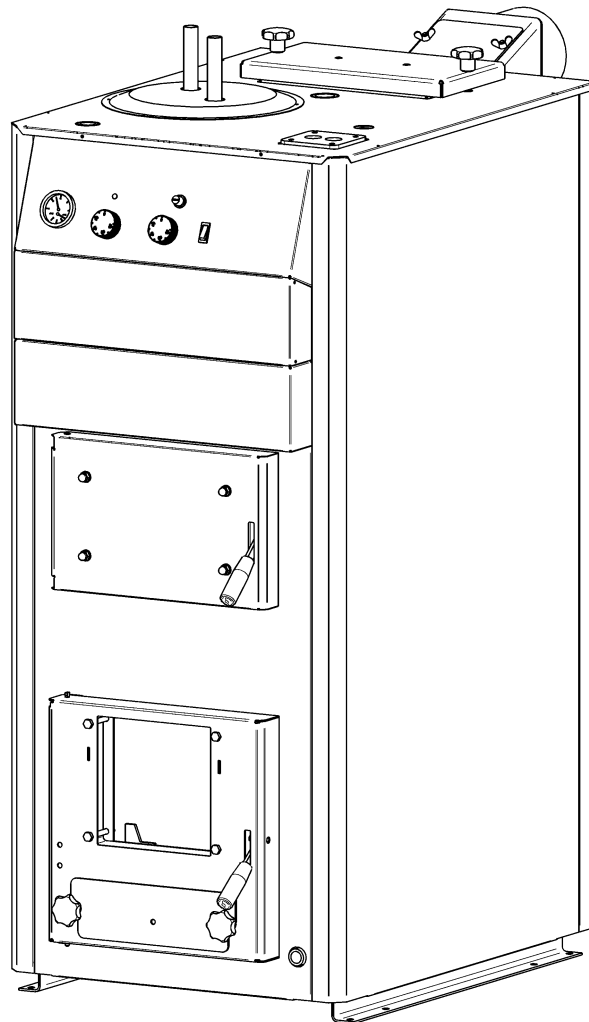




Pellet boiler

PELLETTI XL

INSTALLATION AND OPERATION MANUAL



KAUKORA OY

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Environmental Instruction

Packing



Packing is made of 100 % waste materials. Dispose of packing in accordance with local waste disposal requirements.

Boiler Plant Decommissioning



The boiler shall be delivered to metal scrap receiving points and electric components - to receiving points of electric and electronic components.

Operating Principle

PELETTI XL boiler is designed first of all for pellet burning. While choosing pellet boilers it is necessary to clear up necessity in free space, pellet storage and frequency of boiler cleaning. Installation shall always be performed

