

# Operation manual



# Cerbo

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## Contents

|   |           |
|---|-----------|
| <b>1. Application</b>   | <b>5</b>  |
| <b>2. Technical description</b>   | <b>5</b>  |
| Layout of the instrument panel  | 6         |
| <b>3. Technical specifications</b>  | <b>7</b>  |
| Captions for the diagrams of the boilers  | 8         |
| Technical specifications  | 8         |
| Diagram of the boiler D80P  | 9         |
| Exhaust fan schematics – boiler type D80P   | 9         |
| <b>4. Accessories delivered with the boiler</b>   | <b>9</b>  |
| <b>5. Fuel</b>  | <b>10</b> |
| <b>6. Boiler foundations</b>  | <b>10</b> |
| <b>7. Type of environment and location of the boiler with the burner in the boiler room</b>   | <b>11</b> |
| <b>8. Chimney</b>   | <b>11</b> |
| <b>9. Flue gas duct of the boiler</b>   | <b>12</b> |
| <b>10. Fire protection within the installation and use of heat appliances</b>   | <b>12</b> |
| <b>11. Connection of boilers to the electric mains</b>  | <b>13</b> |
| <b>12. Wire diagram for boiler D80P with a draught fan, model AC07X with a 6-pin connector, control of the boiler's draught fan by the burner via AD04 module, control of pneumatic cleaning operation by control of the burner AC07X – pneumatic valve (R), of the compressor via AD02 module (R2)</b> | <b>15</b> |
| <b>13. Obligatory ČSN EN standards for the design and installation of boilers</b>   | <b>16</b> |
| <b>14. Selection and method of connection of control and heating-system elements</b>  | <b>16</b> |
| <b>15. Protection of the boiler from corrosion</b>  | <b>17</b> |
| <b>16. Connection of the boiler D80P with a buffer tank and burner control by the TS and TV sensors</b>   | <b>18</b> |
| <b>17. Prescribed connection of the boiler D80P with a buffer tank and controlled return water in to the boiler from control unit ACD01</b>   | <b>18</b> |
| <b>18. Laddomat 22</b>  | <b>19</b> |
| <b>19. Thermoregulatory valve</b>   | <b>19</b> |
| <b>20. Operation instructions</b>   | <b>20</b> |
| Preparation of boilers for the operation  | 20        |
| Setting up required output and combustion quality:  | 21        |
| Relation of waste gas temperatur to boiler (burner) output when burning pellets   | 22        |
| <b>21. Placing the shaped pieces into the combustion area</b>   | <b>22</b> |
| <b>22. Burner A85 connection for the D80P boiler</b>  | <b>23</b> |
| <b>23. Boiler system with an external storage container and conveyor</b>  | <b>23</b> |
| <b>24. Boiler-room with textile pellet silo 5,5 - 7,9 m<sup>3</sup> and long conveyor</b>   | <b>24</b> |
| <b>25. Boiler room with a large built-in pellet storage</b>   | <b>25</b> |
| <b>26. Cleaning of the boilers and ash removal</b>  | <b>26</b> |
| Cleaning of the boiler  | 27        |
| Pneumatic burner cleaner  | 29        |
| Factory settings of parameters  | 29        |
| <b>27. Automatic removal of ash from the boiler body</b>  | <b>32</b> |
| <b>28. Maintenance of the heating system, including boilers</b>   | <b>33</b> |
| <b>29. Operation and supervision</b>  | <b>33</b> |
| <b>30. Possible failuress and troubleshooting</b>   | <b>34</b> |
| <b>31. Spare parts</b>  | <b>35</b> |
| Replacing the door sealing cord   | 35        |
| Adjusting the door hinges and closures  | 35        |
| <b>32. Environment protection</b>   | <b>36</b> |
| Disposal of the boiler after the end of its service life  | 36        |
| <b>GUARANTEE CONDITIONS</b>   | <b>37</b> |
| <b>RECORD OF INSTALLATION OF THE BOILER AND BURNER</b>  | <b>38</b> |
| <b>ANNUAL INSPECTIONS RECORDS</b>   | <b>39</b> |
| <b>RECORDS OF GUARANTEE PERIOD AND POST-GUARANTEE PERIOD REPAIRS</b>  | <b>40</b> |

## HOPING YOU WILL BE SATISFIED WITH OUR PRODUCT WE RECOMMEND YOU TO OBSERVE THESE MAIN PRINCIPLES, IMPORTANT FOR THE SERVICE LIFE AND PROPER FUNCTIONING OF THE BOILER

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1. The installation, lighting of the test fire and training of the operators shall be **performed by an installation company trained by the manufacturer**, which shall also fill in the boiler installation record (page 38).
2. When using pellets for heating only **use high-quality fuel with the diameter of 6 - 8 mm**, made of soft wood without bark and contaminants (white pellets).
3. During **fuel combustion** substances are produced that may damage the boiler body. Therefore, the boiler must be equipped with Laddomat 22 or a thermo-regulation valve to maintain **the minimum temperature of return water to the boiler of 65 °C**.  
**The operation temperature** of the water in the boiler must be in the range of **80 - 90 °C**.
4. Each circulation pump in the system must be controlled by a separate thermostat so that **the minimum temperature of return water can be guaranteed**.
5. We require that the boiler be installed with at least one accumulation tank the capacity of which should be at least 1000 l. In this way burner's lifespan will be increased and electricity and fuel consumption decreased.



**CAUTION - If the boiler is equipped with Laddomat 22 or a hot-water thermo-regulation valve - 60 °C and an equalizing tank (see the attached diagrams), the boiler body is subject to an extended guarantee of 36 months instead of 24 months. The guarantee period of the other parts remains unchanged. If these principles are not observed, the service life of the boiler body may be considerably reduced due to low-temperature corrosion.**



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

## 1. Application

ATMOS D80P hot water boilers are intended for easy heating of residential houses, various production areas and other similar objects using pellets. For the heating you can use high-quality wooden pellets with the diameter of 6 to 8 mm. **The boiler is not intended for burning of wood, sawdust and minor wood waste.**

## 2. Technical description

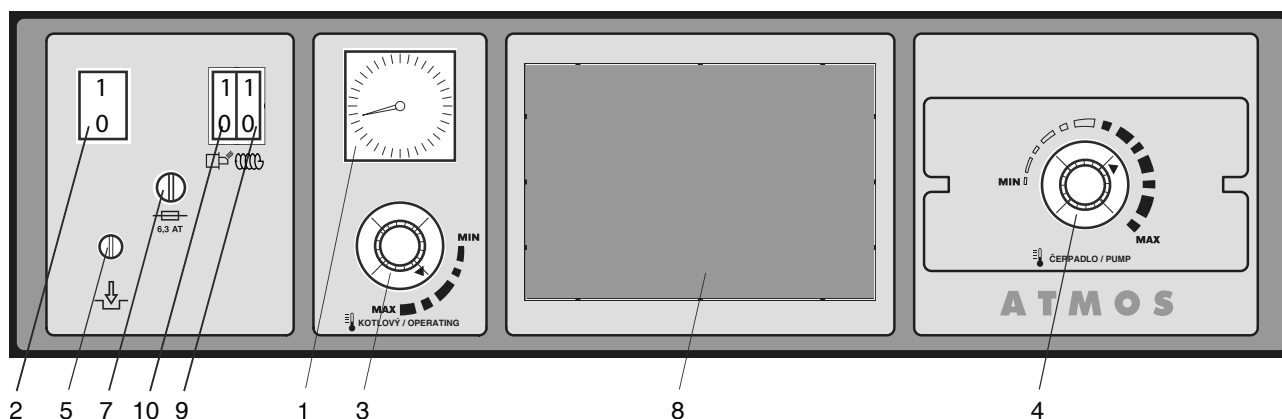
The boilers are constructed with a built-in pellet burner ATMOS A85 with pneumatic cleaning and a conveyor in the left or the right side the boiler. The body of the boiler is welded of 3 - 6 mm thick steel sheets. The body is formed by a combustion chamber lined with ceramic blocks: upper spherical part, at the bottom a ceramic bed and opposite the burner a fire-resistant block to assist ideal burning of the flame. The ceramic parts ensure complete burning out of all combustible substances with high efficiency while at the same time protecting body of the boiler from impairment. At the bottom of the boiler there is a big ash pan, which, if needed, can be substituted by automatic ash removal. The upper part of the boiler encompasses a clean-out door with a tube exchanger behind it.

The outside of the boiler's body is insulated with mineral wool, which is inserted under outer metal casing of the boilers. In the top part of the boiler there is a panel with the main switch, the automatic deashing switch (if installed), the switch of the pellet burner, an operation (control) thermostat, a pump thermostat, a safety thermostat, a thermometer and a 6.3 A fuse. In the bottom right part of the boiler there is a blind flange for additional installation of automatic ash discharge. The boiler is not equipped with a cooling loop against overheating as thanks to the small quantity of fuel in the burner there is no risk of boiler overheating in case of a power supply failure. Boiler D80P is equipped with exhaust fan with speed sensor.



Boiler D80P with ATMOS burner A85 and pneumatic cleaning.

## Layout of the instrument panel



- |                                       |   |
|---------------------------------------|---|
| 1. Thermometer                        |   |
| 2. Main switch                        | 7. 6.3 A fuse - T6, 3A/1500 - type H                |
| 3. Control thermostat (of the boiler) | 8. Place for an electronic control unit (92x138 mm) |
| 4. Pump thermostat                    | 9. Automatic deashing switch                        |
| 5. Safety thermostat                  | 10. Burner switch                                   |

### Description:

- Thermometer** - monitors the output temperature of the boiler water
- Main switch** - allows you to switch off the whole boiler if necessary (restart the pellet burner)
- Control thermostat** - control the operation of the pellet burner by the output temperature of the boiler water
- Pump thermostat** - it is designed to switch the pump in the boiler circuit (set to a temperature of 70 - 80 °C)
- Irreversible safety thermostat** - it serves as protection of the boiler from overheating in case of a failure of the control thermostat or as an indicator of exceeding of the emergency temperature - after exceeding of the emergency temperature it must be reset
- Fuse (6.3 A)** - protection of the electronic unit of the pellet burner
- The **place for an electronic control unit** of the heating system can be fitted with any control unit that matches the opening (92x138 mm), e.g. ACD01. The electric harness is already prepared for its power supply.
- Automatic deashing switch** - it is used to switch off deashing for the purpose of emptying of the auxiliary ash pan and restart of automatic deashing. By turning the switch off and on you will activate the deashing module in such a way that it will stop emitting the warning sound and start the automatic deashing operation.
- Burner switch** - it is used to start the burner and to stop it (initiate the burn-down process) before cleaning of the boiler.

