OLIMPIA SISTEMARIA

INSTALLATION AND MAINTENANCE HANDBOOK

INDEX

1 Premise

The installation and maintenance of air-conditioning devices such as this one could prove dangerous due to the presence of cooling gas and live electrical parts within the appliance.

It would therefore be wise to leave the installation, initial start-up and maintenance exclusively to trained and qualified fitters, naturally after having read and understood this handbook. When in doubt contact the service assistance.

Maintenance such as cleaning and filter substitution may, however, be carried out by the user in that such tasks are neither particularly difficult nor dangerous.

During installation and maintenance all precautions specified in this handbook and on the labels inside each appliance must be observed as should normal common sense and also the security standards in force on the installation site. Furthermore, it is always neccessary to wear gloves and security glasses when in contact with the cooling part of this appliance.

Pay attention to avoid burns during welding.

IMPORTANT: Before making any electrical connections and before carrying out maintenance jobs it is essential to open the general disconnector in order to avoid electric shocks.

For repairs only original spare parts available from you supplier must be used.

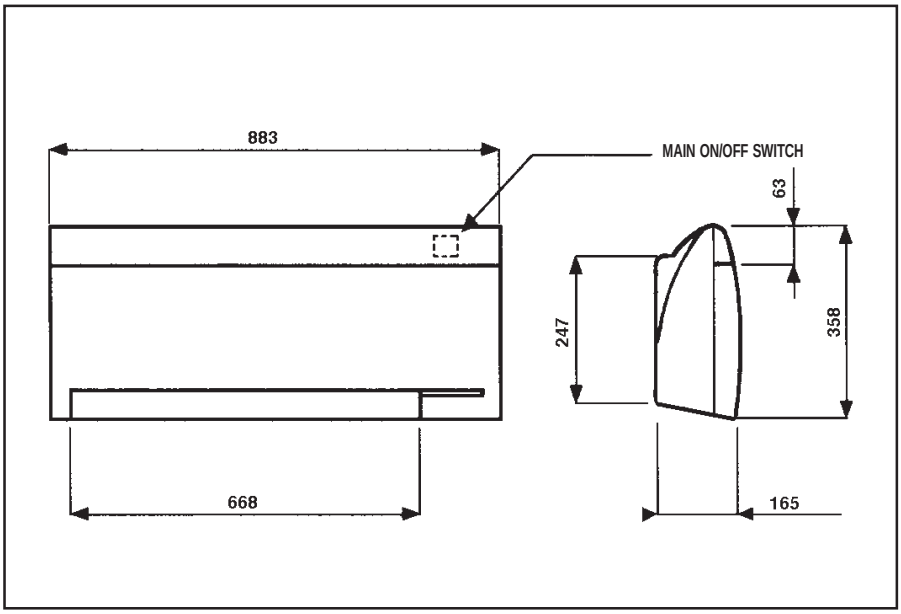
These fixtures may not be installed in the presence of explosive or flammable gases.

2 Tecnical details

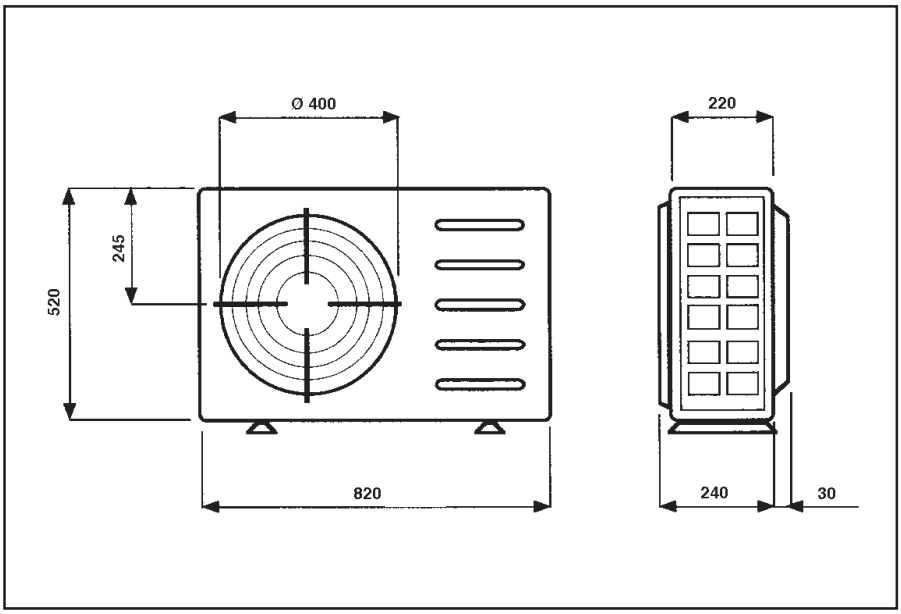
This part of the handbook contains all details necessary for a correct installation.

2.1 Overall dimensions

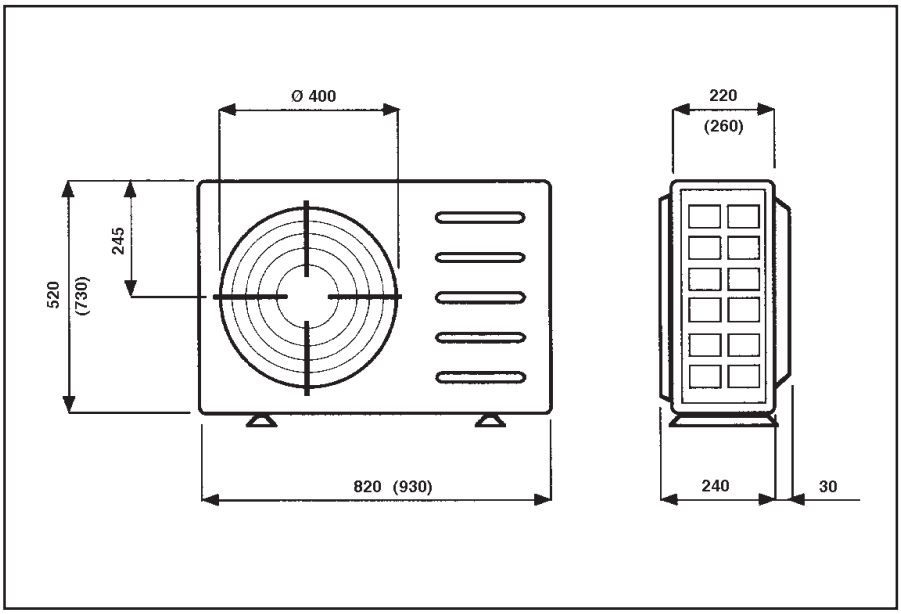
2.1.1 Internal units size 6.000 - 8.000 - 10.000 - 12.000 for cooling only and with heat pump for systems from the Split and Multisplit series.



2.1.2 External units size 6.000 - 8.000 - 10.000 - 12.000 for cooling only and with heat pump for systems from the Split series.



2.1.3 External units size 12.000 - 18.000 - 24.000 for cooling onlyand with heat pump for systems from the Multisplit series.



