Operating
and maintenance instructions
for plant operators

KÖB

VIESMANN Group

PYROMATECO

ECO 35 to ECO 151

Version	Date	Comment
1.0	10.06.2009	Release
1.1	17.07.2009	Modification: chapter 2.10 safety devices
1.2	15.12.2009	Spare Parts List attachments

1 Important basic information

This chapter will familiarise you with the layout of the operating and maintenance instructions so that you will be able to find information in this document quickly and with assurance.

The operating and maintenance instructions use symbols and signs that make it easier for you to locate information. Please read the explanations for the symbols in the following section.

Read all of the safety notices in this operating and maintenance instructions with particular care.

Safety notices are found in chapter "General safety regulations" and before the handling instructions.

1.1 Explanation of the symbols and signs

Symbols and signs are used in these operating and maintenance instructions to enable you to find information quickly.

1.1.1 Symbols and signs in the text

ⓘ Wherever this symbol is shown you are provided with useful information for the safe and fault-free operation of the heating system.

1. Multiple step operating procedure:
   This sign shows an operating action. Carry out the stages of the operating action in the sequence given.

- Bullet points:
  There are no activities linked to bullet points.

1.1.2 Symbols and signs in figures

A, B, C, …:
Items in the figures are identified with these letters.

1.2 Purpose of the operating and maintenance instructions

ⓘ These operating and maintenance instructions are a part of the safety concept of your heating system. Ensure that all personnel that work on the heating system have read and understood the contents of this document.

ⓘ These operating and maintenance instructions contain important information to enable the safe and professional operation and maintenance of the heating system, and to facilitate the rectification of simple faults yourself.

- These operating and maintenance instructions are a part of the heating system.
- Retain these operating and maintenance instructions for the entire service life of the heating system.
- The operating and maintenance instructions must be passed on to any future owner or user of the heating system.

1.3 Legal notes

1.3.1 Liability, warranty and guarantee

Liability

The information, data and instructions provided in the operating and maintenance instructions were up-to-date at the time of printing. Claims can not be raised for heating systems previously supplied, on the basis of the information, diagrams and descriptions in this document.

Köb Holzheizsysteme GmbH accepts no liability for damage and operational faults that have occurred as a result of:

- Improper use.
- Unauthorised alterations to the heating system.
- Unprofessional work on or with the heating system.
- Operating errors.
- Disregard of the operating and maintenance instructions.

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2 Safety notice

In these operating and maintenance instructions warning notices are provided ahead of an operating procedure where there is a risk of injury to persons or property damage. The measures described for hazard prevention must be adhered to.

2.1 Meaning of warnings

The hazard symbols always appear in conjunction with a signal word. The signal words provide information on the extent of the danger.

Please also note that a hazard symbol can never replace the text of a safety notice - therefore, the safety notice text must always be read in full!

The meanings of the signal words are as follows:

Danger!

Immediate danger!

Failure to observe carries risk of death or serious injuries.

Warning!

Potential danger!

Failure to observe can carry risk of death or serious injuries.

Caution!

Hazardous situation!

Failure to observe can lead to minor injuries or damage to property.

2.2 Target groups

These operating and maintenance instructions are addressed to the operator of the heating system.

2.3 Use in accordance with the regulations

The heating system and its components are designed and constructed in accordance with the latest technology and in compliance with all recognised safety regulations. Nevertheless when such machinery is deployed, severe hazards, which could be fatal or cause injury to users and others can arise, or the heating system or other property may be adversely affected.

Appropriate use also includes observing the operating and maintenance instructions as well as adhering to the inspection and maintenance conditions.

The heating system and its components must be used only when in technically perfect condition, and must also be used for its proper purpose and with an awareness of safety and of hazards, and always in consideration of the operating and maintenance instructions. In particular any faults that could have an effect on safety must be remedied without delay.

The intended purpose of the PYROMAT ECO is the burning of wood fuels.

The appropriate use of the PYROMAT ECO is defined:

- In the regulations in the assembly and installation instructions.
- Through the limit values in the technical data.
- Though the specified fuels in Point "Fuels".
- With the safety regulations in these operating and maintenance instructions.

2.4 Improper use

Unless there is written approval from the manufacturer, any alternative or additional use of the PYROMAT ECO is considered inappropriate use. The manufacturer is not liable for damage resulting from this action. The user is solely responsible for the risk incurred.

The following, amongst other things, are considered improper use:

- Operation of the PYROMAT ECO by unqualified personnel, without schooling or knowledge of the operating and maintenance instructions.
- Disabling of safety or monitoring devices on the PYROMAT ECO.
- Removal of protective covers and fairings on the PYROMAT ECO by unauthorised personnel.
- Carrying out modifications or alterations on the PYROMAT ECO without the agreement of the manufacturer.
- Use of replacement parts or accessories from external manufacturers without the approval of the manufacturer.

2.5 Other applicable documentation

- Data sheet 2010/1-5" Boiler system PYROMAT ECO" in chapter "Appendix".

2.6 General safety regulations

ⓘ All personnel who carry out tasks on the heating system must ensure that they are familiar with the documentation provided which relates to these tasks.

ⓘ In addition to the safety regulations stipulated in these instructions, also observe the country-specific safety regulations.

Warning!

General hazard!

Serious injuries due to operating error by insufficiently trained personnel.

1. Only trained and experienced personnel may operate the heating system.
2. Personnel requiring training may only operate the heating system whilst under supervision.

Danger!

Electric shock!

Risk of fatal injury due to electricity.

1. When working on the heating system it must be de-energised either at the separate fuse or by disconnecting mains cable at the rear of the boiler.
2. Secure heating system against being switched on again.
3. Electrical work must be carried out by electricians exclusively.

2.6.1 Over-temperature or electrical outage behaviour

Danger!

Danger of deflagration!

In the event of a power outage the exhaust blower stops and the fresh air supply to the combustion chamber is interrupted. Low temperature gas forms and this can lead to a deflagration.

1. Leave all covers closed.
2. Ventilate affected area.
3. Identify and rectify source of electrical outage.

Caution!

Risk of burning due to hot system parts!

1. You should touch the unit only at the handles and other identified parts.
2. Never touch the flue ducts or their mountings.

2.6.2 What to do if you smell exhaust gas

Danger!

Exhaust gas can lead to life endangering poisoning!

1. Switch off the heating system.
2. Ventilate affected area.
3. Close doors in living spaces.

2.6.3 What to do in the event of fire

Danger!

In the event of fire there is a risk of being burned and a danger of explosion!

1. Switch off the heating system.
2. Leave all covers closed.
3. Call the fire service.
4. If it is still possible to tackle the fire yourself without risk of personal injury:
   Use a fire-class ABC certified fire extinguisher for fire-fighting.

2.6.4 Conditions in the heating room

Caution!

General hazard!

Improper environmental conditions can cause damage to the heating system and endanger the operational safety.

1. Ensure ambient temperatures warmer than 0°C and colder than 40°C.
2. With air contaminated by easily inflammable materials:
   Remove paint, varnish and other easily inflammable materials from the area around the heating system.
3. Prevent extended periods of high humidity - risk of corrosion.
4. Do not block the existing air supply apertures.

2.6.5 Accessory parts, replacement and wearing parts

Caution!

General hazard!

Components that have not been tested with the heating system can cause damage to the heating system or adversely affect its function.

1. When replacing parts, use only original parts or parts approved by the manufacturer.
2. Under no circumstances should changes or amendments to the heating system be carried out without the prior written consent of the manufacturer.
3. Additions or replacements must be undertaken out exclusively by specialists.

2.7 Qualifications of the personnel

Activity	Personnel	Qualification
Installation	Köb personnel, installation specialists, heating system operators	▪ Knowledge of operating and maintenance instructions, installation instructions ▪ Hydraulics knowledge ▪ Experience in installation
All work on the electrical system	Electrician	▪ Qualified electrician with experience in dealing with machinery
Transport	Köb personnel (loading), external transport personnel, installation specialists	▪ Experience in machinery transport
Commissioning	Köb personnel, installation specialists, heating system operators	▪ Electrical knowledge ▪ Knowledge of the operating and maintenance instructions ▪ Hydraulics knowledge ▪ General technical knowledge
Operation	Heating system operator	▪ Knowledge of the operating and maintenance instructions
Maintenance/servicing	Köb personnel, installation specialists, heating system operators	▪ Knowledge of the operating and maintenance instructions ▪ Hydraulics knowledge ▪ General technical knowledge
Fault rectification	Köb personnel, installation specialists, heating system operators	▪ Knowledge of the operating and maintenance instructions ▪ General technical knowledge ▪ Electrical knowledge ▪ Hydraulics knowledge ▪ Experience in handling the machine
Repair	Köb personnel, installation specialists	▪ Experience in metal working ▪ Experience in installation ▪ Electrical knowledge ▪ Knowledge of the operating and maintenance instructions ▪ Hydraulics knowledge ▪ General technical knowledge
Dismantling	Installation specialists, heating system operators, unskilled workers	▪ Knowledge of the operating and maintenance instructions ▪ Hydraulics knowledge ▪ General technical knowledge
Disposal	Installation specialists, heating system operators	▪ Knowledge of local waste disposal regulations

2.8 EC Declaration of Conformity

Starting up the heating boiler is prohibited until it has been determined that the facility into which this heating boiler is installed complies with the regulations of the applicable machinery directive.

CE

EC Declaration of Conformity

The Pyromat-ECO

with types: Pyromat-ECO 35, 45, 55, 65, 75, 85, 61, 81, 101 and 151

was developed, built and produced in sole responsibility by:

Köb Holzheizsysteme GmbH
Flotzbachstraße 33
A-6922 Wolfurt

The Pyromat-ECO meets the requirements of the following directives:

- ❑ 98/37/EC Machine directive
- ❑ 73/23/EEC Low voltage directive
- ❑ 89/336/EEC EMC directive
- ❑ 97/23/EC Pressure equipment directive

Applied standards:

- ❑ EN 303-5, DIN 4702
  Heating boiler for fuels, manually and automatically equipped furnaces.
- ❑ EN 60335-1 / A-14:98
  Safety of electrically powered devices for household use and similar purposes.
- ❑ EN50081 Part 1 and Part 2, EN61000-6-2 (EN55022, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6)
- ❑ TRD 702

A full technical documentation is available. The corresponding operation and maintenance instructions are available at the installation location in the original version and in thew respective native language.

Wolfurt, 2009-05-02
Date

Signature

Dr. Stefan Hoffmann
First name, Name

Management
Function

2.9 Placards on the PYROMAT ECO

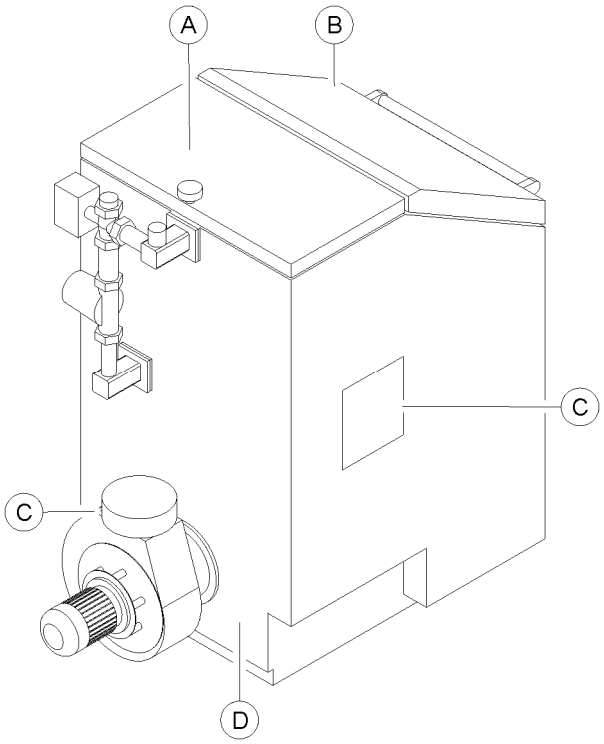
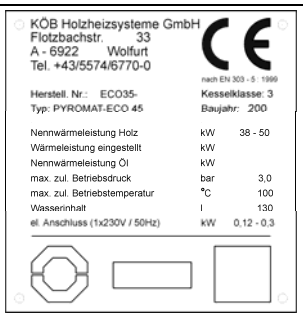


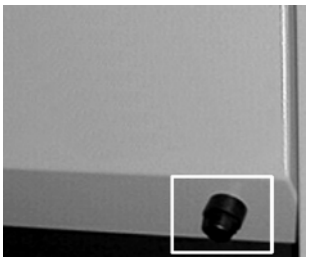
Fig. 1 Overview of placards on the PYROMAT ECO

A	 Comply with operating and maintenance instructions!
B	 Danger of deflagration!
C	 Risk of burns!
D	 Example: Type plate PYROMAT ECO 45

2.10 Safety devices

ⓘ The components listed in the following are a part of the safety concept. Modifications and/or changes on these components are prohibited without exception and result in the loss of all guarantee and warranty claims. Defective components may only be replaced by original replacement parts of the same design.

Temperature limiting safety switch (TLSS)



The TLSS is located in the front panel underneath the firebox door.

ⓘ If the TLSS has been triggered then it must be manually unlatched.

Triggering the function

The TLSS is triggered if the boiler temperature exceeds 100°C.

Cancelling the function

ⓘ Resetting is only possible after the boiler temperature has dropped below approx. 70°C.

1. Unscrew fastener on TLSS and press button.
2. Screw fastener back on again.
3. Acknowledge fault on the ECOTRONIC.

Thermal run off safety valve (optional)

The thermal run off safety valve is installed in the rear area of the boiler.

ⓘ Adhere to the instructions in the manufacturer's documentation for the thermal run off safety valve!

Triggering the function

The thermal run off safety valve is triggered if the boiler temperature exceeds 95°C. Cold mains water flows through the safety heat exchanger. The boiler is cooled and the heated water is conducted to the drain.

Cancelling the function

ⓘ Resetting occurs automatically, depending on the thermal run off safety valve installed, if the boiler temperature has dropped below the triggering temperature.

ⓘ After every triggering be sure to check the resetting of the thermal run off safety valve!

3 Product information

3.1 Model description

Description: PYROMAT ECO

Manufacturer: Köb Holzheizsysteme GmbH
Flotzbachstraße 33
A-6922 Wolfurt
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F 0043 / (0) 5574 / 65707
office@kob.cc
www.kob.cc, www.koeb-holzheizsysteme.com
Viessmann Group

ⓘ Technical data see data sheet 2010/1-5 "Boiler system PYROMAT ECO" in chapter "Appendix".

