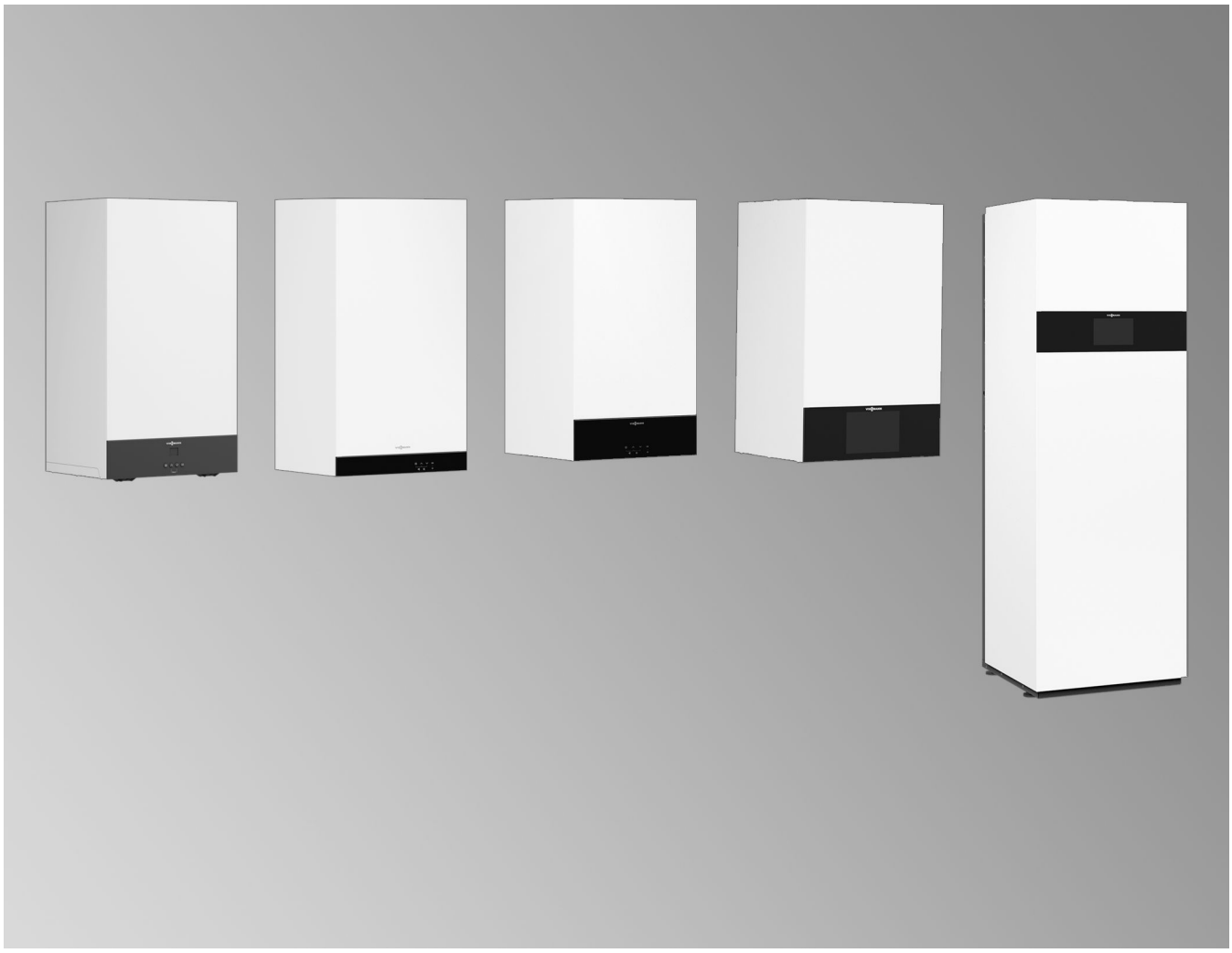
VIESMANN

VITODENS

Flue systems for gas condensing boilers up to 150.0 kW

Technical guide



Vitodens flue systems

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1.1 Flue systems

The following requirements regarding design and installation apply to flue systems for condensing combustion equipment:
Prior to starting work on the flue system, your heating contractor should confer with the responsible flue gas inspector [where applicable].
Gas combustion equipment must be connected to the domestic chimney on the same floor that it is installed on (no transition through separating ceilings).
Here, differentiation is required as to whether the condensing boiler should be installed in the **living space** (occupied rooms) or in the **non-living space** (installation room).

Siting the Vitodens in the **living space** is feasible, provided that the section of the flue pipe that is routed within occupied space is routed inside a protective pipe and is surrounded by air (balanced flue system, **room sealed** operation).
As a special case, installation in the living space is also feasible for **open flue** operation, provided a connection piece with secondary ventilation up to the shaft (operation with interconnected room air supply) is provided (see page 43).

System certification

Note
Appliance types not available in all countries

System certification to Gas Appliances Regulation 2016/426/EU in conjunction with PPs flues from Skoberne

Vitodens Classic	CE-0063DO3012
Vitodens 050-W	CE-0063DL3422
Vitodens 100-W	CE-0085DL0217
Vitodens 111-W	CE-0085DL0217
Vitodens 200-W	CE-0085CT0017
Vitodens 222-F	CE-0085CT0017
Vitodens 222-W	CE-0085CT0017
Vitodens 242-F	CE-0085CT0017

The aforementioned conditions are generally met with the flue systems (accessories) that are CE designated together with the Vitodens.
The following Viessmann balanced flue systems for **room sealed** operation are tested to DVGW and CE designated with the Vitodens:
- Vertical roof outlet
- External wall connection
- Horizontal roof outlet
- External routing through a coaxial pipe

Benefits:
- No calculated performance verification for flues to EN 13384 is required in individual cases
- Simplified visual inspection by the local flue gas inspector every 2 years
- No additional approval certificate by the flue pipe manufacturer is required

In **non-living space**, the flue in the installation room may also be routed without secondary ventilation. However, in that case the installation room would require an adequately sized ventilation air aperture to the outside (according to TRGI).
Rated heating output up to 50 kW:
150 cm^2 or 2 × 75 cm^2
Rated heating output above 50 kW (e.g. Vitodens 200-W from 60 kW or multi boiler system):
150 cm^2 plus 2 cm^2 for every kW above 50 kW
Ⓐ The country-specific regulations (which may include the TR Gas and ÖVGW guidelines) apply to the installation of this appliance.
The plain flue pipe must be type approved by the Deutsches Institut für Bautechnik (DIBt) [Germany] (**open flue** operation).
The flue available as an accessory is CE designated and approved in accordance with EN 14471.

1.2 Room sealed operation

The sealed combustion chamber of Vitodens gas condensing boilers enables their use in **room sealed** operation. These boilers are categorised as equipment type C_{13x}, C_{33x}, C_{43x},, C_{53x}, C_{63x}, C_{83x}, C_{93x} or $C_{14(3)x}$ to EN 1749 ("x" applies only to DE).
A **joint approval** for the Vitodens appliances and Skoberne balanced flue system applies to this type of equipment (except for C_{63x}).
The joint approval/system certification means that a calculated verification is not required if the actual flue pipe lengths are within the specifications of this technical guide. However both deviations and flue accessories from other manufacturers are permitted based on the C6 type approval. For such systems, a calculated verification must be carried out to DIN EN 13384 by the installer of the vertical flue system.
The leak test (overpressure test) by the flue gas inspector during commissioning as well as the verification of the "General Building Regulations approval" by the DIBt may be omitted for this type of equipment.
The combustion air is supplied and the flue gas extracted through one coaxial pipe (balanced flue system). The combustion air is supplied through the annular gap between the external aluminium ventilation air pipe and the flue. Flue gases are extracted through the internal plastic pipe (PPs).
For balanced flue systems tested together with the wall mounted gas boiler, there is no requirement for a leak test (positive pressure test) during commissioning by the flue gas inspector.

In this case, we recommend that the heating contractor carries out a simple leak test when commissioning the system. For this it would be sufficient to check the CO_2 concentration in the combustion air at the annular gap of the balanced flue pipe. The flue pipe is deemed to be gas-tight if the CO_2 concentration in the combustion air is no higher than 0.2 % or the O_2 concentration is at least 20.6 %.
If higher CO_2 or lower O_2 values are established, check the flue system for leaks by pressure testing.
The flue should be designed as short and straight as possible.
If bends are unavoidable, do not install them directly one after another. It must be possible to test and clean the entire flue gas path as required.
In accordance with the FeuVo [check local fire regulations], two ventilation air apertures leading directly outside are required in the installation room for total rated heating outputs of 100 kW and above. These apertures must have an unobstructed cross-section of at least 150 cm² plus 1 cm² for every kW above 100 kW. This also applies to equipment types that have been tested for leaks (...x).
In conjunction with the coaxial pipe (balanced flue system), the surface temperature of the Vitodens and that of the balanced flue system do not exceed 85 °C at any point. Therefore, clearances to combustible components according to TRGI are **not** required.
Install the connection pipes (horizontal routing) with a fall of at least 3° (approx. 50 mm/m) to the boiler. In addition, we recommend using fixing clamps spaced about 1 m apart to support/suspend the connection line.

Flue systems (cont.)

The balanced flue system is CE designated and approved in accordance with EN 14471: See page 8.
The boiler casing creates a system that is sealed against its surroundings. Any leaks caused by escaping flue gas are returned via the combustion air, thereby preventing flue gas from entering the living space.
When siting the Vitodens in a cellar or basement, an existing chimney or shaft of adequate size may be used for routing the balanced flue (type $C_{14(3)x}$ and C_{93x}).
According to EN 1749, flues that bridge several floors must be routed inside a shaft with a fire rating of at least 90 minutes, and for buildings in categories 1 and 2, a fire rating of at least 30 minutes.

The flue gas/ventilation air is routed in a balanced flue pipe up to the chimney or shaft. The flue is then routed inside the chimney or shaft to above the roof.
Where no suitable shaft is available, the flue may be routed to the roof through a retrofitted shaft. For this shaft, a test certificate from the building inspectorate or a CE designation corresponding to the design of the shaft is required. In addition, the shaft must have a fire rating of L30 or L90.

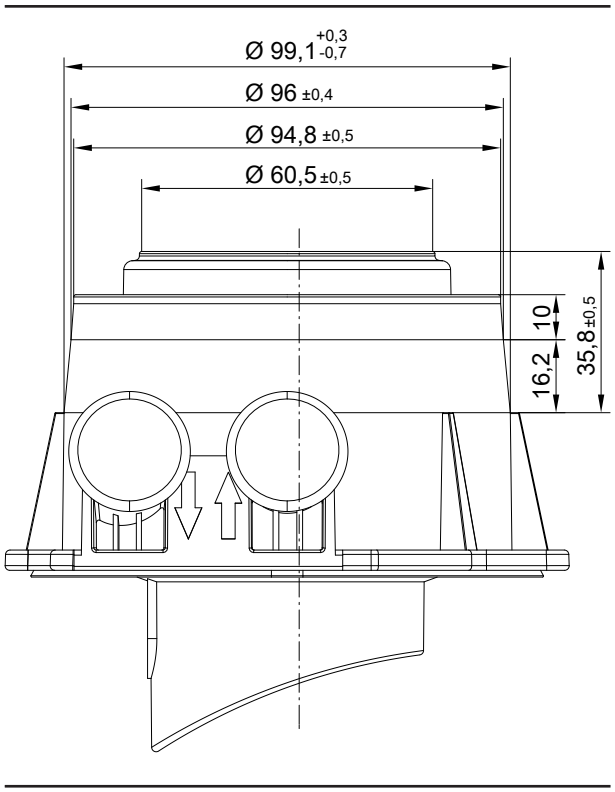
Use of third party flue systems of type C_{63}/C_{63x}

Any approved flue system can be used for type C_{63}/C_{63x}. A system test of these flue systems with Viessmann heat generators has not been carried out, so there is no system certification in accordance with Gas Appliances Regulation (EU) 2016/426.

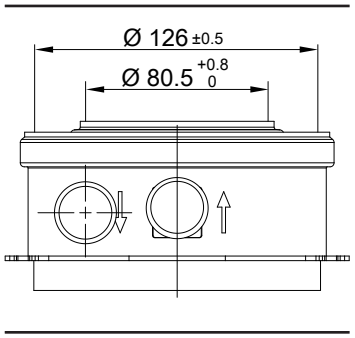
When implementing type C_{63}/C_{63x} with Viessmann heat generators, the following specifications must be observed and complied with:
- Viessmann design specifications for types C_{13x}, $C_{14(3)x}$, C_{33x}, C_{53x}, C_{83x} and C_{93x}
- Appliance-specific details of Viessmann heat generators, e.g. max. draughts, flue gas temperatures, mass flow rates, boiler flue connection tolerances
- Reverse flow of flue gas at the terminal of the flue system, even when it is windy:≤ 10 %
- Wind protection devices for the supply of combustion air and the discharge of flue gas must not be installed on opposite walls of the building.

Flue pipes
- Flues made from plastic (PPS):
  Measures inside the equipment ensure that the flue gas temperature of 120 °C will never be exceeded. Flues made from plastic (PPS) approved for flue gas temperatures up to a maximum of 120 °C (type B) can therefore be used.
- Flues made from aluminium:
  Aluminium residues in the condensate can impair the function of the heat generator. A condensate trap must therefore be additionally installed above the boiler flue connection. The condensate trap must allow the condensate returned from the flue system to completely bypass the heat generator.

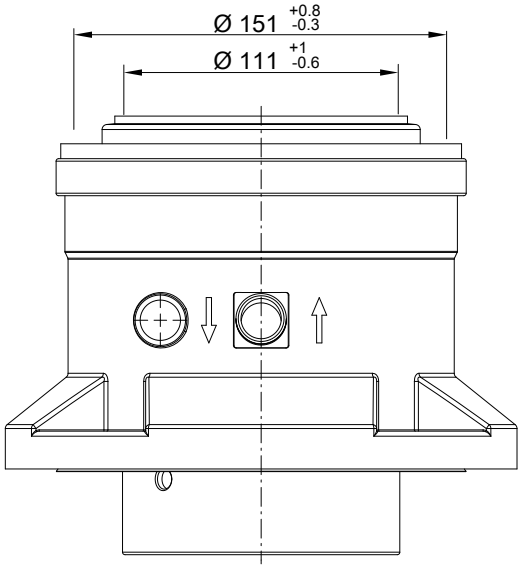
Dimensions of boiler flue gas connection
- Vitodens 100-W, 11 to 32 kW
- Vitodens 200-W, 222-F, 222-W, 242-F, 11 to 32 kW
- Vitodens 300-W, 333-F, 11 to 32 kW



- Vitodens 200-W, 49 to 60 kW



- Vitodens 200-W, 69 to 150 kW



1.3 Use of third party flue systems of type $C_{(10)3}/C_{(10)3x}$

Any approved flue system can be used for type $C_{(10)3}/C_{(10)3x}$. A system test of these flue systems with Viessmann heat generators has not been carried out, so there is no system certification in accordance with Gas Appliances Regulation (EU) 2016/426.

Note
When implementing type $C_{(10)3}/C_{(10)3x}$ with Viessmann heat generators, the following must be observed and complied with:
2 back draught safety devices are required, for installation in the Vitodens and in the flue system.
With the Vitodens 100-W, one back draught safety device is already installed in the boiler. A further back draught safety device must be installed in the flue system.
The back draught safety devices must be added to the order for every boiler.

1.4 Open flue operation

(Type B_{23} and B_{33})
Flue gas is routed through single wall plastic flue pipes (PPs). The flue system is CE designated and approved in accordance with EN 14471: See page 8.
The combustion air is supplied via the annular gap between the flue pipe and the ventilation air connection on the boiler flue connection of the Vitodens.
Install the connection pipes (horizontal routing) with a fall of at least 3° (approx. 50 mm/m) to the boiler. In addition, we recommend using fixing clamps spaced about 1 m apart to support/suspend the connection line.
The connection piece to the chimney should be as short as possible. Therefore position the Vitodens as close to the chimney as possible.
The flue pipe should be designed to be as straight as possible. If bends are unavoidable, do not install them directly one after another. It must be possible to test and clean the entire flue gas path as required.

In accordance with the FeuVo [check local fire regulations], either one ventilation air aperture leading to the outside with an unobstructed cross-section of at least 150 cm² or alternatively two apertures each with an unobstructed cross-section of 75 cm², are required in the installation room. In accordance with the FeuVo [check local fire regulations], two ventilation air apertures leading directly outside are required in the same wall of the installation room for total rated heating outputs of 100 kW and above. These apertures must have an unobstructed cross-section of at least 150 cm² plus 1 cm² for every kW above 100 kW.

Note
Also applicable to room sealed operation.

No special protective measures or clearances towards combustible objects, such as furniture, packaging or similar, need to be taken/observed. The surface temperatures of the Vitodens and the flue system do not exceed 85 °C at any point.

1.5 Flue gas high limit safety cut-out

According to CE designation to EN 14471 the plastic flue pipe (PPs) can be used for flue gas temperatures of up to 120 °C max. (type B). Measures inside the equipment ensure that the flue gas temperature of 110 °C will never be exceeded.

A flue gas high limit safety cut-out is therefore not required.

1.6 Lightning protection

If a lightning protection system is installed, any metallic flue system should be included in the lightning protection scheme.

1.7 CE designation for PPs flue systems (rigid and flexible) for the Vitodens

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Notifizierte Stelle
Nr. 0036

TÜV SÜD
Industrie Service

Zertifikat der Konformität der werkseigenen Produktionskontrolle

0036 CPR 9184 001
Revision 07

Gemäß der Verordnung (EU) Nr. 305/2011 des Europäischen Parlaments und des Rates vom 9. März 2011 (Bauproduktenverordnung - CPR) gilt dieses Zertifikat für das Bauprodukt

System-Abgasanlage mit einer Innenschale aus starren und flexiblen Rohren und –Formstücken aus PP
Ausführungen

Ohne Außenschale, starr	**EN 14471**	**T120 H1 W 2 O20 XXX**
Kunststoff-Außenschale, starr	**EN 14471**	**T120 H1 W2 O00 LI E U1**
Metall. Außenschale, starr	**EN 14471**	**T120 H1 W2 O00 LE E U0**
Mineral. Außenschale, flexibel	**EN 14471**	**T120 H1 W2 O00 LE E U0**

Für Details der Kennzeichnung siehe Seite 2 des Zertifikates

hergestellt von

Skoberne GmbH
Ostendstraße 1
64319 Pfungstadt

im Herstellwerk

Werk 1 **Werk 2** **Werk 3** **Werk 4** **Werk 5**

Dieses Zertifikat bescheinigt, dass alle Vorschriften über die Bewertung und Überprüfung der Leistungsbeständigkeit beschrieben im Anhang ZA der harmonisierten Norm

EN 14471:2013 + A1:2015

entsprechend System 2+ angewendet werden und dass die werkseigene Produktionskontrolle alle darin vorgeschriebenen Anforderungen erfüllt.

Die Feststellung des Produkt-Typs anhand einer Typprüfung ist dokumentiert im Bericht: TÜV SÜD Industrie Service GmbH, A 1614-00/06, A 1614-02/09, A 1614-03/09, A 1614-04/09, A 1614-05/10, A 1614-06/10, A 1614-07/10, A 1614-09/12 und A 1614-14/16.

Dieses Zertifikat wurde erstmals am 2007-02-27 ausgestellt und bleibt gültig, solange sich die in der harmonisierten Norm genannten Prüfverfahren und/oder Anforderungen der werkseigenen Produktionskontrolle zur Bewertung der Leistung der erklärten Merkmale nicht ändern und das Produkt und die Herstellbedingungen im Werk nicht wesentlich geändert werden.

München, 2016-06-10

Johannes Steiglechner
Leiter Zertifizierungsstelle Bauprodukte (EG)

TÜV SÜD INDUSTRIE SERVICE GMBH, WESTENDSTRASSE 199, 80686 MÜNCHEN

TÜV®

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Notifizierte Stelle
Nr. 0036

Seite 2 des Zertifikates Nr.

0036 CPR 9184 001
Rev. 07

Industrie Service

Systemabgasanlage mit einer Innenschale aus starren und flexiblen Rohren und Formstücken aus PP	EN 14471
ohne Außenschale	
DN 80 - DN 110, schwarz	T120 H1 W2 O20 LE E U
DN 60 - DN 250, weiß, grau	T120 H1 W2 O20 LI E U
starr, mit Kunststoffaußenschale	
≤ DN 80, weiß	T120 H1 W2 O00 LI E U1
starr, mit metallischer Außenschale ≤ DN 250	
weiß, grau, schwarz	T120 H1 W2 O00 LE E U0
flexibles Rohr mit mineralischem Schacht	
DN 60 - DN 110	T120 H1 W2 O00 LE E U0

TÜV SÜD INDUSTRIE SERVICE GMBH, WESTENDSTRASSE 199, 80686 MÜNCHEN

1.8 Replacement of existing systems with type C_4 gas appliances to EN 483 and EN 677 with additional requirements to DVGW G 635:2001 (positive pressure operation)

Existing appliances from systems with type C_4 gas appliances can be replaced with type $C_{(10)3X}$ Vitodens 100-W, 111-W, 111-F, 200-W, 222-W, 222-F and 242-F appliances if the following conditions are met:
The maximum rated heat input is less than or equal to the rated heat input of the existing gas appliance.
The combustion-related sizing of the flue system is carried out based on EN 13384-2+A1.
The flue gas temperature for sizing the balanced flue system to EN 13384-2 for partial and full load (minimum and maximum heat input) is set to 25 °C.

The balanced flue system must be designated in accordance with DIN V 18160-1 and in a manner comparable with the requirements of EN 15287-2:2008, section 4.4.
It must also be indicated that the appliance in question is a type $C_{(10)3x}$ appliance – see Fig. 1 as an example of a balanced flue system with concentric air/flue gas routing. In addition to the designation for the flue system, a further plate must be affixed for each flue inlet (as shown in Fig. 2).

Fig. 1

Example of a plate for designating balanced flue systems with concentric air/flue gas routing to EN 15287-2:2008

Warning —Do not cover or remove this plate	
Flue system with concentric air/flue gas routing	
Flue system designation:	NSB EN 15287-2 T160 - P1 - W - 1 - O00
Nominal cross-section of flue shaft:	80 mm
Thermal resistance of flue shaft:	0.00 m² K/W
Flow resistance of flue shaft:	—
External dimension of air shaft:	(120 · 120) mm²
External thermal resistance of air shaft:	0.12 m² K/W
Flow resistance of air shaft	—
Installer/address/tel.:	_____
Date of installation:	_____
Additional details	
∟ Position of flue system:	

Fig. 2

Example of a plate for designating flue inlets on balanced flue systems for gas appliances of type $C_{(10)}/C_{(10)\_x}$

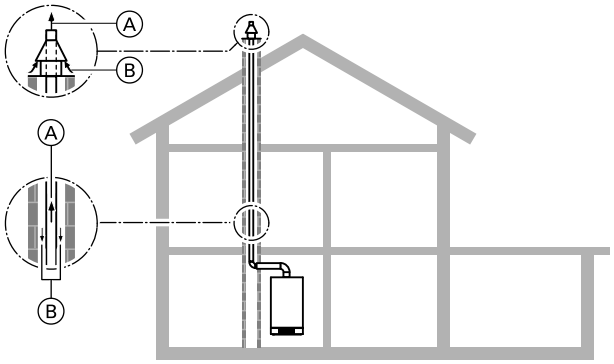
Manufacturer:	Sample company
Only suitable for:	$C_{(10)}/C_{(10)\_x}$ appliances
Maximum permissible mass flow rate:	15 g/s
Maximum permissible heat input:	35 kW
Temperature class:	T120
Caution: When removing the appliance, the openings of the combustion gas outlet and the air supply must be closed off separately.	

1.9 Flue system installation options for room sealed operation

In accordance with the FeuVo [check local fire regulations], either one ventilation air aperture leading to the outside with an unobstructed cross-section of at least 150 cm² or alternatively two apertures each with an unobstructed cross-section of 75 cm², are required in the installation room. In accordance with the FeuVo [check local fire regulations], two ventilation air apertures leading directly outside are required in the same wall of the installation room for total rated heating outputs of 100 kW and above. These apertures must have an unobstructed cross-section of at least 150 cm² plus 1 cm² for every kW above 100 kW.

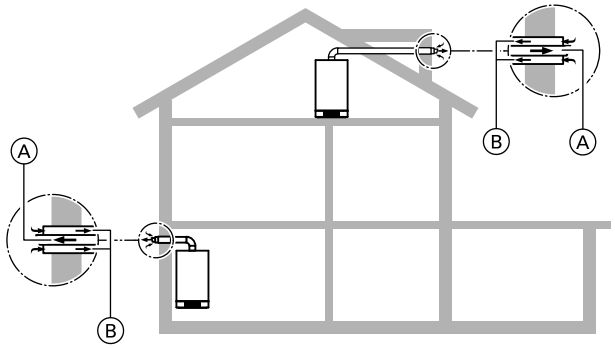
No special protective measures or clearances towards combustible objects, such as furniture, packaging or similar, need to be taken/observed. The surface temperatures of the Vitodens and the flue system do not exceed 85 °C at any point.

Inside occupied rooms (living space) with one or more full storeys above



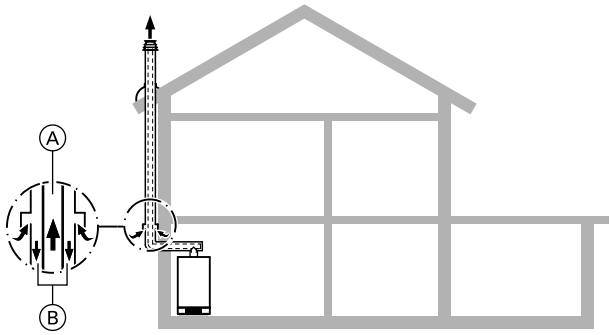
Ⓐ Flue gas
Ⓑ Ventilation air

Routing through a shaft (type C_{93x}, to EN 1749)
The boiler draws combustion air from the outside through the annular gap inside the shaft (chimney) and expels the flue gas via the flue pipe to above the roof. For gas condensing boilers > 50 kW the installation room **must** be ventilated even for **room sealed** operation. The shaft is not part of the standard delivery. For a detailed description, see page 16 onwards.
Retrofitted shafts
Installation in a retrofitted shaft approved by the building inspectorate [Germany] consisting of individual shaft elements (e.g. as supplied by SIMO, Wienerberger or Skoberne) or including mineral profiles (e.g. from PROMATECT). For a detailed description of the shafts, see page 28.



