Split Air Conditioners
Cooled by air
SOC-076K to 300K/
SICH-070B to 180B and 240C, SIH-300B

YORK
A JOHNSON CONTROLS COMPANY

Ref.: Y-R70138 0706

Technical information

ACCORDING TO ISO 9001 STANDARDS
AENOR
Empresa Registrada
ER-0028/1991

ACCORDING TO ISO 14001 STANDARDS
AENOR
Gestión Ambiental
CGM-97/013

CE

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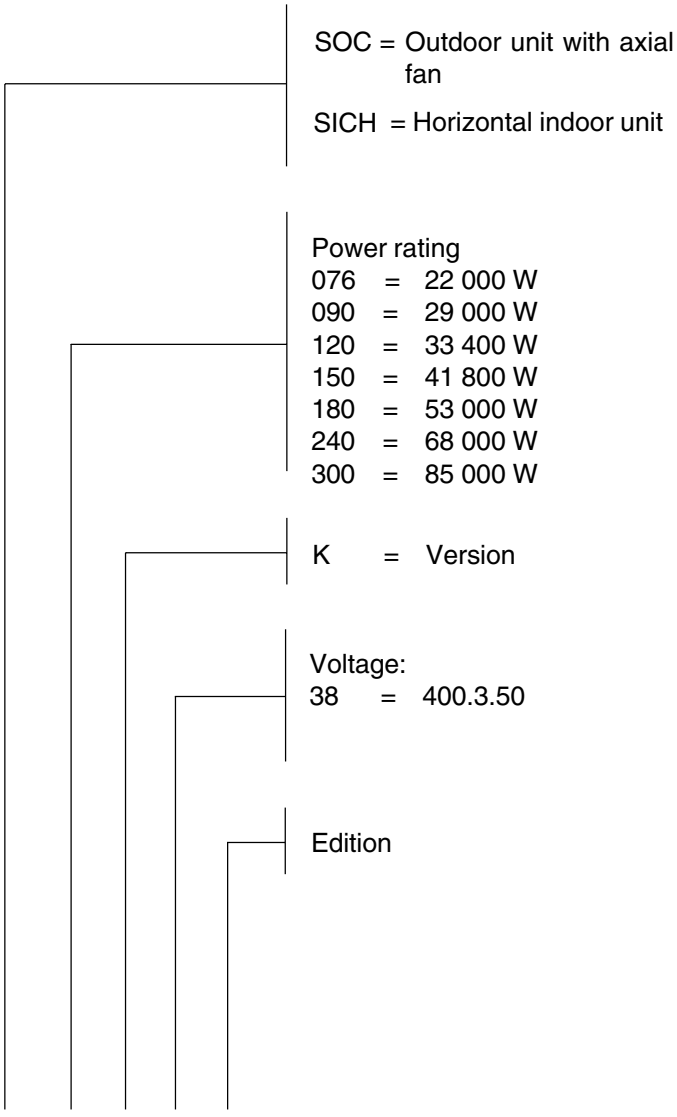
General information

General description

The SOC-K series units are the outdoor units of a split type air conditioner, equipped with a vertical discharge axial fan and ready to be installed directly outdoors.
The SOC-076K to 300K units are compatible with indoor units SICH-070B to 180B and 240C, SIH-300B.
For adequate operation, both the electrical as well as the cooling sections of these units need to be connected to the corresponding indoor unit.
The SICH indoor units can be equipped, as an optional accessory, with an electric heater or a hot water coil for auxiliary heat in the case of an emergency.

Nomenclature



SOC 076 K 38 E1

Technical specifications

Mechanical specifications

Compressor

Vertical hermetic type. Mounted on antivibratory supports and has internal motor protection. Includes an electric heater for heating the oil in the sump to make start-up easier and avoid loss of oil in compressor.

Coils

Of a large surface, made of grooved copper tubing and notched aluminium fins.

Fans (outdoor units)

Axial with free air discharge, without ducts. The unit is equipped with a speed selector in summer cycle that is regulated by the high pressure of the cooling circuit.

Fan (indoor units)

Centrifugal, with dual helix and a shaft in common, except in models SICH 070B and 076B, that have a single helix. Belt and pulley drive with a removable core. The motors are mounted on tensor bases.

Casing (outdoor units)

Made of galvanised steel sheeting, finished with oven-polymerised powdered paint, which allows installing outdoors.

Casing (indoor units)

Made of galvanised steel sheeting and finished with oven-polymerised powdered paint. Insulated internally so as to avoid condensation and reduce noise level. Equipped with a tray and corresponding drain for collecting condensation from the coil. The structure of the SICH 070 to 150B indoor units allows either vertical or horizontal orientation of the fans.

Cooling circuit

Made of welded copper tubing. The units are supplied dehydrated and factory tested with regard to maximum pressure and airtightness. In the indoor units, refrigerant expansion is carried out by means of calibrated and distributor holes. The outdoor units are equipped with a discharge muffler, high and low pressure switches and suction and discharge pressure intakes. 3/8" high and low service valves are also available to aid charge and discharge operations.

Refrigerant

These units are supplied with connections ready for welding. The refrigerant charge must be carried out fully at job site. 3/8" high and low service valves are available for this purpose, 2 per circuit, that aid charge and discharge operations. The refrigerant used is R-407C.

Electrical panel

Accessible directly from the exterior. Includes connecting strip, control board and electronic probes, power supply contactors, operating relays, phases control relay, transformer, heat relays and automatic switches. In compliance with European standards in force.

Phase control relay

The electric panel of the unit introduces a sequence and phase failure detector. In the case of detecting a phase sequence other than R-S-T, or a phase fails once the unit is in operation, this detector, by means of an internal volt-free contact, disconnects power supply to the main board of the unit, leaving it inoperative.
Should the phase sequence be correct and the centrifugal fan of the indoor unit (SICH) rotates in the wrong direction, interchange two phases at the bottom of the fan contactor.

Thermostat

The SOC-076K to 300K include, as standard equipment, de

DPC-1 thermostat. To connect the thermostat to the board use shielded 10 x 0.22 mm² communication cable.

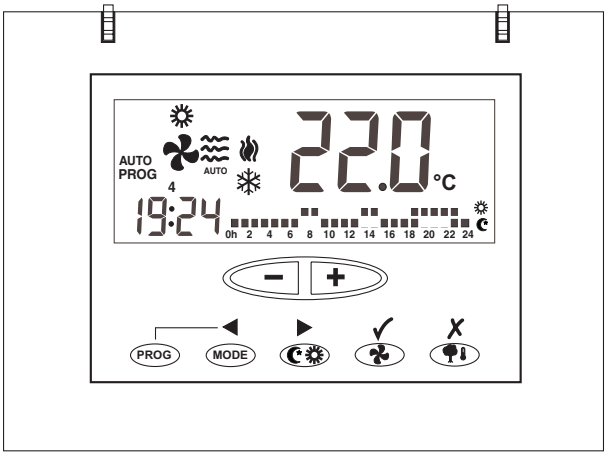
Ambient thermostat DPC-1

Programmable digital thermostat with communication

This thermostat was designed to give close control of the ambient temperature and graphic information regarding the mode it is currently operating in. This control unit, in accordance with the differential between the programmed temperature and the ambient temperature, responds varying the on/off cycles.

The liquid crystal display (LCD) normally indicates the ambient temperature, operating mode and whether the system is in heat or cool.

It allows selecting different set point temperatures for cooland heat, besides choosing between °C and °F on the dis-play. Fan operation can be in continuous or automatic mode,off or in operation along with the compressor.



Physical data

Outdoor units

Model			SOC-076K	SOC-090K	SOC-120K	SOC-150K	SOC-180K	SOC-240K	SOC-300K
Compressor	Amount		1	1	1	2	2	2	2
	Type					Scroll			
	Potencia nominal	kW	8.32	11.2	13.8	2 x 8.32	2 x 11.2	2 x 13.8	2 x 14.3
	Power suppy	V.ph.Hz				400.3.50			
Fan	Power rating	W				370			780
	Number of fans		1	1	2	2	2	4	4
	Power supply	V.ph.Hz.				230.1.50			
	Diameter propellers					610			630
Coil	Amount		1	1	2	2	2	2	4
	Tubing depth x height		2 x 36	2 x 42	2 x 42	2 x 42	3 x 42	3 x 42	2 x 48
	Diameter tubing					3/8"			
	Surface	m²	1.86	2.15	1.52 x 2	1.52 x 2	1.82 x 2	2.17 x 2	1.99 x 4
Refrigerant load R-407C		kg	6.6	7.8	11.2	6.7	8.7	10	15 x 2
Dimensions with standard packing	Height	mm	1 046	1 198	1 198	1 198	1 198	1 198	1 470
	Width	mm	1 345	1 345	1 345	1 345	1 345	2 083	2 526
	Depth	mm	985	985	1 732	1 732	1 732	1735	2 100
Weight	Nett	kg	234	234	318	415	430	575	925
	Gross	kg	236	236	324	425	445	585	935

Indoor units

Model			SICH-076B-076B	SICH-090B-120B	SICH-150B	SICH-180B	SICH-240C	SIH-300B
Fan	Motor power rating	kW	0.75	1.5	1.5	3	3	5.5
	Power supply	V.ph.Hz	400.3.50					
	Motor rpm		1 400					
	Number of turbines		1	2	2	2	2	2
	Turbine Ø	mm	320	320	320	320	380	380
	Turbine width	mm	320	240	320	320	380	380
Coil	Amount		1	1	2	2	2	2
	Tubing depth x height		4 x 21	4 x 25	4 x 25	4 x 29	5 x 32	5 x 32
	Ø tubing		3/8"					
	Surface	m²	0.57	0.84	1.11	1.4	1.76	1.76
Dimensions with packing	Height	mm	760	833	883	935	950	950
	Width	mm	1 444	1 825	2 125	2 390	2 800	2 800
	Depth	mm	930	930	930	955	1 030	1 030
Weight	Nett	kg	120	165	195	240	310	310
	Gross	kg	142	195	230	290	350	350

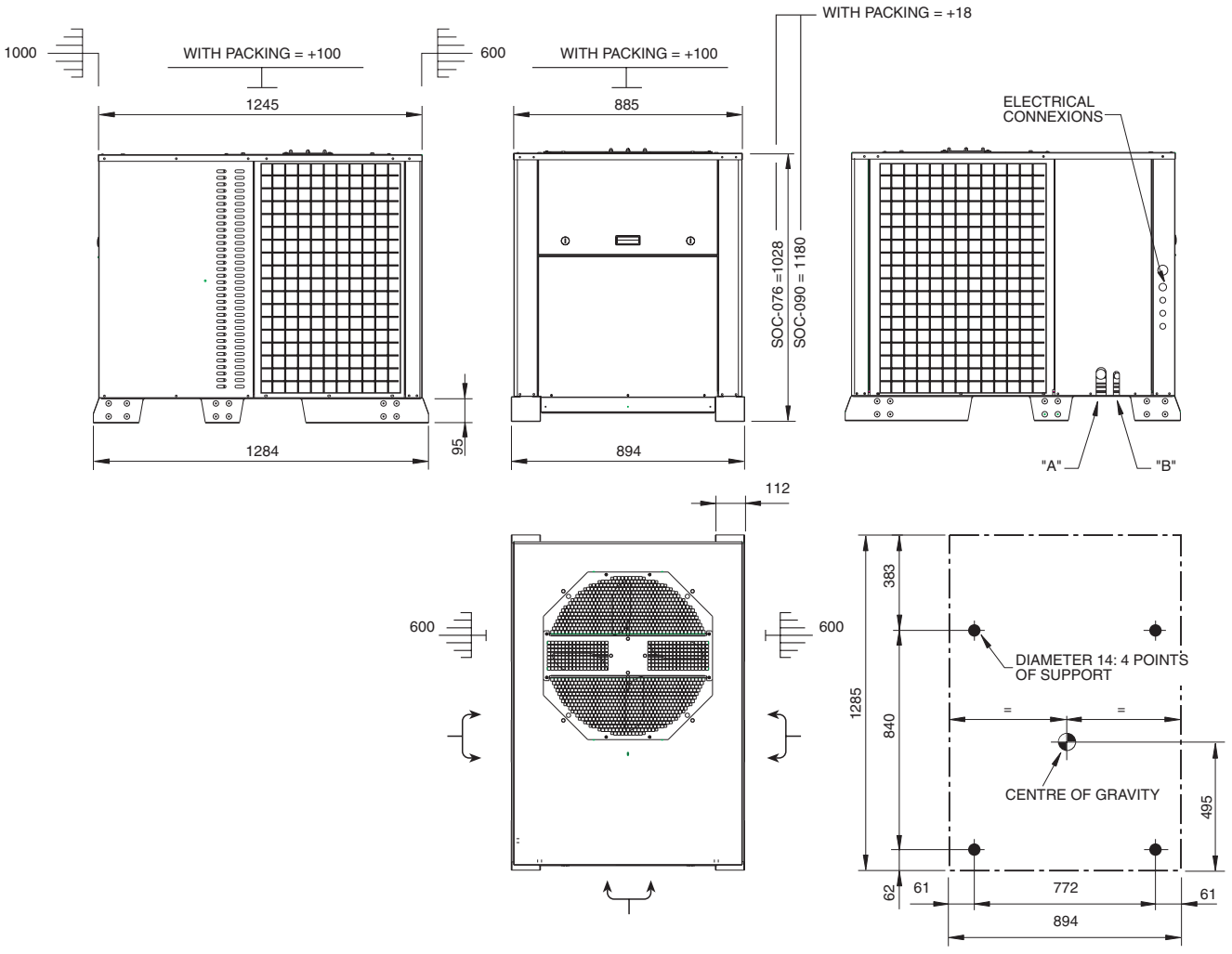
Limits of use

Voltage limits				Air intake temperature to the condensing coil DB		Air intake temperature to the evaporating coil WB	
Nominal at 230 V		Nominal at 400 V					
Maximum	Minimum	Maximum	Minimum	Maximum °C	Minimum °C	Maximum °C	Minimum °C
254	198	436	342	46	2	22	14

Notes: WB = wet bulb. DB = dry bulb.

General dimensions mm

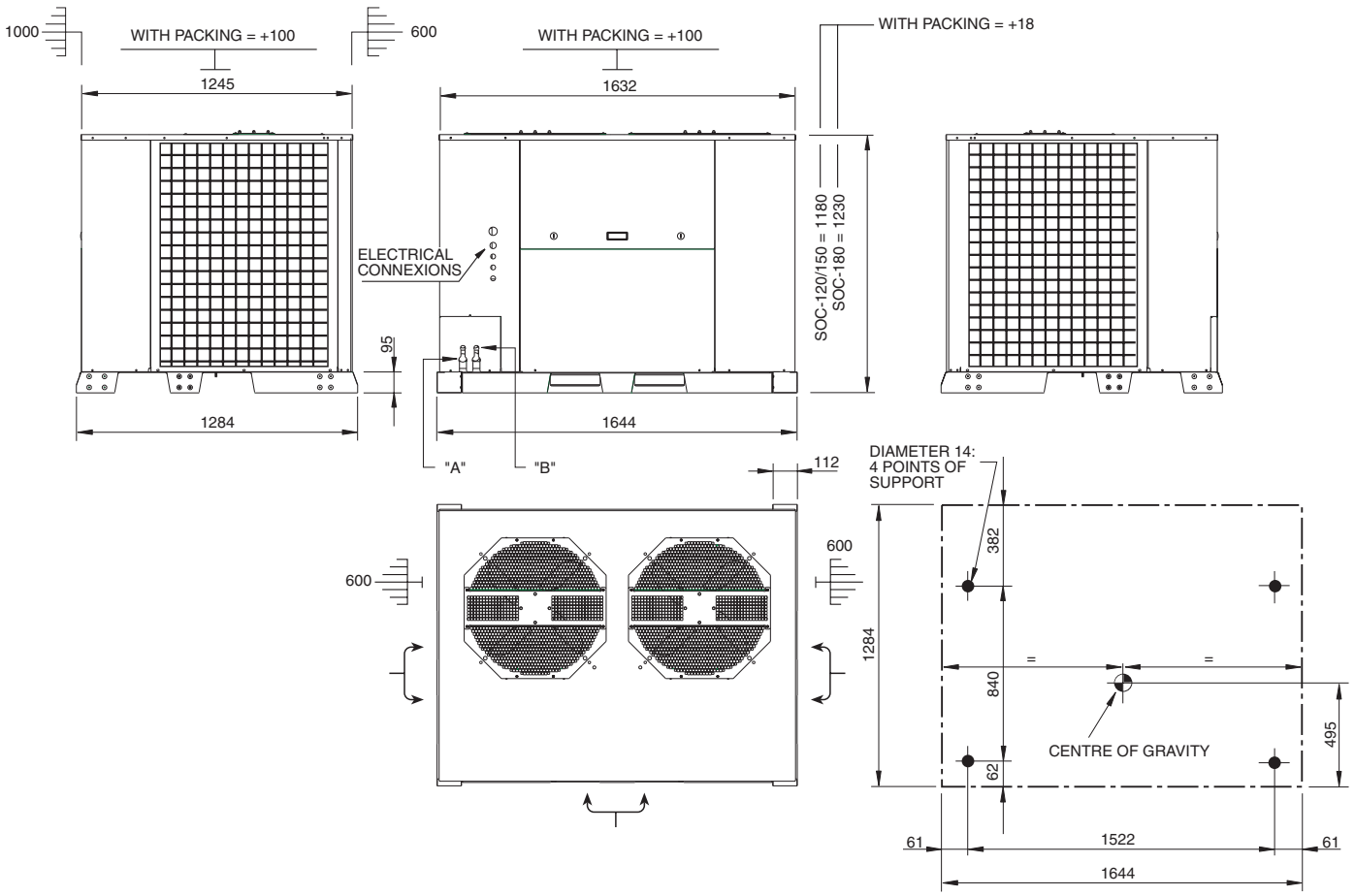
SOC-076K & 090K



Unit	(A) Gas tubing diameter	(B) Liquid tubing diameter	Weight kgs. per point of support
SOC-076K	1-1/8"	1/2"	60
SOC-090K	1-1/8"	5/8"	60

