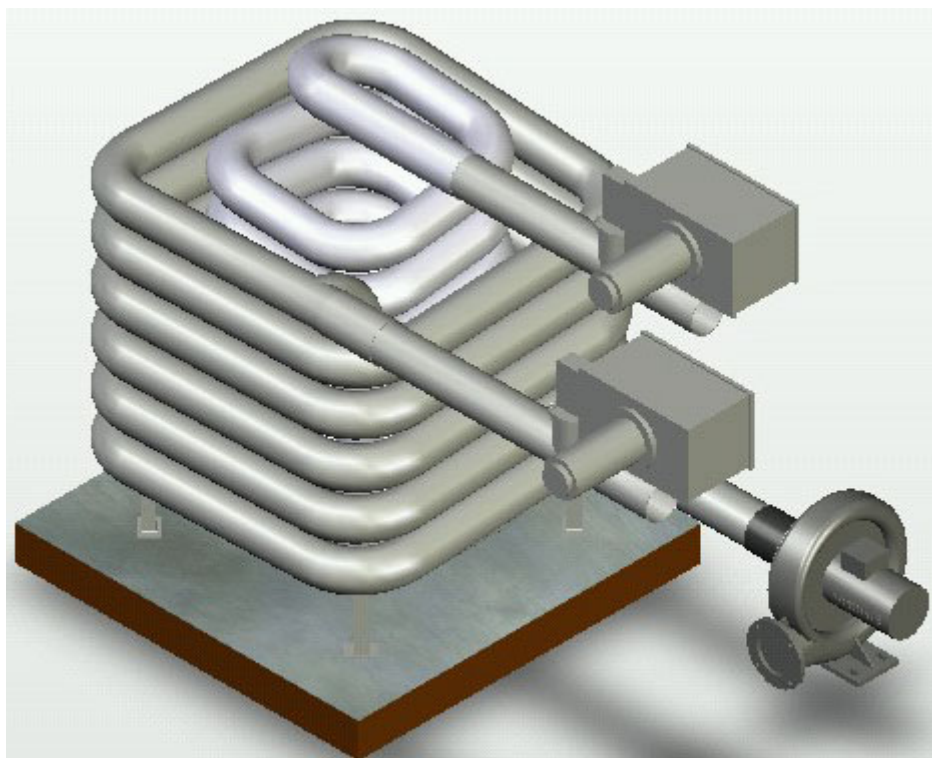


# KUSATEK Kusatherm

Gas-powered sauna heater



Installation and Operating Instructions

Made in Germany

# Documentation

## Manufacturer

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## Original installation instructions DE

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## Characters, symbols and illustrations

	Additional information about an operating step
	Cross-reference to a page
	Read instructions
	Result of a step
	Table title
	Title of figure
$\leq \geq$	Less than or equal to, greater than or equal to

## Revision history

Date	Version	Description
30 Sept. 2020	01.00	First version
22 July 2024	01.10	New logo, general amendments

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# 1

## General safety instructions

### 1.1 Mounting and electrical installation



These installation instructions are intended for qualified personnel familiar with the laws and regulations applicable to electrical installations, gas installations, and infrared radiators at the installation site. Observe the following general safety instructions during mounting, configuration and commissioning of the product.

#### **Risk to life and limb and risk of fire**

Risk to life and limb from electric shock and fire in the event of improper or faulty installation. This risk remains also after completion of the installation work.

- ▶ The electrical installation of the heater, relay boxes and other electrical systems or equipment with a fixed mains connection must only be performed by a trained electrician from an authorised electrical company.
- ▶ The gas installation and exhaust gas routing must be performed only by a trained technician from an authorised company.
- ▶ Ensure compliance with the applicable regional standards and regulations for electrical installation and gas installation.
- ▶ The system must be completely disconnected from the mains supply before commencing installation and repair work.
- ▶ The housing cover must only be removed by a trained specialist.

#### **Fire hazard from overheating**

Insufficient ventilation of the plant room, shafts, or sauna cabin can lead to overheating of the unit and to fire.

- ▶ Install air inlets and outlets in the sauna cabin and in the plant room.
- ▶ Install supply air ventilation for cooling the shafts as needed.
- ▶ Observe the sauna cabin manufacturer's safety and installation instructions.



## General safety instructions

- |   |   |
|---|---|
| <b>Risk of fire due to sauna stones</b> | <p>It is possible for hot stones or stone pieces to fall out of the rock store.</p> <ul style="list-style-type: none"> <li>▶ The sauna heater may not be placed on a floor made of easily flammable material (e.g. laminate or synthetic flooring). Ceramic tiles are recommended as a flooring option.</li> </ul>  |
| <b>Risk of burns from hot glass</b>     | <p>Glass surfaces in the sauna cabin become hot while the sauna is in operation.</p> <ul style="list-style-type: none"> <li>▶ When installing the cabin, ensure that the touchable glass surfaces on the outside of the cabin may reach a maximum temperature of 76°C. Appropriate protection may need to be installed if required.</li> </ul>  |
| <b>Risk of burns from hot unit</b>      | <p>During operation, the burner, burner pipe, and fan may become hot and, if touched, could cause burns.</p> <ul style="list-style-type: none"> <li>▶ Maintain a safe distance.</li> </ul>  |
| <b>Sauna cabin and sauna heater</b>     | <p>The sauna cabin must be constructed with proper material and built in a professional manner, and the output of the sauna heater must be suited for the cabin.</p> <ul style="list-style-type: none"> <li>▶ The sauna heater may only be used in sauna cabins made of suitable, low-resin and untreated material (e.g. Nordic spruce). The control unit must not be used in the cabin.</li> <li>▶ Multiple heaters may be installed in one sauna if the heater output can properly supply the cabin volume. In this case, depending on the position, an additional safety temperature limiter must be installed for each additional heater.</li> <li>▶ The sauna heater is not designed to be installed or set up in an alcove or under a bench or sloping roof unless the sauna heater is specifically designed and approved for this type of installation.</li> <li>▶ Receptacles may not be installed inside the sauna cabin.</li> <li>▶ Each sauna cabin must have air inlets and outlets. The air inlets and outlets may be installed from below or from behind the heater. The minimum dimensions of the air inlets and outlets can be found here: 2.4 Technische Daten, □ DE-15 and 3.1.4 Zu- und Abluftöffnungen, □ DE-24.</li> <li>▶ The air outlet is always installed in the lower part of the wall, diagonal to the heater. The air inlets and outlets must not be closed. Observe the instructions provided by your sauna cabin manufacturer.</li> </ul> |

- ▶ Use the supplied control unit to check and control the sauna heater. It should be mounted to a suitable location on the cabin's outside wall, and the corresponding temperature sensors inside the sauna as per the installation instructions for the control unit.
- ▶ Electrical installations and equipment in the sauna cabin must comply with IEC 60364-7-703 (DIN VDE 0100-703).
- ▶ The cabin lighting must be safe for sauna cabin use and installed in such a way that it can be used safely in a sauna cabin. Ensure that the heater is installed in compliance with the standards and legal norms valid in your country.
- ▶ The cabin door must open outward and must not have a lock that cannot be opened in the case of failure. We recommend magnetic or spring locks.

**Sauna cabin, plant room, and installation**

There is a risk to health and risk of fire if preparatory work is not performed in a professional manner.

- ▶ Ensure compliance with all regulations applicable to the cabin, plant room, gas supply line, electrical installation, and exhaust gas line. See the applicable sections in *Vorgaben für Montage*,  DE-20.
- ▶ Read the chapter entitled 3.6 Sicherheitsvorrichtungen,  DE-29.

## General safety instructions

### 1.2 Operator instruction

The operator of the sauna cabin must be instructed in the general safety instructions during commissioning. The operator must be given a copy of the operating instructions.

#### **Risk of electric shock**

A risk to life and limb from electric shock and fire arises in the event of improper repair work. This risk remains also after work is completed.

- ▶ The housing covers for the burner, fan, and control unit must be removed only by trained technicians.
- ▶ Repairs and maintenance may be completed only by trained technicians.
- ▶ The system must be disconnected and removed entirely from the mains supply before commencing repair work.
- ▶ Use only original spare parts from the manufacturer.

#### **Fire hazard**



Objects placed on the sauna heater can ignite and cause fires.

- ▶ Attach the heater guard rail.
- ▶ Do not place objects on the heater.
- ▶ Fill the rock store as directed.
- ▶ Inspect the sauna cabin prior to each switching.
- ▶ If you switch on the heater using pre-set timers or remotely, attach a protective cover to the heater or install a suitable safety system.

#### **Health risks**

Spending time in a sauna cabin can lead to serious health risks or even death for persons with health impairments.


- ▶ Persons with health impairments who spend time in a sauna must consult a doctor before entering a sauna cabin.



**Damage to health** Excessive time spent in a heated sauna cabin can lead to overheating of the body and hyperthermia, which may cause serious health problems and even death. Hyperthermia occurs when the core temperature of the body exceeds the norm by a few degrees. Symptoms of hyperthermia include fever, dizziness, lethargy, sleepiness, and fainting. Side effects of hyperthermia include perception disorders, inability to recognize the need to leave the room, inability to identify imminent danger, harm to the foetus in the case of pregnant women, inability to physically leave the room and unconsciousness.

Alcohol, drugs, and medications increase the risk of hyperthermia.

- ▶ Do not exceed the maximum recommended time in the sauna.
- ▶ Leave the sauna cabin if your body responds abnormally to the heat or if you do not feel well.
- ▶ Avoid alcohol, drugs, and medications when you are using the sauna.
- ▶ Floor heating in the sauna cabin results in additional warming of the legs and can lead to health risks.
- ▶ Warn sauna users by affixing a warning plate.

Read the chapter entitled 4.5 Warnhinweisschild,  DE-38.

**Operation by  
children or persons  
with reduced mental  
capacity**

- ▶ Children and persons with reduced physical, mental or sensory abilities must be supervised to ensure that they do not play with the unit.
- ▶ Children under 8 years of age should not operate the sauna cabin.
- ▶ The settings for the heating period may only be changed by children 8 years of age or older if they are supervised by an adult.
- ▶ The sauna cabin must only be used by persons with reduced mental capacity, or limited physical or sensory abilities under supervision or if they have been previously instructed in its use and understand the risks.
- ▶ Children and persons who have not received proper instruction must not clean or service the system.

## General safety instructions

### 1.3 Safety levels

Safety instructions and important operating instructions are classified according to ANSI Z535.6. Please familiarise yourself with the following terms and symbols:

#### **WARNING**

##### **Warning**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

---

#### **CAUTION**

##### **Caution**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

---

#### **NOTICE**

##### **Notice**

Indicates a hazardous situation which, if not avoided, will result in damage to the unit.

---

### 1.4 Standards and regulations

For an overview of the standards that were observed during design and construction of the sauna heater, please refer to the individual product's technical data sheet that can be downloaded from [www.eos-sauna.com](http://www.eos-sauna.com). Local regulations also apply to the installation and operation of heating, sauna, and steam room systems.

# 2

## Identification

KUSATEK Kusatherm is a gas-powered sauna heater that is available in a variety of output capacities. The heater uses a burner to heat a gas/air mixture to a temperature of approx. 350°C/662°F in a burner pipe made of stainless steel. At the other end, a fan uses negative pressure to draw the gas/air mixture into the coil and then directs the combustion air outside via an exhaust unit.


### 2.1 Requirements for operation

The sauna heater must be operated in conjunction with the K-Tec control unit, which is included in the scope of delivery. The heater must be connected only to this control unit.


To extract the resulting exhaust gases, an exhaust gas system made of stainless steel must be professionally installed. The exhaust gas system must comply with the requirements of the applicable fire code and be developed in consultation with the chimney sweep.

# Identification

## 2.2 Nameplate

<b>EOS Saunatechnik GmbH</b> 	
Saunagasöfen	
Schneiderstriesch 1	
35759 Driedorf	
Tel.: +49(0)2775 57765-12, <a href="http://www.kusatek.de">www.kusatek.de</a>	
<b>0085-2020</b>	
<b>KUSATHERM Saunagasofen mit 1 Brenner</b>	
<b>A</b>	Geräte-Typ: KUSATHERM XX
<b>B</b>	Gasart/Gasdruck/Düse: G20 / 20mbar / 5,1 mm
<b>C</b>	Geräteart: B22
<b>D</b>	Kategorie: II2ELL3B/P
<b>E</b>	Nennwärmebelastung: XX KW mit 1 Brenner (bezogen auf den Heizwert)
<b>F</b>	Nox-Klasse: 3
<b>G</b>	Elektrische Daten: 230 V, 50 Hz
	Stromaufnahme: max. 3A
	Bestimmungsländer: AT BE CH CZ DE DK EE ES FI GB GR HU IE IT LZ LU LV NL NO PL PT SE SI SK TR RU
<b>H</b>	Baujahr / Seriennummer: 2020-30-XXXX-01
<b>I</b>	Projektname: Muster
<b>J</b>	Brennernummer: 94676700-XXXX-XXXX-30K
<b>K</b>	Produktidentnummer: CE-0085BT0401
Dieses Gerät muss nach den geltenden Anschluss- und Aufstellungsbedingungen installiert werden. Es darf nur in ausreichend belüfteten Räumen benutzt werden. Die Inatallations- und Bedienungsanleitungen sind vor der Insatllation und vor der Inbetriebnahme einzusehen.	
SERVICE- und Wartungsarbeiten	
Vor Beginn der Arbeiten ist die Steuerung auszuschalten und die Gaszufuhr abzusperren.	

