

ONGAS 300/W SERIES CONDENSING BOILER

Installation , Operation & Maintenance Manual



- Cast Aluminum Wall Hung Condensing Boilers
- For Natural Gas

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Safety instructions

The following symbols are used in this document to emphasize certain instructions. This is in order to increase your personal safety and to safeguard the technical reliability of the boiler.



Instructions must be followed carefully to avoid personal injury or serious damage to the unit or the environment.



Indicates possible danger of electric shock. Serious personal injury may occur.



This boiler is connected to a 230v mains supply. An improper installation or attempts to repair electrical components or controls may result in life threatening situations.



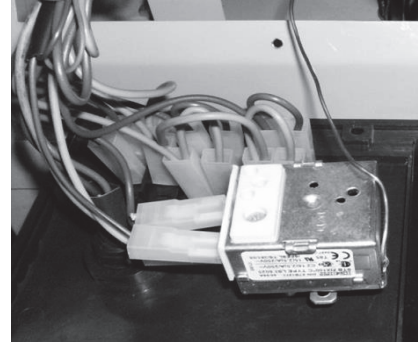
Keep unauthorized personnel away from the boiler. Do not place objects on or against the boiler. Do not touch hot water connections or the flue outlet when the boiler is operating – burn hazard.



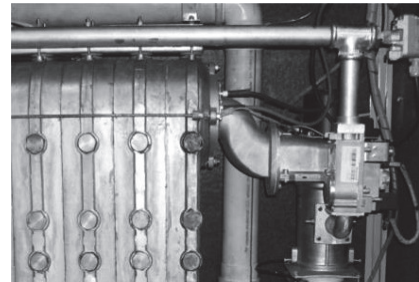
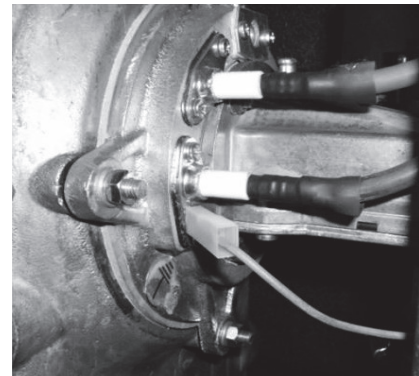
Installation, repair, commissioning, maintenance and repair work must only be carried out by suitably qualified personnel. Engineer in accordance with all relevant national / local standards and certifications. Always disconnect the mains supply and close the main gas cock before working on the boiler. The boiler must not be modified or non-RIMA spare parts fitted without the express written approval of RIMA.



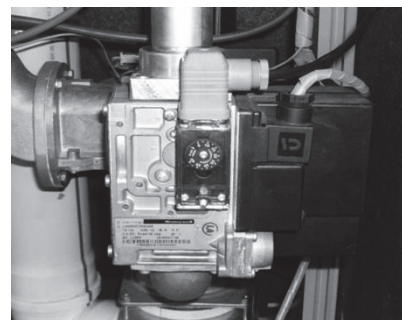
If you smell gas, close the (main) gas cock and contact the emergency situation gas leak telephone number for your area. If you smell flue gas fumes, turn the boiler off and contact your service company or installer.



Terminal box (ONGAS 300/W Series)High Voltage



High voltage in the Ignition transformer , ignition electrode , and heat exchanger.



Gas Valve (ONGAS 306/W/307/W) , High Voltage Risk

Standards & Instructions & Symbols

When installing and operating the boilers it is necessary to keep a safe 200 mm distance from combustible materials with combustibility degrees B,C1,C2 .

For easily flammable materials with combustibility degree C3 ,which burn quickly and by themselves also after the ignition source removal the safe distance is doubled it means 400 mm.

Combustibility degrees of building materials and products	Building materials and products ranked in combustibility degrees
A- incombustible	Granite,sandstone,bricks,ceramic tiles,mortars,fireproof plasters,...
B- hardly combustible	acumin,izumin,heraklit,lignos,boards and basalt felt, fiberglass boards,.....
C1-combustible with difficulties	Beech and oak wood, hobrex board, plywood,werzalit,.....
C2-medium combustible	Pine wood,larch,white wood, chipboard and cork boards, rubber flooring,.....
C3-easily combustible	Asphalt board,fireboards,polyurethane,polystyrenbe,polyethylene , PVC ,

Meaning of the Symbols on packaging

FRAGILE



TOP SIDE



RECYCLE





PROTECT AGAINST WATER



All gas appliances must be installed by authorized technicians. Failure to install appliances correctly could lead to prosecution. RIMA ONGAS300/W condensing boiler must not be installed or modified in any situations except written in this manual. Always transport the boiler in the safety packaging , before installation. Additional protection may be required if site conditions warrant it – overhead builders working, insulation etc. Please apply the regulations and instructions about installation clearances.

Data Plate

ONGAS 300 Series Condensing Boilers	
Manufacturer Name :	 ÖNMETAL DÖKÜM SAN. TİC. LTD.ŞTİ.
Trade Name :	RIMA HEATING SYSTEMS
Serial Number :	
Production Year :	
Model No :	ONGAS
Appliance (Flue) Types :	B23, C63
Nominal Condensing Output min/max (kW):	
Nominal Useful Output "P" min/max (kW) :	
Nominal Heat Input "Q" min/max (kW) :	
Maximum Water Pressure PMS (bar) :	6
Electrical Supply " ~ " (V) :	230
Power Consumption (W) :	
NOx Class :	5
 0051-10	

Packaging Label

WARNINGS !

- This device is designed to be installed in living spaces.(for C type chimney installations)
- Read the technical instructions before installing the boiler.
- Read the user's instructions before lighting the boiler.
- The boiler may only be installed in a room which complies with the appropriate ventilation requirements and which is separated from living rooms.(for B type chimney installations)






Gas Type Plate

COUNTR(IES)Y OF DESTINATION	CONNECTION PRESSURE " p " (mbar)	GAS CATEGORY
DE	20	I 2ELL
AL, BG, HR, RO, AT, CH, SK	20	I 2H
ES, GB, IE, IT, PT, SI, CZ, TR	20	I 2H
EE, DK, FI, LT, LV, NO, SE	20	I 2H
FR	20	I 2Er
BE	20	I 2E(R)B
LU	20	I 2E
NL	25	I 2L
PL	20	I 2ELw
HU	25	I 2H



The boiler has been set at the factory for natural gas H/E (G20, 20 mbar).

RIMA ONGAS300/W Series Condensing Boilers are in compliance with the ; **EC Directives**

- (2009/142/EC) Gas Appliances Directive
- (2006/95/EC) Low Voltage Directive
- (2004/108/EC) Electromagnetic Compatibility Directive
- (92/42/EEC) Efficiency Directive

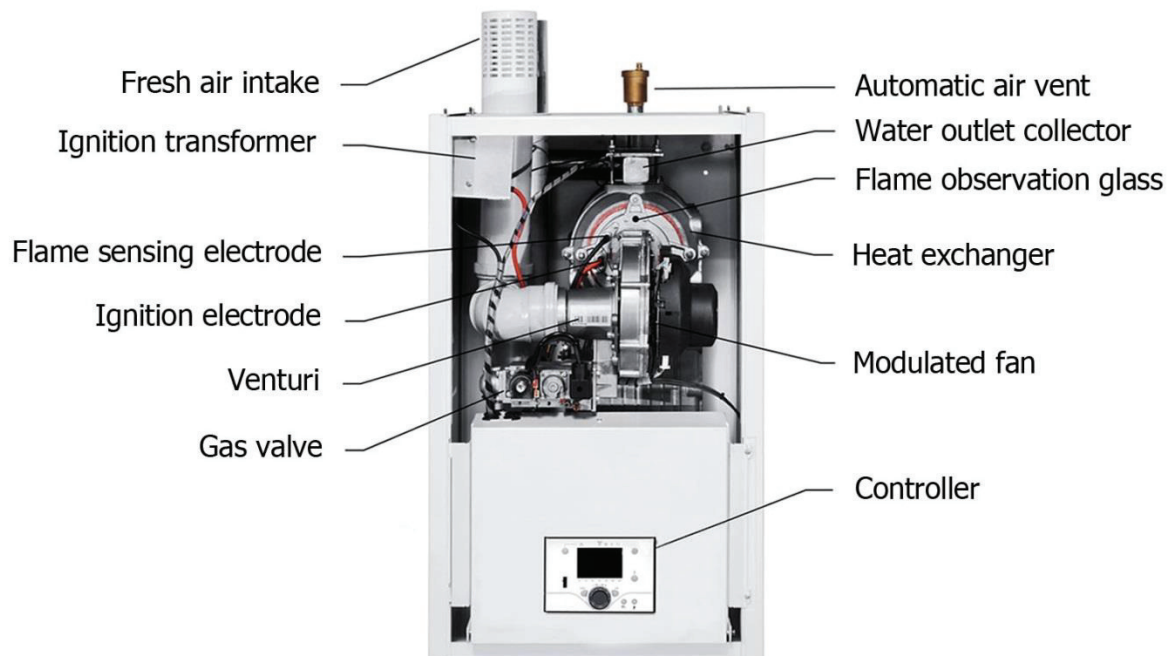
The boiler may only be installed in a room which complies with the appropriate ventilation requirements and which is separated from living rooms. If not , there is suffocate and poisoning risk .

Read the technical instructions before installing and lighting the boiler.



ONGAS 300/W Series Wall Hung Condensing Boilers for Natural Gas

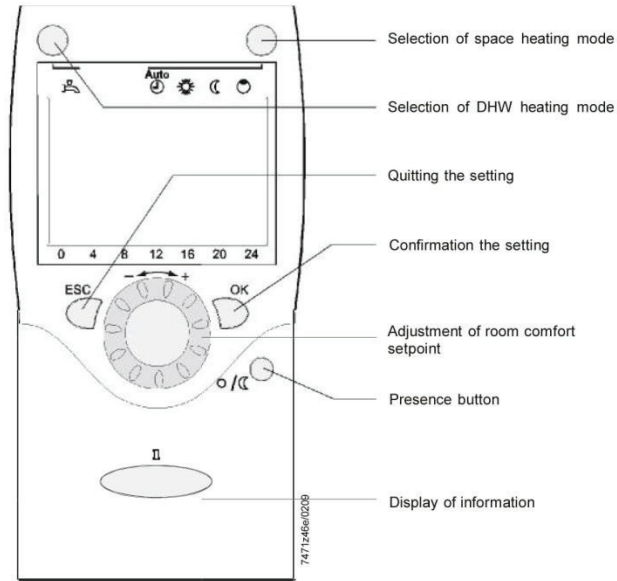
Operating Principle of ONGAS 300/W Series