General dimensions mm

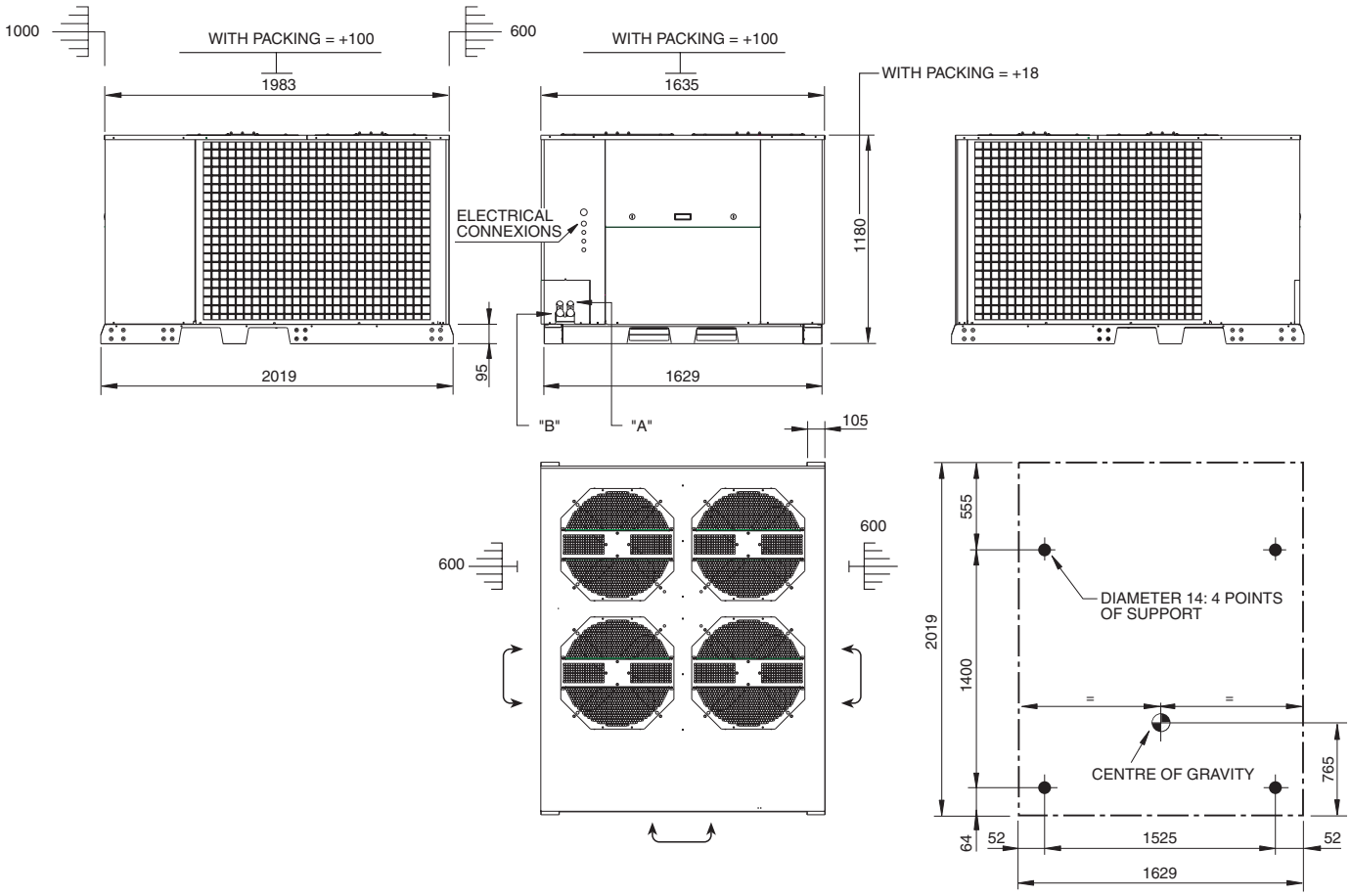
SOC-120K, 150K & 180K



Unit	(A) Gas tubing diameter	(B) Liquid tubing diameter	Weight kgs. per point of support
SOC-120K	1 - 1/8"	1 x 5/8"	80
SOC-150K	2 x 1 - 1/8"	2 x 1/2"	103
SOC-180K	2 x 1 - 1/8"	2 x 5/8"	108

General dimensions mm

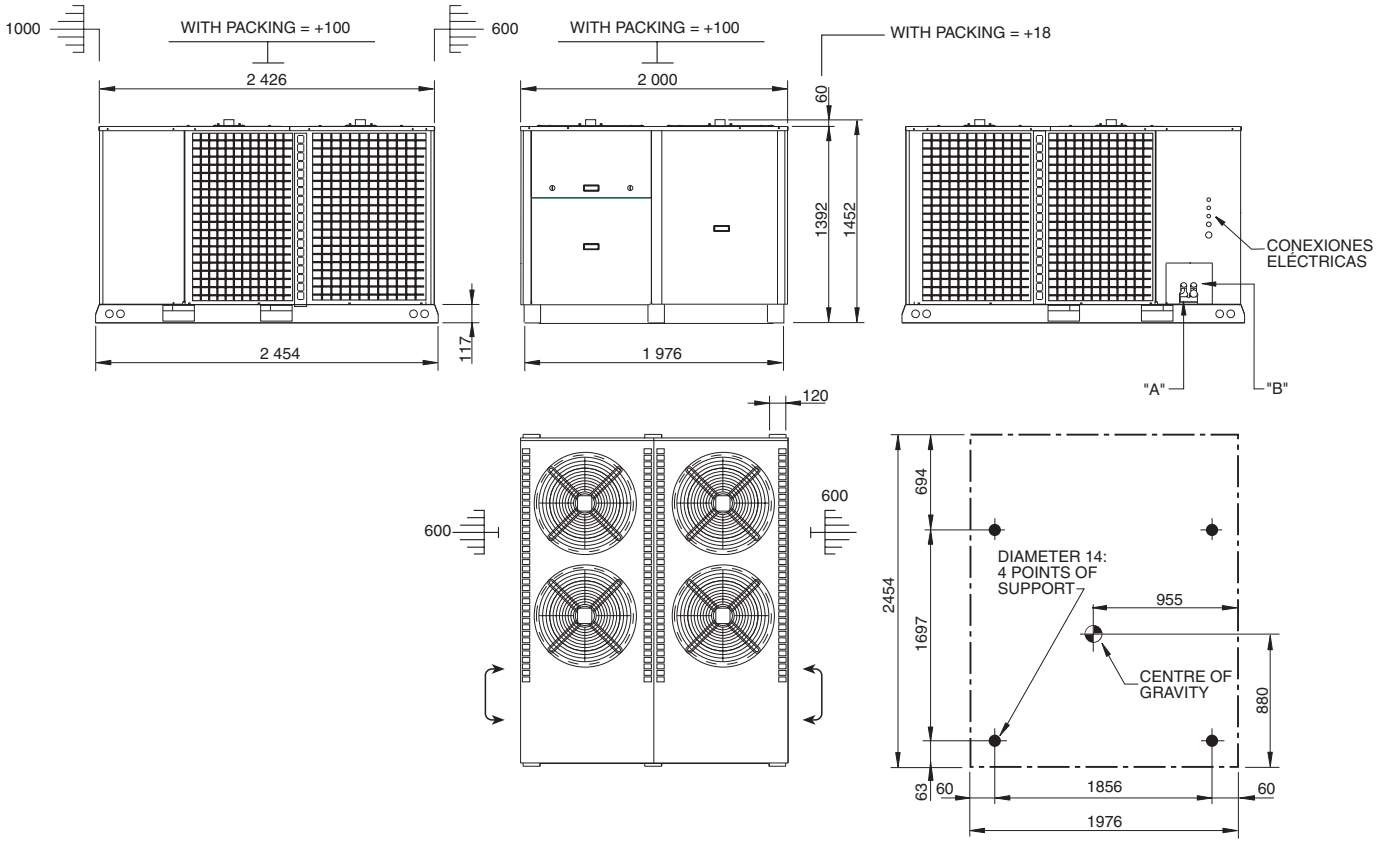
SOC-240K



Unit	Weight kgs. per point of support	(A) Gas tubing diameter	(B) Liquid tubing diameter
SOC-240K	145	2 x 1-3/8"	2 x 7/8"

General dimensions mm

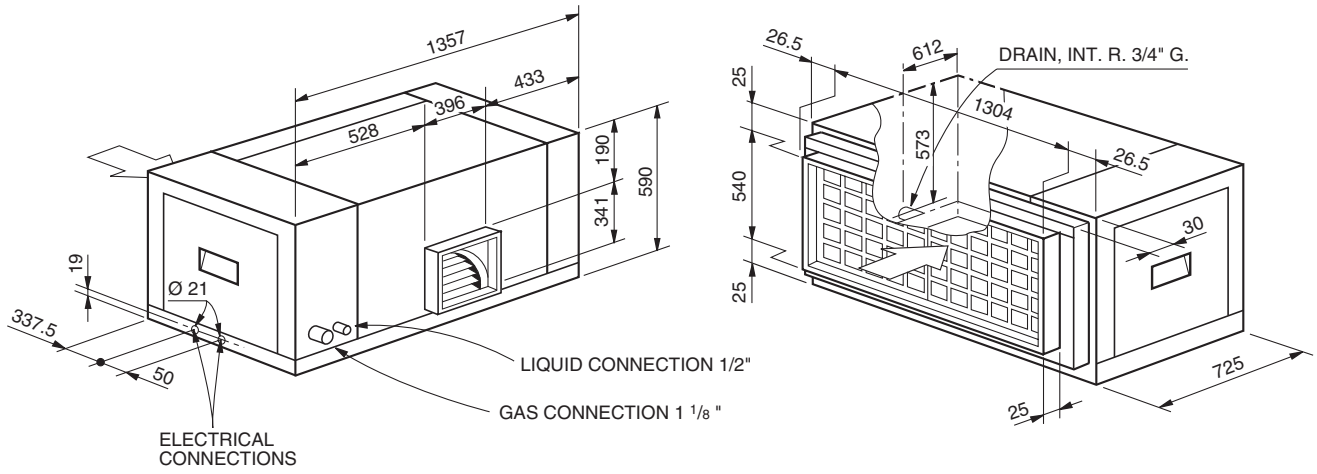
SOC-300K



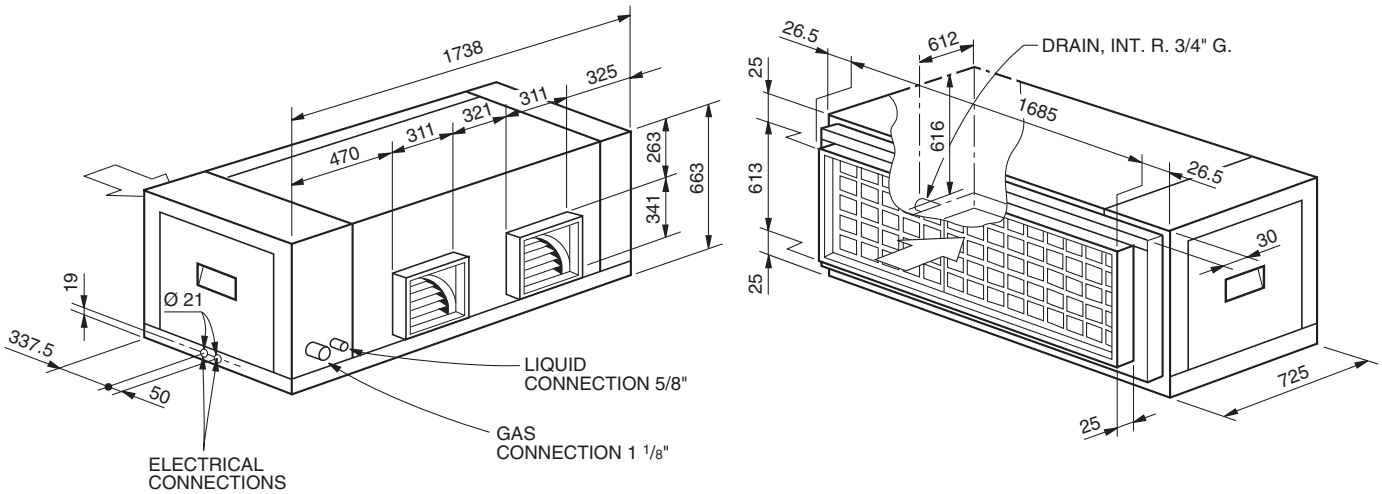
Unit	(A) Gas tubing diameter	(B) Liquid tubing diameter	Weight kgs. per point of support
SOC-300K	2 x 1-3/8"	2 x 7/8"	234

