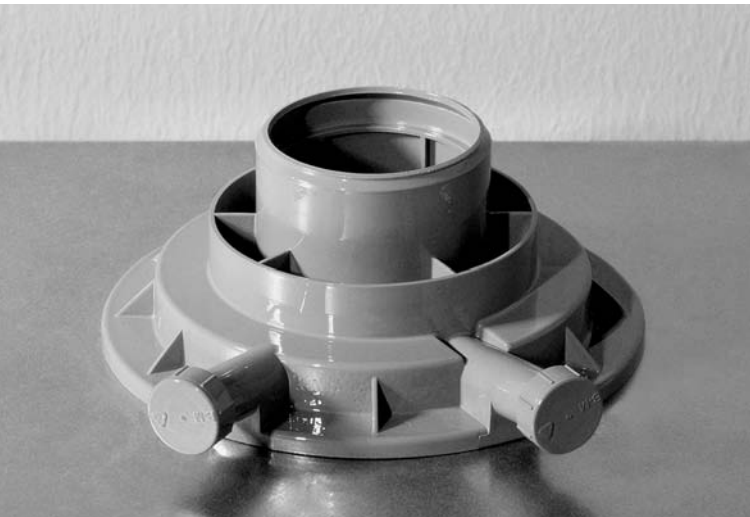


For the installer

Flue installation instructions

## Air flue duct for use with ecoTEC boilers



**Standard Concentric  
Systems Ø 60/100  
(Galvanized steel air  
duct/plastic flue duct)**

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

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## 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 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!**



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

## 2 Standard Concentric Systems Ø 60/100

**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

Two types of flue gas installation are available for ecoTEC boilers:

- standard concentric flue gas installations (outer diameter 100 mm)
- a concentric system with a larger diameter (outer diameter 125mm) which can be used to achieve longer air/flue gas pipes.

### 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.

### 2.1.1 Intended use

Valliant flue pipes for ecoTEC are state-of-the-art appliances which are designed in accordance with approved safety regulations. Nevertheless, there is still a risk of death or serious injury to the user or others or of damage to the device and other property in the event of improper use or use for which it is not intended. The Vaillant flue pipes for ecoTEC may only be used with the unit types named in this installation manual. Any other use or extended use is considered to be improper. The manufacturer or supplier is not liable for any resulting damage. The user alone bears the risk. Intended use includes the observance of the relevant manual.

### 2.1.2 Preliminary remarks for room sealed appliances

This appliance should only be installed in conjunction with either a Vaillant flue system or an alternative approved system (details of flue approval categories can be found in the technical section of the installation manual).

Install the flue system as detailed in the separate flue installation instructions supplied with this boiler.

### 2.1.3 Related documents

The installation of the boiler must be in accordance with the relevant requirements of Gas Safety (Installation and Use) Regulations 1998, Health and Safety Document No. 635 (The Electricity at Work Regulations 1989), BS7671 (IEE Wiring Regulations) and the Water Supply (Water Fitting) Regulations 1999, or The Water Bylaws 2000 (Scotland). It should also be in accordance with the relevant requirements of the Local Authority, Building Regulations, The Building Regulations (Scotland), the Building Regulations (Northern Ireland) and the relevant recommendations of the following British Standards:

- BS 6700:** Services supplying water for domestic use within buildings and their curtilages.
- BS 6798:** Specification for installation of gas fired boilers not exceeding 60 kW input.
- BS 6891:** Specification for installation of low pressure gas pipework up to 28 mm (R1) in domestic premises (2nd family gas).
- BS 7593:** Treatment of water in domestic hot water central heating systems.
- Institute of Gas Engineers Publication IGE/UP/7/1998: "Guide for gas installations in timber framed housing"
- BS. 5482** Pt. 1 Domestic butane and propane gas burning installations.
- IGE/UP1** Soundness testing and purging of industrial and commercial gas installation.
- IGE/UP2** Gas installation pipework, boosters and compressors on industrial and commercial premises.
- IGE/UP10** Installation of gas appliances in industrial and commercial premises.
- BS. 6644** Installation of gas fired hot water boilers of rated inputs between 60 kW and 2 MW (2nd and 3rd family gases).
- BS. 5449** Forced circulation hot water central heating systems for domestic premises. Note: only up to 45 kW.
- BS. 6880** Low temperature hot water heating systems of output greater than 45 kW.  
Part 1 Fundamental and design considerations.  
Part 2 Selection of equipment.  
Part 3 Installation, commissioning and maintenance.
- BS. 4814** Specification for: Expansion vessels using an internal diaphragm, for sealed hot water heating systems.
- BS. 5440** Installation and maintenance of flues and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd familygases).  
Part 1 Specification for installation of flues.  
Part 2 Specification for installation and maintenance of ventilation for gas appliances.

## 2.2 Planning the air/flue duct layout

### 2.2.1 Alternative termination accessories available







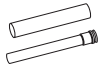

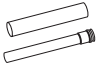








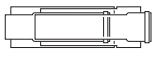
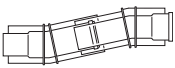

**0020060570** = Vertical air/flue duct (black)  
**0020060571** = Vertical air/flue duct (red)  
**0020065937** = Vertical air/flue duct (black)



**303982** = Ridge tile terminal






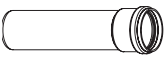



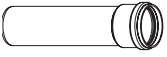






**303933** = Horizontal air/flue duct  
**303936** = Horizontal telescopic air/flue duct

Optional connection accessories	Accy. No.	0020060570 0020060571 0020065937 	303982 	303933 	303936 
Air/flue duct extensions, concentric 470 mm - Ø 60/100 	303 902	X	X	X	X
Air/flue duct extensions, concentric 970 mm - Ø 60/100 	303 903	X	X	X	X
Air/flue duct extensions, concentric 1970 mm - Ø 60/100 	303 905	X	X	X	X
Bends (PP), concentric (pack of 2) 45° - Ø 60/100 	303 911	X	X	X	X
Elbow, concentric 87° - Ø 60/100 	303 910	X	X	X	X
Flue support clips (pack of 5), Ø 100 	303 821	X	X	X	X
Adjustable flue support clips (pack of 3); Ø 100 	303 935	X	X	X	X
Sliding sleeve (PP) Ø 60/100 	303 915	X	X	X	X
Adjustable roof tiles for pitched roof 	009 076 (black)	X		X	X
Flexible pitched roof seal 	303 980	X			
Flat roof penetration collar 	009 056	X			
Telescopic extension 440 mm - 690 mm Ø 60/100 	303 906	X	X	X	X
Telescopic offset section 	303 919	X	X	X	X
Black terminal kit for horizontal air/flue duct 	303 934			X	X

**Table 2.1 Product program**

## 2 Standard Concentric Systems Ø 60/100

Optional connection accessories	Accy. No.	0020060570 0020060571 0020065937 	303 982 	303 922 	303 923 
Variable termination kit - black *) 	303 942			X	X
Extension pipe for variable termination kit VTK Ø 60 mm 1 m - black *) 	303 943			X	X
87° elbow for variable termination kit - black *) 	303 944			X	X
45° bend for variable termination kit - black (2 pieces) 	303 945			X	X
Variable termination kit - white *) 	303 946			X	X
Extension pipe for variable termination kit VTK Ø 60 mm 1 m - white *) 	303 947			X	X
87° elbow for variable termination kit - white *) 	303 949			X	X
45° bend for variable termination kit - white (2 pieces) 	303 948			X	X
Deflector set DN 60 PP-black 	002006 0584			X	X
Deflector set DN 60 PP-white 	002006 0585			X	X

**Table 2.1 Product program (continued)**

\*) delivered with support clips

2.2.2 Element descriptions

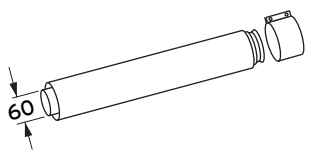
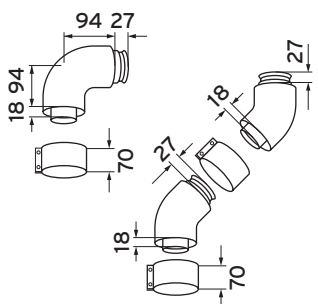
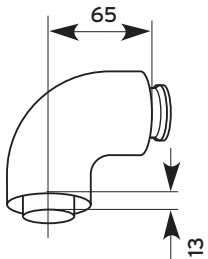
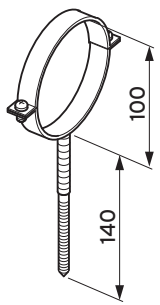
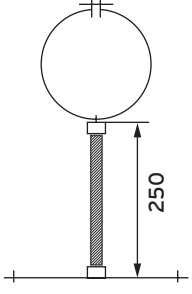
Element	Description
	<b>Air/flue duct extension, Ø 60/100</b> 470 mm: Accy. No. 303 902 970 mm: Accy. No. 303 903 1970 mm: Accy. No. 303 905
	<b>Elbow, Ø 60/100</b> 87°: Accy. No. 303 910 45°: Accy. No. 303 911 (pack of 2)
	<b>Elbow 87°, Ø 60/100</b> Only Part of: Accy. No.: 303 933 Accy. No.: 303 936
	<b>Flue support clips, Ø 100,</b> (pack of 5) Accy. No.: 303 821
	<b>Adjustable flue support clips, Ø 100</b> (pack of 3) Accy. No.: 303 935

