



Swimming Pool Heat Pumps
HHP14, HHP22, HHP28, HHP34

INSTALLATION & OWNERS MANUAL



IMPORTANT
Please read carefully



WARNING:
Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

The installation of this product should be carried out by a person knowledgeable in swimming pool plumbing requirements following the installation instructions provided in this manual.

Please pass these instructions on to the operator of this equipment

Contents

Swimming Pool Heat Pumps

INSTALLATION

1. HOW IT WORKS	4
1.1 Important Facts	4
2. INSTALLATION	5
2.1 Installation Site	5
2.2 Bypass System	5
2.3 Water Connection	5
2.4 Electrical Connection	5
2.5 Connecting a Henden H8VSPBT pump	7
2.6 FIL Mode (optional)	8
3. BEFORE START-UP	8
4. OPERATING INSTRUCTIONS	8
4.1 Electronic Card Setting	8
4.2 Mode (Temperature Adjustment)	9
4.3 Changing the Display from Celsius to Fahrenheit	9
4.4 De-icing Mode	9
5. WINTERISING	9
6. MAINTENANCE	9
6.1 Safety Instructions	9
6.2 Regular Maintenance	9
7. WATER QUALITY	10
8. TROUBLESHOOTING	11
9. HENDEN REPAIR OR REPLACEMENT GUARANTEE	14

Congratulations on the purchase of your Henden heat pump. It is designed and manufactured in Canada and is renowned for its efficiency and reliability.



In accordance with AS/NZS 60335.2.41 we are obligated to inform you that this Henden heat pump is not to be used by children, or infirm persons and must not be used as a toy by children. Please ensure young children are supervised to ensure that they do not play with the heat pump.

1. HOW IT WORKS

The Henden heat pump is equipped with a large surface evaporator that allows heat to be extracted from the surrounding air. This heat is transferred to the pool water by the titanium heat exchanger. This method generates substantial energy savings compared to: a conventional electric resistance heater; and natural, or propane gas pool heaters.

1.1 Important facts

- The Henden heat pump is designed to operate at water pressures ranging from 34kPa - 206kPa;
- The optimal water flow to maximise performance is 265L/min (15.9m³/h);
- Your pool pump should always be "on" when the Henden heat pump is in operation.

2. INSTALLATION

2.1 Installation Site

To get the best results from your Henden heat pump, its location is critical. The Henden heat pump takes hot air from its surroundings and transfers this heat through its heat exchanger, to the pool water.

The Henden heat pump must be installed on a level surface. Henden recommends a concrete slab, or stable pavers that are detached from the foundation of the house. The Henden heat pump should not be installed in an enclosed space (e.g. under a deck, or in a shed).

The Henden heat pump is for outdoor installation only. To get the best performance from your unit, ensure 60cm of clearance around and 120cm above the Henden heat pump, see figure 2.1.

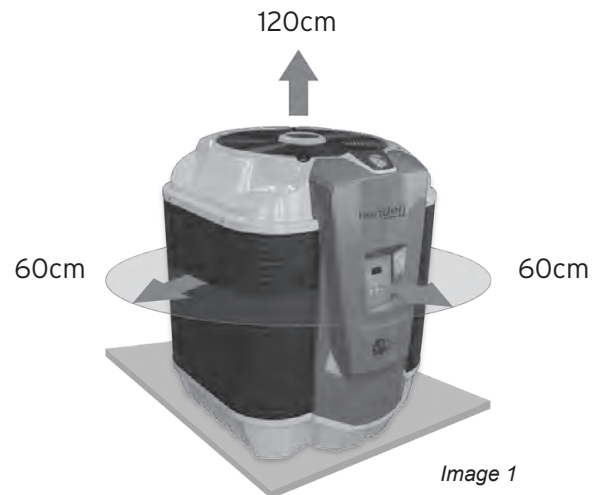


Image 1

2.2 Bypass System

Although a bypass system is not necessary for your Henden heat pump to operate properly, we strongly recommend the installation of a bypass system to make the maintenance and winterising of the Henden heat pump easier.

