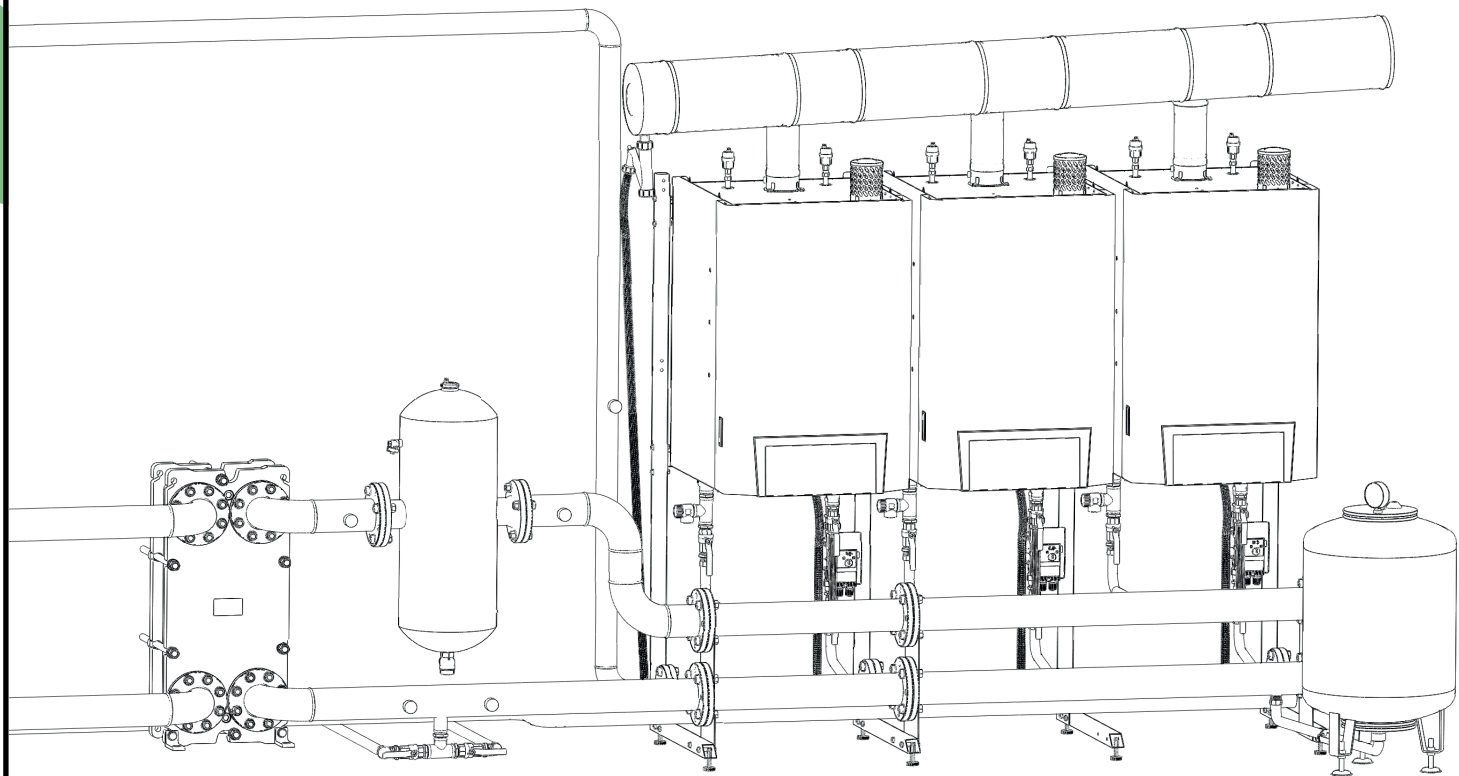


# Product Installation Guide

Gas Fired Wall Mounted Condensing Equipment

## X-130 AND X-150 Series

(Image 1)



## PREFACE

Dear Customer,

First of all, thank you for choosing GRON brand and quality. In this guide, information about assembly and installation of our equipment with stainless heat exchanger is provided.

GRON company is not only an equipment manufacturer, but also is counted among a few heat exchanger producers in the world. This heat exchanger is the combustion chamber and most important part of the equipment. This product has been invented and patented in the name of our company as an outcome of 3-year R&D studies. Therefore, preferring GRON product does not only mean purchasing a heating device, but also ensuring long-term durability and safe comfort thanks to its unique heat exchanger design.

Maximum security conditions have been taken into consideration in the design process of our equipment, which are produced by using the latest technological methods.


As it is already known, gas fired equipment operates as the main product within a Technical installation. However, if the installation is not appropriate, it may decrease the life of the equipment and cause inefficient operation. Therefore, our firm offers all installation equipment such as trestle, piping, pumps, etc. as an optional package. This application offers easy assembly and ensures healthy operation of the product. In this guide, why GRON branded installation equipment should be used and how this equipment is to be installed shall be explained.

Furthermore, contrary to many firms, each equipment produced by GRON company is subjected to safety tests, as well as productivity and emission tests via laboratory devices before their packaging. Thereby, economy and environmental sensitivity are also attached importance in addition to the maximum safety.

Please read this guide carefully to ensure sustainability of long-term reliable comfort offered by our firm. In case you encounter any item not included in the guide or do not understand any item, please contact our authorized service or firm. We will be glad to help you.

Please keep this guide near the product. We hope you to enjoy the GRON product!

Regards,

**GRON**  
Hasan Hüseyin ERASLAN  




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# 1. Symbol Explanations and General Information

## 1.1 Symbol Explanations

Warning symbols used in this document and their explanations are mentioned below.



Safety warnings in this document are indicated with the warning triangle on the left.



Electrical hazard warnings in the document are indicated with the symbol on the left.



Actions that should be strictly prevented are indicated with the symbol on the left.



Important information in the text are shown with the symbol on the left.

Warning words in the document and their explanations are mentioned below.

- **DANGER:** Indicates that fatal injury may occur.
- **WARNING:** Indicates that serious and fatal injury may occur.
- **CAUTION:** Indicates that minor and moderate injury may occur.
- **NOTICE:** Indicates that damage on the equipment may occur.

## 1.2 General Security Information

### Mounting and Setup of the Equipment

- Mounting and setup of the equipment should be made in accordance with the instructions explained by the producer in this guide.
- Mounting and setup works should be performed only by authorized GRON service and company personnel.
- Please contact the company's head office whenever it is required.

### Proper Use

GRON heating equipment is produced by using the state-of-the-art technology and in compliance with the safety techniques. However, life-critical conditions may occur in case of improper use. Furthermore, improper use will shorten the usage life of the equipment.

This equipment can only be used to heat the heating installation water within the closed heating systems. Our company is not responsible for any damage that occur due to improper equipment use, which is **excluded from the scope of the warranty**.



## Control and Maintenance

Incomplete control or inadequate maintenance may shorten the usage life of the product and may result in life threatening risks. Besides, fuel consumption increases due to the decreasing efficiency in the equipment whose regular maintenance is not conducted. Therefore;

- Equipment should be controlled by the authorized service once in every year.
- Heating installation should be checked by the authorized service once in every year and necessary maintenance and cleaning works should be conducted.
- We recommend you to conclude “Maintenance Contract” with the authorized service.

## General Warnings

- After the equipment is unpacked, check that the equipment does not contain any damage. In case you detected any damage, please contact your supplier.
- Ensure that the location where the equipment is to be installed and operated is smooth and has the capacity to bear the weight of the equipment. We recommend you to use the installation kit sold optionally to ensure long-term comfort.
- Installation should be made in compliance with the mounting images in the guide. Any work to be conducted without using the equipment indicated in the mounting images will shorten the usage life of the equipment and result in fatal risks. These situations cause exclusion of the equipment from the scope of the warranty.
- Spaces between the equipment and working area that are indicated in the guide should be left for maintenance and service works.
- Electrical connections should be cut from the main switch during the Mounting, Maintenance and Service works.
- If the equipment is not used when the ambient temperature decreases under 0 degree, electrical and gas supply should not be closed. The equipment is designed to operate in a self-operated manner for a short time to prevent freezing in such cases. If it is needed to turn off electrical and gas supply in the aforementioned cases, closed circuit heating fluid within the equipment should be discharged. Otherwise, damage may occur due to freezing within the equipment and installation outside the equipment.
- Combustible material should be avoided within the environment wherein the equipment is placed.
- Minimum operating pressure of the equipment is 0.8 bar. Heating fluid should be added to the system in case the pressure is below this value.
- Except for the maintenance works, it is not correct to add heating fluid frequently due to the leakages that may occur in the installation. In such cases, leakages should be identified and prevented permanently. Otherwise, usage life of the equipment will shorten.
- Maximum operating pressure of the equipment is 6 bar. It is necessary to insert membrane safety valve on the installation and conduct periodical controls. Otherwise, damage may occur on the equipment operating under high pressure.
- Acidic corrosion-resistant hoses should be used and connected to an outlet to enable discharge of condensate that occur during operation of the equipment. Discharge of condensate from the outlets should be checked frequently to avoid any damage due to the blockage of these outlets over time. Otherwise, service should be contacted.
- Ensure that the location wherein the equipment is installed is not accessible by the unauthorized persons and children.
- This equipment is produced for closed circuit heating purposes. Boiler or heat exchanger should be available within the installation that have the standards and capacity to work with this equipment in an integrated manner to heat hot running water.

