

WARNING!

- Do not cover the sauna heater. This creates a fire hazard.
- Do not use your sauna heater without stones. This creates a fire hazard.
- Do not touch the top of the heater. This will cause severe burns.
- Incorrect ventilation or an incorrectly located sauna heater can, under certain circumstances, cause excessive drying of the wood in the sauna and create a fire hazard.
- Cover sauna floors with a non-slip material.
- Never hose down the sauna.
- There must always be at least 50 mm insulation directly behind the wood panelling in the sauna (no other material may be used, such as particle board, plaster, etc).
- Sauna doors must always open outwards. All that should be needed to open the sauna door is just a little light pressure.
- Do not use the sauna for any purpose other than sauna bathing.
- Do not install more than one sauna heater in a sauna room, unless you follow exactly the special instructions for twin-heater installations.
- Sauna fragrances, etc. may ignite if poured undiluted into the stone compartment.
- Never leave young children unattended in the sauna.
- Do not lift the heater in the heating elements.
- Sauna bathing is not always suitable for persons in poor health. Consult your doctor for advice.
- Store this information in a safe place.

INSTALLATION

Fig. 1a.

Tylö HL, SO sauna heater with integral control panel.

Fig. 1b.

Tylö WM sauna heater with integral control panel.

Fig. 1c.

Tylö EP 100 and EH 150 sauna heater with separate control panel.

Fig. 1d.

Tylö EZ 225 sauna heater with separate control panel.

Installing the sauna heater.

The sauna heater should be placed on the same wall as the door, see figure 12. In an exceptional circumstance, the heater may be placed on a side wall, but as close as possible to the wall with the door. Fit the heater 200 mm above the floor, observing the regulations for the minimum distance to the side wall.

The heater is semi-installed to the connection box on the sauna wall. The type of the connection cable should be H07RN-F (VSN, VSB) with rubber insulation, or similar. Do not use a cable with PVC- insulation!

The cable or conduit is laid on the outside of any heating insulation; see figs. 9 and 10. A single-core cable should be protected by a plastic conduit up to the heater, or in flexible metal conduit with internal insulation.

Important! For heater model WM, the sensor of the high temperature limit control has to be located high on the wall in the sauna room (15-20cm from the ceiling).

2.INSTALLATION

2.1. Placing of the heater

The minimum safety distances given (table 3, fig.3-7) should be carried out. The safety distances are also shown on the heater's nameplate. **The fastening measures for the wall bracket are shown in fig.2 (HL, SO) and fig 3. (WM).** Do not cover the walls or the ceiling nearby the heater with additional plates – the temperature in the wall materials can rise to a dangerous level. When installing the heater in a niche, the niche's minimum height should be 1900 mm and the maximum depth 500 mm.

2.2. Mounting

On the wall (HL, SO, WM)

The heater is equipped with a removable wall bracket for easy installation (fig. 2a), which makes it possible to fasten the screws and the wall mounting to the wall prior to installing the heater (fig. 2b). Fastening screws for mounting on a wooden wall are included in the delivery. Thin wooden panels are not strong enough for a safe fastening. Use a board or a plywood plate behind the heater to strengthen the mounting points. For stone and brick walls, use only heat-resisting special anchor fastenings (no fastenings with plastic plugs). The heater is lifted to its place as shown in fig. 2c, 2d, 2e. Do not lift the heater on the heating elements or on the upper steel panel in the back housing, but only with a good hold on the lower and upper edge of the inner jacket. Free space for service should be left on one side of the heater.

At the floor (EP, EH, EZ)

The heater is placed on the floor and fastened with the fastening plate of the back foot with two screws to a wooden floor or with plastic plug and screw to a stone floor.

3. Connecting to the electric power network

Before connecting the heater, check the technical specifications on the chart. An authorised skilled electrician in accordance with the regulations in force can only do connecting work. The heater is semi-installed to the connection box on the sauna wall. The type of the connection cable should be H07RN-F (VSN, VSB) with rubber insulation, or similar. Do not use a cable with PVC- insulation! Connect the heater before installing it on its place. Do not mount the splash-proof connecting box higher than 50 cm from the floor on the wall.

Fig. 4 – Minimum safety distances.

A = standard installation. B = recess installation. Please refer to the table for minimum distances to side wall (X,Y). When installing sauna heaters in a recess, the sensor (C) should be placed 250 mm from the rear wall of the recess and 1500 mm above floor level.

Fig. 5, 6 – Minimum safety distances (SO, WM).

Minimum distance to sauna fittings in front of a sauna heater.

Fig. 7 – Minimum safety distances (EP, EH, EZ).

Minimum distance to sauna fittings in front of a sauna heater.

Fig. 8 – Sauna

(Sauna heater types EP, EH, EZ and control panel type CC).

1 = sauna heater. 2 = thermistor (sensor). 3 = control panel CC 10/ CC 50/ CC 100. 4 = external power switch (if any). 5 = distribution box. 6 = relay box RB30/60.

Fig. 9 – SO, WM.

A = electric conduit. B = wooden panel. C = insulation. D = built-in sensor (SO). D = sensor (WM). F = built-in control panel. G = vent. H = wooden batten.

I = connecting box

Wiring diagram, fig. 16, 24, 28.

Fig. 10 – EP, EH and EZ.

A = electric conduit. B = wooden panel. C = insulation behind control panel. D = sensor. E = capillary tube/thermistor wire. F = TS separate control panel (CC panel in folded figure). G = vent. H = wooden batten.

I = connecting box

Wiring diagram, fig. 16, 24, 28.

Table 1, Technical data.

