

**Air-Air Heat Pumps**  
**SCOH-070 H(C) to 300 H(C)/**  
**SICH-070 to 180B, 240C and SIH-300B**



Ref.: TSCHBE1

**Technical Information:**



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## General information

### General description

The SCOH-H (C)/SICH, SIH heat pump models are air-air units with centrifugal fans both in the indoor as well as the outdoor units.

The SCOH-H (C) outdoor unit includes compressor, condensing unit, centrifugal fan and controls. The SICH, SIH 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.

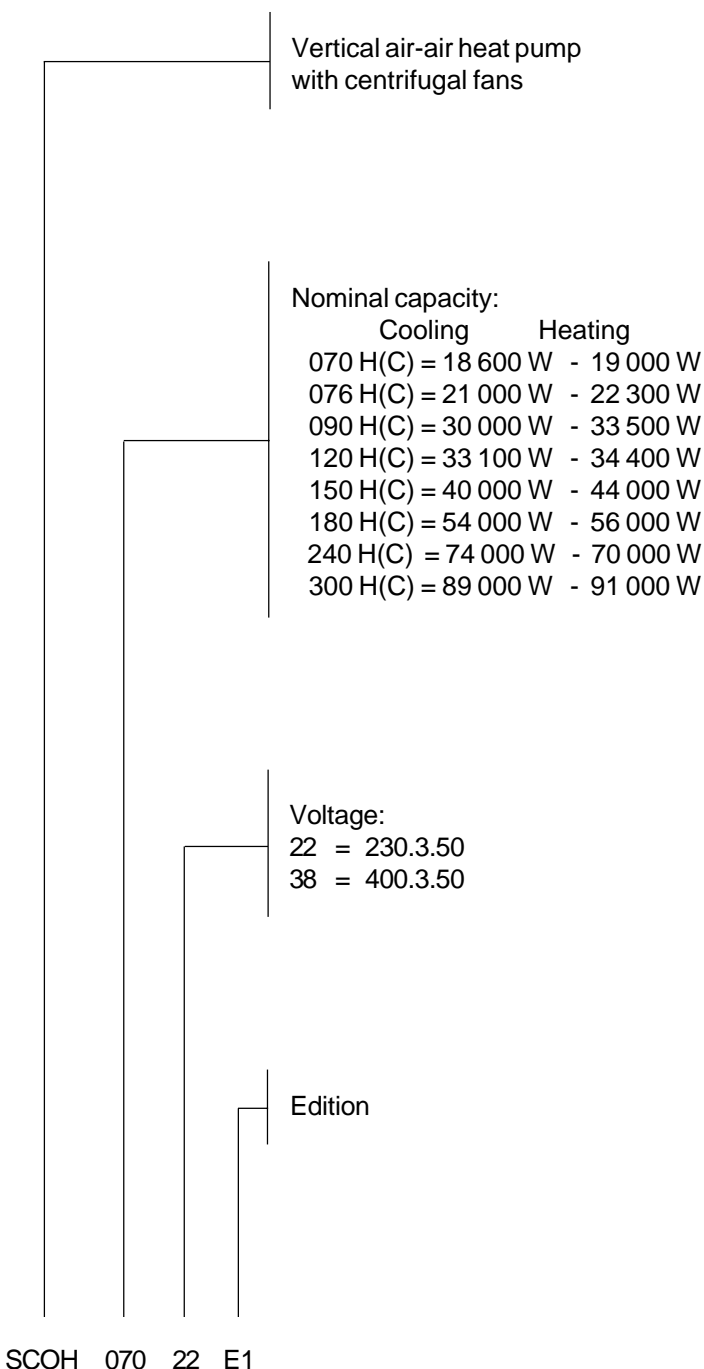
The outdoor unit can be installed either outdoors or indoors, as it is protected to withstand outdoor conditions, while the fans are of the centrifugal type and can accept ducts.

Supplied complete, factory tested and ready for installation of either interior or duct electric heaters accessories.

Designed to achieve considerable savings in energy and a long service life.

Start-up and automatic regulation of the temperature is carried out by means of a 24-volt ambient thermostat.

### Nomenclature



## Technical specifications

### Mechanical specifications

#### Compressor

Vertical hermetic alternative type, mounted on antivibratory supports, specially designed for heat pump units with oversizing of mechanical components and low consumption motor.

The SCOH-070 H (C), 076 H (C), 090 H (C) and 120 H (C) units have one compressor, while the SCOH-150 H (C), 180 H (C), 240 H (C) and 300 H (C) 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.

#### Suction accumulator

Fitted in the suction tubing of the compressor, it protects same from slugging by avoiding oil leaving 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-070 and 076 B)

A centrifugal fan driven by an independent motor and belt drive is installed.

#### Indoor fan (SICH-090B, 120B, 150B, 180B, 240C and SIH-300 B) and outdoor fan (SCOH-070 H (C), 076 H (C), 090 H (C) and 120 H (C))

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 (SCOH-150 H (C), 180 H (C), 240 H (C) and 300 H (C))

Two independent centrifugal fans are installed. Each one of these is driven by an independent motor and coupled to the single plenum.

Transmission from the motor to the fan is by belt drive.

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 SCOH-H (C) and SICH, SIH 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 (R-22 can also be used).

#### Dryer filter

Coupled to the cooling circuit to protect the refrigerant against humidity.

#### Casing

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

#### Complementary heaters

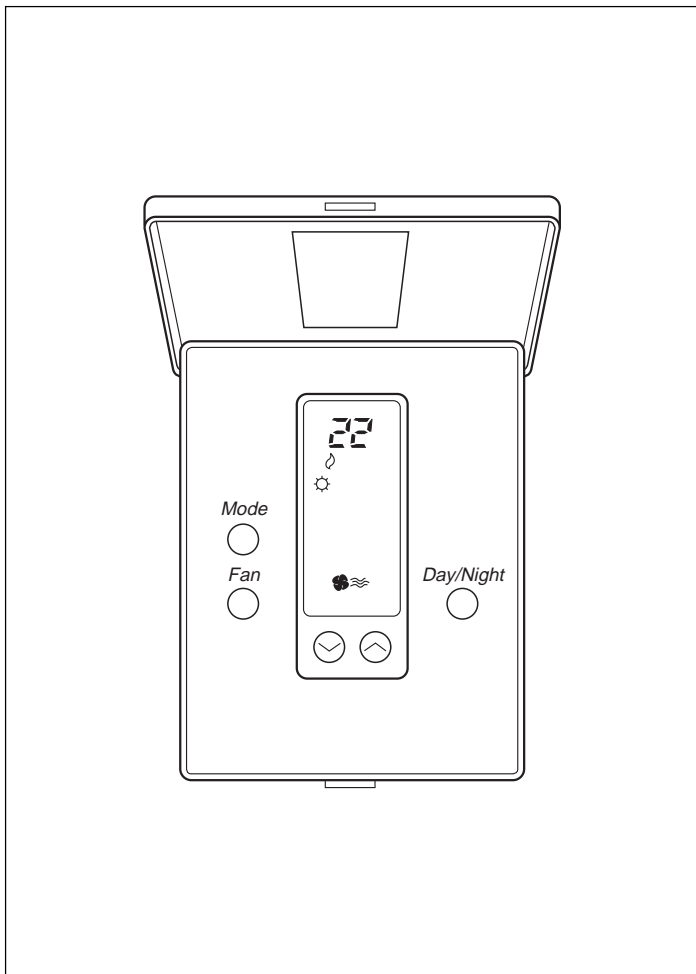
Of the open-air wire type for fast heat dissipation, avoiding temperature inertia that could affect components.

**Thermostat**

The SCOH-H(C)/SICH-070 to 120B units include, as standard equipment, a ARTTH001S electronic thermostat. Nevertheless, upon request and as an accessory, the ARTTH003S electronic thermostat can also be used, programmable for one stage and with communication possibilities. The SCOH-H(C)/SICH-150B, 180B, 240C and SCOH-H(C)/SIH-300B units include a ARTTH003S thermostat. To connect the thermostat to the Rolón board, screened 10x0.22 mm<sup>2</sup> communication cable should be used.

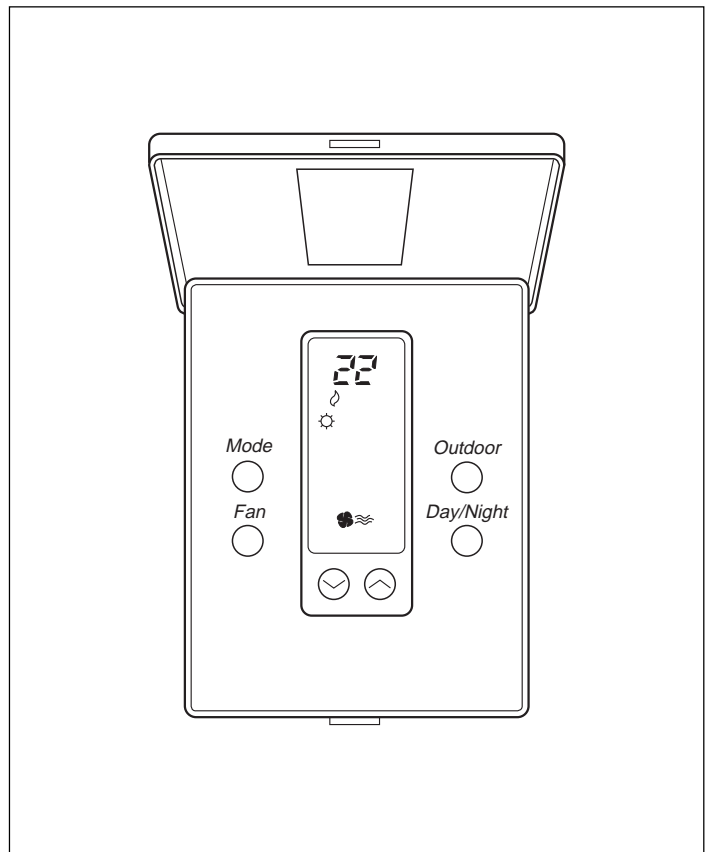
*ARTTH001S Thermostat*

24 Vac digital electronic type. To control one cool stage and one heat stage. Designed to give a precise control of the ambient temperature and graphic information of the mode in which the air conditioner is operating. This is a Proportional-Differential-Integral response control and, in accordance with the difference between the programmed temperature and the ambient temperature, it varies the on-off cycles to between 3 and 7.5 cycles per hour. Allows AUTO/ON operation of the indoor fan. See Operating and Maintenance Instructions.

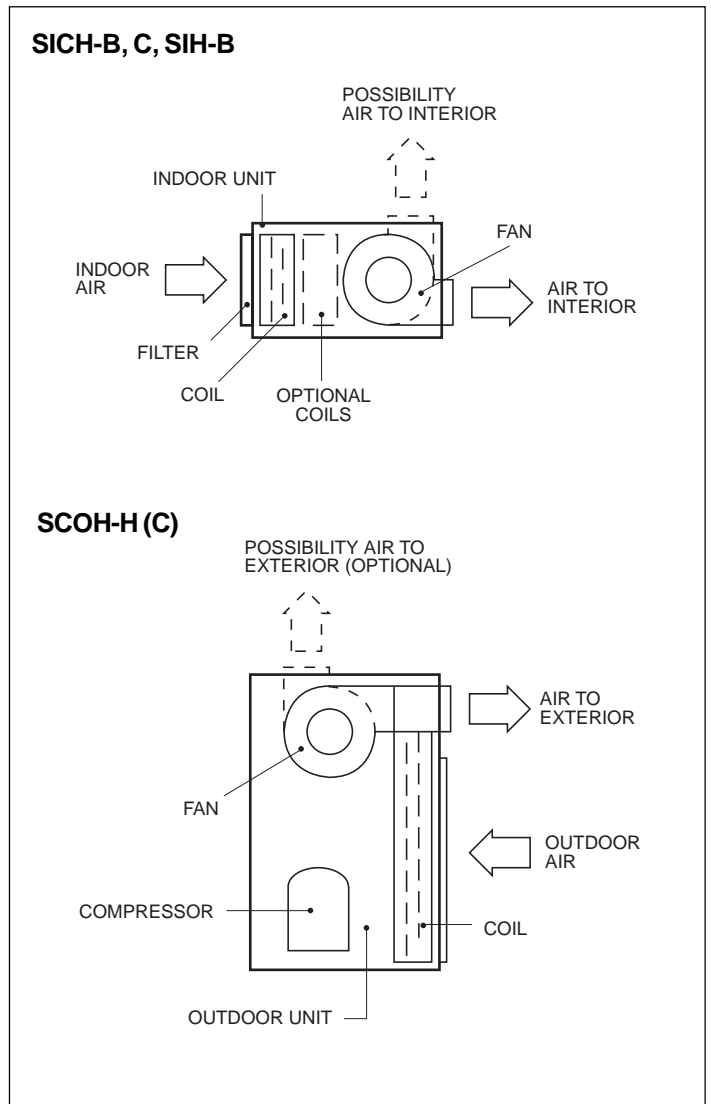


*ARTTH003S Thermostat*

Digital electronic type. To control two cool stages and two heat stages. Programmable for one cool stage and one heat stage only. Designed to give a precise control of the ambient temperature and graphic information of the mode in which the air conditioner is operating. This is a Proportional-Differential-Integral response control in accordance with the difference between the programmed temperature and the ambient temperature. Allows communication with a PC and AUTO/ON operation of the indoor fan. See Operating and Maintenance Instructions.



**Operating diagram**



## Physical data

### Outdoor units

Model		SCOH-070 H(C)	SCOH-076 H(C)	SCOH-090 H(C)	SCOH-120 H(C)	SCOH-150 H(C)	SCOH-180 H(C)	SCOH-240 H(C)	SCOH-300 H(C)	
Compressor	Amount	1	1	1	1	2	2	2	2	
	Power rating	kW	5.1	6.2	7.1	9	2 x 5.1	2 x 7.1	2 x 10.4	2 x 14.3
	Power supply	V.ph.Hz	230.3.50 or 400.3.50				400.3.50			
Outdoor fan	Power rating	kW	1.5	1.5	3	3	2 x 2.2	2 x 2.2	2 x 4	2 x 4
	Power supply	V.ph.Hz	230.3.50 or 400.3.50				400.3.50			
	Motor r.p.m.		1 400	1 400	1 400	1 400	1 400	1 400	1 400	1 400
	Diameter turbines	mm	270	270	320	320	320	380	380	380
	Width turbines	mm	270	270	320	320	320	380	380	380
Outdoor coil	Amount	1	1	1	1	2	2	2	2	
	Tubing depth x height		5 x 37	5 x 37	5 x 40	5 x 40	5 x 40	5 x 42	5 x 48	5 x 48
	Diameter tubing		3/8"							
	Surface	m <sup>2</sup>	1.01	1.01	1.47	1.47	2 x 0.84	2 x 1.02	2 x 1.44	2 x 1.44
Dimens. with packing	Height	mm	1 412	1 412	1 546	1 546	1 612	1 661	1 814	1 814
	Width	mm	1 360	1 360	1 738	1 738	2 040	2 240	2 640	2 640
	Depth	mm	883	883	883	883	883	883	973	973
Approx. Weight	Nett	kg	305	325	375	385	560	650	720	750
	Gross	kg	309	329	379	389	564	654	724	754
Refrigerant load	Nominal load R-22	kg	8.4	9	14.5	14	9.9 x 2	9 x 2	13 x 2	16 x 2
	Nominal load R-407C	kg	8.4	8.7	13.8	13	9.4 x 2	9 x 2	13 x 2	16 x 2

### Indoor units

Model		SICH-070B	SICH-076B	SICH-090B	SICH-120B	SICH-150B	SICH-180B	SICH-240C	SIH-300B	
Indoor fan	Power rating	kW	0.75	0.75	1.5	1.5	1.5	3	3	5.5
	Power supply	V.ph.Hz	230.3.50 or 400.3.50				400.3.50			
	Motor r.p.m.		1 400							
	Diameter turbines	mm	320	320	320	320	320	320	380	380
	Width turbines	mm	320	320	240	240	320	320	380	380
Indoor coil	Amount	1	1	1	1	1	1	1	1	
	Tubing depth x height		4 x 21	4 x 21	4 x 25	4 x 25	4 x 25	4 x 29	5 x 32	5 x 32
	Diameter tubing		3/8"							
	Surface	m <sup>2</sup>	0.57	0.57	0.84	0.84	1.11	1.40	1.76	1.76
Dimens. with packing	Height	mm	760	760	833	833	833	935	950	950
	Width	mm	1 444	1 444	1 825	1 825	2 125	2 390	2 800	2 800
	Depth	mm	930	930	930	930	930	955	1 030	1 030
Approx. Weight	Nett	kg	120	120	165	165	195	240	310	310
	Gross	kg	142	142	195	195	230	290	350	350

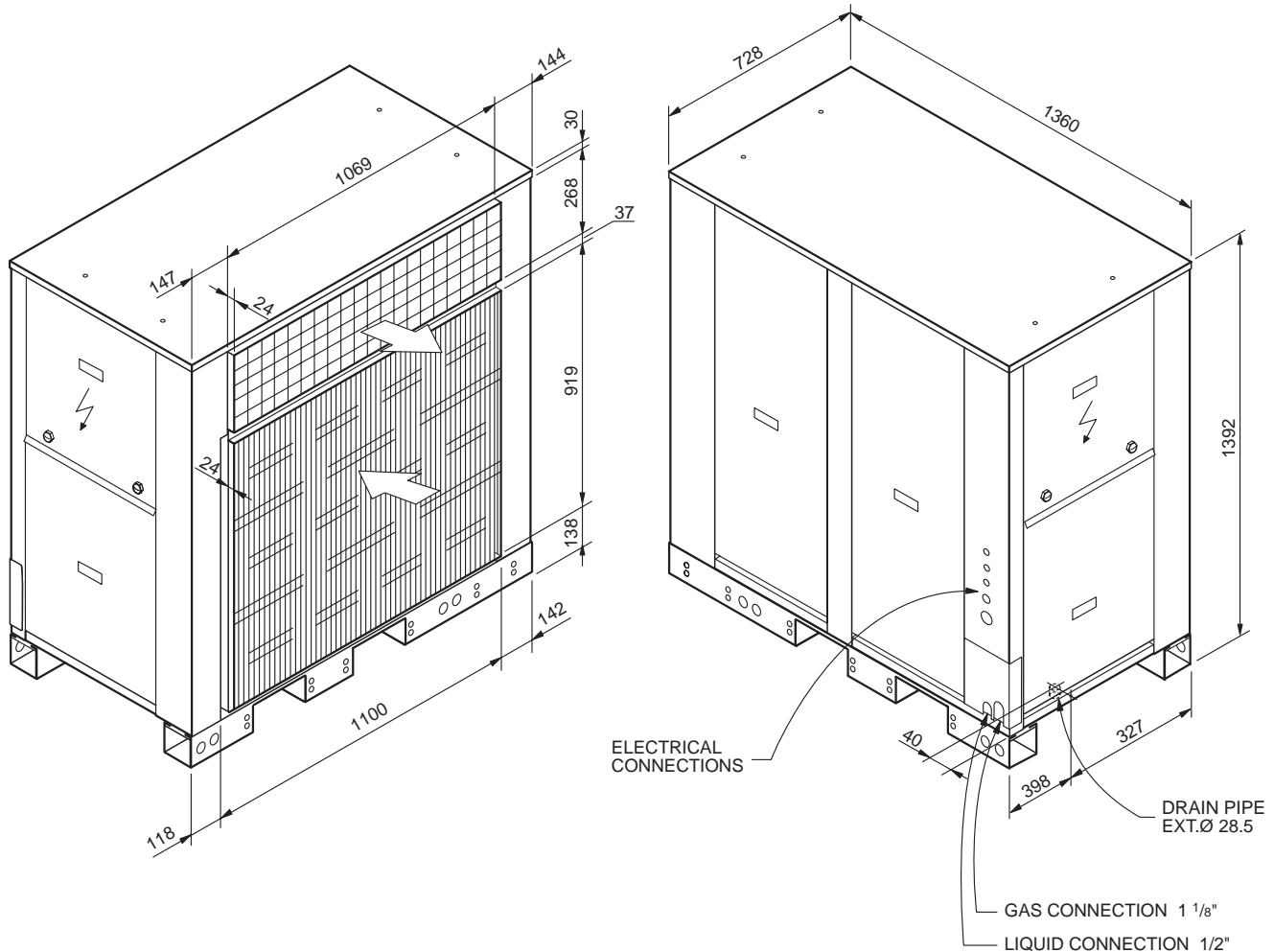
## Limits of use

Voltage limits				Air intake temperature to the outdoor coil DB				Air intake temperature to the indoor coil			
Nom. 230 V		Nom. 400 V		Operating cycle				Operating cycle			
				Minimum °C		Maximum °C		Minimum °C		Maximum °C	
Minimum	Maximum	Minimum	Maximum	Cool	Heat	Cool	Heat	Cool WB	Heat DB	Cool WB	Heat DB
198	254	342	436	19	-20 <sub>(1)</sub>	46	24	14	10 <sub>(2)</sub>	22	25

**Notes:** WB = wet bulb. DB = dry bulb.  
 (1) Below -20°C, only the emergency electric heater (optional) remains operative.  
 (2) This equipment can operate, for a short period of time, at temperatures below 10°C so as to raise the temperature of the conditioned space to 10°C.