2.2 Technical Particulars

2.2.1 Air-Conditioners from the Split series

Model		6.000	6.000HP	8.000	8.000HP	10.000	10.000HP	12.000	12.000HP
Input*	V/F/Hz	230/50	230/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Nominal absorption**	A	2,6	2,8	3,4	3,4	4,6	4,6	6,2	6,2
Capacity***									
Cooling	W	1.890	1.875	2.223	2.223	2.755	2.755	3.625	3.625
	btu/h	6.450	6.400	7.650	7.650	9.350	9.350	12.300	12.300
Heating	W	——	1.890	——	2.337	——	2.905	——	3.725
	btu/h	——	6.450	——	7.960	——	9.860	——	12.650
Dehumidification	l/h	0,95	0,95	1	1	1,2	1,2	1,6	1,6
Absorbed power (max.)									
For cooling	W	560	590	740 (830)	740 (830)	960 (1.060)	960 (1.060)	1.290 (1.390)	1.290 (1.390)
For heating	W	——	640	——	810	——	930	——	1.230
Efficiency RatioEnergetic (EER)									
For cooling	(btu/W)	11,5	10,8	10,34	10,34	9,75	9,75	9,53	9,53
For heating	(btu/W)	——	10,	——	9,8	——	10,60	——	10,28
Diam. x sp. cooling line									
Gas	mm	9,5x1o10x1	9,5x1o10x1	9,5x1o10x1	9,5x1o10x1	9,5x1o10x1	9,5x1o10x1	12,7x1o12x1	12,7x1o12x1
Liquid	mm	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1	6,4x1o6x1
Internal section									
Max.Vel. Air capacity	m^3/h	320	320	380	380	440	440	530	530
	l/s	88,9	88,9	105,5	105,5	122,2	122,2	147,2	147,2
Sound level****	dBA	37	37	37	37	38	38	44	44
Med.Vel. Air capacity	m^3/h	280	280	320	320	380	380	410	410
	l/s	77,8	77,8	88,9	88,9	100	100	113,9	113,9
Sound level****	dBA	31	31	33	33	34	34	37	37
Min. Vel. Air capacity	m^3/h	230	230	240	240	320	320	340	340
	l/s	63,8	63,8	66,6	66,6	88,9	88,9	94,5	94,5
Sound level****	dBA	28	28	29	29	33	33		
Dimensions									
l	mm	880	880	880	880	880	880	880	880
h	mm	350	350	350	350	350	350	350	350
p	mm	165	165	165	165	165	165	165	165
Mass	kg	10	10	10	10	10	10	10	10
External Section									
Type of compressor		rotary	rotary	rotary	rotary	rotary	rotary	rotary	rotary
Max.Vel. Air capacity	m^3/h	1.200	1.200	1.350	1.350	1.500	1.500	1.700	1.700
	l/s	334	334	375	375	417	417	472	472
Sound level****	dBA	42	42	42	42	47	47	52	52
Min.Vel. Air capacity	m^3/h	1.000	1.000	1.100	1.100	1.350	1.350	1.450	1.450
	l/s	278	278	305	305	375	375	403	403
Sound level****	dBA	38	38	38	38	43	43	48	48
Dimensions									
l	mm	810	810	810	810	810	810	810	810
h	mm	530	530	530	530	530	530	530	530
p)	mm	220	220	220	220	220	220	220	220
Mass	kg	34	34	34	34	36	36	38	38

Note:

* The input voltage value must be between 216 and 244 V.

** The nominal absorptions are refered to the performances indicated in this table at an input voltage equal to 230 V.

*** The capacities indicated are refered to the following conditions: For cooling and dehumidification: Internal unit incoming air 27°C b.s. and 19°C b.u.with incoming air to external unit 35°C b.s.

For heating: Internal unit incoming air 21°C b.s. with external unit incoming air 7°C b.s. and 6°C b.u.

**** The sound levels indicated are refered to the following conditions:

For the internal unit: In the anechoic chamber 2 m high and 1m from the appliance.

For the external unit: In free field 1 m high and 1 m from the appliance.

2.2.2 Air-conditioners from the Multisplit series

Combination efficiency in the cool only version

Model		**12000 x 2**	**18000 x 3**	**24000 x 3**
Max. internal units that can be connected		2	3	3
Input*	V/F/Hz	230/1/50	230/1/50	230/1/50
Nominal absorption**	A	6,9	9,5	10,7
Cooling capacity				
maximum***	W	3.625	5.510	7.208
	btu/h	12.000	18.700	24.600
Absorbed power (max.)	W	1.280 (1.390)	1.980 (2.250)	2.600
Efficiency ratio				
Energetic (EER)	(btu/W)	9,53	9,58	10,47
Cooling lines connectable				
Q.ty x (diameter x sp.)				
Gas	mm	1 x (9,5 x 1 o 10 x 1)	1 x (9,5 x 1 o 10 x 1)	1 x (9,5 x 1 o 10 x 1)
		1 x (12,7 x 1 o 12 x 1)	2 x (12,7 x 1 o 12 x 1)	2 x (12,7 x 1 o 12 x 1)
Liquid	mm	2 x (6,4 x 1 o 6 x 1)	3 x(6,4 x 1 o 6 x 1)	3 x(6,4 x 1 o 6 x 1)
Type of compressor rotary		rotary	rotary	rotary
Max.Vel. Air Capacity	m^3/h	1.700	2.300	2.300
	l/s	472	639	639
Sound level****	dBA	52	56	58
Min.Vel. Air Capacity	m^3/h	1.450	1.800	1.800
	l/s	403	500	500
Sound level****	dBA	48	52	54
Dimensions (l x h x p)	mm	810 x 530 x 220	930 x 730 x 260	930 x 730 x 260
Mass	kg	39	58	66

Combination efficiency in the heat pump version

Model		**18000 x 2**	**24000 x 3**
Max. internal units that can be connected		2	3
Nominal absorption**	V/F/Hz	230/1/50	230/1/50
Power absorbed in cooling	A	8,15	10,7
Power absorbed in heating	A	9,5	10,4
Heating capacity			
maximum***	W	5.400	7.208
	btu/h	18.450	24.600
Power absorbed in cooling (maximum)	W	1.800	2.350
Power absorbed in heating (maximum)	W	1.720	2.280
Absorbed power (max.)	(btu/W)	10,25	10,47
Efficiency ratio	(btu/W)	10,7	10,66
Energetic (EER)			
Cooling lines connectable			
Q.ty x (diameter x sp.)			
Gas	mm	1 x (9,5 x 1 o 10 x 1)	1 x (9,5 x 1 o 10 x 1)
		2 x (12,7 x 1 o 12 x 1)	2 x (12,7 x 1 o 12 x 1)
Liquid	mm	3 x(6,4 x 1 o 6 x 1)	3 x(6,4 x 1 o 6 x 1)
Type of compressor rotary		rotary	rotary
Max.Vel. Air Capacity	m^3/h	2.300	2.300
	l/s	639	639
Sound level****	dBA	56	58
Min.Vel. Air Capacity	m^3/h	1.800	1.800
	l/s	500	500
Sound level****	dBA	52	54
Dimensions (l x h x p)	mm	930 x 730 x 260	930 x 730 x 260
Mass	kg	64	66

Note:

* The input voltage value must lie within the limits indicated (216 and 244 V)

** The nominal absorptions are in relation to the performances indicated in this table at an input voltage of 230 V.

*** The indicated capacities are in relation to the following conditions:
Internal unit incoming air at 27°C b.s. and 19°C b.u. with external unit incoming air at 35°C b.s.

**** The indicated sound levels are in relation to the following conditions: In free field 1 m high and 1 m from the appliance.

Features of the outdoor cool only units

Model		07	09	12
Max.Vel. Air capacity	m^3/h	380	440	530
	l/s	105,5	122,2	147,2
Sound level****	dBA	37	38	44
Med.Vel. Air capacity	m^3/h	320	360	410
	l/s	88,9	100	113,9
Sound level****	dBA	33	34	37
Min.Vel. Air capacity	m^3/h	240	320	340
	l/s	66,6	88,9	94,5
Sound level****	dBA	28	29	33
Dimensions (l x h x p)	mm	880 x 350 x 165	880 x 350 x 165	880 x 350 x 165
Mass	kg	10	10	10

Features of the outdoor heat pump units

Model		09HP	12HP
Max.Vel. Air capacity	m^3/h	440	530
	l/s	122,2	147,2
Sound level****	dBA	38	44
Med.Vel. Air capacity	m^3/h	360	380
	l/s	100	106
Sound level****	dBA	34	37
Min.Vel. Air capacity	m^3/h	320	340
	l/s	88,9	94,5
Sound level****	dBA	29	33
Dimensions (l x h x p)	mm	880 x 350 x 165	880 x 350 x 165
Mass	kg	10	10

Note:

* The indicated sound levels are in relation to the following conditions:
In a semi-riverberating room 2 m high and 1 m from the appliance.

Features of the indoor cool only units that can be combined

Dual Model, btu/h (W)

Ext. unit	Int. units	Capacity of int. units	Total capacity*
	09HP	11.100 (3253)	11.100 (3253)
	12HP	13.000 (3810)	13.000 (3810)
	09HP+12HP	8.800+9.200 (2579+2696)	18.000 (5275)
18000 X 2	09HP+09HP	8.800+8.800 (2578+2578)	17.600 (5156)
	12HP+12HP	9.200+9.200 (2696+2696)	18.400 (5392)

Trial Model, btu/h (W)

Ext. unit	Int. units	Capacity of int. units	Total capacity*
	09HP	11.200 (3282)	11.200 (3282)
	12HP	13.200 (3868)	13.200 (3868)
	09HP+12HP	10.300+11.200 (3018+3282)	21.500 (6300)
	09HP+09HP	10.300+10.300 (3018+3018)	20.600 (6036)
24000 X 3	12HP+12HP	11.200+11.200 (3282+3282)	22.400 (6564)
	09HP+09HP+09HP	7.950+7.950+7.950 (2329+2329+2329)	23.850 (6988)
	09HP+09HP+12HP	7.800+7.800+8.400 (2285+2285+2461)	24.000 (7031)
	09HP+12HP+12HP	7.800+8.250+8.250 (2285+2417+2417)	24.300 (7119)
	12HP+12HP+12HP	8.200+8.200+8.200 (2403+2403+2403)	24.600 (7209)