Heater model	Output kW	Sauna volume min/max m³		Weight without stones (kg)	Stone weight (max, kg)	Measurements (mm)		
						Width	Depth	Height
HL 6, SO 6	6,0	5-8		10,8	25-30	425	390	480
HL 8, SO 8	8,0	7-12		11,2	25-30	425	390	480
WM 10	10,0	8-15		16,0	22	370	450	590
EP-100	10,0	8-15		11	25	360	420	650
EH-15	15,0	14-24		19	45	480	540	780
EZ-22,5	22,5	25-36		27	55	560	550	900

Amperage and conductor area:

kW	230- 240V 3~		230- 240V~		400- 415V 3~		400- 415V 2N~		200-208V~		200- 208V 3~	
	amp	mm²	amp	mm²	amp	mm²	amp	mm²	amp	mm²	amp	mm²
6	15	2,5	26	10	10	1,5	-	-	30	10	18	4
8	20	4	35	10	12	2,5	-	-	40	16	23	6
10	25	6	44*	16*	16	2,5	-	-	-	-	29	10
15	38	16	-	-	22	6	-	-	-	-	44	16
22,5	56	16	-	-	32	10	-	-	-	-	65	25

*) 10 kW not approved for single-phase in Europe.

Volume and minimum installation distances:

Heater Model	Minimum Ceiling height in sauna mm	Min. distance to the heater. mm						
		A	B	C	D	E	F	Wall behind the heater
HL 6, SO 6	1900	50	70	30	1100	150	500	
HL 8, SO 8	1900	80	80	30	1100	150	500	
WM 10	2100	100	70	30	1350	110		
EP-100	1900	80		80	1250			20
EH-15	2100	80		80	1320			40
EZ-22,5	2300	100		150	1400			40

Sauna heater – separate control panel combinations

Heater model	Suitable control panel				
	230-240V 3~	230-240V~	400-415V 3~	200-208V~	200-208V 3~
EP 100	TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100/RB30	*TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100 / RB30	TS 16, TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100 / RB30	*TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100 / RB30	TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100 / RB 30
EH-15	TS 58 -12 RB CC 10 / RB 60, CC 50 / RB 60 CC100 / RB 60	-	TS 30, CC 10 / RB 30, CC 50 / RB 30, CC 100 / RB 30	-	TS 58 -12 RB CC 10 / RB 60, CC 50 / RB 60 CC100 / RB 60
EZ 22,5	TS 58 -12 RB CC 10 / RB 60, CC 50 / RB 60 CC100 / RB 60	-	TS 58 -12 RB CC 10 / RB 60, CC 50 / RB 60 CC100 / RB 60	-	TS 58 -12 RB CC 10 / RB 60, CC 50 / RB 60 CC100 / RB 60

*) 10 kW not approved for single-phase in Europe.

Installation of separate control panels.

Must be assembled outside the sauna. Control panel type TS or CC + RB is required for Kastor EP, EH and EZ heaters.

TS-type control panels

TS panels are thermally operated and have a patented divided output. They can either be surface-mounted or recessed for a flush fit (fig. 11). It is essential to fit insulation behind control panels recessed into the wall. The standard length of the capillary tube is 1850 mm, but a 5000 mm capillary tube is also available.

Installing a sensor for a TS control panel (fig. 10). **A** = capillary tube.

B = sensor holder. **C** = plastic holder for capillary tube. **D** = sensor that is installed 1500 mm above floor level (fig. 9 and 10, not above the sauna heater).

Extra equipment for the TS control panel.

Locking cover in transparent plastic to fit over the control panel. Available in designs to prevent unauthorised interference with time and temperature settings, or temperature only.

Figs. 17–21, 25, 26, 29 Wiring diagrams.

(With sauna heater EP, EH, EZ and control panel TS).

1 = sauna heater. 2 = control panel. 3 = relay box.

Check the heater's type identification plate to ensure that the heater is connected to the right voltage. **Don't forget – The installation must be earthed!**

Remote control operation.

TS control panels use contactors for remote control operation.

CC control panels.

Instructions: included with the control panel.

Can be installed at any distance from the sauna room.

CC panels are electronically operated and are available in the following models:

CC 10-3. Manual and automatic on/off. A maximum of three hours' running time, 10 hours' pre-set time.

CC 50-3. Manual and automatic on/off. A maximum of three hours' running time, 10 hours' pre-set time.

CC 50-12. Manual and automatic on/off. A maximum of 12 hours' running time, 10 hours' pre-set time.

CC 100-3. Manual and automatic on/off. A maximum of three hours' running time, 24 hours' pre-set time.

CC 100-12. Manual and automatic on/off. A maximum of 12 hours' running time, 24 hours' pre-set time.

CC 100-0. Built-in weekly timer. A maximum of 12 hours' continuous running time.

Placement of the thermistor (sensor).

1500 mm above floor level (not above the sauna heater).

The thermistor wire can be lengthened outside of the sauna with a partially enclosed low-voltage cable (2-core).

The thermometer in the sauna should be placed at a height so that the temperature corresponds exactly to the numbers displayed on the CC 50/CC 100.

Note: If necessary seal the hole in the wall behind the thermistor.

Relay box (RB).

Installed outside the sauna at any distance from it. The relay box may not be placed closer than one metre from the CC 10/ CC 50/ CC 100.

Partially enclosed low-voltage cable (6-core).

The control cable between the CC 10/ CC 50/ CC 100 and the relay box must be a partially enclosed low-voltage cable (6-core). Connect the shielding cable to plinth 12 in the relay box.

Lighting.

Connect the lighting according to the wiring diagram.

Remote control operation.

CC control panels are already prepared for remote-control operation from one or more locations.

