

Datasheet

**VITOMAX 200-LW** Type M64A

Low pressure hot water boiler

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 (conversion required)

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.

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

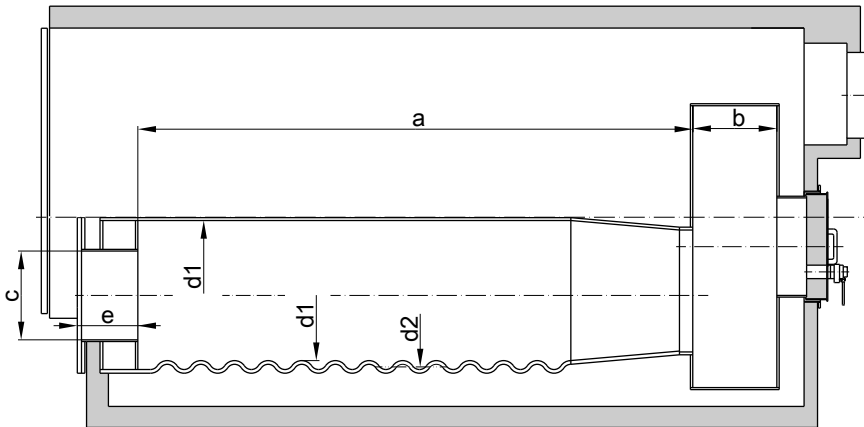
- 100 % load
- Installation altitude: < 500 m above sea level
- Combustion air temperature: 25 °C
- Operating pressure: 6 bar

Boiler size				1	2	3	4	5	6		
Rated heating output 110 °C											
– For natural gas				MW	8.00	10.00	12.00	14.20	16.50	20.00	
– For fuel oil EL				MW	7.75	8.55	10.12	11.78	13.43	15.09	
Rated heating output 120 °C											
– For natural gas				MW	8.00	10.00	12.00	14.20	16.50	16.74	
– For fuel oil EL				MW	7.75	8.55	10.12	11.78	12.88	12.88	
Permiss. combustion heating output 110 °C^{*1*2}											
– For natural gas				MW	8.70	10.87	13.04	15.43	17.93	21.74	
– For fuel oil EL				MW	8.42	9.30	11.00	12.80	14.60	16.40	
Permiss. combustion heating output 120 °C^{*1*2}											
– For natural gas				MW	8.70	10.87	13.04	15.43	17.93	18.20	
– For fuel oil EL				MW	8.42	9.30	11.00	12.80	14.00	14.00	
Flame tube dimensions											
Diameter											
– Smooth pipe, min. internal Ø											
	6 bar	d1	mm	1145	1218	1316	1462	1608	–		
	10 bar	d1	mm	1135	1208	–	–	–	–		
	16 bar	d1	mm	–	–	–	–	–	–		
– Corrugated pipe, min. internal Ø											
	6 bar	d1	mm	–	–	–	–	–	1750		
	10 bar	d1	mm	–	–	1300	1450	1600	1750		
	16 bar	d1	mm	1125	1200	1275	1425	1565	1715		
– Corrugated pipe, average Ø											
	6 bar	d2	mm	–	–	–	–	–	1800		
	10 bar	d2	mm	–	–	1350	1500	1650	1800		
	16 bar	d2	mm	1175	1250	1350	1500	1650	1800		
– Flame tube length				a	mm	4830	5330	5820	6250	7400	
Reversing chamber depth				b	mm	500					
Burner connections											
– Max. flame head Ø				c	mm	718	718	818	918	1018	1118
– Min. flame head length				e	mm	360					
Combustion chamber volume (average value)											
– Flame tube				m ³	5.2	6.5	8.3	11.0	14.6	18.8	
– Relative to flame tube length a and reversing chamber depth b				m ³	5.8	7.2	9.0	11.9	15.7	20.1	
Max. pressure drop on the flue gas side at 110 °C											
– For natural gas				mbar	11.3	11.8	15.7	14.2	15.4	18.8	
– For fuel oil EL				mbar	10.2	9.0	9.9	8.5	8.8	9.2	
Max. pressure drop on the flue gas side at 120 °C											
– For natural gas				mbar	11.3	11.8	15.7	14.2	15.4	13.0	
– For fuel oil EL				mbar	10.2	9.0	9.9	8.5	8.0	6.5	

*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 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
- Fuel oil S to DIN 51603 Part 3 (requires conversion)
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.

