

Datasheet

**VITOMAX 300-LT** Type M343B

Low pressure hot water boiler

Low NO_x version

Certified in accordance with Gas Appliances Directive 2009/142/EC

Permissible for flow temperatures up to 110 °C

Certified in accordance with Pressure Equipment Directive 97/23/EC

Permissible for flow temperatures up to 120 °C, with individual test certification only

Suitable for the combustion of gas and fuel oil EL

Three-pass boiler

Permissible operating pressure 6 bar

Specification for burner selection

Note

All diagrams in this document are schematic, illustrative examples.

Tolerances related to production factors are not taken into consideration for all dimensions and weights (+ 10 %).

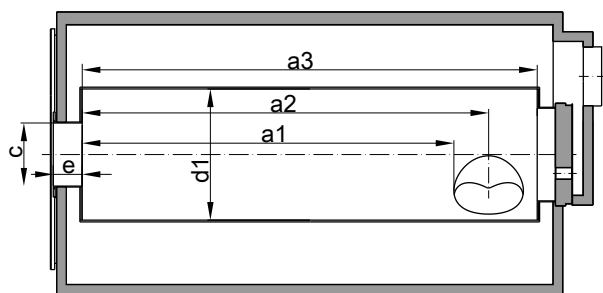
Test conditions

The information and values in the tables relate to the following test conditions:

- O₂ content in the flue gas
 - For natural gas: 3.0 %
 - For fuel oil EL: 3.0 %
- Flow/return temperature:
 - 80/60 °C
 - 60/40 °C

- 100 % load
- Installation altitude: < 500 m above sea level
- Combustion air temperature: 25 °C
- Operating pressure: 6 bar

Boiler size				0	1	2	3	4	5	6
Rated heating output 110 °C										
– For natural gas	MW			1.86	2.30	2.90	3.50	4.10	4.70	5.90
– For fuel oil EL	MW			1.86	2.30	2.90	3.50	4.10	4.70	5.90
Rated heating output 120 °C										
– For natural gas	MW			1.86	2.30	2.90	3.50	4.10	4.70	5.90
– For fuel oil EL	MW			1.86	2.30	2.90	3.50	4.10	4.70	5.90
Permiss. combustion heating output 110 °C^{*1*2}										
– For natural gas	MW			2.01	2.49	3.14	3.79	4.43	5.08	6.38
– For fuel oil EL	MW			2.01	2.49	3.14	3.79	4.43	5.08	6.38
Permiss. combustion heating output 120 °C^{*1*2}										
– For natural gas	MW			2.01	2.49	3.14	3.79	4.43	5.08	6.38
– For fuel oil EL	MW			2.01	2.49	3.14	3.79	4.43	5.08	6.38
Flame tube dimensions										
Diameter										
Smooth pipe, min. internal Ø	6 bar	d1	mm	866	926	994	1050	1110	1160	1238
Length										
– Flame tube length to reversing chamber		a1	mm	2466	2665	2867	3017	3134	3283	3608
– Flame tube length to centre of reversing chamber		a2	mm	2670	2891	3121	3296	3439	3613	3974
– Total flame tube length		a3	mm	2977	3227	3477	3677	3850	4050	4485
Burner connections										
– Max. flame head Ø		c	mm	410	410	520	520	520	520	590
– Min. flame head length		e	mm	265	265	265	265	265	265	270
Combustion chamber volume										
Relative to flame tube length a3			m ³	1.75	2.17	2.70	3.18	3.73	4.28	5.40
Max. pressure drop on the flue gas side at 110 °C										
– For natural gas			mbar	6.0	6.5	8.5	9.0	9.5	10.0	10.8
– For fuel oil EL			mbar	5.5	6.0	7.9	8.2	8.5	9.0	9.8
Max. pressure drop on the flue gas side at 120 °C										
– For natural gas			mbar	6.0	6.5	8.5	9.0	9.5	10.0	10.8
– For fuel oil EL			mbar	5.5	6.0	7.9	8.2	8.5	9.0	9.8



Flame tube dimensions

*1 In accordance with EN 12953, the internal diameter of the flame tube limits the maximum combustion heating output for oil operation.

*2 According to EN 12953, a flame tube temperature monitor is required for a combustion heating output > 14 MW when using fuel oil EL and > 18.2 MW when using natural gas.