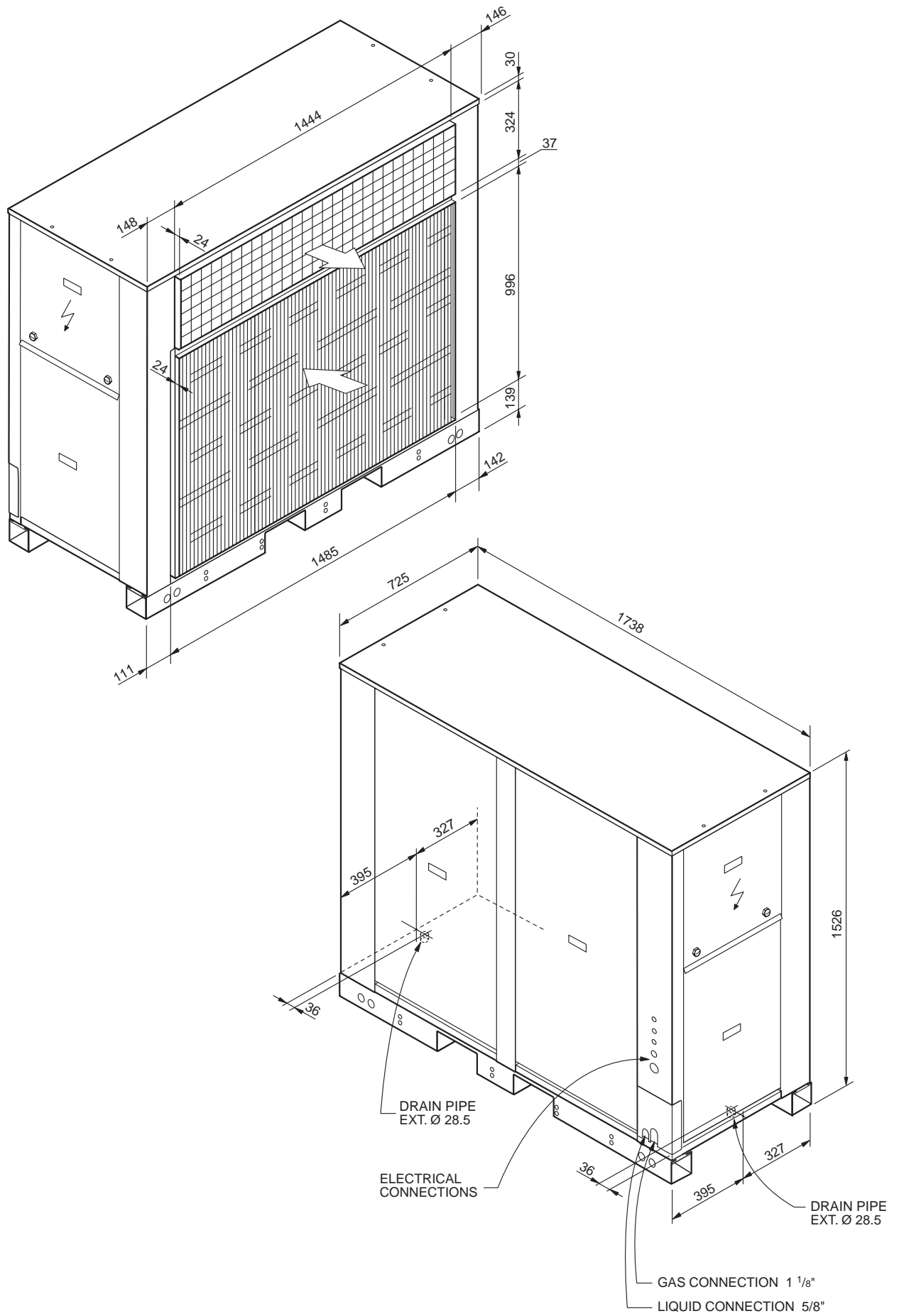
## General dimensions mm

### SCOH-070 H (C) and 076 H (C)



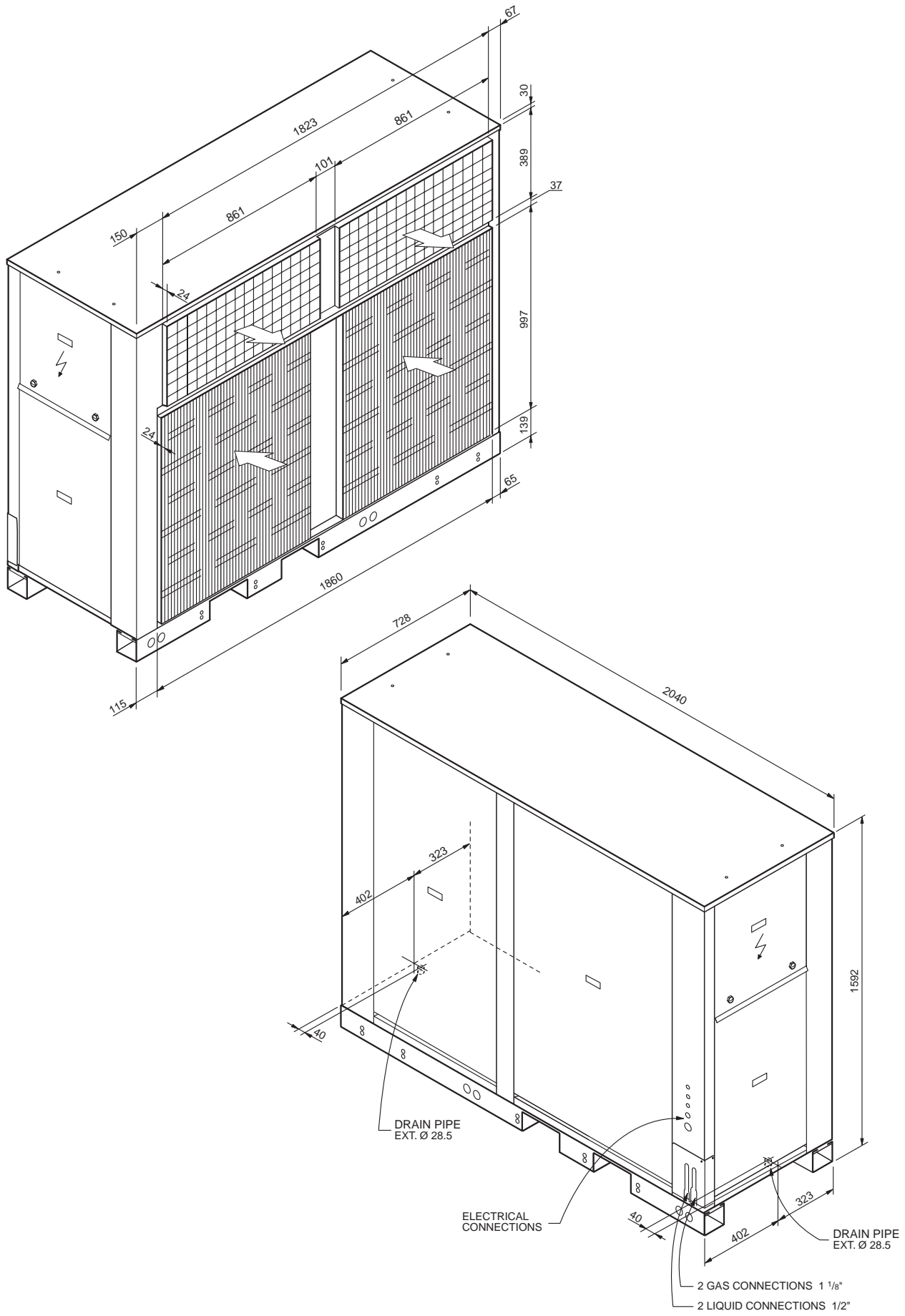
# General dimensions mm

SCOH-090 H (C) and 120 H (C)



# General dimensions mm

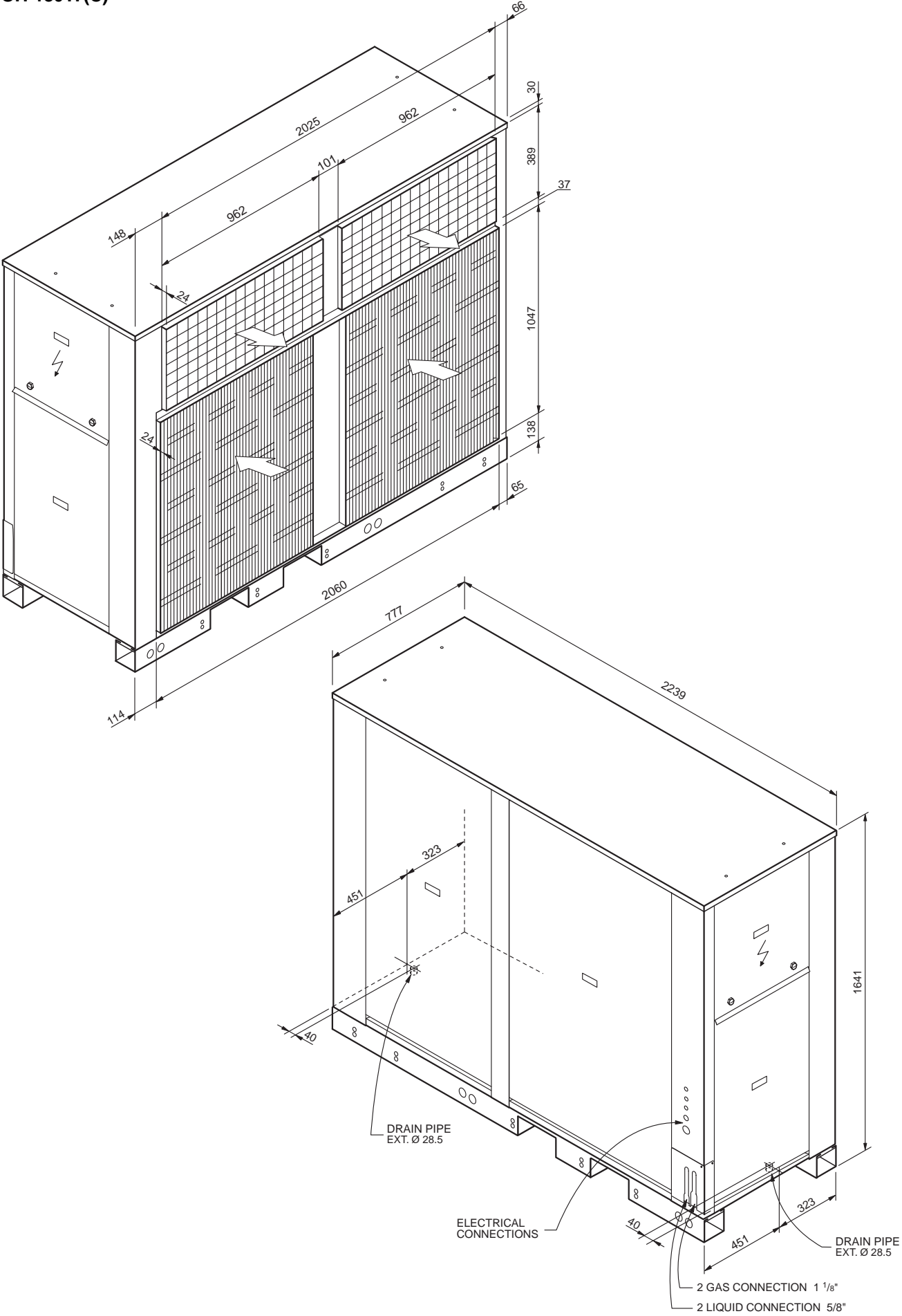
## SCOH-150 H (C)





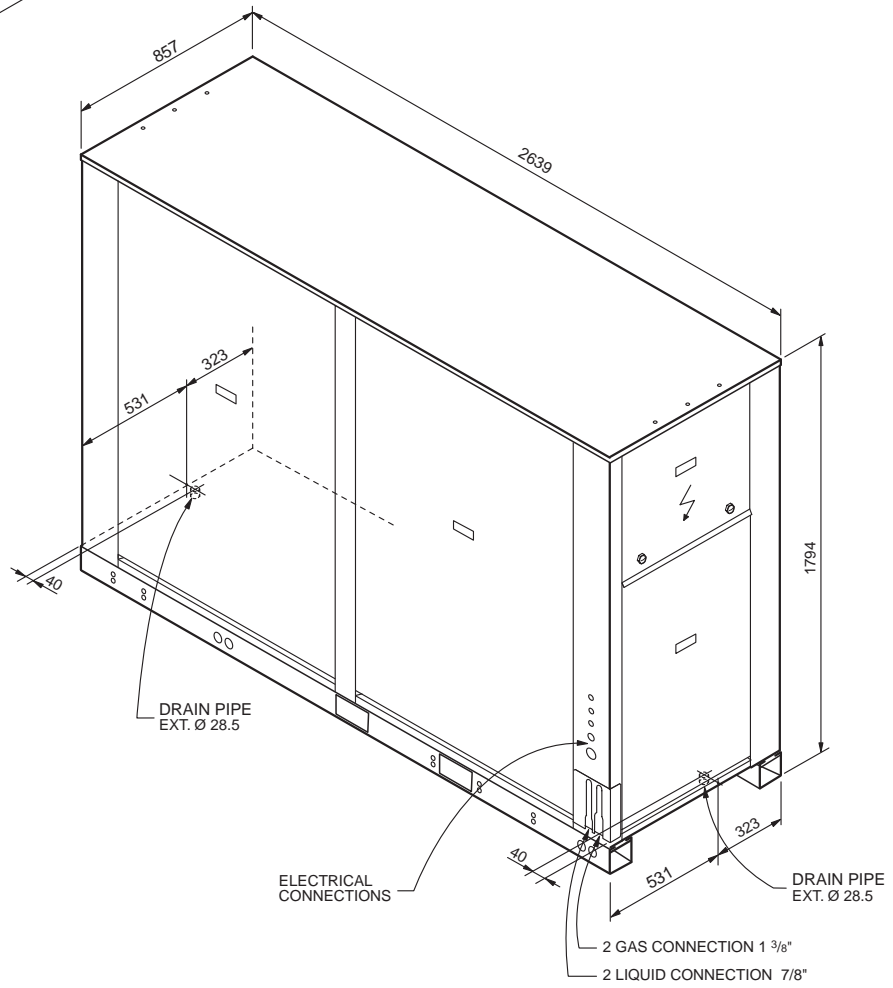
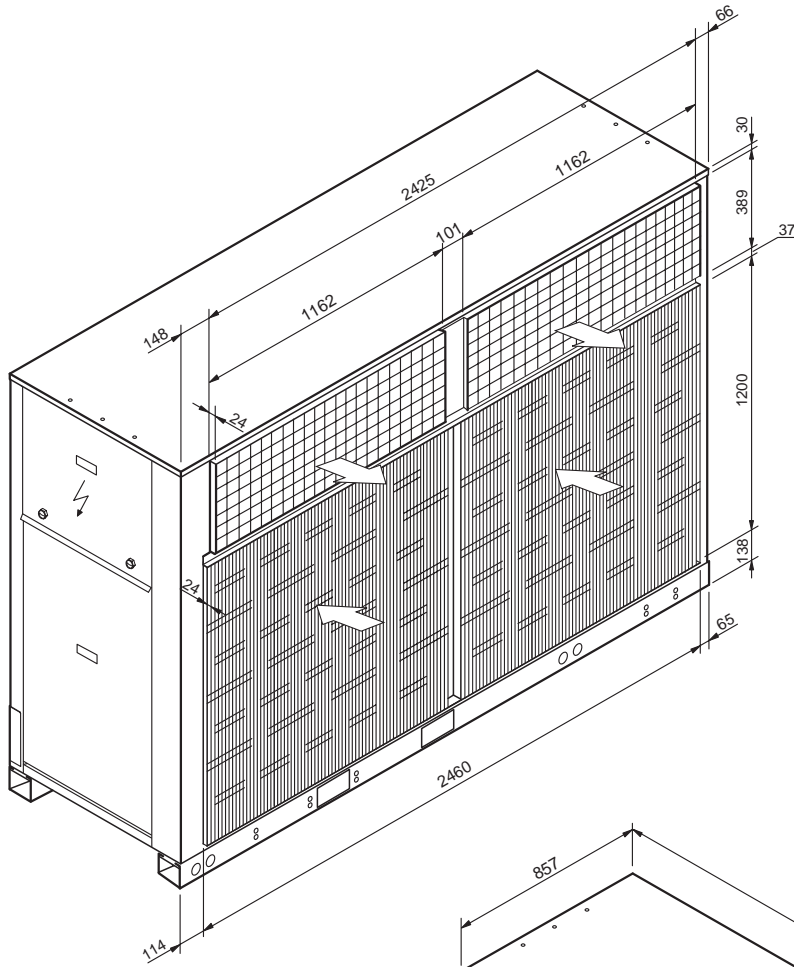
General dimensions mm

SCOH-180 H (C)



