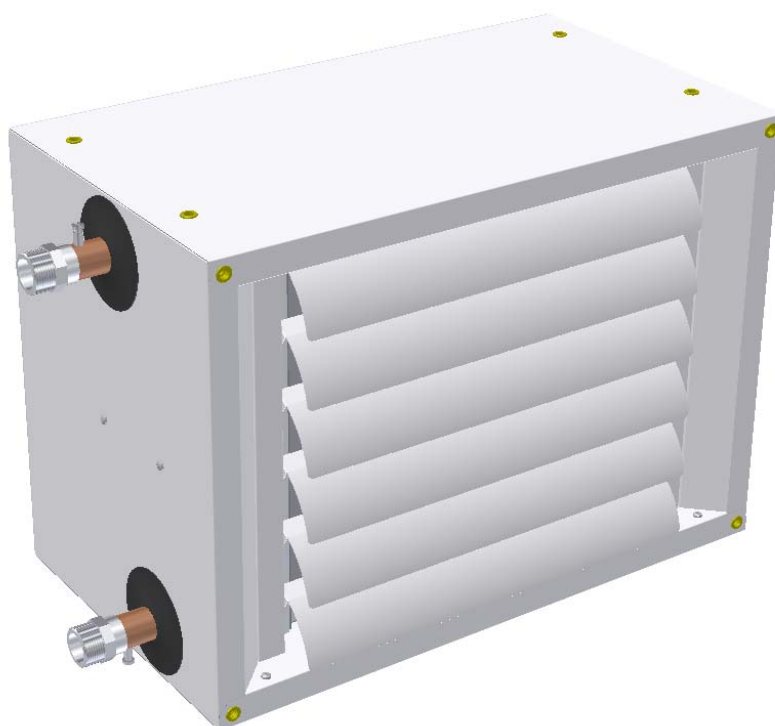


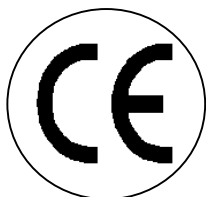
# TECHNICAL INFORMATION ASSEMBLY, USE AND MAINTENANCE INSTRUCTIONS

Water-Fed Fan Heaters

## SERIES LH / LH-X



**Kroll®**



Dear Customer,

Thank you for choosing a Series **LH / LH-X** water-fed fan heater, an innovative, modern, high quality, high efficiency product that will provide you with long-lasting comfort, silent running and safety; we recommend that your fan heater be serviced by a Kroll Technical Service only so as to ensure optimum performance at all times, low running costs and immediate availability of original spare parts.

Thank you

**Kroll GmbH**

## CONFORMITY

**LH / LH-X** water-fed fan heaters comply with:

- EEC Machinery Directives 98/37
- EEC Low Voltage Directive 73/23

## RANGE

Type	Commercial name	Product code for equipments with case pre-painted – EDV Number	Product code for equipments with case in stainless steel – EDV Number
1	LH120	038972-01	038988-01
2	LH130	038973-01	038989-01
3	LH220	038974-01	038990-01
4	LH230	038975-01	038991-01
7	LH320	038976-01	038992-01
8	LH330	038977-01	038993-01
9	LH420	038978-01	038994-01
10	LH430	038979-01	038995-01
11	LH520	038980-01	038996-01
12	LH530	038981-01	038997-01
13	LH620	038982-01	038998-01
14	LH630	038983-01	038999-01
15	LH720	038984-01	039000-01
16	LH730	038985-01	039001-01
17	LH920	038986-01	039002-01
18	LH930	038987-01	039003-01

## WARRANTY

The **LH / LH-x** fan heater has a specific warranty that begins on the date of purchase. The customer must retain documents as proof of purchase. If the customer is unable to provide such proof, the Warranty period shall begin as from the date of production of the unit.

The terms of the Warranty are set out in detail on the **WARRANTY CERTIFICATE** supplied with the unit. Please read this certificate carefully.

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The following symbols are used in some parts of this handbook:



**WARNING** = tasks requiring special caution and adequate training



**FORBIDDEN** = actions that **MUST NOT** be performed.

This manual has 52 pages.



This manual is an integral part of the product. Always make sure the unit is accompanied by this manual so that it can be consulted by the user, installer or any specialised Assistance Service personnel, even in the event of sale. If it is damaged or lost, a copy can be requested from your authorised dealer.



After removing the unit from its packaging make sure it has not been damaged during transport and that no parts are missing; if in doubt contact your dealer.



Installation of the water-fed fan heaters must be carried out by a qualified company. On completion of installation such company must issue a Declaration of Conformity stating that installation has been effected as per the standards in force and in compliance with the instructions contained in this manual.



This unit has been designed for indoor heating purposes only and must only be used for such purposes in situations compatible with their performance.



The manufacturer is exonerated from any contractual or extra-contractual liability regarding damages caused by incorrect installation, adjustment, maintenance or improper use.



A too high indoor temperature is both unhealthy and constitutes a wasteful use of energy. Do not keep rooms/buildings closed for long periods: periodically open a window to air the room/building.



If you do not intend to use the unit for a long period of time you **MUST** at least do the following:

- Turn the main unit switch and the mains socket switch to OFF.
- If there is a risk of sub-zero temperatures, drain the water from the unit.



If the unit has remained idle for a long period, it is advisable to have it restarted by an authorised Technical Assistance Service or, in any case, by professionally qualified personnel.



Use original spare parts only. The Manufacturer cannot be held liable for any damages caused by improper use of the unit or the use of non-original parts.



References to laws, directives and regulations are indicative only and are valid at the time of going to press. The coming into force of new laws, or amendments to existing ones does not constitute any obligation towards third parties on the part of the Manufacturer.



Repair and/or maintenance work must be carried out by an Authorised Service Technician or personnel qualified as described in this manual. Do not modify or tamper with the heater as dangerous situations may result. The Manufacturer cannot be held liable for any damages resulting from failure to observe the above.



All connected systems (water supply, electrical connections etc.) must be secured safely and must not constitute obstacles or cause personnel to trip up.



The Manufacturer is responsible for ensuring that the unit complies with the rules, regulations, directives and standards concerning construction in force at the time the unit is put on sale. Awareness of, understanding and observance of legislation and standards regarding systems design, installation, use and maintenance are, instead, the exclusive responsibility of the planner, installer and user.



The Manufacturer cannot be held liable for failure to observe the instructions contained in this manual, for the consequences of actions not specifically described in this manual or for erroneous translations which may lead to incorrect interpretation.



It is forbidden for children or unassisted disabled persons to use this unit.

Never touch the unit if you are barefoot or if any part of your body is wet.

Before carrying out any cleaning and/or maintenance work on the unit always disconnect the unit from the mains power supply by turning the main switch to OFF.

Any modification to safety or regulation systems is strictly forbidden without the Manufacturer's permission and guidance.

Never tug or detach any wires protruding from the unit even when the latter is disconnected from the power supply.



## IMPORTANT SAFETY REGULATIONS

4



Do not dump packaging (plastic bags, expanded polystyrene etc.) improperly. Keep such packaging away from children as it is dangerous. For proper disposal consult your local authorities.



Do not install the unit in areas with a damp or "aggressive" atmosphere.



Do not place any objects on the unit or insert any objects through the cover grating.



Do not touch the heat exchanger battery with naked hands



Do not use adapters, multiple sockets or extension leads to connect the unit to the electricity supply.

It is forbidden to install the unit outdoors or where it is exposed to adverse weather conditions.

## DESCRIPTION OF UNIT

Water-fed fan heaters are designed to provide heating in winter and ventilation in summer. They are ideal for indoor areas such as shops, workshops and factories. Hot water produced by a boiler (not supplied with this unit) flows inside a water-air heat exchanger; an air flow generated by an electrically powered helical fan flows through the exchanger. As the air flows through the exchanger it absorbs the heat contained in the coil and the air temperature increases. Thus cold air flows into the exchanger and hot air flows out. During the summer the fan can be run on its own to provide ventilation.

### GENERAL CONSTRUCTION CHARACTERISTICS

#### Water-air exchanger

Made of a high-efficiency copper battery with aluminium fins. Water connection couplings have a manual bleed valve.

#### Cover

Made of galvanised, pre-painted sheet metal; attractive, modern design. Highly compact and versatile.

#### Helical fan

Made up of a safety grating and a high performance, silent-running fan unit.

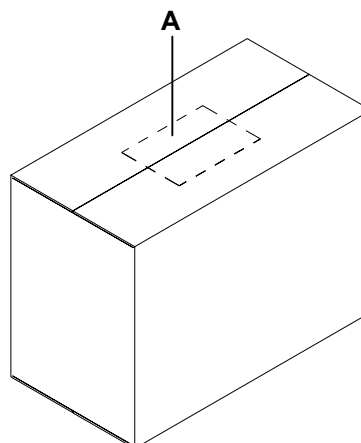
## PRODUCT RECEPTION

The unit is sent in a single case and includes:

WATER-FED FAN HEATER

PLASTIC BAG (A) containing:

- Instruction Manual;
- Warranty Certificate;
- Spare Parts catalogue.



## HANDLING AND TRANSPORT

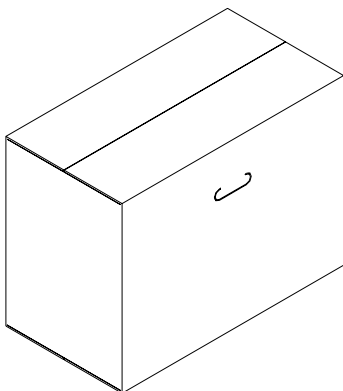
5

Handling must be done by properly equipped personnel. All equipment must be suitable to handle the weight of the unit.

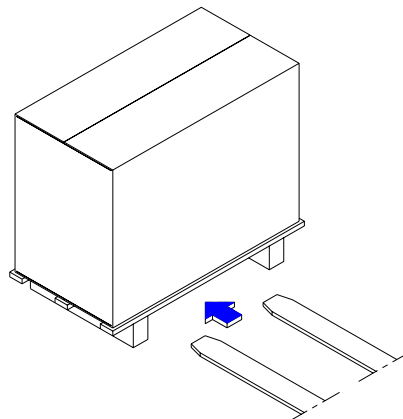
Unit types 1-2-3-4-5-6 are packaged in a cardboard case with handles to aid transport.

Unit's types 7-8-9 are packaged in a cardboard case with a wooden base. Raise the case with a fork-lift truck by inserting the forks in the special guides hollowed out in the support beams.

### Manual handling (types 1-14)



### Handling with a fork-lift truck (types 15-18)



### WARNING!

Handling and transport must be carried out with the utmost care so as to prevent damage to the heater unit and ensure the safety of the personnel carrying out the work.



If the unit has to be handled manually make sure that the weight of the unit can be lifted and manoeuvred along the route to be taken by available personnel without difficulty.



Do not stand near the heater during transport and handling.



Use of personal safety items (work gloves, hard hat, work shoes etc.) is recommended.



If it is necessary to stack several units always observe the stacking index: this is shown on the case. Always align the cases carefully to prevent stack instability.

## REMOVING THE PACKAGING

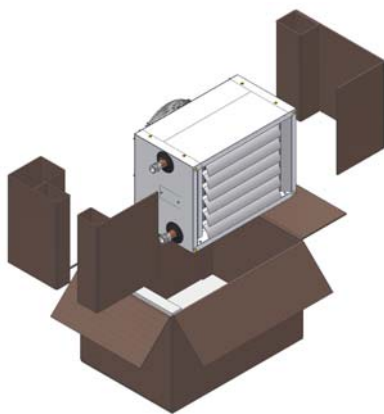
To remove the packaging, proceed as follows:

- Cut the strap (types 7-9 only);
- Open the upper part of the case;
- Remove the inner spacers;
- Pull the unit upwards out of the case.



### WARNING!

Do not dump packaging improperly as it is a potential source of danger. For proper disposal contact your local authorities.



## IDENTIFICATION

The water-fed fan heaters can be identified by:

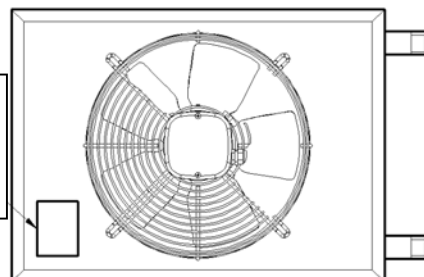
- The TECHNICAL DATA plaque (positioned on the rear of the unit) which shows the main technical/performance data.



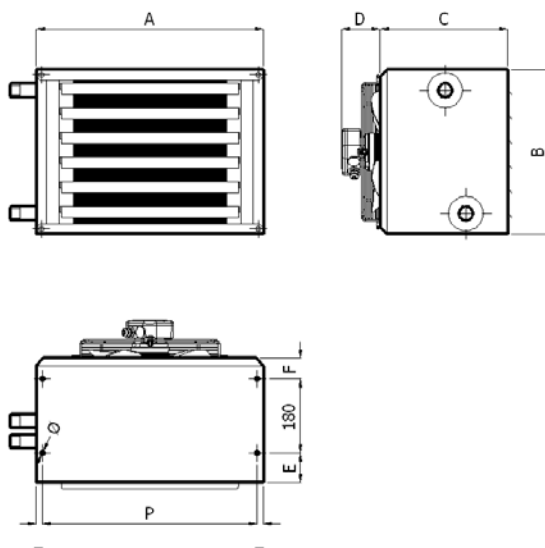
If the plaque is damaged or lost request a duplicate from an Authorised Technical Service.

