



## Utilization

S300 boiler with mentioned features is suitable for small buildings up to the surface of 600m., and is responsive to all requirements of the building, such as 2 units 4 floors buildings up to the surface of 75m.

It is clear that parallel installation of a number of S300 boilers can increase Efficiency with regard to the number of boilers. Also the idea of installation of several boilers is the principle of energy certificate that permanently use less fuel.

## Transportation

Due to non-assembled sections of S300 boiler, it can be easily transport by one person and can be install in heating room. Also due to this capability it is possible to install it in heating room in all building process and prevent from damaging of the boilers.

## Cyclic Checking

Due to the light weighted of S300 boiler, back and front door can be opened easily, and can be transfer by one person. Large furnace and existing smoke passes plated let you to clear the boiler by brush. So by installation of S300 boiler to the combustor smoke passes let you clean plated and also water channels you will be ensured that after each service you can set it up again.

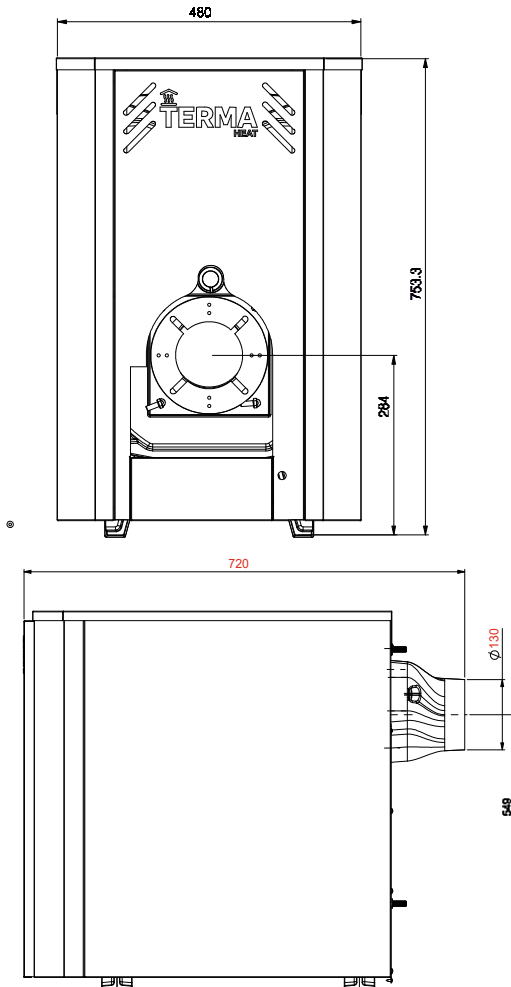
## Design of Super 300 Boiler

S300 boilers are suitable solution for space heating and using hot water in buildings. This boiler has been supplied in two models of Nipple and O-ring. Classification of the number of S300 boilers for gaining higher capacities are suitable solution for making some stage in different seasons that makes the usage of fuel more efficient.

NO. SECTIONS	PCs	4	5	6	7	8	9
CAPACITY	Kw	39.3	50.8	62.3	73.7	85.2	96.7
	KCal/hr	33,800	43,700	53,600	63,400	73,300	83,100
	btu/hr	134,000	173,000	213,000	251,000	291,000	330,000
WATER CONTENT	Litres	17.9	22.3	26.8	31.3	35.8	40.2
EXHUAUST DIAMETER	mm	130					
COMBUSTION CHAMBER CAPACITY	m <sup>3</sup>	0.323	0.0403	0.0484	0.0565	0.0645	0.0726
INLET/OUTLET CONNECTION SIZE	DN(")	1 1/2"					
BURNER FLANG DIAMETER	mm	110					
LENGTH	mm	600	682	764	846	928	1010
NET WEIGHT	kg	177	205	233	262	291	321
MAX. TEMPERATURE	°C	105					
MAX. WORK PRESSURE	Bar	4					
GAS FUEL KIND	Natural Gas						
LIQUID FUEL KIND	Gas Oil						

## Boiler Dimensions and Flue Connection

The standard length of the boiler with 5 sections is 720 mm. For each additional or removed section, the overall length will vary by approximately 80 mm. For instance, a 6-section boiler measures about 800 mm, while an 8-section unit reaches approximately 960 mm in length. The flue outlet diameter is 140 mm, ensuring efficient and safe evacuation of combustion gases, in accordance with the boiler's thermal performance.



