

# Commercial boiler **maximus L**

Operation manual for the system operator

Read carefully before operating.

DR-0159-EN / v16-202206

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# 1 About this manual

## Dear Customer,

To ensure reliable and efficient operation of your boiler, the following points are extremely important:

- Professional planning and installation of the heating system.
- Training of system operator in starting up the boiler.
- Regular maintenance by the operator.
- Regular maintenance by qualified personnel.
- Compliance with the specifications and information in this manual.

## Language

The language of the original manual is German. Versions of this manual in all other languages are translations of the original.

## Storage

Keep the manual for the entire service life of the product and ready to hand. The manual must be passed on to the new owner when the product is dismantled/reused. If the manual is lost or destroyed, request a new copy from the manufacturer.

## Tips and warnings

The instructions used in this manual are highlighted with symbols and signal words. The signal word indicates the level and nature of the danger.



Indicates information for correct handling of the product.



**CAUTION** - Material damage is possible if these instructions are not complied with.



**DANGER** - Failure to comply with this instruction poses a danger to people.

## Manufacturer

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# 2 Safety information

## Qualification of personnel

- The work procedures described in this manual must be carried out by qualified specialist personnel.
- Work on electrical components must only be performed by trained electricians and in accordance with the relevant rules and directives.

## Installation and commissioning

- System may only be installed and brought into operation by certified qualified personnel (SOLARFOCUS service technician or SOLARFOCUS service partner).

## Keep unauthorized persons and children away

- Danger of burns due to hot lines and hot components, risk of injury from mechanically moving parts. Keep unauthorised persons away, do not leave children unattended, and control access to the boiler room and fuel storage room.

## Safety devices

- Never disengage the safety equipment > 6 of the heating system. In case of failure, arrange for immediate repair.

## Maintenance and repair

- Perform maintenance activities at the specified intervals. No or incorrect maintenance leads to inefficient operation, higher failure risk of the boiler and increased potential for hazards.  
Recommendation: Conclude maintenance contract
- Have repairs carried out by qualified personnel only. Improper repairs can lead to risks for the user and impaired operation.
- Store hot ashes only in metal containers. Never put hot or warm ash in the dustbin. High risk of fire.
- For repairs use only original spare parts or parts approved by the manufacturer (e.g. standard parts).

## Damage to the system

- If the electrical insulation on cables, plugs, switches becomes damaged, switch off the power supply and have the insulation repaired.
- In the event of visible damage (e.g. thermal deformation, mechanical damage), operation of the system must not be continued. The system may only be operated if it is in perfect technical condition.

## 3 Warranty, guarantee, liability

- Guarantee claims can be made in accordance with a boiler maintenance agreement.
- Warranty claims can be made by the customer and the dealer has a legal responsibility to honour them.

### 3.1 Technical requirements for warranty and guarantee claims

The following technical requirements must be observed as a precondition for a warranty and guarantee claim.

Further information on the individual points can be found in the boiler's installation manual.

#### Regular maintenance and cleaning

- The boiler and the heating system components must be maintained and checked regularly.
- This is the prerequisite for the following:
  - Long-term reliability of the boiler function
  - Energy-saving and environmentally friendly operation of the boiler
  - Long service life of the boiler.
- Option/recommendation: Conclude maintenance contract.
- *Documentation* is crucial: When maintenance is performed by qualified personnel, the activities carried out/measures taken are documented in the maintenance log. It is advisable to keep a system book, especially when foregoing maintenance by qualified personnel (for documenting/as proof of one's own activities).

#### Fuel

- The fuel used must meet the specifications.
- Non-approved fuel may lead to inefficient combustion and cause damage to the boiler.
- Operation with coal, coke, waste is not permitted.

#### Specifications for the heating system's fill-up/-make-up water

- **Check pH value: this must be in the range of 8.2 to 9.5**
- Avoiding scale build-up (=limescale on heat exchanger surfaces):
  - Take the water hardness into account
  - Soften the fill-up water, or better: desalinate it.

- Avoiding water-side corrosion (is triggered by the oxygen in the water):
  - Correct system planning, correct dimensioning, take material combinations into account.
  - Repair leaks immediately.
  - Expansion tank (prevents air suction when the system cools down): Correctly set the pressure, check it regularly.
  - Existing underfloor heating: Take care with old, diffusion-open plastic pipes (separate the system).

#### Return temperature in the boiler

- A temperature below the dew point (leads to corrosion in the boiler) must be prevented by a sufficiently high return temperature in the boiler.
- The use of a return booster module is a prerequisite for guaranty claims.

#### Supply air to the heating boiler

- The supply air in the boiler must not contain any aggressive substances. These substances can cause corrosion in the boiler and chimney.
- Aggressive substances are, for example, chlorine or fluorine compounds (used in cleaning agents, solvents, adhesives, etc.).

### 3.2 Conditions for claims

For warranty and guarantee claims observe the following points:

- The warranty begins at the time at the time of handover (delivery note, commissioning log).
- The warranty period is calculated from the date of initial commissioning (according to the control's operating hour counter).
- The warranty periods are based on the relevant regulations.
- We must be notified promptly and accurately of any damage incurred, so that the cause can be clarified.
- If the system has defects despite correct installation (in compliance with the technical documentation), we grant a warranty provided that the system has been examined by the plant customer service (commissioning log).
- The guarantee applies to technical, construction-related faults and faults in the manufacture of the system that prevent correct and problem-free usage.
- We are not liable for parts that were not produced by SOLARFOCUS. However, we are prepared to transfer our existing claims against the producer (relating to this defect) to the buyer.

- In fulfilling the warranty/guarantee services, we shall cover only the assembly time and the materials used, but not any travel or accommodation costs necessary for the fitters/engineers or any return transport costs.
- SOLARFOCUS GmbH assumes no liability for any consequential costs of damages.
- The repair and/or warranty replacement shall be carried out on site or in the SOLARFOCUS factory at our discretion.
- The company SOLARFOCUS will determine whether such work requires a repair or whether the parts are to be replaced free of charge.

### 3.3 Claims rendered void

The warranty and guarantee claims are rendered void if one of the following points applies:

- Non-compliance with the technical requirements > 4
- Damage during transport.
- Wilful damage.
- Damage due to force majeure (water, fire, etc.).
- Non-observance of information in the planning, installation and operation manual.
- Insufficient energy or water, fault in the hydraulics.
- Incorrect operation, failure to perform maintenance and cleaning as prescribed.
- Commissioning and maintenance carried out by non-certified companies.
- Undocumented commissioning (no commissioning log) and/or maintenance (maintenance log).
- It is almost impossible to produce flawless painted parts; for this reason, slight defects that do not adversely affect proper use shall not be deemed as grounds for complaint.
- No claims can be accepted under the warranty if unauthorised intervention (or action that has not been explicitly approved by us the manufacturer) has been carried out. In addition, the goods must be paid for within the specified payment time-frame.

### 3.4 Limitation of liability

SOLARFOCUS GmbH assumes no liability for injury or material damage resulting from:

- Failure to observe the instructions in this manual.
- Use of the product for any purpose other than for its intended use.
- Employment of unqualified personnel.
- Use of non-approved spare parts.
- Technical modification of the product by the system operator.

## 4 Product information

### 4.1 Proper use

- The heating boiler **maxi<sup>mus</sup> L** is intended for heating up water in closed heating systems.
- Only use fuel as specified in the next chapter *Fuel*.
- The maximum running time per year is 3000 full-load hours.

### 4.2 Fuel

#### Pellets

Use wood pellets only in accordance with these specifications:

- Pellets according to the ISO 17225-2 standard, class A1.
- Pellets that meet the additional ENplus certification.
- Pellets that meet the additional DINplus certification.



#### Wood chips

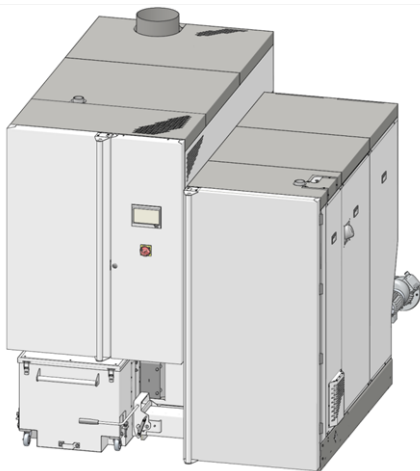
Use wood chips only in accordance with these specifications:

- Wood chips according to the EN ISO 17225-4:2014 standard
- Permissible classes A1, A2, B1  
Not permissible: Class B2
- Sizes P16S and P31S
- Moisture content maximum 35%(M35)

Detailed information on the classification of wood chips > 14

### 4.3 Product description

- **maxi<sup>mus</sup> L** is a boiler for firing wood pellets and wood chips.
- The boiler has an automatic fuel ignition system, automatic fuel supply and automatic cleaning of the heat exchanger.
- The ash produced is collected in an ash container, which must be emptied at regular intervals.



Heat exchanger | Burner

Abb. 2-1

#### 4.4 Spare parts

For repairs use only original spare parts or parts approved by the manufacturer (e.g. standard parts). The manufacturer cannot accept any liability for damage caused by spare parts not authorised by the manufacturer.

#### 4.5 Accessories

#### 4.6 Type plate

|  |                |   |             |
|--|----------------|---|-------------|
| <b>maxi</b> <b>mus</b> <b>300</b>          |                | Holzpellets<br>wood pellets                   | 45 - 299 kW |
| Typenbezeichnung<br>model designation      |                | Wärmeleistungsbereich<br>power range          |             |
| El. Anschluss<br>el. connection            | ~400 V / 50 Hz | 123456789A04                                  |             |
| El. Absicherung<br>el. protection          | 16 A           |   |             |
| Max. el. Leistung<br>max. el. power        | 7500 W         |   |             |
| Schutzklasse<br>protection class           | IP2X           | Seitennummer<br>serial number                 |             |
| Wasserinhalt<br>water content              | 565            | Holzpellets EN ISO 17225-2 A1<br>wood pellets |             |
| Max. Vorlauftemp.<br>max. flow temperature | max. 90°C      | Brennstoff<br>fuel                            |             |
| Betriebsdruck<br>operating pressure        | max. 3 bar     |   |             |
| Kesselklasse<br>boiler class               | 5              |   |             |
| 68903                                      | Art.-Nr.       | Gepüft durch<br>tested by                     | <b>CE</b>   |

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#### 4.7 CE declaration of conformity



The conformity of the product is declared by the manufacturer in accordance with the Machinery Directive 2006/42/EC; the documents are available for inspection at the manufacturer.

The product corresponds to Directive 2011/65/EU (RoHS 2) and does not use any materials containing asbestos. The product does not contain any PCB or mercury.

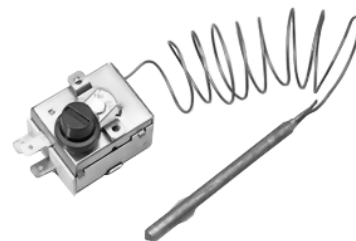
#### 4.8 Safety devices

##### Heat dissipation

- This function of the boiler control is a safety device that prevents overheating of the boiler.
- Functioning: If the boiler temperature exceeds the *Heat dissipation maximum boiler temperature*<sup>[1]</sup> parameter, all pumps relating to the connected devices (e.g. heating circuit, DHW tank, buffer tank) will be switched on and the heating circuit mixing valve opened. In this way, energy is drained from the boiler and it may be possible to prevent other safety devices tripping.
- If the boiler temperature falls below the set *Heat dissipation maximum boiler temperature* minus 1°C again, the pumps and mixing valves will be operated in standard mode again.

[1] You can find the parameter in *Service menu* | *System parameters* button | *General settings* button. The *Service menu* can only be accessed by qualified personnel (code input required).

##### Overtemperature reset (OTR)



- The overtemperature reset is a safety device that prevents overheating of the boiler.
- Functioning: The overtemperature reset stops the heating process at a boiler temperature ~95°C (exclusively electrical function; fuel and air supply are interrupted).

- After tripping, the overtemperature reset must be manually released again by unscrewing the black sealing cap **1** and pressing the button as soon as the boiler temperature falls below 60°C.
- If the overtemperature reset trips, this is indicated on the boiler control display.

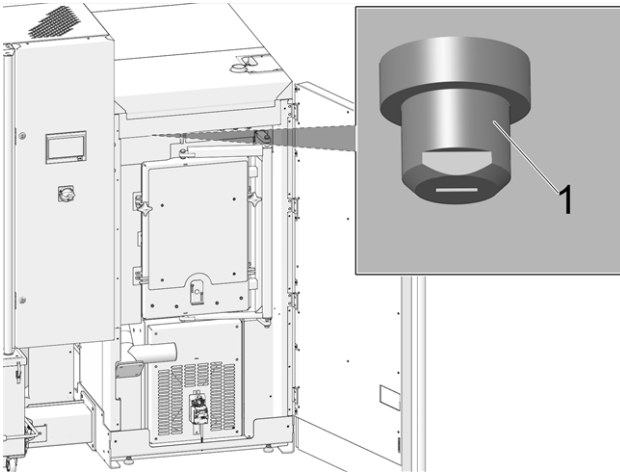


Abb. 2-2: Position of the overtemperature reset

### Thermal overload protection



- The thermal overload protection prevents an uncontrolled increase in temperature and pressure of the boiler.
- Functioning: At a boiler water temperature > 95°C, the valve opens and directs cold water through the two series-connected safety heat exchangers. This lowers the temperature of the boiler and avoids the need for further safety precautions or equipment damage.

### Safety valve (to protect against excess pressure in the system)

- The safety valve **1** is a safety device for protecting against overpressure in the water circuit of the heating system.
- Functioning: The valve opens when the system pressure exceeds 3 bar. Water/steam are discharged into an open drain via a blow-off line, which avoids subsequent damage to the heating system. The safety valve is closed during normal operation.
- For normative specification see EN 12828.

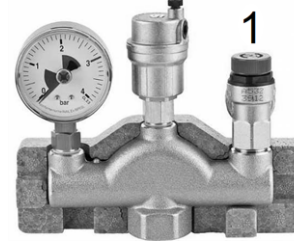


Abb. 2-3: Safety valve integrated into boiler safety group

### Emergency OFF switch



- The emergency OFF switch is a manually operated safety device. The burner and the fuel supply to the boiler are stopped. Circulation pumps remain in operation to dissipate heat and cool the boiler.
- The switch must be installed outside the boiler room in a safe place that is easy to access.

## Temperature monitor in the fuel storage room (TM)



- Required according to guideline TRVB 118 H for wood chips, depending on system design, heating capacity and fuel storage quantity.
- Functioning: On the channel of the fuel delivery auger, a temperature sensor of a protected design must be installed in the area of the wall penetration (inside the storage room). When a temperature of about 70°C is exceeded, the warning device is (optically or acoustically) triggered.
- Art. No.: 6565 and 6567

## Automatically triggered extinguishing device (ATED)

- This extinguishing device serves to automatically suppress burn-back within the feeder. Due to the proper nature and location of the fire detection element, burn-back must be reliably detected and the extinguishing device must be triggered automatically (this must be ensured even in the event of a power failure).
- Functioning: If at the temperature sensor **1** the temperature exceeds 50°C (direct extraction) or 95°C (downpipe extraction), the valve opens and floods the feeder channel with water through the connecting pipe **2**.

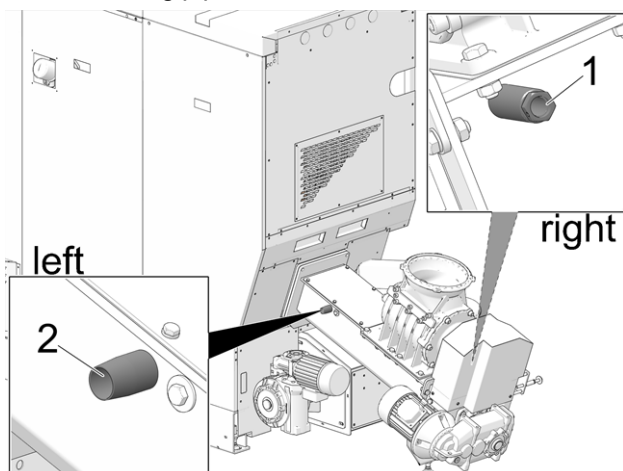


Abb. 2-4

- 1 Immersion sleeve for temperature sensor (IG)
- 2 Connection for water discharge (AG)

**i** If this device is not used, both connections must be sealed shut. False air will otherwise be drawn into the burner, which will impair burner performance.

- The extinguishing device must be connected either directly to a pressurised water supply or to a water reservoir (Note: Domestic waterworks may also be affected in case of power failure).
- The water supply amount must be equal to three times the volume of the feeder equipment, but at least 20 litres.
- The container must be equipped with a fill level monitor, including connection to the warning device (temperature monitor > 8).
- The inlet opening in the feeder is to be configured in such a way that blockage through delivery operation is not possible and this can easily be checked at any time.
- The routing of the extinguishing system must be made as a non-combustible version.
- Art. No.: 63260 and 6553
- Specification regarding requirement yes/no see TRVB 118 H

## Manually triggered extinguishing device (MTED)

- This extinguishing device is used to combat a fire source in the fuel storage room, or fuel storage in the area of the extraction/delivery line. The triggering must be done manually.
- This device consists of an empty pipe with a minimum nominal size of DN 20 and is to be installed in the fuel storage as specified by the manufacturer of the firing system directly above the delivery line in front of the wall or ceiling passage in such a way that the greatest possible success can be achieved in extinguishing. The empty piping must be connected directly to a pressurized water supply and provided with a shut-off valve arranged in the boiler room. Mark this valve with a sign "Extinguisher - Fuel Storage Room".
- The execution of the extinguishing system must be done so that damage during fuel feed or from the extraction device is not possible. In addition, make sure that the fuel supply to the delivery line is not affected.
- Specification regarding requirement yes/no see TRVB 118 H.



