Installation Guide

Water boilers

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1 BASIC INFORMATIONS



All instructions delivered with products must be observed. We do not accept any warranty claim or liability for damage resulting from failure to observe these installation instructions!
Improper installation can cause injury and material damage!

The installation may only be carried out by a registered specialist.

Fireplaces equipped with a water boiler must be pressure-tested after hydraulic connection to the heating system. Masonry work may follow only after this pressure test. Ulrich Brunner GmbH does not cover any costs incurred by necessary dismantling of masonry for rework at water boiler installation or replacement of the boiler.

The floor space of the room must have a suitable structure and sufficient dimensions to ensure proper functioning of the fireplace.

Please note that other installation and assembly instructions are included in other packaging units!

Dimensioning of downstream heat accumulator must be according to valid stove-setting rules.

During installation of the fireplace, all dimensions and minimal clearances of the fireplace casing must be held as specified by the manufacturer.

Fireplaces that meet the requirements of DIN EN 13240 or DIN EN 13229 and that can only be operated as intended with closed combustion chamber door or that have a self-closing firebox door are suitable for multiple occupancy.

All binding national or EU standards and local regulations for the installation of fireplaces must be observed.

All valid stove fitting rules and regulations of local construction law must be observed and followed.

Please follow the relevant regulations of your country.

When these instructions are followed and all works are done properly, this will ensure a safe, energy-saving and environmentally friendly operation of the stove. Pictures shown are not to be considered as complete representations of any kind.

Subject to technical and assortment changes.

Please notify your supplier of any damage which might have occurred during transport.

Please keep these instructions.

2 GENERAL

Tiled stove inserts or fireplaces with hot water functionality include a combustion chamber of a specific stove or fireplace type and a water conducting boiler section. These boiler sections comply with DIN EN13229 and fundamental safety measures according to Pressure Equipment Directive 97/23/EC.

All water boilers are designed and approved as heating generator devices for hot water heating systems with max. allowed supply temperatures up to 100°C (212°F). Those devices can be used in stand-alone applications or in combination with other heating generator devices. These applications include open installations according to DIN 4751 Part 1 as well, as closed installations with thermostatic safety devices according to DIN 4751 Part 2.

Water boilers including a switchable boiler section are in general dimensioned to turn all available energy of the flue gases into hot water. Therefore it is not possible to connect any additional radiators or accumulators behind this section, unless such possibility is explicitly described in the following installation instructions as a potential configuration. The flue gas must be led away into the chimney on shortest possible way.

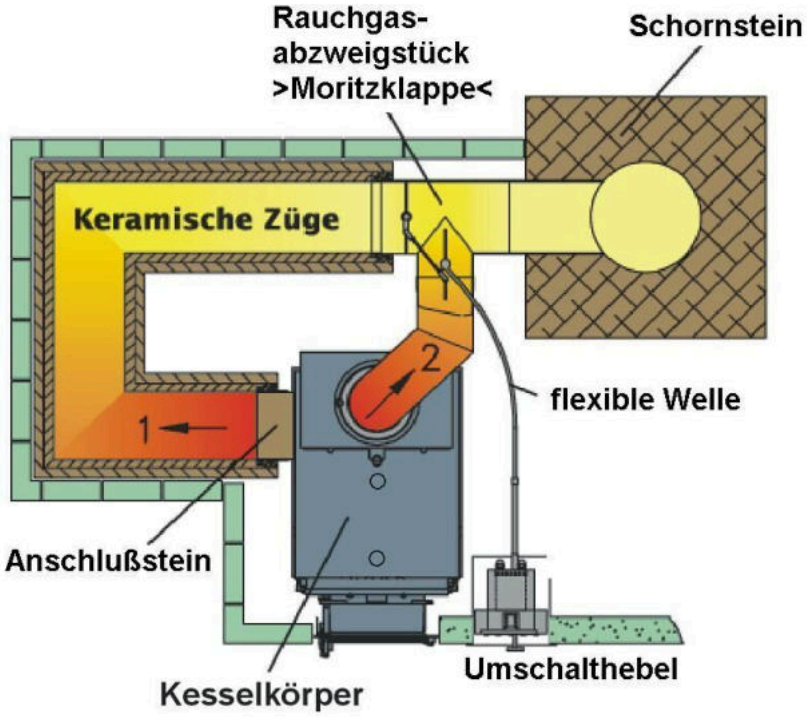
The water boiler can be activated and deactivated by using a special three-way flow control valve (“Moritzklappe”) installed between the boiler and the chimney entrance. Using this smoke valve you can switch between two available operating modes, hot water (the water boiler mode) and warm air or heat projection (the radiator/accumulator mode). Both flue gas streams (mode 1 or 2) are connected by the three-way flow control valve just before they enter the chimney.



Stoves and fireplaces equipped with a water boiler must be pressure-tested after hydraulic connection to the heating system. Masonry work may follow only after this pressure test. Ulrich Brunner GmbH does not cover any costs incurred by necessary dismantling of masonry for rework at water boiler installation or replacement of the boiler.

Flue gas flow

Note: Not applicable for stoves with non-switchable boiler section. In this case, a “Moritzklappe” is not needed.



Im. 1: Flue gas flow with “Moritzklappe”

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In order to avoid damage to the boiler and to the entire heating system, only demineralized water may be used for filling!

3 SAFETY PRECAUTIONS

Fireplaces may be set up only in rooms or areas with no risk of danger due to their location, structure or intended use.

Working on the stove	Installation, commissioning, servicing and maintenance works on the product may be carried out only by an authorized stove-fitter. Safety and efficiency of the system depend on this!
Working with electronics	Switch off the emergency switch or circuit breaker, and secure them against switching on again.



Fireplaces with external air supply are not independent from room air supply and must be considered and designed as roomsealed fireplaces. In connection with a ventilation or extraction system, we recommend the use of a negative pressure safety device USA.



If additional parts are installed on the fireplace which are not approved for this appliance by Ulrich Brunner GmbH (for example, an external control unit), it is a customized product that meets customer requirements. The resulting fireplace insert is not type-tested; the declaration of performance of this fireplace insert will be no longer valid.

The CE mark must be removed from the heating insert!

The responsibility for installation (according to TROL) and operation lies exclusively with the specialist craftsman!

Installation must be carried out by an authorized stove-fitter, because safety and efficiency of the system depend mostly on proper installation of the product. All valid stove fitting rules and regulations of building law must be observed and followed. Make sure to instruct the owner or user about the functions and controls of the system and possibly installed safety devices.

Fireplaces must be built to ensure safe operation and fire safety in order to eliminate possible risks and unacceptable loads. They have to be ready for use over an adequate period of time.

Make sure to instruct the owner or user about the functions and controls of the system and possibly installed safety devices.