Table 2.2 Elements 60/100

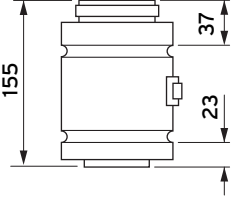
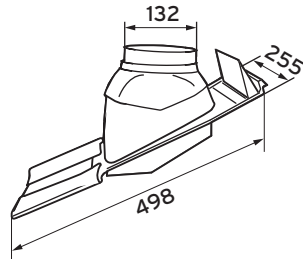
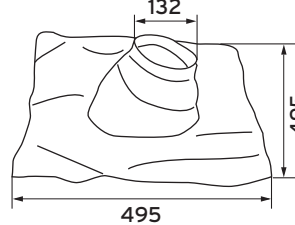
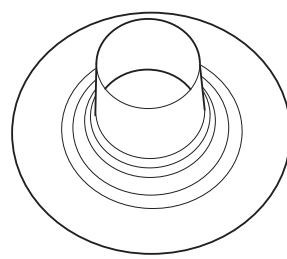
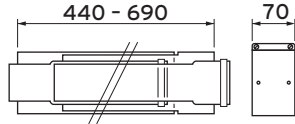
Element	Description
	<b>Sliding sleeve (PP), Ø 60/100</b> Accy. No.: 303 915
	<b>Adjustable roof tile for pitched roof</b> Accy. No.: 009 076 (black)
	<b>Flexible pitched roof seal</b> Accy. No.: 303 980 (black)
	<b>Flat roof penetration collar</b> Accy. No.: 009 056
	<b>Telescopic extension (PP), Ø 60/100</b> 440 mm - 690 mm Accy. No.: 303 906

Table 2.2 Elements 60/100 (continued)

## 2 Standard Concentric Systems Ø 60/100

Element	Description
	<b>Offset section, Ø 60/100</b> Accy. No.: 303 919
	<b>Black terminal kit for horizontal air/flue duct</b> Accy. No.: 303 934 For 303 933 and 303 936 only
	<b>Variable termination kit - black</b> Accy. No.: 303 942 For 303 933 and 303 936 only  <b>Variable termination kit - white</b> Accy. No.: 303 946 For 303 933 and 303 936 only
	<b>Extension pipe for variable termination kit Ø 60 mm 1 m - black</b> including 1 support clip Accy. No.: 303 943  <b>Extension pipe for variable termination kit Ø 60 mm 1 m - white</b> including 1 support clip Accy. No.: 303 947
	<b>87° elbow for variable termination kit - black</b> including 1 support clip Accy. No.: 303 944  <b>87° elbow for variable termination kit - white</b> including 1 support clip Accy. No.: 303 949

Table 2.2 Elements 60/100 (continued)

Element	Description
	<b>45° bend for variable termination kit - black</b> Accy. No.: 303 945  <b>45° bend for variable termination kit - white</b> Accy. No.: 303 948
	<b>Deflector set DN 60 PP-black</b> with wall seal Accessory No.: 002006 0584  <b>Deflector set DN 60 PP-white</b> Accessory No.: 002006 0585
	<b>Flue support clip Ø 60 mm</b> delivered with kits

Table 2.2 Elements 60/100 (continued)



## 2.2.3 Maximum flue lengths for use with ecoTEC exclusive

Accessories	Accy.-Nr.		ecoTEC exclusive	
			832	838
Horizontal flue systems	303 933 303 936	Max. permitted concentric flue length	4.0 m incl. 1 elbow 87°	Maximum length of flue is reduced by 1.0 m for each additional 87° elbow  Maximum length of flue is reduced by 0.5 m for each additional 45° elbow
Variable termination kit	303 942 303 946  only in combination with 303 933 303 936	Max. permitted concentric flue length	The maximum permitted concentric flue length given above is reduced as follows:  - Reduced by 0.5 m for the variable terminal - Reduced by 0.5 m for every 1 m VTK pipe - Reduced by 0.5 m for every 87° bend - Reduced by 0.5 m for 2 x 45° bend	
Vertical flue systems	0020060570 0020060571 0020065937 303 982	Max. permitted concentric flue length	7.0 m	Maximum length of flue is reduced by 1.0 m for each additional 87° elbow  Maximum length of flue is reduced by 0.5 m for each additional 45° elbow

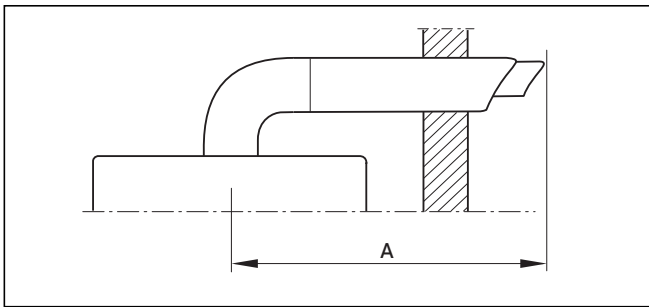
**Table 2.3 Maximum flue lengths for use with ecoTEC exclusive**

## 2.2.4 Maximum flue lengths for use with ecoTEC

Accessories	Accy.-Nr.		ecoTEC					
			plus 612 plus 615 plus 618	plus 624 plus 824	plus 630 plus 831	plus 637 plus 837 plus 937	pro 24 pro 28	plus 415 plus 418 plus 428 plus 438
Horizontal flue systems	303 933	Max. permitted concentric flue length	8.0 m incl. 1 elbow 87°	8.0 m incl. 1 elbow 87°	8.0 m incl. 1 elbow 87°	5.5 m incl. 1 elbow 87°	8.0 m incl. 1 elbow 87°	10.0 m incl. 1 elbow 87°
			Maximum length of flue is reduced by 1.0 m for each additional 87° elbow  Maximum length of flue is reduced by 0.5 m for each additional 45° elbow					
Variable termination kit	303 942 303 946  only in combination with 303 933 303 936	Max. permitted concentric flue length	The maximum permitted concentric flue length given above is reduced as follows:  - Reduced by 0.5 m for the variable terminal - Reduced by 0.5 m for every 1 m VTK pipe - Reduced by 0.5 m for every 87° bend - Reduced by 0.5 m for 2 x 45° bend  The flue length outside shall not exceed 10 m.					
Vertical flue systems	0020060570 0020060571 0020065937 303 982	Max. permitted concentric flue length	12.0 m	12.0 m	12.0 m	8.0 m	12.0 m	10.0 m
			Maximum length of flue is reduced by 1.0 m for each additional 87° elbow  Maximum length of flue is reduced by 0.5 m for each additional 45° elbow					

**Table 2.4 Maximum flue lengths for use with ecoTEC**

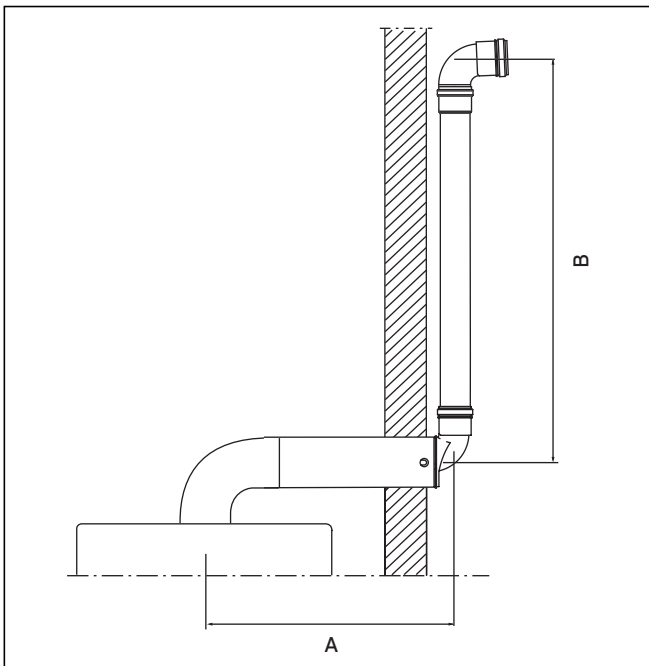
## 2 Standard Concentric Systems Ø 60/100



