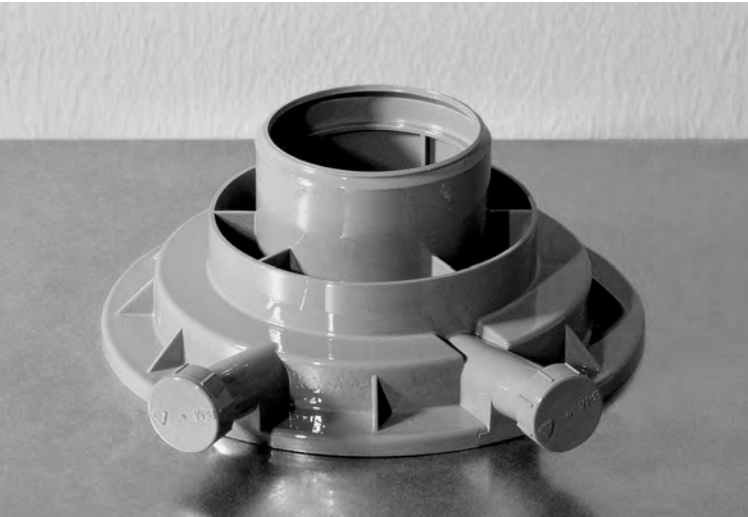


For the installer

Flue installation instructions

## Air flue duct for use with ecoTEC boilers



**Concentric System**  
**Ø 80/125**  
**(Galvanized steel air**  
**duct/plastic flue duct)**

# Contents

## 1 Notes on the documentation

### Contents

<b>1</b>	<b>Notes on the documentation.....</b>	<b>2</b>
1.1	Storage of documents .....	2
1.2	Symbols used .....	2
1.3	Applicability of the manual.....	2
<b>2</b>	<b>Concentric System Ø 80/125.....</b>	<b>3</b>
2.1	Requirements.....	3
2.2	Planning the air/flue duct layout.....	4
2.2.1	Alternative termination accessories available..	4
2.2.2	Element descriptions.....	6
2.2.3	Maximum flue lengths for use with ecoTEC.....	9
2.3	Installation of the sliding sleeve .....	10
2.4	Installation of the horizontal air/flue duct .....	10
2.4.1	Contents included with delivery.....	10
2.4.2	Preparation.....	11
2.4.3	Side flue installations.....	11
2.4.4	Indirect installation.....	13
2.5	Installation of the vertical air/flue duct .....	14
2.5.1	Contents included with delivery.....	14
2.5.2	Preparation.....	14
2.5.3	Pitched roof installation.....	14
2.5.4	Flat-roof installation.....	15
2.6	Installation of flue gas pipe on external wall.....	16
2.6.1	Illustration of system .....	16
2.6.2	Static dimensions.....	17
2.6.3	Installation of the flue gas pipe.....	18
2.6.4	Assembly of rain collar.....	20
2.6.5	Assembly of shortenable extension .....	20
2.6.6	Installing the internal flue gas connection .....	22
2.7	Fitting air/flue duct extensions .....	22
2.7.1	How to add extensions .....	22
2.7.2	Installing clamps for air pipes.....	23
2.7.3	How to install 2 x 87° elbows .....	24
2.7.4	How to install 87° elbows .....	26
2.7.5	How to install 45° elbows.....	27
2.7.6	Installing the 30° elbow (external wall) with offset.....	28
2.7.7	Installation of 45° elbow (external wall) with offset.....	29
2.7.8	Installation of 87° elbow (external wall) with offset.....	30
<b>3</b>	<b>Installation of gas fired wall hung boilers with cascading arrangements .....</b>	<b>32</b>

### 1 Notes on the documentation

The following instructions are intended to help you throughout the entire documentation.  
Further documents apply in combination with this installation manual.  
We accept no liability for any damage caused by non-observe these instructions.

#### Other applicable documents

For the heating engineer:  
- Installation instructions for installed gas fired wall hung high efficiency boiler.

#### 1.1 Storage of documents

Please pass on this flue installation manual, all other applicable documents any auxiliary equipment that may be required to the operator of the system whose responsibility it is to ensure the manuals and auxiliary equipment are available whenever required.

#### 1.2 Symbols used

Please observe the safety instructions in this manual when using the device!



**Danger!**  
**Immediate risk of serious injury or death!**



**Danger!**  
**Danger of death by electric shock!**



**Danger!**  
**Danger of burning or scalding!**



**Caution!**  
**Potentially dangerous situation for the product and environment!**



**Note!**  
**Useful information and instructions.**

- Symbol for a necessary task

#### 1.3 Applicability of the manual

This flue installation manual is only valid for the Vaillant boilers referred to in the other applicable documents.

## 2 Concentric System Ø 80/125

Galvanized steel air duct/plastic flue duct.

### 2.1 Requirements

Regulations and standards to be observed



**Caution!**

The air/flue duct must be installed by a suitably qualified service provider, which is responsible for observing the relevant specifications, regulations and standards.



**Note!**

Vaillant ecoTEC gas fired wall hung boilers are certified as boiler systems with corresponding flue gas systems according to the EU gas appliance directive 90/396/EEC. The installation guide is part of the certification and is cited in the prototype test certificate. The usability proof of products identified by Vaillant item numbers for air/flue gas duct systems is supplied in observance of the specifications in this installation manual.

**Note!**

These instructions should be read in conjunction with the instructions for installation and servicing supplied with the boiler.

**Note!**

Ensure also that all legislation, rules, regulations and directives mentioned in the installation instructions are observed.

**Note!**

The installation of the boiler and its flue must be carried out by a competent person who is registered with CORGI (The Council for Registered Gas Installers).

**Note!**

The installation of the boiler and flue must be in accordance with the Gas Safety (Installation and Use) Regulations 1998 and the Building Regulations and BS 5440 Part 1.

**Note!**

The requirements for flue termination detailed in the boiler installation instructions must be observed.

**Note!**

The air/flue duct operates at very low temperatures therefore no clearance is necessary between the air duct and adjacent services.

**Note!**

Ensure while installation work is being carried out that no debris such as swarf, filings or fragments of mortar are allowed to remain in the air/flue duct.

## 2 Concentric System Ø 80/125

### 2.2 Planning the air/flue duct layout

#### 2.2.1 Alternative termination accessories available













**303 200** = Vertical air/flue duct (black)



**00 2004 2748** = Connection to flue gas pipe, installation on external wall



**303 209** = Horizontal air/flue duct

Optional connection accessories	Accessory No.	303 200	303 209	00 2004 2748
Air/flue duct extensions, concentric 470 mm - Ø 80/125	 303 202	X	X	X
Air/flue duct extensions, concentric 970 mm - Ø 80/125	 303 203	X	X	X
Air/flue duct extensions, concentric 1970 mm - Ø 80/125	 303 205	X	X	X
Bends (PP), concentric (pack of 2) 45° - Ø 80/125	 303 211	X	X	X
Elbow (PPs), concentric 87° - Ø 80/125	 303 210	X	X	X
Flue support clips (pack of 5), Ø 125	 303 616	X	X	X
Sliding sleeve (PPs) Ø 80/125	 303 215	X	X	X
Adjustable roof tiles for pitched roof	 009 076 (black)	X		
Flat roof penetration collar	 009 056	X		
Flexible pitched roof seal	 303 980	X		

**Table 2.1 Product program**













Optional connection accessories	Accessory No.	00 2004 2748 
External wall bracket (50 to 300 mm, adjustable), stainless steel 	0020042749	X
Fastening clamp (50 to 90 mm), stainless steel 	0020042751	X
Extension for fastening clamp (90 to 280 mm), stainless steel 	0020042752	X
0.5 m extension for external wall installation, concentric 80/125, stainless steel 	0020042753	X
1.0 m extension for external wall installation, concentric 80/125, stainless steel 	0020042754	X
0.5 m extension for external wall installation, concentric 80/125, stainless steel, shortenable 	0020042755	X
87° elbow for external wall installation, concentric 80/125, stainless steel 	0020042756	X
45° elbow (2 pieces) for external wall installation, concentric 80/125, stainless steel 	0020042757	X
30° elbow (2 pieces) for external wall installation, concentric 80/125, stainless steel 	0020042758	X
0.25 m pipe with inspection opening, concentric 80/125, stainless steel 	0020042759	X
Rain collar for roof penetration, stainless steel 	0020042760	X

Table 2.1 Product program (continued)

## 2 Concentric System Ø 80/125

### 2.2.2 Element descriptions

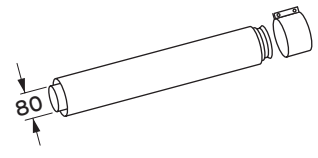
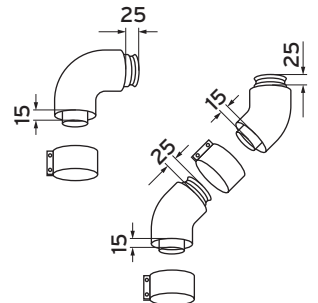
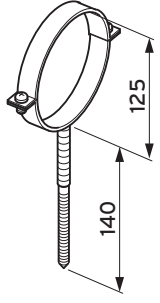
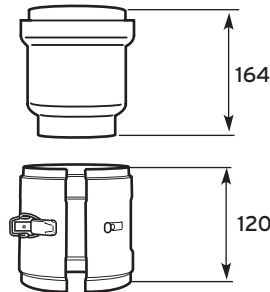
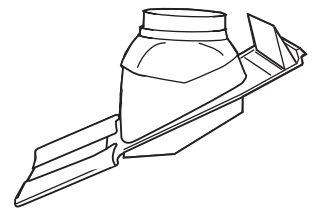
Element	Description
	<b>Air/flue duct extension (PPs) Ø 80/125</b> 470 mm: Accy. No.: 303 202 970 mm: Accy. No.: 303 203 1970 mm: Accy. No.: 303 205
	<b>Elbow (PPs), 87°, Ø 80/125</b> Accy. No.: 303 210 <b>Bends (PPs), 45°, Ø 80/125</b> (pack of 2) Accy. No.: 303 211
	<b>Flue support clips, Ø 125</b> (pack of 5) Accy. No.: 303 616
	<b>Sliding sleeve (PPs), Ø 80/125</b> Accy. No.: 303 215
	<b>Adjustable roof tiles for pitched roof</b> Accy. No.: 009 076 (black)

Table 2.2 Elements 80/125

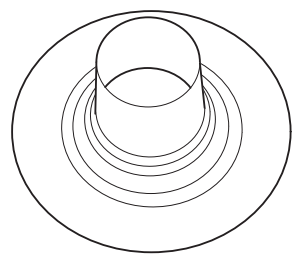
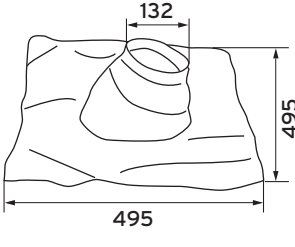
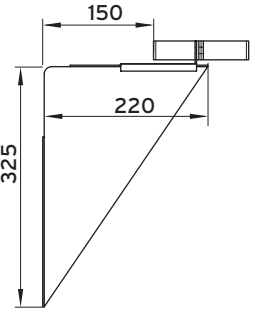
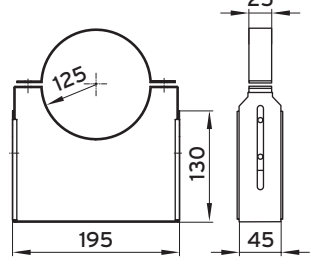
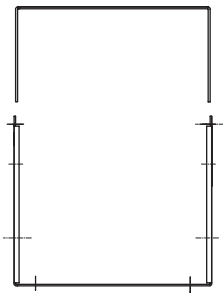
Element	Description
	<b>Flat roof penetration collar</b> Accy. No.: 009 056
	<b>Flexible pitched roof seal (black)</b> Accy. No.: 303 980
	<b>External wall bracket (50 mm to 300 mm), adjustable, stainless steel</b> Accy. No.: 0020042749
	<b>Fastening clamp (50 mm to 90 mm), stainless steel</b> Accy. No.: 0020042751
	<b>Extension for fastening clamp (90 mm to 280 mm), stainless steel</b> Accy. No.: 0020042752

Table 2.2 Elements 80/125 (continued)

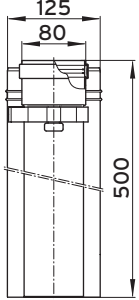
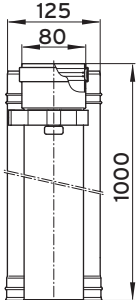
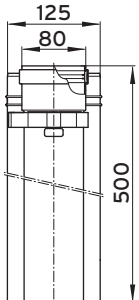
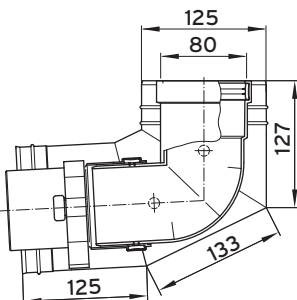
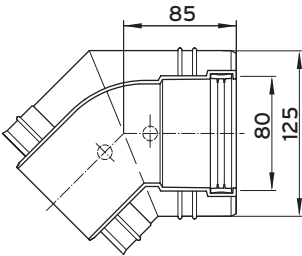
Element	Description
	<b>0.5 m extension for external wall installation, concentric 80/125, stainless steel</b> Accy. No.: 0020042753
	<b>1.0 m extension for external wall installation, concentric 80/125, stainless steel</b> Accy. No.: 0020042754
	<b>0.5 m extension for external wall installation, concentric 80/125, stainless steel, shortenable</b> Accy. No.: 0020042755
	<b>87° elbow for external wall installation, concentric 80/125, stainless steel</b> Accy. No.: 0020042756
	<b>45° elbow (2 pieces) for external wall installation, concentric 80/125, stainless steel</b> Accy. No.: 0020042757