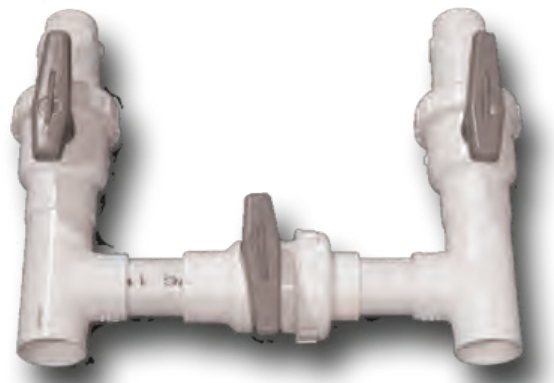
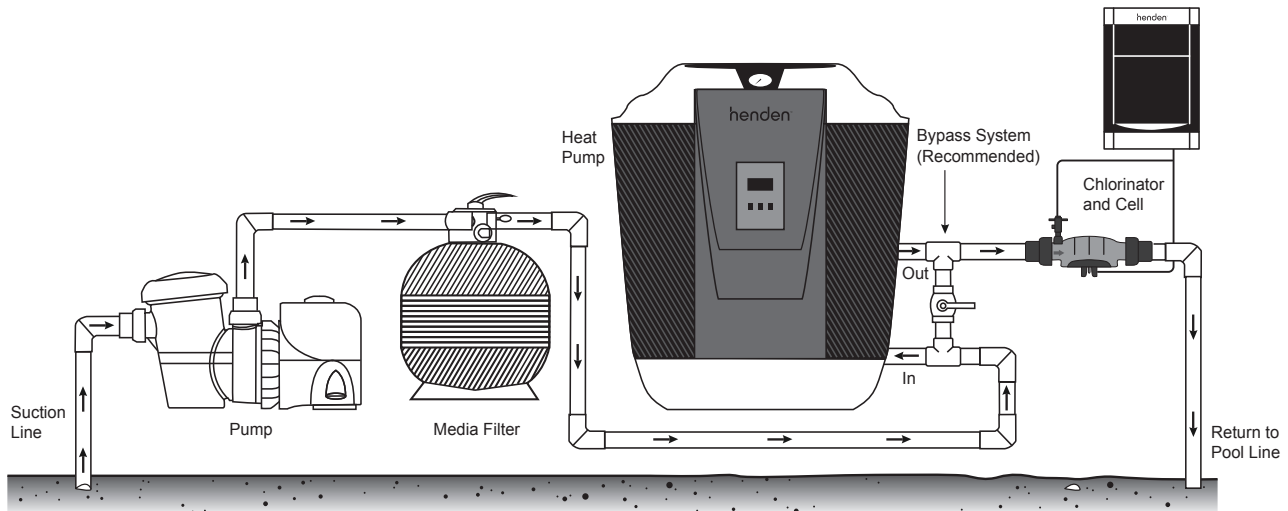


Image 2

2.3 Water Connection



For connections using a single pool circulating pump:

- With your circulation pump connected to your filter, connect the outlet/return of the filter to the inlet connector located on the base of the Henden heat pump.
- Connect the pool water return line to the outlet connector located on the base of the Henden heat pump.

For connections using a secondary pool circulation pump:

- Once all the connections have been made, turn the circulating pump to "ON" to check water pressure and to ensure that connections are watertight. The flow rate should be between 160L/min - 300L/maximum (9.6m³/h - 18m³/h). Correct water flow will significantly improve the performance and efficiency of the Henden heat pump.
- Should the Henden heat pump be used in conjunction with a solar pool heating manifold, the water entering the Henden heat pump should first run through the solar absorber. Do not plumb the solar absorber after the Henden heat pump. Henden doesn't recommend this practice as solar absorbers can't typically accommodate the same flow rates as the Henden heat pump. The solar absorber may also act to cool water rather than heating, in cooler weather. A better practice would be to run separate flow circuits.
- Should the Henden heat pump be used in conjunction with a Henden chlorinator, the chlorinator cell is required to be installed after the Henden heat pump. If the chlorinator cell is installed before the Henden heat pump this will allow heavily chlorinated water to enter the Henden heat pump. This will significantly shorten the life expectancy of the Henden heat pump and may void warranty.

2.4 Electrical Connection



WARNING: The electrical connection should be done by a qualified electrician according to national, state and local city codes or standards. The unit should be connected to a compatible RCD (Residual Current Device).

