

# **Instruction manual**



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**WE HOPE THAT YOU ARE SATISFIED WITH OUR PRODUCT AND WE KINDLY RECOMMEND YOU TO FOLLOW THESE MAIN RULES IMPORTANT FOR A LONG SERVICE LIFE AND THE CORRECT FUNCTIONALITY OF THE BOILER**

1. Installation, ignition test and operator's training **shall be carried out by an installation company trained by the manufacturer**. This company also completes a boiler installation report (p.41).
2. When burning pellets **use only good quality fuel of 6 – 8 cm diameter** made from soft barkless wood (white pellets).
3. **Wood tar and condensates (acids)** form in the fuel storage tank during the wood burning process. Therefore, there must be a Laddomat 21/22 or a thermoregulatory valve installed behind the boiler in order to keep the **minimum temperature of water returning to the boiler at 65 °C**. **Operating temperature** of water in the boiler must be in the **80 - 90 °C** range.
4. When the boiler operates in the wood-burning mode, **it must not be permanently** operated in an output **lower than 50 %**.
5. Every circulating pump in the system must be regulated by an individual thermostat in order to keep the **specified minimum temperature of water returning to the boiler**.
6. We recommend installing the boiler with at least **one equalising tank**; the volume of which should be 500 – 1000 litres. Thus a longer service life of the pellet burner and lower fuel consumption are achieved.
7. Use only dry firewood with **12 - 20 % moisture content** – **higher moisture content decreases the boiler's performance and increases consumption**.



**CAUTION** – if the boiler is installed with a Laddomat 21/22 or with a TV 60 °C thermoregulatory valve and with the equalizing tank (see attached schematics), the guarantee period for the boiler drum is extended from 24 to 36 months. The guarantee period for other parts remains unaffected. In non-compliance with these principles, the drum's and the heatproof shaped pieces' service life may dramatically decrease due to low-temperature corrosion. The boiler drum may corrode in as little time as 2 years.



**CAUTION - INSTALLER SHOULD ALWAYS COMPLY WITH LOCAL PLANNING AND BUILDING REQUIREMENTS.**

## 1. Intended use

The hot water boilers ATMOS D15P, D20P, D30P, D40P and D50P are designed for convenient heating in residential houses, weekend house and other similar buildings by wood pellets or fire wood (as an alternative fuel in case of urgent need). Pellets of 6 – 8 mm diameter and any dry firewood of 300 to 700 mm length (depending on the boiler type) may be used for heating. The boiler is not intended for burning sawdust or small-particle wood waste.

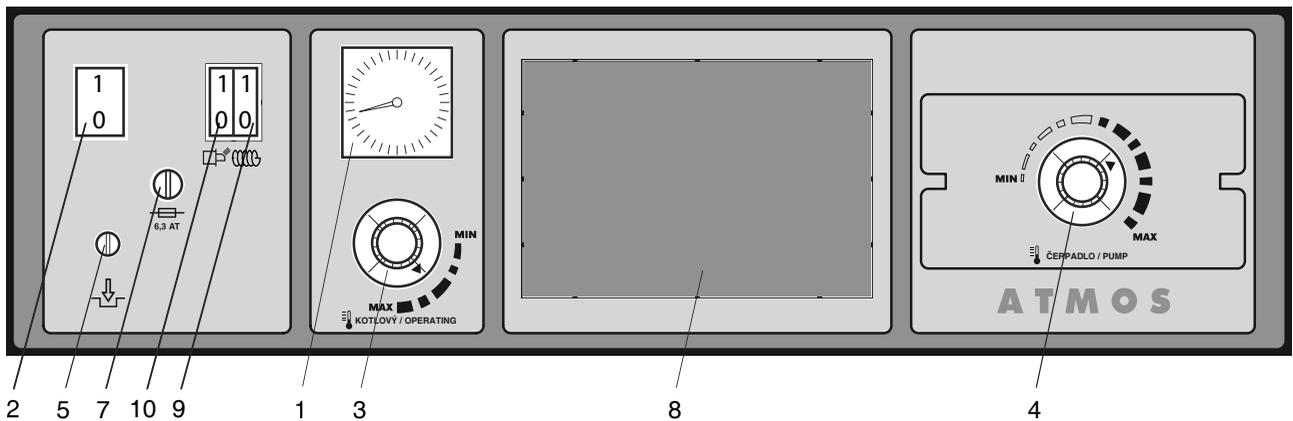
## 2. Technical description

A pellet burner with a conveyor is fitted to the left or right side of the boiler. It is attached to a frame with sealing cord (18 x 32) by a screw. The boiler drum is manufactured as a welded structure of 3 - 6 mm thick steel sheets. The boiler consists of a fuel-feeding hopper (combustion chamber) which is in the lower and rear section fitted with a heatproof shaped piece and in the upper part with a ceramic spherical chamber (shaped piece). The boiler types D15P, D20P, D30P, D40P and D50P have a heatproof shaped piece fitted opposite the pellet burner. The shaped piece protects the boiler drum against damage and also serves as a place on which the flame burns out completely. In the lower part of the boiler, there is a movable grill (for facilitating the ash removal) under which an ash-pan is located. A loading (cleaning) door is located in the front wall of the boiler. The boiler drum is externally heat insulated by mineral wool placed beneath the sheet metal covers of the boilers' external housing. A panel with a main switch, operating (boiler) thermostat, pump thermostat, safety thermostat, thermometer and fuse is located in the upper area of the boiler. The air inlet is equipped with an air flap valve operated by the Honeywell FR124 draught regulator. The boiler standard model is fitted with a cooling loop protecting it against overheating. The models D20P, D30P, D40P and D50P have also a suction ventilator fitted to the rear side. The ventilator facilitates reaching the maximum output. It is switched on and off by a switch located in the boiler control panel and it is controlled by the same operating thermostat as the pellet burner.



**With the D20P boiler type, use the extraction ventilator with the burner preset to an output ranging from 16 – 22 kW only. With types D30P, D40P and D50P, the extraction ventilator must be always operating when burning pellets.**

## Control panel appearance



- |                                    |   |
|------------------------------------|---|
| 1. Thermometer                     | 7. Fuse - T6,3A/1500 - type H                                       |
| 2. Main switch                     | 8. Area for electronic regulation of the heating system (92x138 mm) |
| 3. Control thermostat (for boiler) | 9. Automatic ash removal switch                                     |
| 4. Pump thermostat                 | 10. Burner switch   |
| 5. Safety thermostat               |   |

### Description:

- Thermometer** – monitors the temperature of water exiting the boiler
- Main switch** – allows for completely shutting down boiler if necessary (restart the pellet burner)
- Control thermostat** – regulates the operation of the pellet burner and also (with the D20P, D30P, D40P, D50P models) regulates the extraction ventilator. The regulation is based on the temperature of water exiting the boiler.
- Pump thermostat** – serves for switching the pump placed in the boiler circuit (set it to temperature between 70 – 80 °C).
- Safety irreversible thermostat** – serves as boiler protection against overheating in case of control thermostat failure or as an indication of exceeding the emergency temperature. If such exceeding occurs, it is then necessary to depress the thermostat.
- Fuse (6.3 A)** - T6,3A/1500 - type H pellet burner electronics protection.
- Area for electronic regulation** of the heating system can be used to house any type of regulation that fits into an aperture of 92x138 mm. The electric harness is prefabricated and ready to be used for the regulation's power supply.
- Automatic ash removal switch** - it serves to switch on or off the ash removal when needed eg. in case of cleaning the ash-pan. By switching off and then on you activate the ash removing module so that it stops its sound signal and starts the automatic function of the ash removal.
- Burner switch** – it serves to switch on or off the burner

### 3. Technical data

| ATMOS boiler type  |                    | D15P  | D20P      | D30P       | D40P      | D50P      |
|--|--------------------|---|-----------|------------|-----------|-----------|
| Boiler output  | kW                 | 4,5 - 15  | 6,5 - 22  | 8,9 - 29,8 | 8,9 - 40  | 13,5 - 45 |
| Heating surface  | m <sup>2</sup>     | 1,9   | 2         | 2,7        | 2,7       | 3,6       |
| Fuel shaft volume  | dm <sup>3</sup>    | 70  | 70        | 105        | 105       | 140       |
| Feeding hole dimensions  | mm                 | 270x450   | 270x450   | 270x450    | 270x450   | 270x450   |
| Specified chimney draught  | Pa                 | 18  | 15        | 21         | 22        | 23        |
| Max. operating water-pressure  | kPa                | 250   | 250       | 250        | 250       | 250       |
| Boiler weight  | kg                 | 305   | 315       | 386        | 386       | 455       |
| Gas-outlet pipe diameter   | mm                 | 150/152   | 150/152   | 150/152    | 150/152   | 150/152   |
| Boiler height  | mm                 | 1405  | 1405      | 1405       | 1405      | 1405      |
| Boiler width   | mm                 | 606   | 606       | 606        | 606       | 606       |
| Boiler depth   | mm                 | 708   | 745       | 954        | 954       | 1154      |
| Electric parts ingress protection  | IP                 | 20  |           |            |           |           |
| Electric input - at start-up<br>- in operation   | W                  | 522<br>42   | 572<br>92 | 530<br>97  | 530<br>97 | 530<br>97 |
| Boiler efficiency  | %                  | 90,4  | 91,1      | 92,4       | 91,0      | 91,1      |
| Boiler class   |                    | 5   | 5         | 5          | 5         | 5         |
| Waste gas temperature at nominal output (pellet type)  | °C                 | 141   | 128       | 133        | 157       | 123       |
| Waste gas combustion products flow weight at nominal output – pellet type  | kg/s               | 0,012   | 0,016     | 0,025      | 0,031     | 0,035     |
| Specified fuel   |                    | Good quality pellets with 6 – 8 mm diameter, 5 - 25 mm length and 16 - 19 MJ.kg <sup>-1</sup> caloric power (white pellets) |           |            |           |           |
| Alternative fuel in case of urgent need  |                    | Dry firewood of 15 - 17 MJ.kg <sup>-1</sup> caloric power, 12 – 20 % moisture content and 80 – 150 mm diameter              |           |            |           |           |
| Average fuel (pellets) consumption at nominal output   | kg.h <sup>-1</sup> | 3,7   | 5         | 8,6        | 9,4       | 10,6      |
| Maximum wood length  | mm                 | 310   | 310       | 510        | 510       | 710       |
| Burning time at nominal output – wood type   | hour               | 2   | 2         | 2          | 2         | 2         |
| Boiler water volume  | l                  | 65  | 82        | 91         | 91        | 117       |
| Hydraulic pressure drop  | mbar               | 0,22  | 0,22      | 0,23       | 0,23      | 0,24      |
| Equalising tank minimum volume   | l                  | 500   | 500       | 750        | 750       | 1000      |
| Connecting voltage   | V/Hz               | 230/50  |           |            |           |           |
| <b>Specified min. temperature of water returning to boiler is 65 °C when in operation.<br/>Specified boiler operating temperature is 80 - 90 °C.</b> |                    |   |           |            |           |           |

## Boiler drawings key

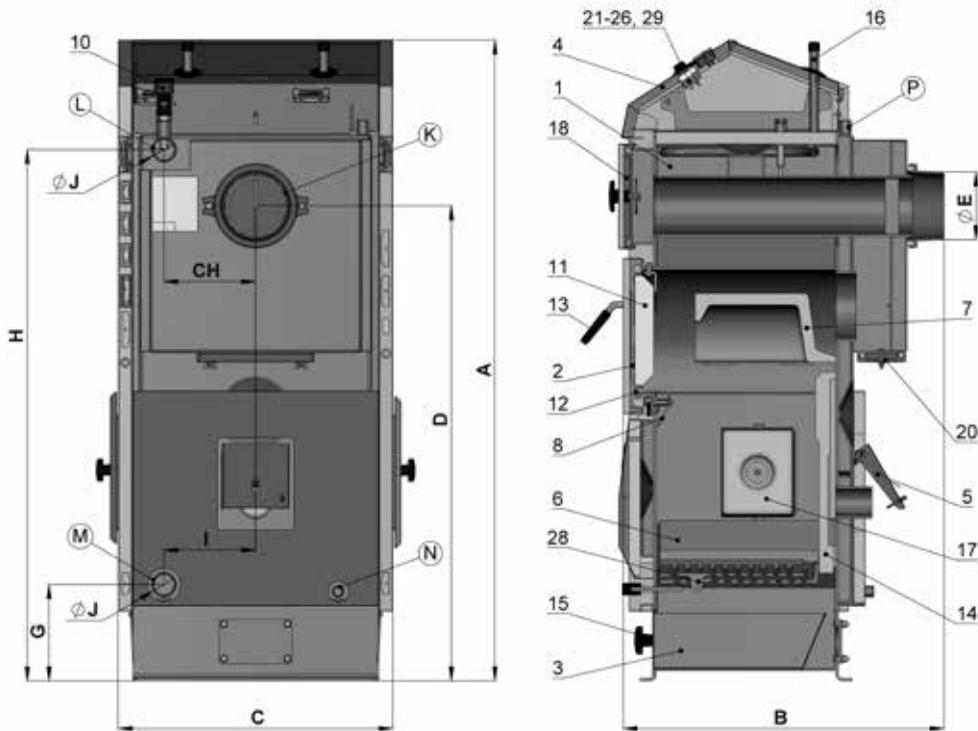
- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Boiler drum</li> <li>2. Loading (cleaning) door</li> <li>3. Ash-pan</li> <li>4. Control panel</li> <li>5. Air flap valve - only when burning wood</li> <li>6. Heatproof shaped piece – combustion area bottom</li> <li>7. Heatproof shaped piece – upper spherical chamber</li> <li>8. Frame screen</li> <li>9. Extraction ventilator</li> <li>10. Output regulator - Honeywell FR 124</li> <li>11. Door filling - Sibral</li> <li>12. Door sealing 18 x 18 mm</li> <li>13. Lock - handle</li> <li>14. Heatproof shaped piece – rear face of the spherical chamber</li> <li>15. Ash-pan lock - nut</li> <li>16. Cooling loop</li> <li>17. Burner aperture lid</li> <li>18. Tube heat exchanger cleaning lid</li> <li>19. Waste gas brake (for type D20P - 3x brush, for type D30P, D40P and D50P -1x brush + 1x iron)</li> </ol> | <ol style="list-style-type: none"> <li>20. Rear-duct cleaning lid</li> <li>21. Thermometer</li> <li>22. Main switch</li> <li>23. Control (boiler) thermostat</li> <li>24. Pump thermostat</li> <li>25. Safety thermostat</li> <li>26. Fuse T6,3A/1500 - type H</li> <li>28. Grill</li> <li>29. Doubleswitch of the automatic ash removal and burner</li> </ol> |
|--|--|
- 
- |   |
|---|
| <p>K – the flue-gas duct neck<br/>                 L – the boiler water outlet<br/>                 M – the boiler water inlet<br/>                 N – filling valve pipe sleeve<br/>                 P – sleeve for a sensor of the valve which regulates the cooling loop (TS 131, STS 20)</p> |
|---|