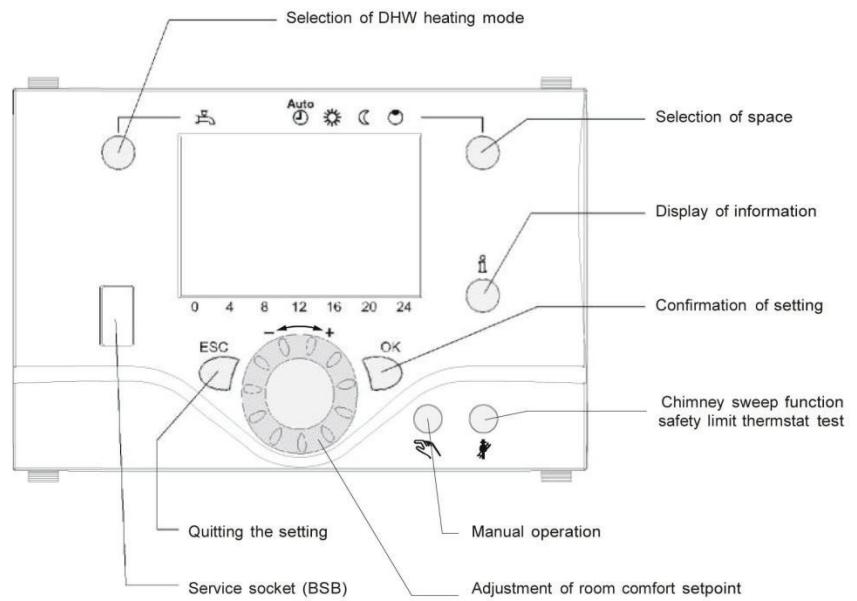
Operating Instructions

Operating elements










Room unit



Operator unit

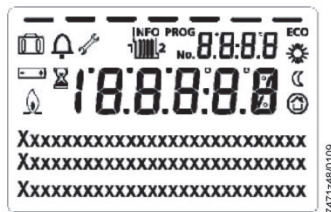


Display options

	Heating to <i>Comfort</i> setpoint	INFO	Info level activated
	Heating to <i>Reduced</i> setpoint	PROG	Programming activated
	Heating to <i>Frost Protection</i> setpoint	ECO	Heating temporarily Off
	Process running – please wait		<i>ECO</i> function active
	Change battery		<i>Holiday</i> function active
	Burner in operation (only oil/gas boiler)		Reference to heating circuit
			Maintenance/special operation
			Error messages

Display

Display of all symbols and segments:



Selecting Heating mode



This setting is used to switch between the different operating modes. The selection made is indicated by a bar which appears below the respective symbol.



Automatic operation AUTO



Automatic operation controls the room temperature according to the time program.

Characteristics of *Automatic* operation:

- Heating mode according to the time program
- Temperature setpoint according to heating program *Comfort* setpoint  or *Reduced* setpoint 
- Protective functions active
- Automatic summer/winter changeover and automatic 24-hour heating limit active (*ECO* functions)

Continuous operation or

Continuous operation maintains the room temperature at the selected operating level.

-  Heating to *Comfort* setpoint
-  Heating to *Reduced* setpoint

Characteristics of continuous operation:

- Heating mode with no time program
- Protective functions active
- Automatic summer/winter changeover (*ECO* function) and 24-hour heating limit inactive in the case of continuous operation with *Comfort* setpoint

Protection mode

When using *Protection mode*, the heating system is Off, but remains protected against frost (frost protection temperature), provided there is no power failure.

Characteristics of *Protection mode*:

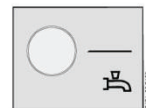
- *Heating mode Off*
- Temperature according to the *Frost protection level*
- Protective functions active
- Automatic summer/winter changeover (*ECO functions*) and automatic 24-hour heating limit active

Selecting *DHW mode*

The button is used to switch *DHW mode* on and off. The selection made is indicated by a bar which appears below the respective symbol.

DHW mode

- On:
DHW is heated according to the selected switching program.
- Off:
No DHW heating, but the protective function is active.




DHW push

The *DHW push* is triggered by keeping the *DHW operating mode* button on the operator unit or room unit depressed for at least 3 seconds.

It can also be started when...

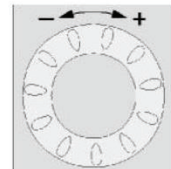
- the operating mode is Off,
- operating mode changeover acts via input 1 or centrally (LPB),
- all heating circuits use the *Holiday* function.

Adjustment of room temperature setpoint

Turn the setting knob to increase or decrease the *Comfort* setpoint .

For the *Reduced* setpoint  ...

- press **OK**,
- select operating page *Heating circuit*, and
- adjust the *Reduced* setpoint.



Note:

After each readjustment, wait at least 2 hours, allowing the room temperature to adapt.

Occupancy button

If the rooms are not used for a certain period of time, you can press the occupancy button to lower the room temperature, thus saving heating energy. When the rooms are occupied again, press the occupancy button again to resume heating operation.



- ☀ Heating to *Comfort* setpoint
- ☾ Heating to *Reduced* setpoint

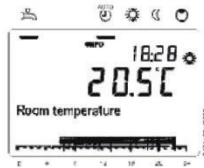
Note:



- The occupancy button is only active in *Automatic* operation
- The current selection is active until the next switching action according to the heating program takes place

Displaying information

Various data can be displayed by pressing the **Info** button.



Possible displays

Depending on the type of unit, the configuration and operating state, some of the info lines listed below may not appear.

Display:

- Potential error messages from the error code list (refer to chapter *Settings in detail/error code*)
- Potential maintenance messages from the maintenance code list (refer to chapter *Settings in detail/maintenance code*)
- Potential special operation messages (refer to chapter *Settings in detail/special operating modes*)

Other displays:

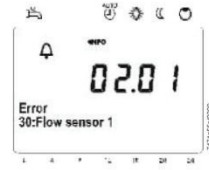
- Room temperature
- Room temperature minimum
- Room temperature maximum
- Boiler temperature
- Outside temperature
- Outside temperature minimum
- Outside temperature maximum
- DHW temperature 1
- State heating circuit 1
- State heating circuit 2
- State heating circuit 3
- State of DHW
- State of boiler
- State of solar
- State of solid fuel boiler
- State of buffer storage tank
- State of swimming pool
- Date and time of day
- Telephone customer service

Exception

In exceptional cases, the basic display shows one of the following symbols:

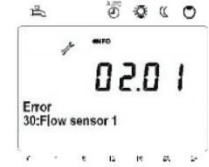
Error messages:

If this symbol appears, an error in the plant occurred. Press the **Info** button and read further information.



Maintenance or special operation:

If this symbol appears, a maintenance alarm is delivered, or the plant has changed to special mode. Press the **Info** button and read further information.



Note:

For possible displays, refer to display lists *Settings in detail/states*).

5.2.2 Programming

Setting principle



















Settings that cannot be made directly with the operating elements require programming. For this purpose, the individual settings are structured in the form of operating pages and operating lines, thus forming practical groups of settings. The following example shows how to set the time of day and the date.

Example: Setting the time of day

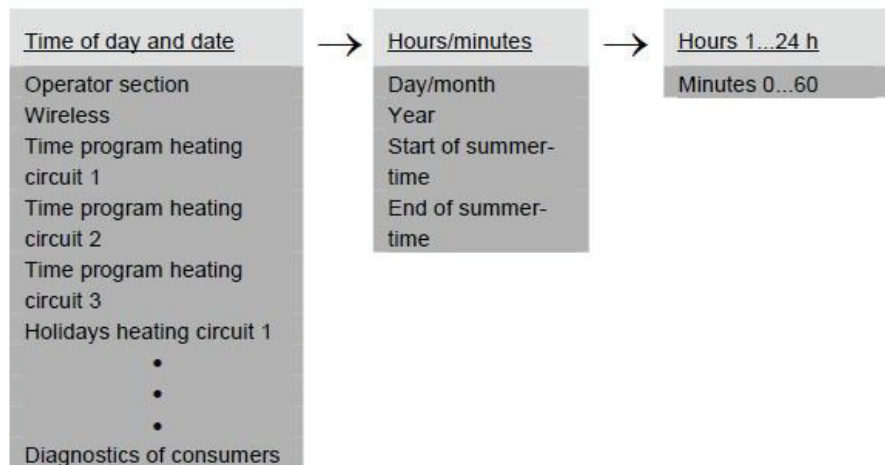
Note:



- Press **ESC** to go one step back at a time; readjusted values are not adopted
- If no setting is made for 8 minutes, the display returns automatically to the basic display
- Operating lines may be hidden, depending on the type of controller, the configuration made and the user level

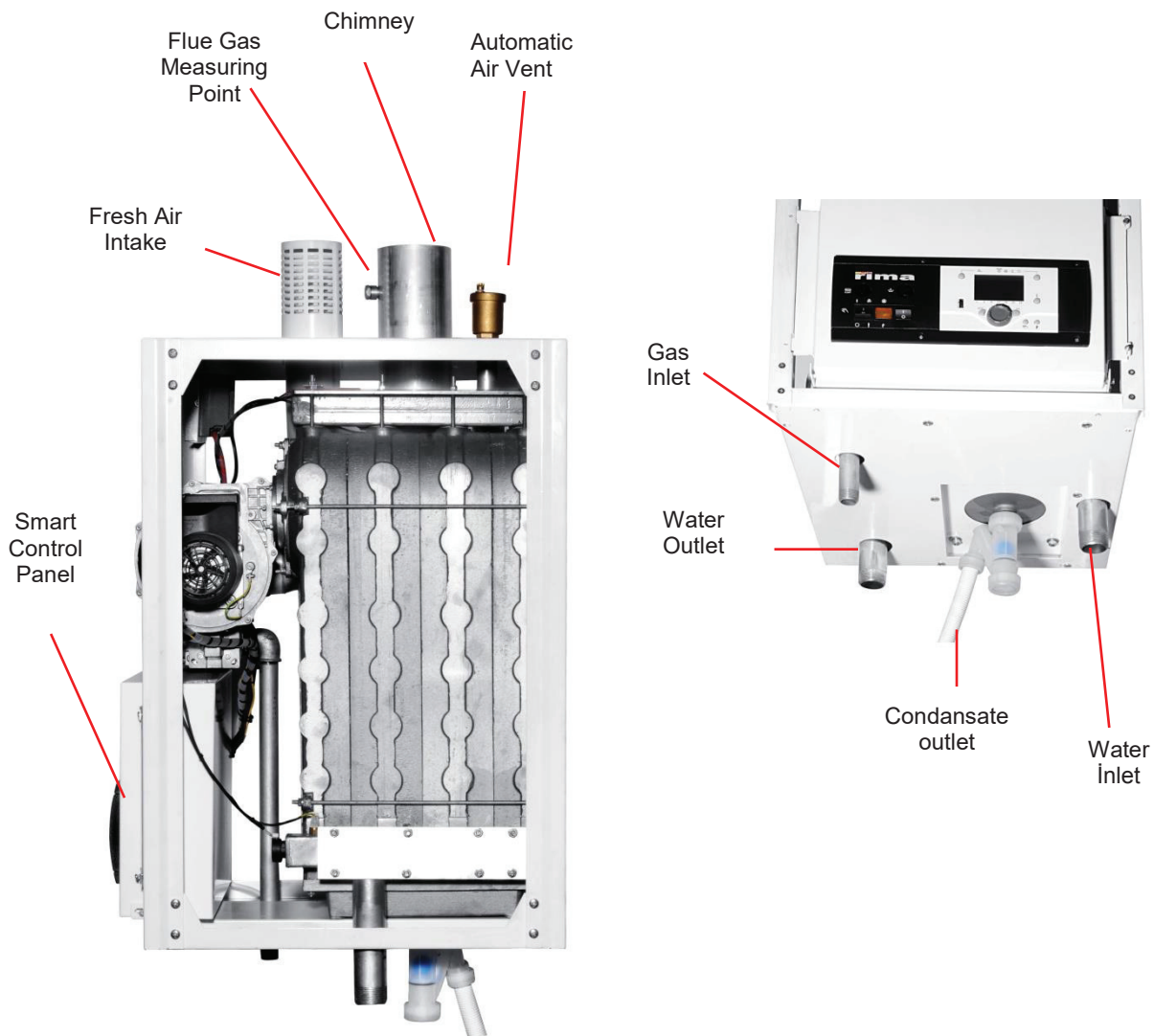
Operation	Display example	Description
1  		This is the basic display. If the basic display is not shown, press ESC to return to it.
2  		The bottom section of the display shows a number of operating pages. Turn the setting knob until operating page <i>Time of day and date</i> appears.
3  		In the bottom section of the display, the first operating line of operating page <i>Time of day and date</i> appears. Turn the setting knob until operating line <i>Hours/minutes</i> appears.
4  		The display shows the hours flashing. Turn the setting knob until the hours of the time of day are correct.
5  		The display shows the minutes flashing. Turn the setting knob until the minutes of the time of day are correct.
6 		The settings are saved and the display stops flashing. Now, you can make further settings or you press the operating mode button to return to the basic display.
7		Now, you see the basic display again.

