 1997. Supersedes Order No. (new). Printed in Italy