## Technical data

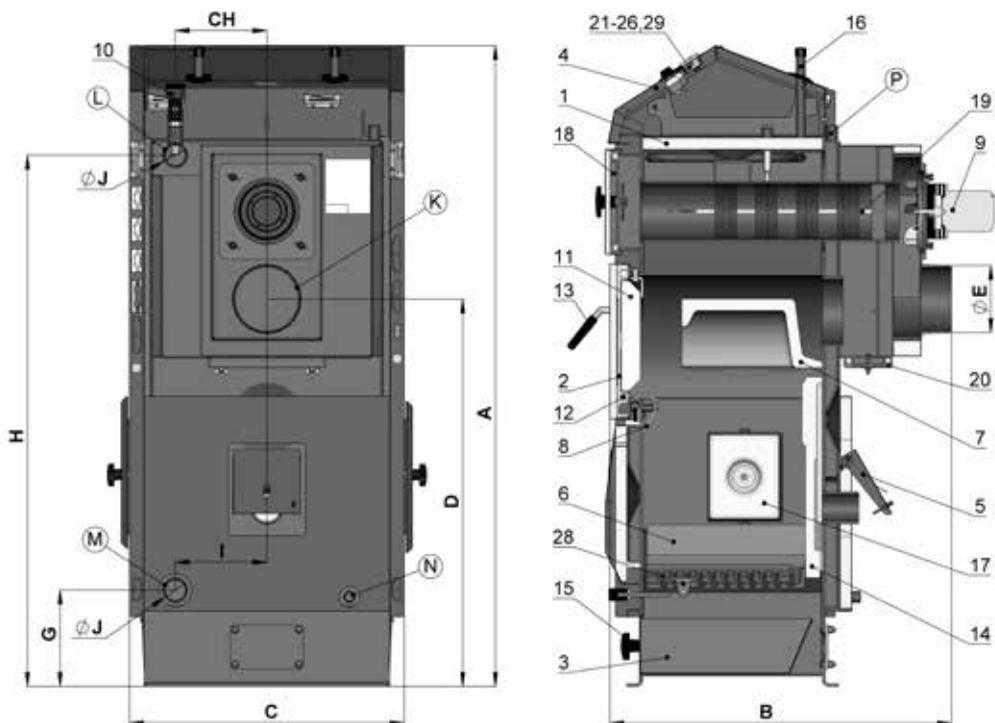
| Dimensions | D15P    | D20P    | D30P    | D40P    | D50P    |
|------------|---------|---------|---------|---------|---------|
| <b>A</b>   | 1405    | 1405    | 1405    | 1405    | 1405    |
| <b>B</b>   | 708     | 754     | 954     | 954     | 1154    |
| <b>C</b>   | 606     | 606     | 606     | 606     | 606     |
| <b>D</b>   | 1040    | 848     | 848     | 848     | 848     |
| <b>E</b>   | 150/152 | 150/152 | 150/152 | 150/152 | 150/152 |
| <b>G</b>   | 211     | 211     | 211     | 211     | 211     |
| <b>H</b>   | 1163    | 1163    | 1163    | 1163    | 1163    |
| <b>CH</b>  | 202     | 202     | 202     | 202     | 202     |
| <b>J</b>   | 6/4"    | 6/4"    | 6/4"    | 6/4"    | 6/4"    |

## Drawings of boilers

### Cut away views - type D15P

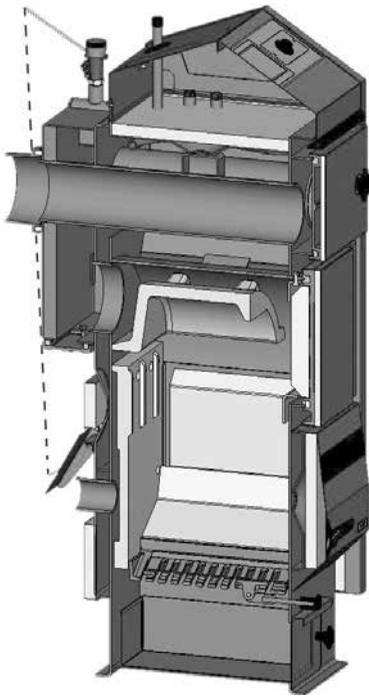


### Cut away vies – types D20P, D30P, D40P, D50P



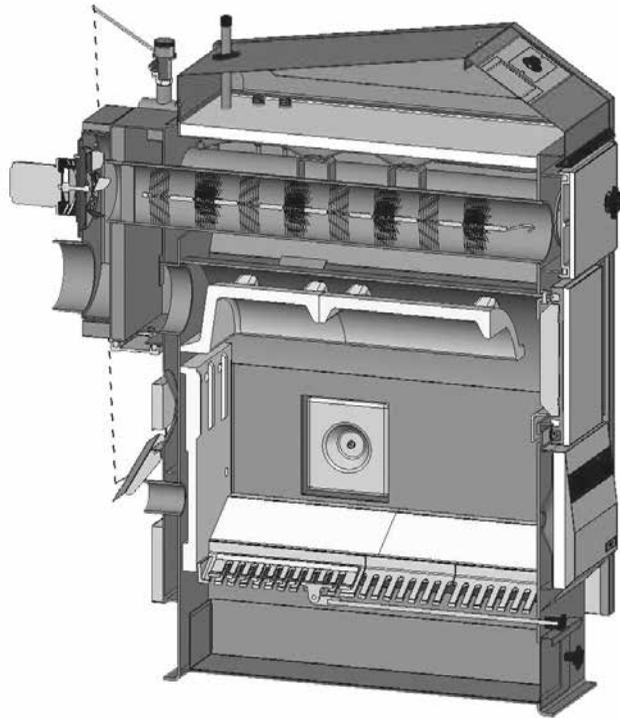
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Cut away view - type D15P



Boiler without an extraction ventilator

Cut away view – type D50P



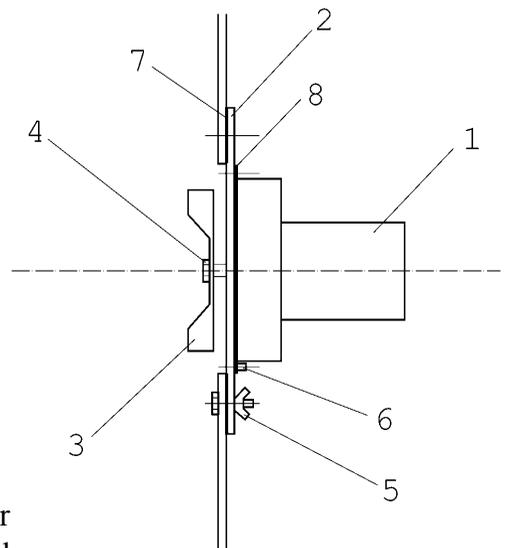
Boiler with an extraction ventilator

Extraction ventilator schematics – boiler types D20P, D30P, D40P, D50P



**CAUTION** – The extraction ventilator is supplied disassembled. Place it over the rear flue-gas duct, tighten everything well, connect into a socket and test for its smooth operation.

- 1 - Motor
- 2 - Plate
- 3 - Rotating wheel (stainless steel)
- 4 - **Nut with left-handed thread** and washer
- 5 - Wing nut
- 6 - Bolt
- 7 - Large gasket (2pcs)
- 8 - Small gasket



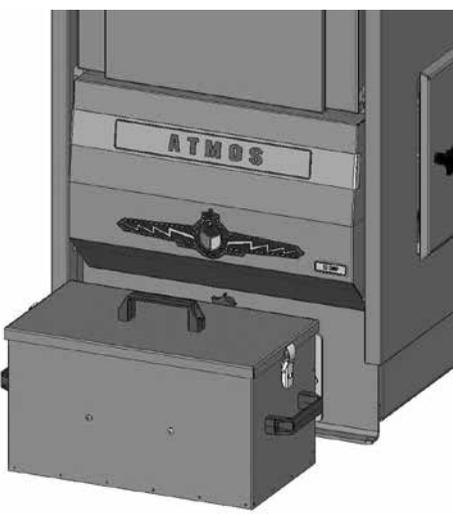
Boilers D30P, D40P, D50P are supplied with impeller of diameter 150mm. The impeller is to be exchanged by plumber (never by customer) instead the existing impeller in case of installing the boiler in chimney with a very high draught which is not able to reduce by any possible way. The impeller is installed so that it was easier to adjust optimally the burner.

## 4. Supplied boiler accessories

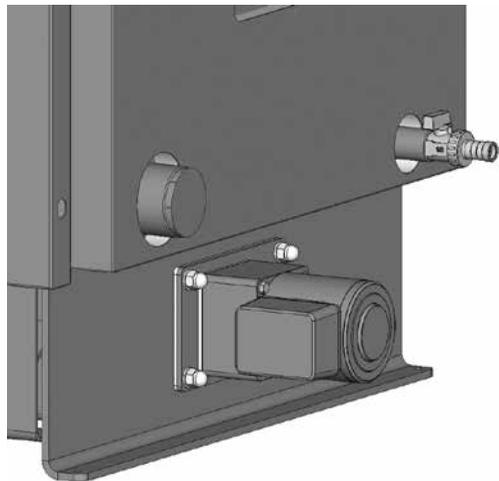
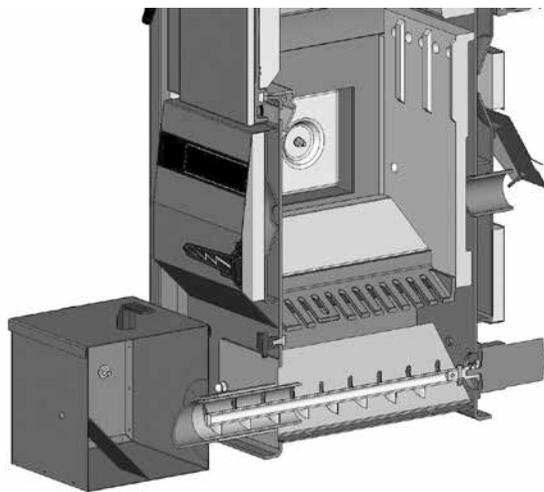
|   |     |
|---|-----|
| Steel brush with accessories                                    | 1pc |
| Poker - for boiler body cleaning                                | 1pc |
| Cleaning fire hook - for cleaning burning chamber of the burner | 1pc |
| Filling-in valve  | 1pc |
| Operating and maintenance instructions manual                   | 1pc |
| Draught regulator - Honeywell FR 124                            | 1pc |

### Automatic ash removal from the boiler drum

Each pellet type boiler produced after 1.3. 2007 can be fitted with automatic ash removal from the boiler body into the additional ash-pan, which will require emptying once in 3 to 45 days, depending on the quality of the pellets. For one minute, this automatic device removes the ash from the chamber under the burner by means of screw conveyor in regular interval of one hour (twelve hour) or according another setting in the ash removal module. We can reset or repeat this cycle in the boiler several times by switching the switch /29 (10)/ on and off. When the additional ash-pan is completely full, the ash removal device will stand off (a screw) and a sound signal will start. New start up should be performed after cleaning the external ash-pan by means of switching the switch /29 (10)/ on and off for 5 - 10 second (the B variation we do not make with a main switch).



**The automatic ash-removal system does not need any specific operating procedures. Just make sure that the additional ash-pan /30/ is emptied regularly. The container is fitted to the boiler by means of two clips with safety catches /32/. These clips must be fastened well during the boiler operation so that no inadvertent release of the ash-removal device and consequent transfer of ash into the boiler room may occur.** This device must be installed in compliance with the supplied installation instructions. When installing the device, we follow the installation manual delivered with the device. In case of wood burning put back the moving grate so that the wood do not fall into the ash-pan.



## 5. Fuel

The specified fuel are good quality pellets of 6 - 8 mm diameter, 5 - 25 mm length and 16 - 19 MJ.kg<sup>-1</sup> caloric power. As alternative fuel (in case of urgent need) use dry firewood of 80 – 150 mm diameter, minimum 2 years old with 12 – 20% moisture content, 300 – 700mm length - depend on boiler type and 16 - 19 MJ.kg<sup>-1</sup> caloric power. Good quality pellets are such that do not disintegrate into sawdust and are made from soft barkless wood without other additive (so called white pellets).

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High-quality wooden pellets – white without black dots (bark)



Poor-quality wooden pellets – dark with bark (with black dots)

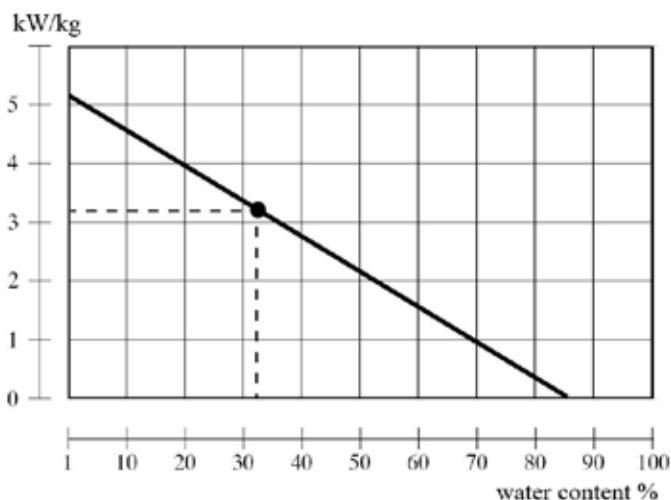
### Basic wood burning data

You can ensure maximum output and a long service life if you burn wood which has been left for at least 2 years to dry. The following graph illustrates the relationship of moisture content to heating capacity of the fuel. The energy content declines dramatically with increased water contents.

Example:

Wood with 20% moisture contents has thermal power of 4 kWh /1 kg of wood.

Wood with 60% moisture contents has thermal power of 1.5 kWh /1 kg of wood.



• e.g. – spruce wood which has been stored for 1 year under shelter – see graph



**Boilers are not suitable for burning wood with moisture content lower than 12%.**

### Fuel heating capacity

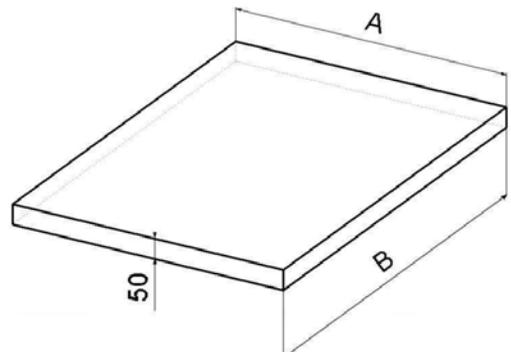
| Wood - type | Heating capacity per 1 kg |        |     |
|-------------|---------------------------|--------|-----|
|             | kcal                      | kJoule | kWh |
| Spruce      | 3900                      | 16250  | 4,5 |
| Pine        | 3800                      | 15800  | 4,4 |
| Birch       | 3750                      | 15500  | 4,3 |
| Oak         | 3600                      | 15100  | 4,2 |
| Beech       | 3450                      | 14400  | 4,0 |



Raw wood does not burn easily, produces a lot of smoke and substantially decreases the service life of your boiler and chimney. Boiler output drops as low as 50% and fuel consumption doubles.

## 6. Boiler bases

| Boiler type (mm) | A   | B    |
|------------------|-----|------|
| D15P, D20P       | 600 | 600  |
| D30P, D40P       | 600 | 800  |
| D50P             | 600 | 1000 |

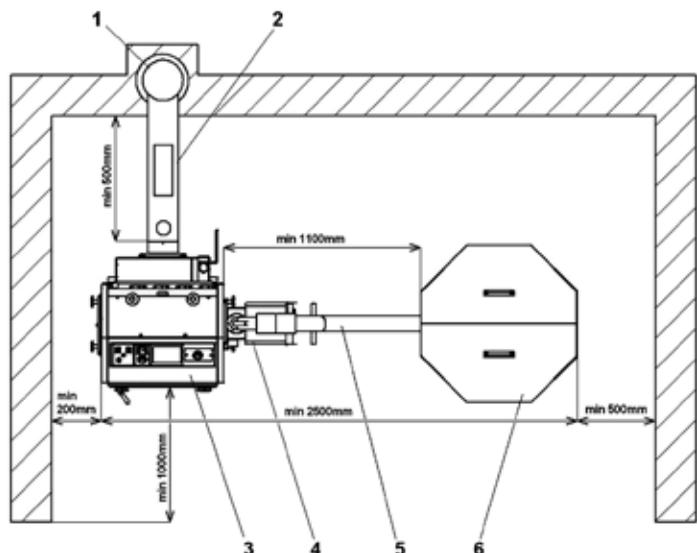


We recommend providing a concrete (metal) base under the boiler.

## 7. Environment type and boiler placement in a boiler room

Boilers may be used in a “basic environment” - AA5/AB5 as specified in Czech standard ČSN3320001. Boilers must be placed in a boiler room with sufficient air access necessary for combustion. Placing boilers in living areas (including halls/corridors) is not permitted. The combustion air inlet aperture in the boiler room must be of minimum 350 cm<sup>2</sup> for boilers of 15 - 45 kW outputs.