### 3. Technical specifications

| ATMOS boiler type   |                    | D80P   |
|---|--------------------|--|
| Boiler output   | kW                 | 24 - 80  |
| Heat-delivery area  | m <sup>2</sup>     | 5,2  |
| Combustion chamber capacity   | dm <sup>3</sup>    | 180  |
| Filling opening dimensions  | mm                 | 260x450  |
| Prescribed chimney draught  | Pa                 | 25   |
| Max. working overpressure of water  | kPa                | 250  |
| Boiler weight   | kg                 | 695  |
| Exhaust orifice diameter  | mm                 | 180  |
| Boiler height   | mm                 | 1663   |
| Boiler width  | mm                 | 684  |
| Boiler depth  | mm                 | 1410   |
| Ingress protection of the electric part   | IP                 | 20   |
| El. power input - on startup<br>- in operation  | W                  | 635<br>142   |
| Boiler efficiency   | %                  | 91,2   |
| Boiler class  |                    | 5  |
| Flue gas temperature at the nominal output (pellets)  | °C                 | 150  |
| Weight flow of flue gas at the nominal output (pellets)   | kg/s               | 0,062  |
| Prescribed fuel   |                    | high quality pellets with a diameter of 6 - 8 mm, length of 5 - 25 mm and calorific value of 16 - 19 MJ/kg <sup>-1</sup> (white pellets) |
| Average consumption of fuel - pellets - at the nominal output   | kg.h <sup>-1</sup> | 18,8   |
| Water volume in the boiler  | l                  | 185  |
| Hydraulic loss of the boiler  | mbar               | 0,25   |
| Minimum volume of the equalizing tank   | l                  | 1000   |
| Mains voltage   | V/Hz               | 230/50   |
| <p><b>The prescribed minimum temperature of return water in operation is 65 °C.</b><br/> <b>The prescribed operation temperature of the boiler is 80 - 90 °C.</b></p> |                    |  |

## Captions for the diagrams of the boilers

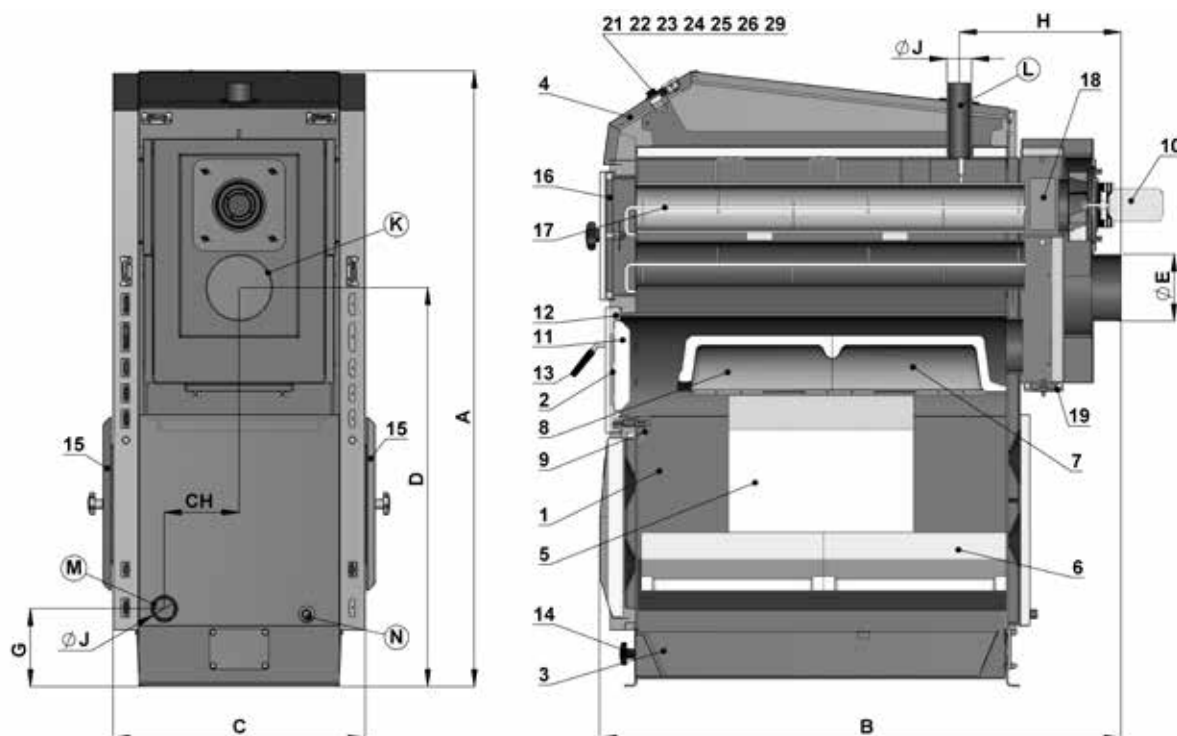
- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Boiler body</li> <li>2. Combustion space door</li> <li>3. Ash pan D80P - (code: P0050)</li> <li>4. Control panel</li> <li>5. Combustion space plate (side wall)</li> <li>6. Combustion space bottom</li> <li>7. Upper spherical part – rear</li> <li>8. Upper spherical part – front</li> <li>9. Frame screen</li> <li>10. Exhaust fan with speed sensor<br/>UCJ4C82B (code: S0148)</li> <li>11. Door filling - Sibral (code: S0252)</li> <li>12. Door gasket, 18 x 18 mm (code: S0241)</li> <li>13. Closure (code: S0212)</li> <li>14. Decorative nut (code: S0413)</li> <li>15. Lid of the burner opening - plate + insulation<br/>(code: S0465)</li> <li>16. Clean-out door – upper</li> </ol> | <ol style="list-style-type: none"> <li>17. Waste gas decelerator for tube exchanger<br/>(code: P0219)</li> <li>18. Rear duct clean-out cover – upper</li> <li>19. Rear duct clean-out cover – lower</li> <li>21. Thermometer (code: S0041)</li> <li>22. Main switch (code: S0091)</li> <li>23. Control (boiler) thermostat (code: S0021)</li> <li>24. Pump thermostat (code: S0023)</li> <li>25. Safety thermostat (code: S0068)</li> <li>26. Fuse T6,3A/1500 - typ H</li> <li>29. Double switch of automatic deashing and the<br/>pellet burner (code: S0098)</li> </ol> |
|---|---|
- 
- |   |
|---|
| <ul style="list-style-type: none"> <li>K - flue gas orifice</li> <li>L - water outlet from the boiler</li> <li>M - water inlet to the boiler</li> <li>N - socket for the filling tap</li> </ul> |
|---|

## Technical specifications

| Dimensions | D80P |
|------------|------|
| A          | 1663 |
| B          | 1410 |
| C          | 684  |
| D          | 1078 |
| E          | 180  |
| G          | 211  |
| H          | 438  |
| CH         | 202  |
| I          | 2"   |
| J          | 2"   |

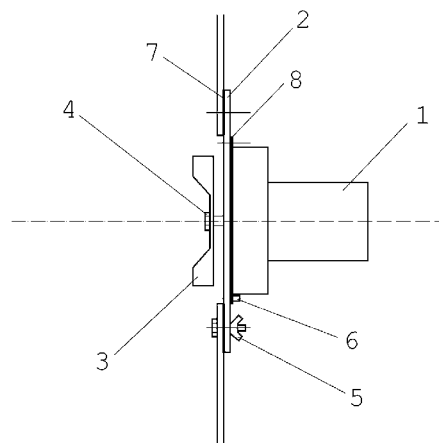


## Diagram of the boiler D80P



### Exhaust fan schematics – boiler type D80P

- 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 (2 pcs)
- 8 - Small gasket



**CAUTION** – The extraction ventilator is supplied disassembled. Mount the fan to rear flue gas duct, tighten all screws properly, connect the fan to the socket in the boiler and burner, test its operation.

## 4. Accessories delivered with the boiler

|  |         |
|--|---------|
| Additional ash pan for cleaning of the exchanger tubes                 | 1 piece |
| Steel brushes with accessories   | 1 piece |
| Poker for cleaning of the boiler body                                  | 1 piece |
| Poker for easy cleaning of the combustion chamber of the pellet burner | 1 piece |
| Filling tap  | 1 piece |
| Operation and maintenance manual                                       | 1 piece |

## 5. Fuel

The prescribed fuel are high-quality pellets of  $\varnothing$  6 - 8 mm and the length of 10 - 25 mm and the calorific value of 16 - 19 MJ/kg<sup>-1</sup>. Such pellets are considered as high-quality pellets that do not disintegrate into sawdust and are made of soft wood without bark and other pollutants (white pellets). We also recommend to fire pellets without biological additives which decrease calorific value of fuel and increase ash amount.



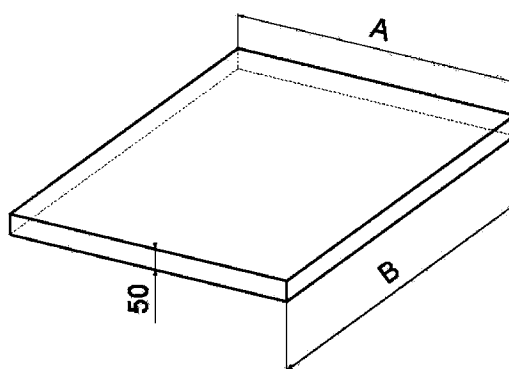
High-quality wooden pellets - white without black dots (bark)



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

## 6. Boiler foundations

| Boiler type (mm) | A   | B    |
|------------------|-----|------|
| D80P             | 800 | 1300 |

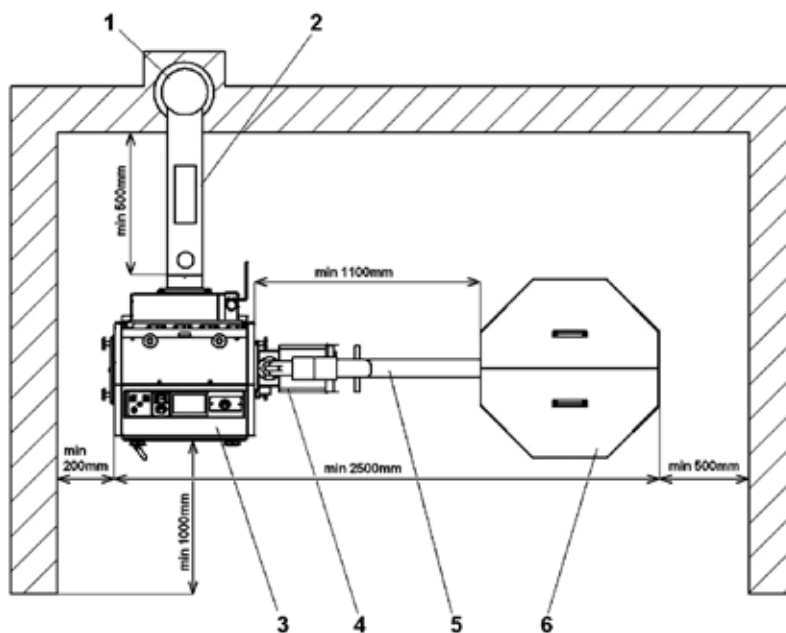


We recommend you to make concrete (metallic) foundations for the boiler.

## 7. Type of environment and location of the boiler with the burner in the boiler room

Boilers with a pellet burner may be used in the AA5/AB5 basic environment in accordance with the ČSN3320001 standard. Boilers must be installed in a boiler room with guaranteed sufficient supply of combustion air. It is unacceptable to locate boilers on residential premises (incl. corridors). The cross-section of the opening for supply of combustion air to the boiler room must be at least 350 cm<sup>2</sup>.

1. Chimney
2. Flue gas duct
3. Boiler
4. A85 burner
5. External conveyoyr
6. Bin (1000 l)



## 8. Chimney

**A boiler with a burner must always be connected to the chimney vent with consent of the responsible chimney maintenance company.** The chimney vent must always produce sufficient draught and exhaust flue gas to the free atmosphere in virtually all operation conditions. For proper function of boiler the separate chimney vent must be properly dimensioned **as the combustion, output and service life of the boiler depends on its draught.** The draught of a boiler directly depends on its cross-section, height and roughness of the inner wall. No other device may be connected to the chimney to which a boiler is connected. **The diameter of the chimney must not be smaller than the outlet on the boiler (min. 180 mm).** The chimney draught must achieve prescribed values (see the technical specifications in the boiler manual). However, the boiler must not be excessively high so as not to reduce the efficiency of the boiler and not to disturb its combustion (tear the flame). In case of too strong draught install a throttling flap or draught reducer in the flue gas duct between the boiler and the chimney.