Ⓐ Flue gas
Ⓑ Ventilation air

External wall connection
Only for existing flues with exemption rights
(Type C_{13x}, to EN 1749)
Permissible up to a rated heating output of 11 kW for room heating or 28 kW for DHW heating.
In accordance with the FeuVo, issue 1999 [check local fire regulations], an external wall connection is only permissible in individual cases where flue gas routing by other means is not appropriate for technical or economic reasons.
The heat generator draws combustion air from the outside via a coaxial pipe in the external wall and expels flue gas to the outside through the external wall. For a detailed description, see page 24.
Horizontal roof outlet
(Type C_{13x}, to EN 1749)
No limit for rated heating output.
The heat generator draws combustion air from the outside via a coaxial pipe in the dormer and expels flue gas to the outside through the dormer.

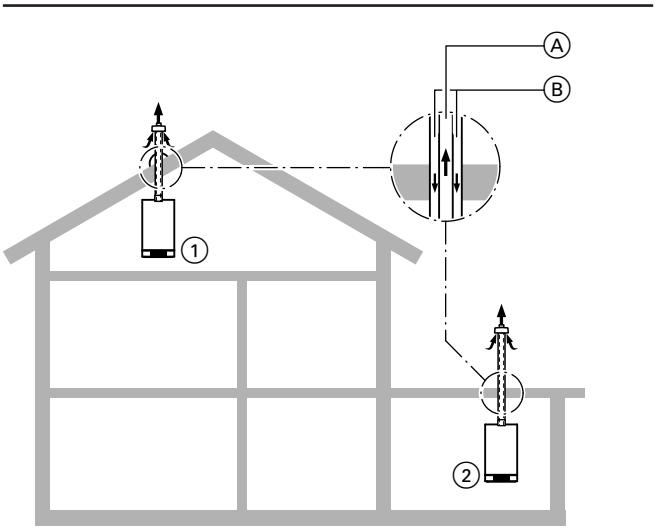


Ⓐ Flue gas
Ⓑ Ventilation air

Routing over external walls
(Type C_{53x}, to EN 1749)
The heat generator draws combustion air from the outside via a horizontal coaxial pipe (balanced flue air inlet piece) on the external wall and expels flue gas above the roof.
In its vertical section, the external pipe of the coaxial pipe acts as thermal insulation thanks to its static air gap.
For a detailed description, see page 26.

Flue systems (cont.)

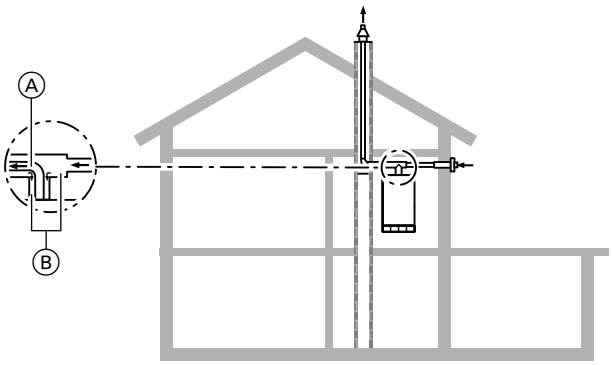
In occupied rooms (living space) immediately below the roof or with only the roof space above



Vertical roof outlet if no shaft is available (Type C_{33x}, to EN 1749)
(Various options)
① Direct, vertical roof outlet through a pitched roof
② Direct, vertical roof outlet through a flat roof
The heat generator draws combustion air from the outside via a coaxial pipe and expels flue gas above the roof.
For a detailed description, see page 22.

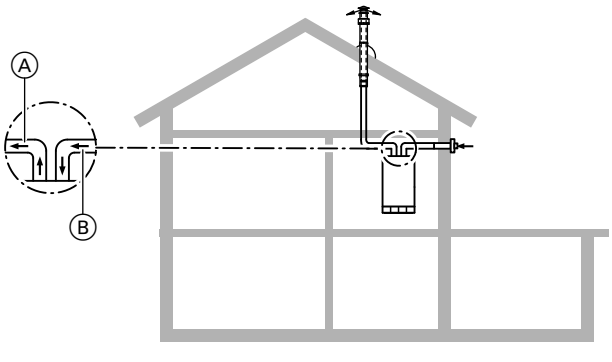
Ⓐ Flue gas
Ⓑ Ventilation air

In the installation room, with ventilation air supplied through the external wall



Separate ventilation air and flue gas routing (Type C_{83x}, to EN 1749)
The heat generator draws combustion air from the outside via a separate ventilation air pipe routed through the external wall, and expels flue gas to the outside via a shaft leading through the roof.
The connection piece to the chimney is designed as a coaxial pipe.
This flue gas/ventilation air system is used if the existing chimney is unsuitable for routing combustion air due to its dimensions or characteristics (deposits).
For a detailed description, see page 25.

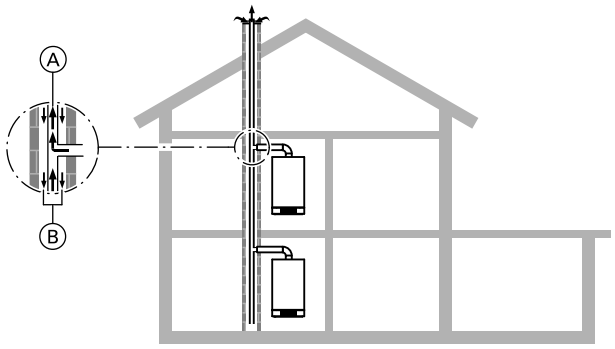
Ⓐ Flue gas
Ⓑ Ventilation air



Parallel ventilation air and flue gas routing (Type C_{83}, to EN 1749)
The heat generator draws combustion air from the outside via a separate ventilation air pipe routed through the external wall, and expels flue gas to the outside via the flue leading through the roof.

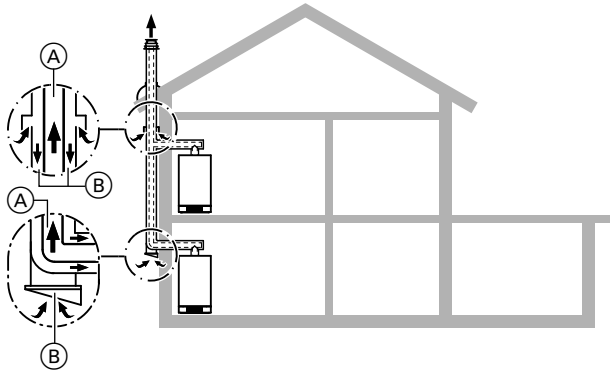
Ⓐ Flue gas
Ⓑ Ventilation air

Several Vitodens in the living space or in living spaces



Installation on different floors with a common balanced flue system
(Type $C_{14(3)x}$, C_{43} to EN 1749)
Operation with negative pressure:
Balanced flue system required.
Operation with positive pressure:
Balanced flue system for multiple connections.
Several heat generators draw combustion air from the outside through the annular gap of the balanced flue system and expel flue gas to the outside through a common shaft in the roof.
For a detailed description, see page 32.

Ⓐ Flue gas
Ⓑ Ventilation air



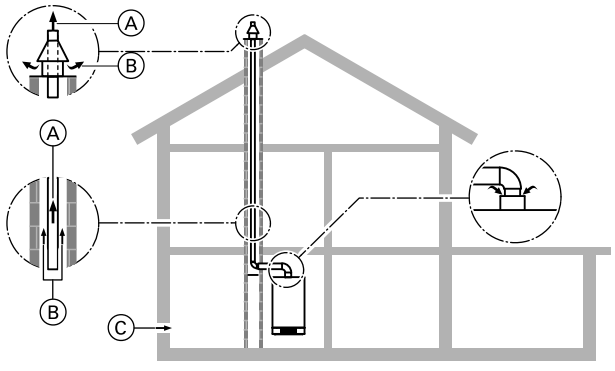
Installation on different floors with a common balanced flue header on the external wall
(Type $C_{14(3)x}$, to EN 1749)
Balanced flue system for multiple connections on the external wall.
Several boilers draw combustion air from the outside through the annular gap of the balanced flue header and expel flue gas to the outside through the roof outlet of the balanced flue header.
For a detailed description, see page 32.

Ⓐ Flue gas
Ⓑ Ventilation air

1.10 Flue system installation options for open flue operation

Separate ventilation air aperture with 150 cm^2 or 2 × 75 cm^2 cross-section required.
Ⓐ For installation in Austria, observe the relevant safety regulations of the ÖVGW-TR Gas (G1) 1985, ÖVGW-TRF (G2), ÖNORM, ÖVGW, ÖVE and regional regulations.

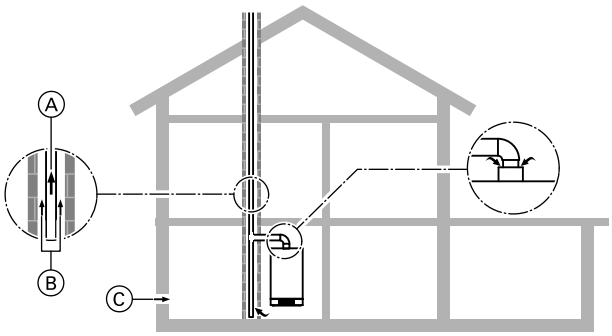
In the installation room (non-living space) with one or more full floors above



Routing through a shaft (positive pressure)
(Type B_{23}, to EN 1749)
The boiler draws combustion air from the installation room and expels flue gas through the flue to above the roof (balanced flow).
For a detailed description, see page 39.

Ⓐ Flue gas
Ⓑ Secondary ventilation
Ⓒ Ventilation air

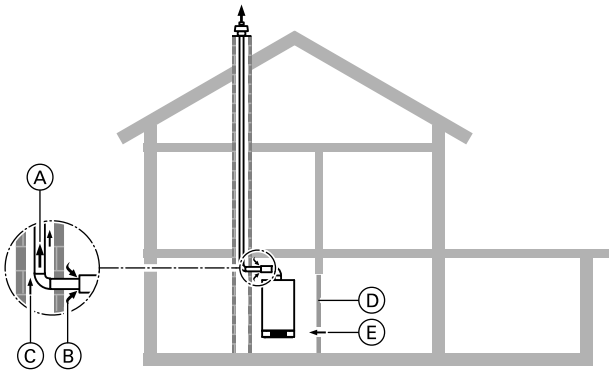
Flue systems (cont.)



Connection to a moisture-resistant chimney (MR chimney, negative pressure)
(Type B_{23}, to EN 1749)
The boiler draws combustion air from the installation room and expels flue gas through the roof in the moisture-resistant chimney.
For a detailed description, see page 44.

Ⓐ Flue gas
Ⓑ Secondary ventilation
Ⓒ Ventilation air

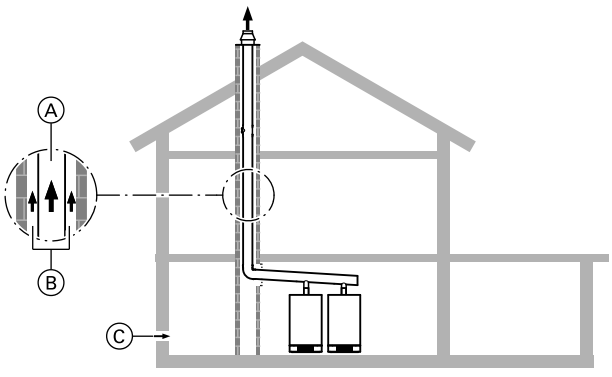
Special version: Open flue operation and installation location in the living space with combustion air supply via interconnected rooms (rated heating output ≤ 35 kW)



Routing through a shaft
or
Connection to a moisture-resistant chimney
(Type B_{33}, to EN 1749)
The boiler draws combustion air from the living space through a coaxial pipe with ventilation air apertures upstream of the shaft inlet, and expels flue gas either through a flue or a moisture-resistant chimney in the roof (combustion air supply via interconnected rooms in accordance with TRGI).
For a detailed description, see page 43.

Ⓐ Flue gas
Ⓑ Ventilation air
Ⓒ Secondary ventilation
Ⓓ Door
Ⓔ Interconnected air supply

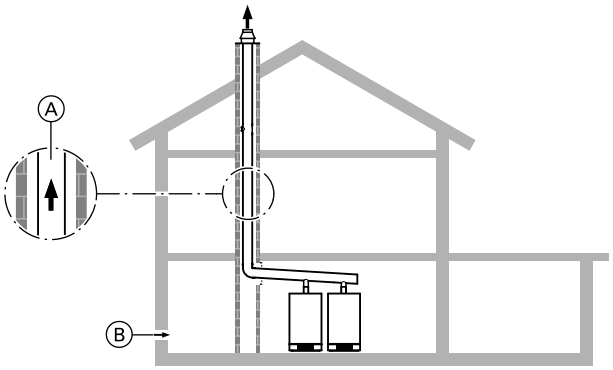
Flue gas header for several Vitodens 050-W, 100-W, 111-W, 111-F, 200-W, 222-W, 222-F, 242-F (appliance types not available in all countries) – positive pressure



Type B_{23}, to EN 1749
Several boilers in the same room draw combustion air from the outside through vents and expel flue gas to the outside through a common flue pipe in the roof.
For a detailed description, see page 45.

Ⓐ Flue gas
Ⓑ Secondary ventilation
Ⓒ Ventilation air

Flue gas header for several Vitodens – negative pressure



Ⓐ Flue gas
Ⓑ Ventilation air

Type B_{23}, to EN 1749
Several boilers in the same room draw combustion air from the outside through vents and expel flue gas to the outside through a common flue pipe in the roof.
For a detailed description, see page 52.

Design and sizing information for connection on the flue gas side

2.1 Boiler allocation — flue gas/ventilation air pipe size

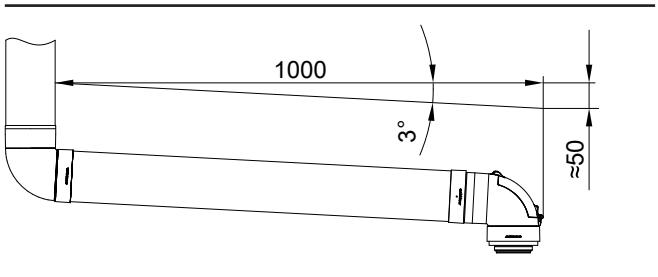
All details regarding length and cross-section in the following tables are only valid in connection with the balanced flue components offered in the Viessmann pricelist.

The specified system sizes are nominal diameters. Actual component dimensions may differ.

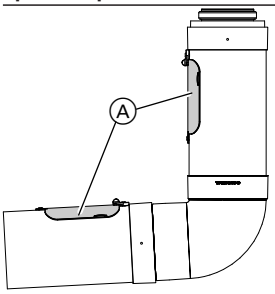
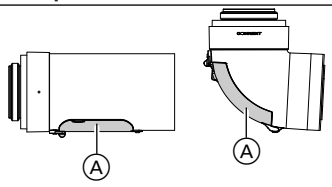
	Nominal diameter in mm		Actual internal diameter in mm	
	Flue pipe	Ventilation air pipe	Flue pipe	Ventilation air pipe
– Vitodens Classic – Vitodens 050-W – Vitodens 100-W, Vitodens 111-W, Vitodens 111-F and Vitodens 141-F – Vitodens 200-W up to 32 kW, Vitodens 222-W, Vitodens 222-F and Vitodens 242-F	60	100	60.5 +0.3	98.6 +0.3
– Vitodens 200-W, 49 to 60 kW	80	125	80.5 +0.8	126 ±0.5
– Vitodens 200-W, 69 to 150 kW	110	150	111 +1/-0.3	151 +0.8/-0.3

2.2 Installing flue pipes

When designing and installing the flue pipe, a fall of at least 3° towards the boiler must be maintained.
The required fall is the same if using an 87° boiler flue connection bend or 87° inspection tee.
The required fall of 3° also corresponds to a height differential of approx. 50 mm over a length of 1 m.
If the required fall is not maintained, condensate will not drain off fully and residue will remain in the joints. This will lead to an increase in acid concentration and possible damage to the gaskets.
For this reason, the flue must also never be designed and installed with a fall leading away from the boiler.



Installation and position of inspection ports

Correct position of the inspection port	Incorrect position of the inspection port
	
Ⓐ Inspection port	Ⓐ Inspection port

Design the inspection ports to ensure that no condensate can collect around them. Collected condensate would lead to an increase in acid concentration and possible gasket damage. Install the inspection pieces with the port at the top/in the upper section.

2

2.3 Plastic (PPs) balanced flue system for routing in a shaft – for room sealed operation (type C_{93x} to EN 1749)

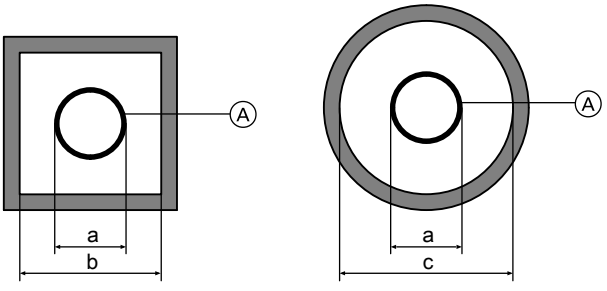
For **room sealed operation**, a coaxial flue (internal pipe for flue gas, external pipe for combustion air) is required as a connection piece between the Vitodens and the shaft.
The connection piece is fitted to the boiler flue connection and must contain an inspection port.

Note
Gas condensing boilers with a total rated heating output greater than 100 kW may only be installed in rooms that provide ventilation air apertures to the outside; see page 39.

For routing through shafts or ducts with longitudinal ventilation which meets the requirements for chimneys to DIN V 18160-1, or have a fire rating of 90 minutes (L90), or a fire rating of 30 minutes (L30) for buildings in categories 1 and 2 (max. 2 storeys).
Prior to installation, the relevant flue gas inspector should check that the shaft to be used is suitable and approved for this purpose.
Ventilation air shafts with which oil or solid fuel boilers were previously used must not contain any sulphur or soot deposits on the inner surfaces of the chimney. Sulphur and soot deposits cause operating faults. If thorough cleaning is not possible, a balanced flue pipe must be laid through the shaft. Alternatively, the flue gas/ventilation air pipes can be routed separately. Viessmann accepts no liability for damages resulting from failure to observe these instructions.
Close off and seal any other connection apertures with appropriate materials.
This does not apply to any cleaning or inspection apertures that are provided with chimney cleaning covers and that are identified with an appropriate test mark.

Check prior to installation whether the shaft runs straight from top to bottom or if it is offset (check with mirrors).
If the chimney is offset, we recommend the installation of a flexible flue pipe: See page 21.
In the installation room, at least one inspection port must be provided in the flue system for inspection, cleaning and pressure testing (if required). If the flue is inaccessible from the roof, a second inspection port must be provided in the attic behind the chimney cleaning hatch. For further information, see FeuVo [Germany].
Provide an inspection port at the base of the shaft for checking the secondary ventilation. Safeguard the unrestricted draining of the condensate from the flue into the boiler through an appropriate fall of at least 3°.
The flue system must be routed to above the roof (protrusion above the roof in accordance with the Landes-FeuVo – check local fire regulations).
Alternative CE designated flue pipes may be used, e.g. if a larger pipe diameter is required because of greater flue lengths. The performance verification to EN 13384 should then be provided by the respective flue manufacturer.
If flue pipes other than those offered as accessories (certified as a system with the Vitodens) are used, the flue system must be checked for tightness by the flue gas inspector prior to commissioning.
This may be carried out, in accordance with the flue system approval certificate, by measuring the CO_2 or O_2 value inside the annular gap. Check the flue system for tightness if this test results in a CO_2 content above 0.2 % or an O_2 content lower than 20.6 %.

Internal shaft dimensions to DIN V 18160



Design and sizing information for connection on the flue gas side (cont.)

Minimum internal shaft dimensions

System size Ⓐ	External diameter, female connection a Ø mm	Minimum internal shaft dimensions b Square or rectangular (short side) mm	 c Round Ø mm
60 (rigid)	73	113	133
60 (flexible, shaft cover PPs)	72	112	132
60 (flexible, shaft cover metal)	87	140	147
80 (rigid)	94	135	155
80 (flexible, shaft cover PPs)	102	142	162
80 (flexible, shaft cover metal)	116	165	176
110 (rigid)	128	170	190
110 (flexible, shaft cover PPs)	127	167	187
110 (flexible, shaft cover metal)	142	182	202

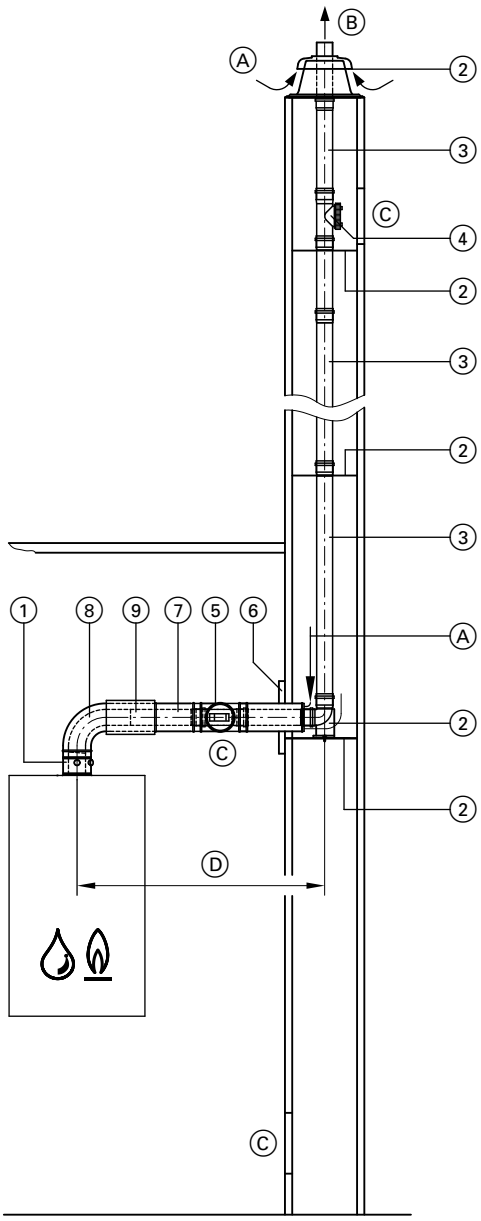
Reduced internal shaft dimensions

System size Ⓐ	External diameter, female connection a Ø mm	Reduced internal shaft dimensions b Square or rectangular (short side) mm	 c Round Ø mm
60 (rigid)	73	112	112
80 (rigid)	94	120	135
110 (rigid)	128	150	165

Minimum shaft dimension in which a flue may be used in the shaft (positive pressure operation) without separate calculation to EN 13384. **Observe the maximum flue lengths!**

Design and sizing information for connection on the flue gas side (cont.)

Flue, system size 60, 80 and 110 (components) (type C_{93x} to EN 1749)



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Connection piece

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Standard shaft pack** (PPs, rigid) Comprising: – Support bend – Support rail – Shaft cover – Spacers (5 pce, max. distance 5 m)	60	80	110
	or			
	Standard shaft pack (metal/PPs, rigid) For twin flue chimneys; one flue for solid fuel boilers Comprising: – Support bend – Support rail – Shaft cover (metal) – Terminal pipe (stainless steel) – Spacers (5 pce, max. distance 5 m)	60	80	110
	Spacers (3 pce, max. distance 5 m)	60	80	110
③	**Flue pipe**			
	1.95 m long (2 pce @ 1.95 m = 3.9 m)	60	80	110
	1.95 m long (1 pce)	60	80	110
	1 m long (1 pce)	60	80	110
	0.5 m long (1 pce)	60	80	110
	Flue bend (for use in corbelled chimneys) 30° (2 pce) 15° (2 pce)	60	80	110
④	**Inspection piece**, straight (1 pce)	60	80	110
⑤	**Balanced flue inspection piece**, straight (1 pce)	60	80	110
⑥	**Balanced flue wall bezel**	60	80	110
⑦	**Balanced flue pipe** 1 m long 0.5 m long	60	80	110
⑧	**Balanced flue bend** 87° (1 pce) 45° (2 pce)	60	80	110
	or			
	Balanced flue inspection tee 87° (1 pce)	—	—	110
	Balanced flue inspection bend 87° (1 pce)	60	80	—
⑨	**Balanced flue slide coupling**	60	80	110
	Fixing clamp, white (1 pce)	60	80	110
	Stainless steel extension, 380 mm long for shaft cover, standard shaft pack (metal/PPs, rigid)	60	80	110
	Balanced flue adaptor			
	– Ø 80/125 mm to Ø 60/100 mm	60	80	—
	– Ø 60/100 mm to Ø 80/125 mm	60	80	—
	– Ø 80/125 mm to Ø 110/150 mm	—	80	110

Max. total flue length up to the boiler flue connection

Vitodens 100-W and 111-W

Rated heating output	kW	11	19	25	32
Max. length – system size 60/100	m	20	20	20	20
Max. length – system size 80/125*1	m	30	30	30	30

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

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Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output	kW	11	19	25	32
Max. length – system size 60/100	m	30	30	30	30
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, from 49 kW

Rated heating output	kW	49	60	80	99	120	150
Max. length – system size 80/125	m	20	15	—	—	—	—
Max. length – system size 110/150	m	25*1	20*1	20	20	8	5

The following components are taken into consideration for the maximum flue lengths:
- Balanced flue connection pipe Ⓓ 1 m long.
- 1 balanced flue bend 87° and 1 support bend 87°
  or
- 2 balanced flue bends 45° and 1 support bend 87°

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Balanced flue connection pipe 0.5 m long: 1 m
- Balanced flue connection pipe 1 m long: 2 m
- Balanced flue bends 45°: 0.5 m
- Balanced flue bends 87°: 1 m
- Balanced flue inspection tee: 1 m

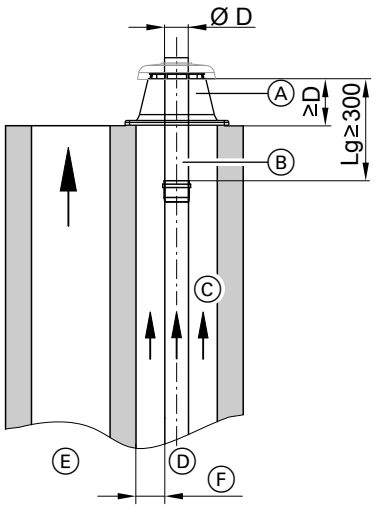
Note
Observe the specifications for internal shaft dimensions: See page 16.