- 1 - Chimney
- 2 - Flue duct
- 3 - Boiler
- 4 - Burner
- 5 - Conveyor
- 6 - Container



## 8. Chimney

Connecting the appliance to the chimney vent stack must always be carried out with the permission of the appropriate chimney authority. The vent stack must always be capable of providing sufficient draught and it must discharge the waste gas into the open atmosphere in a reliable manner for all possible operating conditions. The dimensions of the individual vent stack must be correct to ensure good functionality of the boiler; **because the draught influences combustion, performance and the service life of the boiler.** The chimney draught is directly dependent on its cross section, height and the inner wall ruggedness. It is not permitted to connect another appliance into a chimney into which a boiler is connected. **The chimney diameter must not be smaller than the boiler outlet (min. 150 mm).** The chimney draught must comply with the specified values (see technical data, page 7). The chimney must not be excessively high, otherwise the boiler effectiveness is decreased and the combustion is affected (the flame “breaks”). In case of excessive draught, install a throttle valve in the flue gas duct between the boiler and the chimney.

Indicative values of the chimney cross-section dimensions:

|                |             |
|----------------|-------------|
| 20 x 20 cm     | height 7 m  |
| 20-cm diameter | height 8 m  |
| 15 x 15 cm     | height 11 m |
| 16-cm diameter | height 12 m |

Exact chimney dimensions are stipulated in Czech standard ČSN 73 4201.

Specified chimney draught is stated in section 3 „Technical Data“.

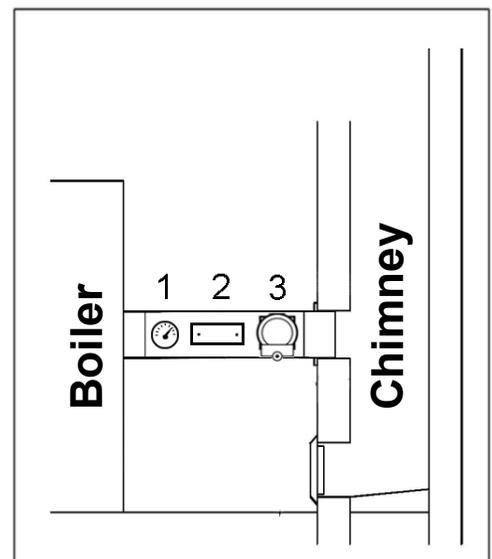
## 9. Flue-gas duct

The flue-gas duct must be connected into the chimney vent stack. If the boiler cannot be connected to the chimney directly, the appropriate flue-gas duct extension must be as short as possible in the given circumstances, **but not longer than 1m**, it must be without additional heating surface and must **incline upwards in the direction towards the chimney.** Flue-gas ducts must be mechanically durable and sealed against combustion products and gas penetration, and it must be possible to **clean them inside.** The flue-gas ducts must not be lead through another person’s apartment or property. The internal diameter of the flue-gas duct must not be larger than the internal diameter of the chimney intake and it must not decrease in width in the direction towards the chimney. Use of elbow-pipes is not suitable. Methods for providing flue-gas duct entries through flammable material structures are stipulated in appendices 2 and 3 of the Czech standard ČSN 061008. These are appropriate for mobile installations, wooden cottages etc.

- 1 - Waste gas thermometer
- 2 - Cleaning aperture
- 3 - Throttle valve (draught limiter)



**INFO** - In case of excessive chimney draught, install a throttle valve /3/ or draught limiter.



## 10. Fire prevention during installation and use of heating appliances

Selected from ČSN 061008 – Fire safety of local appliances and heat sources.

### Safe distances

When installing the appliance, keep a minimum safe distance of 200 mm from building materials. This distance is valid for boilers and flue-gas ducts positioned near flammable materials of the B, C1 and C2 flammability class (the flammability classes are listed in chart 1). It is necessary to double the 200 mm safe distance if the boilers and flue-gas ducts are placed near flammable materials of C3 class (see chart 1). It is also necessary to double the safe distance if the flammability class of the material in question cannot be determined. The safe distance can be decreased to one half (to 100 mm) if a heat insulating, non-combustible screen (asbestos board) of a 5 mm minimum thickness, is placed 25 mm from the protected combustible material (so called flammable insulation). The screening board or protection screen (on the protected object) must exceed the boiler outline including its flue-gas duct on each side by at least 150 mm and by at least 300 mm above its upper surface. The screening board or protection screen must be also used for all fixtures and fittings from combustible materials in cases where the safe distance cannot be maintained (such as in mobile structures or wooden cottages etc. - for more details see ČSN 061008 standard). The safe distance must be maintained even when placing fixtures and fittings near the boilers.

If boilers are placed on floors from combustible materials, the floor must be fitted with a non-combustible, heat insulating pad exceeding the boiler's ground-outline on the side where the stoking and ash-pan apertures are, by at least 300 mm (in front of the aperture) and on all the other sides by at least 100 mm. The non-combustible, heat-insulating pad can be made from any material of A flammability class.

Chart 1

| Flammability classes of building materials and products |  |
|---|--|
| A – non-combustible                                     | granite, sandstone, concrete, bricks, ceramic tiles, mortars, fireproofing plasters etc.)                        |
| B – non-easily flammable                                | Akumin, Izomin, Heraklit, Lignos, basalt felt boards, fibreglass boards, Novodur                                 |
| C1 – low degree of flammability                         | deciduous tree wood (oak, beech), Hobrex boards, plywood, Sirkolit, Werzalit, hardened paper (Formica, Ecrona)   |
| C2 – medium degree of flammability                      | coniferous tree wood (pine tree, larch, spruce), chipboards and cork boards, rubber flooring (Industrial, Super) |
| C3 – high degree of flammability                        | fibreboards (Hobra, Sololak, Sololit), cellulose materials, polyurethane, polystyrene, polyethylene, foamed PVC  |



**CAUTION** - In circumstances when there is a risk of temporary access of flammable gases or fumes, or during works when a temporary fire or explosion risk may possibly occur (such as gluing linoleum, PVC etc.) the boilers must be put out of operation long enough before the risk occurrence. **No items from flammable materials may be placed on the boilers or near them into a distance lower than the specified safe distance (more ČSN EN 13501-1).** In short, do not put any items that could easily catch fire in the vicinity of the boiler.

## 11. Connecting boilers to the electric network

The boilers are connected to 230 V, 50 Hz mains with a mains cable without a plug. The mains supply cable in case of repair it must be replaced with the same type by the servicing organization. Connection, maintenance and reparation can be made only by a qualified person in accordance with valid regulations of the particular country.



**CAUTION** - The mains cable must not be equipped with a plug (designed to be connected to a socket). It must be connected in a fixed way to a switch board or junction box to avoid confusion of the conductors.

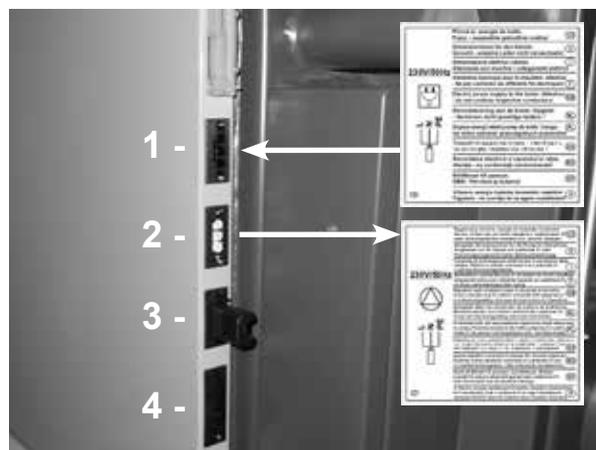
Mains cable must be regularly checked and maintained in the prescribed condition. It is forbidden to interfere in to the safety circuits and elements for safe and reliable operation of the boiler. If any damage of electrical equipment must be the boiler out of operation, disconnect from the mains and ensure a qualified repair according to applicable standards and regulations.

After the installation of the burner on the boiler the technician must connect the burner and subsequently the entire boiler to the electric mains in accordance with the attached wiring diagram (page 17 - 21).

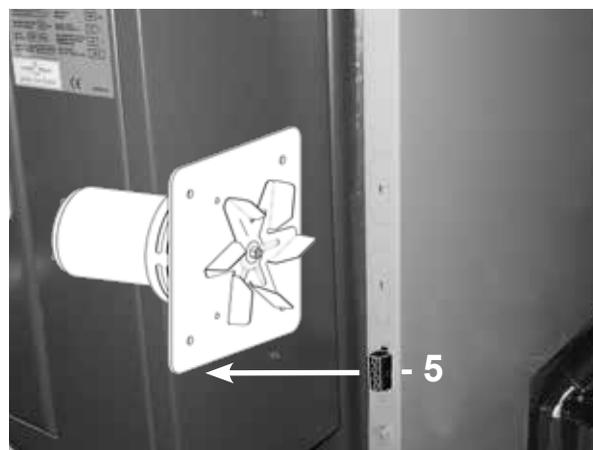
### Electric connection of the burner:

Between the burner and boiler a six-wire cable is use that is connected with one end to the burner with a 6-pin connector (part of the burner) and the other end 6-pin connector (part of the boiler - placed in the side hood) to the boiler. The boiler is also equipped with a 3-pin connector for connection of pump in boiler circuit and with a 3-pin connector (with jumper) for easy connection and controlling of the burner from external regulator.

### Connectors in the right side hood:



Connectors in the right side hood



Connector in the left side hood

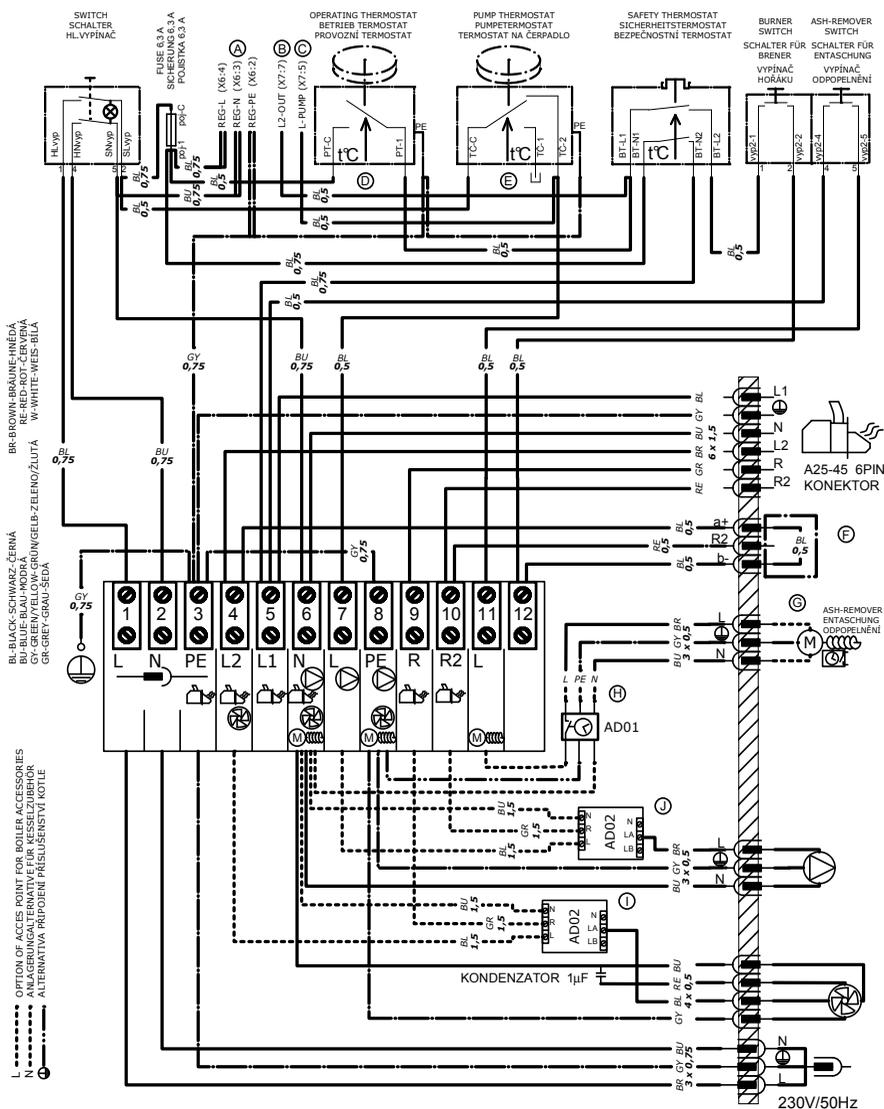
- 1 - connector for power cord - black (L - brown, N - blue, PE - green/yellow)
- 2 - connector for pump in boiler circuit - white (L - brown, N - blue, PE - green/yellow)
- 3 - connector for external regulator of the boiler (with jumper)
- 4 - connector for burner ATMOS connection model AC07X - (L1, L2, R, R2,N, PE)
- 5 - connector for extraction fan (except D15P)

At the bottom part of the side hood is red connector blinded with black cap. Standard designed to engage the automatic ash removal (or other applications) - not connected to the terminal.





# 16. Wiring diagram connection of the boilers D20P, D30P, D40P, D50P with extraction fan, model 2012 with 6-pin connector and two modules AD02 - to control extraction fan of the boiler and pump in the boiler circuit from burner control unit AC07X (R and R2)

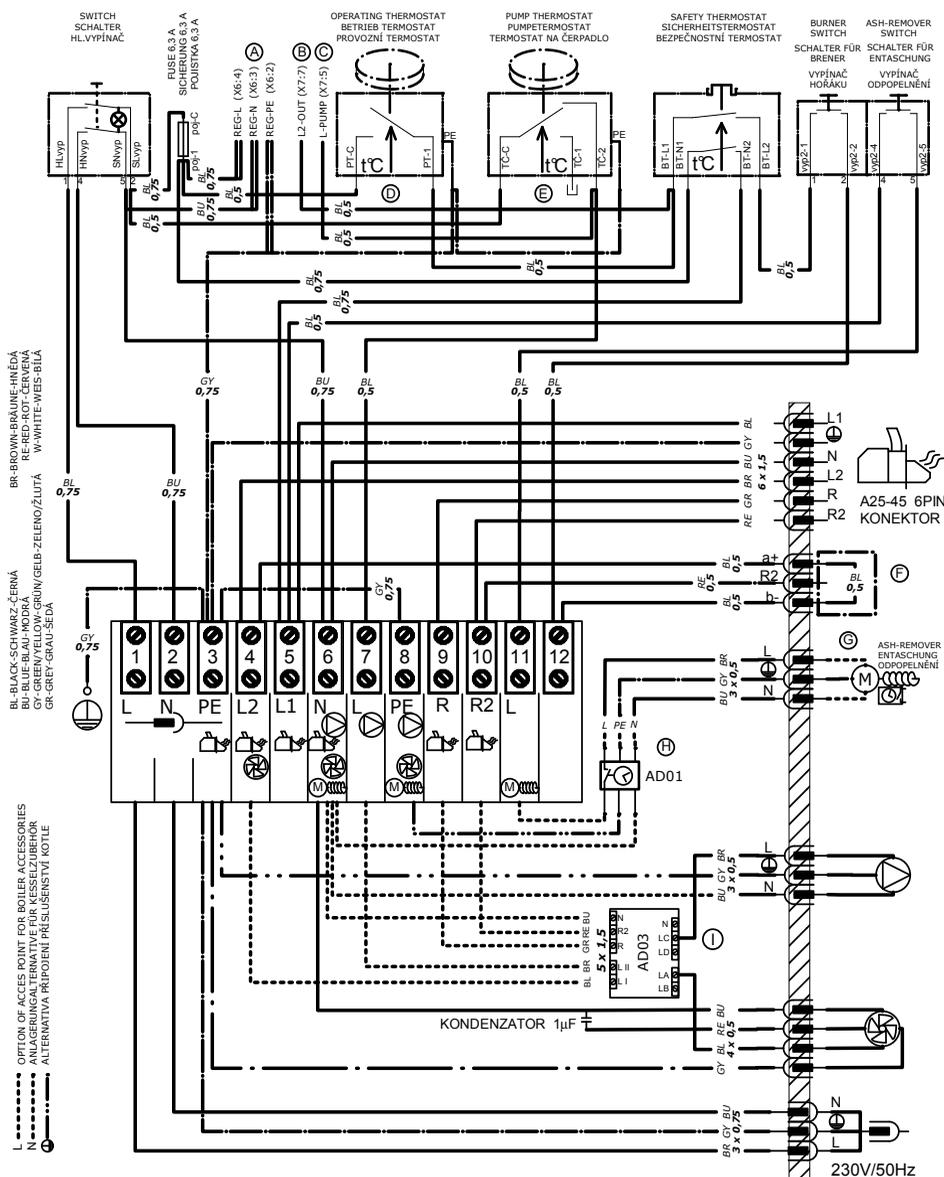


**WHEN USE ELECTRONIC REGULATION ACC01 AND PELLETBURNER A25-45 MUST BE THESE CHANGES OF WIRING:  
 BEI DER STEUERUNG DES KESSELBETRIEBES DER ELEKTRONISCHE REGELUNG ACC01 UND PELLETBRENNER A25-45 MÜSSEN DIESE ÄNDERUNGEN MACHEN SEIN:  
 PŘI ZAPOJENÍ ELEKTRONICKÉ REGULACE ACC01 A PELETŮVÉHO HOŘÁKU A25-45 PROVEDTE TYTO ZMĚNY:**

