



SLOKOV SL-EKO

**HOT-WATER STEEL BOILERS FOR BURNING LUMP WOOD
AND WOOD BRIQUETTES**

SL12EKO | SL16EKO | SL21EKO | SL25EKO | SL30EKO | SL36EKO



- warranty up to 4 years (warranty and post-warranty service)



- can be used even after 2024



- sheet thickness 5 mm



- ecodesign and boiler class 5



- high efficiency

Original user manual

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Introduction

SLOKOV kovo a.s. thanks you for the decision to use one of the SL-EKO wood-fired boilers, for which the manufacturer has issued a declaration of conformity in accordance with § 13, paragraph 2 of Act No. 22/1997 Coll. and § 13, paragraph 1 of Government Regulation No. 163/2002 Coll., as amended by Government Regulation 312/2005 Coll.

Important Notice

Careful study of the user manual will give you information about the design, handling and safe operation of the boiler.

After unpacking the boiler, check the completeness of the delivery. Check that the size of the boiler corresponds to the intended use.

The Slokov SL-EKO hot water boiler is equipped with a cooling circuit which, in cooperation with the safety valve, is used to remove surplus heat (e.g. in the event of a circulation pump failure). This valve can be purchased as a separate boiler accessory.

If you find any fault with the boiler, take the boiler out of operation and have the fault rectified by a specialist company. For proper function, safety and long-term operation, ensure regular professional inspection and maintenance of the boiler at least once a year. This will protect your investment. Only original parts may be used for repairs. In the case of defects caused by improper fitting, non-compliance with regulations, standards or operating instructions during assembly and operation, the manufacturer is not responsible for these defects, and they are not covered by the warranty.

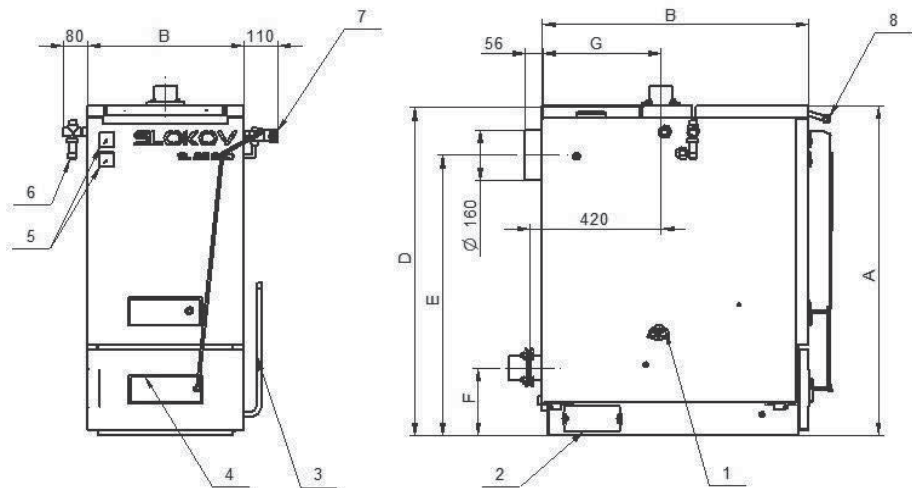
Boiler use, fuel

The Slokov SL-EKO steel hot water boiler is a heat source suitable for heating apartments, houses, businesses and similar buildings. The heating system can be with an open or pressurized expansion vessel, gravity or forced heating water circulation, with a maximum overpressure of 200 kPa. Slokov SL-EKO boilers are intended for operation with dry wood. In addition to professional fitting, good function is dependent on the necessary chimney draught and proper handling.

Description of boiler

The boiler consists of welded steel sheets. The interior space is divided by a water partition into a loading shaft, a combustion chamber and an exchanger through which the flue gases flow to the smoke throat. Under the combustion chamber and loading shaft is a movable two-part grate, controlled from the side of the boiler by a lever.

Regulation of the secondary air supplied to the combustion chamber increases the efficiency of the boiler. Primary air is supplied by an adjustable damper in the ash drawer door and a damper in the front cover. Regulation is carried out manually or automatically by a power regulator (HOR), which is supplied as an accessory along with the boiler. The inlet and outlet of the heating water from the boiler is provided with flanges G 2" internal thread. The flue is in the axis of the boiler on the rear side. The heating damper is controlled by a lever on the right side of the boiler, the lever can also be converted to the left side.

Main dimensions of boiler**Legend:**

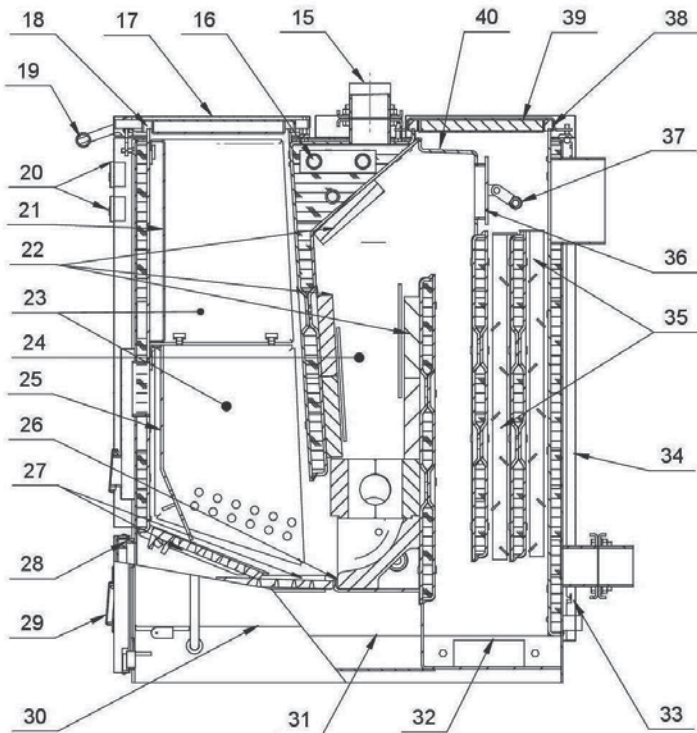
1 – Secondary air damper
 2 – Soot door (on both sides)
 3 – Grate lever (can be used from both sides)
 4 – Ash drawer door
 5 – Thermometer and pressure gauge alarm

6 – Aftercooling safety valve - special boiler accessory
 7 – HOR – heat output regulator
 8 – Feed door handle

Boiler dimensions

Boiler type			SL12EKO	SL16EKO	SL21EKO	SL25EKO	SL30EKO	SL36EKO
Boiler height	A	mm	890	890	1043	1043	1043	1043
Boiler depth	B	mm	715	850	851	851	851	955
Boiler width	C	mm	450	450	450	502	550	680
Height of heating water flange - outlet	D	mm	890	890	1043	1041	1043	1043
Flue axis height	E	mm	725	740	890	890	890	890
Height of heating water	F	mm	215	215	215	215	215	215
Heating water distance axis - outlet	G	mm	275	375	375	378	378	450
Diameter of flue throat (external)		mm	145	160				
Input and output flange			boiler flange – DN65 counter flange - G2" (internal)					

