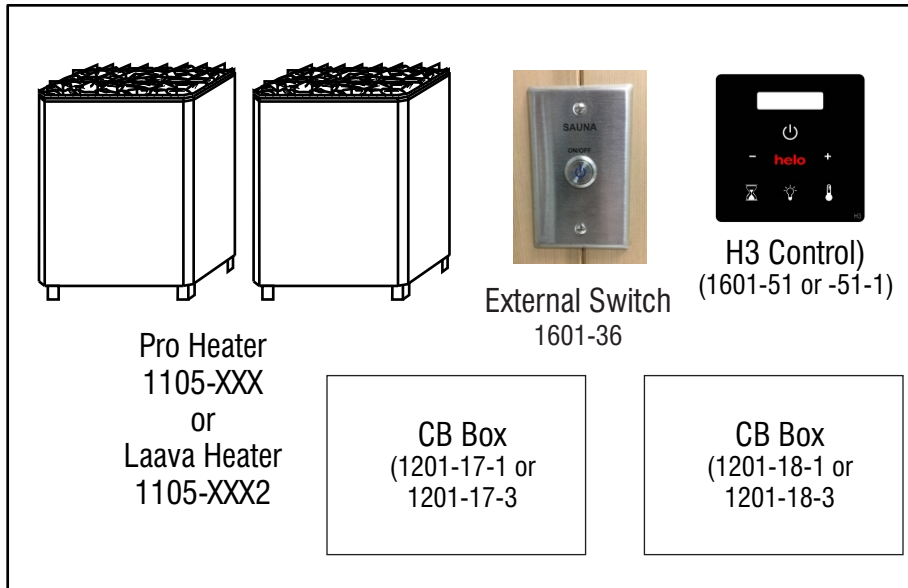


# INSTALLATION AND OPERATING INSTRUCTIONS



Dual Pro 10.5, 12.0, & 14.4 (Model # 1105-105, 1105-120 & 1105-140)  
Laava 10.5, 12.0, & 14.4 (Model # 1105-1052, 1105-1202 & 1105-1402)  
& CB 17-1 (1201-17-1) or CB 17-3 (1201-17-3) with CB 18-1 (1201-18-1) or CB 18-3 (1201-18-3) & H3 Control (Model # 1601-51 or 1601-51-1)  
And / Or External Switch (Type # 1601-36)

Read all instructions carefully before installation. Please leave all instructions and warranty with the owner.

## WARNING

*Prolonged exposure to elevated temperatures is capable of inducing hyperthermia. Hyperthermia occurs when the internal temperature of the body reaches several degrees above the normal body temperature of 98.6°F. The symptoms of hyperthermia include an increase in the normal temperature of the body, dizziness, lethargy, drowsiness, and fainting. The effects of the hyperthermia include failure to perceive heat, failure to recognize the need to exit the room, unawareness of impending hazard, fetal damage in pregnant women, physical inability to exit the room and unconsciousness.*

## WARNING

*The use of alcohol, drugs, or medication is capable of greatly increasing the risk of fatal hyperthermia.*

## SECTION 1: GENERAL INFORMATION

These heaters are ETL approved by Intertek for permanent installations. All wiring must be performed in accordance with the NEC and local codes. See **Table 1** and **Table 2** for wire and room size requirements.

These heaters are free standing, secured to the floor, with separate contractor box and low voltage control.

## WARNING

***Do not take a sauna if using alcohol, drugs or medications.***

***Pregnant women or persons with poor health should consult their physician before using any sauna.***

***Caution fire hazard: Do not use the sauna room for drying clothes, bathing suits, etc. Do not hang towels above heater or place any object other than the rocks supplied on the heater. If any darkening of the wall around the heater is noticed discontinue sauna use immediately.***

***Inspect sauna regularly for required maintenance to heater, control and benches. Replace wood surfaces which show any signs of deterioration.***

***The heater gets extremely hot during operation and should not be touched or burns may result.***

***Minors should be adequately supervised whenever near a hot or warming sauna.***



## SECTION 2: MOUNTING OF SAUNA HEATER

Carefully locate the heaters according to the dimensions shown in Diagram 1. Level both heaters with the provided feet.

## SECTION 3: PLACING OF ROCKS

The rocks supplied with the heater have been chosen to provide the best heater performance. Use of any other type of rock may void the heaters warranty. Never operate the heater without rocks in place! Rinse the rocks with water before placing in the heater. Place the larger rocks at the bottom and the smallest at the top. Place the rocks loosely so that the air can circulate through the heater. Packing the rocks too tightly may cause the heater high limit switch to trip. The rocks must fully cover the heating elements. Attach the guard with the screws provided.

## SECTION 4: ELECTRICAL HOOK-UP

Electrical installation must be made by a licensed electrician in accordance with the National Electrical Code and local regulations.

The primary heater is intended for use with CB 17 Box and the H3 Control only. The secondary heater is intended for use with CB 18 Box. Use of any other control will void the warranty and safety listing. The control must be installed in a dry location outside the sauna room.

The model CB 17-3/CB18-3 contactor boxes are required for use with 3 phase heaters, the model CB 17-1/CB 18-1 contactor boxes are required for use with single phase heaters. To determine the correct wire size, refer to Table 1. Use copper supply wire only, suitable for minimum 90 degrees C. The heaters must be grounded! See the heater diagrams for proper connections. The location must be selected to allow installation of the thermostat's temperature sensor shown in Diagram 1. (30 foot sensor wire supplied.)

Contactor Boxes should be located outside the sauna room. It should be surface mounted with 4 screws to a wall. Refer to Diagram 1 for details.

## SECTION 5: TEMPERATURE SENSOR

Route the sensor wire from the CB 17 contactor box to the sensor location on the ceiling. It may be necessary to drill holes to string the wire through the studs or ceiling joists. Route wire harness into contactor box and connect CN 4 connector. **Ensure low voltage wiring and high voltage wiring is separated by a minimum of 4" or an electrical barrier.**

With a flat tip screwdriver, unsnap sensor cover from sensor. Mount sensor on the ceiling according to Diagrams 1, 2, 3, & 4.

## SECTION 6: HEATER SCREEN (GUARD RAIL)

Install a wooden heater guard to prevent the sauna bather from accidentally touching the sauna heater. Install the heater guard rail with the height clearances and dimensions shown in Diagram 1.

## WARNING

*Fire sprinkler systems used inside any sauna room should be properly rated for sauna room temperatures.*

*Do not pour chlorinated pool or spa water on heater. Excessive water use on heater may cause damage and void warranty.*

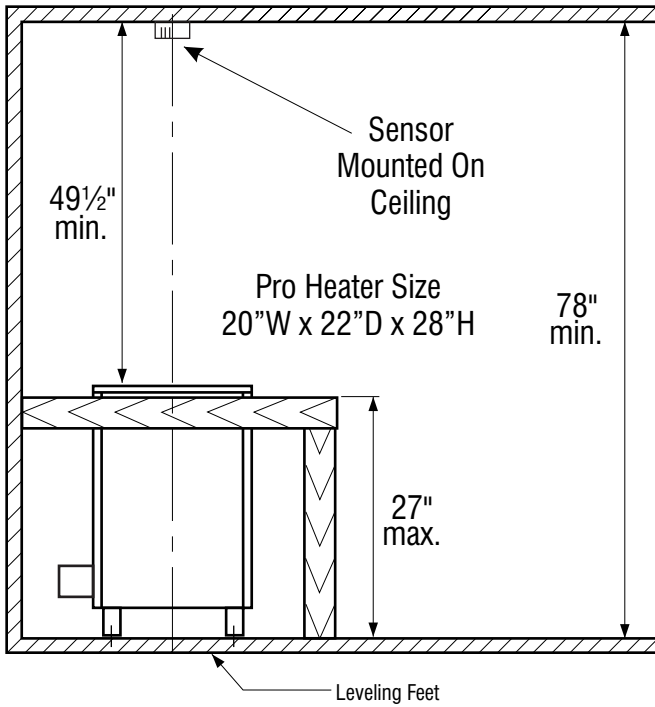
*Do not install a shower in sauna room.*

