



HEAT TECHNOLOGY PRODUCER

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INSTRUCTION FOR USE



**WOOD GASIFYING
BOILER**

**ATTACK DP
STANDARD, PROFI**

ATTACK DP - Wood gasifying boiler

- Assembly, pre-heating and training of the attendance is performed by an assembly technician trained by the manufacturer, who also fills in a document on the installation of the boiler.
- During wood gasifying, tar and condensates (acids) are created in the fuel bin. Therefore behind the boiler the mixing appliance Regumat must be installed to keep the minimum temperature of return water of 65°C into the boiler.
- Operation temperature of water in the boiler must be of 80-90°C.
- The boiler must not be permanently operated with the output lower than 50%.
- When a circulation pump is used, it must be controlled by a separated thermostat in order to keep the prescribed minimum temperature of return water.
- Ecological operation of the boiler is during nominal output.
- We recommend to install the boiler with storage reservoirs and Regumat which guarantees economy in fuel in 20 to 30% and longer service life of the boiler as well as comfortable attendance.
- If the boiler cannot be attached to the accumulation, we recommend to connect it at least with one equalisation basin with the volume of about 25l for 1 kW of the boiler output.
- During the mode with decreased output (summer mode and water heating) it is necessary to start burning daily.
- Fuel must be used only dried of 12 - 20% moisture content (with a higher moisture content of fuel the output of boiler decreases and its consumption increases)
- The choice of the right boiler size, that is its heating output, is a very important condition for economic operation and right function of the boiler. The boiler must be chosen so that its nominal output responds to heat loss of the heated object.

The guarantee does not apply for the boiler if:

- it is operated with wood exceeding 20% moisture content or with fuel not prescribed by the manufacturer.
- if a proper mixing appliance Regumat is not installed in the system, which provides for return water the temperature of 65°C.
- a functional thermostatic valve (WATTS STS20) is not installed on the cooling circuit of boiler and connected to the source of cooling water.

This appliance is not suitable for using by those persons (including children), whose physical, mental and sense- disability or the lack of skills obstructs the safe operation, if they are not under restraint, or they were not trained by the responsible person for using the appliance. It is necessary to look after the children to assure, that they will not play with the appliance.

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Introduction:

Dear customer,

Thank you for confidence that you showed us by purchasing our product - ATTACK wood gasifying boiler. We wish you long and reliable operation. Proper attendance of the boiler is one of the conditions for reliable and right operation, so please read this instruction for use carefully. The manual is written in the way to respect the right operation of the boiler in central heating system.

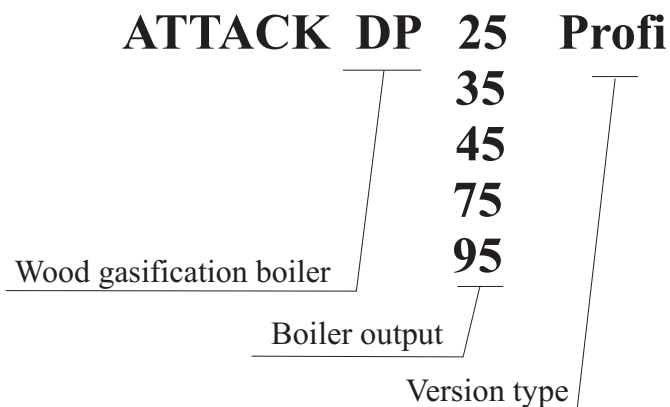
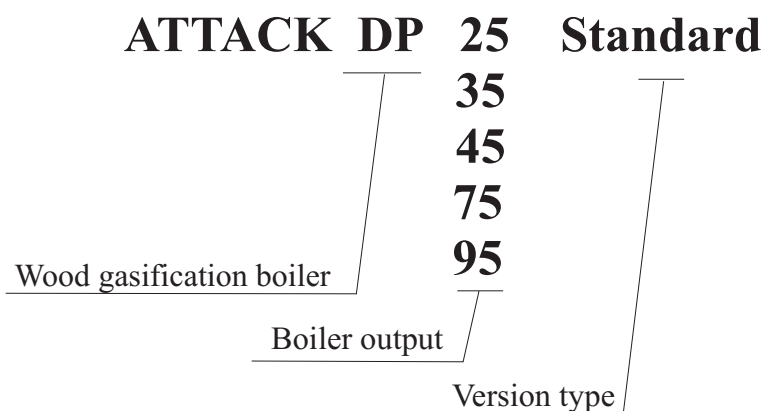
The conditions of right boiler operation:

- to choose the right type and output of the boiler
- impeccable putting into operation
- sensitive attendance
- regular technical maintenance
- reliable service

General description:

ATTACK DP wood gasifying boiler is designed for economic and ecological heating of family houses, bungalows, small plants, workshops and similar objects. Specified fuel for ATTACK DP boilers is dry wood, e.g. logs of lengths, depending on the type of boiler. The wood gasifying boiler is the holder of CE 101 5 certificate.

Description of ATTACK DP brand:



Technical parameters:

Type of boiler		DP25	DP35	DP45	DP75	DP95
Boiler output STANDARDversion)	kW	25	35	45	75	95
Output range (PROFIversion)	kW	10-25	14-35	18-45	30-75	43-95
Heating surface	m ²	1,52	1,74	1,95	3,60	5,60
Feed hopper capacity	dm ³	96	112	128	305	440
Dimensions of feeding opening	mm	235x445	235x445	235x445	292x542	292x542
Prescribed chimney drought	Pa	23	23	23	23	25
Max.operating pressure of water	kPa	250	250	250	250	250
Weight of boiler	kg	370	405	430	650	800
Diameter of the flue connection	mm	150	150	150	219	219
Boiler height - "A"	mm	1235	1235	1235	1320	1535
Boiler width - "B"	mm	690	690	690	750	766
Boiler depth - "C"	mm	1090	1190	1295	1600	1750
The depth of the chamber - "D"	mm	590	690	790	1100	1100
Shield of the electric parts	IP	21	21	21	21	21
Electrical input	W	50	50	60	60	90
Boiler efficiency	%	85	85	86	86	81
CO emission class		3				
Flue gas temperature in nominal output	°C	230	225	220	262	287
Flow of flue gas in nominal output	kg/s	0,019	0,021	0,027	0,045	0,059
Maximum noise level	dB	65	65	65	65	65
Prescribed fuel		Dry wood of 15-17 Mj/kg-1 calorific value, water content min. 12% - max. 20% diameter 80-150mm				
Average fuel consumption	kg ^h ⁻¹	7,75	9,75	11,75	18,7	29,2
Consumption per season		1kW = 1m ³				
Max. length of wood logs	mm	550	650	750	1000	1000
Burning time in min. output	hod.	3	3	3	3	3
Volume of water in the boiler	l	68	78	87	164	250
Min.volume of equalisation basin	l	600	900	1200	1800	2375
Connection voltage	V/Hz	230/50				
Range of temperature of heating water	°C	65-90				
Range of room temperature (PROFIversion)	°C	10-27				
Current carrying capacity of boiler regulator contacts (PROFI version)	V/A	230 / 2				

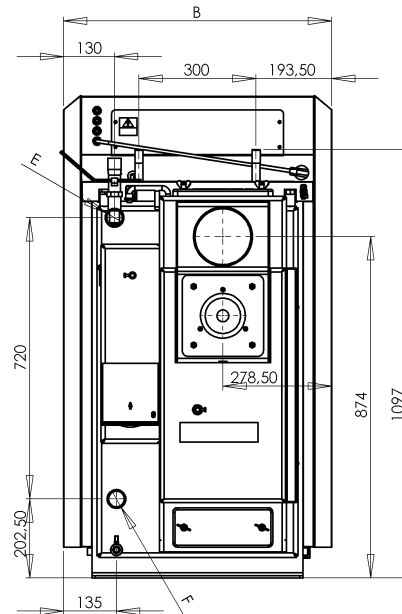
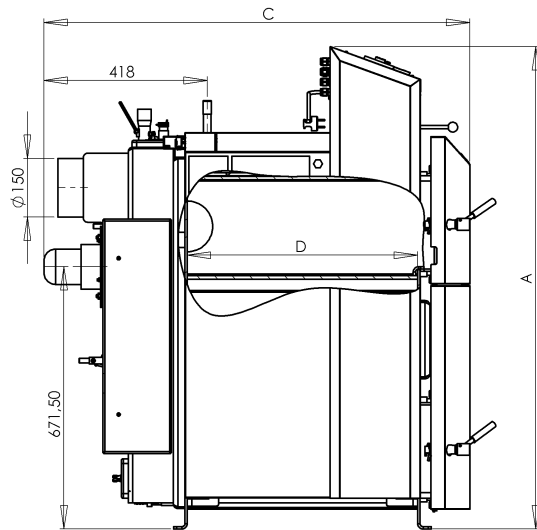
Specified min.temperature of returnable water in operation is 65°C.

Specified temperature of water during operation in the boiler is 80-90°C.

ATTACK, s.r.o. producer reserves the right to change technical parameters and dimensions of boilers without previous warning.