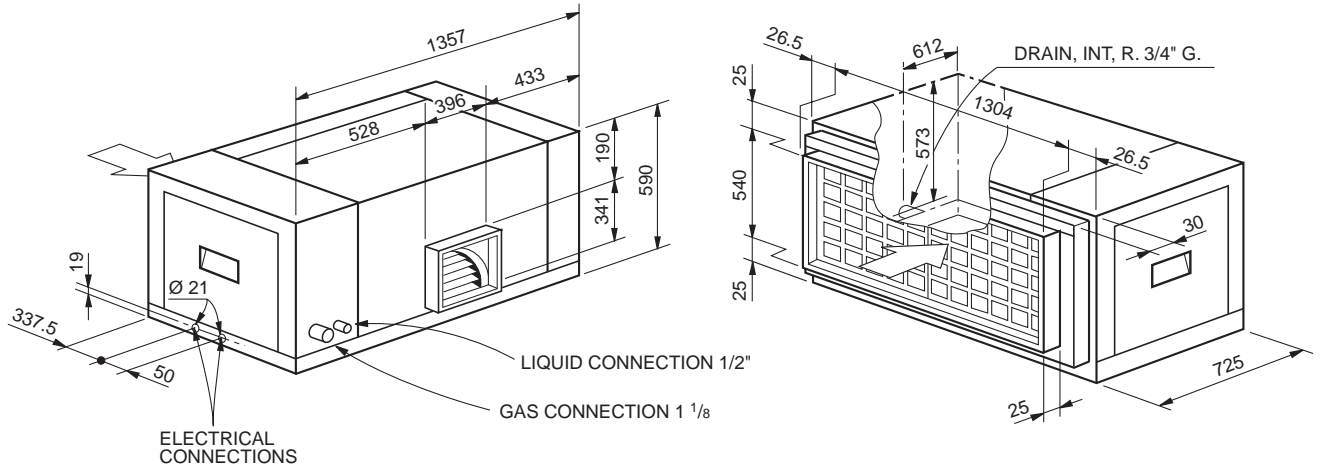
# General dimensions mm

## SCOH-240 H (C) and 300 H (C)

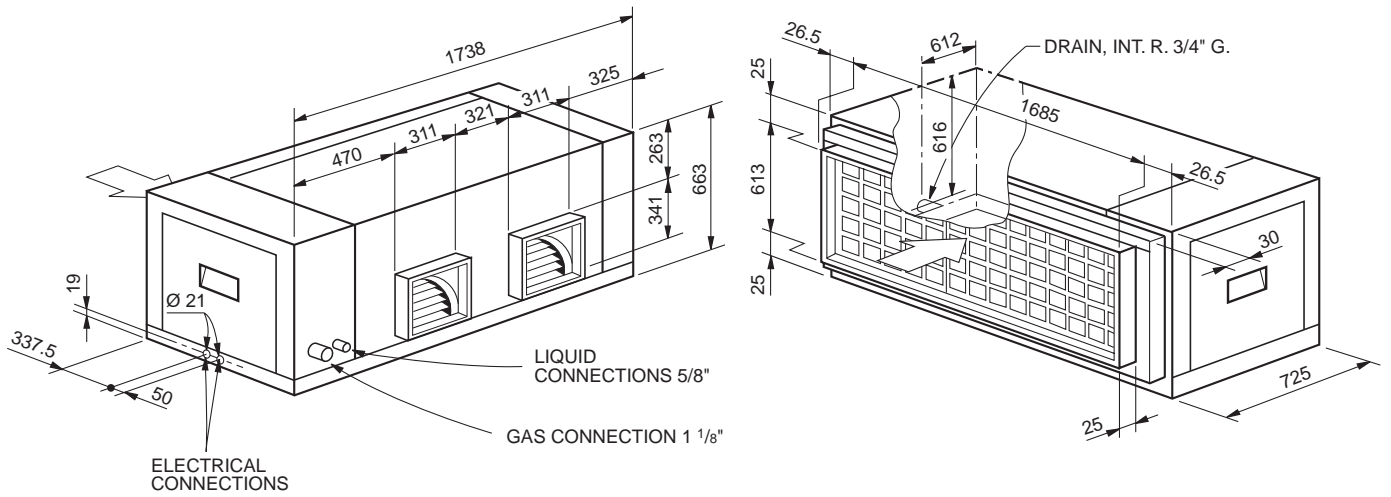


# General dimensions mm

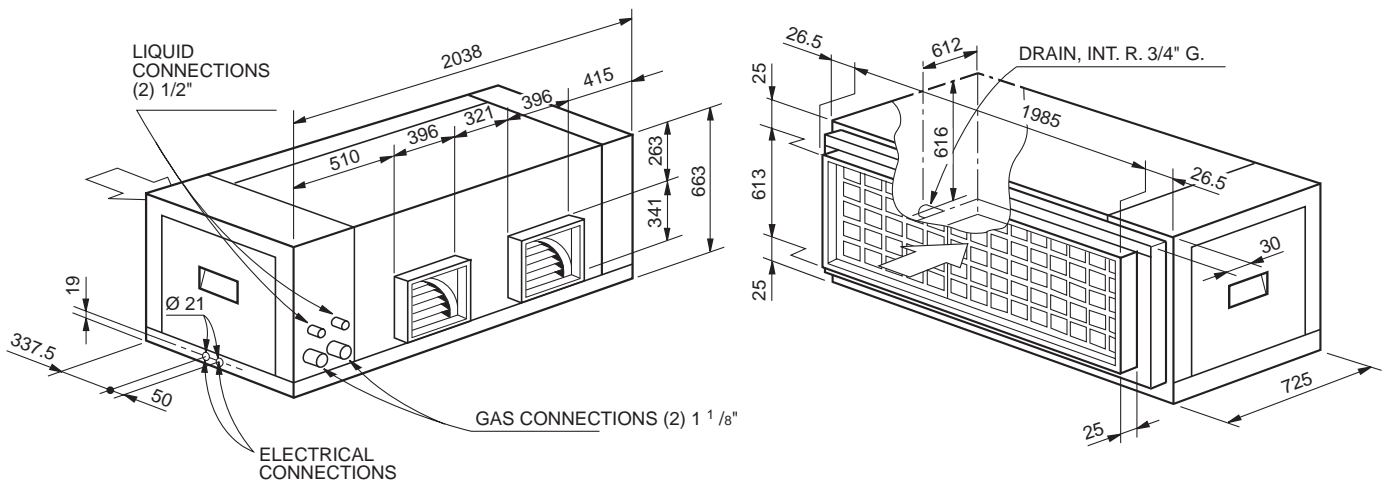
## SICH- 070 and 076B



## SICH-090 and 120B

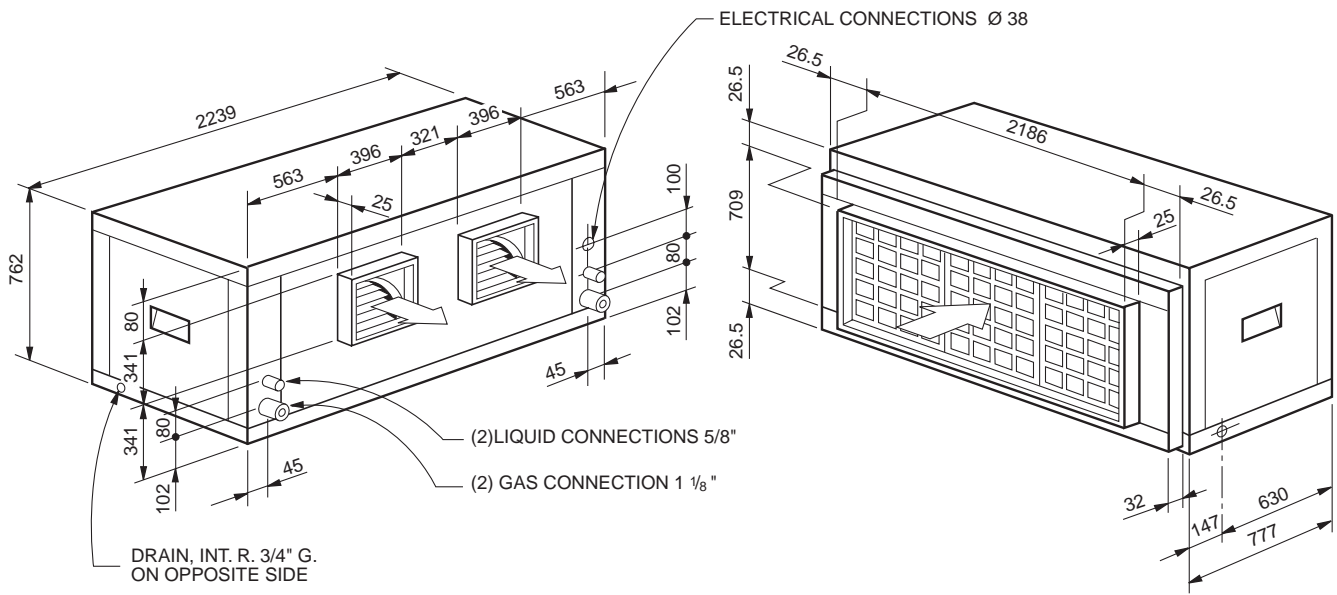


## SICH-150B

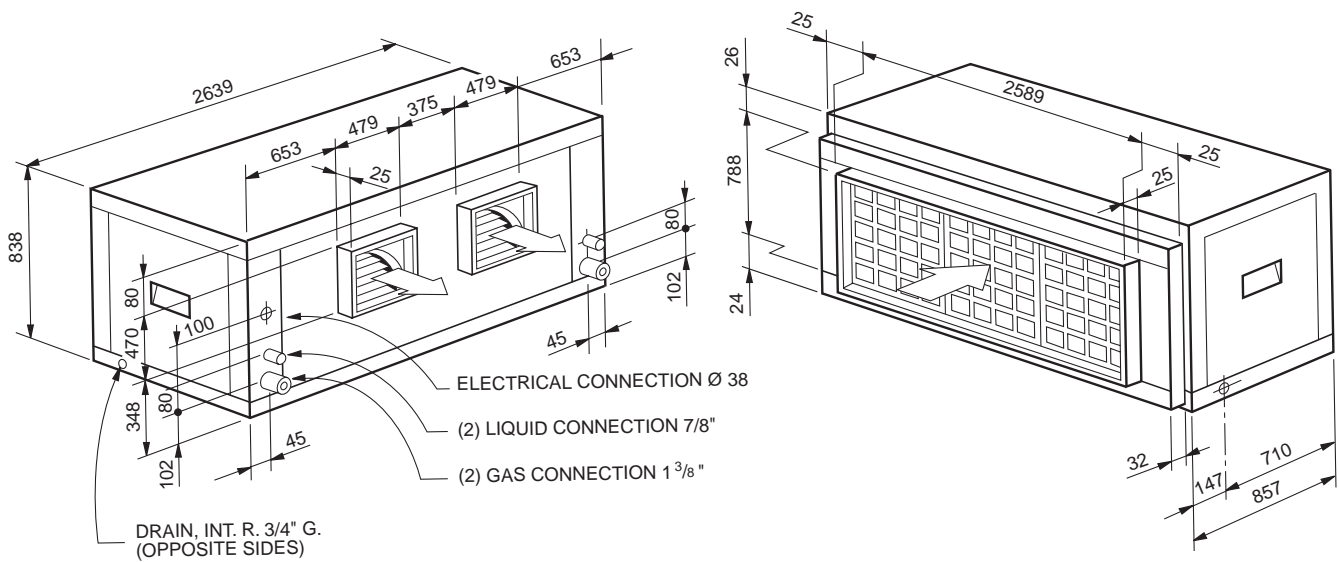


# General dimensions mm

## SICH-180B



## SICH-240C and SIH-300B

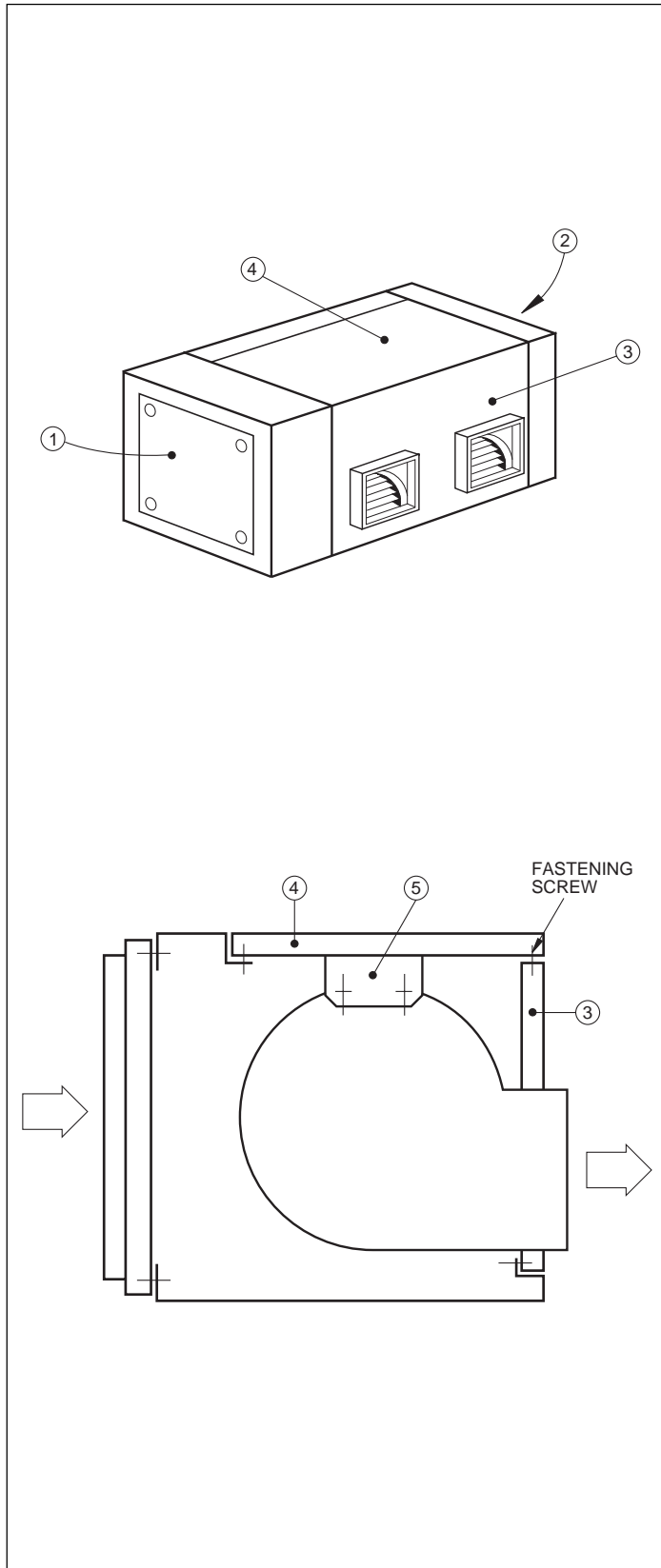


**Process for transforming a horizontal discharge into a vertical discharge (SICH-070, 076, 090, 120, 150B units)**

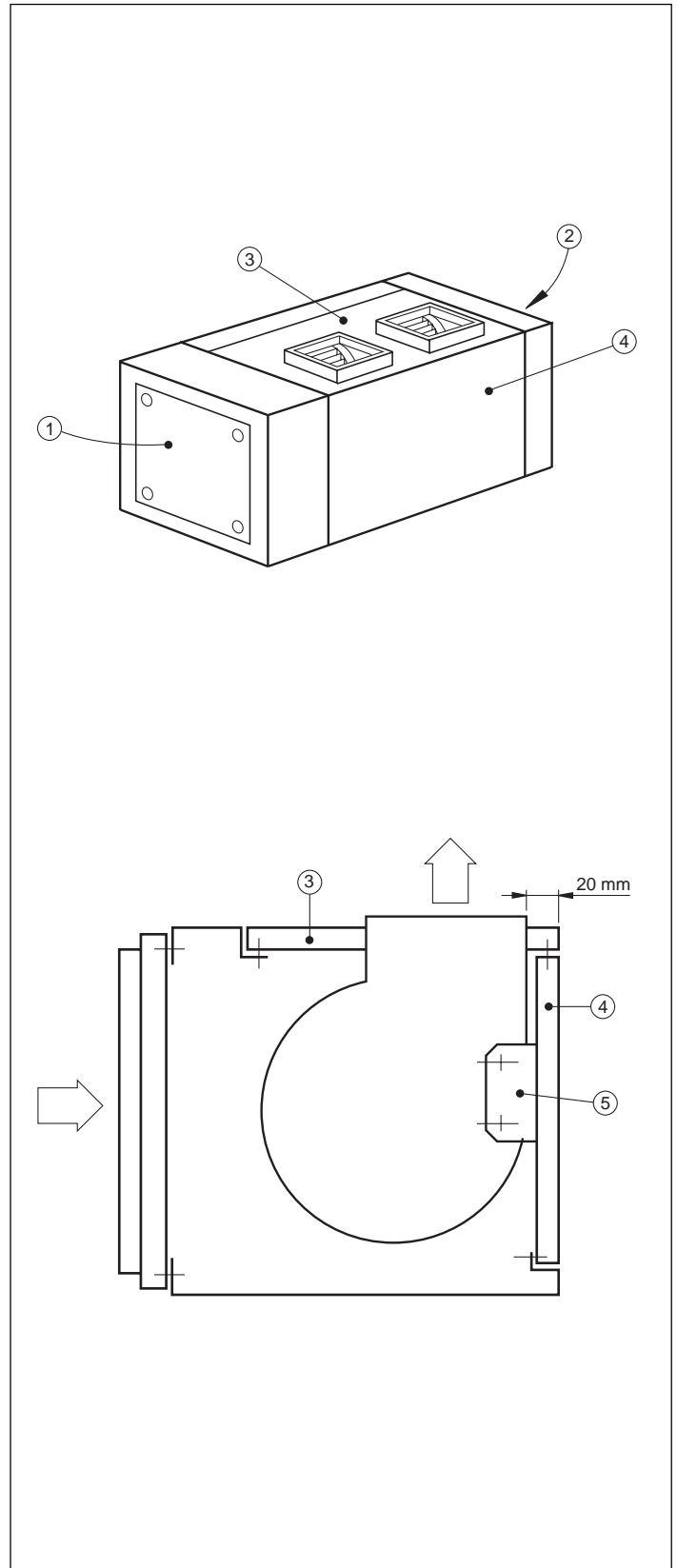
- 1- Remove the fastening screws from the side covers ref. 1 and 2 of the upper unit.
- 2- Remove the side covers ref. 1 and 2.
- 3- Loosen the screws that fasten the fan motor to its base, and remove the transmission belt.
- 4- Through the side accesses, unscrew panels ref. 3 and 4,

- 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.