Example of menu structure



Description of the Boiler & Delivery Terms

The RIMA ONGAS 300/W Series Condensing Boiler is completely assembled, Wall Hung, fully modulating, high efficiency condensing boiler up to (109%) and delivered with steel enamel powder coated casing, shrinked with film, on a pallet. Cast aluminum heat exchanger and other main components are supplied within boiler chassis with easy removable casing for cleaning and maintenance. All main electrical and electronically controls are supplied in the control panel which is placed on top of the boiler. The RIMA ONGAS 300/W series condensing boiler is suitable for room sealed or open flue applications (B and C type) and has been designed for central heating also optionally domestic hot water. The operating pressure of system is between the 0,8 bar min. to 6 bar max. The circulation pump must be installed to system. Every boiler has been tested during the assembling properly. The pre-mix burner with its air/gas system ensures clean mixing, reaches up to 109% efficiencies without any problem in condensing mode, combined with ultra low NOx and minimum CO emissions. The control panel provides the actual and set values to be read and adjusted on the built-in LCD display, which also provides normal operating and fault code indication. The control system of the boiler allows to monitoring all boiler conditions.



Installation Instructions

RIMA ONGAS 300/W Series Condensing Boiler should be positioned as follows ;

Place the boiler in the plant room to operation location.

Remove films, straps, pallets, top and sides and all other packaging.

All gas appliances must, by law, be installed by authorized persons. Failure to install appliances correctly could lead to prosecution. It is in your own interest and that of safety to ensure that the law is complied with.

The boilers must be installed where frost protected place. The water in the radiators must be discharged when the boiler is not working to avoid from frost.

The boiler must not be installed place that contains humid, vapor, dust. Otherwise , boiler is not working correctly and efficiently.

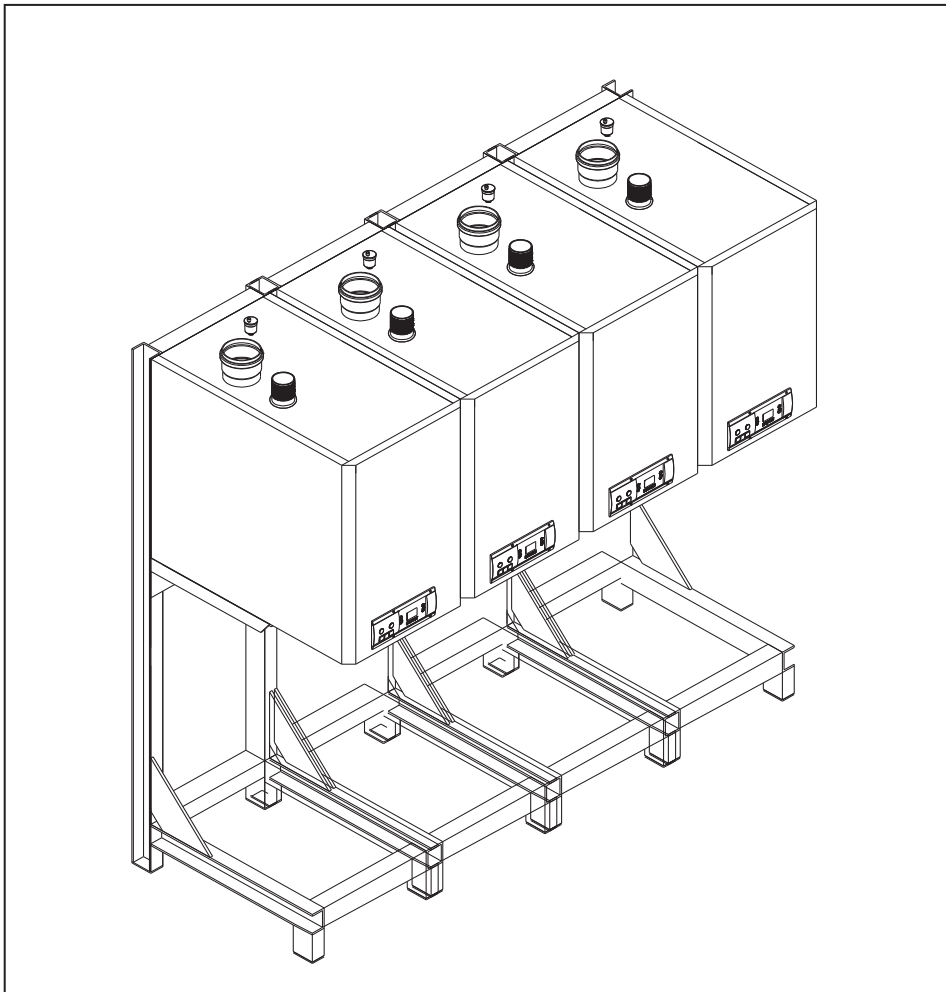
The ground where the boiler installed must be stabilized, strong, flat and high from floor level for avoid of flooding.

Fresh air supply must be refined from halogen hydrocarbons (sprays, paint and some chemical materials), otherwise this materials can cause corrosion and erosion in the boiler and flue gas chimney.

Do not put flammable materials on top of the boiler or near the boiler.

The fresh air intake, must be according to local gas suppliers and gas connecting instructions, otherwise there is a risk of poisoning.

Condensing water and chimney connection must be done according to regulations and standards.



Boiler Dimensions for ONGAS 300/W



(mm)	303	304	305	306	307
L	460	560	710	860	1010
W	500				
H	750				

Plumbing Instructions

- Return water inlet, gas inlet and supply water outlet connections placed in rear side of the boiler.
- Every model (ONGAS 303/W,304/W, 305/W, 306/W, 307/W) has a different water and gas connection size. Boiler connection sizes are given in the technical table.
- Avoiding of the faulty circulation, check valves must be used with circulation pump system. In the new /old buildings and new/old plumbing systems, strainer (filter) must be used in the return water line.
- Safety valve (max.6 bar), and manometer must be used in the plumbing system. There must not be any valve between boiler and safety valve, otherwise pipes and the other parts may explode in the over-pressurized boiler (evaporation harmless).
- RIMA ONGAS 300/W Series Condensing Boilers are only compatible and works with systems which has circulation pump.
- RIMA ONGAS 300/W Series Condensing Boilers delivered without circulation pump.
- RIMA ONGAS 300/W Series Condensing Boilers are compatible with max. 6 bar systems.

Heating (Radiator) Water

Sanitary water can be used for plumbing and additional water. Please clean the plumbing system before filling with water. Chemical materials and softeners can cause damage to system.

Please consider on the standards and instructions while the plumbing system are installing, otherwise water leakage or plumbing problems will occur.

For avoiding the Oxygen diffusion to radiator water (may cause from the problem in the heat exchanger), system separator should be used in the system.

Supply
Water
Outlet



Return
Water
Inlet

Lime and chalk can be formed according to the working type of boiler. Radiators must be heated in min. efficiency with enough water flow. In cascade systems, all boilers must be worked same capacity, otherwise chalk and lime may condensed in one boiler.

All plumbing system pipes must be check against leakage before operating the boiler.

The water quantity in the system, should be determinate by heating project engineer.

The system should be filled with mains cold water (usually have a pH of between 7 and 8). Pressurized installations with a boiler / system content ratio of 1:10 or less should not require water treatment.

All scale deposits will reduce the efficiency of the boiler and should be prevented. However provided the above is complied with any scale produced will not be too detrimental to the boiler efficiency and will not reduce the anticipated life expectancy of the boiler.

Take advice on the suitability of inhibitors for use with aluminum boilers MAX pH of 8.5 when using additives (max. pH of 9 without additives).

Water Quality

Regarding to quality of water used in central heating and boiler systems, some institutions published instructions as well as VDI Directive 2035, DIN EN 14868 Standard. According to these instructions, for heating systems with maximum 100 °C operating temperature, to avoid accumulation of lime (calcium carbonate), below reference values of water quality are valid;

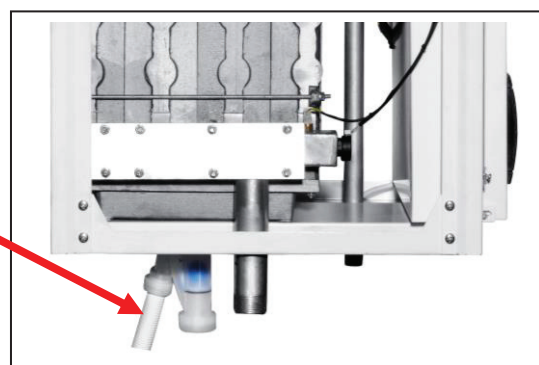
Total Heating Capacity (kW)	Hardness (°F)
≤ 50	None
50 - 200	≤ 20
200 - 600	≤ 15
> 600	< 0,2

Water Rate

Boiler Type	Min. Water Rate (m³/h)	Max. Water Rate (m³/h)
303	2,9	5
304	4,1	7
305	5,2	9
306	6,6	11
307	8,2	13

Condensate Discharge

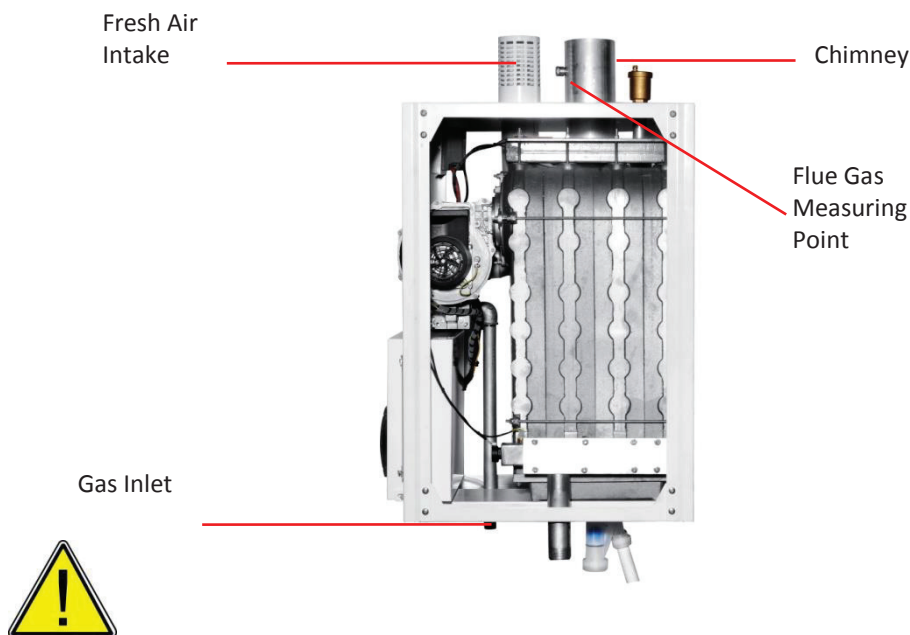
Unload the condensed water with a pipe, directly into a drain. Only use plastic material for the connecting piping, because of the acidity (pH 2 - 5) .(R 3/4 "). Condensing discharge into an outside gutter, because of the freezing risk.