Features of the indoor heat pump units that can be combined

Dual Model, btu/h (W)

Ext. unit	Int. units	Capacity of int. units	Total capacity*
	07	8.200 (2416)	8.200 (2416)
	09	9.300 (2740)	9.300 (2740)
	12	11.000 (3241)	11.000 (3241)
	07+07	5.600+5.600 (1650+1650)	11.200 (3300)
	07+09	5.200+6.400 (1532+1885)	11.600 (3417)
12000 x 2	07+12	5.000+7.200 (1473+2121)	12.200 (3594)
	09+12	5.500+6.800 (1620+2003)	12.300 (3623)
	12+12	6.300+6.300 (1856+1856)	12.600 (3712)

Trial Model, btu/h (W)

Ext. unit	Int. units	Capacity of int. units	Total capacity*
	07	8.200 (2416)	8.200 (2416)
	09	9.600 (2828)	9.600 (2828)
	12	12.500 (3683)	12.500 (3683)
	07+07	7.200+7.200 (2121+2121)	14.400 (4242)
	07+09	7.100+9.200 (2092+2710)	16.300 (4802)
	07+12	6.400+11.700 (1886+3447)	18.100 (5333)
	09+12	7.900+10.300 (2327+3035)	18.200 (5362)
18000 X 3	12+12	9.100+9.100 (2681+2681)	18.200 (5362)
	07+07+07	6.000+6.000+6.000 (1767+1767+1767)	18.000 (5301)
	07+07+09	5.400+5.400+.7400 (1591+1591+2180)	18.200 (5362)
	07+07+12	4.900+4.900+8.400 (1443+1443+2464)	18.200 (5362)
	09+09+09	6.100+6.100+6.100 (1797+1797+1797)	18.300 (5391)
	07+09+12	4.400+6.100+7.800 (1296+1797+2298)	18.300 (5391)
	09+09+12	5.700+5.700+7.000 (1679+1679+2062)	18.400 (5420)
	12+12+12	6.150+6.150+6.150 (1812+1812+1812)	18.450 (5436)

Trial Model, btu/h (W)

Ext. unit	Int. units	Capacity of int. units	Total capacity*
	07	8.900 (2608)	8.900 (2608)
	09	10.500 (3076)	10.500 (3076)
	12	13.600 (3985)	13.600 (3985)
	07+07	8.700+8.700 (2549+2549)	17.400 (5098)
	07+09	8.600+10.300 (2520+3018)	18.900 (5538)
	07+12	8.600+11.900 (2520+3487)	20.500 (6007)
	09+12	10.200+11.700 (2989+3428)	21.900 (6417)
	09+09	10.200+10.200 (2989+2989)	20.400 (5978)
	12+12	11.500+11.500 (3369+3369)	23.000 (6739)
24000 x 3	07+07+07	7.350+7.350+7.350 (2153+2153+2153)	22.050 (6461)
	07+07+09	7.300+7.300+7.900 (2139+2139+2315)	22.500 (6593)
	07+07+12	7.300+7.300+8.300 (2139+2139+2432)	22.900 (6710)
	07+09+09	7.200+7.900+7.900 (2110+2315+2315)	23.000 (6739)
	09+09+09	7.900+7.900+7.900 (2315+2315+2315)	23.700 (6944)
	07+09+12	7.200+7.900+8.100 (2110+2315+2373)	23.200 (6798)
	09+09+12	7.800+7.800+8.300 (2285+2285+2432)	23.900 (7003)
	07+12+12	7.100+8.200+8.200 (2080+2403+2403)	23.500 (6885)
	09+12+12	7.800+8.150+8.150 (2285+2388+2388)	24.100 (7061)
	12+12+12	8.200+8.200+8.200 (2403+2403+2403)	24.600 (7208)

Note:

* The indicated capacities are refered to the following conditions:
Internal unit incoming air at 27°C b.s. and 19°C b.u. with external unit incoming air at 35°C b.s.

Furthermore, when one or more of the internal units has/have been disactivated (manually or by means of the thermostat) the system ignores its/their presence and therefore the capacity of the still active internal unit(s) increases as if it/they was/were the only unit(s) connected to the external unit.

Working Limits (Split and Multisplit):

for cooling: external temperature*: 15 (10)°C b.s.min. / 43°C b.s. max.
room temperature: 18°C b.s. 12°C b.u. min. / 32°C b.s. 24° C b.u. max.
for heating: external temperature: -8°C b.s. min. / 15°C b.s. 10°C b.u. max.
room temperature: 12°C b.s. min. / 25°C b.u. max.

Note*:

* The value between the brackets refers to the Multisplit model.

2.3 List of supplied accessories

The consignment consists of all parts specified in the following table. It would be wise to check that all the articles are near at hand before proceeding with assemblage.

Name	Q.ty	Outline	Packed together with Int. unit	ext.unit
External unit	1			X
Internal unit	1*		X	
Remote control with infrared rays	1		X	
Alkaline batteries for remote control	2		X	
Support for wall mounting of remote control	1		X	
Internal unit fixing plate	1		X	
Screws and blocks for fixing plate to wall	1 set		X	
Useris Instructions Handbook	1		X	
Installation handbook	1		X	
Nuts for cooling connections (for Multisplit models only)	1 set			X
Fixing template for the wall plate	1		X	

** For the Multisplit series the quantity of internal units may vary from one to three depending on the system configuration ordered. All internal units in above table are to be found in both the Split and Multisplit series.*

3 Installation mode

In order to insure that the appliance is installed correctly, it is essential to follow all the guidelines specified in this part of the handbook. If these instructions are not followed the applianceis correct function cannot be garanteed. In such a case malfunction cannot be attributed to product quality and hence the manufactureris garantee is rendered void.

3.1 Location selection of internal unit

The internal unitis location must be selected so that:

- The bottom of the appliance is neither less than 2 m nor more than 3 m from the ground.

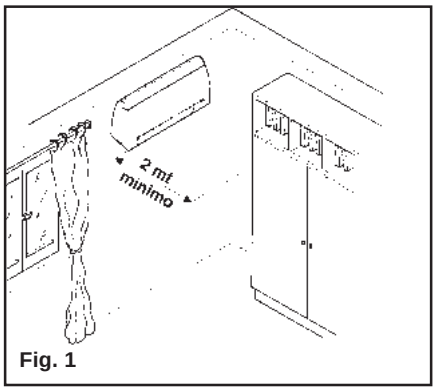


Fig. 1

- The wall onto which the appliance is to be fixed is strong enough to support such a weight.
- Enough space is left around the appliance in order to allow the air to circulate freely and to permit maintenance of the appliance as specified in the overall dimensions (see paragraph 2.1).
- Neither air-intake nor air-outlet is obstructed; the presence of walls or barriers within 2 m from the outlet of the appliance, could result in air bypasses and a consequent reduction in the applianceis output (**fig. 1 - fig.1bis**).

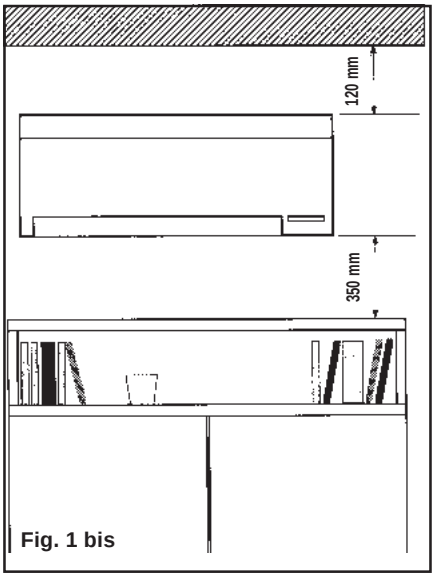


Fig. 1 bis

- Condensate drainage is facilitated.
- The emission of air does not hit people directly, especially those within 1,5 m from the appliance.
- The appliance is not in the vicinity of radios, HI-FI systems, television sets, etc.
- The remote controlsis signals may be received be the appliance.

3.2 Internal unit assembly

IMPORTANT: The cooling and condensate pipes may be connected only in the positions indicated in the overall dimensions.

