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ROOMTOP

Horizontal Air/Air Unit
Heat pump

RTH

TECHNICAL GUIDE

Heat Pump

Models RTH 07 to 30

YORK®

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Index

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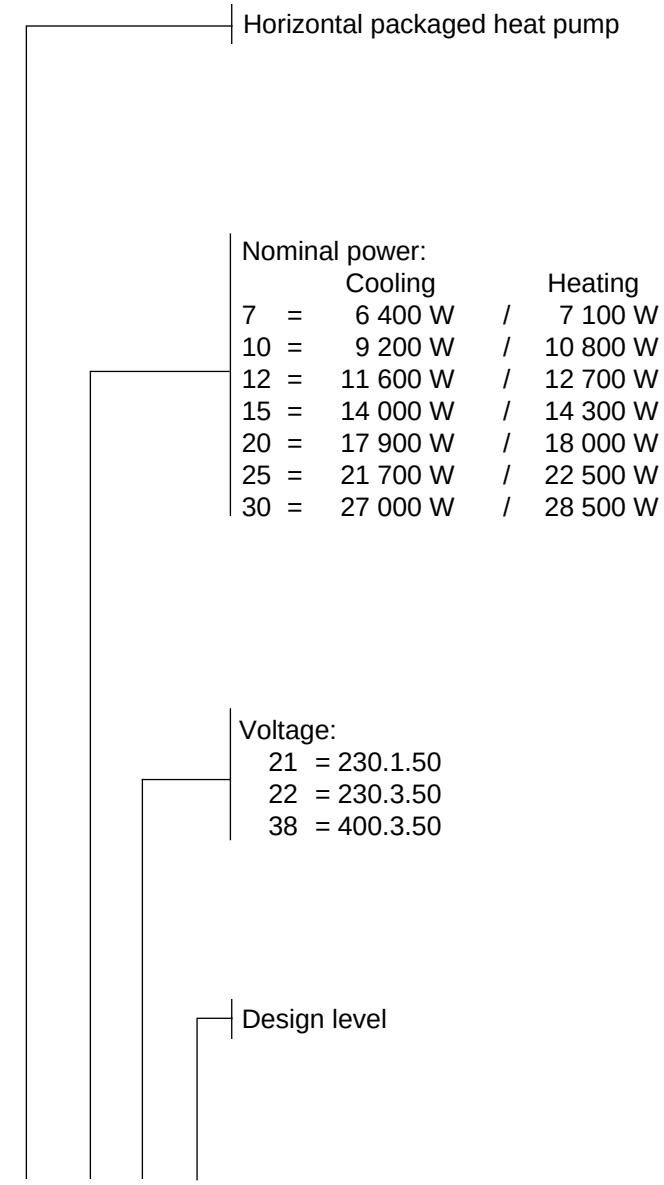
General

General description

The model RTH heat pump is an air to air type of equipment that provides air conditioning in summer and in winter by reversion of its operating cycle.
It can be located either indoors or outdoors since it is protected to withstand weathering and the centrifugal fans allow the connection of ductwork.
It is delivered totally equipped, factory tested and ready for the incorporation of the electric heater accessory, indoor or for ductwork.
Designed to achieve an important energy saving and a long operating life by the incorporation of an electronic control module.
Temperature adjustment is achieved by means of the 24 VAC ambient thermostat.

Nomenclature



RTH 7 21 A

Control

To achieve maximum energy saving and a perfect operation of the equipment, that will avoid breakdowns and prolong its operating life, the RTH heat pump incorporates the following features:

Balance point

Since the heat pump operates by extracting heat from the outdoor air, it is possible that sometimes this temperature is so low that the extracted heat is insufficient to satisfy the heating demand. For these conditions the electronic module has six balance points (between - 4 and 14 °C), one of which will be adjusted during the start-up. Below this temperature the supplementary electric heater will come into operation. The heat pump will nevertheless continue to operate with a COP greater than that of the electric heaters until the outdoor temperature drops below -20°C.
Below this temperature the heat pump will automatically stop operating and will only use the electric heaters to warm the space. This prevents the compressor from operating with very high compression ratios that will shorten its operating life.

Compressor safeties

A temperature sensing element protects the compressor against too high discharge temperatures.
A pressure cutout stops the compressor when the discharge pressure is too high.
It also actuates in case of a refrigerant leak or because of an insufficient air flow across the coils.

Defrost control

The defrost cycle starts after a period, set at will, of 30, 60 or 90 minutes after start or last defrost cycle and the liquid line temperature is -5°C or less.

Start timer

It prevents frequent stops and starts. After stopping, the unit does not start again until 2 or 5 minutes, set at will, have elapsed.

Control panel

The control of the RTH heat pump operation is done by means of thermostat that allows the following:

1- Setting of the desired temperature.
2- Automatic availability of heating or cooling as desired.
3- Control that the operation of the indoor fan be continuous or intermittent depending on the operation of the compressor.
4- Operate the electric heaters shutting down the rest of the unit.

Technical specifications

Mechanical specifications

Compressor

Of the vertical hermetic type, mounted on shock absorbent blocks, equipped with a low consumption motor.
It is delivered with a charge of a special oil that prevents foam formation and with an electric oil heater.

Compressor oil heater

Keeps the crankcase oil hot to ease starts and prevent the oil from being carried away from compressor.

Suction accumulator

Connected to the suction tube of the compressor it protects it against liquid strokes, preventing the oil from coming out of the compressor.

Suction exchanger

Formed by the suction and liquid tubes of the circuit, protects the compressor by preventing the liquid refrigerant from

aching it. Also it increases the efficiency of the system.

Coils
Of large heat transfer area, made of copper tubes and aluminum fins.
They are located inside the casing and are therefore protected from being damaged during transport and installation.

Fans indoor and outdoor fan
Centrifugal type with direct drive motor.
These fans develop sufficient pressure for the installation of ducts and optional accessories.

Casing
Built of steel sheet with aluminum-zinc protection, with primer and powder epoxy finish to allow its installation outdoors.

Supplementary electric heaters
Of the air exposed wires type that allow a rapid heat dissipation, avoiding the thermal inertia that could affect components.

Physical data

Model			RTH-7	RTH-10	RTH-12	RTH-15	RTH-20	RTH-25	RTH-30
Compressor	Quantity		1	1	1	1	1	1	1
	Nominal power	kW	2.8	4.3	4.7	5.3	6.9	9	10
	Power supply	V.ph.Hz.	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
Outdoor coil	Quantity		1	1	1	1	1	1	1
	Tubes length x height		5 x 18	5 x 21	5 x 21	5 x 21	5 x 27	5 x 24	5 x 24
	Fins per inch		12	12	14	12	14	14	14
	Face area	m^2	0.32	0.41	0.51	0.51	0.65	0.7	0.89
	Tubes diameter	mm (Inch)	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")
Indoor coil	Quantity		1	1	1	1	1	1	1
	Tubes length x height		3 x 18	4 x 21	4 x 21	4 x 21	4 x 27	3 x 24	3 x 24
	Fins per inch		12	12	12	12	12	12	12
	Face area	m^2	0.22	0.25	0.37	0.37	0.47	0.61	0.71
	Tubes diameter	mm (Inch)	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")	9.52 (3/8")
Outdoor fan motor	Quantity		1	1	1	1	1	1	1
	Turbine diameter	mm	270	320	320	320	320	320	320
	Turbine width	mm	270	240	240	240	320	228	320
	Nominal power	kW	0.58	0.99	0.99	0.99	1.1	1.1	1.5
	Nominal motor rpm		950	950	950	950	950	950	1 420
	Power supply	V.ph.Hz.	230.1.50	230.1.50	230.1.50	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
Indoor fan motor	Quantity		1	1	1	1	1	1	1
	Turbine diameter	mm	240	270	320	320	320	320	320
	Turbine width	mm	240	200	240	240	240	228	228
	Nominal power	kW	0.38	0.54	0.95	0.95	0.99	1.1	1.1
	Nominal motor rpm		950	950	950	950	950	1 410	1 420
	Power supply	V.ph.Hz.	230.1.50	230.1.50	230.1.50	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
R-22 refrigerant charge		kg	2.95	4.2	4.5	4.75	7.5	5.9	7
Approximation nett weight		kg	193	223	271	275	340	355	412
Approximation gross weight		kg	219	257	311	315	370	395	462
Dimensions with standard packing		cm	132x132x65	136x139x71	155x160x71	155x160x71	155x160x87	176x180x78	176x220x78

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Nominal features

Unit	Summer		Winter	
	Cooling capacity W	Consumption W	Heating capacity W	Consumption W
RTH-7	6 400	3 800	7 100	3 700
RTH-10	9 200	5 000	10 800	4 000
RTH-12	11 600	6 700	12 700	5 000
RTH-15	14 000	6 900	14 300	5 420
RTH-20	17 900	8 900	18 000	7 780
RTH-25	21 700	10 000	22 500	7 500
RTH-30	27 000	14 600	28 500	13 500

Test conditions

Summer				Winter			
Outdoor temperature °C		Indoor temperature °C		Outdoor temperature °C		Indoor temperature °C	
DB	WB	DB	WB	DB	WB	DB	WB
35	24	27	19	7	6	20	12

Correction factors

Correction factors for the cooling capacities

Correction factors for the cooling capacity with regard indoor and outdoor temperatures.

Indoor unit air intake temperature °C WB	Outdoor unit air intake temperature °C DB					
	19	25	30	35	40	46
23	-	1.20	1.15	1.11	1.06	1
19	1.10	1.08	1.04	1	0.96	0.90
14	0.88	0.86	0.84	0.82	0.79	0.74

Note:
Indoor unit air intake DB temperatures, between 21 & 32 °C.
WB = Wet bulb. DB = Dry bulb.

Correction factors for the cooling capacity for flow-rates different from the nominal ones in the indoor coil.

Flow %	80	90	100	110	120	130
Total capacity	0.960	0.980	1	1.016	1.032	1.046
Sensitive capacity	0.945	0.973	1	1.038	1.075	1.118
Absorb. comp. poten.	0.980	0.990	1	1.009	1.017	1.025

Correction of the real temperature of the air entering the outdoor coil for flow-rates different from the nominal ones.

Flow %	70	80	90	100	110	120	130
Correction in °C over the real air intake temperature at the outdoor battery unit	5	3	1.5	0	-1	-2	-2.5

Correction factors for the heating capacities

Indoor unit air intake temperature °C DB	Outdoor unit air intake temperature °C WB				
	14	10	6	0	-8
23	1.20	1.04	0.96	0.77	0.58
20	1.25	1.10	1.00	0.80	0.69
17	1.30	1.13	1.04	0.83	0.63

Correction of the real temperature of the air entering the outdoor coil for flow-rates different from the nominal ones.

Flow %	70	80	90	100	110	120	130
Correction in °C over the real air intake temperature at the outdoor battery unit	-2	-1.5	-0.5	0	0.5	1	1.2

Nominal flow-rates

The cooling and heating capacities in the corresponding tables are valid for the following nominal flow-rates.

Model	Indoor fan nominal m^3/h	Static pres. nominal Pa	Out. fan nominal m^3/h	Static pres. nominal Pa
RTH-7	2 175	25	2 100	50
RTH-10	2 780	37	3 350	50
RTH-12	3 900	50	3 410	50
RTH-15	3 900	50	3 410	50
RTH-20	4 675	50	4 675	50
RTH-25	4 900	62	5 200	50
RTH-30	5 800	62	6 400	50

For other flow-rates, apply the correction factor from the corresponding table.

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Outdoor fan performance

Model	Static pressure available		Air flow		Power absorbed
	mm WG	Pa	m^3/h	m^3/s	W
RTH -7	8	78.4	1 700	0.47	350
	6	58.8	1 900	0.52	365
	4	39.2	2 100	0.58	370
	2	19.6	2 200	0.61	380
	0	0	2 350	0.65	390
RTH -10	8	78.4	2 500	0.69	480
	6	58.8	2 700	0.75	495
	4	39.2	2 800	0.77	510
	2	19.6	2 950	0.82	525
	0	0	3 100	0.86	540
RTH -12 RTH -15	14	137.2	3 300	0.91	875
	12	117.6	3 450	0.96	890
	10	98	3 600	1.00	910
	8	78.4	3 700	1.02	930
	6	58.8	3 850	1.07	950
	4	39.2	3 960	1.10	970
	2	19.6	4 100	1.13	990
	0	0	4 200	1.16	1 020
RTH -20	16	156.8	3 800	1.06	900
	14	137.2	4 000	1.11	1 000
	12	117.6	4 150	1.15	1 020
	10	98.0	4 300	1.19	1 050
	8	78.2	4 500	1.25	1 100
	6	58.7	4 600	1.28	1 120
	4	39.1	4 750	1.32	1 180
	2	19.6	4 900	1.36	1 230
	0	0.0	5 000	1.39	1 270
RTH-25	16	156.8	3 980	1.10	940
	12	117.6	4 400	1.22	1 050
	10	98	4 520	1.25	1 100
	8	78.4	4 750	1.31	1 160
	6.3	61.7	4 900	1.36	1 220
	4	39.2	5 180	1.43	1 290
	2	19.6	5 420	1.50	1 345
	0	0	5 500	1.52	1 390
RTH-30	16	156.8	4 700	1.30	1 220
	12	117.6	5 200	1.44	1 365
	10	98	5 350	1.48	1 430
	6.3	61.7	5 800	1.61	1 585
	4	39.2	6 050	1.68	1 680
	2	19.6	6 280	1.74	1 750
	0	0	6 400	1.77	1 810

Note: Performance calculated with wet coil including filters, except in models 25 and 30.

Indoor fan performance

Model	Static pressure available		Air flow		Power absorbed
	mm WG	Pa	m^3/h	m^3/s	W
RTH -7	6	58.8	2 000	0.56	540
	4	39.2	2 200	0.61	560
	2	19.6	2 410	0.67	580
	0	0.0	2 550	0.71	590
RTH -10	10	98.0	3 100	0.86	900
	8	78.4	3 200	0.89	920
	6	58.8	3 300	0.92	940
	4	39.2	3 400	0.94	960
	2	19.6	3 500	0.97	970
	0	0.0	3 600	1.00	990
RTH -12 RTH -15	10	98.0	3 100	0.86	880
	8	78.4	3 250	0.90	920
	6	58.8	3 370	0.94	930
	4	39.2	3 450	0.96	940
	2	19.6	3 560	0.99	970
	0	0.0	3 700	1.03	980
RTH-20	10	98.0	4 050	1.12	1 050
	8	78.2	4 400	1.22	1 070
	6	58.7	4 600	1.28	1 120
	4	39.1	4 750	1.32	1 150
	2	19.6	4 900	1.36	1 180
	0	0.0	5 100	1.42	1 230
RTH-25	14	137.2	4 500	1.25	1 130
	10	98	4 800	1.33	1 200
	8	78.4	4 910	1.36	1 250
	6	58.8	5 050	1.40	1 275
	5.1	49.98	5 200	1.44	1 295
	4	39.2	5 250	1.45	1 320
	2	19.6	5 350	1.48	1 335
	0	0	5 450	1.51	1 388
RTH-30	14	137.2	5 490	1.52	1 355
	10	98	5 980	1.66	1 440
	8	78.4	6 200	1.72	1 500
	5.1	49.98	6 400	1.77	1 555
	4	39.2	6 480	1.8	1 585
	2	19.6	6 600	1.83	1 600
	0	0	6 700	1.86	1 665

Installation instructions

General

The RTH heat pumps are delivered as factory charged and tested packaged units. Designed to be installed with ducts, on terraces, rooftops, in lofts or basements.

Protection of the environment

Packing

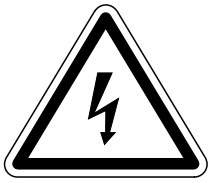
Packing is made of recyclable material. The disposal of same should be carried out in accordance with the regulations on selective residue disposal established by the local authorities.

Disposal of the unit

When dismantling after a long service life, its components should be ecologically salvaged. The cooling circuit is full of HCFC-22 refrigerant which should be salvaged and, finally, returned to the gas manufacturer for recycling.
Oil will remain in the airtight compressor so, it will be returned along with the sealed circuit.
The air conditioning unit will be deposited wherever established by the local authorities for its selective disposal.

Warning signs

The following signs indicate the presence of potentially dangerous conditions for the users or service personnel.
Whenever found on the unit itself, keep in mind the warning indicated by each one.



This sing indicates an electrical risk or danger.

Attention: It is compulsory to read the instructions prior to any handling.

Attention: Fan in operation.

Attention: The unit has remote control system and can start automatically. Two minutes prior to having access to the interior, the power supply should be disconnected so as to avoid any contact with the fan turbine in operation.

Attention: Not to touch the hot surfaces.

Transport

The units should always be transported in a vertical position to prevent oil from leaking out of the compressor. If for some reason the unit must be temporarily moved from this position, the time that it rests in a different position should be kept to a minimum.

Location

The unit should be placed in a location that leaves a permanent access for maintenance service, either through the side panels, or top cover.
They can be installed in any outdoor location. If installed indoors in basements, lofts, etc., the ducts for outdoor air intake and exhaust should be connected.
When the unit is installed indoors, consideration should be given to the great quantity of water condensed by the outdoor coil during winter operation, that must be drained through the drain pipe.
Occasionally, when the operating cycle is reversed in winter to remove the frost that forms on the coil, the air could carry water droplets. This should therefore be kept in mind when selecting the place of installation and also the possibility of

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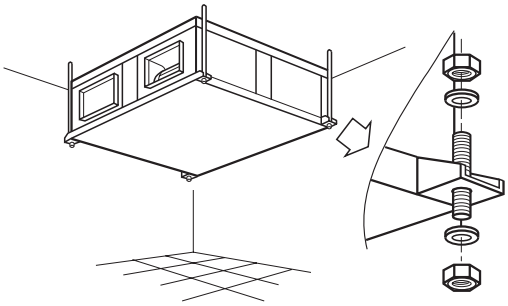
e drain pipe becoming clogged by dust, dirt or some other material should be foreseen.

Attaching unit

From the roof

The unit will be fastened to the roof by four M-10 bolts as shown in figure. For this type of installation the use of vibration isolators is recommended.
When fastening unit care should be taken that it is completely horizontal or slightly tilted towards the drain to avoid the dripping of condensed water (use an air bubble level).



Attention: It is essential to use all fixing points on the unit.
The RTH-7, 10, 12, 15 and 20 have 4 fixing points.
The RTH-25 and 30 have 6 fixing points.

CAUTION

It is very important to take the maximum cara with the support of the internal unit when hanging it from a false ceiling. Make sure that the false ceiling is strong enough to withstand the weight of the unit. Before hanging the unit, check the strength of every suspension bolt installed.

