

**SOLID FUEL FIRED
DOMESTIC HEATING
BOILER
WITH AUTOMATIC FUEL
FEEDING SYSTEM
USER
MANUAL**



SELECTING THE INSTALLATION PLACE

The boiler should be installed into a place where enough fresh air can be supplied for good burning.

The boiler should be installed in a dry place.

The boiler should be protected from direct sunlight, rain, windy environment.

For easy service and maintenance, please provide enough space around boiler.

CHIMNEY CONNECTION

The distance between boiler and chimney should be min. 60 cm and max. 200 cm.

The diameter of smokestack between boiler and chimney should be the same size of the smokestack diameter of smokestack connection of the boiler.

For chimney connection, possible minimum length of smokestack and elbow should be used.

While connecting the smokestack to chimney please be sure that connection does not reduce the diameter of the chimney.

Chimney connection should be removable whenever needed.

Please be sure that there is no leakage at the connections.

The angle of dip of the smokestack from boiler to chimney should be positive value.

The chimney of the boiler should be only for the boiler

MODEL	MİN. CHIMNEY DIMENSION	MAX CHIMNEY DIMENSION	MİN CHIMNEY HEIGHT
PDBS-A 25–34	15x15 cm	20x20 cm	6 m
PDBS-A 45–60	20x20 cm	25x25 cm	9 m
PDBS-A 80–100	25x25 cm	30x30 cm	12 m
PDBS-A 130–160	30x30 cm	35x35 cm	18 m

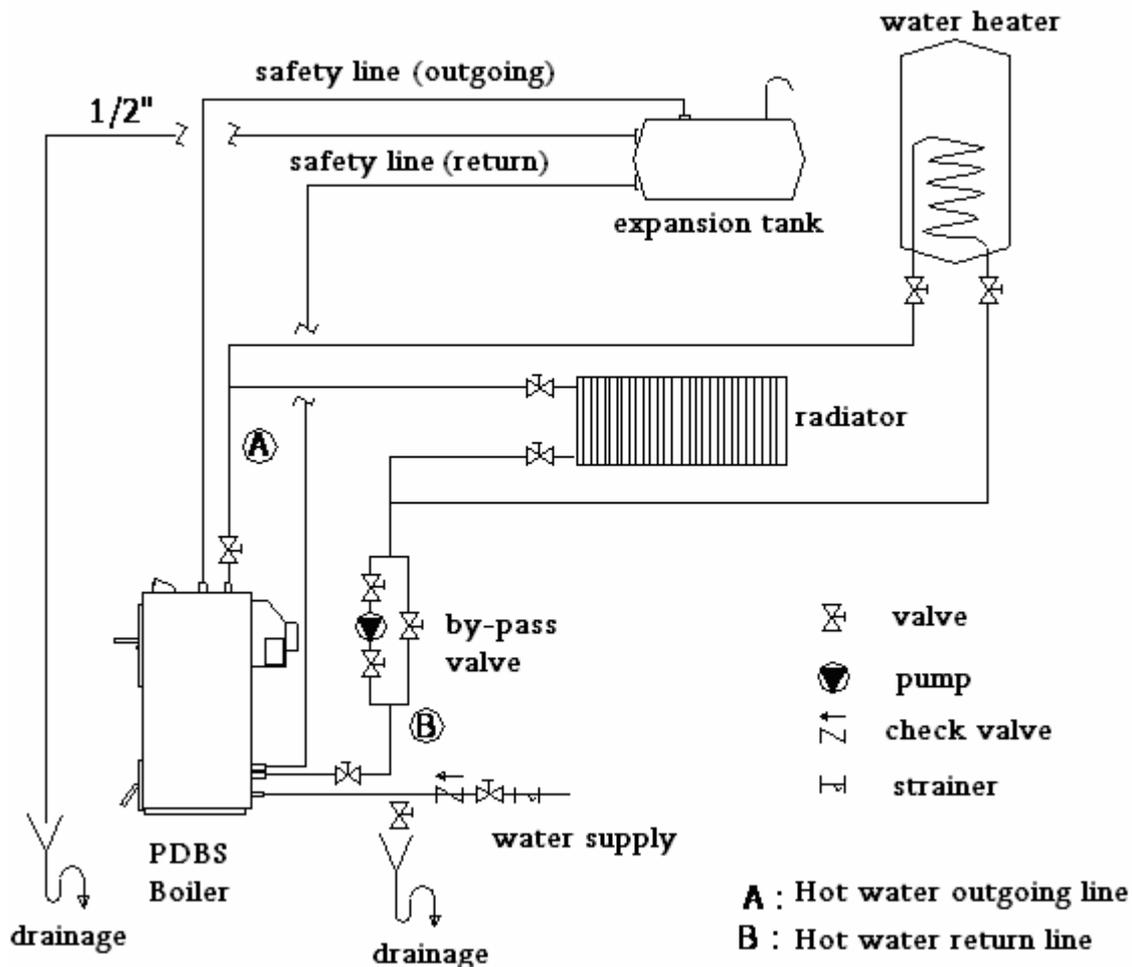
SYSTEM DETAILS:

In all PDBS-A boiler systems, open type expansion tank should be used as shown in drawing 1. .In no case, close type expansion tank should not be used.

For safety of the system it is strongly recommended that the circulation pump should be on the return water side.

Open type expansion tank should be installed at the top of the system and there should be no valves on the safety pipes between boiler and expansion tank. Safety pipes should reach to expansion tank by the shortest length and the diameter should be 1".

Make sure to install a by-pass valve parallel to the pump. This by-pass valve should be opened in case any power loose during the operation of the boiler. Otherwise the boiler water temperature will exceed 90°C which may damage the boiler.



Drawing 1

For unexpected system pressure increase it is highly recommended to use 2,5 bar safety valve in the system.

EXPANSION TANK

Please find below a simple method to calculate the expansion tank volume..

$$V_g = 0,0025 * Q$$

V_g : Expansion tank water volume (lt)

Q : Boiler capacity (kcal/h)

SAMPLE:

For UGS 200

$$V_g = 0,0025 * 200000$$

$$V_g = 500 \text{ lt.}$$

INTRODUCING THE BOLER

PDBS-A solid fuel boiler with automatic fuel feeding systems are combined boilers. The advantage of PDBS-A boilers other than other boilers is that big size fuels can be loaded as well as small size fuels. (It is very important that the fuels have bigger size than 25 mm should be loaded from the front door of the boiler not through the bunker of the boiler. In other words, fuels have bigger size than 25 mm should not be loaded into the bunker)

Main sections :

- 1. Bunker**
- 2. Feeding Screw**
- 3. Burning pot**
- 4. Control panel**

1.BUNKER:

Bunker is the part where the fuel of the boiler is stored. It has a screen wire on it in order to prevent to load any unwanted materials in to the bunker. The screen wire I designed to block the fuels having sizes bigger than 25 mm. The fuel that is loaded in to the bunker should be dry. Wet fuel reduces the efficiency and could cause damages on the feeding screw. If the bunker is left empty, flues gas may come out from the bunker and feeding screw may be damaged. It is very important not to remove the screen wire on the bunker for the safety of the boiler.

2. FEEDING SCREW

Feeding screw is the part which carries the fuel from the bunker to the boiler.

3. BURNING POT

Burning pot is the part where the fuel is burning.

During the burning process, the height of the fuel in the pot should be about 10 cm although the feeding times and waiting times of the fuel is given. This should be arranged by observing the first ignition. Please see part "To set up the ignition"

Do not touch the middle part of the burning pot.

The fuel powder that is collected under the pot should be removed by opening the lower part of the pot for at least two times during the season.

4. CONTROL PANEL:

Control panel is the electronic part of the system which makes the boiler to operate automatically.

OPERATING THE BOILER

The time setting should be done (fuel feeding time & fuel waiting time) according to the times given at Table 1 by using the time setting buttons on the control panel.

While setting the times according the Table 1 it is important to catch the height of the fuel in the burning pot between 10 and 15 cm constantly by observing the burning process.

