

ACHIEVE YOUR VISION

CONDENSING BOILER

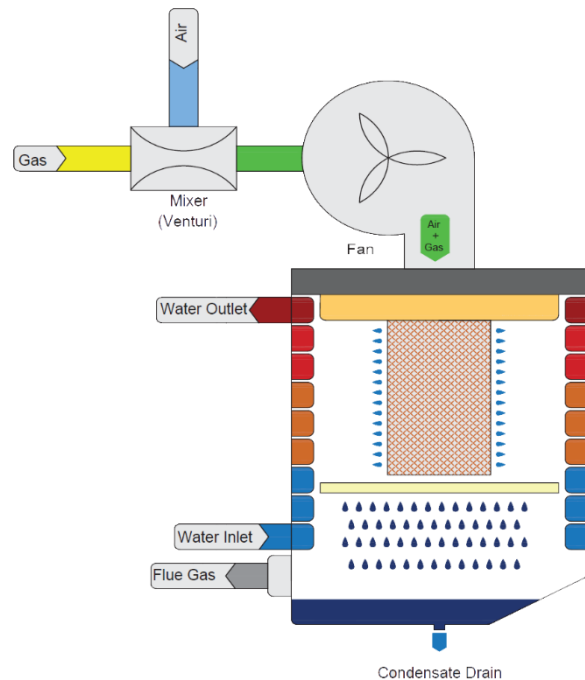
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Introduction

Boiler Performance Diagram

Condensation technology is an effective method for converting natural gas into beneficial energy by combustion. Hidden energy of hot flue gas in water vapor gain into the system and provides energy efficiency. Condensing boilers are operate with low flue gas temperatures. Mixing of the air and gas used in the energy production to obtain an efficient combustion before get inside the combustion chamber is named as premix. Premix systems provide lower emissions values (NO_x-CO) after combustion.



- 50-150 KW capacity range,
- Aluminum heat exchanger
- Low NO_x values
- Low flue gas temperatures
- Turndown ratio up to 14:100
- Cascade operation option up to 16 boilers
- Low noise level
- Energy class A
- Efficiency up to %108,2 according to EN 15502-1+A1
- Suitable B23, C13, C33, C43, C53, C63, C83 flue types
- Frost protection
- Overheat protection
- Low and highwater pressure safety
- Flue gas temperature and pressure safety
- Pump/valve protection
- Legionella protection for DHW tank
- Condensate blockage safety with siphon sensor
- Fan speed safety
- 6 Bar operation pressure
- External circulation pump

Options

- This table includes information of equipment that their installation enhances the unit's efficiency.

Item	Description
Outside Sensor	- Operates between -50 °C and 70 °C. - Max. distance 120 m with 1.5 mm² cable. - Tolerance ±1 K
Clamp Type Temperature Sensor	- Operates between -30 °C and 125 °C. - Max. distance 120 m with 1.5 mm² cable. - Tolerance ±0,5 K
Immersion Type Temperature Sensor	- Operates between 0 °C and 95 °C. - Tolerance ±0,5 K.
External Zone Module	- Provides 3-way valve control function on - temperature based zones. Requires - additional relay and sensor connections
Modbus Module	Provides Building Management Systems (BMS) connection.
Webserver	- Controlling and displaying possibility of the boiler system from - anywhere via internet, - Time program adjustments (heating circuit, DHW, external zone time - program) - Temperature adjustments of the heating circuits: - Such as DHW, swimming pool, solar energy, accumulation tank, - Monitoring errors and error times in the system, - Sending error messages up to 4 users, - Checking cascade parameters, - Setting holiday mode for heating circuits, - Displaying maintenance periods and define the maintenance interval, - Operating modes adjustment (economy, comfort, holiday and - automatic operation)



Technical Data

Model No.				50	70	90
1	Nominal heat output	min/max	KW	7.3/47.8	9.9/63.4	14.3/86.3
			Kcal/hr	6280/41100	8510/54510	12290/74200
	Heating efficiency	min/max	%	96.9/97.7	96.7/97.2	96.8/98.4
2	Nominal heat output	min/max	KW	8.4/51.4	11.6/68.5	15.1/91.0
			Kcal/hr	7220/44200	9970/58900	12300/74200
	Heating efficiency	min/max	%	108.1/105.9	108.0/103.9	108.2/105.0
Turndown ratio			-	16:100	16:100	17:100
Hydraulic separator		Operation water pressure (min/max)	bar	0.8/6.0		
		Exchanger water volume	L	3.2	3.2	4.6
		Water flow rate (min/max)	m³/h	0.4/2.2	0.5/3.0	0.7/3.8
		Pump head	mWC	3	3	5
		Max. operation temp.	°C	85		
		Limit shut off temp.	°C	95		
Fuel		Gas type	-	G20		
		Consumption rate (min/max)	m³/h	0.8/5.1	1.1/6.8	1.6/9.2
		Gas pressure (G20/G31)	mbar	20		
Flue		Gas pressure	Pa	100	130	170
		CO2 emission (min/max)	%	9.32/9.36	9.05/9.61	9.44/9.33
		Gas temp. ¹ (min/max)	°C	54.7/65.6	55.4/72.1	56.8/61.4
		Gas temp. ² (min/max)	°C	29.5/45.1	30.1/52.3	30.2/44.8
		NOx class	-	6		
		NOx value	mg/kWh	37	28	39
Pipe connection		Water inlet/outlet (DN)	mm	25		
		Air intake	mm	80	80	110
		Flue gas	mm	100		
		Gas supply (DN)	mm	20	20	25
Energy efficiency class			-	A		
Sound pressure level			dB(A)	~ 57	~ 66	~ 59
Input power			W	52	97	116
Power supply			Ø , V , Hz	1 , 230 , 50		
Dimension			WxDxH	510x540x770		
Net weight			kg	69	69	79

1 : Heating water inlet / outlet : 60 °C / 80 °C

2 : Heating water inlet / outlet : 30 °C / 50 °C

- Total hardness : 1 °d

- Water side PH range : 7 - 8.5 ppm

- Measuring sound pressure level at 1m away and ±2dB tolerance.