3.2.1 Fixing plate

The fixing plate onto which the internal unit is to be hooked must be positioned keeping in mind the applianceis dimensions indicated. Assemblage should be carried out as follows:

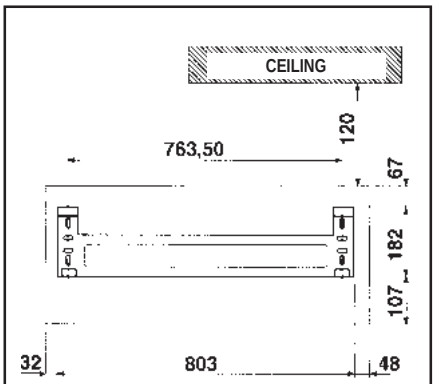


Fig. 2

a) The plate is fixed to the wall in the selected location by means of the four blocks and screws supplied. Other types of screws and blocks may also be used (diam. 8 mm), as long as they have a raised head. If the wall onto which the plate is to be fixed is made of wood then the plate must be attached with wooden screws with a raised head and a 5,5 mm diameter.

b) Tighten the screws slightly.
c) **Use a water level to level the plate** (**fig. 3**).

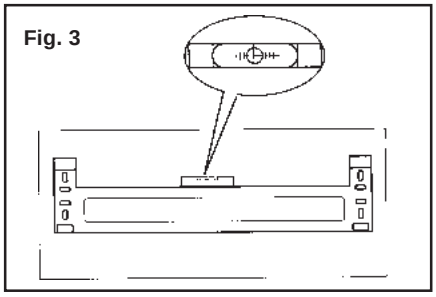


Fig. 3

d) Tighten the srews completely.
e) Check the plateis stability by pulling it downwards and to the side.

3.2.2 Internal unit assembly

Once the plate has been fixed, assemble the internal unit using the following preocedure:

a) If the connection lines are at the back of the appliance, a 100 mm hole must be drilled in the wall with an outward 5% gradient (**fig. 4**) in order to facilitate condensate removal. The position of the hole is indicated in fig. 2.

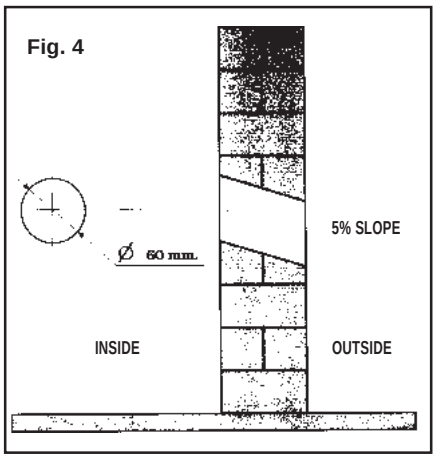


Fig. 4

The best procedure is to make a preliminary hole in the wall with a 8-10 mm nail in correspondence with the centre of the hole to be drilled and then bore the definitive hole using a drill with a guided cup. If there is an "external air intake" included in the appliance, then a hole must be drilled for this also, in the position indicated in the instructions supplied with the accessory and assemble it in accordance with these instructions.
b) Insert the condensate removal line, cooling line and the wires for electrical connection or the raceway in which they are contained into the hole.
c) Remove the applianceis front panel in the following manner (**fig. 5**):

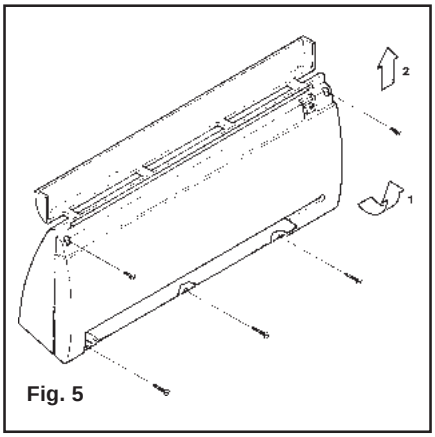


Fig. 5

- remove the three screws from the air outlet and the other two from under the upper door,
- grip the frontal panel from below, turn it upwards to free it from the lower part,
- lift the panel in such a way as to unhook it from the two hooks under the upper door.

d) Bend the lines to the right (**fig. 6**) in the direction of the connections. Use a tube bending spring to avoid "pinching" the lines.

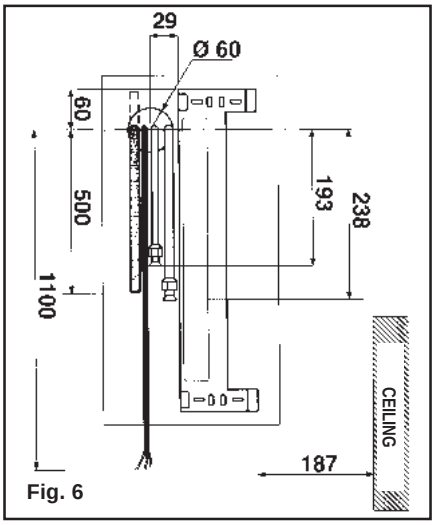


Fig. 6

e) Hook the appliance to the upper part of the plate (**fig. 7**) in such a way that the lower part may be lifted.

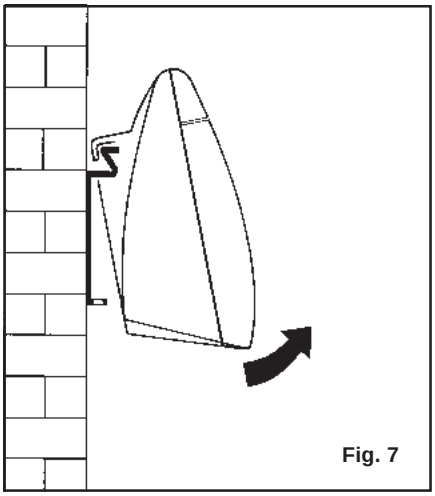


Fig. 7

f) Pass the external unit connecting wires inbetween the motor and the electronic card casing and connect them up to the connecting terninal board (**fig. 8**) in accordance with the modes indicated in the electric circuit arrangement (see paragraph 3.7).

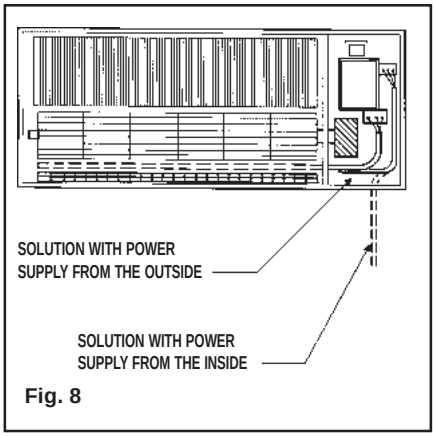


Fig. 8

g) Place a stopper between the appliance and the wall (**fig. 9**) to create sufficient space for the cooling and condensate connections to be carried out according to the modes specified in paragraph 3.5 and 3.6.

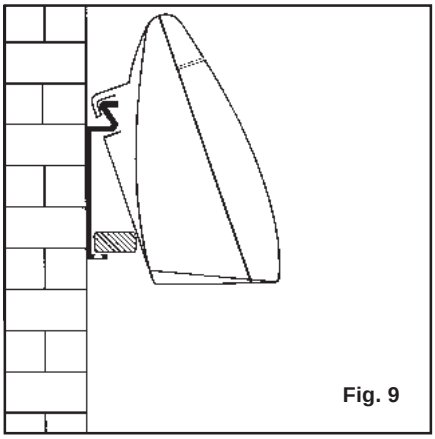


Fig. 9

h) Remove the stopper, lift the device slightly and lower it in order to connect it to the plateis lower hooks resulting in a perfectly sturdy fixture (**fig. 10**).

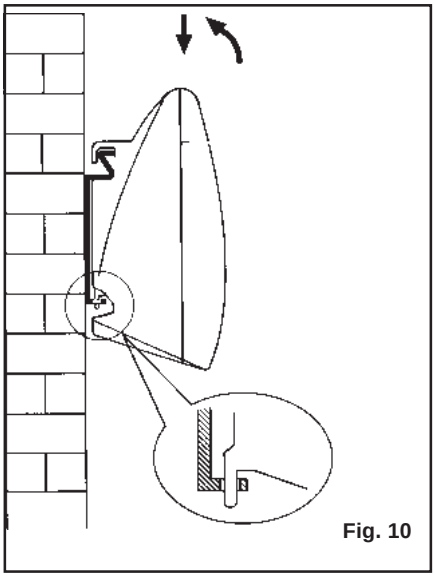


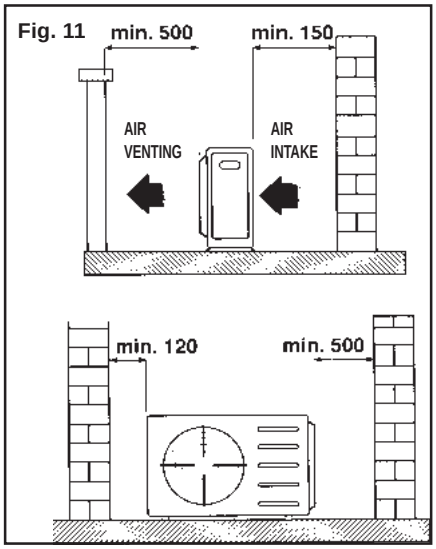
Fig. 10

i) Pull the appliance downwards and to the side to check that it has been hooked up properly to the plate.
j) Connect to the mains as indicated in paragraph 3.7.
k) Close the front panel once more, tighten the screws inside the air outlet and the two screws within the upper door.
l) Check once again that the unit is perfectly level or, at most, that it slants 2 mm towards the side where condensation is drained.