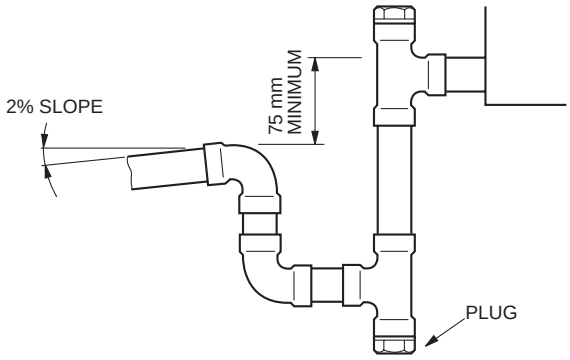
Resting on the ground

If unit is placed outdoors on the ground, it should be raised on supports to avoid the possibility that snow accumulation blocks the air intakes.

Drain connections

The pan drain lines of the indoor and outdoor units must be installed with a water trap with a minimum level difference of 75 mm between the connection to the unit and the line after the water trap (see figure). This is necessary to avoid the fan generated negative pressure preventing the drain pan from draining.
The drain line should have a minimum slope of 20 cm per meter length.

The connections to the unit should be done with copper tube of 22 mm O.D.



Attention:
When the heat pump operates under outdoor temperatures below 5°C, the drain tube could become obstructed by ice formation.
If the unit is located outdoors, the possibility of this happening should be prevented by installing an electric heater on the drain connection and wiring it according to the corresponding diagrams.

Clearances

Free space must be allowed for in the installation of each unit for:

a) Air intake and discharge from the outdoor unit.
b) Connecting the drainage and wiring pipes.
c) Air ducts.
d) Maintenance servicing.
e) Connecting up of the electrical supply.

The minimum distances, indicated in the overall dimensions diagrams, must always be respected with regard to possible obstacles to the free circulation of air, or the operator's work.

Air ducts

1) Air ducts should be connected to the unit isolated by a sleeve of a flexible, preferably non-combustible material, to prevent transmission of the unit's own vibration. If ducts are made from a flexible material they will not transmit vibration.
2) It is advisable to install a damper in every discharge duct, thus making possible a correct balance of the system.
3) Allow for an easy access to the air filters for replacement and cleaning.
4) If the air discharge of the outdoor coil is done through ducts, it is advisable that the first meter section be of galvanized sheet to avoid corrosion produced by water droplets carried by the air.

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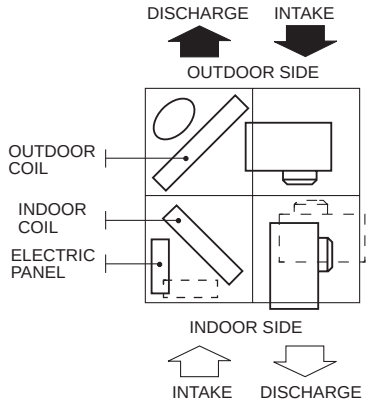
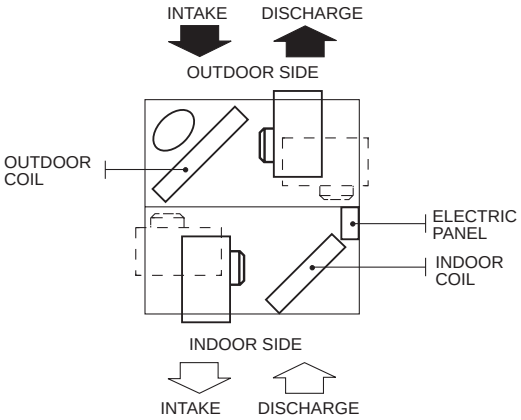
Air intake and discharge orientations

Factory supplied orientation.

RTH-7,10,12,15 & 20



RTH-25 & 30

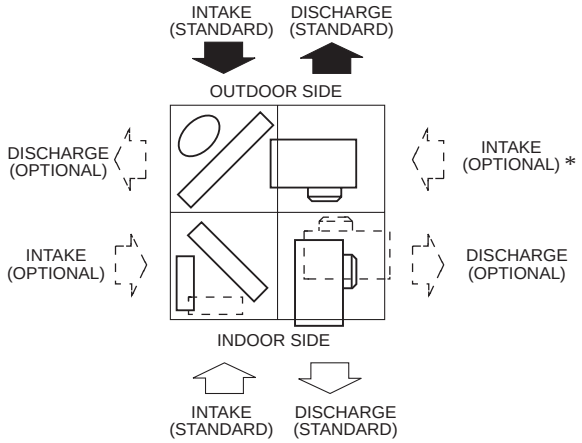


Variations to be performed at jobsite

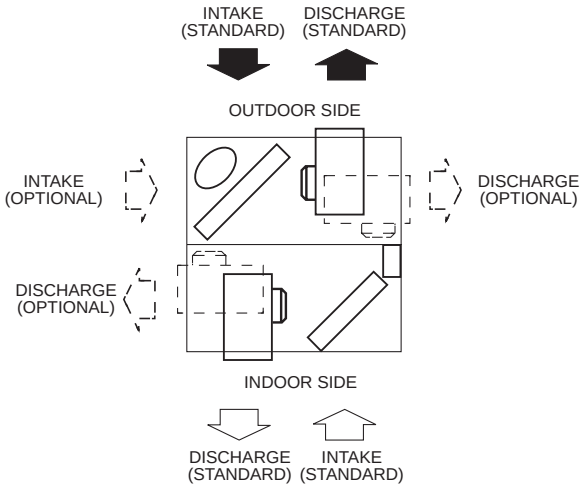
Starting from the standard unit the orientations of the air intake and discharge of the condenser and evaporator fans can be changed to obtain any of the combinations shown in the figure below.

RTH-7,10,12,15 & 20

*) This variation of the air intake can be used only in those installations in which the heat pump is protected from direct rainfall, since it does not allow the rain protection grille (optional accessory) to be fitted.



RTH-25 & 30



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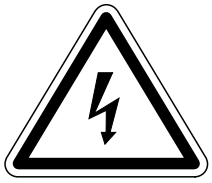
Electrical installation

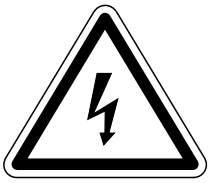
In every case the **established national regulations** should be applied.
Each heat pump is delivered with a control box, to which the power supply will be connected across a fused main disconnect switch or automatic circuit breaker.
The electric heater, if available, should be installed with power supply line and switches independent from those of the heat pump.



Loose cables can cause overheating of the connectors or an inadequate operation of the unit. Fire risk could also exist.
Fot this reason, make sure that all cables are properly connected.

Start-up procedure

a) Connect the power supply cable and earth to the corresponding boards on the controls box.
b) Give power to the auxiliary control line at 220/240.1.50.
c) Connect the room thermostat line to 24 V on the boards provided in the heat pump.
d) Before start-up connect the main switch or automatic circuit breaker to supply power to the electric oil heater in the compressor crankcase.
Compressor should not be started before a minimum of 8 hours have passed.
This is necessary to evaporate any liquid refrigerant that could have mixed with the compressor oil.



Do not supply power to the unit and do not start up operations until the tubing and electrical connections with the outdoor unit have been completed.
Make sure that the electrical supply is correctly connected to the units, as shown in the electrical diagrams.

Electrical characteristics

Model	Power supply V.ph.Hz.		Consumption A			Power supply cables min. cross section	Automatic circuit breaker
	Compressor	Fan	Compressor	Outdoor fan	Indoor fan		
		Outd. - Indoor	Nominal	Run	Run	mm²	A
RTH -7	230.1.50		14.3	2.8	1.7	4	32
RTH -10	230.3.50		10.9	5.1	2.6	4	32
	400.3.50		6.3	5.1	2.6	2.5	20
RTH -12	230.3.50	230.1.50	12.6	5.2	5.2	6	40
	400.3.50		7.3	5.2	5.2	4	32
RTH -15	230.3.50		13.3	5.2	5.2	6	40
	400.3.50		7.7	5.2	5.2	4	32
RTH -20	230.3.50	230.3.50	21.1	4.2	4.2	10	50
	400.3.50	400.3.50	12.2	2.4	2.4	4	32
RTH -25	230.3.50	230.3.50	29.3	5.5	4.5	10	50
	400.3.50	400.3.50	14.2	3.2	2.6	6	40
RTH -30	230.3.50	230.3.50	36	5.5	6.0	16	63
	400.3.50	400.3.50	16.5	3.2	3.5	10	40

Important: The size of the circuit breaker and the cross-section of the supply and control lines are only as a guide and should be corrected in accordance with the conditons at the jobsite, distance between units, and current legislation.

Utilization limits

Voltage limits				Outdoor coil inlet air temperature DB				Indoor coil inlet air temperature			
Nom. 230 V		Nom. 400 V		Operating cycle				Operating cycle			
				Minimum °C		Maximum °C		Minimum °C		Maximum °C	
Minimum	Maximum	Minimum	Maximum	Cool	Heat	Cool	Heat	Cool WB	Heat DB	Cool WB	Heat DB
198	254	342	436	19	-20 (1)	46	24	14	10 (2)	22	25

Notes: WB - Wet bulb. DB - Dry bulb.
(1) At an outdoor temperature of -20 °C only the emergency electric heater (optional) continues to operate.
(2) The equipment can work for a short period at a temperature of less than 10°C in order to raise the air temperature in the conditioned space to 10 °C.

Balance point adjustment

The balance point is the lowest outdoor temperature at which the heat pump can heat the space without the use of the supplementary electric heaters.
The balance point depends on the following:
1) Design outdoor temperature.
2) Building's heat loss.
3) Pump's capacity.
The balance point is usually predetermined by the installation's project, but if it has not been predetermined the factory's adjustment at 6°C can be kept.

Logic module

The control module responds to the thermostat's demand signal, it examines the values given by the sensors outdoor, discharge and liquid and determines if the heat pump and/or the supplementary electric heater must operate.

Discharge sensor

It is a thermistor located in the discharge line of the compressor, connected in series with a high pressure cutout.
It protects the compressor against high discharge temperatures (and pressures).
It stops the compressor when the discharge temperature exceeds the set point or the pressure is greater than 28 kg/cm^2.
It protects the compressor when there is a refrigerant leak or a flow reduction through outdoor or indoor coils.
It allows the reset of the compressor circuit after a lockout condition, by removing the power supply to the control module, or pressing the reset button.

Outdoor sensor

This is a thermistor located in the air intake of the outdoor coil, that registers the air temperature.
It controls the heat pump operation, stopping it when the outdoor temperature nears -15 °C. This prevents the compressor from operating at a high compression ratio that could damage it.
Allows the connection of the duct electric heater (optional) controlled by the 2nd stage of the room thermostat if the outdoor temperature is less than -15 °C.
It allows by means of the balance point for the adjustment of the temperature at which the supplementary electric heater should come into operation.

Liquid sensor

It is connected in the liquid line of the outdoor coil.
This sensor starts the defrost cycle after 30, 60 or 90 minutes from start or last defrost cycle depending on selection, if the temperature it senses is -5 °C or less.
Indicates the end of the defrost cycle when the liquid temperature reaches 13 °C or stays at a minimum of 7 °C during 1 minutes.
Prevents the cycle from starting in mild climates since sufficiently low liquid temperatures are not detected.
The initial time reading for defrosting of 30, 60 or 90 minutes is nominal. These times assume an exterior temperature of 2°C, a highly unfavourable level causing much frost formation.
At lower temperatures the total humidity content of the ambient air is lower, permitting prolongation of the defrost cycles, saving energy. For example: at -10°C exterior temperature the initial time readings for defrost will be 60, 90 and 120 minutes.

Balance point

Prevents the operation of the supplementary heating system when the outdoor temperature is above the balance point as adjusted on the plaque.
This way the electric heater is not used as long ads the heat pump is capable of meeting the space heating demand.
The balance point can be adjusted between 14 °C and -4 °C.
This way an additional outdoor thermostat is not needed.

Timer

Delays start during 5 or 2 minutes to avoid repeated starting cycles. This way operating pressures are equalized before the compressor is started. If the thermostat or manipulation cause false contacts the heat pump is not affected.
It delays the start after a power supply cut, thus allowing the line voltage to regain its normal level.

Stoppage of interior fan during defrost

This module allows the option of stopping the interior fan during the defrost cycles. This option is only for when it is not possible to instal an auxiliary electric heater.
- With the JP-19 bridge in position (factory standard) the interior fan continues to function during defrosting.
- With the JP-19 bridge open (modified at jobsite) the interior fan is deactivated.

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Delayed switch-off of interior fan

The interior fan will continue to function for one minute after the stop order.
This is to permit dissipation of the energy accumulated in the interior interchanger and represents an energy saving.
Optionally, at the jobsite, this option can be deactivated, leaving the JP-20 option of the module open.

Other

- Connector for computer switching.
- Possibility of lowering timer to 2 minutes.
- Buttons:
  - **Test.** Lowers delay. Direction for communication.
  - **Reset.** Restarts the control.
  - **Filters.** Delete dirty filter counter.
- Leds:
  - **Standby.** Indicates compressor delay.
  - **Filters.** Dirty filters.
  - **Reset.** Self-diagnosis and reset Led.

Operation

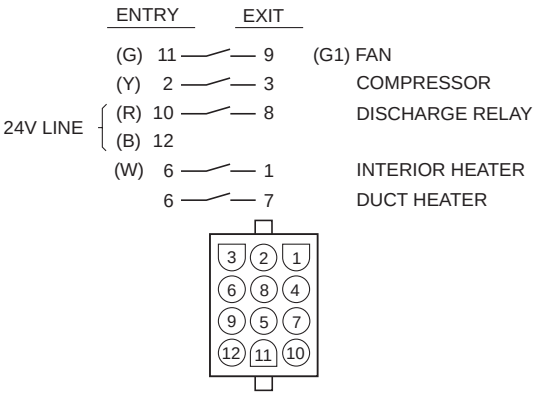
Summer cycle

In summer functioning the 4-way valve is energised.
In the corresponding figure the circuit followed by the refrigerant is shown.

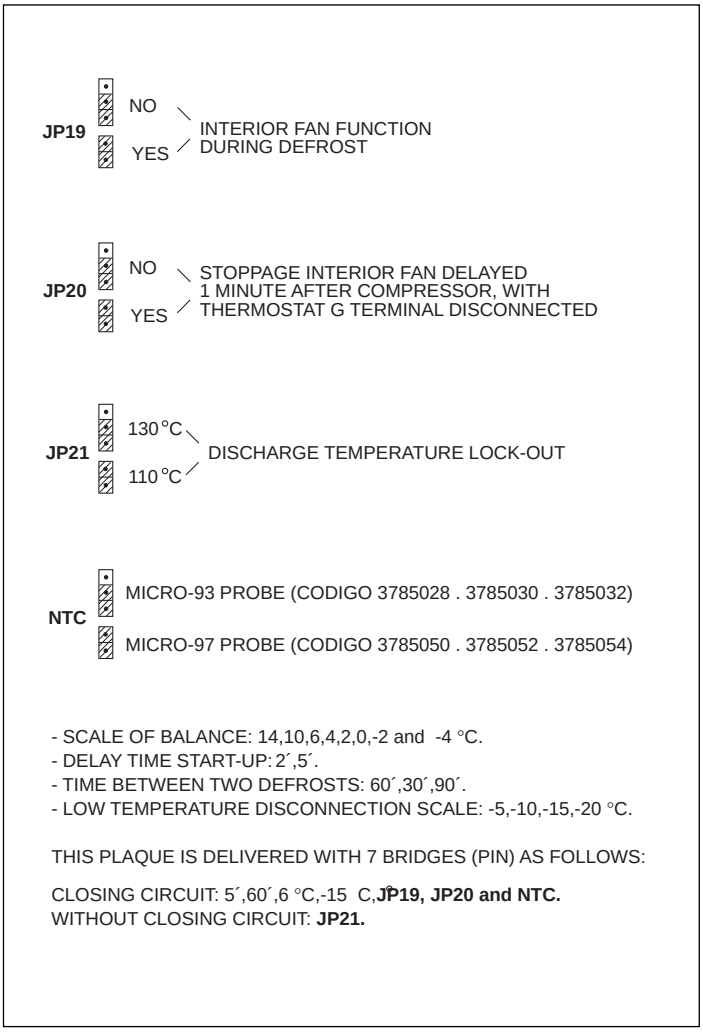
Winter cycle

On winter cycle the discharge gas goes to the indoor coil which operates as the condenser.
The outdoor coil becomes the evaporator.
Reversing valve is deactivated. Refrigerant's circuit is shown in figure.

Detail module internal connections with exits to the connector



Function of the pins

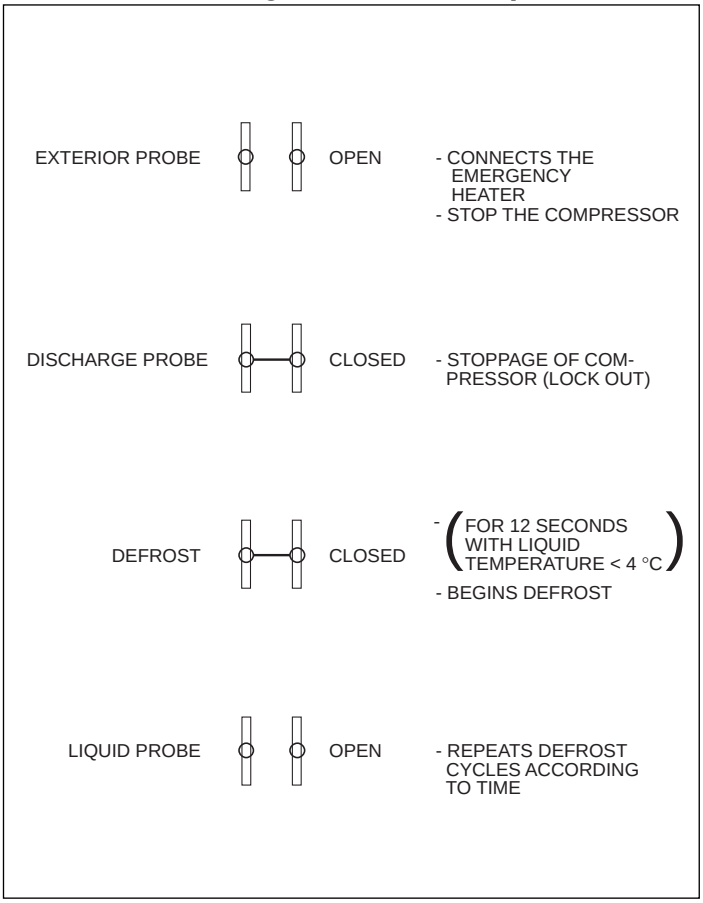


- SCALE OF BALANCE: 14,10,6,4,2,0,-2 and -4 °C.
- DELAY TIME START-UP: 2´,5´.
- TIME BETWEEN TWO DEFROSTS: 60´,30´,90´.
- LOW TEMPERATURE DISCONNECTION SCALE: -5,-10,-15,-20 °C.