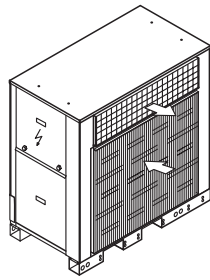
**Standard orientation**



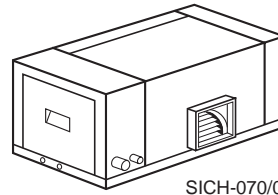
**Orientation variable at job site**



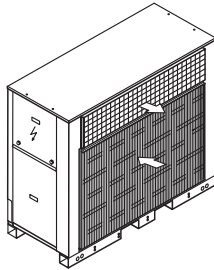
# Variant chart



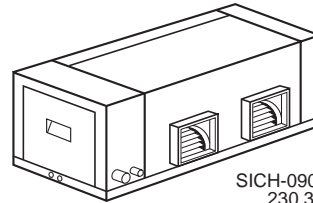
SCOH-070/076 H(C)  
230.3.50  
400.3.50



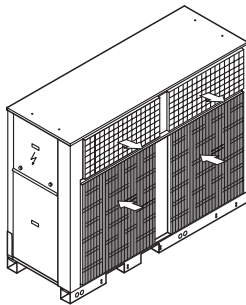
SICH-070/076 B  
230.3.50  
400.3.50



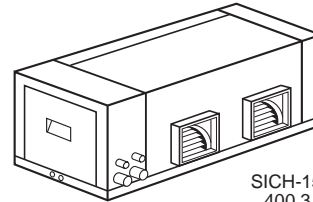
SCOH-090/120 H(C)  
230.3.50  
400.3.50



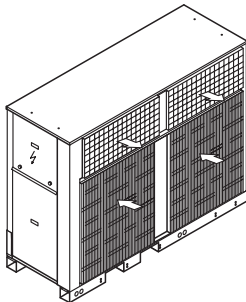
SICH-090/120 B  
230.3.50  
400.3.50



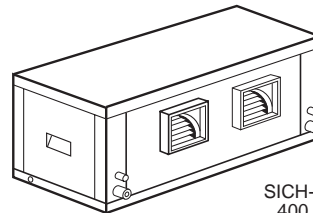
SCOH-150 H(C)  
400.3.50



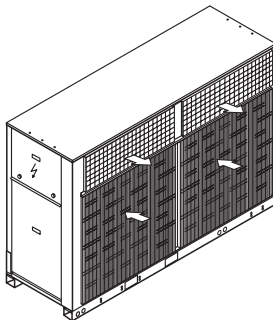
SICH-150 B  
400.3.50



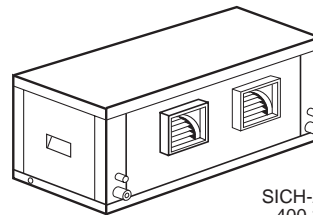
SCOH-180 H(C)  
400.3.50



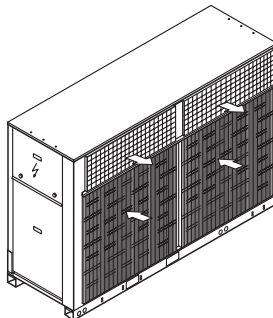
SICH-180 B  
400.3.50



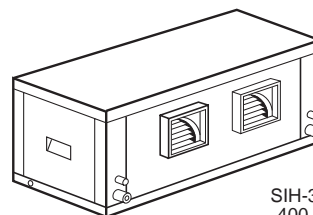
SCOH-240H(C)  
400.3.50



SICH-240 C  
400.3.50



SCOH-300 H(C)  
400.3.50



SICH-300 B  
400.3.50

## Nominal characteristics

Outdoor unit	Indoor unit	Summer		Winter		Available pressure indoor fan Pa
		Cooling capacity W	Consumption W	Heating capacity W	Consumption W	
<b>SCOH-070H (C)</b>	<b>SICH-070/076B</b>	20 000	8 000	17 300	7 300	62
<b>SCOH-0706H (C)</b>	<b>SICH-070/076B</b>	22 500	9 500	22 300	7 700	62
<b>SCOH-090H (C)</b>	<b>SICH-090/120B</b>	30 000	11 000	33 500	12 700	75
<b>SCOH-120H (C)</b>	<b>SICH-090/120B</b>	32 000	13 700	37 000	15 200	75
<b>SCOH-150H (C)</b>	<b>SICH-150B</b>	44 000	16 500	44 000	16 200	75
<b>SCOH-180H (C)</b>	<b>SICH-180B</b>	49 000	24 400	51 000	21 000	80
<b>SCOH-240H (C)</b>	<b>SICH-240C</b>	74 000	30 800	74 000	26 000	80
<b>SCOH-300H (C)</b>	<b>SIH-300B</b>	86 000	36 800	88 000	34 000	80

## Correcting factors

### Correcting factors for 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. absorb. 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

### Correcting factors for heating capacities

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

Correction of the real temperature of the air 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

## 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
<b>SCOH-070 H(C)/SICH-070B</b>	25	22	22 560	6 806	9 605	13 802	16 604	5.54
		19.5	20 304	10 305	13 104	17 301	20 104	5.81
		17	18 800	14 018	16 816	18 800	18 800	6.07
	35	22	20 868	6 239	9 037	13 235	16 033	6.27
		19.5	18 800	9 754	12 552	16 750	18 800	6.60
		17	17 296	12 687	15 486	17 296	17 296	6.93
	45	22	18 800	5 608	8 406	12 603	15 401	7.26
		19.5	16 920	9 125	11 923	16 120	16 920	7.59
		17	15 416	12 668	15 416	15 416	15 416	7.92
<b>SCOH-076 H(C)/SICH-076B</b>	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
<b>SCOH-090 H(C)/SICH-090B</b>	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
<b>SCOH-120 H(C)/SICH-120B</b>	25	22	40 080	12 147	16 937	24 121	28 917	9.24
		19.5	36 072	18 128	22 917	30 102	34 899	9.68
		17	33 400	24 490	29 280	33 400	33 400	10.12
	35	22	37 074	11 132	15 921	23 106	27 896	10.45
		19.5	33 400	17 142	21 931	29 116	33 400	11.00
		17	30 728	21 267	26 057	30 728	30 728	11.55
	45	22	33 400	10 002	14 792	21 976	26 766	12.10
		19.5	30 060	16 017	20 806	27 991	30 060	12.65
		17	27 388	22 077	26 867	27 388	27 388	13.20



## 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			
<b>SCOH-150 H(C)/SICH-150B</b>	25	22	48 360	14 455	20 954	30 703	37 211	10.68
		19.5	43 524	22 604	29 103	38 852	43 524	11.19
		17	40 300	31 204	37 703	40 300	40 300	11.70
	35	22	44 733	13 257	19 756	29 505	36 004	12.08
		19.5	40 300	21 438	27 937	37 686	40 300	12.72
		17	37 076	28 104	34 603	37 076	37 076	13.36
	45	22	40 300	11 922	18 421	28 170	34 669	13.99
		19.5	36 270	20 105	26 604	36 270	36 270	14.63
		17	33 046	28 343	33 046	33 046	33 046	15.26
<b>SCOH-180 H(C)/SICH-180B</b>	25	22	65 160	19 610	27 865	40 247	48 513	15.40
		19.5	58 644	29 940	38 195	50 578	58 644	16.13
		17	54 300	40 885	49 140	54 300	54 300	16.86
	35	22	60 273	17 978	26 233	38 616	46 871	17.41
		19.5	54 300	28 354	36 609	48 991	54 300	18.33
		17	49 956	36 680	44 936	49 956	49 956	19.25
	45	22	54 300	16 160	24 415	36 798	45 053	20.16
		19.5	48 870	26 542	34 797	47 179	48 870	21.08
		17	44 526	36 997	44 526	44 526	44 526	22.00
<b>SCOH-240 H(C)/SICH-240C</b>	25	22	89 280	27 105	37 625	53 405	63 939	17.37
		19.5	80 352	40 233	50 753	66 533	77 070	18.20
		17	74 400	54 214	64 734	74 400	74 400	19.03
	35	22	82 584	24 837	35 357	51 137	61 657	19.65
		19.5	74 400	38 032	48 551	64 331	74 400	20.68
		17	68 448	49 864	60 383	68 448	68 448	21.71
	45	22	74 400	22 314	32 834	48 614	59 133	22.75
		19.5	66 960	35 520	46 040	61 819	66 960	23.78
		17	61 008	48 828	59 348	61 008	61 008	24.82
<b>SCOH-300 H(C)/SIH-300B</b>	25	22	107 280	32 678	44 991	63 460	75 790	23.13
		19.5	96 552	48 026	60 339	78 808	91 142	24.24
		17	89 400	64 404	76 717	89 400	89 400	25.34
	35	22	99 234	29 938	42 251	60 270	73 033	26.16
		19.5	89 400	45 368	57 681	76 150	88 463	27.54
		17	82 248	58 814	71 127	82 248	82 248	28.92
	45	22	89 400	26 891	39 204	57 673	69 986	30.29
		19.5	80 460	42 336	54 649	73 118	80 460	31.67
		17	73 308	57 905	70 218	73 308	73 308	33.05

## Test conditions

Voltage	Length interconnecting tubing	Summer				Winter			
		Outdoor temp. °C		Indoor temp. °C		Outdoor temp. °C		Indoor temp. °C	
		DB	WB	DB	WB	DB	WB	DB	WB
400	7.5 metros	35	24	27	19	7	6	20	12

## 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		Indoor fan available pressure Pa
	m <sup>3</sup> /h	m <sup>3</sup> /s	
<b>SICH-070 &amp; 076B</b>	4 530	1.26	62
<b>SICH-090 &amp; 120B</b>	8 500 / 8 300	2.36 / 2.31	62 / 75
<b>SICH-150B</b>	10 700	2.97	75
<b>SICH-180B</b>	13 600	3.77	80
<b>SICH-240C</b>	16 500	4.58	80
<b>SIH-300B</b>	19 500	5.42	80

## Indoor fan features

Model	Static pressure available <sup>(1)</sup>		Air flow		Absorbed power W
	mm WG	Pa	m <sup>3</sup> /h	m <sup>3</sup> /s	
<b>SICH-070-076B</b>	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	0.0	5 360	1.49	1 035
<b>SICH-090-120B</b>	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

## Indoor fan features

Model	Static pressure available <sup>(1)</sup>		Air flow		Absorbed power
	mm WG	Pa	m <sup>3</sup> /h	m <sup>3</sup> /s	W
<b>SICH-150B</b>	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
<b>SICH-180B</b>	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
<b>SICH-240C</b>	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	3 500
	6	59	17 100	4.75	3 650
	4	39	17 700	4.92	3 800
	0.0	0.0	19 000	5.28	4 100
	<b>SIH-300B</b>	30	294.3	12 800	3.56
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) Values calculated with humid coil, including filters.

## Outdoor fan features

Model	Static pressure available		Air flow		Absorbed power W
	mm WG	Pa	m <sup>3</sup> /h	m <sup>3</sup> /s	
SCOH-070H(C) SCOH-076H(C)	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	0.0	7 010	1.95	1 270
SCOH-090H(C) SCOH-120H(C)	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	2.97	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	
SCOH-150H(C)	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	3 550
	0.0	0.0	13 700	3.81	3 630
SCOH-180H(C)	20	196	14 000	3.89	3 760
	16	157	15 100	4.19	4 100
	14	137	15 700	4.36	4 300
	10	98	16 800	4.67	4 630
	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
SCOH-240H(C) SCOH-300H(C)	20	196	20 500	5.69	6 740
	16	157	21 600	6.00	72 00
	12	118	22 600	6.28	76 00
	8	78	23 400	6.50	8 000
	4	39	24 100	6.69	8 400
	0.0	0.0	24 800	6.89	8 800

## Electrical characteristics

### Outdoor units

Model	Power supply V.ph.Hz.		Consumption A				Power supply cable section (2) mm <sup>2</sup>	Automatic switch (K curve)(1) A
	Compressor	Fan	Compressor		Fan			
			Start	Nominal	Start	Nominal		
<b>SCOH-070H(C)</b>	230.3.50	230.3.50	166	24.1	23	4.9	6	32
	400.3.50	400.3.50	94	14.6	17	2.8	4	20
<b>SCOH-076H(C)</b>	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
<b>SCOH-090H(C)</b>	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
<b>SCOH-120H(C)</b>	230.3.50	230.3.50	279	45.2	53	9.7	16	63
	400.3.50	400.3.50	158	25.6	31	5.6	10	40
<b>SCOH-150H(C)</b>	400.3.50	400.3.50	2 x 94	2 x 14.6	2 x 17	2 x 3.9	10	50
<b>SCOH-180H(C)</b>	400.3.50	400.3.50	2 x 127	2 x 16.9	2 x 30	2 x 4.3	16	63
<b>SCOH-240H(C)</b>	400.3.50	400.3.50	2 x 158	2 x 18.8	2 x 38	2 x 7.4	25	80
<b>SCOH-300H(C)</b>	400.3.50	400.3.50	2 x 189	2 x 25.8	2 x 38	2 x 7.4	35	100

**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.

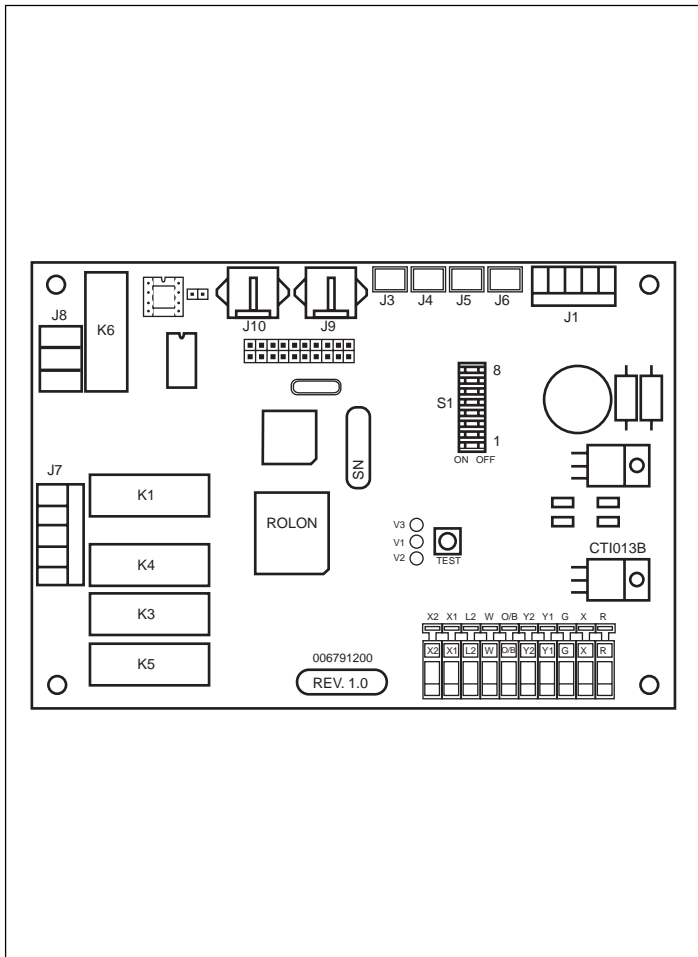
### Indoor units

Model	Power supply V.ph.Hz.	Consumption A		Power supply cable section mm <sup>2</sup>
	Fan	Fan		
		Start	Nominal	
<b>SICH-070/076B</b>	230.3.50	14	3.4	4 x 1.5
	400.3.50	8	2.2	4 x 1.5
<b>SICH-090B</b>	230.3.50	30	5.5	4 x 1.5
	400.3.50	17	3.2	4 x 1.5
<b>SICH-120B</b>	230.3.50	30	5.8	4 x 1.5
	400.3.50	17	3.4	4 x 1.5
<b>SICH-150B</b>	400.3.50	20	3.7	4 x 1.5
<b>SICH-180B</b>	400.3.50	34	6.1	4 x 1.5
<b>SICH-240C</b>	400.3.50	36	6.8	4 x 1.5
<b>SIH-300B</b>	400.3.50	68	9.8	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.

## Operation

The control board of these units is common to both the cool only as well as the heat pump units. By connecting an additional module, two-compressor equipment can be controlled. 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.



### Indoor fan

Operation can be continuous or automatic. For continuous operation, select said operation on the thermostat.

If the internal probe (optional accessory) is installed, and the operating mode is heat, the fan will not start until the indoor coil has reached 35°C and will stop when this temperature drops to below 30°C. Whenever the electric heating starts, the indoor fan will also start.

### Outdoor fan

The outdoor fan starts 5 seconds before the compressor. And stops after the compressor stops.

### Four-way valve

When SW6 of the control board is set to ON, the four-way valve activates when the thermostat requests heat. When a defrost cycle is carried out, this valve operates inversely; that is to say, in cool.

### Compressor

When signal Y1 is present, the board commands the outdoor fan to become operative, and then the compressor. The com-

pressor, along with the outdoor fan, does not start until after a minimum off time, so as to avoid consecutive start-ups. This period of time can be set by means of microswitches SW4; ON = 2' and OFF = 5'.

In two-stage equipment, the first compressor to start up will be the one that has been less hours in operation.

The second compressor will start if a Y2 signal is received from the thermostat.

Whenever one of the compressors is to turn off, it will be the one that has been most hours in operation.

### Defrost

The defrost cycle is possible only in heat pump operation.

In two-stage units, simultaneous defrost of both stages is not allowed, one remaining in standby until the other one has finished.

### Start-up

The following conditions should apply:

- 1) The compressor is on.
- 2) The liquid probe temperature is below -3°C for 3'.
- 3) If outdoor temperature is below 0°C, after compressor start-up 5' are timed before activating the defrost cycle.

When the defrost cycle is started, the board carries out the following operations:

- 1) Sets the 4-way valve to cool mode.
- 2) Turns the outdoor fan off.
- 3) Activates the following heat-generating phase, if the thermostat requires heat.
- 4) Turns the indoor fan off if there is no next heat stage.
- 5) Does not turn off the compressor that is defrosting, even if indicated by the thermostat.

### End

This operation will last until one of the following conditions is completed:

- a) Liquid temperature above 13°C during 2".
- b) Liquid temperature above 5°C during 30".
- c) Timing period after defrost start-up over 10'.
- d) Failure signal from high pressure switch.

Once defrost is over:

- 1) Sets four-way valve to heat.
- 2) Turns outdoor fan on.
- 3) Starts indoor fan if no next heat stage exists.
- 4) Turns off heat generating phase that started due to the defrost cycle.

### Test button and LEDs

Pressing the Test button shortens certain timings, resets the unit after any failure is detected, and also acts as a LonWorks service pin.

There are three signalling led diodes:

- a) The green led indicates correct operation of the equipment and incidents. If the equipment is operating correctly, this led flashes at a frequency of 1.6 Hz.
- b) The red led indicates failures. If no failure is present, this led remains off.
- c) The yellow led is the LonWorks service led, and also indicates, by flashing, that the operating compressor is timed.

### Configuration

Each time the electronic board is powered, system configuration will be checked, with the exception of the accessories. Below we can see how the different options are configured.

## Microswitches

They are read after power supply connection, and the board will act in accordance with their position. SW1 and SW2 set to OFF indicates that the configuration is carried out by remote control, and the parameters stored in the EEPROM memory are use.

## Configuration of switches

The microswitches establish the following configurations:

Number	State	Meaning
1 / 2	OFF/OFF	Ignore SW, programs communication routes
	ON/OFF	Defrost period 30'
	OFF/ON	Defrost period 60'
	ON/ON	Defrost period 90'
3	ON	Indoor fan ON during defrost
	OFF	Indoor fan OFF during defrost
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	NA
	OFF	NA

## Configuration of accessories

To carry out an accessory search and configuration, the test button should be pressed for over two seconds, until the red led goes on. Once the search and configuration process begins, the red led on the board goes on, and stays on until the operation is concluded. Once off, the board uses the accessories found.

Said search will also determine which optional probes are connected to the board. A incident will be give if one of the optional probes detected in the configuration process does not give valid values.

The following table shows the probe configuration.

Probe	Pump	
	Obligatory	Optional
Discharge	x	
Liquid	x	
Outdoor	x	
Suction	x	
Indoor coil		x

## Installation of accessories

The accessories are used to support extended functions of the unit.

