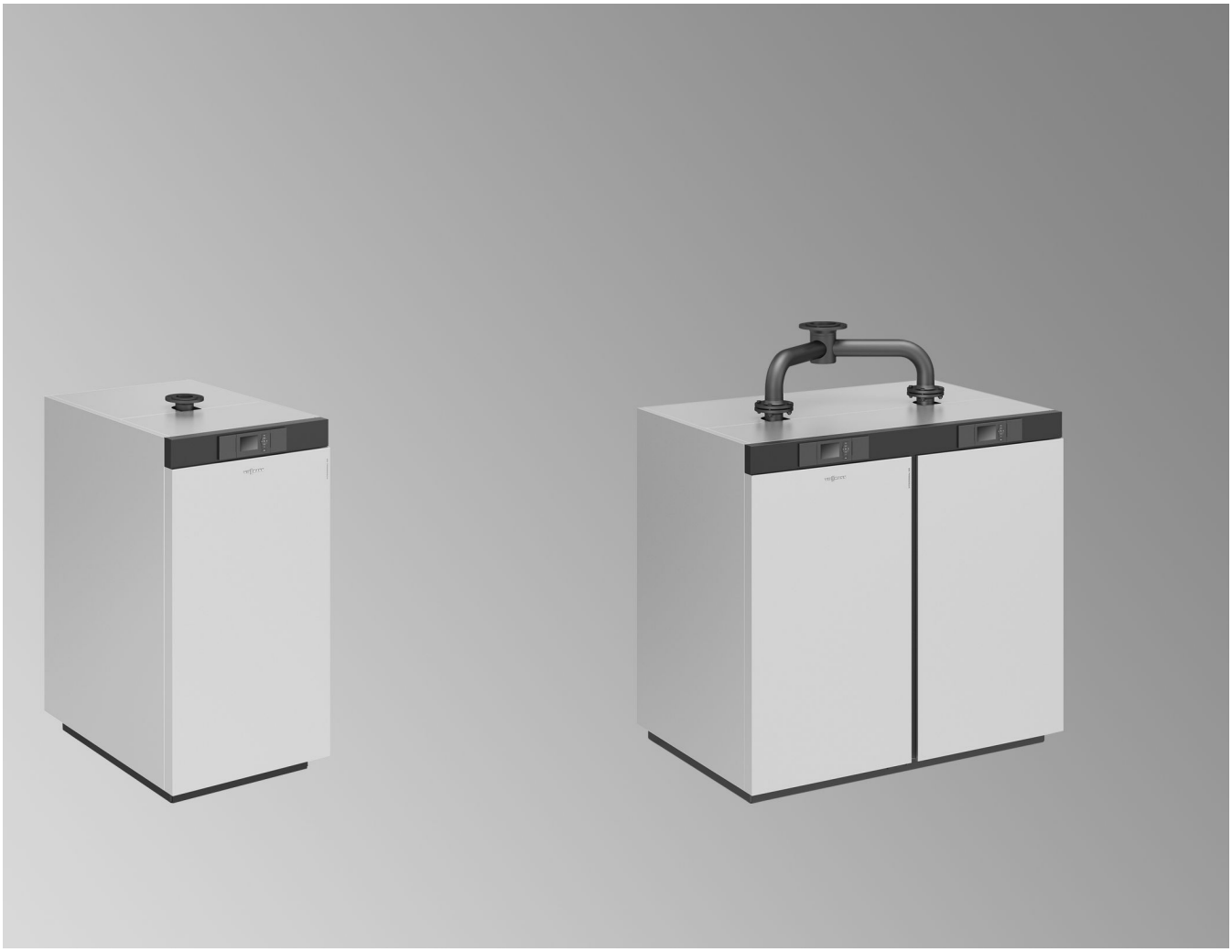
VIESMANN

VITOCROSSAL 100

Gas condensing boiler
80 to 318 kW
240 to 636 kW

Datasheet

Part no. and prices: See pricelist



VITOCROSSAL 100 Type CI1

Gas condensing boiler for natural gas E and LL
With modulating MatriX cylinder burner and Lambda Pro Control

5795 843 GB 3/2017

Benefits at a glance

- Condensing unit with MatriX cylinder burner and Lambda Pro Control, also available as a twin cascade 240 to 636 kW in a single casing
- Boiler available as pre-wired and pre-assembled unit or as individual components
- Standard seasonal efficiency [to DIN] up to 98 % (Hs) [gross cv] / 109 % (Hi) [net cv]
- Stainless steel, corrosion-resistant Integral-Spalt heat exchanger ensures high operational reliability and a long service life
- Clean combustion through self-calibrating gas-adaptive combustion controller and highly efficient stainless steel heat exchanger
- Low-wear operation through wide modulation range and long burner runtime without frequent switching
- MatriX cylinder burner with Lambda Pro Control for environmentally responsible operation, with a modulation range of 20 to 100 %
- Exceptionally quiet operation
- Space efficient and compact, ideal in conditions where handling is difficult
- Easy handling with integrated castors and tailored packaging.
- Either room sealed or open flue operation
- Easy to operate Vitotronic control unit with plain text and graphic display

