Air-cooled Split Air Conditioners SCOC-076 K to 180K/SICH-076 to 180B

YORK
A JOHNSON CONTROLS COMPANY

Ref.: Y-R70146 0706

Technical Information

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

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

CE

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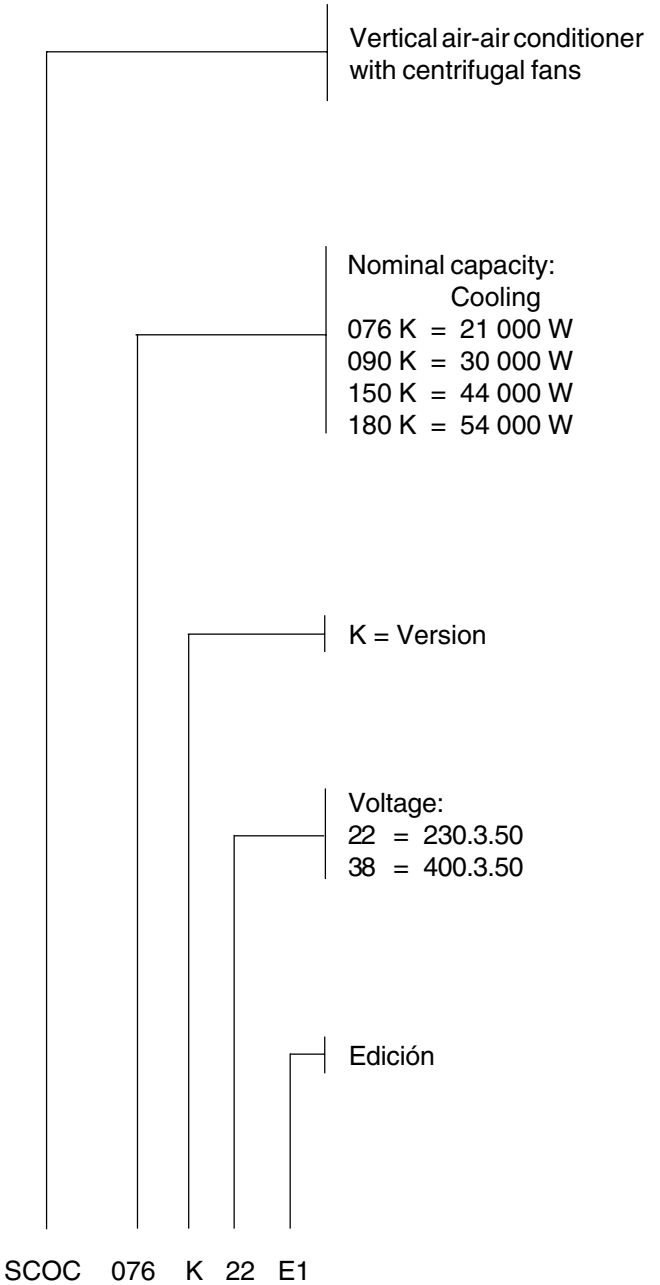
General information

General description

The SCOC/SICH air conditioners are air-air units with centrifugal fans both in the indoor as well as the outdoor units.
The SCOC outdoor unit includes compressor, condensing unit, centrifugal fan and controls. The SICH indoor units include evaporating coil, filter and fan. If necessary, they can be easily modified on job site so as to have a compact unit.
The outdoor unit can be installed either outdoors or indoors, as it is protected to withstand outdoor conditions, while the fans are of the centrifugal type and can accept ducts.
Supplied complete, factory tested and ready for installation of interior or duct electric heaters accessories.
Designed to achieve considerable savings in energy and a long service life.
Automatic start-up and regulation of the temperature is carried out by means of a 24 V ambient thermostat.

Nomenclature



Technical specifications

Mechanical specifications

Compressor
Vertical hermetic type, mounted on antivibratory supports, specially designed for heat pump units with oversizing of mechanical components and low consumption motor.
The SCOC-076K and 090K units have one compressor, while the SCOC-150K and 180K units have two compressors.
Supplied with a charge of special oil so as to avoid foaming.
With oil electric heater.

Compressor heater
Keeps the sump oil hot for easy start-up and avoiding oil being dragged out of the compressor.

Coils
Of a large surface, made of grooved copper tubing and aluminium fins. Located inside the cabinet, and thus protected against damage during transportation or installation.

Indoor fan (SICH-076B)
A centrifugal fan driven by an independent motor and belt drive is installed.

Indoor (SICH-090, 150, 180B) and outdoor (SCOC-076 and 090K) fans
Two centrifugal fans with a common shaft and belt drive, driven by one single motor and coupled to the single plenum, are installed.

Outdoor fan (SCOC-150 and 180K)
Two independent centrifugal fans are installed. Each one of these is driven by an independent motor and is coupled to the single plenum.
Fan motor transmission is belt-driven.
These fans have sufficient available pressure for the installation of ducts and optional accessories.

Cooling circuit
Made of welded copper tubing and equipped with access connections on the high and low pressure sides.

Refrigerant
The SCOC and SICH units are supplied with connections ready for welding. The refrigerant load should be carried out completely on job site. See refrigerant loads in physical data table. The refrigerant used is R-407C.

Electric panel
Accesible directly from the outside. Includes connecting strip, protectors, electronic board and probes, power supply contactors, operating relay, phase control relay and transformer. In compliance with European regulations currently 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.
Shoud the phase sequence be correct and the centrifugal fan of the indoor unit (SICH) rotates in the wrong direction, inter-

change two phases at the bottom of the fan contactor.

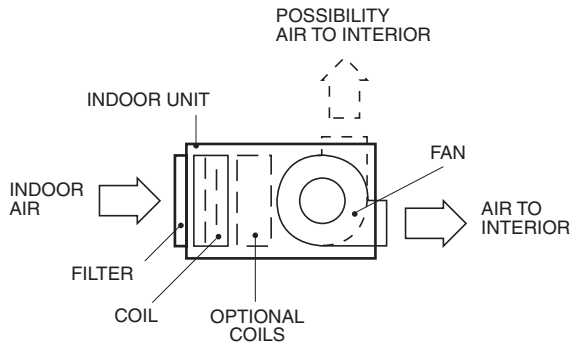
Casing
Made of zinc-aluminium plated steel sheeting, primed and enamelled in epoxy power for outdoor installation.

Complementary heaters
Of the open-air wire type for fast heat dissipation, avoiding temperature inertia that could affect components.

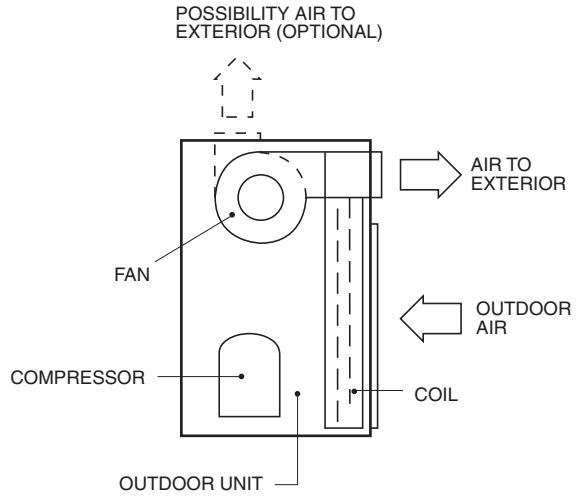
Thermostat
The SCOC/SICH-076 to 180 units include, as standard equipment, the electromechanical DPC-1 thermostat.
To connect the thermostat to the board, 10x0.22mm^2 screened communication cable should be used.

Operating diagram

SICH

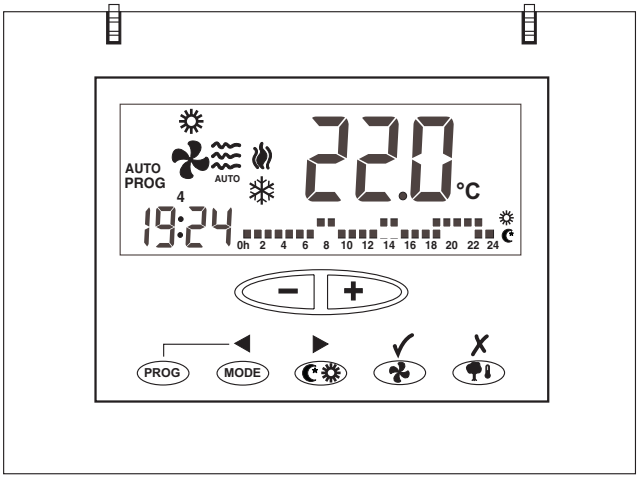


SCOC



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.



Physical data

Outdoor units

Model			SCOC-076K	SCOC-090K	SCOC-150K	SCOC-180K
Com-pressor	Amount		1	1	2	2
	Power rating	kW	6.2	7.1	2 x 5.1	2 x 7.1
	Power supply	V.ph.Hz	230.3.50 or 400.3.50			
Outdoor fan	Power rating	kW	1.5	3	2 x 2.2	2 x 2.2
	Power supply	V.ph.Hz	230.3.50 or 400.3.50			
	Motor r.p.m.		1 400	1 400	1 400	1 400
	Diameter turbines	mm	270	320	320	380
	Width turbines	mm	270	320	320	380
Outdoor coil	Amount		1	1	2	2
	Tubing depth x height		5 x 37	5 x 40	5 x 40	5 x 42
	Diameter tubing		3/8"			
	Surface	m²	1.01	1.47	2 x 0.84	2 x 1.02
Dimens. with packing	Height	mm	1 412	1 546	1 612	1 661
	Width	mm	1 360	1 738	2 040	2 240
	Depth	mm	883	883	883	883
Approx. weight	Nett	kg	315	370	555	645
	Gross	kg	319	374	559	649
Refrigerant load	Nominal load R-407C	kg	8.7	13.8	9.4 x 2	9 x 2

Indoor units

Model			SICH-076B	SICH-090B	SICH-150B	SICH-180B
Indoor fan	Power rating	kW	0.75	1.5	1.5	3
	Power supply	V.ph.Hz	230.3.50 or 400.3.50			
	Motor r.p.m.		1 400			
	Diameter turbines	mm	320	320	320	320
	Width turbines	mm	320	240	320	320
Indoor coil	Amount		1	1	1	1
	Tubing depth x height		4 x 21	4 x 25	4 x 25	4 x 29
	Diameter tubing		3/8"			
	Surface	m²	0.57	0.84	1.11	1.40
Dimens. with packing	Height	mm	760	833	833	935
	Width	mm	1 444	1 825	2 125	2 390
	Depth	mm	930	930	930	955
Approx. weight	Nett	kg	120	165	195	240
	Gross	kg	142	195	230	290

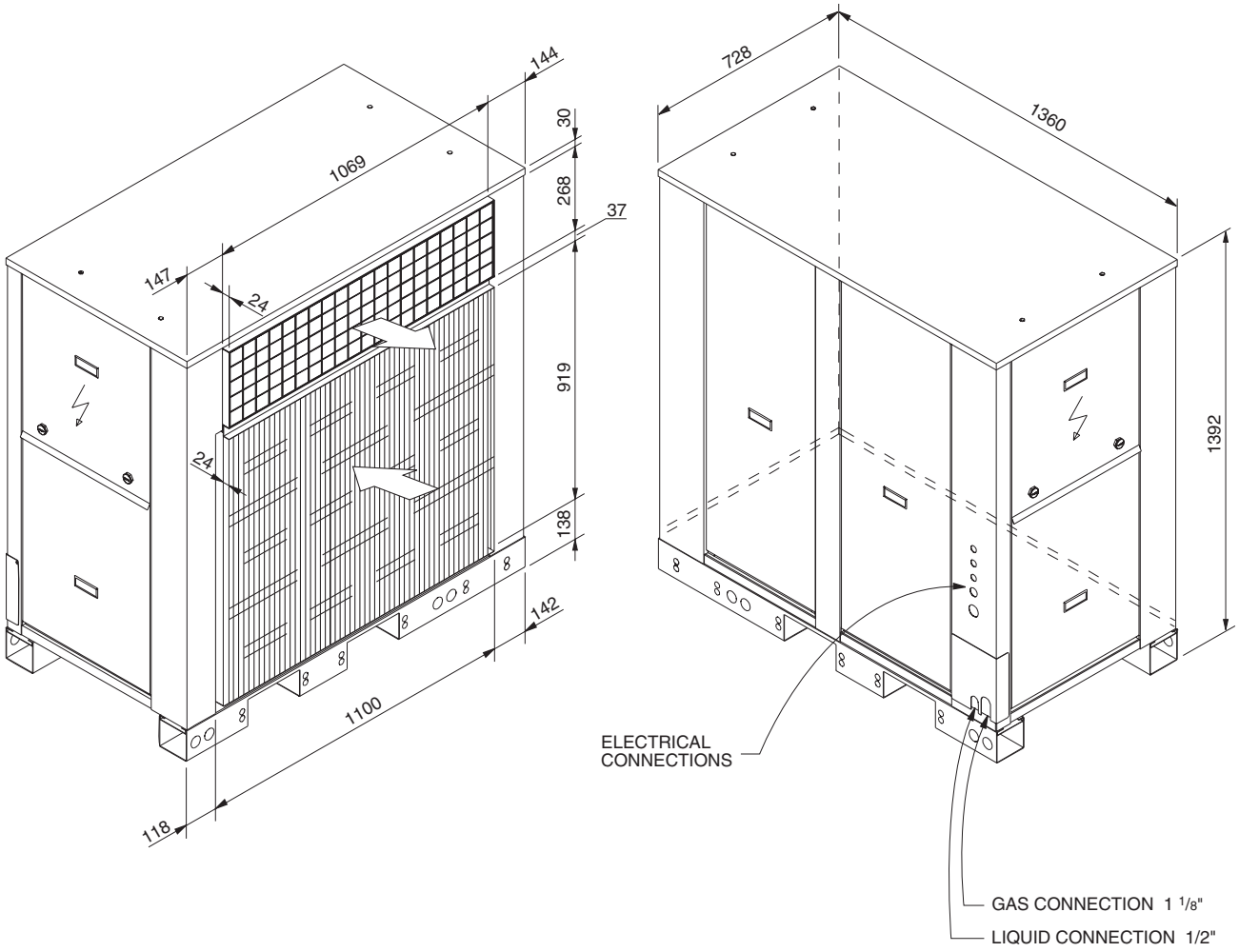
Limits of use

Voltage limits				Air intake temperature to the condensing coil DB		Air intake temperature to the evaporating coil WB	
Nominal a 230 V		Nominal a 400 V					
Minimum	Maximum	Minimum	Maximum	Maximum °C	Minimum °C	Maximum °C	Minimum °C
198	254	342	436	46	19	22	14

