

DESCRIPTION:

The H7-FHC is a controller that heats or cools using a heat pump and will turn on a chlorinator during filtration times. Filtration and heating/cooling are all controlled by the time clock and their relevant settings. When the pump is required to run it operates for 3 minutes to ensure good flow of water before the auxiliary heater or chlorinator is turned on, if the pump is no longer required to operate for heating or chlorination then it is switched off after a 3 minute flush to remove heat and/or chlorine from the pipes.

CONTROLLER MOUNTING:

The controller enclosure must be firmly attached to a nearby solid fixture by either the two mounting lugs or direct attachment through the controller. If mounting through the controller ensure the power cord is disconnected from the mains supply then remove the enclosure front cover by turning the four corner locks so each arrow points to the 'O' marked on the front cover. Insert two mounting screws diagonally through the oval holes in the enclosure, refit front cover and turn the four corner locks to the 'I' position. The power cable is 1.8m long and should be plugged directly into a general power outlet, not into an extension lead.

FILTER PUMP & CHLORINATOR:

The Filter pump plugs into the right hand 240Vac socket marked as PUMP. The PUMP ON LED will be lit when the pump is operating. The chlorinator plugs into the AUXILIARY socket and will be switched on during filtration times. The AUX. ON LED will be lit when the chlorinator is operating. Set the chlorinator time clock to run 24 hours or select manual ON mode, but ensure that manual ON mode does not have a time-out function.

The maximum allowable combined current for both 240V sockets is 10 AMPS @ 2400W.

HEATER INTERLOCK:

The heater interlock cable connects to the green socket marked RELAY1 which switches on the NO/C contacts when the heater is to be turned on. The other end of the heater interlock cable connects in series (daisy chain) to the heater's flow or pressure switch circuit (refer manufactures instructions). If the heater's flow/pressure switch circuit is **240Vac** then **DO NOT** connect the RELAY1 cable directly to the heater, a H7FHCA controller needs to be used which is supplied with an external 240V rated relay which will need to be connected in series with the flow/pressure switch by a **licensed electrician**. Set the temperature setting on the heater 5°C above the desired water temperature (if cooling set 5°C below) to allow the H7 to be in control without conflict. (See diagram on **page 4**)

EXTERNAL MANUAL SWITCH OPTION:

A latching switch can be connected to the green socket marked FLOW, when the switch is closed (ON) the pump will start and the controller will manually heat the pool/spa to the temperature limit that has been set.

TEMPERATURE SENSOR:

The pool sensor must be fitted in the suction line before the pump, preferably in a position out of direct sunlight. It is recommended that a 14.5mm hole be drilled in the PVC pipe, this can be carried out using a Dontek PD01 grinding drill or a small pilot hole can be drilled and a 14.0mm drill-bit used spinning in a counter clockwise direction to minimize the chance of shattering pipe. Insert the grommet into the pipe and gently push in the black sensor barb. The green sensor plug is to be fitted to the plug socket marked POOL.

The right hand socket marked ROOF is not used.

SETTINGS MENU:

All items on the LCD that flash are adjustable items, use the *Up* or *Down* buttons to modify the adjustable item. Press *Enter* to accept the adjustable value.

To enter the SETTINGS MENU push either the up or down buttons and the following will be displayed;

```
SETTINGS MENU
1) MANUAL MODE
```

All menu items are shown below, use the *Up* or *Down* buttons to scroll to different items in the menu;

```
SETTINGS MENU
1) MANUAL MODE
2) FILTER TIMER
3) TEMPERATURE
4) AUX DEMAND
5) MODE
6) SET CLOCK
7) SAVE & EXIT
```

1) MANUAL MODE

```
MANUAL MODE 24HR
UP=ON DOWN=OFF
```

MANUAL MODE allows you to manually set the pump to 'on' by pressing the *Up* button or 'off' by pressing the *Down* button. In manual mode the heater is switched off. Pressing *Enter* will return you to the SETTINGS MENU. You can also keep pressing *Enter* to toggle the pump from 'on' to 'off' and vice versa. If any of the buttons are not pushed then the unit returns to automatic operation after 24 hours.