Option: external on/off-switch (instantaneous).

Can be placed at any distance from the sauna. Connected with a low-voltage cable to the CC 10/ CC 50/ CC 100 – see the wiring diagram. If there are several external on/off switches, they should be parallel-connected.

Connection to a central computer.

The control panel can also be connected to a central computer, which gives a brief impulse (closure) between plinths 19 and 20 in the CC 10/ CC 50/ CC 100. The maximum permitted connection time for the sauna is 12 hours.

An instruction guide is included with the control panel.

Figs. 22, 23, 27, 30 Wiring diagrams.

(With sauna heater EP, EH, EZ and control panel CC).

1 = sauna heater. 2 = thermistor (sensor). 3 = control panel.

4 = external on/off switch (if any). 5 = relay box.

Check the heater's type identification plate to ensure that the heater is connected to the right voltage. **Don't forget – The installation must be earthed!**

Unusual voltages or number of phases.

Before connecting the heater to a different voltage or number of phases than those described in the wiring diagram, contact Tylö Customer Service.

BUILDING INSTRUCTIONS

The importance of correct sauna ventilation.

Incorrect sauna ventilation can result in hot floors and benches, scorched walls and ceilings (the temperature limit control is triggered)! So we do urge you to follow our instructions for sauna ventilation carefully.

Adjust the air outlet to evacuate 6–8 cu.m. of air per person, per hour, when the sauna is in operation.

Mechanical sauna ventilation is not to be recommended, as the forced air supply can cause a fire hazard through the wooden panelling drying out.

Fig. 12. Sauna heater and door on the same wall.

The "air circulation" created by the door should work together with the hot air generated by the heater. To facilitate this, the heater should be placed on the same wall as the door (If exceptional circumstances require the heater to be fitted to a side wall, make sure it is located in close proximity to the wall with the door).

Fig. 13. Inlet vent always directly below the heater.

The inlet vent should be driven straight through the wall directly below the centre of the heater. The cross-section of the vent for a family sauna is approx. 125 Sq.cm., for larger saunas approx. 300 sq.cm.

Fig. 14. The outlet vent should never discharge directly into the open air.

Position the air inlet and outlet vents as far away from one another as possible (diagonally opposite). The outlet vent should be located high on a wall or in the ceiling, and should have the same cross-section area as the inlet vent.

Spent air should always be led back into the same room from which it is drawn into the sauna – it must never be discharged directly into the open air. In this way, the air flowing from the sauna is continually being replenished in the room outside. This thermal ventilation method always works, no matter whether the pressure in adjacent rooms is negative or positive.

If there is a gap above the sauna ceiling, do not seal it. To ventilate a cavity above the sauna, drill or cut at least one ventilation hole into the cavity through the wall on which the sauna door is located.

Alt. A: Outlet vent through the sauna wall (seen from above). The vent is placed high up, near the ceiling.

Alt. B: Outlet vent through the cavity above the sauna ceiling (seen from the side).

Alt. C: Outlet vent through a drum under the ceiling in the sauna (seen from the side). The outlet duct should be placed at an angle between the ceiling and the wall. The drum can be built of wooden panelling and have the same area as the outlet vent.

Fig. 15. Recommendations for sauna construction:

- A. Floor frame, corner posts, studs, ceiling frame.
- B. Battens, rafters, vents.
- C. 50 mm mineral wool as heat insulation, approx. 20 mm air gap between insulation and outer wall.
- D. 12 mm wooden panel in walls and ceilings. There should always be at least 50 mm of insulation behind the wooden panel; no other material, such as particle board or plaster, may be used.
- E. Bonded, non-slip plastic floor-covering, extending approx. 50 mm up the walls behind the wooden panelling.
- F. Inlet vents should always be fully open. May be fitted with a shuttered vent on the outside.
- G. Outlet vent, can be fitted with a sliding hatch to adjust through-flow.
- H. Benches of at least 22 mm thick knot-free pine (alternatively aspen, lime or obeche).
- I. Drainage channel (recommended in public saunas). Never place a drainage channel or drain under the sauna heater.

Heater guard, (fig. 6. HL, SO), (fig. 7. WM, EP, EH, EZ)

The stones and the top of the sauna heater get very hot! In order to reduce the risk of accidental contact, Tylö always recommend that a heater guard be fixed as shown in the sketches.

Some words of advice:

- There should never be a drain in a sauna. However, all public saunas should have a drainage channel (I, fig. 15) connected to a drain out-side the sauna (no drainage channel is needed in a private sauna).
- If the sauna has a window in the door or wall, treat the lower moulding with boat varnish and seal the joint between the glass and the moulding with a water-resistant silicone sealant. This prevents any condensation on the glass from seeping into the wood.
- Varnish the threshold and door handles a few times with boat varnish to maintain the finish and simplify cleaning the sauna. Benches, decorative edging and back supports should be oiled on both sides with sauna oil.
Note: All other wood in the sauna should be untreated.
- Install floor decking only if the floor is slippery. Floor decking is impractical and prolongs the drying time for any water spilt on the floor.
- Treat the bucket and ladle with boat varnish, or oil them with sauna oil. The bucket will remain watertight and the wood will be beautifully preserved. Never leave the wooden bucket in the sauna after a sauna bath.
- Before you enjoy your first sauna bath, heat the sauna room up to 90 °C and leave the heater to run for about 1 hour. This will rid the room of that "new" smell.
- Clean your sauna regularly. Scrub the benches and floor with soft soap. It is a mild, gentle detergent and leaves a pleasant fragrance.

General Information

Filling the stone compartment.

