ENTROPIE boiler TT100-02

20000 kW 170 °C 16 bar

Contents

Field application TT100-02 boilers

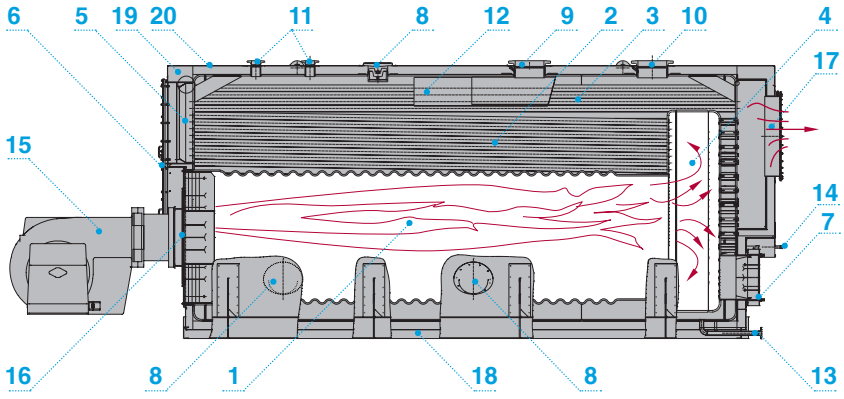
ENTROPIE boiler TT100-02 is a high-temperature three-pass hot water gas-fired boiler with capacity of 20 MW.

ENTROPIE boiler TT100-02 is designed for heating buildings and facilities and for providing engineering processes for various purposes.

Under the conditions of transport, storage, installation and operation, the warranty period is 36 months from the date the boiler begins operation and no more than 42 months from the date of shipment from the manufacturer.

General view of boiler TT100-02

Diagram of ENTROPIE boiler TT100-02



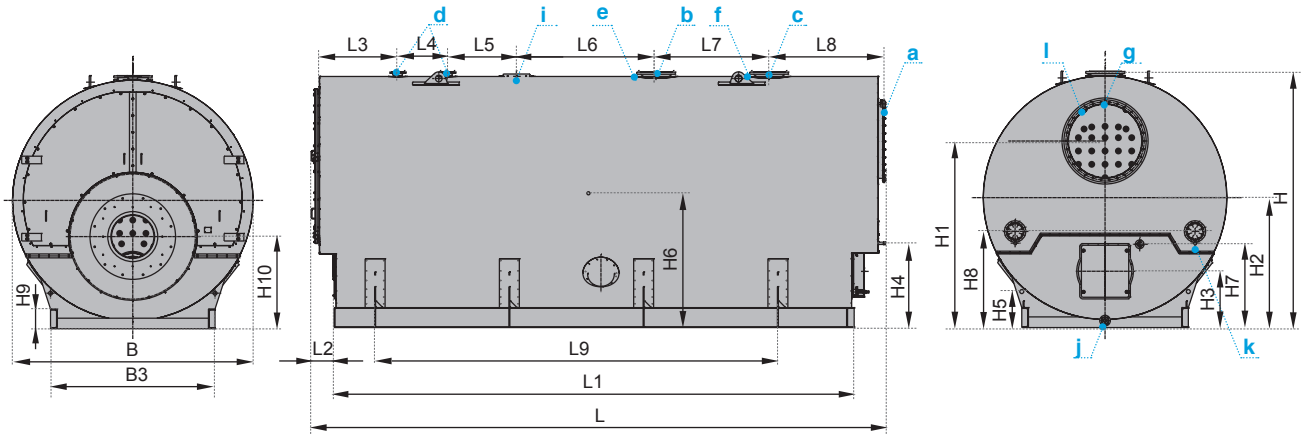
1. Flue tube
2. Second pass fire tubes
3. Third pass fire tubes
4. First reversal chamber
5. Second reversal chamber
6. Boiler front doors
7. Manhole
8. Inspection holes
9. Water inlet
10. Water outlet
11. Emergency valve
12. Water guiding element
13. Drainage pipeline
14. Drain nozzle
15. Burner
16. Burner plate with air port
17. Flue gas removal outlet
18. Steel load-bearing supports
19. Heat insulation
20. Embossed aluminum coating

Technical characteristics of ENTROPIE boiler TT100-02

Description of parameter	Value
Maximum water temperature, °C	170
Minimum water temperature at the boiler inlet, °C	60
Maximum operating overpressure of water, bar	16
Minimum water flow rate, m^3/h	Not regulated
Minimum capacity of the first stage of burner, %	Not regulated