# Technical Notes on Central Heating Boiler Rooms

When selecting and preparing the boiler room location, please consider the following points:

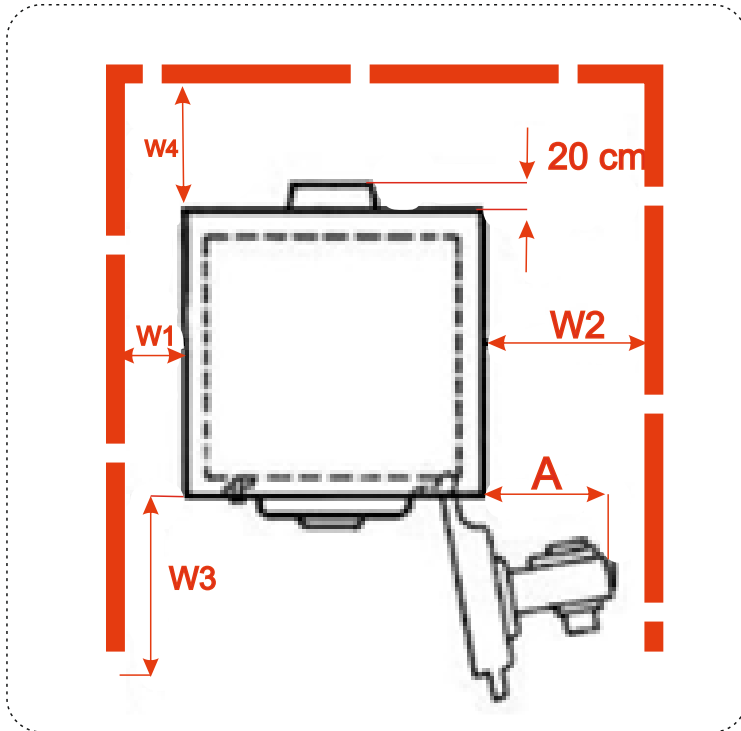
### Selection of Boiler Room Location

1. As much as possible, choose the boiler room location in the lower sections of the building and near the most energy-consuming areas, in a way that allows the use of natural circulation. Also, the pipes should be installed with standard slope from under the ceiling onto the collectors.
2. All sectional cast iron heating boilers can be transported by a few workers via stairs and assembled, serviced, or replaced in any type of underground boiler room or operating area, and necessary repairs can be carried out.
3. The boiler room should have sufficient windows for ventilation and the supply of combustion air. The presence of such a window enhances safety by minimizing the risk of gas accumulation and the destructive dangers that may occur if there is a gas leak due to malfunctioning valves, hoses, etc.
4. Provide a drain sump in the boiler room floor for overflow and other purposes.
5. Sufficient space should be allocated in the boiler room for the installation of collectors, circulation pumps, hot water storage tanks, and other equipment. Avoid placing flammable materials or fuel tanks in the boiler room.
6. The minimum recommended distances for installing the boiler to adjacent walls should be observed as per the diagram below.

### Required Distances for Installing the Boiler

For the installation of the boiler in the boiler room, it is recommended to follow the suggested distances according to the images below:

- W1: Minimum 30 cm
- W2: Burner length (A) + 10 cm (minimum 110 cm)
- W3: Boiler length + 100 cm
- W4: Half of the boiler length + 50 cm



