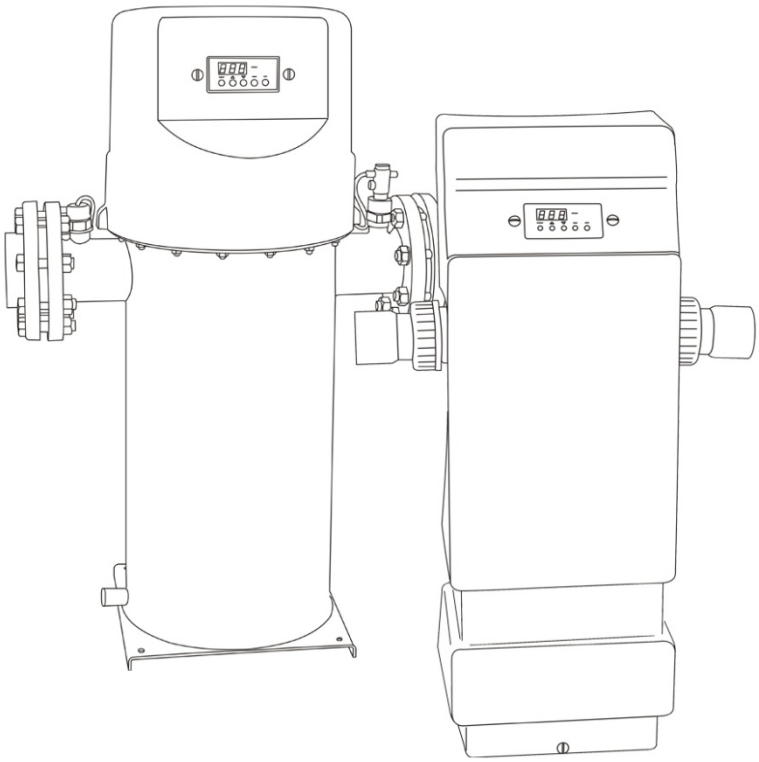
EN Instructions for installation and use

RE/I



EN Industrial electric heater for swimming pool

Réf. : N.D.010.A.EN – Ver. 06-2010

SUMMARY

Information included in the appendix at the end of the manual:
- electrical diagram
- dimensions and description
- EC compliance certificate

1. Installation

1.1 General

Read this manual carefully before installing, maintaining or repairing this appliance!

The ⚠ symbol indicates important information that must be taken into account in order to avoid the risk of injury and/or damage to the appliance.

The ⓘ symbol indicates useful information.

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1.1.1 Precautions

This device must be installed and serviced by certified professionals approved in the electrical and hydraulic domains.

Before working on the appliance, ensure that it is disconnected from the power supply.

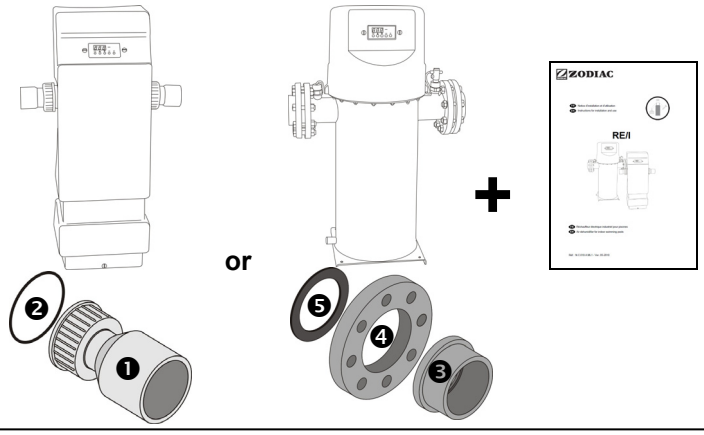
Removing or shunting any of the safety or remote control parts will automatically void the guarantee; this will also apply for the replacement of parts by non-original parts.

1.1.2 General terms of delivery

Any equipment, even CARRIAGE and PACKING FREE, travels at the addressee's risk. Addressees must indicate any reserves in writing on the carrier's delivery bill in the case of damage caused during transport (confirmation to be sent to the carrier within 48 hours by registered mail and Acknowledgement of Receipt).

The appliance must be transported in its original packaging.
If the packaging is damaged, send your complaints in writing to the carrier.

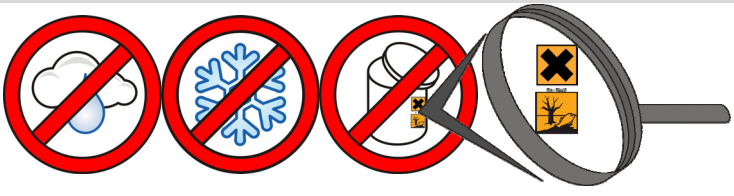
Contents:



Supplied parts:
For RE/I 30 to 48 kW: ❶ half union Ø63 fitting to stick x2 + ❷ joint x2
For RE/I 60 to 120 kW: ❸ collar DN 80 (Ø90 interior) x2+ ❹ flange DN 80 x2 + ❺ joint x2

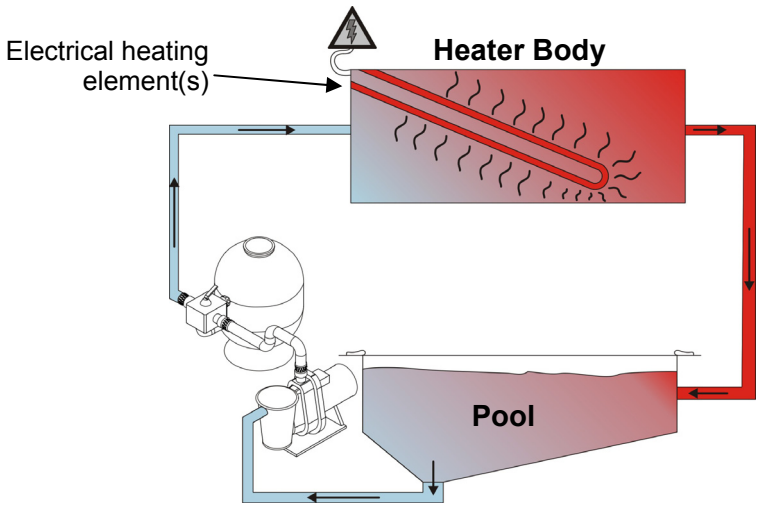
1.1.3 Field of application

Exclusive use: heating swimming pool water
The appliance must not be used for any other use (do not heat seawater as this could corrode the stainless steel tank).
Install in a dry, ventilated technical room, protected from frost and dampness and that is not used to store pool maintenance products.



RE/I

1.1.4 Operating principle



1.2 Technical specifications

RE/I	Voltage	Immersion heater power		Retuned power	Nominal current consumption
		1st stage*	2nd stage**		
		kW		kW	A
30	400V-50Hz	12	18 (12+6)	30	44
36	400V-50Hz	12	24 (2x12)	36	52
42	400V-50Hz	18 (12+6)	24 (2x12)	42	60
48	400V-50Hz	24 (2x12)	24 (2x12)	48	70
60	400V-50Hz	24 (2x12)	36 (3x12)	60	87
72	400V-50Hz	36 (3x12)	36 (3x12)	72	104
84	400V-50Hz	36 (3x12)	48 (4x12)	84	122
96	400V-50Hz	48 (4x12)	48 (4x12)	96	139
108	400V-50Hz	48 (4x12)	60 (5x12)	108	156
120	400V-50Hz	60 (5x12)	60 (5x12)	120	174

* left compartment of the tank (front view)
** right compartment of the tank (front view)

Each electrical resistance has a manufacturer's tolerance of ±5% concerning its power restitution.

- unit protection class: **RE/I 30-36-42-48: IP 23 ; RE/I 60-72-84-96-108-120: IP X3B**

1.3 Operating requirements

- there must be a sufficient water flow
- regulator operating range: 2 °C to 45 °C of water temperature

1.4 Installation

1.4.1 Electrical regulations for swimming pools

Refer to the current regulations in force in your country.
French standard C15.100 Section 702 - U.T.E:
In volumes 0 and 1, only protection using Very Low Voltage (article 411.1) with a nominal voltage not exceeding 12 V AC or 30V DC is allowed. The protection must be installed outside volumes 0, 1 and 2 (the appliance has a protection index of at least IP X5).
In volume 2 (see figures 702A and 702B), the appliances must be:
- either class II for lighting,
- or class I protected by a 30 mA or less ground fault circuit breaker,
- or powered by a separation transformer in compliance to paragraph 413.5.1
The appliance has a protection index of at least IP X2.