Overview
PYROMAT ECO

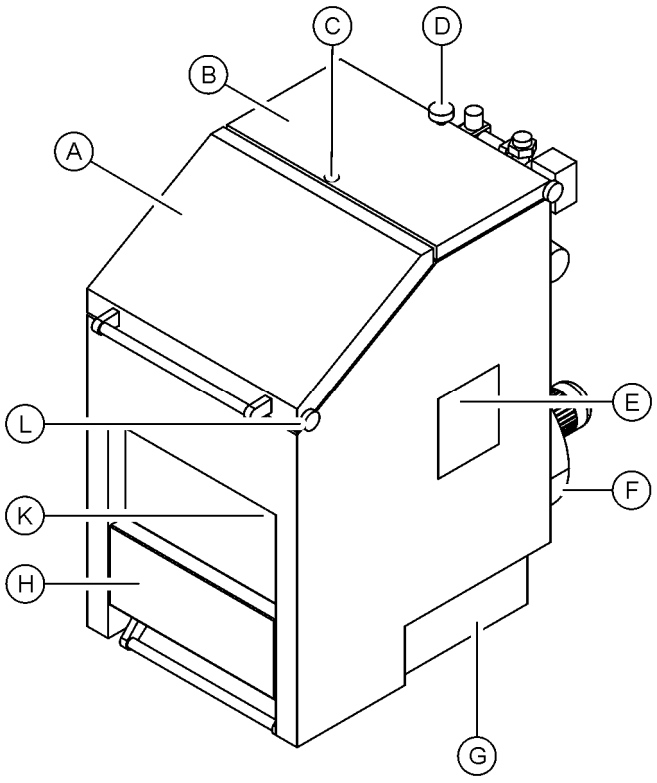


Fig. 2 Overview PYROMAT ECO front

A	Firebox door, feeder chute underneath	**B**	Top opening cleaning lid
C	Sight glass	**D**	Lock for cleaning lid
E	Combustion chamber maintenance cover, addition oil/gas burner (optional)	**F**	Exhaust gas sensor, lambda sensor
G	Lower cleaning door	**H**	Ash pan door
K	Temperature limiting safety switch (TLSS)	**L**	Firebox door lock

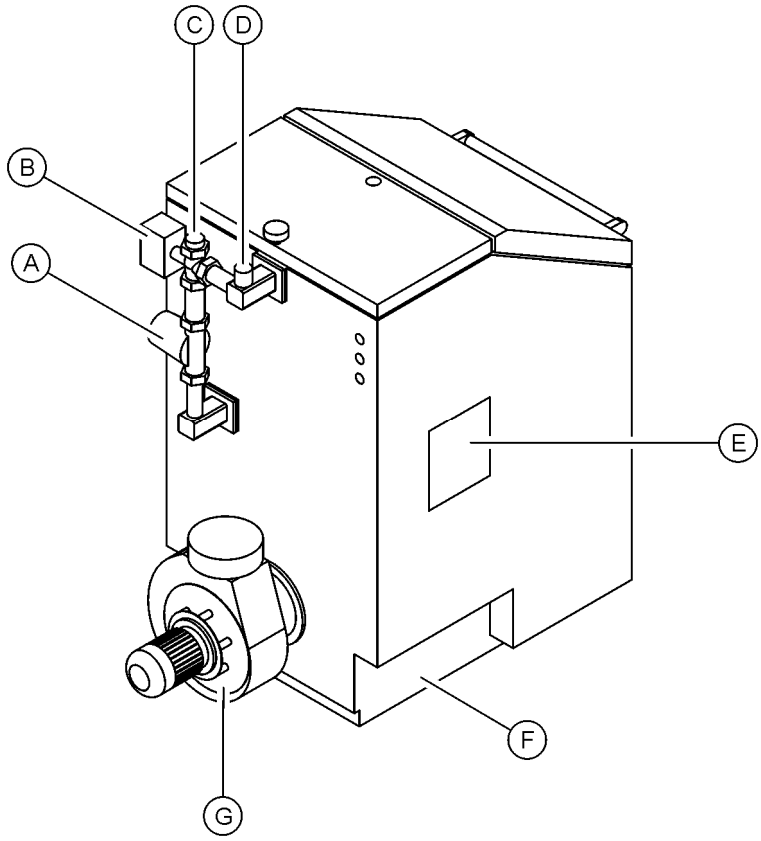


Fig. 3 Overview PYROMAT ECO rear

A	Boiler pump	**B**	Burner control valve with actuating drive
C	Return	**D**	Flow
E	Combustion chamber maintenance cover, addition oil/gas burner (optional)	**F**	Lower cleaning door
G	Exhaust blower		

3.2 Workplace

The following areas around the heating system must be freely accessible:

- All doors and covers.
- All inspection hatches.

ⓘ The heating system must be switched off during any cleaning, servicing or repair activities on the system so that safe working conditions are guaranteed.

ⓘ You must ensure that the heating system and the surrounding area are kept clean and tidy.

3.3 Fuels

3.3.1 Permissible fuels

The PYROMAT ECO is designed for die burning of logs, off-cuts, wood briquettes and scrap wood with shavings. As an option, the PYROMAT ECO can be equipped with an oil burner.

ⓘ When using off-cuts, wood briquettes and scrap wood with chippings, please make sure that the firebox is one third filled with logs before adding these fuels. This is reached when the fireclay of the combustion chamber in no longer visible and the grate is fully covered with logs.

ⓘ When adding cut-offs, wood briquettes and scrap wood with chippings, logs should be added at regular intervals to guarantee a better burn-out.

ⓘ Köb provides no guarantee for the safety, function and service life of the boiler if fuels other than those specified are used. See the "Guarantee" point in the general delivery conditions.

Preconditions for the wood

The wood must be air-dry. 1 to 2 ½ years are required for natural drying. This drying can partly take place outdoors (covered) and should then be continued for at least 1 year in a suitable shed. The water content (w) should be max. 25% (w 25).

ⓘ Moist wood that has been not been stored long enough only has half of its potential heat value and has a high ash content.

Permissible types of wood

- Air dried, natural logs such as e.g.: Split, cut or round logs.
  Hardwood: max. ∅ 15cm
  Softwood: max. ∅ 12cm

ⓘ Recommended storage value (dry storage):
Hardwood: 2 to 2½ years
Softwood: 1 to 1½ years

- Natural, non-log wood (max. water content 25%) in the form of coarse chopped wood pieces including clinging bark with an edge length larger than 5 cm.
- Chipping pellets, if not manufactured using a bonding agent. Diameter larger than 4 cm.
- Joiner's waste in the form of glued wood and left-over wood, if no wood preservatives are applied or contained. Edge length larger than 5 cm.

Max. wood length

PYROMAT ECO 35, 45, 55, 65, 75, 85:	max. ½m
PYROMAT ECO 61, 81, 101, 151:	max. 1 m

Operation with oil/gas burner

Permissible fuel: Heating oil extra light

3.3.2 Non-permissible fuels

Warning!

Danger of damage to the heating system and danger of intoxication due to unsuitable fuels!

The burning of waste such as wood that has been treated with wood preservatives or the coating of which consists of halogen-organic compounds, leads to the formation of highly toxic exhaust gases and can cause serious corrosion damage in the boiler.

1. Only use permissible fuels.

The following must not be burned under any circumstances:

- Coal and coke.
- Waste wood with coatings made of halogen-organic compounds (PVC).
- Pellets.

4 Commissioning

Warning!

General hazard!

Serious injuries due to untrained personnel.

1. Only trained and experienced personnel may perform the commissioning of the heating system.
2. Training personnel may only work on the heating system whilst under supervision.
3. Commissioning work may only be carried out by Köb installation specialists or by persons authorised by Köb.

ⓘ The commissioning of the complete heating system is carried out by Köb service technicians or your installation specialists. The heating system is set up in such a way that the fuel available, in conjunction with the air intake volume, will provide an optimum burn.

ⓘ As the operator of a new heating system you are obligated to register this immediately with the authority responsible for your property. The authority will also provide you with information regarding further activities pertaining to your heating system (e.g. regular measurements, cleaning).

ⓘ The instructions for commissioning are contained in the assembly and installation instructions for specialists.

5 Operation

5.1 Basic menu navigation - ECOTRONIC

The ECOTRONIC controller gathers all data relevant for operations and regulates the heat output and heat consumption.

The boiler system is continuously monitored in all phases of operation and is kept in the optimised emissions zone.

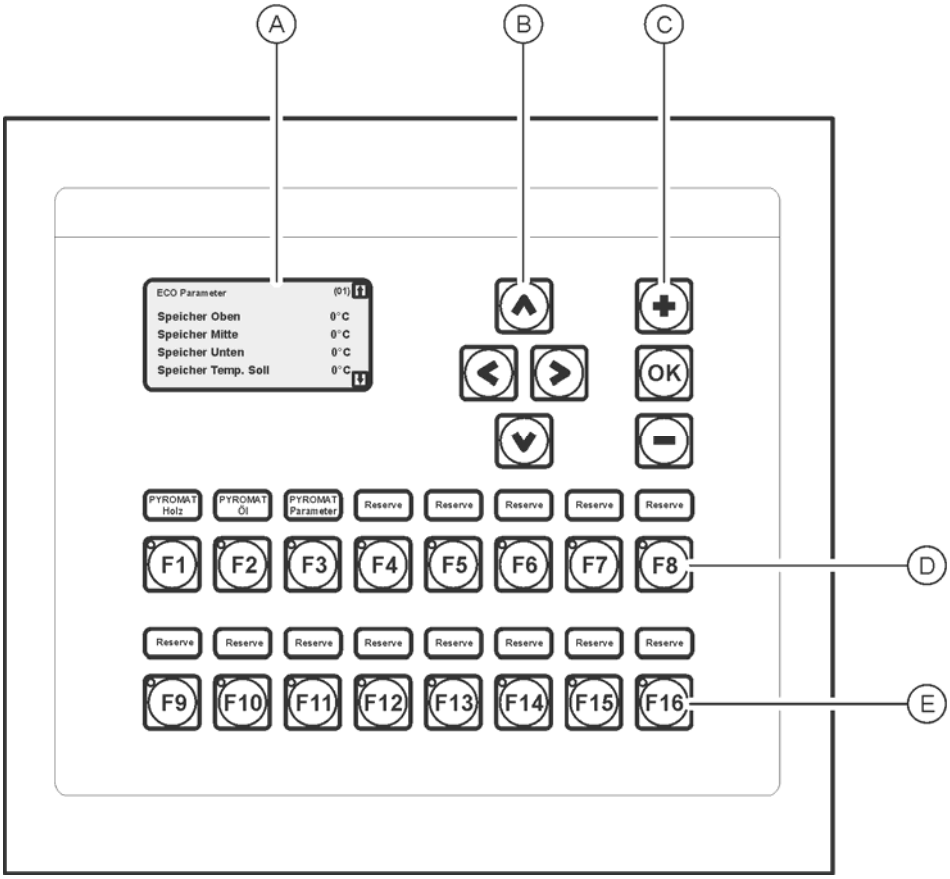


Fig. 4 ECOTRONIC overview

A	Display	**B**	Navigation buttons
C	Increase/decrease parameter, confirm input	**D**	Function keys with built-in LEDs: Selection of the various menus, control system extensions.
E	Function keys with built-in LEDs: Selection of the various menus, control system extensions.		

Illumination of the function keys

Key illuminates green:
- Selected function or group is in operation.

Key flashes green:
- Parameter menu or service menu is active.

Key illuminates red:
- Fault / error has occurred in the group.

ⓘ See chapter"Error correction" for error correction.

Key functions

<	Scroll menu screen to the left.	>	Scroll menu screen to the right.
^	Scroll rows upward.	v	Scroll rows downwards.
+	Increase numeric and target values.	**-**	Decrease numeric and target values.
OK	Apply settings or alterations.	**F1**	PYROMAT wood Manual operation, switch on/off of log operation.
F2	PYROMAT oil Switch on/off the optional oil/gas burner.	**F3**	PYROMAT Parameter Setting of parameters, target values, date and time.
F4	Heat distribution group 1 Setting of parameters and target values.	**F5**	Heat distribution group 2 Setting of parameters and target values.
F6	Heat distribution group 3 Setting of parameters and target values.	**F7**	Heat distribution group 4 Setting of parameters and target values.
F8	Heat distribution group 5 Setting of parameters and target values.	**F9-F16**	Heat distribution group 6-13 Setting of parameters and target values.

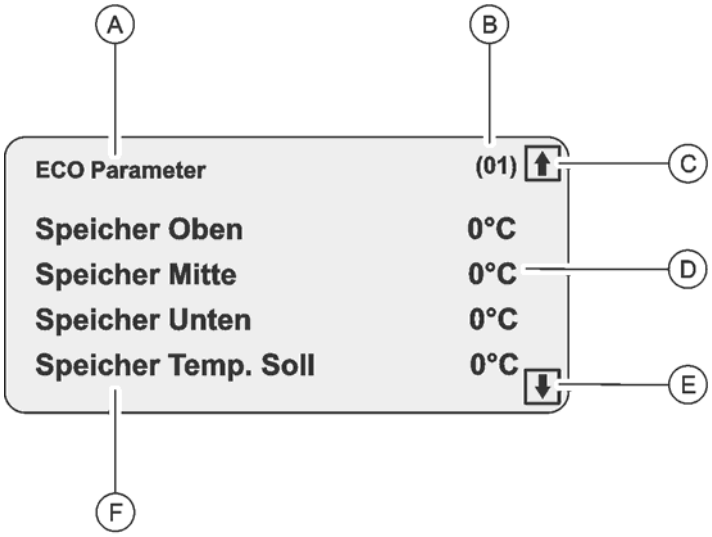


Fig. 5 Overview display

A	Display of the active menu, e.g. ECO parameter.	B	Display of figure number.
C, E	Scrolling symbol, up/down: The scroll symbol is displayed if the information can no longer be displayed on the screen. ⓘ You can scroll up and down through the text, row-by-row using the navigation buttons ∧ and ∨.	D	Display of the current values.
F	Display of screen text, parameters		

5.2 Factory settings

All parameters, such as target values or cycle times, are already preset in the ECOTRONIC and can be recalled at any time.