THIS PLAQUE IS DELIVERED WITH 7 BRIDGES (PIN) AS FOLLOWS:

CLOSING CIRCUIT: 5´,60´,6 °C,-15 C,**JP19, JP20 and NTC.**
WITHOUT CLOSING CIRCUIT: **JP21.**

Actions according to state of the probe



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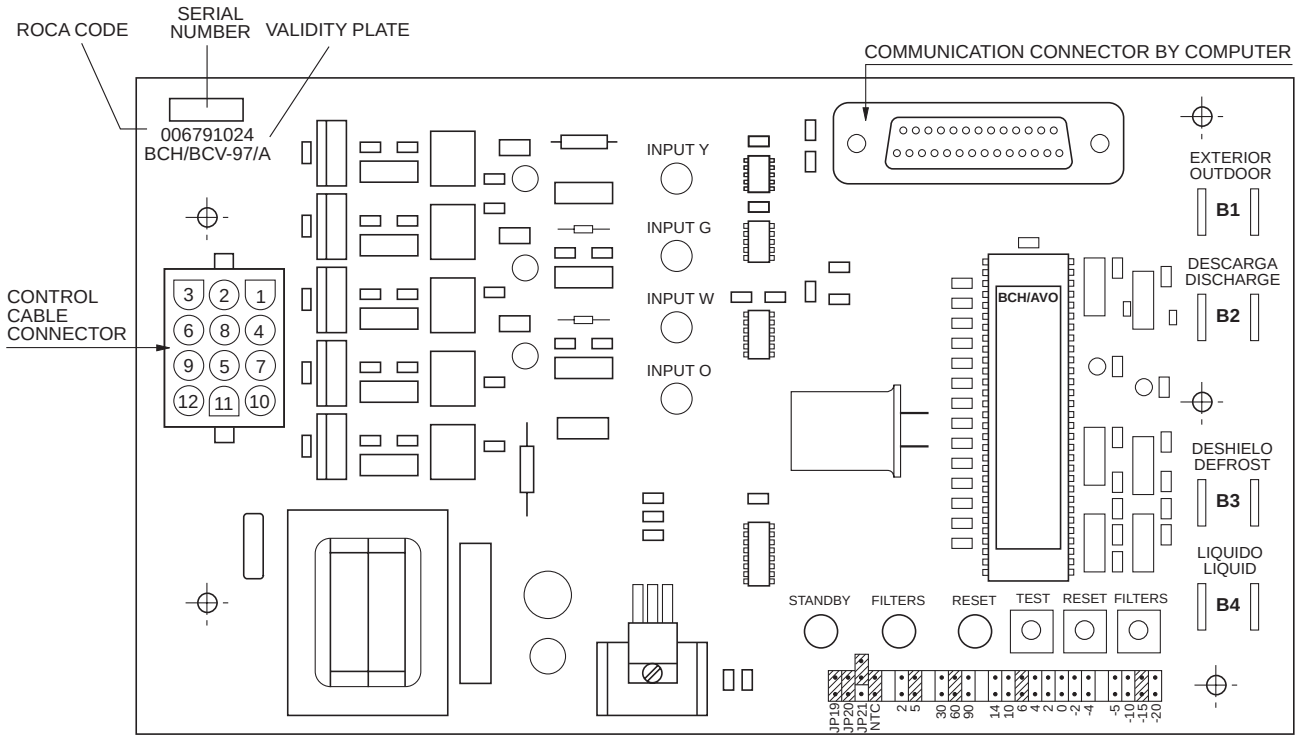
Module



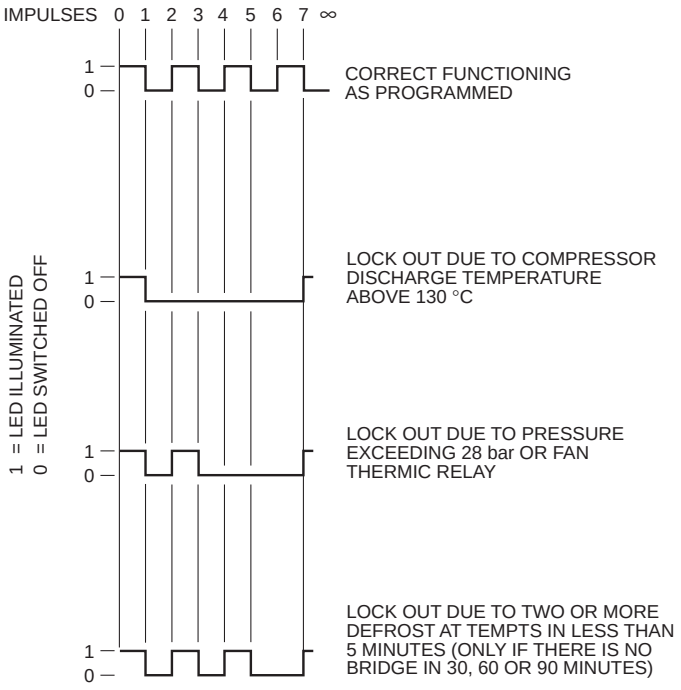
BUTTONS

TEST.- DIMINISHES TIMER/DIRECTOR PLATE COMMUNICATION
RESET.- RESTARTS CONTROL
FILTERS.-DIRTY FILTERS CONTACTOR DELETE

LEDS

STANDBY.- INDICATES COMPRESSOR DELAY
FILTERS.- DIRTY FILTERS
RESET.- SELF-DIAGNOSIS/RESET LED

Indications led autodiagnosis



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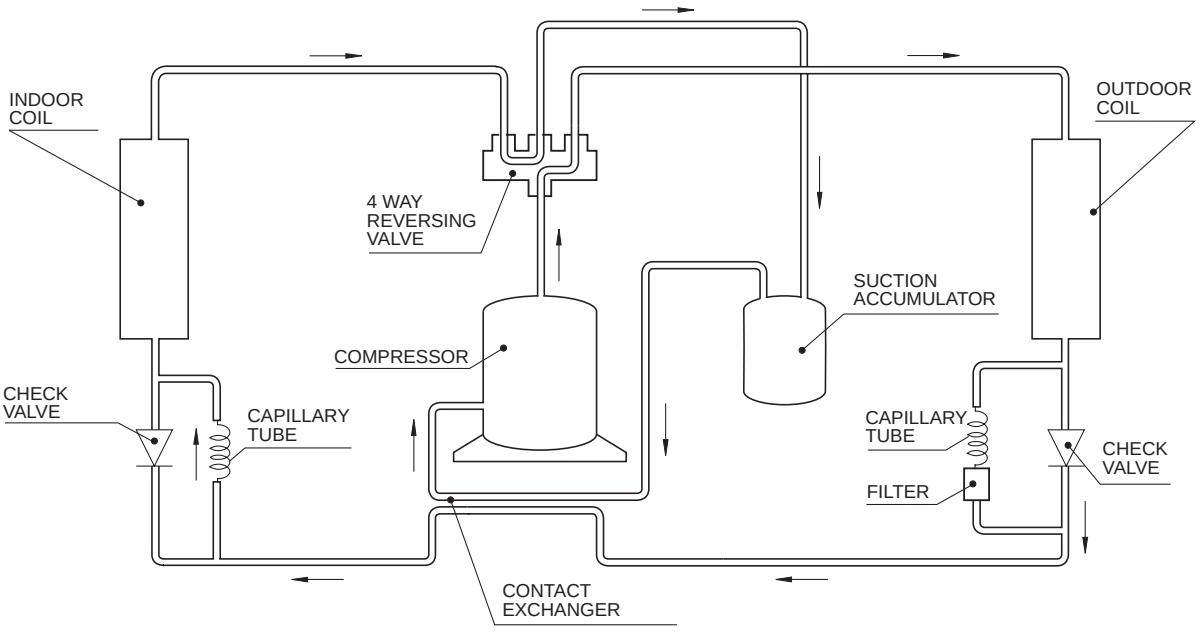
Operating sequences

See relevant electrical diagrams.

Summer cycle: Thermostat in COOL position

1) The 4-way valve is activated through the thermostat.
2) If the fan operating mode in the ambient thermostat is in CONTINUOUS, the contactor is activated and the fan functions continuously.
3) With the logic module timing, the unit will start ip after 5 minutes.
4) When the thermostat contact connects, it activates the contactor and starts the compressor. If the fan operating mode is set to «AUTO», the fan starts simultaneously with the compressor.
5) The unit will function intermittently in response to the corresponding signal from the ambient thermostat to satisfy the cooling demand.
6) When the unit stops at the end of an operating cycle, or through a power failure, the logic module will not allow it to start up again until 5 minutes have elapsed. This is to protect the compressor by allowing the operating voltages to even up.
7) If the diescharge pressure exceeds 28 kg/cm^2, or the discharge temperature is over 130°C, the logic module will switch off the unit, leaving the system in lock-out.
8) To reset after a lock-out, turn the power supply to the unit off, or set «OFF» on the thermostat and then reset «HEAT» or «COOL».
   The system will re-set and the unit will start up after 5 minutes.

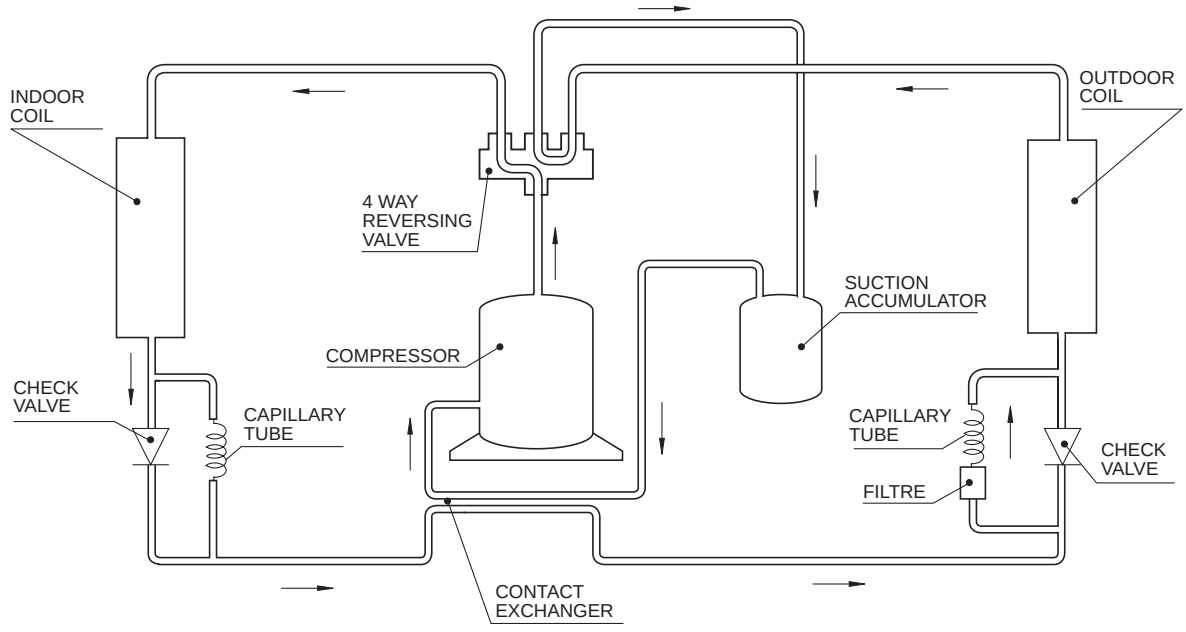
Summer cycle diagram



Winter cycle: Thermostat in HEAT position

1) The 4-way valve is deactivated, allowing the position for the heating circuit, which means that the indoor coil acts as condenser and the outdoor one as evaporator.
2) If the fan operating mode in the ambient thermostat is in the CONTINUOUS position, the contactor is activated and the fan functions continuously.
3) With the logic module timing, the unit will start up after 5 minutes.
4) When the first stage of the thermostat connects, it activates the contactor and starts the compressor. If the fan operating mode is set to «AUTO», the fan starts simultaneously with the compressor.
5) The unit will function intermittently in response to the appropriate signals from the ambient thermostat to satisfy the demand for heating.
6) If the unit stops, after an operating cycle, or through a power failure, the logic module will not allow it to start up again until 5 minutes have elapsed.
   This is to protect the compressor by allowing the operating voltages to even up.
7) If the discharge pressure exceeds 28 kg/cm^2, or the discharge pressure is over 130°C, the logic module will stop the unit, leaving the system in lockout.
8) To reset after a lock-out, turn the power supply to the unit off, or set «OFF» on the thermostat and then reset «HEAT» or «COOL».
   The systen will re-set and the unit start up after 5 minutes.
9) The auxiliary heater is activated when the auxiliary heating stage of the thermostat is connected. The logic module allows the indoor auxiliary heater to function if the outdoor temperature is below the balance point. If the outdoor temperature is above that set as the balance point, the indoor heater does not function.
10) The emergency heater (complementary) is connected when the outdoor temperature is lower than that preselected as the operating limit (-15°C, logic module), and the ambient thermostat demands the second heating stage.

Winter cycle diagram



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efrost cycle (timed)

The ice which is produced on the outdoor coil during the heating cycle must be eliminated when it begins to block the coil.
The defrost cycle begins after a period selected between 30, 60 & 90 minutes from the start-up or the last defrosting, and when the evaporation temperature drops to -5 °C or less.
The logic module activates the defrost relay, which:
- Activates the 4-way valve to go into the cooling cycle.
- Switches off the outdoor fan.

The defrost cycle finishes when the liquid temperature is sufficiently high, measured by a thermistor 13 °C, or when, if it does not heat up, it reaches a minimum of 7 °C for a 1 minute period; also after 12 minutes from its beginning.
When the defrost cycle finishes, the logic module disconnects the defrost relay, reestablishing normal operating conditions of the heating cycle.
If the unit triess to go into another defrost cycle in less than 5 minutes, the logic module switches it off, leaving the system in lock-out.

Operating at -15°C (optionally -5, -10, -20)

When the outdoor temperature is less than -15°C there is no justification for running the compressor with the limited amount of heat it generates.
If the logic module detects, through a thermitor in the exterior air entry, a temperature lower than -15°C, it acts as follows:
- It disconnects the compressor.
- It switches on the emergency heater (if there is one installed) controlled by the thermostat's second stage. (The auxiliary heater will also continue to function, governed by the thermostat's second stage).
- It leaves the indoor fan functioning under the first heating stage of the thermostat.

Operation on emergency heat

When the thermostat operation mode is in the emergency heat position.
- Compressor will be in lockout.
- The supplementary and emergency electric heaters, if installed, will be controlled by the first stage of the thermostat.

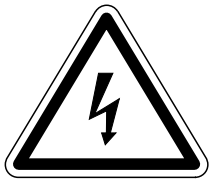
Other safety features of the electric circuit

- The compressor is protected against overheating and the failure of a phase by a solid state protector with three sensors embedded in the windings.
- The control circuit is protected by a fuse.
- In general all the casing and components are protected by an earth circuit.

Compressor crankcase oil heater

The compressor is equipped with an electric heater in the crankcase, which heats the oil to prevent an excessive concentration of refrigerant in it during the periods when it does not operate.
If the main disconnect switch has been off for some time, before heat pump is started switch should have been on for at least 8 hours.
This is necessary to drive out any refrigerant that may be accumulated inside the compressor.

Before finalising the installation



Verify that:
- The voltage is always between 198-254 V or 342-436 V.
- The gauge of the supply cable is at least that which is recommended in the corresponding electrical diagrams.

- The need to clean the air filter has been communicated.

- The condensation drainage is perfectly assembled and their are no leaks in the water circuit.

- The guarantee split has been filled in.
- Maintenance instructions have been given or a contract has been made for periodic servicing.

- Instructions have been given to the users on how to operate the system.

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Operating instructions

General introduction

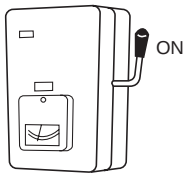
Start up and automatic temperature regulation are implemented by the ambient thermostat.

Locate the thermostat approximately 1.5 m. above floor level, where no object prevents it from registering the true temperature of the room.

Do not place it on a wall where it will be exposed to direct sunlight, or next to windows, air vents, etc. Before start up connect the mains switch in order to eliminate the electrical resistance of the compressor sump.

The compressor must not be started up until at least eight hours have passed.

CAUTION



Connection:
The electrical supply must be connected for at least 8 hours before operational start up of the conditioner in order to warm up the system.
Leave the supply connected, except when the conditioner is going to be out of use for long periods of time.

DSL ambient thermostat for 610 heat pump

This thermostat has been designed to proportion a precise control of the ambient temperature and to give graphic information of the mode in which the heat pump is operating.

It is a control with a Proportional-Differential-Integral response which, in relation to the difference between the programmed and the ambient temperatures, varies the on/off cycles between 3 and 7.5 cycles per hour.

The liquid crytal display (LCD) normally indicates the ambient temperature, mode of operation, and whether the heating or cooling system is connected.

It allows for the selection of different set points for heating and cooling, as well as the choice of °C or °F.

The operation of the fan can be set in continuous mode, or automatic, switching off and operating in unison with the compressor.

The controls are located underneath a cover which prevents their manipulation by unauthorised personnel.

Operation and start up

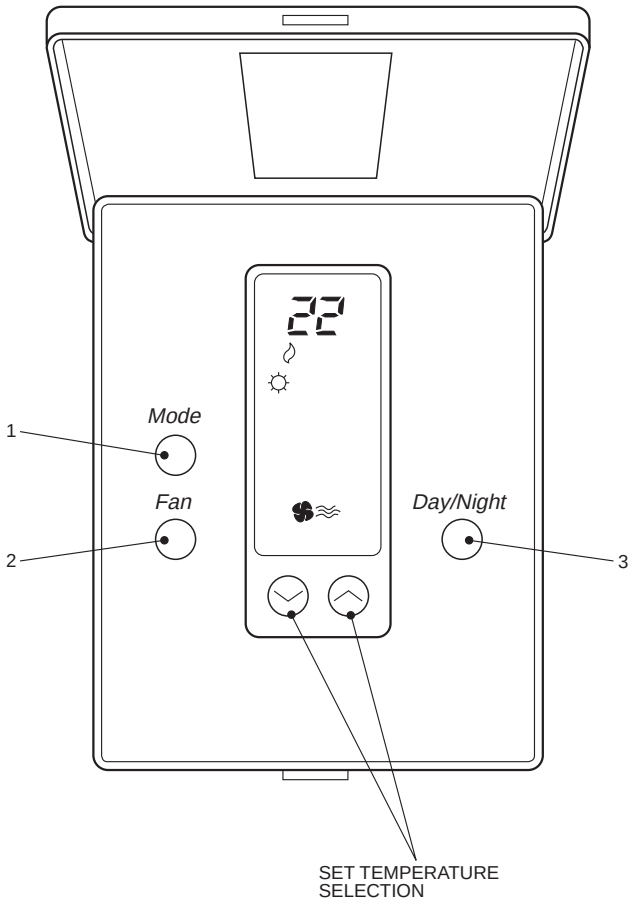
Start up is implemented by the controls located on the thermostat.

