

Instrucion manual

Contents

1. Intended use	5
Layout of the instrument board	6
2. Technical specifications of the boiler and data of the ATMOS A25 burner	7
Captions to the diagrams of the boilers	8
Drawings of the boilers	9
3. Fuel - wood	10
Basic data of burning of wood	10
Calorific value of fuel	10
4. Fuel - pellets	11
5. Environment type and boiler placement in a boiler room	11
6. Chimney	12
7. Flue-gas duct	12
9. Connection of boilers to the electric mains	14
10. Electric diagram of the burner ATMOS A25 - 6-pin connector - model 2012 AC07X - (R, R2, sensors TV, TS, TK, TSV)	15
11. Electric wiring diagram for the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS with an extraction fan, modele 2012 with 6-pin connector and module AD02 - to control extraction fan of the boiler from burner control unit AC07X (R)	16
12. Wiring diagram connection of the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS 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)	17
13. Wiring diagram connection of the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS with extraction an, 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)	18
14. Obligatory ČSN EN standards dealing with boiler designing and installation	19
15. Selection and method of connection of control and heating-system elements	19
16. Protection of the boiler from corrosion	20
17. Recommended connection of the boiler with an equalizing tank, Laddomat 21/22 and burner control by the TS and TV sensor	21
18. Recommended connection of the boiler with an equalizing tank and ACD01 controller	21
19. Recommended connection diagram with Laddomat and accumulation tanks	22
20. Connection of the boiler without an equalizing tank	23
21. Laddomat 21/22	23
22. Thermo-regulation valve	24
23. Fixation of the burner to the gasification boiler door	24
24. Boiler system with an external container and conveyor of pellets	25
25. Boiler room with a large built-in pellet container	26
26. Operation instructions	27
Preparation of boilers for operation - pellet operation	27
Preparation of boilers for operation - burning wood	29
27. Cleaning of the boiler and ash removal in pellet operation	30
28. Maintenance of the heating system, including boilers	31
29. Operation and supervision	32
30. Troubleshooting	32
31. List of basic spare parts of the boiler and the burner	34
Replacement of the sealing cord (18 x 18 mm) in the door	34
Adjustment of the door hinges and closures	34
32. Environment protection	35
Disposal of the boiler after the end of its service life	35
GUARANTEE CONDITIONS	36
BOILER INSTALLATION REPORT	37
ANNUAL INSPECTIONS RECORDS	38
RECORDS OF GUARANTEE PERIOD AND POST-GUARANTEE PERIOD REPAIRS	39

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

GB

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 37).
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 21/22 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 prescribed temperature of return water can be guaranteed**.
5. We recommend you to use the boiler in a system with **one equalizing tank** the volume of which should be 500 - 100 l to achieve a higher service life of the pellet burner and lower fuel consumption.

If you connect a higher number of accumulation tanks to the boiler, we recommend you to put all but one tanks out of operation when switching over from wood to pellets as fuel.



CAUTION - If the boiler is equipped with Laddomat 21/22 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.

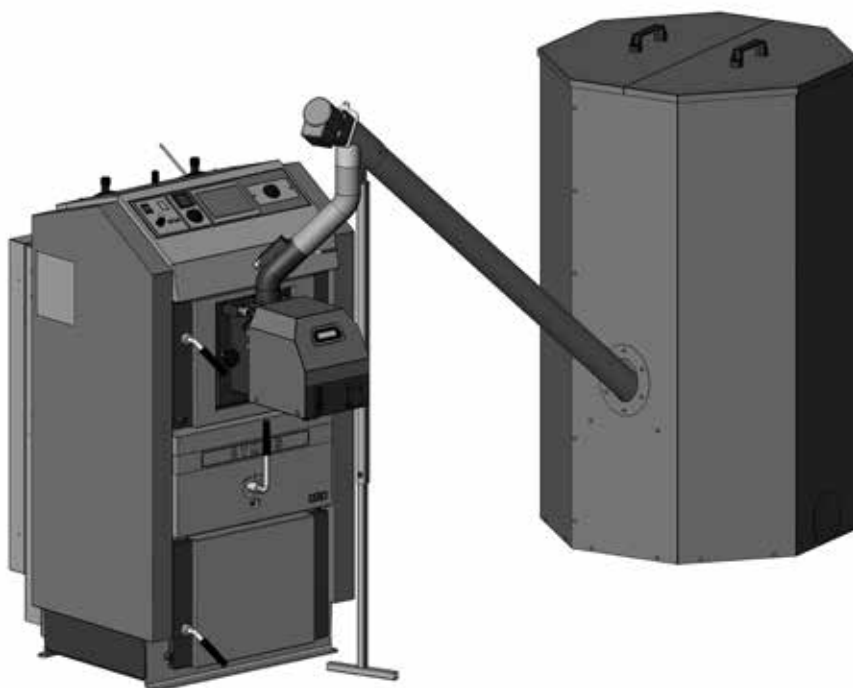
1. Intended use

ATMOS hot-water boilers adapted for the installation of a burner in the top door of the gasification boiler are designed for convenient heating of family houses, holiday homes and other buildings with pellets, piece wood, wood briquettes and other types of fuel depending on the boiler type. For the heating you can use dry piece wood and high-quality wooden pellets with the diameter of 6 to 8 mm.

The length and size of fuel is different with regard to the boiler type - see the manual of the particular gasification boiler

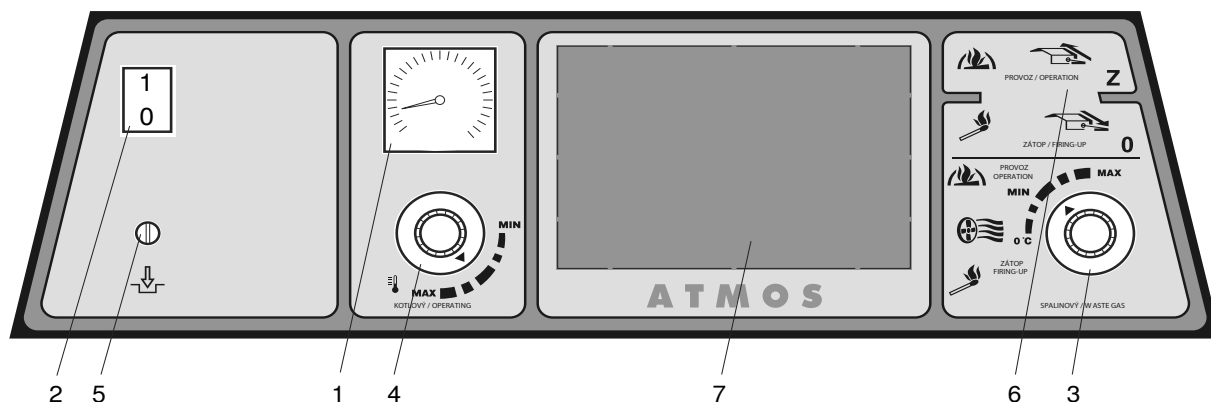
The adaptation and installation of a burner in the top door may be carried out with any ATMOS gasification boiler equipped with an exhaust fan up to the output of 40 kW. The adaptation consists in replacement of the original top door with a door with an opening enabling installation of an ATMOS A25 pellet burner. The pellet burner or a blind cover is attached to this door with two decorative nuts over a Sibril gasket or 16x16 mm sealing cord, which prevents flue gas from escaping to the boiler room during boiler operation.

Next to the boiler a pellet container with the required volume, 500 or 1000 l as standard, is installed. Between the burner and pellet container there is a worm conveyor with the minimum length of 2 or 2.5 m that regularly dispenses fuel to the combustion chamber of the burner. Between the worm conveyor and the burner there is a transparent interconnecting hose with the minimum length of 20 cm and the optimum length of 40 - 60 cm in such a way that for the cleaning of the combustion chamber of the burner and the boiler the door can be easily opened.



Boiler with an ATMOS A25 burner installed in the top door, 500 l fuel container and a 2 m conveyor.

Layout of the instrument board



- | | |
|---------------------------------------|---|
| 1. Thermometer | 5. Safety thermostat (resettable) |
| 2. Main switch | 6. Pulling rod of the ignition valve |
| 3. Flue gas thermostat | 7. Place for an electronic control unit of the heating system (92x138 mm) |
| 4. Control thermostat (of the boiler) | |

Description:

1. **Thermometer** - monitors the output temperature of the boiler water.
2. **Main switch** - allows you to switch off the whole boiler if necessary (restart the burner).
3. **Flue gas thermostat** - it switches of the fan after burning out of the fuel if wood is used for heating



CAUTION - When lighting the fire with wood set the flue gas thermostat to ("0 °C" - ignition). After the ignition, set the flue gas thermostat to the operation position. You should find the optimum position for particular conditions by experience. If the flue gas temperature drops below the set value, the thermostat will switch off the extraction fan. If you want to start the fan again, you must set the flue gas thermostat to a lower temperature (e.g. set „0 °C" - ignition). If you use a pellet burner, the flue gas thermostat must be permanently set to "0 °C" - ignition.

4. **Control thermostat (of the boiler)** - controls the operation of fan and burner by the output temperature of the boiler water (80 - 95 °C).
5. **Safety thermostat (resettable)** - it serves as protection against overheating in case of a failure of the control thermostat or as an indicator of exceeding of the emergency temperature - if the emergency temperature is exceeded, it must be reset.
6. **Draw-bar of the ignition safety valve** - it is used for opening of the ignition valve during ignition or feeding fire with fuel (wood). If pellets are used as fuel, it must be permanently closed.
7. The place for an electronic control unit of the heating system can be fitted with any control unit that matches the dimensions (92x138 mm). An electric harness is prepared for its power supply.

2. Technical specifications of the boiler and data of the ATMOS A25 burner

Minimum heat input of the burner	kW	24
Minimum heat input of the burner	kW	5
Maximum heat input of the burner	kW	30
Maximum heat-delivery surface of the boiler where the burned may be built in	m ²	3
Fuel container		not part of the delivery
Fuel dispensing		with an external worm conveyor - not part of the delivery - min. length 2 m
Boiler control when wood is used as fuel		with electro-mechanical control - see the boiler manual
Control of the pellet burner		with an AC07 control unit that controls the operation of the external conveyor, two ignition spirals and the fan in accordance with the requirements of the boiler and heating system. The electronic system is protected by the safety thermostat of the boiler, safety thermostat at the pellet supply to the burner, sensor of the fan speed and a flame sensing photocell. The operation of the burner is indicated on the display of the electronic control unit of the burner
Power supply	V / Hz	230 / 50
Max. power input at a start with one ignition element	W	522 - normal setting
Max. power input at a start with two ignition elements	W	1042 - special function
Average power input during the nominal heat input operation	W	42
Average power input during the Minimum heat input operation	W	22
Average power input in the stand-by mode	W	3,3
Acoustic pressure level (noisiness)	dB	54
Burner weight	kg	15
Burner dimensions W x H x D	cm	25 x 47 x 55
Minimum dimensions of the combustion chamber of the boiler	mm	diameter / width / height = 400 length / depth = 400
Minimum ash pan space of the boiler	l	it must correspond to operation at the nominal output for at least one week (min. 2 l)
Required chimney draft	Pa	see the manual of the particular boiler
Minimum vacuum in the combustion chamber of the boiler	Pa	2
Min. protection against inadvertent opening of the combustion chamber (door)		with a safety screw