- A** VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRULE/FASTON 6.3) FOR ELECTRONIC REGULATION  
 SPEISEKLEMMENVARIANTEN "REG L,N,PE" (ADERNÜHULSE/FASTON 6.3) FÜR ELEKTRONISCHE REGELUNG  
 VARIANTY NÁPAJEČÍCH SVORKY "REG L,N,PE" (DUTINKA/FASTON 6.3) PRO ELEKTRONICKOU REGULACI
- B** SPEISEKLEMME "L2 OUT" OF BURNER AND FAN TO THE ELECTRONIC REGULATION (ACC01)  
 PRIPOJOVACÍ SVORKA "L2 OUT" HOŘÁKU A VENTILÁTORU DO ELEKTRONICKÉ REGULACE (ACC01)  
 RESERVOIR POINT "L2 OUT" OF BURNER AND FAN TO THE ELECTRONIC REGULATION (ACC01)
- C** SPEISEKLEMME "L PUMP" OF BOILER PUMP TO THE ELECTRONIC REGULATION (ACC01)  
 PRIPOJOVACÍ SVORKA "L PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE (ACC01)  
 RESERVOIR POINT "L PUMP" OF BOILER PUMP TO THE ELECTRONIC REGULATION (ACC01)
- D** WHEN ELECTRONIC REGULATION CONTROL BURNER - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT  
 DEN KONNEKTOREN "PT-C" UND "PT-1" ABKLEMMEN BEI DER BRENNERBEDIENUNG DER ELEKTRONISCHE REGELUNG  
 KONNEKTORY "PT-C" A "PT-1" ODPOJIT PŘI OVLÁDÁNÍ HOŘÁKU ELEKTRONICKOU REGULACÍ
- E** WHEN ELECTRONIC REGULATION CONTROL BURNER - CONNECTORS "TC-C" AND "TC-2" MUST BE UNCONNECT  
 DEN KONNEKTOREN "TC-C" UND "TC-2" ABKLEMMEN BEI DER KESSELPUMPEBEDIENUNG DER ELEKTRONISCHE REGELUNG  
 KONNEKTORY "TC-C" A "TC-2" ODPOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO ČERPADLA ELEKTRONICKOU REGULACÍ
- F** ACCESS POINT FOR EXTERNAL BOILERREGULATION - PLUG IN CONNEKTOR  
 ANLAGERUNG FÜR EXTERN KESSELREGELUNG - KLEMME IN DEN KONNEKTOR  
 PŘIPOJOVACÍ SVORKY PRO EXTERNÍ REGULACI KOTLE - KLEMA V KONNEKTORU
- G** CONNEKTOR (BLACK/RED) - FOR EXAMPLE RESERVOIS POINT FOR MODUL AD01 - MOTOR OF ASH-REMOVER  
 KONNEKTOR (SCHWARZ/ROT) - ZUM BEISPIEL FÜR DEN MODUL AD01 - ENTASCHUNGSMOTOR  
 KONNEKTOR (ČERNÝ/ČERVENÝ) - NÁPŘÍKLAD PRO MODUL AD01 - MOTOR ODPOPELNĚNÍ
- H** ACCESS POINTS - FOR EXAMPLE FOR MODUL AD01 - TIMEUNIT OF ASH-REMOVER  
 SPEISEKLEMME - ZUM BEISPIELE FÜR MODUL AD01 - ZEITBEDIENUNG FÜR DEN ENTASCHUNG  
 PŘIPOJENÍ - NÁPŘÍKLAD PRO MODUL AD01 - ČASOVÝ MODUL ODPOPELNĚNÍ
- I** NO WITH ACC01 - MODUL AD02 FOR BOILERFAN CONTROL FROM BURNER A25/45  
 NEIN MIT ACC01 - MODUL AD02 FÜR KESSELVENTILATORBEDIENUNG BEI DEM BRENNER A25/45  
 NEPLÁTÍ S ACC01 - MODUL AD02 K OVLÁDÁNÍ VENTILÁTORU KOTLE HOŘÁKEM A25/45
- J** NO WITH ACC01 - MODUL AD02 FOR BOILERPUMP CONTROL FROM BURNER A25/45  
 NEIN MIT ACC01 - MODUL AD02 FÜR KESSELPUMPEBEDIENUNG BEI DEM BRENNER A25/45  
 NEPLÁTÍ S ACC01 - MODUL AD02 K OVLÁDÁNÍ ČERPADLA KOTLE HOŘÁKEM A25/45

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# 17. Wiring diagram connection of the boilers D20P, D30P, D40P, D50P with extraction fan, model 2012 with 6-pin connector and module AD03 - to control extraction fan of the boiler and pump in the boiler circuit from burner control unit AC07X (R and R2)



**WHEN USE ELECTRONIC REGULATION ADC01 AND PELLETBURNER A25-45 MUST BE THESE CHANGES OF WIRING:**  
**BEI DER STEUERUNG DES KESSELBETRIEBES DER ELEKTRONISCHE REGELUNG ADC01 UND PELLETBRENNER A25-45 MÜSSEN DIESE ÄNDERUNGEN MACHEN SEIN:**  
**PRÍPOJENÍ ELEKTRONICKÉ REGULACE ADC01 A PELETTOVÉHO HOŘÁKU A25-45 PŘEDVĚTE TYTO ZMĚNY:**

- (A)** VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRULE/FASTON 6,3) FOR ELECTRONIC REGULATION  
 SPEISEKLEMMENVARIANTEN "REG L,N,PE" (ADERENDHÜLSE/FASTON 6,3) FÜR ELEKTRONISCHE REGELUNG  
 VARIANTY NAPÁJECÍCH SVOREK "REG L,N,PE" (DUTINKA/FASTON 6,3) PRO ELEKTRONICKOU REGULACI
- (B)** RESERVOIR POINT "L2 OUT" OF BURNER AND FAN TO THE ELECTRONIC REGULATION (ADC01)  
 SPEISEKLEMME "L2 OUT" DER BRENNER UND VENTILATOR FÜR DIE ELEKTRONISCHE REGELUNG (ADC01)  
 PŘÍPOJOVACÍ SVORKA "L2 OUT" HOŘÁKU A VENTILÁTORU DO ELEKTRONICKÉ REGULACE (ADC01)
- (C)** RESERVOIR POINT "L PUMP" OF BOILER PUMP TO THE ELECTRONIC REGULATION (ADC01)  
 SPEISEKLEMME "L PUMP" DER KESSELPUMPE FÜR DIE ELEKTRONISCHE REGELUNG (ADC01)  
 PŘÍPOJOVACÍ SVORKA "L PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE (ADC01)
- (D)** WHEN ELECTRONIC REGULATION CONTROL BURNER - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT DEN KONNEKTOREN "PT-C" UND "PT-1" ABKLEMMEN BEI DER BRENNERBEDIENUNG DER ELEKTRONISCHE REGULATION  
 KONEKTORY "PT-C" A "PT-1" ODPJOJIT PŘI OVLÁDÁNÍ HOŘÁKU ELEKTRONICKOU REGULACÍ
- (E)** WHEN ELECTRONIC REGULATION CONTROL BOILER PUMP - CONNECTORS "TC-C" AND "TC-2" MUST BE UNCONNECT DEN KONNEKTOREN "TC-C" UND "TC-2" ABKLEMMEN BEI DER KESSELPUMPEBEDIENUNG DER ELEKTRONISCHE REGULATION  
 KONNEKTORY "TC-C" A "TC-2" ODPJOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO ČERPADLA ELEKTRONICKOU REGULACÍ
- (F)** ACCES POINT FOR EXTERNAL BOILERREGULATION - CONNECTOR WITH PLUG  
 ANLAGERUNG FÜR EXTERN KESSELREGELUNG - KLEMME IN DEN KONEKTOR  
 PŘÍPOJOVACÍ SVORKY PRO EXTERNÍ REGULACI KOTLE - KLEMA V KONEKTORU
- (G)** CONNECTOR (BLACK/RED) - FOR EXAMPLE RESERVOIS POINT FOR MODUL AD01 - MOTOR OF ASH-REMOVER  
 KONNEKTOR (SCHWARZ/ROT) - ZUM BEISPIEL FÜR DEN MODUL AD01 - ENTASCHUNGSMOTOR  
 KONEKTOR (ČERNO ČERVENÝ) - NAPŘÍKLAD PRO MODUL AD01 - MOTOR ODPOPELNĚNÍ
- (H)** ACCES POINTS - FOR EXAMPLE FOR MODUL AD01 - TIMEUNIT OF ASH-REMOVER  
 SPEISEKLEMME - ZUM BEISPIEL FÜR MODUL AD01 - ZEITBEDIENUNG FÜR DEN ENTASCHUNG  
 PŘÍPOJENÍ - NAPŘÍKLAD PRO MODUL AD01 - ČASOVÝ MODUL ODPOPELNĚNÍ
- (I)** NO WITH ADC01 - MODUL AD03 FOR CONTROL BOILERPUMP AND BOILERFAN FROM BURNER A25/45  
 NEIN MIT ADC01 - MODUL AD03 FÜR KESSELPUMPE UND KESSELVENTILATORBEDIENUNG BEI DEM BRENNER A25/45  
 NEPLATI S ADC01 - MODUL AD03 K OVLÁDÁNÍ ČERPADLA A VENTILÁTORU KOTLE HOŘÁKEM A25/45

13-01-01\_D20-45P\_A25-45\_6P\_AD03

## 18. Obligatory ČSN EN standards related to boiler designing and installation

|                |   |
|----------------|---|
| ČSN EN 303-5   | - Solid fuel boilers for central heating  |
| ČSN 06 0310    | - Central heating, designing and assembly   |
| ČSN 06 0830    | - Safety devices for central heating and hot potable water heating                    |
| ČSN EN 73 4201 | - Designing chimneys and flue-gas ducting   |
| ČSN EN 1443    | - Chimney structures – general requirements   |
| ČSN 06 1008    | - Fire safety of local appliances and heat sources                                    |
| ČSN EN 13501-1 | - Fire classification of construction products and construction of buildings - Part 1 |
| ČSN EN 1264-1  | - Floor heating – Systems and components – Definitions and symbols                    |
| ČSN EN 1264-2  | - Floor heating – Systems and components – Heat output calculation                    |
| ČSN EN 1264-3  | - Floor heating – Systems and components – Designing                                  |
| ČSN EN 442-2   | - Heaters – Testing and test analysis   |

### Standards for evaluation of conformity and other technical standards:

ČSN EN ISO 12100:2012, ČSN EN 953+A1:2009, ČSN EN ISO 11202:2011, ČSN EN ISO 3746:2011, ČSN ISO 1819:1993, ČSN EN 60335-1ed.2:2003



**CAUTION – the boiler must be installed in compliance with a design prepared in advance. Installation may only be carried out by persons trained by the manufacturer.**

## 19. Choice and connection method of control and heating elements

Boilers are provided to the user with the basic boiler performance control elements compliant with requirements for convenient heating and its safety. The regulation ensures that the required temperature of the water exiting the boiler (80 - 90 °C) is adhered to. Boilers are fitted with an integral thermostat for switching the pump in the boiler circuit on and off. Connection of these elements is illustrated in the wiring diagram. Every pump in the system must always be controlled by an individual thermostat to avoid a temperature drop of water returning to the boiler 65 °C. When connecting the boiler without an accumulation tank or equalizing tank, the pump placed in the heated building circuit must be switched by an individual thermostat or electronic regulation so that it only operates when the pump in boiler circuit operates. If two thermostats are used – each for switching one pump – set the thermostat that switches the heated building circuit pump to 80 °C, and the thermostat that switches the boiler circuit pump, to 75 °C. Both pumps may also be switched by just one thermostat at the same time. If there is an adequately functioning gravity water circulation between the boiler and the system, which prolongs the required temperature build-up, the value of the thermostat designated for switching the boiler circuit pump can be reduced. Setting the required water temperature for the building is always achieved by means of a three-way mixing valve. The mixing valve can be regulated manually or by electronic regulation, which contributes to a more convenient and economical operation of the heating system. The connection of all the elements is designed by a specialist designer to suit specific conditions of the heating system. Electric installations related to the additional equipping the boilers with the above mentioned elements must be carried out by an expert in compliance with valid ČSN EN standards. The electric connection of ACD01 unit you have to do after the wiring diagram in this manual instruction. **Never switch off the ACD unit when off the season (by the main switch on the boiler)!**



When installing the boiler, we recommend using a closed expansion tank. However, an open tank may also be used if permitted in the standards of the specific country. The boiler must always be installed in a way which prevents overheating (and subsequent damage) even during a power cut. It is because the boiler has certain momentum.



There are several ways of protecting the boiler against overheating. Connecting an overheat prevention cooling loop with a TS 131 3/4 ZA (95/110 °C) or WATTS STS 20 (97 °C) valve to the public water system. In cases of personal wells, the boiler can be additionally protected by using a back-up power supply (battery with an exchanger) for operation back up of at least one pump. Another option is connecting the boiler to an after-cooling tank and reversal zone valve.



When installing the boiler, position the rear section 10 mm higher (prop it up) in order to facilitate circulating and air-bleeding.