Bio diesel

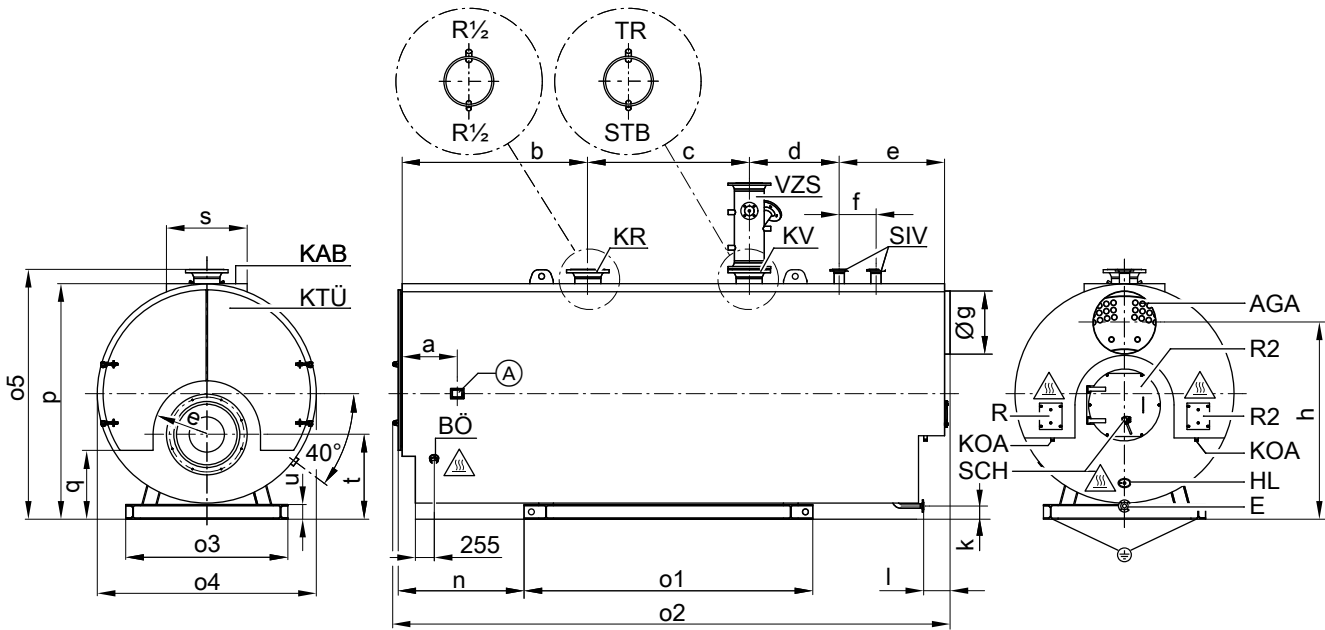
- To DIN EN 51603-6, EN 14213, EN 14214 (or equivalent)

Alternative fuels on request

Gas

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

Boiler geometry



Caution - hot surface

- Ⓐ Type plate
- AGA Flue outlet
- BÖ Inspection port
- E Drain - PN40 DN50
- HL Handhole - 100 x 150 mm
- KAB Boiler cover
- KOA Condensate drain connector R 1/2
- KR Boiler return
- KTÜ Boiler door
- KV Boiler flow
- R 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 1/2
- TR Temperature controller - female connection R 1/2
- VZS Intermediate flow piece as accessory
- ⊕ Equipotential bonding