	HHP14	HHP22	HHP28	HHP34
Voltage (V AC)	240	240	240	415
Frequency (Hz)	50	50	50	50
Phase	Single	Single	Single	Three
Compressor starting current (A)	67	126	130	100
Current total (A)	13.0	21.0	27.1	13.7
Min circuit current (A)	20.5	31.5	40.0	13.2
Max circuit current (A)	30	40	50	15

Table1

Wiring diagram for models: HHP14, HHP22, HHP28

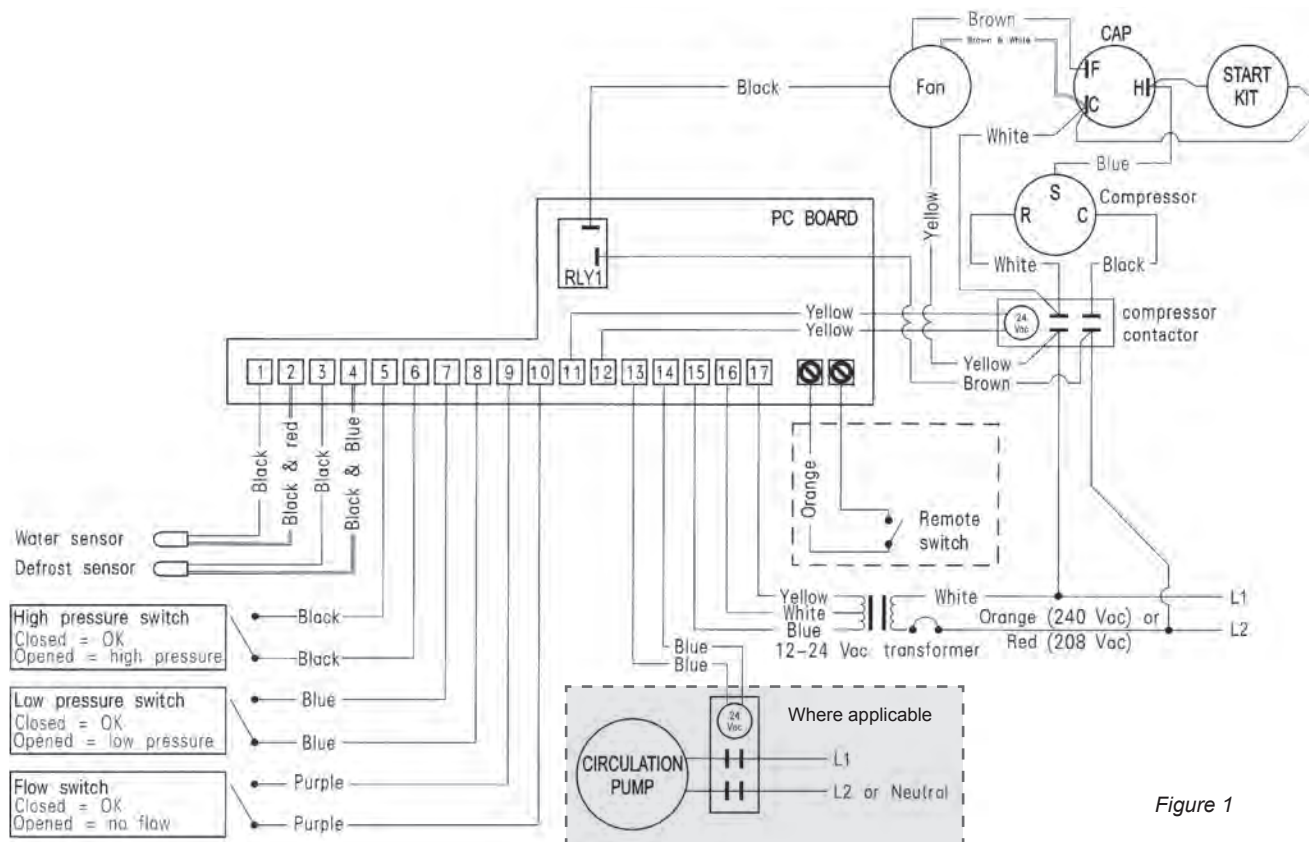


Figure 1

Wiring diagram for model: HHP34

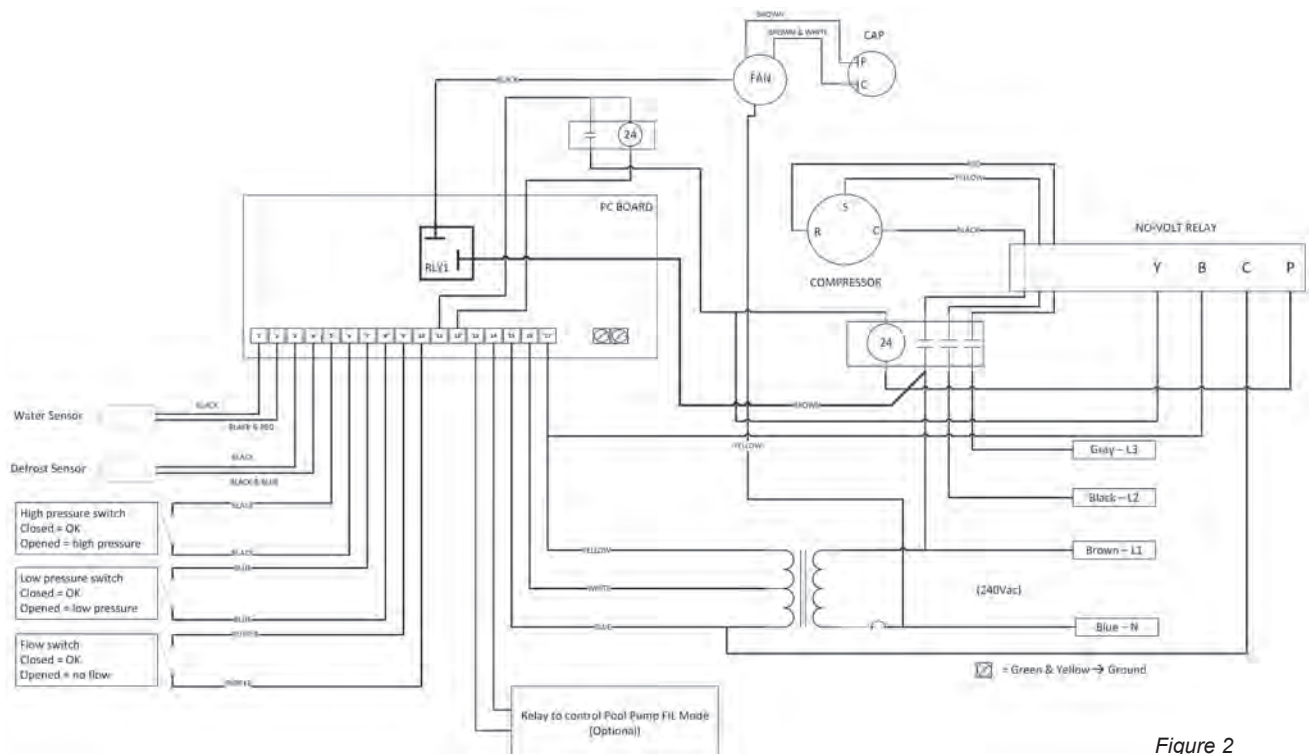


Figure 2

2.5 Connecting a Henden H8VSPBT pump

The following section should be read in conjunction with the installation and operating instructions of the Henden H8VSPBT pump. This option requires the installation of a secondary relay.

