

VIWA 90
VIWA 115
VIWA 125
VIWA 150

CONDENSING BOILERS
TECHNICAL & SERVICE MANUAL

Viwa 90
Viwa 115

Viwa 125
Viwa 150



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INTRODUCTION

This Service Manual was prepared by Warmhaus Service Management to provide our dear authorized services convenience and correct service.

Lifetime of these appliances is 10 years, which was determined by Ministry of Customs and Trade General Directorate of Consumer Protection and Market Surveillance. Appliances started up by authorized services have two (2) years of warranty against manufacturing and workmanship faults.

According to the relevant law, producing and vendor companies commit to keep spare parts and provide service for the appliance in order to make appliances function during this period. **Maintenance activities are determined periodically according to use frequency and appliance's distinctive -superior features- and carried out as PAID by authorized services.**

Periodic maintenances of the appliance considering the use frequency since the commissioning date provide fuel saving, extend appliance's service life, minimize the potential faults, and security and safety systems would be controlled. In cases which you doubt that appliance isn't working correct, maintenance should be done in one of the monthly, 3-month, 6-month or 1-year periods.

Don't clean the outer coating of the appliance with aggressive and/or highly flammable cleaners (for example: gas oil, alcohol etc.)

Appliance's operations such as control, repair, maintenance, part replacement etc. which is carried out by Authorized Service will take place under the normal conditions of the appliance and in the place of appliance except force majeure. Before making any operation on the appliance, disconnect the electricity and gas inlet definitely. **Prior to maintenance of the appliance, check the functions whether they are working normally or not and -if any- fault condition. Heat values and working noise must be checked by operating and stopping few times in the hot water and heating positions. Detections before and after maintenance must be done precisely in the presence of customer.**

After the operation, all components must original material to prevent any noise and leakage in the appliance. Auxiliary parts like bolt, screw, gasket, oring must be installed carefully.

CHAPTER-1 GENERAL CONDITIONS & INTRODUCTION

1.1. DELIVERING THE BOILER TO THE USER

After installing and commissioning the system, authorized service must deliver it to the user by following these procedures:

1. Inform the user to keep Installation and User Manual, to use the product according to the manual and his/her liabilities within the framework of relevant national legislations.
2. Explain and show the appliance's opening and closing procedures.
3. Operation of the boiler, using and adjusting the all controls of the system must be explained to the users completely to provide possible maximum fuel saving in line with the user needs for both heating and hot water. In the event that system isn't operating under normal conditions, inform about the necessary precautions not to damage the system or the building.
4. Explain heating the boiler, controlling and operating the domestic hot water.
5. Explain the user what to do in the cases of fault and error in the appliance.
6. To use the system economically, demonstrate and explain the boiler pumps with heating controls, circulation pumps, three way valves, residue-air separator, DHW boiler, expansion tank, gas connections and pressure indicators and all functions of ventilation systems and flue systems.
7. If there's a timer, pay attention to the User Instructions and give them to the user.
8. Demonstrate and explain what to do in case of water pressure's decreasing.
9. Explain the restart procedures of the appliance (see. INSTALLATION & USER MANUAL).
10. **DEFINITELY, fill the Commissioning Checklist (with signatures of vendor-costumer-service) and deliver it to the authorized with Service Receipt after controlling installation's conformity with the INSTALLATION & USER MANUAL. Send a copy of Commissioning Checklist to Warmhaus Service Management with the Service Receipt.**

IMPORTANT

Authorized Service Technician must check whether following operations are done correct:

- a. Make sure that electrical connections are done correctly and earth cable has a good earthing system.
- b. Conformity of the appliance's Heating and Domestic Hot Water with gas line,
- c. Conformity of the appliance's parameter settings with the system and customer demands,
- d. Make sure there is no liquid or flammable material near the boiler.
- e. Open gas valve, control the all connections, durableness and impermeability of burner and exchanger.
- f. Make sure that gas type of the boiler is suitable for it to function.
- g. Check the impermeability of the flue pipe of exhaust gas, whether it is clogged and is installed properly.
- h. Make sure that all valves of the system are open.
- i. Make sure that heating system is filled with water and air is well discharged. -Check whether the circulation pump is jammed and is functioning. Discharge the air in the heating system and gas line.

ANNUAL MAINTENANCE:

Emphasize the importance of having the annual maintenance of your appliance done by Warmhaus Authorized Service. Periodic maintenance enables boiler economic service life and to function effectively.

BOILER MAINTENANCE CONTENT

These are the main issues which must be controlled periodically, and increase the service life and efficiency of your appliance and system during condensing boiler maintenance.

- General controls of the boiler(s) and the system,
- Control of the condition of flammable burner and aluminum connecting flange -ionized -flame control electrode position-
- Interior exterior cleaning control of the combustion chamber- exchanger
- Control of the gas- combustion circuit connection and equipments of the boiler
- Control of the drainage line of the condensation water
- Control of the calibration settings of the gas valve
- Control of the system pressure of central heating (radiator) circuit,
- **Exchanger cleaning with system and boiler filters:** For effective and long time functioning, strainer, residue retainer cleaner, water and smoke canals of main exchanger must always be clean.
- **Pressure control of the water pressure and expansion tank of the boiler and system:** It is recommended for the boiler water pressure to be 8,0 bar at minimum, for operation pressure to be between 1,5 -3 bar. Pressure control of expansion tanks in boiler system, if low,filling with gas
- **Control of the air purger:** Check if there is water in the cap of air purger. In case of leakage, change the purger.

- **Control of the condensation water flusher and neutralizer:** Remove the flush and clean it, fill it with water, place it. Connect the hose nozzle to the outlet with inclination not preventing the flow. Organize the control of neutralizer box and granul level and granul adding procedure.
- **Fan and burner control:** Cleaning of the fan blades and balance control of the fan engine, cleaning of the flammable burner and electrodes and control of the electrode adjustments,
- **Control of the ionization flow:** Check the ionization flow in full and partial weight. It will stabilize within 1-2 minutes. If the flow isn't stabilized, clean or change the ionization electrode.
- **Control of gas leakage:** Gas leakage control of gas valve, pipe, venturi connection with gas leakage detector:
- **Combustion control of boiler:** (calibration) Control the Exhaust Flue gas by measuring O₂ /CO₂ ratio from discharge pipe. Calorific values must be controlled from the chart of each appliance.
- **Impermeability control of the flue:** Control the discharge of exhaust flue gas and air inlet connections. Change the gasket if they are worn out.
- **Control of the functions of thermostat, sensor and pump:** Control of system's all thermostat and sensors, and module, pump, three way valve and DHW boiler's proper operation together
- After the processes of removal and cleaning-changing, all removed parts must be replaced sensitively.

SPECIFICATIONS:

- Make sure that there is no dirt inside the exchanger and, if necessary, inspection by mirroring between the blades.
- If there is dirt on the burner, clean it with air; if there is deformation in the steel cord surface, change it.
- Check the double ignition electrode, if there is dirt clean it, and in case of deformation change it.
- Change the old, worn-out o-ring, gaskets and isolation materials with new ones.
- Connect fan-gas valve, burner cap and exchanger connection imperviously.
- Control the parts of boiler by reassembling, applying the opposite of removing.
- Deliver the appliance to the customer after explaining how to activate it and the terms of use.

1.2. RECOMMENDATIONS ON USING THE BOILER ECONOMICALLY

Your boiler is adjusted for economic usage in the factory, we recommend not to change it.

Correct Capacity Selection

Boiler capacity must be selected accordingly by properly calculating the heat loss of the place where the boiler will be used. Appliance without the adequate capacity will response late to the heating demands, appliances with over capacity may cause discomfort and more fuel consumption as it will activate more frequently. Thus, it is necessary to select boiler capacities according to the place of use.

Isolation

Isolation condition of your building is the most important issue preventing the heat loss and decreasing the gas consumption. Furthermore, as it has the thickest isolation of its class, heat loss is minimized.

Radiators

Make sure to balance pressure distribution of your heating system in the house by arranging the reduction settings of your radiator valves. Putting furniture in front of radiators cause discomfort and more fuel consumption as it prevents the air circulation. Turning down the radiator valves of rooms which haven't been used for a long time or reducing to the lowest if thermostatic radiator valve is being used and closing the room doors provide savings.

Domestic Hot Water

If you are using the boiler with a DHW boiler, we recommend you to adjust temperature of domestic hot water as (38-42 °C). Setting the temperature adjustor to a low level provides savings at a large rate.

Thermostatic Radiator Valves

You can acquire both saving and comfort by balancing the heat distribution in the places of home via using Thermostatic Radiator Valves.

Room Thermostats

As you will have the opportunity to adjust ambient temperature with room thermostats according to comfort and economy timers, your boiler will operate more economically. Thus, both you can adjust your room temperature as you wish and you can save on energy to about %6 with each degree of temperature decrease.

Ventilation

Don't leave windows half open to ventilate the room/rooms. In that case, although there will be no significant improvement in the room air, there will be constant heat loss. Opening the windows fully for a short period of time results better. While ventilating the rooms, reduce the thermostatic radiator valves to the lowest.

1.3. POINTS WHICH USERS MUST PAY ATTENTION FOR TERMS OF WARRANTY

This warranty given by WARMHAUS doesn't involve repairing faults arising from using the product other than normal, also the following is out of warranty:

1. Damages and faults in the products which wasn't started up by Warmhaus Authorized Services,
2. Damages and faults arising from using the product inconsistently with Operating Manual and out of purpose,
3. Damages and faults arising from wrong type selection,
4. Damages and faults due to maintenance and repairs by people other than Authorized Services,
5. Damages and faults arising from transportation, discharge, loading, storing, external physical (crashing, scratching, breaking) and chemical factors after the delivery of the product,
6. Damages and faults occurring due to fire, flood or stroke of lightning,
7. Damages and faults arising from wrong fuel usage and fuel features,
8. Damages and faults occurring due to under or high voltage; not using grounding plug; wrong electric wiring,
9. Damages and faults arising from not carrying out the described periodical maintenance on time,
10. Damages and faults which may occur in the appliance or usage area due to other product and accessories used in a system with the guaranteed appliance.
11. Faults and damages due to freeze/icing or using in places open to atmosphere (outside balloon etc.).
12. Distorting the Registry Label and Certificate of Warranty,
13. Damages and faults arising from using water other than the water values stated in the operating manual of the appliance,

Repair of the above-mentioned faults and in the warranty period of the device, annual maintenance and cleanings made by our authorized services will be done at a fee.

Viwa

90-115-125-150 kW



**12 Reasons
to Choose
Viwa Boiler**



Operation without Cascade Panel with built-in Interface Card

With built-in Cascade module in the control panel there is no need for an additional control unit which makes connection easy and communication simple. Each boiler can be used as master or slave.



Perfect Heat Transferer Aconit® Burner

Perfect heat transferer Aconit® burner has specially designed to benefit maximum from exchanger space. Thanks to its wide modulation rate and low surface temperature it provides highest performance and lowest NOx emission.



Cascade Installation till 15 x 150 = 2250 kW

With external cascade control panel it is possible to reach maximum 2250 kW central heating system capacity till 15 boilers.



Compatibility with different cascade control panels

Warmhaus Viwa boilers are able to communicate with open term communication protocol and work with various cascade control systems available in the market.



Multiple Part Management

With an external module 4 direct heating circuit and hot water tank or 1 low temperature zone, one high temperature zone and one tank circuit can be controlled.



Easy and Quick installation with Smart Plug System

Easy and quick cascade installation up to eight boilers with to built-in cascade unit and smart plug system.



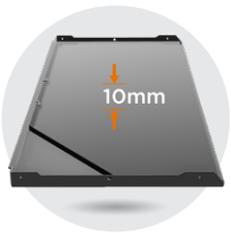
Compact Dimensions & Less Installation Area (720 x 615 x 490 mm)

Compact dimensions and adjacent side by side installation capability allows installation with less area.



Al-Si-Mg Alloyed Monoblock Exchanger

Al-Si-Mg alloyed exchanger which gives important advantages as more efficient with its higher heat transfer than stainless steel, significantly lower and high corrosion resistance gives capacity from 90 kW to 150 kW.



Perfect Body Isolation

High usage efficiency is ensured with the help of the 10 mm thick isolation which prevents heat loss from boiler body and decreases sound level.



Built-in Particle Filter

Built-in mini particle filter, air separator and additional air separator on the exhaust manifold prevent air and particle in the system from damaging the exchanger.



Hermetic Flue Connection

Warmhaus Viwa boilers have room sealed hermetic boiler design and compatible with Ø100/150 mm concentric flue connection. Each boiler can be used with its own flue sets independent from each other which makes cascade systems to be installed in roof space without stainless steel flue.

TECHNICAL DATA		Viwa 90	Viwa 115	Viwa 125	Viwa 150
Gas Circuit	Birim				
Gas type		G20	G20	G20	G20
Gas supply pressure	mbar	20	20	20	20
Gas Consumption at Maximum	m ³ /h	9,301	11,55	12,737	15,27
Gas Consumption at Minimum	m ³ /h	1,538	1,787	2,005	2,419
*(Natural Gas G20) Heat Load (Hu=10,56 kWh/m ³)					
Premix System		Pneumatic			
Modulation Range		1:6			
Heat Exchanger Material		Al-Mg-Si			
Efficiency		G20	G20	G20	G20
(80/60 °C) Efficiency at Maximum Heat Output	%	97,72	97,46	97,78	97,58
(50/30 °C) Efficiency at Maximum Heat Output	%	103,59	102,67	103,6	103,04
Efficiency at 30% load at 36/30 °C	%	107,48	107,17	108,01	107,49
Seasonal space heating energy efficiency (expressed in terms of GCV)	%	92 (Class A)	92 (Class A)	92 (Class A)	92 (Class A)
Radiator Circuit		G20	G20	G20	G20
Maximum heat input Qn	kW	90	115	125	150
Minimum heat input Qn	kW	14,5	17,5	20	24
Maximum Heat Output Pn (80/60 oC)	kW	87,9	112	122,2	146,3
Minimum Heat Output Pn (80/60 oC)	kW	13,23	15,38	17,82	21,62
Maximum Heat Output Pn (50/30 oC)	kW	93,2	118	129	154,5
Minimum Heat Output Pn (50/30 oC)	kW	16,08	19,04	20,81	25,05
Temperature selection range (min - max) high temperature	°C	25 - 80			
Temperature selection range (min - max) low temperature	°C	25 - 47			
Operating Pressure (Maximum)	bar	6			
Operating Pressure (Minimum)	bar	0,8			
Domestic Hot Water Circuit					
Temperature adjustment range (min - max)	°C	20 - 65			
Electricity Circuit					
Electricity Supply	V AC-50 Hz	230 V +/-10%; -%15			
Electricity Consumption (Max./Min.)	Watt	29 / 120	30 / 128	29 / 169	30 / 265
Protection Index	IP	IPX5D			
Exhaust Gas Circuit		G20	G20	G20	G20
(80/60 °C) Exhaust gas temperature (Min. / Max.)	°C	53,5 / 61,7	52,5 / 67,8	56,4 / 58,7	56,9 / 67,6
(50/30 °C) Exhaust gas temperature (Min. / Max.)	°C	30,4 / 46,3	31,2 / 50,2	30,1 / 46,6	30,2 / 48,0
NOx	Class	6			
Weighted value of Nox (GCV)	mg/kWh	18	28	25	29
Flue mass flow rate (60/80°C - Qn) Nominal/Minimum	g/s	38,89 / 6,43	48,29 / 7,47	53,25 / 8,38	63,84 / 8,38
General					
Dimensions (H x W X D)	mm	725 x 612 x 490			
Sound Level	dB (A)	62,1	62,1	63,4	63,4
Net Weight	kg	70	70	82	82
Packed Device Weight	kg	87	87	99	99
Type		B 23, C 13, C 33, C 53, C 63, C 83			
Category		I2H/I2E/I2E(S)/ (G20=20mbar)			

CHAPTER-2 CONTROL OF THE INSTALLATION

2.1. MEASUREMENTS AND WEIGHT

Boiler dimensions and connections

it can be installed side by side without distance thanks to compact dimensions. It enables easier installation in smaller volumes

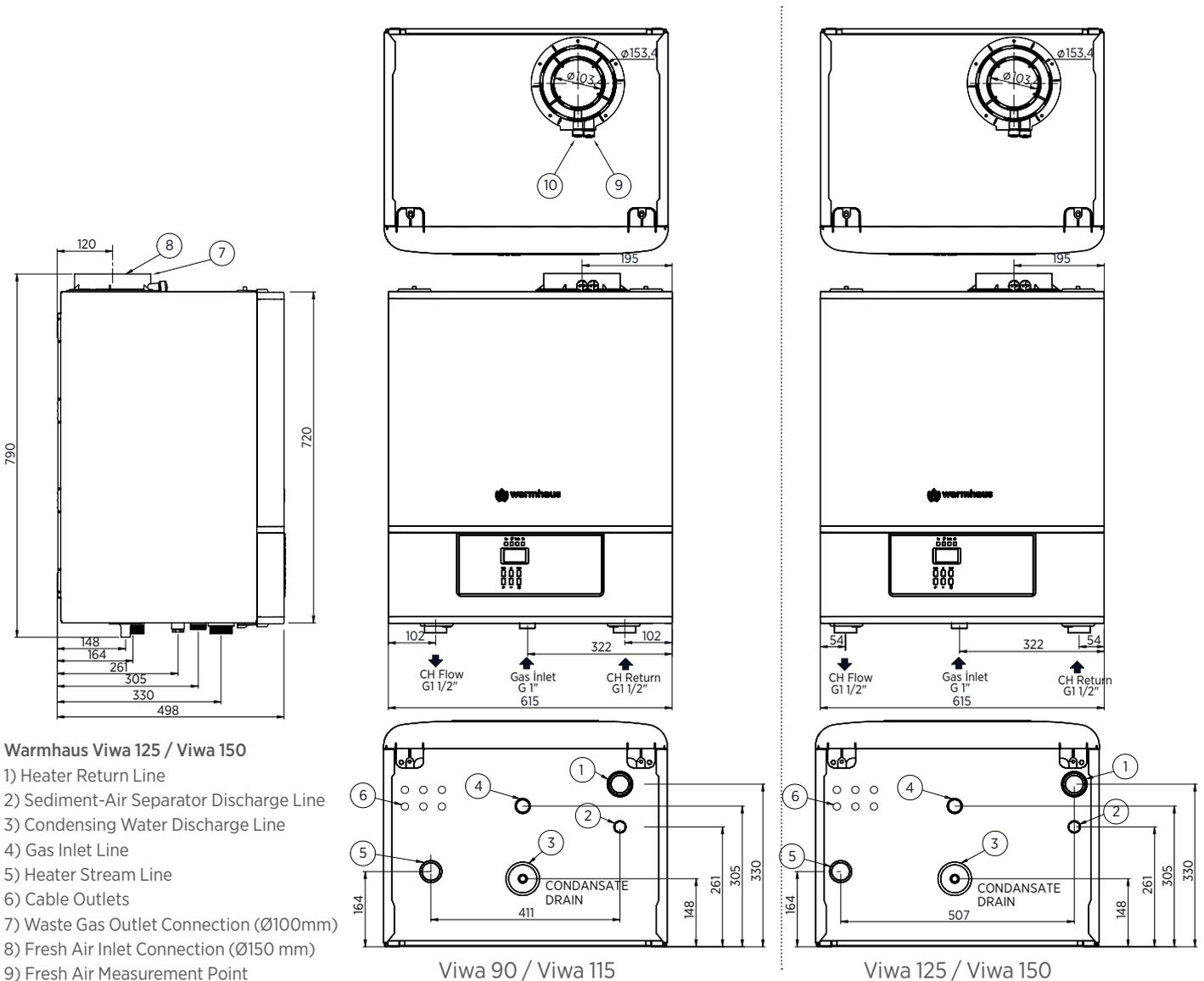


Figure 2.1 Boiler sizes and connections

2.2. HEATING AND DOMESTIC HOT WATER SYSTEMS

Radiator and underfloor heating installation should be constructed in accordance with legislation in force technical specifications and heat loss calculation.

- Heating system must be installed to resist pressure up to at least 6 bar.
- Pressure reducer must be installed if the mains pressure is above 6,5 bar.
- It is recommended to install heating system as (at least) double or mobile line by avoiding bends and additions as much as possible.
- A strainer filter must be installed in heating return line and, if DHW boiler (mains) is being used, in inlet line.
- Additional expansion tank with at least 50 liters must be used according to the heating water volume capacity and operating temperature of the heating system (closed circuit).
- If the valves of room thermostat and thermostatic radiator are going to be used together; thermostat valves shouldn't be installed to radiators in the places where there's room thermostat!
- Cross connection must be made for efficient operation in radiators longer than 1,5 m.
- Covers shouldn't be used in the transitions of heating and domestic hot water from walls, and wall clamps must be immobilized not to slope in expansions due to heating.
- An external DHW boiler must be connected to the boiler for Domestic Hot Water supply. It is necessary to use three way valve and DHW boiler sensor in the product accessory group in case of usage with DHW boiler.
- Heating system must be washed and cleaned up before filling!

2.3. FILLING THE FLUSHER FOR CONDENSATION LINE

The condensation siphon must be filled with water after completing wall-hanging of the condensation boiler, electrical connections, heating lines, hot domestic water connections and condensate drainage line (Figure 2.2).

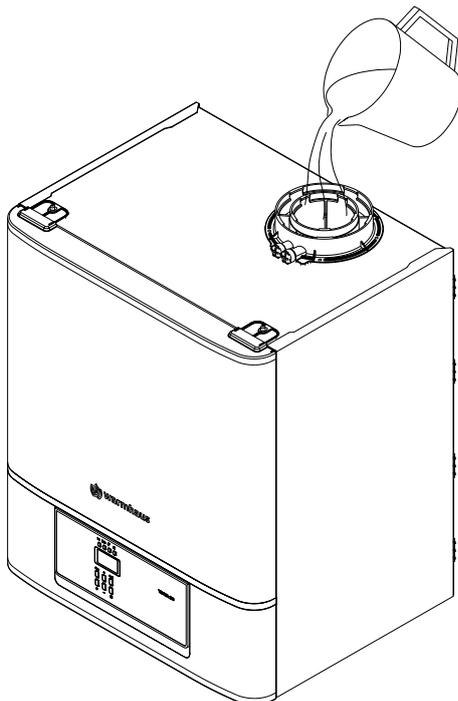


Figure 2.2 Filling the condensation siphon



Condensation line outlet connection must be sealed. However, against the risk of waste gas leak in the first operation, pour about 1 litre of water into the chimney before chimney-mounting of siphon in the boiler. Thus, the water in the siphon will prevent the leakage of waste gas.

The tilt of the condensation water hose and line must always be downward.

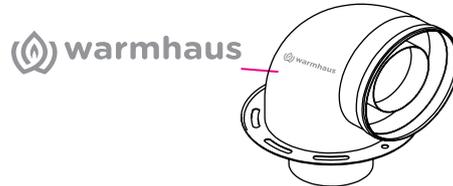


Figure 2.3 Warmhaus logo is available on the flue bend.

2.4. CONNECTION OF WASTE GAS CHIMNEY PIPE SET AND ACCESSORIES



Chimney accessory of hermetic boilers sets to be used in the waste gas installation should be original Warmhaus chimney sets and they should be used taking into account sizes and restrictions given in the mounting instructions.



If different waste gas pipes and/or accessories are used other than original Warmhaus waste gas chimney pipes and accessories, the boiler will not be started by the Authorized Service and therefore cannot be guaranteed!

The boiler should only be mounted with plastic material and the original Warmhaus air intake and waste degazing device.

Plastic ducts cannot be installed outdoors, at intervals over 40 cm, without proper protection against UV and weather conditions. Each pipe is identified by a promoting and distinctive Warmhaus sign in the notes.



If more than one Viwa 90-150 boilers are connected in parallel to the same hydraulic installation and operated as cascade, it is necessary to use the product code for each boiler is: O100 / 100 Waste Gas Chimney Block with 153.11.660.600040 product code or (O100-O100) Chimney Block products with 153.11.660.600068 product code must be used for each boiler. In the same installation, the blocks should not be used together and the same block product should be used for each boiler.

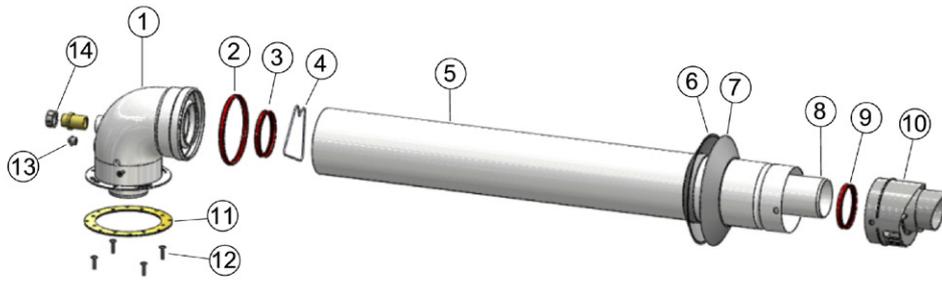
If the Viwa 90, Viwa 115, Viwa 125 and Viwa 150 boilers are used as cascade systems and our blocking products are not used in each boiler, boilers will not be started by our authorized service!

IMPORTANT



The following must be checked during starting the boiler:

- Make sure that there is no liquid or combustible materials near the boiler.
- Ensure that the electrical connections are made correctly and that the ground wire is connected to a good grounding system.
- Open the gas valve and check the durability of connections including the burner, burner exchangers and heat exchangers.
- Ensure that the boiler is adjusted for operating for the supplied gas type.
- Check that the chimney pipe in outlet of combustion products is not blocked and is properly mounted.
- Make sure that any (safety) shut-off valve is open.
- Ensure that the system is filled with water and thoroughly ventilated.
- Check that the circulation pump is not jammed.
- Discharge the air that may be in the gas line, discharge the air in the gas pipe by operating the pressure discharge valve at the gas pipe inlet.



1. 90° elbow
2. Sealing gasket
3. Sealing gasket
4. Centring wire
5. Exterior chimney pipe
6. Inner wall blind flange
7. Outer wall blind flange
8. Interior chimney pipe
9. 60 Sealing gasket
10. Protection cage
11. Flange gasket
12. Flange connecting screws
13. Control measurement stopper
14. Fresh air control cover

Figure 2.4 Ø80/125 mm Concentric Chimney Set

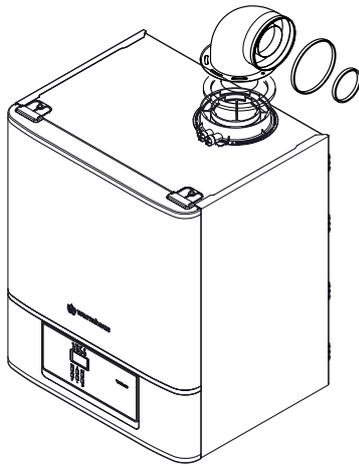


Figure 2.5 Installation of chimney set parts

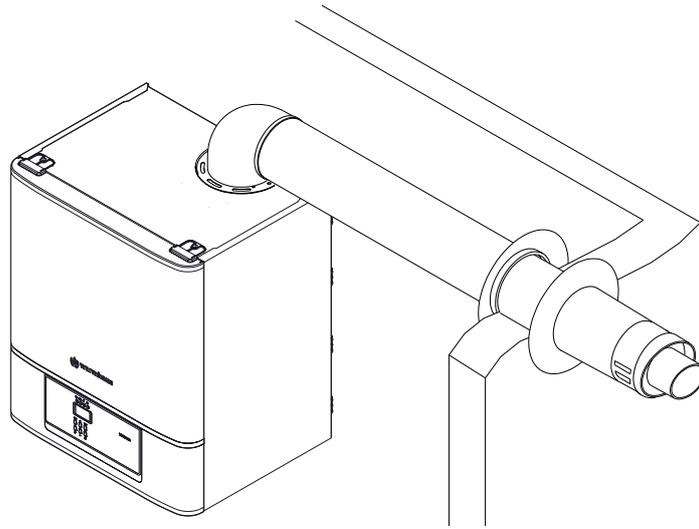


Figure 2.6 Combi concentric chimney wall outlet for hermetic use.

• Concentric extension pipes and plug-in type seal for elbows. To connect the possible extension connections of the waste gas chimneys to other elements of chimneys: connect the male (straight) side of concentric pipe or concentric elbow to the female side (sealed side) of the previous part, in this case make sure you have fitted the required washer, so the connection will be tight and integrity of parts of the set will be ensured.

 Please note that in the case where shortening of the discharge chimney and/or extension is required, the inner chimney must always be 5 mm ahead of the outer pipe..

 For safety reasons, the absorption/ discharge chimney of the boiler should not be blocked, even if for short-time or temporarily.

 During installation of the horizontal pipes, the pipe tilt must be kept upwardly a minimum of 3%, dowelled in every 3m and a retaining clamp must be used.

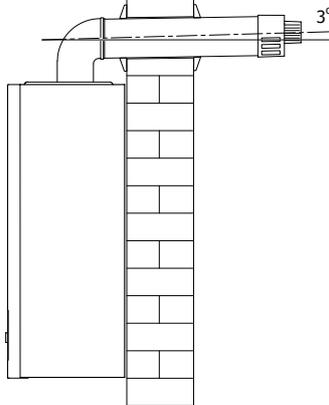
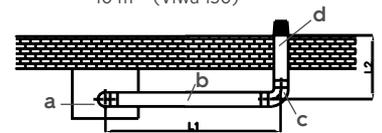


Figure 2.7 Condensed boiler chimney tilt

Ø100/150 mm
 $a + b + c + d < 19 \text{ m} = (\text{Viwa } 90)$
 $19 \text{ m} = (\text{Viwa } 115)$
 $18 \text{ m} = (\text{Viwa } 125)$
 $10 \text{ m} = (\text{Viwa } 150)$



- a- Horizontal Chimney Set Elbow (90°)
- b-Chimney Extension Pipe
- c- Additional 90° Elbow
- d-Horizontal Chimney Set Pipe

Figure 2.8 II. Two 90° cantilever sample chimney installation

 The total length of the concentric chimney set must not exceed 10m horizontally with a single elbow. In additions, this total length is reduced by 1 m for each 90° elbow use and 0.5m for each 45° elbow use. Up to 3 90° elbow can be used.

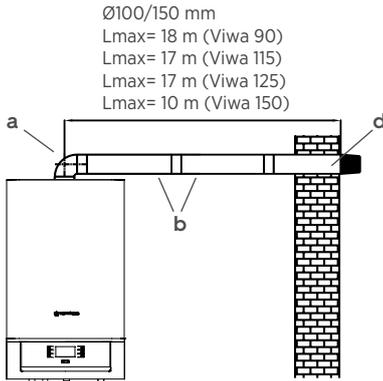


Figure 2.9 I. Single 90° angled sample chimney installation

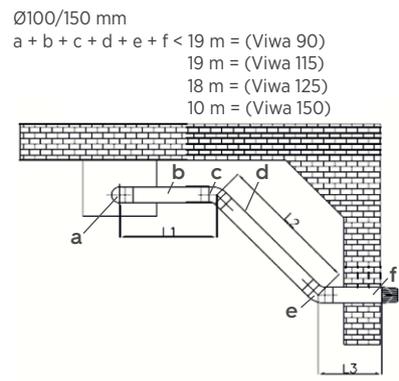


Figure 2.10 III. Single 90° and two 45° angled sample chimney installation

- a- Horizontal Chimney Set Elbow (90°)
- b- Chimney Extension Pipe
- c- Additional 45° Elbow
- d- Standard Chimney Set Pipe
- e- Additional 45° Elbow
- f- Horizontal Chimney Set Pipe

2.4.1 (Ø100/150 MM) INSTALLATION WITH HORIZONTAL CONCENTRIC FLUE SETS CONNECTING THE HORIZONTAL CONCENTRIC FLUE SET TO THE BOILER

Since your boiler is hermetic model, if it is used with concentric chimney sets, it takes the air that it uses from the outside and emits waste gases due to combustion to the outside from the same chimney group. The use and installation of the chimney is very important to avoid emission of waste gases which are extremely harmful, so cautions should be taken into account when connecting chimney.

- Select the chimney necessary for the chimney connection from the mounted place of your boiler and outside. If the horizontal/vertical chimney set is insufficient, select the most appropriate elements from our list of connection accessories, taking into account the warnings mentioned in our operating manual.
- Fix the flange under Elbow part (1) in Figure 2.14 on holes on the boiler by using the Flange Seal (10) and screwing with the flange connection screws (11).
- Two sealing gaskets (2) from the concentric chimney set are placed in the inner pipe slots at both ends of the 90° elbow.

- To group the chimney outlet terminal, intertwine the outer wall (EPDM) gasket with chimney terminal as seen in Figure 2.6. After intertwining the chimney outlet terminal from the outer side of wall and previously opened holes insert the Internal Wall Connection Gasket (7) in chimney terminal. Insert the other end of EPDM connection gasket you have already inserted in 90° chimney elbow, into the chimney outlet terminal. Be careful that gaskets are placed properly.

2.4.2 MOUNTING WITH VERTICAL CONCENTRIC CHIMNEY SETS

The boiler also has the possibility to connect vertically to the flat and sloped roof by means of the accessories it has according to the situation of the environment you will mount on. In straight connections, (Ø100 / 150 mm) vertical chimney set should not exceed 11m.

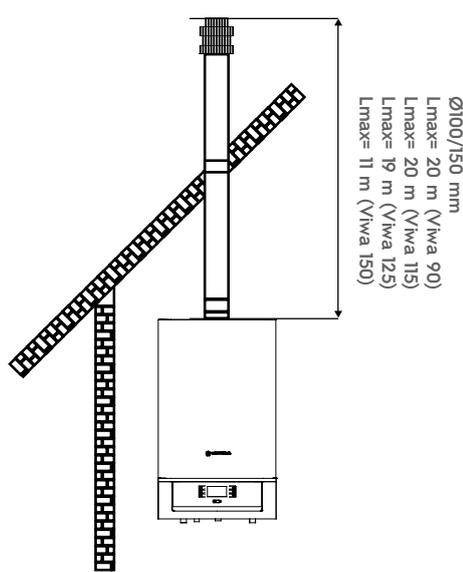


Figure 2.11 Vertical chimney set mounting

In practice

L1	=0.3 m.
L2	=0.5 m. (45° elbow equivalent length)
L3	=4.5 m.
L4	=0.5 m. (45° elbow equivalent length)
L5	=4.7 m.
L6	=1.0 m.
<hr/>	
L Toplam	=11.5 m.

