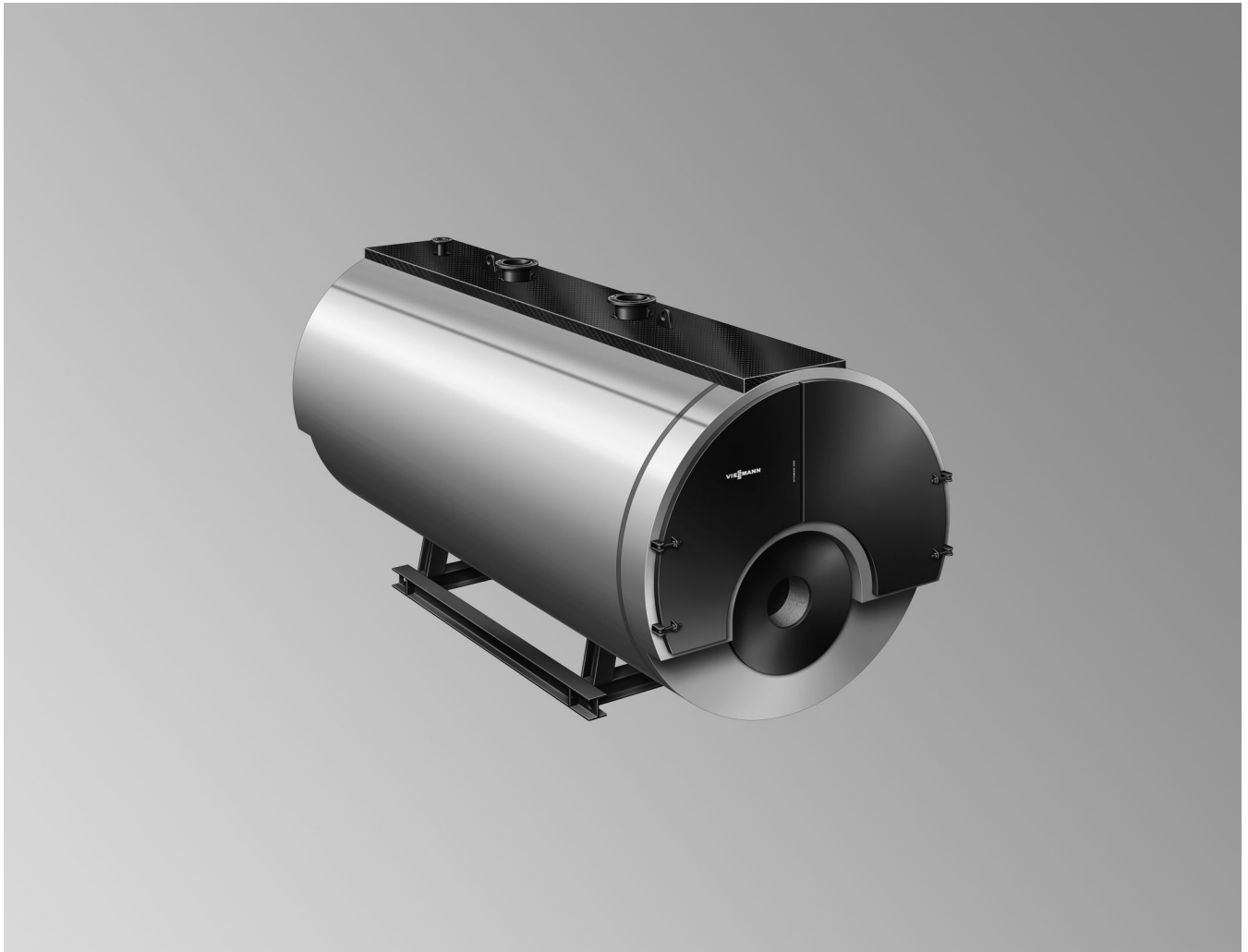


## Datasheet

**VITOMAX 300-LW** Type M82A

Low pressure hot water boiler

Low NO<sub>x</sub> 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

For the combustion of gas, fuel oil EL

and fuel oil S

Three-pass boiler

Permissible operating pressure 6, 10 and 16 bar

## Specification for burner selection

### Note

All diagrams in this document are schematic, illustrative examples.

All dimensions are nominal.