The following applies for keys F3 to F8:

- By pressing once you switch to the corresponding menu. The corresponding LED flashes in acknowledgement.
- If a target value is changed and not confirmed with "OK" then it will not be adopted.
- Pressing the function key again results in the normal display appearing once more.
- If no button are pressed within a period of 60 seconds then the normal display appears again automatically.

ⓘ Depending on the configuration or settings of the heating system some of the menus or text are not shown.

5.3 F3 key "PYROMAT Parameter"

It may be necessary to alter the settings:

- when the fuel is changed
- when the heating system is adapted and optimised

ⓘ Alterations must only be carried out in conjunction with your installation specialists.

Adjustable parameters

Screen number	Parameters	Factory setting
01	Storage temperatures: Display all storage temperatures.	-
02	Boiler return: Preserve minimum boiler return target value.	70°C
03	Boiler flow: Storage loading temperature target value. ⓘ Parameter is only available if "Controlled storage loading" is activated with "YES" or the oil/gas burner is activated in the service menu.	85°C
04	Boiler exhaust gas: Limit value maximum exhaust gas temperature.	200°C
05	Exhaust gas residual O2: Residual oxygen target value for air vent control.	7%
06	O2 regulation: Switch on/off oxygen control.	ON
07	Air vents without O2 control: Position of the air vents with oxygen regulation switched off.	30%
08	Dissipate excess heat at: Limit temperature at which excess heat will be dissipated.	95°C
09	Load storage for oil/gas operation: Shall the storage be loaded at the Pyromat ECO in oil/gas operation? Only display if: - Oil/gas burner available	No
10	Load storage for oil/gas operation up to: Up to which storage sensor shall the storage be loaded at the Pyromat ECO in oil/gas operation? Only display if: -Oil/gas burner available and load storage in oil/gas operation – YES	Storage bottom
11	Load storage for oil/gas operation up to: Up to which temperature shall the storage be loaded at the Pyromat ECO in oil/gas operation? Only display if: -Oil/gas burner available and load storage in oil/gas operation – YES	70°C

Screen number	Parameters	Factory setting
12	Minimum system target temperature: Minimum flow temperature for customer-installed heat distribution. ⓘ Parameter is only available if system minimum target temperature is activated in the maintenance menu with "YES".	50°C
13	Oil/gas-fired operation: Operating hours / minutes oil/gas-fired operation Pyromat ECO Only display if: Oil/gas burner available	-
14	Wood-fired operation: Operating hours/minutes PYROMAT ECO manual mode.	0
15	Date - Year: Year setting.	Current
16	Date - Month: Month setting.	Current
17	Date - Day: Day setting.	Current
18	Date - Weekday: Weekday setting.	Current
19	Date - Hours: Hours setting. ⓘ The time shift from summertime to wintertime does not occur automatically.	Current
20	Date - Minutes: Minutes setting.	Current

Adjustable parameters oil/gas burner (optional)

Screen number	Parameters	Factory setting
9	Load storage for oil/gas operation: Selection storage loading: YES / NO	NO
10	Load storage for oil/gas operation up to storage: Selection storage load level for oil/gas burner operation (only if storage load for oil/gas burner operation YES).	Storage bottom
11	Load storage for oil/gas operation up to: Storage target temperature (only if storage load for oil/gas burner operation YES)	70°C
13	Oil/gas-fired operation: Operating hours/minutes oil/gas burner PYROMAT ECO.	0

5.4 Keys F4 to F8 "Control system extensions"

Your ECOTRONIC can be extended with a multitude of heating controllers such as, e.g. heat consumers, auxiliary heat generators, solar energy.
The operation of the external controllers is carried out principally on the heating system control module.

ⓘ The extended control systems are assigned to keys F4 to F8 (F9 to F16, optional) as per the wishes of the customer. Each extended control system is assigned to a separate key.

ⓘ Information regarding the extended control system can be found in chapter "ECOTRONIC Control system extension".

5.5 Log operation

ⓘ Before log operation ensure that the amount of heat generated can be taken off and stored by the heating system.
If the amount of heat can not be taken off then this will result in an overheating of the boiler and the TLSS will be activated.
The boiler will be supplied with cold mains water via the safety heat exchanger, heating energy is lost.

The combustion time is dependant on the type of wood used:

- Deciduous wood filling: approx. 4 hrs
- Coniferous wood willing: approx. 3 hrs

5.5.1 Fill wood

ⓘ For heating systems with storage and storage control valve:
Unrestricted heating operation possible - only fill in so much wood as the storage can take energy from, until the maximum storage temperature of 90°C is reached.

Heating system is out of operation

1. Open firebox door.
2. If the grate slots are covered in fine ash:
   Remove the ash until the grate is covered with a maximum 2 cm of charcoal.
3. If there are still residual embers on the grate:
   Let the embers go out, do not feed in fuel.

Caution!

Danger of deflagration!

Low temperature gas formation due to off-cuts, wood briquettes or scrap wood with chippings during the heat-up process.

1. Do not under any circumstances fill off-cuts, wood briquettes or scrap wood with chippings directly onto the grate.
2. Fill the firebox with logs until the opening of the combustion chamber and the grate are completely covered.

4. Spread paper and good combustible wood diagonally across the grate approx. 25 cm high, so that the entire boiler width is covered and a good air-permeable bed exists.
5. Arrange split logs or wood pieces horizontally and compactly over the complete width of the boiler in the firebox.

ⓘ The addition of cut-offs, wood briquettes and scrap wood with chippings is possible, as soon as the combustion chamber is one third filled with logs. This is reached as soon as the grate is completely covered with logs and the fireclay of the combustion chamber is no longer visible.

ⓘ When adding cut-offs, wood briquettes and scrap wood with chippings, logs should be added at regular intervals to guarantee a better burn-out.

6. Remove any dirt that may exist on the contact surfaces of the firebox door.
7. Close firebox door.

Heating system is in operation

ⓘ Have the requisite amount of wood ready before opening the firebox door.

1. Press F1 "PYROMAT wood" button.
2. Check the exhaust gas temperature.

Caution!

Danger of deflagration!

Low temperature gas in the upper area of the firebox can lead to deflagration.

1. Exhaust gas temperature above 130°C ?
   Do not under any circumstances open the firebox door.
2. Exhaust gas temperature below 130°C ?
   Slightly lift the firebox door:
   Any possible low temperature gas will be drawn off by the exhaust gas blower.

2. Open firebox door:
   Release the firebox door lock and open the firebox door fully.

Caution!

Danger of deflagration!

Low temperature gas formation due to sawdust or fine wood chips.

1. Under no circumstances feed sawdust or chopped wood pieces directly onto the grate.

3. Arrange split logs or wood pieces horizontally and compactly over the complete width of the boiler in the firebox.
4. Remove any dirt that may exist on the contact surfaces of the firebox door.
5. Close firebox door.

5.5.2 Heat-up in log operation

Ensure that the following preconditions are met:

- Operating pressure in the heating system is checked.
- The heating system is ventilated.
- Customer's on-site slide valves for heating feed and return are open.
- Ventilation apertures in the heating room are open.
- All doors and covers on the boiler are closed.
- Burner group ball valves are open.
- Oil/gas burner is extended.
- Turbolators are installed in the pipe heat exchanger acc. to the following table.

PYROMAT ECO - model	Turbolators installed as standard
35 - 65, 85, 81, 151	Yes
75, 61, 101	No

Caution!

Danger of damage to the oil/gas burner during log operation!

Malfunctions and damage to the burner installation may occur when the oil/gas burner is retracted caused by sooting.

1. Extend the oil/gas burner before log operation.

Warning!

Danger of deflagration!

Serious injuries through highly inflammable materials when igniting the fuel.

1. Use only paper, cardboard and firewood to light the fuel.
2. Under no circumstances use highly inflammable materials such as petrol, oil, alcohol or solvents to light the fuel.

1. Open the ash pan door and light the paper, ideally along the whole width of the firebox.

ⓘ The fire can spread very quickly over the whole grate surface.
Rapid heating up of the combustion chamber quickly provides a perfect combustion.

2. Press F1 "PYROMAT wood" button on the controller.
3. Leave the ash pan door approx. 10cm open.
4. Monitor the heating system during the pre-heating process until an exhaust gas temperature of approx. 110°C is indicated.
5. If an exhaust gas temperature of approx. 110°C is indicated:
Close the ash pan door completely.

ⓘ For optimal and fault-free heating operation ensure that all covers and doors are closed tightly during the combustion.

ⓘ The pre-heating process is completed.

5.5.3 Check the heating operation

During operation

1. Check the exhaust gas temperature.

ⓘ The exhaust gas temperature should rise to 130°C to 150°C within a few minutes after pre-heating and should lie between 160°C and 200°C in long-term operation.

ⓘ If the exhaust gas temperature should drop again prematurely during the combustion process, then a hollow-burn has occurred.
The causes of a hollow-burn can be poor filling or irregular pieces of wood.

2. If a hollow-burn occurs:
Open ash pan doors and spread the wood evenly over the whole ember bed with a poker.

After operation

Warning!

Danger of burning due to hot system parts and ash!

1. Allow heating system to cool down.
2. You should touch the unit only at the handles and other identified parts.
3. Never touch the flue ducts or their mountings.
4. Use protective gloves.

1. Check the surface of the combustion chamber:
The surface must not show signs of shining soot or tar deposits.
2. Check the pipe heat exchanger:
The pipe heat exchanger must not show signs of shining soot or tar deposits.

ⓘ The ash content upon the optimum combustion of wood is very low and amounts to approx. 1-4 weight percent and depends on the quality of the fuel.

5.6 Oil/gas burner operation (optional)

5.6.1 Oil/gas burner is retracted/extended

Caution!

Danger of damage to the oil/gas burner!

The burner extension device is pre-tensioned by means of springs. Careless extending and retracting can lead to damage to the oil/gas burner.

1. Slowly extend/retract the oil/gas burner.
2. Do not under any circumstances allow the burner extension device to shoot out.

Warning!

Risk of burning due to hot system parts!

The oil/gas burner may still be hot shortly after operation.

1. Allow heating system to cool down.
2. You should touch the unit only at the handles and other identified parts.
3. Do not under any circumstances touch the burner pipe.

Retract the oil/gas burner

Pre-condition for action:

- Log operation finished - no more glowing embers left.
- Inside of the boiler completely cleaned, exhaust gas blower and chimney cleaned, not more ash left.

ⓘ Clean the boiler before operation with the oil/gas burner - ash in conjunction with combustion oil residues result in a smeary coating that is difficult to clean.

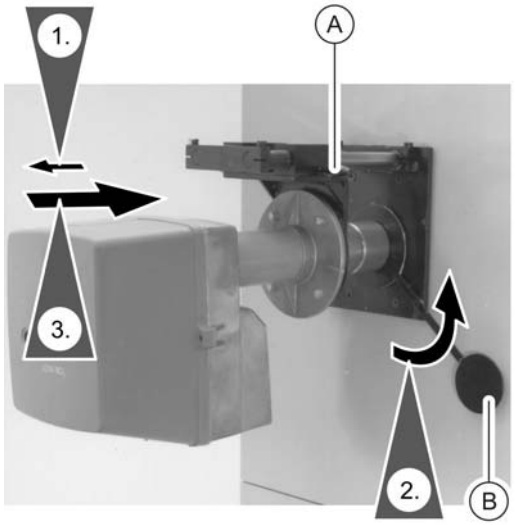


Fig. 6 Oil/gas burner extended

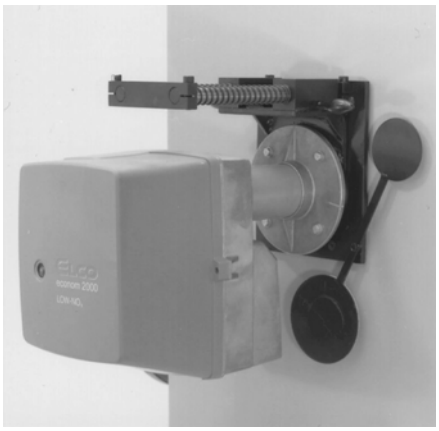


Fig. 7 Oil/gas burner retracted

A	Handle burner extension device
B	Flap

1. Pull the oil/gas burner back slightly and hold the position.
2. Open the flap.
3. Slowly retract the oil/gas burner as far as it will go.

Extend the oil/gas burner

Pre-condition for action:

- Heating operation is finished - oil/gas burner has cooled down.

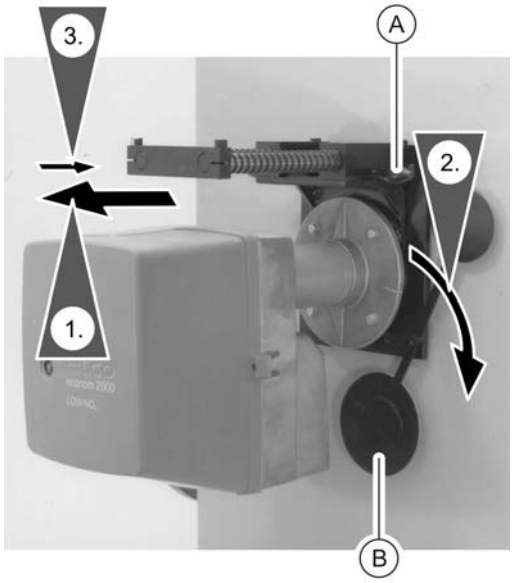


Fig. 8 Oil/gas burner retracted

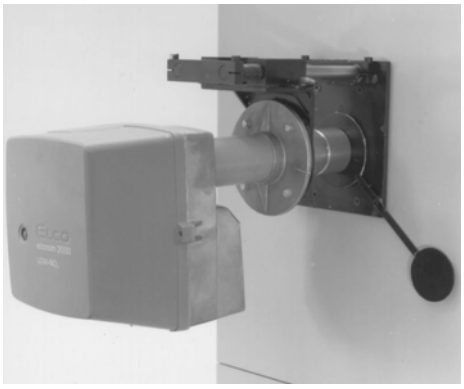


Fig. 9 Oil/gas burner extended

A	Handle burner extension device
B	Flap

1. Pull the oil/gas burner back as far as it will go and hold the position.
2. Close the flap.
3. Move the oil/gas burner forwards a little to fix the flap.

ⓘ The oil/gas burner is extended and the burner opening is closed by means of the spring-loaded flap.

5.6.2 Oil/gas burner operation

Start the oil/gas burner

Pre-condition for action:

- Oil/gas burner is retracted.