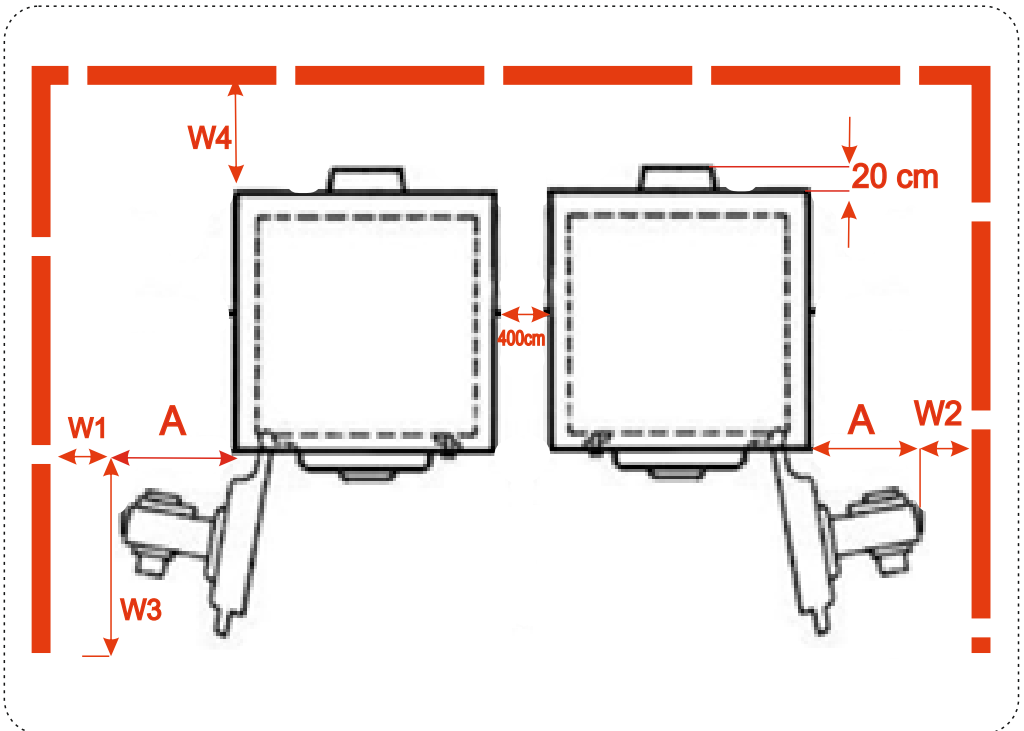
## WARM & LASTING

However, if it is not possible to maintain these distances, the following minimum installation distances should be strictly adhered to:

- W1: 30 cm
- W2: 30 cm
- W3: Boiler length
- W4: 90 cm

The front structure of the boiler is designed in such a way that the door can be mounted on either the right or left side of the boiler. It is hinged and can be opened, allowing periodic cleaning of the combustion chamber from combustion residues.

In cold climates, necessary precautions should be taken to prevent freezing of the boiler and system when they are in the off state.



### Installation of Water Softener on the Heating System

The installation of a water softener is for the makeup water in a closed-loop system, and its size depends on the evaporation rate from the open expansion tank area. This measure is implemented to prolong the deposition of scale in the boiler, protect it from the hard materials that block the water system, and prevent a decrease in efficiency.

The deposition of sediments occurs in heating equipment at points within the boiler where the flame concentration is on the boiler walls, which is the area with the highest heat transfer and the hottest point of the boiler. The deposited particles are usually inorganic materials, such as calcium ions, magnesium, and silicates. Therefore, the water entering the boiler must be softened.

Resin water softeners exchange most of the calcium and magnesium ions that cause scaling with sodium ions, which are non-scaling, thus preventing the formation of scale at the hot spots in the boiler. Special chemicals are available in the market to prevent scaling after water analysis, which are added to the expansion tank according to a set schedule.

Continuous evaporation of water in the heating circuit gradually increases the concentration of dissolved salts in the water, causing scale formation in the boiler and heating circuit. To prevent this and maintain the salt concentration, the evaporated water from the boiler should be removed to control the scaling. If there is a plan to add chemicals for heating production, make sure to ask the chemical supplier about the need and timing for draining.

### Boiler Installation and Maintenance Guidelines

1. All joints of the boiler sections should be sealed with heat-resistant rope and sealing paste to prevent any gas leakage in the boiler room.
2. Ensure that the boiler cover is properly closed in its place.
3. It is recommended to insulate all hot water and heating pipes, as well as hot water storage tanks, for optimization.
4. It is better for the burner settings to be done by the manufacturer's specialists. Keep in mind that changing the air temperature entering the burner alters the fuel-to-air ratio settings. Therefore, it is essential to periodically have the customer adjust the settings for fuel optimization.
5. Ensure complete sealing of valves, pipes, flanges, pumps, and gas pipes. Regular checks should be conducted, at least once a year.
6. If you must use diesel fuel, check the nozzle diameter and angle based on the type of boiler and its thermal capacity by consulting the burner manufacturer.
7. Always ensure that the heating system is filled with water. The boiler will be seriously damaged if operated without water.
8. Never operate the boiler without water, and if you notice that the boiler is running dry, try to cool it down to ambient temperature using only the burner air intake fan. Introducing cold water into the boiler when it is operating without water will cause severe thermal stress and can result in serious damage.
9. The immersed thermostat on the boiler should be regularly checked to ensure it is functioning correctly.
10. If the boiler is located outdoors, appropriate safety measures must be taken to prevent freezing and the possibility of the boiler bursting.
11. The diameter and height of the flue should be selected according to the burner capacity.
12. A window for fresh air and an exhaust fan should be provided in the boiler room for proper combustion and ventilation.
13. Note that installing a water softener in these circuits alone will not completely prevent scaling. A softener will slow down the scaling process, but will not stop it. Therefore, to fully prevent scaling, a single-pipe expansion tank or a closed expansion tank must be used. A two-pipe open expansion tank causes evaporation, which leads to the

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concentration of scale in the closed loop. Make sure the expansion tank is single-pipe, and in cold climates, use a closed expansion tank. In two-pipe open expansion tanks, to control scaling, water must be drained under the boiler according to the amount of evaporation, so that the initial scale level is maintained. Therefore, if you have a two-pipe open expansion tank, do not avoid draining the water.