- Circulation pump of the equipment should comply with the characteristics identified by the producer. Otherwise, useful life of the equipment will shorten and damage will occur as an outcome of insufficient transmission of the heat within the equipment to the outside.
- A voltage regulator should be connected to the electrical supply side of the equipment to prevent damages due to power failures.
- The equipment should be operated in a properly ventilated environment. Otherwise, **drowning and intoxication** may occur.
- In case of heating circuits using floor-heating system, it is required to place heat transfer exchanger between the heating installation and the equipment. Otherwise, damage may occur on the equipment.
- Clean air suction side of the equipment should be clear of acidic gases and halogen hydrocarbons (spray, paint and chemical materials). Otherwise, these gases may cause damage in the burning chamber of the equipment.

**Actions against Waste Gas Smell**

This may cause poisoning. If there is a smell of waste gas, the heating device should be turned off and the environment should be ventilated. Then, the service should be contacted.

**Information for the User**

The person performing installation of the equipment should provide information to the user about operation of the equipment after the installation process is completed.

**Actions against Combustible Gas Smell**

This situation may cause poisoning and even explosion. If you smell combustible gas, the heater should be turned off and the doors and windows should be opened to ventilate the environment, which has to be left. Also, avoid situations that create combustible open flames. Turn off the main gas meter valve. Then, contact the service and gas distribution firm.



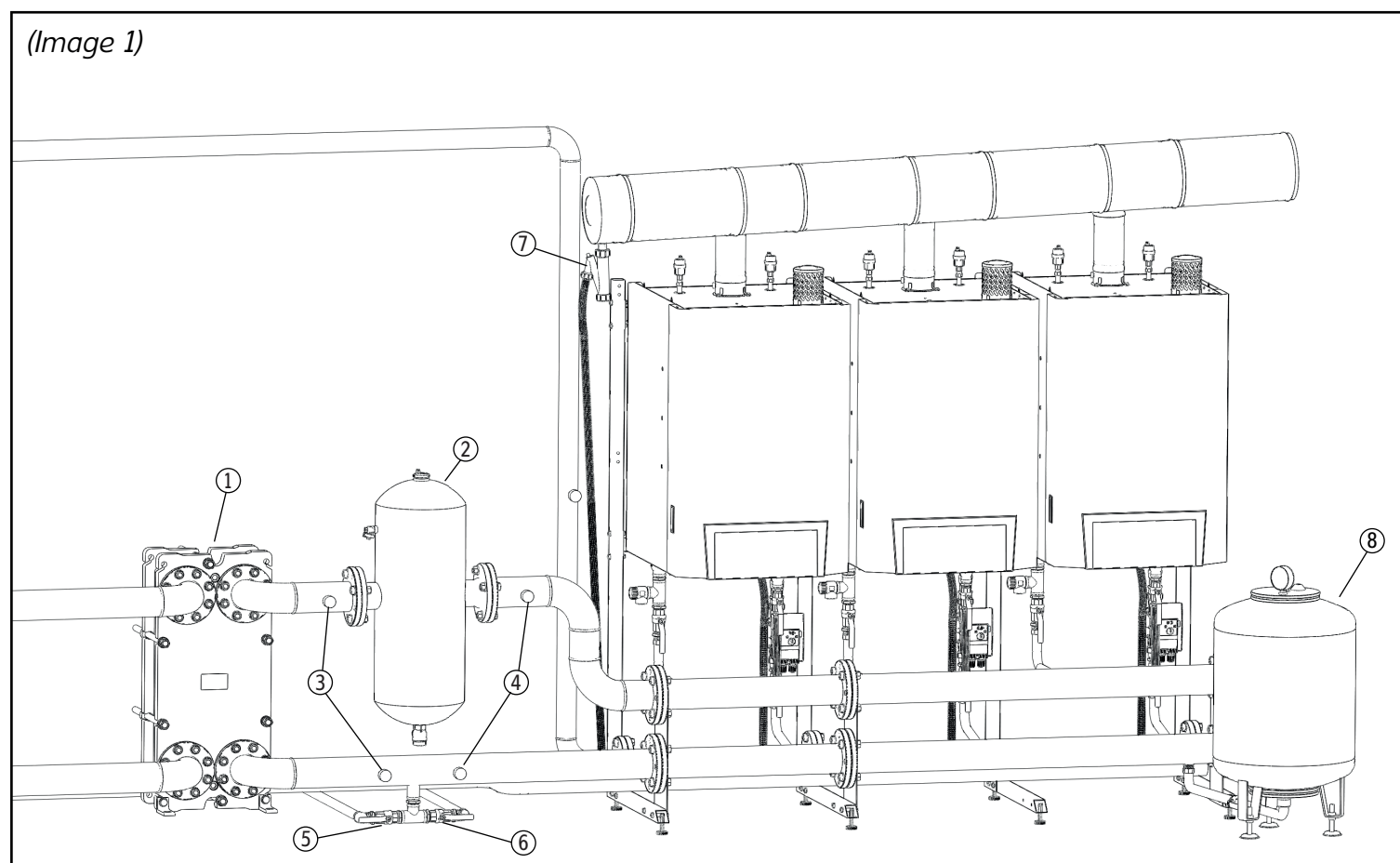
## 2. Proper Installation and General Information

X series equipment should be connected to an installation when they are used for heating purposes. This installation carries the heat transmitted from the gas to the water. However, if the installation where the equipment is mounted is not proper, Long-term comfort and efficiency cannot be maintained. Therefore, although careful attention should be paid while selecting the device, the installation should be as careful as possible. Customer dissatisfaction will occur due to incorrect installations at the point of installation.

In this section, how important suitable plumbing elements are is to be explained so that customers do not become victims.

After the desired cascade information is given, our company supplies the appropriate components in the installation package.

### 2.1 Necessary Components of the Installation



The list of the components required to be available in the installation and shown in "Image 1" and "Image 9" is provided below.