General dimensions mm

SICH-070B and 076B

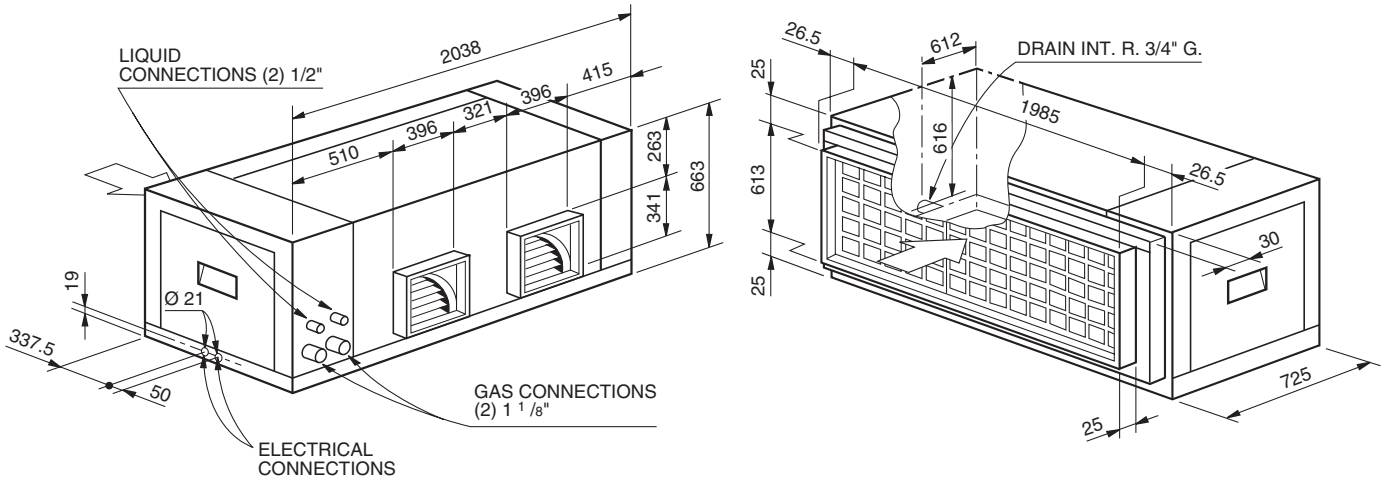


SICH-090B and 120B

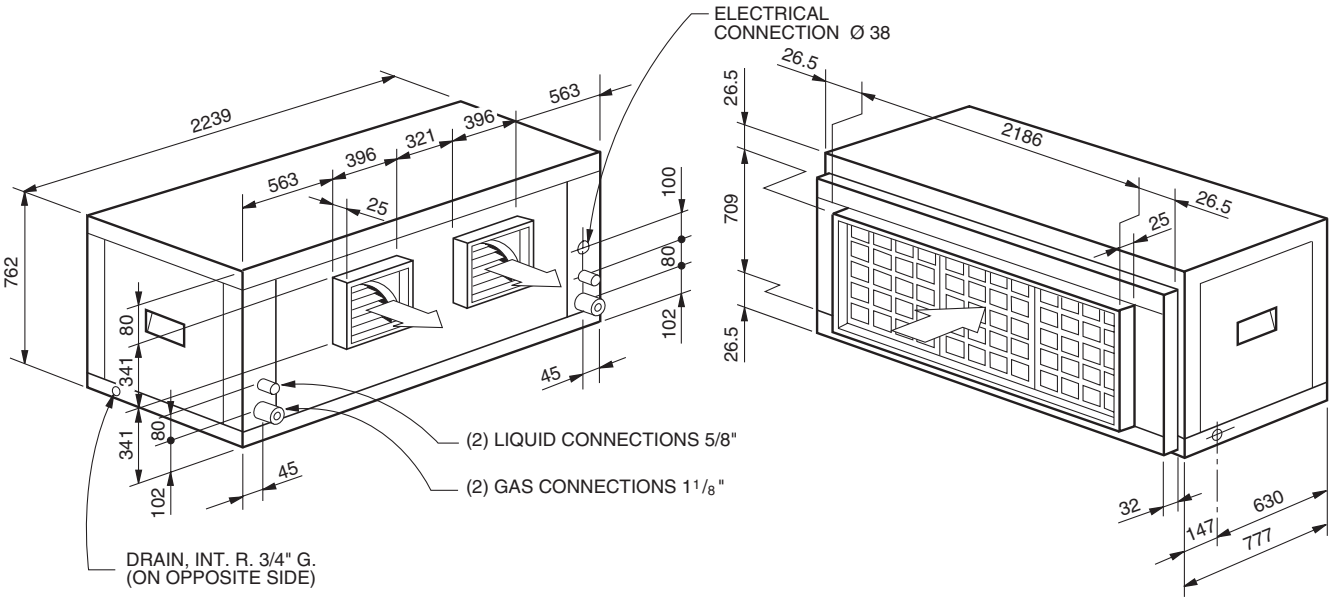


General dimensions mm

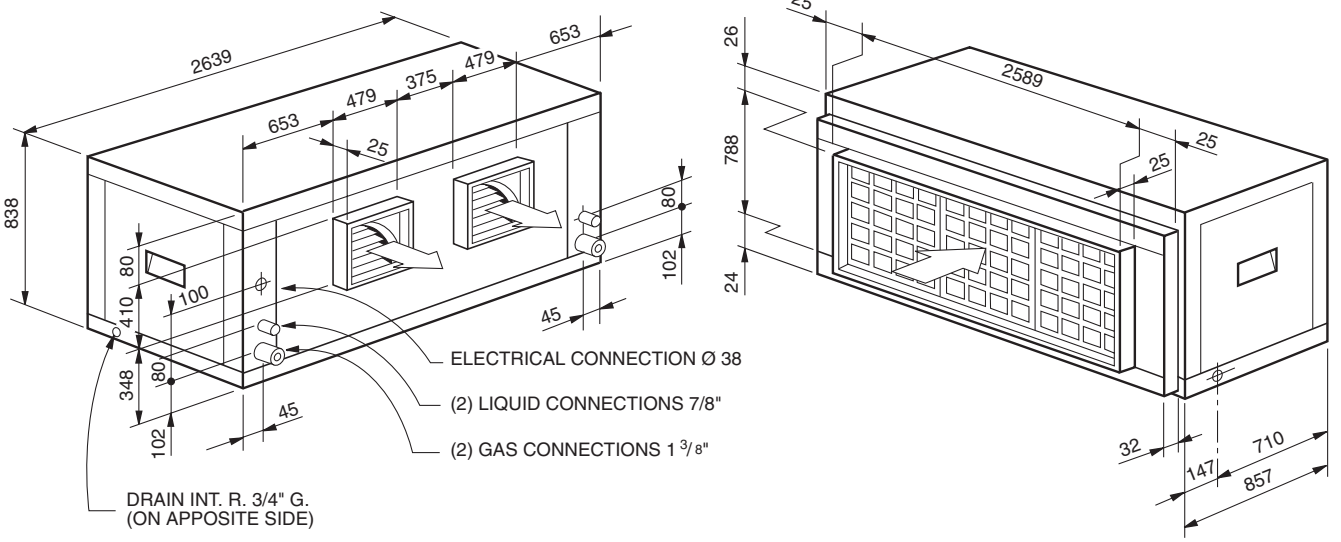
SICH-150B



SICH-180B



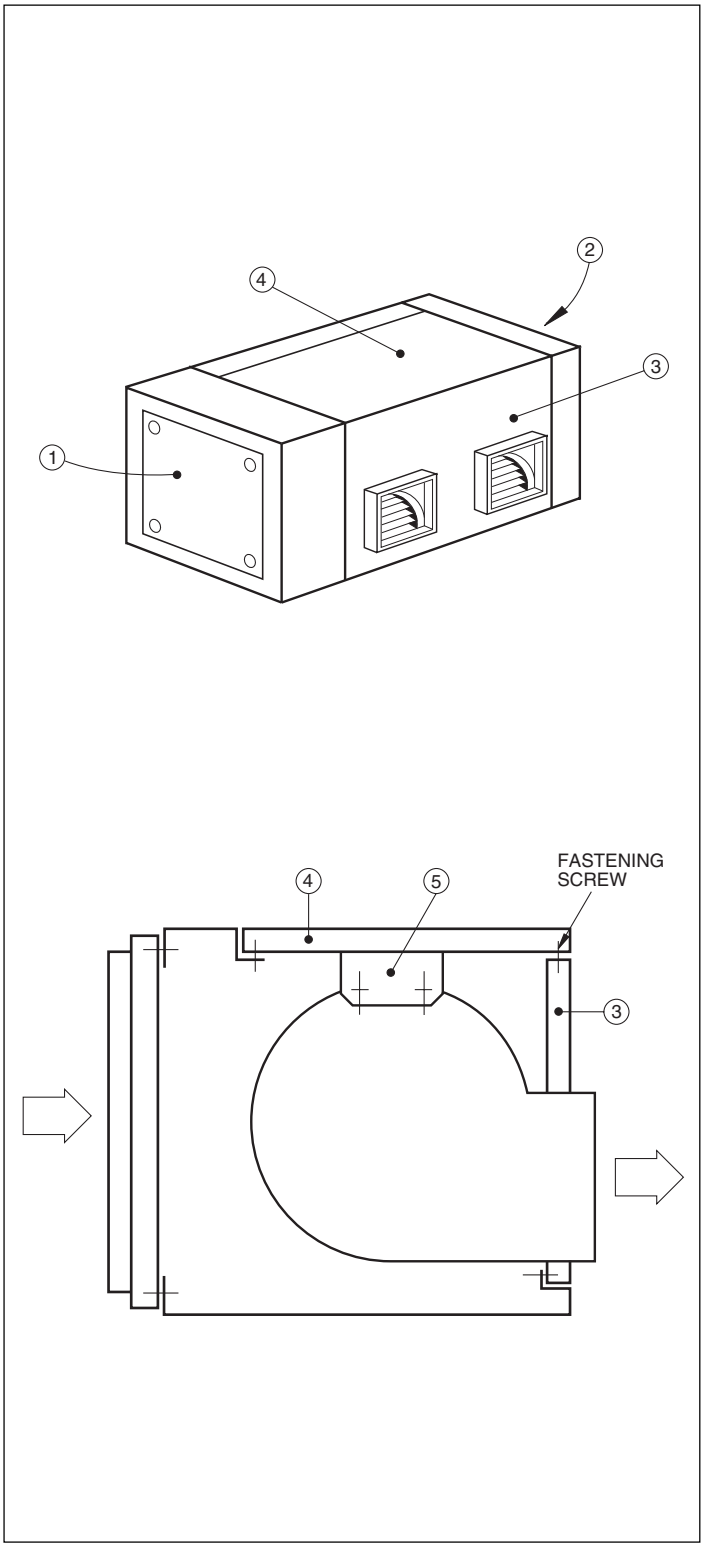
SICH-240C and SIH-300B



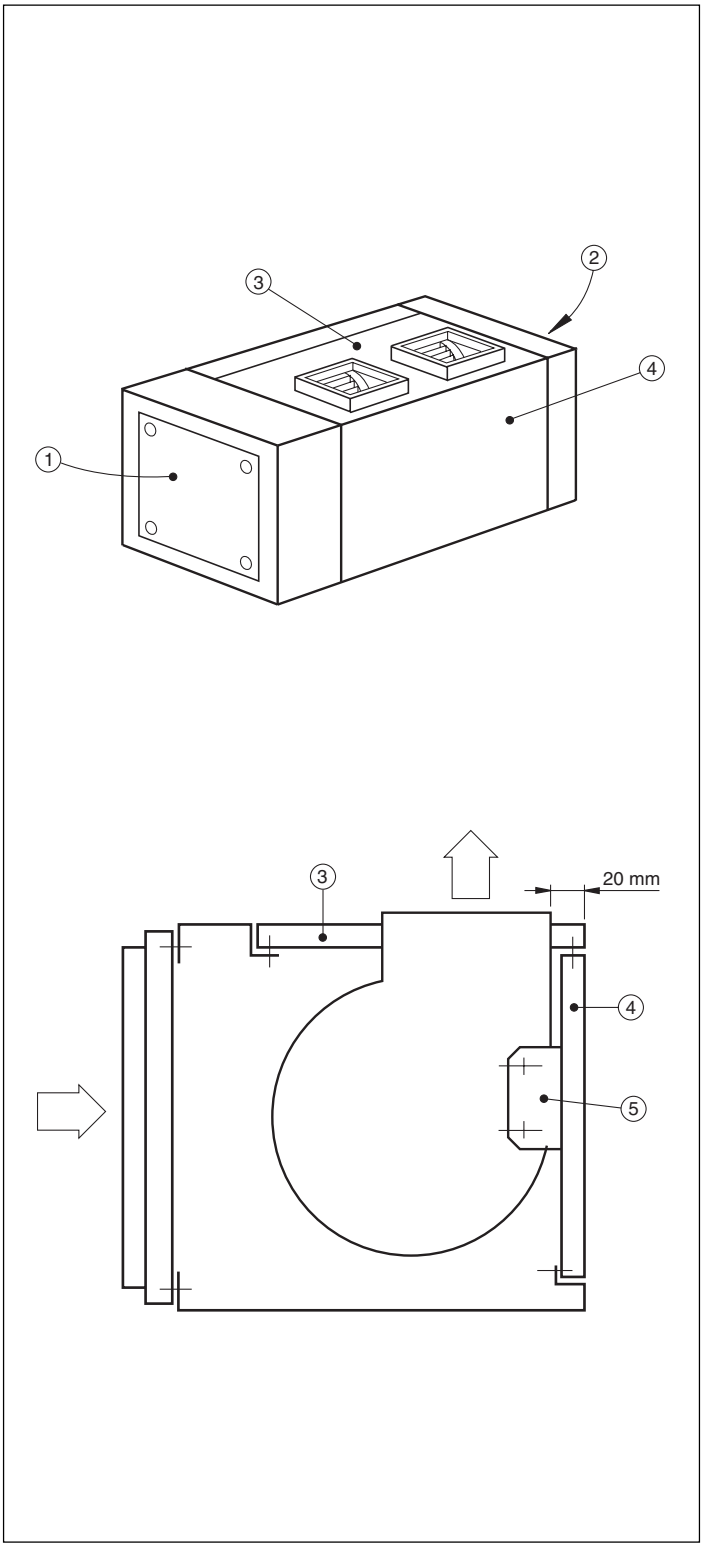
Process for transforming a horizontal discharge into a vertical discharge (SICH-070B, 076B, 090B, 120B, 150B units)

1- Remove the fastening screws from the side covers ref. 1 and 2 of the upper unit.
2- Remove the side covers ref. 1 and 2.
3- Loosen the screws that fasten the fan motor to its base, and remove the transmission belt.
4- Through the side accesses, unscrew panels ref. 3 and 4, as indicated in the standard orientation figure.
5- Unscrew the fastener of the fan to its support ref. 5.
6- Place panel ref. 3 in the previous position of panel ref. 4, and place panel ref. 4 in the previous position of panel ref. 3.
7- Tighten the screws of these panels and the fan on support ref. 5.
8- Replace the transmission belt and fasten the motor to its base.
9- Screw on side covers ref. 1 and 2.

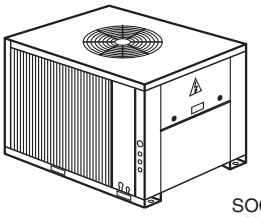
Standard orientation



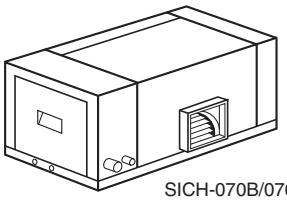
Orientation variable at job site



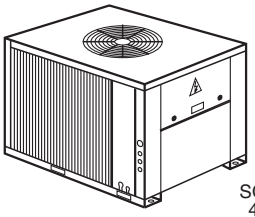
Variant chart



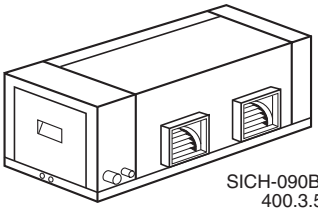
SOC-076K
400.3.50



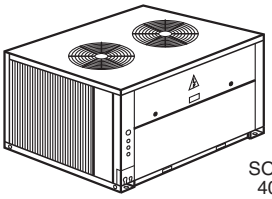
SICH-070B/076B
400.3.50



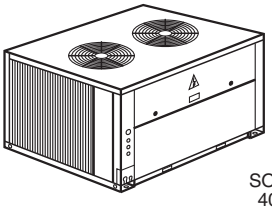
SOC-090K
400.3.50



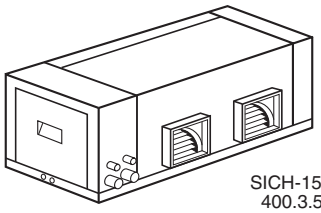
SICH-090B/120B
400.3.50



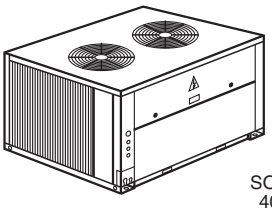
SOC-120K
400.3.50



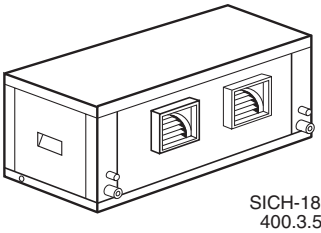
SOC-150K
400.3.50



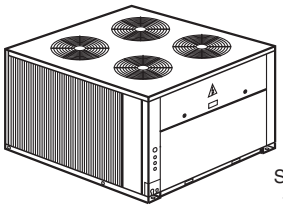
SICH-150B
400.3.50



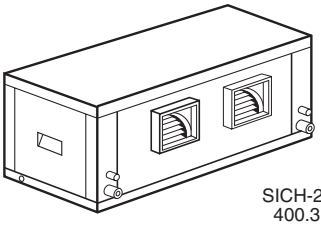
SOC-180K
400.3.50



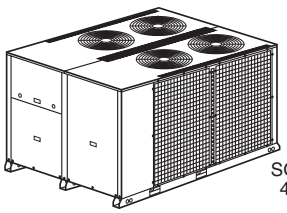
SICH-180B
400.3.50



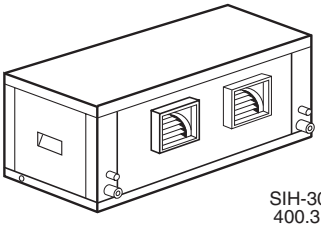
SOC-240K
400.3.50



SICH-240C
400.3.50



SOC-300K
400.3.50



SIH-300B
400.3.50

Nominal characteristics

Outdoor unit	Indoor unit	Cooling capacity W	Consumption W
SOC-076K	**SICH-070B/076B**	22 000	8 300
SOC-090K	**SICH-090B/120B**	29 000	11 000
SOC-120K	**SICH-090B/120B**	33 400	14 000
SOC-150K	**SICH-150B**	41 800	17 000
SOC-180K	**SICH-180B**	53 000	19 400
SOC-240K	**SICH-240C**	68 000	28 000
SOC-300K	**SIH-300B**	85 000	32 800

Correcting factors

Correcting factors of the cooling capacities

Cooling capacity correcting factors for flows that vary from the nominal flows in the indoor coil.

Flow %	80	90	100	110	120	130
Total capacity	0.960	0.980	1	1.016	1.032	1.046
Sensible capacity	0.945	0.973	1	1.038	1.075	1.118
Comp. abs. power	0.980	0.990	1	1.009	1.017	1.025

Correction of the real temperature of air intake to the outdoor coil for flows that vary from the nominal flows.

Flow %	70	80	90	100	110	120	130
Correction in °C on real temperature of air intake to the outdoor coil	5	3	1.5	0	-1	-2	-2.5

Sensible cooling capacities

Model	Dry outdoor air temperature °C (DB)	Humid air intake temperature °C (WB)	Total capaticy	Sensible capacity (W/h)				Compressor absorbed power
				Dry air intake temperature to the coil °C (DB)				
				22	24	27	29	
			W/h	W/h	W/h	W/h	W/h	kW
SOC-076K SICH-076B	25	22	26 400	8 108	10 954	15 223	18 073	6.43
		19.5	23 760	11 644	14 491	18 760	21 611	6.74
		17	22 000	15 438	18 284	22 000	22 000	7.04
	35	22	24 420	7 424	10 270	14 539	17 385	7.27
		19.5	22 000	10 982	13 828	18 097	20 994	7.66
		17	20 240	13 848	16 694	20 240	20 240	8.04
	45	22	22 000	6 665	9 511	13 780	16 626	8.42
		19.5	19 800	10 228	13 074	17 343	19 800	8.80
		17	18 040	13 822	16 668	18 040	18 040	9.19

Sensible cooling capacities

Model	Dry outdoor air temperature °C (DB)	Humid air intake temperature °C (WB)	Total capaticy	Sensible capacity (W/h)				Compressor absorbed power
				Dry air intake temperature to the coil °C (DB)				
				22	24	27	29	
			W/h	W/h	W/h	W/h	W/h	kW
SOC-090K SICH-090B	25	22	34 800	10 350	15 243	22 581	27 480	8.26
		19.5	31 320	16 492	21 385	28 723	31 320	8.66
		17	29 000	22 957	27 850	29 000	29 000	9.05
	35	22	32 190	9 495	14 387	21 726	26 619	9.35
		19.5	29 000	15 659	20 552	27 890	29 000	9.84
		17	26 680	20 723	25 616	26 680	26 680	10.33
	45	22	29 000	8 541	13 433	20 772	25 564	10.82
		19.5	26 100	14 706	19 599	26 100	26 100	11.31
		17	23 780	20 911	23 780	23 780	23 780	11.81
SOC-120K SICH-120B	25	22	40 080	12 151	16 927	24 090	28 874	9.99
		19.5	36 072	18 114	22 890	30 054	34 838	10.46
		17	33 400	24 460	29 235	33 400	33 400	10.94
	35	22	37 074	11 136	15 910	23 075	27 850	11.30
		19.5	33 400	17 128	21 904	29 068	33 400	11.89
		17	30 728	21 892	26 668	30 728	30 728	12.49
	45	22	33 400	10 005	14 780	21 945	26 720	13.08
		19.5	30 060	16 002	20 778	27 942	30 060	13.68
		17	27 388	22 045	26 820	27 388	27 388	14.27
SOC-150K SICH-150B	25	22	50 160	15 056	21 555	31 304	37 811	12.14
		19.5	45 144	23 195	29 694	39 443	45 144	12.72
		17	41 800	31 805	38 305	41 800	41 800	13.29
	35	22	46 398	13 805	20 304	30 053	36 552	13.73
		19.5	41 800	21 978	28 478	38 226	41 800	14.45
		17	38 456	28 854	35 083	38 456	38 456	15.17
	45	22	41 800	12 411	18 910	28 659	35 158	15.90
		19.5	37 620	20 589	27 088	36 836	37 620	16.62
		17	34 276	28 823	34 276	34 276	34 276	17.34

Sensible cooling capacities

Model	Dry outdoor air temperature °C (DB)	Humid air intake temperature °C (WB)	Total capaticy	Sensible capacity (W/h)				Compressor absorbed power
				Dry air intake temperature to the coil °C (DB)				
				22	24	27	29	
			W/h	W/h	W/h	W/h	W/h	kW
SOC-180K SICH-180B	25	22	63 800	18 662	26 333	37 841	45 524	12,60
		19,5	57 320	28 237	35 909	47 417	55 102	13,20
		17	53 000	38 432	46 104	52 000	53 000	13,80
	35	22	58 940	17 017	24 689	36 197	43 869	14,25
		19,5	53 000	26 641	34 313	45 820	53 000	15,00
		17	48 680	34 362	42 034	48 680	48 680	15,75
	45	22	53 000	15 187	22 859	34 367	42 039	16,50
		19,5	47 600	24 819	32 491	43 999	47 600	17,25
		17	43 280	34 525	42 197	43 280	43 280	18,00
SOC-240K SICH-240C	25	22	81 600	24 507	35 027	50 807	61 340	19,65
		19,5	73 440	37 680	48 200	63 980	73 440	20,58
		17	68 000	51 620	62 140	68 000	68 000	21,52
	35	22	75 480	22 470	32 490	48 770	59 290	22,22
		19,5	68 000	35 700	46 218	62 000	68 000	23,39
		17	62 560	47 676	58 196	62 560	62 560	24,56
	45	22	68 000	20 200	30 720	46 500	57 020	25,73
		19,5	61 200	33 436	43 956	59 735	61 200	26,90
		17	55 760	46 763	55 760	55 760	55 760	28,07
SOC-300K SIH-300B	25	22	102 000	30 875	43 188	61 657	73 987	26,88
		19,5	91 800	46 255	58 568	77 038	89 371	28,16
		17	85 000	62 606	74 919	85 000	85 000	29,44
	35	22	94 350	28 296	40 609	59 079	71 391	30,40
		19,5	85 000	43 751	56 064	74 533	85 000	32,00
		17	78 200	57 317	69 630	78 200	78 200	33,60
	45	22	85 000	25 427	37 739	56 209	68 522	35,20
		19,5	76 500	40 893	53 206	71 675	76 500	36,80
		17	69 700	56 476	68 789	69 700	69 700	38,40

Test conditions

Voltage	Outdoor temp. °C		Indoor temp. °C	
	DB	WB	DB	WB
230 or 400	35	24	27	19

Nominal flows

The cooling and heating capacities of the corresponding tables are valid for the following nominal flows.