Correct in practice for Viwa 90, Viwa 115, Viwa 125 **but not suitable in practice** for Viwa 150.

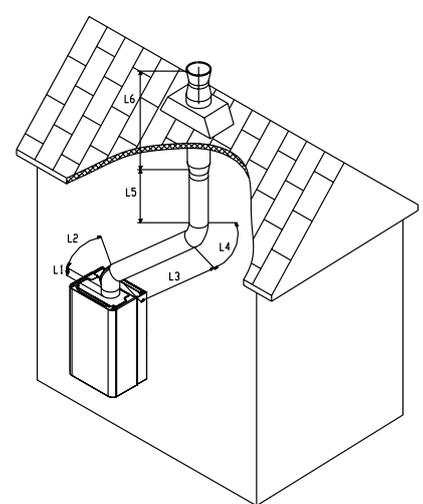
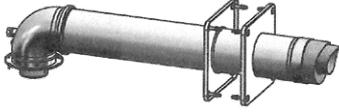
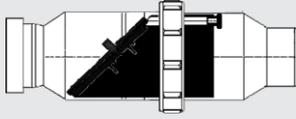
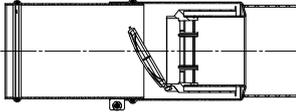


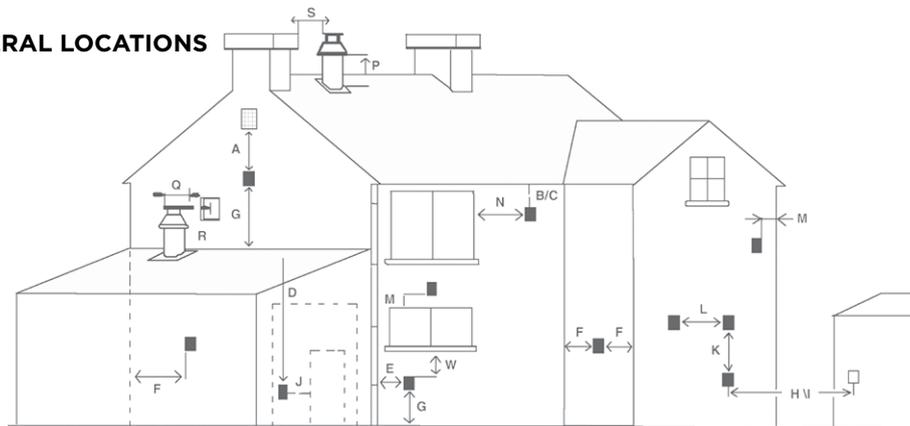
Figure 2.12 Vertical chimney set mounting practice

2.5. FLUE ACCESSORIES, MEASUREMENTS AND WEIGHT

The chimney accessories can be mounted each other by close-fit method, so there is no need for an additional part for the connection.

Product Code	Product Name	Product Explanation	Product Image
153.11.014.000007	Ø 100/150 Horizontal Flue Set	Maximum Flue Distances Lmax= 18 m (Viwa 90) Lmax= 17 m (Viwa 115) Lmax= 17 m (Viwa 125) Lmax= 10 m (Viwa 150)	
153.11.660.600042	Ø 100/150 Extension Flue L=500 mm	Can be used with Horizontal Flue Set and Vertical Chimney Set.	
153.11.660.600043	Ø 100/150 Extension Flue L=1000 mm	Can be used with Horizontal Flue Set and Vertical Chimney Set	
153.11.660.600040	BAL 100.100 Flue Check Valve	If more than one boiler is used in the cascade system, 45 degree angled flap accessories must be inserted on to each boiler's flue outlet. The boiler connection and the collector connection are Ø100 mm.	
153.11.660.600068	BOB 100.100 Flue Check Valve	If more than one boiler is used in the cascade system, non-angled flap accessories must be inserted on to each boiler's flue outlet. The boiler connection and the collector connection are Ø100 mm.	
153.11.660.600044	Ø 100/150 Elbow (90°)	Can be used with Horizontal Flue Set and Vertical Flue Set. Each 90° elbow use requires a reduction of 100cm from the maximum horizontal/ vertical distance.	
153.11.660.600041	Ø 100/150 Vertical Flue Set	Maximum Flue Distance Lmax= 20 m (Viwa 90) Lmax= 20 m (Viwa 115) Lmax= 19 m (Viwa 125) Lmax= 11 m (Viwa 150)	

2.5.1 FLUE PERIPHERAL LOCATIONS



	Chimney Position	Minimum Distance
A	Under a window	300 mm.
B	Under water groove	75 mm.
C	Under fringes	200 mm.
W	Under balcony	200 mm.
E	To vertical water discharge pipes	150 mm.
F	To inside or outside corners	300 mm.
G	To ground, roof or balcony level	300 mm.
H (*)	To another wall corresponding to the wall	600 mm.
S	To another chimney	1200 mm.
J	From the garage wall to another door	1200 mm.

	Chimney Position	Minimum Distance
R	From same wall to another chimney (vertically)	1500 mm.
Q	From same wall to another chimney (horizontally)	300 mm.
M	On another window / culvert	300 mm.
N	Horizontally another window / culvert	300 mm.
P	To the roof level	300 mm.
F	To a neighbouring wall	300 mm.
I (*)	On the window on the neighbouring wall	1000 mm.
L	To another chimney	600 mm.

(*) Not recommended for C₅ ve C₆!

Figure 2.13 Environmental locations of flue

2.6. MOUNTING TO PARTIALLY - PROTECTED OUTER SPACES

Installation instructions: This boiler can be installed in partially protected outer spaces. Partially-protected place means that the boiler is located at places where it is not directly exposed to atmospheric factors and precipitation (rain, snow, hail, etc.).

Protection Against Freeze: The boiler is equipped with a system that automatically prevents the freezing by putting the pump and the burner into operation when the water in the boiler falls below 5 °C. The protection against freeze depends on the following conditions:

- If the boiler is correctly connected to gas and electricity sources;
- If the boiler is supplied constantly from gas and electricity sources (if main switchgear is on)
- If the boiler does not come to the fault condition due to lack of ignition;
- In order to ensure the circulation of the installation water, the installation valves and radiator valves under the boiler must be in the open position. Under these conditions the boiler is protected against freeze up to an ambient temperature of -5 °C.

The lowest temperature -5°C. If the temperature of the boiler is mounted in an environment that may be below -5 °C and if the gas inlet is cut off or the ignition fails, the Anti-Freeze System will not be put into practice and freezing/icing will occur in the device. The following instructions must be followed to prevent freeze risk:

- Protection against freeze by placing in the heating circuit an antifreeze in a percentage of the required minimum temperature for the heater by a well-known antifreeze producer (special for heating appliances) in which the heater is intended to be stored, and by carefully following the instructions. The materials from which the boilers are made are resistant to ethylene glycol and propylene-based icing inhibitor liquids. Observe suppliers' warnings about their life and possible disposal methods.

Protecting the boiler against freeze/icing is only guaranteed on these conditions:

Damage caused by failure to comply with the foregoing and interruption of electrical energy shall be excluded in the effectiveness of the guarantee.

If the boiler is mounted in places where the temperature falls below 0 °C (both for domestic use and for heating purposes), both the heating installation and the domestic water pipes must be insulated.

2.7. ELECTRIC CONNECTIONS

The electric safety of the boiler takes place only if it is fully connected to an effective grounding system, as stipulated by the current safety regulations. If there is no grounding, the grounding shall not be made on the socket through neutral line! The use of gas and water connection pipes for grounding is dangerous and unacceptable.

WARMHAUS A.S. cannot be held responsible for any damage or loss that may occur to a person or property due to the absence of grounding connection of the boiler and the failure of grounding by an authorized electrician to comply with the applicable regulations and standards.

Also check that the electrical installation meets the maximum power that can be pulled specified in the technical specifications label on the boiler. Boilers should be connected with "X" type special power supply cables without socket. The Warmhaus boilers have a protection level of IPX5D. Power supply cable must be connected to a 230 V + 10%; - 15% 50Hz network with L-N polarity and grounding connection; on the same network, a high voltage category 3rd class multi-pole contact cutter should be installed.

When it is necessary to change the cable, be sure to contact our Authorized Warmhaus Service.



The power supply cable must follow the specified route. If the fuses on the adjustment card are to be replaced, use a 2A or 3.15A quick-type fuse. The use of adapters, multiple sockets and extension cables is not permitted for the device to be supplied from the general electric network.

2.8. OPTIONAL CONTROLS: ROOM THERMOSTAT, EXTERIOR TEMPERATURE SENSOR AND OTHER

Control devices such as Room Thermostat, Outside Temperature Sensor, etc. must always be connected to Warmhaus boilers by an authorized service personnel. If the connections are made by unauthorized persons, the boiler will be out of warranty.



Control devices such as Room Thermostat, Outside Temperature Sensor, etc. are provided to Warmhaus boilers as optional accessories and must be Warmhaus certified.

See use instructions for placing the Outside Temperature Sensor.

This sensor, which can be connected directly to the electrical installation of the boiler, automatically reduces the maximum stream water temperature at the installation when the outside temperature increases to run the temperature sent to the heating installation in compliance with the exterior temperature changes. The Outside Temperature Sensor is actuated when connected independently of the typology of the room thermostat used and works in conjunction with room thermostats. The relationship between the installation inlet temperature and the outside temperature is determined according to curves in the diagram from the position of the button on the boiler panel (or on the control panel if connected to the boiler) (Figure 2.15).

The electrical connection of the Outside Temperature Sensor should be made on pins no. 3-4 in the Low Voltage range where terminal pins 1-14 are located in the boiler electronic board (Figure 2.18).



Figure 2.14 RC2113 Room Unit with Heating Area Programming and Hot Water Tank Programming for Temperature Control and Hot Domestic Water

2.9. TECHNICAL INFORMATION

Sizes and Weight: 128x99x36 mm (compatible with box 503)
130 g

Power Supply: Bipolar and nonpolar cable

Power consumption: Max 18V (normal use) Max 23mA (max 250mW)

Charging capacity: Max 24 hours (after at least 3 hours charge)

Room sensor sensitivity: +/- 0.5°C at 25°C

Time accuracy: +/- 15 min/year (maximum deviation)

Operating temperature: 0 to 50°C

Protection classes:

EN 60730: II

IP EN 60529: IP20 (if wall-hanged)

Installation Instruction: Installation of the device should only be carried out by a Warmhaus Service Partner. The dual cable required for installation is supplied by the dealer/consumer.

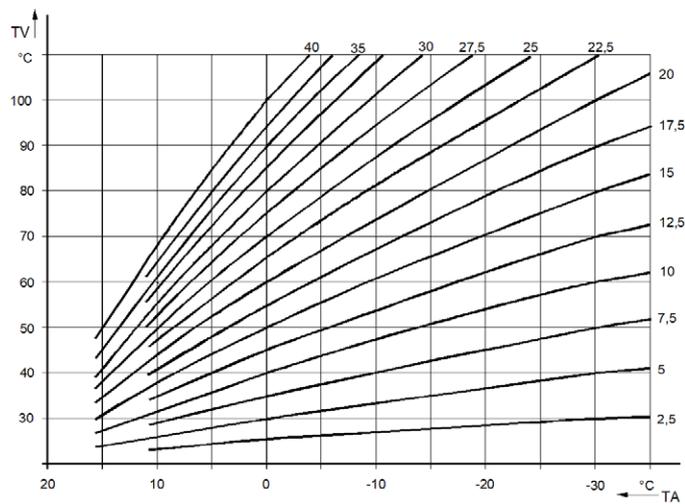


Figure 2.15 Outside Temperature Sensor Curves

HEATING WITH OTC ENABLING (OUTSIDE TEMPERATURE CONTROL = OTC)

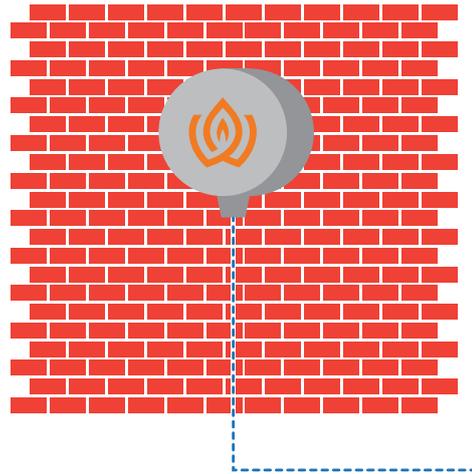
Working mode heating with OTC gets enabled by operative winter setting and connected outside probe.

WORKING

By connecting to Viwa boiler and external temperature probe there is the change of the parameters counting heating setpoint for each zone. sensor specification must be 10 kOHM - β value 3535. This Beta value can be changed on Par 07 = 0 as default 3435 or can be changed via Par07 = 1 means sensor Beta value = 3977)

OTC REMOTE CONTROL PRESENCE

The board passes to the remote control the external temperature value read by the probe; the remote control uses this information to find the heating setpoint for the intended zone.



TV Delivery temperature setpoint
TA Delivery temperature setpoint
TRw Room temperature setpoint (default 20 ° C)
s Climatic curve slope

OUTDOOR SENSOR FUNCTIONING

This operating mode requires the enabling of the circulator only;

LOAD	OPERATING MODE	NOTE
Burner	Turned off	—
Fan	Turned off	—
Circulator	Turned on	With cycle corresponding to 5 min ON and 60 min OFF, and zone valve open.
Diverter valve	Turned to heating	—

When Text>Set_Activation_Antilegionella_external temp +1°C the function is ended.

OTC REMOTE CONTROL ABSENCE

In this case the outside temperature value is used to change (compensate) the heating setpoint which had been set by the user interface for the intended zone. The heating Set can be found by the climatic curves considering the outside temperature and keeping them inside the ranges values:

- Par 20 and Par 21 INST for zone 1
- Par 23 and Par 24 INST for zone 2
- Par 26 and Par 27 INST for zone 3

The curve can be selected from a value between 3 and 40 (a step of 1) with installing parameters Par 22 INST for the curve 1, Par 25 INST for the curve 2 and Par 28 INST for the curve 3.

The user pushing the keys can set, for each circuit, a shift of the of room set and a variation of the climatic curve ($\pm 5^\circ\text{C}$ with pass of 1°C and default for both 0°C). If Par14 INST $\neq 0$ The SetPoint is counted accordingly to the set climatic curve and the value, which is read on the input 0...10VDC, corresponds to the set room shift (0 V = -5, ... , 10 V = +5). In this case is no more possible to set the shift by the keyboard. The set room shift received by the command 0...10VDC could be seen pushing INFO menu. The mode enabling and the working corresponds to the ones of the operative heating mode without OTC; also user's possible actions are the same ones.

2.10. USING OUTDOOR TEMPERATURE SENSOR (OPTIONAL)

Outside Temperature Sensor (optional) is adjusted by Authorized Service according to average outside temperature of your province with PO4 parameter.

Thus, it provides efficient and economical operation according to the need by relieving of constantly adjusting the heating temperature in changing weather temperatures, through reducing the temperature of heating water when outside temperature increases and increasing the temperature of heating water when outside temperature decreases. This sensor activates when connected independently of the presence or type of the used thermostat. Relation between returning temperature of the system and outside temperature is determined according to the position of the button on the Boiler panel as the curves in the following diagram.



Room thermostat must be installed in 1,25 and 1,5 m distance from the ground



It must be at least 30 cm away from doors and windows open to air stream.

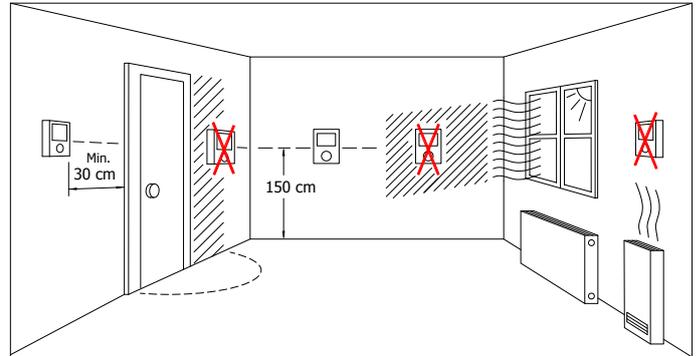


Figure 2.16 Right and Wrong Installation Positions of the Thermostat

2.11. MOUNTING RULES FOR HYDRAULIC INSTALLATION

2.11.1 STRUCTURE OF HEATING WATER



Caution: Before making the connection to the boiler, make sure that any residues in the main heat exchanger (pipes, heating appliances, etc.) are removed using solvents or similar substances so that the device warranty does not lose its validity otherwise it will have a negative effect on the operation of the boiler. We comply with the standards laid down in the standards for domestic water and heating installations in order to prevent the accumulation of lime in the heating installation and therefore the erroneous operation of the installation.



Preventive water treatment procedure for cast aluminium heat exchanger

The following descriptions describe the quality of water required for aluminium heat exchangers. In order to obtain the required heat transfer, the installation water must be of good quality. Parameters such as PH, hardness, conductivity, oxygen, flux residues, oil residues and corrosion products due to installation can have negative effects on the heat exchanger.

Before filling (old and new) the installation, it should be thoroughly rinsed in accordance with EN 14336 with clean running water from the faucet.

For water treatment Warmhaus only permits the products listed below.

For the protection and long-term use of the heat exchanger, Warmhaus always specifies the following criteria for the quality of the installation water and the filling water:

- PH should be kept between 6.5 and 8.5.
- The maximum permissible chlorine content for the aluminium heat exchanger is 250 mg/liter. The maximum permissible sulphate and nitrate content to limit the microbiologically affected corrosion (MIC) risk is 100 mg/litre.
- Strong oxidizing chemicals should be avoided. Some examples of oxidizers include, but are not limited to: chlorine (Cl₂), hydrogen peroxide (H₂O₂), bromine (Br₂), ozone (O₃), chlorine dioxide (ClO₂), sodium hypochlorite

(NaClO), potassium hypochlorite lime (Ca(ClO)₂). Strong oxidizers are often added as biocides to the water to reduce microbiological activity of the water.

- Strong complex actuators should be avoided. The most likely to occur are: chlorides (Cl⁻), ammonia and ammonia containing chemicals (NH₃, amines, EDTA, etc.), polyphosphates (such as Calgon). Strong complex actuators are also known as "chelates" (EDTA, NTA), are commonly used to control scaling by typically forming fixed heat-soluble complexes with calcium and magnesium.
- The installation should be designed so that all air can be discharged, ensure that all air is discharged after installation. Preferably, you can also install air separators.
- The total volume VT of water filled, refilled and completely filled throughout the lifetime of boiler at a total hardness of 11°d or 11°dH (-2mmol/litre) shall not exceed the following values: 15 litres/kW x [kW] for Viwa 90-150 series, Taking into consideration that the water in the installation is likely to be completely filled up several times over the lifetime of the heat exchanger, the maximum values in the application must not exceed the following values: 7.5 litre/kW x [kW] for Viwa 90-150 series.

EXAMPLE 1:

Viwa 90 boiler 90 kW, the total volume of the installation is 1100 litres. The maximum permissible hardness for Viwa 90 can be obtained from 7.5 litres/kW at 11°d.

This is $7.5 \times 90 \times 11 = 7425$ litres. °d

The maximum permissible hardness at 1100 litres, the total volume, is $7425/1100 = 6.8^\circ\text{d}$.

This means that the water in the installation must be softened to a value of 6.8°d or less.

EXAMPLE 2:

Viwa 150 boiler 150 kW, the total volume of the installation is 5,000 litres. The maximum permissible hardness for the Viwa 150 can be obtained from 7,5 litres/kW at 11°d.

This is $7.5 \times 150 \times 11 = 12,375$ litres.

The maximum permissible hardness for a total volume of 5,000

litres is $12,375 / 5000 = 2,48 \text{ }^\circ\text{d}$.

This means that the water in the installation must be softened to a value of $2.48 \text{ }^\circ\text{d}$ or less. The following table shows the other examples of maximum water hardness in $^\circ\text{d}$.



In all cases, the maximum hardness of the water in the installation must be less than 25°d .

2.12. WATER TREATMENT

- In the case of water softening by ion exchange, the mixed ion exchange is preferred. Additional pH buffering should then be provided.
- Avoid cation exchange with K^+ or Na^+ . If cation exchange with K^+ or Na^+ is used, pH control is required to limit the pH variation over time.
- In the case of water softening by anion exchange, only methods using sulphur (SO_4^{2-}) as negative ion are allowed. Ion exchange methods using Cl^- or CO_3^{2-} negative ions are not allowed. If demineralization is used, a chemical additive will be added for pH control.
- Never fill the system with distilled water, as this will seriously corrode the aluminium heat exchanger.
- In order to limit the risk of corrosion, the water conductivity should preferably be less than $100 \text{ } \mu\text{S}/\text{cm}$.
- The conductivity of untreated installation water should not exceed $600 \text{ } \mu\text{S}/\text{cm}$.
- If the installation water is treated with one of the products described below and according to the manufacturer's instructions, the conductivity must not exceed $1500 \text{ } \mu\text{S}/\text{cm}$.
- If the conductivity is higher than the specified values, empty the system and clean and fill with clean tap water according to EN 14336, preferably with recommended cleaning products.
- There are many products in the market claiming to clean and protect the heating systems. Unfortunately, there are a few products that have actually proved this in practice. For this reason, Warmhaus only allows the following quality products for water treatment;

Manufacturer: Fernox (www.fernox.com)

- Cleaner F3 : Removes corrosion, lime and sludge
- Protector F1 : Protects against corrosion, lime and sludge
- Alphi-11 : Prevents freezing and provides protection against corrosion and lime

Manufacturer: Sentinel (www.sentinelprotects.com)

- X 100 : General inhibitor protection
- X 200 : Noise reduct
- X 300 : System cleaner for new installations
- X 400 : System renewing sludge cleaning for old installations
- X 500 : Protective antifreeze and general protection

Manufacturer: Clariant (www.antifrogen.clariant.com)

- Antifrogen-L : antifreeze (mono ethylene glycol)
(Note: Antifrogen-N is toxic, Antifrogen-L is recommended)

Note that all these products must be used strictly in accordance with the instructions of the water treatment manufacturers.



WE ALSO STRONGLY RECOMMEND THE FOLLOWING:

- Use a register to fill, refill, completely fill water, water quality measurements and water treatment.
- Use only non-diffusing material, especially for underfloor heating.
- Always install air discharge devices at the highest point in the installation.
- In order to avoid as much as possible of filling, refilling and completely filling, place ball valves near the boiler on the installation and in strategic locations (anticipating future expansion of the system).
- Install a water meter to check the amount of filled, refilled, and completely refilled water.
- Install a filter in return.
- In case of any doubt, install a plate heat exchanger to hydraulically separate the boiler from the installation.
- Prevent leaks; If there is a leak, repair it as soon as possible. We recommend that you add this description of the preventive water treatment to your installation and operating manual.

The above-mentioned water quality requirements apply to aluminium heat exchangers.

The requirements of other parts in the installation are not taken into account.

ABD Conversion:

1 litre	= 0,264 USA gallon
1 $^\circ\text{dH}$	= 0,959 gpg
1 kW (NCV)	= 3,792 MBTU/s (GCV)
1 litre/kW	= 0,0697 USA gallon/BTU/s

All information contained in the above descriptions is based on reasonable research, but does not guarantee any end result.

2.13. ELEKTRİK BAĞLANTI ŞEMASI (HDIMS 50_ANA KART)

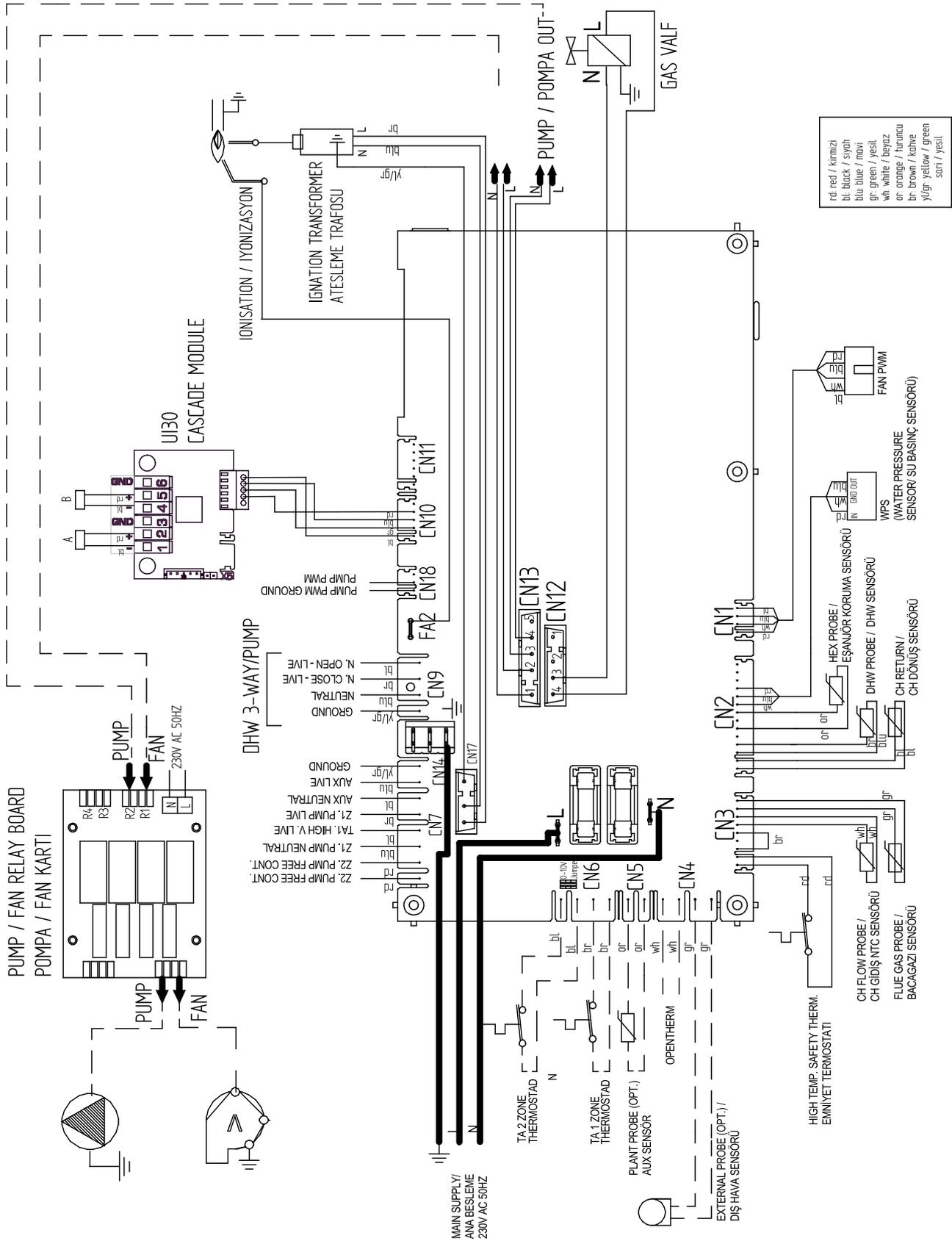


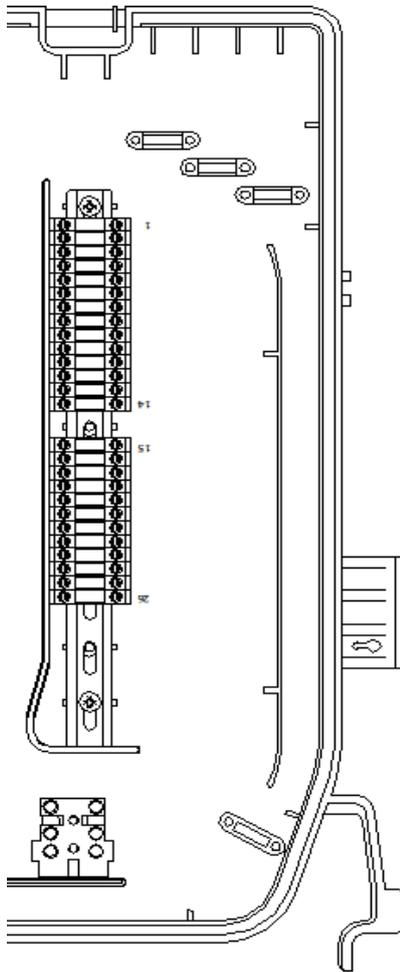
Figure 2.17 Motherboard Electrical Connection Diagram

Electrical Diagram

Designation : **Viwa 90 & 150 - commercial boilers**



Object	Manufacturer	Type-model / Technical data	Mark (s) of conformity
Burner control	BERTELL	HDIMS50	granted



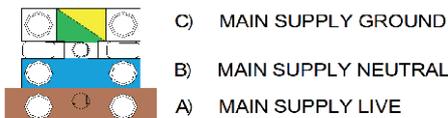
LOW VOLTAGE

1				1] DHW / TANK SENSOR
2				2] DHW / TANK SENSOR
3				3] OUTSIDE SENSOR - MASTER
4				4] PLANT SENSOR - SLAVE
5				5] OPENTHERM
6				6] OPENTHERM
7				7] AUX (Parameter 52) SENSOR
8				8] AUX (Parameter 52) SENSOR
9				9] TA 1 ZONE THERMOSTAD
10				10] TA 1 ZONE THERMOSTAD
11				11] TA 2 ZONE THERMOSTAD
12				12] TA 2 ZONE THERMOSTAD
13				13] PUMP PWM GROUND
14				14] PUMP PWM

HIGH VOLTAGE 230 V - 50Hz

15				15] Z2. PUMP FREE CONT.
16				16] Z2. PUMP FREE CONT.
17				17] Z1. PUMP NEUTRAL
18				18] TA1. HIGH V. LIVE
19				19] Z1. PUMP LIVE
20				20] AUX LIVE
21				21] AUX NEUTRAL
22				22] GROUND +
23				23] GROUND +
24				24] NEUTRAL
25				25] N.CLOSE - LIVE
26				26] N.OPEN - LIVE

DHW 3-WM /PUMP



HIGH VOLTAGE SIDE

Plug	n. pin	Description of the pin	Notes
HIGH VOLTAGE	C	MAIN SUPPLY GROUND	Green-Yellow
	B	MAIN SUPPLY NEUTRAL	Blue
	A	MAIN SUPPLY LIVE	Brown

LOW VOLTAGE SIDE

Plug	n. pin	Description of the pin	Notes
LOW VOLTAGE	1	DHW / TANK SENSOR	Brown
	2	DHW / TANK SENSOR	Blue
	3	OUTDOOR SENSOR FOR MASTER	Green
	4	PLANT SENSOR FOR SLAVE (IF ANY)	Green
	5	OPENTHERM	White
	6	OPENTHERM	White
	7	AUX SENSOR (PARAMETER 52)	Orange
	8	AUX SENSOR (PARAMETER 52)	Orange
	9	TA 1 ZONE THERMOSTAD	Blue
	10	TA 1 ZONE THERMOSTAD	Blue
	11	TA 2 ZONE THERMOSTAD	Brown
	12	TA 2 ZONE THERMOSTAD	Brown
	13	PUMP PWM GROUND	White
	14	PUMP PWM	Red

HIGH VOLTAGE SIDE

Plug	n. pin	Description of the pin	Notes
HIGH VOLTAGE 230 VAC 50 Hz	15	Z2 PUMP FREE CONTACTS	Red
	16	Z2 PUMP FREE CONTACTS	Red
	17	Z1 PUMP NEUTRAL	Blue
	18	TA1 HIGH VOLTAGE LIVE	Black
	19	Z1 PUMP LIVE	Brown
	20	AUX LIVE	Black
	21	AUX NEUTRAL	Blue
	22	GROUND	Green-Yellow
	23	GROUND	Green-Yellow
	24	DHW 3 WM - NEUTRAL	Blue
	25	DHW 3 WM - NORMALLY CLOSE	Brown
26	DHW 3 WM - NORMALLY OPEN	Black	

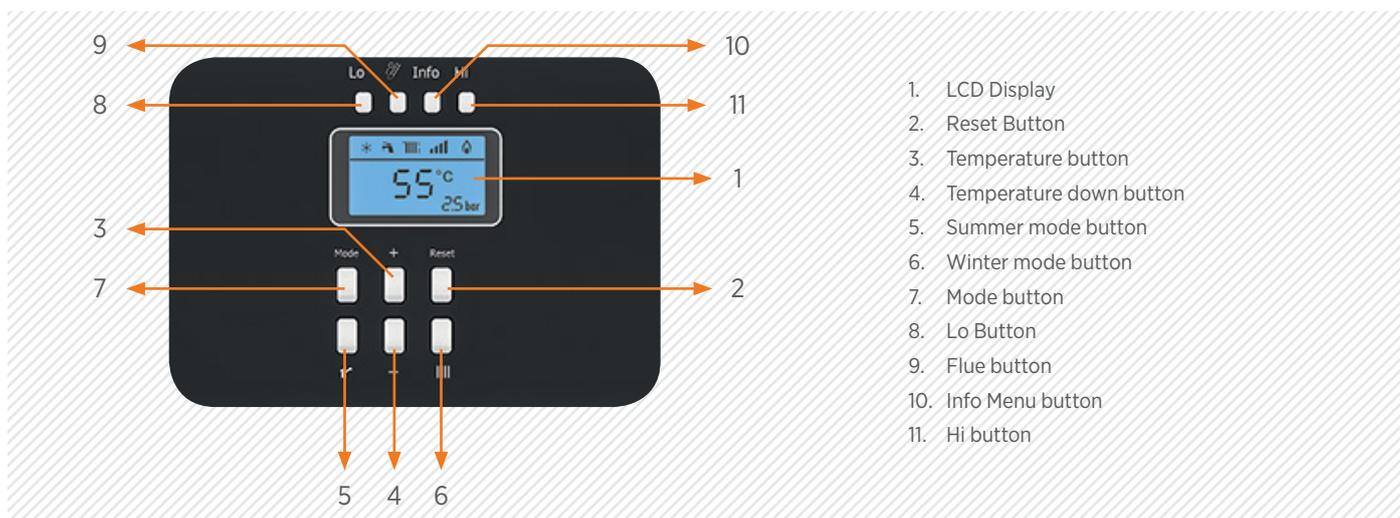
Author	small B.Ta demir / R&D Mng.	Appr.;
Release date	16.7.2018	
Rev. No:	2	
Drw. No:	WH.17.714	

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Figure 2.18 Motherboard Connections

CHAPTER-3 BOILER AND PARAMETER SETTINGS

3.1. CONTROL PANEL

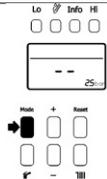
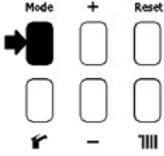
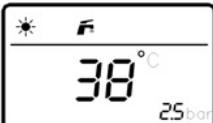
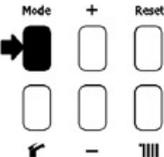
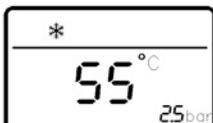
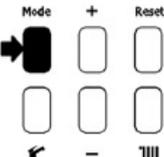


3.2. SCREEN SYMBOLS

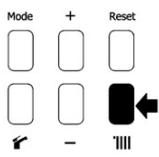
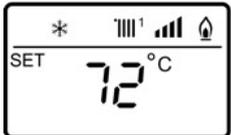
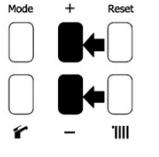
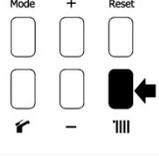
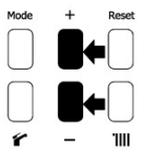
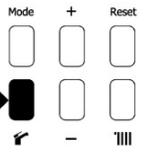
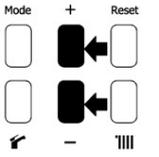
Designation: Viwa 90 - 115 - 125 - 150			
POS NO	Symbol	Description	Use
0		Op. Mode Summer	Symbol lit (if boiler is in Summer mode) during Stand-by, Antifreeze, DHW.
1		Op. Mode Winter	Symbol lit (if boiler is in Winter mode) during Stand-by, Anti-freeze, Heating, DHW.
2		DHW operation	Symbol lit during DHW operation and during DHW set temperature setting procedure.
3		Heating Operation	Symbol lit during heating operation (symbols 1 and 2 lit individually or together based on whether the request arises from zone 1, zone 2 or both, radiator symbol always present, either fixed or flashing in the presence of heat request from zone 3) and during the setting procedure for the heating set temperature value (symbols 1 and 2 lit individually based on whether you are setting the set Temperature for zone 1 or zone 2, radiator symbol without other symbols indicates set temperature for zone 3).
4		Power Bar	Indication of the instant power level of the boiler. Lit during any type of burner operation: - First segment only if power is between 0% and 25% - First two segments if power is between 25% and 50% - First three segments if power is between 50% and 75% - All segments if power is between 75% and 100%
5		Flame present	Symbol lit during burner operation if the flame control device is detecting a flame (even in the presence of remote control). Symbol flashing when flame detection circuit is in error mode (parasite flame) in addition to fixed lighting of associated alarm code.
6		lockout caused by No Flame	Flashing 1 symbol if the boiler is in Lockout error mode due to no flame in addition to (fixed) lighting of associated alarm code.
7		Setting Values	Symbol lit when it is possible to set Heating Set Temperature values; (Z1, Z2, Z3) and DHW Set Temperature values. Symbol lit when it is possible to set installer parameter values and OEM values.
8		Alarm	Symbol lit when the boiler is in error mode together with associated alarm code and any other specific symbols.
9		Sign	Signs + and - to be used each time you need to view or set a value by increasing or decreasing (e.g. values associated with an offset) or a negative value.