Cross section through SL-EKO boiler

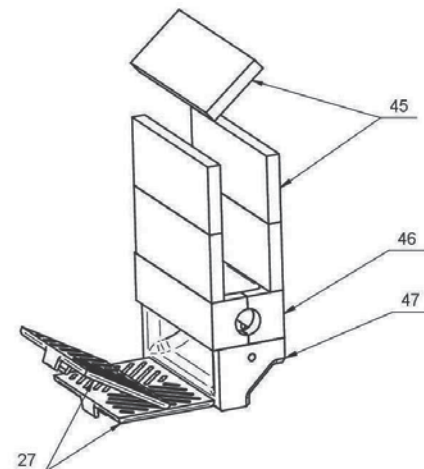


Cross section through SL-EKO
boiler

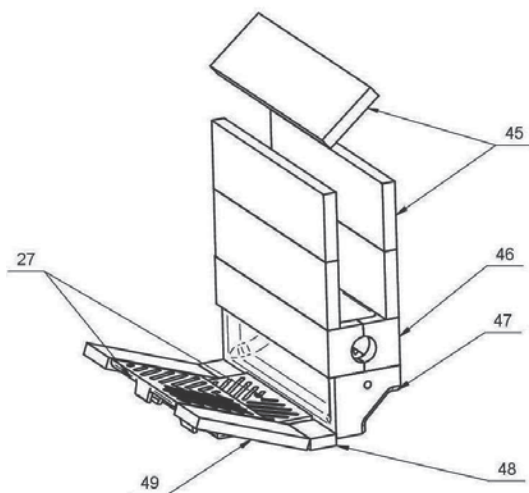
Legend:

- | | | |
|-------------------------------------|---------------------------------|--|
| 15 – Counter flange | 23 – Side top/bottom air pocket | 32 – Soot door |
| 16 – Cooling circuit coupling | 24 – Combustion chamber | 33 – Filling valve |
| 17 – Feed door | 25 – Fuel chute | 34 – Rear cover |
| 18 – Sealing cord for feed door | 26 – Combustion nozzle | 35 – Swirlers |
| 19 – Handle | 27 – Grates | 36 – Heating damper |
| 20 – Thermometer and pressure gauge | 28 – Sealing cord for ash door | 37 – Damper rod |
| 21 – Front air pocket | 29 – Ash door | 38 – Heat exchanger cover sealing cord |
| 22 – Fireproof bricks | 30 – Side cover | 39 – Exchanger cover |
| | 31 – Ash drawer | 40 – Flue gas baffle |

Composition of ceramics for SL-EKO boilers



Composition of ceramics for SL36EKO boiler



27 – grate

45 – combustion chamber bricks 5 pcs (for SL16EKO boiler 3 pcs)

46 - nozzle

47 – bottom brick

48 – bottom of chamber

49 – side of chamber

Specifications

Slovak SL-EKO boiler	MJ	SL12 EKO	SL16 EKO	SL21 EKO	SL25 EKO	SL30 EKO	SL36 EKO
Rated output	kW	12	17	20	25	30	36
Boiler efficiency	%	88	89	89	89	89	89
Burning time at nom. performance wood	hour	2	2	2	2	2	2
Operating draught	Pa	16	16	18	18	18	18
Boiler hydraulic loss for temperature difference of	mbar	0.029	0.034	0.12	0.215	0.14	0.092
Mass flow of flue gas wood	g/sec.	9	11	13	16	18	21
Fuel consumption at nom. output	kg/hour	3.5	4.7	5.5	6.8	7.3	8.7
Flue gas temperature at nom.	°C	162	163	163	163	164	167
Temperature control range	°C	70-90					
Lowest water inlet temperature to boiler	°C	60					
Overpressure for safety valve with exp. vessel	bar	2					
Maximum operating overpressure	bar	2					
Boiler water volume	l	38.5	43	50	58	61	83
Volume of fuel shaft and firebox	l	36	36	52	61	72	105
Size of filling hole	mm	200x270	220x270	220x270	240x320	240x370	240x525
Boiler weight	kg	220	235	265	320	375	450
Boiler class	-	5	5	5	5	5	5
EKODESIGN	-	Complies with					
Energy class of boiler	-	A+					
Heating surface	m ²	1.4	2.3	2.7	3.2	3.6	4.7
Fuel	-	A – dry wood					

Heating water tank - accumulation tank

Slovak SL-EKO boilers are classified according to ČSN EN 303-5 in emission class 5. Boilers comply with this class if they are operated at nominal output - this means that all the heat corresponding to the value of the boiler's nominal output is consumed. If this is not ensured, according to the standard it is necessary to connect a storage tank to the boiler, which is used to remove excess heat. The need to remove excess heat to the storage tank arises mainly in transitional periods, when the building's heat demand is less than the nominal output of the boiler.

The minimum volume of the storage tank can be calculated according to the following formula:

$$V_{SP} = 15T_B \times Q_N \left(1 - 0,3 \frac{Q_H}{Q_{MIN}} \right)$$

V_{SP} volume of storage tank in liters

Q_N nominal heat output, in kW

T_B combustion time, incl

Q_H heat load of buildings, in kW

Q_{min} minimum heat output, in kW (for these boilers it is equal to the nominal)

The volume of the storage tank can be determined by an approximate calculation based only on the output of the boiler.

$$V_{SP} = Q_N \times 55 \text{ l}$$

V_{SP} volume of storage tank in liters

Q_N nominal heat output, in kW

So, for example, for a boiler with an output of 25 kW, the calculation is $25 \text{ kW} \times 55 \text{ l} = 1375 \text{ l}$.

Boiler accessories

Basic:

- Instructions for fitting, operation and maintenance of boilers	1 piece
- Warranty sheet	1 piece
- Filling and draining tap	1 piece
- Cleaning tools – scraper + spike	1 piece
- Ash drawer	1 piece
- Counter flange	2 piece
- Rubber seal	2 piece
- Screw M12x30	8 piece
- M12 nut, washers	8 piece
- Set screw M8x80	2 piece
- Heat output regulator - HOR	1 piece

Special accessories (can be purchased additionally):

- Cooling valve WATTS STS 20 (cooling valve BVTS 1.3m)

Supplied spare parts (to order)

Position	Name
18	sealing cord of loading door
22	fireproof bricks
26	nozzle and bottom brick
27	cast iron grate (both the same)
28	ash drawer door sealing cord
29	ash drawer door - complete

32	soot door, soot door seal
36	heating damper, damper lever with pull rod
38	exchanger cover sealing cord
39.40	exchanger cover, flue gas partition

Special requirements for spare parts in agreement with the manufacturer. When ordering, state the type of boiler, its size, serial number and year of manufacture. Spare parts and accessories for boilers can be ordered from the service technician who fitted the boiler, or directly from the manufacturer at the address:

SLOKOV kovo a.s.

Kovodělská 794, 696 85 Moravský Písek

**phone + 420 518 387 606,607 phone/fax 518
387 605**

variant@slovakov.cz

Boiler fitting

The boiler may only be fitted by a professional company with a valid authorization for this activity and with valid training from the manufacturer Slokov kovo a.s., which authorizes the installation of boilers.

The boiler fitting project must be prepared according to applicable regulations. During the fitting and use of the boiler, the provisions of ČSN 06 1008 must be observed in particular. Boiler fitting must comply with applicable regulations, standards and operating instructions. The manufacturer is not responsible for damage caused by incorrect installation.

Choosing the right boiler size

Choosing the right boiler size, i.e. size of its thermal output, is a very important condition for economical operation and proper functioning of the boiler. The boiler must be selected so that its rated output corresponds to the heat loss of the heated building.

Choosing a boiler with too large a nominal output (oversizing) results in increased tarring and condensation of the boiler. **It is therefore not advisable to use boilers with a higher output** than the heat losses of the building.