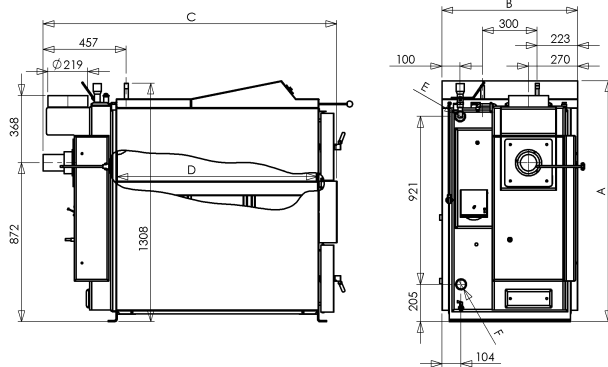
Dimensions of ATTACK DP boilers

ATTACK DP 25-45

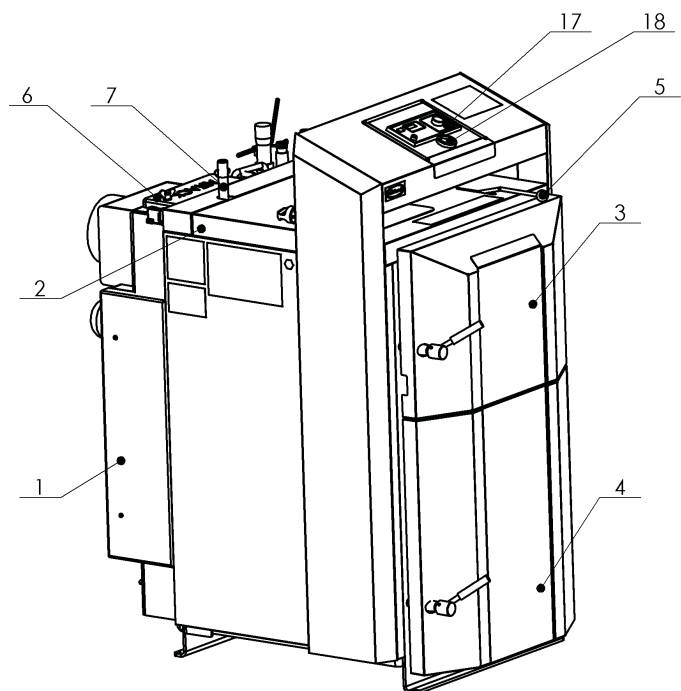
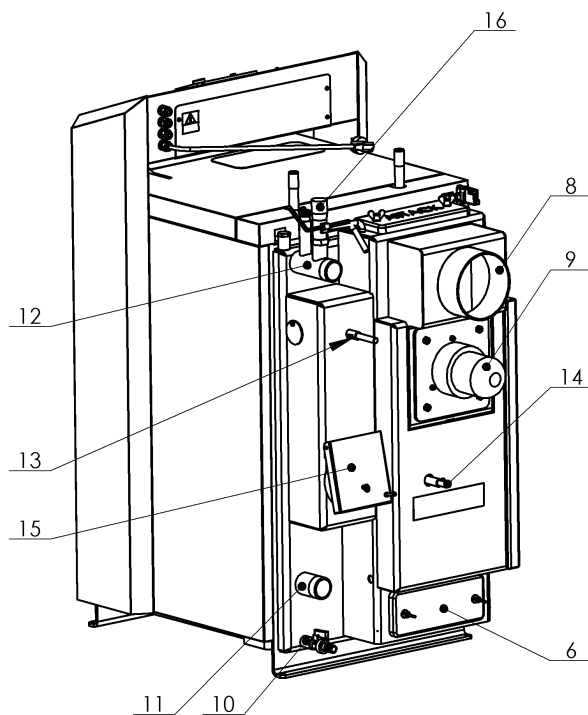
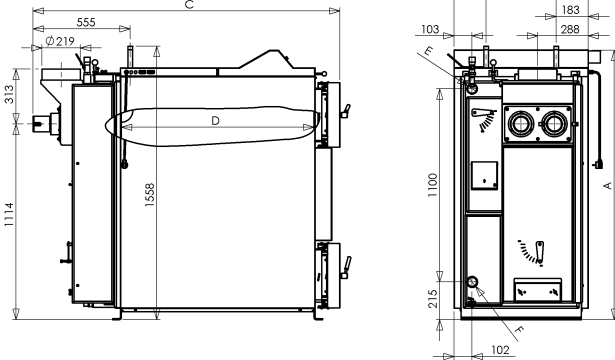


	DP25-35	DP45-95
Rising pipe - "E"	G6/4"	G2"
Return pipe - "F"	G6/4"	G2"

ATTACK DP 75



ATTACK DP 95



Key:

- 1. Boiler body
- 2. Upper cover
- 3. Feeding door
- 4. Ashtray door
- 5. Pull rod of the heat up flap

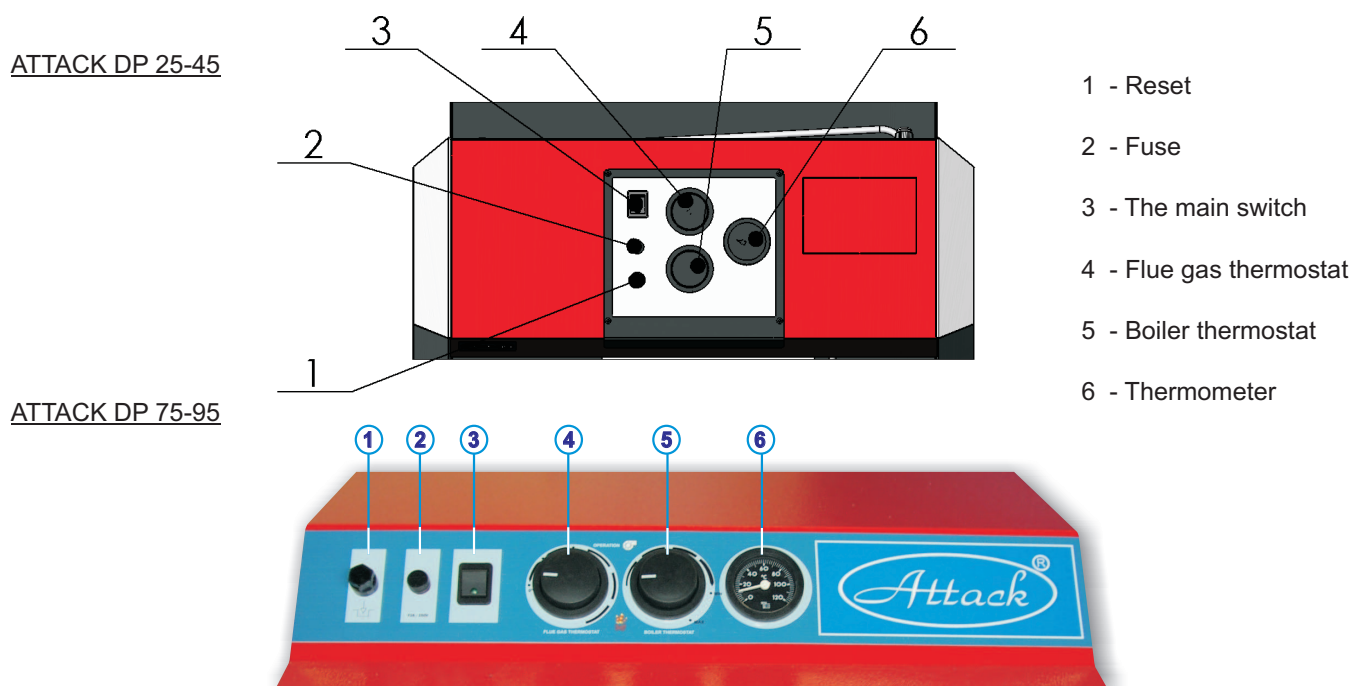
- 6. Cover of cleaning opening
- 7. Aftercooling circuit
- 8. Chimney
- 9. Suction fan
- 10. Outlet valve

- 11. C.H. return connection
- 12. C.H. flow connection
- 13. Primary air flap
- 14. Secondary air flap
- 15. Regulation door

- 16. Output regulator
- 17. Control electronics - PROFI version
- 18. Pressure gauge

ATTACK DP STANDARD

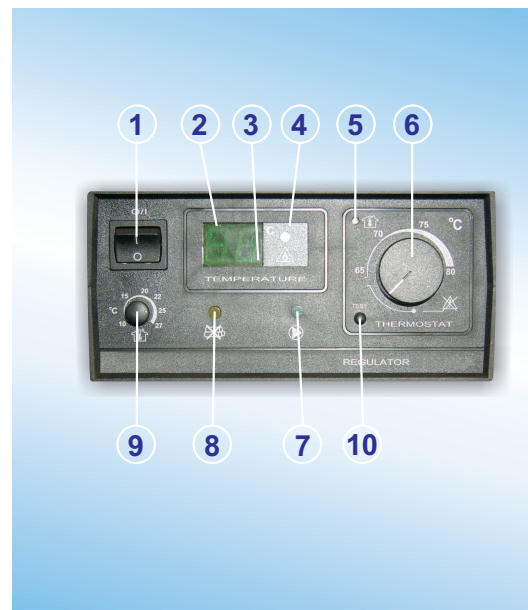
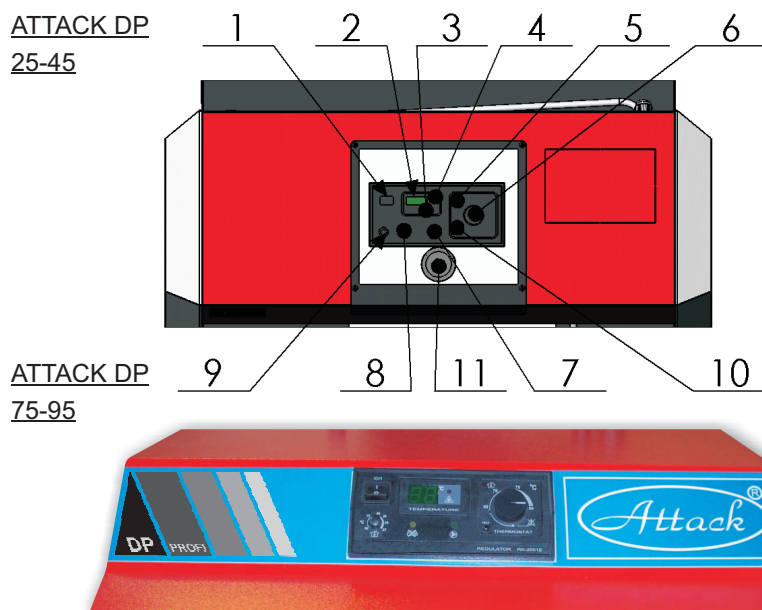
Wood gasifying boiler "ATTACK DP Standard" is controlled by a boiler and flue gas thermostat.

**Description:**

1. *Reset* - protection of the boiler against overheating (in case the temperature is higher than 110°C, the boiler is disconnected from the power net)
2. *Fuse* - protection of the boiler against short circuit
3. *Main switch* - switching on of the boiler, switching off if necessary
4. *Flue gas thermostat* - when the temperature of flue gas drops below the set up value, the fan is switched off
5. *Boiler thermostat* - serves for setting up maximum temperature of water in the boiler (after exceeding set up temperature the fan is switched off and the boiler works with minimum output. After decreasing set up temperature the fan is switched on again and the boiler works with maximum output.
6. *Thermometer* - indicates the temperature of outlet water from the boiler
7. *Pull rod control* - serves for opening and closing of fuel cut-off flap

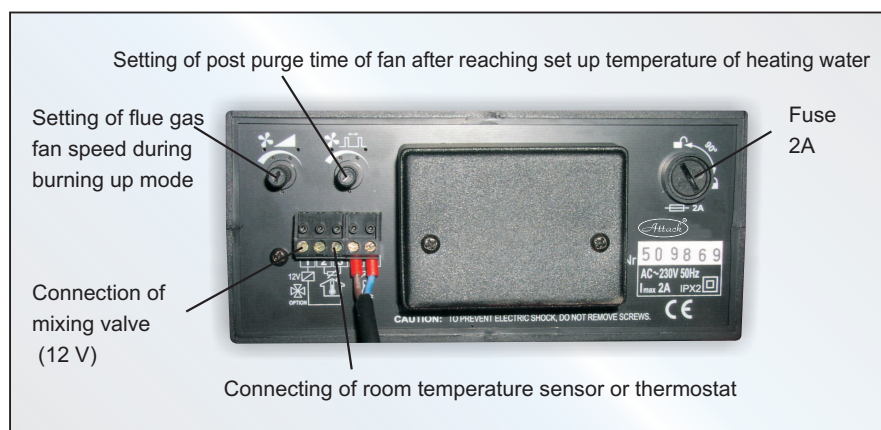
ATTACK DP PROFI

The asset of Profi version of ATTACK DP boilers comparing with Standard version is in more comfortable service and the possibility of heat output modulation and addition of control elements. The boiler temperature is kept at the level set by the user, by setting up number of revolutions of the flue gas fan. ATTACK PROFI boiler regulator measures the temperature of water in the boiler continuously and depicts its value on the display, controlling the pump of central heating at the same time. There is a possibility to connect a room thermostat to the boiler regulator. The room thermostat provides thorough regulation of temperature of heated rooms. The control of drive of the four-way mixing valve is possible as well.