To achieve maximum heating efficiency from the Henden heat pump, connect a Henden H8VSPBT pump using an RJ45 cable. When connected and the Henden heat pump detects your pool needs to be heated, it sends a signal to turn the Henden H8VSPBT pump to full speed (or an overridden speed selected by you). You will need to purchase a separate relay to accommodate this. Specifications of relay required:

- 24V AC coil;
- No contact;
- Contact current: 1A minimum;
- Screw contacts preferred as they can be connected to the RJ45 network cable used to signal the Henden H8VSPBT pump more easily.

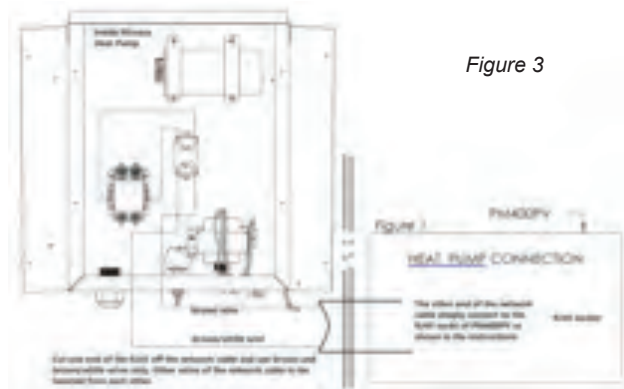


Figure 3

There is a 17.5mm rail available inside the Henden heat pump for the electrician to use to mount the relay. Alternatively, a panel mount relay may be used.