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

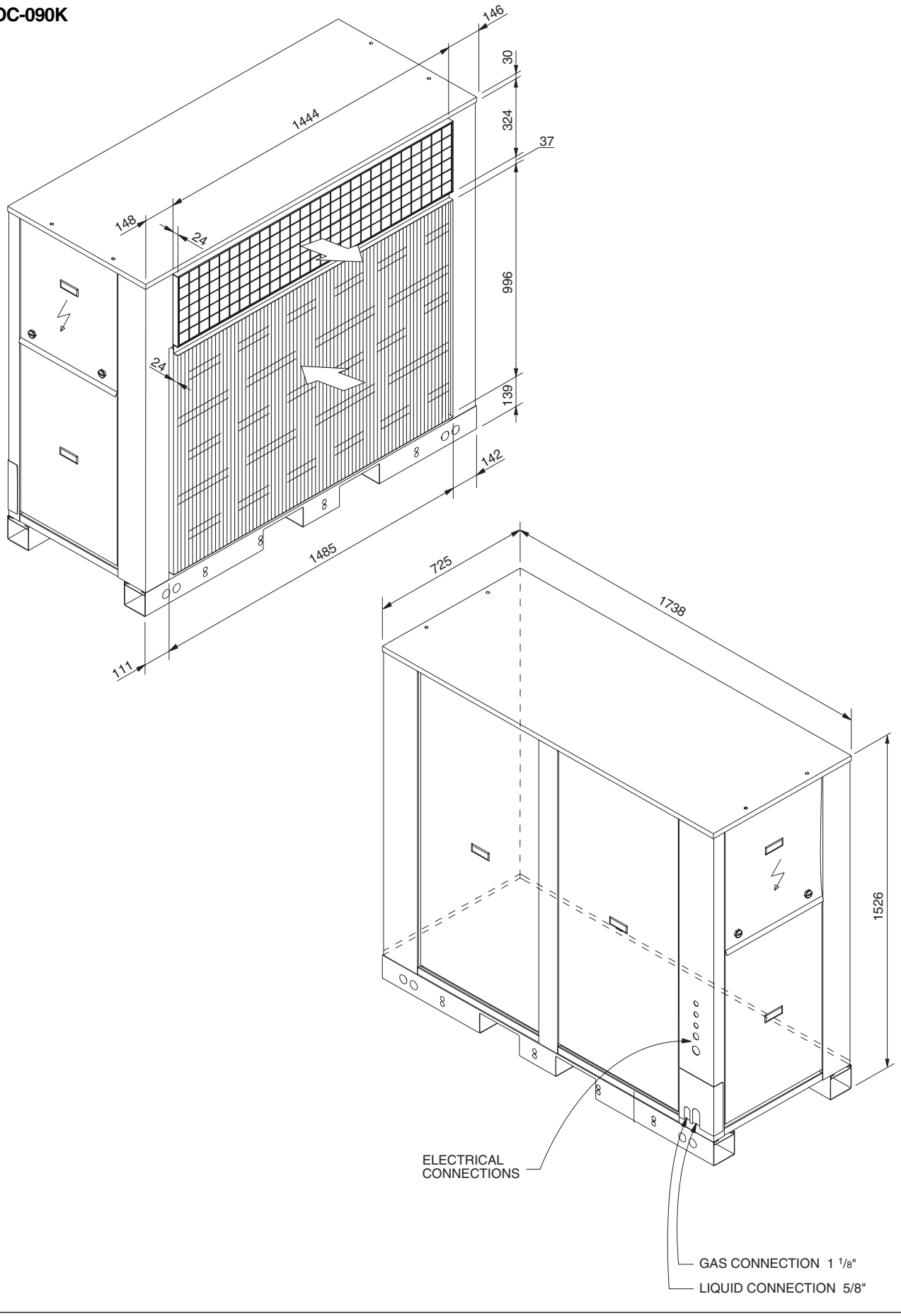
General dimensions mm

SCOC-076K



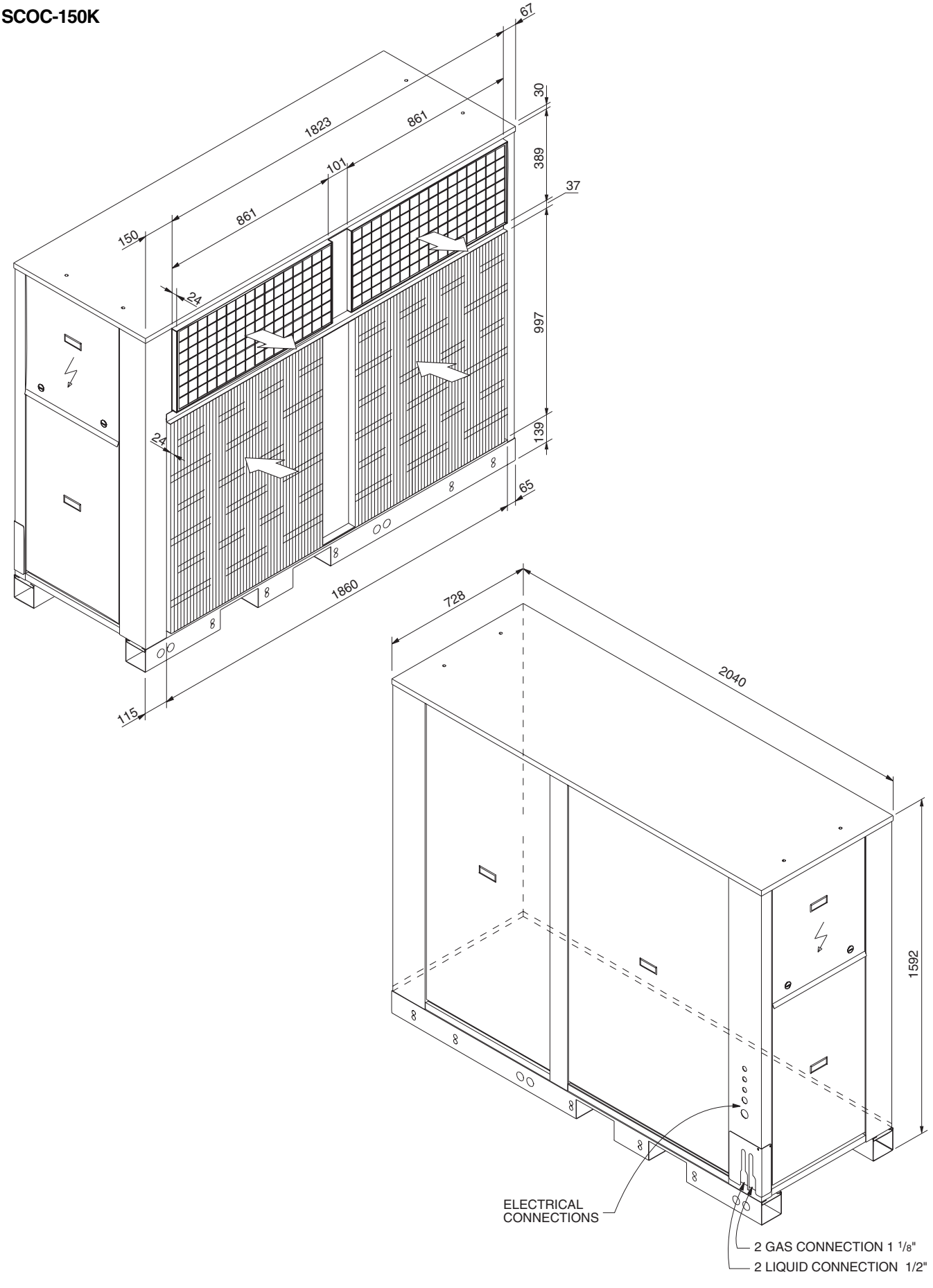
General dimensions mm

SCOC-090K



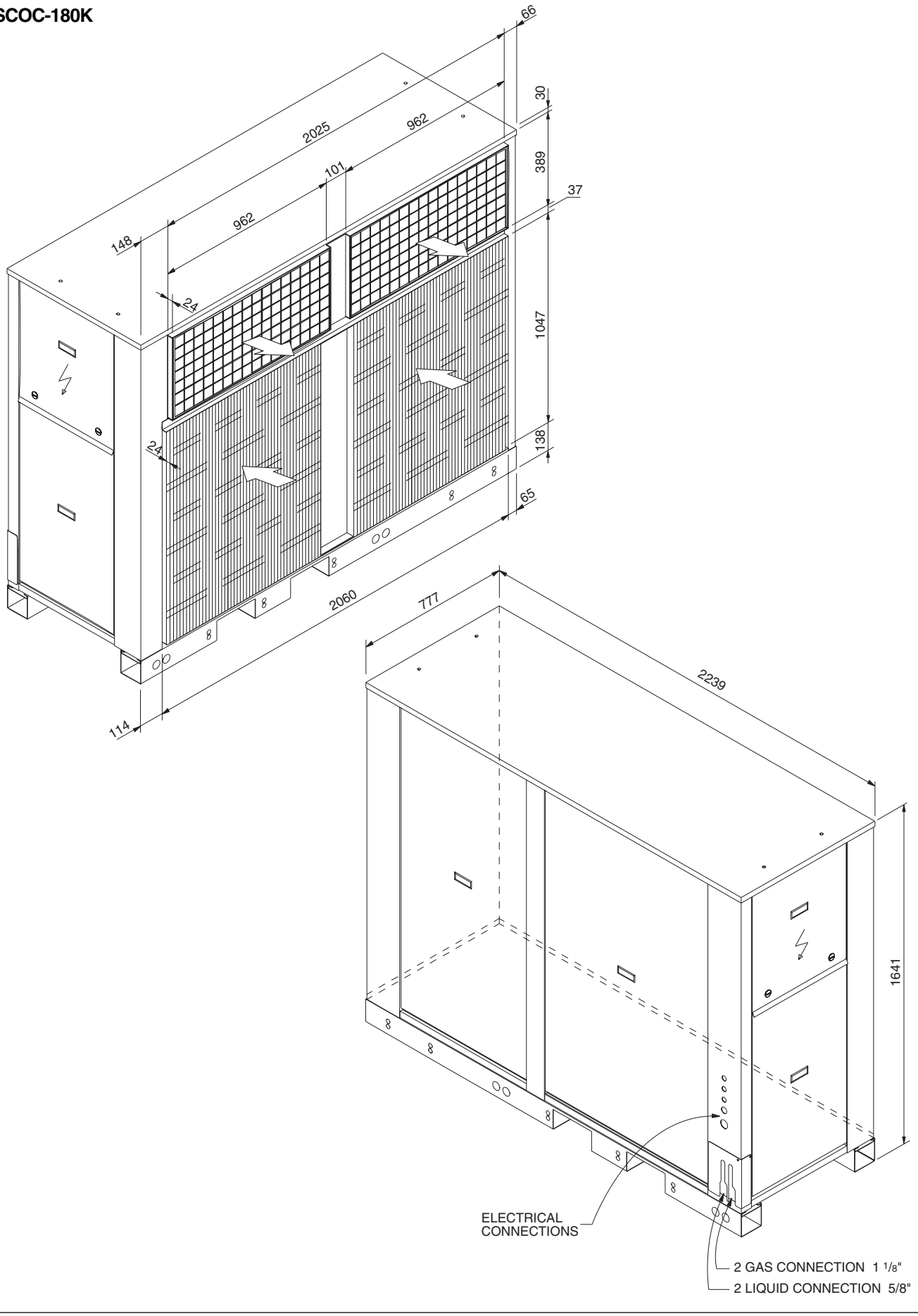
General dimensions mm

SCOC-150K



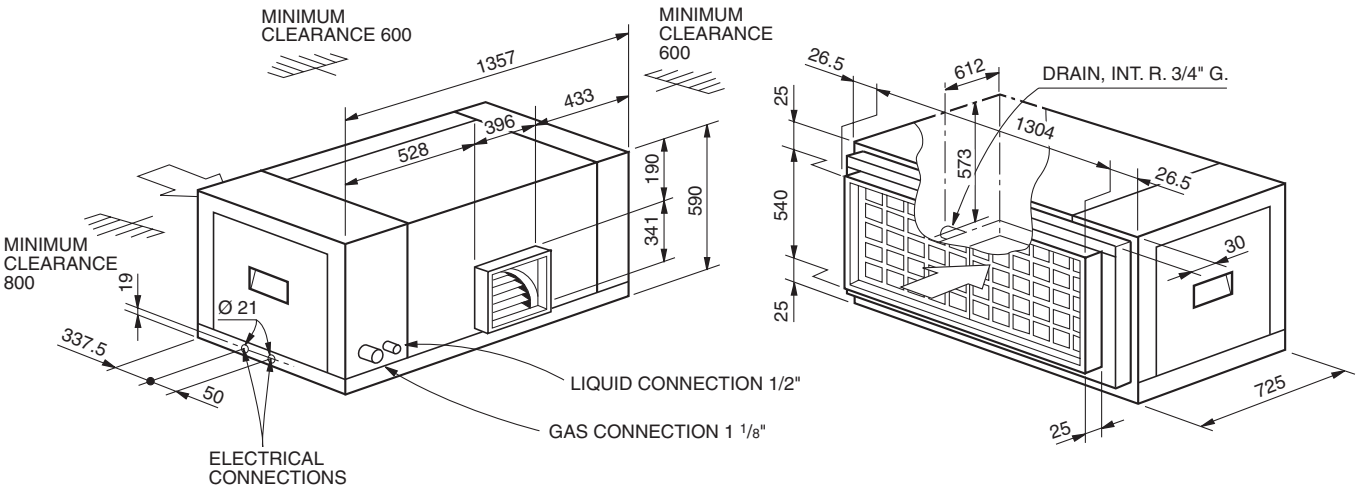
General dimensions mm

SCOC-180K

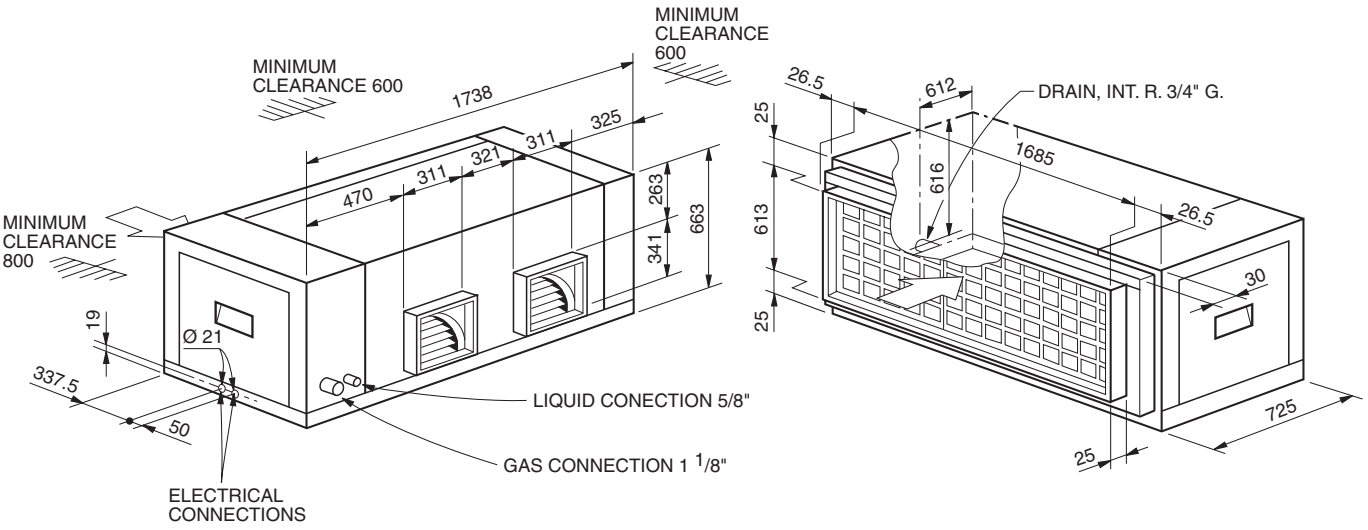


General dimensions mm

SICH-076B

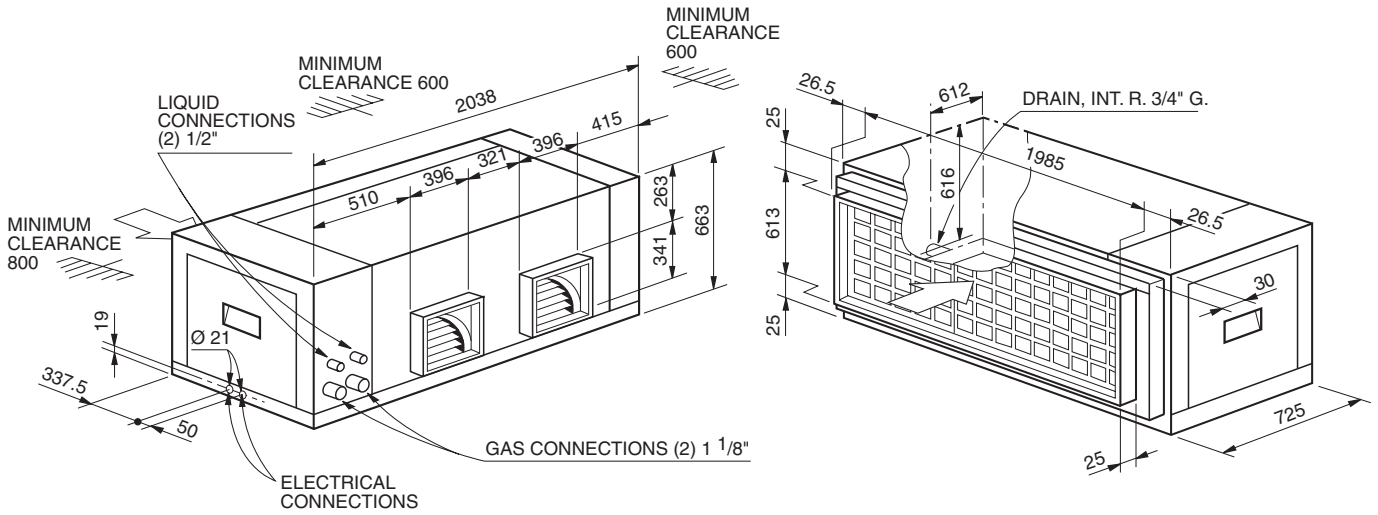


SICH-090B

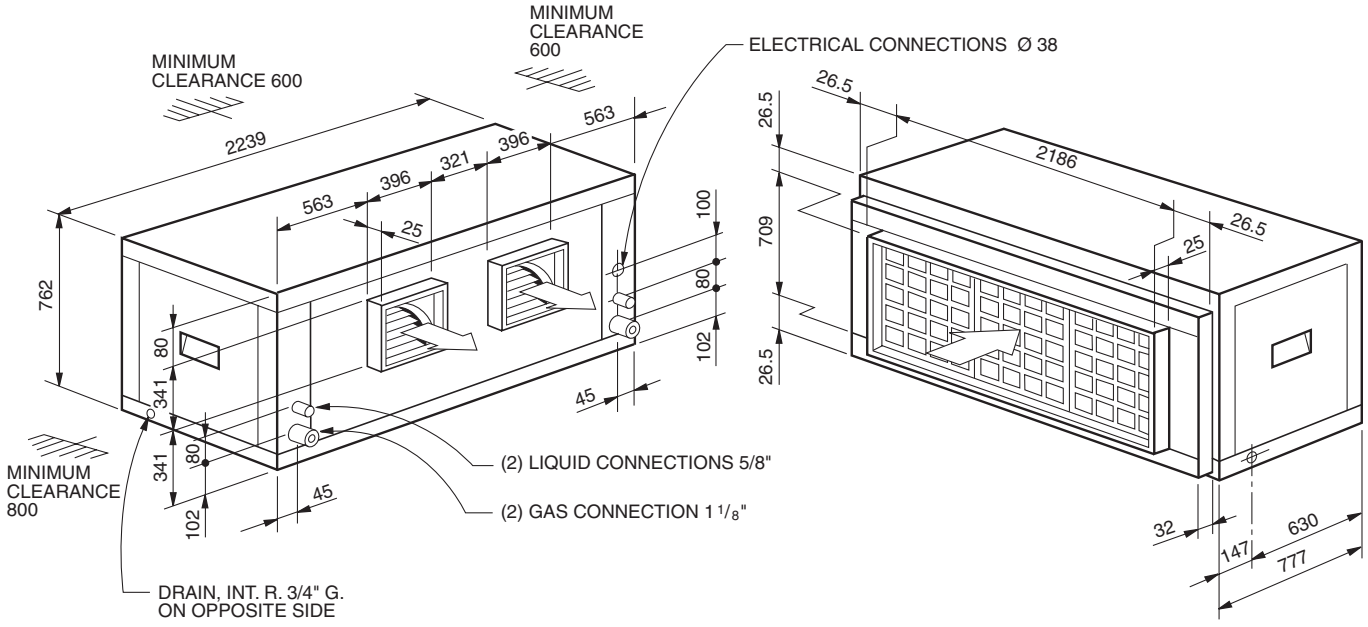


General dimensions mm

SICH-150B



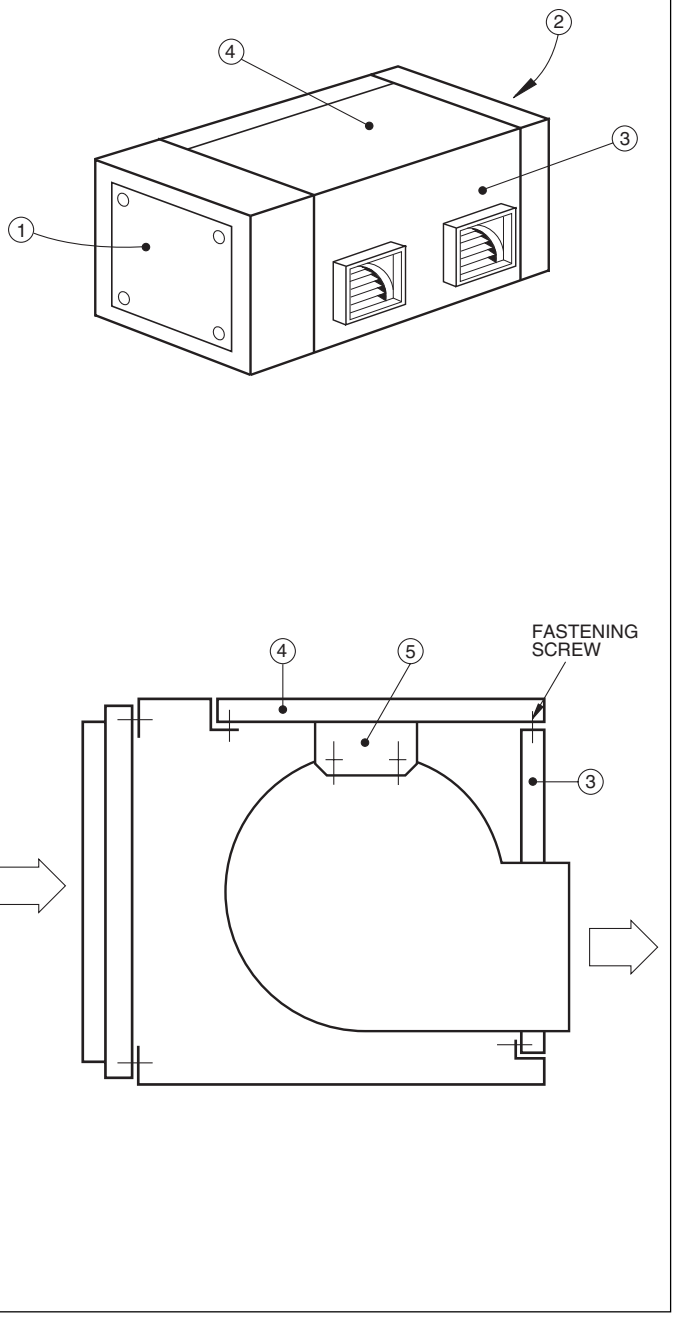
SICH-180B



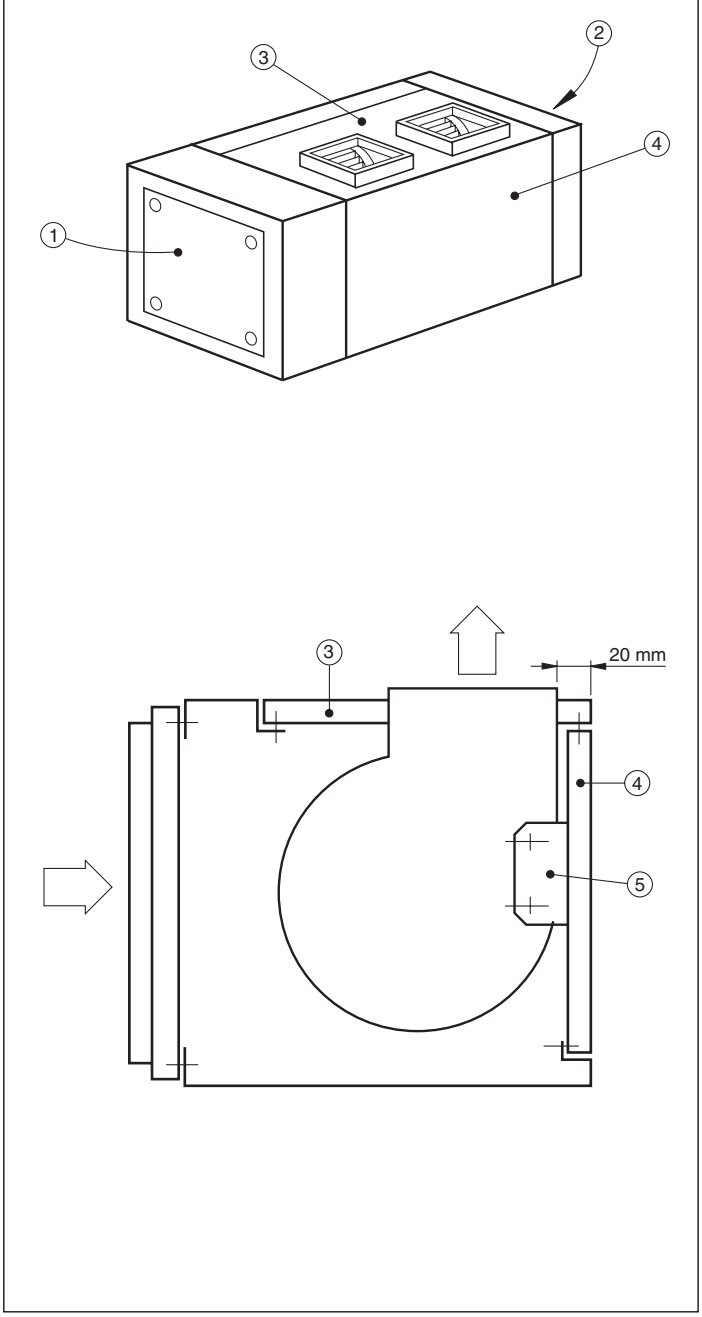
Process for converting a horizontal discharge into a vertical discharge (SICH-076, 090, 150B units)

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.

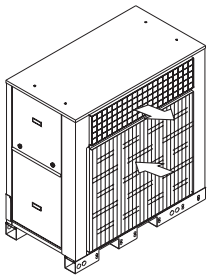
Standard orientation



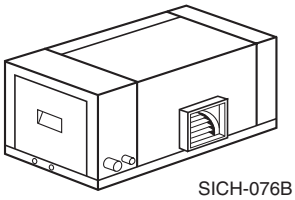
Orientation variable at job site