Remember to use only genuine replacement parts.

Stoves with water boilers are ready for use only with a fully functional boiler section.

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4 SAFETY DEVICES ACCORDING TO DIN EN12828

Necessary safety devices, if not included in delivery contents, must be provided on-site.

The necessary safety equipment must be installed conscientiously and checked for proper operation at least once a year by a qualified person. Due to high ambient temperatures in the furnace area, you may only install components that are suitable for the ambient temperatures occurring at the respective installation site.

Thermal discharge safety device (TAS)

As a safety device against overheating according to EN 12828, a safety heat exchanger is installed, to which a thermal discharge safety device, product tested in accordance with DIN EN 14597 and provided with a CE mark, is connected

The thermal discharge safety device must be installed outside the tiled stove shell. The max. allowed ambient temperature for this component is limited to 70°C (158°F). Cold water supply for thermal discharge safety device must be always open. Supply pressure must be at least 2 bar (29 psi) and cannot exceed 10 bar (145 psi).

The integrated safety cooling device with thermal discharge functionality cannot be used for domestic water heating. It is designed for safety purposes only.

The discharge pipe outlet of the thermal discharge safety device must be clear and available for inspection.

Observe the installation instructions enclosed with the TAS!

Safety valve

For protection against high pressure, stoves with water boilers must have a safety valve according to TRD 721or DIN EN ISO 4126 provided with a CE mark.

The thermal discharge safety device must be installed outside the tiled stove shell at the highest point of the system in the immediate vicinity of the heat generator, in a freely accessible and unobstructed manner on the flow line. The supply line to the safety valve must have a nominal diameter of at least DN 15 and must not exceed a length of one meter. In the supply line to the safety valve you may install max. one pipe elbow.

It is essential to observe the maximum permissible ambient temperature of the safety valve (usually 60 ° C)

Note that the maximum permissible overpressure of the safety valve is 3 bar!

Check the function of the safety valve during commissioning and later annually by a specialized company

For the discharge pipe outlet applies:

nominal width	max. length	max. pipe elbows
DN 20	2 m	2
DN 25	4 m	4

The discharge pipe outlet of the safety valve must be clear and available for inspection.

Expansion tank

If the hot water circuit of the boiler is not connected to a heating circuit equipped with an expansion tank, or if the boiler can be disconnected from the heating system, then a separate, type-approved provided wiht the CE mark expansion tank must be installed according to DIN EN 13831. Dimensioning of this expansion tank must comply with DIN EN 12828:2003-06. Expansion tanks must be installed only in frost-protected rooms. For max. operating temperature, refer to manufacturer's specifications.

Temperature controller

According to DIN EN 12828, heating systems must be equipped with a temperature controller and / or a similar device in order to be able to adapt the heat generation to the heat demand. The highest setting value of the temperature controller must not exceed the maximum operating temperature of the heat generation system.

5 DESCRIPTION OF CONNECTIONS

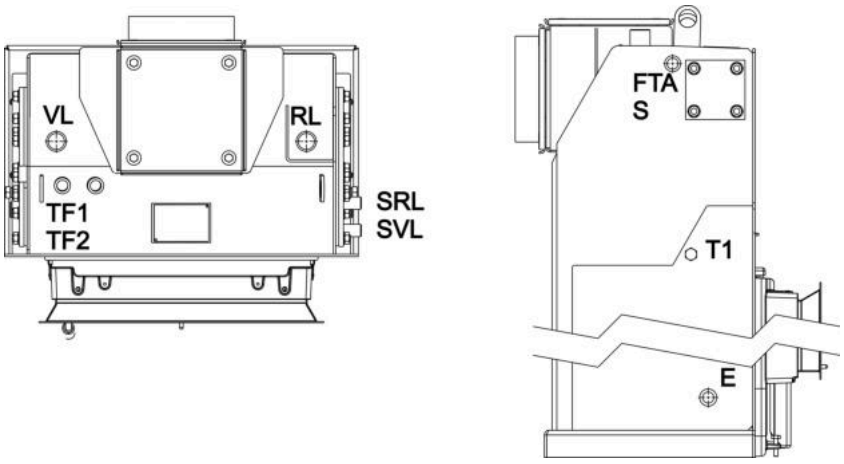
VL	Flow line	E	Drain pipe coupling
RL	Return line	FTAS	Thermal probe coupling
SVL	Safety device supply	TF1	Temp. sensor coupling
SRL	Safety device return	TF2	Temp. sensor coupling
AE	Automatic breather	T1	Temp. sensor for EAS/EOS



Caution: Unused connections must be closed tight with plugs! At delivery, the pipe couplings and connecting pieces are secured by plastic caps or plugs. Remove them just before connecting. Those caps and plugs are not water-tight and cannot remain on the boiler connections.

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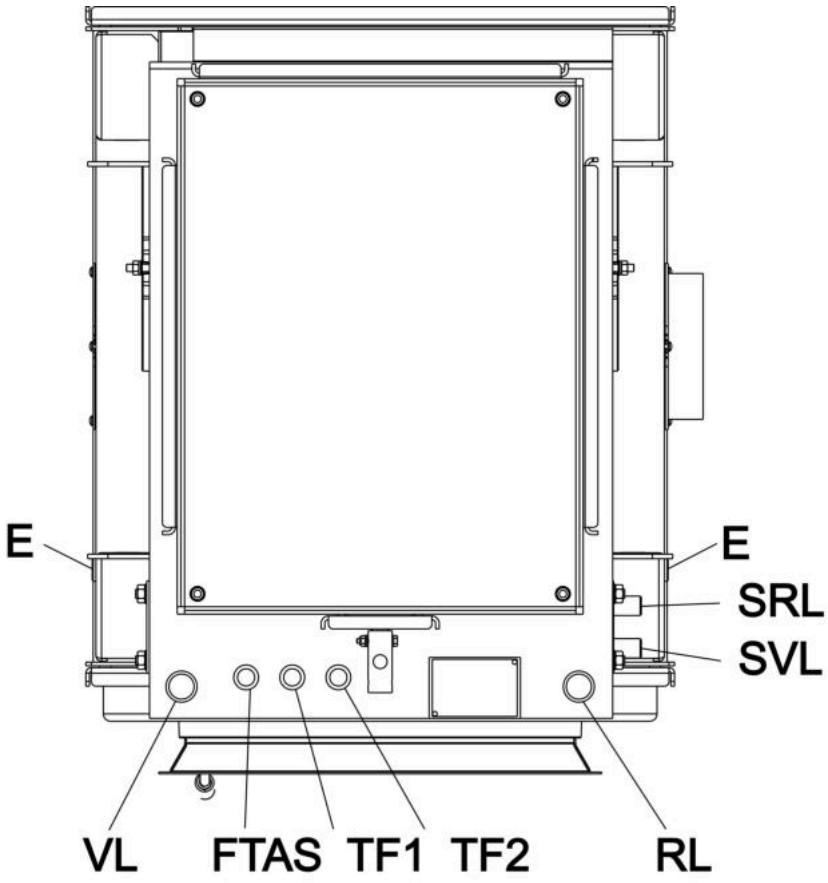
6 AVAILABLE CONNECTIONS