Said accessories can be either factory mounted or installed by the client. Power supply to the unit should always be disconnected. The accessory, along with the necessary elements, will then be assembled, and the power supply connected once again.

Once the search and configuration sequence is carried out, the new elements will be recognised and they will begin to operate.

The function of the different accessories is defined below.

### Tray heater

A cable heater is used, mounted between the lower area of the outdoor coil and the tray, where the defrost water is collected. Its function is to avoid freezing of the water in the tray and ice in the lower area of the coil.

This heater should be activated in the winter cycle, while the compressor is operative, and when the liquid temperature is below -2°C; and disactivated when the temperature is above 2°C.

### Electric heating

In the case of the heaters, the relay is used to switch the power contactor on and off, as well as the thermal switch with safety automatic reset.

In one-stage equipment, the response to a demand for first stage from the thermostat starts the compressor stage, and the second starts the electric heating.

In the case of a failure in the compressor stage, the electric heating would be activated as the first stage.

Whenever the electric heating is on, the indoor fan will also be operative.

### Indoor coil probe (SCOH-070 to 120H (C))

The probe in the indoor coil, depending upon the temperature, carries out the following operations:

- 1) If in heat operating mode, and the electric heater is not activated, the fan will not start until the indoor coil reaches 35°C. If the electric heating is not activated, the indoor fan will turn off if the temperature drops below 30°C. If once the compressor is operating in heat mode for 2' the indoor temperature does not reach over 35°C, an unrecoverable heat temperature incidence is indicated.
- 2) If in cool operating mode, and the probe temperature is below -25°C, or the compressor is in operation for over 5' and the temperature is below -4°C, the compressor and outdoor fan go off. After the timed period, the compressor starts again. If this is repeated 3 times in 35 minutes, a failure of repeated start-up in cool is indicated, and the compressor will not restart.

## Malfunctions

There are two different types of malfunctions: incidents that do not turn the unit off, and failures or lockouts, that inactivate the unit.

### Indoor fan thermal switch

Its activation turns the entire unit off, and an indoor fan thermal switch failure is indicated.

### High and low pressure switches

Its activation turns the compressor and outdoor fan off. A

high or low pressure switch failure is indicated.

### Electric heating thermal switch (accessory)

Activation turns the electric heating off and indicates an incident. If this error occurs more than 3 times in an hour, an electric heater thermal switch incident is indicated, it is inhibited, and the electric heater is turned off.

### Thermostat errors

If signal Y is given without signal G, it acts as if signal G were active. An incident of signal Y1 without signal G is indicated. If signal W is given without signal G, it acts as if signal G were active. An incident of signal W without signal G is given. If signal W is given without signal B/O, it acts as if signal B/O were indicating heat mode. An incident of signal W without signal B/O is given.

### Protection for defrost cycles

If 3 consecutive defrost cycles are carried out and ended in compliance with the 10' timer, an incident of repeated defrosts is indicated. This incident is deleted when a defrost cycle is ended in compliance with another condition that is not the maximum timer period.

### Protection for temperature

- If the outdoor temperature is below  $-20^{\circ}\text{C}$ , the compressor turns off. An incident of low outdoor temperature (only in heat mode) is indicated.
- If the discharge temperature is above  $130^{\circ}\text{C}$ , the compressor and outdoor fan turn off. An excessive discharge temperature failure is indicated.
- If while the compressor is on for 5', the discharge temperature does not rise above  $50^{\circ}\text{C}$ , in cool mode, or  $35^{\circ}\text{C}$  in heat mode, a low discharge temperature incident is indicated.
- If the suction temperature is very low, the compressor and outdoor fan turn off. If this is repeated 3 times in 35 minutes, a failure is indicated.
- If, in heat mode, the liquid temperature is below  $-30^{\circ}\text{C}$ , the compressor and outdoor fan turn off, and a failure is indicated.

### Open or short circuit of the outdoor or indoor liquid probe

An incident of the corresponding probe is indicated if the value read is below  $-40^{\circ}\text{C}$ , or above  $100^{\circ}\text{C}$ . If this incident takes place in heat mode in the liquid probe, repeated defrost cycles are carried out with a maximum duration of 30 seconds.

### Open or short circuit of discharge probe

An incident of the discharge probe is indicated if its value is below  $-20^{\circ}\text{C}$ , or above  $150^{\circ}\text{C}$ . If the probe is short circuited, a failure is indicated.

### Signalling

Malfunction signalling is carried out at two levels. One for incidents and another for failures.

### Incidents

Incidents do not turn the unit off, and are indicated by the green led on the electronic board. If there is no failure present, this led flashes at a frequency of 1 Hz.

When an incident occurs, the led flashes in three sequences. The first indicates the compressor involved: one flash for stage 1, and two for stage 2, followed by a short pause. The second

indicates the type of incident. Another short pause. The third indicates the incident detected, followed by a long pause, and the sequence is repeated again as long as the incident lasts.

The incidents reset when the cause disappears. In the case of more than once incident at the same time, only the first one detected and not reset is indicated. As they reset, the other existing incidents not reset will be indicated.

The following table shows the possible errors:

Type	Flashes		Incident
	2nd	3rd	
Probes	1	1	Discharge probe open or $>150^{\circ}\text{C}$
	1	2	Liquid probe open or short circuited
	1	3	Outdoor probe open or short circuited
	1	4	Indoor probe open or short circuited
	1	5	Outdoor temperature too low
Thermostat	2	1	Signal Y1 or Y2 without signal G
	2	2	Signal W without signal B
	2	3	Signal W without signal G
	2	4	Signal Y2 without signal Y1
Electric heater	3	1	Electric heater thermal switch AUX1
	3	2	Electric heater thermal switch AUX2
	3	3	Electric heater thermal switch EM1
	3	4	Electric heater thermal switch EM2
Temperature	4	1	Repeated defrost cycles
	4	2	Discharge temperature does not recover
	4	4	Temperature in heat does not recover
Others	5	1	ID of trasceiver inknown
	5	2	Accessory disappeared

### Failures (lockouts)

Failures or lockouts turn the unit off.

They are indicated by the red led on the board, and by means of the thermostat (depending upon the model). Relay K6 of the board is also activated with a 24 VAC signal between terminals LED2 and B of J2. If no failure is present, this led remains off. When a failure takes place, this led flashes in two sequences. The first indicates the compressor involved: one flash for stage 1 and two for stage 2, followed by a short pause. Then the detected failure is indicated, followed by a long pause and the sequence is repeated.

Should more than one alarm take place, only the first one



detected and not reset is indicated.

The following table shows the possible failures:

Flashes	Meaning
1	Discharge temperature surpassed or probe short circuited
2	High pressure switch, outdoor fan thermal switch or compressor module thermal switch
3	Low pressure switch
4	Indoor fan thermal switch
5	Repeated star-ups in cool or suction temperature <-25°C
6	Low liquid temperature <-30°C

## Reset

The incidents, with a few exceptions, do not need to be reset. They reset automatically once the cause has disappeared.

The following incidents require resetting, and are reset in the same way as the alarms:

- a) Accessory disappeared.
- b) Repeated defrost cycles (also reset if a defrost cycle ends under normal conditions)
- c) Electric heating thermal switch.

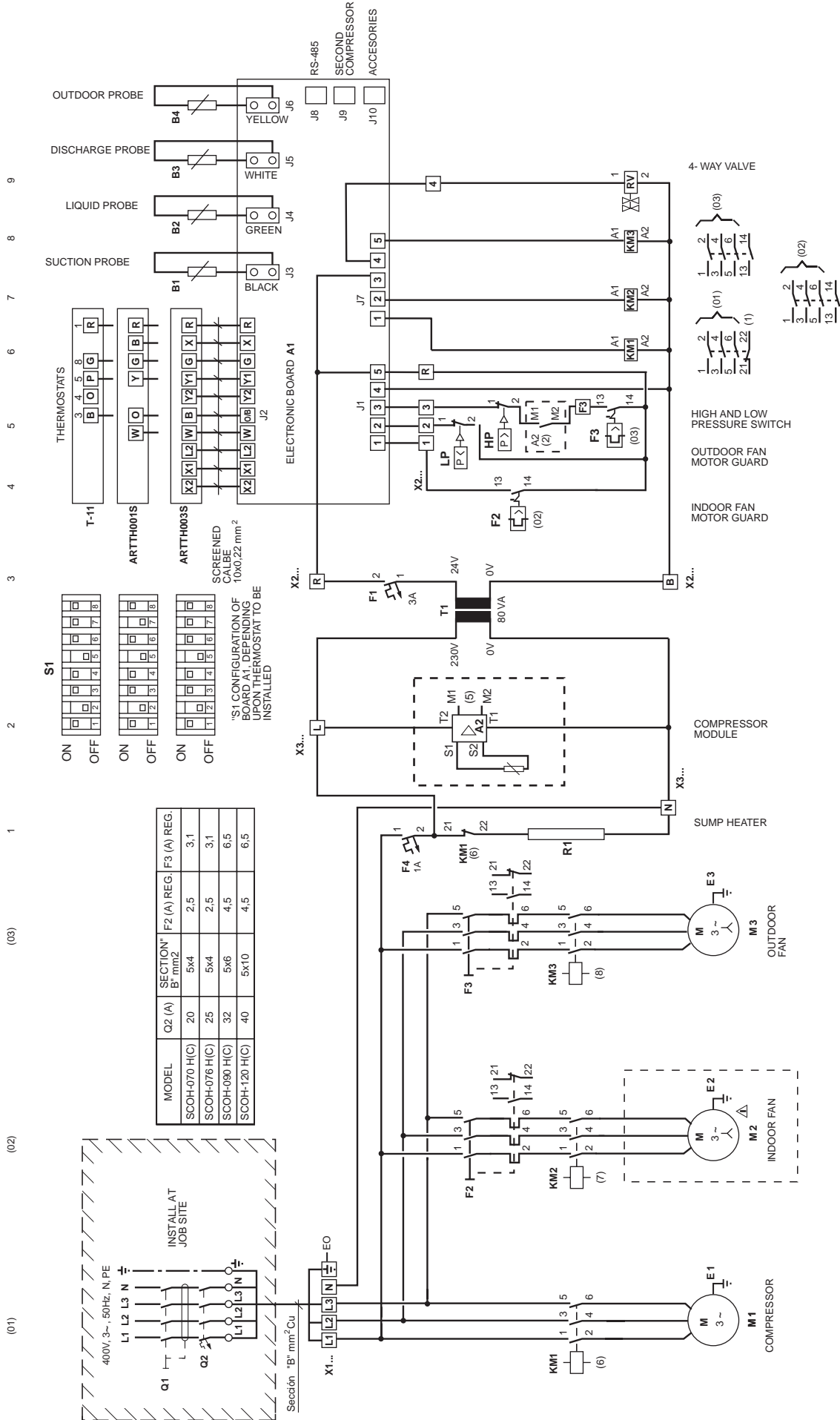
The alarms can be reset as follows:

- 1) Setting the thermostat to OFF, if communication with the thermostat has been implemented.
- 2) Pressing the reset button on the electronic board.
- 3) Disconnecting and reconnecting power supply to the electronic board.
- 4) By means of the communications trunk.

It is worth pointing out that, with a reset by means of setting the thermostat to OFF, the board cannot be reset more than 3 times a day.

# Wiring diagram

## SCOH-070H(C), 076H(C), 090H(C) and 120H(C), 400.3.50



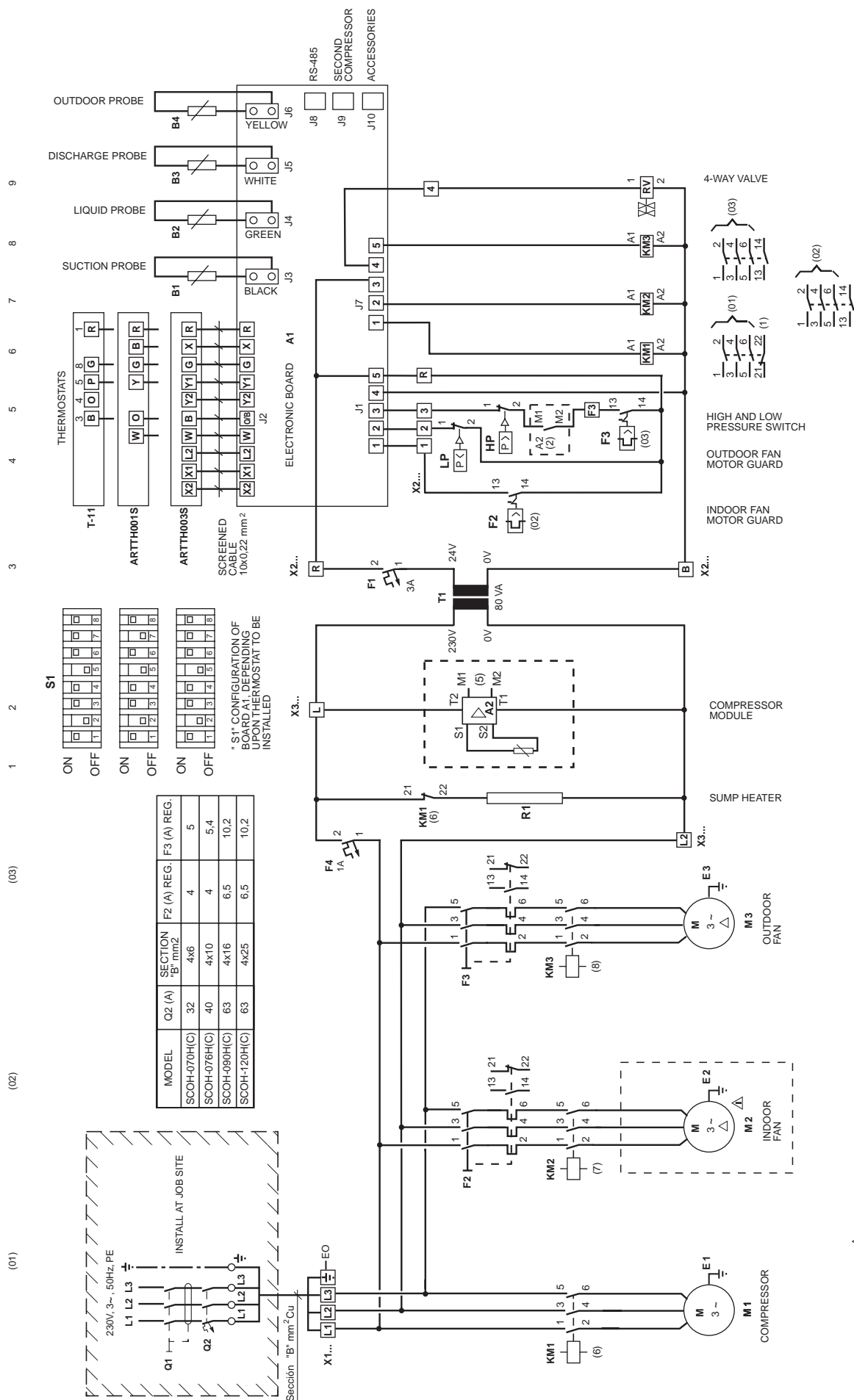
NOTE: INDOOR FAN \*M2\* IS TO BE CONNECTED AT JOB SITE. SEE ELECTRICAL CHARACTERISTICS TABLE.

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

L-2150B  
SCOH-070H(C), 076H(C), 090H(C)  
and 120H(C)  
400.3.50

# Wiring diagram

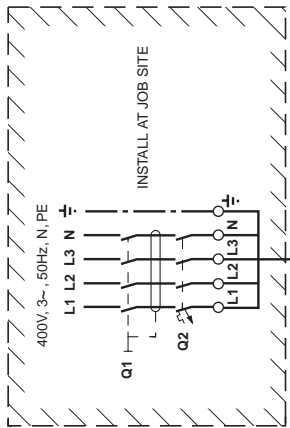
## SCOH-070H(C), 076H(C), 090H(C) and 120H(C), 230.3.50



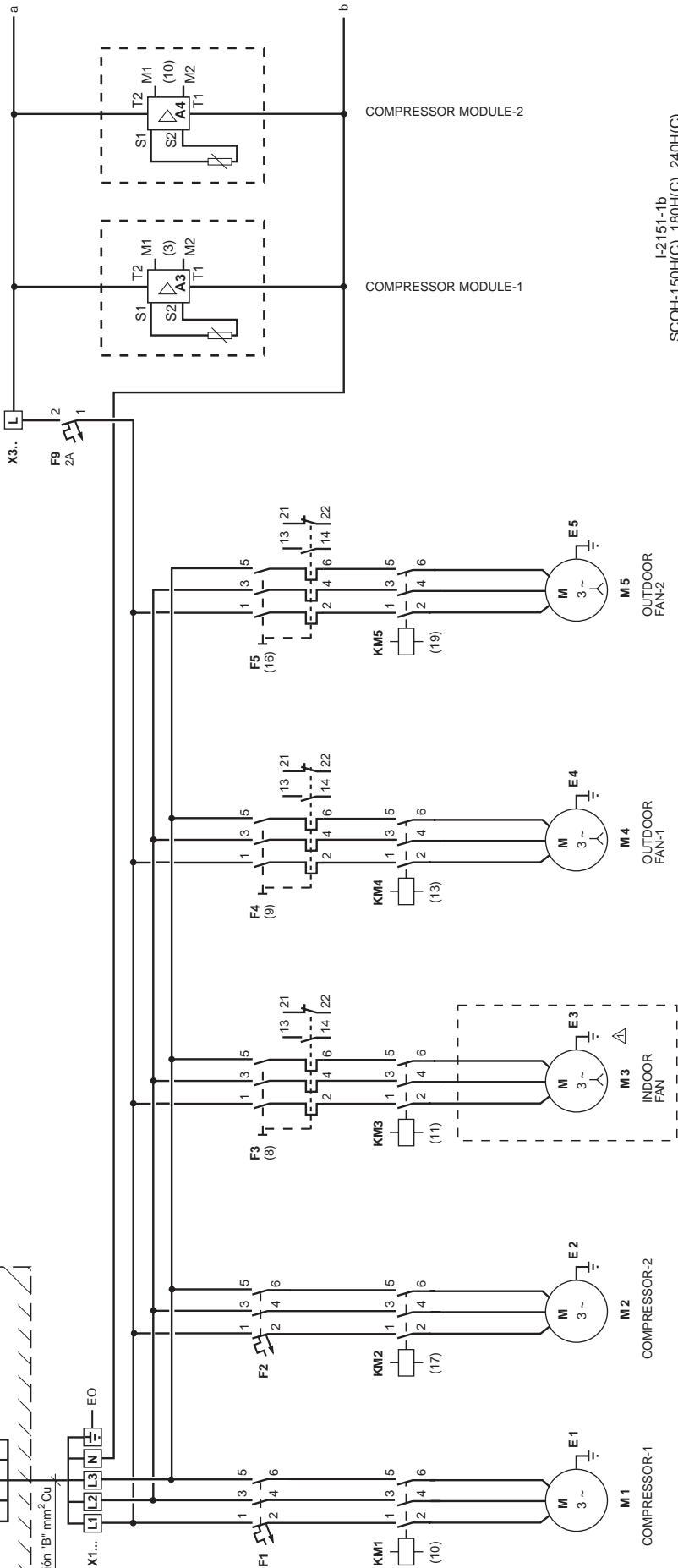
# Wiring diagram

## SCOH-150H(C), 180H(C), 240H(C) and 300H(C), 400.3.50

(01) (02) (03) (04) (05) 1 2 3 4



MODEL	Q2 (A)	SECTION "B", mm <sup>2</sup>	F1 (A)	F2(A)	F3(A) REG.	F4 (A) REG.	F5 (A) REG.
SCOH-150H(C)	50	5x10	20	20	5	4,5	4,5
SCOH-180H(C)	63	5x16	25	25	7	4,5	4,5
SCOH-240H(C)	80	5x25	32	32	7	8,5	8,5
SCOH-300H(C)	100	5x35	32	32	11	8,5	8,5