Design/engineering information

Burner selection

Criteria for burner selection:

- The burner must be selected in accordance with the combustion heating output and the pressure drop on the flue gas side.
- The boiler and burner combination must be in line with country-specific regulations (statutes, standards, guidelines, ordinances, etc.).
- Burner head must be suitable for operating temperatures of at least 500 °C.
- The minimum flame head length must be guaranteed.

Recommendation

Certain types of burner, such as rotary atomisers, can hinder the opening of the cleaning doors. Check with the factory prior to delivery.

Burner type	Requirements
Pressure-jet oil burner	Test and identification in accordance with DIN EN 267
Pressure-jet gas burner	Test in accordance with DIN EN 676, CE designation in accordance with Directive 2009/142/EC



Burner specification
Manufacturer's datasheets

Burner connection

If the burner plate is to be prepared at the factory, specify burner make and boiler type when ordering.

Otherwise, make the flame tube aperture and fixing holes on site in the blank plate supplied. Then fit the burner to the boiler.

Burner adjustment

Adjust the oil or gas throughput of the burner to the stated combustion heating output of the boiler.

Fuels

Oil

- Fuel oil EL to DIN 51603 Part 1

Caution

Vitomax 300-LT, type M343B, is not approved for fuel oil S (heavy fuel oil).

Gas

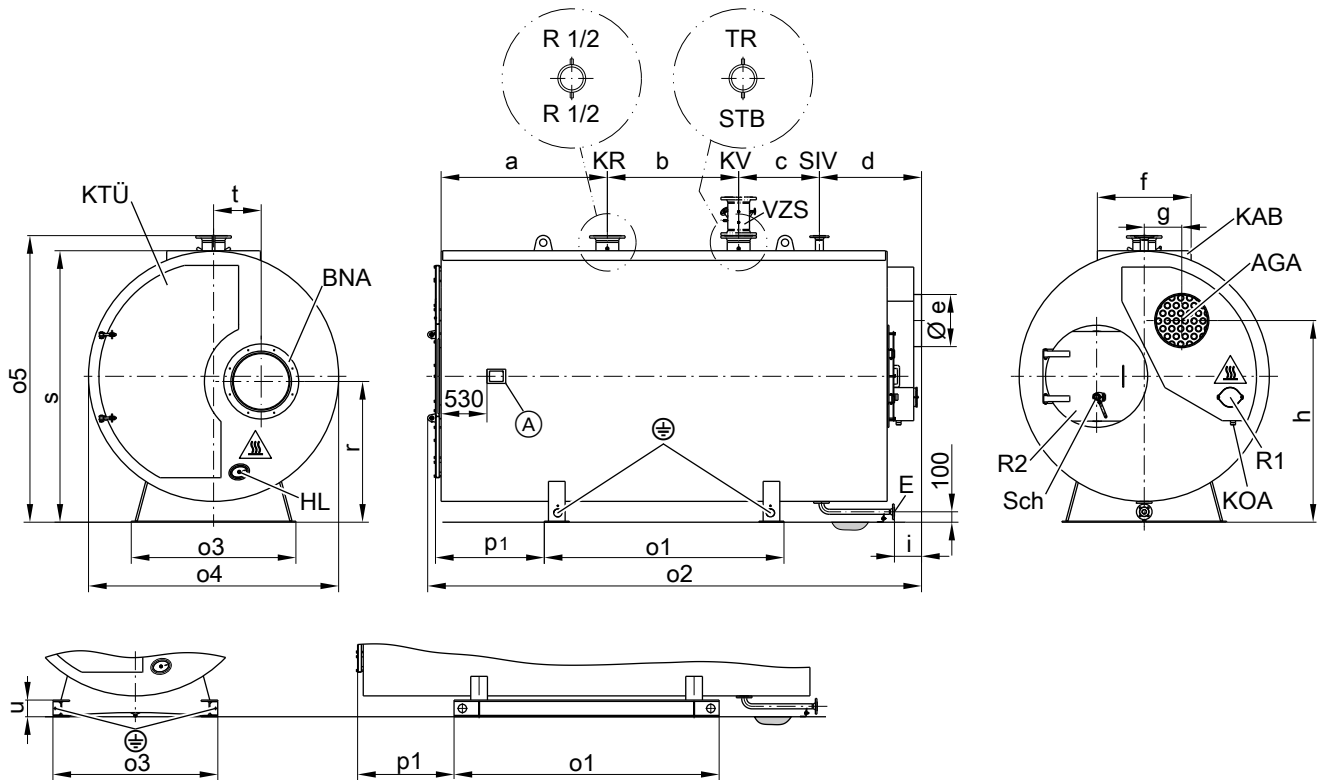
- Natural gas, town gas and LPG to DVGW Code of Practice G 260/I and II or local regulations