Im. 2: Connections available on HKD 2.2k SK / HKD 2.6k SK

HKD 2.2k SK / HKD 2.6k SK

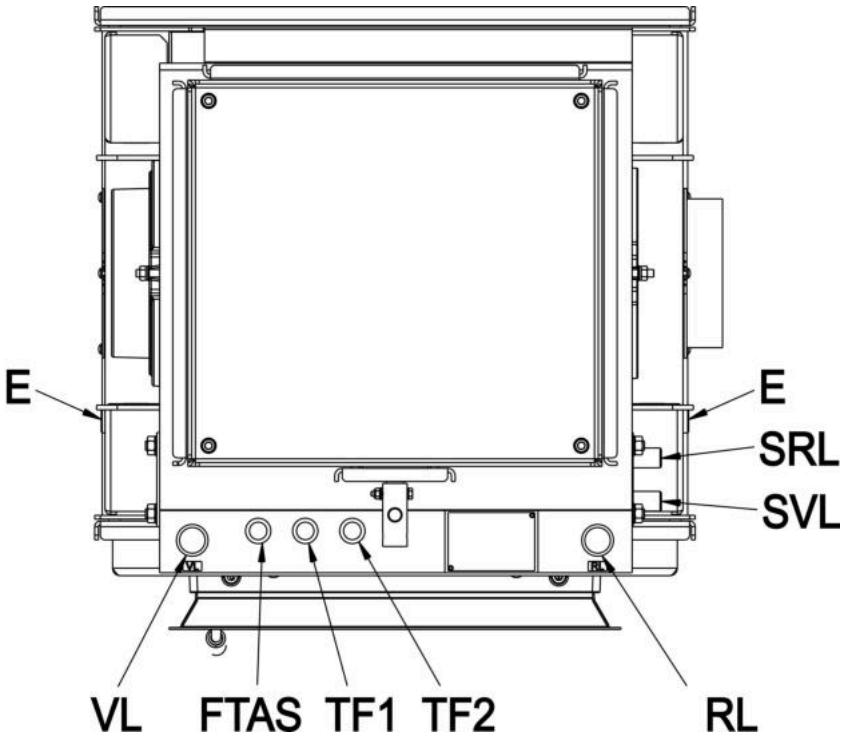
The safety cooling device can be installed on left or right side alternatively.



Im. 3: Connections available on HKD 2.2 XL-SK/h

HKD 2.2 XL-SK/h

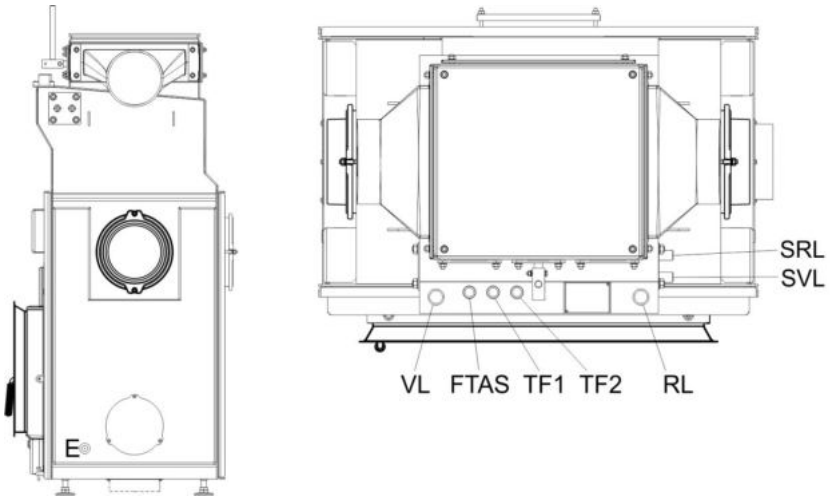
The safety cooling device can be installed on left or right side alternatively.



Im. 4: Connections available on HKD 2.2 SK

HKD 2.2 SK

The safety cooling device can be installed on left or right side alternatively.

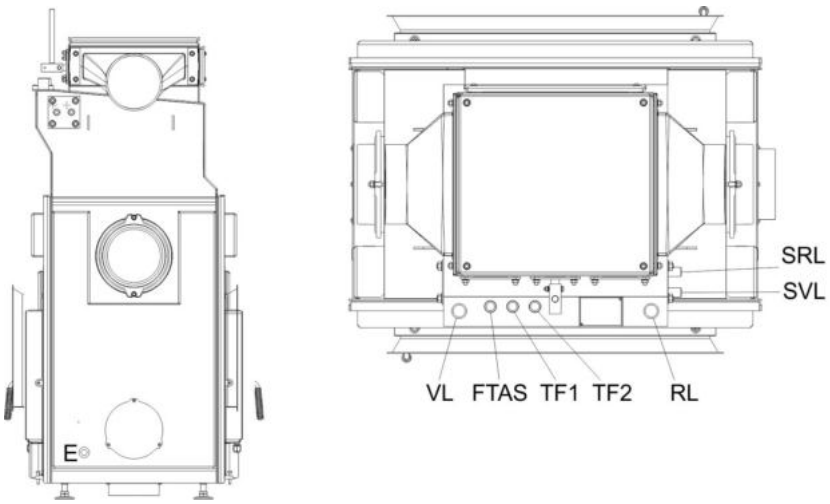


Im. 5: Connections available on HKD 7 SK

HKD 7 SK

The safety cooling device can be installed on left or right side alternatively.