Manual mode is for manually operating the pump ONLY (i.e. Backwashing the filter); heating is switched off and the AUXILIARY Socket (chlorinator) is switched ON only if CHLOR IN MANUAL? is set to ON [See Item 2) FILTER TIMER]

2) FILTER TIMER

When the FILTER TIMER is selected the following is displayed;

```
FILTER TIMER
ON/OFF
```

If OFF is selected the pump will not start for filtration and you will return to the main menu, if ON is selected the following is displayed;

```
SINGLE CYCLE
DUAL CYCLE
```

Select SINGLE CYCLE or DUAL CYCLE, Single Cycle runs the filtration & chlorinator once per day, Dual Cycle runs the filtration and chlorinator twice per day.

Single & Dual cycle sub menu;

```
FILTER CYCLE          FILTER CYCLE
START TIME hh:mm     END TIME   hh:mm
```

Dual cycle sub menu;

```
2nd FILTER CYCLE     2nd FILTER CYCLE
START TIME hh:mm     END TIME   hh:mm
```

Adjust the start time and end time for filter cycle 1; if dual cycle was selected then also adjust the start and end time for the 2nd cycle.

Note1: that if dual cycle is selected, take care not to overlap the 2nd filter times with the first filter times as the result will be one cycle per day.

Note2: If a 24 hour filtration is required then set a single cycle with the start & end times the same (E.g. 12:00 – 12:00).

Note3: Aux Demand requirements will also override the filtration timer to start the pump for heating.

Note4: The second cycle is disabled when AWAY MODE is active.

Once the filter timer is set you can choose if the chlorinator is to operate in the manual modes;

```
CHLOR IN MANUAL?
ON/OFF
```

If set to OFF the 1)MANUAL MODE and the front panel ENTER/MANUAL button will not activate the chlorinator (Aux socket). If set to ON the chlorinator is turned ON during manual modes, however the external manual switch will not activate the chlorinator outside of filtration times.

***Factory Default is ON, DUAL CYCLE from 09:00 to 13:00 & 16:00 to 20:00 without Chlorination in manual mode.*

3) TEMPERATURE

```
TEMPERATURE
POOL LIMIT xx.x°
```

When you enter the TEMPERATURE menu you may adjust the temperature limit setting for the aux heat source.

Heating is performed to the temperature limit plus ½°C* and once that temperature is achieved heating will not re-occur until the temperature drops below the desired limit by ½°C* or until the sample period has elapsed and the temperature is at or below the limit.

*Due to the rounding off effect of the sensor the hysteresis is actually ¼°C but is displayed in 0.5°C steps.

*** Factory default for POOL LIMIT is 27°C*

4) AUX. DEMAND (Must be set to ON to run heating or cooling)

```
AUX. DEMAND
ON/OFF
```

When you enter the AUX. DEMAND menu you will need to select ON or OFF.

If OFF is selected you will return to the menu and the auxiliary heater will never run automatically, If ON is selected you will be prompted for SINGLE CYCLE or DUAL CYCLE.

Select SINGLE CYCLE or DUAL CYCLE, Single Cycle runs the aux heater once per day; Dual Cycle runs it twice per day. Once the number of cycles has been selected you will be prompted to set the START and END time(s), the auxiliary heater will only run between these times.

Single & Dual cycle sub menu;

```
HEAT DEMAND TIME     HEAT DEMAND TIME
START TIME hh:mm     END TIME   hh:mm
```

Dual cycle sub menu;

```
2nd HEAT CYCLE       2nd HEAT CYCLE
START TIME hh:mm     END TIME   hh:mm
```

Next option is IF LIMIT ACTIVE SAMPLE AT hh:mm in 15 minute steps & a LIVE setting.