- | | |
|--|---|
| 1 - Main switch | 7 -The control light of circulation pump operation |
| 2 - Display showing the boiler temperature | 8 - The control light of lack of fuel |
| 3 - Control light of burning up process | 9 - turning button of room thermostat |
| 4 - Contol light of boiler overheating | 10 - The TEST button (by pressing the button the temperature set up by turning the button 6 appears and at the same time flue gas fan swithes off during the time when the button is pressed) |
| 5 - The room thermostat control light | |
| 6 - Turning botton of boiler thermostat | |

Backward view of electronic regulator:



Purpose of use

Ecological hot-water boiler Attack DP is designed for heating of family houses and similar objects. The boiler is designed for burning wood only. Any dry wood can be used for burning, mainly logs. Also wood of bigger diameter, blocks, can be used, which reduces nominal output but prolongs burning time. The boiler cannot be used for burning filedust and small wooden debris. This can be burnt only in small amount together with logs (max. 10%). Due to its large feed hopper you can avoid the most demandable operation of preparation and cutting the wood into smaller pieces.

Location of the boilers in living spaces (including halls) is inadmissible!

Technical parameters

The boiler is designed for combustion of wood on the principle of wood gasifying using a flue gas fan sucking flue gas from the boiler.

The body of the boiler is a weldment of metal steel plates of 6 mm thickness. It includes a feed hopper with a heatproof shaped piece that has an oblong opening for transition of flue gas and gas. Under it in the after-combustion space there is an ash pan. In the rear part of the boiler there is vertical flue channel with a fuel cut-off flap in the upper part. There is also a suction branch for connection to the flue.

In the front wall in the upper part there is a feeding door and in the bottom part there is an ash door. In the front part of the upper cover there is a pull rod of fuel cut-off flap. The body of the boiler is from the outside insulated by mineral fleece put under the covers of outside jacket. In the upper part of the boiler there is a control board for electromechanical regulation. In the rear part of the boiler there is a channel for inlet of primary and secondary air with a regulation flap where the air is heated to a high temperature.

Description of the STANDARD version

- Thermometer indicates outlet temperature of the boiler
- If it is necessary, the boiler can be switched off by main switch
- Electric circuit is protected by a fuse
- Fan can be switched off by a flue thermostat after burning down fuel.

ATTENTION! For heating up, set this thermostat to 0°C. After fuel starts burning, set the flue thermostat to "Operation". If the temperature of flue gas drops below set up temperature the flue thermostat is switched off. If you want the fan start again, you have to set up a temperature. The optimum condition for operation must be tried.

- Regulation thermostat controls the operation of the fan by the outlet temperature of water from the boiler. Safety non-returnable thermostat serves as a protection against overheating in case of breakdown of the regulation thermostat or as an alarm of device for overcoming safety temperature. After overcoming the temperature of 110°C it is necessary to press it. (in the PROFI version turn the boiler thermostat to the left point of "RESET")

Operation rules

Preparing the boiler for operation

Before putting the boiler into operation make sure whether the system is filled with water and deaired. The boiler can be operated only in accordance with these instructions in order to work properly. It can be operated only by an adult. When installing the boiler, lay something under the rear part to elevate it in 10 mm for better flushing and deairing.

Warning!

After the first heating up, there can be condensation and condensate may leak. This is not a defect Condensation disappears after longer heating. When burning smaller wooden waste it is necessary to check the temperature of flue gas which must not overcome 320°C. Otherwise the fan can be damaged. Creation of tar and condensate in the feed hopper is a phenomenon accompanying wood gasifying.

If the boiler was out of order for a longer time (switched off, broke down), it is necessary to use extreme caution when putting into operation again. In not working boiler, the pump can be blocked, water can leak or the boiler could get frost in winter.

Heating up and operation

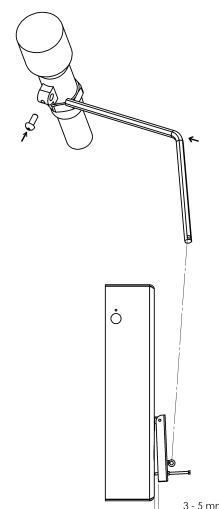
Before burning the fuel open the fuel cut-off flap pull the pull rod of the flap and set the flue thermostat to 0°C. Through the upper door put dry wood chips on the heatproof shaped piece perpendicularly to the channel to leave 2-4 cm gap between the fuel and channel for transition of flue gas. Put paper or wood wool on the chips, then chips again and a bigger amount of dry wood. After burning the fuel switch on the fan and close the fuel cut-off flap. On the thermoregulation valve set the demanded temperature of water (80- 90°C). After proper start fill in the whole fuel bin and set up the fuel thermostat into operation position.

CAUTION: *During the operation the pull rod of fuel cut-off flap must be shifted in otherwise the fan can be damaged.*

To gasify wood, there must be a reduction zone in the boiler (a layer of charcoal on the ceramic shaped piece in the feed hopper). The layer can be created by combustion of dry wood of proper size. When wet wood is burned, the boiler is not working as a gasifying boiler and the consumption of wood rises, output is lower than demanded and the service life of boiler as well as that of flue is shortened. If the draft is as specified, the boiler works up to 70% of output even without a fan.

Electromechanical output regulation

Output is regulated by flap on the rear part of boiler, which is controlled by the output regulator. This regulator opens or closes the flap automatically, according to adjusted outlet water temperature (80 - 90°C). It is necessary to set the regulator carefully, because it regulates output and also subserves important function of boiler protection against overheating. Fasten the chain by bigger hook to mounted and complete regulator. Set the temperature on regulator to 80°C (for setting of temperature, use the red scale). Open the inlet flap to maximum by fastening it to the second end of the chain. Heat the boiler up. When the water temperature reaches 80°C, after few minutes, adjust the chain length to let the door open for 3-5mm. Ensure the adjustment by adjusting screw on the flap. If the boiler temperature differs from adjusted one during the operation, change the chain length adequately. Consider also another influences, that may have consequences on boiler temperature (fuel amount, ash, position of secondary air flap, persistence of boiler and whole system, etc.). Check protection against overheating by testing the regulator's function already at the temperature of 90°C. The regulation flap has to be almost closed at this temperature. It is necessary to test adjustment of regulator. Position of regulation flap can be seen from the rear part of the boiler. Fan is controlled by boiler thermostat on the boiler panel, according to adjusted outlet water temperature. The temperature set on the boiler thermostat should be lower for 5°C than temperature on the thermoregulator. The flue gas thermostat is also placed on the panel. It serves to shut down the fan after burning-out of fuel. During the heating up, set it to the „0°C position“. After sufficient flaming up, set it to the operation position to let the fan run and to turn it only after burning-out of fuel. It is necessary to find the optimum position of the flue gas thermostat adequately to the sort of fuel, chimney draught and other conditions. Watch the outlet water temperature via thermometer. Also the non-return safety thermostat is placed on the panel (Standard version).



When the water temperature reaches 80°C, after few minutes, adjust the chain length to let the door open for 3-5mm. Ensure the adjustment by adjusting screw on the flap. If the boiler temperature differs from adjusted one during the operation, change the chain length adequately. Consider also another influences, that may have consequences on boiler temperature (fuel amount, ash, position of secondary air flap, persistence of boiler and whole system, etc.). Check protection against overheating by testing the regulator's function already at the temperature of 90°C. The regulation flap has to be almost closed at this temperature. It is necessary to test adjustment of regulator. Position of regulation flap can be seen from the rear part of the boiler. Fan is controlled by boiler thermostat on the boiler panel, according to adjusted outlet water temperature. The temperature set on the boiler thermostat should be lower for 5°C than temperature on the thermoregulator. The flue gas thermostat is also placed on the panel. It serves to shut down the fan after burning-out of fuel. During the heating up, set it to the „0°C position“. After sufficient flaming up, set it to the operation position to let the fan run and to turn it only after burning-out of fuel. It is necessary to find the optimum position of the flue gas thermostat adequately to the sort of fuel, chimney draught and other conditions. Watch the outlet water temperature via thermometer. Also the non-return safety thermostat is placed on the panel (Standard version).

Refueling

For refueling first open the fuel cut-off flap by the pull rod, do not stop the ventilator. Wait for some 10 seconds, then slowly open the feeding door so as accumulated flue gas can be draught to the flue. During heating keep the feed hopper always full. To prevent smoke, stoke other fuel only after the original charge is burnt out at least to 1/3 of the content. Then cover live coal with a broad log and fill in as usually. The fuel must not be pressed over the jet as this could cause extinguishing the fire.

CAUTION! During operation the pull rod of fuel cut-off flap must be shifted in, otherwise the fan can be damaged.

Technical description of ATTACK DP PROFI:

During the operation, the display is showing the current temperature of outlet heating water.

Speed of the fan are controlled in this way:

- if during burning up proces the boiler temperature is lower than 45 °C, the fan works with the output set up by the turning of burning up button situated in rear side of regulator in the range of 40 - 100 %. (you can see it on the display, from r4 = 40% to r9 = 90 %, rF=100%), for boiler temperature higher than 45°C the fan works up to 100%.
- if the temperature of heating water during the operation is more than 10°C lower than the one set up by the turning button, the fan works in 100 % output.
- if the temperature of heating water is lower than 10°C from the temperature set up by the turning button of the boiler thermostat, the regulator decreases the output of ventilator according to the difference between these temperatures but only to the output not lower than 40%.
- if the boiler temperature is higher or equal to the temperature set up by the turning button of the boiler thermostat, the fan switches off.
- the ventilator switches on again after decreasing the boiler temperature in o 5°C comparing to the set up temperature.