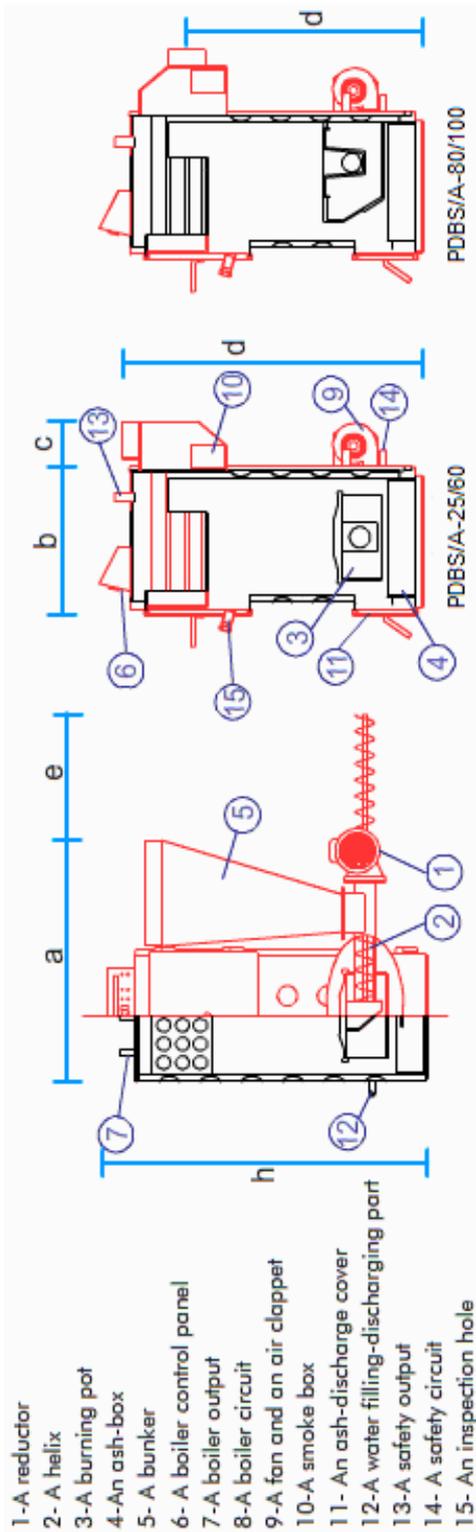
FIRST IGNITION

1. Before starting the ignition, please be sure to fill the system with water.
2. Turn on the "ON-OFF" button to "I" position on the control panel
3. Set up the boiler water temperature to 70°C by using the temperature setting buttons on the control panel. Set up the fuel feeding and waiting times according to Table 1 by using the feeding and waiting time setting buttons.
4. While the burning pot is empty put some wooden pieces in to the pot and burn it. Then press the "Fan" button to start the fan. If the fan is operating the led near the button will shine.
5. After the wooden pieces turns to ember please push the "manual feeding" button until we have a 5 cm height of the fuel in the pot.
6. After the pre-fed fuel start burning, please push the "reduction" for starting the automatic feeding system. If the led near the button is bright than the system is working automatically.
7. Any problem that will occur during the operation of the boiler (Having no fuel in the bunker, fuel feeding problem) will be warned by a warning sound. You will also see a message at the display. By pushing the warning button after repairing the system you will reset the faulty warning.
8. During the first operation of the boiler the height of the fuel in the pot should be observed time to time. If the height is higher than 10-15 cm please increase the "waiting time". If the height is lower than 10-15 cm, please reduce the "waiting time" by using the related buttons on the control panel.
9. The circulating pump will operate when the water temperature reaches up to 40 °C. If the water temperature is below 30 °C, the system will give a warning that the fuel is finished, please than add fuel in to the bunker.
10. Please do not open the front door of the boiler while the fan is operating.