**Fig. 2.1 Horizontal flue systems**

**Key**

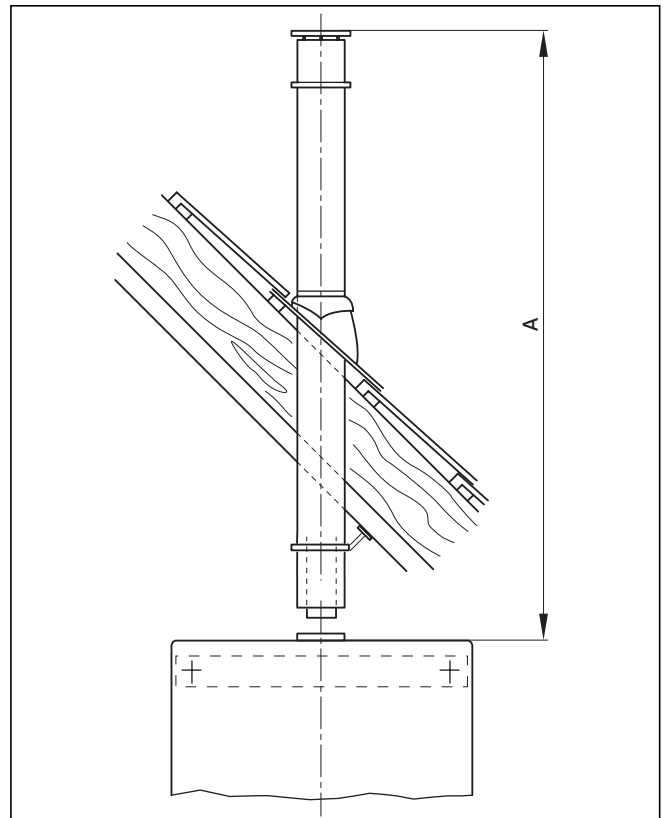
A Maximum flue length



**Fig. 2.2 Horizontal flue system installed with vertical termination kit**

**Key**

A Concentric flue length  
B Flue length outside



**Fig. 2.3 Vertical flue systems**

**Key**

A Maximum flue length

## 2.3 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. 303 915) is available. When using the sliding sleeve both the air and flue ducts of the last extension must be shortened by a further 95 mm.

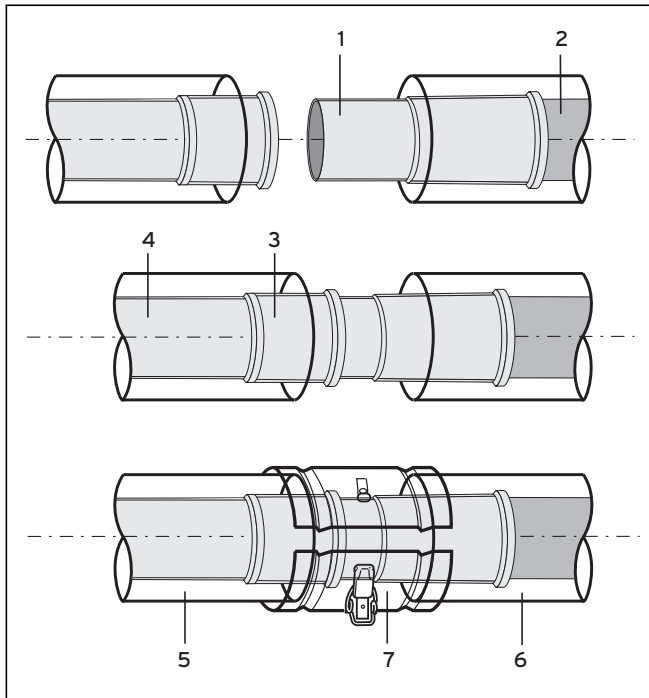


Fig. 2.4 Installing the sliding sleeve

- 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

### 2.4.1 Contents included with delivery



### 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.

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

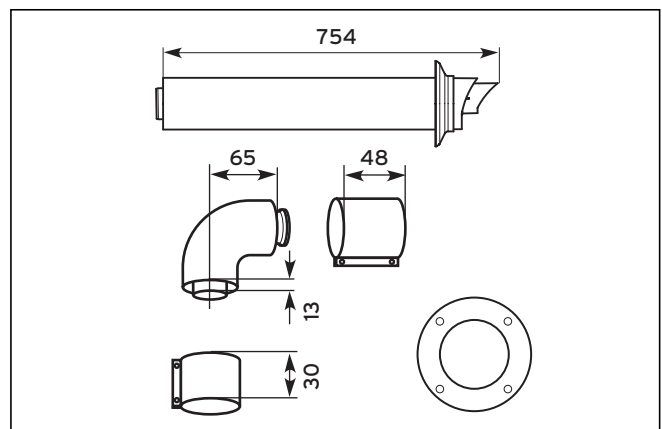


Fig. 2.5 Horizontal air/flue conduit

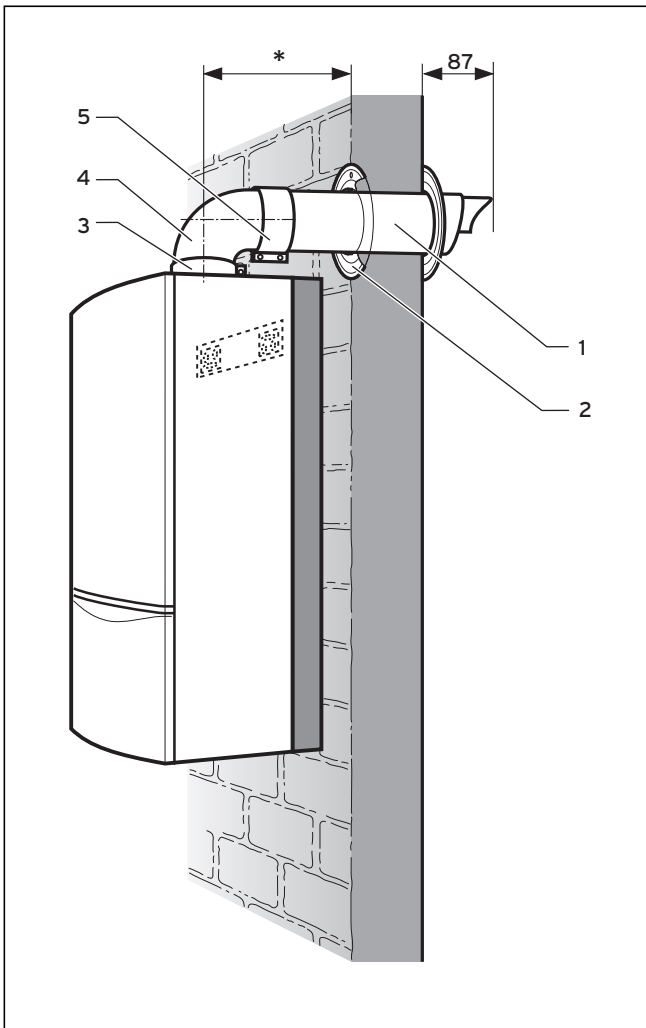
### Horizontal air/flue duct

Accy.-No. 303 933  
(Length 0.75 m)

Contents of the accessory:

- Horizontal air/flue duct
- 87° elbow
- 1 x 48 mm air duct clamp
- 1 x 30 mm air duct clamp
- Internal trim ring Ø 100
- External wall seal.