### Test conditions

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

- O<sub>2</sub> content in the flue gas
  - For natural gas: 3.0 %
  - For fuel oil EL: 3.0 %
- Flow/return temperature: 80/60 °C

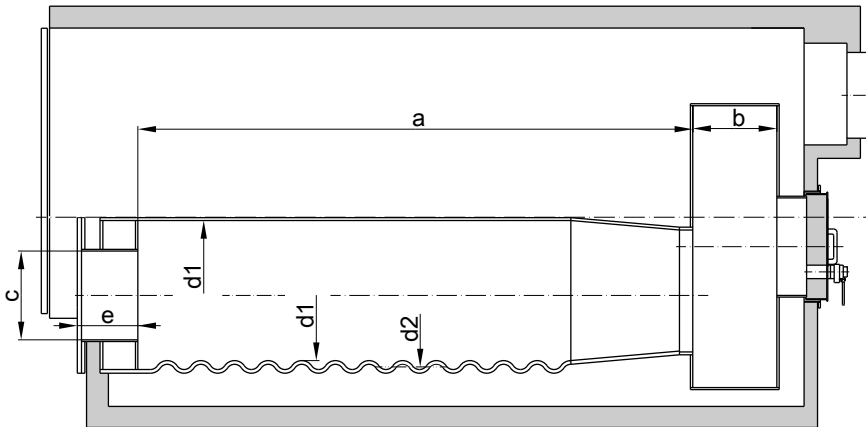
- 100 % load
- Installation altitude: < 500 m above sea level
- Combustion air temperature: 25 °C
- Operating pressure: 6 bar

Boiler size			1	2	3	4	5	6	7
<b>Rated heating output 110 °C</b>									
– For natural gas	MW		2.10	2.50	3.00	3.50	4.20	5.00	6.00
– For fuel oil EL	MW		2.10	2.50	3.00	3.50	4.20	5.00	6.00
<b>Rated heating output 120 °C</b>									
– For natural gas	MW		2.10	2.50	3.00	3.50	4.20	5.00	6.00
– For fuel oil EL	MW		2.10	2.50	3.00	3.50	4.20	5.00	6.00
<b>Permiss. combustion heating output 110 °C<sup>*1*2</sup></b>									
– For natural gas	MW		2.28	2.72	3.26	3.80	4.57	5.44	6.52
– For fuel oil EL	MW		2.28	2.72	3.26	3.80	4.57	5.44	6.52
<b>Permiss. combustion heating output 120 °C<sup>*1*2</sup></b>									
– For natural gas	MW		2.28	2.72	3.26	3.80	4.57	5.44	6.52
– For fuel oil EL	MW		2.28	2.72	3.26	3.80	4.57	5.44	6.52
<b>Flame tube dimensions</b>									
Diameter									
– Smooth pipe, min. internal ∅	d1	mm	856	906	981	1031	1081	1131	1206
– Corrugated pipe, min. inter- nal ∅	16 bar	d1	mm	—	—	—	1025	1075	1125
– Corrugated pipe, average ∅	16 bar	d2	mm	—	—	—	1075	1125	1175
– Flame tube length	a	mm	2510	2740	3000	3240	3540	3860	4220
Reversing chamber depth	b		500						
<b>Burner connections</b>									
– Max. flame head ∅	c	mm	520	520	590	590	590	710	710
– Min. flame head length	e	mm	360						
<b>Combustion chamber volume (average value)</b>									
– Flame tube	m <sup>3</sup>		1.44	1.77	2.27	2.70	3.25	3.88	4.82
– Relative to flame tube length a and reversing chamber depth b	m <sup>3</sup>		1.73	2.09	2.65	3.12	3.71	4.38	5.39
<b>Max. pressure drop on the flue gas side at 110 °C</b>									
– For natural gas	mbar		7.0	8.1	9.3	9.9	11.2	12.4	14.6
– For fuel oil EL	mbar		6.3	7.4	8.4	9.0	10.1	11.2	13.2
<b>Max. pressure drop on the flue gas side at 120 °C</b>									
– For natural gas	mbar		7.0	8.1	9.3	9.9	11.2	12.4	14.6
– For fuel oil EL	mbar		6.3	7.4	8.4	9.0	10.1	11.2	13.2

\*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.