## Rotary valve

The rotary valve fulfils all normative requirements for the approved fuels regarding fire protection, burn-back safety, backflow of gases:

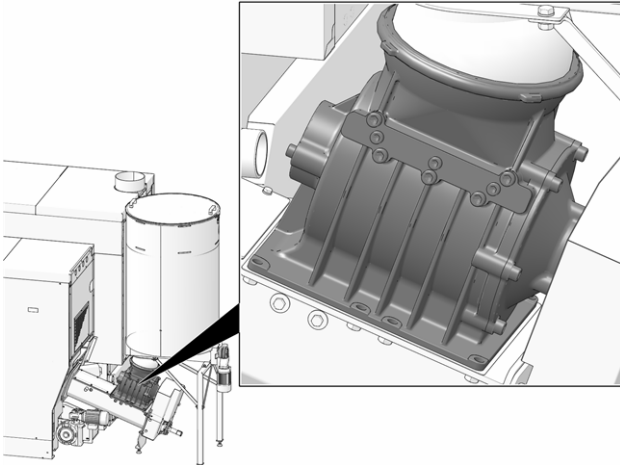
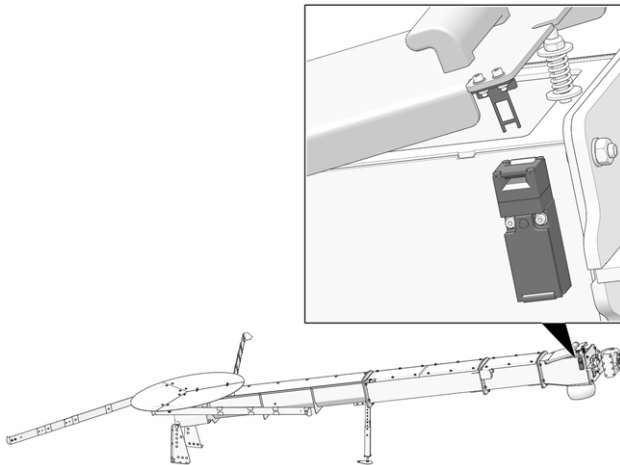


Abb. 2-5: Rotary valve

- Complies with requirements regarding burn-back protection devices (BPD) according to TRVB 118 H.
- Prevents backflow of flammable products of combustion into the fuel supply (according to EN 303-5).
- Prevents fire spreading into the fuel supply (according to EN 303-5).

## Safety switch on the trough cover



Opening the channel cover interrupts the power supply to the auger motor.

## 4.9 Efficient and low-emission operation

Please note the following recommendations from the EU Energy Efficiency Directive:

### Use of a buffer tank

Since maximum combustion is possible only in standard operation of the boiler, and greater losses and higher emissions occur during the warm-up and burn-out phases, use of a buffer tank is recommended.

This tank stores the water heated by the boiler, allowing the connected devices (heating circuit, DHW tank, fresh water module, etc.) to access it as required. This ensures sufficiently long, uninterrupted combustion periods for the boiler.

### Use of high-efficiency heating pumps

When using external heating pumps (e.g. return temperature rise, heating circuit pumps, etc.), high-efficiency pumps with energy efficiency class A should preferably be used.

This delivers savings potential of up to 80 % in drive energy (compared to conventional heating pumps) with identical feed results.

## 4.10 Functional components, combustion principle

### Burner

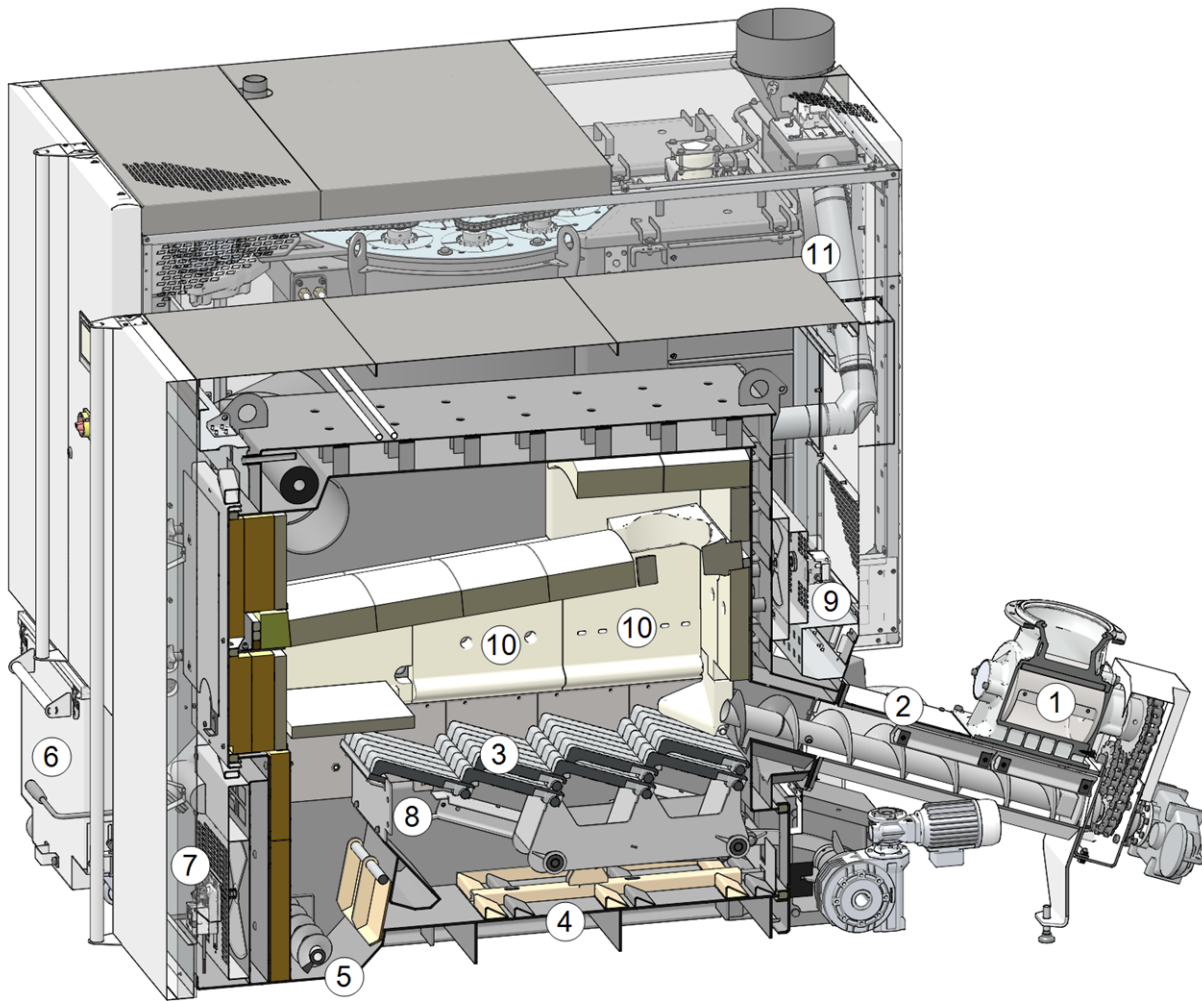


Abb. 2-6: Section through the burner

#### Functional components

|                |                                |                                  |
|----------------|--------------------------------|----------------------------------|
| 1 Rotary valve | 5 Ash auger burner             | 9 Rotary drive for secondary air |
| 2 Feeder unit  | 6 Ash container                | 10 Secondary air outlet          |
| 3 Push grate   | 7 Rotary drive for primary air | 11 Flue gas recirculation line   |
| 4 Ash scraper  | 8 Primary air outlet           |                                  |

#### Fuel path

- The fuel falls through the rotary valve **1** into the channel of the feeder unit **2**. The auger delivers the fuel to the feed grate **3**.
- During combustion, the fuel is transported on the feed grate, and the resulting ash falls down through the grate.
- The ash pusher **4** push the ashes to the ash auger **5**, and auger takes over the transport into the ash container **6**.

#### Airflow

- Primary air is sucked in at the opening **7**, forwarded in a space on the left and right side of the boiler; at the holes **8** the primary air openings under the stainless steel combustion grate, and makes it through the feed grate into the combustion chamber.
- Secondary air is sucked in at the opening **9** and passes through openings **10** in the fire brick (left, right, rear) above the stainless steel combustion grate into the combustion chamber.

- Flue gas recirculation: Flue gas is introduced via the path of the flue gas recirculation line **11** here and added to the primary air. This leads to cooling of the feed grate and the combustion chamber and thus to lower stress on the components.

## Heat exchanger

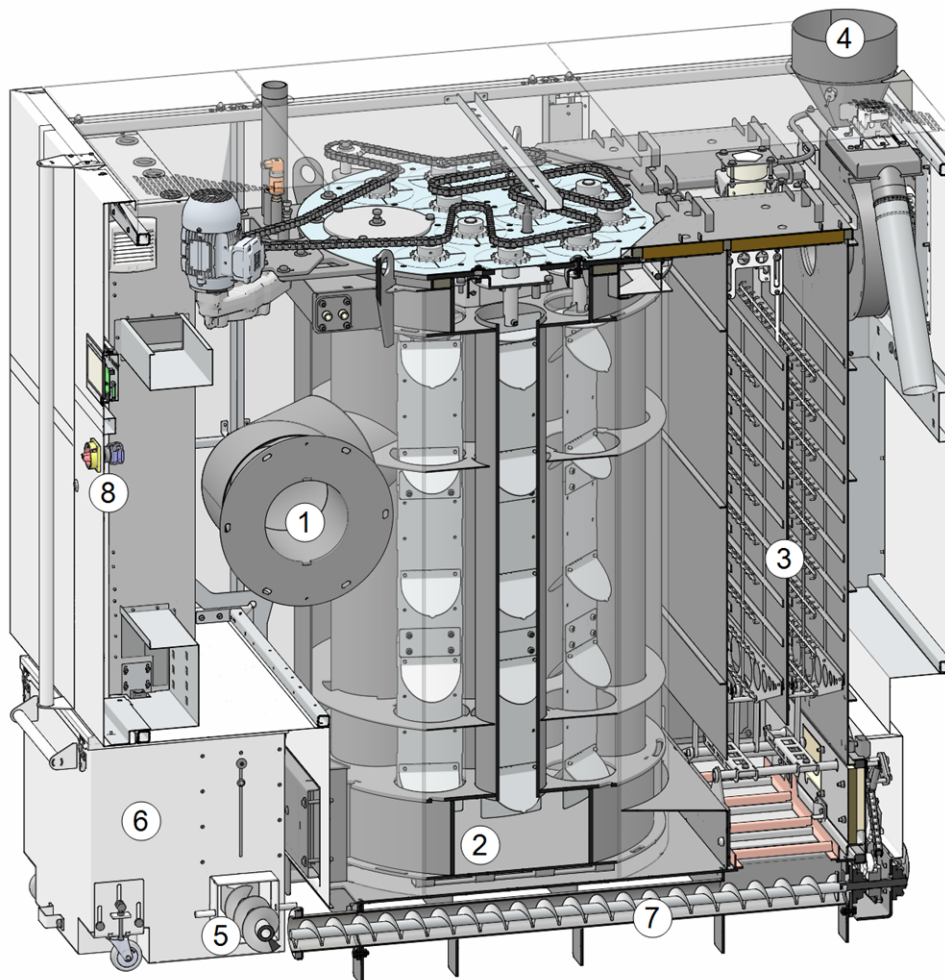


Abb. 2-7: Cross section of heat exchanger

### Functional components

- |                                   |                    |                            |
|-----------------------------------|--------------------|----------------------------|
| 1 Flue gas pipe connecting flange | 4 Flue gas pipe    | 7 Ash auger heat exchanger |
| 2 Heat exchanger                  | 5 Ash auger burner | 8 Main switch              |
| 3 Electrostatic dust collector    | 6 Ash container    |                            |

### Flue gas guide

- The flue gas **1** from the combustion chamber flows past the heat exchanger **2**, on the electrostatic dust separator **3** into the flue gas pipe **4** and into the chimney.

### De-ashing

- The ashes falling on the feed grate (in the burner) are transported from the transverse ash auger burner **5** into the ash container **6**.
- The ashes falling on electrostatic dust collector **3** are transported forward by the ash auger heat exchanger **7** into the collective ash container.

## 4.11 Technical specifications

| <b>maxi<sup>mus</sup> L</b>   |       | <b>150</b>  | <b>200</b> | <b>250</b> | <b>300</b> |
|---|-------|---|------------|------------|------------|
| Wood chips output   | [kW]  | 149   | 201        | 240        | -          |
| Pellets output  | [kW]  | 149   | 201        | 250        | 299        |
| Boiler class (acc. to EN 305:5 2012)  |       | 5   | 5          | 5          | 5          |
| <b>Dimensions</b>   |       |   |            |            |            |
| Width   | [cm]  | 195   | 195        | 195        | 195        |
| Height inc. adjustable feet <sup>[1]</sup>  | [cm]  | 214   | 214        | 214        | 214        |
| Depth with ID fan   | [cm]  | 222   | 222        | 222        | 222        |
| Burner transport dimension - width  | [cm]  | 90  | 90         | 90         | 90         |
| Heat exchanger transport dimension - width <sup>[2]</sup>                                     | [cm]  | 100   | 100        | 100        | 100        |
| Heat exchanger transport dimension - height   | [cm]  | 210   | 210        | 210        | 210        |
| Minimum room height <sup>[3]</sup>  | [cm]  | 275   | 275        | 275        | 275        |
| <b>Weight</b>   |       |   |            |            |            |
| Burner weight   | [kg]  | 1321  | 1321       | 1321       | 1321       |
| Heat exchanger weight   | [kg]  | 1456  | 1456       | 1456       | 1456       |
| Feeder unit weight (inc. single axis rotary valve)  | [kg]  | 215   | 215        | 215        | 215        |
| Total weight (inc. ash container and feeder unit; ready for operation, without fill-up water) | [kg]  | 3290  | 3290       | 3290       | 3290       |
| <b>Water side</b>   |       |   |            |            |            |
| Water content (burner and heat exchanger)   | [l]   | 565   | 565        | 565        | 565        |
| Operating temperature   | [°C]  | 70 - 90   | 70 - 90    | 70 - 90    | 70 - 90    |
| Maximum permissible temperature   | [°C]  | 90  | 90         | 90         | 90         |
| Max. permissible operating pressure   | [bar] | 3   | 3          | 3          | 3          |
| Min. return temperature   | [°C]  | 60  | 60         | 60         | 60         |
| Boiler flow/boiler return connection  | ["]   | G 2" ET   | G 2" ET    | G 2" ET    | G 2" ET    |
| Drain connection  | ["]   | G 1" ET   | G 1" ET    | G 1" ET    | G 1" ET    |
| Connection for thermal overload protection  | ["]   | G 1/2" ET   | G 1/2" ET  | G 1/2" ET  | G 1/2" ET  |
| <b>Electrical connection</b>  |       |   |            |            |            |
| Connection, fuse  |       | 400 V AC, 50 Hz, 16 A, 3P+N+PE  |            |            |            |
| <b>Fuel</b>   |       |   |            |            |            |
| Fuel - wood chips   |       | Wood chips in accordance with EN ISO 17225-4, classes A1, A2, B1, sizes P16S and P31S; water content max. 35% (M35) > 5 |            |            |            |
| Fuel - wood pellets   |       | Wood pellets according to EN ISO 17225-2 > 5  |            |            |            |
| <b>Flue gas side</b>  |       |   |            |            |            |
| Flue gas pipe diameter  | [cm]  | 25  | 25         | 25         | 25         |
| Height up to flue gas pipe upper edge <sup>[1]</sup>  | [cm]  | 214   | 214        | 214        | 214        |
| Minimum draught requirement <sup>[4]</sup>  | [Pa]  | 5   | 5          | 5          | 5          |
| Maximum flue gas temperature <sup>[5]</sup> full load   | [°C]  | 140   | 140        | 140        | 140        |

|                             |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| <b>maxi<sup>mus</sup> L</b> | <b>150</b> | <b>200</b> | <b>250</b> | <b>300</b> |
|-----------------------------|------------|------------|------------|------------|

**Emissions according to test report: *Wood chips***

| Flue gas values (in relation to 13% O <sub>2</sub> )<br>from test report:testing institute/test report No. |                      | 18-IN-AT-UW-OÖ-<br>EX-205/3<br>TÜV Austria | Interpolation according to EN 303-5 | 18-IN-AT-UW-OÖ-<br>EX-205/4<br>TÜV Austria | - |
|--|----------------------|--|-------------------------------------|--|---|
| CO full load   | [mg/m <sup>3</sup> ] | 19   | 30                                  | 38   | - |
| CO partial load  | [mg/m <sup>3</sup> ] | 20   | 20                                  | 20   | - |
| NO <sub>X</sub> full load  | [mg/m <sup>3</sup> ] | 120  | 120                                 | 115  | - |
| NO <sub>X</sub> partial load   | [mg/m <sup>3</sup> ] | 93   | 93                                  | 93   | - |
| Org. C full load   | [mg/m <sup>3</sup> ] | 2  | 2                                   | 2  | - |
| Org. C partial load  | [mg/m <sup>3</sup> ] | 2  | 2                                   | 2  | - |
| Dust content full load   | [mg/m <sup>3</sup> ] | 9.5  | 11.6                                | 6  | - |
| Dust content partial load  | [mg/m <sup>3</sup> ] | 6  | 6.5                                 | 6  | - |
| Flue gas mass flow full load   | [g/s]                | 97.9                                       | 130.5                               | 156.7                                      | - |
| Flue gas mass flow partial load  | [g/s]                | 29.4                                       | 39.2                                | 47.0                                       | - |