Guideline values of dimensions of the chimney cross-section:

20 x 20 cm  
 Ø 20 cm

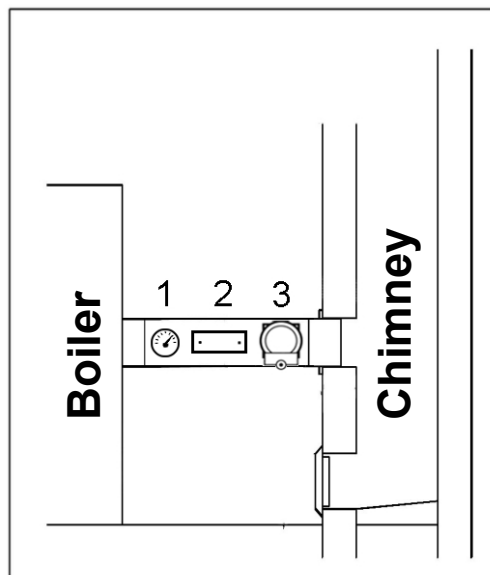
height 9 m  
 height 10 m

The exact determination of chimney dimensions is defined by the ČSN 73 4201 standard. The prescribed chimney draught is specified in the “Technical data” chapter of the manual of the particular boiler.

## 9. Flue gas duct of the boiler

The flue gas duct from the boiler must lead to the chimney vent. If the boiler cannot be connected directly to the chimney vent, the corresponding flue gas duct adapter must be as short as possible with regard to the particular conditions, but **not longer than 1 m**, without additional heating surface and it **must rise towards the chimney**. Flue gas ducts must be mechanically strong and leak-proof for flue gas and **cleanable** inside. Flue gas ducts must not lead through other owners' residential or commercial units. The inner cross-section of the flue gas duct must not be larger than the inner cross-section of the smoke uptake and must not get narrower towards the chimney. The use of smoke elbows is not suitable. Designs of passages of flue gas ducts through structures of flammable materials are defined in Annexes 2 and 3 of ČSN 061008 and are mainly suitable for mobile units, wooden huts, etc.

- 1 - Flue gas thermometer
- 2 - Cleaning opening
- 3 - Throttling flap (draught reducer)



**INFO** - In case of too strong draught of the chimney install a throttling flap /3/ or a draught reducer in the flue gas duct, see the ATMOS price list.

## 10. Fire protection within the installation and use of heat appliances

Extract from ČSN 061008 - Fire safety of local appliances and sources of heat

### Safe distances

On installation of an appliance the safe distance from building materials must be maintained, at least 200 mm. This distance is valid for boilers and flue gas ducts located near flammable materials of the B, C1 and C2 flammability class (the flammability class is specified in tab. no. 1). The safety distance (200 mm) must be doubled if boilers and flue gas ducts are located near flammable materials of the C3 class (see tab. no.1). The safety distance must be doubled if the flammability class of flammable material is not evidenced. The safety distance may be reduced to a half (100 mm) if you use a non-flammable heat insulating panel (asbestos panel) with the thickness of at least 5 mm, located 25 mm from the protected flammable material (flammable insulation). A shielding panel or protective screen (on the protected object) must exceed the outline of the boilers (incl. flue gas ducts) at each side by at least 150 mm and the top surface of the boiler by at least 300 mm. A shielding panel or protective screen must also be used to protect fixtures of flammable materials if the safe distance cannot be maintained (e.g. in mobile units, huts, etc. - more details in ČSN 061008). The safety distance must also be maintained in case of installation of fixtures near boilers.

If boilers are located on a floor of flammable materials, they must be installed on a non-flammable, heat-insulating pad, exceeding the ground plan at the side of the feeding and ashpan opening by at least 300 mm before the opening - at the other sides by at least 100 mm. As non-flammable, heat insulation pads you can use all materials of the A flammability class.

Tab. 1

| Flammability classes of building materials and products |  |
|---|--|
| A - no flammability                                     | granite, sandstone, concrete, brick, ceramic tiles, mortar, fire-resistant plastering, etc.                              |
| B - difficult flammability                              | Akumin, Izomin, cemented fibreboard, Lignos, panels of basalt felt, fibreglass panels, Novodur                           |
| C1- poor flammability                                   | hardwood (oak, beech), hardboard panels, plywood, Sirkolit, Werzalit, hardened paper (Formica, Ecrona)                   |
| C2- medium flammability                                 | softwood (pine, larch, spruce), chipboard and cork panels, rubber flooring (Industrial, Super)                           |
| C3- high flammability                                   | Fibreboard panels (Hobra, Sololak, Sololit), cellulose materials, polyurethane, polystyrene, polyethylene, lightened PVC |



**WARNING** - In circumstances leading to the danger of transient ingress of flammable gases or vapours and during work that might result in a temporary risk of a fire or explosion (e.g. gluing of linoleum, PVC, etc.) the boilers must be put out of operation in time before the occurrence of the danger. **No objects of flammable substances may be put on the burner and boiler in a smaller distance than the safe distance from them (more - see ČSN EN 13501-1).**

## 11. Connection of boilers to the electric mains

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 switchboard or junction box to avoid confusion of the conductors.

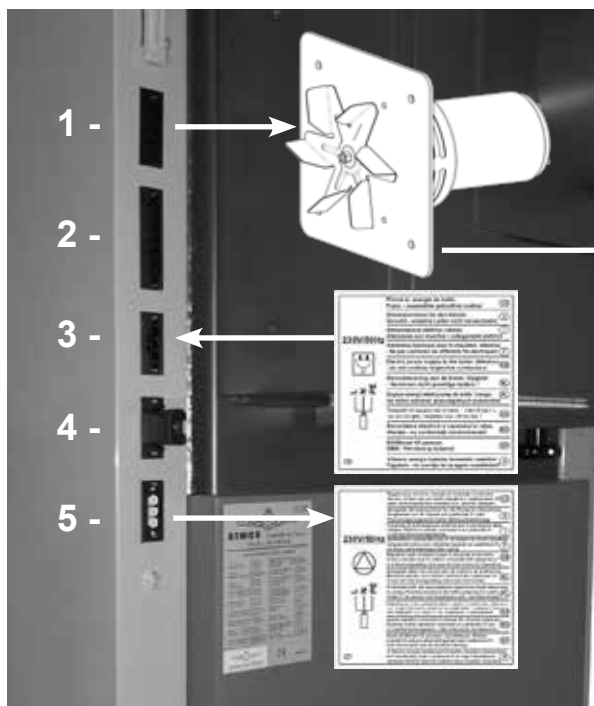
Mains cable must be regularly checked and maintained in the prescribed condition. It is forbidden to interfere in to the safety circuits and elements for safe and reliable operation of the boiler. If any damage of electrical equipment must be the boiler out of operation, disconnect from the mains and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

### Connecting the burner:

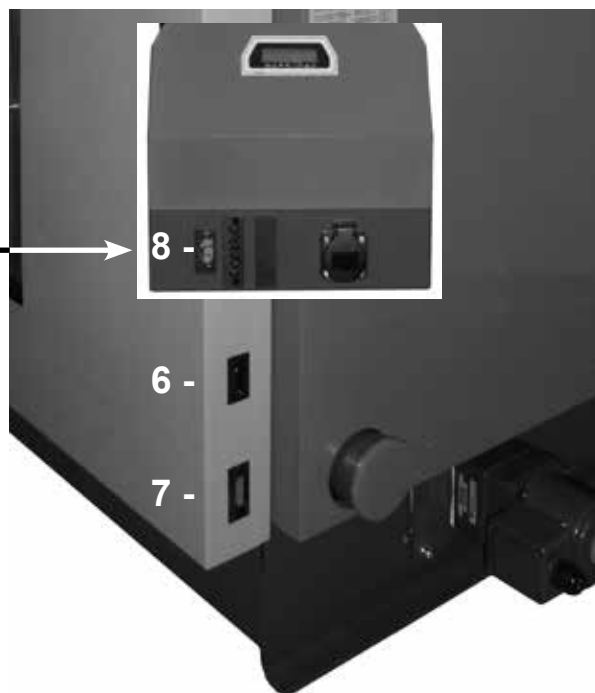
Between the burner and the boiler a six line cable is used. One end of the cable is connected to the burner via a 6-pin connector (part of the burner) and the other end to the boiler via a 6-pin connector. The boiler is also equipped with an outlet with a 3-pin connector for a boiler circulation pump and a 3-pin connector (with a clamp) to allow easy connection and control of the burner by external regulation.

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### Connectors in the side hoods:



Connectors in **upper** part of the boiler's right side casing

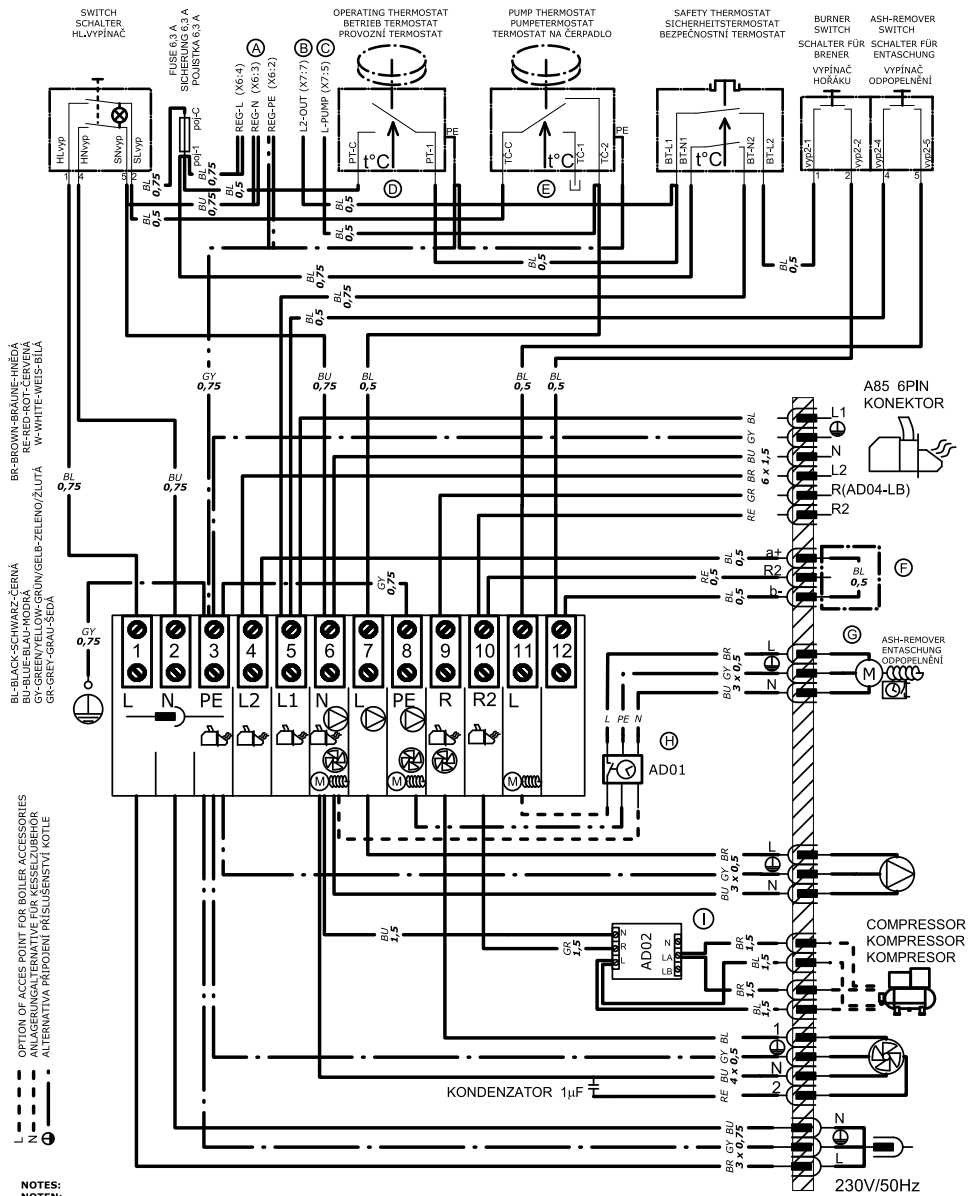


Connectors in **lower** part of the boiler's right side casing

- 1 - connector for exhaust fan - 4-pin connector (fan with speed sensor UCJ4C82B)
- 2 - connector for burner ATMOS - model AC07X - (L1, L2, R, R2,N, PE)
- 3 - connector for power cord - black (L - brown, N - blue, PE - green/yellow)
- 4 - connector for external regulator of the boiler (with jumper) (do not disconnect - do not pull out)
- 5 - connector for pump in boiler circuit - white (L - brown, N - blue, PE - green/yellow)
- 6 - connector for pneumatic cleaning compressor (both sides of the casing)
- 7 - connector for automatic ash removal
- 8 - connector for burner A85 to connect the speed sensor of the boiler's exhaust fan

