
Model BCH horizontal packaged air to air heat pump



Ref.: N-26844 0700

Technical information



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General

General description

The model BCH 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.

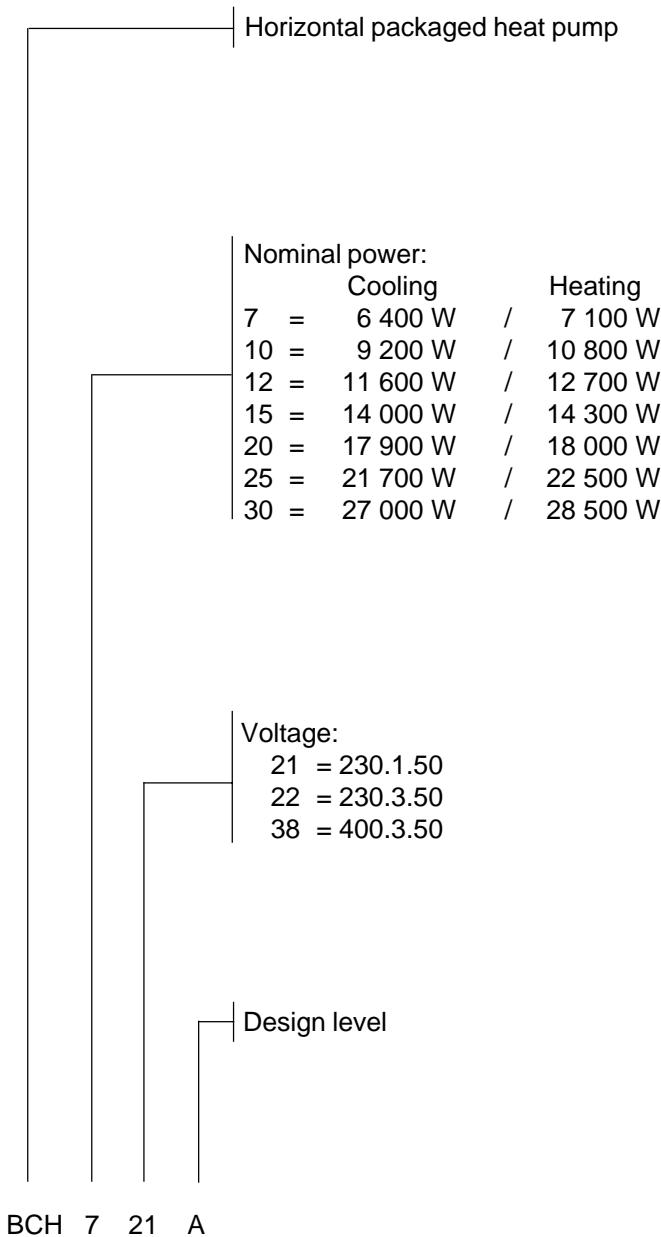
It can be located either indoors or outdoors since it is protected to withstand weathering and the centrifugal fans allow the connection of ductwork.

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



Control

To achieve maximum energy saving and a perfect operation of the equipment, that will avoid breakdowns and prolong its operating life, the BCH 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 BCH 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

reaching 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		BCH-7	BCH-10	BCH-12	BCH-15	BCH-20	BCH-25	BCH-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	4 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	0.61
	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	240	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	240	240
	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	1 410
	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	

Nominal features

Unit	Summer		Winter	
	Cooling capacity W	Consumption W	Heating capacity W	Consumption W
BCH-7	6 400	3 800	7 100	3 700
BCH-10	9 200	5 000	10 800	4 000
BCH-12	11 600	6 700	12 700	5 000
BCH-15	14 000	6 900	14 300	5 420
BCH-20	17 900	8 900	18 000	7 780
BCH-25	21 700	10 000	22 500	7 500
BCH-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 m³/h	Static pres. nominal Pa	Out. fan nominal m³/h	Static pres. nominal Pa
BCH-7	2 175	25	2 100	50
BCH-10	2 780	37	3 350	50
BCH-12	3 900	50	3 410	50
BCH-15	3 900	50	3 410	50
BCH-20	4 675	50	4 675	50
BCH-25	4 900	62	5 200	50
BCH-30	5 800	62	6 400	50

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

Sensitive cooling capacities

Model	Outside air dry temperature °C (DB)	Air intake humid temperature °C (WB)	Total capacity	Sensitive capacity (W)				Compressor power absorbed
				Dry temperature of air °C (DB)				
				22	24	27	29	
			W	W	W	W	kW	
BCH-7	25	22	9 300	2 600	3 700	4 900	6 000	2.18
		19.5	8 300	3 500	4 600	5 700	6 800	2.08
		17	7 200	4 300	5 400	6 500	7 200	1.92
	35	22	8 200	2 200	3 300	4 500	5 600	2.51
		19.5	7 500	3 200	4 300	5 400	6 500	2.38
		17	6 800	4 100	5 200	6 300	6 800	2.22
	45	22	7 800	2 100	3 200	4 300	5 400	2.88
		19.5	6 700	2 800	4 000	5 100	6 200	2.75
		17	5 700	3 600	4 800	5 700	5 700	2.48
BCH-10	25	22	13 600	3 700	5 500	7 200	9 000	3.25
		19.5	12 200	5 200	7 000	8 700	10 500	3.10
		17	10 600	6 400	8 200	10 000	10 600	2.85
	35	22	12 000	3 200	8 000	6 700	8 500	3.75
		19.5	11 000	4 700	6 500	8 200	10 000	3.58
		17	10 000	6 200	8 000	9 700	10 000	3.20
	45	22	11 400	3 000	4 700	6 500	8 300	4.30
		19.5	9 800	4 200	6 000	7 800	9 000	4.10
		17	8 400	5 500	7 200	8 400	8 400	3.65
BCH-12	25	22	17 600	4 600	7 300	10 000	12 700	4.15
		19.5	16 400	7 000	9 700	12 400	15 100	3.90
		17	14 800	9 200	11 900	14 600	14 800	3.75
	35	22	16 500	4 200	6 900	9 600	12 300	4.65
		19.5	14 900	6 400	9 100	11 800	14 500	4.45
		17	13 400	8 600	11 300	13 400	13 400	4.25
	45	22	14 700	3 500	6 200	8 900	11 600	5.30
		19.5	13 700	6 000	8 700	11 400	13 700	4.95
		17	12 200	8 100	10 800	12 200	12 200	4.70

Sensitive cooling capacities

Model	Outside air dry temperature °C (DB)	Air intake humid temperature °C (WB)	Total capacity	Sensitive capacity (W)				Compressor power absorbed
				Dry temperature of air °C (DB)				
				22	24	27	29	
W	W	W	W	W	kW			
BCH-15	25	22	19 400	-	8 300	11 700	15 200	4.70
		19.5	17 800	7 700	11 100	14 600	17 800	4.60
		17	16 300	10 700	14 100	16 300	16 300	4.40
	35	22	17 600	-	7 600	11 100	14 500	5.50
		19.5	16 300	7 100	10 600	14 000	16 300	5.10
		17	14 900	10 100	13 500	14 900	14 900	4.90
	45	22	15 800	-	7 100	10 500	13 900	6.20
		19.5	14 500	6 600	10 000	13 400	14 500	5.80
		17	13 300	9 500	13 000	13 400	13 400	5.50
BCH-20	25	22	24 410	-	10 200	14 150	19 180	6.30
		19.5	22 670	9 620	13 600	17 440	22 600	6.20
		14	18 830	19 200	18 800	18 830	18 830	5.90
	35	22	23 480	-	9 400	14 500	18 400	7.20
		19.5	20 930	8 370	12 600	17 600	21 600	7.00
		14	18 480	15 530	17 090	18 300	18 300	6.60
	45	22	21 160	-	8 820	13 900	17 900	8.00
		19.5	19 340	7 870	11 690	16 900	19 600	7.80
		14	16 290	14 730	16 310	16 500	16 270	7.30
BCH-25	25	22	26 040	8 005	10 791	14 971	17 761	6.64
		19.5	23 436	11 466	14 253	18 432	21 223	6.95
		17	21 700	15 181	17 968	21 700	21 700	7.27
	35	22	24 087	7 330	10 116	14 296	17 082	7.51
		19.5	21 700	10 812	13 599	17 778	20 564	7.90
		17	19 964	12 957	15 743	19 923	19 964	8.30
	45	22	21 700	6 580	9 366	13 545	16 332	8.69
		19.5	19 530	10 067	12 853	17 033	19 530	9.09
		17	17 794	13 585	16 371	17 794	17 794	9.48
BCH-30	25	22	26 040	7 777	11 304	16 594	20 126	8.23
		19.5	23 436	12 200	15 727	21 018	23 436	8.62
		17	21 700	16 866	20 393	21 700	21 700	9.02
	35	22	24 087	7 133	10 660	15 950	19 477	9.31
		19.5	21 700	11 573	15 100	20 391	21 700	9.80
		17	19 964	15 207	18 735	19 964	19 964	10.29
	45	22	21 700	6 414	9 941	15 232	18 759	10.78
		19.5	19 530	10 856	14 383	19 530	19 530	11.27
		17	17 794	15 327	17 794	17 794	17 794	11.76

Outdoor fan performance

Model	Static pressure available		Air flow		Power absorbed W
	mm WG	Pa	m ³ /h	m ³ /s	
BCH -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
BCH -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
BCH -12 BCH -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
BCH -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
BCH -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
BCH -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 W
	mm WG	Pa	m ³ /h	m ³ /s	
BCH -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
BCH -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
BCH -12 BCH -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
BCH -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
BCH -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
BCH -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 BCH 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

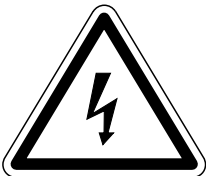
When dismantling after a long service life, its components should be ecologically salvaged. The cooling circuit is full of HCFC-22 refrigerant which should be salvaged and, finally, returned to the gas manufacturer for recycling.

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 sign 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

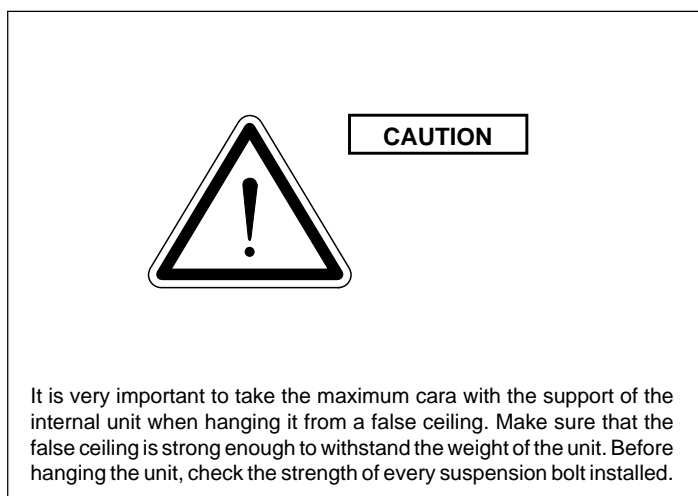
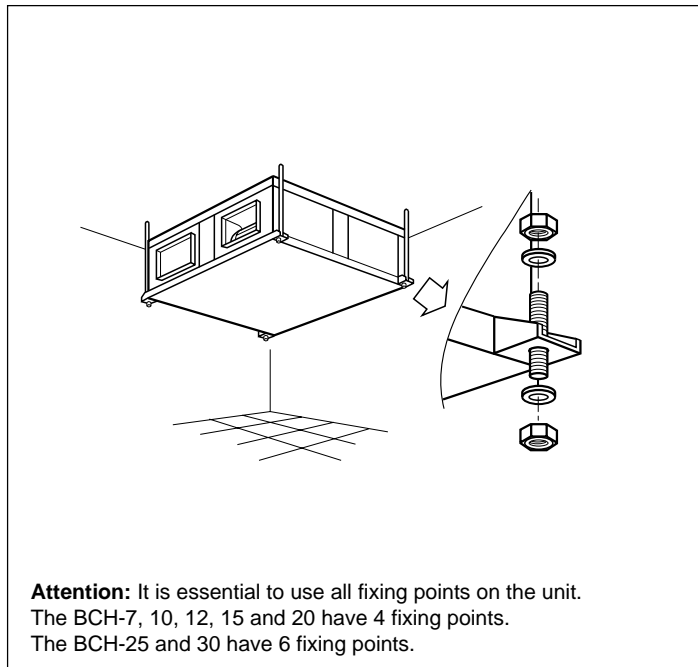
the drain pipe becoming clogged by dust, dirt or some other material should be foreseen.

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).



Resting on the ground

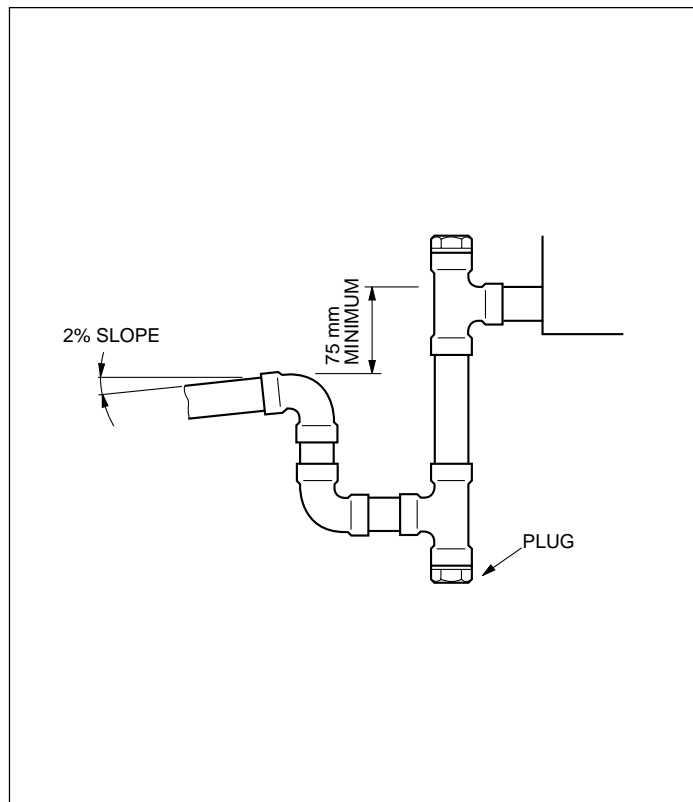
If unit is placed outdoors on the ground, it should be raised on supports to avoid the possibility that snow accumulation blocks the air intakes.

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:

- Air intake and discharge from the outdoor unit.
- Connecting the drainage and wiring pipes.
- Air ducts.
- Maintenance servicing.
- 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.

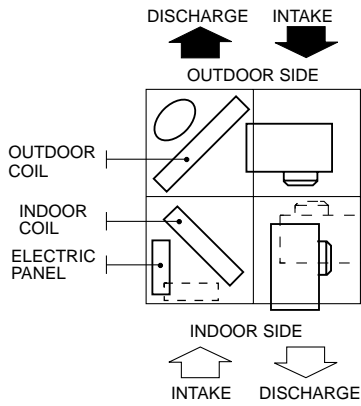
Air ducts

- 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.
- It is advisable to install a damper in every discharge duct, thus making possible a correct balance of the system.
- Allow for an easy access to the air filters for replacement and cleaning.
- 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.

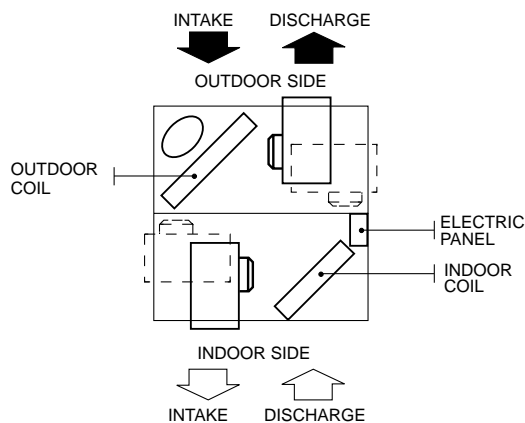
Air intake and discharge orientations

Factory supplied orientation.