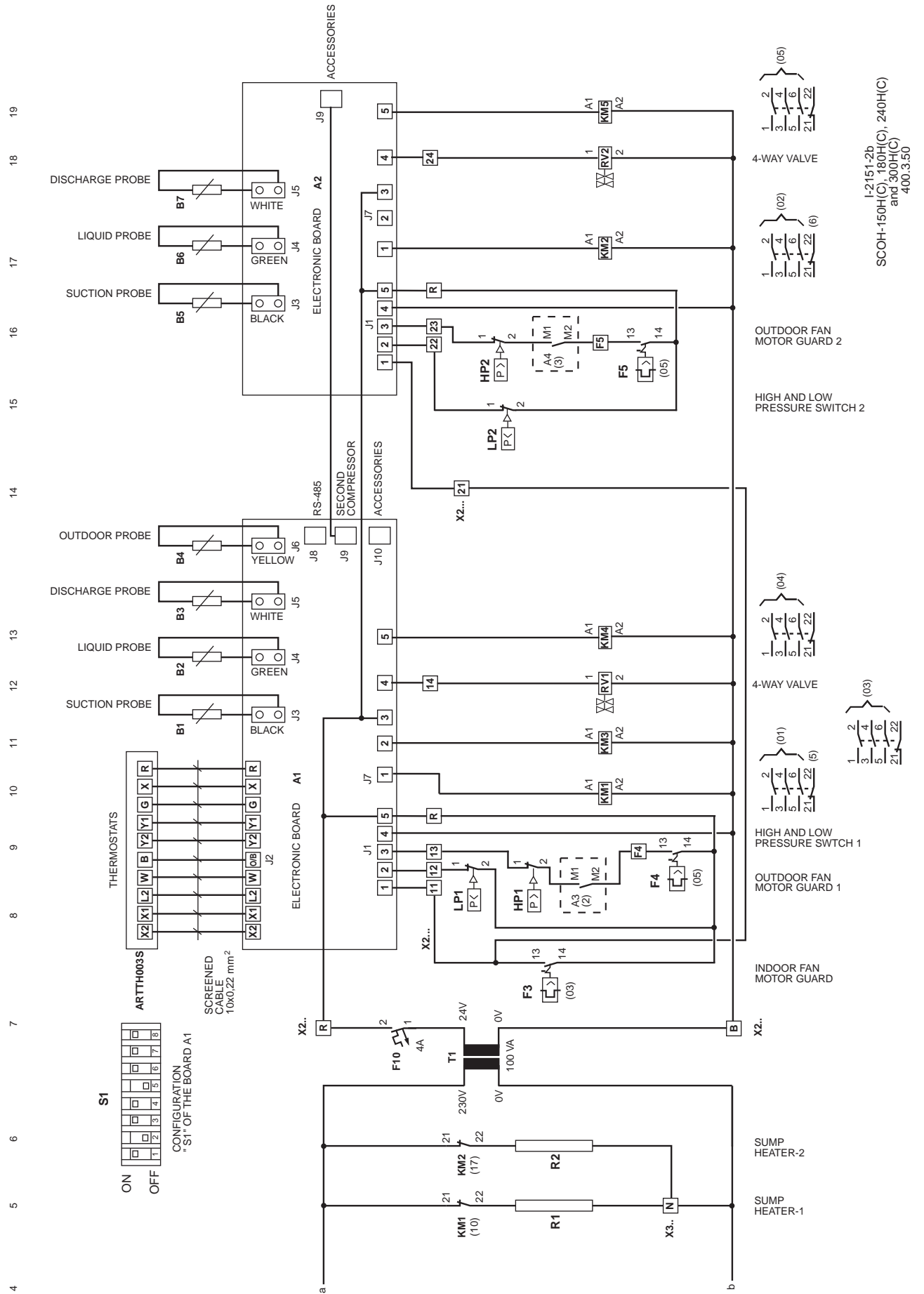


I-2151-1b  
SCOH-150H(C), 180H(C), 240H(C)  
and 300H(C)  
400.3.50

NOTE: -INDOOR FAN "M3" IS TO BE CONNECTED AT JOB SITE. SEE ELECTRICAL CHARACTERISTICS TABLE.  
 THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

# Wiring diagram

## SCOH-150H(C), 180H(C), 240H(C) and 300H(C), 400.3.50



I-2151-2b  
SCOH-150H(C), 180H(C), 240H(C)  
and 300H(C)  
400.3.50

# Accessories

## Standard accessories

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

Accessory	Model SCOH							
	070H (C)	076H (C)	090H (C)	120H (C)	150H (C)	180H (C)	240H (C)	300H (C)
Vertical transformation kit SCOH	X	X	X	X	X	X	X	X

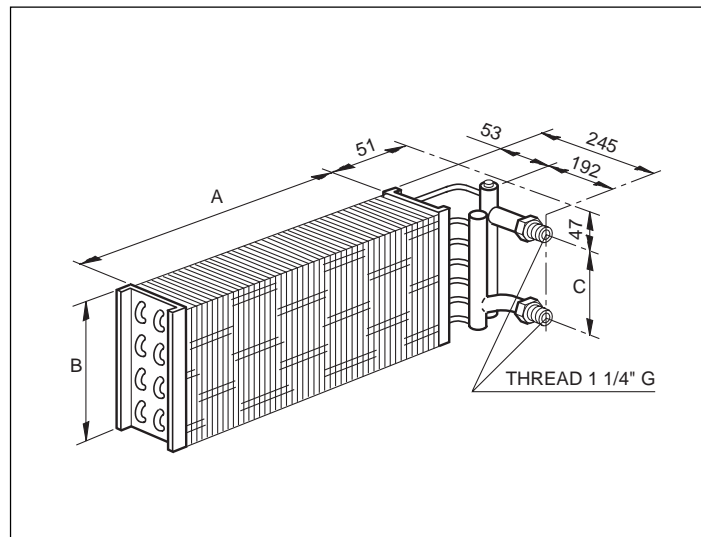
## Hot water coil for SICH-070-076, 090-120 and 150B

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
<b>SICH-070-076B</b>	1 069	458	340
<b>SICH-090-120B</b>	1 312	534	416
<b>SICH-150B</b>	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 <sup>2</sup> 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 <sup>3</sup> /h	m <sup>3</sup> /s	kW	mm WG	Pa
<b>SICH-070-076B</b>	4 615	1.28	40.7	3.9	38.2
<b>SICH-090B</b>	7 940	2.20	59.3	4.4	43.0
<b>SICH-150B</b>	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 <sup>3</sup> /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 <b>SICH-070-076B</b>	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 <b>SICH-090-120B</b>	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 <b>SICH-150B</b>	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-070 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.

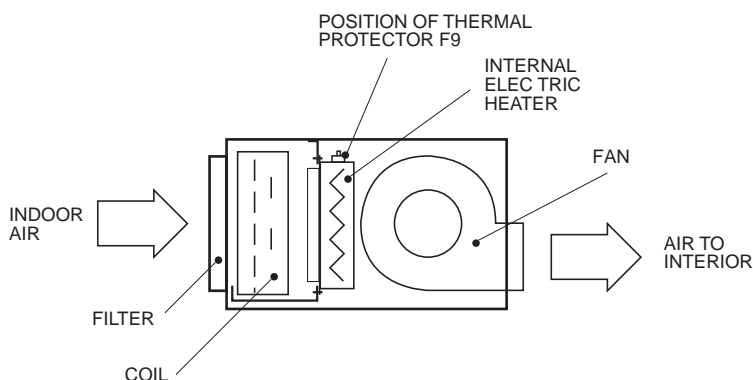
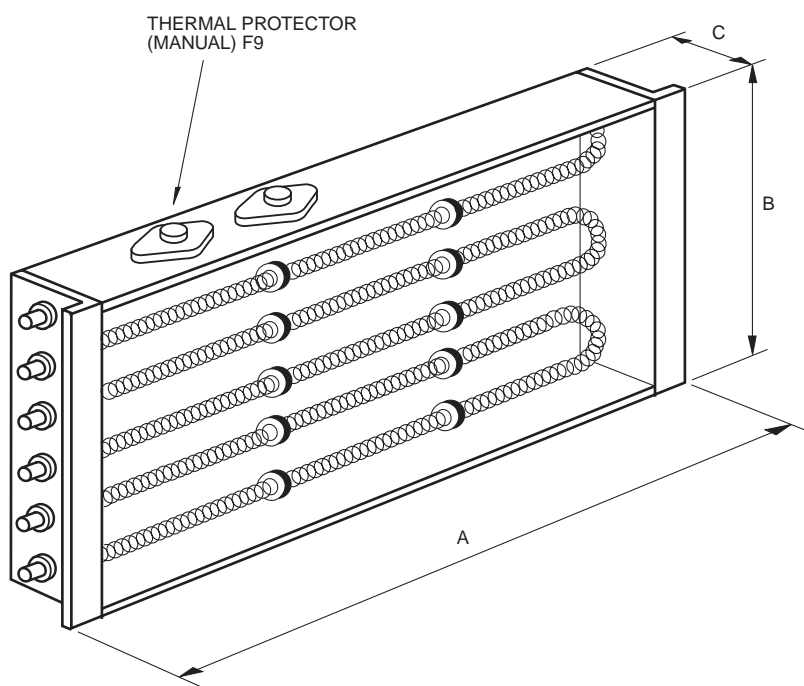
### Technical specifications

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.

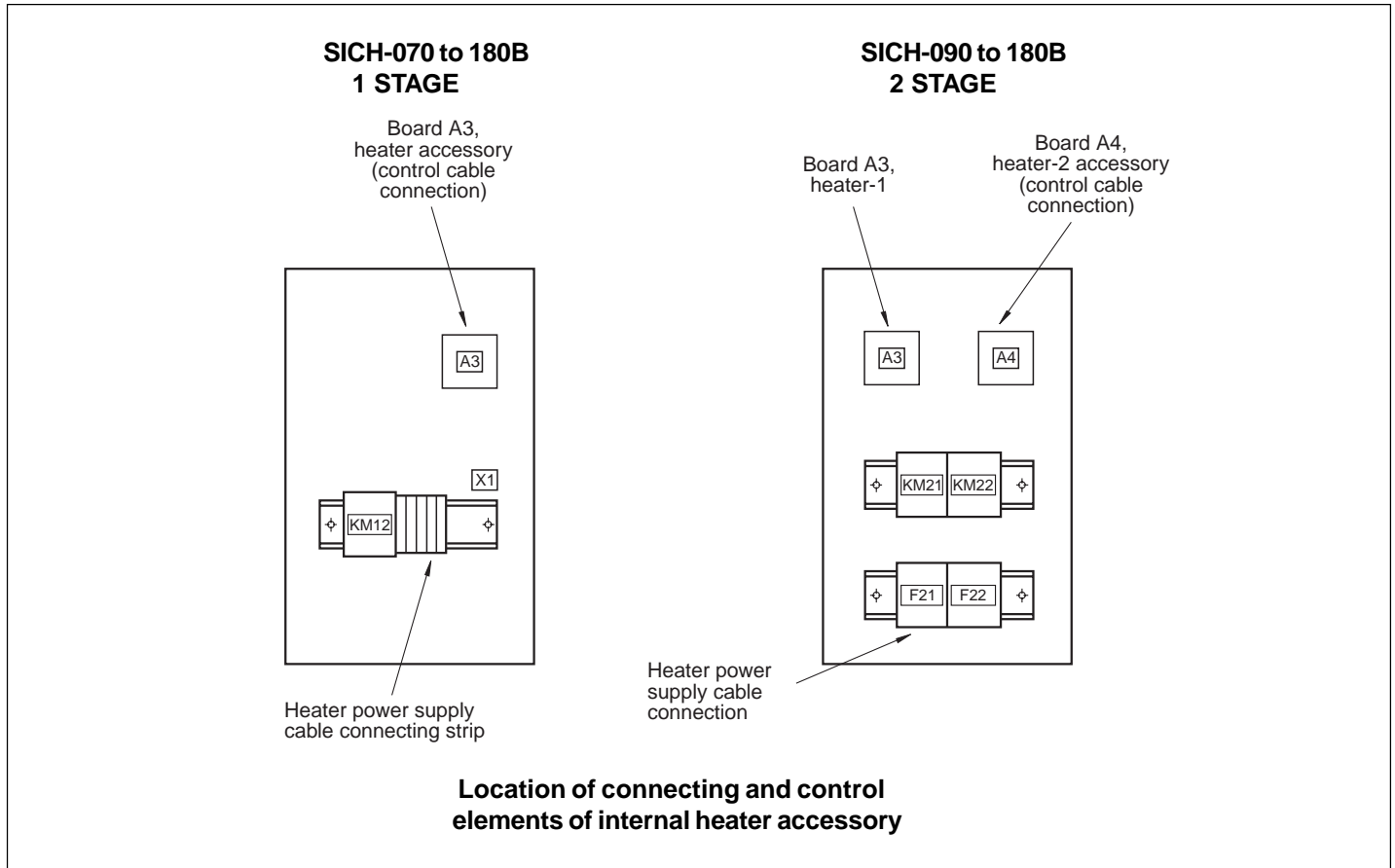
### Assembly and general dimensions mm



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



## Assembly and 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 <sup>2</sup>	m <sup>2</sup>	Pa
<b>SICH-070 &amp; 076B</b>	400.3.50	10	15	1	20	2.5	0.53	2.9
<b>SICH-070 &amp; 076B</b>	400.3.50	15	22	1	25	4	0.53	2.9
<b>SICH-090 &amp; 120B</b>	400.3.50	10	15	1	20	2.5	0.74	4.9
<b>SICH-090 &amp; 120B</b>	400.3.50	20	30	2	40	6	0.74	4.9
<b>SICH-150B</b>	400.3.50	15	22	1	25	4	0.98	7.1
<b>SICH-150B</b>	400.3.50	30	46	2	50	10	0.98	7.1
<b>SICH-180B</b>	400.3.50	15	22	1	25	4	0.98	7.1
<b>SICH-180B</b>	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	
<b>SICH-070 &amp; 076B</b>	620	1 300	110	7
<b>SICH-090 &amp; 120B</b>	620	1 520	110	8
<b>SICH-150B</b>	620	1 920	110	9
<b>SICH-180B</b>	510	2 405	165	10

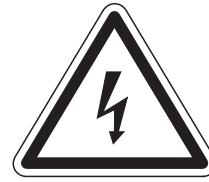
## Installation

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 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.
- 14) 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.

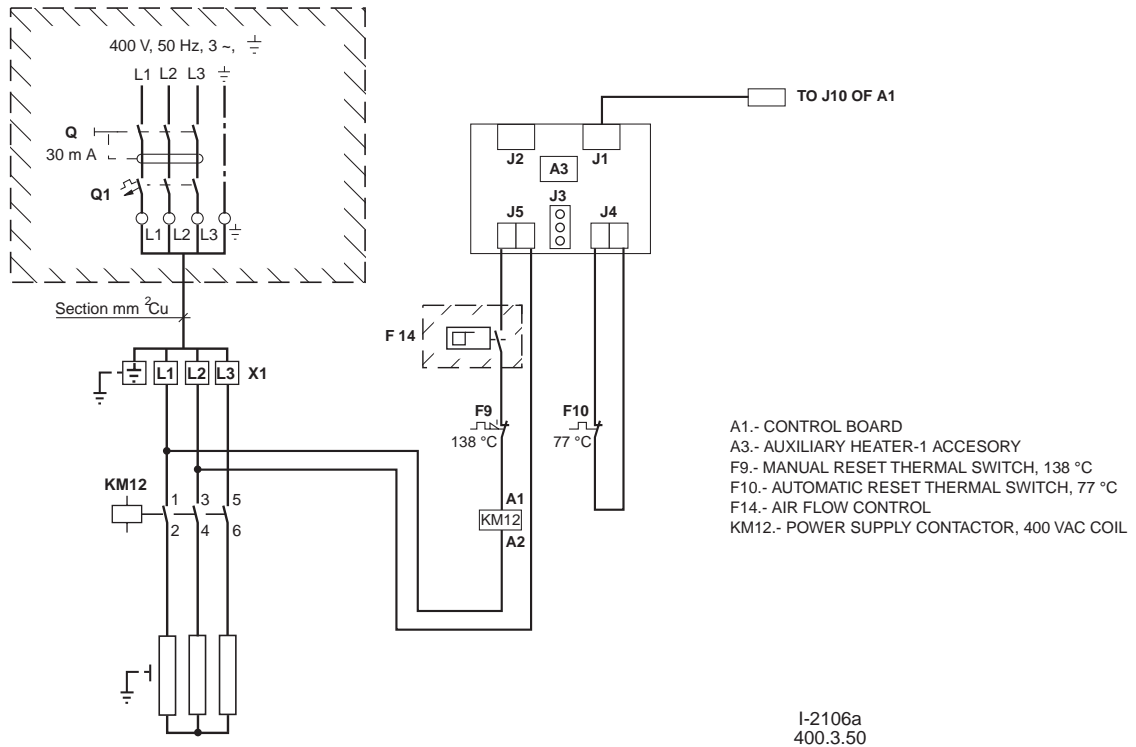


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

# Wiring diagram

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

POWER SUPPLY kW	AUTOMATIC SWITCH Q1	MINIMUM SECTION CABLES mm <sup>2</sup>
10	20	2,5
15	25	4



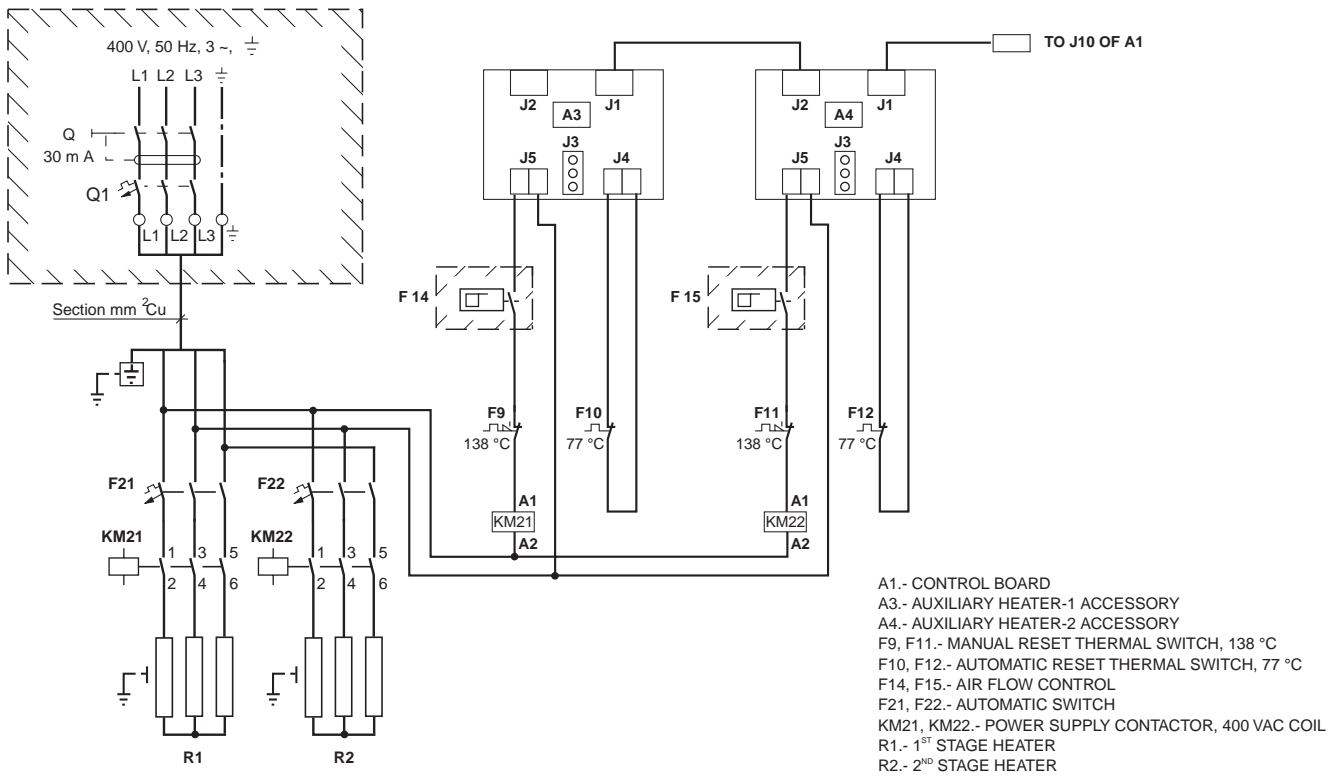
$\square \diagup \diagdown \square$  THE COMPONENTS INCLUDED IN THESE BOXES  
 $\square \diagup \diagdown \square$  ARE NOT SUPPLIED BY THE MANUFACTURER.