Model No.				115	125	150
1	Nominal heat output	min/max	KW	14.3/109.5	19.2/120.8	19.2/139.8
			Kcal/hr	12290/94150	16510/103870	16510/120200
	Heating efficiency	min/max	%	96.8/98.2	97.0/98.3	97.0/98.2
2	Nominal heat output	min/max	KW	15.1/118.1	22.3/128.0	22.3/149.1
			Kcal/hr	12980/101550	19170/110060	128200
	Heating efficiency	min/max	%	108.2/104.8	108.1/104.4	108.1/103.2
Turndown ratio			-	14:100	17:100	14:100
Hydraulic separator		Operation water pressure (min/max)	bar	0.8/6.0		
		Exchanger water volume	L	4.6	6	6
		Water flow rate (min/max)	m³/h	0.7/4.8	1.0/5.4	1.0/6.2
		Pump head	mWC	5	5.5	5.5
		Max. operation temp.	°C	85		
		Limit shut off temp.	°C	95		
Fuel	Gas type		-	G20		
	Consumption rate (min/max)		m³/h	1.6/11.7	2.1/12.8	2.1/14.9
	Gas pressure (G20/G31)		mbar	20		
Flue	Gas pressure		Pa	200	220	330
	CO2 emission (min/max)		%	9.44/9.36	9.54/9.49	9.54/9.56
	Gas temp. ¹ (min/max)		°C	56.8/64.9	56.9/61.8	56.9/70.3
	Gas temp. ² (min/max)		°C	30.2/53.5	30.5/44.9	30.5/47.1
	NOx class		-	6		
	NOx value		mg/kWh	43	46	44
Pipe connection	Water inlet/outlet (DN)		mm	25		
	Air intake		mm	110		
	Flue gas		mm	100		
	Gas supply (DN)		mm	25		
Energy efficiency class			-	A		
Sound pressure level			dB(A)	~ 61	~ 66	~ 69
Input power			W	203	212	313
Power supply			Ø , V , Hz	1 , 230 , 50		
Dimension			WxDxH	mm	510x540x770	600x540x770
Net weight			kg	79	91	91

1 : Heating water inlet / outlet : 60 °C / 80 °C

2 : Heating water inlet / outlet : 30 °C / 50 °C

- Total hardness : 1 °d

- Water side PH range : 7 - 8.5 ppm

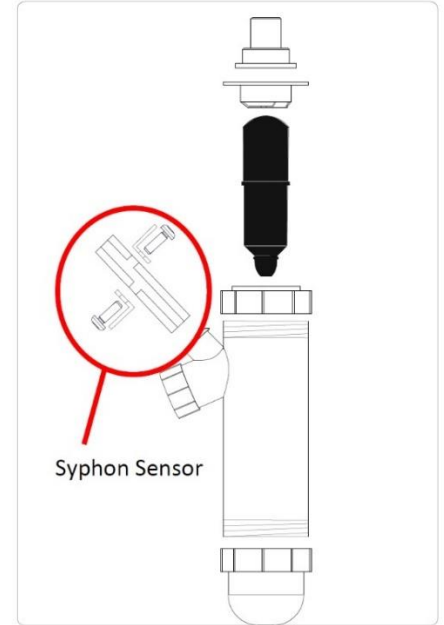
- Measuring sound pressure level at 1m away and ±2dB tolerance.

Precautions

- Nitrite protection should not be used in boilers with aluminum heat exchangers.
- It's Recommend flushing in the system to prolong the life of system and boilers. No acid-based products should be used during flushing.
- The boiler have to be serviced annually. All this maintenance should be made by authorized service, water values and the water softening unit (resin, salt etc.) values should be measured and maintained by service
- Depending on the water conditions specified in the table, the problems that may occur in the boiler heat exchanger could make out of warranty.
- The water used in the installation have to be city-water and observe the hardness range of the water side. Never use well-water.
- Assembly and installation should made according to sample schemes.
- Boiler (primary) pump have to be selected to in accordance with the required pressure and flow rate.
- The boiler (primary) pump have to be in the direction of the installation return line to the boiler.
- The system operating pressure should match with the working pressure of boiler.
- In system with a total power of 200 KW and above, a neutralization tank must be used.
- Boiler output and input diameters have to be strictly followed, other equipment should be selected according to this diameters. In order to install other equipment, the diameter of the boiler out should not be reduced.
- It is mandatory to use a suitable diameter filter and check valve to the boiler return line pipe at each boiler turn.
- In case the plate heat exchanger is used instead of the hydraulic separator as the system separator, expansion tank have to be placed in the primary circuit. If an automatic filling valve is used in the system, a water meter have to be used for following how much water is added to the system.
- In cascade systems, the sensor housing must be placed on the hydraulic separator or on the secondary flow line. If the system is separated by a plate heat exchanger, place the sensor housing on the secondary circuit flow line.

- 6A fuses have to be used for the power supply of the boilers. The electrical system must be grounded.
- Chimney connections have to be made in accordance with the chimney types and regulations.
- The flue gas analysis measuring probe (probe hole) have to be opened by the flue company for each boiler.
- Boiler chimneys should be extended by a minimum 1 meter from the boiler flue outlet direction and then connected to the chimney collector without elbows or with elbows.
- If the chimney connections passes over the boiler, the connections should be checked properly and water tightening should be provided. Water in the chimney due to leaks may cause the system out of warranty. Adequate ventilation should be provided for the boiler room.
- This product is manufactured for heating and domestic water. Not suitable for commercial or industrial purposes.
- The operating pressure of the boilers in the natural gas installation is 21 Mbar. Therefore, it is necessary to use a regulator in the gas line. There should be a minimum distance of 1-2 meters between the regulator and the boiler gas flange. There should be discharge line after regulator for discharge of the excess air.
- In order to control the gas pressures, the manometer must be fitted before and after the regulator.
- The pipes and elbows to be used for the waste gas must be made of plastic material due to the corrosive effects of condensation water.
- Boilers do not have an expansion tank. So the capacity of the expansion tank should be selected according to the capacity of the heating system and the static pressure. It is recommended to place the expansion tank on the turn of the central heating system.
- Boilers are equipped with a safety valve. The hose of this safety valve must be connected to a drain. Manufacturer cannot be held liable for damages caused by water flow into the boiler or on the ground when excessive pressure is generated in the heating installation.

