



User manual

Aqua compact

It is important that you read this manual carefully to secure the function and useful life of the pool equipment.

This manual is also available from www.pahlen.com

Pahlén AB is not responsible for the product warranty or damage caused by incorrect installation, use or incorrect maintenance.

WARNING

- This appliance must not be used to heat drinking water.
- This appliance must not be used in aggressive water, salt water or pools/hot tubs with a chlorine machine/salt chlorinator, see the recommended water quality values.
- The water inlet on this appliance must not be connected to the water from any other water heating system.
- The appliance must be installed in accordance with applicable national laws and provisions and the electrical installation must only be carried out by a qualified electrician.
- Do not start installing the appliance until you have read and understood the installation instructions and warnings in this manual. If you have any questions about the installation instructions or warnings, please contact your local dealer.
- Under no circumstances may this appliance be started without being completely filled with water.
- This appliance must not be covered, placed near combustible material or in direct sunlight.
- This appliance must not be used by very young children (0-3 years).
- This appliance must not be used by young children (3-8 years) and people with significant and complex disabilities unless they are under constant supervision by a person who is responsible for their safety.
- This appliance may be used by children over 8 years of age and persons with reduced physical, sensory or mental capabilities or lack of experience or knowledge, provided that they're under supervision or have received information on how to use the appliance safely and understand risks that may occur by a person who is responsible for their safety.
- Children are not allowed to play with the appliance.
- This appliance should not be cleaned or maintained by children without supervision.
- Failure to follow the installation instructions invalidates the product warranty.

Product description

The Aqua compact electric heater is available from 3 kW to 18 kW, see the type plate on the product. The heater is supplied with built-in safety functions such as an adjustable thermostat (with a temperature range of 0 -45°C), overheating protection (with a maximum breakage temperature of 60°C) and a flow monitor. The casing is made of reinforced thermoplastic (short casing: 3/6/9 kW, long casing: 12/15/18 kW), the heater element is made of Incoloy 825 (or titanium) and the connections are made of PVC. As standard, connections for internal gluing to Ø50 mm PVC pipes are included. Option A: connections for internal gluing to Ø1½" PVC pipes. Option B: connections with 1½" internal thread.

NOTE! The standard version of the heater (with Incoloy element) is not intended for use in aggressive water, salt water or in pools with a chlorine machine/salt generator. In such contexts, Aqua Compact Titanium is required.