### 2.4.2 Preparation



**Fig. 2.6 Assembly of the boiler and of the roof duct to buildings with pitched roofs**

#### Key

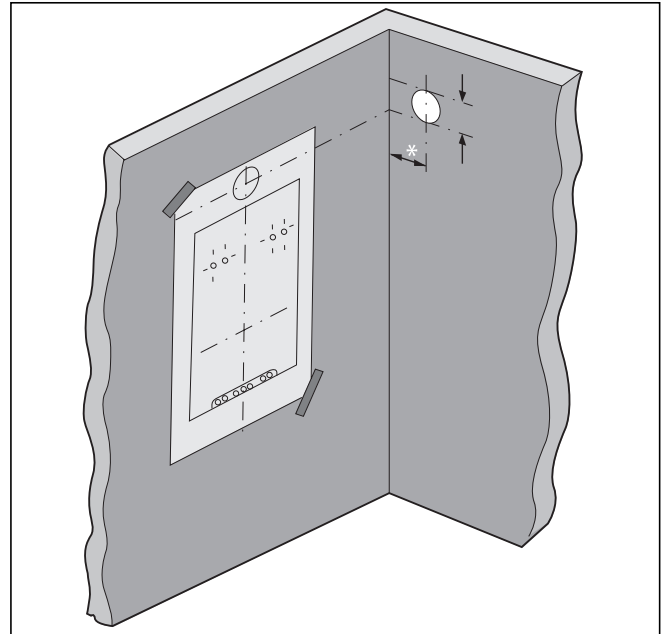
- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

- 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 Top outlet flue exiting to rear

- For installations where the air/flue duct is to be installed directly to the rear of the boiler, the installation template details the position of the flue exit hole for horizontal top outlet installation.

### 2.4.4 Top outlet flue exiting to side



**Fig. 2.7 Distance to external wall**

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

- For installations where the air/flue duct is to be installed to the side, the position of the flue exit hole can be determined by carefully levelling across the wall from the centre line of the air/flue duct hole marked on the template.
- The position of the flue exit hole should allow the flue to be installed with a slight upward slope of about  $3^\circ \pm 1^\circ$  (equivalent to  $50 \text{ mm} \pm 20 \text{ mm}$  per metre of flue duct). Calculate the required rise according to the flue length and mark the position of the flue exit hole.
- Once the position of the flue exit hole has been determined, the hole should be cut through the wall using a core drill of 125 mm diameter.



**Note**

If access can be gained to the proposed flue exit point from outside the dwelling, the hole can be cut with a 107 mm core drill and the flue external wall seal fitted from outside the dwelling.

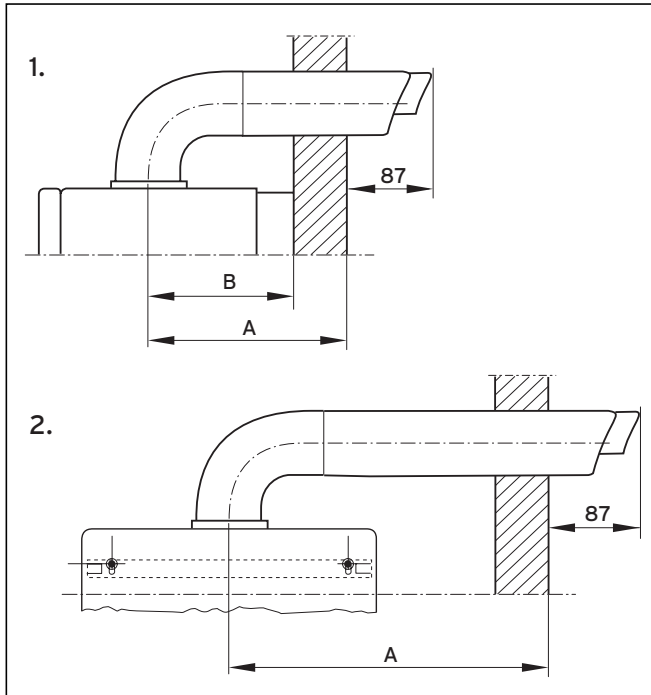


Fig. 2.8 Distance to external wall

**Key**

- 1. Rear exit
- 2. Side exit

- A Distance to external wall
- B Distance to internal wall
  - = 190 mm ecoTEC exclusive combination
  - = 176 mm ecoTEC plus open vent
  - = 125 mm ecoTEC plus system & combination
  - = 323 mm ecoTEC plus 937

- 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.

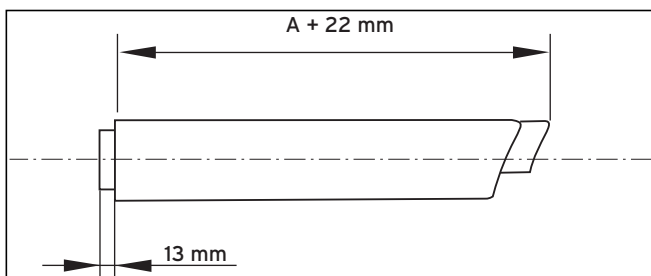


Fig. 2.9 Length of air pipe

- Cut the air duct and flue duct to the lengths shown in (fig. 2.9).
- All flue sockets should point towards the terminal.
- 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 2.11.
- Secure the air duct sections together by drilling a 3 mm diameter hole through the location hole in the end of the outer air duct. (Ensure that the drill does not pierce the inner flue duct). Secure the air ducts together using the screw provided.

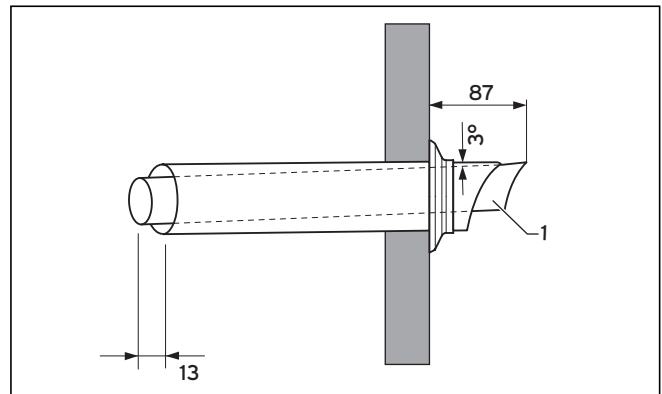


Fig. 2.10 Assembly of the horizontal wall duct

- Push the air/flue duct assembly (1) including the flexible external seal through the wall until the seal clears the outside face of the wall and pull air/flue duct back towards the boiler until the external seal touches the outside wall (fig. 2.6 and fig. 2.10).
- Ensure that the air/flue duct (1) is centred in the hole and the terminal is correctly positioned with the inlet grille at the bottom (fig. 2.6 and fig. 2.10).
- Slide the internal trim ring (2) over the air duct until it is flush with the wall (2, fig. 2.6).
- At this stage it is necessary to prepare and fit the boiler onto the hanging bracket - refer to the boiler installation instructions.
- Fit the elbow (4) to the boiler by inserting the spigot of the flue elbow into the flue socket on the boiler and secure using the 30 mm air duct clamp (3) provided (fig. 2.6).
- Pull the air/flue duct back through the wall such that the flue duct fully engages into the flue elbow socket.
- Fit the 48 mm air duct clamp (5) ensuring that it is positioned centrally (fig. 2.6).
- Drill two holes 3 mm Ø through the air duct of both the elbow/flue and elbow/boiler clamps at the most convenient holes on the air duct clamps. (Ensure that the drill does not penetrate the inner flue duct). Screw

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the clamps to the air ducts of the flue assembly, the elbow and boiler using the screws supplied.

- Slide the internal trim ring back to the wall, securing in position with a small amount of sealant if required.



**Caution!**  
If installed near a light, insects may fly into the opening. Tell the homeowner to clean the opening regularly.

### 2.5 Installation of the telescopic horizontal air/flue duct

#### 2.5.1 Contents included with delivery



**Caution!**  
The air/flue duct is not concentric and the air duct has a slope of  $1.5^\circ$  (if the air flue duct is not cut). The hole through the wall can therefore be drilled horizontally with no slope.

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

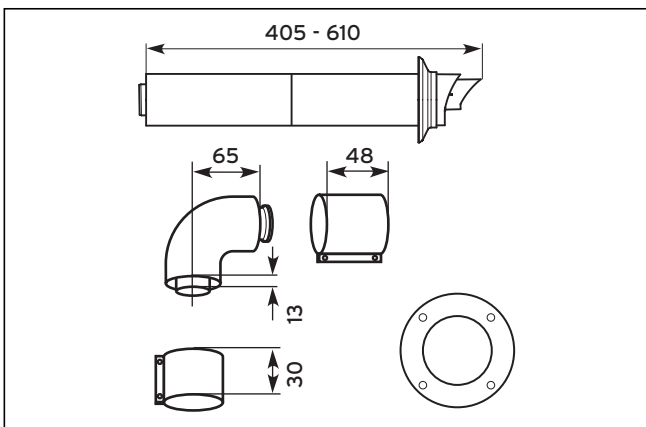


Fig. 2.11 Horizontal air/flue conduit

#### Horizontal telescopic air/flue duct

Accy.-No. 303 936  
(Length 0.4 - 0.61 m)

Contents of the accessory:

- Horizontal telescopic air/flue duct
- $87^\circ$  elbow
- 1 x 48 mm air duct clamp
- 1 x 30 mm air duct clamp
- Internal trim ring Ø 100
- External wall seal.