Bio diesel

- To DIN EN 51603-6, EN 14213, EN 14214 (or equivalent)

Alternative fuels on request

Boiler geometry



Alternative boiler base with longitudinal I-beams (option incurs additional charge)

- | | | | |
|-----|----------------------------------|-----|---|
| | Caution - hot surface | KV | Boiler flow |
| | Type plate | R1 | Cleaning aperture, flue gas collector |
| AGA | Flue outlet | R2 | Cleaning aperture, flame tube |
| BNA | Burner connection | SCH | Inspection port |
| E | Drain - DN40 PN40 | SIV | Safety valve connector |
| HL | Handhole - 100 x 150 mm | STB | High limit safety cut-out - female connection R 1/2 |
| KAB | Boiler cover | TR | Temperature controller - female connection R 1/2 |
| KOA | Condensate drain connector R 1/2 | VZS | Intermediate flow piece as accessory |
| KR | Boiler return | | Equipotential bonding |
| KTÜ | Boiler door | | |

Boiler size		0	1	2	3	4	5	6
a	mm	1300	1395	1470	1540	1595	1670	1830
b	mm	1000	1080	1160	1226	1260	1340	1475
c	mm	610	665	700	740	775	810	900
d	mm	777	807	857	881	980	990	1040
e (internal Ø) ^{*3}	mm	346	346	392	440	490	550	620
f	mm	900	900	900	900	1000	1000	1000
g	mm	150	235	290	330	360	370	395
h	mm	1765	1790	1790	1870	1935	2000	2130
i	mm	210	210	210	210	260	260	260
o1	mm	1825	1950	2075	2175	2300	2400	2620
o1 I-beam	mm	1985	2110	2235	2335	2540	2800	2860
o2	mm	3816	4066	4316	4516	4739	4939	5374
o3	mm	1320	1370	1420	1470	1580	1630	1730
o4	mm	2020	2110	2200	2300	2400	2500	2680
o5	mm	2370	2460	2550	2650	2750	2850	3030
p1	mm	845	908	970	1020	1044	1094	1202
p1 I-beam	mm	765	828	890	940	924	894	1082
q	mm	440	440	440	440	440	440	440
r	mm	1120	1185	1265	1330	1400	1450	1540
s	mm	2225	2315	2405	2505	2605	2705	2885
t	mm	380	397	415	438	457	475	512
u	mm	120	120	120	120	160	160	160

^{*3} External Ø = internal Ø + 8 mm (for sizes 0-2). External Ø = internal Ø + 10 mm (from size 3 upwards).

Boiler geometry (cont.)

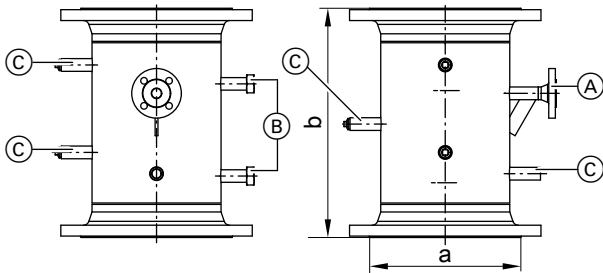
Transport information

Boiler size		0	1	2	3	4	5	6	
Shipping dimensions incl. packaging									
– Total length	m	4.02	4.27	4.52	4.72	4.94	5.14	5.57	
– Total width	m	2.07	2.16	2.25	2.35	2.45	2.55	2.73	
– Total height	m	2.40	2.49	2.58	2.68	2.78	2.88	3.06	
Dry weight Boiler incl. thermal insulation									
For perm. operating pressure	6 bar	t	5.30	6.30	7.30	8.20	9.60	10.60	13.30

Boiler connections

Boiler size		0	1	2	3	4	5	6	
Boiler flow and return									
For perm. operating pressure	6 bar	PN16 DN	150	150	200	200	250	250	
Safety valve connector									
For perm. operating pressure	6 bar	PN16 DN	50	50	65 ^{*4}	65 ^{*4}	65 ^{*4}	80	80
Flue gas connection - flue outlet (DIN 24154-T2)		DN	354	354	400	450	500	560	630

Intermediate flow piece (option)

