

ThermoPlus

Swimming Pool Heat Pumps



RISK OF FIRE
MILDLY FLAMMABLE REFRIGERANT USED
DIFLUOROMETHANE (R32)





WARNING

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ITEMS SUPPLIED

Inside the lid of your heat pump will be the following items:

Information pack including the following:
Wiring Diagram
Laminated Quick Reference Instructions
Installation & Instruction Guide
Advanced Controller Setup Guide (service only)



4x Round rubber mounts and 4x stainless steel through bolts for heat pump placement.



Threaded PVC unions to connect to back of heat pump.



Drain adapters, there are 1 or 2 drain locations depending on the model being installed.

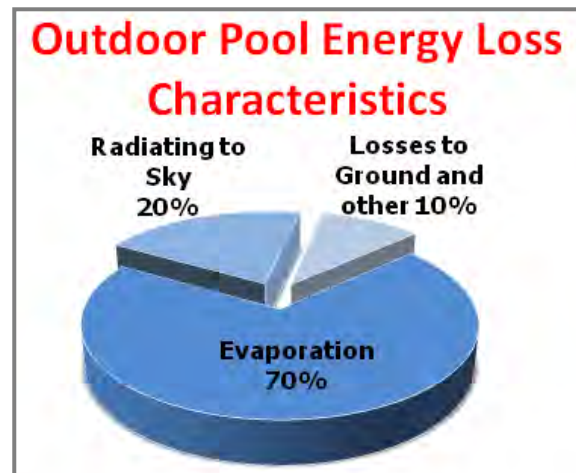


Outdoor Swimming Pools

Heat loss

Heat loss from outdoor swimming pools occurs mainly from the surface in the form of evaporation, radiation and convection. The colder the outdoor air temperature the higher the heat loss is. Evaporation from the surface of the pool lowers both water temperature and water level in the pool. Radiation causes heat loss in the pool by transferring that heat into the surrounding air.

Convection of heat energy is the result of cool air blowing over the pool's surface and lowering water temperature. Heat loss is also attributed to conduction, which is a transfer of heat from the water through the pool walls to the surrounding air or soil.



Pool temperature

The energy consumption of an outdoor pool depends on the water and air temperature. For typical pool activity, set the temperature at 27° - 28°C.

Wind exposure

The evaporative heat loss in a swimming pool is greater as wind velocity over the pool surface increases. It is suggested to use solid fencing around the pool to create a sheltered area such as glass. This would help to reduce pool energy consumption by 20 percent. Pools with an open exposure would consume about 50 percent more energy than a moderately sheltered one.

Swimming pool covers

Use of a floating thermal pool cover to bring the initial investment and running costs down, save energy and maintain the pool temperature when not in use is also recommended. A cover can save up to 50 percent on energy consumption compared with an uncovered pool and is the most significant energy saving measure you can take. This type of cover has special flotation properties, and can, not only save a substantial amount of the energy, but also significantly reduce water loss due to evaporation. A good quality thermal cover is recommended for all winter heating.

Comparison

A Heat Pump uses electricity to operate. The heat is extracted from the ambient air, upgraded with a compressor, and then transferred to the pool. Therefore, it is very cost effective to heat the pool continuously all year round, as the electricity is not to generate heat but just to move the free heat to the Pool, Spa, Domestic Hot Water or Underfloor Heating application no matter what the weather condition is. Due to their high efficiency, heat pumps have a low cost of operation comparing to gas or diesel burners.

Outdoor Installation Guidelines - Horizontal Discharge

Key points that should be taken into consideration for heat pump placement:

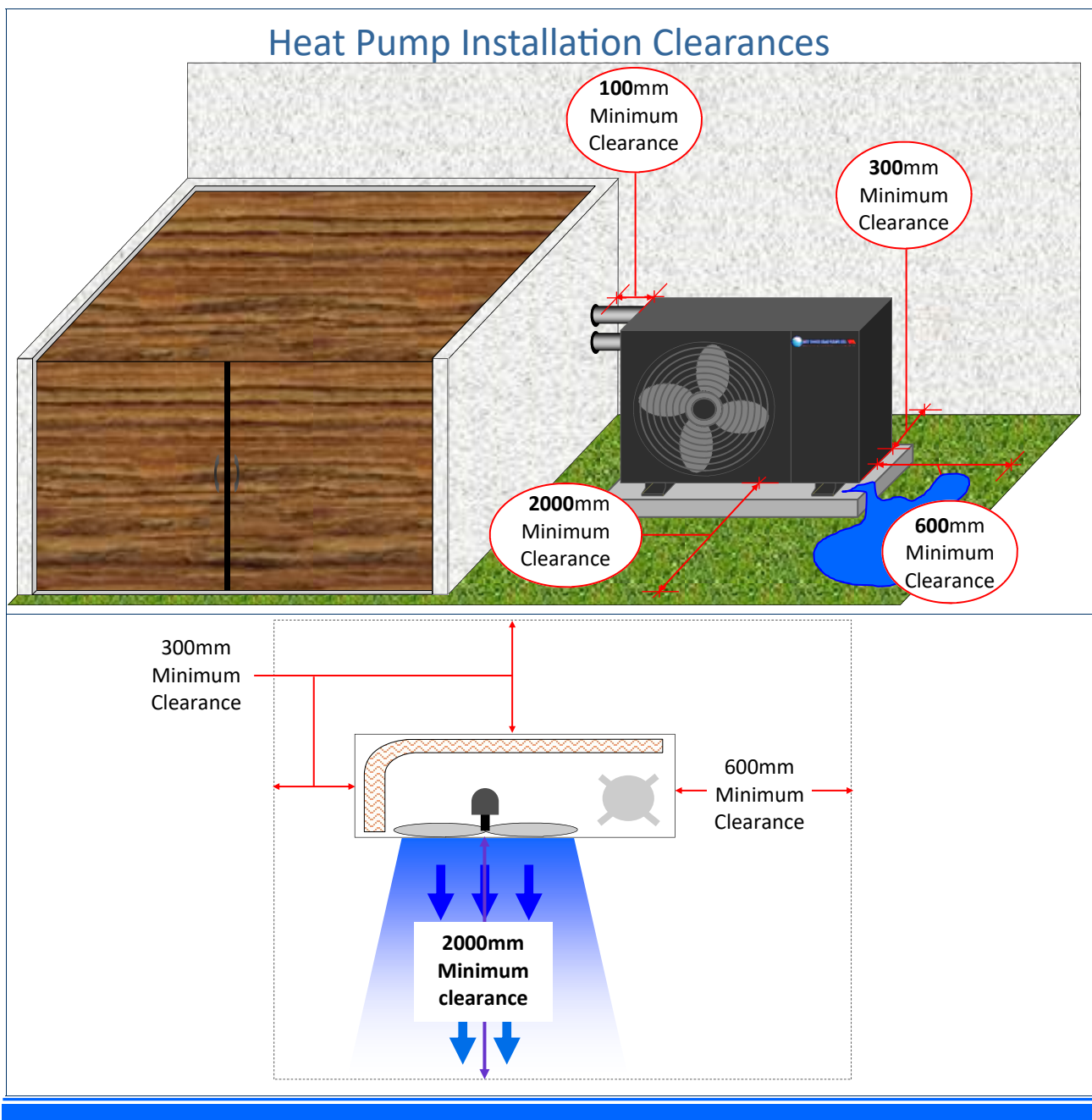
- Distance from the application(s) the heat pump services as any length of pipe installation will cause heat loss.
- Air circulation should be taken into consideration as a poorly placed heat pump that re-circulates the cold air expelled from the fan can cause unnecessarily high running costs and in some situations failure to attain the desired temperature.

Physical Placement

- Prepare a level area with concrete pad or pavers for your specified unit.
- Rubber pads (supplied with the unit) should be placed under the heat pump feet.
- **The heat pump will produce water** as moisture condensate forms on the evaporator coil. A drip tray or full size drain tray may be required to catch and pipe this water away.

Electrical

- Heat pumps must be permanently hard wired by a certified electrician.
- Requires an isolation switch installed within reach of the heat pump location. (Not to be mounted on the unit)
- Power supply cable must be suitably sized for the specific heat pump and its distance from switchboard.
- The specified Motor Rated circuit breaker must be installed for the heat pump.



Indoor Installation Guidelines - Horizontal Discharge

Key notes of importance:

- Ample fresh air must be supplied to the heat pump by means of a correctly sized make-up air grill.
- Do not rely on manual openings such as doors or windows, as they will get closed causing poor performance and higher running costs.
- Cold air discharge must be ducted out of the enclosure to eliminate any chance of air recirculation.
- All clearances of the specific heat pump model must be maintained.
- Service accessibility should be taken into consideration as poor access can make service difficult and expensive.
- Adequate drainage measures should be in place to remove the condensate (water) build up.