For information on routing type C6, see page 4.

Vitodens in conjunction with solid fuel boilers

Routing a plastic flue adjacent to a shaft at risk of chimney fire from soot (e.g. 2-draught chimney with wood burning stove) is generally permitted. Depending on the design of the chimney top and the operation of the condensing systems (open flue or room sealed), fire regulations specify different measures. Design the balanced flue terminals so that flue gas will not be drawn into the air shaft in dangerous amounts and that pressure fluctuations due to wind influence affect the room sealed balanced flue shaft as evenly as possible.
For the required steps, see the following sections:

Open flue operation and/or ventilation air not being supplied through the shaft
The terminals of combustible flues in the upper area should be made from non-flammable materials for fire protection reasons. The length of flue pipe made from non-combustible materials, situated in area Lg and protected from thermal radiation, must be at least 300 mm. The length of the external terminal pipe of the shaft cover must correspond, as a minimum, to external diameter D of the internal flue pipe.
The standard shaft pack (metal/PPs) contains a stainless steel pipe (380 mm long). A stainless steel extension (380 mm long) is available as an additional accessory.



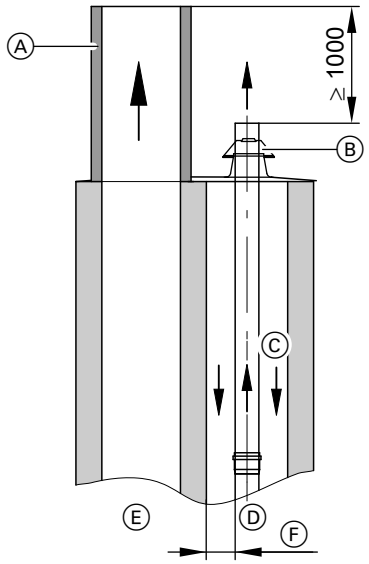
Ⓐ Metal shaft cover
Ⓑ Terminal made from non-combustible material
Ⓒ Secondary ventilation
Ⓓ Vitodens flue pipe
Ⓔ Chimney for solid fuel boilers
Ⓕ Minimum clearance to DIN V 18160, reduced minimum clearance or maximum clearance to EN 14471 (see page 17)

Room sealed operation – the ventilation air is supplied through the shaft
Design the balanced flue terminals so that flue gas will not be drawn into the air shaft in dangerous volumes and that pressure fluctuations due to wind influence affect the balanced flue system as evenly as possible.

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

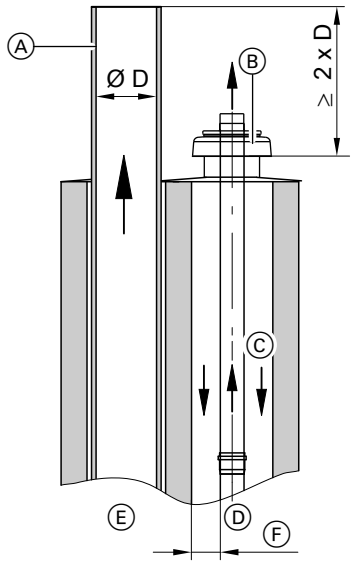
Design and sizing information for connection on the flue gas side (cont.)

■ When using a plastic shaft cover:
The chimney for solid fuel must stand at least 1000 mm proud of the Vitodens flue. For the chimney extension, only use components that are resistant to soot fires.



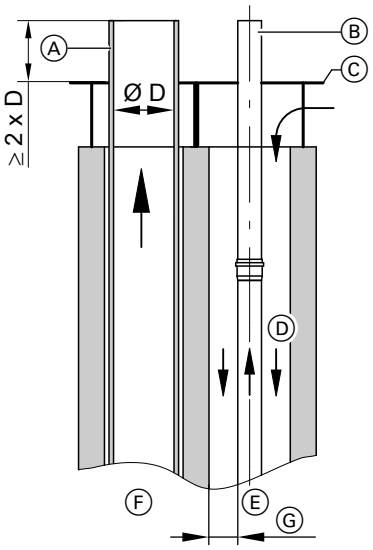
Ⓐ Chimney extension made from soot fire resistant material
Ⓑ Shaft cover, plastic
Ⓒ Ventilation air/secondary ventilation
Ⓓ Vitodens flue pipe
Ⓔ Chimney for solid fuel boilers
Ⓕ Minimum clearance to DIN V 18160, reduced minimum clearance or maximum clearance to EN 14471 (see page 17)

■ When using a metal shaft cover:
The chimney for solid fuel boilers must stand at least 2 x Ø D proud of the Vitodens flue. For the chimney extension, only use components that are resistant to soot fires.



Ⓐ Chimney extension made from soot fire resistant material
Ⓑ Metal shaft cover
Ⓒ Ventilation air/secondary ventilation
Ⓓ Vitodens flue (rigid or flexible)
Ⓔ Chimney for solid fuel boilers
Ⓕ Minimum clearance to DIN V 18160, reduced minimum clearance or maximum clearance to EN 14471 (see page 17)

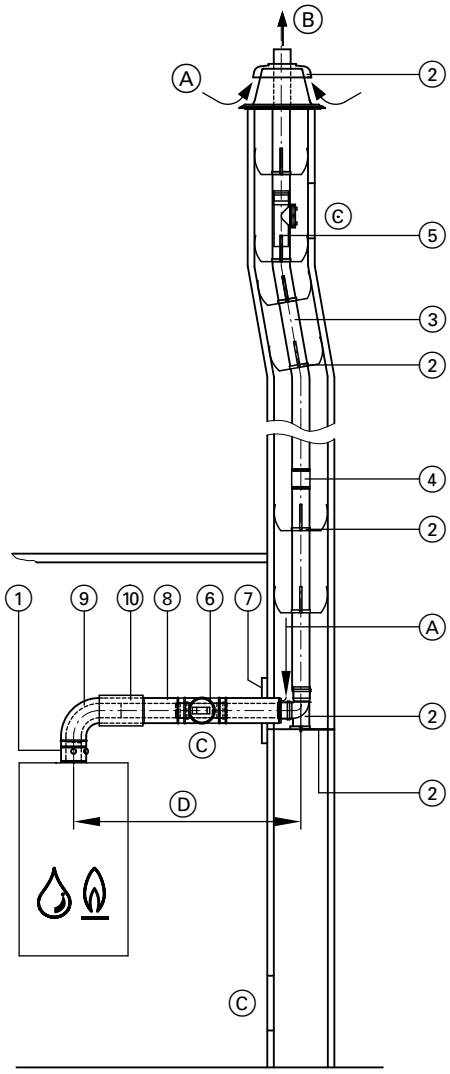
■ If using a common downdraught plate:
The terminal of the flue and the shaft cover must be made from non-combustible material (e.g. metal).



Ⓐ Chimney extension made from soot fire resistant material
Ⓑ Terminal made from non-combustible material
Ⓒ Shaft cover (on site)
Ⓓ Ventilation air/secondary ventilation
Ⓔ Vitodens flue pipe
Ⓕ Chimney for solid fuel boilers
Ⓖ Minimum clearance to DIN V 18160, reduced minimum clearance or maximum clearance to EN 14471 (see page 17)

The metal end piece and shaft cover are part of the standard shaft pack (metal/PPs).
The standard shaft pack (metal/PPs) is available as an accessory.

Flue, flexible, system size 60, 80 and 110 (components) (type C_{93x} to EN 1749)



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Connection piece

Note
The flexible flue pipe may be routed at a max. angle from vertical of 45°.

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Standard shaft pack** (PPs, flexible) Comprising: – Support bend – Support rail – Shaft cover – Spacers (5 pce, max. distance 2 m)	60	80	110
	Standard shaft pack (metal/PPs, flexible) for twin flue chimneys; one flue for solid fuel boilers Comprising: – Support bend – Support rail – Shaft cover (metal) – Terminal pipe (stainless steel) – Spacers (5 pce, max. distance 2 m)	60	80	110
	Spacers (5 pce, max. distance 2 m)	60	80	110
③	**Flue pipe, flexible,** as a 12.5 or 25 m roll	60	80	110
④	**Connection piece** for connecting residual lengths of the flexible flue	60	80	110
⑤	**Inspection piece**, straight for **installation in the flexible flue pipe**	60	80	110
	Pipe lowering attachment with 25 m rope	60	80	110
⑥	**Balanced flue inspection piece**, straight (1 pce)	60	80	110
⑦	**Balanced flue wall bezel**	60	80	110
⑧	**Balanced flue pipe** 1 m long 0.5 m long	60	80	110
⑨	**Balanced flue bend** 87° (1 pce) 45° (2 pce) or **Balanced flue inspection tee** 87° (1 pce) **Balanced flue inspection bend** 87° (1 pce)	60 — 60	80 — 80	110 110 —
⑩	**Balanced flue slide coupling**	60	80	110
	Fixing clamp, white (1 pce)	60	80	110
	Stainless steel extension, 380 mm long for shaft cover, standard shaft pack (metal/PPs, flexible)	60	80	110
	Balanced flue adaptor – Ø 80/125 mm to Ø 60/100 mm – Ø 60/100 mm to Ø 80/125 mm – Ø 80/125 mm to Ø 70/110 mm – Ø 80/125 mm to Ø 110/150 mm	 60 60 — —	 80 80 80 80	 — — — 110

Max. total flue length up to the boiler flue connection with flexible flue pipe

Vitodens 100-W and 111-W

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60/100*1	m	10	10	10	10
Max. length – system size 80/125*1	m	15	15	15	15

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output	kW	11	19	25	32
Max. length – system size 60/100	m	20	17	17	18
Max. length – system size 60/100 (for combi boilers and storage combi boilers)	m	17	17	16	8
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, from 49 kW

Rated heating output	kW	49	60	80	99	120	150
Max. length – system size 80/125	m	20	15	—	—	—	—
Max. length – system size 110/150	m	22*1	17*1	20	20	8	5

The following components are taken into consideration for the maximum flue lengths:
- Balanced flue connection pipe Ⓓ 1 m long.
- 1 balanced flue bend 87° and 1 support bend 87°
  or
- 2 balanced flue bends 45° and 1 support bend 87°

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Balanced flue connection pipe 0.5 m long: 1 m
- Balanced flue connection pipe 1 m long: 2 m
- Balanced flue bends 45°: 0.5 m
- Balanced flue bends 87°: 1 m
- Balanced flue inspection tee: 1 m

Note
Observe the specifications for internal shaft dimensions: See page 16.

For information on routing type C6, see page 4.

2.4 Plastic (PPs) balanced flue system for vertical roof outlets through a pitched or flat roof (type C_{33x} to EN 1749)

For vertical roof outlets when the Vitodens is installed in attics

The roof outlet may only be used where the ceiling of the living space also forms part of the roof or only the roof structure is located above the ceiling (pitched attic).

Note
Install condensing boilers with a heating output > 50 kW in a separate and ventilated installation room, in accordance with the FeuVo – check local fire regulations (Vitodens 200-W from 60 kW).

Inside buildings, route flues made from combustible materials (if they are not routed through shafts) inside protective pipes made from non-combustible materials or inside comparable protective covers made from non-combustible materials.
They can also be routed behind a jamb wall or a solid wall of a converted attic if the fire rating of the jamb wall corresponds to that of the ceiling (e.g. B30).

Minimum clearances to combustible materials inside the installation room or in connection with the roof outlet are **not** required.
As part of the CE approval test it was verified that surface temperatures on the Vitodens and its balanced flue system do not exceed 85 °C at any point.
Install an inspection port for checking and cleaning the flue inside the installation room.
The vertical roof outlet has been certified together with the Vitodens condensing boiler as a coaxial balanced flue system.
A performance verification to EN 13384 is **not** required.

Note
When routing through a suspended ceiling, an additional sealing collar is required. The sealing collar can be requested from the appropriate regional quotation centres.

Vertical flat roof outlet

Integrate the flat roof collar into the roof cladding according to the flat roof guideline: See page 67.

The ceiling opening should have a diameter of at least the specified size:
- System size Ø 60 mm: 105 mm
- System size Ø 80 mm: 130 mm
- System size Ø 110 mm: 160 mm

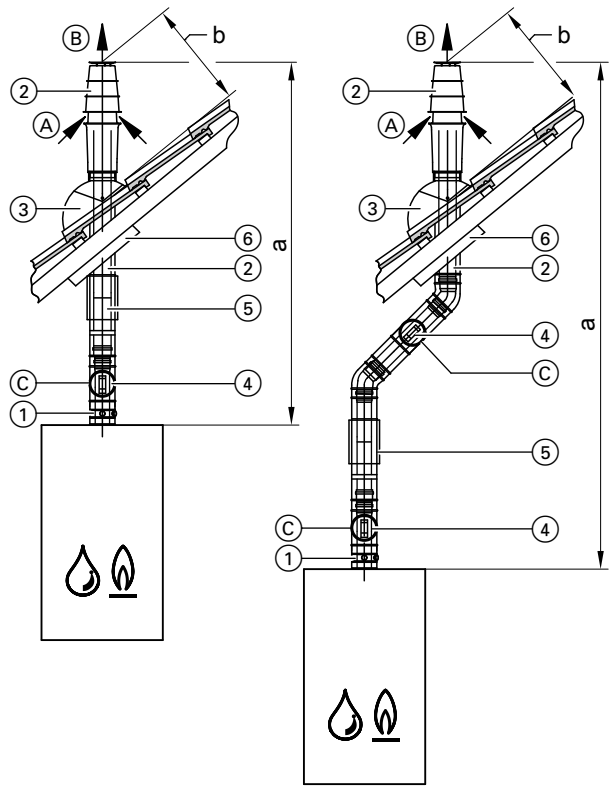
Push the roof outlet into the roof from above and position it on the flat roof collar.
Ensure the installation has been completed before securing the roof outlet on site with a clamp.

When installing several vertical roof outlets adjacent to each other, maintain minimum clearances of 1.5 m between outlets and towards other components, in accordance with the FeuVo [check local fire regulations].

Note
Separate above roof extensions are available if the length of 400 mm above the roof and perpendicular to the roof surface prove insufficient because of specific regulations (see table below). Approval with the flue system is ensured.

1 Alternative system size. Balanced flue adaptor must be added to the order.

Design and sizing information for connection on the flue gas side (cont.)



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Balanced flue roof outlet** with fixing clamp Colour: Black or Colour: Terracotta **Above roof extension** with clamp (brace on site) Colour: Black	60	80	110
	0.5 m long	60	80	110
	1 m long, with bracing clamp	60	80	—
	Colour: Terracotta			
	0.5 m long	60	80	110
	1 m long, with bracing clamp	60	80	—
③	**Universal roof tile** – For Roman tiles, pantiles, plain tiles, slate and other types of roof cover			
	− Colour: Black or terracotta	60	80	110
	or			
	Flat roof collar	60	80	110
	or			
	Pipe outlet for Klöber roof tiles Colour: Black or terracotta Corresponding Klöber roof tile to be provided on site to match the roof outlet selected for the particular type of roof cover.	60	80	—
④	**Balanced flue inspection piece**, straight (1 pce)	60	80	110
⑤	**Balanced flue slide coupling**	60	80	110
⑥	**Universal cover plate**	60	80	110
	Balanced flue bend 87° (1 pce) 45° (2 pce)	60	80	110
	Balanced flue pipe 1 m long 0.5 m long	60	80	110
	Fixing clamp, white (1 pce)	60	80	110
	Balanced flue adaptor			
	– Ø 80/125 mm to Ø 60/100 mm	60	80	—
	– Ø 60/100 mm to Ø 80/125 mm	60	80	—
	– Ø 80/125 mm to Ø 110/150 mm	—	80	110

Max. total flue length

Vitodens 100-W and 111-W

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60/100	m	20	20	20	20
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output		**kW**	**11**	**19**	**25**	**32**
a	Max. length – system size 60/100	m	30	30	30	30
a	Max. length – system size 60/100 (for combi boilers and storage combi boilers)	m	30	30	30	16
a	Max. length – system size 80/125*1	m	30	30	30	30
b	min.	mm	400	400	400	400

Vitodens 200-W, from 49 kW

Rated heating output		**kW**	**49**	**60**	**80**	**99**	**120**	**150**
a	Max. length – system size 80/125	m	10	6	—	—	—	—
a	Max. length – system size 110/150	m	13*1	9*1	15	15	8	5
b	min.	mm	400	1000	1000	1000	1000	1000

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

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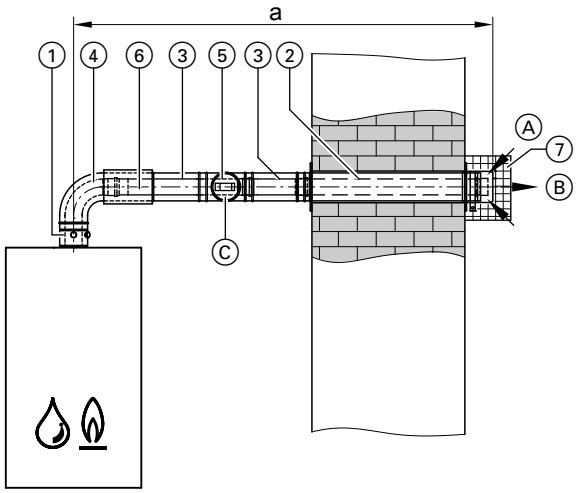
2 balanced flue bends 87° are taken into consideration for the maximum flue lengths.

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Balanced flue bends 45°: 0.5 m
- Balanced flue bends 87°: 1 m
- Balanced flue inspection tee: 1 m

2.5 Plastic (PPs) balanced flue system for external wall connection (type C_{13x} to EN 1749)

As part of the CE approval test it was verified that surface temperatures on the Vitodens and its balanced flue system do not exceed 85 °C at any point.
Observe the implementation information to EN 1749, in particular the arrangement/position of the wall terminal.
Install the connection line with a fall of at least 3° to the boiler.
Install an inspection port in the flue for checking and cleaning the flue pipe.
The external wall connection has been certified as a coaxial balanced flue system with the Vitodens condensing boiler.
A performance verification to EN 13384 is **not** required.



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Balanced flue external wall connection** (incl. wall bezels)	60	80	110
③	**Balanced flue pipe** 1 m long 0.5 m long	60	80	110
④	**Balanced flue bend** 87° (1 pce) 45° (2 pce) or **Balanced flue inspection bend** 87° (1 pce)	60 60	80 80	110 —
⑤	**Balanced flue inspection piece**, straight (1 pce)	60	80	110
⑥	**Balanced flue slide coupling**	60	80	110
⑦	**Grille** Required if the combustion air inlet and flue outlet are positioned up to 2 m above ground level in public or private thoroughfares	60	80	110
	Fixing clamp, white (1 pce)	60	80	110
	Balanced flue adaptor – Ø 80/125 mm to Ø 60/100 mm – Ø 60/100 mm to Ø 80/125 mm	 60 60	 80 80	 — —

Max. total flue length

Vitodens 100-W and 111-W

Rated heating output	kW	11	19	25	32
Max. length – system size 60/100	m	20	20	20	20
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output		kW	11	19	25	32
a	Max. length – system size 60/100	m	30	30	30	30
a	Max. length – system size 60/100 (combi boilers and storage combi boilers)	m	30	30	30	16
a	Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, from 49 kW

Rated heating output		kW	49	60	80	99	120	150
a	Max. length – system size 80/125	m	10	6	—	—	—	—
a	Max. length – system size 110/150	m	13*1	9*1	15	15	8	5

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

2 balanced flue bends 87° are taken into consideration for the maximum flue lengths.

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Balanced flue bends 45°: 0.5 m
- Balanced flue bends 87°: 1 m
- Balanced flue inspection tee: 1 m

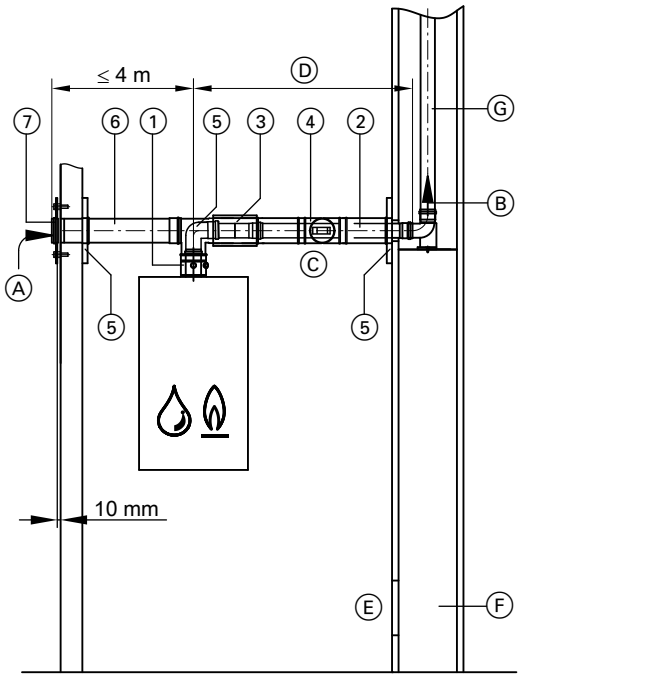
2.6 Plastic (PPs) balanced flue system for separate ventilation air and flue gas routing (type C_{83x} to EN 1749)

The Vitodens may be operated in **room sealed** mode and with separately routed flue gas and ventilation air, subject to the flue system meeting the following conditions:
- Connection to a chimney that is unsuitable for providing the combustion air supply because of deposits.
- Connection to a moisture-resistant chimney.

The combustion air is then supplied through a separate ventilation air pipe that is routed separately from the flue gas.
Observe the design information according to EN 1749.
Internal diameter of flue pipe: Ø 60 or 80 mm
Internal diameter of external pipe: Ø 100 or 125 mm
Internal diameter of ventilation air pipe: Ø 100 mm
Max. pipe length:
- Connection piece: 3 m
- Ventilation air pipe: 4 m

Max. number of bends (flue pipe and ventilation air pipe):
- 87°: 2 pce each
  or
- 45°: 3 pce each

Install an inspection port in the flue for checking and cleaning the flue pipe. Safeguard the unrestricted draining of the condensate from the flue into the boiler through an appropriate fall of at least 3°.
As part of the CE approval test it was verified that surface temperatures on the Vitodens and its balanced flue system do not exceed 85 °C at any point.
The flue system for separate ventilation air and flue gas routing has been certified as a system with the Vitodens condensing boiler.
A performance verification to EN 13384 for the ventilation air side and the connection pieces is **not** required.



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Connection piece
Ⓔ Ventilation aperture
Ⓕ Shaft F90/L90 or F30/L30
Ⓖ Flue pipe

		System size Ø mm	
①	**Boiler flue connection** (part of the standard boiler delivery) and **Balanced flue adaptor** Ø 80/125 mm to Ø 60/100 mm	60/100 60	80/125
②	**Balanced flue pipe** 1 m long 0.5 m long	60	80
	Balanced flue bend 87° (1 pce) 45° (2 pce)	60	80
③	**Balanced flue slide coupling**	60	80
④	**Balanced flue inspection piece**, straight (1 pce)	60	80
⑤	**Balanced flue tee C 8** with wall bezels	60	80
⑥	**Ventilation air pipe** Ø 100 mm 1 m long (may be trimmed to size) 0.5 m long (may be trimmed to size) **Ventilation air bend** Ø 100 mm 87° (1 pce) 45° (2 pce)		
⑦	**Ventilation air wind deflector**		
	Fixing clamp, white (1 pce) (balanced flue pipe)	60	80

Note
Where the flue is routed through an existing chimney or shaft (not moisture-resistant), use the flue pipe components according to page 18.

Max. total flue length up to the boiler flue connection

Vitodens 100-W and 111-W

Rated heating output	kW	19	26	30	32
Max. length – system size 60/100	m	20	20	20	20
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output	kW	11	19	25	32	45	60
Max. length – system size 60/100	m	20	30	30	30	—	—
Max. length – system size 60/100 (for combi boilers and storage combi boilers)	m	30	30	30	28	20	15
Max. length – system size 80/125	m	30	30	30	30	30	30

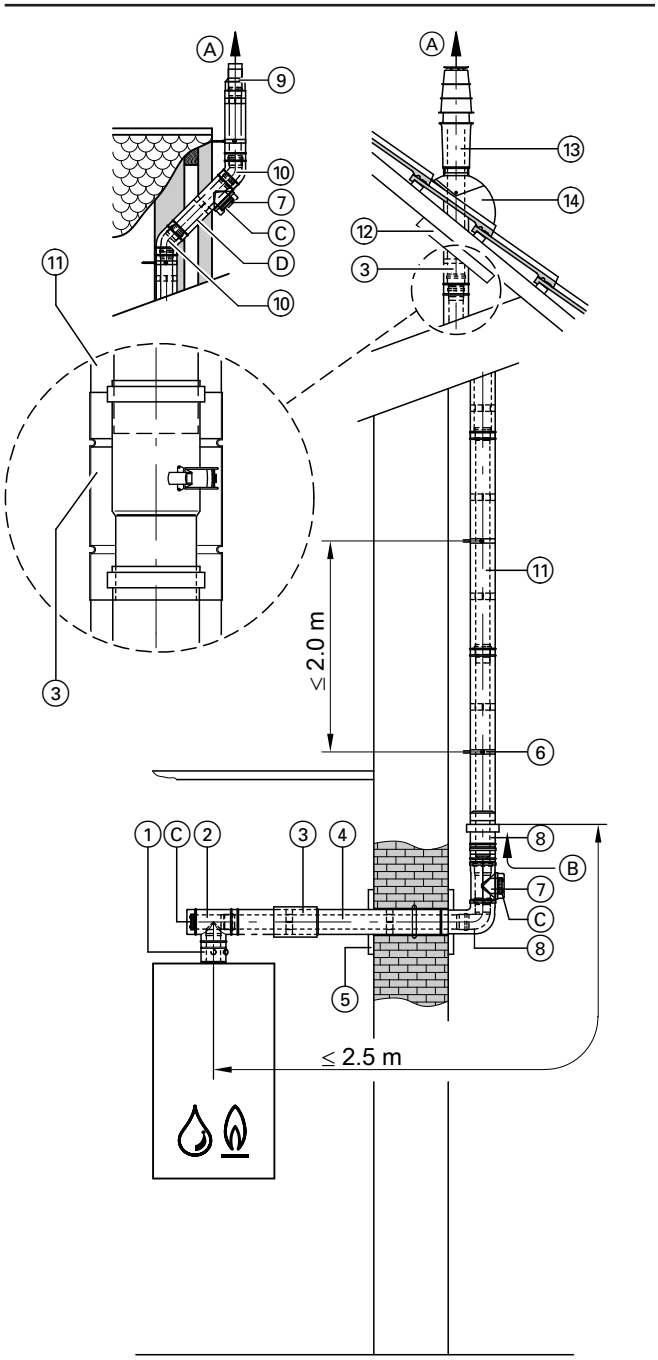
The following components are taken into consideration for the maximum flue lengths:
- Connection pipe Ⓓ 1 m long.
- 1 bend 87° and 1 support bend 87°
  or
- 2 bends 45° and 1 support bend 87°

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Connection pipe 0.5 m long: 0.5 m
- Connection pipe 1 m long: 1 m
- Bend 45°: 0.3 m
- Bend 87°: 0.5 m
- Inspection tee: 0.5 m

2.7 Plastic (PPs) balanced flue system for routing over external walls (type C_{53x} to EN 1749)

The Vitodens may also be connected, without a shaft, to a flue pipe that is routed over an external wall.
The combustion air is drawn in via the air inlet piece. The vertical external pipe provides protection and the static air gap inside it acts as thermal insulation. Safeguard the unrestricted draining of the condensate from the flue into the boiler through an appropriate fall of at least 3°.
The external routing has been certified as a coaxial balanced flue system with the Vitodens condensing boiler. A performance verification to EN 13384 is **not** required.