BCH-7,10,12,15 & 20



BCH-25 & 30

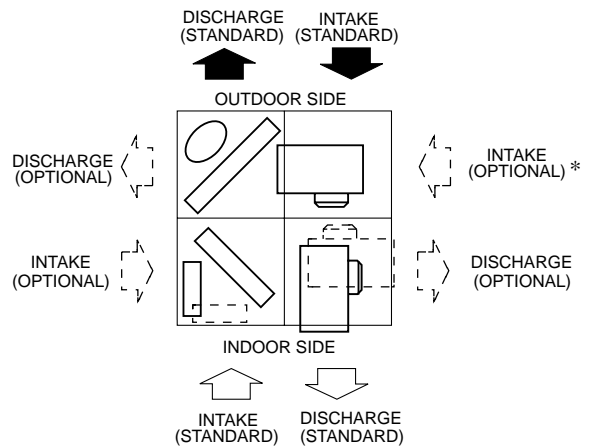


Variations to be performed at jobsite

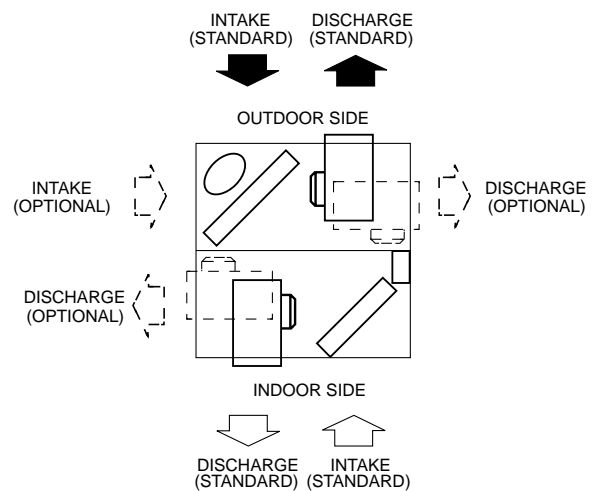
Starting from the standard unit the orientations of the air intake and discharge of the condenser and evaporator fans can be changed to obtain any of the combinations shown in the figure below.

BCH-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.



BCH-25 & 30

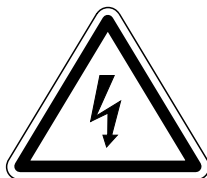


Electrical installation

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.



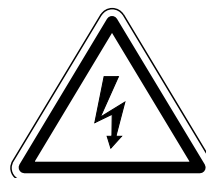
Loose cables can cause overheating of the connectors or an inadequate operation of the unit. Fire risk could also exist. For this reason, make sure that all cables are properly connected.

Start-up procedure

- Connect the power supply cable and earth to the corresponding boards on the controls box.
- Give power to the auxiliary control line at 220/240.1.50.
- Connect the room thermostat line to 24 V on the boards provided in the heat pump.
- 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 mm ²	Automatic circuit breaker A
	Compressor	Fan	Compressor Nominal	Outdoor fan	Indoor fan		
		Outd. _ Indoor		Run	Run		
BCH -7	230.1.50		14.3	2.8	1.7	4	32
BCH -10	230.3.50		10.9	5.1	2.6	4	32
	400.3.50		6.3	5.1	2.6	2.5	20
BCH -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
BCH -15	230.3.50		13.3	5.2	5.2	6	40
	400.3.50		7.7	5.2	5.2	4	32
BCH -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
BCH -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	32
BCH -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	32

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 conditions 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	15	10 ⁽²⁾	23	27

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/cm².

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 as 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.

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.

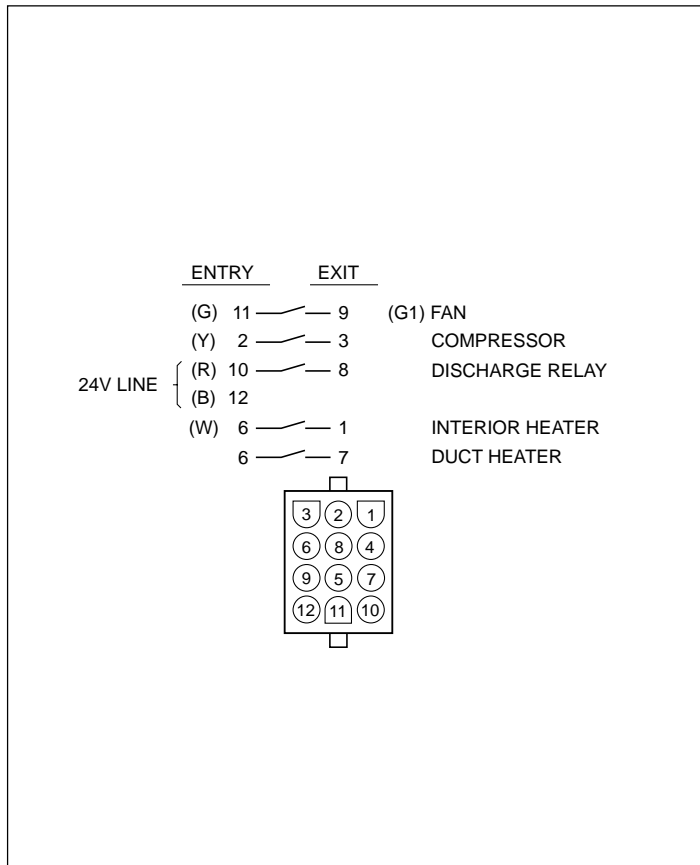
Winter cycle

On winter cycle the discharge gas goes to the indoor coil which operates as the condenser.

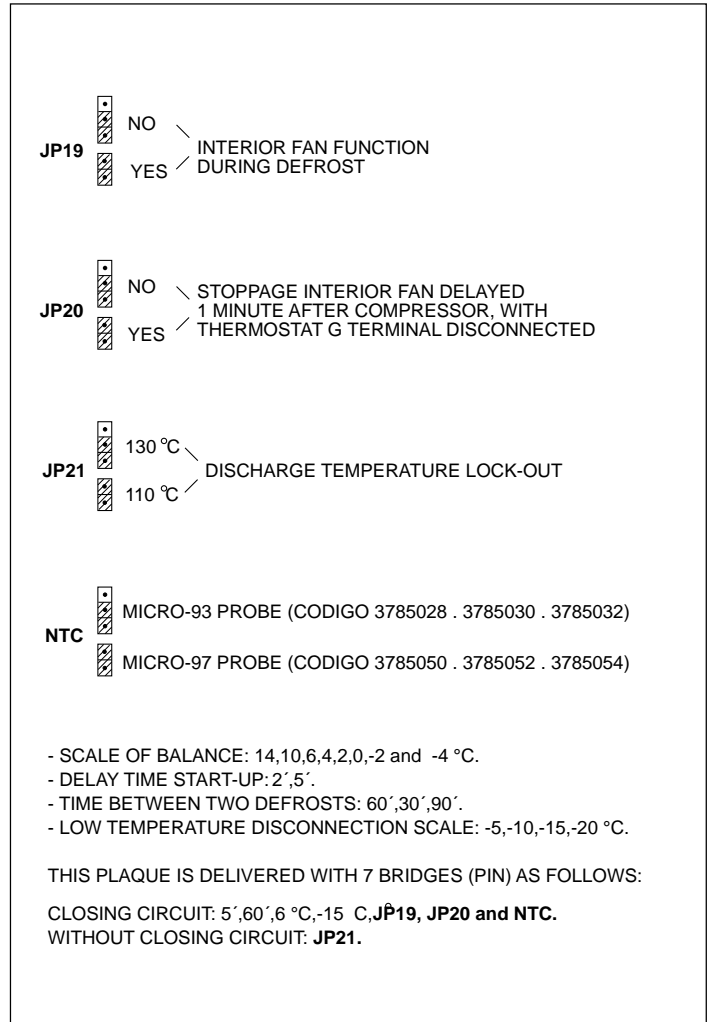
The outdoor coil becomes the evaporator.

Reversing valve is deactivated. Refrigerant's circuit is shown in figure.

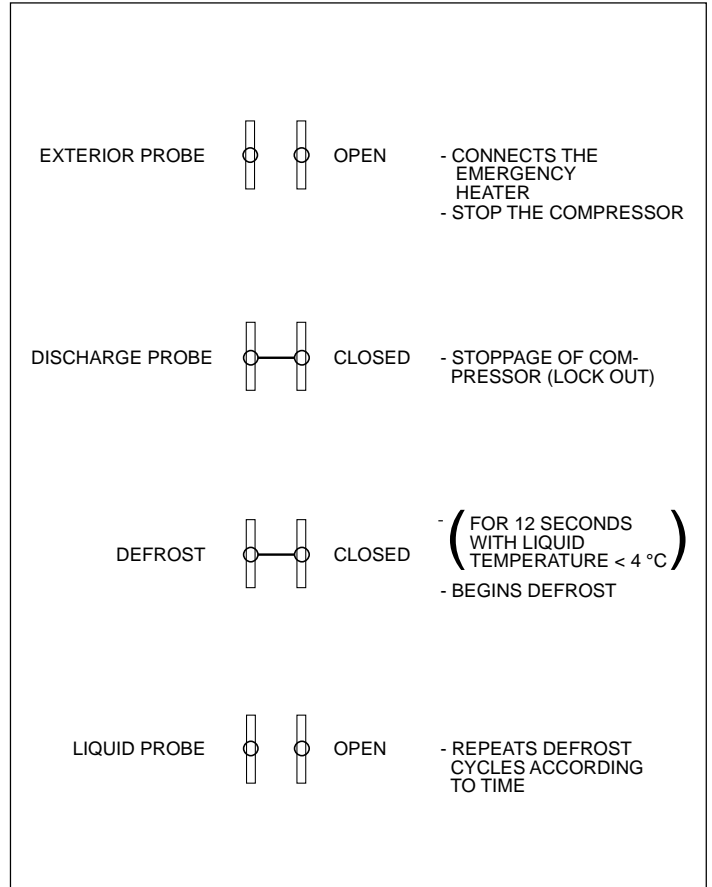
Detail module internal connections with exits to the connector



Function of the pins



Actions according to state of the probe



Operating sequences

See relevant electrical diagrams.

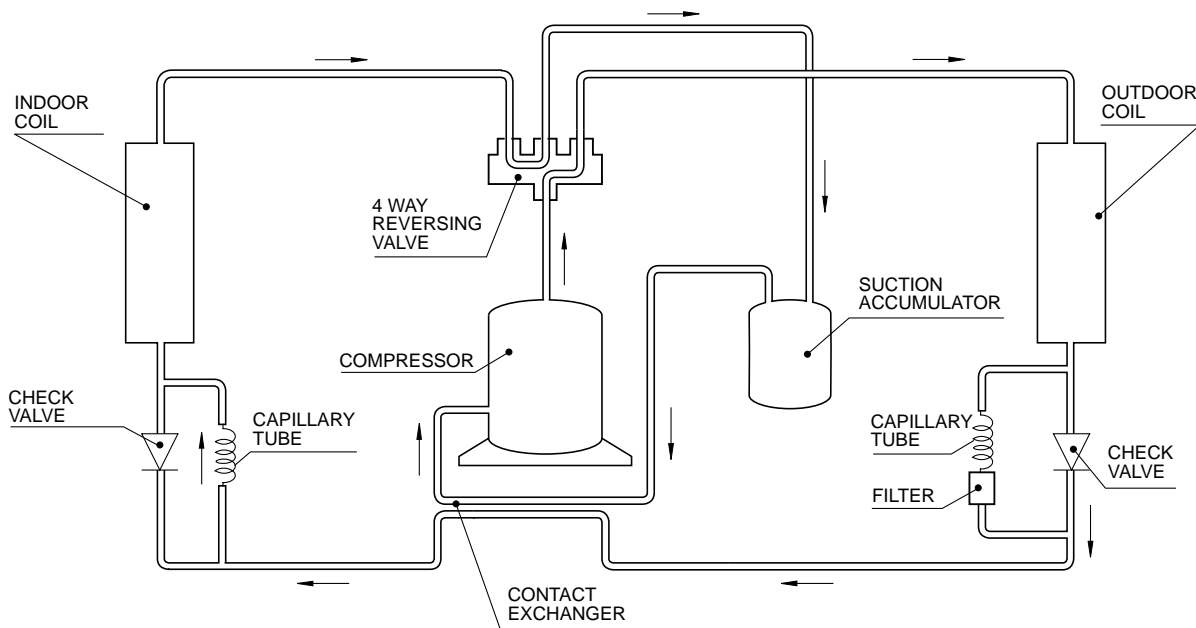
Summer cycle: Thermostat in COOL position

- 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 up 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 discharge pressure exceeds 28 kg/cm², 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.

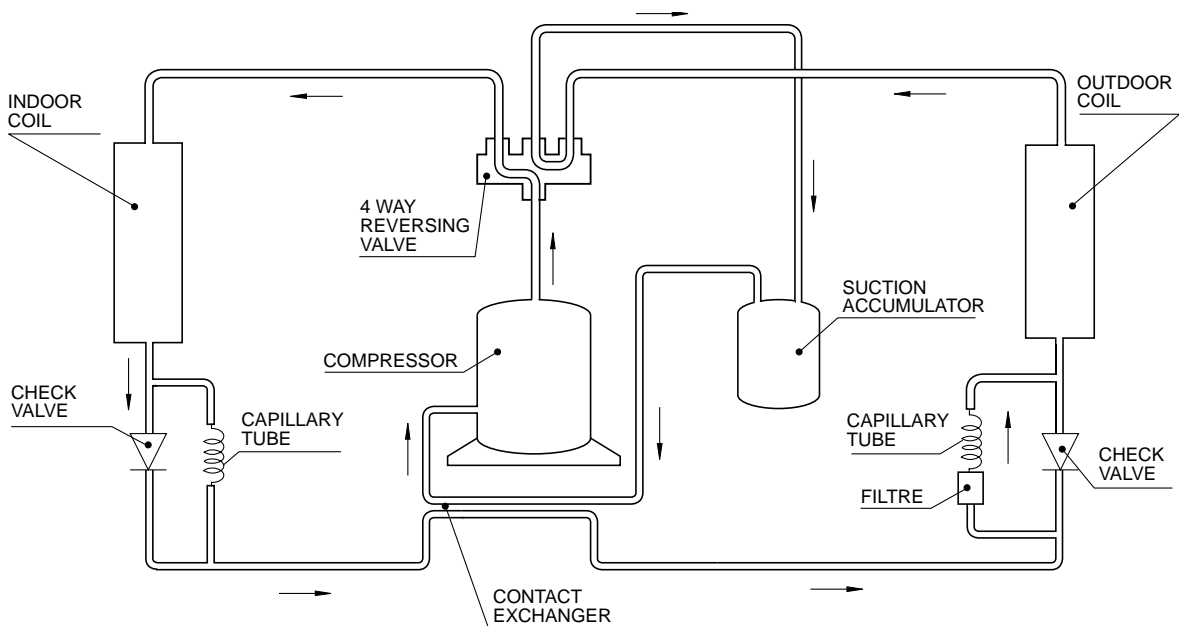
Summer cycle diagram



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/cm², 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».
- 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



Defrost 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 tries 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 thermistor 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.

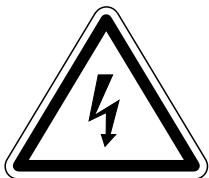
Compressor crankcase oil heater

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 there 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.

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.

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 crystal 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.

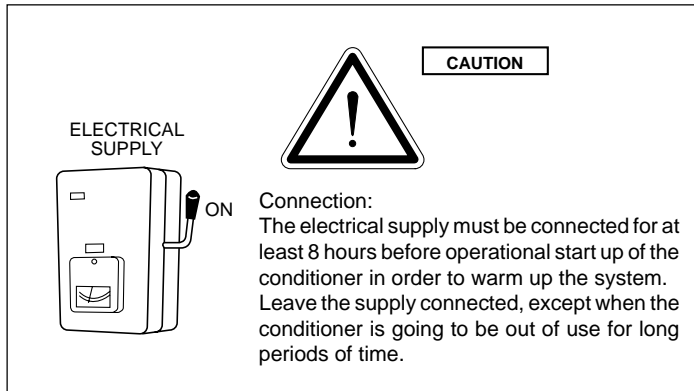
The controls are located underneath a cover which prevents their manipulation by unauthorised personnel.