- Condensation water which is generated during the combustion, transfers to the water drain connection by the syphon and drain hose. Condensation water is acidic and corrosive (approx. 2 PH). So all of the connections which are made for condensation water must be made with PP type pipes.
- Condensation water must be transferred to the drain well system with the shortest way possible. For health and environmental reasons it must not transfer such places near people, animals and plants.
- Condensation water must not be connected to rain drain systems.
- The condensate drain line must have a slope of at least 3%.
- A neutralization tank should be used for condensate water occurring in systems with a total power of 200 KW and above.
- It is mandatory to comply with the relevant local regulations for the discharge of condensate water.
- Boilers have an automatic relief valve for the evacuation of the air accumulated in the heat exchanger. However, for the evacuation of the air that may occur in the installation, it is necessary to place one or more automatic air relief valves in the appropriate places of the installation. Local regulations must be followed in this regard.
- DYNAMIC AND CHEMICAL WASHING/FLUSHING: In the newly established systems, to avoid the possible substances in the installations (metal shavings, some oils, residues of construction wastes etc.) flushing treatment is a mandatory. Likewise, it is a mandatory to apply the flushing treatment without water given to the boiler in conversion of older systems. Neutral-based, non-acidic, non-alkaline registered products can be used to clean the installation or keep the water conditions at desired levels.
- If Boilers will be used in to a dirty air environment, they must be supported with the air inlet filters. This optional filter must be checked regularly.

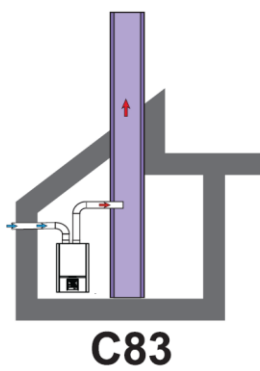
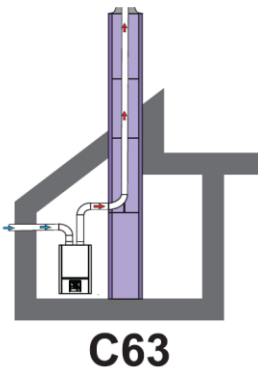
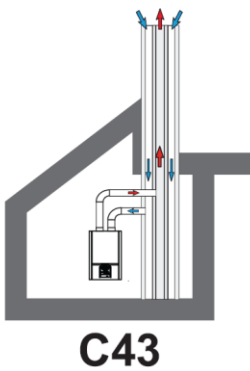
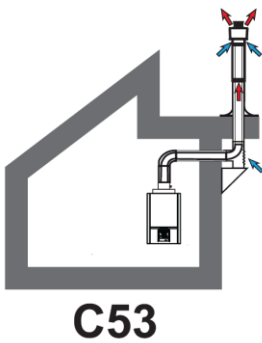
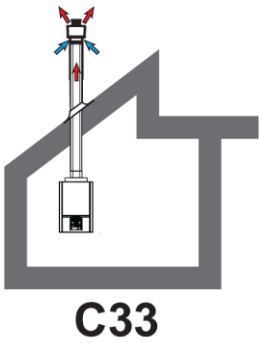
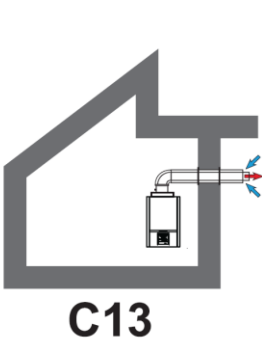
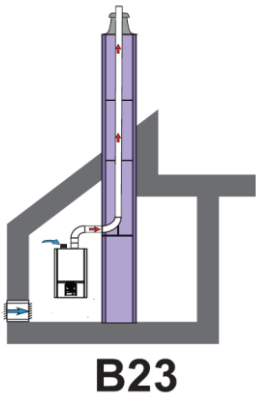


- Flue and chimney connections must be carried out in accordance with applicable regulations and relevant standards.

Materials which are used for the flue and chimney must be resistant to the temperature, corrosive effect of condensation water and mechanical stresses and must be gas-tight. So all of the connections which are made for flue and chimney must be made with PPS type pipes or stainless steel pipes.
- Chimney system and the condensation drainage systems connected to it should be checked once a year and cleaned if necessary.
- FROST PROTECTION: It will be activated when the temperature of the water in the boiler falls below 4 °C and activates the primary circulation pump. In order for the frost protection mode to be active, boiler's electrical switch must be switched on and the system water must be full.
- Frost Protection function is valid only for boiler, cannot protect the installations circuit.
- Boilers are equipped with a fault diagnosis system. When a malfunction code is displayed on both the Master and Slave boilers, the red light on the bottom of the control panel flashes with the no flame sign.
- Boilers are designed to work only with natural gas. never be used with LPG.

Flue Application Detail

Installation Type		Unit Model					
		50	70	90	115	125	150
B23	m	25	25	25	25	22	22
C13 - C33	m	20	20	20	20	17	17
C43 - C53 - C63 - C83	m	20	20	20	20	17	17



B23 = It is a flue system that takes the combustion air from the environment and throws flue gas to the outside.

C13 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with the horizontal concentric flue pipe system.