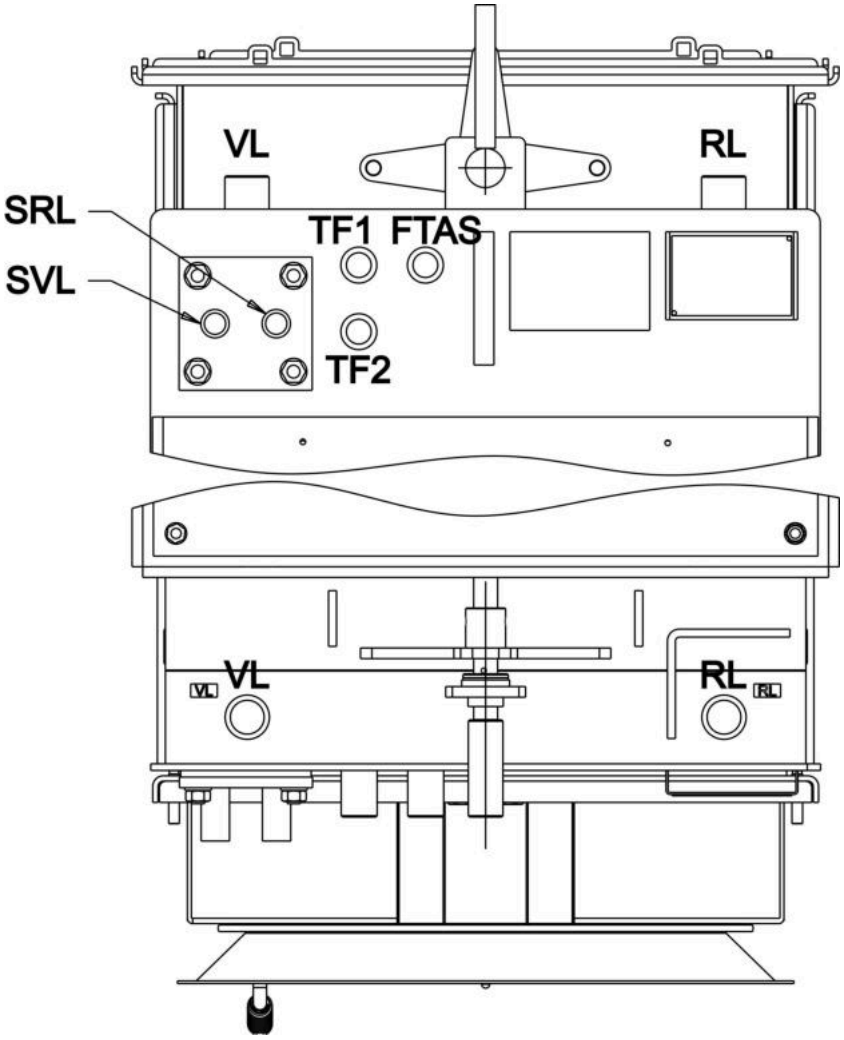
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Im. 6: Connections available on HKD 7 SK Tunnel

HKD 7 SK Tunnel

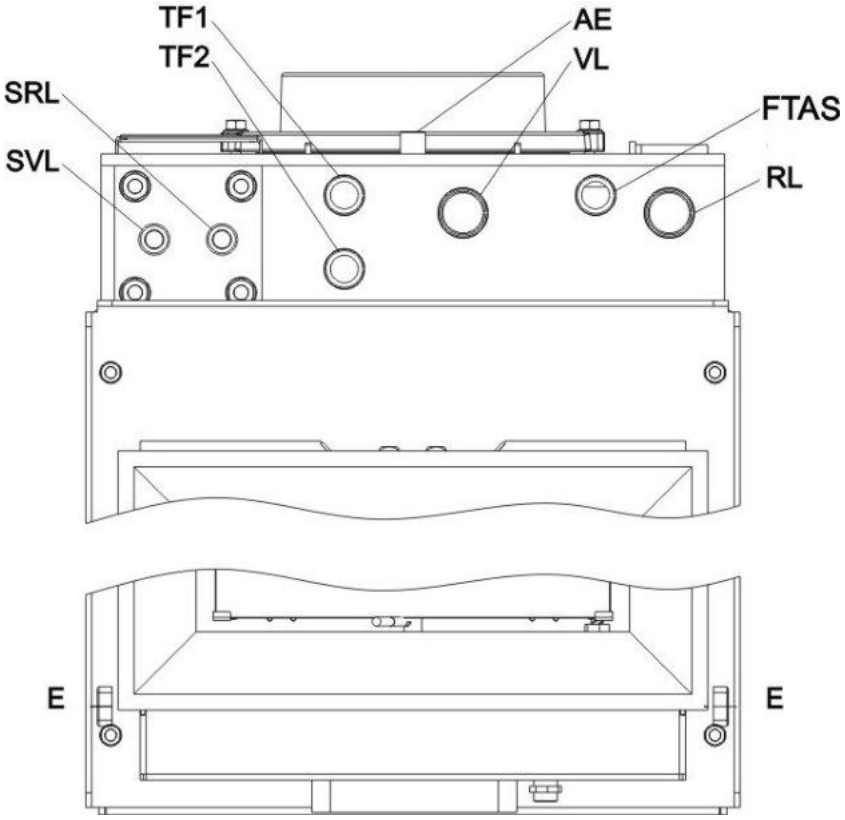
The safety cooling device can be installed on left or right side alternatively.