Boiler size		1	2	3	4	5	6
a	mm	710	750	750	790	830	890
b	mm	2145	2350	2530	2690	2855	2990
c	mm	1900	2050	2200	2400	2650	3150
d	mm	982	1167	1227	1337	1462	1537
e	mm	1285	1285	1435	1485	1485	1535
f	mm	-	-	-	-	-	500
g (internal Ø) ^{*3}	mm	700	800	850	950	1000	1100
h	mm	2400	2550	2690	2890	3150	3290
k	mm	180	180	180	220	260	260
l	mm	310	310	360	410	410	460
n	mm	1430	1595	1715	1805	1910	2130
o1	mm	3435	3685	3935	4265	4635	4965
o2	mm	6516	7056	7596	8116	8656	9416
o3	mm	2050	2140	2210	2450	2720	2820
o4	mm	2670	2840	2985	3200	3475	3650
o5	mm	3090	3260	3405	3660	3975	4150
p	mm	2895	3065	3210	3465	3780	3955
q	mm	915	910	935	1015	1145	1200
r	mm	625	660	725	800	875	950
s	mm	1000	1100	1100	1100	1200	1200
t	mm	1052	1090	1154	1271	1442	1518
u - width of I-beam profile	mm	200	200	200	240	280	280

^{*3} External Ø = internal Ø + 10 mm

Boiler geometry (cont.)

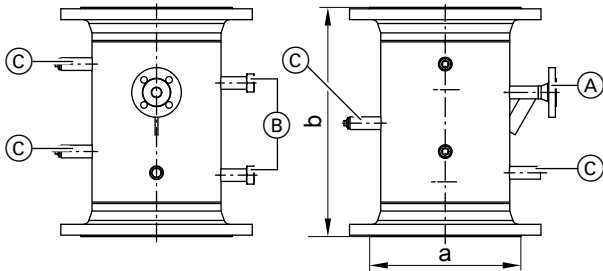
Transport information

Boiler size			1	2	3	4	5	6
Shipping dimensions incl. packaging								
	– Total length	m	6.60	7.10	7.65	8.15	8.70	9.50
	– Total width	m	2.70	2.90	3.00	3.25	3.50	3.70
	– Total height	m	3.10	3.30	3.45	3.70	4.00	4.20
Dry weight Boiler incl. thermal insulation								
	For perm. operating pressure							
	6 bar	t	15.1	19.2	22.8	27.8	35.8	40.1
	10 bar	t	17.7	22.7	24.8	31.4	39.8	48.0
	16 bar	t	20.5	26.0	30.2	38.4	46.4	56.3

Boiler connections

Boiler size			1	2	3	4	5	6
Boiler flow and return								
	For perm. operating pressure							
	6 bar	PN16 DN	250	300	350	350	400	400
	10 bar	PN16 DN	250	300	350	350	400	400
	16 bar	PN25 DN	250	300	350	350	400	400
Safety valve connector								
	For perm. operating pressure							
	6 bar	PN16 DN	100	100	125	150	150	2 x 100
	10 bar	PN16 DN	80	80	100	100	125	125
	16 bar	PN40 DN	65	65	80	80	100	100
Flue gas connection - flue outlet (DIN 24154-T2)		DN	710	810	860	960	1010	1110

Intermediate flow piece (option)



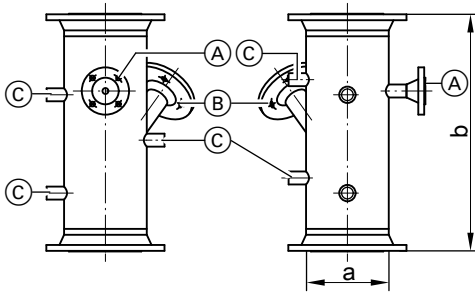
Intermediate flow piece (VZS) for boilers with permissible flow temperature 110 °C

- (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)

