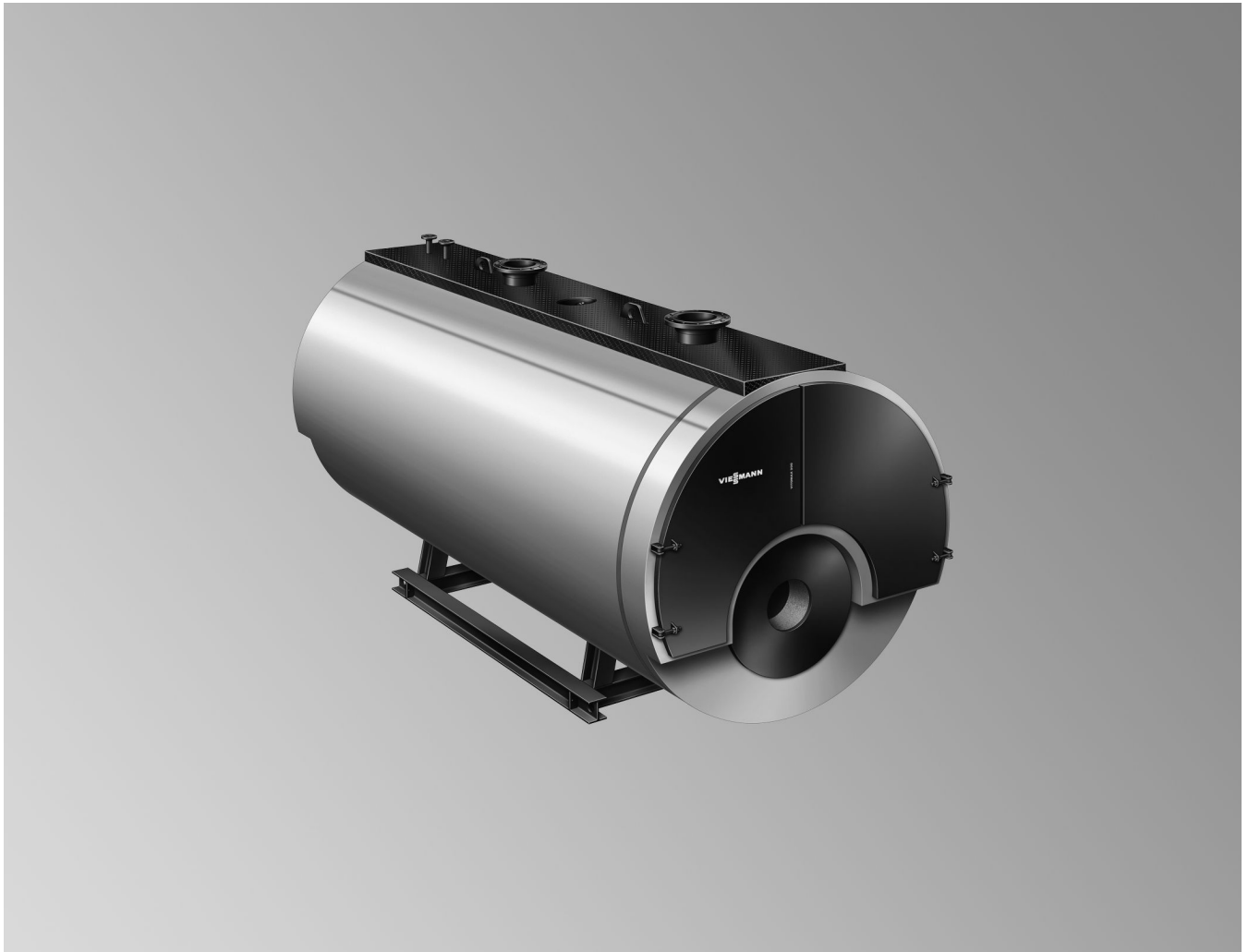


Datasheet

**VITOMAX 300-HW** Type M96A

High pressure hot water boiler

Low NO_x version

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

Suitable for the combustion of fuel oil and gas

Approved for operation with fuel oil S (heavy fuel oil)

Three-pass boiler

Permissible operating pressure 6 to 20 bar

General specification for burner selection

Note

All diagrams are schematic.