10		Main Digits	<p>Digits used to display values for:</p> <ul style="list-style-type: none"> - Delivery probe during heating stage, stand-by and all inertia discharges (post-circulation or post-ventilation, also at the end of a DHW stage). - DHW probe during DHW stage. - Flashing of heating/DHW set value during associated setting procedure. - Flashing of value for parameter during associated setting procedure or reading. - Several values in sequence pressing button P1 (see dedicated chapter) - Several values in sequence during the panel testing procedure (see dedicated chapter) - Alarm codes preceded by "ALL" symbol - Dedicated compositions in the special cases described below.
11		Degrees Celsius	Symbol lit when the information shown in the main digits is a temperature as celcius.
12		External Temperature	Symbol lit when the information shown in the main digits is the external temperature and during external probe anti-freeze.
13		Presence of alternative sources	Symbol lit when the alternative sources function is active.
14		Chimney sweeping function active	Symbol flashing when the chimney sweeping function is active.
15		Parameter	Symbol lit in front of number identifying parameter (secondary digits) when it is possible to display the parameter settings.
16		Secondary Digits	<p>Digits used to display values for:</p> <ul style="list-style-type: none"> - Pressure value in OFF mode - Pressure value in Stand-by, Heating, DHW, Anti-freeze, Alarm modes (except water pressure alarms) - Flashing of pressure value during high and low system water pressure errors. - Identification number of parameter during the display or adjustment of parameters. - Identification number of information displayed, accessing installer information using button P1. - Identification number of step in the panel testing procedure.
17		Bar	Symbol lit when the information shown in the secondary digits is a pressure value for the Europe version.
18		Reset Available	Symbol flashing when reset of an error or automatic lock-out conditions are available.

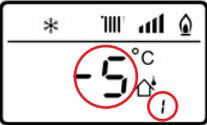
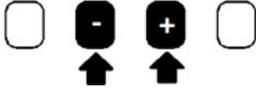
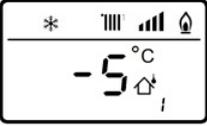
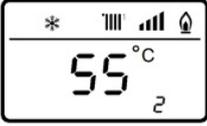
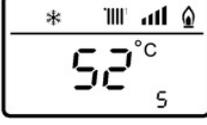
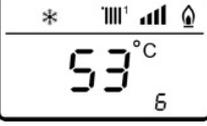
3.3. ON-OFF MODE

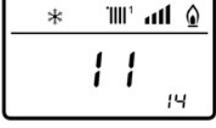
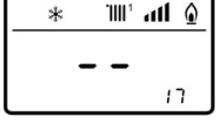
Pos No	Operation	Description
0		By Pressing MODE button to select switch mode of the boiler. MODE order is OFF > SUMMER > WINTER > OFF as circle.
1		Make sure that the "--" is displayed on the screen to show device is OFF. If not press again the "MODE" and repeat the step above. On the display "--" symbol shown.
2		to Switch boiler SUMMER MODE - ON press the "MODE" ones again.
3		SUMMER MODE - ON: On the LCD only "SUN" symbol displayed.
4		SUMMER MODE - ON: On the LCD only "SUN" symbol displayed. If DHW request the TAP symbol shown on the screen.
5		to Switch boiler WINTER MODE - ON press the "MODE" ones again.
6		WINTER MODE - ON: On the LCD only "SNOW" symbol displayed.
8		to Switch boiler OFF press the "MODE" ones again.
9		Make sure that the "--" is displayed on the screen to show device is OFF . If not press again the "MODE" and repeat the step above. On the display "--" symbol shown.

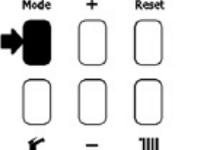
3.4. SET CH & DHW TEMPERATURES

Pos No	Operation	Description
0		To set Central heating Zone 1 temperature value, Push RADITATOR button at ones.
1		On the screen RADIATOR ZONE 1 shown and value start blinking.
2		From this moment toggle; (+) to increase set temperature OR (-) to decrease set temperature after some seconds the vallue will be saved automatically.
3		To set Central heating Zone 2 temperature value, Push RADITATOR button ONE MORE TIME.
4		On the screen RADIATOR ZONE 2 shown and value start blinking.
5		From this moment toggle; (+) to increase set temperature OR (-) to decrease set temperature after some seconds the vallue will be saved automatically.
6		To set Domestic Heating Water temperature (DHW) value, Push TAP button at ones.
7		From this moment toggle; (+) to increase set temperature OR (-) to decrease set temperature after some seconds the vallue will be saved automatically.

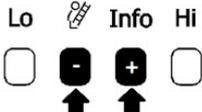
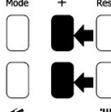
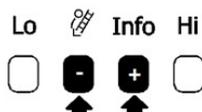
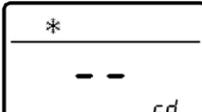
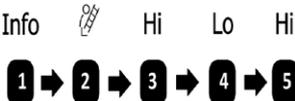
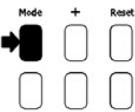
3.5. INFO MENU

Pos No	Operation	Description
0		Attention: This procedure must be applied by authorised persons and valid for only condensing boiler.
1	Lo  Info Hi 	Push INFO button at ones.
2		The screen bottom right will appear INFO as sample; on the middle Value = -5 (if external sensor connected, value could be different according to current out side temperature) INFO:1
3	Lo  Info Hi 	From this moment toggle; INFO (+) to increase OR CHIMNEY SWEEP (-) to decrease any INFO aimed to be checked.
4		INFO 1: Display of external temperature sensor. Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "
5		INFO 2: Display of heating flow (CH) temperature sensor.
6		INFO 3: Display of domestic hot water (DHW) temperature sensor. Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "
7		INFO 4: Display of Plant Probe temperature sensor OR AUX sensor temperature (selectable by Par=52). Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "
8		INFO 5: Display of fume temperature sensor. Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "
9		INFO 6: Display of heating flow (CH) SET temperature ZONE 1. Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "

		INFO 7: Display of heating flow (CH) SET temperature ZONE 2.
11		INFO 8: Display of ionisation current (μ A).
12		INFO 9: Display of fan speed in rpm x100. (ie. 33 x 100 = 3300 rpm)
13		INFO 10: Display of number of hours of the burner in hour x 100 (ie. 6.8 x 100 = 6800 hours)
14		INFO 11: Display of number of times the burner has ignited x 1000 (ie. 23 x 1000 = 23.000 times)
15		INFO 12: Display of number of total number of errors. (ie. 18 = 18 times)
16		INFO 13: Display of number of INSTALLER parameters (Par 1-49) accessed. Counter-installer. (ie. 15 = Parameter menu Par 1 - 49 has been 15 times activated)
17		INFO 14: Display of number of OEM parameters (Par 51-99) accessed. Counter-OEM (ie. 11 = Parameter menu Par 51 - 99 has been 11 times activated)
18		INFO 15: Access counter parameters CASCADE OEM (ie. 4 = 4 access)
19		INFO 17: Not used.

20		<p>INFO 18: Display of heating return (CH) temperature sensor.</p>
21		<p>INFO 19: Display of CASCADE flow temperature sensor. Value is available ONLY / WHEN sensor connected. IF the sensor not available OR not connected the value shown as " - - "</p>
22		<p>INFO 40: Display of % Value pump control PWM. Value is available ONLY / WHEN PWM pump connected.</p>
23		<p>INFO 60: Code of last recorded error. (ie. E06)</p>
24		<p>INFO 61: Code of penultimate recorded error. (ie. E02)</p>
26		<p>To exit the INFO menu push the MODE button at ones.</p>

3.6. SET TRANSPARENT PARAMETERS MENU (TSP)

Pos No	Operation	Description
0		Attention: This procedure must be applied by authorised persons and valid for only condensing boiler. Attention: The parameters as indicated DO NOT CHANGE should not be adjusted / touched by any official document supplied by Warmhaus R&D.
1		Keep pressing the CHIMNEY SWEEP and INFO button simultaneously until SET Par01 shown on the screen. Release the buttons when SET Par01 shown on the screen. Par 1 to Par 49 - INSTALLER MENU
2		The screen will appear SET - Parameter = 01 - Value = 01 Attention: do not change this parameter
3		Value of the Parameter show on TOP as BIG character as "01" as blinking. The Parameter shown on bottom as SMALL character as "Par 01"
4		From this moment toggle; INFO (+) to increase OR CHIMNEY SWEEP (-) to decrease any parameter aimed to be changed.
5		Ones you reach the parameter aimed to be changed, Change the parameter VALUE by using the (+) or (-) buttons.
6		Example: Push INFO to reach Par 05 ones reached Par 05 on bottom corner, value of paramater 05 can be changed by button (+) or (-) while TsP menu activated. When parameter VALUE changed wait for 2-3 Second then value will be saved automatically.
7		To toggle parameter list OVER than Par 50; Keep pressing CHIMNEY SWEEP and INFO button simultaneously until on the screen shown " cd " Release the buttons when " cd " symbol shown on the screen.
8		On the screen CODE symbol shown as " cd " from this moment the KEY CODE must be entered by button combinations.
9		The CODE is button combination push the buttons given bellow sequence for OEM MENU TsP > 50; INFO > CHIMNEY SWEEP > HI > LO > HI
10		The screen will appear SET - Parameter = 51 - Value = 00 From this moment; toggle can be done like point 4, change VALUE can be done like point 5, save can be done like point 6.
11		To exit the TSP menu push the MODE button at ones.
12		Attention: Some parameter MUST NOT to be changed EVER. PAR 01 - PAR 02 - PAR 04 - PAR 97 DO NOT CHANGE EVER.

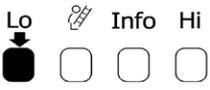
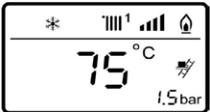
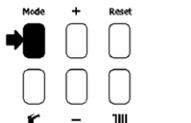
3.7. TRANSPARENT PARAMETERS MENU (TSP)

Parameter no.	Parameter	Type of Parameter	Value Field	Viwa 90 Default	Viwa 115 Default	Viwa 125 Default	Viwa 150 Default
Par 01	Quick configuration for combustion and power 1 = 90 kw 2 = 115 kw 3 = 125 kw 4 = 150 kw	INSTALLER	" - - " / 1 - 53	1	2	3	4
Par 02	Quick configuration for hydraulic configuration of the boiler and plant parameters	INSTALLER	1 - 14	5	5	5	5
Par 03	Digital Input CN 11 - Pin 4 configuration	INSTALLER	1 - 3	1	1	1	1
Par 04	Water pressure sensor configuration 0 = Not used 1 = Not used 2 = Water pressure sensor: 0,8 - 5,7 Bars With high pressure alarm	INSTALLER	0 - 2	2	2	2	2
Par 05	AUX Relay configuration 1 = Alarm relay out put - Normally open 2 = Recirculation pump 3 = Water filling 4 = Alarm relay out put - Normally closed 5 = Heat pump 6 = Zone valve 2	INSTALLER	1 - 6	6	6	6	6
Par 06	Not USED	INSTALLER	0 - 1	1	1	1	1
Par 07	Outside Temperature Sensor (Master) / Plant Sensor (Slave) Beta Value 0 = 3435 1 = 3977	INSTALLER	0 - 2	0	0	0	0
Par 08	Ignition fan speed (Par 08 x100) rpm	INSTALLER	"9,9 - 81 (0,3 each step)"	33 = NG	33 = NG	33 = NG	33 = NG
Par 09	Percentage increase in fan speeds to be used in case of clapet (%)	INSTALLER	0 % - 40 %	0	0	0	0
Par 10	DHW Priority 0 = Paralel operation (DHW and CH operates paralel) 1 = DHW Priority (if there is DHW request first priority is DHW)	INSTALLER	0 - 1	0	0	0	0
Par 11	External temperature sensor correction (C°)	INSTALLER	- 5 C°.....+ 5 C°	0	0	0	0
Par 12	Not USED	INSTALLER	" - - " / 0 - 199	3	3	3	3
Par 13	Modulating pump configuration (if PWM connected to boiler) " - - " = No modulation AU = Automatic modulation in range of %30 - %100	INSTALLER	" "" - - "" AU / 30 - 100 "	AU	AU	AU	AU
Par 14	Second TA low voltage configuration " - - " = Contact TA 2 5...160 = 0 - 10 V - DC.	INSTALLER	" - - " / 5 - 160	" - - "	" - - "	" - - "	" - - "
Par 15	Cascade adress " - - " = No cascade - Single boiler 00 = Master boiler 01..07 = Slave boiler	INSTALLER	" - - " / 00 - 07	" - - "	" - - "	" - - "	" - - "
Par 16	DHW Sensor Beta Value 0 = 3435 1 = 3977	INSTALLER	0 - 2	1	1	1	1
Par 18	Post ventilation time (sec x 10)	INSTALLER	1 - 180	30	30	30	30
Par 19	Configutation of plant type 0 = 2 Heating zone (2 Zon) 1 = 3 Heating zone (3 Zon)	INSTALLER	0 - 1	0	0	0	0
Par 20	Minimum set temperature for zone 1 heating (C°)	INSTALLER	Par 64 OEM... Par 21 Installer	20	20	20	20
Par 21	Maximum set temperature for zone 1 heating (C°)	INSTALLER	Par 20 Installer ...Par 65 OEM	80	80	80	80
Par 22	Climatic regulation for zone 1	INSTALLER	03 - 40	20	20	20	20
Par 23	Minimum set temperature for zone 2 heating (C°)	INSTALLER	Par 64 OEM... Par 24 Installer	20	20	20	20
Par 24	Maximum set temperature for zone 2 heating (C°)	INSTALLER	Par 23 Installer ...Par 65 OEM	80	80	80	80

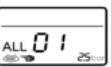
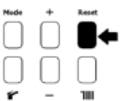
Parameter no.	Parameter	Type of Parameter	Value Field	Viwa 90 Default	Viwa 115 Default	Viwa 125 Default	Viwa 150 Default
Par 25	Climatic regulation for zone 2	INSTALLER	03 - 40	20	20	20	20
Par 29	Delta temperature CH flow and return for pump modulation (in case Par 13 set to AU)	INSTALLER	10 - 40	20	20	20	20
Par 30	Post circulation time (sec)	INSTALLER	0 - 199	60	60	60	60
Par 31	Maximum CH power (%)	INSTALLER	% 0 - %100	100	100	100	100
Par 32	Delay time to activate Zone 1 pump (sec x 10)	INSTALLER	0 - 199	1	1	1	1
Par 33	Delay time for ignition (min)	INSTALLER	0 - 10 min (dak)	3	3	3	3
Par 34	Not USED	INSTALLER	0 - 100	0	0	0	0
Par 35	Antifreezing activation temperature (C°)	INSTALLER	0 C°... +20 C°	5	5	5	5
Par 36	Antifreezing activation external temperature (C°)	INSTALLER	(-5 C°)....+5 C°	-2	-2	-2	-2
Par 37	Not USED	INSTALLER	- - / 00 - 100	100	100	100	100
Par 38	Post circulation time DHW (sec)	INSTALLER	0 - 199	20	20	20	20
Par 39	Anti Legionella function 0 = Disable 1 = Enable	INSTALLER	0 - 1	1	1	1	1
Par 40	Not USED	INSTALLER	0 - 3	0	0	0	0
Par 41	Not USED	INSTALLER	0 - 199	12	12	12	12
Par 42	Not USED	INSTALLER	0 - 1	1	1	1	1
Par 44	Not USED	INSTALLER	1 - 8	1	1	1	1
Par 45	Not USED	INSTALLER	5 - 50	8	8	8	8
Par 46	Not USED	INSTALLER	" - - " / 0 - 199	0	0	0	0
Par 47	Not USED	INSTALLER	" - - " / (-30 C°) ... 0 C°	-10	-10	-10	-10
Par 48	Not USED	INSTALLER	" - - " / 80 - 199	120	120	120	120
Par 49	Reset INSTALLER TSP parameter values to default Note: Par 1 to -- and Par 2 a - " - - " = No reset 1 = all values Par 1 to Par 48 reset to the default values	INSTALLER	" - - " / 1	" - - "	" - - "	" - - "	" - - "
Par 50	Water filling 0 = Disable 1 = Enable	OEM	0 - 1	0	0	0	0
Par 51	Selection Flow switch / flow meter 0 = Flow switch 1 = Flow meter	OEM	0	0	0	0	0
Par 52	AUX sensor configuration 0 = Not used 1 = Pre heat sensor 2 = Tank sensor (DHW) 3 = No-Frost sensor 4 = Tank thermostat 5 = Plant probe	OEM	0 - 5	4	4	4	4
Par 53	Not USED	OEM	0 - 1	0	0	0	0
Par 54	Configuration of 3 way valve 0 = Not used 1 = 2 pump 2 = 3-way electric (230 VAC)	OEM	0 - 2	2	2	2	2
Par 55	Not USED	OEM	0 - 1	0	0	0	0
Par 57	Main supply frequency 50 = 50 Hz 60 = 60 Hz	OEM	50 / 60	50	50	50	50
Par 58	Not USED	OEM	10 - 199	100	100	100	100
Par 59	Flue gas sensor configuration 0 = No 1 = Yes	OEM	0 - 1	1	1	1	1
Par 60	Fluxmeter value for DHW request activation (Value = liter / minute)	OEM	1 - 4 lt/min (0,1 per step)	2,5	2,5	2,5	2,5
Par 61	Tank derivatives value	OEM	0 - 5 (C° / min)	0	0	0	0
Par 62	DHW Maximum temperature (C°)	OEM	30 C° - 80 C°	60	60	60	60

Parameter no.	Parameter	Type of Parameter	Value Field	Viwa 90 Default	Viwa 115 Default	Viwa 125 Default	Viwa 150 Default
Par 63	Set temperature for anti legionella function (C°)	OEM	08 C° - 95 C°	65	65	65	65
Par 64	Minimum boiler temperature / absolute (C°)	OEM	10 ... Par 65 OEM	10	10	10	10
Par 65	Maksimum boiler temperature / absolute (C°)	OEM	Par 64 OEM...85	80	80	80	80
Par 66	DHW Primary temperature DELTA set point (C°)	OEM	10 C° - 25 C°	15	15	15	15
Par 70	Not USED	OEM	01 - 90	32	32	32	32
Par 71	Not USED	OEM	0 - 199	12	12	12	12
Par 72	Not USED	OEM	0 - 30	10	10	10	10
Par 73	Not USED	OEM	40 - 95	40	40	40	40
Par 74	Not USED	OEM	4 - 7	4	4	4	4
Par 75	Not USED	OEM	01 - 30	10	10	10	10
Par 76	Not USED	OEM	5 - 50	8	8	8	8
Par 77	Not USED	OEM	4 - 7	4	4	4	4
Par 80	Maximum flue gas temperature (C°)	OEM	20 C° - 120 C°	105	105	105	105
Par 81	Flue gas temperature for minimum raised (C°)	OEM	0 C° - 100 C°	45	45	45	45
Par 82	Not USED	OEM	00 - 19,9	0	0	0	0
Par 83	Power reduction time (minute)	OEM	01 - 05 (min)	1	1	1	1
Par 84	Not USED	OEM	0 - 1	0	0	0	0
Par 85	Not USED	OEM	10 - 50	40	40	40	40
Par 86	Not USED	OEM	70 - 90	90	90	90	90
Par 87	Temperature for activation preheat function (C°)	OEM	45 C° - 65 C°	55	55	55	55
Par 88	Heat exchanger protection temperature (C°)	OEM	25 C° - 110 C°	95	95	95	95
Par 90	Minimum power fan speed (Par 90 x 100) rpm	OEM	9,9...78 (Each step 0,3)	11.4 = NG	11.1 = NG	11.1 = NG	12.9 = NG
Par 91	Maximum power fan speed (Par 91 x 100) rpm	OEM	9,9...81 (Each step 0,3)	55 = NG	55 = NG	58 = NG	70 = NG
Par 92	Fan speed for minimum raised (Par 92 x 100) rpm	OEM	9,9...78 (Each step 0,3)	9.9	9.9	9.9	9.9
Par 93	Time to reach maximum PWM value for modulation pump (seconds)	OEM	0 - 60 sec.	25	25	25	25
Par 94	Not USED	OEM	1 - 40	1	1	1	1
Par 95	Not USED	OEM	1 - 40	30	30	30	30
Par 96	Not USED	OEM	1 - 40	3	3	3	3
Par 97	Fan selection (Do not Change !) 0 = Not used 1 = Not used 2 = Not used 3 = NRG 137 4 = Not used 5 = Not used 6 = Not used 7 = Not used	OEM	3	3	3	3	3
Par 99	Reset INSTALLER + OEM parameter values to default Note: Par 1 to -- and Par 2 a - " - " = No reset 1 = all values Par 1 to Par 97 reset to the default values	OEM	" - " / 1	" - "	" - "	" - "	" - "

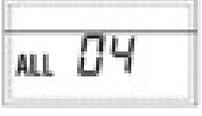
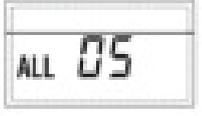
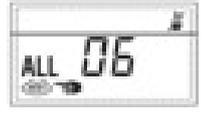
3.8. SET SWEEPER MODE (HI&LO)

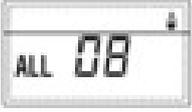
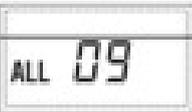
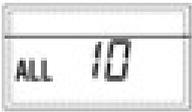
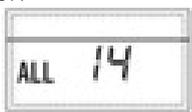
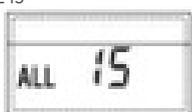
Pos No	Operation	Description
0		Attention: This procedure must be applied by authorised persons and valid for only condensing boiler. Attention: Chimney Sweep mode time out is 30 Minute.
1	Lo Info Hi 	Keep pressing the CHIMNEY SWEEP button until CHIMNEY SWEEP symbol shown on the screen. Release the button when CHIMNEY SWEEP symbol shown on the screen.
2		On the screen will appear CHIMNEY SWEEP symbol as blinking.
3	Lo Info Hi 	To set Minimum power, Push LO button at ones and wait the boiler reduce minimum fan speed.
4		When minimum power reached the symbol of flame level shown as also LOW (1/4 Digit)
5	Lo Info Hi 	To set Maximum power, Push HI button at ones and wait the boiler increase maximum fan speed.
6		When maximum power reached the symbol of flame level shown as also MAX (4/4 Digit)
7		Attention: Make sure there is enough cooling on this operation specially set HI. Otherwise there could be error codes related poor circulation or/and high temperature alarms.
8	Mode + Reset 	To exit the CHIMNEY SWEEP MODE push the MODE button at ones.

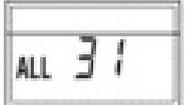
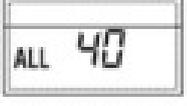
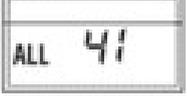
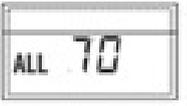
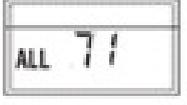
3.9. RESETING

Pos No	Operation	Description
0	Lo Info Hi  Mode + Reset 	In case there is an ERROR occur on the boiler. Press RESET button ones to remove the error code on the screen.
1		ERROR code shown the screen with " PUSH the RESET BUTTON" symbol.

CHAPTER-4 FAULT FINDING & SOLUTIONS

Fault Finding & Solutions				
Designation: Viwa 90 - 115 - 125 - 150 Boilers				
 <p>This document has been composed to find possible faults and solve</p> <p>Attention: This procedure must be applied by authorised persons.</p>				
Error Code	Error	Malfunction	Probable Cause	Solution(s)
ALL 01	NA	NA	NA	
ALL 02 	Low water pressure in the system/system parameter wrongly setted	Boiler does not work, ALL 02 error code flashing on the screen	> Water pressure in the boiler not enough > TsP Parameter wrongly settled (PAR4 must be 2)	1-) Fill the boiler 1,5-2 bar 2-) Check if the system pressure 1,5 - 2 bar from the LCD display 3-) If problem persist Call for authorised service 4-) Check TsP parameter P4=2 as default value for boiler 5-) Reset & Restart boiler
ALL 03 	High water pressure in the system	Boiler does not work, ALL 03 error code flashing on the screen	> High Water pressure in the boiler higher than > 5,5 bar	1-) Drain the boiler water until 1,5-2 bar 2-) Check if the system pressure 1,5 - 2 bar from LCD display 3-) If problem persist Call for authorised service 4-) Check expansion vessel pre set air AND/OR tank membrane 5-) Reset & Restart boiler
ALL 04 	Domestic heating water temperature sensor faulty	Boiler does not work on DHW mode but still work on Central heating mode, ALL 04 error code flashing on the screen	> Domestic heating water temperature sensor faulty > DHW sensor not connected > PAR2 wrong setting	1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Check Domestic heating water temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabling and connectors between NTC and PCB 5-) Check parameter P2
ALL 05 	Central heating FLOW temperature sensor faulty	Boiler does not work, ALL 05 error code flashing on the screen	> Central heating FLOW temperature sensor faulty > flow sensor is open or short circuit	1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Check Central heating temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabling and connectors between double NTC and board 5-) Reset & Restart boiler
ALL 06 	No ignition Flame is not detected	Boiler does not work, ALL 06 error code flashing on the screen	> Gas supply failure	1-) RESET boiler at first check if problem removed 2-) Check other gas devices if they are working 3-) Check main gas supply valve is open or not 4-) Check boiler gas supply valve below the boiler is open or not 5-) RESET boiler at first check if problem removed 6-) Call for authorised service at first 7-) Check gas supply pressure must be 20-17 mBar. Gas pressure must be in between on this values while boiler on operational. 8-) Check out let of the gas supply on the gas valve nipple if gas valve opening during the ignition phase 9-) Check earth connector between PCB and earth connector 10-) Check wrong flue 11-) Check any problems on the ignition electrode, (like condensation, rust etc.), and control positioning of the electrode, if electrode position wrong calibrate electrode according to user manual page XXX or XXX. 12-) Check burner is clean if not DO NOT USE plastic brush, use only compressed air. 13-) Check for condensation on the cabling AND/OR on board 14-) Check ignition Spark generator is produce spark on electrode, IF there is no ignition by spark generator replace it 15-) Check earth connection between board and electrode 16-) Check electrode ignite directly on burner or not. If there is current leak replace electrode cable 17-) IF NOT successful check the gas valve IF during first ignition the solenoid voice sound hear and if gas passes to the gas valve out let nipple then check adjustment of gas valve. 18-) IF PCB not control the spark generator (measure the voltage between PCB to Spark generator) IF PCB does not control to Spark generator Replace PCB board but do not forget to record the default parameter values. Adjust P1 related to the default value of boiler power.