**Emissions according to test report: *Pellets***

| Flue gas values (in relation to 13% O <sub>2</sub> )<br>from test report:testing institute/test report No. |                      | 18-IN-AT-UW-OÖ-<br>EX-205/1<br>TÜV Austria | Interpolation according to EN 303-5 | Interpolation according to EN 303-5 | 18-IN-AT-UW-OÖ-<br>EX-205/2<br>TÜV Austria |
|--|----------------------|--|-------------------------------------|-------------------------------------|--|
| CO full load   | [mg/m <sup>3</sup> ] | <3   | 3                                   | 3.6                                 | 3.6  |
| CO partial load  | [mg/m <sup>3</sup> ] | 29   | 29                                  | 29                                  | 29   |
| NO <sub>X</sub> full load  | [mg/m <sup>3</sup> ] | 112  | 112                                 | 113                                 | 113  |
| NO <sub>X</sub> partial load   | [mg/m <sup>3</sup> ] | 83   | 83                                  | 83                                  | 83   |
| Org. C full load   | [mg/m <sup>3</sup> ] | 2  | 2                                   | 2                                   | 2  |
| Org. C partial load  | [mg/m <sup>3</sup> ] | 2  | 2                                   | 2                                   | 5  |
| Dust content full load   | [mg/m <sup>3</sup> ] | 1  | 8                                   | 2                                   | 10.2                                       |
| Dust content partial load  | [mg/m <sup>3</sup> ] | 5  | 5                                   | 5                                   | 5  |
| Flue gas mass flow full load   | [g/s]                | 94.5                                       | 126.0                               | 157.6                               | 189.1                                      |
| Flue gas mass flow partial load  | [g/s]                | 28.4                                       | 37.8                                | 47.3                                | 56.7                                       |

- [1] Adjustable feet at maximum depth of thread
- [2] The boiler cladding parts are removed. The dimension including fitted cladding is 106 cm.
- [3] The minimum room height is required for maintenance work
- [4] A draught stabiliser must be fitted if the specified draught of 15 Pa is exceeded
- [5] Flue gas temperature can be adjusted electronically

## 4.12 Wood chipclassification

according to EN ISO 17225-4 standard

|                                |                   | Property class > 14  |  |   |
|--------------------------------|-------------------|--|--|---|
| Unit                           |                   | A1   | A2   | B1  |
| <b>Origin, source</b>          |                   | Complete trees without roots;<br>Trunk wood;<br>Woodland offcuts;<br>Chemically untreated waste timber |  | Woodland timber and plantation wood as well as other natural timber;<br>Chemically untreated waste timber |
| <b>Particle size P &gt; 14</b> | mm                | P16S / P31S  |  | P16S / P31S   |
| <b>Water content M</b>         | m-%               | M10 ≤ 10<br>M25 ≤ 25   | M35 ≤ 35   | M35 ≤ 35  |
| <b>Ash content A</b>           | m-% water-free    | A1.0 ≤ 1.0   | A1.5 ≤ 1.5   |   |
| <b>Bulk density BD &gt; 15</b> | kg/m <sup>3</sup> | BD150 ≥ 150<br>BD200 ≥ 200<br>BD250 ≥ 250  | BD150 ≥ 150<br>BD200 ≥ 200<br>BD250 ≥ 250<br>BD300 ≥ 300 | BD150 ≥ 150   |
| Nitrogen N                     | m-% water-free    | Not applicable   |  | N1.0 ≤ 1.0  |
| Sulphur S                      | m-% waterless     | Not applicable   |  | S0.1 ≤ 0.1  |
| Chlorine Cl                    | m-% waterless     | Not applicable   |  | Cl0.05 ≤ 0.05   |
| Arsenic As                     | mg/kg waterless   | Not applicable   |  | ≤ 1   |
| Cadmium Cd                     | mg/kg waterless   | Not applicable   |  | ≤ 2.0   |
| Chromium Cr                    | mg/kg waterless   | Not applicable   |  | ≤ 10  |
| Copper Cu                      | mg/kg waterless   | Not applicable   |  | ≤ 10  |
| Lead Pb                        | mg/kg waterless   | Not applicable   |  | ≤ 10  |
| Mercury Hg                     | mg/kg waterless   | Not applicable   |  | ≤ 0.1   |
| Nickel Ni                      | mg/kg waterless   | Not applicable   |  | ≤ 10  |
| Zinc Zn                        | mg/kg waterless   | Not applicable   |  | ≤ 100   |

### Property class

The property classes A1 and A2 represent natural wood and chemically untreated waste timber.

A1 denotes fuels with low ash content, which have little or no bark, and fuels with low water content. Class A2 indicates a slightly higher ash content and/or water content.

B1 extends the origin and source of class A and includes other materials, such as e.g. short rotation coppice, wood from gardens and plantations etc., as well as chemically untreated waste wood from industry.

B2 (not approved for **maxi**<sup>mus</sup> L) includes waste wood from industry (also chemically treated wood) and chemically untreated used wood.

### Particle size

|             | Main portion <sup>[1]</sup><br>(at least 60 m-%) | Fine material portion<br>m-% (≤ 3.15 mm) | Coarse material portion<br>m-% (length of particle) | Maximum length<br>of particles <sup>[2]</sup> | Coarse material portion<br>(Maximum cross-section<br>area <sup>[3]</sup> of particle) |
|-------------|--|--|---|---|---|
| <b>P16S</b> | 3.15 to 16 mm                                    | ≤ 15 %                                   | ≤ 6 % (> 31,5 mm)                                   | ≤ 45 mm                                       | ≤ 2 cm <sup>2</sup>   |
| <b>P31S</b> | 3.15 to 31.5 mm                                  | ≤ 10 %                                   | ≤ 6 % (> 45 mm)                                     | ≤ 150 mm                                      | ≤ 4 cm <sup>2</sup>   |
| <b>P45S</b> | 3.15 to 45 mm                                    | ≤ 10 %                                   | ≤ 10 % (> 63 mm)                                    | ≤ 200 mm                                      | ≤ 6 cm <sup>2</sup>   |

[1] The numerical values (P class) of the dimensions relate to the particle sizes that match the specified sieve opening size of a round hole sieve (ISO 17827-1). The lowest possible property class should be specified. Only one class shall be given for wood shavings.

[2] The length and cross-section area shall only be determined for particles in the coarse material portion. In a sample of about 10 l, no more than 2 pieces may exceed the maximum length if the cross-section area < 0.5 cm<sup>2</sup>.

[3] For measurement of the cross-section area, it is recommended to use a transparent protractor, arrange the particles orthogonally (at right angles) behind the protractor and estimate the maximum cross-section area of these particles with the aid of the cm<sup>2</sup> pattern.

**Bulk density (kg/m<sup>3</sup>)**

| <b>Water content</b> (with moist mass being reference base) | m-%                              | <b>8 to 18</b> | <b>18 to 25</b> | <b>25 to 35</b> |
|---|----------------------------------|----------------|-----------------|-----------------|
| Conifer tree species  | Bulk volume [kg/m <sup>3</sup> ] | 160 to 180     | 180 to 200      | 200 to 225      |
|   | <b>Property class</b>            | <b>BD150</b>   | <b>BD150</b>    | <b>BD200</b>    |
| Deciduous tree species                                      | Bulk volume [kg/m <sup>3</sup> ] | 225 to 250     | 250 to 280      | 280 to 320      |
|   | <b>Property class</b>            | <b>BD200</b>   | <b>BD250</b>    | <b>BD250</b>    |

## 4.13 Dimensions

The following figures show the **maxi<sup>mus</sup> L** with attached intermediate pellet store.

Top view

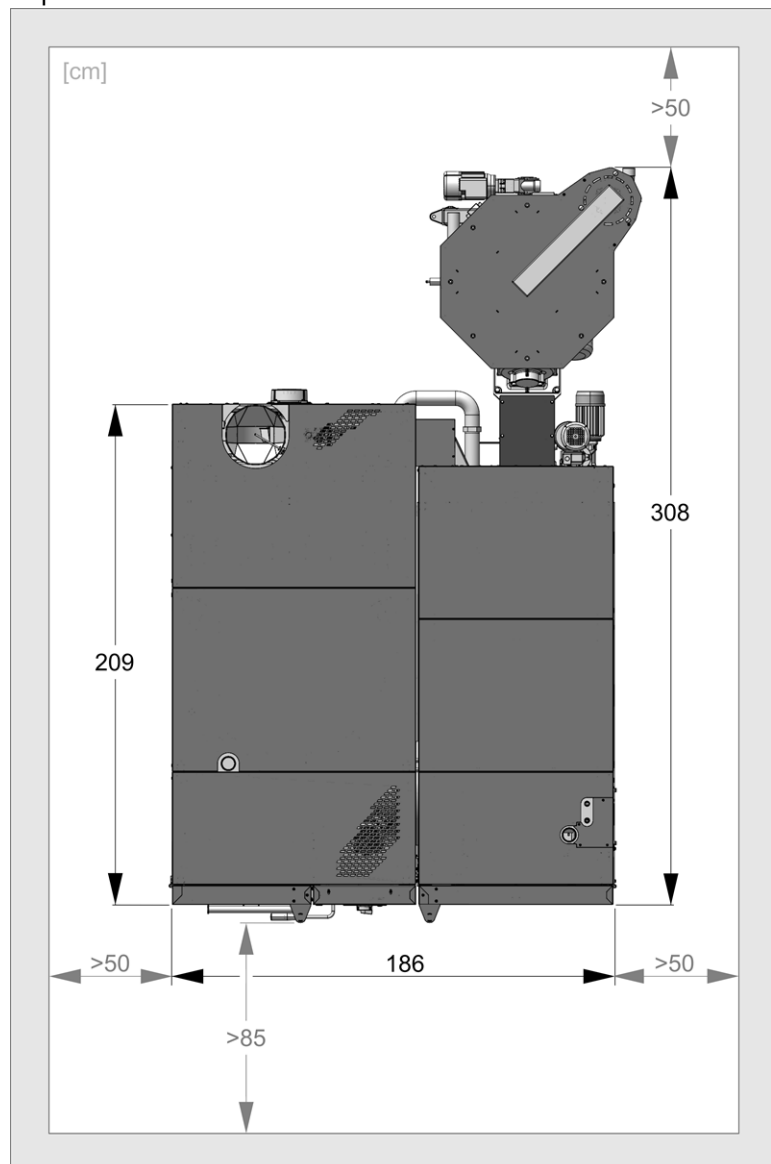


Abb. 2-8



Front

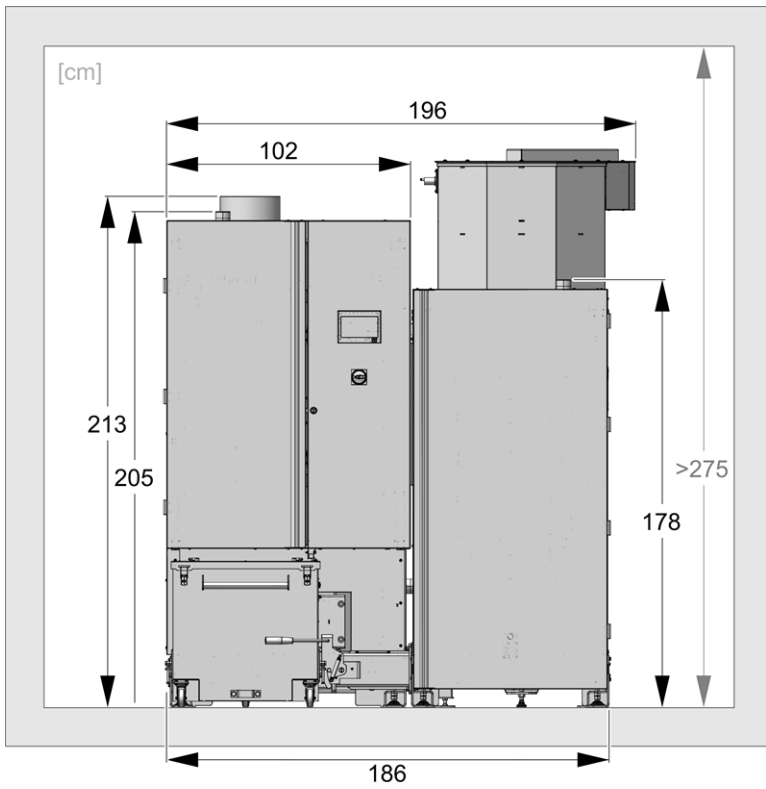


Abb. 2-9

Side view

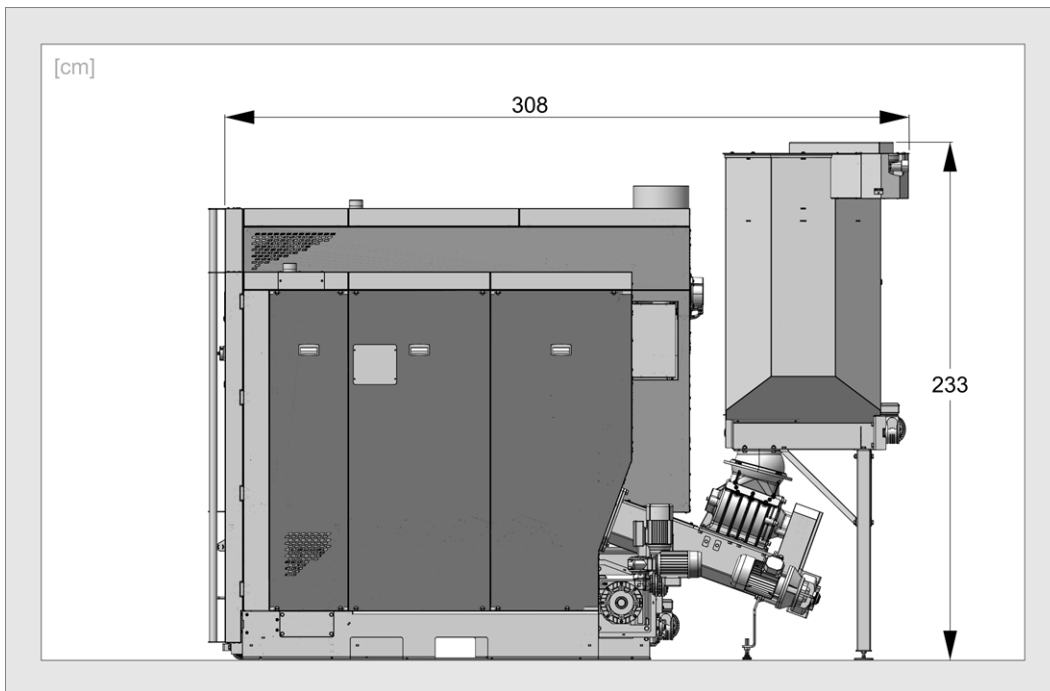


Abb. 2-10

## 5 Use and operation

### Touch display for operation

If the boiler is supplied with a mains power supply, the boiler control starts **eco**<sup>manager-touch</sup>. The control is started up to show the main screen.

**i** Operate the touch display with your finger. Do not use hard and/or sharp implements.

If no inputs are made for 5 minutes (factory setting), the display will switch to standby mode.

Tapping the display again restarts the display with the main screen.

### Buffer battery in operating element

A replaceable buffer battery (CR2032) ensures that data (time, settings) are retained in the operating unit when the power supply is switched off.

### 5.1 Main screen of boiler control

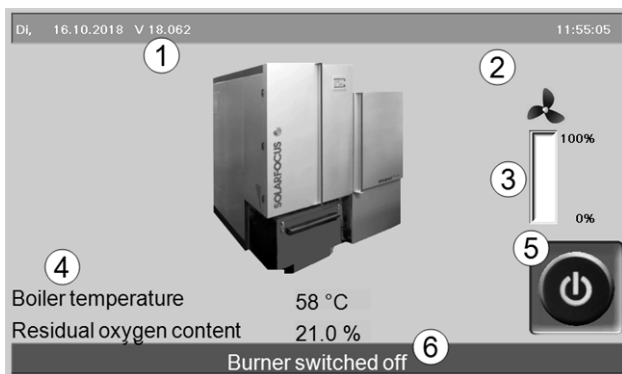
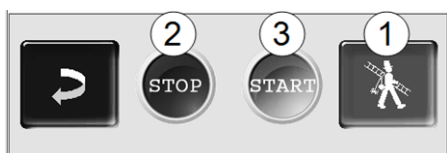


Abb. 2-11: Main screen

- 1 Software version for boiler control
- 2 Outside temperature
- 3 Boiler output (rotational speed of induced draught fan)
- 4 Boiler temperature and residual oxygen content in flue gas
- 5 Boiler operating mode > 18
- 6 Status line

Tapping the main screen changes to the *Selection menu* > 18

### 5.2 Boiler operating mode



### 1 Chimney sweep function

This function is used to perform the emission measurements prescribed by law.

- ▶ Perform emissions measurement > 41

### 2 STOP

The burner is switched off. No heating requests of the consumers are fulfilled.

**!** **WARNING** - The burner must not start! Only the automatic start-up of the heating circuit pump is active to protect against frost.

### 3 START

After pressing the *START* button, the burner is ready for operation, and is able to fulfil heating requests from the connected devices. The burner goes into standby as soon as a heating request is fulfilled, or the time release > 19 is no longer available.