*Electric Shock Hazard - High voltage exists within this equipment. There are no user serviceable parts in this equipment. All installation and service to this equipment should be performed by qualified licensed personnel in accordance with local and national codes.*

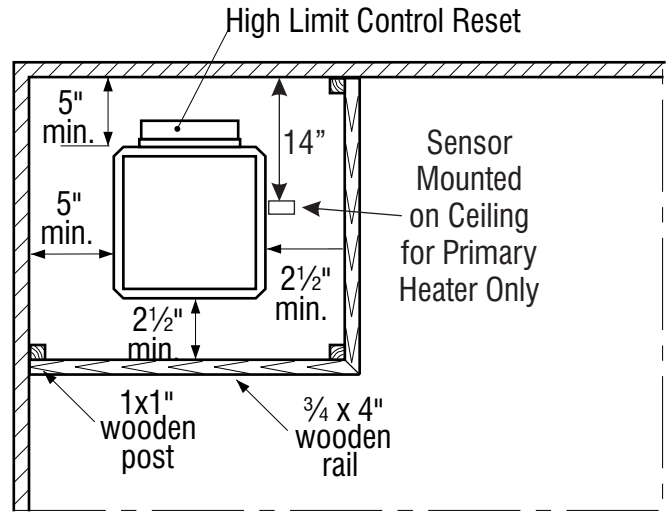
*Do not construct sauna room so as to restrict air flow through the bottom of the heater.*

*Packing the rocks too tightly may cause the heater high limit switch to trip.*

DIAGRAM 1



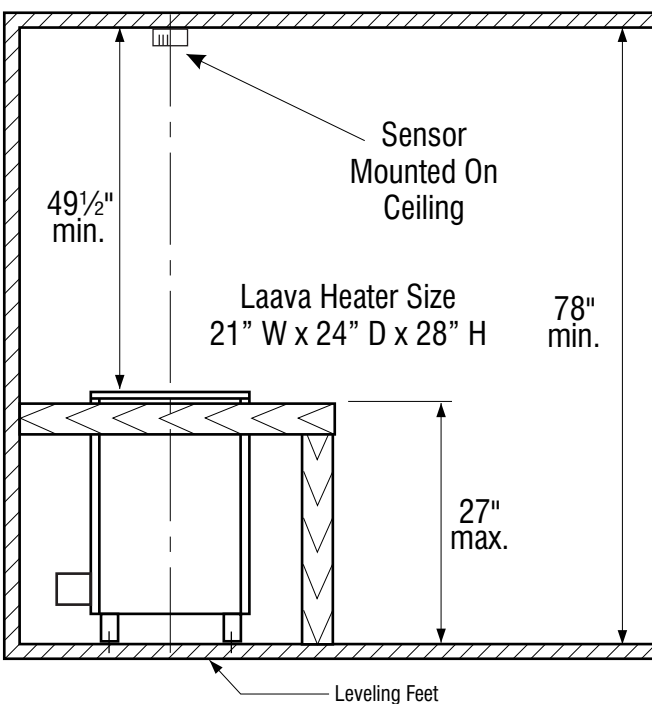
**Pro Heater  
Model # 1105-XXX**



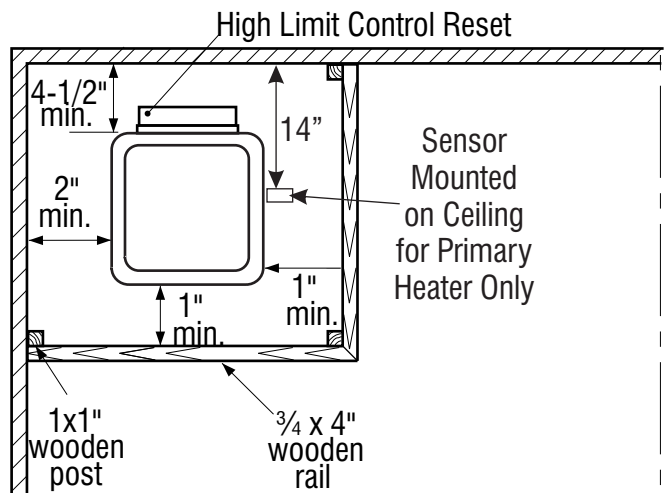
CAUTION: Avoid fire, Do Not Place Combustible Material on sauna heater / ATTENTION: Evitez les Incendies, Ne Placez Aucune Matière Combustible Sur Le Chauffe-saun