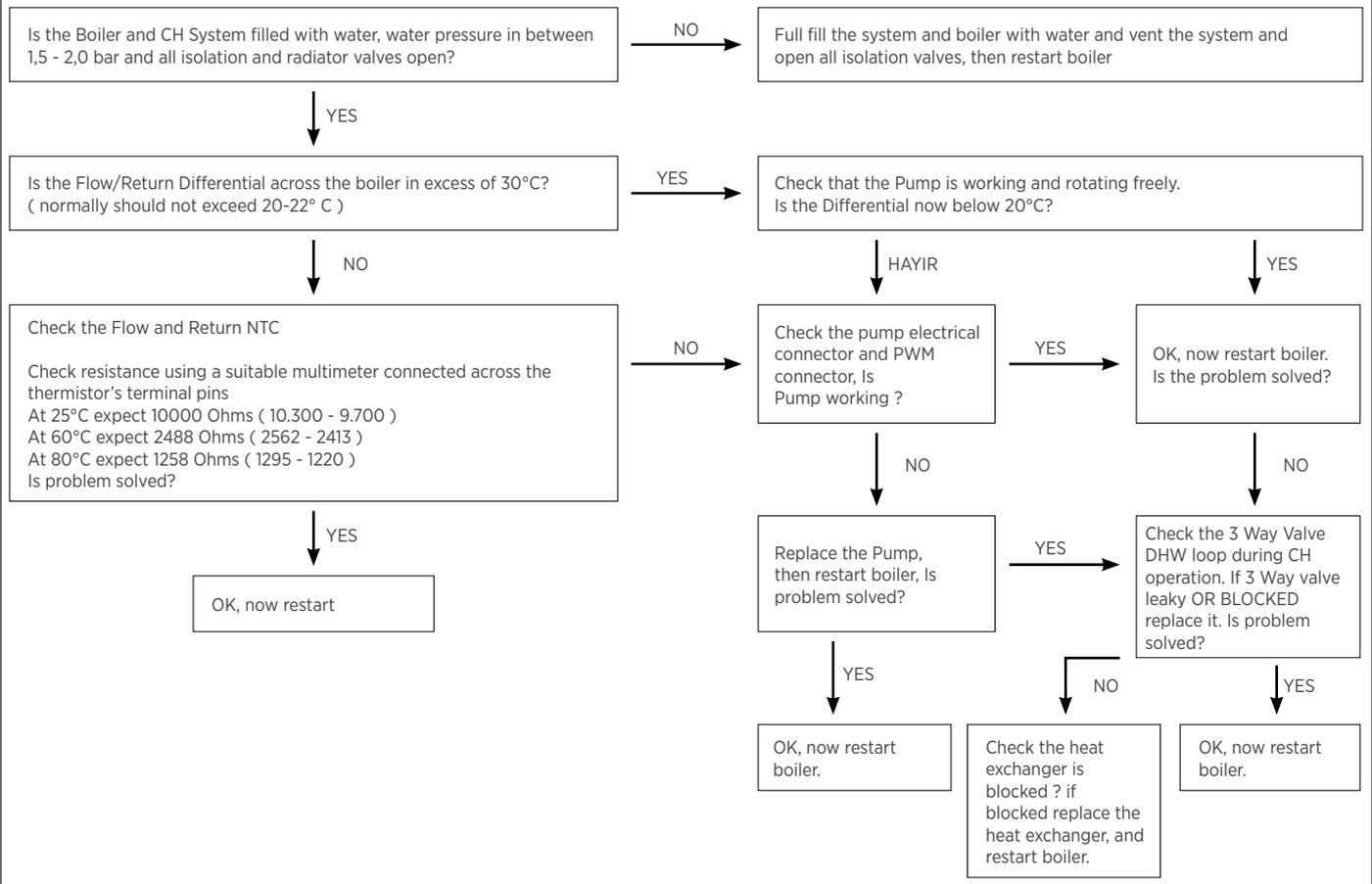
<p>ALL 07</p> 	Safety/Limit thermostat intervention	Boiler does not work, ALL 07 error code flashing on the screen Water overtemperature (T>95°C)	<ul style="list-style-type: none"> > Lack of water on the system > Pump blockage > Pump failure > Pump harness > Installation blockage 	<ol style="list-style-type: none"> 1-) RESET boiler at first check if problem removed 2-) Check boiler central heating valves are open if they are closed open of all 3-) Check all radiator valves are open if they are closed open of all minimum 3 meters of radiator must be open 4-) RESET boiler and check if problem removed 5-) Call for authorised service at first 6-) Check Pump operation if the pump circulation through the heat exchanger is enough 7-) Check intermittent contacts on harness carefully specially Pump and PWM cable and specially pump main supply connector and specially pump main connector, measure voltage from connectors 8-) Check if there is air on the heat exchanger or system, remove air. 9-) Check heat exchanger water path againsts clogging 10-) Installation water path againsts clogging 11-) Reset & Restart boiler
<p>ALL 08</p> 	Flame circuit failure / Flame detection error	If the flame control section recognises the presence of a flames in phases when they should not be present, it means that there is a breakdown in flame detection circuit	<ul style="list-style-type: none"> > Aging or rust on the electrode > Electrode position > Cabeling disconnections > Water blokage on syphon > Electronic board 	<ol style="list-style-type: none"> 1-) Call for authorised service at first 2-) Check any problems on the ionisation electrode, (like condensation, rust etc.), and control poistioning of the electrode. 3-) Check for condensation on the cabling AND/OR on board 4-) Check earth connection between board and electrode 5-) Check electrode cabling between board and electrode 6-) Check syphone against water blokage 7-) If fault still persists Replace board but do not forget to record the default parameter values. Adjust P1 related to the default value of boiler power.
<p>E 09</p> 	No water circulation in the system	Boiler does not work, ALL 09 error code flashing on the screen Flow temperature sensor has detected a temperature rise in excess of 5°C/sec	<ul style="list-style-type: none"> > Lack of water on the system > Pump blockage > Pump failure > Pump harness > Installation blockage 	<ol style="list-style-type: none"> 1-) RESET boiler at first check if problem removed 2-) Check boiler central heating valves are open if they are closed open of all 3-) Check all radiator valves are open if they are closed open of all minimum 3 meters of radiator must be open 4-) RESET boiler and check if problem removed 5-) Call for authorised service at first 6-) Check Pump operation if the pump circulation through the heat exchanger is enough 7-) Check intermittent contacts on harness carefully specially Pump and PWM cable and specially pump main supply connector and specially pump main connector, measure voltage from connectors 8-) Check if there is air on the heat exchanger or system, remove air. 9-) Check heat exchanger water path againsts clogging 10-) Installation water path againsts clogging 11-) Reset & Restart boiler
<p>ALL 10</p> 	Plant Probe OR AUX Probe temperature sensor faulty	Boiler does not work, ALL 10 error code flashing on the screen	<ul style="list-style-type: none"> > Plant probe OR AUX Probe temperature sensor faulty > Plant Probe OR AUX sensor is open or short circuit 	<ol style="list-style-type: none"> 1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabling and connectors between double NTC and board 5-) Reset & Restart boiler
<p>ALL 13</p> 	Exhaust temperature probe overtemperature alarm	Boiler does not work, ALL 13 error code flashing on the screen	<ul style="list-style-type: none"> > Over temperature flue gas outlet value > P80 value C° 	<ol style="list-style-type: none"> 1-) Call for authorised service at first 2-) Check Pump operation if the pump circulation through the heat exchanger is enough 3-) Check intermittent contacts on harness carefully specially Pump and PWM cable 4-) Check if there is air on the heat exchanger, remove air 5-) Check heat exchanger water path againsts clogging 6-) Installation water path againsts clogging 7-) Reset & Restart boiler
<p>ALL 14</p> 	Exhaust (FLUE) temperature probe fault	Boiler does not work, ALL 14 error code flashing on the screen	<ul style="list-style-type: none"> > Central heating FLUE temperature sensor faulty > Probe is open or short circuited 	<ol style="list-style-type: none"> 1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Check FLUE temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabling and connectors between FLUE NTC and board 4-) Reset & Restart boiler
<p>ALL 15</p> 	Fan failure (feedback/supply)	Boiler does not work, ALL 15 error code flashing on the screen	<ul style="list-style-type: none"> > Fan harness 	<ol style="list-style-type: none"> 1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully on fan main supply, if main supply not connected then fan will not operate and boiler will not ignite 3-) Check intermittent contacts or open contacts on harness carefully on fan PWM connection, if PWM connection not connected then fan will work at %100 capacity 4-) Reset & Restart boiler

ALL 19 	Fault failure external probe	This error is activated when the external probe is shortcircuited The  symbol is shown flashing on the display	> External probe is shortcircuited	1-) Call for authorised service at first 2-) Check intermittent contacts or short-circuit contacts on harness carefully 3-) Check External temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabeling and connectors between External Probe and board 5-) Reset & Restart boiler
ALL 30 	Return probe temperature sensor faulty	Boiler does not work, ALL 30 error code flashing on the screen	> Return Probe temperature sensor faulty > Return sensor is open or short circuit	1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Return temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 4-) Check cabeling and connectors between double NTC and board 5-) Reset & Restart boiler
ALL 31 	Cascade Delivery Sensor Alarm	Usable RESET number reached.	Too many consecutive lock-out failures (followed by reset) due to other possible causes	1-) Removing power supply reset will be allowed 2-) Check the root cause of Error code to solve 3-) Check Cascade Sensor at first. 4-) If fault still persists call for authorised service
ALL 35 	Communication Error Between UI 30 board and UI 30 Board (between two cascade module)	Boiler does not work, ALL 35 error code flashing on the screen	When PAR 15 is different from " - - " and there isn't communication between UI 30 board and UI 30 board the boiler stop and the display shows ALL 35.	1-) Call for authorised service at first 2-) Check main supply for all boilers, if there is no voltage supply for all or one of the boilers it will not operate. Check the main supply main fuse, fuse on the PCBs and cable harness. 3-) Check the cascade cable harness between the boilers. 4-) Reset & Restart boiler
ALL 36 	Cascade Adress Error	Boiler does not work, ALL 36 error code flashing on the screen	When PAR 15 is addressed for two or more boilers as SAME ADRESSED then boilers stop and the display shows ALL 36.	1-) Call for authorised service at first 2-) Check Par 15. 3-) Check the cascade adress. All CASCADE adress must be correctly adjusted 4-) Reset & Restart boiler
ALL 40 	HEX heatexchanger protection temperature probe fault	Boiler does not work, ALL 40 error code flashing on the screen	> HEX temperature sensor faulty > Probe is open or short circuited	1-) Call for authorised service at first 2-) Check intermittent contacts or open contacts on harness carefully 3-) Check HEX temperature sensor resistance according to page XXX at section XXX if its out of tolerance replace NTC 3-) Check cabeling and connectors between HEX NTC and board 4-) Reset & Restart boiler
ALL 41 	HEX heat exchanger temperature probe overtemperature alarm	Boiler does not work, ALL 41 error code flashing on the screen Temp > Par 88 value	> Lack of water on the system > Pump blockage > Pump failiure > Pump harness > Installation blockage	1-) RESET boiler at first check if problem removed 2-) Check boiler central heating valves are open if they are closed open of all 3-) Check all radiator valves are open if they are closed open of make sure enough cooling into the system 4-) RESET boiler and check if problem removed 5-) Call for authorised service at first 6-) Check Pump operation if the pump circuation through the heat exchanger is enough 7-) Check intermittent contacts on harness carefully specially Pump and PWM cable and specially pump main supply connector and specially pump main connector, measure voltage from connectors 8-) Check if there is air on the heat exchanger or system, remove air if any to do that activate deaeration mode on manual page XX 9-) Check heat exchanger water path againts clogging 10-) Installation water path againts clogging 11-) Reset & Restart boiler
ALL 70 	Cascade Error Mater boiler	Boiler does not work, ALL 70 error code flashing on the screen	Fault ALL 70 displayed only on the master boiler when an error is detected in the cascade system which prevents its operation.	1-) Call for authorised service at first 2-) Check slave boilers at first. 3-) Reset & Restart boiler
ALL 71 	Cascade Error	Boiler does not work, ALL 71 error code flashing on the screen	Fault ALL 71 displayed only on the master boiler in case of SMC probe fault (data not received or probe faulty)	1-) Removing power supply reset will be allowed 2-) Check the root cause of Error code to solve 3-) Check Cascade Sensor at first. 4-) If fault still persists call for authorised service

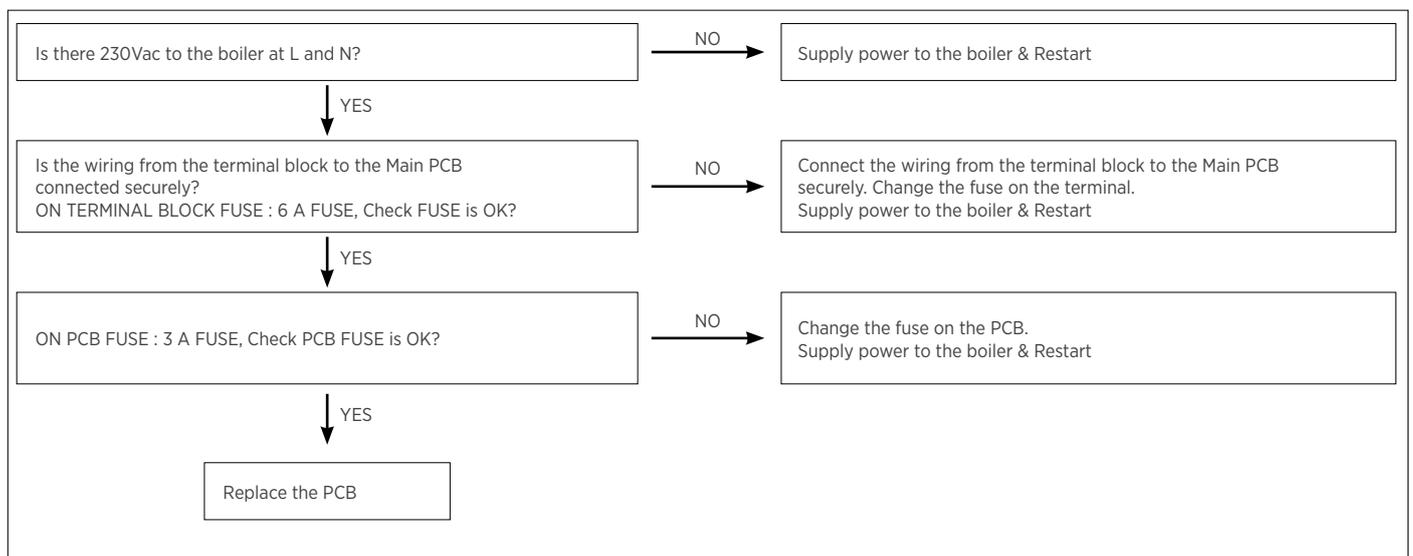
4.1. OVERHEAT /NO DISPLAY

Object	Manufacturer	Type-model / Technical data	Release date
Fault finding for Overheat and No display problems	Warmhaus	Viwa 90-115-125-150	Rev. No:
			Drw. No:

OVERHEAT



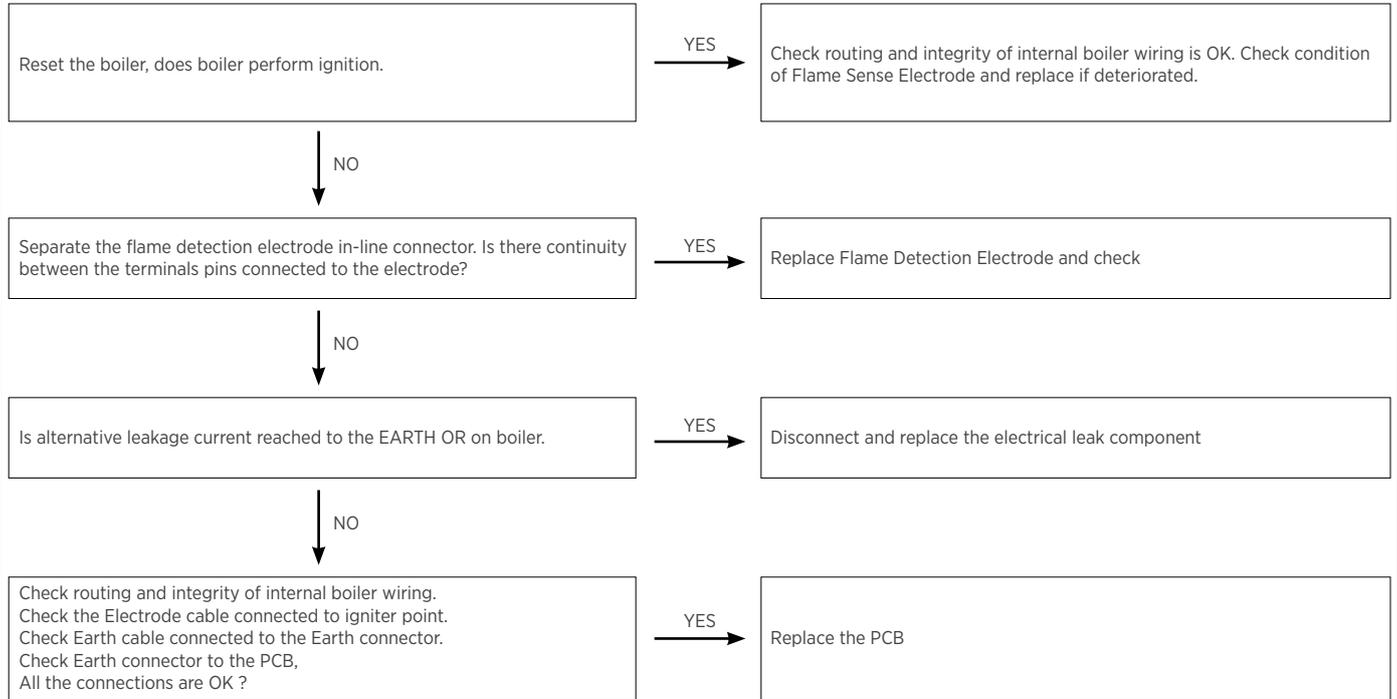
4.2. NO DISPLAY



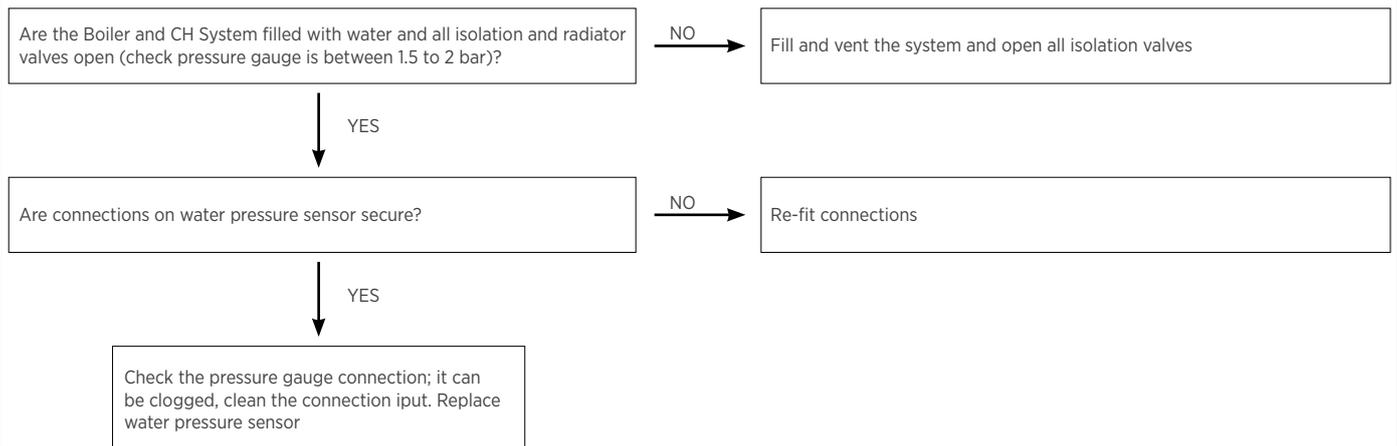
4.3. FLAME ON BEFORE GAS VALVE ON / LOW WATER PRESSURE

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault Finding; Flame before Gas valve ON & Low Water	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.725

FLAME ON BEFORE GAS VALVE ON



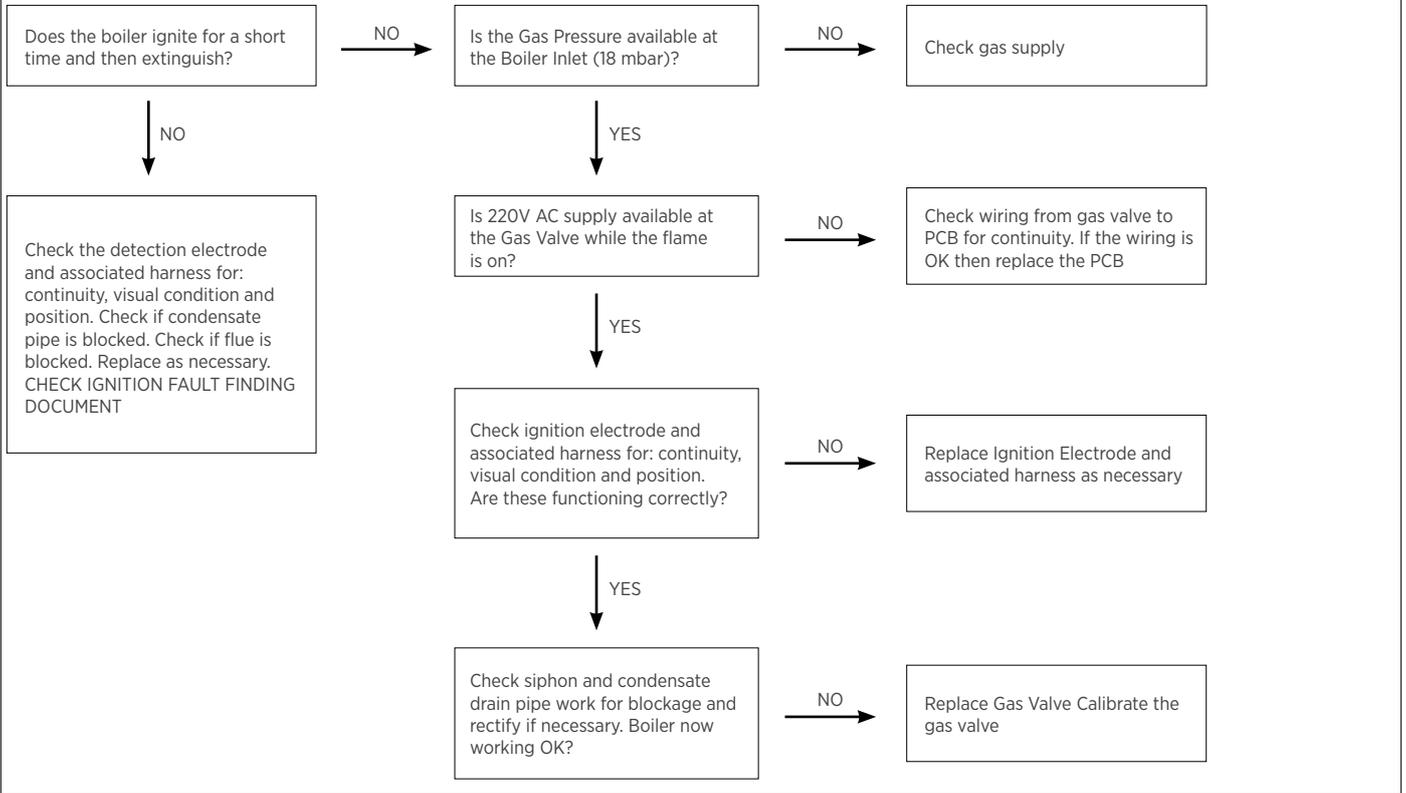
4.4. LOW WATER PRESSURE



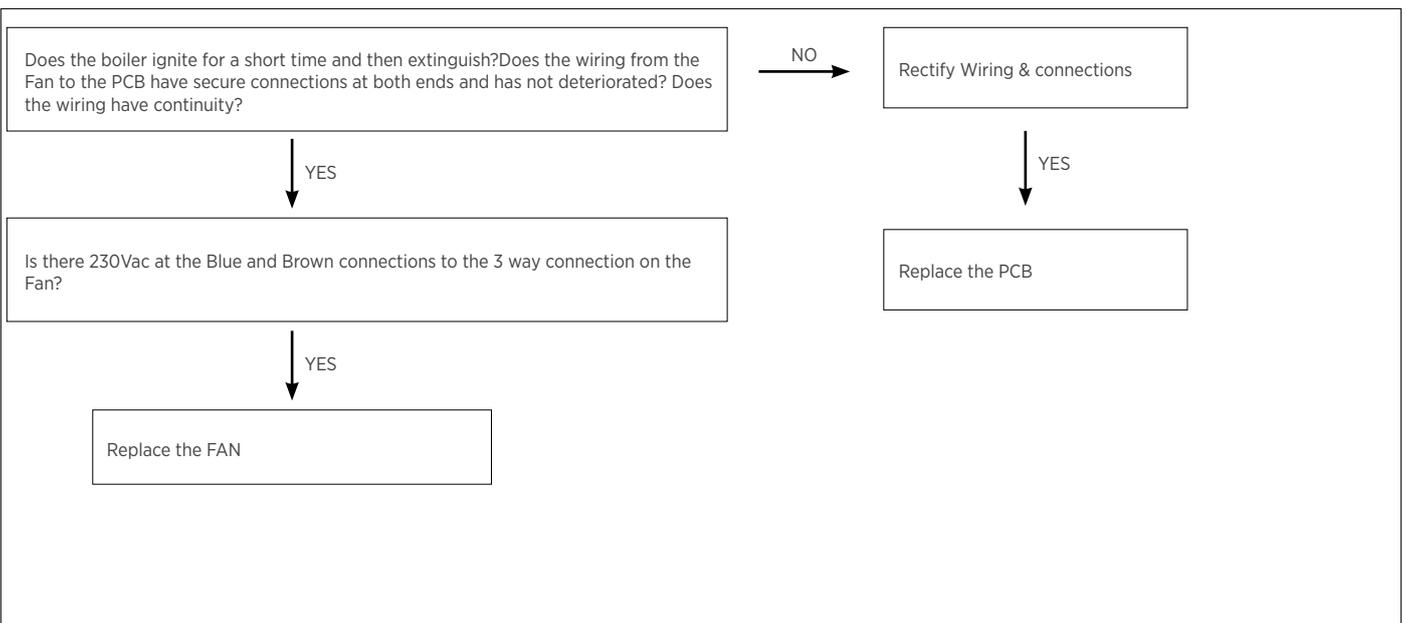
4.5. FLAME LOSS / FAN FAULT

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault Finding; Flame Loss & Fan Fault	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.726

FLAME LOSS



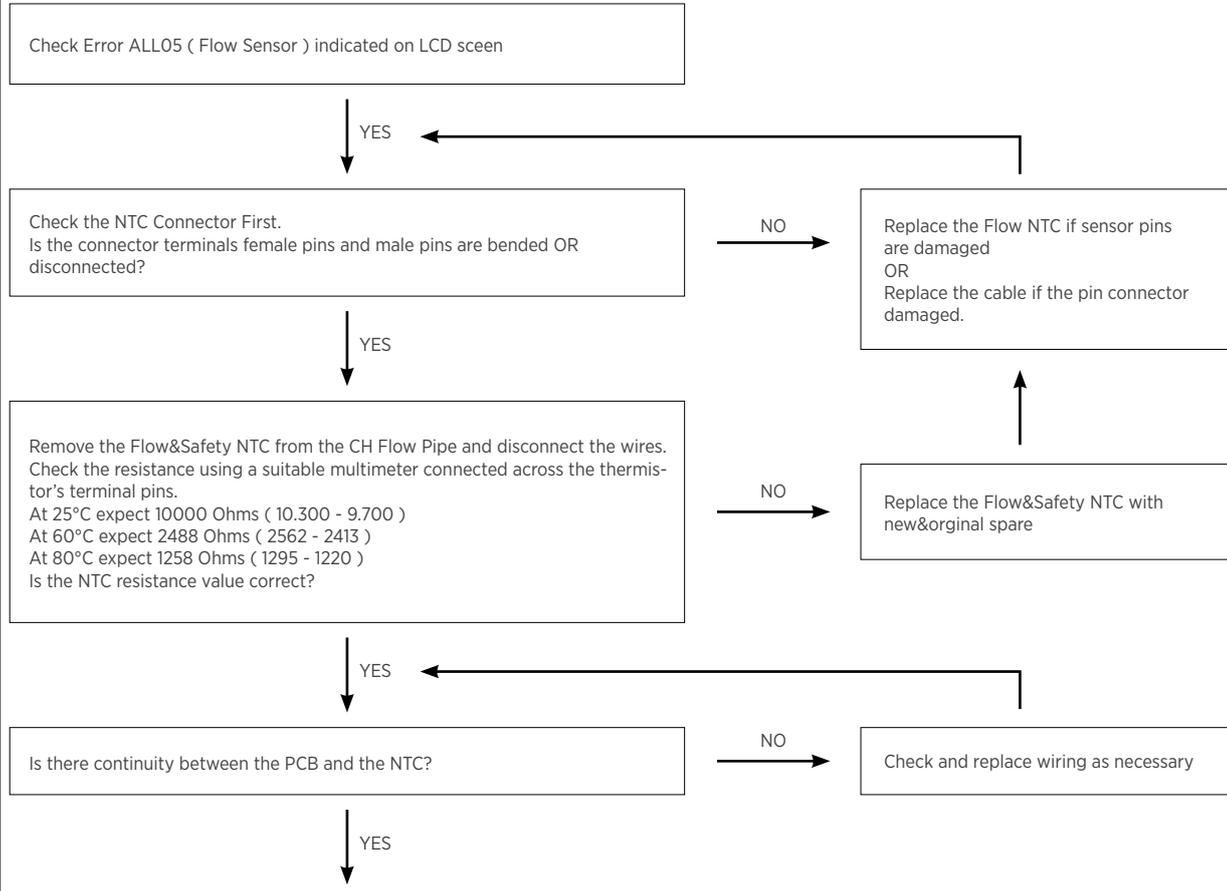
4.6. FAN FAULT



4.7. FLOW NTC FAULT

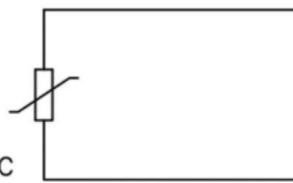
Designation	Manufacturer	Type-model / Technical data	Release date	17.05.2018
Fault finding: Flow NTC Sensor	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.727

Flow NTC FAULT

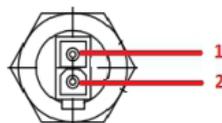


T (°C)	R (Ohm)
0	32624
5	25381
10	19897
15	15711
20	12493
25	10000
30	8056
35	6530
40	5324
45	4365
50	3599
55	2982
60	2483
65	2079
70	1748
75	1476
80	1252
85	1066
90	912
95	782
100	674

NTC thermistor
type 10KOhm 3%
single 2-wire
10KOhm at 25°C
Bvalue 3977K @25/85°C
range -40..+105°C
tolerance 3% at 60°C



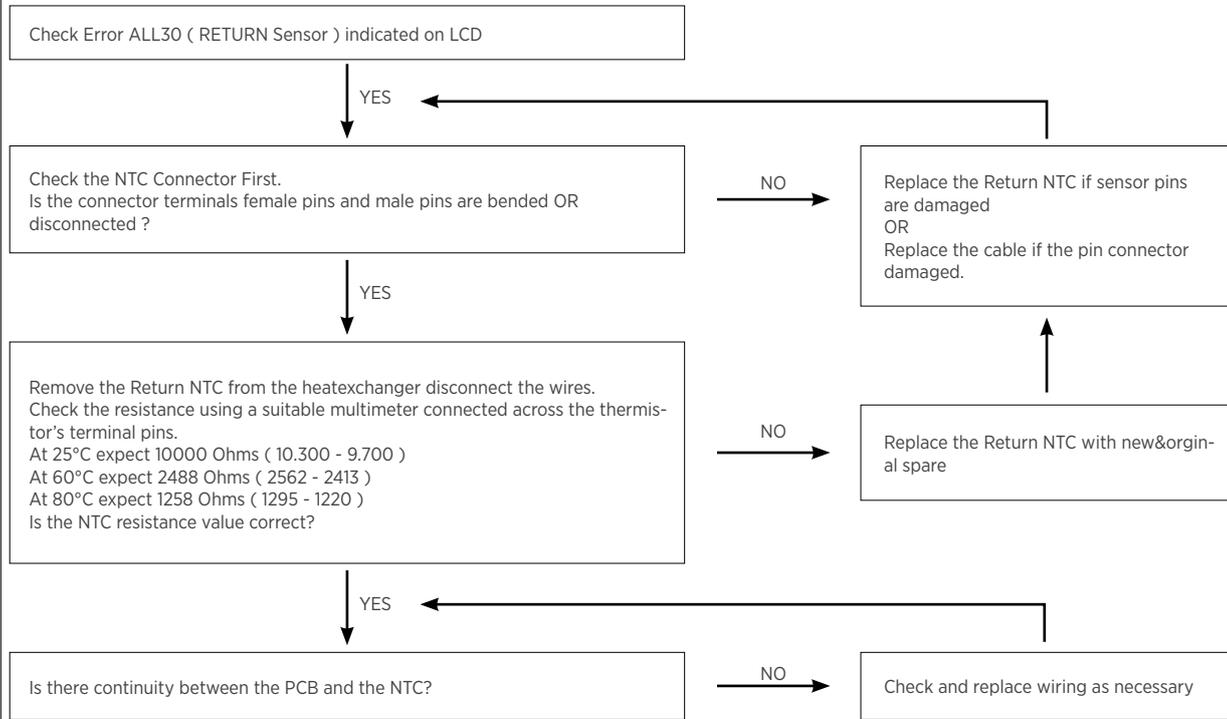
Electrical circuit



4.8. RETURN NTC FAULT

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault finding; Return NTC Sensor	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.728

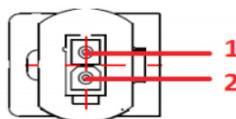
RETURN NTC FAULT



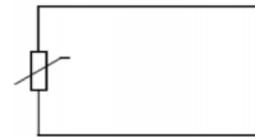
Replace PCB

T (°C)	R (Ohm)
0	32650
5	25388
10	19900
15	15709
20	12490
25	10000
30	8057
35	6531
40	5327
45	4369
50	3603
55	2986
60	2488
65	2083
70	1752
75	1481
80	1258
85	1072
90	918
95	789
100	680

18) Return NTC Sensor



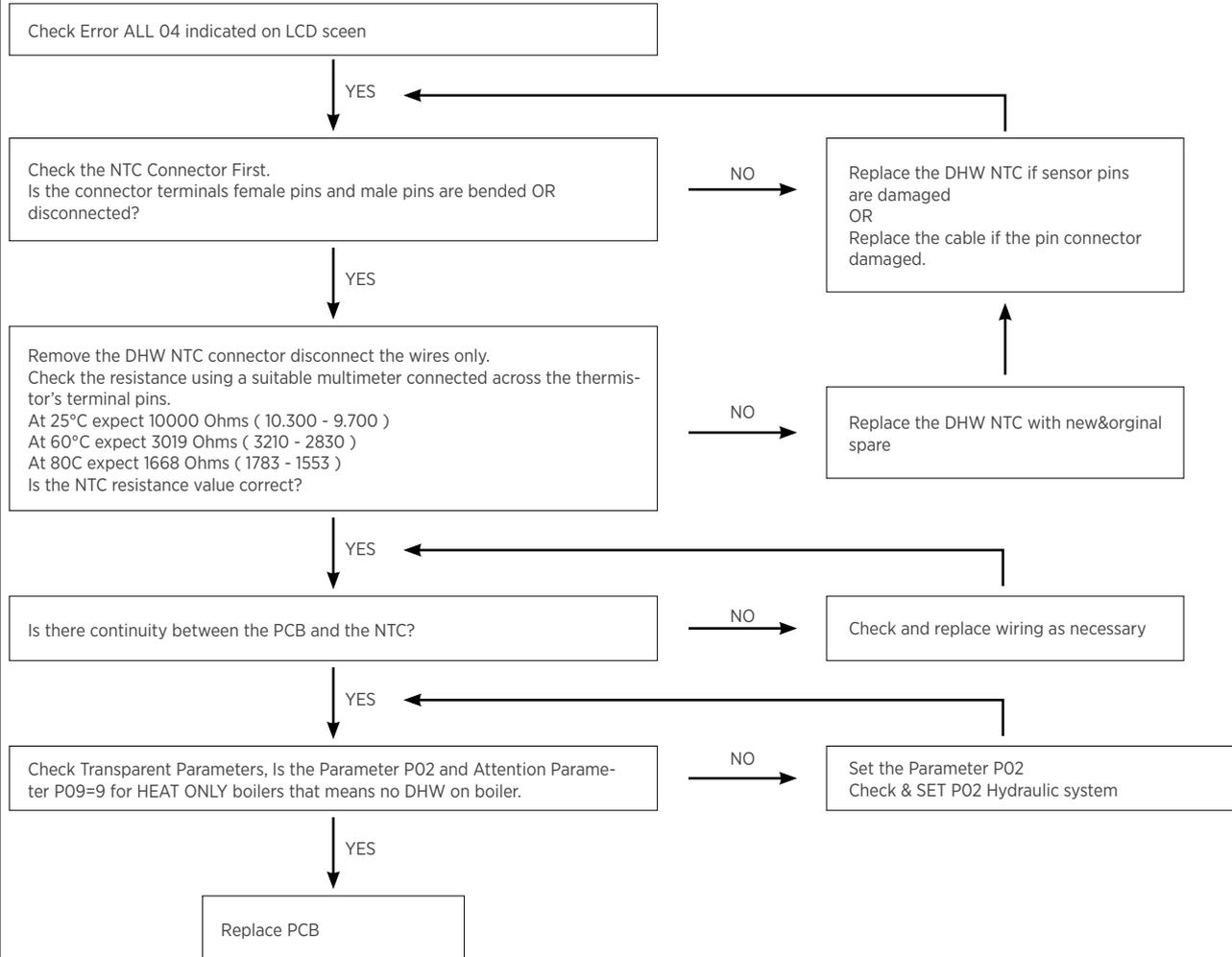
Measure 1-2 points via multimeter



4.9. DOMESTIC HOT WATER NTC FAULT

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault finding; DHW NTC Sensor	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.729