Captions to the diagrams of the boilers

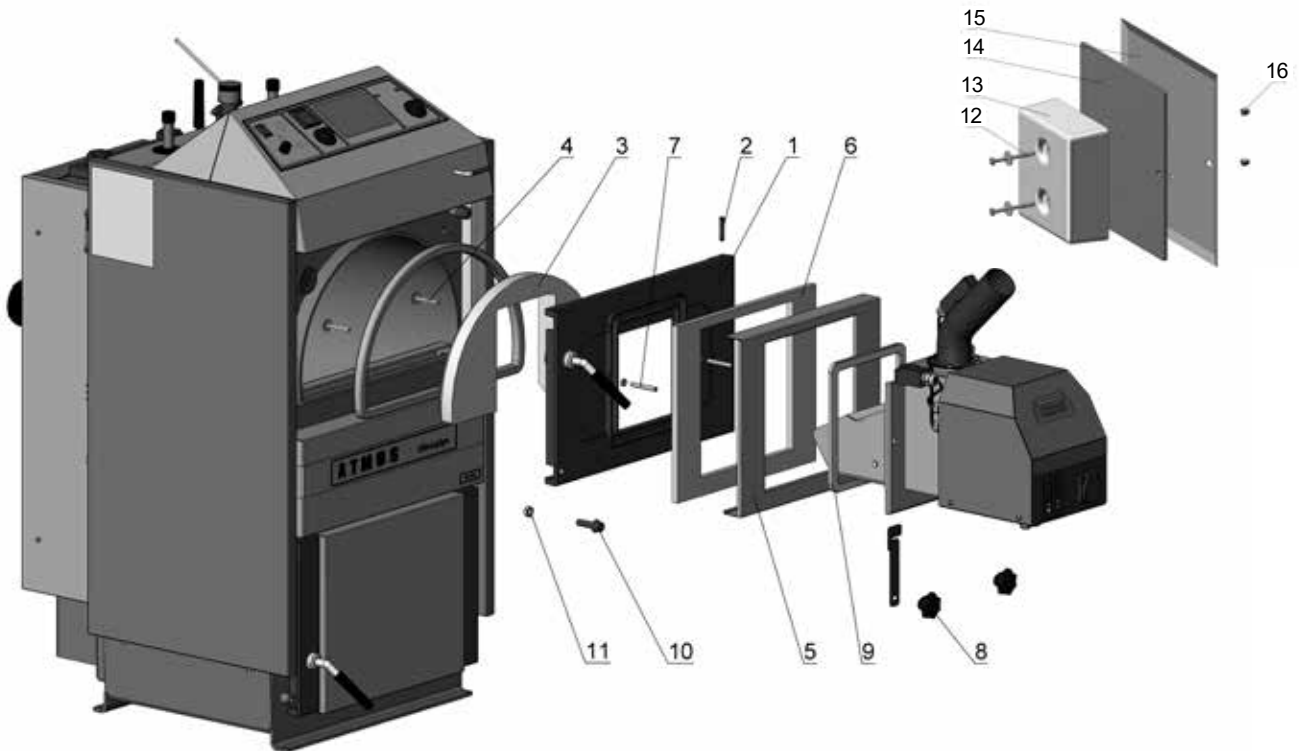
The system consists of the following components:

ATMOS A25 pellet burner

1. small door with a hole for the burner - right or left (both versions)
(door include the sealing cord 18 x 18mm - code: S0241)
left – code: S0417 1 pc
right – code: S0416 1 pc
(only one door in the set)
2. hinge pin - code: S0222 2 pcs
3. thick Sibrál gasket for the small door with the hole for the burner - code: S0517 1 pc
4. screw M6x40 with a large washer for fixing the Sibrál gasket to the door – code: S0721 2 pcs
5. cover of a small door with a hole - code: S0415..... 1 pc
6. insulation under the small cover of the door with a hole - code: S0550 1 pc
7. screw M8x35 for fixing the burner to the door – code: S0733 2 pcs
8. decorative nuts M8 – code: S0411 2 pcs
9. sealing cord 16x16 mm - new design
- for doors with the cord groov - code: S0177 1 pc
10. screw M12x45 with a washer for securing the door – code: S0765 1 pc
11. nut M12 – low – code: S0796 1 pc
12. screw M6x70 with a large washer for fixing the insulation cube – code: S0875 2 pcs
13. insulation cube - for insulation of the blind cover - covering plate - code: S0278 1 pc
14. blind cover - covering plate necessary for wood heating, thickness 4 mm – code: S0518 1 pc
15. covering plate of the hole for the burner - thickness 1 mm - code: S0496 1 pc
16. cap nut M5 (for attaching the cover plate pos. 15) 2 pcs
17. metal lid under regulating air flap - code: S0956 1 pc
18. sealing ring of Sibrál paper under the regulating air flap
= (sealing under the extraction fan motor - code: S0161 1 pc
19. safety thermostat with 2 circuits BT100 - S0068 1 pc
20. electric installation - new electric harness – code: S0719 1 pc
(include S0986, S0985 = positions: 21, 22)
21. separate 6-pole female connector with a hood bushing designed for boilers with a hole for a
connector in the hood - code: S0986 1 pc
22. separate 6-pole male connector for the connecting cable to the burner - code: S0985 1 pc
23. Allen key Nr. 10 – code: S0214 1 pc
24. AD02 module - code: P0432 1 pc

Drawings of the boilers

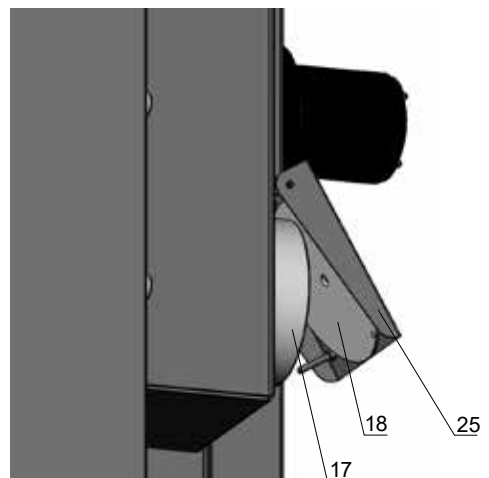
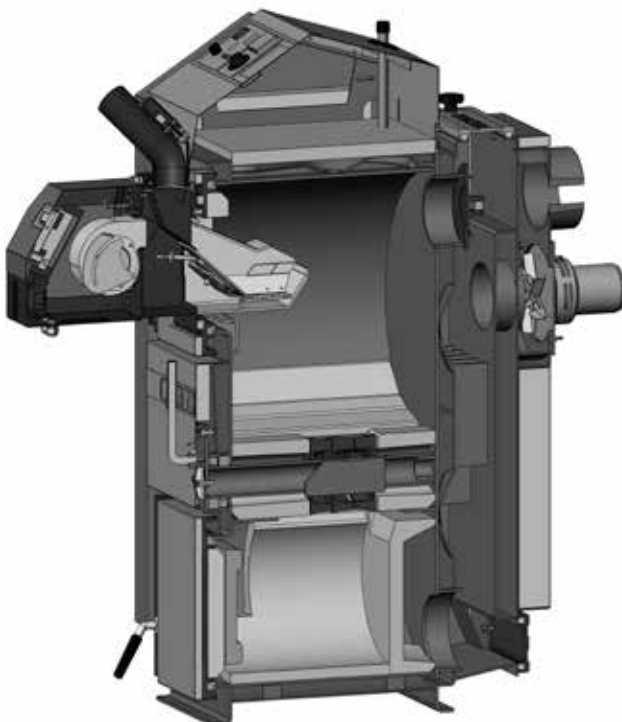
Door design breakdown



GB

Section of the boiler and burner

View of the air flap with Sibral sealing



If wood is used as fuel, the air flap /25/ is controlled by the FR124 draft controller by the output temperature of the boiler water (80 - 95 °C). **If pellets are used as fuel**, it is permanently closed - down, the FR124 controller is reduced to the minimum.

3. Fuel - wood

The prescribe fuel is dry split and lug wood with Ø 80 - 150 mm, at least 2 years old with the moisture content of 12 % to 20 %, calorific value 15 - 17 MJ.kg⁻¹ and the length of lugs 330 - 1000 mm depending on the boiler type or possibly other fuel - see the boiler manual.

Basic data of burning of wood

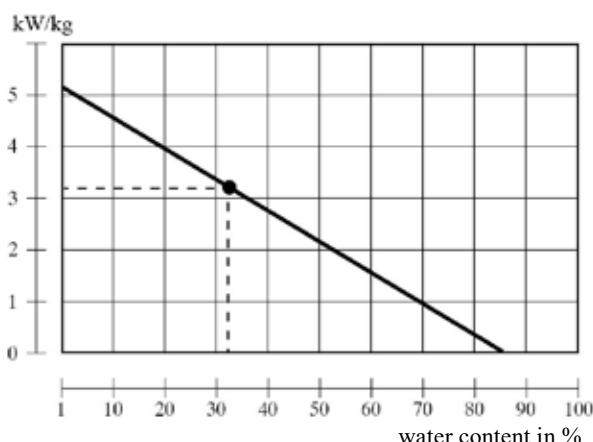
You will ensure the maximum performance and long life of the boiler if you burn wood that is has been stored for at least two years. The chart below shows the dependence of the calorific value of fuel on the water content. The useful volume of energy in wood significantly drops with an increasing content of water.

E.g.:

The calorific value of wood with 20 % of water is 4 kWh / 1kg of wood

The calorific value of wood with 60 % of water is 1.5 kWh / 1kg of wood

● E.g. spruce wood stored for 1 year under a shelter - shown in the chart



Max. output of boilers with wet fuel shown in the chart.

	kW
DC 18 S	- 13
DC 22 S	- 14
DC 25 S	- 19
DC 32 S	- 24
DC 40 S	- 31
DC 24 RS	- 18
DC 30 RS	- 22
C 18 S	- 13
C 20 S	- 15
C 30 S	- 24
C 40 S	- 31

The information is applicable to the other types of gasification boilers as well.



The boilers are not suitable for burning wood with a lower water content than 12 %.

Calorific value of fuel

Wood - type	Thermal 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



Fresh wood burns poorly, produces a lot of smoke and considerably shortens the service life of the boiler and chimney. The output of the boiler may drop to 50 % and the consumption of fuel may be up to twice as high.

4. Fuel - pellets

The prescribed fuel are high-quality pellets of Ø 6 - 8 mm and the length of 10 - 25 mm and the calorific value of 16 - 19 MJ/kg⁻¹. 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 you to burn pellets without biological additives that reduce burning-down of the fuel and increase ash production.



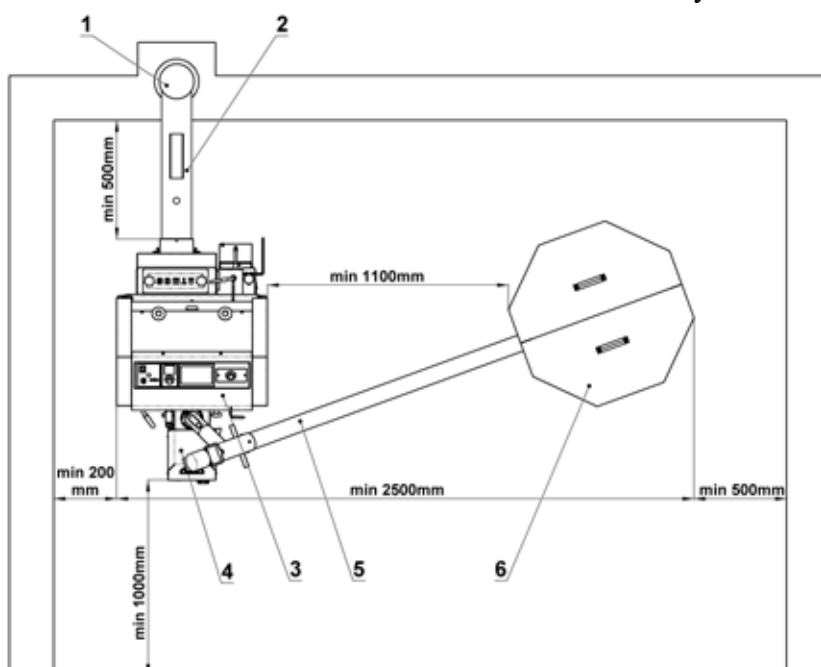
High-quality wooden pellets - white without black dots (bark)



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

5. 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) is not permitted. The combustion air inlet aperture in the boiler room must be of minimum 250 cm² for boilers of 15 - 35 kW outputs.