MANUFACTURER IDENTIFICATION	
<b>WATER-FED FAN HEATER</b>	
Model	<input type="text"/>
Code	<input type="text"/>
Serial n°	<input type="text"/>
Year of construction	<input type="text"/>
Heating cap. output <sup>(1)</sup>	<input type="text"/> kW
Max air flow rate	<input type="text"/> m <sup>3</sup> /h
Electrical power supply	<input type="text"/> V – 50 Hz
Max electrical power	<input type="text"/> W
Max electrical current	<input type="text"/> A
Protection rating	<input type="text"/> IP
Max working pressure	<input type="text"/> bar
(1) Water 85-70°C, Air 15°C, U.R. 50%	

Technical data label

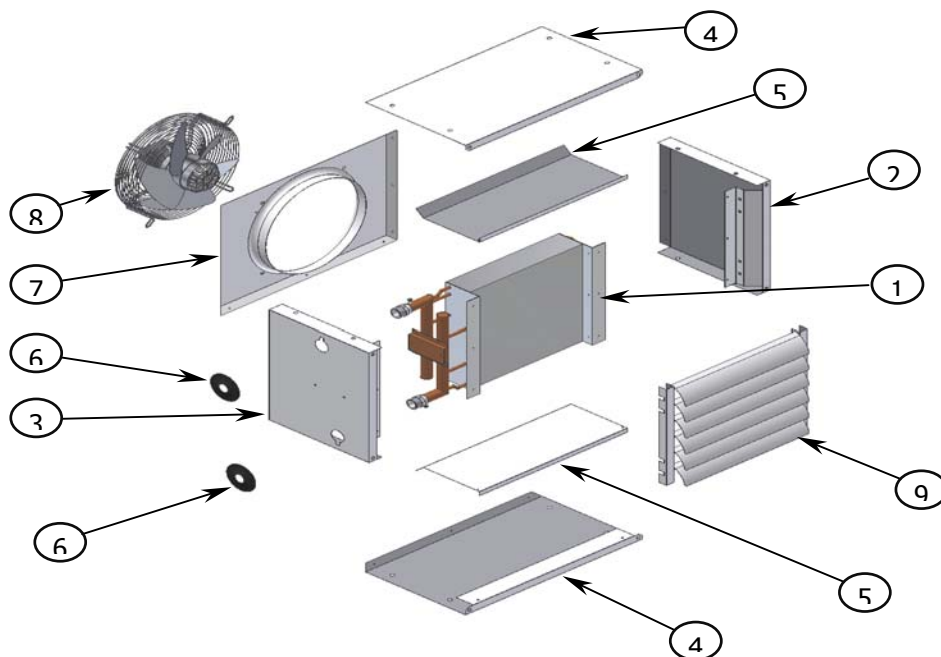


## OVERALL DIMENSIONS AND WEIGHT

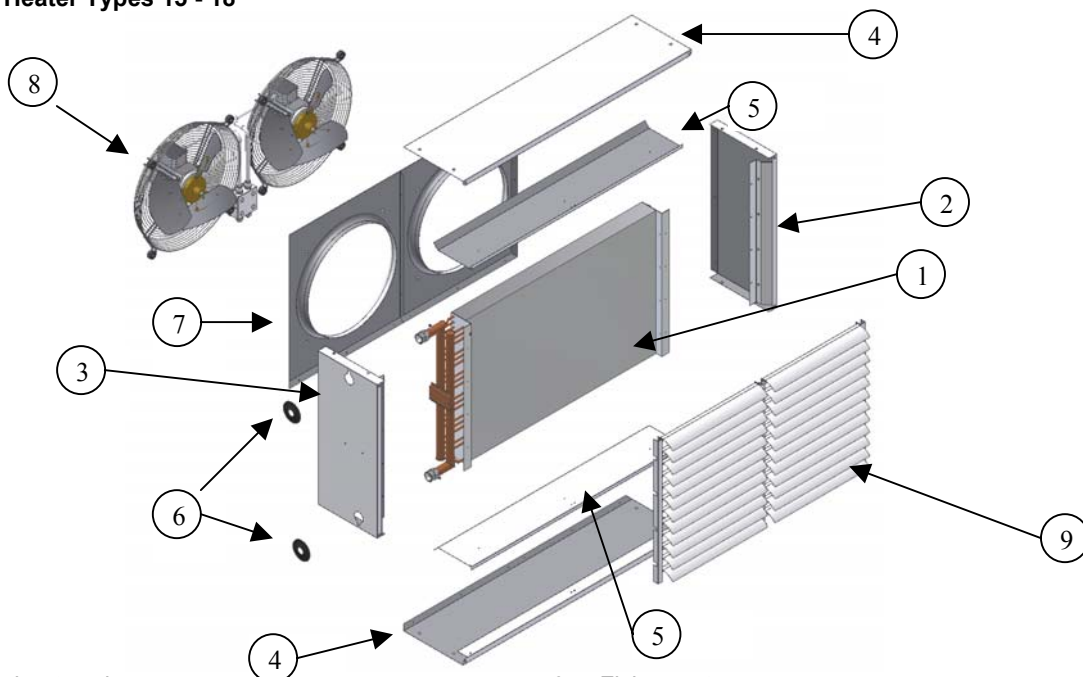


Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>A</b>	550		600		650		700		750		800		850		1200		1400		mm
<b>B</b>	400		450		500		550		600		650		700		700		700		mm
<b>C</b>	331		331		331		331		331		331		331		331		331		mm
<b>D</b>	95		115		130		110		120		150		170		170		170		mm
<b>E</b>	79		79		79		79		79		79		79		79		79		mm
<b>F</b>	72		72		72		72		72		72		72		72		72		mm
<b>P</b>	489		539		589		639		689		739		789		1139		1339		mm
<b>Ø</b>	M6		M6		M6		M6		M6		M6		M6		M6		M6		F
<b>Weight</b>	17.0	18.2	19.2	20.6	22.2	24.8	25.6	27.0	30.5	32.0	32.0	35.7	41.0	44.4	58.7	63.8	70.6	76.3	Kg

**Structure of Heater Types 1 - 14**



**Structure of Heater Types 15 - 18**



1. Water-air heat exchanger
2. Side panel, left
3. Side panel, right
4. Upper-lower panel
5. Internal part

6. Fixing part
7. Fixing part
8. Fan(s)
9. Outflow grating



TYPE	HEATING CAPACITY <sup>(1)</sup>		NUMBER OF RANGE	NUMBER OF FANS	FAN		MAX AIR DELIVERY RATE	AIR OUTFLOW RANGE	AIR OUTFLOW TEMP <sup>(1)</sup>	WATER SIDE HEAD LOSS	WATER FLOW RATE	ELECTRICAL POWER SUPPLY	PROTECTION DEGREE	ELECTRICAL POWER	MAX ELECTRICAL CURRENT	NOISE LEVEL <sup>2)</sup>		
					DIAMETER.	FAN SPEED												
	Kw	kcal/h				N°										N°		V/min'
	KW	kcal/h	Nr.	Nr	mm	V/min'	m3/h	m	°C	kPa	Lit./h		IP	W	A	MAX	MED	MIN
1	13,3	11450	2	1	300	1400 - 900 - 700 (3)	1750	22	38	26	785	230V~ 50 H z	54	80	0,40	50	47	41
2	17,3	14900	3		300		1550	17	47	20	1020		54	80	0,40	50	47	41
3	17,7	15250	2		315		2450	25	36	17	1044		54	95	0,40	51	47	45
4	23,8	20450	3		315		2300	19	45	20	1401		54	95	0,40	51	47	45
5	22	18950	2		330		2800	31	38	30	1296		54	130	0,58	52	50	43
6	28,5	24550	3		330		2550	25	47	17	1680		54	130	0,58	52	50	43
7	27,4	23550	2		350		3600	31	37	24	1612		54	140	0,70	53	49	43
8	35,4	31300	3		350		3400	25	46	19	2141		54	140	0,70	53	49	43
9	31,9	27400	2		400		3950	32	39	20	1876		54	180	0,80	53	49	43
10	42,7	36750	3		400		3900	24	47	13	2514		54	180	0,80	53	49	43
11	39,1	33600	2		420		5200	33	37	13	2300		44	150	1,40	53	49	47
12	52,4	45100	3		420		4900	26	46	16	3086		44	150	1,40	53	49	47
13	47,4	40800	2	2	600	900 - 700 (3)	6700	39	36	14	2793	400 V~ 50Hz3N	54	245	1,04	52	-	46
14	63	54150	3		600		6200	37	45	12	3707		54	245	1,04	52	-	46
15	67,7	58200	2		450		8500	38	38	11	3985		54	260	1,40	54	-	49
16	87,8	75550	3		450		7700	32	48	9	5173		54	260	1,40	54	-	49
17	88,8	76400	2		600		12550	40	36	21	5229		54	490	2,08	53	-	48
18	115	98800	3		600		10900	38	46	17	6764		54	490	2,08	53	-	48

(1) Data refers to following conditions:

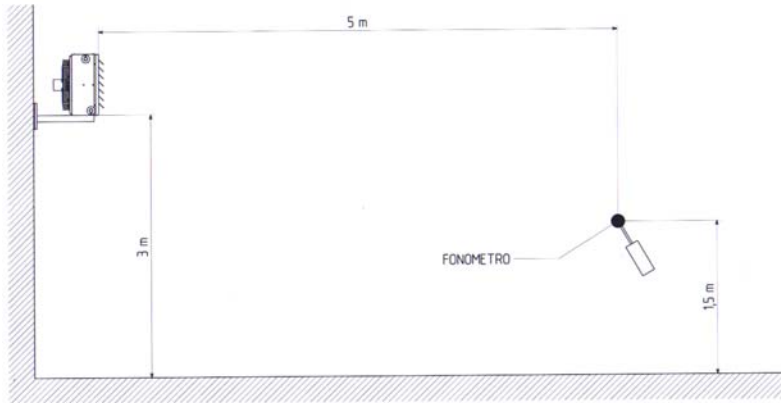
- Water temperature 85-70°C
- Air temperature 15°C
- U.R. 50%
- Atmospheric pressure 1013 mbar
- Max fan speed

(2) Data refers to the following conditions:

- Area unobstructed
- Max fan speed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.

(3) RPM variations attained via use of special accessories (available as an optional). RPM figures are average values as RPM varies from model to model.

#### UNOBSTRUCTED AREA SOUND PRESSURE MEASUREMENT DIAGRAM



**TYPES 1 AND 2, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 1 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	13,7	12,5	11,3	kW
	11.750	10.750	9.750	Kcal/h
Air flow rate	1.750			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	38	42	45	°C
Water side head loss	16	14	12	kPa
Water flow rate	605	533	502	l/h

**Fan heater type 1 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	12,0	10,9	9,9	kW
	10.300	9.400	8.500	Kcal/h
Air flow rate	1.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	43	46	49	°C
Water side head loss	13	11	9	kPa
Water flow rate	530	485	440	l/h

**Fan heater type 1 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	10,5	9,6	8,7	kW
	9.000	8.250	7.500	Kcal/h
Air flow rate	900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			dB(A)
Air outlet temperature	49	51	54	°C
Water side head loss	10	9	7	kPa
Water flow rate	463	424	385	l/h

**Fan heater type 2 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	17,8	16,3	14,8	kW
	15.350	14.050	12.750	Kcal/h
Air flow rate	1.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			DB(A)
Air outlet temperature	48	51	54	°C
Water side head loss	13	11	9	kPa
Water flow rate	790	722	656	l/h

**Fan heater type 2 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	15,3	14,1	12,7	kW
	13.200	12.100	10.950	Kcal/h
Air flow rate	1.150			M <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	54	57	59	°C
Water side head loss	10	8	7	kPa
Water flow rate	680	621	564	l/h

**Fan heater type 2 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	13,0	11,9	10,8	kW
	11.200	10.250	9.300	Kcal/h
Air flow rate	850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			Db(A)
Air outlet temperature	60	62	64	°C
Water side head loss	7	6	5	kPa
Water flow rate	577	527	478	l/h

(1) Data refers to the following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 3 AND 4, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 3 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	18,1	16,6	15,1	kW
	15.600	14.300	12.950	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	37	40	44	°C
Water side head loss	11	9	8	kPa
Water flow rate	804	735	667	l/h

**Fan heater type 3 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	17,1	15,6	14,2	kW
	14.700	13.450	12.200	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	39	43	46	°C
Water side head loss	10	8	7	kPa
Water flow rate	756	692	627	l/h

**Fan heater type 3 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	16,6	15,2	13,8	kW
	14.300	13.050	11.850	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	40	44	47	°C
Water side head loss	9	8	7	kPa
Water flow rate	735	672	609	l/h

**Fan heater type 4 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	24,5	22,4	20,3	kW
	21.050	19.250	17.500	Kcal/h
Air flow rate	2.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	46	49	52	°C
Water side head loss	12	11	9	kPa
Water flow rate	1.084	991	899	l/h

**Fan heater type 4 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	22,3	20,3	18,5	kW
	19.150	17.500	15.900	Kcal/h
Air flow rate	1.850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	50	53	55	°C
Water side head loss	10	9	8	kPa
Water flow rate	985	901	817	l/h

**Fan heater type 4 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	20,5	18,7	17,0	kW
	17.600	16.100	14.600	Kcal/h
Air flow rate	1550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	53	56	58	°C
Water side head loss	9	8	6	kPa
Water flow rate	906	828	752	l/h

- (1) Data refers to the following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally..

