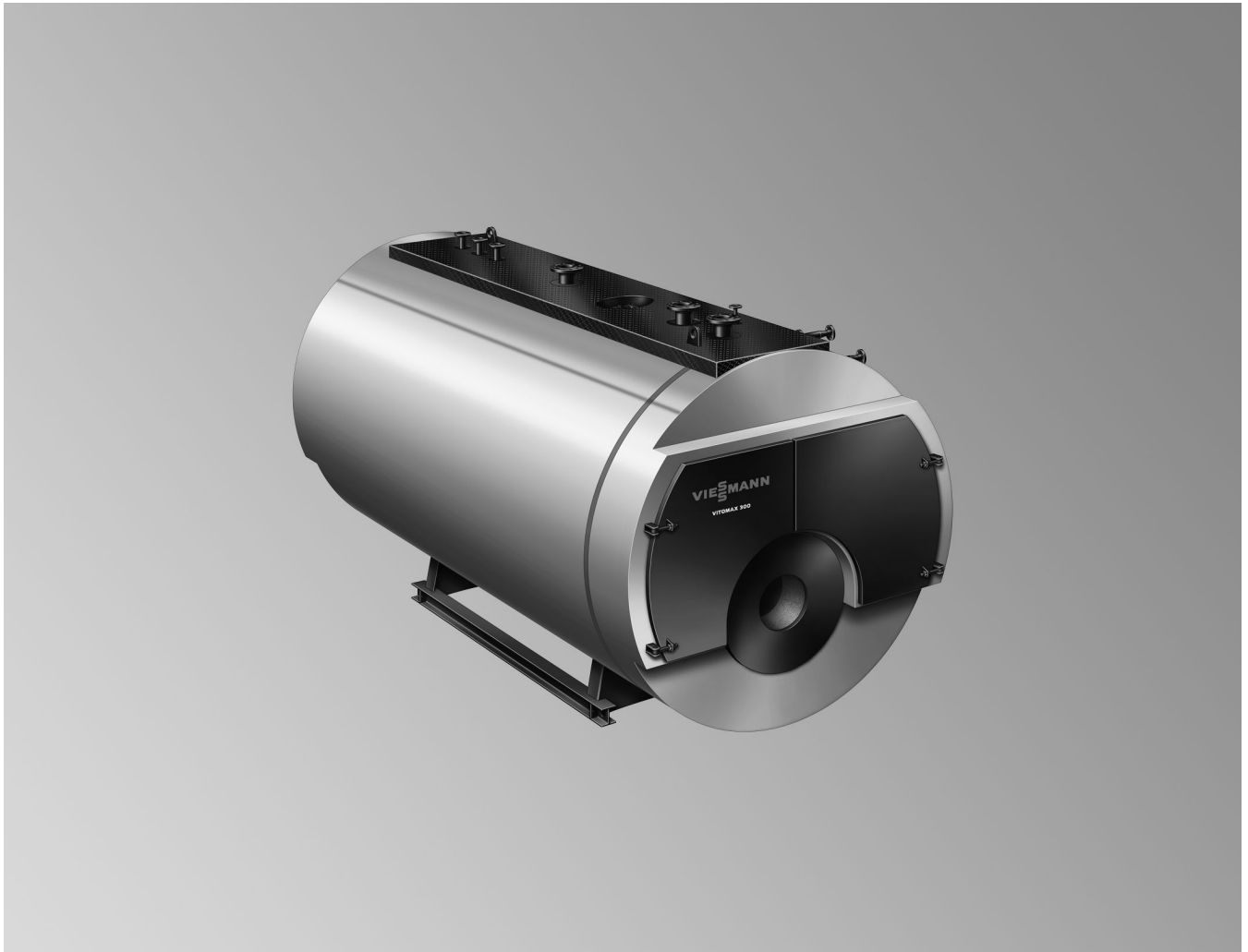


## Datasheet

Part no. and prices on request

To select the right boiler, please use the separate technical guide.



### **VITOMAX 300-HS** Type M93A

#### **High pressure steam boiler**

Low NO<sub>x</sub> version

In accordance with the requirements of the  
Pressure Equipment Directive 97/23/EC

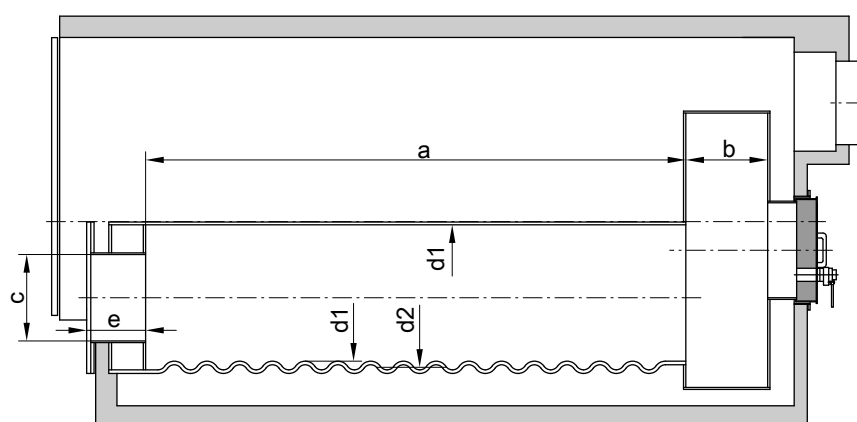
#### **Three-pass boiler**

With and without economiser

**Permissible operating pressure 6 to 25 bar**

## Specification - boilers in general (for burner selection)

Boiler size			1	2	3	4	5	6	7
Permissible steam output*1	t/h		1.0	1.3	1.65	2.0	2.5	3.2	4.0
(at 102 °C feedwater temperature)									
<b>Length</b>			<b>Combustion chamber dimensions</b>						
- Flame tube	a	mm	1710	1910	2130	2325	2535	2800	3085
- Reversing chamber	b	mm	500						
<b>Diameter</b>									
- Smooth pipe, internal min.	d1	∅ mm	676	706	746	776	826	886	941
- Corrugated pipe, internal	d1	∅ mm	—	—	740	770	820	880	935
- Corrugated pipe, average	d2	∅ mm	—	—	790	820	870	930	985
<b>Smooth pipe application limit</b>	bar		25	25	22	22	20	18	16
			<b>Burner connections</b>						
Max. flame head diameter	c	∅ mm	350	350	400	400	450	550	600
Minimum flame head length	e	mm	315						
			<b>Combustion chamber volume</b>						
Flame tube (average dim.)	m <sup>3</sup>		0.64	0.77	0.96	1.13	1.39	1.76	2.18
Flame tube and reversing chamber depth	m <sup>3</sup>		0.82	0.98	1.18	1.37	1.67	2.08	2.54



### Note

The type of flame tube depends on the pressure stage employed. Product-dependent tolerances are not taken into consideration.

