

AREO AC-P

INSTALLAZIONE USO E MANUTENZIONE

I

INSTALLATION, OPERATION AND MAINTENANCE

GB



AEROTERMI PER FUNZIONAMENTO IN RISCALDAMENTO
FAN HEATERS FOR HEATING OPERATION



DECLARATION OF CONFORMITY

Galletti S.p.A. whose main office is located at 12/a via Romagnoli, 40010 Bentivoglio (BO) - Italy, hereby declares, under its own responsibility, that the fan heaters belonging to the AREO AC P series, indoor units for air-conditioning systems, conform to the specifications of 2006/42/CE, 2004/108/CE, 2006/95/CE and subsequent modifications.

Bologna, 16/12/2014

Luca Galletti
President



SAFETY SYMBOLS



Carefully read
this manual



ATTENTION



DANGER
VOLTAGE

GENERAL WARRANTY FOR GALLETTI FAN HEATERS

- 1) Galletti SpA fan heaters are guaranteed for 24 months from the date of delivery to the user. The warranty covers free of charge repairs and/or replacements of components with "defects" or manufacturing defects.
- 2) Galletti ties granting the guarantee to the verification of component defects, through a Service Center authorised by the writer for the competent territory.
- 3) In accordance with Directive 199/44/EC implemented by Legislative Decree no 24 (February 2nd, 2002), the Galletti warranty only applies to the product and does not contemplate any part of the system.
- 4) The effective date of the guarantee will be in accordance with the accompanying bill of sale. In its absence, Galletti reserves the right to establish the effective date at the date of manufacture.
- 5) After expiry of the warranty term, spare parts and labour repair costs are charged to the customer.
- 6) As specified by law (LD 199), the guarantee obligation for the end user shall be borne by the seller (the company where the purchase was made). Galletti will activate warranty procedures upon request by the seller.
- 7) The Galletti warranty does not cover:
 - Inspection, maintenance, repairs due to normal wear and tear
 - Incorrect or non-conforming installation
 - Damage caused by transport and / or handling not claimed upon delivery
 - Misuse
 - Power supply not "compliant" with the nameplate data
 - Damage or manipulation by unauthorised personnel
 - Acts of vandalism and weather damage.
- 8) Galletti reserves the right to challenge the validity of the guarantee should objective evidence show that the product worked prior to the effective date of the guarantee.
- 9) The modalities of these warranty conditions are valid and applicable only for the Italian territory.

1 BEFORE STARTING INSTALLATION

Carefully read this handbook.

Installation and maintenance must be performed exclusively by technical personnel qualified for this type of equipment, in compliance with applicable regulations.

On receiving the equipment check its status, verifying that it has not been damaged during shipping.

2 INTENDED USE AND OPERATING LIMITS

Galletti S.p.A. will not accept any liability for damage or injury caused as a result of:

- installation by non-qualified personnel;
- improper use or use in conditions not allowed by the manufacturer;
- failure to perform the maintenance prescribed in this manual;
- use of spare parts other than original factory parts.

The operating limits are specified at the end of this chapter; usage outside the stated limits is to be considered improper.

When choosing an installation site, you should observe the following rules:

- The heating unit should not be placed immediately under a socket.
 - do not install the unit in places where inflammable gases are present;
 - do not expose the unit directly to sprays of water;
 - install the unit on walls or ceilings able to withstand its weight; use accessories suited to the purpose and suitable screw anchors.
- Store the unit in its packing container until you are ready to install it in order to prevent dust infiltrations.

Carry out installation, maintenance and cleaning operations with the power supply disconnected.

If the unit is installed in a room that is only occasionally used, the temperature in the room itself must be kept above 0°C or else antifreeze must be added to the water in order to prevent it from freezing inside the coil.

Do not attempt to modify the internal wiring or other parts of the unit.

Operating limits

- **Thermal carrier fluid:** water
- **Water temperature:** max +95°C
- **Air temperature:** min -10°C, max + 40°C
- **Supply voltage:** rated voltage +/- 10%
- **Max water pressure during operation:** 10 bar

The range comprises 36 models whose characteristics are summarised in the table of figure 1 where:

RPM	number of motor revolutions
QA	air flow rate
PT	thermal heating power (70/60°C, 20°C)
Hmax	maximum installation height
LWA	sound power level
PIN	Power consumption

3 UNIT DESCRIPTION

AREO ACP, an indoor terminal unit for heating medium to large interiors with a horizontal discharge of warm air, consists of the following main components:

- **A pre-painted sheet steel cabinet**, complete with ABS corner trim.
The cabinet is complete with adjustable aluminium louvers (spring operated) placed on the air outlet which enable an optimal distribution of air within the room.
On the rear of the cabinet there are 4 **for suspending the fan heater** from the ceiling or joining it to the mounting board for installation on the wall (accessory DFC, DFP or DFO).
- **Heat exchanger**, made up of copper tubing and aluminium fins providing superior thermal conductivity compared with traditional iron pipe exchangers.
- **Electric motors:**
two-speed, 4/6-pole or 6/8-pole, in 400V three-phase delta-triangle configuration

All single-phase MODELS are supplied with a single speed motor all motors are fitted with an internal safety thermal cut-out (klixon), class F windings, protection rating IP 54.

- **Axial fan** with statically balanced sickle blades housed in a specially designed compartment that enhances ventilation and reduces noise emissions.
- **Safety grille** made of electrogalvanized steel wire: it supports the motor and is fixed to the cabinet by means of vibration-damping supports.

Main components as shown in figure 2:

(1)	Cabinet: side panel
(2)	Cabinet: upper/lower panel
(3)	Rear panel/fan compartment
(4)	Finned block heat exchanger (heat exchanger coil)
(5)	Safety grille (fan) supporting motor
(6)	Adjustable louvers
(7)	Top cover of heat exchanger
(8)	Conveyor duct
(9)	Wall/ceiling mounting brackets
(10)	Plastic corner trim on cabinet

4 DIMENSIONS

Figure 3 shows the dimensions of the unit:

(1)	Water inlet connection, male gas coupling
(2)	Water outlet connection, male gas coupling

5 INSTALLATION

Remove the fan heater from the packing container and check that no damage has occurred during transport.

Before starting to install the unit, make sure that the installation height and air range conform to the specifications provided in the technical catalogue, according to the number of motor poles and type of air flow of the unit. The maximum installation height is shown in figure 4.

All models making up the AREO ACP series can be mounted either on a wall (heating function) or on the ceiling (heating function ONLY).

In the case of wall installation, use suitable mounting boards, available as accessories:

DFP for wall mounting

DFC for mounting on columns

Adjustable DFO for mounting on walls/columns (from 0° to ±45°).