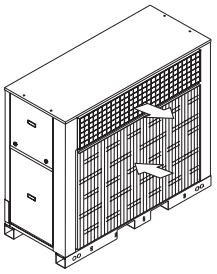
Variant chart



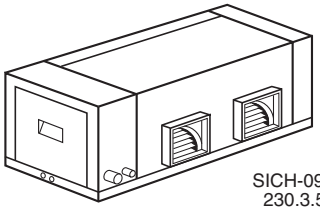
SCOC-076K
230.3.50
400.3.50



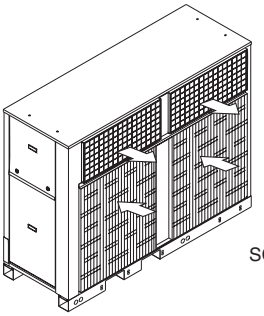
SICH-076B
230.3.50
400.3.50



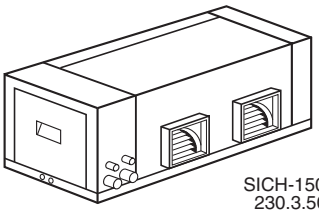
SCOC-090K
230.3.50
400.3.50



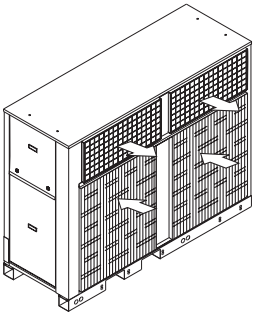
SICH-090B
230.3.50
400.3.50



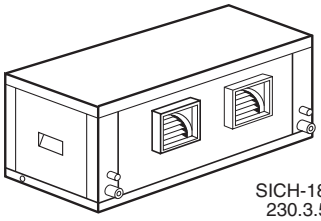
SCOC-150K
230.3.50
400.3.50



SICH-150B
230.3.50
400.3.50



SCOC-180K
230.3.50
400.3.50



SICH-180B
230.3.50
400.3.50

Nominal characteristics

Outdoor unit	Indoor unit	Cooling capacity W	Consumption W	Available pressure, indoor fan Pa
SCOC-076K	**SICH-070/076B**	21 000	9 500	62
SCOC-090K	**SICH-090/120B**	30 000	11 000	75
SCOC-150K	**SICH-150B**	44 000	16 500	75
SCOC-180K	**SICH-180B**	54 000	24 400	80

Correcting factors

Correcting factors of the cooling capacities

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.absorbed power	0.980	0.990	1	1.009	1.017	1.025