Location of boiler

The boiler may be fitted in a basic AA 5/AB 5 environment according to ČSN 33-2000-3:1995. The smallest permissible distance between the external contours of the boiler and flue from highly and moderately flammable materials is 400 mm.

The smallest permissible distance between the external contours of the boiler and the flue pipe from easily flammable materials is 200 mm

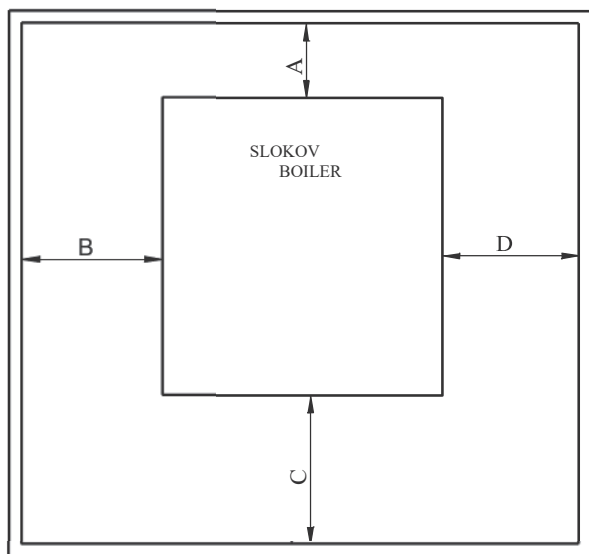
A distance of 200 mm must be observed even if the degree of flammability of the material is not proven. Detailed data on the degree of flammability of building materials are given in ČSN 73 0823. A safe distance must also be observed when storing fixtures, kindling material and fuel in the room where the boiler is located.

A permanent air supply for combustion must be provided to the room in which the boiler is located. Its consumption depends on the boiler output.

Location of boiler

Location of boiler with regard to fire regulations.

1. Placement on a floor made of non-combustible material
 - the boiler must be placed on a non-flammable, heat-insulating pad exceeding the floor plan of the boiler on all sides by 30 mm.
 - if the boiler is located in a basement, it is recommended to place it on a plinth with a height of at least 50 mm. The boiler must stand horizontally.
2. Safe distance from flammable materials
 - the smallest permissible distance of the boiler and flue from combustible materials (see detailed specifications in ČSN EN 13 501-1+A1:2010) during installation and operation of the boiler must be at least 400 mm.



Location of boiler in boiler room

Location of the boiler in relation to the required handling space:

Tab. 6 Defining of minimum dimensions.

Dimensi	Value
A	300 mm
B	300 mm
C	700 mm
D	500 mm

- Basic environment AA5 / AB5 according to ČSN 33 2000-1 ed.2:2009.
- In front of the boiler (dimension C), a handling space of min. 700 mm must be left.
- Minimum distance between the back of the boiler and the wall (dimension A) 300 mm.
- On the side of the heat output regulator (dimension D), a gap of min. 500 mm.
- On the side of the DBV valve (dimension B), gap min. 300 mm.
- The minimum dimensions defining the location of the boiler in the boiler room can be adjusted, although this will reduce effective and convenient maintenance and operation, but safety and fire regulations cannot be violated (ČSN EN 13 501-1+A1:2010).
- Fuel location:
- It is forbidden to store fuel near the boiler at a distance of less than 400 mm.
- The manufacturer recommends maintaining a minimum distance of 1,000 mm between the boiler and the fuel. It is advisable to place the fuel in a different room than the one where the boiler is installed.
- Fuel must be stored in a dry place.

Connection to heating system

The VARIANT SL-EKO boiler is designed for self-gravity or forced circulation systems. To reduce the condensation of flue gases and at the same time to increase the service life of the boiler, we recommend equipping the boiler with a device ensuring **that the water temperature does not fall below 65 °C** (dew point of flue gases). A three-way or four-way mixing valve (DUOMIX) or TSV thermostatic valve can be used for this purpose.

As a heat transfer medium, use clean water that meets the requirements of ČSN 07 7401, and in particular its hardness must not exceed the required parameters.

A liquid with a low freezing point and anti-corrosion effects FRITERM can be used as passive boiler protection.

Connecting boiler to flue

Fasten the flue pipes to the exhaust pipe using a rivet with a diameter of 5 mm.

The flue should be as short as possible, with an upward slope from the boiler.

The flue, fixed only in the exhaust pipe and fitted to the boiler outlet, must be firmly assembled and installed to prevent its accidental or spontaneous dislodging, the pipe outlet should not be longer than 1.5 m, if possible without elbows. All parts of the flue must be made of non-combustible materials. For solid fuels, flues must be made up of pipes inserted into each other in the direction of flue gas flow.

Connecting boiler to chimney

The boiler must be connected to the chimney vent according to ČSN 73 4201 et seq. and with the consent of a chimney company.

A boiler in a central heating system can only be connected to a separate chimney vent with the correct chimney draught, which is a basic prerequisite for good boiler function. Chimney draught significantly affects boiler output, efficiency, consumption and boiler life.

Heat output regulator HOR (mertik)

One of the items of mandatory equipment when operating VARIANT SL-EKO boilers is a heat output regulator (HOR), which is supplied as an accessory and is included in the basic price of the product. Its assembly is usually carried out by a professional fitting company according to the instructions from the HOR manufacturer into the prepared (blanked) hole of diameter G 3/4" in the right side of the boiler. The HOR is then connected by a chain to the rod of the primary air damper - the damper in the ash door. Detailed connecting instructions are part of the draught regulator package.

Fitting the regulator:

Screw the regulator with a 3/4" external thread into the nozzle on the boiler with a 3/4" internal thread. Seal the thread (e.g. Siseal sealant, Teflon tape...). Turn the regulator so that it faces upwards when installed horizontally. Remove the plastic transport tube and replace it with the hex lever, undrilled side first.

By tightening the screw, secure the rod in such a position that its free end is above the chain handle on the boiler door and the arm of the lever is as close as possible to a horizontal position (depending on the possibility of the hexagon). Insert the chain into the regulator lever hole with the larger hook firmly connected to the chain. Thread the other end of the chain through the handle on the boiler door and secure the free end with a free hook on the hanging chain.

Check that the chain hangs freely and the lever moves freely (when turning the knob). During installation of the regulator, the scale further from the boiler applies.

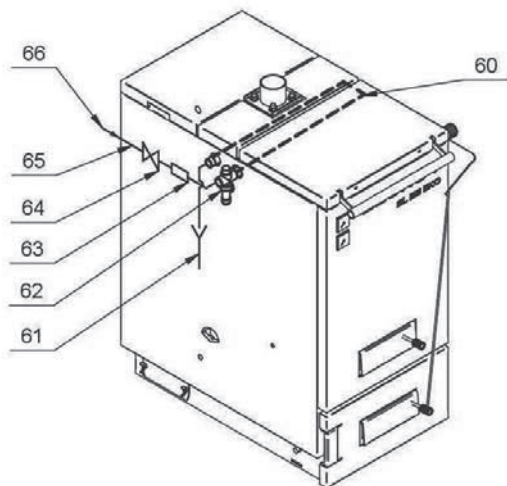
Regulator calibration:

Fire up boiler with the door manually open. Use the knob on the regulator to set 60. When the water temperature reaches 60 °C, after a few minutes of stabilization, adjust the chain attachment so that the damper remains open about 1-2 mm. Now you can select the desired temperature. If the boiler temperature is lower than set during steady state operation, shorten the chain, if the boiler temperature is higher than set, lengthen the chain. However, take into account other influences that can affect the temperature of the boiler regardless of the regulator - especially the amount of fuel and ash in the boiler, the position of the secondary air damper, the inertia of the boiler and the entire heating system.