Boiler size / Rated heat output, kW	20000
Efficiency, %	90,5
Flue gas flow rate, kg/s	9,00
Aerodynamic resistance of gas path for maximum capacity, Pa	1870
Temperature of outgoing flue gas, °C	220
Firebox volume, m^3	19,6
Boiler water volume, m^3	34,0
Dry boiler weight (weight tolerance 4,5 %), kg	46000

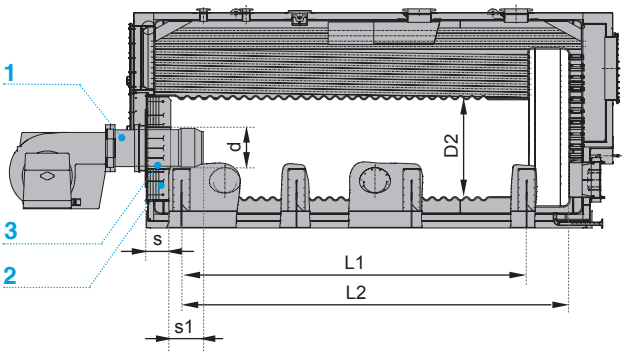
Overall and connecting dimensions of ENTROPIE boiler TT100-02



Boiler size		20000
Flue gas outlet, DN	a	1100
Water inlet, DN	b	400
Water outlet, DN	c	400
Safety valve, DN	d	125
Temperature sensor (inlet)	e	G 1/2-B
Temperature sensor (outlet)	f	G 1/2-B
Flue gas temperature sensor	g	G 1/2-B
Inspection hole, mm	i	230x330
Boiler water drainage, mm	j	50
Condensate removal	k	G 1-B
Draft and heat gauge	l	G 1/2-B
Length, mm	L	8629
Width, mm	B	3655
Height, mm	H	3847
Length of supporting frame, mm	L1	7825
Distance, mm	L2	286
Distance, mm	L3	1224

Boiler size		20000
Distance, mm	L4	750
Distance, mm	L5	940
Distance, mm	L6	2100
Distance, mm	L7	1700
Distance, mm	L8	1695
Width of supporting frame, mm	B3	2500
Distance, mm	H1	2800
Distance, mm	H2	1950
Distance, mm	H3	845
Distance, mm	H4	1250
Distance, mm	H5	540
Distance, mm	H6	2021
Distance, mm	H7	1250
Distance, mm	H8	1443
Distance, mm	H9	300
Distance, mm	H10	1400
Distance, mm	L9	6060

Dimensions of ENTROPIE boiler TT100-02 firebox



Boiler size	20000
Diameter of installation hole, d, mm	650
Cover thickness, taking into account the adapter plate, s, mm	472
Installation size of burner, s1, mm	20–60
Firebox diameter, D2, mm	1700/1850
Flue tube length, L1, mm	6250
Firebox length, L2, mm	6950

1. Burner flame head
2. Air port
3. Elastic heat-insulating material

Selecting and installing of the burner

The aerodynamic characteristics of the burners and their placement shall ensure that the flame fills the firebox uniformly without affecting the firebox walls and prevent any areas becoming stagnant or poorly ventilated within the firebox volume.

Burners to be used with ENTROPIE boilers TT100-02 shall have a forced air supply with a regulated air excess factor. Starting up burners, combustion chamber blowing, operation, and shutdown shall be performed automatically.

ENTROPIE boilers TT100-02 are operated with excess pressure in the firebox. When selecting the burners, it is necessary to take into account the firebox length and diameter and the boiler's aerodynamic resistance. The use of automatic multistage and modulated burners (gas, liquid fuel or combined burners) is permitted.

When ordering a burner, check that its connecting dimensions and its flame head dimensions comply with the technical requirements for the boiler and this technical data sheet. An additional extension and/or intermediate flange should be ordered when the burner is fitted with a long flame head. Production of a special air port for burners with individual characteristics is possible.

The burner gas line shall contain a compensator. It will relieve mechanical loads on the gas pipeline during boiler maintenance and operation.

The burner flame head is equipped according to the manufacturer's requirements. The burner flame head shall be inserted in the firebox, taking into account the dimensions s1.

The space between the burner flame head and rigid heat insulation of the air port shall be sealed with an elastic heat-insulating material attached to the boiler.

The burner units shall provide safe and efficient operation of boilers and comply with DIN EN 267, 676.

Boiler configuration

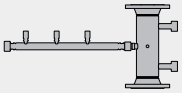
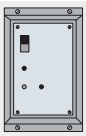
Several options of boiler delivery sets are available depending on the equipment: full delivery set, partial delivery set, or delivery without parts.

The full delivery set includes a boiler with burner equipment, set of parts and components installed according to the information specified in the questionnaire. Due to factory installation, the optimal and reliable operation of all boiler units is guaranteed.