Physical Placement

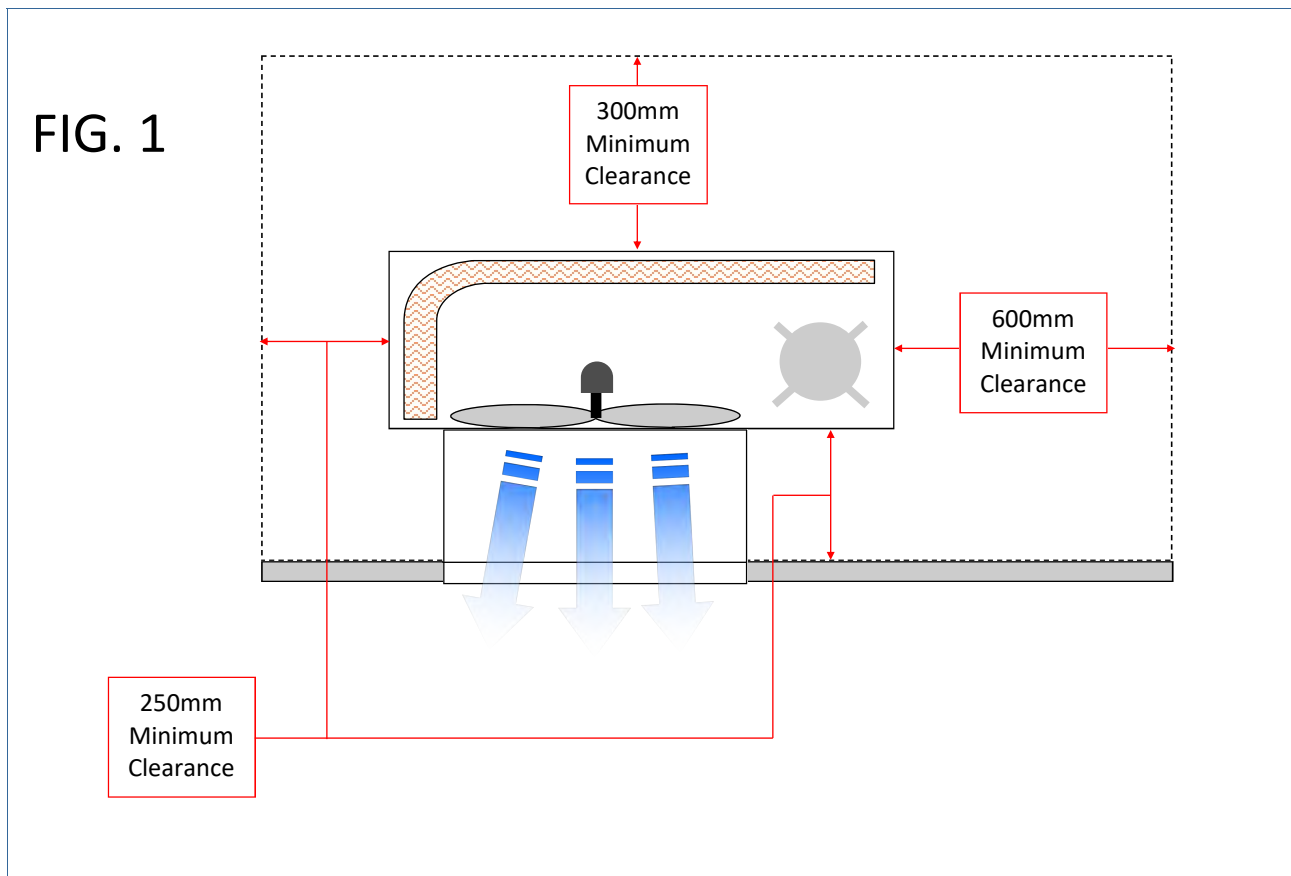
- Prepare a level area with a concrete pad or pavers for your specified unit.
- Rubber pads (supplied with the unit) should be placed under the heat pump feet.
- The heat pump will produce water as moisture condensate forms on the evaporator coil. A drip tray or full size drain tray may be required.

Electrical

- Heat pumps must be "Hard Wired" by a certified electrician.
- Requires an isolation switch installed within reach of the heat pump location. (Not to be mounted on the unit)
- Power supply cable must be suitably sized for the specific heat pump and distance from the switchboard
- The specified Motor Rated circuit breaker must be installed for the heat pump.