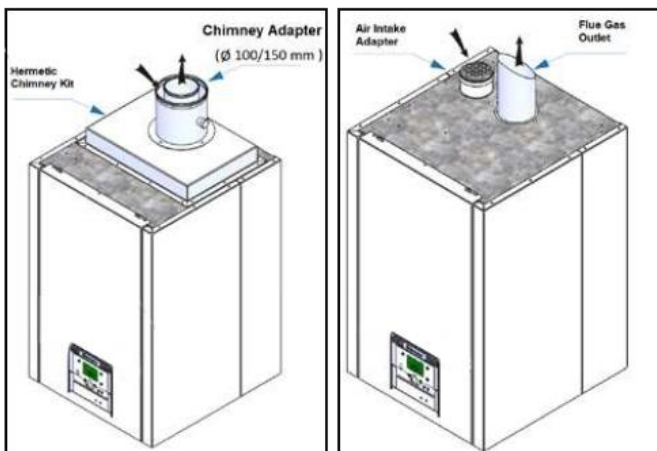
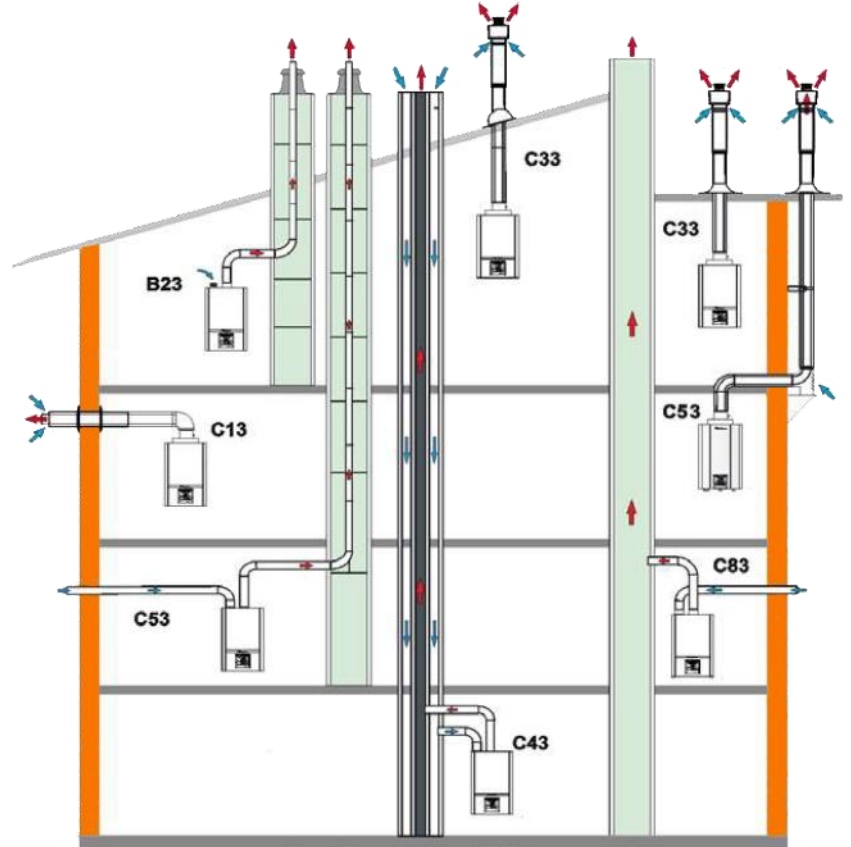
C33 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with the vertical concentric flue pipe system.

C43 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with separate flue pipes.

C53 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with the vertical and horizontal concentric flue pipe system.

C63 = It is a flue system that flue pipes are not supplied by the manufacturer. It has to be applied according to one of the applicable flue systems which are mentioned in technical table in flue types section with CE certified flue pipes.

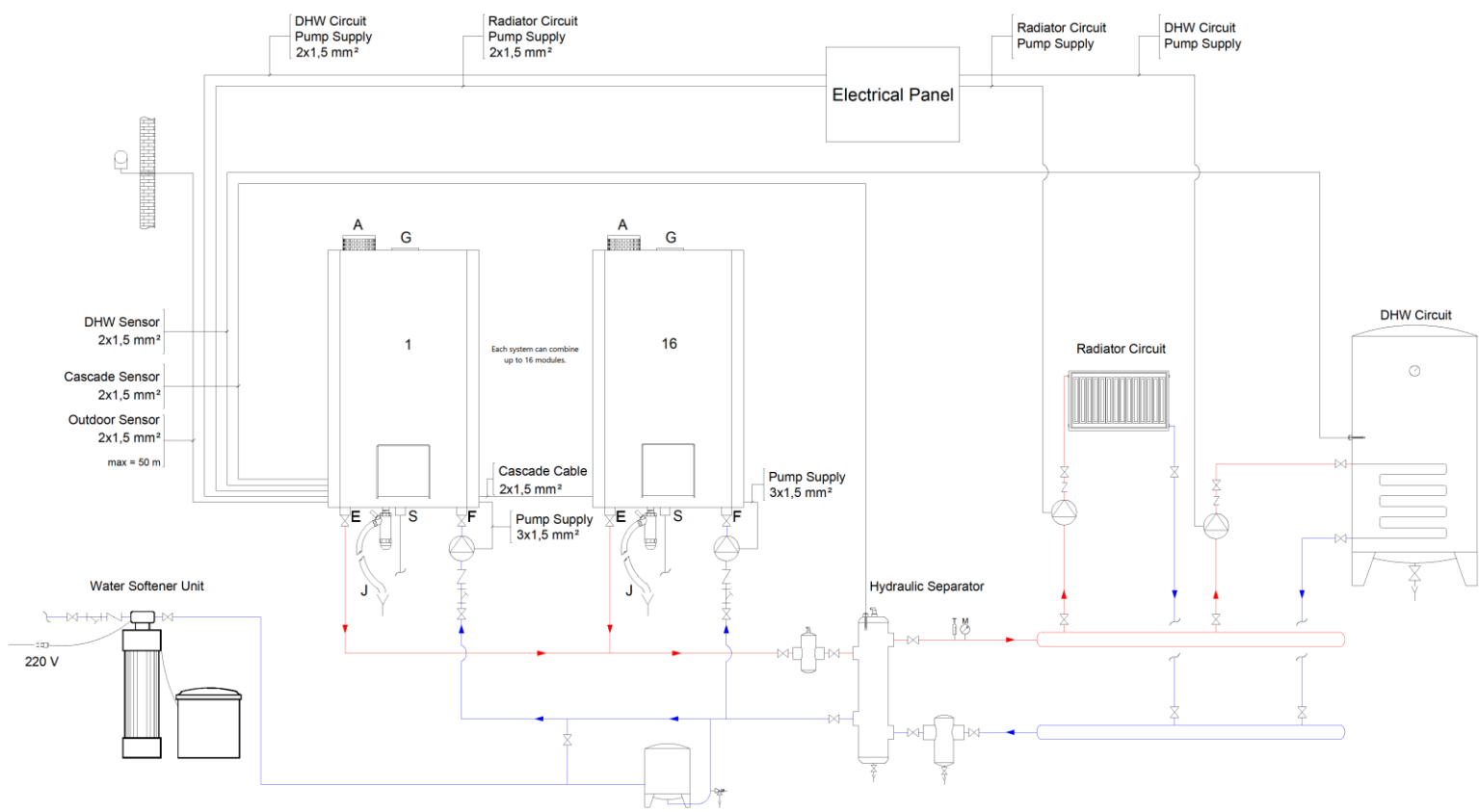
C83 = It is a flue system which takes the combustion air from the outside with horizontal flue pipes and throws flue gas to the self contained (negative pressure) chimney.