### 5.3 Selection menu

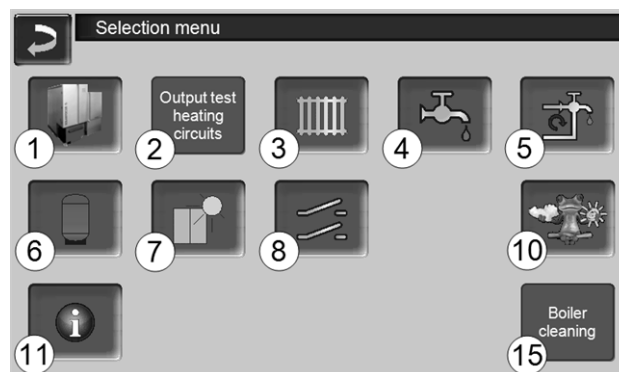


Abb. 2-12: Selection menu

- 1 Customer menu > 19
- 2 Output test heating circuit > 19  
CAUTION, only to be undertaken by qualified personnel.
- 3 Heating circuit > 24
- 4 Domestic hot water heating > 28
- 5 Circulation control (optional) > 30
- 6 Buffer tank (optional) > 31
- 7 Solar system (optional) > 32
- 8 Temperature difference, charge control (optional) > 32
- 10 Weatherman function (optional) > 36
- 11 Information
- 15 Boiler cleaning > 38

### 5.3.1 Heating circuit output test

The available electrical outputs can be switched on/off directly using the button. Can be used to test the function of individual components.

**! ATTENTION** - To be carried out by qualified personnel only.

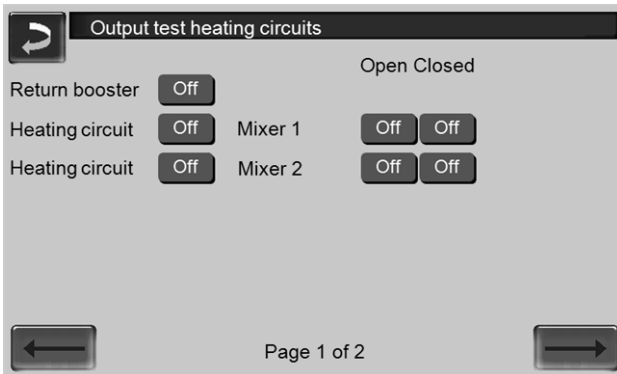


Abb. 2-13

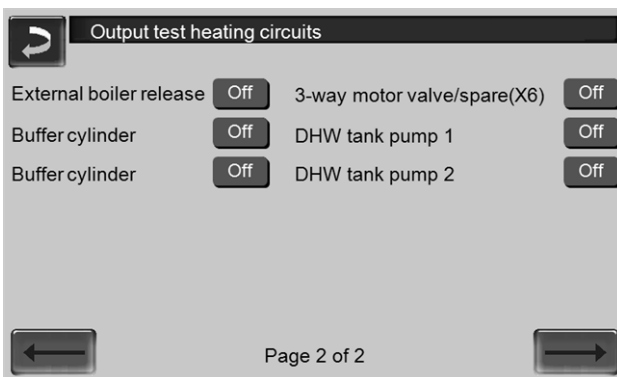


Abb. 2-14

### 5.4 Customer menu

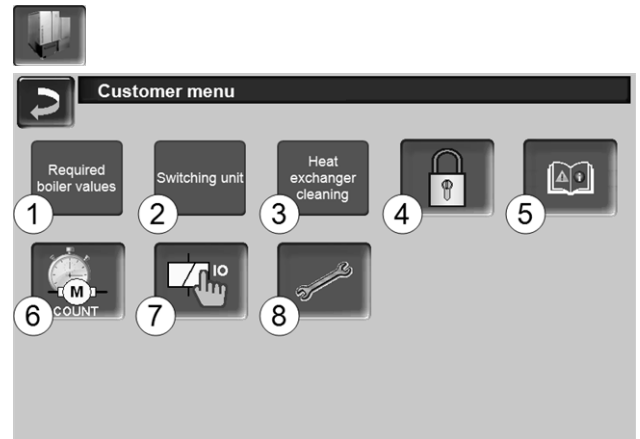


Abb. 2-15

- 1 Required boiler values > 19
- 2 Diverter (optional) > 20
- 3 Heat exchanger cleaning <sup>[1]</sup> > 20
- 4 User lock > 21
- 5 Message log <sup>[2]</sup>: Recording of alarm and notification messages > 21
- 6 Operating hour counter > 21
- 7 Output test boiler (CAUTION, only to be undertaken by qualified personnel).
- 8 Qualified personnel menu > 22

[1] The button is only visible if qualified personnel are logged in.

[2] Button is only visible if a message is active.

#### 5.4.1 Required boiler values

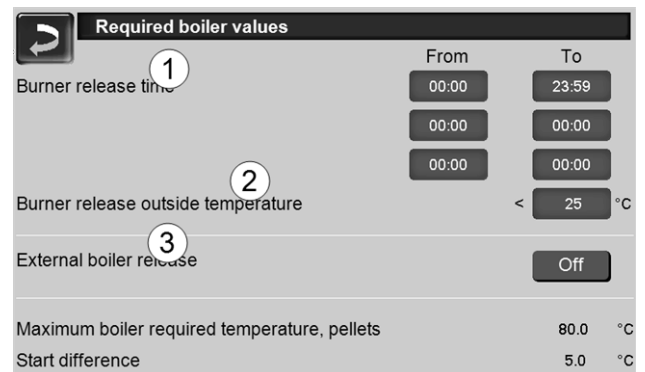


Abb. 2-16: Required boiler values

##### **Burner release time 1**

The burner can start within the release times; outside of these times, starting does not take place and/or the burner is stopped. A release time from 00:00 to 23:59 means that no restriction is pending and the burner can start at any time.

**! CAUTION** - In order to protect against frost, only automatic start-up of the heating circuit pump is active outside time release.

### **Drinking water heating in summer**

If the boiler is used for heating domestic hot water, the required chimney draught of 5 Pa may not be present in the summer months (or outside the heating period). This may result in smoke escaping in the boiler room.

Reason: High temperature on the chimney stack (greater than 30°C); as a result, the cooler air does not rise (~ 20°C air temperature when the burner starts) in the chimney.

Remedy: Set the burner time release from 00:00 to 07:00 or from 21:00 to 23:59.

### **Burner release outside temperature 2**

The burner may not start if the outside temperature exceeds this value.

### **External boiler release 3**

On switches the function to standby. I.e. a connected external boiler may only start when it receives the release from the SOLARFOCUS boiler (e.g. on the basis of a lack of fuel, operating fault).

## 5.4.2 Automatic diverter for suction heads

Optional, i.e. the button of the same name and the screen are only visible if this item has been bought.

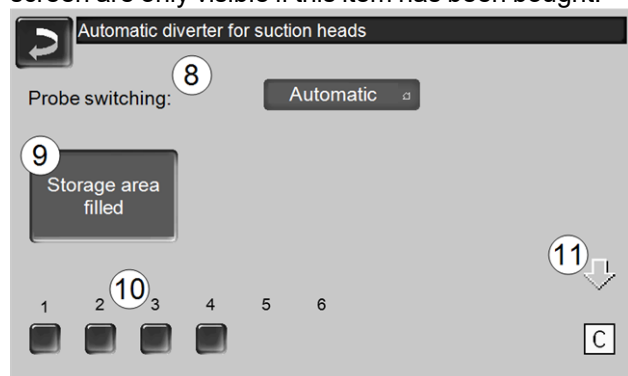


Abb. 2-17

### **Probe switching 8**

**Automatic** (recommended setting): After three successful suction procedures at a head, the system switches to the next head. An even reduction of the level in the pellet storage area is achieved.

**Selectively**: The probes are successively emptied through extraction.

**Only probe ...**: Suction is only performed at the set head. Switching to the next head must be performed manually at the boiler control.

### **Storage area filled 9**

- Pressing the button marks all suction probes **10** again as full (e.g. after filling the storage room). Pressing the Status button changes the head status (colour red: Head is empty; colour green: Head is full).
- Red marking means: Probe is emptied through extraction.
- Green marking means: Probe is full.
- The arrow **11** above the heads shows the currently used head. Position C means that the pellet hose has been sucked empty (happens automatically, lasts a few seconds).

## 5.4.3 Heat exchanger cleaning

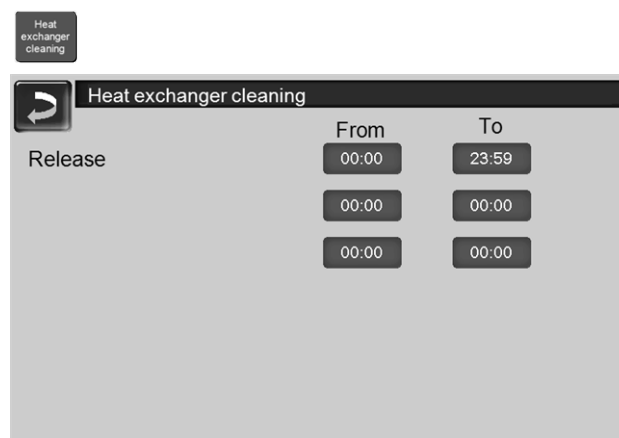


Abb. 2-18

### **Release from-to**

Within the release times, heat exchanger cleaning can start. A time release from 00:00 to 23:59 means that no restriction is pending and the functions can start at any time.

## 5.4.4 User lock

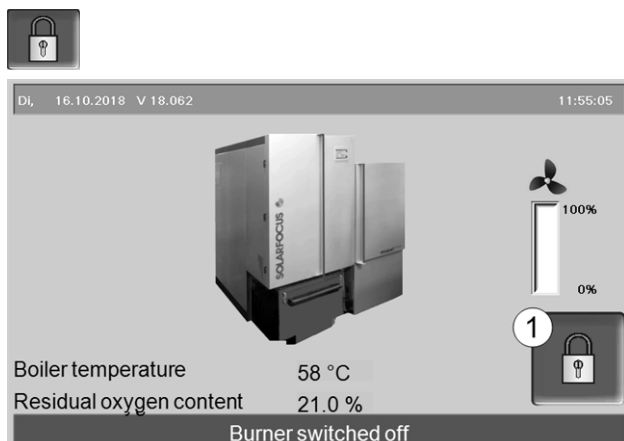


Abb. 2-19: Main screen with active user lock

The function serves as protection against unauthorised modification of the control parameters. When the user lock is active, the parameters of the individual screens are displayed but cannot be changed. The active user lock is indicated by the padlock icon **1** in the screens.

### User lock screen

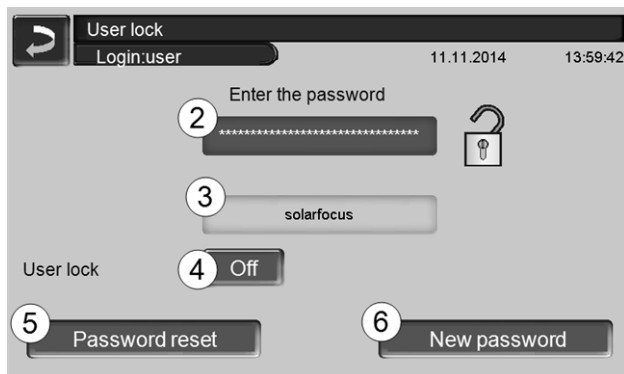


Abb. 2-20

### Enter the password **2**

To define a new password (maximum 20 characters).

### Password **3**

The currently valid password is displayed.

### User lock **4**


**Off:** The user lock is switched off.

**On:** Switches on the user lock function. If the display is not touched for one minute, the user lock is active in the screens.

### Password reset **5**

The current password is reset to the value *solarfocus*.

### Adopt as new password **6**

Enter a new password in the input field and press the button. Note on screen keyboard: Confirm input with the  button.

## 5.4.5 Message log



Abb. 2-21

The messages displayed on the control are recorded here, with the time that it began and ended. The message with the highest priority is highlighted in red, acknowledged messages are highlighted in green.

Press the **2** button to quit messages. Button **1** opens the power failure log.

Possible messages > 42

## 5.4.6 Operating hours counter

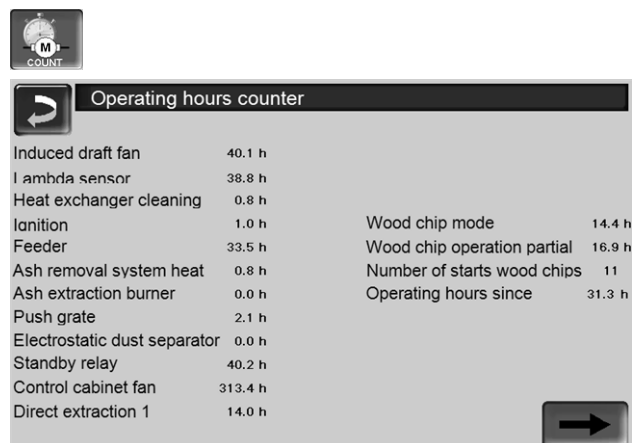


Abb. 2-22: Operating hours counter screen

## 5.4.7 Qualified personnel menu

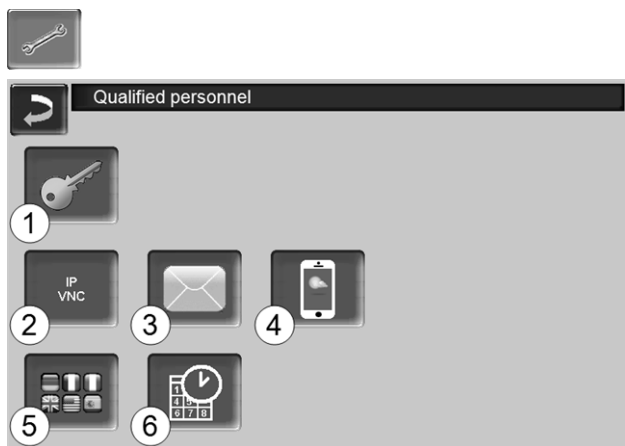


Abb. 2-23

- 1 Service menu > 22
- 2 IP-VNC (IP address of the control) > 22
- 3 Sending emails > 22
- 4 mySOLARFOCUS app > 33
- 5 Language selection > 23
- 6 Date and time > 24

### 5.4.7.1 Service menu



The *Service menu* has (predefined at the factory) technical settings for an optimum combustion process in the boiler. These can only be accessed by qualified personnel (code input required).

### 5.4.7.2 IP-VNC

The IP address must be entered in order to operate the control via the internet.

The following control functions require internet accessibility.


- Remote access to the control > 35
- mySOLARFOCUS app > 33
- Weatherman function > 36
- Sending emails > 22

### Hardware

A cable connection is required on site for connecting the control to the router. Use the Ethernet socket (type RJ45) on the rear of the operating panel (touch display).

## IP configuration screen



- ▶ To access the *IP-VNC* icon, select the following in the control
  - *Selection menu* screen
  - *Customer menu* screen
  - Qualified personnel button 
- ▶ Enter the data for your router. Recommended process:
  - Select *DHCP ON*.
  - ↳ The IP address is determined automatically.
  - Select the *DHCP OFF + Adopt* button.

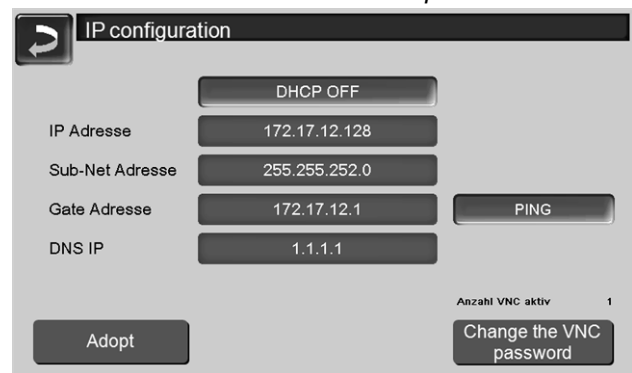


Abb. 2-24

- The IP address must be unique in each Ethernet network and is dependent on the other network components (PC, modem/router, etc.).
- Recommendation: Set a fixed IP address (=DHCP OFF), i.e. the control unit has a constant IP address.

### 5.4.7.3 Sending emails



Function: The boiler control **eco**<sup>manager-touch</sup> automatically sends status emails and alarm e-mails (to stored addresses) if required.

**Status email:** An automatic email (e.g. sent daily) provides information on the current boiler status.

**Alarm email:** a message is sent when a fault occurs.



Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

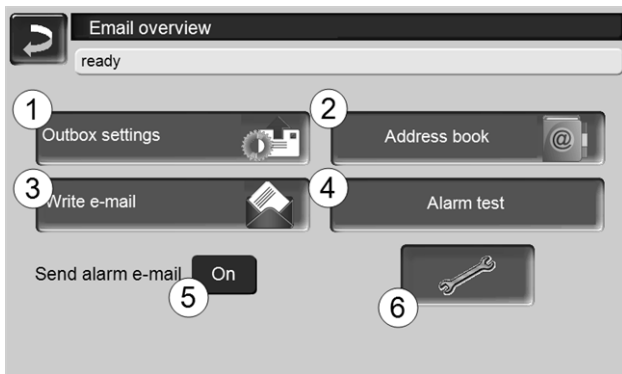


Abb. 2-25

### Outgoing mail server 1

Enter the access data for the e-mail server you use.



Abb. 2-26

**Use SSL:** Select if the e-mail server uses a TLS/SSL encryption protocol.

### Address book 2

A maximum of 10 contacts can be added. If there are several addresses for a contact, these should be comma-separated.

### Write e-mail 3

Used to manually send e-mails. The recipient's address can be selected from the address book using *To* and *CC* or manually entered in the recipient line.

### Alarm test 4

Used to test the e-mail settings. Pressing the button sends an email to the recipient *status email*.

### Send alarm email 5

Activates/deactivates the automatic sending of alarm e-mails. The sending of status emails is not affected by this.

### Alarm configuration 6

Settings for the alarm e-mails to be sent automatically.