- 1 - Chimney
- 2 - Flue-gas duct
- 3 - Boiler
- 4 - Burner
- 5 - Conveyor
- 6 - Pellets silo

6. 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 8). 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
Ø 20 cm	height 8 m
15 x 15 cm	height 11 m
Ø 16 cm	height 12 m

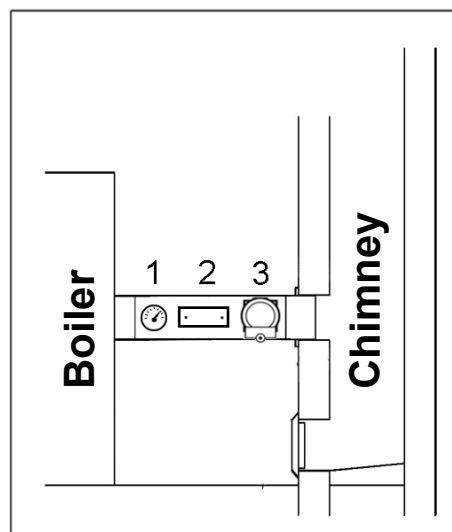
Exact chimney dimensions are stipulated in Czech standard ČSN 73 4201.

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

7. 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)



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

8. 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 materials (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, fibre-glass boards, Novodur
C1 – low degree of flammability	deciduous tree wood (oak, beech), Hobrex boards, plywood, Sirkolit, Werzalit, hardened paper (Formica),
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



NOTE - 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 for a distance lower than the specified safe distance (more ČSN EN 13501-1).**

9. 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 L, N and PE conductors. Power supply for the boilers and individual elements in the heating system must be protected in the corresponding way, in accordance with the valid standards and load level.

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.

Connectors in the right side hood:



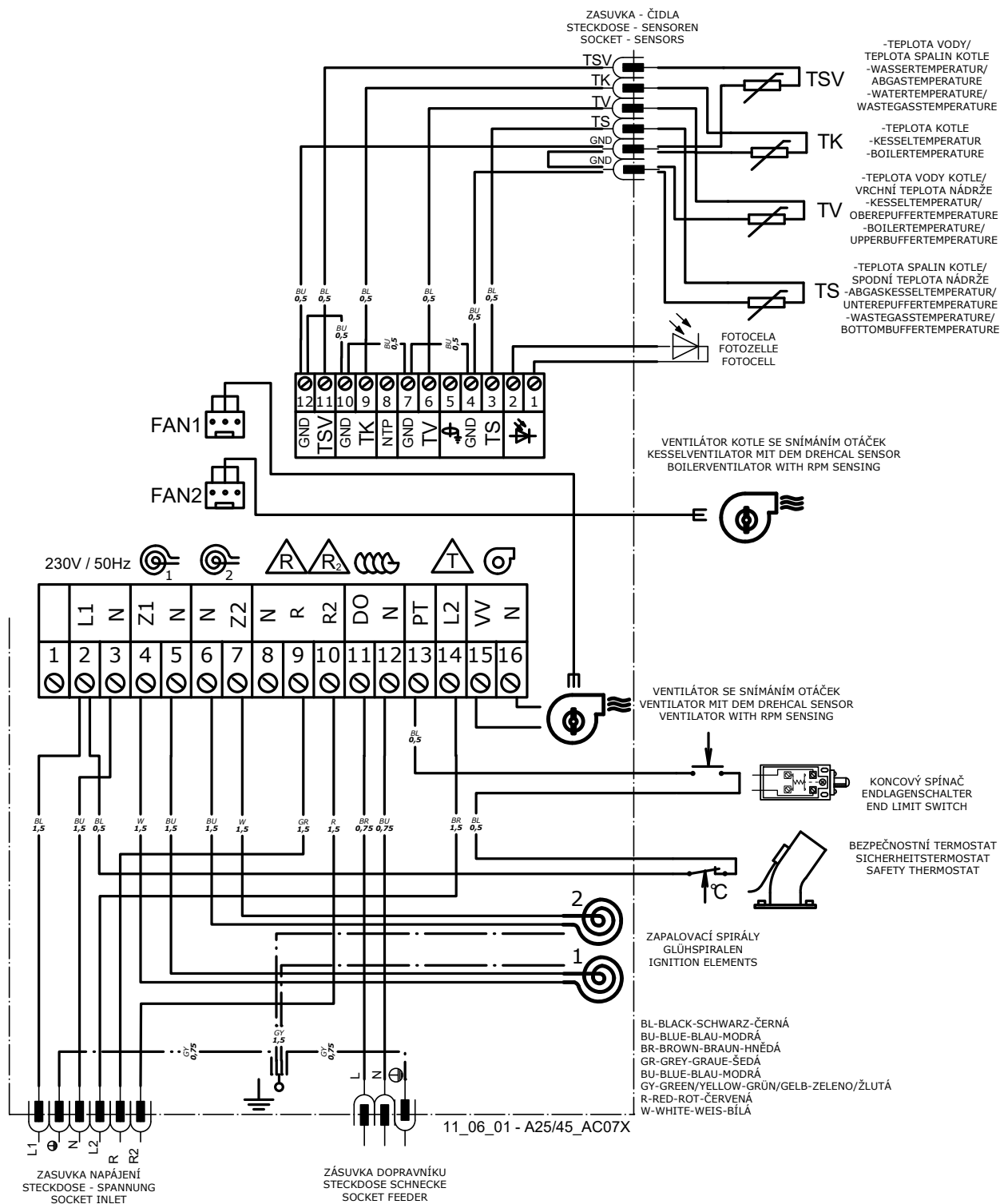
Connectors in the right side hood



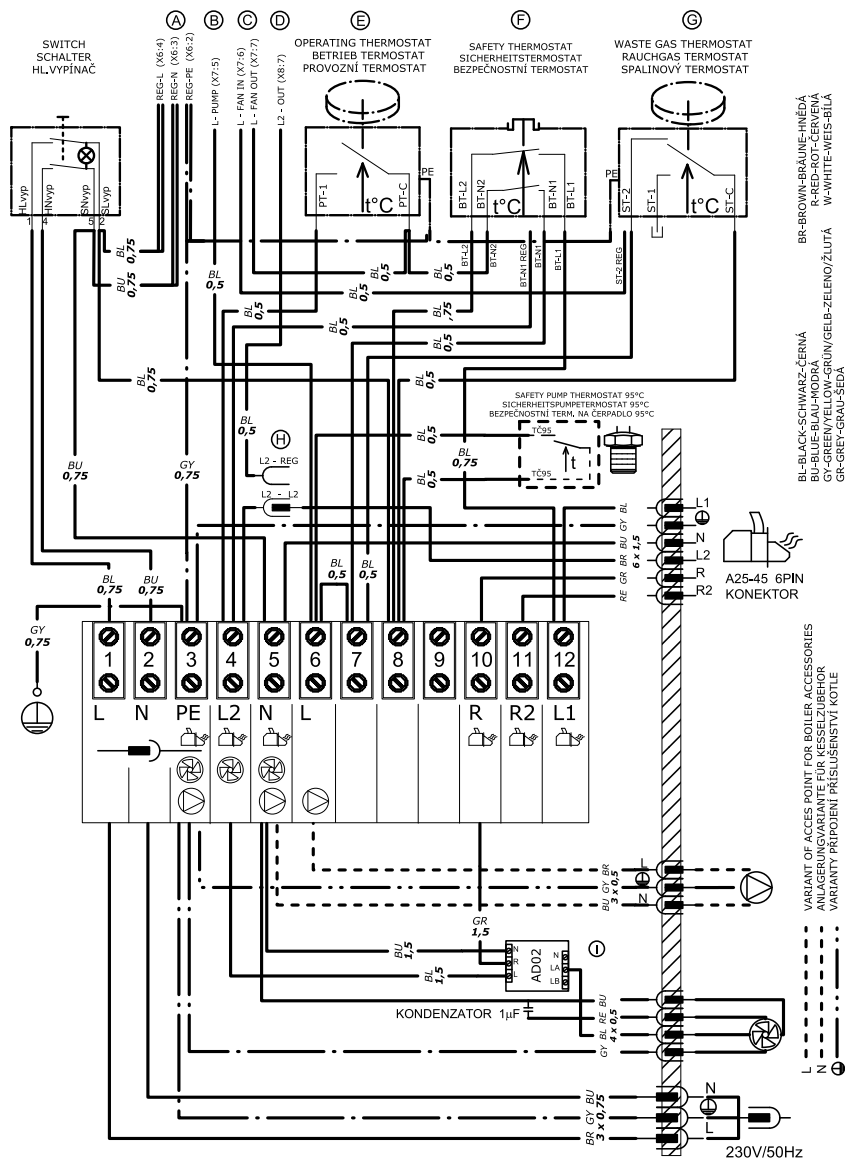
Connector in the left side hood

- 1 - connector for power cord - black (L - brown, N - blue, PE - green/yellow)
- 2 - connector for burner ATMOS connection (L1, L2, R, N, PE) / model 2012 - (L1, L2, R, R2,N, PE)
- 3 - connector for extraction fan

11. Electric diagram of the burner ATMOS A25 - 6-pin connector - model 2012 AC07X - (R, R2, sensors TV, TS, TK, TSV)



13. Electric wiring diagram for the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS with an extraction fan, modele 2012 with 6-pin connector and module AD02 - to control extraction fan of the boiler from burner control unit AC07X (R)

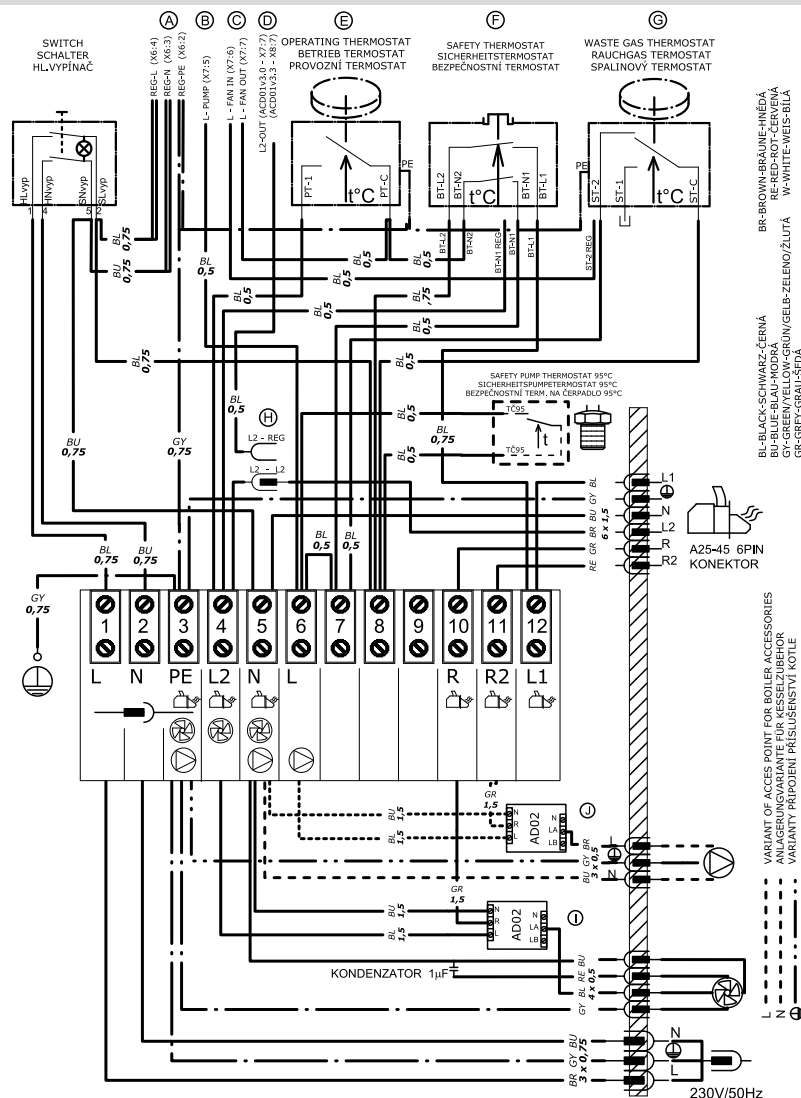


WHEN USE ELECTRONIC REGULATION ACD01 AND PELLETBURNER A25-45 MUST BE THESE CHANGES OF WIRING:
BEI DER STEUERUNG DES KESSELBETRIEBES DER ELEKTRONISCHE REGULACI ACD01 UND PELLETBRENNER A25-45 MÜSSEN DIESSE ÄNDERUNGEN MACHEN SEIN:
PŘI ZAPOJENÍ ELEKTRONICKÉ REGULACE ACD01 A PELETTOVÉHO HOŘÁKU A25-45 PROVEDETE TYTO ZMĚNY:

- VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRULE/FASTON 6,3) FOR ELECTRONIC REGULATION
SPEISEKLEMMEN/ARIANTEN "REG L,N,PE" (ADERENDHÜSE/FASTON 6,3) FÜR ELEKTRONISCHE REGELUNG
VARIANTY NÁPAJEČÍCH SVOREK "REG L,N,PE" (DUTINKA/FASTON 6,3) PRO ELEKTRONICKOU REGULACI
- RESERVOIR POINT "L-PUMP" OF BOILERPUMP TO THE ELECTRONIC REGULATION
SPEISEKLEMME "L-PUMP" DER KESSELPUMPE FÜR DIE ELEKTRONISCHE REGELUNG
PŘIPOJOVACÍ SVORKA "L-PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L - FAN IN" AND "L - FAN OUT" OF BOILER FAN TO THE ELECTRONIC REGULATION
SPEISEKLEMME "L - FAN IN" AND "L - FAN OUT" DER KESSELGEBLÄSE FÜR DIE ELEKTRONISCHE REGELUNG
PŘIPOJOVACÍ SVORKA "L - FAN IN" A "L - FAN OUT" KOTLOVÉHO VENTILÁTORU DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L2" OF BURNER TO THE ELECTRONIC REGULATION
SPEISEKLEMME "L2" DER BRENNER FÜR DIE ELEKTRONISCHE REGELUNG
PŘIPOJOVACÍ SVORKA "L2" HOŘÁKU DO ELEKTRONICKÉ REGULACE
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT
DEN KONNEKTOREN "PT-C" UND "PT-1" ABKLEHMEN BEI DER KESSELGÄBLASE/BRENNER BEDIENUNG DER ELEKTRONISCHE REGELUNG
KONNEKTORY "PT-C" A "PT-1" ODPLOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/PELLETS BURNER - CHANGE CONNECTOR "BT-N1" FOR CONNECTOR "BT-N1 REG"
DEN AUSWECHSELN KONNEKT, "BT-N1" FÜR KONNEKT, "BT-N1 REG" BEI DER KESSELGÄBLASE/BRENNER BEDIENUNG DER ELEKTRON. REG.
PŘEHODIT SVORKY "BT-N1" ZA "BT-N1 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER/PUMP - CHANGE CONNECTOR "ST-2" TO CONNECTOR "ST-2 REG"
WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER/PUMPE - CHANGE CONNECTOR "ST-2" TO CONNECTOR "ST-2 REG"
DEN AUSWECHSELN KONNEKTOR "ST-2" FÜR KONNEKT, "ST-2 REG" BEI DER GÄBLASE/BRENNER/PUMPE BEDIENUNG DER ELEKTRON. REGELUNG
PŘEHODIT SVORKY "ST-2" ZA "ST-2 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU/ČERPADLA ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL PELLETS BURNER - CHANGE CONNECTOR "L2" TO CONNECTOR "L2 REG"
WHEN ELECTRONIC REGULATION CONTROL PELLETS BRENNER - CHANGE CONNECTOR "L2" TO CONNECTOR "L2 REG"
DEN AUSWECHSELN KONNEKTOR "L2" FÜR KONNEKT, "L2 REG" BEI DER BRENNER BEDIENUNG DER ELEKTRON. REGELUNG
PŘEHODIT SVORKY "L2" ZA "L2 REG" PŘI OVLÁDÁNÍ PELETTOVÉHO HOŘÁKU ELEKTRONICKOU REGULACI
- MODUL AD02 FOR VENTILATOR CONTROL FROM BURNER A25/45
MODUL AD02 FÜR VENTILATORBEDIENUNG BEI DEM BRENNER A25/45
MODUL AD02 K OVLÁDÁNÍ VENTILÁTORU KOTLE HOŘÁKEM A25/45

13-12-01_DCxxS_HORAK_A25-45_6P_AD02

14. Wiring diagram connection of the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS 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)

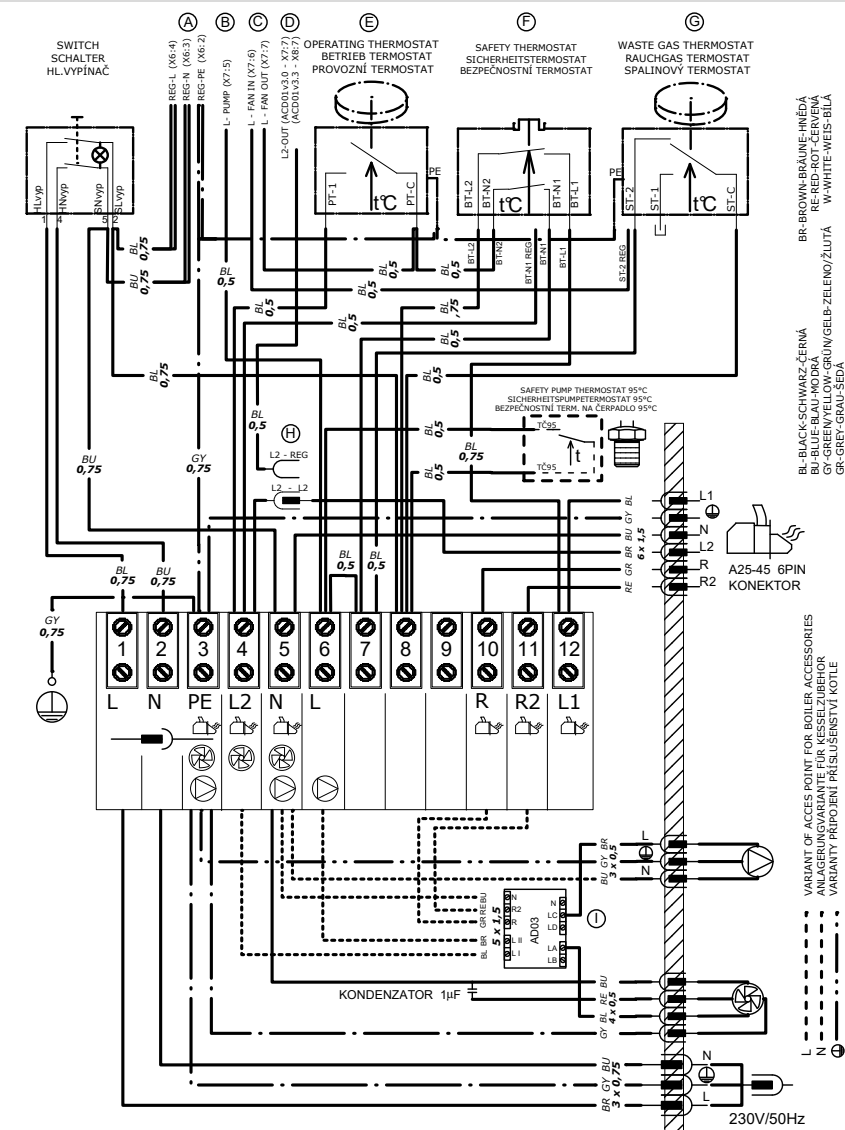


WHEN USE ELECTRONIC REGULATION ACD01 AND PELLETBURNER A25-45 MUST BE THESE CHANGES OF WIRING:
BEI DER STEUERUNG DES KESSELBETRIEBES DER ELEKTRONISCHE REGELUNG ACD01 UND PELLETBURNER A25-45 MÜSSEN DIESSE ÄNDERUNGEN MACHEN SEIN:
PŘI ZAPOJENÍ ELEKTRONICKÉ REGULACE ACD01 A PELETTOVÉHO HOŘÁKU A25-45 PROVEDTE TYTO ZMĚNY:

- VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRULE/FASTON 6,3) FOR ELECTRONIC REGULATION
SPEISEKLEMMEN/Varianten "REG L,N,PE" (ADDERNHÜLSE/FASTON 6,3) FÜR ELEKTRONISCHE REGELUNG
VARIANTY NÁPAJEČNÍ SVORKY "REG L,N,PE" (DUTINKA/FASTON 6,3) PRO ELEKTRONICKOU REGULACI
- RESERVOIR POINT "L-PUMP" OF BOILERPUMP TO THE ELECTRONIC REGULATION
SPEISEKLEMME "L-PUMP" DER KESSELPUMPE FÜR DIE ELEKTRONISCHE REGELUNG
PŘIPOJOVACÍ SVORKA "L-PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L - FAN IN" AND "L - FAN OUT" OF BOILER FAN TO THE ELECTRONIC REGULATION
SPEISEKLEMME "L - FAN IN" UND "L - FAN OUT" DER KESSELGEBLÄSE FÜR DIE ELEKTRONISCHE REGELUNG
PŘIPOJOVACÍ SVORKA "L - FAN IN" A "L - FAN OUT" KOTLOVÉHO VENTILÁTORU DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L2" OF BURNER TO THE ELECTRONIC REGULATION (BY THE SOFTWARE VERSION OF ACD01)
SPEISEKLEMME "L2" DER BRENNER FÜR DIE ELEKTRONISCHE REGELUNG (GEMÄß SOFTWARE VERSION ACD01)
PŘIPOJOVACÍ SVORKA "L2" HOŘÁKU DO ELEKTRONICKÉ REGULACE (PODLE VERZE SOFTWARE ACD01)
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT
DEN KONEKTOREN "PT-C" UND "PT-1" ABKLEMMEN BEI DER KESSELGÄBLASE/BRENNER BEDIENUNG DER ELEKTRONISCHE REGELUNG
KONEKTORY "PT-C" A "PT-1" ODPOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/PELLETS BURNER - CHANGE CONNECTOR "BT-N1" FOR CONNECTOR "BT-N1 REG"
DEN AUSWECHSELN KONEKT. "BT-N1" FÜR KONEKT."BT-N1 REG" BEI DER KESSELGÄBLASE/BRENNER BEDIENUNG DER ELEKTRON. REG.
PŘEHODIT SVORKY "BT-N1" ZA "BT-N1 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER/PUMP - CHANGE CONNECTOR "ST-2" TO CONNECTOR "ST-2 REG"
DEN AUSWECHSELN KONEKTOR "ST-2" FÜR KONEKT."ST-2 REG" BEI DER GÄBLASE/BRENNER/PUMPE BEDIENUNG DER ELEKTRON. REGELUNG
PŘEHODIT SVORKY "ST-2" ZA "ST-2 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU/ČERPADLA ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL PELLETS BURNER - CHANGE CONNECTOR "L2" TO CONNECTOR "L2 REG"
DEN AUSWECHSELN KONEKTOR "L2" FÜR KONEKT."L2 REG" BEI DER BRENNER BEDIENUNG DER ELEKTRON. REGELUNG
PŘEHODIT SVORKY "L2" ZA "L2 REG" PŘI OVLÁDÁNÍ PELETTOVÉHO HOŘÁKU ELEKTRONICKOU REGULACI
- NO WITH ACD01 - MODUL AD02 FOR VENTILATOR CONTROL FROM BURNER A25/45
NEIN MIT ACD01 - MODUL AD02 FÜR VENTILATORBEDIENUNG BEI DEM BRENNER A25/45
NEPLATÍ S ACD01 - MODUL AD02 K OVLÁDÁNÍ VENTILÁTORU KOTLE HOŘÁKEM A25/45
- NO WITH ACD01 - MODUL AD02 FOR BOILERPUMP CONTROL FROM BURNER A25/45
NEIN MIT ACD01 - MODUL AD02 FÜR KESSELPUMPEBEDIENUNG BEI DEM BRENNER A25/45
NEPLATÍ S ACD01 - MODUL AD02 K OVLÁDÁNÍ ČERPADLA KOTLE HOŘÁKEM A25/45