**14.** Ensure that all burner commands are executed promptly at the correct times. This can be verified by turning the burner on and off multiple times.

**15.** The exhaust gas paths in passes 2 and 3 should be inspected to ensure there are no foreign objects or combustion residues.

**16.** Lubricate the circulation pump motor according to the manufacturer's instructions.

**17.** After the annual service, make sure to check for heat distribution and check for any leakage in the consumption areas.

**18.** At least once a year, inspect all control systems in the boiler room, such as thermometers, manometers, air stat, lighting, and burner relays, to ensure they are working correctly.

**19.** Gas pipes inside the boiler room should be thoroughly checked with soapy water to ensure there are no leaks.

**20.** Prevent tampering with the boiler room installations by unauthorized personnel.

**21.** Always ensure that the temperature difference between the supply and return water does not exceed 20°C during startup. The optimal operation is for consumers to gradually enter the heating cycle.

**22.** Burners consume air for combustion. It is recommended to install a fan for air circulation in the boiler room. Air inlet and outlet vents should be installed at the top and bottom of the boiler room door to assist with air exchange.

**23.** If the burner or pump is malfunctioning or making abnormal noises, turn off the system and consult the relevant specialist.

**24.** To accurately control the boiler temperature, install a thermostat and thermometer on the boiler.

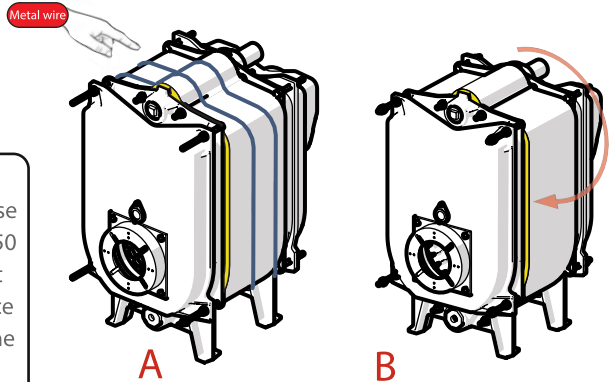
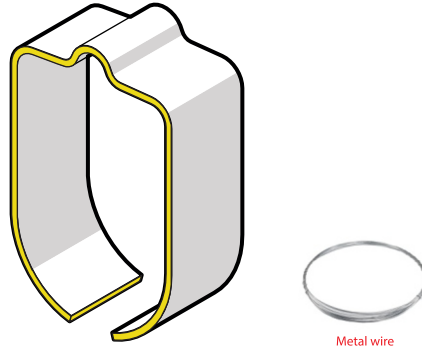
### Conditions That Void the Warranty

1. Installation of the boiler by unauthorized personnel and without following the installation and commissioning instructions.
2. Absence of a concrete foundation (in accordance with the conditions mentioned in the installation and commissioning instructions).
3. Failure to install the boiler sections on a metal frame.
4. Use of the boiler under conditions exceeding the standard working pressure Use of a 60-degree H-shaped nozzle in diesel burners.
5. Flame concentration on the boiler section due to the following reasons:
  - a) Improper adjustment of the burner during installation and commissioning.
  - b) Failure to adjust the fuel-to-air ratio of the burner according to seasonal changes.
  - c) Burner misalignment over time.
6. Use of a burner with a flame length exceeding 70% of the boiler length.
7. Use of a burner with a higher thermal capacity than required.
8. Cracking of the boiler sections due to operation without water or accumulation of water deposits, blocking water flow channels.
9. Cracking of the boiler sections due to improper use of the boiler purge system.
10. Any damage caused during transportation.
11. Freezing of water.

To reduce the impact of water deposit accumulation, it is recommended to use an appropriate water softener on the water inlet line.

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- Along with the boiler, in addition to the cover, the required amount of thermal insulation and wire to close the insulation around the boiler will be delivered

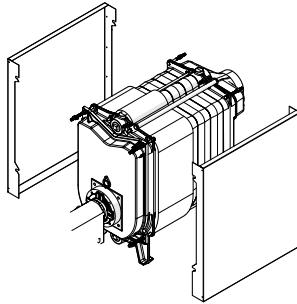


**Notice:**

Use M10 x 100 screws to close the rear door and M 10x150 screws to close the front door. Otherwise, we will face problems when installing the cover.