### 2.5.2 Preparation

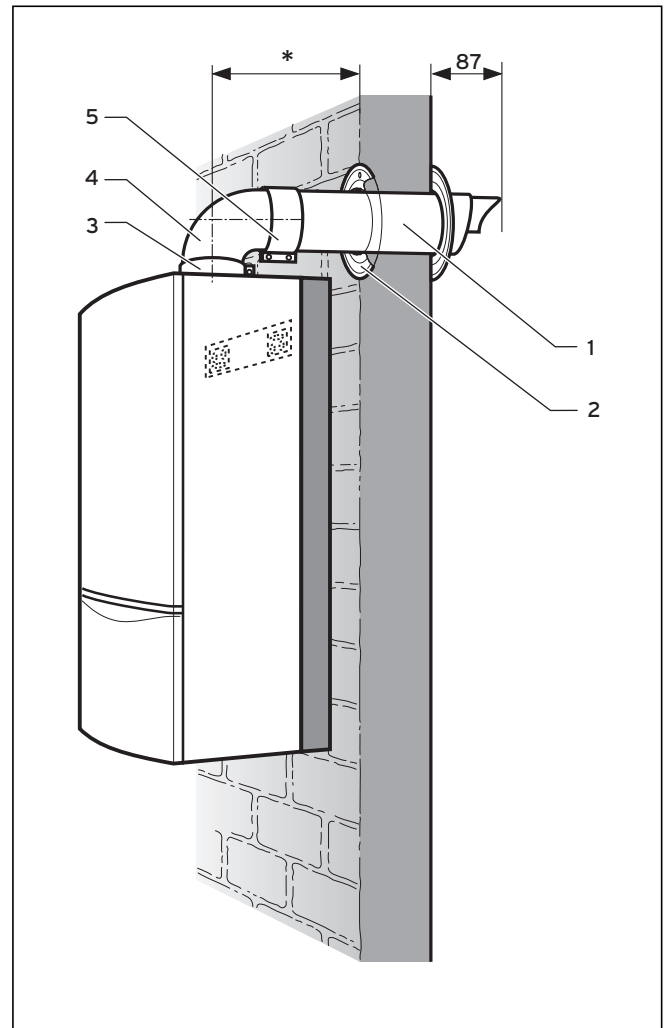


Fig. 2.12 Assembly of the boiler

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

- 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.

### 2.5.3 Top outlet flue exiting to rear

- For installations where the air/flue duct is to be installed directly to the rear of the boiler, the installation template details the position of the flue exit hole for horizontal top outlet installation.

### 2.5.4 Top outlet flue exiting to side

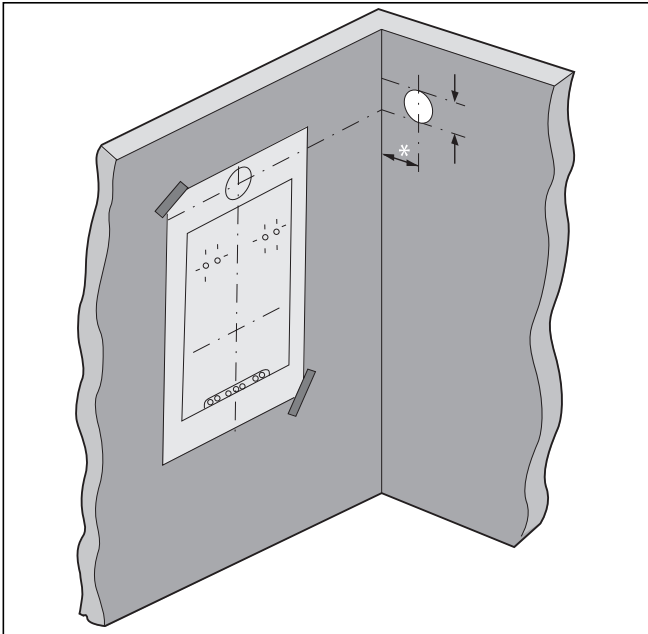


Fig. 2.13 Installation template

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

- For installations where the air/flue duct is to be installed to the side, the position of the flue exit hole can be determined by carefully levelling across the wall from the centre line of the air/flue duct hole marked on the template (fig. 2.13).
- The position of the flue exit hole should allow the flue to be installed with a slight upward slope of about  $3^\circ \pm 1^\circ$  (equivalent to  $50 \text{ mm} \pm 20 \text{ mm}$  per metre of flue duct). Calculate the required rise according to the flue length and mark the position of the flue exit hole.
- Once the position of the flue exit hole has been determined, the hole should be cut through the wall using a core drill of 125 mm diameter.

#### Note

If access can be gained to the proposed flue exit point from outside the dwelling, the hole can be cut with a 107 mm core drill and the flue external wall seal fitted from outside the dwelling.

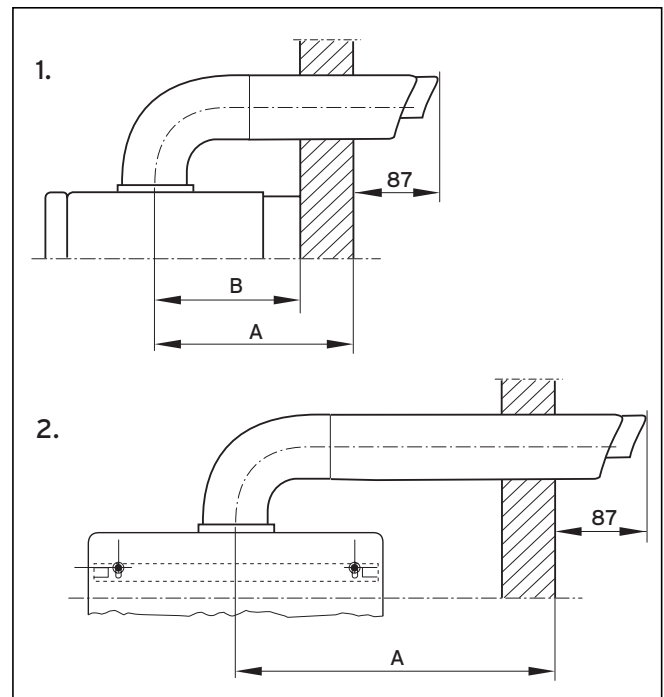


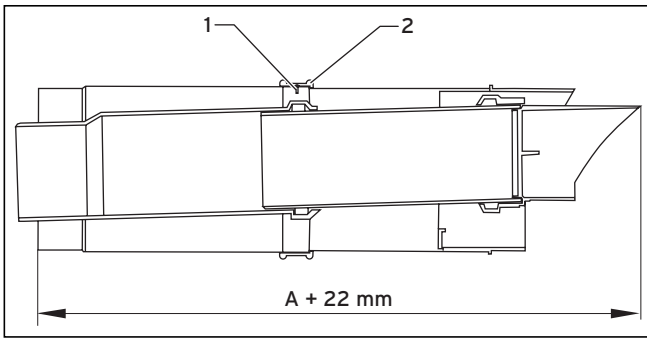
Fig. 2.14 Distance to external wall

#### Key

- 1 Rear exit
- 2 Side exit
- A Distance to external wall
- B Distance to internal wall
- = 190 mm ecoTEC exclusive combination
- = 176 mm ecoTEC plus open vent
- = 125 mm ecoTEC plus system & combination
- = 323 mm ecoTEC plus 937

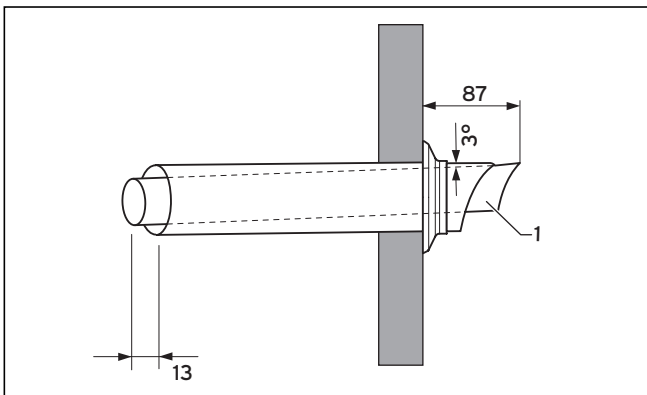
- Measure the distance from the outside face of the wall to the centre of the fan outlet on the boiler (fig. 2.14). This is dimension A.