If the temperature limit is achieved the controller will turn off the pump until the sample wait time has elapsed. If the next sample time is outside of the AUX. DEMAND times then the next sample will not occur until the start of the next AUX. DEMAND cycle. After the sample time has elapsed the pump will run for 3 minutes to sample the water temperature. If after 3 minutes heating is required then the pump will continue to run and the aux. Heater will be switched on. Selecting LIVE disables all sampling and assumes PIPE temperature is the same as POOL temperature. When the pump is running for filtration the pipe temperature is also assumed to be the same as pool temperature (LIVE).

Note1: if a 24 hour continuous heating time is required, select single cycle and set the start time and end time to the same value. (E.g. Start 12:00, End 12:00)

Note2: Aux Demand is disabled when AWAY MODE is active.

***Factory default for AUX. DEMAND is OFF, SINGLE CYCLE, 06:00 to 22:00, sample @ 1 hour*

5) MODE

When you enter the MODE menu you can select between HEATING/PREHEAT, AUTO HEATING, AUTO COOLING or AWAY MODE. HEATING/PREHEAT MODE – This is for initially heating a new pool to the temperature limit, once the temperature limit is reached the heater and pump switch off and the controller changes to AUTO HEATING mode. AUTO HEATING or COOLING - Auto heating or cooling will occur only during AUX. DEMAND times and depends on the temperature limit setting.

Note1: Auto Cooling is only supported by heat pumps with the ability to cool; the heat pump must also be set for cooling, failure to do so will result in an **OVERHEATED POOL OR SPA**

Note2: If the pool or spa reaches 40°C or higher the auxiliary heater will be turned off as a safety measure.

AWAY MODE – This is a maintenance mode used when heating or cooling is not required. The 2nd filter cycle is disabled and heating/cooling is switched to a maintenance flush program, this flush occurs every day at noon (12:00) and runs the pump for 3 minutes and activates the heat pump for the first 2 minutes only.

When AWAY MODE is selected you'll be asked to select the away start month and the auto start month.

At the beginning of the start month the away mode activates, at the beginning of the auto month the controller resumes heating or cooling, after selecting the auto start month the display will indicate what mode it will return to (select the required mode of heating/cooling before selecting away mode, if AUX. DEMAND is switched OFF it will be indicating a return to auto filtration).

Note1: If all an all year round away mode is required the option is available after December (12).

Note2: DO NOT select the away start month to occur after the auto start month.

Note3: If you do not want a flush to occur then select AUTO HEATING/COOLING and turn heat demand OFF.

Note4: Away mode cannot return to heating/preheat mode.

6) SET CLOCK

```
TIME 17:00:PM
THU 19/04/2011
```

When you enter the CLOCK menu you will be prompted to change the DAY setting first, adjust by pressing the *Up/Down* buttons, to accept the setting press the *Enter* button.

Repeat for Date, Month, Year, Hour & minutes.

Note: time is in 24 hour format, there is also an AM/PM displayed to avoid clock setting errors, when setting the clock, seconds is set to 00 (zero)

7) SAVE & EXIT

When this menu is selected, push *Enter* to save ALL settings, the unit will return to normal automatic operation.

Note: If any of the menu items are left unattended for 3-4 mins the menu will time out and automatically save all settings and return to operation.

The ENTER/MANUAL button (Manual heating mode)

```
FOR MANUAL MODE
PRESS ENTER NOW
```

Pressing the *Enter* button once will display the above message for ~3 seconds, to prevent accidental manual mode if ENTER is not pressed again within the 3 second period then the controller will revert to automatic operation (and it will cancel any pump lockout delays).

If ENTER is pressed again within 3 seconds then manual mode is activated and the pump is switched on, the following is displayed;

```
MANUAL MODE 4HR
23.5° SET=30.0°
```

The displayed temperature on the left hand side is the water temperature; the SET temperature displayed on the right hand side is what the water will be heated to before the heater is switched off. The AUXILIARY Socket (chlorinator) is switched ON only if CHLOR IN MANUAL? is set to ON [See Item 2\FILTER TIMER]

Use *Up* button or *Down* button to change the SET temperature to the required comfort level.