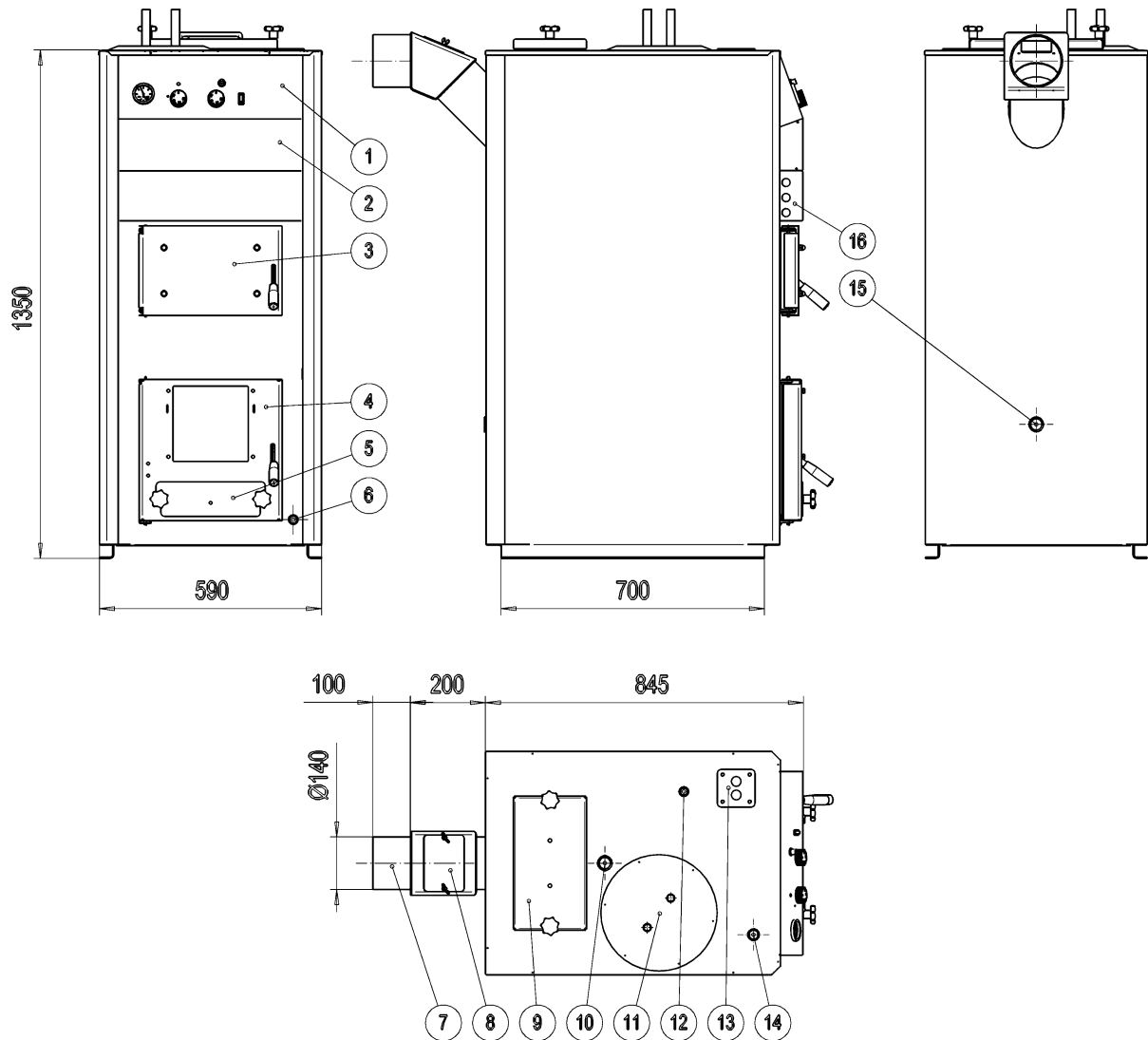
by qualified personnel knowing requirements of official control authorities.

It is recommended to use energy accumulators in combination with pellet burner as it increases operating cycle, improves operating level and reduces emissions.