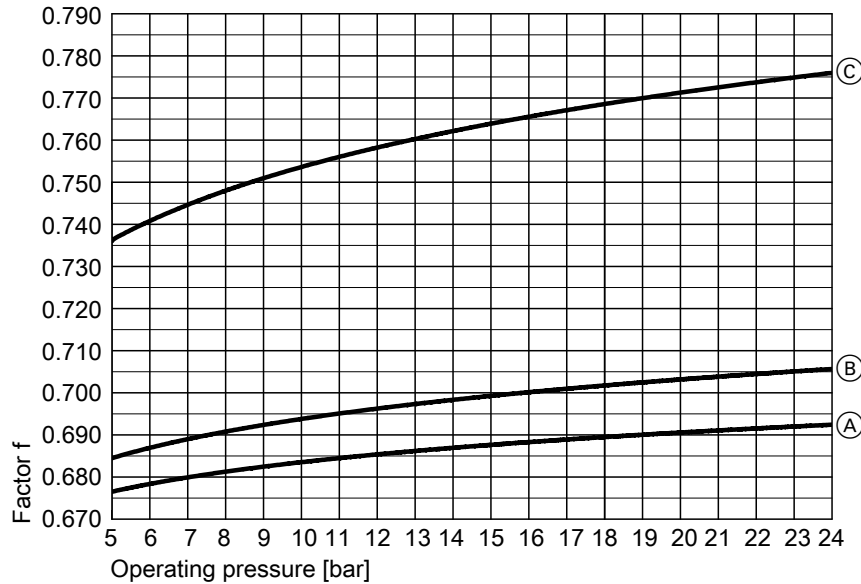
\*1 The actual steam output may be lower depending on the emission values required at the installation site.



## Specification - boilers in general (for burner selection) (cont.)

### Factor to determine the heating output of the combustion equipment based on the steam output and operating pressure

Values averaged across all boiler sizes  
Feedwater temperature 102 °C



- (A) with ECO 200
- (B) with ECO 100
- (C) without ECO

Combustion heating output in kW = factor f x steam output in kg/h

#### Example:

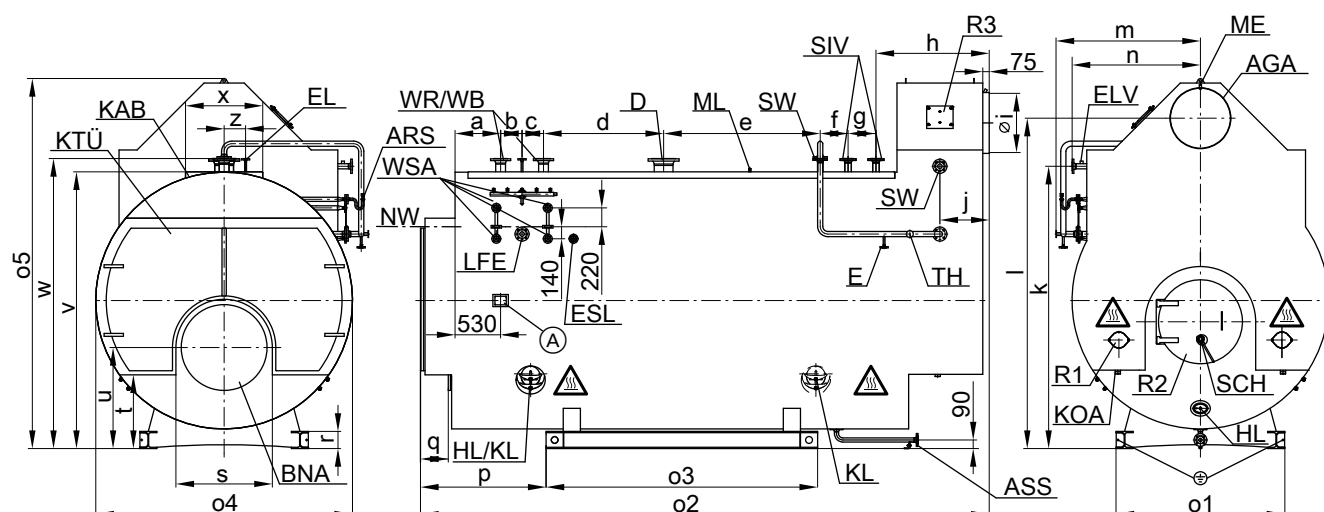
Steam output           1400 kg/h  
Operating pressure    12 bar

1. Operation without Economiser (curve (C))  
Factor f = 0.758 (see diagram) produces a combustion heating output = 1060 kW (see formula)
2. Operation with ECO 200 (curve (A))  
Factor f = 0.685 (see diagram) produces a combustion heating output = 960 kW (see formula)

#### Pressure drop on flue gas side

Boiler size		1	2	3	4	5	6	7
Max. flue gas pressure drop <b>with</b> ECO 200								
- for natural gas	mbar	6.2	7.6	9.9	8.1	7.0	9.7	11.7
- for fuel oil EL	mbar	5.7	6.9	9.0	7.4	6.4	8.9	10.8
Max. flue gas pressure drop <b>with</b> ECO 100								
- for natural gas	mbar	6.0	7.1	9.1	7.8	6.5	9.1	10.8
- for fuel oil EL	mbar	5.4	6.5	8.3	7.1	5.9	8.3	9.9
Max. flue gas pressure drop <b>without</b> ECO								
- for natural gas	mbar	6.8	8.0	10.0	8.8	7.3	9.7	11.3
- for fuel oil EL	mbar	6.0	7.0	8.8	7.8	6.4	8.6	10.0

## Specification - boiler with ECO 200



Caution – hot surface!

Ⓐ	Type plate	LFE	Connector for conductivity electrode with dummy flange DN 50 PN 40
AGA	Flue outlet	ME	Test port R ½
ARS	Connector for fitting assembly DN 20 PN 40	ML	Manhole 320 x 420 mm
ASS	Connector for blow-down valve DN 25 PN 40	NW	Lowest water level
BNA	Burner connection	R 1	Cleaning aperture, flue gas collector
D	Steam connector	R 2	Cleaning aperture, combustion chamber
E	Drain connector DN 15 PN 40	R 3	Cleaning aperture, ECO
EL	Vent connector DN 15 PN 40	SIV	Connector for safety valve with 1x dummy flange
ELV	Fem. connection R ½ for air vent valve	SCH	Inspection port R 2
ESL	Connector for TDS line DN 20 PN 40	SW	Feedwater connector
HL	Handhole 100 x 150 mm	TH	Thermometer
HL/KL	Handhole or headhole	WR/WB	Connector for water level control/limitation DN 100 PN 40
KAB	Boiler cover	WSA	Connector for water level indicator with 1x dummy flange DN 20 PN 40
KL	Headhole 220 x 320 mm		
KOA	Condensate drain R 1 ½		
KTÜ	Boiler door		

### Dimensions\*2

Boiler size		1	2	3	4	5	6	7
a	mm	505	505	480	480	480	480	480
b	mm	175	175	200	200	200	200	200
c	mm	175	175	200	200	200	200	200
d	mm	750	875	1000	1100	1125	1225	1335
e	mm	240	335	370	450	625	750	925
f	mm	210	195	230	250	260	250	250
g	mm	200	200	200	200	200	250	250
h	mm	942	942	937	1082	1082	1082	1082
i*3	∅ mm	216	242	272	307	346	392	442
j	mm	219	219	219	219	219	425	425
k	mm	2510	2570	2800	2750	2820	3020	3100
l	mm	2772	2845	3090	3058	3147	3370	3475
m	mm	1040	1070	1110	1130	1195	1310	1340
n	mm	910	940	980	1000	1065	1180	1210
o1	mm	1200	1240	1310	1360	1420	1475	1520
o2	mm	3391	3591	3811	4156	4366	4631	4916
o3	mm	1700	1800	1900	2000	2100	2200	2400
o4	mm	1850	1925	2040	2140	2250	2350	2440
o5	mm	3050	3130	3390	3385	3485	3730	3860
p	mm	698	748	808	855	910	993	1035
q	mm	134	134	134	134	134	134	130
r	mm	120	120	120	120	120	120	120
s	mm	670	700	790	820	870	930	965
t	mm	850	813	880	845	870	845	850
u	mm	865	880	910	925	960	990	1018