Gas Connections

- Gas connections must be done by authorized personnel or gas certificated plumbing companies.
- Old plumbing systems, must be refined from sediment and debris before installation of radiator and gas piping.
- Gas side connections must be checked against gas leakage before commissioning.
- Poisoning and explosion risk due to inappropriate gas plumbing materials using and installation is not made in accordance with the rules.
- Fire protected gas valve must be used in the system, if not, risk of explosion in case of firing.
- Gas connections must be done according to standards and directives.

Perform the gas leakage test, when the check valve is OFF. Gas valves can be exposure max. 150 mbar pressure. Gas valves and burners may damaged over this pressure and as a result of explosion and poisoning. In the pressure test of gas side, ball valve in gas device must be closed (OFF position). Please be careful of gas type that using in the boiler and please consider on the conversion instructions.



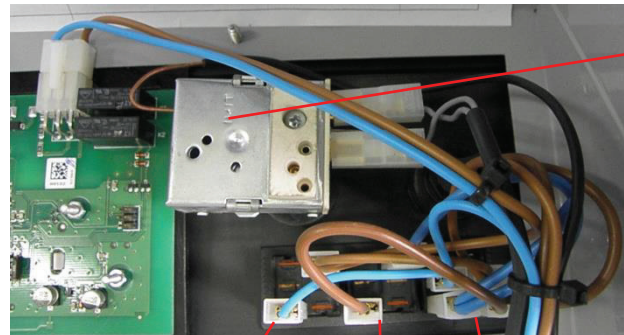
- In the flue gas discharge connections, only RIMA Original Parts and authorized local gas dealer parts must be used. Please read carefully instructions before connecting the chimney.
- Local gas distributors may have different directives, because of this, information should be taken from local gas companies and dealers.

Electrical Connections

- Electrical connections must be done by authorized technicians.
- Terminal box, fuse, switches and sensors delivered completely assembled and functionally tested.
- Main supply and other accessories (circulation pump, etc...) must be connected by authorized technicians.
- Please examine carefully the electrical wiring diagram, before making any connection.
- Please cut off the electrical (main) supply , before any operations. The electrical supply is not cutted, when the ON/OFF switch is at OFF position.

Electrical Connection Samples

Remove the screws from control panel for connecting electrical supply and other equipments.



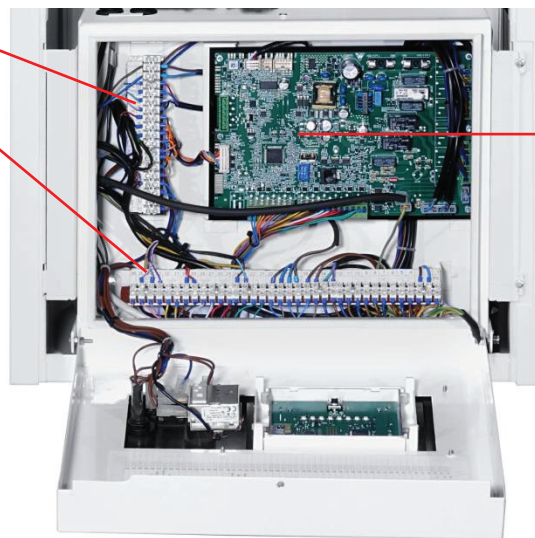
Safety
Thermostat

Working
Indicator

Energy
Indicator

ON/OFF
Switch

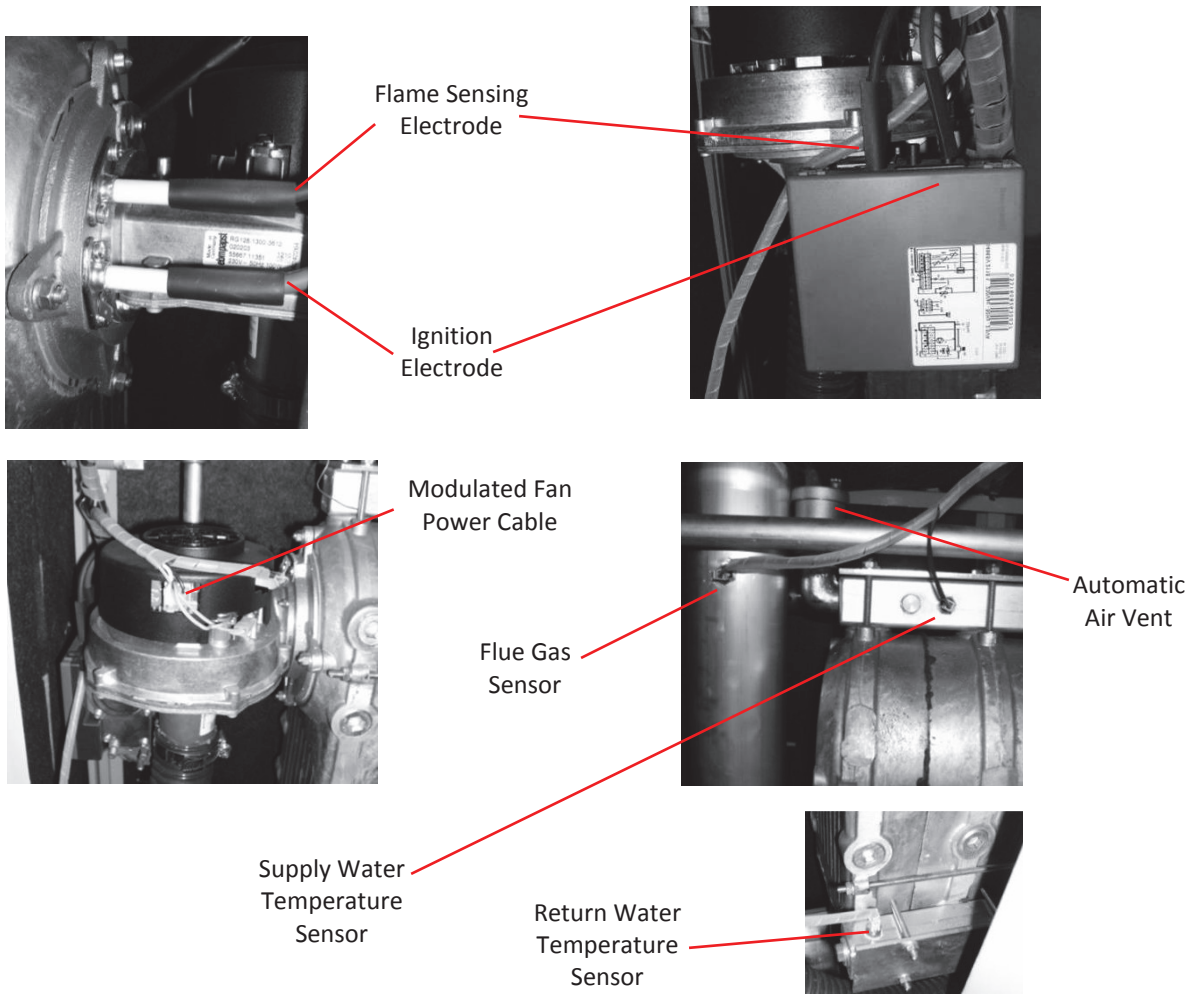
Terminal Connections



Mainboard

- To ensure reliable long term operation, mount the boiler control at a position in the appliance with a low ambient temperature, heat and a low radiation. The boiler control should be externally fused. High temperatures will strongly affect product life, please consider on the installation instructions.
- When first starting the boiler control has a self check time of about 10 seconds.
- Electrical rating of connected controls should be appropriate for the load that is switched by the boiler control.
- Disconnect the boiler control from mains before performing a dielectric strength test.
- The flame connection pin of all types is not protected against electrical shock.

- The modulation function of the boiler control units is checked during the start up safety check. As a result the gas technical safety of the appliance provided with a boiler control unit can rely on the proper functioning of the adjustable gas outlet pressure during ignition of this boiler control unit. This means that due to a safe ignition pressure level, the safety time of the boiler can be extended.
- Take care that installer is a trained experienced service person. Disconnect power supply to prevent electrical shock and/or equipment damage.
- Wiring must be in accordance with local regulations. The appliance manufacturer's instructions should always be followed when provided. If such instructions are not provided see the connection diagrams for typical systems. Before installing or replacing any control check that type number is correct for the application. Ensure combustion chamber is free of gas before start up. Conduct a thorough check out when installation is completed. At the first start the boiler control can be in lock-out; depress reset button to free control.
- Do not connect the boiler control to power supply when it is not connected to the gas control.



Cascade Configurations

The boiler is also suited for configuration in a cascade applications. For overpressure flue gas cascade arrangements, use our motorized flue gas discharge valve (available as an accessory). This prevents flue gas from flowing back to boilers that are not in operation. As a result of the narrow width and depth of the boiler, a heat output of 375 kW (2 x ONGAS 307/W) can be provided in a floor area of just under 2 m². A floor area of less than 3 m² is sufficient to include room for service and maintenance. If necessary, contact our technical department.

Gas rate adjustment instructions

FIRE OR EXPLOSION HAZARD CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY OR DEATH !

Gas leak test

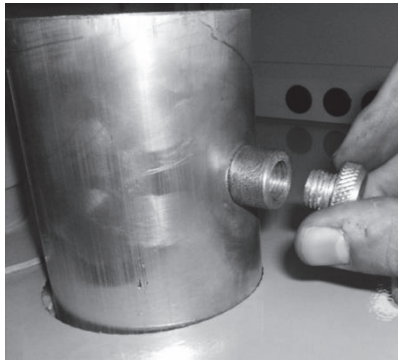
- Paint all pipe connections upstream of the gas control with a rich soap and water solution. Bubbles indicate a gas leak.
- If a gas leak is detected, tighten the pipe connection.
- Stand clear while lighting the main burner to prevent injury caused from hidden gas leaks, which could cause flashback in the appliance vestibule. Light the main burner.
- With the main burner in operation, paint all pipe joints (including adapters) and gas control inlet and outlet with a rich soap and water solution approved leak detection fluid.
- If another gas leak is detected, tighten adapter screws, joints and pipe connections.
- Replace the part if gas leak cannot be stopped.



