

HEMOCRAFT MANUFACTURING CORPORATION

Sauna Heater and Controls Installation & Wiring Instructions

SAUNA HEATERS & CONTROLS APPLICABLE TO THIS MANUAL				
MODEL	WATTS	VOLTAGE	PHASE	CONTROL
FHSH 12	12000	208	3	TKE2-3
FHSH 15	15000	208	3	TKE2-3

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1. *CAUTIONS & WARNINGS*****

1.1. ELECTRICAL WIRING ROUTING

All wiring to the sauna heater and accessories must be routed away from any direct radiation from the sauna heater

1.2. WATER SPRAY

Never subject the sauna heater or control components to direct water spray

1.3. SHOWER HEAD

Never install a shower head above the sauna heater

1.4. FREQUENT HIGH LIMIT SWITCH FAULTS

If the manually resettable temperature-limiting control trips frequently, a qualified serviceman should be contacted

1.5. FIRE PREVENTION

CAUTION: AVOID A FIRE, DO NOT PLACE COMBUSTIBLE MATERIAL ON SAUNA HEATER
ATTENTION : ÉVITEZ LES INCENDIES, NE PLACEZ AUCUNE MATIÈRE COMBUSTIBLE SUR LE

1.6. APPROVED CONTACTORS

CAUTION: USE ONLY A CONTACTOR APPROVED FOR 250 000 ENDURANCE CYCLES
ATTENTION : UTILISER UNIQUEMENT UN CONTACTEUR APPROUVÉ POUR 250 000 CYCLES DE

1.7. MAINTENANCE PROGRAM

The owner must implement a maintenance program for the sauna heater and inspect the sauna heater at the end of each day to ensure the sauna heater is turned off

2. GENERAL SPECIFICATIONS

Electrical wiring and hookup should be done only by a certified electrician. Electrical connection by a non-certified person voids the warranty. Never install electrical wiring such that it could be exposed to heat radiating from the sauna heater.

The following wire sizes and circuit breaker specifications are provided as a guide only. Your local electrical code may require different sizes and will supersede this guide.

SAUNA HEATERS SPECIFICATIONS							
MODEL	WATTS	VOLTAGE	PHASE	AMPS	CIRCUIT BREAKER	WIRE 90° C COPPER	CONTROL
FHSH 12	12000	208	3	33.4	50	8	TKE2-3
FHSH 15	15000	208	3	41.7	60	6	TKE2-3

MODEL	WEIGHT	CLEARANCE TO CEILING	MINIMUM ROOM SIZE	MAXIMUM ROOM SIZE	MINIMUM CEILING HEIGHT
FHSH 12	54.4 KG	1321 MM	12.74 m ³ (450 ft ³)	19.82 m ³ (700 ft ³)	2134 MM
FHSH15	54.4 KG	1321 MM	17 m ³ (600 ft ³)	25.48 m ³ (900 ft ³)	2134 MM

3. SAUNA HEATER INSTALLATION

HOMECRAFT Sauna Heaters come fully assembled.

NOTICE: REMOVE PLASTIC PROTECTIVE COATING ON THE OUTSIDE OF THE HEATER AFTER COMPLETE INSTALLATION AND ELECTRICAL WIRING BUT BEFORE START-UP.

Caution: Avoid a fire; do not place combustible material on sauna heater

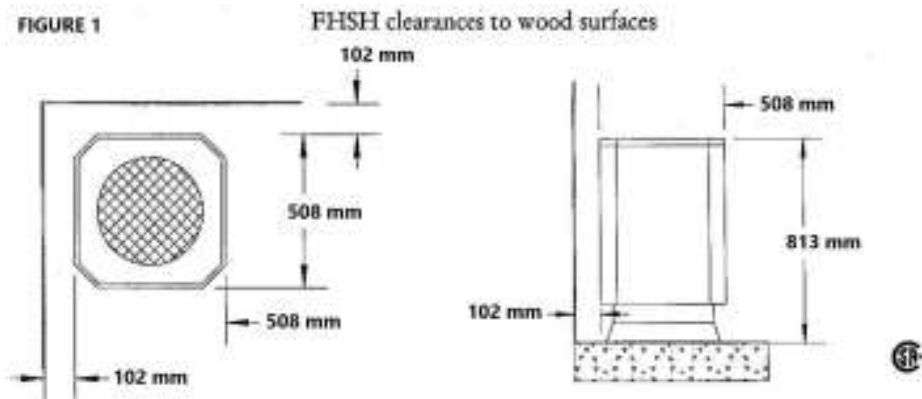
Attention: Évitez les incendies, ne placez aucune matière combustible sur le chauffe-sauna Step 1

3.1. STEP 1

Lay the heater on the floor and remove the base. Open the appropriate knock-out in the electrical box and install the sealtight connector. Connect the wiring as shown in wiring diagram. Replace the base.