If you do not use the mounting boards supplied by the manufacturer, make sure in any case that the unit is adequately spaced from the wall or ceiling, at a distance that is at least that shown in figure 5.

Use screw anchors of adequate dimensions to support the weight of the unit and make sure that the surface of the installation site is suited to the purpose.

For ceiling installation, use the 4 brackets provided and suspend the fan heater with 4 suitable chains, bearing in mind its weight.

To optimise the distribution of air within the room, half of the louvers should be turned 180° as indicated in figure 6, by pressing on the louver to compress the spring.

Using suitable lifting equipment (a forklift truck is recommended), convey the unit to the installation site and rest it on the side of the fins.

The plumbing connections on the side of the unit may not be used to carry or bear the weight of the unit.

The unit must be installed perfectly level to prevent air pockets from forming inside the heat exchanger.

Warning: for hydraulic connections use a tightening wrench to avoid the manifold rotation that may damage the heat exchanger (figure 7)

If the unit is to be ceiling mounted (for vertical air flow), make sure it is installed in a perfectly level position.

6 WIRING

The standard motors installed in AREO fan heaters are of the closed type: asynchronous three-phase 2-speed motors (400/400 V Y connection) or single-phase single-speed motors.

400/400 V -Y motors are equipped internally with klixon and speeds are selected by means of a normal star-delta switch (accessory CST), figure 15.

The terminals of the klixon are connected to the terminal block so that they can be used as protection in series with the coil of a contactor (TOP in the terminal block, figures 9, 10, 11).

If the internal klixon is not used to protect the motor, it will be necessary to provide a motor overload cut-out set at a current that is 10-15% higher than the current indicated on the unit rating plate.

Make the electrical connections with the power supply disconnected, in accordance with current safety regulations. All wiring must be carried out by qualified personnel.

Check that the mains electricity supply is compatible with the voltage shown on the unit rating plate.

Scrupulously follow the wiring diagram provided, according to the type of installation.

Each fan heater on the supply line must be equipped with an omnipolar mains disconnecting switch pole in overvoltage category III.

The table in figure 8 shows the electrical specifications of the motors, where:

VROT	Motor polarity
POWER	Power supply voltage
PIN	Electrical power consumption
I_{IN}	Absorbed current

The wiring diagrams are shown in Figures from 9 to 15:

9) Delta connection to terminal block of 400/400 V - Y motorsΔ, high speed.

10) Star connection to terminal block of 400/400 V- Y motorsΔ, low speed.

11) Wiring diagram showing connection of single-phase motors.

12) Wiring diagram showing connection of a 230V single-phase motor.

13) Wiring diagram showing connection of 400V three-phase motor.

15) Wiring diagram showing connection of 400/400 V motor, with star delta selector (YΔ).

Legend of wiring diagrams:

CST	star-triangle switch
FL	Protective fuse (NOT SUPPLIED)
IL	Line Switch (NOT SUPPLIED)
M	Motor
TA-TA2	Room thermostat
K	Relay (not supplied)

If single-phase fan heaters are installed on a three-phase line, they must be connected so as to ensure an equal distribution over the 3 phases: this will ensure a balanced load.

7 FUNCTIONAL TEST

- Check the tightness of the plumbing connections.
- Check the stability of the mounting brackets if the unit is installed on the wall; the chains if the unit is ceiling mounted.
- Make sure that the wiring is firmly secured.
- Make sure that air has been eliminated from the heat exchanger.
- Adjust the louvers as desired and switch on the unit to check that it works properly.
- Always make sure that the fan turns in the correct direction (ANTI-CLOCKWISE viewing the fan heater from the rear, figure 14).

8 MAINTENANCE

The routine maintenance operations to be performed on AREO ACP fan heaters mainly concern the heat exchanger. It must be cleaned to eliminate dust build-up, which tends to obstruct the spaces between the fins, resulting in a decrease in the quantity of heat exchanged.

This job may be done using jets of compressed air.

If grease has also deposited you can wash the fins, taking care not to wet the electric motor and making sure the finned block is thoroughly dried before starting the fan heater.

It is recommended to carry out these operations at least once a year before the start of the heating season.

The electric motor requires no maintenance as it is of the closed type with self-lubricating bearings.

Every time you start up the unit after it has been off for a long time, make sure no air is trapped in the heat exchanger.

Special care should be taken when carrying out maintenance work:

- some metal parts may cause injuries; wear protective gloves.
 - maintenance may be performed exclusively by specialised personnel; contact your dealer or installer.
 - For safety reasons, before carrying out any maintenance or cleaning jobs, turn off the main switch of the unit to disconnect the power supply.
 - If any work needs to be done on a unit that is working with hot water, it is advisable to shut off the hot water (by means of the on-off valves) and allow the fan to run for a few minutes until all the metal parts have cooled down before carrying out any job on the fan heater.
- Stop the fan and disconnect the unit from the power supply before working on it.