**OBSERVING MINIMUM DISTANCES IS REQUIRED TO REDUCE THE RISK OF FIRE**

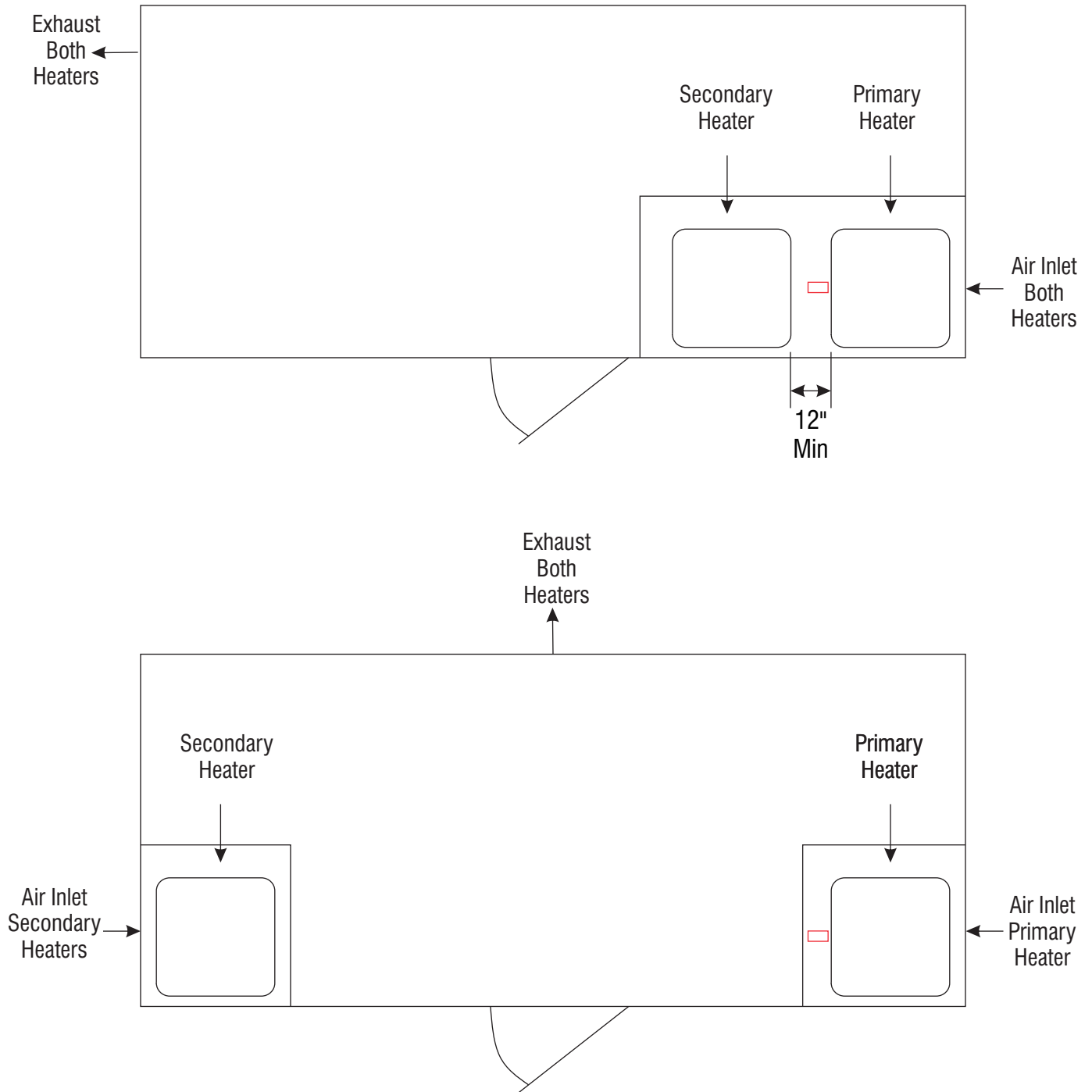


**Laava Heater  
Model 1105-XXX2**

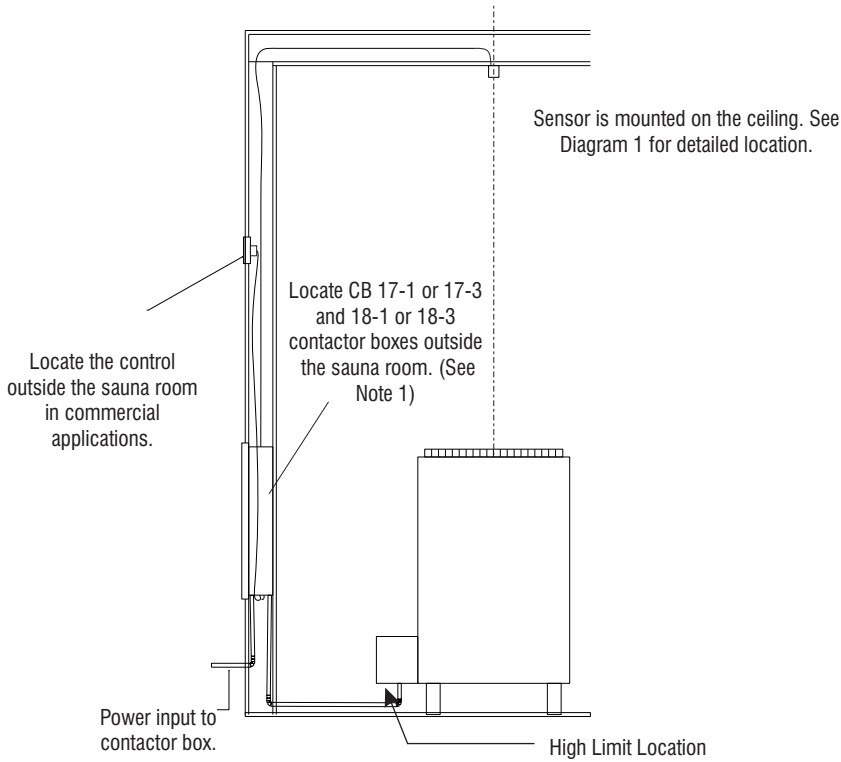


# INSTALLATION AND OPERATING INSTRUCTIONS

DIAGRAM 1 Cont.



## DIAGRAM 2



All wiring for sauna system or accessories should be routed inside the walls or away from the high temperature air from the sauna heater.

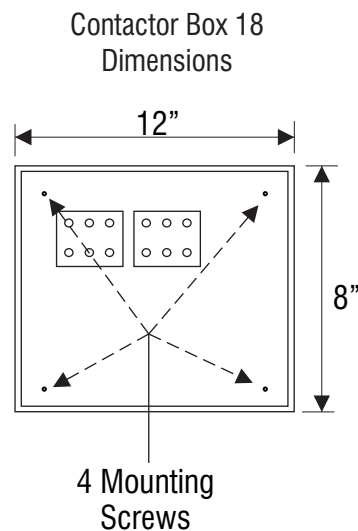
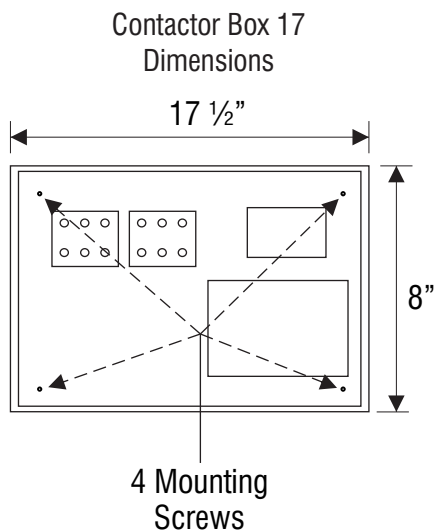
### High Limit Reset



Note 1: The contactor box may be mounted anywhere outside the sauna room.

A location should be selected so the front cover is accessible for service and the noise from the contactors pulling in will not be a nuisance.

Provide a service loop into the sauna room to the proposed heater location.



# INSTALLATION AND OPERATING INSTRUCTIONS

**TABLE 1**

**Primary Heater Wiring Information Pro/Laava 10.5, 12.0, & 14.4 with CB 17-1 and H3 (1601-51)**

Heater Model / Product Number	KW	Minimum Room		Maximum Room		Phase	VAC	* Amps	Contactor Box Model	Copper Wire Size 90° C					
		Floor Area	Wall Height	Volume Cu.Ft.	Wall Height					Volume Cu.Ft.	Control Circuit to Contactor Box	** Breaker # and Size	Heater Power to Contactor Box	Contactor Box to Heater	High Limit wire from Contactor Box to Heater
Pro 10.5 (1105-105) or Laava 10.5 1105-1052	10.5	48 sq. ft.	78"	780	96"	1270	1	208	50.5	CB 17-1 1201-17-1	1 x 15 Amps	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
							1	240	43.8		1 x 15 Amps	2 x 30 Amps	4 #10AWG +GR	4 #10AWG +GR	(Factory Supplied)
							3	208	29.1	CB 17-3 1201-17-3	1 x 15 Amps	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
							3	240	25.3		1 x 15 Amps	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
Pro 12.0 (1105-120) or Laava 12.0 1105-1202	12.0	63 sq. ft.	78"	1120	96"	1550	1	208	57.7	CB 17-1 1201-17-1	1 x 15 Amps	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
							1	240	50.0		1 x 15 Amps	2 x 30 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
							3	208	33.3	CB 17-3 1201-17-3	1 x 15 Amps	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
							3	240	28.9		1 x 15 Amps	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
Pro 14.0 (1105-140) or Laava 14.0 1105-1402	14.4	78 sq. ft.	78"	1300	96"	2000	1	208	69.2	CB 17-1 1201-17-1	1 x 15 Amps	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
							1	240	60.0		1 x 15 Amps	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
							3	208	40.0	CB 17-3 1201-17-3	1 x 15 Amps	1 x 50 Amps	3 #6AWG +GR	3 #6AWG +GR	(Factory Supplied)
							3	240	34.6		1 x 15 Amps	1 x 50 Amps	3 #6AWG +GR	3 #6AWG +GR	(Factory Supplied)

\* Total amp draw of combined circuits and accessory circuits.

\*\* Single phase heaters are supplied power from two circuits which must be grouped and marked per NEC.