Operation and start up

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

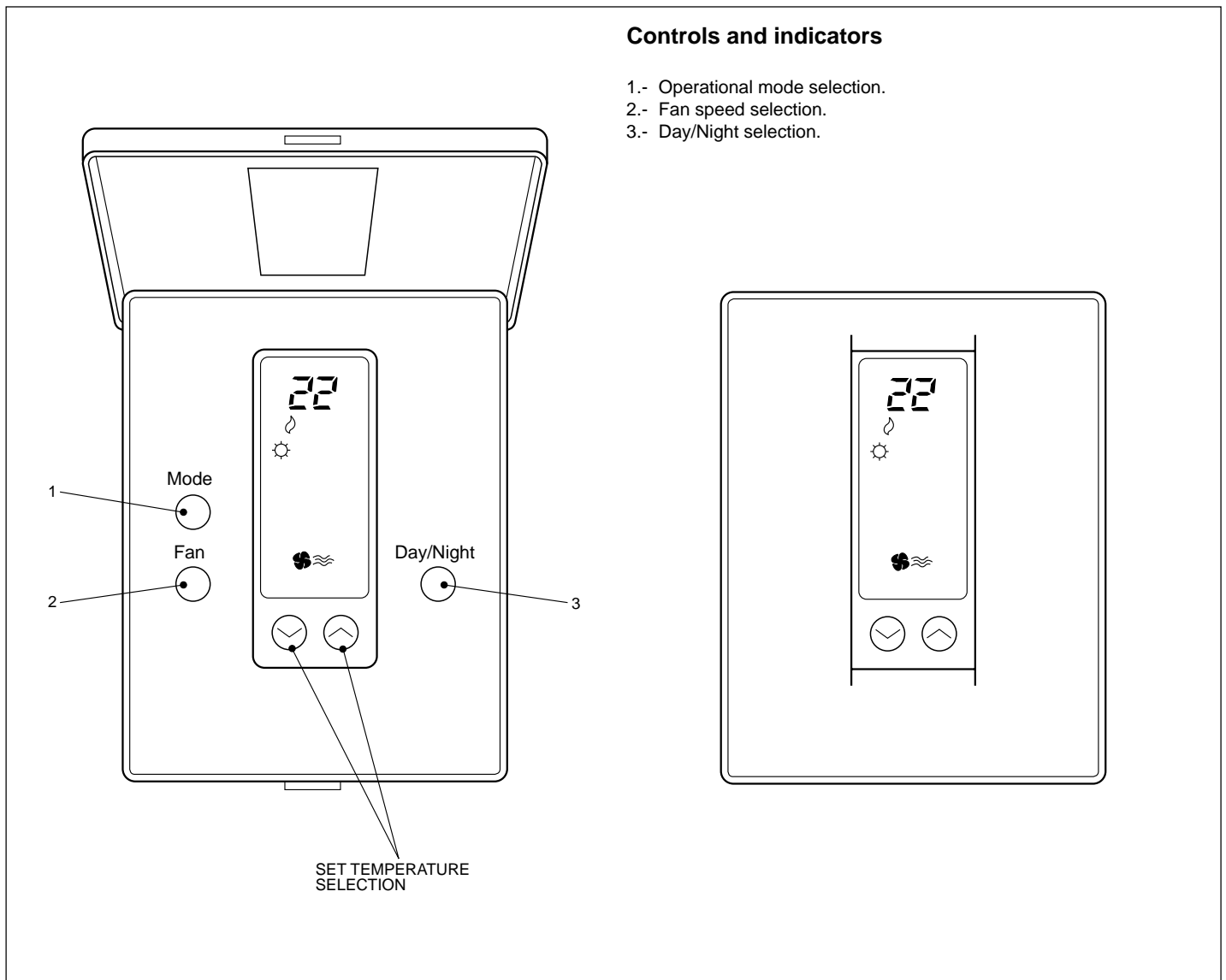
1.- MODE

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.

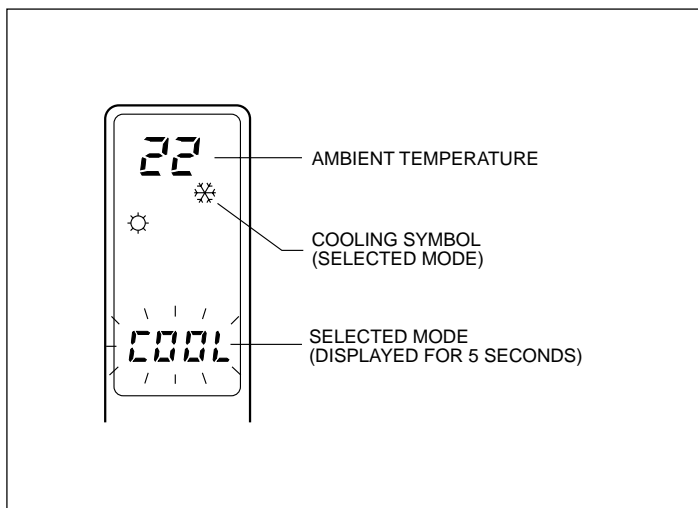


operational modes appear on the liquid crystal display panel:

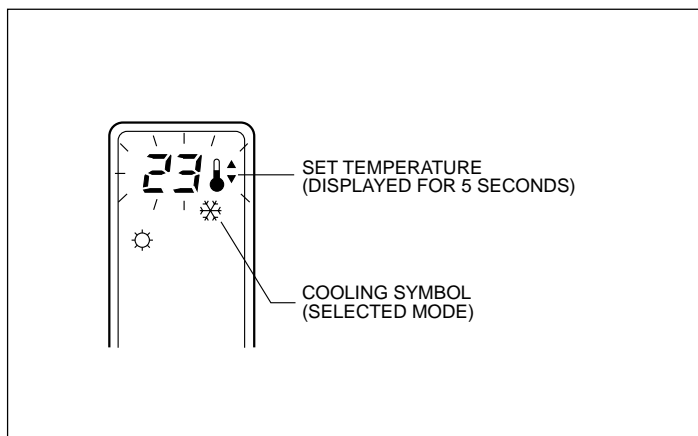
- COOL** ❄️ - Controls the system in the cooling mode. (The word **COOL** is displayed on the panel for 5 seconds).
- HEAT** 🔥 - Controls the system in the heating mode. (The word **HEAT** is displayed on the panel for 5 seconds).
- Auto** ❄️ 🔥 - Controls the system in cooling or heating according to requirements. (The word **Auto** is displayed on the panel for 5 seconds).
- EH** - 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.



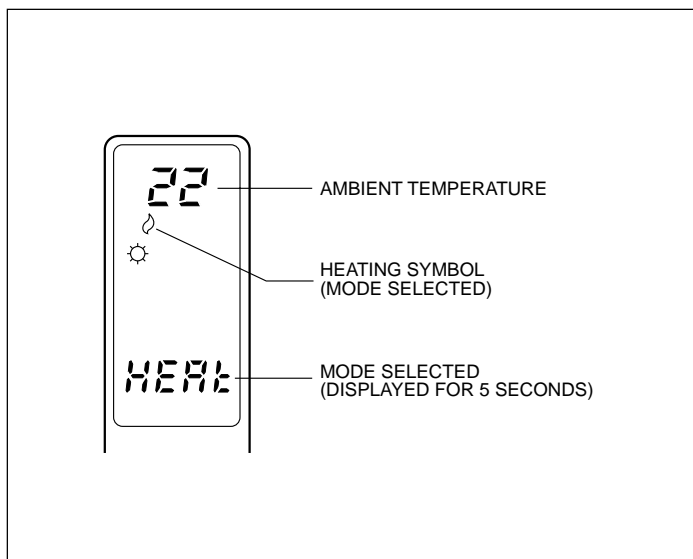
Once the operational mode has been selected, select the set temperature by pressing button **▲** or button **▼**, whether this be to select a higher or a lower temperature. The set temperature is displayed accompanied by a small symbol which represents a thermometer, and remains visible on the display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



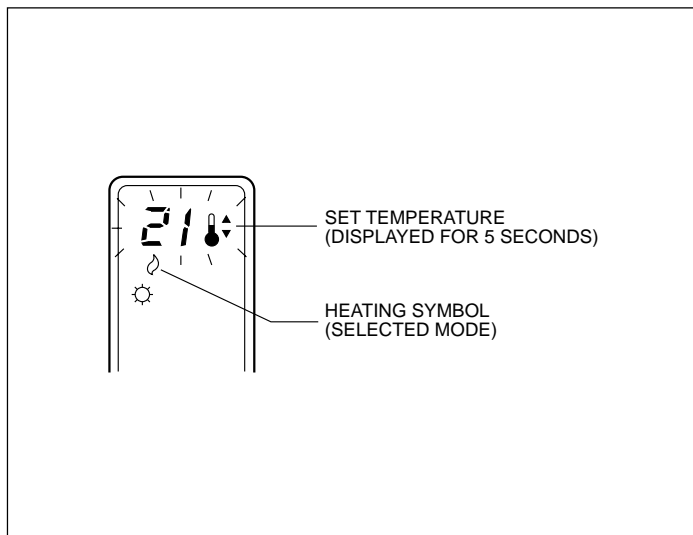
After a few minutes have passed the cooling system will start up, and the cooling symbol, visible on the display, will start to flash.

b) Heating

Press the **MODE** button repeatedly until the heating symbol 🔥 is displayed 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.

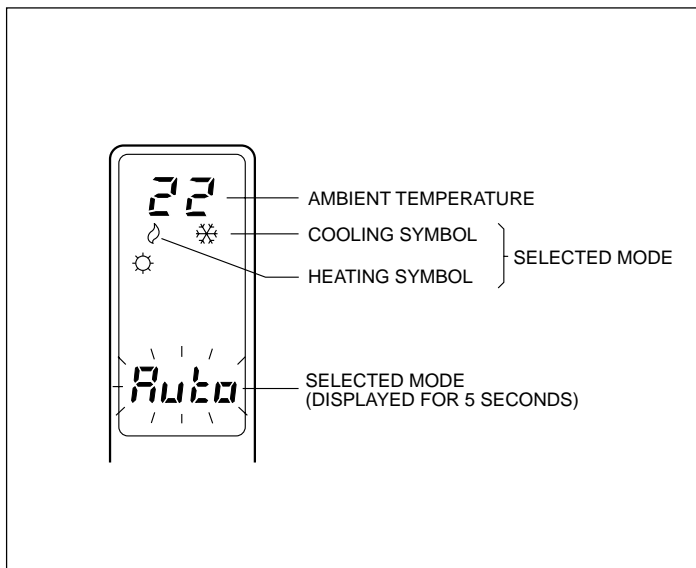


After a few minutes have passed the heating system will start up, and the heating symbol, visible on the display will start to flash.

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**,

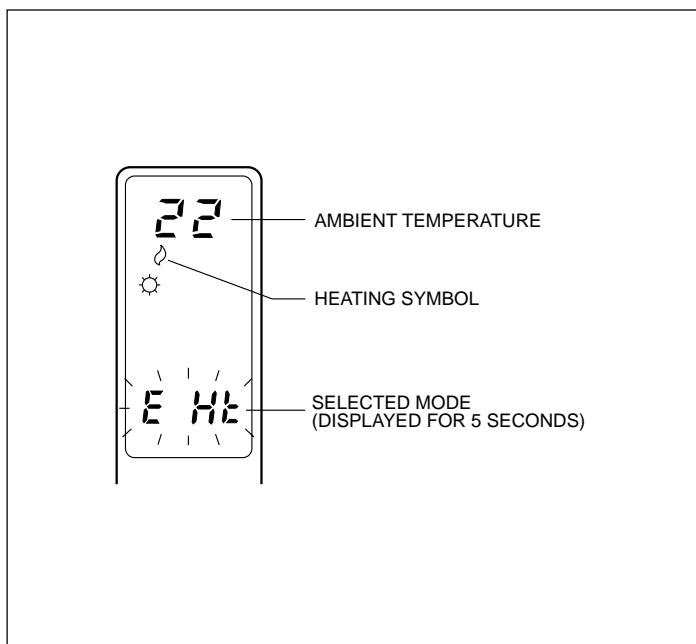
temperature, this is the minimum differential allowed by the thermostat. Press the MODE button repeatedly until the heating symbol  and cooling symbol  are displayed on the panel (at the same time the word **Auto** will be displayed for 5 seconds). The heating and cooling symbols will continue to be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

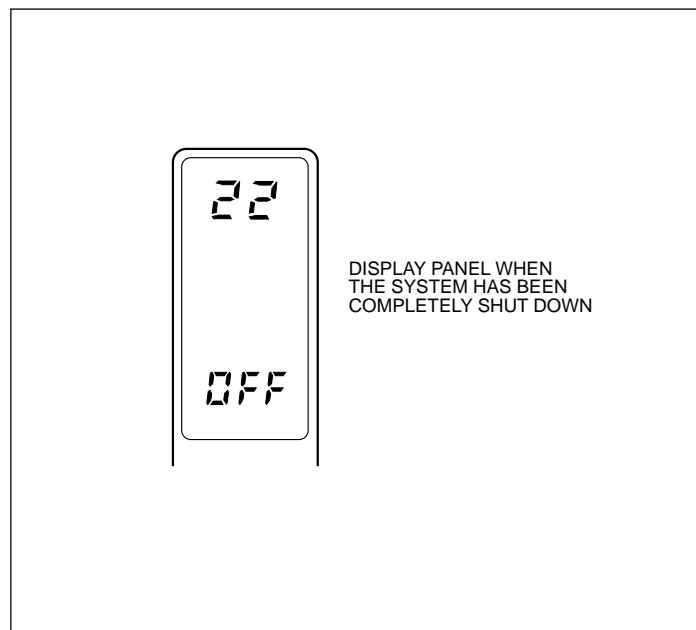
d) Emergency heating

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.




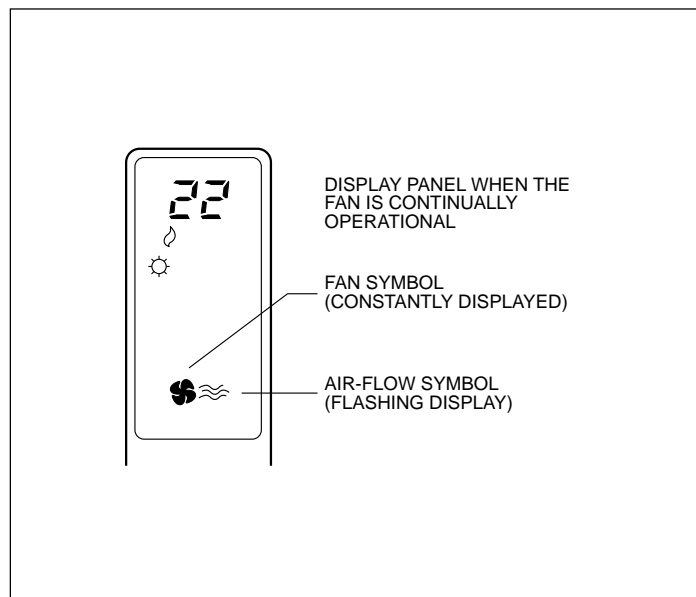
f) °C/°F scale

To change the scale of degree 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).



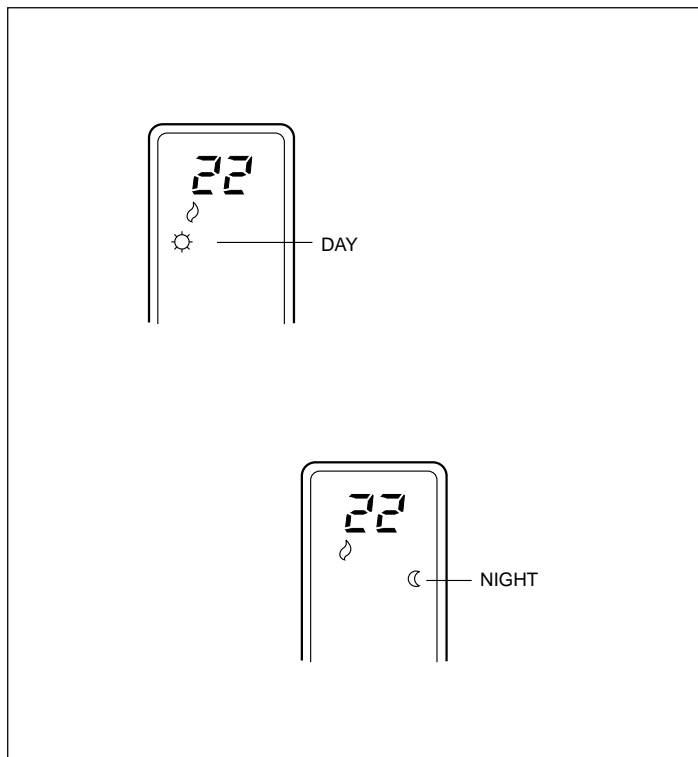
3.- Day/night selection

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

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 switch 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 drainage 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.