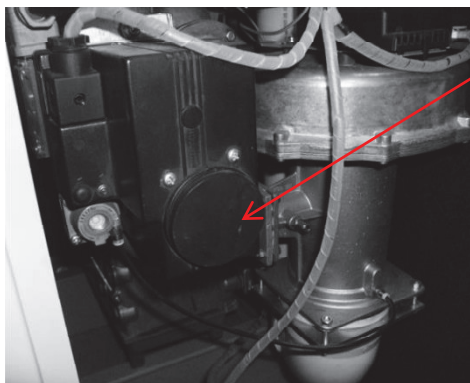
Check for gas leaks with a rich soap and water solution any time work is done on a gas control. Keep soap and water solution away from electrical connections. Disconnect power supply to prevent electrical shock and/or equipment damage. Wiring must be in accordance with local regulations. The appliance manufacturer's instructions should always be followed. Before installing or replacing any control check that type number is correct for the application. Ensure combustion chamber is free of gas before start up. Conduct a thorough check out when installation is completed. At the first start the ignition control can be in lockout; depress reset button to free the ignition control. Under normal circumstances no maintenance or service is required.

Adjustment of the Gas Rate

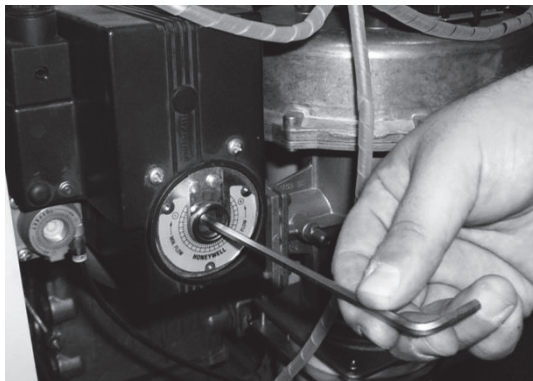
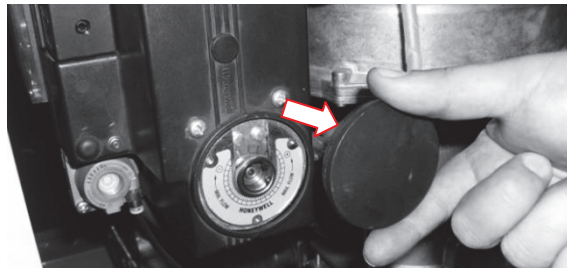
ONGAS 306/W & 307/W (VR 425 Series Gas Valve)



The boiler must be run at full modulation rate mode before starting the adjustment, therefore the boiler must be set test mode by using LCD display. Summer mode button should be pressed and hold more than 5 second , then (100) will be appeared on screen and boiler will be set to full modulation rate automatically. Meanwhile flue gas analyzer should be prepared for measurement and its probe should be inserted to chimney by means of flue gas measurement hole.

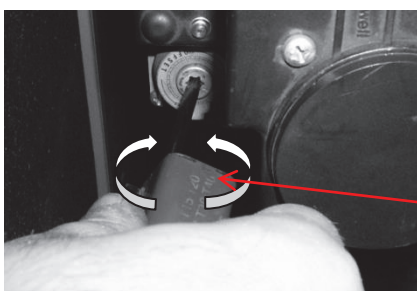


Remove the plastic cover of gas valve by pulling. Use a proper ,thin screwdriver , if necessary .(as it shown in the picture)



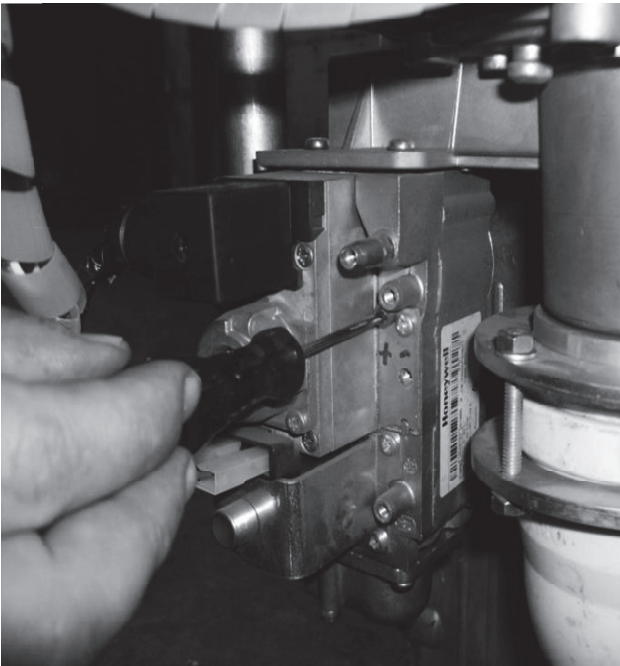
Increasing or decreasing gas rate by checking emission (O_2 , CO_2 , CO) values from the flue gas analyzer according to above table. Use the proper Allen tool and, rotate the Allen to right for decrease and left for increase. Continue this process until the reaching emission values in the table .(as it shown in the picture)

Emission Values		
CO_2	NO_x (Class 5)	CO
% 9 - 9,5	< 39 ppm	< 100 ppm

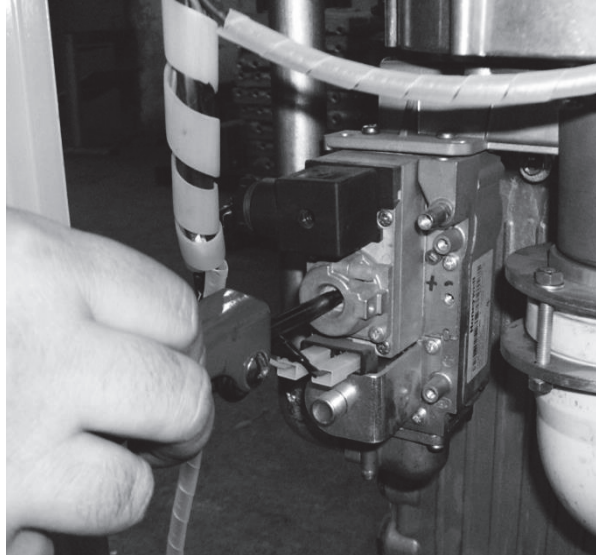


Rotate tool to right and left to increase and decrease CO_2 . Continue this process until the reaching emission values in the table .

ONGAS 304/W & 305/W (VR 4615 Series Gas Valve)

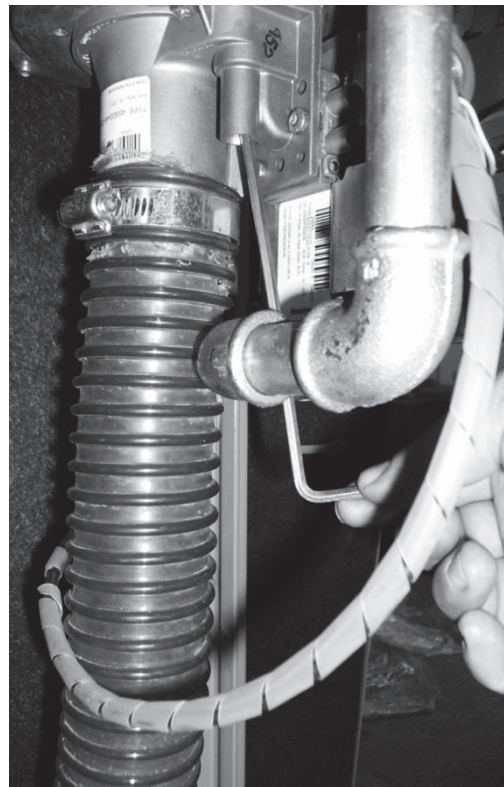
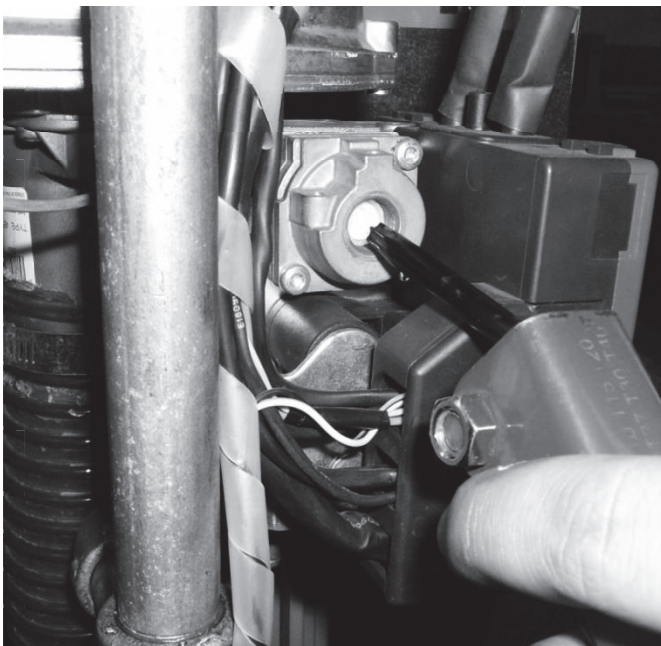


Repeat the mentioned steps above by using proper tool as it is shown picture (use screw driver for maximum gas rate adjustment) .



ONGAS 303/W (VK 4115 Series Gas Valve)

Repeat the mentioned steps above by using proper tool as it is shown picture (use Allen tool for maximum gas rate adjustment) .



Chimney connections

The boiler has been approved for the following flue configurations:

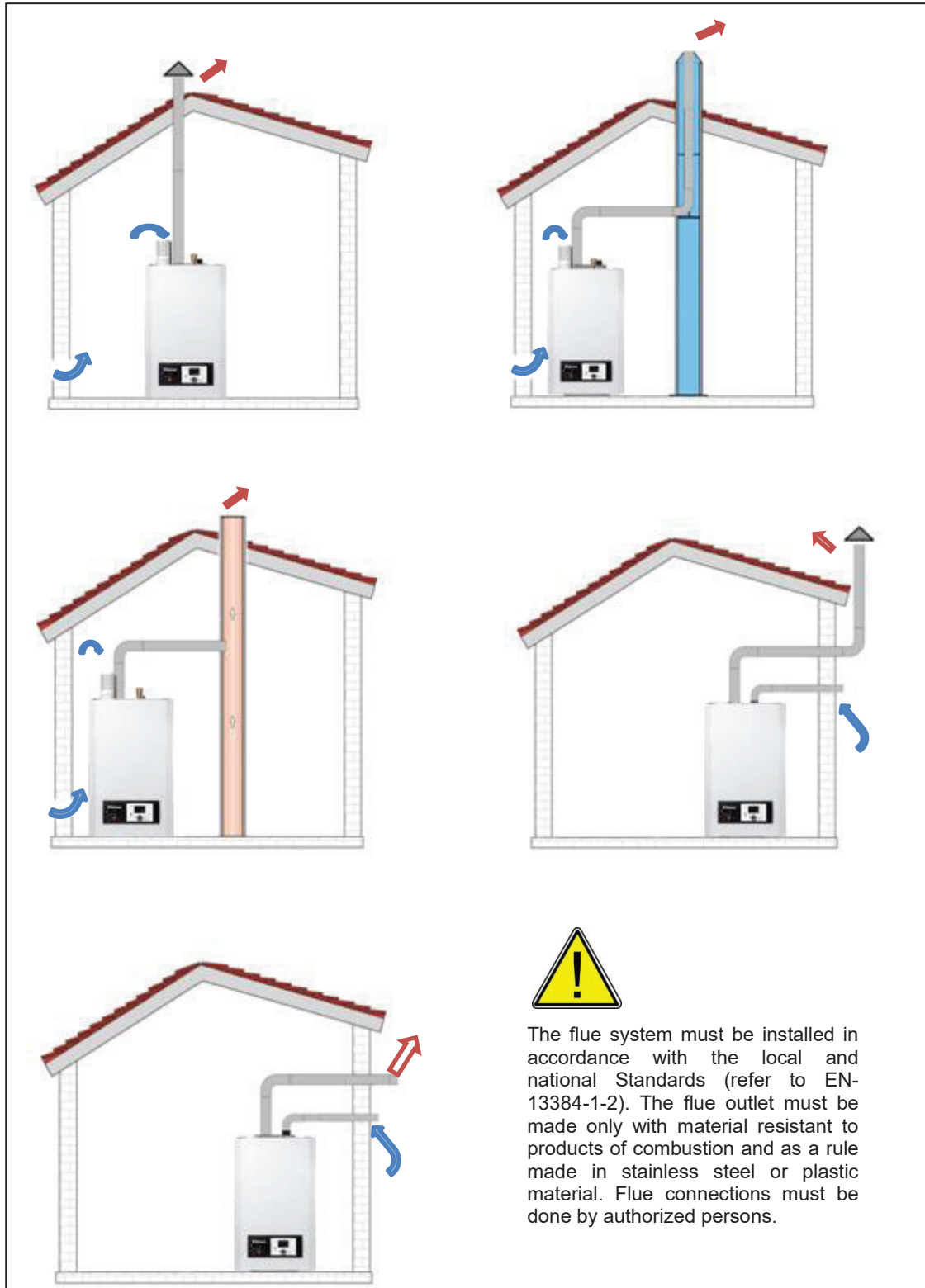
Type B23

Boiler designed to be connected to an open flue which will terminate vertically through the roof. The combustion air is intaken directly from the room where the boiler is installed. B23 type of connection the room must comply with the same installation regulations valid for open chimney boilers. The chimney must comply to the current regulations.

Type C63

Room sealed appliance, supplied without the terminal or the air supply and flue gas discharge ducts.

Installation Samples



Connect the boiler to the flue using a pipe made of stainless steel or plastic material with an internal diameter (diameters can be changed according to boiler models), capable of resisting normal mechanical stresses over time, as well as high temperatures (<120°C) and the chemical effects of fuel gases and their condensates. Whenever possible use a flue connection that can be disconnected for maintenance. Horizontal flue sections must have a minimum slope of 3° towards the boiler. Flue accessories made of plastic material for cascade or single installations are available all joints and seams should be gastight and watertight with the horizontal runs graded towards the boiler (min. discharge 5 cm per meter) to allow condensate free drainage to the boiler. Flue gas discharges longer than 2 meters must be supported independently and may not rest on the boiler. The flue outlet should terminate with reduction cone and bird guard only.

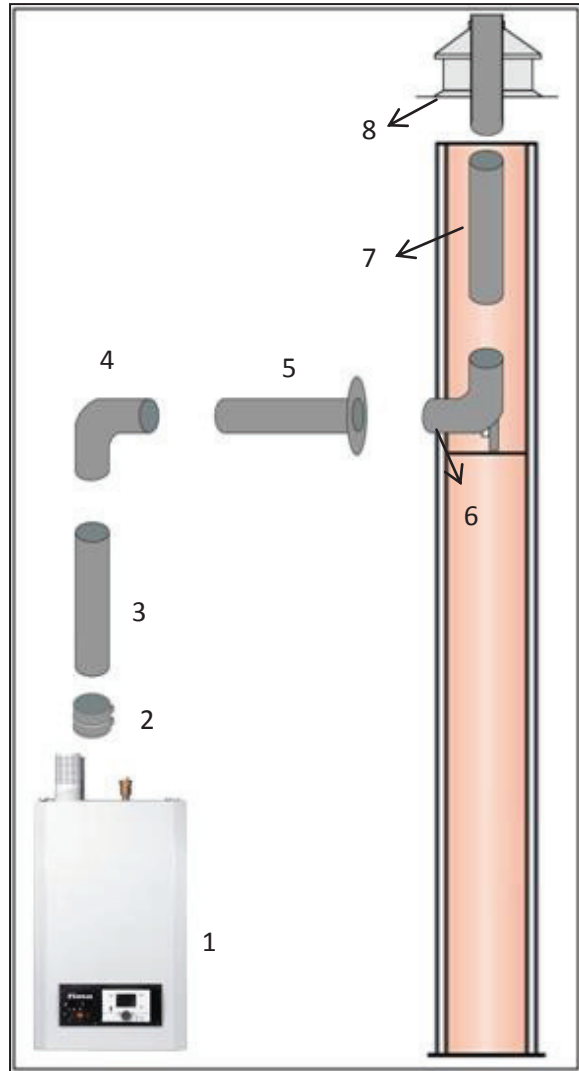
Chimney Installation for ONGAS 300/W Series

- 1- ONGAS 300/W Series Condensing Boiler
- 2- Chimney Clamp
- 3- Flue gas pipe
- 4- Bend 90°
- 5- Flue pipe with wall diaphragm
- 6- Bend 90°
- 7- Flue gas pipe
- 8- Chimney cap

All horizontal flue gas pipes must be installed with 3° angle for condensed water to flow back .

There must be empty space between flue gas pipes and inner wall.

Round shaped ; 3mm
Square shaped ; 2mm



Sample flue length calculation (B23 type) (For ONGAS 304/W Series Condensing Boiler)

1 x Chimney Clamp = 0,3 m
 1 x Flue pipe = 2 m
 1 x Bend 90° = 2m
 1 x Flue pipe = 2 m
 1 x Bend 90° = 2m
 1 x Flue pipe = 6 m
 1 x Flue pipe(in chimney cap) = 2 m
 Effective length = 0,2+2+2+2+2+6+2=16,2m
Result 16,2 m < 28 m OK

Model	Flue Diameter (mm)	Maximum Pressure (Pa)	Maximum Length (on evacuation ducts)(m)
ONGAS 303	80	260	18
ONGAS 304	100	260	28
ONGAS 305	115	180	20
ONGAS 306	127	210	30
ONGAS 307	150	190	40

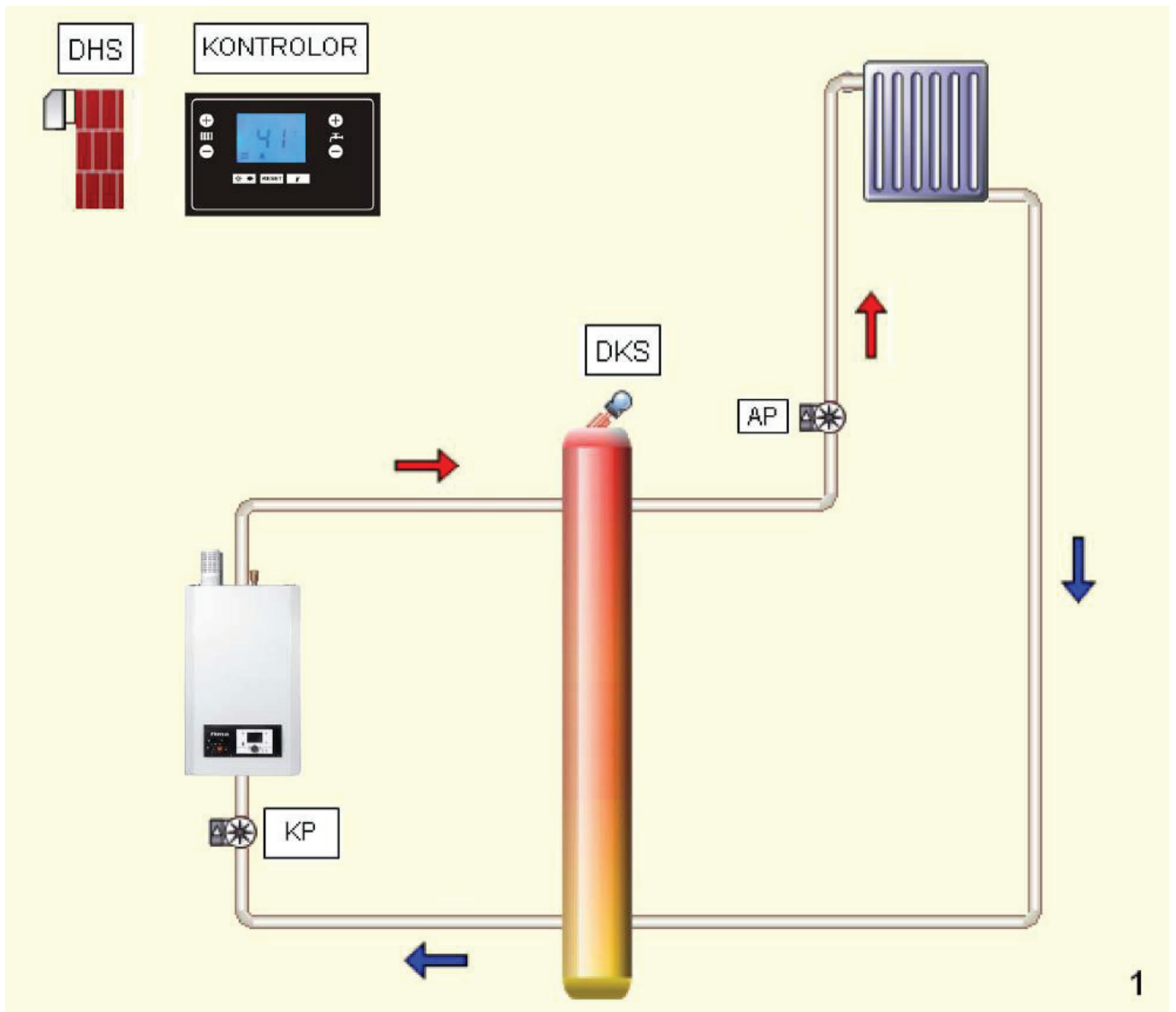
* These are only indicative value because the loss of the flue is different for every manufacturer.

* Flue length must be calculate according to the Maximum Pressure on table are given.

* Deviations in the flue systems and pipes must be calculate according to EN 13384-1 .