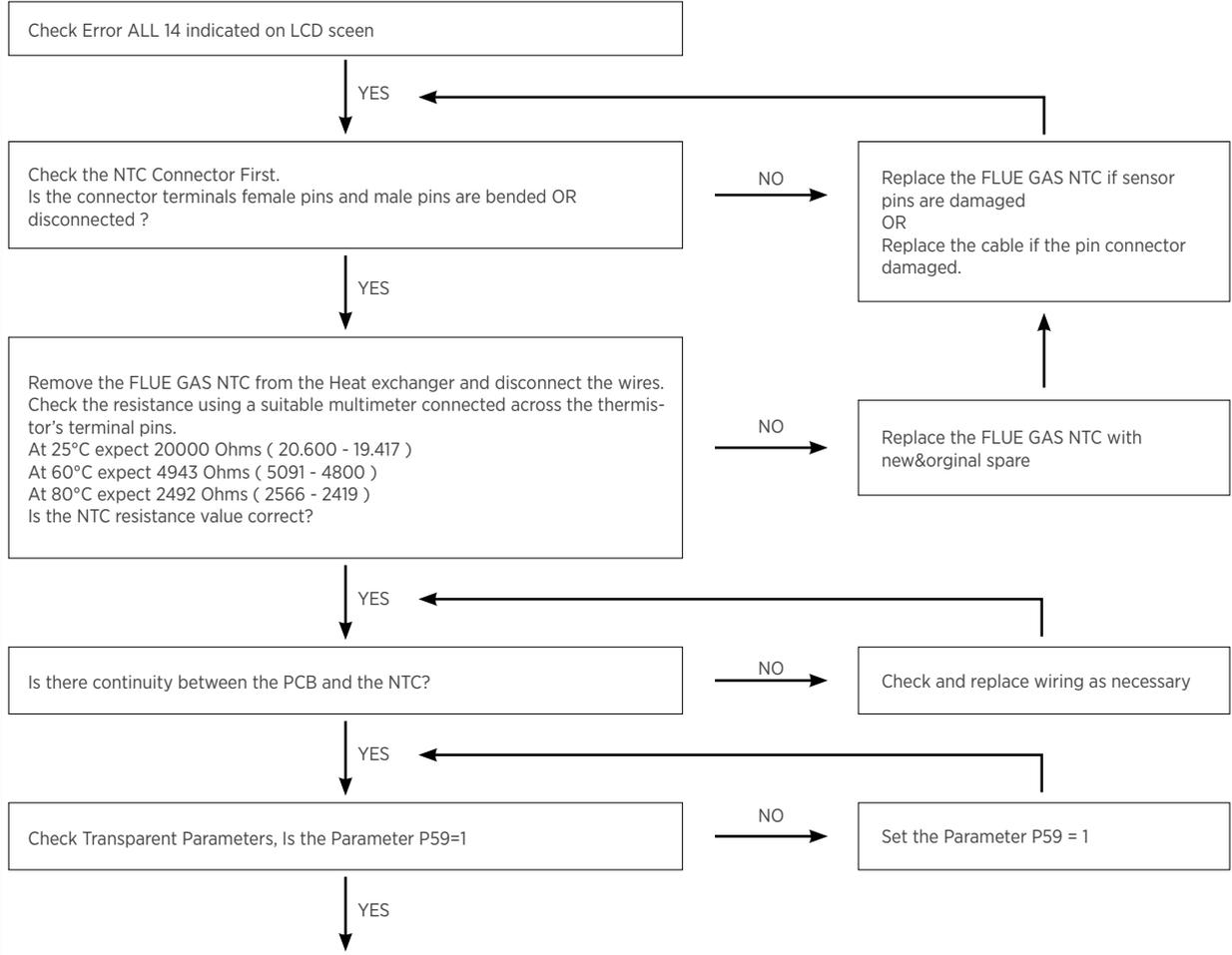
Domestic Hot Water NTC FAULT



4.10. FLUE GAS NTC FAULT

Designation	Manufacturer	Type-model / Technical data	Release date	17.05.2018
Fault finding; FLUE GAS NTC Sensor	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.730

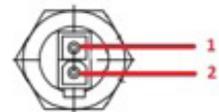
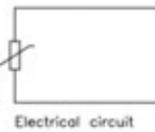
FLUE GAS NTC FAULT



Replace PCB

T (°C)	R (Ohm)
0	66050
10	40030
20	25030
25	20000
30	16090
40	10610
50	7166
60	4943
70	3478
80	2492
90	1816
100	1344
110	1009
120	768
130	592
140	461
150	364
160	290
170	233
180	189
190	155

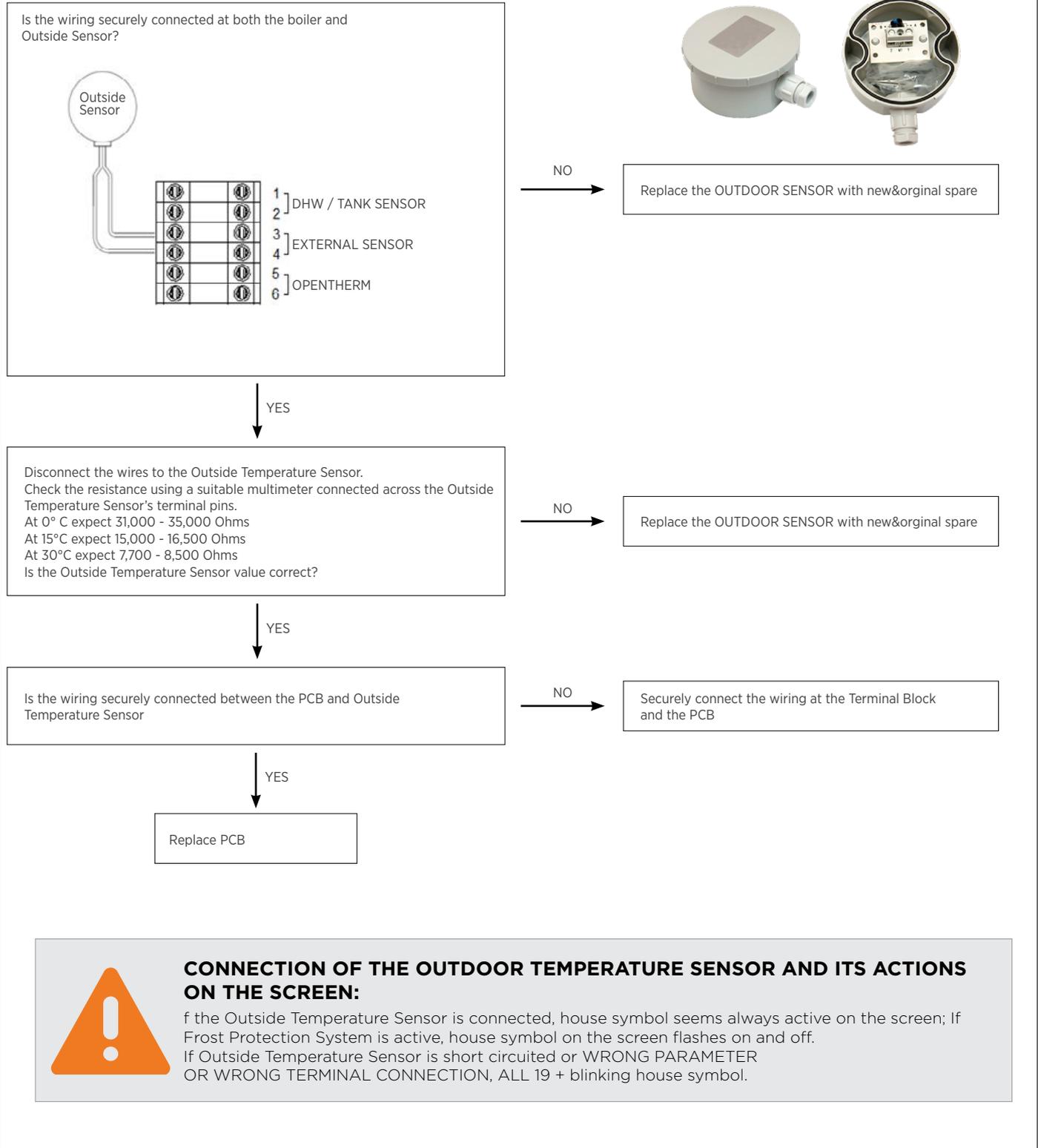
NTC thermistor
type 10KOhm 3%
single 2-wire
10KOhm at 25°C
Bvalue 3977K Ø25/85°C
range -40...+105°C
max.temp. tip 150°C
tolerance 3% at 60°C



4.11. OUTDOOR SENSOR FAULT

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault Finding; Outside Sensor	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.731

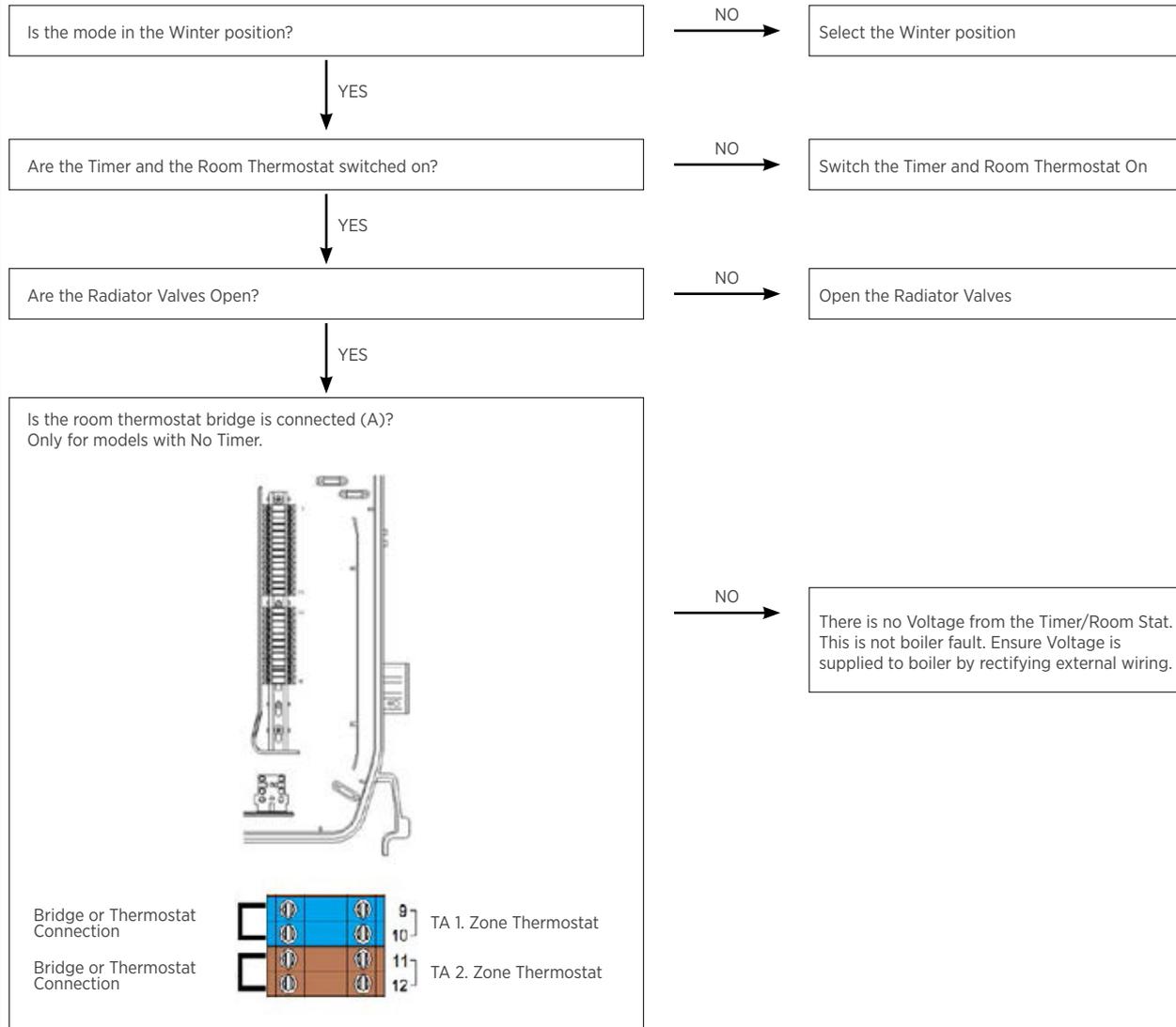
OUTDOOR SENSOR FAULT



4.12. NO CH OPERATION / DHW WORKS

Designation	Manufacturer	Type-model / Technical data	Release date	28.11.2017
Fault Finding; No CH Operations but DHW works	Warmhaus	Viwa 90-115-125-150	Rev. No:	0
			Drw. No:	WH.17.733

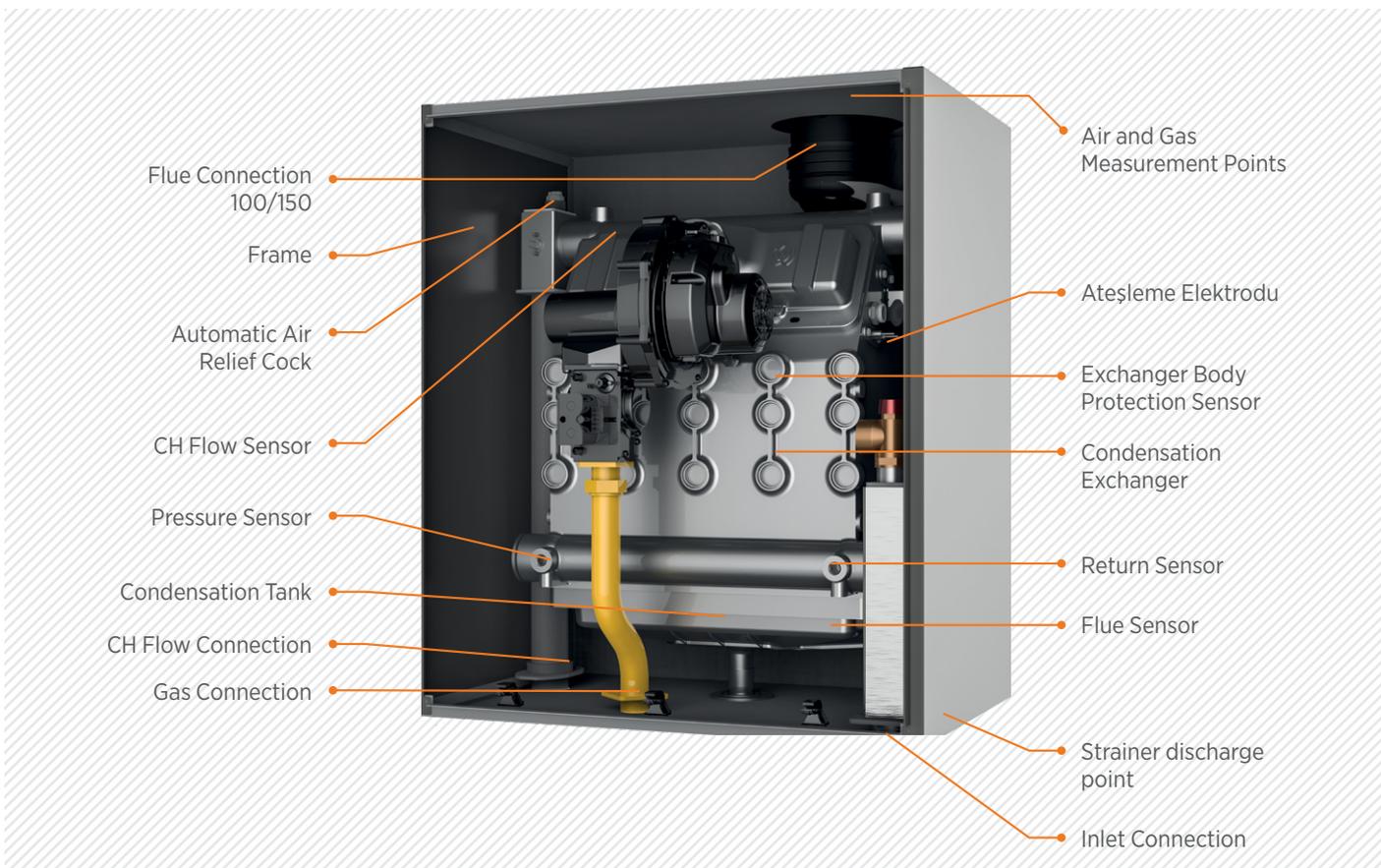
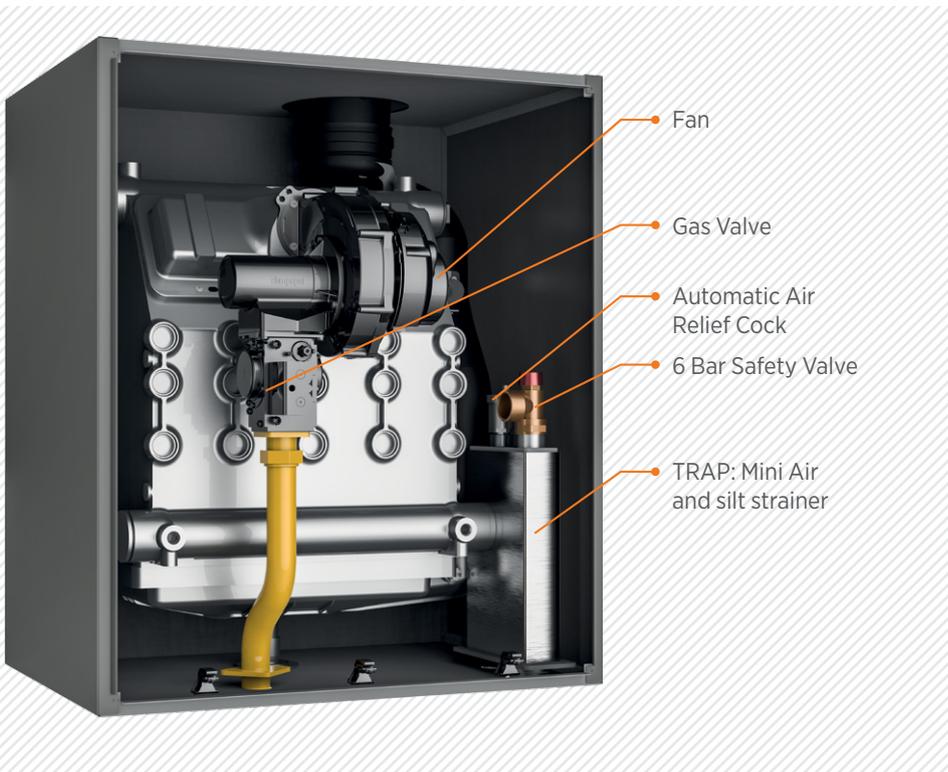
NO CH OPERATION / DHW WORKS



CHAPTER-5 MAINTENANCE-REPAIR & CONTROL

5.1. INTERIOR VIEW AND COMPONENTS

Our Authorized Service can easily reach to all parts and carry out maintenance-repair quickly when they remove the front cover of the boiler.



5.2. REMOVING THE BOILER



Suitable tool kit and maximum attention are required when removing-mounting all components during maintenance and repair of the boiler. Pay attention to your and appliance's safety while applying intervention facilities.



Figure 5.1 You can see the operation sequence for removing the front cover of boiler and controlling the connections of other parts.

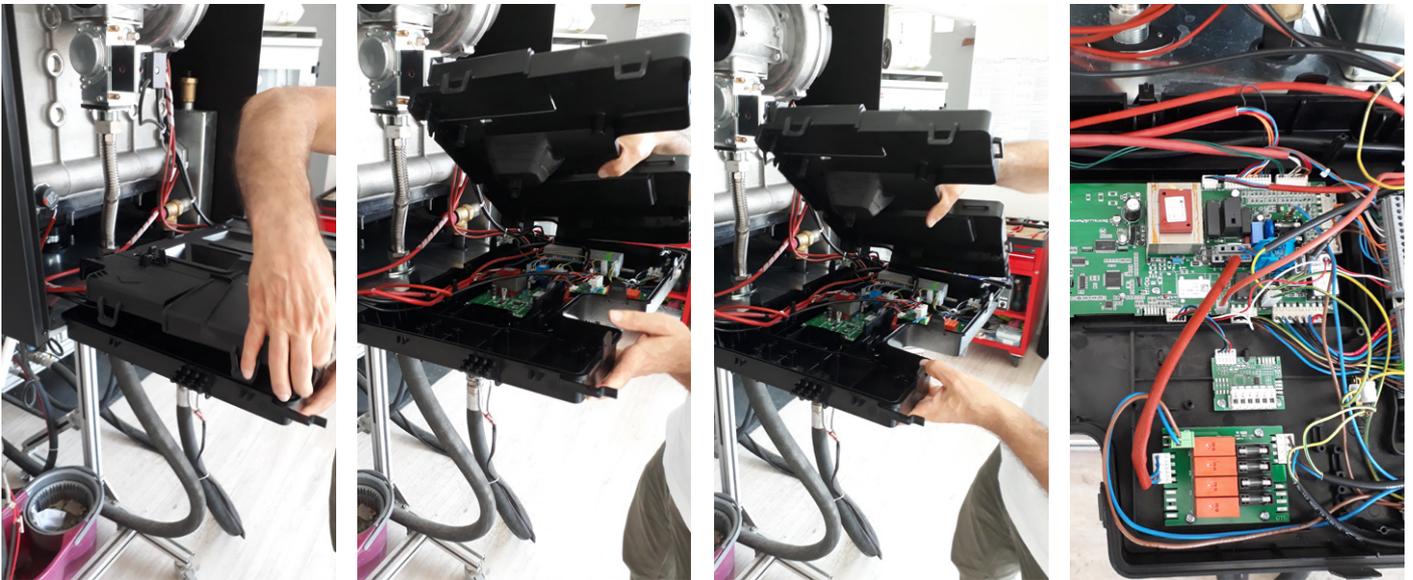
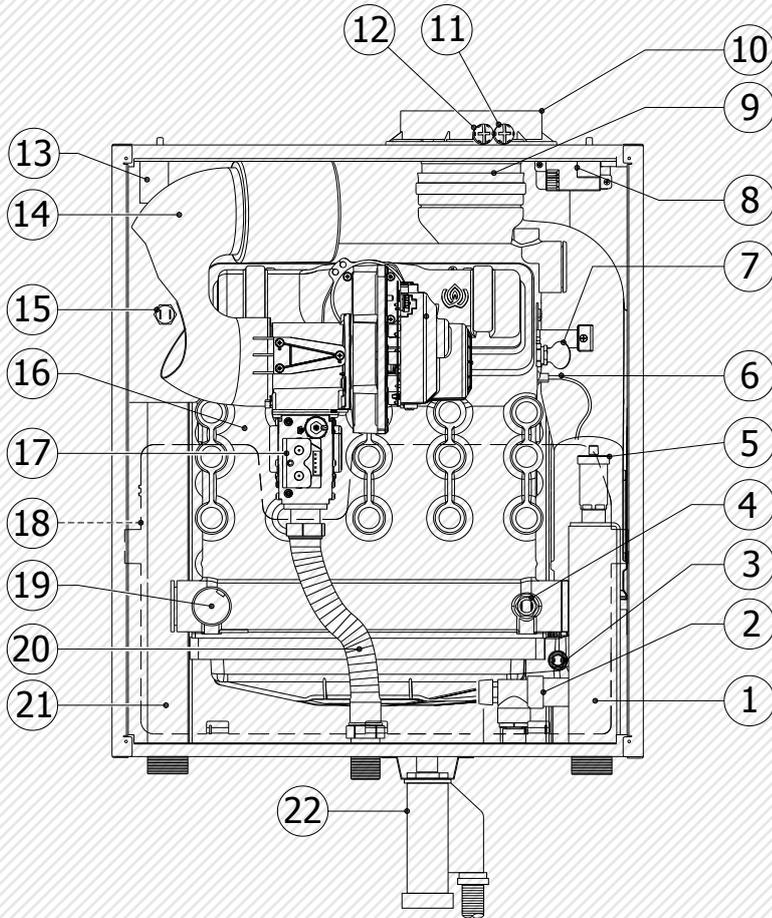


Figure 5.2 Opening-closing the electronic board group and terminal box as a whole.



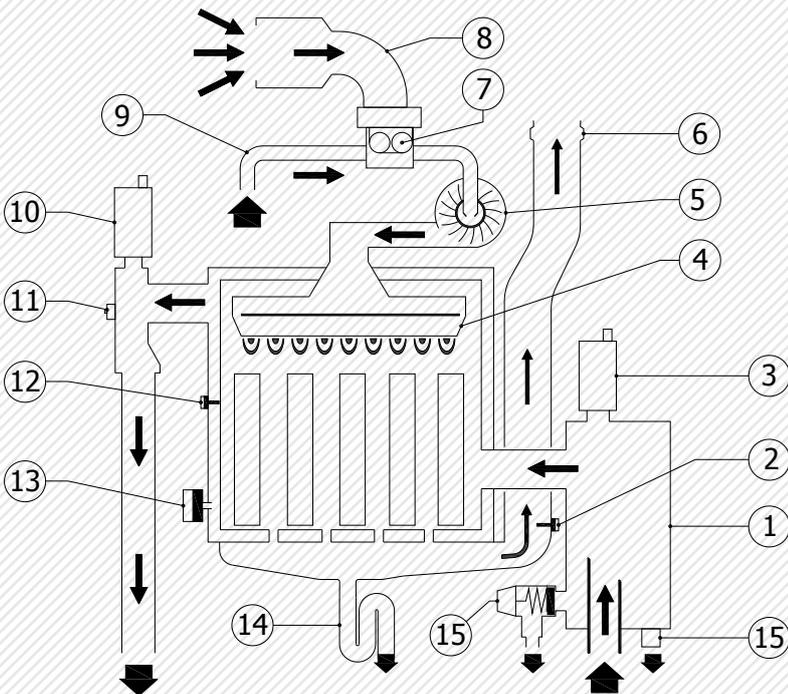
1. **ATTENTION** Flexible brackets on the both sides shouldn't be forced during removing and mounting the board box.
2. Snap clips around the rear cover of motherboard must be removed and affixed carefully.
3. While working on electronic board, it needs to be protected from cable residues and external factors (moisture-water etc.).

5.3. COMPONENTS OF THE BOILER



1. CH Heating Return
2. Safety Valve Discharge (6bar)
3. Flue Over Heat NTC Sensor
4. CH Return NTC Sensor
5. Automatic Air Vent (inlet)
6. Ignition & Ionisation Electrode
7. Flame Inspection mirror
8. Ignition Transformer
9. Exhaust (Ø100mm Flue outlet)
10. Air Inlet (Ø150mm)
11. Air Inlet Sample Point
12. Flue Gas Sample Point
13. Automatic Air Vent (outlet)
14. Air Intake Slicer
15. High Limit Thermostat
16. Main Heat Exchanger
17. Gas Valve
18. Main PCB Control Panel
19. Pressure Sensor
20. Gas Inlet Pipe
21. CH Heating Flow
22. Condensation Trap (Siphon)

Figure 5.3 Parts comprising the boiler



FUNCTIONAL DIAGRAM

1. CH Heating Return Dirt & Air Trap
2. Flue Over Heat NTC Sensor
3. Automatic Air Vent (CH inlet)
4. Burner
5. PWM Fan
6. Flue Gas Outlet
7. Gas Valve
8. Air Intake Slicer
9. Gas inlet
10. Automatic Air Vent (CH Outlet)
11. CH Return NTC Sensor
12. HEX NTC Safety Limit Sensor
13. Water Pressure sensor
14. Condensation Drain Trap (Siphon)
15. 6 Bar Safety Valve
16. Sediment Air Separator Cleaning Plug

Figure 5.4 Diagram of Viwa Boiler Function

5.4. REMOVING AND CLEANING THE BURNER

1. Close the electric switch and gas valve of the boiler,
2. Disconnect the electric cables from the fan. (220 V. ve Tacho Signal)
3. Remove the inlet bushing of gas valve.
4. Screw off the four machine screws holding the cover of fan and burner. (Gas valve, venturi and fan will be removed as group). Don't try to separate these parts. Because parts are a group; they will change together.
5. Loosen the cap nuts holding the cover of burner. Take the Premix burner (cord triangle part) out from combustion chamber. **ATTENTION!** Clean the burner only with pressure air.
6. Take the Ionized cable coming from Ignition Transformer from ignition electrode.
7. Take grounding cable out from the ignition electrode.
8. Clean the accumulations such as dust-particle etc. which may occur on exchanger and on the combustion surfaces inside the exchanger.
9. Check if there is any damage signs in the impermeability gaskets of burner cover. Change when necessary.

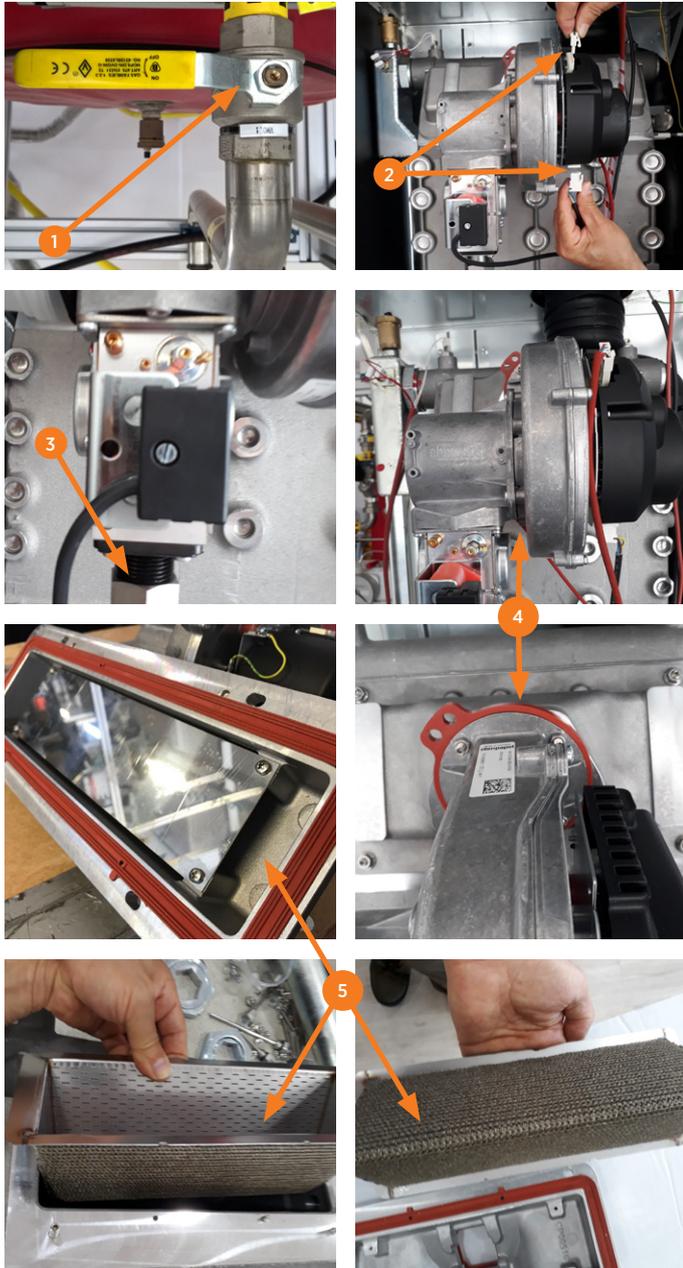


Figure 5.5 Removing and cleaning of the burner



Figure 5.6 Remove the ionized cable coming from Ignition Transformer from ignition electrode.

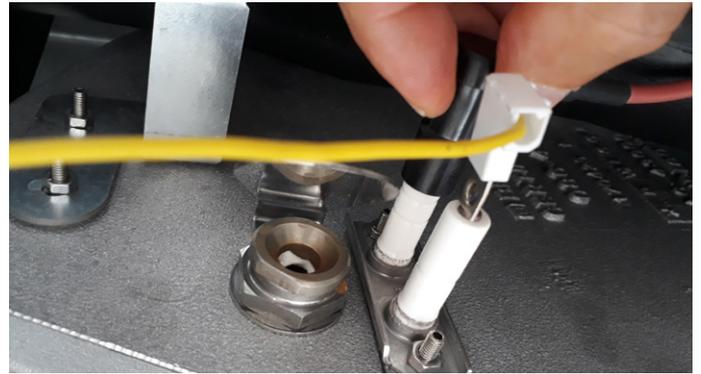


Figure 5.7 Take grounding cable out from the ignition electrode. Dismount the electrode with suitable open-end wrench or socket set.

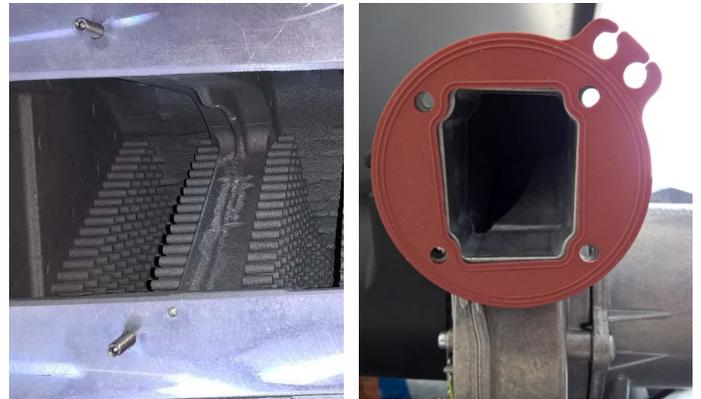


Figure 5.8 Clean the accumulations such as dust-particle etc. which may occur on the burner and on the combustion surfaces inside the exchanger

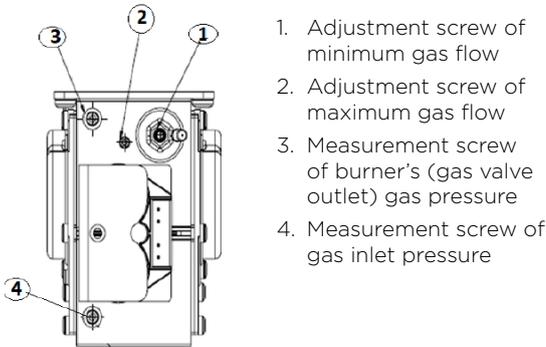


Figure 5.9 Check if there is any damage signs in the impermeability gaskets of burner cover. Change when necessary

5.5. COMBUSTION PERFORMANCE CONTROL

Attention Please: Control the following during routine service and after any maintenance or part replacement of combustion circuit:

Adjust Points of EBM Gas Valve:



- Durability/integrity of flue system, throttles and flue gaskets,
- Durability/integrity of boiler combustion circuit and related gaskets,
- Gas inlet pressure in maximum operating power,
- Gas flow rate,
- Combustion performance.