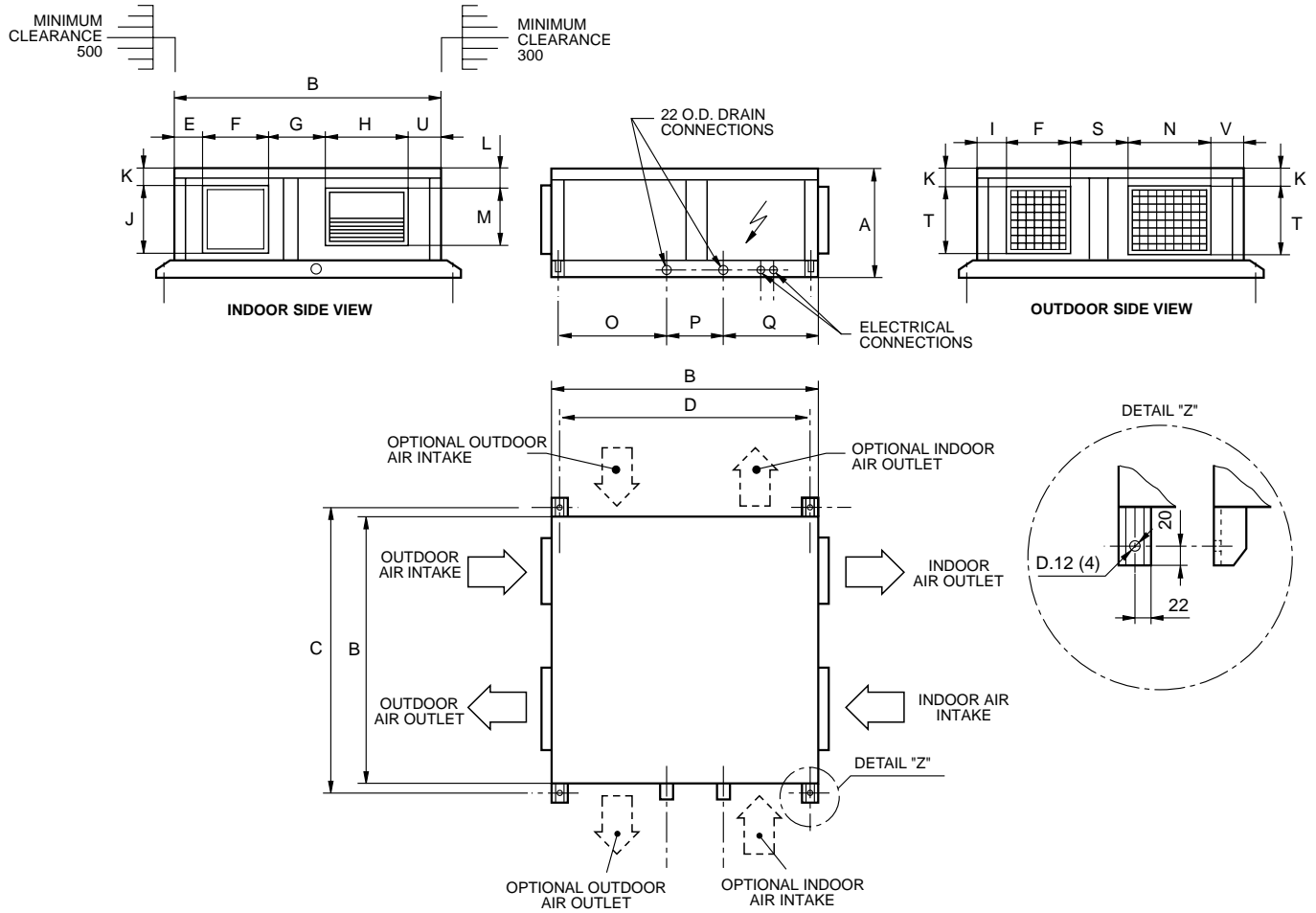


CAUTION

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

BCH-7, 10



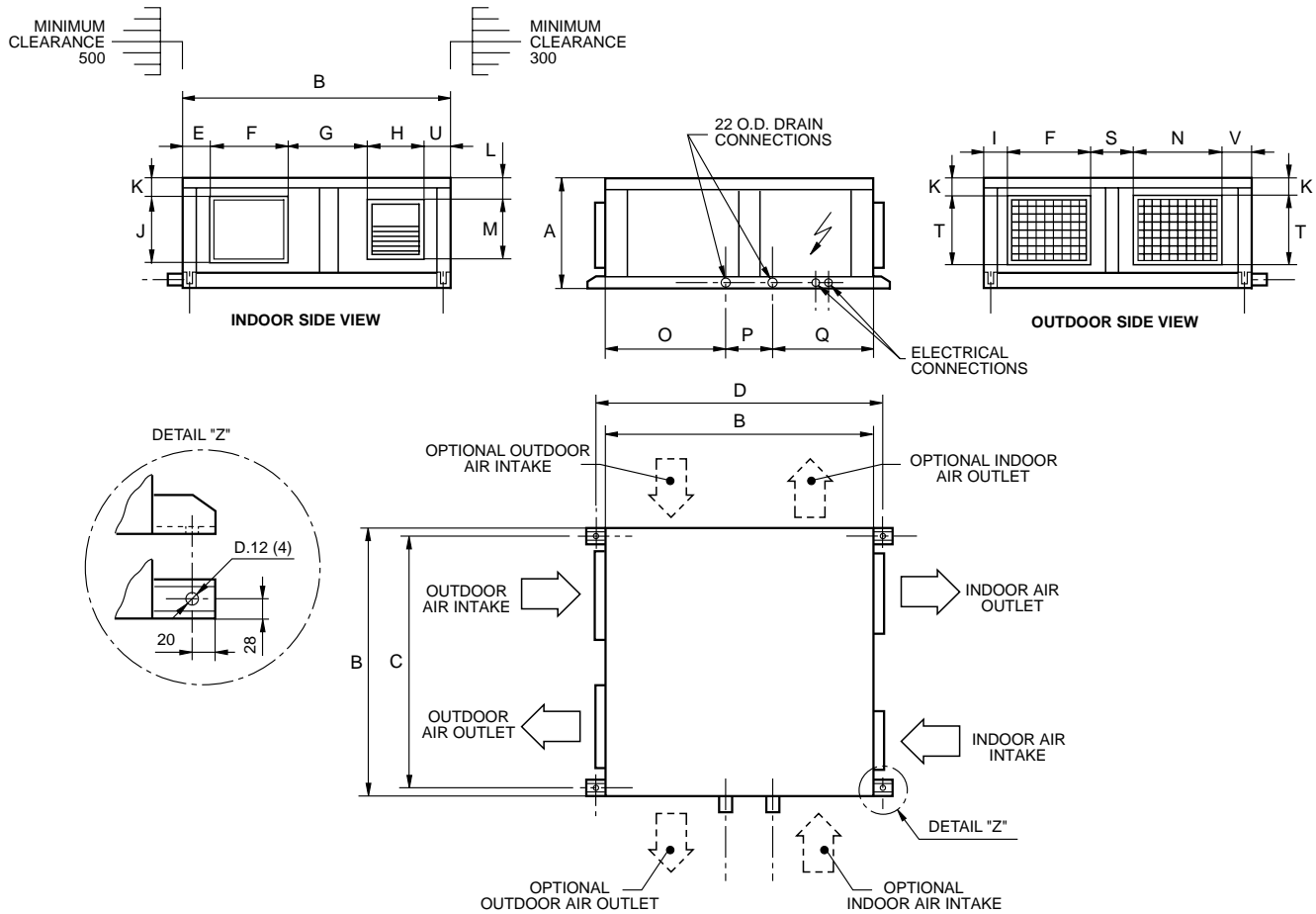
Note:

- 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
BCH-7	471	1200	1250	1156	78	376	290	302	80	362	35	86	262	376	550	214	436	214	362	154	154
BCH-10	549	1250	1300	1206	78	376	396	268	78	362	75	109	293	461	517	291	442	192	362	132	143

General dimensions mm

BCH- 12, 15 & 20



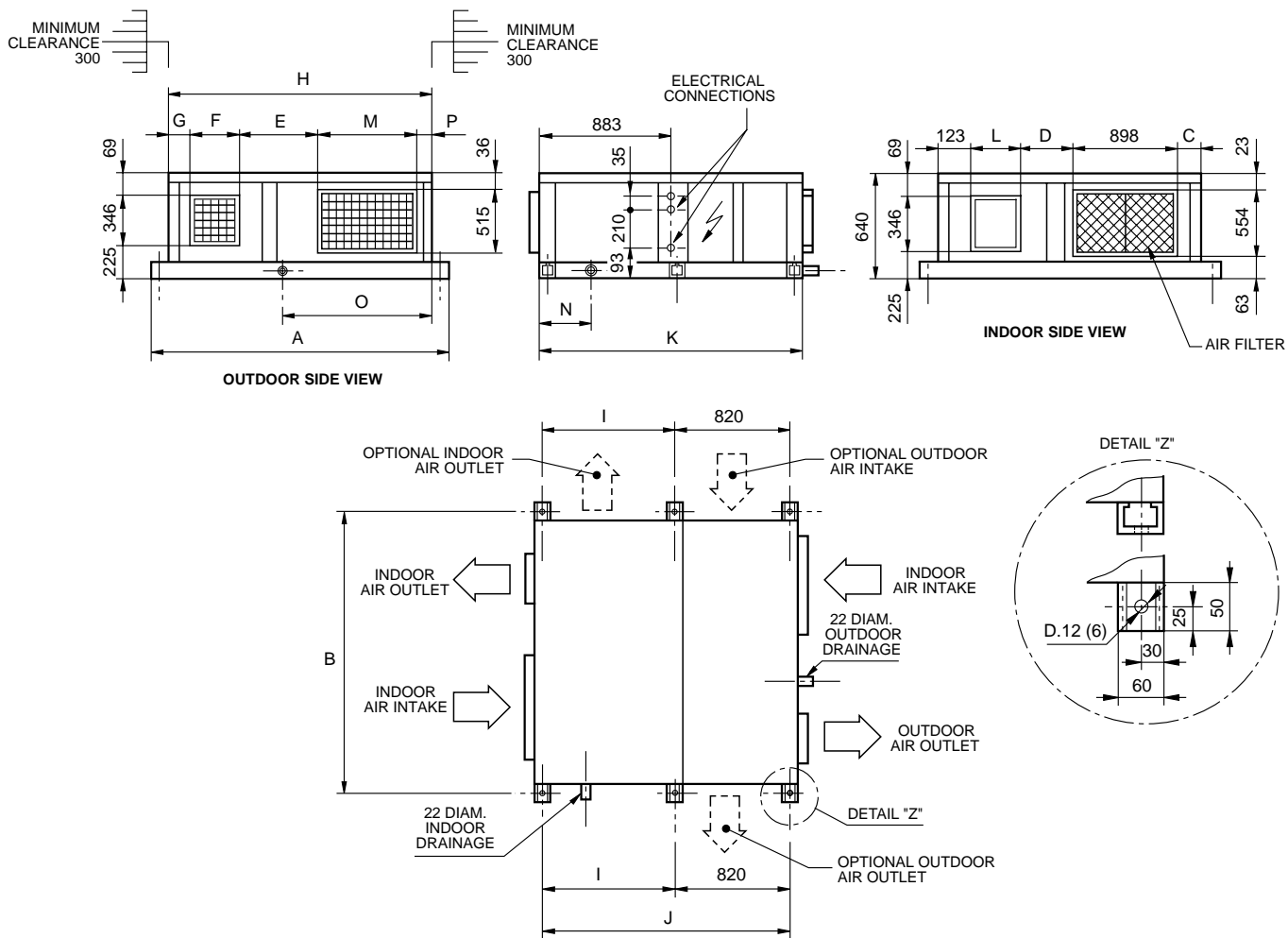
Note:

- 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
BCH-12 & 15	555	1440	1384	1492	78	476	412	315	78	430	39	25	345	546	652	324	464	192	430	159	148
BCH-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

BCH - 25 & 30



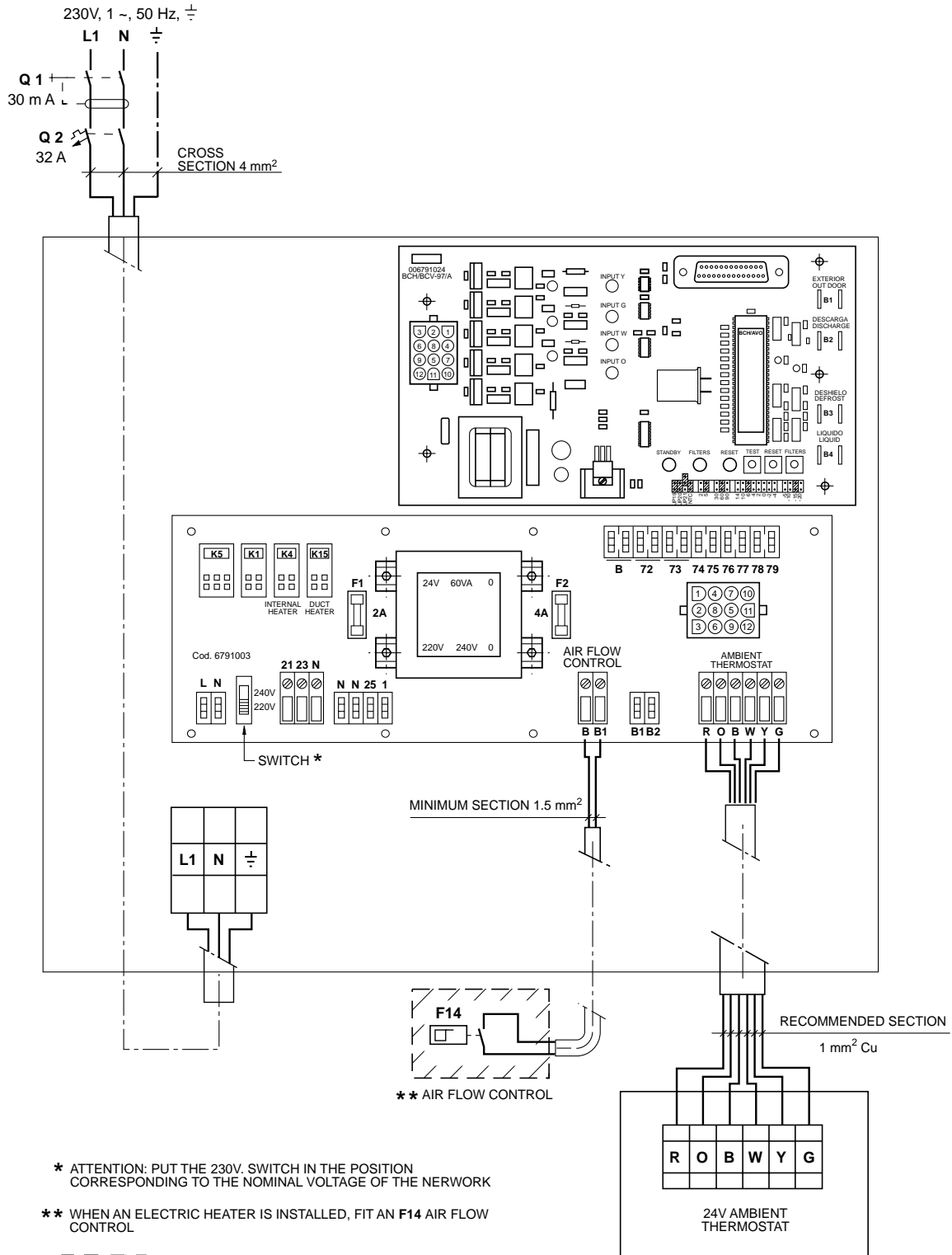
Note:

- 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	I	J	K	L	M	N	O	P
BCH-25	1 750	1 700	81	233	442	315	133	1 650	870	1 690	1 750	315	667	348	1 145	93
BCH-30	2 150	2 100	130	499	648	400	138	2 050	890	1 710	1 770	400	732	368	1 495	132

Wiring diagram

BCH - 7, 230.1.50



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

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

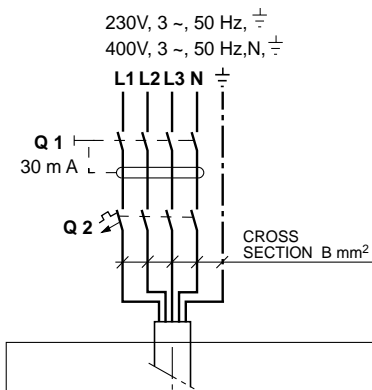
\square \square \square \square THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