Im. 7: Connections available on Kompakt-Kessel B4

Kompakt-Kessel B4

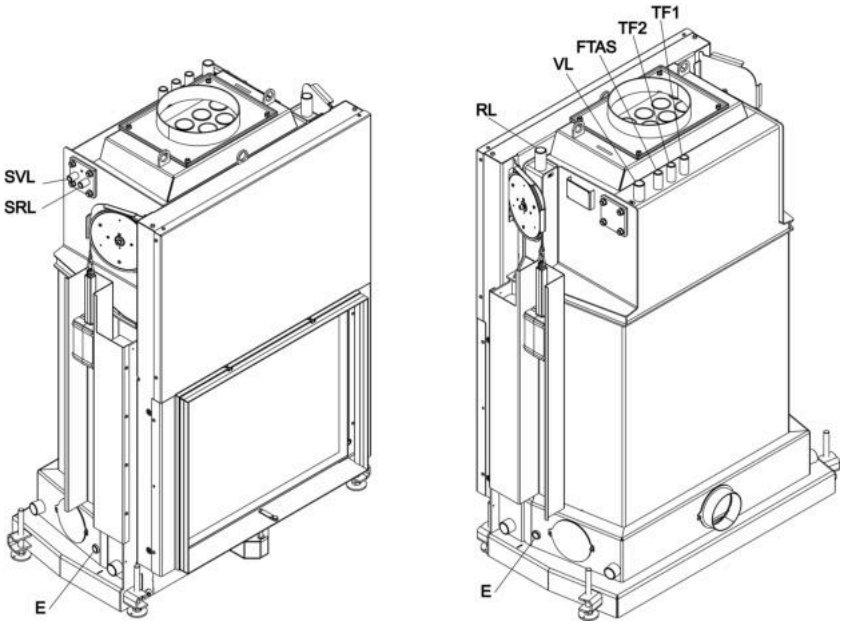
Kompakt-Kessel B7 / B8



Im. 8: Connections available on Kompakt-Kessel B7 und B8

Kamin-Kessel 62/76

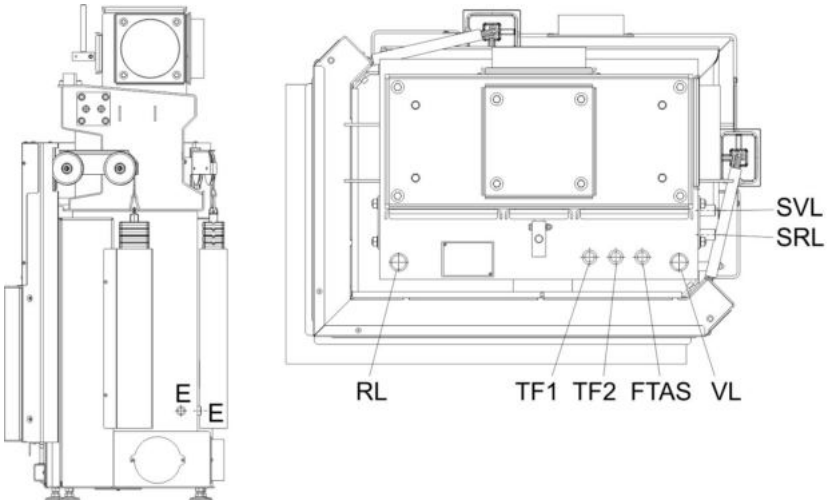
The safety cooling device can be installed on left or right side alternatively.



Im. 9: Connections available on Kamin-Kessel 62/76

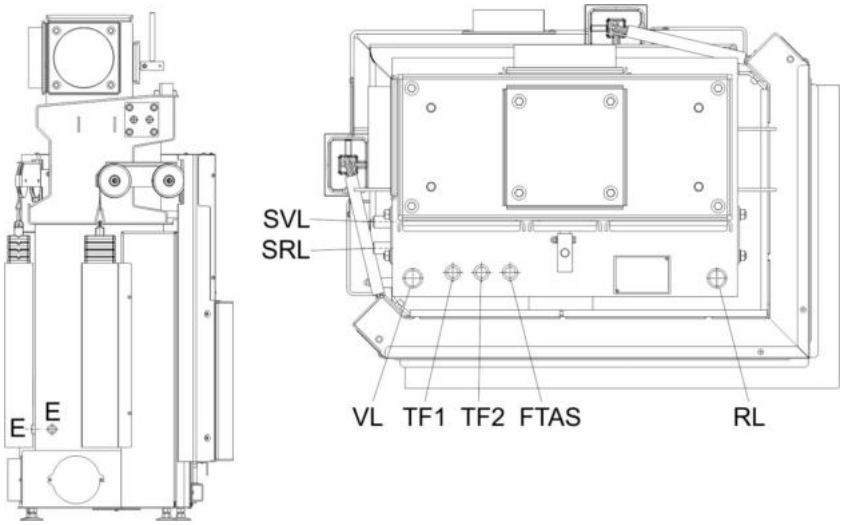
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Kamin-Kessel Corner 45/67/44 L



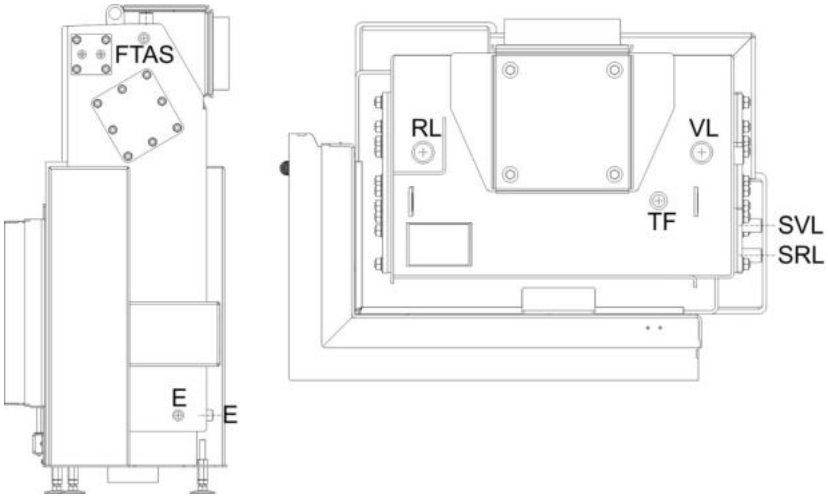
Im. 10: Connections available on Kamin-Kessel Eck 45/67/44 L

