



EN Owner's/Operator's Manual

Sauna heater installation, wiring, operating instructions, troubleshooting, maintenance and guarantee.

IMPORTANT! This manual must be left with owner, manager, or operator of Sauna after it is used by electrician!

MODEL

HCT 105-1
HCT 120-1
HCT 144-1

MODEL

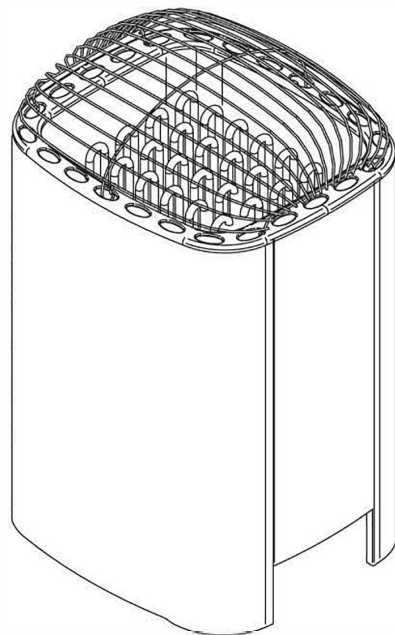
HCT 105-3
HCT 120-3
HCT 144-3

CONTROLS

F-2T
F-2

CONTACTORS

FX404
FX503



3159549

ETL LISTED
CONFORMS TO
UL STD 875
CERTIFIED TO
CAN/CSA STD
E60335-2-53-05

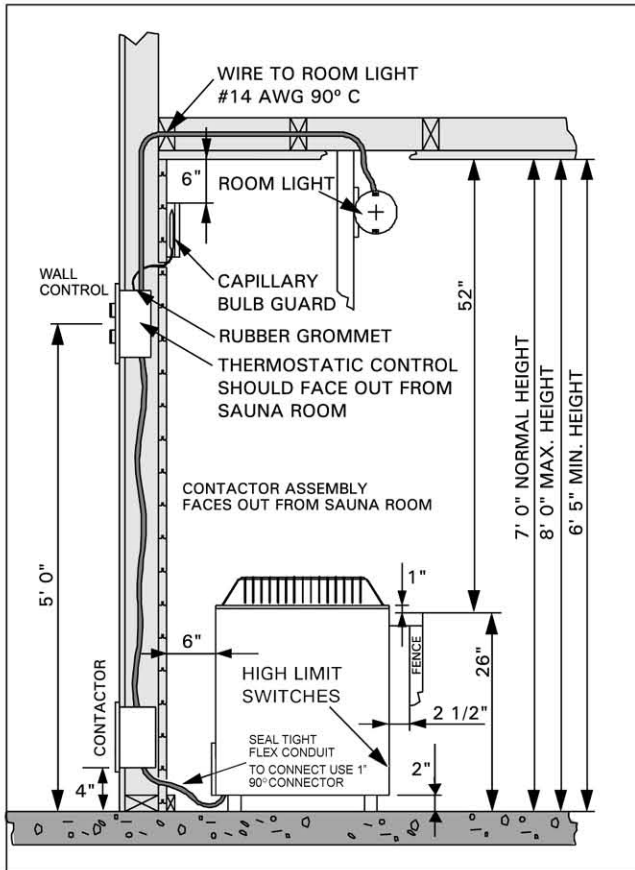


Figure 1.

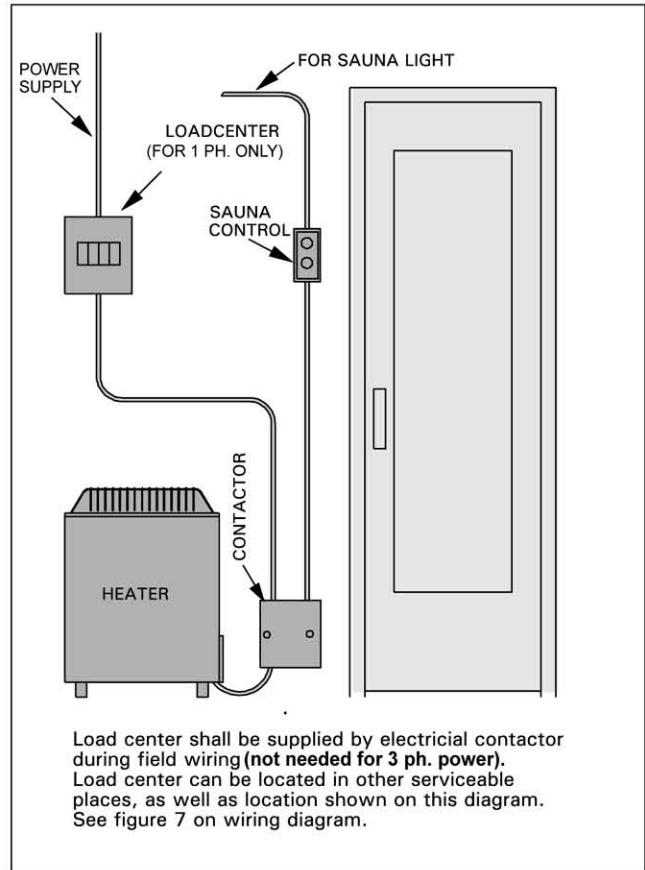


Figure 1A

NOTE: DO NOT INSTALL GFI ON SAUNA HEATER CIRCUIT!

Note! Control and contactor must be installed in a dry place; away from spa, pool, or shower; not outdoors.

Important: After rough-in of control and/or contactor installer must cover them with paper or plastic wrap to keep paint, sheet rock dust and construction debris out of mechanism (where it will interfere with operation). Otherwise installer is responsible for cleaning out equipment!

INSTALLATION OF FLOOR MODEL HEATER, CONTROL-CONTACTOR.

1. Remove heater from carton and place in proper location in Sauna room. Observe proper clearances as per pg. 3 and table 1. After final hookup, electrical contractor should secure heater to floor with at least two screws or bolts.
2. See applicable wiring diagram fig. 5-6 for heater model. Heater must be permanently installed (no pigtails or plugs allowed) and wiring must be done by a licensed electrician, who must follow wiring diagram provided and adhere to local codes. Use proper A.W.G. rated wire size and use copper wire suitable for 90°C within Sauna walls. Use grounding terminals provided in Sauna heater, control system, and contactor to properly ground the equipment as per NEC and local codes.
3. See fig. 5-6 to match control to heater model. Locate control in wall, 5' up from floor, so that panel faces outward from room. Punch out one of the knockouts in roughin box and push rubber grommet (provided) into knockout hole. Bring capillary tubing

- with sensing bulb out through grommet & through stud wall, so that capillary bulb is located 6" from ceiling inside Sauna room and close to but not over the Sauna heater, taking care to avoid sharp bends in tubing (to prevent damage to tubing and liquid within). Extra tubing can be coiled up inside wall. Nail or screw bulb guard to wall to secure sensing bulb.
4. Install contactor 4" up from floor behind Sauna heater, on outside wall of Sauna room. Wire from contactor to heater must be within seal tight flexible conduit. (Contactor may also be located in an equipment room or closet, but must be accessible, for servicing.
5. Inside the heater box there are two signs. Please place the metal "CAUTION" sign on the interior wall of the Sauna room directly above the heater in a visible place. Place the metal "WARNING" sign outside, on the door of the Sauna room. "MAINTENANCE INSTRUCTIONS" are at the end of this manual.