I-1310/j

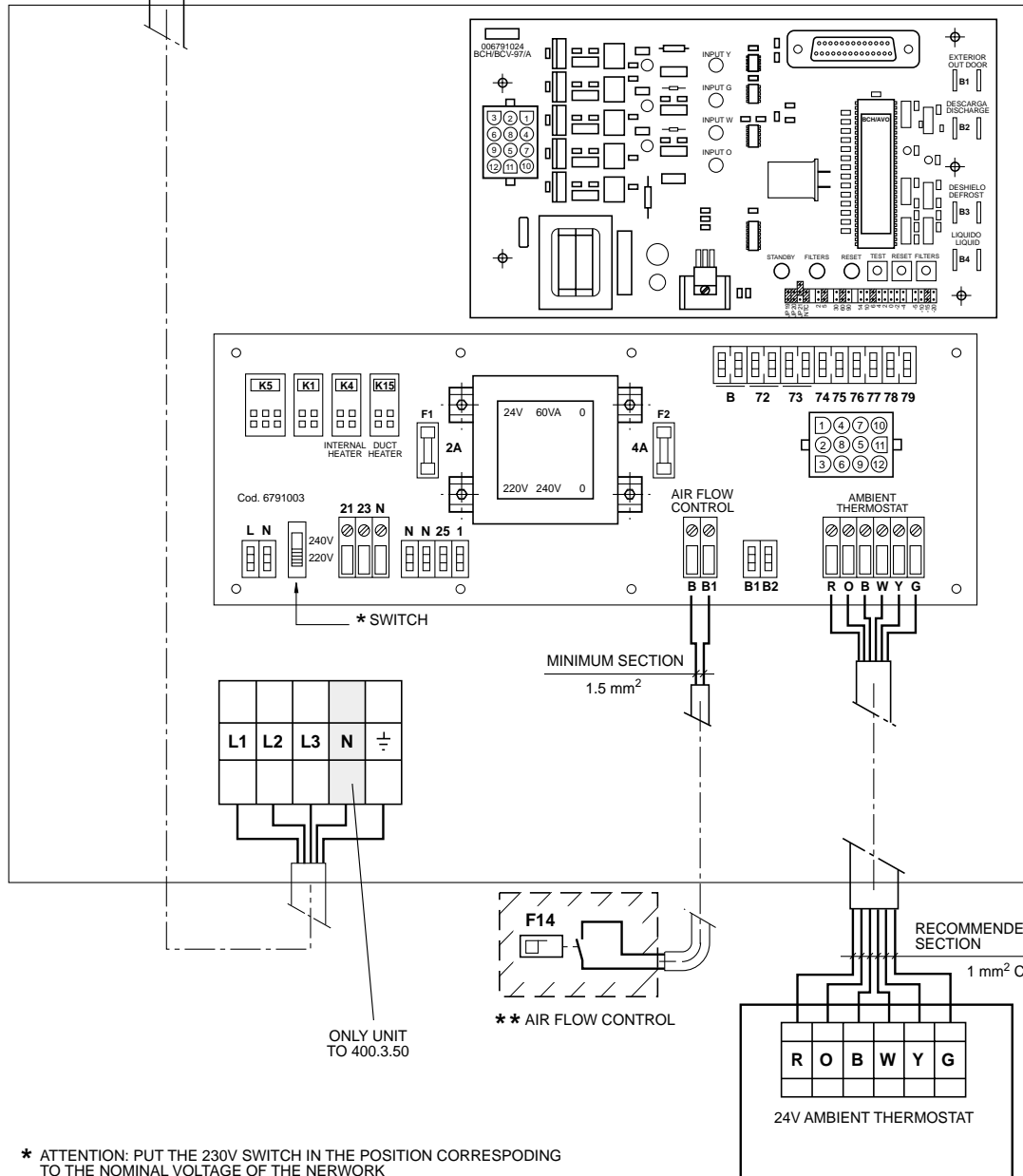
Wiring diagram

BCH - 10, 12, 15, 230.3.50

BCH - 10, 12, 15, 400.3.50



MODEL	400.3.50		230.3.50	
	Q2 (A)	SECTION B mm ²	Q2 (A)	SECTION B mm ²
BCH-10	20	2.5	32	4
BCH-12	32	4	40	6
BCH-15	32	4	40	6



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

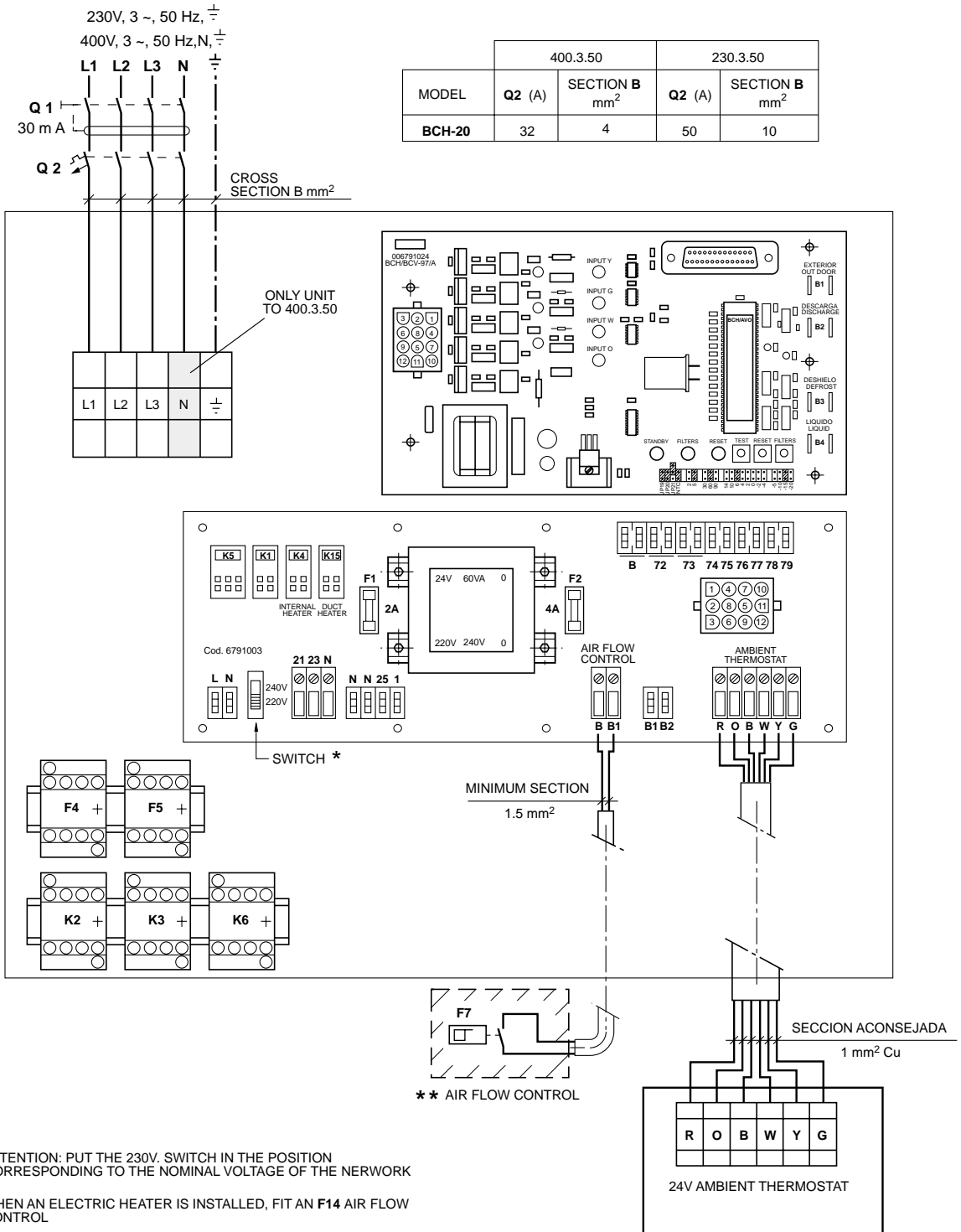
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN F14 AIR FLOW CONTROL

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

I-1312/j

Wiring diagram

BCH - 20, 230.3.50
BCH - 20, 400.3.50



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

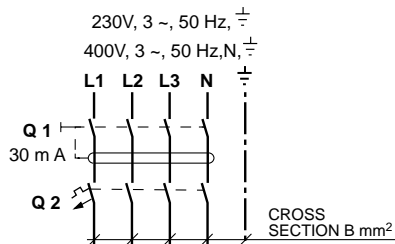
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN F14 AIR FLOW CONTROL

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

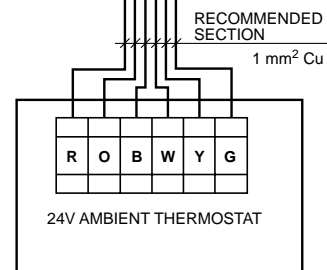
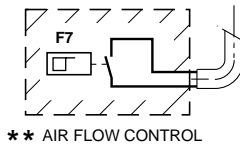
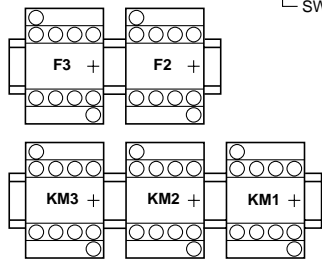
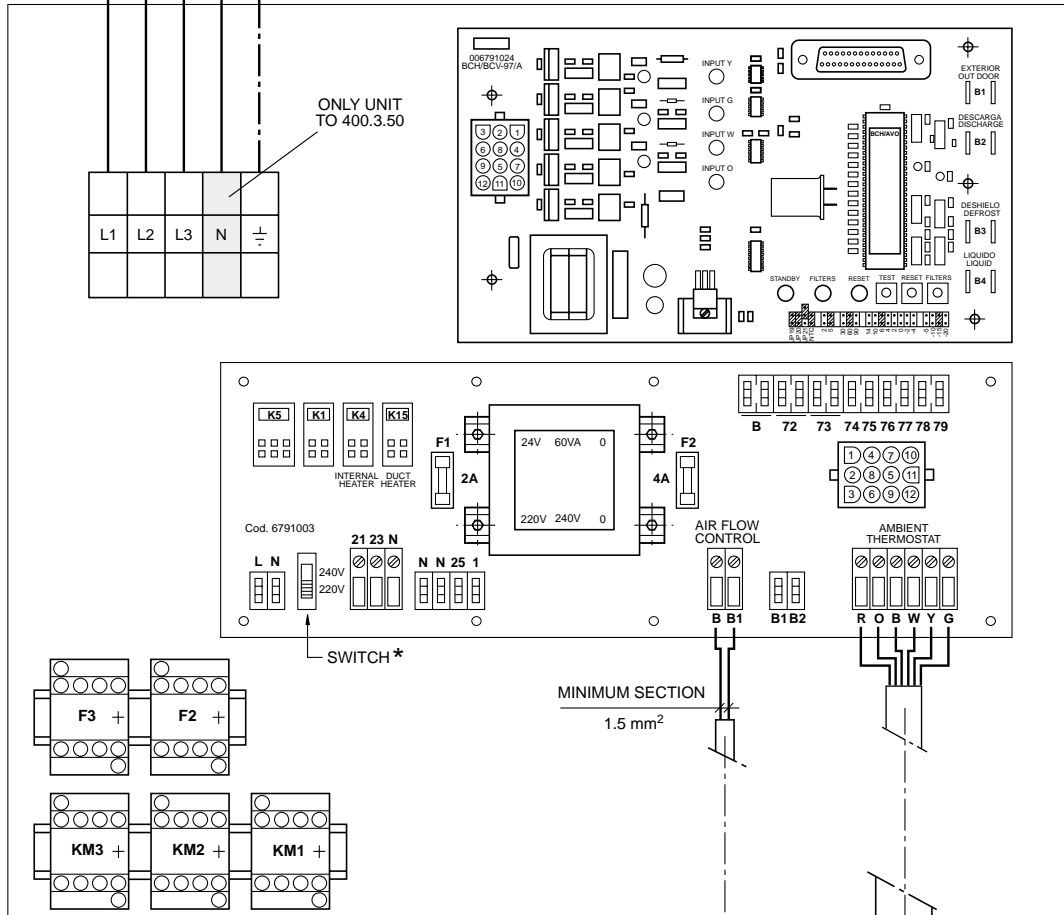
Wiring diagram

BCH - 25 & 30, 230.3.50

BCH - 25 & 30, 400.3.50



	400.3.50		230.3.50	
MODEL	Q2 (A)	SECTION B mm ²	Q2 (A)	SECTION B mm ²
BCH-25	32	6	50	10
BCH-30	40	10	63	16



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

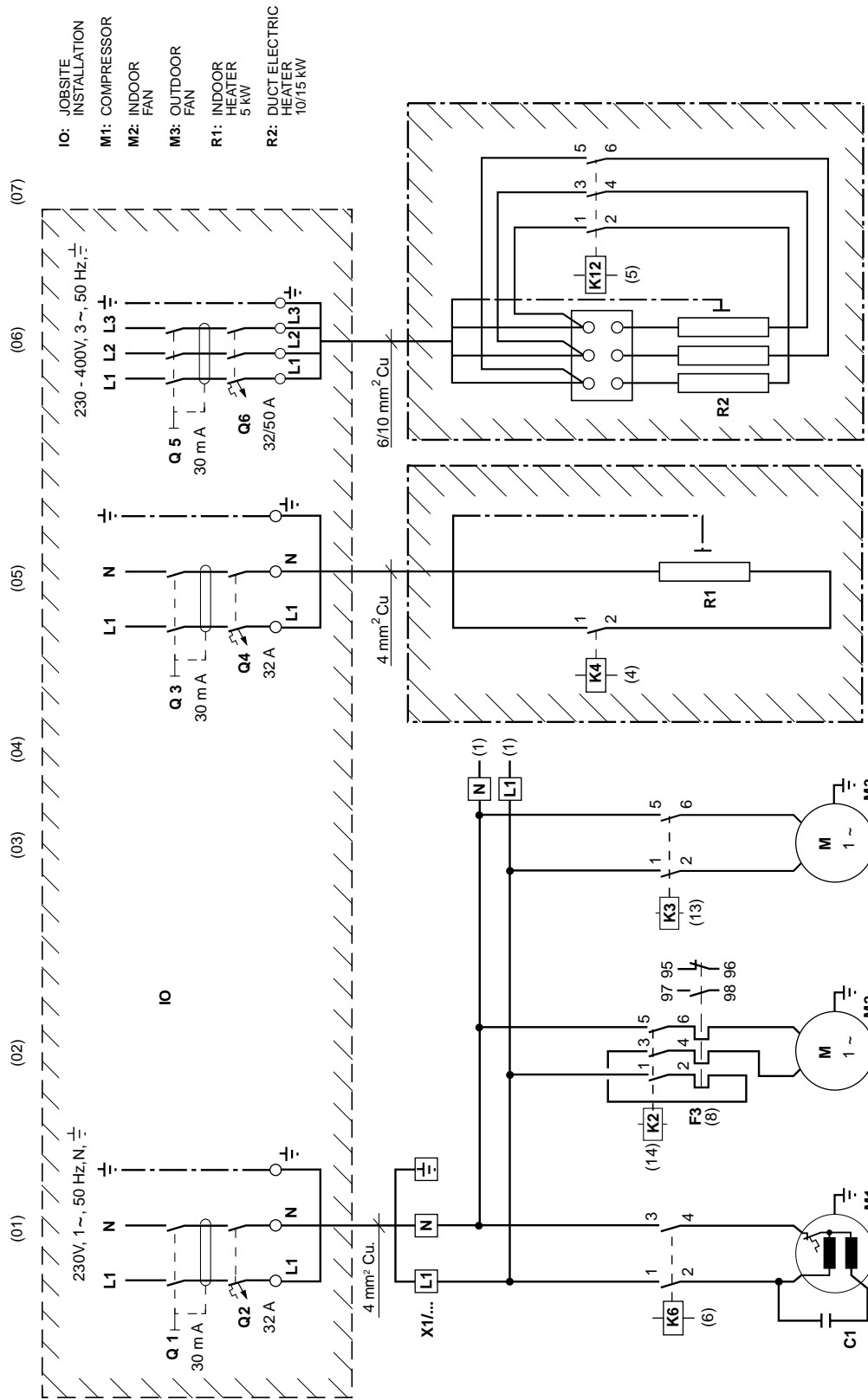
** WHEN AN ELECTRIC HEATER IS INSTALLED, FIT AN F7 AIR FLOW CONTROL

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

I-1877/b

Power diagram

BCH - 7, 230.1.50



- IO: JOBSITE INSTALLATION
- M1: COMPRESSOR
- M2: INDOOR FAN
- M3: OUTDOOR FAN
- R1: INDOOR HEATER 5 kW
- R2: DUCT ELECTRIC HEATER 10/15 kW

SEE DIAGRAM RC-10-220/15-220

I-1298/g
BCH-7, 230.1.50

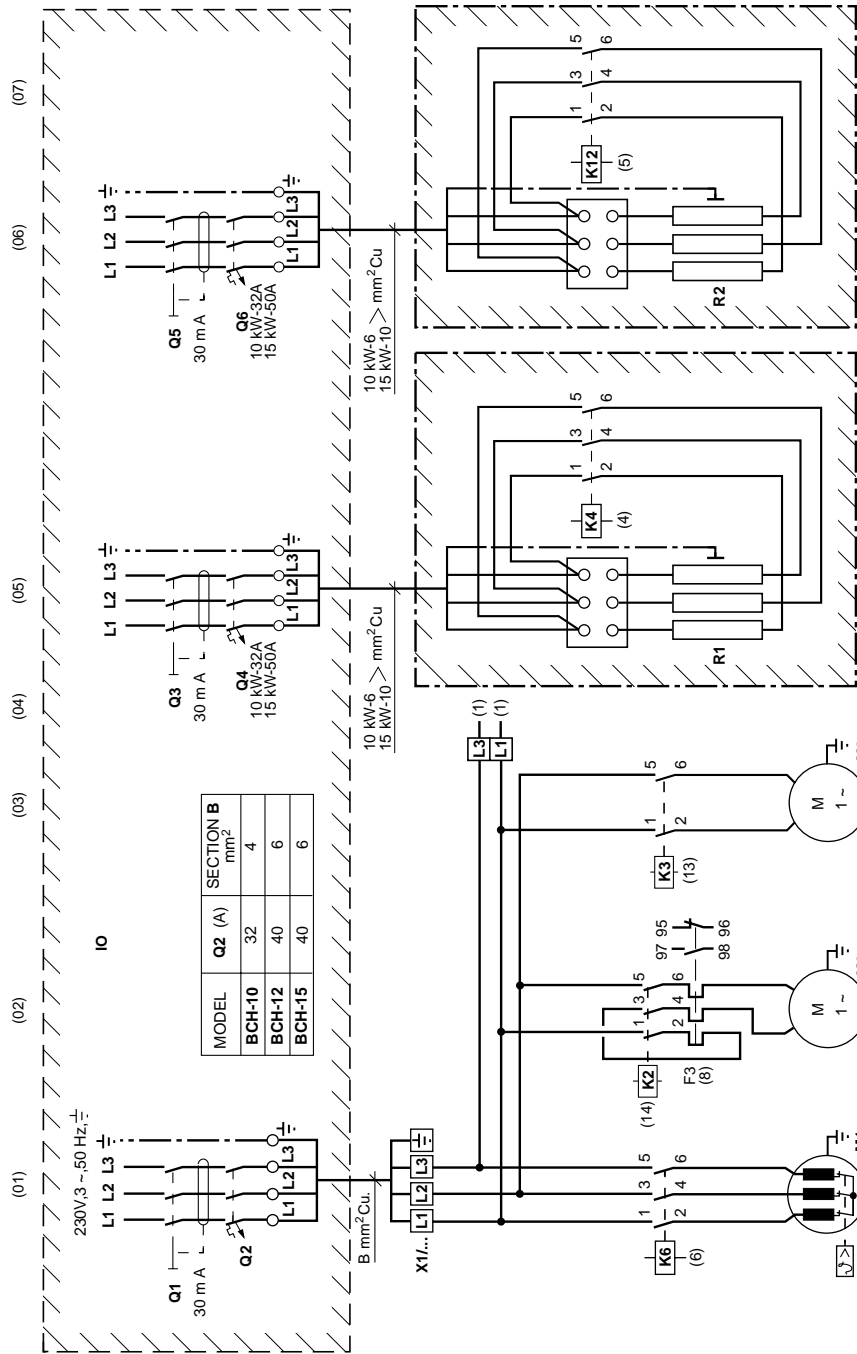
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THE COMPONENTS INCLUDED IN THESE BOXES ARE STANDARD ACCESSORIES SUPPLIED BY THE MANUFACTURER.