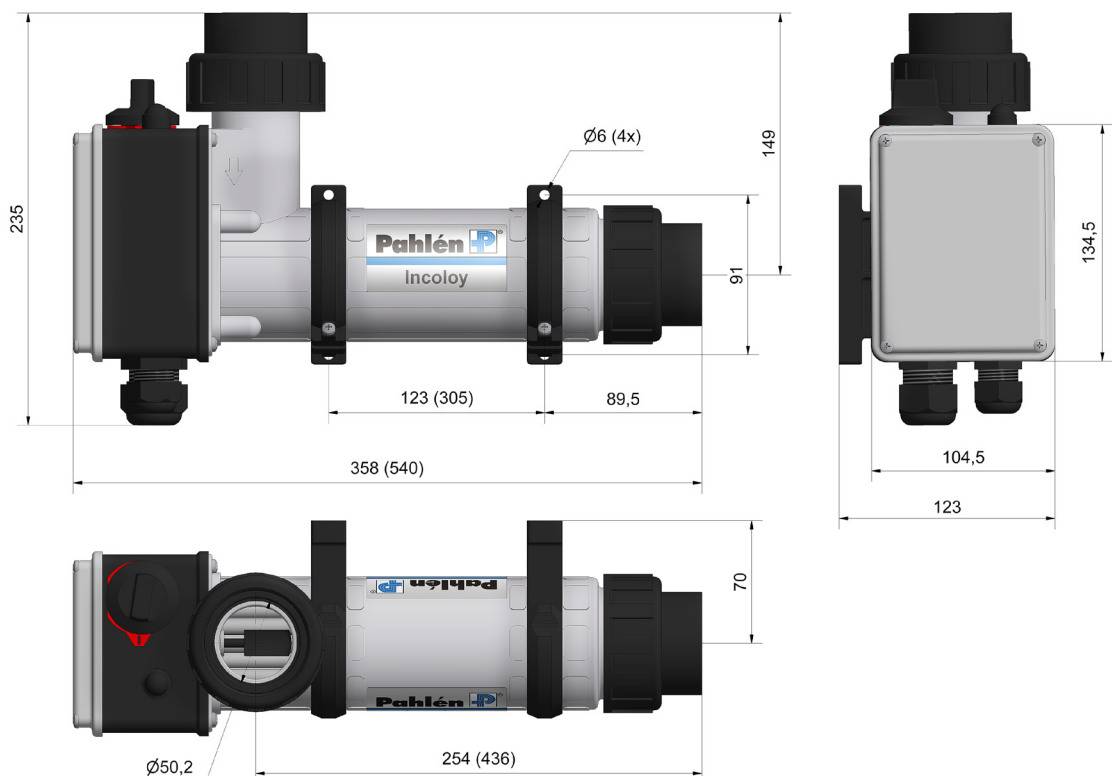
Technical data

Min. flow	90 l/min
Max. flow	300 l/min
Voltage:	230 V 1-phase (3-6 kW), 230 V 3-phase (3-18 kW), 400 V 3-phase (3-18 kW)
Max. pressure:	2.5 bar (2.5 Pa)
Max. temperature:	45°C
Enclosure class:	IP45

Rated power and power consumption

Power	Rated power 220-240 V / 380-415 V 50-60 Hz		Power consumption		
	Standard	Titanium	230 V, 1-phase	230 V, 3-phase	400 V, 3-phase
3 kW	2.7–3.5 kW	2.7–3.2 kW	13 A	8 A	5 A
6 kW	5.4–6.5 kW	5.4–6.5 kW	26 A	15 A	9 A
9 kW	8.1–9.7 kW	8.1–9.7 kW	—	23 A	14 A
12 kW	10.8–13 kW	10.8–12.9 kW	—	31 A	18 A
15 kW	13.5–16.2 kW	13.5–16.1 kW	—	38 A	22 A
18 kW	16.2–19.4 kW	16.2–19.4 kW	—	46 A	27 A

Dimensions



Installation in circulation systems

WARNING

- The water inlet on this appliance must not be connected to the inlet water from any other heating system.
- This appliance must ALWAYS be installed at least 200 mm below the normal water level, see the installation example.
- Valves must not be installed so that the flow of water through the heater can be unintentionally turned off.
- The installation must be carried out in such a way that the heater cannot be self-drained in the absence of pool water circulation and air pockets cannot be formed.
- The heater must be installed on the return line to the pool AFTER a possible filter.
- If necessary, chlorine, acid or similar should be dosed after the heater in the direction of flow.
- The flow direction marking on the heater indicates the connections that apply for the inlet and outlet.

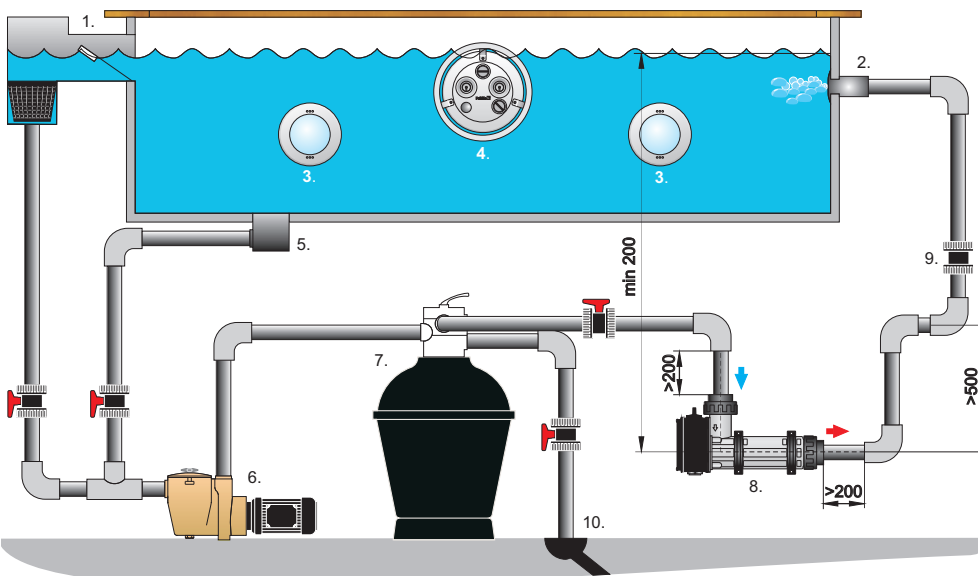
Pipe connections are made BEFORE electrical installation.

The electric heater should be installed horizontally according to the drawing, so that it is always fully filled with water. Under no circumstances may it be started without being completely filled with water.