Table 2.2 Elements 80/125 (continued)

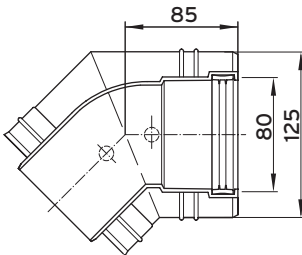
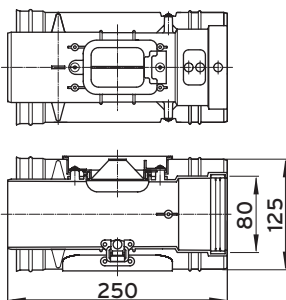
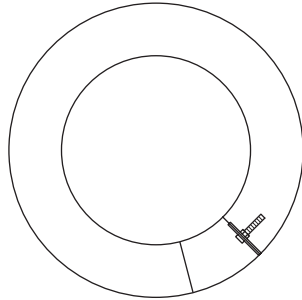
Element	Description
	<b>30° elbow (2 pieces) for external wall installation, concentric 80/125, stainless steel</b> Accy. No.: 0020042758
	<b>0.25 m pipe with inspection opening, concentric 80/125, stainless steel</b> Accy. No.: 0020042759
	<b>Rain collar for roof penetration, stainless steel</b> Accy. No.: 0020042760

Table 2.2 Elements 80/125 (continued)

## 2 Concentric System Ø 80/125

Elements Accy. No.: 00 2004 2748	Description
	<b>Inspection T piece 80/125</b>
	<b>2x air clamp 70 mm</b>
	<b>Extension 80/125, 0.5 m</b>
	<b>Wall breakthrough elbow 80/125, 87°, stainless steel</b>
	<b>Internal collar 125 mm</b>

Table 2.2 Elements 80/125 (continued)

Element	Description
	<b>External collar 80/125, split, stainless steel</b>
	<b>Air intake piece, stainless steel</b>
	<b>Junction piece, stainless steel</b>
	<b>2x air clamp, stainless steel</b>

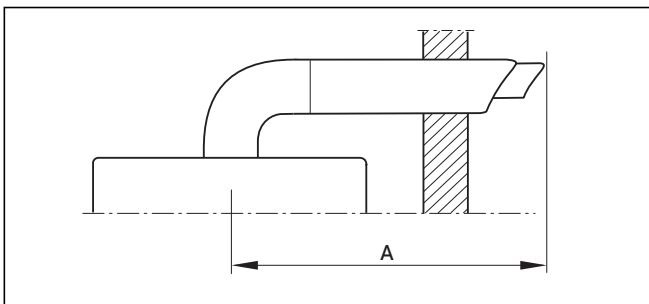
Table 2.2 Elements 80/125 (continued)



**2.2.3 Maximum flue lengths for use with ecoTEC**

Elements	Article No.		ecoTEC	
			VU GB 466/4-5	VU GB 656/4-5
Vertical flue gas installation	303 200	Max. permissible length of concentric flue gas pipe	21.0 m without elbow Maximum length of flue is reduced by 2.5 m for each additional 87° elbow Maximum length of flue is reduced by 1.0 m for each additional 45° elbow	18.0 m without elbow Maximum length of flue is reduced by 2.5 m for each additional 87° elbow Maximum length of flue is reduced by 1.0 m for each additional 45° elbow
Horizontal flue gas installations	303 209	Max. permissible length of concentric flue gas pipe	18.0 m plus 1 elbow, 87° Maximum length of flue gas pipe is reduced by 2.5 m for each additional 87° elbow Maximum length of flue gas pipe is reduced by 1.0 m for each additional 45° elbow	15.0 m plus 1 elbow, 87° Maximum length of flue gas pipe is reduced by 2.5 m for each additional 87° elbow Maximum length of flue gas pipe is reduced by 1.0 m for each additional 45° elbow
Connection to flue gas pipe on external wall	0020042748	Max. permissible length of concentric flue gas pipe	22.0 m plus 3 elbows 87° and support elbow Air intake piece positioned no further than 4 m from the connection with the boiler	22.0 m plus 3 elbows 87° and support elbow Air intake piece positioned no further than 4 m from the connection with the boiler

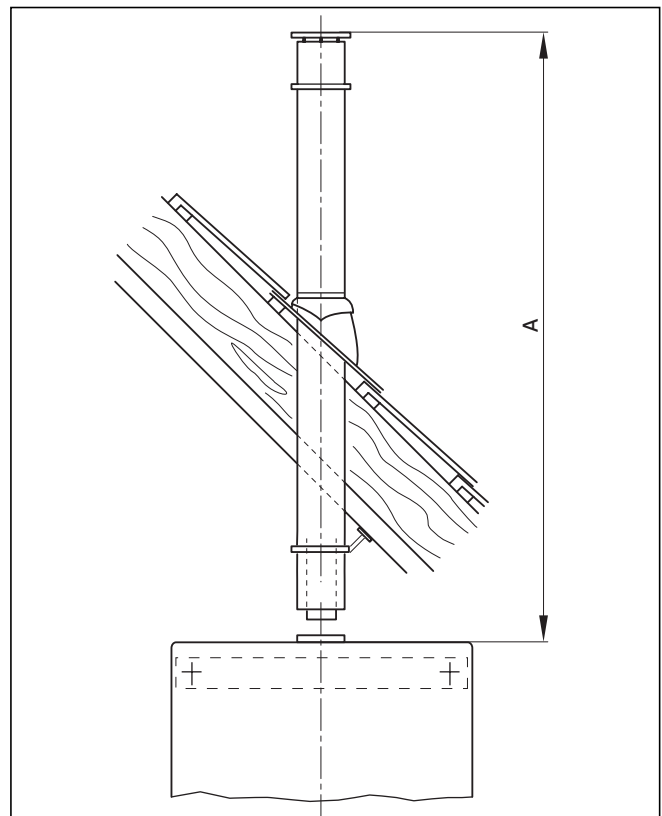
**Table 2.3 Maximum flue lengths for use with ecoTEC**



**Fig. 2.1 Horizontal flue systems**

**Key**

A Maximum flue length



**Fig. 2.2 Vertical flue systems**

**Key**

A Maximum flue length

### 2.3 Installation of the sliding sleeve

#### Installing the air/flue duct sliding sleeve

**Note!**

For installations where there is insufficient movement to allow fitting of the flue into flue outlet, a sliding sleeve (Accy. No. 303 215) is available. When using the sliding sleeve both the air and flue ducts of the last extension must be shortened by a further 85 mm.

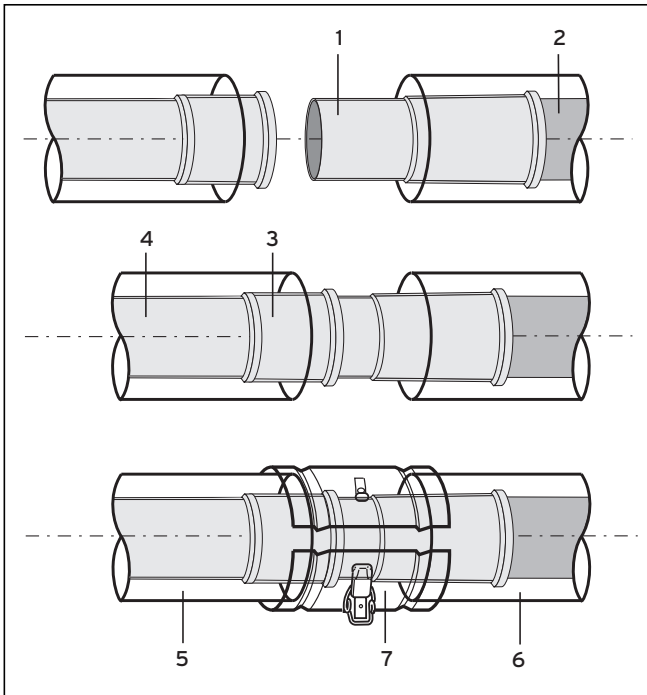


Fig. 2.3 Installing the sliding sleeve

- Push the sliding sleeve (1) over the cut end of the flue duct (2).
- Place the air duct clamp (7) over the air duct.
- Pull back the sliding sleeve so that it engages into the socket (3) of the boiler (4). Ensure that the sliding sleeve penetrates the socket such that there is at least 20 mm engagement at both ends of the sliding sleeve.
- Fit the air duct clamp over the air ducts (5 and 6) of the extension/terminal and boiler outlet. Close the snap clamp.
- Drill two holes 3 mm diameter through the air duct clamp (the centre of the holes should be 6 mm from the edge of the clamp). Ensure that the drill does not penetrate the inner flue duct. Screw the air duct clamp to the air duct of the sleeve using the screws provided.
- Complete the installation of the flue as detailed in these instructions.

### 2.4 Installation of the horizontal air/flue duct



**Caution!**

The air/flue duct is not concentric and the air duct has a slope of 1.5° (if the air flue duct is not cut). The hole through the wall can therefore be drilled horizontally with no slope.

**Caution!**

Where extensions are used, these must be installed with a slope at 3° ± 1° (equivalent to 50 mm ± 20 mm rise per metre length) to ensure that condensate does not remain in the sleeve.



**Note!**

Observe the maximum flue lengths as detailed in sections 2.2.3.

**Note!**

See section 2.2 for details of air/flue duct elements.

#### 2.4.1 Contents included with delivery

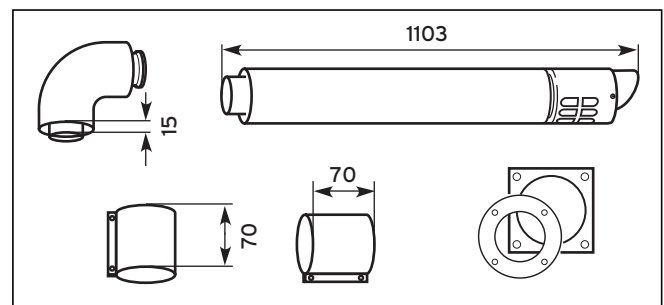


Fig. 2.4 Horizontal air/flue conduit

#### Horizontal air/flue duct

Accy. No. 303 209

Contents of the accessory:

- Horizontal air/flue duct
- 87° elbow
- 2 x 70 mm air duct clamps
- 1 x internal plastic ring Ø 125
- 1 x external metal plate

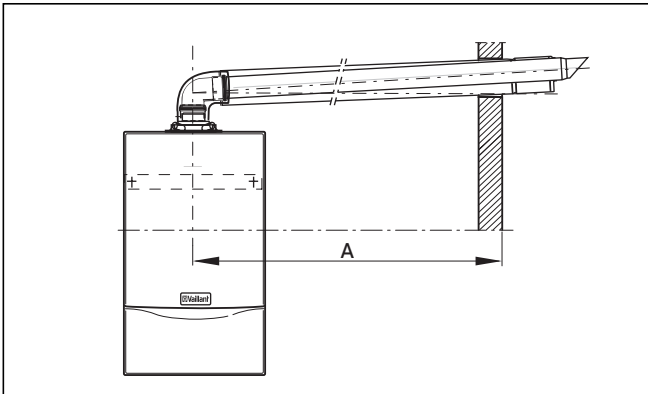


Fig. 2.5 Example of installation with horizontal air/flue duct

### 2.4.2 Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Fix the paper template, supplied with the boiler, to the wall ensuring that the centreline of the template is vertical using a plumbline or spirit level.

