

# Electro Titanium Plate Heat Exchanger

Installation & Operating Manual



**ELECTRO**  
FLUID DYNAMICS



Congratulations on your purchase of your Elecro Titanium PLATE HEAT EXCHANGER, manufactured in Hertfordshire, England to exacting standards using the finest quality materials available.

Titanium has been specifically chosen as the plate material for units being used to heat or cool Swimming Pools, as its non reactive / inert state will provide many years of trouble free operation and reduced maintenance intervals.

## Environmental compliance

Elecro endeavours to perform its own operations as cleanly and efficiently as possible, and to take environmental aspects into consideration when developing, designing, manufacturing, servicing and marketing its products.

## Before Installation

Before connecting any piping, make sure all foreign objects have been flushed out of the piping system that should be connected to the PHE. Before start-up check that all tightening bolts are firmly tightened and that the correct measurements of the plate pack, refer to PHE drawing.

When connecting the piping system make sure the pipes do not subject the PHE to stress or strain.

To avoid water hammer, do not use fast-closing valves.

In automated installations, the stopping and starting of pumps and actuation of valves should be programmed so that the resulting amplitude and frequency of the pressure variation will be as low as possible.

If pressure variance is expected install efficient dampers.

Make sure that no air remains within the PHE.

Safety valves shall be installed according to current pressure vessel regulations.

It is recommended that protective sheets are used to cover the plate pack.

Protect against leakage of hot or aggressive fluids and the hot plate pack

For each model, design pressures and temperatures are marked on the identification plate. These shall not be exceeded.

## Unpacking

Packing material consists of wood, plastics, cardboard boxes and in some cases metal straps.

- Wood and cardboard boxes can be reused, recycled or used for energy recovery.
- Plastics should be recycled or burnt at a licensed waste incineration plant.
- Metal straps should be sent for material recycling.
- All metal parts should be sent for material recycling.
- Oil and all non metal wear parts must be taken care of in agreement with local regulations.

At end of use, the equipment shall be recycled according to relevant, local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be considered and dealt with in a proper manner. When in doubt, or in absence of local regulations, please contact Elecro sales company.

## Main components

- Frame plate
- Connection plate and corners
- Port hole and connections
- Foot
- Definition
- Supporting column
- Pressure plate
- Tightening bolts
- Guiding bar Section Plate pack

## Function

The Plate Heat Exchanger (PHE) consists of a pack of corrugated titanium plates with port holes for input and output of the two separate fluids. The heat transfer between the two fluids will take place through the plates. The plate pack is assembled between a frame plate and a pressure plate and compressed by tie bars. The plates are fitted with an EPDM soft polymer gasket which seals fluids into alternate channels. The plate corrugation promotes fluid turbulence and supports the plates against differential pressure.

## Installation

A minimum free space is needed for lifting plates in and out for servicing. Refer to the delivered PHE drawing.

**Foundation:**

Install on a flat foundation giving enough support to the frame.

**Elbow:**

To make it easier to disconnect the PHE, an elbow should be fitted to the connection in the pressure plate, directed upwards or sideways, and with another flange located just outside the contour of the Plate Heat Exchanger.

**Shut-off valve:**

To be able to open the PHE, shut-off valves should be provided in all connections.

**Pressure plate:**

Must be moved when the PHE is opened. Therefore no fixed pipes should be fitted inside the shaded area. Use, for example, a short bend directed sideways.

**Pipe connection:**

Avoid excessive force on pipe connections.

Fit the pipes so that only a minimum tension is transferred to the heat exchanger.

**Lifting:**

Straps should be used when lifting the PHE. Place straps around the upper threaded tie bars.

## Start-Up

**Note: Avoid rapid temperature changes in the PHE. With media temperatures over 100 °C.**

**Note: Adjustments of flow rates should be made slowly in order to avoid the risk of pressure surge (water hammer). Water hammer is a short lasting pressure peak that can appear during start-up or shut-down of a system, causing liquids to travel along a pipe as a wave at the speed of sound. This can cause considerable damage to the equipment.**

During start-up check that no visible leakages appear from plate pack, valves or piping system.

If there is a vent valve installed at the exit, make sure it is fully open. Increase the flow rate slowly. Open the air vent and start the pump. Open the valve slowly.

Centrifugal pumps must be started against closed valves and valves must be operated as smoothly as possible.

Do not run pumps temporarily empty on the suction side.

When all air is expelled, close the air vent. Repeat for the second media.

Before start-up check that all tightening bolts are firmly tightened.

Check that the valve is closed between the pump and the unit controlling the system flow rate to avoid pressure surge.

## Unit in operation

Adjustments of flow rates should be made slowly in order to protect the system against sudden and extreme variations of temperature and pressure.

During operation, check that media temperatures and pressures are within the limits stated on the PHE-drawing and identification plate. If the PHE is shut down for long periods of time, it should be drained. Draining should also be done if the process is shut down and the ambient temperature is below freezing temperature of the media.

**Note: If several pumps are included in the system, make sure you know which one should be stopped first.**

## Maintenance

To keep the PHE in good condition and to maintain its performance descaling of the plates may be required.

(It is recommended to record maintenance of the PHE).

### Typical cleaning programs

Consult your local Elecro representative for advice on suitable descaling programmes, and how to reduce their incidence.

**NOTE: It is not usually necessary to have to strip and re-build a unit for descaling purposes.**



## RoHS Compliance Statement

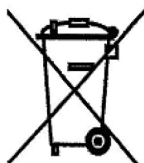
Elecro Engineering Limited certify that our Electric Swimming Pool Heater Range complies in accordance with RoHS Directive 2002/95/EC on the restriction of hazardous substances.

## Waste of Electrical / Electronic Equipment

This product complies with EU directive 2002/96/EC

**Do Not dispose of this product as unsorted municipal waste.**

This symbol on the product or on it's packaging indicates that this product should not be treated as household waste. Instead it should be handed over to the applicable collection point for the recycling of electrical and electronic equipment.



By ensuring this product is disposed of correctly you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.

For more information please contact your local Civic office, your household waste disposal service or the retailer where you purchased the product.

***Your heater is guaranteed from the date of purchase against faulty workmanship and materials ie: 2 years guarantee for incoloy heating element products and 3 years guarantee for titanium heating element products.***

The manufacturer will replace or repair, at it's discretion, any faulty units or components returned to the company for inspection.  
Proof of purchase may be required.

The manufacturer will not be liable in cases of incorrect installation of the heater, inappropriate use or neglect of the heater.

### **CE Declaration Of Conformity**

The manufacturer declares that the herewith products or ranges

### **ELECTRIC SWIMMING POOL HEATER RANGE**

Are in conformity with the provisions:  
of the ELECTROMAGNETIC COMPATIBILITY directive 89/336/EEC, as amended 93/068/EEC. Controlled by AEMC Measures laboratory—  
technical report no P96045T

The harmonised standards have been applied: EN 55014—EN 55104

**EN 55011**

**EN 55022**

**CEI 801-4**

**CEI 801-2**

**CEI 801-3**

of the LOW VOLTAGE directive 73/23/EEC.  
The harmonised standards have been applied

**EN 60335-2-35**





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