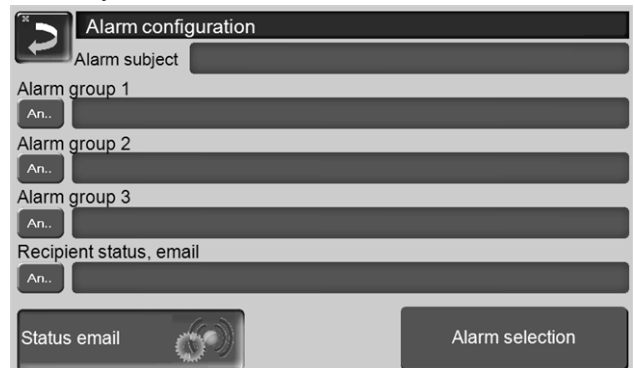


Abb. 2-27

**Alarm subject:** is used for all alarm emails and status emails, therefore it should be as meaningful as possible (e.g. boiler type / name of system operator; 40 characters available).

**Alarm groups:** For prioritisation of the alarm messages (e.g. Alarm group 1 receives all messages, Alarm group 2 receives only safety-related messages, such as information on faults).

**Status email:** Set time at which the status e-mail is sent. The automatically generated content of the status email is:

- Current status of the heating system
- Fault present, and which

**Alarm selection:** This is where you define which alarm group is reported for which event.

#### 5.4.7.4 mySOLARFOCUS app



Pressing the button displays the screen with information relating to online registration for the *mySOLARFOCUS app* (serial number, PIN, status, etc.) > Abb. 2-46, > 34

Detailed information on using the *mySOLARFOCUS app* > 33

#### 5.4.7.5 Language selection



Abb. 2-28

### 5.4.7.6 Date and time

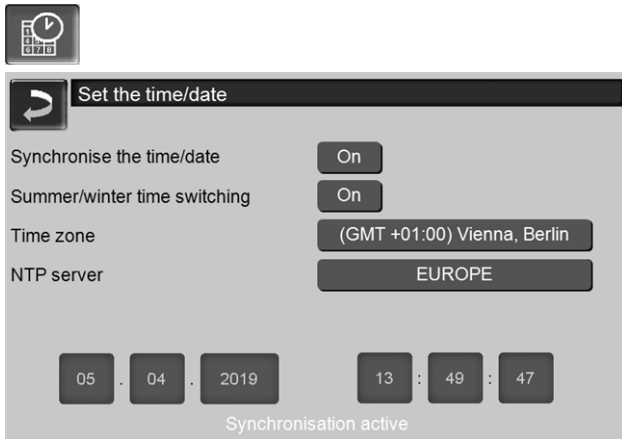


Abb. 2-29

Switchover from summer/winter time takes place automatically when the *Summer-Winter time switch 1* parameter has the value *Europe*. Switchover takes place on the last Sunday of the months of March and October. If *America* is set, the clock is changed to summer time on the first Sunday in April.

## 6 Heating circuit

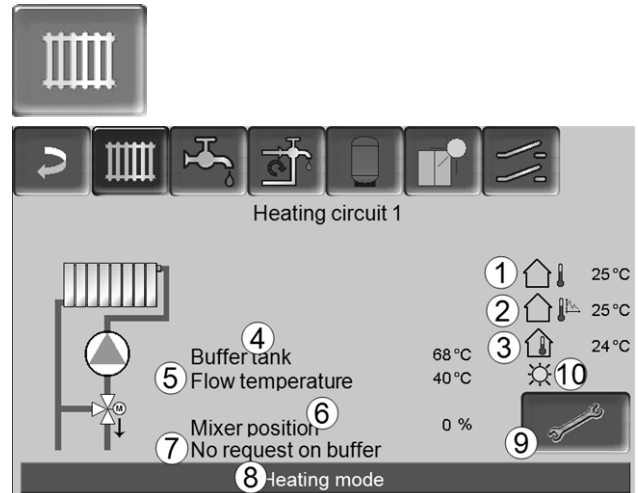


Abb. 2-30

- 1 Outside temperature
- 2 Average outside temperature
- 3 Room temperature (optional)
- 4 Temperature of the energy source, (e.g. boiler, buffer)
- 5 Flow temperature of the heating circuit
- 6 Position of the heating circuit mixing valve  
0% - the mixer is closed, the heating circuit is supplied from the heating circuit return. 100% - the mixer is open, the heating circuit is supplied from the heating boiler flow.
- 7 Info line: Heating request (yes/no) to the energy source
- 8 Status line of the heating circuit
- 9 Heating circuit settings > 25
- 10 Display of the heating circuit operating mode set on the optional room temperature sensor (item no. 6160)



## 6.1 Heating circuit settings

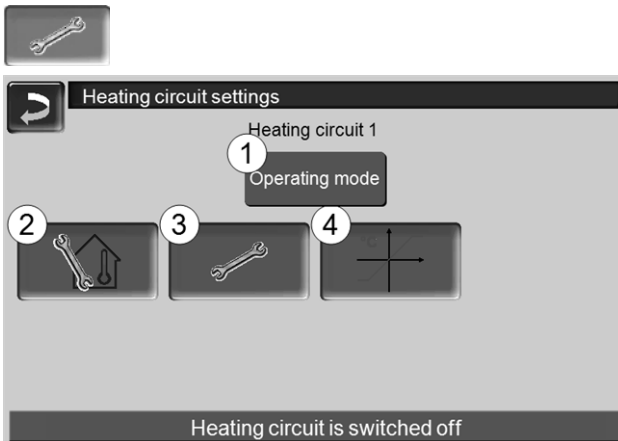


Abb. 2-31

- 1 Heating circuit operating mode > 25
- 2 Room settings  
(Button is only visible when the *Room effect* parameter is set to *On* or *Sliding*. This can be found in the *Qualified personnel system parameters*)
- 3 General settings > 25
- 4 Heating curve > 26

### 6.1.1 Heating circuit operating mode

#### Heating mode

The heating circuit pump is activated. A shutdown occurs whenever

- the *ambient switch off temperature for heating mode* is reached.
- a room temperature sensor is used and where *inside setpoint temperature for heating mode* has been reached.

The heating circuit is supplied with the *calculated required flow temperature* > Abb. 2-32.

#### Reduced mode

Heating circuit pump is activated. A shutdown occurs whenever

- the *ambient switch off temperature for reduced mode* is reached.
- a room temperature sensor is used and where *inside setpoint temperature for reduced mode* has been reached.

The heating circuit is supplied with the reduced temperature, i.e. *calculated required flow temperature* minus *reduction*; > Abb. 2-32

#### Time switch

In this operating mode, the timed switch-over between *Heating mode* and *Reduced mode* is defined. The times for heating mode can be entered *per day* or *by block*.

Usage example: *Heating mode* should be active during the day. At night, it should be changed to *reduced mode*.

#### Switch off heating circuit

The heating circuit pump and heating circuit mixing valve are switched off. The anti-freeze function for the heating circuit is enabled (i.e. the heating circuit pump is switched on whenever the ambient temperature drops below the *anti-freeze temperature*).

#### Holiday mode

Holiday mode deactivates the active operating mode for the entered duration.



activates the frost protection mode for the heating circuit for the duration of the holiday.



activates the reduced mode for the heating circuit for the duration of the holiday.



This icon indicates activated holiday mode in the *Heating circuit* screen.

### 6.1.2 General settings



#### **Ambient switch off temperature**

If the outside temperature exceeds the value set here, the heating circuit pump is switched off and the heating circuit mixing valve closes.

Ambient switch off temperature for heating mode: 18°C

Ambient switch off temperature for reduced mode: 5°C



This means: the heating circuit is normally automatically switched off during the summer month due to the outdoor temperature. You can also switch the heating circuit off manually (=operating mode: Switch off heating circuit).

#### **Anti-freeze temperature**

If the outside temperature drops below the value set here, the heating circuit pump is switched on.

### Buffer difference

The burner starts when the *tank temperature top* falls below the *required flow temperature* minus the *buffer difference*.

#### Example:

- Current required flow temperature = 50°C
- Buffer difference = 5°C

The burner starts as soon as the *tank temperature top* < 45°C.

A negative buffer difference value is added, i.e. the burner starts earlier.

#### Example:

- Current required flow temperature = 50°C
- Buffer difference = - 5°C

The burner starts as soon as the *tank temperature top* < 55°C.

### Outside temperature delay

The delay set here is used to determine an average value for the outside temperature (= Average outside temperature).

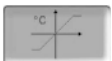
The heating circuit pump switches on if the average temperature and the current outside temperature fall below the ambient switch off temperature (within the heating period), or below the reduced mode ambient switch off temperature (outside the heating period).

The heating circuit pump switches off again as soon as the current outside temperature rises above the value of the ambient switch off temperature.

### Heating circuit name

The heating circuit can be given an individual name.

## 6.1.3 Heating curve



The heating circuit flow temperature is controlled by the heating circuit operating mode > 6.1.1 and by the outside temperature. The heating curve represents the relationship between these two temperatures. In other words, the boiler control uses the outside temperature to calculate the temperature (= *calculated required flow temperature*) with which the heating circuit is supplied.

In *heating mode* the heating curve for heating mode 4 (red) is used.

In *reduced mode* the heating curve for reduced mode 5 (= heating curve for heating mode minus *reduction*) is used.

The heating curve must be adapted to suit each building and its heating system.

## 2-point heating curve

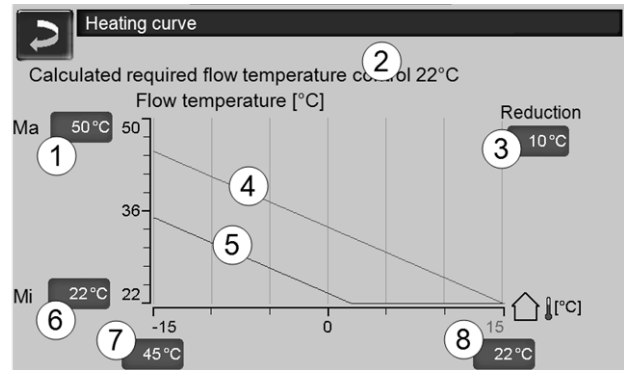


Abb. 2-32

- 1 Maximum heating circuit flow temperature<sup>[1]</sup>
- 2 Calculated required flow temperature
- 3 Reduction (the value by which the reduced temperature is lower than the heating temperature)
- 4 Heating curve for heating mode (shown in red)
- 5 Heating curve for reduced mode (blue)
- 6 Minimum heating circuit flow temperature<sup>[1]</sup>
- 7 Flow temperature at outside temperature - 15°C
- 8 Flow temperature at outside temperature +15°C

**!** <sup>1)</sup> **ATTENTION** - This temperature is system-specific and must be agreed with the heating engineer. Only to be set by qualified personnel.

The desired heating circuit required flow temperature in heating mode is set for an outside temperature of -15°C 7 and +15°C 8. Between these outside temperatures, the required flow temperature is calculated from the characteristics of the heating curve (interpolated).

**Example for calculation of required flow temperature** (see the following illustration):

Flow temperature at outside temperature of  $-15^{\circ}\text{C} = 45^{\circ}\text{C}$   
 Flow temperature at outside temperature of  $+15^{\circ}\text{C} = 22^{\circ}\text{C}$   
 Current outside temperature =  $-5^{\circ}\text{C}$

In the heating circuit operating mode *Heating mode*, the following applies:

- > The calculated required flow temperature (**Pos.9**) is  $37.4^{\circ}\text{C}$
- > The heating circuit is supplied with  $37.4^{\circ}\text{C}$ .

In the heating circuit operating mode *Reduced mode*:  
 Reduction =  $10^{\circ}\text{C}$

- > The calculated required flow temperature (**Pos.10**) is  $27.0^{\circ}\text{C}$
- > The heating circuit is supplied with  $27.0^{\circ}\text{C}$ .

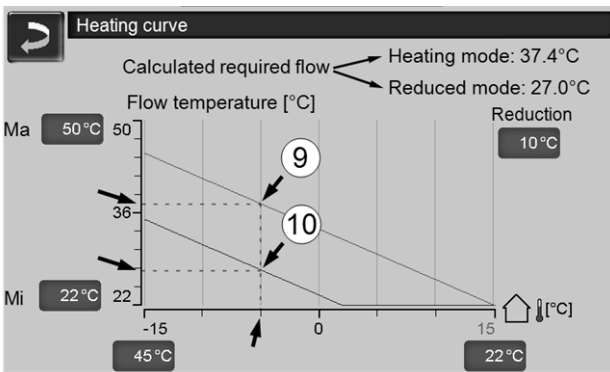


Abb. 2-33

**Adaptation of the 2-point heating curve (in Heating mode)**

**i** Observe the currently set temperature before changing the values.

A change in heating curve cannot be felt immediately. Instead, this depends largely on the kind of heat distribution system (e.g. underfloor heating) and the building standard (brick, lightweight construction etc.). It is advisable to adjust the heating curve in small increments ( $\pm 2^{\circ}\text{C}$ ) with corresponding pauses (1 to 2 days). Depending on the current outside temperature, different adjustments need to be made.

| Current outside temperature                   | Perceived room temperature | Recommended adaptation of heating curve             |
|---|----------------------------|---|
| $-15^{\circ}\text{C}$ to $-5^{\circ}\text{C}$ | too cold                   | Increase temperature value at <b>7</b>              |
|   | too hot                    | Reduce temperature value at <b>7</b>                |
| $-5^{\circ}\text{C}$ to $+5^{\circ}\text{C}$  | too cold                   | Increase temperature value at <b>7</b> and <b>8</b> |
|   | too hot                    | Reduce temperature value at <b>7</b> and <b>8</b>   |

| Current outside temperature                   | Perceived room temperature | Recommended adaptation of heating curve |
|---|----------------------------|---|
| $+5^{\circ}\text{C}$ to $+15^{\circ}\text{C}$ | too cold                   | Increase temperature value at <b>8</b>  |
|   | too hot                    | Reduce temperature value at <b>8</b>    |

**3-point heating curve**

**i** Function must be activated by qualified personnel.

Depending on the standard of building and insulation, it is advisable to change over from the 2-point to a 3-point heating curve. In contrast to the 2-point heating curve, it is possible to stipulate a third temperature **11**, i.e. the heating curve can include a sharp deflection or bend.

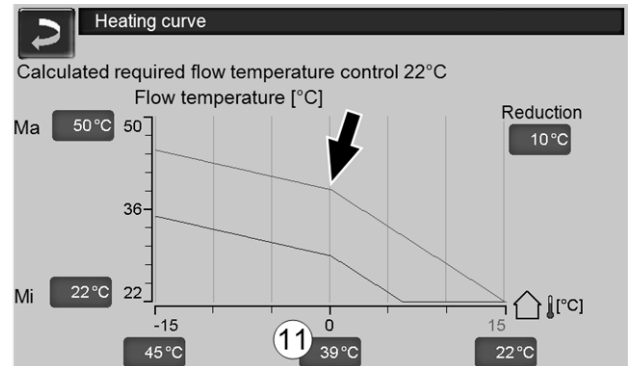


Abb. 2-34

**Adaptation of the 3-point heating curve (in Heating mode)**

**i** Observe the currently set temperature before changing the values.

| Current outside temperature                   | Perceived room temperature | Recommended adaptation of heating curve |
|---|----------------------------|---|
| $-15^{\circ}\text{C}$ to $-5^{\circ}\text{C}$ | too cold                   | Increase temperature value at <b>7</b>  |
|   | too hot                    | Reduce temperature value at <b>7</b>    |
| $-5^{\circ}\text{C}$ to $+5^{\circ}\text{C}$  | too cold                   | Increase temperature value at <b>11</b> |
|   | too hot                    | Reduce temperature value at <b>11</b>   |
| $+5^{\circ}\text{C}$ to $+15^{\circ}\text{C}$ | too cold                   | Increase temperature value at <b>8</b>  |
|   | too hot                    | Reduce temperature value at <b>8</b>    |

## 7 DHW heating



Drinking water can be heated up in two ways:

- With a *DHW tank* > 28  
(the energy source of the DHW tank is the boiler or a buffer tank<sup>[1]</sup>)
- With a *fresh water module* > 29  
(The energy source of the fresh water module is a buffer tank<sup>[1]</sup>)

**[1]** DHW area in the buffer tank

Warm water rises and collects in the uppermost area of the buffer tank (= thermal stratification). The DHW tank or the fresh water module draws the required energy for DHW heating from this uppermost area. Therefore, this (held at an adjustable temperature level) area in the buffer tank is also referred to as the *DHW area*.

### 7.1 Domestic hot water tank

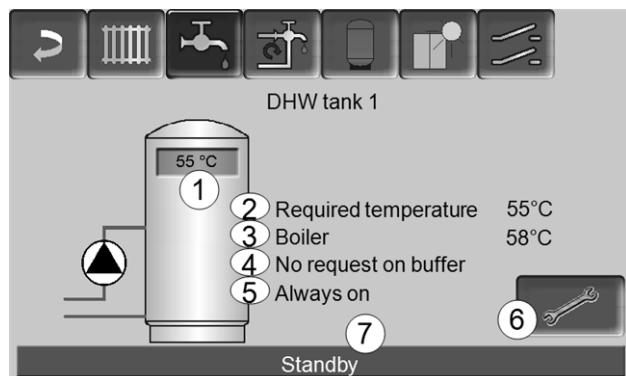


Abb. 2-35

- 1 DHW tank temperature
- 2 Required DHW tank temperature
- 3 Temperature of the energy source (e.g. boiler, buffer tank)
- 4 Info line: Charging requirement (Yes/No) to the energy source.
- 5 DHW tank operating mode > 29
- 6 DHW tank settings > 28
- 7 DHW tank status line

### 7.1.1 DHW tank settings

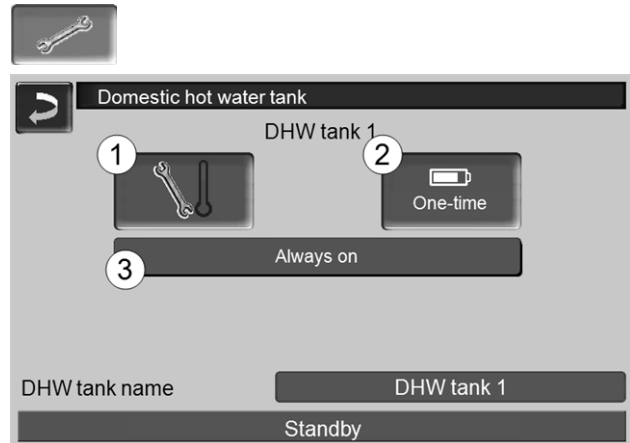


Abb. 2-36

- 1 Temperatures and hystereses 1
- 2 One-time charge 2
- 3 DHW tank operating mode 3

#### Temperatures and hystereses 1



#### Required temperature / hystereses

The DHW tank (or the domestic hot water area in the buffer tank) is charged when required until the set *Required temperature 1* is reached. A new charge starts when the DHW tank temperature falls to the value *Required temperature 1* less *Hysteresis*.