Figure 702 A: volume sizes for in-ground pools and foot baths

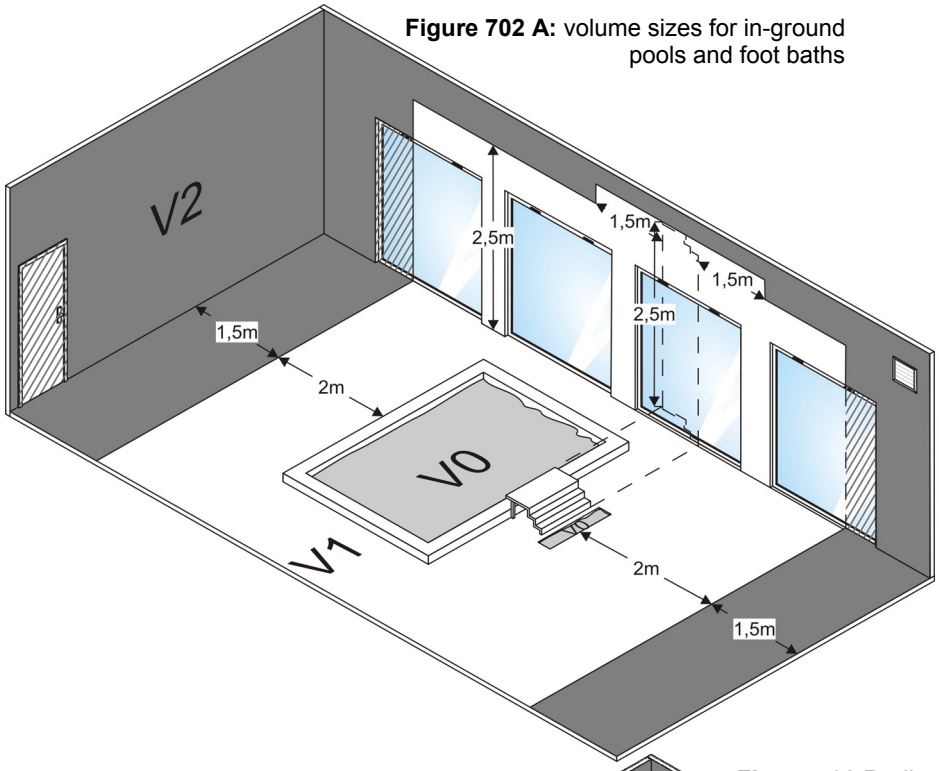
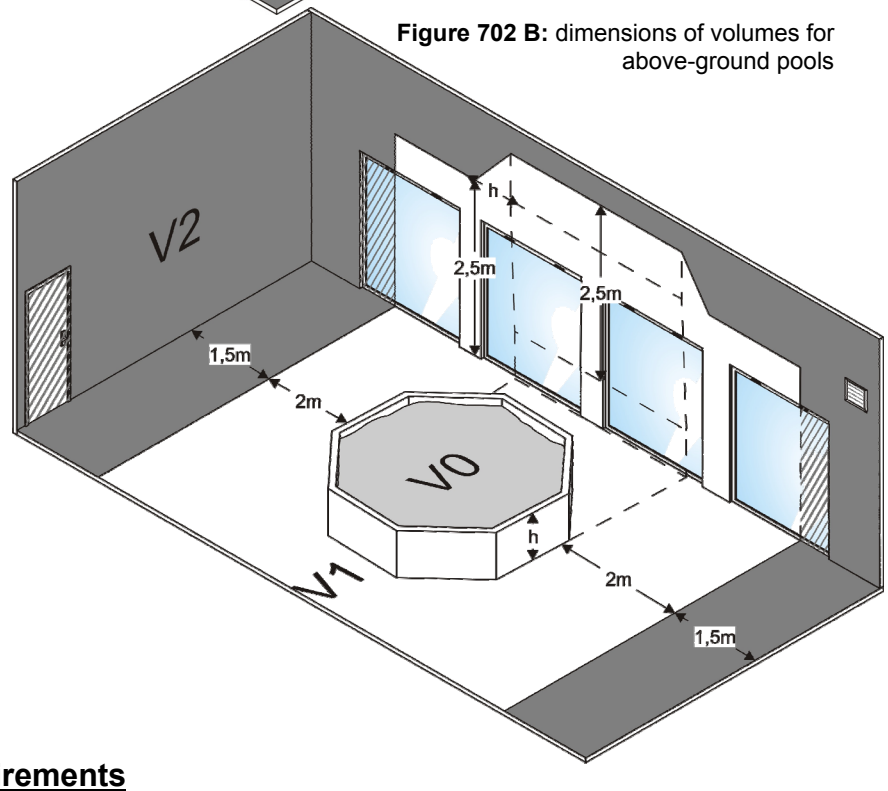


Figure 702 B: dimensions of volumes for above-ground pools



h: unknown variable
V: volume

1.4.2 Installation requirements

1) Improper installation can cause serious material damage and/or injuries (potentially including death).

2) install the appliance in a technical room that is protected from freezing, close to the pool filtration pump

3) **set it on a stable, solid** (concrete slab type) **and level surface**

4) Ensure **easy access** to the appliance for maintenance and connections,

5) the appliance should be installed so that it is on load as compared with the filtration system or the pool

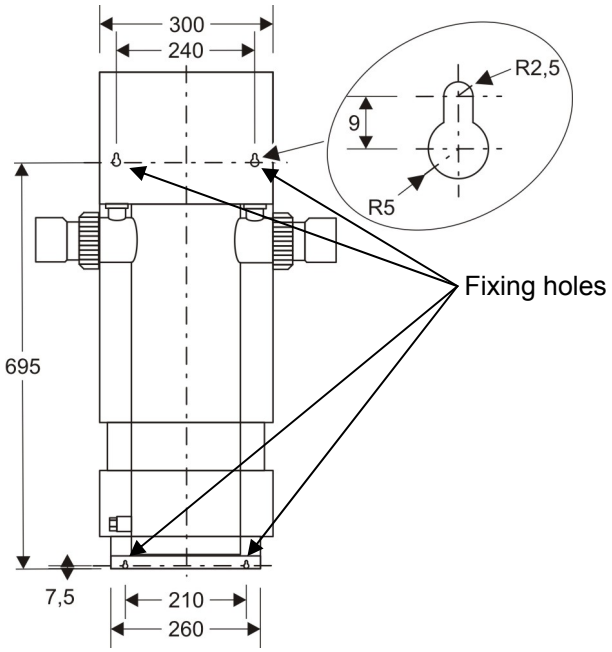
6) the appliance must not be installed near a source of heat or inflammable gas

7) keep the appliance out of the reach of children.

1.4.3 Installing the appliance

- **Do not handle the unit by the cover, use the base of the appliance**
- Make sure that the base is not exposed to risk of flooding.

It is possible to mount the RE/I 30, 36, 42 and 48 units on the wall, thanks to the fixing holes situated on the rear of the unit.



