



INSTALLATION AND MAINTENANCE OF  
**THE ULMA ECO BOILER 20KW**



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ULMA AB reserves the right to changes in details and specifications without a preceding message.

## Information

- Keep this manual so that it is accessible to professionals and future needs.
- Read this manual carefully before starting up the boiler.
- The efficiency of the boiler is calculated after the maximum amount pellets that can be fed and combusted in the burner during 1 hour (intended for combustion of normal wood pellets as an average of the fuel specification).
- Follow the manual and its instructions carefully do recommended management and maintenance.

### **Registration to the local building authority in your municipality**

N.B.: At every change of heating system, the local building authority of the municipality has to be contacted and a so called "Construction Registration" is made.

### **Inspection**

Heating plants installed today shall be inspected and approved by authorized inspector like the local certified chimney-sweeper. The local building authority in the municipality can inform you how this could work.

### **Important at installation**

- Make sure expansion and cold water connection are correctly mounted, if you are unsure you may control this by looking down in the connection pipes. The long pipe reaching down towards the bottom of the boiler is cold water and the short expansion connection. The pipe connections are placed behind the connection of the shunt valve. (See connection schedule on page 5-6.)
- Make sure that boiler and heating system is water filled and de-aerated before starting the combustion.
- Installation shall be made by certified ventilation and sanitation engineer and electrician.
- At operation with burner: Set the thermostat so that the immersion heater will be connected at unintentional interruptions in operation of the burner.
- **N.B.!** The burner shall be inserted to maximum in the boiler. Control this carefully in the future also if the burner is disconnected for example cleaning and service.
- At adjustment of the burner draw limiter shall be adjusted after the draft condition of the chimney.
- The boiler shall be connected electrically via an all-pole breaker with at least 3 mm length of break.
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### **Sweeping**

Chimney sweeping made in accordance with the fire-protection law shall be made frequently during the year. This is made by your local chimney sweeper. Regular cleaning of heating surface of the boiler shall be made in a way so that good operating economy is obtained. Prepare sweeping by turning off the boiler at least a couple of hours before cleaning to minimize the amount of ignited ash.

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See to that the power to the boiler is turned off before the cap over the burner is removed and dismount cabling to the burner when the burner is removed from the boiler.

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ULMA AB recommends subscription of annual maintenance agreement.  
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## ■ Function & description

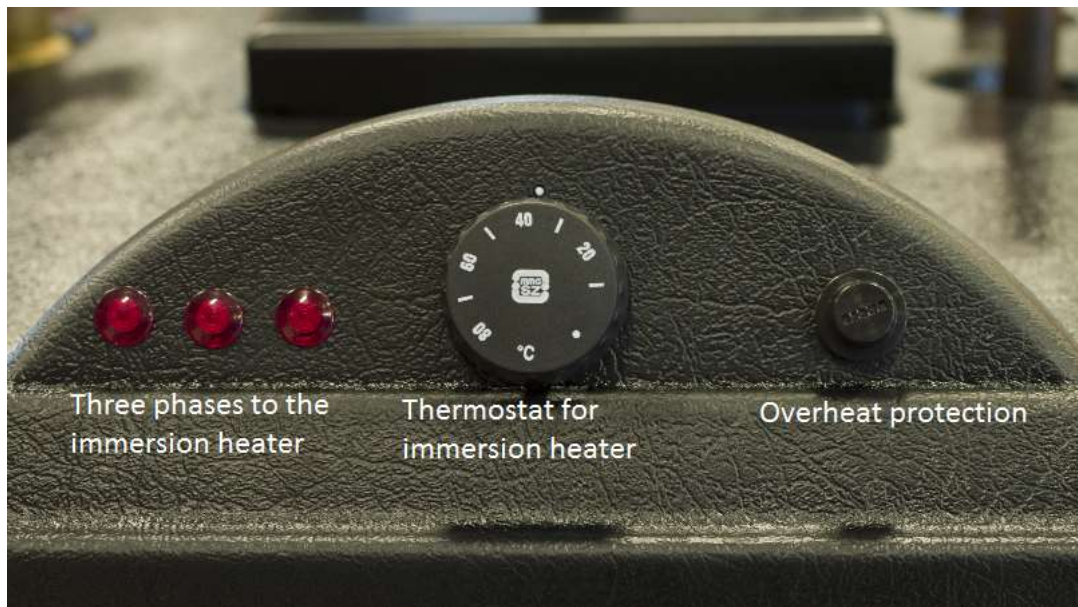
### ULMA ECO BOILER

Belongs to a new generation of pellet boiler that is specially built only for pellet combustion which means that it has a standing convection system and special design of the hearth to catch the smallest soot particles on the convection surfaces and longest possible flue-gas way to increase the efficiency.

The boiler consists of a combustion chamber with a gas canal surrounded by an outer shell that holds 200 liter of water. At combustion of pellets the heat from the burner goes straight to the boiler water that transports the heat to the hot water via a hot water coil which is 11 meters long. The boiler is mainly meant for combustion of pellets but is also provided with a 6 kW immersion heater.

### Sweeping

Regular cleaning of heating surfaces is made from the top by taking off the lid placed in the center on the top of the boiler. The boiler is provided with an extra large ash box in the bottom part to facilitate the maintenance. The ash box is emptied as required approx.. 1500 Kg pellet. Normally 3-4 times per year is enough for an average house. Control of the ash amount in the box should be made at least one time per month. The ash box holds about 48 L of ash.



### Thermostat

Always set the thermostat at a lower temperature than the burner.

### Shunting automaticity

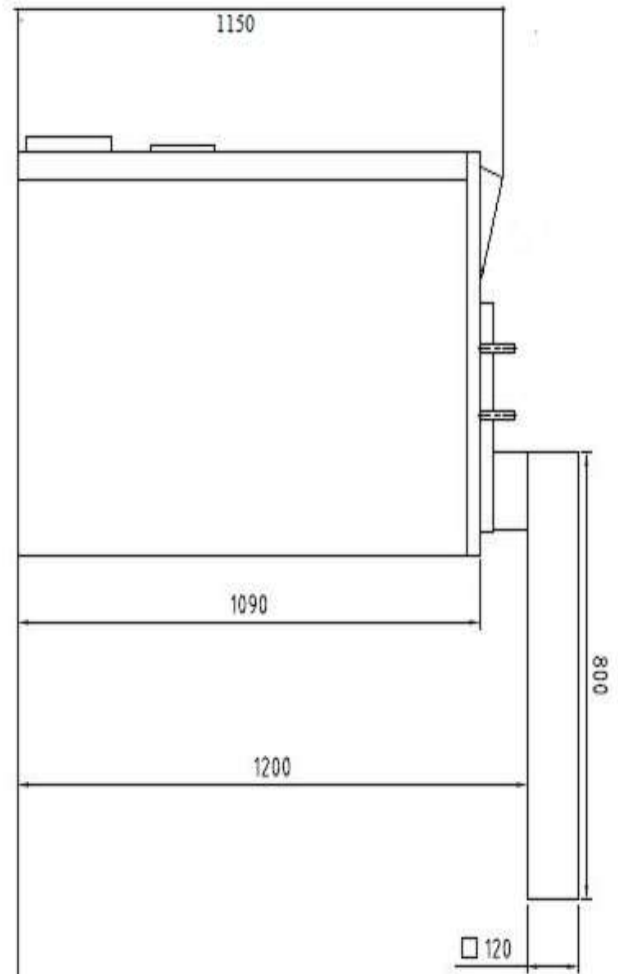
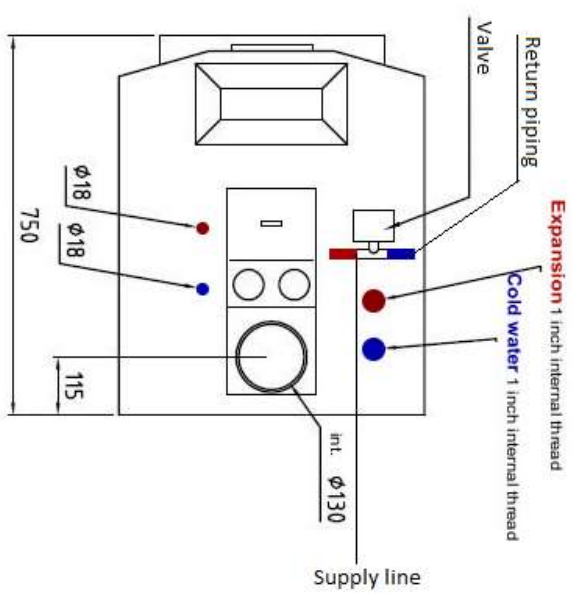
The heat to the radiator system goes via a shunt valve. In the shunt valve the boiler water is blended with the return water so that the right temperature is obtained in the radiator system in relation to the indoor temperature.