## Specification for burner selection (cont.)



Flame tube dimensions

## Engineering information for burner selection

### 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 ensured.

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



**Burner specification**  
Manufacturer's datasheets

### Burner connection

If the burner plate is to be prepared at the factory, specify burner make 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 gas or oil throughput of the burner to the stated combustion heating output of the boiler.

### Fuels

#### Gas

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

#### Oil

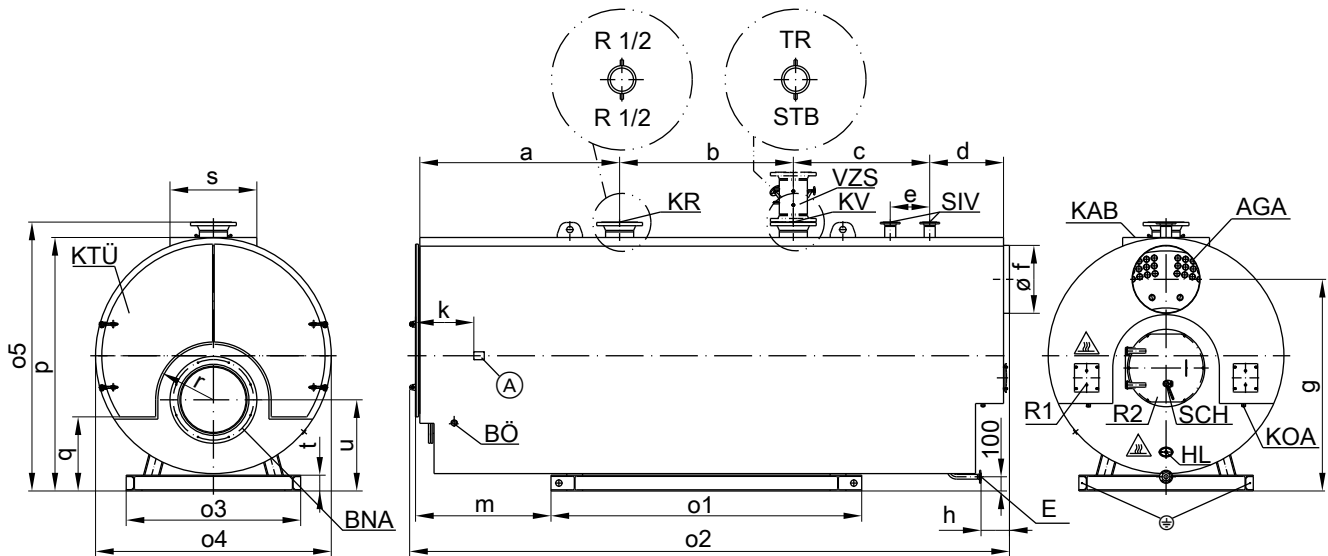
- Fuel oil EL to DIN 51603 Part 1
  - Fuel oil S to DIN 51603 Part 3
- If using fuel oil S, different output data for the rated heating output, flue gas temperature and efficiency may result.  
Never use heat exchangers if using fuel oil S.

#### Biodiesel

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

Alternative fuels on request

## Boiler geometry



Caution - hot surface

- Ⓐ Type plate
- AGA Flue outlet
- BNA Burner connection
- BÖ Inspection port
- E Drain - DN40 PN40
- HL Handhole - 100 x 150 mm
- KAB Boiler cover
- KOA Condensate drain connector R 1½
- KR Boiler return
- KTÜ Boiler door
- KV Boiler flow
- R1 Cleaning aperture, flue gas collector
- R2 Cleaning aperture, flame tube
- SCH Inspection port
- SIV Safety valve connector
- STB High limit safety cut-out - female connection R ½
- TR Temperature controller - female connection R ½
- VZS Intermediate flow piece as accessory
- ⊕ Equipotential bonding