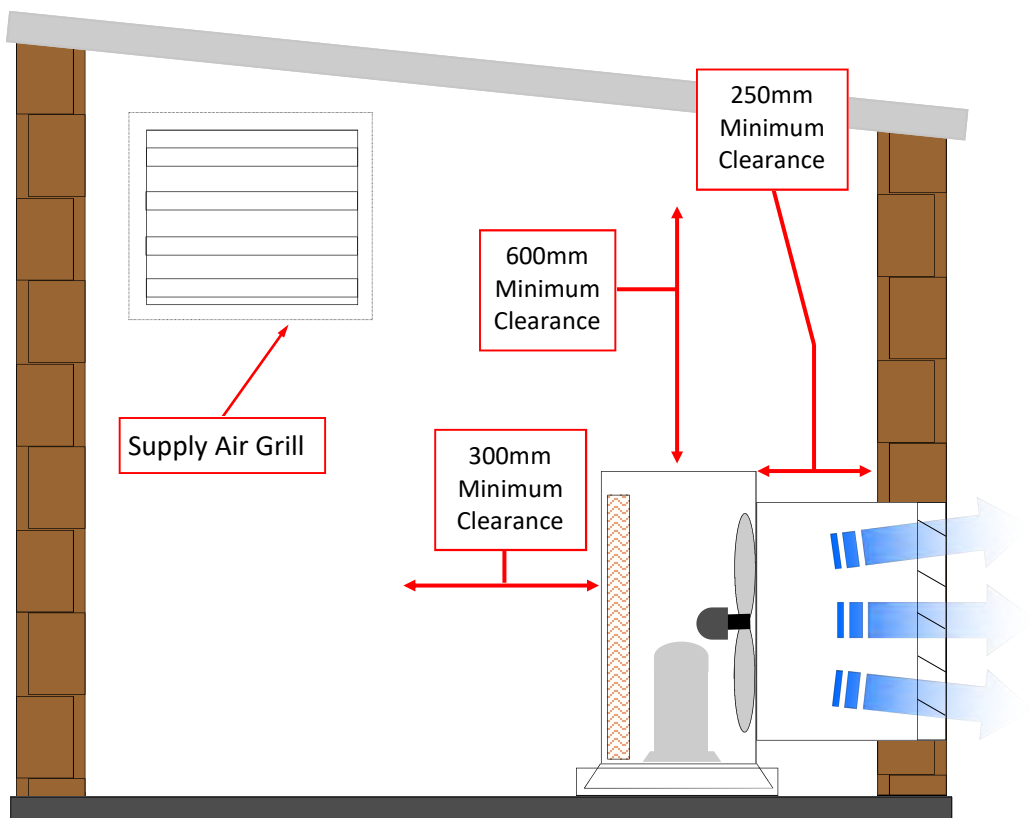
We recommend looking at the Ducting and Drainage section for ideas and available equipment.

Installation Clearances - Horizontal Discharge



Indoor Installation Diagrams - Horizontal Discharge

FIG. 2



An air supply grill is REQUIRED
This can be located on any wall, preferably at a high level