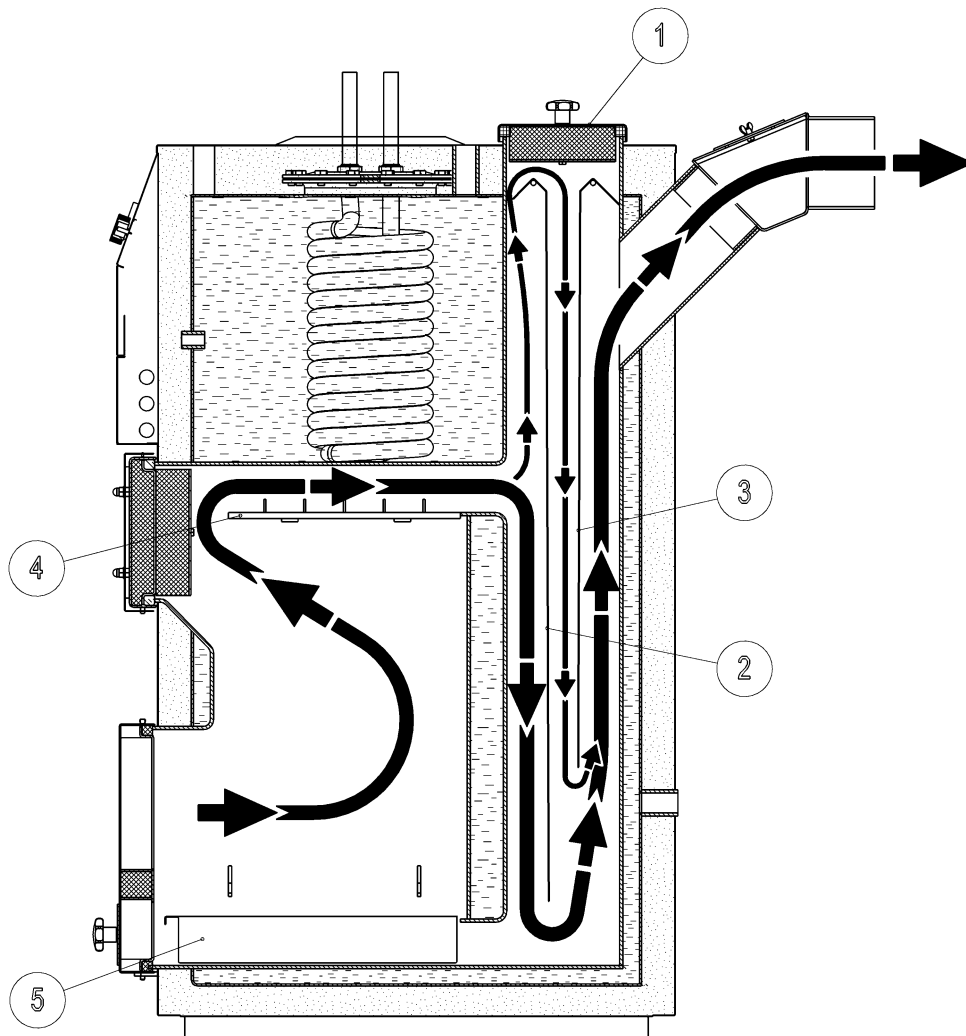
Technical Data

Power range:	15...30 kW	Max. total capacity:	6.2 kW
Weight:	450 kg	Voltage:	230 V
Water capacity:	220 L	Frequency:	50 Hz
Max. temperature:	110 °C	Protection class:	IP 2X
Min. temperature:	0 °C	Furnace dimensions:	height 750 mm
Max. pressure:	1.5 bar		width 290 mm
Proof-test pressure:	4.0 bar		depth 380 mm

Boiler Dimensional Drawing



- | | |
|--|---|
| 1. Control panel | 9. Convection part cleanout opening |
| 2. Point of electric connections | 10. Accumulator inlet/ boiling adapter
R25 i/t |
| 3. Maintenance hatch | 11. Hot water supply coil, adapters Ø 22 |
| 4. Burner hatch | 12. Adaptor of thermal safety valve sensor
R15 i/t |
| 5. Ash removal hatch | 13. Mixture valve flange R20 i/t |
| 6. Vent outlet R15 e/t | 14. Draft-regulating damper adapter R20 i/t |
| 7. Pivoted stack fitting
(with 180° turn and upward
vertical exit) | 15. Accumulator return / expansion adapter
R25 i/t |
| 8. Cleanout | 16. Electric leads |

Boiler Sectional View

1. Convection part cleanout opening
2. Front turbulent plate
3. Rear turbulent plate
4. Turbulent furnace plate
5. Ash chest

Installation

Requirements of local control authorities shall be met.

The boiler is installed directly onto a solid even base. 4 adjustable legs are delivered in assembly with the boiler.

Boiler Room

There should be sufficient space for pellet burner and boiler maintenance operations. For cleaning of convection part located in the boiler rear part there should be access to the boiler rear and space over convection part cleanout opening, at least 800 mm.

It is important from fire safety point that boiler-room is clean and non-dusty. Flammable substances shall not be stored in the boiler-room. The door to the boiler-room shall be kept closed. Air required for burning shall be supplied from outside and area of the channel or valve shall be at least 1.5 more than stack flue cross-section.

Stack

Round stack diameter shall be 150 mm, and for brick-lined stack - $\approx 250 \text{ cm}^2$.

Boiler draft requirement depending on capacity is 10-15 Pa.

Stack height shall be sufficient so that flue gases do not cause problems for surrounding buildings.

Recommended height is 5 m minimum.

Piping Installation

It is recommended to connect the boiler to energy accumulator with volume of 500 – 1,500 l.

It is recommended to build in 3 thermometers: in lower, medium and upper parts.

For easier filling and drainage of the system connections of the boiler, accumulator and heating networks shall be equipped with stop valves.