\*2 Nominal dimensions, subject to modification

\*3 Internal diameter; for external diameter +8 mm

## Specification - boiler with ECO 200 (cont.)

Boiler size		1	2	3	4	5	6	7
v	mm	2035	2110	2225	2325	2435	2535	2625
w	mm	2160	2235	2350	2450	2560	2660	2750
x	mm	900	900	900	900	1000	1000	1000
z	mm	200	225	225	250	275	300	300

**Table**

Boiler size		1	2	3	4	5	6	7
<b>Permissible steam output*<sup>1</sup></b>	t/h	1.0	1.3	1.65	2.0	2.5	3.2	4.0
Combustion heating output		see diagram on page 3						
CE designation		see page 17						
Shipping dimensions (incl. packaging) <sup>*4</sup>								
- total length	m	3.59	3.79	4.01	4.36	4.57	4.83	5.12
- total width	m	1.88	1.95	2.07	2.17	2.28	2.38	2.47
- total height	m	2.64	2.70	2.93	2.88	2.95	3.15	3.23
Weight (when empty) <sup>*5</sup>								
Boiler with thermal insulation for permissible operating pressure								
6 bar	t	3.8	4.3	5.2	6.1	6.8	8.2	9.3
8 bar	t	4.0	4.5	5.5	6.5	7.3	8.7	10.0
10 bar	t	4.2	4.9	5.8	7.0	7.9	9.3	10.8
13 bar	t	4.7	5.4	6.4	7.5	8.6	10.1	11.7
16 bar	t	5.2	5.8	6.9	8.2	9.4	11.2	13.0
18 bar	t	5.4	6.1	7.5	8.8	10.1	11.8	13.0
20 bar	t	5.8	6.6	7.8	9.3	10.7	11.9	13.8
22 bar	t	6.0	6.9	8.3	9.3	10.9	12.8	14.9
25 bar	t	6.5	7.5	8.8	10.3	11.8	13.9	16.0
Boiler water content								
- total	m <sup>3</sup>	3.47	4.08	5.01	5.92	7.12	8.43	9.73
- average operating range <sup>*6</sup>	m <sup>3</sup>	3.20	3.74	4.58	5.38	6.36	7.43	8.59
Steam chamber volume	m <sup>3</sup>	0.27	0.34	0.42	0.53	0.76	1.00	1.14
Steam level surface area	m <sup>2</sup>	2.42	2.78	3.22	3.69	4.37	5.15	5.70
Boiler connections		<b>Steam connector</b>						
6 bar	PN 16 DN	80	100	100	125	125	150	150
8 bar	PN 16 DN	65	80	100	100	100	125	150
10 bar	PN 16 DN	65	65	80	80	100	125	125
13 bar	PN 40 DN	50	65	65	80	80	100	100
16 bar	PN 40 DN	50	50	65	65	65	80	100
18 bar	PN 40 DN	50	50	65	65	65	80	100
20 bar	PN 40 DN	40	50	50	65	65	80	80
22 bar	PN 40 DN	40	50	50	65	65	65	80
25 bar	PN 40 DN	32	40	50	50	65	65	80
		<b>Safety valve connector</b>						
6 bar	PN 40 DN	25	32	32	40	40	50	50
8 bar	PN 40 DN	25	25	32	32	40	40	50
10 bar	PN 40 DN	20	25	25	32	32	40	40
13 bar	PN 40 DN	20	20	25	25	32	32	40
16 bar	PN 40 DN	20	20	20	25	25	32	32
18 bar	PN 40 DN	20	20	20	20	25	32	32
20 bar	PN 40 DN	20	20	20	20	25	25	32
22 bar	PN 40 DN	20	20	20	20	25	25	32
25 bar	PN 40 DN	20	20	20	20	20	25	25
		<b>Feedwater connector</b>						
	PN 40 DN	25	32	32	32	32	32	32
Flue gas parameters		see diagrams on page 6 to 7						
Flue gas mass flow rate		1.5225 x combustion output in MW						
- for natural gas	t/h	1.5 x combustion output in MW						
- for fuel oil EL	t/h	1.5 x combustion output in MW						
Flue gas volume	m <sup>3</sup>	1.74	2.02	2.49	3.04	3.52	4.23	4.99

\*1 The actual steam output may be lower depending on the emission values required at the installation site.

\*4 Flue gas hood and feedwater line are delivered separately

\*5 The weight of the boiler when empty can vary by up to 10 %, for production-related reasons.

\*6 Average water level between pump On and pump Off

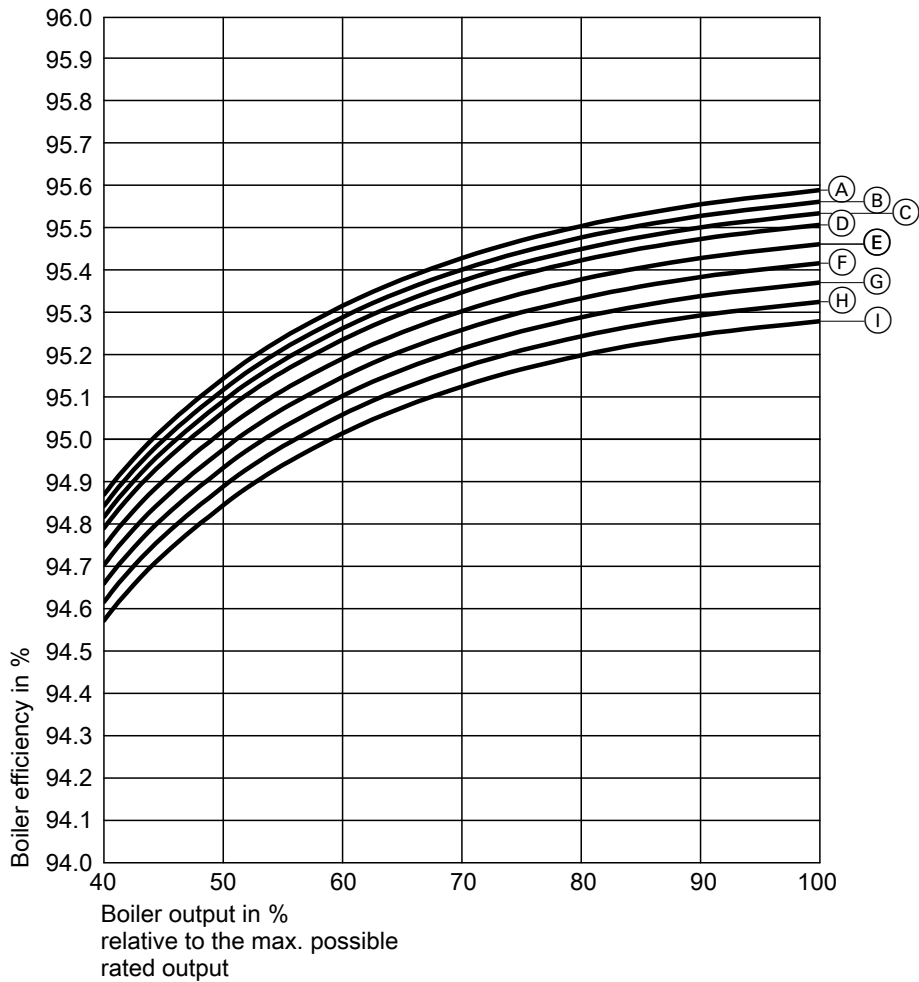
## Specification - boiler with ECO 200 (cont.)

