

Pool Heating Install Guide

Swimming pools can be added to most central heating systems to make better use of the heat source using it to heat the home in the winter and pool in the summer.

When adding pool heating to a central heating system our engineering team should check and confirm that this option is suitable for the intended system and design this into the total solution.

When planning or installing pool heating as part of a central heating system, please ensure the following factors are well considered and discussed with the main pool contractor to ensure their obligations, outlined below, are properly considered.

Pool Water Treatment Type:

Central Heating New Zealand supply plate type heat exchangers to incorporate pool heating and stock a range of sizes to suit different pool heating loads and temperatures. The pool heat exchangers from CHNZ are available in stainless steel or titanium.

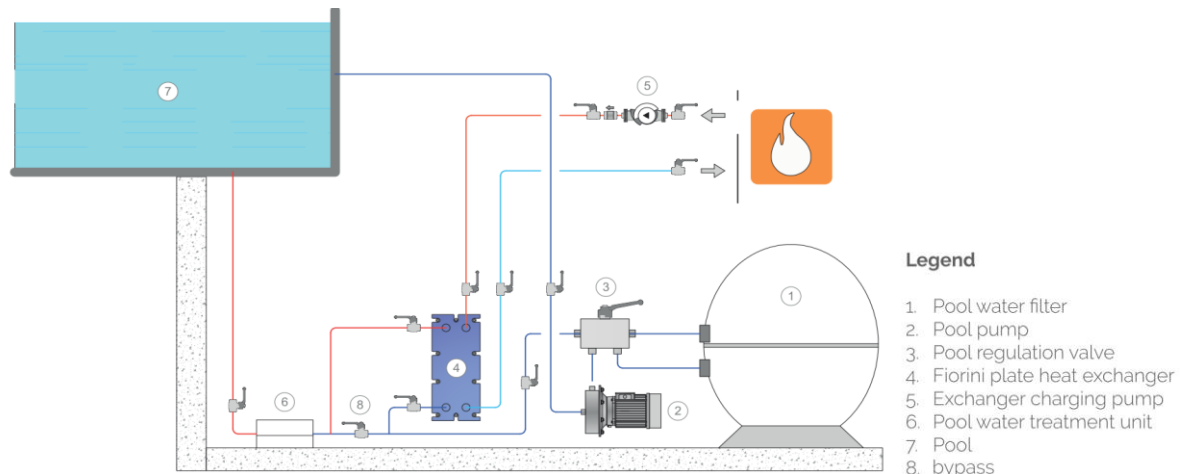
For traditional chlorine pools stainless steel heat exchangers are suitable (HEX14B, HEX13, & HEX19).

For all other types of pool water treatment (Saltwater pools etc) a titanium heat exchanger is required to ensure a long functional life of the heat exchanger (HEX19TI).



Heat Exchanger Location & Arrangement:

The plate type heat exchangers supplied by CHNZ allow for high rates of heat transfer but have higher pressure drops than other types of heat exchanger. This fact requires the heat exchanger to be installed on a bypass loop from the main pool filtration with only a portion of the total filtration flow passed through the heat exchanger:



The bypass valve (8) is partially closed to force some of the pool filtration flow through the heat exchanger (4).

To set the bypass valve (8) correctly, start with the valve fully open and gradually close it while monitoring the temperature difference across the heat exchanger (4). Adjust the valve until the desired heat transfer is achieved without causing excessive restriction to the system. Once the optimal position is found, mark and label the valve setting clearly to prevent accidental changes. To further secure the setting, you may consider removing the valve handle to avoid unintentional adjustment of the valve which could affect system performance.

Pool Thermostat Probe & Filtration Interlock:

To enable control of the pool heating a thermostat will monitor the pool inlet temperature to the pool filtration system and operate the heating until the pool is at the set point.

The pool thermostat needs to have a suitable probe pocket installed in the pool filtration pipe work prior to the heat exchanger inlet port, a number of methods are possible for creating a probe pocket within the pool filtration pipe work, the pocket should be of a suitable material (stainless steel for a chlorine pool or titanium/PVC for a saltwater pool) and sized appropriately for the probe (min 7mm ID). Heat paste should be used to when housing the probe to enhance the reading accuracy:



The probe pocket should be supplied and installed by the pool contractor. The operation of the pool heating must be interlocked with the pool filtration system, the heating system must not be able to operate in pool heating mode while the pool filtration is not running to prevent any overheating/damage of the heat source.

Interlocking the heating with the pool filtration is possible via two methods;

1. Pool filtration controller output – some pool filtration control systems will include an output or contacts for the pool heating to be interlocked and this output can be used to allow pool heating to only occur when filtration is active:



2. Flow switch – a suitable flow switch can be installed in the pool filtration pipe work to indicate that pool filtration is active and allow pool heating during these periods:



Pool Thermostat Settings:

The settings of a thermostat used to control pool heating should be set up to ensure safe and easy heating of a pool can be managed, it is also required that a pool thermostat not be able to be set above 40°C for safety reasons.




When using a SmartOne thermostat to control pool heating we have developed a specific setup guide for this that can be downloaded from our website [here](#):

SmartOne Thermostat Pool Heating Setup Guide



The SmartOne thermostat has a wide range of possible uses and can easily be set up to control the heating of a spa or swimming pool. The instructions below provide the steps required to set up a SmartOne thermostat for this application.

- Ensure the thermostat back plate is wired as per the below wiring diagram and cables are adequately inserted and secured into the terminals. When fixing back plate off to flush box ensure cables are not being pinched or damaged.

Wiring diagram (backplate)



- Note that the heat source on output is a 230V supply, this may need to be run via a relay to switch on/off the heat source.
- The output from the SmartOne to the heating demand should be run via the filtration timer to ensure the pool heating is only active while the pool filtration system is operating, this may require the inclusion of a relay.

- Power up the SmartOne thermostat and follow the prompts through to the menu. Press the  symbol in the upper right hand corner of the screen for **Network > WiFi > Scan Network > Select network (2.4GHz only) > Enter correct password > Confirm**. Now the thermostat is connected to the WiFi it will update to the latest software version.
- Press the  in the upper right hand corner of the screen and navigate to Settings. Using the passcode **266408** you can enter the Advance Settings menu. Once in the advanced setting menu change the following settings:

- Under Setup > Type - set the thermostat to heating only. This will reboot the thermostat.
- Navigate back to the Advanced setting menu then under Parameters > Temperature > Sensor Selection - set this to External air sensor only. The thermostat will again reboot.
- Navigate back to the Advanced settings menu then under Parameters > Temperature > Switching differential - change this to 1.0°C for boiler systems or 0.5°C for heat pump systems.
- Under Parameters > Temperature > Set point > Max - set this to 40°C. For safety reasons the maximum temperature a pool should be able to be heated to is 40°C.

- To make it clear what this thermostat is controlling we recommend changing the thermostat naming as per the following steps:
 - Preferences > Room Setting > Name - change to a suitable name, i.e. Swimming or Spa
 - Preferences > Room Setting > Type - set to Pool.
- The set point of the pool can then be controlled on an automatic schedule or a manual schedule to suit the needs of the user. Refer to the full manual or commissioning guide for further details on the parameters and use of these thermostats. Even if you intend to use the thermostat in a manual control mode, we would recommend setting the automatic program with a suitable temperature and time schedule in case the controller is accidentally reverted to this.

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