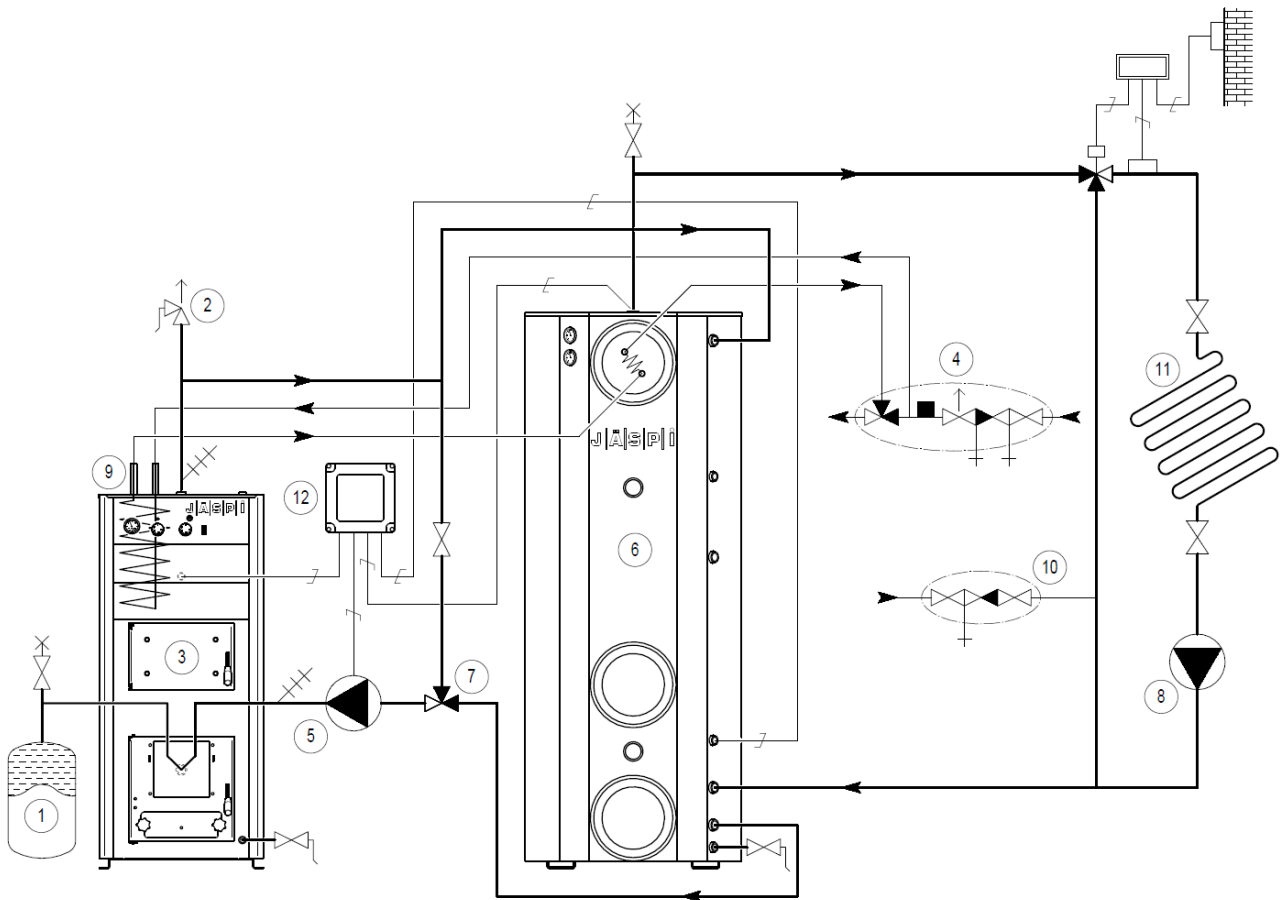
The boiler shall have at least one safety valve 1"/1.5 bar. For operation confirmation it is recommended to use two safety valves with unit blow capacity complying with required blow capacity.

Safety valve blow pipe shall be retracted to drain pit so that overflowing could be seen and steam potentially escaping from the pipe could not result in danger for people and property.

The volume of the membrane expansion tank should be at least 5 % of the entire water space in the system. In practice tank volume is approximately 10 % of total volume if preliminary pressure of 0.5 bar in the tank is sufficient.

Piping should be installed to ensure that boiler operation, maintenance, and cleaning are unobstructed.