Attention please: Technical specifications recommend these issues for installation and maintenance of the gas-fired boilers with nominal inlet not exceeding 200 kW:

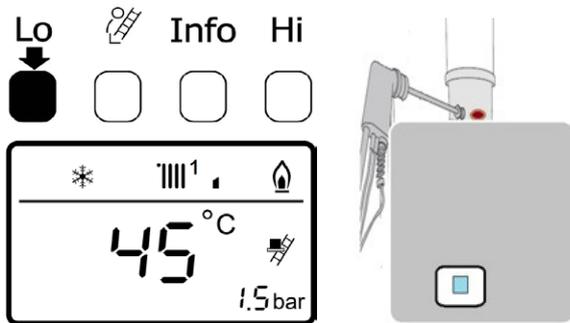
- A person who carries out the combustion measurement must be regarded as authorized in interpreting the usage and results of a flue gas analysis device.
- Flue gas analysis device to be used must be calibrated, meeting the requirements of related standards and according to the requirements of analyzer manufacturers.
- It must be determined that appliance is burning efficiently or, if not, efficient combustion is provided by adjusting necessary settings through evaluating the flue gas analysis results

5.6. ADJUSTMENTS ON GAS VALVE AND BOILER SCREEN

5.6.1 MINIMUM GAS SETTINGS OF BOILER

To adjust the boiler at the minimum power rate;

1. Place the probe of the flue gas analysis device on measurement point of the boiler.
2. Press the **Lo** button of the boiler once and wait for the fan speed to reduce to minimum rate



Adjust the Maximum setting points on gas valve by turning clockwise to + and - directions with thin flathead screwdriver (O₂ % rate increases).

Ordinary O₂ and CO setting values;

Oxygen (O₂) : 4,81% adjustable
 Carbon monoxide (CO) : must be 9,10%

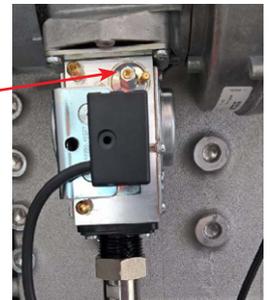
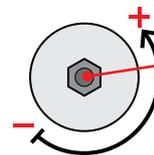
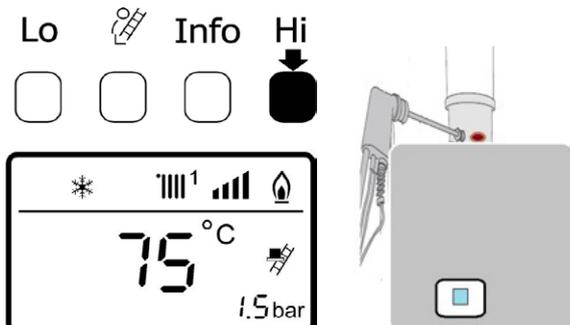


Figure 5.6 Minimum gas setting of Gas Valve

5.6.2 MAXIMUM GAS SETTING OF THE BOILER

To adjust the boiler at the Maximum power rate;

1. Place the probe of the flue gas analysis device on measurement point of the boiler.
2. Press the **Hi** button of the boiler once and wait for the fan speed to increase to maximum rate.



Adjust the Maximum setting points on gas valve by turning clockwise to + and - directions with thin flathead screwdriver (O₂ % rate increases)

Ordinary O₂ and CO setting values;

Oxygen(O₂) : 4,81% adjustable
 Carbon monoxide (CO) : must be 9,10%

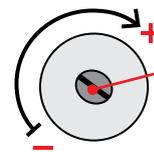
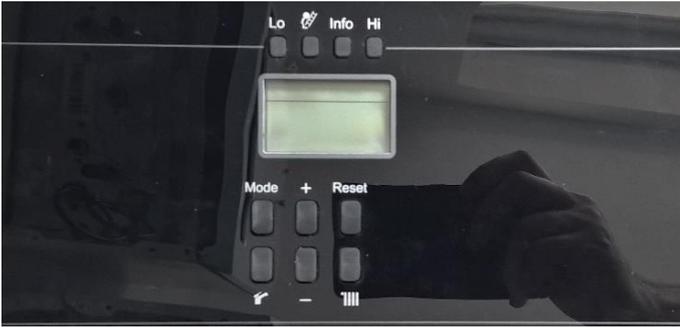


Figure 5.7 Maximum gas setting of Gas Valve

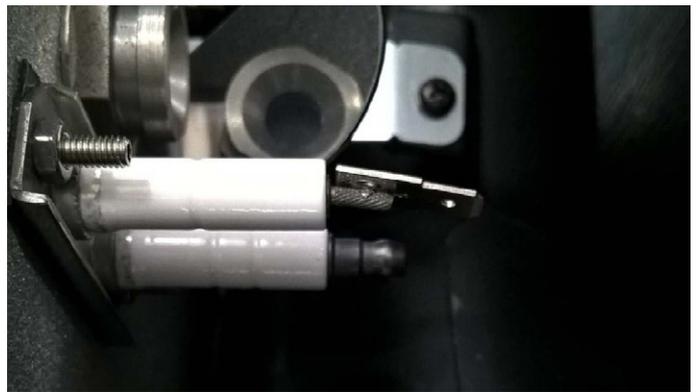
5.7. REMOVAL AND MAINTENANCE OF BURNER



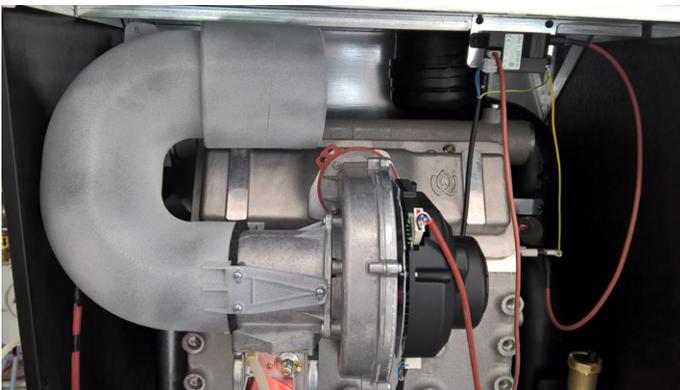
1. Close the electric and gas resource (inlet).



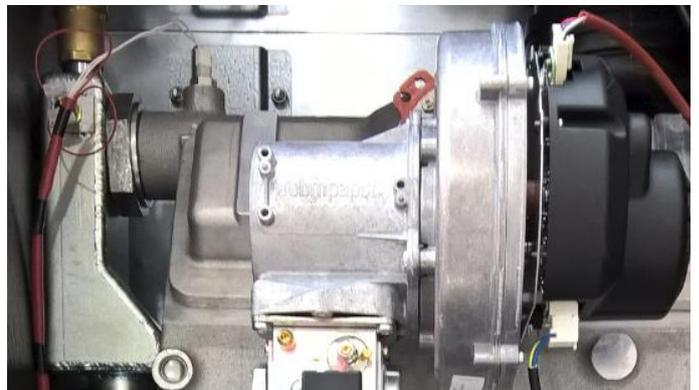
2. Open the control panel.



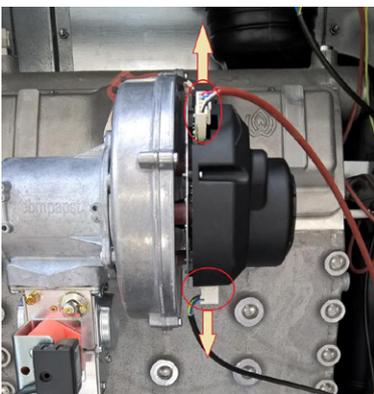
3. Separate the ignition and ionized electrodes.



4. Remove the connection screws of air silencer with the fan.



5. Disconnect the electricity in the gas valve of the fan.



6. Remove the two electrical connection from fan.



7. In order to demount ignition group completely, screw off the four (4) cap nuts stabilizing the cover of Burner.



8. After burner group is removed completely /examine the exchanger (heat changer) assembly carefully.



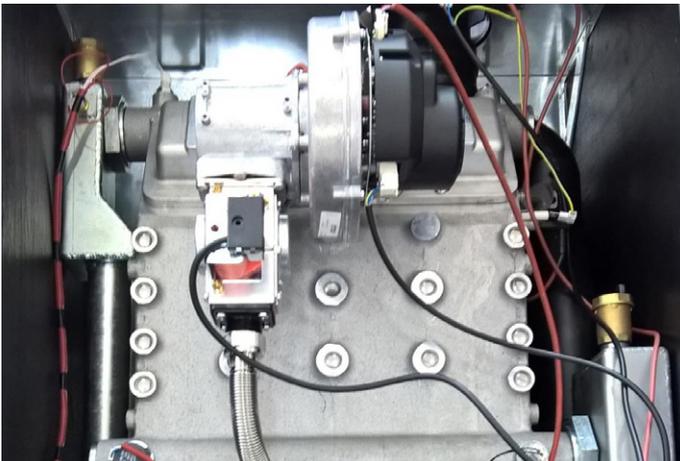
9. Control the inner section of heat exchanger, if necessary, clean it with a soft brush and vacuum cleaner.

10. Control the gaskets and isolation of the burner, if damaged, change it



11. Control the position and condition of contact and ionized electrodes, change if necessary. (Distance between the electrode tips must be 4mm)

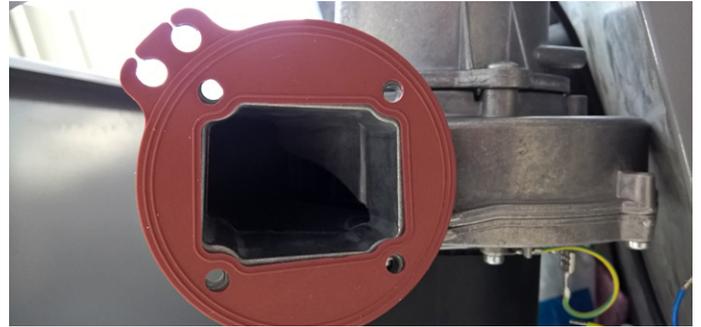
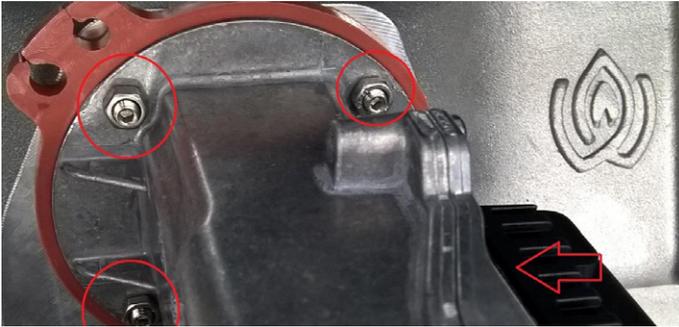
12. Mount in the opposite order of removal when starting the installation.



13. A flue gas analysis must be carried out when completed. See. Chapter - Commissioning

5.8. FAN GROUP

1. Remove the burner/fan mechanism as shown in FG -1



2. Remove four fixing screws and the fan.
3. Control the gasket and change if necessary.
4. Clean the blades of fan with a soft brush, reassemble in the opposite order, change if faulty.
5. A flue gas analysis must be carried out when completed. See. Chapter - 5.6

5.9. WATER PRESSURE SENSOR



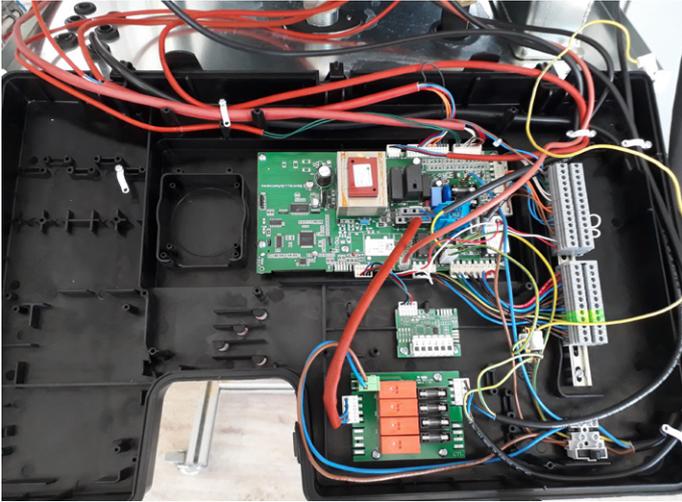
1. Close the electric and gas resource (inlet)



2. Open the control panel.



3. Close the flow and return valves and empty the boiler by using the given discharge openings.



4. Protect the electrical equipment from potential system waters.
5. Disconnect the electricity.



6. Disconnect the electrical socket connection cables on the water pressure sensor.
7. Then, carefully disconnect water with suitable wrench. Make sure that water inlet passage is clean.
8. Reassemble them in the opposite order.

5.10. PCB (PRINTED CIRCUIT BOARD-HDIMS-50)



1. Close the electric and gas resource (inlet).

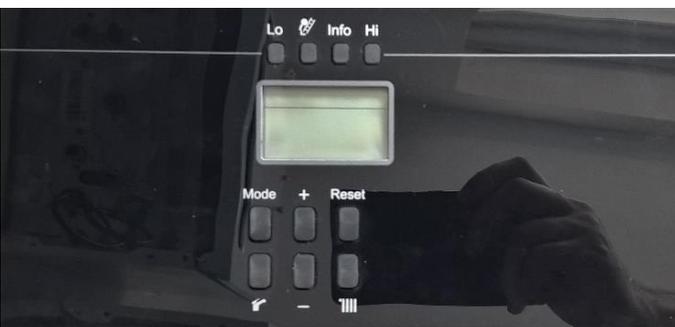


2. Open the control panel.
3. Remove the PCB covers.
4. Unplug all the plugs around the circuit.



5. Remove the single connections and connection cables on the panel.
6. Remove the PCB fixing screws.
7. Change with the opposite order.
8. New or spare PCB needs to be restructured to fit the boiler.
9. PAR X must be adjusted according to the gas used.
10. PAR Y must be adjusted according to boiler structure. See. Chapter TSP Parameters
11. A flue gas analysis must be carried out when completed. See. Chapter - Commissioning

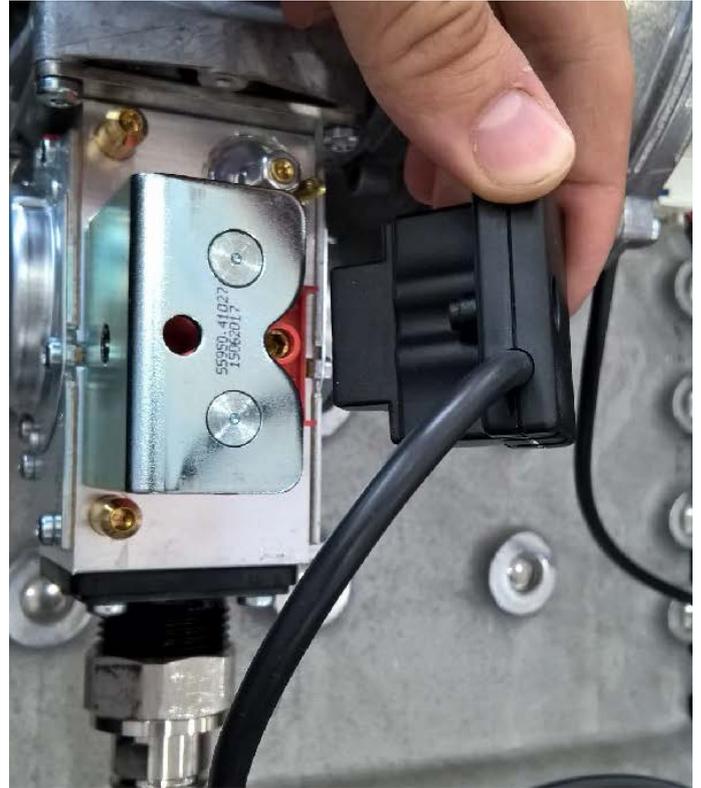
5.11. GAS VALVE



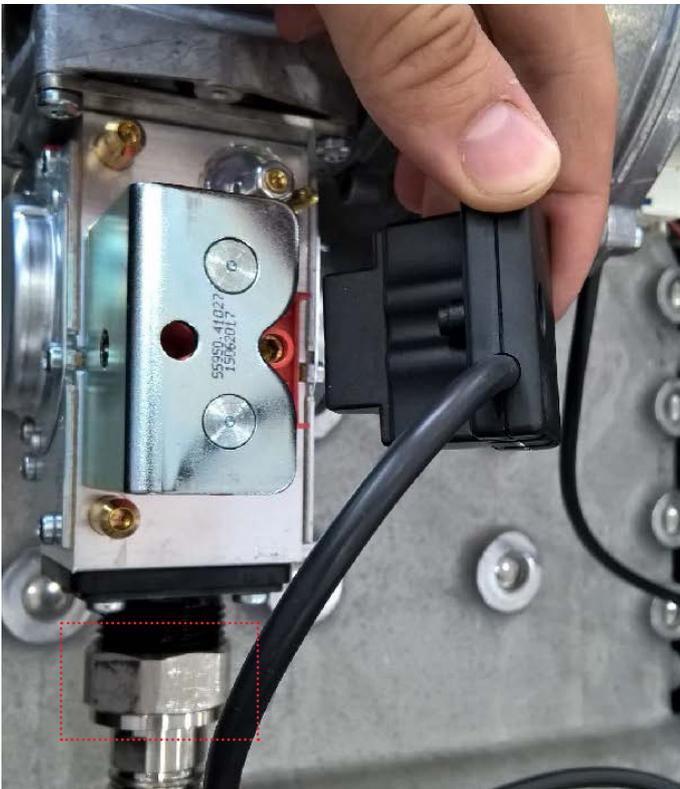
1. Close the electric and gas resource (inlet).



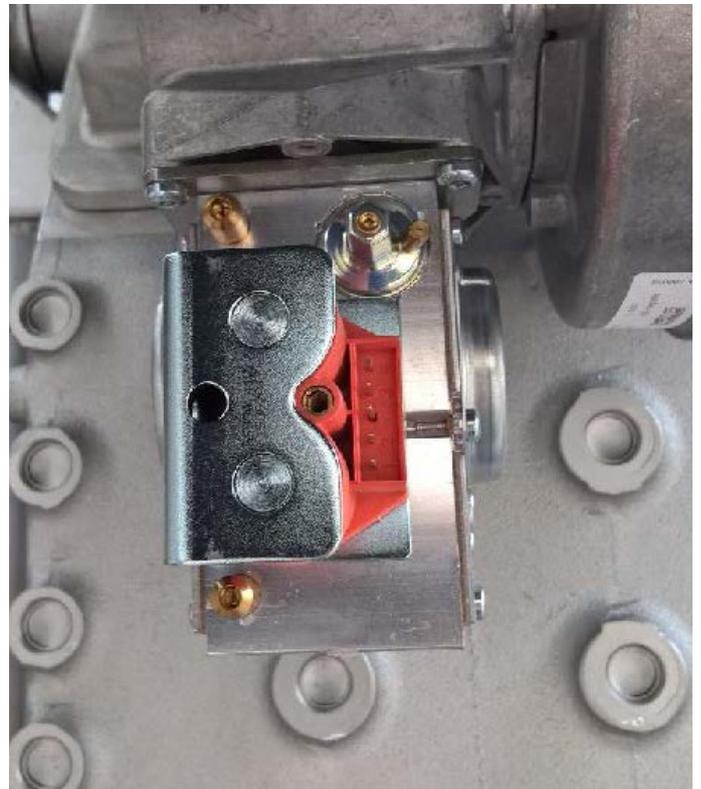
2. Open the control panel.

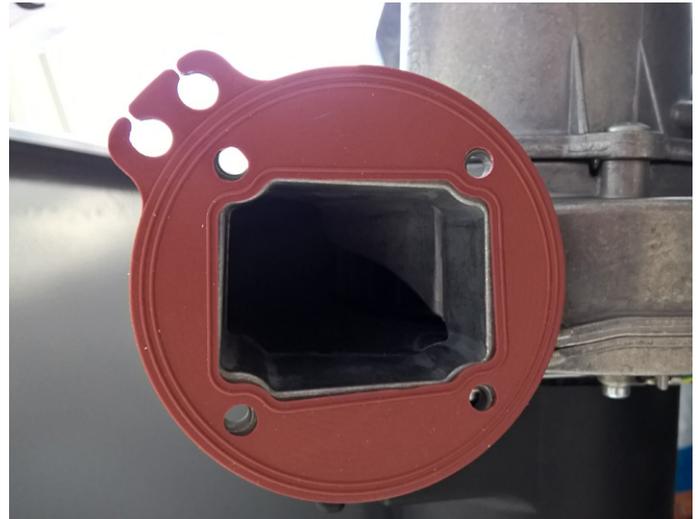
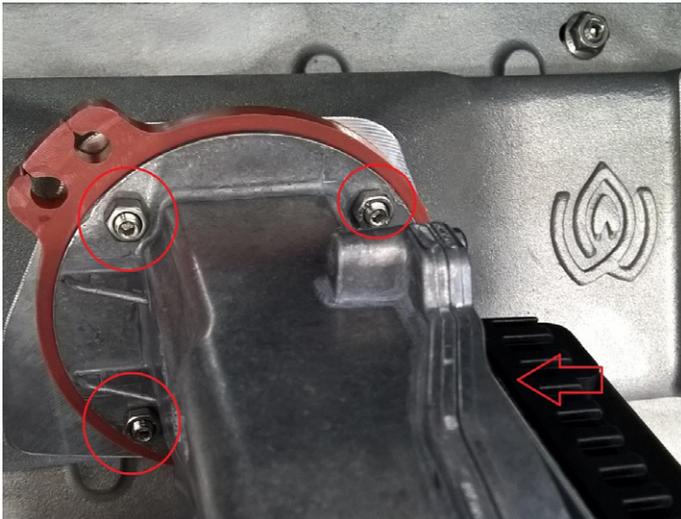


3. Screw off the electrical socket going to the gas valve.



4. Demount the electrical socket and connection bushing.



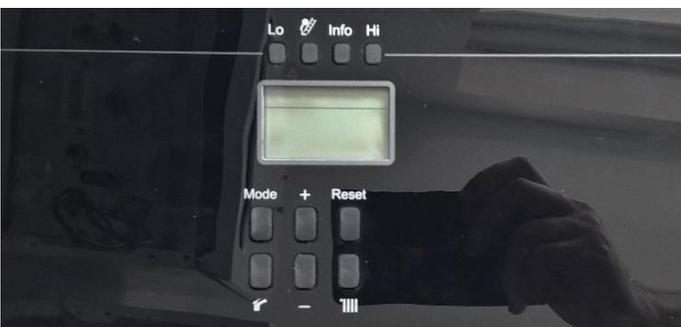


5. Separate the group of gas valve, fan and venturi from the exchanger. ATTENTION Clean the pollution on the surface with pressure air
6. Take the gas group off from the Burner cap (manifold)



7. When completed, gas valve will need adjustment (flue gas analysis). See the chapter - .Gas Valve calibration.
8. Demount the gas valve and replace the spare valve. (ATTENTION There might be group change in the gas valve change.)
9. Change the gaskets as required.
10. Reassemble with the opposite order.
11. When completed, gas valve will need adjustment (flue gas analysis). See the Chapter - .Gas Valve calibration.

5.12. FLOW AND RETURN NTC SENSORS:

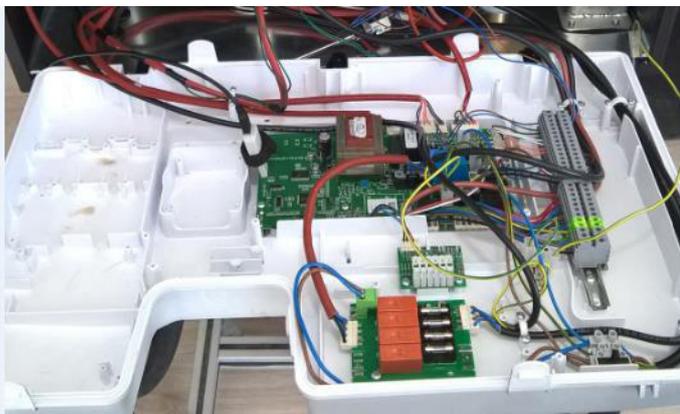


1. Close the electric and gas inlets.



2. Open the control panel.

3. Close the flow and return valves and empty the boiler by using the provided discharge openings.



4. Protect the electrical equipment from potential system water spills.



5. Disconnect the electricity from sensor.



6. Demount the sensor.



7. Reassemble them in the opposite order.

5.13. SAFETY LIMIT THERMOSTAT



1. Close the electric and gas inlets.



2. Open the control panel.



3. Disconnect the electricity.



4. Remove the fixing screw of the thermostat

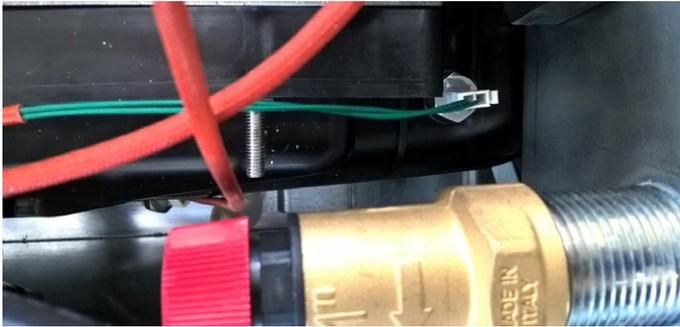
5. Thermal conductivity paste to the safety limit thermostat during change or maintenance. Example: Use prolink.

6. Reassemble them in the opposite order.

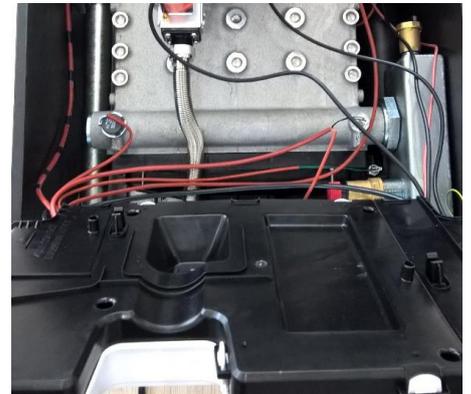
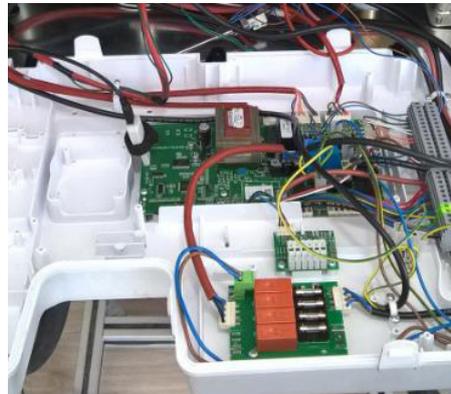
5.14. FLUE GAS (EXHAUST GAS) SENSOR



1. Close the electric and gas inlets.

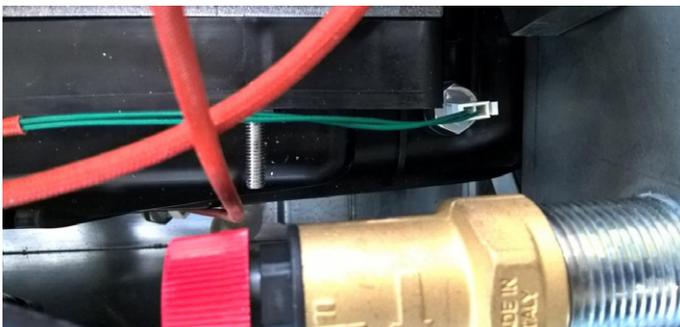


2. Disconnect exhaust (flue) gas sensor from its cable.



3. Close the flow and return valves and empty the boiler by using the provided discharge openings.

4. Protect the electrical equipment from potential system water spills.



5. Remove the Safety pressure valve (if any) where possible to improve the access.

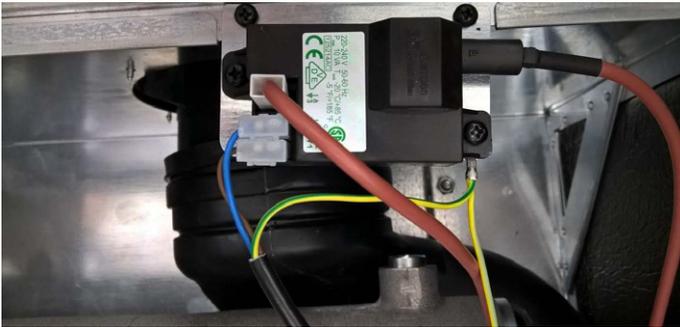
6. Demount exhaust (flue) gas sensor.

7. Reassemble them in the opposite order.

5.15. IGNITION-IONIZED TRANSFORMER



1. Close the electric and gas inlets.



5.16. IGNITION ELECTRODE



1. Close the electric and gas inlets.



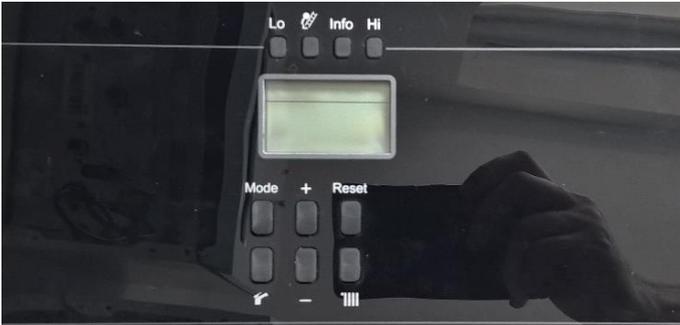
2. Separate the socket connection cables of ignition electrode.

3. Screw off the fixing screws of ignition electrode.



4. Remove the ignition electrode, if there is oxidation, clean or change it. Distance between the electrode tips must be 4 mm.
5. Control the gasket and change if necessary.
6. Reassemble them in the opposite order.

5.17. SAFETY VALVE (6 BAR)



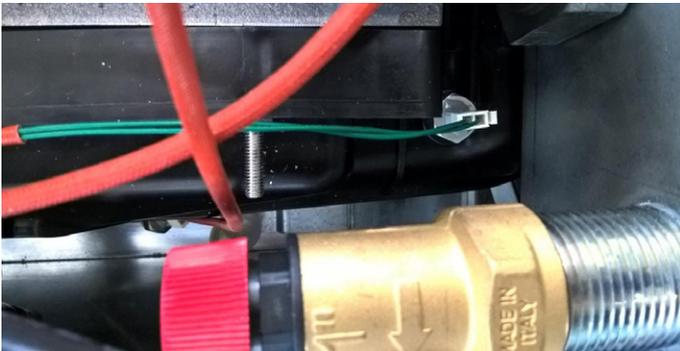
1. Close the electric and gas inlets.



2. Open the control panel. Close the flow and return valves and discharge the water in the boiler by using the provided discharge openings.



3. Protect the electrical equipment from potential system water spills.
4. Separate the discharge pipe.
5. Remove the safety discharge valve.



6. If impermeability of the safety valve can't be maintained, mount a new safety valve.
7. Change with the opposite order.

CHAPTER-6 INSTALLATION AND SETTINGS OF CASCADE SYSTEM



6.1. WHAT IS CASCADE SYSTEM?

Cascade System is creating a heating system by using more than one boilers together. Cascade heating systems can be used to heat dwellings, hotels, dormitories, gyms, office and similar commercial buildings, and provide hot water by creating central boiler room. It is the most developed system solution as it can be used with external heat resources such as solar energy.

6.2. IS CASCADE SYSTEM MORE EXPENSIVE THAN OTHER SYSTEMS?

Materials used in condensing boilers are different than the materials used in other boilers and there is cost difference due to their high technological features. Price increases as the boiler grows. Cascade system eliminates the high cost in big boilers. Cascade system is composed of more than one appliances according to the system requirements. All the appliances operating side by side operate with high modulation range and according to the need.

Boilers operating in tandem and proportionately may be more economical than one big boiler in terms of investment cost. Therefore, using 2 boilers with 50Kw is more economical than a single boiler with 100Kw. You can use 8 appliances in addition to cascade system without any control module.

6.3. HOW DOES THE CONDENSING CASCADE SYSTEM OPERATE?

All appliances in the cascade system operate with proportional control (modulated). In order to control all boilers at the same time, Main boiler (master) must be connected to Slave boilers with socket adapter cables.

When there's a change in the determined room temperature, first boiler activates and operates with %100 efficiency. System watch the boiler's time of reaching to the wanted temperature. It compares this time with the previously determined target time. The system which decides that operating boiler can't

reach the determined temperature within this period, fulfills the demand by commissioning a second boiler at the minimum level. The same process is repeated until the system reaches to the determined temperature within the target period.

If the operating boiler break down, the other boiler connected in series activates automatically and there will be no malfunction in operation order.

The capacity of cascade system is equal to the total capacity of all boilers. For example; it is possible to create 2.250 kW heating system by using Warmhaus VIWA 150 kW boilers and controller unit (Siemens) with 15 boilers. All the boilers connected in series heats the same heating circuit. It is a must to use balance tank or plate-exchanger in systems in which cascade system is used.

If you desire, you can create the cascade system which is the closest to your targeted capacity by combining the boilers operating in different capacities.

Cascade boilers don't occupy a place as they are installed on the wall. Temperature settings of many areas can be adjusted at the same time thanks to electronic control system. Therefore, your heating cost will decrease and this advantage make a significant difference in your bill.

6.4. INSTALLATION SETTINGS OF VIWA CASCADE SYSTEM:

It is possible to make cascade connection of 8 boilers without using control unit via motherboards (HDIMS-50) on the boilers. While making this connection, it is possible to direct by mounting a RC21.11 control unit to control only the pumps of determined heating zones. Electricity diagram regarding this is given in the annex.

While making the connections, pay attention that external factors such as cable particles or water, moisture don't contact with open boards during cabling.