# 12. Wire diagram for boiler D80P with a draught fan, model AC07X with a 6-pin connector, control of the boiler's draught fan by the burner via AD04 module, control of pneumatic cleaning operation by control of the burner AC07X – pneumatic valve (R), of the compressor via AD02 module (R2)

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**NOTES:**  
**POZNÁMKY:**

- (A) VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRILE/FASTON 6,3) FOR ELECTRONIC REGULATION  
SPEISEKLEMMENVARIANTEN "REG L,N,PE" (ADERENDHÜLSE/FASTON 6,3) FÜR ELEKTRONISCHE REGELUNG  
VARIANTY NÁPAJEČÍCH SVOREK "REG L,N,PE" (DUTINKA/FASTON 6,3) PRO ELEKTRONICKOU REGULACI
- (B) RESERVOIR POINT "L2 OUT" OF BURNER ABS TO THE ELECTRONIC REGULATION (ACD01)  
SPEISEKLEMME "L2 OUT" DER BRENNER ABS FÜR DIE ELEKTRONISCHE REGELUNG (ACD01)  
PŘÍPOJOVACÍ SVORKA "L2 OUT" HOŘÁKU ABS DO ELEKTRONICKÉ REGULACE (ACD01)
- (C) RESERVOIR POINT "L PUMP" OF BOILER PUMP TO THE ELECTRONIC REGULATION (ACD01)  
SPEISEKLEMME "L PUMP" DER KESSELPUMPE FÜR DIE ELEKTRONISCHE REGELUNG (ACD01)  
PŘÍPOJOVACÍ SVORKA "L PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE (ACD01)
- (D) WHEN ELECTRONIC REGULATION CONTROL BURNER ABS - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT  
DEN KONEKTOREN "PT-C" A "PT-1" ABKLEMMEN BEI DER BRENNER ABS BEDIENUNG DER ELEKTRONISCHE REGELUNG  
KONEKTORY "PT-C" A "PT-1" ODPOJIT PŘI OVLÁDÁNÍ HOŘÁKU ABS ELEKTRONICKOU REGULACI
- (E) WHEN ELECTRONIC REGULATION CONTROL BOILER PUMP - CONNECTORS "TC-C" AND "TC-2" MUST BE UNCONNECT  
DEN KONEKTOREN "TC-C" A "TC-2" ABKLEMMEN BEI DER KESSELPUMPEBEDIENUNG DER ELEKTRONISCHE REGELUNG  
KONEKTORY "TC-C" A "TC-2" ODPOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO ČERPADLA ELEKTRONICKOU REGULACI
- (F) ACCESS 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 MOTOR OF ASH-REMOVER  
KONEKTOR (SCHWARZ/ROT) - FÜR DEN ENTASCHUNGSMOTOR  
KONEKTOR (ČERNO ČERVENÝ) - PRO MOTOR ODPOPELNĚNÍ
- (H) OPTIONAL ACCESSORIES - MODUL AD01 - TIMEUNIT OF ASH-REMOVER - CONNECTED TO THE ASH REMOVAL MOTOR PILOT CABEL INTO THE RED/BLACK 3P CONNECTOR  
OPTIONALES ZUBEHÖR - MODUL AD01 - ZEITBEDIENUNG FÜR DEN ENTASCHUNG - ZUM ENTASCHUNGSMOTORUNTER PILOT KABEL IN DIE ROT/SCHWARZ 3P-KONEKTOR ANGESCHLOSSEN  
VOLITELNÉ PŘÍSLUŠENSTVÍ - MODUL AD01 - ČASOVÝ MODUL ODPOPELNĚNÍ - PROPOJENÍ S MOTOREM ODPOPELNĚNÍ POMOCNÝM VODIČEM DO ČERVENO/ČERNÉHO 3P KONEKTORU
- (I) MODUL AD02 FOR CONTROL BOILER FAN FROM BURNER ABS  
MODUL AD02 FÜR KESSELGABLÄSBEDIENUNG BEI DEM BRENNER ABS  
MODUL AD02 K OVLÁDÁNÍ VENTILÁTORU KOTLE HOŘÁKEM ABS

14-05-01\_D80P\_A85\_6P\_AD02

## 13. Obligatory ČSN EN standards for the design and installation of boilers

- ČSN EN 303-5 - Central heating boilers using solid fuel
- ČSN 06 0310 - Central heating, design and installation
- ČSN 06 0830 - Safety devices for central heating and hot water preparation
- ČSN EN 73 4201 - Designing of chimneys and flues
- ČSN EN 1443 - Chimney structures - General requirements
- ČSN 06 1008 - Fire safety of local appliances and sources of heat
- ČSN EN 13501-1 - Fire classification of construction products and building structures - part 1
- ČSN EN 1264-1 - Floor heating - Systems and components - Definitions and marking
- ČSN EN 1264-2 - Floor heating - Systems and components - Heat output calculation
- ČSN EN 1264-3 - Floor heating - Systems and components - Design
- ČSN EN 442-2 - Heating elements - Tests and their evaluation

### 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 installation of the boiler must always be carried out in accordance with a prepared design. The boiler may only be installed by persons trained by the manufacturer.

## 14. Selection and method of connection of control and heating-system elements

The boilers are delivered to the user with the basic control of the boiler output, which complies with the requirements for the heating comfort and safety. **The control ensures the required output temperature of the boiler water (80 - 90 °C).** The boilers are equipped with a built-in thermostat controlling the pump in the boiler circuit. The connection of these elements is indicated in the electric wiring diagram. Each pump in the system must be controlled with a separate thermostat **to avoid cooling of the boiler at the return line** below 65 °C. The required water temperature for the building is always set with the use of a three-way mixing valve. The mixing valve may be controlled manually or with an electronic control unit, which will contribute to more comfortable and more economical operation of the heating system. **The way of connection of all the elements is always determined by the designer in accordance with the specific conditions of the heating system.** The electric installation related to the sufficient equipment of the boilers with the above mentioned elements must be implemented by a qualified person in accordance with valid ČSN EN standard. If you install the ACD01 electronic control unit, follow the instructions in the operation manual of this unit. Connect this control unit in the boiler in accordance with the electric wiring diagram in this manual. **Never switch off the ACD01 electronic control unit outside the heating season (with the main switch on the boiler)!**



**For the installation of the boiler we recommend you to use an open expansion vessel; however, it may also be closed if permitted by the legislation of the particular country. You must install the boiler in such a way to avoid its overheating and consequent damage even in case of a power supply failure.**





During the installation support the back part of the boiler to raise it by 10 mm to facilitate its rinsing and bleeding.

For the control of the heating system we recommend the following controllers:

- |  |                         |
|--|-------------------------|
| a) ATMOS ACD 01 - equithermal control set for solid fuel boilers |                         |
| b) KOMEX THERM, Prague   | phone: +420 235 313 284 |
| c) KTR, Uherský Brod   | phone: +420 572 633 985 |
| d) Landis & Staefa   | phone: +420 261 342 382 |

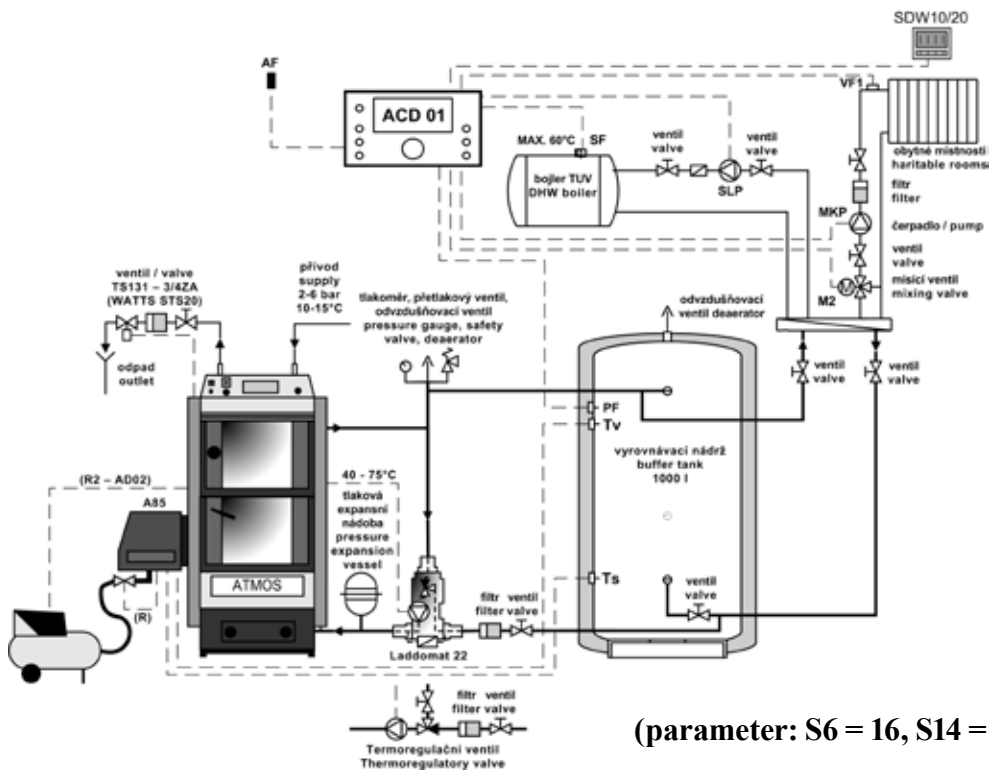
## 15. Protection of the boiler from corrosion

The prescribed solution consists in the installation of the boiler with **Laddomat 22**, or a thermo-regulation valve, which allows you to create a separated boiler and heating (primary and secondary) circuit to ensure the **minimum temperature of return water to the boiler of 65 °C**. The higher the return water temperature is, the lower you will keep condensation of tar and acids that are harmful for the boiler body. **The output water temperature of the boiler must be permanently in the range of 80 - 90 °C**. The flue gas temperature must not drop **below 110 °C** during normal operation. A low flue gas temperature causes condensation of tar and acids even though the output water temperature (80 - 90 °C) and the return water temperature (65 °C) is maintained. These situations may occur e.g. in case of a wrong setting of the pellet burner (low output). You can also use a three-way mixing valve with a servo drive and electronic control to maintain the minimum temperature of return water to the boiler (65 - 75 °C).