FIG. 3

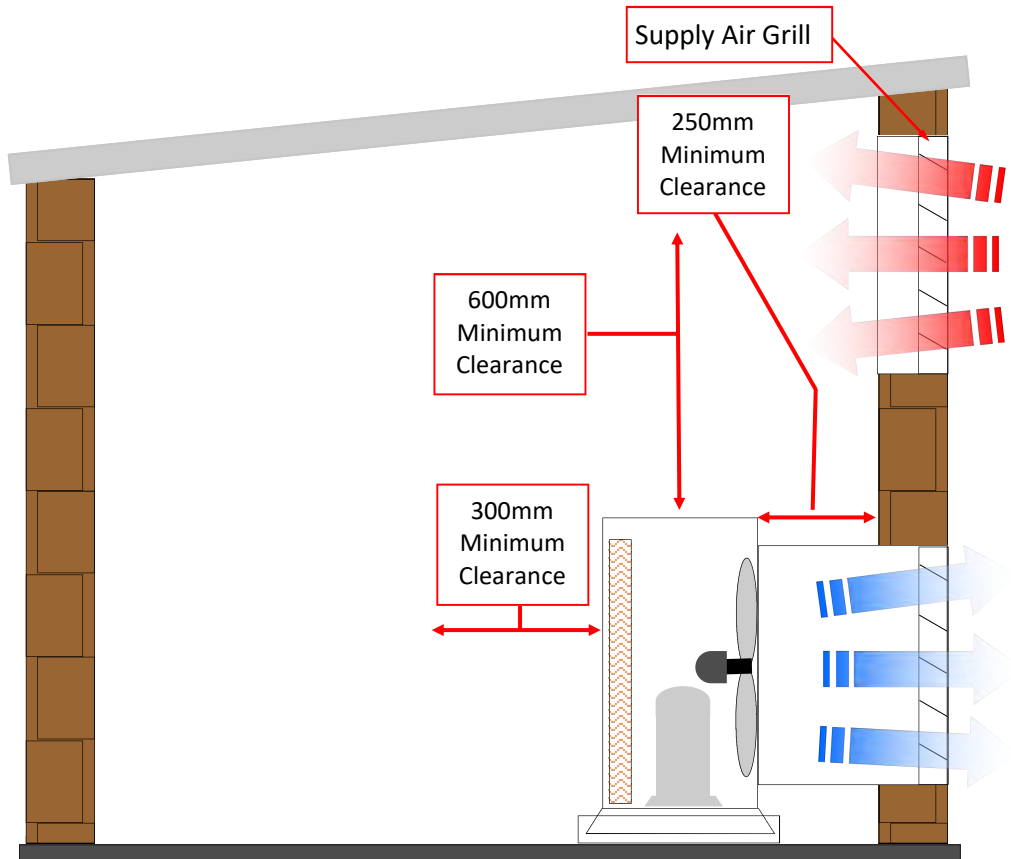
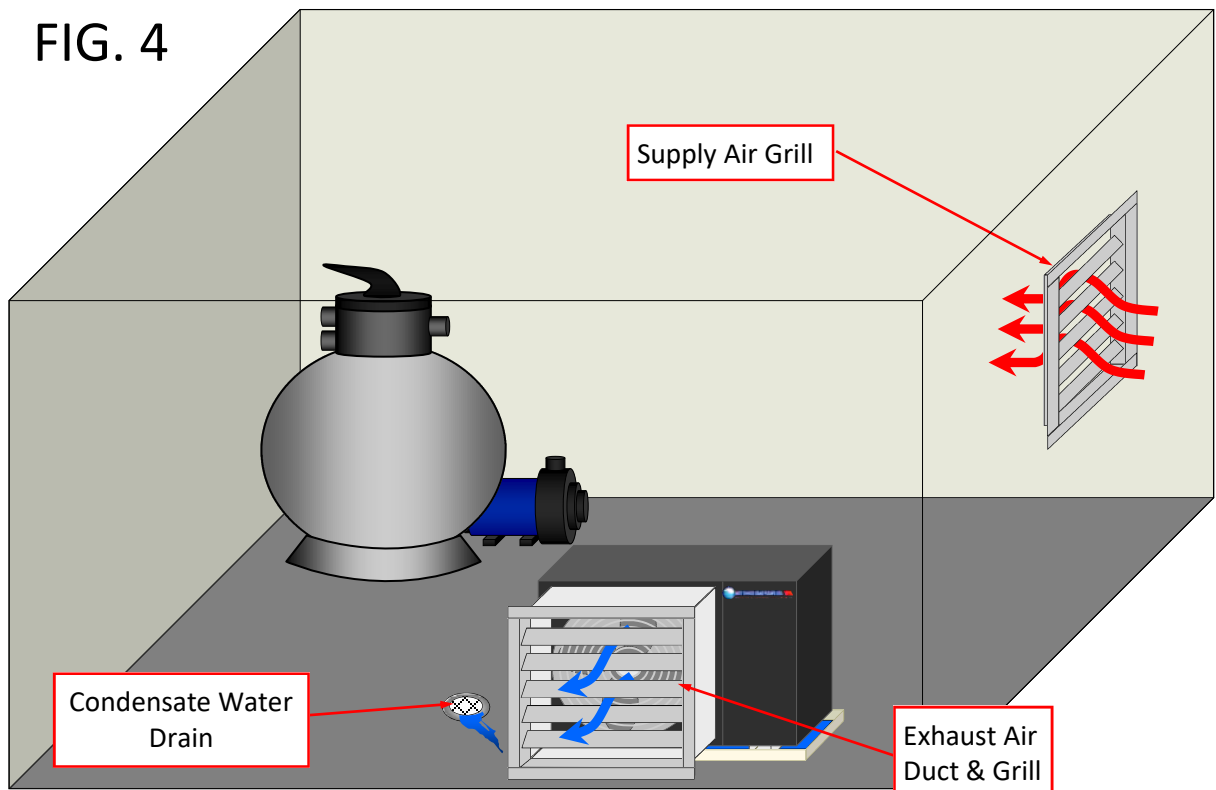