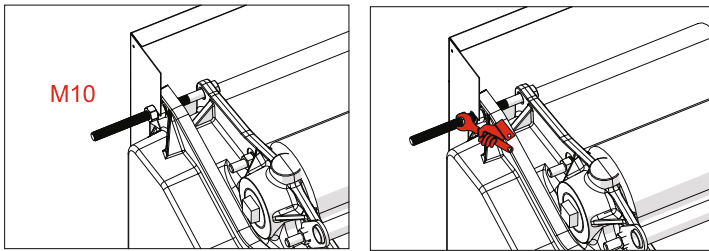
- A-**First, put the insulation on the boiler so that it covers all surfaces.
- B-** Connect the insulation from both sides to the tie rod of the boiler using the existing wires.

1. First, put the left and right cover on the tie rods as shown in the picture.

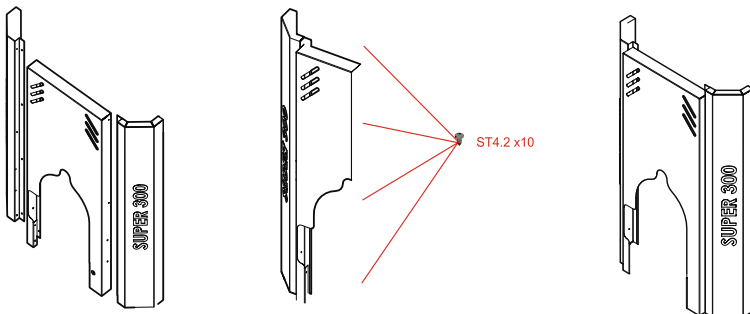


- Tighten the second nut according to the picture.

Do the same steps for the four sides.

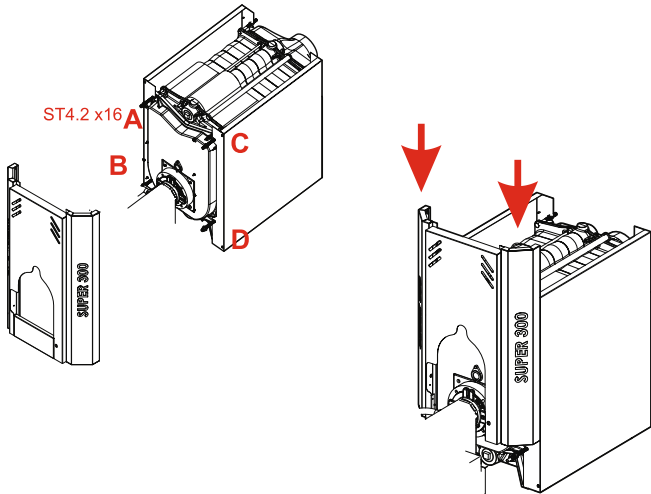


2. Connect or assemble the two left and right columns and the front part of the facade with automatic four-way screws (ST 4.2 x 10).

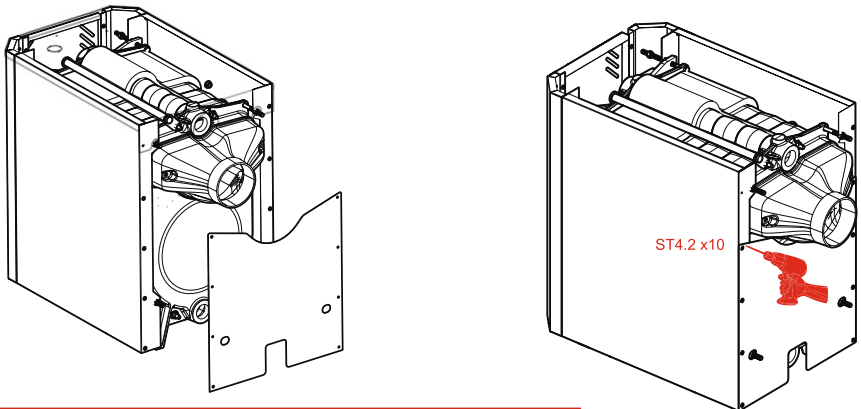


3. Screw the four parts marked with Latin letters with a screw (ST4.2x16) without a washer so that the screw is the size of a sheet.

Install the assembled front and side parts as shown below (sliding manner).



5. Screw the back plate into its matching holes.





6. At the end, press install the roof as shown in the picture.