- **Connections must be made using PVC pipe with at least 200 mm of straight length before and after the heater.**
The standard version's connection is glued to PVC pipes with an outside diameter of 50 mm (inside diameter min. 42 mm).
Connection A: glued to PVC pipe with outside diameter $\text{Ø}1\frac{1}{2}$ " (inside diameter min 42 mm).
Connection B: hose with an inside diameter min. 35 mm is connected and must be clamped to ensure 200 mm straight length before and after the heater.
- Do not install the shut-off valve between the heater and the pool. If a valve is required here, it must be a non-return valve.
- The heater must not be covered, placed close to combustible material or in direct sunlight.
- If the heater is placed against combustible material, a fireproof board or the like must be placed between the heater and combustible material. The board must cover 10 cm outside the heater's outer dimensions.
- The heater must not be installed in a position that is exposed to the elements and must be protected against the ingress of water.
- If the position of the heater is such that there is a risk of freezing, the installation must be carried out in such a way that the heater can be drained of all water.

Failure to follow the installation instructions invalidates the product warranty.

Installation example pipe



NOTE!

The electric heater must always be located at least 200 mm below the water surface.

1. Skimmer
2. Inlet
3. Light
4. JetSwim
5. Main drain
6. Pump
7. Filter
8. Electric heater
9. Check valve
10. Drain

Electrical installation

WARNING

- The electrical installation may only be carried out by a qualified electrician in accordance with the instructions provided with the heater.
- As electrical installation regulations differ from country to country, contactors, cables, connection components, and enclosures must be selected based on local regulations.
- A main isolator must be installed before all live electrical connections on the heater. This must be an all-pole isolator that satisfies the requirements set out in IEC/EN 60335-1 paragraphs 7.12.2, 22.2 and 24.3.
- Pahlén recommends the installation of a residual current device.
- The heater must be connected according to the wiring diagram below.
- The control voltage is connected: for 230 V 1-phase and 400 V 3-phase to L1 and N, for 230 V 3-phase to L1 and L2.
Note that the control voltage must be fitted with a separate fuse of 5-10 amps for the live electrical connections.
- The heater must be installed in such a way that it cannot be activated unless the circulation pump is in operation (sufficient flow), i.e. the control current to the heater's contactors must be controlled over the pump's contactors.
- The voltage to the heater must not fluctuate more than +5% to -10% in relation to the specification of the model and type plate.
- The installation method must be chosen in such a way that the temperature limit is not exceeded for any component at full load.

Minimum requirements for contactors (main isolator) and coupling material

Connection options	230 V, 1-phase	230 V, 3-phase	400 V, 3-phase
Isolator poles	2	4	4
Voltage	≥ 240 VAC	≥ 240 VAC	λ415 VAC
Power	According to the rating plate*	According to the rating plate*	According to the rating plate*
Current	According to the rating plate*	According to the rating plate*	According to the rating plate*
Temperature	≥ 60°C**	≥ 60°C**	≥ 60°C**

* See the table "Rated power and power consumption"

** The temperature the component receives at the installation site at the maximum ambient temperature, but at least +45° and the maximum power output from the heater. The temperature depends on how well ventilated the installation is.

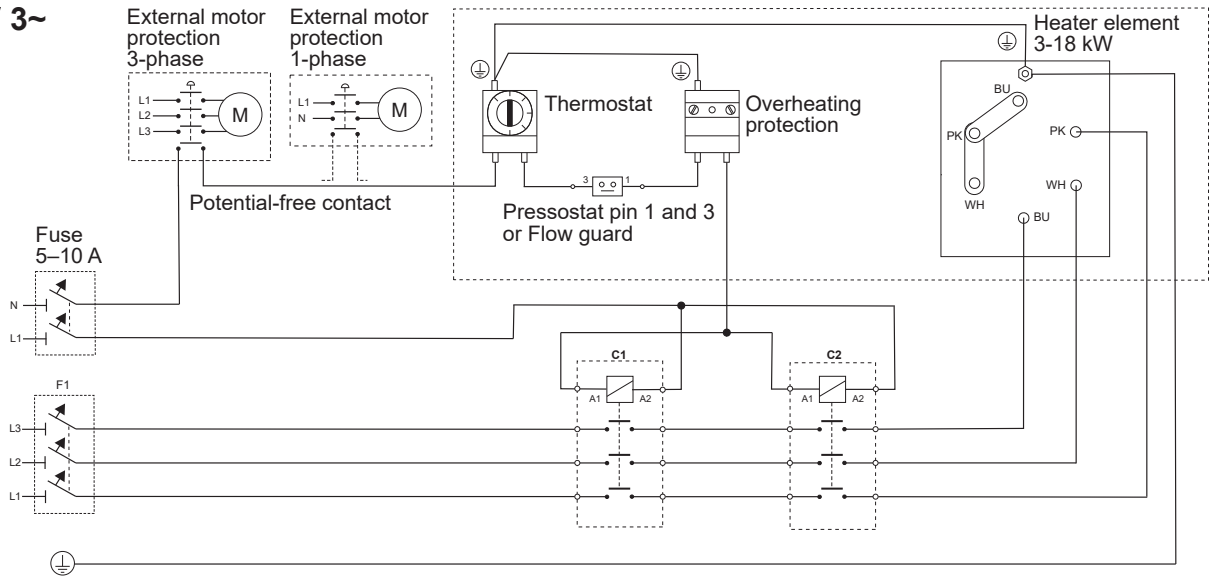
NOTE!