Only use stones of the dolerite type (sauna stones), as "ordinary" stones can damage the unit. Fill the stone compartment around the elements from bottom to top, stacking the stones approx. 50 mm above the front edge at the top of the unit. Do not press the stones into place.

Check the stone compartment at least once a year.

This is especially important for public saunas and saunas in frequent use. Remove all stones from the compartment. Clean any small stones, grit, gravel and chalky deposits from the bottom of the stone compartment. Use only stones which are whole and intact, replacing them when necessary with new dolerite stones.

Temperature limit control.

Tylö sauna heaters have a temperature limit control built into the terminal box on the heater. This is activated automatically if there is any risk of overheating. More often than not, the cut-off is triggered because of incorrect sauna ventilation or an incorrectly located sauna heater. Call an expert to reset the temperature limit control.

Important! For heater model WM, the sensor of the high temperature limit control has to be located high on the wall in the sauna room (15-20cm from the ceiling).

Sprinkling water on the stones

Must always be done with a ladle onto the stones, never with a hose or bucket. **Note:** The stones must be hot.

OPERATING INSTRUCTIONS HL, SO, WM and TS

Temperature setting.

The Roman numerals indicate a rising temperature scale. Experiment to find the temperature that suits you best. Begin for example by turning the thermostat dial to position IV. If you later find that you would prefer a higher or lower temperature, adjust the dial up or down until you find the ideal bathing temperature for you (usually 70–90 °C). Once you have found the right temperature, you can leave the dial on this setting.

Timer settings with control panels TS 16-3(B), TS 30-03 and sauna heater HL, SO and WM

The first figures, 1–2–3–(4), indicate the length of time the sauna will operate. The following 9 (8) figures are used to pre-set start-up times.

For immediate operation: First turn the dial past the first figure 3 (4) and then back again to the figure corresponding to the length of time you wish the heater to run for (1, 2, 3 or (4) hours). The timer turns the heater off automatically when the 0 position is reached.

For automatic operation: Turn the dial to the figure 9 (8) and then back to the desired pre-set time (in other words, the number of hours before the heater automatically switches itself on). The timer turns off automatically when the 0 position is reached.

You may turn the dial forwards or backwards whenever you wish, for example, to switch off the sauna manually (turn to 0) or to change a setting you have already made.

Timer settings with control panels TS 30-012 and TS 58 -12 RB.

The figures 1–12 on the timer indicate the operating time. The heater remains in operation for the number of hours the switch is set to, and automatically switches itself off when the 0 position is reached.

You may change the time setting whenever you wish and also switch off the sauna by turning the dial to 0.

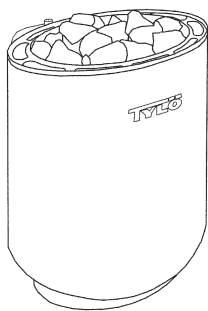
HOW TO GET THE MOST OUT OF YOUR SAUNA

- Always shower before going into the sauna.
- Take a towel in with you to sit on. Stay inside the sauna only as long as it feels pleasant. Go out now and then to cool off and freshen up with a quick shower.
- Show consideration for other bathers. Don't set the temperature higher than is pleasant for all those using the sauna.
- Young children love saunas. Let them splash about in a tub of water on the floor or the lower benches where it is somewhat cooler. But remember to keep an eye on them at all times.
- Round off your sauna with a long, cool shower.
- Never get dressed right after your sauna. This will only cause you to perspire. Relax, treat yourself to a cold drink and enjoy a sensation of true well-being. Don't get dressed until your body has cooled down and your pores have closed once again.

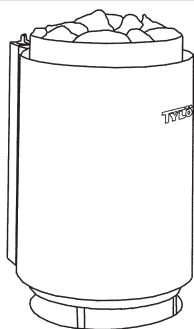
You can enjoy traditional dry and wet saunas with provide continuous water sprinkling are not permissible.

Manufactured by : Kastor Oy, Riihimäki Finland

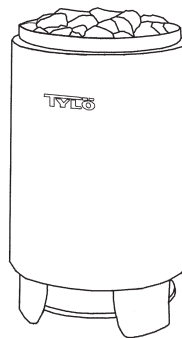
www.kastor.fi



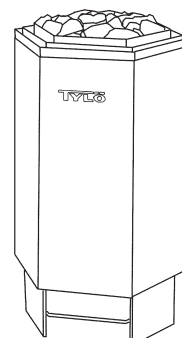
1a



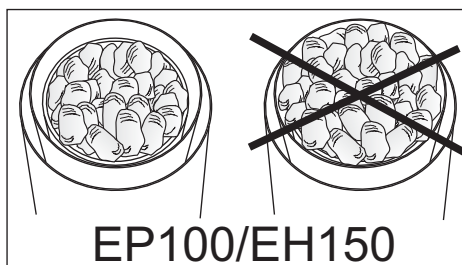
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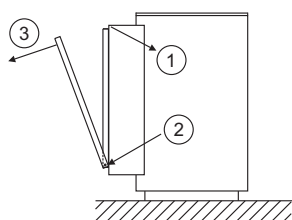
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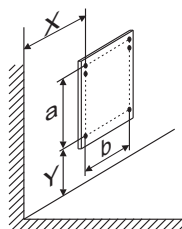
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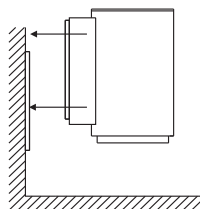
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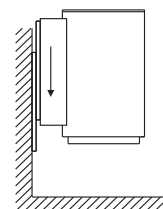
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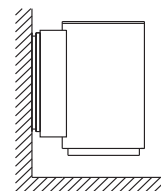
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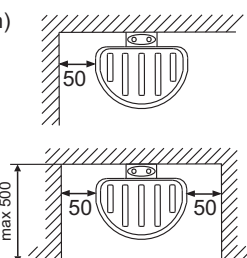
e