For the heating system regulation we recommend regulation elements provided by the following companies:

- |                       |                        |
|-----------------------|------------------------|
| a) ATMOS ACD 01       | tel.: +420 326 701 404 |
| b) KOMEX THERM, Praha | tel.: +420 235 313 284 |
| c) KTR, Uherský Brod  | tel.: +420 572 633 985 |
| d) Landis & Staefa    | tel.: +420 261 342 382 |

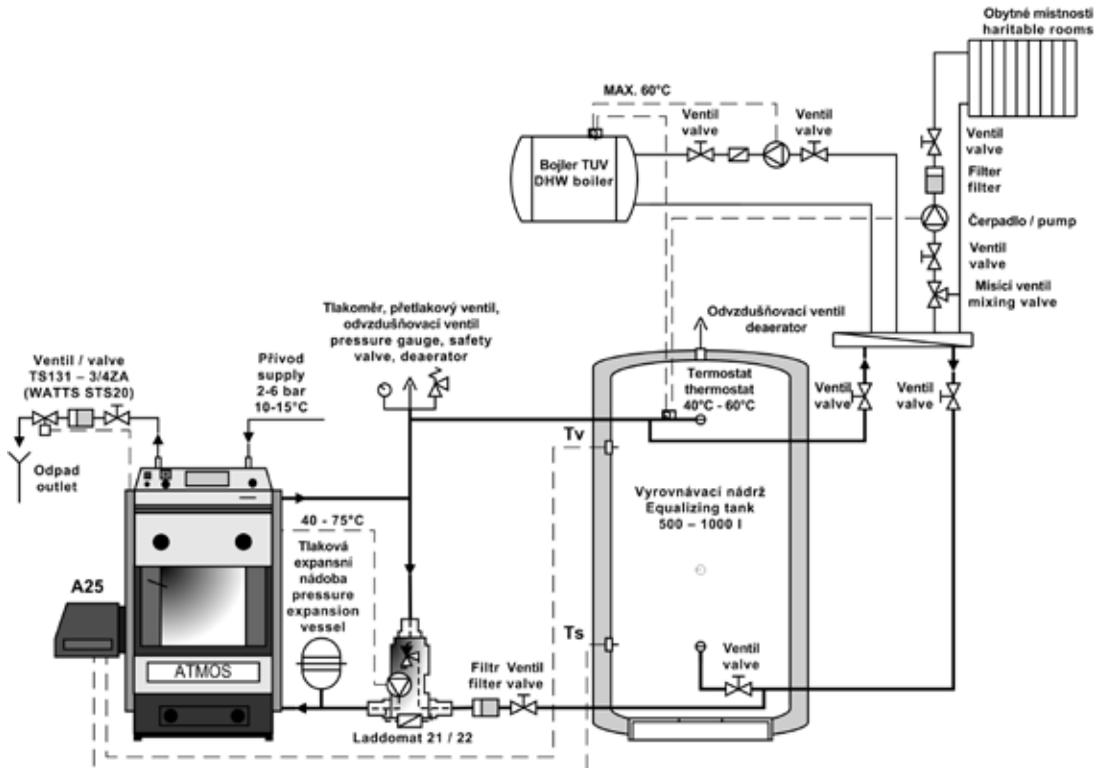
## 20. Boiler corrosion protection

The specified solution is connecting the boiler with **Laddomat 21/22** or with a thermoregulatory valve, which can separate the boiler circuit from the heating circuit (primary and secondary circuits), and provide **minimum of 65 °C for water returning to boiler**. The higher the temperature of water returning to the boiler, the fewer tars and acids condensing; which damage the boiler. Temperature of the outgoing water must permanently range between 80 - 90 °C. The combustion products (waste gas) temperature must not drop **below 110 °C** during normal operation. Low waste gas temperature causes condensation of tars and acids even when the specified outgoing water temperature of 80 - 90 °C and returning water temperature of 65 °C are adhered to. These conditions may occur with for example incorrectly set output of pellet burner (small power) or when burning wood. For outputs of 15 - 100 kW it is also possible to keep the minimum temperature of the returning water (65 - 75 °C) by utilising a three-way mixing valve with an electric actuator and electronic regulation etc. ACD01.

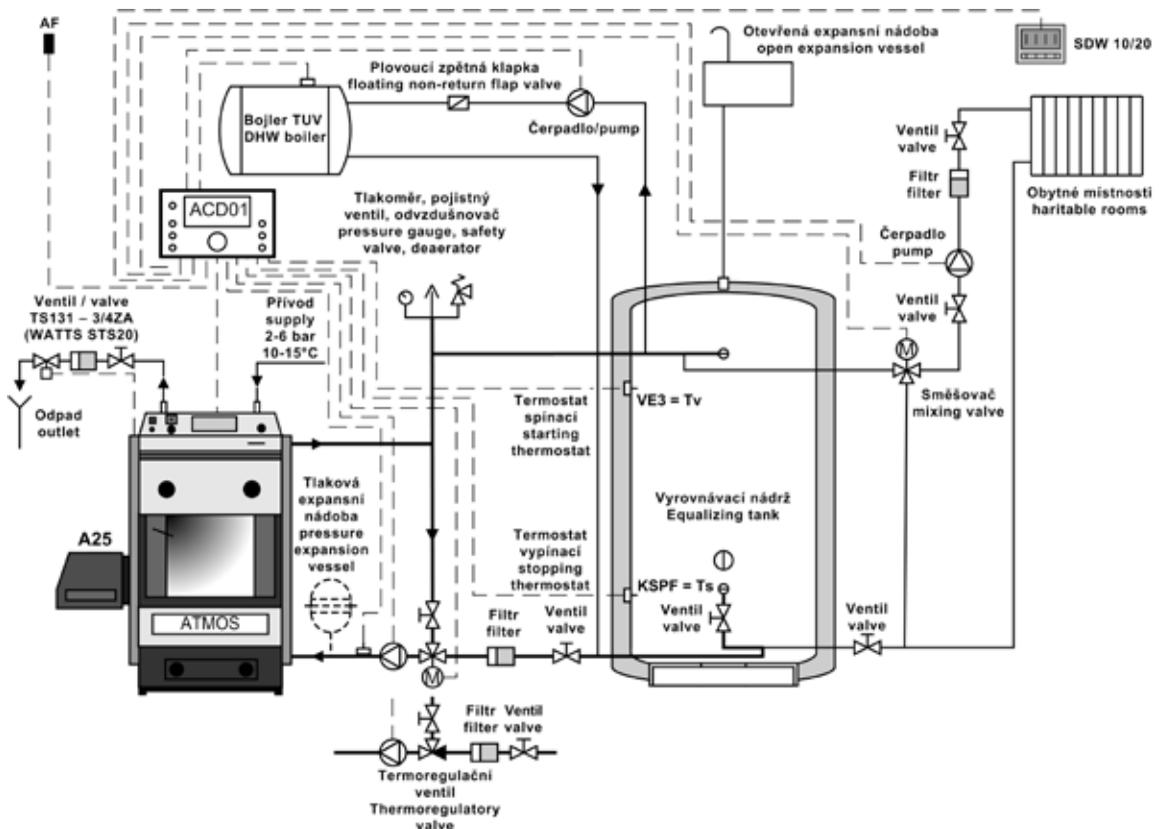


**CAUTION** - We recommend installing boilers D15P, D20P, D30P, D40P, D50P with equalizing tank of size at least 500 Lt. to 1000 Lt. It helps to decrease fuel and electricity consumption and increase service life all electric elements.

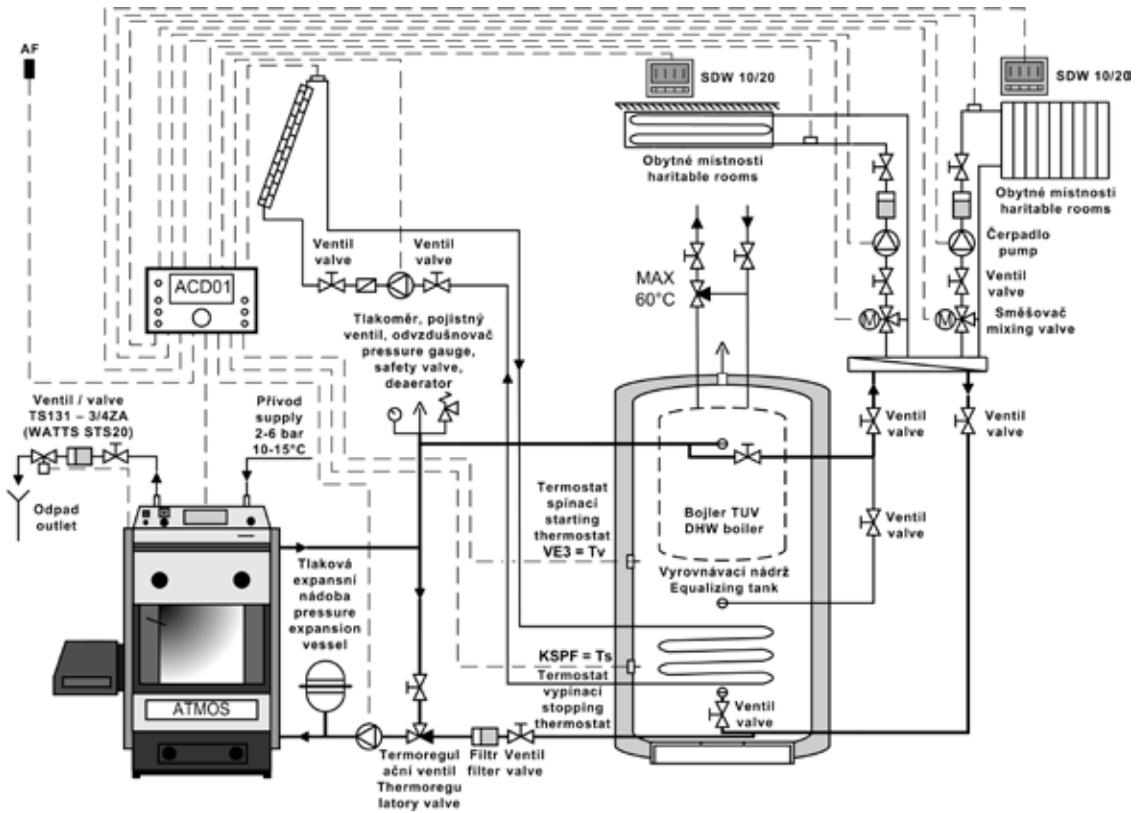
## 21. Prescribed boiler connection with an equalizing tank for burner control on the basis of TS and TV sensors



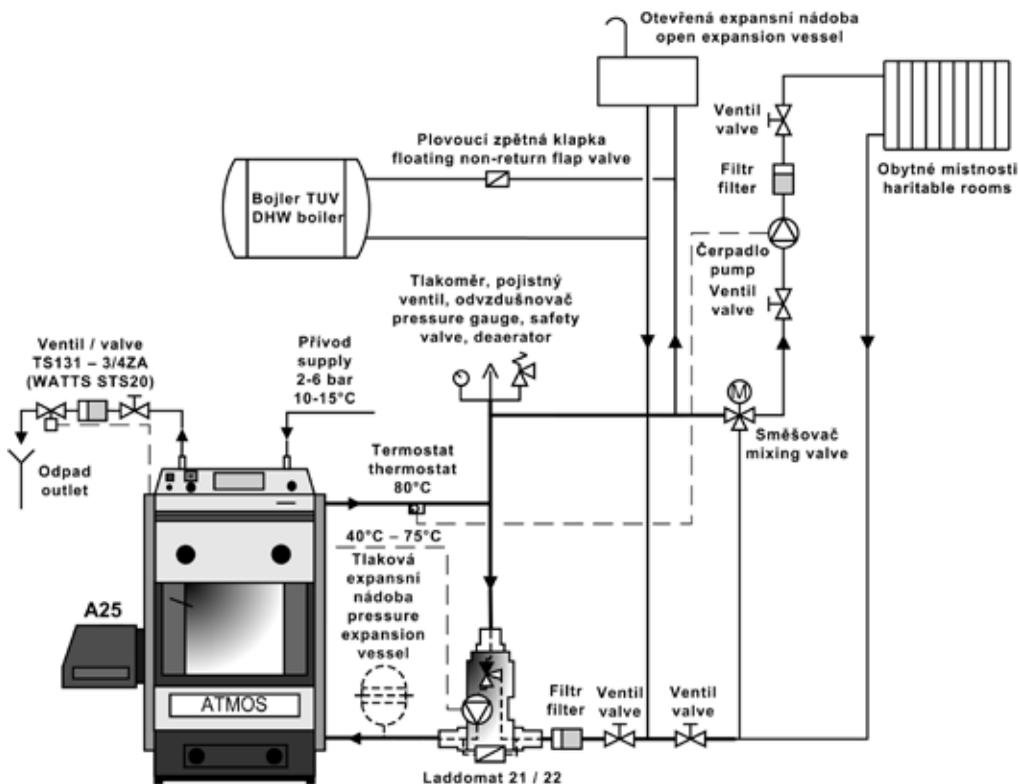
## 22. Prescribed boiler connection with an equalizing tank and with the ACD01 electronic control unit



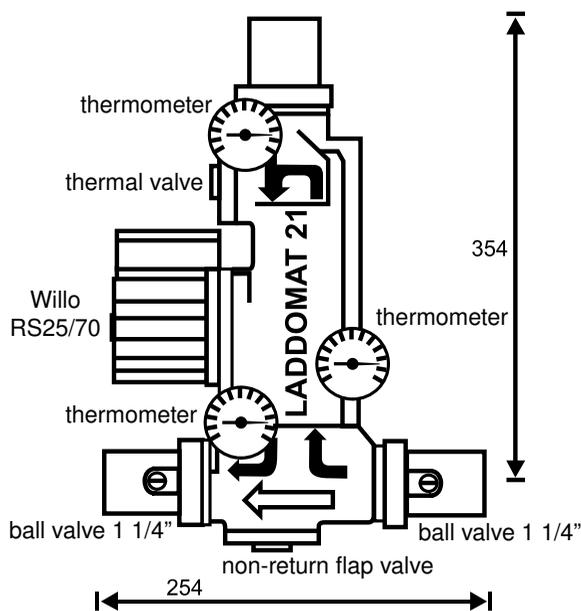
## 23. Possible boiler connection with equalizing tank with DHW boiler and with solar system



## 24. Possible boiler connection with Laddomat 21/22



## 25. Laddomat 21/22



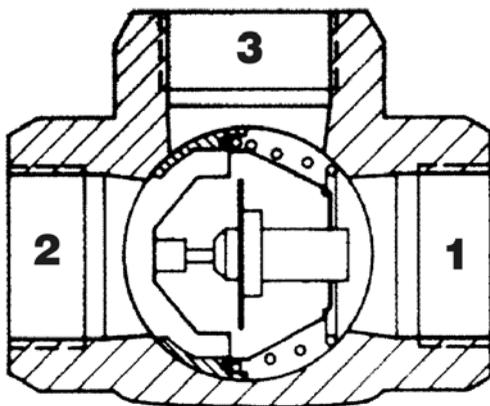
With its construction, Laddomat 21/22 replaces the traditional connection composed of individual parts. It consists of a cast-iron body, thermoregulatory valve, pump, non-return flap valve, ball valves and thermometers. When the water temperature reaches 78 °C, the thermoregulatory valve opens the water supply from the storage tank. The connection with Laddomat 21/22 is considerably easier and therefore, we recommend it. A spare thermo-cartridge of 72 °C is supplied with the Laddomat 21/22 device. It is used for boilers over 32 kW.

| OPERATION DATA             |          |
|----------------------------|----------|
| Max. operating pressure    | 0,25 MPa |
| Design pressure            | 0,25 MPa |
| Withstand test pressure    | 0,33 MPa |
| Max. operating temperature | 100 °C   |



**WARNING - Laddomat 21** is designed only for boilers with output up to 75 kW. However, we recommend using it only with boilers with **output up to 50 kW** (inclusive). For boilers with an **output from 15 up to 100 kW** we recommend using **Laddomat 22**, which is factory fitted with thermo-cartridge of 78 °C.

## 26. Thermoregulatory valve

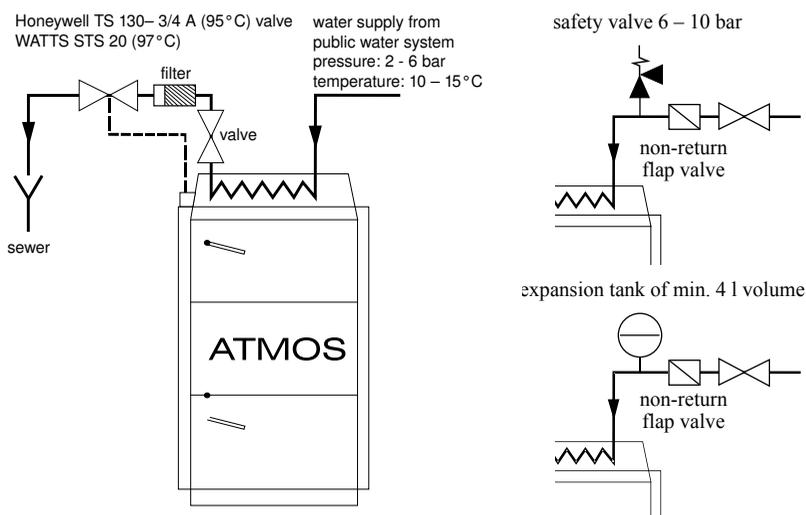


Thermoregulatory valve type TV 60 °C (65, 72, 78 °C) is used with solid fuel boilers. When the boiler water temperature reaches + 60 °C, the thermoregulatory valve opens and fluid from the building heating circuit (2) enters the boiler circuit (3 →1). Inlets 1 and 3 always remain open. This ensures that the minimum temperature of the water returning to the boiler is maintained. If need be, a thermoregulatory valve set to a higher temperature (E.g. 72 °C) may be used.