ONGAS 300/W Series Example Hydraulic Schemes

Scheme -1



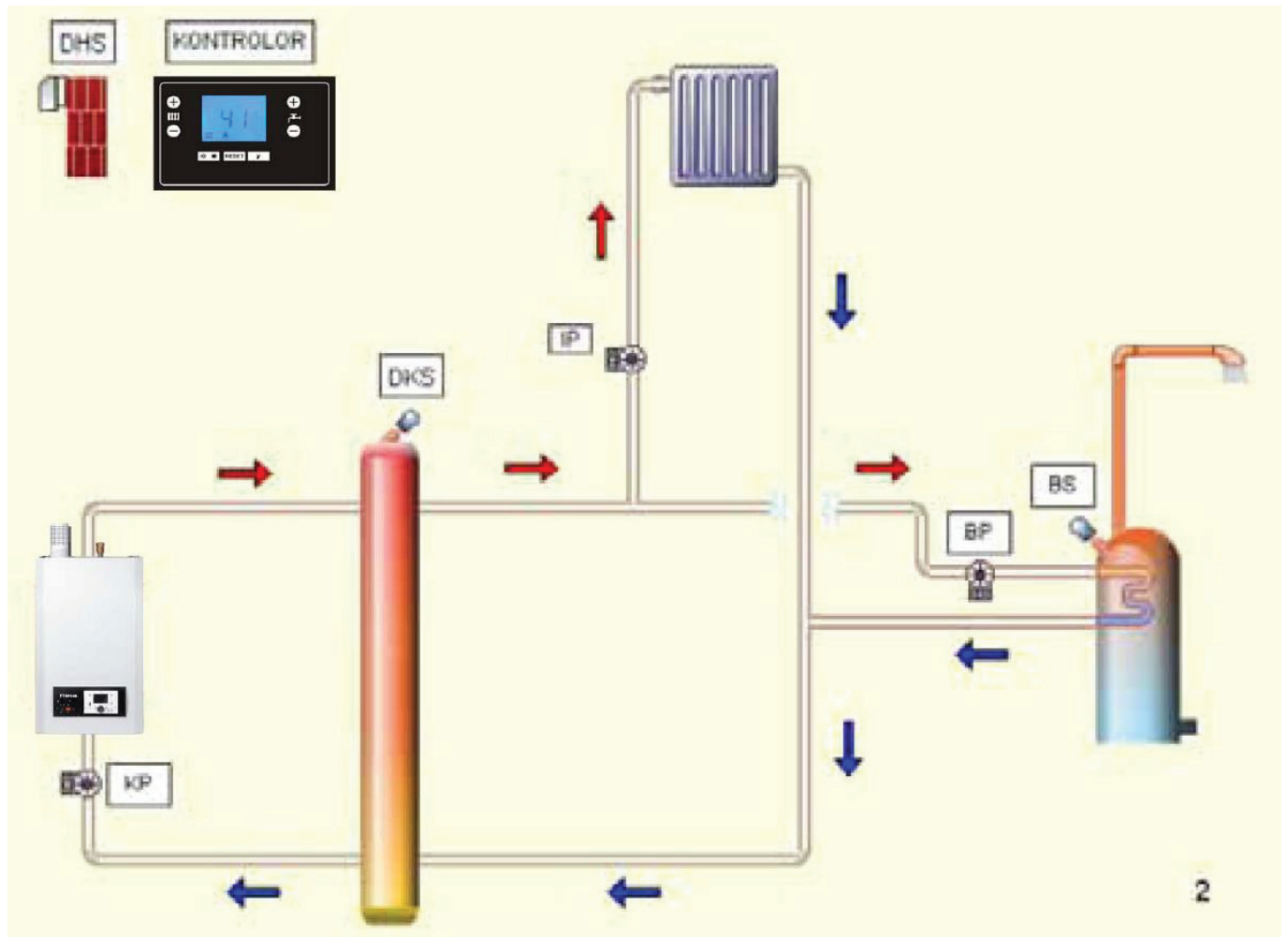
Meaning of the symbols on Scheme-1

DHS: Outside Temperature Sensor
KP: Circulation Pump
DKS: Low Loss Header sensor
AP: Main Pump

Note:

1. Only general installation principle, and electrical sensors are shown in the scheme. Filters, valves and expansion vessels are not shown in the scheme., these components must be chosen and placed accordingly.
2. Pumps and Low loss headers must be chosen according to table in the end of the manual.

Scheme -2



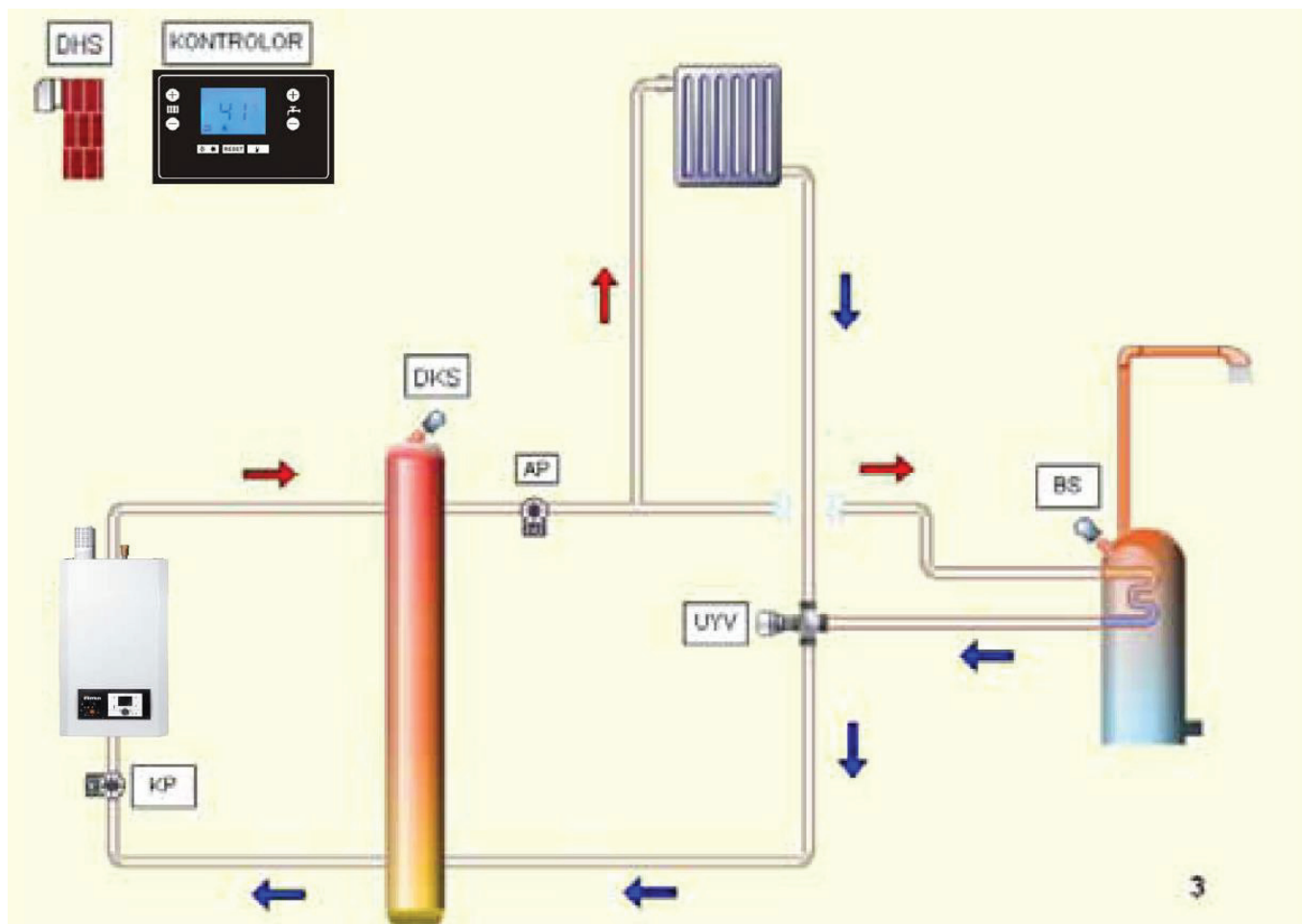
Meaning of the symbols on Scheme-2

- DHS: Outside Temperature Sensor
- KP: Circulation Pump
- DKS: Low Loss Header sensor
- BS: Boiler Sensor
- IP: Heating pump
- BP: Boiler Pump

Note:

1. Only general installation principle, and electrical sensors are shown in the scheme. Filters, valves and expansion vessels are not shown in the scheme., these components must be chosen and placed accordingly.
2. Pumps and Low loss headers must be chosen according to table in the end of the manual.

Scheme -3



Meaning of the symbols on Scheme-3

- DHS: Outside Temperature Sensor
- KP: Circulation Pump
- DKS: Low Loss Header sensor
- BS: Boiler Sensor
- UYV : 3 way valve
- AP : Main pump

Note:

1. Only general installation principle, and electrical sensors are shown in the scheme. Filters, valves and expansion vessels are not shown in the scheme., these components must be chosen and placed accordingly.
2. Pumps and Low loss headers must be chosen according to table in the end of the manual..

Fault Finding

Error code	LPB code	Description of error	Priority
10		Outside temperature, sensor error	6
20		Boiler temperature 1, sensor error	6
20		Boiler temperature 1, sensor error	9
25		Boiler temperature, solid fuel, sensor error	6
28		Common flow temperature, sensor error	6
28		Flue gas temperature, sensor error	6
28		Flue gas temperature, sensor error	9
30		Flow temperature 1, sensor error	6
31		Flow temperature 1, cooling, sensor error	6
32		Flow temperature 2, sensor error	6
38		Flow temperature, primary controller, sensor error	6
40		Return temperature 1, sensor error	6
40		Return temperature 1, sensor error	9
46		Cascade return temperature, sensor error	6
47		Common return temperature, sensor error	6
50		DHW temperature 1 sensor error	6
52		DHW temperature 2 sensor error	6
54		Flow temperature DHW, sensor error	6
57		DHW, circulation sensor error	6
60		Room temperature 1, sensor error	6
65		Room temperature 2, sensor error	6
68		Room temperature 3, sensor error	6
70		Storage tank temperature 1 (top), sensor error	6
71		Storage tank temperature 2 (bottom), sensor error	6
72		Storage tank temperature 3 (center), sensor error	6
73		Collector temperature 1, sensor error	6
78		Water pressure, sensor error	6
78		Water pressure, sensor error	9
82		LPB address collision	3
83		BSB wire cross-sectional / no communication	8
84		BSB wire address collision	3
85		BSB RF communication error	8
91		Data overrun in EEPROM	3
91		Data overrun in EEPROM	6
91		Data overrun in EEPROM	9
98		Extension module 1, error	8
99		Extension module 2, error	8
100		2 clock time masters	3
102		Clock time master without backup	3
103		Communication error	8
105		Maintenance message	5
109		Supervision boiler temperature	6
109		Supervision boiler temperature	9

Error code	LPB code	Description of error	Priority
110		STB lockout	6
110		STB lockout	9
111		Temperature limiter safety shutdown	8
117		Water pressure too high	6
117		Water pressure too high	9
118		Water pressure too low	6
118		Water pressure too low	9
119		Water pressure switch has cut out	6
119		Water pressure switch has cut out	9
121		Flow temperature heating circuit 1 not reached	6
122		Flow temperature heating circuit 2 not reached	6
125		Maximum boiler temperature exceeded	9
126		DHW charging temperature not reached	6
127		DHW legionella temperature not reached	6
128		Loss of flame during operation	6
128		Loss of flame during operation	9
129		Wrong air supply	6
129		Wrong air supply	9
130		Flue gas temperature limit exceeded	6
130		Flue gas temperature limit exceeded	9
132		Gas pressure switch safety shutdown	6
133		Safety time for establishment of flame exceeded	6
133		Safety time for establishment of flame exceeded	9
146		Configuration error sensor/controlling elements	3
151		LMS14... error, internally	3
151		LMS14... error, internally	6
151		LMS14... error, internally	9
152		Parameterization error	3
152		Parameterization error	9
153		Unit manually locked	9
160		Fan speed threshold not reached	9
162		Air pressure switch does not close	9
164		Flow/pressure switch, heating circuit error	6
164		Flow/pressure switch, heating circuit error	9
166		Air pressure switch error, does not open	9
169		Sitherm Pro system error	3
169		Sitherm Pro system error	6
169		Sitherm Pro system error	9
170		Error water pressure sensor, primary side	6
170		Error water pressure sensor, primary side	9
171		Alarm contact 1 active	6
172		Alarm contact 2 active	6
173		Alarm contact 3 active	6
174		Alarm contact 4 active	6
176		Water pressure 2 too high	6
176		Water pressure 2 too high	9
177		Water pressure 2 too low	6
177		Water pressure 2 too low	9
178		Temperature limiter heating circuit 1	3