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		MINIMUM SECTION CABLES mm <sup>2</sup>
		F21	F22	
20	40	20	20	6
30	50	25	25	10



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-070B to 180B, 240C and 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.

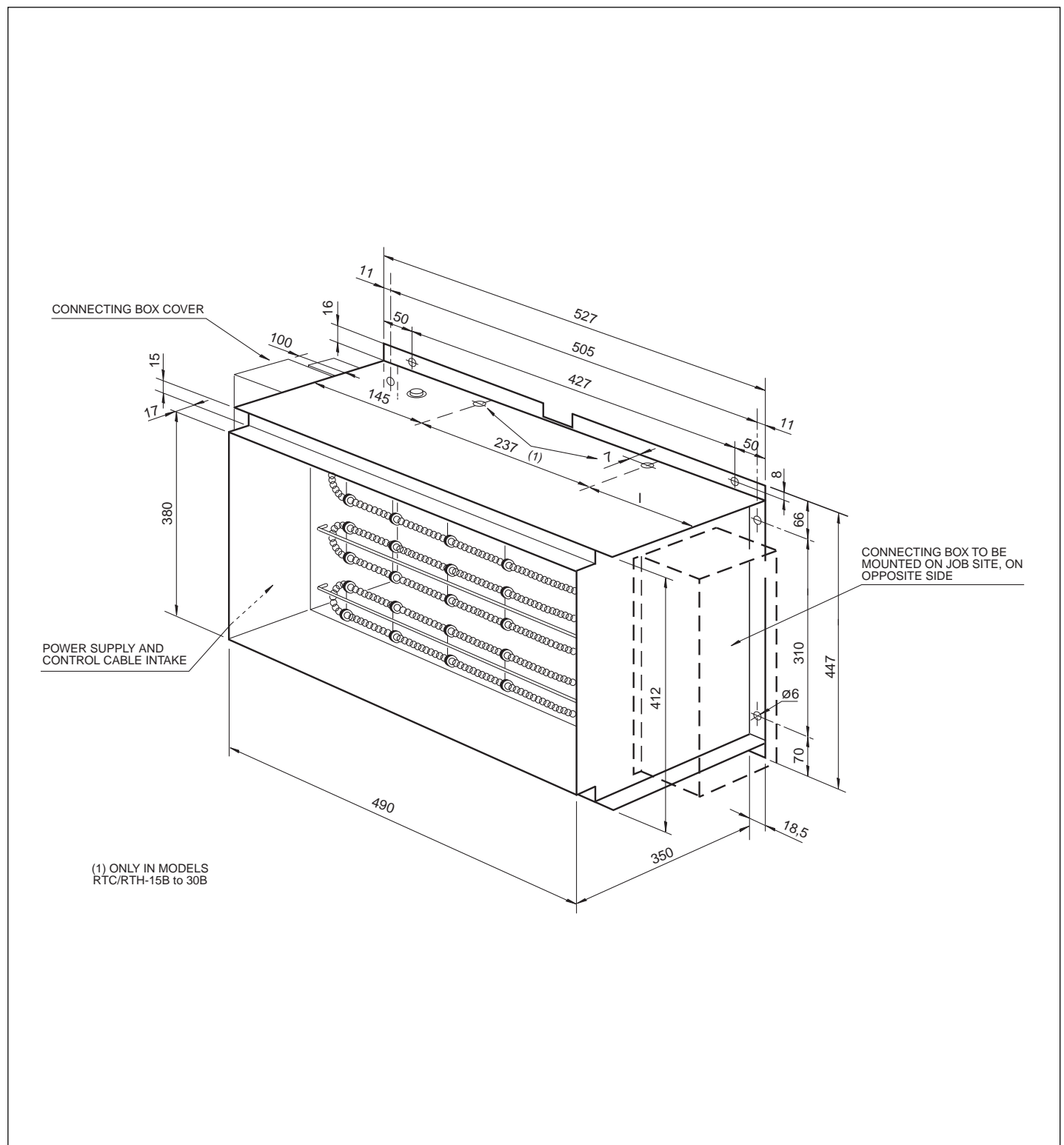
### Technical specifications

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



## 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 <sup>2</sup>	m <sup>2</sup>	Pa
<b>SICH-070 &amp; 076B</b>	400.3.50	10	15	1	20	2.5	0.19	6
<b>SICH-070 &amp; 076B</b>	400.3.50	15	22	1	25	4	0.19	6
<b>SICH-090B to 180B, 240C and SIH-300B</b>	400.3.50	20	30	2	40	6	0.19	15
<b>SICH-090B to 180B, 240C and SIH-300B</b>	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	
<b>SICH-070 &amp; 076B</b>	440	640	370	20
<b>SICH-090B to 180B, 240C and SIH-300B</b>	880	640	370	40

## Installation

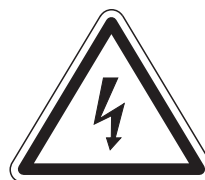
Install the electric heater in the SICH unit as follows:

- 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 con-

trol 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.

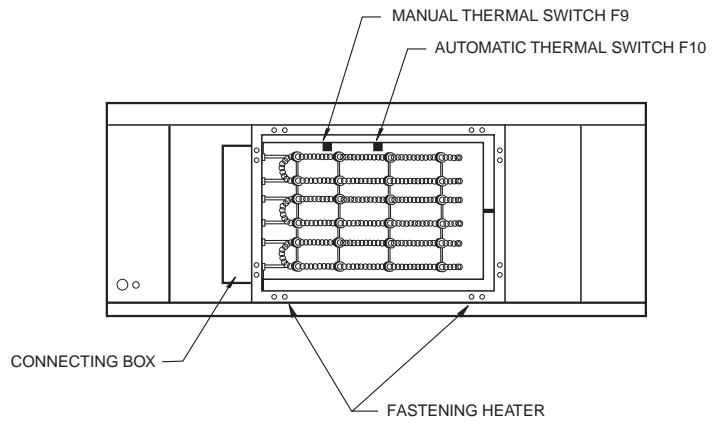
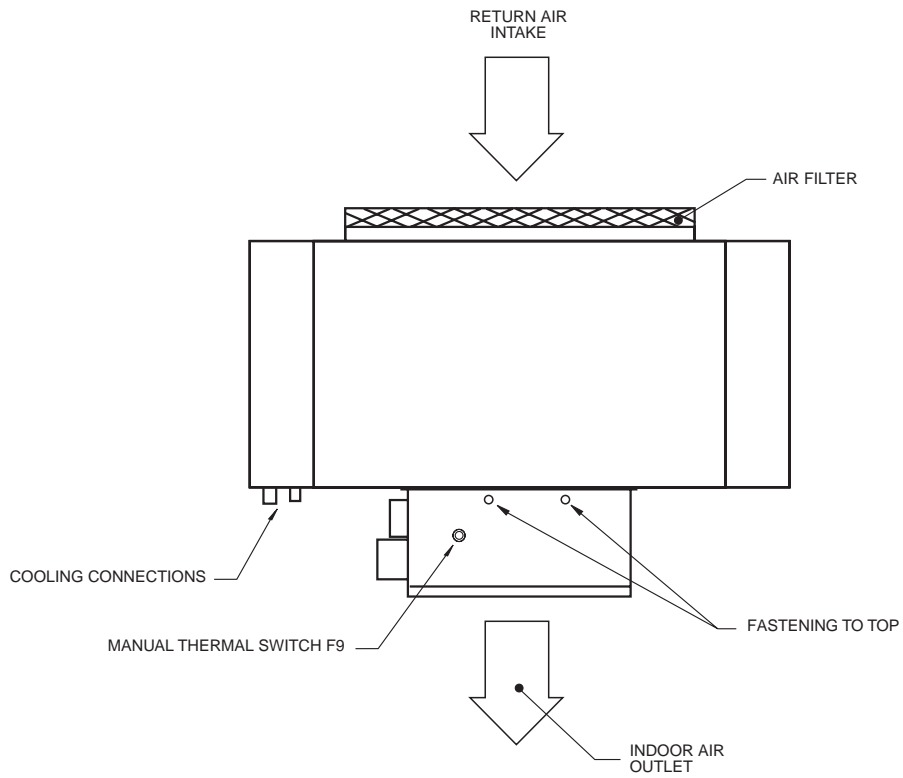
**Note:** Should an incorrect response of the system take place, see the Operation section of the SCOC, SCOH, SOC or SOH/SICH Installation Instructions. There you will find the control functions of the A1 electronic board on the heater, as well as its configuration, incidents identification, etc.



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.

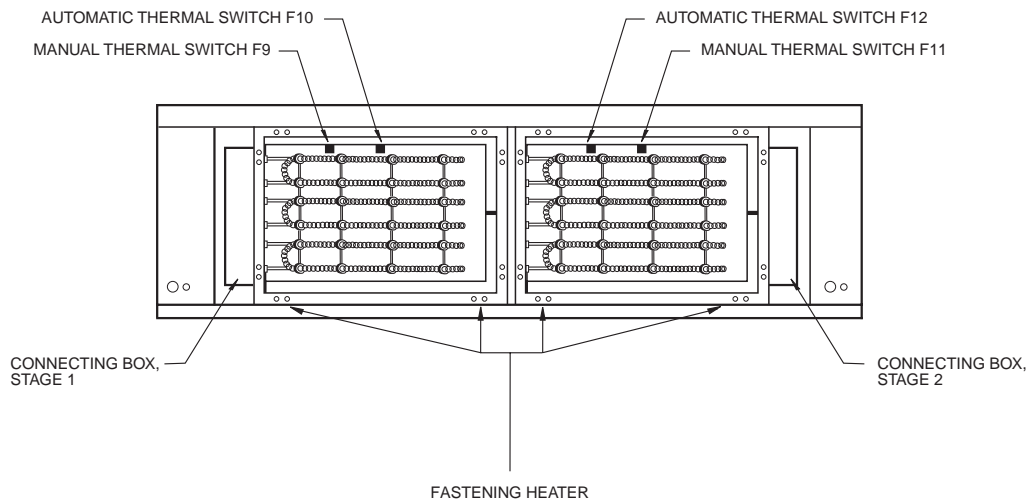
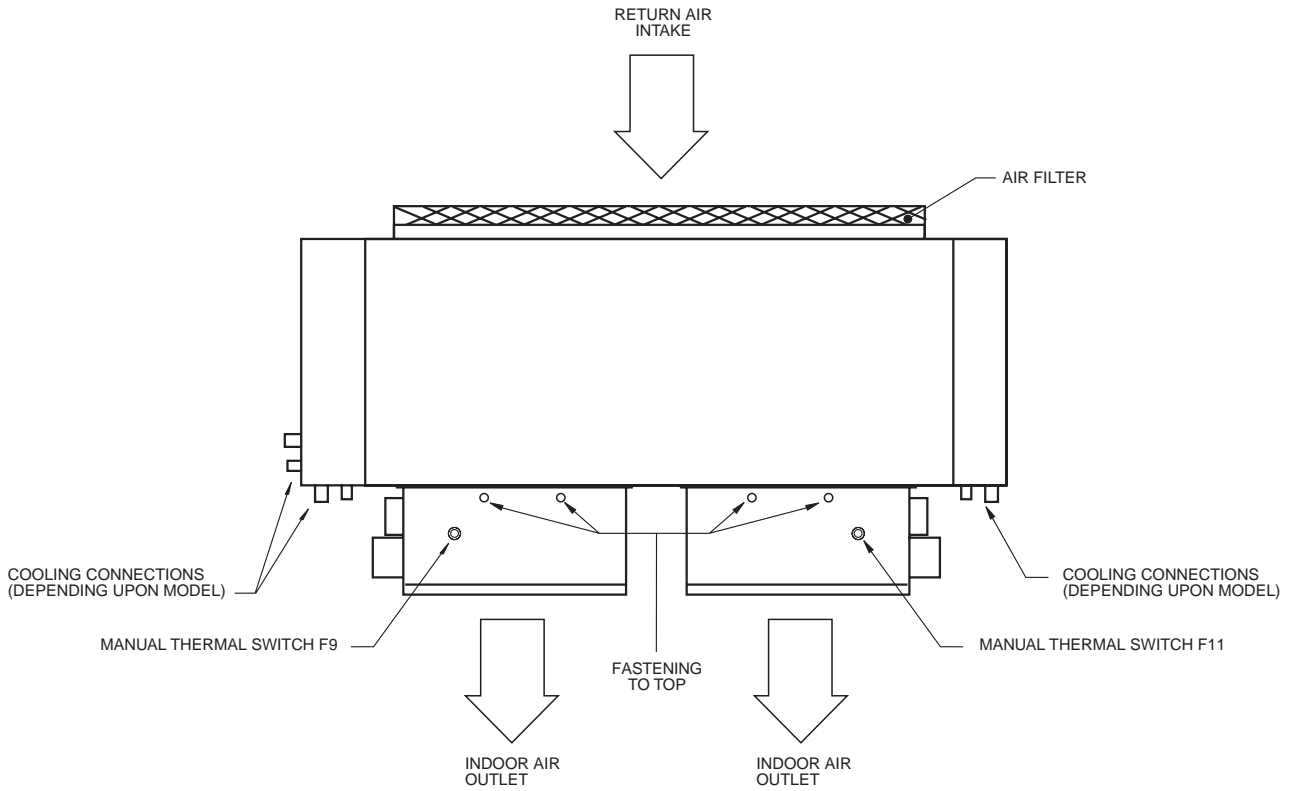
# Location of the heater

SICH-070 and 076B



# Location of the heater

SICH-090B to 180B, 240C and SIH-300B

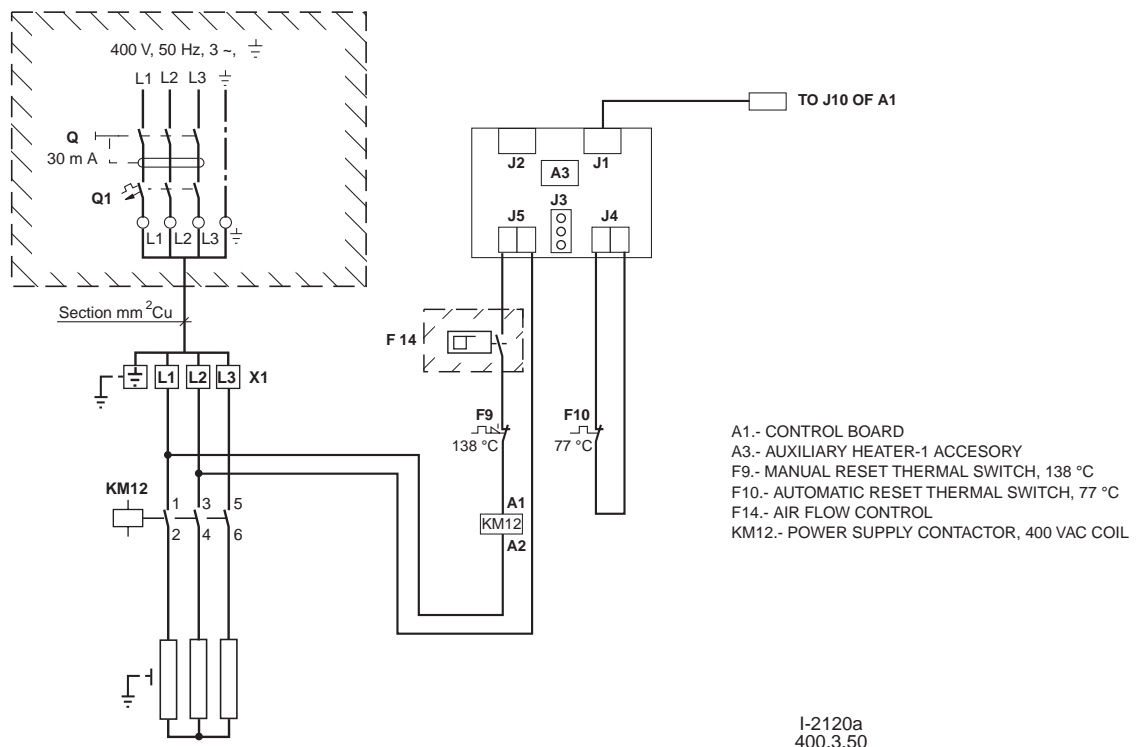




# Wiring diagram

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

POWER kW	AUTOMATIC SWITCH Q1	MINIMUM CABLE SECTION mm <sup>2</sup>
10	20	2,5
15	25	4



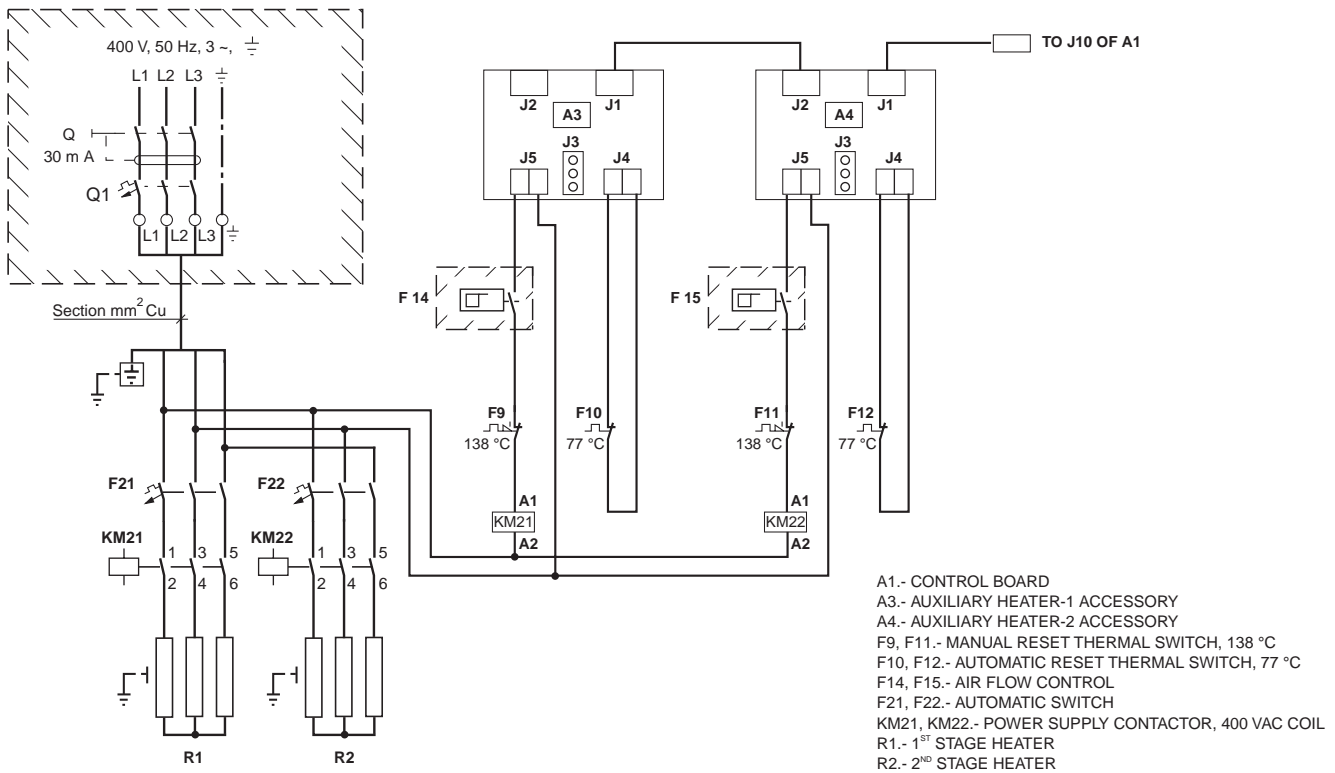
 THE COMPONENTS INCLUDED IN THESE BOXES  
 ARE NOT SUPPLIED BY THE MANUFACTURER.