**Note:** System needs a separate 120 volt circuit to power the contactor box.

Primary Heater kW	Secondary Heater kW	Room Total kW
10.5	10.5	21.0
12.0	12.0	24.0
14.4	14.4	28.8

**Combinations for Heaters:** 21.0 kW, 24.0 kW, or 28.8 kW.

**Room sizing:** Add the two heater specifications together.

**Note:** Both heaters need to be the same size kW to balance in the room.

## TABLE 2

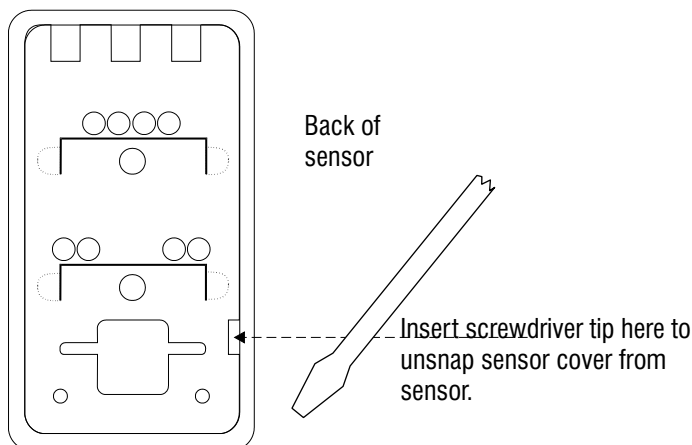
### Secondary Heater Wiring Information Pro/Laava 10.5, 12.0, & 14.4 with CB 18-1 and H3 (1601-51)

Heater Model / Product Number	KW	Phase	VAC	* Amps	Contactor Box Model	** Breaker # and Size	Copper Wire Size 90° C		
							Secondary Heater Power to CB 18 Box	CB 18 Box to Secondary Heater	High Limit wire from CB 18 Box to Heater
Pro 10.5 (1105-105) or Laava 10.5 1105-1052	10.5	1	208	50.5	CB 18-1 1201-18-1	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
		1	240	43.8		2 x 30 Amps	4 #10AWG +GR	4 #10AWG +GR	(Factory Supplied)
		3	208	29.1	CB 18-3 1201-18-3	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
		3	240	25.3		1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
Pro 12.0 (1105-120) or Laava 12.0 1105-1202	12.0	1	208	57.7	CB 18-1 1201-18-1	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
		1	240	50.0		2 x 30 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
		3	208	33.3	CB 18-3 1201-18-3	1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
		3	240	28.9		1 x 40 Amps	3 #8AWG +GR	3 #8AWG +GR	(Factory Supplied)
Pro 14.0 (1105-140) or Laava 14.0 1105-1402	14.4	1	208	69.2	CB 18-1 1201-18-1	2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
		1	240	60.0		2 x 40 Amps	4 #8AWG +GR	4 #8AWG +GR	(Factory Supplied)
		3	208	40.0	CB 18-3 1201-18-3	1 x 50 Amps	3 #6AWG +GR	3 #6AWG +GR	(Factory Supplied)
		3	240	34.6		1 x 50 Amps	3 #6AWG +GR	3 #6AWG +GR	(Factory Supplied)

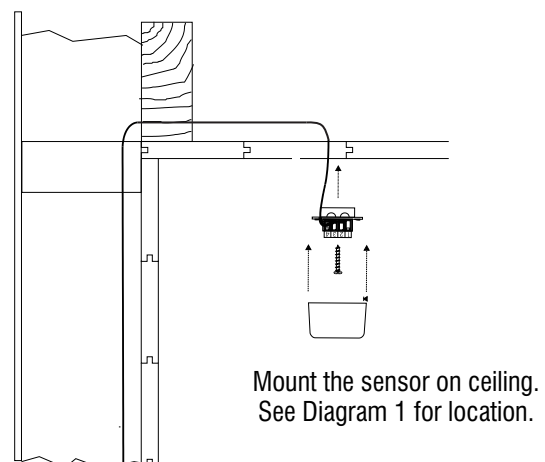
\* Total amp draw of combined circuits and accessory circuits.

\*\* Single phase heaters are supplied power from two circuits which must be grouped and marked per NEC.