Correction of the real temperature of the 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

Correction of the real temperature of the 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	-2	-1.5	-0.5	0	0.5	1	1.2

Test conditions

Voltage	Length interconnecting tubing	Outdoor temp. °C		Indoor temp. °C	
		DB	WB	DB	WB
400	7.5 meters	35	24	27	19

Nominal flows

The cooling 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		Indoor fan available pressure
	m^3/h	m^3/s	Pa
SICH-076B	4 530	1.26	62
SICH-090B	8 500	2.36	62
SICH-150B	10 700	2.97	75
SICH-180B	13 600	3.77	80

Sensible cooling capacities

Model	Dry outdoor air temperature °C (DB)	Humid air intake temperature °C (WB)	Total capacity	Sensible capacity (W)				Compressor absorbed power
				Dry air intake temperature to the coil °C (DB)				
				22	24	27	29	
			W	W	W	W	W	kW
SCOC-076K/ SICH-076B	25	22	25 440	7 792	10 590	14 787	17 590	6.59
		19.5	22 896	11 273	14 071	18 268	21 071	6.91
		17	21 200	15 000	17 798	21 200	21 200	7.22
	35	22	23 532	7 136	9 934	14 132	16 930	7.46
		19.5	21 200	10 637	13 436	17 633	20 431	7.85
		17	19 504	13 484	16 282	19 504	19 504	8.24
	45	22	21 200	6 408	9 206	13 403	16 201	8.64
		19.5	19 080	9 913	12 711	16 908	19 080	9.03
		17	17 384	13 448	16 246	17 384	17 384	9.42
SCOC-090K/ SICH-090B	25	22	36 360	10 866	15 763	23 109	28 013	6.89
		19.5	32 724	17 006	21 904	29 250	32 724	7.22
		17	30 300	23 487	28 384	30 300	30 300	7.54
	35	22	33 633	9 965	14 863	22 209	27 107	7.79
		19.5	30 300	16 130	21 028	28 374	30 300	8.20
		17	27 876	21 161	26 059	27 876	27 876	8.61
	45	22	30 300	8 961	13 859	21 205	26 103	9.02
		19.5	27 270	15 128	20 026	27 270	27 270	9.43
		17	24 846	21 337	24 846	24 846	24 846	9.84
SCOC-150K/ SICH-150B	25	22	5 3280	16 107	22 606	32 355	38 863	10.68
		19.5	47 952	24 229	30 728	40 477	46 986	11.19
		17	44 400	32 856	39 355	44 400	44 400	11.70
	35	22	49 284	14 763	21 262	31 011	37 510	12.08
		19.5	44 400	22 923	29 422	39 171	44 400	12.72
		17	40 848	29 421	35 921	40 848	40 848	13.36
	45	22	44 400	13 267	19 766	29 515	36 014	13.99
		19.5	39 960	21 433	27 932	37 680	39 960	14.63
		17	36 408	29 659	36 158	36 408	36 408	15.26
SCOC-180K/ SICH-180B	25	22	65 280	19 650	27 905	40 288	48 554	15.54
		19.5	58 752	29 980	38 235	50 617	58 752	16.28
		17	54 400	40 925	49 180	54 400	54 400	17.02
	35	22	60 384	18 015	26 270	38 625	46 907	17.58
		19.5	54 400	28 390	36 645	49 027	54 400	18.50
		17	50 048	36 713	44 968	50 048	50 048	19.43
	45	22	54 400	16 193	24 448	36 831	45 086	20.35
		19.5	48 960	26 574	34 829	47 212	48 960	21.28
		17	44 608	37 029	44 608	44 608	44 608	22.00

Indoor fan features

Model	Static pressure available		Air flow		Absorbed power
	mm WG (1)	Pa	m^3/h	m^3/s	W
SICH-076B	14	137.2	3 200	0.89	605
	12	117.6	3 580	0.99	680
	10	98	3 930	1.09	735
	8	78.4	4 260	1.18	795
	6.3	61.7	4 530	1.26	860
	6	58.8	4 570	1.27	865
	4	39.2	4 860	1.35	935
	2	19.6	5 120	1.42	990
	0	0	5 360	1.49	1 035
SICH-090B	17	166.8	6 320	1.76	1 300
	16	157	6 590	1.83	1 340
	14	137	7 080	1.97	1 470
	12	118	7 500	2.08	1 570
	10	98	7 900	2.19	1 680
	7.6	75	8 300	2.31	1 770
	6.3	62	8 500	2.36	1 840
	4	39	8 800	2.44	1 935
	2	19.6	9 070	2.52	2 010
	0.0	0.0	9 270	2.58	2 075
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

(1) Prestaciones calculadas con batería húmeda incluyendo filtros.

Outdoor fan features

Model	Static pressure available		Air flow		Absorbed power
	mm WG	Pa	m^3/h	m^3/s	W
SCOC-076K	18	177	3 380	0.94	730
	16	157	4 050	1.13	830
	12	118	5 050	1.40	970
	8	78	5 820	1.62	1 050
	5.1	50	6 300	1.75	1 130
	4	39	6 470	1.80	1 160
	0	0	7 010	1.95	1 270
SCOC-090K	18	177	8 200	2.28	1 690
	14	137	9 750	2.71	1 900
	12	118	10 230	2.84	2 020
	10	98	10 700	2.47	2 130
	8	78	11 100	3.08	2 230
	6	59	11 500	3.19	2 330
	5.1	50	11 650	3.24	2 380
	4	39	11 800	3.28	2 430
	2	19.6	12 200	3.39	2 540
	0.0	0.0	12 500	3.47	2 600
SCOC-150K	20	196	9 200	2.56	2 430
	16	157	10 300	2.86	2 710
	12	118	11 200	3.11	2 920
	10	98	11 600	3.22	3 040
	8	78	12 000	3.33	3 180
	6	59	12 400	3.44	3 290
	5.1	50	12 600	3.50	3 360
	4	39	12 900	3.58	3 430
	2	19.6	13 300	3.69	3 430
	0.0	0.0	13 700	3.81	3 550
SCOC-180K	20	196	14 000	3.89	3 630
	16	157	15 100	4.19	3 760
	14	137	15 700	4.36	4 100
	10	98	16 800	4.67	4 300
	8	78	17 300	4.81	4 820
	5.1	50	18 100	5.03	5 070
	2	19.6	18 800	5.22	5 350
	0.0	0.0	19 300	5.36	5 500

Electrical characteristics

Outdoor units

Model	Power supply V.ph.Hz.		Consumption A				Power supply cable section (2) mm²	Automatic switch (K curve)(1) A
	Compressor	Fan	Compressor		Fan			
			Start	Nominal	Start	Nominal		
SCOC-076K	230.3.50	230.3.50	210	31.2	23	4.9	10	40
	400.3.50	400.3.50	116	17.9	10	2.8	4	25
SCOC-090K	230.3.50	230.3.50	224	31.5	53	8.5	16	63
	400.3.50	400.3.50	127	18.1	31	4.9	6	32
SCOC-150K	400.3.50	400.3.50	2 x 94	2 x 14.6	2 x 17	2 x 3.9	10	50
SCOC-180K	400.3.50	400.3.50	2 x 127	2 x 16.9	2 x 30	2 x 4.3	16	63

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.

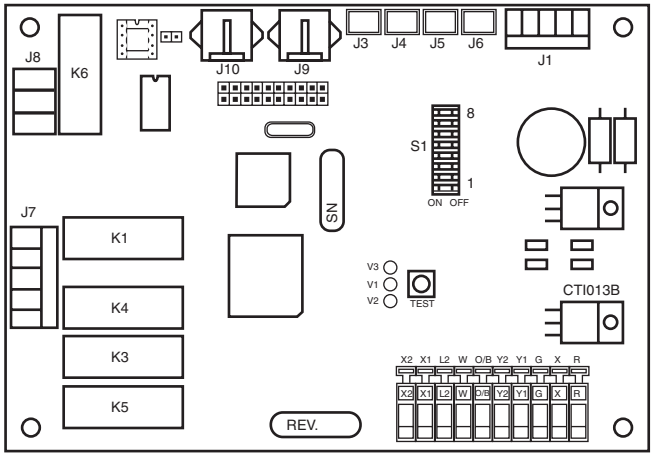
Indoor units

Model	Power supply V.ph.Hz.	Consumption A		Power supply cable section mm²
	Fan	Fan		
		Start	Nominal	
SICH-076B	230.3.50	14	3.2	4 x 1.5
	400.3.50	8	1.8	4 x 1.5
SICH-090B	230.3.50	30	5.5	4 x 1.5
	400.3.50	17	3.2	4 x 1.5
SICH-150B	400.3.50	17	3.4	4 x 1.5
SICH-180B	400.3.50	34	6.3	4 x 1.5

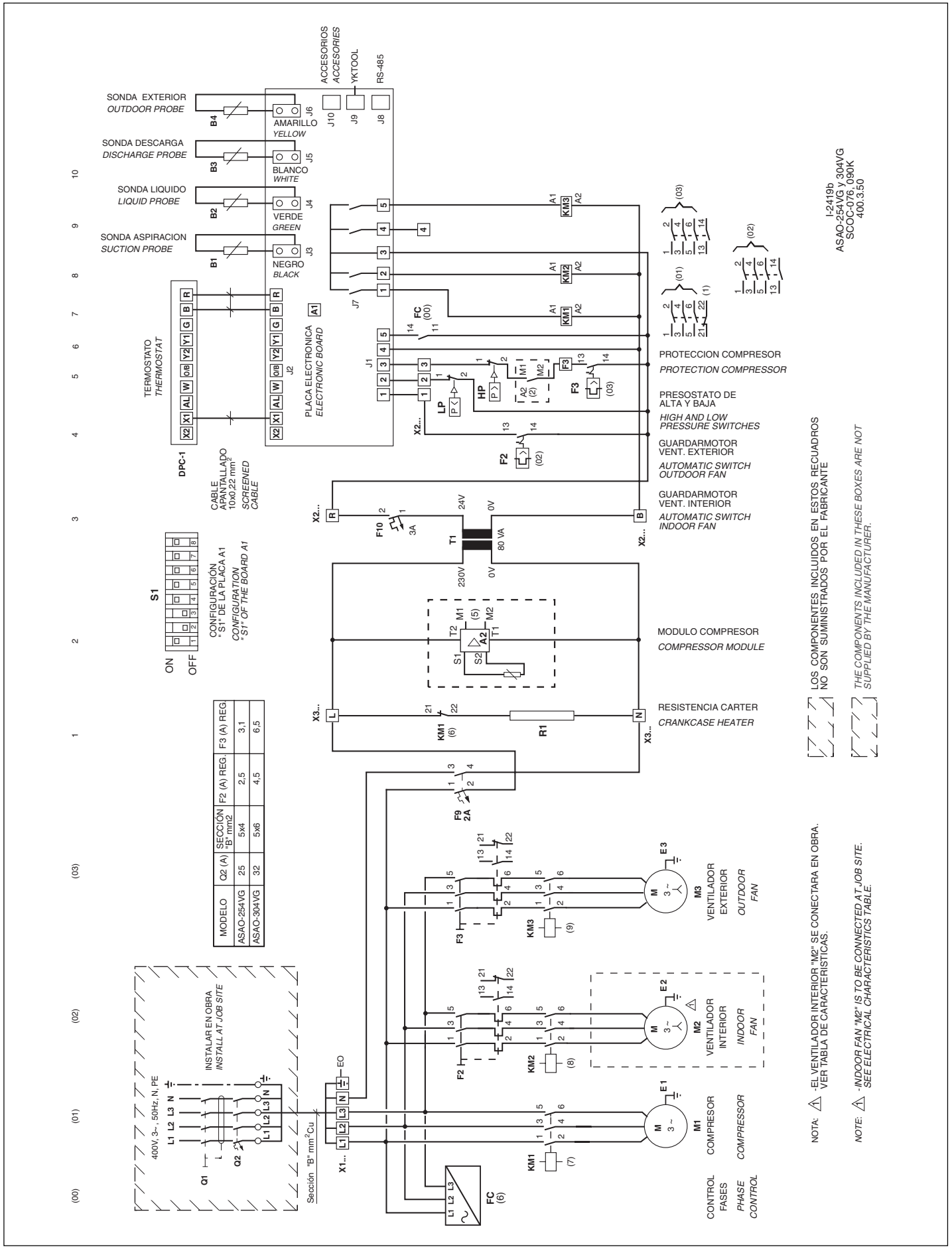
Important: The dimensioning of the automatic switch and power supply line sections are orientative and should be corrected in accordance with job site conditions, length between units and legislation in force.

Control board

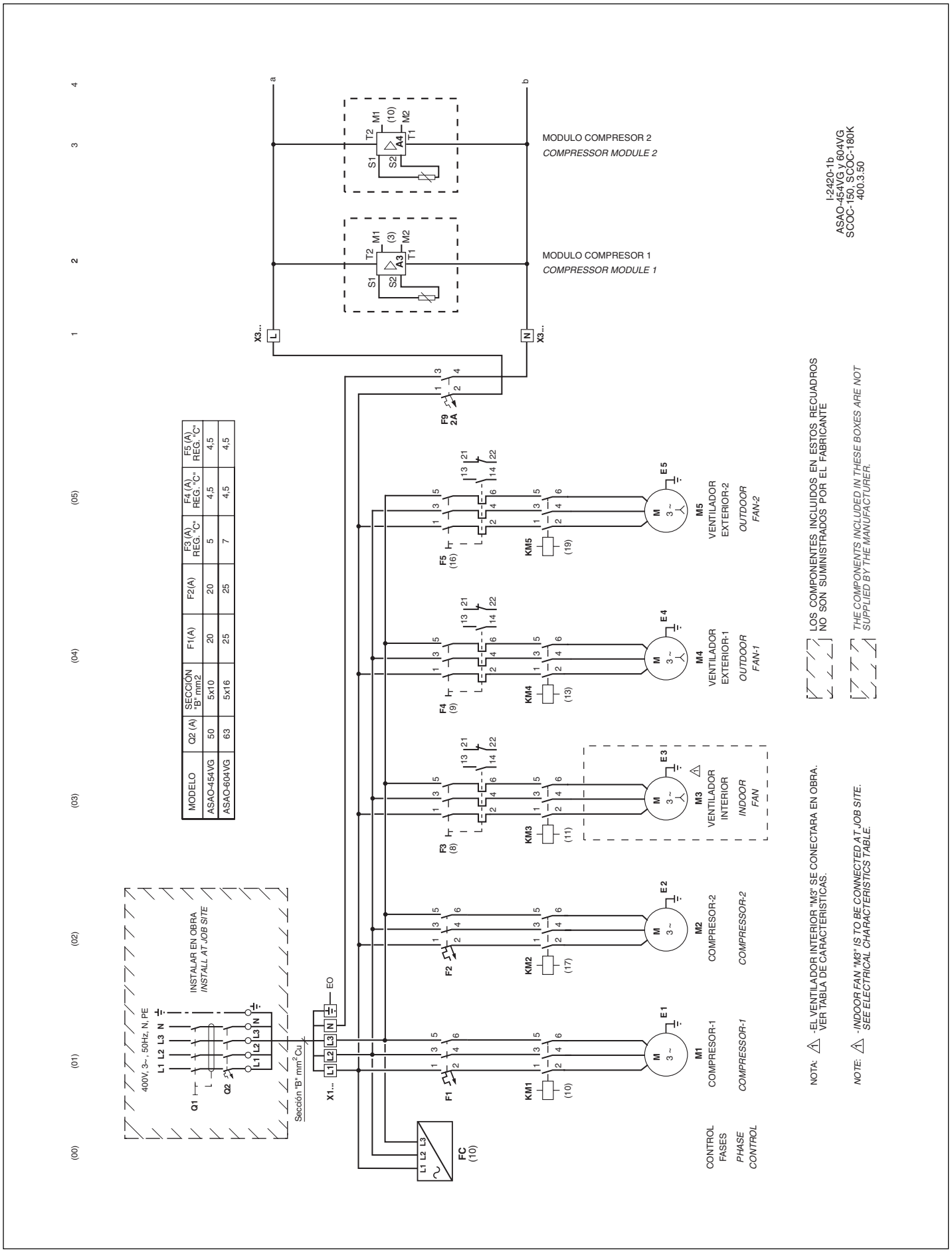
The control board of these units is common to both the cool only as well as the heat pump units. Equipment control is carried out by means of software that is resident in the board. System operation is carried out in accordance with the position of the microswitches in the main board. There are also 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, SCOC-076K and 090K, 400.3.50