### Small dimensions facilitate placing

The dimensions of the ULMA ECO BOILER make it very easy to install. The small smooth dimensions make it fit in boiler rooms that normally would be considered tight.

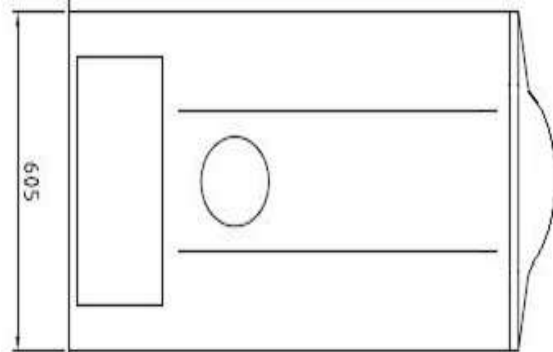
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## Dimension description



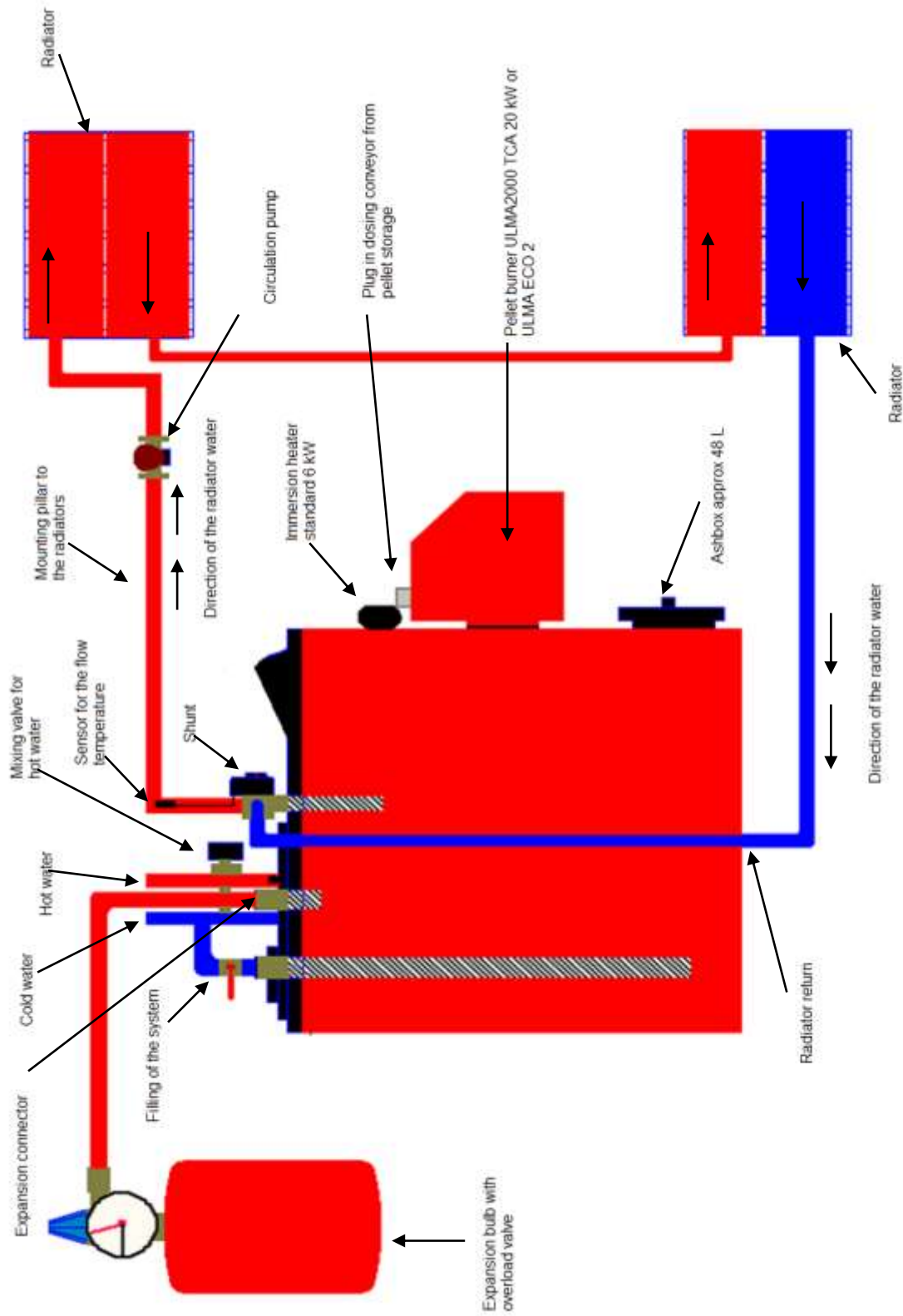
## Technical data

Max working pressure	1,5 bar
Flue pipe	120 x 120 mm
Water volume	200 L
My chimney area	80 cm <sup>2</sup>
Connection hole (burner)	Ø 154mm
Dept of hearth	350mm
Hight of hearth	350 mm
Power connection	400 VAC
Warranty	5 YEARS
My under pressure	1,5 / vp
Efficiency	Approx. 90- 92%
Max effect	20kW
Hot water coil	11m
Immersion heater	6kW
Ash box	Approx. 48 liters
Weight	Approx. 250 Kg