1.4.4 Hydraulic connections

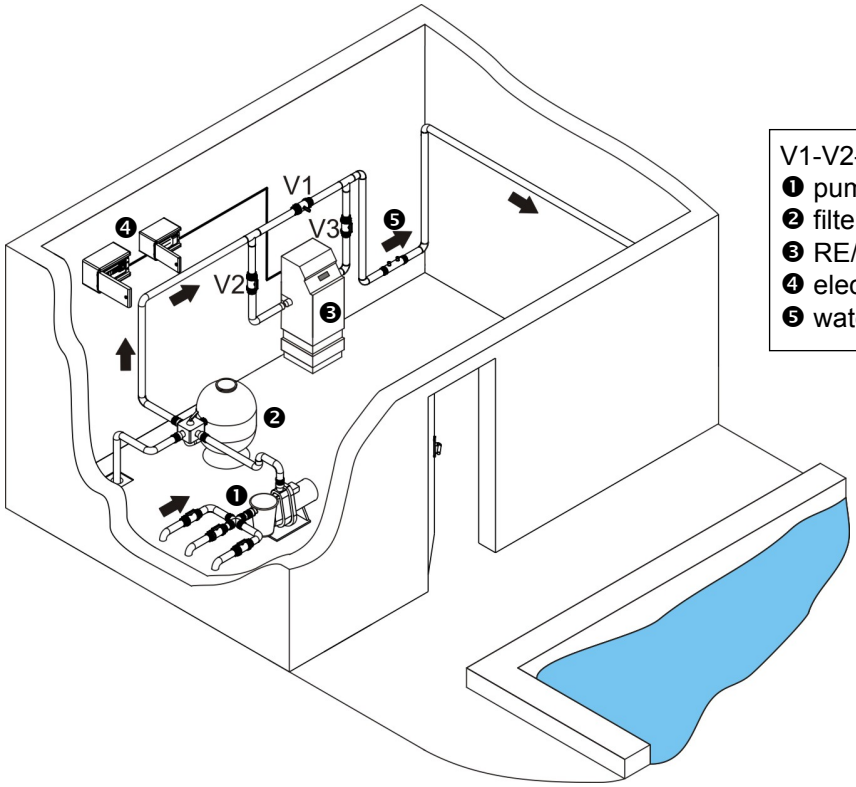
Recommended values for water treatment:
- Free chlorine: maximum 2.5 mg/l,
- Total bromine: maximum 5.5 mg/l,
- pH : between 6.9 and 8.0.

The water treatment system (chemical or electro-physical disinfection) **must be installed downstream from the heater and at a low point in order to avoid backflow of chloride when the filtration system is stopped** (see installation below). **It must be compatible with the heater** (check with the manufacturer).

The connection shall be by PVC pressure pipe, from a by-pass, to the swimming pool filter circuit, after the filter ❷ and before the water treatment ❺:

RE/I	Hydraulic circuit pressure		Fittings = inlet = outlet	Minimum water flow-rate	Maximum water flow-rate
	test	operating			
	bar	bar		m³/h	m³/h
30-36-42-48	4	2	half union Ø63 fitting to stick	20	30
60-72-84-96-108-120			2 Ø90 PVC flange collars (to glue)	30	50

Direction of circulation is arranged for water circulation from left to right.
In order to invert the flow direction, place the following elements as indicated:
- Digital regulation thermostat sensor: in its sheath at the input of the preheater,
- Flow switch: at the output of the preheater, make sure the arrow points in the same direction as the water flow,
- Safety thermostat sensor: in the immersion heater sheath at the output of the preheater



V1-V2-V3: by-pass valves
❶ pump
❷ filter
❸ RE/I
❹ electrical protection boxes
❺ water treatment

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1.4.5 Electrical connections

1.4.5.1 Voltage and protection

Prior to any operation, check that the voltage on the identification plate of the appliance corresponds to the mains voltage available on site.

- The electrical supply must be fitted with a protection and circuit breaking device (not supplied) compliant with the standards and regulations in force in the country where it is installed (in France standard NF C 15100),
- Electrical protection: 30 mA differential circuit breaker at the head of the line (see §1.4.5.3 for specifications)

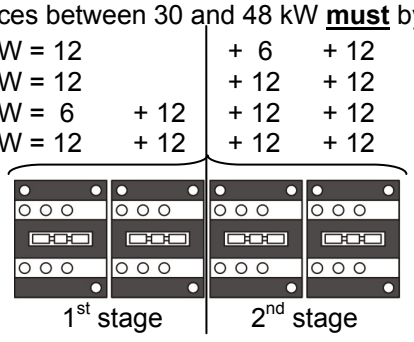
- Accepted tolerance for tension variation: ± 10% (while operating),
- Electrical cables must be fixed,
- For RE/I appliances between 60 and 120 kW use the hole situated at the back of the cover for the power supply cords
- For RE/I appliances between 60 and 120 kW use the fixing system of the cable(s) fitted on the rear of the electrical plate.

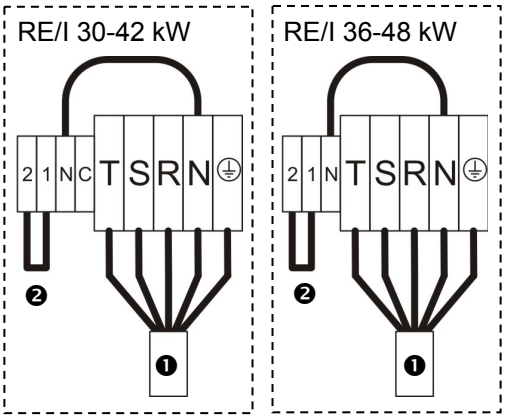
1.4.5.2 Connections

RE/I 30 to 48 kW

RE/I appliances between 30 and 48 kW **must** by powered with a three phase supply (400V/3N/50Hz).

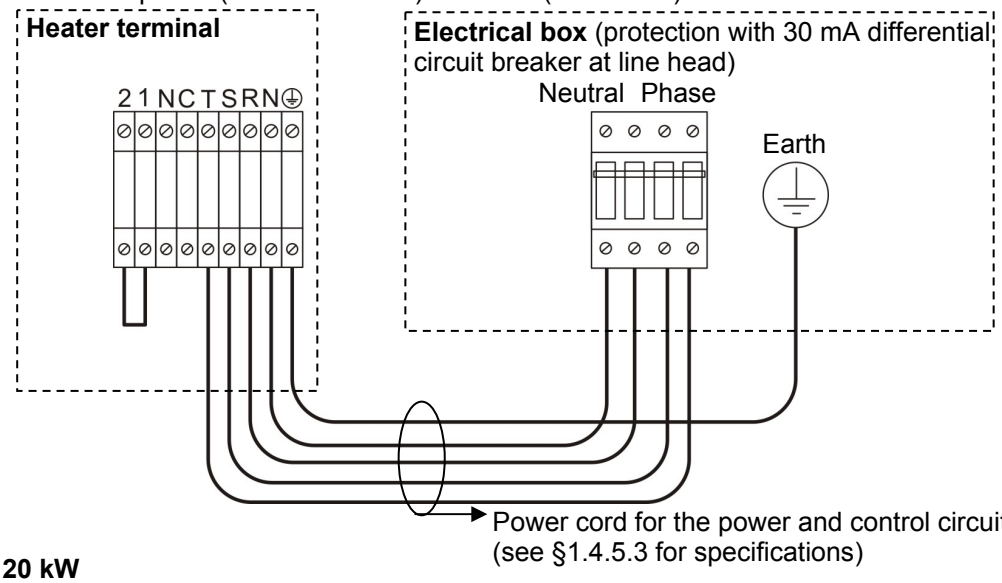
RE/I 30 kW = 12		+ 6	+ 12
RE/I 36 kW = 12		+ 12	+ 12
RE/I 42 kW = 6	+ 12	+ 12	+ 12
RE/I 48 kW = 12	+ 12	+ 12	+ 12





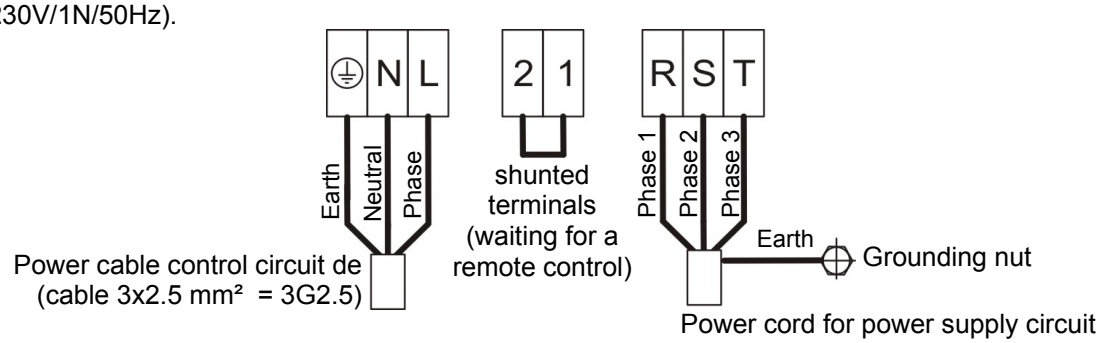
❶ supply cable
❷ shunted terminals (waiting for a remote control)