#### Example

- Required temperature 1 = 55°C
- Hysteresis = 10°C

The DHW tank charge starts when the DHW temperature falls to 45°C (requirement: The temperature of the energy source is 5°C above 45°C).

#### One-time charge 2

Is used to perform one-off re-heating of the DHW tank (e.g. if no release times are defined or the operating mode *Always Off* is set). By pressing the button, the DHW tank is recharged as soon as a charging request is made by the drinking water storage.

### DHW tank operating mode 3


*Always off:* The DHW tank charge pump is switched off permanently.

Exception for frost protection mode: The DHW tank charging pump is activated if

- the outside temperature is  $<2^{\circ}\text{C}$ , and
- the DHW tank temperature falls to  $<10^{\circ}\text{C}$ .

*Always on:* The DHW tank charge pump is switched on permanently. The pump is controlled taking the parameters *Required temperature 1*, *Minimal temperature* and *Hysteresis* into account.

Time switches (*Monday-Sunday, daily*, etc.): different time ranges can be set, in which the DHW tank charge pump is switched to *ON*.

 The operating mode *Monday - Sunday* and is not available when using the *mySOLARFOCUS app* > 33.

## 7.2 Fresh water module - FWM (optional)

A fresh water module heats domestic hot water in circulation operation. The circulation pump of the fresh water module starts if a DHW extraction point (also called a *tapping point* e.g. shower or bath) is opened. The energy for heating up domestic hot water is taken from the upper area (called the *DHW area*) of the buffer tank.

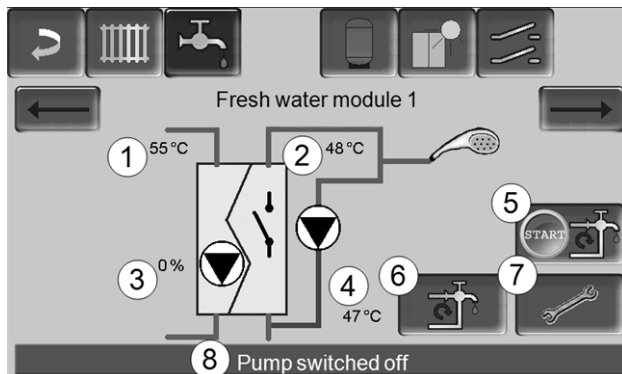


Abb. 2-37

- 1 Buffer tank temperature
- 2 Required DHW temperature
- 3 Speed of the fresh water module pump
- 4 Recirculation temperature<sup>[1]</sup> (only visible if a recirculation sensor is connected)
- 5 Start recirculation pump<sup>[1]</sup> (used for immediate start of the recirculation pump)
- 6 Circulation pump settings<sup>[1]</sup> > 30
- 7 Fresh water module settings > 29
- 8 Fresh water module status line

[1] The recirculation control is an optional additional function.

## Fresh water module settings 7



### Pump control

*Always off:* The fresh water module pump is permanently switched off. No drinking water is heated up.

*Always on:* (= manual mode); the fresh water module pump is always switched on.

*Automatic:* (= default setting); the fresh water module pump starts when a flow is detected in the pipework by an electronic sensor (e.g. the tap is opened at a connected device).

### Required DHW temperature

This parameter is only active in the case of release type *Automatic*. The fresh water module regulates the temperature at which the connected hot water devices receive water to this temperature.

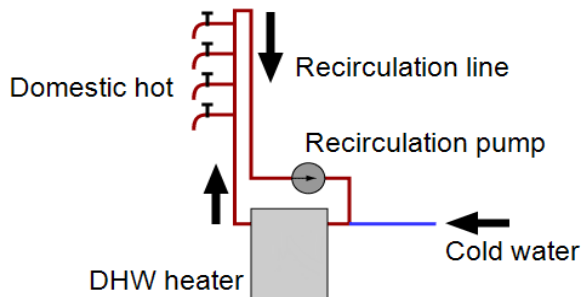
## 8 Recirculation control



(optional additional function)

A recirculation line means that hot water can be quickly available at the extraction points (also called tapping points, e.g. basin, shower, bath, ...), even with long supply pipes.

Recirculation control is possible with a fresh water module or for a DHW tank.



### Recirculation screen

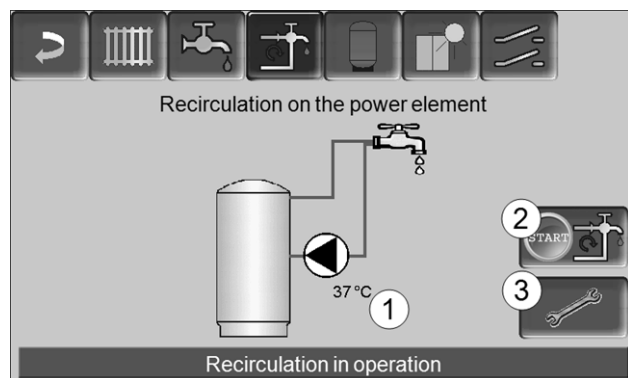


Abb. 2-38

- 1 Recirculation temperature (only visible if a recirculation sensor on the boiler power element is connected).
- 2 Start recirculation pump (serves for immediate start of the recirculation pump).
- 3 Circulation settings

### 8.1 Circulation settings

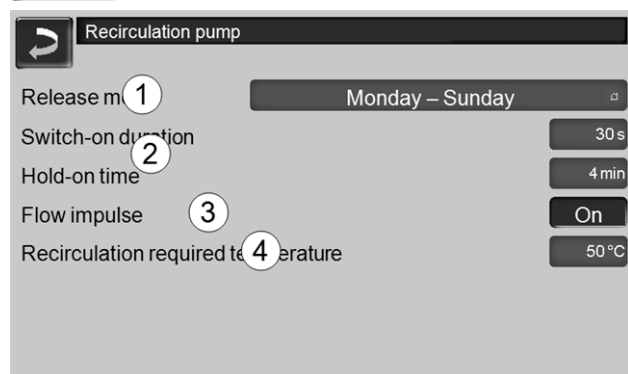


Abb. 2-39

#### Release mode 1

**Always off:** The recirculation control is switched off permanently.

**Always on:** The recirculation control is switched on permanently. The recirculation pump is only triggered in consideration of the parameters *Switch-on duration* and *Hold-on time*.

Time switching (*Monday-Sunday, by block, etc.*): In this respect, time releases can be set for recirculation control.

#### Switch-on duration / Hold-on time 2

Depending on the recirculation control selected, the pump is cycled in consideration of these two parameters, i.e. alternation between *Switch-on duration* and *Hold-on time*.

#### Recirculation required temperature 4

Is the required temperature in the recirculation line (only displayed when a recirculation sensor is connected).

## 8.2 Recirculation control - Options



In order to be able to make use of the following controls, time switching (*Monday-Sunday, by block, etc.*) must be selected for the parameter *release type*.

### Time-controlled recirculation

In the event of time-controlled recirculation, the recirculation pumps are triggered on a cycled basis if a time release (see parameter *release type* 1) is present. Cycling (i.e. switching between control/no control) is conducted in accordance with the *Switch-on duration* and *Waiting time* parameters.

#### Example:

- Release type = *Monday-Sunday*,
- The recirculation control currently has, for example, a time release of 06:00 to 08:00
- Switch-on duration = 30 seconds
- Hold-on time = 4 minutes

The recirculation pump runs for 30 seconds. After this, the pump pauses for 4 minutes in order to then run for 30 seconds again. This repeats in a time release from 06:00 to 08:00. Outside the time release, the pump is not triggered.

## Temperature- and time-controlled recirculation

Temperature-controlled recirculation is only available if a temperature sensor is connected for the recirculation temperature. The control takes the recirculation temperature (*required recirculation temperature*) into account within the time release. This means that the pump is only cycled if the recirculation temperature is below the *required recirculation temperature* minus 5°C.

### Example:

- Release type = *Monday-Sunday*
- The recirculation control currently has, for example, a time release of 06:00 to 08:00
- Switch-on duration = 30 seconds
- Hold-on time = 4 minutes
- Required recirculation temperature = 50°C
- Recirculation temperature = 48°C

The recirculation pump is not triggered as the recirculation temperature (48°C) is above the *required recirculation temperature* minus 5°C (50°C minus 5°C = 45°C). If the recirculation temperature falls below 45°C, the recirculation pump is triggered for 30 seconds. After this, the pump pauses for 4 minutes in order to then run for 30 seconds again. This repeats until the recirculation temperature reaches the *required recirculation temperature*. Outside the time release, the pump is not triggered.

## Extension of recirculation by means of a flow impulse

Recirculation being controlled by a flow impulse **3** is only possible in fresh water modules > 29, and is used as an extension of the control options previously named.

In order to activate this function, the *Flow impulse 3* parameter must be set to *on*. When a DHW extraction point is opened briefly, an electronic sensor detects the pressure drop in the line. The recirculation pump is triggered even if there is no time release.

Exception: If a temperature sensor for the recirculation pump (=recirculation sensor) is connected and the recirculation temperature is sufficient (see *Temperature- and time-controlled recirculation*), the recirculation pump is not triggered.

### Example:

- Release type = *Monday-Sunday*
- No time release has been set.

As soon as DHW is drawn, the recirculation pump is triggered.

## 9 Buffer tank

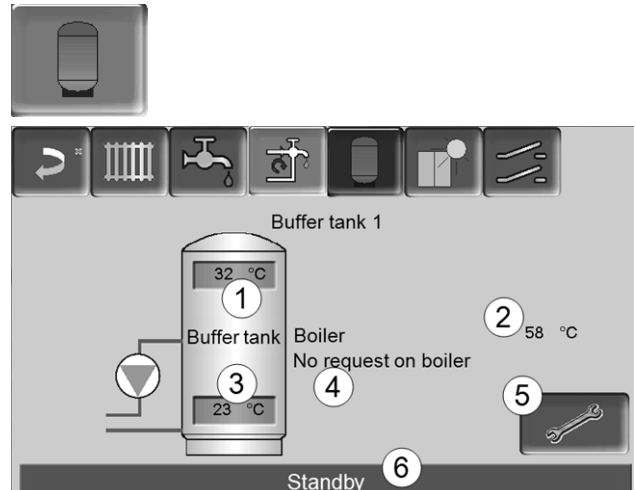


Abb. 2-40

- 1 Buffer cylinder temperature top
- 2 Temperature of the energy source
- 3 Buffer cylinder temperature bottom
- 4 Info line: Heating request (yes/no) to the energy source.
- 5 Buffer tank settings  
The button is only visible when *Time switching* is selected as the buffer tank operating mode. It may only be adjusted by qualified personnel.
- 6 Buffer tank status line

## Set buffer cylinder temperatures



### **Min. buffer cylinder temperature top**

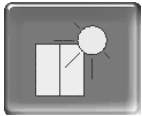
When *Buffer cylinder temperature top* falls below this value, the energy source for the buffer tank starts (e.g. boiler) and the buffer tank is re-charged (upon time release).

### **Max. buffer cylinder temperature bottom**

The buffer tank is charged until the *Buffer cylinder temperature bottom* has reached this value.

- i** In order to ensure optimum and efficient use of the buffer tank, the difference between these two temperatures should be > 15°C.

## 10 Solar system



(optional additional function)

The solar yield is charged into a solar tank. This tank can be a buffer tank or a DHW tank.

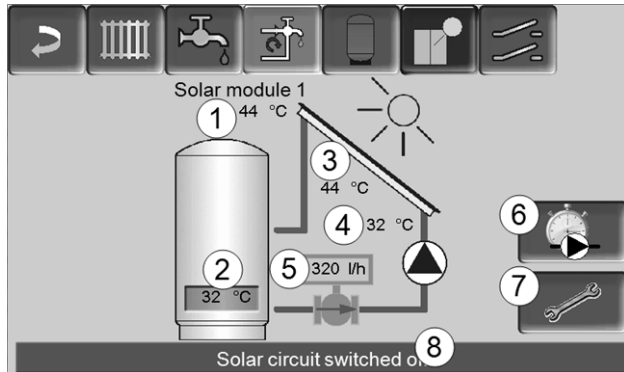


Abb. 2-41

- 1 Collector temperature (measured at the collector sensor)
- 2 Tank temperature bottom
- 3 Collector flow temperature
- 4 Collector return temperature
- 5 Solar circuit flow rate
- 6 Operating hours counter
- 7 Solar circuit settings
- 8 Solar circuit status line

**i** Additional information on the solar functions, for which a charge is due, (e.g. boiler control of two or three solar circuits) will be provided in a separate manual upon purchase, DR-0007.

**i** The solar yield is displayed in the *mySOLARFOCUS app* > 33 (prerequisite: solar system controlled by *eco*<sup>manager-touch</sup> control, including thermal unit counter).

## 11 Temperature difference charge control



(optional additional function)

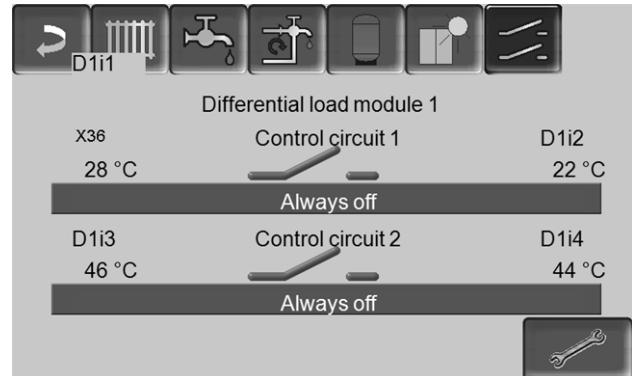


Abb. 2-42

- This function expands the *eco*<sup>manager-touch</sup> control with two (independent) differential control circuits. Suitable, for example, for charge pump control, for (rapid) tank charge, or return-stratification in the tank.
- The components of this charging circuit (e.g. circulation pump, motor valve, etc.) can be regulated by means of temperature differences between sensors.

**i** Further information can be obtained in a separate set of instructions when you purchase this function, DR-0014.



## 12 mySOLARFOCUS app



Function: The *mySOLARFOCUS app* allows you to use your smartphone to access specific *eco<sup>manager-touch</sup>* control functions.

- Set the room temperature and heating circuit flow temperature, including heating times.
- Hot water programs, with one-time DHW tank charge.
- Display the solar yield of your solar power system.



Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

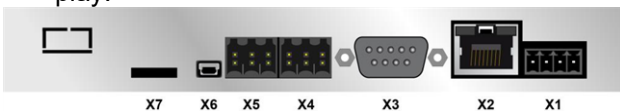
### 12.1 Requirements for use

- The control must be connected to the internet.
- Smartphone with Apple IOS 7.0 or higher or Android OS 4.4 or higher

### 12.2 Connecting the control to the internet


Create a network connection between the router and the touch display

- Use the *X2 Ethernet* (RJ45) on the rear of the display.



#### IP configuration screen



- To access the *IP-VNC* icon, select the following in the control
  - *Selection menu* screen
  - *Customer menu* screen
  - Qualified personnel button 

- Enter the data for your router. Recommended process:
  - Select *DHCP ON*.
  - The IP address is determined automatically.
  - Select the *DHCP OFF + Adopt* button.

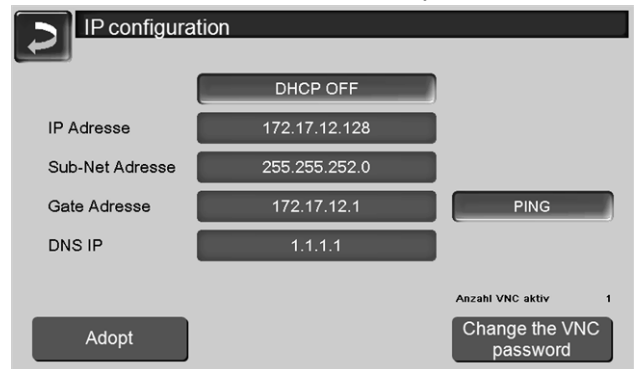


Abb. 2-43

- The IP address must be unique in each Ethernet network and is dependent on the other network components (PC, modem/router, etc.).
- Recommendation: Set a fixed IP address (=DHCP OFF), i.e. the control unit has a constant IP address.

### 12.3 Registering on the web server

The touch display must be registered on the SOLARFOCUS Web server:

- Press the app button



Abb. 2-44

- Continue by pressing *Accept*

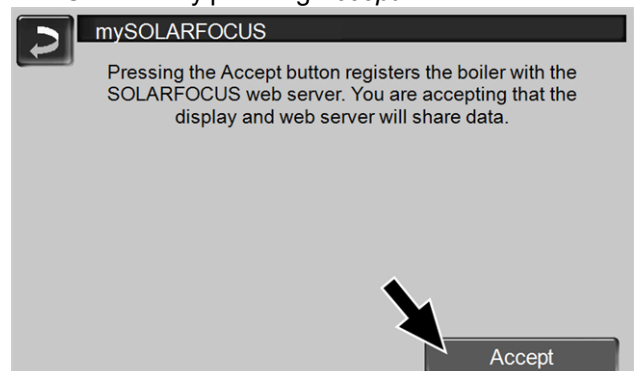


Abb. 2-45

- ▶ Note the serial number and PIN
- ▶ Change the *Send data* parameter to **Yes**.