Design and sizing information for connection on the flue gas side (cont.)



Ⓐ Flue gas
Ⓑ Ventilation air
Ⓒ Inspection port
Ⓓ Elbow in flue for routing over external walls, see page 56

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Balanced flue inspection tee** 87° (1 pce)	—	—	110
	Balanced flue inspection bend, 87° (1 pce)	60	80	—
	or			
	Balanced flue inspection piece, straight (1 pce)	60	80	110
	and			
	Balanced flue bend 87° (1 pce)	60	80	110
③	**Balanced flue slide coupling**	60	80	110
④	**Balanced flue pipe**	60	80	110
	1.95 m long (1 pce)			
	1 m long (1 pce)			
	0.5 m long (1 pce)			
⑤	**Wall bezel**	60	80	110
⑥	**Fixing clamp,** white (1 pce)	60	80	110
⑦	**Balanced flue inspection piece**, straight (1 pce)	60	80	—
	or			
	External wall inspection piece, straight (1 pce)	—	—	110
⑧	**External wall pack**	60	80	110
	Comprising:			
	– Balanced flue bend			
	– Balanced flue air inlet piece			
	– Wall bezel			
⑨	**External wall terminal**	60	80	110
	For short protrusion above the roof			
⑩	**Balanced flue bend**			
	87° (1 pce)	60	80	—
	45° (2 pce)	60	80	—
	30° (2 pce)	60	80	—
	or			
	External wall bend			
	87° (1 pce)	—	—	110
	45° (2 pce)	—	—	110
	30° (2 pce)	—	—	110
⑪	**Balanced flue pipe**			
	1.95 m long (1 pce)	60	80	—
	1 m long (1 pce)	60	80	—
	0.5 m long (1 pce)	60	80	—
	or			
	External wall pipe			
	1.95 m long (1 pce)	—	—	110
	1 m long (1 pce)	—	—	110
	0.5 m long (1 pce)	—	—	110
⑫	**Universal cover plates**	60	80	110
⑬	**Balanced flue roof outlet**	60	80	110
	External wall with fixing clamps (for large protrusion above the roof)			
	Colour: Black or terracotta			
	Above roof extension with clamp (brace on site)			
	Colour: Black			
	0.5 m long	60	80	110
	1 m long	60	80	—
	Colour: Terracotta			
	0.5 m long	60	80	110
	1 m long	60	80	—

**1 Alternative system size. Balanced flue adaptor must be added to the order.*

Design and sizing information for connection on the flue gas side (cont.)

		System size Ø mm		
⑭	**Universal roof tile**	60	80	110
	– For Roman tiles and tiled roof cover. Colour: Black or terracotta			
	– For plain tile, slate and other roof cover. Colour: Black or terracotta	60	80	110
	Pipe outlet for Klöber roof tiles Colour: Black or terracotta Corresponding Klöber roof tile to be provided on site to match the roof outlet selected for the particular type of roof cover.	60	80	—

		System size Ø mm		
	Balanced flue adaptor			
	– Ø 80/125 mm to Ø 60/100 mm	60	80	—
	– Ø 60/100 mm to Ø 80/125 mm	60	80	—
	– Ø 80/125 mm to Ø 110/150 mm	—	80	110

2

Max. total flue length

Vitodens 100-W and 111-W

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60/100	m	20	20	20	20
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60/100	m	30	30	30	30
Max. length – system size 80/125*1	m	30	30	30	30

Vitodens 200-W, from 49 kW

Rated heating output	**kW**	**49**	**60**	**80**	**99**	**120**	**150**
Max. length – system size 80/125	m	12	12	—	—	—	—
Max. length – system size 110/150	m	17*1	17*1	20	20	18	15

2 balanced flue bends 87° are taken into consideration for the maximum flue lengths.

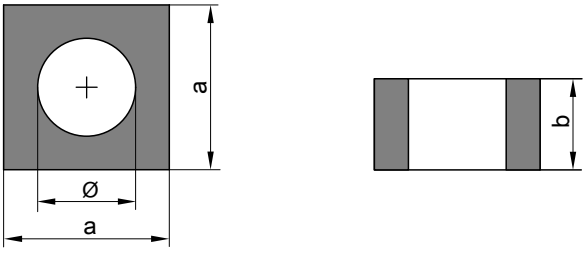
For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Balanced flue bends 45°: 0.5 m
- Balanced flue bends 87°: 1 m
- Balanced flue inspection tee: 1 m

2.8 Plastic (PPs) balanced flue system for routing through a lightweight shaft

A space saving shaft for reduced temperature requirements may be retrofitted if no shaft is available where the Vitodens is installed in the living space with one or more full storeys above.

The shaft used must comply with the requirements for domestic chimneys to DIN V 18160-1 or must be generally approved by the building inspectorate [Germany].

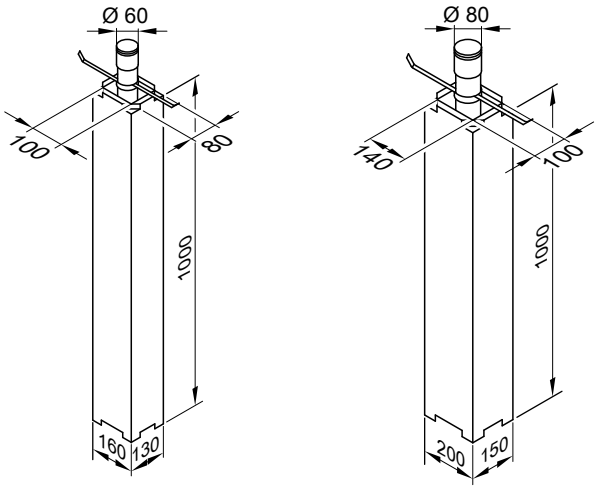
"UNIFIX" shaft profiles from Skoberne (made from aerated concrete)



Ø mm	a mm	b mm	Fire rating
165	240	500	90 min
210	300	500	90 min
240	360	249	90 min
280	400	249	90 min

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

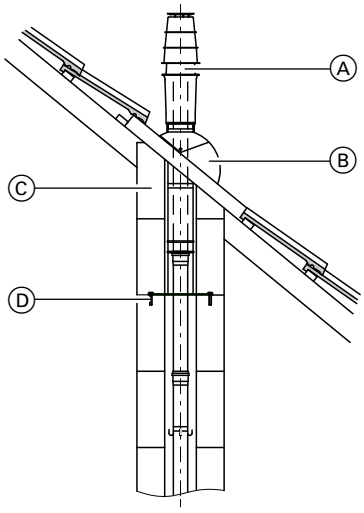
"SKOBIFIXnano" and "SKOBIFIXXs 30" shaft elements from Skoberne (made from foamed ceramics)



Fire rating 30 min.
Skoberne is one of the companies that sells a shaft system made from lightweight concrete or foamed ceramics approved by the building inspectorate [Germany].
Skoberne address:
Skoberne Schornsteinsysteme GmbH
Ostendstraße 1
D-64319 Pfungstadt

Anchoring of the roof outlet in shaft profiles

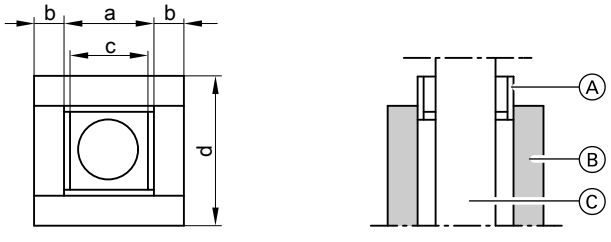
Where the shaft is run up to under the roof cladding



Available from Skoberne:
Ⓐ Roof outlet
Ⓑ Universal roof tile
Ⓒ Terminal shaft profile
Ⓓ Anchoring of the roof outlet

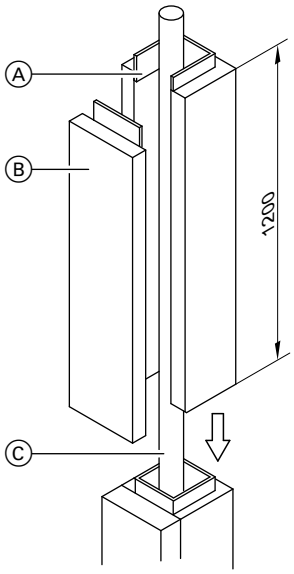
During installation, match the terminal shaft profile Ⓒ to the roof pitch.

Shaft profiles from Promat



System size Ø mm	a mm	b mm	c mm	d mm	Fire rating
80	140	25	128	190	30 min
	140	40	128	220	90 min
110	180	25	168	230	30 min
	180	40	168	260	90 min

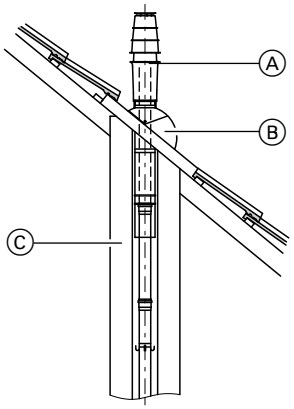
Ⓐ PROMATECT® female connection
Ⓑ PROMATECT® fitting
Ⓒ Flue pipe



Promat is one of the companies that sells a shaft system made from calcium silicate fire-resistant plates approved by the building inspectorate [Germany].
Promat address:
Promat GmbH
Postfach 109 564
D-40835 Ratingen

Ⓐ PROMATECT® female connection
Ⓑ PROMATECT® fitting
Ⓒ Flue pipe

Roof outlet for shafts with Promat profiles

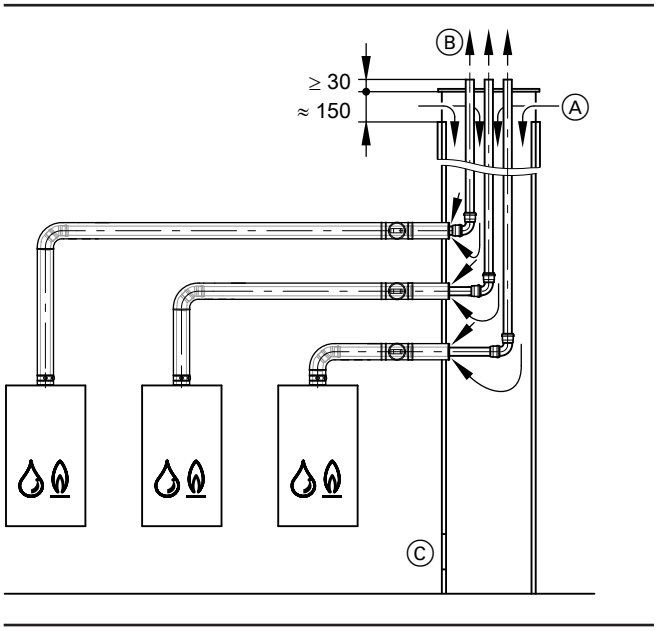


During installation, match the terminal shaft profile to the roof slope.

Ⓐ Vertical coaxial roof outlet
Ⓑ Universal roof tile
Ⓒ Lightweight shaft made from PROMATECT mineral fibre profiles®

2.9 Plastic (PPs) flue gas/ventilation air system for routing multiple pipes through a shaft

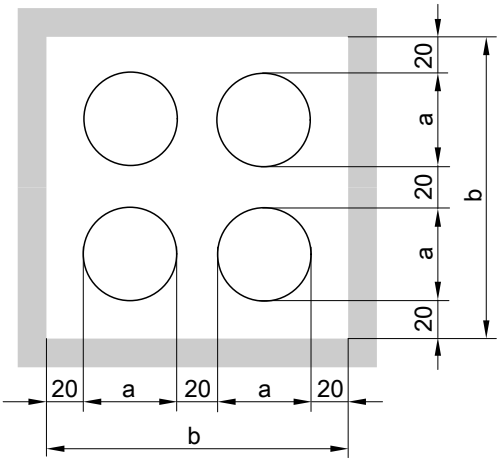
There is an option of routing several flues in room sealed operation through a common, sufficiently sized shaft. For this, the Vitodens condensing boilers must be installed in the same living space. For reasons of fire protection, the installation and connection on different levels or in different rooms is not possible. The flues and the shaft covers must be professionally supported inside/on the shaft, on site.
For balanced flue components from the Vitodens to the common shaft, see page 18.

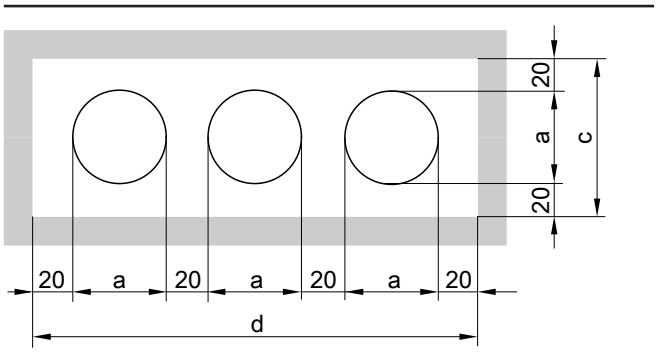


Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port

Layout examples

Minimum clearances of the individual flues to DIN V 18160-1:
- In square/rectangular shafts: 20 mm
- In round shafts: 30 mm





System size	Dimensions [mm]			
Ø mm	a	b	c	d
60	73	206	113	299
80	94	248	134	362
110	128	316	168	464

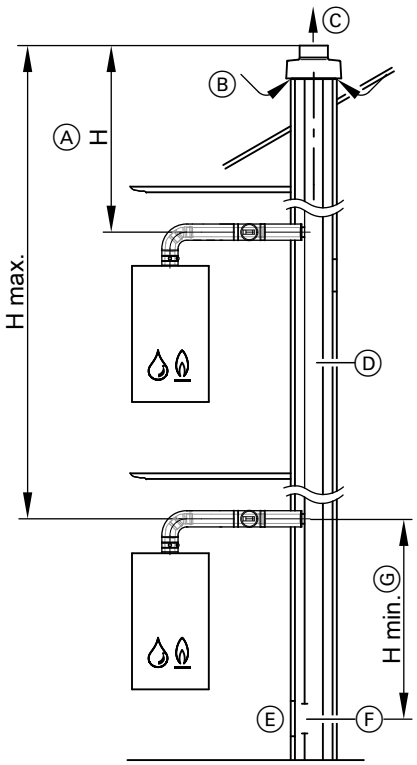
Note
According to the approval certificate, internal shaft dimensions smaller than those shown in the table may also be used, provided this is allowed under performance verification to EN 13384.

2.10 Plastic (PPs) balanced flue system (connection line) for multiple flue connection to a single balanced flue system

Vitodens condensing boilers meet the safety requirements of DIN 3368-6. A general building regulations approval for connection to balanced flue systems is therefore not required.
Each gas condensing boiler in a multiple connection flue system or multi boiler system with flue gas cascade requires an additional external back draught safety device in the flue gas connection.

When connecting 2 condensing boilers to one chimney on the same floor, the connection piece inlets should be separated by at least 300 mm.
Design and calculations for balanced flue systems with multiple flues are carried out by the relevant manufacturer.

Balanced flue system, negative pressure (type C_{43x}, to EN 1749)



Ⓒ Flue gas
Ⓓ Balanced flue system (see below for manufacturers)
Ⓔ Inspection port
Ⓕ Pressure compensation aperture
Ⓖ Minimum clearance to DIN V 18160, paragraph 9.3.1
Check with the flue system manufacturer.

Note
*Back draught safety devices must **not** be used for multiple connections under negative pressure.*
For multiple connection under negative pressure with Vitodens Classic, 100-W, 111-W and 111-F, use only appliances for single connection.

Ⓐ Effective chimney height relative to the highest positioned Vitodens
Ⓑ Ventilation air

Balanced flue system, positive pressure – multiple connections with Vitodens Classic, 050-W, 100-W, 111-W, 111-F to 35 kW, 200-W, 222-W, 222-F and 242-F up to 32 kW (type $C_{14(3)x}$ to EN 1749)

Note
Appliance types not available in all countries

System for room sealed operation, specifically developed for Vitodens Classic, 050-W, 100-W, 111-W, 111-F, 200-W, 222-W, 222-F and 242-F.

Note
*For multiple connections under positive pressure with Vitodens 100-W, 111-W or 111-F, it is **essential** to install appliance versions for multiple connection.*
A separate back draught safety device must be used for multiple connections under positive pressure with Vitodens Classic.
*Appliances for multiple connection are identified by the letter **-M** in the type designation.*

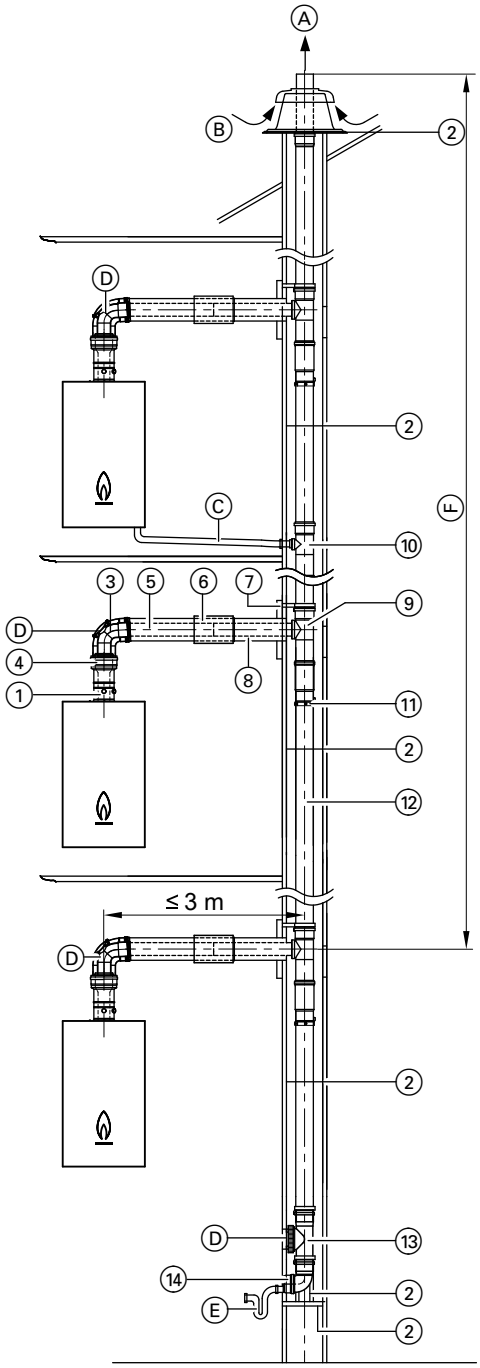
For multiple flue connection to a single balanced flue chimney (balanced flue system, positive pressure) in conjunction with natural gas. Operation with liquid gas is not permissible.

Minimum shaft cross-section:
- Square: 175 × 175 mm
- Round: Ø 195 mm.

C_{14} only with Skoberne flue system:

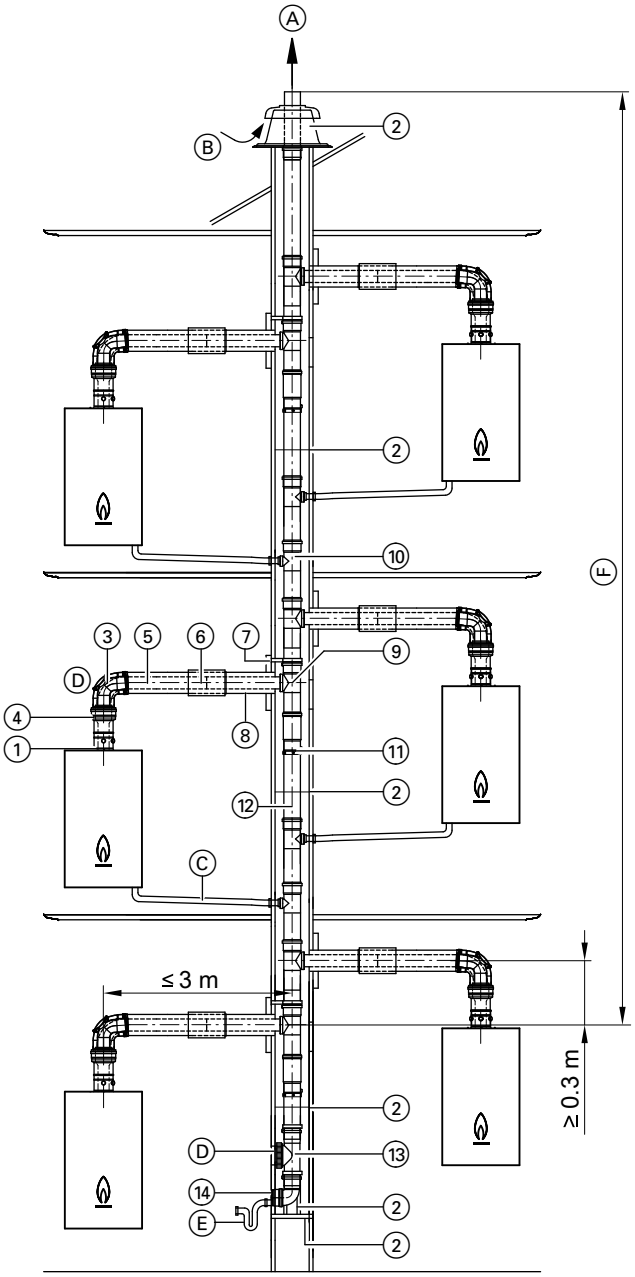
The minimum shaft cross-sections relate to max. connections and max. lengths/heights. For fewer connections or shorter lengths/heights, the annular gap may be reduced to a minimum of 15 mm, provided that a calculated verification based on the Skoberne flue system is provided.
Calculation to C_{10} is not carried out by Viessmann.
Due to the dimensions of the fixing clamp, a minimum shaft cross-section of D = 160 mm or 160 x 160 mm is required!

Note
Only the Skoberne flue system must be used for type $C_{(14)}$; in addition, flue systems must not be installed opposite each other.
Only combinations approved by Viessmann are permitted. Other combinations are only permissible for flue gas routing type $C_{(10)}$.



1 boiler per floor

Ⓐ Flue gas
Ⓑ Ventilation air
Ⓒ Condensate drain into vertical flue pipe
Ⓓ Inspection port
Ⓔ Condensate drain with trap (on site)
Ⓕ Max. flue pipe length (vertical)



2 boiler per floor

Ⓐ Flue gas
Ⓑ Ventilation air
Ⓒ Condensate drain into vertical flue pipe
Ⓓ Inspection port
Ⓔ Condensate drain with trap (on site)
Ⓕ Max. flue pipe length (vertical)

Design and sizing information for connection on the flue gas side (cont.)

		System size Ø mm	
①	**Boiler flue connection** (part of the standard boiler delivery)	80	—
	Back draught safety device 2 back draught safety devices required, for installation in the Vitodens and in the flue system. The internal back draught safety device is already installed in the Vitodens 1xx. Another back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical). Must be added to the order for every boiler	—	—
②	**Standard shaft pack** (PPs, rigid) Comprising: – Support bend – Support rail – Shaft cover (PPs) – Spacers (3 pce)	—	110
	Spacers (3 pce)	—	110
③	**Balanced flue bend** 87° (1 pce) 45° (2 pce) or **Balanced flue inspection bend** (recommended) 87° (1 pce)	 80 80 80	 — — —
④	**Balanced flue adaptor** Ø 60/100 to Ø 80/125	80	—
⑤	**Balanced flue pipe**, straight (1 pce)	80	—
⑥	**Balanced flue slide coupling**	80	—
	Fixing clamp, white (1 pce) (balanced flue pipe)	80	—

		System size Ø mm	
⑦	**Wall bezel**	80	—
⑧	**Balanced flue pipe** 1 m long 0.5 m long	 80 80	 — —
⑨	**Connecting assembly, multiple connections** Comprising: – Inspection pipe Ø 110 – Flue gas connection Ø 80 – Fixing clamp – Spacer – Long fem. connection Ø 110	—	110
⑩	**Connecting assembly, condensate drain** Comprising: – Branch 87° Ø 40 – Fixing clamp – Long fem. connection Ø 110	—	110
⑪	**Connecting clamp** required for every joint in the shaft	—	110
⑫	**Flue pipe** 2 m long (2 pce @ 2 m = 4 m) 2 m long (1 pce) 1 m long (1 pce) 0.5 m long (1 pce)	 — — — —	 110 110 110 110
	Flue bends (for use in corbelled chimneys) 30° (2 pce) 15° (2 pce)	 — —	 110 110
⑬	**Inspection piece**, straight (1 pce)	—	110
⑭	**Condensate drain connection** (eccentric) Reduction from Ø 110 mm to Ø 40 mm	—	110

Flue pipe lengths – Vitodens Classic

1 boiler per floor – system size 110 mm

Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
25	25	15	—	—	—

2 boiler per floor – system size 110 mm

Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
25	15	10	—	—	—

Flue pipe lengths – Vitodens 050-W

1 boiler per floor – system size 110 mm

Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
25	25	18	9	—	—

2 boiler per floor – system size 110 mm

Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
25	15	15	5	—	—

Flue pipe lengths – Vitodens 100-W, 111-W, 111-F, 200-W, 222-W, 222-F and 242-F (appliance types not available in all countries)

Up to 6 boilers with the same rated heating output can be connected to one flue system. The flue pipe lengths detailed below are confirmed with the relevant CE designations. If you observe these length specifications you will not need to make a separate flue pipe length calculation.