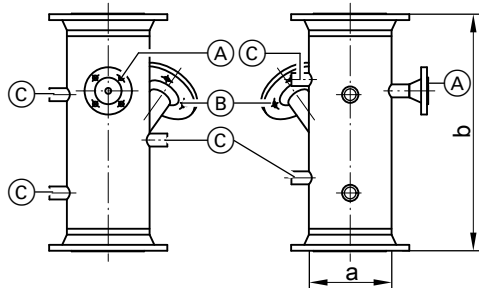


Intermediate flow piece (VZS) for boilers with permissible flow temperature 110 °C

- (A) Connector for fitting assembly DN20 PN40
- (B) Connector for water level limiter with float (VZS standard delivery)
- (C) Female connections for thermometer, sampling valve and other control equipment 4 x R ½

a	DN	80	100	125	150	200	250	300	350	400
b	mm	470	470	470	470	475	485	490	515	515

Intermediate flow piece (option)



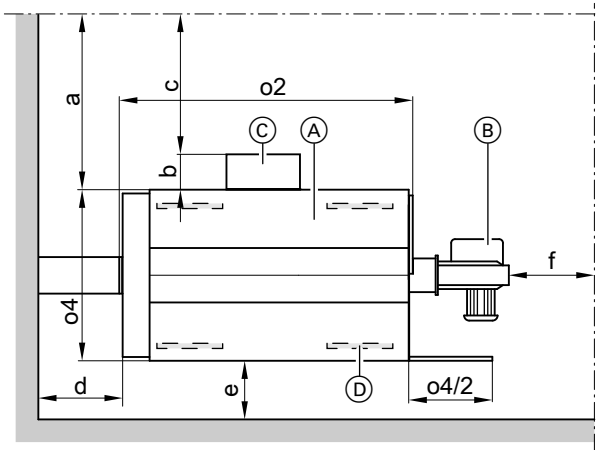
Intermediate flow piece (VZS) for boilers with permissible flow temperature 120 °C

- (A) Connector for fitting assembly DN20 PN40
- (B) Connector for water level limiter with electrodes DN20 PN40
- (C) Female connections for thermometer, sampling valve and other control equipment 5 x R ½

a	DN	125	150	200	250	300	350	400
b	mm	500	500	500	550	550	600	600

Boiler geometry (cont.)

Recommended minimum clearances



- (A) Boiler
- (B) Burner

- (C) Regulating and control system
 - (D) Optional: Anti-vibration boiler supports
 - a Control system not fitted
 - b Control system depth
 - c Control system fitted
 - d,e,f Miscellaneous clearances
 - o2, o4 See dimension tables: Max. length, max. width
- | | | |
|-------|----|-----------------|
| a/b/c | mm | ≥1000/≥500/≥800 |
| d/e/f | mm | ≥500/≥300/≥500 |

Recommendation for dimension f

Leave one boiler length (o2) of space in front of the boiler door to extract the turbulators (if fitted) and for cleaning.

Observe the specified clearances to ensure easy installation and maintenance.

Observe the clearances with regard to the regulations applicable at the installation site. Allow for equipment and accessories.

Siting conditions

- Prevent air contamination from halogenated hydrocarbons. Halogenated hydrocarbons can be found in sprays, paints, solvents and cleaning agents.
- Provide an adequate supply of uncontaminated combustion air if there is a risk of air contamination from halogenated hydrocarbons where the boiler is sited.

- Avoid very dusty conditions.
- Avoid high levels of humidity.
- Prevent frost and ensure good ventilation.
- Site on a level surface.

Failure to observe these instructions can cause system faults and damage.

Reducing noise

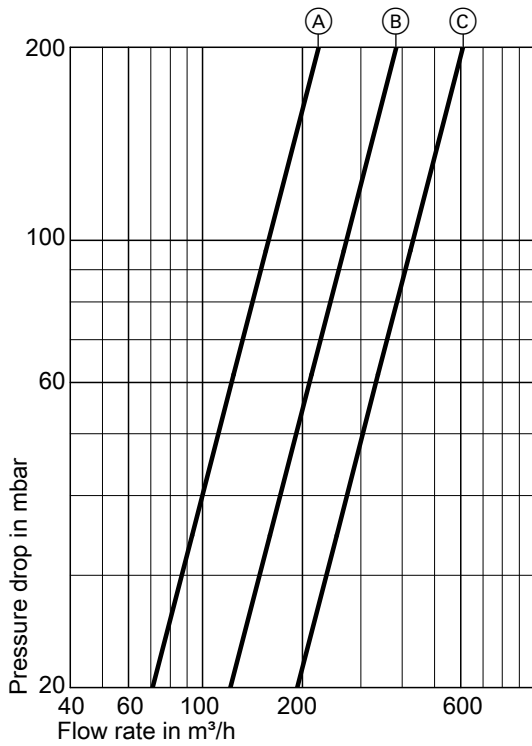
Place anti-vibration supports (not included in standard delivery) under the boiler shell. Position supports centrally under the base rails, distributed evenly along the length.