The regulation of boiler ensures that the pump for central heating switches off when the temperature of outlet water in the boiler decreases under 60°C. The pump switches on again by the temperature higher than 65°C.

To prevent explosion of accumulated gas during ignition, the boiler regulator ensures purging of gas in the boiler in 5 seconds and then each minute until 9 minutes according to the position of the turning post-purge time button in the rear part of the regulator. During the set up there is always information on the display which lasts 2 seconds (P1,....., P9, P-). In case you do not wish purging of gas in the boiler, it is necessary to set up (P--)..

To make the process of burning up the boiler stable, there is a burning up system installed in the regulator. After plugging in or stopping the alarm the regulator is set up to the process of burning up and this mode is signalled by a shining dot on the display. The process of burning up is finished when the dot stops shining and the boiler temperature reaches the value set up by the thermostat. In case the temperature in the boiler does not exceed 65 °C in 2 hours of burning up time, the regulator stops the waste-gas ventilator and switches on the control light - missing fuel.

In the time of burning out the boiler when the temperature falls under 65 °C and this condition lasts for more than 30 minutes, the regulator stops the flue-gas fan and the control light of missing fuel shines on.

Missing fuel

When the temperature of heating water in the boiler falls under 65 °C and this condition lasts for more than 30 minutes, the regulator stops the flue-gas fan and the control light of missing fuel shines on. If in the burning up process the boiler temperature does not raise to more than 65°C, missing fuel will be shining on the display after 2 hours. To start the regulation again, it is necessary to:

- refuel the boiler;
- burn the boiler up
- turn the turning button of the boiler thermostat into the maximum left position and thus stop the alarm
- wait until the control light of missing fuel flickers,
- by turning button of the boiler thermostat set up the required temperature of the boiler and the regulator starts the process of burning up

The boiler overheating

If the temperature of the boiler raises to more than 95 °C, the regulator stops the flue-gas fan and the control light of boiler overheating shines on. For new start it is necessary to:

- wait until the boiler temperature falls
- remove the cause of boiler overheating (e.g. refill missing water into the central heating circuit)

Warning! Water can be refilled only after the boiler temperature falls under 40°C.

- turn the button of the boiler thermostat into the maximum left position and thus stop the alarm
- wait until the control light of boiler overheating starts flickering;
- to start the regulator again, set up the required temperature of the boiler by the turning button of the thermostat;

If the temperature falls under 60 °C, the regulator comes into the burning up mode.

The options of boiler regulation ATTACK DP PROFI

The boiler enables regulation of room temperature as well as connecting the sensor of room temperature. If the room temperature is lower than the set up one, the control light near the button of thermostat shines on, which means that the boiler must keep the set up temperature. After reaching the required temperature the control light switches off, the circuit pump of central heating switches off and the boiler starts burning at the temperature of 65 °C.

For the purposes of timing regulation by room temperature it is possible to connect any optional programmable thermostat with the terminals for the sensor of room temperature. In this case the turning button of the room thermostat is not working.

If you do not wish to use the room thermostat nor the room sensor, the inlet terminals must be short-circuited. In this case only the boiler thermostat is working. The mixing valve with the 12V electric drive can be also connected to the boiler regulator. (This system is not delivered with the boiler).

Displaying faults:

The boiler regulator constantly verifies the functions of internal systems and of the sensor of boiler temperature. After finding out the defect, the regulator switches off the flue-gas fan, the central heating pump and at the same time the defect shows on the display. In the case of failure it is necessary to switch the boiler off by the main switch, to assure the continuous operation of the central heating pump by plugging into the mains, the fuel must be burnt thoroughly and the contract service company contacted.

If E1 fault appears on the display, it means the damage of the sensor of boiler temperature.

Permanent-heat operation

Permanent-heat operation of the boiler means that the fire can be kept during the night without heating up daily, **but only in winter**. This way of operation shortens the service life of the boiler. For permanent-heat operation prepare the boiler this way:

- Put a few bigger logs (4-6) on the glowing layer
- Get the mixing valve ready. After closing the valve the temperature of water rises to 80-90°C.
- Regulation flap controlled by the thermoregulator is closed automatically and the fan is switched off.

In the boiler prepared like this burning is kept for more than 12 hours. During permanent-heat operation the temperature of water in the boiler is **80 - 90°C**.

Cleaning the boiler

The boiler must be cleaned regularly and properly every 3-5 days because ash settled down in the feed hopper together with condensates and tar decreases output and service time of the boiler and isolates heat-exchanging surface. When there is too much ash, there is not enough space for burning out of fuel and a holder of ceramic jet as well as the whole boiler can be damaged. When cleaning the boiler, firstly turn the ventilator on, open the feeding door and wipe the ash through a slot into bottom space. Leave long unburnt logs in the feed hopper. Open the upper cleaning cover and clean inside with a brush. After opening the bottom cleaning hole take ash and soot out. After opening the bottom door clean the bottom space. Cleaning interval depends on the quality of wood (moisture content), heating intensity, draft of the flue and other circumstances. We recommend to clean the boiler once a week. **Do not pull the fireclay shaped piece out when cleaning.** Once a year minimally clean the moving wheel of the fan and check through the cleaning hole fouling of regulation of primary and secondary air flowing into feed chamber and clean with a screwdriver if necessary. It influences the output and quality of burning. **WARNING-** Regular and proper cleaning is important for permanent output and service life of the boiler. In case of insufficient cleaning the boiler can be damaged and **guarantee expires**.

Maintenance of heating system and boiler

At least once in fortnight check or fill up water in the heating system. If the boiler is out of operation during winter, water can be frost in the system. Therefore it is better to discharge water of the system or fill in with antifreeze agent. Otherwise discharge water only in critical situations and for the shortest time possible. **After heating season is finished, clean the boiler thoroughly**, replace damaged parts. Twice a year clean the moving wheel of the ventilator and its air chamber.

Changing the packing cord of the door

Dismantle the old packing cord with a screwdriver and clean the rabbet where it was placed. Take the new packing cord and put its beginning on the horizontal parts of the rabbet. With your hand or light knock of the hammer press it into the rabbet on the circumference of the door.

Adjustment of hinges

After some time the packing cord in the door gets deformed. To repack the door, it is necessary to change the position of the door. The position is changed by tightening the hinges of the door. Feeding door and bottom door are joined to the body with two hinges which are attached to the door with a long pin. If we want to change the adjustment of hinges, it is necessary to remove the pin and screw the hinge by turning it. Fit the door on and insert the pin into the hinge.

Exchange of the nozzle body

The body of nozzle is placed in the boiler body in a nozzle holder. In the lower part is the nozzle body sealed by boiler lute and in the upper part by a packing cord. When exchanging the nozzle, remove the packing cord from the rabbet by a screwdriver. Remove the nozzle body and clean the holder thoroughly from the tar and old lute. On the cleaned surface put the nozzle body insulation. Take the nozzle and put it on the holder so that the shorter wall was in the rear part of the boiler pushed to the stop. The lateral clearance must be the same. Take the new set of packing cords of the nozzles and with a light knock press it into the gap so as to be at the same level with the nozzle.

Setting of the boiler combustion

Setting of the boiler combustion is executed through the regulations flaps of the primary and secondary air. Boilers are from the production set for the most optimal burning conditions in term of the emissions and the temperature of exhaust gas. Setting can be executed only by producer or by trained serviceman.

The most optimal setting of the regulation flaps:

flap of the primary air:

DP25 totally closed /backstop/
 DP35 totally closed /backstop/
 DP45 totally closed /backstop/
 DP75 backstop +5 mm
 DP95 MIN closed position + shift of 1/3 of the range

flap of the secondary air:

DP25 backstop + 2 mm
 DP35 backstop+2 mm
 DP45 backstop +4 mm
 DP75 backstop +4 mm
 DP95 closed position MAX

Prescribed fuel

Specified fuel is dried cut wood and logs of 80-150mm diameter, with min. 12% and max. 20% moisture content and calorific value of 15 - 17MJkg⁻¹. It is also possible to burn big pieces of wooden waste with thick logs.

Note

Logs of bigger dimensions is necessary to cut into halves or quarters (because of the requirement of operation to nominal output). You can burn hard as well as soft wood. Wood must be dried! **Boiler output depends on the moisture content of wood. Output and function of the boiler is guaranteed for maximum moisture content of 20%.**

Calorific values of the most used kinds of wood

Drevo	Heat energy for 1kg		
	kcal	MJ	kWh
Spruce	3900	16,25	4,5
Pine	3800	15,80	4,4
Birch	3750	15,50	4,3
Oak	3600	15,10	4,2
Beech	3450	14,40	4,0

Location of the boiler:

For the installation it is necessary to keep safe distance of its surface from flammable materials by the degree of flammability and combustibility:

- materials B, C1 and C2 200mm
- materials C3 400mm
- materials with the degree not tested by STN 73 0853 400mm

Examples of building material divided by the degree of combustibility:

- A degree- noncombustible (bricks, blocks, ceramic linings, mortar, plaster)
- B degree- very difficult to ignite (heraklith, lignos, boards from bazalt felt)
- C1 degree - difficult to ignite (broadleaves- beech, oak; plywood, werzalit, hard paper)
- C2 degree - normal combustibility (coniferous species -wood, pine, spruce pulpboard, solodur)
- C3 degree - easily ignited (wood pulpboards, polyurethane, PVC, foam rubber, styrofoam)

Non-combustible board or protecting fire- screen (on the protected subject) must exceed the boiler dimensions at least 300mm. All the other subjects from combustible materials, which are situated near the boiler, have to be protected by non-combustible board or fire-screen, if it is impossible to keep the safe distance.

If the boiler is located on the floor from combustible materials, the floor must be covered with the non-combustible, thermal insulating pad exceeding the boiler planview at least 100mm on the side with feeding door and ash door . All the solid materials of "A" degree of combustibility can be used for thermal insulation.

When locating the boiler in the boiler room, there must be a free space of min. 1 meter in front of the boiler and of 0,5 m from the side walls and the rear. Above the boiler there must be a free space of min. 1 meter. This space is necessary for basic operation, maintenance and service of the boiler. Location of the boiler in the dwelling spaces (including halls) **is not allowed!** The cross of opening for air inlet to the boiler room is recommended to be at least 200cm² depending on the boiler output.

ATTENTION!

The objects from easily combustible materials cannot be placed on the boiler or the nearby in the distance shorter than the safe distance.