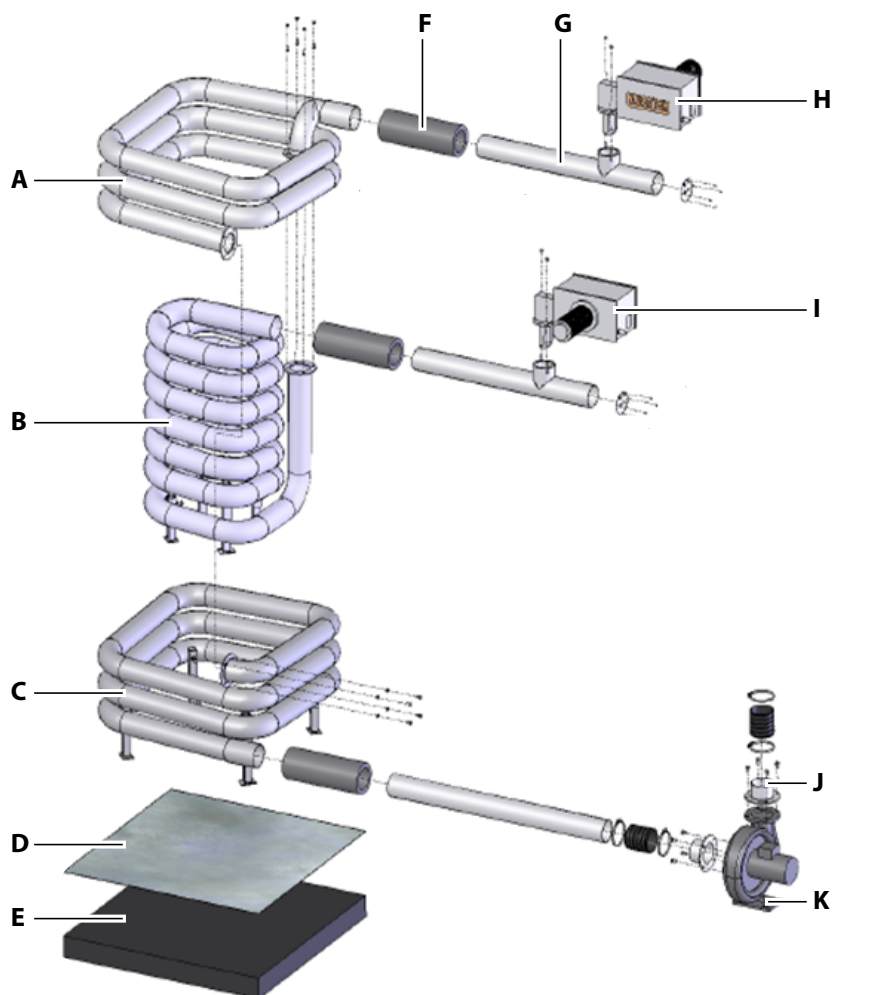
<b>A</b> Unit model	<b>G</b> Power consumption
<b>B</b> Gas type	<b>H</b> Manufacturing date
<b>C</b> Unit type	<b>I</b> Project
<b>D</b> Category	<b>J</b> Burner number
<b>E</b> Nominal heat input	<b>K</b> Product ID number
<b>F</b> Electrical data	
 Nameplate	


## 2.3 Scope of delivery

The scope of delivery is listed in the delivery note and essentially includes the KUSATEK Kusatherm sauna heater and the K-Tec control unit. Check the delivery to ensure that all components were delivered and that they are in proper working order. Contact your distributor if components are missing or damaged. The heater must not be operated if components are missing or damaged.

### KUSATEK Kusatherm

The following parts are included in the scope of delivery:



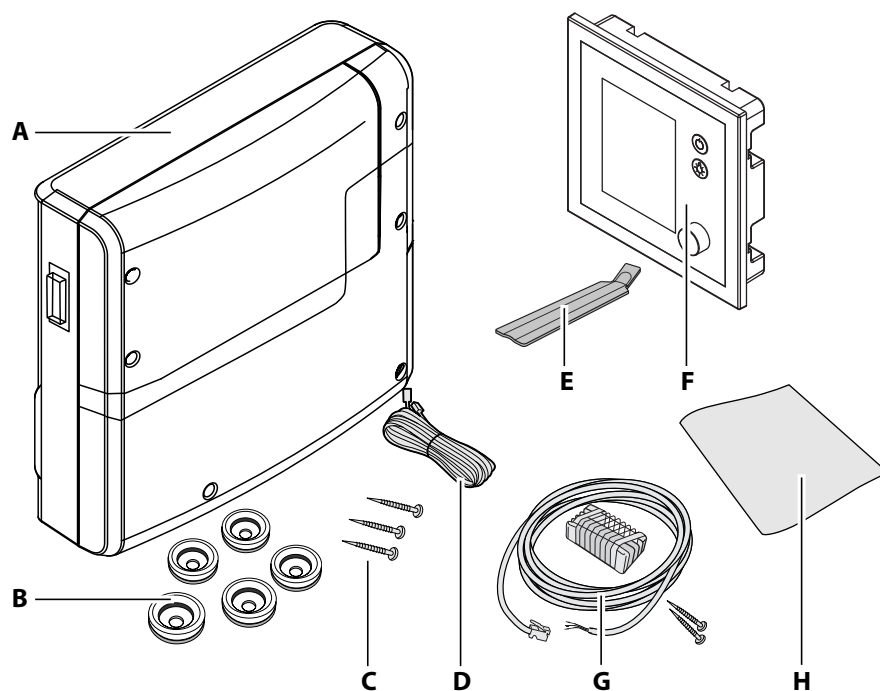
- A** Coil top section
- B** Inner coil
- C** Coil bottom section
- D** Stainless steel tray
- E** Foam glass plate  
Rock store – not shown
-  Diagram – assembly

- F** Wall bushing
- G** Burner pipe
- H** Burner
- I** Mains supply connection, gas supply connection
- J** Compressed air connecting piece
- K** Fan

## Identification

### K-Tec

The following parts are included in the scope of delivery:



- A** Relay box with 2-piece front cover
- B** 5 bushings
- C** 3 wood screws 5 x 25 mm
- D** 5 m connecting cable with RJ14/  
RJ10 modular plug for control panel
- E** Removal tool for front panel
- F** Control panel with housing for  
mounting in the wall or mounting  
on the wall
- G** Temperature sensor with safety tem-  
perature limiter,  
including 5 m connecting cable with  
RJ10 plug, housing, circuit board,  
2 screws 4x40 mm
- H** Installation and operating instruc-  
tions

\* STB = Safety temperature limiter

The scope of delivery also includes a protocol for the commissioning check.

## 2.4 Technical data

### Control unit

Manufactured by KUSATEK GmbH	K-Tec
------------------------------	-------

### Electrical lines

Heater output	10 kW	15 kW	20–120 kW
Power connector	230 V/50 Hz		400 V/50 Hz
Supply line to control unit	3 x 1.5 mm <sup>2</sup>		5 x 2.5 mm <sup>2</sup>
Control unit – room sensor	2 x 1.5 mm <sup>2</sup>		2 x 1.5 mm <sup>2</sup>
Control unit – heater sensor with safety temperature limiter	4 x 1.5 mm <sup>2</sup>		4 x 1.5 mm <sup>2</sup>
Control unit – burner	3 x 1.5 mm <sup>2</sup>		3 x 1.5 mm <sup>2</sup>
Control unit - fan	3 x 1.5 mm <sup>2</sup>		5 x 2.5 mm <sup>2</sup>

All line cross-section specifications are the minimum cross-sections of a copper line. Leakage current: max. 0.75 mA per kW heater output

### Heater – cabin

Heater output	10 kW	15 kW	20 kW	25–30kW	
Cabin volume	10–15m <sup>3</sup>	15–23m <sup>3</sup>	23–30m <sup>3</sup>	30–45m <sup>3</sup>	
Nominal heat input	9 kW	14 kW	18 kW	23 kW	27 kW
Number of gas burners	1 pc.				
Gas consumption	0.9 m <sup>3</sup> /hour	1.4 m <sup>3</sup> /hour	1.8 m <sup>3</sup> /hour	2.3–2.7m <sup>3</sup> /hour	
Gas supply connection at burner	R 1/2"				
Gas flow pressure for natural gas	22 / 50mbar				
Gas flow pressure for propane/ butane	28 / 50mbar				
Air intake filter	1 pc.	-	1 pc.	1 pc.	
Air volume per burner	50 m <sup>3</sup> /hour	70 m <sup>3</sup> /hour	95 m <sup>3</sup> /hour	120 m <sup>3</sup> /hour	150 m <sup>3</sup> /hour
Min. air inlet/outlet in plant room	150 cm <sup>2</sup>				

## Identification

Heater output	50–60kW		75–90kW		100–120kW	
Cabin volume	45–90m <sup>3</sup>		90–135m <sup>3</sup>		135–200m <sup>3</sup>	
Nominal heat input	45 kW	53 kW	67 kW	84 kW	90 kW	107 kW
Number of gas burners	2 pcs		3 pcs		4 pcs	
Gas consumption	4.5–5.4m <sup>3</sup> /hour		6.7–8.1m <sup>3</sup> /hour		9.0–10.8m <sup>3</sup> /hour	
Gas supply connection at burner	R 1/2"					
Gas flow pressure for natural gas	22 / 50mbar					
Gas flow pressure for propane/ butane	28 / 50mbar					
Air intake filter	2 pcs		3 pcs		4 pcs	
Air volume per burner	235 m <sup>3</sup> / hour	300 m <sup>3</sup> / hour	350 m <sup>3</sup> / hour	450 m <sup>3</sup> / hour	470 m <sup>3</sup> / hour	565 m <sup>3</sup> / hour
Min. air inlet/outlet in plant room	150 cm <sup>2</sup>	170 cm <sup>2</sup>	200 cm <sup>2</sup>	230 cm <sup>2</sup>	250 cm <sup>2</sup>	290 cm <sup>2</sup>

### Gas burner – KUSATEK

Burner model		KUSA 10	-	KUSA 20	KUSA 25	KUSA 30
Kusatherm model		10	15	20	25–30	
G20	Baffle plate (type)	2	-	4	4	5
	Negative pressure	7.2 mbar	-	7.0 mbar	7.8 mbar	7.8 mbar
	Nozzle diameter	2.8 mm	-	4.0 mm	4.6 mm	5.1 mm
G25	Baffle plate (type)	2	-	4	4	5
	Negative pressure	8.5 mbar	-	7.0 mbar	7.5 mbar	7.7 mbar
	Nozzle diameter	3.0 mm	-	4.2 mm	4.9 mm	5.4 mm
G150	Baffle plate (type)	-	-	-	4	4
	Negative pressure	-	-	-	8.7 mbar	8.8 mbar
	Nozzle diameter	-	-	-	7.0 mm	7.0 mm
PRO-PANE	Baffle plate (type)	2	-	4	5	5
	Negative pressure	4.1 mbar	-	7.0 mbar	6.0 mbar	5.2 mbar
	Nozzle diameter	2.4 mm	-	3.3 mm	3.7 mm	4.0 mm



Burner model		2 x KUSA 25	2 x KUSA 30	3 x KUSA 25	3 x KUSA 30	4 x KUSA 25	4 x KUSA 30
Kusatherm model		50–60		75–90		100–120	
G20	Baffle plate (type)	5	5	3	4	5	4
	Negative pressure	4.7 mbar	6.8 mbar	3.7 mbar	7.2 mbar	4.7 mbar	8.1 mbar
	Nozzle diameter	5.0 mm	5.1 mm	5.2 mm	5.0 mm	5.0 mm	5.1 mm
G25	Baffle plate (type)	5	5	5	5	5	4
	Negative pressure	4.6 mbar	5.4 mbar	5.5 mbar	5.5 mbar	4.6 mbar	9.0 mbar
	Nozzle diameter	5.4 mm	5.4 mm	5.4 mm	5.4 mm	5.4 mm	5.4 mm
G150	Baffle plate (type)	4	4	4	4	-	-
	Negative pressure	6.0 mbar	7.9 mbar	5.5 mbar	6.8 mbar	-	-
	Nozzle diameter	8.0 mm	8.0 mm	8.0 mm	8.0 mm	-	-
PRO-PANE	Baffle plate (type)	5	8	4	5	5	4
	Negative pressure	3.8 mbar	5.8 mbar	4.0 mbar	4.0 mbar	3.8 mbar	7.2 mbar
	Nozzle diameter	4.0 mm	4.0 mm	4.0 mm	4.0 mm	4.0 mm	4.0 mm

## Gas burner – Roberts Gorden USA

Burner model		CRT 10	BH 15	CRT 20	CRT 25	CRT 30
Kusatherm model		10	15	20	25–30	
G20	Baffle plate (type)	2	6	4	4	5
	Negative pressure	7.2 mbar	-	7.0 mbar	7.8 mbar	7.8 mbar
	Nozzle diameter	2.8 mm	3.2 mm	4.0 mm	4.6 mm	5.1 mm
G25	Baffle plate (type)	2	-	4	5	5
	Negative pressure	8.5 mbar	-	7.0 mbar	7.5 mbar	7.7 mbar
	Nozzle diameter	3.0 mm	-	4.2 mm	4.9 mm	5.4 mm
G150	Baffle plate (type)	-	-	-	4	4
	Negative pressure	-	-	-	8.7 mbar	8.8 mbar
	Nozzle diameter	-	-	-	7.0 mm	8.0 mm
PRO-PANE	Baffle plate (type)	2	7	4	5	5
	Negative pressure	4.1 mbar	-	7.0 mbar	6.0 mbar	5.2 mbar
	Nozzle diameter	2.4 mm	2.3 mm	3.3 mm	3.7 mm	4.0 mm