Device for removing surplus heat

The boiler is equipped with a cooling circuit, which protects the boiler against overheating when properly connected. A safety valve connected to the cooling circuit (WATS STS 200, BVTS 1.3m) will let water from the water supply system into the cooling circuit if the water temperature in the boiler rises above 95 °C, which will absorb the excess energy and drain into the waste.

The drainage of water from the cooling circuit to the waste needs to be done in such a way that the water flowing through the circuit can be seen. This is in case of early detection of a faulty safety valve that would let water through during normal boiler operation.



Connecting safety valve to SL-EKO boiler

Legend:

- 60 – Cooling circuit built into boiler
- 61 – Discharge to waste
- 62 – Safety valve WATTS STS 20 or BVTS 1.3
- 63 – Filter
- 64 - Valve
- 65 – Connection to water supply system

Heating

We check:

- amount of water in the heating system
- tightness of the heat exchanger cover pos. 39
- seating of the soot door pos. 32

Close the tertiary air dampers (front air dampers pos. and pos. 70), open the heating damper pos. 36 by turning the lever pos. 37 backwards (lever from the side of the boiler).

Heating option 1

Place paper and wood shavings on the grid through the loading door pos. 17. After closing the loading door, we ignite this from the ash drawer area with burning paper. For better burning of the fuel, leave the ash door slightly open pos. 29. The boiler must be supervised when the ash door is ajar.

Heating option 2

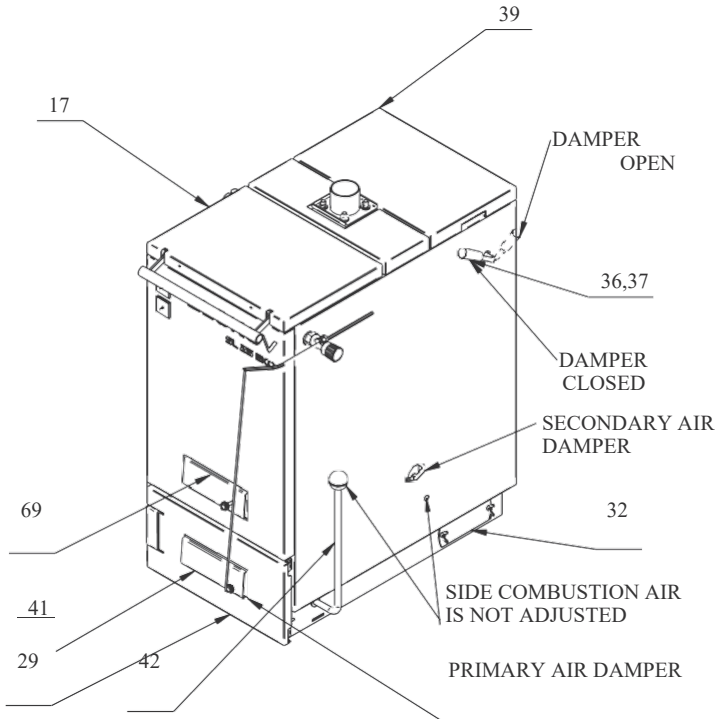
Place paper and wood shavings on the grid through the loading door pos. 17. Then we insert from above a lit piece of paper, or a solid fire lighter. We close the loading door and leave it

heat the boiler for a while. For better burning of the fuel, leave the ash door slightly open pos. 29.
and only for a few minutes. The boiler must be supervised when the ash door is ajar.

After the fuel has caught fire properly, fill the hopper with wood, adjust the amount of secondary air with dampers. After the fuel has caught fire properly, close the heating damper pos. 36, 37. Timely closing of the heating damper extends its service life. The perfection of combustion depends, among other things, on the correct amount of secondary air in the combustion chamber (pos. 22 Fig. 2). Its quantity is regulated by opening the holes in the side covers.

The amount of secondary air must be such that the flame does not get sooty. We open the secondary air dampers depending on the size of the boiler. See the table below for approximate secondary air setting values. This setting can be adjusted according to specific draught conditions.

We recommend that for the first few times you fire up the boiler you verify the correct flame, to check for good combustion by observing the smoke from the chimney. In the case of good combustion, the smoke rising from the chimney is hardly visible, smoking means a lack of air in the combustion chamber. This only applies after boiler has heated up, not when it is being fired up.

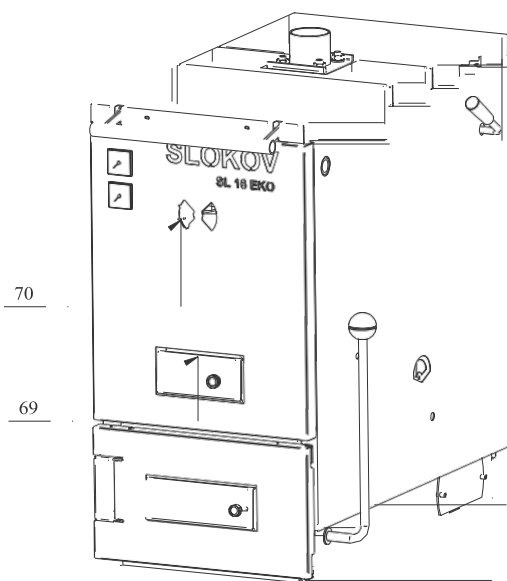


SLOKOV SL-EKO

To ensure more perfect combustion, the boiler is also equipped with an adjustable inlet of combustion air located above the ash door - tertiary air lower pos. 69. We open the damper according to the size of the boiler so that there is a gap for the air supply, see the table below. This setting can be adjusted according to specific draught conditions.

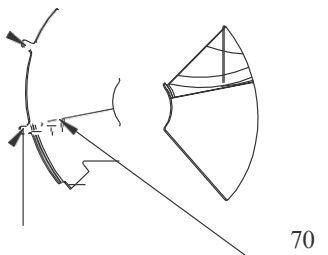
Boiler type	Secondary air opening	Opening the top
SL16EKO	25%	2 to 4 mm
SL21EKO	35%	3 to 5 mm
SL25EKO	50%	4 to 6 mm
SL30EKO	55%	5 to 7 mm
SL36EKO	60%	6 to 8 mm

SL16EKO and SL36EKO boilers are additionally equipped with an adjustable inlet of combustion air located under the loading door - tertiary air upper position 70. We adjust this air by turning the slide roof pos. 70. During heating up, we close the upper tertiary air, and after combustion has started properly open it according to the notch in the cover, see the picture below.



DAMPER POSITION FOR SL36EKO BOILER

DAMPER POSITION FOR SL16EKO BOILER



Operation

Regulation of the combustion (primary) air is carried out with the control damper pos. 41 in the ash drawer door. When adding new fuel to the hopper, slightly open the hopper door to allow the smoke to be sucked out of the hopper, and then open the hopper door fully and add fuel. If smoke rises from the loading shaft during loading, open the heating damper. After adding fuel, don't forget to close the damper again. Clearing the grate is done by moving the grating lever forward and backward in the range of 10-15 cm of the control lever stroke. If we want to perform a complete grate clearance after the heating is finished, we move the grate pos. using the lever 42 forward all the way.