### Boiler efficiency subject to the operating pressure with ECO 200

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C



#### Operating pressure:

- Ⓐ 5 bar
- Ⓑ 7 bar
- Ⓒ 9 bar
- Ⓓ 11 bar

- Ⓔ 15 bar
- Ⓕ 17 bar
- Ⓖ 19 bar
- Ⓗ 21 bar
- Ⓘ 23 bar

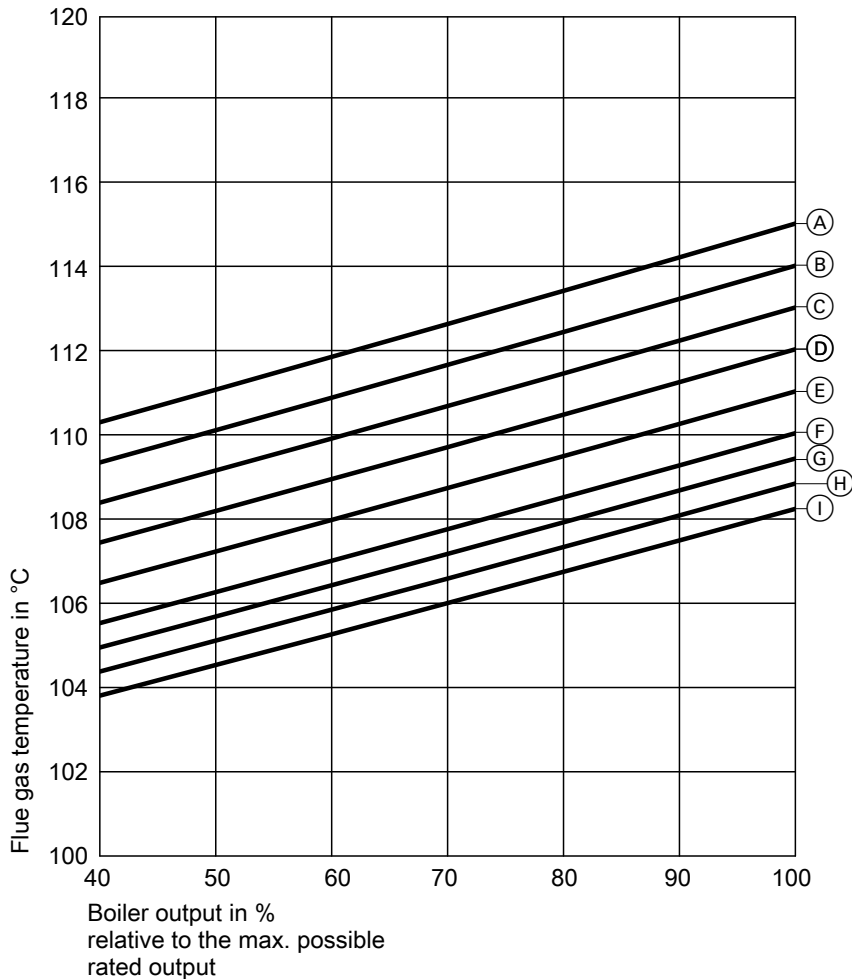
## Specification - boiler with ECO 200 (cont.)

### Flue gas temperature subject to the operating pressure with ECO 200

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C

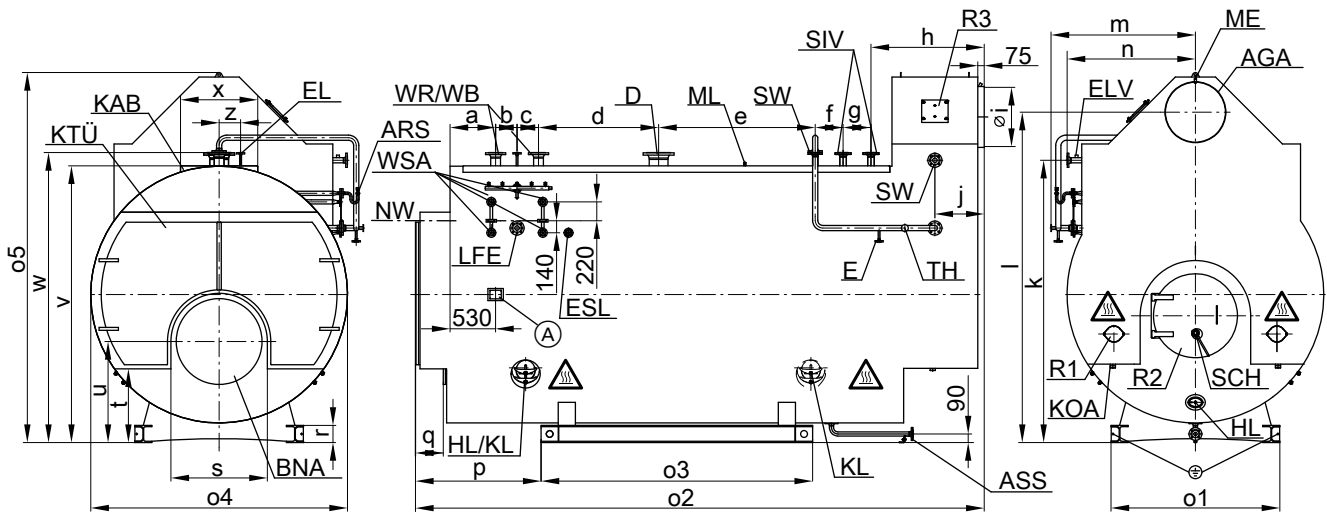


#### Operating pressure:

- Ⓐ 23 bar
- Ⓑ 21 bar
- Ⓒ 19 bar
- Ⓓ 17 bar

- Ⓔ 15 bar
- Ⓕ 11 bar
- Ⓖ 9 bar
- Ⓗ 7 bar
- Ⓘ 5 bar

# Specification - boiler with ECO 100



Caution – hot surface!

- |       |  |       |   |
|-------|--|-------|---|
| Ⓐ     | Type plate                                 | LFE   | Connector for conductivity electrode with dummy flange<br>DN 50 PN 40   |
| AGA   | Flue outlet                                | ME    | Test port R ½   |
| ARS   | Connector for fitting assembly DN 20 PN 40 | ML    | Manhole 320 x 420 mm  |
| ASS   | Connector for blow-down valve DN 25 PN 40  | NW    | Lowest water level  |
| BNA   | Burner connection                          | R 1   | Cleaning aperture, flue gas collector                                   |
| D     | Steam connector                            | R 2   | Cleaning aperture, combustion chamber                                   |
| E     | Drain connector DN 15 PN 40                | R 3   | Cleaning aperture, ECO  |
| EL    | Vent connector DN 15 PN 40                 | SIV   | Connector for safety valve with 1x dummy flange                         |
| ELV   | Fem. connection R ½ for air vent valve     | SCH   | Inspection port R 2   |
| ESL   | Connector for TDS line DN 20 PN 40         | SW    | Feedwater connector   |
| HL    | Handhole 100 x 150 mm                      | TH    | Thermometer   |
| HL/KL | Handhole or headhole                       | WR/WB | Connector for water level control/limitation DN 100 PN 40               |
| KAB   | Boiler cover                               | WSA   | Connector for water level indicator with 1x dummy flange<br>DN 20 PN 40 |
| KL    | Headhole 220 x 320 mm                      |       |   |
| KOA   | Condensate drain R 1 ½                     |       |   |
| KTÜ   | Boiler door                                |       |   |