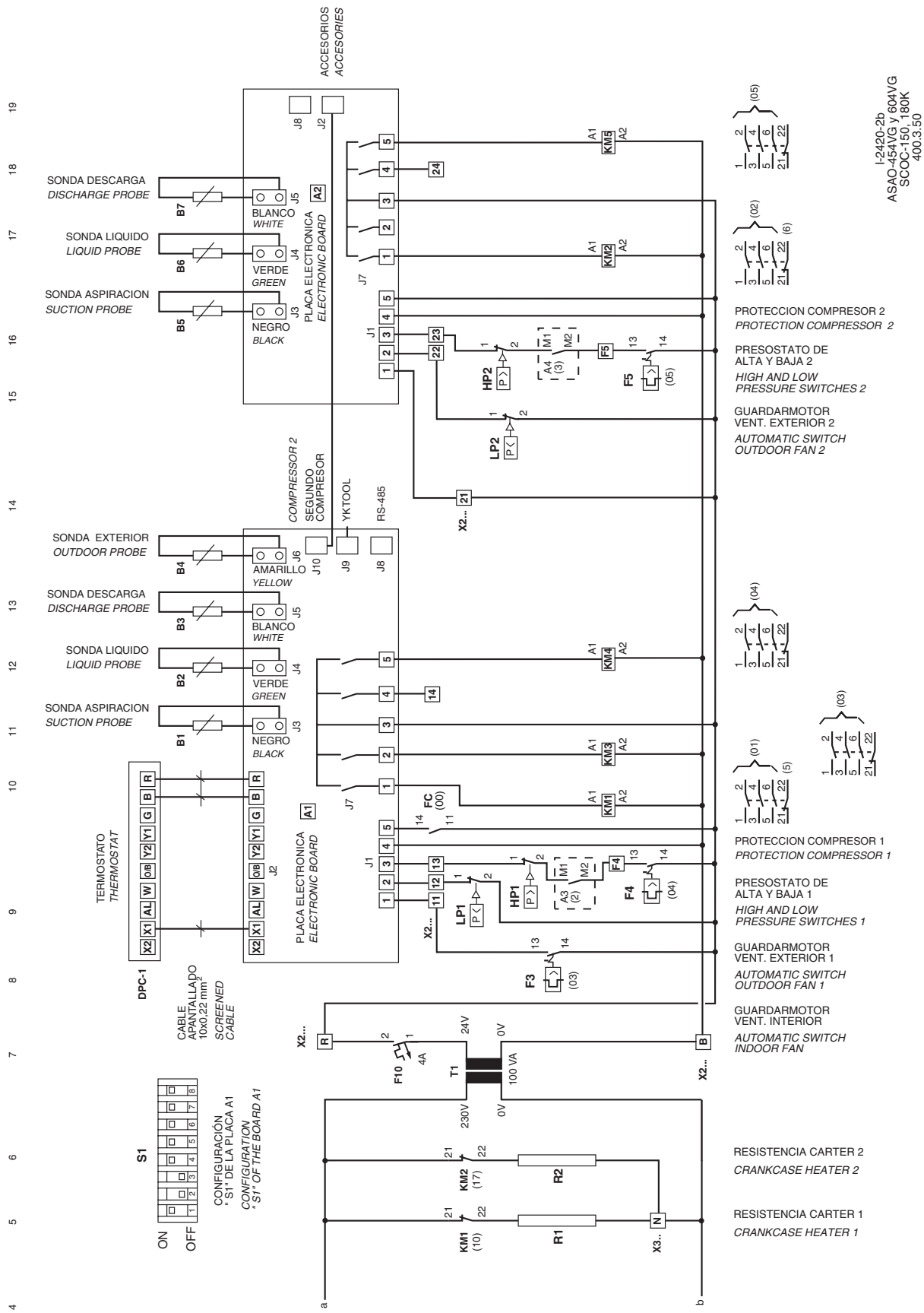


Wiring diagram, SCOC-150K and 180K, 400.3.50



MODELO	Q2 (A)	SECCIÓN "B" mm2	F1(A)	F2(A)	F3 (A) REG."C"	F4 (A) REG."C"	F5 (A) REG."C"
ASAO-454VG	50	5x10	20	20	5	4,5	4,5
ASAO-604VG	63	5x16	25	25	7	4,5	4,5

Wiring diagram, SCOC-150K and 180K, 400.3.50



Microswitches configuration:

These establish the following setups:

Number	State	Meaning
1 / 2	OFF/OFF	Ignore SW, programmed by communications
	ON/OFF	Defrost time 30'
	OFF/ON	Defrost time 60'
	ON/ON	Defrost time 90'
3	ON	Crossed coils
	OFF	Independent coils
4	ON	Compressor time delay at start -up 2'
	OFF	Compressor time delay at start -up 5'
5	ON	Cooling only selection
	OFF	Heat pump selection
6	ON	4-way valve ON in heat pump mode
	OFF	4-way valve ON in cooling only mode
7	ON	Thermostat with signal B (ON in heat pump mode)
	OFF	Thermostat with signal O (ON in cooling only mode)
8	ON	Indoor Fan ON in defrost mode
	OFF	Indoor Fan OFF in defrost mode

Failures

These are indicated by the red LED on the YKIon board. If no failure is present, this LED remains OFF permanently. When a failure occurs, this LED flashes in two sequences. The first indicates the compressor affected: One flash for compressor 1, two flashes for compressor 2, three flashes for compressor 3 and four flashes for accesories, followed by a short pause. The second indicates the cause of the failure.

Failures table (Red LED)

Flashes		Meaning
1 2 or 3	1	Discharge temperature exceeded
	2	High pressure 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	Stage failure of heater 3
	4	Stage failure of heater 4
	5	Failure of economizer or HW coil (impulse, outdoor, return, water probe)
	6	Detection of smoke or high temperature

Incidents

Incidents are indicated by the green LED on the YKIon board. If no incidents is present, this LED flashes at a constant frequency. When an incident occurs, the LED flashes in three sequences. The first indicates the compressor affected: one flash for compressor 1, two flashes for compressor 2, three flashes for compressor 3 and four flashes for others, followed by a short pause. The second and third indicates the cause of the incident.

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 defrost cycles
		2		Discharge temperature doesn´t recuperate
4	1	1	Probes	Impulsion 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 in 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 or Y2 without Y1
	3	1	Aux. heat	Thermal switch of heater 1
		2		Thermal switch of heater 2
		3		Thermal switch of heater 3
		4		Thermal switch of heater 4
	4	1	Temperature	Water coil temperature not recuperating
		2		Outdoor temperature too low
		3		Water coil in defrost cycle
		4		Impulse temperature above 80°C
	5	1	Others	ID transceiver unknown
		2		At least one accesory not found
		3		Call for air quality
		4		Dirty filters
		5		Presence sensor set to unoccupied

Test push-button

- Also shortens certain timings and resets any failure detected if pressed until the green LED goes ON.
- Also identifies optional accesories and probes connected to the board when pressed an held until the red LED goes ON.
- Operates as a LonWorks pin service button. When pressed it sends the Neuron ID through the LonWorks network.
- If the module is powered with this push-button pressed and held for over 3 seconds, the setup of the node is cancelled (only used by authorized staff).

Thermostat DPC-1

When a failure occurs, and there is communication, the thermostat indicates time and failure (according to the failures table). Also indicates others indicents of the thermostat.

Type	Thermostat numbers		Incident
Thermostat	9	1	Ambient probe open or short circuited
	9	2	Internal probe not calibrated
	9	3	Error in communication
	9	4	Outdoor failure

I-2367a

Accessories

Standard accessories

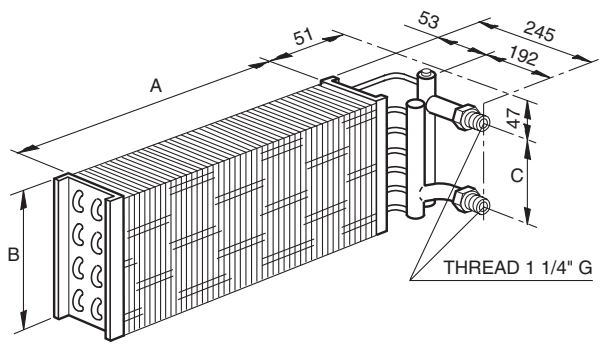
Accessory			Model SICH			
			076	090	150	180
Internal electric heater	**SICH-076B**	10 kW	X			
Internal electric heater	**SICH-076B**	15 kW	X			
Internal electric heater	**SICH-090B**	10 kW		X		
Internal electric heater	**SICH-090B**	20 kW		X		
Internal electric heater	**SICH-150B**	15 kW			X	
Internal electric heater	**SICH-150B**	30 kW			X	
Internal electric heater	**SICH-180B**	15 kW				X
Internal electric heater	**SICH-180B**	30 kW				X
Duct electric heater	**SICH-076B**	10 kW	X			
Duct electric heater	**SICH-076B**	15 kW	X			
Duct electric heater	**SICH-090-180B**	20 kW		X	X	X
Duct electric heater	**SICH-090-180B**	30 kW		X	X	X
Water coil for model	**SICH-076B**		X			
Water coil for model	**SICH-090B**			X		
Water coil for model	**SICH-150B**				X	
Vertical transformation kit for model	**SICH-180B**					X

Accessory	Model SCOC			
	076K	090K	150K	180K
Vertical transformation kit SCOC	X	X	X	X

Hot water coil for SICH-076, 090 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-070-076B	1 069	458	340
SICH-090-120B	1 312	534	416
SICH-150B	1 750	534	416

Physical data

For model		SICH-070-076B	SICH-090-120B	SICH-150B
Tube depth		2	2	2
Tube height		16	19	19
Fins/inch		12	12	12
Front area	m^2	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-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 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

		Hot 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-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**	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

Internal electric heaters for SICH-076 to 180B

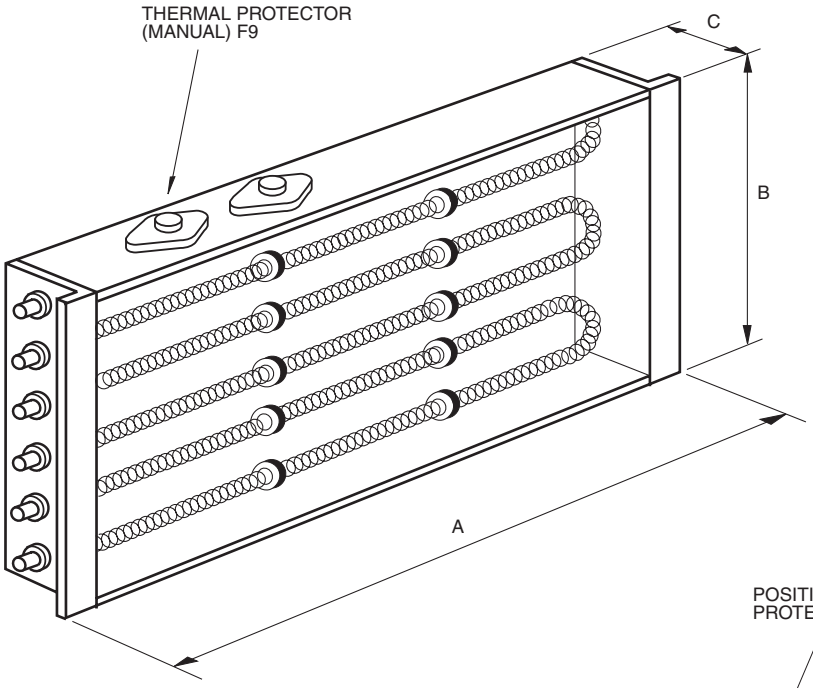
These internal electric heaters are designed to provide backup or complementary heat for the SCIH units. On and off cycles are governed by the air conditioning equipment control system. They should be fitted to the internal supports of the indoor unit.

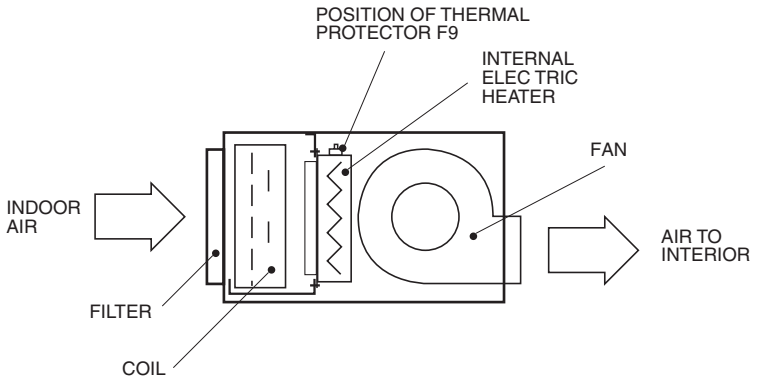
Technical specifications

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.