Tab. 1

Boiler size			1	2	3	4	5	6	7	8	9
Rated heating output											
- for natural gas	MW		3.50	4.20	5.00	6.00	8.00	10.00	12.00	14.00	16.00
- for fuel oil EL	MW		3.50	4.20	5.00	6.00	8.00	10.00	12.00	13.40	14.22
Permissible combustion heating output^{*1}											
- for natural gas	MW		4.00	4.80	5.70	6.80	9.05	11.30	13.55	15.75	18.05
- for fuel oil EL	MW		4.00	4.80	5.70	6.80	9.05	11.30	13.55	14.90	15.80
Length			Combustion chamber dimensions								
- Flame tube length	a	mm	3240	3540	3860	4220	4830	5330	5820	6220	6600
- Reversing chamber depth	b	mm	500								
Diameter^{*2}			Flame tube volume								
- Smooth pipe, min. internal \varnothing	d1	\varnothing mm	1031	1081	1131	1206	1306	1431	1531	1631	—
- Corrugated pipe, min. internal \varnothing	d1	\varnothing mm	1000	1050	1085	1160	1260	1385	1485	1585	1660
- Average corrugated pipe \varnothing	d2	\varnothing mm	1075	1125	1175	1250	1350	1475	1575	1675	1750
Smooth pipe application limit			Flame tube volume								
		bar	16	13	13	10	10	8	8	6	—
Max. flame head \varnothing			Flame tube volume								
	c	\varnothing mm	660	660	710	710	810	910	910	1010	1110
Minimum flame head length			360								
	e	mm	360								
Flame tube (average)			Flame tube volume								
		m ³	2.94	3.52	4.19	5.18	6.91	9.11	11.34	13.71	15.87
Flame tube and reversing chamber			Flame tube volume								
		m ³	3.39	4.02	4.73	5.79	7.63	9.96	12.31	14.81	17.08

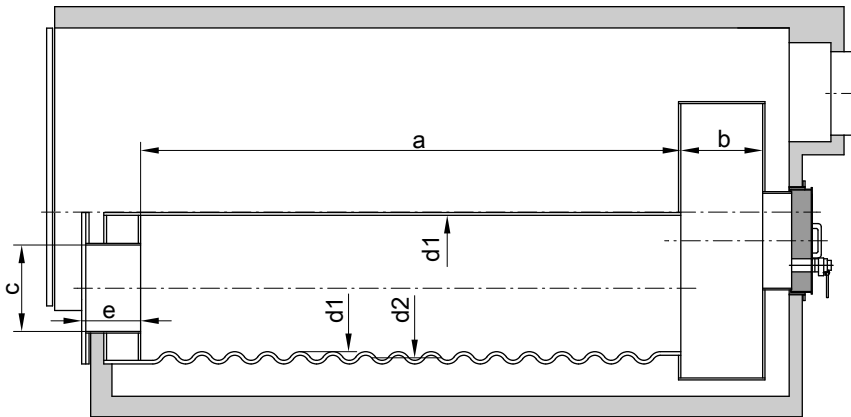


Fig. 1

Note

The pressure stage used determines the type of flame tube. Tolerances related to production factors are not taken into consideration.

Tab. 2: Max. pressure drop on the flue gas side^{*3}

Boiler size			1	2	3	4	5	6	7	8	9
- for natural gas	mbar		9.6	9.3	11.0	11.4	13.8	12.6	13.4	16.7	14.2
- for fuel oil EL	mbar		8.5	8.2	9.8	10.1	12.3	11.1	11.8	13.2	9.5

Tab. 3: Heating surfaces

Boiler size			1	2	3	4	5	6	7	8	9
			Flue gas side heating surface								
	m ²		105	128	150	182	247	319	384	433	512
			Water side heating surface								
	m ²		114	140	164	199	270	349	419	473	558

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

*2 Tolerances related to production factors are not taken into consideration.