Boiler size		1	2	3	4	5	6	7
a	mm	1295	1395	1485	1585	1680	1820	1940
b	mm	1100	1250	1350	1420	1400	1600	1700
c	mm	912	892	912	1002	1227	1237	1377
d	mm	533	533	583	583	633	633	633
e*3	mm	300	300	350	350	400	400	—
f (internal Ø)*4	mm	346	392	392	440	490	550	620
g	mm	1890	1960	2050	2130	2175	2235	2325
h	mm	208	208	208	208	258	258	258
k	mm	648	648	648	668	668	698	698
m	mm	850	915	980	1070	1075	1185	1285
o1	mm	2070	2165	2295	2400	2685	2845	3010
o2	mm	3970	4200	4460	4720	5070	5420	5780
o3	mm	1320	1360	1410	1480	1590	1630	1670
o4	mm	2025	2100	2200	2325	2410	2485	2575
o5	mm	2375	2450	2550	2675	2760	2835	2925
p	mm	2225	2300	2400	2525	2610	2685	2775
q	mm	865	873	908	965	967	975	1000
r	mm	425	450	488	538	544	588	625
s	mm	900	900	900	1000	1000	1000	1000
t	mm	120	120	120	120	160	160	160
u	mm	870	895	938	988	1012	1038	1075

## Transport information

Boiler size		1	2	3	4	5	6	7
<b>Shipping dimensions incl. packaging</b>								
– Total length	m	4.17	4.40	4.66	4.92	5.27	5.62	5.98
– Total width	m	2.08	2.15	2.25	2.38	2.46	2.54	2.63
– Total height	m	2.40	2.48	2.58	2.70	2.79	2.86	2.95

\*3 2nd SIV optional on request

\*4 External Ø = internal Ø + 8 mm (for sizes 1-3), external Ø = internal Ø + 10 mm (from size 4 upwards)

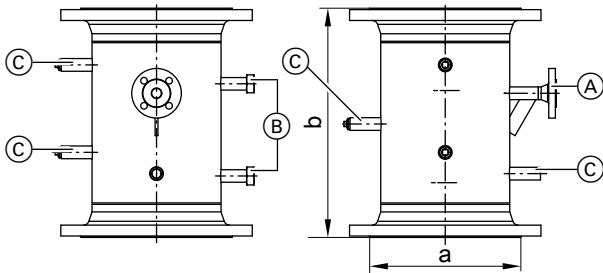
## Boiler geometry (cont.)

Boiler size			1	2	3	4	5	6	7
<b>Dry weight boiler incl. thermal insulation</b>									
For perm. operating pressure	6 bar	t	5.3	6.0	6.9	7.9	9.2	10.4	11.9
	10 bar	t	6.1	6.9	8.1	9.3	10.8	12.3	14.1
	16 bar	t	7.4	8.7	9.8	10.9	12.6	14.6	17.0

## Boiler connections

Boiler size			1	2	3	4	5	6	7	
<b>Boiler flow and return</b>										
For perm. operating pressure	6 bar	PN16 DN	150	150	200	200	200	250	250	
	10 bar	PN16 DN	150	150	200	200	200	250	250	
	16 bar	PN25 DN	—	—	200	200	200	250	250	
	16 bar	PN40 DN	150	150	—	—	—	—	—	
<b>Safety valve connector</b>										
For perm. operating pressure	6 bar	PN16 DN	50	50	65*5	65*5	65*5	80	80	
	10 bar	PN16 DN	—	—	50	50	65*5	65*5	65*5	
	10 bar	PN40 DN	40	40	—	—	—	—	—	
	16 bar	PN40 DN	32	40	40	40	50	50	65	
Flue gas connection - flue outlet (DIN 24154-T2)			DN	354	400	400	450	500	560	630

## Intermediate flow piece (option)



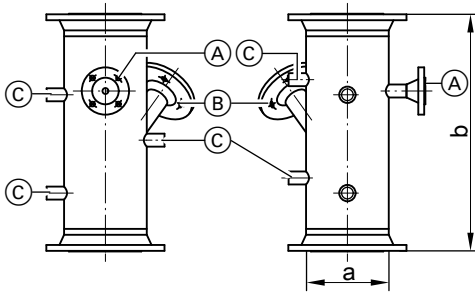
Intermediate flow piece (VZS) for boilers with permissible flow temperature 110 °C