On request, the boiler can be supplied with the partial delivery set equipment (boiler fitted with a burner and relief valves) or the customer can independently equip the boilers with burners, safety devices, and automatic controls.

Boiler accessories

On additional request the manufacturer can deliver the following accessories for boilers:

	Plate for burner
	Flange for burner
	Collecting channel of the safety group for connecting sensors and monitoring devices
	Pressure limiters for minimum and maximum pressure
	Safety valves
	Temperature sensors
	Three-way valve
	Boil-off protection sensor
Other accessories for boiler installation and maintenance	

Placement of ENTROPIE boilers

The distance from the boiler front to the wall of the boiler room shall leave enough space for boiler maintenance and repair and no less than 3 m. In this case, for boilers running on gaseous or liquid fuel, the distance from the protruding parts of the burner devices to the boiler room wall shall be at least 1 m. The width of passageways between the boiler and the boiler room wall shall be at least 1 m.

Maintenance of ENTRIOPIE boiler TT100-02 is via side access. The side passageway shall be wide enough to carry out maintenance and repair and no less than the value specified in effective regulatory documentation.

In case the boiler is installed near walls or columns, the insulation of the boilers shall not be in close contact with the boiler room wall if there is no passageway, and there shall be a minimum distance of 70 mm between them.

The width of the passageway between the boiler and the rear wall of the boiler room shall be wide enough for carrying out maintenance, repair, and installation of the connecting element of flue tube. In this case, the width of the passageway shall be at least 1 m.

Deviations from the recommended distances are allowed but only within the distances specified in the local regulatory documents.

Transportation

Subject to the approval of the customer and relevant authorities, the boiler can be transported by any mode of transport.

During boiler transportation, the open flange and fitting connections, cable insertions shall be plugged, all temporary openings shall be closed.

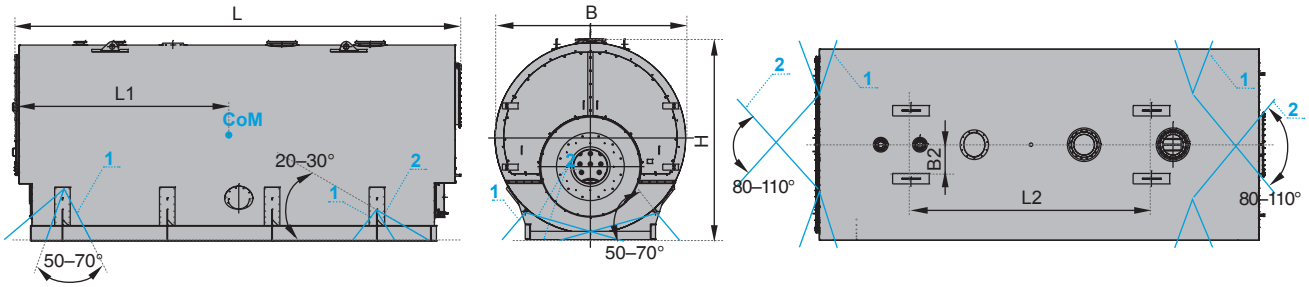
During transportation and storage it is necessary to take precautions in order to protect the boiler against mechanical damages.

Special slinging devices, namely, eye bolts, are provided for the process of loading, unloading, and placing the boiler (units, boiler elements) in its permanent location. Boiler slinging with the use of other elements is not allowed. Operation of hoisting devices shall prevent any sliding (dragging) of any part, unit and vehicles along the surfaces of storage areas.

Slinging and lifting from other parts of the boiler is not allowed!

The boiler shall be loaded on a vehicle using cranes with the corresponding lifting capacity, equipped with beams and lifting devices.

The boiler shall be secured to vehicles in accordance with the corresponding specifications for cargo handling and securing for each mode of transport.



Boiler transportation diagram

• – Center of mass
—— – Means of fastening

1 – Tilt protection
2 – Diagonal fastening

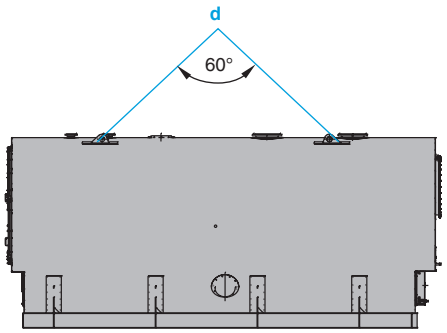


Diagram for boiler slinging

d – Eye bolts for slinging (4)

Description	Numerical value
Rated heat output, kW	**20000**
Length, L, mm	8629
Width, B, mm	3655
Height, H, mm	3847
Distance, B2, mm	650
Center of mass, L1, mm	4114
Distance, L2, mm	4510
Weight, m, kg	46000