



# Sauna Heater



**Domestic**



**Commercial**



## Installation & Operating Manual

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**Congratulations on selecting a Dayliff Sauna Heater. They are manufactured to the highest standards and if installed and operated correctly will give many years of efficient and trouble free service. Careful reading of this Installation Manual is therefore important, though should there be any queries they should be referred to the equipment supplier.**

## 1. SPECIFICATIONS



Dayliff Sauna heaters work by using electric elements to heat sauna stones. Two models are offered:-

**Domestic** - Suitable for small sized saunas, especially domestic applications up to a room volume of 13m<sup>3</sup> and comes with a separate intelligent digital controller that provides various control and monitoring functions including temperature settings and a timer.

**Commercial** - Suitable for larger institution saunas with separate programmable digital intelligent controller and a separate Control box for timer and temperature control system. Other features includes control for integral sauna light and LED indicator lights showing operating conditions.

All saunas are offered with a range of accessories including wooden water bucket, ladle, thermometer and hygrometer.

Model	Size (kW)	Phase/Current (A)	Room Volume (m <sup>3</sup> )	Stone Capacity (Kg)	Dimensions(mm)			Weight (Kg)
					L	W	H	
<b>DSAUNA90</b>	9	1-39/3-13	9-13	20	410	280	570	13
<b>DSAUNA120</b>	12	3-20	10-18	50	480	560	660	26
<b>DSAUNA150</b>	15	3-25	13-23	70				28

## 2. SYMBOLS AND WARNINGS



***This appliance must be connected to an MCB protected all pole isolator and installation done by a qualified person in accordance to local regulations.***



***Disconnect the power supply before exposing electrical connections.***



***The sauna heater should not be used for any other purpose***



***Do not cover the sauna heater or allow contact with flammable materials such as towels due to risk of fire. Also do not hang clothes to dry in the heater.***



***No smoking inside the sauna room***



***Do not operate sauna heater without sauna stones***



***Isolate the power supply before installation. The sauna heater will be controlled via the control box***



***The installation position must comply with the minimum distance and good ventilation must be guaranteed at all times***



***The minimum height of the sauna room must be 1900mm***



***Do not install the sauna heater on the floor or in a cabinet***



**The wire which enters the sauna room must be type 60245 IEC 66 HO7RN-F (BSEN6141)**



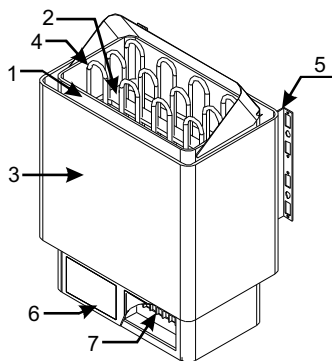
**Do not install two or more sauna heaters in one sauna room**



**The sauna heater becomes very hot when in operation and must be guarded to protect incase of accidental contact**

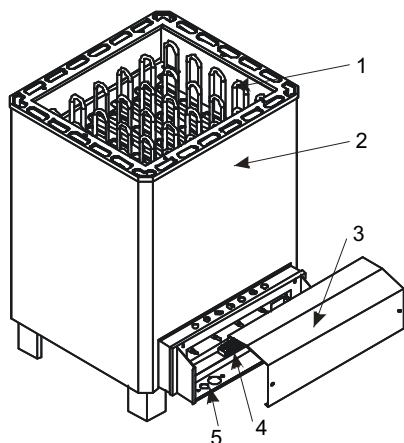
### 3. PRODUCT DESCRIPTION

#### Domestic



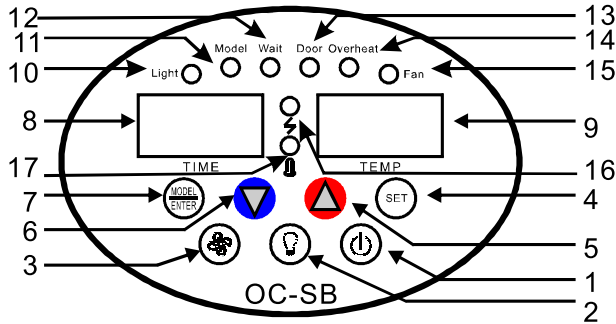
1. Inner Shell
2. Stone Bracket
3. Shell
4. Heat Element
5. Fix Bracket
6. Cover Panel
7. Terminal