If there is a danger of fire or blow up during the work (p.e. the work with texture materials, sizing materials, etc.) the boiler must stand off operation.

Chimney

Attachment of the appliance to the flue must be always done with approval of authorized chimney-sweeping company. There must always be sufficient draft in the flue and flue gas must be draught to the atmosphere in all possible operation conditions. For the right operation of the boiler the independent flue must be dimensioned in the right way, **because combustion, output and service life of boiler depends on the draught**. The draught is influenced by the section of flue, height and roughness of the internal wall. Into the flue where the boiler is attached, no other appliance can be attached. **The flue diameter must not be smaller than the outlet on the boiler**. Flue draught must have the specified values. But it must not be too high so as not to decrease the efficiency of boiler and interrupt burning. If the draught is too strong, install a throttle valve between the flue and boiler.

Informative values of flue section:

For DP25, DP35, DP45		DP75, DP95	
20x20 cm	min. height 7 m	Ø25 cm	min. height 9 m
Ø20 cm	min. height 8 m	Ø30 cm	min. height 7 m
15x15 cm	min. height 11 m	25x25 cm	min. height 8 m
Ø16 cm	min. height 12 m		

Flue draught is specified in technical parameters.

Exhaust pipe

Exhaust pipe must have the outlet into the chimney. If the boiler can not be attached to the chimney directly, the exhaust pipe must be **as short as possible and not longer than 1m** without heating surface and it must rise to the flue. Exhaust pipes must be tight and resistant against flue gas leakage and cleanable from inside. Exhaust pipes must not come through home and utility spaces and the internal section of the exhaust pipe must not be narrowing to the flue. Using bents is not suitable.

Connecting the boiler to the mains net

The boiler is connected to the mains of 230 V, 50 Hz by a supply cord and plug. The voltage is of M type and when replaced, the same type must be used by a service organization. The appliance must be located in such a way that the plug was within the reach of the attendance.

(according to STN EN 60 335-1 + A11:1997).

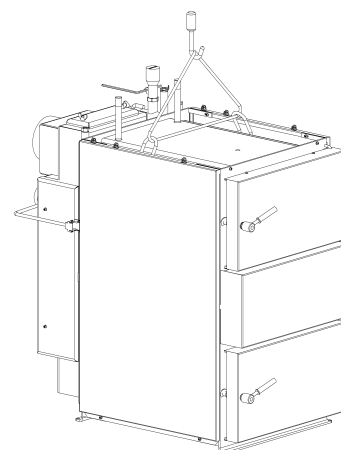
Installation of the boiler to the heating system

The ATTACK DP boiler only by a company certified for the installation and assembly of heating equipment. Before the installation there must be a project responding to valid regulations. Before installing the boiler to the old heating system, the installing company must sluice out the whole system to clean it. The heating system must be filled by the water of quality according to STN 07 7401:1991, especially the hardness of water cannot be more than 1 mmol/l and the ia Ca^{2+} cannot be more that 0,3 mmol/l. If these conditions are not kept, the warranty cannot be accepted.

Boiler transport

Producer enables better manipulation with the boiler by the eyes welded on the exchanger. They ensure better clamping of chain or rope that can be used to place the boiler as it is required. Before beginning of

transport, put down the upper covers. Place the boiler by using of eyes and rope to the required location and put the upper covers back. To ensure safe manipulation with the boiler, it is necessary to leave appropriate space. For manipulation, use only devices that are technically in conformity with technical norms and control them in adequate way, not to threaten safety of the people. Special machineries have to be attended by trained staff. Producer takes no responsibility for damages caused by incorrect manipulation and by breaking instructions given in this manual. Producer also takes no responsibility for bodily injuries caused by breaking safety instructions.



Attachment of regulation and control elements

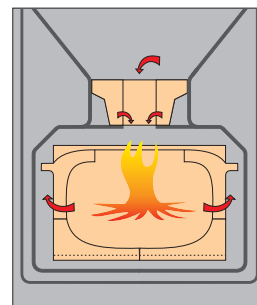
The boiler is delivered to a consumer equipped with basic regulation and control elements. Attachment of these elements is indicated on the chart of connection. We recommend to extend the regulation of boiler with other regulation elements which enable more comfortable and economic operation. Each pump in the system must be controlled by an individual thermostat so as **the boiler was not undercooled on the inlet of returnable water under 65°C**. Attachment of these elements can be suggested by a designer due to specific conditions of the heating system. Electric installation together with the proper equipment of the boiler must be done by a specialist in compliance with valid standards. The basic version of boiler (Standard) does not have a thermostat for pump built in.

Protection of boiler against corrosion

Suitable solution to this problem is mixing appliance Regumat ATTACK-OVENTROP, which enables separated boiler and heating circuit. This way you can prevent undercooling of boiler under 65°C and also decrease condensation of steam, acids and tars in the feed hopper.

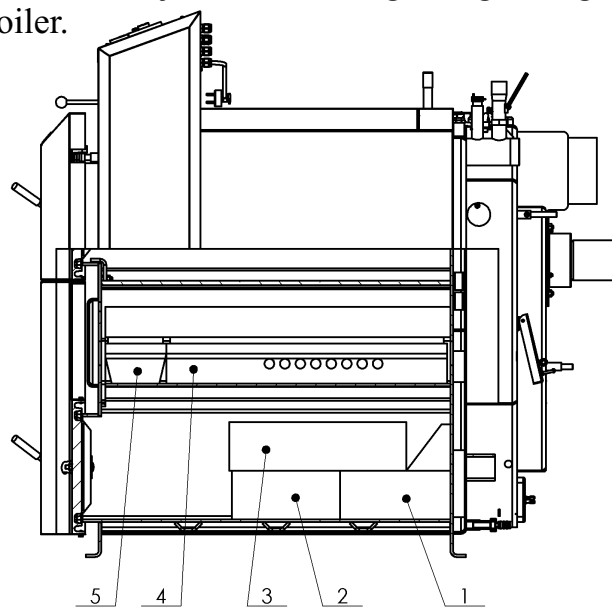
The mixing system Regumat keeps the constant temperature of return water flowing into the boiler on 65°C by setting the thermostatic head to 5 - 6 degree. Water in the boiler must be permanently of 80-90°C.

Section cross boiler - combustion chamber

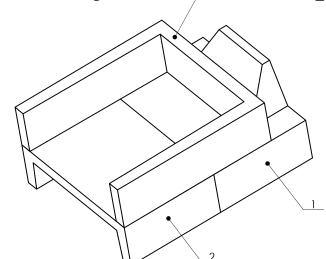


Installation and exchange of the heatproof shaped piece (version 1)

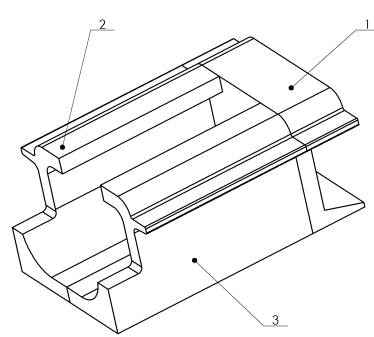
The back part of the ash pan pos. 1 insert into the lower chamber and push to stop to the back plate. Insert the front part of the ash pan pos. 2 and push to stop to the back part of the ash pan. Put the super-structure of the ash pan pos. 3 on the ash pan and push it to stop to the rear. The ash pan should be situated in the centre lime of the boiler at the front sight. When exchanging damaged jet pos. 4 or cube pos. 5 , follow the next instructions: Take out the jet and the cube / the cube in DP35 and DP 45 only/ after the elimination of the gaskets. Then insert the new jet eventually the cube and seal up with gasket backwards. If it is necessary, change also the gaskets. The jet is inserted regarding the sign on the lower part of the jet into the rear part of the boiler.



VERZIA 1

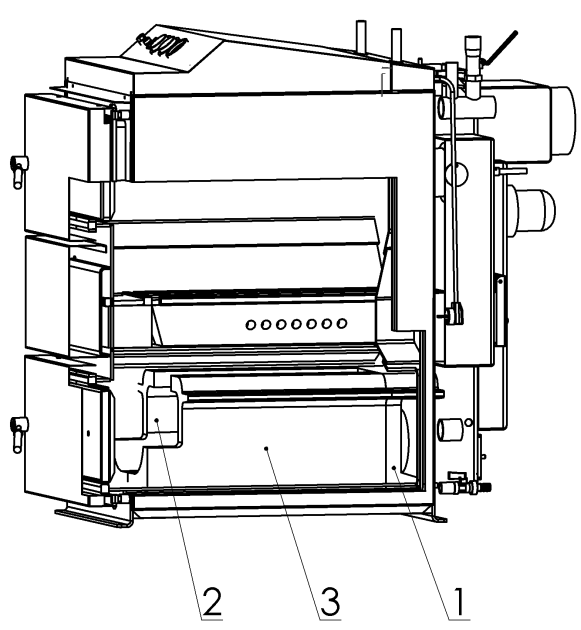


VERZIA 2

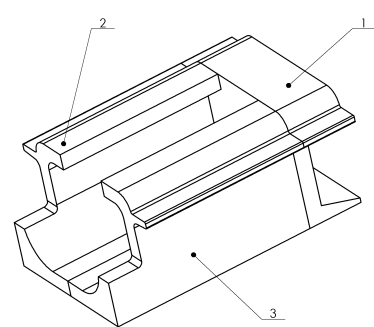


Installation and exchange of the fireproof concrete shaped peaces (version 2)

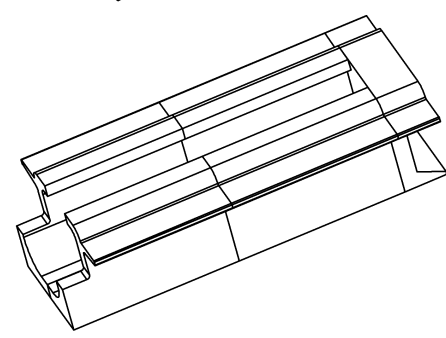
Put the rear part *pos.1* into the lower chamber, the intagliated part backwards. It is necessary to put it in horizontal position and then turn it. Place it to the centre of the chamber and push it to stop to the rear steel plate. Insert the left front part pos.2 to lower chamber, it is necessary to insert this part horizontally and then turn it. Use the same method for the right front part of the ash pan pos. 3. Push both the parts together to stop and then pull them to the rear part of the ash pan.