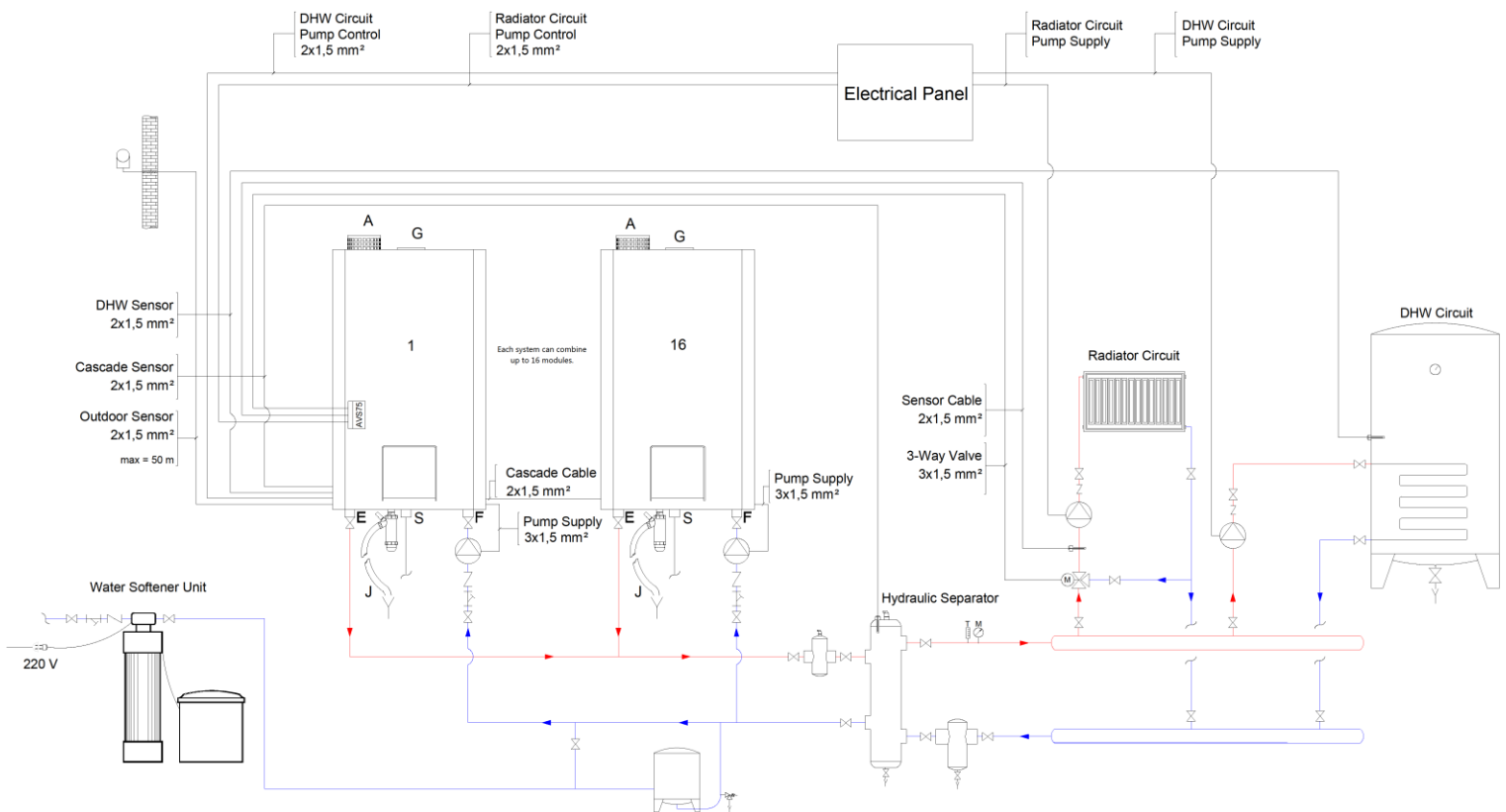
- If the C13 and C33 (Hermetic) type chimney connection is to be applied, the C13 and C33 (Hermetic) type chimney connection is to be used with the Chimney Adapter.
- For horizontal flue connections, an upward slope of 3% should be provided and the condensate formed in the chimney should be directed towards the boiler.
- If B23 type flue connection is to be applied, air suction adapter should be used for clean air and waste gas should be discharged to external environment with Ø100 mm pipe.
- The maximum permissible chimney lengths must be observed in all flue applications.