Power diagram

BCH - 10, 12, 15, 230.3.50

- IO: JOBSITE INSTALLATION
- M1: COMPRESSOR
- M2: INDOOR FAN
- M3: OUTDOOR FAN
- R1: INDOOR HEATER 10/15 kW
- R2: DUCTELECTRIC HEATER 10/15 kW



SEE DIAGRAM RC-10-220/15-220

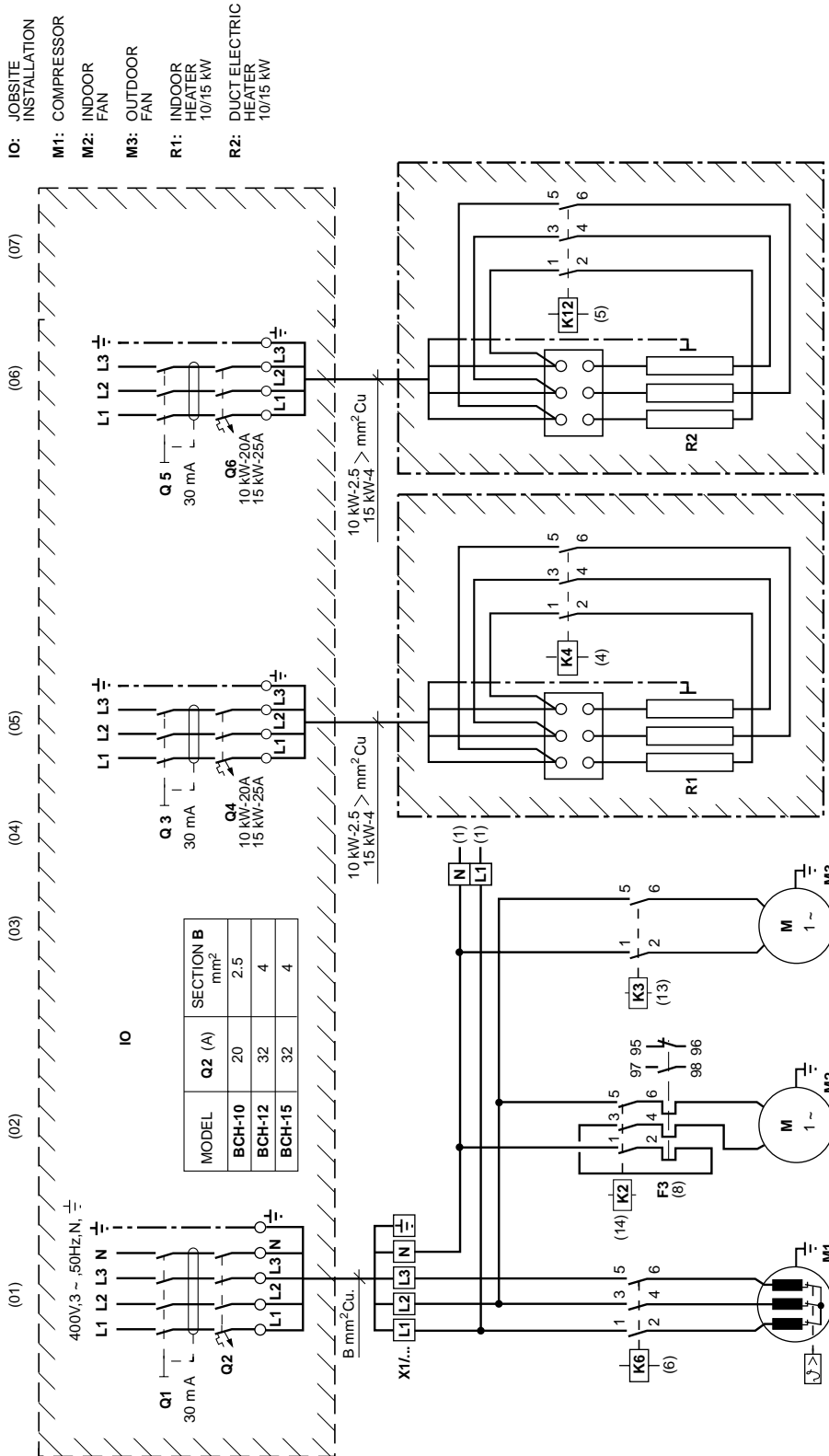
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I-1275/g
BCH-10,12,15, 230.3.50

Power diagram

BCH - 10, 12, 15, 400.3.50



SEE DIAGRAM RC-10-220/15-220

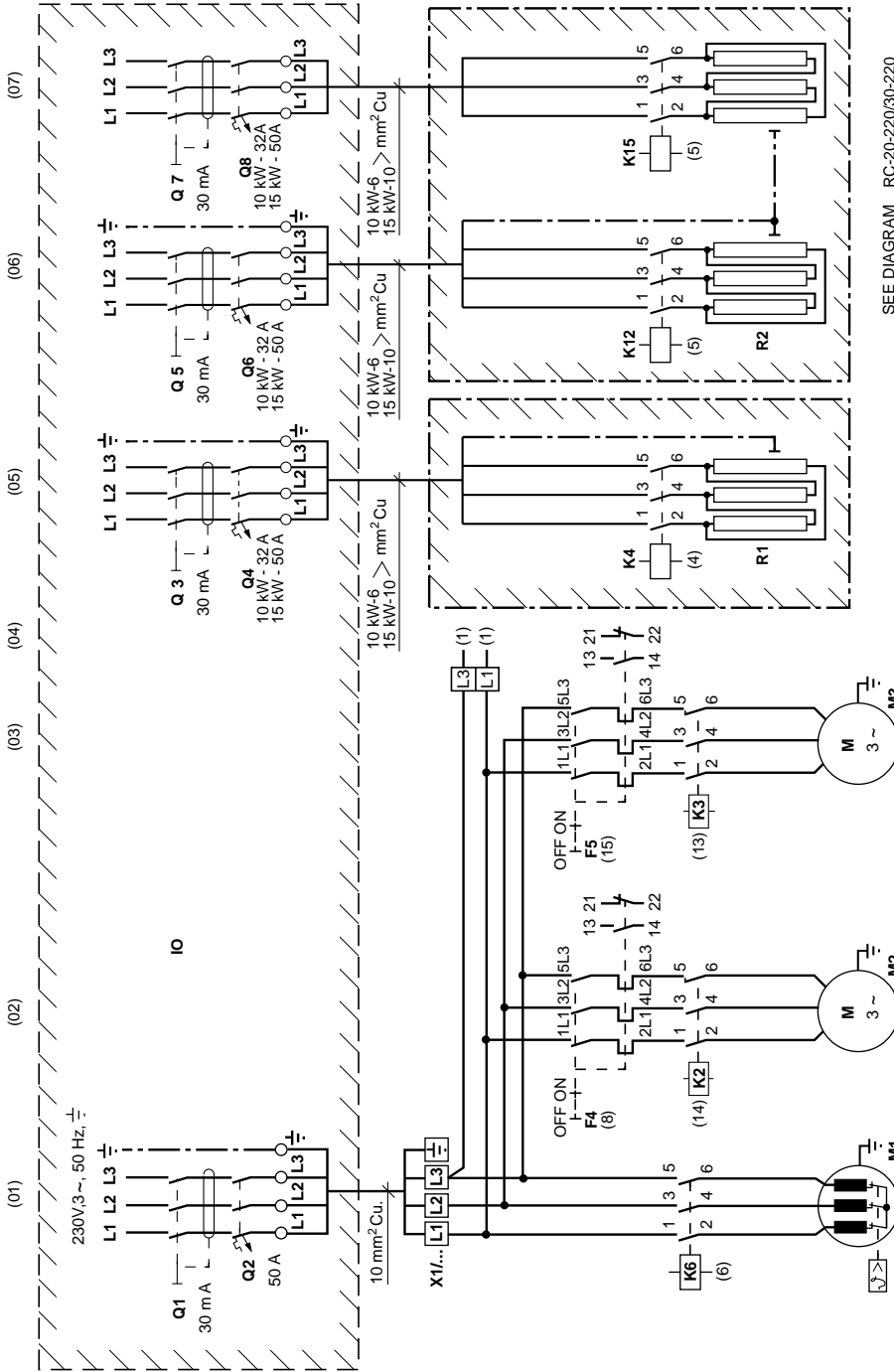
- [/ / / /] THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.
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I-1274/g
BCH-10,12,15, 400.3.50

Power diagram

BCH - 20, 230.3.50

- IO: JOBSITE INSTALLATION
- M1: COMPRESSOR
- M2: INDOOR FAN
- M3: OUTDOOR FAN
- R1: INDOOR HEATER 10/15 kW
- R2: DUCT ELECTRIC HEATER 20/30 kW



SEE DIAGRAM RC-20-220/30-220

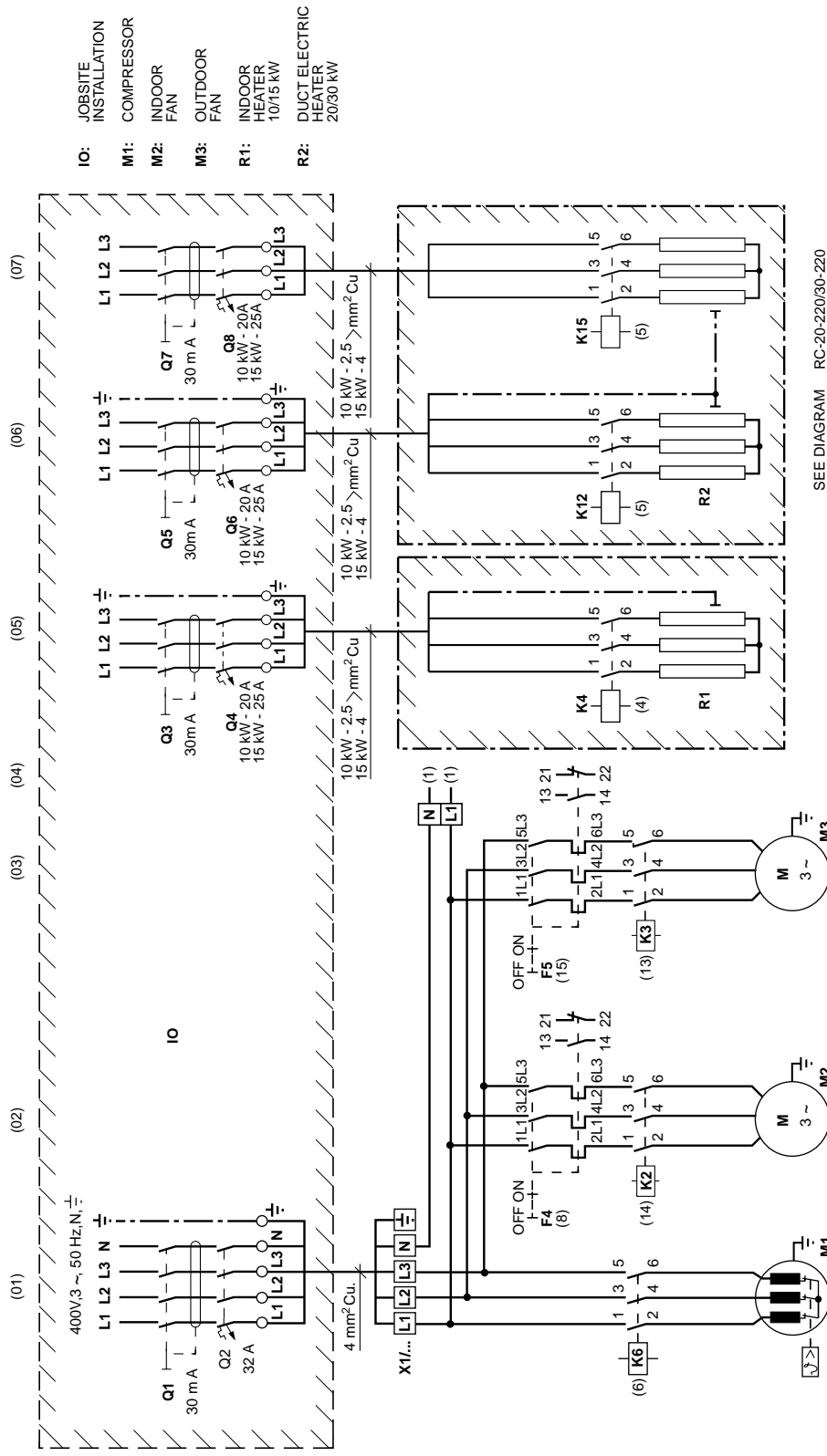
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

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

I-1308/g
BCH-20, 230.3.50

Power diagram

BCH - 20, 400.3.50



- IO: JOBSITE INSTALLATION
- M1: COMPRESSOR
- M2: INDOOR FAN
- M3: OUTDOOR FAN
- R1: INDOOR HEATER 10/15 kW
- R2: DUCT ELECTRIC HEATER 20/30 kW