**TYPES 5 AND 6, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 5 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	22,6	20,8	18,8	kW
	19.450	17.850	16.200	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	38	42	45	°C
Water side head loss	19	16	14	kPa
Water flow rate	1.002	917	833	l/h

**Fan heater type 5 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	20,0	18,3	16,6	kW
	17.200	15.750	14.300	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	43	46	49	°C
Water side head loss	15	13	11	kPa
Water flow rate	884	809	735	l/h

**Fan heater type 5 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	18,1	16,5	15,0	kW
	15.550	14.200	12.900	Kcal/h
Air flow rate	1.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	47	50	53	°C
Water side head loss	13	11	9	kPa
Water flow rate	799	732	664	l/h

**Fan heater type 6 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	29,4	26,9	24,4	kW
	25.300	23.150	21.000	Kcal/h
Air flow rate	2.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	48	51	54	°C
Water side head loss	11	9	8	kPa
Water flow rate	1.301	1.190	1.080	l/h

**Fan heater type 6 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	25,3	23,2	21,0	kW
	21.800	19.950	18.100	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	54	57	59	°C
Water side head loss	9	7	6	kPa
Water flow rate	1.122	1.026	931	l/h

**Fan heater type 6 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	22,1	20,2	18,3	kW
	19.000	17.350	15.750	Kcal/h
Air flow rate	1.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	60	61	63	°C
Water side head loss	7	6	5	kPa
Water flow rate	977	893	810	l/h

- (1) Data refers to the following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 7 AND 8, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 7 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	28,1	25,8	23,4	kW
	24.200	22.150	20.100	Kcal/h
Air flow rate	3.600			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	38	41	45	°C
Water side head loss	15	13	11	kPa
Water flow rate	1.244	1.139	1.034	l/h

**Fan heater type 7 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	23,7	21,7	19,7	kW
	20.400	18.650	16.950	Kcal/h
Air flow rate	2.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	45	48	51	°C
Water side head loss	11	9	8	kPa
Water flow rate	1.048	959	871	l/h

**Fan heater type 7 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	20,3	18,6	16,9	kW
	17.500	16.000	14.550	Kcal/h
Air flow rate	1650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	51	53	56	°C
Water side head loss	8	7	6	kPa
Water flow rate	900	824	748	l/h

**Fan heater type 8 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	37,4	34,3	31,1	kW
	32.200	29.500	26.750	Kcal/h
Air flow rate	3400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	47	50	53	°C
Water side head loss	12	10	9	kPa
Water flow rate	1.658	1.516	1.376	l/h

**Fan heater type 8 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	28,9	26,5	24,0	kW
	24.850	22.750	20.650	Kcal/h
Air flow rate	2000			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	58	60	62	°C
Water side head loss	8	7	6	kPa
Water flow rate	1.279	1.169	1.061	l/h

**Fan heater type 8 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	23,3	21,3	19,4	kW
	20.050	18.350	16.650	Kcal/h
Air flow rate	1.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	65	67	68	°C
Water side head loss	5	5	4	kPa
Water flow rate	1.032	943	856	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 9 AND 10, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 9 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	32,7	29,9	27,2	kW
	28.150	25.750	23.400	Kcal/h
Air flow rate	3.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	39	43	46	°C
Water side head loss	12	11	9	kPa
Water flow rate	1.448	1.325	1.203	l/h

**Fan heater type 9 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	28,5	26,1	23,7	kW
	24.550	22.450	20.400	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	45	48	51	°C
Water side head loss	10	8	7	kPa
Water flow rate	1.262	1.154	1.048	l/h

**Fan heater type 9 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	24,1	22,0	19,9	kW
	20.700	18.900	17.150	Kcal/h
Air flow rate	1900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	52	54	56	°C
Water side head loss	7	6	5	kPa
Water flow rate	1.064	973	883	l/h

**Fan heater type 10 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	44,0	40,2	36,5	kW
	37.800	34.600	31.350	Kcal/h
Air flow rate	3.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	48	51	53	°C
Water side head loss	9	7	6	kPa
Water flow rate	1.945	1.778	1.613	l/h

**Fan heater type 10 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	36,6	33,4	30,3	kW
	31.450	28.750	26.100	Kcal/h
Air flow rate	2.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	55	58	60	°C
Water side head loss	6	5	4	kPa
Water flow rate	1.617	1.478	1.341	l/h

**Fan heater type 10 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	30,3	27,7	25,1	kW
	26.050	23.800	21.600	Kcal/h
Air flow rate	1850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	62	64	66	°C
Water side head loss	4	4	3	kPa
Water flow rate	1.339	1.224	1.110	l/h

- (1) Data refers to the following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 11 AND 12, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 11 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	40,1	36,6	33,2	kW
	34.450	31.500	28.550	Kcal/h
Air flow rate	5.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	37	41	44	°C
Water side head loss	8	7	6	kPa
Water flow rate	1.771	1.619	1.468	l/h

**Fan heater type 11 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	33,5	30,6	27,8	kW
	28.800	26.350	23.900	Kcal/h
Air flow rate	3.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	44	47	50	°C
Water side head loss	6	5	4	kPa
Water flow rate	1.482	1.355	1.228	l/h

**Fan heater type 11 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	29,2	26,7	24,2	kW
	25.100	22.950	20.800	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	50	53	55	°C
Water side head loss	5	4	3	kPa
Water flow rate	1.291	1.179	1.070	l/h

**Fan heater type 12 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	54,0	49,4	44,8	kW
	46.450	42.450	38.550	Kcal/h
Air flow rate	4.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	47	50	53	°C
Water side head loss	10	9	7	kPa
Water flow rate	2.388	2.184	1.982	l/h

**Fan heater type 12 at medium fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	43,5	39,8	36,2	kW
	37.450	34.250	31.100	Kcal/h
Air flow rate	3.150			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	56	58	60	°C
Water side head loss	7	6	5	kPa
Water flow rate	1.926	1.761	1.598	l/h

**Fan heater type 12 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	36,0	32,9	29,9	kW
	31.000	28.300	25.700	Kcal/h
Air flow rate	2.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	63	64	66	°C
Water side head loss	5	4	4	kPa
Water flow rate	1.593	1.456	1.321	l/h

- (1) Data refers to the following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 13 14 15, ELECTRICAL POWER SUPPLY TRI-PHASE 400 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 13 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	48,6	44,5	40,3	kW
	41.800	38.250	34.700	Kcal/h
Air flow rate	6.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	36	40	43	°C
Water side head loss	9	8	6	kPa
Water flow rate	2.151	1.967	1.784	l/h

**Fan heater type 13 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	42,1	38,5	34,9	kW
	36.200	33.100	30.000	Kcal/h
Air flow rate	4.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	42	45	48	°C
Water side head loss	7	6	5	kPa
Water flow rate	1.861	1.701	1.543	l/h

**Fan heater type 14 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	64,7	59,2	53,7	kW
	55.650	50.900	46.150	Kcal/h
Air flow rate	6.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	46	48	51	°C
Water side head loss	7	6	5	kPa
Water flow rate	2.863	2.617	2.373	l/h

**Fan heater type 14 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	54,4	49,7	45,1	kW
	46.750	42.750	38.750	Kcal/h
Air flow rate	4.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	53	55	57	°C
Water side head loss	5	5	4	kPa
Water flow rate	2.405	2.198	1.993	l/h

**Fan heater type 15 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	69,4	63,4	57,5	kW
	59.700	54.550	49.450	Kcal/h
Air flow rate	8.500			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	39	42	46	°C
Water side head loss	7	6	5	kPa
Water flow rate	3.069	2.805	2.543	l/h

**Fan heater type 15 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	62,7	57,3	51,9	kW
	53.900	49.250	44.650	Kcal/h
Air flow rate	6.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	43	46	49	°C
Water side head loss	6	5	4	kPa
Water flow rate	2.771	2.533	2.296	l/h

(1) Data refers to the following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally..



**TYPES 16 17 18, ELECTRICAL POWER SUPPLY TRI-PHASE 400 V – 50 Hz, WATER TEMP. DROP 90-70°C**
**Fan heater type 16 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	90,4	82,6	74,9	kW
	77.750	71.050	64.400	Kcal/h
Air flow rate	7.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	49	52	54	°C
Water side head loss	6	5	4	kPa
Water flow rate	3.999	3.654	3.313	l/h

**Fan heater type 16 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	80,7	73,7	66,9	kW
	69.400	63.400	57.550	Kcal/h
Air flow rate	6.100			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	54	56	58	°C
Water side head loss	5	4	3	kPa
Water flow rate	3.569	3.260	2.956	l/h

**Fan heater type 17 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	91,2	83,4	75,7	kW
	78.400	71.750	65.100	Kcal/h
Air flow rate	12.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	36	40	43	°C
Water side head loss	13	11	9	kPa
Water flow rate	4.033	3.690	3.349	l/h

**Fan heater type 17 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	80,2	73,4	66,6	kW
	68.950	63.100	57.250	Kcal/h
Air flow rate	8.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	41	44	48	°C
Water side head loss	10	9	8	kPa
Water flow rate	3.547	3.245	2.945	l/h

**Fan heater type 18 at maximum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	118,4	108,3	98,3	kW
	101.800	93.100	84.500	Kcal/h
Air flow rate	10.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	47	50	52	°C
Water side head loss	11	9	8	kPa
Water flow rate	5.235	4.788	4.346	l/h

**Fan heater type 18 at minimum fan speed with water 90 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	105,1	96,1	87,2	kW
	90.350	82.650	75.000	Kcal/h
Air flow rate	8.400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	52	54	56	°C
Water side head loss	9	8	6	kPa
Water flow rate	4.648	4.250	3.857	l/h

- (1) Data refers to the following conditions:  
 - Area unobstructed  
 - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 1 AND 2, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 1 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	13,3	12,2	11	kW
	11.450	10.450	9.450	Kcal/h
Air flow rate	1.750			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			DB(A)
Air outlet temperature	38	41	44	°C
Water side head loss	26	22	18	kPa
Water flow rate	785	715	647	l/h

**Fan heater type 1 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	11,6	10,6	9,6	kW
	10.000	9.150	8.250	Kcal/h
Air flow rate	1.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			DB(A)
Air outlet temperature	43	46	49	°C
Water side head loss	20	17	15	kPa
Water flow rate	685	625	566	l/h

**Fan heater type 1 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	10,2	9,3	8,4	kW
	8.750	8.000	7.200	Kcal/h
Air flow rate	900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			DB(A)
Air outlet temperature	48	50	53	°C
Water side head loss	16	14	11	kPa
Water flow rate	598	546	494	l/h

**Fan heater type 2 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	17,3	15,8	14,3	kW
	14.900	13.600	12.300	Kcal/h
Air flow rate	1.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			DB(A)
Air outlet temperature	47	50	53	°C
Water side head loss	20	17	14	kPa
Water flow rate	1020	931	842	l/h

**Fan heater type 2 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	14,9	13,5	12,3	kW
	12.800	11.650	10.550	Kcal/h
Air flow rate	1.150			M <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			DB(A)
Air outlet temperature	53	55	58	°C
Water side head loss	15	13	11	kPa
Water flow rate	875	798	722	l/h

**Fan heater type 2 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	12,6	11,5	10,3	kW
	10.800	9.850	8.900	Kcal/h
Air flow rate	850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			Db(A)
Air outlet temperature	59	61	62	°C
Water side head loss	11	10	8	kPa
Water flow rate	741	675	611	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 3 AND 4, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 3 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	17,7	16,2	14,7	kW
	15.250	13.900	12.600	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	36	40	43	°C
Water side head loss	17	15	12	kPa
Water flow rate	1.044	952	861	l/h

**Fan heater type 3 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	16,7	15,2	13,7	kW
	14.350	13.100	11.800	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	39	42	45	°C
Water side head loss	15	13	11	kPa
Water flow rate	981	895	810	l/h

**Fan heater type 3 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	16,2	14,8	13,4	kW
	13.900	12.700	11.500	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	40	43	46	°C
Water side head loss	15	12	10	kPa
Water flow rate	953	869	786	l/h

**Fan heater type 4 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	23,8	21,7	19,7	kW
	20.450	18.650	16.900	Kcal/h
Air flow rate	2.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	45	48	51	°C
Water side head loss	20	17	14	kPa
Water flow rate	1.401	1.278	1.156	l/h

**Fan heater type 4 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	21,6	19,7	17,8	kW
	18.600	16.950	15.350	Kcal/h
Air flow rate	1.850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	49	52	54	°C
Water side head loss	16	14	12	kPa
Water flow rate	1.271	1.159	1.049	l/h

**Fan heater type 4 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	19,8	18,1	16,3	kW
	17.050	15.550	14.050	Kcal/h
Air flow rate	1.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	52	55	57	°C
Water side head loss	14	12	10	kPa
Water flow rate	1.168	1.065	963	l/h

(1) Data refers to following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 5 AND 6, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 5 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	22,0	20,1	18,2	kW
	18.950	17.300	15.650	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	38	41	45	°C
Water side head loss	30	26	22	kPa
Water flow rate	1.296	1.184	1.072	l/h

**Fan heater type 5 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	19,4	17,7	16,0	kW
	16.700	15.250	13.750	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	43	46	49	°C
Water side head loss	24	21	17	kPa
Water flow rate	1.142	1.043	944	l/h

**Fan heater type 5 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	17,5	16,0	14,5	kW
	15.050	13.750	12.450	Kcal/h
Air flow rate	1.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	46	49	52	°C
Water side head loss	20	17	14	kPa
Water flow rate	1.031	941	852	l/h

**Fan heater type 6 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	28,5	26,0	23,5	kW
	24.550	22.400	20.250	Kcal/h
Air flow rate	2.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	47	50	53	°C
Water side head loss	17	15	13	kPa
Water flow rate	1.680	1.532	1.386	l/h

**Fan heater type 6 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	24,5	22,4	20,2	kW
	21.100	19.250	17.400	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	53	55	58	°C
Water side head loss	13	11	10	kPa
Water flow rate	1.446	1.318	1.192	l/h

**Fan heater type 6 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	21,3	19,4	17,6	kW
	18.350	16.700	15.100	Kcal/h
Air flow rate	1.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	58	60	62	°C
Water side head loss	11	9	7	kPa
Water flow rate	1.255	1.144	1.035	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 7 AND 8, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 7 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	27,4	25,0	22,6	kW
	23.550	21.500	19.450	Kcal/h
Air flow rate	3.600			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	37	41	44	°C
Water side head loss	24	20	17	kPa
Water flow rate	1.612	1.471	1.332	l/h

**Fan heater type 7 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	23,0	21,0	19,0	kW
	19.800	18.050	16.350	Kcal/h
Air flow rate	2.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	44	47	50	°C
Water side head loss	18	15	13	kPa
Water flow rate	1.355	1.237	1.119	l/h

**Fan heater type 7 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	19,7	18,0	16,3	kW
	16.950	15.450	14.000	Kcal/h
Air flow rate	1650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	50	52	55	°C
Water side head loss	13	11	10	kPa
Water flow rate	1.161	1.059	958	l/h

**Fan heater type 8 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	36,4	33,2	30,0	kW
	31.300	28.550	25.800	Kcal/h
Air flow rate	3400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	46	49	52	°C
Water side head loss	19	16	14	kPa
Water flow rate	2.141	1.953	1.767	l/h