Ⓐ Highly effective thermal insulation
Ⓑ Vitotronic boiler control unit
Ⓒ High grade casing
Ⓓ Modulating MatriX cylinder burner with Lambda Pro Control
Ⓔ Stainless steel Integral-Spalt heat exchanger
Ⓕ Inspection cover for easy maintenance
Ⓖ Integrated castors for easy handling
Ⓗ Height-adjustable feet

Boiler specification

Rated heating output range								
TF/TR = 50/30	**kW**	**16 - 80**	**32 - 120**	**32 - 160**	**48 - 200**	**48 - 240**	**64 - 280**	**64 - 318**
TF/TR = 80/60	**kW**	**15 - 74**	**29 - 110**	**29 - 146**	**44 - 184**	**44 - 220**	**58 - 258**	**58 - 291**
Rated heat input	kW	76	113	151	189	226	264	300
Product ID		CE-0085CR0391						
Permiss. operating temperature	°C	95						
Permiss. flow temperature (= safety temperature)	°C	110						
Max. permiss. operating pressure	bar	6						
	MPa	0.6						
Min. permiss. operating pressure	bar	0.5						
	MPa	0.05						
Test pressure	bar	7.8						
	MPa	0.78						
Boiler body dimensions								
Length/handling dimension*1	mm	660/450	780/570	780/570	900	900	1010	1010
Width	mm	680	680	680	680	680	680	680
Height	mm	1459	1459	1459	1459	1459	1459	1459
Overall dimensions without boiler flue connection								
Length g	mm	745	875	875	980	980	1090	1090
Width c	mm	750	750	750	750	750	750	750
Height a	mm	1500	1500	1500	1500	1500	1500	1500
Foundation dimensions								
Length	mm	750	850	850	1000	1000	1100	1100
Width	mm	800	800	800	800	800	800	800
Height	mm	100	100	100	100	100	100	100
Weight								
Overall unit weight	kg	238	295	295	340	340	385	385
Packed unit	kg	288	345	345	390	390	435	435
Boiler body	kg	183	230	230	265	265	300	300
Boiler body with transport pallet	kg	210	260	260	295	295	330	330
Burner	kg	10	11	11	15	15	15	15
Water capacity	l	65	103	103	145	145	180	180
Connections								
Boiler flow	PN 6 DN	50	50	50	65	65	65	65
Boiler return	PN 6 DN	50	50	50	65	65	65	65
Safety connection	R	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Drain	R	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Trap with condensate drain	mm	20	20	20	20	20	20	20
Flue gas parameters*2								
Temperature (at a return temperature of 30 °C)								
– At rated heating output	°C	45	45	45	45	45	45	45
– At partial load	°C	35	35	35	35	35	35	35
Temperature (at a return temperature of 60 °C)	°C	65	65	65	65	65	65	65
Mass flow rate (for natural gas)								
– At rated heating output	kg/h	120	180	240	300	360	420	477
– At partial load	kg/h	36	54	72	90	108	126	143
Flue gas connection	DN	200	200	200	200	200	200	200
Draught at	mbar	0.7	0.7	0.7	0.7	0.7	0.7	0.7
flue outlet	Pa	70	70	70	70	70	70	70
Product parameters according to EnEV								
Standard seasonal efficiency [to DIN]								
For heating system temperature 40/30 °C	%	Up to 98 (Hs) [gross cv] / 109 (Hi) [net cv]						
For heating system temperature 75/60 °C	%	Up to 96 (Hs) [gross cv] / 106 (Hi) [net cv]						

*1 *With unassembled base rail*

*2 *Values for calculating the size of the flue system to EN 13384, based on 10 % CO_2 for natural gas*
Flue gas temperatures as actual gross values at 20 °C combustion air temperature.
The details for partial load refer to an output of 30 % of the rated heating output. If the partial load differs (subject to burner operating mode), calculate the flue gas mass flow rate accordingly.