FUEL FEEDING/WAITING TIMES

Ø80 helezon		25.000 kcal/h	34.000 kcal/h	45.000 kcal/h	60.000 kcal/h	100.000 kcal/h
6000 kcal/kg coal type1	Waiting sec. Feeding sec.	204 3	199 4	187 5	167 6	163 10
4000 kcal/kg coal type2	Waiting sec. Feeding sec.	225 5	164 5	197 8	182 10	158 15
3500 kcal/kg Olive pomace	Waiting sec. Feeding sec.	197 5	143 5	107 5	158 10	91 10
8000 kcal/kg coal (anthracite)	Waiting sec. Feeding sec.	272 2	265 3	249 4	223 5	
8000 kcal/kg wood	Waiting sec. Feeding sec.	272 2	265 3	249 4	223 5	
7300 kcal/kg coal (litantrace)	Waiting sec. Feeding sec.	248 2	242 3	228 4	203 5	
6200 kcal/kg corn	Waiting sec. Feeding sec.	210 3	206 4	193 5	173 6	
6120 kcal/kg biofuel	Waiting sec. Feeding sec.	208 3	203 4	191 5	170 6	
4500 kcal/kg lignite	Waiting sec. Feeding sec.	153 4	249 5	140 6	125 7	
4400 kcal/kg pellets	Waiting sec. Feeding sec.	149 4	146 5	137 6	122 7	
4300 kcal/kg walnut shells	Waiting sec. Feeding sec.	146 4	143 5	134 6	120 7	
4100 kcal/kg crushed olive stone	Waiting sec. Feeding sec.	139 4	139 4	128 5	114 6	
4000 kcal/kg pressed strain	Waiting sec. Feeding sec.	136 5	133 6	125 7	111 8	
4000 kcal/kg peat	Waiting sec. Feeding sec.	136 5	133 6	125 7	111 8	
3490 kcal/kg dry wood(15%)	Waiting sec. Feeding sec.	118 6	116 7	109 8	97 9	
2300 kcal/kg moist wood(40%)	Waiting sec. Feeding sec.	78 6	76 7	72 8	64 9	

Technical Specifications



TYPE	CAPACITY kcal/h	DIMENSIONS (mm)						BOILER OUTPUT RETURN	SAFETY OUTPUT RETURN	BOILER LOADING DISCHARGING	SMOKESTACK DIAMETER (MM.)	WATER VOLUME (L.T.)	COAL CAPACITY (KG.)	WEIGHT (KG.)
		a	b	c	d	e	h							
PDBS/A - 25	25,000	950	570	180	1150	580	1200	1"	1/2"	130	70	75	300	
PDBS/A - 34	34,000	1100	570	180	1250	660	1350	1 1/4"	1/2"	130	80	80	320	
PDBS/A - 45	45,000	1100	650	180	1300	660	1450	1 1/4"	1/2"	160	100	95	380	
PDBS/A - 60	60,000	1100	800	180	1300	660	1450	1 1/2"	1/2"	180	130	100	420	
PDBS/A - 80	80,000	1150	850	180	1100	660	1450	1 1/2"	1/2"	220	200	110	510	
PDBS/A - 100	100,000	1150	1000	180	1100	700	1500	1 1/2"	1/2"	220	240	120	580	

TROUBLE SHOOTING

PROBLEM	POSSIBLE REASONS	SOLUTION
The leds on the control panel do not light.	a. Boiler did not connected to power b. Fuses are down	a. 220 V power supply should be connected. b. Turn on the automatic fuse behind the control panel.
Fuel finished led is lightning or see the Er1 code on the display.	There is no fuel in the bunker.	Add fuel into the bunker.
Er3 error code on the display	Heat sensor is not installed or not operating	Call the service
Fan is not operating	a. Fuse might be down. b. Fuel is finished	a. Turn on the automatic fuse behind the control panel. b. Add fuel into the bunker. Re-ignite again
Circulation pump is not operating	Water temperature is below 40C.	Wait for the temperature to increase. If it is not operating even the temperature exceeds 40C open the by-pass valve system and call the service.
Reduction gear is not operating. Er2 code on the display.	a. Automatic fuse behind the control panel turned off.. b. Reduction motor power cable are loosen. c. The feeding screw is blocked.	a. Turn on the automatic fuse behind the control panel. b. Open the panel beside the boiler and check the motor connections c. Clean the bearing of the feeding screw. d. If the problem continues call the service.
Er4 code on the display.	Boiler water temperature is very high (Over 85 °C).	Turn of the alarm. Stop fuel feeding and fan and operate circulation pump for cooling the water.
The fuel feeding system is not operating	Bunker – Feeding screw connection part is dirty.	Remove the fuel in the bunker and clean the bunker. Fill the bunker and re-ignite again Note: Do not use wet fuel.
Flue gas is coming form the bunker.	a. Flue draught is not enough b. The holes of the burning pot are choked up c. The fuel height in the pot is very low.	a. Check the chimney. b. Clean the holes on the pot and itself.
The boiler water do not reach to the set up temperature	a. Flue gas pipe are choked up. b. The holes in the burning pot is choked up. c. The air inlet of the burning pot is choked up.	a. Clean the flue gas pipes b. . Clean the holes on the pot and itself. c. Clean the air inlet of the burning pot d. If the problem continues call the service.