**Fan heater type 8 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	27,9	25,5	23,0	kW
	24.000	21.900	19.800	Kcal/h
Air flow rate	2000			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	56	58	60	°C
Water side head loss	12	10	9	kPa
Water flow rate	1.644	1.499	1.356	l/h

**Fan heater type 8 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	22,4	20,5	18,5	kW
	19.300	17.600	15.900	Kcal/h
Air flow rate	1.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	65	65	66	°C
Water side head loss	8	7	6	kPa
Water flow rate	1.322	1.205	1.089	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 9 AND 10, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 9 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	31,9	29,1	26,3	kW
	27.400	25.000	22.650	Kcal/h
Air flow rate	3.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	39	42	45	°C
Water side head loss	20	17	14	kPa
Water flow rate	1.876	1.712	1.550	l/h

**Fan heater type 9 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	27,7	25,3	22,9	kW
	23.850	21.750	19.700	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	44	47	50	°C
Water side head loss	15	13	11	kPa
Water flow rate	1.631	1.489	1.347	l/h

**Fan heater type 9 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	23,3	21,3	19,2	kW
	20.050	18.300	16.550	Kcal/h
Air flow rate	1900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	51	53	55	°C
Water side head loss	11	10	8	kPa
Water flow rate	1.371	1.251	1.132	l/h

**Fan heater type 10 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	42,7	39,0	35,2	kW
	36.750	33.500	30.300	Kcal/h
Air flow rate	3.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	47	50	52	°C
Water side head loss	13	11	10	kPa
Water flow rate	2.514	2.292	2.073	l/h

**Fan heater type 10 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	35,4	32,3	29,2	kW
	30.450	27.750	25.100	Kcal/h
Air flow rate	2.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	54	56	58	°C
Water side head loss	10	8	7	kPa
Water flow rate	2.084	1.900	1.718	l/h

**Fan heater type 10 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	29,2	26,6	24,1	kW
	25.100	22.900	20.700	Kcal/h
Air flow rate	1850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	61	62	64	°C
Water side head loss	7	6	5	kPa
Water flow rate	1.720	1.567	1.417	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 11 AND 12, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 11 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	39,1	35,6	32,2	kW
	33.600	30.650	27.700	Kcal/h
Air flow rate	5.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	37	40	44	°C
Water side head loss	13	11	9	kPa
Water flow rate	2.300	2.098	1.897	l/h

**Fan heater type 11 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	32,9	29,8	26,9	kW
	28.050	25.600	23.150	Kcal/h
Air flow rate	3.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	44	47	50	°C
Water side head loss	9	8	7	kPa
Water flow rate	1.920	1.751	1.583	l/h

**Fan heater type 11 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	28,4	25,8	23,4	kW
	14.400	22.200	20.100	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	49	52	54	°C
Water side head loss	7	6	5	kPa
Water flow rate	1.668	1.521	1.375	l/h

**Fan heater type 12 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	52,4	47,8	43,3	kW
	45.100	41.150	37.200	Kcal/h
Air flow rate	4.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	46	49	52	°C
Water side head loss	16	14	12	kPa
Water flow rate	3.086	2.815	2.547	l/h

**Fan heater type 12 at medium fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	42,2	38,4	34,8	kW
	36.250	33.050	29.900	Kcal/h
Air flow rate	3.150			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	54	56	59	°C
Water side head loss	11	9	8	kPa
Water flow rate	2.481	2.262	2.046	l/h

**Fan heater type 12 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	34,8	31,6	28,6	kW
	29.900	27.200	24.600	Kcal/h
Air flow rate	2.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	61	63	64	°C
Water side head loss	8	7	6	kPa
Water flow rate	2.045	1.863	1.685	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 13 14 15, ELECTRICAL POWER SUPPLY TRI-PHASE 400 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 13 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	47,4	43,3	39,2	kW
	40.800	37.250	33.700	Kcal/h
Air flow rate	6.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	36	39	43	°C
Water side head loss	14	12	10	kPa
Water flow rate	2.793	2.549	2.305	l/h

**Fan heater type 13 at minimum fan speed with water 85 – 70°C C**

Air intake temperature	15	20	25	°C
Thermal output	41,0	37,4	33,8	kW
	35.250	32.150	29.100	Kcal/h
Air flow rate	4.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	41	44	47	°C
Water side head loss	11	9	8	kPa
Water flow rate	2.412	2.200	1.990	l/h

**Fan heater type 14 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	63,0	57,4	51,9	kW
	54.150	49.400	44.650	Kcal/h
Air flow rate	6.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	45	48	50	°C
Water side head loss	12	10	8	kPa
Water flow rate	3.707	3.380	3.056	l/h

**Fan heater type 14 at minimum fan speed with water 85 – 70°C C**

Air intake temperature	15	20	25	°C
Thermal output	52,7	48,1	43,5	kW
	45.350	41.350	37.400	Kcal/h
Air flow rate	4.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	51	54	56	°C
Water side head loss	8	7	6	kPa
Water flow rate	3.105	2.830	2.559	l/h

**Fan heater type 15 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	67,7	61,7	55,8	kW
	58.200	53.100	48.000	Kcal/h
Air flow rate	8.500			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	38	42	45	°C
Water side head loss	11	9	8	kPa
Water flow rate	3.985	3.634	3.286	l/h

**Fan heater type 15 at minimum fan speed with water 85 – 70°C C**

Air intake temperature	15	20	25	°C
Thermal output	61,0	55,6	50,3	kW
	52.500	47.850	43.300	Kcal/h
Air flow rate	6.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	42	45	48	°C
Water side head loss	9	8	6	kPa
Water flow rate	3.593	3.276	2.962	l/h

(1) Data refers to following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.



**TYPES 16 17 18, ELECTRICAL POWER SUPPLY TRI-PHASE 400 V – 50 Hz, WATER TEMP. DROP 85-70°C**
**Fan heater type 16 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	87,8	80,1	72,4	kW
	75.550	68.900	62.250	Kcal/h
Air flow rate	7.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	48	51	53	°C
Water side head loss	9	8	6	kPa
Water flow rate	5.173	4.715	4.262	l/h

**Fan heater type 16 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	78,3	71,3	64,5	kW
	67.300	61.350	55.450	Kcal/h
Air flow rate	6.100			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	53	55	57	°C
Water side head loss	7	6	5	kPa
Water flow rate	4.607	4.198	3.794	l/h

**Fan heater type 17 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	88,8	81,1	73,4	kW
	66.400	69.750	63.100	Kcal/h
Air flow rate	12.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	36	39	43	°C
Water side head loss	21	18	15	kPa
Water flow rate	5.229	4.773	4.321	l/h

**Fan heater type 17 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	78,0	71,2	64,4	kW
	67.050	61.200	55.400	Kcal/h
Air flow rate	8.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	41	44	47	°C
Water side head loss	17	14	12	kPa
Water flow rate	4.591	4.190	3.792	l/h

**Fan heater type 18 at maximum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	114,9	104,8	94,9	kW
	98.800	90.150	81.600	Kcal/h
Air flow rate	10.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	46	49	51	°C
Water side head loss	17	15	12	kPa
Water flow rate	6.764	6.171	5.583	l/h

**Fan heater type 18 at minimum fan speed with water 85 – 70°C**

Air intake temperature	15	20	25	°C
Thermal output	101,8	92,8	84,0	kW
	87.550	79.850	72.250	Kcal/h
Air flow rate	8.400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	50	53	55	°C
Water side head loss	14	12	10	kPa
Water flow rate	5.994	5.466	4.945	l/h

(1) Data refers to following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 1 AND 2, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 1 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	6,0	4,9	3,8	kW
	5.150	4.200	3.250	Kcal/h
Air flow rate	1.750			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			DB(A)
Air outlet temperature	25	28	32	°C
Water side head loss	15	10	6	kPa
Water flow rate	522	424	327	l/h

**Fan heater type 1 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	5,3	4,3	3,3	kW
	4.550	3.700	2.800	Kcal/h
Air flow rate	1.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			DB(A)
Air outlet temperature	28	30	33	°C
Water side head loss	12	8	5	kPa
Water flow rate	458	373	284	l/h

**Fan heater type 1 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	4,7	3,8	2,8	kW
	4.000	3.250	2.400	Kcal/h
Air flow rate	900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			DB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	9	6	4	kPa
Water flow rate	402	327	244	l/h

**Fan heater type 2 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	7,9	6,4	4,9	kW
	6.800	5.500	4.200	Kcal/h
Air flow rate	1.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			DB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	12	8	5	kPa
Water flow rate	684	557	424	l/h

**Fan heater type 2 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	6,8	5,5	4,1	kW
	5.850	4.750	3.550	Kcal/h
Air flow rate	1.150			M <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			DB(A)
Air outlet temperature	32	34	36	°C
Water side head loss	9	6	4	kPa
Water flow rate	590	481	358	l/h

**Fan heater type 2 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	5,8	4,7	3,4	kW
	5.000	4.000	2.950	Kcal/h
Air flow rate	850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	41			Db(A)
Air outlet temperature	35	37	37	°C
Water side head loss	7	5	3	kPa
Water flow rate	502	403	299	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 3 AND 4, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 3 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	7,9	6,5	4,8	kW
	6.800	5.550	4.150	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	25	28	31	°C
Water side head loss	10	7	4	kPa
Water flow rate	689	558	420	l/h

**Fan heater type 3 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	7,5	6,0	4,5	kW
	6.450	5.200	3.900	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	26	29	32	°C
Water side head loss	9	6	4	kPa
Water flow rate	649	526	390	l/h

**Fan heater type 3 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	7,3	5,9	4,4	kW
	6.250	5.050	3.750	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	26	29	32	°C
Water side head loss	8	6	3	kPa
Water flow rate	631	511	377	l/h

**Fan heater type 4 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	10,8	8,8	6,7	kW
	9.300	7.550	5.750	Kcal/h
Air flow rate	2.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	51			dB(A)
Air outlet temperature	29	31	34	°C
Water side head loss	11	8	5	kPa
Water flow rate	937	762	582	l/h

**Fan heater type 4 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	9,8	8,0	6,0	kW
	8.450	6.900	5.150	Kcal/h
Air flow rate	1.850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	31	33	35	°C
Water side head loss	10	7	4	kPa
Water flow rate	853	694	521	l/h

**Fan heater type 4 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	9,1	7,4	5,5	kW
	7.800	6.350	4.700	Kcal/h
Air flow rate	1.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	45			dB(A)
Air outlet temperature	32	34	36	°C
Water side head loss	8	6	3	kPa
Water flow rate	785	640	474	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 5 AND 6, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 5 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	10,0	8,1	6,3	kW
	8.600	7.000	5.400	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	25	29	32	°C
Water side head loss	17	12	8	kPa
Water flow rate	867	706	546	l/h

**Fan heater type 5 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	8,8	7,2	5,6	kW
	7.600	6.200	4.800	Kcal/h
Air flow rate	2.050			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	28	30	33	°C
Water side head loss	14	10	6	kPa
Water flow rate	767	625	484	l/h

**Fan heater type 5 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	8,0	6,5	5,0	kW
	6.900	5.600	4.300	Kcal/h
Air flow rate	1.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	29	32	34	°C
Water side head loss	12	8	5	kPa
Water flow rate	695	567	435	l/h

**Fan heater type 6 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	13,0	10,6	8,0	kW
	11.150	9.100	6.900	Kcal/h
Air flow rate	2.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	10	7	4	kPa
Water flow rate	1.126	916	695	l/h

**Fan heater type 6 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	11,2	9,1	6,7	kW
	9.650	7.850	5.800	Kcal/h
Air flow rate	1.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	50			dB(A)
Air outlet temperature	32	34	36	°C
Water side head loss	8	5	3	kPa
Water flow rate	974	794	587	l/h

**Fan heater type 6 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	9,8	7,9	5,8	kW
	8.400	6.800	5.000	Kcal/h
Air flow rate	1.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	35	36	37	°C
Water side head loss	6	4	2	kPa
Water flow rate	850	683	503	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 7 AND 8, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 7 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	12,4	10,1	7,7	kW
	10.650	8.650	6.650	Kcal/h
Air flow rate	3.600			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	25	28	32	°C
Water side head loss	14	9	6	kPa
Water flow rate	1.074	873	673	l/h

**Fan heater type 7 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	10,5	8,5	6,5	kW
	9.000	7.300	5.600	Kcal/h
Air flow rate	2.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	28	31	33	°C
Water side head loss	10	7	4	kPa
Water flow rate	908	739	562	l/h

**Fan heater type 7 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	9,0	7,3	5,5	kW
	7.750	6.300	4.700	Kcal/h
Air flow rate	1650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	31	33	35	°C
Water side head loss	8	5	3	kPa
Water flow rate	782	637	472	l/h

**Fan heater type 8 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	16,6	13,5	10,3	kW
	14.250	11.600	8.900	Kcal/h
Air flow rate	3400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	29	32	34	°C
Water side head loss	11	8	5	kPa
Water flow rate	1.435	1.168	899	l/h

**Fan heater type 8 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	12,8	10,5	7,7	kW
	11.050	9.000	6.600	Kcal/h
Air flow rate	2000			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	34	36	37	°C
Water side head loss	7	5	3	kPa
Water flow rate	1.113	905	668	l/h

**Fan heater type 8 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	10,3	8,3	6,1	kW
	8.900	7.100	5.250	Kcal/h
Air flow rate	1.350			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	37	38	39	°C
Water side head loss	5	3	2	kPa
Water flow rate	899	714	528	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 9 AND 10, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 9 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	14,4	11,7	9,1	kW
	12.400	10.050	7.800	Kcal/h
Air flow rate	3.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	26	29	32	°C
Water side head loss	11	8	5	kPa
Water flow rate	1.250	1.015	782	l/h

**Fan heater type 9 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	12,6	10,2	7,7	kW
	10.800	8.800	6.600	Kcal/h
Air flow rate	2.800			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	28	31	33	°C
Water side head loss	9	6	4	kPa
Water flow rate	1.091	888	668	l/h