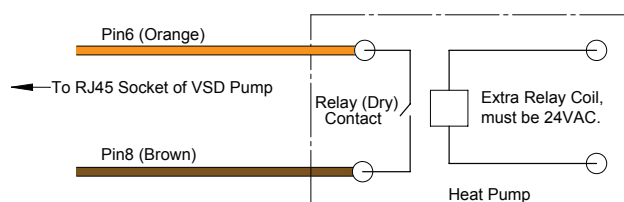
For this feature to work correctly, both the Henden heat pump and Henden H8VSPBT pump must be run at the same time.



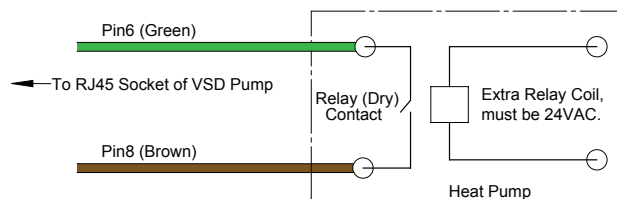
WARNING: The electrical connection should be done by a qualified electrician according to national, state and local city codes and standards.

The Henden heat pump uses a 24V AC contactor to turn on the compressor to operate. Depending on the system your chosen speed of the Henden H8VSPBT pump will require connections as shown in the following diagrams:

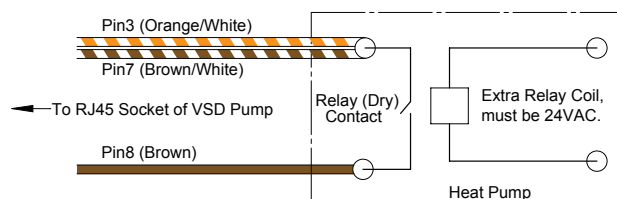
Henden H8VSPBT pump 50% speed using T-568A cable



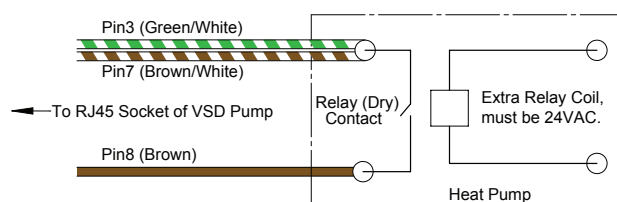
Henden H8VSPBT pump 50% speed using T-568B cable



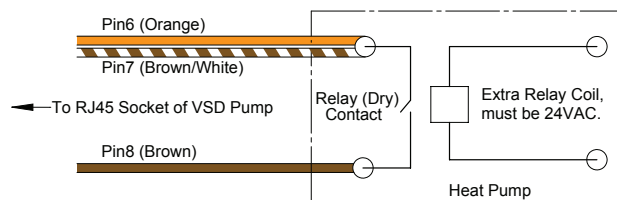
Henden H8VSPBT pump 67% speed using T-568A cable



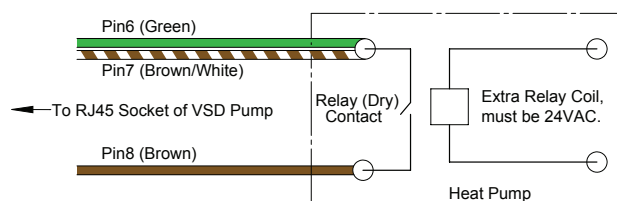
Henden H8VSPBT pump 67% speed using T-568B cable



Henden H8VSPBT pump 83% speed using T-568A cable



Henden H8VSPBT pump 83% speed using T-568B cable



Henden H8VSPBT pump 100% speed using either T-568A, or T-568B cable

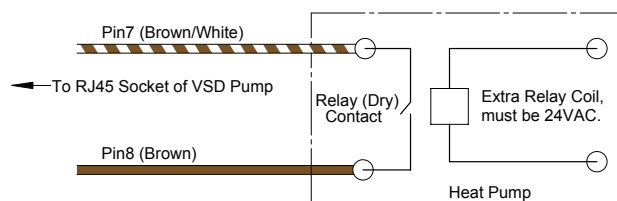


Figure 4

2.6 FIL Mode (optional)

FIL mode OFF: This is the factory default setting and is used when the Henden heat pump does not power the circulation pump.