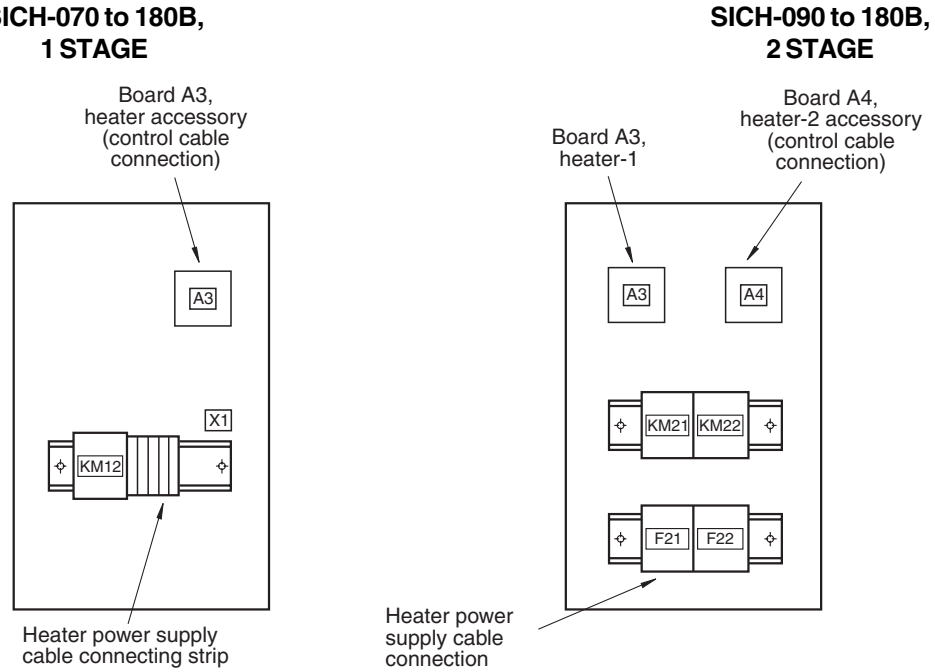
Assembly and general dimensions mm





For mounting on	A	B	C
SICH-076B	1 103	480	48
SICH-090B	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 internal 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	mm²	m²	Pa
SICH-076B	400.3.50	10	15	1	20	2.5	0.53	2.9
SCIH-076B	400.3.50	15	22	1	25	4	0.53	2.9
SICH-090B	400.3.50	10	15	1	20	2.5	0.74	4.9
SICH-090B	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

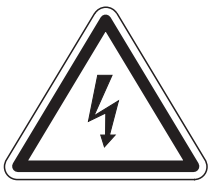
Heater model	Dimensions with packing mm.			Weight kgs.
	Height	Width	Depth	
SICH-076B	620	1 300	110	7
SICH-090B	620	1 520	110	8
SICH-150B	620	1 920	110	9
SICH-180B	510	2 405	165	10

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 and differential switches 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 SICH or SCOH/SICH unit and to the heater.
11) o 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.

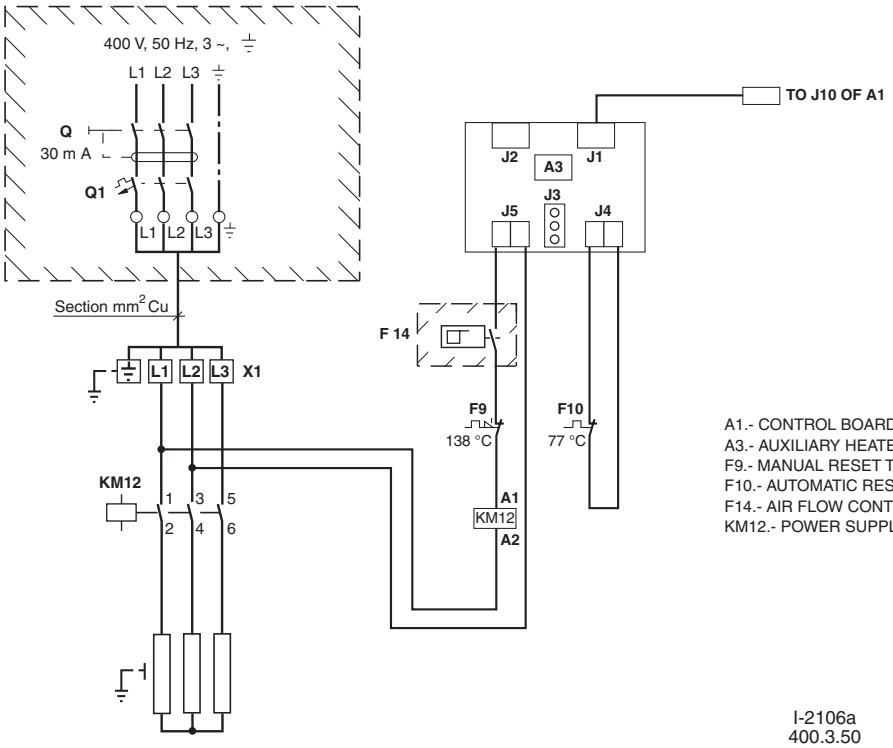


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

Wiring diagram

Heater 10, 15kW, 400.3.50
SICH-076 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-1 ACCESSORY
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

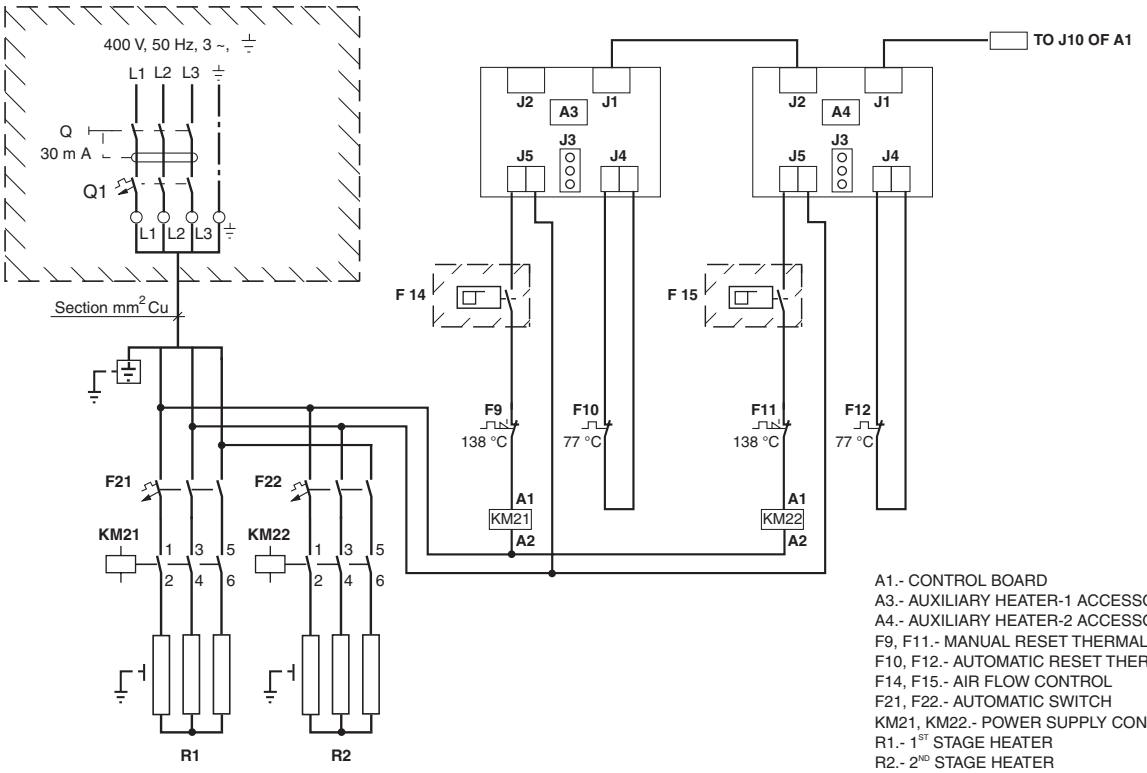
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

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-090 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-1 ACCESSORY
A4.- AUXILIARY HEATER-2 ACCESSORY
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-2107a
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.

Duct electric heaters for SICH-076 to 180B

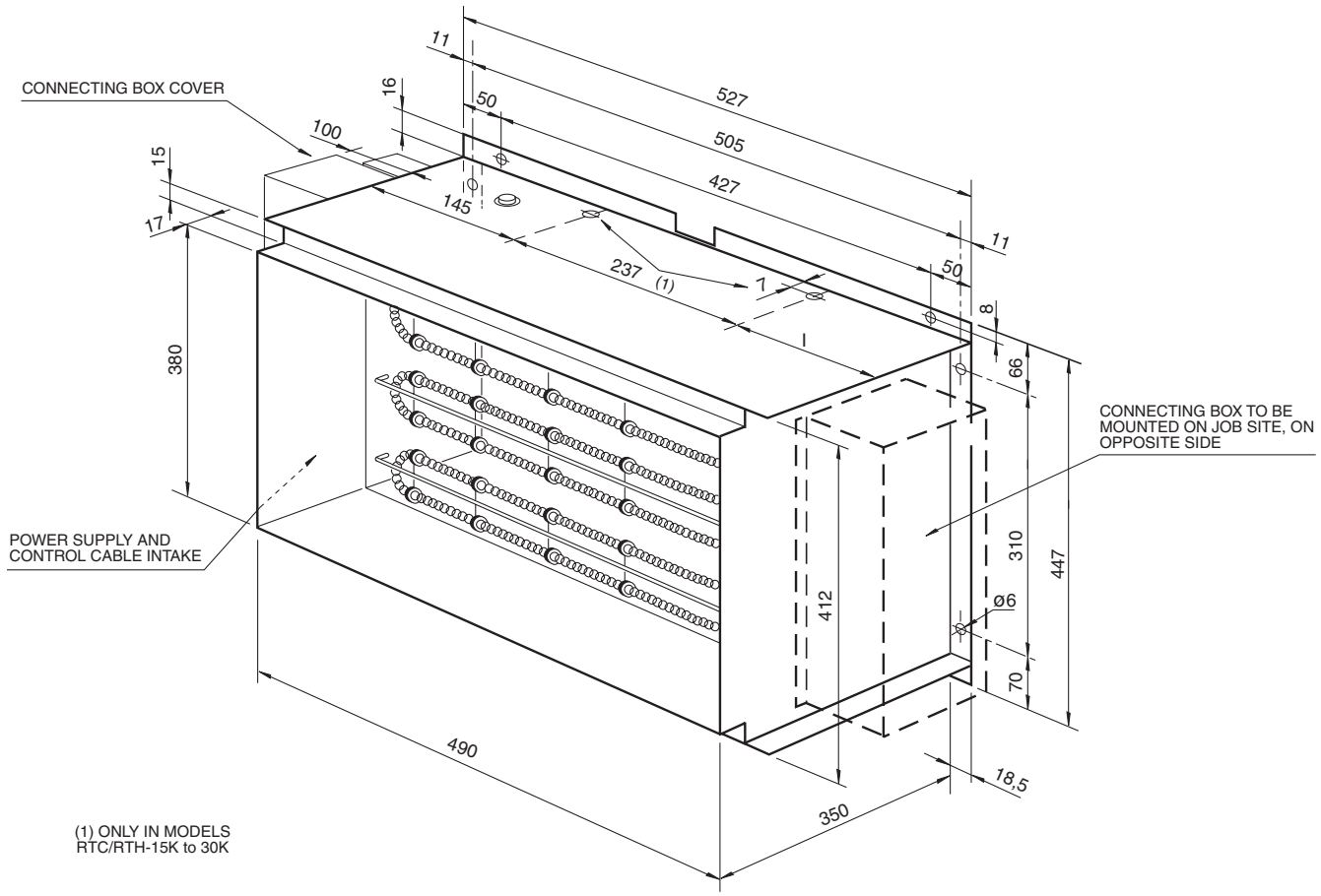
These duct electric heaters are designed to provide backup heat in heat pump units, and complementary heat in cool only units. On and off cycles are governed by the air conditioning equipment control system. These should be fitted directly to the impulse outlet of the indoor section of the unit.

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



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-076B	400.3.50	10	15	1	20	2.5	0.19	6
SICH-076B	400.3.50	15	22	1	25	4	0.19	6
SICH-090 to 180B	400.3.50	20	30	2	40	6	0.19	15
SICH-090 to 180B	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

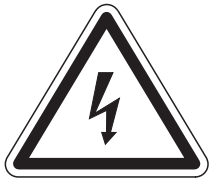
Heater model	Dimensions with packing mm.			Weight kg
	Height	Width	Depth	
SICH-076B	440	640	370	20
SICH-090 to 180B	880	640	370	40

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 and differential switches 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.

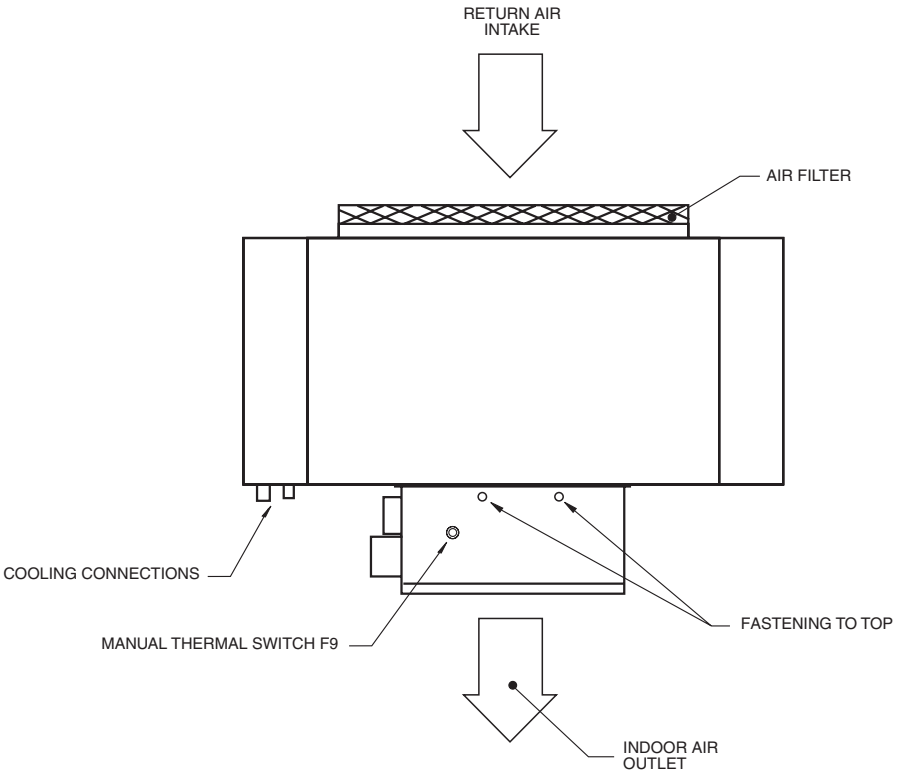
Note: Should an incorrect response of the system take place, see the Operation section of the SCOC or SCOH, SOC or SOH/SICH Installation Instructions. There you will find the control functions of the A1 electronic board on the heater, as well as its configuration, incidents identification, etc.