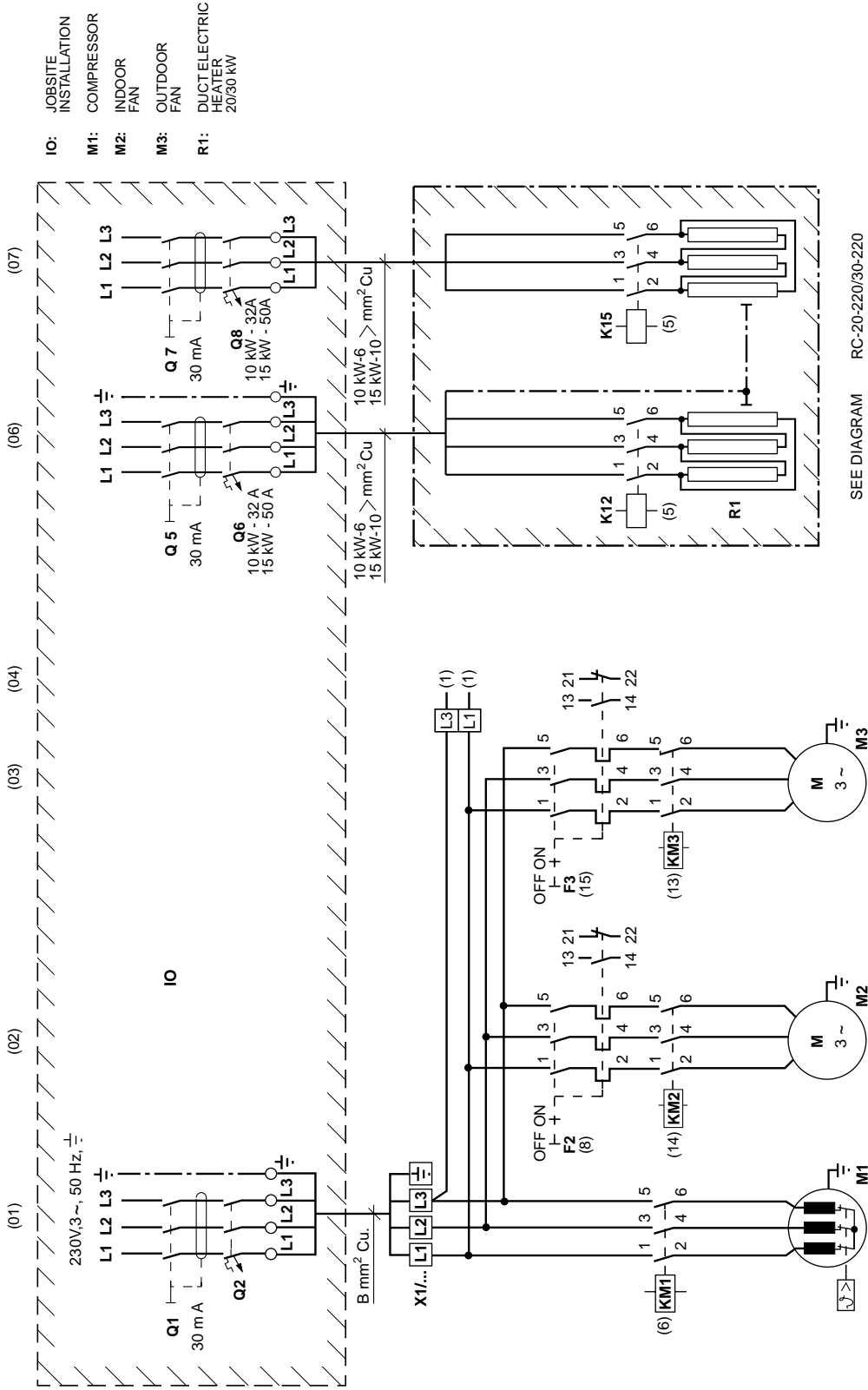
SEE DIAGRAM RC-20-220/30-220

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I-1309/g
BCH-20, 400.3.50

Power diagram

BCH - 25 & 30, 230.3.50



IO: JOBSITE
INSTALLATION
M1: COMPRESSOR
M2: INDOOR
FAN
M3: OUTDOOR
FAN
R1: DUCTELECTRIC
HEATER
20/30 kW

SEE DIAGRAM RC-20-220/30-220

MODEL	Q2 (A)	SECTION B mm ²
BCH-25	50	10
BCH-30	63	16

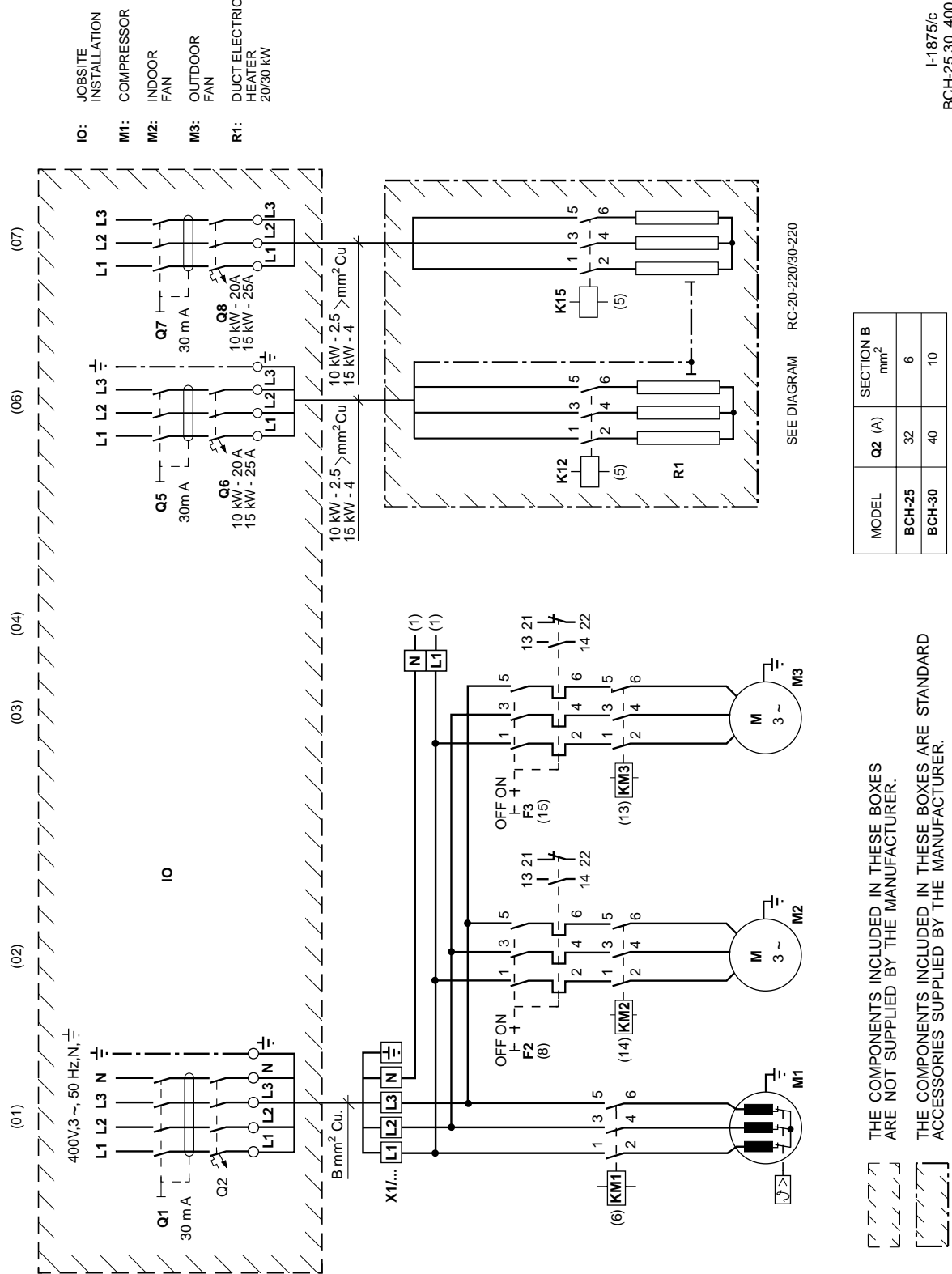
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THE COMPONENTS INCLUDED IN THESE BOXES ARE STANDARD ACCESSORIES SUPPLIED BY THE MANUFACTURER.

I-1873/b
BCH-25,30, 230.3.50

Power diagram

BCH - 25 & 30, 400.3.50



IO: JOBSITE
INSTALLATION
M1: COMPRESSOR
M2: INDOOR
FAN
M3: OUTDOOR
FAN
R1: DUCT ELECTRIC
HEATER
20/30 KW

SEE DIAGRAM RC-20-220/30-220

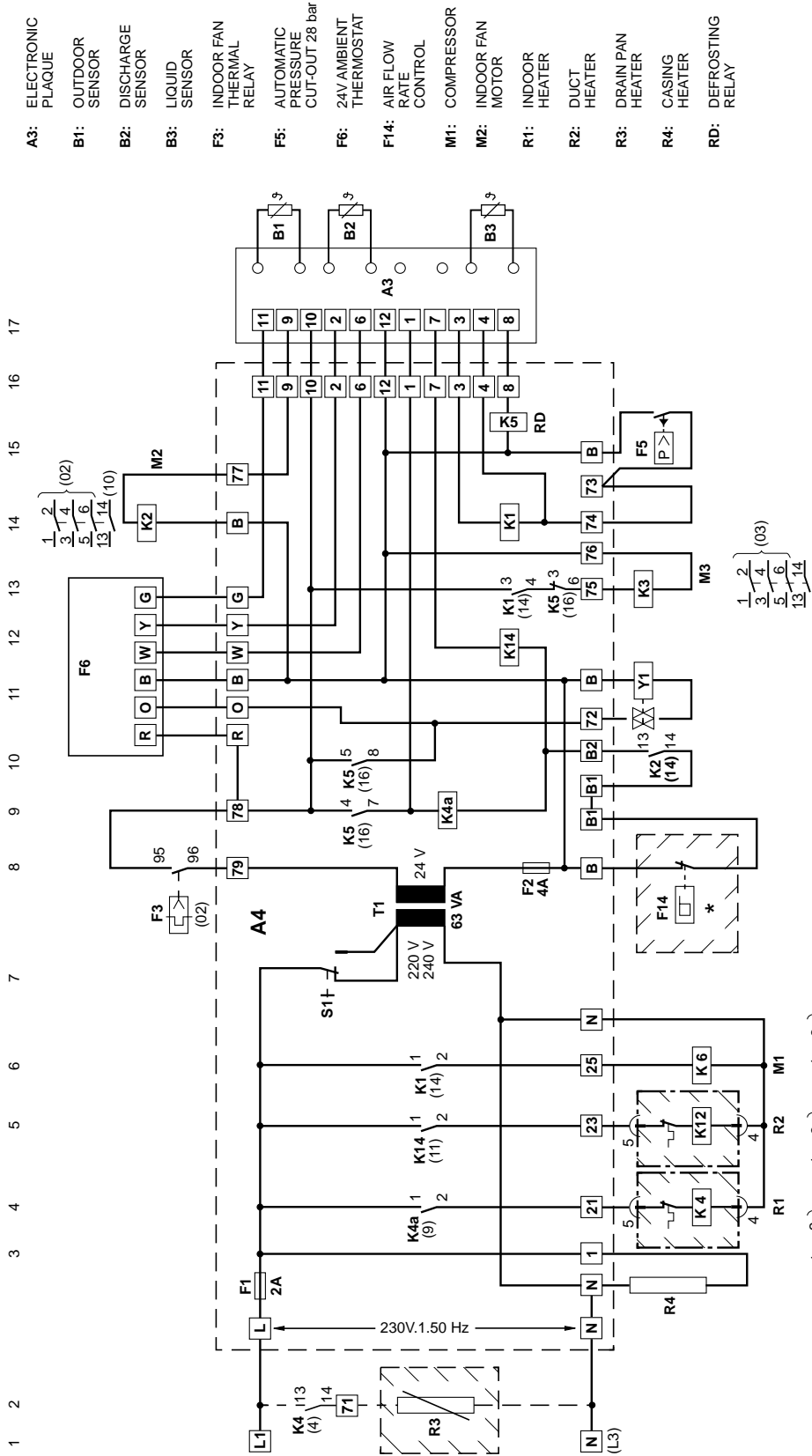
MODEL	Q2 (A)	SECTION B mm ²
BCH-25	32	6
BCH-30	40	10

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I-1875/c
BCH-25,30, 400.3.50

Control diagram

BCH - 7, 10, 12, 15, 230.3.50, 400.3.50



- A3: ELECTRONIC PLAQUE
- B1: OUTDOOR SENSOR
- B2: DISCHARGE SENSOR
- B3: LIQUID SENSOR
- F3: INDOOR FAN THERMAL RELAY
- F5: AUTOMATIC PRESSURE CUT-OUT 28 bar
- F6: 24V AMBIENT THERMOSTAT
- F14: AIR FLOW RATE CONTROL
- M1: COMPRESSOR
- M2: INDOOR FAN MOTOR
- R1: INDOOR HEATER
- R2: DUCT HEATER
- R3: DRAIN PAN HEATER
- R4: CASING HEATER
- RD: DEFROSTING RELAY

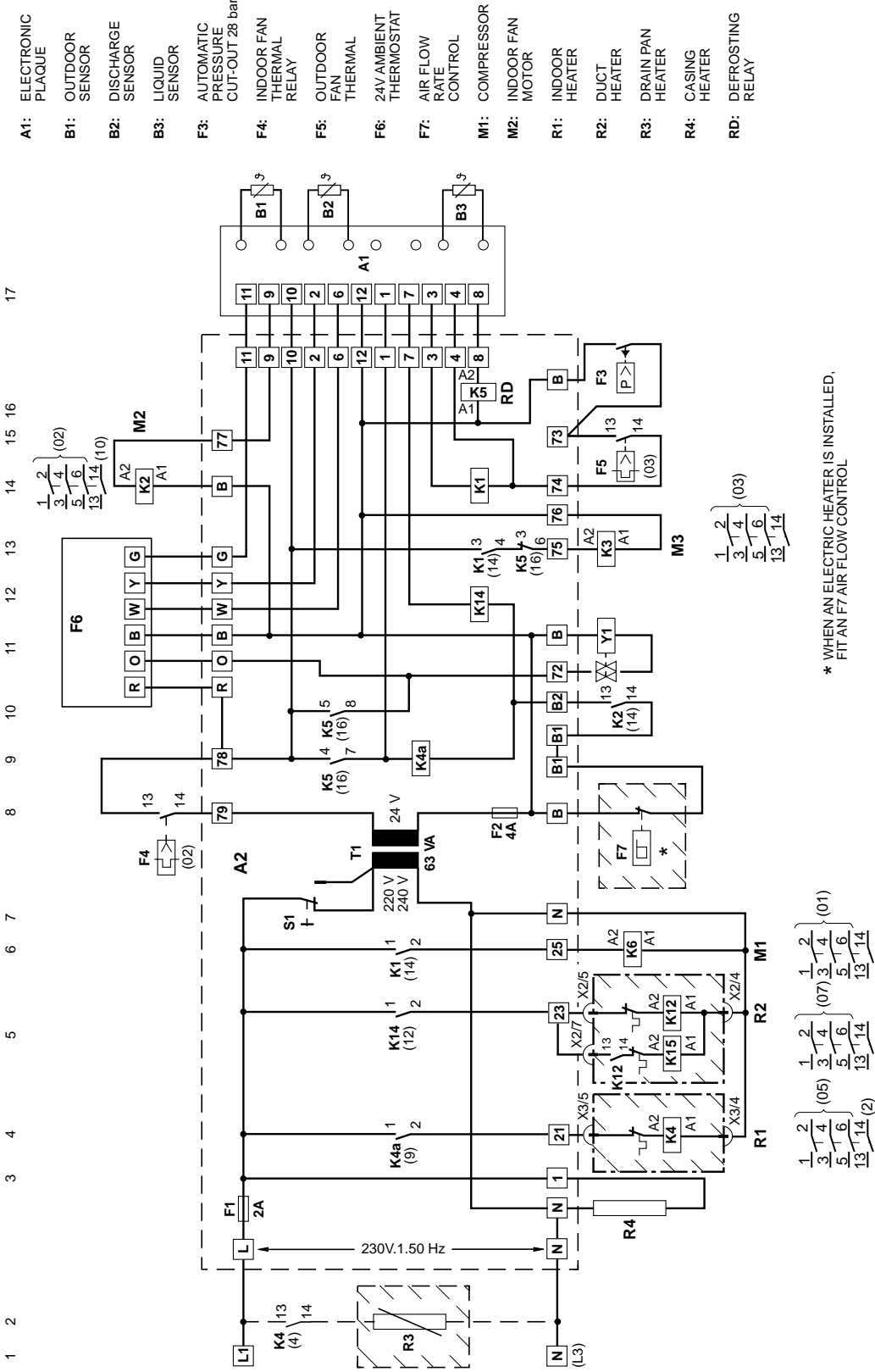
I-1313/e
 BCH-7,10,12,15
 230.3.50
 400.3.50

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

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.