Heat Connection Example



- | | |
|------------------------------------|--|
| 1. Membrane expansion tank | 8. Heating loop pump |
| 2. Safety valve 1.5 bar (2 pieces) | 9. Hot water supply coil of the boiler
(25 l/min) |
| 3. PE-XL Heating boiler | 10. Boiler water filling valve |
| 4. Hot water supply valve bank | 11. Heating circuit |
| 5. Charging pump | 12. TERMOMAT 3 Charging automatics |
| 6. GTV-700 accumulator | |
| 7. Charging valve | |

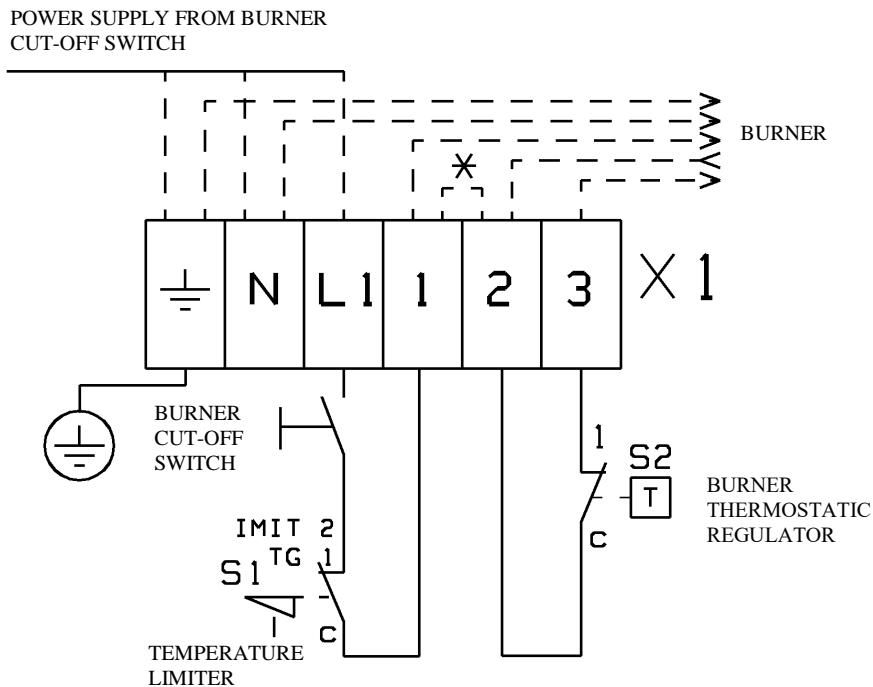
Electric Wiring

The boiler power supply is 230 V / 50 Hz.

Connections shall be made to terminal block located behind opening sensor panel.