**THE SAUNA ROOM SHOULD BE PROVIDED WITH PROPER VENTILATION
MINIMUM CLEARANCES, MIN-MAX SPACE, ADEQUATE VENTILATION**

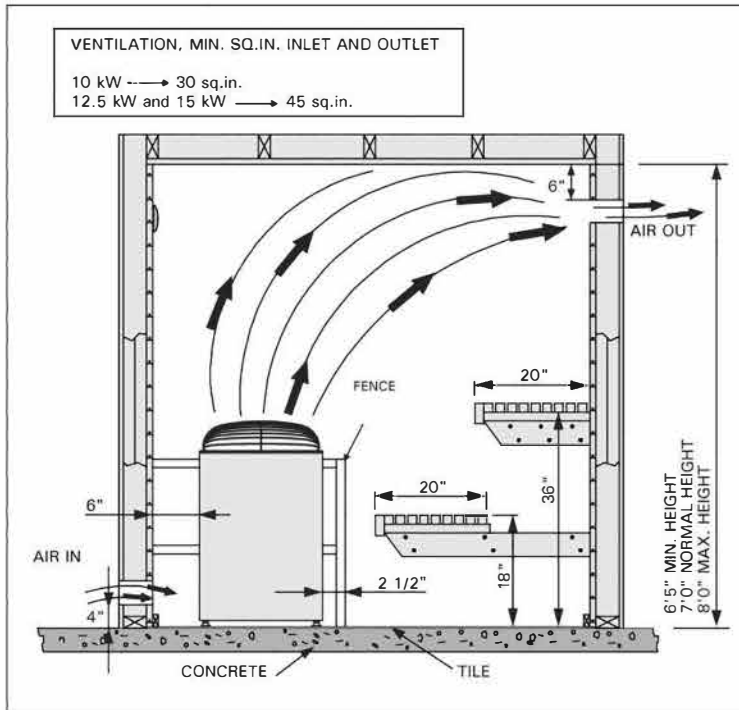


Figure 2.

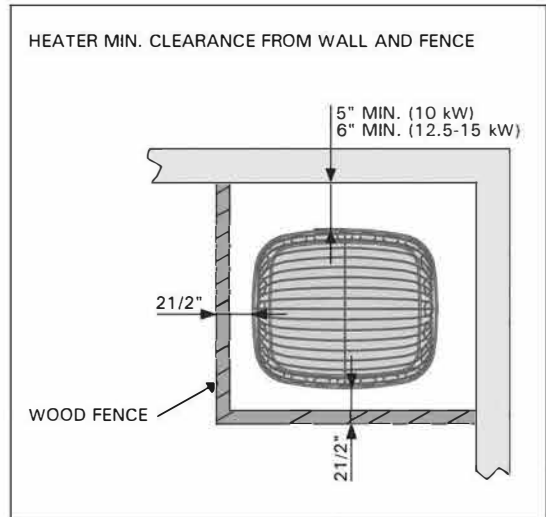


Figure 4.

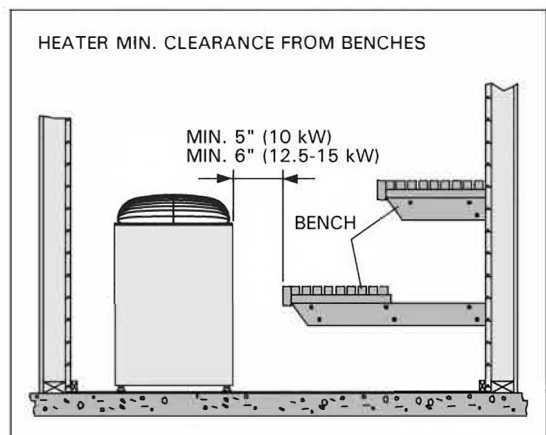


Figure 4A.

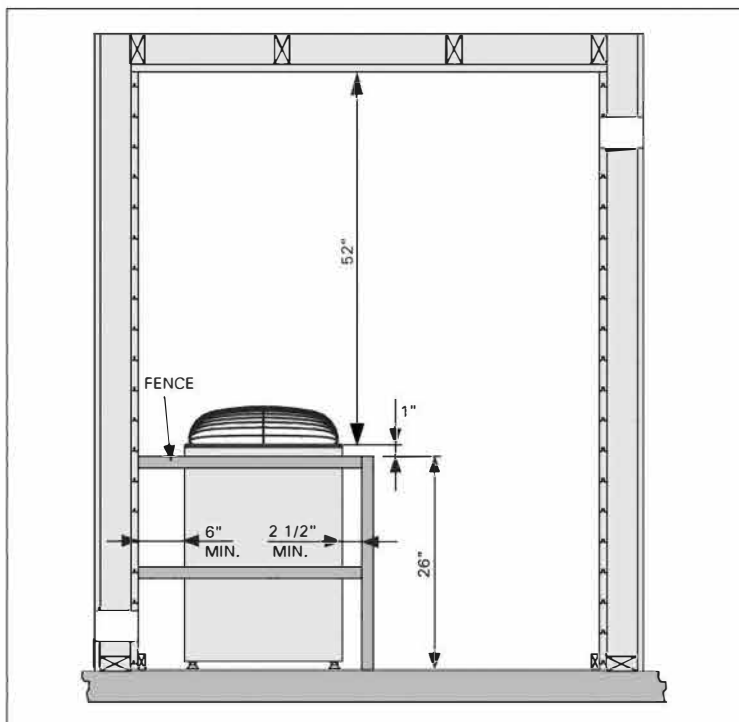


Figure 3.

MODEL	INPUT	MIN. HEIGHT FT.	FLOOR AREA		SAUNA ROOM		MIN. SPACING FROM ADJACENT SURFACE (INCHES)
			MIN. SQ.FT.	MAX. SQ.FT.	MIN. CU.FT.	MAX. CU.FT.	
HCT105-1 HCT105-3	10.0	6.5	60	94	390	600	5"
HCT120-1 HCT120-3	12.5	6.5	78	114	500	750	6"
HCT144-1 HCT144-3	15.0	6.5	97	146	630	1000	6"

Table 1.