3.2. STEP 2

Locate the heater a minimum of 102 mm from the nearest wall as shown in figure 1. Anchor the base of the



heater to the floor by inserting fasteners (not supplied) through the 4 holes in the flange of the heater base.

3.3. STEP 3

Fill the heater rock basket with the igneous rock provided. **Note:** This sauna heater should not be operated without the recommended quantity of rocks. **ENSURE PROPER AIRFLOW AROUND THE ROCKS. THIS IS THE MOST COMMON CAUSE OF TEMPERATURE HIGH LIMIT SWITCH TRIPPING.**

Never operate the heater without rocks. Ensure that the sauna rocks are not packed together too tightly in the rock basket. Cool air is entering the heater at the bottom, being heated by the elements, and rising through the top of the heater. If airflow is impeded due to rock placement, superheated air will build up inside the heater resulting in the Temperature High Limit Switch tripping.

When installing rocks, place the first layer of rocks scattered over the screen leaving approximately 50% of the screen exposed.

Place each additional layer of rocks across the gaps so there will be good airflow. Stack the rocks loose and high, **NOT** tight and low. Use all rocks provided.



3.4. STEP 4

The thermostat temperature sensor should be mounted inside the sauna room at the location shown in FIGURE 2. If the sensor bulb is not positioned correctly, tripping of the high limit switch will occur.

3.5. STEP 5

A protective cover is supplied for the sensor bulb as shown in FIGURE 5. Use only **HEMECRAFT'S** Sensor Bulb Cover Kit. **ENSURE GOOD AIR CIRCULATION AROUND THE SENSOR BULB.**

3.6. STEP 6

REMOVE THE PLASTIC PROTECTIVE "SKIN" COVERING THE HEATER BEFORE STARTING. The guard rail as shown in FIGURE 3 can now be installed.

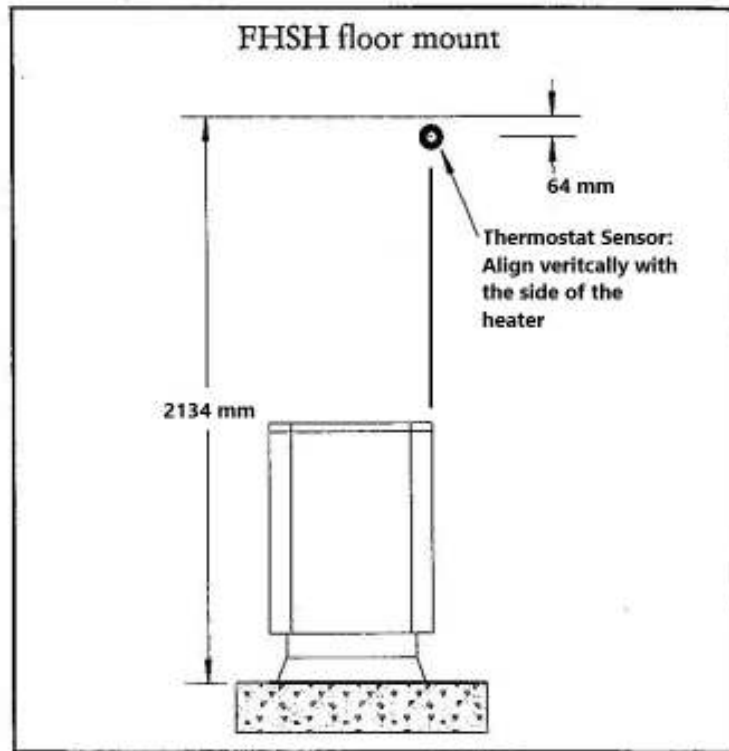


FIGURE 2

3.7. STEP 7

After the heater and control installation is completed, the heater should be turned on high for one hour to "settle in" the heater. This allows any rocks that have cracks or fault lines to break and any protective coating remaining on the elements will burn off as well. This is normal. Do not enter the sauna room during this initial start-up.

3.8. STEP 8

The owner must implement a maintenance program for the sauna heater and inspect the sauna heater at the end of each day to ensure the sauna heater is turned off.

4. SAUNA ROOM VENTING

Proper venting and positioning of sauna vents will prevent nuisance tripping of the High Limit Temperature Switch and will also result in a more comfortable sauna experience. Ideally, intake and exhaust vents are placed on opposite walls. DO NOT use any powered intake/ exhaust fans.