#### Commercial



1. Heat Element
2. Shell
3. Cover Panel
4. Terminal
5. Power Entry

## OC-SB Controller



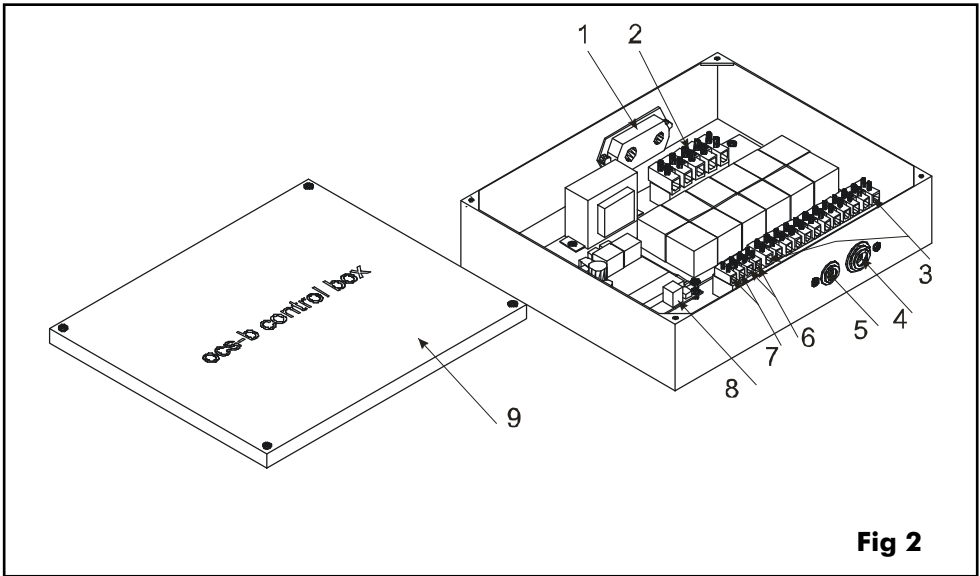
**Fig 1**

	Input	Output	Load	Dimensions		
				L	W	H
<b>Control Box OCS-B</b>	400V	400V	9-20kW	310	260	70
<b>OC-SB Controller</b>	Voltage: DC 5V			150	92	22

No	Description	Function
1	On/Off Button	Push to operate heater
2	Light Button	Push to operate sauna room light
3	Fan Button	Push to operate fan
4	Setting Button	Preset time and temperature setting confirmation
5	Increase Button	Press to increase temperature
6	Increase Button	Press to decrease temperature
7	Mode Button	Change working mode
8	Time Display	Display working time or waiting time
9	Temp. Display	Display temperature
10	Light LED	Indicator Led for sauna room lamp
11	Model LED	When this LED is on the heater should be on
12	Wait LED	When this LED is on the count down timer is on

No	Description	Function
13	Sauna Room Door(interlock) indicator LED	When this LED is on the door has been opened as count down timer is set and so the timer is cancelled and the heater won't come on until the settings are reset
14	High temperature LED	When this LED is on the safety overheat cut out thermostat has tripped, this means the sauna has reached very high temperature. This can be reset with the button in the sensor but test the control by setting a temperature of say 90°C and make sure the sauna temp stays around this.
15	Fan LED	Press to operate fan
16	Heating LED	On means the heat element is working
17	Stop Working LED	Once the room has reached the preset temperature this light will appear and the heater will stop heating.

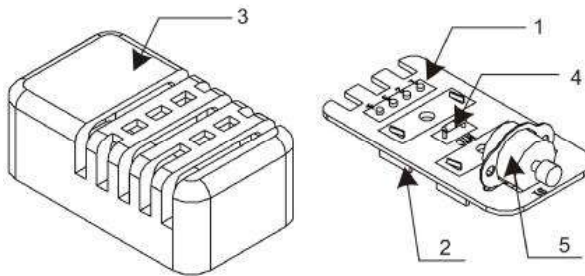
**OCS-B Control Box**



**Fig 2**

No	Description	Function Instruction
1	Wire anchorage	Route of wire entry
2	Terminal-1	Connects to the power supply
3	Terminal-2	Connects to heater
4	Heater ,light and fan output	Outlet of wires to heater ,light and fan
5	Control cable entry	The entry of control cable
6	Light terminal	Connect to light wire
7	Fan terminal	Connect to fan wire
8	Control panel terminal	Connect to control cable
9	Cover	Offer protection to the electronics