Kamin-Kessel Corner 45/67/44 R

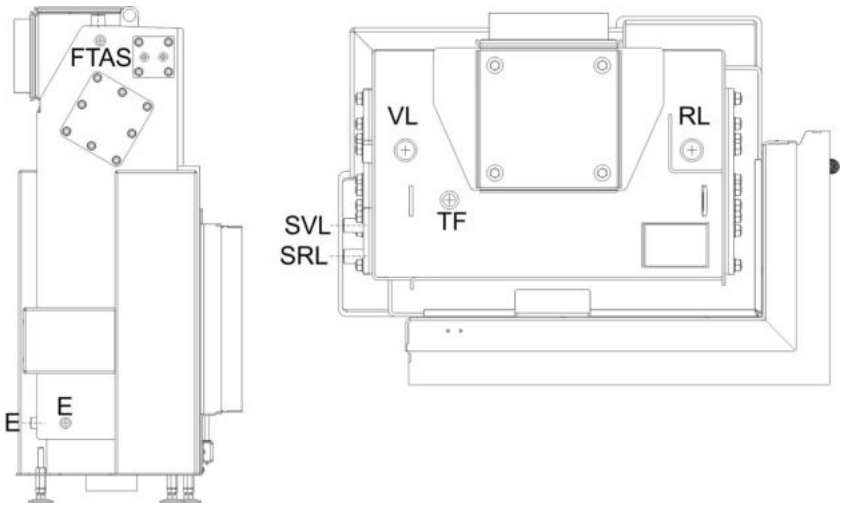


Im. 11: Connections available on Kamin-Kessel Eck 45/67/44 R

Kamin-Kessel Corner 42/57/30 L

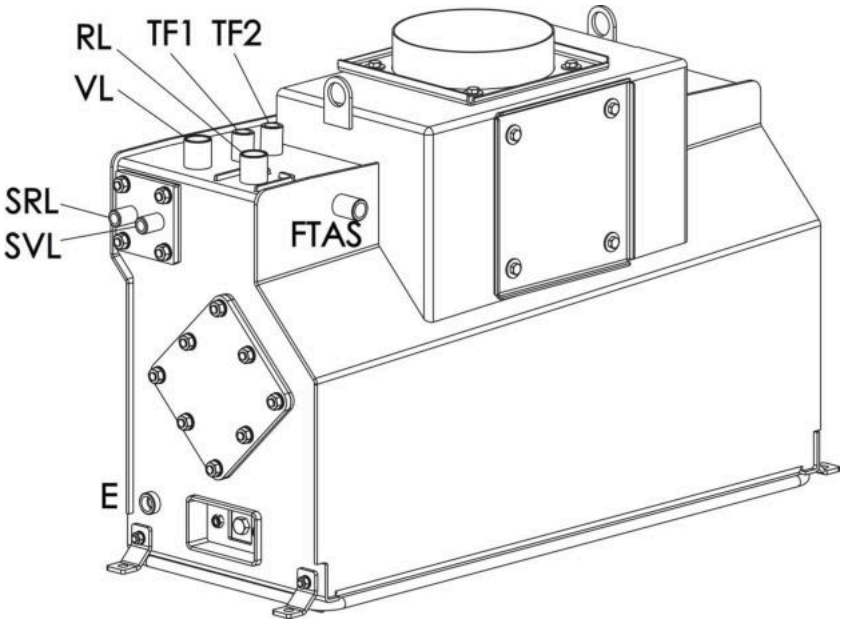


Im. 12: Connections available on Kamin-Kessel Eck 42/57/30 L



Kamin-Kessel Corner 42/57/30 R

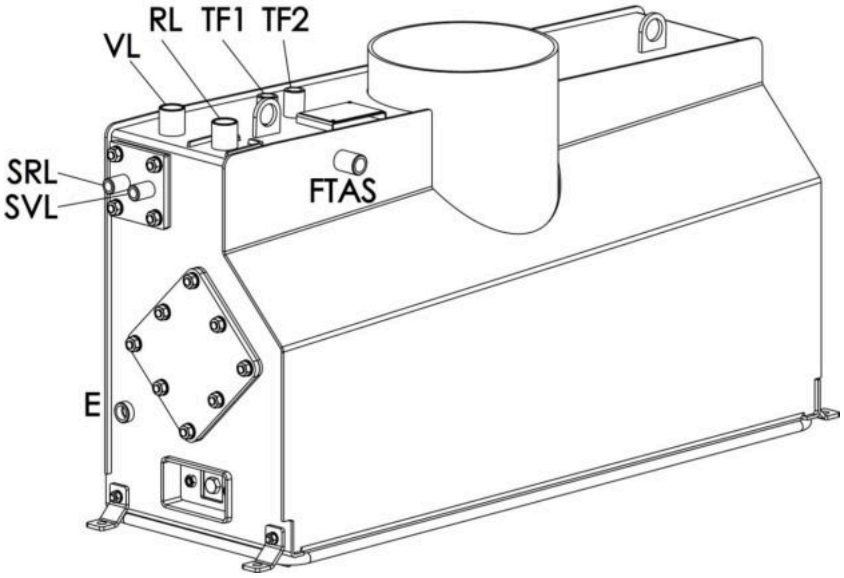
Im. 13: Connections available on Kamin-Kessel Eck 42/57/30 R



AK 38/86 and AK 38/86 Tunnel top mount boiler 38/86

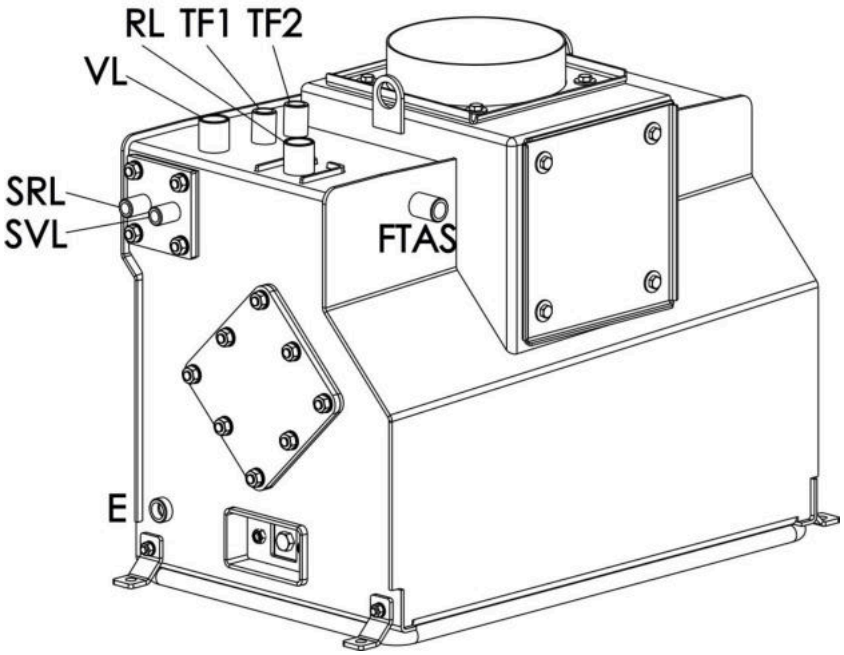
Im. 14: Connections available on Kesselaufsatz 38/86

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AK 45/101 and AK 45/101 Tunnel top mount boiler 45/101