*3 For a flow/return temperature of 195/155 °C

Boiler specification

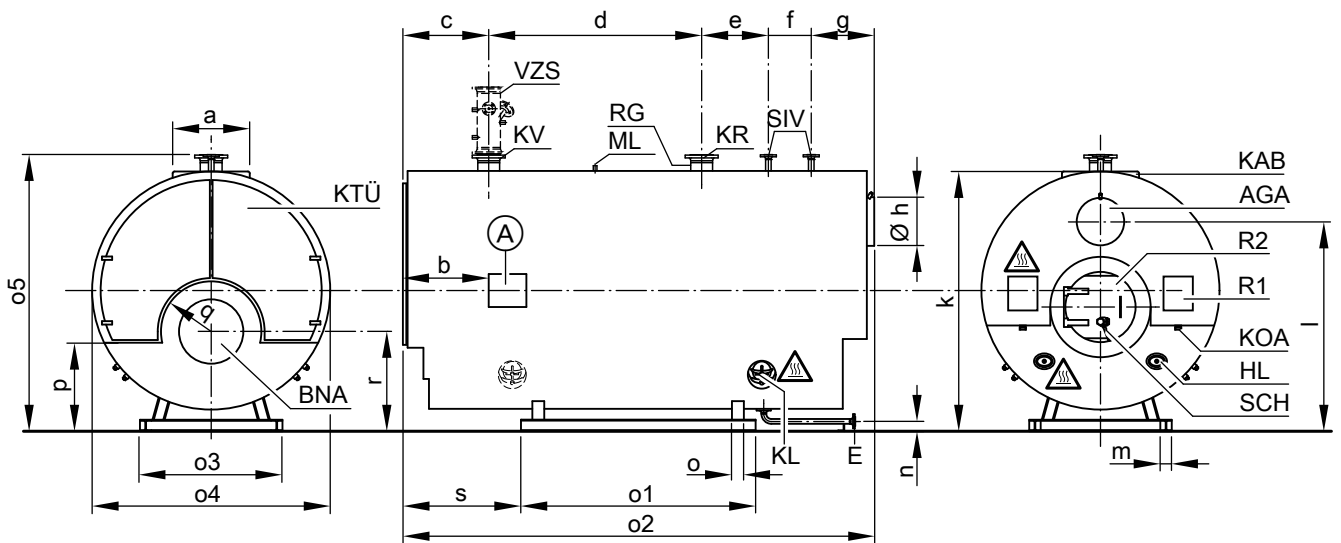


Fig. 2:  Caution – hot surface!

(A) Type plate	KTÜ Boiler door
AGA Flue outlet	KV Boiler flow
BNA Burner connection	ML Manhole 320 x 420 mm
E Drain DN 40 PN 40	R1 Cleaning aperture, flue gas collector
HL Handhole 100 x 150 mm	R2 Combustion chamber cleaning aperture
KAB Boiler cover	RG 2 female connections for additional control equipment - R 1/2
KL Headhole 220 x 320 mm	SCH Inspection port
KOA Condensate drain - R 1 1/2 connector	SIV Safety valve connector
KR Boiler return	VZS Intermediate flow piece as accessory (required for $\geq 120\text{ }^\circ\text{C}$)

Tab. 4: Boiler nominal dimensions *4

Boiler size		1	2	3	4	5	6	7	8	9
a	mm	1000	1000	1000	1000	1100	1100	1100	1200	1200
b	mm	783	783	783	783	823	823	853	853	883
c	mm	833	883	933	983	1073	1073	1403	1403	1433
d	mm	2177	2227	2397	2507	2917	3217	3307	3607	3787
e	mm	700	900	1000	1150	1300	1400	1500	1600	1700
f	mm	450	450	450	450	450	500	500	500	550
g	mm	660	660	710	760	810	860	910	910	1010
h*5	Ø mm	490	550	620	620	700	790	890	990	1110
k	mm	2815	2910	2985	3125	3300	3485	3725	3835	4000
l	mm	2325	2390	2430	2570	2705	2845	3035	3095	3200
m*6	mm	160	160	160	200	200	200	240	240	240
n	mm	100	100	100	100	100	100	100	100	100
o*6	mm	160	160	160	200	200	200	240	240	240
o1	mm	2525	2675	2825	3150	3450	3700	4050	4250	4450
o2	mm	4820	5120	5490	5850	6550	7050	7620	8020	8480
o3	mm	1900	1925	1975	2175	2250	2350	2575	2650	2725
o4	mm	2580	2675	2750	2890	3065	3250	3440	3550	3715
o5	mm	2940	3035	3110	3250	3475	3660	3900	4010	4175
p	mm	908	908	920	895	882	925	1000	1015	1028
q	mm	550	575	608	645	695	758	808	858	895
r	mm	1117	1137	1172	1220	1262	1317	1427	1462	1500
s	mm	1109	1178	1266	1287	1482	1606	1706	1806	1926

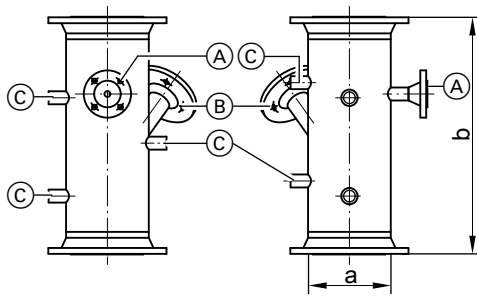
*4 Subject to modification.

*5 Internal diameter; for external diameter: + 10 mm

*6 Profile I-beam width

Boiler specification (cont.)