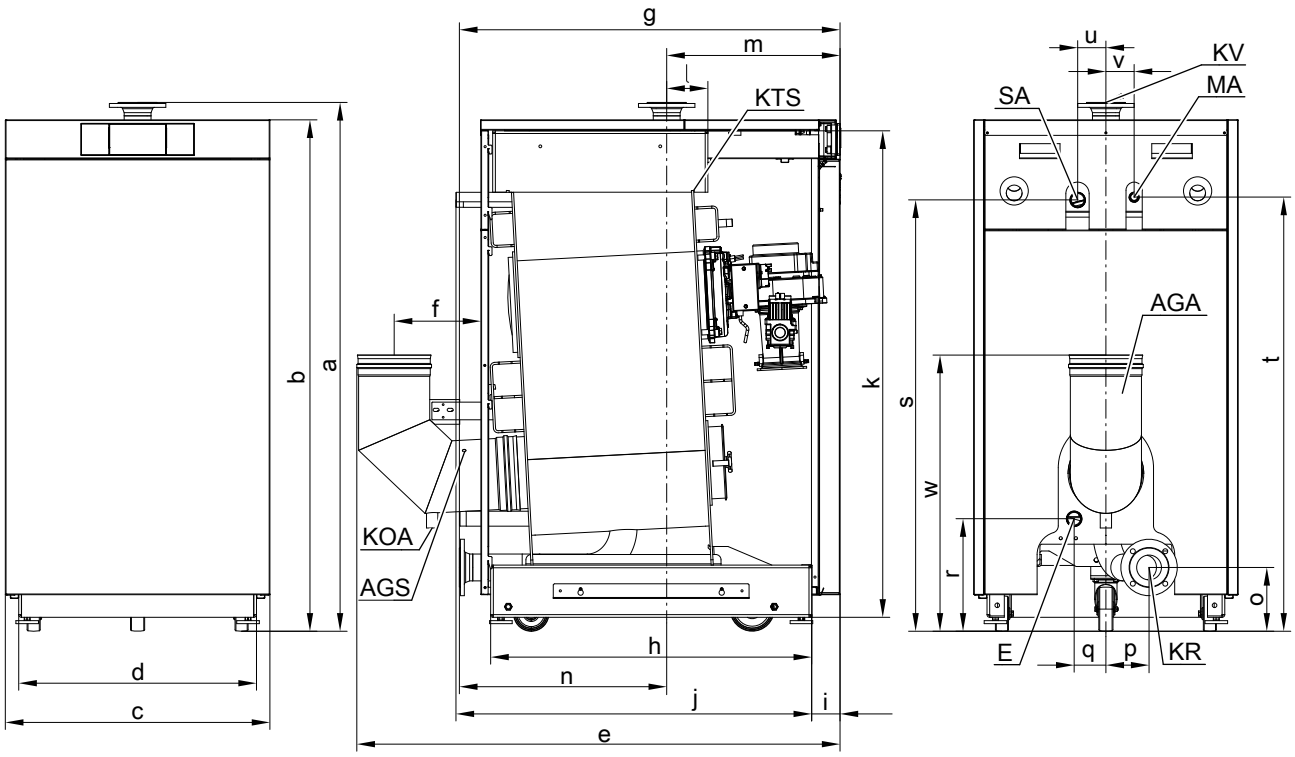
Boiler specification (cont.)

Rated heating output range								
TF/TR = 50/30	**kW**	**16 - 80**	**32 - 120**	**32 - 160**	**48 - 200**	**48 - 240**	**64 - 280**	**64 - 318**
TF/TR = 80/60	**kW**	**15 - 74**	**29 - 110**	**29 - 146**	**44 - 184**	**44 - 220**	**58 - 258**	**58 - 291**
Standby loss qB,70	%	0.6	0.5	0.3	0.6	0.6	0.6	0.6
NOx		NOx class 6, < 56 mg/kWh						

Twin boiler specification

Rated heating output	**kW**	**240**	**320**	**400**	**480**	**560**	**636**
Twin boiler comprises 2 boilers, each with	kW	120	160	200	240	280	318
Overall dimensions without boiler flue connection							
Length	mm	875	875	980	980	1090	1090
Width	mm	1500	1500	1500	1500	1500	1500
Height	mm	1500	1500	1500	1500	1500	1500
Total weight	kg	590	590	680	680	770	770
Water capacity	l	206	206	290	290	360	360

Specification



AGS Flue gas temperature sensor R ⅛
AGA Flue outlet DN 200
E Drain
KOA Condensate drain
KR Boiler return
KTS Boiler water temperature sensor R ⅛
KV Boiler flow
MA Pressure gauge R ½
SA Safety connection (safety valve)

Rated heating output	**kW**	**Up to 80**	**120 and 160**	**200 and 240**	**280 and 318**
a	mm	1500			
b	mm	1450			
c	mm	750			
d	mm	674			
e	mm	1024	1148	1251	1370
f	mm	235	235	241	245
g	mm	745	875	980	1090
h	mm	570	682	798	910
i	mm	83	92	77	80
j	mm	660	780	900	1010
k	mm	1380			
l	mm	168	198	166	117

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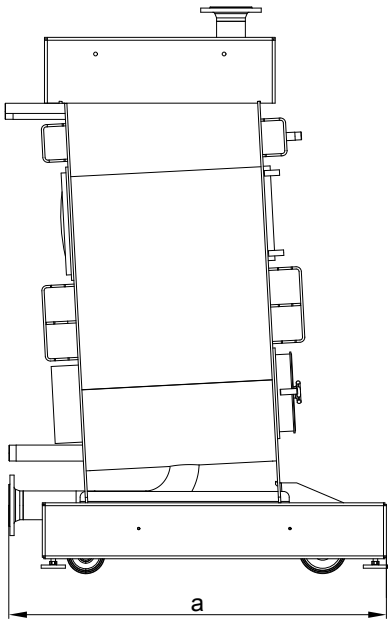
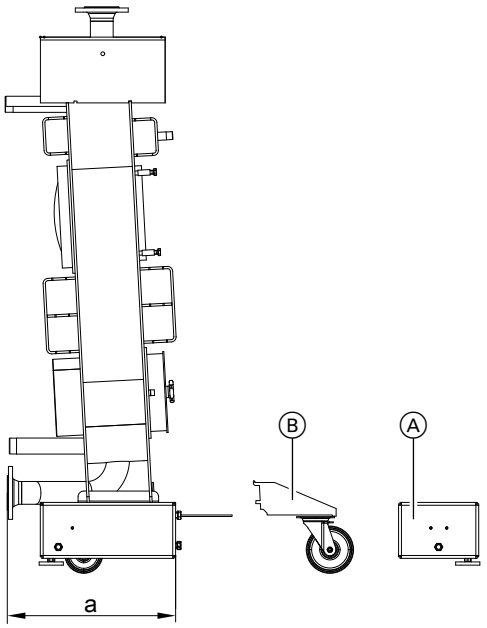
Boiler specification (cont.)