### Recommended size of the thermoregulatory valve

|              |                  |       |
|--------------|------------------|-------|
| For boilers: | D15P, D20P ..... | DN 25 |
|              | D30P, D40P ..... | DN 32 |
|              | D50P .....       | DN 40 |

## 27. Connection of overheat protecting cooling loop with a safety valve Honeywell TS 131 - 3/4 ZA or WATTS STS20 (valve opening temperature 95 - 97 °C)



**CAUTION** – in compliance with the EN ČSN 303-5, the cooling loop must not be used for any other purpose than overheat protection (never for heating hot potable water).

The TS 131 - 3/4 ZA valve or WATTS STS 20 valve, the sensor of which is placed in the rear of the boiler, prevents overheating in the following way: if the boiler water temperature rises above 95 °C, the valve opens and allows water from public water supply system to enter the cooling loop. This water then absorbs the excessive energy and exits to the sewer. In case that a non-return flap valve has been installed to the cooling loop water inlet for the purpose of preventing reversed water flow (which might be caused by pressure drop in the public water supply system), the cooling loop must be fitted with a 6 - 10 bar safety valve or with an expansion vessel of minimum 4 l volume. The boiler must be protected against overheating at all times. If not, its damage or burst may occur.

## 28. Operating instructions

### Preparing boilers for operation when burning pellets

Before putting the boiler in operation you must make sure that the system is filled with water and bled. Boiler must always operate in accordance with the instructions contained in this manual to achieve high quality and safety of the functionality of the system. **The system may only be operated by adult persons.** The commissioning of the boiler must be done in accordance with this manual and the operation manual attached to the pellet burner by a qualified person.



**CAUTION** - The boiler may only be put in operation by a qualified person in accordance with valid regulations and standards, trained by the manufacturer.

**Before we proceed heating-up with the pellets do some operations.**

Ensure that all lids and doors are fully closed. Check that the burner is well drawn towards the boiler through its gasket and the limit switch position-stop is in its place. Also check the tube between the burner and conveyor so that it is stretched and at a sufficient angle to ensure that the pellets can drop without difficulty into the burner. **They must not cumulate inside the tube!** The screw conveyor should be at a maximum of 45° angle otherwise the boilers might not reach their nominal output.

**If all checks are satisfactory, load the pellets into the conveyor.**

With the ATMOS burner, plug the conveyor's lead into a regular 230V - 50Hz socket. After the pellets start falling out of the conveyor (conveyor is full), plug the conveyor's electric flex back into the socket on the burner. **Close (hang up) the air flap valve controlled by the FR124 draft controller** so that secondary air should not be suctioned into the boiler (we use it only when burning wood).



**For the D20P boiler with its burner set to output ranging under 16 kW, switch the suction ventilator permanently off (by disconnecting the ventilator connector in the side hood of the boiler). When burning pellets in the boiler types D30P, D40P, D50P the suction ventilator must be operating during all boiler's output modes.**

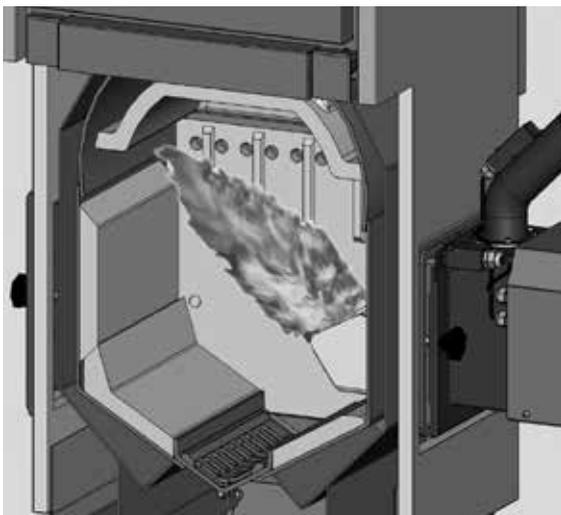
**Approach the boiler panel and switch on the main (green) button switch, the burner and the ash removal button switch (if they are installed).**

**When the boiler is put in operation for the first time, an installer or qualified technician should adjust combustion of the burner with the use of a flue gas analyzer the sensor of which is to be inserted into the measurement place (opening) in the flue between the boiler and the chimney. Always adjust the burner in a stabilized condition, approx. 20 - 30 minutes after fuel ignition. If there is no flue-gas analyzer available for the boiler adjustment at the moment, you can adjust the pellet burner „roughly by guesswork“. Set the quantity of fuel and combustion air in such a way to stop the flame (1 - 3 cm) before the opposite wall (the flame should not touch the wall). The flames must not turn at the opposite wall in any case. In such a case add combustion air by opening the flap of the burner fan or reduce the fuel supply. Excess of O<sub>2</sub> in waste gas set in range 8 - 10 (12) % with average CO < 500 ppm (for EU states CO < 250 mg/m<sup>3</sup> with O<sub>2</sub> ret = 13 %).**

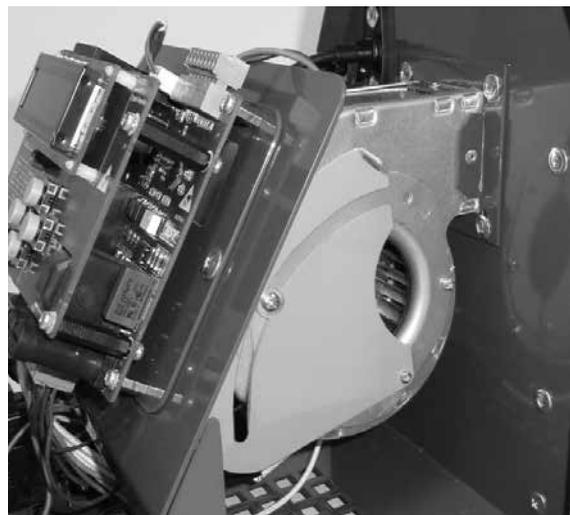
**After the adjustment of the burner the operation of the boiler is completely automatic, the customer only replenishes fuel and removes ash in regular intervals.**



**CAUTION** - The adjustment by the flame length does not replace adjustment made with the use of a flue gas analyzer by a qualified person. Changes of settings of the boiler and burner may only be performed by a person that is qualified in accordance with all the valid regulations and ČSN EN standards. Before the adjustment of the burner the combustion chamber of the burner and boiler and the chimney with the flue must be completely cleaned.

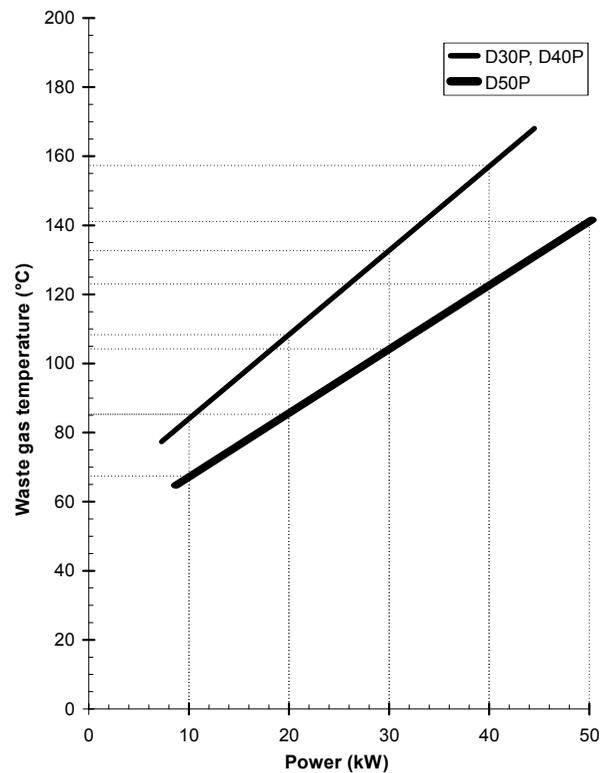
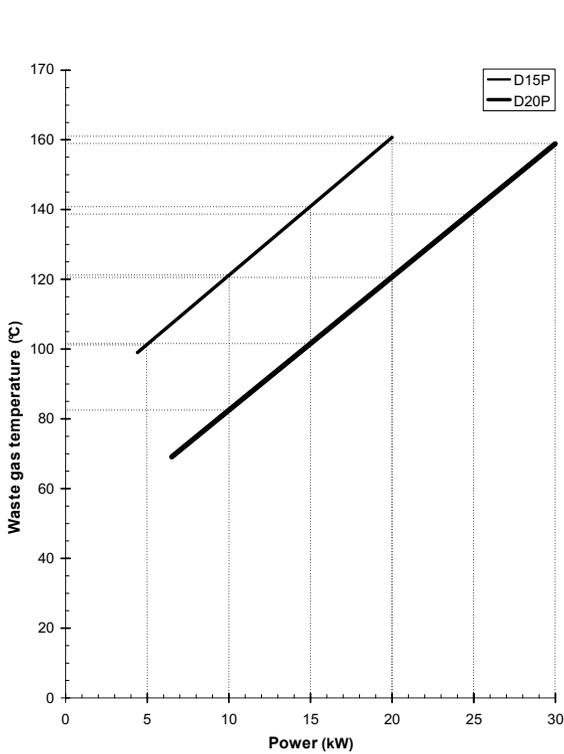


Burner flame ending 1-3cm before the opposite wall



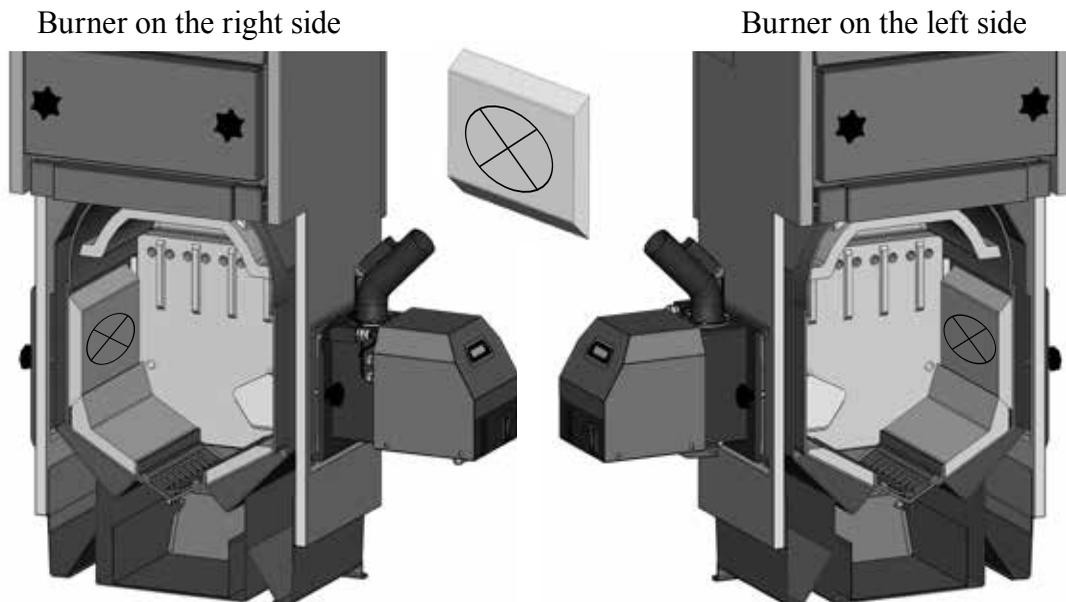
Fan of the burner with an air flap. By opening the air flap you will reduce the length of the flame

## Relation of waste gas temperatur to boiler (burner) output when burning pellets



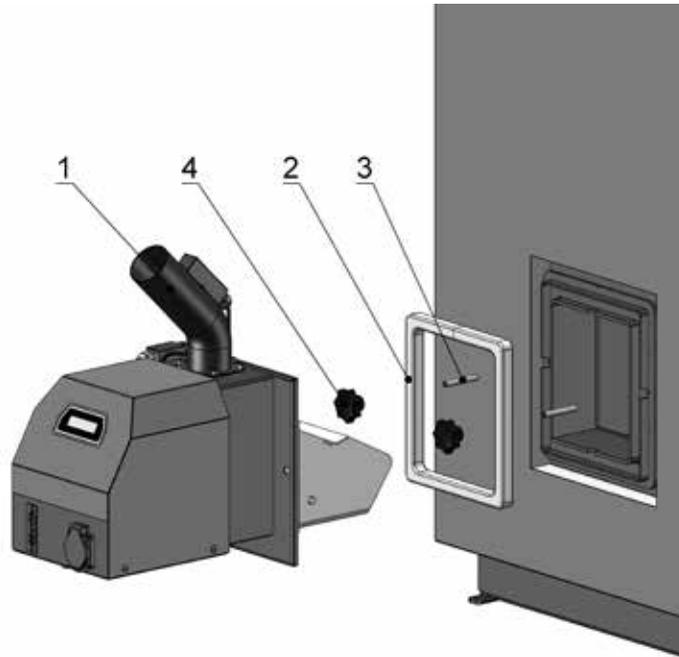
It is a linear dependence at stabilised state and with a clean boiler

## 29. Placing the shaped pieces into the combustion area



**CAUTION** – do not forget to place the fire clay shaped-piece into the chamber. The shaped piece must always be placed opposite the burner. The shaped piece serves as a place on which the flame burns out completely and it also protects the boiler parts situated opposite the burner against overheating and damage.

## Connecting the burner A25 into boilers D15P and D20P



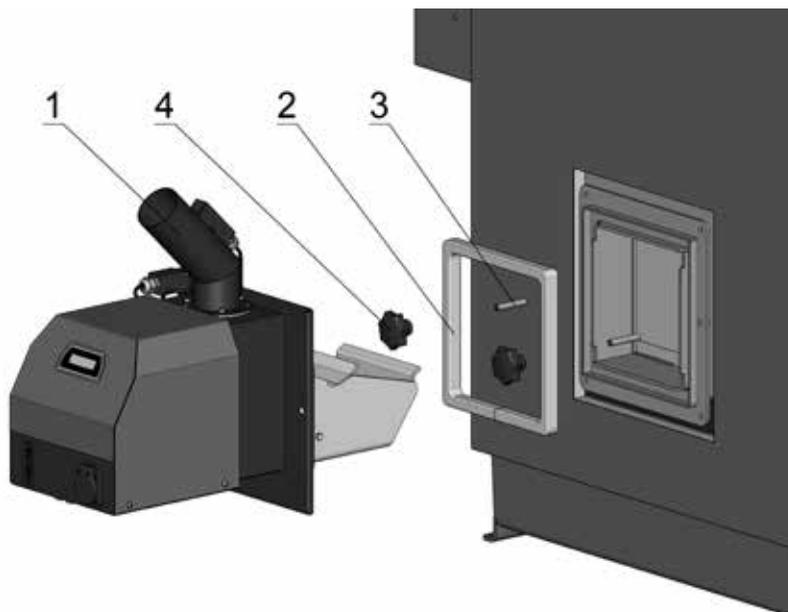
1 - pellet burner ATMOS A25

2 - Sealing cord 18x32 mm - small (code: S0165)

3 - Two M8 screws

4 - Two M8 decorative nuts

## Connecting the burner A45 into boilers D30P, D40P, D50P



1 - pellet burner ATMOS A45

2 - Sealing cord 18x32 mm - big (code: S0174)