3.3 Location selection of external unit

The external unitis location must be selected so that:

- The appliance is protected from direct sunlight.
- The base is strong enough to hold the weight of the appliance; if, in order to carry out maintenence jobs, it is necessary to stand on the base, then the said base will have to be strong enough to hold both the person and the appliance.
- The appliance remains above the base at a distance equal to that of the maximum foreseeable snowfall.
- The appliance never remains exposed to heavy downpours (as can happen when a drain pipe gets clogged up and the gutter overflows).
- Sufficient space is left around the appliance to inable air circulation and maintenance as specified in the overall dimensions (see paragraph 2.1).
- Pathways are not obstructed.
- The appliance can be securely fixed to the base.
- Neither fumes nor noise emissions can disturb the neighbourhood in any way. As regards noise levels, the Hygiene Regulations in force on the site must always be respected. If noise levels are too high, soundproofing should be installed without obstructing neither air-circulation nor maintenance.
- The appliance is facing prevalent winds according to **fig. 11**.



- The appliance is not in a leeward position as regards burnt gas smoke stacks and does not undergo contact with vapours and oily or corrisive gas emissions.
- The condensate can be easily removed (in the case of heat pump appliances).
- The internal unit connecting lines (or internal units in the case of the Multisplit series) are not longer than 15 m in each direction (when more than 10 m, the charge must be topped up with 20 g of R22 for each extra meter). Furthermore, the maximum difference in height between the external and internal unit (or in the case of Multisplit, the internal units) is not more than 5 meters.

The external unit must be perfectly horizontal and therefore before going ahead with its positioning it is essential to ensure that the support surface is perfectly level.

If the appliance has to be installed in an overhanging position on the wall it is advisable to use an "Assembly bracket for the external unitis wall-mounting" which is available on request. As regards the assembly follow the instructions enclosed in each respective box.

We would also like to indicate some precautions to be taken during assembly:

In areas susceptible to snowfalls.
By means of support walls or a base of metal sections the appliance must be lifted above ground level at a distance greater than the height of a maximum foreseeable snowfall because:

- if the appliance does not work by heat pump, during the thaw, the water could get into the system causing damage to the electrical devices,
- if the appliance works by heat pump, the drifting snow could obstruct the regular air circulation and make condensate drainage difficult.

Appliance assembly on ground level, roof, terrace, etc. in not easily accessible locations
The base must be lifted to avoid stagnant rain water and dirt accumulation underneath the appliance. It is therefore advisable to raise the appliance approximately 15 cm off the ground by means of two small walls onto which the appliance is fixed with two anchor bolts. The above is not necessary, however, if the appliance is to be installed on a balcony as balconies already slope to aid rainwater drainage and are usually found in fairly protected locations hence there should be no danger of dirt accumulation under the appliance.

On a rigid metal base (Brackets, metal support sections, etc.)
In this case the appliance must always be fixed to the base by means of elastic vibration-damping blocks (not supplied with the appliance) underneath the four support points which are selected in relation to the applianceis weight. Furthermore, the base must be rigid enough to avoid amplifying the vibrations caused when the appliance is running.

Heat pump appliances
When the heating is on, a condensate or water is produced in the external unit due to defrosting. Such water must be eliminated to avoid stagnation. In particular, when the appliance is assembled directly on the ground a drainage channel should be made around the base of the appliance which depends on the drainage system running from the building. If the appliance is installed on a balcony it is possible to position it over a tray in galvanized sheet iron or better still in stainless steel (not included with the appliance) which remains above ground level and which is equipped with a drainpipe from which the condensate can be made to flow using the most opportune method (for example, into a gutter).

Furthermore, even if the appliance is resistant in inclement weather, it should be assembled in a location which remains protected or it should be covered with its own roof which permits the air to circulate freely through the appliance.

3.4 External unit assembly

After checking the suitability of the base (if prepared by a third party) mount the external unit adopting the following precedure:

a) Position the appliance on the base using the elastic vibration-damping blocks if necessary.
b) Tighten the anchor bolts slightly.
c) Check that the appliance is horizontal in both directions (**fig. 12**). If necessary, shim the supports until the appliance is level.

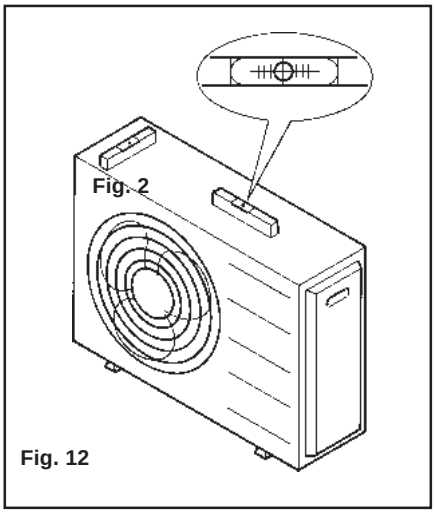


Fig. 12

d) Tighten the anchor bolts.

e) Open the attachment access door (**fig. 13**).

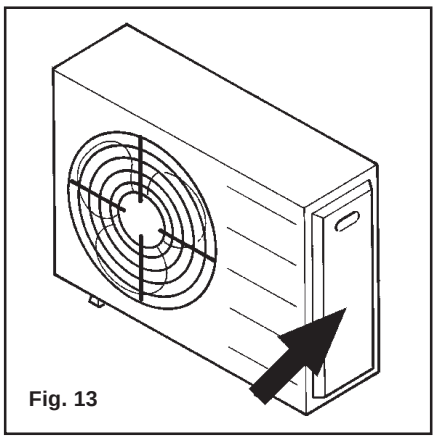


Fig. 13

f) Connect up the cooling lines according to paragraph 3.5.
g) Connect up the electrical lines as specified in paragraph 3.7.
h) Reassemble the access door to the connections.

3.5 Laying and connection of cooling lines

IMPORTANT: The presence of dirt or water inside the pipes to be used for the cooling lines could have a negative effect on the applianceis correct running. Normal copper pipes for thermohydraulic purposes do not offer the necessary garantees for such a task. **It is therefore essential to use copper pipes for cooling purposes only which have been cleaned and sealed within the factory**. Such pipes are annealed and delivered in rolls with the ends sealed. Before assembling and after cutting off the required pieces it is essential to seal both the ends of the roll and of the cut-off pieces. Furthermore, the installation may be quickened by using preinsulated refrigeration copper pipes which do not require further lagging.

Granted that the pipes employed have to have the same diameters and thicknesses as indicated in paragraph 2.2 "Technical Particulars", the installation and connection of the lines must be carried out according to the following procedure:

a) Identify the shortest route linking the internal and external unit creating as few bends as possible (the shorter the route and the fewer the bends, the better the applianceis output). The length of the internal unit connecting lines (or of the lines connecting up all the internal parts of the Multisplit) must not be more than 15 m in each direction (in any case, for more than 10 m it is necessary to top up the charge with 20 g of R22 for each extra meter).

b) Cut off the required piping - it is better to cut off a little more than required - and seal the ends.

IMPORTANT: The pipes should on no account be cut with a saw as the shavings could get into the piping. The cutting should therefore be carried out using a wheel pipe cutter (**fig. 14**).

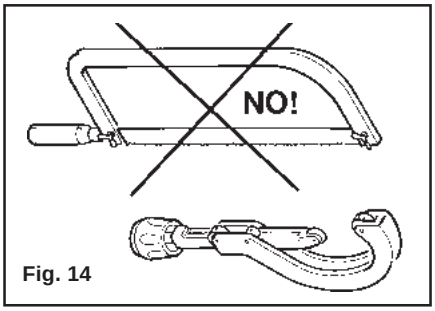


Fig. 14

c) Insert the pipes into the lagging sheaths if preinsulated pipes are not used. Each sheath end must be joined and sealed with adhesive tape. The lagging sheaths must be made of polyurethane closed cell foam and must have the following characteristics:
   - maximum trasmission coefficient: 0,45 W(Kx m^2) or 0,39 kcal/(h x °C x m^2),
   - the liquid lines must have a thickness of at least 7 mm,
   - the gas lines must have a thickness of at least 10 mm. Avoid putting both lines into the same lagging: the applianceis efficiency could be compromised as a result.

d) Lap the lines with the raceway within which the electrical cables are housed (see paragraph 3.7) fixing it with adhesive tape or plastic clamps at regular intervals.
e) Lay down the piping from the internal unit through to the external unit (or vice versa) making sure that the lagging does not get damaged in any way when passed through the walls.
f) If the piping is not connected up to the appliance immediately, before leaving the site remember to:
   - seal the ends of the piping,
   - Ask the person in charge of the site to make sure that the piping does not get squashed, bent or damaged in any way.

g) The piping and the appliances (internal and external units) are connected by means of binders. After the piping has been cut and the nut which is found on the connection has been inserted onto the piping (**fig. 15**), the piping must be binded in accordance with the norms.