Rated heating output	kW	Up to 80	120 and 160	200 and 240	280 and 318
m	mm	491	500	486	892
n	mm	250	360	485	588
o	mm	213	209	183	181
q	mm	90			
r	mm	337	331	325	319
s	mm	1240	1234	1228	1223
t	mm	1249	1242	1236	1230
u	mm	80			
v	mm	80			
w	mm	80	794	788	783

Transport dimensions





Ⓐ Base rail
Ⓑ Retaining bracket with castor

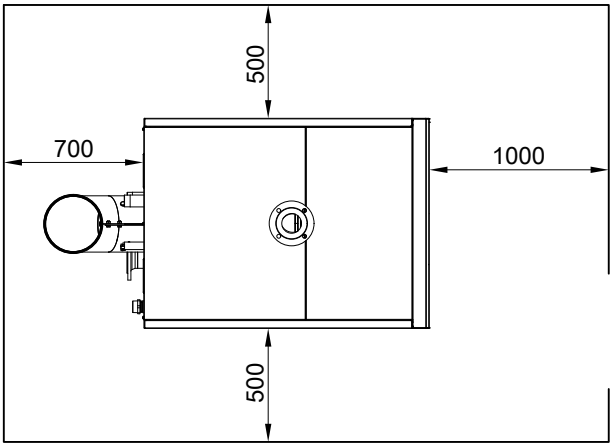
Handling dimension a

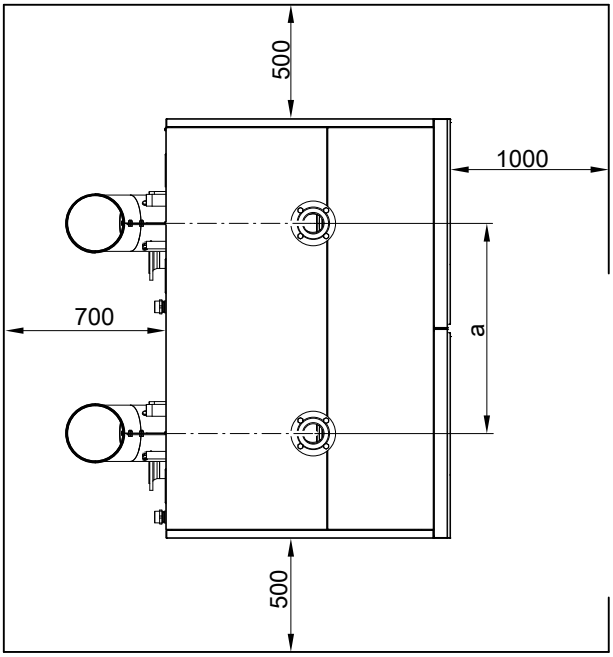
kW	Up to 80	120 and 160	From 200
mm	450	570	680

Note
For boilers of up to 160 kW, the base rail of the boiler body can be separated for easier handling.

Siting

Minimum clearances





a = 750

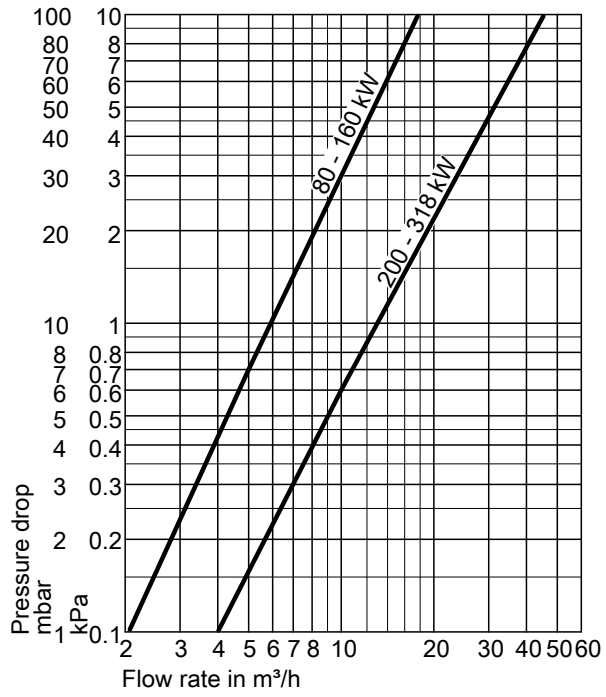
Siting

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

Otherwise the system may suffer faults and damage.
In rooms where air contamination from **halogenated hydrocarbons** is to be expected, operate the boiler only in room sealed mode.