(min mm)

(mm)	HL, HL-S, SO	WM
X	175	160
Y	295	275
a	240	278
b	177	390

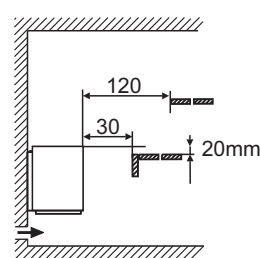
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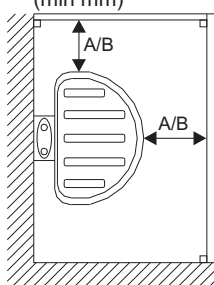
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(min mm)



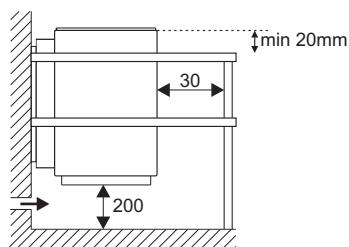
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(min mm)

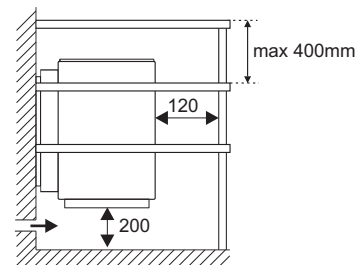


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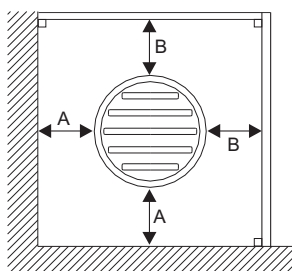
(min mm) A