Supply: 400 VAC three-phase (terminals R-S-T) + neutral (terminal N) + Earth

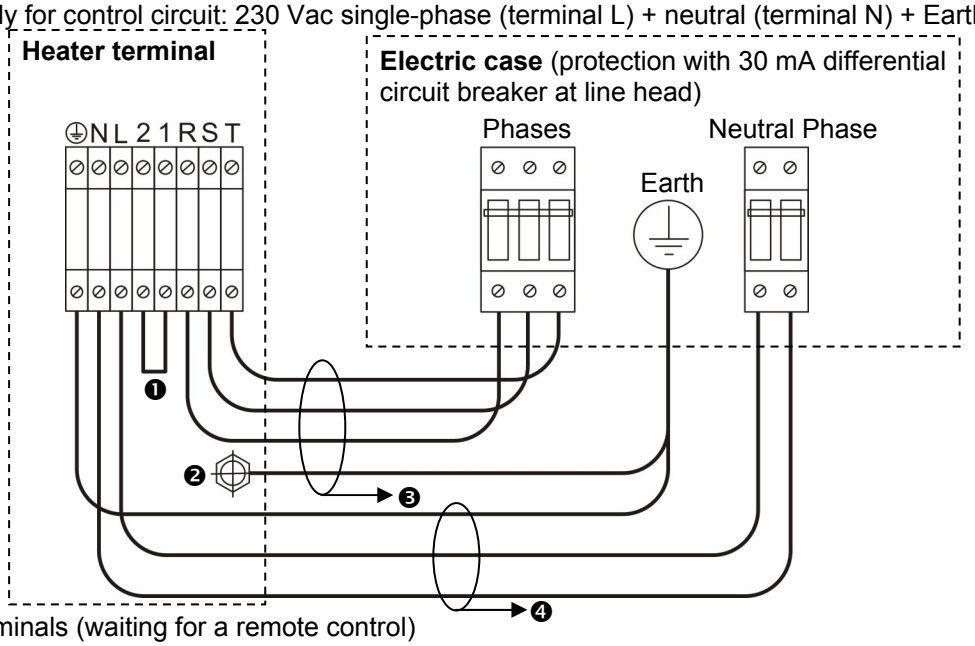


RE/I 60 to 120 kW

RE/I appliances between 60 and 120 kW **must** be powered with a three phase supply (400V/3/50 Hz) for the power circuit. The control circuit must have a separate monophase power supply (230V/1N/50Hz).



Electrical supply for power circuit: 400 Vac three-phase (terminals R-S-T) + Earth
Electrical supply for control circuit: 230 Vac single-phase (terminal L) + neutral (terminal N) + Earth



❶ shunted terminals (waiting for a remote control)
❷ grounding nut for RE/I
❸ power cables for power supply circuit (see §1.4.5.3 for specifications)
❹ power cables for control circuit 3x2.5 mm² (3G2.5)

During the first months after installing the appliance: check that the cables are tightly fastened to the power terminal , also to the power contactors.

The appliance must be earthed.
Risk of electrical shock inside the device. Only a qualified and experienced technician must install the device cables.
If power cable(s) is/are damaged it/they must be replaced by a qualified technician.

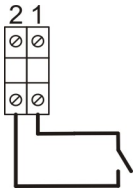
1.4.5.3 Cable sections

- supply cable section: must be checked and adapted depending on installation conditions.

RE/I	Maximum current consumption *	Cable section **		Max length before overheating	Electrical protection
	A	mm²		m	A
30	46.2	5x10	5G10	117	50
36	54.6	5x16	5G16	98	63
42	63	5x16	5G16	132	80
48	73.5	5x16	5G16	116	80
60	91.4	4x25	4G25	144	100
72	109.2	4x35	4G35	163	125
84	128.1	4x50	4G50	182	160
96	139.7	4x50	4G50	139	160
108	163.8	4x70	4G70	196	200
120	182.7	4x70	4G70	176	200

* nominal voltage
** minimal with copper conductor and power loss (Δu) of 5% and Cos phi >0,8

1.4.5.4 Connecting a remote control unit

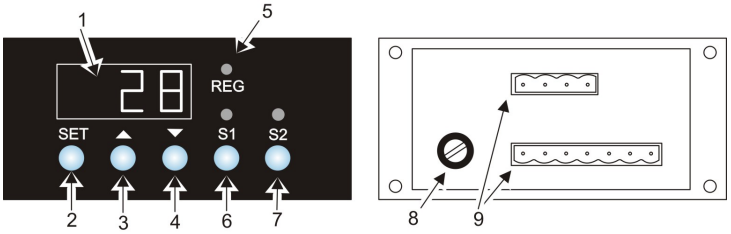


Connection of a contact with no polarity, using a 2x1.5 mm² cable between terminals 1 and 2 of the preheater terminal board

Remove the shunt before connecting the remote control contact.

1.5 Operation

1.5.1 ECP 230 regulation



1. digital display indicating both the pool water temperature and the set temperature
2. button to read or change the set temperature
3. button to increase the set temperature
4. button to reduce the set temperature (or switch off the “beep” sound indicating a fault)
5. regulation indicator:
   - when this is lit and fixed it indicates that the digital display thermostat is "in request" (requested temperature > pool temperature),
   - when it is blinking this indicates temporisation before onset of the heating stage(s)
6. switch “on/off” for the 1st heating stage (with above an indicator “on/off”)
7. switch “on/off” for the 2nd heating stage (with above an indicator “on/off”)
8. digital display thermostat fuse housing
9. electrical connectors

1.5.2 Checks before operating the appliance

- the unit is stable (as well as level and upright),
- the hydraulic connections are tightened properly,

- make sure there is no leak,
- There must be no air remaining in the hydraulic circuit, nor in the preheater tank,
- Water in the preheater tank must never freeze,

Never operate the heater if the water is frozen.

- the unit is connected to the earth (green/yellow cable).
- the side panel providing access to the technical section is in place,

Incorrectly tightened terminals may cause overheating of the electrical terminal rail, and will void the warranty.

1.5.3 Starting the appliance

- recommendations in order to achieve the desired temperature:
  - protect the pool with a cover (blister cover, roller cover …),

Strongly recommended in order to avoid heat loss.

  - switch the filter system to “manual” mode, 24h/24,
- the by-pass valves and regulation valves (see §1.4.4) must be positioned as follows:
  - valve 1 completely open,
  - valves 2 and 3 closed.
- switch on the filter system,
- progressively completely open valves 2 and 3 (see §1.4.4) (this will remove air accumulated in the preheater tank and in the filter circuit)
- adjust valves 1 and 3 so as to obtain a water flow rate between 20 and 30 m³/h for RE/I between 30 and 48 kW, or between 30 and 50 m³/h for RE/I between 60 and 120 kW,

The heater will not operate if the water flow in the heater is lower than 5 m³/h.

- switch on the electrical supply,
- adjust the digital thermostat temperature to “on request” (“REG” indicator flashing):
- press the "SET" button so as to display the requested temperature,
- maintain this button pressed, and press on the ▲ key to increase, or the ▼ key to lower the value,
- release the "SET" button to return to the display of the pool temperature.
- press the key(s) S1 and/or S2,
- when the pool reaches the desired temperature, the “REG” indicator will turn off, and the heater will stop heating.

A 4 minute wait state will be effective:
- Upon powering up the appliance,
- When powering up after a power failure
- If the flow controller executes an open/close operation

1.5.4 Checks

The heater must switch off when:
- filtering is stopped,
- decreasing the required temperature on the control thermostat
- pressing key “S1” and/or “S2”.

1.5.5 Wintering

Wintering is essential as there is a risk of the heater freezing, and this case is not covered by the warranty.

- press keys “S1” and “S2” to stop the heating stages,
- switch off the power supply (by disengaging the 30 mA differential circuit breaker at the head of the heater line),
- drain the heater (**risk of freezing**) by removing the stopper situated on the side of the appliance, and by unscrewing the ½ U-union connectors or the DN80 collars.

2. Troubleshooting

2.1 Faults

In the event of abnormal heating, the heater will stop automatically thanks to the positive overheating safety thermostat (TS) situated on the plate, frontal view (cover removed). To reset the safety feature, press the middle button on this thermostat.