1 boiler per floor – system size 110 mm

Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
11	25	25	25	25	21
19	25	25	25	15	—
25	25	25	19	12	—
32	25	25	15	—	—

2 boiler per floor – system size 110 mm

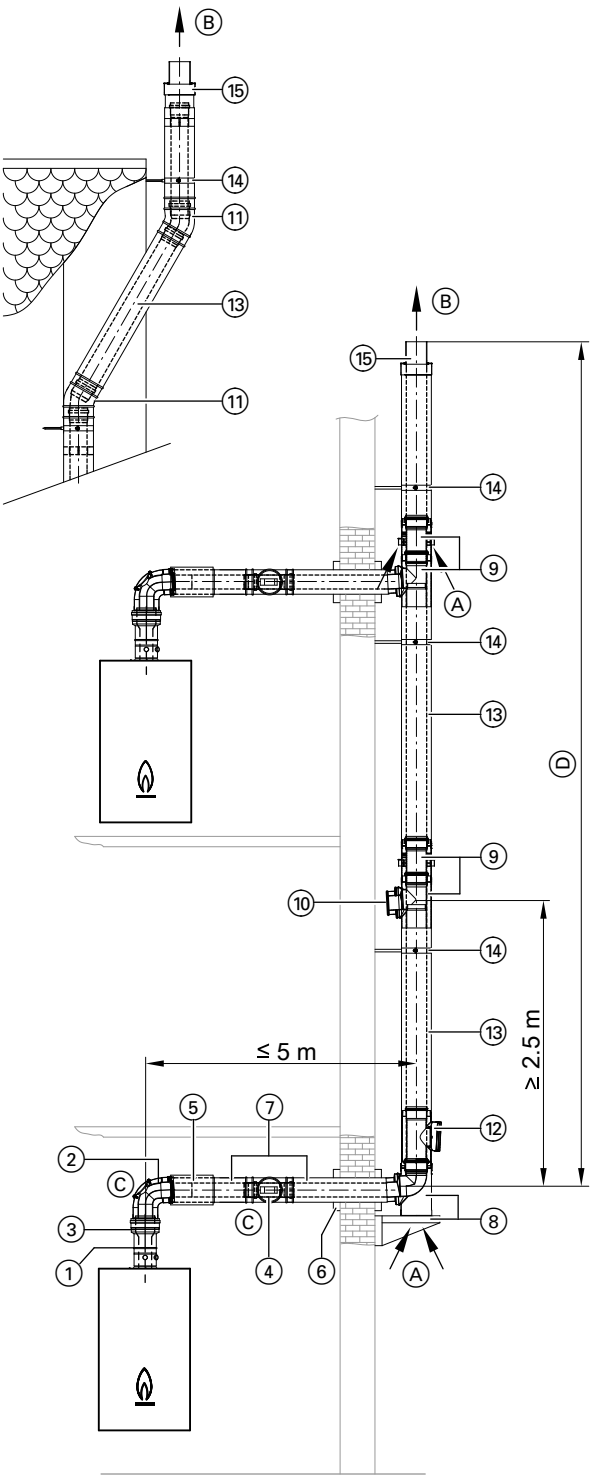
Number of boilers	2	3	4	5	6
Rated heating output (kW)	Flue pipe length (m)				
11	15	15	15	15	15
19	15	15	15	11	6
25	15	15	15	8	—
32	15	15	12	6	—

Common balanced flue header on the external wall – multiple connections with Vitodens 100-W, 200-W, 222-W, 222-F, 242-F to 32 kW (type $C_{13(3)x}$ to EN 1749)

Note
Appliance types not available in all countries.

System for room sealed operation, specifically developed for Vitodens 100-W, 200-W, 222-W, 222-F and 242-F.
Operation only in conjunction with natural gas, operation with liquid gas is not permissible.
Balanced flue header Ø 110/160 mm

Design and sizing information for connection on the flue gas side (cont.)



1 boiler per floor

Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Max. flue pipe length (see the following pages)

		System size Ø mm	
①	**Boiler flue connection** (part of the standard boiler delivery)		
	Back draught safety device 2 back draught safety devices required, for installation in the Vitodens and in the flue system. The internal back draught safety device is already installed in the Vitodens 050-W and Vitodens 1xx-W. Another back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical). Must be added to the order for every boiler.	—	—
②	**Balanced flue bend**		
	87° (1 pce)	80	—
	45° (2 pce)	80	—
	or		
	Balanced flue inspection bend 87° (1 pce)	80	—
③	**Balanced flue adaptor** Ø 60/100 to Ø 80/125	80	—
④	**Balanced flue inspection piece** (recommended), straight (1 pce)	80	—
⑤	**Balanced flue slide coupling**	80	—
	Fixing clamp, white (1 pce) (balanced flue pipe)	80	—
⑥	**Wall bezel**	80	—
⑦	**Balanced flue pipe**		
	1.95 m long	80	—
	1 m long	80	
	0.5 m long	80	—
⑧	**Connecting assembly, multiple connections, base** Comprising: – Connection, multiple connections – Mounting bracket	—	110
⑨	**Connecting assembly, multiple connections, upper floor** Comprising: – Connection, multiple connections – Air inlet piece – Integral condensate trap for sectional condensate drainage	—	110
⑩	**Dummy cover** For subsequent connection of a heat generator	80	110
⑪	**Balanced flue bend**		
	87° (1 pce)	—	110
	45° (2 pce)	—	110
	30° (2 pce)	—	110
⑫	**Balanced flue inspection piece**, straight (1 pce)	—	110
	Balanced flue slide coupling	—	110
⑬	**Balanced flue pipe**		
	2 m long (1 pce)	—	110
	1 m long (1 pce)	—	110
	0.5 m long (1 pce)	—	110
⑭	**Wall clamp**, adjustable	—	110
	Fixing clamp, white (balanced flue pipe)	—	110
⑮	**Terminal, balanced flue header** For installation without roof outlet	—	110
	Universal cover plate For balanced flue roof outlet	—	110

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		System size Ø mm	
	Wall bezel For flat roof outlet	—	110
	Balanced flue roof outlet with fixing clamp Colour: Black or Colour: Terracotta	—	110

Note
The base connecting assembly for multiple connections must be installed at the interface to the last heat generator. If an additional heat generator is to be subsequently installed below the already installed base connecting assembly for multiple connections, offset the connecting assembly accordingly.
Operation with liquid gas is not permissible.

Flue pipe lengths – Vitodens 100-W and 111-W
Up to 6 boilers with the same rated heating output can be connected to one flue system. The flue pipe lengths detailed below are confirmed with the relevant CE designations. If you observe these length specifications you will not need to make a separate flue pipe length calculation.

Number of boilers	**2**	**3**	**4**	**5**	**6**
Rated heating output (kW)	**Flue pipe length (m)**				
11	25	25	25	25	23
19	25	25	25	17	—
25	25	25	21	13	—
32	25	25	17	—	—

Flue pipe lengths – Vitodens 200-W, 222-W, 222-F and 242-F (appliance types not available in all countries)
Up to 6 boilers with the same rated heating output can be connected to one flue system.
Max. flue length: 25 m vertically and 5 m horizontally (connection piece)

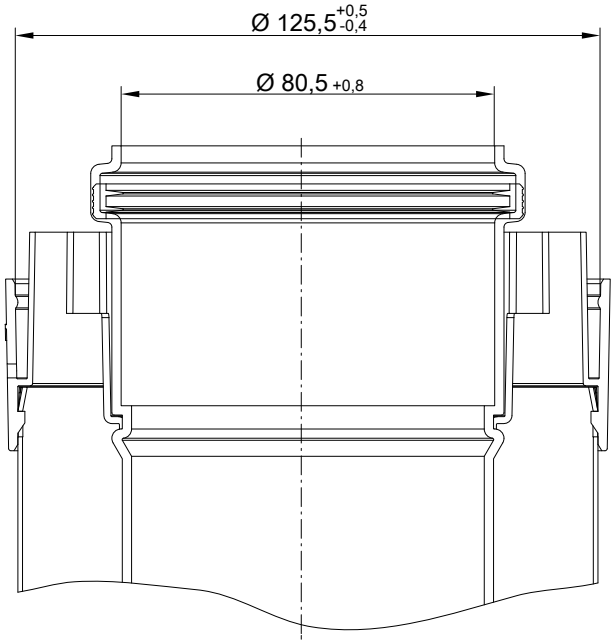
These flue pipe lengths are confirmed with the relevant CE designations. If you observe these length specifications you will not need to make a separate flue pipe length calculation.

Number of boilers	**2**	**3**	**4**	**5**	**6**
Rated heating output (kW)	**Flue pipe length (m)**				
11	25	25	25	25	23
19	25	25	25	17	—
25	25	25	21	13	—
32	25	25	17	—	—

2.11 Third party flue systems for multiple connection, type $C_{(10)}$

The heat generators are designed to be connected to a flue header system.
If one heat generator is operating at the maximum rated heating output (Qn max) and another at the minimum rated heating output (Qn min), the static pressure in the air header must be 25 Pa higher than the static pressure in the flue header.
The length of the connection pipe between the heat generator and flue header should be a minimum of 0.5 m and a maximum of 3 m.

For shape of end piece, see sketch:



Design basis:
- *Flue gas mass flow rate at maximum rated heat input*
- *Flue gas mass flow rate at lowest heat input*
- *CO_2 or O_2 content of flue gases under rated operating conditions*
- *Minimum permissible pressure differential between flue gas outlet and air inlet*

Note
The relevant information can be found in the technical guide for the heat generator.

The flue system must be suitable for the values specified for the "$C_{(10)}$ design basis". For calculating the system, a flue gas temperature of 25 °C at the inlet to the vertical flue gas header is assumed.
A condensate return to the appliance is permitted.
- Due to the flue gas being extracted under positive pressure, any reverse flow of flue gas through off-line heat generators must be effectively prevented. 2 back draught safety devices are required for this, for installation in the Vitodens and in the flue system.
- With the Vitodens 100-W, one back draught safety device is already installed in the boiler. A further back draught safety device must be installed in the flue system.
- The back draught safety devices must be added to the order for every boiler.

Maximum permissible reverse flow of flue gas of 10 % in windy conditions.

If one heat generator is operating at the max. rated heating output (Qn max) and another at the min. rated heating output, the max. permissible pressure differential between flue gas outlet and air inlet on entry into the header system must not be exceeded.
The flue gas header must be suitable for a positive pressure of at least 200 Pa.
No draught extraction/draught hood must be installed in the flue system.

Note
The flue gas mass flow rate at maximum heat input must be stated for every connection point. The wind protector for the header must be designed so that it generates an air draught.
A type plate containing the following information must be attached to each connection interface:
- *The header system is suitable for boilers of type $C_{(10)}$.*
- *Maximum permissible flue gas mass flow rate.*
- *Dimensions of the flue gas connection to the header.*
- *A warning notice: If the heat generator is disconnected from the flue system, the air and flue inlets must be closed and checked for leaks. The name of the flue system manufacturer or an unambiguously identifiable symbol must be visible on the connection interface.*

2.12 Modernisation projects with Vitodens and existing flue systems with pressure class "P"

Today's advanced flue systems are approved for pressure class H1 according to DIN EN 1443 and consequently for operation at nominal pressures of up to 5000 Pa.
By contrast, older flue systems installed in existing buildings are often certified to pressure class **"P_1"** or **"P_2"**. These are only suitable for nominal pressures up to 200 Pa.
- If replacing a boiler, it is essential to clarify with the flue gas inspector in advance whether the previous flue systems will continue to be used.
- Flue gas gaskets are subject to wear; the tightness of the flue system cannot always be guaranteed in the long term. Since inspection or replacement of the gaskets already involves dismantling the flue system and cleaning the pipe sleeve and pipes, we recommend that the flue system is modernised.
- If reusing the previous flue system of pressure class P_X, the nominal pressure in the flue system when operating with the new appliance under normal operating conditions must not exceed 200 Pa.
- Whether the existing flue system can continue to be used with the new appliance while observing the maximum pressure depends on the cross-section and the length of the flue system and the rated output of the new appliance.
  Relevant data on the residual draughts of Vitodens appliances can be found in the respective flue gas technical guides or obtained directly from the technical guides for the respective boiler.
- The maximum flue gas side residual heads stated in the technical guides define the maximum flue gas pressure arising in the flue system in standard mode when combined with the indicated maximum flue pipe lengths and flue pipe cross-sections.
- Consequently, the maximum resulting flue gas pressure in standard mode can also be positively influenced by reducing the flue pipe lengths, enlarging the flue pipe cross-section and using an appliance with a low rated output.

The relevant data for Vitodens gas condensing boilers for compliance with a nominal pressure of 200 Pa can be found in the attached tables.

Maximum flue length

If the maximum flue pipe lengths listed in the tables are adhered to, a maximum flue system pressure of 200 Pa is maintained in standard mode.

Single connection up to 150 kW

Product designation/type	Rated output (50/30 °C) in kW	Max. length of flue system 60/100	Max. length of flue system 80/125	Max. length of flue system 110/150
Vitodens 100-W, 200-W, 300-W Type B1HF, B2HF, B3HG	11	30 m	30 m	—
	19	30 m	30 m	—
	25	28 m	30 m	—
	32	17 m	30 m	—

Product designation/type	Rated output (50/30 °C) in kW	Max. length of flue system 60/100	Max. length of flue system 80/125	Max. length of flue system 110/150
Vitodens 100-W, 200-W, 222-F Type B2KF, B1KF, B2LF	11	30 m	30 m	—
	19	20 m	30 m	—
	25	15 m	30 m	—
	32	12 m	28 m	—
Vitodens 222-F, 333-F Type B3TG, B2TF, B2SF	11	30 m	30 m	—
	19	30 m	30 m	—
	25	17 m	30 m	—
	32	12 m	28 m	—
Vitodens 200-W, type B2HA	49	—	12 m	17 m
	60	—	12 m	17 m
	80	—	—	20 m
	99	—	—	13 m
	120	—	—	09 m
	150	—	—	05 m

Cascade installation up to 594 kW

Product designation/type	Rated output (50/30 °C) in kW	Max. length of flue system 160 mm	Max. length of flue system 200 mm	Max. length of flue system 250 mm
Inline formation				
Vitodens 200-W type B2HA	2x 49 2x 60	30	—	—
	2x 80 2x 99	—	30	—
	3x 49 3x 60	30	—	—
	3x 80 3x 99	—	30	—
	4x 49 4x 60	—	30	—
	4x 80 4x 99	—	30	—
	5x 49 5x 60	—	—	30
	5x 80 5x 99	—	—	30
	6x 49 6x 60	—	—	30
	6x 80 6x 99	—	—	30
Block arrangement				
Vitodens 200-W type B2HA	4x 49 4x 60	—	30	—
	4x 80 4x 99	—	—	30
	6x 49 6x 60	—	—	30
	6x 80 6x 99	—	—	30

2.13 Plastic (PPs) flue pipe for routing through a shaft – with open flue operation (type B to EN 1749)

Open flue operation requires a flue pipe as a connection piece between the Vitodens and the shaft as well as for routing through the shaft.

The installation room must provide a ventilation air aperture with an open cross-section of at least 150 cm² or 2 × 75 cm² (to EN 1749).

Note

Install the Vitodens 200-W, from 60 kW, and multi boiler systems in accordance with the FeuVo [check local fire regulations] in a separate installation room with a suitable ventilation air aperture. The cross-section must be at least 150 cm² and should be 2 cm² larger for each kW above 50 kW rated heating output. This cross-section may not be split over more than 2 apertures (observe FeuVo and EN 1749).

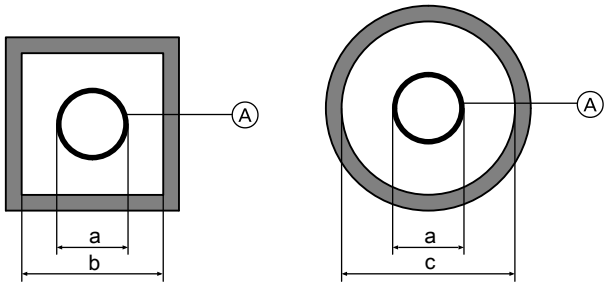
The flue system is connected to the boiler flue connection.
The combustion air is drawn from the installation room via the annular gap in the boiler flue connection.

Design and sizing information for connection on the flue gas side (cont.)

For routing through shafts or ducts with longitudinal ventilation which meet the requirements for domestic chimneys to DIN V 18160-1, or which have a fire rating of 90 minutes (L90), or a fire rating of 30 minutes (L30) for buildings in categories 1 and 2.
Prior to installation, the relevant flue gas inspector should check that the shaft to be used is suitable and approved for this purpose.
Close off and seal any other connection apertures with appropriate materials.
This does not apply to any cleaning or inspection apertures that are provided with chimney cleaning covers and that are identified with an appropriate test mark.
Check prior to installation whether the shaft runs straight from top to bottom or if it is offset (check with mirrors).
If the chimney is offset, we recommend the installation of a flexible flue pipe (see page 42).
Before commissioning the flue system, the responsible flue gas inspector must perform a tightness test.

In the case of **open flue** operation, this can **only** be carried out by means of a pressure test.
Inside the installation room, at least one inspection port for checking and cleaning as well as for checking the pressure must be provided in the flue system.
If the flue is inaccessible from the roof, a second inspection port must be provided in the attic behind the chimney cleaning hatch.
Safeguard the unrestricted draining of the condensate from the flue into the boiler through an appropriate fall of at least 3°.
The flue system must protrude above the roof line. Observe the roof protrusion parallel to the roof slope in accordance with the Landes-FeuVo [check local fire regulations].
Alternative CE designated flue pipes may be used, e.g. if a larger pipe diameter is required for longer flue lengths. In that case, the performance verification to EN 13384 should be provided by the relevant flue pipe manufacturer.

Internal shaft dimensions

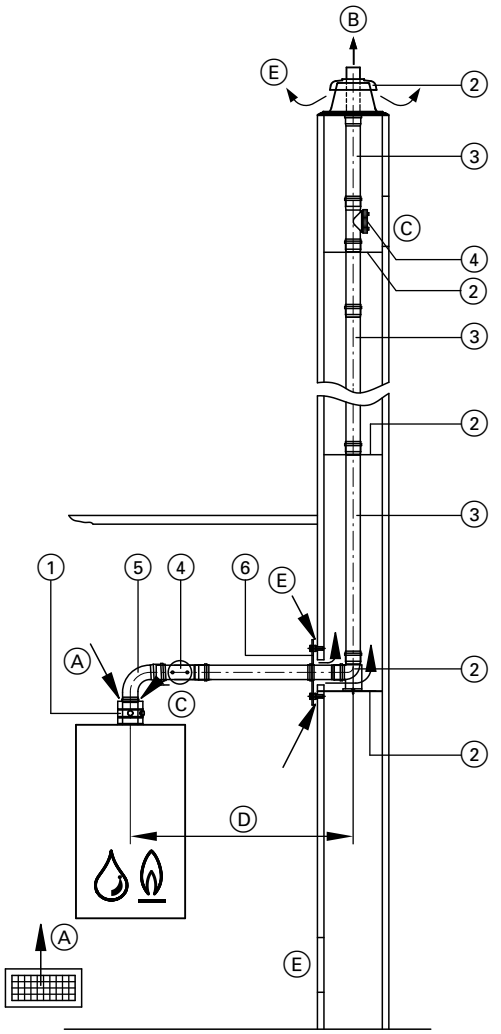


Minimum internal shaft dimensions

System size Ⓐ	External diameter, female connection a	Minimum internal shaft dimensions	
		b Square or rectangular (short side)	c Round
	Ø mm	mm	Ø mm
60 (rigid)	73	113	133
60 (flexible, shaft cover PPs)	72	112	132
60 (flexible, shaft cover metal)	87	140	147
80 (rigid)	94	135	155
80 (flexible, shaft cover PPs)	102	142	162
80 (flexible, shaft cover metal)	116	165	176
110 (rigid)	128	170	190
110 (flexible, shaft cover PPs)	127	167	187
110 (flexible, shaft cover metal)	142	182	202
125 (rigid)	145	185	205
160 (rigid)	184	224	244
200 (rigid)	227	267	287
250 (rigid)	273	313	333

Max. number of bends:
- 87°: 3 pce
  or
- 45°: 3 pce
  or
- 30°: 4 pce
  or
- 15°: 4 pce

Flue, system size 60, 80 and 110 (components) (type B_{23} /B_{33} to EN 1749)



Ⓐ Ventilation air
For sizing the ventilation air aperture, see page 39
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Connection piece
Ⓔ Secondary ventilation

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Standard shaft pack** (PPs, rigid) Comprising: – Support bend – Support rail – Shaft cover – Spacers (5 pce, max. distance 5 m) or	60	80	110
	Standard shaft pack (metal/PPs, rigid) For twin flue chimneys; one flue for solid fuel boilers Comprising: – Support bend – Support rail – Shaft cover (metal) – Terminal pipe (stainless steel) – Spacers (5 pce, max. distance 5 m)	60	80	110
	Spacers (3 pce, max. distance 5 m)	60	80	110
③	**Flue pipe**			
	1.95 m long (2 pce @ 1.95 m = 3.9 m)	60	80	110
	1.95 m long (1 pce)	60	80	110
	1 m long (1 pce)	60	80	110
	0.5 m long (1 pce)	60	80	110
④	**Inspection piece**, straight (1 pce)	60	80	110
⑤	**Flue bends** 87° (1 pce) 45° (2 pce) or	60	80	110
	Inspection tee 87° (1 pce) or	60	80	—
	Inspection bend 87° (1 pce)	—	—	110
⑥	**Ventilation bezel** (1 pce)	60	80	110
	Flue bend (for use in corbelled chimneys) 30° (2 pce) 15° (2 pce)	60	80	110
	Stainless steel extension, 380 mm long for shaft cover, standard shaft pack (metal/PPs, rigid)	60	80	110
	Extension			
	– Ø 60 mm to Ø 80 mm	60	80	–
	– Ø 80 mm to Ø 110 mm	–	80	110

Max. total flue length

Vitodens 100-W and 111-W

Rated heating output	kW	11	19	25	32
Max. length – system size 60	m	30	30	30	30
Max. length – system size 80*1	m	30	30	30	30

Vitodens 200-W, 222-F, 222-W and 242-F (appliance types not available in all countries)

Rated heating output	kW	11	19	25	32
Max. length – system size 60	m	30	30	30	30
Max. length – system size 80*1	m	30	30	30	30

*1 *Alternative system size. Balanced flue adaptor must be added to the order.*

Design and sizing information for connection on the flue gas side (cont.)

Vitodens 200-W, from 49 kW

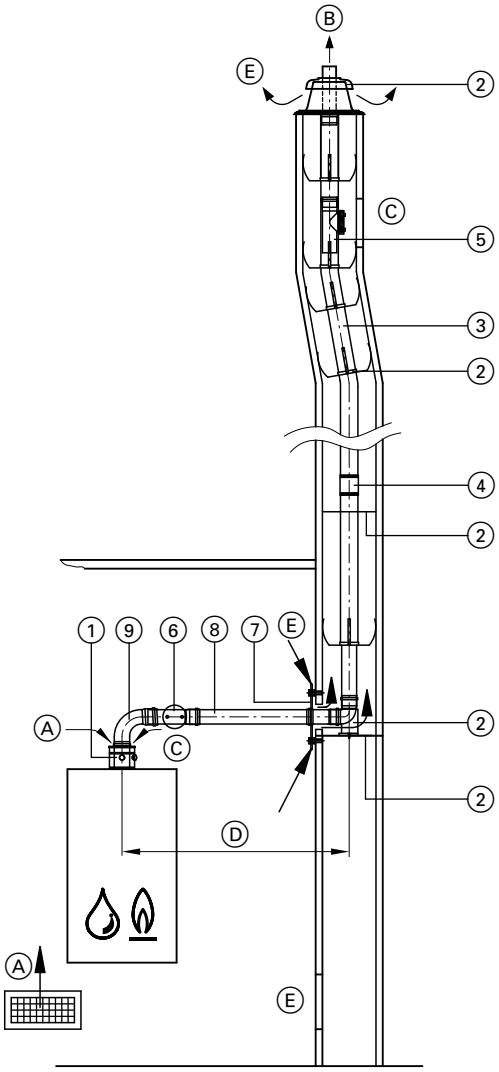
Rated heating output	kW	49	60	80	99	120	150
Max. length – system size 80	m	20	15	—	—	—	—
Max. length – system size 110	m	25*1	20*1	20	20	20	20

The following components are taken into consideration for the maximum flue lengths:
- Connection pipe Ⓓ 1 m long.
- 1 bend 87° and 1 support bend 87°
  or
- 2 bends 45° and 1 support bend 87°

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Connection pipe 0.5 m long: 0.5 m
- Connection pipe 1 m long: 1 m
- Bend 45°: 0.3 m
- Bend 87°: 0.5 m
- Inspection tee: 0.5 m

Note
Observe the specifications for internal shaft dimensions: See page 40.

Flue, flexible, system size 60, 80 and 110 (components) (type B_{23} to EN 1749)



Ⓐ Ventilation air
Ventilation air aperture, min. 150 cm² or 2 × 75 cm²
Ⓑ Flue gas
Ⓒ Inspection port
Ⓓ Connection piece
Ⓔ Secondary ventilation

		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Standard shaft pack** (PPs, flexible) Comprising: – Support bend – Support rail – Shaft cover – Spacers (5 pce, max. distance 2 m)	60	80	110
	Standard shaft pack (metal/PPs, flexible) For twin flue chimneys; one flue for solid fuel boilers Comprising: – Support bend – Support rail – Shaft cover (metal) – Terminal pipe (stainless steel) – Spacers (5 pce, max. distance 2 m)	60	80	110
	Spacers (5 pce, max. distance 2 m)	60	80	110
③	**Flue pipe, flexible,** as a 12.5 or 25 m roll	60	80	110
④	**Connection piece** for connecting residual lengths of the flexible flue	60	80	110
⑤	**Inspection piece**, straight for **installation in the flexible flue pipe**	60	80	110
	Pipe lowering attachment with 25 m rope	60	80	110
⑥	**Inspection piece**, straight (1 pce)	60	80	110
⑦	**Ventilation bezel** (1 pce)	60	80	110
⑧	**Flue pipe** 1 m long (1 pce) 0.5 m long (1 pce)	60	80	110
⑨	**Flue bends** 87° (1 pce) 45° (2 pce) or **Inspection tee** 87° (1 pce) or **Inspection bend** 87° (1 pce)	60 60 —	80 80 —	80 — 110
	Stainless steel extension, 380 mm long for shaft cover, standard shaft pack (metal/PPs, flexible)	60	80	110

1 Alternative system size. Balanced flue adaptor must be added to the order.

Design and sizing information for connection on the flue gas side (cont.)