Installation Detail

DHW - Radiator with Hydraulic Separator

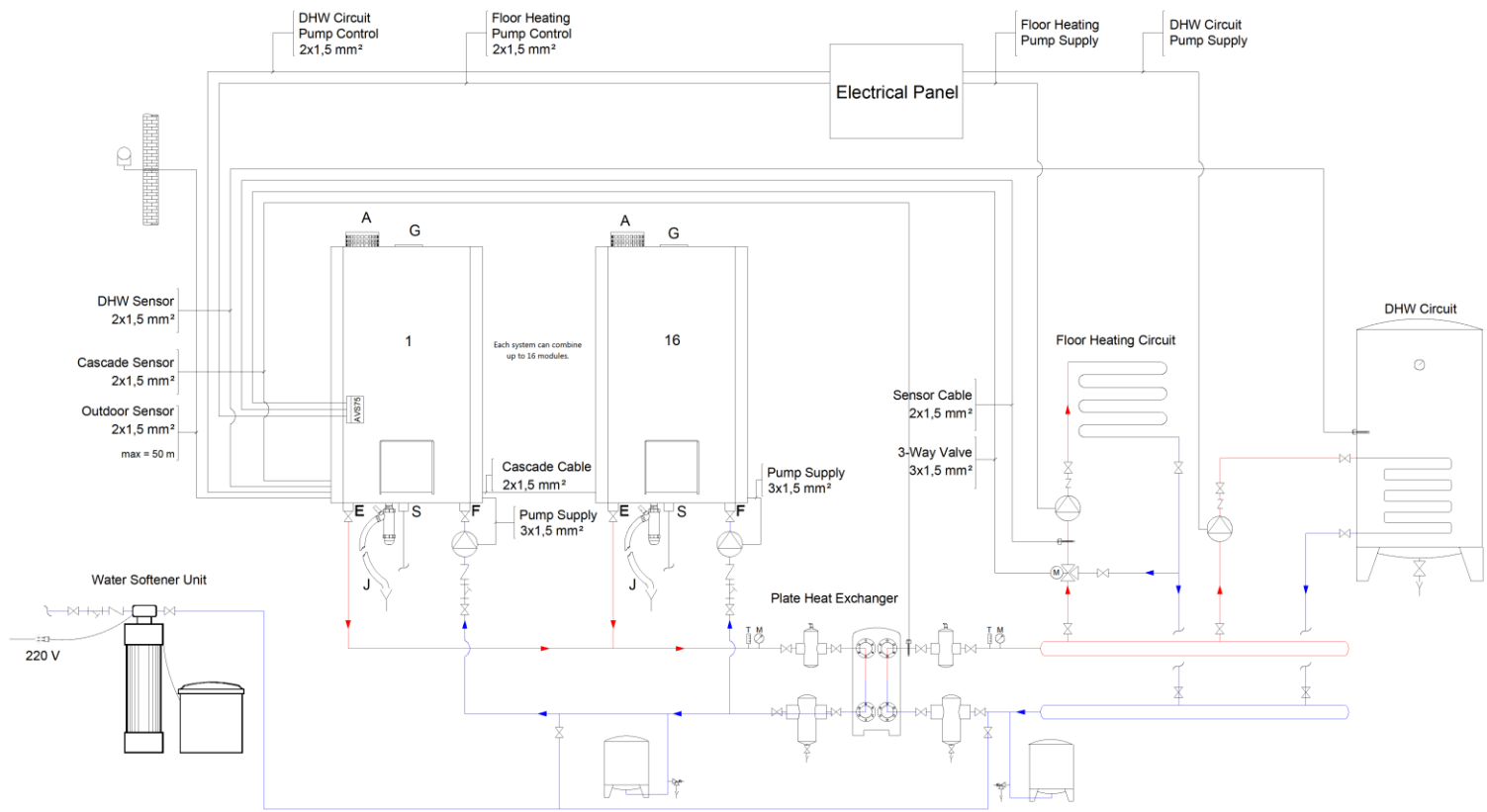


pump	valve	non-return valve	strainer	temperature sensor	outdoor sensor	air relief valve	thermometer	manometer	safety valve	drain	air separator	dirt separator	expansion vessel