1. Preselect oil/gas burner: Press key F2 on the controls.

ⓘ The oil/gas burner is automatically started upon the next heat request. The air flaps are automatically closed.

Stop the oil/gas burner

1. Stop the oil/gas burner: Press key F1 on the controls.

ⓘ The oil/gas burner is stopped.

6 ECOTRONIC Control system extension

Your ECOTRONIC can be extended with a multitude of heating controllers such as, e.g. heat consumers, auxiliary heat generators or solar energy.

The operation of the external controllers is carried out principally on the heating system control module.

ⓘ The commissioning of the complete heating system is carried out by Köb service technicians or your installation specialists. The heating system is set up in such a way that the fuel available, in conjunction with the air intake volume, will provide an optimum burn.

ⓘ Incorrect setting of the parameters in the ECOTRONIC can lead to malfunctions in the heating system.
Consequences of alterations are entirely your own responsibility. Your installation specialists or Köb customer service are happy to help you with any questions.

6.1 Function keys control system extensions

6.1.1 Room heating controller

Weather-led heating control with digital timer for drop-down function after day program or week program, with pump control, frost protection function, ECO mode and limited flow temperature.

Parameter menu Room heating

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** Room unit is switched off. ▪ **Day / Night** Heating operation as per timer program. Set flow temperature in the day and reduced flow temperature at night. ▪ **Day / Off** Heating operation as per timer program. Set flow temperature in the day and switched off at night. ▪ **Day** Permanent set flow temperature. ▪ **Night** Permanent reduced flow temperature. ▪ **Manual** ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Day / night
02	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available.	1

Screen number	Parameters	Factory setting
03	Heating period 1, heating day: Set day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available with day / night or day / off operating modes.	Mon to Sun
04	Heating period 1, start: Set switch-over time from reduced temperature (or off) to normal temperature. ⓘ This setting is only available with day / night or day / off operating modes.	06:00
05	Heating period 1, end: Set switch-over time from normal temperature to reduced temperature (or off). ⓘ This setting is only available with day / night or day / off operating modes.	22:00
06 – 23	Heating periods 2-7 Dependant on the number of heating periods (figure number 2), comprising heating days, start and end.	
24	Flow temperature; at +5°C: Set desired flow temperature when outside temperature is -15°C (see heating curve).	43°C
25	Flow temperature; at -15°C: Set desired flow temperature when outside temperature is -15°C (see heating curve).	64°C
26	Temperature room day: Target value for room temperature in the day. ⓘ This setting is only available in conjunction with the optional thermostat.	20°C
27	Temperature room night: Target value for room temperature in the night. ⓘ This setting is only available in conjunction with the optional thermostat.	15°C
28	Night flow temperature drop of: The temperature set is subtracted from the calculated flow temperature when night drop-down is operating.	-6°C
29	Maximum flow temperature: Maximum limit for flow temperature.	70°C
30	ECO mode: The heating is switched on and off depending on requirement by the ECO economy-controller.	Yes

Screen number	Parameters	Factory setting
31	Switch-off under system temperature: Should the room unit group be switched off when the system temperature drops below a minimum?	No
32	Frost protection function: With the frost protection function switched on the room unit will be switched on if there is a danger of frost.	Yes
33	Excess heat take-off: If there is a danger of the PYROMAT ECO overheating (e.g. through too much fuel being fed in by hand) then the excess heat can be taken off if desired. The room unit is controlled under "Maximum flow temperature".	No

Set heating curve

ⓘ The controller creates the flow temperature target value with the heating curve, so that a constant room temperature can be achieved even without a room temperature sensor.
The steeper the gradient of the heating curve the higher the flow temperature target value with cold outside temperatures.

The mapping of the flow to outside temperature is directly adjustable and readable. The adjustment of the heating curve is carried out with 2 points:

Example heating curve
Point 1:
Flow temperature at +5°C outside temperature, adjustable range for flow temperature 20°C to 90°C.

ⓘ Point 2 must always be set higher than point 1!

Point 2:
Flow temperature at -15°C outside temperature, adjustable range for flow temperature 20°C to 90°C.

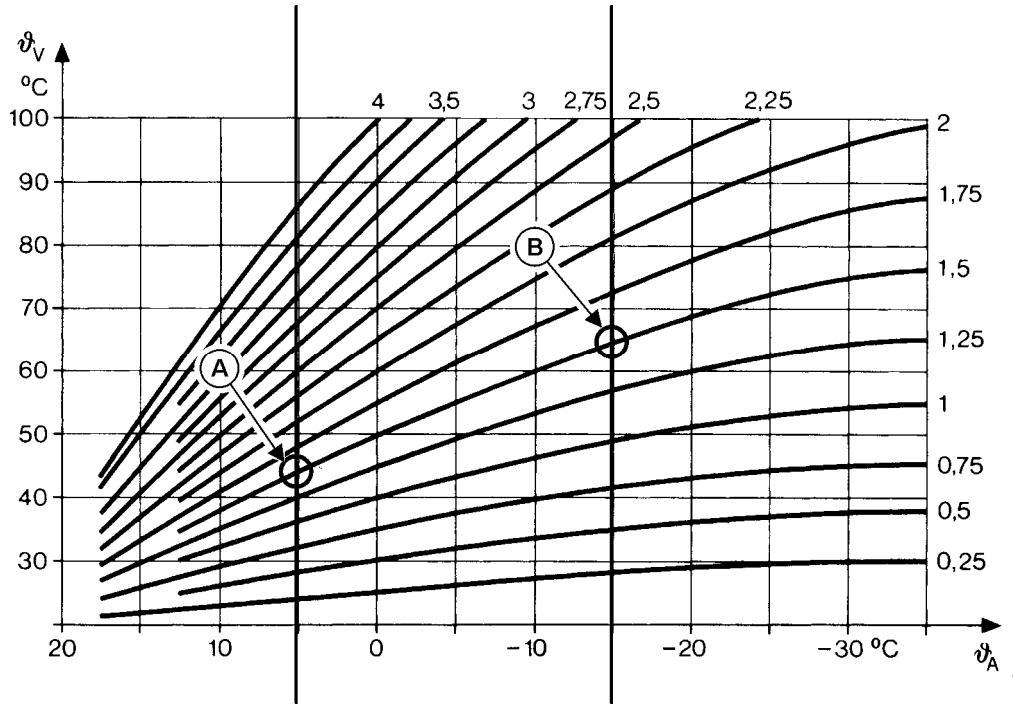


Fig. 10 Heating curve

A	point 1 at +5°C	**B**	point 2 at -15°C

The two points illustrated represent the factory default settings. Point 1 is set to 43°C and point 2 to 64°C.
This represents a gradient of approx. 1.5.

Thermostat (optional)

The thermostat can be used with or without the influence of the room temperature.

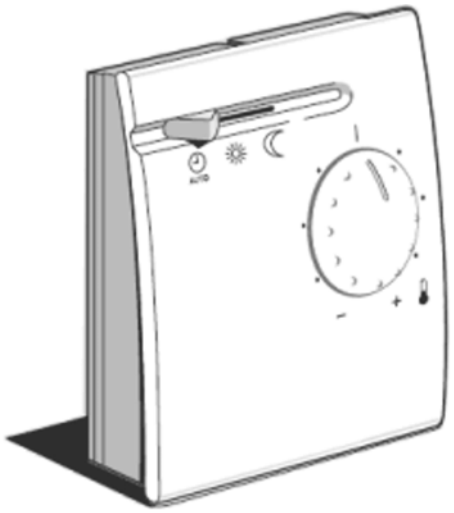


Fig. 11 Thermostat

Switch positions

Auto

Automatic:
The heating operation is controlled by the timer program in accordance with the setting of the ECOTRONIC.

Permanent set flow temperature:
The operating mode set in the ECOTRONIC will be ignored.

Permanent reduced flow temperature:
The operating mode set in the ECOTRONIC will be ignored.

Adjust temperature

1. .. Increase room temperature: Turn control in + direction.
2. .. Decrease room temperature: Turn control in - direction.

6.1.2 Utility water heater controller

without quantity regulation

If the utility water temperature drops then this is re-heated by the boiler or the heat storage via the integrated heat exchanger. An appropriate temperature differential (selectable between differential temperature or fixed preset temperature) is a prerequisite.

The heating times (day and week program) can be adjusted via the integrated timer.

with quantity regulation

If the utility water temperature drops then this is re-heated by the boiler or the heat storage via the integrated heat exchanger. An appropriate temperature differential (selectable between differential temperature or fixed preset temperature) is a prerequisite.

The hot water flow rate is controlled by the return temperature (flow control). This results in an optimised storage stratification with a higher temperature maintained in the storage feed over a longer period.

The heating times (day and week program) can be adjusted via the integrated timer.

Parameter menu Utility water

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** Utility water heating is switched off. ▪ **Timer** The utility water heating is controlled in accordance with a timer program. The boiler is only heated up during the heating time. ▪ **On** The boiler is heated up when there is a demand for heat and when the system temperature is sufficient. ▪ **Manual** The pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Timer
02	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available. ⓘ This setting is only available in timer operating mode.	1

Screen number	Parameters	Factory setting
03	Heating period 1, heating day: Set day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available in timer operating mode.	Mon to Sun
04	Heating period 1, start: Start release of utility water heating. ⓘ This setting is only available in timer operating mode.	06:00
05	Heating period 1, end: End release of utility water heating. ⓘ This setting is only available in timer operating mode.	22:00
06 - 23	Heating periods 2-7 Dependant on the number of heating periods (figure number 2), comprising heating days, start and end.	-
24	Utility water temperature: Setting the desired utility water temperature.	60°C
25	Set return temperature xx °C higher than the utility water temperature. Desired return target temperature: Current boiler temperature plus the value set here. ⓘ Display only for extension by controller with quantity regulation.	10°C

6.1.3 Utility water circulation controller

Parameter menu Circulation

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. **Off** The circulation is switched off. **Timer** The circulation is controlled by a timer program. **On** The circulation is switched on. **Manual** The circulation is switched on. Emergency operation. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Timer
02	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available. ⓘ This setting is only available in timer operating mode.	1
03	Heating period 1, heating day: Set day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available in timer operating mode.	Mon to Sun
04	Heating period 1, start: Start release of circulation. ⓘ This setting is only available in timer operating mode.	06:00
05	Heating period 1, end: End of release of circulation. ⓘ This setting is only available in timer operating mode.	22:00
06 - 23	Heating periods 2-7 Dependant on the number of heating periods (figure number 2), comprising heating days, start and end.	-

6.1.4 Air handling unit group controller

The air heaters are supplied with the maximum supply temperature by the boiler storage system. The blowers are controlled by the customer's on-site switches or controllers.

The hot water flow rate is controlled by the return flow temperature (flow control) and this in turn adapts the heat output of the air heater.

This results in an optimised storage stratification with a higher temperature maintained in the storage feed over a longer period. The heating times (day and week program) can be adjusted via the integrated timer.

Parameter menu
Air heater

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** Air heater is switched off. ▪ **Day / Off** The air heater is controlled in accordance with a timer program. By day controlled with return flow target value, by night air heater is switched off. ▪ **Day** Controlled with return flow target value (continuous operation). ▪ **Manual** The pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Day / Off
02	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available.	1
03	Heating period 1, heating day: Day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available in day / off operating mode.	Mon to Sun
04	Heating period 1, start: Set switch-on time for the air heater. ⓘ This setting is only available in day / off operating mode.	06:00

Screen number	Parameters	Factory setting
05	Heating period 1, end: Set switch-off time for the air heater. ⓘ This setting is only available in day / off operating mode.	22:00
06 – 23	Heating periods 2-7: Dependant on the number of heating periods (figure number 2), comprising heating days, start and end.	-
24	Return temperature: Desired return flow temperature	60°C
25	ECO mode: The air heater is switched on and off depending on requirement by the ECO economy-controller.	Yes
26	Switch-off under system temperature: Should the air heater group be switched off when the system temperature drops below a minimum?	No
27	Frost protection function: With the frost protection function switched on the air heater will be switched on if there is a danger of frost.	Yes
28	Excess heat take-off: If there is a danger of the PYROMAT ECO overheating (e.g. through too much fuel being fed in) then the excess heat can be taken off if desired. The air heater is controlled under "Maximum flow temperature".	No

6.1.5 Controller for annexes

The pipeline will suffer a drop in temperature commensurate with the weather-led heating control. The charging of the utility water heater is carried out with the maximum set supply temperature.

To do this the hot water is diverted by a valve to the utility water heater. This is extended to ancillary time periods by the integrated timer, whereby the room unit will be interrupted for a short time.

Parameter menu
Annexes

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** The room unit is switched off. ▪ **Day / Night** The room unit is controlled in accordance with a timer program. By day controlled with normal temperature, by night with a reduced temperature. ▪ **Day / Off** The room unit is controlled in accordance with a timer program. By day controlled with normal temperature, by night the room unit is switched off. ▪ **Day** Permanent normal temperature. ▪ **Night** Permanent reduced temperature. ▪ **Manual** The pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Day / night
02	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available.	1
03	Heating period 1, heating day: Day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available with day / night or day / off operating modes.	Mon to Sun

Screen number	Parameters	Factory setting
04	Heating period 1, start: Set switch-over time from reduced temperature or off to normal temperature. ⓘ This setting is only available with day / night or day / off operating modes.	06:00
05	Heating period 1, end: Set switch-over time from normal temperature to reduced temperature (or off). ⓘ This setting is only available with day / night or day / off operating modes.	22:00
06 – 23	Heating periods 2-7: Dependant on the number of heating periods (figure number 2), comprising heating days, start and end.	-
24	Flow temperature at +5°C outside temperature.	43°C
25	Flow temperature at -15°C outside temperature	64°C
26	Temperature room day: Target room temperature in day operation. ⓘ This setting is only available in conjunction with the optional thermostat.	20°C
27	Temperature room night: Target room temperature in night operation. ⓘ This setting is only available in conjunction with the optional thermostat.	15°C
28	Night flow temperature drop of: The temperature set is subtracted from the calculated flow temperature when night drop-down is operating.	-6°C
29	Flow temperature, maximum: Maximum limit for flow temperature.	70°C
30	ECO mode: The heating is switched on and off depending on requirement by the ECO economy-controller.	Yes
31	Switch-off under system temperature: Should the room unit group be switched off when the system temperature drops below a minimum?	No
32	Frost protection function: With the frost protection function switched on the room unit will be switched on if there is a danger of frost.	Yes
33	Excess heat take-off: If there is a danger of the PYROMAT ECO overheating (e.g. through too much fuel being fed in) then the excess heat can be taken off if desired. The room unit is controlled under "Maximum flow temperature".	No

Screen number	Parameters	Factory setting
34	Operating mode: Operating mode selection. ▪ **Off** Utility water heating is switched off. ▪ **Timer** The utility water heating is controlled in accordance with a timer program. The boiler is only heated up during the heating time. ▪ **On** The boiler is heated up when there is a request for heat and when the system temperature is sufficient. ▪ **Manual** The pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	Timer
35	Number of heating periods: The week program is entered in the form of heating periods. Each week program comprises heating days, start and end. There are a maximum of 7 heating periods available.	1
36	Heating period 1, heating day: Day or days for which the switching times are to be applied. The heating days are selected with keys F1 (for Monday) to F7 (for Sunday). One button press → day selected, one further button press → day deselected. ⓘ This setting is only available in timer operating mode.	Mon to Sun
37	Heating period 1, start: Adjust start release of utility water heating. ⓘ This setting is only available in timer operating mode.	06:00

Screen number	Parameters	Factory setting
38	Heating period 1, end: Adjust end release of utility water heating. ⓘ This setting is only available in timer operating mode.	22:00
39 – 56	Heating periods 2-7: Dependant on the number of heating periods (figure number 35), comprising heating days, start and end.	-
57	Utility water temperature: Setting the desired utility water temperature.	60°C

6.1.6 Remote supply line controller

For an annex with a separate heat distribution system that is supplied with heat via a remote supply line. The temperature of the remote supply line is pre-controlled for the minimum pipeline loss, in accordance with the request of the heat distribution system.