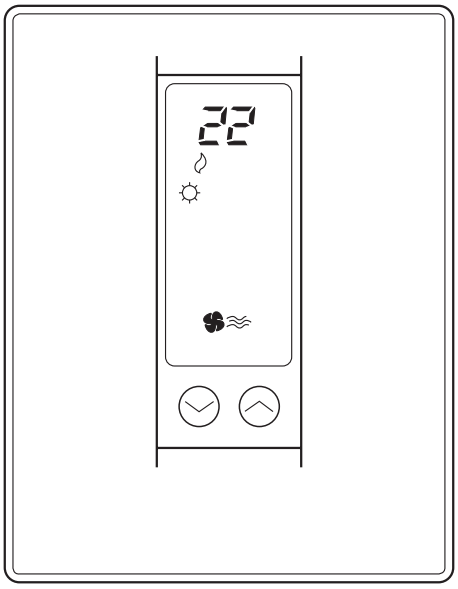
1.- MODE

The operational mode of the heat pump is selected by pressing this button. When the button is pressed the following

Controls and indicators

1.- Operational mode selection.
2.- Fan speed selection.
3.- Day/Night selection.





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Operational modes appear on the liquid crystal display panel:

COOL - Controls the system in the cooling mode. (The word COOL is displayed on the panel for 5 seconds).

HEAt - Controls the system in the heating mode. (The word HEAt is displayed on the panel for 5 seconds).

Auto - Controls the system in cooling or heating according to requirements. (The word Auto is displayed on the panel for 5 seconds).

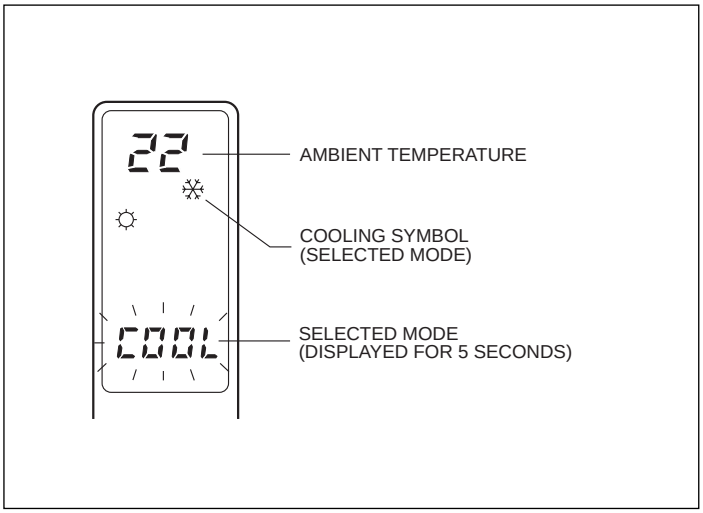
E Ht - Controls the system in the emergency heating mode (it is only active if the optional accessory electrical resistance heater has been installed).

OFF - Disconnects the system.

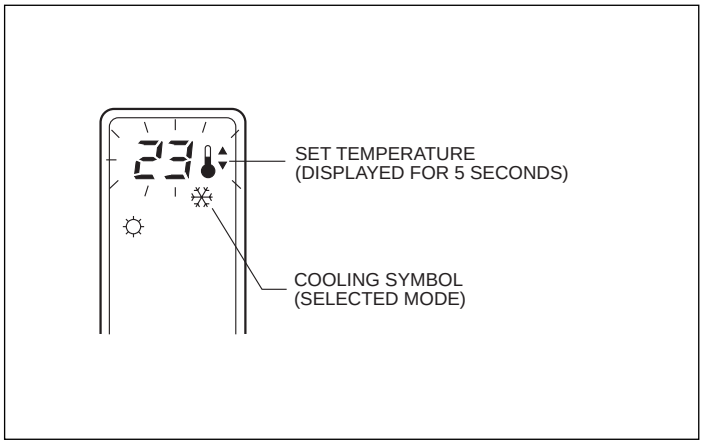
a) **Cooling**

Press the button MODE repeatedly until the cooling symbol is displayed on the panel (at the same time the word COOL is displayed for 5 seconds).

The cooling symbol continues to be displayed on the panel.



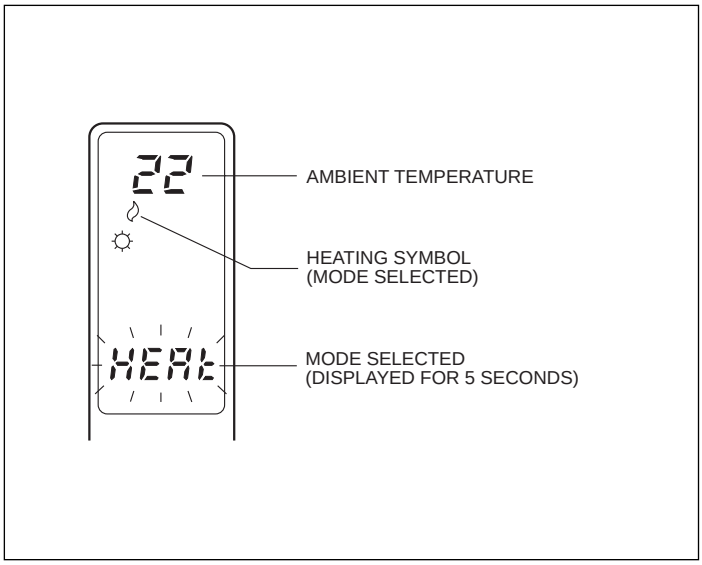
Once the operational mode has been selecte, select the set temperature by pressing button ⌃ or button ⌄ , whether this be to select a higher or a lower temperature. The set temperature is displayed accompanied by a small symbol which represents a thermometer, and remains visible on the display panel for 5 seconds. Once the set temperature will again be displayed.



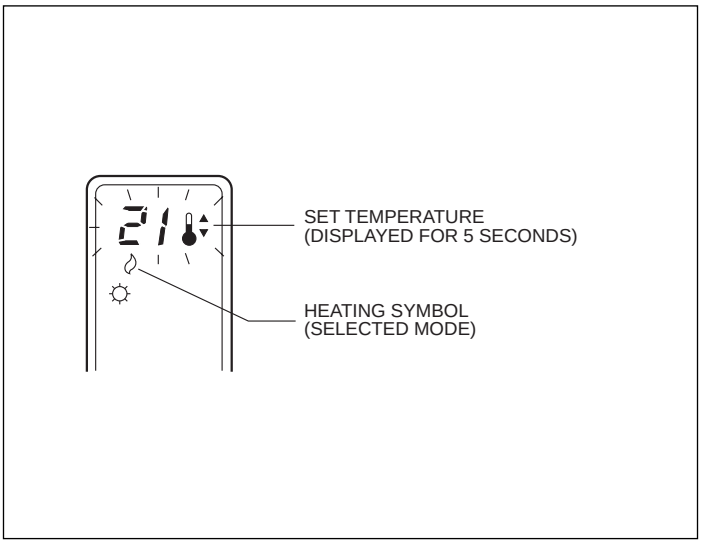
After a few minutes have passed the cooling system will start up, and the cooling symbol, visible on the display, will start to flash.

b) **Heating**

Press the MODE button repeatedly until the heating symbol is isplayed on the panel (at the same time the word HEAt is displayed for 5 seconds). The heating symbol continues to be displayed on the panel.



Once the operational mode has been selected, continue to select the set temperature by pressing button ⌃ or button ⌄ , whether this be to select a higher or a lower temperature. The set temperature is displayed together with a small symbol which represents a thermometer, which is displayed on the panel for 5 seconds. After the set temperature has disappeared then the ambient temperature will again be displayed.

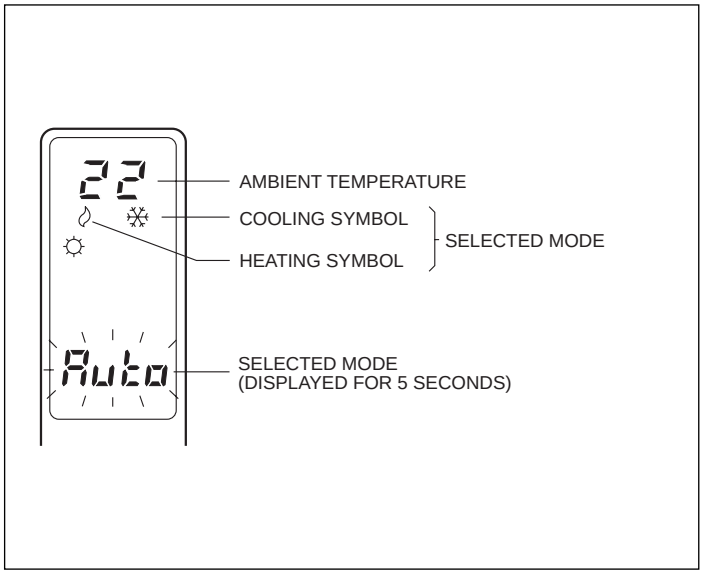


After a few minutes have passed the heating system will start up, and the heating symbol, visible on the display will start to flash.

c) **Automatic**

Select a set temperature for the cooling mode and another for the heating mode, as described in paragraphs a and b. In this operational mode the set temperature for cooling COOL must be at least 1°C above the heating HEAt ,

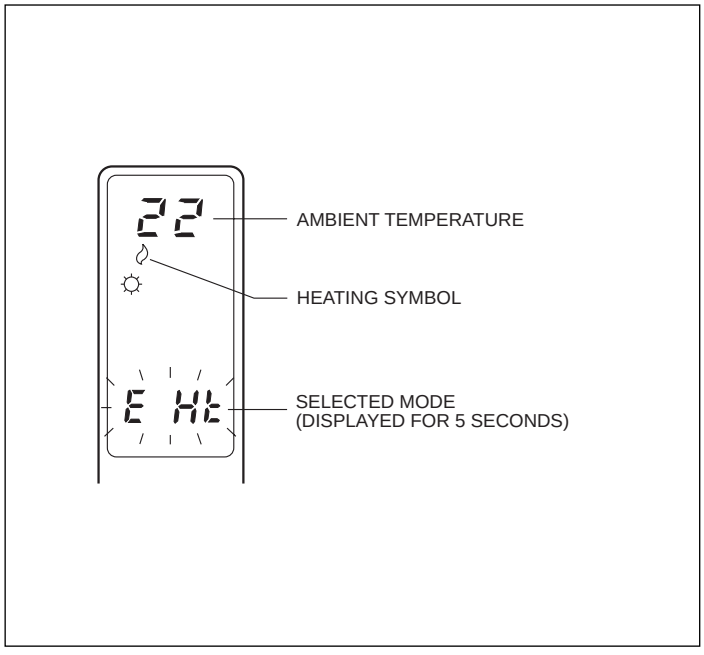
temperature, this is the minimum differential allowed by the thermostat. Press the MODE button repeatedly until the heating symbol and cooling symbol are displayed on the panel (at the same time the word Auto will be displayed for 5 seconds). The heating and cooling symbols will continue to be displayed on the panel.



After a few minutes have passed the system will start up, automatically switching to the heating or cooling mode and maintaining the temperature between the selected margins. The symbol corresponding to the operational mode, heating or cooling, will start to flash.

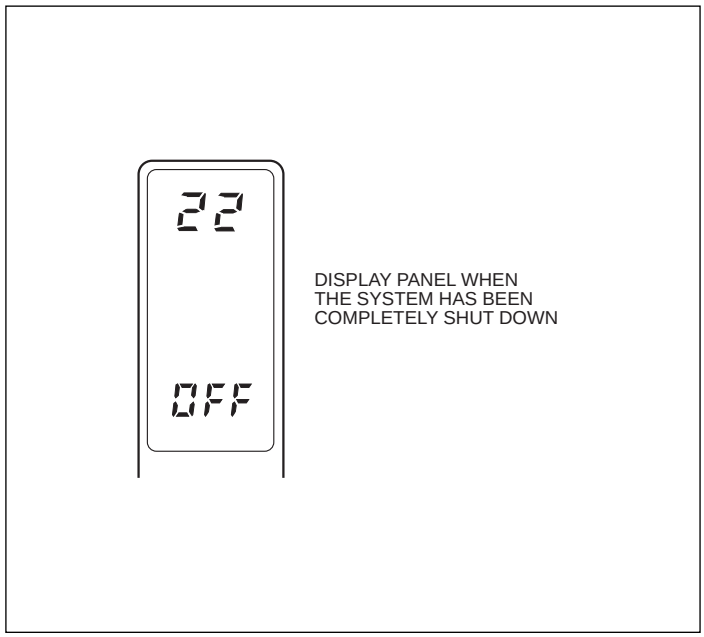
d) **Emergency heating**

Repeatedly press the MODE button until the letters E Ht (displayed for 5 seconds) appears on the display panel, at the same time the heating symbol will be displayed; once a few minutes have passed the emergency heating will start up, and the heating symbol will start to flash. In this operational mode the compressor is always shut down and the (optional) auxiliary and emergency resistance heaters, if they are fitted, are used to supply the heat. This operational mode can also be used for heating in case of a compressor breakdown.



e) **Off**

Repeatedly press the MODE button until the word OFF appears on the display. The heat pump will stop and on the thermostat display panel the word OFF and the ambient temperature will be permanently displayed.



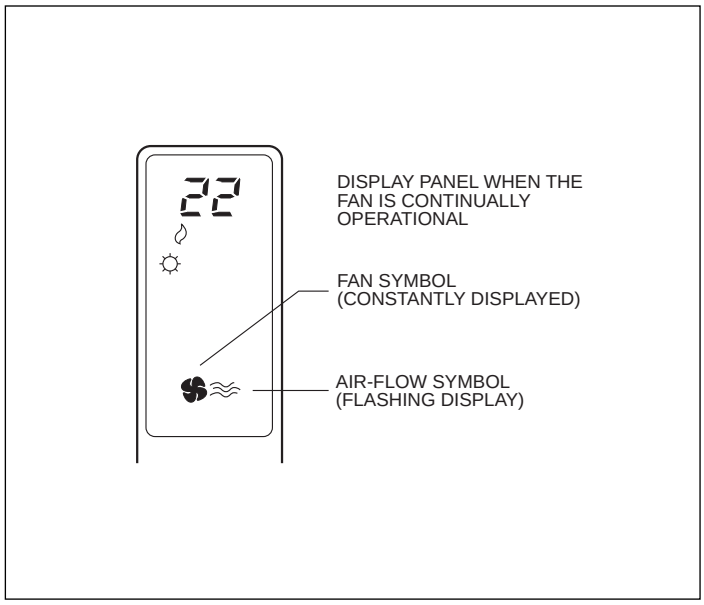
f) **°C/°F scale**

To change the scale of degress of temperature, press the and buttons simultaneously.

2.- Fan

The Fan is started up in a continuous manner by pressing the FAN button (independently of the operational state of the unit), the fan and air-flow symbols will be displayed on the thermostat display panel, the fan symbol steadily and the flow symbol flashing.

The FAN symbol will disappear when the button is pressed again and the fan will be automatically controlled in unison with the compressor or the electrical resistance heater (should this be installed).



3.- Day/night selection

Different set temperatures can be selected by pressing the DAY/NIGHT button, for day and night (in each of the

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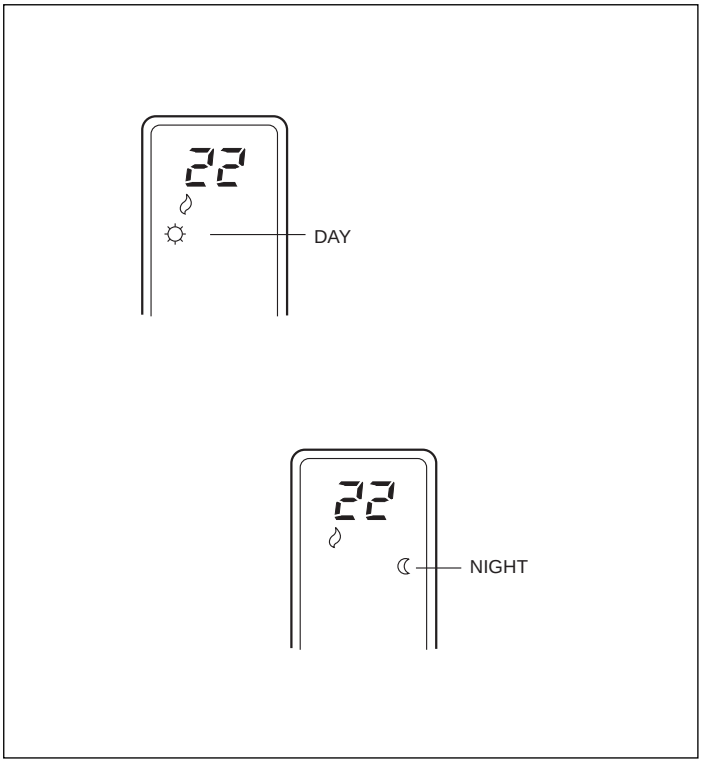
operational modes).
When installing the thermostat the ☼ symbol will be displayed, indicating that the temperature selected is set for the day. By pressing the DAY/NIGHT button the ☾ symbol is displayed on the panel, indicating that the temperature selected will be set for the night.
Every time that we press this button we alternate the established set temperatures, whether they be for the day ☼ or the night ☾.



Graphic information

The display panel permanently provides us with information concerning: the ambient temperature, operational mode, day/night, and fan operation. To receive information concerning the set temperatures it is only necessary to press one of the temperature selection buttons once, and the established set temperature for the operational mode which is being displayed at that time will appear on the panel for 5 seconds.

Maintenance

Cleaning of filters

Keep coil's air filters in good condition. Check them at least every 15 days.

Cleaning outdoor coil

Dirt accumulation on outdoor coil should not be allowed. Coil should be cleaned as frequently as necessary with a brush vacuum cleaner or detergent.

CAUTION

For safety reasons make sure you swich off the air-conditioner, and disconnect it from the mains before cleaning.

CAUTION

Check the outdoor unit periodically to see whether either the outlet or the inlet are blocked up with dirt or leaves, etc.
The internal coil and other components of the outdoor unit must also be periodically cleaned. Contact your concessionary or maintenance service.

Priming the dreinage siphon

To avoid problems with water from condensation we recommend that the drainage siphon be primed when starting up and before the beginning of each season so as to avoid, from the very beginning, the intake of air into this pipe.