Boiler performance data

Boiler size		0	1	2	3	4	5	6
Boiler water capacity	m ³	5.0	5.5	6.4	8.2	9.3	10.5	13.0

Boiler performance data (cont.)

Pressure drop on the heating water side



Connectors for boiler flow and return

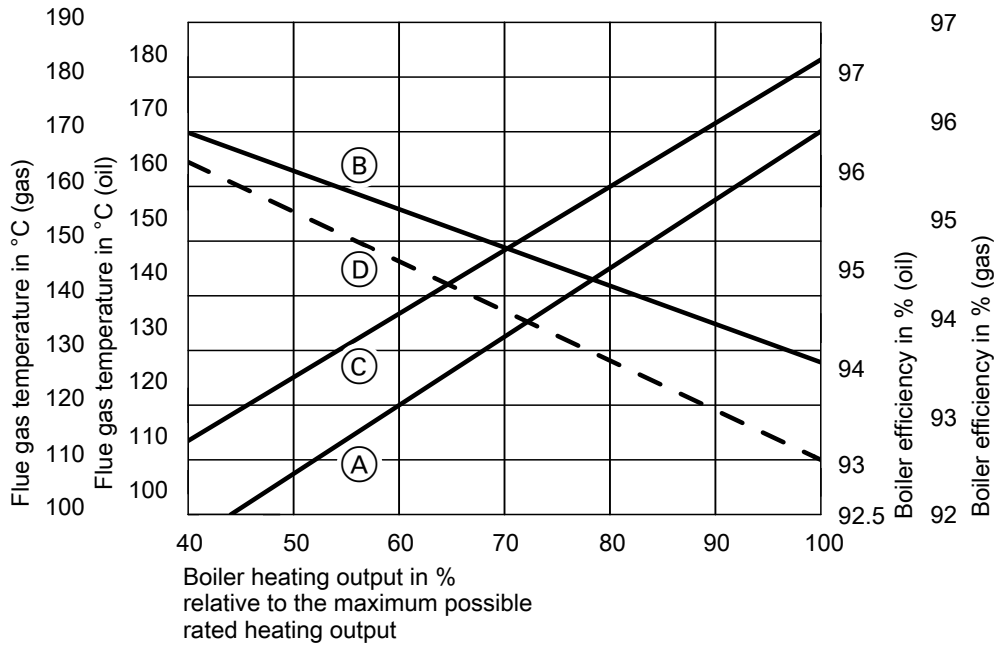
- Ⓐ DN150
- Ⓑ DN200
- Ⓒ DN250

Boiler size		0	1	2	3	4	5	6
Flue gas mass flow rate*5	t/h	1.5225 x combustion heating output in MW						
	t/h	1.5 x combustion heating output in MW						
Heating surface, flue gas side	m ²	53	63	75	87	99	110	132
Flue gas volume	m ³	3.1	3.7	4.6	5.4	6.5	7.5	9.5

*5 Calculation of values for sizing the flue system to EN 13384 with the following CO₂ contents: 13 % for fuel oil EL, 10 % for natural gas. The significant factor for sizing the flue system is the flue gas temperature at 80 °C boiler water temperature. It is used to determine the application range of flue pipes with maximum permissible operating temperatures.

Boiler performance data (cont.)