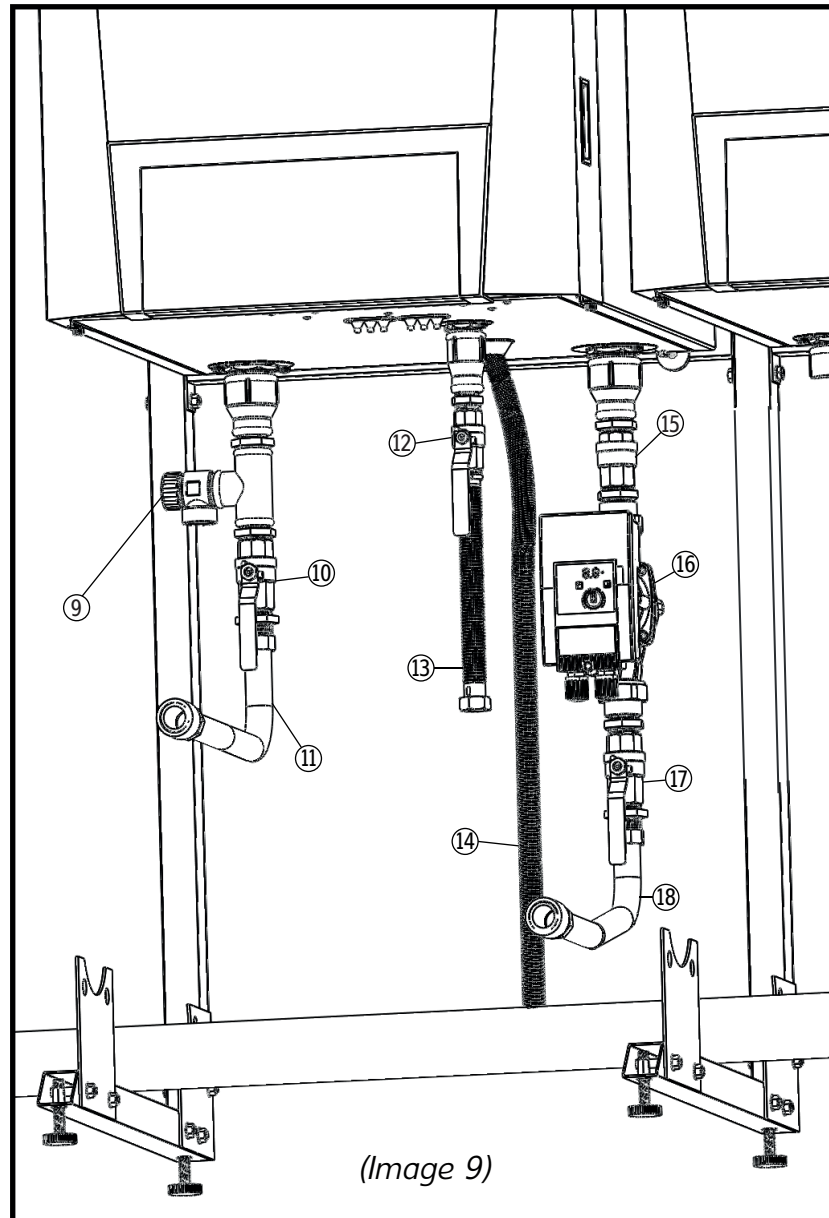
- [1] Plate Heat Exchanger
- [2] Residue Holder with Air Separator
- [3] Thermometer
- [4] Barometer
- [5] Plumbing Fluid Reinforcing Valve
- [6] Plumbing Fluid Relief Valve
- [7] Flue Drain Siphon
- [8] Expansion Tank
- [9] Safety Valve
- [10] Hot Water Line Valve
- [11] Hot Water Collector Connection Pipe
- [12] Gas Inlet Valve
- [13] Gas Collector Connection Flex
- [14] Siphon Pipe
- [15] Check Valve
- [16] Circulation Pump
- [17] Cold Water Inlet Valve
- [18] Cold Water Collector Pipe



In the installation configuration in "Image 1", the installation material of residue holder with air separator was preferred. Residue holder and air separator can also be offered as separate equipment.



Whether your gas-fired appliance is used in single or cascade form, the system must have the equipment of the sub-installation group in "Image 9". This equipment is essential for the long-lasting healthy operation of the system. Our company is not responsible for the damages that may arise from the applications that do not comply with the situations described in this guide. The product is then excluded from the warranty scope.





### 2.1.1 Expansion Tank

---

There is an expansion tank within our X series equipment. The capacity of the expansion tank to be used in the system should be calculated in accordance with the capacity of the heating system and the system pressure. The expansion tank used should be placed in the system return installation.

- ➔ In an installation configuration like our sample project, it is appropriate to choose an expansion tank of 30 liters per equipment, multiplied by the number of equipment.
- ➔ Permanent damages may occur on the products in case inappropriate expansion tank is used.
- ➔ In addition, since the membranes of poor quality expansion tanks deteriorate quickly, they lose their function in a short time.

Therefore, our company performs quality controls of these products and supplies them in a package system.

### 2.1.2 Heat Exchanger

---

If no plate heat exchanger is used in high-rise buildings, the dynamic installation pressure rises above the acceptable limits for the boiler. This causes permanent damage to the equipment. In addition, liquid leaks may occur in the installation due to long-distance piping in installations built without the use of plate heat exchangers. In this case, automatic feeding units will add liquid to the installation continuously. This means that both new lime and oxygen that will cause corrosion enter the installation. As a result, it causes rapid wear of devices and shortens equipment life. **Therefore, a healthy installation circuit should consist of two closed circuits, primary and secondary, and heat transfer should be provided with a plate heat exchanger between them. In addition, it should be noted that the appropriate plate heat exchanger is selected for the healthy operation of the installation and the efficient operation of the equipment. In package systems, the correct heat exchanger is calculated and supplied by our company.**

### 2.1.3 Residue Holder

---

The sediment-forming particles in the heating water installation adhere to the inner surface of the heat exchanger over time and reduce the heat transfer. Then, the surfaces whose heat transfer rate decreases are deformed due to overheating and generally causes perforation of the heat exchanger. This causes irreversible damage to the equipment. Furthermore, efficiency losses occur in the equipment due to the reduction of the heat transfer surface. **Screen or cartridge type filters should not be used to remove sedimentary substances. Because this type of filters will be covered with sediments in a short time, so water cannot pass through them. This will prevent passage of desired flow rate through the equipment and cause the equipment to overheat and be permanently damaged. However, the residue holder devices work with the method of sedimentation of the material in the form of sludge in the water into its lower chamber. Thus, while the materials such as sediment and sludge settle to the bottom, it ensures that the flow of the installation does not decrease.**

### 2.1.4 Air Separator

---

Oxygen bubbles that occur over time due to heating and cooling of fluids under high pressure in installations cause many problems. Main problems are as follows;

- It causes corrosion due to the oxygen it contains.
- It causes cavitation in the equipment and pumps in the installation.
- It causes vibration in the system and creates noise.
- Air bubbles adhere to the heat transfer surface and reduce heat transfer and efficiency.
- A correctly selected air separator prevents aforementioned problems in the installation.

### 2.1.5 Safety Valve

It is attached to the system to reduce the high pressure that may occur in the installation before it damages the equipment. A safety valve that is not selected properly or does not work properly causes permanent damage to the equipment. Although it is a small component of the installation, it is vital for the equipment.



It is used in the applications wherein the HYDRAULIC SEPARATOR is used in our country. However, such applications are used in installations made to reduce costs without using plate heat exchangers. Although this application is offered to the customer as a cost-effective solution compared to the heat exchanger, it is not a correct application. It significantly shortens the life of the equipment. Therefore, an installation with a plate heat exchanger is essential for long-term comfort. Otherwise, damages to the device are excluded from the warranty.

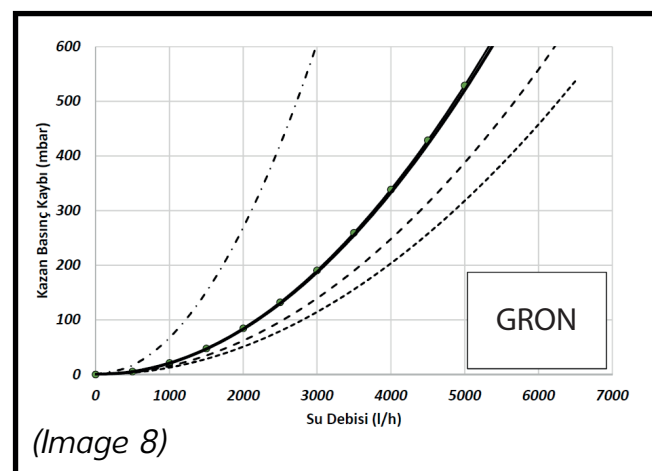
### 2.1.6 Other Important Installation Issues

- The selection of the required pipe diameters in the heating, cooling line and gas line is very important in the installation. If insufficient hot and cold water line pipe diameters are preferred, closed circuit pumps cannot provide sufficient water circulation, causing inefficient operation of the device, as well as overheating of the heat exchanger and shortening the life of the equipment. In addition, due to the insufficient diameter of the natural gas pipes, no gas enters the equipment at the desired mbar in maximum and minimum operations, which causes a loss of efficiency in the device. **(Therefore, our company makes the pipe diameter calculations suitable for you and provides the installation pipes in the package system)**
- The discharge parts of the safety valves on the device must be connected to the drain. Otherwise, our company is not responsible for any damage that may occur.
- Drain cocks can be placed on the hot and cold water outlets under the equipment. In this way, in case of long-term disassembly and reassembly, the fluid inside the equipment can be discharged without flowing into the environment. It is not mandatory.



## 2.2 Preparation of Proper Circulation Pump

Each equipment should have its own circulation pump. This circulation pump should comply with the technical specifications of the equipment. As specified performance cannot be achieved with the low-quality pumps, it is not possible to obtain desired flow rate within the equipment. As a result, inner surface of the heat exchanger overheats and is required to operate under high temperature. This situation facilitates scaling and causes permanent damages on the equipment's heat exchanger. Therefore, correct pump is of significant importance in terms of long-term healthy operation of the equipment.