## Dimensions\*2

Boiler size		1	2	3	4	5	6	7
a	mm	505	505	480	480	480	480	480
b	mm	175	175	200	200	200	200	200
c	mm	175	175	200	200	200	200	200
d	mm	750	875	1000	1100	1125	1225	1335
e	mm	240	335	370	450	625	750	925
f	mm	210	195	230	250	260	250	250
g	mm	200	200	200	200	200	250	250
h	mm	942	942	937	1082	1082	1082	1082
i*3	∅ mm	216	242	272	307	346	392	442
j	mm	219	219	219	219	219	425	425
k	mm	2120	2180	2280	2360	2430	2630	2710
l	mm	2382	2455	2570	2668	2757	2980	3085
m	mm	1040	1070	1110	1130	1195	1310	1340
n	mm	910	940	980	1000	1065	1180	1210
o1	mm	1200	1240	1310	1360	1420	1475	1520
o2	mm	3391	3591	3811	4156	4366	4631	4916
o3	mm	1700	1800	1900	2000	2100	2200	2400
o4	mm	1850	1925	2040	2140	2250	2350	2440
o5	mm	2660	2740	2870	2995	3095	3340	3470
p	mm	698	748	808	855	910	993	1035
q	mm	134	134	134	134	134	134	130
r	mm	120	120	120	120	120	120	120
s	mm	670	700	790	820	870	930	965
t	mm	850	813	880	845	870	845	850
u	mm	865	880	910	925	960	990	1018

\*2 Nominal dimensions, subject to modification

\*3 Internal diameter; for external diameter +8 mm



## Specification - boiler with ECO 100 (cont.)

Boiler size		1	2	3	4	5	6	7
v	mm	2035	2110	2225	2325	2435	2535	2625
w	mm	2160	2235	2350	2450	2560	2660	2750
x	mm	900	900	900	900	1000	1000	1000
z	mm	200	225	225	250	275	300	300

**Table**

Boiler size		1	2	3	4	5	6	7	
<b>Permissible steam output*1</b>	t/h	1.0	1.3	1.65	2.0	2.5	3.2	4.0	
Combustion heating output		see diagram on page 3							
CE designation		see page 17							
Shipping dimensions (incl. packaging)*4									
- total length	m	3.59	3.79	4.01	4.36	4.57	4.83	5.12	
- total width	m	1.88	1.95	2.07	2.17	2.28	2.38	2.47	
- total height	m	2.25	2.31	2.41	2.49	2.56	2.76	2.84	
Weight (when empty)*5									
Boiler with thermal insulation for permissible operating pressure									
6 bar	t	3.5	3.9	4.8	5.6	6.3	7.7	8.7	
8 bar	t	3.7	4.1	5.1	6.0	6.8	8.2	9.4	
10 bar	t	3.9	4.5	5.4	6.5	7.4	8.8	10.2	
13 bar	t	4.4	5.0	6.0	7.0	8.1	9.6	11.1	
16 bar	t	4.9	5.4	6.5	7.7	8.9	10.7	12.4	
18 bar	t	5.1	5.7	7.1	8.3	9.6	11.3	12.4	
20 bar	t	5.5	6.2	7.4	8.8	10.2	11.4	13.2	
22 bar	t	5.7	6.5	7.9	8.8	10.4	12.3	14.3	
25 bar	t	6.2	7.1	8.4	9.8	11.3	13.4	15.4	
Boiler water content									
- total	m <sup>3</sup>	3.43	4.06	4.98	5.88	7.08	8.38	9.69	
- average operating range	m <sup>3</sup>	3.16	3.72	4.55	5.34	6.32	7.38	8.54	
Steam chamber volume		m <sup>3</sup>	0.27	0.34	0.42	0.53	0.76	1.00	1.14
Steam level surface area		m <sup>2</sup>	2.42	2.78	3.22	3.69	4.37	5.15	5.70
Boiler connections									
		<b>Steam connector</b>							
6 bar	PN 16 DN	80	100	100	125	125	150	150	
8 bar	PN 16 DN	65	80	100	100	100	125	150	
10 bar	PN 16 DN	65	65	80	80	100	125	125	
13 bar	PN 40 DN	50	65	65	80	80	100	100	
16 bar	PN 40 DN	50	50	65	65	65	80	100	
18 bar	PN 40 DN	50	50	65	65	65	80	100	
20 bar	PN 40 DN	40	50	50	65	65	80	80	
22 bar	PN 40 DN	40	50	50	65	65	65	80	
25 bar	PN 40 DN	32	40	50	50	65	65	80	
		<b>Safety valve connector</b>							
6 bar	PN 40 DN	25	32	32	40	40	50	50	
8 bar	PN 40 DN	25	25	32	32	40	40	50	
10 bar	PN 40 DN	20	25	25	32	32	40	40	
13 bar	PN 40 DN	20	20	25	25	32	32	40	
16 bar	PN 40 DN	20	20	20	25	25	32	32	
18 bar	PN 40 DN	20	20	20	20	25	32	32	
20 bar	PN 40 DN	20	20	20	20	25	25	32	
22 bar	PN 40 DN	20	20	20	20	25	25	32	
25 bar	PN 40 DN	20	20	20	20	20	25	25	
		<b>Feedwater connector</b>							
	PN 40 DN	25	32	32	32	32	32	32	
Flue gas parameters		see diagrams on page 10 to 11							
Flue gas mass flow rate		1.5225 x combustion output in MW							
- 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 <sup>3</sup>	1.64	1.92	2.34	2.87	3.33	4.03	4.77	

\*1 The actual steam output may be lower depending on the emission values required at the installation site.

\*4 Flue gas hood and feedwater line are delivered separately

\*5 The weight of the boiler when empty can vary by up to 10 %, for production-related reasons.

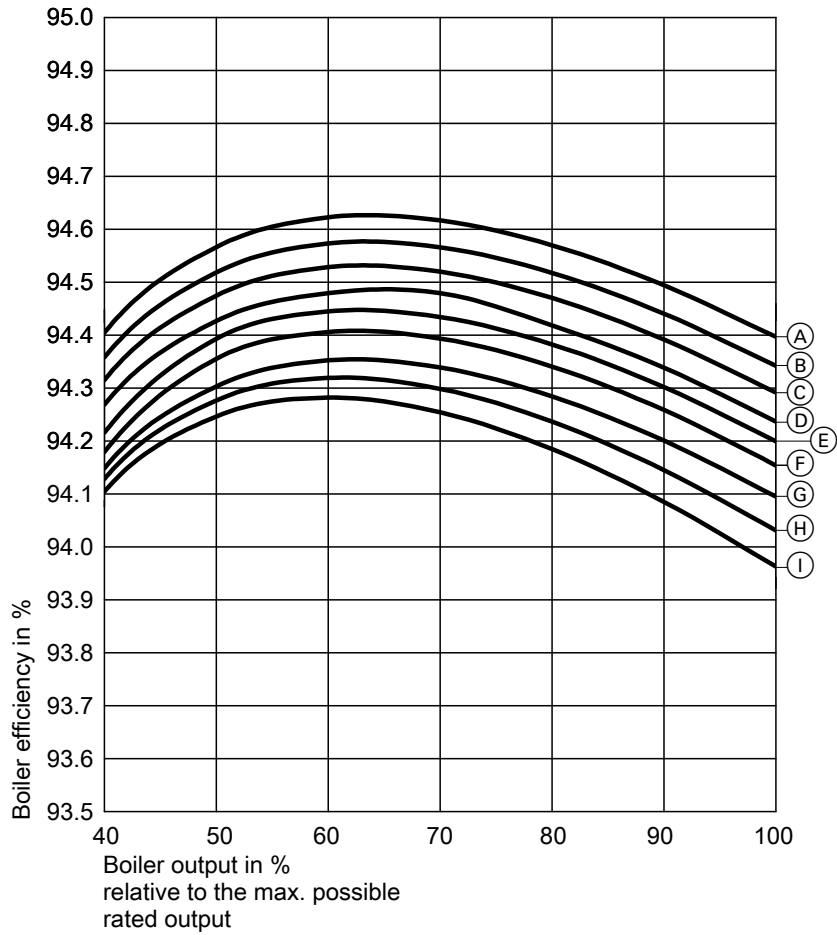
## Specification - boiler with ECO 100 (cont.)