Control diagram

BCH - 20, 230.3.50, 400.3.50



- A1: ELECTRONIC PLAQUE
- B1: OUTDOOR SENSOR
- B2: DISCHARGE SENSOR
- B3: LIQUID SENSOR
- F3: AUTOMATIC PRESSURE CUT-OUT 28 bar
- F4: INDOOR FAN THERMAL RELAY
- F5: OUTDOOR FAN THERMAL
- F6: 24V AMBIENT THERMOSTAT
- F7: AIR FLOW RATE CONTROL
- M1: COMPRESSOR
- M2: INDOOR FAN MOTOR
- R1: INDOOR HEATER
- R2: DUCT HEATER
- R3: DRAIN PAN HEATER
- R4: CASING HEATER
- RD: DEFROSTING RELAY

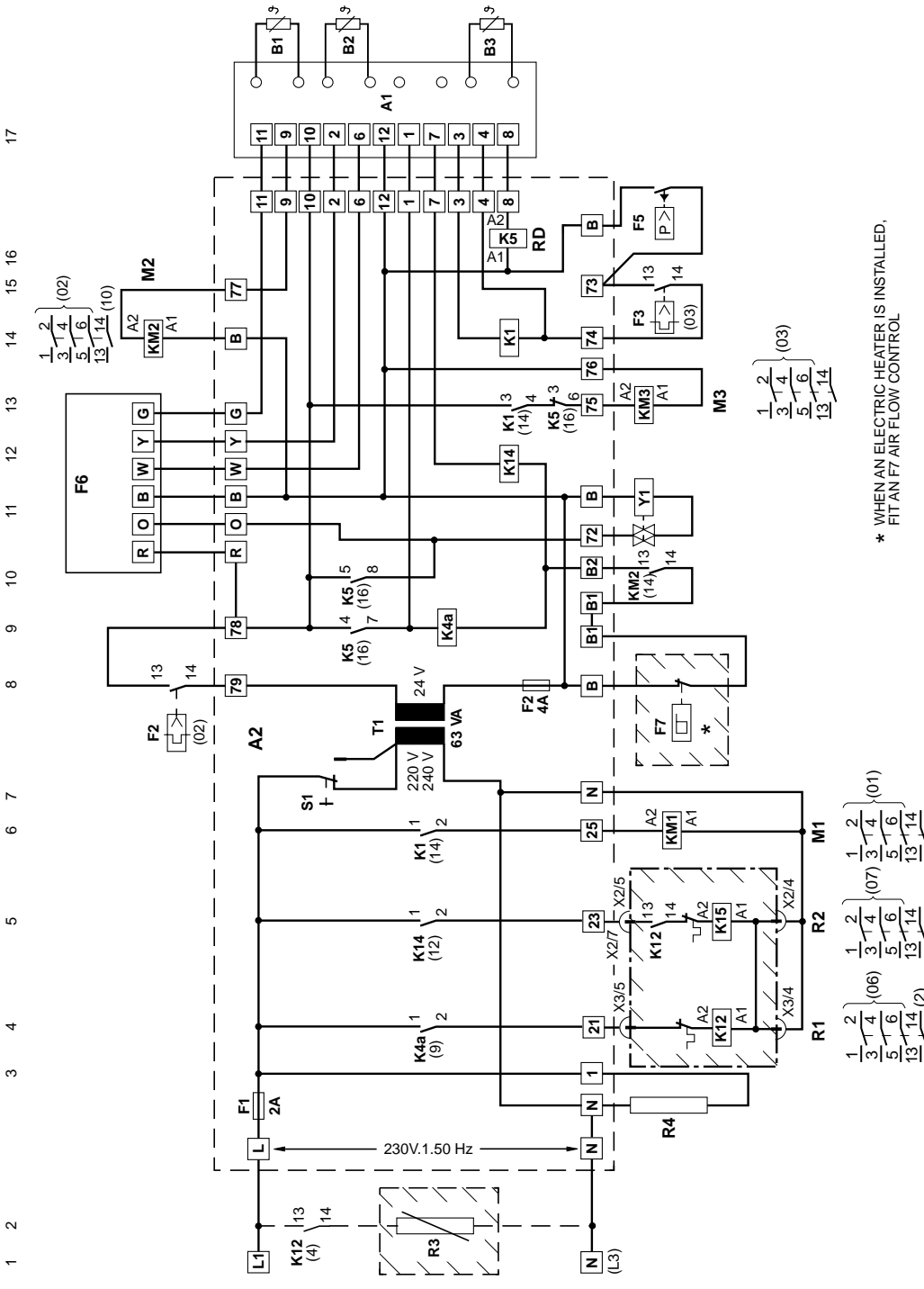
I-1301/e
 BCH-20
 230.3.50
 400.3.50

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

Control diagram

BCH - 25 & 30, 230.3.50, 400.3.50

- A1: ELECTRONIC PLAQUE
- B1: OUTDOOR SENSOR
- B2: DISCHARGE SENSOR
- B3: LIQUID SENSOR
- F2: INDOOR FAN THERMAL RELAY
- F3: OUTDOOR FAN THERMAL RELAY
- F5: AUTOMATIC PRESSURE CUT-OUT/28 bar
- F6: 24V AMBIENT THERMOSTAT
- F7: AIR FLOW RATE CONTROL
- M1: COMPRESSOR
- M2: INDOOR FAN MOTOR
- M3: OUTDOOR FAN
- R2: DUCT HEATER
- R3: DRAIN PAN HEATER
- R4: CASING HEATER
- RD: DEFROSTING RELAY



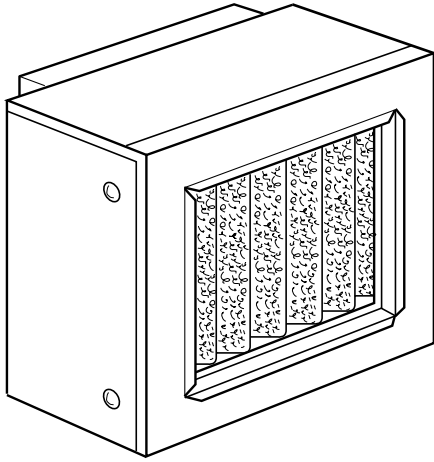
I-1876/a
 BCH-25,30
 230.3.50
 400.3.50

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

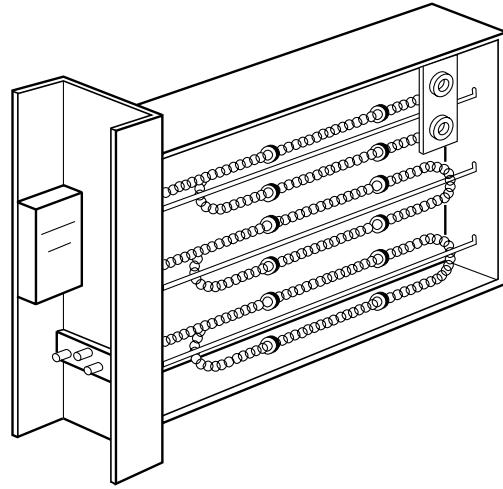
THE COMPONENTS INCLUDED IN THESE BOXES
 ARE NOT SUPPLIED BY THE MANUFACTURER.

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

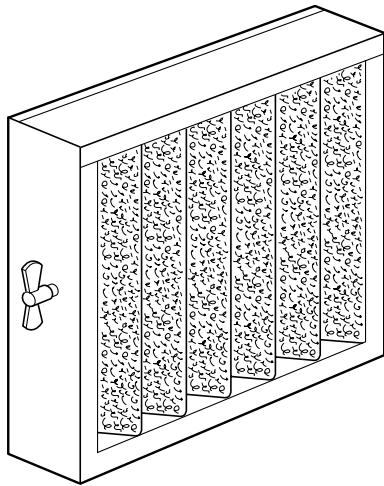
Optional accessories



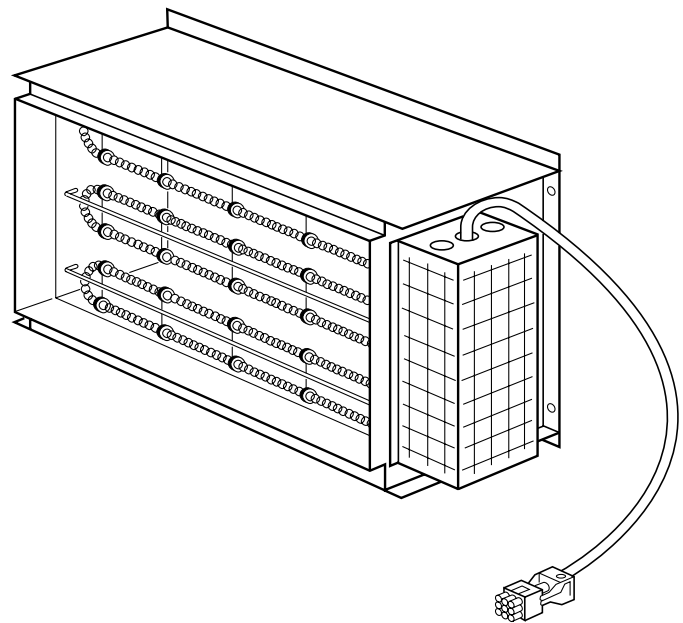
**Filter rack with filter for
BCH-7, 10, 12, 15 & 20**



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



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



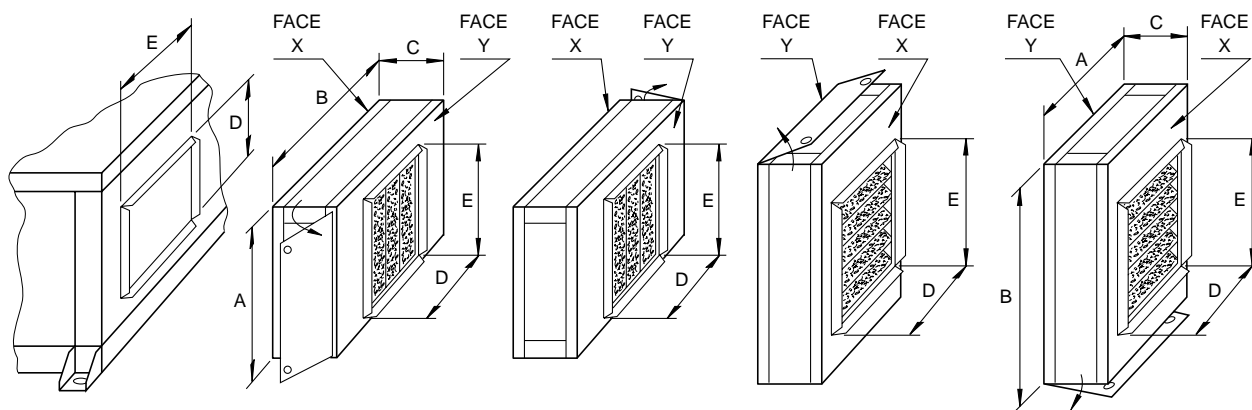
**Duct electric heater RC -220
for BCH-7, 10, 12, 15, 20, 25 & 30**

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 BCH-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 BCH-20 unit this accessory can be connected only in the indoor air return.

Model		BCH -7 & 10	BCH -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)

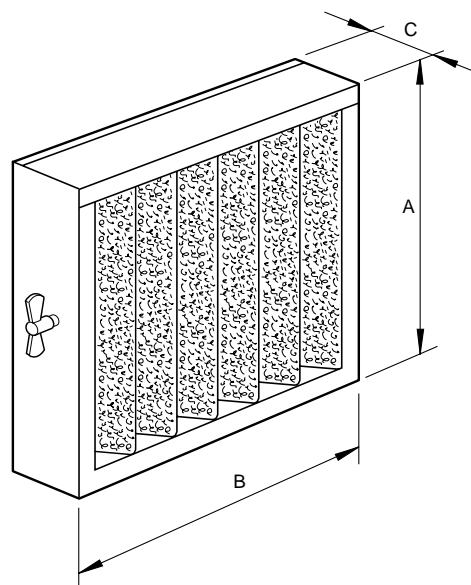
Flow rate m ³ /h	BCH -7 & 10		BCH -12, 15 & 20	
	mm WG	Pa	mm WG	Pa
1 300	0.64	6.2	-	-
1 500	0.80	7.8	-	-
2 000	1.20	11.7	-	-
2 500	1.60	15.6	0.82	8.0
3 000	2.10	20.5	1.06	10.3
3 500	2.60	25.4	1.35	13.0
4 000	3.20	31.3	1.65	16.0
4 500	-	-	2.00	19.6
5 000	-	-	2.30	22.5
5 500	-	-	2.70	26.4
6 000	-	-	3.00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

Air 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 conditioner's outer dimensions by 100 mm.

General dimensions mm



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

Model			BCH -7 & 10	BCH -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 m ³ /h	BCH -7 & 10		BCH -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.

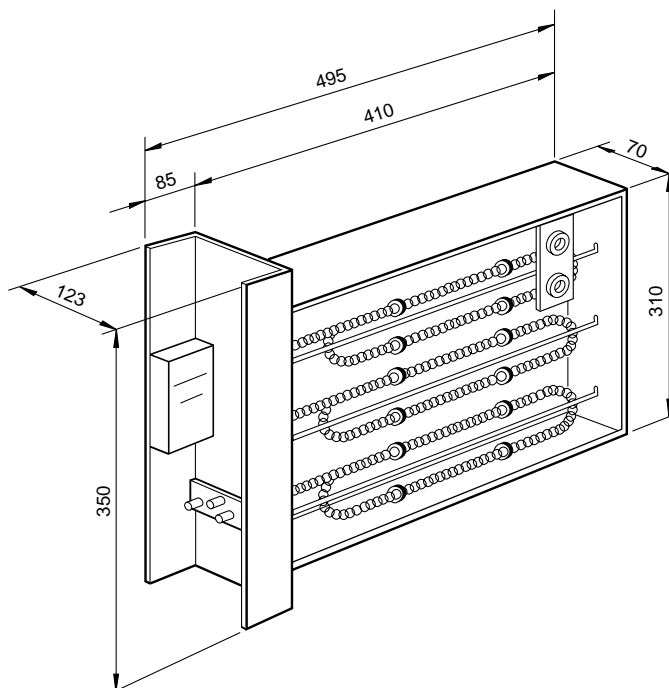
Star-triangle connection terminal strip for 230.3.50 & 400.3.50.

Quick connector for the control wiring between the heater and 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		BCH-7	BCH-7,10	BCH-7,10,12,15,20	BCH-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

Duct electric heaters RC-220

For installation in the indoor fan outlet.

Its intended function is to operate as an emergency heater.

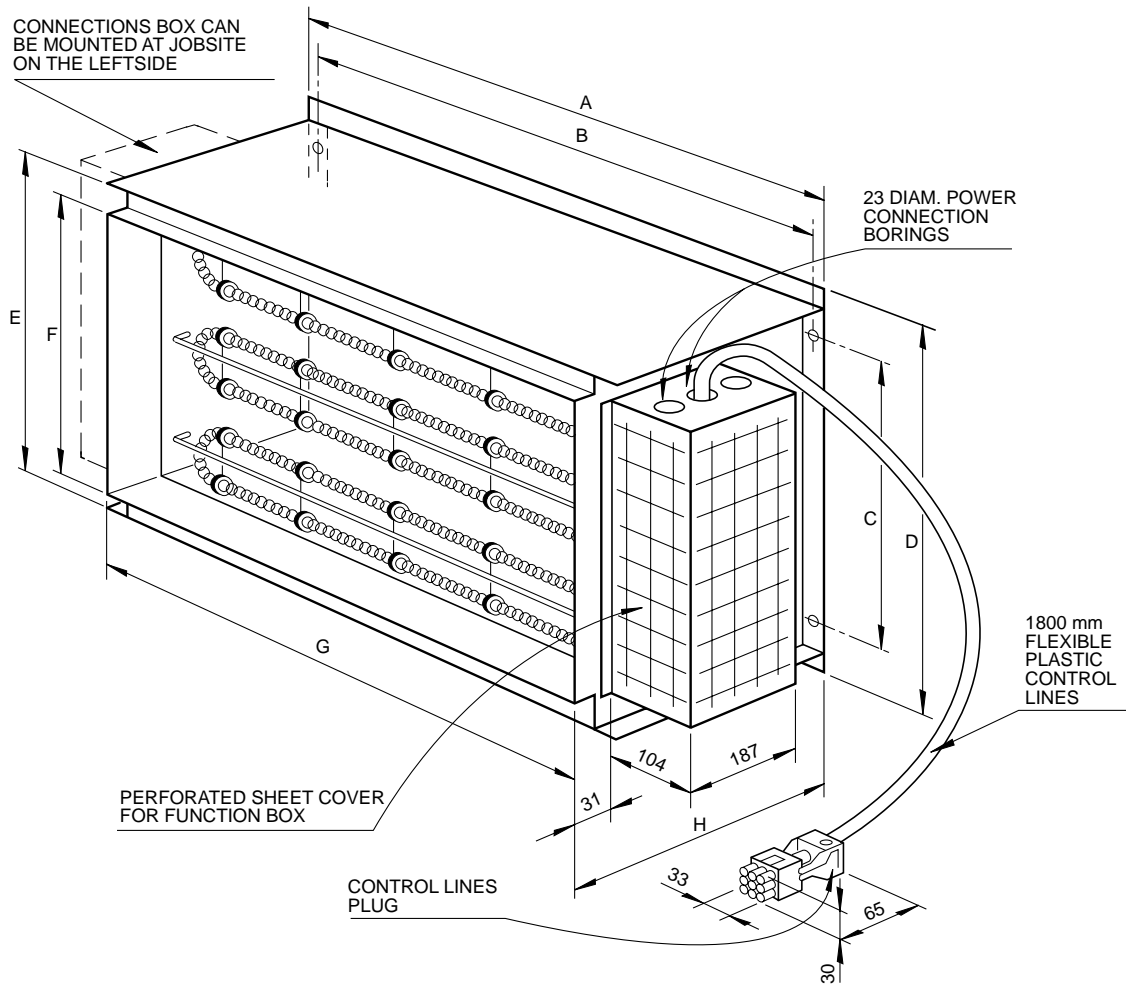
The charge loss calculated for these heaters in any functioning state is 1 mm WG

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 BCH.

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.

AIR CONDITIONING
HEATING
TILES
BATHROOMS

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