14-01-01_DCxxS HORAK_A25-45_6P_2AD02

15. Wiring diagram connection of the boilers DCxxS(X), DCxxS, ACxxS, DCxxRS 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 ACD01 AND PELLETBURNER A25-45 MUST BE THESE CHANGES OF WIRING:
BEI DER STEUERUNG DES KESSELBETRIEBES DER ELEKTRONISCHE REGELUNG ACD01 UND PELLETBURNER A25-45 MÜSSEN DIESSE ÄNDERUNGEN MACHEN SEIN:
PŘI ZAPOJENÍ ELEKTRONICKÉ REGULACE ACD01 A PELETOVÉHO HOŘÁKU A25-45 PROVEDTE TYTO ZMĚNY:

- VARIANTS OF RESERVOIR POINTS "REG L,N,PE" (FERRULE/FASTON 6,3) FOR ELECTRONIC REGULATION SPEISEKLEMMEVARIANTEN "REG L,N,PE" (ADRENDHÜLSE/FASTON 6,3) FÜR ELEKTRONISCHE REGELUNG VARIANTY NÁPAJEČÍCH SVOREK "REG L,N,PE" (DUTINKA/FASTON 6,3) PRO ELEKTRONICKOU REGULACI
- RESERVOIR POINT "L-PUMP" OF BOILERPUMP TO THE ELECTRONIC REGULATION SPEISEKLEMME "L-PUMP" DER KESSELPUMPE FÜR DIE ELEKTRONISCHE REGELUNG PŘIPOJOVACÍ SVORKA "L-PUMP" KOTLOVÉHO ČERPADLA DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L - FAN IN" AND "L - FAN OUT" OF BOILER FAN TO THE ELECTRONIC REGULATION SPEISEKLEMME "L - FAN IN" UND "L - FAN OUT" DER KESSELGÄBLASE FÜR DIE ELEKTRONISCHE REGELUNG PŘIPOJOVACÍ SVORKA "L - FAN IN" A "L - FAN OUT" KOTLOVÉHO VENTILÁTORU DO ELEKTRONICKÉ REGULACE
- RESERVOIR POINT "L2" OF BURNER TO THE ELECTRONIC REGULATION (BY THE SOFTWARE VERSION OF ACD01) SPEISEKLEMME "L2" DER BURNER FÜR DIE ELEKTRONISCHE REGELUNG (GEMÄß SOFTWARE VERSION ACD01) PŘIPOJOVACÍ SVORKA "L2" HOŘÁKU DO ELEKTRONICKÉ REGULACE (PODLE VERZE SOFTWARE ACD01)
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER - CONNECTORS "PT-C" AND "PT-1" MUST BE UNCONNECT DEN KONNEKTOREN "PT-C" UND "PT-1" ABKLEMMEN BEI DER KESSELGÄBLASE/BURNER BETRIEBUNG DER ELEKTRONISCHE REGELUNG KONNEKTORY "PT-C" A "PT-1" ODPOJIT PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/PELLETS BURNER - CHANGE CONNECTOR "BT-N1" FOR CONNECTOR "BT-N1 REG" DEN AUSWECHSELN KONNEKT. "BT-N1" FÜR KONNEKT. "BT-N1 REG" BEI DER KESSELGÄBLASE/BRENNER BETRIEBUNG DER ELEKTRON. REG. PŘEHODIT SVORKY "BT-N1" ZA "BT-N1 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL BOILER FAN/BURNER/PUMP - CHANGE CONNECTOR "ST-2" TO CONNECTOR "ST-2 REG" DEN AUSWECHSELN KONNEKTOR "ST-2" FÜR KONNEKT. "ST-2 REG" BEI DER GÄBLASE/BRENNER/PUMPE BETRIEBUNG DER ELEKTRON. REGELUNG PŘEHODIT SVORKY "ST-2" ZA "ST-2 REG" PŘI OVLÁDÁNÍ KOTLOVÉHO VENTILÁTORU/HOŘÁKU/ČERPADLA ELEKTRONICKOU REGULACI
- WHEN ELECTRONIC REGULATION CONTROL PELLETS BURNER - CHANGE CONNECTOR "L2" TO CONNECTOR "L2 REG" DEN AUSWECHSELN KONNEKTOR "L2" FÜR KONNEKT. "L2 REG" BEI DER BRENNER BETRIEBUNG DER ELEKTRON. REGELUNG PŘEHODIT SVORKY "L2" ZA "L2 REG" PŘI OVLÁDÁNÍ PELETOVÉHO HOŘÁKU ELEKTRONICKOU REGULACI
- NO WITH ACD01 - MODUL AD03 FOR CONTROL VENTILATOR AND BOILERPUMP FROM BURNER A25/45 NEIN MIT ACD01 - MODUL AD03 FÜR BETRIEBUNG VENTILATOR UND KESSELPUMPE BEI DEM BRENNER A25/45 NEPLAT S ACD01 - MODUL AD03 K OVLÁDÁNÍ VENTILÁTORU A ČERPADLA KOTLE HOŘÁKEM A25/45

13-01-01_DCxxS HORAK_6P_AD03

16. Obligatory ČSN EN standards dealing with 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 conformity assessment 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.

17. 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). It does not deal with the control of mixing valves and pumps. 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. If the boiler is installed without a storage or equalizing tank, the pump in the circuit of the heated building must be controlled by a separate thermostat or electronic control unit to only run when the pump in the boiler circuit is running. If you use two thermostats, either for the control of one pump, set the thermostat that controls the pump in the circuit of the heated building to the value of 80 °C and the thermostat that controls the pump in the boiler circuit to the value of 75 °C. You can also control both the pumps with one thermostat at the same time.

If the boiler is incorporated in a system with storage tanks as well as Laddomat 21/22 and there is good gravity circulation of water in the boiler circuit, which extends the time necessary for the boiler to reach the required temperature, we recommend that the pump in the boiler circuit should be controlled by second module AD02 or with module AD03. Module AD03 is able to control extraction fan and also pump in the boiler circuit with a special logic. Than si possible to control pump in the boiler circuit directly from pellet burner A25 when burning pellets. When burning wood for heating into accumulation tanks control pump in small circuit with waste gas thermostat inbuild in boiler dash. The exact description of the pump control logic can be found in the burner manual A25.

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 standards.



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. If you burn wood, you should take into account that the boiler exhibits certain inertia.



The boiler can be protected from overheating in several ways - by connecting a cooling loop against overheating with a Danfoss BVTS - 3/4A 95 °C, Honeywell TS 131 3/4 ZA (95 °C) or WATTS STS 20 (97 °C) valve to the water main. If you have your own well, you may protect the boiler by using a backup power supply (battery with a converter) to guarantee the operation of at least one pump. Another possibility consists in connecting an aftercooling tank with an inverted zone valve to the boiler.



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 controllers made by the following manufacturers:

- | | |
|--|-------------------------|
| 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 |

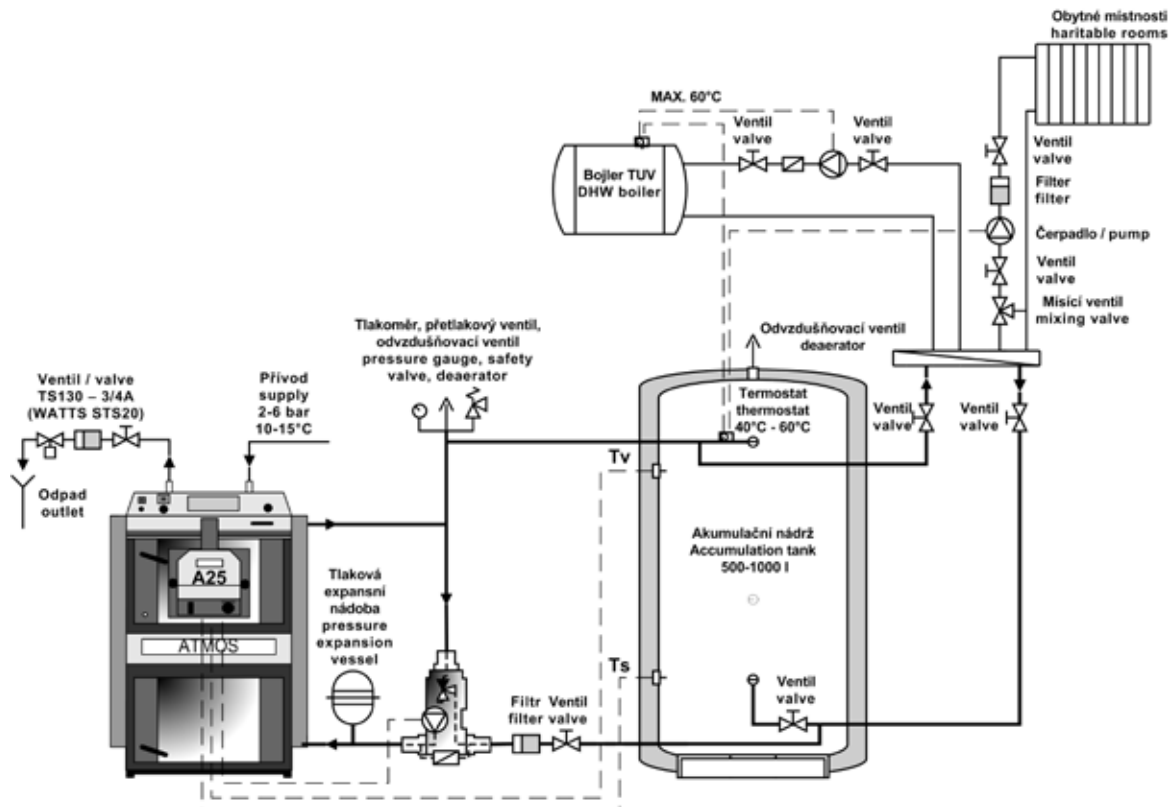
18. Protection of the boiler from corrosion

The prescribed solution consists in the installation of the boiler with **Laddomat 21/22**, 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). As protection of the boiler from low-temperature corrosion and to maintain the minimum temperature of return water to the boiler (65 - 75 °C), you can also use a three-way mixing valve with a servo drive and electronic control.