FIL mode ON: This option allows for the pool pump to be powered by the Henden heat pump. It requires the installation of a contactor in the Henden heat pump's electrical box and wiring to your circulation pump.

How to programme the FIL Mode timer:

*Press the SET button until "FIL" is displayed;

- If you do not want to use the heat pump integrated timer;

Press the down arrow until "OFF" is displayed

- * If you want your heat pump to function non-stop;

Press the up arrow until "ON" is displayed

- If you would like your heat pump to operate using the integrated timer;

Press the up arrow or the down arrow until the desired number of filtration hours is displayed.

FOR EXAMPLE:

A daily 24 hour cycle is divided into six filtering periods.

If you have selected the number 2, this number represents the number of hours you would like to filter the water each day.

The heat pump should filter the water for a duration of 20 minutes, 6 times a day to make a total of 2 hours of filtering in a day.

When the filtration pump is functioning and if a desired temperature has not yet been reached during the filtration period, the pump will continue to function until the desired temperature is reached.

Table below of other common number of filtering hours and running times;

Number of filtering hours	Running Time
2	20 minutes, 6 times a day
6	60 minutes, 6 times a day
8	1 hr 20 minutes, 6 times a day
10	1 hr 40 minutes, 6 times a day
12	120 minutes or 2 hours, 6 times a day



WARNING: The electrical connection should be done by a qualified electrician according to national, state and local city codes and standards.

The contactor must be connected to the PUMP connectors

on the control board (shown below).



Image 3

Use terminals L1-L2 on the control board to power the breaker (shown below).



Image 4

The pump can then be wired to the other side of the contactor (shown below).



Image 5

In FIL mode, a day is divided into 6 periods of 4 hours each. The adjustable timer sets the minimum length of time the pump is in operation for all of these periods. That is, the timer requires you to set the total run time for a 24 hour period which will then be divided between the 6 periods. Minimum total 24 hour run time is 2 hours, maximum is 23 hours.

When the FIL mode is ON, the circulation pump will follow the below schedule:

- The circulating pump will stay ON until the pool reaches the desired temperature;
- The minimum filtration time counter will continue to count down the hours spent heating that day;
- If the set time is reached and the desired pool temperature is also reached, the pump will turn on automatically for 15 minutes every 4 hours to check the water temperature and activate the heater as needed.

3. BEFORE START-UP

- Inspect the unit to ensure it is in good operating condition;
- Clean the swimming pool filter;
- Ensure water is balanced to recommended levels in water quality section of this manual (section 9);
- Ensure all Henden heat pump water inlets and outlets are correctly connected;
- Turn on the circuit breaker, or isolation switch.

4. OPERATING INSTRUCTIONS

4.1 Electronic Card Setting

As shown in Figure 4.1:

1. Displays actual pool water temperature and error codes; can also show other parameters while programming
- 2.SET - To select a different operating menu
- 3.DECREASE - Decrease water temperature
- 4.INCREASE - Increase water temperature
- 5.The green light means the unit is on pool mode
- 6.The red light means the unit is in operation
- 7.The green light means the unit is on spa mode.

When the Henden heat pump is first turned on, the temperature will be measured and updated after 5 minutes. Afterwards, the temperature will be updated in real time.

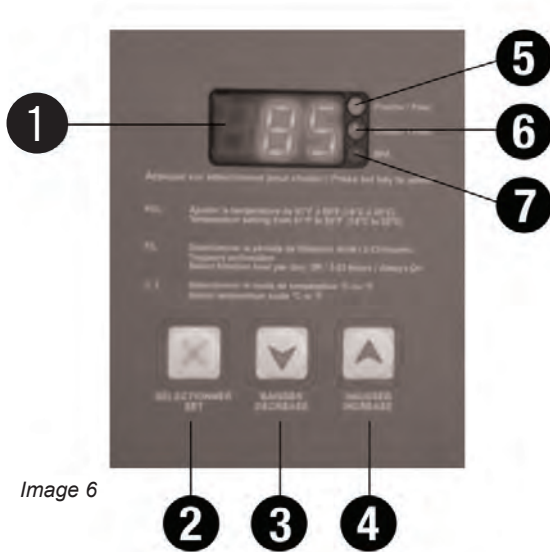


Image 6

4.2 Mode (Temperature adjustment)

- Pool mode: Between 16°C - 35°C
- Spa mode: Between 16°C - 40°C

In OFF mode, the screen will display the actual pool water temperature. Use the SET button to choose POOL, SPA, or OFF mode. The Henden heat pump cannot be set under 16°C (61°F). It will shut down if the temperature requested is below 16°C (61°F). Above this temperature setting, the Henden heat pump will automatically maintain the desired temperature.