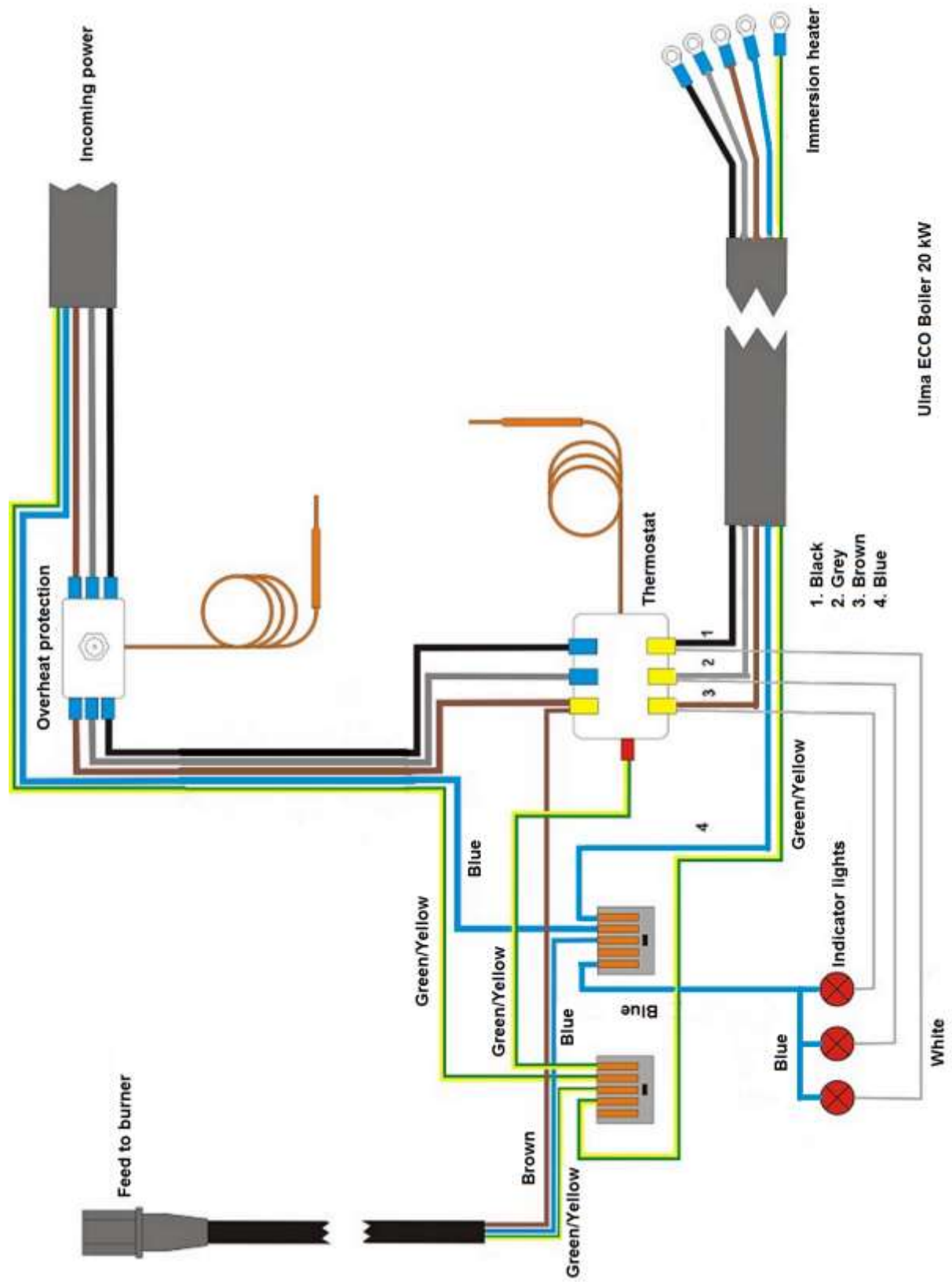
**$L_{ptA}$  [dB] (ref. 20  $\mu$ Pa) □ 60 dBA**

**Building services installations schedule for ULMA ECO 20kW pellet boiler**



Ulma AB recommends that the building services installation is performed after this schedule.

# Wiring diagram



Ulma ECO Boiler 20 kW

## **Installation**

### **Radiator system and expansion tank**

Filling of the system shall be realized with all valves in open position and the circulation pump shall be turned off. The system is carefully ventilated during the filling. When the unit has been running for a couple of days ventilation and repeated filling should be made.

**Note!** See special instructions for filling of water.

The volume of the expansion tank is chosen in following way:

Open system: 5 % of the water volume in the heating system.

Closed system: The volume of the tank should be made from directions from manufacturer of closed tanks.

In the table below examples of suitable expansion tanks for closed systems are shown.

Open system with 300 litres water volume requires at least 15 litres expansion tank.

\* System volume = boiler volume + pipe volume + radiator volume

System volume (liter)*	Opening pressure (bar)	Oppression (bar)	Tank volume (liter) 70°C - 90°C
Approx. 300	1,5	0,5	18
Approx. 300	1,5	1,0	35

### **Firing with pellets and electricity at the same time**

You can fire with both pellets and electricity at the same time. At dimensioning of the expansion pipe or safety valve this must be considered.

Dimensions according to BFS 1988:18, 3:416.

### **Planning- and installation work**

The planning – and installation work of the unit shall be made in a professional way with special attention of common and local regulations and ordinances. .

The operation pressure is maximum 1,5 bar. Before the unit is put into work, and always at the beginning of the combustion season following inspections should be made:

1. that the heating system is filled with water and ventilated
2. that the circulation pump is working
3. that the valves of the system are open
4. that potential control – and safety automatic system is working
5. that the chimney has required draft and that the fresh air ventilation is open

### **Safety valve**

If a closed expansion tank is installed to the radiator system, the safety valve should be controlled 3-4 times per year. Activate the valve by pressing or turning the control and then make sure that water is entering into the waste pipe that goes from valve to drainage.

### **Maximal hot water capacity**

If you have a higher setting of the boiler temperature, the better hot water capacity you get (recommended setting = 85°C).

### **Filling of water**

Before connecting of heat, the heating system has to be filled with water.

The filling of the systems is made in following way:

1. Open all stop taps, even the shunt valve. The pump shall be turned off.
- 2 Filling of water to boiler and radiator. Deaeration is made on the radiators.
- 3 Delivery of cold water to the hot water coil. This is done by opening the stop tap on the cold water fittings and ventilation is made by tapping out from a hot water tap.
- 4 When the system is completely filled the circulation pump can be started and heating begin.
- 5 When the water inside the boiler has reached set operating temperature, the pump should be turned off and another airing be made on the radiators. This should be repeated several times. Keep in mind that there is a lot of air inside the tap water. The volume can go up to approx. 8-10% why deaeration can take time – especially at bigger volumes. Closed systems shall be filled so that the manometer stands at the desired system pressure, distance from the manometer to the highest located radiator in meter x 0,1 which gives the system pressure in bar. Set the red pointers of the manometer at the same value as the big pointer. Preferred hot water temperature is set on the mixing fittings.

## Boiler room & chimney

The construction regulations of the National Housing Board include detailed norms for the design of the boiler room, position of boilers in boiler rooms, performance of gas flue etc. *The boiler room has to have a supply air valve with an at least 2 dm<sup>2</sup> area, this may not be closed during the time when the boiler is operating. Exhaust fan may not be installed inside the boiler room.*

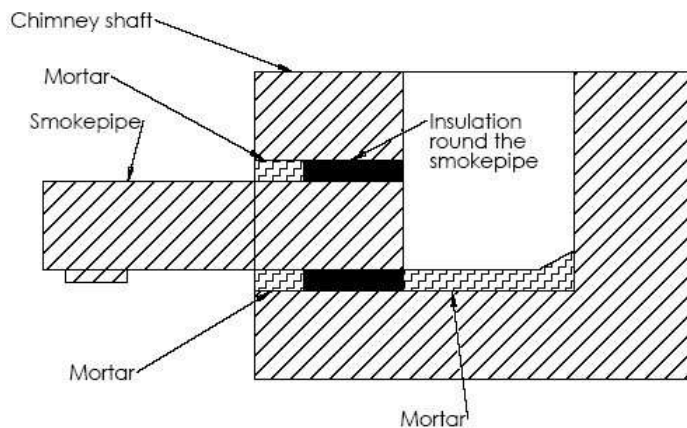
The installer and chimney-sweeper could give closer information.

The boiler should be placed on a flat and stably molded concrete bed.

### The chimney connection

The ULMA ECO BOILER has a design of the combustion chamber and flues that give the possibility of firing with very high efficiency. The boiler is suitably connected to chimney/gas flue with the provided turning flue pipe horizontally. The flue pipe canal may *never* go down. The chimney should be inspected and possibly test pressed before installation if it has never been used and had continuous maintenance by the local chimney-sweeper. At the slightest doubt, contact your certified chimney-sweeper for inspection. Note that at too low flue gas temperature the flue gases can condense with a risk of frost damage on the chimney as result. As a rule you should aim at least 70-80°C flue gas temperature 1 m down in the chimney when the burner is running, this is primarily valid for brick chimneys or similar material. The choice of flue gas temperature depends on the design and isolation of the chimney, a steel chimney or bricked chimney with flue lining tube will not be as easily damaged of low flue gas temperatures, provided that possibly condensate is continuously drained from the lowest point of the chimney. This is the responsibility of the installer to control at installation. Place the boiler at least 100 mm from the wall/bricks to facilitate service. Also leave room for possibly existing cleanout door in the brick wall.