HEMECRAFT Vented Doors come with an exhaust vent installed whereas the **HEMECRAFT** Window Door do not have a vent installed in the door. **HEMECRAFT** manufactured doors are intentionally provided with a gap for airflow under the door. If you choose to keep the door threshold in place the gap will be approximately $\frac{3}{4}$ " or you can choose not to install the door threshold, which would then leave a gap of about $1 \frac{1}{2}$ ".

You may decide to install wall vents for air intake and exhaust. The **HEMECRAFT** Wall Intake Vent is has no sliding doors to control air flow through the louvers. Where possible, a Wall Intake Vent should be installed below the sauna heater. When opting to install a Wall Intake Vent, the gap below the door should be kept to $\frac{3}{4}$ " to prevent excessive air exchange which could result in nuisance High Limit Temperature Switch tripping.

HEMECRAFT Wall Exhaust Vents are provided with sliding doors to control air flow through the louvers. Placement of a wall mounted exhaust vent is important. This vent is ideally installed on a wall opposite to the air intake, at a height no higher than the upper sauna bench and can be positioned under the upper bench,

out of sight. Installing the vent any higher than this will cause too much heated air to be lost, resulting in nuisance tripping of the High Limit Temperature Switch.

Refer to **MECRAFT** Sauna Kit and Door Instructions for more detailed installation instructions regarding framing, etc.

5. SAUNA LIGHTS

Sauna lights should be approved for this use and in a sealed tight vapour-proof housing. Sauna lights must be at least 305 mm (12 inches) distance horizontally from the edge of the sauna heater. Switches for the sauna lights must be located and operated from outside the sauna room. Do not install lights over the sauna heater.

6. MANUAL SAFETY SWITCH

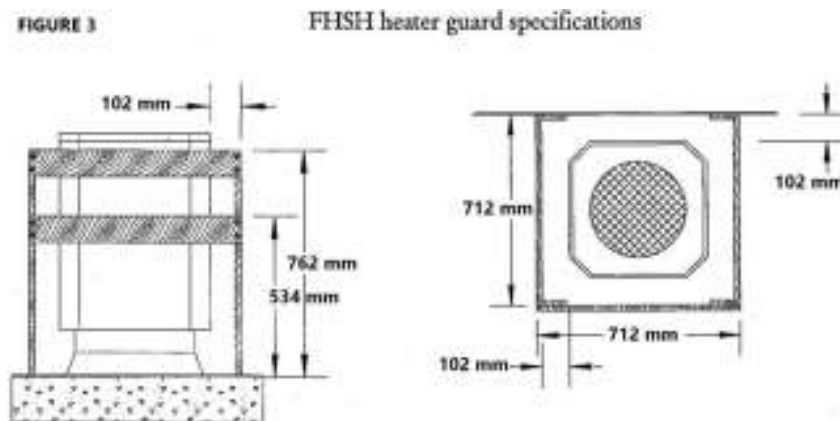
All **MECRAFT** sauna heaters have a thermal safety switch to prevent overheating. If the sauna heater switches off due to an abnormal operating condition, consult the Troubleshooting Guide at the end of this manual. Let the heater cool down then reset the safety switch by pressing the red safety switch stem located in the small hole on the front face of the heater, down near the bottom of the heater, in the center of the CSA sauna heater specification label. If the “reset safety switch” trips frequently, please contact either a qualified serviceman or contact **MECRAFT** directly.

7. SHOWER HEADS

Never install shower heads or water spray equipment above a sauna heater. Never subject the sauna heater or control components to direct water spray. Always use a sauna bucket and ladle to put water on the sauna rocks.

8. HEATER GUARD RAIL

A wooden guard rail made of Western Red Cedar should be installed around your sauna heater. This guard rail is meant to prevent anyone brushing up against the side of the heater. Be sure to maintain the clearances indicated in FIGURE 3. You should use either 1” x 4” or 2” x 4” material ensuring the guard is securely anchored to the wall and cannot be inadvertently moved.



9. ELECTRICAL COMPONENTS

Please note the following:

- Electrical wiring and hook-up should only be done by a certified electrician. Electrical connection by a non-certified person voids the heater warranty.

All wiring to the sauna heater and accessories must be routed away from any direct radiation from the sauna heater

Digital Control for FSHH Model – 208 volt - Three Phase Heaters

We have supplied a Digital Wall-Mount Control Panel for your sauna heater. This control is precise and offers features for the safe operation of your sauna heater. The wall control is a Class II 24 volt circuit and should not require a GFI breaker. Be sure to check with your local inspection authority.