### DIAGRAM 3

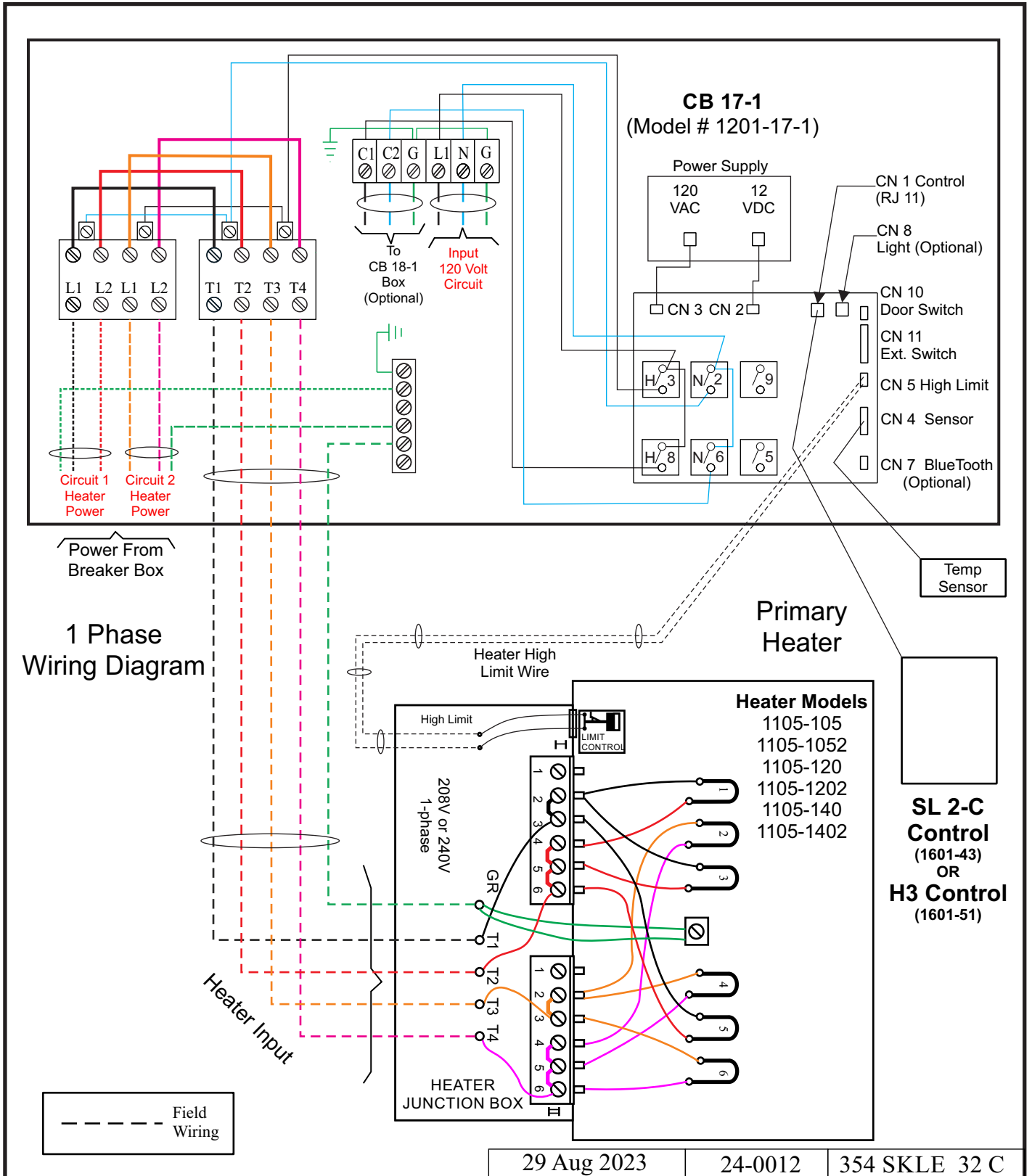


### DIAGRAM 4



## DIAGRAM 5

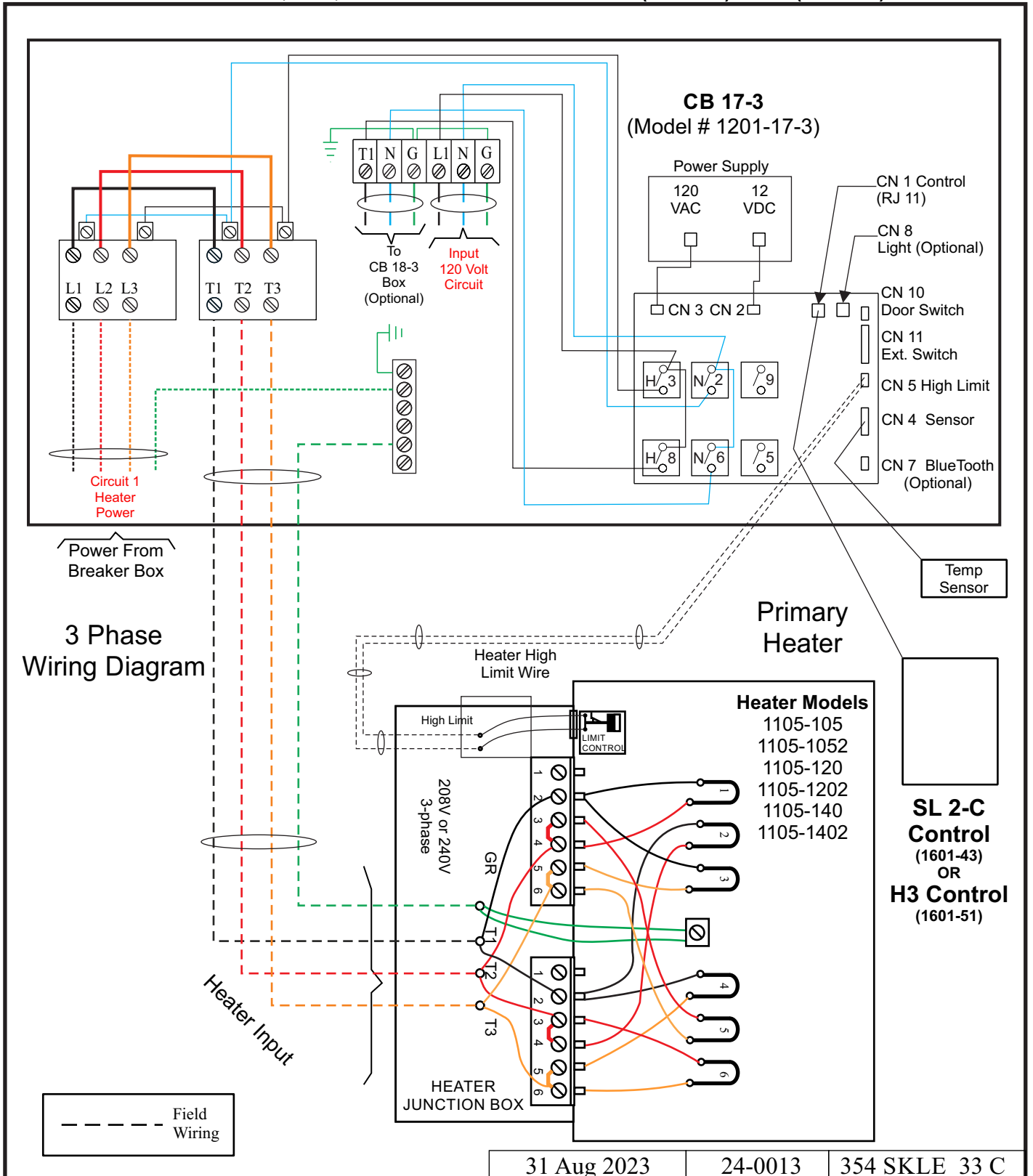
### WIRING DIAGRAM: CONTROL AND HEATER MODELS Pro/Laava 10.5, 12.0, & 14.4 with CB 17-1 and SL2-C (1601-43) or H3 (1601-51)





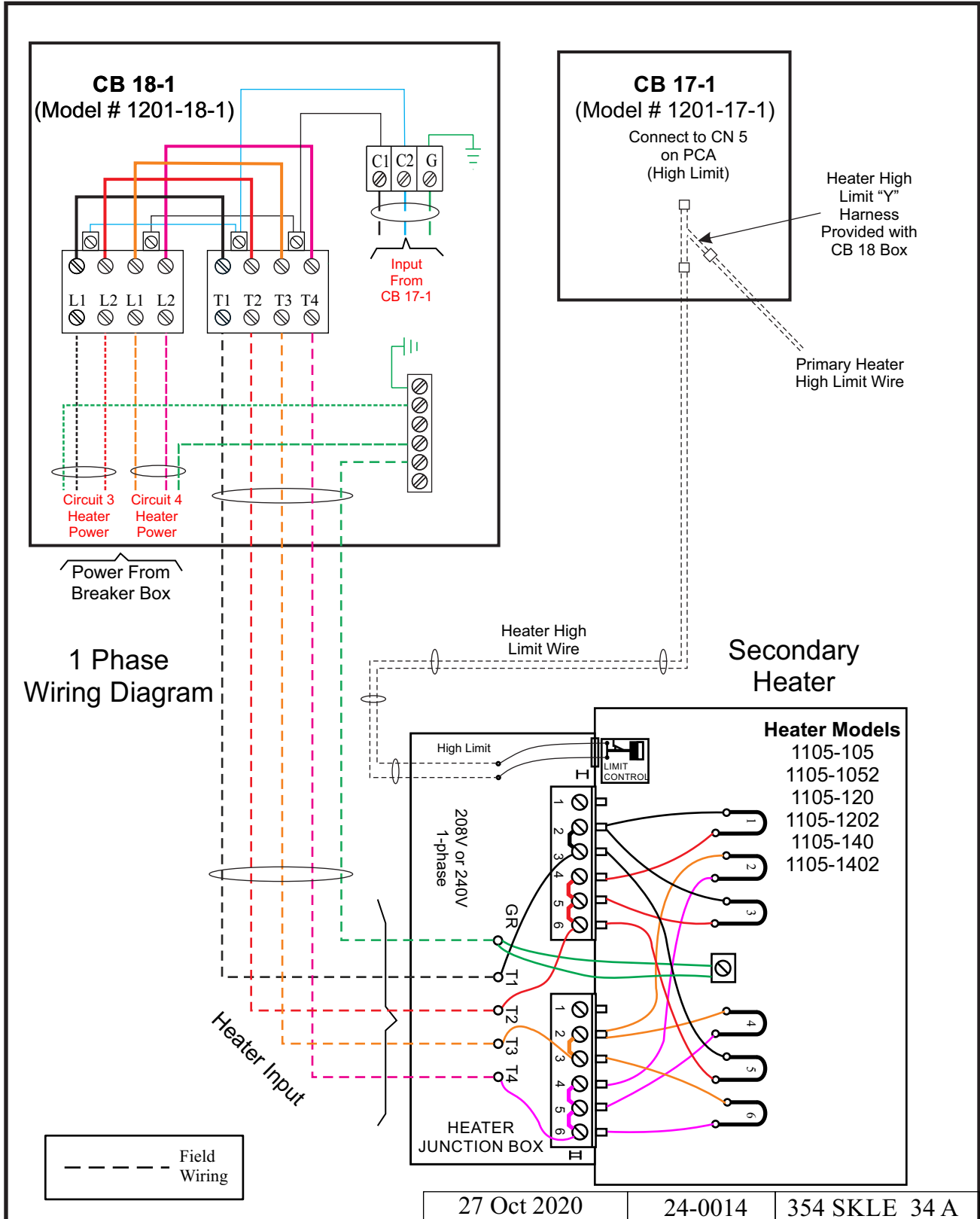
## DIAGRAM 5, Continued

### WIRING DIAGRAM: CONTROL AND HEATER MODELS Pro/Laava 10.5, 12.0, & 14.4 with CB 17-3 and SL2-C (1601-43) or H3 (1601-51)