If the chimney is made out of bricks, you have to take up the hole in the chimney shaft so that there is an approx. 20 mm blank space around the pipe. Then place the pipe in the chimney shaft and mark out the dept. Cut the pipe if needed. The pipe should be placed so that it does not cover the hole of the flue from above in any way. Then wrap the pipe with a according to our recommendations with 2-3 layers of heat resistant insulating mat. Thickness of the insulating mat is as normal standard approx. 12 mm. Then add some extra isolation from the outside in the opening and then clean the wall brickworks.



Water the polish with a sprinkler a couple of hours after to avoid cracking if the polish burns too fast. The insulating mat makes it closely and at the same time you escape cracking in the chimney wall since the pipe can move a little from thermal expansion.

### The draft limiter ( Back draft door)

The draft limiter shall at installation be adjusted by the installer of approx. 0.15 hPa under pressure. Too low under pressure can create problems with overheating of the burner and risk for accumulation of flue gases in the hearth that leads to producer gas puffs at the ignition moment of the burner, a too high under pressure can cause ignition problem.



## Management & Maintenance

### The Immersion heater.

In the ULMA ECO BOILER there is a preconnected three-phase immersion heater of 6 kW. When the immersion heater is used as back up, you set the thermostat of the immersion heater so that it is not connected without a reason, it shall only be used when there is something wrong with the burner or as support-run at very high energy needs in the house. Operating indication lights are shining when the immersion heater is running.

### Cleaning of the boiler

In the ULMA ECO BOILER the maintenance has been minimized i.a. by a well planned construction and the large ash box holds approx. 48 liters. Ash emptying is made as required. Cleaning of the tubes of the boiler is realized when the flue gas temperature has increased approx. 50 degrees compared to a new swept boiler. More frequent intervals give increased efficiency. The giver should be cleaned at least once per month.



Giver for the flue gas temperature



Under the door on the top of the boiler, you can reach the tubes at the regular cleaning of the heating surfaces



The tubes shown on this picture without the flue gas break that you can see on the picture to the left.

**O.B.S! Very important to put where flue gas in a proper manner after completion of sweeping. See picture above.**

Be extra attentive of to the quality of the pellets at new delivery or change of deliverer. At new delivery a flue gas analysis should be made. Therefore we recommend a service agreement. Contact your local installer regarding information of agreement.

The tubes of the boiler should be cleaned 4-5 times per year (may vary some depending on consumption and pellet quality) or when the flue gas temperature has risen with approx. 50 degrees since previous cleaning.

- Turn off the burner a couple of hours before service.
- Lift up the soot door on the top and clean the tubes. (Use the enclosed tube wisp.)

Check the colour of ashes in the tubes and inside the lid. Should be gray to light brown. Is the colour black, the burner must be adjusted, otherwise it shorten the life of the burner. See dealer for adjustment of the burner.

- Pull out the burner and clean from ash residues between the burner pipes at least two times per year.

### NOTE!

Always be careful with ash since it might be ignited. The ash should be kept in fireproof vessels.

## Data about pellet firing

At installation the unit shall always be adjusted with a flue gas instrument and not only with help of the human eye. When the installation is in place and has been gotten into shape with a flue gas instrument, ask for a print of the check measurement from the installer. There you should be able to read the values like CO, O<sub>2</sub>, CO<sub>2</sub>, combustion efficiency, draft, flue gas temperature etc.

**Goal values:**  
 CO<sub>2</sub> : 11%  
 CO :10 - 300 ppm  
 O<sub>2</sub> : 8-10 %  
 hPa : -0,10 / -0,15

## General facts about fuel pellets

A fuel pellet is per definition a "short cylindrical item" for combustion. Fuel pellets are made by pressing of finely powdered dry fuel that is made by waste products from the forest industry. The diameter of the fuel pellets existing on the Swedish market today, vary between 6-8 mm. The effect on the outer environment is minimal at combustion of pellets. At the combustion in a pellet system of for example a pellet boiler or stove the stored sun energy in the raw material is released. The emissions of unburned hydrocarbons as well as dust are in almost all cases far below the marginal values of the authorities. The carbon dioxide taken up and captured during the growth of the trees is released in the process to once again be taken up by the nature. In other words a circuitry. Combustion of pellets does not provide the atmosphere extra carbon dioxide which happens at combustion of the fossil fuels oil, gas and coal.

Comparison tables between Svanen market Norsk Pellets and Swedish standard SS 18 71 20

### Norsk Pellets

\*AnalyCen BE000720-05

Quality (in the storage of the manufacturer)	Unit	Group1 (House pellets)
- Diameter – Length	mm	Max 5x Ø
- Bulk density	kg/m <sup>3</sup>	≥ 739
- Strength	Fines content in weight % < 3,15 mm	≤ 1,1
- Effective heat value	kWh/kg	≥ 4,88
- Ash content	Weight % of TS >	≤ 0,3
- Total Moisture content	Weight %	≤ 7,4
- Total Sulphur content	Weight of TS	≤ 0,01
- Content of additives	Weight % of TS	None
- Chlorides	Weight % of TS >	<0,01
- Ash melt process	C°	>1550

### Swedish standard SS 18 71 20

Quality (in the storage of the manufacturer)	Unit	Group1 (House pellets)
- Diameter – Length	mm	Max 4x Ø
- Bulk density	kg/m <sup>3</sup>	≥ 600
- Strength	Fines content in weight % < 3 mm	≤ 0,8
- Effective heat value	kWh/kg	≥ 4,7
- Ash content	Weight % of TS >	≤ 0,7
- Total Moisture content	Weight %	≤ 10
- Total Sulphur content	Weight % of TS	≤ 0,08
- Content of additives	Weight % of TS	Content and kind shall be given
- Chlorides	Weight % of TS >	≤ 0,03
- Ash melt process	C°	Initial temperature (IT) is given

## ORIGINAL EC DECLARATION OF CONFORMITY



Martin Karlsson  
ULMA AB  
Energigatan 11  
SE-512 53 Svenljunga  
Sweden

Company registration number: 556089-5640

declare that:

Equipment: Hot water boiler  
Model name: ULMA Eco 20 kW  
Serial number: \_\_\_\_\_

is in accordance with the following Directives:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

and has been designed and manufactured to the following harmonised standards:

EN ISO 12100:2010; EN 303-5:2012  
EN 60335-1:2012/AC:2014; EN 60335-2-102:2006/A1:2010  
EN 55014-1:2006/A1:2009/A2:2011; EN 55014-2:1997/A1:2001/IS1:2007/A2:2008

I hereby declare that the equipment named above has been designed to comply with the relevant sections of above referenced harmonised standards. The unit complies with all essential requirements of the Directives.

Svenljunga 2014-12-08

Martin Karlsson CEO  
Name and position

A handwritten signature in blue ink, appearing to read "Martin Karlsson", written over a horizontal dashed line. Below the line, the word "Signature" is printed.