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**Fig. 2.15 Fixing the air pipe**

- Adjust the air duct and flue duct to the lengths shown in (fig. 2.15).
- Secure the air duct sections together by drilling a 3 mm diameter hole through the location hole in the end of the outer air duct (1). (Ensure that the drill does not pierce the inner flue duct). Secure the air ducts together using the screw (1) provided. Place the adhesive tape (2) across the gap in the telescopic extensions. (fig. 2.15)
- All flue sockets should point towards the terminal.
- 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 2.11.



**Fig. 2.16 Assembly of the horizontal wall breakthrough**

- Push the air/flue duct assembly (1) including the flexible external seal through the wall until the seal clears the outside face of the wall and pull air/flue duct back towards the boiler until the external seal touches the outside wall (fig. 2.12 and fig. 2.16).
- Ensure that the air/flue duct (1) is centred in the hole and the terminal is correctly positioned with the inlet grille at the bottom (fig. 2.12 and fig. 2.16).
- Slide the internal trim ring (2) over the air duct until it is flush with the wall (fig. 2.12).
- At this stage it is necessary to prepare and fit the boiler onto the hanging bracket - refer to the boiler installation instructions.
- Fit the elbow (4) to the boiler by inserting the spigot of the flue elbow into the flue socket on the boiler and

secure using the 30 mm air duct clamp (3) provided (fig. 2.12).

- Pull the air/flue duct back through the wall such that the flue duct fully engages into the flue elbow socket.
- Fit the 48 mm air duct clamp (5) ensuring that it is positioned centrally (fig. 2.12).
- Drill two holes 3 mm Ø through the air duct of both the elbow/flue and elbow/boiler clamps at the most convenient holes on the air duct clamps. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamps to the air ducts of the flue assembly, the elbow and boiler using the screws supplied.
- Slide the internal trim ring back to the wall, securing in position with a small amount of sealant if required.



### Caution!

**If installed near a light, insects may fly into the opening. Tell the homeowner to clean the opening regularly.**



## 2.6 Installation of the black terminal kit

### 2.6.1 Contents included with delivery

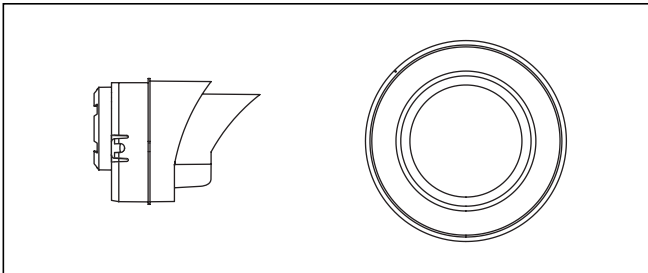


Fig. 2.17 Black terminal kit, Accy.-No. 303 934

#### Black terminal kit (Accy. No. 303 934)

Contents of the accessory:

- Black terminal
- External wall seal

### 2.6.2 Assembly of the black terminal kit before installing the flue duct

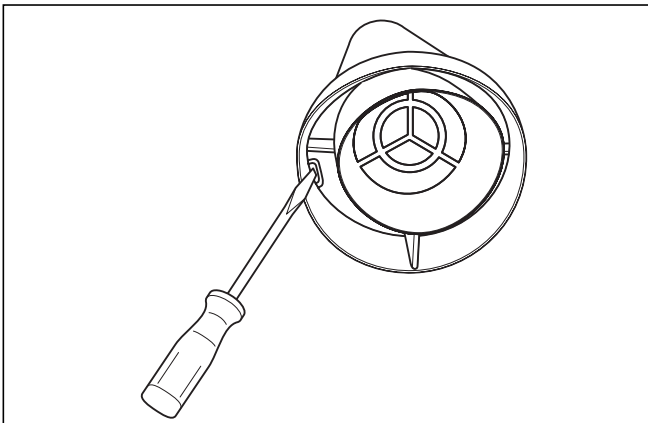


Fig. 2.18 Releasing the catches

- Use an 8 mm screwdriver to bend the catches inward.

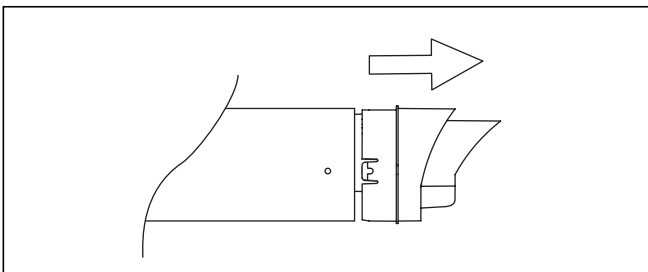


Fig. 2.19 Pulling out the terminal

- Pull the terminal together with the flue duct out of the air duct.

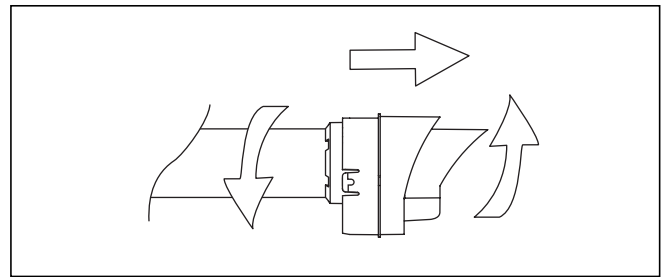


Fig. 2.20 Unlocking the catch

- Unlock the catch between the terminal and the flue duct by twisting them against each other.
- Pull the terminal off the flue duct.
- Push the new terminal into the flue duct and click to lock.

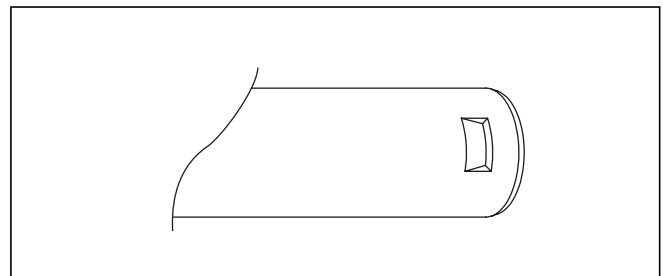


Fig. 2.21 Flue duct

**Caution!**  
The catch on the top of the terminal must lock firmly into the notch in the flue duct.

**Caution!**  
Make sure the seal fits tightly.

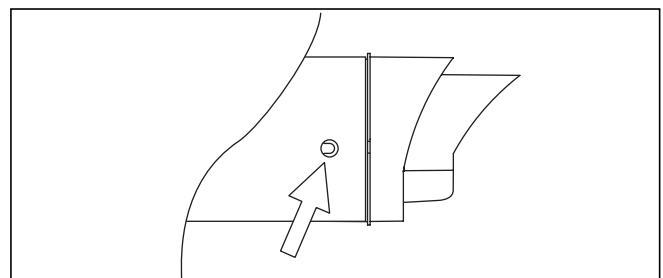


Fig. 2.22 Locking the catch

- Push the flue duct and the terminal back into the air duct and lock the two catches.

**Caution!**  
The seam of the air duct must be at the top.

- Fit the horizontal air/flue duct as described in section 2.4 and 2.5.

### 2.6.3 Assembly of the black terminal kit after installing the flue duct



**Danger!**  
**Risk to life from escaping flue gas!**  
**Before starting work, shut down the appliance and prevent it from being switched on unintentionally.**

- Remove the wall seal from the terminal.
- Use an 8 mm screwdriver to bend the catches inwards (fig. 2.18).
- Pull the terminal together with the flue duct out of the air duct (fig. 2.19).



**Caution!**  
**Do not twist the flue duct, because this might detach the following flue duct behind the terminal from the spacer.**

- Unlock the catch between the terminal and the flue duct by twisting them against each other (fig. 2.20).
- Pull the terminal off the flue duct.
- Push the new terminal into the flue duct and click to lock.



**Caution!**  
**The catch on the top of the terminal must lock firmly into the notch in the flue duct (fig. 2.21).**

**Caution!**  
**Make sure the seal fits tightly.**

- Push the flue duct with the terminal back in the air duct. Carefully push the flue duct back into the sleeve of the pipe or bend behind it. Lock the two catches (fig. 2.22).
- Fit the wall seal.



**Danger!**  
**Before starting up the appliance, check that the entire flue pipe is firmly seated and sealed.**

### 2.7 Installation of the variable termination kit (VTK)



**Caution!**  
**The flue outlet of the variable termination must face directly upwards.**

#### Flue terminal clearances

Minimum flue terminal clearances are defined in BS5440, and these must apply unless the boiler manufacturer has received approval to quote smaller clearances that are not safety critical. Vaillant have reduced flue terminal clearances approved and these are given in the boiler installation instructions. These are the minimum clearances that must apply to all installations, except when a Variable Termination Kit (VTK) is fitted.