(Image 8)

## 2.3 Preparation of Correct Installation Water and Outlet

The fluid to be put in the installation where the equipment are connected is very important for the long-term healthy operation of the equipment. The fluid should have proper hardness and pH levels. Otherwise, the high amount of lime in hard water quickly covers the inner surface of the heat exchanger and as a result, the inner surface of the heat exchanger operates under excessive heat. This not only shortens the life of the device, but also impairs efficiency.

pH value of the water should be between 7-8.5. Calcified equipment is considered out of warranty.

In order to prevent calcification, water hardness should be measured and appropriate water should be added to the system when the system is filled for the first time or when water is added. If water hardness and pH value cannot be measured, an automatic feeding unit should be installed in the system and a water softener should be connected to this unit. By this way, long-term healthy operation can be achieved.

The water hardness values required for the equipment are as follows;

Total Heating Capacity (kW)	Total Hardness (Fr)
≤ 50	No condition
Between > 50 and ≤ 200	≤ 20
Between > 200 and ≤ 600	≤ 15
> 600	< 0,2



Before connecting the equipment to the installation, the installation must be cleaned, any parts, residues, etc. that may remain in the installation during the mounting process should be cleared.

## 2.4 Correct Installation Scheme



According to the number of equipment in the cascade system and different heating system needs, the installation schemes vary greatly. This results in hundreds of different combinations of setup schemes. In this guide, the indispensable components in a normal installation are explained with the images in section 2.1. You can request the installation scheme of the heating system you need by contacting our company. We will be glad to help you.

### 3. Installation Instructions



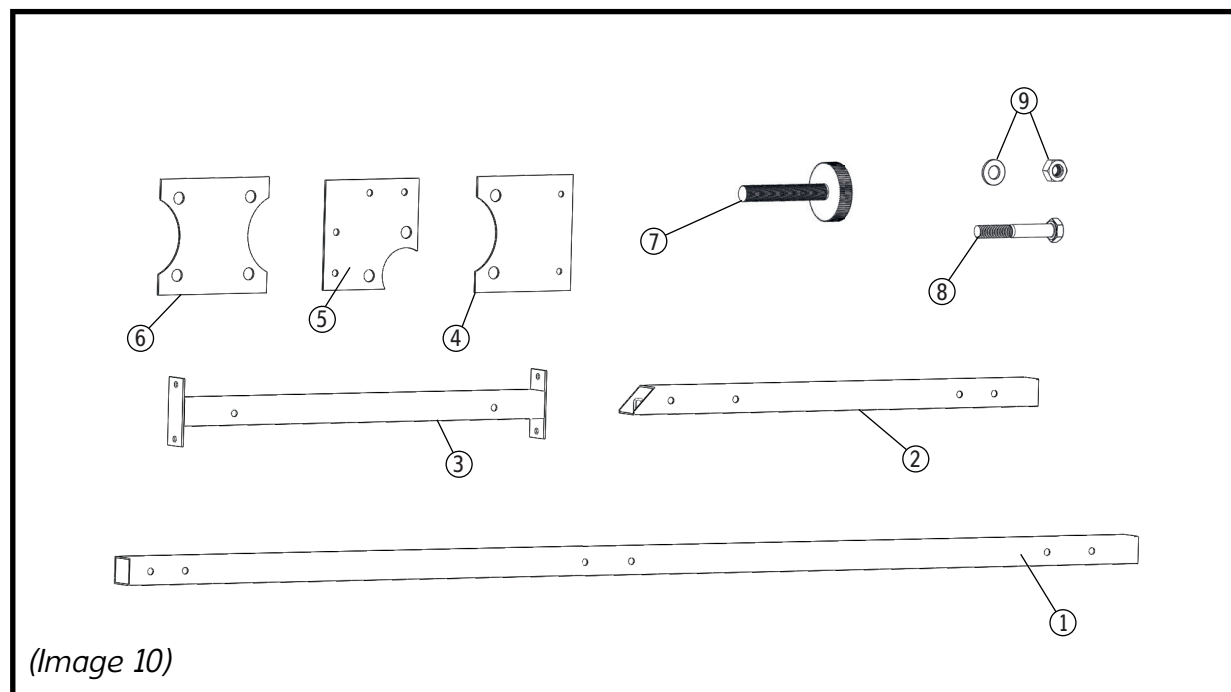
You can access the installation video of the device by scanning the QR code



The installation instructions in this manual are for a 3-equipment installation kit. Depending on the number of equipment, the number and types of parts to be delivered will vary.

#### 3.1 Installation of Trestle

In this section, trestle parts and mounting will be explained.

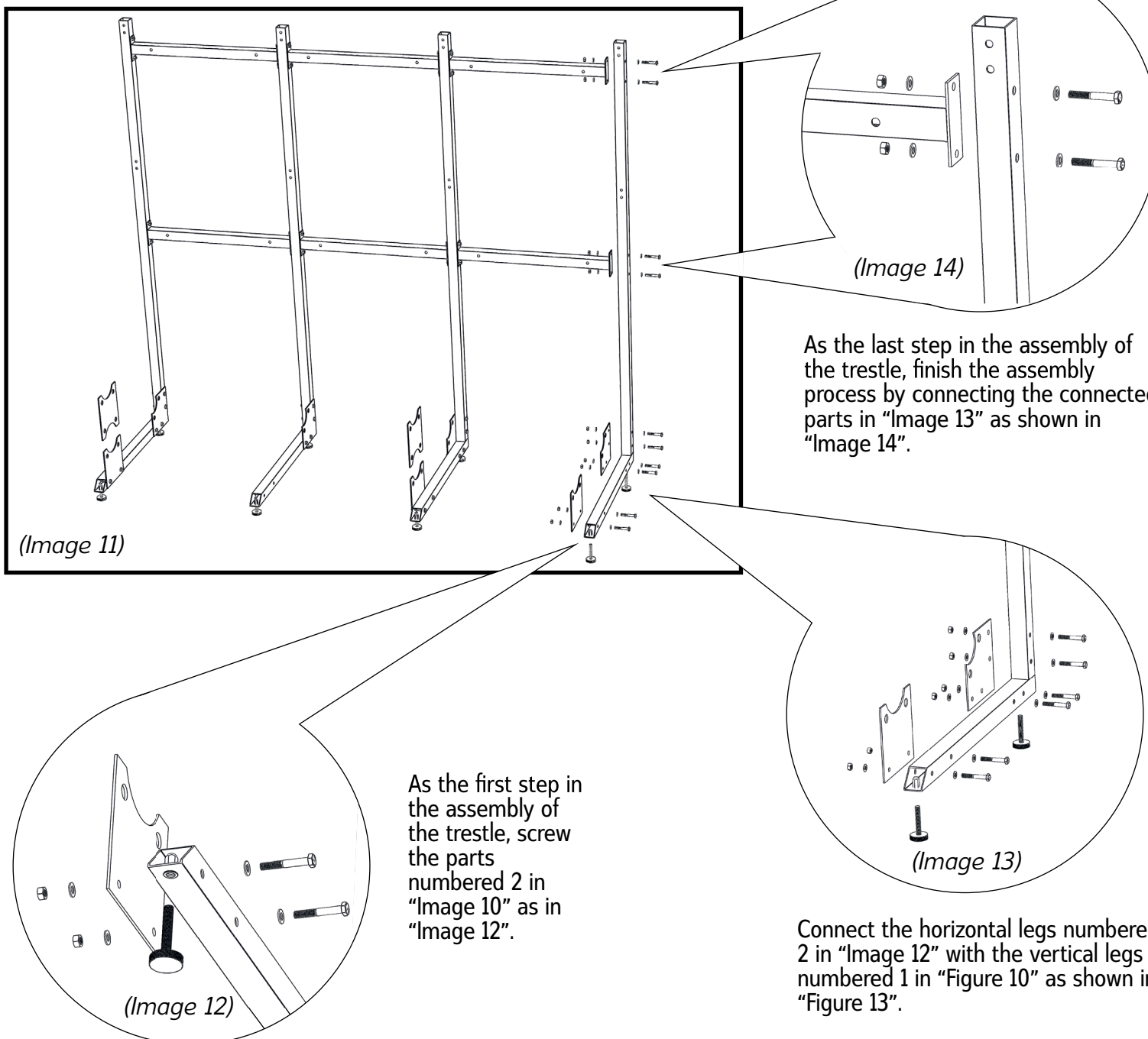


(Image 10)

- |                             |  |                       |
|-----------------------------|--|-----------------------|
| [1] Vertical Leg            | [4] Collector Trestle Connection Plate | [7] Bingo Leg         |
| [2] Horizontal Leg          | [5] Gas Pipe Trestle Connection Plate  | [8] M8 Bolt           |
| [3] Interconnection Profile | [6] Collector Pipes Connection Plate   | [9] M8 Washer and Nut |



Trestle mounting is made with the parts in "Image 10". The assembly sequence starts with "Image 12", continues with "Image 13" and ends with "Image 14".