The boiler may only be used up to the nominal output of the boiler. Overheating - a slightly open ash drawer door, the use of black coal, coke, etc. reduces the life of the boiler and the manufacturer does not recommend this. The boiler and the heating system should be dimensioned so that there is no continuous operation with an inlet water temperature lower than 65 °C - dew point.

If the boiler works in this mode for a long time, its service life is reduced and the boiler and chimney become heavily clogged and tarred, which then have insufficient draught and cause further deterioration of efficiency. We therefore recommend heating at full power for a short time even in the transition period (spring, autumn) to burn off deposits and dry the chimney.

When heating in the transitional period of spring and autumn, it is advisable to remove the swirlers from the boiler to prevent excessive cooling of the flue gases. We also recommend removing the swirlers from the boiler when the chimney draught is small.

Note:

Use the prescribed fuel to guarantee easy operation and compliance with rated power.

The manufacturer does not recommend under any circumstances burning sawdust, which significantly reduces the service life of the boiler.

Permitted repairs:

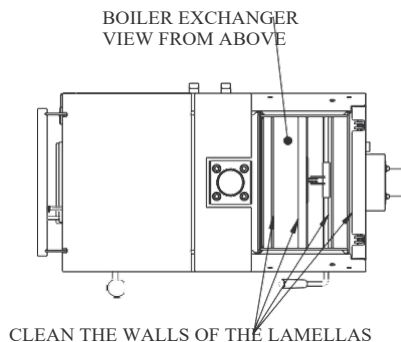
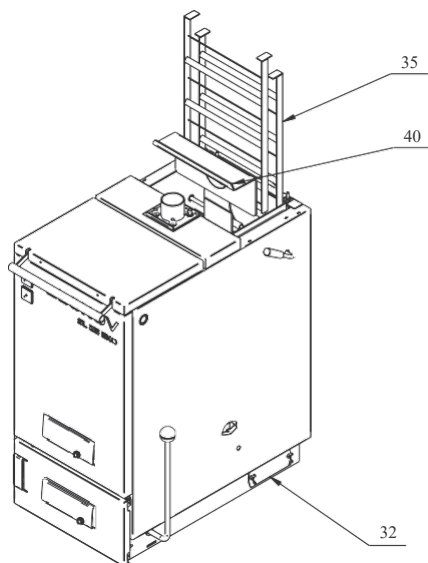
The user can only replace spare parts according to the given list. Only the manufacturer, fitting and service organization is authorized to carry out repairs of a larger scale.

Cleaning and maintenance

After prolonged heating, soot and ash settle on the walls, which reduces the efficiency of the boiler. The amount of soot and possible tarring of the boiler depends on the operation of the boiler, the type of fuel used, the size of the chimney draught and the temperature of the water leaving the boiler. The boiler is cleaned about twice a month, depending on the need and operating conditions.

After the heating is finished, clean the ash from the grate according to the procedure described in the "Operation" chapter. Remove the exchanger cover pos. 39. Pull up to remove the flue gas partition pos. 40 and swirlers pos. 35, which we also clean. Clean the exchanger with the cleaning tool supplied with the boiler (steel scraper). Remove the soot falling into the chamber under the exchanger through the soot door pos. 32 (soot doors are on both sides). After cleaning the boiler, put the soot door back on. The swirlers are in the boiler to increase efficiency. In case of a smaller draught of the chimney, it is possible to operate the boiler even without swirlers.

When cleaning, we recommend checking the condition and position of the fireproof bricks pos. 22 and 26 in the combustion chamber. The nozzle and the lower brick are particularly important. Replace damaged fireproof bricks with new ones.



Boiler operation

The boiler may only be operated by adults familiar with the function of the boiler and its operation. The operator of the boiler must follow the operating instructions and may only start the boiler up, set the temperature on the thermal output regulator, shut down the boiler and check its operation. Familiarization with the function and operation of the boiler must be carried out by a service engineer after commissioning. It is inadmissible to leave children unattended near a boiler that is in operation. Interventions in the appliance that could endanger the health of the operator or other persons are not permitted.

The boiler may be operated at a maximum of 90 °C and must be under occasional supervision. It is prohibited

to use for heating flammable liquids and increase the boiler's rated output in any way during operation (overload). Do not store or throw any flammable objects near the loading and ash drawer openings. Ashes must be placed in non-flammable containers with lids.

Under circumstances leading to the danger of temporary formation of flammable gases or vapors during work that could cause a temporary danger of fire or explosion (e.g. gluing linoleum, PVC, etc.), the boiler must be taken out of operation in time before the danger arises.

Boiler dewing and tarring

When the boiler is fired up for the first times, water condenses on the walls of the boiler and drops into the ash drawer and soot area. This sweating of the boiler walls can lead to the assumption that the boiler is leaking. Sweating disappears after the ash settles on the walls of the inner shell, which is about the 2nd to 4th time the boiler is fired up. Even when heating at a lower output - at a low flue gas temperature and low water temperature in the boiler - condensate forms on the walls inside the boiler, which drops into the ash drawer and soot compartment.

Since the dew point of the flue gas is about 65 °C, condensate will only form when the flue gas cools down to the limit

layer on the walls of the boiler with a temperature lower than 65 °C. If there is dew in the loading shaft, it means that the fuel is too wet. In this case, condensate may drop into the ash drawer space even at a water temperature in the boiler higher than 65 °C. Boiler tarring occurs under similar conditions – low output, low temperature – and also with poorly adjusted combustion (little secondary air).

The tar can be scraped off the walls of the boiler with the supplied scraper only in a soft state. This is at a water temperature in the boiler of around 90°C. This temperature can be quickly reached by turning off the radiators. The most suitable fuel for this performance is soft wood, which burns out quickly.

Notice

If the pressure expansion vessel is to extend the life of the boiler, low-temperature corrosion of the flue gas passages must be eliminated by maintaining the boiler temperature above the dew point by about 65 °C, using a mixing device. If low-temperature corrosion is not eliminated, the boiler corrodes from the flue gas side, and the pressure expansion vessel in most cases will shorten the life of the boiler due to pressure and dynamic stress on the boiler walls. The pressure expansion vessel may be fitted by an authorized organization with a valid authorization according to Decree No. 18/79 Coll., or No. 23/79 Coll. §4.

Boiler operation safety

When operating the boiler, all relevant safety regulations must be observed, especially ČSN

SLOKOV SL-EKO

06 1008 Fire safety of local appliances and heat sources.

The Slokov SL-EKO boiler must not be used for purposes other than those specified in this manual.

The surface of the boiler may only be cleaned with normal non-flammable cleaning agents. Objects made of flammable materials must not be placed on the appliance or at a distance less than a safe distance from it.

No flammable material (wood, paper, diesel and other flammable materials) may be stored in the room where the boiler is located. The smallest permissible distance between the external contours of the boiler and the flue gas outlet from highly and moderately flammable materials (which, after ignition without the supply of additional thermal energy, will extinguish themselves - flammability level B, C1, C2) must be at least 400 mm.

The smallest distance from easily flammable materials (they burn and burn out after ignition - flammability level C3) must be at least 200 mm. A distance of 200 mm must be observed even if the degree of flammability of the material is not proven. Detailed data on the degree of flammability of building materials are given in ČSN 73 0823. Removing solid combustion residues from the ash drawer - for this purpose, the ash drawer, which is installed in the center of the ash drawer compartment, is used. The ash drawer must be emptied regularly before it becomes completely full. The handle on the front of the drawer is used for removing and handling the drawer. After removing the drawer from the boiler, tip the ash into a pre-prepared ash container. Use protective equipment - gloves when working.