Parameter menu
Remote supply line

Screen number	Parameters	Factory setting
01	Heating - operating mode: Operating mode selection. ▪ **Off** The pump is switched off, the valve is closed. ▪ **Automatic** Control to required temperature. ▪ **Manual** The pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	automatic
02	Frost protection function: With the frost protection function switched on the remote supply line will be switched on if there is a danger of frost.	Yes
03	Flow temperature, minimum: Set the desired minimum temperature on request.	20°C
04	Flow temperature, maximum: Maximum limit for flow temperature.	60°C

6.1.7 Solar controller

Utility water heater

Application for simple solar systems as single control circuit for heating the utility water in the solar utility water heater.

The solar utility water heater is an additional module for the utility water heater controller without quantity regulation (with quantity regulation).

If the solar collector is warmer than the lower utility water then the utility water will be heated by the solar collector.

Utility water and heating

Application for larger solar system for heating the utility water in the solar utility water heater and for heat input to the heat storage tank as a triple control circuit heating system.

The first circuit serves to heat the utility water, the second circuit serves to heat the heat storage tank back/bottom and the third circuit serves to heat the heat storage tank front/top.

The heating of the heat storage tank is carried out with an exterior plate heat exchanger. The secondary pump is switched on with the change over from utility water heater to heat storage tank. This pump is then in operation with the solar pump.

For optimal function the flow through the secondary circuit must be matched to the primary circuit, e.g. with a flowmeter in the primary and secondary circuits.

Parameter menu Solar

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** The pump is switched off, the valve is closed. ▪ **Automatic** Automatic heating of the solar utility water heater via differential control. ▪ **Manual** Emergency operation: Solar and secondary pumps are switched on, the valves are not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	automatic
02	Utility water temperature, maximum: Maximum utility water temperature with solar heating.	65°C

Screen number	Parameters	Factory setting
03	Utility water precedence: ▪ **Optimised**: Utility water charging prioritised - if however the solar yield is not sufficient to completely charge the utility water heater then priority switched to solar heating. If the solar yield increases (cyclic monitoring) sufficiently that utility water heating is possible then the utility water is switched back to solar heating again. ▪ **Absolute**: Utility water charging has absolute priority - i.e. Solar heating is only authorised after the utility water heater is fully charged. ▪ **No**: Solar heating utility water / heating commensurate with temperature differential collector / utility water bottom or collector / storage bottom. Display only for extension via solar/utility water controller and heating	Optimised
04	Collector - utility water, target differential: Temperature difference between solar collector and utility water bottom to solar utility water heating.	10°C
05	Collector/storage, target differential: Temperature difference between collector and storage-Bottom for solar heating heater.	15°C
10	Operating hours counter	-

6.1.8 Heat generator controller

Single

An auxiliary heat generator is automatically switched in to cover the heat demand (stand-alone) after the storage heat take-off.

Only the PYROMAT ECO can charge the storage. If this is put into operation then the auxiliary heat generator switches off and the closed shut-off valve prevents it being flooded through.

Single flexible

An auxiliary heat generator is automatically switched in to cover the heat demand (stand-alone) after the storage heat take-off.

Only the PYROMAT ECO can charge the storage. If this is put into operation then the auxiliary heat generator switches off and the closed shut-off valve prevents it being flooded through. The boiler temperature is controlled flexibly, commensurate with the heat demand, to the minimum temperature.

parallel

An auxiliary heat generator is switched in automatically when required. This can be done after the heat take-off of the storage in order to cover the complete heat demand (stand-alone operation), or the auxiliary heat generator can serve to cover a spike in heat demand (parallel operation to the PYROMAT ECO).

ⓘ For parallel operation a burner group is required for heat dissipation and this will also serve to uphold the return line.

Parameter menu Heat generator

Screen number	Parameters	Factory setting
01	Operating mode: Operating mode selection. ▪ **Off** The auxiliary heat generator is switched off. ▪ **Automatic** Automatic enabling of the auxiliary heat generator by the demand of a heat consumer or (only heat generator controller parallel) when the wood burner temperature drops below a pre-settable switch-in temperature. ▪ **On** The auxiliary heat generator is enabled. ▪ **Manual** The auxiliary heat generator is enabled and (only heat generator controller parallel) the pump is switched on, the valve is not controlled. ⓘ Use this setting only for emergency operation if a fault message is shown on the display. 1. Inform your heating specialists for further instructions on fault rectification.	automatic

Screen number	Parameters	Factory setting
02	Switch-on delay: The release occurs after the time set has elapsed.	15 minutes
03	Switch-on temperature system target temperature: If the system temperature drops below the system target temperature by this value then the switch-on delay (figure number 2) starts to run.	-15°C
04	Switch-off temperature system target temperature: Switch-off differential for parallel operation and accumulator charging set to NO.	-5°C
05	Boiler flow, maximum:	80°C
06	Boiler flow, minimum:	20°C
07	Return temperature target: Set target value for return temperature.	50°C
08	Load storage: Should the storage be heated up by the auxiliary heat generator?	No
09	Load storage to: Up to which heat storage sensor should the storage be loaded?	Storage top
10	Load storage to: Up to which temperature on the selected storage sensor should the auxiliary heat generator heat the storage?	70°C
12	Service function, auxiliary heat generator. Maintenance function for specialists.	No
13	Operating hours counter	-

7 Servicing, cleaning

7.1 Safety regulations

Warning!

Danger of burning due to hot system parts and ash!

1. Allow heating system to cool down.
2. You should touch the unit only at the handles and other identified parts.
3. Never touch the flue ducts or their mountings.
4. Use protective gloves.
5. Use the cleaning tool supplied for cleaning.
6. Never remove the ash box when system is running.

Danger!

General hazard!

Serious injuries due to electric shock.

1. When working on the heating system it must be de-energised either at the separate fuse or by disconnecting mains cable at the rear of the boiler.
2. Secure heating system against being switched on again.
3. Maintain secure condition during all work.
4. Never clean electrical system components with high pressure or steam cleaners.
5. Clean electrical system components with a suitable vacuum cleaner.

Warning!

General hazard!

Serious injuries due to operating error by insufficiently trained personnel.

1. Only trained and experienced personnel may perform maintenance work on the heating system.
2. Training personnel may only work on the heating system whilst under supervision.

Observe disposal regulations!

1. Observe the national regulations when disposing of any ancillary material, waste and system parts.

7.2 Annual general inspection

ⓘ Regular cleaning and maintenance of the heating system is a prerequisite for years of trouble-free operation and to achieve the maximum possible power with the optimum efficiency.

Köb Customer Service personnel are available for the inspection and maintenance of the heating system.

Contact our customer service for the annual general inspection.

Köb Customer Service personnel will be glad to submit an offer and agree on a schedule for the maintenance operations.

Customer services:	T 0043 / (0) 5574 / 6770 – 0 F 0043 / (0) 5574 / 65707 office@kob.cc

7.3 Maintenance overview

ⓘ The cleaning intervals can change depending on the type of fuel, the proportion of fine parts and the method of operation.

Maintenance overview PYROMAT ECO

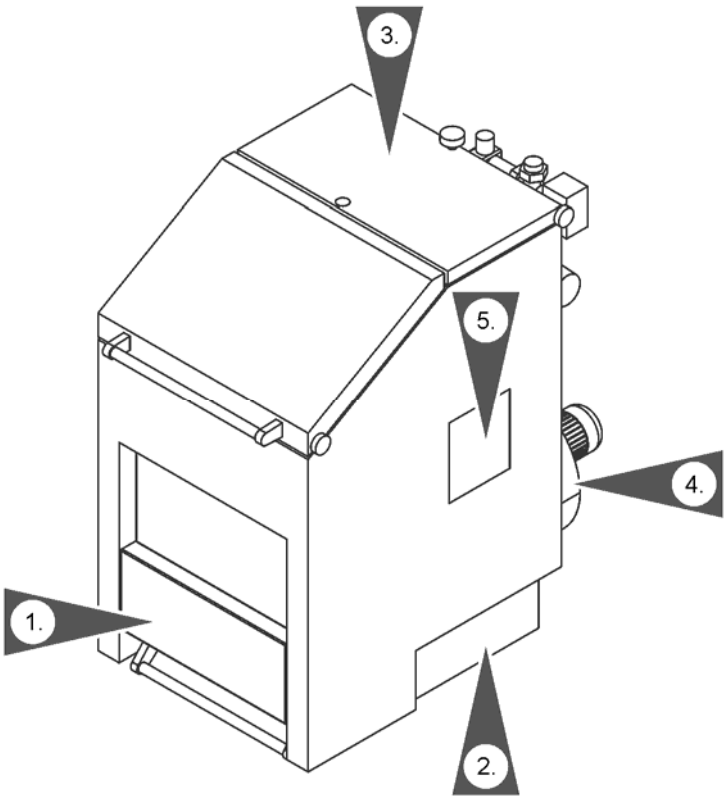


Fig. 12 Overview PYROMAT ECO front

1	Ash pan, lower combustion chamber	**2**	Ash pan bottom, secondary air channel, ash pan pipe heat exchanger
3	Sight glass, pipe heat exchanger	**4**	Exhaust blower
5	Combustion chamber top		

Maintenance intervals

PYROMAT ECO	System operator	Customer service department
Daily / before each heat up process		
Inspect ash pan and combustion chamber, clean if necessary.	X	
Weekly / before each heat up process		
Clean bottom ash pan.	X	
Check level of ash pan and pipe heat exchanger and empty container if necessary.	X	
Exhaust gas deduster (optional): Check level of ash and empty container if necessary.	X	
Every 300 operating hours		
Clean sight glass.	X	
Clean secondary air channel.	X	
Clean pipe heat exchanger.	X	
Every 900 operating hours		
Clean exhaust gas blower.		
Exhaust gas deduster (optional): Check exhaust path for free passage, clean if necessary.	X	
Check all seals for damage and have these replaced if necessary.	X	X
Every 1800 operating hours		
Clean top combustion chamber.	X	
Every 5 years		
Replace back-up battery in the controller.	X	

7.4 Maintenance activities

Ensure that the following preconditions are met before work begins:

- Heating system is out of operation.
- Mains plug disconnected.
- Boiler has cooled down.

ⓘ Disconnect the mains plug only for maintenance or repair purposes! The lambda sensor is otherwise not heated, and this can lead to the lambda sensor being damaged if the system is switched off for an extended period of time.
The pumps are periodically and briefly switched on in order to flush the heating system and prevent the pumps from jamming.

ⓘ Plug the mains plug back in again after completion of the maintenance work.

7.4.1 Clean ash pan, combustion chamber bottom (1)

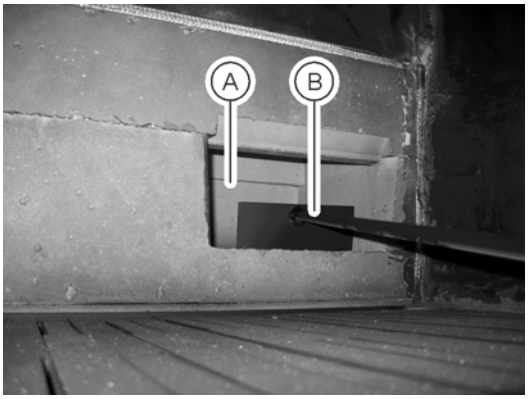


Fig. 13 Ash pan, lower combustion chamber

A	Combustion chamber
B	Cleaning device

1. Fold up ash pan door.
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. Push the ash towards the ash pan door using the combustion chamber cleaning device.
4. Pull out ash pan and remove ash in suitable container.

Warning!

Danger of fire from hot ash!

Hot ash can ignite filters and plastic in an unsuitable vacuum cleaner.

1. Use an appropriate, special ash vacuum.
2. Under no circumstances use a plastic domestic vacuum cleaner with paper/material filters.

5. Clean ash pan with hand brush or ash vacuum cleaner (optional).
6. Insert ash pan and close ash pan door.

7.4.2 Clean bottom ash pan (2)

1. Open the cleaning door:
   Release catch and fold cover away to the side,
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. Pull out ash pan and remove ash in suitable container.
4. Clean ash pan with hand brush or ash vacuum cleaner (optional).
5. Insert ash pan and close cleaning door.
6. Turn lock until cover is sealed closed.

ⓘ Ensure that all cleaning doors and cover are sealed closed! A poorly closed cleaning lid can lead to a poor combustion.

7.4.3 Clean pipe heat exchanger (3)

1. Open top cleaning lid:
   Release lock and lift cover up until the safety catch engages.
2. Visual check of seals:
   Check for wear and damage and replace if necessary.