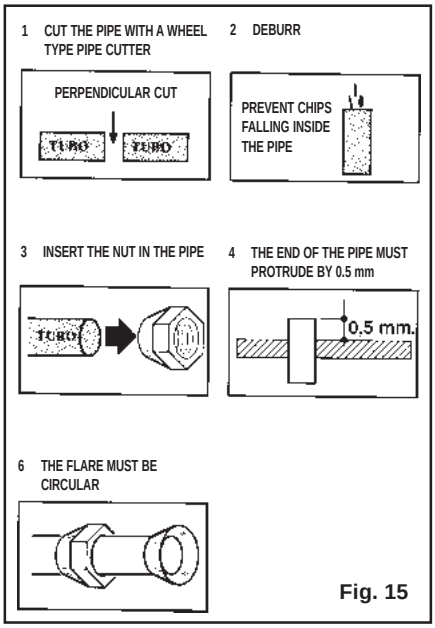


Fig. 15

h) In order to tighten each joint it is necessary to:
   - grease the thread with refrigeration oil (do not use other types of oil),
   - close the joint initially by hand,
   - tighten the joint with a dynamometrically calibrated spanner with the following torque values:

   - 14 " 18 Nx m (1,4 " 1,8 kgxm) for line attachments from 6,4 " 6 mm.
   - 33 " 40 Nx m (3,3 " 4,0 kgxm) for line attachments from 9,5 " 10 mm.
   - 50 " 60 Nx m (5,0 " 6,0 kgxm) for line attachments from 12,7 " 12 mm.

IMPORTANT: To avoid deforming the internal unitis attachments when tightening, hold the welded part of the joint with a spanner and tighten the other part with the dynamometric spanner.

i) Once the attachments have been tightened, the lineis seal must be tested. In order to test the seal a cylinder of anhydrous nitrogen is connected to the external unitis gas pipe service connection (**fig. 16**) (after having unscrewed the cap) (it is connected to the service connections in the case of the Multisplit external units) by means of a flexible with a 1/4" attachment and a pressure reducer.

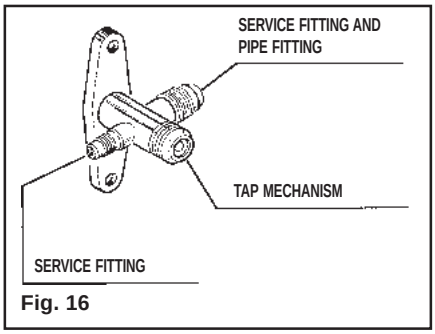


Fig. 16

Open the cylinder and the pressure reducer until the pressure in the circuit reaches 3 bars and then close the

cylinder. If the pressure does not descend after 3 minutes, this means that there are no major leaks and the pressure can be raised to 15 bars. After the cylinder is closed, the pressure must remain constant for another 3 minutes. In any case, to be completely sure it is advisable to apply a solution of soap suds and check that bubbles do not formed in the solution. If the pressure descends and the solution test gives no results, insert some R22 into the circuit and identify the leakage by means of a leak finder. Since there should be no weldings in the system, the leaks are nearly always found around the joints. Eliminate all gas leaks by tightening or repairing the joints and repeat the seal test. Once the operation has been concluded, reassemble the caps, checking carefully that they have been closed properly.

IMPORTANT: In the case of Multisplit this operation must be carried out on all the connections one after the other. The search for gas leaks must be carried out each time on the circuit which depends on the connection in question.

j) Once the seal test has been passed, every trace of air, nitrogen and humidity must be completely extracted from the circuit. Lower the pressure within the circuit by means of a vacuum pump until the pressure reaches an absolute value equal to 50 Pa and, leaving the pump connected, maintain this pressure for a while until sure that all impurities have been removed. To carry out such an operation it is necessary to procure a vacuum pump with a capacity equal to at least 40 l/min (0,66 l/s) and:
   - By means of a flexible with a 1/4 attachment connect a header gauge to the external unitis gas line service connection (after unscrewing the cap). See fig. 16 for the connection modes. Activate the vacuum pump and leave it running for at least 2 hours.
   - If after 2 hours the pressure continues to be greater than 50 Pa this means that there was alot of humidity in the circuit and that there is a leak in the same circuit. Leave the pump running for another 3 hours. If at the end of this time the pressure still has not descended to 50 Pa, it will be necessary to carry out a search for possible leakages.
   - Once the suction has been concluded, remove the flexible from the service connection while the vacuum pump is still running.
   - Finally, put the cap back on checking that it is closed properly.

IMPORTANT: For the Multisplit model this operation must be carried out by rotation on all the connections.

k) After opening the relevant cap, slowly open the tap on the intake line and also the tap on the liquid line which are found in the external unit, in order to allow the diffusion of the cooler within the appliance.

IMPORTANT: In the case of Multisplit, this operation must be carried out on all the external unitis taps to which an internal unit is connected; the operation must be carried out by rotation on all the connections. Finally close the caps and make sure they have been tightened properly.

3.6 Laying and connection of condensate removal lines

Each internal unit must be equipped with its own condensate drainage line which on one side depends on the internal unitis condensate drainage connection and on the other side depends on the buildingis water drainage system or on an open receptacle. Condensate drainage from the drain tray takes place exclusively due to gravity. Since, for encumbrance reasons, the tray is not very high, the drain head as a result, is somewhat limited. The drainage line should always have a gradient of at least 3% with the flow and must be constructed without any upward or counterslopes. The condensate drainage line may be constructed with any type of rigid or flexible pipe with an internal diameter of at least 16 mm. If the line leads into a sewerage system a seal-trap must be fitted before entrance into the sewer in order to avoid the diffusion of bad smells into the air-conditioned atmosphere. The seal-trap (**fig. 17**) must on no account have a 1,5 m difference in height less than the applianceis lower wire.

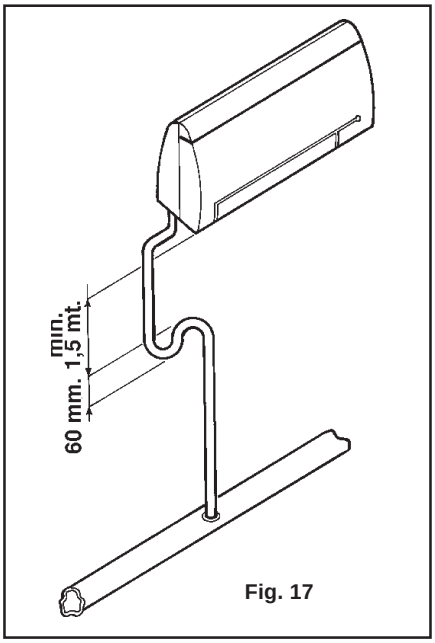


Fig. 17

If, on the contrary, the condensate drainage line flows into a receptacle (can etc.) such receptacle must be open in order to avoid backpressure which would make drainage difficult and the line end must never get completely submersed in the water (**fig. 18**).

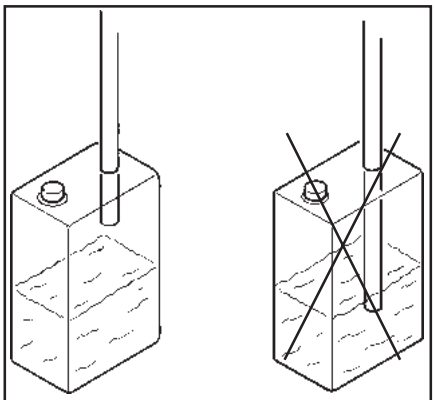


Fig. 18

IMPORTANT: After the condensate drainage line has been connected to the internal unit it is essential to check that it functions properly by slowly pouring half a liter of water into the tray and observing that the resulting flow is regular.

3.7 Laying and connection of electric lines

IMPORTANT: The applianceis connection to the mains must be carried out in conformity with the following instructions and with the norms in force in the place of installation. The appliance is equipped with an earthing system which must be connected to a fully efficient ground line according to the local norm.

The earthing must on no account be connected up neither to the water pipeline nor to the gas pipeline.