Repairs

The operator of the boiler may only carry out repairs consisting of a simple replacement of a part, such as, for example, the replacement of grates, sealing cords, fireproof bricks, heating dampers. Other possible defects may only be rectified by the manufacturer or authorized service. The manufacturer provides warranty service throughout the Czech Republic. Only original parts may be used for repairs.

Defects and their elimination

Symptoms of defect	Probable cause of the defect	Method of eliminating the defect
1. The nominal output of the boiler cannot be reached	Soot door not sealing properly	Tighten the wing nuts of the soot door, replace the seal if needs be
	Heat exchanger cover and loading door not sealing properly	Check the function of the sealing cords and correct their location or replace them
	Sufficient draught is not ensured in the chimney	Ensure the inspection of the draught of the chimney and its adjustment if needs be.
	The fuel used has a low calorific value	Use prescribed fuel with sufficient calorific value, especially at low outside

temperatures

2. The boiler output

Ash and
loading door not
sealing properly

Check the function of the sealing
cords and correct their location or
replace them

Excessive draught
in the chimney

Close the exhaust damper in
the chimney pipe and ensure the
inspection of the draught of the
chimney and its adjustment if
needs be.

3. High temperature in the boiler and at the same time low water temperature in the radiators. Water is boiling in	High hydraulic resistance of the heating system, especially gravity system.	Clean the system by flushing, or install a circulation pump.
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boiler.	Excessive draught in the chimney	Reduce draught by using draught chimney damper
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In other cases, it is necessary to ensure the rectification of possible defects and malfunctions through the boiler manufacturer, or by a service organization.

Disposal of packaging

Dispose of the packaging via a secondary raw materials group or use a managed waste dump run by the relevant municipal authority.

Disposal of products after the end of their useful life

Arrange for the disposal of the product (boiler) through a secondary raw material purchase company or use a managed waste dump run by the relevant municipal authority.

Safety and other regulations

The following standards and regulations apply to the design, installation, operation and maintenance of the boiler:

A) for the heating system

ČSN EN 303-5:2013 Boilers for central heating - Part 5: Boilers for central heating using solid fuels, with manual or automatic delivery, with a nominal heat output of no more than 500 kW - Terminology, requirements, testing and marking

ČSN 06 0310:2014 Thermal systems in buildings – Design and assembly

ČSN 06 0830:2014 Thermal systems in buildings – Safety devices

ČSN 07 7401:1992 Water and steam for thermal energy devices with working pressure of steam up to 8 MPa

B) for fire regulations

ČSN 06 1008:1997 Fire safety of thermal equipment

ČSN EN 13 501-1+A1:2010 Fire classification of building products and structures of buildings - Part 1: Classification according to the results of reaction to fire tests

C) on the chimney

ČSN 73 4201:2010 Chimneys and flues - Design, implementation and connection of fuel appliances

Warranty

Customers are advised that commissioning and servicing of all SLOKOV kovo a.s. boilers may be carried out by professional fitting organizations. Otherwise, no warranty claim will not be recognized. Any possible claim must be made immediately after the defect is discovered. The manufacturer reserves the right to any changes made as part of the technical improvement of the products.

The length of the warranty provided is stated in the warranty card supplied as a basic accessory of the boiler and is conditioned by strict adherence to this assembly operating manual and professional installation of the boiler. The buyer makes any claims in writing to the seller or directly to the manufacturer.

Address for making any claims:

SLOKOV kovo a.s.

Kovodělská 794

696 85 Moravský Písek

Phone: 518 387 606, 607 phone/fax 518 387 605

Residual risks and their prevention

The risks arising from the operation of the boiler under the conditions of expected use and logically foreseeable incorrect use have been minimized by available technical means.

Despite the implemented design and technical measures, certain residual risks remain during the operation of the boiler resulting from the analysis of the risks that are given by the technological process at various stages of the equipment's life.

These are mainly risks arising from the inattention of the boiler operator and non-compliance with safety principles during operation.

In order to further reduce risks and ensure greater effectiveness of security protection, we point out the possible emergence of certain residual risks that cannot be eliminated by any technical solution.

Thermal hazards

- sufficient care must be taken when handling the boiler due to possible injury from burns from heat sources

Risks caused by fuel handling

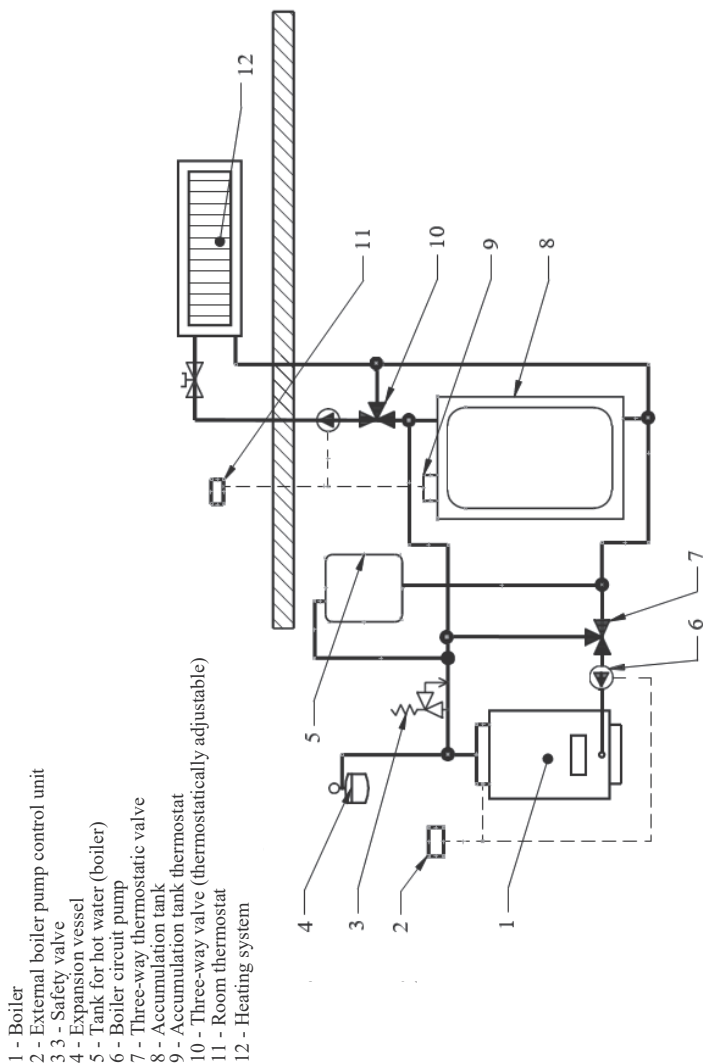
- as it involves a fuel, the relevant fire regulations must be followed and a suitable fire extinguisher must be available

Ergonomic risks

- the boiler may only be operated by adults who are properly familiar with the contents of the instructions for installation, use and maintenance
- in case of any non-standard behavior of the boiler during operation, and not other faults, the boiler must be taken out of service, disconnected from the mains and a service technician called.