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, 240C and SIH-300B

POWER kW	AUTOMATIC SWITCH Q1	AUTOMATIC SWITCH F21 F22		MINIMUM CABLE SECTION mm <sup>2</sup>
20	40	20	20	6
30	50	25	25	10



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-070H (C) to 120H (C) and SCOC-076H (C) and 090H (C)

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

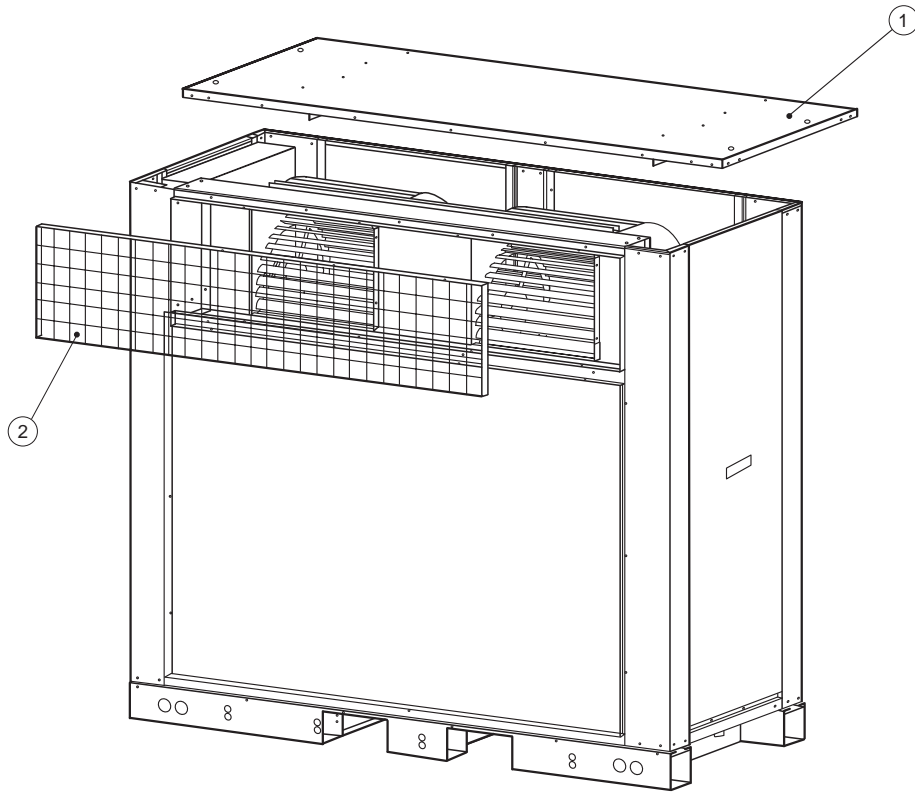


Fig.2

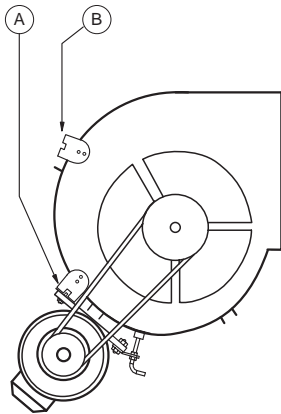
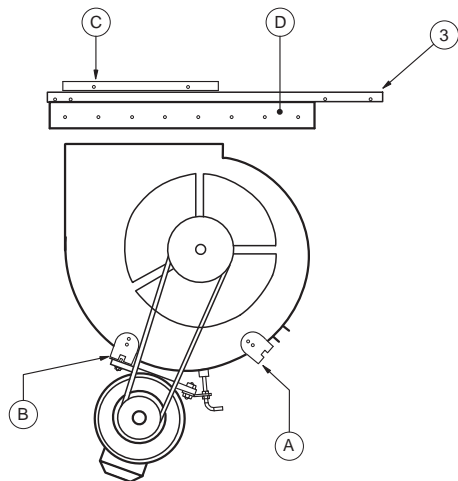
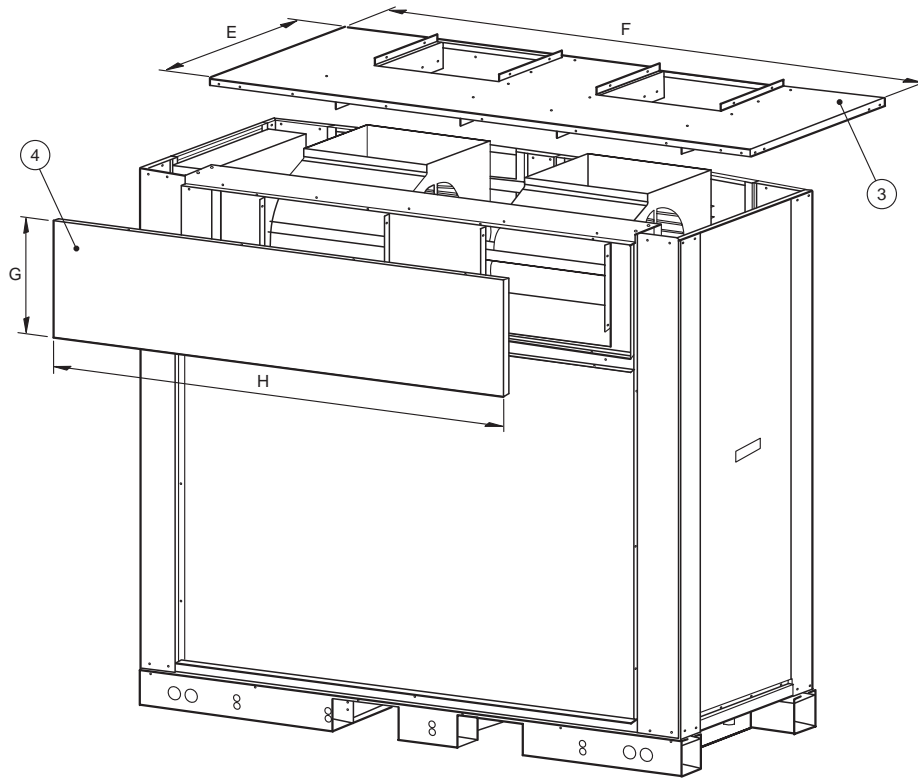


Fig.3



## General dimensions mm

Fig.4



Model	E	F	G	H
<b>SCOH-070H (C) and 076H (C)</b> <b>SCOC-076H (C)</b>	730	1363	272	1075
<b>SCOH-070H (C) and 076H (C)</b> <b>SCOC-076H (C)</b>	725	1738	332	1450

## Vertical air discharge conversion kit for: SCOH-150H (C) to 300H (C) and SCOC-150H (C) and 180H (C)

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

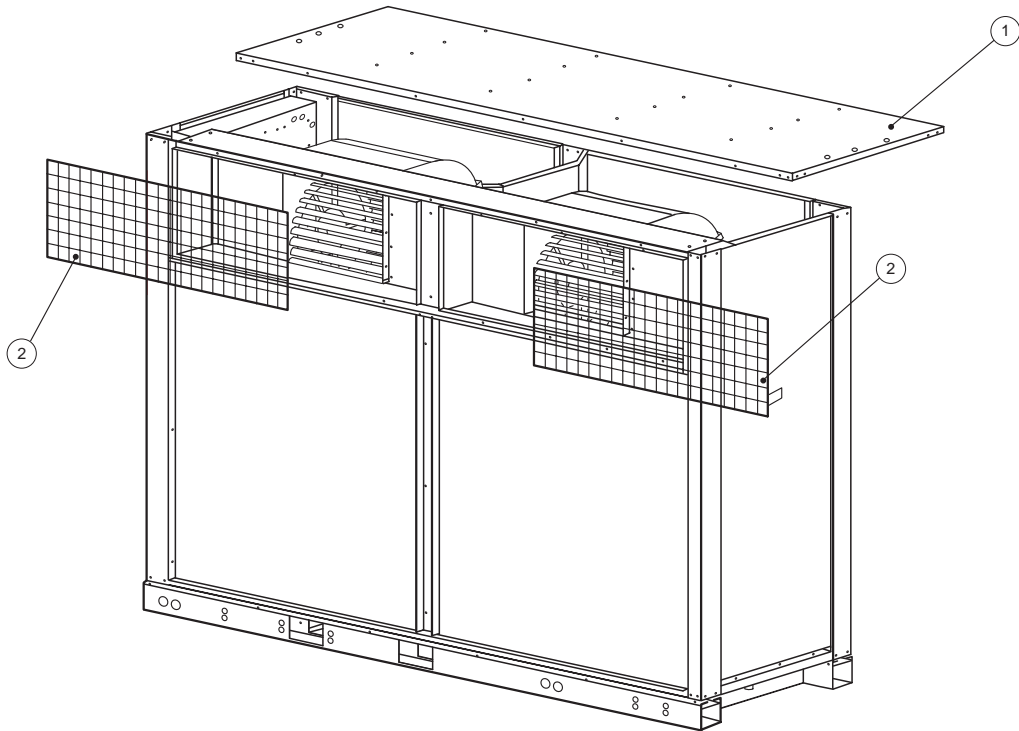


Fig.2

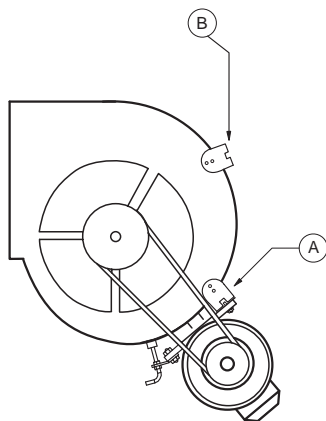
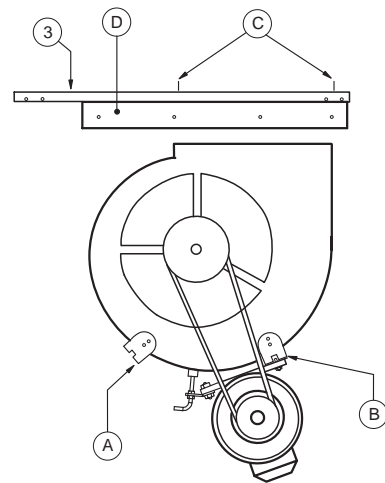
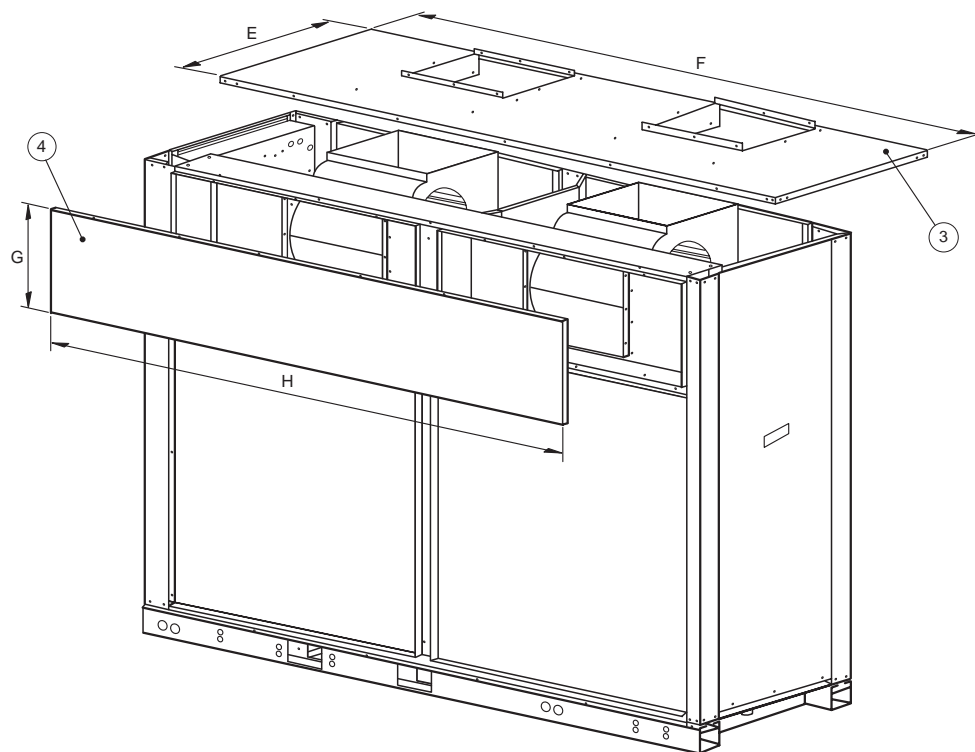


Fig.3



## General dimensions mm

Fig.4



Model	E	F	G	H
SCOH/SCOC-150H (C)	728	2038	393	1828
SCOH/SCOC-180H (C)	777	2240	393	2030
SCOH-240H (C) and 300H (C)	857	2640	393	2430

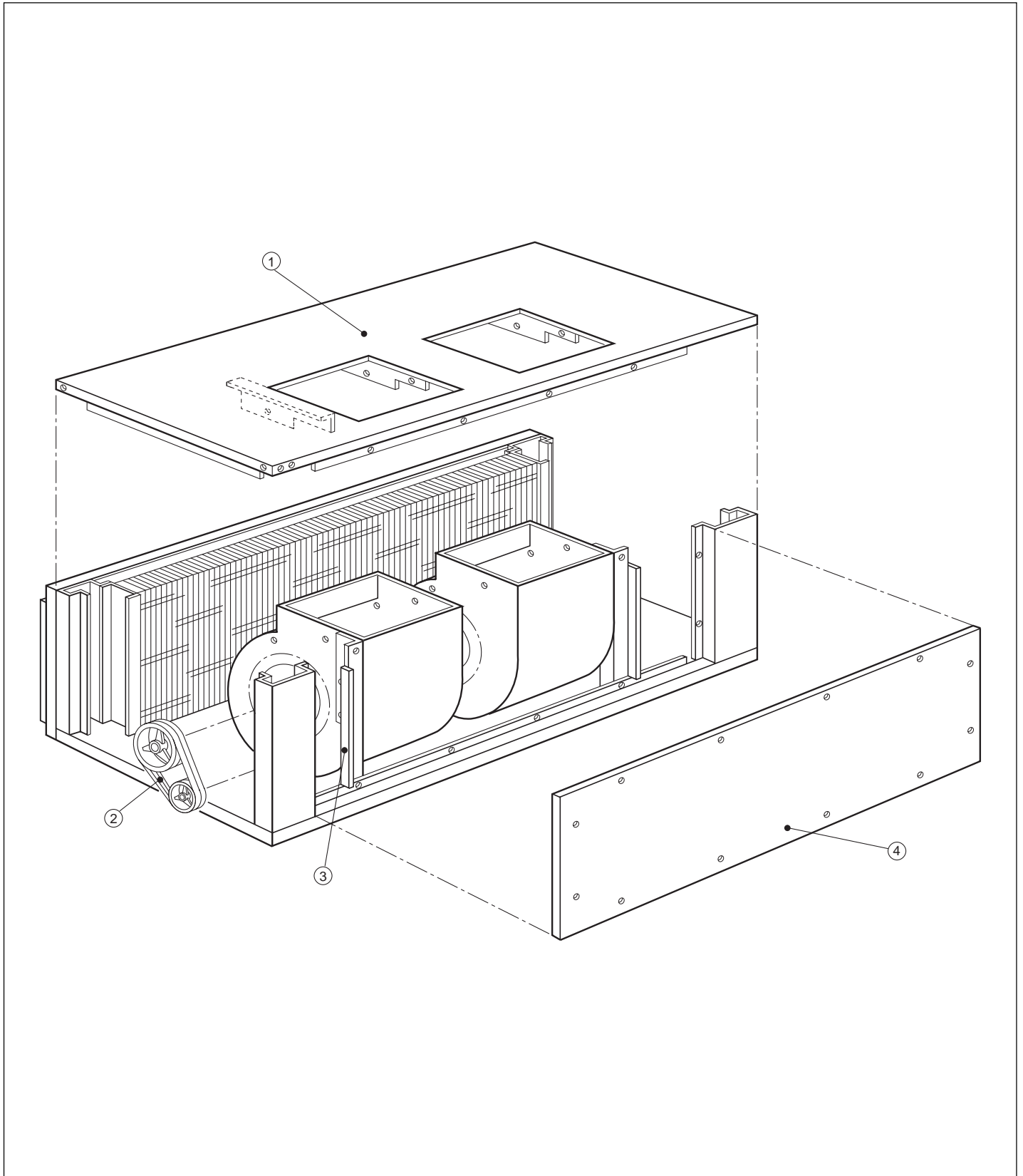
## Vertical air discharge conversion kit for: SICH-180B to 240C and SIH-300B

The SICH-180B, 240C and SIH-300B units 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.



All data subject to change without notice.



Ref.: Y-R70056 0602