VERZIA DP75

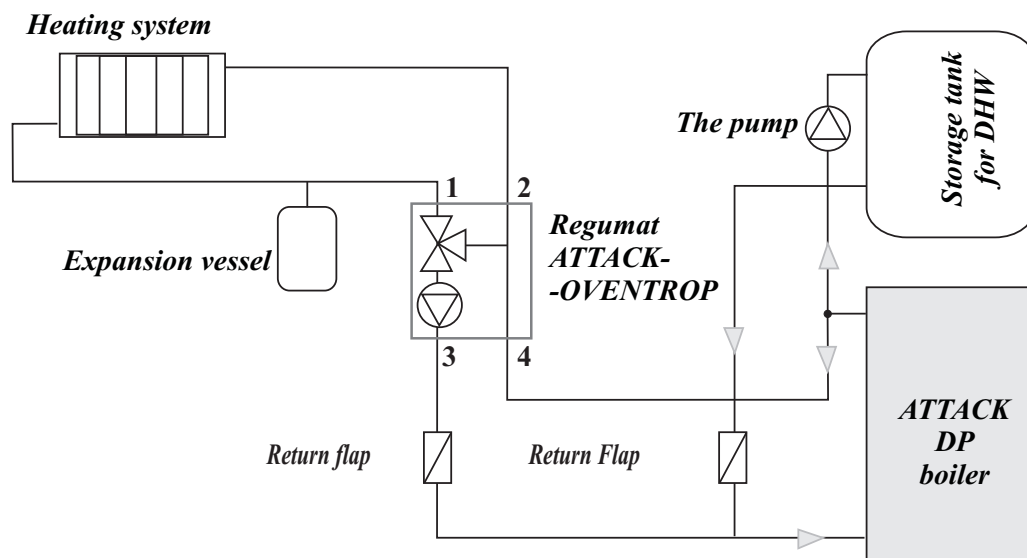


VERZIA DP95

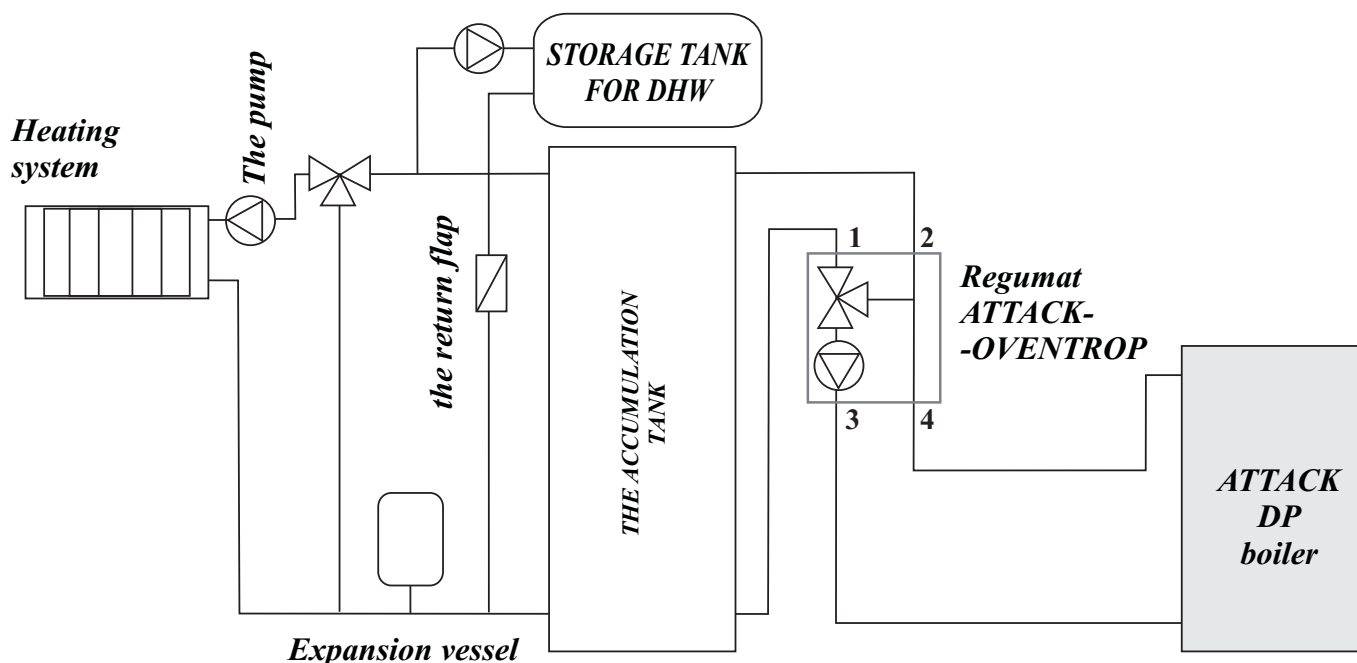


The variants of connections

The variant of connection with the regulating system REGUMAT ATTACK-OVENTROP



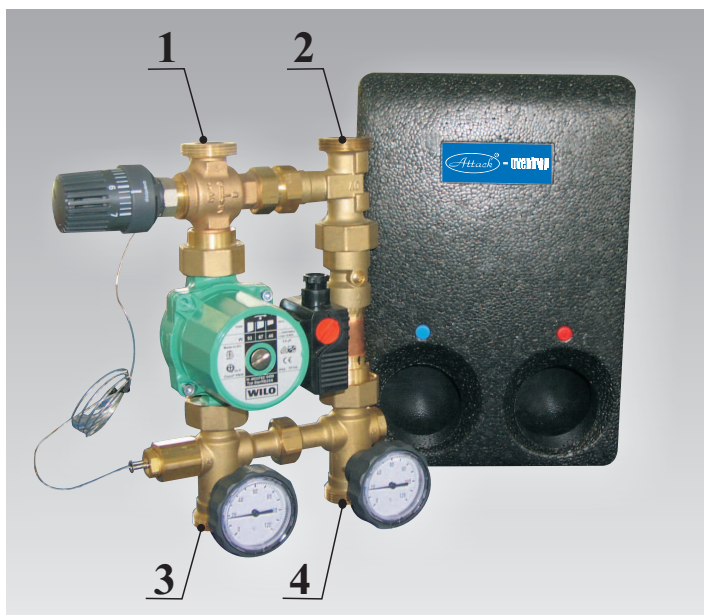
The variant of connection with the accumulation tank



The boiler has to be operated continuously in nominal output. In case of heat outlet when the boiler operates on a lower output than the nominal, it is necessary to attach the boiler to the accumulation tank of the volume of min. 460 litres (STN EN 303-5, paragraph 4.2.5).

The variants of protection and boiler durability increase

1. Regumat is used to increase the return heating water temperature returning into the boiler to more than 65°C. The return water temperature below 60°C causes increasing formation of condensate and the tar, and then decreasing of boiler durability.



Technical parameters:

Clarity **DN25**
 Max.pressure 10 bar
 Max.temperature 120°C
 Value kvs 3,9

Clarity **DN32**
 Max.pressure 10 bar
 Max.temperature 110°C
 Value kvs 0

Regumat consists of three-way mixing valve, circulation pump, closing cock, thermometers and insulation. The advantage of this solution consists in its compactness, simplicity of attendance and in guaranteed protection of the boiler thermal exchanger.

Regumat for the boiler

ATTACK DP25, DP35 (DN25)

ATTACK DP45, DP75, DP95 (DN32)

Ordering code

DPP25003

DPP25006

2. Connection with accumulation tank

Connection system consists in heating up of water in accumulation tanks and the warmth is gradually taking away from the tanks according to the request from the heating system. By the operation with several heating ups at full performance, accumulation tanks will be heated for the temperature of 90-100°C.

Heating with accumulation tanks in connection with the ATTACK DP boilers bring more advantages.

Among the main advantages belong enlargement of the boiler life and in the end result also lower consumption of fuel.

Recommended volumes of accumulation tanks according to boiler output:

DP25 - 1500 - 2000 l

DP35 - 2000 - 2500 l

DP45 - 2500 - 3000 l

DP75 - 4000 - 4500 l

DP95 – 5500 – 6000 l

The operation with the accumulation tanks

After making- fire phase, the boiler heats the water in the accumulation tank to 90 - 100°C by full output in 2 - 4 feedings. After next feeding the heat is taken from the accumulation tank only, through the three-way valve. The offtake period depends on the tank volume and external temperature. In heating season it can be 1 - 3 days (if the prescribed min. volume is respected). If it is not possible to use the prescribed volume of the tank, it is recommended to use at least one tank of the volume of 500l for start of operation and for afterburning of the boiler. Minimum accumulation tank volume is described in the tabel of technical parameters.

Standardly supplied accumulation tanks

Type of tank	Volume(l)	Diameter(mm)	Height(mm)	thermal changing surface(m ²)
AK500	500	650	1650	
AK800	800	790	1730	
AK1000	1000	790	2050	
AS500	500	650	1650	2,0
AS800	800	790	1730	2,4
AS1000	1000	790	2050	2,8

The tank insulation

The accumulation tanks ATTACK AK500, AK800, AK1000, AS500, AS800 and AS1000 are usually supplied with detachable insulation from soft polyurethane with white leatherette cover.

The advantages

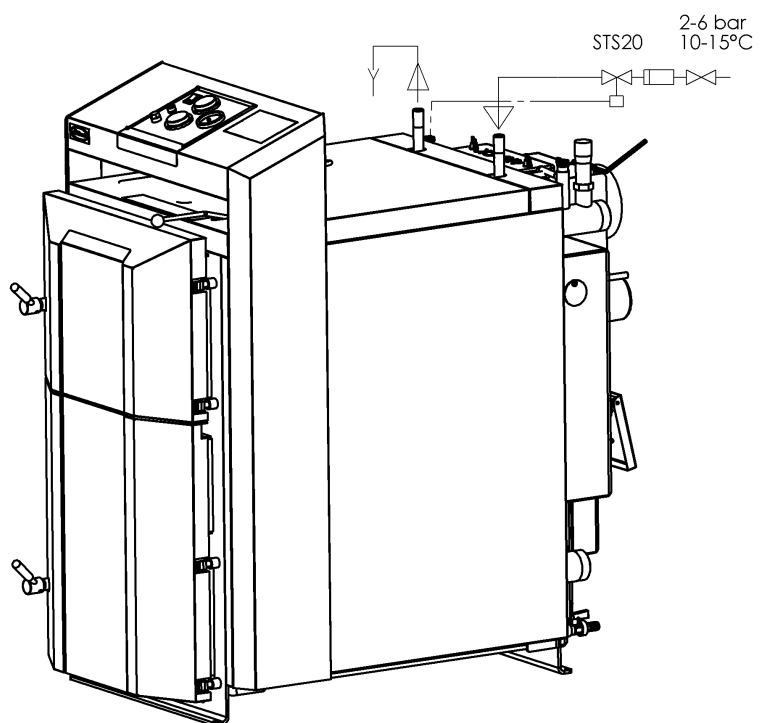
The boiler installation together with the accumulation tank offers several advantages:

- lower fuel consumption (up to 30%). The boiler works in full output to fuel burn-up when the optimal operation is observed
- High chimney and boiler durability and minimum formation of acids and condensate
- Possibility of combination with another heating sources (solar panels...)
- conjunction of boiler and floorheating
- comfortable and ecological heating

Protection of the boiler against overheating

CAUTION: Cooling circuit against overheating must not be used by STN EN 303-5 for other use than protection against overheating.