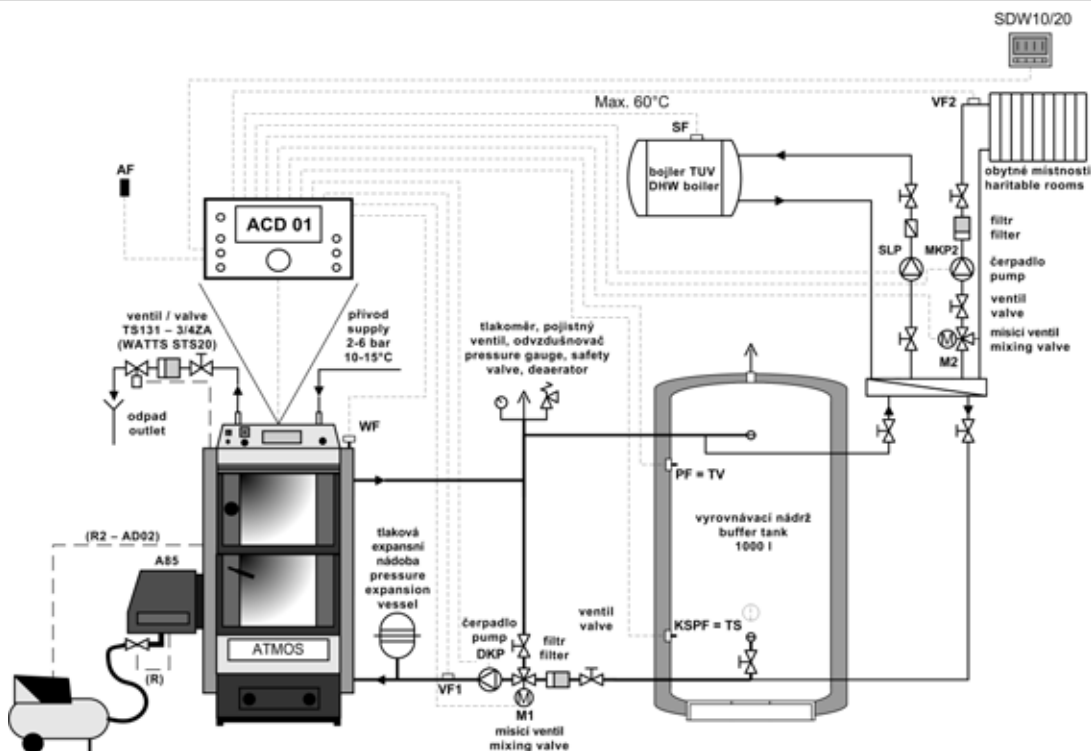


**CAUTION** - we require that boiler D80P be always installed with an accumulation tank of a capacity at least 1000 l.

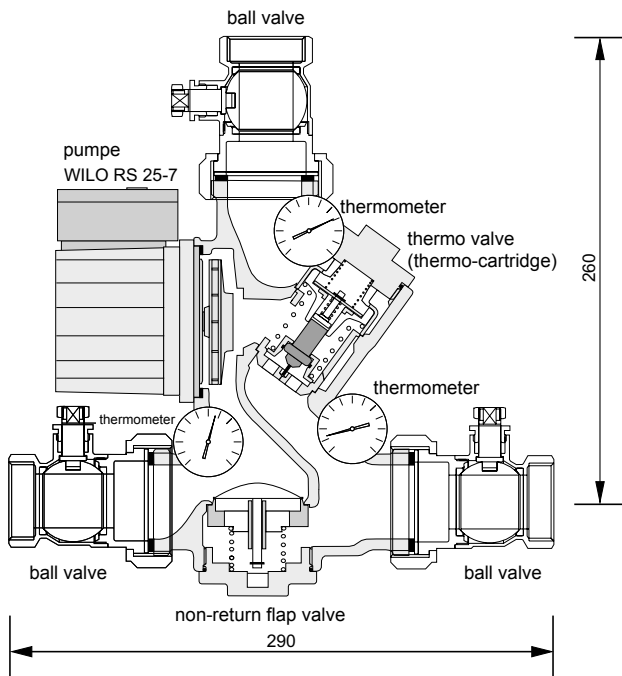
## 16. Connection of the boiler D80P with a buffer tank and burner control by the TS and TV sensors



## 17. Prescribed connection of the boiler D80P with a buffer tank and controlled return water in to the boiler from control unit ACD01



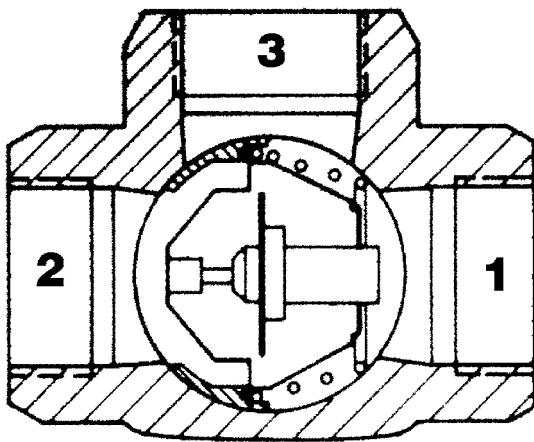
## 18. Laddomat 22



With its construction, Laddomat 22 replaces the traditional connection composed of individual parts. It is composed 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 22 is considerably easier and therefore, we recommend it. A spare thermo-cartridge of 72 °C is supplied with the Laddomat 22 device. It is used for boilers over 32 kW.

| OPERATION DATA                       |          |
|--------------------------------------|----------|
| <b>Max. operating pressure</b>       | 0,25 MPa |
| <b>Design pressure</b>               | 0,25 MPa |
| <b>Test over pressure</b>            | 0,33 MPa |
| <b>Highest operating temperature</b> | 100 °C   |

## 19. Thermoregulatory valve



Thermoregulatory valve type, TV 60 °C (65/72 °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 sizes of the thermoregulatory valve TV 60/65/72 °C.**

For boilers: D80P ..... DN40, DN50

## 20. Operation instructions

### Preparation of boilers for the operation

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

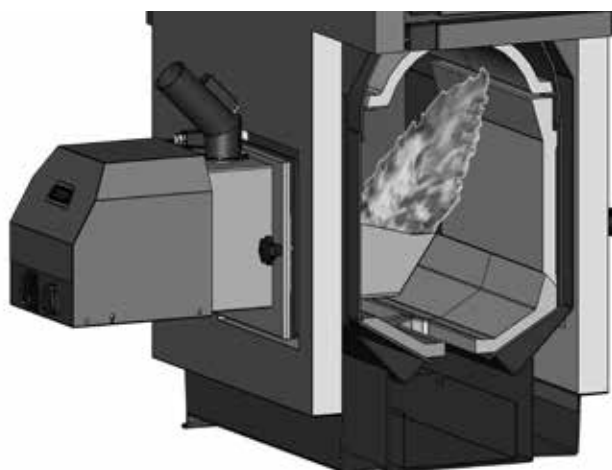
**Before igniting pellets perform several operations.** Check all the lids and doors for proper closing. Check whether the burner is properly tightened to the boiler over the gasket and that the end switch stop is in its place. Also, check the hose between the burner and the conveyor for proper tensioning and such inclination that allows free falling of pellets to the burner. They must not accumulate in the hose. The angle of the worm conveyor should be at least 45°; otherwise the boiler may not achieve the nominal output.

**If everything is OK, draw pellets to the conveyor.** In the case of the ATMOS A85 burner plug the power supply cord of the conveyor to a standard 230V/50Hz socket. When pellets start to fall out of the conveyor, plug the power supply cord of the conveyor back to the socket for normal operation. Turn on the main switch (green), the switch of the pellet burner and the switch of the automatic deashing system (if installed).

**Adjust combustion of the burner with the use of a flue gas analyzer in the measurement place (opening) in the flue between the boiler and the chimney.** Always adjust the burner in a stabilized condition, approx. 30 - 60 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 just before the front edge of spherical part which is situated in upper part of the combustion chamber. This means that in boiler D80P flames fill the entire space of the combustion chamber. However, reaching (creeping) of the flames above the spherical space of the boiler's body must be prevented. In such a way add combustion air (open the fan flap, raise fan speed - S3) or reduce the fuel supply.



**CAUTION** - This adjustment 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.



Burner A85 built-in into the boiler



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

## Setting up required output and combustion quality:

### Required output is set up by parameters T4 and T6

The real output is, however, also affected by pellet diameter and an angle of the conveyor. That is why it is necessary to know that when conveyor angle or pellet diameter were changed after set-up of the burner, the burner must be set up again.

**Quality of combustion is set up with the fan's air flap** in such way that the flame ends at the front edge of the combustion chamber spherical space. This means that in boiler D80P flames fill the entire space of the combustion chamber. However, reaching of the flames as far as the spherical space of the boiler's body must be prevented.

**Accurate final set-up of combustion is to be done after the boiler had been in continuous operation for 30 to 60 minutes. The best way is to use an exhaust analyzer.** We recommend to set up the burner so that surplus O<sub>2</sub> in exhaust gas fluctuates between 7 to 10 % and average CO is less than 250 mg/m<sup>3</sup>. Exhaust gas temperature must never drop below 110 °C and rise above 250 °C.



**INFO - Although the burner has many functionalities (parameters), these only relate to set up of the basic ones, which characterize output of the burner T4, T6 and quality of combustion – fan's speed S3, air flap opening**

**Approximate recommended set up of the burner for separate outputs when using conveyors DRA50 – 1.7, 2.5, 4 and 5 m, 6 mm pellets and the conveyor at an angle of 45°:**

| Boiler output | Parameter T1 | Parameter T4 | Parameter T6 | Parameter S3 | Opening of the air flap on the burner fan of a boiler with an exhaust fan |
|---------------|--------------|--------------|--------------|--------------|---|
| 50 – 60 kW    | 85 s         | 5 s          | 12 s         | 30 %         | 47 mm   |
| 70 – 80 kW    | 85 s         | 8,3 s        | 12 s         | 47 %         | 67 mm   |



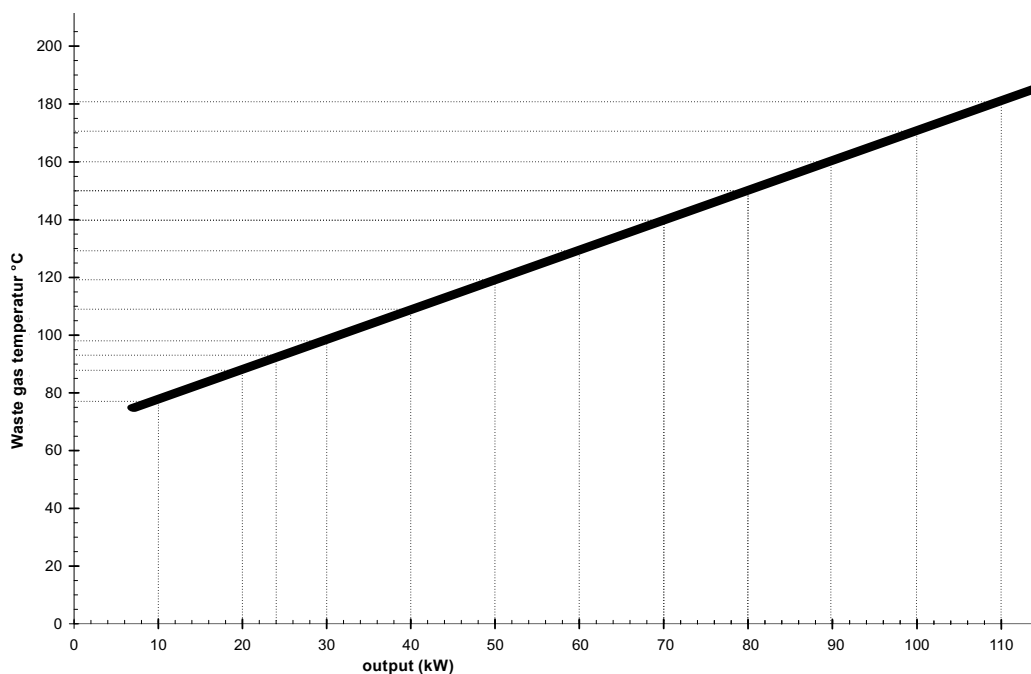
**CAUTION - Parameter T4 must never be set higher than 9 s.**



**INFO – If necessary, when there is little space in the boiler room, you may shorten the conveyor (screw) or its legs as you wish at any time, but in such way that the conveyor angle remains smaller than 45°.**

**Minimum length of the pipe between the burner and the conveyor must be more than 20 cm. Maximum length of the pipe should not exceed 1 m.**