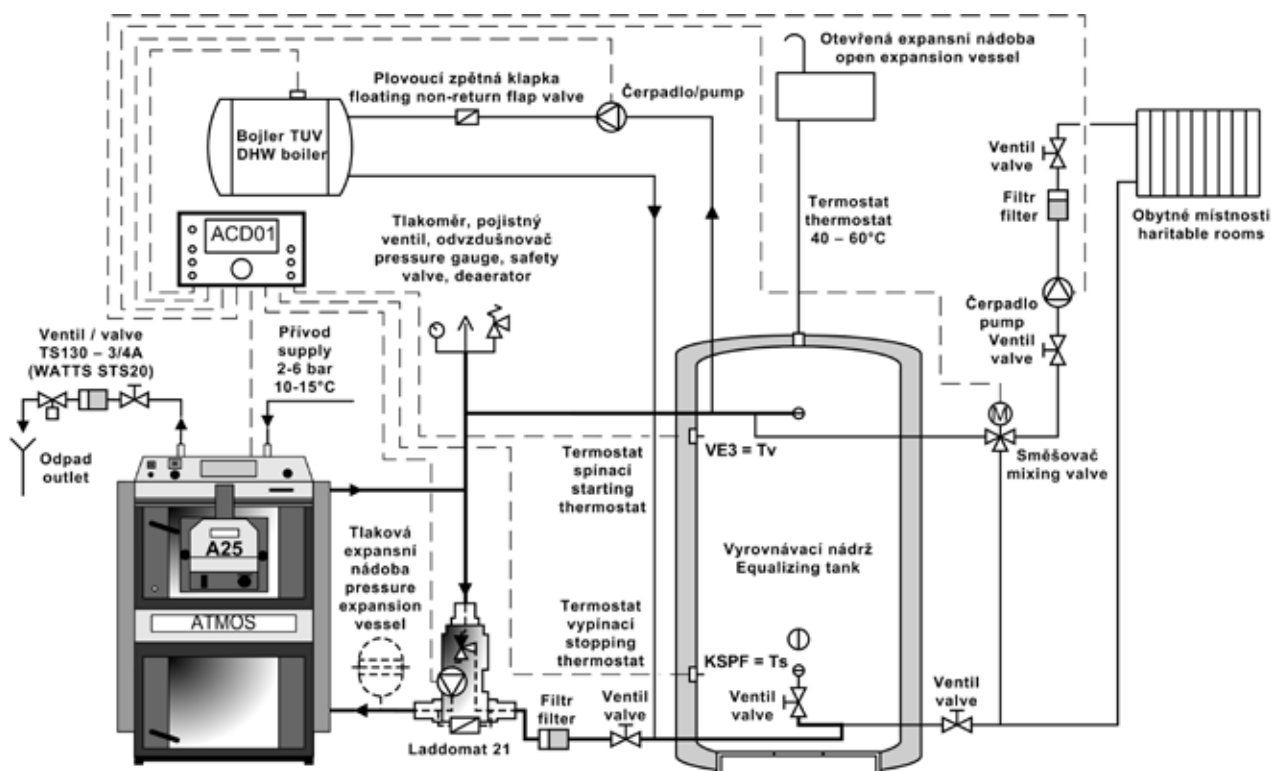


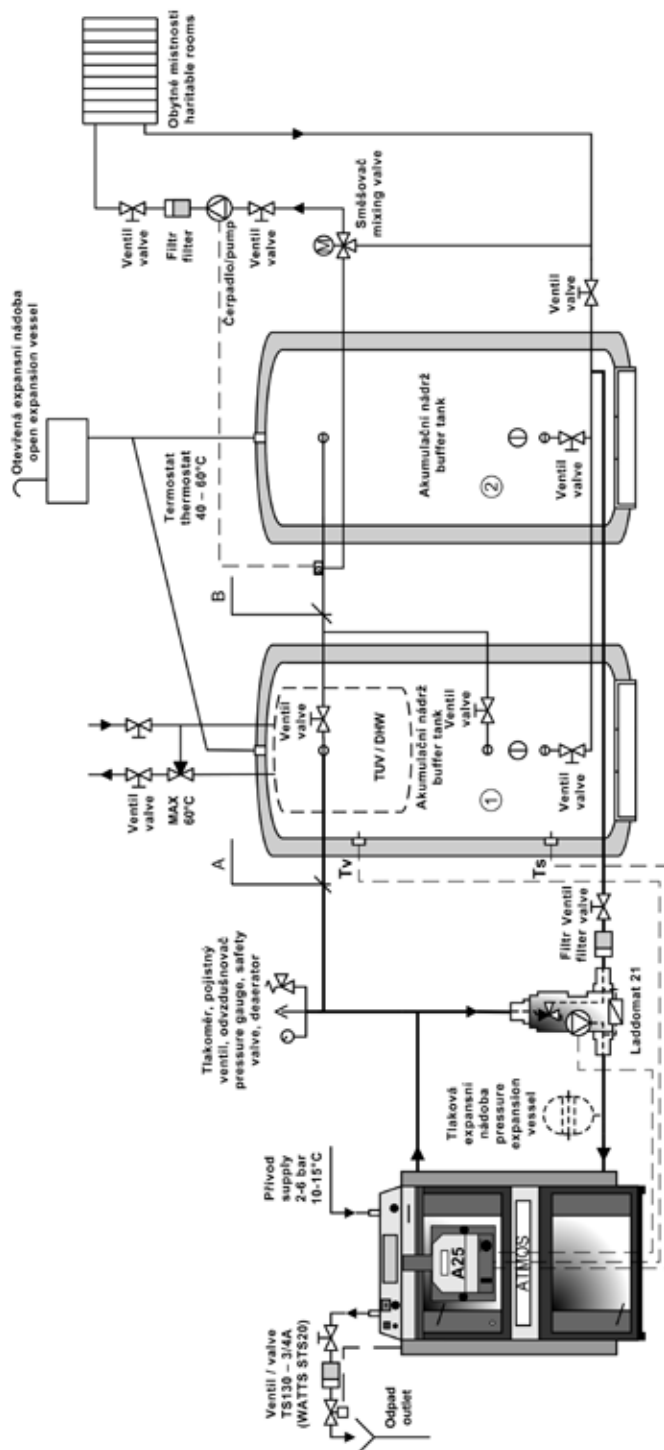
CAUTION - We always recommend you to use the boilers in combination with an equalizing tank with the volume of 500 to 1000 l.

19. Recommended connection of the boiler with an equalizing tank, Laddomat 21/22 and burner control by the TS and TV sensor



20. Recommended connection of the boiler with an equalizing tank and ACD01 controller



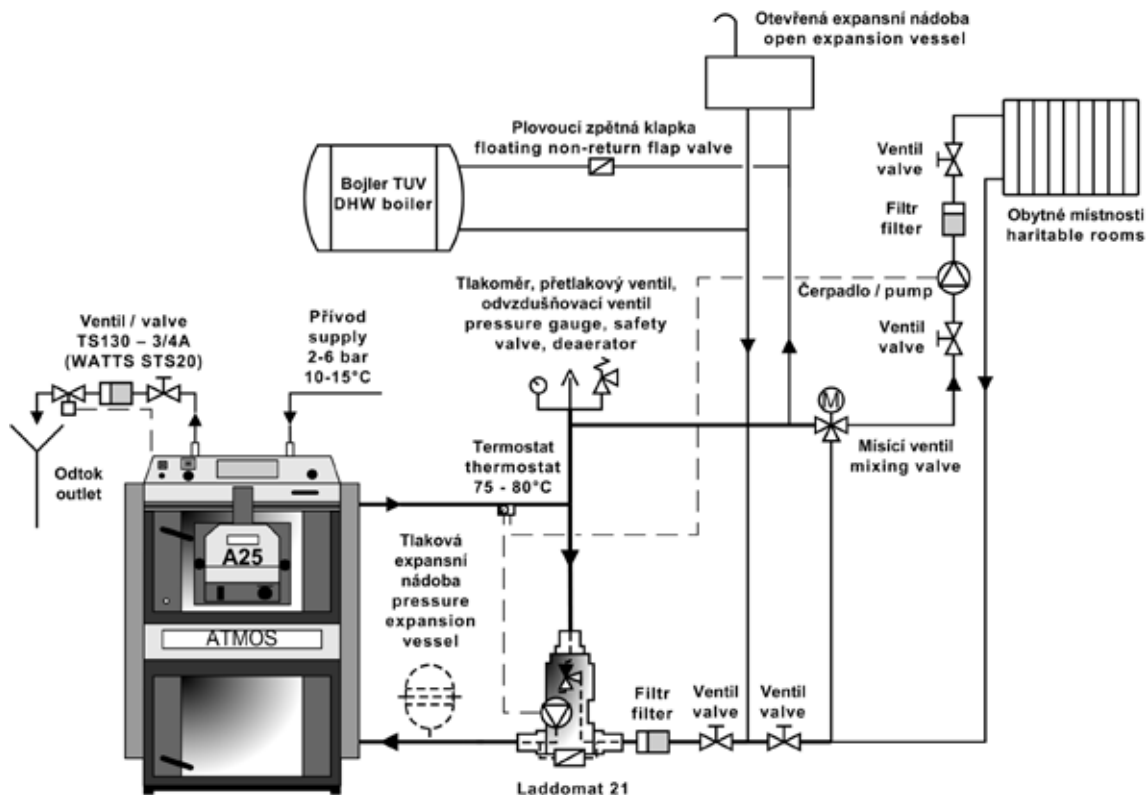


If the boiler is included in a system with Laddomat 21/22 and accumulation tank, we recommend that if you use wood (coal, briquettes) for heating, the pump of Laddomat 21/22 should be controlled by the flue gas thermostat installed in the boiler. If you burn pellets, connect a contact thermostat in series with the flue gas thermostat and set it to a temperature of $40 \div 75$ °C. when using wood (coal, briquettes), put the contact thermostat out of operation by reducing its setting to the minimum. If pellets are used, we recommend you to disconnect the other accumulation tank from the system.

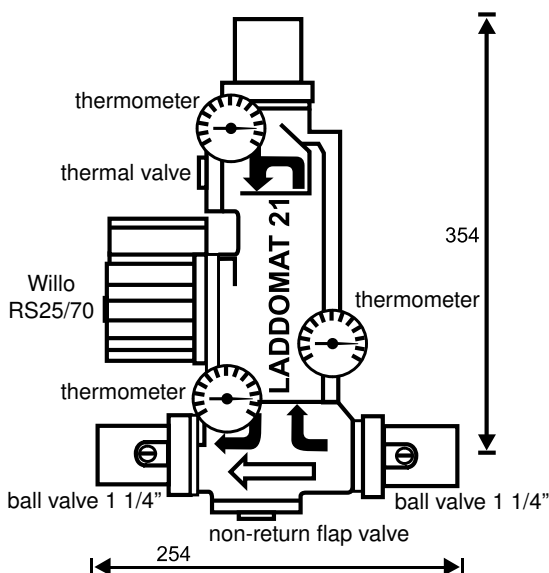
Minimum pipeline diameters in a system with accumulation tanks

Boiler type and output	Part A		Part B	
	copper	steel	copper	steel
DC18S, C18S	28x1	25 (1'')	28x1	25 (1'')
DC22S, DC25S, DC22SX, DC30SX, C20S, AC25S, DC24RS	28x1	25 (1'')	28x1	25 (1'')
DC32S, DC30SE, C30S, AC35S, DC30RS	35x1,5	32 (5/4'')	28x1	25 (1'')
DC40SX, C40S	35x1,5	32 (5/4'')	28x1	25 (1'')

22. Connection of the boiler without an equalizing tank



23. Laddomat 21/22



With its design Laddomat 21/22 replaces a conventional system composed of individual parts. It consists of a cast-iron body, thermo-regulation valve, pump, non-return flap, ball valve and thermometers. When the water temperature in the boiler reaches 78 °C, the thermo-regulation valve opens the supply from the reservoir. The connection with Laddomat 21/22 is much simpler and therefore it is strongly recommended. A spare thermo-cartridge for 72 °C is supplied with the Laddomat 21/22 fitting system. You can use it for boilers over 32 kW.

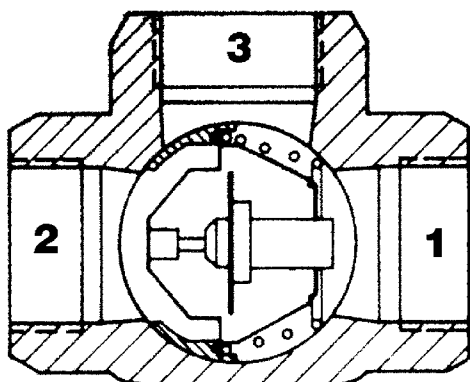
OPERATION DATA	
Maximum operation pressure	0,25 MPa
Calculated overpressure	0,25 MPa
Test overpressure	0,33 MPa
Maximum operation temperature	100 °C



WARNING - Laddomat 21 is designed only for boilers with output up to 75 kW (inclusive). 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.