You will require a 2-gang electrical box to house the digital wall-mount control panel. This box should be mounted in the outside wall of the sauna. All sauna controls and room light switches must be operated from outside the sauna.

All wiring to the sauna heater and accessories must be routed away from any direct heat radiating from the sauna heater. Install the control box on the outside of the sauna room in a location that is readily accessible for maintenance. Do not install any electrical receptacles inside the sauna room.

This control consists of the following components:

- A. A "Relay Control Box" containing a printed circuit board and a magnetic contactor that is prewired.
- B. A digital "Wall Control Panel" that mounts to a 2-gang electrical box (supplied by owner) by which you set your time and temperature
- C. A package containing wire, temperature sensor, electrical connectors, , and 4 Faceplate screws required for installation

Please refer to the enclosed wiring schematic which clearly shows the path of the wiring

10. RELAY CONTROL BOX INSTALLATION

The "Relay Control Box" contains a magnetic contactor and printed circuit board. The Relay Control Box can be surface mounted or flush wall mounted. This box needs to be mounted in a location that you can access should servicing be required. Note that 3658 mm (12 feet) of 18/4 wire is supplied with this control for connecting the Relay Control Box to the Wall Control Panel so be sure to keep within this distance.

Caution: Use only a contactor approved for 250,000 cycles

Attention: Utiliser uniquement un contacteur approuvé pour cycles ce fonctionnement

Connect the 18/4 wire to the appropriate connections in the Relay Control Box.

If more than the supplied 18/4 wire is needed for your installation, you can order additional wire from **HEMECRAFT** or purchase 18/4 wire locally. **Do not splice onto the 12 foot length of 18/4 wire.**

Be sure to connect colored wires consistently between the Relay Control Box and the Wall Control Panel as per the wiring diagram.

11. STEP 4 TEMPERATURE SENSOR INSTALLATION

11.1. STEP 1

Attach the Temperature Sensor in the location indicated with the supplied connectors to the 3658 mm (12 foot) length of 18/2 wire. If you require a longer distance between the sensor and the Wall Control Panel, buy a new continuous length of 18/2 wire and attach the sensor to it. **DO NOT splice onto the wire supplied.**

11.2. STEP 2

Be sure to run the 18/2 wire inside the insulated stud space in the sauna wall.

11.3. STEP 3

Be sure to leave a little slack in the 18/2 wire in the stud wall. Strip about 152 mm (6") from the outer casing of the 18/2 pair, leaving the protective casing on the individual leads. This will make it easier to attach the 18/2 wires to the sensor leads, and gives more flexibility when pushing any excess wire back into the wall.

11.4. STEP 4

The sensor wire should come out of the wall into the sauna room through a 5/8" diameter hole so the sensor is positioned over the heater according to the heater instructions (See Figure 2.)