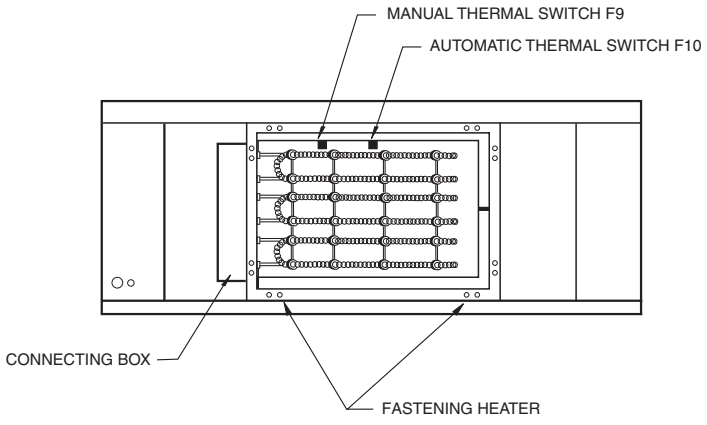


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

Location of the heater

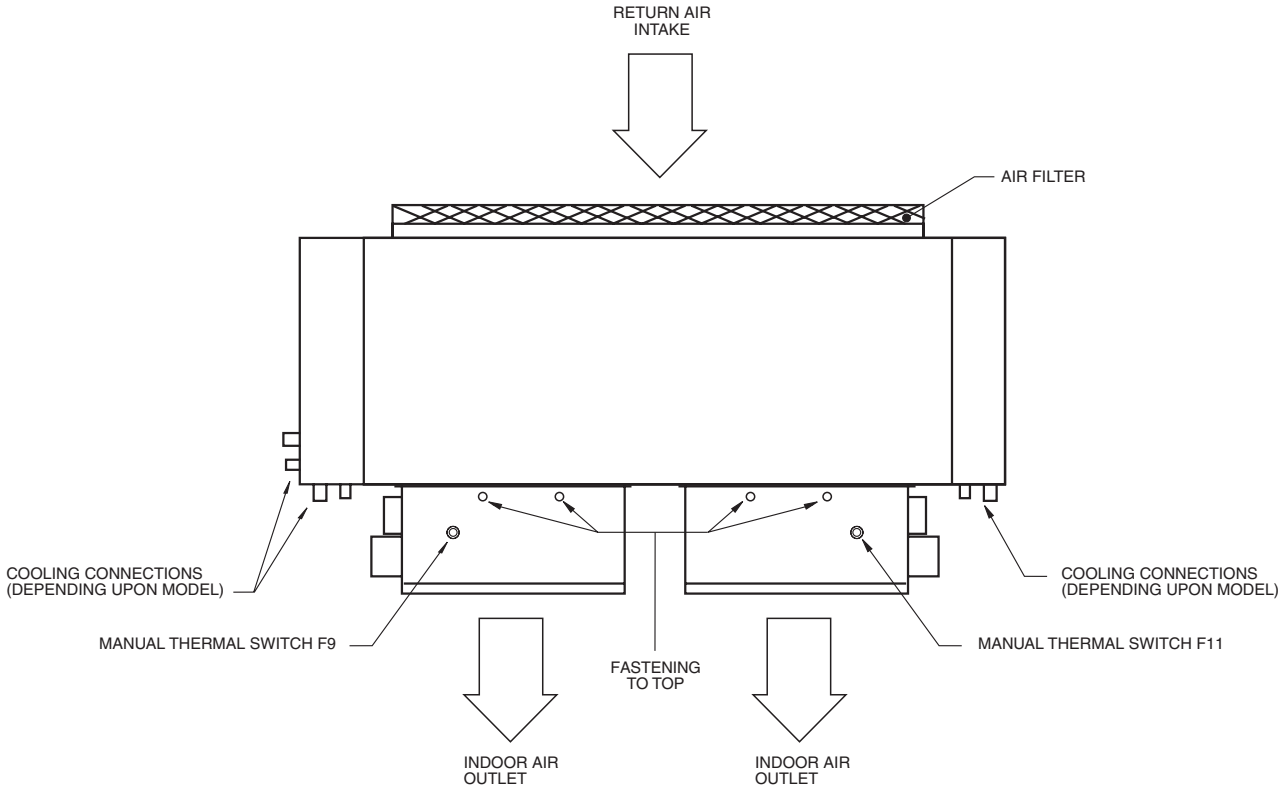
SICH-076B

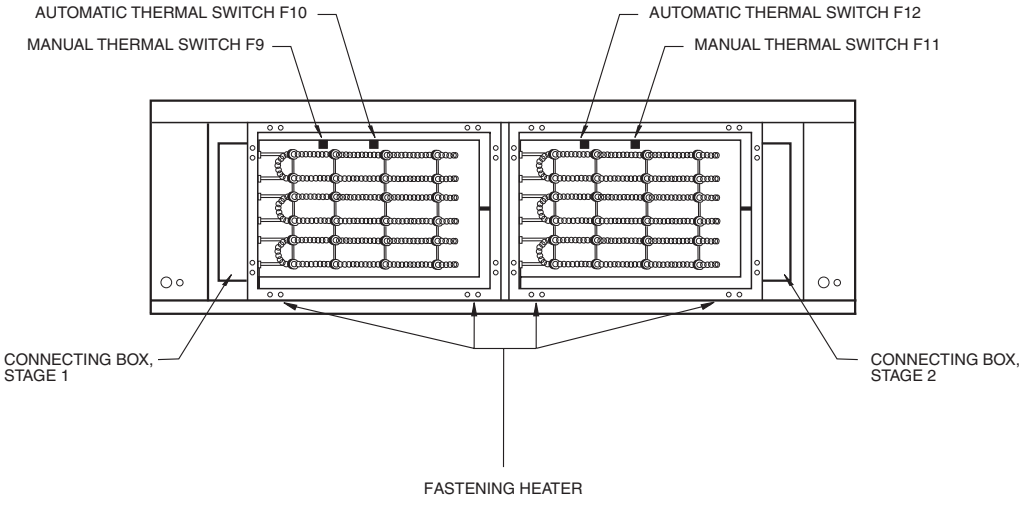




Location of the heater

SICH-090 to 180B

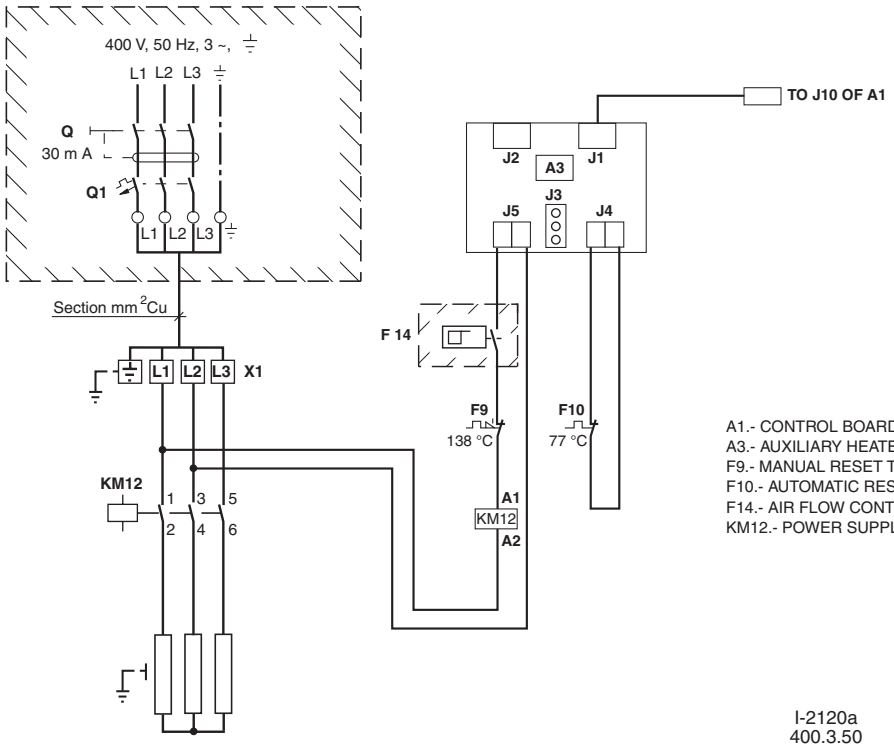




Wiring diagram

Heater 10, 15kW, 400.3.50
SICH-076B

POWER kW	AUTOMATIC SWITCH Q1	MINIMUM CABLE SECTION mm²
10	20	2,5
15	25	4



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER-1 ACCESSORY
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

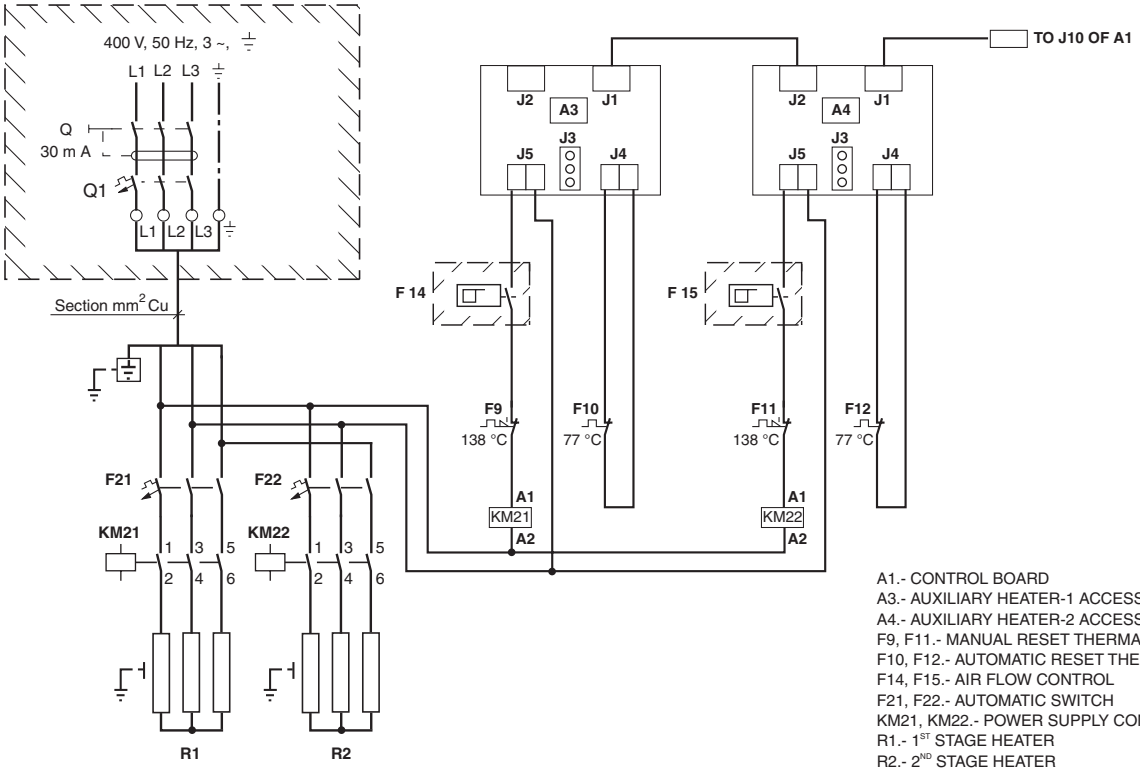
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER

IMPORTANT: THE AUTOMATIC SWITCH SIZING AND POWER SUPPLY LINE SECTION ARE ORIENTATIVE AND SHOULD BE CORRECTED IN ACCORDANCE WITH JOB SITE CONDITIONS AND LEGISLATION IN FORCE.

Wiring diagram

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

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



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER-1 ACCESSORY
A4.- AUXILIARY HEATER-2 ACCESSORY
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

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.

Vertical air discharge conversion kit for: SCOH/ SCOC-070 to 120K

This Kit allows converting the standard horizontal air discharge, in outdoor units SCOH/SCOC, version "V", to a vertical discharge. The conversion process is as follows:

1.- Remove and discard the upper panel ref. 1 and the grid ref. 2 (fig. 1).
2.- Remove the fan, standard motor assembly on support "A" (fig. 2).
3.- Change the motor to the proportioned and mounted support "B", making sure the pulleys are aligned (the centre of the tensor will be at about 20 mm. from the face of the fan) (fig. 3).
4.- Fasten the fan to the wings "C" and supports "D" of the upper panel ref. 3, before or after mounting same on the machine, with the new self-drilling screws included in the Kit (fig. 3).
5.- Install the upper panel ref. 3 and the plenum cover ref. 4 (fig. 4).
6.- If the unit is to work without ducts, the protection grids included in the kit should be mounted on the fan intakes (self-threading screws are supplied for mounting).