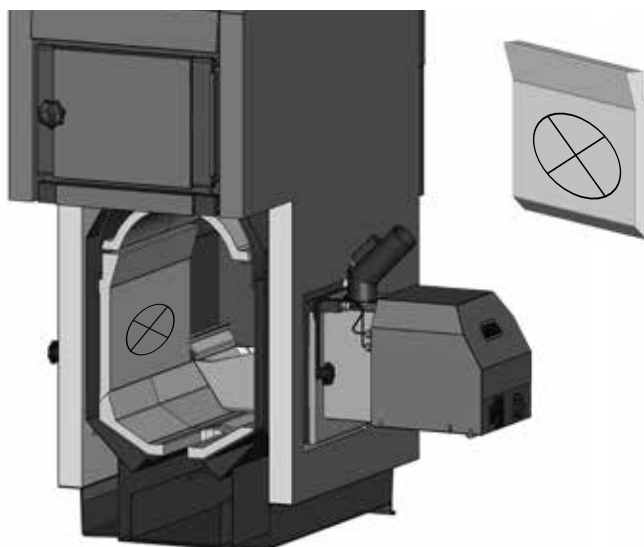
## Relation of waste gas temperatur to boiler (burner) output when burning pellets



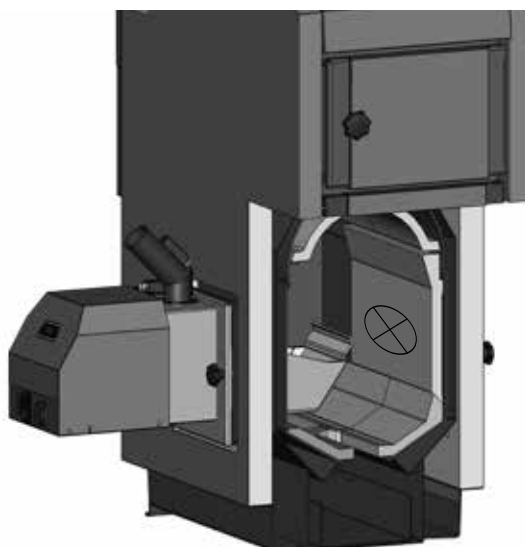
It is a linear dependence at stabilised state and with a clean boiler.

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

Burner on the right side

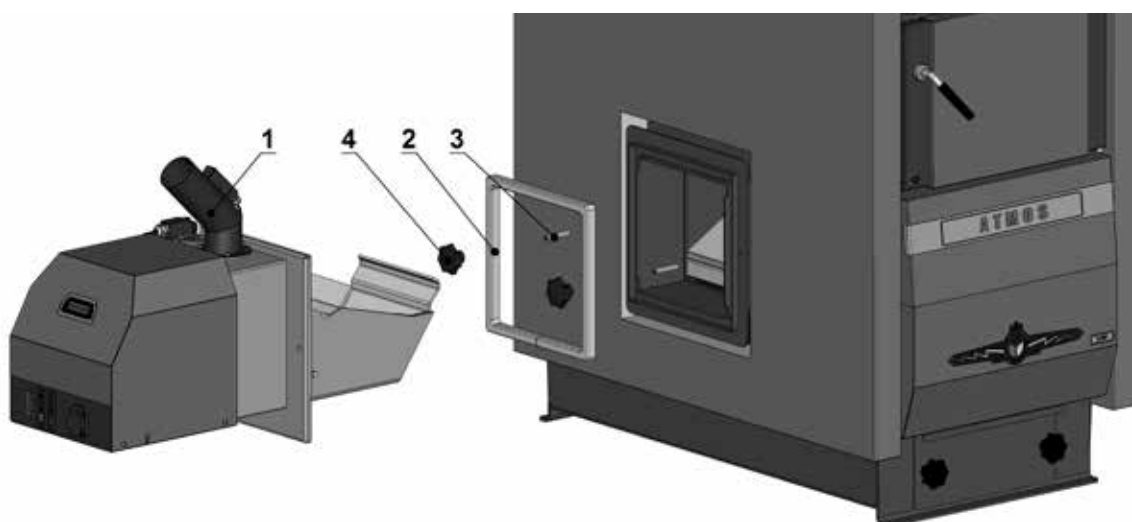


Burner on the left side



**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.

## 22. Burner A85 connection for the D80P boiler

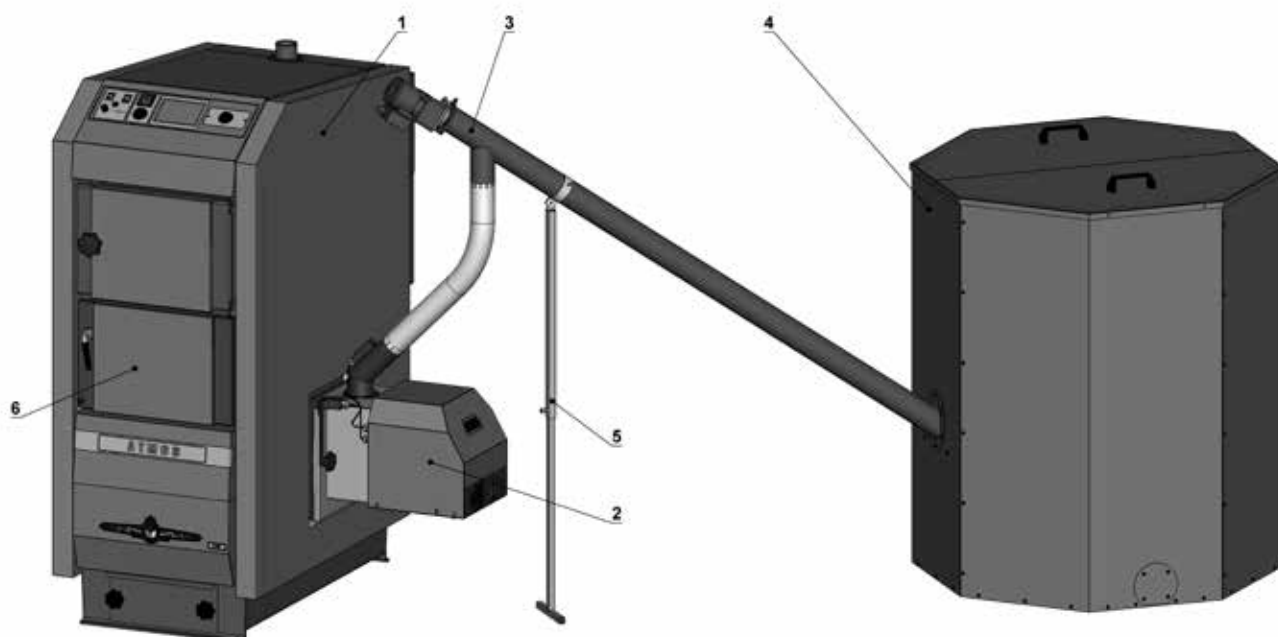


- |  |                           |
|--|---------------------------|
| 1. ATMOS A85 pellet burner                           | 3. 2 x M10 screw          |
| 2. Sealing cord, 18 x 32 mm, extra big (code: S0174) | 4. 2 x M10 decorative nut |



**CAUTION** - For A85 burner we standardly use conveyors DRA50 - 1.7 m, 2.5 m, 4 m and 5 m

## 23. Boiler system with an external storage container and conveyor



- |                                 |                              |
|---------------------------------|------------------------------|
| 1. ATMOS D80P boiler            | 4. Pellet container (1000 l) |
| 2. ATMOS A85 pellet burner      | 5. Conveyor leg              |
| 3. ATMOS DRA50 conveyor - 2.5 m | 6. Combustion space door     |

## 24. Boiler-room with textile pellet silo 5,5 - 7,9 m<sup>3</sup> and long conveyor

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### Description:

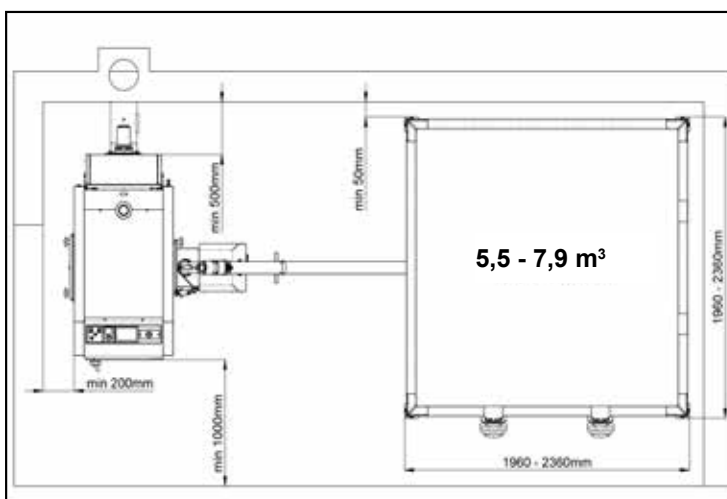
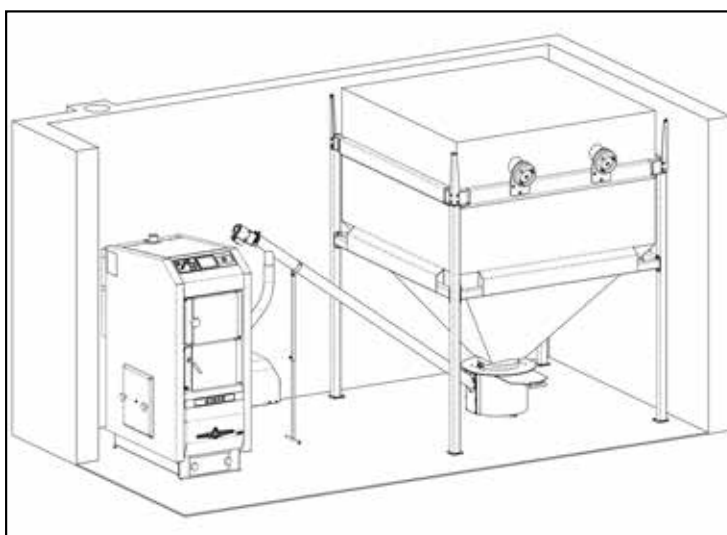
Boiler-room with external textile pellet silo placed next to the boiler or in to the next room with direct feeding of pellet in to the burner by long conveyor.

Textile silo with volume of 5,5 - 7,9 m<sup>3</sup>, which contains 3600 - 5100 kg pellets (depend on type), it is enough big to be filled three or four a season. Pellet feeding we do from cistern-truck or in case of emergency from 15 kg bags.

There are two flanges in upper part of the textile silo with holes for comfort filling of pellet from cistern-truck.

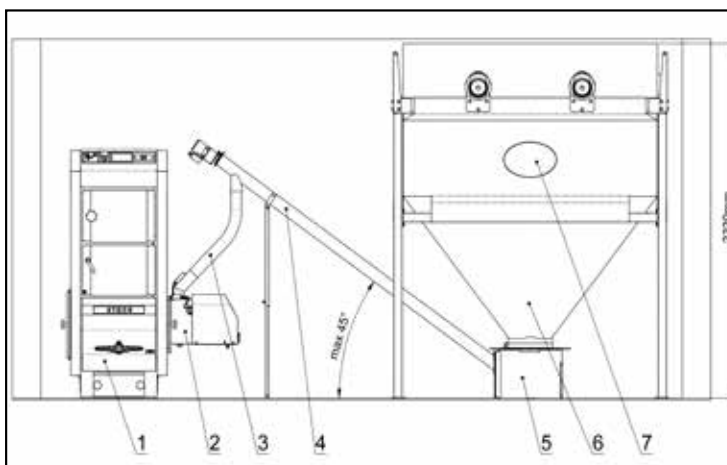
Material of textile silo prevent moistening of the fuel and it is easy to assemble how the customer need.

All the walls of textile silo are directed at the lowest point of the silo, universal container, from which the auger pellet conveyor with length 1.7, 2.5, 4 or 5 m picks the pellets up.