For other flows, apply the correcting factors from the corresponding table.

Model	Nominal flow		Pressure available indoor fan
	m^3/h	m^3/s	Pa
SICH-070B & 076B	4 615	1,28	62
SICH-090B & 120B	8 060 / 7 850	2,24 / 2,18	62 / 75
SICH-150B	10 700	2,97	75
SICH-180B	13 600	3,77	80
SICH-240C	16 500	4,58	80
SIH-300B	19 500	5,42	80

Indoor fan features

Model	Static pressure available		Air flow		Absorbed power W
	mm WG (1)	Pa	m^3/h	m^3/s	
SICH-070B-076B	14	137,2	3 577	0,99	680
	12	117,6	3 885	1,07	740
	10	98	4 130	1,14	785
	8	78,4	4 399	1,22	840
	6	58,8	4 653	1,29	900
	5	49	4 723	1,31	920
	4	39,2	4 860	1,35	955
	2	19,6	5 058	1,40	1 005
	0	0	5 281	1,46	1 070
SICH-090B-120B	17,1	167,6	5 250	1,46	650
	16,5	161,7	5 500	1,53	690
	15,2	149,0	6 000	1,66	770
	13,6	133,3	6 500	1,80	850
	11,5	112,7	7 000	1,94	950
	10,0	98,0	7 500	2,08	1 050
	6,7	65,7	8 000	2,22	1 100
	3,6	35,3	8 500	2,36	1 210
	1,0	9,8	9 000	2,50	1 320
	0,0	0,0	9 200	2,55	1 375
SICH-150B	17,9	175,4	7 000	1,94	896
	17,1	167,6	7 500	2,08	970
	16,0	156,8	8 000	2,22	1 045
	14,8	137,2	8 500	2,36	1 100
	13,3	130,3	9 000	2,50	1 175
	12,1	118,6	9 500	2,64	1 275
	10,0	98,0	10 000	2,78	1 375
	8,5	83,3	10 500	2,92	1 450
	6,5	63,7	11 000	3,05	1 600
	4,3	42,1	11 500	3,19	1 700
	2,0	19,6	12 000	3,33	1 802
	0,0	0,0	12 500	3,47	1 970
SICH-180B	15,9	155,8	11 500	3,19	2 004
	14,2	139,1	12 000	3,33	2 139
	12,6	123,4	12 500	3,47	2 240
	11,0	107,8	13 000	3,61	2 408
	8,6	84,2	13 500	3,75	2 535
	6,5	63,7	14 000	3,89	2 732
	3,9	38,2	14 500	4,02	2 843
	1,3	12,7	15 000	4,16	3 000
	0,0	0,0	15 200	4,22	3 150
SICH-240C	20	196	12 900	3,58	2 200
	16	157	14 000	3,89	2 800
	12	118	15 300	4,25	3 120
	8	78	16 500	4,58	3 520
	6	59	17 100	4,75	3 650
	4	39	17 700	4,92	3 800
	0	0	19 000	5,28	4 100
SIH-300B	30	294,3	12 800	3,56	3 105
	24	235,4	14 600	4,06	3 900
	20	196	16 000	4,44	4 300
	16	157	17 100	4,75	4 805
	12	118	18 350	5,10	5 110
	8	78	19 500	5,42	5 520
	6	59	20 000	5,56	5 800
	4	39	20 700	5,75	6 000
	0	0	22 300	6,19	6 300

(1) Performance calculated with wet coil including filters.

Electrical characteristics

Outdoor units

Model	Power supply V.ph.Hz.		Consumption A				Power supply cable section (2) mm²	Automatic switch (K curve)(1)
	Compressor	Fan	Compressor		Fan			
			Start	Nominal	Start	Nominal		A
SOC-076K	400.3.50	230.1.50	99	11,7	6	2,2	4	25
SOC-090K	400.3.50	230.1.50	134	17,1	6	2,2	6	32
SOC-120K	400.3.50	230.1.50	167	21,1	2 x 6	2 x 2,2	10	40
SOC-150K	400.3.50	230.1.50	2 x 99	2 x 11,7	2 x 6	2 x 2,2	10	50
SOC-180K	400.3.50	230.1.50	2 x 134	2 x 17,1	2 x 6	2 x 2,2	16	63
SOC-240K	400.3.50	230.1.50	2 x 167	2 x 21,1	4 x 6	4 x 2,2	25	80
SOC-300K	400.3.50	230.1.50	2 x 189	2 x 23	4 x 7	4 x 2,5	25	80

Important: The dimensioning of the automatic switch and power supply line sections are orientative and should be corrected in accordance with job site conditions, length between units and legislation in force.
Notes: 1.- K curve (DIN, VDE 0660-104) 2.- Based on copper conductors.

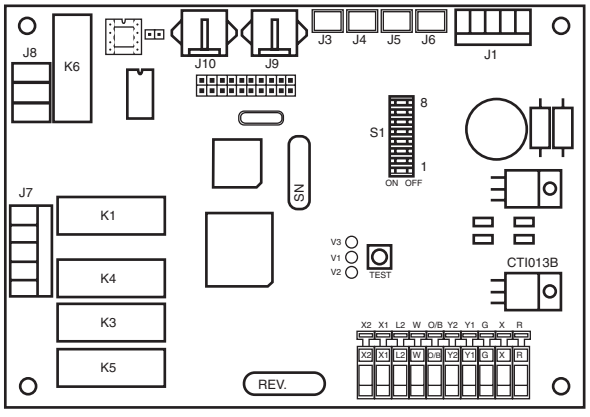
Indoor units

Model	Power supply V.ph.Hz.	Consumption A		Power supply cable section mm²
	Fan	Fan		
		Start	Nominal	
SICH-070B/076B	400.3.50	8	2,2	4 x 1,5
SICH-090B	400.3.50	17	3,4	4 x 1,5
SICH-120B	400.3.50	17	3,4	4 x 1,5
SICH-150B	400.3.50	17	3,4	4 x 1,5
SICH-180B	400.3.50	36	6,5	4 x 1,5
SICH-240C	400.3.50	36	6,5	4 x 1,5
SIH-300B	400.3.50	82	11	4 x 2,5

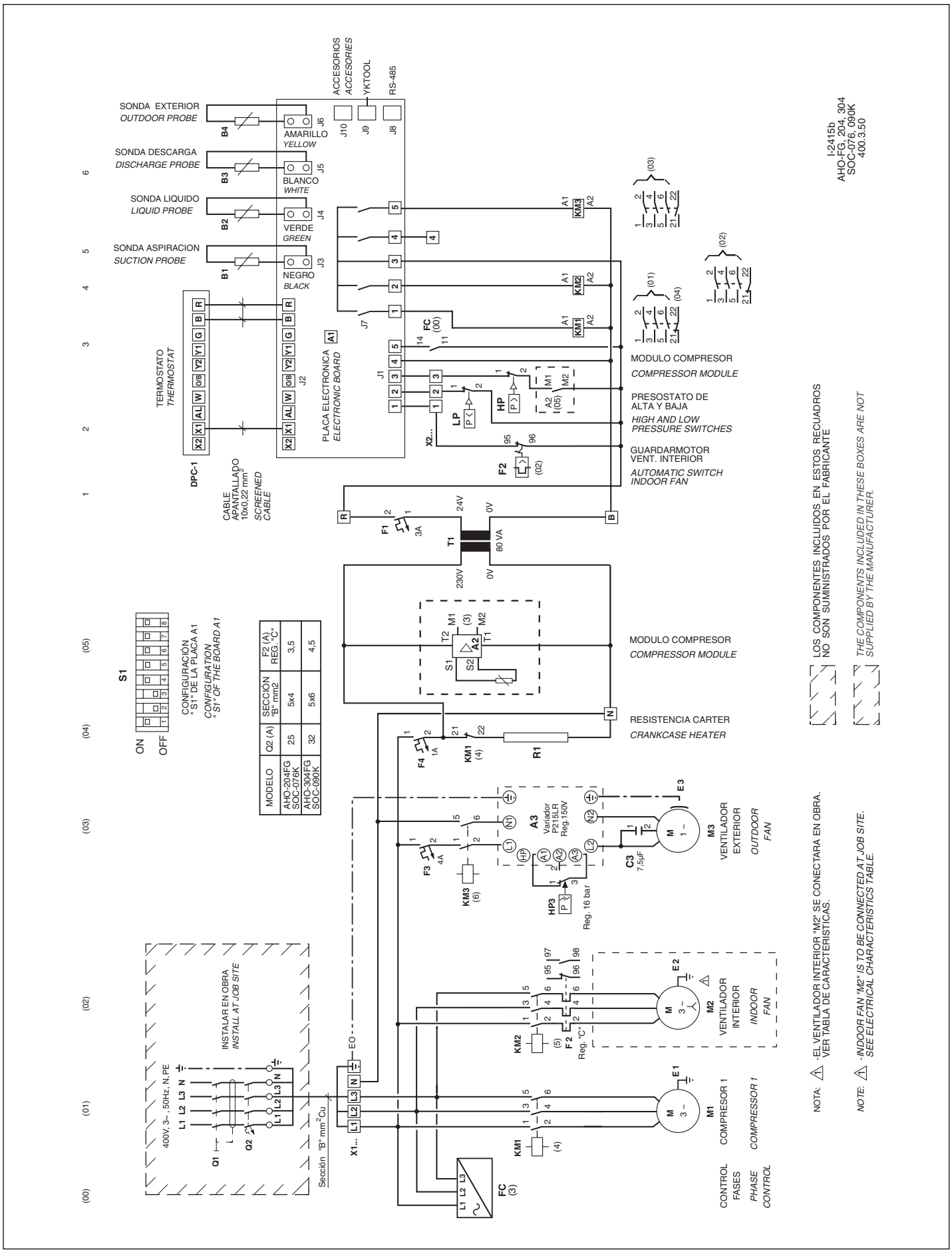
Important: The dimensioning of the automatic switch and power supply line sections are orientative and should be corrected in accordance with job site conditions, length between units and legislation in force.

Control board

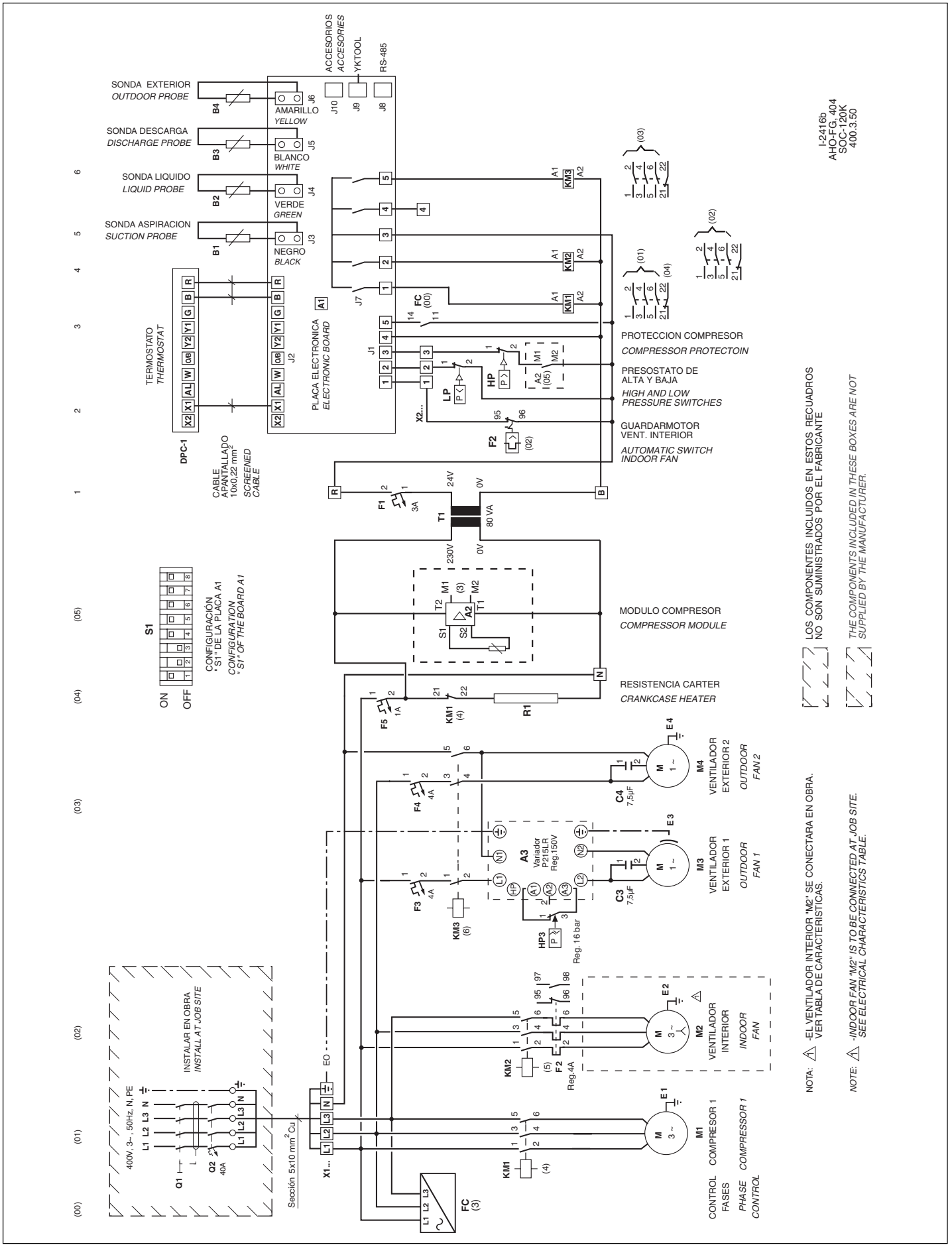
The control board of these units is common to both the cool only as well as the heat pump units. Equipment control is carried out by means of software that is resident in the board. System operation is carried out in accordance with the position of the microswitches in the main board. There are also variations in the control algorithm, depending upon the accessories the board detects installed in the equipment.
For further details please see Technical Information of the control board.