9 TROUBLESHOOTING

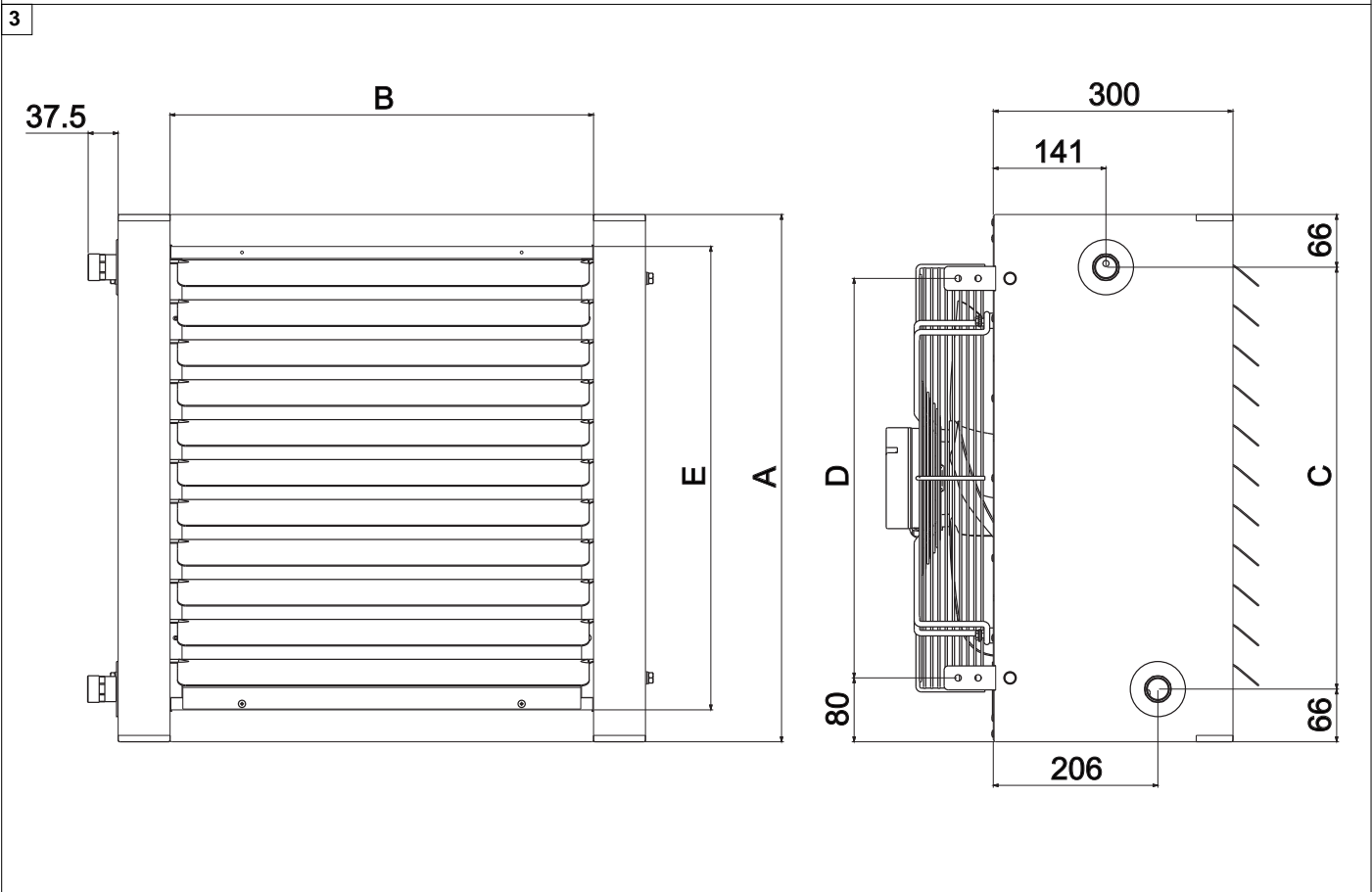
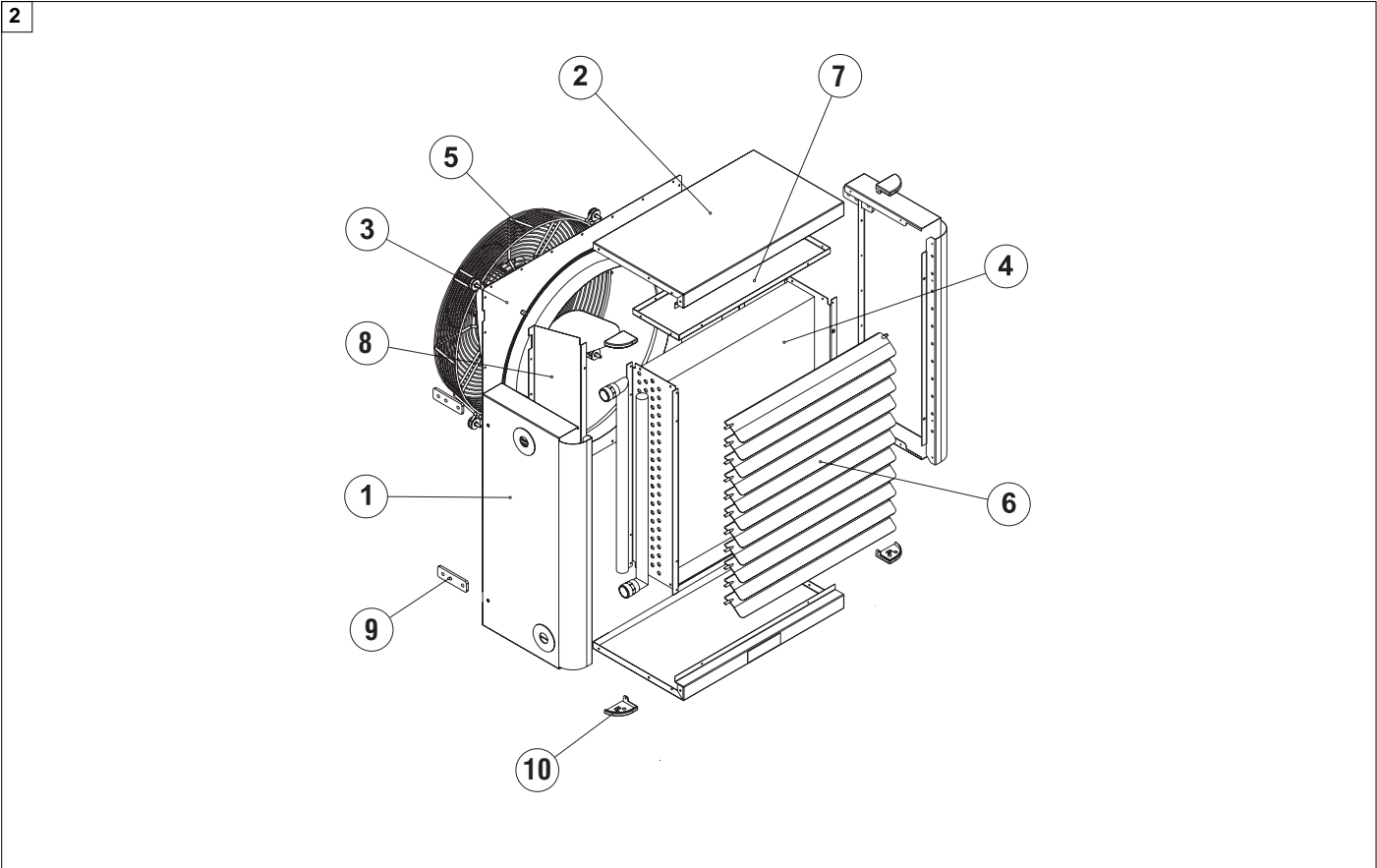
If the unit is not working properly, before calling a service engineer carry out the checks indicated in the table below.

If the problem cannot be solved, contact the dealer or service centre.