### Legend:

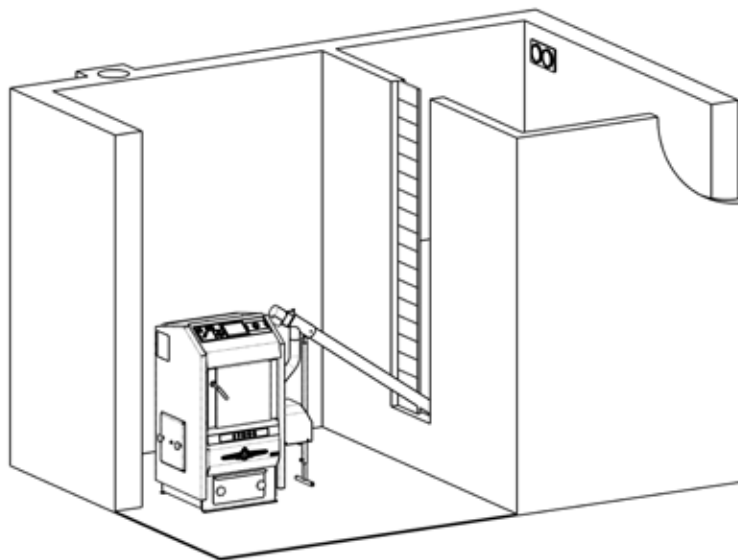
- 1 - Boiler
- 2 - Pellet burner
- 3 - Pellet supply pipe
- 4 - Conveyor
- 5 - Universal container with collector probe under textile silo (H0510)
- 6 - Textile silo (5,5 - 7,9 m<sup>3</sup>)
- 7 - Openings for possible filling of pellets





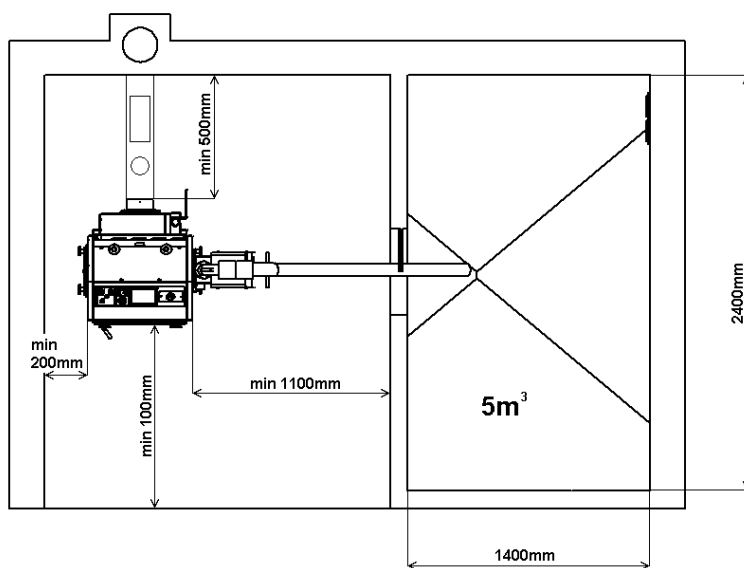
## 25. Boiler room with a large built-in pellet storage

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 a 2 m (2.5 m) conveyor is used. For easy access to the storage a segmented opening is produced that can be 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 that have different sizes with regard to pellet suppliers.



GB

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.

## 26. Cleaning of the boilers 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.

**For this reason the basic version of ATMOS burner A85 is equipped with pneumatic cleaning** which cleanses the burner's combustion chamber after every burn out or at regular intervals (factory setting is 4 hours – parameter S42, S43). Thanks to pneumatic cleaning you can check or clean the burner's combustion chamber only once in a fortnight or a month.



Burner A85 with the pneumatic cleaning compressor



Removable combustion chamber of the burner with air supply openings - must be checked regularly

**Basic version of the boiler includes an ash pan** which must be emptied regularly once in 3 - 14 days depending on the quality of pellets and intensity of the boiler's operation.

**The ash pan can be replaced by automatic ash removal** which removes ash regularly from the bottom chamber under the burner into an additional ash pan using a screw conveyor.



Pull out the ash-pan and remove the ash



Boiler with automatic ash removal and an additional ash pan

## Cleaning of the boiler

Regular cleaning of the body of the boiler is done by first letting the burner finish firing (switch off the burner /20/, the boiler switch remains on).

Open the upper clean-out **door of the exchanger with a tube box**. Attach the additional ash pan to the door of the combustion chamber and clean the tube box by moving the obstruction flaps in the tube box. In case of heavy clogging in the tube box, use the enclosed brush. Cleaning should be done once in 7 to 30 days depending on the degree of clogging.



Cleaning of the boiler's tube exchanger using the built-in waste gas decelerator

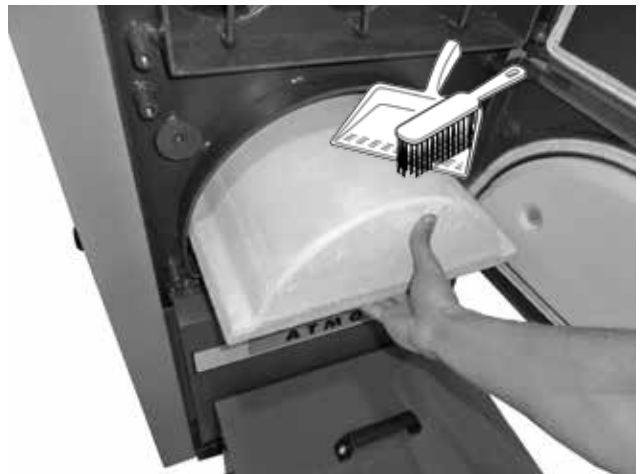


Cleaning of the tube exchanger

Now take away the additional ash pan, open the **combustion chamber door** and sweep all the ash into the bottom ash pan. The upper ceramic parts situated in the combustion (stoke up) space should be checked and/or swept clean at least twice a year (Caution – fragile).



Sweeping ash into the bottom space (ash pan)



Cleaning the upper ceramic combustion space

With boiler D80P the circulating wheel of the fan should be cleaned at least once a year. The fan is situated on the motor at the back of the boiler. Also, do not forget to clean the back smoke channel with sides lids and scrape the walls of the combustion chamber of the boiler with the provided poker or brush. Finally, remove the ash pan and dispose of the ash while observing all the fire measures. Real frequency of boiler cleaning and ash removal must be adjusted according to the quality of fuel, intensity of boiler operation, chimney draught and other circumstances. Put everything in the original condition after the cleaning. At least once a year remove the burner and clean it completely. See the manual of the burner.



Sample cleaning of impeller on exhaust fan



Should be done after the tube box above the boiler's combustion chamber had been cleaned



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



Burner removing for year servicing and cleaning

## Pneumatic burner cleaner

The pneumatic burner cleaner is an accessory suitable for optimal cleaning of the ATMOS A85 combustion chambers when burning poorer quality wooden pellets which form cakes (ash clumps), i.e. wooden pellets with greater amounts of bark and dirt.



**WARNING** – This equipment does not deal with the burning of plant pellets, grains, other biological waste pressed into pellets or wooden pellets with greater content of the above mentioned substances.

The pneumatic burner cleaner is very fast, effective and reliable.



**INFO** – Pneumatic cleaning is not a replacement for regular servicing or where necessary the cleaning of the burner and boiler which has to be undertaken at regular intervals according to pellet quality. The interval between checks and cleaning of the combustion chamber should be looked at taking account of the amount of foreign matter and dirt in the pellets, which can result in growth of apertures (holes) in the combustion chamber for intake of combustion air.

Combustion chamber cleaning is undertaken according to a preset program in the ATMOS A85 burner electronics. Its frequency must always correspond to the quality of pellets burnt. **The poorer the pellet quality, the more frequent clumps must be removed from the combustion chamber.**



**INFO** - Clumps of ash prevent combustion air from reaching the pellets, meaning they cannot burn properly in the required time in the combustion chamber. This subsequently results in the overfilling of the combustion chamber and blockage of the pellet inlet pipe between the burner and conveyor.

These ash clumps are not formed with high quality wooden pellets made of soft bark-free wood or other mixes of so-called white pellets, meaning pneumatic cleaning is unnecessary. However, if it is built into the burner it saves us time, facilitates work, ensures consistent combustion quality, and thus reliability.



**WARNING** - check and secure everything before operating the pneumatic burner cleaner so that everything is properly connected and secured according to the operation manual.

## Factory settings of parameters

• **parameter T5** – Rundown time of the fan after the STOP command - for optimal burning out of pellets in the combustion chamber... **(25 min)**

• **parameter S6** – determines function of first reserve R - added output  
The first reserve R is used most commonly for controlling the boiler exhaust fan (S6 = 4), but in this case we use it for controlling the solenoid which releases compressed air into the burner combustion chamber.

Set S6 = 16

• **parameter S14** – determines function of second reserve R2 - added output

The second reserve R2 is used most commonly for controlling the pump in the boiler circuit (S14 = 13), but in this case we use it to control the compressor via the AD02 or AD03 module.

**Set S14 = 15**

**To activate the function you need to set the specific times and working number of cycles after which the burner is cleaned. Values in brackets are set by the manufacturer!**

• **parameter S41** – is the function for automatic burner cleaning with compressed air after a specific number of working cycles (burn-out). The function assumes use of both reserve outputs (S6 = 16, S14 = 15) – non-standard function... **(11)**

a) **S41 = 1 to 9**... function where burner cleaning will take place only once, and after the set number of cycles have run (1, 2, 3, 4, 5, 6, 7, 8, 9 – number of cycles)

b) **S41 = 11 to 19**... function where burner cleaning will take place always twice in a row after the set number of cycles have run (11 = 1, 12 = 2, 13 = 3, 14 = 4, 15 = 5, 16 = 6, 17 = 7, 18 = 8, 19 = 9 – number of cycles)

If parameter S41 = 0 or 10, the function is switched off.

• **parameter S42** – is the function for automatic burner cleaning with compressed air after a specific period of operation time has passed. Once the subsequent working cycle has ended (burn-out), the burner tubing is cleaned. The function assumes use of both reserve outputs (S6 = 16, S14 = 15)... **(4 hours)**

Once the S42 period is over, the fuel is burnt out and the burner is cleaned, with the display showing the message AUTO STOP.

The value set is the actual time in hours.

• **parameter S43** – is the function for automatic burner cleaning with compressed air after a specific period of operation time has passed. Once the set time has passed, the burner immediately burns out, it is cleaned and once again run. If required at all requirements for START are met. (regardless of S41 and S42 parameters). The function assumes use of both reserve outputs (S6 = 16, S14 = 15)... **(4 hours)**

The value set is the actual time in hours.

• **parameter S44** – is the function for the compressor for automatic burner cleaning with compressed air where this parameter sets the period the compressor is run for so that a sufficient amount of compressed air is ready (pressure, function S6 = 16)... **(3 min)**

The value set is the actual time in minutes.

• **parameter S45** – is the function for the solenoid for automatic burner cleaning with compressed air where this parameter sets the period the solenoid is open to ensure perfect cleaning of burner combustion chambers (function S14 = 15)... **(2 s)**

The value set is the actual time in seconds. Never set a lower value than 1 s.

- **parameter S58** – characterizes the amount of compressed air for the first pre-cleaning of the burner when installing pneumatic cleaning the burner. This is the time at which the partial filling compressor air tank for pre-cleaning of the burner ... **(10 s) - standardly do not change**



**INFO** - pellet burner A85 pre-cleans the burner's combustion chamber three times. The cleaning is characterized by parameters S58, S59, S60. Do not change these parameters by any means.