Press & hold *ENTER/MANUAL* to exit manual heating mode and revert back to automatic mode.

Manual heating mode will automatically revert to automatic operation 4 hours after the last temperature adjustment.

EXTERNAL MANUAL SWITCH FUNCTION:

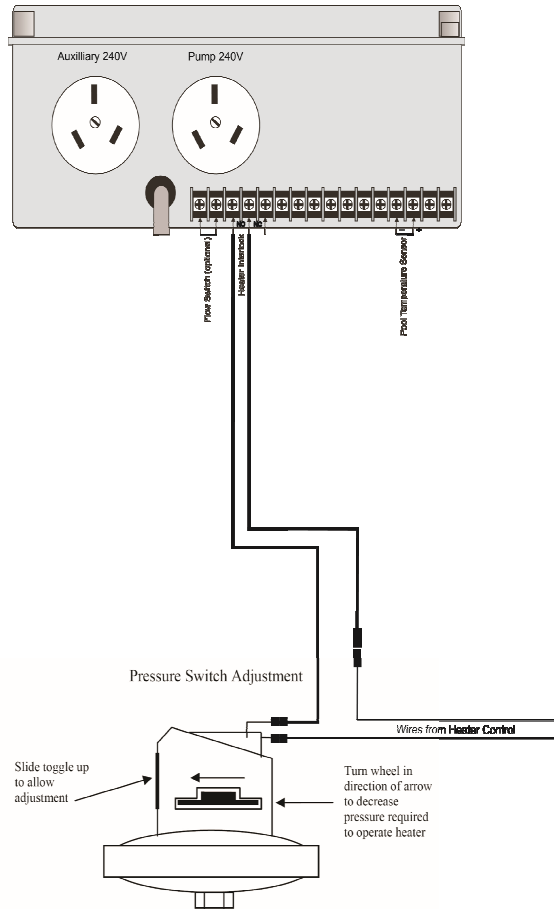
When the external switch is switched ON (closed contact, latched) then the unit will start the pump and set the controller into manual operation, all timers and features will be overridden to manually heat the pool.

Set the switch to OFF (open contact) to revert back to automatic operation, if no heating is required the pump may continue to run for 3 minutes to flush the heater for preventing thermal cut-out.

NOTES:

1. If a sensor fault is detected the H7 will display what the fault is.
2. Should power be interrupted for any reason, the H7 will resume normal operation when power is restored, all information will have been kept.
3. The Temperature sensor used with this unit is Digital and accurate to 0.5 Deg. C, no calibration is required.
4. The sensor cable with the thin trace is the positive and is usually fitted to the right hand side of the green plug, incorrect polarity will be displayed.
5. If the controller has stopped pumping and is displaying an unexpected temperature it may be caused by a pump which is failing to prime, check the pump and if necessary prime the pump as per the pump manufacturers' instructions then reset the controller by turning it off/on.
6. The heater interlock switch has a maximum load of 5A at 32Vac max.

H7 FHC CONNECTIONS



WARRANTY

This range of product is covered by a limited 3 year warranty against component failure or faulty workmanship from the date of installation.

Faulty units should be returned in the first instance to the dealer from which the unit was purchased.

Damage to the unit due to misuse, power surges, lightning strikes or installation that is not in accordance with the manufacturer's instruction may void the warranty.

Valves and actuators are covered by a twelve month warranty at the discretion of their manufacturer.

Warranty does not cover travel costs to or from installation site.

If the power cord is damaged, do not use the controller; return the unit to the supplier for repair.

Customer Record. (To be retained by the customer)

Dealer/Installer Name _____

Serial Number _____

Date Installed _____

For service assistance phone 1300 130 693



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