In the case of a visual and sound defect on the regulator (to stop the "beep" sound press the ▼ key):

- if “E0” is displayed (flash and beep):
  - regulation sensor is not operational (cut or short-circuited or disconnected)
  - reconnect or replace the sensor
- if “E2” is displayed (flash and beep):
  - the regulator is not operational (damaged electronics)
  - replace the digital display regulator

If nothing is displayed:

- mains power supply may be insufficient or faulty
- regulator circuit-breaker fuse is faulty

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3. Maintenance

3.1 Maintenance instructions

A general servicing of the appliance is recommended when wintering and restarting, or at minimum once a year, to check the proper operation of your appliance, to ensure continued performance and to prevent certain failures.

- check that all metal elements are properly earthed,
- check the tightening and connections of the electrical cables and the cleanliness of the electrical equipment box,

Incorrectly tightened terminals may cause overheating of the electrical board.

- check the good operation of the regulator,
- visual check of the condition of the various electrical components,
- clean the outside of the appliance, do not use solvent-based products,

Do not use a high-pressure water jet.

3.2 Recycling the product

If your appliance has reached the end of its operating life and you would like to dispose of it or replace it. Please do not throw it into your dustbin or into your local selective sorting containers.

This symbol, mentioned on a new appliance means that the equipment must not be thrown away. It will be processed selectively so that it can be reused, recycled or recovered. Any substances it may contain which are potentially dangerous to the environment will be eliminated or neutralised.

You can give it to a community association which will be able to repair it and put it back into circulation.
If you buy a new appliance, you can take the old one back to the reseller or ask the carried to take it back.
This is known as a “**One-for-One**” exchange.
Otherwise please take it to a waste collection centre, if your local council has set up a selective collection system for these products.

Give the appliance to a community association.

Return the used device to the reseller when making a new purchase.

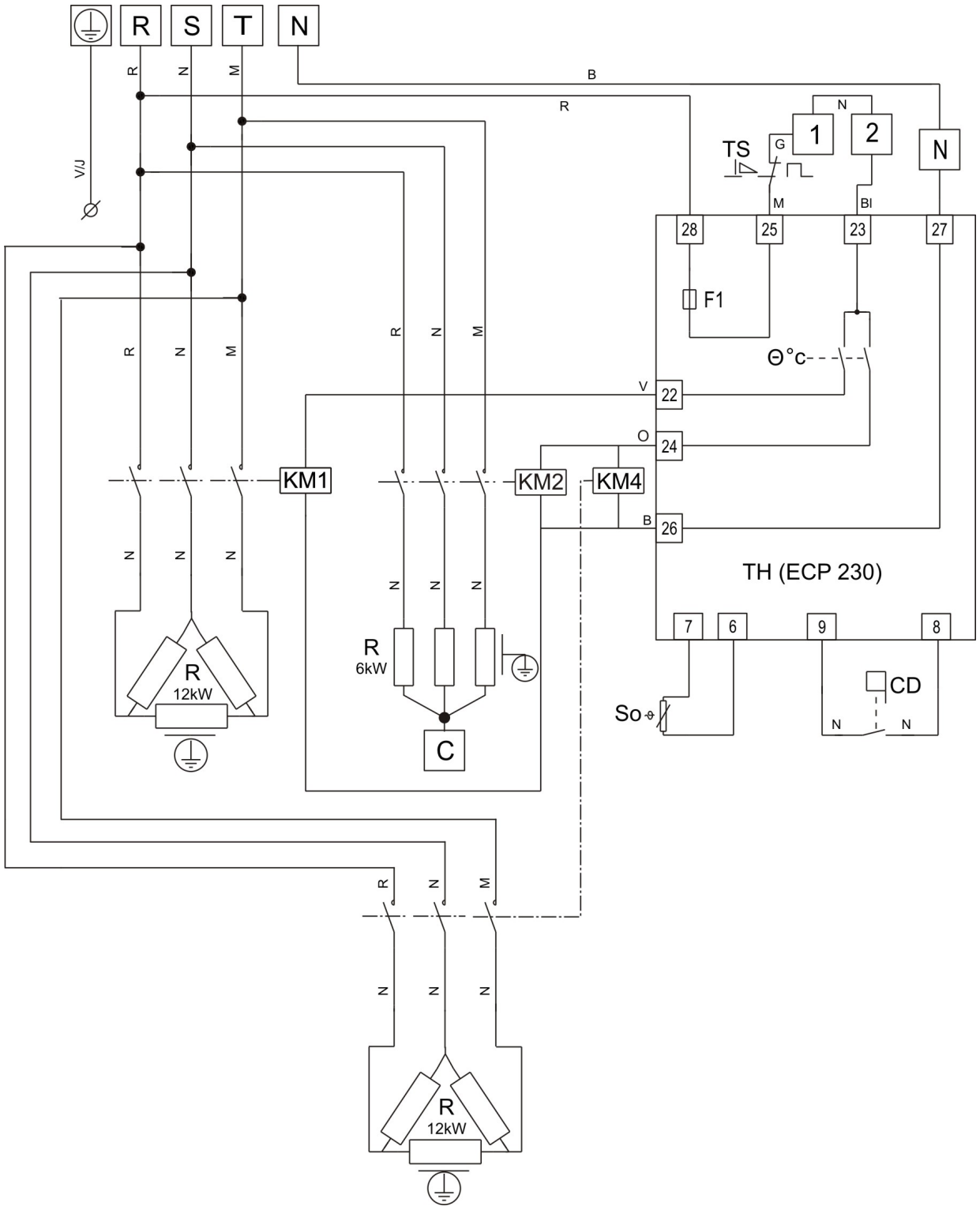
Take the used device to a waste collection centre.

Due to our policy of ongoing improvement, our products specifications may be subject to change without notice.