**Fan heater type 9 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	10,6	8,6	6,3	kW
	9.150	7.400	5.450	Kcal/h
Air flow rate	1900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	31	33	35	°C
Water side head loss	7	5	3	kPa
Water flow rate	923	749	548	l/h

**Fan heater type 10 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	19,4	15,8	11,7	kW
	16.650	13.550	10.050	Kcal/h
Air flow rate	3.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	8	5	3	kPa
Water flow rate	1.678	1.364	1.012	l/h

**Fan heater type 10 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	16,2	13,0	9,4	kW
	13.900	11.150	8.100	Kcal/h
Air flow rate	2.650			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	33	35	36	°C
Water side head loss	6	4	2	kPa
Water flow rate	1.401	1.125	816	l/h

**Fan heater type 10 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	13,3	10,5	7,7	kW
	11.450	9.000	6.600	Kcal/h
Air flow rate	1850			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	43			dB(A)
Air outlet temperature	36	37	37	°C
Water side head loss	4	3	2	kPa
Water flow rate	1.156	910	662	l/h

- (1) Data refers to following conditions:
- Area unobstructed
  - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 11 AND 12, ELECTRICAL POWER SUPPLY SINGLE-PHASE 230 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 11 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	17,5	14,2	10,4	kW
	15.050	12.200	8.950	Kcal/h
Air flow rate	5.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	25	28	31	°C
Water side head loss	7	5	3	kPa
Water flow rate	1.516	1.227	903	l/h

**Fan heater type 11 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	14,7	11,8	8,4	kW
	12.600	10.150	7.200	Kcal/h
Air flow rate	3.300			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	28	31	33	°C
Water side head loss	5	4	2	kPa
Water flow rate	1.273	1.023	726	l/h

**Fan heater type 11 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	12,8	10,1	7,1	kW
	11.050	8.650	6.100	Kcal/h
Air flow rate	2.450			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	4	3	1	kPa
Water flow rate	1.112	870	617	l/h

**Fan heater type 12 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	23,8	19,4	14,7	kW
	20.500	16.650	12.650	Kcal/h
Air flow rate	4.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	29	32	34	°C
Water side head loss	9	6	4	kPa
Water flow rate	2.065	1.679	1.277	l/h

**Fan heater type 12 at medium fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	19,3	15,7	11,5	kW
	16.600	13.500	9.850	Kcal/h
Air flow rate	3.150			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	33	35	36	°C
Water side head loss	6	4	3	kPa
Water flow rate	1.672	1.359	994	l/h

**Fan heater type 12 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	16,0	12,7	9,2	kW
	13.750	10.900	7.950	Kcal/h
Air flow rate	2.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	47			dB(A)
Air outlet temperature	36	37	38	°C
Water side head loss	5	3	2	kPa
Water flow rate	1.388	1.099	803	l/h

- (1) Data refers to following conditions:  
 - Area unobstructed  
 - Unit installed on wall 3 m above ground with sound pressure measured frontally.

**TYPES 13 14 15, ELECTRICAL POWER SUPPLY TRI-PHASE 400 V – 50 Hz, WATER TEMP. DROP 50-40°C**
**Fan heater type 13 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	21,3	17,2	12,9	kW
	18.300	14.800	11.100	Kcal/h
Air flow rate	6.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	24	28	31	°C
Water side head loss	8	6	3	kPa
Water flow rate	1.843	1.492	1.119	l/h

**Fan heater type 13 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	18,4	14,9	10,8	kW
	15.850	12.850	9.300	Kcal/h
Air flow rate	4.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	27	30	32	°C
Water side head loss	6	4	2	kPa
Water flow rate	1.598	1.296	936	l/h

**Fan heater type 14 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	28,4	23,0	16,7	kW
	24.400	19.800	14.400	Kcal/h
Air flow rate	6.200			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	52			dB(A)
Air outlet temperature	28	31	33	°C
Water side head loss	7	5	3	kPa
Water flow rate	2.460	1.995	1.454	l/h

**Fan heater type 14 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	23,9	19,1	13,6	kW
	20.550	16.400	11.700	Kcal/h
Air flow rate	4.250			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	46			dB(A)
Air outlet temperature	32	33	35	°C
Water side head loss	5	3	2	kPa
Water flow rate	2.074	1.654	1.179	l/h

**Fan heater type 15 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	30,3	24,5	17,6	kW
	26.050	21.050	15.100	Kcal/h
Air flow rate	8.500			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	25	29	31	°C
Water side head loss	6	4	2	kPa
Water flow rate	2.626	2.125	1.524	l/h

**Fan heater type 15 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	27,4	22,0	15,5	kW
	23.550	18.900	13.300	Kcal/h
Air flow rate	6.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	27	30	32	°C
Water side head loss	5	3	2	kPa
Water flow rate	2.375	1.907	1.343	l/h

(1) Data refers to following conditions:

- Area unobstructed
- Unit installed on wall 3 m above ground with sound pressure measured frontally.



**Fan heater type 16 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	39,7	31,9	22,6	kW
	34.100	27.400	19.400	Kcal/h
Air flow rate	7.700			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	54			dB(A)
Air outlet temperature	30	32	34	°C
Water side head loss	5	3	2	kPa
Water flow rate	3.438	2.761	1.959	l/h

**Fan heater type 16 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	35,5	27,9	19,7	kW
	30.500	24.000	16.950	Kcal/h
Air flow rate	6.100			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	49			dB(A)
Air outlet temperature	32	34	35	°C
Water side head loss	4	3	2	kPa
Water flow rate	3.075	2.418	1.711	l/h

**Fan heater type 17 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	40,1	32,5	25,0	kW
	34.450	27.950	21.500	Kcal/h
Air flow rate	12.550			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	24	28	31	°C
Water side head loss	12	8	5	kPa
Water flow rate	3.474	2.821	2.171	l/h

**Fan heater type 17 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	35,3	28,7	21,9	kW
	30.350	24.650	18.800	Kcal/h
Air flow rate	8.950			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	27	30	32	°C
Water side head loss	9	7	4	kPa
Water flow rate	3.062	2.489	1.899	l/h

**Fan heater type 18 at maximum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	52,2	42,5	32,6	kW
	44.900	36.550	28.050	Kcal/h
Air flow rate	10.900			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	53			dB(A)
Air outlet temperature	29	32	34	°C
Water side head loss	10	7	4	kPa
Water flow rate	4.530	3.685	2.829	l/h

**Fan heater type 18 at minimum fan speed with water 50 – 40°C**

Air intake temperature	15	20	25	°C
Thermal output	46,5	37,8	28,4	kW
	39.950	32.550	24.400	Kcal/h
Air flow rate	8.400			m <sup>3</sup> /h
Sound pressure level <sup>(1)</sup>	48			dB(A)
Air outlet temperature	31	33	35	°C
Water side head loss	8	6	3	kPa
Water flow rate	4.030	3.283	2.462	l/h

(1) Data refers to following conditions:  
 - Area unobstructed  
 - Unit installed on wall 3 m above ground with sound pressure measured frontally.

The following accessories are available on request:

Type	Code	1	2	3	4	N	N	7	8	9	10	11	12	13	14	15	16	17	18
Shelf pair	4AZM001	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4-position speed selector	4AAR022	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
4 position speed selector	4AAR023											●	●						
Panel with speed commutator	4AZQ001													●	●	●	●	●	●
Speed commutator	4AZC001													●	●	●	●	●	●
Ceiling installation kit	47KT002	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Vertical fin kit (pre-painted)	47KV012	●	●																
Vertical fin kit (pre-painted)	47KV022			●	●														
Vertical fin kit (pre-painted)	47KV032					●	●												
Vertical fin kit (pre-painted)	47KV042							●	●										
Vertical fin kit (pre-painted)	47KV052									●	●								
Vertical fin kit (pre-painted)	47KV062											●	●						
Vertical fin kit (pre-painted)	47KV072													●	●				
Vertical fin kit (pre-painted)	47KV082															●	●		
Vertical fin kit (pre-painted)	47KV092																	●	●
Vertical fin kit (stainless steel)	47KVX12	●	●																
Vertical fin kit (stainless steel)	47KVX22			●	●														
Vertical fin kit (stainless steel)	47KVX32					●	●												
Vertical fin kit (stainless steel)	47KVX42							●	●										
Vertical fin kit (stainless steel)	47KVX52									●	●								
Vertical fin kit (stainless steel)	47KVX62											●	●						
Vertical fin kit (stainless steel)	47KVX72													●	●				
Vertical fin kit (stainless steel)	47KVX82															●	●		
Vertical fin kit (stainless steel)	47KVX92																	●	●

## POSITIONING

The heater installation point must be selected by the planner or a person qualified to handle such matters: all technical requirements, standards and laws in force must be taken into account. Installation of the water-fed fan heater must be carried out by a company qualified as per Law requirements. You may need to make a planning application to ensure that you comply with architectural, fire prevention, and pollution prevention laws. Always obtain the necessary authorisation before going ahead with installation.

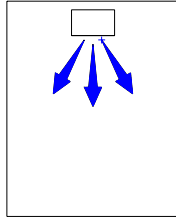
For ensure correct installation, always observe the following minimum requirements:

- position the unit on a dry level surface capable of sustaining its weight;
- ensure that the unit is positioned in such a way as to ensure proper air flow and allow cleaning and maintenance to be carried out;
- position the unit in a place that makes water and electrical connections convenient;

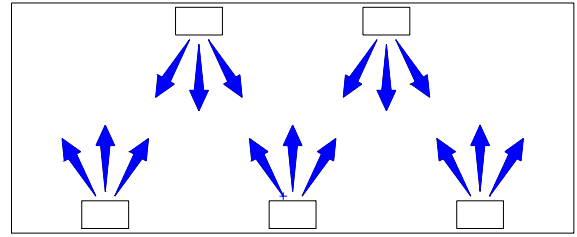


Select the appropriate model on the basis of performance data for medium or minimum fan speed.

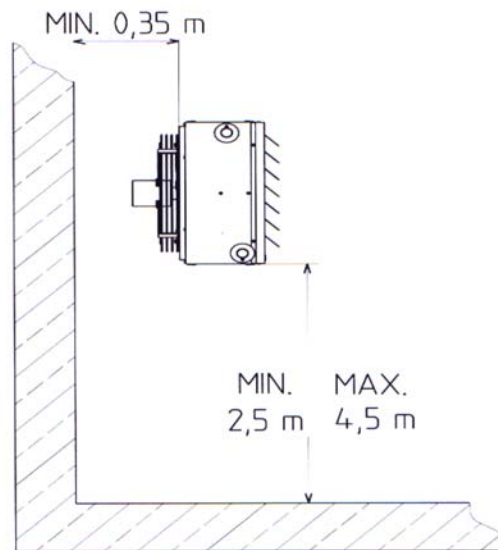
### Example of installation in a small room



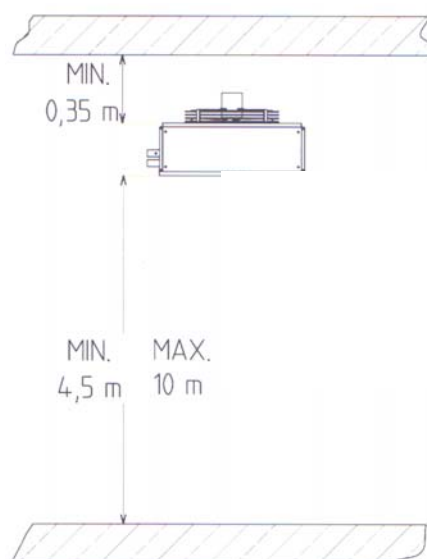
### Example of installation in a large room/area



### Example of vertical installation and ceiling installation



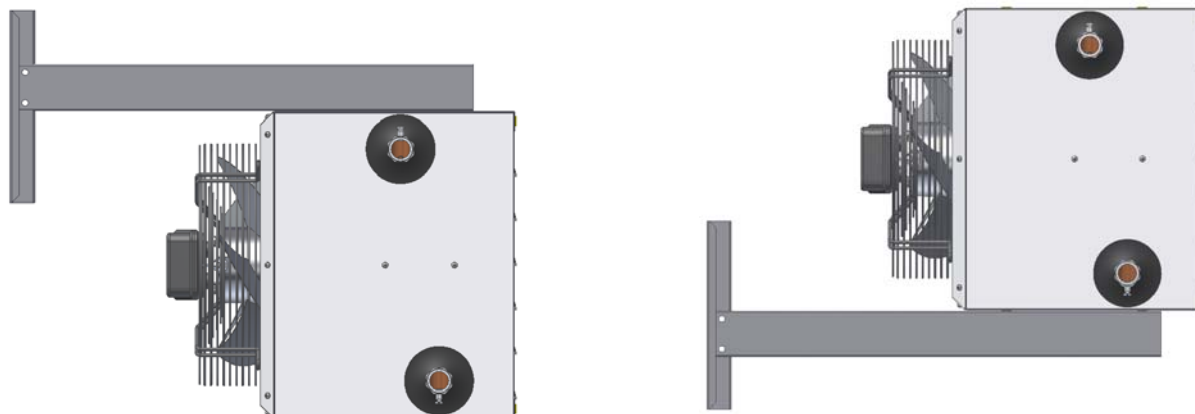
### Example of ceiling installation



When mounting the heater on the ceiling it is recommended that you use the CEILING INSTALLATION KIT.