### Boiler efficiency subject to the operating pressure with ECO 100

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C



#### Operating pressure:

- Ⓐ 5 bar
- Ⓑ 7 bar
- Ⓒ 9 bar
- Ⓓ 11 bar

- Ⓔ 15 bar
- Ⓕ 17 bar
- Ⓖ 19 bar
- Ⓗ 21 bar
- Ⓘ 23 bar

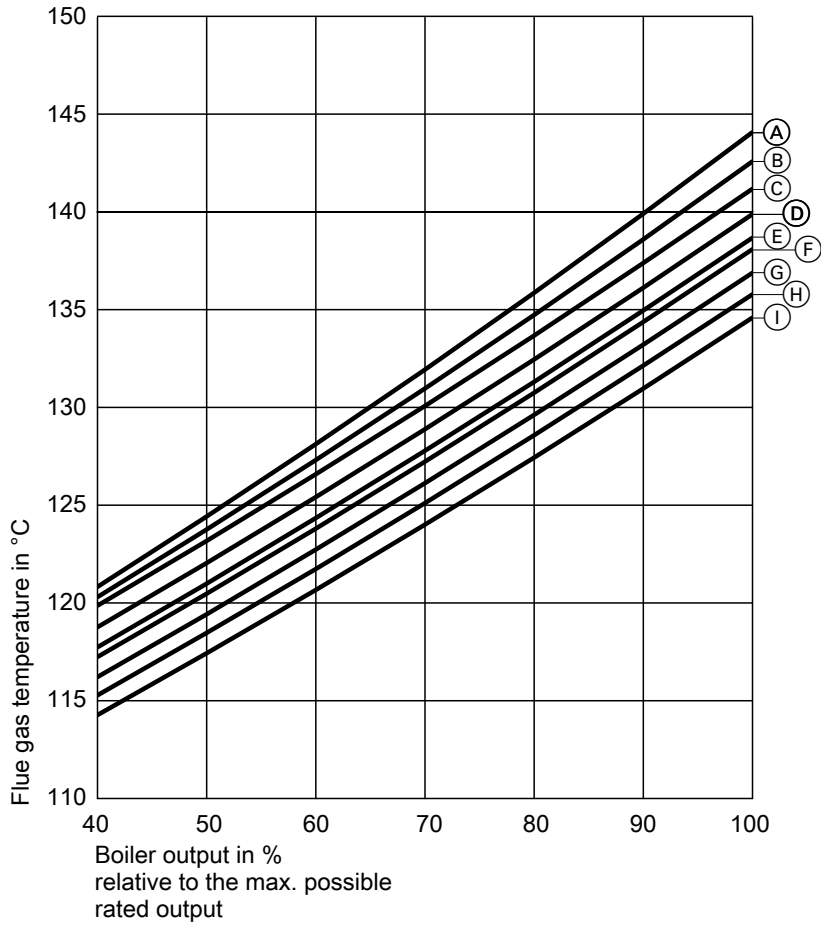
## Specification - boiler with ECO 100 (cont.)

### Flue gas temperature subject to the operating pressure with ECO 100

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C

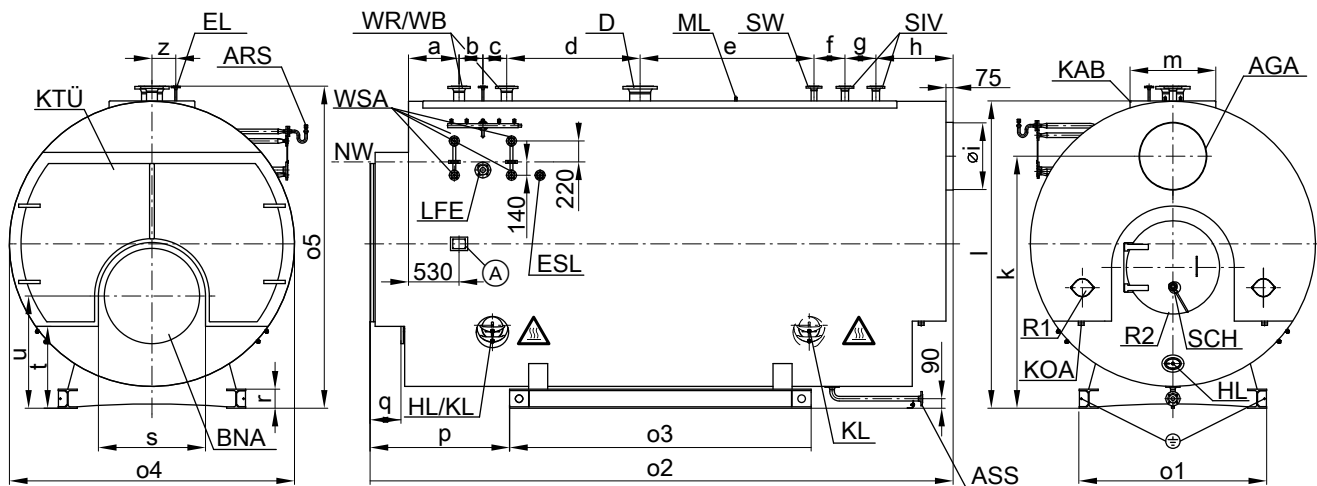


#### Operating pressure:

- Ⓐ 23 bar
- Ⓑ 21 bar
- Ⓒ 19 bar
- Ⓓ 17 bar

- Ⓔ 15 bar
- Ⓕ 11 bar
- Ⓖ 9 bar
- Ⓗ 7 bar
- Ⓘ 5 bar

## Specification - boiler without ECO



Caution – hot surface!