6.5. 90-150 kW INSTALLATION OF CASCADE SYSTEM

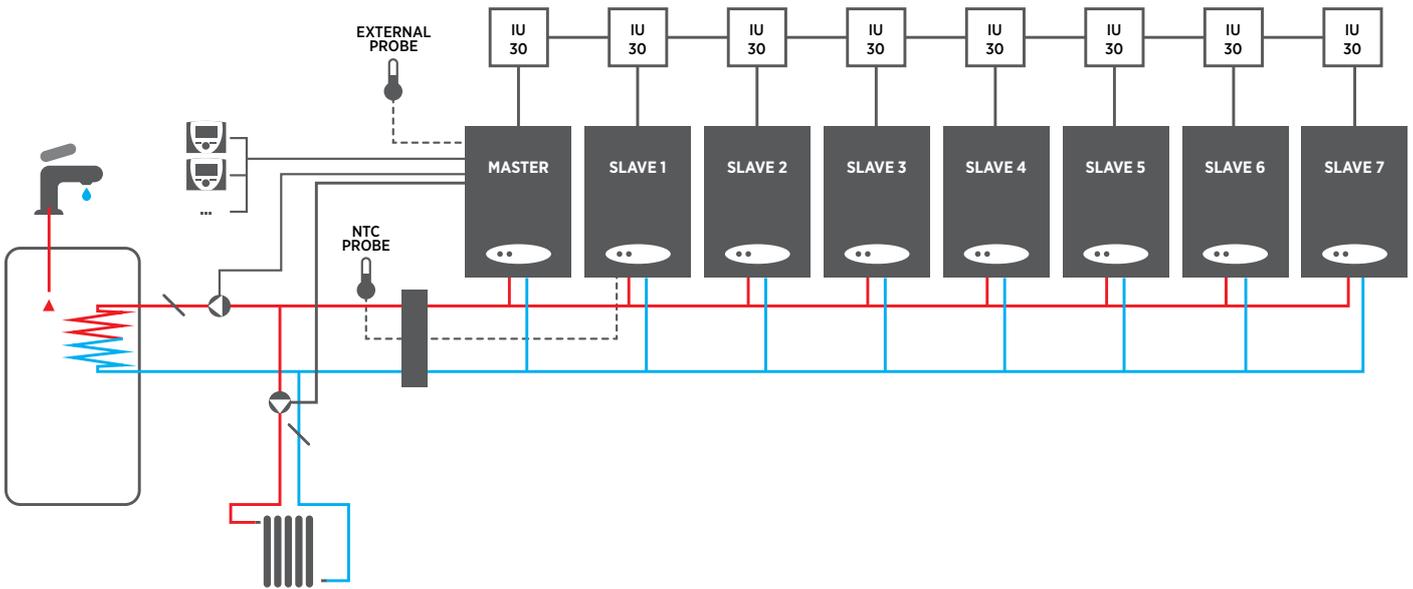


Figure 6.1 Viwa 90-150 kW Cascade System, Hydraulic Configuration Diagram

- 90-115-125-150 kW boilers can be connected as 8 cascades.
- While connecting the cascade system, pay attention to the connections in board outlet throttles.
- Firstly, tips no. 7 and 8 which are described as balance tank sensor in the throttles on Main boiler (Master) are left blank. Balance tank sensor is connected to the 3 and 4 numbered throttles of the 1.Slave boiler.

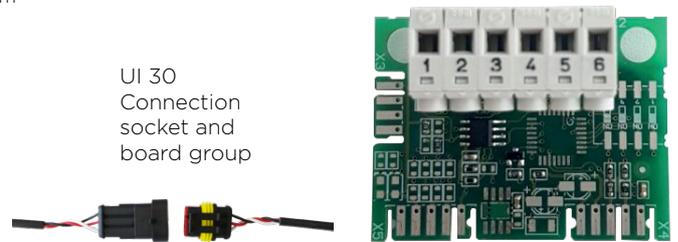


Figure 6.2 UI 30 Connection socket and board group

- Connection between boilers will be -from Master boiler- to Slave as the following 1-1,2-2,3- 3 information flow throttles by using UI 30 Module.
- Throttles are connected by continuing as 4-1,5-2,6-3 for the information flow from one Slave boiler to another.
- The following connections are for pursuing purposes; Inter connections enables to easily interconnect auxiliary boilers with smart plug-in cables.

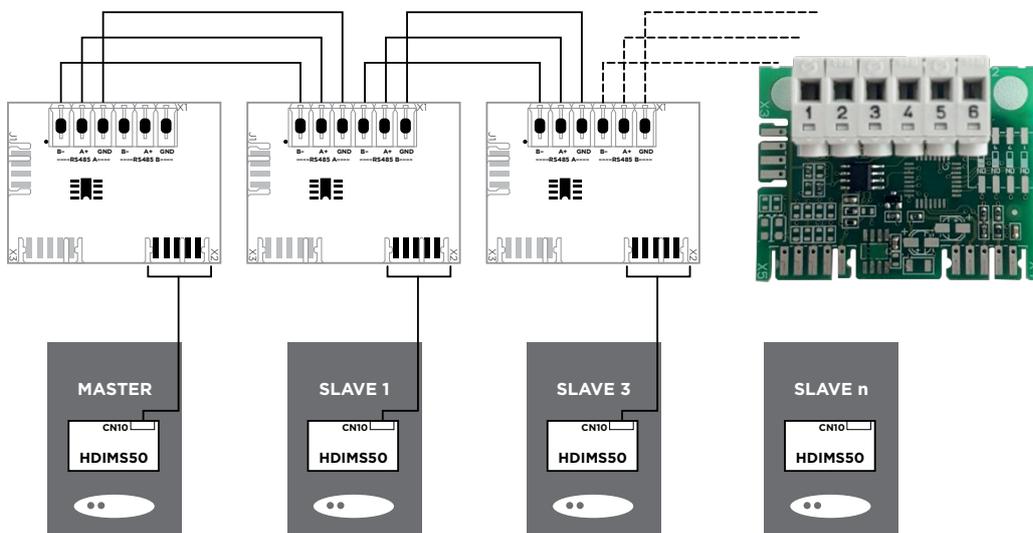


Figure 6.3 UI 30 Connection socket and board groups

6.6. MLC-30.XX CASCADE ZONE MANAGEMENT CARD AND PLACES OF USAGE:

There are two different application of MLC-30 Cascade Board.

When used only for high temperature zones, four high temperature zone controls can be done.

A high temperature zone can control a low temperature zone (controlled with 3way valve).

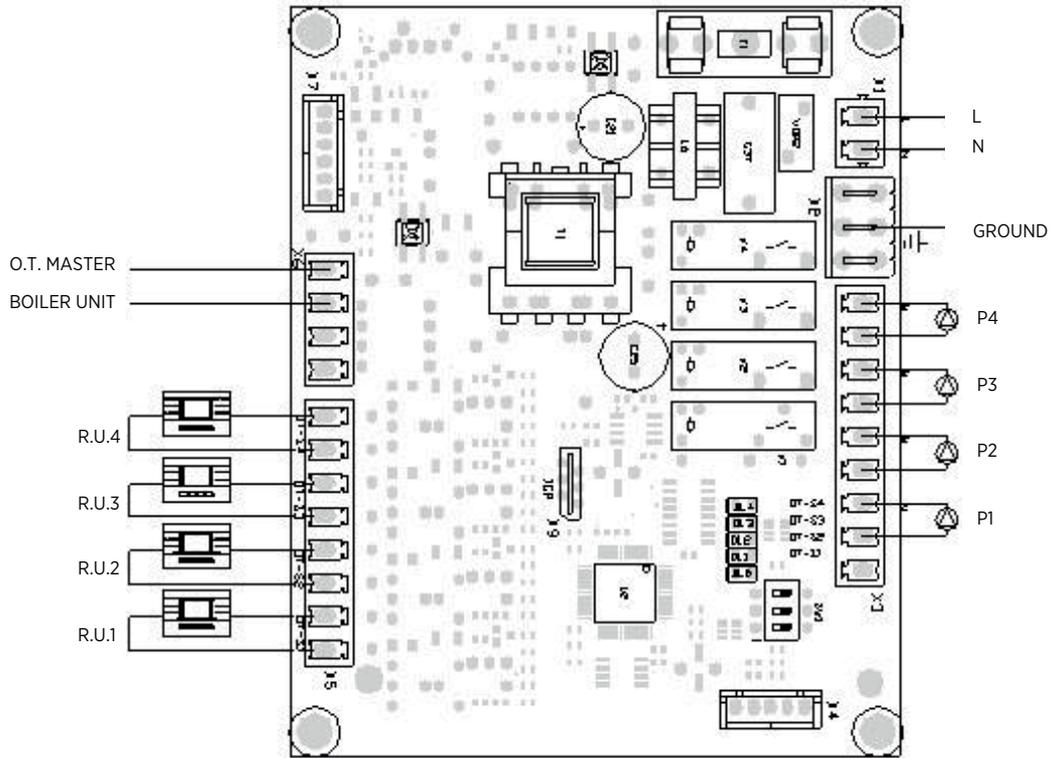


Figure 6.4 Boiler and MLC30 Electricity Connection Diagram in the 4 High Temperature Zone of the Cascade System with Viwa 90, 115, 125 and 150 Boilers

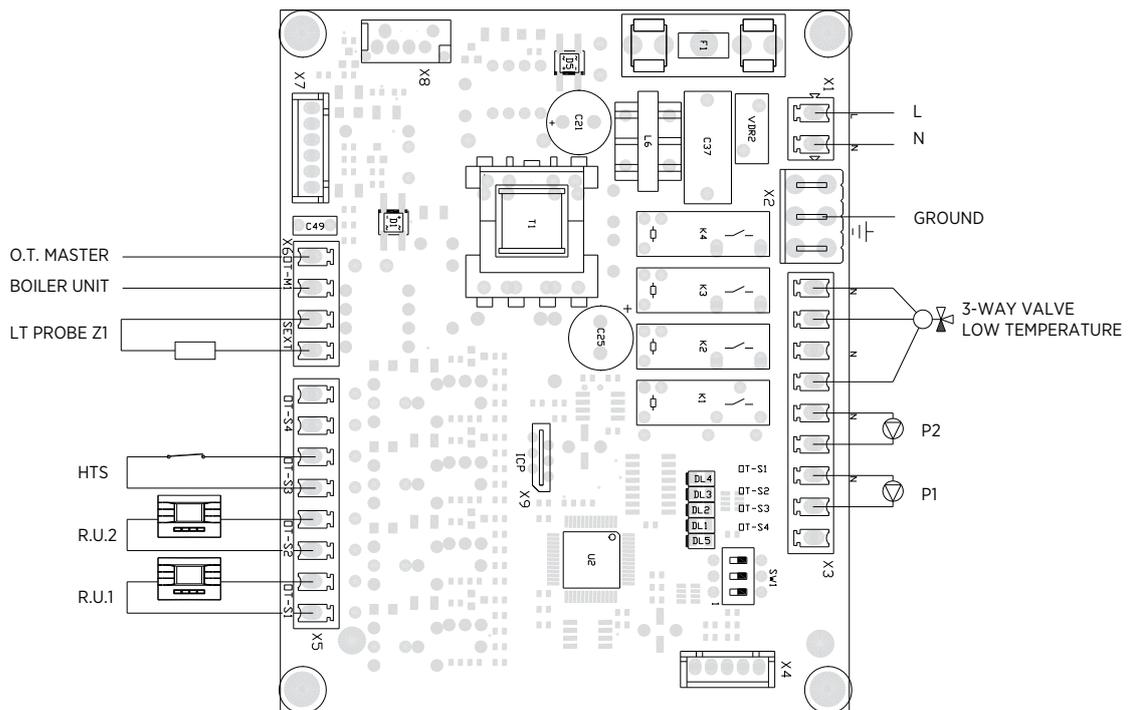
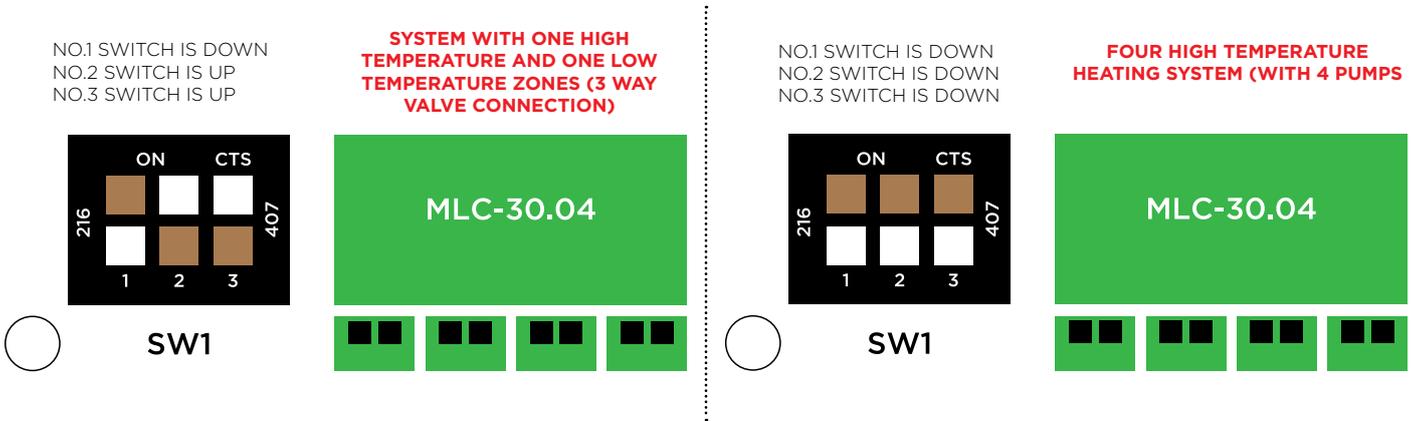


Figure 6.5 Boiler and MLC30 Electricity Connection Diagram for Cascade System and System with 1 High Temperature (Radiator) and 1 Low Temperature (Underfloor Heating) Zones with Viwa 90, 115, 125 and 150 Boilers

MLC 30.04 Cascade System Zone Control Board is used as the following two ways.

There are two different application of MLC-30 Cascade Board.

- a) When used only for high temperature zones, four high temperature zone controls can be done.
- b) A high temperature zone can control a low temperature zone (controlled with 3 way valve)



6.7. CONNECTION OF DIRECT HEATING+ TWO 3-WAY CIRCUITS WITH USING MLC-30 + MLC -30

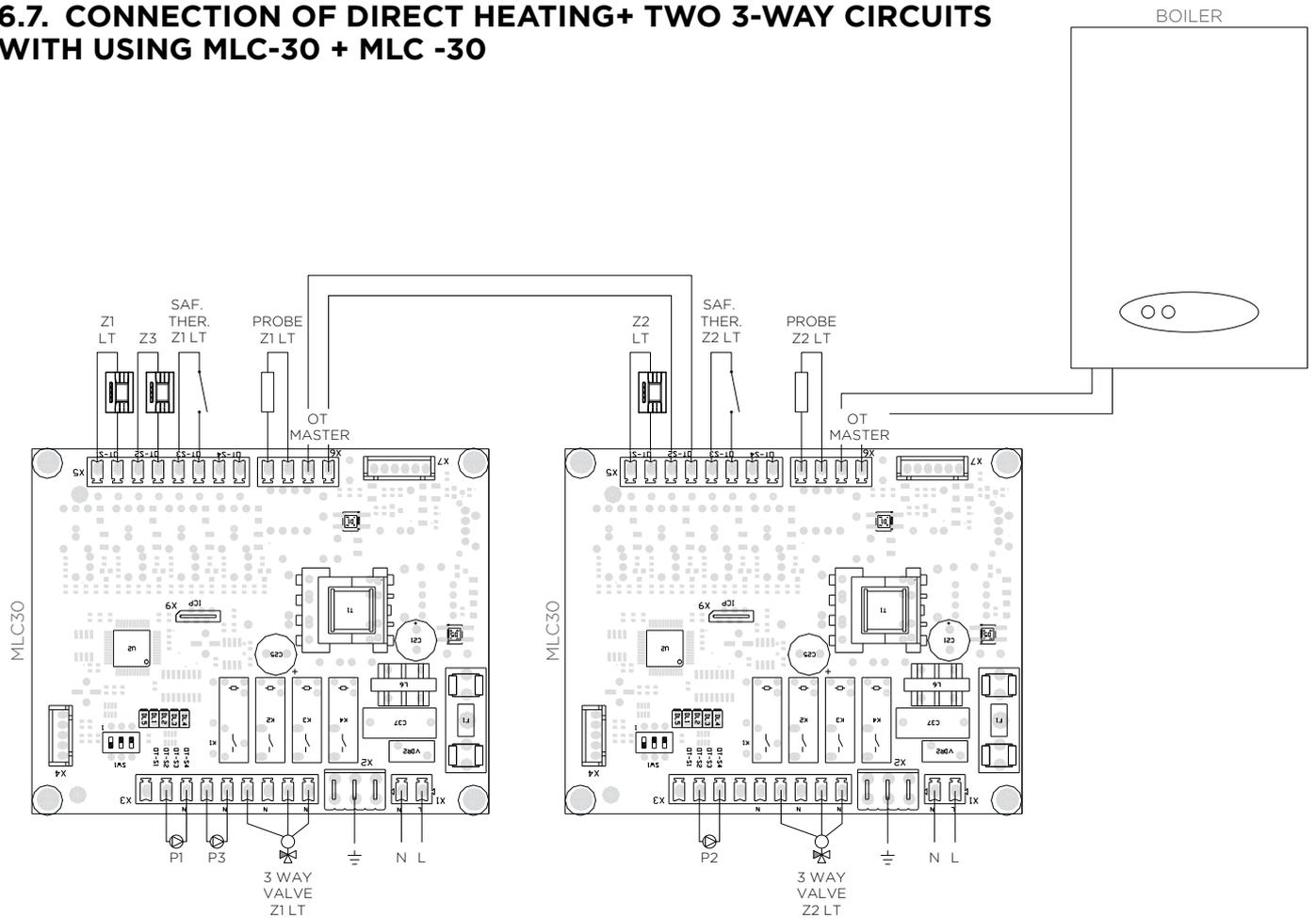


Figure 6.7 Control of One High Temperature and Two Low Temperature Zones with two MLC 30.

6.8. DIRECT HEATING CIRCUIT CONNECTION WITH USING MLC-30 + MLC-30

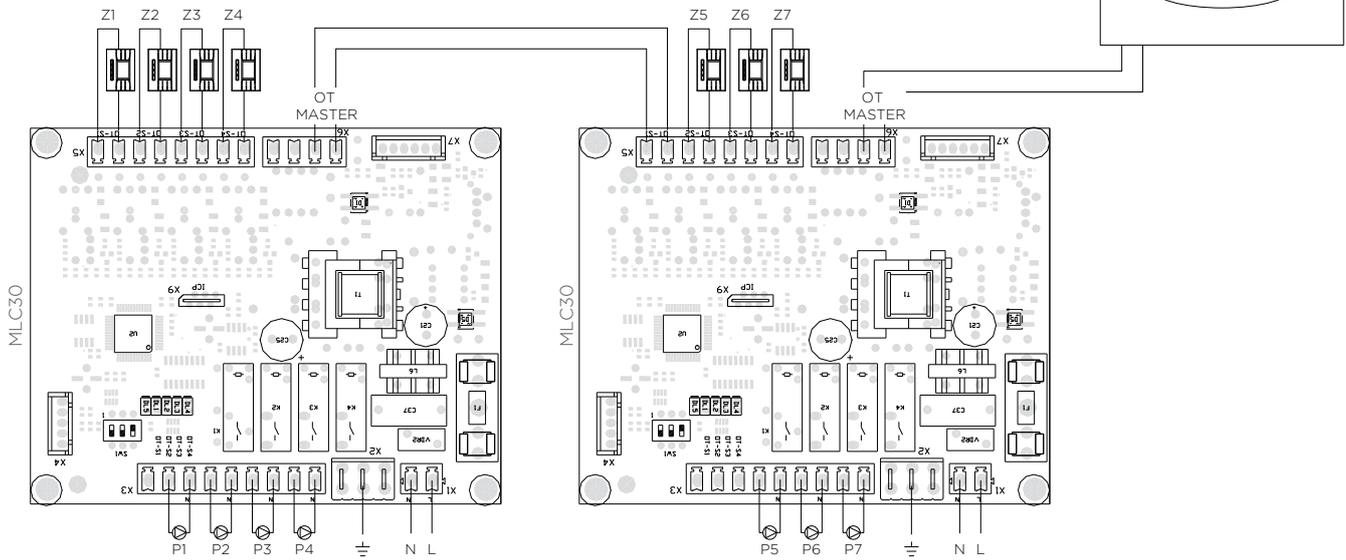


Figure 6.8 Control of High Temperature Zones with Two MLC 30

6.9. CONNECTION OF DIRECT HEATING+ ONE 3-WAY CIRCUITS WITH USING MLC-30 + MLC -30

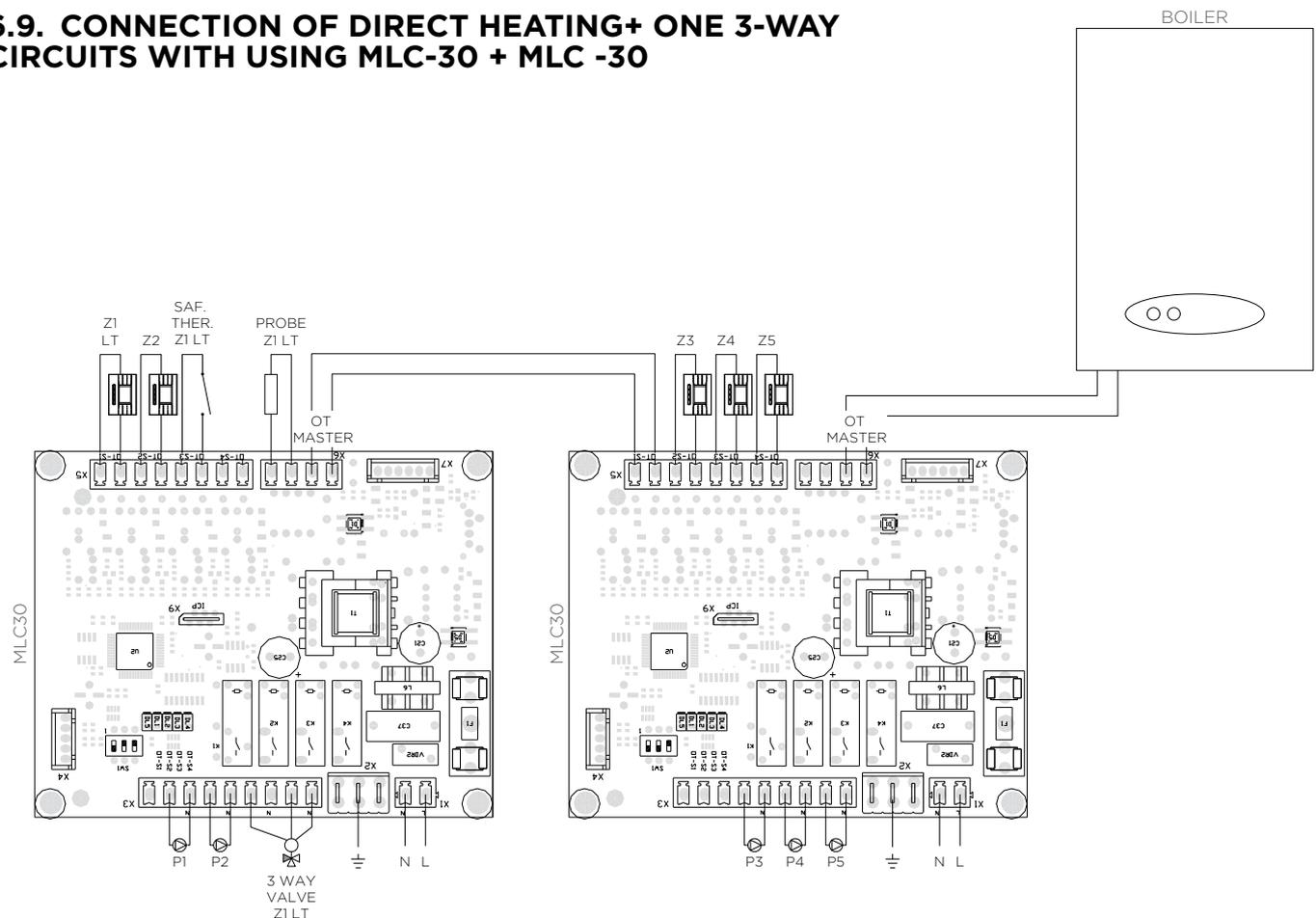
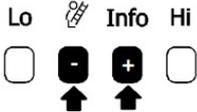
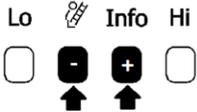
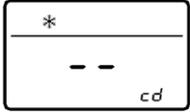
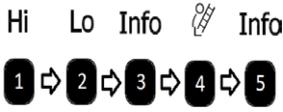
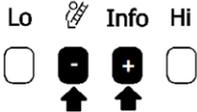
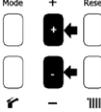
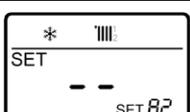


Figure 6.9 Control of High Temperature and Low Temperature Zones with two MLC 30

6.10. SET CASCADE PARAMETERS MENU

Object	Manufacturer	Type-model / Technical data
<p>Procedure setting or checking Cascade parameters</p>	Warmhaus	Viwa 90,115,125,150
0		<p>Attention: This procedure must be applied by authorised persons and valid for only condensing boiler.</p> <p>Attention: The parameters as indicated DO NOT CHANGE should not be adjusted / touched by any official document supplied by Warmhaus R&D.</p>
1		<p>Keep pressing the CHIMNEY SWEEP and INFO button simultaneously until SET Par01 shown on the screen.</p> <p>Release the buttons when SET Par01 shown on the screen.</p> <p>Par 1 to Par 49 - INSTALLER MENU</p>
2		<p>The screen will appear SET - Parameter = 01 - Value = 01</p> <p>Attention: do not change this parameter</p>
3		<p>To toggle switch CASCADE parameter list;</p> <p>Keep pressing CHIMNEY SWEEP and INFO button simultaneously until on the screen shown " cd "</p> <p>Release the buttons when " cd " symbol shown on the screen.</p>
4		<p>On the screen CODE symbol shown as " cd " from this moment the KEY CODE must be entered by button combinations.</p>
5		<p>The CODE is button combination push the buttons given below sequence for CASCADE MENU ;</p> <p>HI > LO > INFO > CHIMNEY SWEEP > INFO</p>
6		<p>From this moment toggle;</p> <p>INFO (+) to increase</p> <p>OR</p> <p>CHIMNEY SWEEP (-) to decrease</p> <p>any parameter aimed to be changed.</p>
7		<p>Ones you reach the parameter aimed to be changed, Change the parameter VALUE by using the (+) or (-) buttons.</p>
7		<p>Example; Push INFO to reach Par A1 ones reached Par A1 on bottom corner, value of parameter A1 can be changed by button (+) or (-) while CASCADE menu activated.</p> <p>When parameter VALUE changed wait for 2-3 Second then value will be saved automatically.</p>
8		<p>PAR A0 = Default = 0 Cascade strategy selection</p> <p>Value band; 0= Fixed set. / 1= Dynamic set</p>
9		<p>PAR A1 = Default = 2 Number of boiler to be Cascaded</p> <p>Value band; 0 - 8</p> <p>This Parameter has to be changed on master boiler only to enter how many boiler cascaded on the installation via Modbus.</p>
10		<p>PAR A2 = Default = 0 Reset for Cascad burner working hours</p> <p>Value band; 0 / 1 = reset</p> <p>With this parameter, the total time of cascade burner operation can be reset.</p>

11		PAR A3 = Default = 70 Next boiler switching power threshold value Value band; 45% - 90% With this parameter, the power threshold value for the next boiler can be set.
12		PAR A4 = Default = 30 Last boiler shutdown power threshold value Value band; 10% - 40% With this parameter, the power threshold value of the next boiler OFF can be set.
13		PAR A5 = Default = 120 Time-out (seconds) to reach the ignition threshold for Next boiler Value band; 10 sec - 240 sec
14		PAR A6 = Default = 180 Time-out (seconds) to reach the burner off threshold Value band; 10 sec - 240 sec
15		PAR A7 = Default = 0 Set temperature offset value (C °) Value band; 0°C - 10°C
16		To exit the TSP menu push the MODE button at ones.

6.11. CONTROL ACCESSORIES FOR CASCADE SYSTEM

6.11.1 RC 21.11 - REMOTE CONTROL AND PROGRAM DEVICE

Two type usage is possible thanks to RC21, Room thermostat or weekly programming and modulation features.

1. A high temperature heating system and one DHW boiler system can be controlled remotely through main (master) boiler by programming and closing the room thermostat feature in the boiler room.
2. It is an electronic appliance presenting the comfort at the highest level in domestic use with its room thermostat feature.



This Accessory abbreviated as Remote Control (RC) - High Level (HL) includes user interface and developed features for Remote Control and Weekly room temperature control.

- Appliance is equipped with a high-resolution dot matrix back light display, a jog dial having two switches in the maximum configuration.
- You can access the menu to program house temperature in weekly time bands with switches, instead of this, it is enough to turn jog dial until the desired temperature is seen for instant settings.
- While basic functions are accessed instantly to allow basic and intuitive usage, there are also special menus to adjust developed settings.

- There are additional functions in the password protected menu for the Service. It connects remotely, so it provides energy saving by controlling the boiler with outside temperature sensor. It is possible to adjust optimum heating circuit through OTC (Outside Temperature Curve) to obtain the temperature.
- Communication with controlled unit can be done via cabling or wi-fi by connecting the system to a RF base.
- High Level solutions can be applied to multi-zone systems and wide configuration opportunities guarantees maximum comfort at each level of installation.