	System size Ø mm		
Extension			
– Ø 60 mm to Ø 80 mm	60	80	–
– Ø 80 mm to Ø 110 mm	–	80	110

Note
The flexible flue pipe may be routed at a max. angle from vertical of 45°.

Max. total flue length

Vitodens 100-W and 111-W

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60	m	10	10	10	10
Max. length – system size 80*1	m	15	15	15	15

Vitodens 200-W, 222-F, 222-W and 242-F

Rated heating output	**kW**	**11**	**19**	**25**	**32**
Max. length – system size 60	m	18	—	—	—
Max. length – system size 80*1	m	25	25	25	25

Vitodens 200-W, from 49 kW

Rated heating output	**kW**	**49**	**60**	**80**	**99**	**120**	**150**
Max. length – system size 80	m	20	15	—	—	—	—
Max. length – system size 110	m	22*1	17*1	20	20	20	20

The following components are taken into consideration for the maximum flue lengths:
- Connection pipe Ⓓ 0.5 m long.
- 1 bend 87° and 1 support bend 87°
  or
- 2 bends 45° and 1 support bend 87°

For other bends, tees and straight lengths, subtract the following values from the maximum length:
- Connection pipe 0.5 m long: 0.5 m
- Connection pipe 1 m long: 1 m
- Bend 45°: 0.3 m
- Bend 87°: 0.5 m
- Inspection tee: 0.5 m

Note
Observe the specifications for internal shaft dimensions: See page 40.

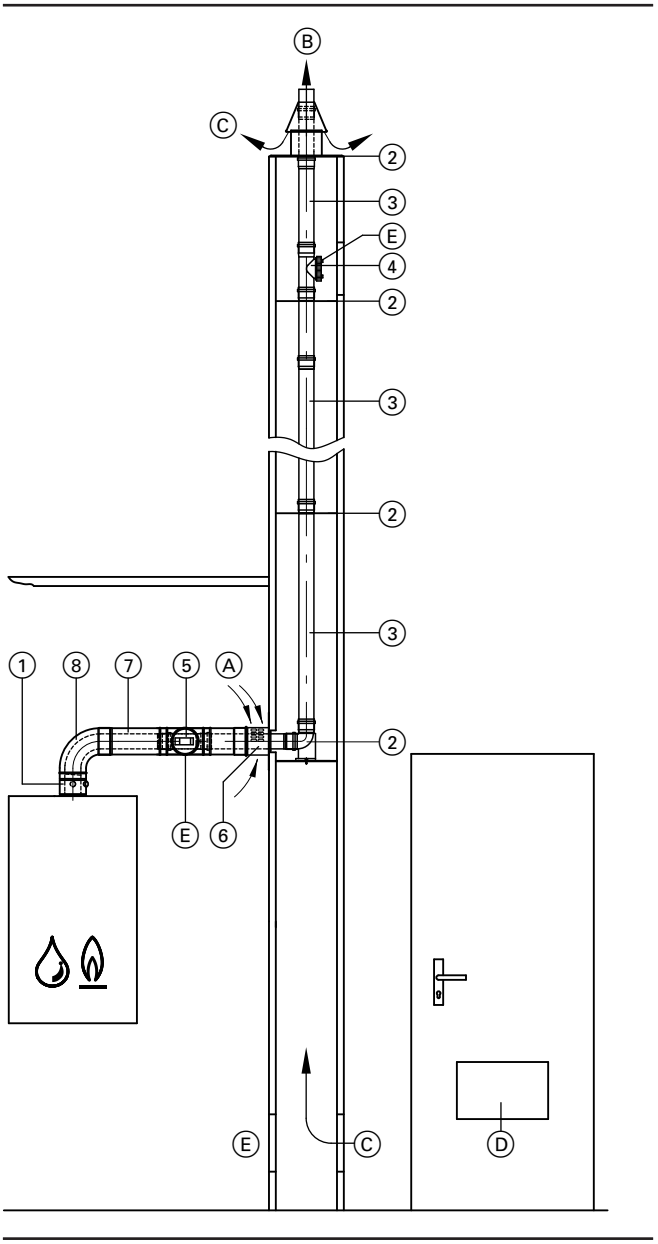
Special version: Open flue operation with combustion air supply via interconnected rooms for Vitodens up to 32 kW (type B_{33} to EN 1749)

The Vitodens may also be installed in the living space and be operated in open flue mode, subject to the following conditions being met:
- The shaft connection piece is constructed as a balanced flue pipe and the combustion air is drawn directly from the room via an aperture at the chimney inlet (air inlet adaptor, see page 56).
- An adequate combustion air supply must be ensured inside the room by means of an interconnected combustion air supply:
  – Minimum volume of the interconnected rooms, 4 m^3 per kW rated heating output
  – Apertures in the connecting doors min. 150 cm^2

When routing through shafts, the same conditions apply as for the routing of flue systems through a shaft, see page 39.
For calculation of the max. total flue pipe length, see page 41.

**1 Alternative system size. Balanced flue adaptor must be added to the order.*

Design and sizing information for connection on the flue gas side (cont.)



		System size Ø mm	
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80
②	**Standard shaft pack** (PPs, rigid) Comprising: – Support bend – Support rail – Shaft cover – Spacers (5 pce, max. distance 5 m) or	60	80
	Standard shaft pack (metal/PPs, rigid) For twin flue chimneys; one flue for solid fuel boilers Comprising: – Support bend – Support rail – Shaft cover (metal) – Terminal pipe (stainless steel) – Spacers (5 pce, max. distance 5 m)	60	80
	Spacers (3 pce, max. distance 5 m)	60	80
③	**Flue pipe** 1.95 m long (2 pce @ 1.95 m = 3.9 m) 1.95 m long (1 pce) 1 m long (1 pce) 0.5 m long (1 pce)	 60 60 60 60	 80 80 80 80
	Flue bend (for use in corbelled chimneys) 30° (2 pce) 15° (2 pce)	60	80
④	**Inspection piece**, straight (1 pce)	60	80
⑤	**Balanced flue inspection piece**, straight (1 pce)	60	80
⑥	**Balanced flue air inlet adaptor** Ø 80/125 mm (type B_{33} to EN 1749)	60	80
⑦	**Balanced flue pipe** 1 m long 0.5 m long	60	80
⑧	**Flue bends** 87° (1 pce) 45° (2 pce) or **Balanced flue inspection bend,** 87° (1 pce)	60 60	80 80
	Stainless steel extension, 380 mm long for shaft cover, standard shaft pack (metal/PPs, rigid)	60	80

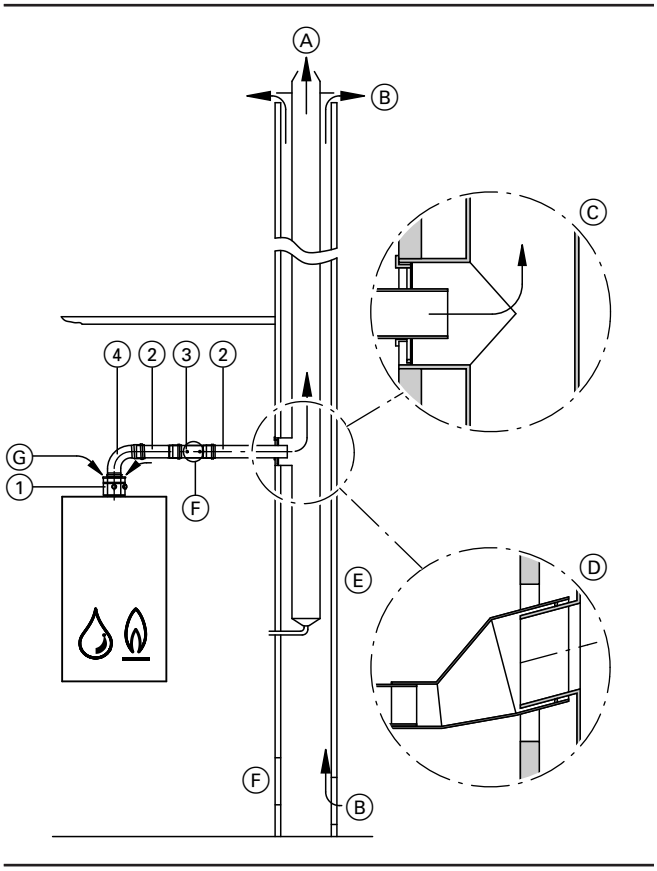
Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Secondary ventilation
Ⓓ Aperture for interconnected room air supply (min. 150 cm^2)
Ⓔ Inspection port

Connection to a moisture-resistant chimney (MR chimney negative pressure) with a plastic (PPs) flue pipe (type B_{23x}, to EN 1749)

Vitodens condensing boilers may be connected to moisture-resistant chimneys to EN 13384, provided the chimney manufacturer can verify their suitability based on the stated flue gas values and taking local conditions into consideration (e.g. heating water return temperature, design of the pipe connection piece, etc.).
The connection piece must consist of a moisture-resistant flue pipe that has been approved by the building inspectorate. For this, you can use the plastic (PPs) flue system offered as an accessory to the Vitodens. Safeguard the unrestricted draining of the condensate from the flue into the boiler through an appropriate fall of at least 3°.

The adaptor from the flue pipe to the MR chimney must be purchased from the chimney manufacturer.

Design and sizing information for connection on the flue gas side (cont.)



		System size Ø mm		
①	**Boiler flue connection** (part of the standard boiler delivery)	60	80	110
②	**Flue pipe**			
	1.95 m long (2 pce @ 1.95 m = 3.9 m)	60	80	110
	1.95 m long (1 pce)	60	80	110
	1 m long (1 pce)	60	80	110
	0.5 m long (1 pce)	60	80	110
③	**Inspection piece**, straight (1 pce)	60	80	110
④	**Flue bends**	60	80	110
	87° (1 pce)			
	or			
	Inspection tee	60	80	—
	87° (1 pce)			
	or			
	Inspection bend	—	—	110
	87° (1 pce)			

Ⓐ Flue gas
Ⓑ Secondary ventilation
Ⓒ For example: Flue outlet adaptor from Schiedel or Wienerberger
Ⓓ For example: Flue outlet adaptor from Plewa
Ⓔ Moisture-resistant chimney
Ⓕ Inspection port
Ⓖ Ventilation air

Multi boiler systems with pressurised flue systems (open flue operation)

Vitodens 050-W, 100-W, 111-W, Vitodens 200-W, Vitodens 222-W, 222-F and 242-F

The following gas condensing boilers with the same rated heating output may be connected to a common flue pipe under positive pressure:

- Max. 4 Vitodens 050-W, 100-W, 111-W, 111-F and 141-F up to 32 kW
- Max. 4 Vitodens 200-W, 222-W, 222-F and 242-F up to 32 kW
- Max. 6 Vitodens 200-W, 49 to 99 kW

The max. output is 594 kW. The Vitodens 050-W, 100-W, 111-W, 200-W, 222-W, 222-F and 242-F multi boiler systems with common flue systems under positive pressure are designed for open flue operation (type B).

Installation requirements

Combustion air apertures

Gas equipment with a total rated heating output in excess of 50 kW must be provided with combustion air apertures leading to the outside. The cross-section must be at least 150 cm^2 and should be 2 cm^2 larger for each kW above 50 kW rated heating output. This cross-section may not be split over more than 2 vents (check EN 1749 and FeuVo – local fire regulations).

Example:

Vitodens 200-W, 3 × 80 kW
Total rated heating output 240 kW
150 cm^2 + ((240 kW - 50 kW) × 2 cm^2/kW) = 530 cm^2
or 2 × 265 cm^2.
The combustion air vents should measure at least 530 cm^2 or 2 × 265 cm^2.

Installation clearances

For straightforward installation, we recommend a clearance of approx. 100 to 150 mm between the gas condensing system boilers. For Vitodens 200-W multi boiler systems, 49 to 99 kW, in conjunction with a hydraulic cascade, this clearance must be 100 mm.

Flue gas back draught safety device

The flue gas back draught safety device is installed in the boiler (mixing shaft). In the delivered condition of the Vitodens 100-W up to 32 kW and the Vitodens 200-W from 49 kW, the flue gas back draught safety device is already installed.
When the boiler is operational, the diaphragm of the flue gas back draught safety device is lifted by the positive pressure of the variable speed fan, which opens the path into the boiler mixing shaft.
When the boiler is not in use, the flue gas back draught safety device closes the mixing shaft, which prevents the flue gas passing back into the boiler.

Design and sizing information for connection on the flue gas side (cont.)

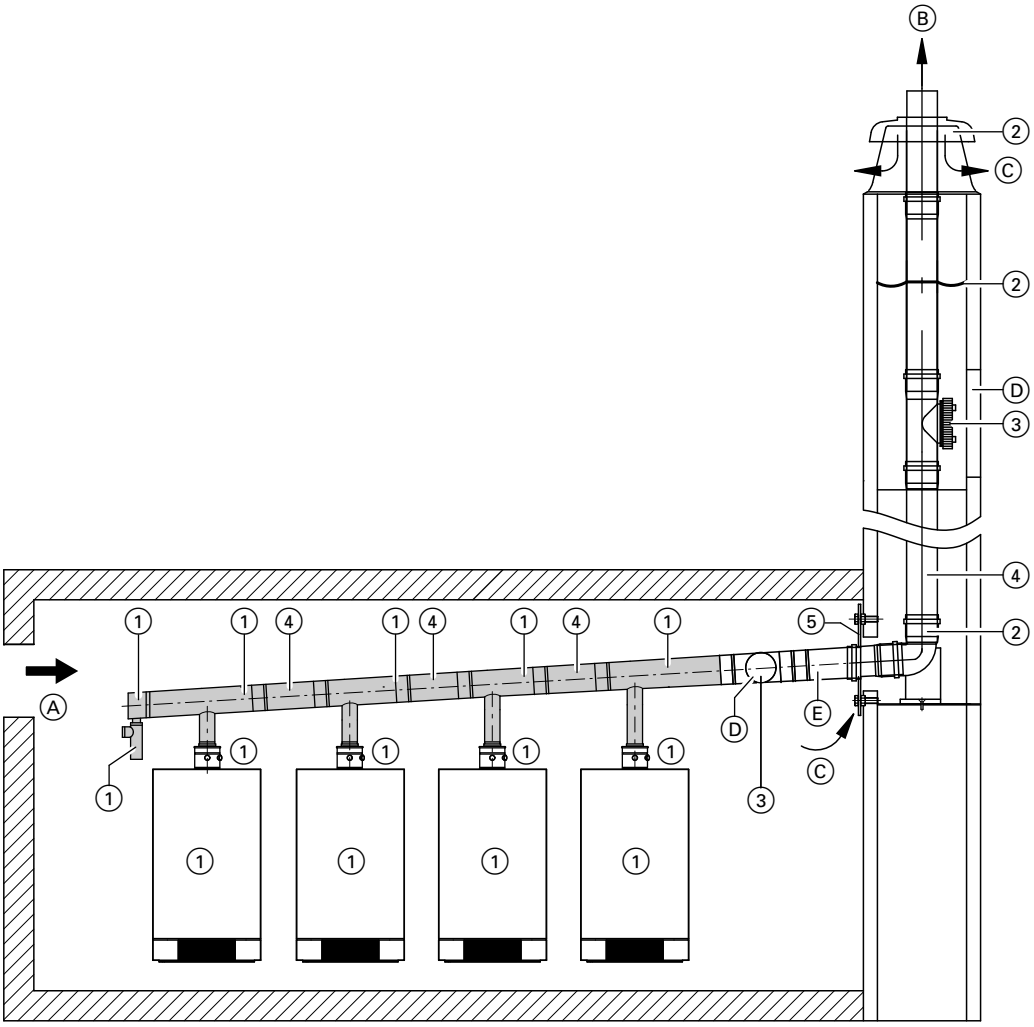
Approval
The gas condensing boilers Vitodens Classic,
Vitodens 050-W, 100-W, Vitodens 111-W, 111-F, 141-F,
Vitodens 200-W, Vitodens 222-W, 222-F and 242-F are tested and certified together with the flue system.
The flue pipe is CE designated.

Components and pipe lengths

Vitodens to 32 kW

Inspection port
The FeuVo [check local fire regulations] requires the installation of an inspection port inside the installation room.
Use an inspection port appropriate for the selected flue pipe diameter.

2



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Secondary ventilation
Ⓓ Inspection port
Ⓔ Connection pipe

Standard delivery, flue gas cascade:	
①	**Flue gas cascade** Ø 110 or 160 mm – 2 back draught safety devices for each boiler*2 – Flue gas header – Terminal with trap and condensate hose
②	**Standard shaft pack** Ø 110 or 160 mm Comprising: – Support bend – Support rail – Shaft cover – Spacers (3 pce, max. distance 5 m)
③	**Inspection piece** Ø 110 or 160 mm
④	**Flue pipe** Ø 110 or 160 mm 2 m long (2 pce = 4 m long) 2 m long (1 pce) 1 m long (1 pce) 0.5 m long (1 pce)
⑤	**Ventilation bezel** Ø 110 or 160 mm

*2 *In the delivered condition of the Vitodens 100-W, one of the back draught safety devices is already installed in the boiler. The 2nd back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical).*

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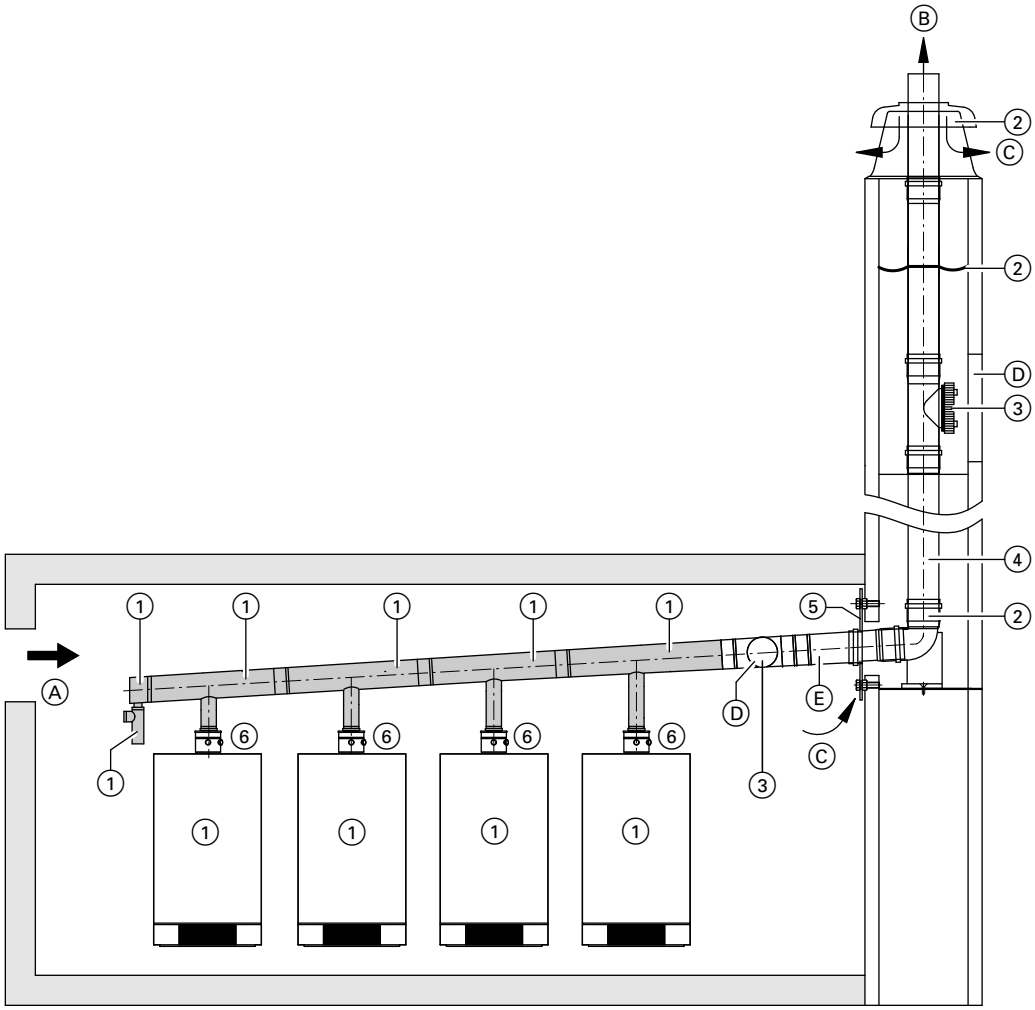
Design and sizing information for connection on the flue gas side (cont.)

Note

- ***No back draught safety device is installed in the boiler in the Vitodens Classic in delivered condition***
- *The first back draught safety device must be installed outside the boiler fan.*
- *The second back draught safety device must be installed directly downstream of the boiler flue connection (vertically) in the continuing flue pipe.*

The inspection piece and all other flue gas accessories should be ordered specifically for each system.

Vitodens 200-W from 49 kW



Ⓐ Ventilation air
Ⓑ Flue gas
Ⓒ Secondary ventilation
Ⓓ Inspection port
Ⓔ Connection pipe

Standard delivery, flue gas cascade:	
①	**Flue gas cascade** Ø 160, 200 or 250 mm – **Back draught safety device** (installed in the boiler in the delivered condition) – Flue gas header – Terminal with trap and condensate hose
Further accessories (from Ø 200 mm see Vitocrossal 300 pricelist):	

②	**Standard shaft pack** Ø 160, 200 or 250 mm Comprising: – Support bend – Support rail – Shaft cover – Spacers (3 pce, max. distance 5 m)
③	**Inspection piece** Ø 160, 200 or 250 mm
④	**Flue pipe** Ø 160, 200 or 250 mm 2 m long (2 pce = 4 m long) 2 m long (1 pce) 1 m long (1 pce) 0.5 m long (1 pce)

Design and sizing information for connection on the flue gas side (cont.)

⑤	**Ventilation bezel** Ø 160, 200 or 250 mm
⑥	**Back draught safety device**[*3] – Back draught safety device and coding card

The inspection piece and other flue gas accessories should be ordered specifically for the system (Ø 200 and 250 mm, see pricelist for flue system for Vitocrossal).

Max. total flue length

Vitodens 100-W and 111-W, inline formation

Rated heating output	kW	2 x 19	3 x 19	4 x 19	2 x 25	3 x 25	4 x 25	2 x 32	3 x 32	4 x 32
Max. total flue length										
- System size 110 mm	m	25	25	25	25	25	21	25	25	17

Vitodens 200-W, 222-W, 222-F and 242-F up to 32 kW in inline formation (appliance types not available in all countries)

Rated heating output	kW	2 x 11	3 x 11	4 x 11	2 x 19	3 x 19	4 x 19	2 x 25	3 x 25	4 x 25	2 x 32	3 x 32	4 x 32
Max. length of horizontal connection pipe (between flue gas header and shaft)													
- System size 110 mm	m	25	25	25	25	25	25	25	25	21	25	25	17
- System size 160 mm	m	25	25	25	25	25	25	25	25	25	25	25	25

Vitodens 200-W from 49 kW, inline formation

Rated heating output	kW	2 x 49/60	2 x 80/99	3 x 49/60	3 x 80/99	4 x 49/60	4 x 80/99	5 x 49/60	5 x 80/99	6 x 49/60	6 x 80/99
Max. length of horizontal connection pipe (between flue gas header and shaft)											
- System size 160 mm	m	4	—	4	—	—	—	—	—	—	—
- System size 200 mm	m	—	4	—	4	4	4	—	—	—	—
- System size 250 mm	m	—	—	—	—	—	—	4	4	4	4
Max. pipe length inside the shaft											
- System size 160 mm	m	26	—	26	—	—	—	—	—	—	—
- System size 200 mm	m	—	26	—	26	26	26	—	—	—	—
- System size 250 mm	m		—	—	—	—	—	26	26	26	26
Max. total flue length											
- System size 160 mm	m	30	—	30	—	—	—	—	—	—	—
- System size 200 mm	m	—	30	—	30	30	30	—	—	—	—
- System size 250 mm	m	—	—	—	—	—	—	30	30	30	30

Vitodens 200-W from 49 kW, block formation

Rated heating output	kW	4 x 49/60	4 x 80/99	6 x 49/60	6 x 80/99
Max. length of horizontal connection pipe (between flue gas header and shaft)					
- System size 200 mm	m	4	—	—	—
- System size 250 mm	m	—	4	4	4
Max. pipe length inside the shaft					
- System size 200 mm	m	26	—	—	—
- System size 250 mm	m	—	26	26	26
Max. total flue length					
- System size 200 mm	m	30	—	—	—
- System size 250 mm	m	—	30	30	30

Note

The flue gas parameters for single boilers can be used for the flue system calculation (see Vitodens technical guide).
The pressure drop of the flue gas back draught safety device has already been taken into account and does not have to be factored into the calculation.
The maximum operating pressure according to DVGW G 635 is not taken into account.

*[*3] Must be added to the order for every boiler. The 2nd back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical).*

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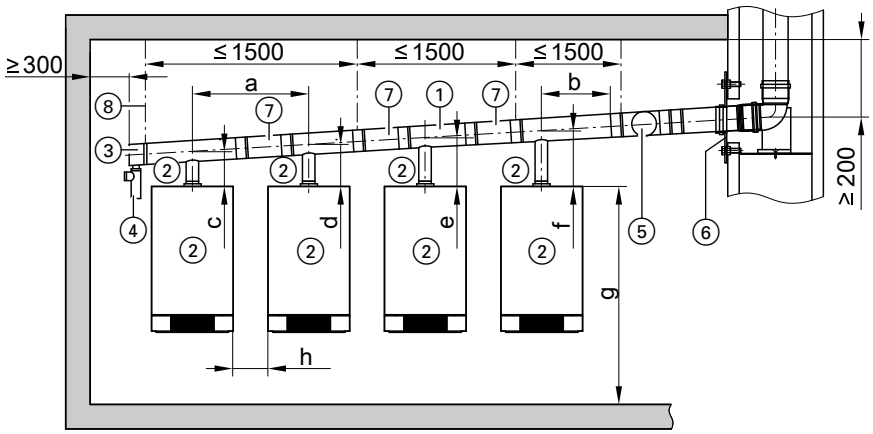
Design and sizing information for connection on the flue gas side (cont.)