P**YROMAT ECO - model**	**Turbolators installed as standard**
35 - 65, 85, 81, 151	Yes
75, 61, 101	No

Repeat the following steps until the pipe heat exchanger is clean:

1. Remove turbolators and clean with brush/wire brush.
2. Clean heat exchange pipes with cleaning brush.
3. Sweep any ash lying on top of the pipe heat exchanger down into the combustion chamber.
4. Attach the turbolators.
5. Close cleaning lid: Lift cover slightly, lift safety catch and close cover.
6. Turn lock until cover is sealed closed.

Empty the ash pan

1. Open cleaning door:
   Release catch and fold cover away to the side,
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. Pull out ash pan and remove ash in suitable container.
4. Clean ash pan with hand brush or ash vacuum cleaner (optional).
5. Insert ash pan and close cleaning door.
6. Turn lock until cover is sealed closed.

ⓘ Ensure that all cleaning doors and cover are sealed closed! A poorly closed cleaning lid can lead to a poor combustion.

7.4.4 Clean exhaust blower (4)

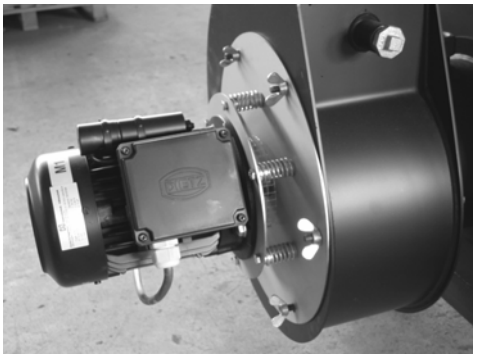


Fig. 14 Exhaust blower

Fig. 15 Motor with impellor, detached

1. Release exhaust blower connector from boiler.
2. Remove motor with impellor from exhaust blower box:
   Remove all wing nuts and draw out motor with impellor.
3. Remove ash from the impellor with a brush or wire brush.
4. Install motor with impellor into exhaust blower box:
   Fasten all wing nuts tightly by hand.
5. Connect exhaust blower connector to the boiler.

7.4.5 Clean top combustion chamber (5)

1. Remove maintenance cover for combustion chamber left/right:
   Unscrew all wing nuts and remove maintenance cover.
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. Push the ash down using the cleaning device or remove it with the ash vacuum (optional).
4. Attach maintenance cover and fasten all wing nuts tightly by hand.

7.4.6 Clean exhaust gas deduster (optional)

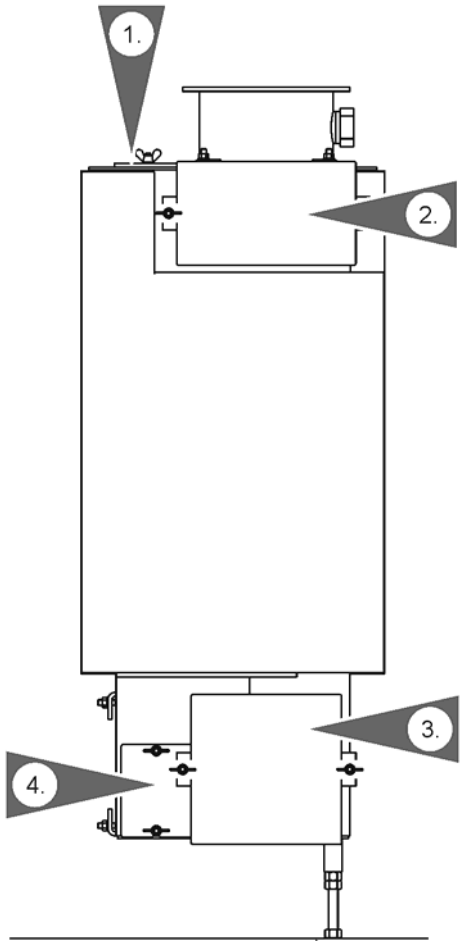


Fig. 16 Exhaust gas deduster

Remove ash

1. Remove left or right maintenance cover (3, 4):
   Unscrew all wing nuts and remove maintenance cover.
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. Pull out ash pan and remove ash in suitable container.
4. Clean ash pan with hand brush or ash vacuum cleaner (optional).
5. Insert ash pan.
6. Attach left or right maintenance cover (3, 4):
   Fasten all wing nuts tightly by hand.

Check exhaust gas path

1. Remove left and right maintenance covers (1 and 2):
   Unscrew all wing nuts and remove maintenance cover.
2. Visual check of seals:
   Check for wear and damage and replace if necessary.
3. If the inlet cylinder is heavily soiled with ash:
   Remove ash and deposits from the inlet cylinder with a brush or wire brush.
4. Mount the left and right maintenance covers (1 and 2):
   Fasten all wing nuts tightly by hand.

8 Error correction

8.1 Safety regulations

Warning!

General hazard!

Danger due to extant faults in the heating system.

1. If errors arise then you must shut-down and secure the heating system.
2. Report errors to the responsible department or person immediately.
3. Correct errors immediately.
4. No other personnel may be located in the hazardous area of the heating system while performing error corrections.

8.2 Procedure for error correction

1. Identify the malfunction.
2. Check the malfunction.
3. Decide whether you will rectify fault yourself or if you will notify Köb customer service.
4. Rectify source of the malfunction.
5. Cancel error report on the controller with OK.

8.3 Error report table

8.3.1 Heat generation

No.	Error report display	Error sensor	Possible cause	Check, rectification
01	**Over temperature** Function keys F1, F2 and F3 illuminate red.	▪ TLSS in the front panel underneath the firebox door.	▪ Incorrect target value setting in the control module. ▪ Defective system part (temperature sensor, pump or valve). ▪ Heat take-off suddenly decreases to zero. ▪ Too much wood filled in. ⓘ The heat generated by this can lead to an over temperature.	1. Identify cause of heat take-off being too small. 2. Check function of temperature sensor, burner circuit pump and modulating valve (burner control valve). 3. Activate "Excess heat take-off" function. 4. Unscrew the protective cap on the TLSS and press the reset button (only possible after boiler temperature drops below 70 °C) and press OK. 5. Before heating up and re-filling, make sure that the generated amount of heat can be withdrawn from the heating system and stored.
03 to 17	**Sensor interrupted or shorted. . .** Function key F3 illuminates red.	▪ Sensor. . .	▪ Damage to the sensor wiring. ▪ Error sensor defective.	1. Contact an electrician.
09	**Lambda sensor** Function key F3 illuminates red.	▪ Lambda sensor rear on the boiler	▪ Fault sensor heavily soiled. ▪ Error sensor defective. ▪ Fault in the electronics.	1. Have the lambda sensor cleaned or replaced by electrician. 2. Have lambda sensor calibrated by electrician. 3. Cancel error with OK.
19	**Repeat heat up** Function key F3 illuminates red.	▪ Exhaust gas sensor ▪ Lambda sensor	▪ Fuel too wet.	1. Use appropriate dried fuel.
			▪ Lambda sensor inaccurate.	1. Have lambda sensor calibrated by electrician. 2. Cancel error with OK.
			▪ Wood pieces poorly filled.	1. Settle the wood pieces in the combustion chamber such that sufficient air can flow through the gaps.

No.	Error report display	Error sensor	Possible cause	Check, rectification
81 to 93	**BUS fault, no connection to. . .** Function key F3 illuminates red.	▪ Data transmission line, bus connection	▪ Bus connection interrupted.	1. Check the connectors. 2. Briefly interrupt the power supply. (new) 3. Defective data transmission line? Have data transmission line replaced. 4. Call suppliers.

8.3.2 heat distribution

No.	Error report display	Error sensor	Possible cause	Check, rectification
01 to 27	**Sensor interrupted or shorted. . .** Function key illuminates red.	▪ Sensor. . .	▪ Damage to the sensor wiring ▪ Error sensor defective	1. Contact an electrician.

9 De-commissioning for an extended break in heating

If you do not wish to use your heating system you can switch it off. We recommend that you consult with your heating specialists before and after extended periods during which the heating system is out of use.

They can take appropriate measures if necessary, e.g. to protect the system from frost or to preserve the heating surfaces.

ⓘ No special measures are required in the event of a temporary decommissioning.

9.1 De-commissioning

Switch off the heating system

1. Switch off the heating system at the controller.

ⓘ Disconnect the mains plug only for maintenance or repair purposes! The lambda sensor is otherwise not heated, and this can lead to the lambda sensor being damaged if the system is switched off for an extended period of time.
The burner pump is periodically and briefly switched on in order to flush the heating system.

2. Remove any incrustations from the firebox and boiler wall using a spatula or flat scraper.
3. Empty the heating system if there is any danger of frost while observing the heating installer's instructions or have a frost protection agent added.

9.2 Recommissioning

Ensure that the following preconditions are met:

- Operating pressure in the heating system is checked.
- The heating system is ventilated.
- All doors and covers are closed.
- Slide valves for heating feed and return are open.
- Ventilation apertures are open.
- Preservation agent is removed in accordance with the preservation measures.
- Sufficient fuel is available.

ⓘ Information regarding the heat-up can be found in chapter "5.5 Log operation" or "5.6 Oil/gas burner operation (optional)".

10 Disposal

Observe disposal regulations!

Observe the national regulations when disposing of any ancillary material, waste and machine parts.

ⓘ Contact your installation specialists or Köb customer services before final dismantling of the heating system.
The dismantling of the heating system is carried out logically, in the reverse order to the assembly; consult the installation instructions.

11 Notes

12 Appendix

The following information is also enclosed with the operating and maintenance instructions after this page:

- Data sheet 2010/1-5 "Boiler system PYROMAT ECO".

The burner:

This beautifully designed burner makes operation very easy when heating with logs and remnant wood, and it also allows an oil burner to be connected. Filling is done conveniently from the top, and the burn-out happens at the bottom. The re-incineration is carried out in optimum fashion in a patented combustion chamber made of refractory concrete. The supply of combustion air (primary and secondary airflow) is cleverly controlled as a function of the lambda sensor and the temperature of the exhaust gas. The surplus heat produced is conducted into the accumulators with precise stratification.
Equipped with an absolutely silent and long-lasting exhaust fan, the burner is of high quality and solidly constructed. Maximum burner efficiency rates along with clever usage of residual heat in the burner guarantee maximum convenience and minimum fuel requirements.
The burner group, the exhaust fan, incl. the exhaust gas sensor and the lambda sensor are all wired to the burner in plug-and-play fashion, making installation especially simple. The individual parts can be easily detached for service purposes later on.

Max. flow temperature:	100°C
Max. operating pressure:	3.0 bar
Test pressure:	5.0 bar
Safety heat exchanger:	Built-in & ready for use

Pre-installed burner group
The burner group is pre-installed on the connecting flange. It is made up of the burner pump, burner control valve, and the forward and return flow sensors, incl. fittings. The pump is built in between two shut-off devices.

The plug-and-play ECOTRONIC for a burner system with storage management:
The ECOTRONIC control system is a decentralised microprocessor system (CAN-bus). To regulate the burner system with storage management, the ECOTRONIC consists of a module integrated in the burner and the control module.
The control module (300 mm wide x 280 mm high x 100 mm deep) mounts on the wall where possible and is connected to the burner via a data transmission line in plug-and-play fashion.

Functions:
- Output control system with storage management provided by continuously adjusting air vents, optimising heat-ups and burn-outs

Nominal load: during accumulator loading phase
Partial load: at the end of the accumulator loading phase

- An additional control circuit with a lambda sensor provides for perfect incineration and maximum efficiency rates.
- Keeping up the return temperature by means of the burner control valve provides for a long service life of the burner.
- During the start-up phase the complete heat output is available to the consumers (no diversion of heat into the accumulator via the return flow)
- Exact temperature stratification of the accumulator using the storage control valve enables long-lasting heat
- The primary air vent closes while wood is being reloaded to provide for safe reloading of wood
- Heat remaining in the boiler after burn-outs is completely exploited
- Help and service functions provide support
- Control of an additional oil burner on the PYROMAT
- The best possible protection against overheating is guaranteed by diverting heat to accumulators, disconnecting the exhaust gas fan and closing the air vents.

Scope of delivery:
- Burner with integrated electronic module, incl. temperature-limiting safety switch; plug-and-play exhaust gas fan with exhaust gas sensor and lambda sensor; ash drawers; stoking and cleaning device;
- Flanged on burner group with burner pump, burner control valve, forward and return flow sensors
- Storage control valve (uninstalled)
- Control module (300 mm wide, 280 mm high x 100 mm deep): display with background lighting and comprehensive display of text; simple, clearly laid out pushbutton operation for PYROMAT-ECO burner system
- Five pushbuttons for operating external controllers
- Three KTY heat accumulator sensors, incl. dipping shell (1/2" x 280 mm long) wired together to plug

Note:
- *Regarding data cable for connection to the control module (separate price item), see Spec Sheet 4020*

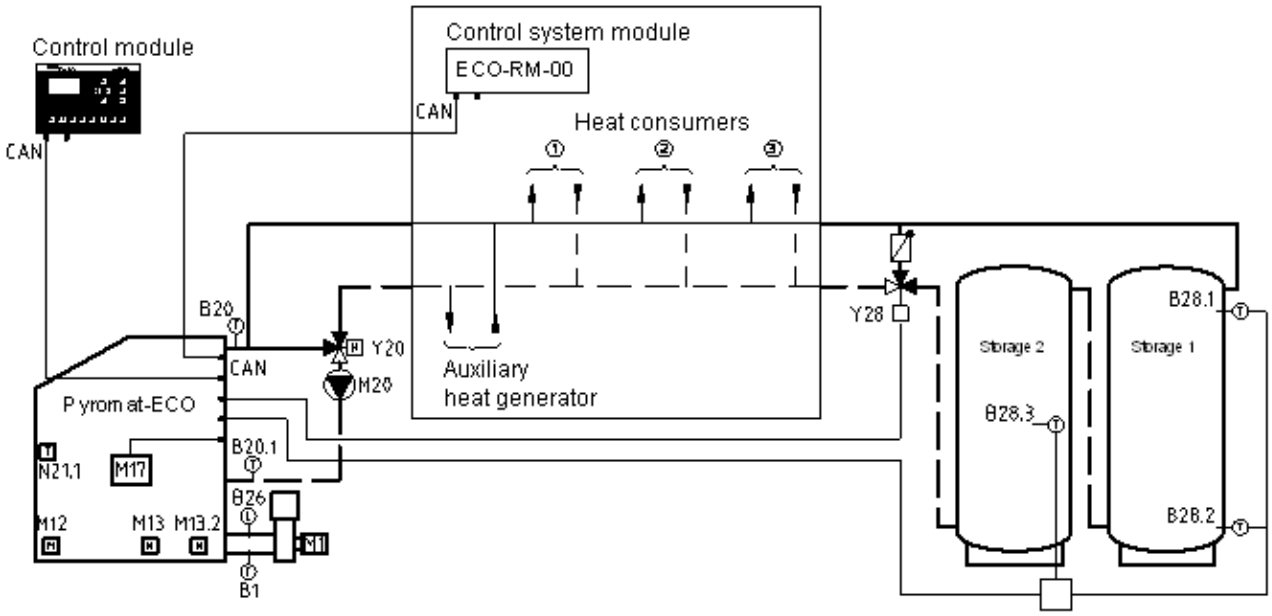
Schematic diagram with ECOTRONIC

ECOTRONIC with heating regulator units:
The ECOTRONIC can be expanded by a great number of heating control units (heat consumers, auxiliary heat generators) (refer to spec sheets, Category 4).
The operation of the external controllers is all carried out in the control module for the burner system.
Each controller is operated by a separate pushbutton.