(min mm) B



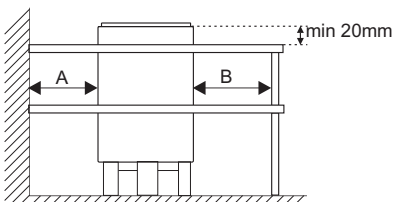
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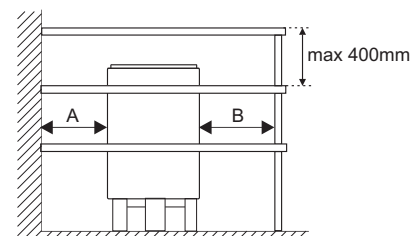
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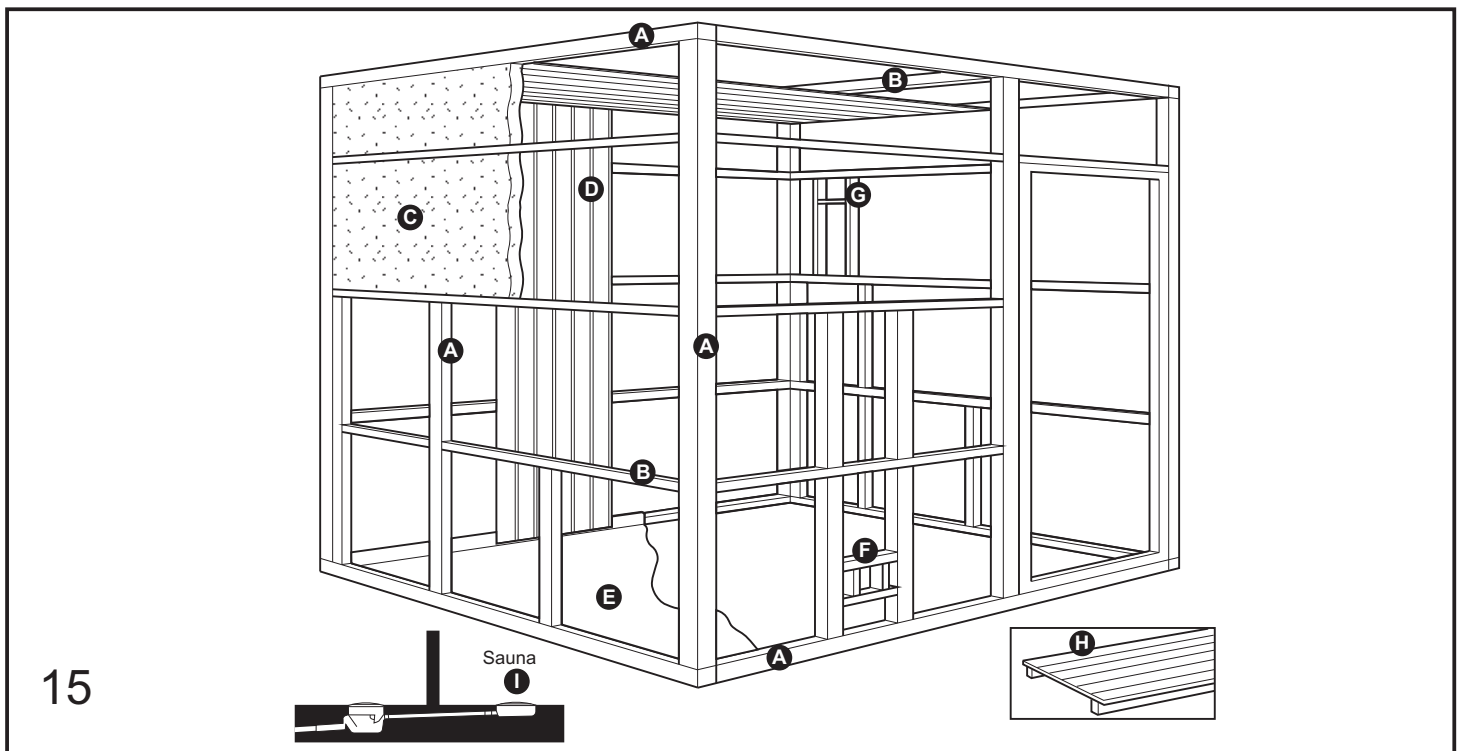
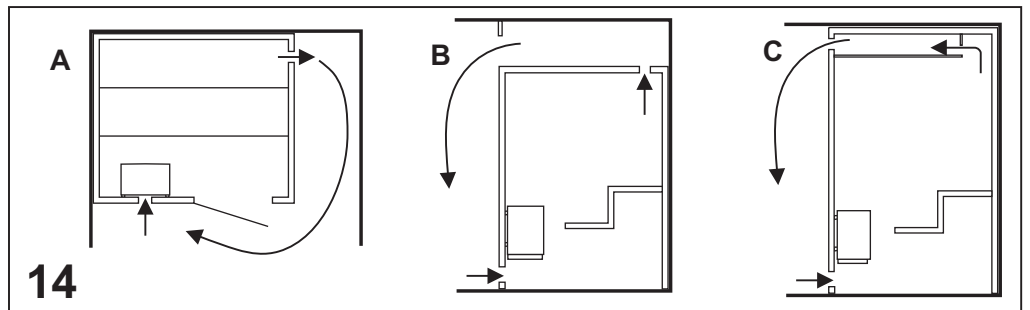
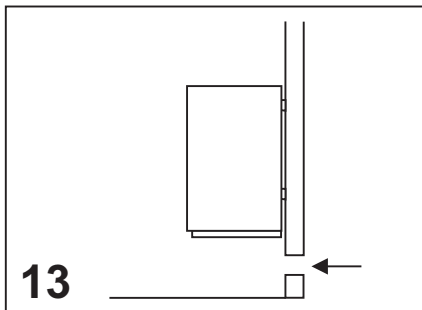
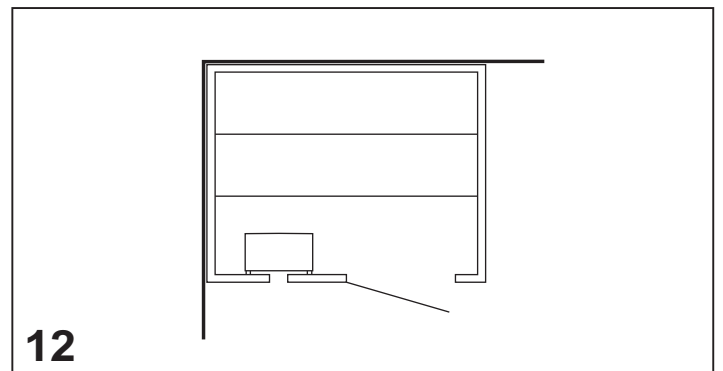
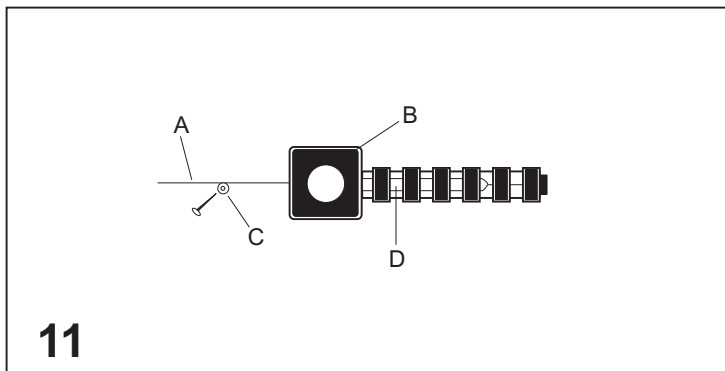
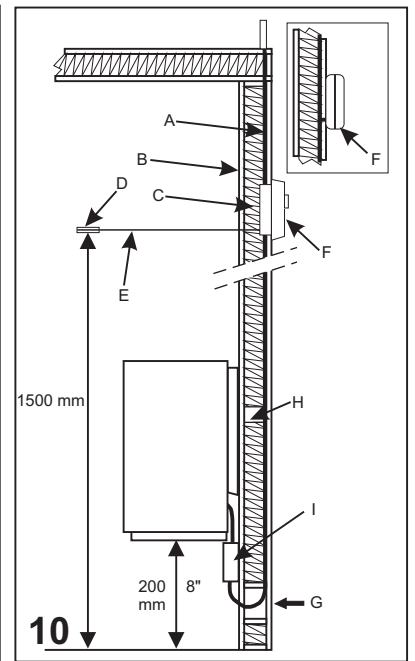
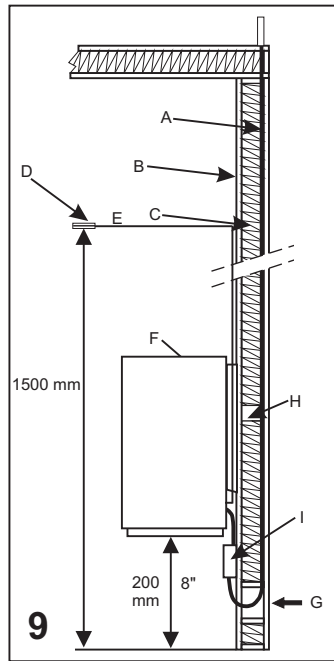
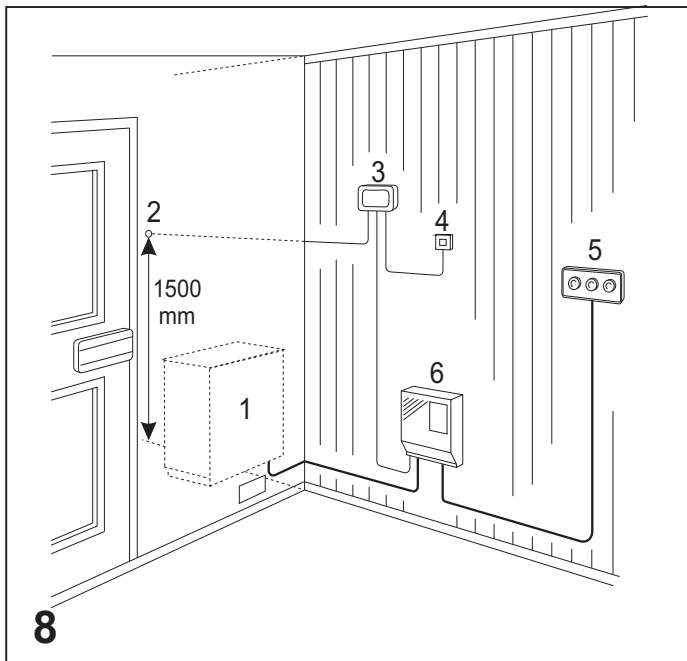
EP100, EH150: A=80, B=80
EZ225: A=100, B=150