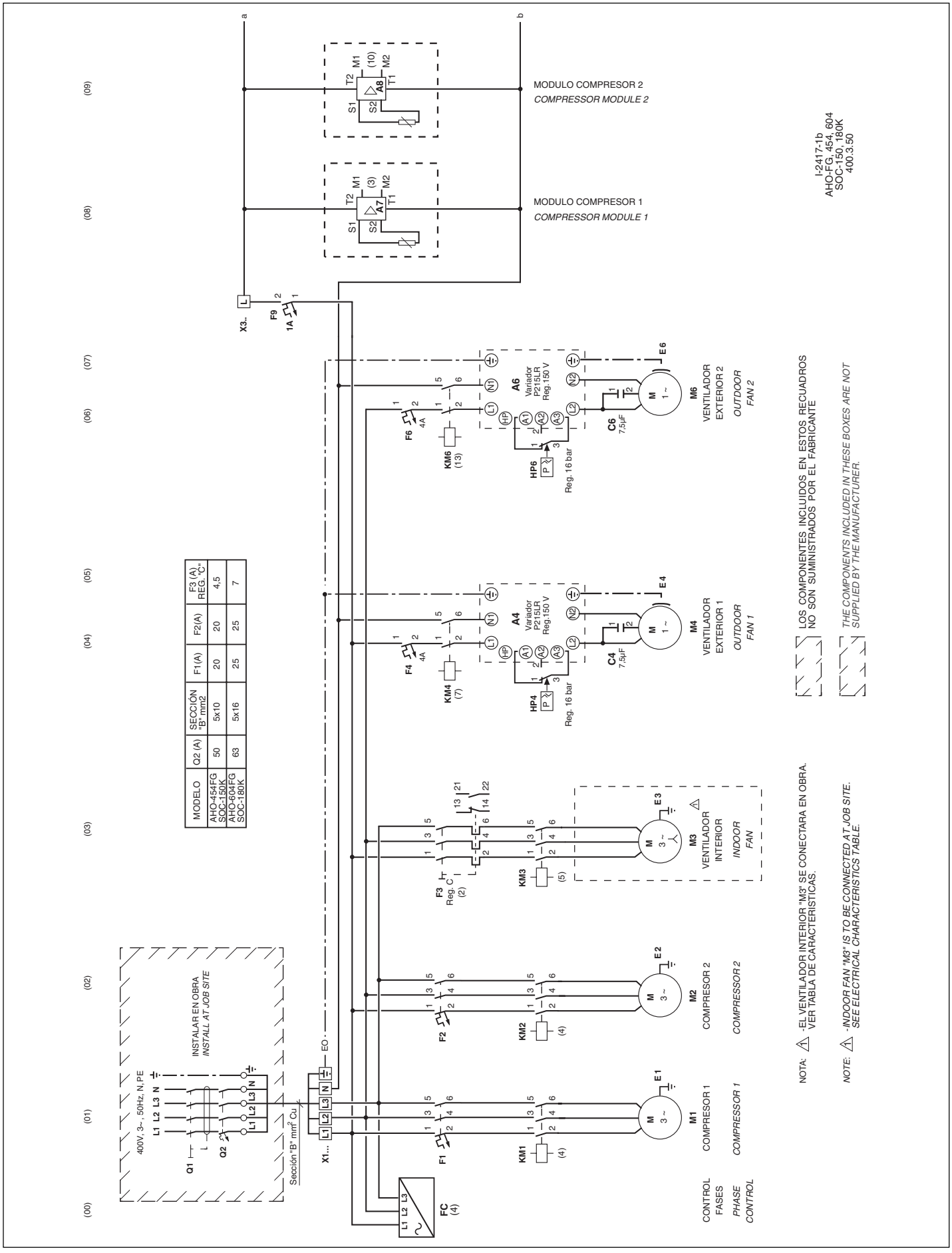
Wiring diagram, SOC-076K & 090K, 400.3.50



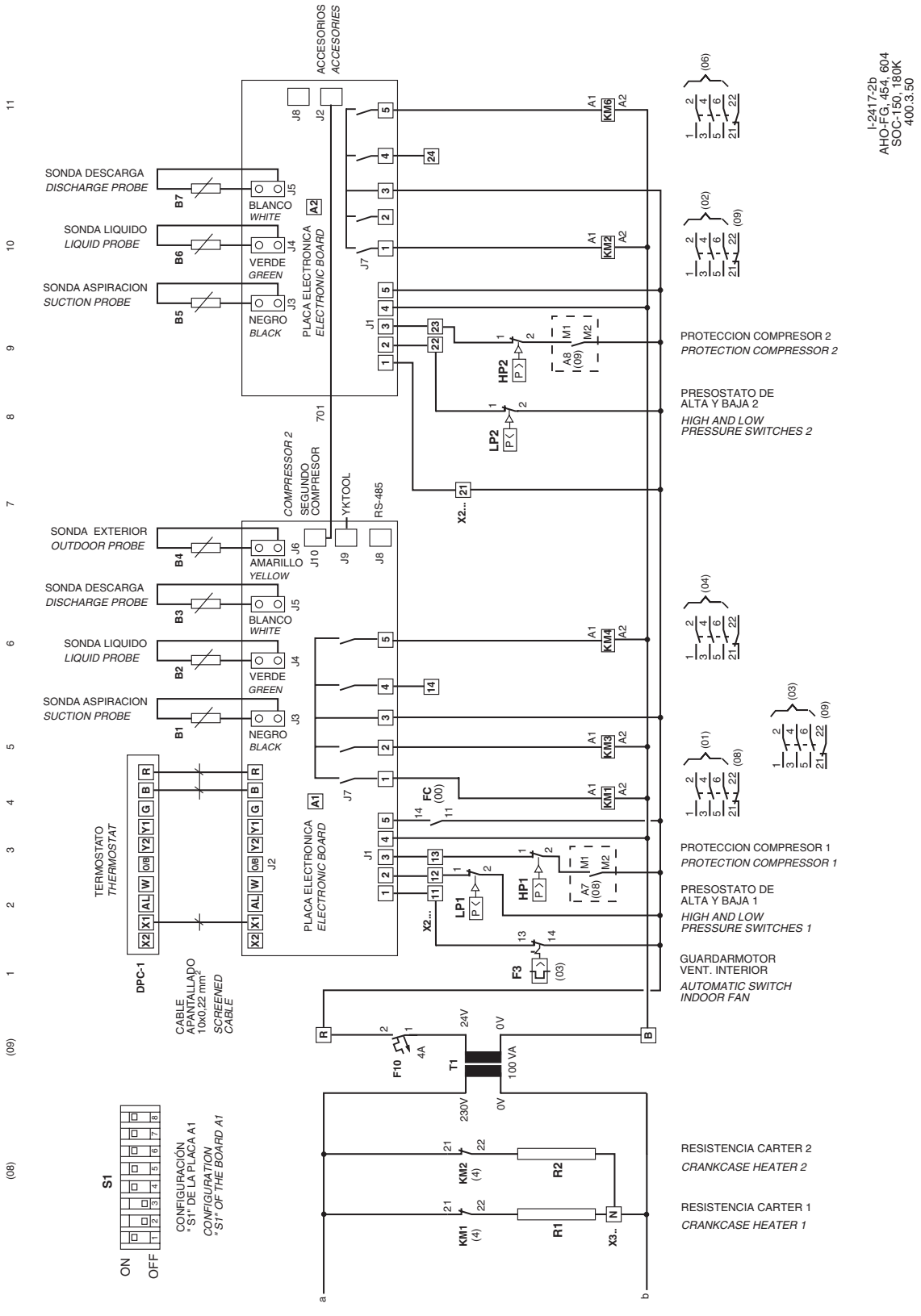
Wiring diagram, SOC-120K, 400.3.50



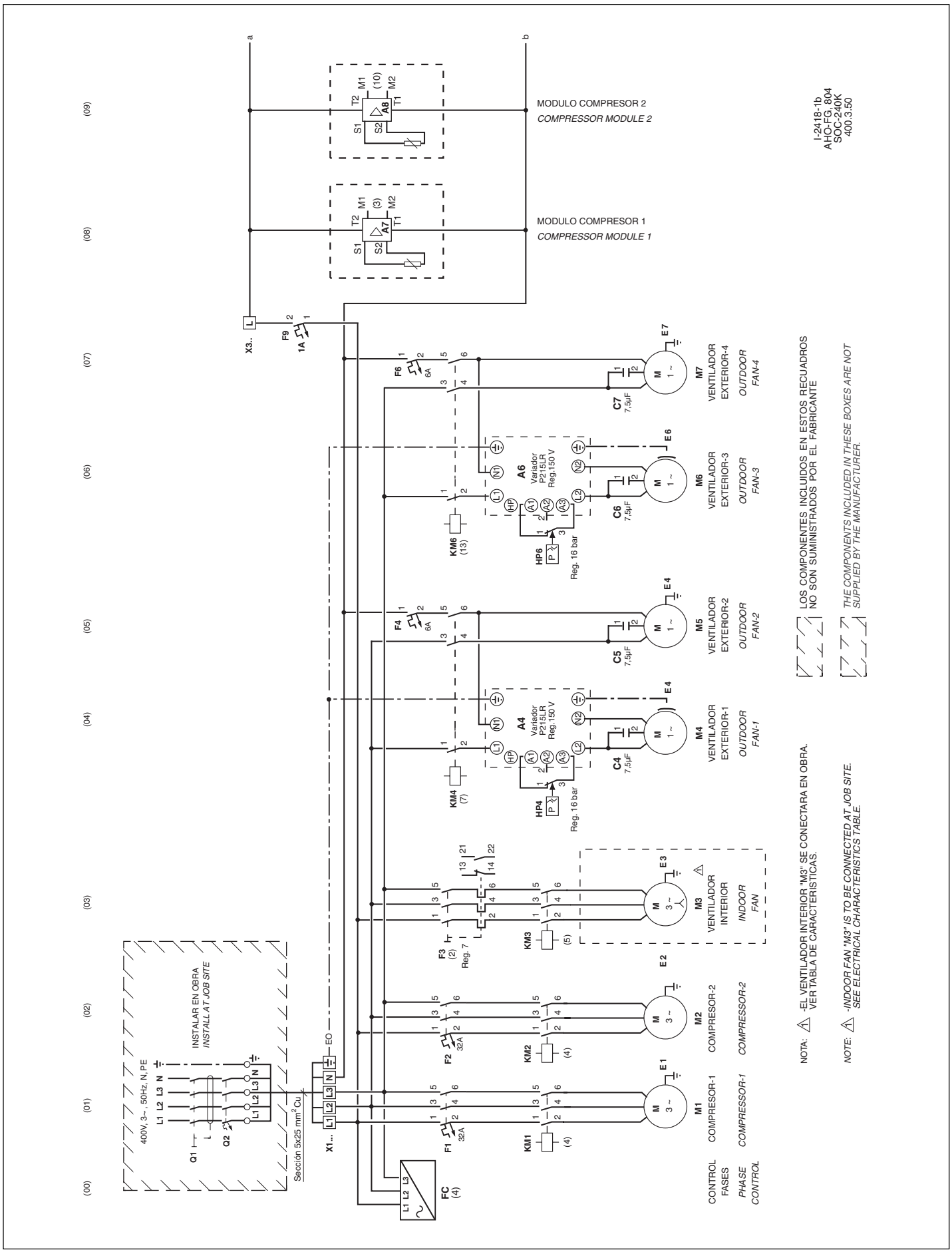
Wiring diagram, SOC-150K & 180K, 400.3.50



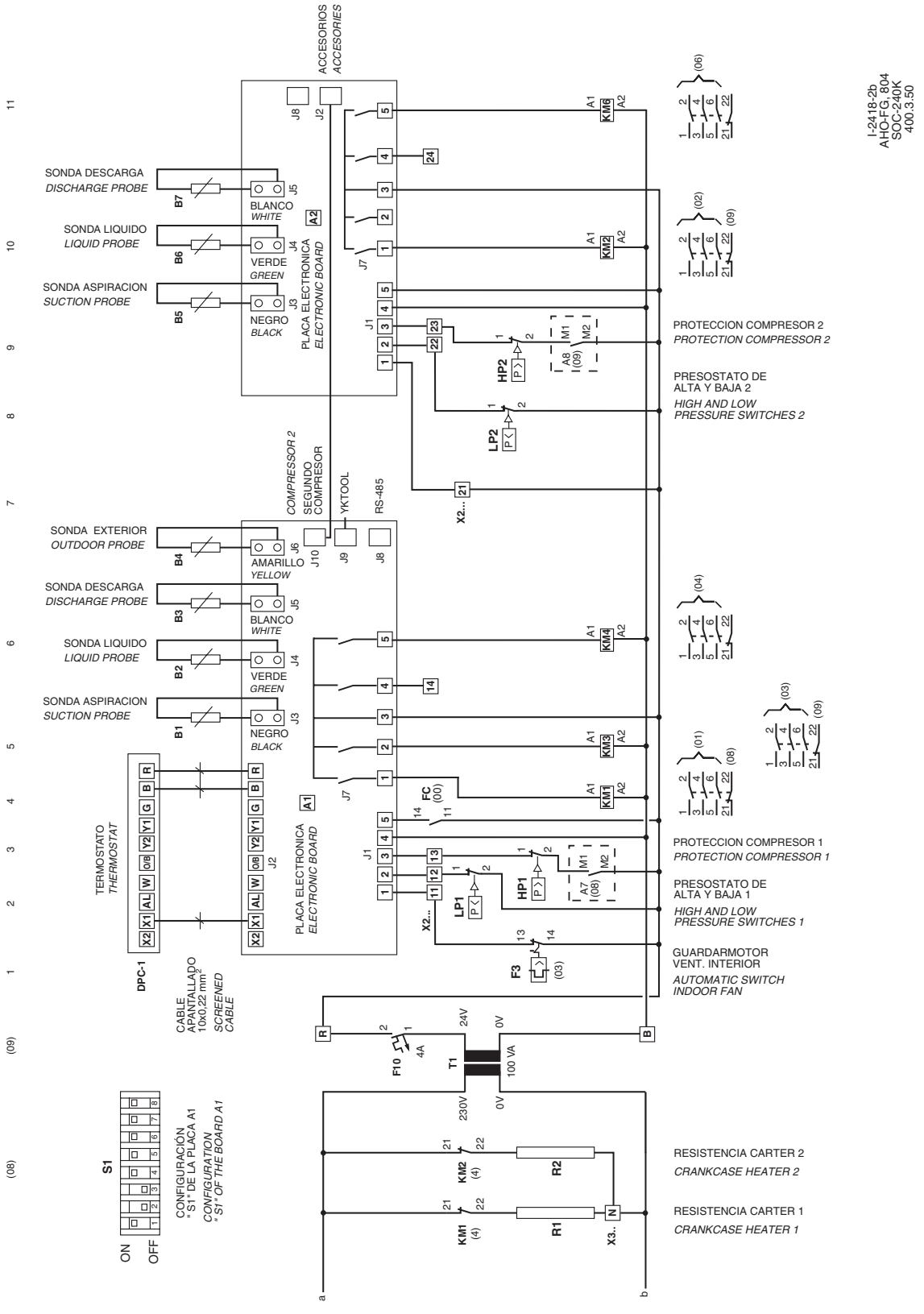
Wiring diagram, SOC-150K & 180K, 400.3.50



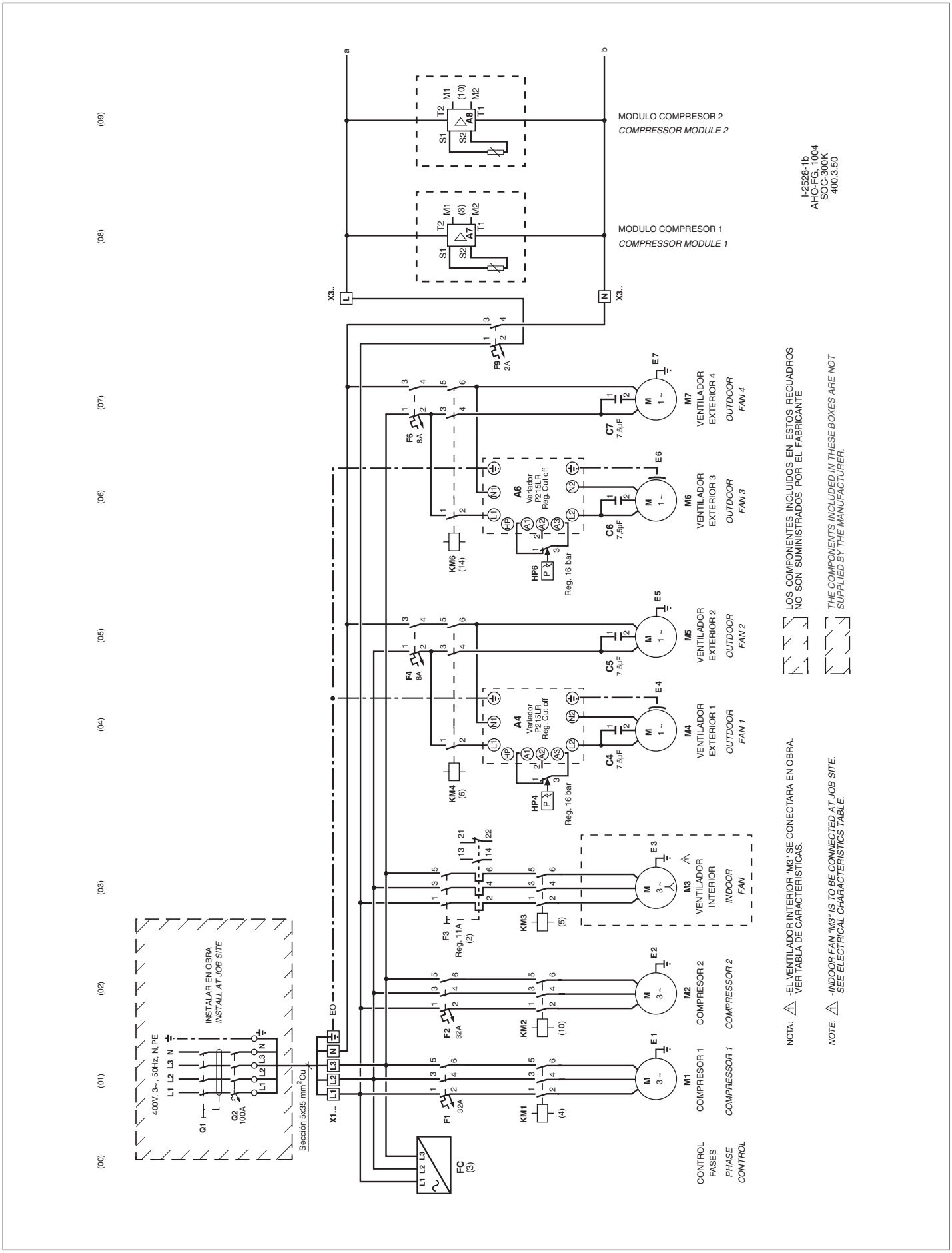
Wiring diagram, SOC-240K, 400.3.50



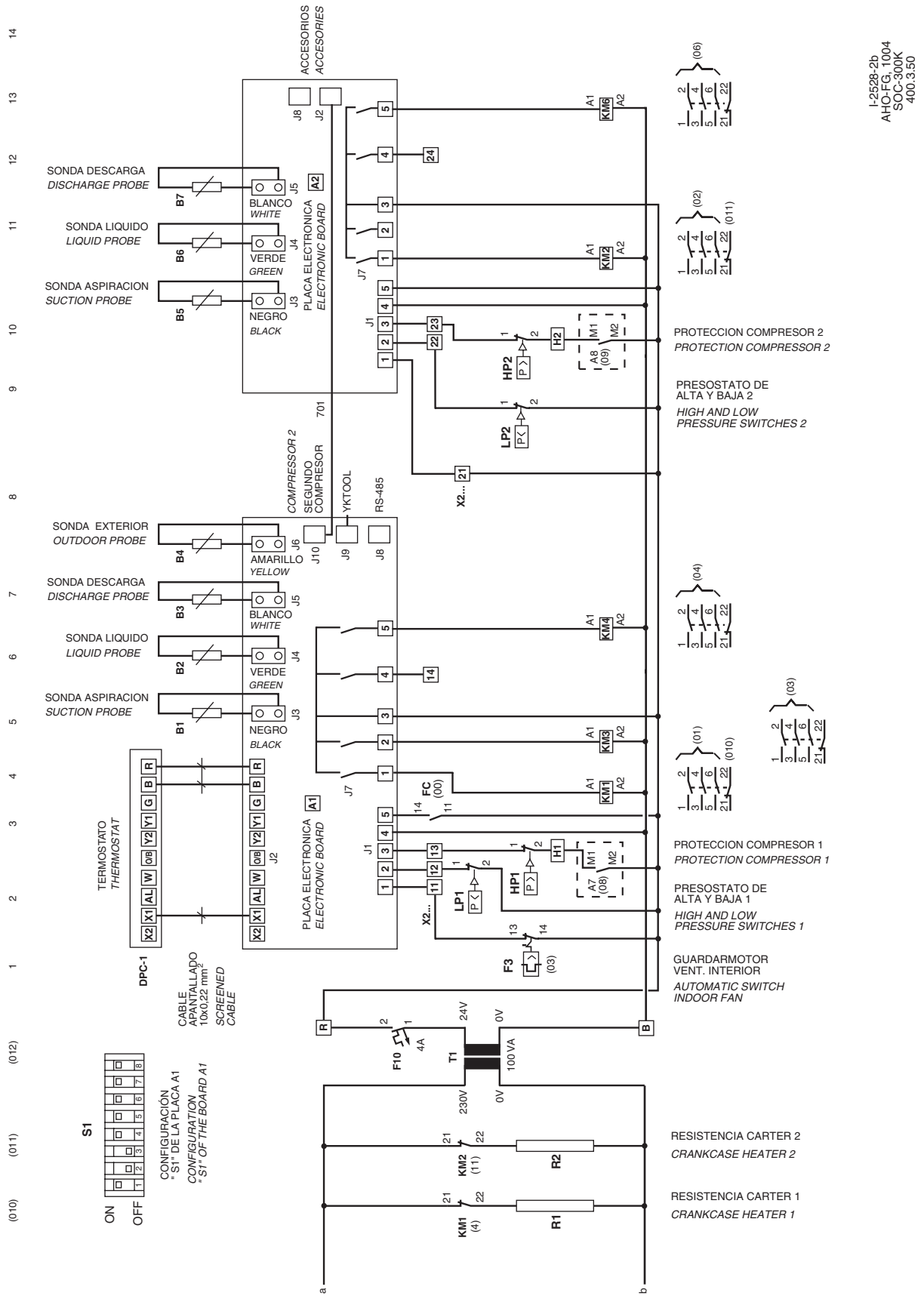
Wiring diagram, SOC-240K, 400.3.50



Wiring diagram, SOC-300K, 400.3.50



Wiring diagram, SOC-300K, 400.3.50



Configuration of switches
The microswitches establish the following configurations:

Number	Status	Meaning
1 / 2	OFF/OFF	Ignore SW, programs communication route
	ON/OFF	Defrost period 30'
	OFF/ON	Defrost period 60'
	ON/ON	Defrost period 90'
3	ON	Crossed coils
	OFF	Independent coils
4	ON	Compressor delay 2'
	OFF	Compressor delay 5'
5	ON	Cool mode
	OFF	Heat pump mode
6	ON	4-way valve active in heat
	OFF	4-way valve active in cool
7	ON	Receives signal B from thermostat (active in heat)
	OFF	Receives signal O from thermostat (active in cool)
8	ON	Fan on during defrost
	OFF	Fan off during defrost

It is necessary to disconnect power supply to the board to read the new configuration.

Failures (lockouts)
Failures or lockouts are indicated by the red led on the YKLON board. If no failure is present, this led remains permanently off. When a failure takes place, this led flashes in two constant sequences. The first indicates the circuit involved: one flash for compressor one two for compressor two, three for compressor three and four for accessories, followed by a short pause. The second series indicates the element or situation causing the lockout.

Table of lockouts (red led)

Flashes		Meaning
1 2 or 3	1	Discharge temperature exceeded
	2	High pressure switch, outdoor fan thermal switch or compressor module thermal switch
	3	Low pressure switch
	4	Indoor fan thermal switch
	5	Repeated start-ups in cool or suction temperature <-25°C
4	1	Failure of gas control 1 or heater 1
	2	Failure of gas control 2 or heater 2
	3	Failure heater 3 phase
	4	Failure heater 4 phase
	5	Failure in economiser or hot water coil (outdoor impulse probe, water return)
	6	Detection of smke or high temperature

Incidents
Incidents are indicated by the green led on the YKLON board. If there is no failure present, this led flashes at a constant frequency. When an incident occurs, the led flashes in three constant sequences. The first series indicates the circuit involved: one flsh for compressor one, two for compressor two, three for compressor three and four for incidences, followed by a short pause.
The second and third series indicate direct cause of the incicent.

Table of incidents (green led)

Flashes			Type	Incident
1 2 or 3	1	1	Probes	Discharge probe open or short circuited
		2		Liquid probe open or short circuited
		3		Suction probe open or short circuited
	2	1	Temperature	Repeated defrosts
		2		Discharge temperature not recovered
4	1	1	Probes	Impulse probe open or short circuited
		2		Return probe open or short circuited
		3		Outdoor probe open or short circuited
		4		Water probe open or short circuited
		5		Error on enthalpy probes
	2	1	Thermostat	Signal Y1 or Y2 without signal G
		2		Signal W without signal B
		3		Signal W without signal G
		4		Signal Y2 without signal Y1
	3	1	Auxiliary heat	Electric heater thermal switch 1
		2		Electric heater thermal switch 2
		3		Electric heater thermal switch 3
		4		Electric heater thermal switch 4
	4	1	Temperature	Water coil temperature not recovered
		2		Outdoor temperature too low
		3		Water coil in antifreeze operation
		4		Impulse temperature over 80°C
	5	1	Others	ID of transceiver unknown
		2		At least one accessory not found
		3		Call forair quality
		4		Dirty filters
		5		Presence sensor in unoccupied

Test button
- Pressing until the green led goes on shortens certain timings and resets any lockout detected.
- Pressing until the red led goes on identifies the optional accessories and probes connected to the board.
- If there is communication between units, pressing this button sends the Neuron ID by means of the LonWorks network.

DPC-1 thermostat
When a failure is detected and there is communication, the thermostat indicates, in al alternative way, the time and failure in accordance with the failure table of the unit.
Also indicated other thermostat incidents.

Type	No. thermostats		Incidents
Thermostat	9	1	Ambient probe open or short circuited
	9	2	Internal probe not calibrated
	9	3	Communication error
	9	4	Failure with terminal **AL** connected
	9	5	Digital probe S5 not detected
	9	6	Digital probe S6 not detected
	9	7	Digital probe S7 not detected
	9	8	Digital probe S8 not detected
	9	9	Outdoor digital probe not detected

I-2367b

Accessories

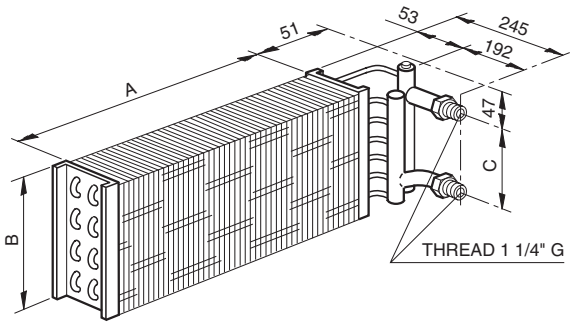
Standard accessories

Accessory			Model SICH					
			070B-076B	090B-120B	150B	180B	240C	300B
Internal electric heater for	**SICH-070B-076B**	10 kW	X					
Internal electric heater for	**SICH-070B-076B**	15 kW	X					
Internal electric heater for	**SICH-090B-120B**	10 kW		X				
Internal electric heater for	**SICH-090B-120B**	20 kW		X				
Internal electric heater for	**SICH-150B**	15 kW			X			
Internal electric heater for	**SICH-150B**	30 kW			X			
Internal electric heater for	**SICH-180B**	15 kW				X		
Internal electric heater for	**SICH-180B**	30 kW				X		
Duct electric heater for	**SICH-070B-076B**	10 kW	X					
Duct electric heater for	**SICH-070B-076B**	15 kW	X					
Duct electric heater for	**SICH-090B-240C**	20kW		X	X	X	X	
Duct electric heater for	**SICH-090B-240C**	30kW		X	X	X	X	
Water coil for	**SICH-070B-076B**		X					
Water coil for	**SICH-090B-120B**			X				
Water coil for	**SICH-150B**				X			
Vertical conversion kit for model	**SICH-180B**					X		
Vertical conversion kit for model	**SICH-240C**						X	
Vertical conversion kit for model	**SIH-300B**							X

Hot water coil for SICH-070B-076B, 090B-120B and 150B

Made of copper tubes and aluminium fins.
Designed to be fitted inside the conditioner, on galvanised steel supports.
Equipped with an 1/8" air purger.

General dimensions mm



For model	A	B	C
SICH-070B-076B	1 069	458	340
SICH-090B-120B	1 312	534	416
SICH-150B	1 750	534	416

Physical data

For model		**SICH 070B-076B**	**SICH 090B-120B**	**SICH 150B**
Tube depth		2	2	2
Tube height		16	19	19
Fins/inch	m^2	12	12	12
Front area		0.49	0.70	0.93
Tubing diameter		3/8"	3/8"	3/8"
Inlet/outlet GAS male threaded connections		$1\,^1/_4$"	$1\,^1/_4$"	$1\,^1/_4$"

Heating capacity

For model	Nominal flow-rate		Heating capacity (*)	Air circuit pressure drop	
	m^3/h	m^3/s	kW	mm WG	Pa
SICH 070B-076B	4 615	1.28	40.7	3.9	38.2
SICH-090B	7 940	2.20	59.3	4.4	43.0
SICH-150B	10 000	2.97	79.1	4.4	43.0

* The heating capacities given in this table are valid for water intake temperatures of 90°C, outlet 80°C, and air intake at 13°C. For different conditions, apply the correction factor appearing in the corresponding table.

Correction factors for the heating capacities of the hot water coil

These correction factors are for water intake and outlet and air intake temperatures other than nominal.

Air temperature	Water intake/outlet temperature °C					
	75/65	85/75	90/80	85/70	90/75	90/70
-10	1.03	1.23	1.33	1.13	1.24	1.14
-5	0.97	1.16	1.28	1.07	1.17	1.08
0	0.91	1.09	1.19	1.00	1.10	1.01
5	0.85	1.02	1.12	0.94	1.03	0.95
10	0.79	0.95	1.04	0.88	0.96	0.89
13	0.75	0.91	1.00	0.84	0.92	0.85
15	0.73	0.88	0.97	0.82	0.90	0.83
20	0.68	0.82	0.90	0.76	0.83	0.77
25	0.60	0.74	0.83	0.68	0.75	0.69

Pressure drop in the water circuit of the hot water coil

	How water flow-rate												
	m^3/h	1.00	1.30	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	6.00	7.00
	l/s	0.28	0.36	0.42	0.56	0.69	0.83	0.97	1.11	1.25	1.39	1.67	1.94
For model **SICH 070B-076B**	m WG		0.08	0.10	0.17	0.24	0.33	0.42	0.48				
	kPa		0.78	0.98	1.66	2.35	3.23	4.11	4.70				
For model **SICH 090B-120B**	m WG				0.13	0.20	0.27	0.36	0.46	0.54	0.66		
	kPa				1.27	1.96	2.64	3.52	4.50	5.28	6.46		
For model **SICH-150B**	m WG					0.25	0.34	0.45	0.57	0.68	0.82	1.17	1.50
	kPa					2.44	3.33	4.40	5.58	6.66	8.03	11.45	14.68

Interior electric heaters for SICH-070B to 180B

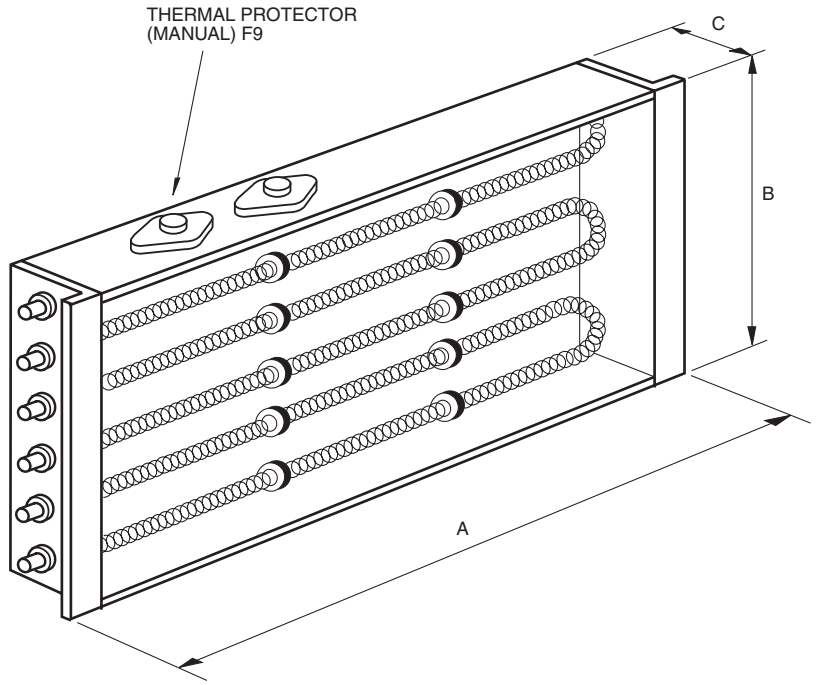
These internal electric heaters are designed to provide backup or complementary heat for the SICH units. On and off cycles are governed by the air conditioning equipment control system. They should be fitted to the internal supports of the indoor unit.

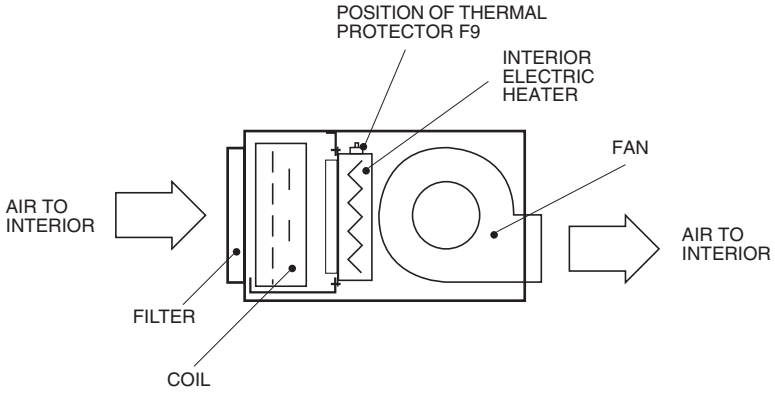
Technical specifications

These internal electric heaters include the following components:

- Galvanised sheet casing and supports.
- Exposed Nickel-chrome wire electric resistances mounted on steatite supports.
- Power supply contactor with a 400 V coil.
- Two thermal protectors located at the top of the heater. The first, with automatic reset, disconnects the heater when a temperature of 77°C is reached. The second, accessible internally and with manual reset, disconnects the heater when reaching a temperature of 138°C. Two-stage heaters contain four thermal protectors; two for each stage.
- Interlock with the heat relay of the indoor fan. The control system of the unit does not let the heater operate if the indoor fan heat relay has failed.
- Plug-in connector for interconnecting the control panel of the air conditioning unit and the heater.
- Self-threading screws for fastening this accessory.

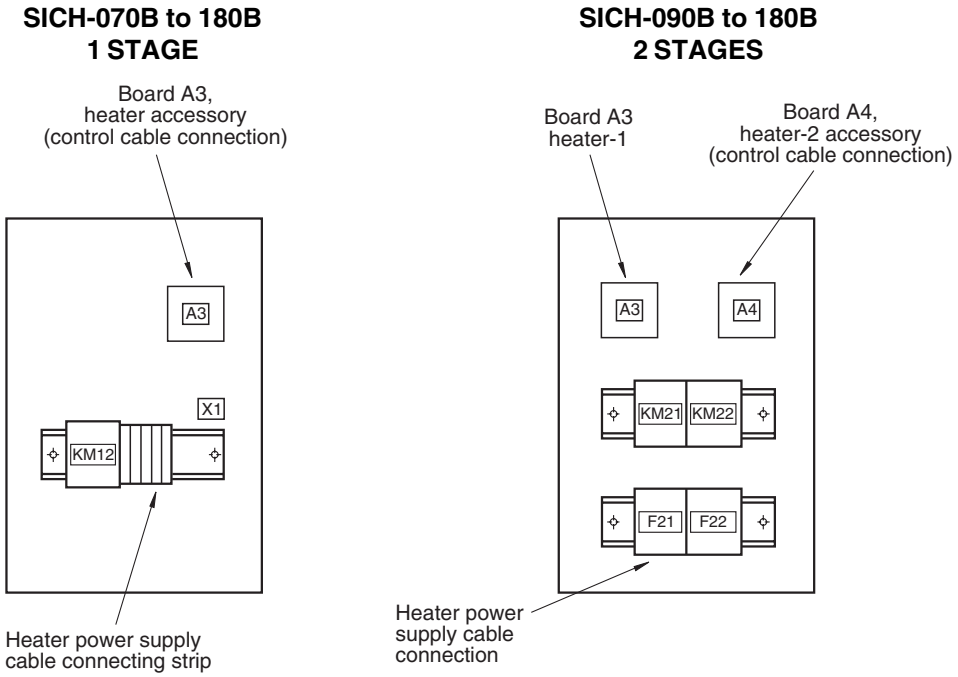
Assembly and general dimensions mm





For mounting on	A	B	C
SICH-070B & 076B	1 103	480	48
SICH-090B & 120B	1 339	550	48
SICH-150B	1 740	550	48
SICH-180B	1 930	470	80

Assembly and general dimensions mm



Location of connecting and control elements of interior heater accessory

General characteristics

Heater model	Power supply	Power	Consumption	Stages	Automatic switch (1) Q1	Power supply cable section (2)	Front surface	Pressure drop (3)
	V.ph.Hz	kW	A		A	mm^2	m^2	Pa
SICH-070B & 076B	400.3.50	10	15	1	20	2.5	0.53	2.9
SICH-070B & 076B	400.3.50	15	22	1	25	4	0.53	2.9
SICH-090B & 120B	400.3.50	10	15	1	20	2.5	0.74	4.9
SICH-090B & 120B	400.3.50	20	30	2	40	6	0.74	4.9
SICH-150B	400.3.50	15	22	1	25	4	0.98	7.1
SICH-150B	400.3.50	30	46	2	50	10	0.98	7.1
SICH-180B	400.3.50	15	22	1	25	4	0.98	7.1
SICH-180B	400.3.50	30	46	2	50	10	0.98	7.1

Notes: 1.- K curve (DIN, VDE 0660-104). 2.- Based on copper conductors. 3.- Considered the nominal air flow of the indoor section.