## Identification

Burner model		2 x CRT 25	2 x CRT 30	3 x CRT 25	3 x CRT 30	4 x CRT 25	4 x CRT 30
Kusatherm model		50–60		75–90		100–120	
G20	Baffle plate (type)	5	5	3	4	5	4
	Negative pressure	4.7 mbar	6.8 mbar	3.7 mbar	7.2 mbar	4.7 mbar	8.1 mbar
	Nozzle diameter	5.0 mm	5.1 mm	5.2 mm	5.0 mm	5.0 mm	5.1 mm
G25	Baffle plate (type)	5	5	5	5	5	4
	Negative pressure	4.6 mbar	5.4 mbar	5.5 mbar	5.5 mbar	4.6 mbar	9.0 mbar
	Nozzle diameter	5.4 mm	5.4 mm	5.4 mm	5.4 mm	5.4 mm	5.4 mm
G150	Baffle plate (type)	4	4	4	4	-	-
	Negative pressure	6.0 mbar	7.9 mbar	5.5 mbar	6.8 mbar	-	-
	Nozzle diameter	8.0 mm	8.0 mm	8.0 mm	8.0 mm	-	-
PRO-PANE	Baffle plate (type)	5	8	4	5	5	4
	Negative pressure	3.8 mbar	5.8 mbar	4.0 mbar	4.0 mbar	3.8 mbar	7.2 mbar
	Nozzle diameter	4.0 mm	4.0 mm	4.0 mm	4.0 mm	4.0 mm	4.0 mm

### Heating coils

Heater output	10 kW	15 kW	20 kW	25–30kW	50–60kW	75–90kW	100–120kW
Standard models							
Type	S-10	S-15	S-20	S-25	S-50	S-75	S-100
Dimensions L x W x H	37x37 x88cm	50x50 x100cm	63x63 x100cm	80x80 x100cm	80x80 x110cm	80x130 x110cm	80x170 x110cm
Weight	50 kg	75 kg	110 kg	137 kg	212 kg	274 kg	425 kg
Special models							
Pipe lengths	4–6m	5–8m	14–21m	21–31m	24–36m	35–53m	51–77m
Transfer surface	1.2–2m <sup>2</sup>	1.5–2.5m <sup>2</sup>	4.5–6.5m <sup>2</sup>	6.5–10m <sup>2</sup>	7.5–12m <sup>2</sup>	12–16m <sup>2</sup>	17–24m <sup>2</sup>
Bend 90°	16–24 pcs	22–34 pcs	38–58 pcs	40–60 pcs	15–67 pcs	67–101 pcs	90–134 pcs

## Fan – ELEKTOR

Heater output	10 kW	15 kW	20 kW	25–30kW	50–60kW	75–90kW	100–120kW
Fan type	RE 10	GE 133	RD 14	RD 2	RD 4	RD 62	RD 7
Volumetric flow	4.8m <sup>3</sup> /min	4.3m <sup>3</sup> /min	11.0m <sup>3</sup> /min	12.1 m <sup>3</sup> /min	13.5m <sup>3</sup> /min	27.5m <sup>3</sup> /min	50.0m <sup>3</sup> /min
Total differential pressure	1000 Pa	380 Pa	1000 Pa	2100 Pa	2200 Pa	3000 Pa	3600 Pa
Exhaust vent	75mm <sup>2</sup>	100mm <sup>2</sup>			100mm <sup>2</sup>	125mm <sup>2</sup>	160mm <sup>2</sup>
Electrical connection	230 V/50 Hz		400 V/50 Hz		400 V/50 Hz		
Output	0.075 kW	0.07 kW	0.25 kW	0.37 kW	0.55 kW	1.1 kW	2.2 kW

## Housings

Heater output	10 kW	15 kW	20 kW	25–30kW	50–60kW	75–90kW	100–120kW
Enclosure inside for standing coil	52x52 x90cm	65x65 x100cm	78x78 x100cm	95x95 x100cm	95x95 x110cm	95x145 x110cm	95x185 x110cm

## Exhaust gas line

Heater output	10 kW	15 kW	20 kW	25–30kW	50–60kW	75–90kW	100–120kW
Stainless steel, pressure-tight	NW 130						
Open flue operation							
Vertical chimney opening	X	X	X	X	X	X	X
Balanced flue operation							
Vertical chimney opening	-	X	-	-	X	-	-
Horizontal chimney opening	-	X	-	-	-	-	-

## Identification

### Cooling the shaft

Heater output	10 kW	15 kW	20 kW	25 kW	30 kW	50 kW	60 kW	75–90kW	100–120kW
Volume of air	200m <sup>3</sup> /h						400m <sup>3</sup> /h	600m <sup>3</sup> /h	800m <sup>3</sup> /h
Fan, pcs	1						2	3	4
	For heater outputs over 120 kW, an additional fan is needed for each additional 30 kW and 800+X m <sup>3</sup> /h volume of air.								

### Stone filling for standard models

Heater output	10 kW	15 kW	20 kW	25–30kW	50–60kW	75–90kW	100–120kW
Stone filling	80 kg	100kg	180kg	260kg	340kg	500kg	680kg

## 2.5 Spare parts

### Sauna heater

Name	Item no.
Burner, complete	600090155
Burner head without electrode	650075100
Ignition electrode with flame control	650076100
Seal for burner nut	650077100
Seal for mixing chamber	650078100
Seal for electrode	602000043
Air filter	602000018
Burner safety control	650081100
Gas solenoid valve	602000154
Pressure sensor	650521100
Ignition cable, complete	650578100
Ionisation cable, complete	650579100
Flexible hose 102 mm, heat-resistant	602000086
Hose clamp, 90–110 mm, galvanised	671000-10
Gas nozzle 2.4 mm	50593
Gas nozzle 2.8 mm	602000155
Gas nozzle 3.0 mm	50602
Gas nozzle 3.7 mm	650089100
Gas nozzle 4.0 mm	650090100
Gas nozzle 4.6 mm	650091100
Gas nozzle 4.9 mm	650092100
Gas nozzle 5.1 mm	650093100
Gas nozzle 5.4 mm	50577

### Control unit

Name	Item no.
Main temperature sensor, plastic housing	690060100
Auxiliary bench sensor, plastic housing	690061100
Temperature sensor element	90064
Safety temperature limiter 139°C	90065

## Identification

### 2.6 Intended use

This sauna heater is designed only for heating sauna cabins or sauna log cabins together with the supplied sauna control unit. KUSATEK Kusatherm is suitable for commercial and private use.



The sauna heater is not suitable for outdoor use.

It must be operated only inside buildings and may not be exposed to environmental conditions such as extreme humidity and moisture or the possible formation of condensation or corrosive substances in the ambient air, as well as other weather conditions.

Any use beyond this is considered improper use. Proper use also includes compliance with operating, maintenance and servicing requirements.

The sauna heater's coil is mounted on the floor in the sauna cabin. Typically, the sauna heater's burner and fan are installed in a separate plant room with the exhaust gas line.

#### Foreseeable misuse

The following are considered instances of foreseeable misuse:

- The heater power does not match the sauna volume.
- The unit is operated without knowledge of or compliance with the safety instructions.
- Operating, service and maintenance requirements are not observed.
- The unit is operated with insufficient air supply or exhaust air.
- The unit is operated without sauna stones or with a rock store that is not filled as directed.
- The unit is operated by children under 8 years of age.
- The unit is operated by children 8 years of age or older, or persons with reduced mental capacity who have not been thoroughly instructed in its use.

The manufacturer is not liable for unauthorised modifications made to the equipment and damages resulting from these modifications. The person modifying the equipment alone shall bear the associated risk.

## General instructions

- Please note that an optimal sauna climate can be achieved only if the cabin with its air inlets and outlets, the sauna heater, and the control unit are synchronized.
- Observe the specifications and information provided by your sauna retailer.
- The sauna heater heats the sauna cabin with heated convection air. Fresh air is drawn in through the air inlet. It is warmed and rises (convection) and is then circulated in the cabin. Some of the used air is pushed out of the cabin through the cabin's air outlet. This creates a typical sauna climate in which temperatures of approx. 110°C are achieved directly below the ceiling. These temperatures drop to approx. 30–40°C in the cabin along the floor.  
Therefore, it is not unusual that if the temperature sensor above the heater reads 110°C, the thermometer that is mounted approx. 20–25 cm below the cabin ceiling on the sauna wall reads only 85°C. When the max. temperature is set for the area around the upper sauna bench, the bathing temperature is typically between 80°C and 90°C.
- Please note that the highest temperatures in the cabin are always above the sauna heater and that is where the temperature sensor and safety temperature limiter should be mounted according to the installation instructions.
- The first time the cabin is heated, you may notice a slight odour resulting from the evaporation of consumables used in the manufacturing processes. Air out your cabin once it has been heated and before using the sauna.

## Installation requirements

# 3

### Installation requirements

#### **WARNING**

##### **Risk to health and risk of fire**

There is a risk to health and risk of death due to fire if the preparatory work is not performed in a professional manner. These risks also exist once preparatory work is completed.

- ▶ Preparatory work may be performed only by trained technicians.
- ▶ Comply with the regulations stipulated in these installation instructions.
- ▶ Comply with the information found in the KUSATEK project documents.
- ▶ Ensure that installation complies with the standards and legal norms valid in your country.

---

Before the sauna heater can be mounted, the preparatory work must be complete.

##### **Installation sites**

Preparatory work applies to the following installation sites:

- Sauna cabin
- Plant room
- Shaft for exhaust gas pipe
- Gas supply line
- Cable ducts (electrical and data lines)

KUSATEK provides every customer with individual project documents, for example, project drawings, for completion of the preparatory work. The preparatory work must be completed by commissioned, trained technicians using the project documents.



## 3.1 Sauna cabin

The sauna cabin must be dimensioned so that the cabin volume and the heater output match. One or more than one heater may be installed in a sauna. A temperature sensor with a safety temperature limiter must be installed above the sauna heater. If multiple heaters are used, depending on their position, an additional safety temperature limiter must be installed for each additional heater. The installation is described in the installation instructions for the control unit.

The clearance between the sauna heater, the sauna bench and other flammable material must comply with the KUSATEK project documents. Observe the requirements and instructions of the cabin manufacturer as well.

### 3.1.1 Installation site

#### **WARNING**

##### **Risk of fire due to incorrect place of installation**

There is a risk of death due to fire if the sauna heater is installed in a sauna cabin made of unsuitable materials or too close to flammable materials.

- ▶ Do not set up the heater in rooms with an increased risk of fire or explosion.
- ▶ Do not set up the heater in rooms that are unsuitable.
- ▶ The heater's installation site must comply with the KUSATEK project documents.
- ▶ Minimum clearances are defined in the KUSATEK project documents.

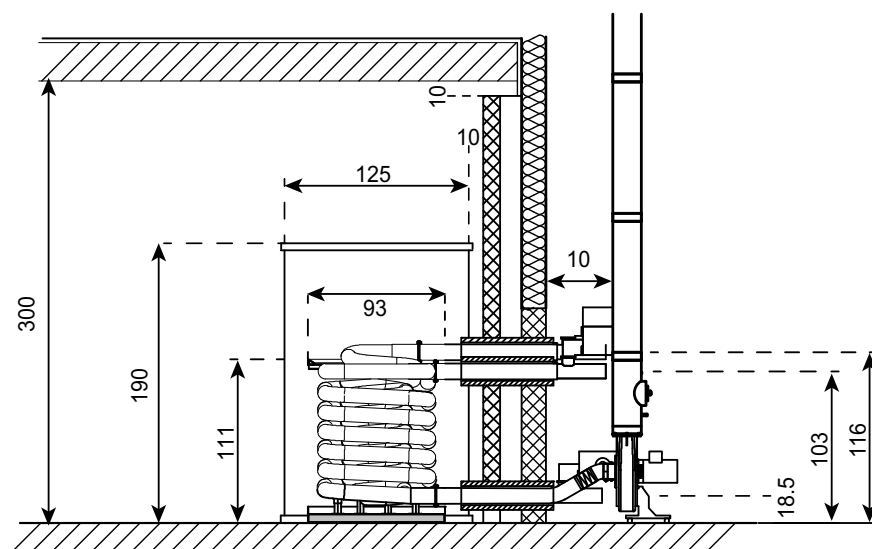
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Ensure that the installation site has been prepared for the sauna heater and complies with the following requirements:

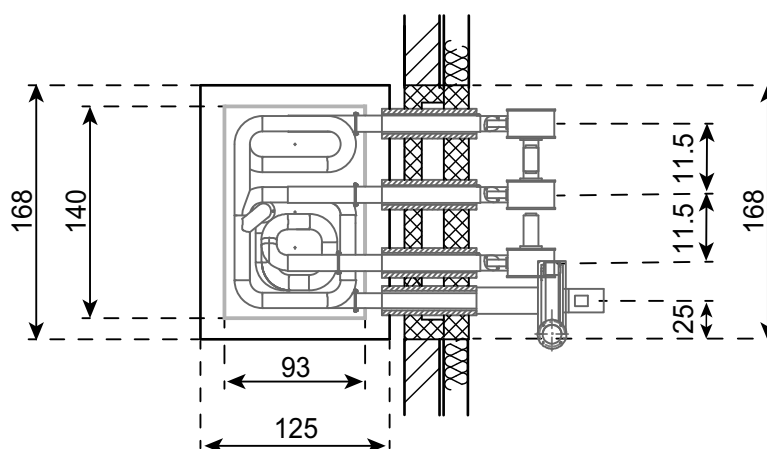
- Dimensions of the sauna cabin and plant room correspond to the installation drawings of the KUSATEK project documents.
- Compliance with clearances for sauna heater installation.
- Access to the sauna heater is not hampered or prevented by devices, system components, or future fixtures.
- Compliance with safety clearances at the installation site of the sauna heater must be ensured.