(min mm)

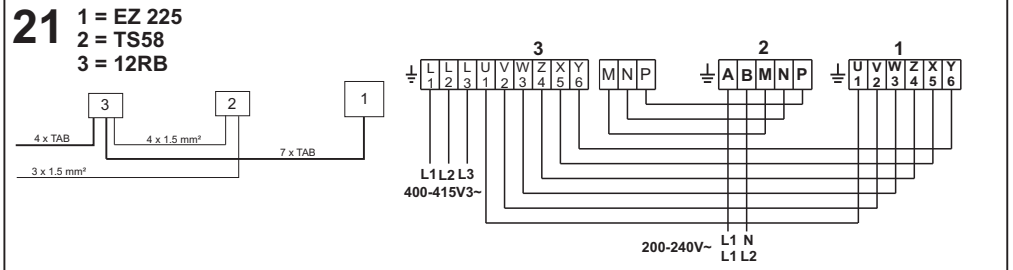
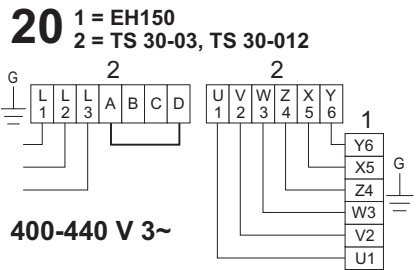
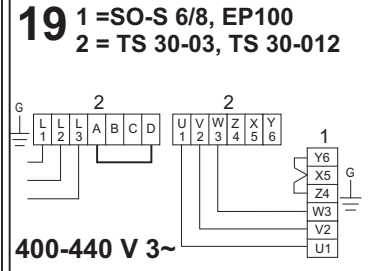
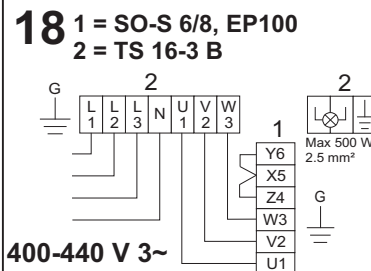
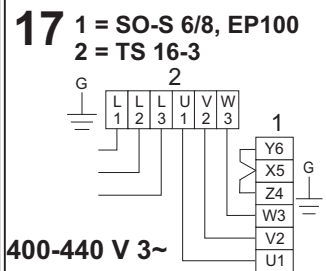
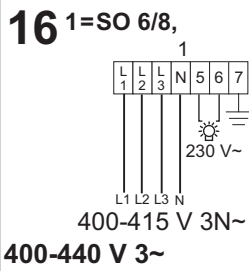


(min mm)





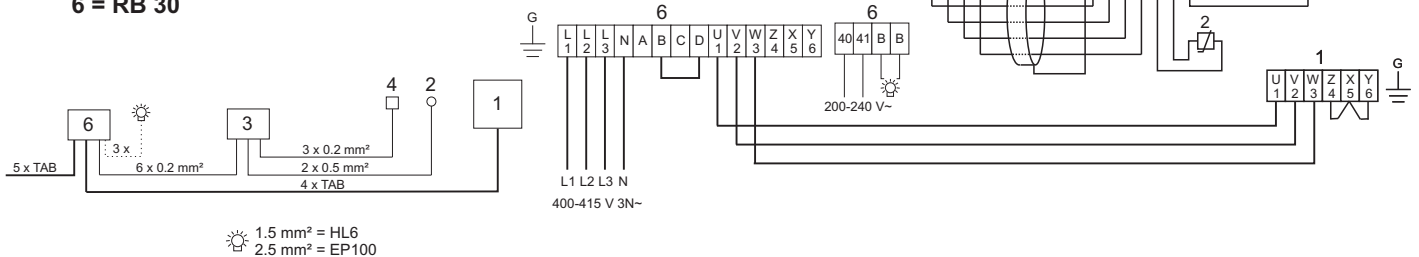
400 - 415 - 440 V 3~



400 - 415 - 440 V 3N~

Type SO-S 6/8, EP100 400-415 V 3N~

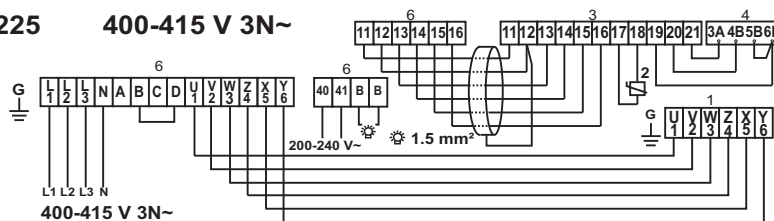
- 22** 1 = SO-S 6/8, EP100
2 = thermistor (sensor)
3 = CC10, CC50, CC100
4 = external switch
6 = RB 30



WARNING! THIS APPLIANCE MUST BE EARTHED!