Valve on the cold water inlet to cooling circuit must be opened constantly and the heating circuit has to be connected with the functional cooling water feeder (p.e. the cold water from water supply) with the temperature of 10-15 °C and the pressure of 2-6bar. STS 20 valve which has a sensor placed in the rear part of the boiler protects the boiler against overheating. If the temperature of water in the boiler overcomes 95°C, the valve lets water into a cooling circuit which overtakes excessing heat. In case of boiler overheating and STS20 valve opening the constant off-take of heated water from heating circuit to waste piping has to be assured.



Unsecured cooling circulation in the cooling circuit when the STS20 valve is opened, can cause the boiler damage! In that case the garrantee cannot be applied.

Instructions for liquidation of the product after its lifetime

After the period of use the product has to be liquidated in a compliance with the local standards and norms.

Liquidation of wrapping

The wrapping has to be liquidated according to local standards and norms.

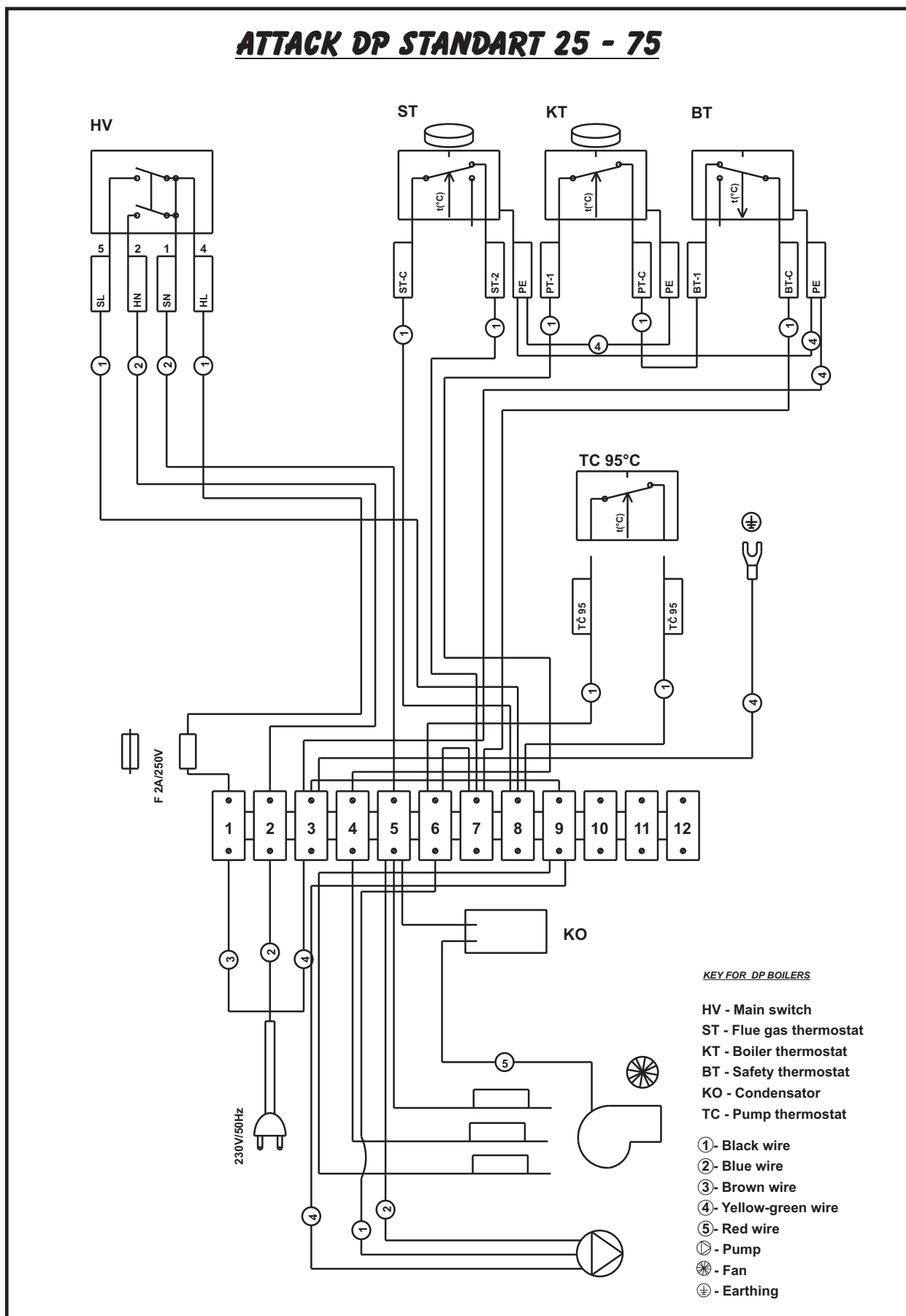
Possible defects and how to remedy them

Defect	Cause	Remedy
<u>Control light power net" is not lighting</u>	No voltage in the mains	Check
	Plug not plugged properly	Check
	Switch damaged Cord damaged	Replace Replace
<u>Boiler does not have demanded parameters</u>	Low water in the system	Refill
	Too big output of the pump	Regulate the flow and switching
	Boiler output is not dimensioned sufficiently for the system	Mistake in project
	Bad-quality fuel	Burn only dried wood and cut logs
	Fuel cut-off flap does not seal	Repair
	Weak chimney draft Strong chimney draft	New flue, wrong attachment Place a cut-off slide into exhaust pipe
<u>Door not sealed</u>	Long heating up or operation with open fuel cut-off slide	Strighten the vanes to 90°
	Deformed vanes of fan	Replace
	Boiler not cleaned properly	Clean up
	Air inlet into combustion chamber fouled	Clean up
	Damaged packing cord	Replace, set up the hinges
<u>Fan is not turning or is noisy</u>	Jet clogged	Do not burn small wood, bark
	Weak flue draft	Defect of flue
	When a non-returnable safety thermostat is used, it can be disconnected after overheating	Push thermostat button
<u>Fan is not turning or is noisy</u>	Moving wheel fouled	Clean the fan
	Defected condensator	Replace
	Defected motor	Replace
	Bad contact in the plug of the supply cable of motor	Check

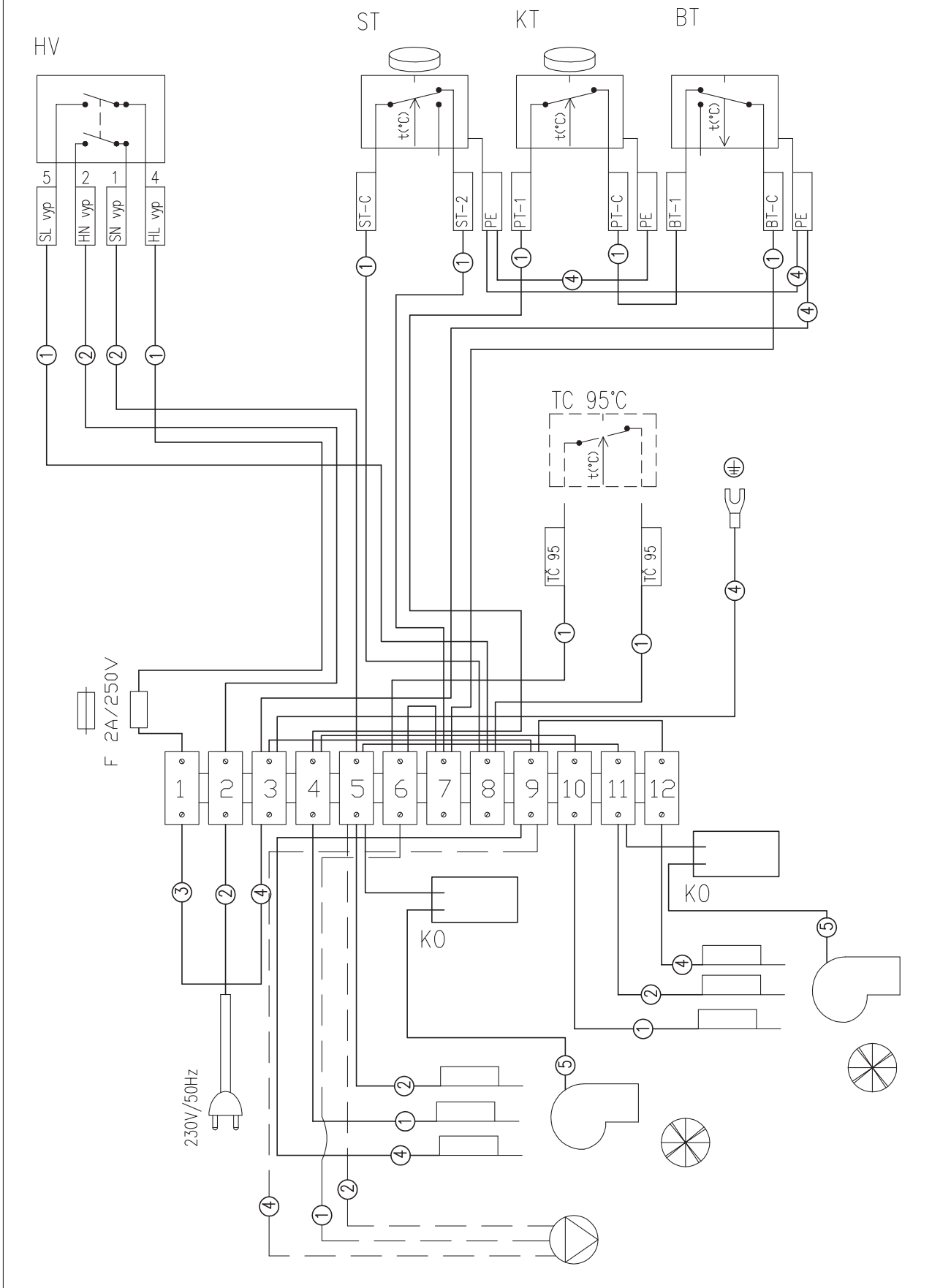
Scheme of dependency of resistance on the temperature of heating water by the thermal probe (DP PROFI)