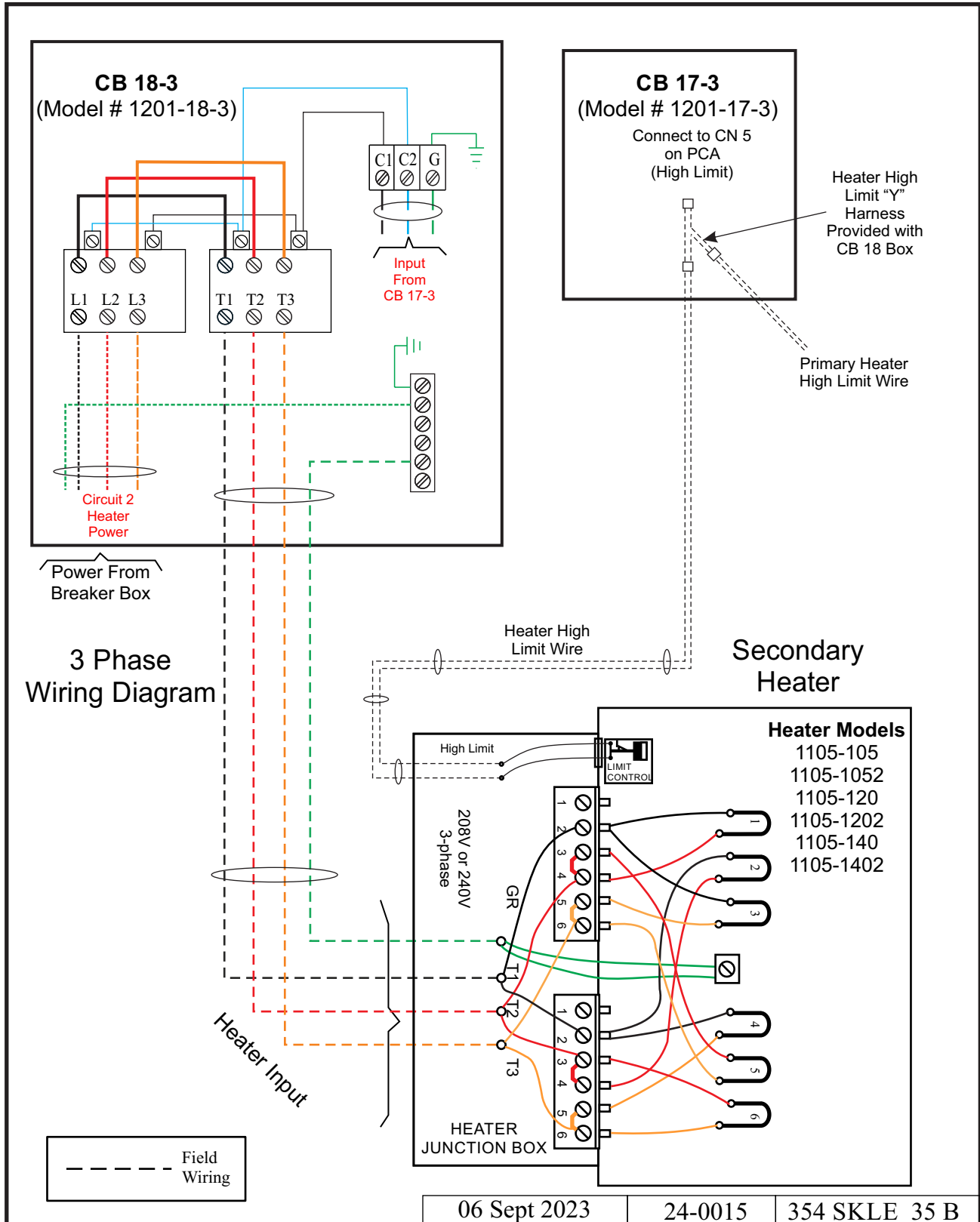
## DIAGRAM 5

**WIRING DIAGRAM: CONTROL AND HEATER MODELS  
Pro/Laava 10.5, 12.0, & 14.4 with CB 18-1 and CB 17-1 (1201-17-1)**



## DIAGRAM 5

**WIRING DIAGRAM: CONTROL AND HEATER MODELS  
Pro/Laava 10.5, 12.0, & 14.4 with CB 18-3 and CB 17-3 (1201-17-3)**

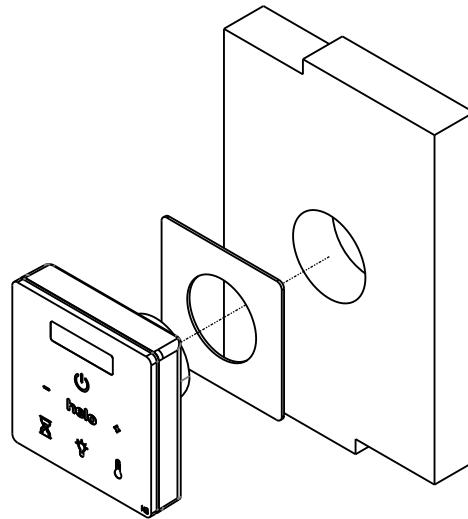


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## DIAGRAM 6: H3 MOUNTING



## SECTION 7: H3 CONTROL INSTALLATION & OPERATION


**INSTALLATION ROUGH IN** The H3 (1601-51) control can be mounted inside or outside the sauna room. (See Diagram 3) The control also can be mounted outside of the sauna room in the weather. The control is weather resistance and water resistant.

To mount the control use a 1-3/8" (35mm) hole saw to drill a hole in the wall. Route the control wire from the CB Box to the control. *Note: Use the factory supplied cable only! Do not staple through or otherwise damage the cable!*


Install the provided double side tape to the back of the control. (See Diagram 6) Connect the control cable to the back of the circuit board with the RJ11 cable and secure the control to the wall by removing the protective film on the double side tape. *Note: Ensure the surface is dust free before mounting the control to the wall!*


Connect the other end of the control cable through the electrical access hole on the bottom of the contactor box and connect it to CN1.

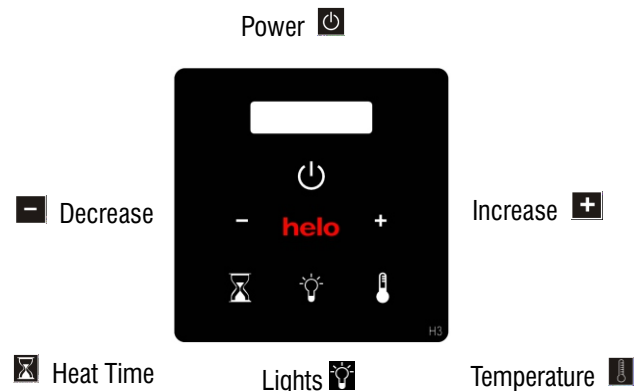
### OPERATING INSTRUCTIONS FOR TRADITIONAL SAUNA HEATER

Press the H3  icon once. The default settings for the temperature is 194°F, the bath time is 60 minutes. These settings are adjustable (as described below) from 119° to 194°. Length of sauna can be set from 0 to 60 minutes. The time delay before start can be up to 24 hours. Any changes are remembered by the heater for your next bath. Should the heater power be lost then restored, the settings will return to their default values.

#### SETTING THE DURATION AND TEMPERATURE


Press the  icon for time "+" or "-" icon on the H3 to increase or decrease time for desired setting. The maximum of time is 60 minutes.

Press the  icon and then press "+" or "-" icon on the H3 to increase or decrease temperature for desired setting. The maximum temperature is 194°F (90°C).



## SECTION 7: CONTROL INSTALLATION & OPERATION

Note: Typical bathing temperature is 150F to 165F displayed on the control.