### 2.4.3 Side flue installations

- For installations where the air/flue duct is to be installed to the side, the position of the flue exit hole can be determined as follows:

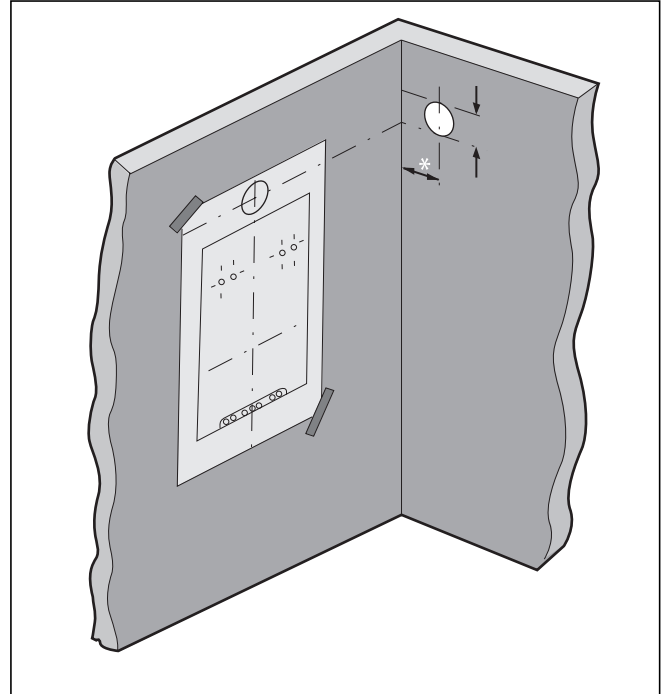


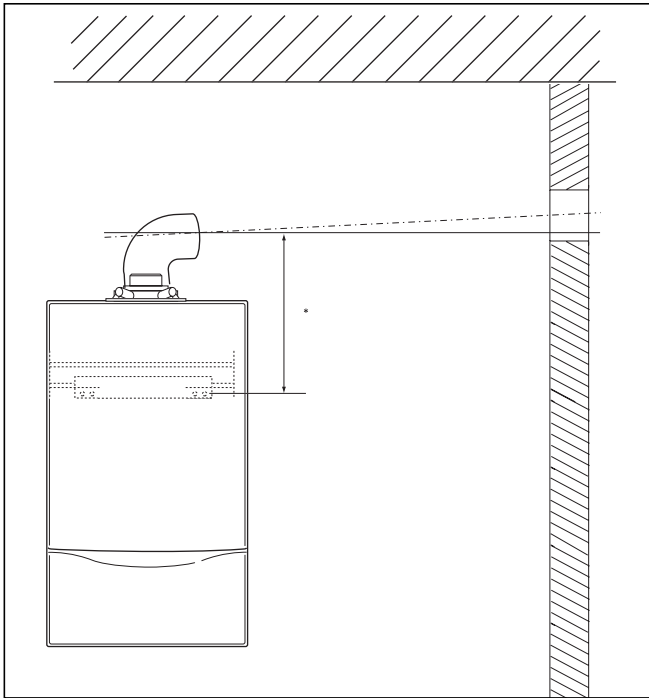
Fig. 2.6 Installation template

#### Key

\* = 190 mm VU GB 466/4-5

\* = 211 mm VU GB 656/4-5

- Identify the correct measurement as shown in fig. 2.6, carefully measure the distance from the bottom centre of the boiler hanging bracket (centreline of the two lower hanging bracket fixing holes). This gives the position of the centreline of the 127 mm flue elbow and adaptor when installed.
- The position of the flue exit hole can be determined by carefully levelling across the wall from this mark.



**Fig. 2.7 Distance between hanging bracket and wall break-through**

### Key

\* = 253 mm VU GB 466/4-5

\* = 297 mm VU GB 656/4-5

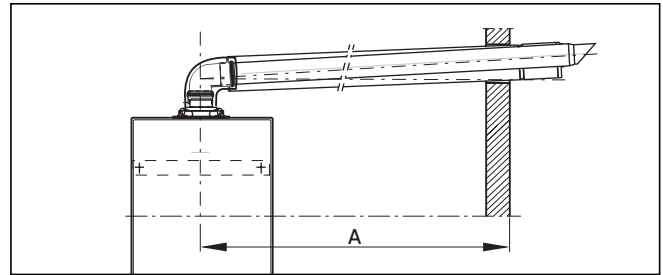
- The position of the flue exit hole should allow the flue to be installed with an upwards slope towards the terminal of approximately  $3^\circ \pm 1^\circ$ , equivalent to  $50 \text{ mm} \pm 20 \text{ mm}$  rise per metre of flue length. Calculate the required rise according to the flue length and mark the position of the flue exit hole (fig. 2.7).



### Note!

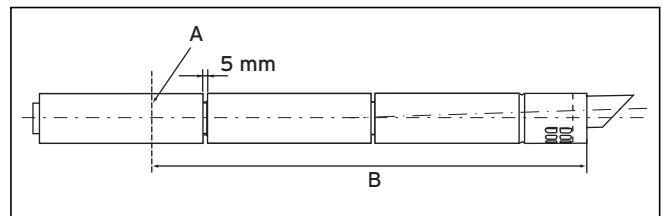
**Due to the long lengths of flue possible and the slope required, it may be necessary to adjust the location of the boiler installation template. Please check that both the boiler installation site and flue termination are in accordance with these instructions prior to drilling any holes for the boiler hanging bracket.**

- Once the position of the flue exit hole has been determined, the hole should be cut through the wall using a core drill of 127 mm diameter. The flue exit hole should be cut with a rise towards outside of  $3^\circ$ .
- Measure the distance from the outside face of the wall to the centre of the fan outlet on the boiler (fig. 2.8). This is dimension A.



**Fig. 2.8 Distance to external wall**

- For installations where the measured distance dimension A (fig. 2.8) is greater than 960 mm, an air/flue extension accessory will be required. The number of air/flue duct extensions which can be used depends on the boiler.
- Taking each extension to be used, fit the flue duct into the air duct and secure using the 3 screws provided.



**Fig. 2.9 Air duct**

### Key

A = Mark air duct here

B = Dimension A + 10 mm

- For ease of measuring and marking the air/flue duct extensions, assemble them loosely together with the air/flue duct and terminal assembly as shown (fig. 2.9).



### Note!

**The joints between the flue duct sections are of a push-fit type, with the flue duct spigot inserted into a socket containing a sealing ring. For ease of installation lubricate the seal using soap solution prior to assembling.**

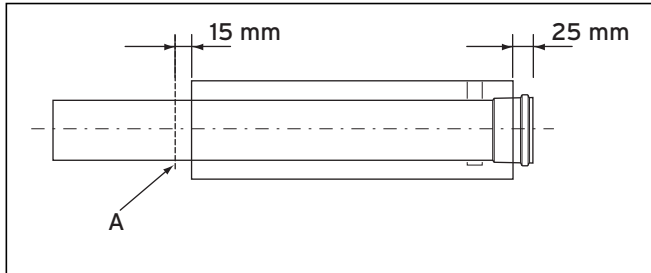
- Assemble the flue such that there is a gap of about 5 mm between each air duct, which will ensure the correct flue duct penetration into the flue sockets of 30 mm. All flue sockets should point towards the flue terminal.
- Measure from the flue terminal and mark the air duct to a length of: Dimension A + 60 mm.
- Disconnect the lines at the extensions that are to be shortened as described in section 2.7.1.



**Note!**

**For assembly reasons do not shorten any air duct to a length of less than 100 mm. If necessary shorten two adjacent extensions to achieve the overall required length.**

- Cut the air duct square and remove any burrs.
- Insert the flue gas pipe into the air pipe as described in section 2.7.1.

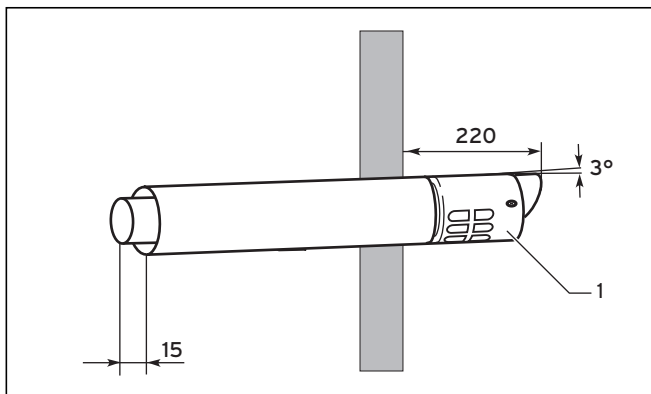


**Fig. 2.10 Flue duct**

**Key**

A = Mark flue duct here

- Cut the flue duct as detailed in fig. 2.10.
- When cutting the air and flue ducts it is important to remove any burrs with a file, this ensures easy fitting of the ducts and prevents any rough edges from damaging the flue seals.
- Care should be taken not to scratch the white surface of the air duct.
- If the installation requires the use of air/flue duct extensions, additional bends or elbows refer to the section 2.7.
- At this stage it is necessary to prepare and fit the boiler onto the hanging bracket - refer to the boiler installation instructions.
- Fit the appliance flue outlet adaptor to the boiler.

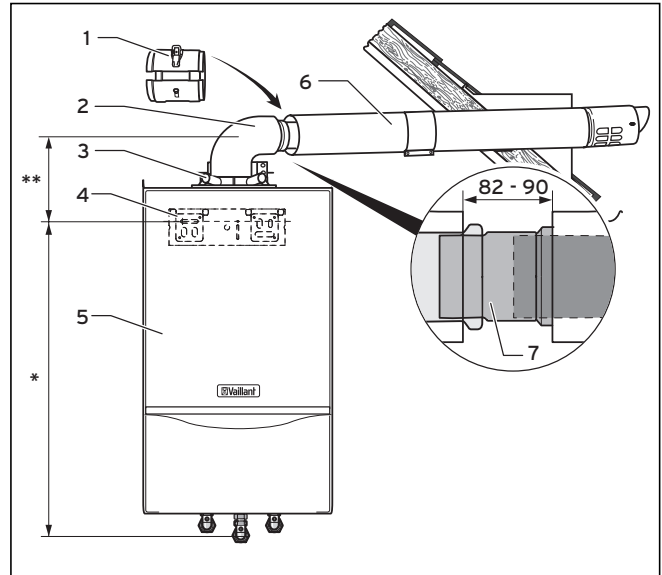


**Fig. 2.11 Installing the horizontal wall duct**

- Push the assembled air/flue duct and terminal assembly through the flue exit hole until it protrudes 220 mm out from the outside wall.

- Ensure that the terminal is correctly positioned with the air inlet grille at the bottom.
- Slide one of the two trim rings over the air duct until it is flush with the internal wall face.

**2.4.4 Indirect installation**



**Fig. 2.12 Distance to external wall**

**Key**

- \* = 750 mm VU GB 466/4-5, VU GB 656/4-5
- \*\* = 253 mm VU GB 466/4-5
- \*\* = 297 mm VU GB 656/4-5

- Fit the wall mounting (4).
- Install the appliance (5) with reference to the installation and servicing instructions supplied with the boiler.
- Join the 87° elbow to the appliance connection piece (3).
- Push the sliding sleeve (7) firmly into place on the appropriate extensions (6).
- Install the extensions and join the sliding sleeve to the 87° elbow.



**Note!**

**This section functions subsequently as a separation point.**

- Join all separation points with the air-conduit fixing collars (1).



**Note!**

See section 2.7 for further details on the installation of extensions and elbows.

**Note!**

For horizontal flue installations through sloping roofs, please order the Horizontal Flue Flashing from Ubbink (Nothants, Tel: 01280 700211)

### 2.5 Installation of the vertical air/flue duct



**Note!**

Observe the maximum flue lengths as detailed in section 2.2.3.

#### 2.5.1 Contents included with delivery

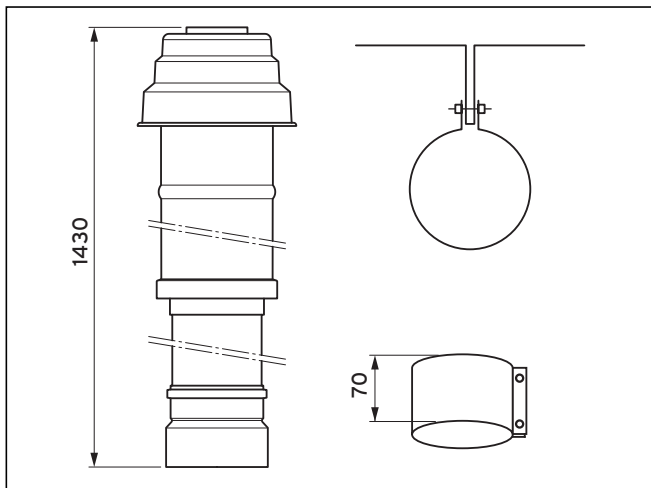


Fig. 2.13 Vertical roof duct

**Vertical air/flue duct**

Accy. No.: 303 200 (black)

Contents of the accessory:

- Vertical roof duct
- Adapter (air) for Ø 110/125
- 70 mm air duct clamp
- Fixing bracket



**Note!**

See section 2.2 for details of air/flue duct elements.

The air/flue duct assembly may be connected directly to the flue outlet on top of the boiler.

In addition to the vertical air/flue duct and terminal accessory, air/flue duct extensions can be added to increase the length of the flue.

#### 2.5.2 Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.



**Note!**

The vertical air/flue duct and terminal accessory (Accy. No. 303 200) may be shortened. The outer 'white' duct should be shortened first, then the inner flue duct cut so that it protrudes 15 mm out of the air duct. In case of installation directly to the boiler without elbows or bends, it is essential that the roof tile/collar is vertically aligned with the air/flue duct of the boiler.