General dimensions mm

Fig.1

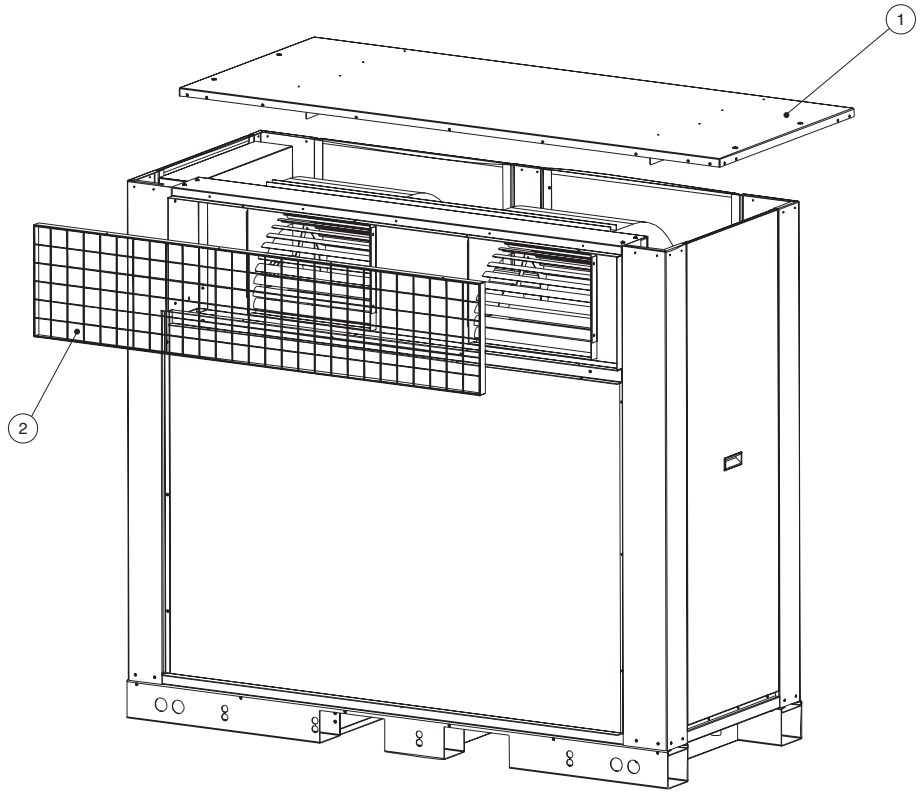


Fig.2

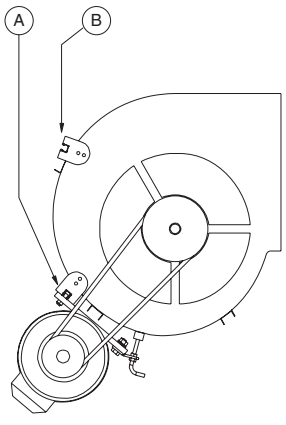
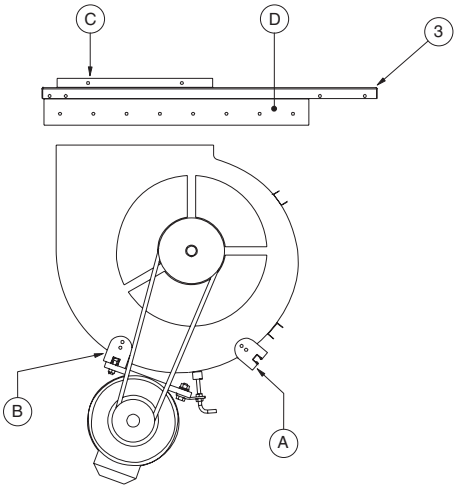
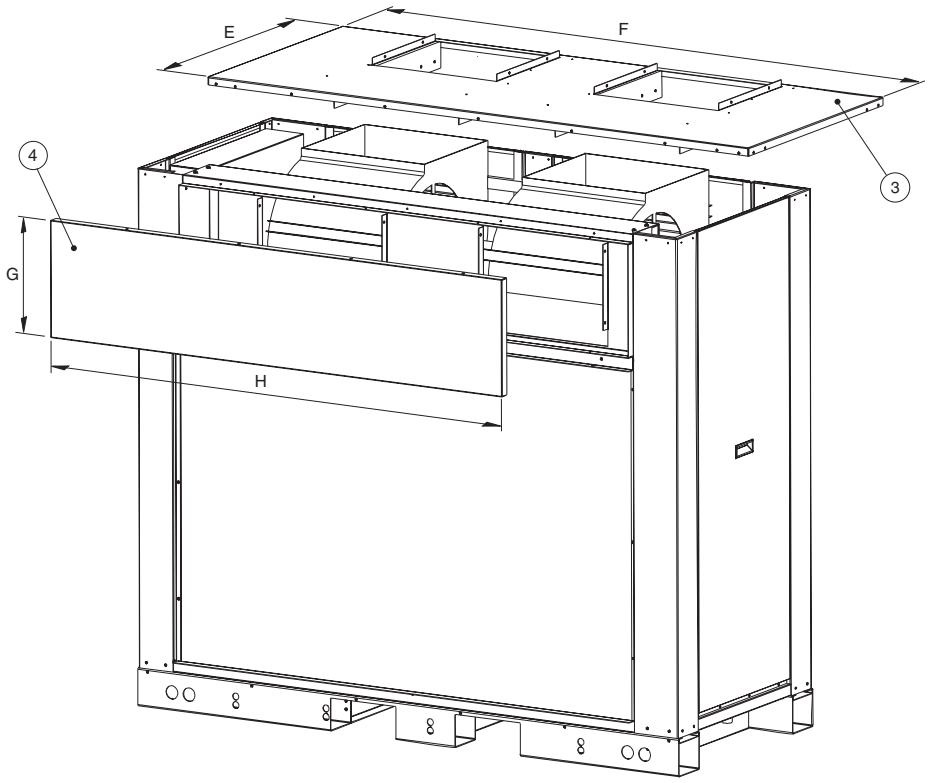


Fig.3



General dimensions mm

Fig.4



Model	E	F	G	H
SCOH / SCOC-076K	730	1363	272	1075
SCOH / SCOC-090K	725	1738	332	1450

Vertical air discharge conversion kit for: SCOH/ SCOC-150 to 300K

This Kit allows converting the standard horizontal air discharge, in outdoor units SCOH/SCOC, version "V", to a vertical discharge. The conversion process is as follows:

1.- Remove and discard the upper panel ref. 1 and the grid ref. 2 (fig. 1).
2.- Remove the fan, standard motor assembly on support "A" (fig. 2).
3.- Change the motor to the proportioned and mounted support "B", making sure the pulleys are aligned (the centre of the tensor will be at about 20 mm. from the face of the fan) (fig. 3).
4.- Fasten the fan to the wings "C" and supports "D" of the upper panel ref. 3, before or after mounting same on the machine, with the new self-drilling screws included in the Kit (fig. 3).
5.- Install the upper panel ref. 3 and the plenum cover ref. 4 (fig. 4).
6.- If the unit is to work without ducts, the protection grids included in the kit should be mounted on the fan intakes (self-threading screws are supplied for mounting).

General dimensions mm

Fig.1

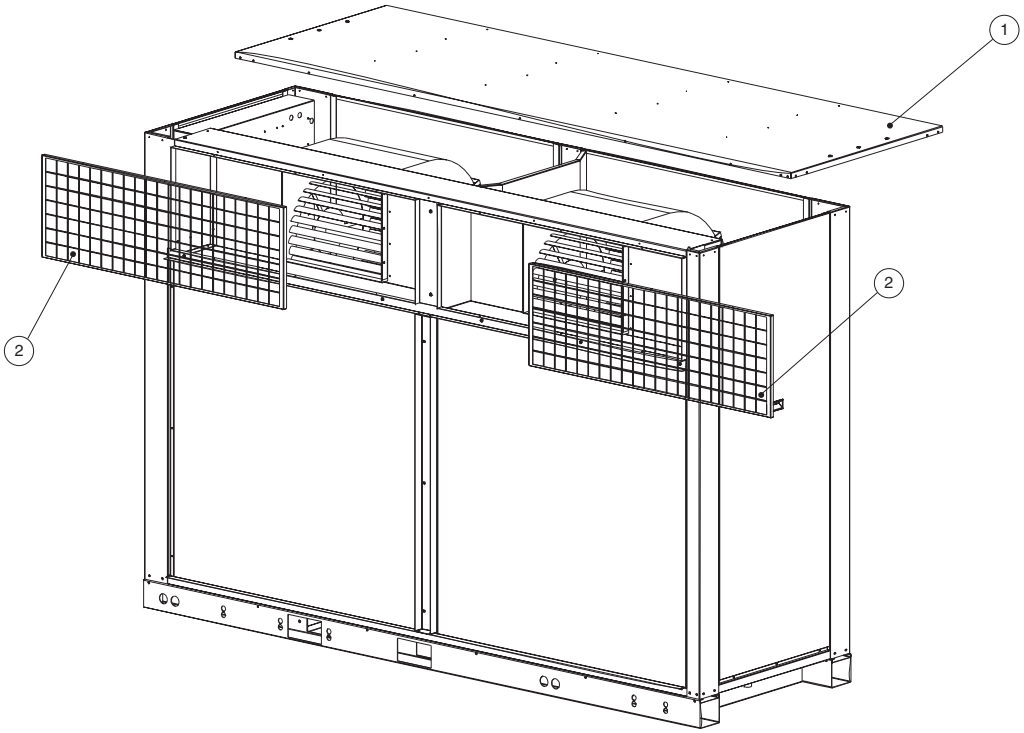


Fig.2

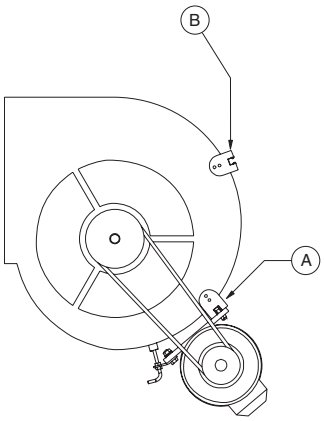
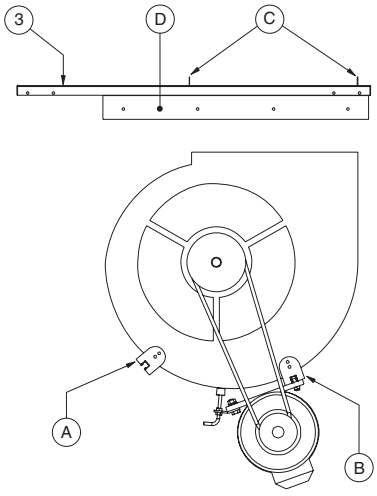
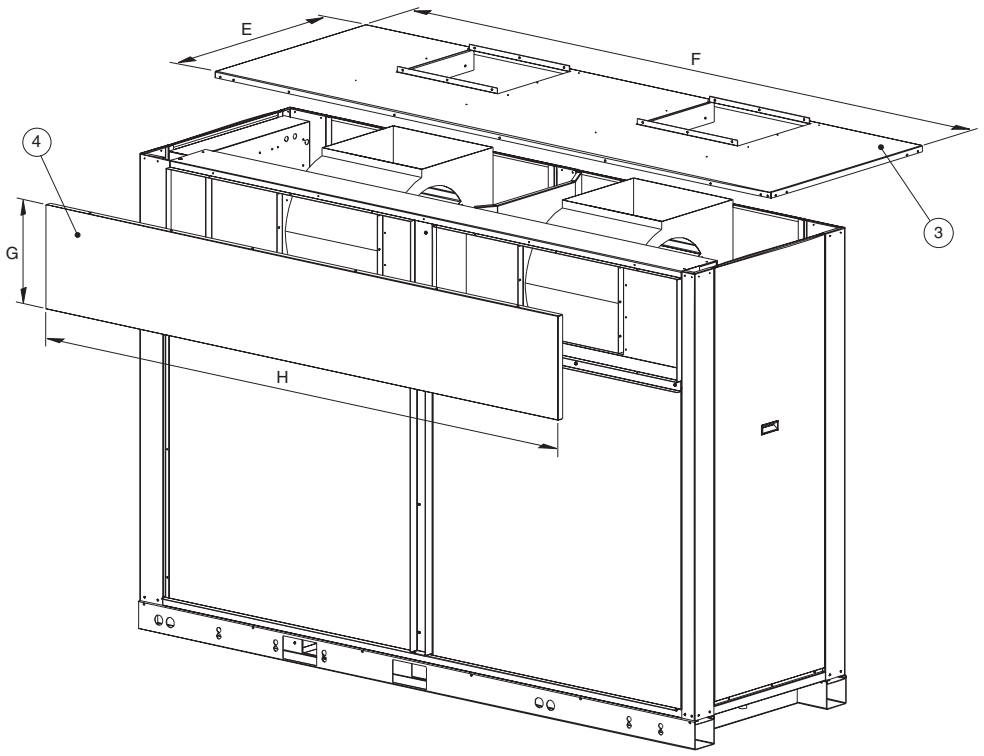


Fig.3



General dimensions mm

Fig.4

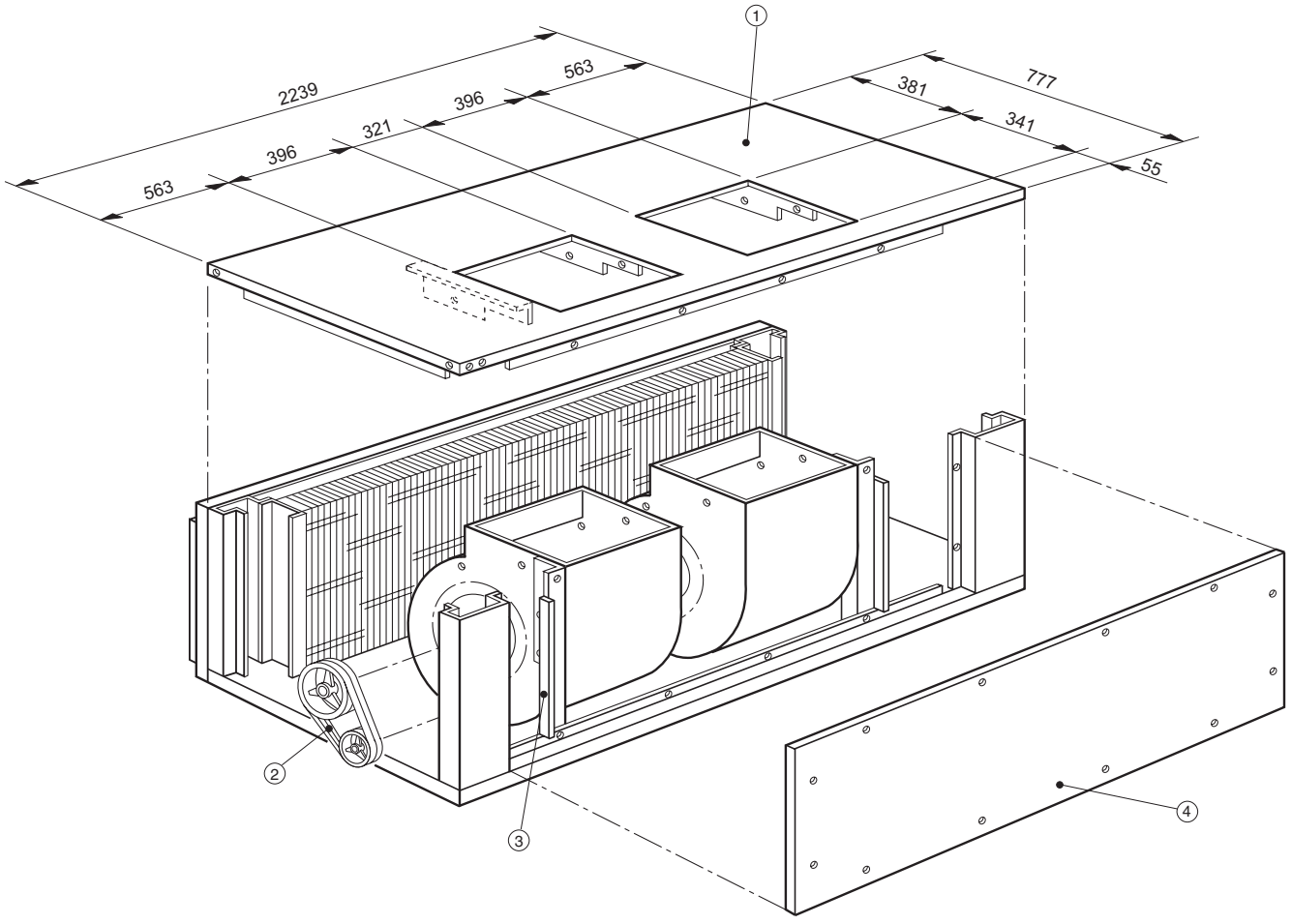


Model	E	F	G	H
SCOH / SCOC-150K	728	2038	393	1828
SCOH / SCOC-180K	777	2240	393	2030

Vertical air discharge conversion kit for: SICH-180 to 300B

The SICH-180 to 300B unit require a conversion kit that includes: rear and top panels, belts, motor and fan pulleys.

1- Remove the standard top, rear and side panels, as well as the fans, and orient these as indicated in the drawing, fastening them to the upper panel included in the conversion kit.
2- Once the fans are assembled, fasten the top panel ref. 1 to the unit.
3- Fasten the left and right side fan angles ref. 3 to the unit.
4- Substitute motor and fan pulleys, and belts ref. 2, with those included in the kit.
5- Apply rear panel ref. 4.
6- Lastly, replace the standard side panels.

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