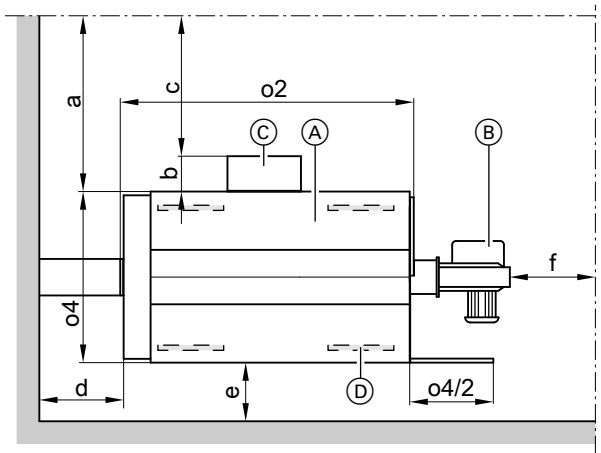


Intermediate flow piece (VZS) for boilers with permissible flow temperature 120 °C

- (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) 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.

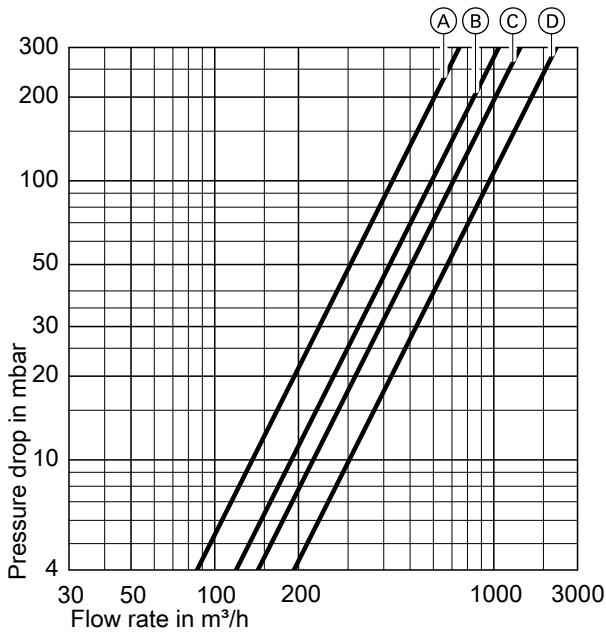
Boiler performance data

Boiler size		1	2	3	4	5	6
Boiler water content	m ³	15.3	18.7	22.2	26.6	33.8	39.8

Boiler performance data (cont.)

Pressure drop on the heating water side

- Ⓒ DN350
- Ⓓ DN400

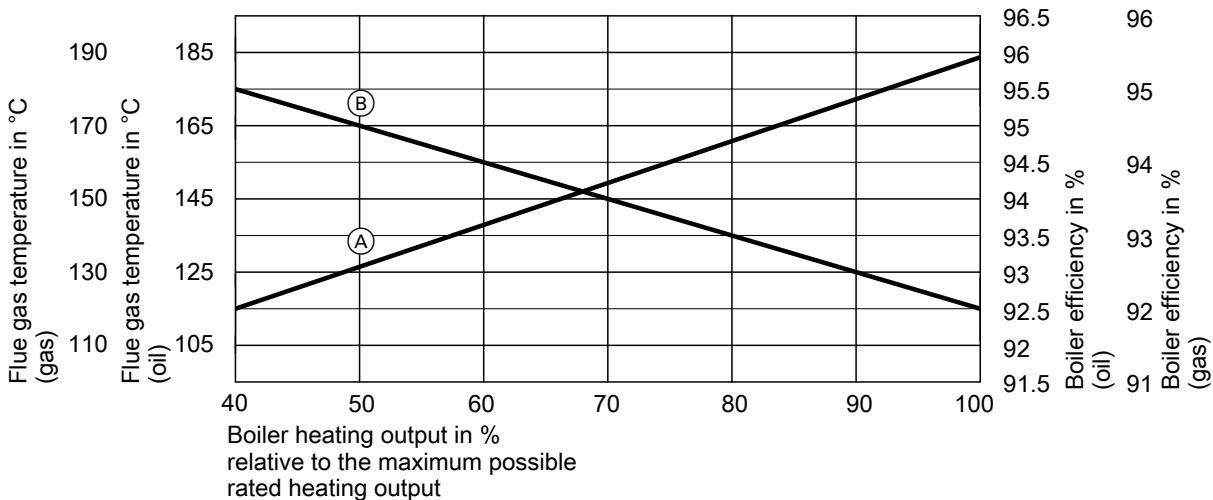


Connectors for boiler flow and return

- Ⓐ DN250
- Ⓑ DN300

Boiler size		1	2	3	4	5	6
Flue gas mass flow rate*4	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	m²	225	279	326	390	461	553
Flue gas volume	m³	11.0	13.9	17.1	22.2	28.5	35.4