## ■ Test record



Date: \_\_\_\_\_

Model: \_\_\_\_\_

Serial number: \_\_\_\_\_

### Checkpoints

1. Connection and tension setting
2. Functional inspection indicator lights
3. Functional inspection thermostat
4. Functional inspection power to burner
5. Functional inspection immersion heater: Grey\_\_\_\_\_ $\Omega$  Brown\_\_\_\_\_ $\Omega$  Black\_\_\_\_\_ $\Omega$
5. Serial no

6. Control of content in packaging

Fiberglass cord  
Sweeping brush  
Manual  
Clutch kit-mixing valve, relief valve

Checked and approved by: \_\_\_\_\_

Name: \_\_\_\_\_

8. Control of accessories supplied.

Smoke pipe  
Draft limiter

Checked and approved by: \_\_\_\_\_

Name: \_\_\_\_\_



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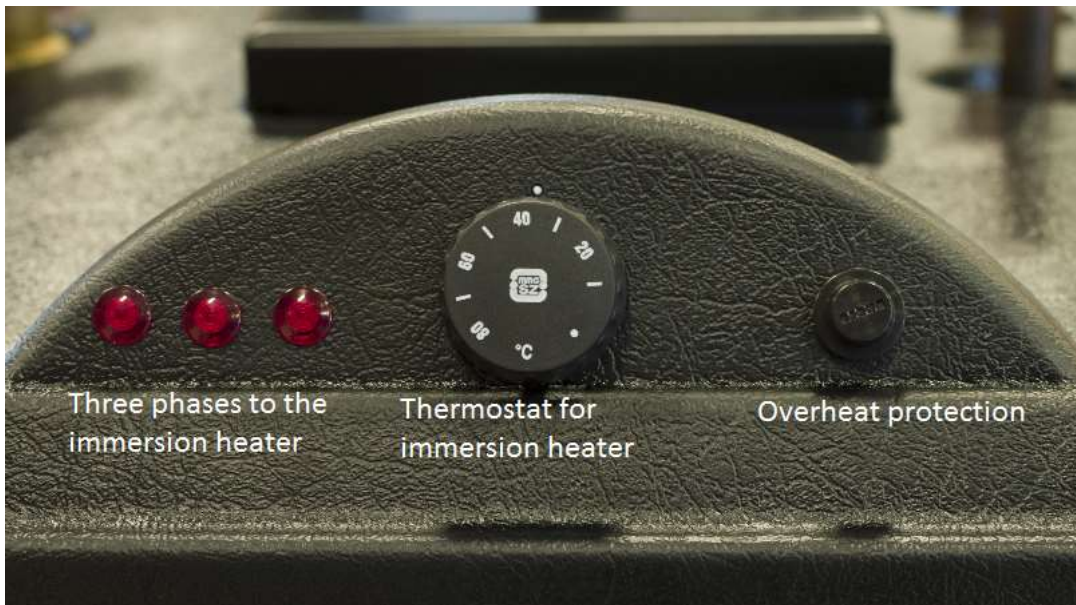
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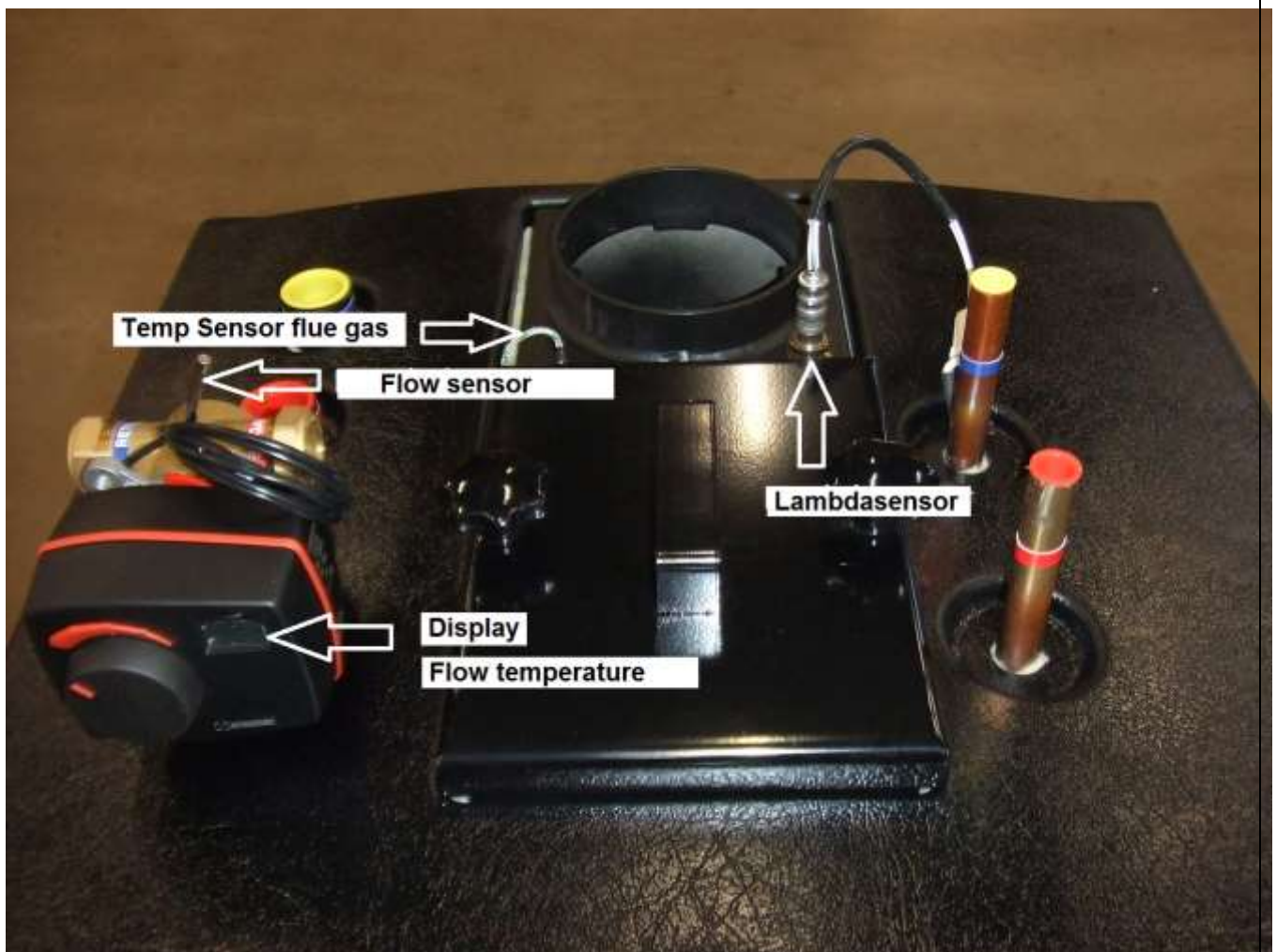
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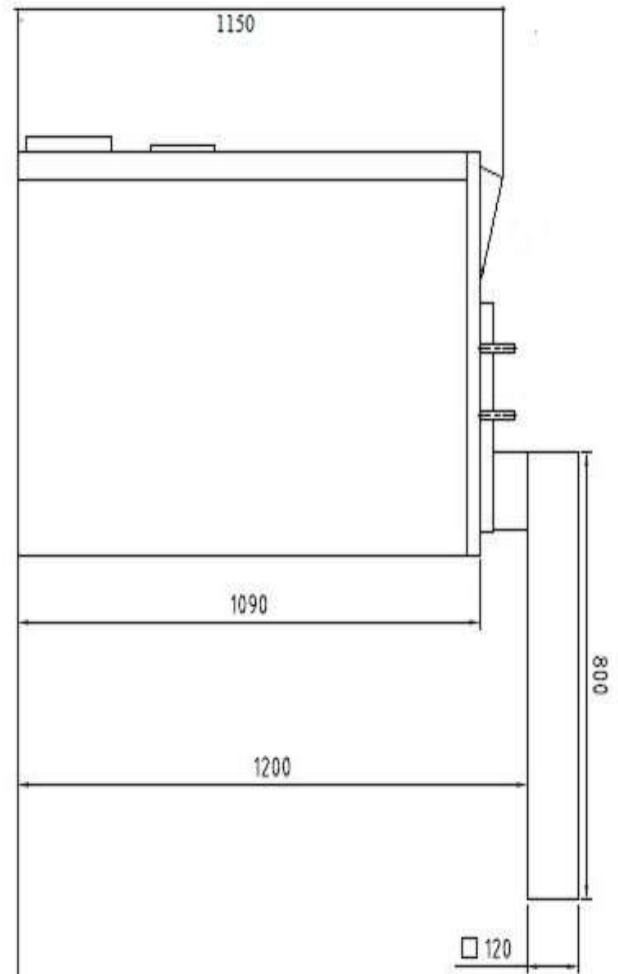
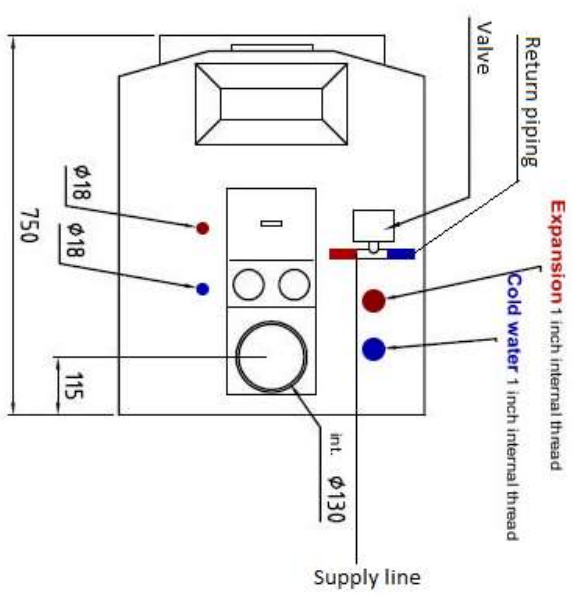
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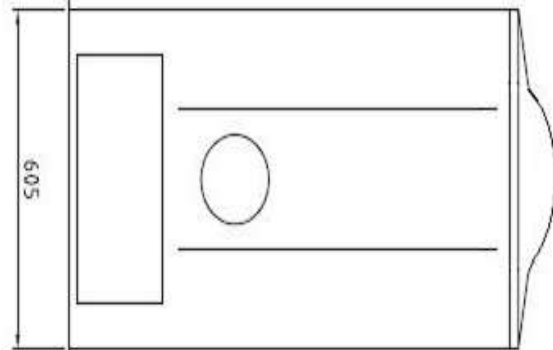