When a VTK is fitted to the horizontal flue, the terminal clearances for the air inlet are reduced. The terminal clearances for the 'new' flue outlet at the end of the VTK do not change.

The minimum terminal clearances A, B & C for the air inlet of the VTK are reduced to 150 mm from an opening such as a window. This means that the terminal on the horizontal flue becomes the air inlet when a VTK is fitted, and hence can be located less than 300 mm from an opening window or airbrick.

#### 2.7.1 Contents included with delivery

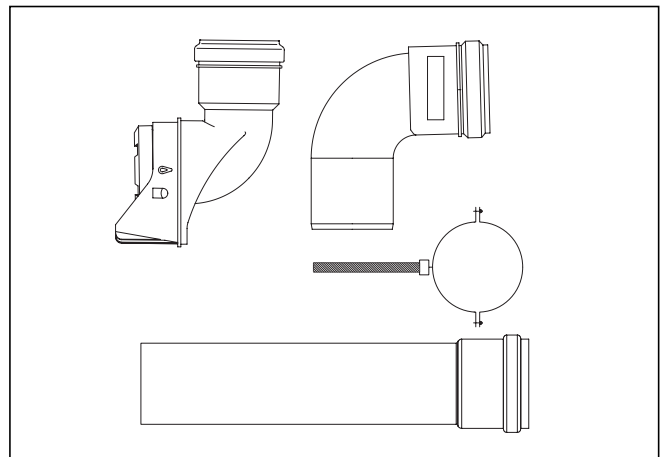


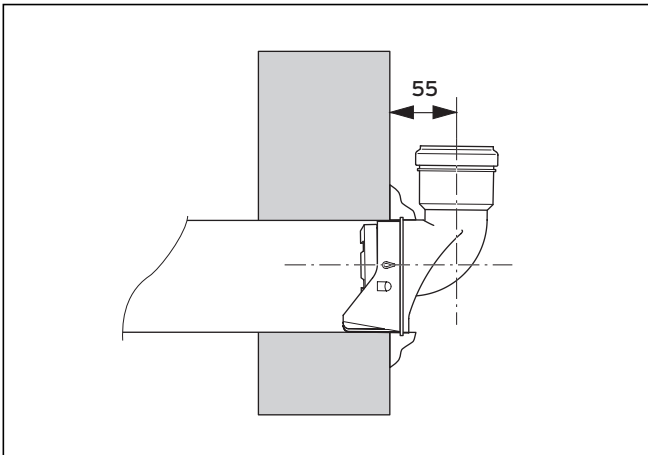
Fig. 2.23 Variable termination kit

#### Variable termination kit

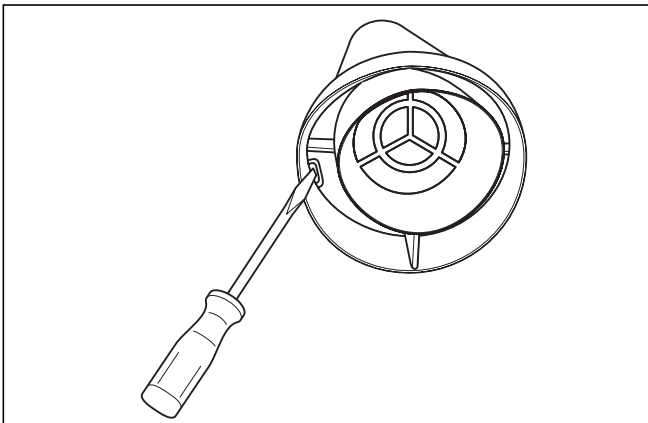
Contents of the kit (Accy. No. 303 942, black; 303 946, white):

- Variable terminal
- 2 x 1 m pipe
- 3 x pipe support clips
- 87° bend with bird protection grille

**2.7.2 Assembly of the variable terminal kit before installing the flue pipe**

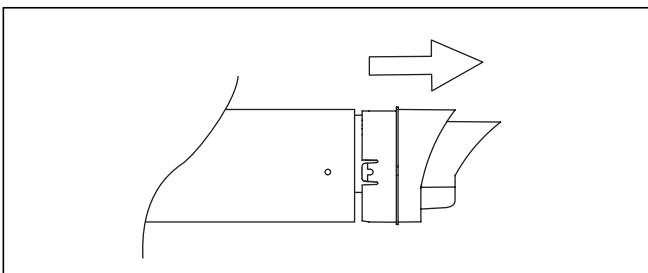


**Fig. 2.24 Wall clearance**



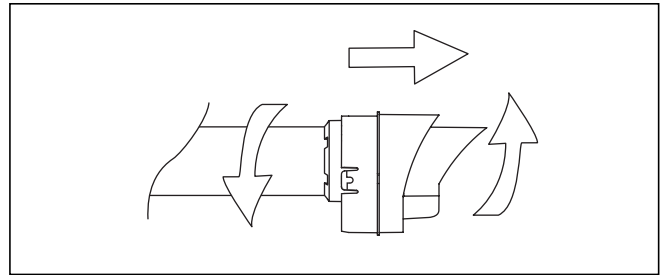
**Fig. 2.25 Releasing the catches**

- Use an 8 mm screwdriver to bend the catches inwards.



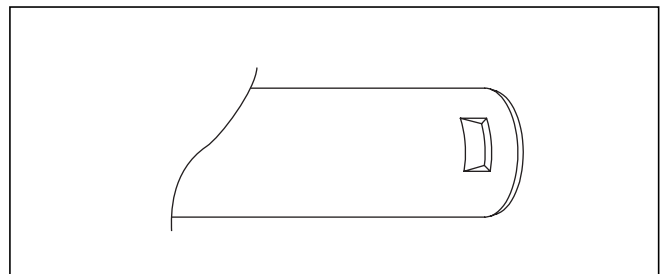
**Fig. 2.26 Pulling out the terminal**

- Pull the terminal with the flue duct out of the air duct.



**Fig. 2.27 Unlocking the catch**

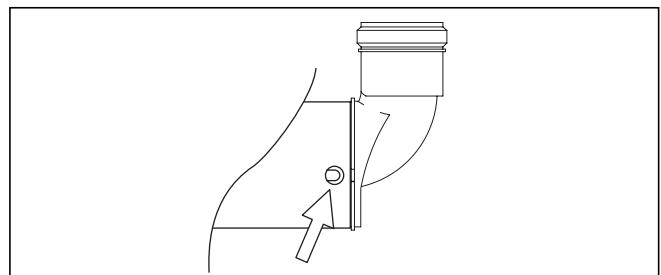
- Unlock the catch between the terminal and the flue duct by twisting them against each other.
- Pull the terminal out off the flue duct.
- Push the variable terminal into the flue duct and click to lock.



**Fig. 2.28 Flue pipe**

**Caution!**  
The catch on the top of the terminal must lock firmly into the notch in the flue duct.

**Caution!**  
Make sure the seal fits tightly.



**Fig. 2.29 Locking the catch**

- Push the flue duct and the variable terminal back into the air duct and lock the two catches.

**Caution!**  
The seam of the air duct must be at the top.

- Fit the horizontal air/flue duct as described in section 2.4 and 2.5.

**Caution!**  
It cannot be fitted from inside.

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- Fit the rest of the variable termination kit as described in section 2.7.4.

### 2.7.3 Installing the variable terminal kit after installing the flue duct



**Danger!**

**Risk to life from escaping flue gas!  
Before starting work, shut down the appliance and prevent it from being switched on unintentionally.**

- Remove the wall seal from the terminal.
- Use an 8 mm screwdriver to bend the catches inwards (fig. 2.25).
- Pull the terminal with the flue duct out of the air duct (fig. 2.26).



**Caution!**

**Do not twist the flue duct, because this might detach the following flue duct behind the terminal from the spacer.**

- Unlock the catch between the terminal and the flue duct by twisting them against each other (fig. 2.27).
- Pull the terminal out of the flue duct.
- Push the new variable terminal onto the flue duct.