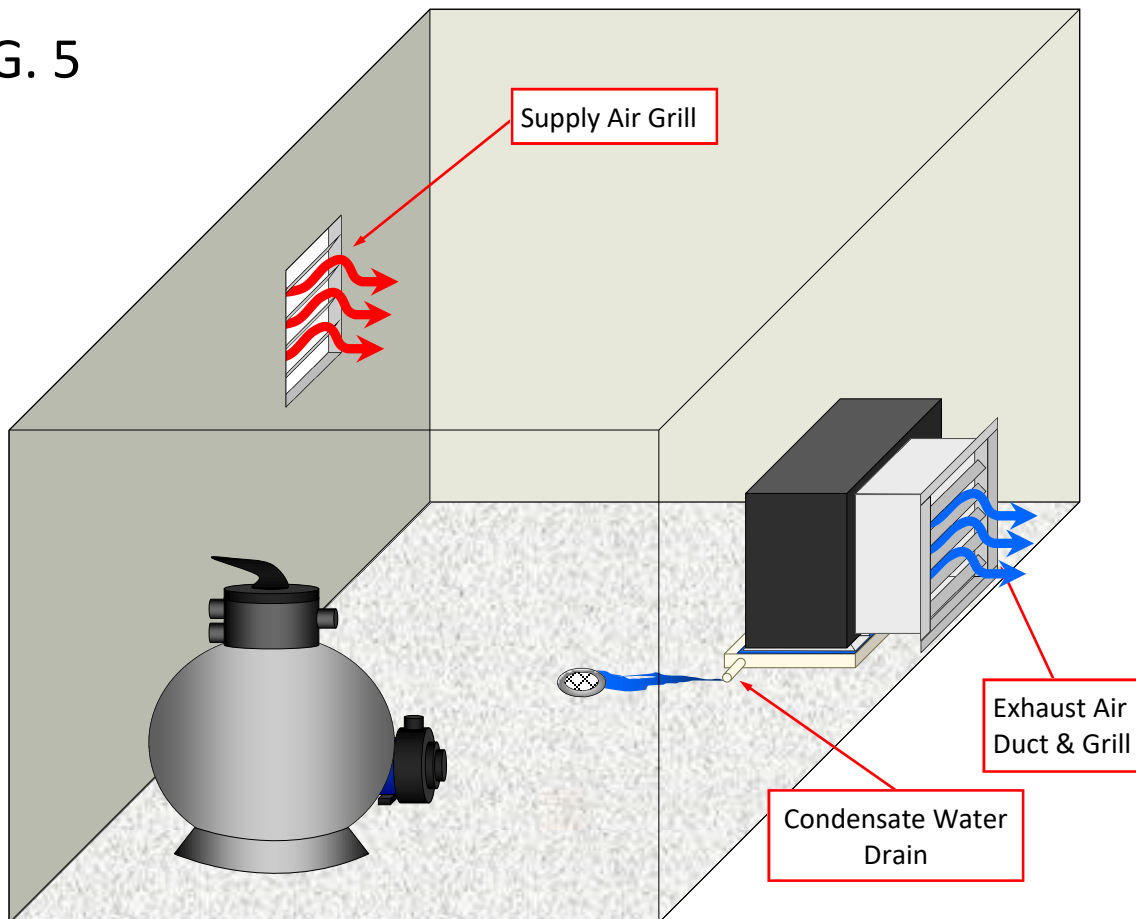
FIG. 4



An air supply grill is REQUIRED
This can be located on any wall, preferably at a high level