#### 2.5.3 Pitched roof installation

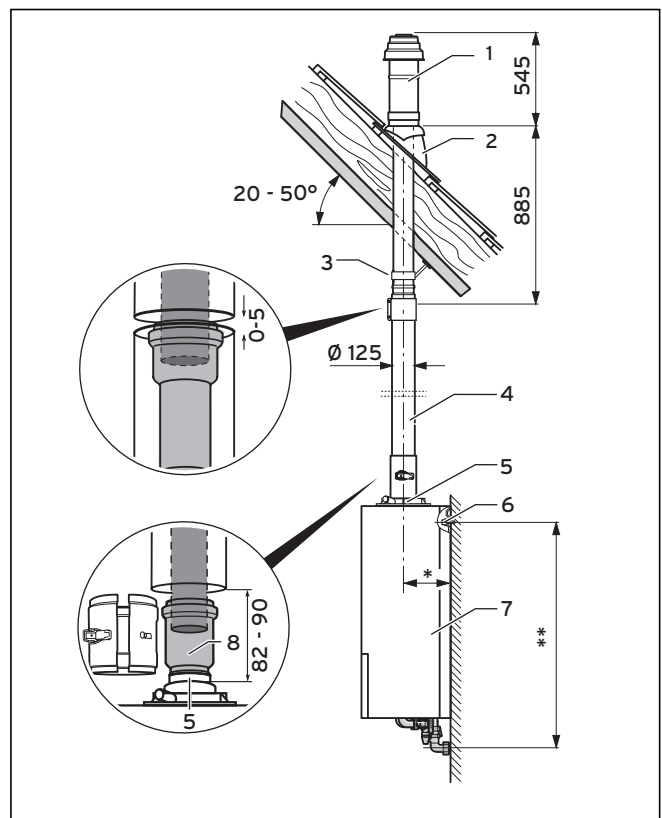


Fig. 2.14 Fitting the appliance and the vertical roof duct to a building with a pitched roof

**Key**

\* = 190 mm VU GB 466/4-5

\* = 211 mm VU GB 656/4-5

\*\* = 750 mm VU GB 466/4-5, VU GB 656/4-5

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
- Fit the flexible pitched roof seal (2).
- Working from above, insert the vertical roof duct (1) through the roofing tile and push it firmly into place.
- Vertically align the roof duct and attach it to the roof structure with the fixing bracket (3) supplied.
- Fit the boiler hanging bracket (6).
- Install the appliance (7) with reference to the installation and servicing instructions supplied with the boiler.

**Note!**  
See section 2.7 for further details on the installation of extensions and elbows.

- Push the sliding sleeve (8) firmly into place on the extension.
- Join the vertical roof duct (1) to the extension (4).
- Join the sliding sleeve (8) to the appliance's connection piece (5).

**Note!**  
Using the sliding sleeve allows the appliance to be easily removed and replaced without dismantling the flue.

- Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
- Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.

**Note!**  
The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.

- Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.

## 2.5.4 Flat-roof installation

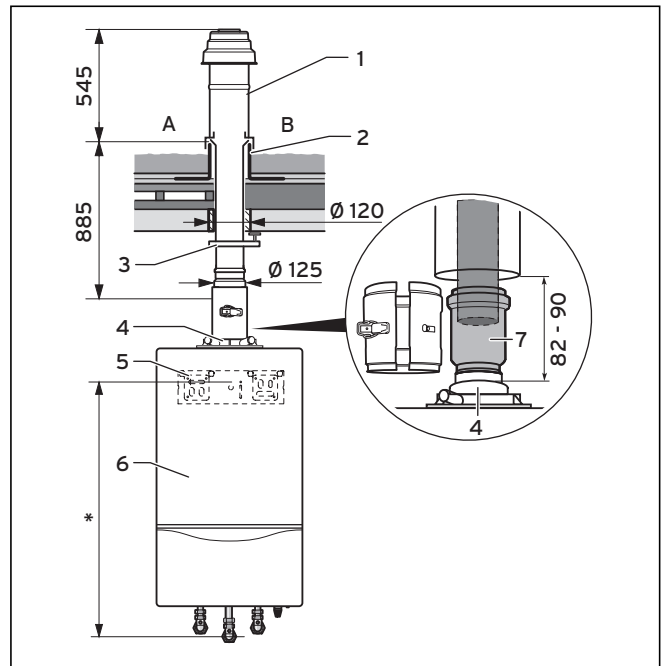


Fig. 2.15 Fitting the appliance and vertical flue duct to a building with a flat roof

### Key

- A cold roof
- B warm roof
- \* = 750 mm VU GB 466/4-5, VU GB 656/4-5

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
- Fit the flat roof penetration collar (2).
- Stick the flat roof penetration collar firmly into place with adhesive in accordance with the codes of practice for flat roofs (CP 144) to ensure a watertight seal.
- Working from above, insert the vertical roof duct (1) through the flat roof collar and push it firmly into place.
- Vertically align the roof duct and attach it to the roof structure with the fixing bracket (3) supplied.
- Fit the boiler hanging bracket (5).
- Install the appliance (6) with reference to the installation and servicing instructions supplied with the boiler.

**Note!**  
See section 2.7 for further details on the installation of extensions and elbows.

## 2 Concentric System Ø 80/125

- Push the sliding sleeve (7) firmly on to the vertical roof duct (1) or, where appropriate, on to an extension.
- Where appropriate, join the vertical roof duct (1) to an extension.
- Join the sliding sleeve (7) to the appliance's connection piece. This permits easy separation between the air/flue duct and the appliance.
- Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
- Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.



### Note!

**The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.**

- Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.

## 2.6 Installation of flue gas pipe on external wall

### 2.6.1 Illustration of system

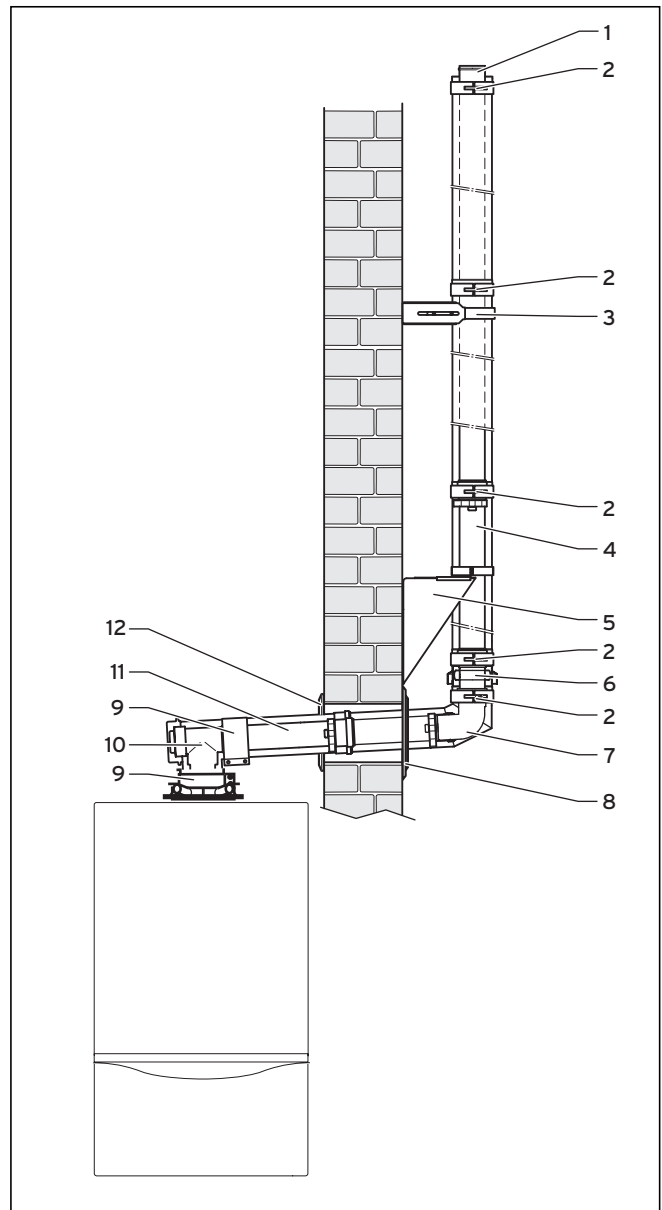


Fig. 2.16 Illustration of flue gas pipe system

### Key

- 1 Junction piece
- 2 Air clamp
- 3 External fastening clamp
- 4 Extension
- 5 External wall bracket
- 6 Air intake piece
- 7 Wall breakthrough elbow
- 8 External collar, split
- 9 Air clamp, internal
- 10 Inspection T piece
- 11 Extension, internal
- 12 Internal collar



### 2.6.2 Static dimensions

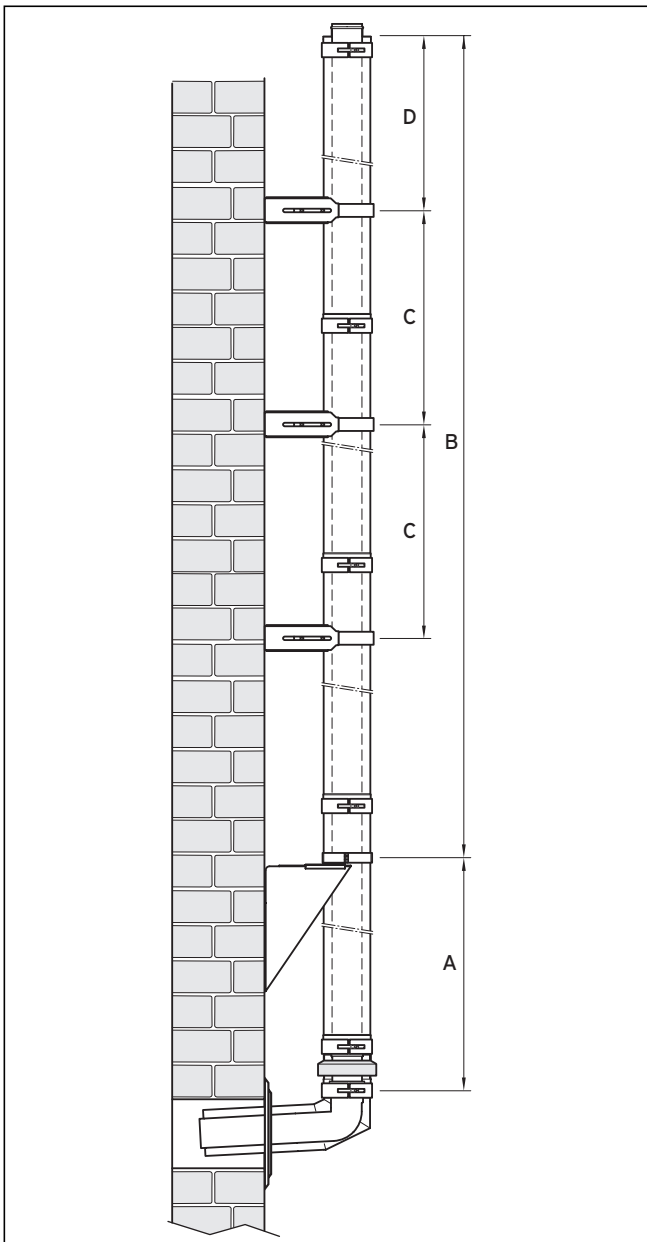


Fig. 2.17 Static dimensions

**Key**

- A: max. 2 m (vertical distance between wall breakthrough elbow and wall bracket)
- B: max. 22 m (max. vertical height above wall bracket)
- C: max. 2 m (distance between external fastening clamp)
- D: max. 1.5 m (max. height above last fastening clamp)



**Caution!**

Dimension A is the maximum permissible height A between the wall breakthrough elbow and wall bracket. The wall breakthrough elbow will be damaged if this height is exceeded. Dimension B is the maximum height of the flue gas pipe above the external wall bracket. If this dimension is exceeded, the vertical weight will exceed the load-bearing capacity of the bracket. Dimension C must not be exceeded in order to safely accommodate wind forces. Dimension D is the maximum height above the highest fastening clamp and must not be exceeded due to wind forces. If these dimensions are exceeded this could lead to mechanical damage of the flue gas duct and in extreme cases parts may come loose/fall thus endangering passers by.

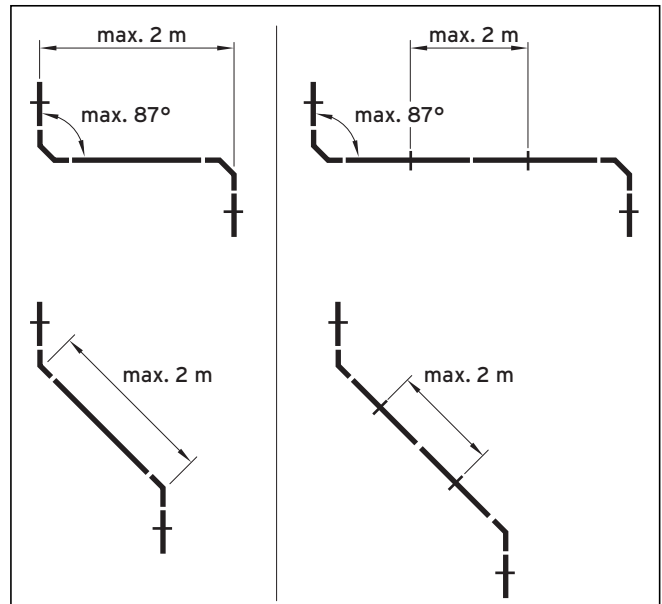


Fig. 2.18 Information on statics for flue gas duct offsetting



**Caution!**

An external wall bracket is required to resist the vertical supporting force for vertical heights greater than 2 m. This means that a second external wall bracket may be required after an offset in the flue gas duct. Additional external wall brackets are available on request.