## SHELF INSTALLATION

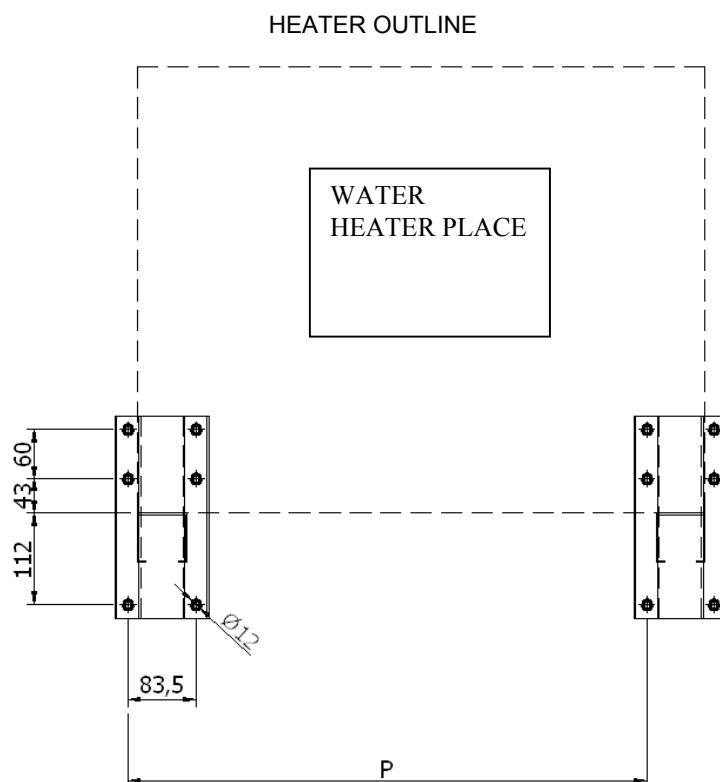
The shelves can be mounted either above or beneath the unit depending on installation requirements.



To assemble, proceed as follows:

- drill holes in the walls as per the template;
- attach the shelves to the walls using suitable fixing items (not supplied);
- mount the heater on the shelves and fix in place using the supplied screws and threaded inserts.

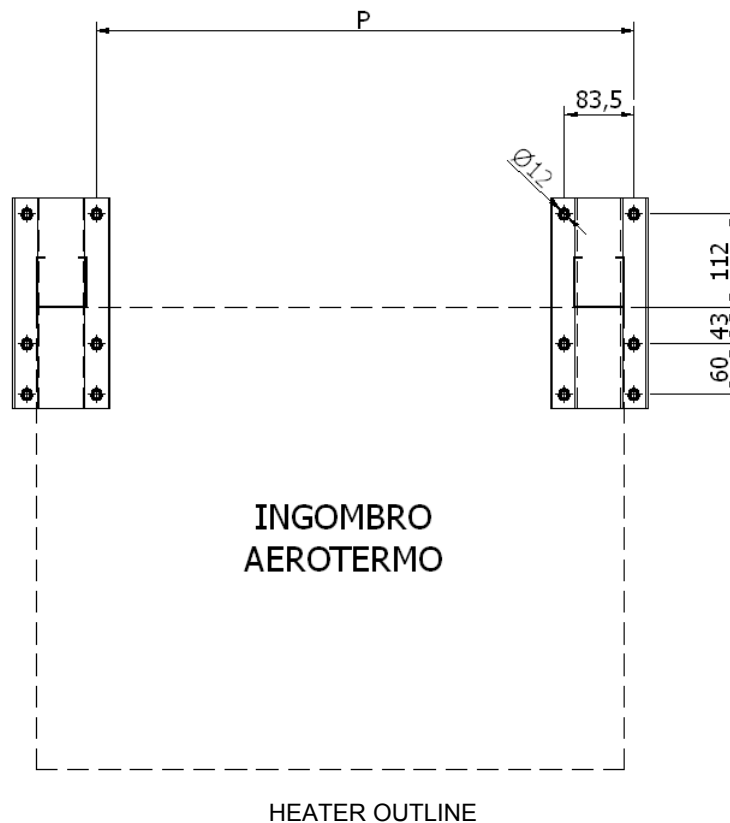
**Drilling template with shelves applied underneath heater unit.**



Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
P	489		539		589		639		689		739		789		1.139		1.339		mm

The diameter of the shelf plate fixing holes is 12 mm.

Drilling template with shelves applied over heater unit.



Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
P	489		539		589		639		689		739		789		1.139		1.339		mm

The diameter of shelf plate fixing holes is 12 mm.



**WARNING!**

The support shelves are sized to support one heater unit only. The Manufacturer cannot be held liable for any damages that may result from improper attachment of the shelves to the wall.

**IT IS FORBIDDEN**

To climb up on the shelves

## VERTICAL FIN KIT INSTALLATION

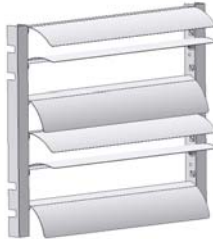
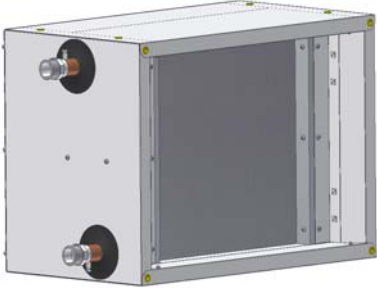
To install the VERTICAL FIN KIT proceed as follows:

- Turn around the fins to make easier the driving out of the screws (1);
- Drive out the fastener screws of the outlet panel (2);
- Take out the outlet panel (3);
- Mount the vertical fins kit (4)
- Mount the outlet panel back.





2



3

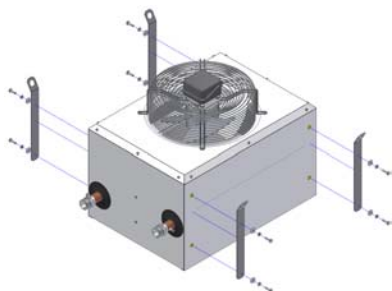


4

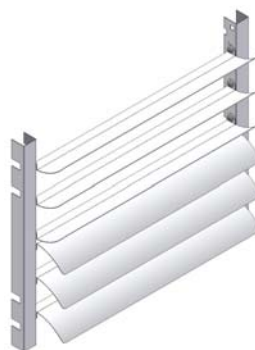
## INSTALLING THE CEILING MOUNTING KIT

To install the CEILING MOUNTING KIT proceed as follows:

- Remove the hang up facilities (1);
- Remove an half of the horizontal fins and mount it again in different direction, to direct the air flow in 2 different ways (2);
- Adjust the fins.



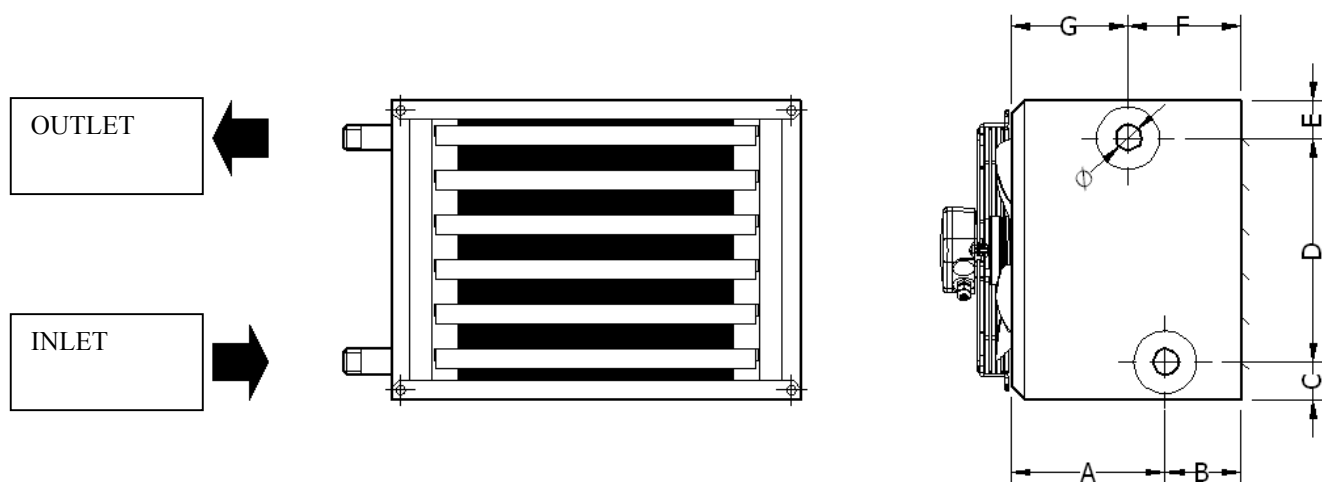
1



2

## WATER COUPLING DIMENSIONS

The unit is assembled in the factory with the water connection couplings on the left (as seen from the air outflow grating).



Water fitting dimensions

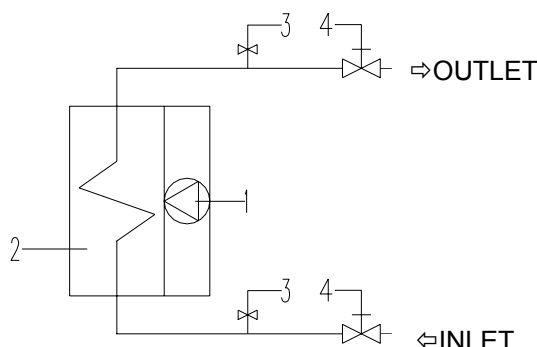
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>A</b>	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	mm
<b>B</b>	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	mm
<b>C</b>	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	mm
<b>D</b>	302	352	402	452	502	552	602	602	602	602	602	602	602	602	602	602	602	602	mm
<b>E</b>	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	mm
<b>F</b>	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	mm
<b>G</b>	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	182	mm
Ø male	1	1	1	1	1	1	1	1	1	1	1 1/4	1 1/4	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	Inch.



### WARNING!

For optimum performance it is essential that the water inlet-outlet directions always be observed as indicated by the adhesive label.

## WATER CIRCUIT DIAGRAM



### KEY:

1. Helical fan(s)
2. Water-air exchanger
3. Manual air bleed
4. Spherical check valve (not supplied)



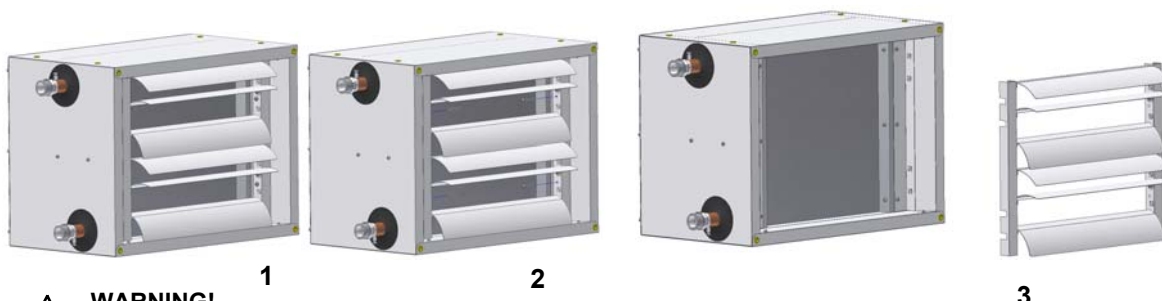
### WARNING!

Install a drain valve at the lowest point in the water circuit to empty the system when necessary.

## INVERTING THE WATER CONNECTIONS

To switch the water connections from one side to the other proceed as follows:

- Turn the fins to make easier the driving out of the screws of outlet panel(1);
- Drive out the fastener screws (2)
- Rotate the entire unit 180°(3);
- Re-mount the air outflow panel.



### WARNING!

For optimum performance it is essential that water inlet-outlet directions always be observed as indicated by the adhesive label.

## WATER CONNECTIONS



Selection and installation of water system components is the responsibility of the installer. The installer must observe the correct working practices and the legislation in force at all times.

In systems filled with anti-freeze, the use of water disconnectors is compulsory.

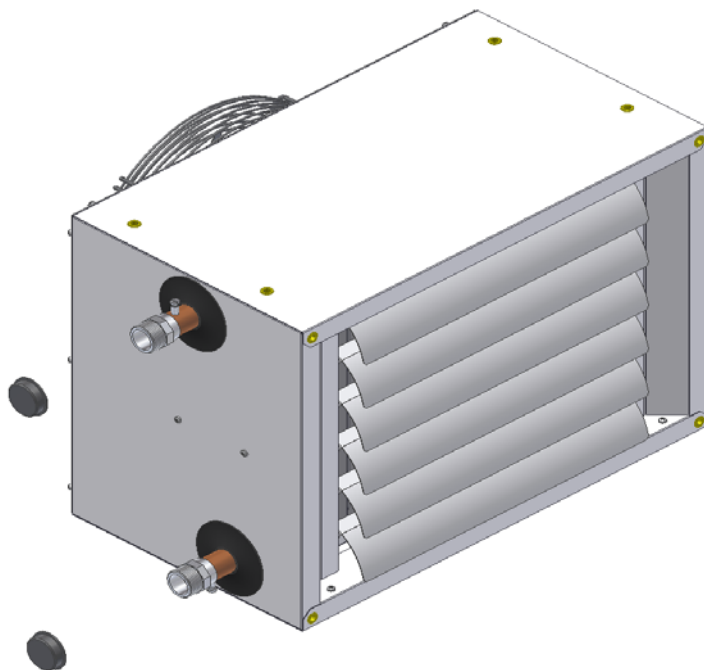
Where the heater is supplied with special or recycled water, it must first be treated accordingly. Observe the reference values in the table.


REFERENCE VALUES	
PH	6 – 8
Electrical conductivity	less than 200mV/cm (25°C)
Chlorine ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
Ammonia ions	none
Silicon ions	less than 30 ppm



#### TO CONNECT UP TO THE WATER SUPPLY:

- Remove the plastic plugs from the water connection fittings;
- Connect up to the system as indicated in the diagram on page 39.



 To prevent damage to the unit, secure the heater water fittings by using the wrench / counter wrench method.

To seal the threads, use hemp and green paste. Using Teflon is inadvisable where anti-freeze is used.

## ELECTRICAL CONNECTIONS

The fan heater leaves the factory fully wired and only require :

- To be connected to the mains;
- To be connected to a control device (where applicable).

Installation, near the unit, of a pad lockable magneto-thermal omnipolar cut-out switch that complies with CEI-CEN standards (contact aperture of at least 3 mm) is compulsory.

It is compulsory to use systems that, in the event of a fan heater breakdown, isolate the faulty unit only without compromising the routine operation of any other units making up the overall system.