Indoor unit discharge ducts

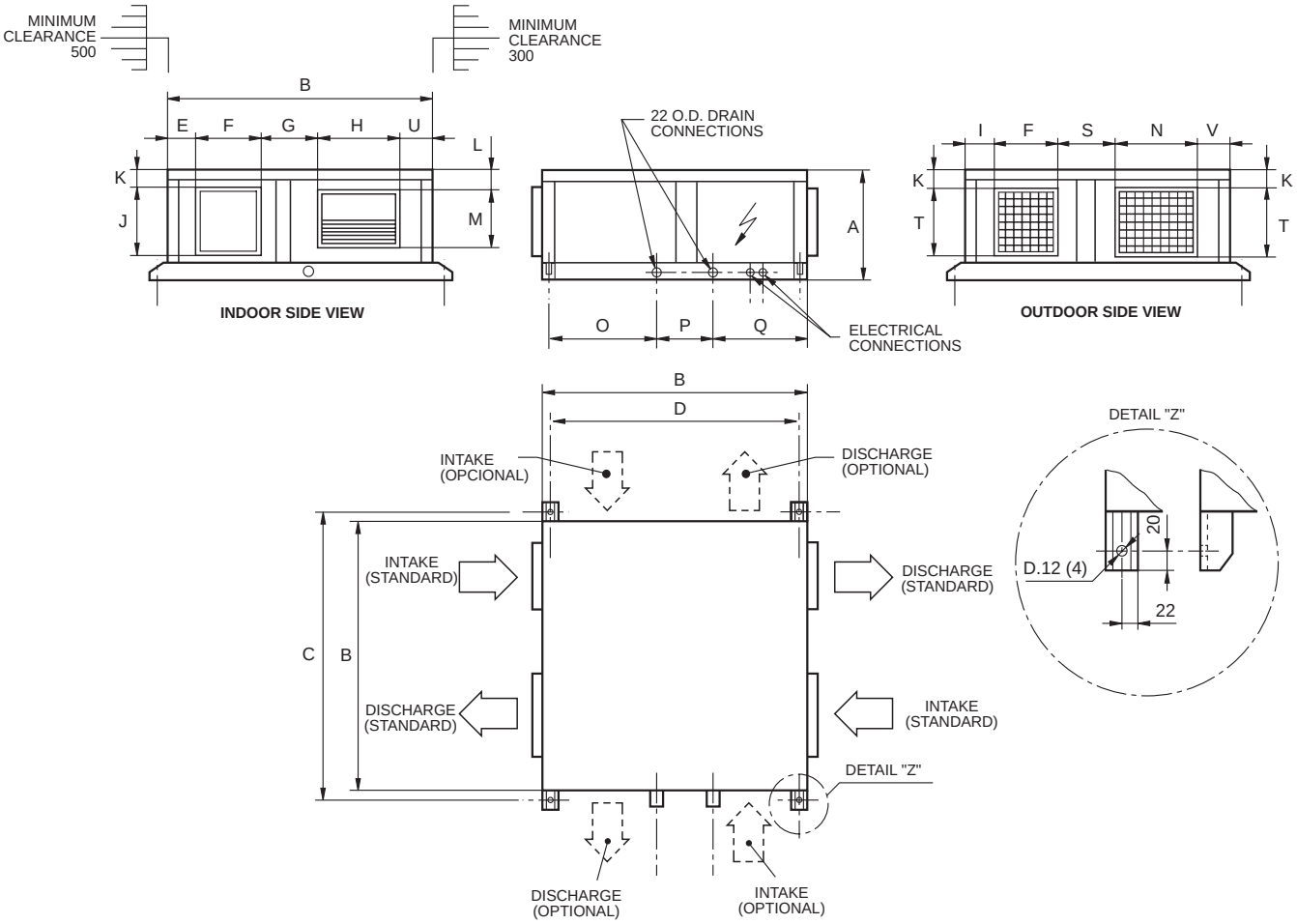
The indoor unit discharge, intended for ducts, is supplied without a protective grill. When maintenance work is being done this must be taken into account.

CAUTION

In cases of unrestricted discharge installations for an indoor unit intended for ducting, the outlet must be protected with a grill.
Failure to fit this protection could result in damages being caused by the fan turbine.

General dimensions mm

RTH-7, 10



Note:

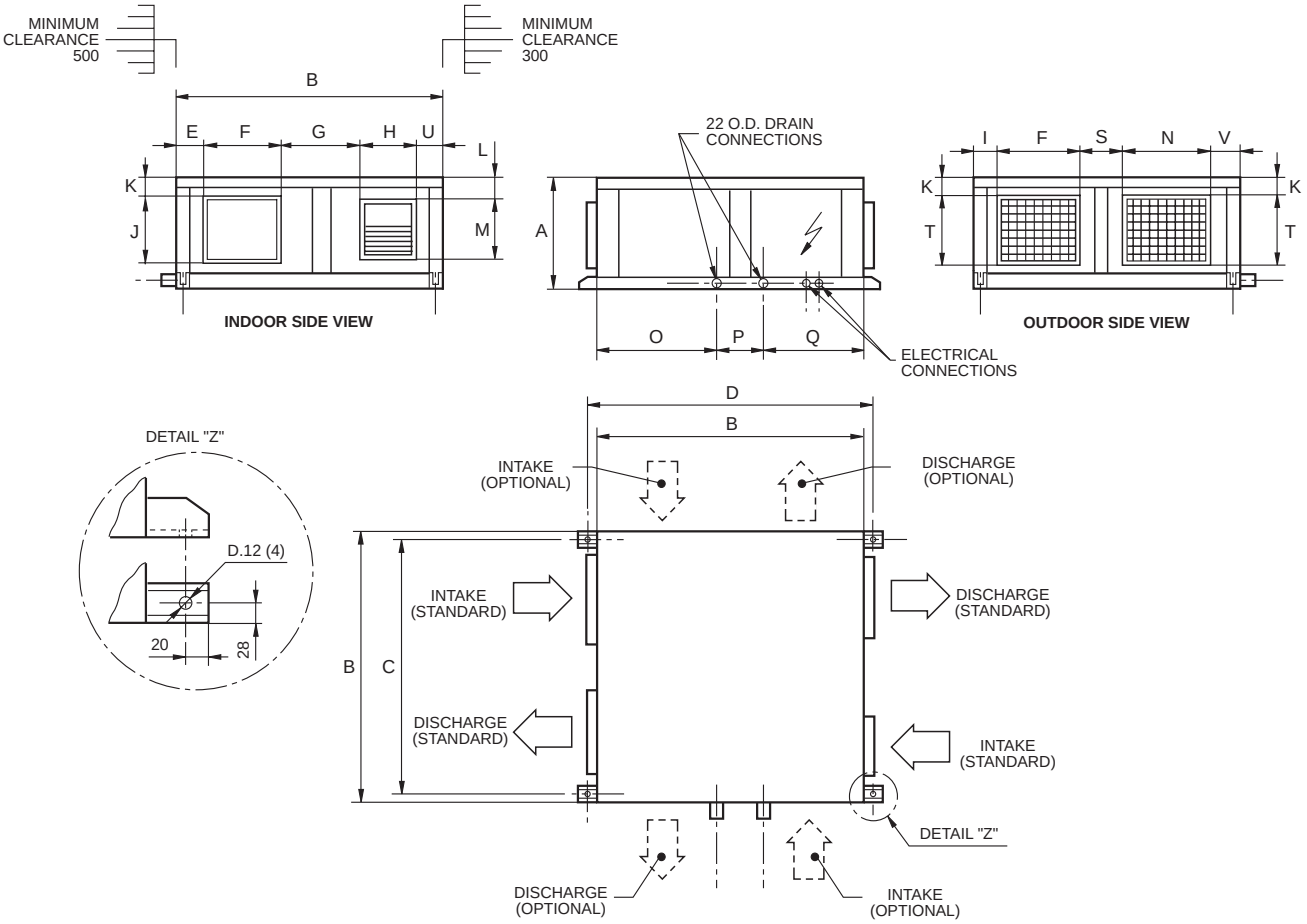
1- The solid line arrows indicate the standard air inlets and outlets. The dotted line arrows show inlet and outlet arrangements that can be performed on the jobsite.

2- If a filter with rack is to be fitted in the air intake, refer to the accessory's brochure for the dimensions.

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V
RTH-7	471	1200	1250	1156	78	376	290	302	80	362	35	86	262	376	550	214	436	214	362	154	154
RTH-10	549	1250	1300	1206	78	376	396	268	78	362	75	109	293	461	517	291	442	192	362	132	143

eneral dimensions mm

RTH- 12, 15 & 20



Note:

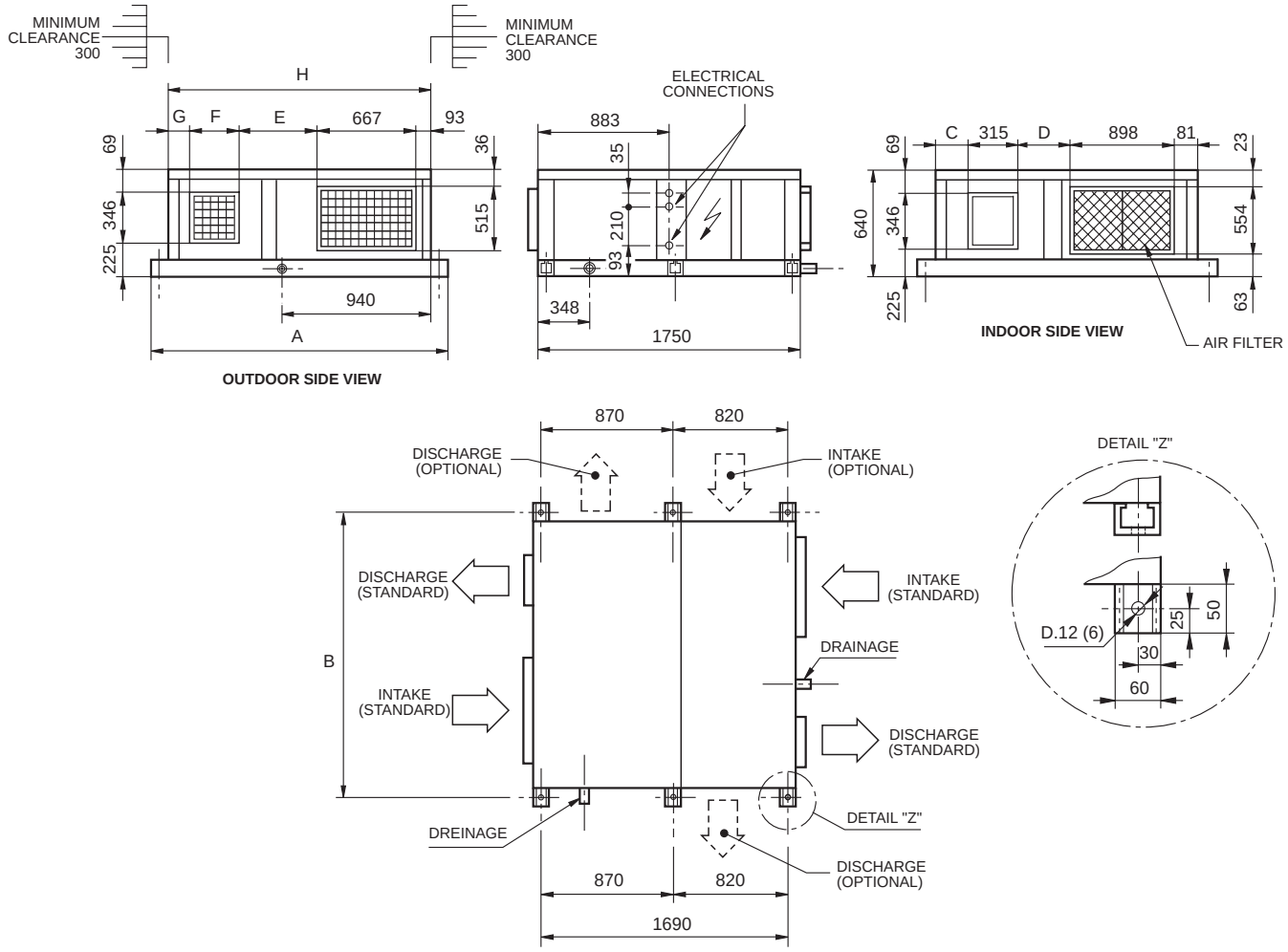
1- The solid line arrows indicate the standard air inlets and outlets. The dotted line arrows show inlet and outlet arrangements that can be performed on the jobsite.

2- If a filter with rack is to be fitted in the air intake, refer to the accessory's brochure for the dimensions.

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V
RTH-12 & 15	555	1440	1384	1492	78	476	412	315	78	430	39	25	345	546	652	324	464	192	430	159	148
RTH-20	727	1440	1384	1492	78	476	412	315	78	430	52	121	345	546	652	324	464	192	596	159	148

General dimensions mm

RTH - 25 & 30



Note:

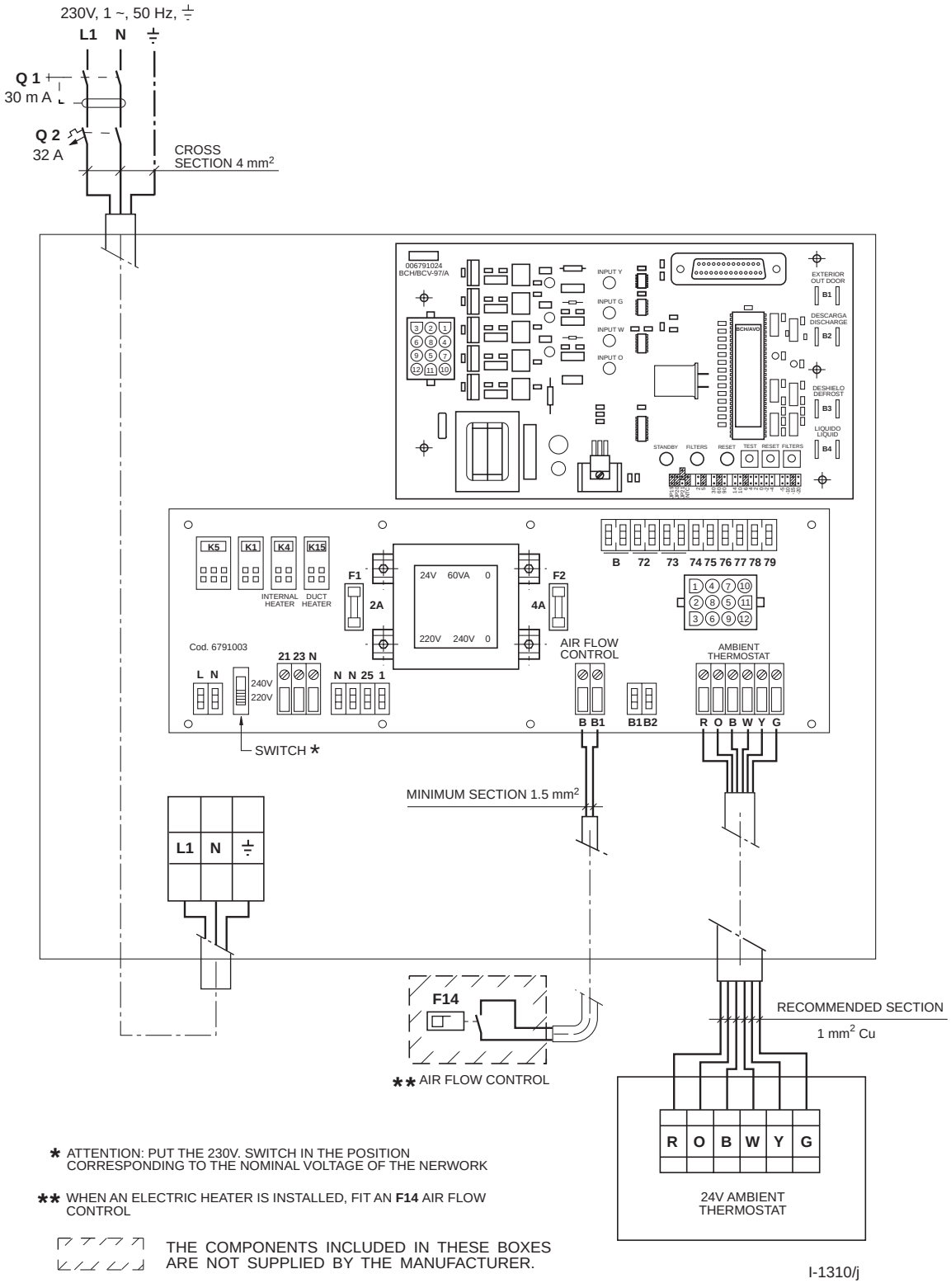
1- Always use the six fixing points to assemble to unit.

2- The solid line arrows indicate the standard air inlets and outlets. The dotted line arrows show inlet and outlet arrangements that can be performed on the jobsite.