## Dimension description



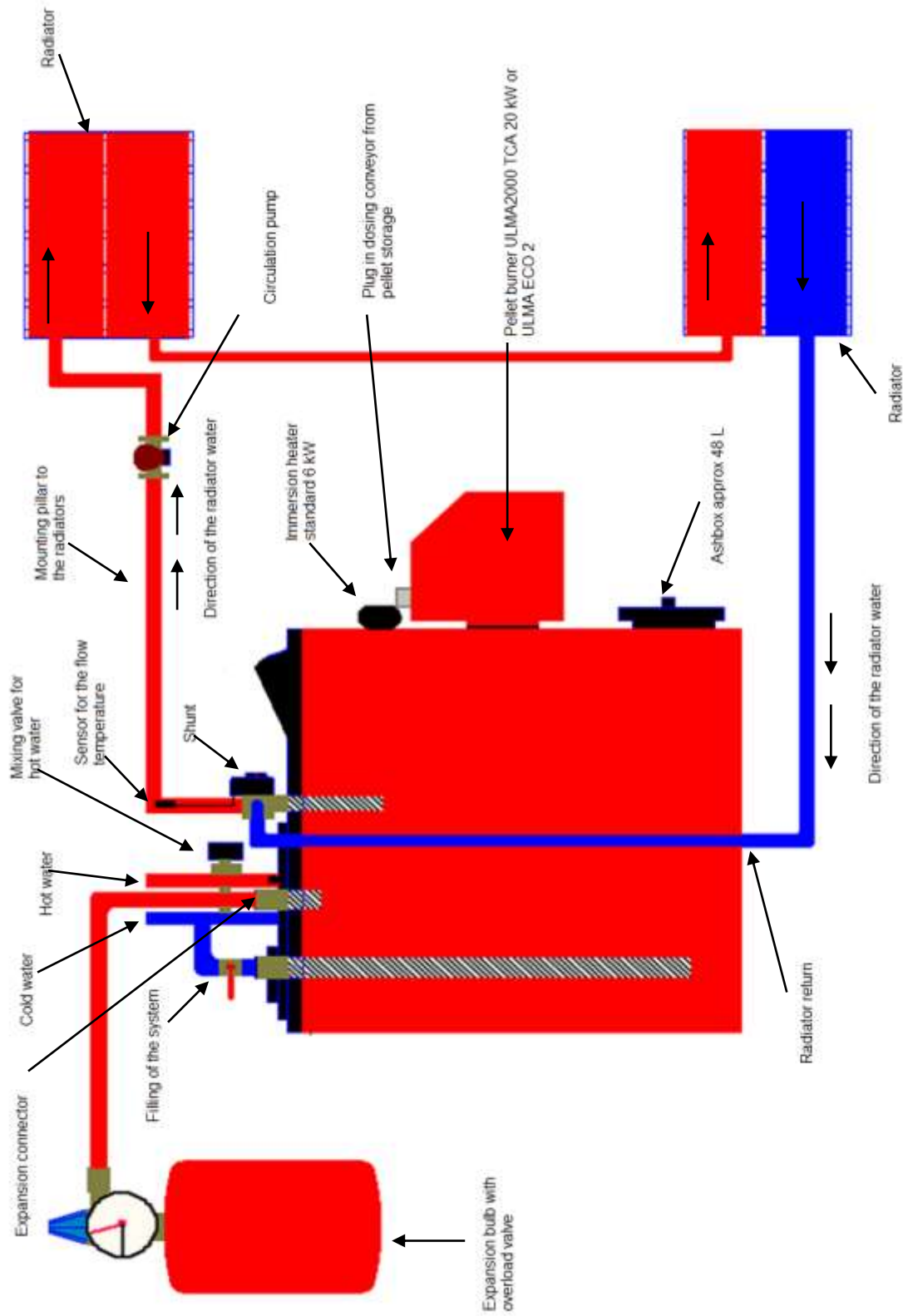
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Flue pipe	120 x 120 mm
Water volume	200 L
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Connection hole (burner)	$\phi$ 154mm
Dept of hearth	350mm
Hight of hearth	350 mm
Power connection	400 VAC
Warranty	5 YEARS
My under pressure	1,5 / vp
Efficiency	Approx. 90- 92%
Max effect	20kW
Hot water coil	11m
Immersion heater	6kW
Ash box	Approx. 48 liters
Weight	Approx. 250 Kg