LIGHTING OPERATION (Optional) H3 is capable of operating ONLY a Lighting package purchased with the system. Press the  icon to activate the lighting option. White light is the only available option. The brightness will be on display for 3 seconds. Press the “+” or “-” button to increase or decrease the light setting. The setting options are 25, 50, 75, and 100% light output.

EXTERNAL SWITCH (1601-36) is a momentary, illuminated switch provides simple ON/OFF function to your H3 Control. In a commercial environment, it is recommended that the main Sauna Control be located either in a utility closet or at the Attendant's desk so the sauna time and temperature functions can be secured from the general public. This optional external switch will provide the sauna bather with the ability to turn the sauna ON or OFF only.

When the momentary switch is activated, the power icon will illuminate in blue and activate the sauna session that has been programmed on the H3. Pressing the switch when it is illuminated will remove power to the sauna heater and end the bathing session.



**This switch cannot function as a control. It has to be connected to the system with another control.**

## WARNING

*Do not locate benches over heater. Refer to Diagram 1 for minimum clearance of ceiling above heater is required.*

*Minimum clearance from heater to wooden surfaces (benches, side walls, heater fence etc.) is required. Refer to Diagram 1 for specific information.*

*Use only copper wire of the size and type indicated in the Heater Specification Chart and the temperature rating indicated on the heater junction box.*

*All heaters and controls must be grounded per NEC to prevent electrical shock in case of unit failure.*

*Electrical outlets or receptacle must not be installed in a sauna room.*

*A guardrail or fence is required around the heater to prevent burns from accidental contact.*

## SECTION 8: LIMIT CONTROL (RESET BUTTON)

The sauna heater has a built-in High Limit control, which automatically turns off the heater if the temperature inside in the sauna room rises to an abnormally high level.

To restart the heater, let the heater cool and the timer run down to zero (off). Remove the protective cover, then push the reset button with a small screwdriver (or preferred tool) on the back of the heater on the bottom side of the electrical compartment, See Diagram 2. If the High Limit continually shuts off the heater, refer to Section 14 for Troubleshooting.

## SECTION 9: HOW TO TAKE A SAUNA

- When taking a sauna, allow time to relax completely.
- Remove clothing and jewelry...if required, wear a towel loosely.
- After 10 minutes or when perspiration begins, leave sauna and relax in dressing area...follow with a cool shower.
- Cooling time should equal time spent in sauna. Enter sauna room again and stay 5 or 10 minutes.
- Repeat the cycle 2 or 3 times; end with a brisk shower...rinse in cool water.
- Dress when completely dry and perspiration has stopped.
- Some sauna bathers enjoy the soothing effect of steam by splashing water on the heated sauna rocks. Use only one dipper full (approx. ½ cup) at a time and take care to keep clear of the steam as it rises off the rocks.
- Do not smoke, exercise or drink alcoholic beverages in the sauna room.
- Do not pour chlorinated pool or spa water on the heater or corrosion damage may result.

## SECTION 10: WARNING PLACARDS

Two metal placards are included in the Installation Instruction Envelope packaged with every Sauna Heater. The CAUTION placard must be attached to the interior wall of the sauna room directly above the heater where it is visible to the bather. The WARNING placard must be attached to the door of the sauna room.

## SECTION 11: ROOM CONSTRUCTION

- For safety and reliability, the following rules must be addressed.
- No permanent locking or latch system is to be used on the sauna door.
- Acceptable door fittings are: magnetic catches, friction catches, spring or gravity loaded closures.
- The door must always open outwards.
- No shower may be installed in a sauna room.
- No electrical receptacle shall be installed inside the sauna room.
- The enclosed WARNING: Reduce the risk of overheating ... warning plate must be mounted on or alongside the door outside the sauna room at about eye level.
- The enclosed CAUTION: Reduce the risk of fire ... caution plate must be mounted on the interior wall above the heater.
- The heater should not be operated without its container properly filled with rocks and the rock guard in place.
- If an intercom speaker is installed, it should be away from the heater and as close to the floor as possible.
- Fire sprinkler systems installed inside any sauna room should be properly rated for sauna room temperatures.
- Always mount the heater according to these installation instructions.
- Minimum of R12 insulation in 16" on center 2x4 stud walls.
- Recommended minimum flooring thickness of 5/8"



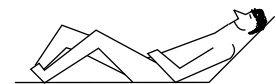
Shower



Sauna (10 - 15 min.)



Shower or swim



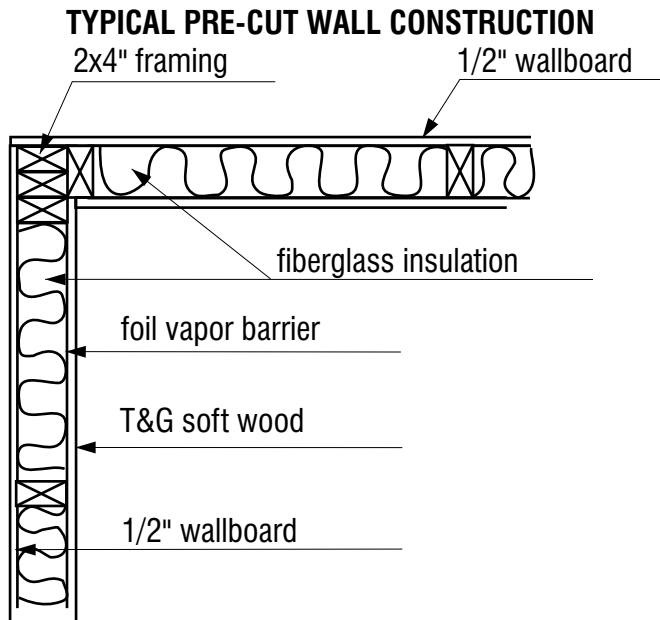
Rest (10 - 15 min.)



Relax with juice or water

You liked it?  
Do it once again and  
you will feel great.

**DIAGRAM 8**



## SECTION 12: VENTILATION

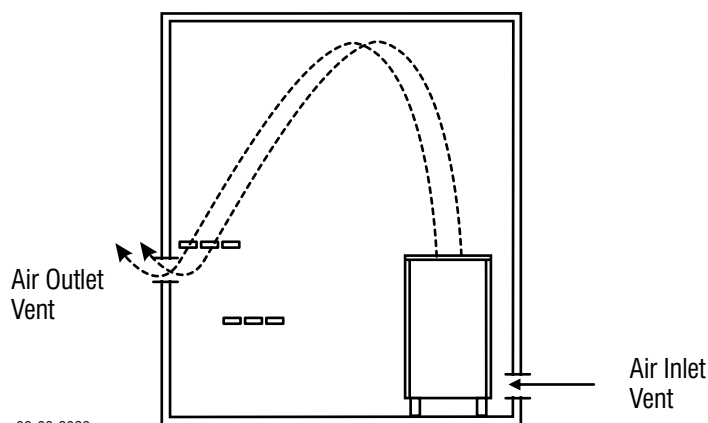
**VENTILATION** Ventilation shall be provided in a sauna, the air should be changed about 6 times an hour. This can be achieved by making a vent opening (fresh air inlet) in the sauna wall directly below the heater. The air outlet must be lower than the upper benches, as far as possible from the heater and about two feet higher than the fresh air inlet vent, See Diagram 9.

The minimum opening should be determined using one of the following formulas:

$$\begin{aligned} \text{For } R < 31, \quad V &\geq 9.4 \\ \text{For } R \geq 31, \quad V &\geq 0.3R \end{aligned}$$

R = the floor area of the room in square feet  
V = the minimum vent size in square inches

**DIAGRAM 9**



*The "CAUTION" and "WARNING" placards must be mounted in accordance with Section 10.*

**⚠ WARNING**

**REDUCE THE RISK OF OVERHEATING**

- \* Exit immediately if uncomfortable, dizzy, or sleepy. Staying too long in a sauna is capable of causing overheating.
- \* Supervise children at all times.
- \* Check with a doctor before use if pregnant, in poor health, or under medical care.
- \* Breathing heated air in conjunction with consumption of alcohol, drugs, or medication is capable of causing unconsciousness.