## Installation requirements

### Installation diagram



Side view – example



Plan view – example

The minimum distance between the top and side of the sauna heater's uncovered coil and flammable material is at least 1 m. If the sauna heater is covered, the minimum clearances could change. You can find this information in the KUSATEK project documents.

## 3.1.2 Walls, shafts, and openings

### **WARNING**

#### **Risk of fire due to improper building materials**

If wood is used as a building material or adhesive for fixing the insulation, there is a danger to life from fire.

- ▶ Ensure that wood is not used as building material or as permanent shuttering.
- ▶ Do not use glue to fix the insulation.

Building material near the sauna heater or in the shafts must have the following properties:

- non-combustible
- non-flammable
- the components of the building material do not contain flammable substances.

In Germany, this corresponds to building material class A1. Comparable building materials are Promasil, Foamglas T4, or Silka T3400 plates.

The insulation in the floor must be laid loosely. The insulation on the walls, the shafts, and the ceiling must be fixed with screws.

Prior to installation, refractory linings in the wood walls, and concrete walls or other connecting walls between the plant room and sauna cabin must be completely installed. Core drillings and chiselling work in the walls, floors, and ceilings must also be complete.

An exception applies if the contract stipulates that the technicians carry out the core drillings and wall openings on the day of installation.

## Installation requirements

### 3.1.3 Sauna cabin floor

#### CAUTION

##### **Risk of skin burns due to hot floor**

There is a risk of overheating if the floor of the sauna cabin does not dissipate heat. This can cause burns to the feet.

- ▶ Design the floor of the sauna cabin so that it dissipates heat; install floor cooling if necessary.
  - ▶ Do not install floor heating.
- 

In general, it should be noted that the sauna heater must not be set on a floor made of highly flammable material such as laminate, flooring made of plastic material, etc. Ceramic tiles are recommended as a flooring option.


### 3.1.4 Fire protection wall

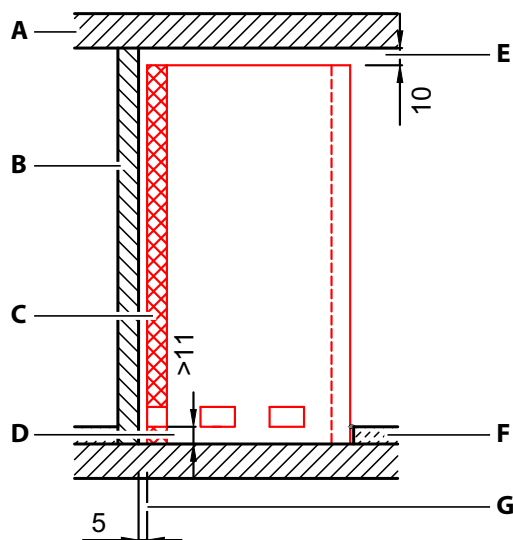
If the coil is installed on the wall of the sauna cabin, a fire protection wall between the coil and the cabin wall must be erected.

#### WARNING


##### **Risk of fire due to overheating of walls**

If the wall of the sauna cabin is not protected from the heat emitted from the sauna heater's coil, it can overheat. This can lead to heat accumulation between the cabin wall and the fire protection wall if it has not been installed as shown in the planning documents. In both cases, there is a risk of death due to fire.

- ▶ Erect a fire protection wall between the coil and the wall of the sauna cabin.
  - ▶ Erect the fire protection wall with suitable building material, for example, brick or fire safety panels.  
See 3.1.2 Walls, shafts, and openings,  EN-27.
  - ▶ Observe KUSATEK project documents when installing the fire protection wall.
-



- |  |   |
|--|---|
| <b>A</b> Cabin ceiling                                 | <b>E</b> Clearance between fire protection wall and cabin ceiling |
| <b>B</b> Cabin wall                                    | <b>F</b> Insulated plate  |
| <b>C</b> Fire protection wall                          | <b>G</b> Clearance between fire protection wall and cabin wall    |
| <b>D</b> Clearance between ventilation and cabin floor |   |

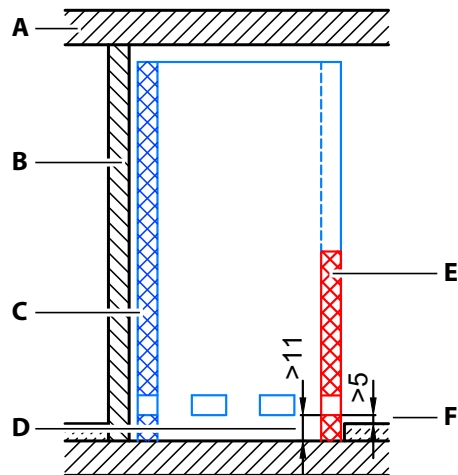
 Construction of fire protection wall – example

- Clearance between top edge of fire protection wall and lower edge of cabin ceiling: 10 cm
- To ensure sufficient air circulation behind the coil, air inlets must be installed in the bottom part of the fire protection wall. 4 air inlets in the fire protection wall, 20 x 10 cm, min. 11 cm above top edge of unfinished floor.

The use of flammable building material in the cabin wall near the air inlets/core drillings is not permitted.

## Installation requirements

### 3.1.5 Enclosing the coil



- |  |   |
|--|---|
| <b>A</b> Cabin ceiling                                 | <b>E</b> Enclosure                                  |
| <b>B</b> Cabin wall                                    | <b>F</b> Insulated plate                            |
| <b>C</b> Fire protection wall                          | <b>F</b> Clearance between enclosure and cabin wall |
| <b>D</b> Clearance between ventilation and cabin floor |   |
| Construction of fire protection wall                   |   |

- 4 air inlets in the enclosure, 20 x 10 cm, at least 11 cm above top edge of unfinished floor and at least 5 cm above top edge of finished floor.
- Parting line, 2 cm between the wall and screed as thermal separation, permanent elastic seal
- 1–3 cm circumferential clearance between enclosure and stainless steel frames.

### 3.1.6 Coil substrate

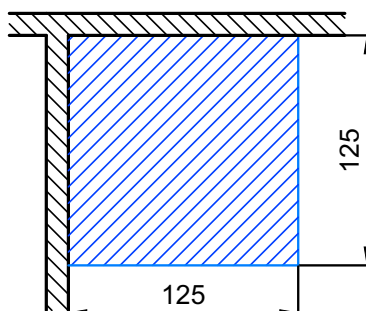
#### WARNING

##### **Risk of fire due to incorrect substrate**

There is a risk of death due to fire if an incorrect material is used for the substrate beneath the coil.

- ▶ Do not lay a screed floor on the coil's installation site.
- ▶ Do not lay flooring on the coil's installation site.

A concrete floor is best suited for the substrate on which the coil is installed. A foam glass plate is placed underneath during installation to protect the floor from heat. The foam glass plate is included in the scope of delivery.



 Base plate diagram

## 3.1.7 Air inlets and outlets

### **WARNING**

#### **Fire hazard from overheating**

The heater can overheat if the air supply is insufficient. There is a risk of death due to fire.

- Ensure that the air inlets and outlets provide sufficient ventilation. Install a fan if necessary.
- Start the sauna only after all air inlets and outlets have been opened.

### **CAUTION**

#### **Risk to health due to overheating**

If the percentage of glass surface in the sauna cabin is 10% or higher, the room can heat up more quickly than expected. This can lead to overheating in the sauna cabin, which poses a health risk to sauna users.

- Mount air inlets and outlets that are sufficient for the sauna cabin model and the percentage of glass surface used.

### **NOTICE**

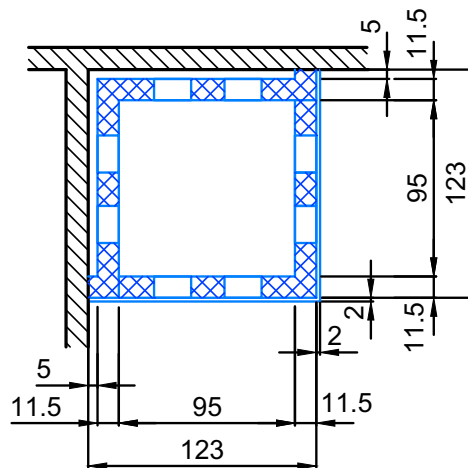
#### **Heating process takes too long**

If the heat-up process takes a long time, the underlying reason can be that the heater has an insufficient fresh air supply.

- A minimum of 5 times the cabin volume of air per hour must be exchanged.

## Installation requirements

Glass surfaces impact the room temperature because glass is unable to store either heat or humidity. Glass reflects heat, which means that the temperature feels higher than it actually is. Sunlight also heats the floors and benches. This is why additional air inlets and outlets are required if the percentage of glass surface in the cabin is greater than 10%. This additional requirement must be considered when calculating the dimensions of the air inlets and outlets.



☒ Air inlets diagram

The air outlet is always installed in the lower part of the wall, diagonal to the sauna heater.

We recommend an air exchange rate of 7 to 12 times the standard in the sauna cabin.

The required size and position of the air inlets and outlets depend on the heater output and installation configuration and is specified in the KUS-ATEK project documents.

### 3.1.8 Connecting cable

All cables, e.g. cables for cabin lighting, fans, etc., must be protected from damage during installation. This means that the cables must be routed under a suitable protective cover (e.g. in a cable duct or empty conduits).

### 3.1.9 Specifications for the control unit

The sauna control unit is mounted in a suitable location, for example, on the outside wall of the sauna cabin or in the plant room.

The location must comply with the requirements defined in the installation instructions for the control unit. Observe the operating conditions to ensure that the sauna cabin's temperature control works properly.



## 3.1.10 Cabin lighting

The cabin lighting and its installation must be performed in such a way that it can be used safely in a sauna cabin. Ensure that the heater is installed in compliance with the standards and legal norms valid in your country.

## 3.2 Plant room



The gas burners and fans are typically mounted in the plant room; depending on the model, one or more than one burner and fan are required. They must be installed prior to installation and comply with the requirements described here.

### Combustion air

#### **WARNING**

##### **Risk of fire due to insufficient air inlets in the plant room**

The plant room can overheat if there is insufficient air flow. There is a risk of death due to fire.

- ▶ Ensure that the air supply for the plant room is sufficient so that a temperature of 40°C is not exceeded.
- ▶ A minimum of 5 times the room volume of air per hour must be exchanged. See  Technical data,  EN-15 for more information about air requirements.

#### **NOTICE**

##### **Damage to the unit from dust**

The burners can become damaged if air for the burners contains an elevated concentration of dust.

- ▶ In the event of an elevated concentration of dust in the plant room, the burner must be supplied with clean air from outside the room.

Openings for the air inlets and outlets must be present in the plant room. The optimal locations of the openings are on opposite sides of the floor and in the ceiling. The openings must lead outside of the room. Their positioning must comply with the KUSATEK project documents. The project documents cover only the KUSATEK equipment. Optional air inlet elements or other technical components installed by third parties are not calculated and planned by KUSATEK.

## Installation requirements

Dimensions for the air inlets and outlets must be observed; see the chapter entitled Technical Data for Heater – cabin, [EN-15](#).

The plant room must ensure that no negative pressure can build and any generated heat can escape.

See [Technical data](#), [EN-15](#).

### Cooling the plant room

The plant room must be cooled depending on its size and the location of the KUSATEK equipment.

The plant room is cooled by means of increased air exchange, which can be achieved by one or more fans. Fresh air must be supplied in the immediate vicinity of the burner and the fan.

If air exchange is controlled by a ventilation system, the supply of combustion air for the KUSATEK Kusatherm equipment, the air exchange for the plant room, and fresh air supply for the fans that cool the shafts must be ensured. All work on the ventilation system must be completed before installing the sauna heater.

### Cooling the shaft

If the connection pipes between the burner and coil are located in a shaft, the shaft must be cooled.

### WARNING

#### **Risk of fire due to insufficient air inlets in the shaft**

The shaft can overheat if there is insufficient air in the shaft. If the air for the shaft is supplied by fans from the plant room, the plant room can overheat. In both cases, there is a risk of death due to fire.

- ▶ Cool the shaft sufficiently by installing fans as needed.
- ▶ Ensure that the air requirements for the shaft do not infringe on the air requirements for the plant room. Observe the air requirements. See 2.4 Technical data, [EN-15](#).

If fans are mounted to cool the shaft, the additional air requirement must be added to the combustion air required for the burners. See [Cooling the shaft](#), [EN-20](#).

We recommend a separate external air supply for the shaft fans so that the air supply for the burners remains sufficient.

## 3.3 Gas supply line for mains connection to public supply

The gas supply line and gas supply connection are installed in the plant room. The installation should be performed as described in the KUSATEK project documents.

A 1/2-inch ball valve must be installed for the burner. The installation and seal inspection must comply with the standards and legal norms valid in your country. The gas supply line must be checked for leaks and deaerated.

Gas	Minimum gas pressure Per burner	Maximum gas pressure Per burner
Natural gas	22 mbar	50 mbar
Propane	22 mbar	50 mbar
Butane	22 mbar	50 mbar

☐ Min. and max. gas pressure per burner

Gas	Gas consumption (full load)	per burner
Natural gas	0.9 m <sup>3</sup> /h	for 10 kW burner
Natural gas	1.4 m <sup>3</sup> /h	for 15 kW burner
Natural gas	1.8 m <sup>3</sup> /h	for 20 kW burner
Natural gas	2.7 m <sup>3</sup> /h	for 30 kW burner
Propane	1.9–2.0 kg/h	
Butane	1.9–2.0 kg/h	

☐ Gas consumption per burner

The dimensions specified in the installation drawing may have to be adapted to the situation at the site.

The gas supply connection must be installed on the day the sauna heater is installed, and the gas pressure must be verifiable.