Version 06/2010

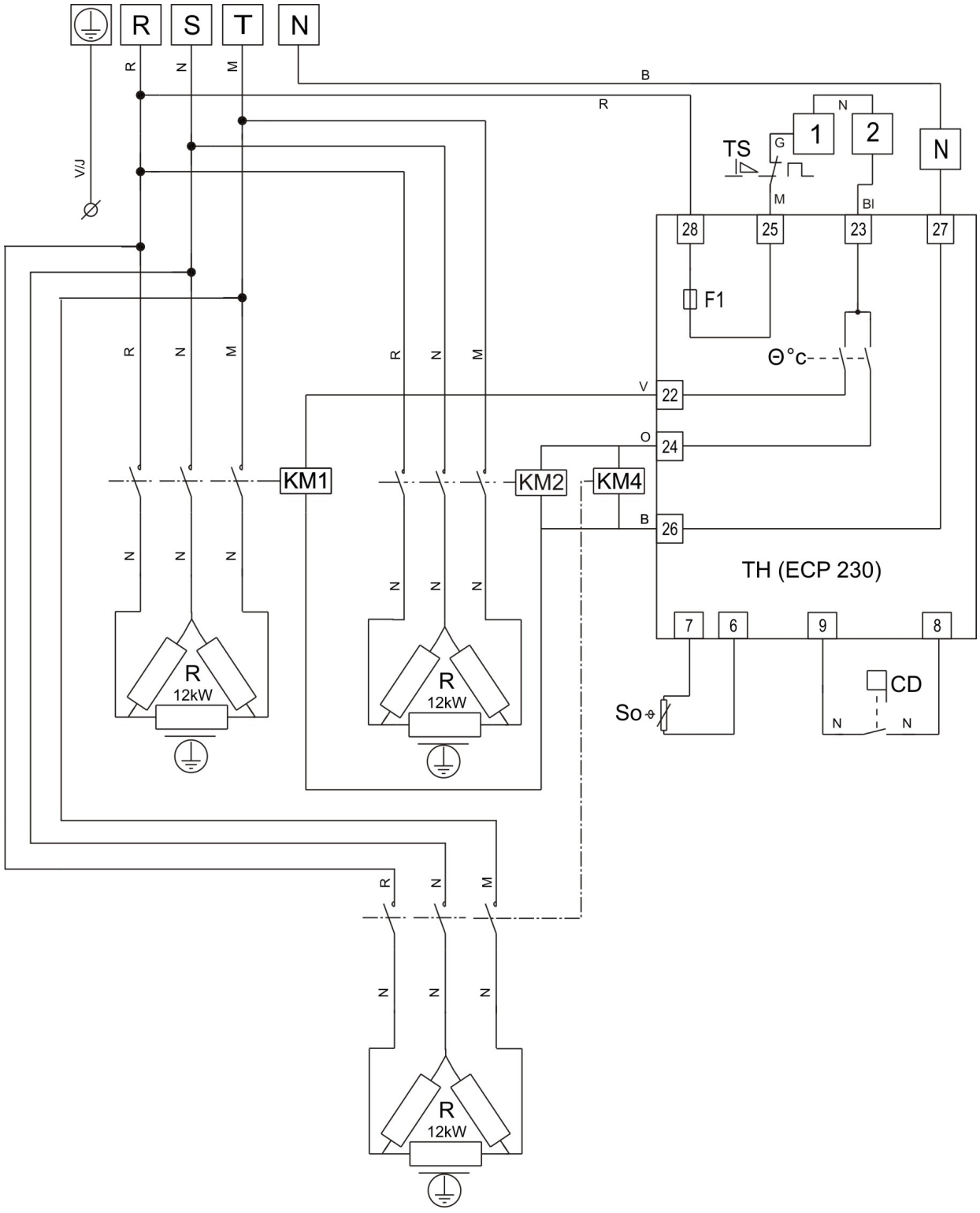
Electrical diagram

RE/I 30 kW



RE/I

RE/I 36 kW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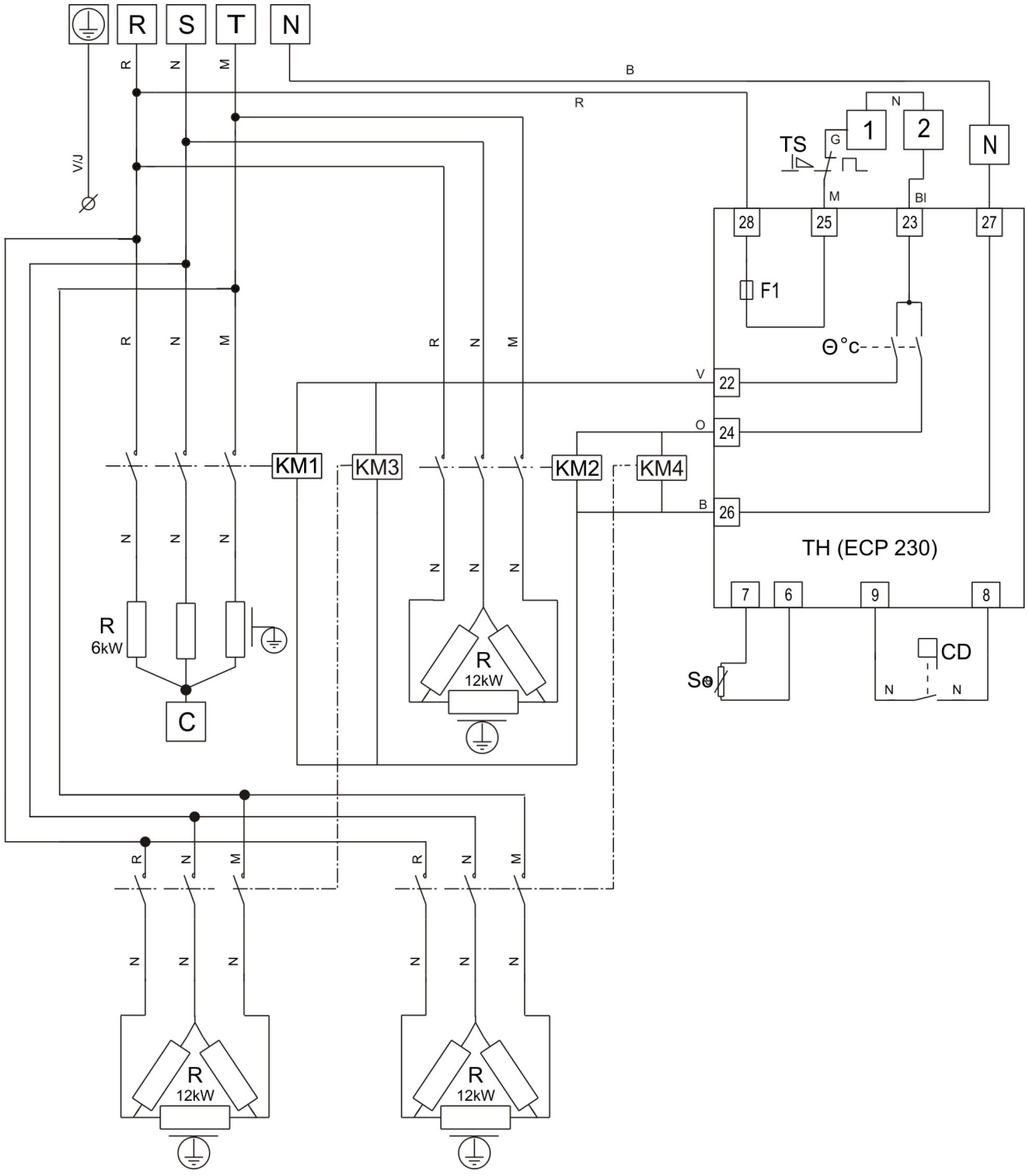
RE/I

RE/I 42 kW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KM1
KM3
KM2
KM4
R
6kW
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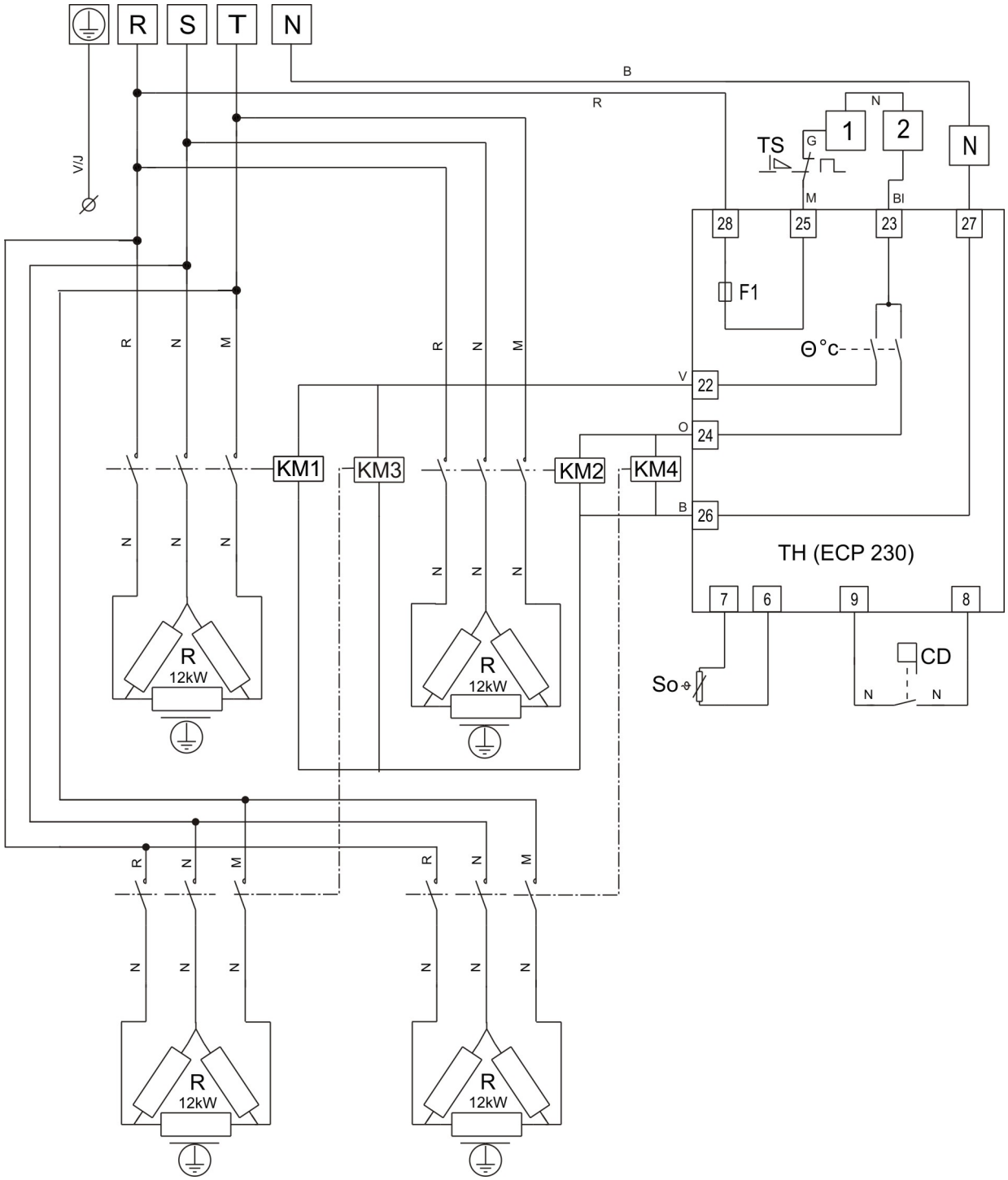
12kW
R
12kW
R
12kW