Type EH-150, EZ-225 400-415 V 3N~

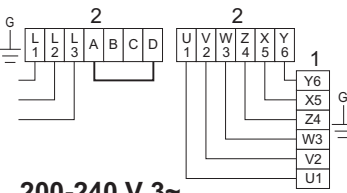
- 23** 1 = EH-15, EZ 22.5
2 = therm. (sensor)
3 = CC10, CC50, CC100
4 = ext. switch
6 = RB 30, RB 60



WARNING! THIS APPLIANCE MUST BE EARTHED!

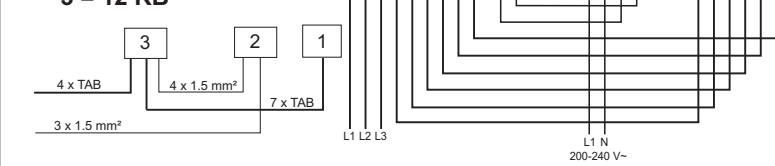
200 - 208 - 230 - 240 V 3~

24 1 = SO-S 6/8, EP100
2 = TS 30-03, TS 30-012



200-240 V 3~

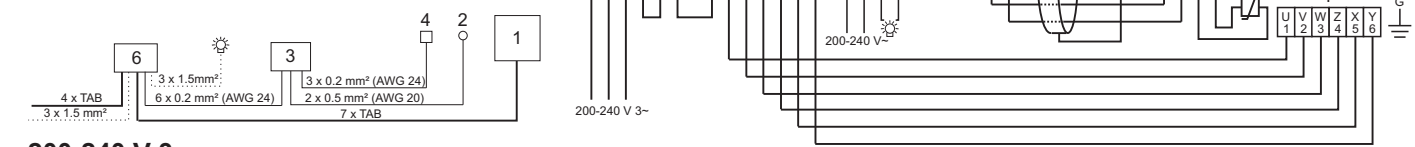
25 1 = EH150, EZ225
2 = TS 58
3 = 12 RB



200-240 V 3~

WARNING! THIS APPLIANCE MUST BE EARTHED!

26 1 = SO-S 6/8, EP100
2 = thermistor (sensor)
3 = CC10, CC50, CC100
4 = external switch
6 = RB 30, RB 60

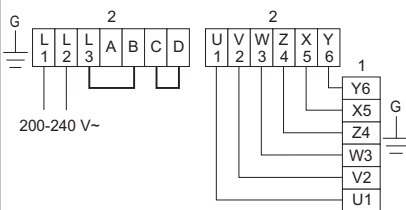


200-240 V 3~

WARNING! THIS APPLIANCE MUST BE EARTHED!

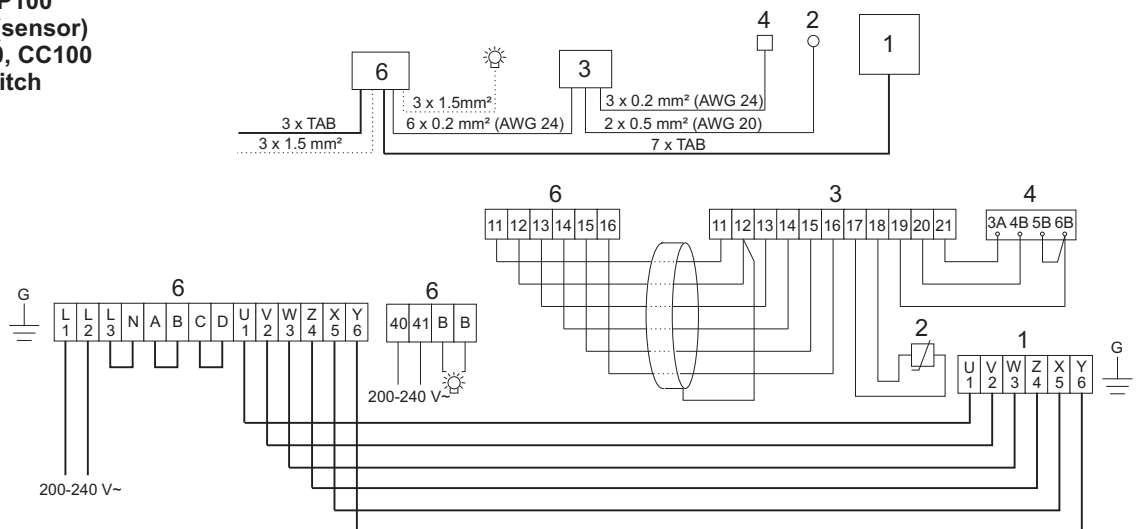
200 - 208 - 230 - 240 V~

27 1 = SO-S 6/8, EP100
2 = TS 30-03, TS 30-012



200-240 V~

28 1 = SO-S 6/8, EP100
2 = thermistor (sensor)
3 = CC10, CC50, CC100
4 = external switch
6 = RB 30



200-240 V~

WARNING! THIS APPLIANCE MUST BE EARTHED!