The ECOTRONIC can be extended as follows:

1) *<u>Economical solution for small-scale systems with:</u>*
   Control module for external control systems [Art. No. ECO-BM00]
   Maximum of three controllers (see spec sheets, Category 4)

2) *<u>Ready-made solution for complex systems with</u>*
   Control system module (Art. No. ECO-RM00)
   With additional control system modules, up to 13 controllers can be integrated in the in ECOTRONIC (refer to spec sheets, Category 4)



Heat *accumulators* Refer to Spec Sheets 4700
Domestic water heaters: Refer to Spec Sheets 4750

PYROMAT-ECO with integrated manifold
One manifold with two or three consumer groups can be integrated with the PYROMAT-ECO burner.
In this design with the manifold attached, the boiler forms a compact overall system (refer to Spec Sheets 4600).

Spec Sheet
Burner System PYROMAT-ECO

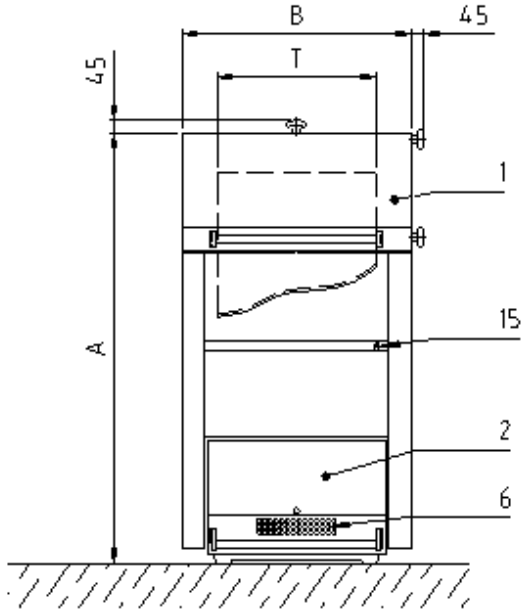
Technical data:

Trade name	Boiler PYROMAT-ECO..									
	35	**45**	**55**	**65**	**75**	**85**	**61**	**81**	**101**	**151**
Art. No.:	**KPM-ECO-35** 7387412	**KPM-ECO-45** 7387797	**KPM-ECO-55** 7387838	**KPM-ECO-65** 7387968	**KPM-ECO-75** 7388007	**KPM-ECO-85** 7387844	**KPM-ECO-61** 7387413	**KPM-ECO-81** 7387805	**KPM-ECO-101** 7388024	**KPM-ECO-151** 7387779
Nominal heat output [kW]	40	50	60	75	80	95	85	100	120	170
Minimum heat consumption, wood [kW]	35	38	45	55	60	75	60	75	90	110
Max. log length [m]	1/2	1/2	1/2	1/2	1/2	1/2	1	1	1	1
Firebox volume [l]	185	185	255	255	255	255	375	375	500	500
Boiler water volume [l]	130	130	170	170	210	210	230	230	300	300
Boiler weight without water [kg]	750	760	920	935	1040	1065	1300	1320	1680	1720
Test pressure [bar]	6	6	6	6	6	6	6	6	6	6
Max. operating pressure [bar]	3	3	3	3	3	3	3	3	3	3
Max. boiler temperature, wood [°C]	100	100	100	100	100	100	100	100	100	100
Min. return temperature [°C]	70	70	70	70	70	70	70	70	70	70
Resistance on water-bearing side (Diff. 10 K) [mbar]	32	32	62	62	98	98	56	56	112	112
Resistance on water-bearing side (Diff. 20 K) [mbar]	8	8	16	16	25	25	14	14	28	28
Thermal run-off safety valve: min. flow rate at 2.5 bar [kg/h]	2000	2000	2800	2800	3500	3500	3500	3500	5500	5500
Boiler efficiency nominal heat output wood [%]	87-92	87-92	87-92	87-92	87-92	97-92	87-92	87-92	87-92	87-92
Exhaust gas temperature, nominal heat output, wood [°C]	180	180	180	180	180	180	180	180	180	180
Exhaust gas mass flow nominal heat output wood [g/s]	30.4	35.2	44	56	60	68	58.4	72	88	108
Max. flue draught, wood [Pa] 1)	25	25	25	25	25	25	25	25	25	25
Nominal heat output, oil [kW]	35	38	45	55	60	75	60	75	90	110
Boiler efficiency Nominal heat output, oil [%]	87-92	87-92	87-92	87-92	87-92	97-92	87-92	87-92	87-92	87-92
Exhaust gas temperature Nominal heat output, oil [°C]	168	168	168	168	170	170	172	172	168	168
Chimney draught required [Pa] 2)	+-0	+-0	+-0	+-0	+-0	+-0	+-0	+-0	+-0	+-0
Electrical power, exhaust fan [kW]	0.08	0.08	0.08	0.08	0.15	0.15	0.15	015	0.25	0.25
Burner group										
Burner pump, Wilo model	RS 30/6		TOP-S 30/7		TOP-S 30/7				TOP-S 40/7	
Electrical power for pump [W]	46-93		85-195		85-195				220-390	
Pump output m³/h at mWS	2.5 at 6.5		7.5 at 7.0		7.5 at 7.0				16.5 at 7.0	
Burner control valve, Siemens model	VXG 48.32		VXG 48.32		VXG 48.40				VXG 48.40	
Drive for burner control valve, Siemens	SQS 35.00		SQS 35.00		SQS 35.00				SQS 35.00	
Weight of burner group [kg]	14		16		20				40	
Storage control valve, Siemens model	VXG 48.40		VXG 48.40		VXG 48.40				VBF 21.50	
Drive for storage control valve	SQS 35.00		SQS 35.00		SQS 35.00				SQK 33	
Weight of storage control valve [kg]	2.5		2.5		2.5				6.9	

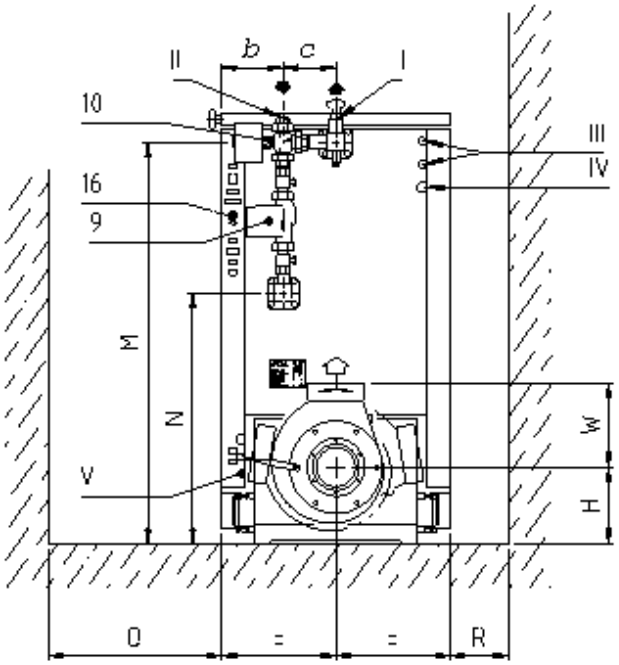
1) Maximum overpressure during the start-up phase (chimney cold) in the exhaust pipe after the exhaust fan
2) Do not install a chimney draught controller!

Dimensional drawing:

View from the front



View from the rear



View from the side

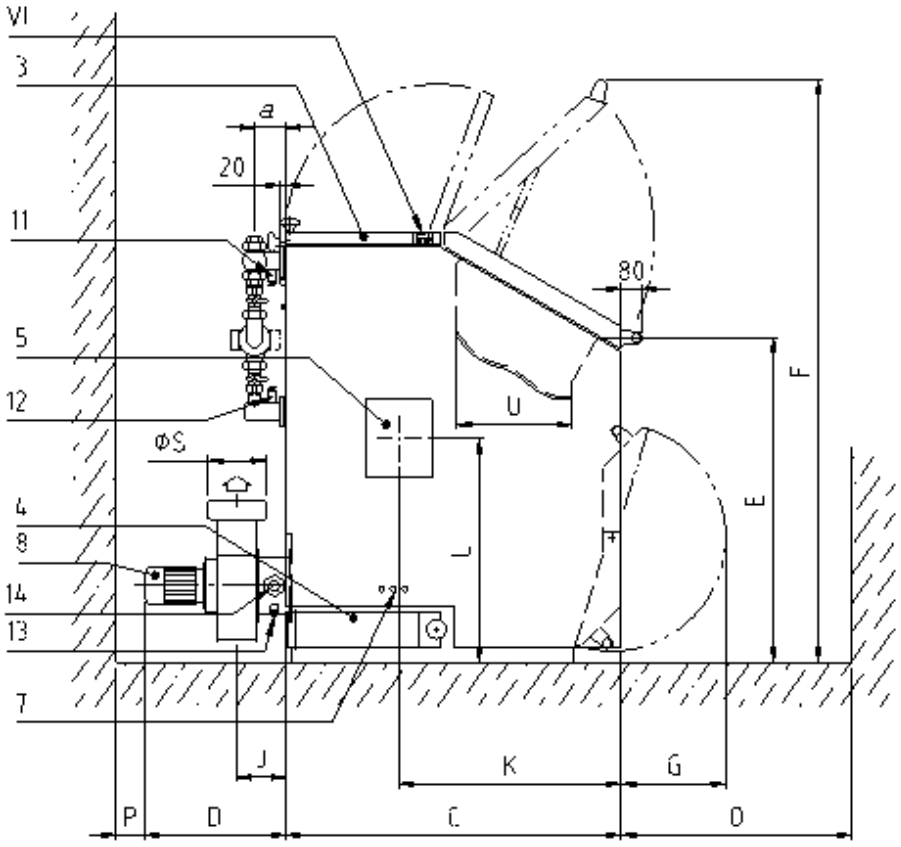


Table of dimensions:

Boiler PYROMAT-ECO [Art.-No.]		**KPM-ECO-35** 7387412	**KPM-ECO-45** 7387797	**KPM-ECO-55** 7387838	**KPM-ECO-65** 7387968	**KPM-ECO-75** 7388007	**KPM-ECO-85** 7387844	**KPM-ECO-61** 7387413	**KPM-ECO-81** 7387805	**KPM-ECO-101** 7388024	**KPM-ECO-151** 7387779
Connections:											
I	Forward flow, connection Bsp	R 1¼"	R 1¼"	R 1¼"	R 1¼"	R 1½“	R 1½“	R 1½“	R 1½“	R 1½“	R 1½“
II	Return flow, connection Bsp	R 1¼"	R 1¼"	R 1¼"	R 1¼"	R 1½“	R 1½“	R 1½“	R 1½“	R 1½“	R 1½“
III	Safety valve Bsp connection	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“
IV	Sensor for run-off safety valve Bsp connection	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“
V	Drain valve	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“	R ½“
VI	Sight glass (transport hook) connection Bsp	R 1“	R 1“	R 1“	R 1“	R 1“	R 1“	R 1“	R 1“	R 1“	R 1“
Dimensions [mm]:											
A	Height of casing	1433	1433	1490	1490	1490	1490	1433	1433	1490	1490
B	Width of casing (dismantled)	795 (686)	795 (686)	795 (686)	795 (686)	795 (686)	795 (686)	1324 (1246)	1324 (1246)	1324 (1246)	1324 (1246)
C	Length of casing	958	958	1163	1163	1313	1313	1018	1018	1353	1353
D	Length of exhaust blower	500	500	500	500	630	630	630	630	630	630
E	Filling height	1134	1134	1134	1134	1134	1134	1134	1134	1134	1134
F	Height of lid, open	1892	1892	2012	2012	2012	2012	1892	1892	2012	2012
G	Radius of ash door	365	365	365	365	365	365	365	365	365	365
H	Outlet, boiler	265	265	265	265	265	265	265	265	265	265
J	Outlet, exhaust blower	175	175	175	175	300	300	300	300	300	300
K	Flange of oil burner	647	647	769	769	842	842	631	631	820	820
L	Flange of oil burner	770	770	773	773	813	813	770	770	876	876
M	Flange, forward flow, boiler	1331	1331	1389	1389	1386	1386	1328	1328	1386	1386
N	Flange, return flow, boiler	811	811	869	869	693	693	635	635	636	636
O	Space for operation	800	800	800	800	800	800	800	800	800	800
P	Min. distance to wall	100	100	100	100	100	100	100	100	100	100
Q	Space for cleaning	600	600	600	600	600	600	800	800	800	800
R	Min. distance to wall	200	200	200	200	200	200	400	400	400	400
S	Connection for exhaust blower. 1)	200	200	200	200	200	200	200	200	250	250
T	Width of firebox	550	550	550	550	550	550	1080	1080	1080	1080
U	Depth of firebox	300	300	400	400	475	475	300	300	400	400
W	Outlet, exhaust blower	293	293	293	293	293	293	293	293	293	293
Y	Width of handle	45	45	45	45	45	45	45	45	45	45
a	Connection, boiler	108	108	108	108	108	108	108	108	108	108
b	Connection, boiler	214	214	214	214	214	214	480	480	480	480
c	Connection, boiler	183	183	183	183	183	183	183	183	183	183
Operation and maintenance											
1	Firebox door										
2	Ash pan door										
3	Cleaning door, top										
4	Cleaning door, bottom										
5	Flange for attaching the burner slide-out system, maintenance cover to combustion chamber (on both sides)										
Electric drives											
6	Primary air vent with servomotor										
7	Secondary air vent with servomotor										
8	Motor for exhaust blower										
9	Burner pump										
10	Burner control valve with servomotor										
Electric connections and sensors											
11	Burner sensor										
12	Return circuit sensor										
13	Exhaust gas sensor										
14	Lambda sensor										
15	Burner control panel with temperature-limiting safety switch (TLSS)										
16	Sockets for electrical connection										