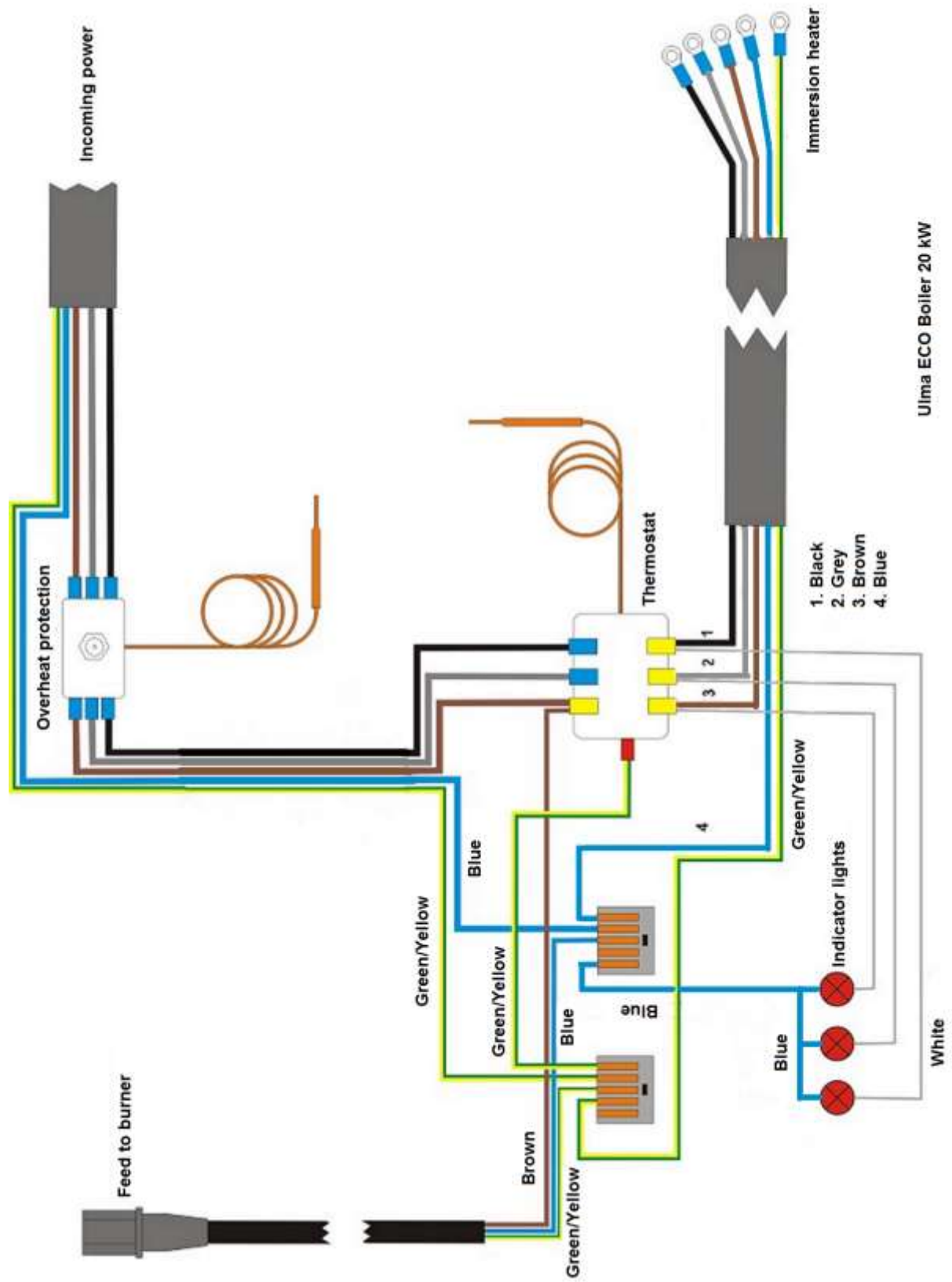
**$L_{ptA}$  [dB] (ref. 20  $\mu$ Pa)  $\square$  60 dBA**

**Building services installations schedule for ULMA LAMBDA 20kW pellet boiler**



Ulma AB recommends that the building services installation is performed after this schedule.

# Wiring diagram



Ulma ECO Boiler 20 kW

- 1. Black
- 2. Grey
- 3. Brown
- 4. Blue

## **Installation**

### **Radiator system and expansion tank**

Filling of the system shall be realized with all valves in open position and the circulation pump shall be turned off. The system is carefully ventilated during the filling. When the unit has been running for a couple of days ventilation and repeated filling should be made.

**Note!** See special instructions for filling of water.

The volume of the expansion tank is chosen in following way:

Open system: 5 % of the water volume in the heating system.

Closed system: The volume of the tank should be made from directions from manufacturer of closed tanks.

In the table below examples of suitable expansion tanks for closed systems are shown.

Open system with 300 litres water volume requires at least 15 litres expansion tank.

\* System volume = boiler volume + pipe volume + radiator volume

System volume (liter)*	Opening pressure (bar)	Oppression (bar)	Tank volume (liter) 70°C - 90°C
Approx. 300	1,5	0,5	18
Approx. 300	1,5	1,0	35

### **Firing with pellets and electricity at the same time**

You can fire with both pellets and electricity at the same time. At dimensioning of the expansion pipe or safety valve this must be considered.

Dimensions according to BFS 1988:18, 3:416.

### **Planning- and installation work**

The planning – and installation work of the unit shall be made in a professional way with special attention of common and local regulations and ordinances. .

The operation pressure is maximum 1,5 bar. Before the unit is put into work, and always at the beginning of the combustion season following inspections should be made:

1. that the heating system is filled with water and ventilated
2. that the circulation pump is working
3. that the valves of the system are open
4. that potential control – and safety automatic system is working
5. that the chimney has required draft and that the fresh air ventilation is open

### **Safety valve**

If a closed expansion tank is installed to the radiator system, the safety valve should be controlled 3-4 times per year. Activate the valve by pressing or turning the control and then make sure that water is entering into the waste pipe that goes from valve to drainage.

### **Maximal hot water capacity**

If you have a higher setting of the boiler temperature, the better hot water capacity you get (recommended setting = 85°C).

### **Filling of water**

Before connecting of heat, the heating system has to be filled with water.

The filling of the systems is made in following way:

1. Open all stop taps, even the shunt valve. The pump shall be turned off.
- 2 Filling of water to boiler and radiator. Deaeration is made on the radiators.
- 3 Delivery of cold water to the hot water coil. This is done by opening the stop tap on the cold water fittings and ventilation is made by tapping out from a hot water tap.
- 4 When the system is completely filled the circulation pump can be started and heating begin.
- 5 When the water inside the boiler has reached set operating temperature, the pump should be turned off and another airing be made on the radiators. This should be repeated several times. Keep in mind that there is a lot of air inside the tap water. The volume can go up to approx. 8-10% why deaeration can take time – especially at bigger volumes. Closed systems shall be filled so that the manometer stands at the desired system pressure, distance from the manometer to the highest located radiator in meter x 0,1 which gives the system pressure in bar. Set the red pointers of the manometer at the same value as the big pointer. Preferred hot water temperature is set on the mixing fittings.

## Boiler room & chimney

The construction regulations of the National Housing Board include detailed norms for the design of the boiler room, position of boilers in boiler rooms, performance of gas flue etc. *The boiler room has to have a supply air valve with an at least 2 dm<sup>2</sup> area, this may not be closed during the time when the boiler is operating. Exhaust fan may not be installed inside the boiler room.*

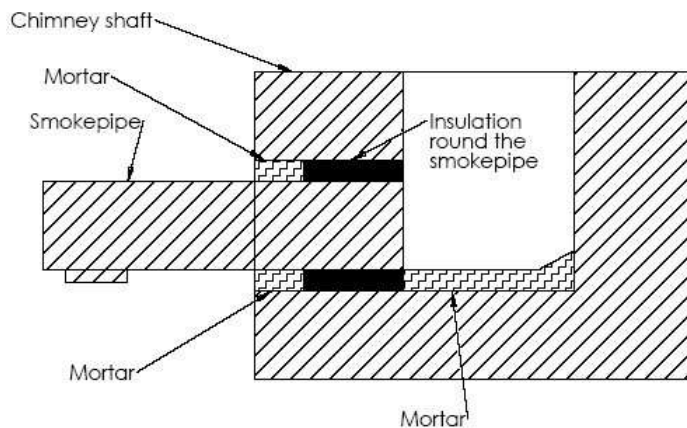
The installer and chimney-sweeper could give closer information.

The boiler should be placed on a flat and stably molded concrete bed.

### The chimney connection

The ULMA LAMBDA BOILER has a design of the combustion chamber and flues that give the possibility of firing with very high efficiency. The boiler is suitably connected to chimney/gas flue with the provided turning flue pipe horizontally. The flue pipe canal may *never* go down. The chimney should be inspected and possibly test pressed before installation if it has never been used and had continuous maintenance by the local chimney-sweeper. At the slightest doubt, contact your certified chimney-sweeper for inspection. Note that at too low flue gas temperature the flue gases can condense with a risk of frost damage on the chimney as result. As a rule you should aim at least 70-80°C flue gas temperature 1 m down in the chimney when the burner is running, this is primarily valid for brick chimneys or similar material. The choice of flue gas temperature depends on the design and isolation of the chimney, a steel chimney or bricked chimney with flue lining tube will not be as easily damaged of low flue gas temperatures, provided that possibly condensate is continuously drained from the lowest point of the chimney. This is the responsibility of the installer to control at installation. Place the boiler at least 100 mm from the wall/bricks to facilitate service. Also leave room for possibly existing cleanout door in the brick wall.