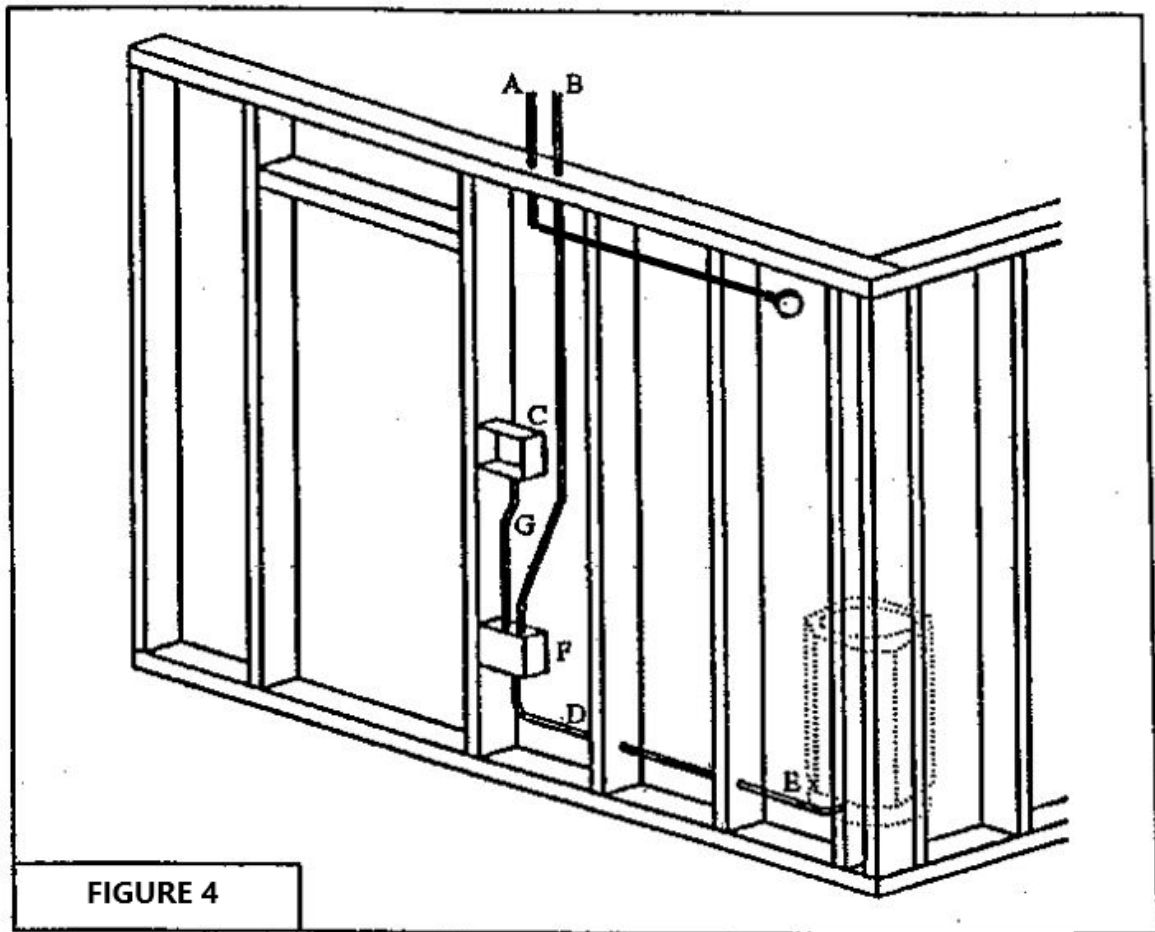


FIGURE 4

- A) Temperature Sensor
- B) Power Supply from Breaker Panel
- C) Electronic Touchpad Control
- D) Line out from Relay Control Box to Heater
- E) Heater
- F) Relay Control Box
- G) Line out from Relay Control Box to Digital Touch Pad Control