Siting and dimensions

Inline formation — 2 to 4 boilers up to 32 kW



① Flue gas header
② Back draught safety devices*4
③ Terminal with condensate drain
④ Trap with hose
⑤ Inspection piece
⑥ Ventilation bezel
⑦ Flue gas header extension (only for Vitodens 222-W, 222-F and 242-F)
⑧ Brackets with suitable fixing materials

Note

- *Back draught safety device ② is installed in each boiler.*
- *For Vitodens 222-W with the shaft positioned on the left, insert an additional flue gas header extension ⑦ upstream of the terminal with condensate drain ③.*

Header ∅ mm	a mm	b mm	c mm	d mm	e mm	f mm	g*5 mm	h mm
110								
– Vitodens 100-W	580	280	153	183	213	243	1700	180
– Vitodens 111-W	700	280	133	170	207	244	1700	100
– Vitodens 200-W to 32 kW	580	280	153	183	213	243	1700	130
– Vitodens 222-W	700	280	133	170	207	244	1700	100
– Vitodens 222-F and 242-F (appliance types not available in all countries)	700	280	133	170	207	244	—	100
160								
– Vitodens 200-W to 32 kW	580	215	255	285	315	345	1700	130
– Vitodens 222-W	700	215	234	271	308	345	1700	100
– Vitodens 222-F and 242-F (appliance types not available in all countries)	700	215	221	258	295	332	—	100

Route the flue gas header with a fall of at least 3°.

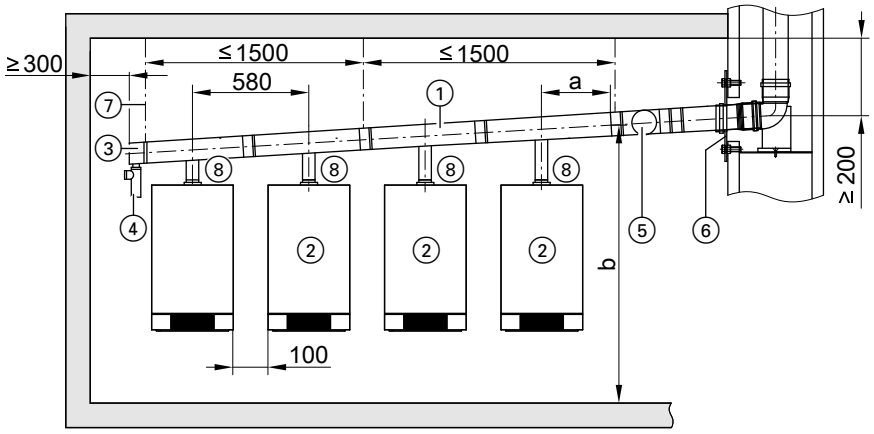
The vertical pipes must be trimmed accordingly.

*4 *In the delivered condition of the Vitodens 100-W, one of the back draught safety devices is already installed in the boiler. The 2nd back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical).*

*5 *Recommendation for installation height.*

Design and sizing information for connection on the flue gas side (cont.)

Inline formation — 2 to 6 boilers from 49 kW



① Flue gas header Ø 160, 200 or 250 mm
② Back draught safety device (installed)
③ Terminal with condensate drain
④ Trap with hose
⑤ Inspection piece Ø 160, 200 or 250 mm
⑥ Ventilation bezel
⑦ Brackets with suitable fixing materials
⑧ **Back draught safety device** and coding card*6

Note
In the delivered condition of the Vitodens 200-W from 49 kW, the back draught safety device ② is installed in the boiler.
The 2nd back draught safety device ⑧ must be added to the order for every boiler.

Header	a	b				
∅ mm	mm	mm	mm	mm	mm	mm
Number of boilers		**2**	**3**	**4**	**5**	**6**
160						
– Vitodens 200-W, 49 - 60 kW	215	2019	2049	–	–	–
200						
– Vitodens 200-W, 49 - 60 kW	404	–	–	2082	–	–
– Vitodens 200-W, 80 - 99 kW	404	2022	2052	2082	–	–
250						
– Vitodens 200-W, 49 - 60 kW	404	–	–	–	2114	2144
– Vitodens 200-W, 80 - 99 kW	404	–	–	–	2114	2144

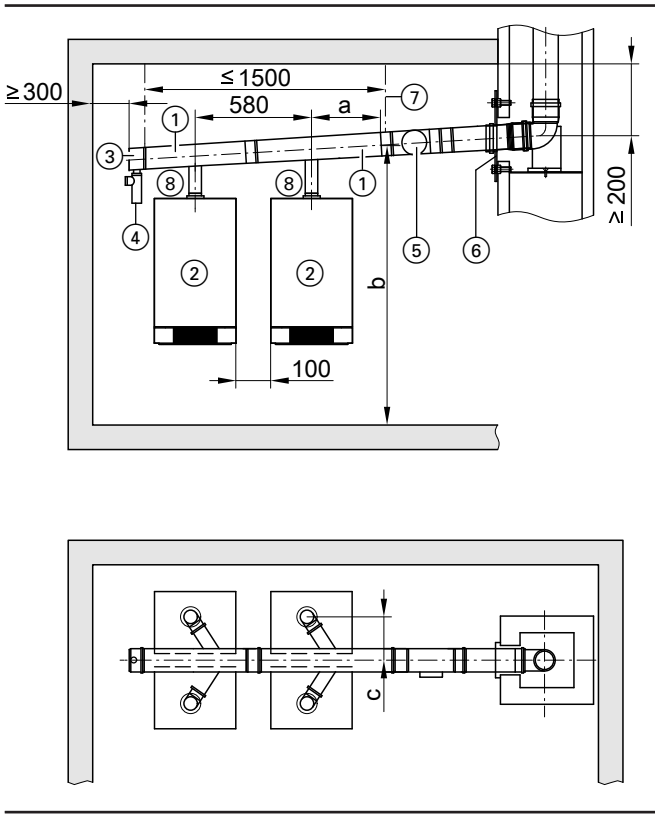
Note
In conjunction with a low loss header, height dimension "b" may be reduced by 150 mm and in conjunction with a cascade module adaptor by 300 mm. For this, the suspension profiles are installed accordingly. For installation directly onto a wall, these dimensions should also be adhered to.

Route the flue gas header with a fall of at least 3°.
The boiler flue connections must be trimmed accordingly.

*6 *The 2nd back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical).*

Design and sizing information for connection on the flue gas side (cont.)

Vitodens 49 - 99 kW, block formation



① Flue gas header Ø 200 or 250 mm
② Back draught safety device (installed)
③ Terminal with condensate drain
④ Trap with hose
⑤ Inspection piece Ø 200 or 250 mm
⑥ Ventilation bezel
⑦ Brackets with suitable fixing materials
⑧ **Back draught safety device** and coding card[*7]

Note
In the delivered condition, the back draught safety device ② is installed in the boiler.
The 2nd back draught safety device ⑧ must be added to the order for every boiler.

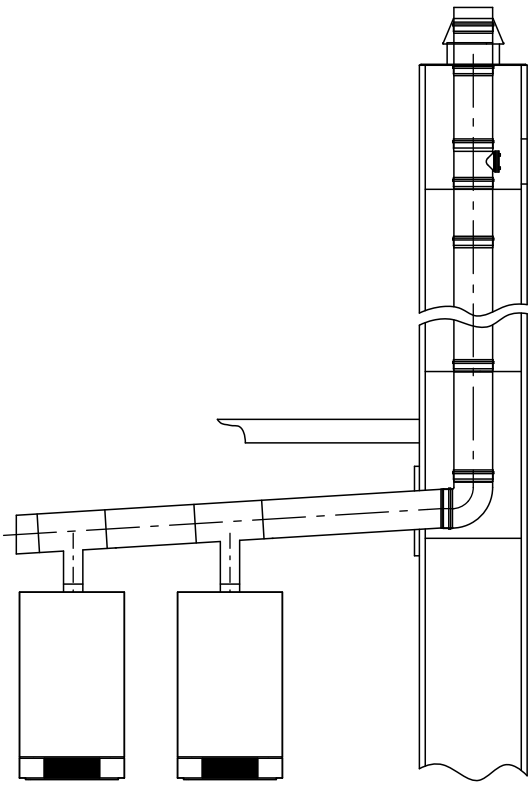
Header Ø mm	a mm	b mm	 mm	c mm
Number of boilers		**2x2**	**2x3**	
200				
– Vitodens 200-W, 49 - 60 kW	502	1997	–	340
– Vitodens 200-W, 80 - 99 kW	–	–	–	–
250				
– Vitodens 200-W, 49 - 60 kW	–	–	2004	–
– Vitodens 200-W, 80 - 99 kW	532	1999	2029	422

Note
In conjunction with a low loss header, height dimension "b" may be reduced by 150 mm and in conjunction with a cascade module adaptor by 300 mm.

Route the flue gas header with a fall of at least 3°.
The deflector bends must be trimmed accordingly.

[*7] *The 2nd back draught safety device must be installed directly downstream of the boiler flue connection in the continuing flue pipe (vertical).*

Multi boiler systems with flue systems under negative pressure



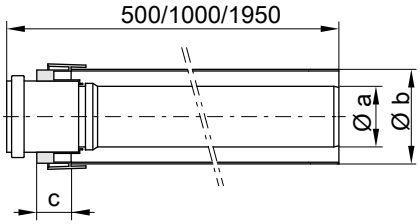
Note
For multi boiler systems under negative pressure, a 2nd back draught safety device must not be used.

Size to EN 13384.
For flue gas headers in the negative pressure range, see the Viessmann Vitoset pricelist.
For flue systems for multi boiler systems under positive pressure, see page 45.

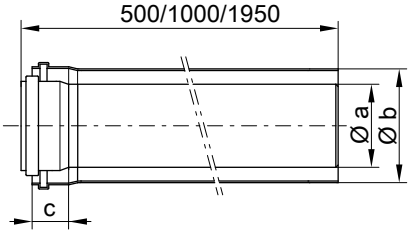
Individual parts for flue systems

3.1 Balanced flue system components

Balanced flue pipe
These pipes may be trimmed as required.



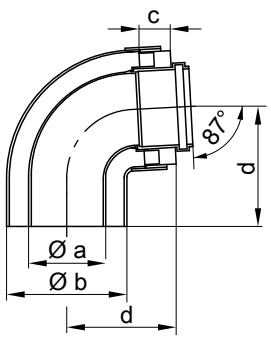
System size Ø 60 and 80 mm



System size Ø 110 mm

System size Ø mm	Dimensions [mm] a	b	c
60	60	100	40
80	80	125	40
110	110	150	40

Balanced flue bend 87°



System size Ø 60 and 80 mm

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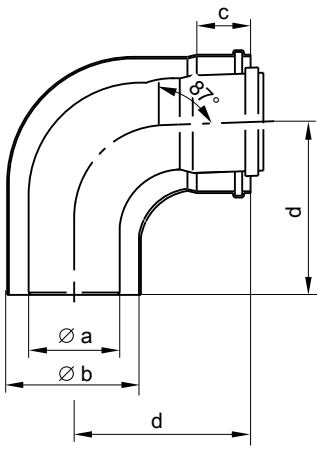
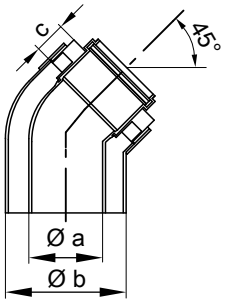


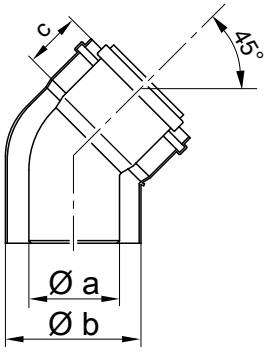
System size Ø 110 mm

System size Ø mm	Dimensions [mm] a	b	c	d
60	60	100	40	110
80	80	125	40	120
110	110	150	40	170

Balanced flue bend 45°
Standard pack 2 pce



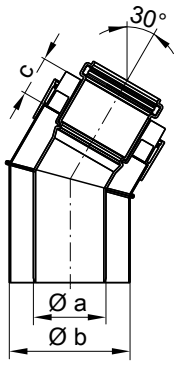
System size Ø 60 and 80 mm



System size Ø 110 mm

System size Ø mm	Dimensions [mm] a	b	c
60	60	100	40
80	80	125	40
110	110	150	40

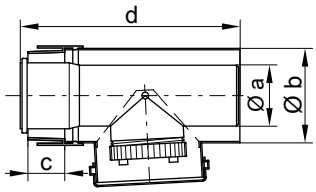
Balanced flue bend (30°)
Standard pack 2 pce



System size Ø 60 and 80 mm

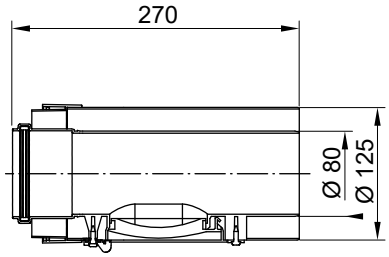
System size Ø mm	Dimensions [mm] a	b	c
60	60	100	40
80	80	125	40
110	110	150	40

Balanced flue inspection piece, straight

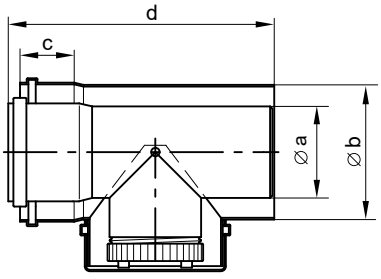


System size Ø 60 mm

System size Ø mm	Dimensions [mm] a	b	c	d
60	60	100	40	250



System size Ø 80 mm

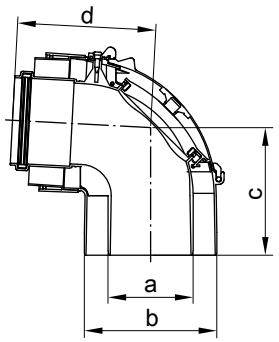


System size Ø 110 mm

Individual parts for flue systems (cont.)

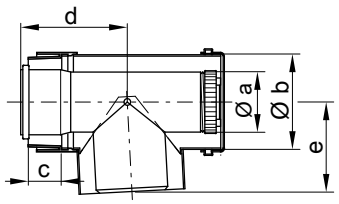
System size Ø mm	Dimensions [mm] a	b	c	d
110	110	150	40	273

Balanced flue inspection bend 87°; system size Ø 60 and 80 mm



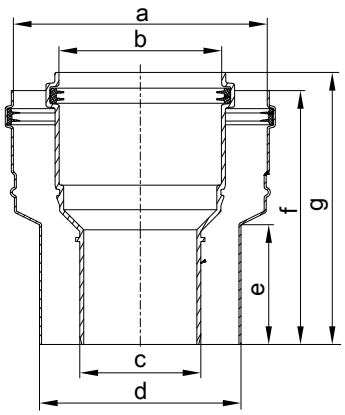
System size Ø mm	Dimensions [mm] a	b	c	d
60	60	100	100	130
80	80	125	120	130

Balanced flue inspection tee 87°, system size Ø 110 mm



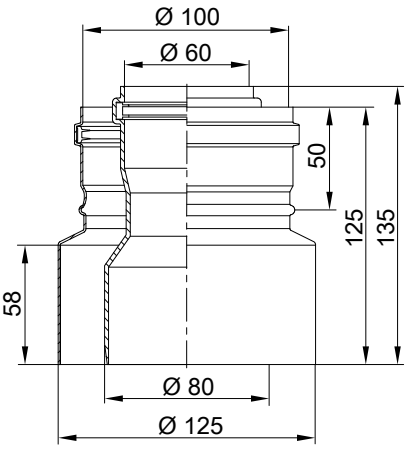
System size Ø mm	Dimensions [mm] a	b	c	d	e
110	110	150	40	120	140

Balanced flue adaptor (extension)

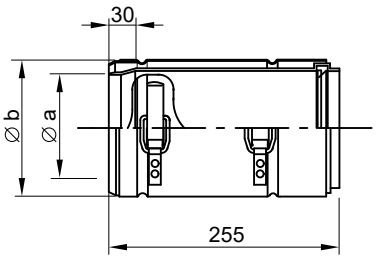


System size Ø mm	Dimensions [mm] a	b	c	d	e	f	g
From 60/100 to 80/125	125	80	60	100	60	126	135
From 80/125 to 110/150	150	110	80	125	60	155	165

Balanced flue adaptor (reducer)
From system size Ø 80/125 mm to Ø 60/100 mm.

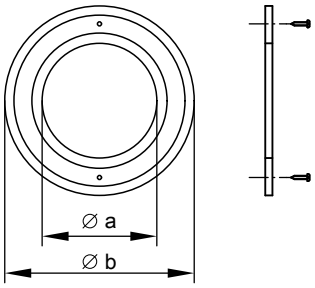


Balanced flue slide coupling



System size Ø mm	Dimensions [mm] a	b
60	60	100
80	80	125
110	110	150

Balanced flue wall bezel

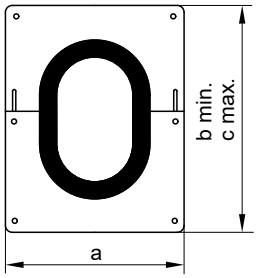


System size Ø mm	Dimensions [mm] a	b
60	102	194
80	130	230
110	155	230

3

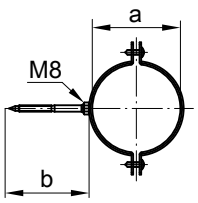
5414641

Universal cover plate



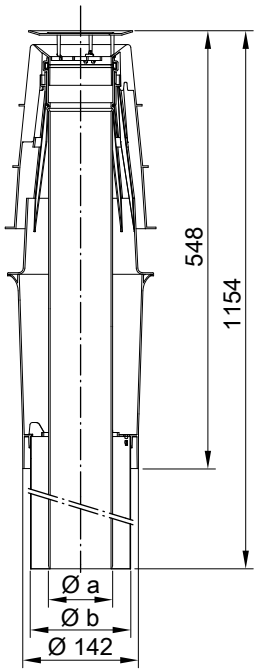
System size Ø mm	Dimensions [mm] a	b	c
60	250	246	310
80	250	246	310
110	280	286	350

Fixing clamp
For routing over internal or external walls; white.



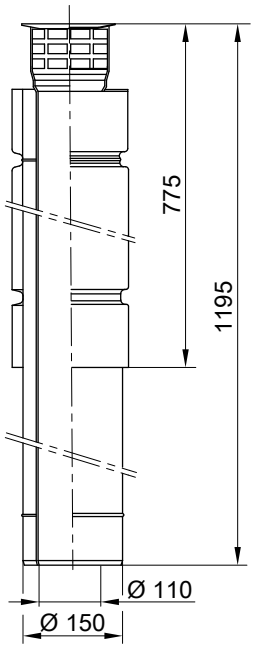
System size Ø mm	Dimensions [mm] a	b
60	100	100
80	125	100
110	150	100

Balanced flue roof outlet
With fixing clamp.



System size Ø 60 and 80 mm

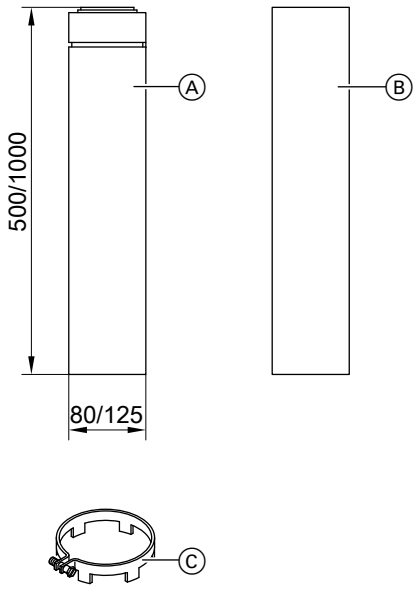
System size Ø mm	Dimensions [mm] a	b
60	60	100
80	80	125



System size Ø 110 mm

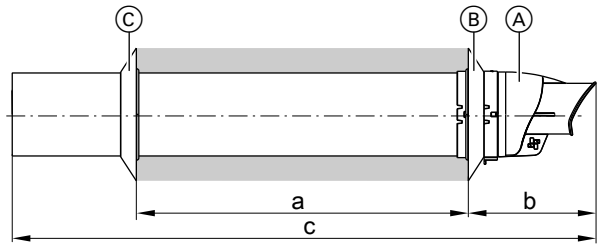
Individual parts for flue systems (cont.)

Above roof extension



Ⓐ Above roof extension
Ⓑ Casing pipe
Ⓒ Bracing clamp

Balanced flue external wall connection (incl. wall bezels)
For system size ∅ 60/100 mm and ∅ 80/125 mm.



Ⓐ External wall connection
Ⓑ External wall bezel
Ⓒ Internal wall bezel

Balanced flue system (∅ mm)	60/100	80/125
a (mm)	≤ 475	≤ 710
b (mm)	155	165
c (mm)	704	952

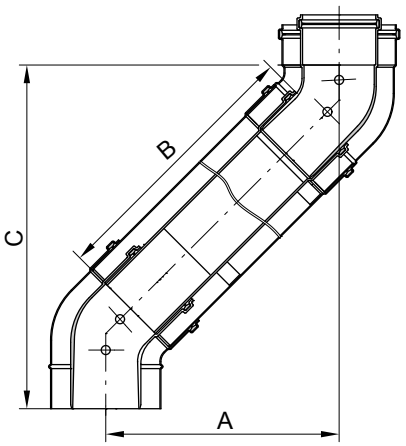
Elbow in the balanced flue pipe

Small offset A (2 × 45° balanced flue bend):
- 74 mm for system size Ø 60 mm (C = 174 mm)
- 93 mm for system size Ø 80 mm (C = 223 mm)
- 140 mm for system size Ø 110 mm (C = 328 mm):

Push two 45° balanced flue bends into each other and into the balanced flue pipe.

Offset:
- In excess of 74 mm for system size Ø 60 mm
- In excess of 93 mm for system size Ø 80 mm
- In excess of 140 mm for system size Ø 110 mm:

Depending on the offset (dimension A), insert a balanced flue extension (dimension B) between the two 45° balanced flue bends.



System size Ø 60 mm

Offset	A (mm)	150	200	250	300	350	390
Extension	B (mm)	153	224	295	372	436	487
Installed height	C (mm)	250	300	350	400	450	490

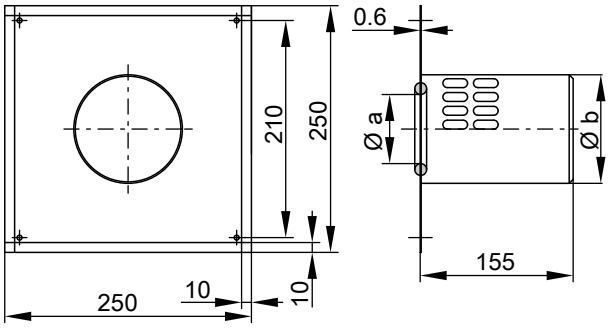
System size Ø 80 mm

Offset	A (mm)	150	200	250	300	350	390
Extension	B (mm)	123	194	265	335	406	463
Installed height	C (mm)	280	330	380	430	480	520

System size Ø 110 mm

Offset	A (mm)	200	250	300	350	390
Extension	B (mm)	134	205	275	346	403
Installed height	C (mm)	390	438	488	538	578

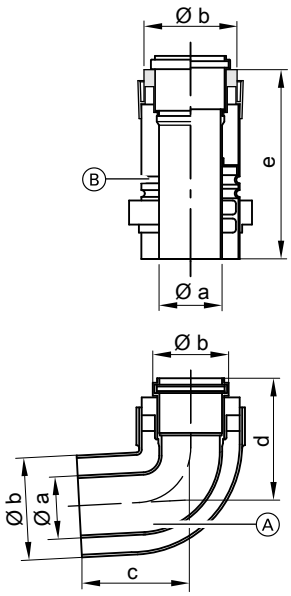
Balanced flue air inlet adaptor



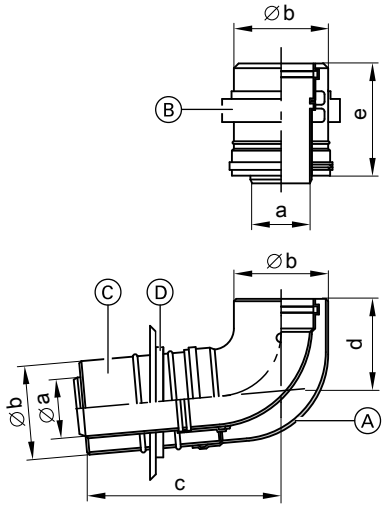
System size Ø mm	Dimensions [mm] a	b
60	60	100
80	80	125

3.2 Components for routing a flue over an external wall

External wall pack
External wall bend Ⓐ with air inlet piece Ⓑ, twin female connection Ⓒ and wall bezel Ⓓ.



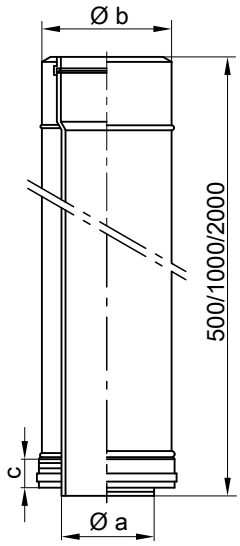
System size Ø mm	Dimensions [mm] a	b	c	d	e
60	60	100	110	110	250
80	80	125	120	120	250



System size Ø 110 mm

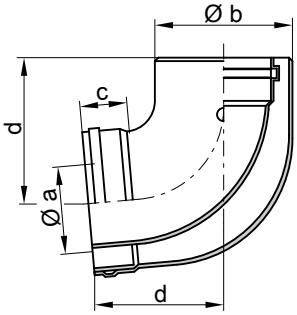
System size Ø mm	Dimensions [mm] a	b	c	d	e
110	110	150	295	170	165

External wall pipe



System size Ø mm	Dimensions [mm] a	b	c
60*8	—	—	—
80*8	—	—	—
110	110	150	40

External wall bend, 87°

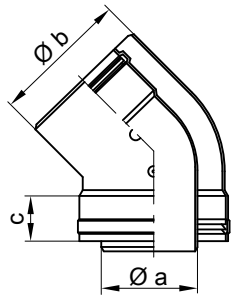


System size Ø mm	Dimensions [mm] a	b	c	d
60*8	—	—	—	—
80*8	—	—	—	—
110	110	150	40	170

*8 *Use balanced flue components (see page 52).*

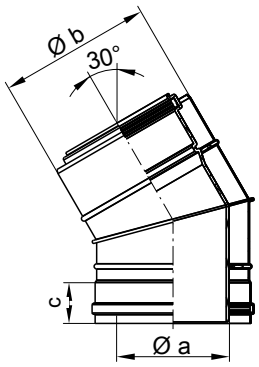
Individual parts for flue systems (cont.)