If the chimney is made out of bricks, you have to take up the hole in the chimney shaft so that there is an approx. 20 mm blank space around the pipe. Then place the pipe in the chimney shaft and mark out the dept. Cut the pipe if needed. The pipe should be placed so that it does not cover the hole of the flue from above in any way. Then wrap the pipe with a according to our recommendations with 2-3 layers of heat resistant insulating mat. Thickness of the insulating mat is as normal standard approx. 12 mm. Then add some extra isolation from the outside in the opening and then clean the wall brickworks.



Water the polish with a sprinkler a couple of hours after to avoid cracking if the polish burns too fast. The insulating mat makes it closely and at the same time you escape cracking in the chimney wall since the pipe can move a little from thermal expansion.

### The draft limiter ( Back draft door)

The draft limiter shall at installation be adjusted by the installer of approx. 0.15 hPa under pressure. Too low under pressure can create problems with overheating of the burner and risk for accumulation of flue gases in the hearth that leads to producer gas puffs at the ignition moment of the burner, a too high under pressure can cause ignition problem.



## Management & Maintenance

### The Immersion heater.

In the ULMA LAMBDA BOILER there is a preconnected three-phase immersion heater of 6 kW. When the immersion heater is used as back up, you set the thermostat of the immersion heater so that it is not connected without a reason, it shall only be used when there is something wrong with the burner or as support-run at very high energy needs in the house. Operating indication lights are shining when the immersion heater is running.

### Cleaning of the boiler

In the ULMA LAMBDA BOILER the maintenance has been minimized i.a. by a well planned construction and the large ash box holds approx. 48 liters. Ash emptying is made as required. Cleaning of the tubes of the boiler is realized when the flue gas temperature has increased approx. 50 degrees compared to a new swept boiler. More frequent intervals give increased efficiency. The giver should be cleaned at least once per month.



Giver for the flue gas temperature



Under the door on the top of the boiler, you can reach the tubes at the regular cleaning of the heating surfaces



The tubes shown on this picture without the flue gas break that you can see on the picture to the left.

**O.B.S! Very important to put where flue gas in a proper manner after completion of sweeping. See picture above.**

Be extra attentive of to the quality of the pellets at new delivery or change of deliverer. At new delivery a flue gas analysis should be made. Therefore we recommend a service agreement. Contact your local installer regarding information of agreement.

The tubes of the boiler should be cleaned 4-5 times per year (may vary some depending on consumption and pellet quality) or when the flue gas temperature has risen with approx. 50 degrees since previous cleaning.

- Turn off the burner a couple of hours before service.
- Lift up the soot door on the top and clean the tubes. (Use the enclosed tube wisp.)

Check the colour of ashes in the tubes and inside the lid. Should be gray to light brown. Is the colour black, the burner must be adjusted, otherwise it shorten the life of the burner. See dealer for adjustment of the burner.

- Pull out the burner and clean from ash residues between the burner pipes at least two times per year.

### NOTE!

Always be careful with ash since it might be ignited. The ash should be kept in fireproof vessels.

## Data about pellet firing

At installation the unit shall always be adjusted with a flue gas instrument and not only with help of the human eye. When the installation is in place and has been gotten into shape with a flue gas instrument, ask for a print of the check measurement from the installer. There you should be able to read the values like CO, O<sub>2</sub>, CO<sub>2</sub>, combustion efficiency, draft, flue gas temperature etc.

**Goal values:**  
 CO<sub>2</sub> : 11%  
 CO : 10 - 300 ppm  
 O<sub>2</sub> : 8-10 %  
 hPa : -0,10 / -0,15

## General facts about fuel pellets

A fuel pellet is per definition a "short cylindrical item" for combustion. Fuel pellets are made by pressing of finely powdered dry fuel that is made by waste products from the forest industry. The diameter of the fuel pellets existing on the Swedish market today, vary between 6-8 mm. The effect on the outer environment is minimal at combustion of pellets. At the combustion in a pellet system of for example a pellet boiler or stove the stored sun energy in the raw material is released. The emissions of unburned hydrocarbons as well as dust are in almost all cases far below the marginal values of the authorities. The carbon dioxide taken up and captured during the growth of the trees is released in the process to once again be taken up by the nature. In other words a circuitry. Combustion of pellets does not provide the atmosphere extra carbon dioxide which happens at combustion of the fossil fuels oil, gas and coal.

Comparison tables between Svanen market Norsk Pellets and Swedish standard SS 18 71 20

### Norsk Pellets

\*AnalyCen BE000720-05

Quality (in the storage of the manufacturer)	Unit	Group1 (House pellets)
- Diameter – Length	mm	Max 5x Ø
- Bulk density	kg/m <sup>3</sup>	≥ 739
- Strength	Fines content in weight % < 3,15 mm	≤ 1,1
- Effective heat value	kWh/kg	≥ 4,88
- Ash content	Weight % of TS >	≤ 0,3
- Total Moisture content	Weight %	≤ 7,4
- Total Sulphur content	Weight of TS	≤ 0,01
- Content of additives	Weight % of TS	None
- Chlorides	Weight % of TS >	<0,01
- Ash melt process	C°	>1550

### Swedish standard SS 18 71 20

Quality (in the storage of the manufacturer)	Unit	Group1 (House pellets)
- Diameter – Length	mm	Max 4x Ø
- Bulk density	kg/m <sup>3</sup>	≥ 600
- Strength	Fines content in weight % < 3 mm	≤ 0,8
- Effective heat value	kWh/kg	≥ 4,7
- Ash content	Weight % of TS >	≤ 0,7
- Total Moisture content	Weight %	≤ 10
- Total Sulphur content	Weight % of TS	≤ 0,08
- Content of additives	Weight % of TS	Content and kind shall be given
- Chlorides	Weight % of TS >	≤ 0,03
- Ash melt process	C°	Initial temperature (IT) is given

## ORIGINAL EC DECLARATION OF CONFORMITY



Martin Karlsson  
ULMA AB  
Energigatan 11  
SE-512 53 Svenljunga  
Sweden

Company registration number: 556089-5640

declare that:

Equipment: Hot water boiler  
Model name: ULMA Eco 20 kW  
Serial number: \_\_\_\_\_

is in accordance with the following Directives:

- Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

and has been designed and manufactured to the following harmonised standards:

EN ISO 12100:2010; EN 303-5:2012  
EN 60335-1:2012/AC:2014; EN 60335-2-102:2006/A1:2010  
EN 55014-1:2006/A1:2009/A2:2011; EN 55014-2:1997/A1:2001/IS1:2007/A2:2008

I hereby declare that the equipment named above has been designed to comply with the relevant sections of above referenced harmonised standards. The unit complies with all essential requirements of the Directives.

Svenljunga 2014-12-08

Martin Karlsson CEO  
Name and position

A handwritten signature in blue ink, appearing to read 'Martin Karlsson', written over a horizontal dashed line.

Signature

## ■ Test record



Date: \_\_\_\_\_

Model: \_\_\_\_\_

Serial number: \_\_\_\_\_

### Checkpoints

1. Connection and tension setting
2. Functional inspection indicator lights
3. Functional inspection thermostat
4. Functional inspection power to burner
5. Functional inspection immersion heater: Grey\_\_\_\_\_ $\Omega$  Brown\_\_\_\_\_ $\Omega$  Black\_\_\_\_\_ $\Omega$
5. Serial no

6. Control of content in packaging

Fiberglass cord  
Sweeping brush  
Manual  
Clutch kit-mixing valve, relief valve

Checked and approved by: \_\_\_\_\_

Name: \_\_\_\_\_

8. Control of accessories supplied.

Smoke pipe  
Draft limiter

Checked and approved by: \_\_\_\_\_

Name: \_\_\_\_\_