Electric Connection Diagrams

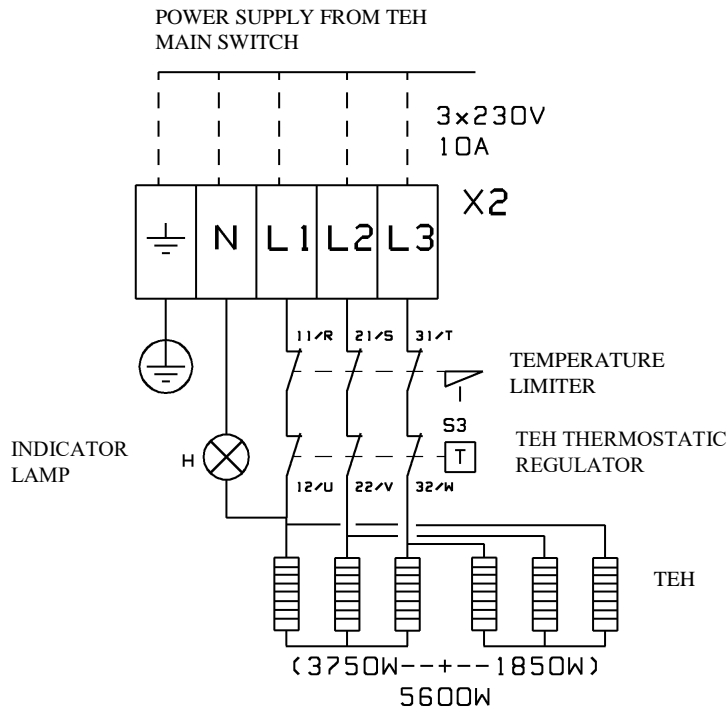
Burner Connection Diagram



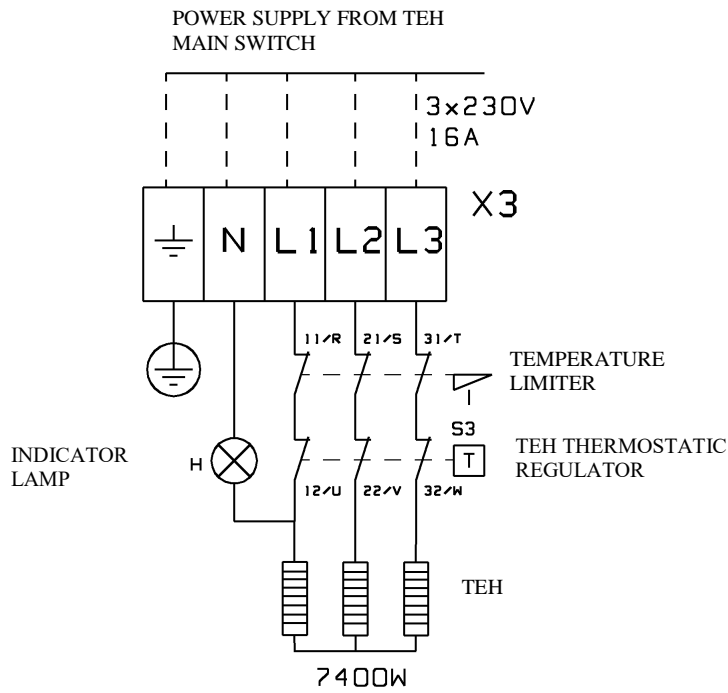
*** CAUTION !**

In system with 3-wired burner add jumper 1-2, voltage to the burner from connection terminal 3.

TURBULAR ELECTRIC HEATER (TEH) CONNECTION DIAGRAM



ADDITIONAL ELECTRIC CAPACITY CONNECTION DIAGRAM



Boiler Operation and Maintenance

Check that:

- The flue is open and there is no installation or other waste at its base.
- The boiler and heating system are filled with water and circulation is functioning.
- Piping connections are tight.
- The system is under pressure.
- The safety relief valve is working, i.e. water runs from the drain line during valve testing.

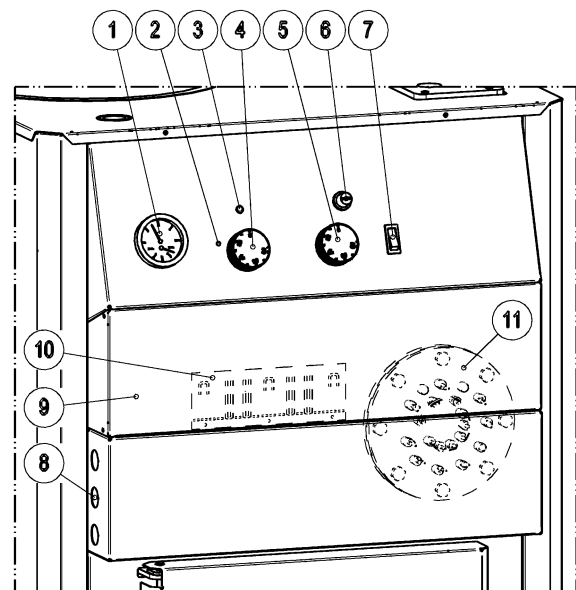
Before the first operation the system shall be deaerated. During the first filling of the system air dissolved in water gets into the system; it

is removed from boiler water when temperature increases.

Pellet boiler shall be mounted into the lower hatch of boiler. The boiler has been tested with Iwabo Villa S1 20 kW and Iwabo 30 kW burners. Instructions supplied with the burner shall be followed. Thermostatic regulator of the burner shall be set at temperature of 75 °C or bigger value in order to receive bigger quantity of hot water for domestic use. TEH thermostatic regulator is set, for example, at the value of 60 °C.