### Danger!

#### Danger of injury from falling parts!

An offset must not be located between the two highest wall mounts. An offset compromises the rigidity of the flue gas duct when subjected to wind forces. This may in turn cause the flue gas duct to twist or come loose.

### 2.6.3 Installation of the flue gas pipe



### Note!

Before commencing with the assembly, the route of the flue gas duct and the number/position of the wall brackets and fastening clamps must be determined: observe Section 2.6.2 Static dimensions.



### Caution!

Take any roof projections into account. Use the pantiles for pitched roofs if required. The flue gas pipe must be installed at least 20 cm from windows and other wall openings.

### Caution!

Make sure that the inward gradient of the horizontal flue gas pipe is 3° (3° corresponds to a change in height of roughly 50 mm per metre length of pipe) to prevent the seals being damaged by condensation deposits.

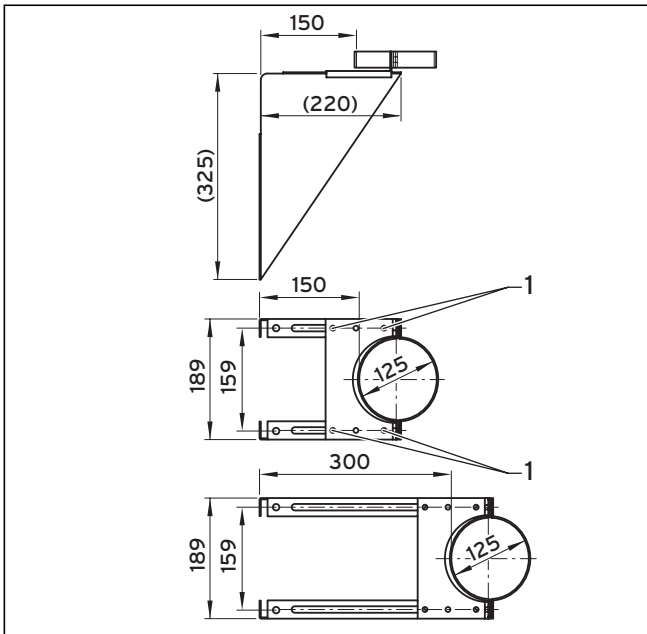


Fig. 2.19 Installation of wall bracket

- Drill a hole with a core diameter of at least 150 mm.
- Pre-assemble the wall bracket - consisting of 2 retainers and a carrier plate.
- Install the retaining plate on the short side of the bracket if the distance from the wall is between 50 mm and 150 mm and on the long side of the bracket

if the distance from the wall is between 150 mm and 300 mm.

- Set the required distance from the wall and fully tighten the 4 bolts (1, Fig. 2.19) in the mountable position.

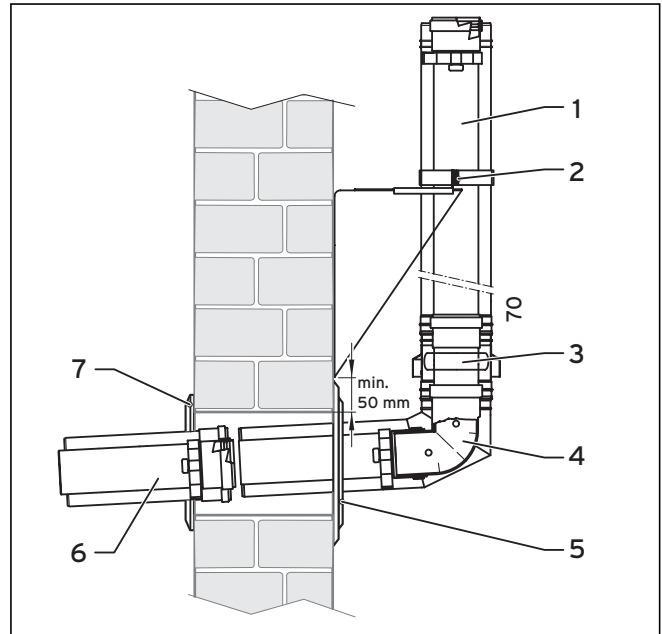
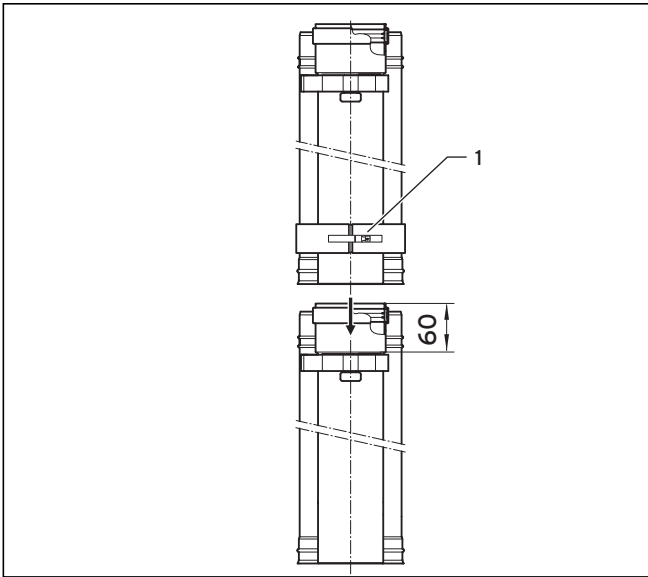


Fig. 2.20 Assembly of external wall pipe connection

### Key

- 1 External wall extension
- 2 Clamping ring, external wall bracket
- 3 Air intake piece
- 4 Wall breakthrough elbow
- 5 External collar, split
- 6 Extension, internal
- 7 Internal collar

- Install the wall bracket at least 50 mm above the hole in the wall so that the wall collar can be mounted on the flue pipe.



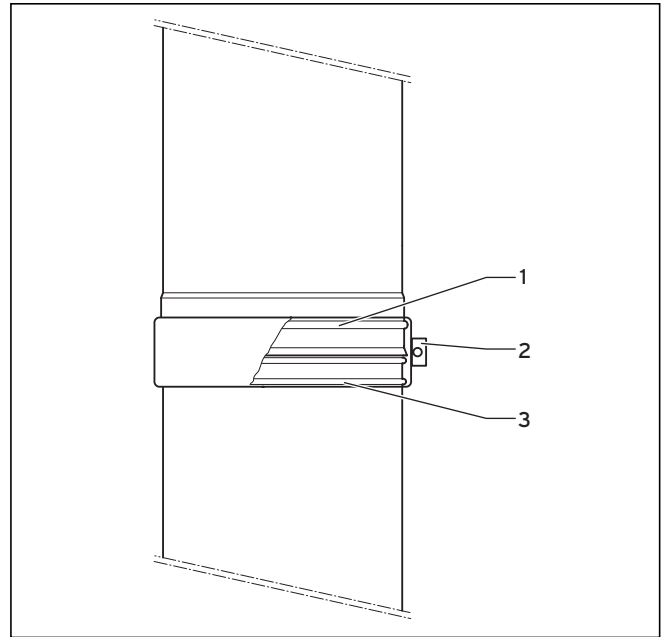
**Fig. 2.21** Plugging together the flue gas components of the external wall system

- Pre-assemble the wall breakthrough elbow, air intake piece and external wall extension.



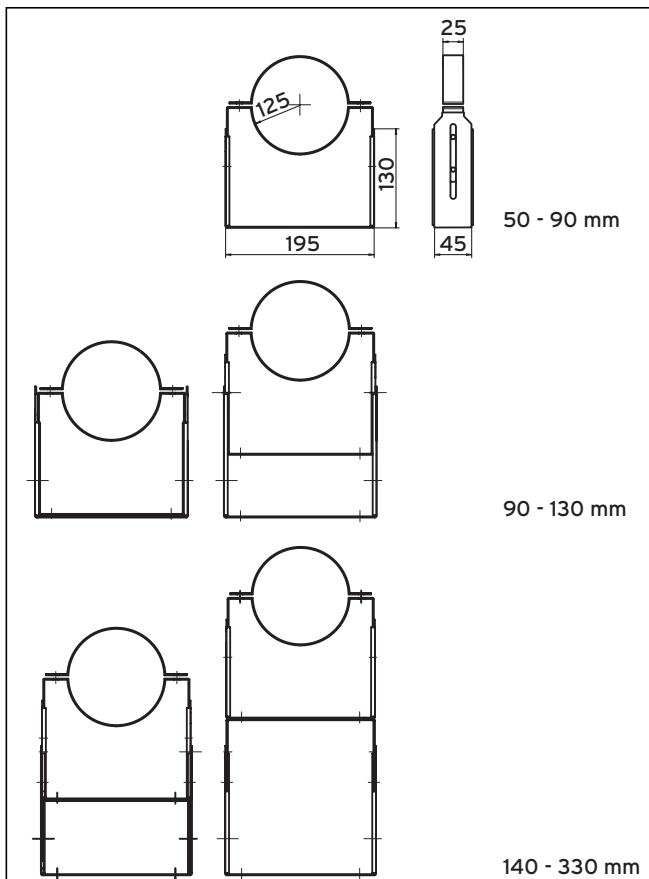
**Note!**

The air intake opening must be at least 0.3 m above the surface of the ground to prevent it from being blocked by snow. The air intake piece can also be positioned at any desired height. Restrictions are listed in Table 2.3. It must however always be positioned vertically to prevent rainwater entering the air intake openings. The sleeve of the flue gas pipe must always point in the direction of the flue gas opening.



**Fig. 2.22** Securing external wall elements with air clamp

- Suspend one air clamp (1, Fig. 2.21) from each external wall extension (1, Fig. 2.20) and air intake piece (3, Fig. 2.20) respectively.
- Plug the air intake piece (3, Fig. 2.20) and wall breakthrough elbow (4, Fig. 2.20) together until the limit stop is reached, repeat this procedure for the external wall extension (1, Fig. 2.20) and air intake piece (3, Fig. 2.20).
- Place the air clamp (1, Fig. 2.21) over both outer corrugations (1, 3, Fig. 2.22) and fully tighten the clamping fixture (2, Fig. 2.22).
- Insert the wall breakthrough elbow (4, Fig. 2.20) with air intake piece and extension in the wall opening.
- Place the clamping ring of the external wall bracket (2, Fig. 2.20) over the external wall extension and fully tighten both clamping bolts.
- Shorten the white extension (6, Fig. 2.20) to the required length if necessary.
- Place the white extension (6, Fig. 2.20) on the wall breakthrough elbow from the inside (4, Fig. 2.20).
- Fill the gap between the air pipe and hole from the inside and outside with mortar. Let the mortar harden.
- Screw on the internal collar (7, Fig. 2.20) from the inside.
- Screw on the external collar (5, Fig. 2.20) from the outside.
- Fasten the external fastening clamps at max. 2 m intervals.



**Fig. 2.23 Adjustment range of external fastening clamp**

The external fastening clamps can be adjusted between 50 mm and 90 mm.

If the distance to the wall is greater, extensions will be required for the external fastening clamp. A distance of 300 mm from the wall can be achieved in this case. The adjustment options are illustrated in Fig. 2.23.

For distances in the 90 mm to 160 mm range the outer bracket must be removed and the fastening clamp screwed directly to the bottom section of the fastening clamp extension.

- Mount the flue gas pipes, and if necessary the cleaning eye, diversions and terminal.



**Note!**

**The terminal on the flue-gas side is manufactured from stainless steel which means the flue gas opening is also resistant to UV radiation.**

- Fully tighten all wall fixings and air pipe clamps.

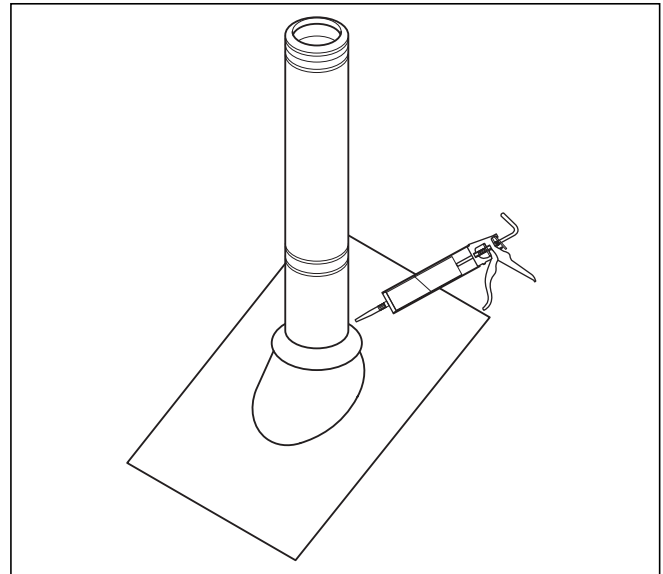


**Note!**

**The opening must always be at least 40 cm from the roof surface, this distance must increase to at least 100 cm if the power rating is higher than 50 kW.**

### 2.6.4 Assembly of rain collar

If the flue gas duct is led through a roof projection, the rain collar must be mounted on the flue gas duct.



**Fig. 2.24 Assembly of rain collar**

- Once the rain collar is positioned fully tighten the clamping bolt.
- Also install a permanently elastic seal at the joint between the rain collar and flue gas duct.