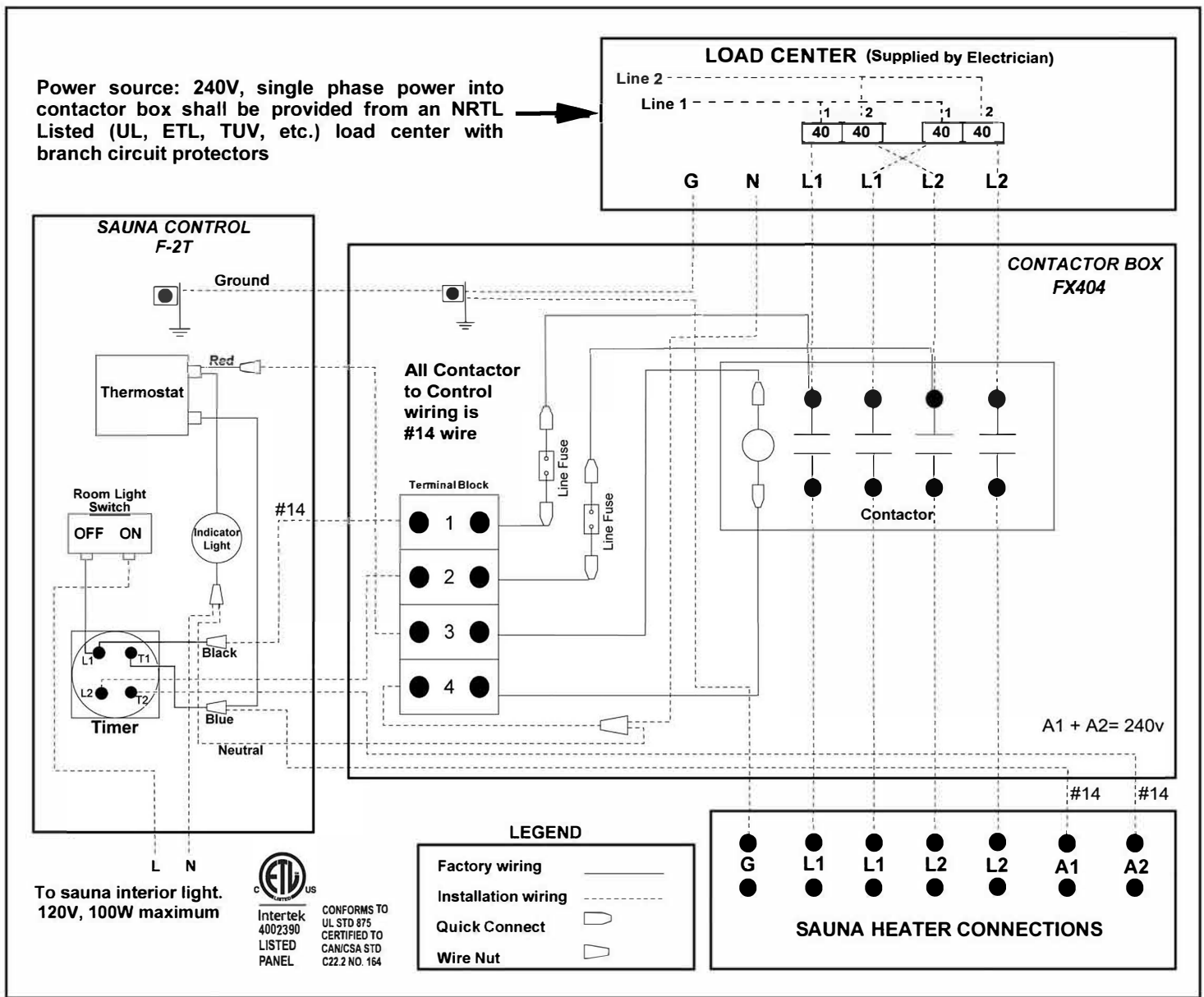


Figure 5

CLUB MODEL HEATER (240 V 1PH)									
HEATER MODEL	WATTS	VOLTS	AMP DRAW	BREAKER SIZE TO USE	WIRE SIZE breaker to load center	WIRE SIZE load center to contactor	WIRE SIZE contactor to heater	CONTROL 3.75" x 2.5" x 9.25"	CONTACTOR 6" x 4" x 8"
HCT105-1	10,000	240/1	41.7	50	#6 copper	(4) #10	(4) #10	F-2T	FX404
HCT120-1	12,600	240/1	52.7	60	#6 copper	(4) #10	(4) #10	F-2T	FX404
HCT144-1	14,800	240/1	61.7	70	#4 copper	(4) #8	(4) #8	F-2T	FX404

SAUNA HEATER WIRING AND HOOKUP – ALSO REFER TO FIGURE 1

Refer to chart above for proper wire size and amperage. See page 3 for required clearances. Use copper wire from load center to wall-mounted contactor. Supply cable must have 5 wires including insulated neutral plus separate ground.

Use 90°C copper wire from contactor to control and from control to room light. Also use 90°C copper wire from contactor to Sauna heater (within seal tight flex conduit), and connect to junction box at heater with 90° connector.

Connect to the noted terminals and connect ground wire to marked terminal. (Cover plate on heater must be removed first).

Important! Follow wiring instructions carefully to prevent shorting of glass fuses in contactor.

Be sure there are no bare wires or shorts. If the contactor is shorted out it will be the responsibility of the electrical contractor to replace it!

If connection to heater will be made at a later time, bring flex into Sauna room 4–6" from floor, and leave 3' of flex for hookup (can be cut to right length later). Before testing heater, fill rock cavity with igneous stones provided with heater and fasten metal rock guard at top of heater. (See gen. info concerning washing and placing of stones.)