Temperature °C	Resistance		
	MIN	kOhm	MAX
-55	951	980	1009
-50	1000	1030	1059
-40	1105	1135	1165
-30	1218	1247	1277
-20	1338	1367	1396
-10	1467	1495	1523
0	1603	1630	1656
10	1748	1772	1797
20	1901	1922	1944
25	1980	2000	2020
30	2057	2080	2102
40	2217	2245	2272
50	2383	2417	2451
60	2557	2597	2637
70	2737	2785	2832
80	2924	2980	3035
90	3118	3182	3246
100	3318	3392	3466
110	3523	3607	3691
120	3722	3817	3912
125	3815	3915	4016
130	3901	4008	4114
140	4049	4166	4283
150	4153	4280	4407

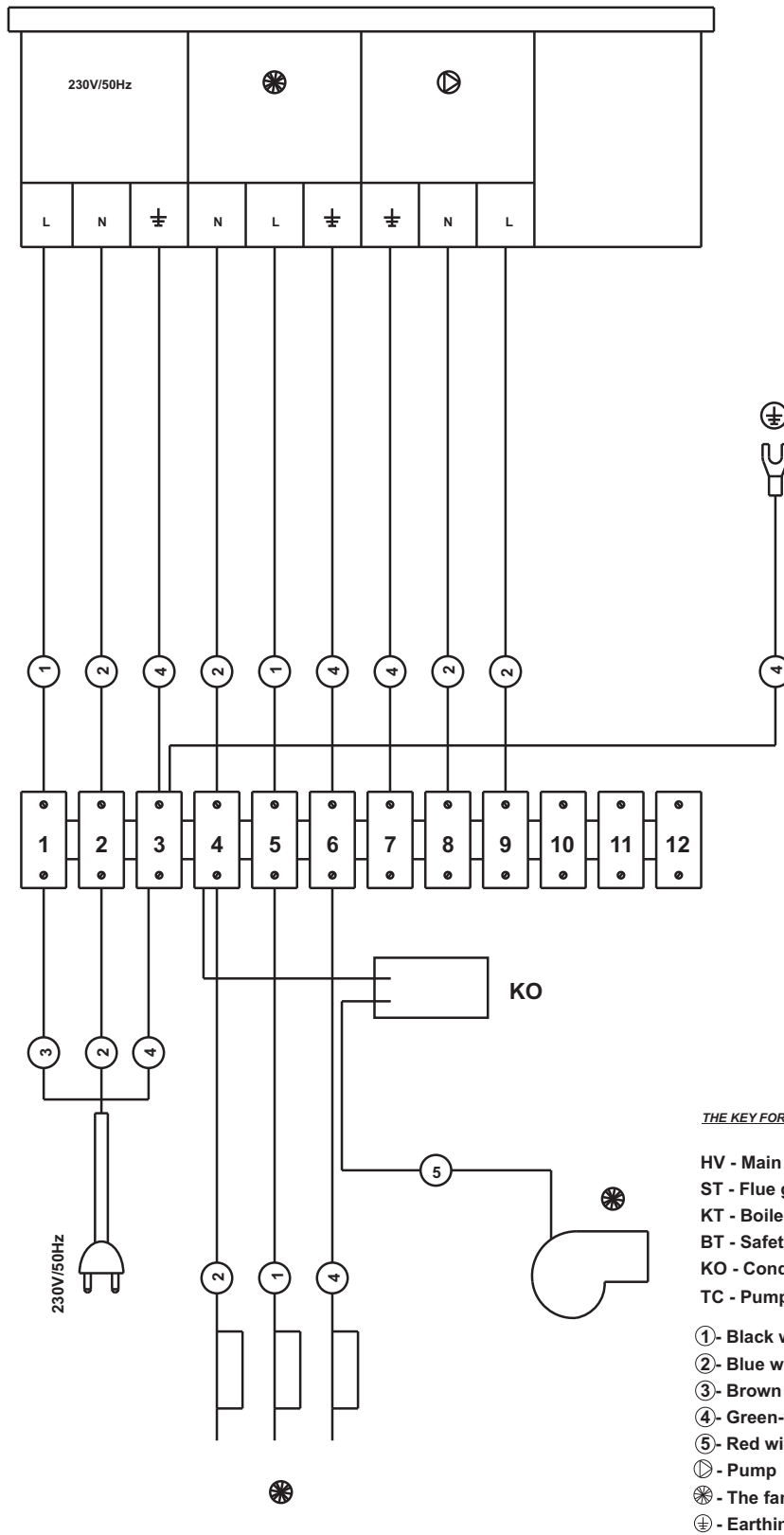
The schemes of electrical connection of ATTACK DP STANDARD, PROFI boilers



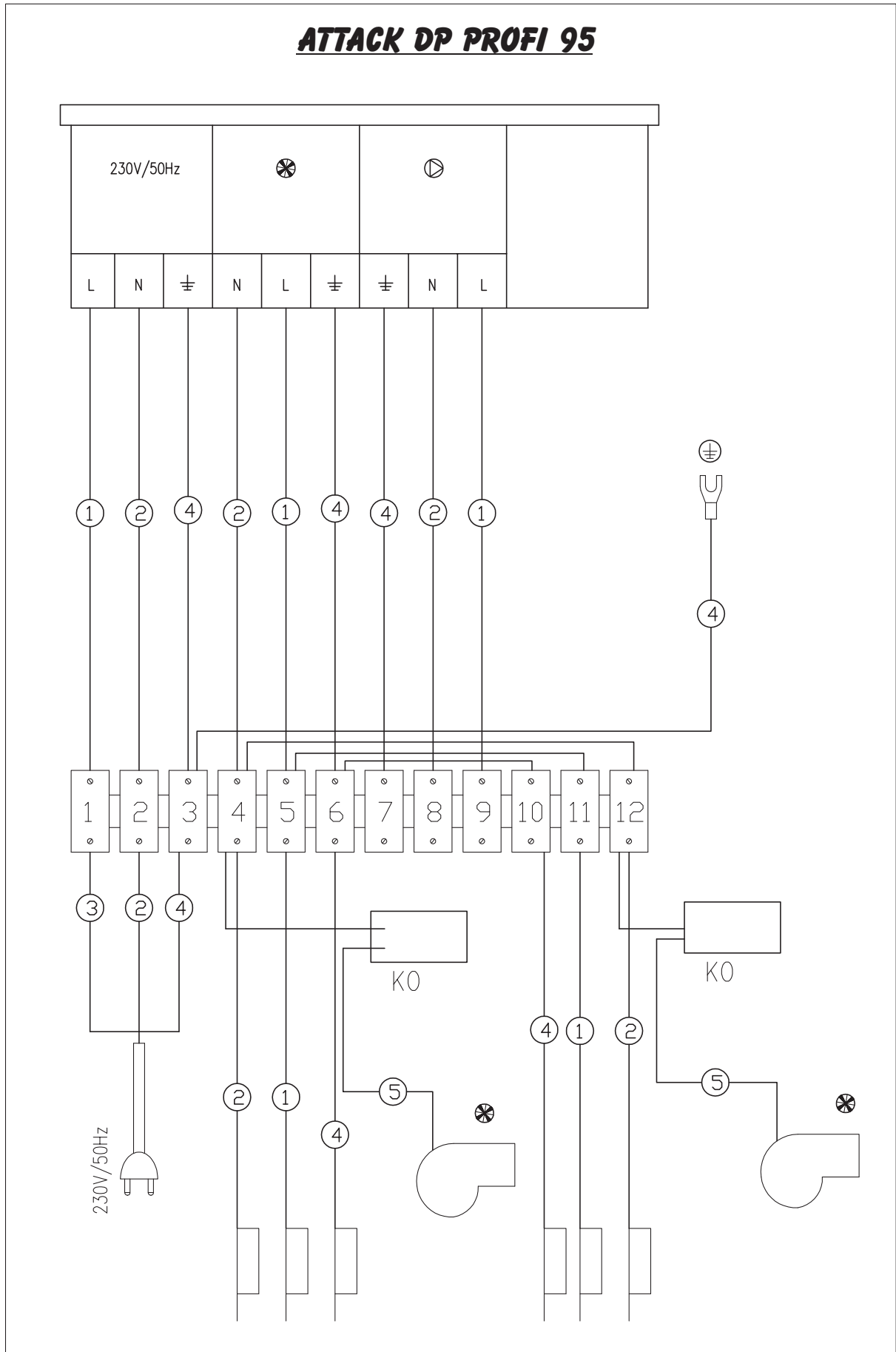
ATTACK DP STANDART 95



ATTACK DP PROFI 25 - 75



ATTACK DP PROFI 95



Notes:

This page serves for confirming service examinations and is kept by a customer !!!

RECORD ON PUTTING THE BOILER TO OPERATION

Production number.....

Date of putting to operation.....

Service organization:

.....

.Stamp, signature

.....

Data on the customer (Ilegible)

Name and surname:

.....

Street:

Post code, town:

.....

Tel. No.

Obligatory service examination after the 1st year of operation

Date :Stamp, signature of service organization :

Obligatory service examination after the 2nd year of operation

Date :Stamp, signature of service organization :

Obligatory service examination after the 3 rd year of operation

Date :Stamp, signature of service organization :

**DOCUMENT of testing and completeness
of ATTACK gasifying boiler**

Boiler production No.:

Boiler type:

The product is delivered with this certificate suits to technical standards and technical conditions.

The product was manufactured by its drawing design in requested quality and it is approved by National testing insitute SZÚ BRNO CE 1015.

Technical inspection

In Vrútky, date:

Stamp and signature of final inspection:

The country of delivery of the appliance :

SK	CZ	AT	CH	DK	ES	FI	FR	GB	GR	IE	IT	NL	NO	PT	DE
IS	LU	BE													

Producer:



**ATTACK, s.r.o.
Dielenská Kružná 5
038 61 Vrútky
SLOVAKIA**

**Tel: 00421 43 4003 101
Fax: 00421 43 4003 106
E-mail: kotle@attack.sk
export@attack.sk
http: www.attack.sk**



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ATTACK, s.r.o. producer reserves the right to change technical parameters and dimensions of boilers without previous warning.
Der Hersteller ATTACK, s.r.o. behält sich das Recht der technischen Veränderungen an Produkten ohne eine vorige Warnung.
Изготовитель ATTACK оставляет за собой право изменить технические параметры и размеры котла без предыдущего предупреждения.
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Productor ATTACK, s.r.o. reserva el derecho de cambios técnicos sin advertencia anterior.