3.7.1 Power supply link up

The power must be supplied to the appliance by means of a general disconnector equipped with delayed fuses or with a thermomagnetic automatic circuit breaker with the following current capacities:

Model	Capacity
Split 6000	: 10 A
Split 6000 HP	: 10 A
Split 8000	: 10 A
Split 8000 HP	: 10 A
Split 10000	: 10 A
Split 10000HP	: 10 A
Split 12000	: 10 A
Split 12000HP	: 10 A
Multisplit 12000	: 16 A
Multisplit 18000	: 25 A
Multisplit 24000	: 25 A

For security reasons the general disconnector should be near the feeder and should also be in a clearly visible location.

The supply cordons must be provided with copper conductors with the following unitary sections (the under indicated values refer to a maximum lenght of the lines fo 15 meters). Besides the cordons must be of the type H07-RR-F and they must have a minimum diameter of 11,5 mm.

Model	**Conductor section mm²**	
	Earth	**Input (phase and neutral)**
Split 6000:	2,5	2,5
Split 6000 HP:	2,5	2,5
Split 8000:	2,5	2,5
Split 8000 HP:	2,5	2,5
Split 10000 :	2,5	2,5
Split 10000 HP:	2,5	2,5
Split 12000:	2,5	2,5
Split 12000HP:	2,5	2,5
Multisplit 12000:	2,5	4,0
Multisplit 18000:	4,0	6,0
Multisplit 24000:	4,0	6,0

The input and earthing cables must be connected:

For Split appliances
To the input terminal board in the internal unit in the position indicated (**fig. 19**) with three terminals: phase, neutral, and earth.

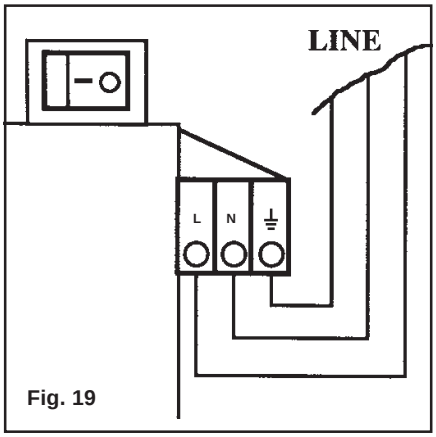


Fig. 19

For Multisplit appliances
To the input terminal board in the internal unit in the position indicated (**fig. 20**) with three terminals: phase, neutral, and earth.

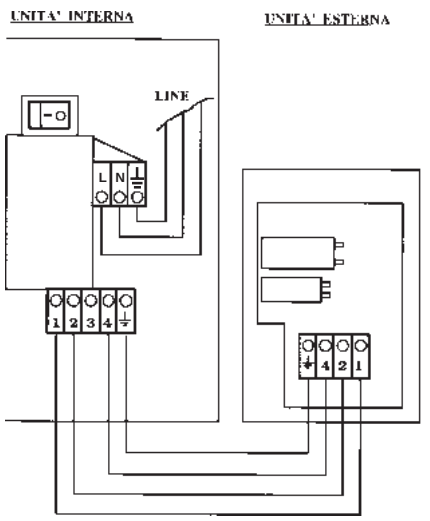
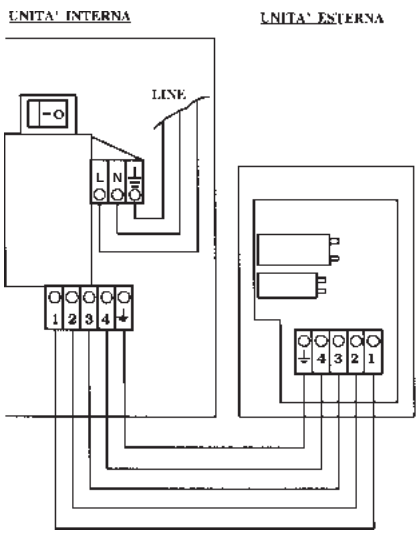
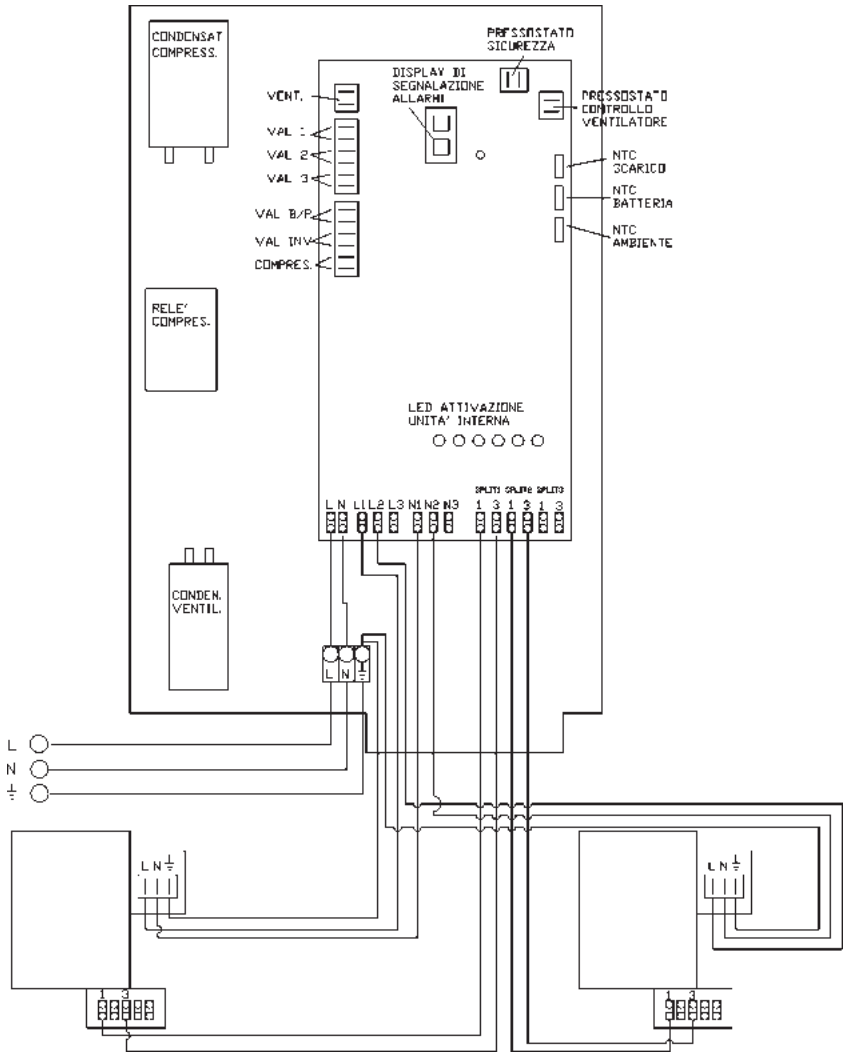


Fig. 21



HEAT PUMP

Fig. 22



NB: For the multisplit connection, mantain the power supply polarity of the indoor units, if the compressor led of the indoor unit is on but the respective led on the outdoor door does not turn on, reverse the power supply wires of the corresponding indoor unit, terminal no. 3 of the indoor and outdoor unit terminal board must only be connected for the hp models

Fig. 23

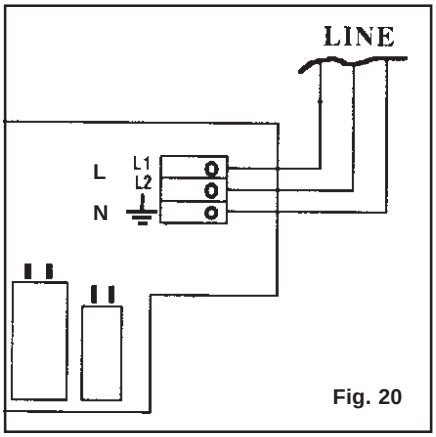


Fig. 20

3.7.2 Link up of connection wires (see also the diagrams inside the side of the sheet in front of the electric panel)

With the Split models, a connection must be made between the two units in order to carry the commands from the internal to the external unit. As for the multisplit model, the input is delivered to the external unit and then sorted out between the various internal units. All these connections must be carried out with copper wires which connect the applianceis connection terminals according to the diagram in **fig. 21** (Split), **22** (Split with heat pump) and **23** (Multisplit).
The connection cordons must be of the type H07-RR-F with outer diameter of 14,5 mm and they must have the following section (the under indicated values refer to a maximum lenght of the lines of 15 meters.