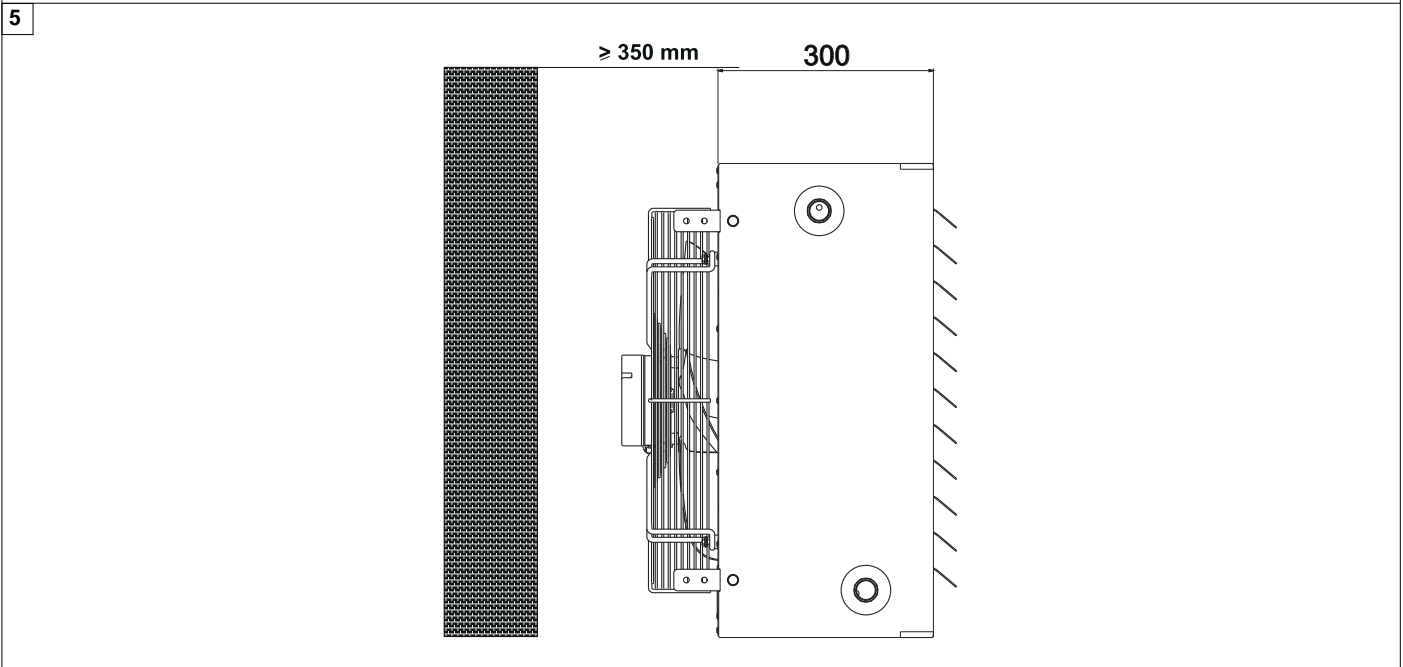
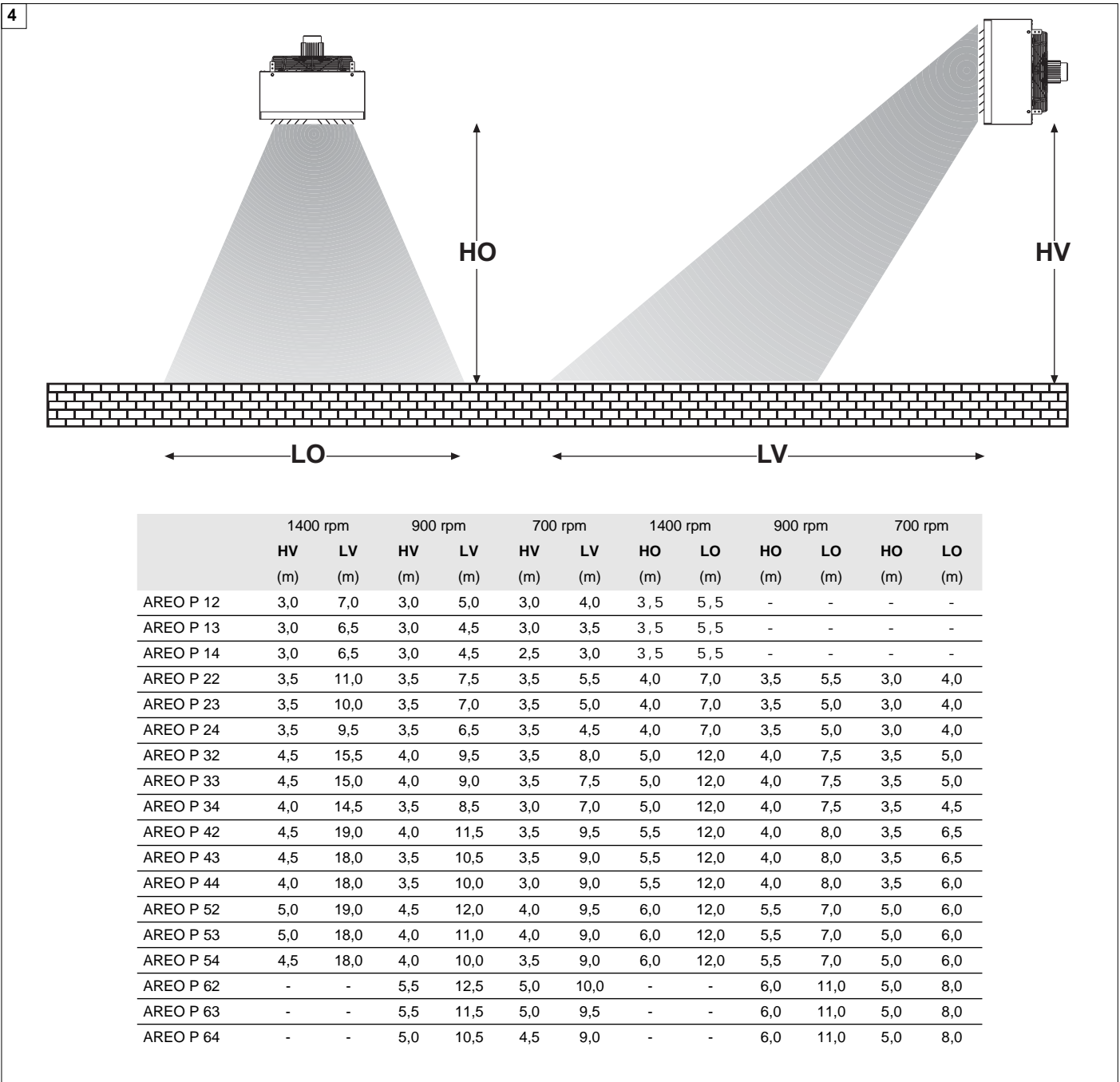
Problem	Cause	Solution
The fan heater does not work at all	1 No power supply	1 Restore the power supply
	2 The motor overload cutout has tripped	2 Contact the after-sales service
	3 The main switch is in the off position	3 Switch on the power supply
The fan heater provides inadequate heating	1 An obstacle is obstructing the air intake or outlet	1 Remove the obstacle
	2 Air is trapped inside the heat exchanger	2 Contact the installer
	3 The operating speed selected is too low (3-speed model)	3 Select a higher speed
The fan heater "leaks" water.	1 Operation in 4-pole air conditioning mode	1 Select a lower speed
	2 Leaky plumbing connections	2 Contact a service centre or your installer
	3 Only heating	3 Only heating