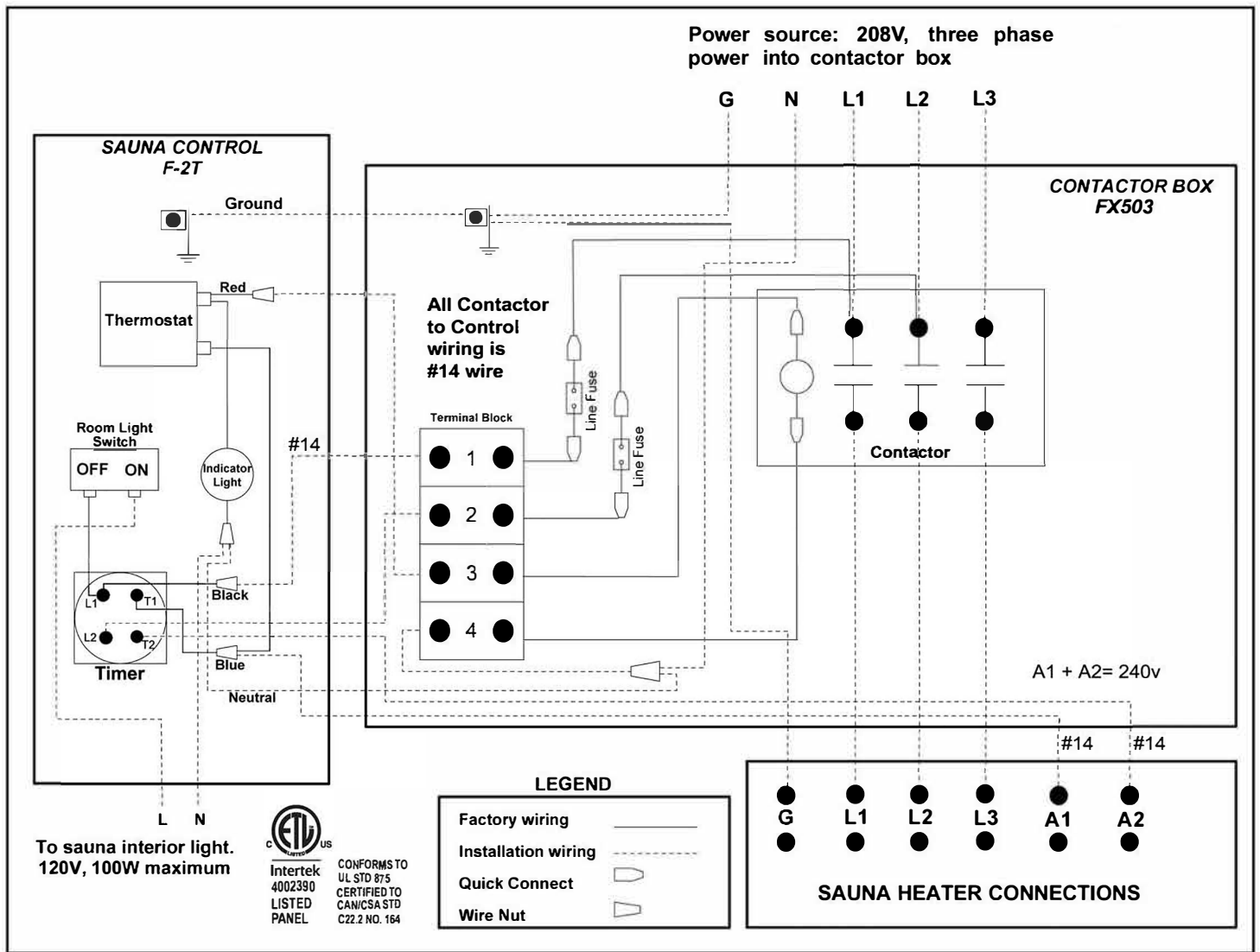


Figure 6.

CLUB MODEL HEATER (208 V 3PH)							
HEATER MODEL	WATTS	VOLTS/ PHASE	AMP DRAW	BREAKER SIZE TO USE	WIRE SIZE breaker to contactor & contactor to heater	CONTROL 3.75" W x 2.5" D x 9.25" H	CONTACTOR 6" W x 4" D x 8" H
HTC105-3	9,800	208/3	27.3	40	#8 copper	F-2T	FX503
HTC120-3	12,300	208/3	34.1	40	#8 copper	F-2T	FX503
HTC144-3	14,400	208/3	40	50	#8 copper	F-2T	FX503

SAUNA HEATER WIRING AND HOOKUP – ALSO REFER TO FIGURE 1

Refer to chart above for proper wire size and amperage. See page 3 for required clearances. Use copper wire from breaker to wall-mounted contactor. Supply cable must have 4 wires including insulated neutral plus separate ground.

Use 90°C copper wire from contactor to control and from control to room light. Also use 90°C copper wire from contactor to Sauna heater (within seal tight flex conduit), and connect to junction box under heater at back, with 90° connector.

Connect to the noted terminals and connect ground wire to marked terminal. (Cover plate on heater must be removed first).

Important! Follow wiring instructions carefully to prevent shorting of glass fuses in contactor.

Be sure there are no bare wires or shorts. If the contactor is shorted out it will be the responsibility of the electrical contractor to replace it!

If connection to heater will be made at a later time, bring flex into Sauna room 4–6" from floor, and leave 3' of flex for hookup (can be cut to right length later). Before testing heater, fill rock cavity with igneous stones provided with heater and fasten metal rock guard at top of heater. (See gen. info concerning washing and placing of stones.)