RE/I

RE/I 48 kW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KM1
KM3
KM2
KM4
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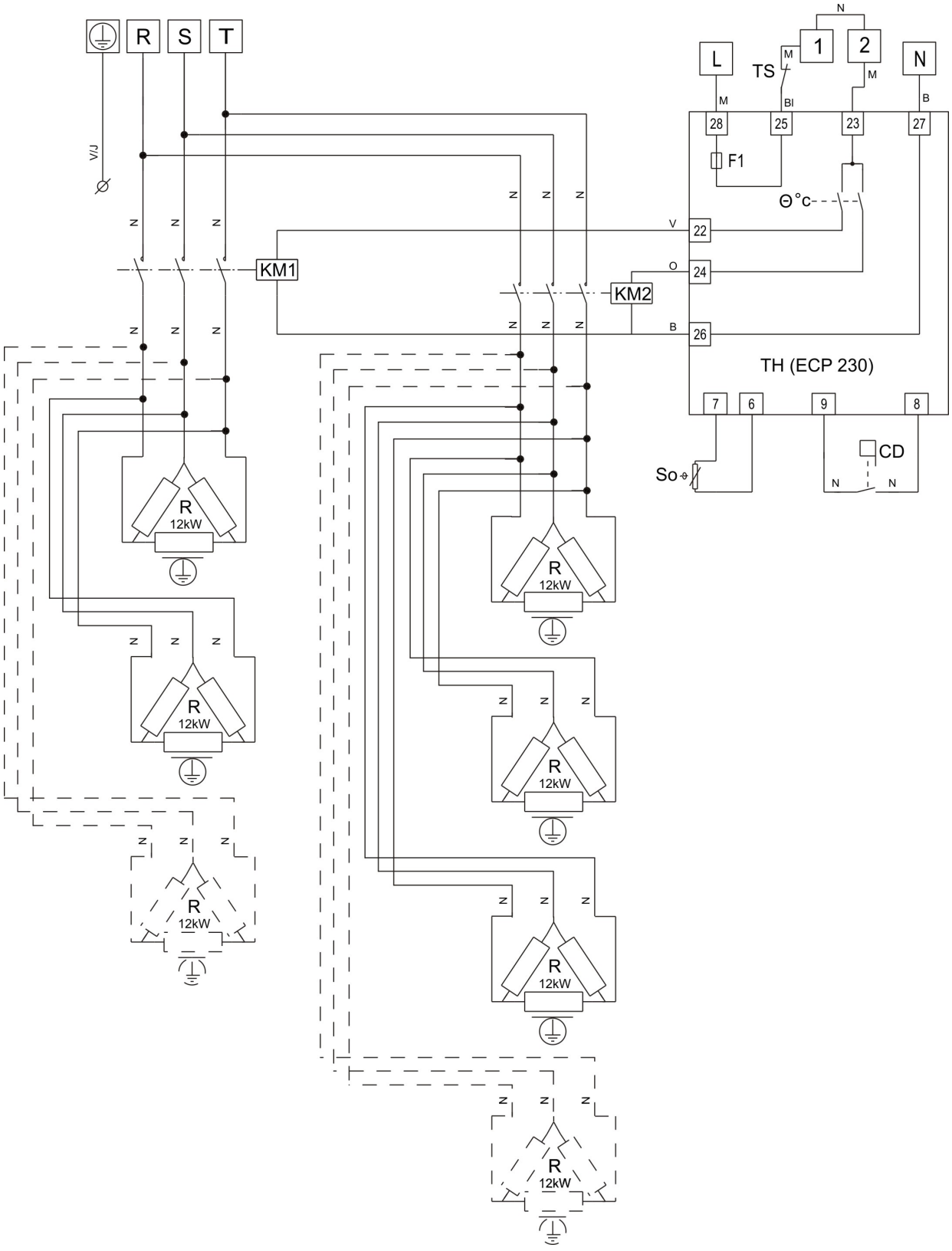
M
R
12kW

RE/I

RE/I 60-72-84-96-108-120 kW



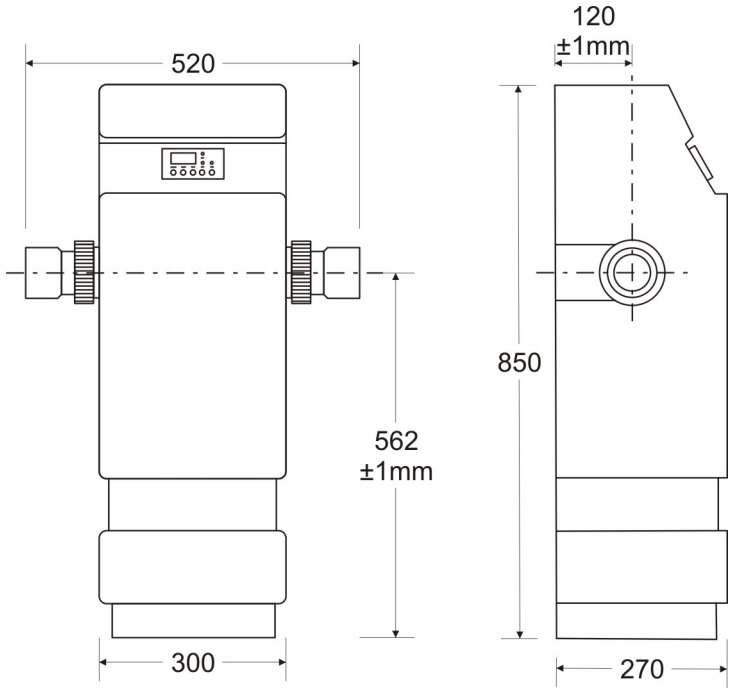
RE/I

	English
R-S-T-N	Three-phase power supply 400 Vac-50 Hz (on RE/I 30 to 48 kW)
R-S-T	Three-phase power supply 400Vac-50 Hz (power circuit on RE/I 60 to 120 kW)
N-L	Single-phase power supply 230Vac-50 Hz (control circuit on RE/I 60 to 120 kW)
⏚	Earth
1-2	shunted terminals for connecting a remote control (see §1.4.5.4)
TH	ECP 230 regulation thermostat with digital display
TS	High limit thermostat
So	Swimming pool water control sensor
CD	Flow switch
F1	Protection fuse 3.15A-T
R	Titanium electrical resistor
KM1-KM3	1° stage power contactor
KM2-KM4	2° stage power contactor
N	Black
O	Orange
B	Blue
Bl	White
M	Brown
V/J	Green/yellow
G	Grey
V	Violet