Connecting boiler to heating system option 1

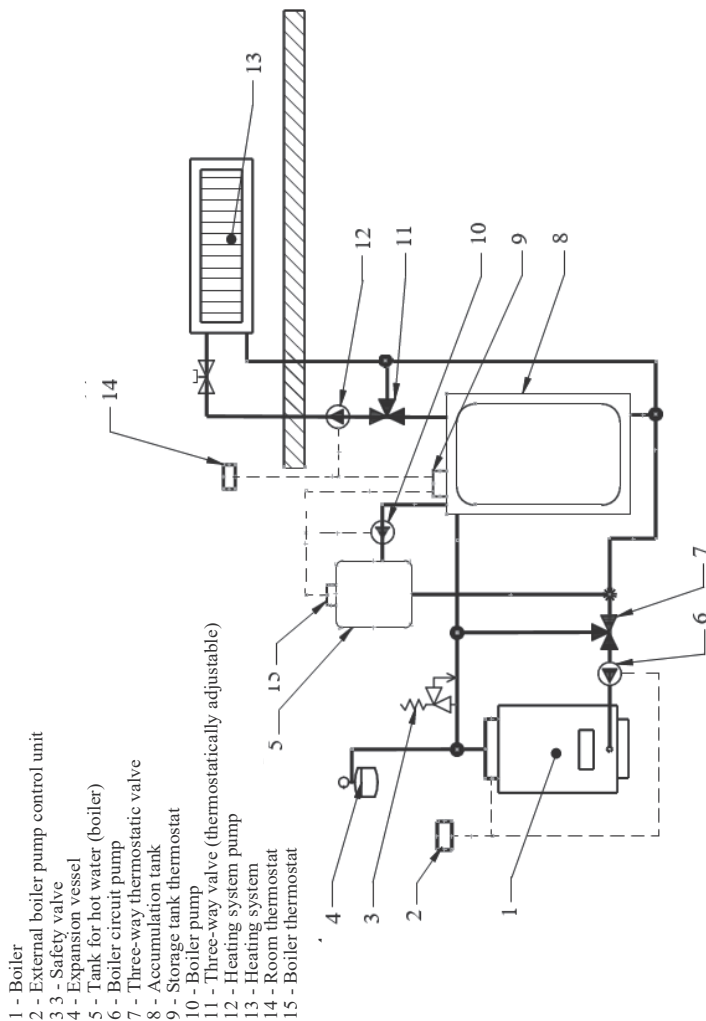
Each connection has its own specifics and principles that must be followed when connecting. The installation company should know these principles.



The connection with the storage tank makes it possible to accumulate excess heat in the storage tank

Connecting boiler to heating system option 2

Each connection has its own specifics and principles that must be followed when connecting. The installation company should know these principles.



The connection with the storage tank makes it possible to accumulate excess heat in the storage tank

Specification of boilers according to directive 2015/1187

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers							
Model identification number: Slokov SL12EKO							
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 715 litres							
Condensation boiler: no							
Solid fuel cogeneration boiler: no				Combination boiler: no			
Fuel				Preferred fuel (only one type):		Other suitable fuel/s:	
Wood logs, moisture content $\leq 25\%$				Yes		no	
Wood chips, moisture content 15-35%				no		no	
Wood chips, moisture content $> 35\%$				no		no	
Pressed wood in the form of pellets or briquettes				no		no	
Sawdust, moisture content $\leq 50\%$				no		no	
Other wood biomass				no		no	
Non-wood biomass				no		no	
Black coal				no		no	
Brown coal (including briquettes)				no		-	
Coke				no		no	
Anthracite				no		no	
Briquettes made of fossil fuel mixture				no		no	
Other fossil fuel				no		no	
Briquettes made of mixture of biomass (30-70%) and fossil fuel				no		no	
Other biomass and fossil fuel mixture				no		no	
Properties during operation on preferred fuel:							
Seasonal energy efficiency of heating of indoor spaces η_s [%] :				76			
Energy efficiency index EEI:				114			
Name	Designation	Value	Unit	Name	Designation	Value	Unit
Usable heat output				Usable efficiency			
At 30 % of rated heat output	P_n^{***}	13	kW	At rated heat output	η_n	88	%
At 30% of rated heat output, if it comes into consideration	P_p	-	kW	At 30% of rated heat output, if it comes into consideration	η_p	-	%
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy			
				At rated heat output	e_{lmax}	-	kW
At rated heat output	$\eta_{el,n}$	-	%	At 30% of rated heat output, if it comes into consideration	e_{lmin}	-	kW
				Built in secondary emission reduction equipment, if it comes into consideration	-	kW	

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				In standby mode	PSB	-	kW
Contact data	Name and address of supplier						
SLOKOV kovo a.s.	Billing address:		Kovodělská 794,		696 85 Moravský Písek		
	Production plant:		Kovodělská 794,		696 85 Moravský Písek		
			www.slokov.cz		variant@slokov.cz		

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers									
Model identification number: Slokov SL16EKO									
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 935 litres									
Condensation boiler: no									
Solid fuel cogeneration boiler: no				Combination boiler: no					
Fuel				Preferred fuel (only one type):		Other suitable fuel/s:			
Wood logs, moisture content ≤ 25%				Yes		no			
Wood chips, moisture content 15-35%				no		no			
Wood chips, moisture content > 35%				no		no			
Pressed wood in the form of pellets or briquettes				no		no			
Sawdust, moisture content ≤ 50%				no		no			
Other wood biomass				no		no			
Non-wood biomass				no		no			
Black coal				no		no			
Brown coal (including briquettes)				no		-			
Coke				no		no			
Anthracite				no		no			
Briquettes made of fossil fuel mixture				no		no			
Other fossil fuel				no		no			
Briquettes made of mixture of biomass (30-70%) and fossil fuel				no		no			
Other biomass and fossil fuel mixture				no		no			
Properties during operation on preferred fuel:									
Seasonal energy efficiency of heating of indoor spaces ηs [%] :				78					
Energy efficiency index EEI:				115					
Name		Designation	Value	Unit	Name		Designation	Value	Unit
Usable heat output				Usable efficiency					
At 30 % of rated heat output		Pn(***)	17	kW	At rated heat output		ηn	88.5	%
At 30% of rated heat output, if it comes into consideration		Pp	-	kW	At 30% of rated heat output, if it comes into consideration		ηp	-	%
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy					
				At rated heat output		elmax		-	

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At rated heat output	$\eta_{el,n}$	-	%	At 30% of rated heat output, if it comes into consideration	elmin	-	kW
				Built in secondary emission reduction equipment, if it comes into consideration		-	kW
				In standby mode	PSB	-	kW
Contact data		Name and address of supplier					
SLOKOV kovo a.s.		Billing address:	Kovodělská 794,	696 85 Moravský Písek			
		Production plant:	Kovodělská 794,	696 85 Moravský Písek			
		www.slokov.cz		variant@slokov.cz			

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers										
Model identification number: Slokov SL21EKO										
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 1100 litres										
Condensation boiler: no										
Solid fuel cogeneration boiler: no				Combination boiler: no						
Fuel			Preferred fuel (only one type):		Other suitable fuel/s:					
Wood logs, moisture content $\leq 25\%$			Yes		no					
Wood chips, moisture content 15-35%			no		no					
Wood chips, moisture content $> 35\%$			no		no					
Pressed wood in the form of pellets or briquettes			no		no					
Sawdust, moisture content $\leq 50\%$			no		no					
Other wood biomass			no		no					
Non-wood biomass			no		no					
Black coal			no		no					
Brown coal (including briquettes)			no		-					
Coke			no		no					
Anthracite			no		no					
Briquettes made of fossil fuel mixture			no		no					
Other fossil fuel			no		no					
Briquettes made of mixture of biomass (30-70%) and fossil fuel			no		no					
Other biomass and fossil fuel mixture			no		no					
Properties during operation on preferred fuel:										
Seasonal energy efficiency of heating of indoor spaces η_s [%] :				78.5						
Energy efficiency index EEI:				115						
Name		Designation	Value	Unit	Name		Designation	Value	Unit	
Usable heat output				Usable efficiency						
At 30 % of rated heat output		Pn(***)	20	kW	At rated heat output		η_n	89	%	