Im. 15: Connections available on Kesselaufsatz 45/101



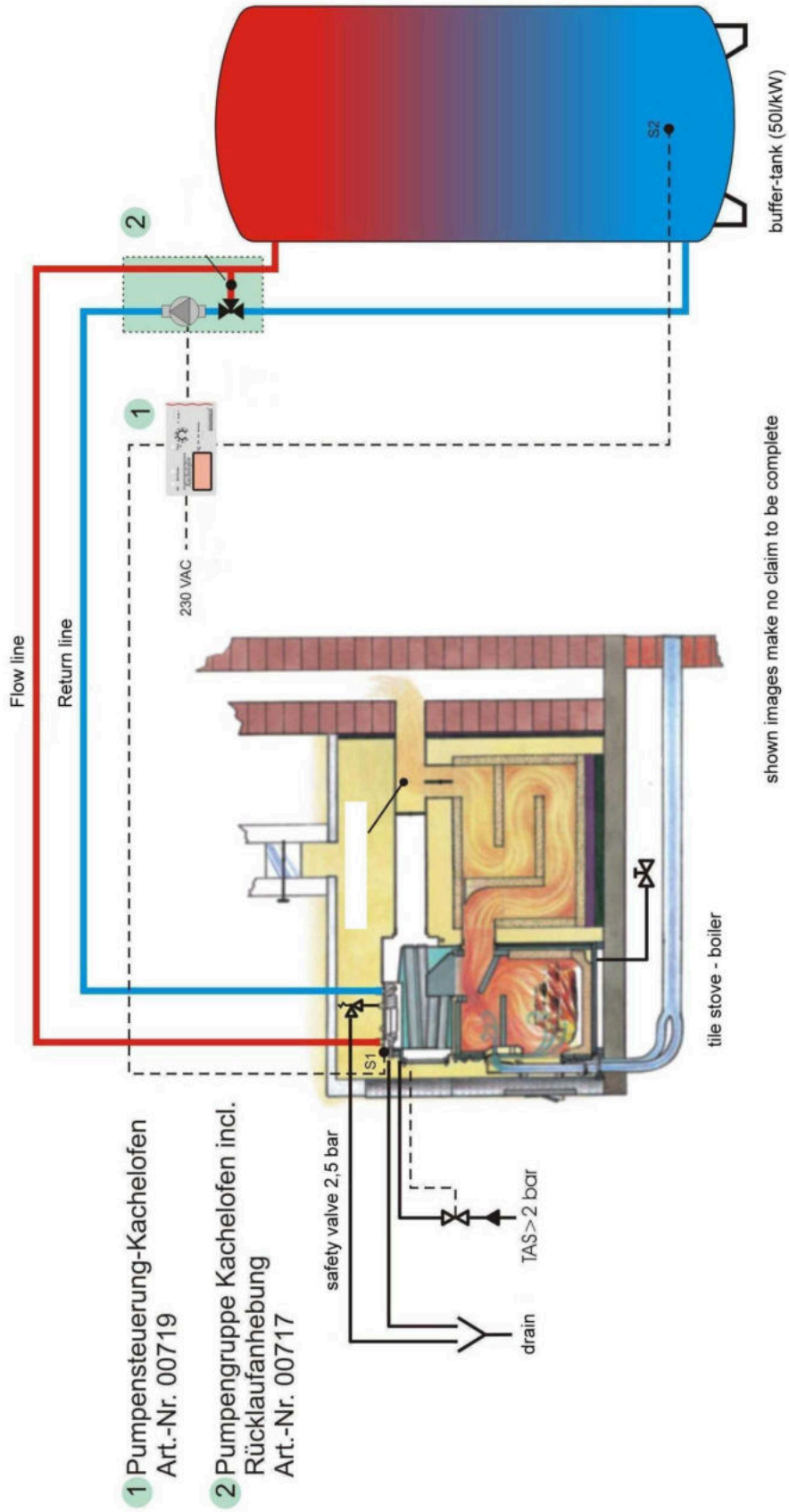
Stil-Kamin 51/67 and Stil-Kamin Tunnel 51/67 with top mount boiler 51/67

Im. 16: Connections available on Kesselaufsatz 51/67

7 CONNECTING TO A BUFFER TANK

Note: According to “Bundes-Immissionsschutzgesetz” (1. BimSchV; Federal Pollution Control Act), all manually stoked fireplaces using fluids as heat transfer medium must have a heat collecting buffer with sufficient capacity.

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1 Tiled stove pump control; 2 Pump group for tiled stove including return flow lift

8 DIMENSIONING HINTS

To ensure efficient operation of the heating system, please consider the following:

Heat demand

Heat demand of the building must be estimated according to DIN 4701 Part 1 & 2. Domestic hot water demand must be calculated too.

Heat transfer

A tiled stove is **not** a continuously operating heating system. Heating power is adjusted by amount of wood and the stoking intervals only. Please remember, that the actual momentary heating power can significantly exceed the specified rated power.

Beech wood with 18% humidity has a calorific value of 4.0kWh/kg. Stoking up 10kg beech wood equals to 40kWh supplied energy, reduced only by unavoidable flue draught losses of 15-20%, depending on stove type.

Return flow increasing valve

Installation of a return flow increasing valve is absolutely necessary. A return flow increasing valve makes the warm-up of the boiler much faster by enabling internal circulation within the boiler, avoids temperatures below the dew point and reduces soot build-up inside the boiler. To avoid damage inside the boiler, the return flow increasing valve must be set to 60°C (140°F). A choke is necessary to allow for hydraulic pressure compensation between the bypass and heating circuit. Compensation level must be set during initial operation. We recommend the use of our tiled stove pump group unit, art. no. 00717.1.

Circulation pump

The circulation pump is controlled by a differential temperature controller with minimal temperature limiter. We recommend our pump control unit for tiled stoves, Art.No. 00719.1. The pump is switched on only after the water boiler temperature exceeds 60°C (140°F) and if the boiler temperature is higher than water temperature in buffer tank.

Heat collecting buffers

The tiled stove water boilers are designed for full load operation only, therefore it is necessary to provide a buffer tank.

A practical recommendation regarding buffer capacity:

at least 55 litres for each kW of water boiler rated power.

Note: The specified buffer tank capacities are only recommended values which can be altered depending on different system designs.

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9 INITIAL OPERATION

Detailed instructions for use can be found in the specific User Guide delivered with your stove. For water boiler use, please pay attention to the following requirements:

Check before first fire:

1 The flue gas system and water piping must be properly designed and dimensioned.

2 The heating circuit must be filled with water and the remaining air must be evacuated. The tiled stove circulation pump must be connected to electricity and in working order.

3 Unused wet connections (for example, sensor connections or drain pipe couplings) must be closed with plugs. Plastic caps provided on those connections at delivery are not water-tight and cannot remain on the boiler connections.

4 The cold water supply pressure for the existing thermal discharge safety device must be at least 2 bar (29 psi).

5 Thermal discharge safety device and safety valve must be connected and in working order.

6 Combustion chamber linings must be set completely using fire resistant mortar - do not put them loose inside the stove!

The stove cannot be used, as long the requirements 1 - 6 are not met! The stove cannot be used under any circumstances, when the water boiler is not functional - even if the chosen operation mode will exclude hot water applications!

10 OPERATION

During operation please remember about the following:

- The user and operator of the heating system must read and understand the following instructions for use. The instructions for use must be always at hand for user reference.
- The operating water temperature must be between 60°C (140°F) to 90°C (194°F). Operating temperatures below 60°C (140°F) will cause fast soot build-up on the heat exchanger faces and significant loss of efficiency. Above 95°C (203°F) the thermal discharge safety device will respond, leading the excessive heat safely away.
- The thermal safety device function must be checked at initial operation and then at least once a year on a regular basis. Faulty operation requires immediate action and repairs. Repairs and checks must be carried out by a specialized technician only.
- If the necessary cold water supply pressure for the existing thermal discharge safety device is not available (< 2 bar/29 psi), for instance, due to local or your own water supply failure, the water boiler system must be shut down immediately. Protection against overheating is not present in this case.
- After lighting fire (for 10 minutes) the stove must be used only for warm air applications or with the optional start-up duct (does not apply to Kompaktkessel and Kamin-Kessel fireplaces). When reaching temperatures at 450-600 °C (depending on stove type) you can switch the smoke valve (Moritz's flap) to let the flue gas stream into the water boiler.