### Temp Sensor Frame & Parts



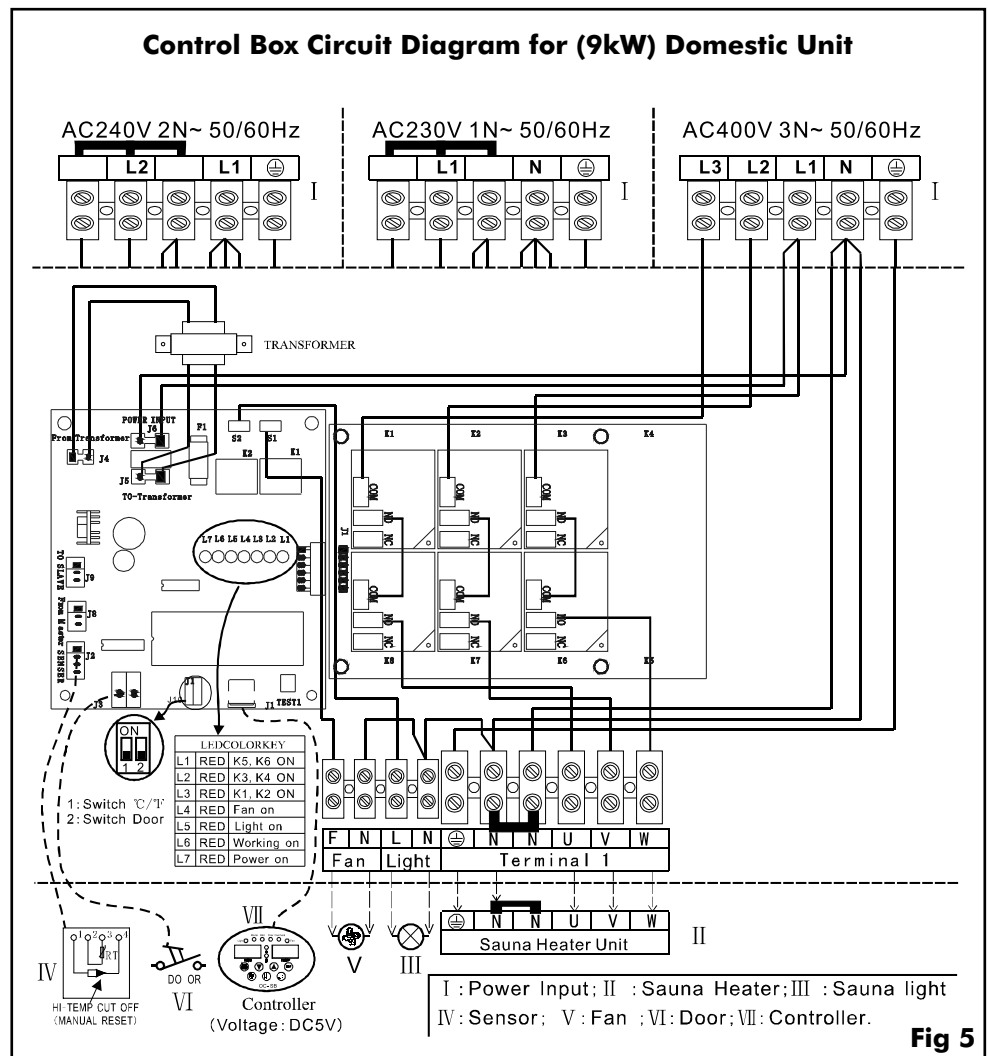
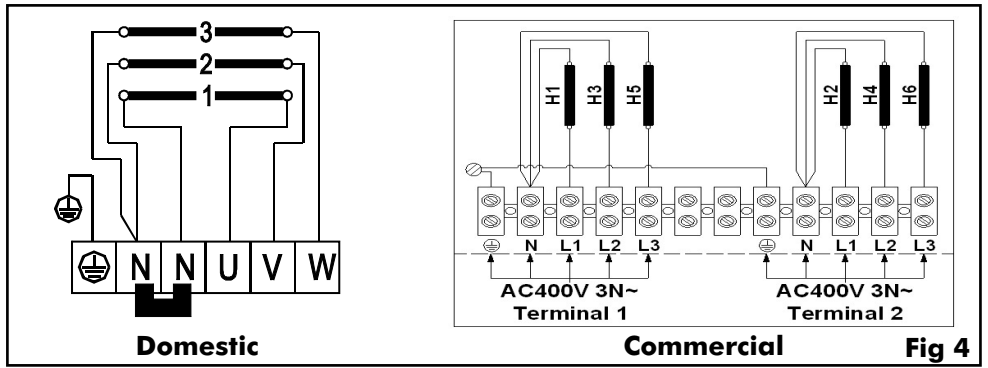
**Fig 3**

No	Description	Function
1	Circuit Board	Circuit circuitry
2	Bracket	Bracket
3	Cover	Protects the electronics
4	Heat Resistance	Detects temperature
5	High Temp cut-of switch	When temperature in sauna room exceed 120°C, the heater is switched off

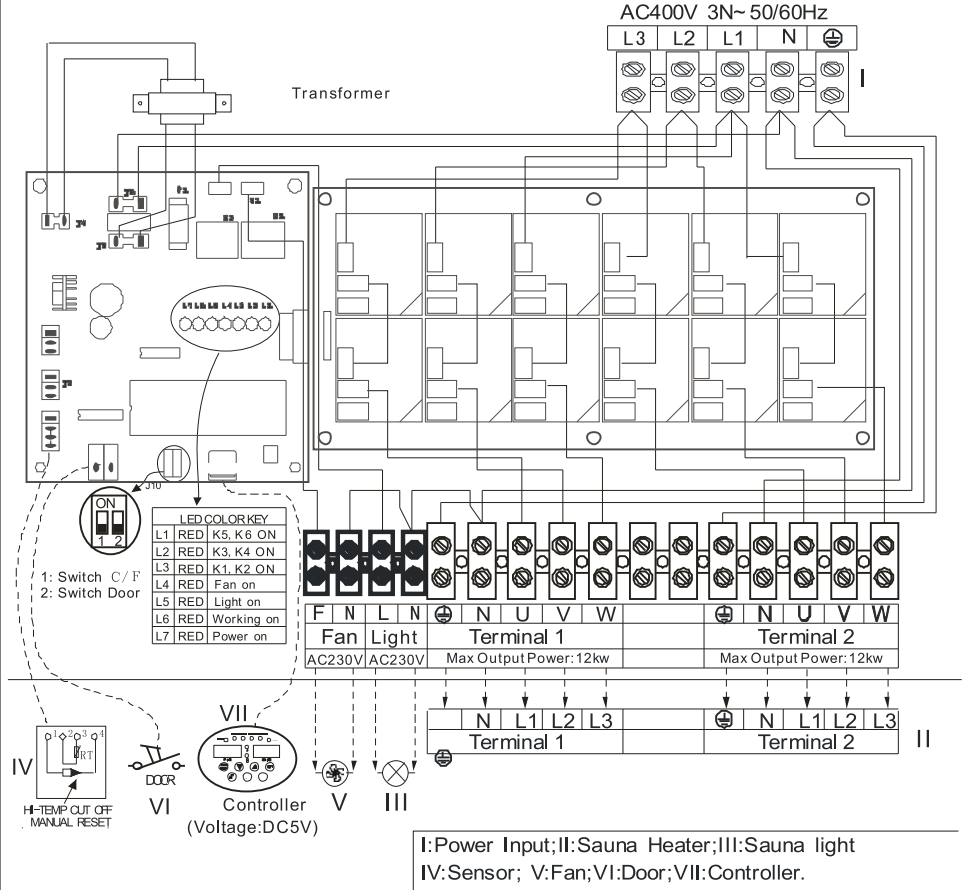
Model	Temp Range	Cut off Temp	Size mm		
			L	W	H
OC-S	0-110°C	120°C	76	42	27