Dimensions with packing and weights

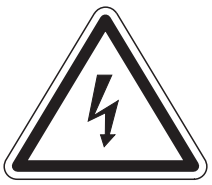
Heater model	Dimensions with packing mm			Weight kg
	Height	Width	Depth	
SICH-070B & 076B	620	1 300	110	7
SICH-090B & 120B	620	1 520	110	8
SICH-150B	620	1 920	110	9
SICH-180B	510	2 405	165	10

Installation

Install the electric heater in the SICH unit as follows:

1) In all cases, the **established national regulations** should be followed.
2) Disconnect the power supply to the air conditioning unit.
3) Install the magnetothermal switches and differentials for the heater in accordance with the indications appearing in the table of General Characteristics and Wiring Diagrams.
4) Remove the access covers to the controls of the SCOC, SCOH, SOC or SOH/SICH units.
5) Unpack the accessory, opening the top of the box. Make sure the heater assembly has not been damaged during transportation. Check the ceramic insulation and that the heater wires are not in contact with any metal parts.
6) Remove the side covers of the SICH unit and place the electric heater on the two vertical supports of the coil, making the tab coincide with the drilled hole. Check to make sure that the reset push button of the F9 thermal switch (F9 and F11 in 2-stage units) is accessible and at the top. See *Assembly and general dimensions*.
7) Mount the control support on the side of the machine, or inside the electrical box, depending upon the SICH unit, and fasten with the screws supplied.
8) Connect the power supply cables to connecting strip X1 (or automatic switch F21 in 2-stage). Connect the control cable included between connector J1 of the A3 auxiliary heater board (A4 in 2-stage units) and connector J10 of the A1 control board of the air conditioning unit.
9) The installer should complete the electric circuit of the heater by fitting an air flow control F14 (F14 and F15 in 2-stage) at the most convenient point of the ducts so as to make sure the heater operates only when there is sufficient air flow.
10) Connect power supply to the SCOC or SCOH/SICH unit and to the heater.
11) To configure the accessory, press the test button of control board A1 for over 2 seconds, until the red led on the board goes on. Configuration will be complete once said led goes off.
12) Check operation of the heater by selecting the Emergency Heat mode at the ambient thermostat of the air conditioning unit.
13) Replace the covers of the SCOC or SCOH/SICH units.

Note: Should an incorrect response of the system take place, see the Operation section of the SCOC or SCOH/SICH Installation Instructions. There you will find the control functions of the A1 electronic board on the heater, as well as its configuration, incidents identification, etc.

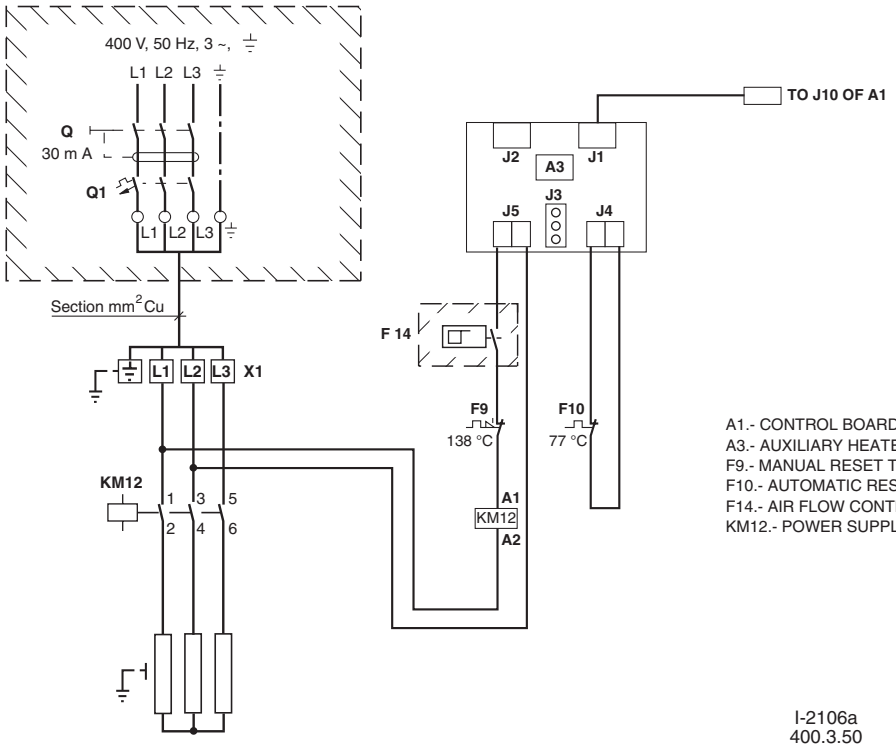


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

Wiring diagram

Heater 10, 15kW, 400.3.50
SICH-070B to 180B

POWER SUPPLY kW	AUTOMATIC SWITCH Q1	MINIMUM SECTION CABLES mm²
10	20	2.5
15	25	4



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY-1
F9.- MANUAL RESET THERMAL SWITCH, 138 °C
F10.- AUTOMATIC RESET THERMAL SWITCH, 77 °C
F14.- AIR FLOW CONTROL
KM12.- POWER SUPPLY CONTACTOR, 400 VAC COIL

I-2106a
400.3.50

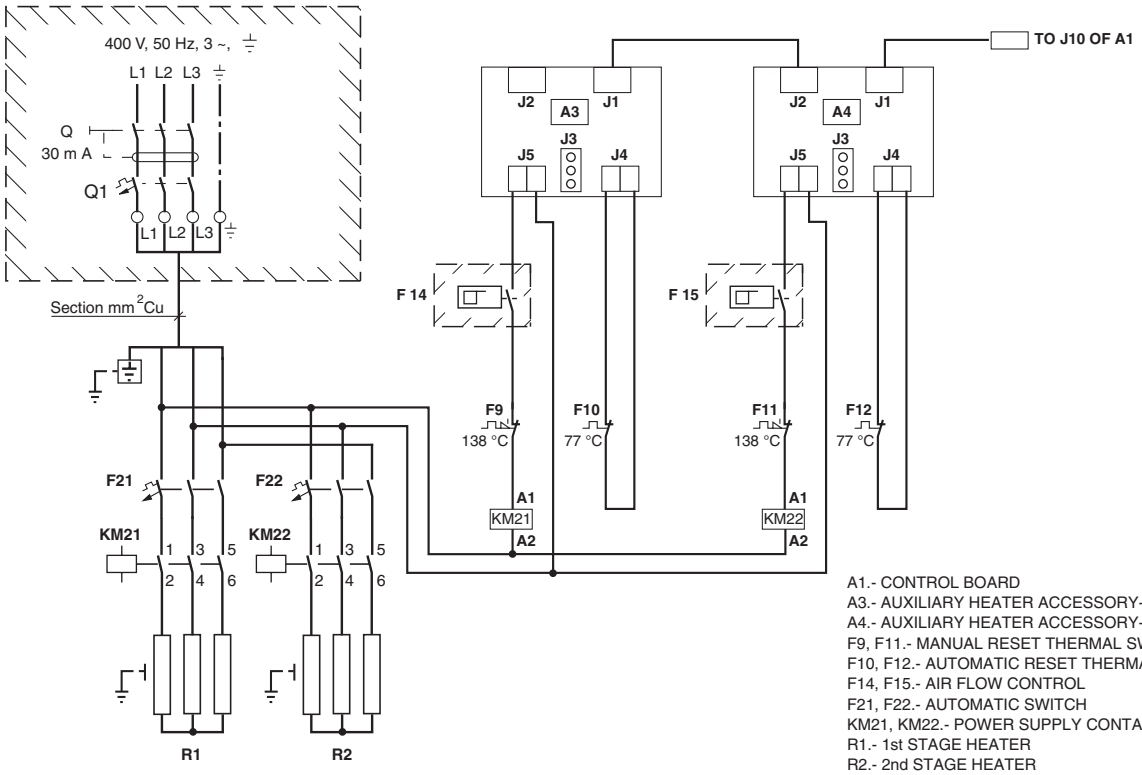
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

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.

Wiring diagram

Heater 20, 30kW, 400.3.50
SICH-090B to 180B

POWER SUPPLY kW	AUTOMATIC SWITCH Q1	AUTOMATIC SWITCH F21	AUTOMATIC SWITCH F22	MINIMUM SECTION CABLES mm²
20	40	20	20	6
30	50	25	25	10



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY-1
A4.- AUXILIARY HEATER ACCESSORY-2
F9, F11.- MANUAL RESET THERMAL SWITCH, 138 °C
F10, F12.- AUTOMATIC RESET THERMAL SWITCH, 77 °C
F14, F15.- AIR FLOW CONTROL
F21, F22.- AUTOMATIC SWITCH
KM21, KM22.- POWER SUPPLY CONTACTOR, 400 VAC
R1.- 1st STAGE HEATER
R2.- 2nd STAGE HEATER

I-2107a
400.3.50

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Duct electric heaters for SICH-070B to 240C, SIH-300B

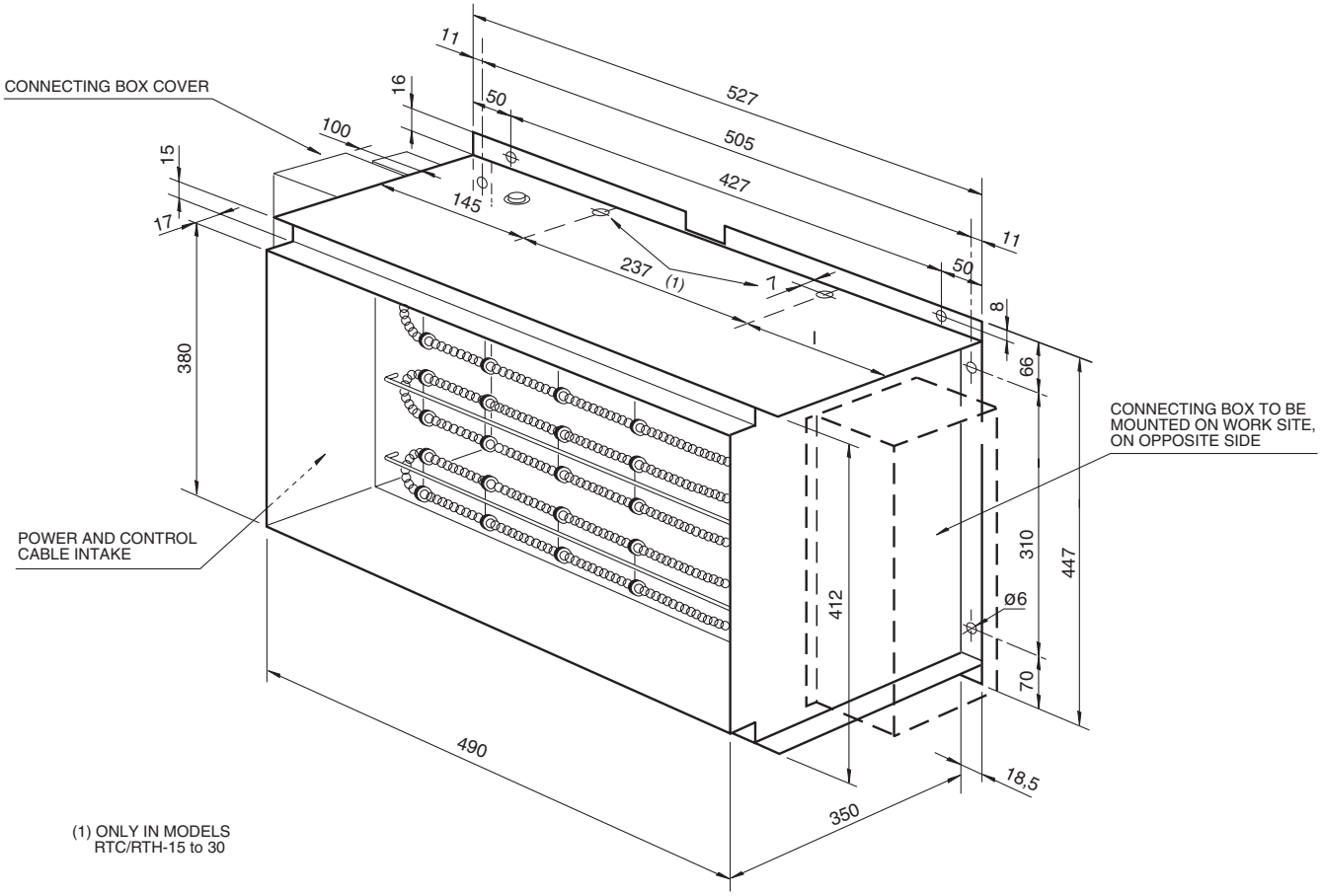
These duct electric heaters are designed to provide backup heat in heat pump units, and complementary heat in cool only units. On and off cycles are governed by the air conditioning equipment control system. These should be fitted directly to the impulse outlet of the indoor section of the unit.

Technical specifications

These duct electric heaters include the following components:

- Galvanised sheet casing, covers and supports.
- Exposed nickel-chrome wire electric resistance mounted on steatite supports.
- Power supply contactor with a 400 V coil.
- Two thermal switches located at the top of the heater. The first, with automatic reset, disconnects the heater when a temperature of 77°C is reached. The second, accessible externally and with manual reset, disconnects the heater when a temperature of 138°C is reached. With 2-stage heaters, there are four thermal protectors, 2 for each stage.
- Interlock with the indoor fan thermal relay. The control system of the unit does not allow operation of the heater when the indoor fan thermal relay fails.
- Plug-in connector for interconnection between the control panel of the air conditioning unit and the heater.
- PVC gasket for heater-air conditioner joint and self-threading screws for fastening the accessory.

General dimensions mm



(1) ONLY IN MODELS RTC/RTH-15 to 30

General characteristics

Heater model	Power supply	Power	Consumption	Stages	Automatic switch (1) Q1	Power supply cable section (2)	Front surface	Pressure drop (3)
	V.ph.Hz	kW	A		A	mm^2	m^2	Pa
SICH-070B & 076B	400.3.50	10	15	1	20	2.5	0.19	6
SICH-070B & 076B	400.3.50	15	22	1	25	4	0.19	6
SICH-090B to 240C, SIH-300B	400.3.50	20	30	2	40	6	0.19	15
SICH-090B to 240C, SIH-300B	400.3.50	30	46	2	50	10	0.19	15

Notes: 1.- K curve (DIN, VDE 0660-104). 2.- Based on copper conductors. 3.- Considered the nominal air flow of the indoor section.

Dimensions with packing and weights

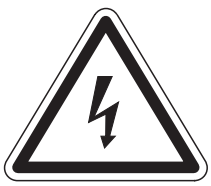
Heater model	Dimensions with packing mm			Weight kg
	Height	Width	Depth	
SICH-070B & 076B	440	640	370	20
SICH-090B to 240C, SIH-300B	880	640	370	40

Installation

Install the electric heater in the SICH unit as follows:

1) In all cases, the **established national regulations** should be followed.
2) Disconnect the power supply to the air conditioning unit.
3) Install the magnetothermal switches and differentials for the heater in accordance with the indications appearing in the table of General Characteristics and Wiring Diagrams.
4) Remove the access covers to the controls of the SCOC, SCOH, SOC or SOH/SICH units.
5) Unpack the accessory, opening the top of the box. Make sure the heater assembly has not been damaged during transportation. Check the ceramic insulation and that the heater wires are not in contact with any metal parts.
6) Fit the electric heater in the mouth of the indoor fan panel housing and drill eight 3 diameter holes for fastening. Check to make sure that the reset push button of the F9 thermal switch (F9 and F11 in 2 stages) is accessible and at the top. See Heater Location diagram.
7) Fasten the PVC gasket supplied with the accessory, to the frame surface of the heater adjacent to the indoor fan panel.
8) Fasten the heater to the panel with the screws supplied.
9) Remove the electrical connections cover of the heater and connect the power supply cables to connecting strip X1 (or automatic switch F21 in 2 stages). Connect the control cable supplied, between connector J1 of the A3 Auxiliary Resistance board (A4 in 2 stages) and connector J10 of the A1 control board of the air conditioning unit.
10) The installer should complete the electric circuit of the heater by fitting an air flow control F14 (F14 and F15 in 2 stages) at the most convenient point of the ducts so as to make sure the heater operates only when there is sufficient air flow.
11) Connect power supply to the SCOC, SCOH, SOC or SOH/SICH unit and the heater.
12) To configure the accessory, press the test button of control board A1 for over 2 seconds, until the red led on the board goes on. Configuration will be complete when said led goes off.
13) Check operation of the heater by selecting the Emergency Heat mode at the ambient thermostat of the air conditioning unit.
14) Assemble the electrical box covers of the heater and the SCOC, SCOH, SOC or SOH/SICH unit.