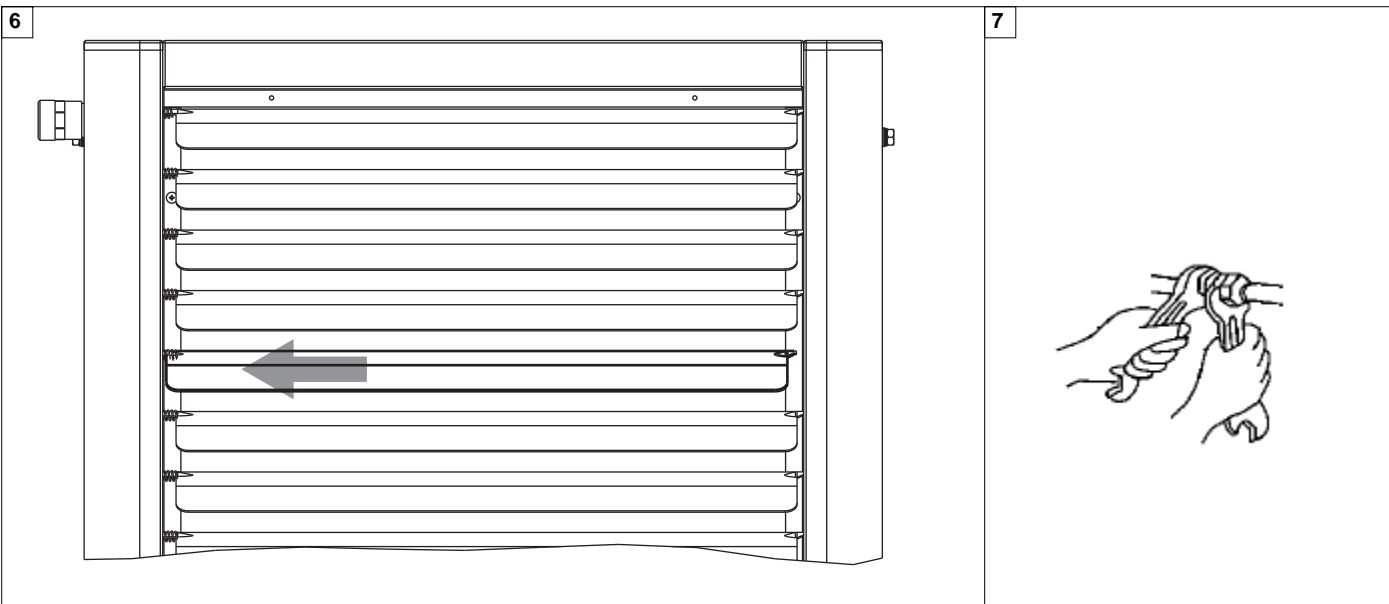
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Modello	Power Supply V-ph-Hz	Vrot poles	Motor conn.	QA m ³ /h	PH 20-70/60 °C W	LW dB(A)	H Max m	L Max m	P _{IN} W
AREO 12 A4 1F	230-1-50	4	Mono	1280	6570	64	3	7	67
AREO 12 A6 1F	230-1-50	6	Mono	1000	5710	59	3	5	49
AREO 13 A4 1F	230-1-50	4	Mono	1140	8370	64	3	6,5	69
AREO 13 A6 1F	230-1-50	6	Mono	900	7230	59	3	4,5	50
AREO 14 A4 1F	230-1-50	4	Mono	1040	9580	65	3	6,5	70
AREO 14 A6 1F	230-1-50	6	Mono	800	8030	60	3	4,5	51
AREO 22 A4 1F	230-1-50	4	Mono	3020	13280	76	3,5	11	198
AREO 22 A6 1F	230-1-50	6	Mono	2100	10860	64	3,5	7,5	110
AREO 23 A4 1F	230-1-50	4	Mono	2630	17200	76	3,5	10	210
AREO 23 A6 1F	230-1-50	6	Mono	1850	13900	65	3,5	7	114
AREO 24 A4 1F	230-1-50	4	Mono	2600	19480	77	3,5	9,5	212
AREO 24 A6 1F	230-1-50	6	Mono	1800	15450	65	3,5	6,5	120
AREO 32 A4 1F	230-1-50	4	Mono	4500	23670	76	4,5	15,5	320
AREO 33 A4 1F	230-1-50	4	Mono	4150	26460	76	4,5	15	340
AREO 34 A4 1F	230-1-50	4	Mono	4050	30460	77	4	14,5	345
AREO 42 A4 1F	230-1-50	4	Mono	6900	35750	75	4,5	19	623
AREO 43 A4 1F	230-1-50	4	Mono	6400	40130	74	4,5	18	635
AREO 44 A4 1F	230-1-50	4	Mono	6200	45010	75	4	18	655
AREO 52 A6 1F	230-1-50	6	Mono	6400	32610	69	5	19	370
AREO 53 A6 1F	230-1-50	6	Mono	6200	41020	69	5	18	374
AREO 54 A6 1F	230-1-50	6	Mono	5900	44900	71	4,5	18	380
AREO 62 A6 1F	230-1-50	6	Mono	8600	57180	70	5,5	12,5	555
AREO 63 A6 1F	230-1-50	6	Mono	8100	67270	70	5,5	11,5	560
AREO 64 A6 1F	230-1-50	6	Mono	7500	67570	71	5	10,5	582
AREO 32 A4 3F	400-3-50	4	Delta	4300	23060	76	4,5	15,5	315
		6	Star	3200	19460	69	4	9,5	175
AREO 33 A4 3F	400-3-50	4	Delta	4000	25890	76	4,5	14,5	330
		6	Star	2900	21330	69	4	9	180
AREO 34 A4 3F	400-3-50	4	Delta	3900	29760	77	4	14	340
		6	Star	2800	24130	70	3,5	8,5	182
AREO 42 A4 3F	400-3-50	4	Delta	7100	36330	73	4,5	18	650
		6	Star	5600	31750	67	4	11,5	450
AREO 43 A4 3F	400-3-50	4	Delta	6550	40680	74	4	17,5	690
		6	Star	5300	35880	68	3,5	10,5	465
AREO 44 A4 3F	400-3-50	4	Delta	6400	45890	75	4	17	700
		6	Star	5150	40140	69	3,5	10	470
AREO 52 A4 3F	400-3-50	4	Delta	8200	37420	75	5	18	725
		6	Star	6800	33740	71	4,5	12	760
AREO 53 A4 3F	400-3-50	4	Delta	7900	47310	76	5	17,5	732
		6	Star	6450	42000	72	4	11	775
AREO 54 A4 3F	400-3-50	4	Delta	7600	52410	77	4,5	17	755
		6	Star	6200	46300	73	4	10	780
AREO 62 A6 3F	400-3-50	6	Delta	8900	58360	71	5,5	12	565
		8	Star	7100	50940	66	5	10	360
AREO 63 A6 3F	400-3-50	6	Delta	8300	68320	72	5,5	11	575
		8	Star	6500	58350	67	5	9,5	380
AREO 64 A6 3F	400-3-50	6	Delta	7650	68460	72	5	10,5	590
		8	Star	6000	58260	67	4,5	9	390