Model	A	B	C	D	E	F	G	H
RTH-25	1 750	1 700	123	233	442	315	133	1 650
RTH-30	2 150	2 100	323	433	350	400	540	2 050

Wiring diagram

RTH - 7, 230.1.50



* ATTENTION: PUT THE 230V. SWITCH IN THE POSITION CORRESPONDING TO THE NOMINAL VOLTAGE OF THE NERWORK

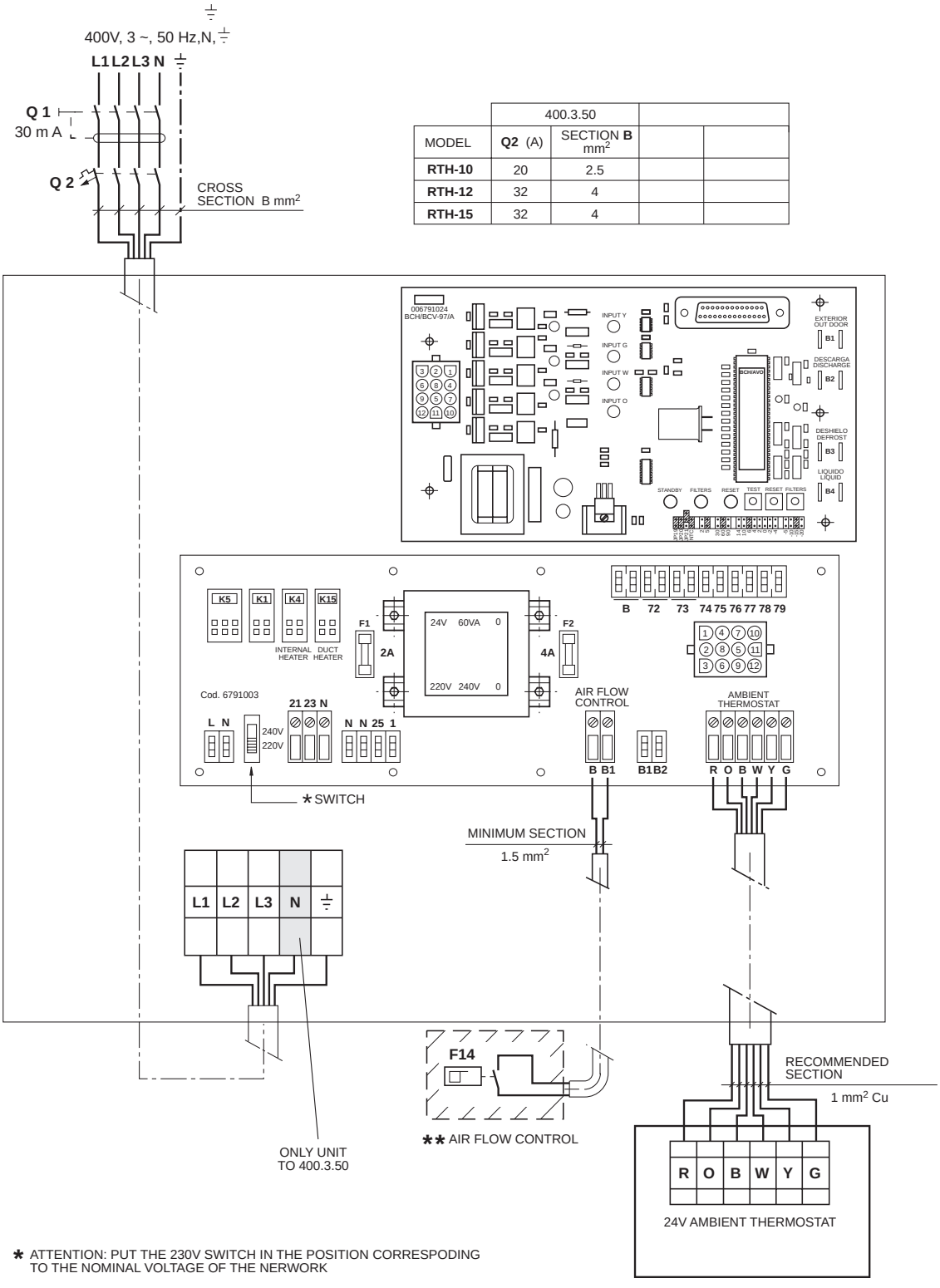
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN **F14** AIR FLOW CONTROL

THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

I-1310/j

Wiring diagram

RTH - 10, 12, 15, 400.3.50



MODEL	400.3.50 Q2 (A)	SECTION B mm²		
RTH-10	20	2.5		
RTH-12	32	4		
RTH-15	32	4		

* ATTENTION: PUT THE 230V SWITCH IN THE POSITION CORRESPODING TO THE NOMINAL VOLTAGE OF THE NERWORK

** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN **F14** AIR FLOW CONTROL

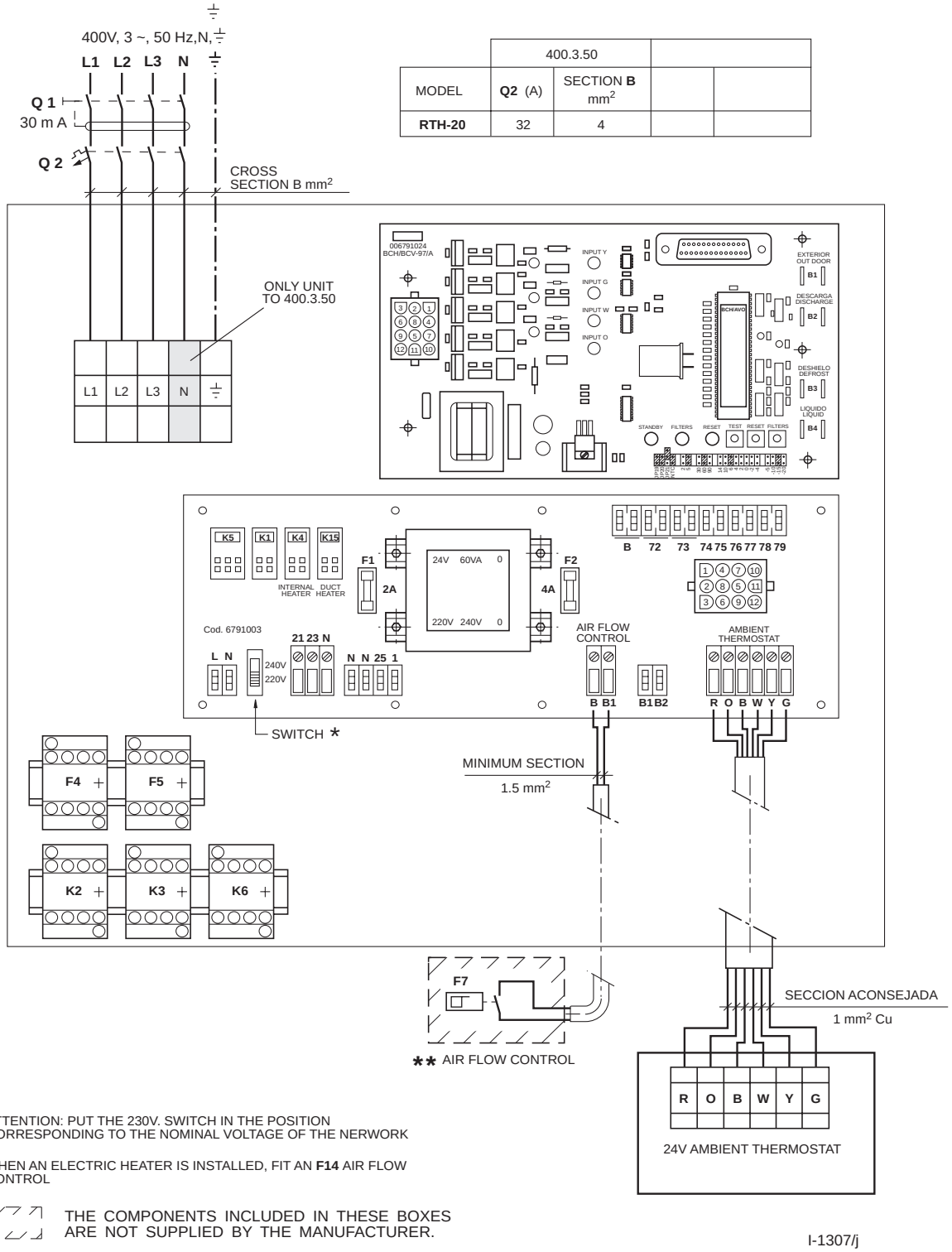
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

I-1312/j

Wiring diagram

RTH - 20, 400.3.50

	400.3.50			
MODEL	**Q2** (A)	SECTION **B** mm²		
RTH-20	32	4		



* ATTENTION: PUT THE 230V. SWITCH IN THE POSITION CORRESPONDING TO THE NOMINAL VOLTAGE OF THE NERWORK

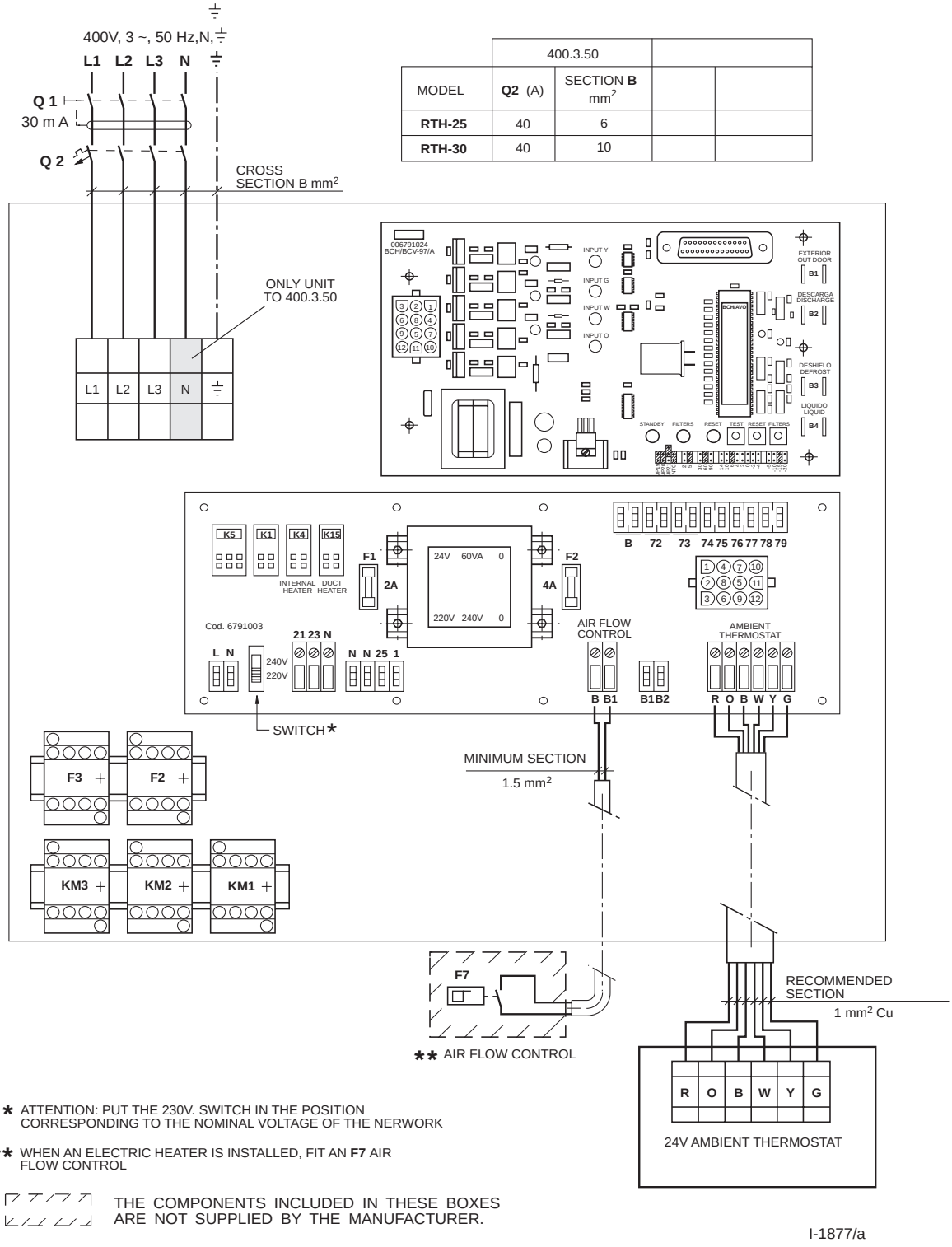
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN **F14** AIR FLOW CONTROL

THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

I-1307/j

Wiring diagram

RTH - 25 & 30, 400.3.50



MODEL	400.3.50 Q2 (A)	400.3.50 SECTION B mm²		
RTH-25	40	6		
RTH-30	40	10		

* ATTENTION: PUT THE 230V. SWITCH IN THE POSITION CORRESPONDING TO THE NOMINAL VOLTAGE OF THE NERWORK

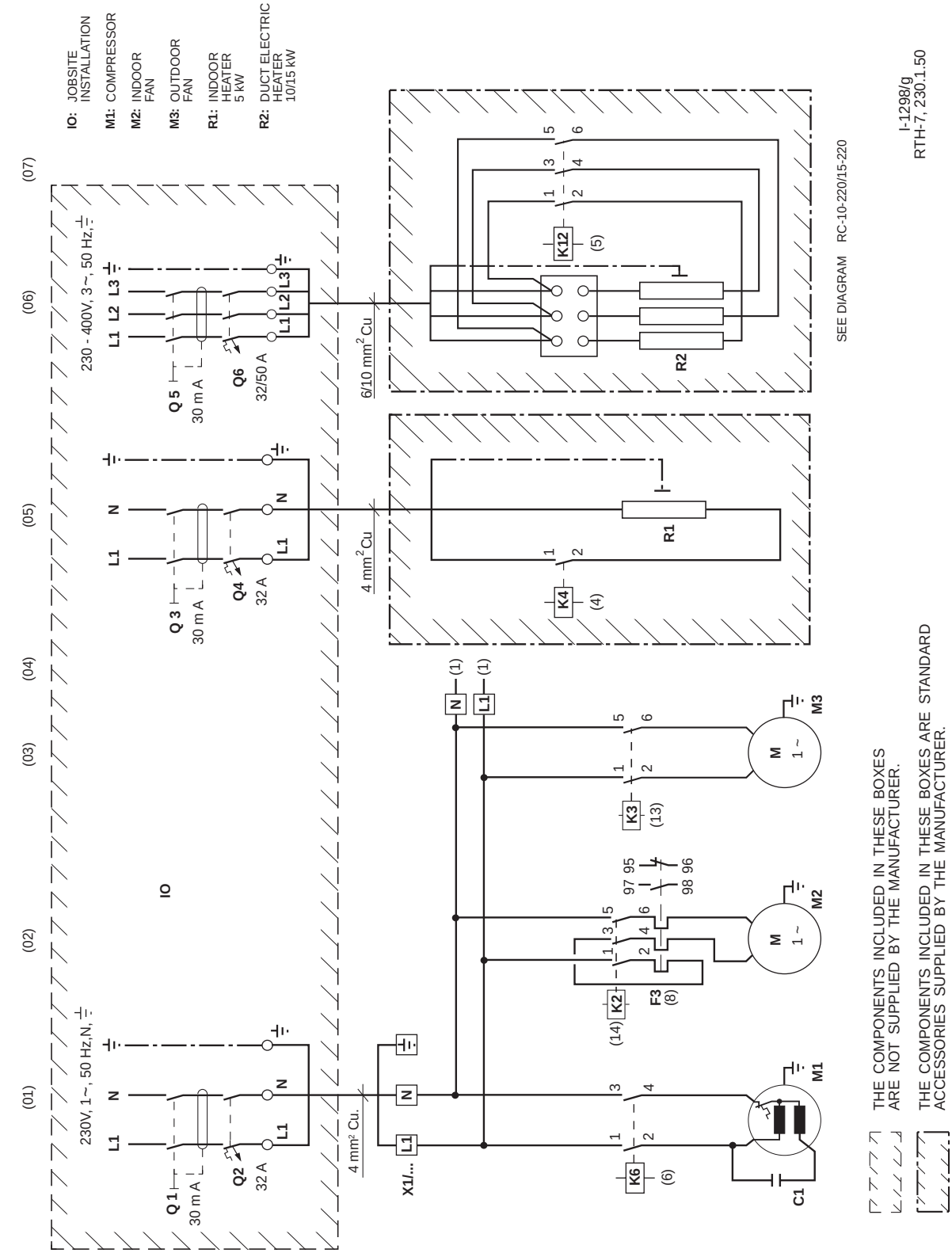
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN **F7** AIR FLOW CONTROL

THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

I-1877/a

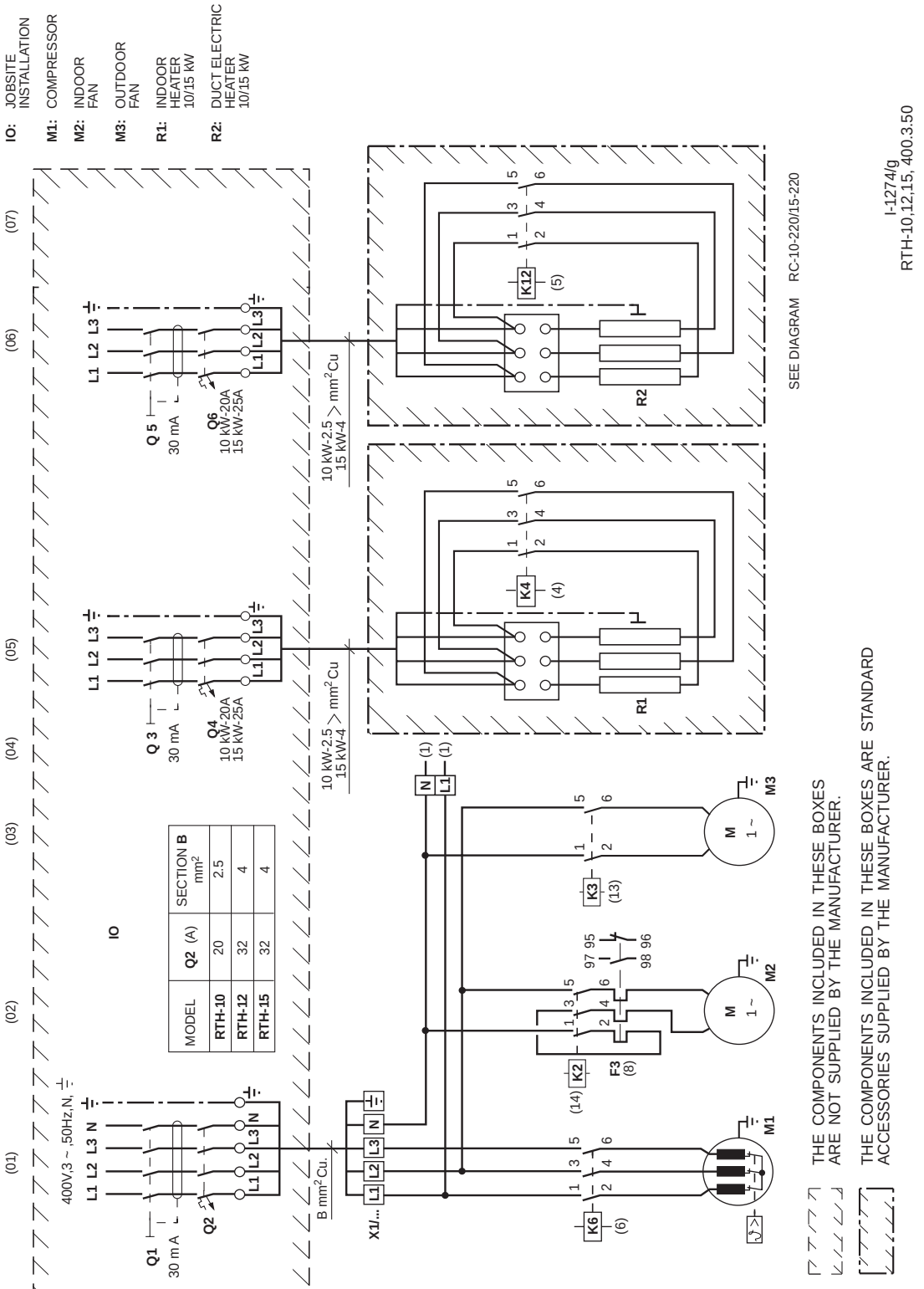
Power diagram

RTH - 7, 230.1.50



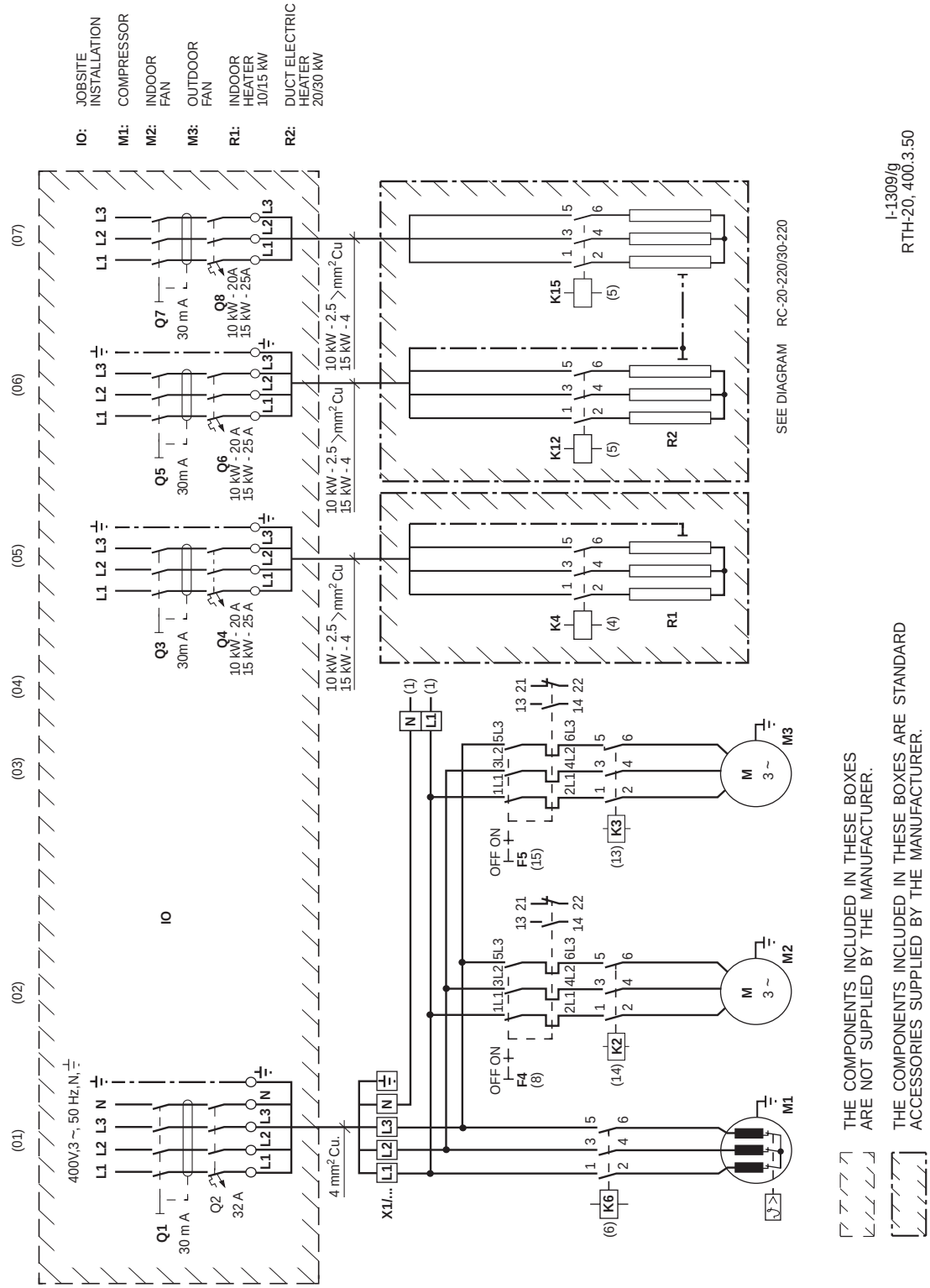
ower diagram

RTH - 10, 12, 15, 400.3.50



MODEL	Q2 (A)	SECTION B mm²
RTH-10	20	2.5
RTH-12	32	4
RTH-15	32	4

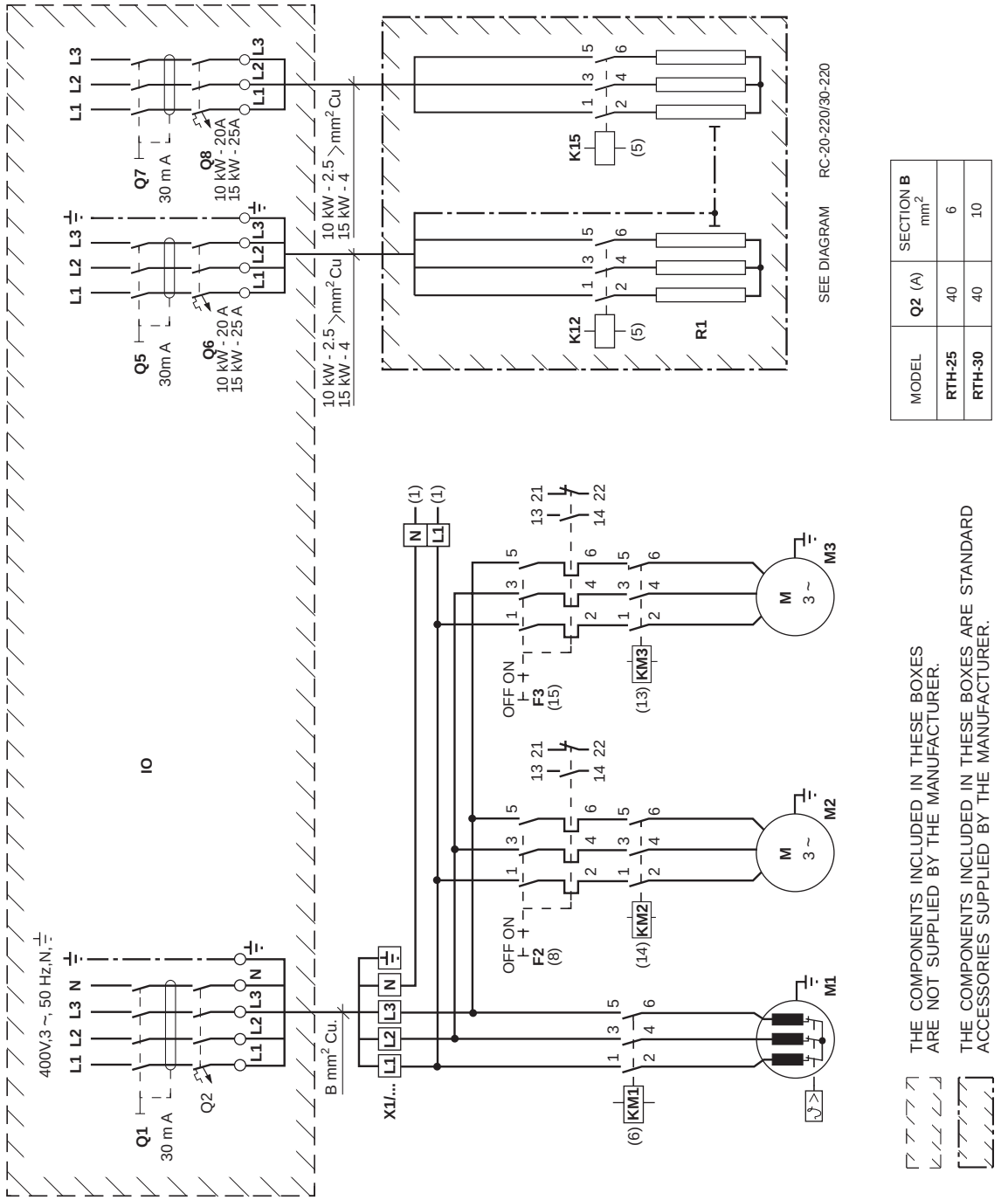
RTH - 20, 400.3.50



I-1309/g
RTH-20, 400.3.50

ower diagram

RTH - 25 & 30, 400.3.50



MODEL	Q2 (A)	SECTION B mm²
RTH-25	40	6
RTH-30	40	10

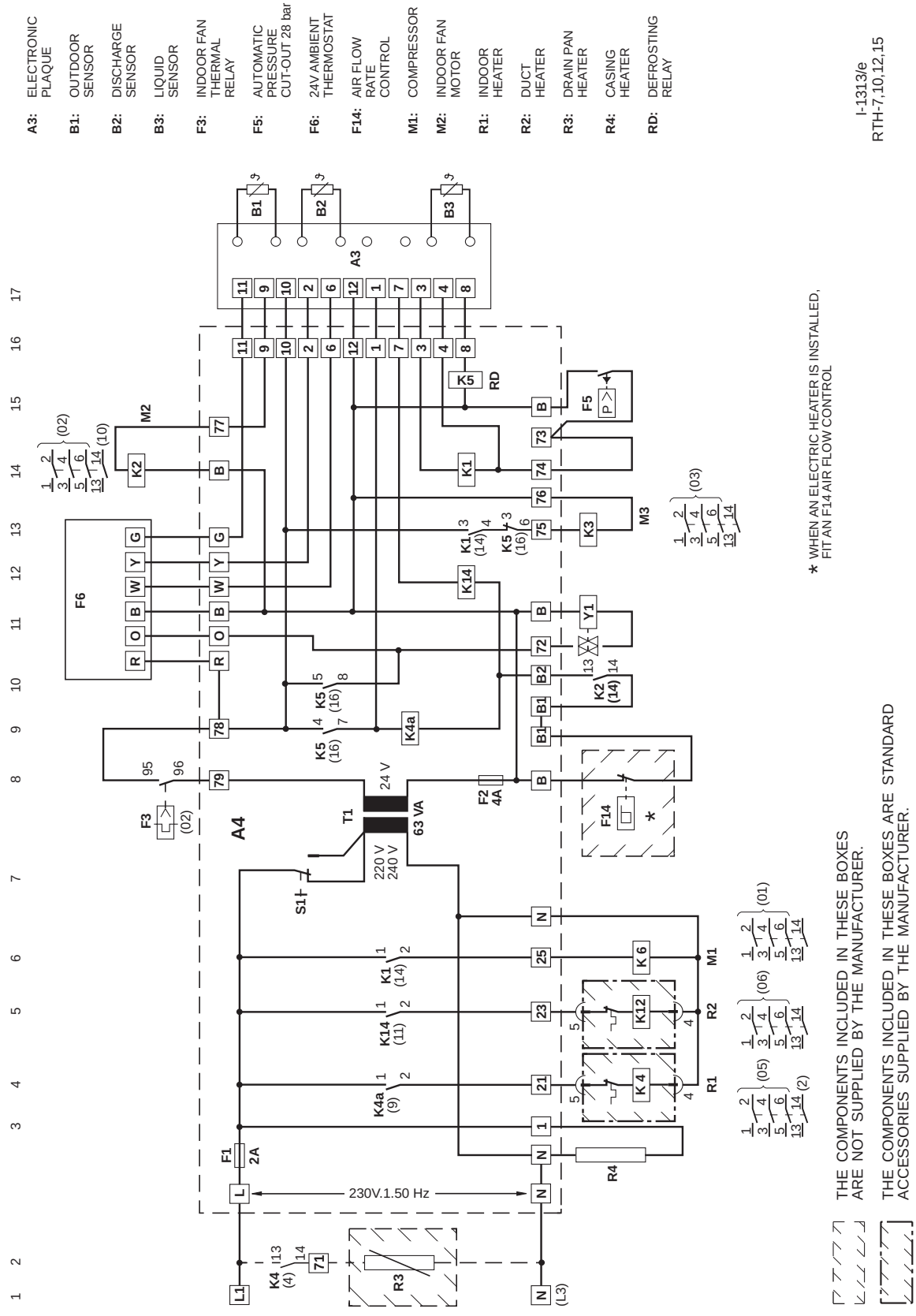
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

THE COMPONENTS INCLUDED IN THESE BOXES ARE STANDARD ACCESSORIES SUPPLIED BY THE MANUFACTURER.