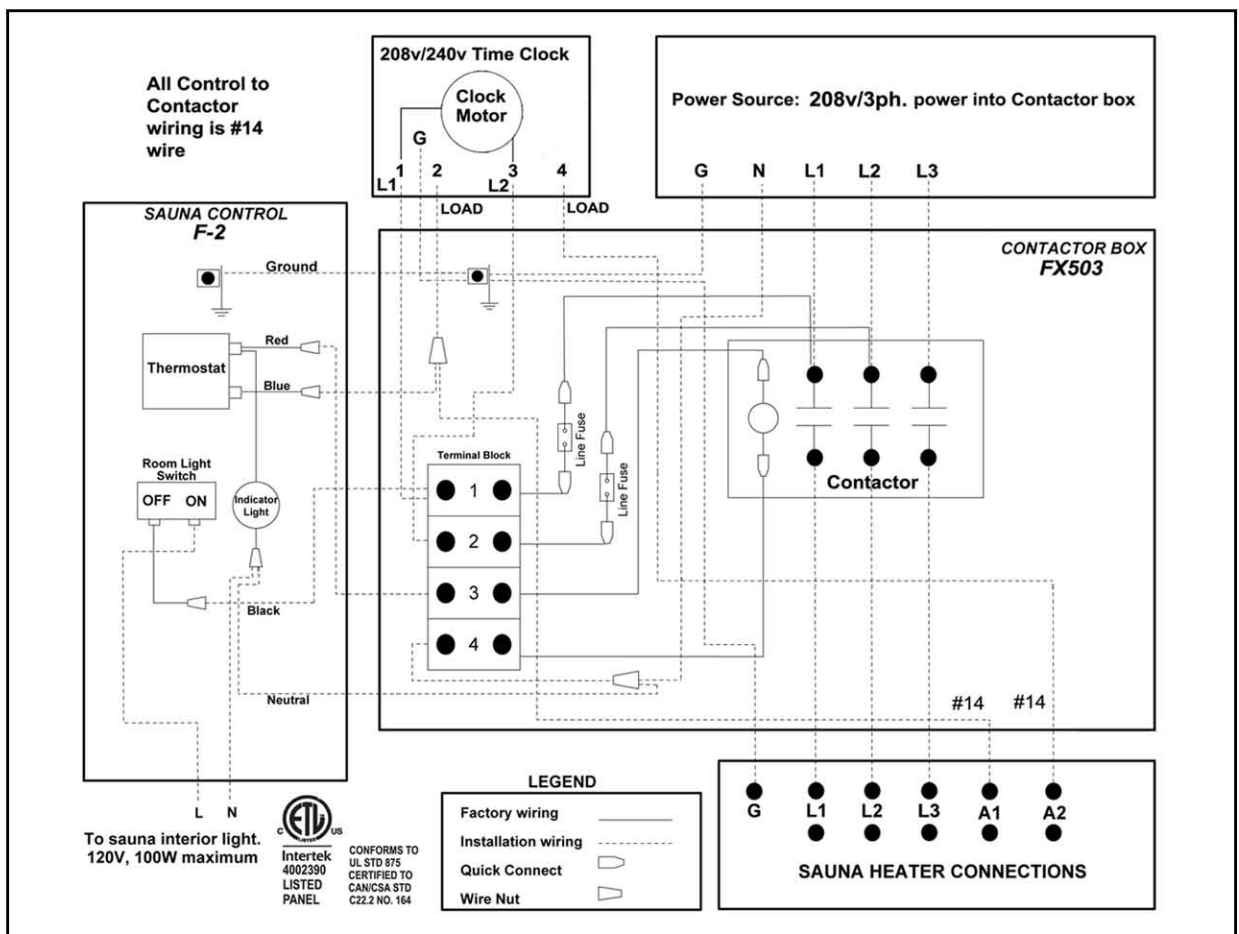
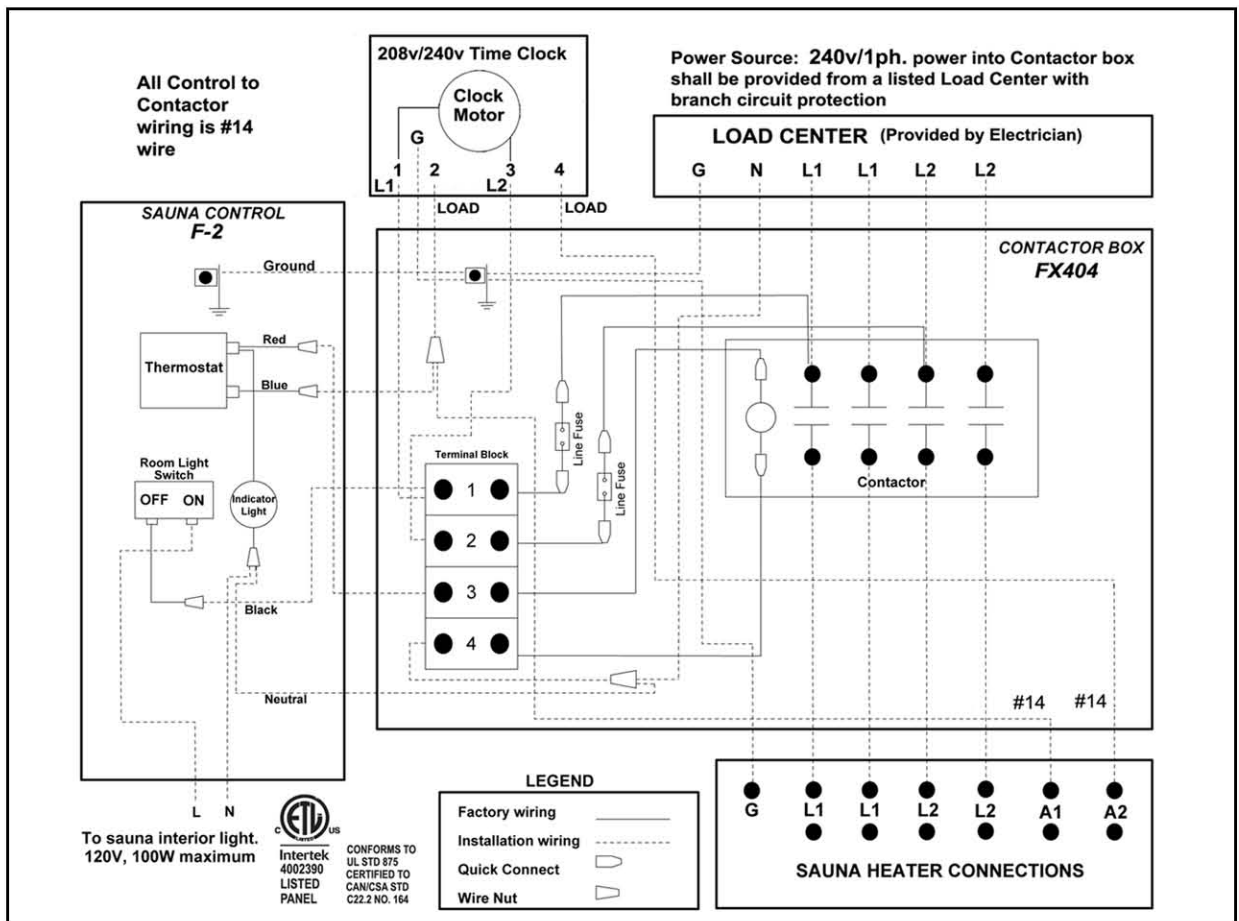


Figure 8.

F-2 SAUNA CONTROL

This control can be used with any heater and proper contactor. See chart for contactor model.

NOTE: This control can be used only when an attendant is on duty during hours of operation.

MODEL	WATTS	AMPS	VOLTAGE	PH	WIRE SIZE		
					breaker to load center	load center to contactor	contactor to heater
HCT105-1	10 000	41.7	240	1	#6 copper	(4) #10 copper	(4) #10 copper
HCT120-1	12 600	52.7	240	1	#6 copper	(4) #10 copper	(4) #10 copper
HCT144-1	14 800	61.7	240	1	#4 copper	(4) #8 copper	(4) #8 copper
					breaker to contactor		contactor to heater
HCT105-3	9 800	27.3	208	3	#8 copper		#8 copper
HCT120-3	12 300	34.1	208	3	#8 copper		#8 copper
HCT144-3	14 400	40.0	208	3	#8 copper		#8 copper

Table 1.