### 2.6.5 Assembly of shortenable extension

In the case of shortenable extension (Accy. No. 0020042755) the spacer used to centre the flue pipe in the outer pipe is not connected to the outer pipe. The outer pipe has no corrugation on the plug-in side as this side is shortened.

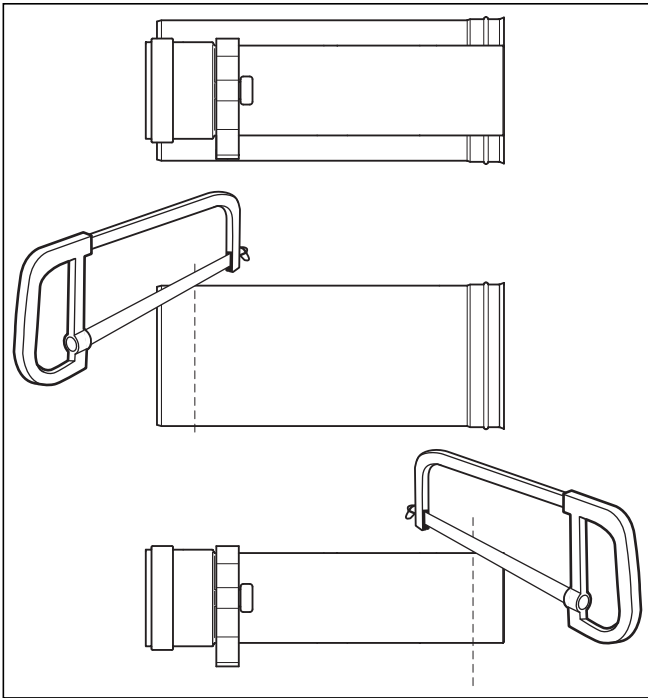


Fig. 2.25 Shortening of extension

- To shorten the extension, pull the flue pipe out of the outer pipe.
- Shorten the flue pipe and outer pipe by equal lengths.



**Note!**

**Shorten the flue pipe and outer pipe on the side facing away from the sleeve (Fig. 2.25). The spacer must remain locked in position at the flue pipe.**

- Push the flue pipe back into the outer pipe, as shown in Fig. 2.25.

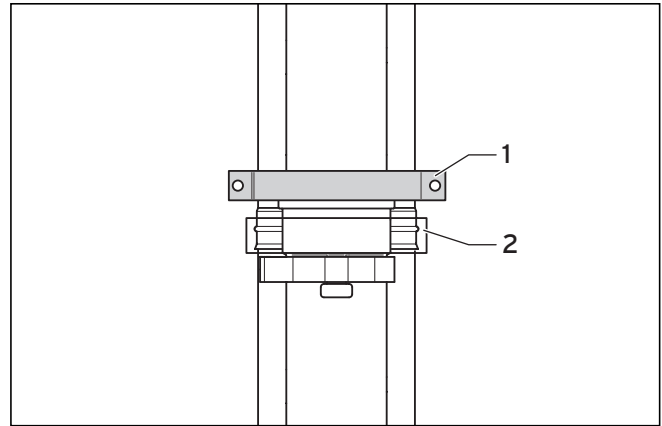


Fig. 2.26 Shortenable extension with external fastening clamp



**Danger!**

**Danger of injury from falling parts!**

**As the underside of the outer pipe of the shortenable extension has no corrugation, it is not possible to stabilise the pipe system with the clamping ring (2). An additional fastening clamp (1) is necessary to prevent the system from disconnecting or detaching as a result of wind loads.**

- Install an additional fastening clamp immediately above the shortenable extension (1), as shown in Fig. 2.26.

### 2.6.6 Installing the internal flue gas connection

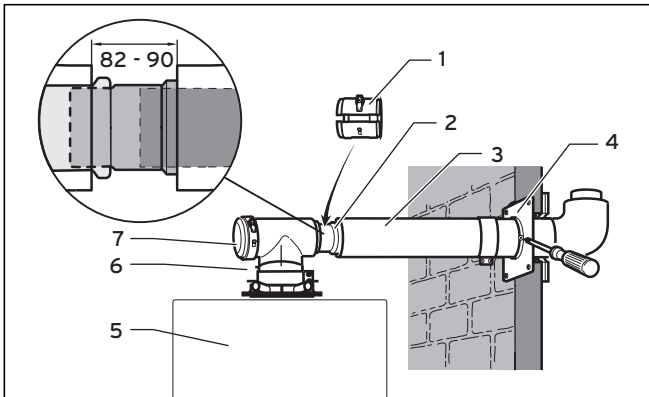


Fig. 2.27 Installing the flue gas connection

- Install the boiler (5) (for installation dimensions, see manual enclosed with the boiler).
- Connect the inspection T piece (7) to the appliance connection piece (6).
- Plug the partition (2) and sleeve on to the necessary extensions (3) and push on until the limit stop is reached. The partition cannot be used in the case of direct installation.
- Install the extensions and connect the partition to the inspection T piece.



#### Caution!

**Extensions must be connected to the ceiling or wall using pipe clamps to prevent the flue gas pipe from being disconnected. Use one clamp for each extension.**

- Install the air clamp (1) for the partition.
- Connect all other coupling points with air pipe clamps, as described in Section 2.7.2.

### 2.7 Fitting air/flue duct extensions

#### 2.7.1 How to add extensions

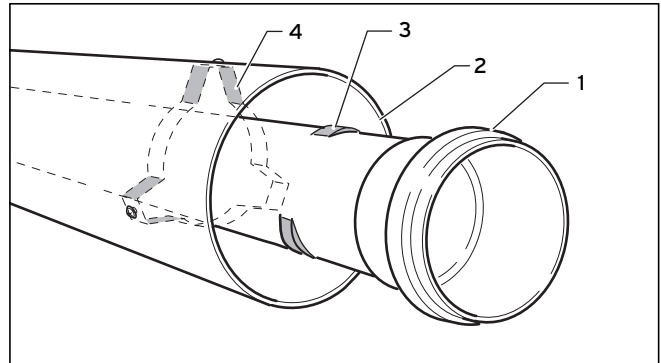


Fig. 2.28 Loosening the flue pipe



#### Note!

**No tools are required when separating extensions for cutting to size air and flue tubes separately. When doing so, the flue pipe should be twisted into a position where the shoulders on the plastic tube can be pushed through the spacer-piece. After cutting to size, refit the flue pipe and secure it to the air pipe.**

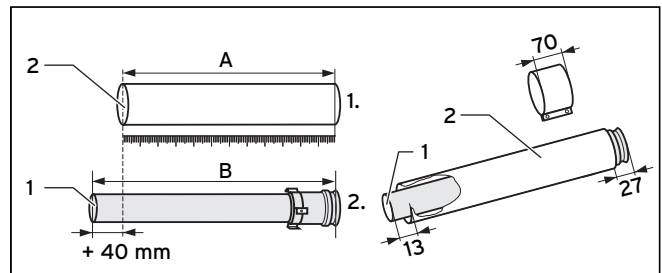


Fig. 2.29 Cutting tubes to size

- Use a saw, tin-snips, etc. to cut tubes to size.
- Start by measuring the required length of air pipe\* ( $L_{\text{air}}$ ), and then calculate the corresponding length of flue pipe ( $L_{\text{flue gas}}$ ) as follows:

$$\begin{aligned}
 L_{\text{flue gas}} &= L_{\text{air}} + 40 \text{ mm} \\
 L_{\text{flue gas}} &= \text{length of flue pipe (B)} \\
 L_{\text{air}} &= \text{length of air pipe (A)}
 \end{aligned}$$

\* Minimum length of air-pipe extension: 80 mm.



**Caution!**  
You must fasten extensions to the ceiling or wall using pipe clamps. Use one clamp for each extension.

**Caution!**  
Where extensions are used, these must be installed with a slope of  $3^\circ \pm 1^\circ$  to ensure that condensate does not remain in the sleeve (equivalent to  $50 \text{ mm} \pm 20 \text{ mm}$  rise per metre length).

**Caution!**  
The seals are sensitive to mineral oil-based grease products. For this reason, the seals must not be greased. If the seals need wetting to aid in installation, use water only.

**Caution!**  
De-burr and file down any rough edges on the tubes before fitting in order to prevent damage to the seals. Remove all metal filings and other debris.

**Caution!**  
Do not use damaged or dented tubes, as they will not form an adequate seal.

**Caution!**  
Ensure that the seals remain correctly aligned when installing the tubes. Do not fit damaged seals.

**Caution!**  
Secure the flue pipe with the fixing device in order to ensure that it is correctly centred relative to the air pipe.

### 2.7.2 Installing clamps for air pipes

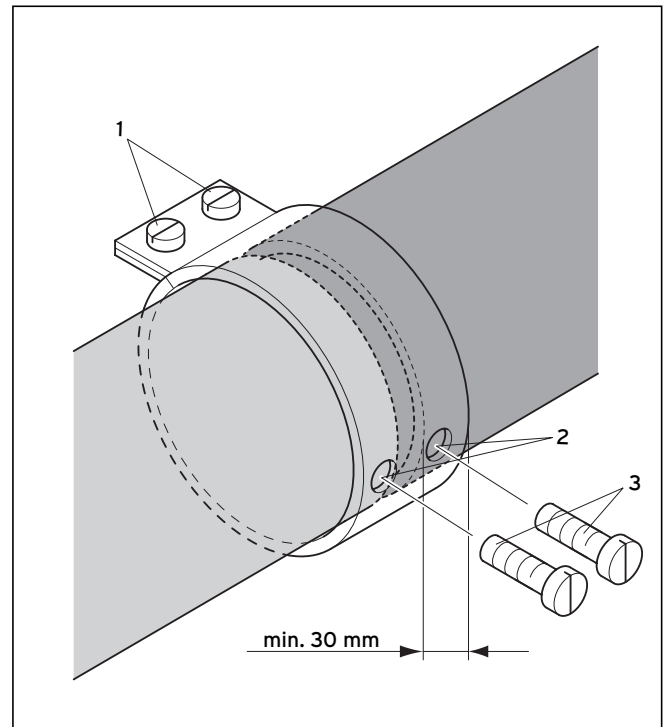


Fig. 2.30 Installation of air clamp

- Push the clamp over the air pipe partition and fasten the bolts (1).



**Danger!**  
**Risk of poisoning due to escaping flue gas!**  
Ensure that the clamp covers, at least, 30 mm of the air pipe and that the distance between air pipes is not more than 5 mm.

**Danger!**  
**Risk of poisoning due to escaping flue gas!**  
If there are holes in the flue gas pipe, flue gas may escape.  
Take care not to damage the flue pipe while drilling.

- Drill a 3 mm hole in the air pipe through the holes in the clamp (2) and insert the retaining bolts (3).

### 2.7.3 How to install 2 x 87° elbows

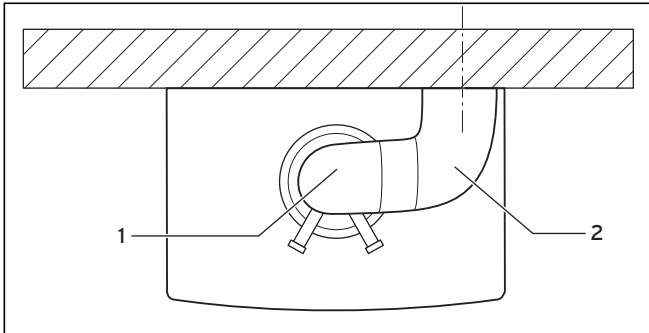


Fig. 2.31 Arrangement of 2 x 87° elbows - View from above

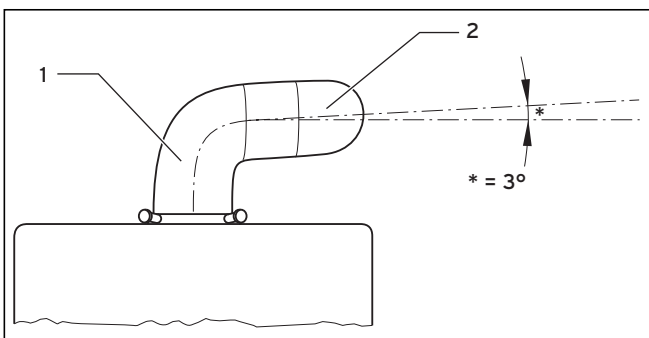


Fig. 2.32 Arrangement of 2 x 87° elbows - View from front

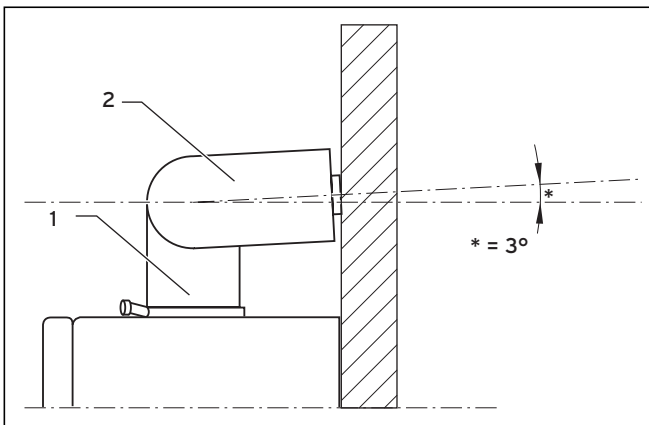


Fig. 2.33 Arrangement of 2 x 87° elbows - View from side

When using 2 x 87° elbows follow fig. 2.31 to fig. 2.33 to avoid obstructions on outer wall.