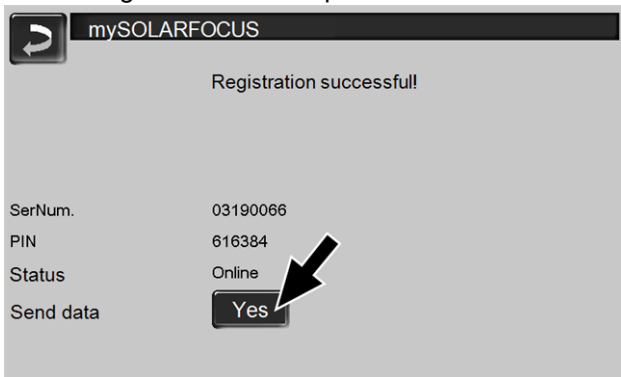


Abb. 2-46

If the connection is faulty, possible causes include:

- ▶ Check the connection from the display to the router.
- ▶ Check the IP addresses you have entered.
- ▶ Check your network router (e.g. status, etc.).

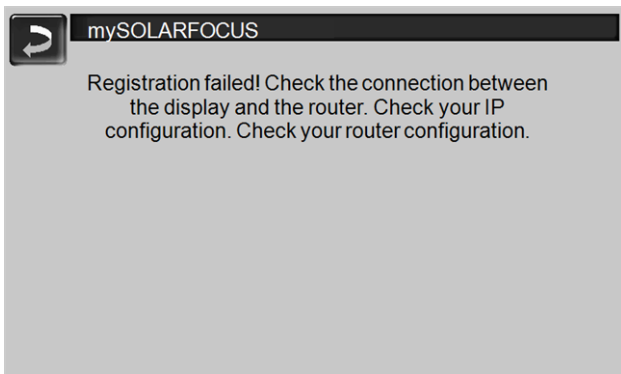


Abb. 2-47

## 12.4 Installing app, registering user



The *mySOLARFOCUS app* is available in the Apple Store and Google Play Store.

- ▶ Download, install and start the app.

- ▶ Press the *Register new user* button.

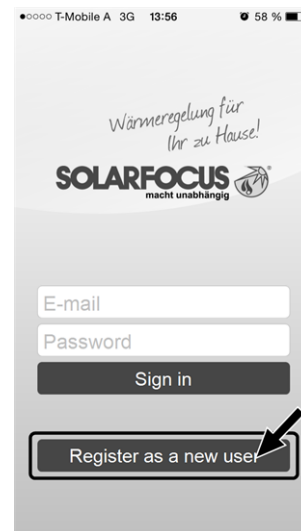


Abb. 2-48

- ▶ Enter the information required and press the *Register* button.
  - ↳ An email will be sent to the email address you provided.
- ▶ Open the email and click on the *Confirm account* link.
  - ↳ You can now sign into the app (to sign in, enter your email address and password).

## 12.5 Add system

- Requirement: You have successfully signed into the app.

- ▶ Press the *Add new system* button.

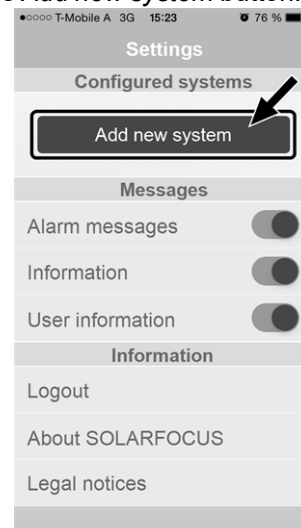


Abb. 2-49

- ▶ Enter the data for your heating system (serial number and PIN).

**i** The weather forecast data for the weatherman function are sent to the boiler control according to the *Postcode* and *Location* fields.

**i** As an alternative to the app, you can also add systems on the website:  
<https://www.mysolarfocus.com>

**i** Important: In principle only *one* user may access a system. If additional users wish to access a system, they must be approved in advance *Approve additional users > 35*.

## 12.6 Use of the mySOLARFOCUS app



In the boiler control, the app icon indicates that the parameter has been changed on the basis of an entry in the app; e.g.

- on the *heating circuit* screen: If *short-term mode* has been activated in the app.
- on the *heating circuit* screen, in *room settings*
- on the *heating curve* screen

Changes using the app:

- On the *heating circuit* screen, only *Daily* time switch is available in the *Time switch* heating circuit mode, and not *By block*.
- In the *heating domestic hot water* screen, the time switches *Monday - Sunday* and *By block* are not available for DHW tank mode.

## 12.7 Approve additional users

You can enable access to your control for additional users, for example heating engineers.

**Issuing approval.**

- ▶ Select the *Approval* menu item.

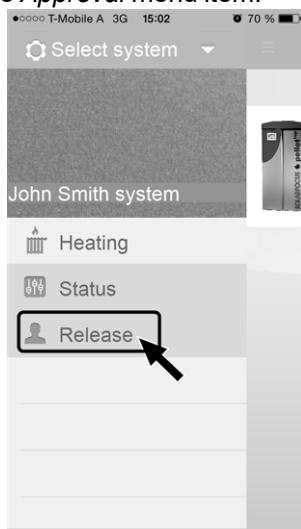


Abb. 2-50

- ▶ Enter the user's email address and select the *Invite* button.
  - ↳ The invited user will receive an email with an approval code for the system. They can use this to add the system to their app account.

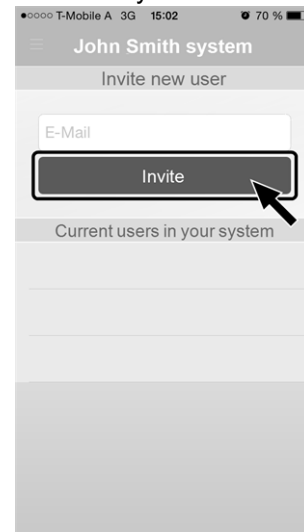


Abb. 2-51

## 13 Remote access to the control

The **eco<sup>manager-touch</sup>** control allows access to the control screens from a PC or mobile device (e.g. smartphone).

**i** Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

Two access options:

- External access: via *SOLARFOCUS-connect*, for a fee
- Access from the home network: via *VNC Viewer*, free

### 13.1 External access: **SOLARFOCUS-connect**

**i** Detailed information can be obtained in a separate manual when you purchase this function, DR-9964.

**Function**

- The control display can be operated externally, via app or web portal.
- Access option for the system operator, as well as other users authorised by them (e.g. family members, heating engineer, SOLARFOCUS customer service).

### Requirements for use

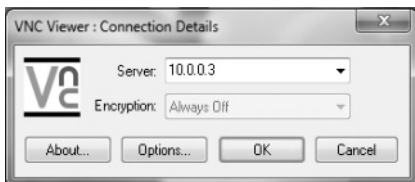
- Maintenance contract concluded for the heating system (including the *Remote access* option); or order the item (Art. 60893) for a fee.
- Possible as of software version V 21.050 > 18 of the control.
- Internet connection for the control (cable connection, IP address defined > 22, etc.).
- Data line with a bandwidth of >1 Mbit/s.

### 13.2 Access from the home network

The VNC (Virtual Network Computing) software is used for this. The control has an integrated VNC server. The free VNC Viewer software is required for remote access.

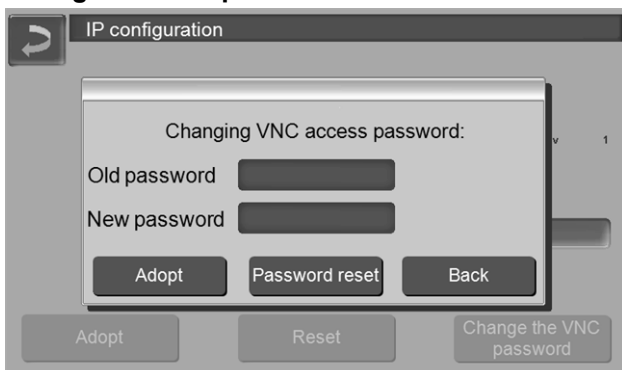
The following points are helpful for setting up a PC/-router to control the VNC server, which requires knowledge of networking technology.

#### Installation of VNC viewer for access from a local PC



- ▶ Download the free VNC Viewer from the Internet, install it on the PC and start the application.
- ▶ Enter the previously defined IP address of the control.
  - As soon as the VNC Viewer is able to access the control, a password must be entered.
  - The password predefined by the manufacturer is *solarfocus*
  - After login, the screen view of the control can be seen.

#### Change the VNC password



- ▶ Press the *Change VNC password* button on the *IP setup* view.
- ▶ To change it, first enter the old password, then the new password, then press the *Adopt* button.
- ▶ The new password must be used to log on after restarting the VNC Viewer on the local PC.

- ▶ Press the *Reset password* button to reset the password to the default password *solarfocus*.

## 14 Weatherman function



Function: The boiler control *eco*<sup>manager-touch</sup> receives current weather forecast data on an ongoing basis. If good weather is forecast, then the control delays starting the burner when there is a heating request.

Requirements for using the weatherman function:

- Registration of the heating boiler on the web server SOLARFOCUS, or in the *mySOLARFOCUS app*, > 33.

After successful online registration of the heating system, the 'weatherman' button **1** is displayed in the *Selection menu* after 2 to 3 hours.



Abb. 2-52

Press button **1** to access the weatherman menu.

If you cannot see the button, check the following (see *mySOLARFOCUS app*, > 33).

- Has your heating system been correctly registered on the SOLARFOCUS web server?
- Is the connection status between the control and the SOLARFOCUS web server *online*?
- Is the *Send data* parameter set to *Yes*?

## 14.1 Information

The *weatherman information* menu visualises the current weather forecast.

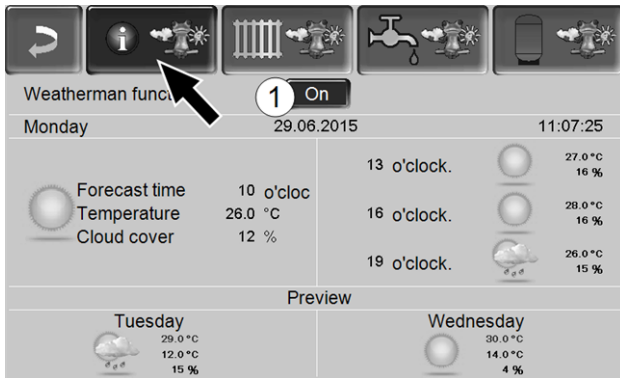


Abb. 2-53

### Weatherman function 1

**Off:** The weather forecast is shown in the display, but does not influence the control at all.

**On:** The weather forecast influences the behaviour of the control in the menus

- Heating circuit
- DHW heating
- Buffer tank

The following applies for three menus: The level of influence can be set using the plus/minus buttons on the bar, in 10% steps,



- 0% means that good weather being forecast has no influence on the control of the heating circuit/domestic hot water/buffer tank charging.
- 100% means a maximum level of influence.

## 14.2 Heating circuit

This menu **1** is only visible when a heating circuit is enabled in a boiler control.

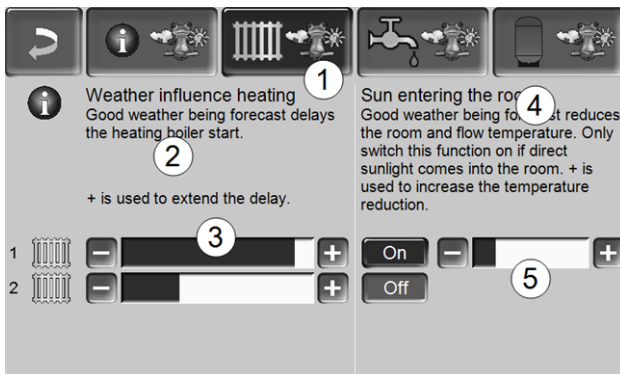


Abb. 2-54

### Weather influence heating circuit 2

This area is only visible when the heating circuit obtains its energy from a buffer tank enabled in the control.

Activate the *weather influence heating circuit* function only if the buffer tank is connected to a solar power system.

Good weather being forecast delays the start of the burner in the event of a request from the heating circuit. The bar **3** can be used to set the duration of the request delay for each heating circuit individually.

0% = no delay to burner start.

100% = maximum delay to burner start in the event of good weather being forecast.

If the function delays the burner start due to good weather being forecast, then the weatherman icon appears in the main heating circuit menu.



The green column indicates the delay. When 100% is reached, the burner starts.

### Solar yield in the room 4

Activate this function only if solar radiation directly influences the heating circuit (e.g. solar radiation through a glass panel).

A good weather forecast results in the following:

- The flow temperature of the heating circuit is reduced (within the heating period).
- The room temperature is reduced (if the *Room effect* parameter is activated in the heating circuit menu).

The bar **5** can be used to set the temperature reduction for each heating circuit individually.

0% = no reduction in the heating circuit flow temperature, or the room temperature.

100% = maximum reduction in the heating circuit flow temperature, or the room temperature, in the event of good weather being forecast.

Within the heating period, the heating circuit flow temperature is reduced by a maximum of the *reduction* set in the *heating curve* screen.

Within the heating period, the inside setpoint temperature is reduced as a maximum to the *inside setpoint temperature reduced mode* set on the *heating circuit room settings* screen.

If the *Solar yield in the room* function reduces the temperature(s) due to good weather being forecast, then the weatherman icon appears in the main heating circuit menu.



### 14.3 Domestic hot water

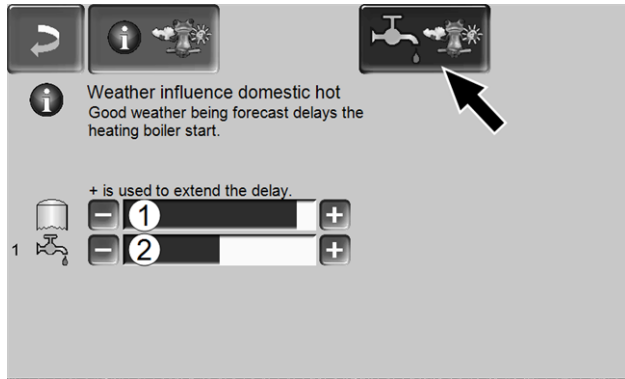


Abb. 2-55

- 1 DHW range for the boiler **octo plus**
- 2 DHW tank / domestic hot water area 1 to 4

Activate the *weather influence domestic hot water* function only if the DHW tank/domestic hot water area is heated by a solar power system, or is charged from a buffer tank that is heated by a solar power system.

Good weather forecast delays the start of the burner in the event of a request from the DHW tank/domestic hot water area.

The bar can be used to set the duration of the request delay for each DHW tank/domestic hot water area individually.

0% = no delay to burner start..

100% = maximum delay to burner start in the event of good weather being forecast.

If the function delays the burner start due to good weather being forecast, then the weatherman icon appears in the main domestic hot water menu.



The green column indicates the delay. When 100% is reached, the burner starts.

### 14.4 Buffer tank charging

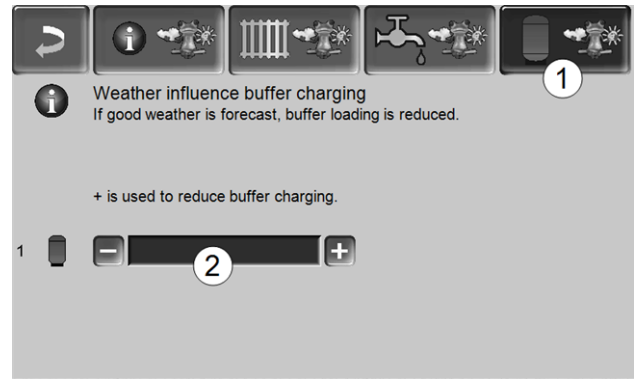


Abb. 2-56

This menu **1** is only visible when a buffer tank is enabled in the boiler control.

In the event of good weather being forecast, the buffer tank is charged for a shorter time within the release time.

The bar **2** can be used to set the level of influence for each buffer tank individually.

0% = if the burner has started and the buffer tank is within a release time, then the buffer tank is completely charged. The charge request is fulfilled when the *buffer cylinder temperature bottom* has reached the *maximum buffer cylinder temperature bottom* (in the buffer tank main menu).

100 % = if the burner has started and the buffer tank is within a release time, then the buffer tank is not completely charged. The charge request is then already fulfilled when the *buffer cylinder temperature bottom* has exceeded the *minimum buffer cylinder temperature top* (in the buffer tank main menu).

## 15 Maintenance (and cleaning)

**i** Regular maintenance of the heating system is a prerequisite

- for permanently reliable functioning of the boiler,
- for energy-saving and environmentally friendly operation of the boiler,
- for long service life of the boiler.

## 15.1 Required activities - overview

The implementation responsibility of the maintenance activities is defined according to type and extent (system operator *SO* or qualified personnel *QP*).

| Activity                                | Interval                                 | AB | QP |
|---|--|----|----|
| Empty ash container > 39                | upon notification message <sup>[1]</sup> | X  |    |
| Check system pressure > 40              | monthly                                  | X  |    |
| Clean flue gas pipe > 40                | six-monthly <sup>[2]</sup>               | X  |    |
| Check safety valve > 40                 | yearly                                   | X  |    |
| Maintenance by qualified personnel > 40 | yearly                                   |    | X  |
| Perform emissions measurement > 41      | as per regional regulations              |    | X  |

[1] You can use the *E-mail message* > 22 function to be informed about an upcoming emptying of the ash container (see *Alarm selection* button)

[2] Indication is valid for average consumption values; adjust the interval according to your own requirements.