Intermediate flow piece (order separately)



- (A) Connector for fitting assembly (pressure regulator, pressure limiter and pressure gauge) - DN 20 PN 40
- (B) Connector for water level limiter electrodes - DN 50 PN 40
- (C) Female connections for thermometer, sampling valve and other control equipment 5 x R 1/2

Tab. 5

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

Fig. 3

Tab. 6

Boiler size		1	2	3	4	5	6	7	8	9
CE designation		See "Tested quality" on page 6								
Permiss. flow temperature ^{*7} = safety temperature										
- for permiss. op. pressure	6 bar °C	160								
	8 bar °C	170								
	10 bar °C	180								
	13 bar °C	190								
	16 bar °C	200								
	18 bar °C	205								
	20 bar °C	210								
Boiler return temperature (minimum value) ^{*8}	°C	65								
Shipping dimensions incl. packaging										
- Total length	m	5.02	5.32	5.69	6.05	6.75	7.25	7.82	8.22	8.68
- Total width	m	2.63	2.73	2.80	2.94	3.12	3.30	3.49	3.60	3.77
- Total height	m	2.97	3.06	3.14	3.28	3.50	3.69	3.93	4.04	4.20
Dry weight ^{*9} Boiler incl. thermal insulation										
- for permiss. op. pressure	6 bar t	9.8	11.3	12.9	15.0	19.1	23.5	28.6	34.8	36.0
	8 bar t	10.6	12.2	13.8	16.4	20.4	25.5	30.8	34.5	38.2
	10 bar t	11.4	13.2	15.2	17.5	22.3	25.9	31.1	38.1	42.6
	13 bar t	12.6	14.6	16.8	18.8	23.5	29.3	35.8	40.7	47.5
	16 bar t	13.9	15.5	17.9	21.0	25.7	30.0	36.8	44.1	49.8
	18 bar t	14.4	16.8	19.1	21.7	26.4	32.6	39.5	47.0	51.8
	20 bar t	15.4	17.9	19.6	22.4	28.2	34.2	41.8	47.9	54.0
Boiler water capacity	m ³	10.7	12.4	13.9	16.6	20.4	24.9	29.8	31.6	37.7
Boiler connections										
		Boiler flow and return ^{*10}								
- for rated heating output and temperature spread	20 K DN	200	200	250	250	250	300	350	350	400
	30 K DN	150	150	200	200	250	250	250	300	300
	40 K DN	125	150	150	200	200	200	250	250	250
		Safety valve connector								
- for permiss. op. pressure	6 bar PN 40 DN	65 ^{*11}	65 ^{*11}	65 ^{*11}	80	80	100	100	125	125
	8 bar PN 40 DN	50	65 ^{*11}	65 ^{*11}	65 ^{*11}	80	80	100	100	125
	10 bar PN 40 DN	50	50	65 ^{*11}	65 ^{*11}	65 ^{*11}	80	80	100	100
	13 bar PN 40 DN	40	50	50	50	65 ^{*11}	65 ^{*11}	80	80	100
	16 bar PN 40 DN	40	40	50	50	65 ^{*11}	65 ^{*11}	65 ^{*11}	80	80
	18 bar PN 40 DN	40	40	40	50	50	65 ^{*11}	65 ^{*11}	80	80
	20 bar PN 40 DN	32	40	40	50	50	65 ^{*11}	65 ^{*11}	65 ^{*11}	80
Flue gas connection										
- Flue outlet to DIN 24154-T2 (external DN)	mm	500	560	630	630	710	800	900	1000	1120
Flue gas mass flow rate										
- for natural gas	t/h	1.5225 x combustion output in MW								
- for fuel oil EL	t/h	1.5 x combustion output in MW								
Flue gas volume	m ³	6.4	7.7	8.8	10.6	14.4	18.0	22.6	27.4	30.6

^{*7} The maximum achievable flow temperature is approx. 15 K below the permissible flow temperature.

^{*8} During the combustion of fuel oil S according to DIN 51603-5 an average boiler water temperature of at least 90 °C is required.

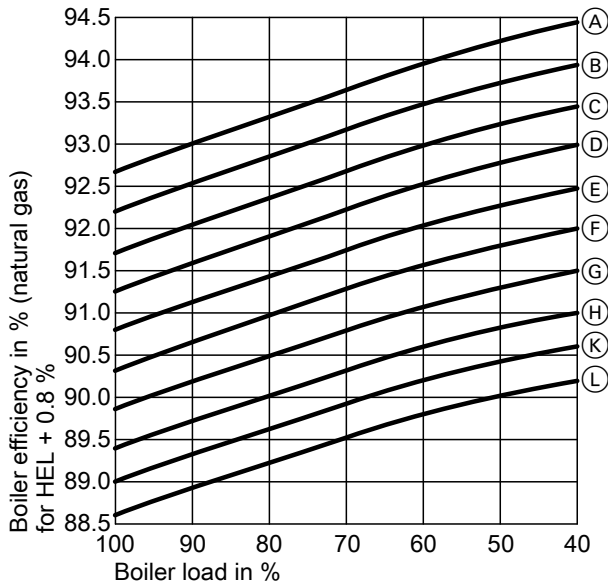
^{*9} The dry weight of the boiler varies by up to +10 % due to production factors.