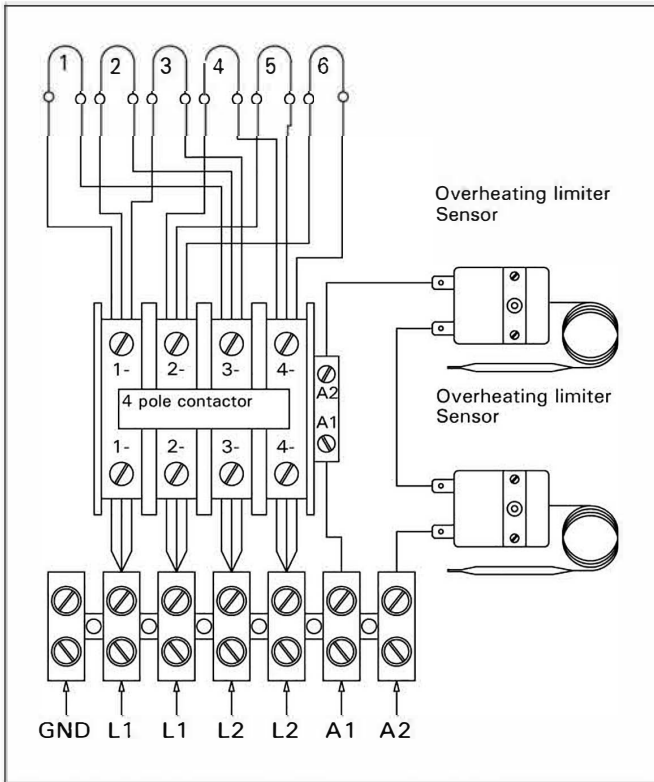


Figure 9. Electrical connections of 240 V 1-phase heaters (HCT105-1, HCT120-1, HCT144-1)

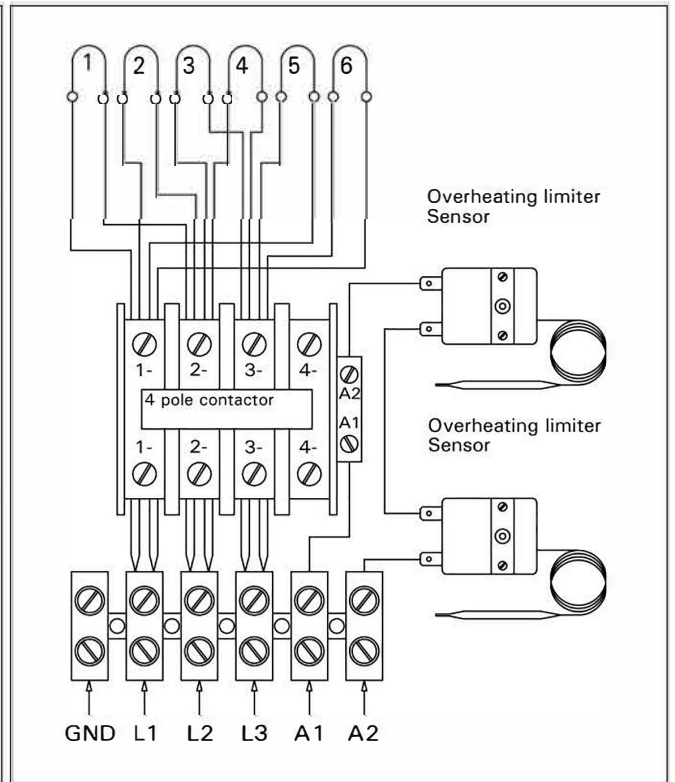


Figure 10. Electrical connections of 208 V 3-phase heaters (HCT105-3, HCT120-3, HCT144-3)

SAUNA – GENERAL INFORMATION

ROCK PLACEMENT – Do not operate heater without stones!

Use only the stones which are supplied with the Sauna heater. Wash stones with water hose and place inside of heater box so that rocks are between and around heating elements. However, do not force rocks between elements.

Use smaller stones first, and continue to fill heater with larger stones until they are about 2" below rock guard. You may not need all of the stones.

Stones should be placed loosely within heater so that there is good heat circulation around and through them. Stones should completely cover the heating elements, however!

Pouring water over exposed elements could cause heater damage!

TESTING OF SAUNA HEATER

1. After Sauna heater has been properly wired, according to appropriate wiring diagram and local codes, turn Sauna breaker on in the main breaker panel.
(Note! Electrician must label "Sauna" breaker.)
2. Turn thermostatic (heat) control to on position (this is located either on your heater or on your remote wall control. If you have a wall control, the indicator light will come on to show that the Sauna is heating). Set timer to 10 or 15 minutes.
3. Within 5 minutes, you should be able to feel heat from heater elements when holding your hand over heater.
4. If Sauna does not heat, refer to troubleshooting information.
5. It is normal for smoke to appear during the first heating, as protective element coating needs to burn off. **Turn sauna on for 1 hour before using the first time, to eliminate smoking.**

TROUBLESHOOTING

A. If sauna does not operate after initial installation and wiring:

1. Check breaker to be sure that it is on. Also, breaker should be correct size.
2. Make sure that a neutral wire has been included (necessary for all heaters except model with built-in control).
3. Check glass fuses in contactor to be sure that they have not been shorted out.
4. Be sure that thermostat and timer are both in on position.
5. Be sure that timer winds down. If timer has been shorted out, heater will not operate.

B. If sauna has been in operation, but heater ceases to operate:

1. Check breaker to make sure it is on.
2. Check timer to see if it winds down.
3. Check high limit reset button in heater (reset is under the heater (wall models) or on the back of the junction box (floor models) to see if it has been released. Club heater has 2 reset buttons.
4. Call your electrician or service person for further help.

NOTE! A GROUND FAULT INTERRUPTER (GFI) should not be installed in and does not belong in a Sauna. If used, the breaker will trip, and damage could result.

C. If Sauna heater operates, but sauna room does not come up to sauna temperature (160–185°F normal Sauna temperature)

1. You must allow at least 30 minutes for Sauna heat-up time.
2. Is Sauna thermometer located 6" from ceiling, and is it above or close to Sauna heater? (This is proper location for Sauna temperature reading.) Thermometer readings vary with room heights and location. Eg. 180°F above Sauna heater = 165 on opposite wall = 140 on upper bench level = 120 on lower bench level = 100 at floor level.
3. Check for proper wire size, amp size, and proper wiring (according to diagrams and information) also necessary copper wiring.
4. Check for placement of stones to make sure they are loosely spaced around elements, to insure good air flow. Stones packed too tightly will restrict air flow and reduce heating capacity.
5. Check for heat loss (around or under door, around ceiling light or fan – we do not recommend ceiling light and a fan does not belong in the Sauna.
6. Is room properly insulated?
7. Is ceiling higher than 7'?
8. After checking all the above, remove rocks and check heater elements for holes or burned areas. (Only if heater has been in use for some time.)

Caution! Electrician or service person!

1. **BEFORE SERVICING HEATER, CONTROL, OR CONTACTOR, TURN POWER OFF AT BREAKER!**
2. Open junction box to make sure wires are tightly secured with no loose connections. Heater wire and all connecting wires should be copper.
3. Check for burned spots or short in wiring of timer or thermostat.

warranty on parts is void if installer/electrician fails to follow necessary wiring information provided or fails to follow code for proper wire size, amperage, etc.