An appropriate earth connection is compulsory. It is forbidden to use gas or water pipes to earth the unit. The Manufacturer cannot be held liable for any damages caused by failure to provide an appropriate earth or to correctly observe the information contained in the wiring diagrams.

When connecting the unit's earth (ground) make sure that the earth wire is slightly longer than the other two so that in the event of an accidental wrench, the earth wire will be the last to be detached.

For types with 2 electro-fan it is possible to supply the fans separately to partialize the running



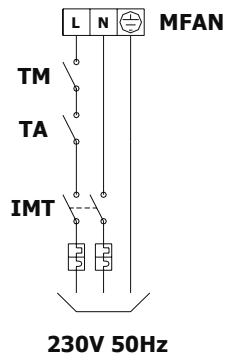
**Wire sizing table:**

<b>Type</b>	<b>Power supply</b> <b>(V ph Hz)</b>	<b>Max absorbed power</b> <b>(W)</b>	<b>Max absorbed current</b> <b>(A)</b>	<b>Mains fuse<sup>(1)</sup></b> <b>(A)</b>	<b>Mains wires cross-section<sup>(2)</sup></b> <b>(mm<sup>2</sup>)</b>	<b>Earth wire cross-section<sup>(2)</sup></b> <b>(mm<sup>2</sup>)</b>
<b>1 – 2</b>	230V ~ 50Hz	80	0,40	1	1,5	1,5
<b>3 – 4</b>	230V ~ 50Hz	95	0,40	1	1,5	1,5
<b>5 – 6</b>	230V ~ 50Hz	130	0,58	1	1,5	1,5
<b>7 – 8</b>	230V ~ 50Hz	140	0,70	1	1,5	1,5
<b>9 – 10</b>	230V ~ 50Hz	180	0,80	1	1,5	1,5
<b>11 – 12</b>	230V ~ 50Hz	150	1,40	2	1,5	1,5
<b>13 – 14</b>	400V 3N ~ 50Hz	245	1,04	2	1,5	1,5
<b>15 – 16</b>	400V 3N ~ 50Hz	260	1,40	2	1,5	1,5
<b>17 – 18</b>	400V 3N ~ 50Hz	490	2,08	3	1,5	1,5

(1) Not supplied

(2) Wire cross-section ensures a voltage drop of less than 5% for a length of 30 m

**WIRING CONNECTION DIAGRAM TYPES 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 – 11 – 12**  
(Single-phase 230 V – 50 Hz power supply)



**MFAN** - Fan connecting terminal

**230V 50Hz** - Single-phase 230V ~ 50Hz power supply

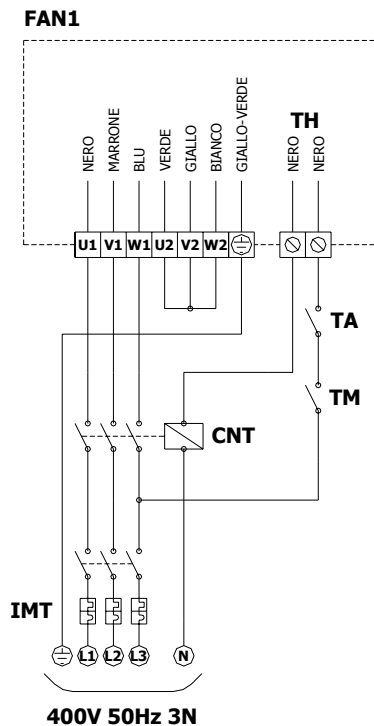
**TM<sup>(1)</sup>** - Minimum thermostat

**TA<sup>(1)</sup>** - Room thermostat

**IMT<sup>(1)</sup>** - Differential magneto-thermal cut-out switch

**(1) Not included: to be installed by the customer.**

**WIRING CONNECTION DIAGRAM TYPES 13 – 14 – 15 – 16 – 17 – 18 (STAR – MIN. SPEED)**  
(Tri-phase 400 V – 50 Hz 3N power supply)



Wires colours:

Black = nero

Brown = marrone

Blue = blu

Green = verde

Yellow = giallo

White = bianco

Green – Yellow = giallo - verde

**FAN1** - Electric fan

**TH** - N.C. motor safety contact

**400V 50Hz 3N** 400V ~ 50Hz Tri-phase 400 V – 50 Hz 3N power supply, with neutral

**CNT<sup>(1)</sup>** - Line electromagnetic switch

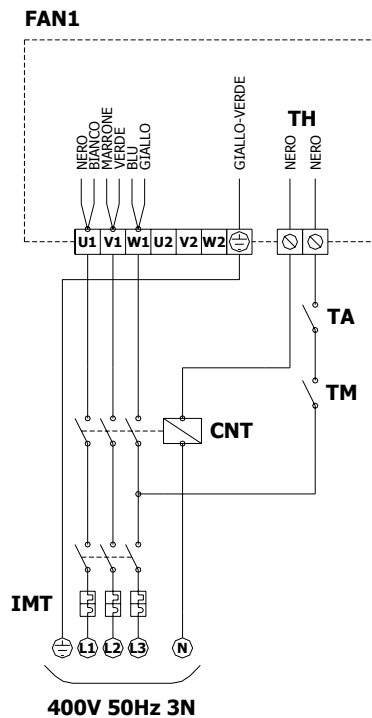
**TM<sup>(1)</sup>** - Minimum thermostat

**TA<sup>(1)</sup>** - Room thermostat

**IMT<sup>(1)</sup>** - Differential magneto-thermal cut-out switch

**(1) Not included: to be installed by the customer**

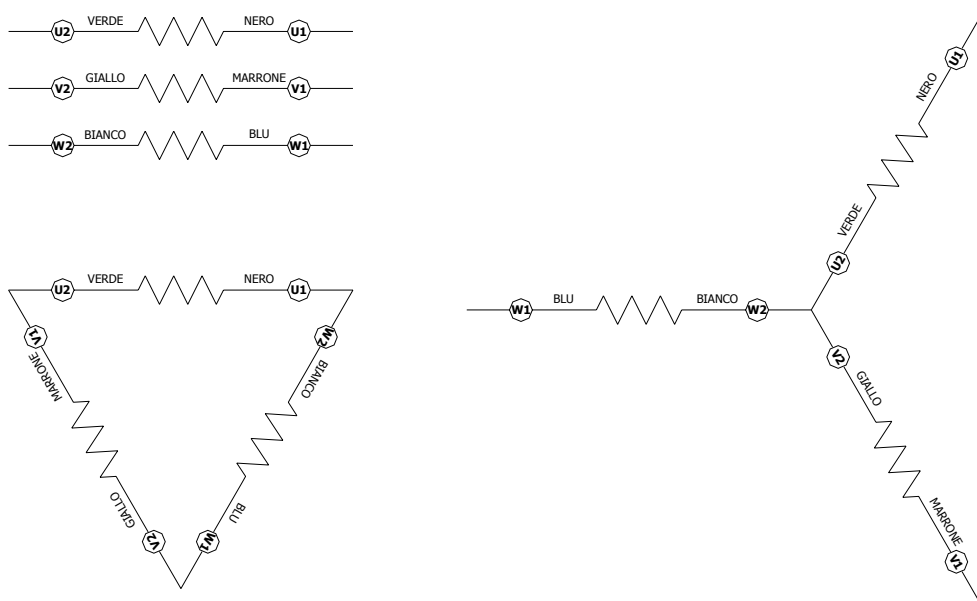
**WIRING CONNECTION DIAGRAM TYPES 13 – 14 – 15 – 16 – 17 – 18 ( TRIANGLE – MAX. SPEED)**  
(Tri-phase 400 V – 50 Hz 3N power supply)



- FAN1** - Electric fan  
**TH** - N.C. motor safety contact  
**400V 50Hz 3N** 400V ~ 50Hz Tri-phase 400 V – 50 Hz 3N power supply, with neutral  
**CNT<sup>(1)</sup>** - Line electromagnetic switch  
**TM<sup>(1)</sup>** - Minimum thermostat  
**TA<sup>(1)</sup>** - Room thermostat  
**IMT<sup>(1)</sup>** - Differential magneto-thermal cut-out switch

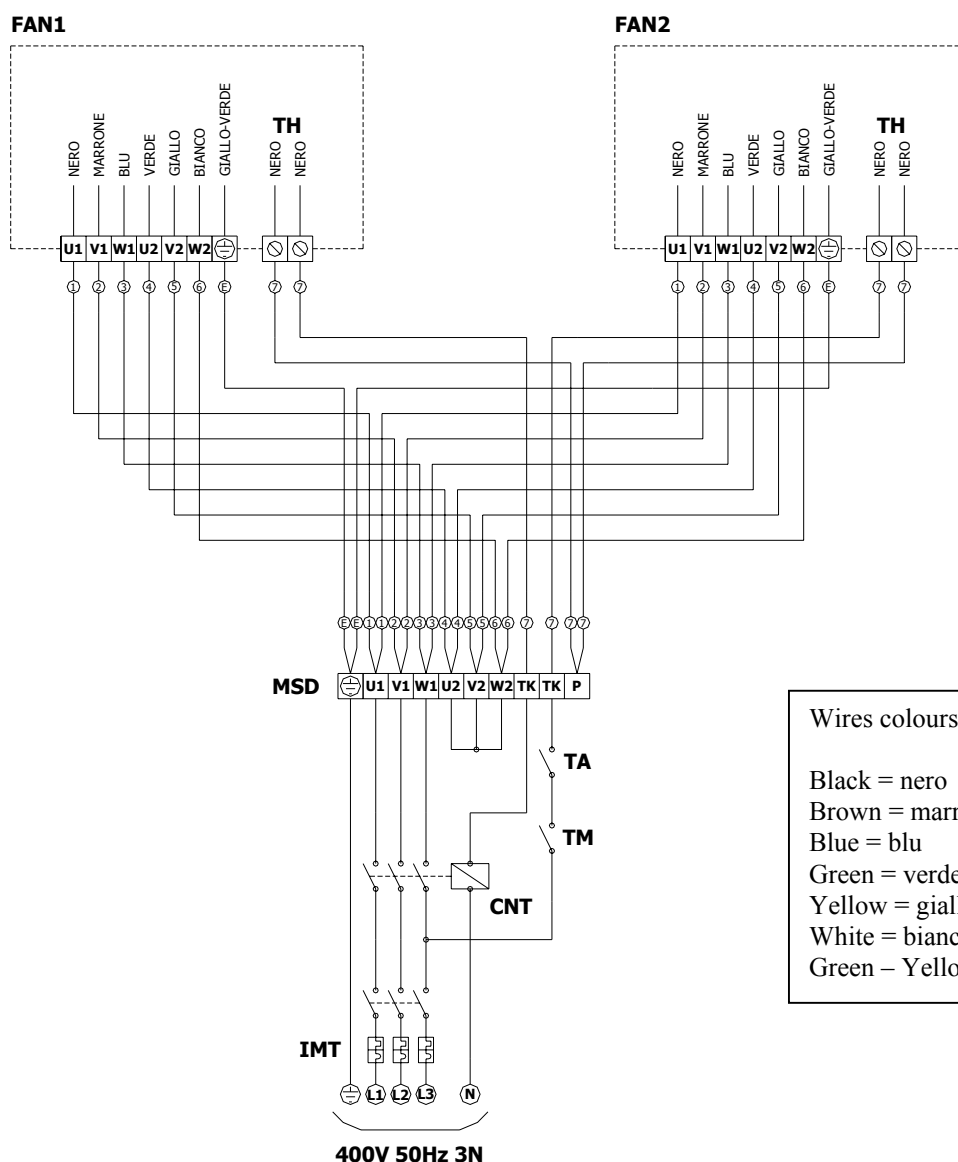
**(1) Not included: to be installed by the customer**

**MOTOR WINDINGS ELECTRICAL PLAN**  
(For version with Tri-phase 400 V – 50 Hz 3N power supply)



# **WIRING CONNECTION DIAGRAM TYPES 15 – 16 – 17 – 18 ( STAR - MIN. SPEED)**

For version with 2 fans and derivation box  
(Tri-phase 400 V – 50 Hz 3N power supply)



**FAN1** - Electric fan

**FAN2** - Electric fan

**MSD** Connecting terminal for derivation box

**TH** - N.C. motor safety contact

**400V 50Hz 3N** 400V ~ 50Hz Tri-phase 400 V – 50 Hz 3N power supply, with neutral

**CNT<sup>(1)</sup>** - Line electromagnetic switch

**TM<sup>(1)</sup>** - Minimum thermostat

**TA<sup>(1)</sup>** - Room thermostat

**IMT<sup>(1)</sup>** - Differential magneto-thermal cut-out switch

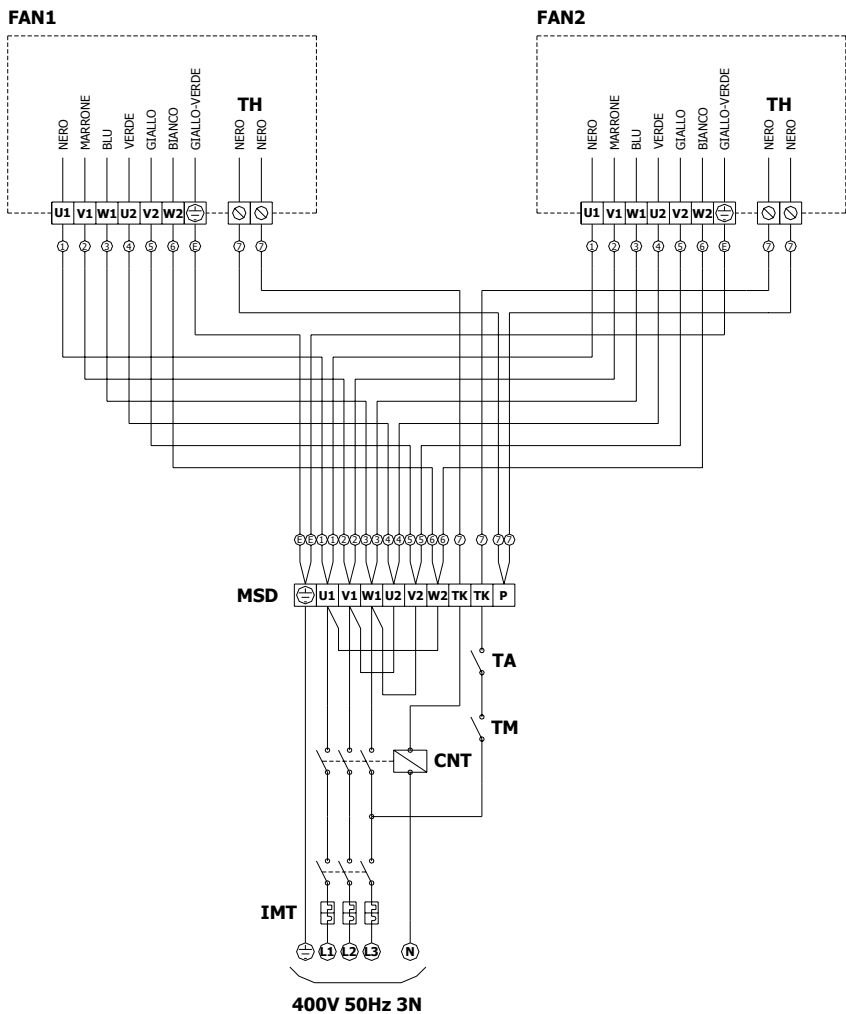
**(1) Not included: to be installed by the customer**