4.3 Changing the display from Celsius to Fahrenheit

Unit is pre-programmed in Celsius. Press the SET

key until "F_C" is displayed, as shown in image 6.

Press the ▲ for °F and ▼ for °C.

4.4 De-icing mode

De-icing is a normal cycle that takes a few minutes. While the evaporator is de-icing, FS will be displayed as seen in image 6. During that process, the fan will operate but the compressor will be turned off.

5. WINTERISING

Winterising is required in conditions where any water inside the heater can drop below 0°C. In this situation, if not carried out, severe damage is likely to occur to the Henden heat pump.



WARNING: All water connections to the pool should be disconnected for winter to allow complete drainage of the Henden heat pump. The winterising must be done before air temperatures reach freezing point.

- Turn off the circuit breaker, or isolation switch;
- Drain the Henden heat pump. Loosen all water connections;
- Rinse the interior of the heat exchanger cylinder with a stream of tap water for about 15 minutes to remove any chlorine residue that could cause damage to the heat exchanger. Tilt the unit towards the back to remove all water from the unit.



WARNING: The Henden heat pump should never be tilted more than 30-35°, even during transportation. Should this occur, allow the Henden heat pump to sit for 4 hours before turning on.

- Block water inlet and outlet with a cloth or plastic to prevent mice, or other animals from entering the unit.

6. MAINTENANCE

6.1 Safety instructions

Always disconnect the Henden heat pump before:

- Opening the access door;
- Cleaning the cabinet, or evaporator.

To avoid the risk of injuries, or damage to the unit, never:

- Sit on the Henden heat pump, or place a heavy object on it;
- Put objects in, or on the protective grid.

The Henden heat pump requires professional maintenance and repair. Any "do-it-yourself" repairs on a unit within warranty period, may void the remainder of the manufacturer's warranty. Maintenance, or adjustments other than those recommended in this owner's manual should not be attempted. Contact Henden for any questions, or problem you may have with your unit.

6.2 Regular maintenance

- Inspect and clean the pool filter regularly to ensure adequate water flow to the Henden heat pump.
- Inspect the evaporator and rinse it using a garden hose. Wash, with a stream of water from top to bottom to remove any grass, leaves or other objects that could obstruct the evaporator.
- Clean the Henden heat pump casing with a mild soap (dishwashing liquid). Do not use abrasives, or bleach. Inspect the pool skimmer basket regularly. Never use the skimmer to add pool chemicals.
- Ensure water is balanced to recommended levels in water quality section of this manual (section 9). Chemical balance outside of recommended levels could result in damage to your unit and risks voiding warranty.



WARNING: To prevent injuries, death, or property damage, read and follow all instructions and warnings.

7. WATER QUALITY

RECOMMENDED POOL WATER CHEMISTRY					
POOL WATER BALANCING	Free Chlorine (ppm)	pH	Total Alkalinity TA (ppm)	Calcium Hardness (ppm)	Stabiliser – Cyanuric Acid (ppm)
Ideal Reading / Range	1 – 3	Concrete & Tiled Pools: 7.4-7.6 Other Surfaces: 7.2-7.4	Concrete & Tiled Pools – 80-120. Other Surfaces – 125-150	Concrete & Tiled Pools – 200-275. Other Surfaces – 100-225	25 – 50
To Increase	Increase output of chlorinator. Add chlorine. Increase filtration time.	Add buffer or soda ash (Sodium Carbonate)	Add Sodium Bicarbonate	Add Calcium Chloride	Add Cyanuric Acid
To Decrease		Add Muriatic Acid	Add Muriatic Acid or Dry Acid	Partially drain & refill pool with lower hardness water to dilute	Partially drain & refill pool to dilute
Frequency of Testing	Weekly	Weekly	Weekly	Weekly	Regularly