**Caution!**  
The elbows must be correctly aligned to avoid undue stress on the joints and risk of leakage.

- The elbow fitted to the top of the boiler (1) should be twisted by 3° to ensure that the second 87° elbow (2) exits the wall perpendicular.

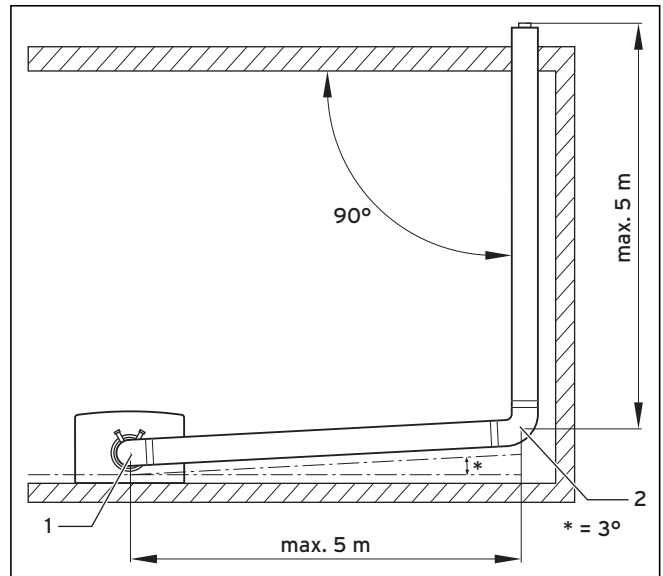


Fig. 2.34 Connecting extensions with 87° elbows

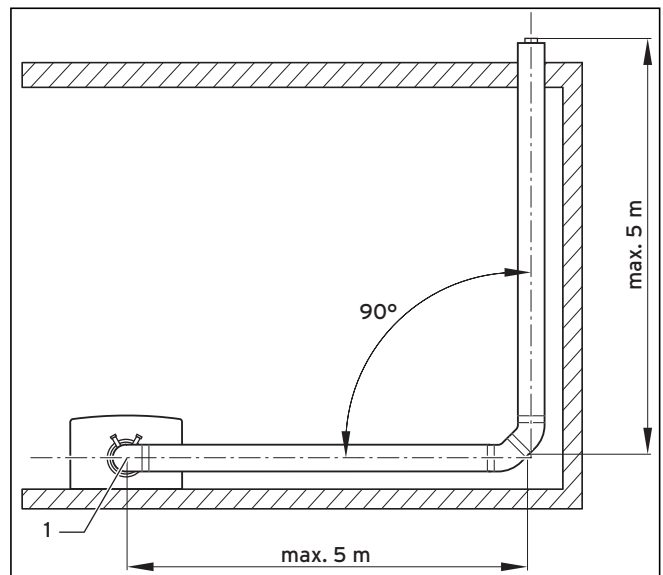


Fig. 2.35 Connecting extensions with 45° elbows

When using elbows for long flue runs in a corner follow fig. 2.34 and fig. 2.35 to avoid obstructions.

**Caution!**  
The elbows must be correctly aligned to avoid undue stress on the joints and risk of leakage.





**Note!**

The elbow fitted to the top of the boiler (1) should be twisted by 3° to ensure that the second 87° elbow (2) exits the wall perpendicular.

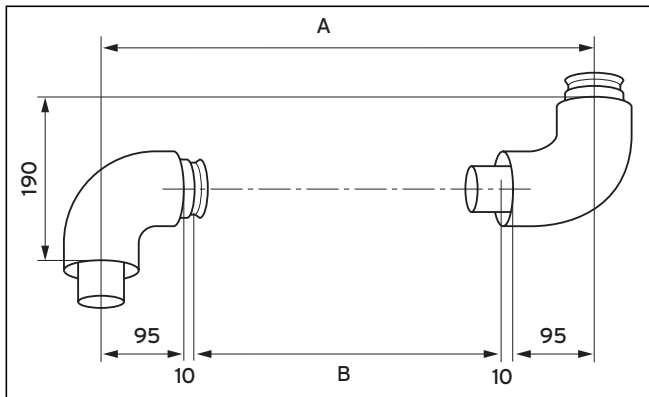
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**Note!**

When using 87° elbow install with a slope of 3° between wall and air-flue pipe (fig. 2.34) or use 2 x 45° elbows (fig. 2.35).

## 2 Concentric System Ø 80/125

### 2.7.4 How to install 87° elbows



#### Key

A = Offset  
B = Length of air pipe



#### Caution!

This gives a corresponding flue pipe length of  $190 + 40 = 230$  mm.

#### Example:

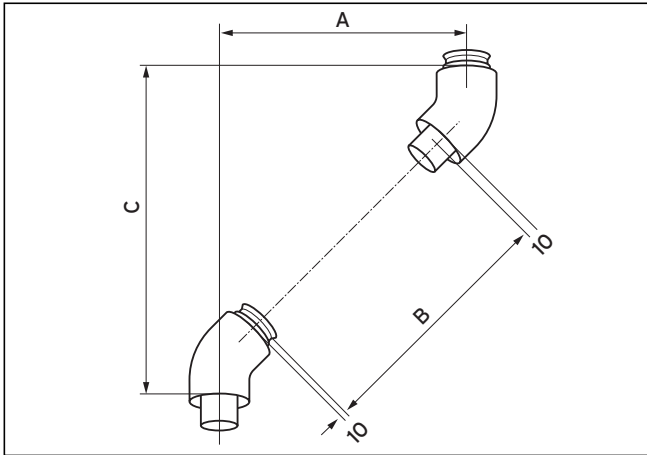
An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air pipe (= 190 mm in this case).

Fig. 2.36 Installation of 87° elbows, Accy. No.: 303 210

Offset [in mm]	Length of air pipe [in mm]	Offset [in mm]	Length of air pipe [in mm]	Offset [in mm]	Length of air pipe [in mm]
200, 205, 210	0	505	295	730	520
		510	300	735	525
		515	305	740	530
> 210 to < 310	not possible	520	310	745	535
		525	315	750	540
		530	320	755	545
		535	325	760	550
310	100	540	330	765	555
315	105	545	335	770	560
320	110	550	340	775	565
325	115	555	345	780	570
330	120	560	350	785	575
335	125	565	355	790	580
340	130	570	360	795	585
345	135	575	365	800	590
350	140	580	370	805	595
355	145	585	375	810	600
360	150	590	380	815	605
365	155	595	385	820	610
370	160	600	390	825	615
375	165	605	395	830	620
380	170	610	400	835	625
385	175	615	405	840	630
390	180	620	410	845	635
395	185	625	415	850	640
400	190	630	420	855	645
405	195	635	425	860	650
410	200	640	430	865	655
415	205	645	435	870	660
420	210	650	440	875	665
425	215	655	445	880	670
440	220	660	450	885	675
445	225	665	455	890	680
440	230	670	460	895	685
445	235	675	465	900	690
450	240	680	470	905	695
455	245	685	475	910	700
460	250	690	480	915	705
465	255	695	485	920	710
470	260	700	490	925	715
475	265	705	495	930	720
480	270	710	500	935	725
485	275	715	505	940	730
490	280	720	510		
495	285	725	515		
500	290				

Table 2.4 Length of surplus with 87° elbows

2.7.5 How to install 45° elbows



Key

- A = Offset
- B = Length of air pipe
- C = Height



**Caution!**  
This gives a corresponding flue pipe length of  $284 + 40 = 324$  mm.

Example:

An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air pipe (= 284 mm) and the height (= 420 mm).

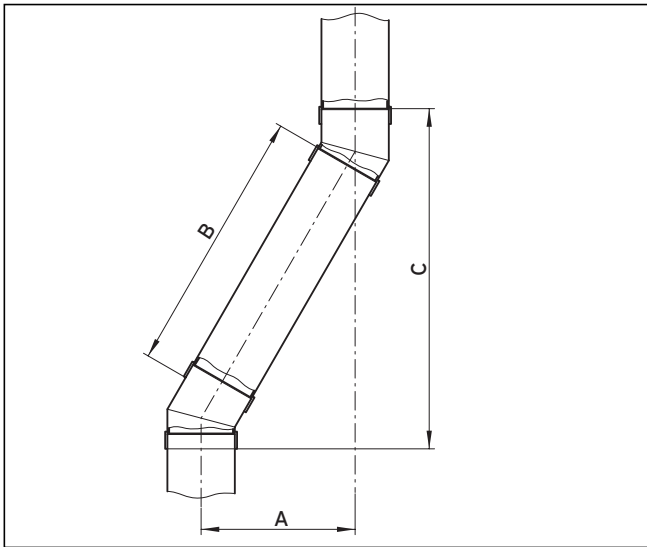
Fig. 2.37 Installation of 45° bends, Accy. No.: 303 211

Offset [in mm]	Length of air pipe [in mm]	Height [in mm]	Offset [in mm]	Length of air pipe [in mm]	Height [in mm]	Offset [in mm]	Length of air pipe [in mm]	Height [in mm]
90	0	210	335	334	455	535	617	655
95	0	215	340	341	460	540	624	660
100	0	220	345	348	465	545	631	665
> 100 to < 170 mm	not possible		350	355	470	550	638	670
			355	362	475	555	645	675
			360	369	480	560	652	680
			365	376	485	565	659	685
170	100	290	370	383	490	570	666	690
175	108	295	375	390	495	575	673	695
180	115	300	380	397	500	580	680	700
185	122	305	385	405	505	585	687	705
190	129	310	390	412	510	590	695	710
195	136	315	395	419	515	595	702	715
200	143	320	400	426	520	600	709	720
205	150	325	405	433	525	605	716	725
210	157	330	410	440	530	610	723	730
215	164	335	415	447	535	615	730	735
220	171	340	420	454	540	620	737	740
225	178	345	425	461	545	625	744	745
230	185	350	430	468	550	630	751	750
235	192	355	435	475	555	635	758	755
240	199	360	440	482	560	640	765	760
245	207	365	445	489	565	645	772	765
250	214	370	450	496	570	650	779	770
255	221	375	455	504	575	655	786	775
260	228	380	460	511	580	660	794	780
265	235	385	465	518	585	665	801	785
270	242	390	470	525	590	670	808	790
275	249	395	475	532	595	675	815	795
280	256	400	480	539	600	680	822	800
285	263	405	485	546	605	685	829	805
290	270	410	490	553	610	690	836	810
295	277	415	495	560	615	695	843	815
300	284	420	500	567	620	700	850	820
305	291	425	505	574	625	705	857	825
310	298	430	510	581	630	710	864	830
315	306	435	515	588	635	715	871	835
320	313	440	520	596	640	720	878	840
325	320	445	525	603	645			
330	327	450	530	610	650			

Table 2.5 Length of surplus with 45° bends

## 2 Concentric System Ø 80/125

### 2.7.6 Installing the 30° elbow (external wall) with offset



#### Key

- A Offset
- B Length of air pipe
- C Height

Example (with shortenable extension, Accy. No. 0020042755):

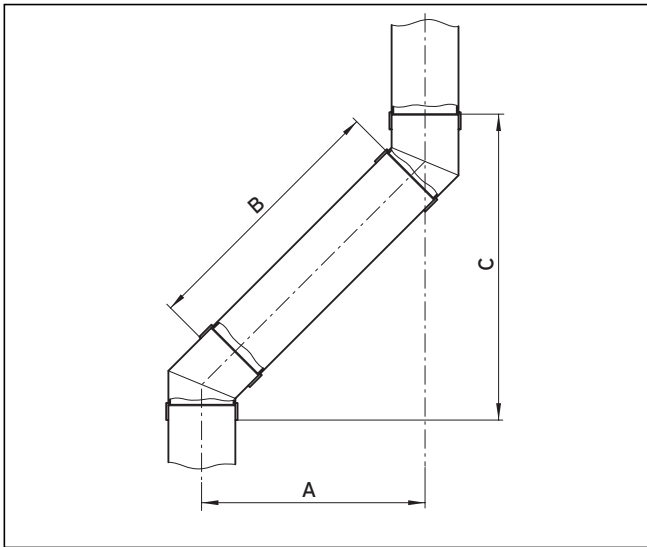
Through measurement, you determine the offset to be 300 mm. Using this value, you can determine the length (= 494 mm) and height (= 656 mm) of the outer pipe of the shortenable extension by referring to the table below.