24. Thermo-regulation valve

GB

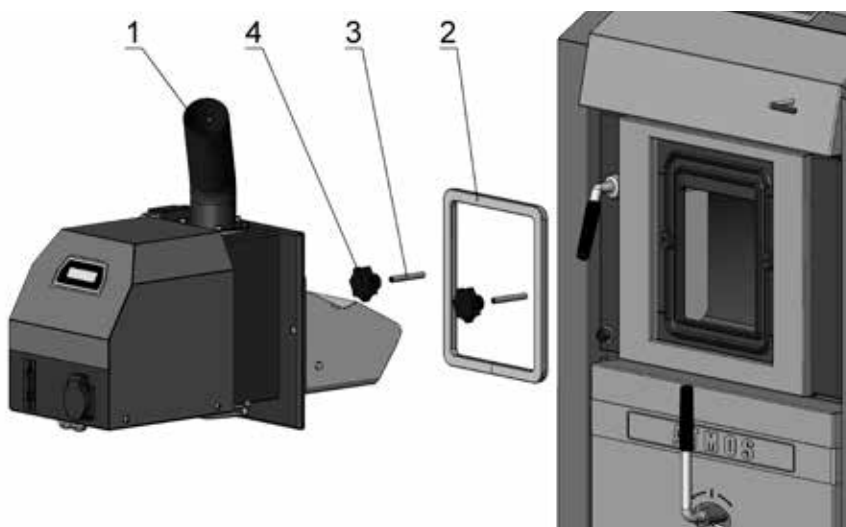


A thermo-regulation valve of the TV 60 °C (65/70 °C) type is used in solid fuel boilers. At the boiler water temperature of + 60 °C the thermo-regulation valve opens and the liquid from the circuit of the heated building (2) is released into the boiler circuit se (3→1). The supplies 1 and 3 are opened permanently. This way the minimum temperature of return water to the boiler is guaranteed. If necessary, you can use a thermo-regulation valve set to a higher temperature (e.g. 72 °C).

Recommended size of the TV 60/65/70 °C thermo-regulation valve

For the outputs: DC18S, DC22S, DC22SX DC25S, DC30SX, C18S, C20C, DC24RS..... DN25
DC32S, DC40SX, C30S, C40S, DC30RS..... DN32

25. Fixation of the burner to the gasification boiler door



- 1 - ATMOS A25 pellet burner
- 2 - Sealing cord 16x16 mm (Sibral gasket)

- 3 - 2x screw M8
- 4 - 2x decorative nut M8



CAUTION - Always properly tighten the ATMOS A25 pellet burner to the boiler to prevent flue gas from escaping to the boiler room.

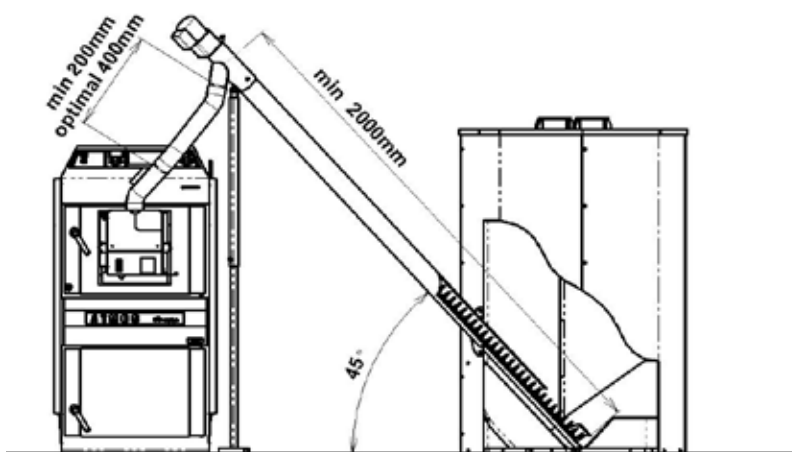
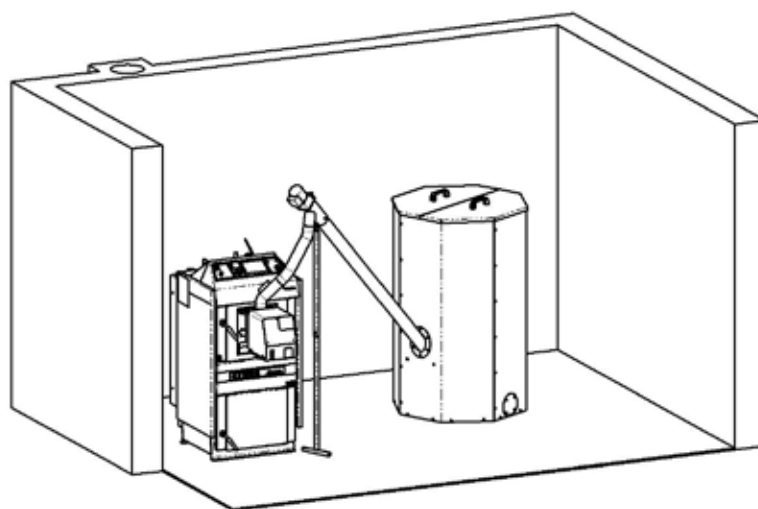
26. Boiler system with an external container and conveyor of pellets

When installing the pellet burner in the top door of the boiler, you must observe certain rules:

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 20 cm for safety reasons. However, a bigger length (about 40 - 60 cm) is recommended for easier opening of the door during cleaning of the combustion chamber of the burner, eliminating the need of removing the hose. If necessary, you can support the pellet container to achieve the ideal dimensions.

For each conveyor a support leg is delivered, but in confined spaces we recommend you to replace the leg with a chain for suspending the conveyor from the ceiling, which is part of the conveyor delivery.

The external pellet container is delivered in standard sizes of 500 and 1000 l, which is sufficient for 3 to 14 days of operation, depending on the consumed power. The larger the container volume, the better. 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.



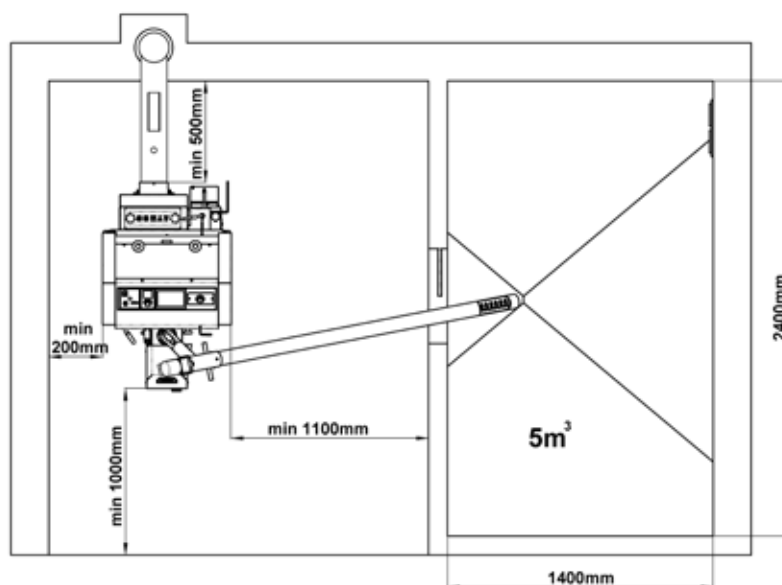
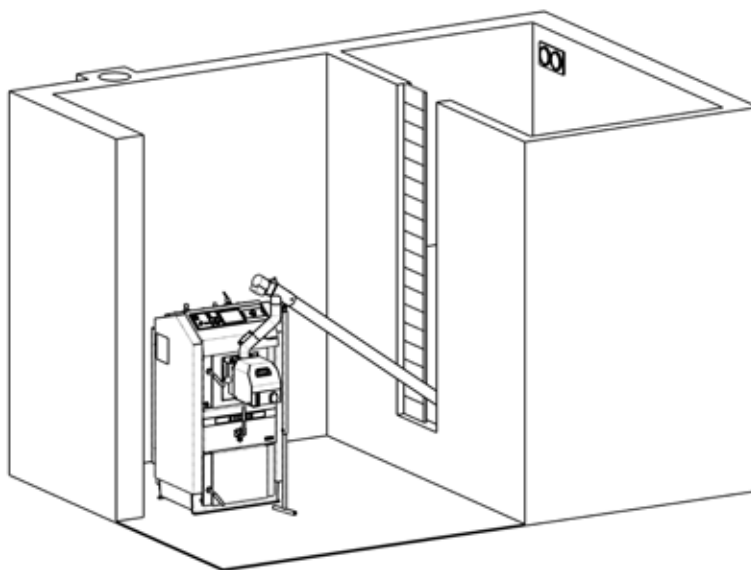
INFO - We recommend you to clean the fuel container from dust and dirt that have accumulated in the bottom part of the container during the heating season once a year, best after the heating season.

27. Boiler room with a large built-in pellet container

GB

A boiler plant with a built-in pellet container with the volume of e.g. 5 m³ in which you can store 3250 kg of pellets. For the transport of pellets from the container 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.

For optimum collapsing of the pellet heap the optimum angle of the inner walls in the container 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 container 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.

28. Operation instructions

Preparation of boilers for operation - pellet 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 and the manual of the particular boiler and burner 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.

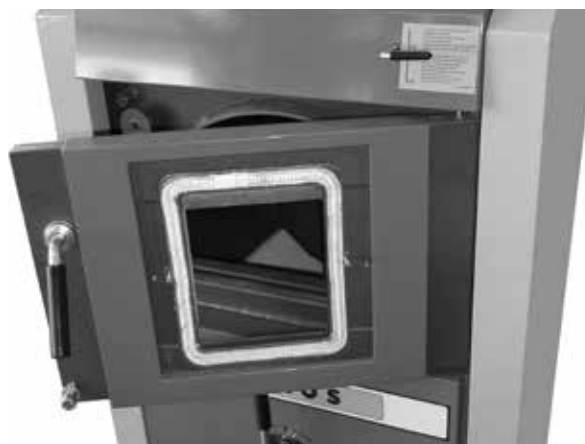
Before we proceed heating-up with the pellets do some operations.

Preparation for burning pellets

Disassemble the lid with insulation that is installed in the top door of the boiler when wood is used for heating. Insert the ATMOS A25 burner in the door and tighten it thoroughly to the boiler. Then, insert the end switch stop under one of the decorative nuts.



Door blinded with a lid for burning wood



Door without the lid ready for insertion of the burner



Boiler with the burner inserted



Boiler with the burner inserted and open door

Connect a transparent hose between the burner and conveyor and secure it with clamps with the minimum length of 20 cm and optimum length of 40 - 60 cm in such a way that the pellets can freely fall into the burner and should not accumulate in the hose. Check the angle of the worm conveyor, which should not be bigger than 45 °C. In case of bigger angles and smaller pellets the worm conveyor may not deliver a sufficient quantity of fuel that is necessary for achievement of the nominal output. Check the tightening and leakproofness of all the covers and doors and mainly attachment of the pellet burner to the boiler to prevent suctioning of secondary air to the boiler or to prevent flue gas from escaping to the boiler room during boiler operation.

If everything is OK, draw pellets to the conveyor. In the case of the ATMOS A25 burner plug the power supply cord of the conveyor to a standard 230V/50Hz socket. When pellets start to fall out of the conveyor (the conveyor is full), plug the power supply cord of the conveyor back to the socket for normal operation. **Close (hang up) the control flap controlled by the FR124 draft controller** so that secondary air should not be suctioned via the flap. Close the ignition safety valve.