Installed cables are only test cables. These must not be used for connection.

Wiring diagram

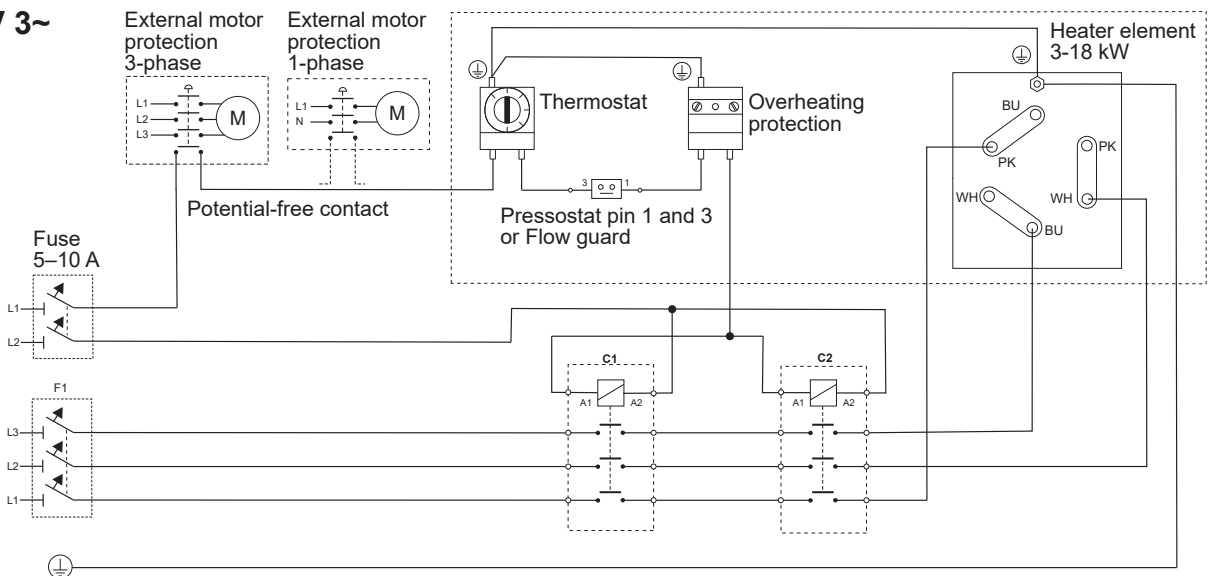
380–415 V 3~

BU = blue
PK = pink
WH = white



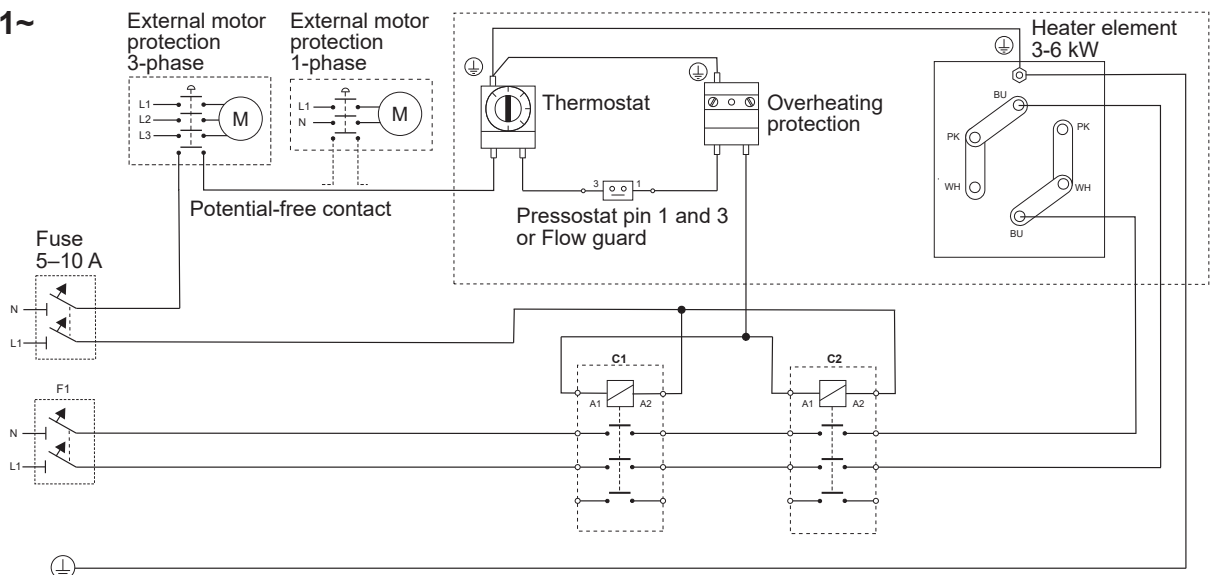
220-240 V 3~

BU = blue
PK = pink
WH = white



220-240 V 1~

BU = blue
PK = pink
WH = white



Start

1. Fill the pool with water to the right level.
2. Start the pump for pool water circulation.
3. Check that the water circulates as normal in the system and that all air is vented from the system.
The heater must be completely water-filled before switching on the power.
Only when all air has been vented from the system can the heater be switched on.
4. Functional test the heater by turning the thermostat knob back and forth and check that the thermostat contactor switches and releases.
The flow monitor is checked by turning off the flow through the heater with a shut-off valve and check that the contactors release. Turn on the water again. The contactors should then switch on again.
5. Set the desired pool temperature with the thermostat knob.
6. The water is now heated to the desired temperature.

Operation

When backwashing and cleaning the filter, switch off the power to the heater.
In the event of a risk of freezing, the power must be switched off and the heater drained of all water.

General info

In order to ensure electric heater works well and has a long-life, it is important that the following recommended values regarding water quality are followed.

Chlorine content:	max 3.5 mg/l (ppm)*