# Circuit Diagram



# Control Box Circuit Diagram for 12/15kW Commercial Unit



I: Power Input; II: Sauna Heater; III: Sauna light  
IV: Sensor; V: Fan; VI: Door; VII: Controller.

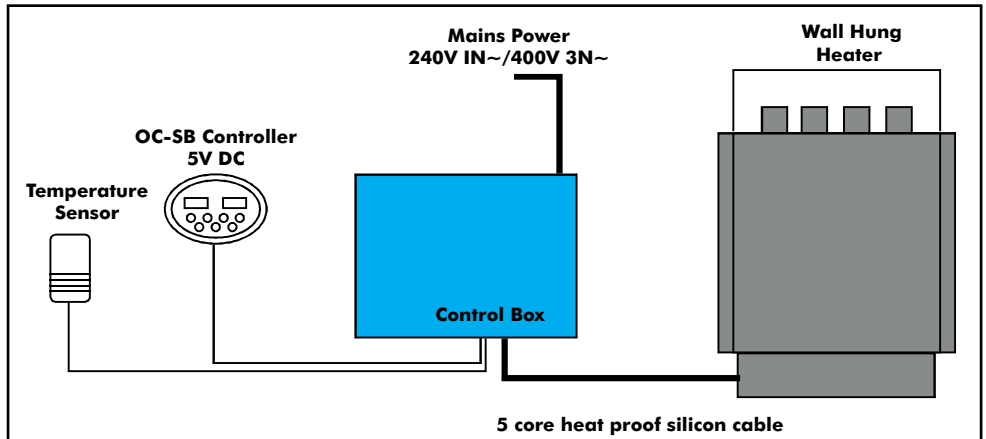
**Fig 6**

# 4. INSTALLATION

## 4.1 Important

Prior to installing sauna heater, please refer to installation handbook and check it as following points:

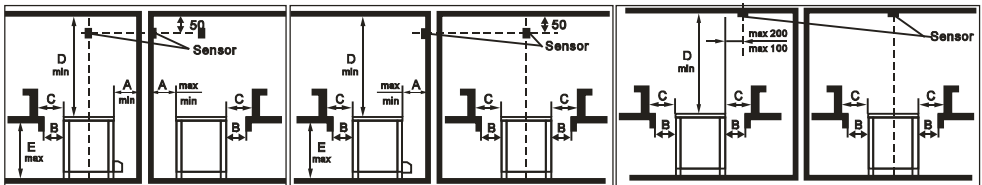
- Is the output power and type of the heater suitable for the Sauna Room? See parameter table 1 (Technical Parameter) on page 1.
- Is the supply voltage suitable for the of sauna heater?.
- Does the location of the heater fulfill the minimum requirements concerning the distances given in table below for safety and convenience?
- Is the cable wire correctly sized? note that the cable to the heater will need to have high temperature resistance silicon rubber.



Domestic Heater Water

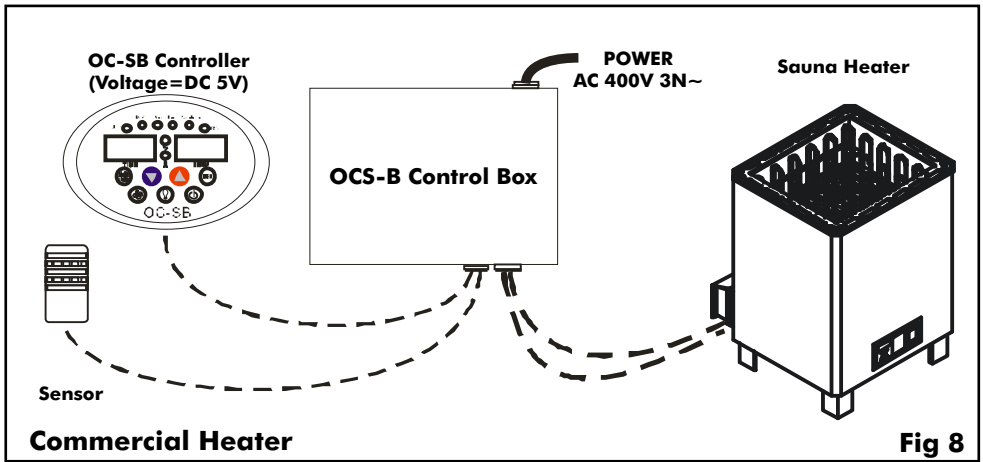
Fig 7

Model	Sauna Installation Safety Distance, mm					
	A min	A max	B min	C min	D min	E max
<b>DSAUNA90</b>	120	220	100	200	1200	630
<b>DSAUNA120</b>	120	220	100	200	1200	630
<b>DSAUNA160</b>	160	260	100	200	1200	630