OVERHEATING LIMITER

Club heaters are equipped with 2 overheating limiters which are safety devices. If an abnormal heating condition should occur, the heater will automatically shut off, and it will not come on again until it cools.

To reset overheating limiter, locate the reset button (back bottom of heater on floor models) and push inward until contactor kicks in. If reset button continues to trip, contact a qualified service person. Be sure that a GFI has not been installed.

Receptacles or PLUGS are not allowed in a Sauna room. If a speaker is installed in a Sauna room, it should not be installed higher than 3' from floor, away from the Sauna heater (consult manufacturer for ratings).

ROOM LIGHT should be a vapor proof, wall-mounted type, with rough-in box mounted flush with inside paneling. It should mount 6'6" from floor, not directly over Sauna heater, and not over upper benches; light bulb should not exceed 75 watts.

HEATER FENCE is necessary for safety and should be constructed of 1" x 2" or 2" x 2" softwood to match Sauna interior. See figures 2-4 for clearances from Sauna heater. Fence should attach to wall and should not be placed higher than top of heater below rock line.

ROOM CONSTRUCTION – GENERAL INFORMATION

A. Framing

2" x 4" dry Douglas Fir, 16" o.c.

B. Ceiling height

no higher than 7'0".

C. Insulation

R11 Fiberglas with foil back in walls and ceiling, foil facing into room.

D. Drywall

See local codes. Is not required in most residences. See local codes for commercial. If drywall is used, apply 1" x 2" nailers so that wall and ceiling boards can be attached to solid wood.

E. Paneling

Use kiln-dried, clear, T & G softwood such as California Redwood, Western Red Cedar, Alaska Yellow Cedar, with moisture content not exceeding 11 %.

F. Benches

Use matching wood of vertical grain with 2" x 2" tops – ½" spacing – and 2" x 4" facing, fastening from bottom to prevent burning of bathers.

G. Heater guardrail

Use matching softwood of 1" x 2" or 2" x 2".

H. Door

Must open out and should not have a lock. Size – 2'0" x 6'8" with fir rails and double sealed, tempered glass.

I. Flooring

concrete, ceramic tile, or heavyduty Vinyl with walking area of removeable SuperDek.

J. Ventilation

should be provided by lower vent close to heater, 4" from floor, and upper vent on opposite wall (if possible) 6" from ceiling or as low as 24" from floor. Vents should be adjustable and should allow air to change 5 times per hour. Sauna shall be provided with intended ventilation as required per the local code authorities.

K. Light

should be wall-mounted, vapor proof type, located 6" from ceiling.

L. Accessories

bucket, dipper and thermometer are essential. Thermometer should be placed over the Sauna heater, 6" from ceiling, for correct temperature reading. Other accessories such as hygrometer, sand timer, brushes, etc. are available.

M. Maintenance instructions – are included at the end of this manual.

N. Warning signs

are furnished with Sauna heater. The metal "CAUTION" sign should be fastened to wall, close to heater, in a visible place. The metal "WARNING" sign should be fastened outside, to the Sauna room door.

WARNINGS!

- Do not smoke, use alcohol, or exercise in the Sauna!
- Do not exceed 30 min. in the Sauna at one time, as excessive exposure can be harmful to health. The Sauna should not be used as an endurance test!
- Persons with poor health should consult their physicians before using the Sauna!
- Do not place any combustible material over the Sauna Heater (towels, bathing suits, wooden bucket or dipper)!
- Use only clean tap water on the stones – do not use pool or spa water, as chlorine gas can be produced and the heating elements can be damaged!
- Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98,6°F. The symptoms of hyperthermia include an increase in the internal temperature of the body, dizziness, lethargy, drowsiness, and fainting.

The effects of hyperthermia include:

- A) Failure to perceive heat
- B) Failure to recognize the need to exit the room.
- C) Unawareness of impending hazard
- D) Fatal damage in pregnant women
- E) Physical inability to exit the room
- F) Unconsciousness

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

MAINTENANCE INSTRUCTIONS

1. Use only clean water on Sauna stones. **Do not** use spa or pool water as it will destroy your heater.
2. Clean water should always be used in Sauna buckets and water should be dumped out after every use. Scour buckets and dippers occasionally when film collects from usage. Use plastic bucket liner in bucket to prevent water leakage.
3. Scrub benches with a soft brush, using soap and water or a mild disinfectant, when needed—about once a week in commercial Saunas, or depending upon Sauna usage. For sanitation, each bather should sit or lie on a towel (this will prolong bench life).
4. Remove Super Dek and wash waterproof floor with disinfectant (e.g. Pine Sol) about once a week or as often as needed. Hose off Super Dek to clean.
5. To maintain beautiful appearance of Sauna heater, remove water stains by wiping with a damp cloth occasionally.
6. Heaters require no special maintenance when properly installed by a qualified electrical contractor. After 5 years of usage, the rocks may need replacing if they have crumbled or powdered.
7. We strongly recommend a floor that can be easily cleaned (concrete, ceramic tile, or a poured type of flooring). When this is provided, the Sauna can be easily cleaned and kept in a sanitary condition with little effort. A carpet is NOT recommended for a Sauna! A carpet becomes a perfect breeding ground for bacteria in the moist conditions of a Sauna; and a carpet promotes the spread of foot diseases such as athlete's foot. For the same reasons, wooden duckboard should not be used for flooring.
8. In new construction, a floor drain should also be provided, especially in commercial Saunas for sanitary cleaning and maintenance.
9. Seal wood around glass in door—inside and outside—with *Thompson's Water Seal* to prevent warpage.
10. When Sauna wood becomes stained from perspiration, the wood may be lightly sanded with fine sandpaper to restore beautiful appearance. We do not recommend stains or sealers as toxic vapors may appear when heated. However, 2 coats of *Thompson's Water Seal* may be used on the wood benches in a commercial Sauna, so that the wood may be more easily cleaned and kept sanitary—the wood will not absorb perspiration.
11. The Sauna room will heat faster if the higher vent is kept in a closed position when heating. The lower vent may always be kept in an open position.
12. Required warning signs should be posted according to the instructions.

GUARANTEE

This Sauna heater is guaranteed for one year from date of purchase, and includes all heater parts such as heating elements, controls, contactors, etc.

This guarantee covers faults in manufacture and material only, and includes the exchange of new parts supplied by the manufacturer or manufacturer's agent, after the faulty part has been returned to same. The replacement of parts under warranty does not extend the warranty period beyond the original one year.

The guarantee does not cover defects caused by normal wear and tear, defects caused by improper installation, poor maintenance, or failure to follow the manufacturer's instructions for installation, use and care, or alterations made to the Sauna product.