I-1875/b
RTH-25,30, 400.3.50

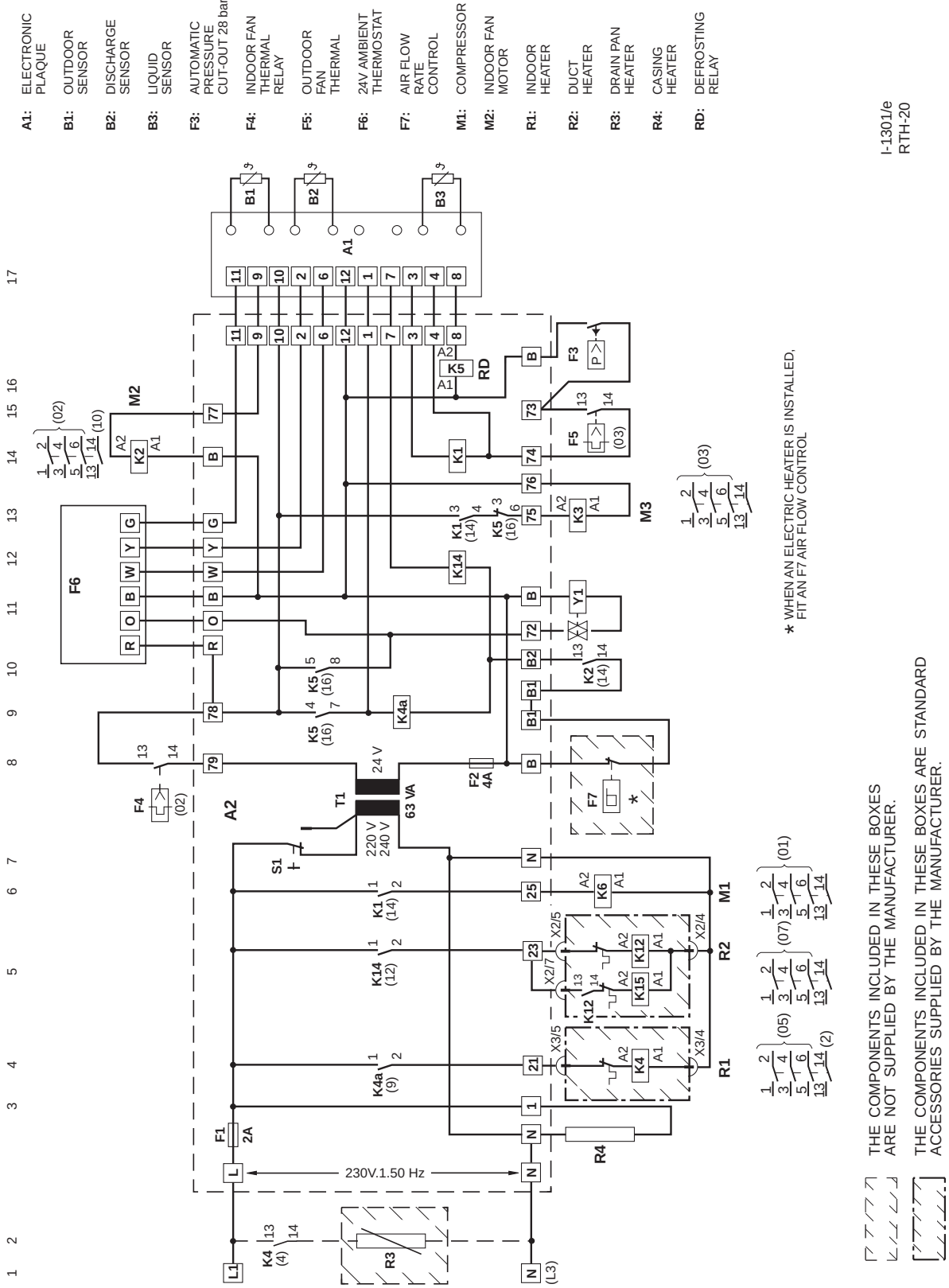
Control diagram

RTH - 7, 10, 12, 15



ontrol diagram

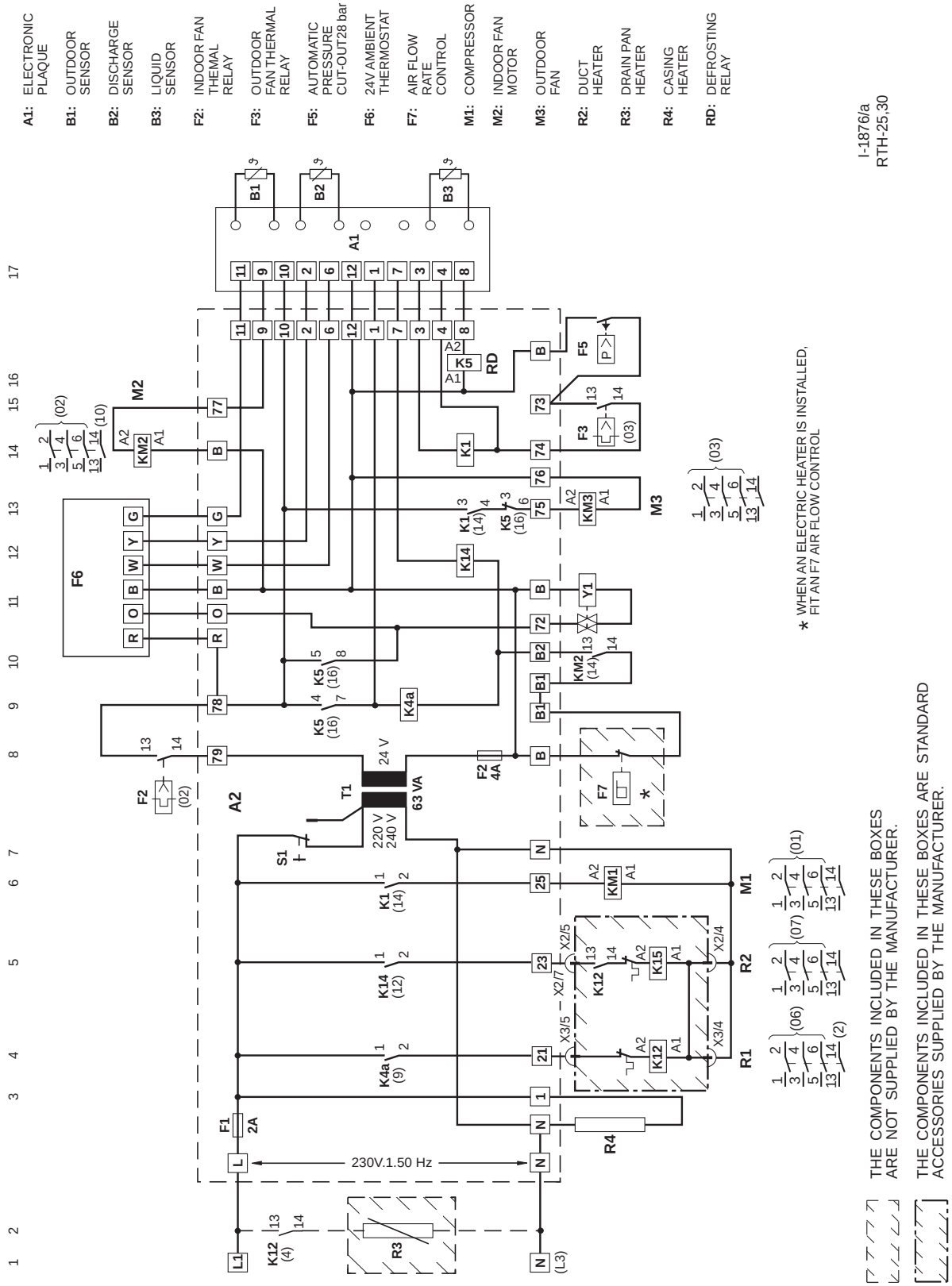
RTH - 20



I-1301/e
RTH-20

Control diagram

RTH - 25 & 30



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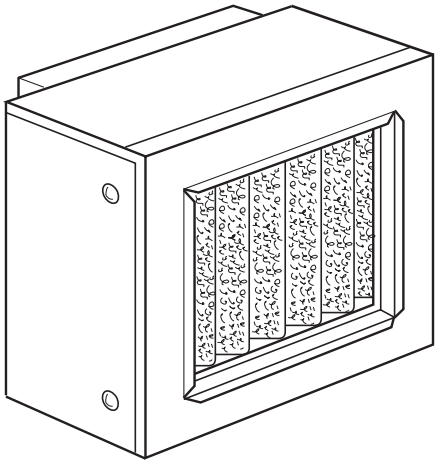
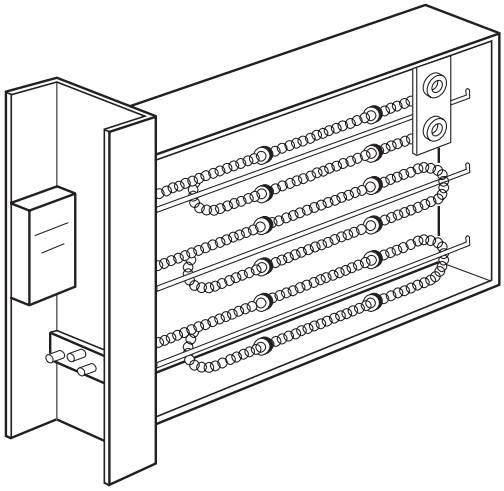
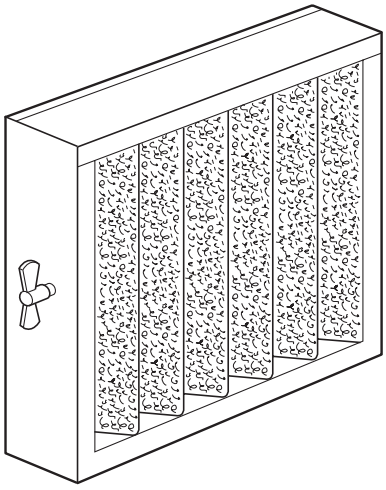
Optional accessories



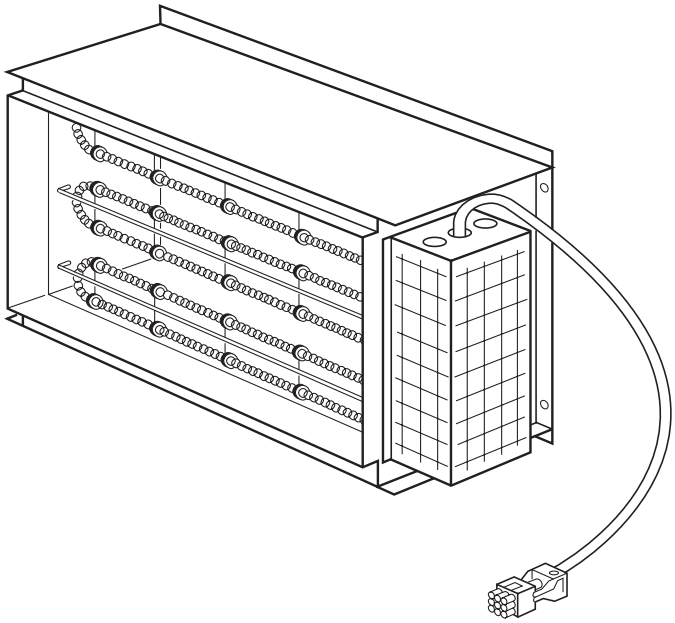
Filter rack with filter for RTH-7, 10, 12, 15 & 20



Indoor electric heater RH for RTH-7, 10, 12, 15 & 20



Air filter for RTH-7, 10, 12, 15 & 20, (the 25 and 30 units are supplied with a filter installed)



Duct electric heater RC -220 for RTH-7, 10, 12, 15, 20, 25 & 30

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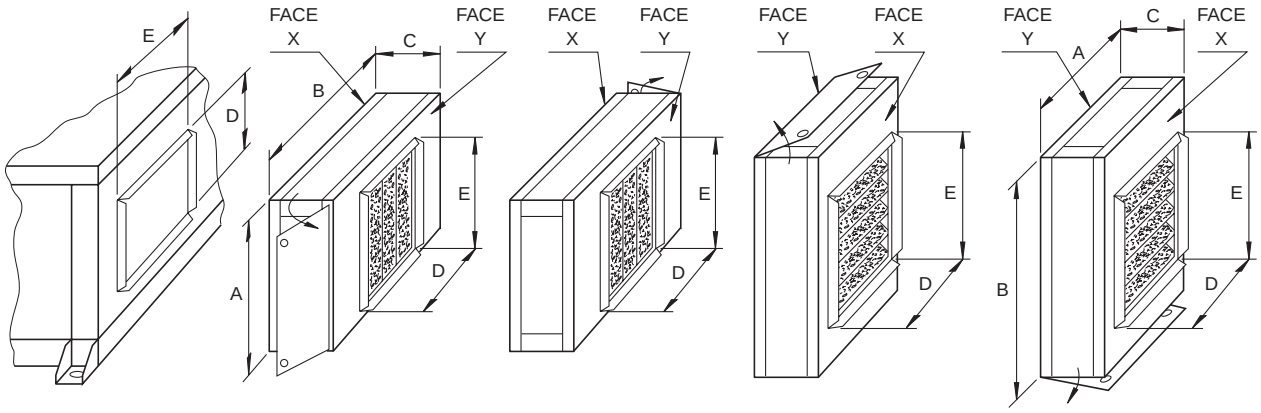
Filter rack with filter

Designed for installation in the air intakes of either the indoor or outdoor fans (only for the indoor one in the case of RTH-20). The incorporated filter is of the cleanable type, with the filter mat made of open cell polyurethane foam.

Due to the shape of the filter rack the access cover to the filter can be placed on any of the four sides of the rack or duct. When designing the air ducts consideration should be given to the fact that the use of this accessory, **always implies a 90° rotation of the dimensions of the unit's air inlet port**, as shown in the diagram below.

Positions and general dimensions mm



Note: With the RTH-20 unit this accessory can be connected only in the indoor air return.

Model			RTH -7 & 10	RTH -12, 15 & 20
Filter rack dimensions	Height	A	403	482
	Width	B	419	528
	Depth	C	164	174
Air inlet dimensions		D	364	434
		E	380	480
Shipping dimensions	Height		413	490
	Width		430	540
	Depth		210	220

Filters pressure drop (mm WG)

Flow rate m^3/h	RTH -7 & 10		RTH -12, 15 & 20	
	mm WG	Pa	mm WG	Pa
1 300	0.64	6.2	-	-
1 500	0.80	7.8	-	-
2 000	1.20	11.7	-	-
2 500	1.60	15.6	0.82	8.0
3 000	2.10	20.5	1.06	10.3
3 500	2.60	25.4	1.35	13.0
4 000	3.20	31.3	1.65	16.0
4 500	-	-	2.00	19.6
5 000	-	-	2.30	22.5
5 500	-	-	2.70	26.4
6 000	-	-	3.00	29.4

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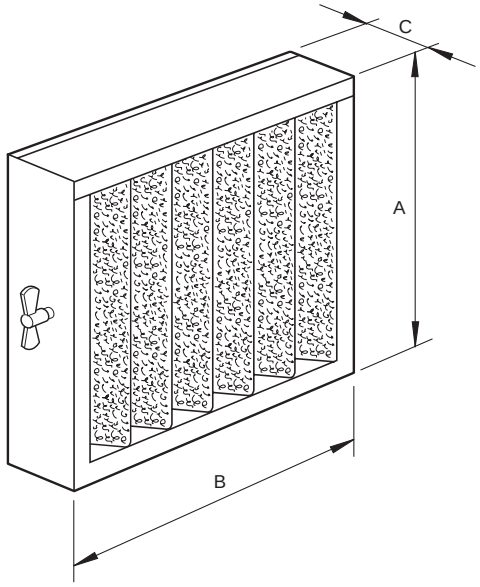
ir filter

Of the cleanable type, with open cell polyurethane foam filter mat.

Can be adapted to either the evaporator or condenser side. Once attached the filter will exceed the conditoner's outer dimensions by 100 mm.

General dimensions mm



Note: With the RTH-20 unit this accessory can be connected only in the indoor air return.

Model			RTH -7 & 10	RTH -12, 15 & 20
Filter dimensions	Height	A	356	426
	Width	B	370	470
	Depth	C	100	100
Shipping dimensions	Height		375	445
	Width		450	550
	Depth		110	110

Filters pressure drop (mm WG)

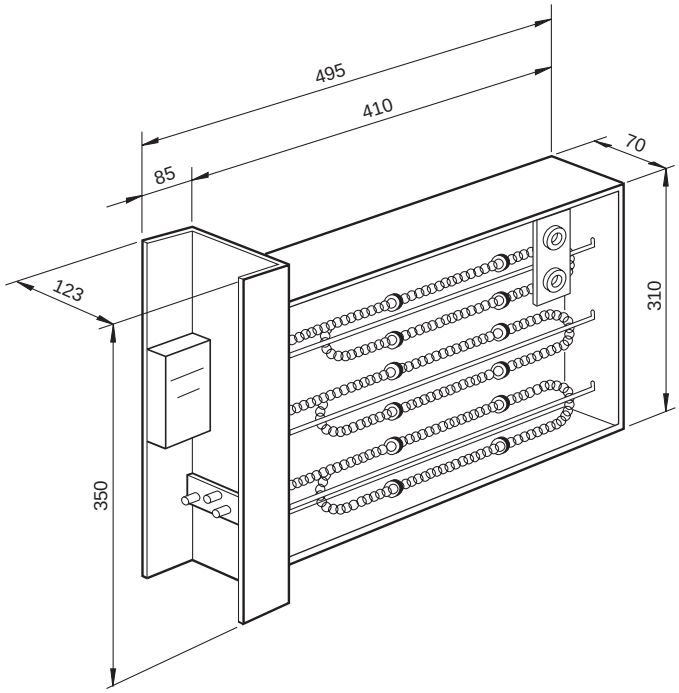
Flow rate m³/h	RTH -7 & 10		RTH -12, 15 & 20	
	mm WG	Pa	mm WG	Pa
1 300	0.64	6.20	-	-
1 500	0.80	7.80	-	-
2 000	1.20	11.70	-	-
2 500	1.60	15.60	0.82	8.0
3 000	2.10	20.50	1.06	10.3
3 500	2.60	25.40	1.35	13.0
4 000	3.20	31.30	1.65	16.0
4 500	-	-	2.00	19.6
5 000	-	-	2.30	22.5
5 500	-	-	2.70	26.4
6 000	-	-	3.00	29.4

Indoor electric heaters RH

They are electric resistances made of air exposed wire elements and include the following components:
Electric resistances of the air exposed wires type with chrome-nickel wires.
High reliability contactors with 220 V coil.
Safety thermal protector that disconnects control circuit when sensing an abnormally high temperature.
Fan control to prevent the resistance from operating if the fan has not been switched on.
Star-triangle connection terminal strip for 230.3.50 & 400.3.50.
Quick connector for the control wiring between the heater ans the air conditioner.

Attention:
A flow rate control should be installed together with every electric heater, to prevent the heater from operating if the fan has not been switched on.

General dimensions mm



Characteristics

Model		RH - 5.1	RH - 5.3	RH - 103	RH - 15.3
For installation in heat pump size		RTH-7	RTH-7,10	RTH-7,10,12,15,20	RTH-10,12,15,20
Power	kW	5	5	10	15
Power supply	V.ph.Hz	230.1.50		230.3.50 or 400.3.50	
Consumption	A	22	13/7.5	26/15	39/23
Pressure with nominal flow rate	mm WG	1	1	2	2
Shipping dimensions	mm	370 x 510 x 140	370 x 510 x 140	370 x 510 x 140	370 x 510 x 140
Nett weight	kg	2.3	2.3	3.1	3.8
Gross weight	kg	2.7	2.7	3.4	4.2

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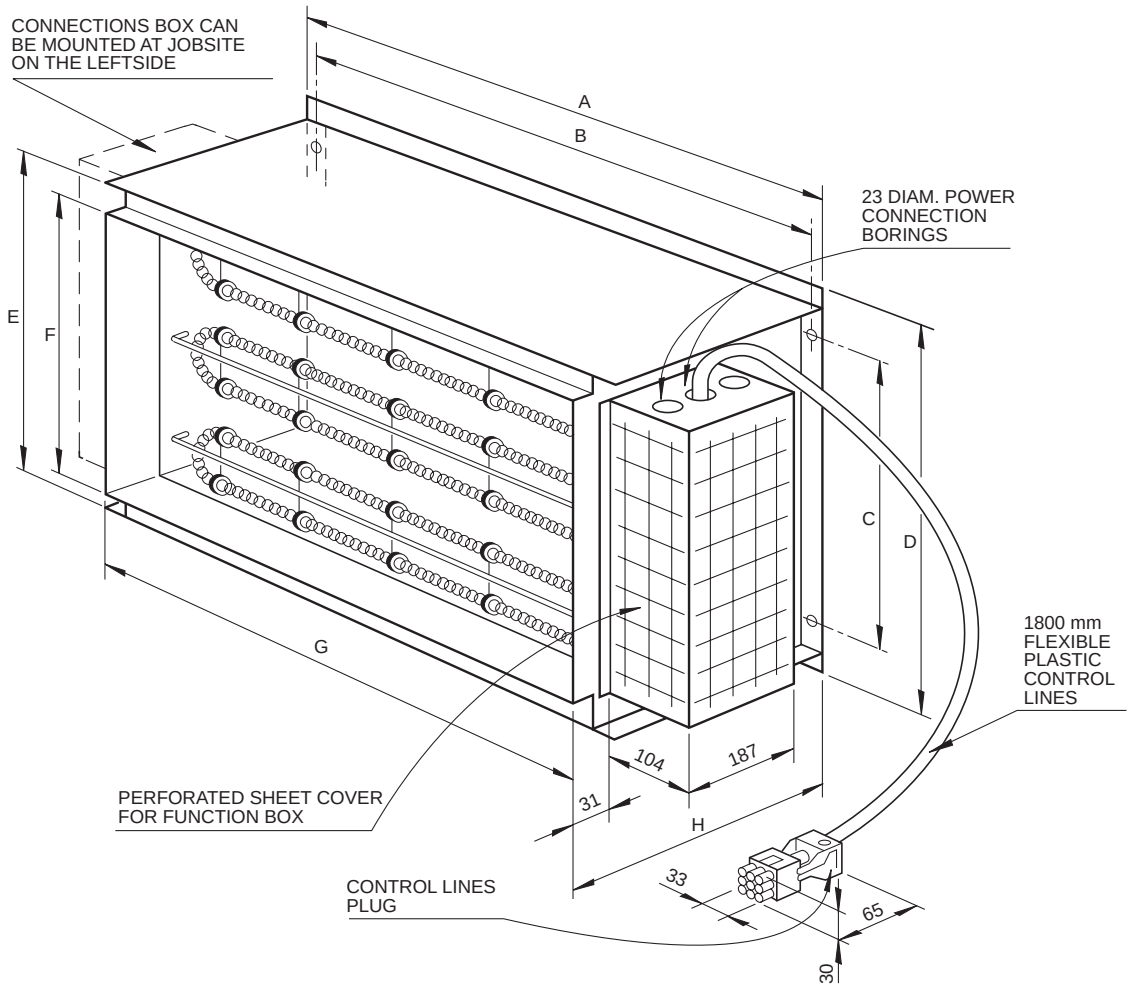
uct electric heaters RC-220

For installation in the indoor fan outlet.
Its intended function is to operate as an emergency heater.
The charge loss calculated for these heaters in any functioning state is 1 mm WG

Attention:
A flow rate control should be installed together with every electric heater, to prevent the heater from operating if the fan has not been switched on.

General dimensions mm

Note: For more detailed information see the brochure for this accessory.



Note: To connect electric heaters, see the wiring diagrams of each RTH.

Resistance model	Nominal power kW
RC-10 - 220	10
RC-15 - 220	15
RC-20 - 220	20
RC-30 - 220	30

Resistance size	A	B	C	D	E	F	G	H
10, 15, 20	582	562	330	408	376	345	542	321
30	823	803	435	517	482	451	783	351

All data subject to change without notice.

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DEFINITIVE SHUTDOWN, DISASSEMBLY & DESTRUCTION

This product includes a refrigerant gas under pr essur e, moving parts and electric components which may be dangerous and cause injury !
All servicing must be done by qualified personnel, wearing protective clothing, in compliance with applicable safety r ules.

Read the Manual

Risk of electr ocution

Remote-contr olled unit
May start up unexpectedly

1. Cut off all electric power-supplies from the unit, as well as from the power supply of the control systems running it. Make sure that all electric cut-off devices are blocked in open position and the town-gas supply valves are in closed position. The power-supply wires and gas pipes may then be disassembled and removed. Consult the technical documentation in order to ascertain the unit's connection points.
2. Transfer all refrigerant from each system component to an appropriate recipient, or use a specially-designed recovery unit. The refrigerant can then be re-used or returned to the manufacturer for destruction/recycling, depending on the case. **It is strictly forbidden to dischar ge the r efrigerant into the atmospher e.** Depending on the case, drain the refrigerant oil from each system into an appropriate recipient and eliminate it in accordance with local applicable regulations relative to hydrocarbon waste products.
3. As a general rule, the solid-block units are to be disassembled and removed in a single piece. Remove all fastening bolts and then raise the items with handling equipment with appropriate lifting capacity. It is absolutely essential to consult the information in the technical documentation as regards the weight and recommended handling procedures. The residual refrigerant oil and spills are to be sponged up and eliminated according to instructions given above.
4. After disassembly, the system components are to be destroyed/drained/put in a recycling dump in accordance with local applicable regulations.

YORK® Europe

YORK INTERNATIONAL

E - TEC - R9905

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