As the first step in the assembly of the trestle, screw the parts numbered 2 in "Image 10" as in "Image 12".

As the last step in the assembly of the trestle, finish the assembly process by connecting the connected parts in "Image 13" as shown in "Image 14".

Connect the horizontal legs numbered 2 in "Image 12" with the vertical legs numbered 1 in "Figure 10" as shown in "Figure 13".

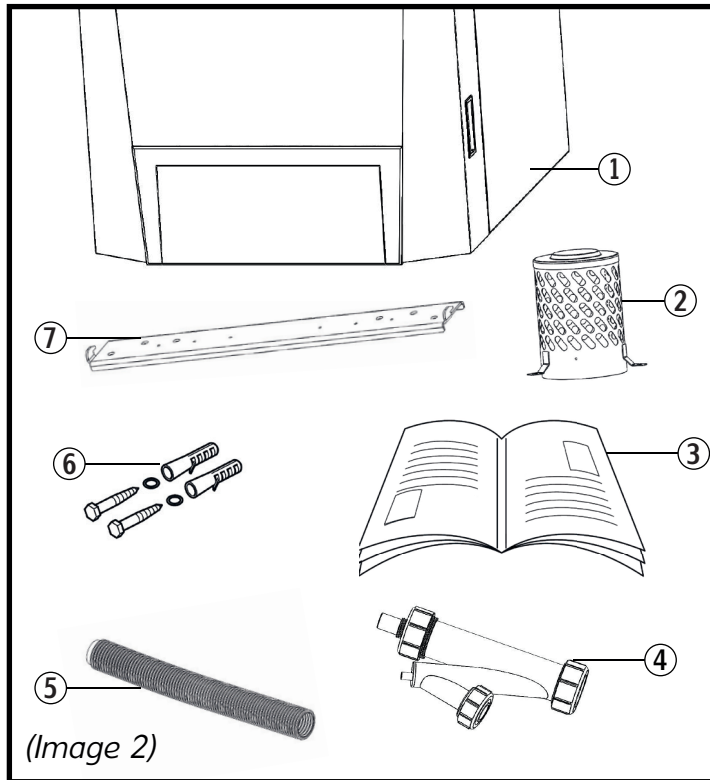


After the assembly of the trestle is finished, square the trestle with the bingo legs shown in "Image 12".

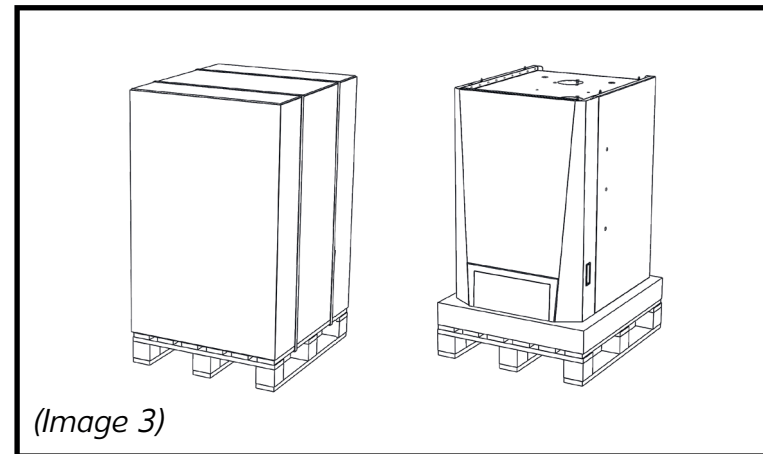
## 3.2. Installation of Equipment

### 3.2.1 Package

Following parts are available inside of the equipment package.



- [1] Condensing Equipment
- [2] Air Suction Flue
- [3] Technical Documentation
- [4] Siphon
- [5] Condensate Hose
- [6] Suspension Screws
- [7] Suspension Sheet



The products will be delivered as shown in the left side of “Image 3”. After the products are transported to the assembly area in this way, unpack the products in the assembly area. First, cut the straps outside the product. Then remove the cover cardboard. Finally, remove the product top protection styrofoam. Make the preparation for assembly process as shown in the right side of “Image 3”.



Packaging materials are fully recyclable. Furthermore, due to the fact that the materials used can be dangerous in terms of living creatures, do not leave them easily accessible locations after opening the package.



### 3.2.2 Handling



The equipment is not suitable for lifting by a single person with or without a package. Improper lifting may cause injuries and damage to the equipment. There are parts within the equipment that can be permanently damaged as a result of impacts and bumps. Comply with the handling symbols on the package. Hold the equipment only from its sides during lifting and mounting. Do not hold the control panel in the front or the pipes in the upper and lower part, or the gas inlet and outlet flues.

As can be seen in “Image 15” and “Image 16”, hook holes are available on the top of the product for easy assembly in the product design. During assembly, the product can be easily transported through the carrying holes with a lift-like tool.

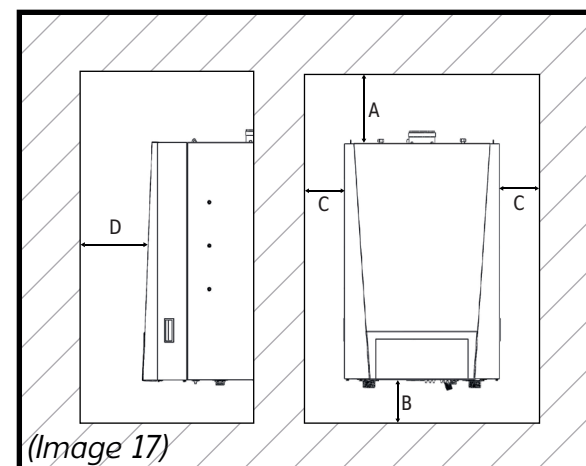
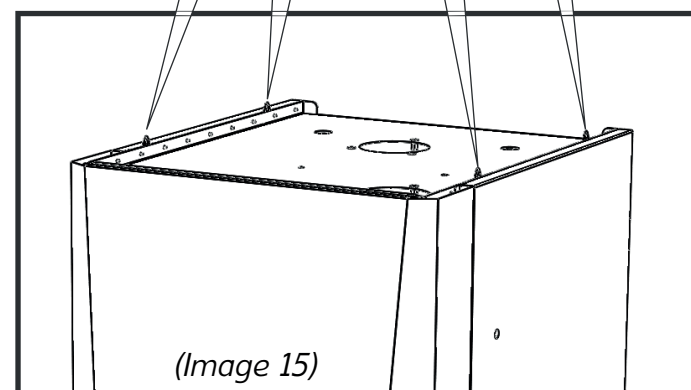
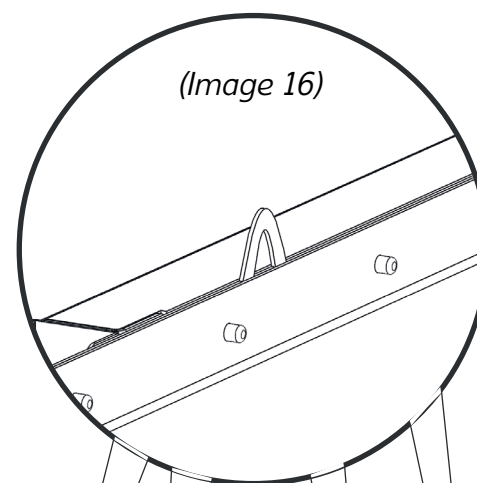
### 3.2.3 Minimum Assembly Distances

Pay attention to the dimensioning in the Guide so that there is enough space for service when the device needs to be intervened. The water and gas installation integrated on the equipment must be outside these dimensions.