Flue gas temperature and boiler efficiency



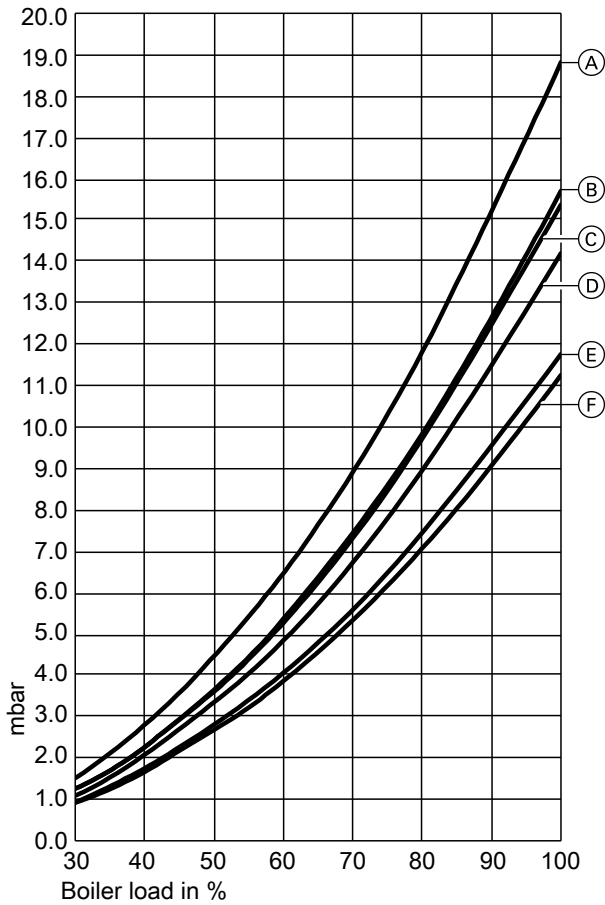
Lower limits averaged across all boiler sizes

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

*4 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.)

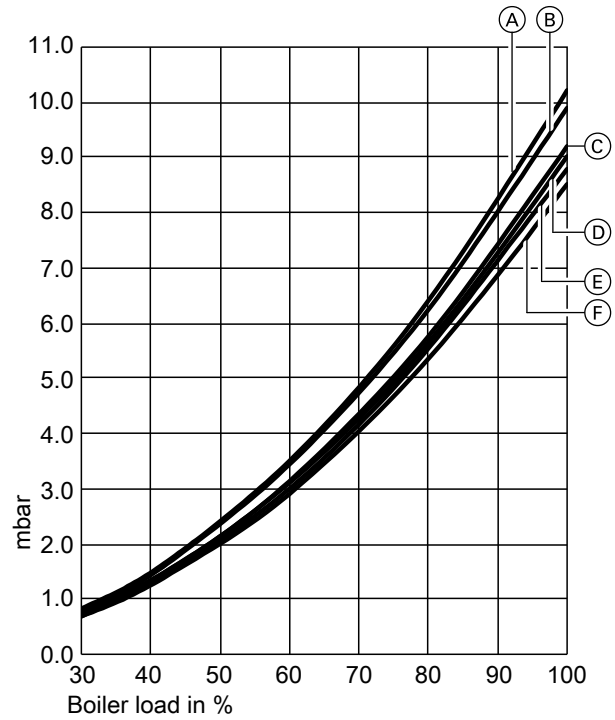
Pressure drop on the flue gas side for natural gas at 110 °C