AREOP	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Φ 1	Φ 2
12 - 13 - 14	460	330	328	300	380	3/4"	3/4"
22 - 23 - 24	560	430	428	400	480	3/4"	3/4"
32 - 33 - 34	660	530	528	500	580	1"	1"
42 - 43 - 44	760	630	628	600	680	1"	1"
52 - 53 - 54	860	730	728	700	780	1 1/4"	1 1/4"
62 - 63 - 64	960	830	828	800	880	1 1/4"	1 1/4"

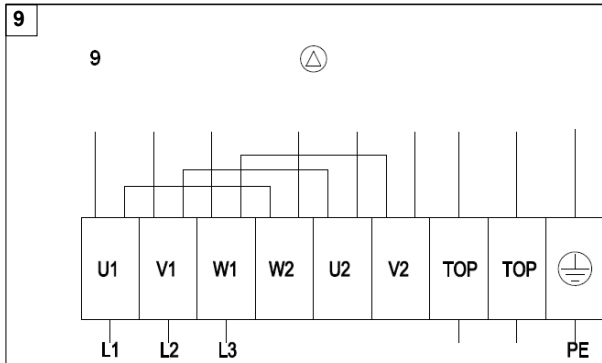




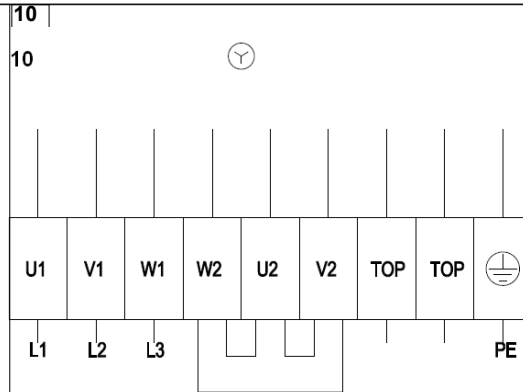
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Frame	Models	Power V-ph-Hz	V _{rot} poles	P _{IN} W	I _{IN} A
1	AREO 12 A6 1F	230-1-50	6p	49	0,22
	AREO 13 A6 1F	230-1-50	6p	50	0,22
	AREO 14 A6 1F	230-1-50	6p	51	0,22
	AREO 12 A4 1F	230-1-50	4p	67	0,29
	AREO 13 A4 1F	230-1-50	4p	69	0,31
	AREO 14 A4 1F	230-1-50	4p	70	0,32
2	AREO 22 A6 1F	230-1-50	6p	110	0,49
	AREO 23 A6 1F	230-1-50	6p	114	0,5
	AREO 24 A6 1F	230-1-50	6p	120	0,53
	AREO 22 A4 1F	230-1-50	4p	198	0,88
	AREO 23 A4 1F	230-1-50	4p	210	0,93
	AREO 24 A4 1F	230-1-50	4p	212	0,95
3	AREO 32 A4 1F	230-1-50	4p	320	1,4
	AREO 33 A4 1F	230-1-50	4p	340	1,49
	AREO 34 A4 1F	230-1-50	4p	345	1,51
	AREO 32 A4 3F	400-3-50	4p	315	0,55
	AREO 33 A4 3F	400-3-50	4p	330	0,56
	AREO 34 A4 3F	400-3-50	4p	340	0,57

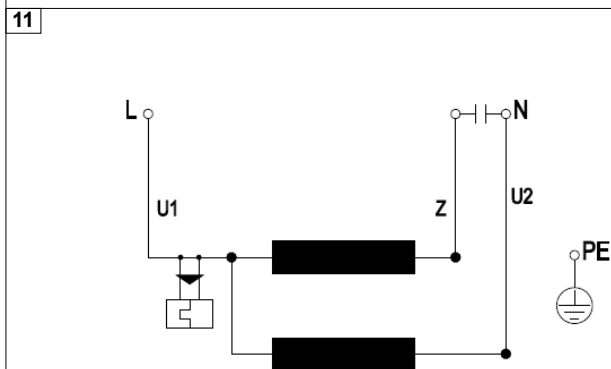
Frame	Models	Power V-ph-Hz	V _{rot} poles	P _{IN} W	I _{IN} A
4	AREO 42 A4 1F	230-1-50	4p	623	2,73
	AREO 43 A4 1F	230-1-50	4p	635	2,78
	AREO 44 A4 1F	230-1-50	4p	655	2,87
	AREO 42 A4 3F	400-3-50	4p	650	1,33
	AREO 43 A4 3F	400-3-50	4p	690	1,35
	AREO 44 A4 3F	400-3-50	4p	700	1,38
5	AREO 52 A6 1F	230-1-50	6p	370	1,68
	AREO 53 A6 1F	230-1-50	6p	374	1,72
	AREO 54 A6 1F	230-1-50	6p	380	1,73
	AREO 52 A4 3F	400-3-50	4p	725	1,4
	AREO 53 A4 3F	400-3-50	4p	732	1,42
	AREO 54 A4 3F	400-3-50	4p	755	1,5
6	AREO 62 A6 1F	230-1-50	6p	555	2,4
	AREO 63 A6 1F	230-1-50	6p	560	2,5
	AREO 64 A6 1F	230-1-50	6p	582	2,55
	AREO 62 A6 3F	400-3-50	6p	565	1,18
	AREO 63 A6 3F	400-3-50	6p	575	1,2
	AREO 64 A6 3F	400-3-50	6p	590	1,22



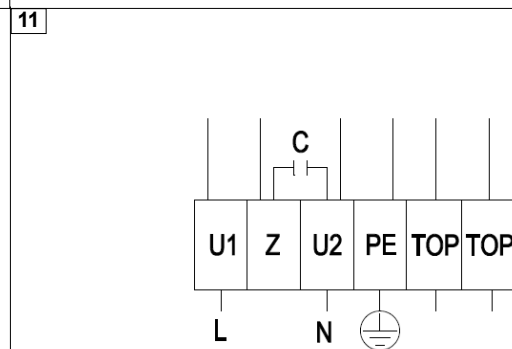
Δ Collegamento Triangolo / Delta connection
L1 =U1=marrone/brown
L2 =V1=blu / blue
L3 =W1=marrone / brown
W2 Giallo / Yellow
U2 Verde / Green
V2 Bianco / White
TOP 2 X grigio / grey
PE Verde/Giallo / Green/Yellow