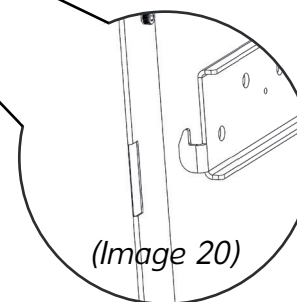
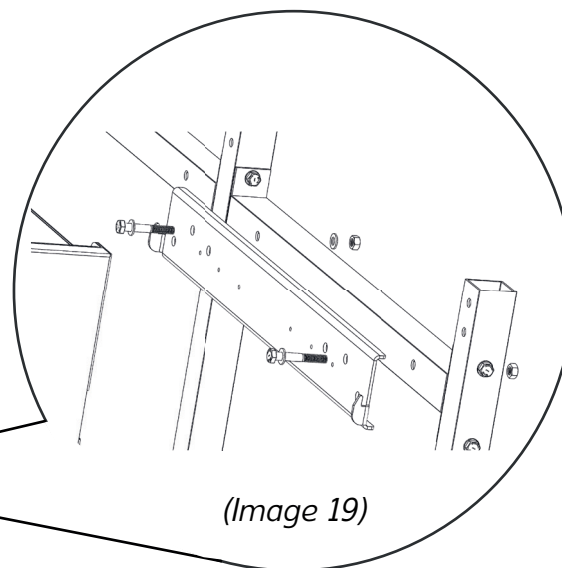
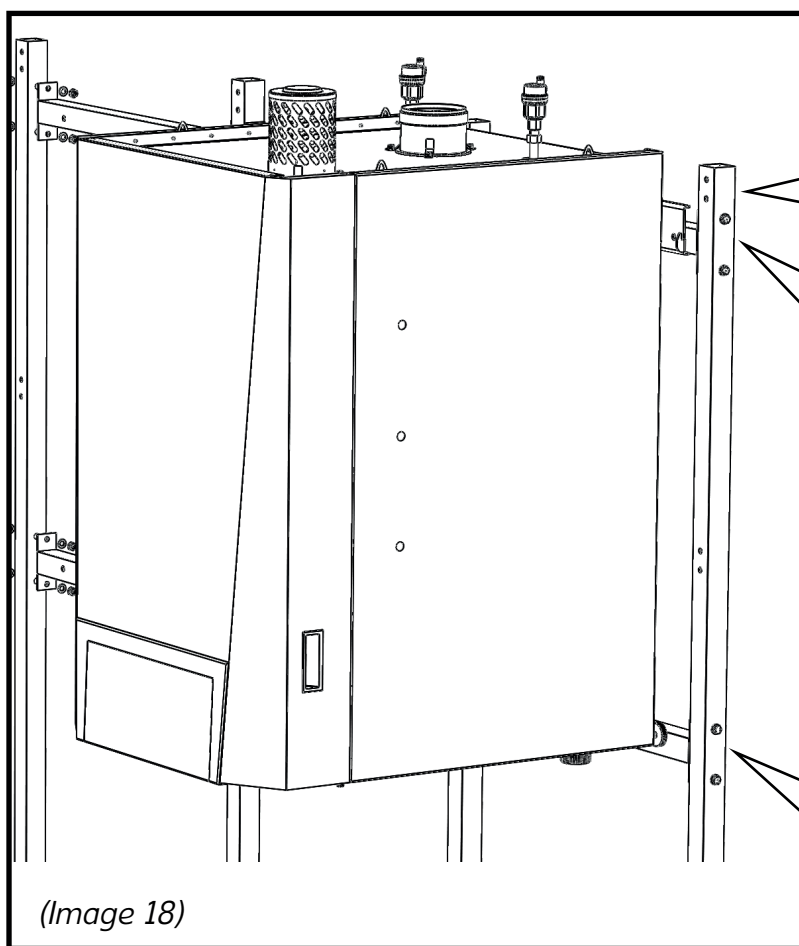
Any flammable material should be avoided in the environment where the device is placed.

A	B	C	D
≥ 270mm	≥ 170mm	≥ 5mm	≥ 500mm



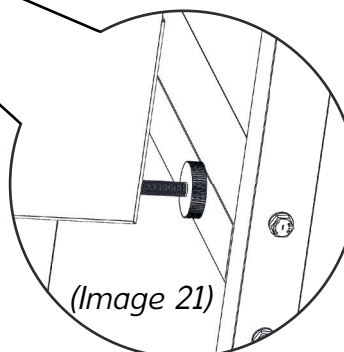
### 3.2.4 Assembly of the Equipment

Before placing the equipment as shown in "Image 18", we need to connect the suspension sheet mentioned in "Image 2" to the trestle. Connect the suspension screws of the assembly suspension sheet as shown in "Image 19".



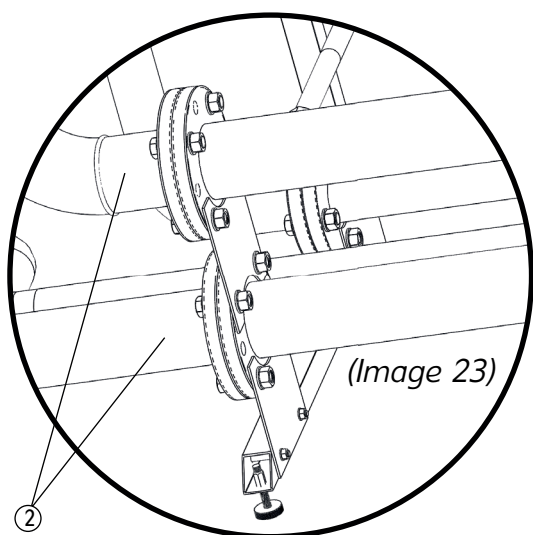
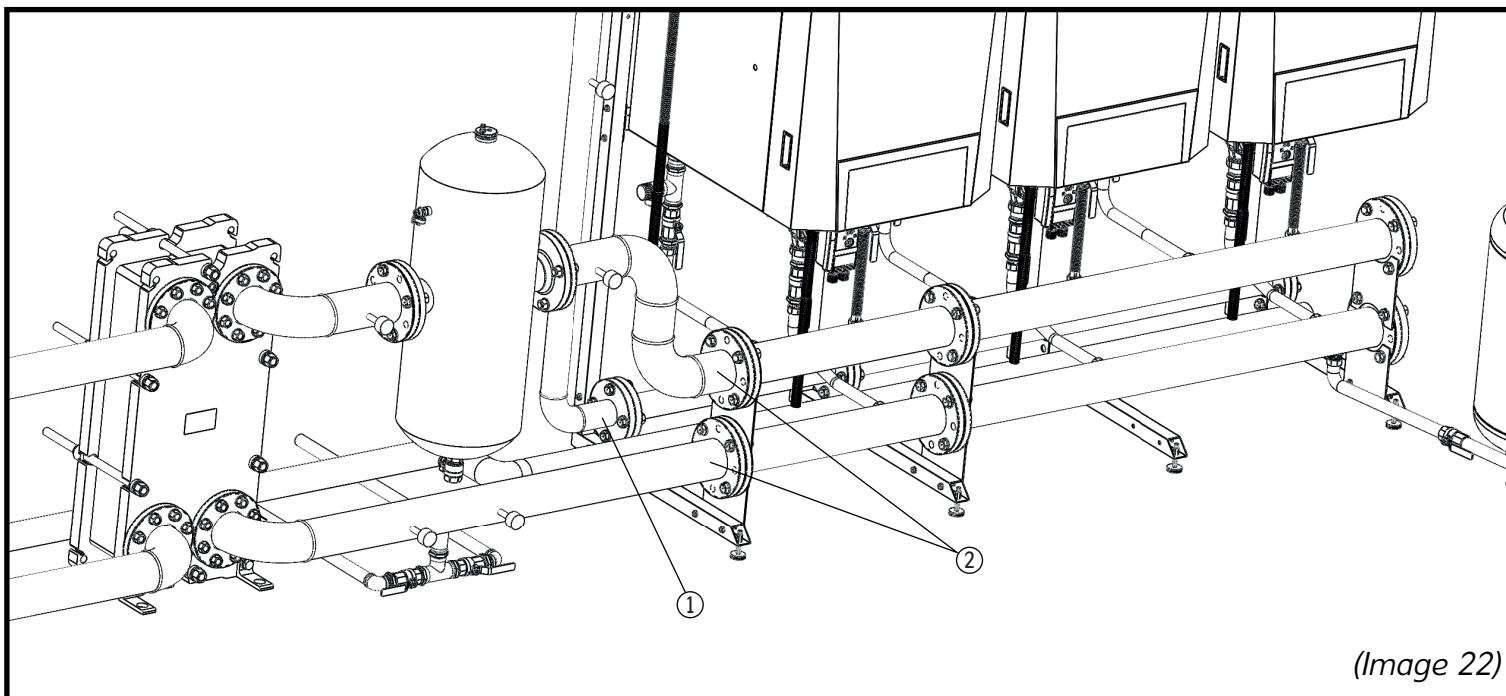
After connecting the mounting suspension sheet to the trestle as in "Image 19", place the equipment on the hooks of the mounting suspension plate as in "Image 20".