Table2

8. TROUBLESHOOTING

PROBLEM	LIKELY CAUSE(S)	WHAT TO LOOK FOR
Digital Control Displays		
CODE: FLO	<ul style="list-style-type: none"> The water flow inside the Henden heat pump is insufficient; There is no water circulation inside the Henden heat pump; The flow switch is faulty. 	<ul style="list-style-type: none"> Make sure that the circulating pump works; Make sure the bypass valves are properly positioned; Check the pool skimmer basket is clear; Check the water pressure of your circulation system. Ideally it should be between 68 - 137kPa.
CODE: FL3	The flow switch has cut out 3 times in the same hour for one reason shown above (code FLO).	<ul style="list-style-type: none"> Cycle the power off then on to reset the Henden heat pump; Make sure FIL is set to OFF (section 2.6).
CODE: FS	The Henden heat pump is in de-icing mode.	Wait until the end of the de-icing cycle. The Henden heat pump will restart automatically.
CODE: LP	<ul style="list-style-type: none"> Ventilation on the evaporator is insufficient; The fan is faulty; There's a refrigerant leak; The outside ambient temperature is too low. 	<ul style="list-style-type: none"> Check the evaporator is not obstructed by pollen, grass, leaves etc. Refer to section 6 for safety instructions; Be sure there is enough free space around the Henden heat pump. Refer to section 2; Check that the fan is running.
CODE: LP3	The Henden heat pump low pressure switch has cut out 3 times in the same hour for one of the reasons above (code LP).	<ul style="list-style-type: none"> Cycle the power off then on to reset the Henden heat pump
CODE: HP	<ul style="list-style-type: none"> The flow inside the Henden heat pump is insufficient; The bypass valves are in the wrong position; Flow switch is incorrectly set and static pressure in the system is keeping the flow switch activated (pump not running); The water exit is blocked. 	<ul style="list-style-type: none"> Ensure there is correct water flow through the Henden heat pump; Check the bypass valves are properly positioned; Adjust flow switch so that static pressure does not activate flow switch; Check if there's an object obstructing the water hose.
CODE: HP3	The (high) pressure switch has cut out 3 times in the same hour for one of the reasons above (code HP).	<ul style="list-style-type: none"> Cycle the power off then on to reset the Henden heat pump.
CODE: SPI	The general control is faulty.	Cycle the power off then on to reset the Henden heat pump. If the problem is not resolved, the digital control will have to be changed. In this case, call your installer or 1300 HENDEN (1300 436 336).
CODE: DPO	The de-icing sensor is not properly connected or is not receiving power.	Call your Installer or 1300 HENDEN (1300 436 336).
CODE: PO	The water temperature sensor is faulty.	
CODE: DPC	The de-icing sensor is faulty.	
CODE: PC	The water temperature sensor is faulty.	
NO CODE: Heat is needed, the fan is functioning, no code is displayed and the compressor does not start.	Electrical problem in the compressor circuit Capacitor defective Compressor defective	

9. HENDEN™ REPAIR OR REPLACEMENT GUARANTEE

Henden Guarantee Period

Parts - Three Years

Compressor - Five Years

Titanium Heat Exchanger Coil - Ten Years

Fibreglass Cabinet - Fifteen Years

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Should you experience any difficulties with your Henden by Nirvana product, we suggest in the first instance that you contact the installer of the product or your Reece Irrigation & Pools branch.

Alternatively you can phone Henden. On receipt of your claim, Henden will seek to resolve your difficulties if the product is faulty or defective, advise you on how to have your Henden product repaired, obtain a replacement or a refund.

Henden does not cover normal wear or tear, loss or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes, or unauthorised persons attempting repairs. Where applicable, your Henden product must only be connected to the voltage shown on the nameplate.

Henden does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you MUST provide evidence of the date of original purchase when making a claim.

Henden shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Henden products.

Should your Henden by Nirvana product require repair or service; contact Henden or your nearest Reece Irrigation & Pools branch or phone the number below.

For a complete list of Reece Irrigation & Pools branches visit our website (reece.com.au/storefinder) or contact:

TECHNICAL AND AFTER SALES SUPPORT:

1300 HENDEN (1300 436 336)

MAILING/MANUFACTURER ADDRESS:

Davey Water Products
6 Lakeview Drive, Scoresby,
Victoria, 3179

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