Flue gas temperature and boiler efficiency



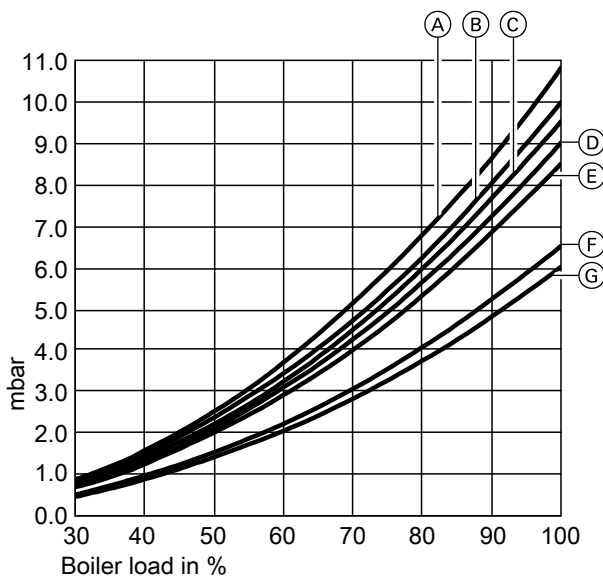
At 60/40 °C boiler water temperature

- (A) Flue gas temperature in °C
- (B) Boiler efficiency in %

At 80/60 °C boiler water temperature

- (C) Flue gas temperature in °C
- (D) Boiler efficiency in %

Pressure drop on the flue gas side, natural gas



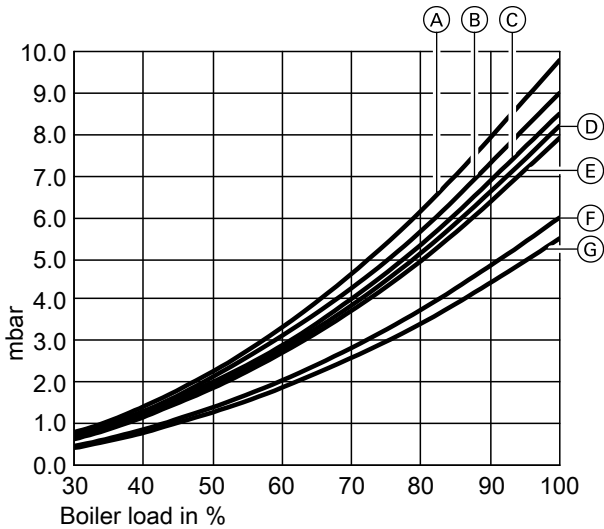
- (C) M343B04
- (D) M343B03
- (E) M343B02
- (F) M343B01
- (G) M343B00

Pressure drop on the flue gas side 30 % to 100 % boiler load

- (A) M343B06
- (B) M343B05

Boiler performance data (cont.)

Pressure drop on the flue gas side, fuel oil EL



- Ⓒ M343B04
- Ⓓ M343B03
- Ⓔ M343B02
- Ⓕ M343B01
- Ⓖ M343B00

Pressure drop on the flue gas side 30 % to 100 % boiler load

- Ⓐ M343B06
- Ⓑ M343B05

Operating conditions

	Operation with burner load	Requirements	
		≥ 60 %	< 60 %
1.	Heating water flow rate	No minimum heating water flow rate required	
2.	Boiler return temperature (minimum value)		
	– Oil operation	38 °C	53 °C
	– Gas operation	45 °C	53 °C
3.	Lower boiler water temperature		
	– Oil operation	50 °C	60 °C
	– Gas operation	60 °C	65 °C
4.	Max. spread		
	– Oil operation	40 K	
	– Gas operation	40 K	
5.	Stepped burner operation	Stage 1, 60 % of rated heating output	No minimum load required
6.	Modulating burner operation	Between 60 % and 100 % of rated heating output	
7.	Reduced mode		
	Single boiler system	Operation with lower boiler water temperature	
	Multi boiler system		
	– Lead boiler	Operation with lower boiler water temperature	
	– Lag boiler	Lag boilers can be shut down	
	Weekend setback	See reduced mode	



For water quality requirements

"Requirements and standard values for water quality"

Permissible flow temperatures

Hot water boiler for permissible flow temperatures (= safety temperatures)


- **Up to 110 °C**
 - Designation: In accordance with Gas Appliances Directive 2009/142/EC
- **Up to 120 °C**
 - Designation: In accordance with Pressure Equipment Directive 97/23/EC



For further information on design/engineering
see the technical guide to this boiler

Operating conditions (cont.)

Tested quality

 CE designation according to current EC directives.

Boiler scope of delivery

Boiler

- Boiler shell with burner connection flange and burner plate supplied
- Fitted boiler doors
- Bolted down cleaning cover

Boiler accessories (option)

- Safety equipment
- Burner
- Valves/fittings
- Heat exchanger
- Return temperature raising facilities

- Fitted load bearing boiler cover
- Fitted thermal insulation and thermally insulated flue gas collector
- Turbulators (if installed)
- Turbulator extractor (if turbulators are installed)
- Packaging

- Boiler control platform
- Regulating and control systems
- Flue gas components
- Pressure-maintaining facility
- For further accessories, see pricelist



Subject to technical modifications.

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