- (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

## Boiler geometry (cont.)

### Intermediate flow piece (option)

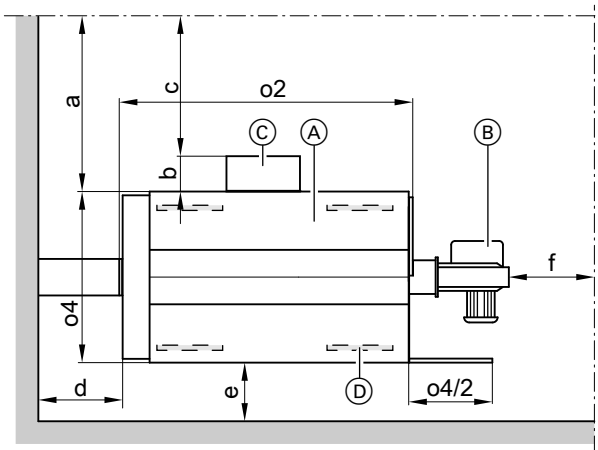


Intermediate flow piece (VZS) for boilers with permissible flow temperature 120 °C

- (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 1/2

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

### Recommended minimum clearances



- (A) Boiler
- (B) Burner

- (C) Regulating and control system
- (D) 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. Supporting surfaces must be level. The boiler must be levelled horizontally.

### 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 high levels of dust.
- 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

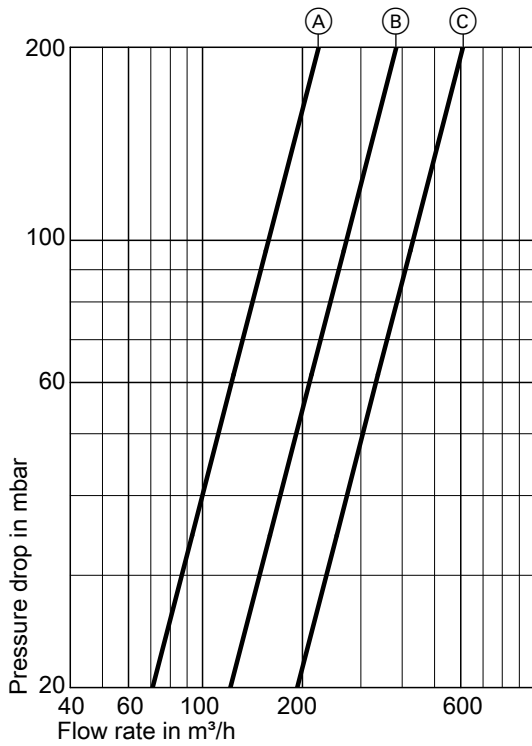
Place anti-vibration supports (option) underneath the boiler body. Position supports centrally under the base rails, distributed evenly along the length.

### Boiler performance data

Boiler size		1	2	3	4	5	6	7
Boiler water content	m <sup>3</sup>	5.1	5.8	6.8	8.1	9.3	10.5	12.0