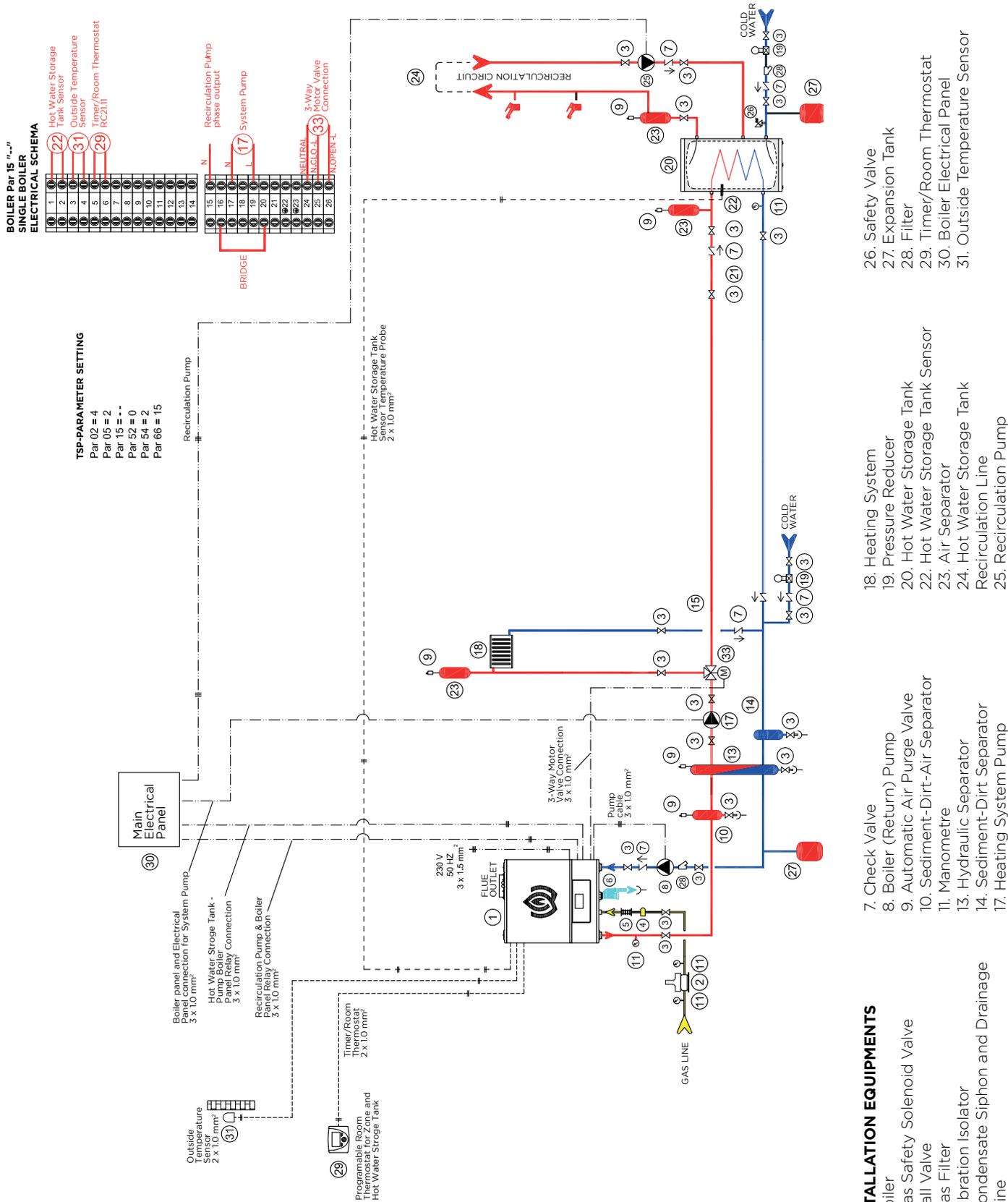
6.11.2 CONTROL ACCESSORIES FOR CASCADE SYSTEM (CONTINUATION)

Accessories Code	Accessories Name	Description	Adaptable Product	Product View
153.11.660.600001	WDHS-01-Exterior Temperature Sensor	Sensor that allows the boiler to regulate according to exterior temperature.	Viwa 50-150	
153.11.660.600045	RC 21.11-Room Thermostat with Timer	Unit that can be used as a thermostat OR timer to provide weekly/daily program to heater and boiler circuit	Viwa 50-150	
153.11.660.600049	QAZ36-Hot Water Tank / Hydraulic Separator Sensor - Immersion Type	The immersion type sensor that will be used to measure the Hot Water Tank or Hydraulic Separator temperature and report to boiler	Viwa 90-150	
153.11.660.600050	QAD36-System Stream Sensor- Surface Type	A clamp-type sensor that provides temperature measurement over the pipe at the outlet of the Hydraulic Separator. It is used to measure the stream water temperature of low temperature zone in double-zone systems.	Viwa 90-150	
153.11.660.600053	MST80 Adjustable Surface Thermostat	A clamp-type adjustable thermostat for heating zone.	Viwa 50-150	
153.11.660.600047	MLC 30-Multi Zone Module	Unit controlling the Low Temperature/Underfloor Heating Zone (mixed valve circuit) of Viwa 90, Viwa 115, Viwa 125 and Viwa 150 boilers.	Viwa 50-150	
151.11.05.006	RVS-AVS Cascade Panel Set	This set is for the cascade and zone management system which involves RVS 43 boiler control device, AVS 37 display module and RVS-AVS connection cable.	Viwa 50-150	
153.11.660.600051	RVS 43.345 / 101 Boiler Controller	Control unit for Viwa 90 - 150 Boilers that can cascade over OpenTerm for up to 8 boilers (up to 15-cascade) With RVS 43, 1 Radiator Circuit, 1 Underfloor Heating Circuit and 1 Hot Water Tank can be managed.	Viwa 90-150	
153.11.660.600056	OCI 365.03 / 101 Opentherm Module	Communication unit for each boiler if RVS unit is used for Viwa 90 - 150 Boilers	Viwa 90-150	
153.11.660.600057	AVS 37.294 / 509 RVS Display Module	1 must be purchased if RVS unit is used for Viwa 90 - 150 Boilers RVS unit control display	Viwa 90-150	
153.11.660.600076	AVS 82.490 / 109 RVS-AVS Connection Cable [40 cm]	1 must be purchased if RVS unit is used for Viwa 90 - 150 Boilers The cable that provides the connection between the RVS unit and the control display or RVS unit and AVS75 unit or AVS75 unit and AVS75 unit (with each other)	Viwa 90-150	
153.11.660.600058	AVS 82.491 / 109 RVS - AVS Connection Cable [100 cm]	1 must be purchased if RVS unit is used for Viwa 90 - 150 Boilers The cable that provides the connection between the RVS unit and the control display or RVS unit and AVS75 unit or AVS75 unit and AVS75 unit (with each other)	Viwa 90-150	
153.11.660.600071	QAC34/101 Exterior Temperature Sensor	1 must be purchased if RVS unit is used for Viwa 90 - 150 Boilers. The sensor that must be connected to the RVS unit.	Viwa 90-150	
153.11.660.600072	QAA55.110/101 Room Unit (Basic)	Small screen room thermostat with Economy and Comfort mode selection and adjusting temperature	Viwa 90-150	
153.11.660.600073	QAA74.611/101 Room Unit (Advanced)	Wide and Illuminated screen room thermostat with Economy and Comfort mode selection and adjusting temperature	Viwa 90-150	
153.11.660.600074	AVVS75.390/101 (Additional Module)	ZONE EXPANSION MODULE (Module for additional zone with 3 relay outputs)	Viwa 90-150	
153.11.660.600077	OZW672.01-Web Server 1 LPB Device	The OZW672.01 web server connected to the RVS 43 Boiler Controller allows remote monitoring and monitoring of the heating center via web and smartphone application.	Viwa 90-150	

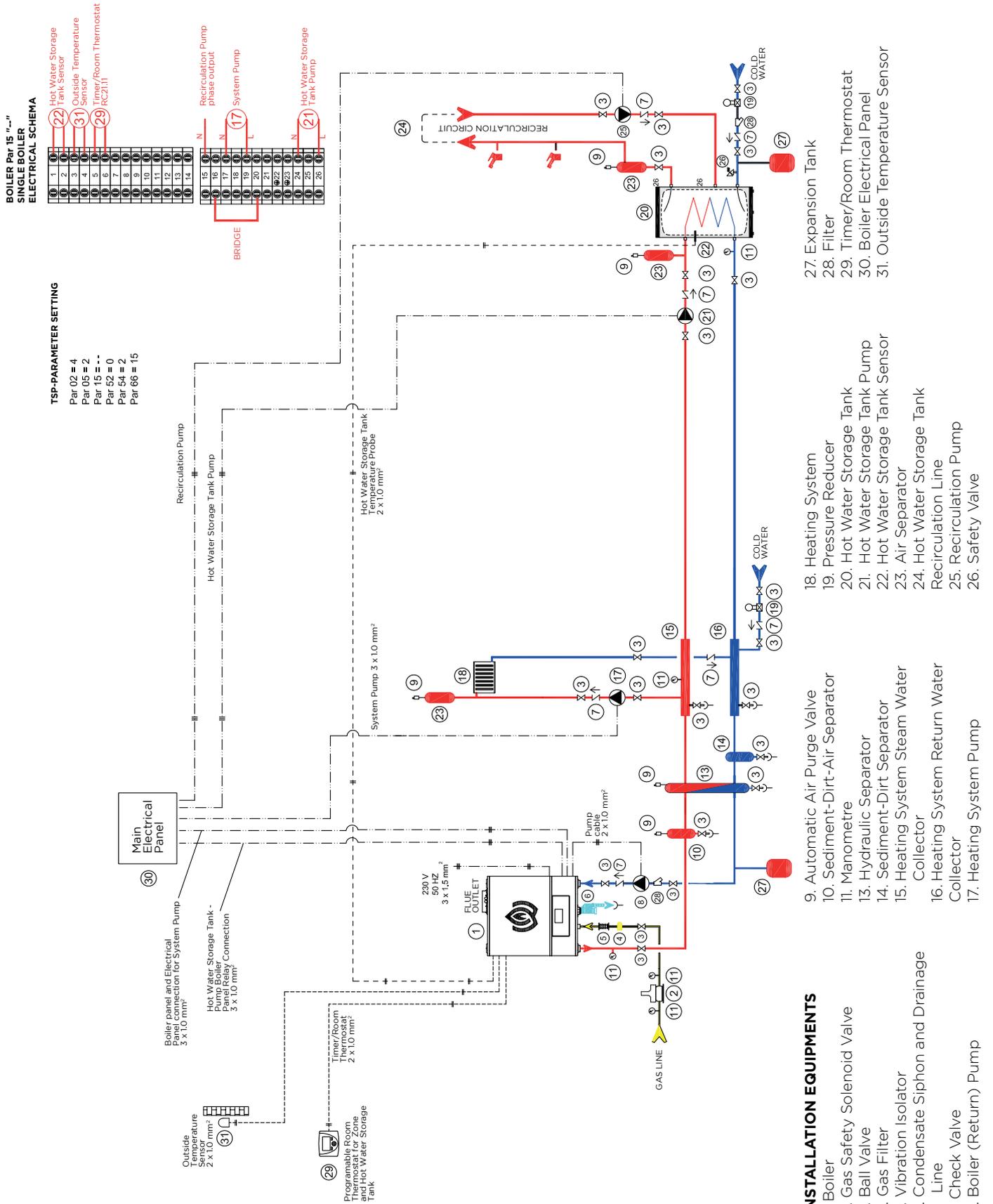
CHAPTER-7 HEATING SYSTEM INSTALLATION SCHEMES FOR VIWA BOILERS

7.1. INSTALLATION DIAGRAM WITH SINGLE BOILER

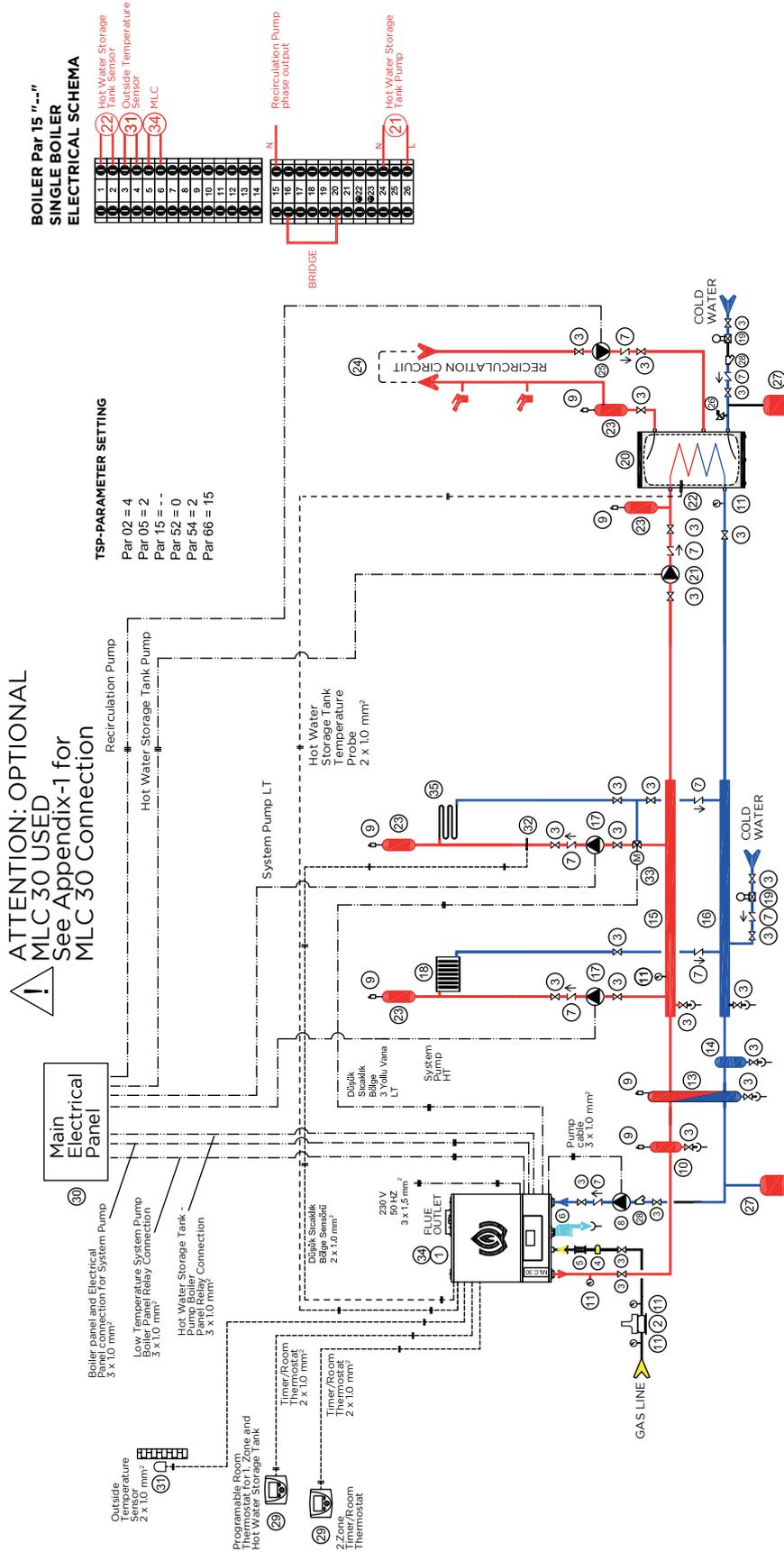
7.1.1. SINGLE BOILER (1 HIGH TEMPERATURE REGION) + HOT WATER STORAGE TANK SYSTEM DIAGRAM + WITH 3-WAY VALVE WAY VALVE



7.1.2. SINGLE BOILER (1 HIGH TEMPERATURE REGION) + HOT WATER STORAGE TANK SYSTEM DIAGRAM



7.1.3. SINGLE BOILER (1 HIGH + 1 LOW TEMPERATURE ZONE) + HOT WATER STORAGE TANK SYSTEM DIAGRAM / OPTIONAL MLC 30

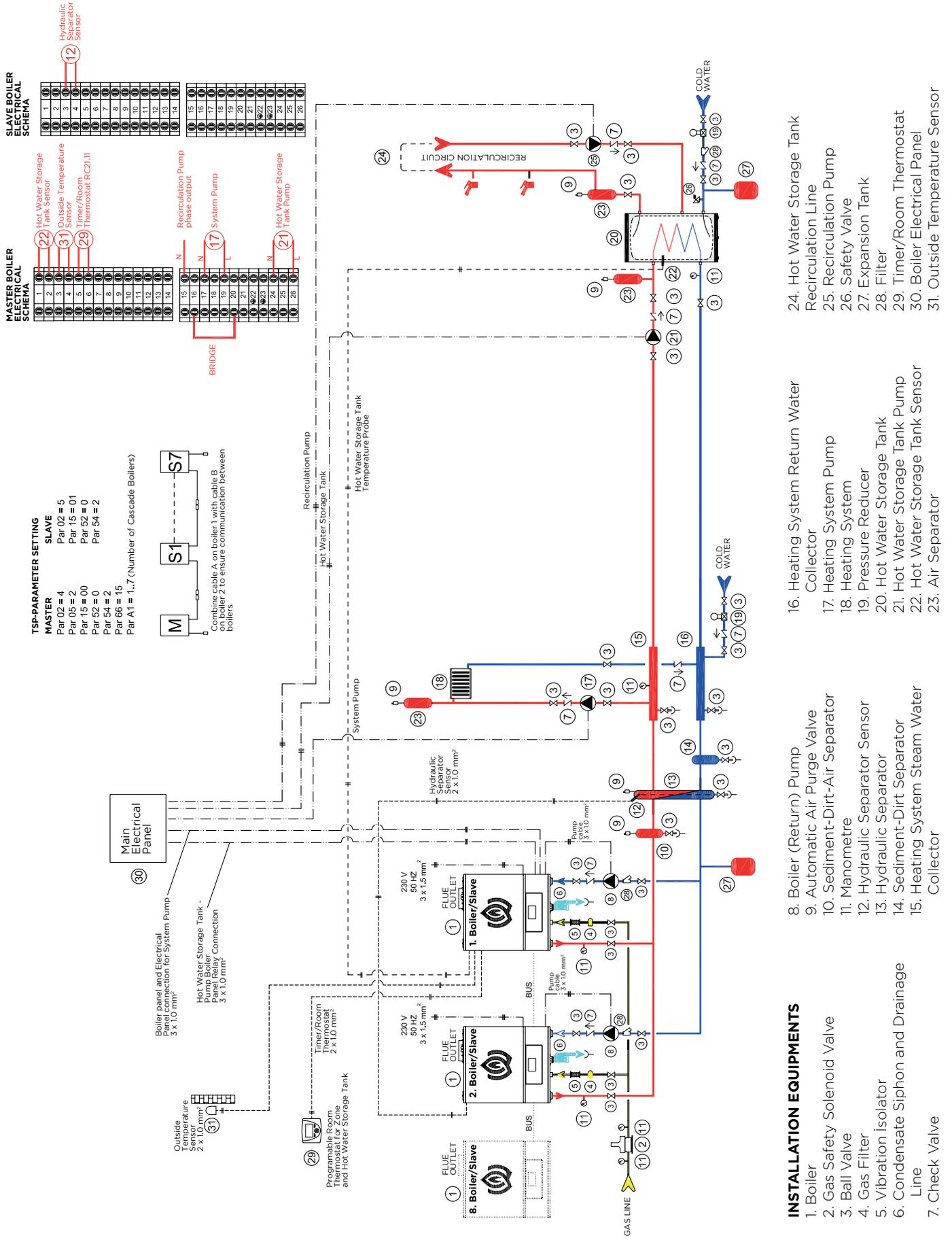


INSTALLATION EQUIPMENTS

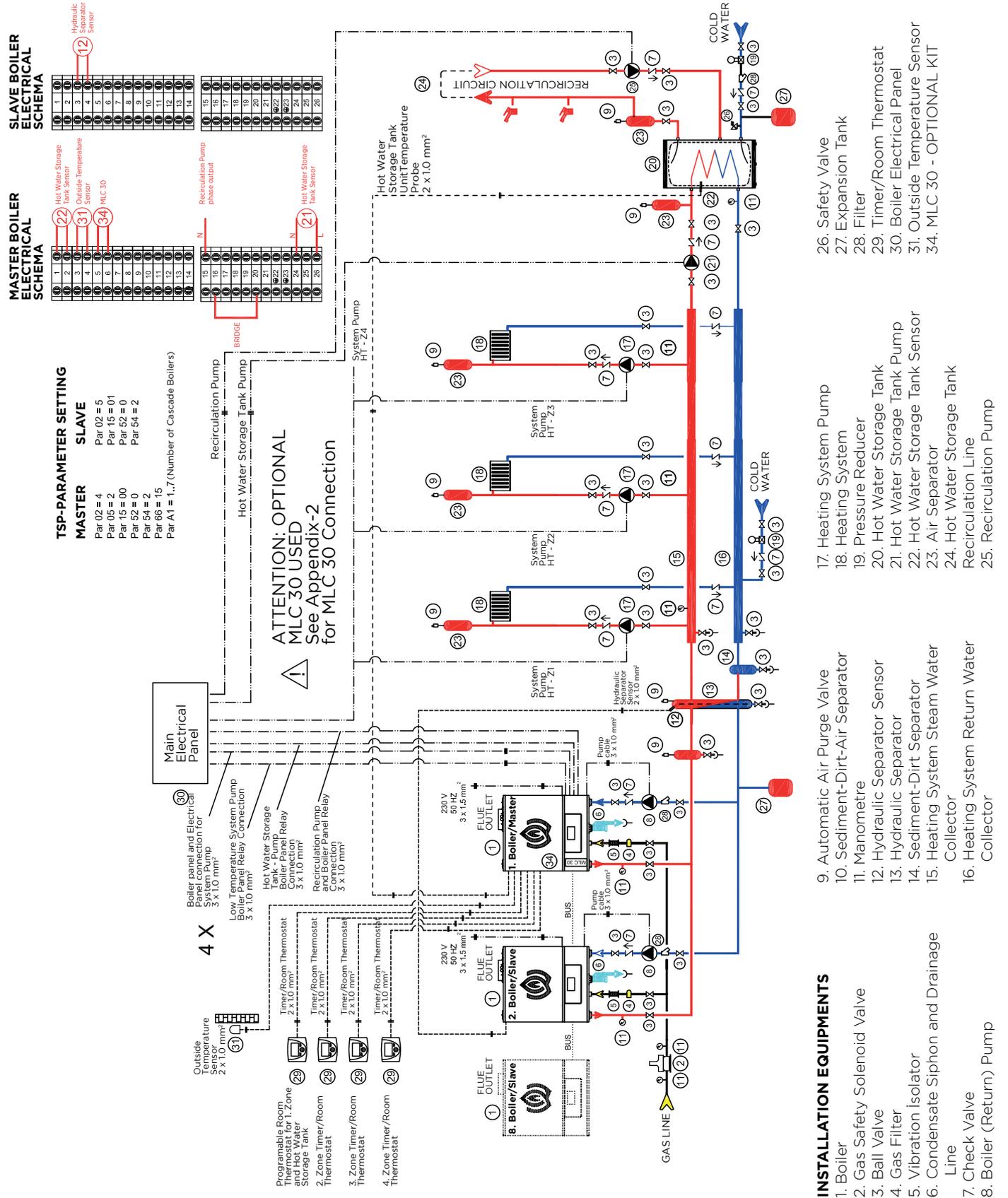
1. Boiler
2. Gas Safety Solenoid Valve
3. Ball Valve
4. Gas Filter
5. Vibration Isolator
6. Condensate Siphon and Drainage Line
7. Check Valve
8. Boiler (Return) Pump
9. Automatic Air Purge Valve
10. Sediment-Dirt-Air Separator
11. Manometre
13. Hydraulic Separator
14. Sediment-Dirt Separator
15. Heating System Steam Water Collector
16. Heating System Return Water Collector
17. Heating System Pump
18. Heating System
19. Pressure Reducer
20. Hot Water Storage Tank
21. Hot Water Storage Tank Pump
22. Hot Water Storage Tank Sensor
24. Air Separator
24. Hot Water Storage Tank Recirculation Line
25. Recirculation Pump
26. Safety Valve
27. Expansion Tank
28. Filter
29. Timer/Room Thermostat
30. Boiler Electrical Panel
31. Outside Temperature Sensor
32. Low Temperature Zone Sensor
33. 3-Way Motorized Valve
34. MLC 30 - OPTIONAL KIT
35. Low Temperature Zone

7.2. INSTALLATION DIAGRAM WITH CASCADE SYSTEM

7.2.1. 1 HIGH TEMPERATURE ZONE + HOT WATER STROGE TANK CASCADE SYSTEM DIAGRAM

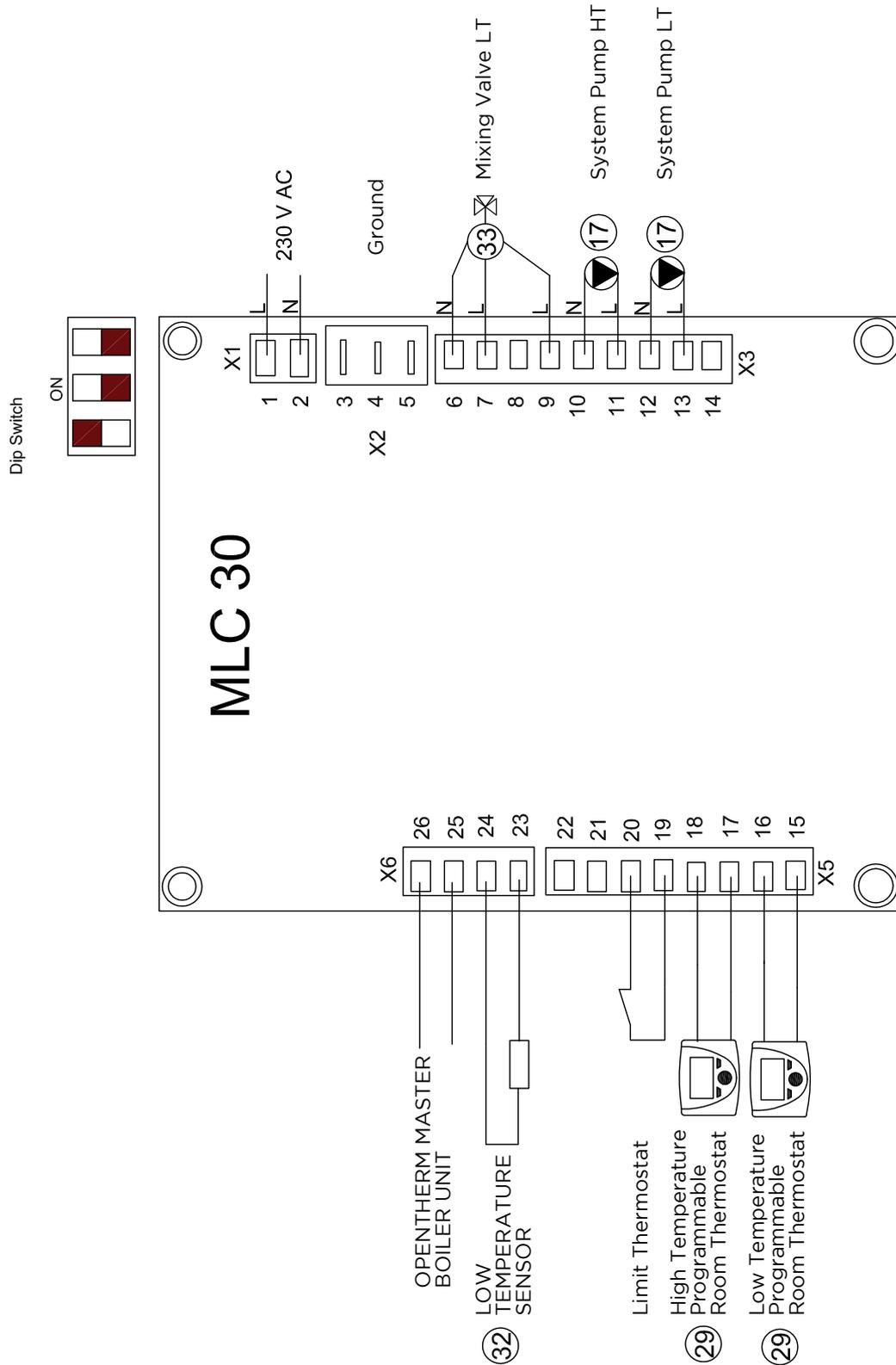


7.2.3. VIWA 90, 115, 125 AND 150 BOILERS AND CASCADE SYSTEM AND 3 OR 4 HIGH TEMPERATURE (RADIATOR) SYSTEM BOILERS AND MLC 30 ELECTRICAL CONNECTION DIAGRAM

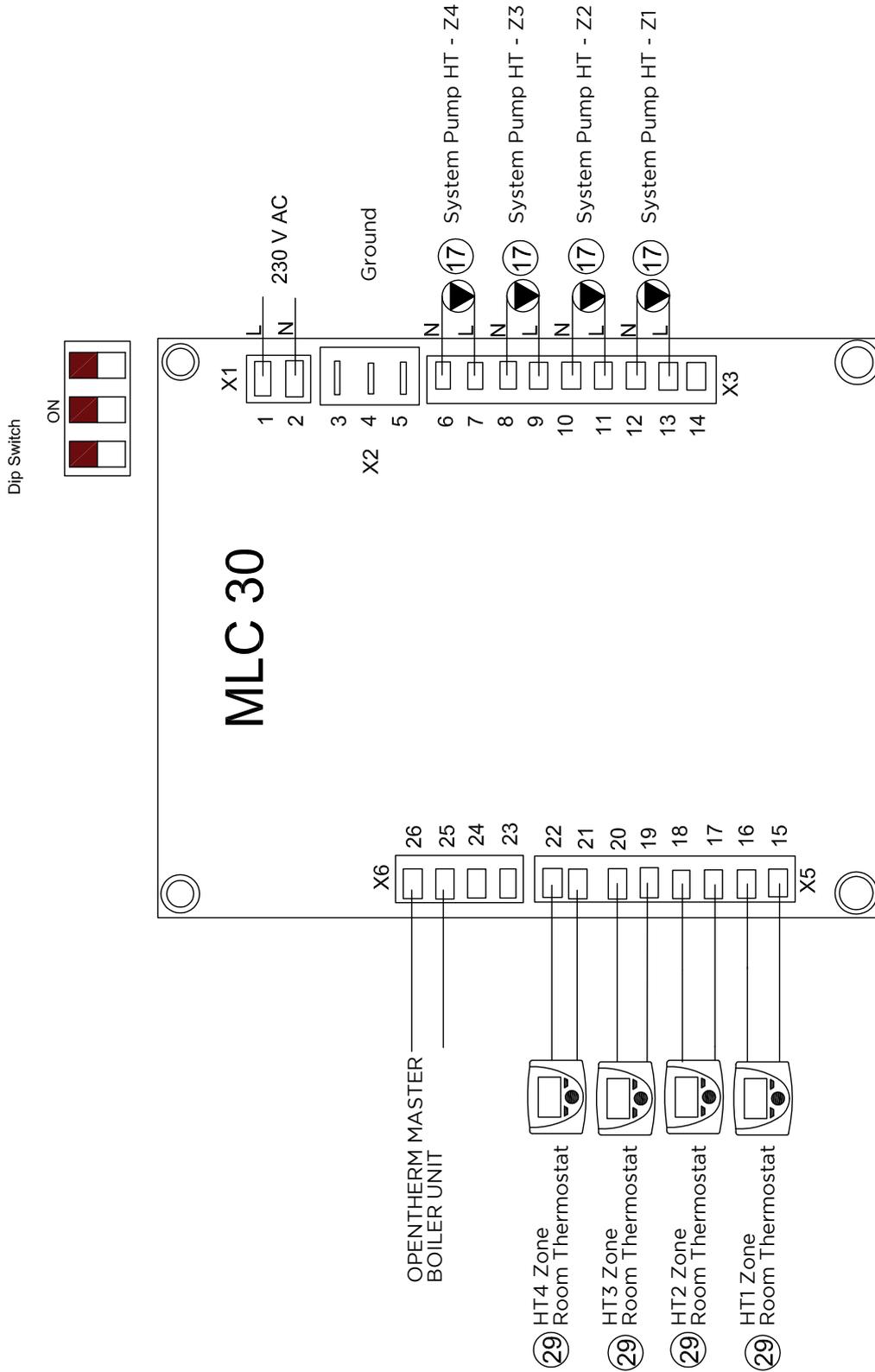


7.2.4. CASCADE SYSTEM (3 HIGH TEMPERATURE REGION) + HOT WATER STROGE TANK SYSTEM SCHEME / OPTIONAL MLC 30

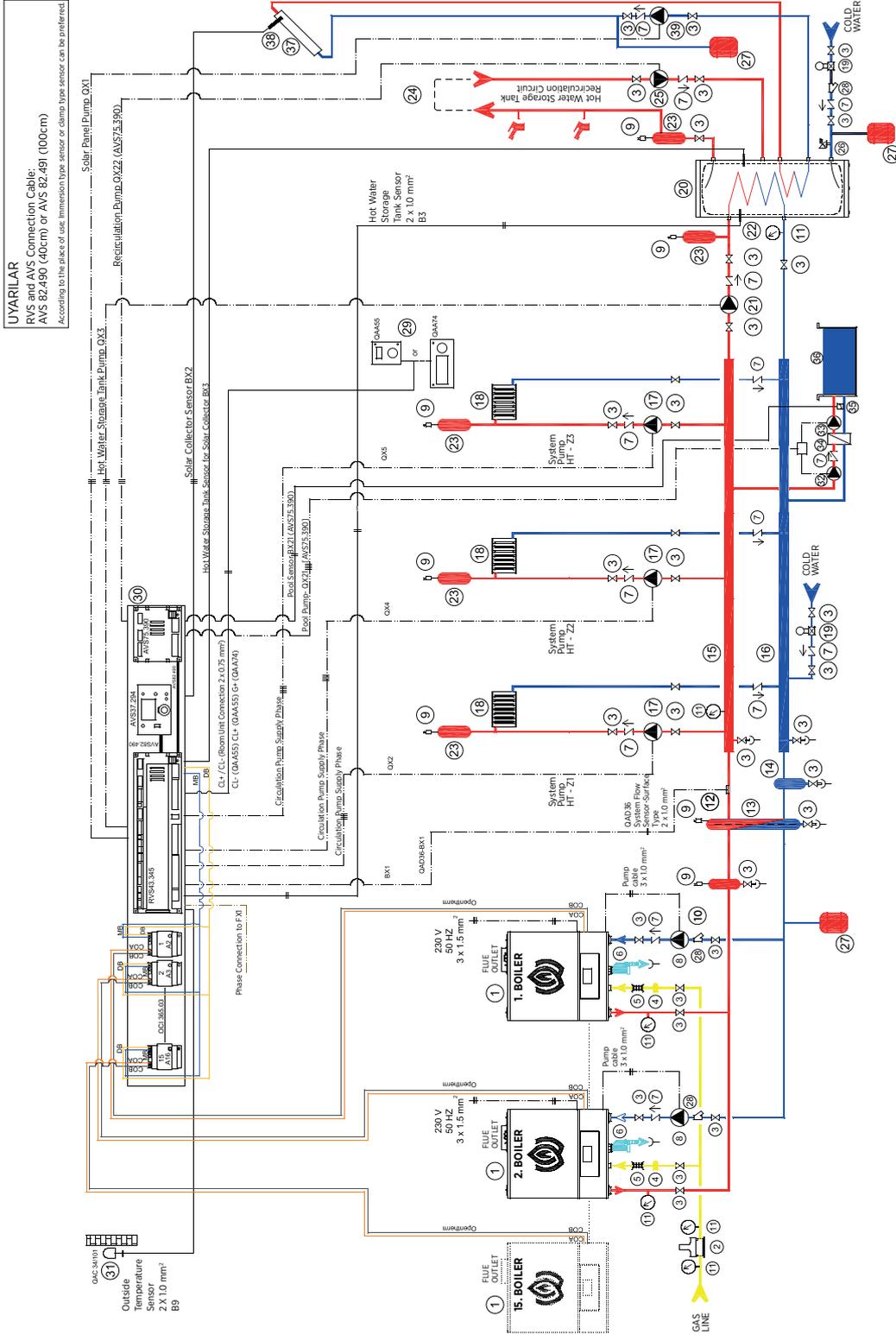
(This system can support up to 4 independent high temperature zones)



7.2.5. 1 VIWA 90, 115, 125 AND 150 BOILERS AND CASCADE SYSTEM AND 1 HIGH TEMPERATURE (RADIATOR) AND 1 LOW TEMPERATURE (LOCAL HEATING) ZONE BOILER AND MLC 30 ELECTRICAL CONNECTION DIAGRAM



7.3. CASCADE SYSTEM WITH RVS PANEL: 3 HIGH TEMPERATURE ZONE + HOT WATER STORAGE TANK + SOLAR PANEL + POOL HEATING SYSTEM DIAGRAM



UYARILAR
RVS and AVS Connection Cable:
AVS 82.490 (40cm) or AVS 82.491 (100cm)
According to the place of use, immersion type sensor or clamp type sensor can be preferred.

- INSTALLATION EQUIPMENTS**
- 1. Boiler
 - 2. Gas Safety Solenoid Valve
 - 3. Ball Valve
 - 4. Gas Filter
 - 5. Vibration Isolator
 - 6. Condensate Siphon and Drainage Line
 - 7. Check Valve
 - 8. Boiler (Return) Pump
 - 9. Automatic Air Purge Valve
 - 10. Sediment-Dirt-Air Separator
 - 11. Manometer
 - 12. QAD36 System Flow Sensor-Surface Type
 - 13. Hydraulic Separator
 - 14. Sediment-Dirt Separator
 - 15. Heating System Flow Water Collector
 - 16. Heating System Return Water Collector
 - 17. Heating System Pump
 - 18. Heating System Pressure Reducer
 - 19. Pressure Reducer
 - 20. Hot Water Storage Tank
 - 21. Hot Water Storage Tank Pump
 - 22. Hot Water Storage Tank Sensor
 - 23. Air Separator
 - 24. Hot Water Storage Tank Recirculation Circuit
 - 25. Recirculation Pump
 - 26. Safety Valve
 - 27. Expansion Vessel
 - 28. Filter
 - 29. Timer/Room Thermostat
 - 30. Boiler Electrical Panel
 - 31. Outside Temperature Sensor (QAC 34/101)
 - 32. Pool Heat Exchanger Feeding Pump
 - 33. Pool Heat Exchanger Pump
 - 34. Pool Heat Exchanger
 - 35. Pool Sensor
 - 36. Swimming Pool Solar Panel Collector
 - 37. Solar Panel Sensor
 - 38. Solar Panel Pump
 - 39. Solar Panel Pump

VIWA 90 VIWA 115 VIWA 125 VIWA 150

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CONDENSING BOILERS TECHNICAL & SERVICE MANUAL

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