Ⓐ	Type plate	KTÜ	Boiler door
AGA	Flue outlet	LFE	Connector for conductivity electrode with dummy flange DN 50 PN 40
ARS	Connector for fitting assembly DN 20 PN 40	ML	Manhole 320 x 420 mm
ASS	Connector for blow-down valve DN 25 PN 40	NW	Lowest water level
BNA	Burner connection	R 1	Cleaning aperture, flue gas collector
D	Steam connector	R 2	Cleaning aperture, combustion chamber
EL	Vent connector DN 15 PN 40	SIV	Connector for safety valve with 1x dummy flange
ESL	Connector for TDS line DN 20 PN 40	SCH	Inspection port R 2
HL	Handhole 100 x 150 mm	SW	Feedwater connector
HL/KL	Handhole or headhole	WR/WB	Connector for water level control/limitation DN 100 PN 40
KAB	Boiler cover	WSA	Connector for water level indicator with 1x dummy flange DN 20 PN 40
KL	Headhole 220 x 320 mm		
KOA	Condensate drain R 1 ½		

### Dimensions\*2

Boiler size		1	2	3	4	5	6	7
a	mm	505	505	505	480	480	480	480
b	mm	175	175	200	200	200	200	200
c	mm	175	175	200	200	200	200	200
d	mm	750	875	1000	1100	1125	1225	1335
e	mm	240	335	370	450	625	750	925
f	mm	210	195	230	250	260	250	250
g	mm	200	200	200	200	200	250	250
h	mm	732	732	727	722	722	712	722
i <sup>*3</sup>	∅ mm	216	242	272	307	346	392	442
k	mm	1685	1745	1860	1930	2025	2095	2170
l	mm	2035	2110	2225	2325	2435	2535	2625
m	mm	900	900	900	900	1000	1000	1000
o1	mm	1200	1240	1310	1360	1420	1475	1520
o2	mm	3181	3381	3601	3796	4006	4271	4556
o3	mm	1700	1800	1900	2000	2100	2200	2400
o4	mm	1850	1925	2040	2140	2250	2350	2440
o5	mm	2160	2235	2350	2450	2560	2660	2750
p	mm	698	748	808	855	910	993	1035
q	mm	134	134	134	134	134	134	130
r	mm	120	120	120	120	120	120	120
s	mm	670	700	790	820	870	930	965
t	mm	850	813	880	845	870	845	850
u	mm	865	880	910	925	960	990	1018
z	mm	200	225	225	250	275	300	300

\*2 Nominal dimensions, subject to modification

\*3 Internal diameter; for external diameter +8 mm

## Specification - boiler without ECO (cont.)

Table

Boiler size		1	2	3	4	5	6	7
Permissible steam output**1	t/h	1.0	1.3	1.65	2.0	2.5	3.2	4.0
(at 102 °C feedwater temperature)								
Combustion heating output		see diagram on page 3						
CE designation		see page 17						
Shipping dimensions (incl. packaging)**4								
- total length	m	3.38	3.58	3.80	4.00	4.21	4.47	4.76
- total width	m	1.88	1.95	2.07	2.17	2.28	2.38	2.47
- total height	m	2.19	2.26	2.38	2.48	2.59	2.69	2.78
Weight (when empty)**5								
Boiler with thermal insulation for permissible operating pressure								
6 bar	t	3.1	3.5	4.3	5.0	5.6	6.8	7.8
8 bar	t	3.3	3.7	4.6	5.4	6.1	7.3	8.5
10 bar	t	3.5	4.1	4.9	5.9	6.7	7.9	9.3
13 bar	t	4.0	4.6	5.5	6.4	7.4	8.7	10.2
16 bar	t	4.5	5.0	6.0	7.1	8.2	9.8	11.5
18 bar	t	4.7	5.3	6.6	7.7	8.9	10.4	11.5
20 bar	t	5.1	5.8	6.9	8.2	9.5	10.5	12.3
22 bar	t	5.3	6.1	7.4	8.2	9.7	11.4	13.4
25 bar	t	5.8	6.7	7.9	9.2	10.6	12.5	14.5
Boiler water content								
- total	m <sup>3</sup>	3.41	4.04	4.96	5.84	7.04	8.33	9.63
- average operating range	m <sup>3</sup>	3.14	3.70	4.53	5.30	6.28	7.33	8.48
Steam chamber volume	m <sup>3</sup>	0.27	0.34	0.42	0.53	0.76	1.00	1.14
Steam level surface area	m <sup>2</sup>	2.42	2.78	3.22	3.69	4.37	5.15	5.70
Boiler connections								
		<b>Steam connector</b>						
6 bar	PN 16 DN	80	100	100	125	125	150	150
8 bar	PN 16 DN	65	80	100	100	100	125	150
10 bar	PN 16 DN	65	65	80	80	100	125	125
13 bar	PN 40 DN	50	65	65	80	80	100	100
16 bar	PN 40 DN	50	50	65	65	65	80	100
18 bar	PN 40 DN	50	50	65	65	65	80	100
20 bar	PN 40 DN	40	50	50	65	65	80	80
22 bar	PN 40 DN	40	50	50	65	65	65	80
25 bar	PN 40 DN	32	40	50	50	65	65	80
		<b>Safety valve connector</b>						
6 bar	PN 40 DN	25	32	32	40	40	50	50
8 bar	PN 40 DN	25	25	32	32	40	40	50
10 bar	PN 40 DN	20	25	25	32	32	40	40
13 bar	PN 40 DN	20	20	25	25	32	32	40
16 bar	PN 40 DN	20	20	20	25	25	32	32
18 bar	PN 40 DN	20	20	20	20	25	32	32
20 bar	PN 40 DN	20	20	20	20	25	25	32
22 bar	PN 40 DN	20	20	20	20	25	25	32
25 bar	PN 40 DN	20	20	20	20	20	25	25
		<b>Feedwater connector</b>						
	PN 40 DN	25	32	32	32	32	32	32
Flue gas parameters		see diagrams on page 14 to 15						
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 <sup>3</sup>	1.48	1.75	2.16	2.60	3.03	3.64	4.37

\*1 The actual steam output may be lower depending on the emission values required at the installation site.

\*4 Flue gas hood and feedwater line are delivered separately

\*5 The weight of the boiler when empty can vary by up to 10 %, for production-related reasons.

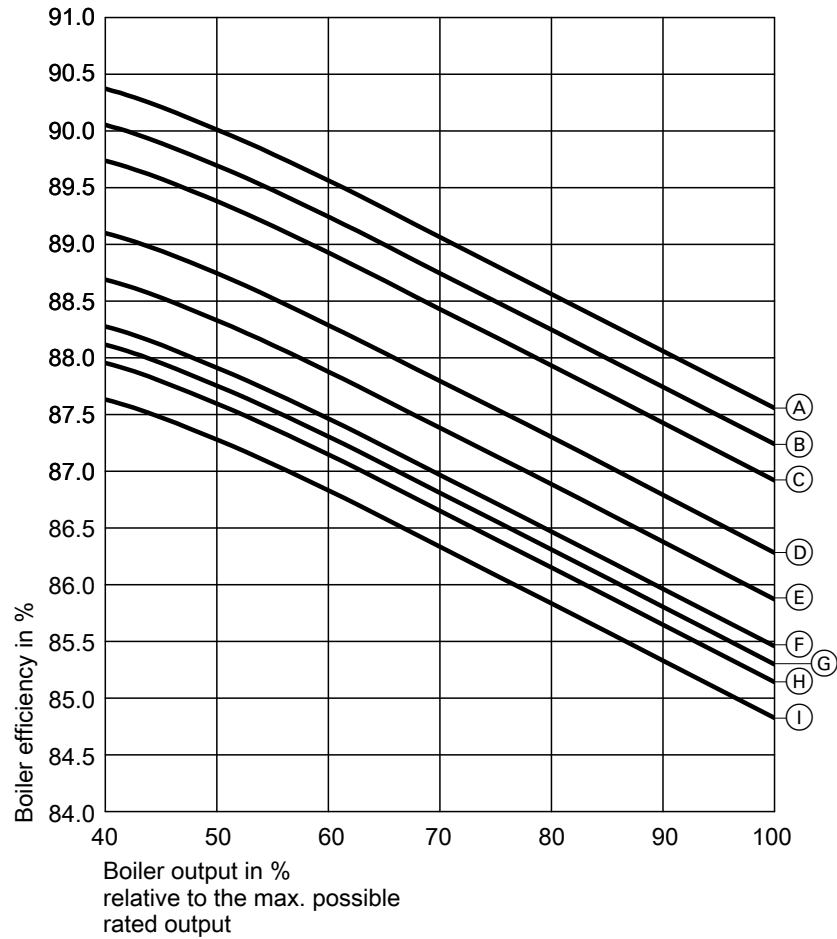
## Specification - boiler without ECO (cont.)