Split appliances

Cable				
1	2,5	2,5	2,5	2,5
2	2,5	2,5	2,5	2,5
3	—	1,5	—	1,5
4	1,5	1,5	1,5	1,5
5	2,5	2,5	2,5	2,5

Multisplit appliances

Model			
	DUAL	**TRIAL**	**INT. UNIT**
Cable			**N°**
L1	2,5	2,5	
N1	2,5	2,5	1
GND	2,5	2,5	
1-3	1,5	1,5	
L2	2,5	2,5	
N2	2,5	2,5	2
GND	2,5	2,5	
1-3	1,5	1,5	
L3	—	2,5	
N3	—	2,5	3
GND	—	2,5	
1-3	—	1,5	

IMPORTANT: If the cables have to be walled then install raceways to facilitate their removal in the future.

4 Appliance start-up and charge optimization

Before turning on the appliance it is essential to make sure that:

- the input voltage remains within the limits specified in paragraph 2.2 "Technical particulars". The appliance must not be turned on if the voltage is greater or less than that specified as it could undergo serious damage not covered by the garantee.
- the cooling charge inserted in the external unit within the factory has been introduced into the installation. If the charge has been introduced, the faucets on the external unitis gas and liquid connections should be open.
- the charge has not leaked due to the appliance being left off immediately after installation is completed. To carry out this operation it is necessary to unscrew the cap on the service valve which can be found on the external unitis gas line connection (or on one of the external unitis gas line connections in the case of the Multisplit appliance) and see if the circuitis pressure corrisponds at least to the saturation pressure at atmospheric temperature. If there is a possibility that a part of the charge has leaked it will be necessary to check the charge according to the modes indicated in the Technical Handbook.
- the air can circulate without difficulty through the internal (or the internal units in the case of Multisplit) and external units.

The applianceis general disconnector can then be closed as can its circuit breaker which is found on the right hand side at the inside of the upper door (fig. 23) and check that the consoleis green LED on the left lights up. Then, following the instructions enclosed in the Useris Instructions Handbook, turn the appliance on using the remote control.

A couple of minutes after the appliance has been turned on, the compressor is activated and the internal unit starts to give out cold air. In the case of hot pump appliances, one must also check that the appliance starts to pump hot air after switching the working mode. One must not forget that once the appliance has been turned on, hot or warm air is not given off immediately but after approximately 3 minutes.

Should the length of the cooling lines (in one direction) be greater than 10 meters (or greater than 10 meters for every internal unit in the case of Multisplit) a charge of 20 grams must be introduced into the system for each excess meter. If, for example, the Multisplit Dualis internal unit has a 13m line and a 14,5 m line, the topping-up amounts to:

(13 + 14,5 - 10 x 2) x 20 = 150 g

Topping up is carried out in the following manner:

a) Procure a charging station with a cylinder graduated in grams, a gauge collector with two flexibles, one of which must be connected on the gas side of the charging station and the other must be connected to the service valve on the external unitis gas line connection (or in the case of Multisplit, connected to the service valve on one of the gas lineis connections). Should a charging station not be available, the gauge collector may be connected to a R22 cylinder placed on a balance. The service valve is accessible once the cap has been removed.
b) Turn the appliance on and leave it running for a couple of minutes.
c) Slowly open the charging stationis or cylinderis faucet until the right quantity of R22 has entered into the system (the quantity can be observed from the index scale on the cylinder or from the balance).

IMPORTANT: When the cylinder or balance system is used it is essential that the cylinder is kept in a vertical position with the valve facing upwards (**fig. 24**).

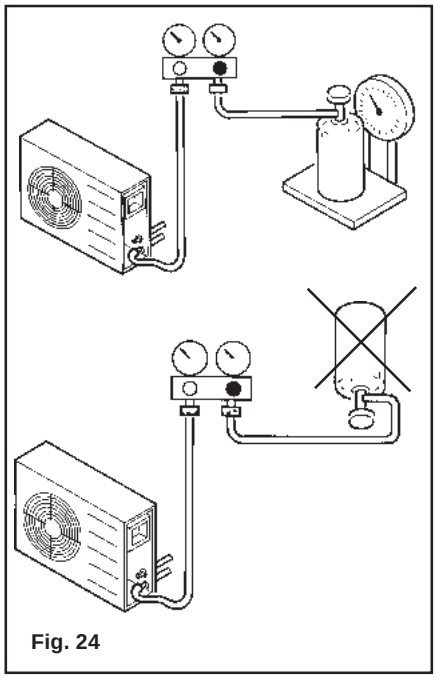


Fig. 24

Doing so the inlet of cooling liquid into the appliance is avoided which could have

grave consequences for the appliance.

e) When the operation is finished, remove the flexible from the service valve and close the cap firmly one more.

IMPORTANT: Avoid using more cooling liquid than is absolutely necessary as doing so could have a negative effect on the applianceis output. Additionally, surplus charging can be dangerous for the applianceis functioning.

5 Operating test and diagnosis for possible defects

Apart from the test described in paragraph 4, the appliance can also be subjected to a more general test with the objective of checking the correct electrical connection and the componentis functioning under various operating conditions. As regards the Multisplit model the test must be repeated on each internal unit. To carry out such a test the following procedure must be observed:

a) Close the general disconnector.
b) While the appliance is off use a pointed object to press the test microswitch which is to be found on the console (**fig. 25**) to the side the internal unitis delivery hole.

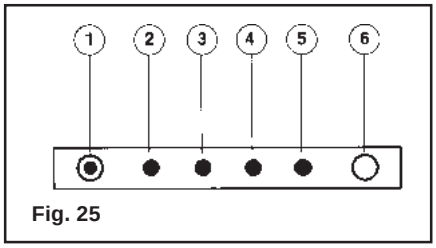


Fig. 25

c) Still pressing the test microswitch, close the applianceis circuit breaker inside the upper door.
d) Release the test microswitch.

When such operations have been carried out, the appliance should react as follows:

a) For a fraction of a second all the console LEDs light up one after the other.
b) The applianceis cooling effect is activated for two minutes or the heating effect (for two minutes) if it is a heat pump appliance. If a heat pump appliance is activated but remains cold, either the electrical connections are incorrect or the valve solenoid for the inversion of the cooling cycle is burnt out (for further details consult the Technical Handbook).
c) For the first 5 minutes all four of the consoleis LEDs light up. If one or more of the LEDs fail to light up, this means that they have burnt out and must be replaced (contact the supplieris service department).
d) If everything is in order and subsequently the LEDs light up which indicates that the probes function correctly; that is:
   - The green LED on the left of the room temperature probe.
   - The green LED on the right of the battery temperature probe.
   - The yellow LED to the extreme right of the outgoing air temperature probe. If one or more of the said LEDs fail to light up this means that the relative probe is disconnected or is not working properly.
e) After two minutes the internal unit runs once more on remote control.

IMPORTANT: If the appliance does not function as decribed above call the Service Department. The garantee will be rendered invalid should attempts be made to carry out repairs by a third party.

6 Periodic Maintenance

This type of air-conditioner does not require any particular periodic maintenance operations apart from:

a) cleaning the internal unitis air filter each time the respective LED lights up (See the Useris Instructions Handbook),
b) cleaning the external unitis battery once a year at the beginning of the season in which it is to be used (twice a year for heat pump appliances, that is, before the beginning of the heating season and that of the cooling season). For further information on this operation see the Useris Instructions Handbook.

Possible cooling leaks are indicated by the fouling of oil which appears at the leakage point (most of the time leaks come from the joints).

If the oil foulings correspond, the chargeis consistency must be checked in accordance with the instructions given in the Technical Handbook.

If the charge is proven scarse (still following the instructios given in the Technical Handbook):

a) Identify and eliminate the leakage,
b) Reset the charge.

In order to locate and repair damages of a more serious nature (compressor burn-out, solenoid valve burn-out, etc.) call the Service Department.

7 Conclusion

Before leaving the installation site collect the wrappings and use a damp cloth to remove any traces of dirt which were left on the appliance during assemblage (**fig. 26**).

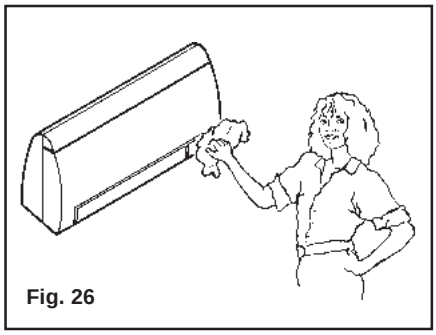


Fig. 26

Obviously the above is not strictly necessary, however, in the eyes of the user it demonstrates a certain professionalism on the part of the fitter.

In order to avoid unnecessary phone calls by the user, before leaving the installation site:

a) Illustrate the contents of the Useris Instructions Handbook to the user,
b) Illustrate the method used for cleaning the external unitis filter and battery
c) Clarify when and how the Service Department should be contacted.