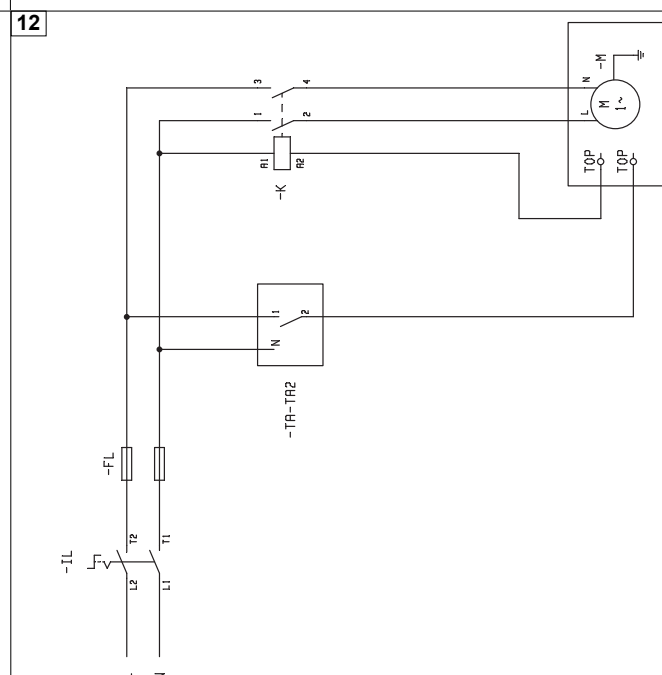
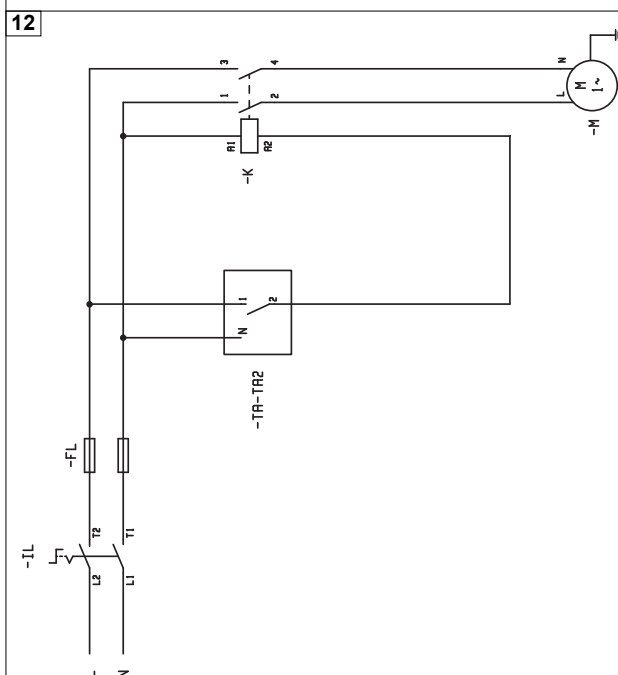
Y Collegamento Stella / Star connection
L1 =U1=marrone/brown
L2 =V1=blu / blue
L3 =W1=marrone / brown
W2 Giallo / Yellow
U2 Verde / Green
V2 Bianco / White
TOP 2 X grigio / grey
PE Verde/Giallo / Green/Yellow



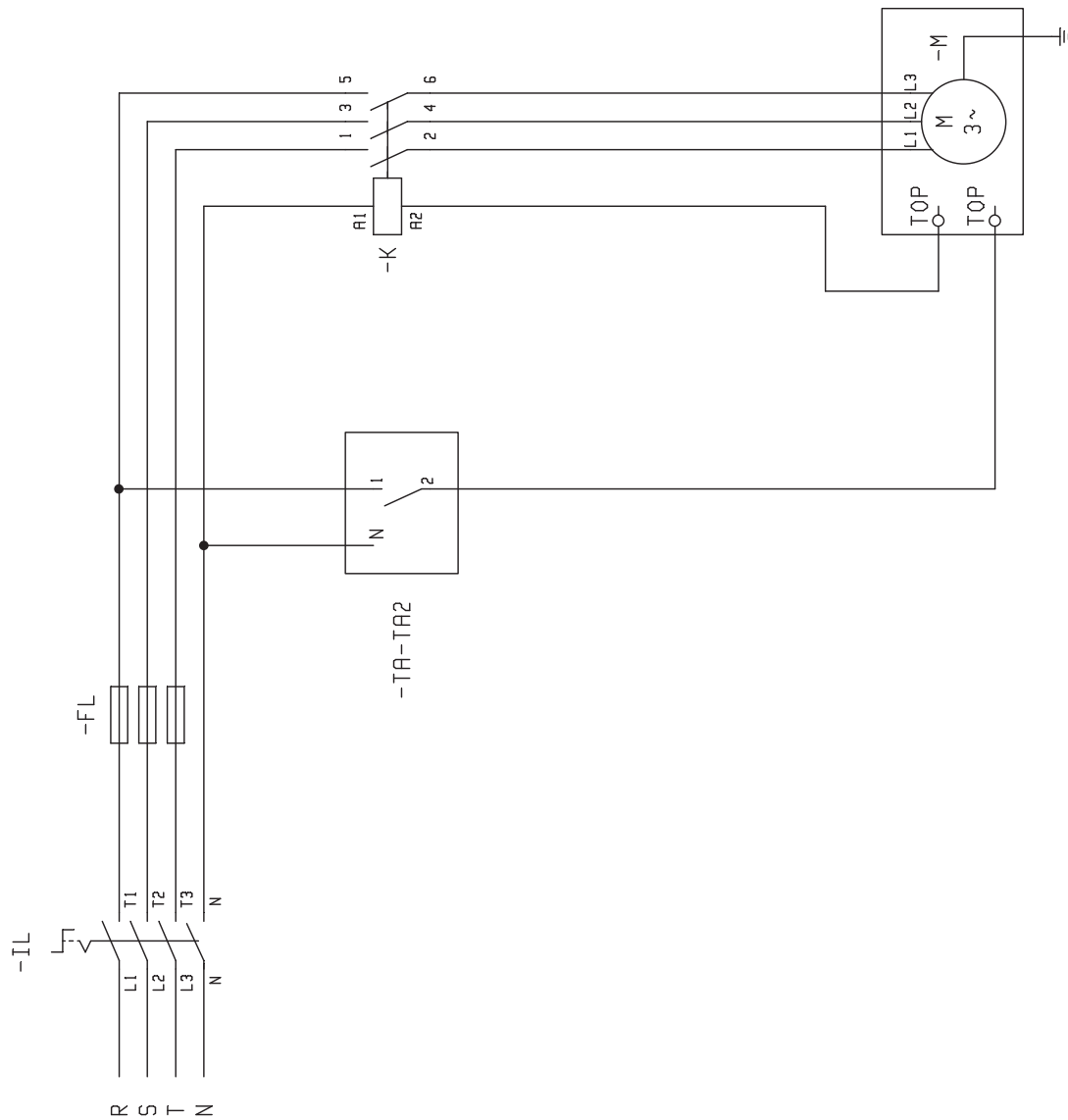
U1 Blue
PE Green/Yellow
Z Brown
U2 Brown