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

- (A) M64A006
- (B) M64A003
- (C) M64A005
- (D) M64A004
- (E) M64A002
- (F) M64A001

Pressure drop on the flue gas side for fuel oil EL at 110 °C

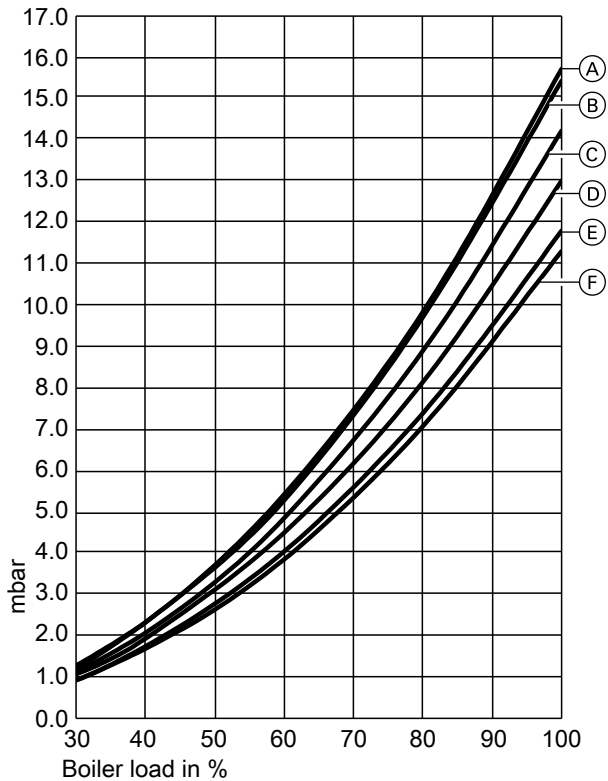


Pressure drop on the flue gas side 30 % to 100 % boiler load

- (A) M64A001
- (B) M64A003
- (C) M64A006
- (D) M64A002
- (E) M64A005
- (F) M64A004

Boiler performance data (cont.)

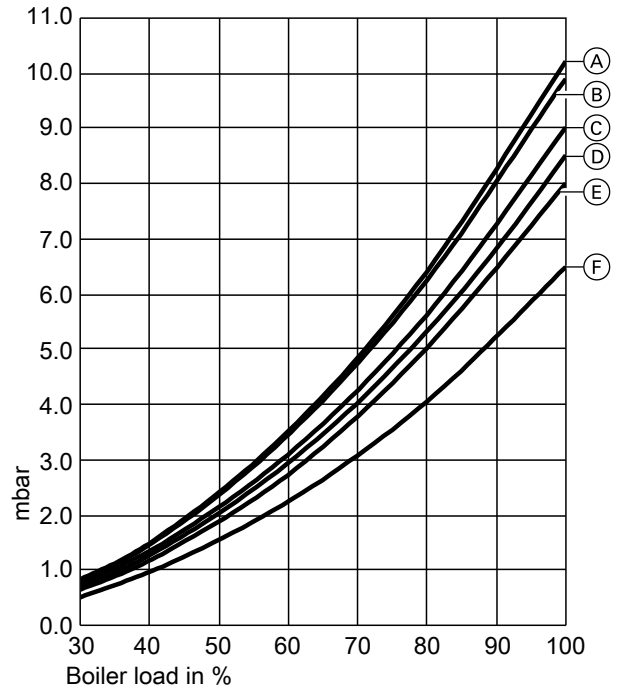
Pressure drop on the flue gas side for natural gas at 120 °C



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

- (A) M64A003
- (B) M64A005
- (C) M64A004
- (D) M64A006
- (E) M64A002
- (F) M64A001

Pressure drop on the flue gas side for fuel oil EL at 120 °C



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

- (A) M64A001
- (B) M64A003
- (C) M64A002
- (D) M64A004
- (E) M64A005
- (F) M64A006

Operating conditions

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

Operating conditions (cont.)



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



Further information on design/engineering

See the technical guide to this boiler

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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