External wall bend, 45°



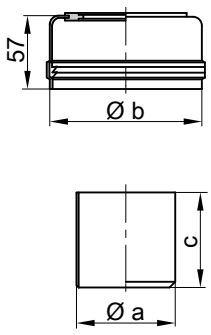
System size Ø mm	Dimensions [mm] a	b	c
60*8	—	—	—
80*8	—	—	—
110	110	150	40

External wall bend, 30°



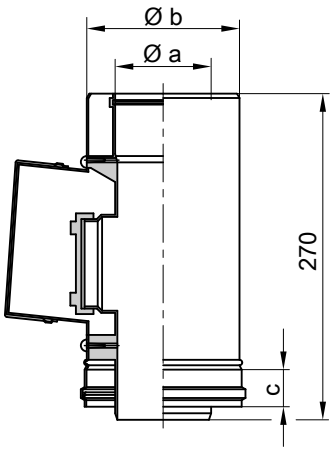
System size Ø mm	Dimensions [mm] a	b	c
60*8	—	—	—
80*8	—	—	—
110	110	150	40

External wall terminal



System size Ø mm	Dimensions [mm] a	b	c
60	60	100	110
80	80	125	110
110	110	152	85

External wall inspection piece

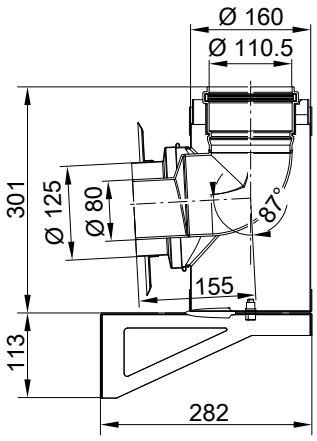


System size Ø mm	Dimensions [mm] a	b	c
60*8	—	—	—
80*8	—	—	—
110	110	150	40

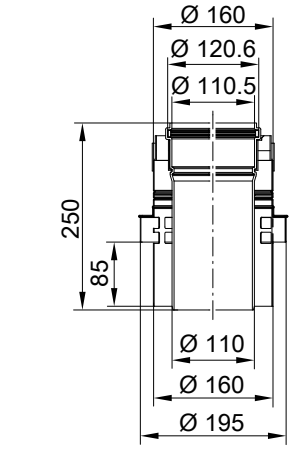
*8 *Use balanced flue components (see page 52).*

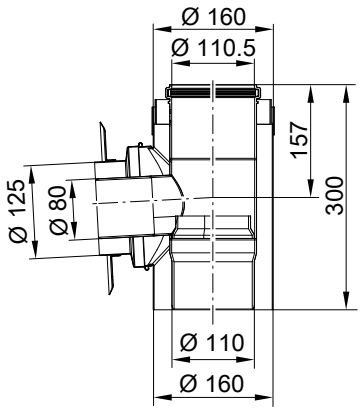
External wall components for multiple connections

Connecting assembly, external wall multiple connections, base



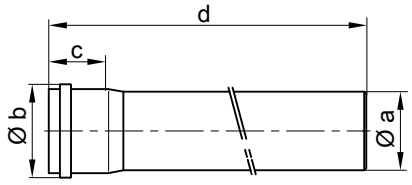
Connecting assembly, external wall multiple connections, upper floor





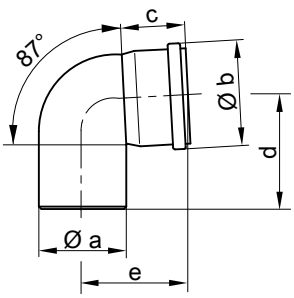
3.3 Single pipe system components

Flue pipe
These pipes may be trimmed as required.



System size	Dimensions [mm]			
Ø mm	a	b	c	d
60	60	73	58	500/1000/1950
80	80	94	57	500/1000/1950
110	110	128	72	500/1000/2000
125	125	145	75	500/1000/2000
160	160	184	83	500/1000/2000
200	184	227	122	500/1000/2000
250	250	273	103	500/1000/2000

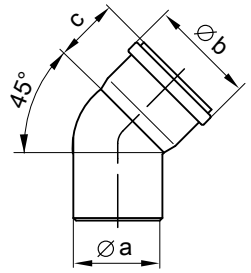
Flue bend 87°



System size	Dimensions [mm]				
Ø mm	a	b	c	d	e
60	60	73	55	110	120
80	80	94	60	120	130
110	110	128	72	130	130
125	125	145	75	150	150
160	160	184	83	170	170
200	200	227	122	350	310
250	250	273	103	402	390

Individual parts for flue systems (cont.)

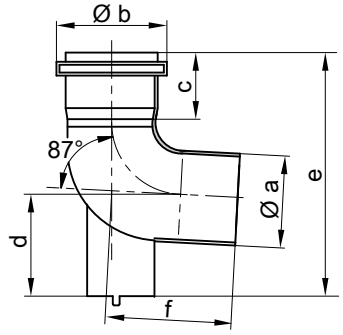
Flue bend (45°)
Standard pack 2 pce.



System size Ø mm	Dimensions [mm] a	b	c
60	60	73	55
80	80	94	60
110	110	128	72
125	125	145	75
160	160	184	83
200	200	227	122
250	250	273	103

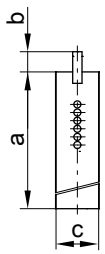
Standard shaft pack
Comprising support bend, support rail, shaft cover and spacers

Support bend

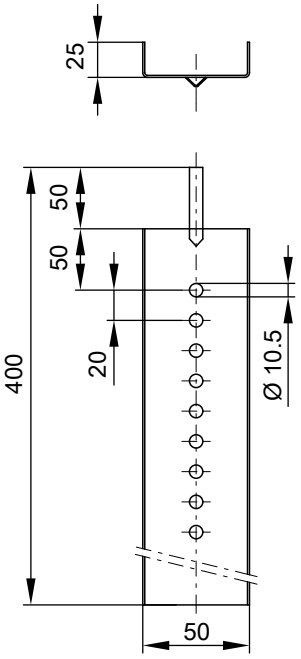


System size Ø mm	Dimensions [mm] a	b	c	d	e	f
60	60	73	55	60	180	110
80	80	94	60	80	210	120
110	110	128	72	112	245	120
125	125	145	75	120	264	147
160	160	184	83	137	296	163
200	200	227	122	153	490	310
250	250	273	103	326	670	385

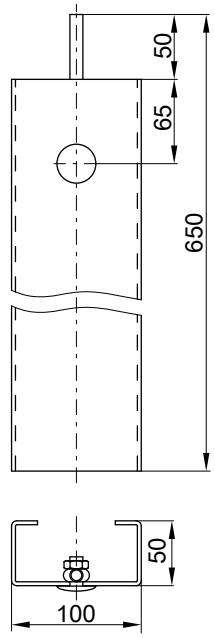
Support rail



System size Ø mm	Dimensions [mm] a	b	c
60	350	50	50
80	350	50	50
110	350	50	50
125	400	50	50
160	400	50	50

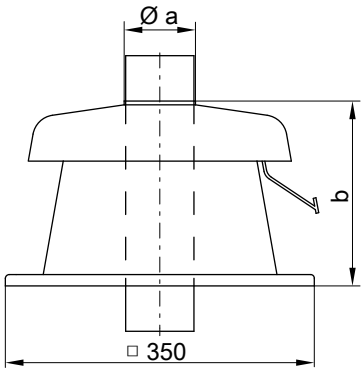


System size 200

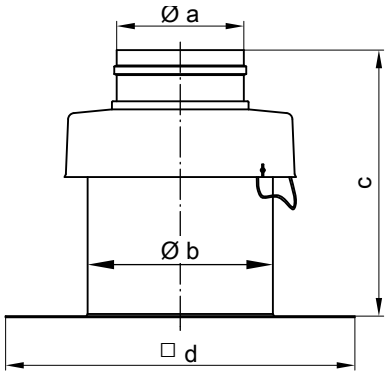


System size 250

Shaft cover, PPs
Fixing materials are part of the standard delivery.

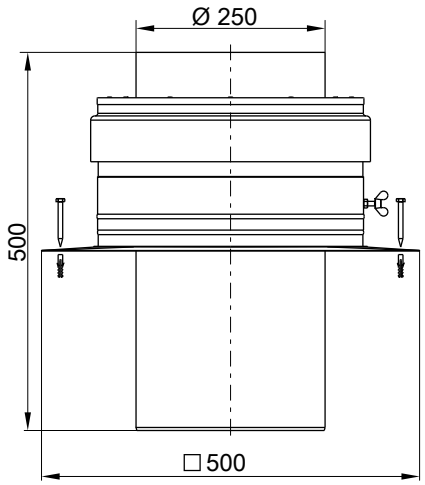


System size Ø mm	Dimensions [mm] a	b
60	60	198
80	80	229
110	111	201



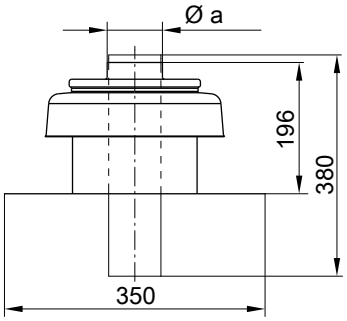
System size 125, 160 and 200

System size ∅ mm	Dimensions [mm] a	b	c	d
125	126	185	257	350
160	161	228	258	350
200	202	260	261	280



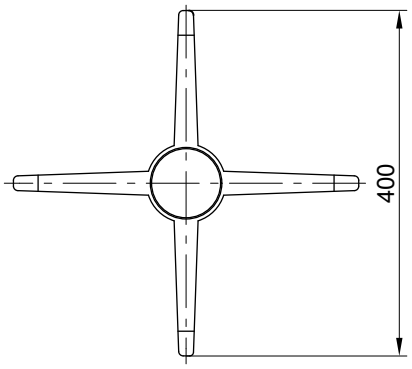
System size 250

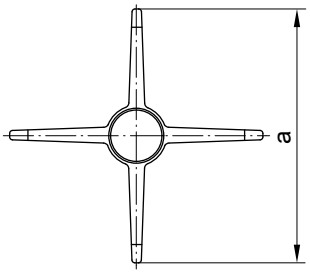
Metal shaft cover
Fixing materials are part of the standard delivery.



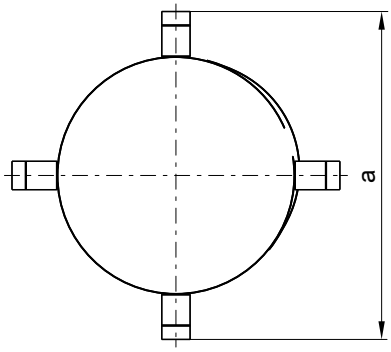
System size Ø mm	Dimensions [mm] a
60	60
80	80
110	110

Spacer
Standard pack 3 pce (applicable to internal shaft dimensions 130 × 130 mm to 250 × 250 mm or Ø 150 mm to Ø 300 mm).





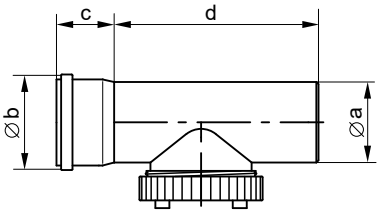
System size 200



System size 250

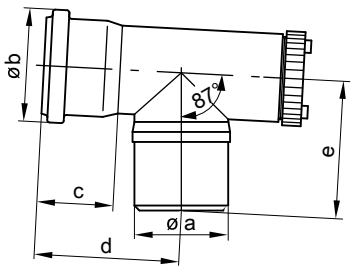
System size ∅ mm	Dimensions [mm] a
200	734
250	751

Inspection piece (straight)



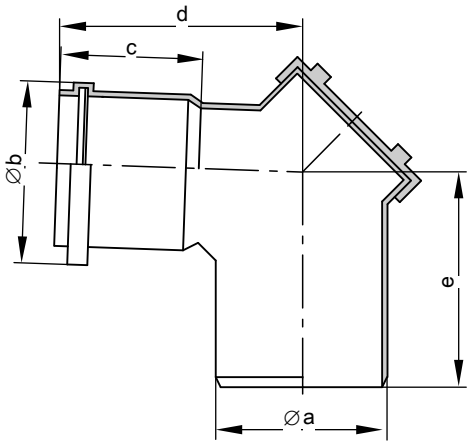
System size Ø mm	Dimensions [mm] a	b	c	d
60	60	73	55	195
80	80	94	60	210
110	110	128	72	201
125	125	145	75	180
160	160	184	83	205
200	200	227	122	300
250	250	273	103	600

Inspection tee
System size Ø 60 and 80 mm



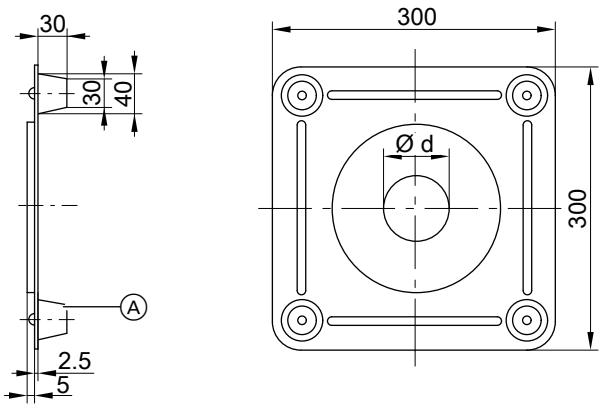
System size Ø mm	Dimensions [mm] a	b	c	d	e
60	60	73	55	130	100
80	80	94	60	142	130

Inspection bend



System size Ø mm	Dimensions [mm] a	b	c	d	e
110	110	128	72	143	142
125	125	145	75	148	148
160	160	184	83	159	163
200	200	227	122	350	310
250	250	273	103	390	410

Ventilation bezel

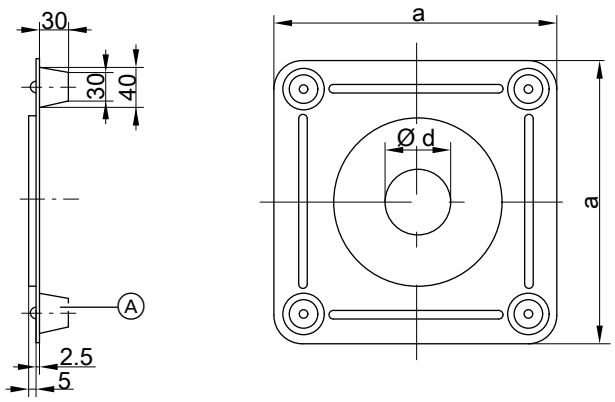


Ⓐ Spacer

Individual parts for flue systems (cont.)

System size Ø mm	Dimensions [mm] Ø d
60	60
80	80
110	110
125	125
160	160

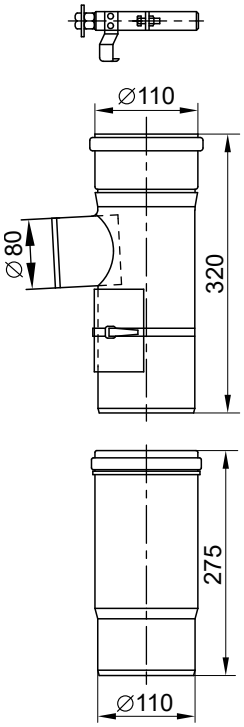
System size Ø mm	Dimensions [mm] a	Ø d
200	400	200
250	400	250



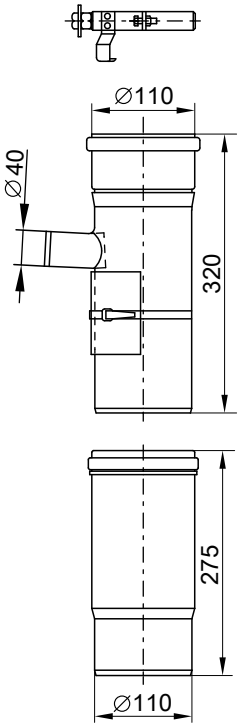
Ⓐ Spacer

3.4 Components for multiple connection of a balanced flue system – positive pressure for Vitodens 100-W, 111-W, 200-W, 222-W, 222-F and 242-F, 11 to 32 kW

Connecting assembly, multiple connections
Connection tee with long fem. connection and fixing clamp

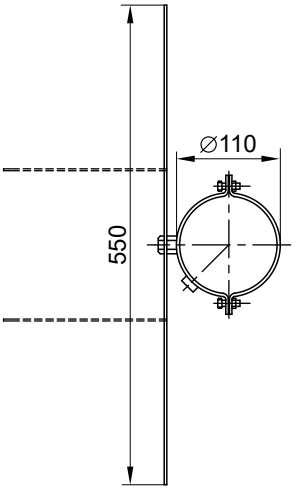


Connecting assembly, condensate drain
Connection tee with long fem. connection and fixing clamp

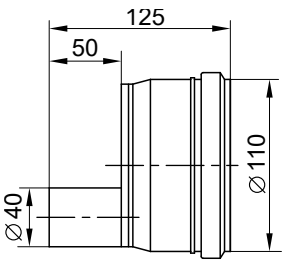


Individual parts for flue systems (cont.)

Fixing clamp
For securing the flue pipe horizontally inside the shaft



Condensate drain connection
Reduction from Ø 110 mm to Ø 40 mm



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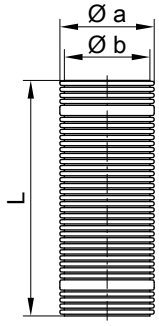
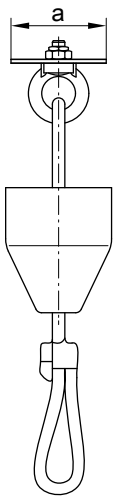
3.5 Components of the flexible single pipe system for flexible flues

Flue pipe, flexible
Standard pack (length L) 12.5 or 25 m on a roll



System size Ø mm	Dimensions [mm] a	b
60	58	50
80	88	77
110	113	101

Pipe lowering attachment
With 25 m rope



System size Ø mm	Dimensions [mm] a
60	56
80	88
110	111

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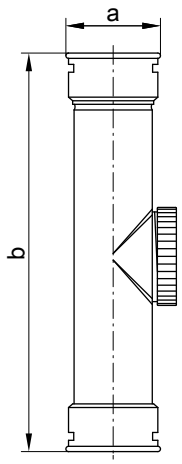
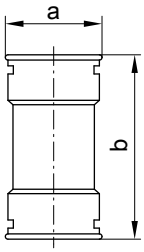
Inspection piece (straight)



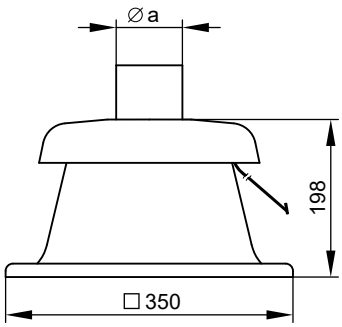
System size Ø mm	Dimensions [mm] a	b
60	72	310
80	102	325
110	127	326

Connection piece



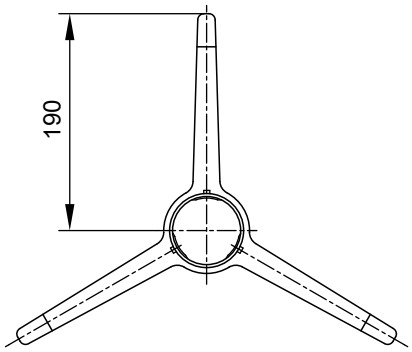
System size Ø mm	Dimensions [mm] a	b
60	72	140
80	102	140
110	127	140

Shaft cover
With terminal

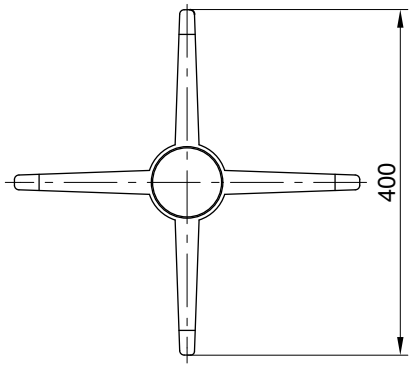


System size Ø mm	Dimensions [mm] a
60	60
80	80
110	110

Spacer
Standard pack 5 pce
Applicable to internal shaft dimensions 130 × 130 mm to 250 × 250 mm or Ø 150 mm to Ø 300 mm



System size Ø 60 mm

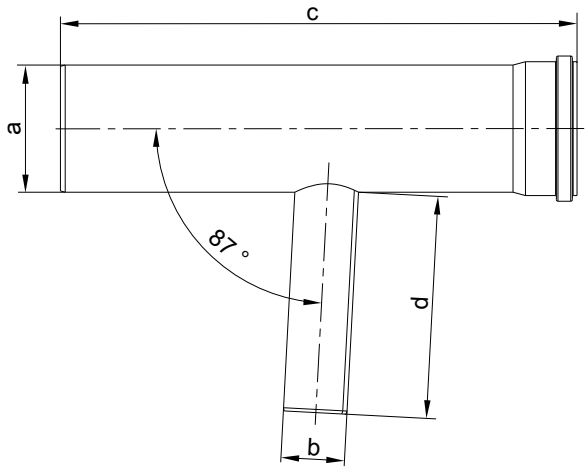


System size Ø 80 and 110 mm

3.6 Components for multi boiler systems

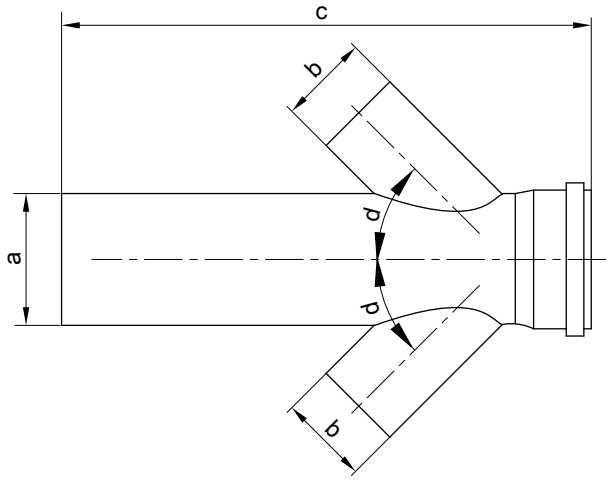
Flue gas header

Inline formation



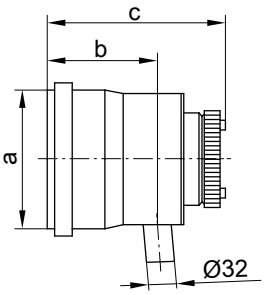
System size Ø mm	Dimensions [mm] a	b	c	d
110	110	60	630	160
160	160	80	650	280
200	200	80	680	280
250	250	110	790	280

Block formation



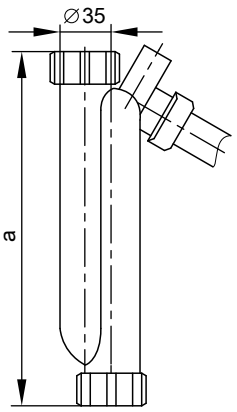
System size Ø mm	Dimensions [mm] a	b	c	d
160	160	80	650	45°
200	200	110	680	45°
250	250	110	675	42°

Terminal with condensate drain



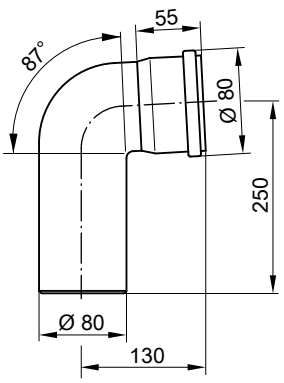
System size Ø mm	Dimensions [mm] a	b	c
160	160	115	195
200	200	115	195
250	250	339	431

Trap with drain hose



Rated heating output kW	Dimensions [mm] a
15 – 60	248
80 – 150	300

Flue bend (87°)
Only for Vitodens 200-W, 222-W, 222-F, 300-W and 333-F up to 35 kW



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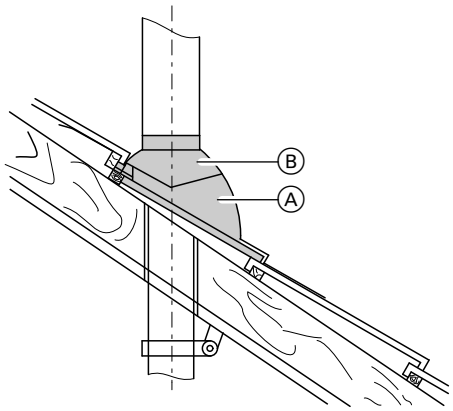
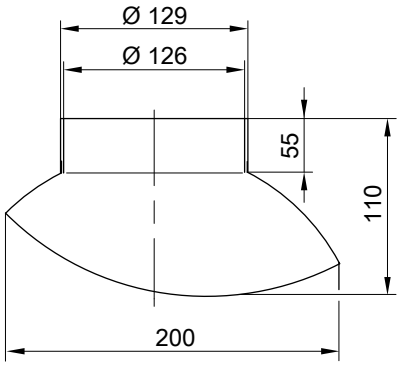
3.7 Roof elements

Universal roof tile
Suitable for roof pitches of 25 to 45°

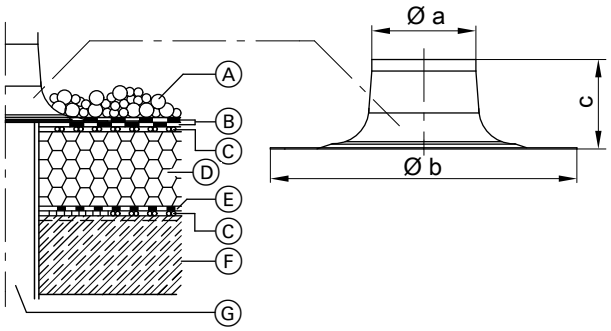


Ⓐ Universal roof tile
Ⓑ Pipe outlet for universal roof tile

Pipe outlet for Klöber roof tiles
Suitable for roof pitches of 20 to 50°



Flat roof collar



Ⓐ Gravel ballast layer
Ⓑ Insulation layer
Ⓒ Aeration layer
Ⓓ Thermal insulation
Ⓔ Insulation
Ⓕ Ceiling
Ⓖ Vertical coaxial roof outlet

System size Ø mm	Dimensions [mm] a	b	c
60	135	390	250
80	135	390	250
110	170	470	250
160	170	450	254
200	220	500	254

Keyword index

Subject to technical modifications.

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