**⚠ CAUTION**

**REDUCE THE RISK OF FIRE**

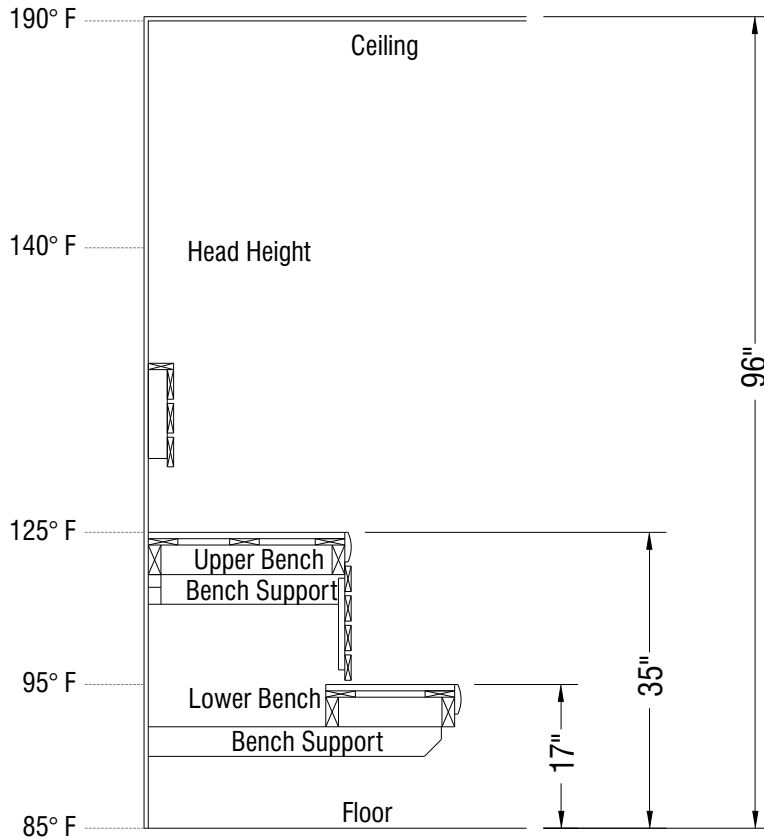
Do Not Place Combustible Material On The Heater At Any Time.

*For safety purpose sauna door must open out and not lock.*

*Never use a wood stain, seal or preservative on the inside of your sauna room.*

*Light fixtures get very hot during operation. Locate light fixture where it will not be a burn hazard.*

**DIAGRAM 10: ROOM TEMPERATURES**



Non-Typical Ceiling Height

**Notes:**

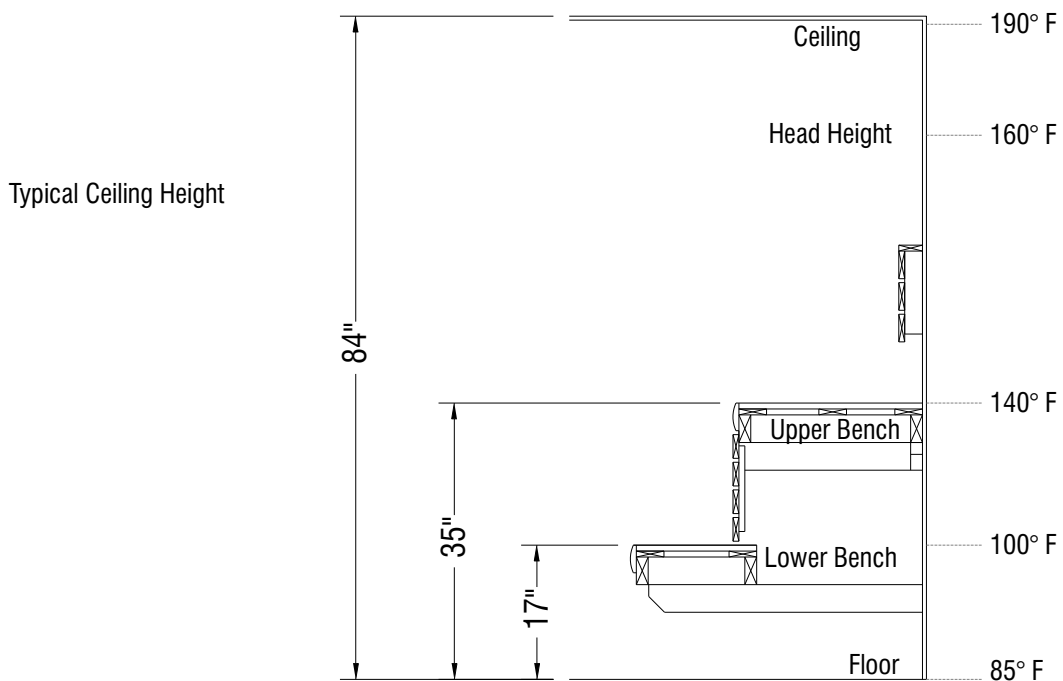
Temperatures vary in a sauna room by height and distance from heater.

Ventilation will help reduce it but will not eliminate temperature variations.

The hottest part of the room is always at the ceiling directly above the sauna heater and should not exceed 194°F (90°C).

Air temperature will be 15°F to 25°F lower on the opposite side of the room from the heater close to the ceiling.

The temperatures in the elevated view are general numbers. Each sauna room is different due to construction variations and ventilation.



Typical Ceiling Height



## SECTION 13: MAINTENANCE

Inspect sauna room at the end of each day the room to ensure the control and system is off.

The sauna, like a bathroom, should be kept clean and odor free. Towels or mats should always be used on benches and floor as perspiration otherwise penetrates the soft wood.

Air out the sauna often by keeping the door and vents open when the sauna is not in use. Saunas that are in daily use should be washed down at least once a week to keep them clean and the air fresh. Duckboard should be removed from the sauna, the sauna floor mopped and dried in a conventional manner, and the duckboard thoroughly scrubbed and dried before returning to the sauna room. The sauna heater should be wiped down occasionally with a damp cloth to remove lint and dust. The rocks should be removed once a year for cleaning and small or crumbled rocks replaced.

To clean and remove perspiration stains, use soap or detergent in warm water, best applied with a scrub brush. Badly soiled surfaces may require sanding. Sand paper wrapped around a wooden block works well.

Benches and supporting structure must be inspected annually for potential deterioration due to age, dry rot or abuse. Any boards with signs of deteriorations should be replaced immediately to avoid possible injury.

## SECTION 14: TROUBLESHOOTING

If control displays "Pre-Heat" it means there is no sensor connected to the CB Box or the room temperature is below 10°F. Refer to Section 5 for sensor installation information. Note: the system will heat for 5 minutes and then turn off and error "No Sensor" if a sensor is not connected to CN 4.

If control displays "HL" it means the high limit is open. Refer to Section 9 for high limit information how to reset the device. If the heater continues to have the high limit issue, check placement of sensor for correct location.

If the control displays "Door Open" check to see if there is a connector on CN 10.

System won't start to heat, ensure the system is not in the delay mode. If "dLAY" is flashing in the display window, the system is in the delay mode.

If control acts erratically or buttons turn on and off by itself during startup. Turn power off at the 120 Volt circuit breaker for control power, place the glass on the control and turn power back on the system. The control will automatically reset the sensitivity of the capacitive switches. Turn power back on and test.

CAUTION: Use only a contactor approved for 250,000 endurance Cycles / ATTENTION: Utiliser uniquement un contacteur approuvé pour 250,000 cycles de fonctionnement

Please contact your dealer or outlet you purchased your product for questions and support. Prior to calling, please have the Model and Type number available.

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