Boiler specification (cont.)

Pressure drop on the heating water side



The Vitocrossal 100 is only suitable for fully pumped hot water heating systems.

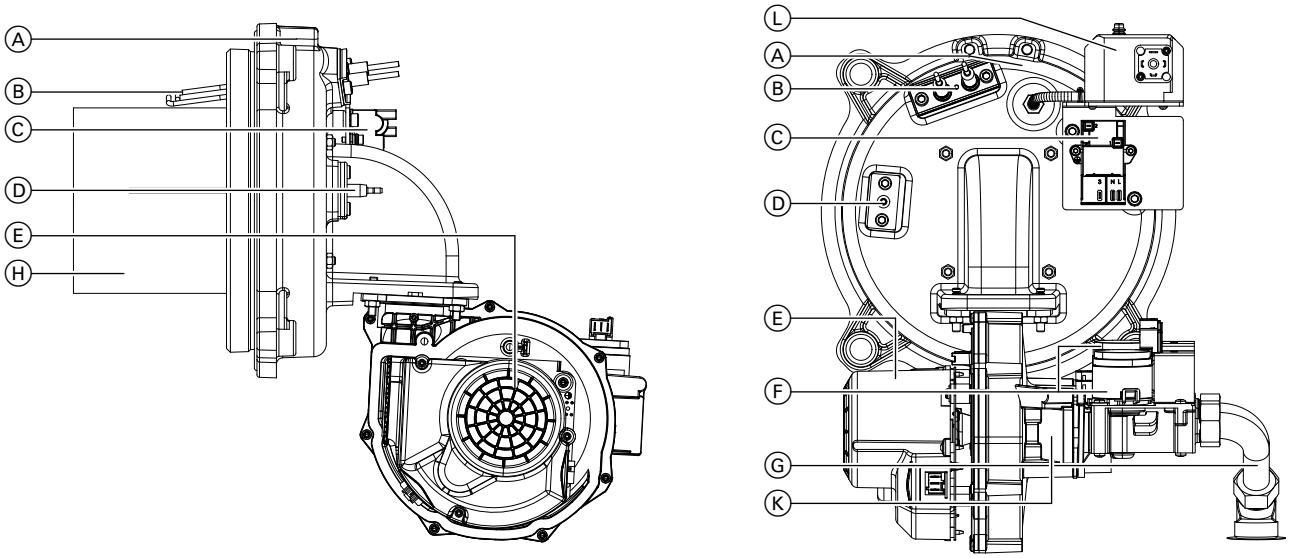
MatriX cylinder burner specification

Specification

Rated boiler heating output T_F/T_R 50/30 °C	**kW**	**80**	**120**	**160**	**200**	**240**	**280**	**318**
Twin boiler			**240**	**320**	**400**	**480**	**560**	**636**
Burner heating output, lower/upper output *3	kW	15.1/75.5	30.2/113.2	30.2/ 150.9	45.3/ 188.7	45.3/ 226.4	60/264.2	60/300
Burner type		CI1 75/80 kW	CI1 120/ 160 kW	CI1 120/ 160 kW	CI1 200/ 240 kW	CI1 200/ 240 kW	CI1 280/ 318 kW	CI1 280/ 318 kW
Product ID		See boiler						
Voltage	V	230						
Frequency	Hz	50						
Power consumption								
At upper heating output	W	140.5	130	268	171	279	260	393
At lower heating output	W	19.5	28	28	29	29	26.5	26.5
Type		Modulating						
Dimensions								
Width a	mm	463	426	426	463	463	463	463
Length b	mm	442	481	481	655	655	731	731
Height c	mm	400	273	273	356	356	356	356
Weight Burner with combination valve	kg	10	11	11	15	15	15	15
Gas supply pressure G20/G25	mbar kPa	20/25 2/2.5						
Gas connection	R	1	1½	1½	1½	1½	1½	1½
Supply values relative to the max. load with								
– Natural gas E (G20) Partial load/ Full load	m^3/h	1.6/ 7.99	3.19/ 11.98	3.19/ 15.97	4.79/ 19.97	4.79/ 23.56	6.35/ 27.95	6.35/ 31.75
– Natural gas LL (G25) Partial load/ Full load	m^3/h	1.86/ 9.28	3.71/ 13.92	3.71/ 18.57	5.57/ 23.21	5.57/ 27.85	7.38/ 32.49	7.38/ 36.9