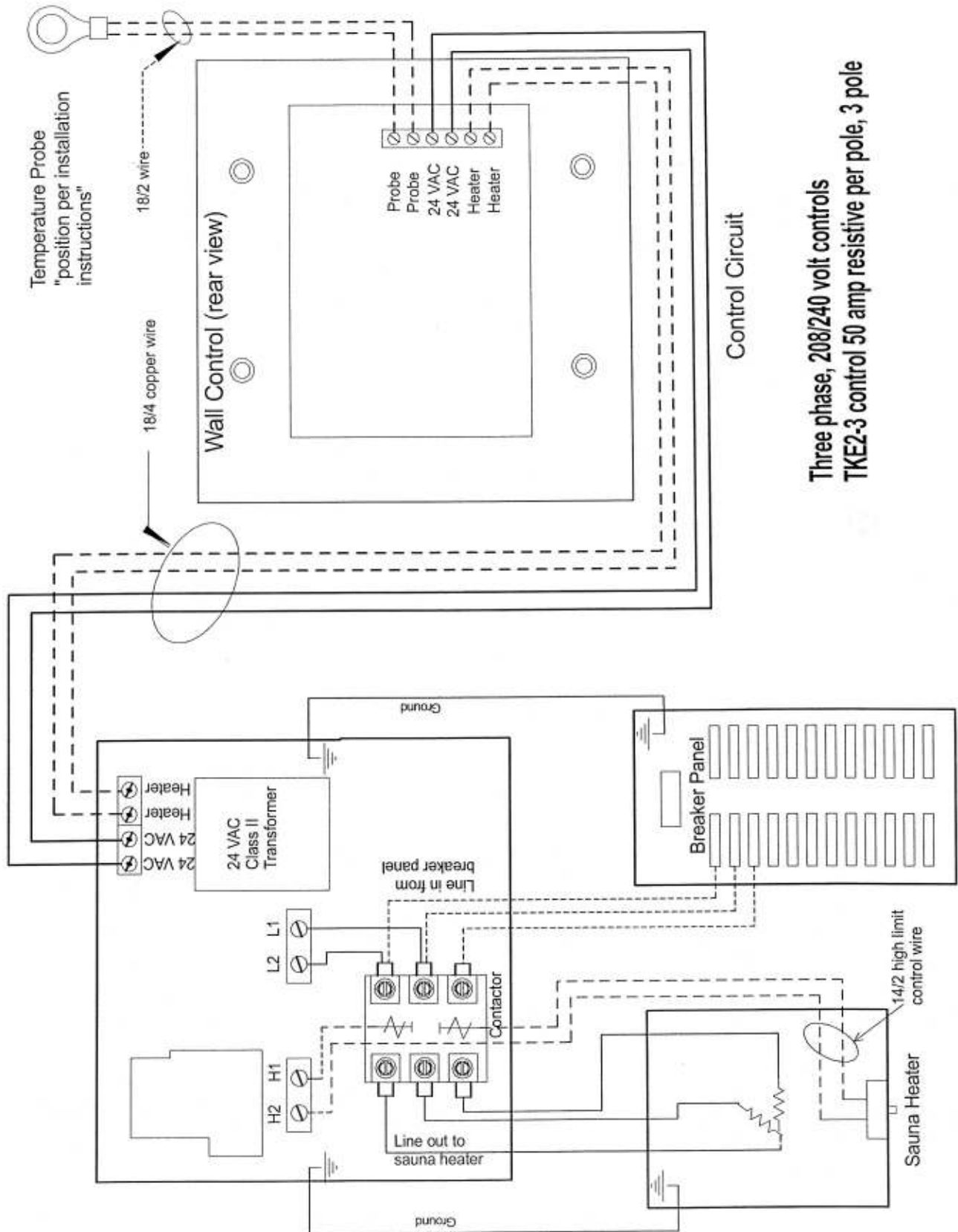
11.5. STEP 5

Do not hide or bury the sensor behind a cover other than the one supplied with this control. Incorrect installation of the sensor will negatively impact the heater operation, cause nuisance high limit tripping (safety device in the heater), and compromise personal and fire safety.

12. SENSOR COVER INSTALLATION

12.1. STEP 1

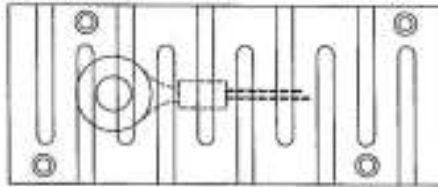
Using the supplied #6 wood screws and a flat washer, fasten the sensor to the sauna wall over the sauna heater in the prescribed position 64 mm (2 1/2") below the ceiling.



Three phase, 208/240 volt controls
 TKE2-3 control 50 amp resistive per pole, 3 pole

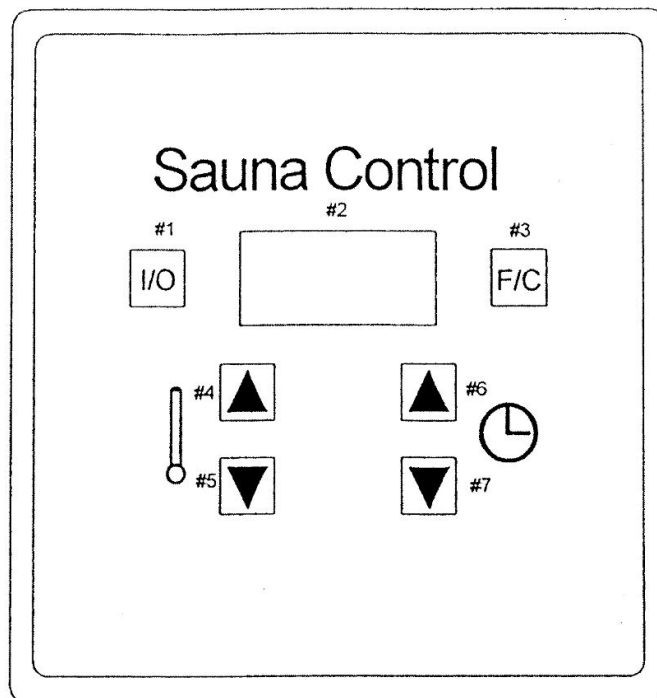
12.2. STEP 2

Fasten the sensor cover to the wall using the 4 supplied #6 wood screws, covering the sensor and taking care not to nick or cut the wires leading to the sensor. Be sure to remove the protective plastic film from the stainless steel sensor cover. The sensor cover is designed to allow for adequate airflow. It adds a nice finished look to the sensor and also protects the sensor from tampering.



13. DIGITAL TOUCHPAD CONTROL OPERATION

Refer to the diagram below when following the directions.



13.1. "OFF" DISPLAY

When the sauna is turned off the display (#2) will show "OFF"

13.2. TURN ON THE SAUNA

Press the I/O switch (#1) on the Digital Touchpad to turn on the sauna.