Control Panel

- 1. Pressure/temperature gauge** displays pressure and water temperature in the boiler.
- 2. TEH temperature limiter** switches off TEH if water temperature in the boiler exceeds 98°C. Limiter shall operate only in case of improper operation or the instrument failure. Limiter acknowledgement is performed by a sharp object pressing on acknowledgement push-button. Water in the boiler shall cool down before acknowledgement.
- 3. Electric heating indicator lamp** is on when TEH is operating.
- 4. TEH thermostatic regulator xx-90°C.** TEH shall switch on when water temperature in the boiler reduces up to the set value. During normal operation - approximately 60 °C.
- 5. Regulating burner thermostat 75 - 85°C** activates pellet burner when water temperature in the boiler reduces up to the set value. Set value shall be at least 75°C during normal operation.
- 6. Temperature limiter of the burner** switches the burner off when temperature in the boiler is more than 98°C. The limiter shall operate only in case of improper operation or the instrument failure. Limiter acknowledgement is performed by protective cap opening and pressing acknowledgement push-button. Water in the boiler shall cool down before acknowledgement.



- 7. Cut-off device** Electric cut-off of the pellet burner
- 8. Electric leads**
- 9. Panel for electric connections**
- 10. Electric connections strip**
- 11. TEH**

Maintenance

- Check regularly that the system is filled with water. If you have to add water permanently it indicates availability of leakage in the system, which should be eliminated as soon as possible. Permanent adding of fresh water leads to heating system corrosion as fresh water contains air (oxygen).
- The hot system pressure should be lower than 1.5 bar and the cold system pressure higher than 0.5 bar. Water volume changes depending on temperature - the higher the temperature, the bigger is the volume and pressure. Task of the expansion tank is to compensate volume changes.
- Preliminary pressure of the expansion tank shall be checked once in several years.
- Safety valves shall be checked at least 2 times a year by handle/ lever turning to prevent their sticking. Add water to the system after the check.
- In order to prevent corrosion observe that temperature in the boiler during pellet burning is 70°C at least.
- Remove ash from the furnace.
- Clean the burner as per instructions of the burner manufacturer.

Cleaning

Keeping a daily watch on the burning process in the boiler and making necessary adjustments make the cleaning process a problem free and infrequent job. Good burning forms a thin grey or coffee colored layer on the firing surfaces of the boiler, which falls off itself. Poor burning forms a dirty layer of soot, ashes, and tar on the firing surfaces and inside the flue. This prevents thermal energy from transferring to water thus increasing the flue gas temperature and lowering the efficiency. Cleaning is performed through front hatches and also rear hatch in the following way:

1. Disconnect convection part cleanout opening on top of the boiler and clean the gaps between flue gas turbulators. After that place turbulators close to each other raising them simultaneously up approximately to 5 cm. At first install plates together to the rear end and clean the front plate, and also boiler surface and heat transfer plate. After that shift the plates to the front end and clean the rear plate, and boiler surface and heat transfer plate. Place turbulators on their places after cleaning. Check that clearance between the upper level of the front turbulator and front wall of the channel is approximately 10 mm. Close thoroughly convection part cleanout opening
2. Disconnect burner and clean it as per the burner manufacturer's instructions (see respective instructions).
3. Remove the turbulator from the upper part of the furnace. Clean fired surfaces of the furnace with metal brush and remove ash from the chest. Remove by scraper ash from the bottom of convection part cleanout opening.
4. Install ash chest and the furnace turbulator onto their places and close thoroughly the burner hatch. Close hatch hook by retention screw, which prevents accidental hatch opening.
5. Install the burner and check correctness of its functioning.

Troubleshooting

The boiler water temperature does not rise to the desired level

- Make sure that the burner is adjusted properly.
- Make sure that fuel is supplied from the adaptor to the burner.
- Make sure that thermal valve eventually connected to hot water supply coil is closed.
- Make sure that mixture valve is functioning correctly.

The boiler boils and sputters

- Make sure that water quantity is sufficient in the system and pressure in the system is **0.8-1.5 bar**. If there is no water in the system immediately stop heating by switching off the burner. Do not add water to the boiler at once, let it cool down by blowing it with cold water. When the boiler is cooled down, the system can be filled with water and heating process can be started again.
- Check that the pump and the mixing valve are working and check the circulation through the pump and piping. The air present in the system can inhibit water circulation.

The flue gas temperature is too high

- **Flue gas temperature shall not exceed 350 °C as stacks do not tolerate high temperatures.**
- Clean the boiler. Soot, ash and tar contaminate fired surfaces of the boiler and act as heat insulation.
- Make sure that turbulent plates of convection part flue gases are in the right place and are integral.

Warranty

The warranty is confirmed to be two years for the boiler and one year for the components. The warranty is effective provided that installation, start-up, and maintenance are done or approved by an authorized agent/dealer in accordance with this manual.