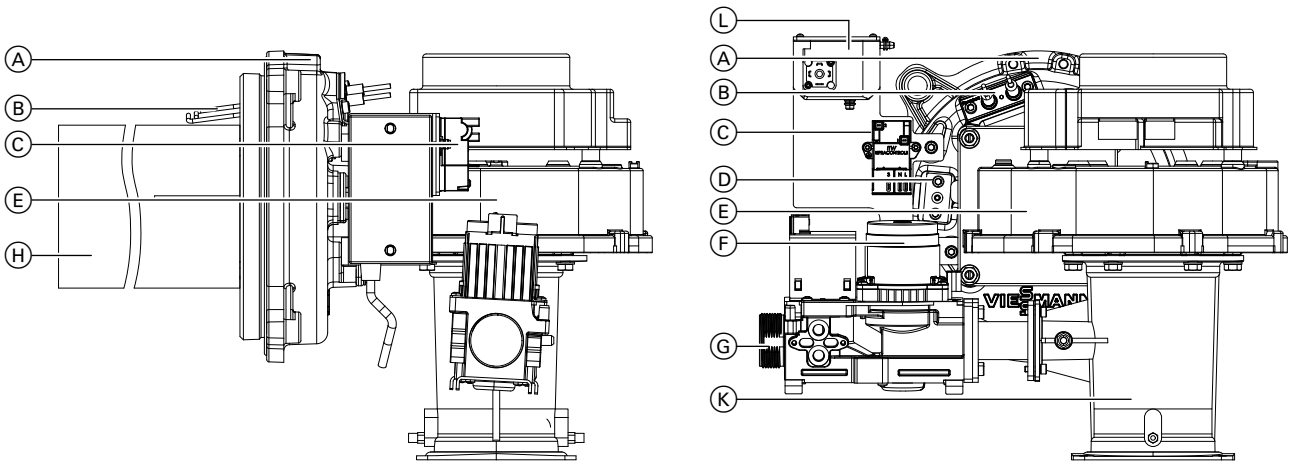
*3 *Corresponds to the rated heat input of the boiler.*

MatriX cylinder burner specification (cont.)



MatriX cylinder burner 80 kW

Ⓐ Boiler door
Ⓑ Ignition electrodes
Ⓒ Ignition module
Ⓓ Ionisation electrode
Ⓔ Fan
Ⓕ Gas train
Ⓖ Gas supply pipe
Ⓗ Flame tube
Ⓚ Ventilation air connection
Ⓛ Combustion chamber pressure limiter



MatriX cylinder burner 280/318 kW

Ⓐ Boiler door
Ⓑ Ignition electrodes
Ⓒ Ignition unit
Ⓓ Ionisation electrode
Ⓔ Fan
Ⓕ Gas train
Ⓖ Gas supply pipe
Ⓗ Flame tube
Ⓚ Venturi mixing pipe
Ⓛ Combustion chamber pressure limiter

Delivered condition

Delivered condition of Vitocrossal fully assembled as a unit:
- Complete boiler with wheels and adjustable feet on transportation pallet
- Boiler flue connection and trap enclosed.
- Box with programming unit
- Technical documentation

Delivered condition of Vitocrossal as individual components for assembly on site
- Boiler body with transport wheels, adjustable feet and caps (connectors) on transportation pallet; boiler flue connection and trap enclosed.
- Box with thermal insulation

Delivered condition (cont.)

- Box with burner and coding card
- Box with control unit
- Box with cable kit
- Box with programming unit bracket
- Box with programming unit
- Technical documentation

Equipment - control unit version

For single boiler systems:

- Without Vitocontrol control panel
  Vitotronic 100 (type GC7B)
  For constant boiler water temperature
  Vitotronic 200 (type GW7B)
  For modulating boiler water temperature
  Without mixer control
  Vitotronic 200 (type GW7B)
  For modulating boiler water temperature
  With mixer control, for up to 2 heating circuits with mixer

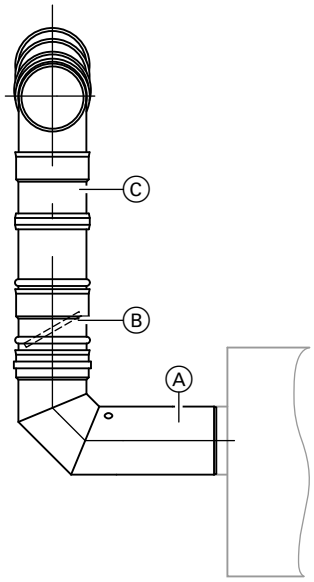
For multi boiler systems:
(up to 4 boilers)

- **Vitotronic 100** (type GC7B) **and LON communication module**
  For modulating boiler water temperature
  For each boiler in a multi boiler system
  and
  Vitotronic 300-K (type MW1B) for multi boiler system, weather-compensated operation and mixer control for up to 2 heating circuits with mixer and additional Vitotronic 200-H, type HK1B or HK3B for 1 or up to 3 heating circuits with mixer

Boiler accessories

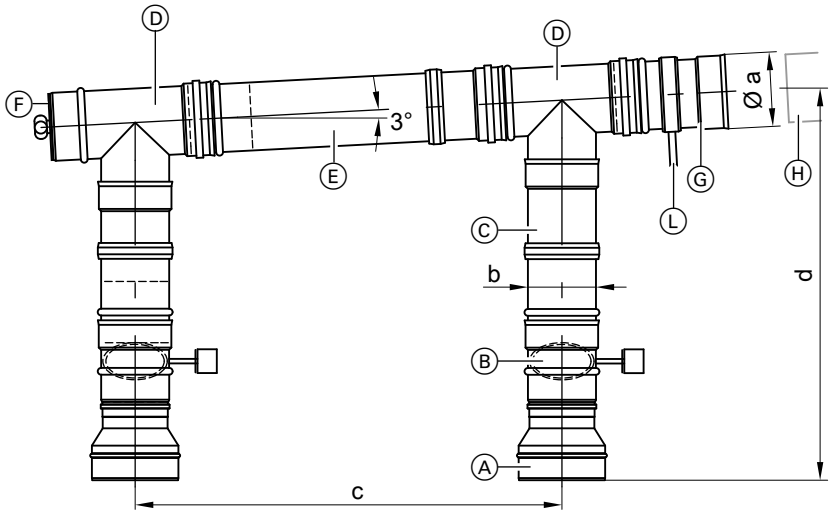
Stainless steel flue gas header for two-boiler system