13.3. SELECT FAHRENHEIT OR CELSIUS

Press the "F/C" switch (#3) on the Digital Touchpad to select either Fahrenheit or Celsius.

13.4. DEFAULT SETTINGS

The default setting when the sauna is first turned on is 80° C (176°F) for the temperature, and 50 minutes for the timer

13.5. CHANGE THE TEMPERATURE

To change the temperature, press and hold

for 3 seconds either the up/ increase switch (#4) or the down/ decrease switch (#5), and then release. This will then allow you to scroll to the desired temperature using either of these switches again. The temperature setting limits are 25°C to 90°C

13.6. CHANGE THE TIMER

To change the timer, press and hold for 3 seconds either the up/ increase switch (#6) or the down/ decrease switch (#7), and then release. This will then allow you to scroll to the desired time using either of these switches again. The maximum timer setting is 60 minutes.

13.7. DEFAULT DISPLAY

When sauna is turned on and the temperature and timer are not being adjusted, the LED display returns to the default display which shows the actual room temperature.

13.8. DISPLAY THE SET TEMPERATURE

To display the currently “set” temperature, momentarily press and release either temperature setting switch (#4 or #5). The “set” temperature will display for 3 seconds and then the LED display will default back to the current room temperature.

13.9. DISPLAY THE TIME

To display the time remaining on the timer setting, momentarily press and release either timer setting switch (#6 or #7). The time remaining on the timer will be displayed for 3 seconds and then the LED display will default back to the current room temperature.

14. **NOTE ON INSTALLATION IN A PUBLIC SAUNA*****

Some facilities have experienced vandalism of the control sensor. The **HEMOCRAFT** sensor cover is designed to give maximum security against vandalism. If the sensor needs to be replaced, it may be necessary to “fish” the 18/2 wire back through the hole. This is why we suggest leaving at least 152 mm (6”) of lead wire on the 18/2 wire. Be sure when mounting the 18/2 wire in the sauna wall that the cable will not fall down and away from the hole and that there is enough slack to pull the leads through. In the event the sensor is vandalized, the safety feature of the control will disable the heater from operation.

CAUTION: In a public sauna, the sensor should be visually inspected every day to ensure that there are no obstructions and that air flows freely around the sensor.

15. TROUBLESHOOTING GUIDE

Generally, most troubleshooting is directly related to nuisance tripping of the Temperature High Limit Switch. This can be attributed to any one of a number of conditions.

If you experience a tripped Temperature High Limit Switch, allow the heater to cool down then reset the switch located in the small hole at the front, bottom of the heater in the center of the silver CSA heater identification label.

Next, carefully read through the chart below and confirm that each condition has been adequately addressed.

PROBLEM	CAUSE	SOLUTION
Sauna heater not energizing	Tripped Temperature High Limit Switch	Visually verify that the elements are not turning red when heater is turned on. Allow heater to cool down. Reset by pushing the eraser end of a pencil through the small hole at the front, bottom of the heater in the center of the silver CSA heater identification label. You will feel resistance, and with a gentle push you will feel the switch move and you will hear an audible “click” when the switch is reset.
Tripped Temperature High Limit Switch	Appropriate Heater and Control size	Confirm that the heater and control are appropriately matched to the room size. Heaters/ controls that are too small for a given room size will experience nuisance Temperature High Limit Switch tripping. Sizing charts can be found on our website at www.saunas4less.com
Tripped Temperature High Limit Switch	Ceiling too high	Do not operate the heater in rooms with ceilings over 2134 mm (7’). Rooms with ceilings over this height will experience nuisance Temperature High Limit Switch tripping