pH-value:	7.2–7.6
Alkalinity:	60–120 mg/l (ppm)
Calcium hardness:	100–300 mg/l (ppm)
Iron:	max 0.1 mg/l (ppm)*
Copper:	max 0.2 mg/l (ppm)*
Manganese:	max 0.05 mg/l (ppm)*
Phosphorus:	max 0.01 mg/l (ppm)*
Nitrate:	max 50 mg/l (ppm)*

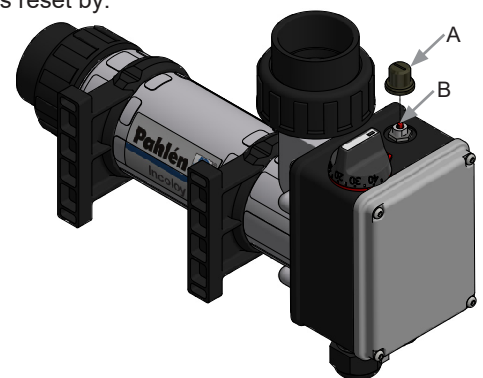
	Incoloy	Titan
Chloride (salt) content:	max 250 mg/l (ppm)	max 35,000 mg/l (ppm)

* according to EN 16713-3

Failure to follow the limit values for water quality invalidates the product warranty.

Troubleshooting

1. Check the fuses.
2. Check that the system has the requisite flow through the heater.
3. For safety reasons, the heater's overheating protection trips with a lack of water or poor circulation. This is the most common reason why the heater "stops working". Check whether the overheating protection has tripped, investigate the cause.
After the cause has been established and rectified, the overheating protection is reset by:
 - Unscrewing the protective cap (A).
 - Press in the reset button (B) on the junction box.
 - Refit the protective cap again.
4. Check the operation of the heater, see point 4 under "Start".
5. Reset the thermostat to a higher temperature.
6. If the problem persists: contact the installer.



Disposal and recycling

You must dispose of this product in accordance with local laws and provisions.
Since this product contains electronic components, it must be disposed of separately from household waste.
When this product reaches the end of its life cycle, contact your local authorities to find out more about disposal and recycling.