Ensure that the on-site gas distribution requirements, the gas type used, and the gas pressure at the ball valves match the values stated on the nameplate. If the gas type does not match, replace the nozzle with the appropriate nozzle for the available gas type and correct the information on the nameplate. If the actual gas pressure does not match the specification on the nameplate, contact the local gas provider.

## Installation requirements

### 3.4 Electrical installation

The position of the control unit must be defined. The power lines must be installed as shown in the KUSATEK project documents.

Lines to control unit	Line specification
Power supply line for control unit	5 x 2.5 mm <sup>2</sup> , 400 V, 16 A
Power supply line for control unit (if 400 V is not available)	5 x 2.5 mm <sup>2</sup> , 230 V
Control unit for heater sensor incl. safety temperature limiter	4 x 0.5 mm <sup>2</sup> , silicone, heat-resistant up to 170°C
Control unit for room sensor (bench)	2 x 0.5 mm <sup>2</sup> , silicone, heat-resistant up to 170°C
Control unit for burner	3 x 1.5 mm <sup>2</sup>
Control unit for fan	5 x 2.5 mm <sup>2</sup> , 230/400 V, 16 A

☐ Power supply line for control unit

All electrical installations inside the cabin must be silicone cables. They must be suitable to withstand temperatures of 170°C and above. All lines must be routed in such a way that they are well-protected, e.g. in a cable duct. If single-core lines are used as connecting cables, they must be protected by a flexible metal hose that is connected to the protective conductor.

The electrical lines must be completely installed on the day the sauna heater is mounted, and the power supply must be available. Construction-site power is insufficient.

### 3.5 Exhaust gas system

It may be necessary to have a ceiling opening and ceiling duct professionally prepared when installing the exhaust gas system.

The exhaust gas line is not installed by KUSATEK unless specified contractually in the scope of performance.

A pressure-tight exhaust gas system must be used as the exhaust gas line. The inner diameter of the exhaust gas line must equal 130 mm. A ceiling opening and ceiling duct, if needed, should be completed during preparatory work.

The exhaust gas system starts at the outlet side of the fan. Contact the manufacturer in the event of discrepancies. The exhaust gas system is mounted from the fan outward.

Make sure to observe the locally applicable fire code.

## 3.6 Safety systems

Safety systems increase the safety for sauna users and personnel.

### 3.6.1 Cabin door

#### **WARNING**

##### **Risk of death due to locked door**

There is a risk to health and a risk of death if the door to the sauna cabin cannot be opened.

► Ensure that a door that cannot be locked has been installed.

We recommend doors with a magnet catch or spring-ball catch for sauna cabins.

### 3.6.2 Door contact

Installation of a door contact ensures that the cabin has been inspected before the sauna heater starts to produce heat. Use of a key switch to open and close the cabin door can trigger the sauna heater to start heating within 60 seconds. This ensures that the cabin door has been opened to verify that no flammable objects are in the vicinity of or directly on top of the heater.

### 3.6.3 Emergency button

Installing an emergency button increases the safety for sauna users and has a positive impact on the risk potential analysis for the sauna operator. This type of button facilitates a quicker response in the event of an emergency. We recommend installing one or more than one emergency button in each sauna cabin. The emergency button should have two circuits in order to switch off the heater and issue a warning in the form of an acoustic or visual signal. It is possible to connect the emergency buttons to the control unit.

### 3.6.4 Protective grill on fan

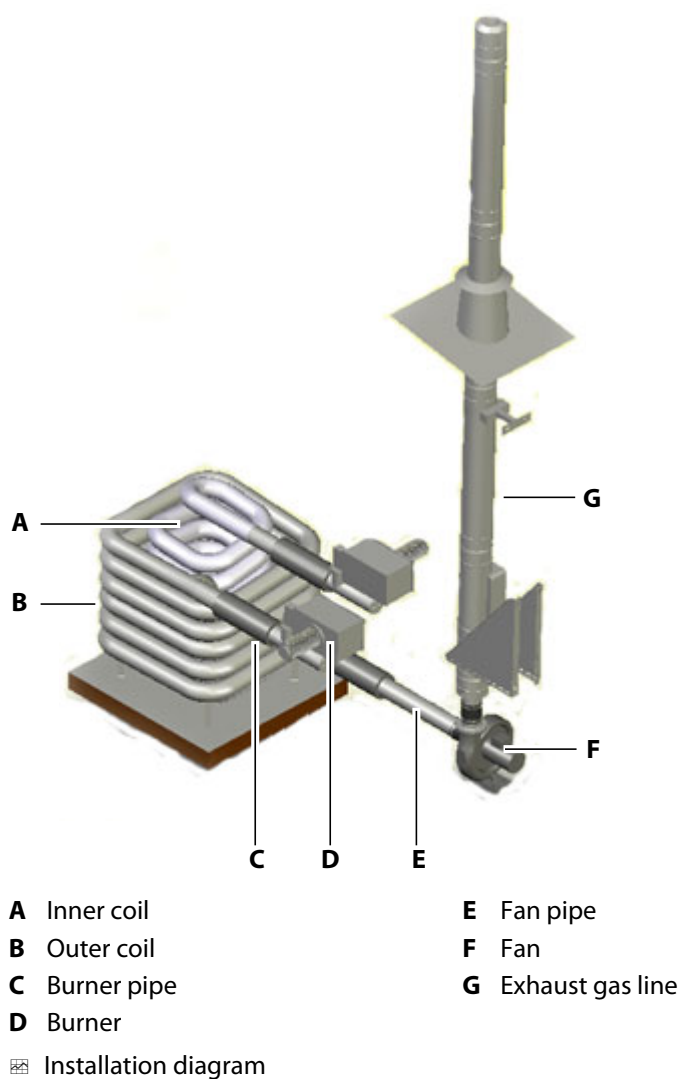
The exhaust gas fan in the plant room can reach temperatures of 80–120°C while in use. We recommend installing a protective grill and hanging a warning sign to protect personnel.

## 4

## Installation

All preparatory work must be completed before the sauna heater is installed. See Installation requirements, EN-24.

KUSATEK provides each customer with individual project documents, for example installation diagrams, for the mounting of the heater. Installation must be completed by commissioned, trained technicians using the project documents.



## ⚠ WARNING

### Risk to health and risk of fire

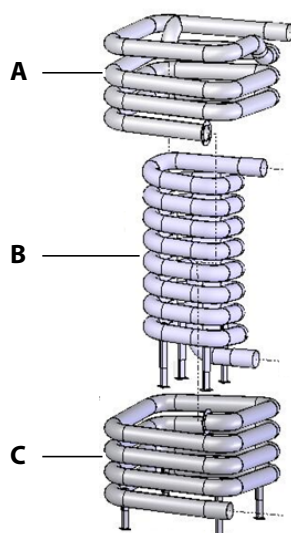
There is a risk to health and risk of death due to fire if the gas-powered sauna heater is not installed in a professional manner. These risks also exist once the gas-powered sauna heater is installed.

- ▶ The heater must be installed only by a trained technician.
- ▶ Ensure that technicians have experience with handling infrared radiators.
- ▶ Comply with the information found in the KUSATEK project documents.
- ▶ Ensure that installation complies with the standards and legal norms valid in your country.

The sauna heater is delivered as individual parts and components on pallets. Transport the pallets as close to the pre-defined installation site as possible. All protective films must be removed prior to mounting the heater.


## 4.1 Coil

The coil consists of several elements that are assembled when installing the heater. These elements depend on the model of the sauna heater.



**A** Coil top section

**B** Inner coil

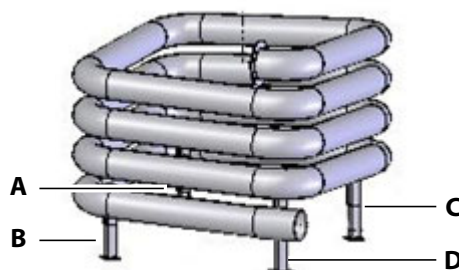
 Coil diagram


**C** Coil bottom section

# Installation

## ► Mounting the coil

- 1 Cut the foam glass plate to size and place it in the correct position.
  - ① The dimensions of the foam glass plate must match those of the stainless steel tray.
- 2 Place the stainless steel tray on the foam glass plate.
- 3 **CAUTION!** The coil elements have different weights and are heavy. Have two or three people carry the elements, if needed.  
Lift the coil elements from the pallet in a logical sequence and place them on the stainless steel tray.
  - ① Sequence: Coil bottom section, then inner coil and then coil top section. The coil elements should be aligned as shown in the KUSATEK project documents.
- 4 Screw the coil elements into the flanges.
  - ① Use the 4 hexagon screws (M8 x 30) and 4 hexagon nuts (M8) per flange.
- 5 Adjust the coils with the adjustable feet.

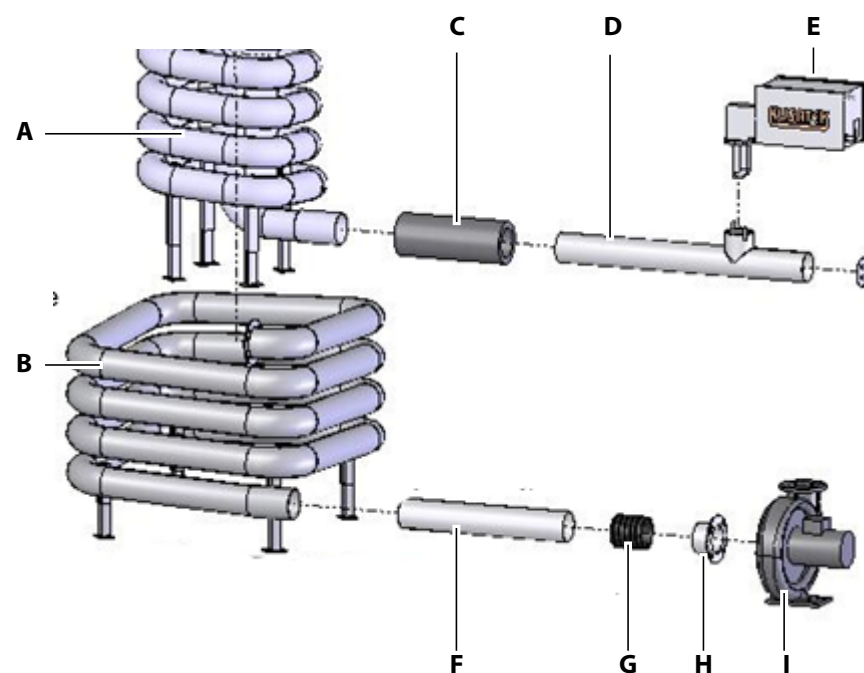


 Lower coil – 4 adjustable feet


## 4.2 Burner and fan pipes

Wall bushings are installed in the wall openings between the sauna cabin and the plant room for the pipes. The pipes are routed from and to the coil through them. Run the burner pipes from the burner to the coil. The fan pipe runs from the coil to the fan. Depending on the model of the sauna heater, 1–4 burner pipes and 1 fan pipe must be mounted.






- |                       |                        |
|-----------------------|------------------------|
| <b>A</b> Inner coil   | <b>F</b> Fan pipe      |
| <b>B</b> Outer coil   | <b>G</b> Flexible hose |
| <b>C</b> Wall bushing | <b>H</b> Suction piece |
| <b>D</b> Burner pipe  | <b>I</b> Fan           |
| <b>E</b> Burner       |                        |

 Pipe mounting diagram

Pipe fixtures are mounted on the coil to connect the pipes to the coil. Each pipe fixture is connected to the coil via a flange. The burner pipe is pushed through the pipe fixture and fixed with set screws. Observe the KUSATEK project documents during installation.

The following steps must be completed:

► Mounting the coil,  EN-40

## ► Mounting the burner and fan pipe

- 1** Insert the wall bushings in the wall cut-outs that lead to the plant room as shown in the KUSATEK project documents.
  - ① Wall bushing type per material:
    - As per diagram for wood wall bushing
    - As per diagram for brick wall bushing
- 2** If a fire protection wall exists, insert the wall bushings into the cut-outs in the fire protection wall as shown in the KUSATEK project documents.
- 3** Cut the pipe fixtures to length.
  - ① 1–4 pipe fixtures depending on the number of burners.

## Installation

- 4 Connect the pipe fixtures and coil.
  - a) Coat the flanges for the pipe fixtures and coil with heat-resistant silicone.
  - b) Screw together each flange with four screws and nuts.
    - ① The screws and nuts are included in the scope of delivery.
- 5 Cut all burner pipes to length.
- 6 Cut fan pipe to length.
- 7 Push the burner pipes and fan pipe through the wall bushings.
- 8 Push the burner pipes into the pipe fixtures.
  - ① The burner connection on the burner pipe must face upward vertically.
- 9 Tighten each pipe to the pipe fixtures with 3 set screws.
  - ① Set screws (M10) are included in the scope of delivery.
- 10 Screw the fan pipe to the coil.

### 4.3 Attaching the stone grate

The stone grate is included in the scope of delivery. Depending on the sauna heater model, it can consist of multiple elements. It is welded to the coil.

The following steps must be completed:

- Mounting the coil, [EN-40](#)
- Mounting the burner and fan pipe, [EN-41](#)

## ► Welding on the stone grate

- 1 Cut the stone grate with a metal saw as needed.
- 2 **WARNING!** Welding must be performed only by persons trained in the trade; otherwise there is a risk of injury or fire.  
Weld the stone grate onto the top of the coil.
- 3 If multiple stone grates are used, perform steps 1–3 for each stone grate.  
① The stone grates are welded onto the coil separately and one after the other.
- 4 Place the stainless steel frame on the coil as needed.