## 4.2 Installation for Sauna Heater

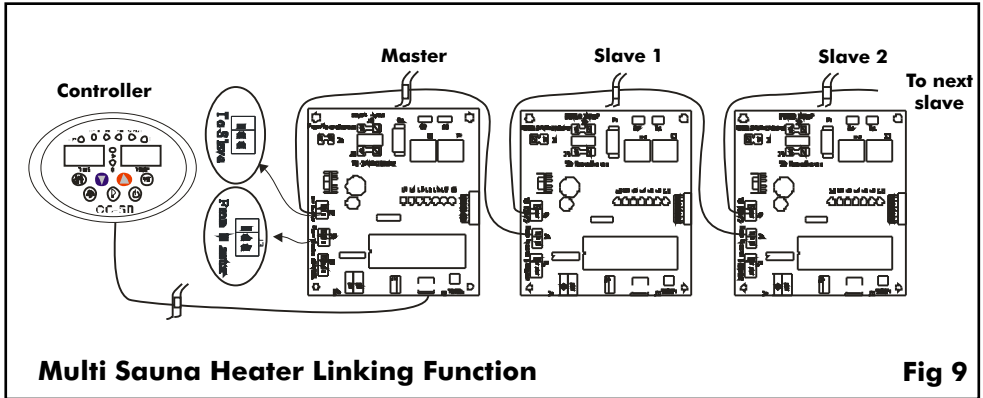
Remove the cover panel & connect power supply wire & control cable through the wire anchorage to the terminal as below figure.



**Fig 8**



**Control box output to sauna heater can not be bridged**



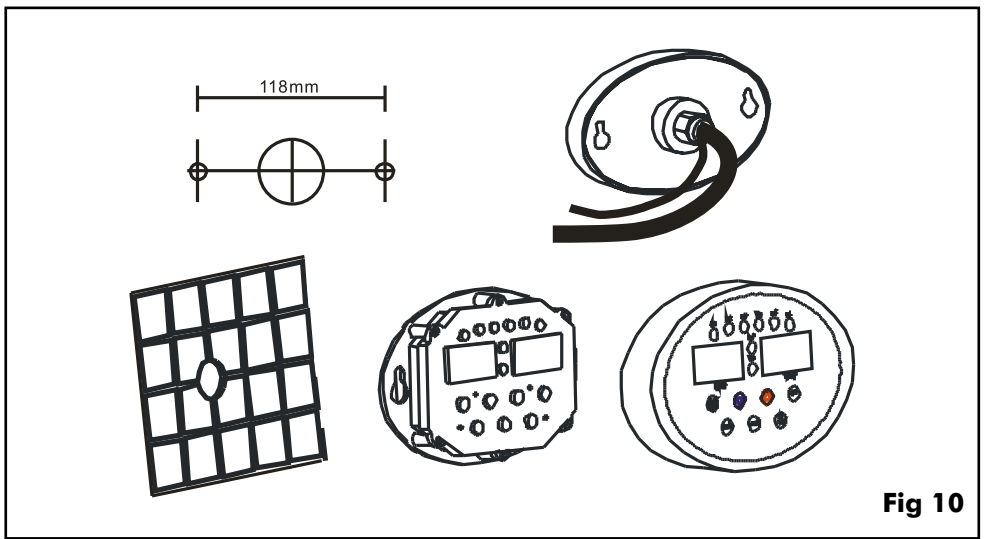
**Multi Sauna Heater Linking Function**

**Fig 9**

**4.3 Installation for Controller**

The control panel should be installed at a height of approximately 1200mm for ease of use. Installation method.

- Drill a  $\phi$ 40mm hole on wall for the wires.
- The panel can be monitored by either drilling two holes 118mm apart for the screws.
- Alternatively remove the plastic cover using a flat screw driver to carefully lever it off, then use the holes to mark desired drill holes

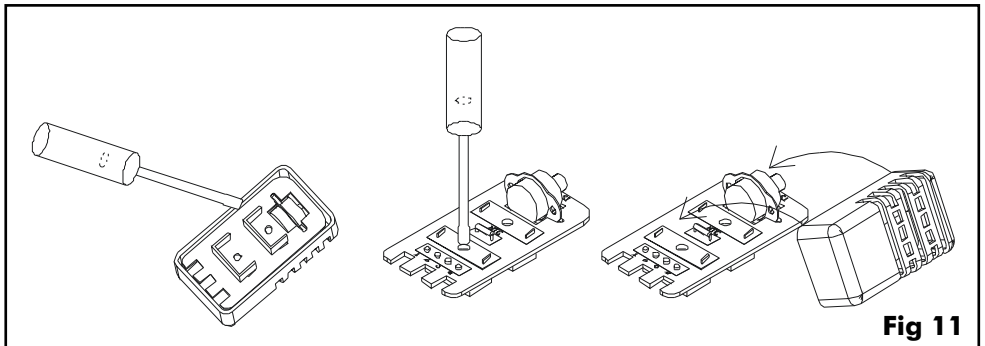


**Fig 10**

The control wire should plug into the silver / black DIN socket on the PCB of the main OCB control box.