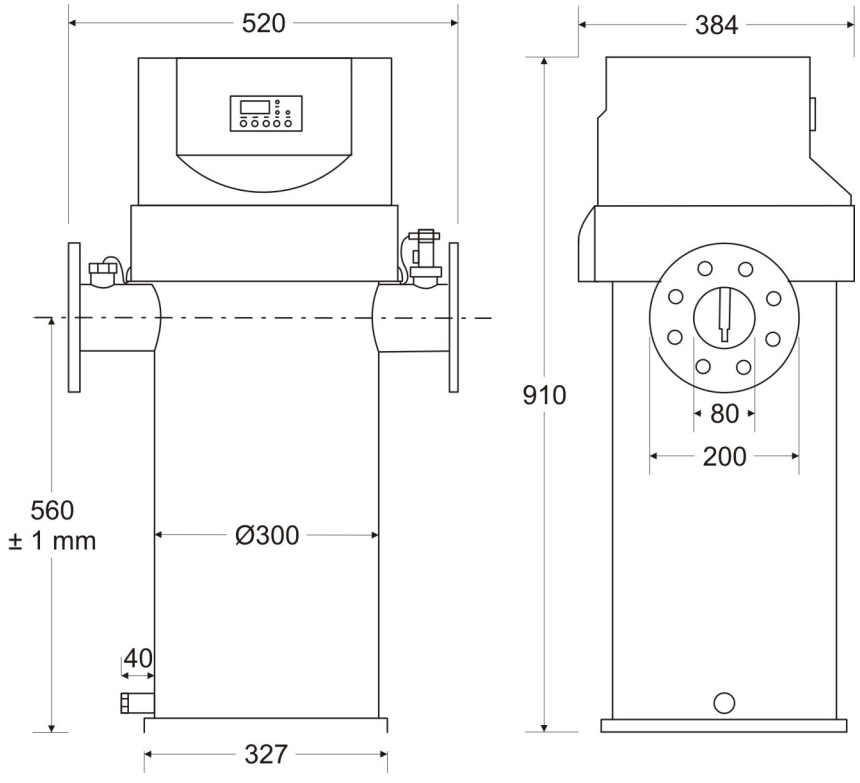
Dimensions

RE/I	weight Kg
30	30
36	30
42	33
48	33
60	49
72	50
84	51
96	53
108	55
120	58

RE/I 30-36-42-48 kW



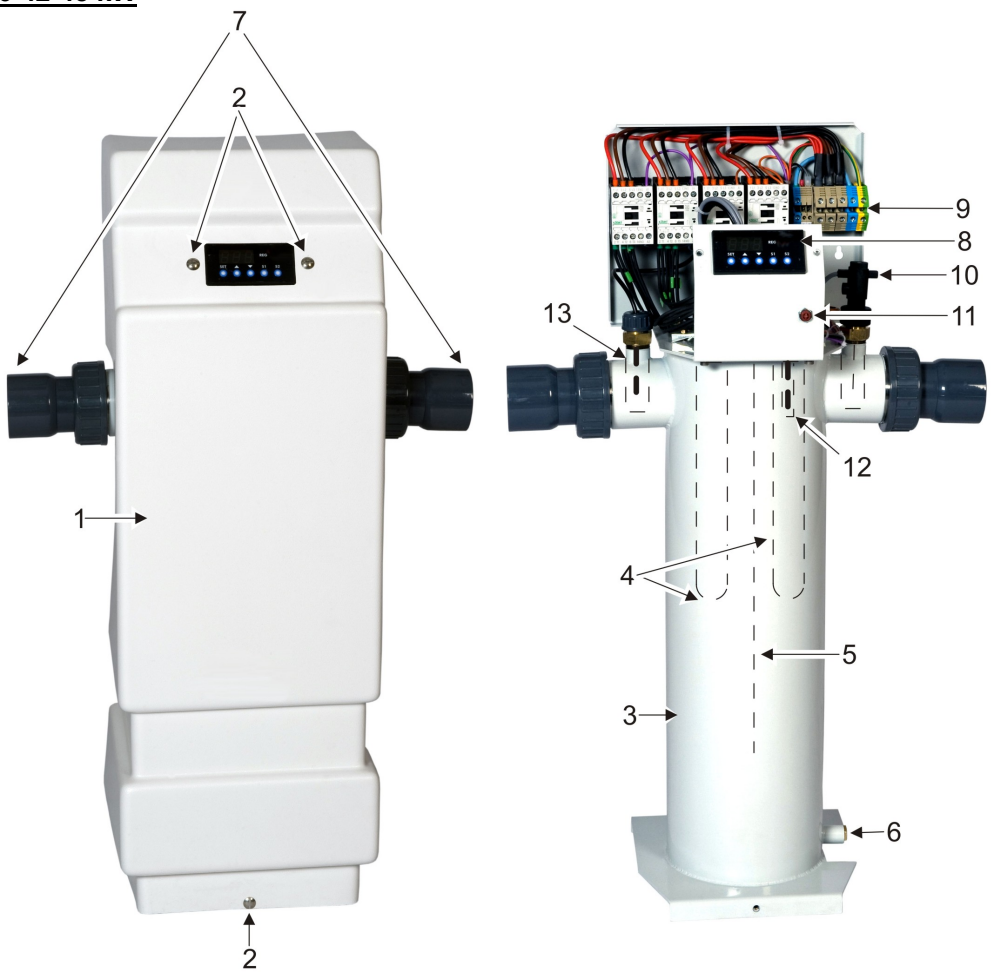
RE/I 60-72-84-96-108-120 kW



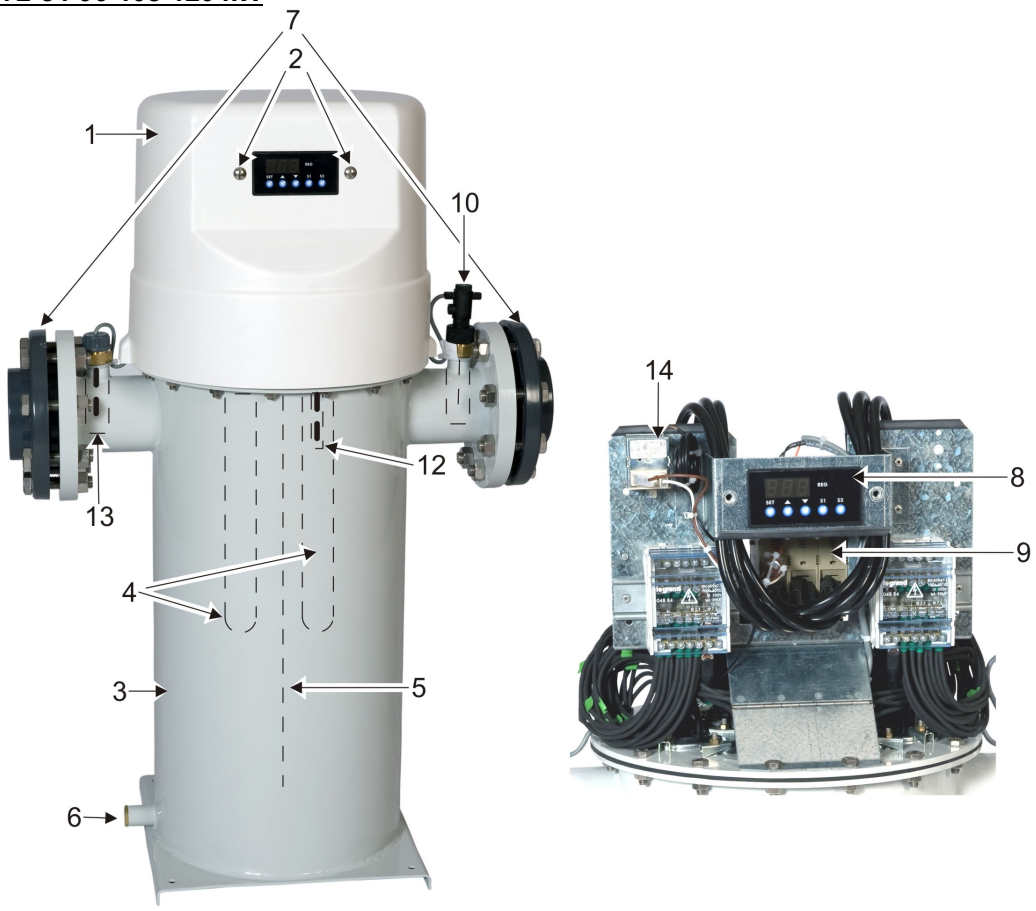
RE/I

Description

RE/I 30-36-42-48 kW



RE/I 60-72-84-96-108-120 kW



RE/I

	English
1	cowl
2	Panel screw
3	Tank
4	Electric back up heating
5	Partition
6	Drain screw
7	Hydraulic connectors
8	Regulator
9	Supply terminal board
10	Flow switch
11	Reset button for thermostatic safety at 63 °C
12	Bulb of thermostatic safety + sensor well
13	Control sensor + pocket
14	Adjustable thermostatic safety (set at 60 °C)

CONFORMITY CERTIFICATE

Z.P.C.E. declares that the herewith products or ranges:

Electric heater for pools: RE/I

are in conformity with the provisions:

- **of the ELECTROMAGNETIC COMPATIBILITY directive 89/336/EC as amended 93/068/EC.**
- **of the LOW VOLTAGE directive 73/23/EC.**

RE/I

- Notas - Nota

- Notas - Nota

ZODIAC

Plaque signalétique – Product name plate

Votre installateur – Your installer

Chauffage et déshumidification de piscines – Heating and dehumidification of pools

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