This guarantee is void if the heater is used improperly, pool or spa water should not be poured over the Sauna stones, as chemicals are harmful to the heater; the Sauna room must be heated for at

least 30 minutes before water is poured over the stones; only one or two dippers full of water should be poured over the hot stones at one time. This guarantee will be void if a shower has been installed in the Sauna room.

This guarantee does not cover delivery costs of the faulty part or costs of the person carrying out the repair in the field. If the Sauna heater is returned to the manufacturer or manufacturer's agent in Portland, Oregon, within five years after date of purchase, the agent will provide free labor for repair, but will charge for parts if date of purchase is past one year.

This guarantee will be void if installation and wiring is not carried out by a certified electrician or authorized and qualified service representative, who must sign below.

This guarantee will be void if is not filled out and returned within 15 days of purchase, and it applies only to original installation of product and to original purchaser.

SAUNA HEATER _____

MODEL NUMBER _____

DATE OF PURCHASE _____

ORIGINAL OWNER _____

ADDRESS _____

PURCHASED FROM _____

ELECTRICAL CONTRACTOR _____

MUST SIGN HERE _____

DATE OF ELECTRICAL _____

WIRING & HOOKUP _____

THERMASOL

800-776-0711

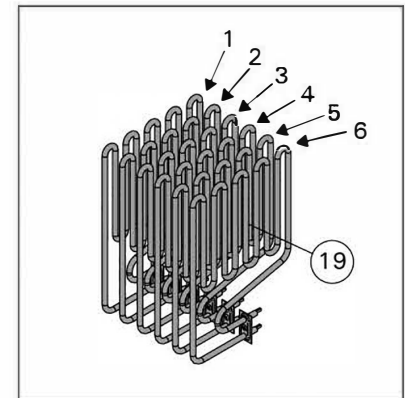
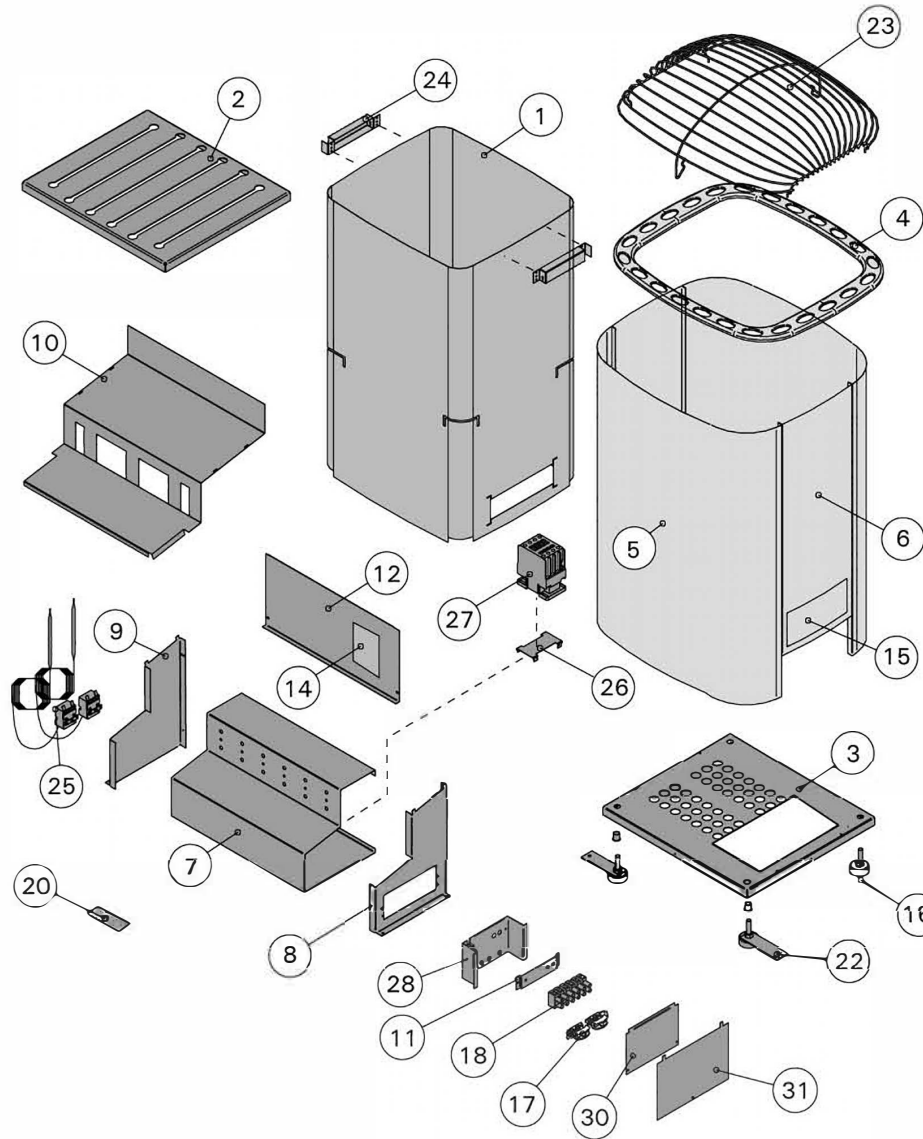
SPARE PARTS

SAUNA HEATERS

HCT105-1, HCT120-1, HCT144-1

HCT105-3, HCT120-3, HCT144-3

1	Stone compartment
2	Stone holder
3	Base plate
4	Top part
5	Casing side L/R
6	Casing FRONT/REAR
7	Electrical casing
8	Electrical casing R
9	Electrical casing L
10	Radiation shield
11	Terminal block bracket
12	Electrical casing cover
13A	Wireset 240 V 1-phase heaters
13B	Wireset 208 V 3-phase heaters
14	Wiring diagram
15	Rating plate sticker
16	Adjusting leg
17	Connection cable holder
18	Terminal block
19	Heating element set
20	Terminal block sticker
21	Lead-in plastic grommet
22	Floor mounting plate
23	Protective grille
24	Overheating limiter/sensor bracket
25	Overheating limiter/switch
26	Contactor bracket
27	4-pole contactor
28	Grounding terminal



HCT105-1 1, 2, 3, 4, 5, 6	10 kW 1640 W/240 V	ZSS-110
HCT120-1 1, 3, 5 2, 4, 6	12.5 kW 1640 W/240 V 2350 W/240 V	ZSS-110 ZSP-240
HCT144-1 1, 2, 3, 4, 5, 6	15 kW 2350 W/240 V	ZSP-240
HCT105-3 1, 2, 3, 4, 5, 6	10 kW 1640 W/208 V	ZSS-120
HCT120-3 1, 2, 3, 4, 5, 6	12.5 kW 2050 W/208 V	ZSP-250
HCT144-3 1, 2, 3, 4, 5, 6	15 kW 2460 W/208 V	ZSP-255

13A

13B