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11 DIRECTIVES

The following standards and directives must be respected when setting up or using a heating system:

TROL	Stove fitting rules and regulations for warm air heating systems
FeuVo	“Feuerungsverordnung” (Fireplace Act; relevant for German Federal Lands)
EnEV	Energy Saving Regulation
LBO	Regional building codes
VDE	electronic installation instructions
	List of technical building regulations
DIN EN 12831	Calculation of the standard heating load
DIN EN 12828	Heating systems in buildings
DIN EN 14597	Temperature control devices and limiters for heat generating systems
TRD 721 oder DIN EN ISO 4126	Safety devices against excessive pressure - safety valves Safety devices against impermissible overpressure - safety valves
DIN V 18160-1	Exhaust systems
DIN EN13384	Exhaust systems: Thermal and fluidic calculation methods - Part 1: exhaust systems with a fireplace - Part 2: exhaust systems with several fireplaces
DVGW-Worksheet W551	Technical rules for drinking water installations
In addition, it is necessary to observe the local building law and regulations for heating systems valid in your country.	

The listing does not claim to be complete!

12 TROUBLESHOOTING

Problem: Excessive soot build-up inside the boiler

- This can be caused by stoking not enough or unsuitable wood (humidity above 20%). Use only dried, seasoned firewood (stored in a dry place for at least 2 years) with humidity below 20%. Another cause can be a faulty or missing return flow increasing valve. Without a working return flow increasing valve, the heat exchanger elements may get stained due to increased condensation.

Problem: Thermal discharge safety device activates, pump not working

- The most often cause for thermal discharge safety device activation is insufficient evacuation of air from pipelines. Please check, if it is possible to evacuate the pipelines (boiler flow/return line) using a breather located in the highest point of the installation. Those breathers can be operated manually (radiator breather valves made from metallic materials only) or optional automatic breathers.
- Water pressure inside the heating system is too low (recommended value 1.5-2 bar).
- Check the pressure load inside the expansion tank.

Problem: Thermal discharge safety device activates

- Differential temperature control is probably faulty. Please check, if the circulation pumps is activated after water temperature inside boiler exceeds 60°C.
- Another cause can be a completely opened choke valve installed before the return flow increasing valve. If the pressure drop between pump unit and buffer tank is much higher than inside the “short circuit” between the pump unit and boiler, the pump will supply the most of its output volume through the return flow increasing valve. The problem can be solved by closing the choke valve in a few steps.
- The buffer tank cannot collect more heat.

Problem: Pump not working

- Please check, if the pump has connection with power supply. After longer breaks (in summer, when the heating system is not used) it is possible, that the pump won't start even if power supply voltage is present. Remove the breather screw on front side of the pump and turn the pump shaft with a screw-driver. If this won't help, the pump must be replaced.
- In some cases it is possible, that the pump shaft turns, but the pump is not pumping anyway. In those cases it is possible, that the paddle wheel of the pump is loose or damaged. The pump must be re-placed.
- Another cause for reduced output volume could be, that system pressure is too low. Please check the atmospheric pressure load inside the expansion tank or water pressure of the heating system, espe-cially when the system has not been used for a long time; fill system with water, if necessary.

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13 TECHNICAL SPECIFICATIONS

		HKD 7 SK	HKD 2.2 k SK	HKD 2.2 XL-SK/h	HKD 2.2 SK
Approval		CE	CE	CE	CE
Rated power EN 13229	kW	12	8	13	12
Smoke pipe Ø (Ausgang)	mm	180	180	180	180
Water volume	l	80	36	91	78
max. operating pressure	bar	3	3	3	3
max. flow temperature	°C	100	100	100	100
Water pressure loss (1100 l/h)	mbar	6	10	6	6
Flue gas pressure loss	Pa	2	2	2	2
min. circulation volume	l/h	800	720	860	800
Weight: Water boiler set	kg	382	256	471	405
Flow/return line		1" AG	1" AG	1" AG	1" AG
Safety heat exchanger		½" AG	½" AG	½" AG	½" AG
Sensor couplings		½" IG	½" IG	½" IG	½" IG
Min. flow/return cross section		1"	1"	1"	1"
Drain pipe		½" IG	½" IG	½" IG	½" IG
Autom. breather		-	-	-	-

		B4	B7	B8	62/76[1]	45/67/44[1]
Approval		CE	CE	CE	CE	CE
Rated power EN 13229	kW	14,5	12	13	14	12
Smoke pipe Ø	mm	180	180	180	250	180
Water volume	l	71	31	42	99	61
max. operating pressure	bar	3	3	3	3	3
max. flow temperature	°C	100	100	100	100	100
Water pressure loss (1100 l/h)	mbar	6	6	6	10	10
Flue gas pressure loss	Pa	2	2	2	2	2
min. circulation volume	l/h	800	450	500	780	760
Weight: Water boiler set	kg	214	179	223	423	346
Flow/return line		1" AG	1" AG	1" AG	1" AG	1" AG
Safety heat exchanger		½" AG	½" AG	½" AG	½" AG	½" AG
Sensor couplings		½" IG	½" IG	½" IG	½" IG	½" IG
min. flow/return cross section		1"	1"	1"	1"	1"

		B4	B7	B8	62/76[1]	45/67/44[1]
Drain pipe		½" IG	½" IG	½" IG	½" IG	½" IG
Autom. breather		-	½" IG	½" IG	-	-

[1] Waterbearing fireplace

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		Stil 51/67[2]	Stil-Tun-nel 51/67[2]	AK 38/86[2]	AK-Tun-nel 38/86[2]	AK 45/101[2]	AK-Tunnel 45/101[2]	42/57/30
Approval		CE	CE	CE	CE	CE	CE	CE
Rated power EN 13229	kW	13,5	13,5	14	14	14	14	8
Smoke pipe Ø	mm	200	200	200	200	250	250	180
Water volume	l	43	43	43	43	55	55	33
max. operating pressure	bar	3	3	3	3	3	3	3
max. flow temperature	°C	100	100	100	100	100	100	100
Water pressure loss (1100 l/h)	mbar	6	6	6	6	6	6	10
Flue gas pressure loss	Pa	2	2	2	2	2	2	2
min. circulation volume	l/h	500	500	500	500	500	500	720
Weight: Water boiler set	kg	361	424	368	430	344	425	198
Flow/return line		1" AG	1" AG	1" AG	1" AG	1" AG	1" AG	1" AG
Safety heat exchanger		½" AG	½" AG	½" AG	½" AG	½" AG	½" AG	½" AG
Sensor couplings		½" IG	½" IG	½" IG	½" IG	½" IG	½" IG	½" IG
min. flow/return cross section		1"	1"	1"	1"	1"	1"	1"
Drain pipe		½" IG	½" IG	½" IG	½" IG	½" IG	½" IG	½" IG
Autom. breather		-	-	-	-	-	-	-

[2] with top mounted boiler

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