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At 30% of rated heat output, if it comes into consideration	Pp	-	kW	At 30% of rated heat output, if it comes into consideration	ηp	-	%
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy			
				At rated heat output	elmax	-	kW
At rated heat output	$\eta_{el,n}$	-	%	At 30% of rated heat output, if it comes into consideration	elmin	-	kW
				Built in secondary emission reduction equipment, if it comes into consideration		-	kW
				In standby mode	PSB	-	kW
Contact data		Name and address of supplier					
SLOKOV kovo a.s.		Billing address:		Kovodělská 794,		696 85 Moravský Písek	
		Production plant:		Kovodělská 794,		696 85 Moravský Písek	
				www.slovak.cz		variant@slovak.cz	

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers		
Model identification number: Slokov SL25EKO		
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 1375 litres		
Condensation boiler: no		
Solid fuel cogeneration boiler: no		Combination boiler: no
Fuel	Preferred fuel (only one type):	Other suitable fuel/s:
Wood logs, moisture content $\leq 25\%$	Yes	no
Wood chips, moisture content 15-35%	no	no
Wood chips, moisture content $> 35\%$	no	no
Pressed wood in the form of pellets or briquettes	no	no
Sawdust, moisture content $\leq 50\%$	no	no
Other wood biomass	no	no
Non-wood biomass	no	no
Black coal	no	no
Brown coal (including briquettes)	no	-
Coke	no	no
Anthracite	no	no
Briquettes made of fossil fuel mixture	no	no
Other fossil fuel	no	no
Briquettes made of mixture of biomass (30-70%) and fossil fuel	no	no
Other biomass and fossil fuel mixture	no	no
Properties during operation on preferred fuel:		
Seasonal energy efficiency of heating of indoor spaces η_s [%] :		78

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Energy efficiency index EEI:				114			
Name	Designation	Value	Unit	Name	Designation	Value	Unit
Usable heat output				Usable efficiency			
At 30 % of rated heat output	Pn(***)	25	kW	At rated heat output	η_n	88.4	%
At 30% of rated heat output, if it comes into consideration	Pp	-	kW	At 30% of rated heat output, if it comes into consideration	η_p	-	%
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy			
				At rated heat output	elmax	-	kW
				At 30% of rated heat output, if it comes into consideration	elmin	-	kW
				Built in secondary emission reduction equipment, if it comes into consideration		-	kW
				In standby mode	PSB	-	kW
At rated heat output	$\eta_{el,n}$	-	%				
Contact data		Name and address of supplier					
SLOKOV kovo a.s.		Billing address:		Kovodělská 794, 696 85 Moravský Písek			
		Production plant:		Kovodělská 794, 696 85 Moravský Písek			
				www.slokov.cz variant@slokov.cz			

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers		
Model identification number: Slokov SL30EKO		
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 1650 litres		
Condensation boiler: no		
Solid fuel cogeneration boiler: no		Combination boiler: no
Fuel	Preferred fuel (only one type):	Other suitable fuel/s:
Wood logs, moisture content $\leq 25\%$	Yes	no
Wood chips, moisture content 15-35%	no	no
Wood chips, moisture content $> 35\%$	no	no
Pressed wood in the form of pellets or briquettes	no	no
Sawdust, moisture content $\leq 50\%$	no	no
Other wood biomass	no	no
Non-wood biomass	no	no
Black coal	no	no
Brown coal (including briquettes)	no	-
Coke	no	no
Anthracite	no	no

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Briquettes made of fossil fuel mixture	no	no					
Other fossil fuel	no	no					
Briquettes made of mixture of biomass (30-70%) and fossil fuel	no	no					
Other biomass and fossil fuel mixture	no	no					
Properties during operation on preferred fuel:							
Seasonal energy efficiency of heating of indoor spaces η_s [%] :		78					
Energy efficiency index EEI:		114					
Name	Designation	Value	Unit	Name	Designation	Value	Unit
Usable heat output				Usable efficiency			
At 30 % of rated heat output	P _n (***)	30	kW	At rated heat output	η_n	89	%
At 30% of rated heat output, if it comes into consideration	P _p	-	kW	At 30% of rated heat output, if it comes into consideration	η_p	-	%
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy			
				At rated heat output	e _{lmax}	-	kW
At rated heat output	$\eta_{el,n}$	-	%	At 30% of rated heat output, if it comes into consideration	e _{lmin}	-	kW
				Built in secondary emission reduction equipment, if it comes into consideration		-	kW
				In standby mode	PSB	-	kW
Contact data							
Name and address of supplier							
SLOKOV kovo a.s.		Billing address:		Kovodělská 794,	696 85 Moravský Písek		
		Production plant:		Kovodělská 794,	696 85 Moravský Písek		
				www.slokov.cz		variant@slokov.cz	

Technical specifications of solid fuel boilers and cogeneration solid fuel boilers		
Model identification number: Slokov SL36EKO		
Stoking mode: Manual: the boiler should be operated with a hot water tank having a volume of at least 1980 litres		
Condensation boiler: no		
Solid fuel cogeneration boiler: no		Combination boiler: no
Fuel	Preferred fuel (only one type):	Other suitable fuel/s:
Wood logs, moisture content $\leq 25\%$	Yes	no
Wood chips, moisture content 15-35%	no	no
Wood chips, moisture content $> 35\%$	no	no
Pressed wood in the form of pellets or briquettes	no	no

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Sawdust, moisture content ≤ 50%				no		no				
Other wood biomass				no		no				
Non-wood biomass				no		no				
Black coal				no		no				
Brown coal (including briquettes)				no		-				
Coke				no		no				
Anthracite				no		no				
Briquettes made of fossil fuel mixture				no		no				
Other fossil fuel				no		no				
Briquettes made of mixture of biomass (30-70%) and fossil fuel				no		no				
Other biomass and fossil fuel mixture				no		no				
Properties during operation on preferred fuel:										
Seasonal energy efficiency of heating of indoor spaces η_s [%] :				78						
Energy efficiency index EEI:				115						
Name		Designation	Value	Unit	Name		Designation	Value	Unit	
Usable heat output				Usable efficiency						
At 30 % of rated heat output		$P_n(***)$	36	kW	At rated heat output		η_n	89	%	
At 30% of rated heat output, if it comes into consideration		P_p	-	kW	At 30% of rated heat output, if it comes into consideration		η_p	-	%	
Solid fuel cogeneration boiler: Electrical efficiency				Consumption of ancillary electrical energy						
				At rated heat output		e_{lmax}	-	kW		
At rated heat output		$\eta_{el,n}$	-	%	At 30% of rated heat output, if it comes into consideration		e_{lmin}	-	kW	
					Built in secondary emission reduction equipment, if it comes into consideration		-	kW		
					In standby mode		PSB	-	kW	
Contact data		Name and address of supplier								
SLOKOV kovo a.s.		Billing address:		Kovodělská 794,		696 85 Moravský Písek				
		Production plant:		Kovodělská 794,		696 85 Moravský Písek				
				www.slokov.cz		variant@slokov.cz				



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