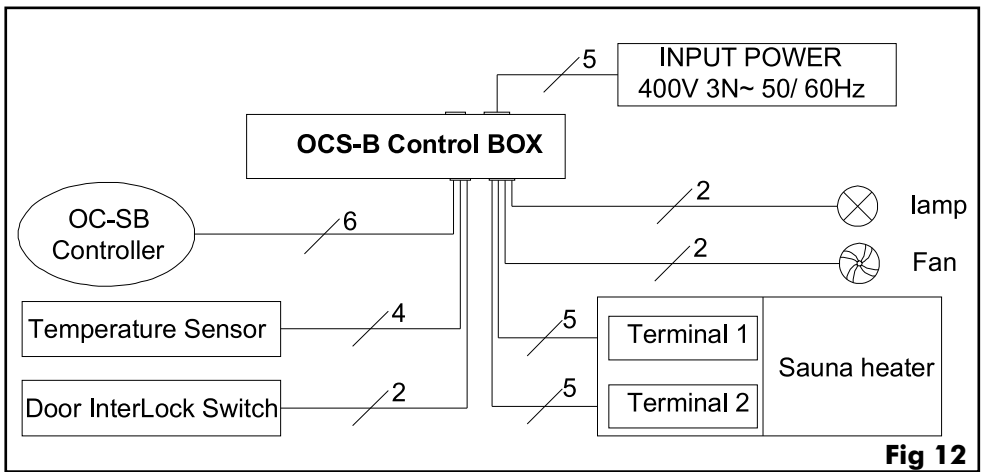
#### 4.4 Installation for Temp Sensor

- Install the temperature sensor on the height between 1500-1800mm in sauna room.
- Open the cover with a screw driver.
- Fix the bottom of the temperature sensor on to wall with screw.
- Replace the cover.



**Fig 11**

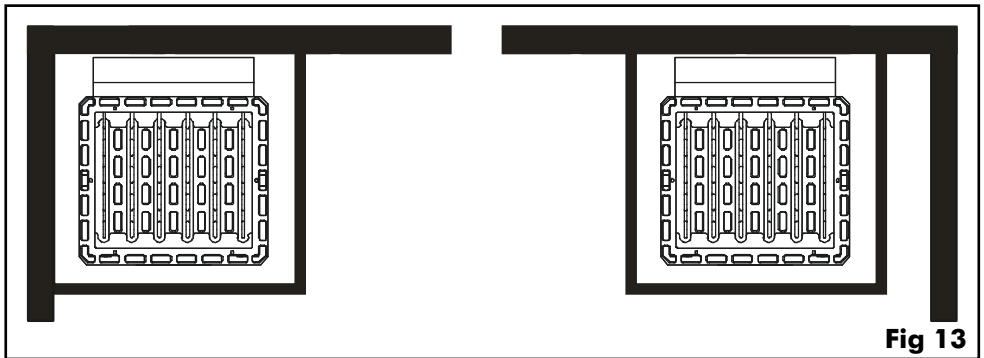
- Install the door interlock switch following the manufacturers instructions and connect the wires back to the control box as shown below



**Fig 12**

#### 4.5 Heater Guard (not supplied)

- The heater should be guarded against accidental contact with a wooden guard similar to the one shown below – according to the position of the heater within the cabin it may need to be guarded on 2 or 3 sides.
- Fix the guard in place around the heater by drilling and screwing accordingly.



**Fig 13**



***It is important that the top rail of the guard is set at least 30 mm below the rim of the heater such that it does not receive heat radiation directly from the heater rocks.***

#### 4.6 Sauna Stones

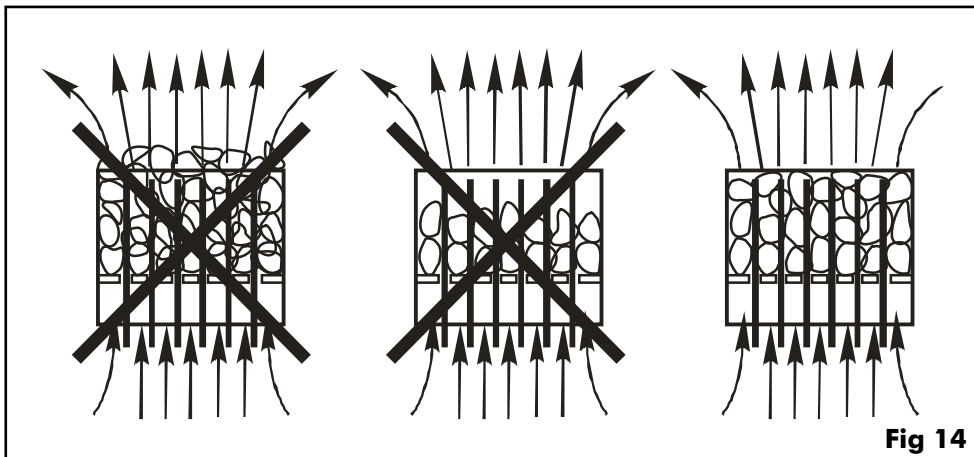
- Do not use the heater without sauna stones, otherwise it may cause a fire. These can be supplied from any Dayliff dealer.
- Do not use ordinary stones which may emit harmful substances, easily break and do not possess good heating capacity.
- Wash the stones to clear the dust before putting them into the heater.
- Allowable size of stones is about 3-8cm.