^{*10} For boilers up to 10 bar, the flange connections are PN 16; from 13 to 18 bar they are PN 25; and from 20 to 25 bar they are PN 40.

^{*11} 4-hole version

Boiler specification (cont.)

Boiler efficiency (temperature spread 40 K, O₂ content in the flue gas: 3 %)



Note

- Offset of the boiler efficiency shown
 - At temperature spread 30 K: - 0.2 %
 - At temperature spread 20 K: - 0.4 %

Efficiency increase

- with natural gas and 2.1 % O₂ at 100 % load: + 0.45 %
 - with HEL and 2.7 % O₂ at 100 % load: + 0.17 %

Flue gas temperature

- At 100 % rated load: Flow temperature + 80 K
 - At approx. 40 % partial load: Flow temperature + 40 K

(A) 100 °C	(F) 150 °C
(B) 110 °C	(G) 160 °C
(C) 120 °C	(H) 170 °C
(D) 130 °C	(K) 180 °C
(E) 140 °C	(L) 190 °C

Graph 1: Boiler efficiency subject to the flow temperature

General specification

Minimum clearances

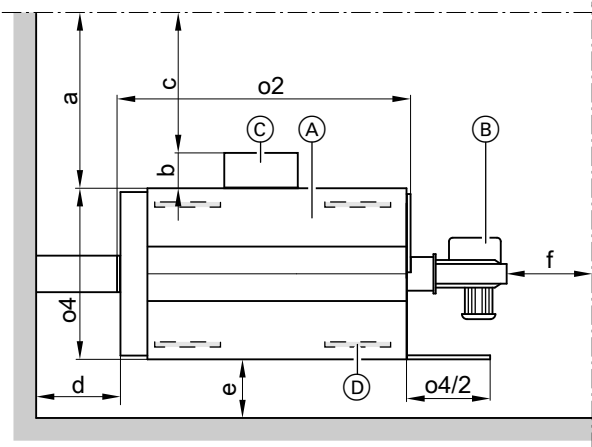


Fig. 4

- (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 o₂ = max. length, o₄ = max. width (see table 4)

Tab. 7

a/b/c	mm	≥1000/≥500/≥800
d/e/f ^{*12}	mm	≥500/≥300/≥500

Observe the given dimensions to ensure easy installation and maintenance.

The minimum clearances must be observed.

Check 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.
- Avoid very dusty conditions.
- Avoid high levels of humidity.

- Prevent frost and ensure good ventilation.

- Site on a level surface.

Impact can cause system faults and damage.

If there is a risk of air contamination from **halogenated hydrocarbons** where the boiler is sited, an adequate supply of uncontaminated combustion air must be provided.

Delivered condition

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

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

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^{*12}Leave 1 boiler length of space clear in front of the boiler door. This makes it easier to remove any turbulators and to clean the boiler.

General specification (cont.)

Boiler accessories (optional)

- Flue gas/water heat exchanger
- Regulating and control systems
- Safety equipment
- Burner
- Platform
- Intermediate flow piece as an accessory (required for ≥ 120 °C)
- Valves/fittings

Design information

Selecting and fitting the burner

Note

See chapter "General specification for burner selection" and the burner specification.

Important for burner selection:

- The burner must be suitable for the intended rated heating output and the pressure drop on the hot gas side of the boiler.
- The burner head must be suitable for operating temperatures of at least 500 °C.

Note

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

Required for pressure-jet oil burners:

- Test and identification in accordance with DIN EN 267

Required for pressure-jet gas burners:

- Test to DIN EN 676
- CE designation in accordance with Directive 2009/142/EC

Burner connection

Note

The burner plate can be prepared at the factory. If this is required and the burner is not supplied by Viessmann: Please state the 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 rated boiler heating output.

Fuels

Oil

- Fuel oil EL to DIN 51603 part 1
 - Fuel oil S and SA to DIN 51603 parts 3 and 5
- If using fuel oil S or SA, different output data for the rated heating output, flue gas temperature and efficiency may result.

Gas

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

Information about alternative fuels on request

Tested quality

 CE designation complies with existing EC directives.

Subject to technical modifications.

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