Error code	LPB code	Description of error	Priority
179		Temperature limiter heating circuit 2	3
183		Unit in parameterization mode	6
183		Unit in parameterization mode	9
195		Maximum duration of the refill per charging exceeded	6
195		Maximum duration of the refill per charging exceeded	9
196		Maximum duration of the refill per week exceeded	6
196		Maximum duration of the refill per week exceeded	9
209		Fault heating circuit	3
209		Fault heating circuit	6
214		Monitoring of motor	6
215		Fault fan air diverting valve	9
216		Fault boiler	6
216		Fault boiler	9
217		Sensor error	3
217		Sensor error	6
217		Sensor error	9
218		Pressure supervision	6
218		Pressure supervision	9
241		Flow sensor for yield measurement, error	6
242		Return sensor for yield measurement, error	6
243		Swimming pool sensor, error	6
260	217	Flow temperature 3, sensor error	3
270	215	Temperature difference, heat exchanger too large	9
317	214	Mains frequency outside permissible range	6
320	217	DHW charging temperature, sensor error	6
321	217	DHW outlet temperature, sensor error	6
322	218	Water pressure 3 too high	6
322	218	Water pressure 3 too high	9
323	218	Water pressure 3 too low	6
323	218	Water pressure 3 too low	9
324	146	Input BX, same sensors	3
325	146	Input BX/extension module, same sensors	3
326	146	Input BX/mixing group, same sensors	3
327	146	Extension module, same function	3
328	146	Mixing group, same function	3
329	146	Extension module/mixing group, same function	3
330	146	Sensor input BX1 without function	3
331	146	Sensor input BX2 without function	3
332	146	Sensor input BX3 without function	3
333	146	Sensor input BX4 without function	3
335	146	Sensor input BX21 without function	3
336	146	Sensor input BX22 without function	3
339	146	Collector pump Q5 missing	3
340	146	Collector pump Q16 missing	3
341	146	Collector sensor B6 missing	3
342	146	Solar charging DHW sensor B31 missing	3
343	146	Solar integration missing	3
344	146	Solar controlling element buffer K8 missing	3

Error code	LPB code	Description of error	Priority
345	146	Solar controlling element swimming pool K18 missing	3
346	146	Solid fuel boiler pump Q10 missing	3
347	146	Solid fuel boiler comparative sensor missing	3
348	146	Solid fuel boiler address error	3
349	146	Buffer storage tank return valve Y15 missing	3
350	146	Buffer storage tank address error	3
351	146	Primary controller/system pump, address error	3
352	146	Pressureless header, address error	3
353	146	Cascade flow sensor B10 missing	3
371	209	Flow temperature heating circuit 3	6
372	209	Temperature limiter heating circuit 3	3
373	103	Extension module 3	8
374	189	Sithern Pro calculation	6
374	189	Sithern Pro calculation	9
375	189	BV stepper motor	9
376	189	Drift test limit value	3
376	189	Drift test limit value	6
376	189	Drift test limit value	9
377	189	Drift test prevented	9
378	151	Internal repetition	9
382	129	Repetition speed	9
384	151	Extraneous light	6
384	151	Extraneous light	9
385	151	Mains undervoltage	9
386	129	Fan speed tolerance	6
386	129	Fan speed tolerance	9
387	129	Air pressure tolerance	6
387	129	Air pressure tolerance	9
388	146	DHW sensor no function	3
426	151	Feedback flue gas damper	9
427	152	Configuration flue gas damper	3
429	218	Dynamic water pressure too high	6
429	218	Dynamic water pressure too high	9
430	218	Dynamic water pressure too low	6
430	218	Dynamic water pressure too low	9
431	217	Sensor primary heat exchanger	6
431	217	Sensor primary heat exchanger	9
432	151	Function earth not connected	9
433	216	Temperature primary heat exchanger too high	6
433	216	Temperature primary heat exchanger too high	9

Cleaning and Maintenance

The boiler is virtually maintenance free; it only has to be inspected once a year and only if necessary be serviced/cleaned.

The annual inspection of the boiler includes:

- **combustion system check of the boiler** (Clean the fan, venturi and burner);
- **checking the ignition electrode;**
- **leakage check** (water, flue gas and gas);
- **water pressure check.**



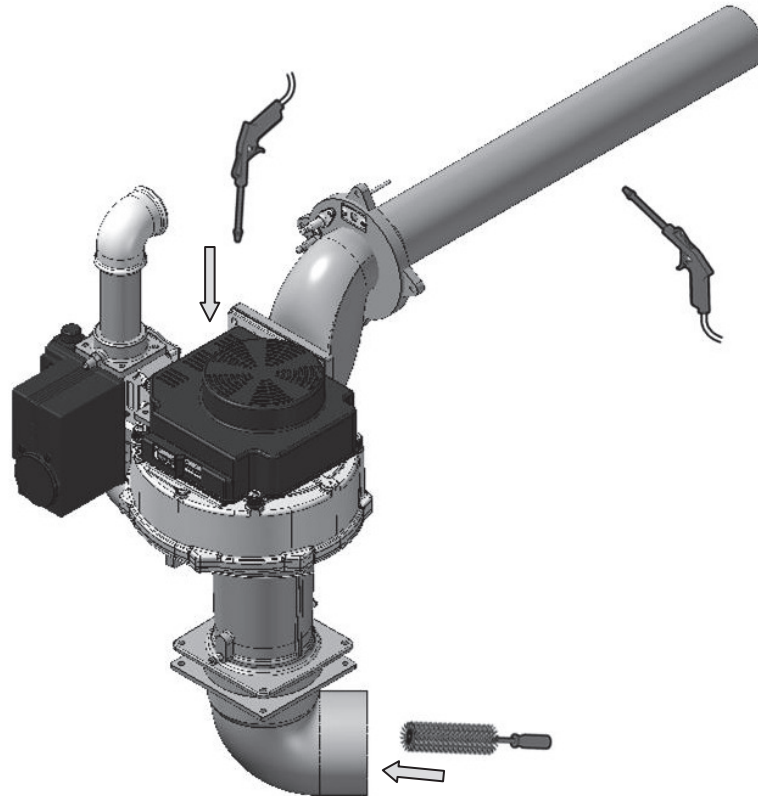
Disconnect the mains supply, close the main gas cock and allow the boiler to cool down before working on the boiler.

Combustion System Check

Combustion is checked by measuring the O₂/CO₂ percentage in the flue gas discharge duct. To do this, heat the boiler to a water temperature of ~ 70°C. The measurements must meet the values set according to gas rate adjustments. The flue gas temperature can also be measured at the measuring point in the flue gas discharge duct. If the flue gas temperature exceeds the return temperature by more than 30°C, this can indicate that the heat exchanger is dirty.

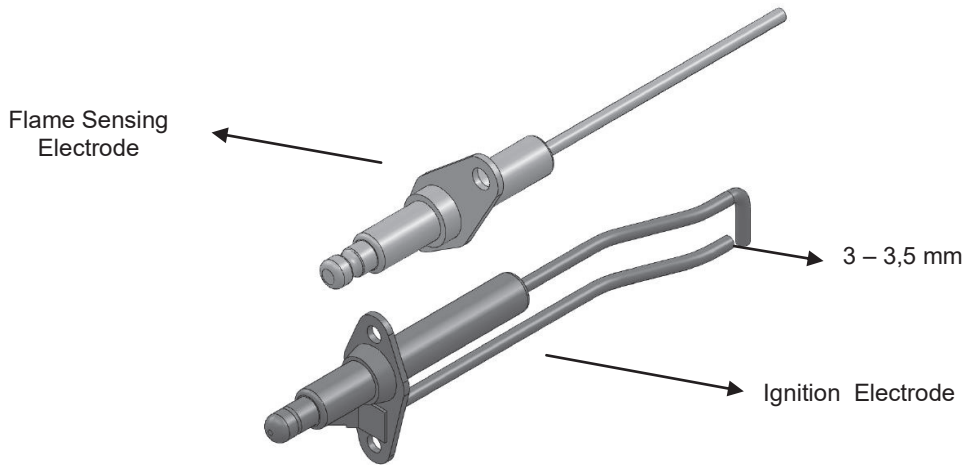
Cleaning the modulated fan , venturi and burner

1. Cut off the electrical supply.
2. Close the main gas valve.
3. Remove the electrical connections from the fan, gas valve and electrodes.
4. Remove the bolts from the venturi-air inlet connection.
5. Remove the pressure sensor and temperature sensor cables.
6. Remove the bolts from venturi-gas inlet connection.
7. Remove the burner connection bolts from heat exchanger.
8. Clean the pre-mix burner with air gun (nozzle - burner distance approx. 1 cm- compressed air must be 2 - 4 bar).
9. Remove loose dust from the fan and burner.
10. Clean the venturi pipe with a plastic brush or air.
11. Re-assemble all removed components; check the correct positioning of the sealing plate between fan and venturi.



Checking the electrodes

Check the ignition electrode adjustment (between 3 and 3,5 mm) and replace electrode if necessary (including sealing). Also check the electrode's porcelain for hairline fractures because this may cause spark-over.



Commissioning Form

Commissioning Steps	Values or Confirmations
1. Fill the central heating system with water. Check the water pressure in the central heating system.	<input type="checkbox"/>
2. Fill siphon with water.	<input type="checkbox"/>
3. Vent central heating system	<input type="checkbox"/>
4. Check circulation pump operation	<input type="checkbox"/>
5. Check water-side connections for leakage	<input type="checkbox"/>
6. Check type of gas offered and Flue gas measured	CO ₂ : O ₂ : NO _x :
7. Check the gas supply pressure	<input type="checkbox"/>
8. Check gas meter capacity	<input type="checkbox"/>
9. Check the gas leakage of the connections and the gas pipes	<input type="checkbox"/>
10. Vent gas supply pipe	<input type="checkbox"/>
11. Check electrical connections	<input type="checkbox"/>
12. Air supply and flue gas discharge connections checked	<input type="checkbox"/>
13. Check function and operational status of the boiler	<input type="checkbox"/>
14. Check whether the gas/air ratio control is correct	<input type="checkbox"/>
15. Measuring equipment removed and cap refitted on flue gas measuring point	<input type="checkbox"/>
16. Refit boiler front cover panels again in the proper manner(see boiler de-montage)	<input type="checkbox"/>
17. Mark the gas type on the boiler plate	<input type="checkbox"/>
18. Set room thermostat or boiler control to desired value	<input type="checkbox"/>
19. Instruct user and hand over the necessary documents	<input type="checkbox"/>
20. Confirmation of commissioning	Date :
(Company name, signature of engineer)	