PROBLEM	CAUSE	SOLUTION
Tripped Temperature High Limit Switch	Sauna heater not energizing	Visually verify that the elements are not turning red when heater is turned on. Allow heater to cool down. Reset by pushing the eraser end of a pencil through the small hole at the front, bottom of the heater in the center of the silver CSA heater identification label. You will feel resistance, and with a gentle push you will feel the switch move and you will hear an audible “click” when the switch is reset.
Tripped Temperature High Limit Switch	Walls made of glass block	Do not build complete walls of glass block as the insulation value is not sufficient to prevent nuisance Temperature High Limit Switch tripping
Tripped Temperature High Limit Switch	Location of Temperature Sensor	The Temperature sensor MUST be located on the wall above the heater, in line vertically with the side of the Sauna Heater, and no more than 64 mm (2 1/2”) below the ceiling. Incorrect placement will result in the room not reaching the desired temperature and nuisance Temperature High Limit Switch tripping
Tripped Temperature High Limit Switch	Vents open before sauna room reaches temperature	Ensure that all intake and exhaust vents are closed when initially heating the sauna room. This will prevent the heater from overheating before the room reaches the temperature set point.
Tripped Temperature High Limit Switch	Improper placement of vents	Refer to section 4 for proper venting directions.
Tripped Temperature High Limit Switch	Incorrect sauna rock placement	THIS IS THE MOST COMMON PROBLEM. Never operate the heater without rocks. Ensure that the sauna rocks are not packed together too tightly in the rock basket. Cool air is entering the heater at the bottom, being heated by the elements, and rising through the top of the heater. If airflow is impeded due to rock placement, superheated air will build up inside the heater resulting in the Temperature High Limit Switch tripping. Allow the rocks to cool and re-place them to allow for adequate air circulation. When installing rocks, place the first layer of rocks scattered over the screen leaving approximately 50% of the screen exposed. Place each additional layer of rocks over the gaps so there will be good airflow. Stack the rocks loose and high, NOT tight and low.
Tripped Temperature High Limit Switch	Air leakage	This is a common problem. Ensure that there is no air leakage around the sauna door or windows. When the door is closed, adjust the door stop strip to seat tight against the door. With the door stop properly installed there will always be a slight air leakage. This is normal.
Tripped Temperature High Limit Switch	Poorly insulated windows	If windows have been installed in the sauna room they must not be excessive in size. They must be double or triple sealed and tempered glass. Never use single pane window due to the fact that there is too much heat loss.
Tripped Temperature High Limit Switch	Room location	The intended placement of a sauna room is to be indoors with a starting room temperature of 20°C (70°). If your sauna is outdoors, in an unheated basement, garage, or other unheated area, the sauna will take much longer to heat up. The colder the air, walls, benches, etc., the longer the heating time of the room. This will cause nuisance High Limit Switch tripping. Two solutions are: !) gradually bring your room up to temperature by beginning with lower temperature settings and letting the heater cycle on and off, then gradually increasing the temperature setting and letting the heater cycle on and off at each new temperature setting until you reach the desired temperature set point.

PROBLEM	CAUSE	SOLUTION
		2)Install a baseboard heater to maintain a constant minimum room temperature
Sauna room not reaching temperature set point	Elements Burnt out	Visually inspect the elements and ensure that each element is glowing red. If one element is dark while the others are red, further investigation is required. Visually check to see if the element that is not energizing is physically damaged/ broken. Replace as necessary.
LCD display reads "OPEN"	Temperature Sensor not connected	Inspect all terminations between the Temperature Sensor and the Digital Touch Pad

16. HOME~~CRAFT~~ **HEATER GUARANTEE**

Every **HOME**~~CRAFT~~ sauna heater has been carefully inspected and packaged prior to shipping and we guarantee to correct or replace, at our discretion, any defect caused by faulty material or workmanship. This guarantee applies as follows:

RESIDENTIAL installations of sauna heaters:

LIFETIME limited warranty against manufacturers’ defects Controls: warranted for one year from date of purchase.

Note: heating elements and high-limit switch are regarded as “consumable” items and are excluded from this warranty.

COMMERCIAL installations:

Sauna heater and controls: one year from the date of purchase.

Note: heating elements and high-limit switch are regarded as “consumable” items and are excluded from this warranty.

SAUNA ACCESSORIES

Accessories manufactured by **HOME**~~CRAFT~~ are covered for 1 year from the date of purchase.

This guarantee does not cover faults or defects caused by misuse, negligence, improper installation, installation in high corrosion areas, alterations, careless handling, damage in shipping, acts of God, or other circumstances beyond the control of **HOME**~~CRAFT~~ Manufacturing Corporation or its authorized agents.

No reimbursement by **HOME**~~CRAFT~~ will be allowed for costs incurred to diagnose, remedy, or replace parts without prior written agreement.

Electrical wiring and hook-up should only be done by a certified electrician. All equipment must be installed according to our heater installation instructions observing the required clearances of the sauna heater and the proper position of the temperature sensor probe. Our electrical connection instructions are a guide only and local electrical codes will supersede our instructions. Electrical connection by a non-certified person voids the sauna heater and control guarantee. We reserve the right to decline responsibility where repairs or replacements have been attempted by others.

The complete sauna unit must be returned to one of our Factory Service branches or to our factory with transportation charges prepaid. A return authorization must be obtained from **HOME**~~CRAFT~~ Manufacturing before returning any product.

(Please call us before returning any product, we can often trouble-shoot difficulties over the phone.)

No other verbal or written guarantee is applicable to our products.

End of Instructions