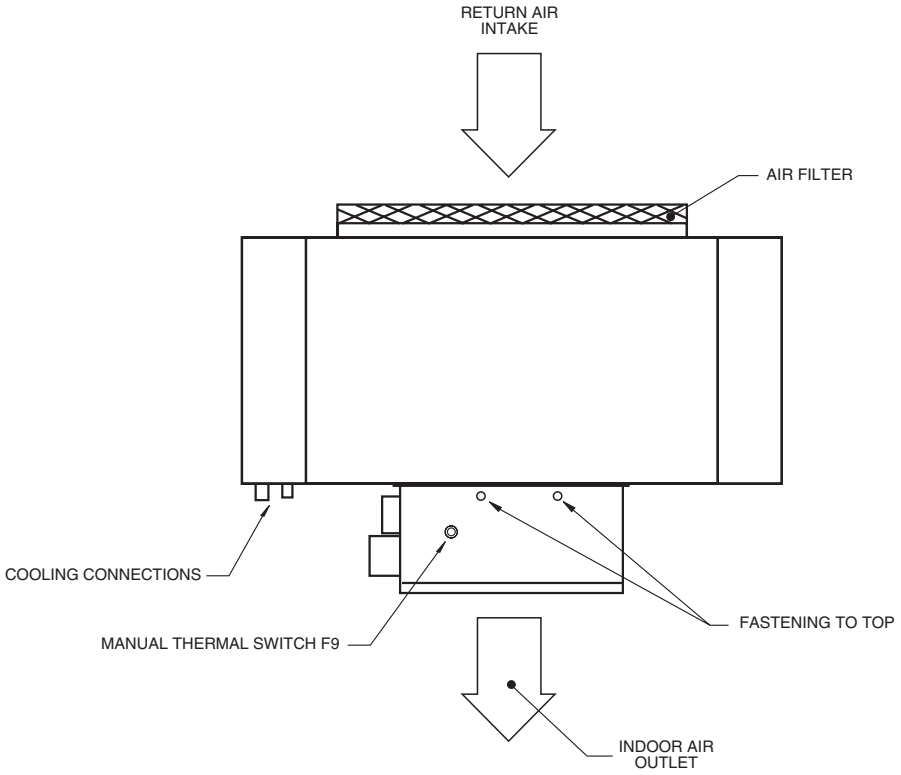
Note: Should an incorrect response of the system take place, see the Operation section of the SCOC or SCOH, SOC or SOH/SICH Installation Instructions. There you will find the control functions of the A1 electronic board on the heater, as well as its configuration, incidents identification, etc.

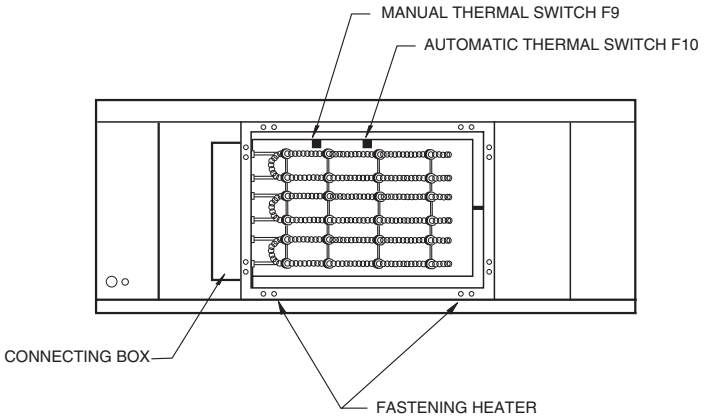


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

Location of the heater

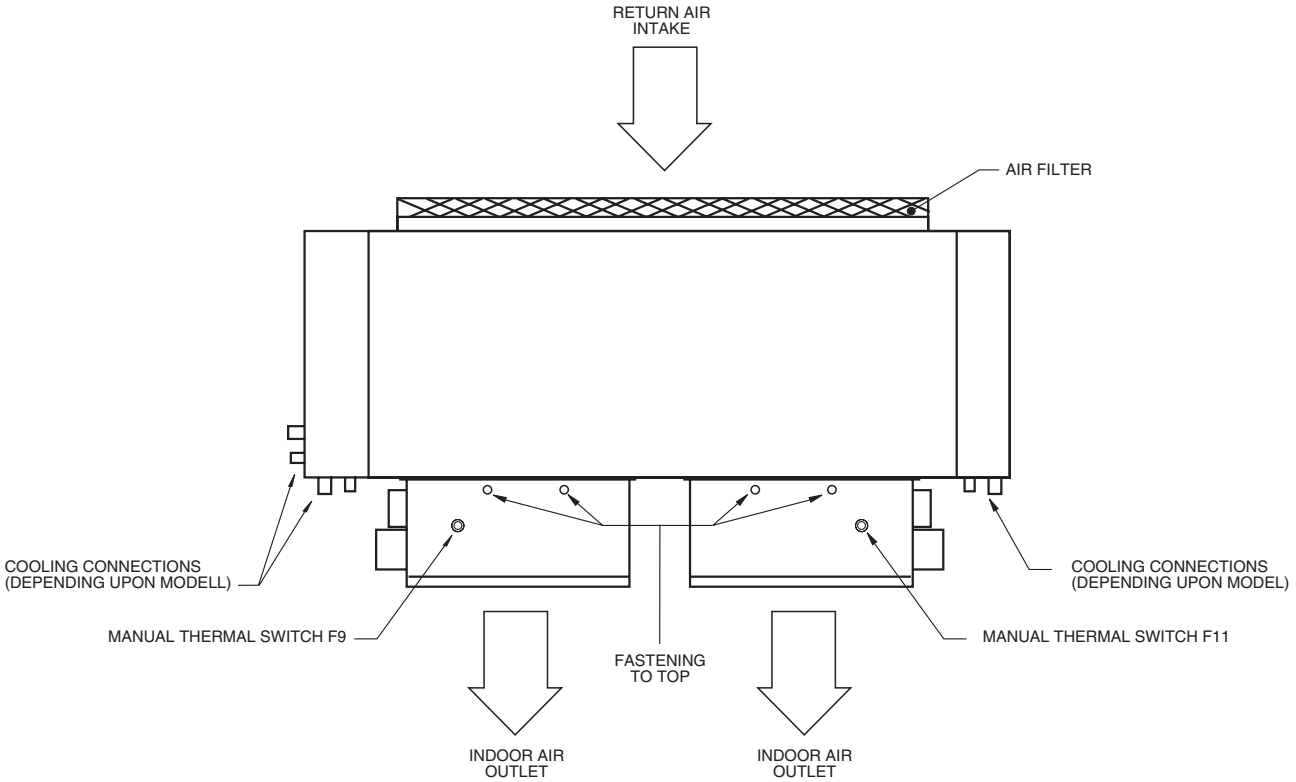
SICH-070B and 076B

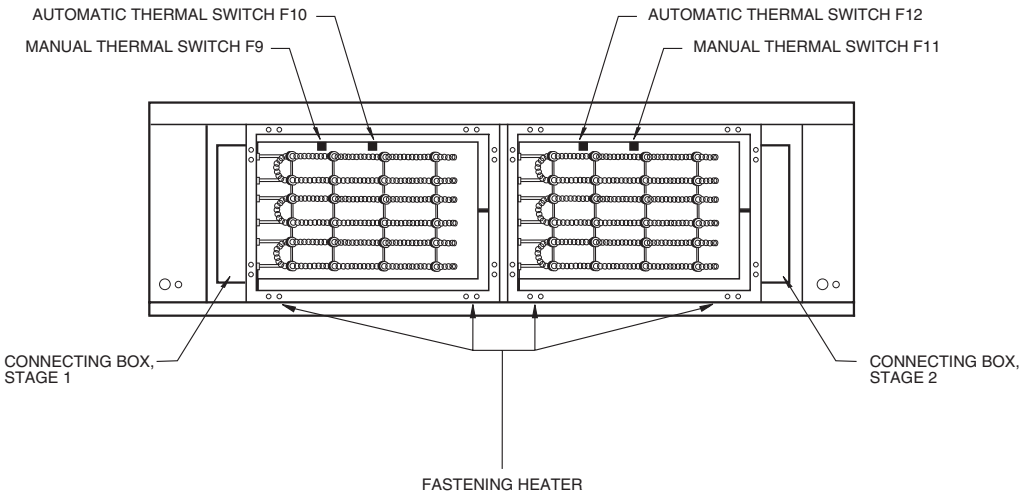




Location of the heater

SICH-090B to 240C, SIH-300B

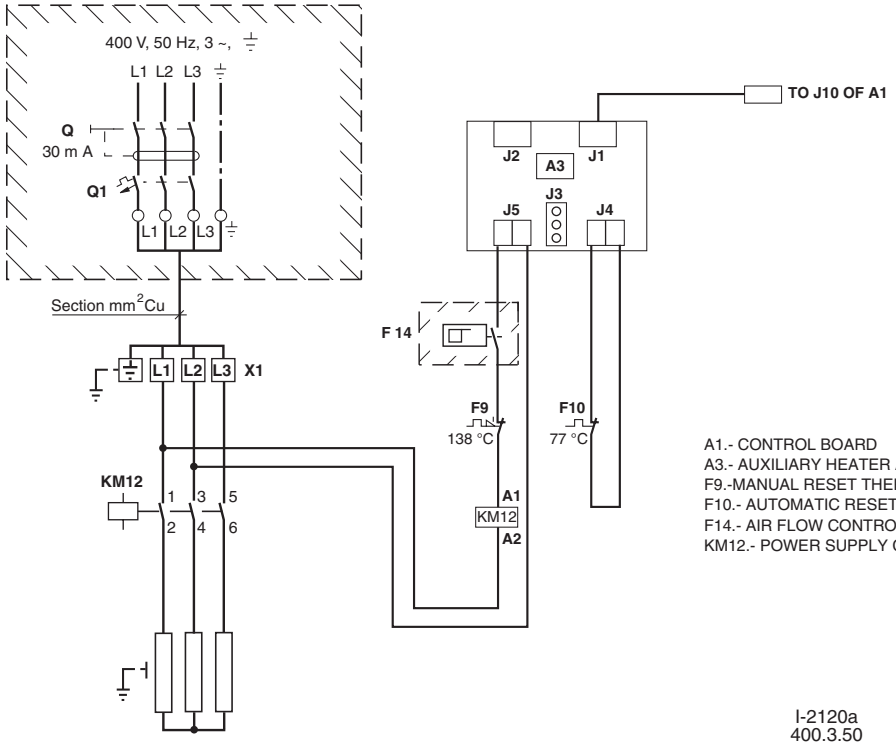




Wiring diagram

Heater 10, 15kW, 400.3.50
SICH-070B and 076B

POWER kW	AUTOMATIC SWITCH Q1	MINIMUM CABLE SECTION mm²
10	20	2.5
15	25	4



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY-1
F9.-MANUAL RESET THERMAL SWITCH, 138 °C
F10.- AUTOMATIC RESET THERMAL SWITCH, 77 °C
F14.- AIR FLOW CONTROL
KM12.- POWER SUPPLY CONTACTOR, 400 VAC COIL

I-2120a
400.3.50

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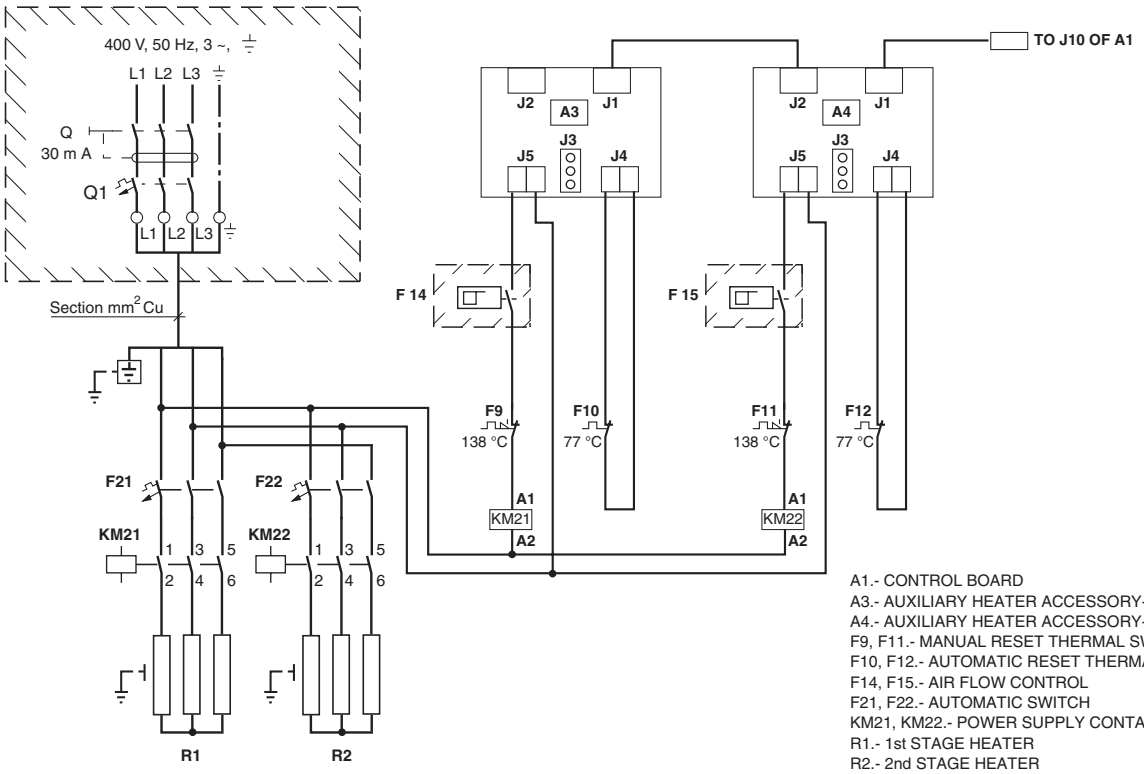
Wiring diagram

Heater 20, 30kW, 400.3.50
for SICH-090B to 240C, SIH-300B

POWER kW	AUTOMATIC SWITCH Q1	AUTOMATIC SWITCH F21	F22	MINIMUM CABLE SECTION mm²
20	40	20	20	6
30	50	25	25	10



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY-1
A4.- AUXILIARY HEATER ACCESSORY-2
F9, F11.- MANUAL RESET THERMAL SWITCH, 138 °C
F10, F12.- AUTOMATIC RESET THERMAL SWITCH, 77 °C
F14, F15.- AIR FLOW CONTROL
F21, F22.- AUTOMATIC SWITCH
KM21, KM22.- POWER SUPPLY CONTACTOR, 400 VAC COIL
R1.- 1st STAGE HEATER
R2.- 2nd STAGE HEATER

I-2121a
400.3.50

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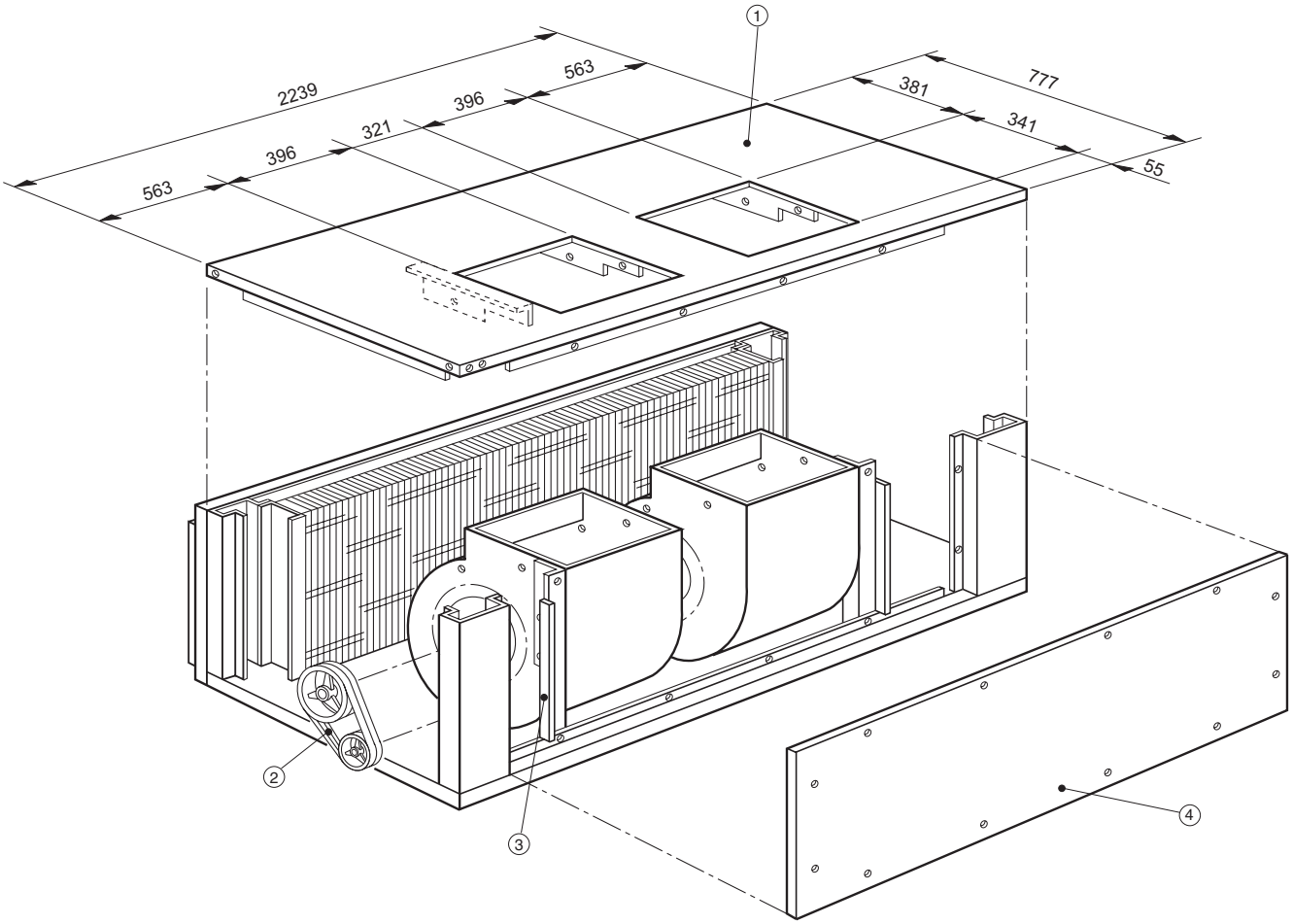
Vertical conversion kit for: SICH-180B to 240C, SIH-300B

The SICH-180B, 240B & SIH-300B units require a transformation kit that includes: rear and upper panel, belts, motor and fan pulleys.

1- Remove the standard upper, rear and side panels, as well as the fans and orient them as shown in the following drawing, fastening them to the upper panel supplied with the transformation kit.
2- Once the fans are mounted, fasten upper panel ref. 1 to the unit.
3- Fasten the fan left and right side angles ref. 3 to the unit.
4- Substitute motor and fan belts, as well as belts ref. 2 with those included in the kit.
5- Mount rear panel ref. 4.
6- Finally, mount the standard side panels.



All data subject to change without notice.

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