3 - Two M10 screws

4 - Two M10 decorative nuts

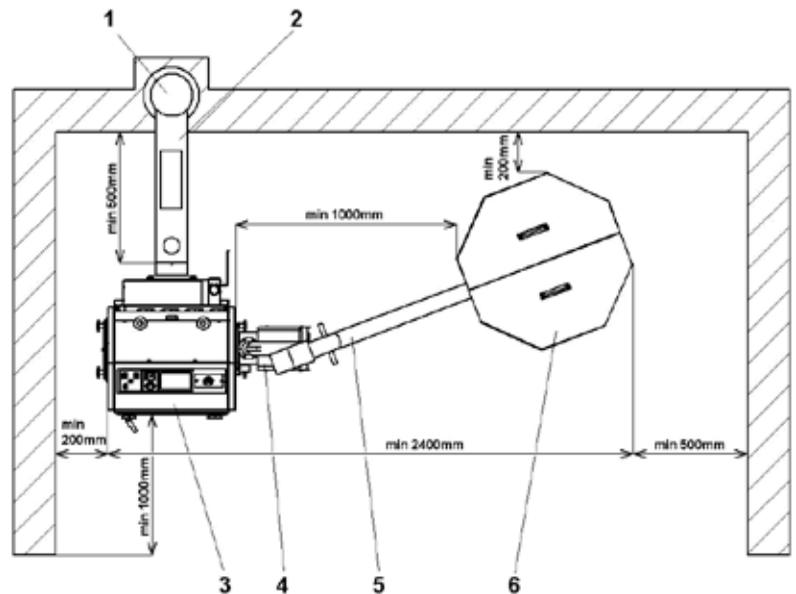
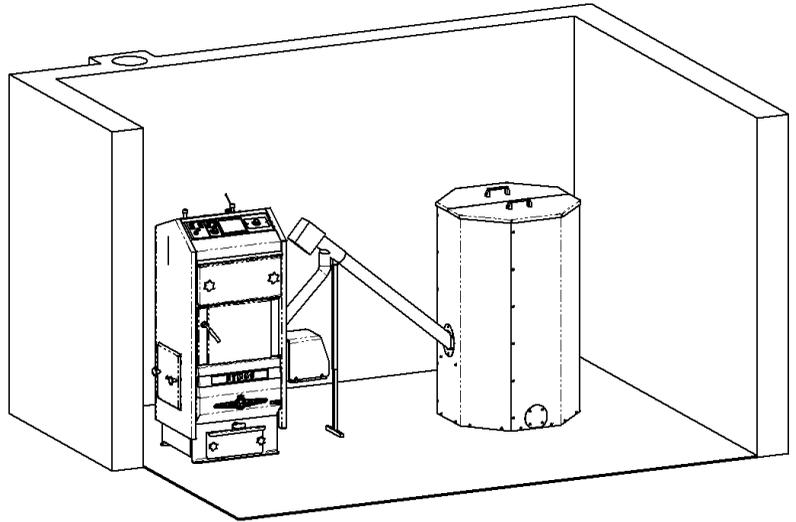
## Boiler system with an external silo and conveyor of pellets

The length of the conveyor must be at least 2 m so that the hose between the burner and the conveyor can have the minimum length of 15 cm (optimal 30 - 60 cm) for safety reasons. Maximal length of the hose should not be more than 1 m.

For each conveyor a support leg is delivered. In confined spaces we recommend you to replace the leg with a chain for suspending the conveyor from the ceiling (is part of the conveyor delivery).

The external pellet container is delivered in standard sizes of 250, 500 and 1000 l. The larger the container volume, the better. For the boiler D15P and D20P we recommend 500 l silo. For the boiler D30P, D40P, D50P we recommend 1000 l silo. This size of the silos will be sufficient for 3 to 10 days. A clearly delimited part of the room complying with fire regulations from which pellets may be drawn to an intermediate storage or directly to the boiler may also play the role of a pellet container.

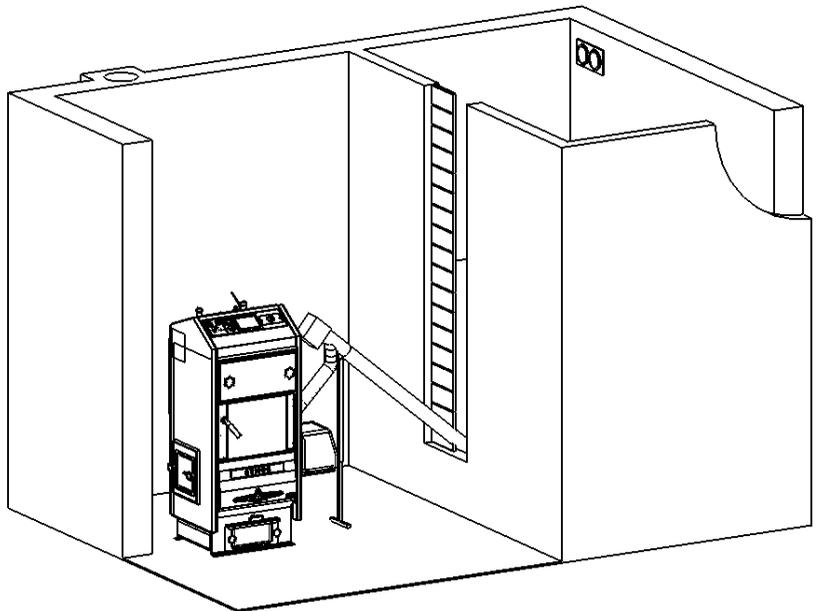
- 1 - Chimney
- 2 - Waste gas duct
- 3 - Boiler
- 4 - Burner
- 5 - Conveyor
- 6 - Silo



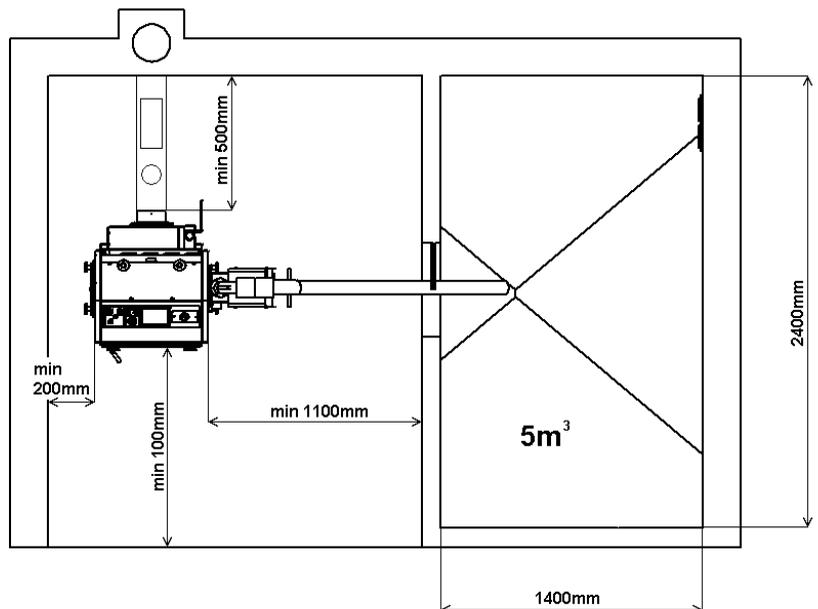
**INFO** - We recommend you to clean the fuel container from dust and dirt that have accumulated in the bottom part of the container during the heating season once a year, best after the heating season.

## Boiler room with a large built-in pellet storage

A boiler plant with a built-in pellet storage with the volume of e.g. 5 m<sup>3</sup> in which you can store 3250 kg of pellets. For this purpose we recommend 2 m (2.5 m) conveyor is used. For easy access to the storage a segmented opening is produced that can be easily adapted to the pellet level in the storage and enables cleaning of the storage from dust and dirt once a year. In the top part of the storage there are two openings for replenishment of pellets from a cistern. Their size and construction depend on pellets supplier.



For optimum collapsing of the pellet heap the optimum angle of the inner walls in the storage must be at least 45°. All the walls are inclined to the lowest point of the storage from which the worm conveyor draws pellets.



**CAUTION** - If pellets are drawn to the storage in the boiler plant directly from the cistern, several principles must be observed that prevent their crushing during pneumatic transport. First of all you must make sure that they do not hit the hard wall of the storage, but a screen that is suspended in the centre of the storage from the ceiling. This way you will ensure even filling of the storage and prevent crushing into small pellets and dust. Ask the pellet suppliers about further possibilities and conditions of pellet drawing.

## Preparing boiler operation for emergency burning wood

When switching from pellet burning to fire wood burning mode, carry out the following adjustments. Dismantle the burner and take measures so that it cannot start operating outside the boiler drum (**disconnect it from the power supply**). Close the opening (which remains after the burner was removed) by the supplied lid. Set required temperature of water exiting the boiler (80 - 90 °C) on the FR 124 draught regulator so that it effectively regulates air flap-valve at the back side of the boiler. This air flap was closed during the pellets burning mode.



**CAUTION** - When switching the boiler operating mode from wood burning to pellets or the other way round, clean the boiler thoroughly from ash, pay particular attention to the tube heat exchanger on the top, heatproof shaped piece – upper spherical chamber and rear flue-gasduct (remove ash from the lower lid), so that blockage of waste gas may not occur.

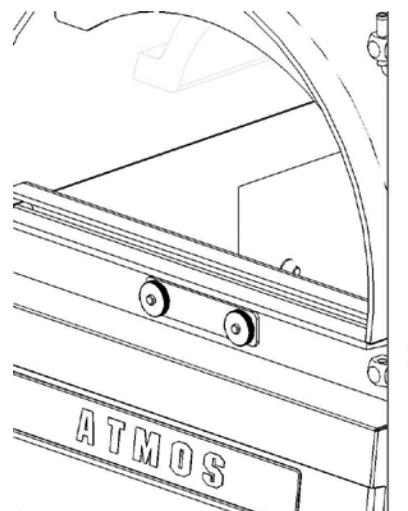
## Ignition and operation when burning alternative fuel - wood

First disconnect and remove the pellet burner and close the aperture by the supplied lid, then you can ignite the wood. Open the upper loading door, place paper or wood wool on the bottom of the stoking area, place dry splinters on top of the paper/wood wool, slightly pull out the ash-pan and ignite (close the upper door). Set the required heating water temperature (80 - 90 °C) on the Honeywell draught regulator. By wood heating turn the draught regulator (turnin clock wise) to the lowest value (50 °C) so that the ventilator runs only when heating up for faster fire up. After loading fuel close the lower ash-pan. The ash-pan must be retracted back in position during the boiler operation. Otherwise, the boiler output cannot be regulated. Choose the amount of fuel which you load in by the required output.

### Additional secondary air inlet placed under the door-frame

In case of burning fire wood as an alternative fuel.

Loosen or even complete remove the sheet-metal with its sealing, which covers the additional secondary air inlet placed underneath the door frame. **However, if the pellet burner is utilised for the burning process, the opening for the additional secondary air inlet must be properly closed and tightened.**



**CAUTION** - When loading fuel, do not exceed the lower edge of the doorframe. All the doors must be well closed when the boiler is in operation.



**NOTE** - When igniting in the boiler for the first time, condensation and condensed fluid leakage occurs – this is not a defect. Condensation will disappear later. When burning small particle wood waste, it is necessary to keep checking the waste gas temperature. Otherwise, the ventilator (S) may sustain damage. **Wood tar and condensate formation in the hopper is a side effect of wood combustion.** Is good to know when burning moist wood, the fuel consumption increases, the boiler does not reach the required output and the service life of both - the boiler and the chimney - decreases.

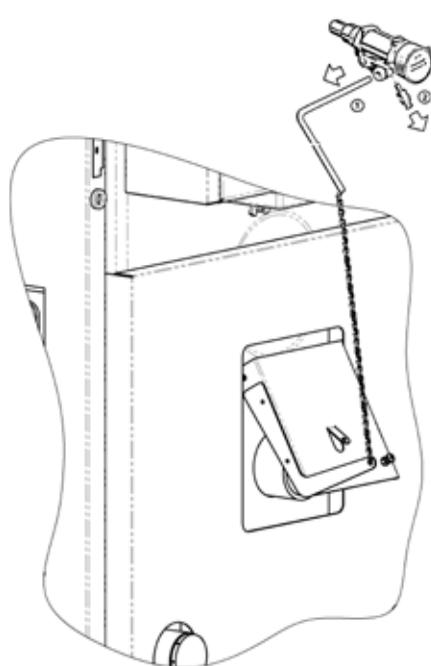
## Mechanical output regulation – when burning alternative fuel (wood)

The output is regulated by the amount of fuel which is loaded into the boiler (large pieces + small amount = low output) and by the air flap-valve /5/ that is operated by the FR 124 draught regulator /10/. The draught regulator automatically opens up or shuts the flap-valve (for the primary and secondary air) according to the pre-set outgoing water temperature (80 - 90 °C). The output (draught) regulator adjustment should be done carefully because it not only regulates the output; but also protects the boiler against overheating. The setting should be in compliance with the enclosed 'Assembly and Setting Instructions' for the HONEYWELL Braukmann FR 124 type regulator. Right function overheat protection check by temperature of 90 °C. At this temperature, the air flap-valve must be almost closed. It is necessary to determine the best setting. The outgoing water temperature should be monitored on the thermometer situated on the control panel.



**CAUTION** - When burning wood extraction fan is use only for ignition and loading wood. When noraml operation the fan is switch off. This we can reach that we set regulation thermostat on temeperatre 50 °C (40 - 60 °C). Boiler works in temperature mode 80 - 90 °C so it auhomaticly switch off after burning up.

## Draught regulator - HONEYWELL Braukmann FR124 – Assembly instructions



Disassemble the lever /1/ and coupler /2/ and screw the regulator into the boiler.

### Setting

Heat the boiler to approx. 80 °C. Set the setting handle to the temperature read on the boiler thermometer. Tension the air flap valve chain in a way that provides the required boiler output; the gap at the air (control) flap valve may range between 3 - 50 mm. In cases where there are insufficient general draught conditions, slightly increase the flap-valve gap.

### Draught regulator functional check

Set the setting handle to the required temperature of water exiting the boiler (80 - 90 °C). When the water temperature reaches its maximum of 95 °C, the air flap valve must be fully closed (only providing the setscrew gap). It is always necessary to fine-tune the specified operating temperature (80 - 90 °C) utilising the mixing valves behind the boiler either manually or by electronic regulation with electric actuator.

## 30. Fuel refill when burning alternative fuel (wood)

First shut the air flap-valve operated by the Honeywell draught regulator. Set the thermostat on the boiler D20P, D30P, D40P, D50P to the position MAX to start up the ventilator. Slightly open the door, wait for about 5 seconds and then add fuel. In order to prevent excessive smoke formation, load new batch of fuel only after the previous fuel has combusted to at least one fourth of the loading volume. Then put everything into the original state.

## 31. Boiler cleaning and ash removal

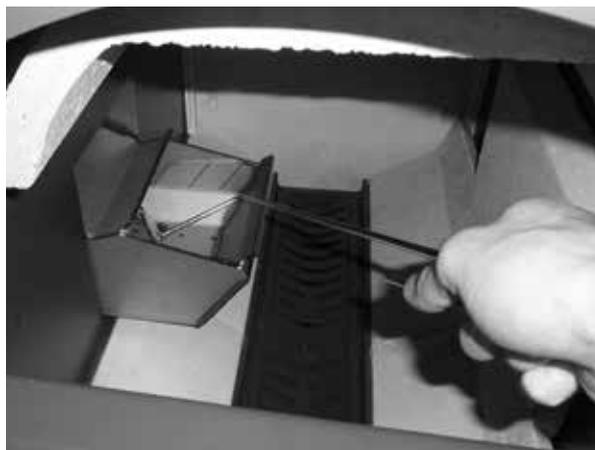
The burner and the boiler must be cleaned regularly and thoroughly once every 1 to 30 days depending on the quality of pellets and the output setting. Fly-ash and dirt accumulated in the combustion chamber of the burner and boiler considerably reduce the service life and output.

Do the regular cleaning of the boiler in such a way that you first let the burner burn out (switch off pellet burner switch). Open cleaning (filling) door of the boiler clean the combustion chamber of the burner, incl. the air openings in the chamber with the provided poker. If the combustion chamber of the burner is heavily soiled, remove it for cleaning.