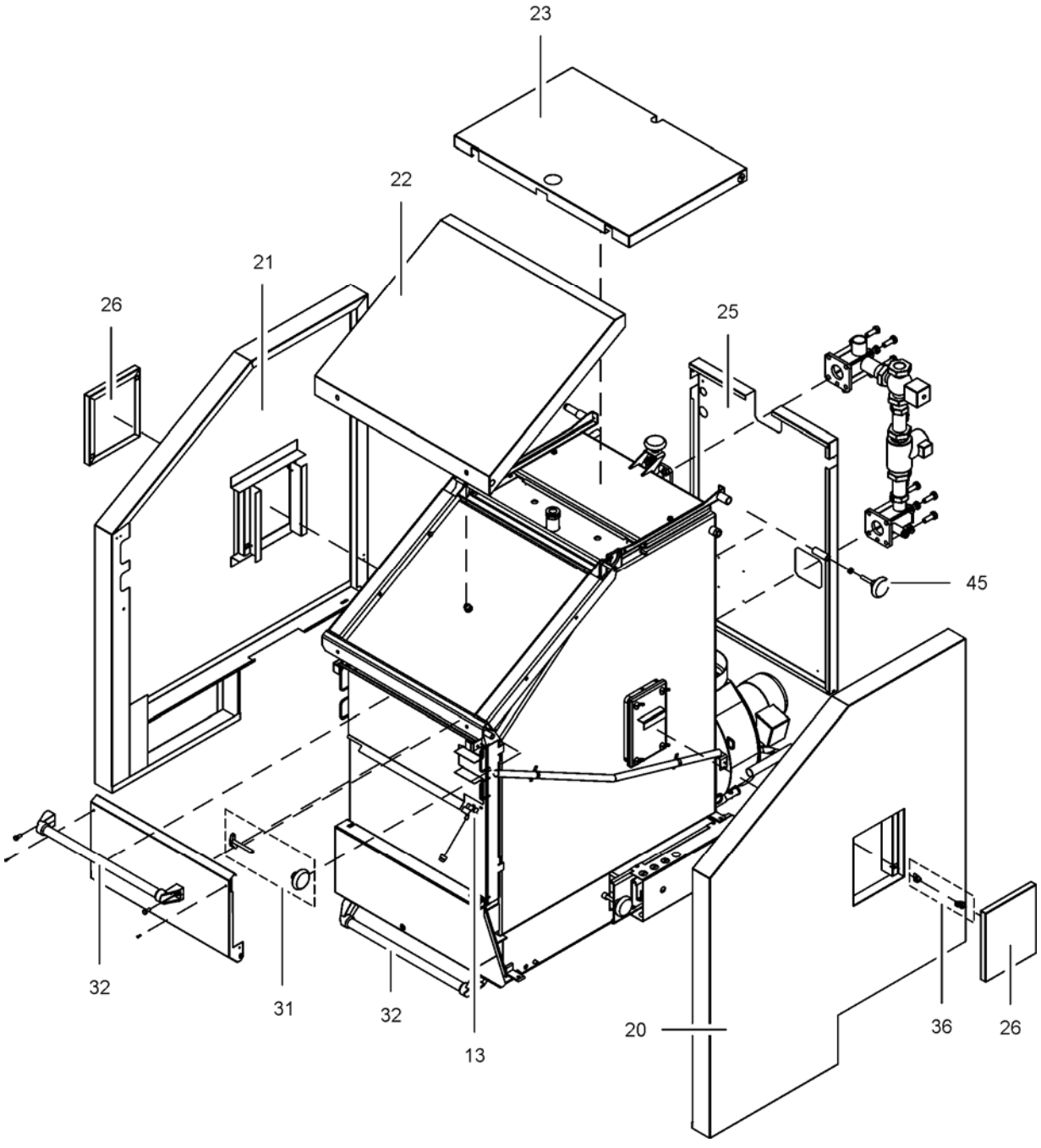
1) Reduction is possible to KPM-ECO-65 (160 mm or 180 mm)

Component List

Note for replacement orders!
List reference no. and part no. (see rating plate) as well as item number of the component (from this component list). Standard parts can be obtained at a local specialist shop.

001 Air vent, small, with motor (only for ECO 35, 45, 55 and 65)
002 Air vent, large, with motor
004 Cast iron bar (1 unit)
005 Gas compression spring, ash door (1 unit)
006 Gas compression spring, inlet cap
007 Stone set
008 Gaskets
009 Supalux board
010 Inner shell, inlet cap
013 STB 110 degrees
014 Servo drive
015 Exhaust temperature sensor
016 Temperature sensor
017 Lambda sensor
018 Recirculating pump
019 Drive train
020 Casing, right
021 Casing, left
022 Casing inlet cap
023 Casing, cleaning lid
024 Casing, front
025 Casing, rear
026 Insulating cover
031 Closure, access door
032 Handle, access door/ash door
033 Sight glass
034 Wirbulator (1 unit)
035 Insulation, cleaning opening
036 Clamp (4 units)
037 Lid, burner port
038 Ash box (1 unit)
039 Ash box, sideways
040 Ash box, sideways (only ECO 61, 81, 101 and 151)
044 Insulation, ash door
045 Mushroom knob

Components without illustration
011 Boiler control
012 Power supply, boiler control
027 Casing, above (only ECO 75, 85, 101 and 151)
028 Feather brush
029 Wire brush
030 Servo drive (only ECO 101 and 151)
041 Cable set, internal
042 Cable set, external
043 Cable set, stepper motor
046 Thermal run off safety valve
047 Control system module
048 Control module
049 Wall mount, control module
050 Weather sensor
051 Contacting temperature sensor
052 Reservoir temperature sensor
053 Collector temperature sensor
054 Assembly instructions
055 Operation and maintenance instructions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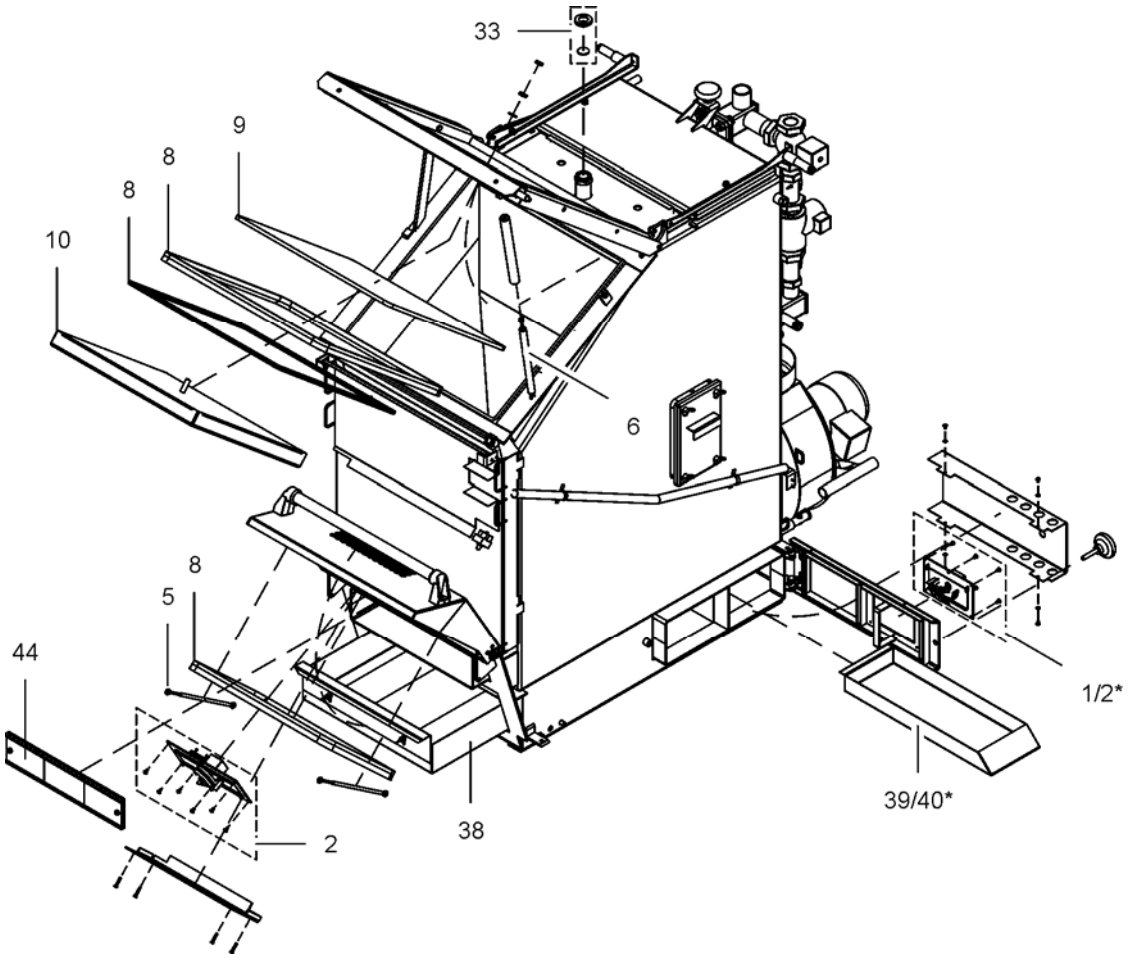
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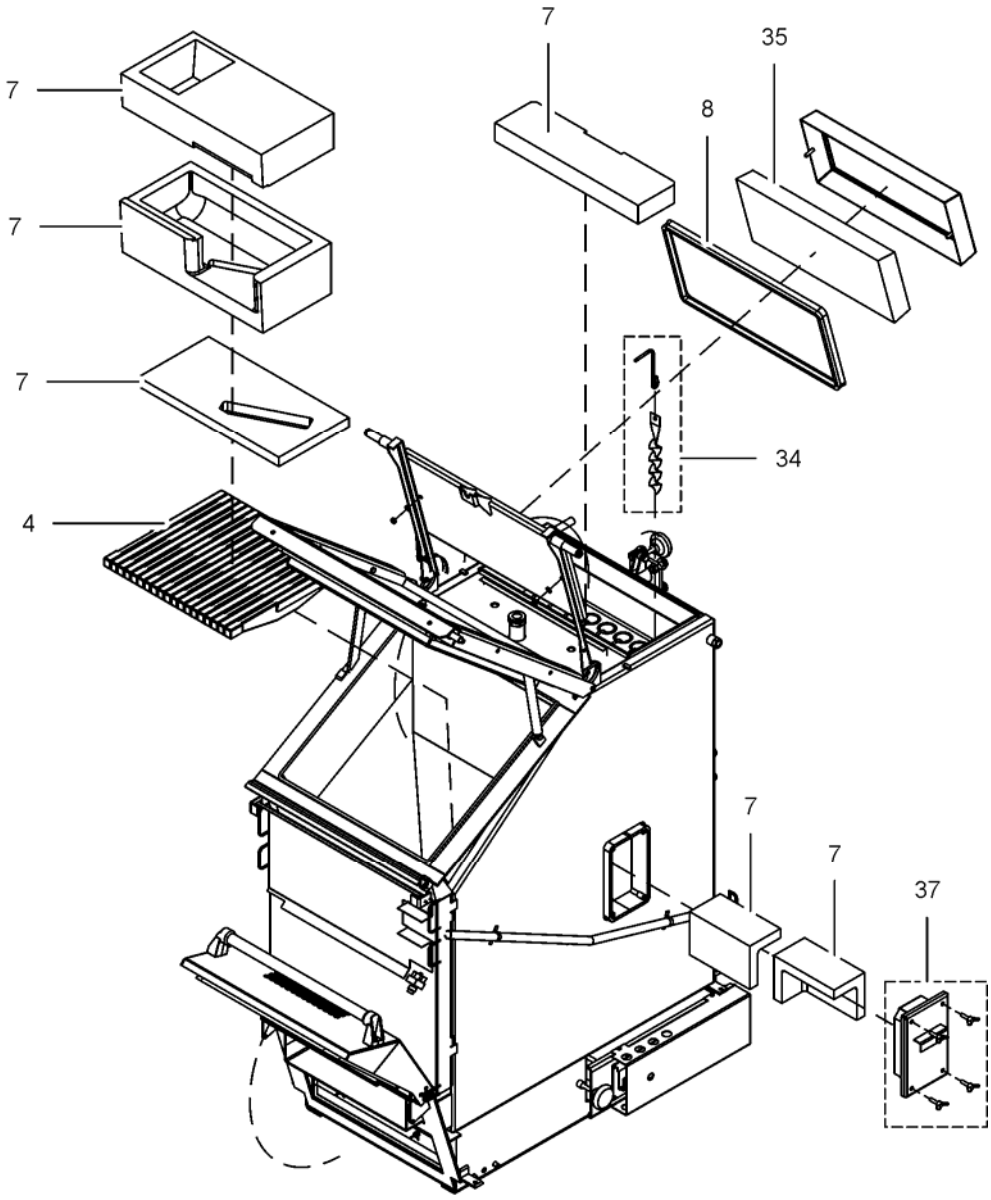
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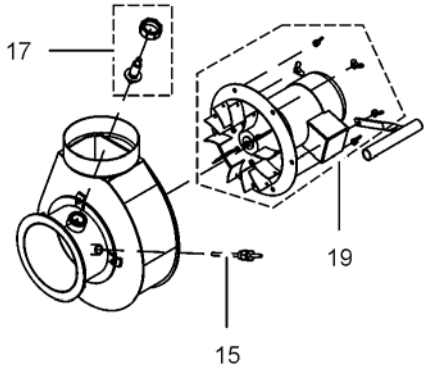
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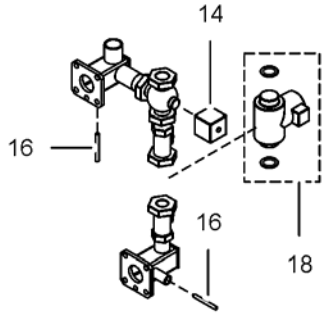
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