### 15.1.1 Empty ash container

Empty the ash container when the message on the boiler control display appears.

Information on the necessity of emptying the ash container:

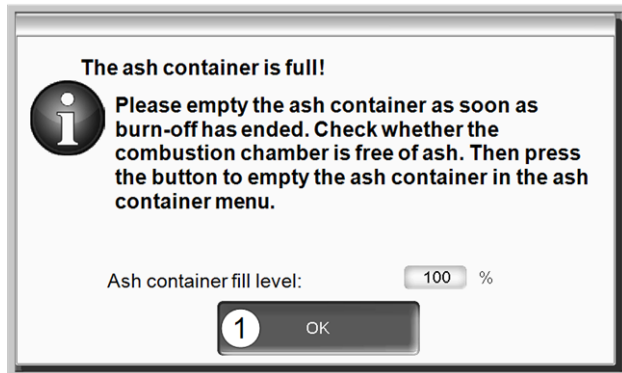


Abb. 2-57

- ▶ Wait until the burner switches off (the burner still fulfils its heating requests, i.e. this can take longer).
- ▶ Turn lever **1** to the right until the stop and remove the ash container towards the front.

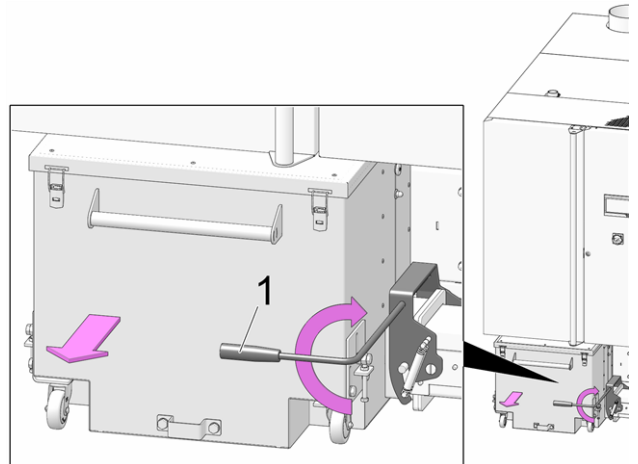


Abb. 2-58

- ▶ To avoid ash escaping, loosen the knurled nut **1** and move the slide downwards.
- ▶ Open the 4 turnbuckles **2** and remove the lid **3** upwards.

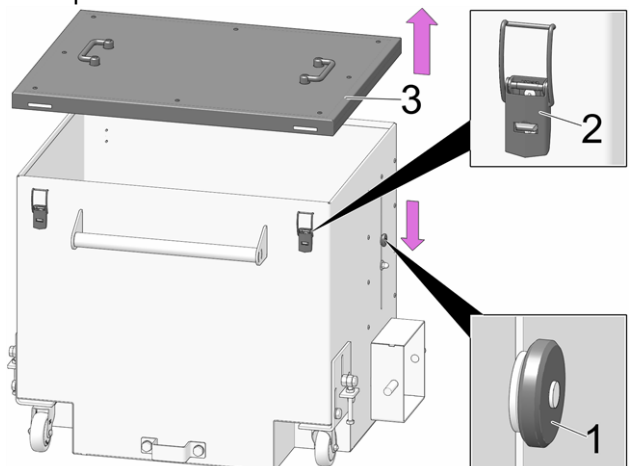


Abb. 2-59

- ▶ Empty the ash container.



**DANGER** - risk of fire due to hot ash self-igniting. Only store removed ash in metal containers with a lid.

- ▶ After replacing the emptied ash container, lock the bar again by pulling it forwards.
- ▶ Confirm the information message on the display with OK **1** > Abb. 2-57

- ▶ Press the *Ash container emptied 2* button.

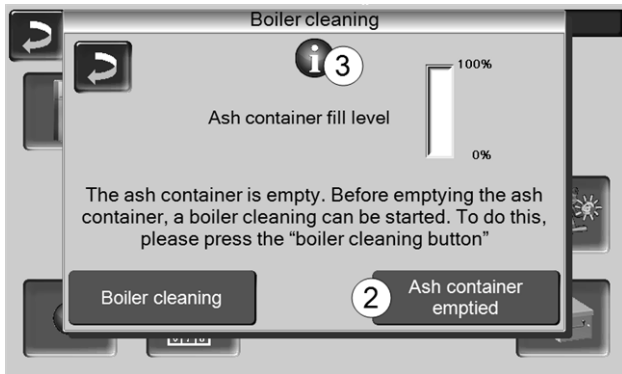


Abb. 2-60

- ↳ The counter for the ash container fill level is reset to zero.

Note: Press button **3** to open the *Boiler cleaning statistics* screen (shows the time of the last 5 boiler cleaning operations).

### 15.1.2 Check system pressure

The water pressure in the heating system can be read on the pressure gauge. As a rule of thumb (for buildings of up to three storeys), the pressure should be 1 to 2 bar for a cold system and 1.5 to 2.5 bar for a hot system.

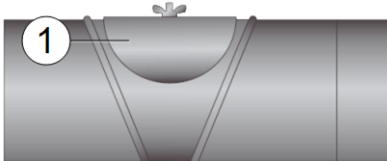
It is important that the pressure remains constant at all times. A constant fall in pressure requires the addition of extra water and indicates a fault in the system (e.g. a leak).

- i** TIP: Make a note of the set system pressure during initial commissioning.

### 15.1.3 Cleaning flue gas pipe

The flue gas pipe is located between boiler and chimney.

- ▶ Remove cover **1** in the flue gas pipe.



- ▶ Remove combustion deposits (e.g. dust, flue ash) from the pipe.

### 15.1.4 Check safety valve

Carry out a visual check for leaks at the valve (inspect around outlet of dump hose). Turning the valve cap is not recommended, as the valve may not seal completely afterwards.

Information on safety valve > 7

### 15.1.5 Replace pellet suction turbine

The suction turbine for conveying the pellets is a wearing part. Depending on the degree of soiling<sup>[1]</sup> of the suction turbine, the service life of the suction motor carbon brushes is around 450 operating hours for the initial equipment, and another 450 operating hours for the replacement carbon brush set. After approx. 1200 operating hours, we recommend replacing the suction turbine.

- [1] The cleaner the working air (air in the pellet hose) and cooling air (ambient air sucked in from the room), the longer the service life of the brushes will be.

### 15.1.6 Maintenance by qualified personnel

Depending on the operating hours (in each case after 1800 hours, fixed value) or a defined duration (in months), the control shows an indication of the necessary professional maintenance of the boiler.

Contact your heating engineer or the SOLARFOCUS *Service Hotline* > 3

#### Boiler maintenance agreement

By purchasing a maintenance agreement, SOLARFOCUS will manage the annual appointment and contact you directly when a maintenance appointment is due.



## 16 Perform emissions measurement

- The emissions measurement at the boiler is a legal requirement and must be performed by qualified personnel on a regular basis.
- For more information, consult the relevant chimney sweep and your heating engineer.
- When performing the emission measurement, the boiler control's *chimney sweep function* must be used.

### Chimney sweep function




The chimney sweep function is available in the boiler operating mode screen > 18

#### Notes on chimney sweep function

- May only be performed by qualified personnel.
- Do not open the boiler door during the measurement.
- Ensure sufficient heat removal for the boiler (e.g. energy removal to buffer tank or heating circuit).
- The removal of heat is increased by opening the heating circuit mixing valve and by switching on the heating circuit pumps.

#### Start the chimney sweep function

- ▶ Press the  button.
  - ↳ The prerequisites for enabling a measurement are tested.

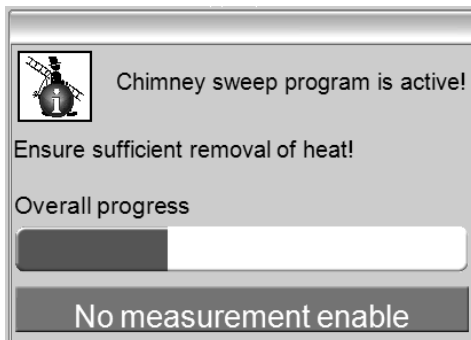


Abb. 2-61

- ▶ As soon as *Measurement enable* appears in the status bar, the measurement can be started.
- The chimney sweep function remains active for a period of 40 minutes. Before this period expires, a message allowing extension of the period by 30 minutes is displayed.
- To abort the function prematurely, switch to a different boiler operating mode.

## 16.1 Emission measurement for external boilers

If necessary, use the menu *output test heating circuit* > 19 to carry out the emission measurement on an external boiler. In this menu, the electrical outputs for the remote boiler, 3-way motor valve as well as for the heating circuit pump and heating circuit mixing valve can be switched on/off manually.

## 17 Filling pellet storage area

### Switch off the boiler before filling

- ⓘ For safety reasons, switch off the boiler 15 min. before filling (blowing in) the pellet storage area.

If item *House connection box for pellet filling* (item no. 6678) is used, this is done automatically.

## 18 Messages

Messages that arise are shown in the **eco**<sup>manager-touch</sup> control display, each message is saved in the *message log* > 21.

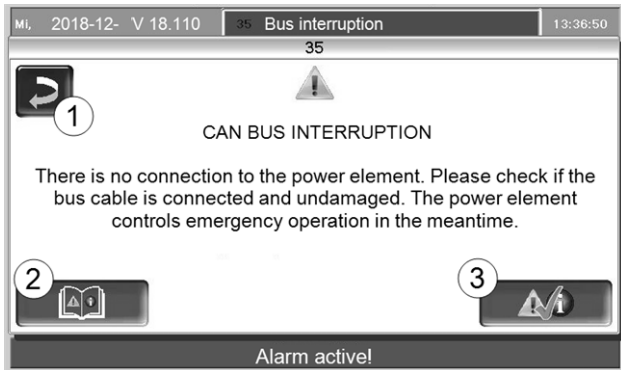


Abb. 2-62: Information window with message

### Handling of messages

- Button **1**: Close window, change to main screen. The message remains active, i.e. the burner may not start depending on the type of message.
- Button **2**: Switch to the *message log*
- Button **3**: Acknowledge the message. For some messages, an acknowledgement is only possible if the cause of the fault has been rectified; the burner may then restart after a heating request is received.

A message is visible at the top edge of the main screen until it is acknowledged **1**. Press to acknowledge the message (information window opens)

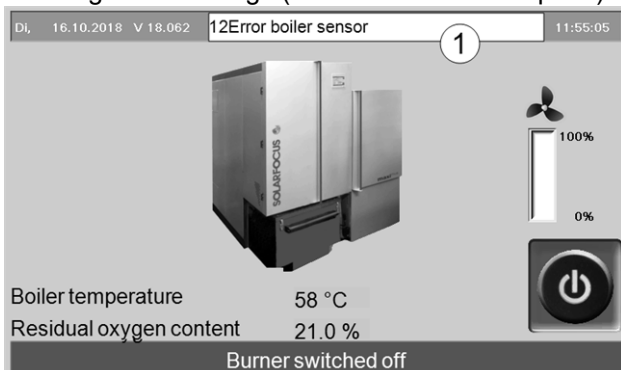


Abb. 2-63

### Alarm symbol



This symbol indicates an alarm message: The boiler is no longer ready for operation if such a message occurs.

### Note symbol



This symbol indicates a notification message: The boiler is still ready for operation.

## Possible messages

| No. | Message   |
|-----|---|
| 1   | Internal memory is invalid                                  |
| 2   | Feeder sensor short circuit                                 |
| 3   | Filling level sensor may be dusty                           |
| 5   | Flue gas temperature too low                                |
| 6   | Flue gas sensor disruption                                  |
| 7   | Flue gas sensor wrong measured value                        |
| 8   | Feeder sensor disruption                                    |
| 9   | Flue gas sensor short circuit                               |
| 10  | Factory settings loaded                                     |
| 11  | Error rotational speed feedback                             |
| 12  | Rotational speed feedback test                              |
| 13  | Rotational speed feedback Not OK                            |
| 14  | Maximum suction run time reached                            |
| 15  | Error feed sensor measured value                            |
| 16  | Error lambda sensor measurement                             |
| 17  | Error boiler temperature sensor                             |
| 19  | Extraction auger is blocked                                 |
| 20  | First ignition attempt was unsuccessful                     |
| 23  | Communication with module interrupted                       |
| 24  | Safety chain has triggered                                  |
| 25  | A power failure has occurred                                |
| 26  | Mains fuse F3 defective                                     |
| 27  | Triac fuse F6 defective                                     |
| 30  | Feed blockage   |
| 31  | Heat exchanger is blocked                                   |
| 32  | Heat exchanger is blocked                                   |
| 33  | No feed motor current flow                                  |
| 35  | CAN bus interruption  |
| 36  | Fuse at fresh water module defective                        |
| 37  | A fuse in the electronic module (solar module) is defective |
| 38  | Commissioning settings have been loaded                     |
| 40  | Pellet ignition fault/pellet shortage?                      |
| 41  | FUSE F1 or F8 defective                                     |
| 42  | Shortage of pellets in storage area                         |
| 43  | Fault in diverter for suction heads                         |
| 44  | Communication error cascade                                 |
| 46  | The ash container is full and must be emptied               |
| 47  | Heating boiler maintenance recommended!                     |
| 51  | Battery in operating element (display) is dead              |
| 52  | Limiting thermostat is open                                 |
| 67  | Room air flap does not open                                 |
| 68  | Room air flap does not close                                |
| 69  | Error communicating with the room air module                |
| 71  | No current flow heat exchanger                              |
| 72  | Note: No current flow heat exchanger                        |

| No. | Message  |
|-----|--|
| 73  | Fault in reference switch, diverter              |
| 75  | Room temperature sensor assignment               |
| 900 | Blockage of ash extraction heat exchanger        |
| 901 | No current flow to ash extraction heat exchanger |
| 902 | Blockage of ash extraction burner                |
| 903 | Electrostatic dust collector warning             |
| 904 | Thermal contact insertion                        |
| 905 | VFD communication error                          |
| 906 | Primary air damper communication error           |
| 907 | Secondary air damper communication error         |
| 908 | Recirculation pump communication error           |
| 909 | ID fan communication error                       |
| 910 | AC module 1 communication error                  |
| 911 | AC module 2 communication error                  |
| 912 | Supplemental module communication error          |
| 913 | No extraction current flow 1                     |
| 914 | Extraction 1 blockage                            |
| 915 | Storage room may be empty                        |
| 916 | Relay error AC module 1                          |
| 917 | Filling level sensor error                       |
| 918 | No extraction current flow 2                     |
| 919 | Extraction 2 blockage                            |
| 920 | Relay error AC module 2                          |
| 921 | AGT booster flap communication error             |
| 922 | Primary air damper blockage                      |
| 923 | Secondary air damper blockage                    |
| 924 | Recirculation flap blockage                      |
| 925 | AGT booster flap blockage                        |
| 926 | Ash extraction heat exchanger end position       |
| 927 | Combustion chamber sensor interruption           |
| 928 | Combustion chamber sensor incorrect reading      |
| 929 | System pressure too high                         |
| 930 | System pressure too low                          |
| 931 | Warning system pressure too low                  |
| 932 | Pressure sensor error                            |
| 933 | Filling level sensor 2 error                     |
| 934 | Direct extraction 1 safety chain                 |
| 935 | Direct extraction 2 safety chain                 |
| 936 | Ignition not possible                            |

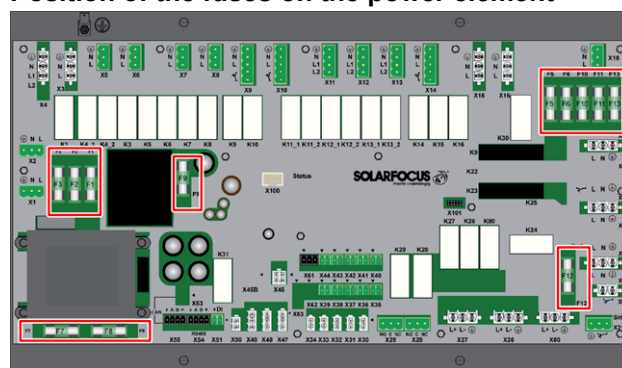
## 19 Electrical fusing



**DANGER - There is a risk of fatal electric shocks when working on electrical components of the system**

- Work may be performed only by a qualified electrician.
- Applicable standards and regulations must be observed.

### Position of the fuses on the power element



### Fuses on the power element (A1)

|     | Value   | Size    | Use  |
|-----|---------|---------|--|
| F1  | T 3.15A | 5x20 mm | 230V AC fuse: Main transformer pre fuse                                |
| F2  | T 125mA | 5x20 mm | 230V AC fuse: Standby transformer pre fuse                             |
| F3  | T 10A   | 5x20 mm | 230V AC fuse: Relay outputs  |
| F5  | F 8A    | 5x20 mm | Fuse for X18 (power supply to external modules 230V AC)                |
| F6  | F 8A    | 5x20 mm | 230V AC fuse: Triac outputs  |
| F7  | T 2.5A  | 5x20 mm | 12V AC fuse: Heating lambda sensor                                     |
| F8  | T 2.5A  | 5x20 mm | 18V AC fuse: Internal electronics for main transformer                 |
| F9  | T 800mA | 5x20 mm | 18V AC fuse: internal electronics, standby transformer; display supply |
| F10 | T 10A   | 5x20 mm | Spare fuse   |
| F11 | F 8A    | 5x20 mm | Spare fuse   |
| F12 | F 0.5A  | 5x20 mm | 230 VAC fuse: Relay outputs X26, X27 and X80                           |
| F13 | F 0.5A  | 5x20 mm | Spare fuse for F12   |

For information regarding the accessibility of the power element, see the boiler installation manual.

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- ☑ Solar energy systems
- ☑ Heat pumps
- ☑ Fresh water technology



Pellets



Log wood + pellets



Log wood



Wood chips



Solar energy



Fresh water



Heat pump

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