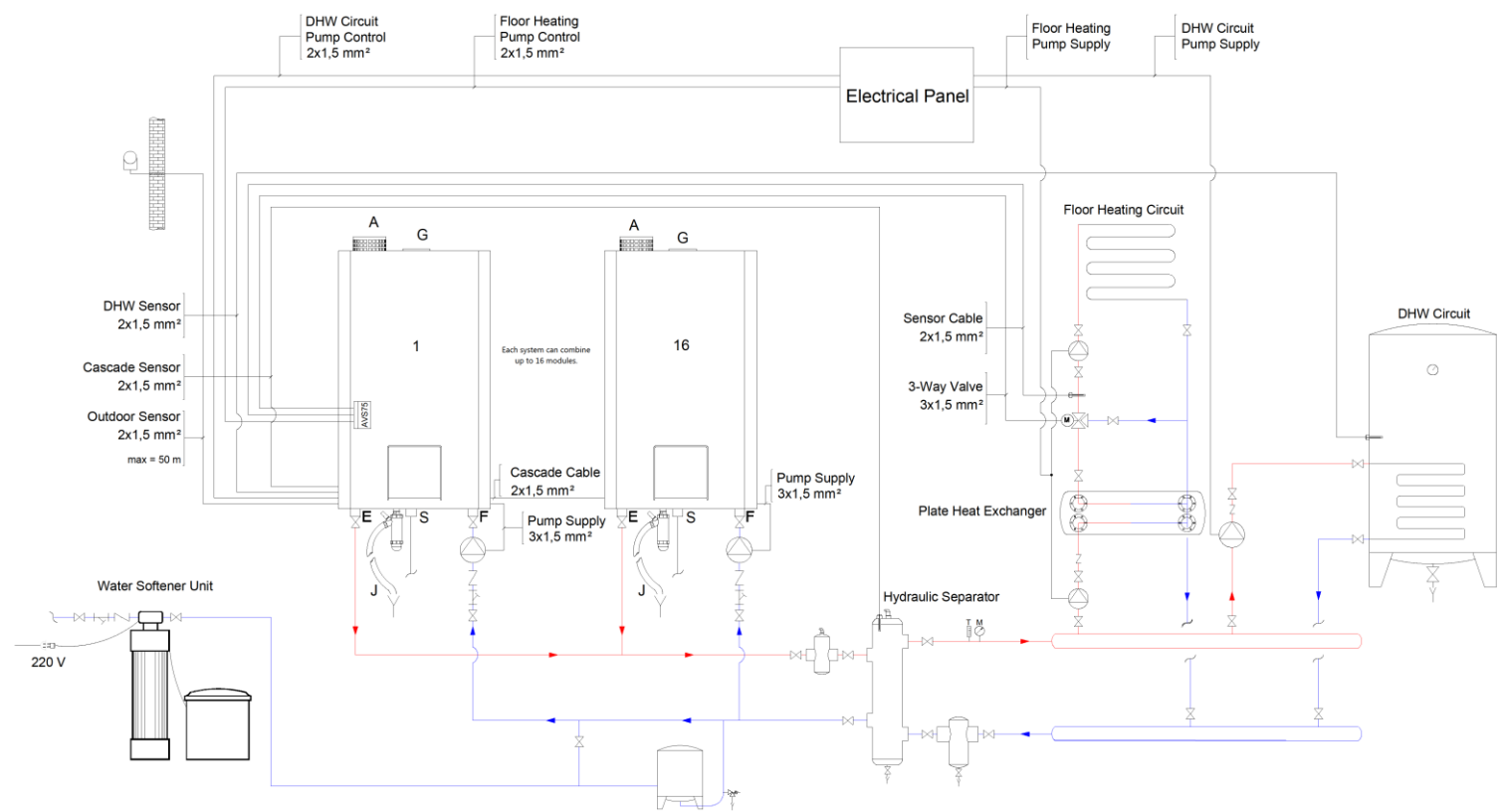
													
pump	valve	non-return valve	strainer	temperature sensor	outdoor sensor	air relief valve	thermometer	manometer	safety valve	drain	air separator	dirt separator	expansion vessel

DHW - Floor Heating with Plate Heat Exchanger
and 3-Way Valve



pump	valve	non-return valve	strainer	temperature sensor	outdoor sensor	air relief valve	thermometer	manometer	safety valve	drain	air separator	dirt separator	expansion vessel

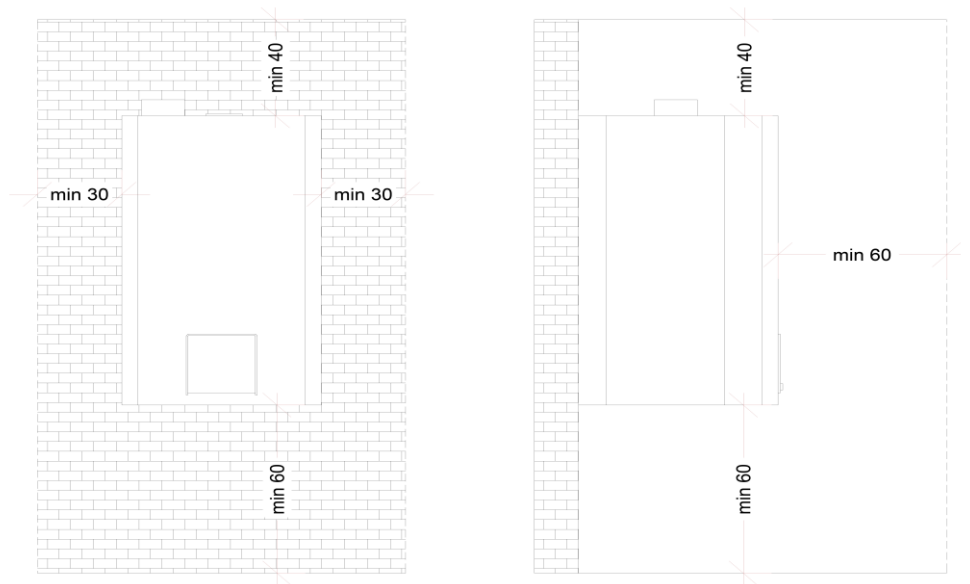
DHW - Floor Heating with Hydraulic Separator,
Plate Heat Exchanger and 3-Way Valve



pump	valve	non-return valve	strainer	temperature sensor	outdoor sensor	air relief valve	thermometer	manometer	safety valve	drain	air separator	dirt separator	expansion vessel