FIG. 5



Plumbing

- Make sure filter pump is switched off before changing the position of any valves.
- If the filter is located below the water level of the pool close shut off valves if available; if shut off valves have not been fitted close pool skimmers and use “plumbers putty” to block any drain locations inside the pool.
- Cut a small section 100 to 200mm of the pipe section between the filter pool return and any chlorination device and plumb to and from the heat pump location making sure that the flow from the filter is connected to the “Water Inlet” on the heat pump and that the “Water Outlet” is connected to the pool return. This is to reduce the risk of any deterioration of plastic or rubber fittings and seals from chlorine or other chemicals.
- All PVC pipe work should be clean and dry with all ends cut square and burrs removed.
- Ensure correct PVC pipe cement is used.
- Roughen all mating surfaces with emery tape and apply glue to both mating surfaces.
- While surfaces are still wet bring the two together using a twisting motion to ensure good fit and hold for approximately 30 seconds.
- Let glue dry for 24 hours before starting filtration pump.
- Before commissioning remove lid from top of heat pump and then turn on filtration system.
- Check that there are no water leaks from around heat exchanger or any of the PVC fittings and glue joints as this can cause major corrosion if left unattended.
- Check flow switch and adjusted if necessary, This is done by loosening the gland nut on the top of the flow switch and pushing the probe down just enough to stop the flap bouncing up and down then Re-tighten gland nut. (See FIG 7)
- Heat loss occurs from pipes carrying water, whether buried or exposed to the air. Especially in situations of all year heating and Spa heating where the water temperatures are higher and or ambient temperatures are lower. Therefore, to avoid unnecessary heat loss, all pipes must be insulated and be kept to the shortest possible distances.

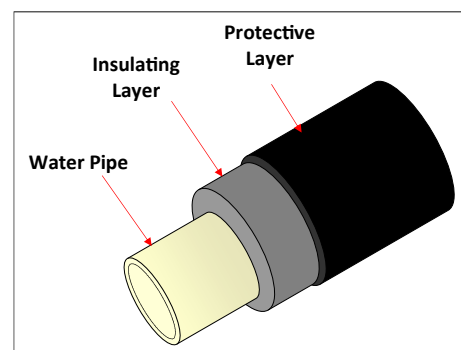
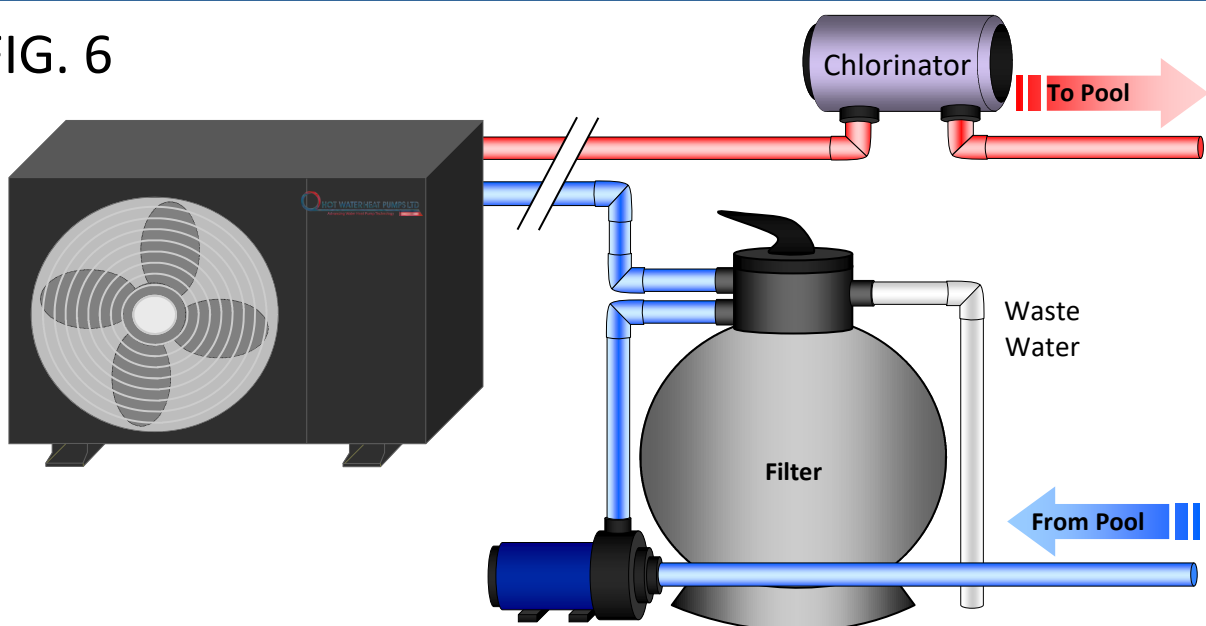


FIG. 6



Controller



HOW YOUR THERMO PLUS HEAT PUMP WORKS IN BRIEF

Once installed the **THERMO Plus** Swimming Pool Heater will not function unless the isolation switch is turned on, water is flowing through the heat exchanger and the water is not already up to the desired temperature. This is controlled by a Flow Switch and an Electronic Temperature Sensor which is built into the unit or plumbed remotely by the installer.