- Put the larger stones at the bottom of stove compartment and the smaller ones on top.
- Do not pile them tightly so that air can flow freely.



***Tightly placed stones decrease working time of the heater element, the stones should plainly cover the heater element.***

- Rearrange the stones in the heater at least once a year or twice if it is in frequent use (maximum 500 hrs). Refer to diagram below on how to arrange stones correctly.



**Fig 14**

#### **4.7 Insulation**

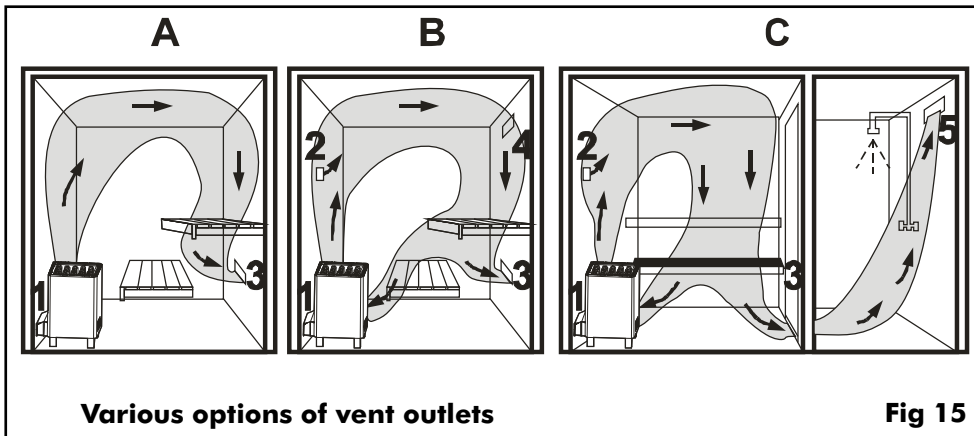
- The door, ceiling and walls of sauna room must be insulated.
- Ensure that moisture-protection is installed in the sauna room to prevent spreading moisture to the other rooms or wall structure . Moisture-protection must be placed between panel and heating insulation.
- Moisture and thermal protection should be installed from outside to inside, recommend minimum thickness of the thermal insulation in the walls is 25mm and in the ceiling 50mm.

#### **4.8 Air Ventilation of Sauna Room**

- Mix the cold air with hot air to relieve mugginess when bathing.
- Draw the fresh air around the heater to ventilate the sauna room.
- Move the heater to the farthest part of sauna room considering air ventilation of sauna room, the inlet and outlet vent should be properly installed.
- The inlet vent may be installed on the wall below the heater. When using mechanical ventilation, inlet vent is placed 50cm above the heater or on the ceiling above the heater the heavy cold air that is blown into the sauna room is mixed with the light hot air from the heater ,bringing fresh air for bathers.
- The recommended inlet should have a diameter of 5- 10cm.

- The outlet vent should be placed diagonally opposite to the inlet. It is advisable that the outlet vent is placed under the platform in sauna room as far as possible from the inlet vent.
- It can be installed near the floor, or from the floor through to a vent to the sauna ceiling, or under the door (to the wash room).

In this case, the sill slot must be at least 5cm and it is recommended there is mechanical ventilation in washroom with twice the size of the inlet.



1. Air supply vent
2. Optional air supply vent if mechanical exhaust ventilation is used, the opening is located 50cm above the heater
3. Exhaust air vent
4. Drying vent, which is closed during heating and bathing, the sauna room can also be dried by leaving the door open after bathing
5. If there is only an exhaust vent in washing room, leave an opening (Min 5cm), under the sauna door and install mechanical ventilation



**Do not bake food in the heater**

## 5. OPERATION

### 5.1 Testing

- Before connecting to the power supply check the sauna heater and make sure there are no flammable items on or around the heater, Note that on the first use the elements and stones may smoke slightly and give off a smell – ensure the sauna cabin is well ventilated.
- Connect to power supply, press “Ⓢ” key, temp and time windows will display data, LED shows the sauna’s heating status when the heating LED is on, the temperature of sauna room will rise and will achieve the preset temperature (the default settings are 75 °C/167°F, with work time of 2 hours).



- "Ⓞ" : Turns sauna light on/off
- "Ⓢ" : Turns sauna fan on/off
- The Controller has a timing device used to set a time to power up the heater, this can be set from 0~12 hours as shown in the table 1 below. When the controller is in B Mode (Timer mode) the heater will not operate. To operate press "Ⓜ/ⓔ" and the heating function will start (A Mode).

Model	Default Mode	Default Temp	Temperature Adjust Scope
		°C	°C
OC~SB	A	75	50~110
	Default Time		Time Adjust Scope
	Working Time	Waiting	Work Time
	2 hours	4 hours	10min - 8 hours
	The time adjustment difference for every press		The temperature adjustment difference for every press
	10 min		1°C

**Table 1**

## 5.2 Setting Time and Temperature

- The default settings for temperature is 75°C while preset operation time is 2 hours. These can be adjusted easily, if the electricity supply is lost the controller will return to default settings.
- When the sauna is turned on the time settings will work under A mode (A mode LED is on), the time window will display the last time that was set. Press "Ⓜ/ⓔ" key the time display window will flash. Press "▲" or "▼" to adjust the time, every press the time will increase or reduce by 10 minutes. Once the desired setting is reached press "Ⓜ/ⓔ" the window will stop flashing. The time can be adjusted from 10 minutes to 8 hours.