After placing the equipment on the trestle, take the square with the adjustable bingo legs as shown in "Image 21". After all equipment are mounted in this way, the assembly process is finished.

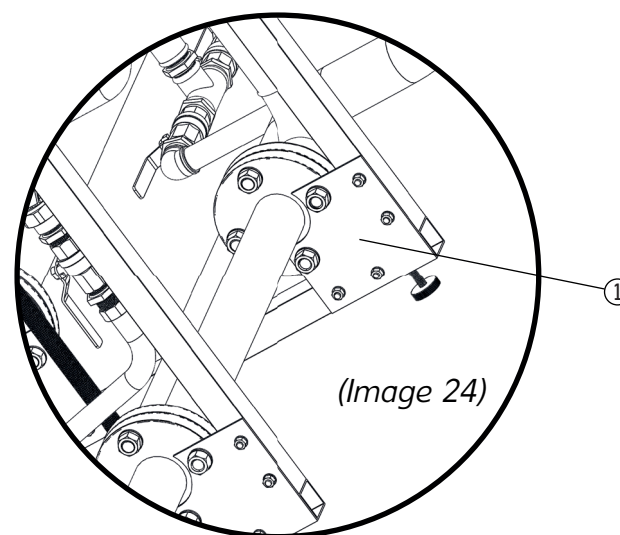




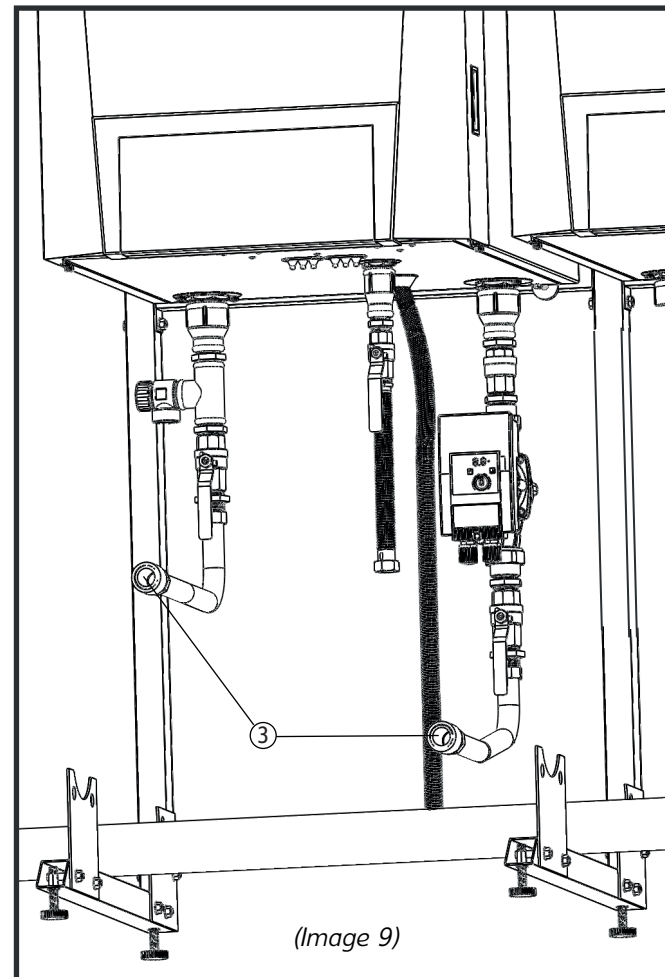
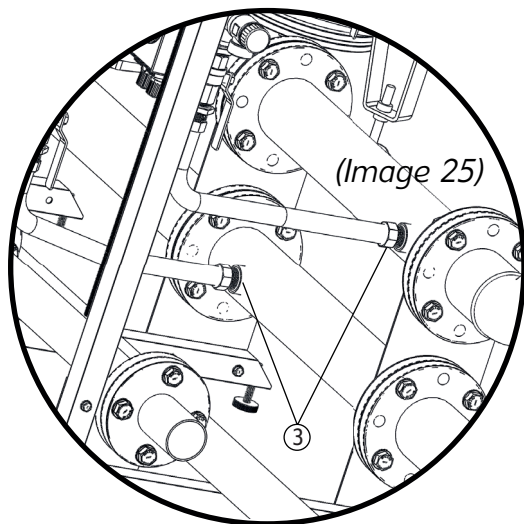
### 3.3 Piping and Setup of Other Installation Equipment



Assemble the cascade collector line assembly in such a way that it is also connected to the trestle connection sheets as in "Image 22/23/24" on this page.



After the collector assembly is completed, assemble the device sub-installation group in "Image 9", which is explained in the "Necessary Components of the Installation" in section 2.1. After this assembly is completed, the parts numbered 3 in "Image 9 and 25" on this page are connected and the installation assembly is completed



### 3.3.2 Preparation of Condensation Outlet



The siphon and condensate drain line inside the product should be checked at least once a year and cleaned if necessary. Otherwise, our company is not responsible for any permanent damage that may occur.

Siphon pipe diameter is 25 mm. X series equipment are shipped in a way that the siphon is not assembled inside the cabinet. Condensate is discharged by mounting a siphon to the siphon outlet on the cabinet bottom sheet of the product that comes in this way. Siphon discharge hose is supplied separately. The drain hose used must be resistant to acidic corrosion.





The condensate formed as a result of the operation of the equipment is acidic and harmful to the nature. To reduce this environmental impact, we recommend adding a Neutralization Box on the condensate drain line. Thereby, adverse impact of the condensate on the environment will be mitigated. Please contact our company for more information about the neutralization box. We will be glad to help you.

### 3.4 Installation of Electrical and Control Accessories



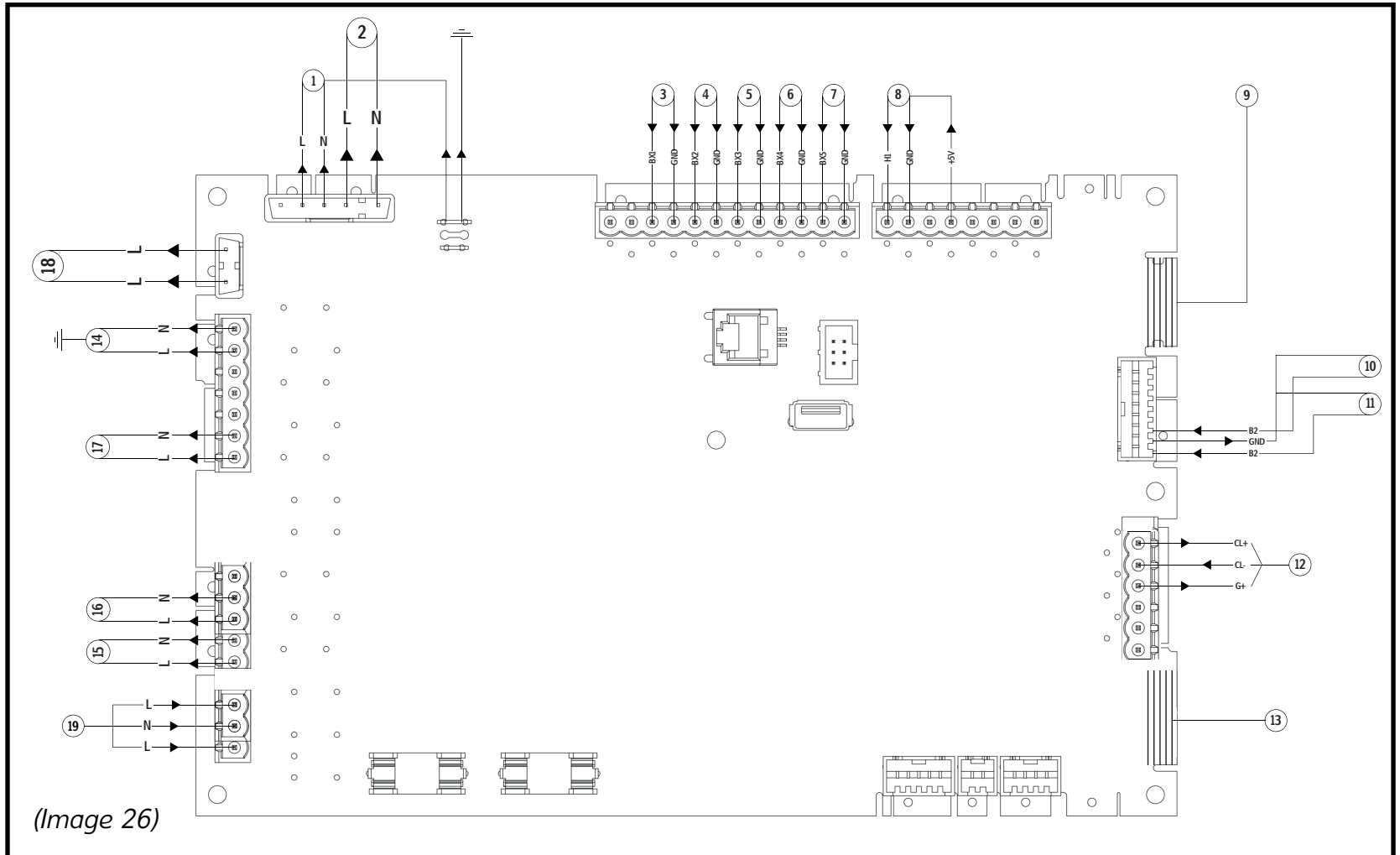
Please read the electrical installation directive before any work. Electrical connections should be made by authorized technicians. Our company is not responsible for applications not performed by authorized technicians.