SEASON START UP

Pool Management / Timeclock Bypass

1. Simply turn your **Thermo Plus** swimming pool heat pump on at the isolation switch.
2. Set your time clock for the desired filtration cycle.
3. Turn on the **Auto Heat** switch.

Your **Pool Management System / Timeclock Bypass System** will now allow you to maintain your pool heating without further alterations to the system. For more detailed instructions or technical information please see your **Pool Management / Timeclock Bypass** booklet

SEASON START UP

NON Pool Management / Timeclock Bypass

1. Turn off your chlorination system completely.
2. Set your filter to run 24 hours/day.
3. Turn on the chlorination system manually for the required duration per day only.
4. Once the pool has reached its desired temperature you can now reduce the filtration cycle; 12 hours at the beginning of the season is not an unreasonable length while ambient temperatures are still low, this can be reduced further as the swimming season progresses, but will increase again towards the end of the season. (this will take a few days of alteration to achieve the desired result)

CAUTION! Where a water treatment system that does not actively monitor chemical levels is used **without** the addition of a **Timeclock Bypass or Pool Management system**, turn the water treatment system off during the initial heat up period as overriding the time clock may cause over treatment of the pool water.

TEMPERATURE CONTROL FOR THERMO PLUS HEAT PUMPS

Read / Modify function of the set point

1. Press "SET" and hold for 3 seconds.
2. Press arrow "UP" or "Down" to set the desired value.
3. Press "SET" to confirm the value.



END OF SEASON SHUTDOWN

Simply turn the heat pump off at the isolation switch.

(For **Dual Purpose Heat Pumps** turn off the appropriate labelled switch)

CAUTION! Regions where standing water can freeze; If you do not filter your swimming pool through the winter months, drain the water from the **Thermo Plus** Swimming Pool Heater at the end of the season to avoid the risk of damage.



Phone 09 838 9444 / 0800 33 66 33 / Fax 09 838 6223 / info@waterheating.co.nz
PO Box 21 586 Henderson / Auckland / New Zealand / www.waterheating.co.nz

- Designers & manufacturers of Performance Plus Heat Pumps
- Heat Pump Water Heating specialists since 1980
- Dual Purpose Models our Specialty
- Installation / After Sales Service / Nationwide Authorised Dealer Network

TROUBLESHOOTING

Probable CAUSE

Possible SOLUTION

No red light

No power supply.

Check fuse/circuit breaker.

Red light is on, but the display is not functioning

No water flow through heat pump.

Check filter pump is running, check flow switch inside heat pump.

The pool never reaches the desired temperature

Controller is set too low.

Adjust the controller set point.

The desired temperature is higher than what the heat pump was sized to achieve.

Keep the cover on for longer periods of time.

The pool is warm but the heat pump fails to turn off

The temperature probe is not properly placed or seated properly.

Seat the probe as shown in your swimming pool manual.

Controller set point is above an achievable temperature.

Adjust the controller set point down to 28°C.

The water is cold

There is no power.

Check fuse/circuit breaker or isolating switch.

The set point is set too low.

Set controller to 28°C.

The heat pump has stopped on safety.

Check water flow through heat pump flow switch.

There is ice on the fins at the back of the heat pump

The ambient temperature is very low.

This is a natural function in cold weather. The active defrost function should melt the ice within minutes of the de-ice controls automatic activation.

If the weather is warm the heat pump may be low on refrigerant.

Contact Hot Water Heat Pumps Ltd or your nearest service agent.

There is water around the heat pump

Condensation.

This is a natural function of the heat pump in humid conditions. Condensation forms on the coil and drains into the inbuilt drain tray. A tray could be placed below the unit to catch this water to be piped away.

Possible water leak from connections to the heat exchanger in the top of the unit.

Check under the lid of the unit for any sign of water in the top part of the heat pump. Prolonged exposure to pool water will cause damage to the heat pump if neglected. Contact your nearest service agent.

If you are in any doubt as to an issue or the performance of your heat pump, please contact **Hot Water Heat Pumps Ltd** or your nearest service agent.



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