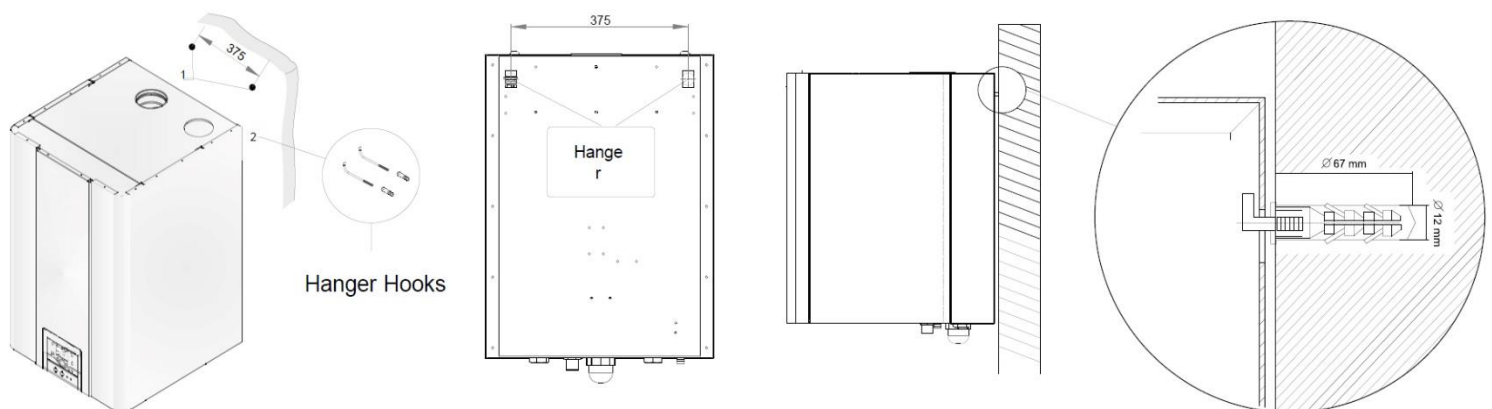
Mounting

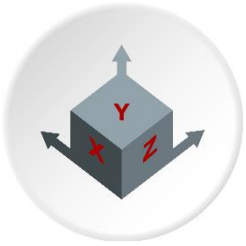
The wall must be strong enough to hold a water filled boiler. If the carrying capacity of the wall is not sufficient, an external suspension device must be provided. For example; a footed device may be used. For ease of service operation to the boiler, the necessary distances must be left around the boiler.



Wall Mount: The dimensions of the hanger spaces behind the boiler are shown below.

- Drill the holes you marked with a 12-point drill.
- Screw the hooks and hanger hooks into place.
- Hang the boiler from the sling slots on the wall.

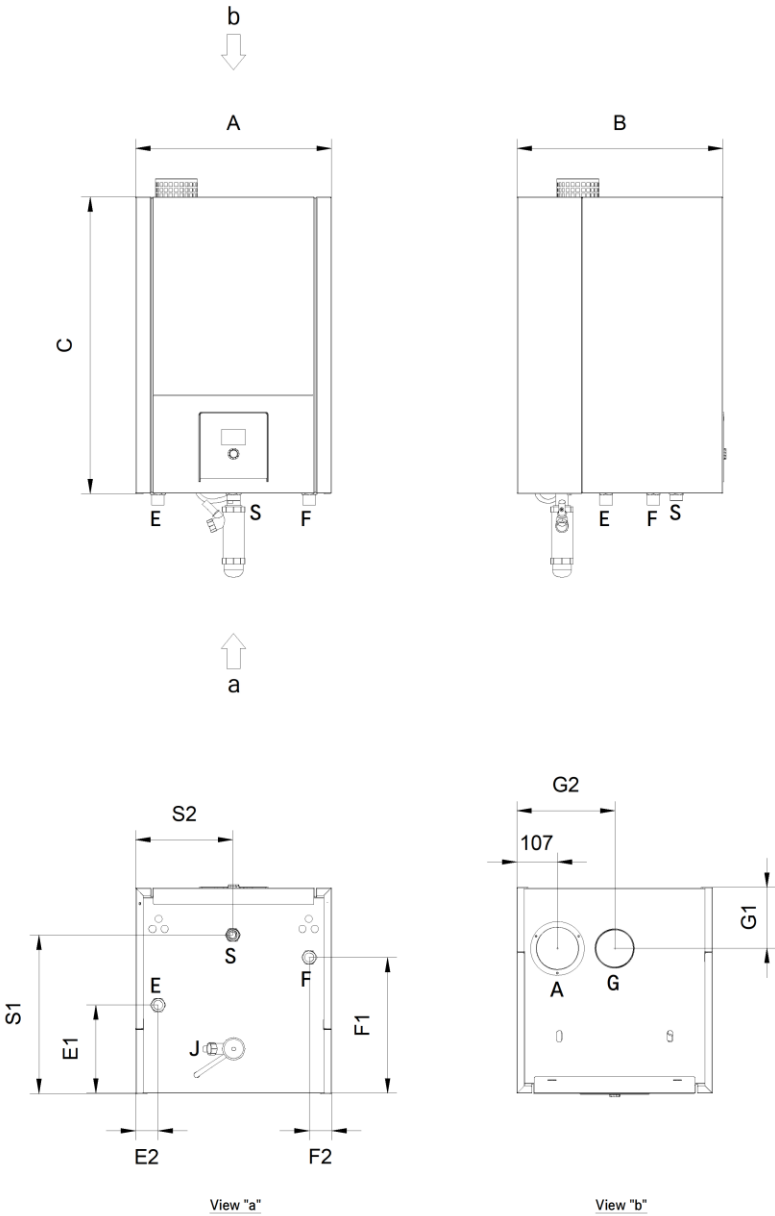




Dimensions

No.	Model						unit
	50	70	90	115	125	150	
A	510	510	510	510	600	600	mm
B	540	540	540	540	540	540	
C	770	770	770	770	770	770	
S1	417	417	417	417	417	417	
S2	455	455	455	455	455	455	
E1	232	232	232	232	232	232	
E2	105	105	58	58	58	58	
F1	357	357	357	357	357	357	
F2	105	105	58	58	58	58	
G1	159	159	159	159	159	159	
G2	257	257	257	257	303	303	
G (Ø)	100	100	100	100	100	100	
A (Ø)	80	80	110	110	110	110	
J (Ø)	25	25	25	25	25	25	
S	3/4	3/4	1	1	1	1	in
E	1	1	1	1	1	1	
F	1	1	1	1	1	1	

No.	Part Name
A	Fresh air hole
G	Flue gas hole
S	Gas supply pipe
E	Water outlet
F	Water inlet
J	Drain pipe connection





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