Connection to the flue system; outlet either on the left or right



Ⓐ Boiler flue connection with test ports (standard delivery with boiler)
Ⓑ Motor-controlled flue gas damper
Ⓒ Sliding part

Boiler accessories (cont.)



Ⓐ Adaptor 200 mm to 150 mm (boiler 240 to 320 kW)
Ⓑ Motor-controlled flue gas damper
Ⓒ Sliding part
Ⓓ Tee connector
Ⓔ Sliding part
Ⓕ Inspection cover
Ⓖ Flue pipe with condensate drain
Ⓗ Flue system
Ⓛ Condensate drain

Note

- *Order the flue gas damper from the accessories range if an on-site flue gas header is used.*
- *The flue gas damper is included in the Viessmann flue gas headers for two-boiler systems.*

Dimensions

Boiler	**kW**	**240 to 320**	**400 to 480**	**560 to 640**
Nominal diameter	**mm**	**150/200**	**200/250**	**200/300**
a	mm	200	250	300
b	mm	150	200	200
c*4	mm	752 to 958	752 to 1018	752 to 1018
d	mm	842 to 912	715 to 835	765 to 845

Length of flue for max. draught 70 Pa

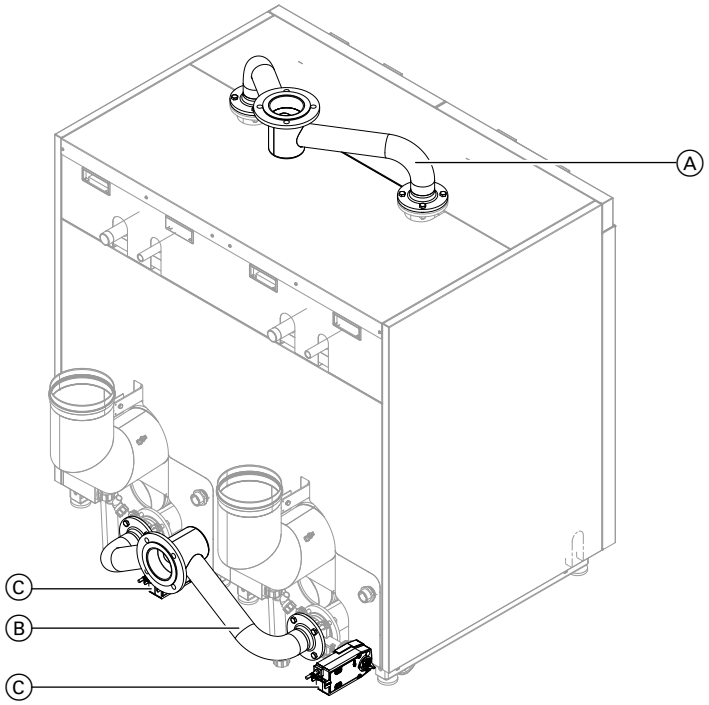
Rated heating output	**Flue length max. 30 m with diameter of:**
2 x 120 kW 2 x 160 kW	∅ 200 mm
2 x 200 kW 2 x 240 kW	∅ 250 mm
2 x 280 kW 2 x 318 kW	∅ 300 mm

Use a flue pipe with the same diameter as that of the flue gas header.

*4 *Adjustable range if used as a flue gas header for 2 single boilers positioned next to each other*

Boiler accessories (cont.)

Hydraulic system pipework for two-boiler system



Ⓐ Flow
Ⓑ Return
Ⓒ Servomotor

Rated heating output in kW		Nominal diameter
Single boiler	Twin boiler	
120	240	DN 50/80
160	320	DN 50/80
200	400	DN 65/100
240	480	DN 65/100
280	560	DN 65/100
318	636	DN 65/100

Further accessories

See pricelist and "Boiler accessories" datasheet.

Operating conditions

For water quality requirements, see technical guide.

	Requirements
1. Heating water flow rate	None
2. Boiler return temperature (minimum value)	None
3. Low end boiler water temperature	None
4. Low end boiler water temperature with frost protection	10 °C – ensured through the Viessmann control unit
5. Modulating burner operation	None
6. Reduced mode	None – total reduction is possible
7. Weekend setback	None – total reduction is possible

Design information

Siting for room sealed operation

As a type C_{13}, C_{33}, C_{53}, C_{63}, C_{93} appliance to TRGI 2008, the Vitocrossal can be operated in room sealed mode. (C_{63} not in Belgium)

Siting for open flue operation

B_{23}, B_{23P} (only in France)
For open flue combustion equipment with a total rated output in excess of 50 kW, the fresh ventilation is deemed to have been verified if the combustion equipment is located in areas which provide an aperture or duct leading outdoors.
The cross-section of the aperture must be at least 150 cm^2 and must be 2 cm^2 larger for each additional kW above 50 kW rated output.