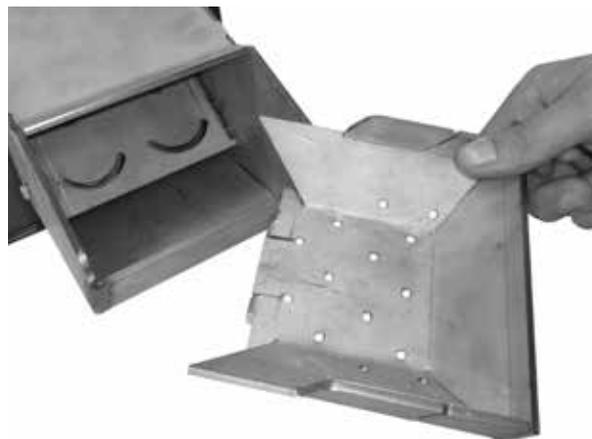
Then sweep the ashes down through the grill into the lower area (ash-pan). Remove the ashes. Thoroughly once every 14 days - 2 mounts clean the tube heat exchanger (placed above the combustion chamber) regularly by the supplied brush. With the boiler types D20P, D30P, D40P, D50P carry out the cleaning with the brush inserted in the exchanger (the brush also serves as an air-break valve). At least two times a year check and sweep upper heatproof shaped piece – upper spherical chamber (caution - fragile). If the boiler operates with a pellet burner, also clean the cinder from the burner's burn-off chamber. With the boiler types (the D20P, D30P, D40P, D50P models), clean the ventilator's rotating wheel which is placed on the extraction fan (in the rear section of the boiler) at least once a year. The cleaning and ash-removing interval depends on the fuel quality, heating intensity, chimney draught and other conditions. At least once a year remove the burner and thoroughly clean space where pellets fall down into the burner and where the pellets burn out.



**INFO** - By D20P, D30P, D40P, D50P we recommend switch on the extraction ventilator for cleaning.



Cleaning of combustion chamber with fire hook



Removable combustion chamber with air supply openings - must be cleaned regularly



Sweep the ashes down through the grill into the lower area (ash-pan)



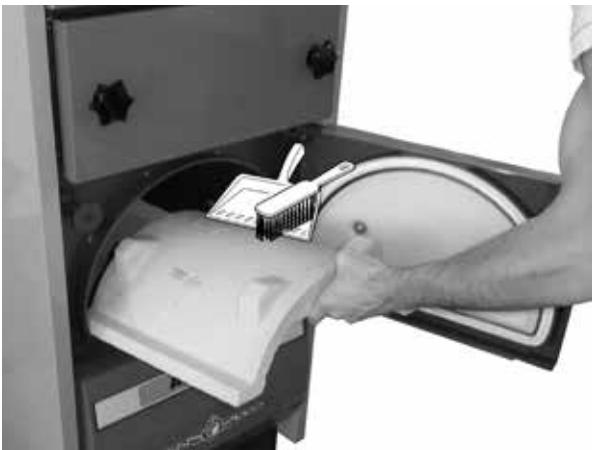
Pull out the ash-pan and remove the ash



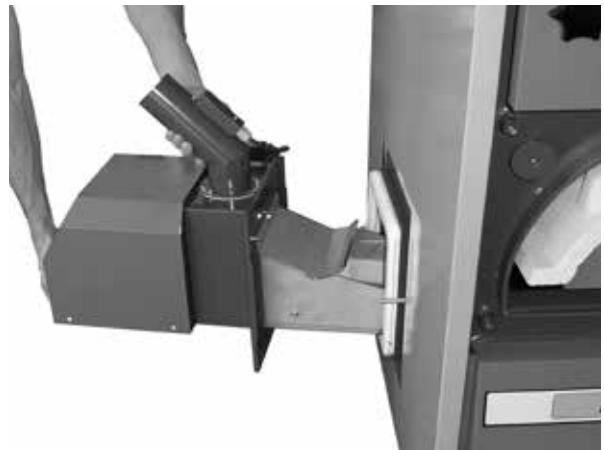
Cleaning of (tubes) exchanger with inserted the brush (by boiler D20P, D30P, D40P, D50P)



Sample cleaning of the smoke duct at the back side of the boiler



Cleaning of heatproof shaped piece



Burner removing for year servicing and cleaning

## 32. Heating system maintenance - including boilers

Inspect at least once every 2 weeks. If necessary, refill the system with water. If the boilers are out of operation during wintertime, a risk of water freezing in the system arises. Therefore, we recommend letting all the water out from the system or filling it with antifreeze mixture. In other situations, only let water out if absolutely necessary and keep without water for as little time as possible. After the heating season is over, clean the boiler thoroughly and replace damaged parts. **Do not leave parts replacement for the last moment; prepare your boiler for the heating season as early as in spring.**

## 33. Use and inspections

Boiler operators must always follow the operation and maintenance instructions. Interventions into boilers that could endanger the health of the operators or other persons in the vicinity are prohibited. Boilers may only be operated by a person that is more than 18 years old, that has been acquainted with the instructions and operation of the equipment and that complies with the requirements of § 14 of the Directive no. 24/1984 Coll. The boiler operation needed increased attention to safety in terms

of potential burns from hot boiler parts and systems. You must never leave unattended children near boiler that is in operation. During the operation of solid fuel boilers it is prohibited to use any flammable liquids for lighting the fire and it is also prohibited to increase the nominal output of the boiler during operation (overheating). **You must not put flammable objects on the boiler and near the fuel feeding and ash pan openings and ash must be stored in non-flammable containers with a lid.** When handling fuel and ash, wear protective equipment (gloves, dust mask). Boilers in operation must be under occasional supervision of the operator. The user may only carry out repair consisting in simple replacement of a spare part (e.g. a sealing cord, etc.). During the operation check the doors and cleaning openings for tightness and always tighten them properly. The user must not alter the structure and electric installation of boilers. The boiler must always be cleaned properly and in time so that free passage of all the ways can be guaranteed. Cleaning doors must always be properly closed.



**CAUTION** - Follow valid fire regulations and have in reach portable fire extinguisher. If any non-standard behavior of the boiler shut down the boiler from operation and call the service.

### 34. Possible failures and troubleshooting

| Failure   | Cause   | Solution  |
|---|---|---|
| <b>The “mains” indicator does not light up</b>  | <ul style="list-style-type: none"> <li>- no mains voltage</li> <li>- incorrectly plug connector of power cord in the boiler side hood</li> <li>- faulty main switch</li> <li>- defective cord</li> </ul>  | <ul style="list-style-type: none"> <li>- check</li> <li>- check</li> <li>- replace</li> <li>- replace</li> </ul>  |
| <b>Boilers do not reach their required outputs and the pre-set water temperatures</b> | <ul style="list-style-type: none"> <li>- little water in the heating system</li> <li>- high output of the pump</li> <li>- the output of the boiler is not sufficiently sized for the particular hot-water system</li> <li>- poor quality fuel (high moisture content, large pieces)</li> <li>- poor-quality fuel - pellets</li> <li>- low chimney draft</li> <li>- high chimney draft</li> <li>- bent vanes of the extraction fan</li> <li>- insufficiently cleaned boiler</li> <li>- clogged inlet of combustion air to the burning chamber</li> </ul> | <ul style="list-style-type: none"> <li>- replenish</li> <li>- adjust the flow and pump control</li> <li>- design issue</li> <li>- burn dry wood and split logs in halves</li> <li>- burn high-quality pellets</li> <li>- new chimney, unsuitable connection</li> <li>- install a throttling flap in the flue or a pressure reducer</li> <li>- straighten the vanes (to the angle of 90°)</li> <li>- replace</li> <li>- clean</li> <li>- clean burning little chamber and burning chamber</li> </ul> |
| <b>Leaky doors</b>  | <ul style="list-style-type: none"> <li>- faulty glass cord</li> <li>- low chimney draft</li> </ul>  | <ul style="list-style-type: none"> <li>- replace</li> <li>- adjust the door hinges</li> <li>- fault in the chimney</li> </ul>   |

|  |  |  |
|--|--|--|
| <p><b>The boiler fan is not running</b></p>  | <ul style="list-style-type: none"> <li>- overheated boiler - the fuse of the safety thermostat has tripped</li> <li>- <b>faulty capacitor - 1µF</b></li> <li>- faulty motor</li> <li>- <b>poor contact in the connector</b> of the supply cable from the motor</li> </ul>  | <ul style="list-style-type: none"> <li>- press the target on the thermostat</li> <li>- <b>replace</b></li> <li>- replaces</li> <li>- check - measure</li> <li>- repair (rectify)</li> </ul>  |
| <p><b>Defects and shortcomings of the burner, conveyor and the ash removing system</b></p> | <ul style="list-style-type: none"> <li>- no more fuel</li> <li>- the fuel is cindered and blocks the chamber on the burner</li> <li>- <b>the hose between the conveyor and the burner gets clogged</b></li> <li>- the burner does not provide the required output</li> <li>- the worm conveyor does not run (stops)</li> <li>- other defects of the burner</li> <li>-the ash removal does not run when resetting on/off</li> </ul> | <ul style="list-style-type: none"> <li>- replace and <b>before the new star draw pellets to the conveyor</b></li> <li>- clean the combustion chamber and hose replace pellets</li> <li>- <b>clean the combustion chamber of the burner once a day until you burn all the poor-quality pellets</b></li> <li>- low calorific value of the pellets, change the setting</li> <li>- check and if necessary, replace the gearbox of the conveyor - defect</li> <li>- check the quality of pellets, high resistance = hard pellets, large diameter of pellets, long pellets</li> <li>- follow the operation instructions of the burner</li> <li>- change ash removal electronic module placed under the dash board of the boiler</li> </ul> |

## 35. Spares

|  |   |
|--|---|
| Heatproof shaped piece – combustion area bottom /6/                        | 2 |
| Heatproof shaped piece – upper spherical chamber /7/                       | 1 |
| Heatproof shaped piece – combustion area rear face /14/                    | 1 |
| Grill /28/   | 1 |
| Thermometer /21/ (code: S0041)   | 1 |
| Main switch /22/ (code: S0096)   | 1 |
| Control thermostat /23/ (code: S0021)                                      | 1 |
| Pump thermostat /24/ (code: S0023)   | 1 |
| Safety thermostat /25/ (code: S0068)                                       | 1 |
| Fuse T6,3A/1500-type H /26/ (code: S0200)                                  | 1 |
| Door sealing cord 18 x 18 /12/ (code: S0241)                               | 1 |
| Ash-pan /3/  |   |
| D15P, D20P (code: P0045), D30P, D40P (code: P0066), D50P (code: P0068)     | 1 |
| Sealing cord placed between burner and boiler (18x32 mm)                   |   |
| D15P, D20P (code: S0165), D30P, D40P, D50P (code: S0174)                   | 1 |
| Doubleswitch of automatic ash removal and pellet burner /29/ (code: S0098) | 1 |
| Cleaning fire hook for cleaning of burner                                  | 1 |

## Door sealing cord replacement

Procedure: Use a screwdriver to remove the old sealing cord and to clean the groove in which it was seated. Lightly shape the cord from a square into a trapeze cross-section using a hammer. Manually press the sealing cord along the door circumference (place the narrower base into the groove first) in such a way to ensure that the cord sticks well in the groove (if necessary, use a hammer). Position the lock's handle upwards, and with several gentle, careful taps of the door against the boiler, press the cord into the groove until the door can be closed. Fine-tune the position of the wheel that engages the lock's cam. This is the only procedure that can ensure good door seal!

## Adjusting the door hinges and locks

The loading door and ash-pan door are firmly connected to the boiler drum by two sets of hinges. Each hinge consists of a nut, which is welded to the boiler drum, and a setting-screw to which the door is connected by means of a pin. If you want to adjust the hinge settings, first take off the upper hood (control panel) and remove both pins. Then remove the door and slightly turn the screw with a right-hand thread, as necessary. By following these steps in reverse order, you can replace the door.

The door lock consists of a lever with a handle and a cam which engages a wheel that is screwed into the boiler and secured by a nut preventing its turning. After a certain time, the sealing cord gets pressed down and therefore it becomes necessary to screw the wheel further into the boiler. First, loosen the wheel's nut and screw the wheel into the boiler in such a way that after firmly closing the door, the lock's handle is in the 20 minutes past the hour position. Then tighten the nut.

## 36. Environmental protection

The ATMOS gasifying boilers comply with the most demanding environmental requirements and were awarded the "Environmentally friendly product" mark, in compliance with directive No. 13/2002 of the Ministry of Environment of the Czech Republic. The boilers are certified in compliance with the European standard EN 303-5 and they fall within class 5.

### Disposal of the boiler after expiration of its service life

It is necessary to provide an ENVIRONMENTALLY FRIENDLY disposal of the boiler's individual parts. Before disposal, clean all the flue cinder and place it in a refuse bin. Take the boiler drum and hood to a scrap-metal collection site. Take all the ceramic (fireclay) parts to an approved refuse site.



**NOTE** – In order to comply with the environmentally friendly operation requirements, it is prohibited to burn any other substances than specified for the boiler. Plastic bags, various plastic materials, paints, textiles, laminate are substances which should be particularly avoided but also avoid burning sawdust, sediment and coal dust.

## GUARANTEE CONDITIONS

### Hot-water boiler

1. If adhered to the product's use, operation and maintenance as described in the instruction manual, we guarantee that the product will maintain the characteristics as stipulated by the corresponding technical standards and terms for the duration of a guarantee period – of 24 months after the product's acquisition by the user, a maximum of 32 months after the manufacturer sells it to the sales representative. If the boiler is installed with a TV 60 °C thermoregulatory valve or with a Ladomat 21/22 in combination with the accumulation tanks (see attached schematics), the guarantee period for the boiler drum is extended from 24 to 36 months. The guarantee period for other parts remains unaffected.
2. If a defect not caused by the user appears on the product during the guarantee period, the defect will be repaired free of charge.
3. The guarantee period is extended by the period of time for which has the product been under repair.
4. A claim to provide a guarantee period repair shall be made by the customer at the service company.
5. The guarantee claim is justified only in cases where the boiler installation was carried out by a person trained by the manufacturer and in compliance with valid standards and the instruction manual. A necessary condition for justifying a guarantee claim is possession of a legible and complete record identifying the company who installed the boiler. If the installation was not carried out in a professional manner, the subsequent costs are borne by the company that carried out the installation.
6. The purchaser was familiarised with the use and operation of the product – in a provable way.
7. A claim to provide an after-guarantee period repair shall be made by the customer at the service company, too. In this case, the customer bears the repair costs.
8. The user is obliged to adhere to instructions from the operation and maintenance manual. If the operation and maintenance manual is not adhered to, in cases of negligent or unprofessional handling, or burning prohibited substances, the guarantee expires and the repair costs are borne by the customer.
9. Boiler installation and operation must be in compliance with the instruction manual where the outgoing water temperature is in the 80 - 90 °C range and the temperature of water returning to boiler at least 65 °C in all its operation modes.
10. There is an obligation to have the boiler inspection carried out including its controls settings, structural elements and extraction system by an expert company at least once a year – confirmed in a warranty card

For boilers designated for the Czech Republic, Poland, Russia, Romania, Lithuania, Latvia and Hungary no guarantee conditions or insurance policies from outside these countries apply.

#### **Guarantee and post-guarantee period repairs are carried out by:**

**- company representing ATMOS in the particular country for the particular region**

**- installation company that carried out the installation**

**- Jaroslav Cankař and son, ATMOS,**

**Velenskéého 487, 294 21 Bělá pod Bezdězem, Czech Republic, Tel. +420 326 701 404**

# BOILER INSTALLATION REPORT

GB

## Installation carried out by:

Company: .....

Street: ..... Town: .....

Telephone: ..... Country: .....

## Ascertained data:

### Chimney:

Dimensions: .....

Height: .....

Chimney draught: .....\*

Date of last inspection: .....

### Flue-gas duct:

Diameter: .....

Length: .....

Number of elbow pieces: .....

Waste gas temperature: .....\*

## Boiler connected with mixing valves and fittings (brief description of connection):

.....  
 .....  
 .....  
 .....

### Fuel:

Type: .....

Size: .....

Moisture content: .....\*

### Measured data:

Waste gas temperature: ..... °C

Emissions in stabilised state : CO .....

CO<sub>2</sub> .....

O<sub>2</sub> .....

Person responsible for the inspection: ..... Date: .....

Stamp : .....

*(Responsible person's signature)*

Customer's signature: .....

\* measured values

## ANNUAL INSPECTIONS RECORDS

GB

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# RECORDS OF GUARANTEE PERIOD AND POST-GUARANTEE PERIOD REPAIRS

GB

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