Fig. 2.38 Installation of 30° elbow with offset

With shortenable extension (Accy. No. 0020042755)			With 0.5 m extension (Accy. No. 0020042753) and short- enable extension (Accy. No. 0020042755)				With 1.0 m extension (Accy. No. 0020042754) and shortenable extension (Accy. No. 0020042755)			
Offset [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shorte- nable extension [in mm]	Height [in mm]
A	B	C	A	B	C	A	B	C		
53	0	228	298	490	0	652	548	990	0	1085
54 to 109	not possible		299 to 339	not possible			549 to 589	not possible		
110	114	327	340	574	114	725	590	1074	114	1158
120	134	344	350	594	134	742	600	1094	134	1175
130	154	361	360	614	154	759	610	1114	154	1192
140	174	378	370	634	174	777	620	1134	174	1210
150	194	396	380	654	194	794	630	1154	194	1227
160	214	413	390	674	214	811	640	1174	214	1244
170	234	430	400	694	234	829	650	1194	234	1262
180	254	448	410	714	254	846	660	1214	254	1279
190	274	465	420	734	274	863	670	1234	274	1296
200	294	482	430	754	294	881	680	1254	294	1314
210	314	500	440	774	314	898	690	1274	314	1331
220	334	517	450	794	334	915	700	1294	334	1348
230	354	534	460	814	354	933	710	1314	354	1366
240	374	552	470	834	374	950	720	1334	374	1383
250	394	569	480	854	394	967	730	1354	394	1400
260	414	586	490	874	414	985	740	1374	414	1418
270	434	604	500	894	434	1002	750	1394	434	1435
280	454	621	510	914	454	1019	760	1414	454	1452
290	474	638	520	934	474	1037	770	1434	474	1470
300	494	656	530	954	494	1054	780	1454	494	1487

Table 2.6 Offset dimensions of 30° elbow with offset

**2.7.7 Installation of 45° elbow (external wall) with offset**



**Key**  
 A Offset  
 B Length of air pipe  
 C Height

Example (with shortenable extension, Accy. No. 0020042755):  
 Through measurement, you determine the offset to be 430 mm. Using this value, you can determine the length (= 488 mm) and height (= 580 mm) of the outer pipe of the shortenable extension by referring to the table below.

**Fig. 2.39 Installation of 45° elbow with offset**

With shortenable extension (Accy. No. 0020042755)			With 0.5 m extension (Accy. No. 0020042753) and shortenable extension (Accy. No. 0020042755)				With 1.0 m extension (Accy. No. 0020042754) and shortenable extension (Accy. No. 0020042755)			
Offset [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]
A	B	C	A	B		C	A	B		C
106	0	256	431	490	0	581	785	990	0	935
106 to 169	not possible		432 to 499	not possible			786 to 849	not possible		
170	120	320	500	587	127	650	850	1082	122	1000
180	135	330	510	601	141	660	860	1096	136	1010
190	149	340	520	615	155	670	870	1110	150	1020
200	163	350	530	630	170	680	880	1124	164	1030
210	177	360	540	644	184	690	890	1139	179	1040
220	191	370	550	658	198	700	900	1153	193	1050
230	205	380	560	672	212	710	910	1167	207	1060
240	219	390	570	686	226	720	920	1181	221	1070
250	234	400	580	700	240	730	930	1195	235	1080
260	248	410	590	714	254	740	940	1209	249	1090
270	262	420	600	729	269	750	950	1223	263	1100
280	276	430	610	743	283	760	960	1238	278	1110
290	290	440	620	757	297	770	970	1252	292	1120
300	304	450	630	771	311	780	980	1266	306	1130
310	318	460	640	785	325	790	990	1280	320	1140
320	333	470	650	799	339	800	1000	1294	334	1150
330	347	480	660	813	353	810	1010	1308	348	1160
340	361	490	670	828	368	820	1020	1322	362	1170
350	375	500	680	842	382	830	1030	1337	377	1180
360	389	510	690	856	396	840	1040	1351	391	1190
370	403	520	700	870	410	850	1050	1365	405	1200
380	417	530	710	884	424	860	1060	1379	419	1210
390	432	540	720	898	438	870	1070	1393	433	1220
400	446	550	730	912	452	880	1080	1407	447	1230
410	460	560	740	926	466	890	1090	1421	461	1240
420	474	570	750	941	481	900	1100	1436	476	1250
430	488	580	760	955	495	910	1110	1450	490	1260

**Table 2.7 Offset dimensions of 45° elbow with offset**

### 2.7.8 Installation of 87° elbow (external wall) with offset

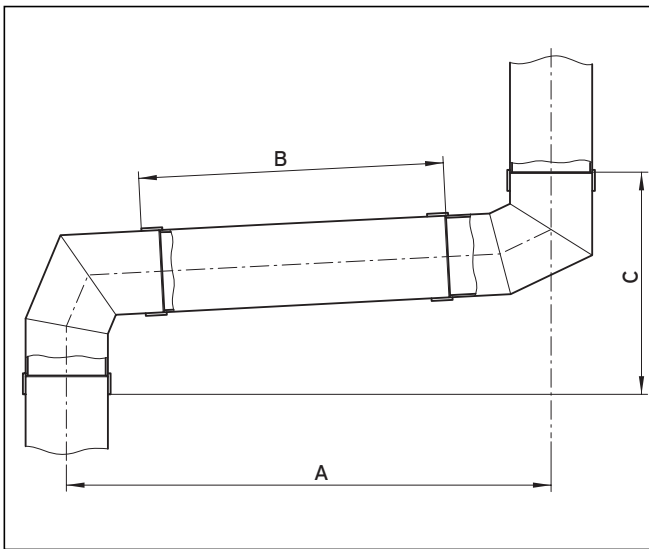


Fig. 2.40 Installation of 45° elbow with offset

#### Key

- A Offset
- B Length of air pipe
- C Height

Example (with shortenable extension, Accy. No. 0020042755):

Through measurement, you determine the offset to be 760 mm. Using this value, you can determine the length (= 486 mm) and height (= 345 mm) of the outer pipe of the shortenable extension by referring to the table below.

With shortenable extension (Accy. No. 0020042755)			With 0.5 m extension (Accy. No. 0020042753) and shortenable extension (Accy. No. 0020042755)				With 1.0 m extension (Accy. No. 0020042754) and shortenable extension (Accy. No. 0020042755)			
Offset [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]	Offset [in mm]	Overall length of outer pipes [in mm]	Length of outer pipe of shortenable extension [in mm]	Height [in mm]
A	B	C	A	B		C	A	B		C
275	0	319	764	490	0	345	1263	990	0	371
276 to 399	not possible		765 to 859	not possible			1264 to 1359	not possible		
400	126	326	860	586	126	350	1360	1087	127	376
410	136	326	870	596	136	351	1370	1097	137	377
420	146	327	880	606	146	351	1380	1107	147	377
430	156	328	890	616	156	352	1390	1117	157	378
440	166	328	900	626	166	352	1400	1127	167	378
450	176	329	910	636	176	353	1410	1137	177	379
460	186	329	920	646	186	353	1420	1147	187	379
470	196	330	930	656	196	354	1430	1157	197	380
480	206	330	940	666	206	354	1440	1167	207	380
490	216	331	950	676	216	355	1450	1177	217	381
500	226	331	960	686	226	355	1460	1187	227	382
510	236	332	970	696	236	356	1470	1197	237	382
520	246	332	980	706	246	356	1480	1207	247	383
530	256	333	990	716	256	357	1490	1217	257	383
540	266	333	1000	726	266	357	1500	1227	267	384
550	276	334	1010	736	276	358	1510	1237	277	384
560	286	334	1020	746	286	358	1520	1247	287	385
570	296	335	1030	756	296	359	1530	1257	297	385
580	306	335	1040	766	306	360	1540	1267	307	386
590	316	336	1050	776	316	360	1550	1277	317	386
600	326	336	1060	786	326	361	1560	1287	327	387
610	336	337	1070	796	336	361	1570	1297	337	387
620	346	337	1080	806	346	362	1580	1307	347	388
630	356	338	1090	816	356	362	1590	1317	357	388
640	366	339	1100	827	367	363	1600	1327	367	389
650	376	339	1110	837	377	363	1610	1337	377	389
660	386	340	1120	847	387	364	1620	1347	387	390
670	396	340	1130	857	397	364	1630	1357	397	390
680	406	341	1140	867	407	365	1640	1367	407	391
690	416	341	1150	877	417	365	1650	1377	417	391
700	426	342	1160	887	427	366	1660	1387	427	392
710	436	342	1170	897	437	366	1670	1397	437	393
720	446	343	1180	907	447	367	1680	1407	447	393
730	456	343	1190	917	457	367	1690	1417	457	394
740	466	344	1200	927	467	368	1700	1427	467	394
750	476	344	1210	937	477	368	1710	1437	477	395
760	486	345	1220	947	487	369	1720	1447	487	395

Table 2.8 Offset dimensions of 87° elbow with offset

## 3 Installation of boilers with cascading arrangements

### 3 Installation of gas fired wall hung boilers with cascading arrangements

- These instructions should be read in conjunction with the instructions for installation and servicing supplied with the boiler.
- Ensure also that all legislation, rules, regulations and directives mentioned in the installation instructions are observed.
- The installation of the boiler and its flue must be carried out by a competent person who is registered with CORGI (The Council for Registered Gas Installers).
- The installation of the boiler and flue must be in accordance with the Gas Safety (Installation and Use) Regulations 1998 and the Building Regulations with respect to BS 5440 Part 1 or BS 6644.
- The requirements for flue termination detailed in BS 5440 Part 1 or BS 6644 installation instructions must be observed.
- All installations must be carried out with respect to The Clean Air Act.
- Ensure while installation work is being carried out that no debris such as swarf, filings or fragments of mortar are allowed to remain in the air/flue duct.

For the flue systems installed in cascade arrangement a flue gas non return valve (article no. 303960) must be mounted (dimensions see fig. 3.1). The non return valve must be inserted directly into the appliance flue connector.

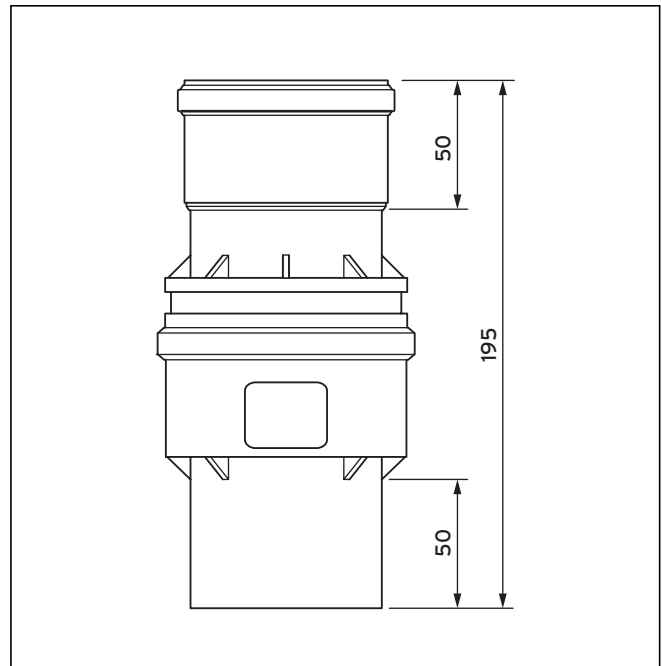


#### Caution!

**The appliance must be installed configured as an open-flue type (with combustion air supplied directly into the installation room from outside) in order that the appliance operate safely.**

#### Caution!

**The flue system arrangement must be designed so that condensation in the flue pipes (downstream of the non return valve) does not flow onto the valve, failure to do this will prevent the operation of the valve.**



**Fig. 3.1: Dimensions**

The flue system must be suitable for cascade arrangements (e.g. temperature, pressure and tightness class). The flue duct must be marked with the CE label or, as the case may be, tested and approved acc. to the national requirements (marked as BS 715). The flue system must be installed as defined in the instructions by the manufacturer.

The flue system must be dimensioned in accordance with EN 13384-2. (EN 13384-2 - Chimneys - Thermal and fluid dynamic calculation methods - Part 2: Chimneys serving more than one heating appliance). The required boiler parameters are given in table 3.1.

The installation shall comply with all existing standards and regulations for a chimney/flue installation serving a cascade arrangement.

The standards identify the limitations and safety considerations associated with the design, installation, commissioning and maintenance of a chimney or flue system (shared flue system) serving more than one heating appliance.



## Installation of boilers with cascading arrangements 3

	VU GB 466/4-5	VU GB 656/4-5
Kind/type of appliance/ burner (category)	B <sub>23</sub>	B <sub>23</sub>
Kind of fuel	natural gas	natural gas
Maximum flue gas temperature	see instructions for installation and servicing	
Maximum allowable condensate back flow rate (from the chimney)	no condensate backflow	
Flue gas mass flow for minimum heat output	6,4 g/s	6,5 g/s
Flue gas mass flow for nominal heat output	21,0 g/s	30,3 g/s
Minimum flue gas temperature for minimum heat output	40 °C	40 °C
Minimum flue gas temperature for nominal heat output	40 °C	40 °C
Maximum flue gas temperature	see instructions for installation and servicing	
CO <sub>2</sub> -content for minimum heat output	9,0%	9,0%
CO <sub>2</sub> -content for nominal heat output	9,0%	9,0%
Maximum allowable pressure differential at minimum heat output at the non-return valve	15 Pa	15 Pa
Maximum allowable pressure differential at maximum heat output at the non return valve	50 Pa	50 Pa
Maximum draught at minimum heat output	20 Pa	20 Pa
Maximum draught at maximum heat output	20 Pa	20 Pa
Size/shape of flue gas outlet	Ø 80 mm	Ø 80 mm
Position/height of flue gas outlet	see instructions for installation and servicing	

**Table 3.1 Boiler parameters**





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