**The controller has a memory function, if the power supply is not cut off the next time the heater is turned on, the time selected will be the default time.**

- To set the heater to come on at a certain time use the B mode setting which can be set pressing the "Ⓜ/ⓔ" and the time window will display 4:00, then Press "Ⓜ/ⓔ" key the time display window will flash. Then press "▲" or "▼" to adjust the time every press the time will increase or reduce 10 minutes. Once the desired setting is achieved press "Ⓜ/ⓔ" and the window will stop flashing. Upon reaching "0" it will switch over to A Model and the heater will turn on.



**Remember to set the required time for on 'A Mode' before setting B Model.**

- For quick time adjustment hold the “ ▲ ” or “ ▼ ” and it will count continuously up or down, when it reaches the desired time release the button and the time is set.
- To adjust temperature: press “ SET ” once after setting the time or otherwise twice the temperature window will flash, enter the required temperature by pressing “ ▲ ” or “ ▼ ” to adjust - every press will increase or reduce by 1 °C . The temp can be adjusted from 50°C-110°C once the required temperature has been set press “  ” key the window will stop flashing.

### 5.3 Door Interlock

When used in commercial situations such as public buildings where the countdown timer is set to come on in advance the door interlock switch must be connected as described in Fig 12 – before the timer is set to come on in advance the sauna room must be checked by the operator to ensure there is no hazard such as combustible material left over the sauna stove or in the sauna – then the sauna cabin door must be closed before the timer setting can be made – if the timer begins when the door is opened, the controller will cancel the countdown and won’t operate until reset.

## 6. TROUBLE SHOOTING GUIDE

Description	Cause	Solution
The sauna is turned on and there is no display on control panel.	Faulty; 1. Power supply 2. Circuit board transformer or faulty fuse	1. Check the power supply. If the power supply indicator LED L1 (red) is on, check the wire 2. Change the controller
The controller is on but the sauna heater doesn’t work	1. The sauna heater has n ’ t been connected 2. There is a problem with the controller	1. Check the connection 2. Change the controller
OverHeat LED is on	1. The temperature sensor hasn’t been connected correctly 2. The high temperature cut off switch is turned off	1. Check the connection to temperature sensor 2. Check if the high temperature cut off switch is turned off, if yes ,reset manually

Description	Cause	Solution
Door LED is on	During the advance timer countdown sequence ,the sauna room door is opened, the timing stopped and will not restart again until it is reset.	Reset counter down timer
Wait LED is on red	Sauna heater is in timer mode	To heat press the Model button to change to A model (heating Mode)
Temperature windows display --L°C or --H°C	<ol style="list-style-type: none"> <li>1.Temp sensor isn't connected or cable is broken</li> <li>2. The temperature is lower than 0 °C or higher than 115 °C</li> </ol>	<ol style="list-style-type: none"> <li>1. – L°C means temperature sensor hasn't connected or the temperature is lower than 0 °C, check the connection, cable or change sensor</li> <li>2. – H °C means there is a short circuit in the temperature sensor or the temperature is higher than 115 °C (check the connection, cable or change sensor</li> <li>3. Change controller</li> </ol>

## 7. MAINTENANCE

It is recommended that the sauna heater is inspected on a regular basis for any signs of deterioration of its condition. Pay particular attention to both the fastenings, the condition of the wiring and the electrical elements. It's recommended that commercial operators change the sauna stones at least once every 12 months.



***If the stones have started to crumble this can cause the elements to overheat and they should be changed for new rocks.***

## 8. TERMS OF WARRANTY

### I) General Liability

- In lieu of any warranty, condition or liability implied by law, the liability of Davis & Shirliff (hereafter called the Company) in respect of any defect or failure of equipment supplied **is limited to making good by replacement or repair** (at the Company's discretion) defects which under proper use appear therein and arise solely from faulty design, materials or workmanship within a specified period. This period commences **immediately after the equipment has been delivered to the customer** and at its termination all liability ceases. Also the warranty period will be assessed **on the basis of the date that the Company is informed of the failure.**
- This warranty applies solely to equipment supplied and **no claim for consequential damages**, however arising, will be entertained. Also the warranty specifically excludes defects caused by fair wear and tear, the effects of careless handling, lack of maintenance, faulty installation, incompetence on the part of the equipment user, Acts of God or any other cause beyond the Company's reasonable control. Also, any repair or attempt at repair carried out by any other party **invalidates all warranties.**

### ii) Standard Warranty

#### General Terms

If equipment failure occurs in the normal course of service having been competently installed and when operating within its specified duty limits warranty will be provided as follows:-

- **Up to 1 year - The item will be replaced or repaired at no charge.**
- **Over 1 year, less than 2 years - The item will be replaced or repaired at a cost to the customer of 50% of the Davis & Shirliff market price.**

The warranty on equipment supplied or installed by others is conditional upon the defective unit **being promptly returned free to a Davis & Shirliff office** and collected thereafter when repaired. No element of site repair is included in the warranty and any site attendance costs will be payable in full at standard chargeout rates. Also proof of purchase including the purchase invoice must be provided for a warranty claim to be considered.

**DAYLIFF** is a brand of **Davis & Shirliff**

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for details of the nearest branch or stockist