**Recommended parameter settings according to the quality of pellets**

| Pellet type and quality   | T5 | S6 | S14 | S41 | S42 | S43 | S44 | S45 |
|---|----|----|-----|-----|-----|-----|-----|-----|
| Quality white pellets without bark which do not form ash clumps   | 25 | 16 | 15  | 11  | 24  | 32  | 3   | 2   |
| Wooden pellets with small amount of bark which create ash clumps in about a week  | 25 | 16 | 15  | 11  | 12  | 24  | 3   | 2   |
| Wooden pellets with large amount of bark, where ash clumps have to be removed once a day  | 25 | 16 | 15  | 11  | 6   | 8   | 3   | 2   |
| Wooden pellets of worst quality where high ash clumps are created after two to three hours operation  | 25 | 16 | 15  | 11  | 2   | 2   | 3   | 2   |
| Factory settings<br>-----<br>Pneumatic cleaning setting when using weekly timer   | 25 | 16 | 15  | 11  | 4   | 4   | 3   | 2   |
| <b>When connection of the pneumatic cleaning of the burner with the original or other compressor (up to 24 l air tank) set S58 = 10 s. When connection to a central compressed air distribution with pressure reducing valve and air tank up to 15 l set S58 = 1 s.</b> |    |    |     |     |     |     |     |     |



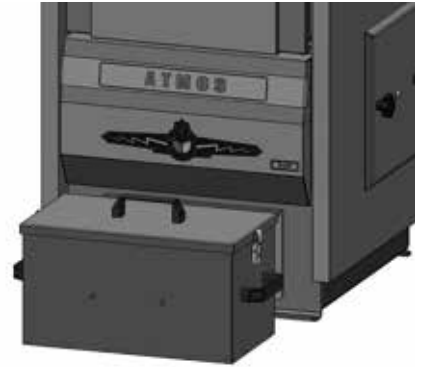
**INFO** - You should note the optimal pressure with which the burner should be cleaned. For the compressor which is supplied as part of the set, it is set to 4 – 5 bar (400 - 500 kPa). When connecting your own compressor or to a central compressed air system, **set initial pressure to 4 bar (400 kPa).**



**INFO** - **Pneumatic cleaning of the burner significantly extends the period between combustion chamber cleanings and reduces boiler heat exchanger clogging (tube sheet).** Nevertheless, the burner should be regularly checked and cleaned when necessary.

## 27. Automatic removal of ash from the boiler body

As an accessory for every pellet boiler you can equip the boiler with automatic ash removal from the boiler body to an additional ash pan that only needs emptying once every 7 to 45 days depending on the quality of pellets and heating intensity. This automatic device uses a worm conveyor with a gearbox to remove ash from the chamber under the burner in regular intervals two times a day for five minute or on the basis of another setting in the deashing module, which is installed under the boiler hood. **You can repeat the cycle any time by turning off and on the switch on the boiler.** When the additional ash pan is completely full, the ash removal device (worm) will be automatically switched off and the **deashing module will start to emit a sound signal.** You can restart the device after cleaning (emptying) of the additional ash pan by merely turning off and on the switch on the boiler for 5 to 10 seconds.



### Setting of deashing module AD01



**CAUTION** – ash removal device and ash pan for boiler D80P is not the same as in other DxxP boilers and it is sold on its own under a different code (the screw conveyor’s diameter is bigger). Capacity of ash pan enclosed with the ash removal device is 67 or 135 l. The module is situated under the casing of the boiler. Factory setting corresponds with the applied 15 W gearbox.



**Automatic ash removal requires no particular handling; you only have to empty the additional ash pan regularly. The additional ash pan and its lid are attached and secured by two clips with a security clip, which have to be closed properly during operation of the boiler to avoid leakage of ash into boiler room.** When installing this system follow the installation instructions supplied with it.



Module AD01 – opened for setting it up

### MODUL AD01 ATMOS

| PE<br>N<br>L | 1234 SW1 |      | SW2 I[mA] I[MA] |     |     | SW2 I[mA] I[MA]      |     |     | MOTOR<br>PE<br>N<br>L |
|--------------|----------|------|-----------------|-----|-----|----------------------|-----|-----|-----------------------|
|              | TIME     | STOP | 0               | 1   | 2   | 8                    | 9   | A** |                       |
|              | 000-     | 1h   | 0               | 115 | --- | 8                    | 230 | 310 |                       |
|              | 100-     | 3h   | 1               | 100 | 205 | 9                    | 235 | 310 |                       |
|              | 010-     | 6h   | 2               | 105 | 205 | A**                  | 240 | 310 |                       |
|              | 110-     | 12h  | 3               | 110 | 205 | B                    | 245 | 310 |                       |
|              | 001-     | 24h  | 4*              | 115 | 205 | C                    | 250 | 310 |                       |
|              | ---      | 0    | 5               | 120 | 205 | D                    | 260 | 310 |                       |
|              | ---      | 1    | 6               | 125 | 205 | E                    | 270 | 310 |                       |
|              | ---      | 1    | 7               | 220 | 310 | F                    | 240 | --- |                       |
|              |          |      | 1=ON 0=OFF      |     |     | * SPG 15W ** SPG 25W |     |     |                       |

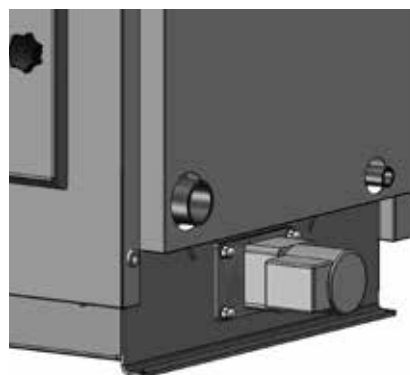
T6,3A 230V~ IP20 SN:152-0001

Set up table for time module AD01





**CAUTION** – automatic ash removal is not designed for pellets with biological agents (hay, straw, grains etc.) as these form large and hard agglomerates, which can block the ash removal screw conveyor. In such cases the automatic ash removal should be replaced with a normal ash pan.



## 28. Maintenance of the heating system, including boilers

At least once every 2 weeks check or replenish water in the heating system. If the boilers are out of operation in winter, there is a danger of water freezing in the system and therefore you had better drain water from the system or fill it with an antifreeze mixture. Otherwise, only drain water in inevitable cases and for the shortest possible time. After the end of the heating season thoroughly clean the boiler and replace the damaged parts. **Do not wait with the replacement of parts until the last moment; prepare the boiler for the heating system in spring already.**

## 29. Operation and supervision

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.

### 30. Possible failuress and troublesshooting

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| Problem  | Cause   | Remedy  |
|--|---|---|
| The “mains” indicator does not light up                                  | <ul style="list-style-type: none"> <li>- no mains voltage</li> <li>- incorrectly inserted plug in the mains socket</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>  |
| The boiler does not achieve the set output and the set water temperature | <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</li> <li>- low chimney draught</li> <li>- high chimney draught</li> <li>- insufficiently cleaned boiler</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 high-quality pellets</li> <li>- new chimney, unsuitable connection</li> <li>- install a throttling flap in the flue or a pressure reducer</li> <li>- <b>clean</b></li> </ul>   |
| The boiler fan is not running<br>(ALARM VENTILATOR 2)                    | <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>   |
| Leaky doors  | <ul style="list-style-type: none"> <li>- faulty glass cord</li> <li>- low chimney draught</li> </ul>  | <ul style="list-style-type: none"> <li>- replace</li> <li>- adjust the door hinges</li> <li>- faulty in the chimney</li> </ul>  |
| Defects and shortcomings of the burner, conveyor and the deashing system | <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>- the hose between the conveyor and the burner gets clogged</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 deashing system does not work after turning the switch off and on</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 or <b>clean the combustion chamber more often (set S42 = 2, S43 = 2) until all low quality pellets are used up</b></li> <li>- low calorific value of the pellets, change the setting</li> <li>- replace the gearbox of the conveyor - defect</li> <li>- check the quality of pellets, high resistance (diameter, length)</li> <li>- follow the operation instructions of the burner</li> <li>- check - replace the module under the boiler hood or the defective gearbox</li> </ul> |

## 31. Spare parts

|   |   |
|---|---|
| Upper spherical space – front /8/ (code: D0053)                                     | 1 |
| Upper spherical space – rear /7/ (code: D0015)                                      | 1 |
| Combustion space bottom, R + L side (complete) /6/ (code: D0040)                    | 1 |
| Combustion space plate (side wall) /5/ (code: D0052)                                | 1 |
| Thermometer /21/ (code: S0041)  | 1 |
| Main switch /22/ (code: S0091)  | 1 |
| Control thermostat /23/ (code: S0021)   | 1 |
| Pump thermostat /24/ (code: S0023)  | 1 |
| Safety thermostat /25/ (code: S0068)  | 1 |
| Fuse T6,3A/1500-typ H /26/ (code: S0200)  | 1 |
| Door sealing cord, 18 x 18 /12/ (code: S0241)                                       | 1 |
| Ash pan /3/ D80P (code: P0050)  | 1 |
| Sealing cord between the burner and boiler, 18 x 32 mm D80P (code: S0152)           | 1 |
| Double switch of the automatic deashing system and pellet burner /29/ (code: S0098) | 1 |
| Sibral gasket under the smoke channel lid (with an opening) (code: S0156)           | 1 |
| Klingerite gasket under the smoke channel lid (without openings) (code: S0155)      | 1 |
| Sibral insulation of the burner opening lid (code: S0293)                           | 1 |
| Waste gas decelerator for tube exchanger /17/ D80P (code: P0219)                    | 6 |
| Exhaust fan with speed sensor - UCJ4C82B /10/ D80P (code: S0148)                    | 1 |
| Impeller of exhasut fan Ø 200 mm - D80P (code: S0190)                               | 1 |
| Module AD02 (code: P0432)   | 1 |

### Replacing the door sealing cord

Procedure: Use a screwdriver to remove the old cord and clean the groove where it was seated. Use a hammer to slightly shape the cord from the square cross-section to the trapezoidal cross-section. Grip the cord and impress it along the perimeter of the door (with the narrower base to the groove) to make it sit in the groove (you can use a small hammer as an auxiliary tool). Hold the handle of the door closure pointing upwards and by means of slow knocks with the door press the cord into the groove until you can close the door. Finally, adjust the position of the wheel where the cam of the closure gets engaged. Only using this procedure you can guarantee tightness of the door!

### Adjusting the door hinges and closures

Cleaning doors are firmly connected to the boiler body with a set of two hinges. A hinge consists of a nut that is welded to the boiler body and an adjustment crew to which the door is fixed with a pin. If you want to change the setting of the hinges, first release and lift the top hood (control panel), knock both the pins out, remove the door and turn the adjusting screw (hinge) with the right thread as necessary. Put everything in the original condition in the reverse order.

The door closure consists of a lever with a handle and a cam that engages to a wheel that is screwed to the boiler and secured with a nut preventing its turning. After a certain time the sealing cord in the door gets compressed and therefore the wheel should be screwed deeper into the boiler. So release the nut on the wheel and screw it into the boiler in such a way that the handle can indicate 20 minutes on an imaginary clock dial after firm closing of the door. Finally, tighten the nut.

## 32. Environment protection

ATMOS gasification boilers comply with the most stringent environmental requirements. The boilers are certified in accordance with the ČSN EN 303-5 European Standard and belong to class 5.

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

You must ensure ENVIRONMENT-FRIENDLY disposal of individual parts of the boiler.

Properly remove fly-ash from the boiler before its disposal and put it in a dustbin.

Scrap the boiler body and the hoods.

Ceramic parts and insulation - discard to a legal dumping site.



**NOTE** - To ensure environment-friendly heating you must not burn any other fuel or substances in the boiler than specified. This is mainly the case of plastic bags, various types of plastic materials, paint, textiles, glass fibre as well as sawdust, sludge, vegetable (biological) pellets, dust coal.

## 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 Laddomat 22 in combination with the accumulation storage 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:**

- installation company that carried out the installation
- Jaroslav Cankar a syn ATMOS, Velenského 487, 294 21 Bělá pod Bezdězem, Czech Republic, Telephone. +420 326 701 404

## RECORD OF INSTALLATION OF THE BOILER AND BURNER

### The installation was performed 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

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# RECORDS OF GUARANTEE PERIOD AND POST-GUARANTEE PERIOD REPAIRS

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