## 4.4 Mounting the burner(s)

One or more burners are mounted on the burner pipes in the plant room.

The following steps must be completed:

- Mounting the coil, □ EN-40
- Mounting the burner and fan pipe, □ EN-41



☒ Mounting the burner – diagram

# Installation

## ► Mounting the burner

- 1 Place the burner seal on the burner's connection flange.
- 2 Place the burner on the burner pipe.
  - ① The burner must face upward vertically.
  - ① The KUSATEK project documents indicate which burner is mounted on which burner flange in a multiple burner set-up. The burner type is indicated on the nameplate.
- 3 Screw in the burner with the screws for the burner pipe.
  - ① Tighten the screws uniformly.
  - ① The screws (M8 x 30) and nuts (M8) are included in the scope of delivery.
- 4 If multiple burners are used, perform steps 1–3 for each burner.


## 4.5 Fan

The fan is attached to either the floor or on a pedestal on the wall. The example describes how to mount the fan on the floor.

The following steps must be completed:

- Mounting the burner and fan pipe,  EN-41



 Mounting the fan – diagram

## ► Mounting the fan

- 1 Place the fan in the pre-defined location.
  - ① The location is specified in the KUSATEK project documents.
  - ① Floor heating may not be installed in this location.
- 2 Mark the drill holes for fixing the fan.
- 3 Place the fan to the side and drill the holes.
- 4 Push the anchors into the drill holes.
- 5 Use the supplied screws to screw the vibration dampers onto the floor.
- 6 Fix the fan to the vibration dampers.

- 7 Push one hose clamp over the end of the fan pipe and one over the fan's intake manifold.
- 8 Push one hose end over the end of the fan pipe and the other hose end as far as possible over the fan's intake manifold.  
① Ensure that the hose is neither compressed nor stretched.
- 9 Push the hose clamps over each hose end and fix the hose to the intake manifold and fan pipe by tightening.

## 4.6 Filling rock stores with stones

The heater is intended for use with natural stones. Use only natural sauna stones of the prescribed caliber of 100–150 mm. Due to their roughness, they produce a better water splash effect than ceramic sauna stones.

### **WARNING**

#### **Fire hazard from overheating**

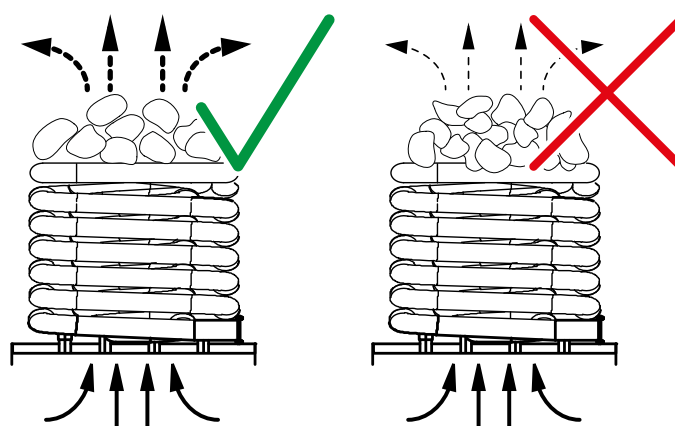
Operating the heater without stones could cause fire or damage to the heater. Stones that are too small or are positioned too close together in the heater prevent hot air from being exhausted. This leads to overheating of the heater.

- ▶ Start the heater only if it has been filled with stones.
  - ▶ Ensure stones with the correct caliber are used: 100–150 mm.
  - ▶ Stack the stones loosely around the coil.
-

# Installation

## ► Filling rock stores with stones

- 1 Wash the stones under running water.
- 2 **WARNING!** Stones that are stacked too closely prevent the hot air from rising properly, thus causing the heater to overheat. Stack the separate stones loosely around the coil, leaving sufficient space between them. Add each stone individually.



① Fill the stones only just above the coil. The coil should only be covered loosely with stones.

## 4.7 Temperature sensor

### ⚠ WARNING

#### **Risk of fire due to incorrect temperature sensor position**

Overheating can occur if the temperature sensor with the safety temperature limiter is installed in the incorrect position; in this case, the sensor may read a lower temperature than actually exists in the cabin.

This would trigger the sauna heater to continue to heat, even though the desired temperature has already been reached.

- Mount the temperature sensor as described in the installation instructions for the control unit.

### NOTICE

#### **Malfunction due to damaged temperature sensor**

The temperature sensor is protected by its housing.

- Ensure that the housing and the temperature sensor are not damaged during operation.

## 4.8 Heater housing

The coil housing is not installed by KUSATEK unless specified contractually in the scope of performance.

The heater housing should be mounted after the coil, stone grate, and pipes have been completely mounted. It should be mounted in a professional manner and be made of non-flammable material suitable for sauna use.

If the coil is located next to a fire protection wall, ensure that there is sufficient air circulation. This requires air inlets in the fire protection wall. Observe the information about fire protection walls in the KUSATEK project documents.

Additional air inlets must be installed in the heater housing. The dimensions of the air inlets and clearances to the coil are specified in the KUSATEK project documents. The clearance from the stone grate to the housing must be at least 1–3 cm. The slot allows air to circulate and ensures the required convection.

The heater housing must be mounted in such a way that the stainless steel tray can be accessed under the coil so residual water can be removed. An inspection opening may be required.

## 4.9 Warning plate

In some countries it is mandatory to warn sauna cabin users of health risks. Ensure that you comply with the standards and requirements stipulated in your country.

A warning plate with the following information should be affixed near the heater so it is clearly visible at eye level:

- Health risks exist if the body overheats.
- Do not exceed the maximum recommended time in the sauna.
- Leave the sauna cabin if your body responds abnormally to the heat or if you do not feel well.
- Consult with a doctor prior to using the sauna if you have a health impairment.
- Avoid alcohol, drugs, and medications when you are using the sauna.

## 5

## Electrical installation

This chapter describes how the gas supply line, the burner and the corresponding fan are connected and how negative pressure is set.

### **WARNING**

#### **Risk to health and risk of fire**

There is a risk to health and risk of death due to fire if installation is not performed in a professional manner. These risks also exist once the installation is completed.

- ▶ Installation should be performed only by:
  - KUSATEK customer service
  - Technicians who have been trained by KUSATEK
  - Other trained technicians if technicians trained by KUSATEK do not service the area in which the installation site of the sauna heater is located.
- ▶ Comply with the regulations stipulated in these installation instructions.
- ▶ Comply with the information found in the KUSATEK project documents.
- ▶ Ensure that installation complies with the standards and legal norms valid in your country.

---

#### **Additional documentation**

If special measures, which are crucial for the operation or safety of the unit, are implemented, this information must be added to the documentation and provided to the operator. This includes, for example, a diagram showing the location of switches and shut-off valves, and particulars about connected thermostats and timers.



## 5.1 Gas supply connection

### **WARNING**

#### **Risk of fire due to improper gas installation**

There is a risk of death due to fire if the gas installation is not performed in a professional manner. This risk also exists once the gas installation is completed.

- The gas installation must be performed only by a trained technician.

The burner and gas supply line must be connected by a flexible gas hose. The flexible hose must be long enough so that it is not under tension upon thermal expansion of the sauna heater.

## 5.2 Electrical connection

### 5.2.1 General instructions for electrical installation

### **WARNING**

#### **Risk of electric shock**

There is a risk of electric shock if connection work is performed while the burner and fan are being connected to the power connector.

- Disconnect the power supply to the burner and to the fan by disconnecting the cables from the power connectors.

Ensure that electrical installation is performed in compliance with the standards and legal norms valid in your country.

Observe the following regulations when installing sauna heaters:

IEC 60364-7-703 and/or DIN VDE 0100 part 703:

This most recent version of the standard under amendment of paragraph 703.412.05, states the following:

“The additional protection must be provided for all of the sauna's electric circuits by one or more residual current devices (RCDs) with a rated differential current no greater than 30 mA, with the exception of sauna heaters.”

If a residual current device (RCD) is installed, ensure that there are no units not belonging to the sauna system which are fused via this RCD.

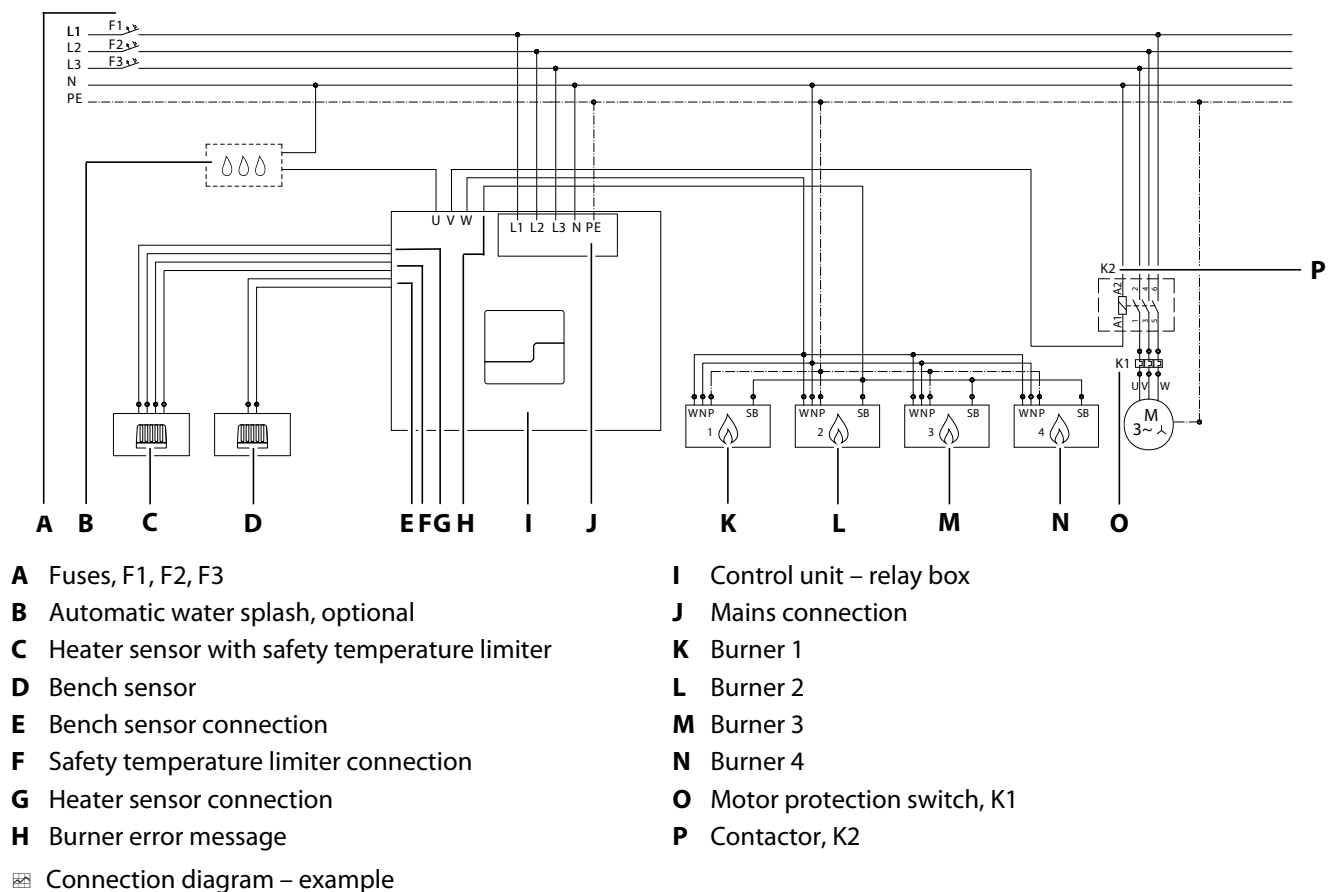
If the sauna heater has not been used for an extended period of time, the heater may draw moisture from the ambient air, which, in rare cases, could lead to the RCD to be tripped. This is a physical process and not a fault on the part of the manufacturer.

In this case, the heater must be heated by a technician under supervision which will bypass the RCD function. Once the moisture has escaped from the heating elements after approx. 10 minutes, the RCD can be integrated again in the electric circuit.

If the sauna heater will not be used for an extended period of time, we recommend that you switch on the heater every 6 weeks so that the heating elements do not accumulate moisture. If, during switching, the RCD is triggered, the electrical installation must be checked again.

The electrician is responsible for properly connecting the heaters; thus, the manufacturer does not assume liability.

### 5.2.2 Connection diagram



The burner and the fan for the sauna heater may be connected only to the supplied control unit.

### 5.2.3 Heating period limitation

All sauna heaters, except for those installed in public saunas, and which must be operated under the supervision of personnel, must be equipped with a timer that complies with IEC and EN standards. For safety reasons, this timer limits the operation time.

This timer is typically integrated in all EOS control units.

- The operation time of a public sauna must be limited so that the sauna heater is switched off for a minimum of 6 consecutive hours within a 24-hour period before an independent restart can take place.
- Units used in private saunas must be limited to an operating time of 6 hours, and an automatic restart is not permitted.

### 5.2.4 Burner

Burners 1–4 are switched on and off by switching on and interrupting the power supply. Each burner is equipped with a 2A fuse (5 mm x 20 mm). The fuse is located next to the power supply on the back of the burner. Each burner has an additional plug contact used for incoming burner error messages.

#### ► Connecting the burner

- 1 **WARNING!** Ensure that the control unit has no voltage.  
Connect the burner to the control unit as shown in the circuit diagram and connection diagram.  
① The circuit diagram and connection diagram are included in the installation instructions for the control unit.
- 2 If multiple burners are used, perform steps 1–2 for each burner.

## Electrical installation

### 5.2.5 Fan

The fan is switched on and off by switching on and interrupting the power supply.