Pipes must be sized to provide equivalent flow rates. The required cross-section may be split over a maximum of two apertures or pipes.

Neutralisation

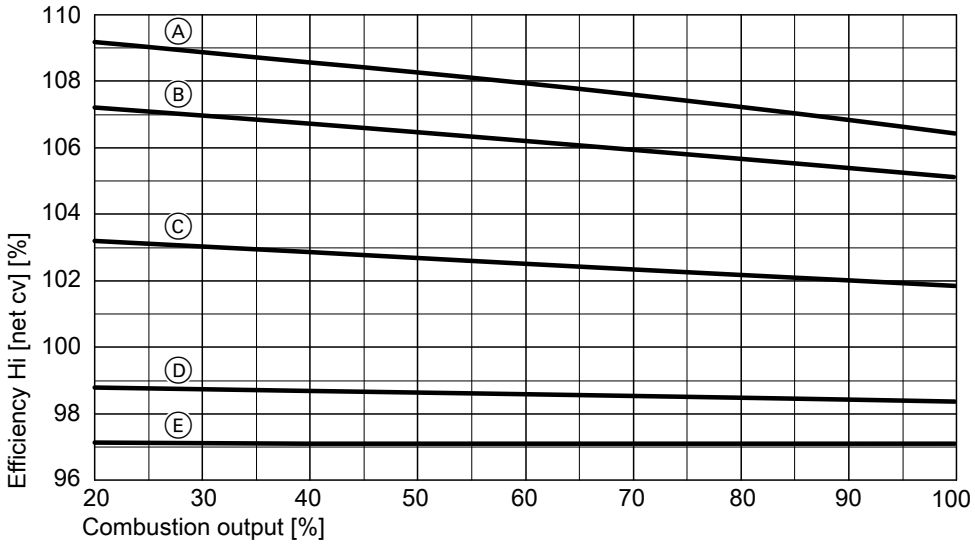
During condensation, acidic condensate is formed with a pH value of between 3 and 4. The condensate can be neutralised in a neutralising system with the aid of a neutralising medium.

For further information, see the technical guide and price sheet.

Burner adjustment

The MatriX cylinder burner is tested at operating temperature and preset at the factory.

Efficiency (Hi) [net cv] in relation to combustion output
Efficiency curves at different system design temperatures

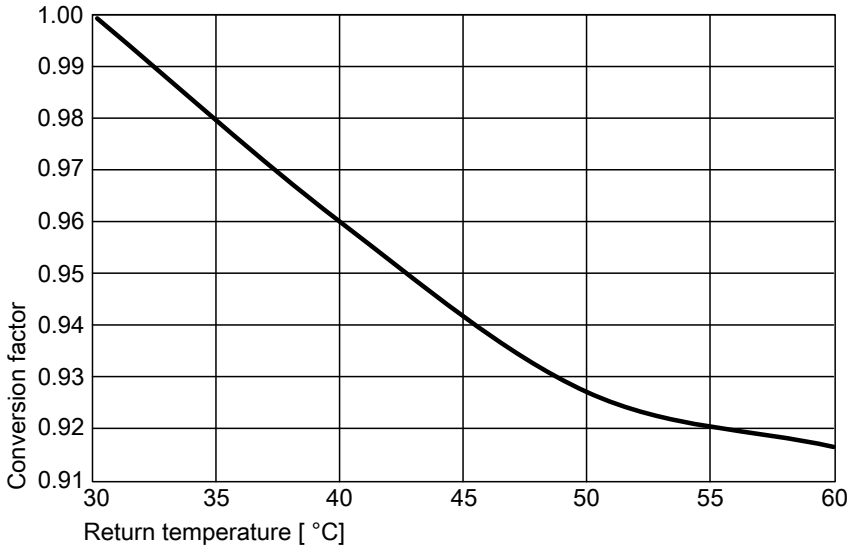


Ⓐ FL/RT spread 40/20 °C
Ⓑ FL/RT spread 50/30 °C
Ⓒ FL/RT spread 60/40 °C
Ⓓ FL/RT spread 70/50 °C
Ⓔ FL/RT spread 80/60 °C

Design information (cont.)

Rated heating output

Rated heating output, conversion factors for various system design temperatures



Tested quality

CE designation according to current EC Directives

ÖVGW Applied for

Subject to technical modifications.

Viessmann Werke GmbH & Co. KG
D-35107 Allendorf
Telephone: +49 6452 70-0
Fax: +49 6452 70-2780
www.viessmann.com

Viessmann Limited
Hortonwood 30, Telford
Shropshire, TF1 7YP, GB
Telephone: +44 1952 675000
Fax: +44 1952 675040
E-mail: info-uk@viessmann.com

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