#### 3.4.1 Electrical Installation

Post-production functional and electrical tests of each packaged equipment are carried out in accordance with the standards. Equipment cable connections are placed behind the screen and cabling is accessible by dismounting front panel of the boiler. Our company has placed a terminal set after the card so that the connections on the card are not touched and easy operation can be achieved. In this way, the connections to be made by authorized technicians will be made via spring terminals. The numbers in the wiring diagram in “Image 22” on the next page are available on the terminals. Easy wiring can be performed with these numbers. Please consider following important items during the process.

- Cut off the main power line before any application.
- Although there is on / off option at the boiler supply terminals, there is voltage.
- Electrical cabling should comply with the international standards. It must be connected to the electrical network with a fixed connection.
- The electrical connection must be made over a line with a switch and fuse. Connection cable should be made with 3x1.0 mm<sup>2</sup> and maximum 3x1.5 mm<sup>2</sup> TTR cable.
- Make sure that the L(phase), N(Neutral) and grounding connections are made correctly.
- Connect your equipment to the active grounding system.
- Do not run electrical supply and room thermostat cables close to hot surfaces.

### 3.4.2 Electrical Diagram



- |                           |                                |                       |
|---------------------------|--------------------------------|-----------------------|
| [1] Firing Transformer    | [7] Outside Air Sensor         | [13] Screen           |
| [2] Gas Valve             | [8] Pressure Sensor            | [14] Fan 230V 50Hz    |
| [3] Flue Gas Sensor       | [9] Communication Module       | [15] Heating Pump     |
| [4] Cascade Outlet Sensor | [10] Return Temperature Sensor | [16] Boiler Pump      |
| [5] Cascade Return Sensor | [11] Temperature Sensor        | [17] Equipment Pump   |
| [6] Boiler Sensor         | [12] Building Automation       | [18] Limit Thermostat |
|                           |                                | [19] Power Inlet      |

**i** The numbers here are same with the numbers on the spring fields inside the equipment



### 3.4.3 Outside Air Sensor Connection



Only an outside temperature sensor, which can be combined with the appropriate remote control switch, can be connected to the condensing unit.

Correct positioning of the outside air temperature sensor is important for healthy operation of the equipment. Following item should be considered while connecting the sensor.

- This sensor should be placed on the wall facing NORTH direction outside the building where the equipment are located.
- This area should not be exposed to direct sunlight.
- In order for the sensor to work properly, the distance between the area and the outside air temperature sensor should not exceed 45 meters.
- There should be no additional connections in the wiring.

When attaching the outdoor temperature sensor to the wall, open the sensor housing cover by turning it counterclockwise in order to reach the fixing holes on the wall. Then, fix the box to the wall via the fixing holes. Connect the two-pin wire without specifying the terminal block polarity.

### 3.5 Preparation of Fresh Air Suction and Waste Gas Flue




Uninsulated flue installations are potentially dangerous.

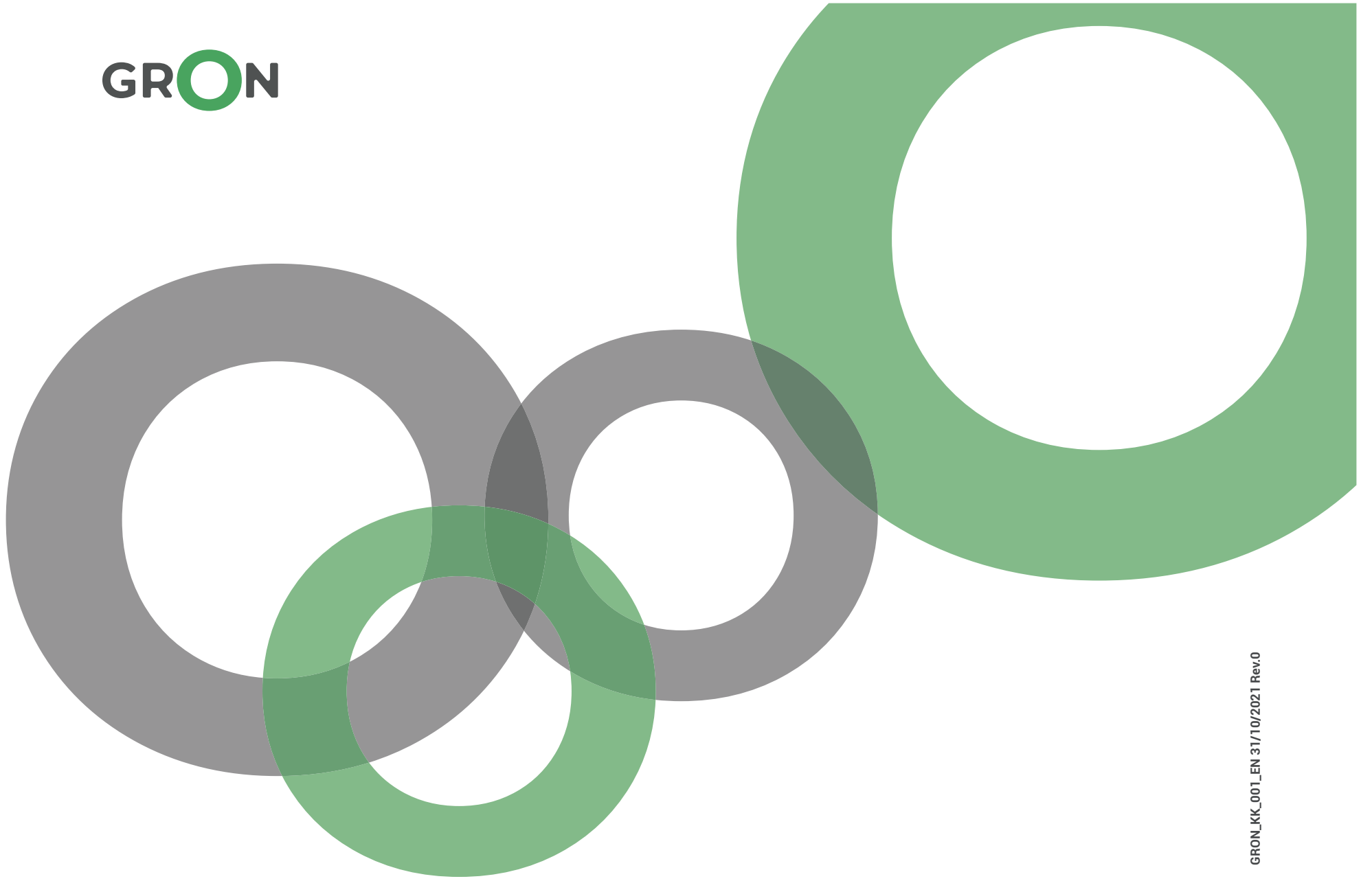
The waste gas flue equipment (flue and flue fittings) and installation must comply with the standards. The flue parts used must be of plastic or stainless steel material resistant to temperature, corrosive effects of condensation water and mechanical stresses. Removable flue structures provide great convenience during maintenance process.

Horizontal flue structuring should have a minimum slope of 3 degrees. This slope is essential for evacuation of the condensate inside the flue. **This equipment is designed to be used with the following flue types.**

**B23** : In this type of flue configuration, while the clean air is sucked from the room environment where the equipment is located, the waste gas moves along a flue channel that opens out from the site where the equipment is placed.

	X-130	X-150
 Diameter 100 Horizontal Max. Flue Length (m)	18	10
Diameter 100 Vertical Max. Flue Length (m)	20	12

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