#### ► Connecting the fan

- 1 **WARNING!** Ensure that the control unit has no voltage.  
Connect the fan to the control unit as shown in the circuit diagram and connection diagram.
  - ① The circuit diagram and connection diagram are included in the installation instructions for the control unit.
  - ① The fan's direction of movement can change if the fan is connected with the incorrect power supply phasing. Check the fan's power supply phasing.

### 5.3 Negative pressure

A pressure switch monitors the functioning of the fan. The negative pressure is set by a control damper on the fan.

#### ► Setting the negative pressure

- 1 Connect the negative pressure meter.
  - ① Negative pressure is measured at the baffle plate.
- 2 Set the negative pressure at the butterfly valve on the fan.
  - ① The negative pressure depends on the model of the sauna heater.  
See  
Gas burner – KUSATEK, □ EN-16 or  
Gas burner – Roberts Gorden USA, □ EN-17.
- 3 Tighten the control damper with the self-tightening nut.

## 6

## Commissioning

Before the installation can be inspected and the sauna heater can be switched on, it must be filled with the supplied sauna stones.

See 4.3 Steine einfüllen, □ DE-36.

Before switching it on, ensure that the air inlets are free of lint. Remove any lint with a moist towel.

The heater is operated via the control panel for the control unit. For more information, see the installation and operating instructions for the control unit.

**⚠ WARNING****Risk of fire due to objects on or next to the sauna heater**

Objects placed on the sauna heater could catch fire. Objects that are placed too close to or on the heater can cause a fire.

- ▶ Inspect the cabin prior to each use and ensure that no objects are placed on the heater.
- ▶ Ensure that the minimum distance between the top and side of the heater and flammable material is at least 1.0 m.
- ▶ Switch on the heater only after all air inlets and outlets have been opened.

**⚠ WARNING****Risk of fire due to heating without stones**

If the heater is operated without stones, there is a risk of flammable parts becoming overheated.

There is a risk of death due to fire.

- ▶ Start the heater only if it has been filled with stones.

The following inspections must be completed before the sauna heater is switched on:

- 6.1.1 Inspecting the mounting and installation, □ EN-54
- 6.1.2 Function inspection of unit parts, □ EN-55
- 6.1.3 Operation inspection, □ EN-56
- 6.1.4 Exhaust gas measurement, □ EN-57
- 6.2 Official acceptance of firing system installation, □ EN-58, if necessary

## Commissioning

### 6.1 Inspections before commissioning

Prior to commissioning, all mounting and installation work must be complete as indicated in the instructions. The commissioning inspection must be performed only by trained specialists.

#### 6.1.1 Inspecting the mounting and installation

The supplied commissioning report must be completed during commissioning and then returned to KUSATEK.

##### ► Inspecting the mounting and installation

- 1 Compare the distribution of the various burner models with the KUS-ATEK project documents.  
① The burners must be remounted in the event of discrepancies.
- 2 Check for proper fuse protection of the electric circuits.
- 3 Ensure that the power supply phasing is correct.
- 4 Check if measures for preventing contact with the sauna heater have been implemented.
- 5 Check that the exhaust gas line has been mounted correctly.
- 6 Check if the supply and exhaust lines for the sauna cabin and plant room have been installed according to the KUSATEK project documents.
- 7 Check if the sauna heater is suitable for operation with the type of gas used.
- 8 Compare the gas flow pressure with the values in the table.  
See 2.4 Technical data, □ EN-15.
- 9 Compare the negative pressure at the baffle plate with the values in the table.  
See 2.4 Technical data, □ EN-15.
- 10 Check the overall installation.
- 11 Ensure that installation complies with the standards and legal norms valid in your country.

## 6.1.2 Function inspection of unit parts

The sauna heater and KUSATEK equipment shall be inspected after mounting and installation.

This inspection ensures that each of the units is in proper working order.

The function inspection shall be documented, and the documentation shall be given to the operator. The operator bears the risk.

### **WARNING**

#### **Risk to health and risk of fire**

There is a risk to health and risk of death due to fire if the function inspection is not performed in a professional manner. These risks also exist once the function inspection is completed.

- ▶ Function inspections should be performed only by:
  - KUSATEK customer service
  - Technicians who have been trained by KUSATEK
  - Other trained technicians if technicians trained by KUSATEK do not service the area in which the installation site of the sauna heater is located.

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If commissioning is not performed by KUSATEK but by the operator or a third party, KUSATEK cannot be held liable for possible consequential damages.

### 6.1.3 Operation inspection

The general visual inspection of the entire sauna heater must be performed only by trained specialists. If a defect is detected during the inspection, it must be rectified before further inspections are performed and prior to commissioning of the sauna heater.

#### Instructions for switching on the unit

The sauna heater is switched on and off by interrupting the power supply. This process unlocks and restarts the sauna heater in the event of a malfunction.

As soon as the burner and fan are supplied with a live current, the fan starts to run and generates negative pressure in the coil.

After a purge period of approx. 30 seconds, the gas solenoid valve opens, the ignition is switched on and the Burner operating control light illuminates.

Burning gas causes an ionisation current to flow over the monitoring electrode to the burner safety control. If the ionisation current is sufficient, the ignition is switched on. The sauna heater is now in use. The control light is always illuminated during operation.

If the ionisation current is interrupted, the unit attempts a restart. If this attempt is unsuccessful three times, the start process is locked. The malfunction light illuminates.

A restart must then be manually triggered by pressing the *Reset* button on the control unit. Alternately, the relay box can be switched off and then on again.

#### ► Operation inspection

- 1 Ensure that gas is supplied to the burners.
  - ① Check if the gas lines' ball valves or gas valves to the burners are open.
- 2 Switch on the relay box for the control unit.
  - ① See the installation instructions for the control unit.



- 3** Switch on the sauna at the control panel.
  - ① See the instructions for switching on the unit.
  - ① Check for any unusual noises.
  - a)** Switch on the sauna heater multiple times and then off again after commissioning.
  - b)** Switch off the sauna heater if abnormalities and deviations from normal functioning are detected.
  - c)** Troubleshoot and rectify the problem.
  - d)** Repeat this step.
  - e)** Once the abnormalities and deviations have been rectified, continue with the next step.
- 4** Check the lighting and extinguishing of the burner flame in all burners.
  - ① The burner flame can be seen through the baffle plate on the burner pipe.
  - a)** Switch off the sauna heater if abnormalities and deviations from normal functioning are detected.
  - b)** Troubleshoot and rectify the problem.
  - c)** Repeat this step.
  - d)** Once the abnormalities and deviations have been rectified, continue with the next step.
- 5** Perform multiple test runs while observing as the operating temperature is reached.
  - a)** Switch off the sauna heater if abnormalities and deviations from normal functioning are detected.
  - b)** Troubleshoot and rectify the problem.
  - c)** Repeat this step.
  - ☒ The general function inspection is complete once the abnormalities and deviations have been rectified.

## 6.1.4 Exhaust gas measurement

KUSATEK recommends that a leak test is performed by a chimney sweep.

### ► Measuring the exhaust gas

- 1** Ensure that gas is supplied to the burners.
  - ① Check if the gas lines' ball valves or gas valves to the burners are open.
- 2** Switch on the relay box for the control unit.
  - ① See the installation instructions for the control unit.

## Commissioning

- 3 Switch on the sauna at the control panel.
- 4 Wait 5 minutes while the sauna heater runs.
- 5 Measure the exhaust gas at the metering aperture of the exhaust gas line and log the values.
- 6 Measure the combustion air temperature and log the values.
- 7 Give the operator the measurement report with the following values:
  - ☒ Combustion air temperature (°C/°F)
  - ☒ Exhaust gas temperature (°C/°F)
  - ☒ CO<sub>2</sub> in the exhaust gas (vol. %)
  - ☒ CO in the exhaust gas, dry, undiluted (ppm)
  - ☒ Exhaust gas loss (%)
- 8 Complete the commissioning report and send to KUSATEK.

### 6.2 Official acceptance of firing system installation

Some countries stipulate by law that an installed firing system must be inspected and accepted by an officially authorised technician. For example, in Germany, a chimney sweep is responsible for certifying the safety of the firing system and chimney.

Ensure that your sauna system complies with the standards and legal norms stipulated in your country.

### 6.3 Operator instruction

Before instructing the operator, all prior inspections must be successfully completed.

The operator must be familiarised with how to operate the sauna heater.

#### ► Instructing the operator

- 1 These installation and operating instructions must be given to the operator.
- 2 Inform the operator that the installation and operating instructions must be kept on hand at the site of use.
  - ① The installation and operating instructions are required for maintenance and repairs and can be given to technicians for this purpose.
- 3 Instruct the operator on how to use the unit safely.

- 4 Inform the operator on how to detect signs of malfunctions, switch off the sauna heater, and disconnect the gas and power supply in the event of a malfunction.
- 5 Notify the operator of the risks associated with using the sauna heater.
- 6 Instruct the operator on how to operate the unit economically.
- 7 Inform the operator of the minimum clearances that must be maintained between the unit and flammable materials.
- 8 Give the operator all measurement reports and documentation. Ensure that the operator has the following documentation:
  - ☑ KUSATHERM installation and operating instructions
  - ☑ Installation and operating instructions for the control unit
  - ☑ Installation instructions for the temperature sensor, if needed
  - ☑ Installation and operating instructions for the burner
  - ☑ Installation and operating instructions for the fans
  - ☑ KUSATEK project documents
  - ☑ Gas measurement report, see 6.1.4 Exhaust gas measurement, □ EN-57
  - ☑ Measurement report for function inspection, see 6.1.2 Function inspection of unit parts, □ EN-55
  - ☑ Acceptance certificate of firing system as needed, see 6.2 Official acceptance of firing system installation, □ EN-58
  - ☑ Transfer of risk

## 6.4 Switching on the heater

A slight odour may be produced the first time the sauna cabin is heated. This occurs when the heating coils are heated for the first time due to residue from the manufacturing process. The odour ceases upon continued operation of the heater.

### **WARNING**

#### **Risk of fire if operated despite malfunction**

A risk of death due to fire exists if the sauna heater is switched on despite indications of a malfunction or damage.

- Check the heater for signs of malfunction or damage before starting the heater.
- Switch on the heater only if there is no indication of malfunctions or damage.

## Commissioning

### ► Switching the system on

- 1 Ensure that gas is supplied to the burners.  
 ⓘ The gas lines' ball valves or gas valves to the burners must be open.
- 2 Ensure that the sauna stones have been put in place correctly.  
 ⓘ See 4.6 Filling rock stores with stones, □ EN-45
- 3 Switch on the sauna heater at the control unit.
- 4 Use the control unit to select a suitable program.

### ► Switching the system off

- 1 Switch off the sauna heater at the control unit.
- 2 Close the gas lines' ball valves or gas valves to stop the supply of gas to the burners.  
 ⓘ If the unit is not operated for an extended period of time, see Decommissioning, □ EN-70.

## 6.5 Water splash

Before the first water splash can be carried out, the cabin must be sufficiently heated. The temperature sensor checks the temperature and, via the control panel, indicates when the desired temperature has been reached.

### **WARNING**

#### **Risk of fire due to sauna essences**

Incorrectly diluted sauna essences, essential oils or herbs can catch fire.

- Never add more sauna essence or essential oils to the water than the amount indicated on the container.
  - Do not add herbs to the water or the stones.
  - Do not use pure sauna essences for water splashes.
  - Do not use alcohol for water splashes.
  - Pour the water over the stones only.
-

## **⚠ CAUTION**

### **Risk of scalding from hot steam**

Hot steam is produced during a water splash. Contact with hot steam can scald the skin.

- ▶ Start the water splash side across from you and pour over the stones moving toward yourself.
- ▶ Take care that your hand does not get caught in the rising steam during the water splash.
- ▶ Use a suitable ladle with a handle that is long enough for the water splash.

Pour water slowly over the stones so it is evenly distributed.

As the hot air rises, steam is distributed evenly in the cabin to create a pleasant infusion experience.

Please note that the sauna stones must be reheated after each water splash to generate an intense burst of steam.

Recommendation: During a water splash, no more than approx. 10 cL / 3.38 US fl oz of water per m<sup>3</sup> / 35.3 ft<sup>3</sup> cabin volume should be vaporised.

After each water splash, wait approx. 10 minutes before starting the next one. This time is needed for the sauna stones to reheat.

## **6.6 Switching the heater on remotely**

If you switch on the sauna heater remotely, ensure that no objects are placed on the heater. A suitable safety system, for example EOSafe D/L, can be used to prevent this.

## 7

## Service and maintenance

This sauna heater is made of low-corrosion material. To ensure a long service life, take care of and perform regular maintenance on your sauna heater. Ensure that openings in the intake area and heat reflectors are never blocked. These can easily become blocked with lint and dust as fresh air is drawn in. This limits the air convection ability of the sauna heater and could lead to impermissible temperatures.

Clean the units as needed. Contact your sauna retailer or the manufacturer directly if you notice malfunctions or signs of wear and tear.

If you do not use your sauna for a longer period of time, ensure that prior to recommissioning, no towels, cleaning agents or other objects are lying on the sauna heater.

Contact your sauna retailer or the manufacturer directly if you notice malfunctions or signs of wear and tear.

The sauna heater must be serviced at least once per year. Maintenance intervals must be shortened as needed. The first maintenance should be completed 6 months after commissioning.

## 7.1 Cleaning

The heater must be cleaned regularly. The cleaning frequency depends on how often it is used. The operator may carry out cleaning tasks. The operator should check the stainless steel tray below the coil daily for residual water and remove it.

### **WARNING**

#### **Risk of fire due to dust**

Dust can catch fire easily. There is a risk of death due to fire if the plant room has an elevated concentration of dust.