## Boiler performance data (cont.)

### Pressure drop on the heating water side



Connectors for boiler flow and return

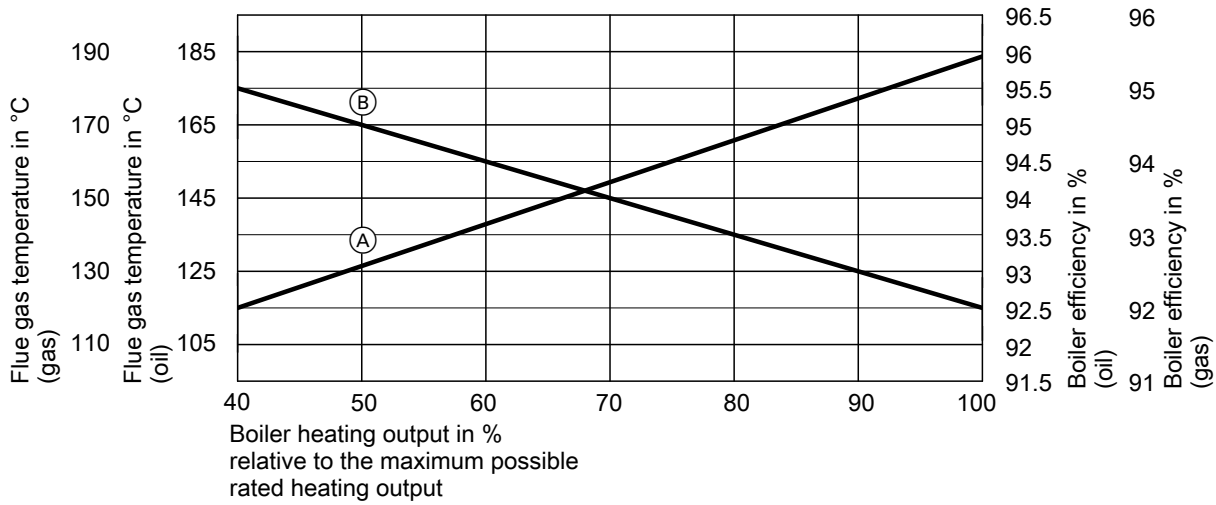
- Ⓐ DN150
- Ⓑ DN200
- Ⓒ DN250

Boiler size		1	2	3	4	5	6	7
<b>Flue gas mass flow rate</b> *6								
– For natural gas	t/h							
– For fuel oil EL	t/h							
Heating surface, flue gas side	m <sup>2</sup>	58	68	80	91	110	130	152
Flue gas volume	m <sup>3</sup>	3.3	3.8	4.6	5.7	6.7	7.9	9.4

\*6 Calculation of values for sizing the flue system to EN 13384 with the following CO<sub>2</sub> 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.)

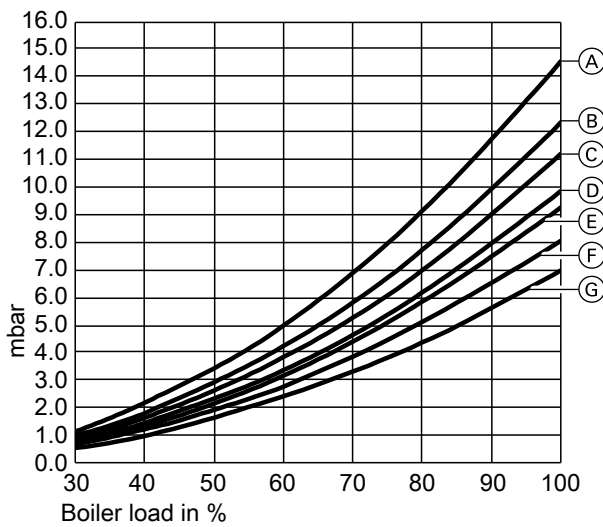
### Flue gas temperature and boiler efficiency



Lower limits averaged across all boiler sizes

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

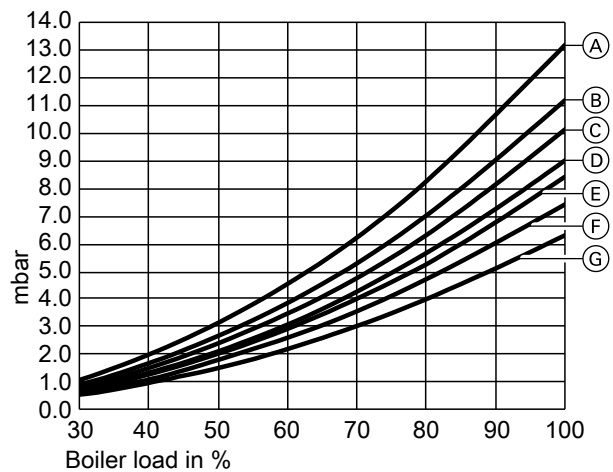
### Pressure drop on the flue gas side, natural gas



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

- (A) M82A007
- (B) M82A006
- (C) M82A005
- (D) M82A004
- (E) M82A003
- (F) M82A002
- (G) M82A001

### Pressure drop on the flue gas side, fuel oil EL



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

- (A) M82A007
- (B) M82A006
- (C) M82A005
- (D) M82A004
- (E) M82A003
- (F) M82A002
- (G) M82A001



## Operating conditions

		Requirements/notes
1.	Heating water flow rate	No minimum heating water flow rate required
2.	<b>Boiler return temperature</b> (minimum value)	
	– Oil operation	50 °C
	– Gas operation	55 °C
3.	Lower boiler water temperature	70 °C
4.	<b>Maximum spread</b>	
	– Oil operation	50 K
	– Gas operation	50 K
5.	Stepped burner operation	None
6.	Modulating burner operation	None
7.	<b>Reduced mode</b>	
	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

## Tested quality

 CE designation according to the Pressure Equipment Directive.

## 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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