**Cable colours plan:**

NAME	CABLE COLOR
1	Black
2	Brown
3	Blue
4	Green
5	Yellow
6	White
E	Yellow - Green

### WIRING CONNECTION DIAGRAM TYPES 15 – 16 – 17 – 18 ( TRIANGLE - MAX. SPEED)

For version with 2 fans and derivation box  
(Tri-phase 400 V – 50 Hz 3N power supply)



**FAN1** - Electric fan

**FAN2** - Electric fan

**MSD** Connecting terminal for derivation box

**TH** - N.C. motor safety contact

**400V 50Hz 3N** 400V ~ 50Hz Tri-phase 400 V – 50 Hz 3N power supply, with neutral

**CNT<sup>(1)</sup>** - Line electromagnetic switch

**TM<sup>(1)</sup>** - Minimum thermostat

**TA<sup>(1)</sup>** - Room thermostat

**IMT<sup>(1)</sup>** - Differential magneto-thermal cut-out switch

**(1) Not included: to be installed by the customer**

### Cable colours plan:

NAME	CABLE COLOR
1	Black
2	Brown
3	Blue
4	Green
5	Yellow
6	White
E	Yellow - Green

## WIRING CONNECTION DIAGRAM FOR ACCESSORIES

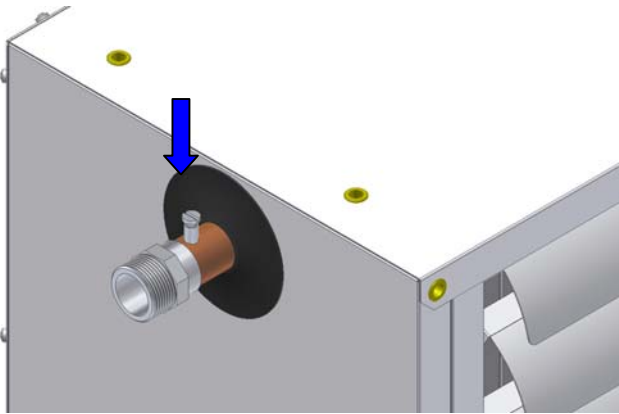
For wiring connections of accessories, please read carefully the instructions of each accessory

### FILLING - EMPTYING THE UNIT

#### FILLING:

Before you start filling:

- position the main switch to OFF;
- check that the water system drain valve is closed;
- open the upper manual bleed valve.



- start filling by slowly opening the water system filling valve external to the heater unit;
- when water begins flowing out of the bleed valve close the latter and continue filling until correct system pressure is reached;
- repeat the procedure after the heater has been running a few hours and periodically check pressure;
- check that there are no leaks.



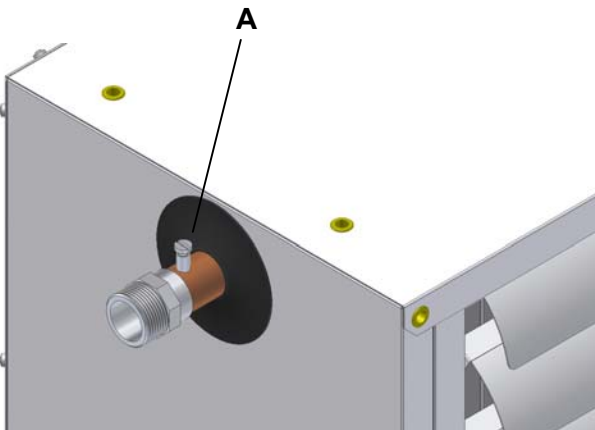
#### WARNING!

If there is a risk of sub-zero temperatures, mix some anti-freeze into the water in manufacturer-recommended quantities.

#### EMPTYING:

Before you start to empty:

- position the main switch to OFF.
- check that the water system drain valve is closed;
- open the manual bleed valves (A).



#### WARNING!

If the system contains anti-freeze the water must be collected and where possible, re-used. Do not dump as with normal water, because the anti-freeze is a pollutant.

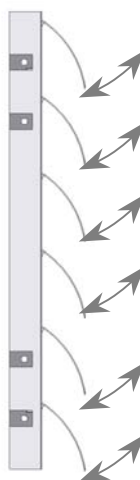
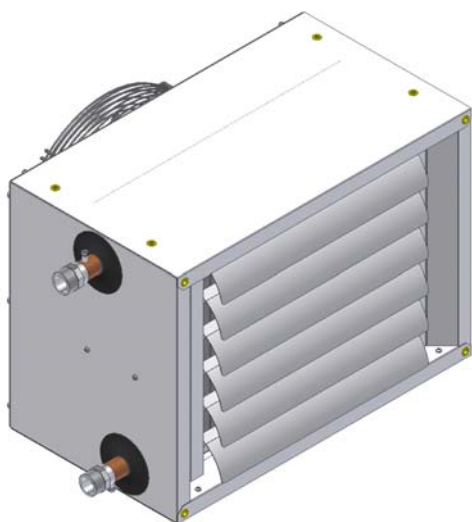
## PREPARING FOR START-UP

Before starting and testing the fan heater, check that:

- the heater unit is positioned correctly;
- the check valves are open;
- water and electrical connections have been made correctly;
- water pressure (unit cold) is as required;
- any air has been bled from the system;
- the fins are open.

## FIN ADJUSTMENT

The horizontal fins **must be adjusted during installation** so as to create an airflow suitable for the room/area being heated. Such airflow must not disturb the persons occupying such room/area. The fins can be individually adjusted manually. Likewise, vertical fins must also be adjusted (where fitted).



## FIRST-TIME START-UP

### ACTIVATING THE HEATING FUNCTION:

- Position the main switch to ON.;
- Set fan speed as desired (where speed selector switch is installed);
- Set room thermostat to desired temperature (higher than current room temperature);
- At this point, both the water circulator and the heater fan start simultaneously. To prevent an initial outflow of unpleasant cold air it is possible to delay fan start-up with the aid of a minimum thermostat (not supplied as accessory). This thermostat also delays fan shutdown so as to disperse all the heat accumulated in the exchanger into the room/area to be heated;
- once the temperature set on the room thermostat has been reached the heater will shut down. When

the temperature drops back down below this setting the fan heater restarts automatically;

### DEACTIVATION OF HEATING MODE :

- Set the room thermostat to “anti-freeze” and wait for the fan heater to shut down;
- Turn the main switch to OFF.



## CHECKS DURING AND AFTER FIRST-TIME START-UP

Once the fan heater has been started, check that it shuts down on reaching the required temperature and then restarts again when the room cools down (adjust the room thermostat settings if necessary).

With the fan heater running:

- check that the fan(s) rotates the right way;
- check that fan(s) operates at the various speeds (where fan speed control switch is installed);
- check that electrical absorption is less than indicated in the TECHNICAL DATA chapter;
- check that there are no water leaks;
- check that the fins are not too close together and that there is no obstruction to airflow.

If the fan heater passes all these checks it may be restarted.

## SWITCHING OFF FOR LONG PERIODS

If the fan heater is expected to remain idle for a lengthy period proceed as follows:

- deactivate the fan heater by acting on the room thermostat;
- turn the main switch to OFF;
- close the water check valves.



### WARNING!

If there is a risk of sub-zero temperatures and the system water does not contain an anti-freeze liquid you must drain the system as described on page 45.

## MAINTENANCE

Periodic maintenance is essential for the safety, efficiency and long-term performance of the unit.

Before doing any maintenance work:

- cut the power by turning the main switch to OFF;
- close the water check valves.

The annual maintenance schedule is to be observed by the Authorised Technical Service / Maintenance Technician as follows:

<b>Check</b>	<b>Frequency</b>
Check there is no air in circuit	annually
Check voltage	annually
Check absorption	annually
Check electrical connections	annually
Check water couplings	annually
Clean outer cover	annually
Clean fan	annually
Clean heat exchanger	annually



### WARNING!

For installation in particular environments, the periodical maintenance has to be carried out every 6 months.

## **CHECKING THERE IS NO AIR IN THE WATER CIRCUIT**

Loosen the manual bleed valves and check that there is no air.

## **CHECKING VOLTAGE**

Using a voltmeter, check that the power supply is as indicated on the technical data plaque (tolerance  $\pm 10\%$ ).

## **CHECKING ABSORPTION**

Using an ammeter, check that the electrical current of each phase is less than that indicated on the technical data plaque.

## **CHECKING ELECTRICAL CONNECTIONS**

Disassemble the electrical connections box and check that all the terminal grips are tightened properly.

## **CHECKING CONDITION OF WATER COUPLINGS**

Check for leaks along the entire circuit.

## **CLEANING THE OUTER COVER**

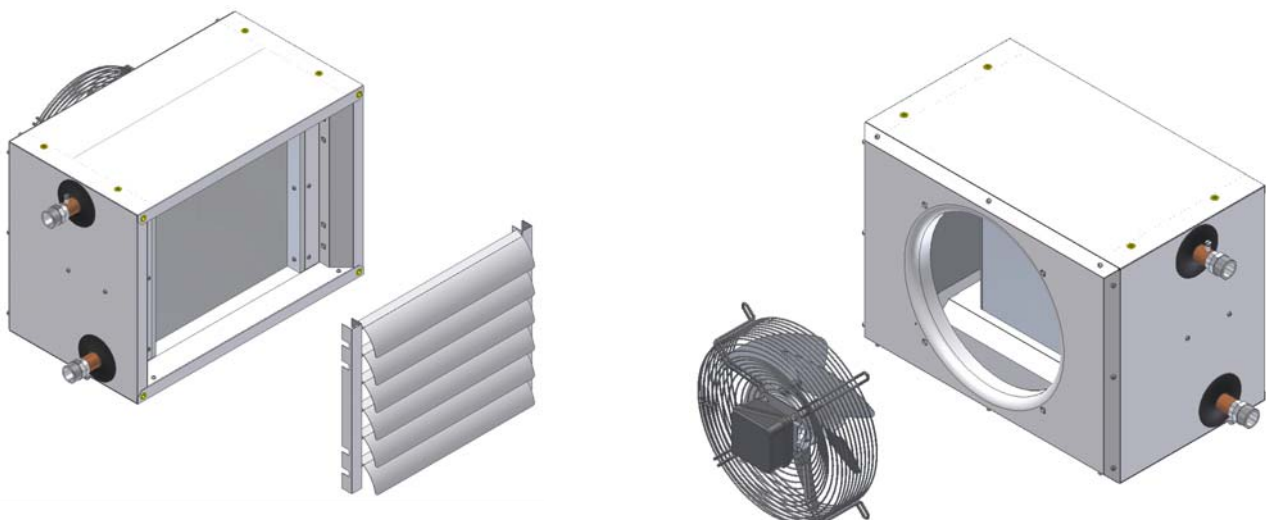
Clean the outer cover with a damp, soapy cloth. DO NOT wipe with abrasive detergents, powder detergents, hydrocarbons or solvents.

## **CLEANING THE HELICAL FAN**

Remove any dust and/or foreign objects that may have deposited on the fan and/or grating with compressed air.

## **CLEANING THE AIR-WATER HEAT EXCHANGER**

Remove the air outflow grating. Then clean off any dust that may have deposited on the exchanger fins with the aid of compressed air.



PROBLEM		CAUSE		SOLUTION
<b>THE FAN DOES NOT START</b>	⇒	No power	⇒	Check unit is powered
		↓		
		Main switch turned to OFF	⇒	Turn to ON
		↓		
		Room thermostat faulty	⇒	Check room thermostat
		↓		
		Fan faulty	⇒	Check fan motor
		↓		
		Condenser faulty	⇒	Check condenser
		↓		
		Overload cut-out tripped	⇒	Check absorption
		↓		
<b>POOR HEATING EFFICIENCY</b>	⇒	Heat exchanger dirty	⇒	Clean exchanger
		↓		
		Airflow obstructed	⇒	Remove obstruction
		↓		
		Improper room temp. setting	⇒	Check regulation
		↓		
		Wrong water temperature	⇒	Check water temperature
		↓		
		Air in water circuit	⇒	Bleed air from system
		↓		
		Fan faulty	⇒	Check fan motor
		↓		
		Fan rotation inverted	⇒	Check direction of fan rotation
<b>NOISE OR VIBRATION</b>	⇒	Contact between metal parts	⇒	Inspect for contact
		↓		
		Screws loose	⇒	Tighten
		↓		
		Fan improperly balanced	⇒	Replace
		↓		
		Fan dirty	⇒	Clean



Notes



**Kroll GmbH-**  
Pfarrgartenstrasse 46  
D-71737 Kirchberg am Murr (D)  
Tel. +49 (0)7144 830 0 AWS - Fax +49 (0) 7144 830112  
[www.kroll.de](http://www.kroll.de)

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