- ▶ Remove dust from surfaces in the plant room regularly.
- ▶ Install air filters to reduce the concentration of dust as needed.

### **CAUTION**

#### **Risk of injury from sharp edges**

- ▶ Use suitable personal protective equipment, e.g. gloves, when cleaning parts with sharp edges.

#### **▶ Cleaning the heater**

- 1 Switch off the heater from the control unit.
  - ① Wait until the heater is completely cool.
- 2 Clean surfaces and frames with household cleaners.
- 3 Remove lint and dust from openings and heat reflectors.
  - ① Openings can easily become blocked with lint and dust as fresh air is drawn in. This limits the air convection ability of the sauna heater and could lead to impermissible temperatures.
- 4 Remove residual water from the stainless steel tray below the coil with a towel.

#### **▶ Cleaning the plant room**

- 1 Switch off the heater from the control unit.
  - ① Wait until the burner and fans have cooled completely.
- 2 Remove lint and dust from all surfaces.

## Service and maintenance

### 7.2 Sauna stones

Sauna stones are a product of nature. Sauna stones must be replenished or reshuffled depending on the intensity of use.

The process of heating and cooling can make the stones brittle. Particular damage to the sauna stones can be caused by aggressive sauna essences, causing them to disintegrate over time. Small particles can break off from the stones. The gaps between the stones also become smaller which means that hot air can no longer rise between the stones.

Check the sauna stones regularly and reshuffle them. Replace damaged stones.

Please observe the following frequencies of time.

Commercial use	Private use
Every 2–3 months	Once per year


Use only natural sauna stones when you refill the rock store. Due to their roughness, they produce a better water splash effect than ceramic sauna stones.

#### ► Reshuffling the sauna stones

- 1 Switch off the heater from the control unit.
- 2 **CAUTION!** Caution: stones may be hot. Allow the heater to cool sufficiently before you start to replace the stones.  
Remove each stone individually.
- 3 Check each stone for damage.
  - ① Discard any stones with severe damage.
  - ① Replace stones that have been sorted out: new stone caliber 100–150 mm
- 4 Rinse all stones with cold water.
- 5 Stack the stones loosely on the stone grate, leaving sufficient space between them. Add each stone individually.
  - ① 4.6 Filling rock stores with stones, ▢ EN-45



### 7.3 Conversion to a different gas type

You can order the nozzle, baffle plate, and the nameplate from KUSATEK. See Service address,  EN-76.



#### **WARNING**

##### **Risk to health and risk of fire**


There is a risk to health and risk of death due to fire if the nozzle is not replaced in a professional manner. These risks also exist after the nozzle is replaced.

- ▶ Nozzle replacement must be performed only by a trained technician.
  - ▶ Use only original spare parts from the manufacturer.
- 

The following work is required:

- ▶ Replacing the burner nozzle,  EN-65
- ▶ Replacing the nameplate,  EN-66

##### ▶ **Replacing the burner nozzle**

- 1 Switch off the heater from the control unit.
- 2 Close the gas lines' ball valves or gas valves to stop the supply of gas to the burners.
  - ① If the unit is not operated for an extended period of time, see Decommissioning,  EN-70.
- 3 **WARNING!** Electric shock may occur if parts of the burners are replaced while connected to the power supply.  
Disconnect the mains plugs for the burners and all supply lines.
- 4 Wait until the burners have cooled completely.
- 5 Remove the screws from the burner's housing cover and the cover itself.
- 6 Unscrew the safety plug.
- 7 Unscrew the nozzle and screw in a new nozzle.
  - ① The new nozzle must correspond to the new gas type.
- 8 Screw in the safety plug.
- 9 Attach the housing cover and tighten with the screws.

## Service and maintenance

### ► Replacing the nameplate

- 1 Replace the nameplate.
- 2 Plug in the mains plugs for the burners again.
- 3 Switch off the heater from the control unit.
- 4 Perform a test run.  
① See 6.1 Inspections before commissioning, ▫ EN-54
- 5 Set the negative pressure.  
① See 5.3 Negative pressure, ▫ EN-52.

## 7.4 Troubleshooting

Only spare parts specified by the manufacturer in the replacement parts list may be used. See: 2.5 Spare parts, ▫ EN-21. Consult the manufacturer before installing other parts.

### **WARNING**

#### **Risk to health and risk of fire**

There is a risk to health and risk of death due to fire if repairs are not performed in a professional manner. These risks also exist once repairs have been made.

- Repairs should be performed only by:
- KUSATEK customer service
  - Technicians who have been trained by KUSATEK
  - Other trained technicians if technicians trained by KUSATEK do not service the area in which the installation site of the sauna heater is located.
- 

Contact the manufacturer in the event of malfunctions or signs of malfunctions. See Service address, ▫ EN-76.

### 7.4.1 Burner malfunctions

#### **WARNING**

##### **Risk of fire if operated despite malfunction**

A risk of death due to fire exists if the sauna heater is started despite indications of a burner malfunction.

- ▶ Check the heater for signs of malfunction or damage before starting the unit.
- ▶ Start the heater only if there is no indication of malfunctions or damage.

##### **▶ Troubleshooting the burner**

- 1 **WARNING!** Restart the burner only if operating the burner poses no risk. Press the reset button or unplug the mains plug and plug it back in to restart the burner.
- 2 Observe if the malfunction occurs again.
  - a) Malfunction does not reoccur: Operate the burner.
  - b) Malfunction persists: Do not operate the burner. Continue with the next step.
- 3 Switch off the heater from the control unit.
- 4 Close the gas lines' ball valves or gas valves to stop the supply of gas to the burners.
- 5 Unplug the mains plug for the burners and fans to disconnect them from the power supply.
- 6 Contact the person responsible for malfunctions or KUSATEK customer service for troubleshooting assistance.

## Service and maintenance

### 7.4.2 Causes of malfunctions

Error	Reason	Solution
The unit does not start when it is switched on.	Fan does not run.	Check if the fan blades can move freely. Check the cabling. Check if the motor protection switch has been triggered. Replace the fan, if needed.
	Control unit fuse is defective.	Replace the fuse and check the sauna heater.
	Time switch did not switch on.	Change the time switch setting.
	Vacuum actuator is defective.	Check the vacuum actuator and replace as needed.
	Vacuum actuator is defective.	Check the installation fuses. Have the control unit's outputs checked by a technician.
	Burner malfunction.	Check the burner and replace fuse as needed.
Only the fan runs after unit is switched on.	Control unit malfunction.	Check the control unit.
	Vacuum actuator is defective.	Check the vacuum actuator and replace as needed.
	Gas supply has been interrupted.	Check the gas supply and re-establish the connection.
When the unit is switched on, the fan runs and burners ignite but do not become operational.	Gas supply has been interrupted.	Check the gas supply and re-establish the connection.
	Gas pressure is too low.	Check the gas pressure.
	Connection to monitoring electrode is faulty or interrupted.	Check the cabling. Remove corrosion from the plug.
When the unit is switched on, the fan runs and the gas supply is established, but one or more than one burner does not ignite.	Distance between ignition electrodes is too great or too little.	Set the distance between ignition electrodes to 3 mm.
	Hairline crack in the isolator for the ignition electrode.	Replace the ignition electrode.
After switching on the unit, the sauna heater switches off and the control unit indicates a malfunction.	Malfunction in one or more burners.	Check the burner.
After switching on, the burners operate, but then switch off again after 9 seconds.	Neutral conductor improperly connected during installation.	Replace the connection for phase and neutral conductor.

Error	Reason	Solution
It takes the sauna heater a long time to heat up the cabin.	There is not enough space between the stones.	Reshuffle the stones. See 4.6 Filling rock stores with stones, EN-45.
	There is insufficient ventilation.	Install the air inlets. If these are insufficient, add a fan to the openings. See 3.1.7 Air inlets and outlets, EN-31.
	The temperature sensor is incorrectly positioned.	Check the position of the temperature sensor and adjust as needed. See 4.7 Temperature sensor, EN-46.
The sauna heater is very hot but cannot distribute the heat throughout the cabin.	There is not enough space between the stones.	Reshuffle the stones. See 4.6 Filling rock stores with stones, EN-45.
The safety temperature sensor was triggered and the sauna heater no longer heats.	The safety temperature sensor was triggered by heat accumulation.	Check the inlets, outlets, and the fan and ensure that the sauna heater has access to a sufficient amount of air.
	The position of the safety temperature sensor is not optimal.	Check the position of the safety temperature sensor and adjust as needed. See 4.7 Temperature sensor, EN-46.

# 8

## Decommissioning

### 8.1 Deactivation

The sauna heater should be deactivated if not operated for an extended period of time.

#### ► Deactivating the sauna heater

- 1 Switch off the heater via the control unit.
- 2 Close the gas lines' ball valves or gas valves to stop the supply of gas to the burners.
- 3 Unplug the burners' mains plugs to disconnect them from the mains supply.
- 4 Unplug the fans' mains plugs to disconnect them from the mains supply.

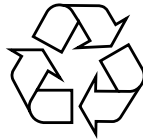
### 8.2 Recommissioning

The sauna heater must be inspected before recommissioning if it has not been operated for an extended period of time. This inspection must be performed only by:

- KUSATEK customer service
- Technicians who have been trained by KUSATEK

If service technicians trained by KUSATEK do not service the area in which the installation site of the sauna heater is located, the inspection may be carried out by other technicians.

## 8.3 Disposal



Electrical devices that are no longer needed must be recycled at a recycling station as per EU guideline 2012/19/EU or as per the Electrical and Electronic Equipment Act (ElektroG).

Observe local provisions, laws, regulations, standards and directives when disposing of the unit.



Do not dispose of the unit with household waste.

### Packaging

The packaging of the KUSATHERM can be completely separated for disposal and recycled. The following materials are used in the packaging:

- Used paper/cardboard
- Plastic foil

### Electrical components

Dispose of electrical components and circuit boards as electronic waste.

### Metal parts

Dispose of metal parts at scrap metal recycling sites.

## 9

## General terms and conditions of service

(T&C, Dated 08-2018)

### I. Scope

Unless otherwise agreed in writing for specific instances, these terms and conditions of service shall apply to service operations, including reviewing and remedying complaints. All our existing or future legal relationships shall be governed solely by the following terms and conditions of service. We do not recognise any of the customer's conflicting terms and conditions unless we have given our express written consent to their applicability.

We hereby expressly object to any of the customer's terms and conditions included in the customer's General Terms and Conditions of Business or order confirmation. Unconditional acceptance of order acknowledgments or deliveries shall not be construed as any form of acknowledgment of such terms and conditions. Ancillary agreements or amendments must be confirmed in writing.

### II. Costs

The customer shall bear the following costs in connection with services rendered:

- Mounting/dismantling and electrical (de-)installation
- Transportation, postage and packaging
- Function testing and troubleshooting, including inspection and repair costs

There shall be no third-party billing.

### III. Performance and cooperation obligations

The customer shall provide assistance free of charge to the manufacturer in rendering services.

In the case of a warranty claim, the manufacturer shall provide spare parts necessary for servicing free of charge.



## **IV. Service visit by the manufacturer**

Services rendered on site by an employee of the manufacturer must be agreed in advance.

If the main reason for the service visit is not the fault of the manufacturer, any costs incurred shall be charged to the customer after the service visit and must be paid by the customer in full within the agreed payment term.

## **V. Liability**

The manufacturer shall assume liability in accordance with the currently applicable statutory regulations. All our products are packaged in such a way that the individually packed goods (pallets) can be shipped.

We wish to point out that our packaging is not suitable for individual shipments via parcel post. The manufacturer shall accept no liability for damages incurred as a result of improper packaging in an individual shipment.

## **VI. Manufacturer's warranty**

The manufacturer's warranty shall apply only if installation, operation and maintenance have been carried out in full accordance with the manufacturer's specifications in the installation and operating instructions.

- The warranty period shall commence from the date on which proof of purchase is provided and shall be limited, in all cases, to 24 months.
- Warranty services shall be performed only if proof of purchase of the equipment can be presented.
- Any and all warranty claims shall become void if modifications are made to the equipment without the manufacturer's express consent.
- Any warranty claim shall likewise become void in the case of defects that arise due to repairs or interventions made by unauthorised persons or due to improper use.
- In the case of warranty claims, the serial and article numbers must be provided, together with the unit designation and a meaningful description of the error.
- This warranty shall cover defective equipment parts, with the exception of normal wear parts. Wear parts shall include, for example, light sources, glass elements, tubular heating elements and sauna heater stones.
- Only original spare parts may be used within the warranty period.

## General terms and conditions of service

- Service visits made by third parties shall require a written order issued by our service department.
- The equipment in question shall be sent to our service department by the customer at the customer's own expense.
- Electrical assembly and installation work, including service visits and parts replacements, shall be carried out at the customer's expense; costs shall not be borne by the manufacturer.

Complaints in respect of our products shall be reported to the responsible distributor and shall be handled exclusively by said distributor.

The manufacturer's General Terms and Conditions of Business, in the version available at [www.eos-sauna.com/agb](http://www.eos-sauna.com/agb), shall apply in addition to the foregoing terms and conditions of service.



**Service address**

EOS Saunatechnik GmbH  
Schneiderstriesch 1  
35759 Driedorf, Germany  
Tel. +49 2775 57765-12  
Fax +49 2775 827-147  
Email [info@kusatek.de](mailto:info@kusatek.de)  
Web [www.kusatek.de](http://www.kusatek.de)

Store this address with the installation and operating instructions in a safe place.

Please always provide us with nameplate data, such as model, item number and serial number so we can provide fast and efficient support.

**Date of sale**

**Stamp/retailer signature:**