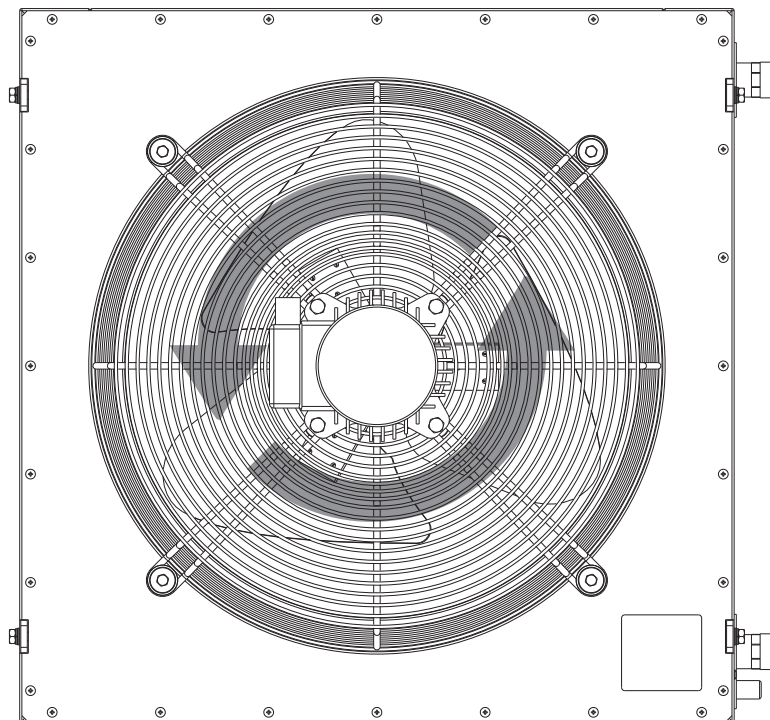
L =U1=Blue
PE Green/Yellow
Z Brown
TOP Grey
N =U2=Black



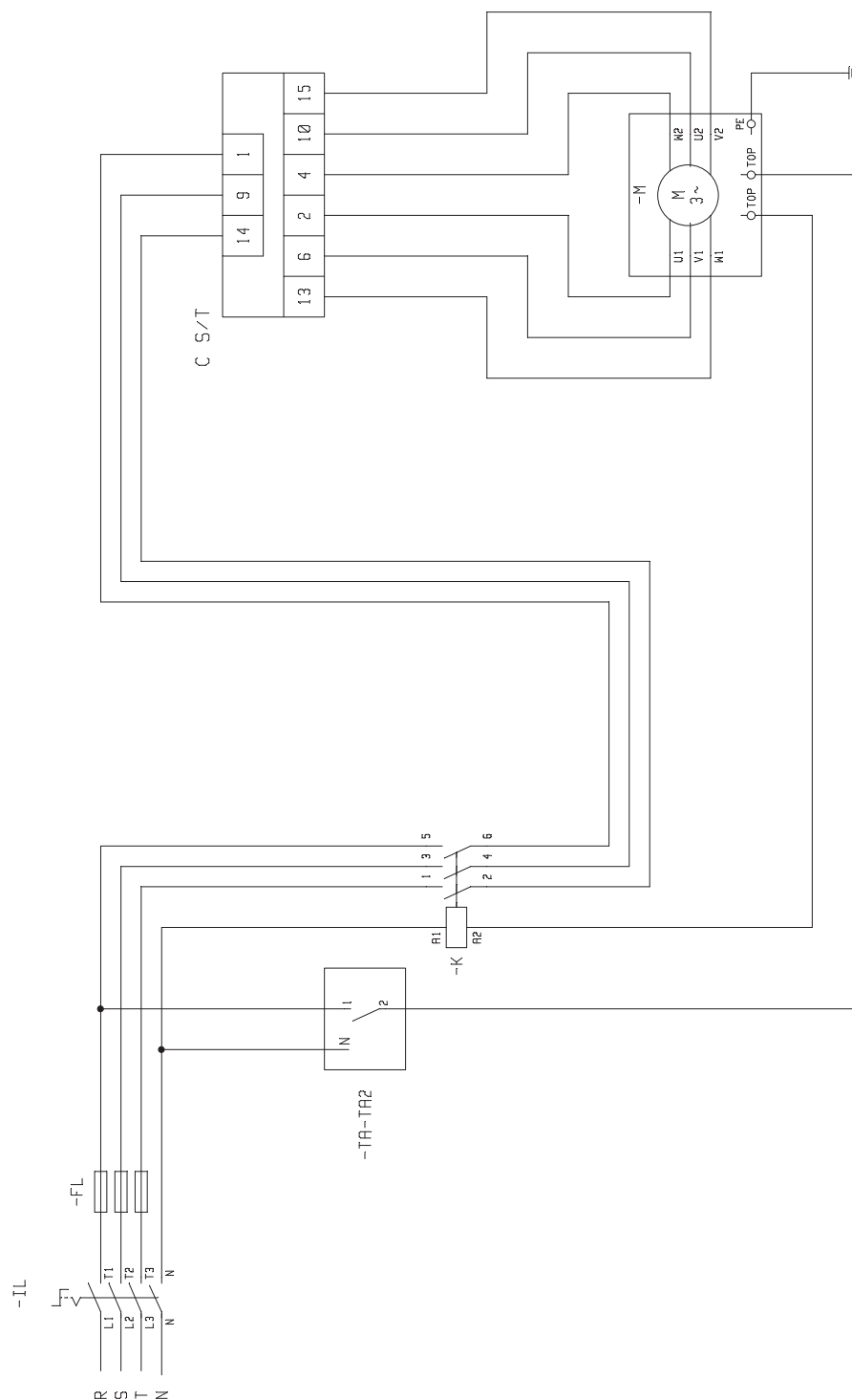
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