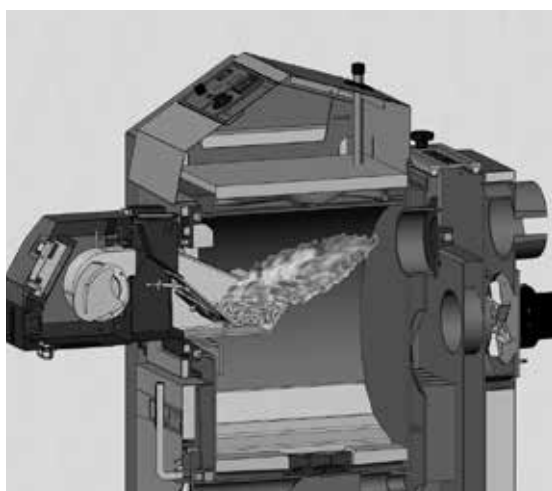
Approach the boiler panel and turn on the main switch (green), reduce the flue gas thermostat to the minimum (0 °C) and set the control thermostat to the operation temperature (80 - 90 °C). If the pump is the boiler circuit is switched by the flue gas thermostat and additional contact thermostat, set the contact thermostat to a temperature of 40 - 75 °C.

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 just 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.

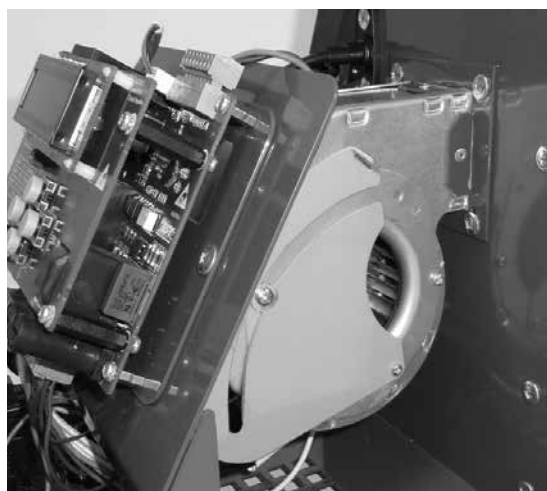
After the adjustment of the burner the operation of the boiler is completely automatic, the customer only replenishes fuel and removes ash in regular intervals.



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 - 3 cm 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

Preparation of boilers for operation - burning wood



INFO - Instruction and method for burning wood you can find specifically in instruction manual for the boiler.

When change from pellet operation to burning wood first remove pellet burner. Follow steps – unplug the burner power supply cable straight on the burner or on the back side of the boiler. Release the clamp and disconnect pellet supply hose from the burner to the conveyor. Unscrew two decorative nuts which are holding burner in the top door. Take out the burner. In its place insert blinded lid with insulation. Be careful that between the door and lid is properly placed sealing cord or sibril sealing. Everything must be leakproofness to prevent suctioning of secondary air to the boiler. Lid must be properly tighten to the door.

Now we can approach burning wood, which is specifically described in instruction manual for the boiler.



CAUTION - Don't forget check or clean up whole boiler inclusive of air duct, whereon is air control flap controled by draught regulator FR124. Draught regulator FR124 use to set the required outgoing water temperature. Then follow instruction manual specifically for the boiler.



View on blinded door when burning wood



View on air duct with air control flap and draught regulator FR124



Chacking and cleaning of the air duct equipped with a control flap for the supply of combustion air for burning of wood



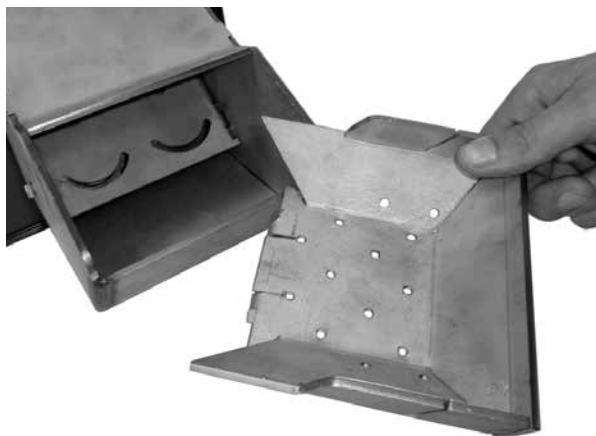
Checking and cleaning regulation of primary-secondary air ratio via cleaning lid

29. Cleaning of the boiler and ash removal in pellet operation

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 (reduce the setting of the control thermostat). Open top door of the boiler with the built-in burner and 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.

Further, clean the combustion chamber of the boiler by brushing dust from the walls by the provided poker or brush. Further, push ash and dust through the gasification nozzle or grill to the bottom combustion chamber of the boiler and remove it from there. Finally, clean the rear smoke channel with a wire brush and remove the ash from the bottom cap on the smoke channel. **Never forget to also check and clean the air channel through which the air is supplied to the boiler when wood is used as fuel (the space behind the flap controlled by the FR124 draft controller), the flue and chimney with the cleaning opening.** Perform all these activities under observance of fire prevention and work safety measures. The actual interval of the cleaning and ash removal depends on the fuel quality, heating intensity, chimney draft and other circumstances. Put everything in the original condition after the cleaning.



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



Sample cleaning of the smoke channel with a wire brush



ATOMOST A25 pellet burner in the top door of the gasification boiler



Open top door of the boiler during cleaning of the combustion chamber of the burner



Open bottom space of the boiler with a roof and example of ash removal with a poker



Open bottom space of the boiler with a circular space and example of ash removal with the ash pan



Sample cleaning of impeller and checking uprightness of vane on extract ventilator



Open bottom cleaning lid on the smoke channel



CAUTION - At least once a year remove the burner from the boiler and clean the inner part of the combustion chamber completely. Never disassemble the ignition spirals, see the manual of the burner.



INFO - Procedure and places of cleaning when burning wood you can find specifically in instruction manual for the boiler.

30. 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 season in spring already.**

31. 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 burner, 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.

32. Troubleshooting

Problem	Cause	Remedy
The “mains” indicator does not light up	<ul style="list-style-type: none"> - no mains voltage - incorrectly inserted plug in the mains socket - faulty main switch - defective cord 	<ul style="list-style-type: none"> - check - check - replace - replace
The boiler does not achieve the required output and the set water temperature	<ul style="list-style-type: none"> - little water in the heating system - high output of the pump - the output of the boiler is not sufficiently sized for the particular hot-water system - poor quality fuel (high moisture content, large pieces) - poor-quality fuel - pellets - leaky ignition safety valve - low chimney draft - high chimney draft - bent vanes of the extraction fan (long ignition or boiler operation with the ignition flap open) - insufficiently cleaned boiler - clogged inlet of combustion air to the fuel supply chamber 	<ul style="list-style-type: none"> - replenish - adjust the flow and pump control - design issue - burn dry wood and split logs in halves - burn high-quality pellets - repair - new chimney, unsuitable connection - install a throttling flap in the flue or a pressure reducer - straighten the vanes (to the angle of 90°) - replace - clean - clean

Leaky doors	<ul style="list-style-type: none"> - faulty glass cord - the nozzle gets clogged - low chimney draft 	<ul style="list-style-type: none"> - replace - adjust the door hinges - do not burn small pieces of wood, sawdust, bark - fault in the chimney
The boiler fan is not running	<ul style="list-style-type: none"> - overheated boiler - the fuse of the safety thermostat has tripped - clogged impeller - faulty capacitor - 1μF - faulty motor - poor contact in the connector of the supply cable from the motor 	<ul style="list-style-type: none"> - press the target on the thermostat (with a pencil) - clean the fan from tar and deposits, incl. the channel - replace - replaces - check - measure - repair (rectify)
Defects and shortcomings of the burner, conveyor and the deashing system	<ul style="list-style-type: none"> - no more fuel - the fuel is cindered and blocks the chamber on the burner - the hose between the conveyor and the burner gets clogged - the burner does not provide the required output - the worm conveyor does not run (stops) - other defects of the burner 	<ul style="list-style-type: none"> - replace and before the new star draw pellets to the conveyor - clean the combustion chamber and hose replace pellets - clean the combustion chamber of the burner once a day until you burn all the poor-quality pellets - low calorific value of the pellets, change the setting - check and if necessary, replace the gearbox of the conveyor - defect - check the quality of pellets, high resistance = hard pellets, large diameter of pellets, long pellets - follow the operation instructions of the burner

33. List of basic spare parts of the boiler and the burner

Refractory brick - see the manual of the particular boiler	1
Extraction fan - UCJ4C52 (code: S0131)	1
Capacitor for the extraction fan UCJ4C52 - 1μF (code: S0171)	1
On/off switch with an indicator (green) (code: S0091)	1
Thermometer (code: S0041)	1
Control thermostat (code: S0021)	1
Safety thermostat - (2-circuit design) (code: S0068)	1
Flue gas thermostat (code: S0020)	1
Sealing cord of the door, 18 x 18 (code: S0240)	1
Door filling - small, thick Sibril gasket with a hole (code: S0517)	1
Sibril gasket of the lid of the burner hole /10/ (code: S0275)	1
Electronic unit of the holder - AC07X with a fixing plate (code: H0222)	1
Safety thermostat of the burner, 95 °C (code: H0059)	1
Holder - plate with holes for ignition spirals (code: H0225)	1
Ignition spiral, 500W (code: H0229)	2
Combustion chamber (pot) of the burner (code: H0228)	1
End switch - FR501 (code: H0210)	1
Burner fan with a speed sensor (code: H0058)	1
Photocell - separate (code: H0231)	1
Sealing under the flange of the pellet supply pipe - Sibril paper (code: S0170)	1
End switch stop (code: H0237)	1
Ignition spiral fuse - type F 3.15A/1500A/5x20mm (code: H0238)	2
Conveyor fuse - type F 0.8A/1500A/5x20mm (code: H0239)	1
Fan fuse - type F 1.0A/1500A/5x20mm (code: H0251)	1

Replacement of the sealing cord (18 x 18 mm) in the door

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!



INFO - When replacing the 16 x 16 mm sealing cord between the burner and the boiler, proceed in a similar way. Also, always check the joint of both the ends of the sealing cord to prevent flue gas from escaping to the boiler room.

Adjustment of 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.

34. Environment protection

ATMOS gasification boilers comply with the most stringent environmental requirements. The boilers are certified in accordance with the EN 303-5 European Standard and belong to class 4.

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

GB

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 21/22 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:

- **company representing ATMOS in the particular country for the particular region**
- **installation company that carried out the installation**

Jaroslav Cankař a syn ATMOS,

Velenského 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

CO₂

O₂

Person responsible for the inspection: Date:

Stamp :

(Responsible person's signature)

Customer's signature:

* measured values

ANNUAL INSPECTIONS RECORDS

GB

Date	Date	Date	Date
stamp and signature	stamp and signature	stamp and signature	stamp and signature
Date	Date	Date	Date
stamp and signature	stamp and signature	stamp and signature	stamp and signature
Date	Date	Date	Date
stamp and signature	stamp and signature	stamp and signature	stamp and signature
Date	Date	Date	Date
stamp and signature	stamp and signature	stamp and signature	stamp and signature
Date	Date	Date	Date
stamp and signature	stamp and signature	stamp and signature	stamp and signature

RECORDS OF GUARANTEE PERIOD
AND POST-GUARANTEE PERIOD REPAIRS

GB

Repair:
Repair:
Repair:
Repair:
Repair:
Repair:
Repair:

.....
repair carried out by, date

Repair:
Repair:
Repair:
Repair:
Repair:
Repair:
Repair:

.....
repair carried out by, date

Repair:
Repair:
Repair:
Repair:
Repair:
Repair:
Repair:

.....
repair carried out by, date

Repair:
Repair:
Repair:
Repair:
Repair:
Repair:
Repair:

.....
repair carried out by, date

Repair:
Repair:
Repair:
Repair:
Repair:
Repair:
Repair:

.....
repair carried out by, date