### Boiler efficiency subject to the operating pressure without ECO

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C



#### Operating pressure:

- Ⓐ 5 bar
- Ⓑ 7 bar
- Ⓒ 9 bar
- Ⓓ 11 bar

- Ⓔ 15 bar
- Ⓕ 17 bar
- Ⓖ 19 bar
- Ⓗ 21 bar
- Ⓘ 23 bar

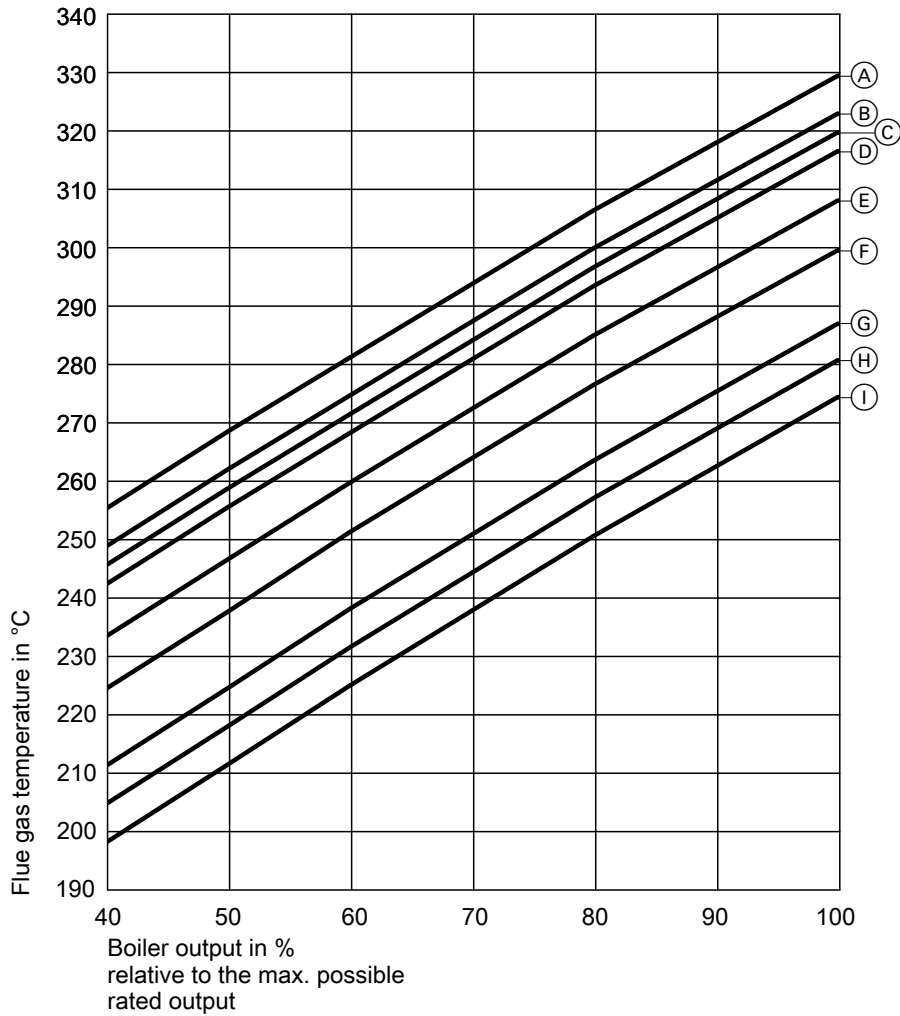
## Specification - boiler without ECO (cont.)

### Flue gas temperature subject to the operating pressure without ECO

Values averaged across all boiler sizes

Residual oxygen content in the flue gas 3 %

Feedwater temperature 102 °C



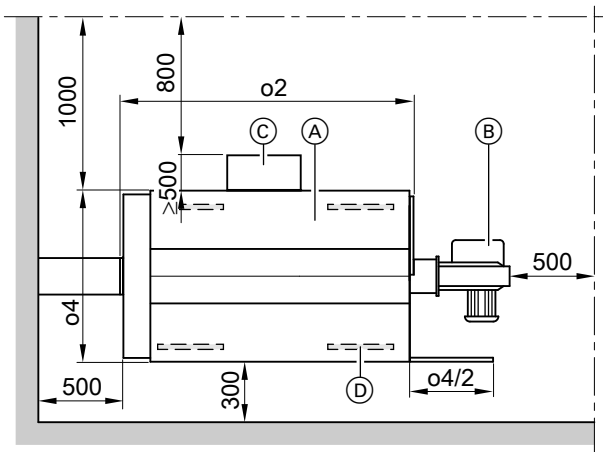
#### Operating pressure:

- Ⓐ 23 bar
- Ⓑ 21 bar
- Ⓒ 19 bar
- Ⓓ 17 bar

- Ⓔ 15 bar
- Ⓕ 11 bar
- Ⓖ 9 bar
- Ⓗ 7 bar
- Ⓘ 5 bar

## Specification - boilers in general

### Recommended minimum clearances to TRD 403- 3.2



- (A) Boiler
  - (B) Burner
  - (C) Regulating and control system
  - (D) Anti-vibration boiler supports (optional)
- o2 and o4 For these values please see the dimensions tables of the corresponding boilers.

### Installation conditions

- Avoid air contamination by halogenated hydrocarbons (e.g. as contained in sprays, paints, solvents and cleaning agents)
- Avoid very dusty conditions
- Avoid high levels of humidity
- Prevent frost and ensure good ventilation
- Install on a level surface

Otherwise, the system may suffer faults and damage. In rooms where air contamination from **halogenated hydrocarbons** may occur, install the boiler only if adequate measures can be taken to provide a supply of uncontaminated combustion air.

### Delivered condition

#### Boiler with

- Thermal insulation
- Fitting assembly
- Dummy flanges for connectors that are not required in all applications
- Sight glass
- Burner plate included
- Insulation material for the flame head gasket
- Packaging

#### For boilers with economiser, the following are additionally delivered for installation on site:

- Feedwater line with thermal insulation
- Flue gas hood with thermal insulation



## Design information

### Fitting a suitable burner

The burner must be suitable for the respective rated heating output and the pressure drop on the hot gas side of the boiler (see burner manufacturer's specification).

The material of the burner head must be suitable for operating temperatures of at least 500 °C.

Burners of special design, e.g. rotary atomisers, require consultation with the factory prior to ordering.

#### Pressure-jet oil burner

The burner must be tested and labelled to EN 267.

#### Pressure-jet gas burner

The burner must be tested to EN 676 and must be provided with a CE designation in line with Directive 90/396/EEC.

#### Burner adjustment

Match the oil or gas throughput of the burner to the rated heating output of the boiler.

#### Burner connection

On request, the burner plate can be prepared at the factory. For this, please state the burner make and type when ordering. Otherwise, create the blast tube aperture and fixing holes on site in the dummy plate supplied.

## Fuels

#### Oil:

- Fuel oil EL to DIN 51603 part 1.
- Fuel oil S or SA to DIN 51603 parts 2, 3, 5.

#### Gas:

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

Alternative fuels on request.

## Tested quality

 CE designation according to current EC Directives.

Subject to technical modifications.

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