**Caution!**

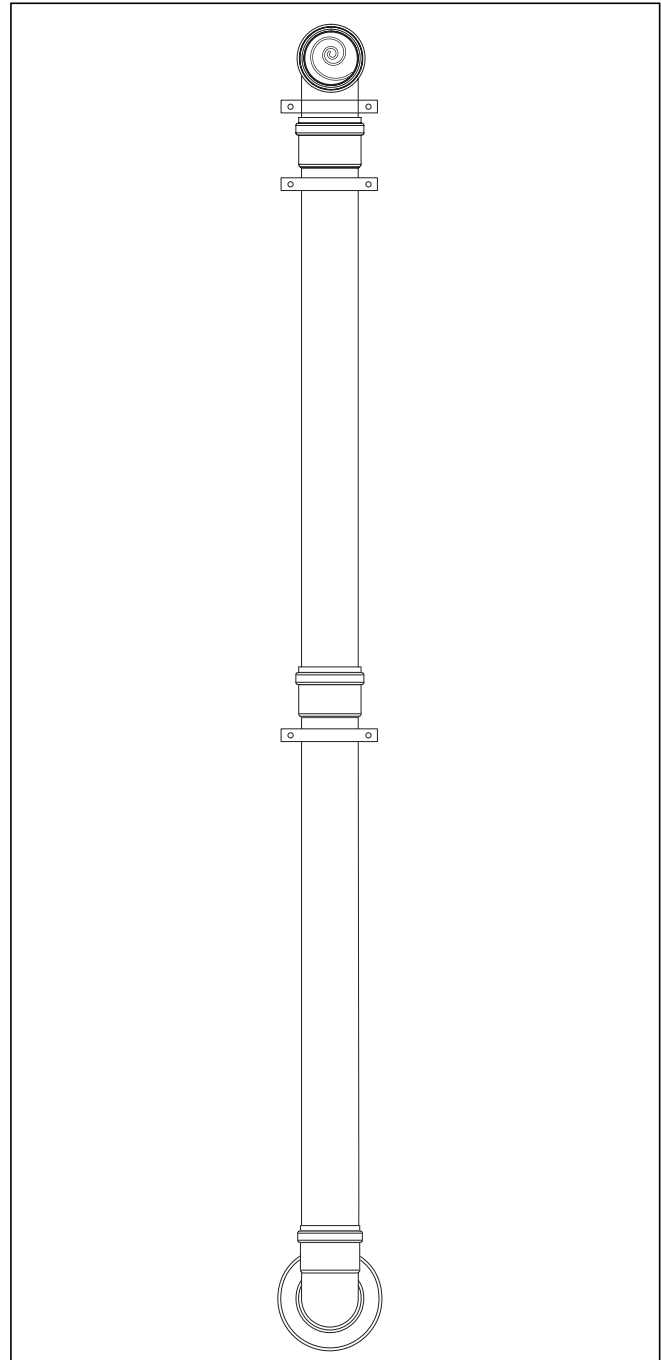
**The catch on the top of the variable terminal must lock firmly into the notch in the flue duct (fig. 2.28).**

**Caution!**

**Make sure the seal fits tightly.**

- Push the flue duct with the variable terminal back in the air duct. Carefully push the flue duct back into the sleeve of the duct or bend behind it. Lock the two catches (fig. 2.29).
- Fit the wall seal on the variable terminal.
- Fit the rest of the VTK as described in section 2.7.4.

### 2.7.4 Installing the pipes



**Fig. 2.30** Installation of basic kit showing position of support clips

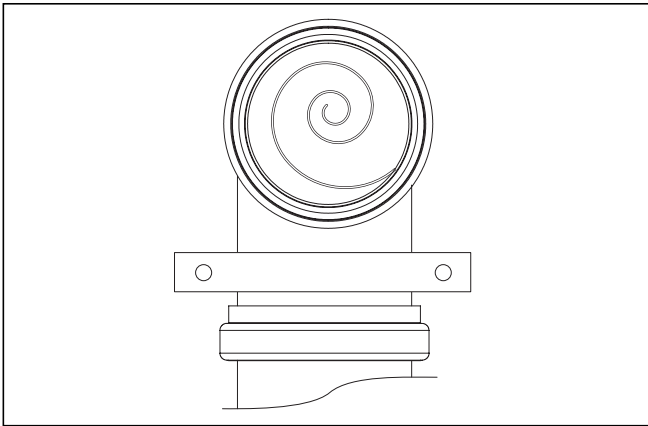


Fig. 2.31 Bird protection grille

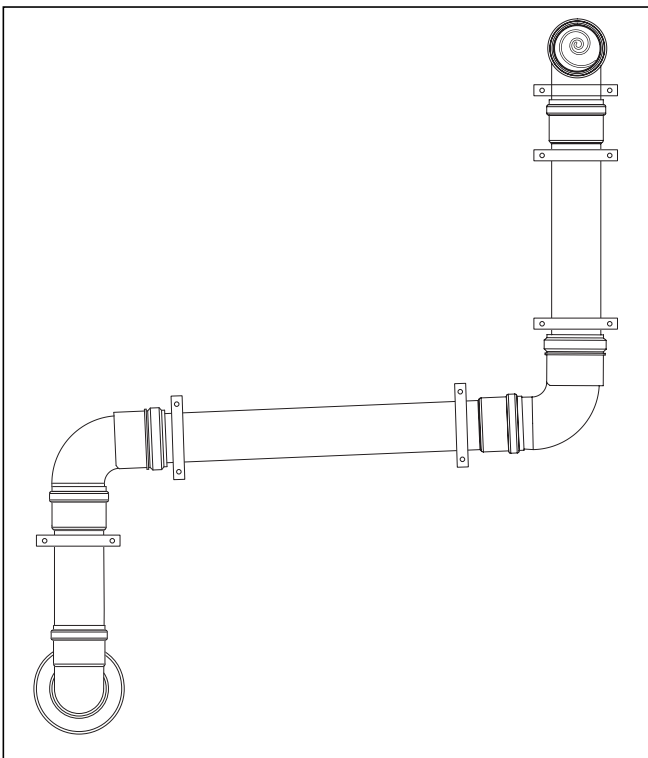


Fig. 2.32 Installation of basic kit with two additional 87° bends showing position of support clips

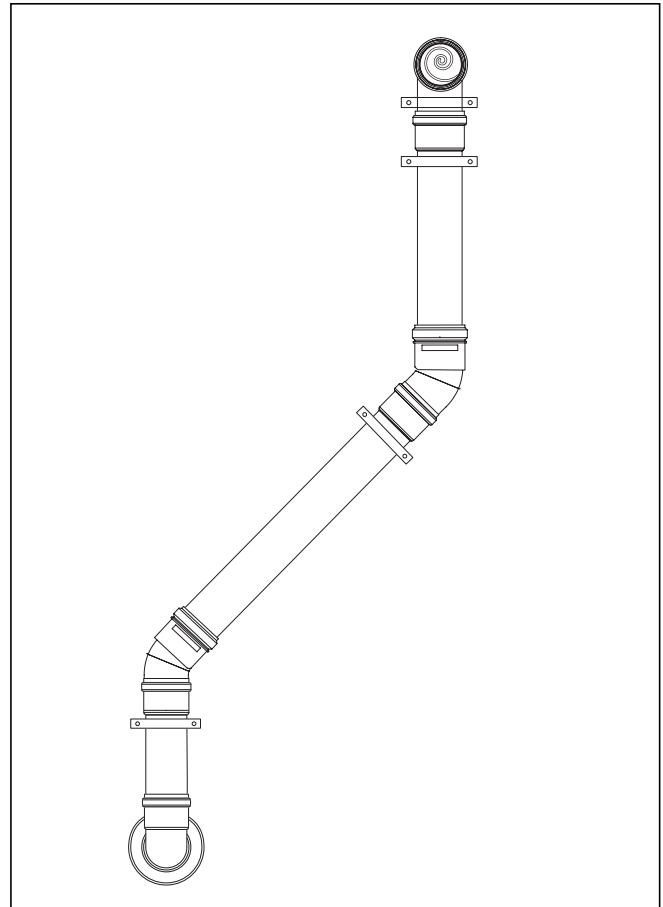


Fig. 2.33 Installation of basic kit with two additional 45° bends showing position of support clips

- Fit the pipes and bends, working from the variable terminal to the selected location for the flue exit using support clips supplied fig. 2.30, 2.31, 2.32 or 2.33.



**Caution!**

Pipe extensions must be fixed to the wall using support clips. Use one clamp for each extension directly beside the sleeve. Fit another clamp to the extension after each 87° bend (fig. 2.32).

**Caution!**

The extension pipe expands when heated. Leave 1 cm expansion space in each sleeve.



**Note**

The maximum flue lengths where the variable termination kit is installed are shown in tables 2.3 and 2.4.

**Note**

The parts are simply pushed together (not bolted).



**Caution!**

Fasten the 87° bend with bird protection grille using a separate support clip (fig. 2.31).



**Caution!**  
If installed near a light, insects may fly into the opening. Tell the home owner to clean the opening regularly.



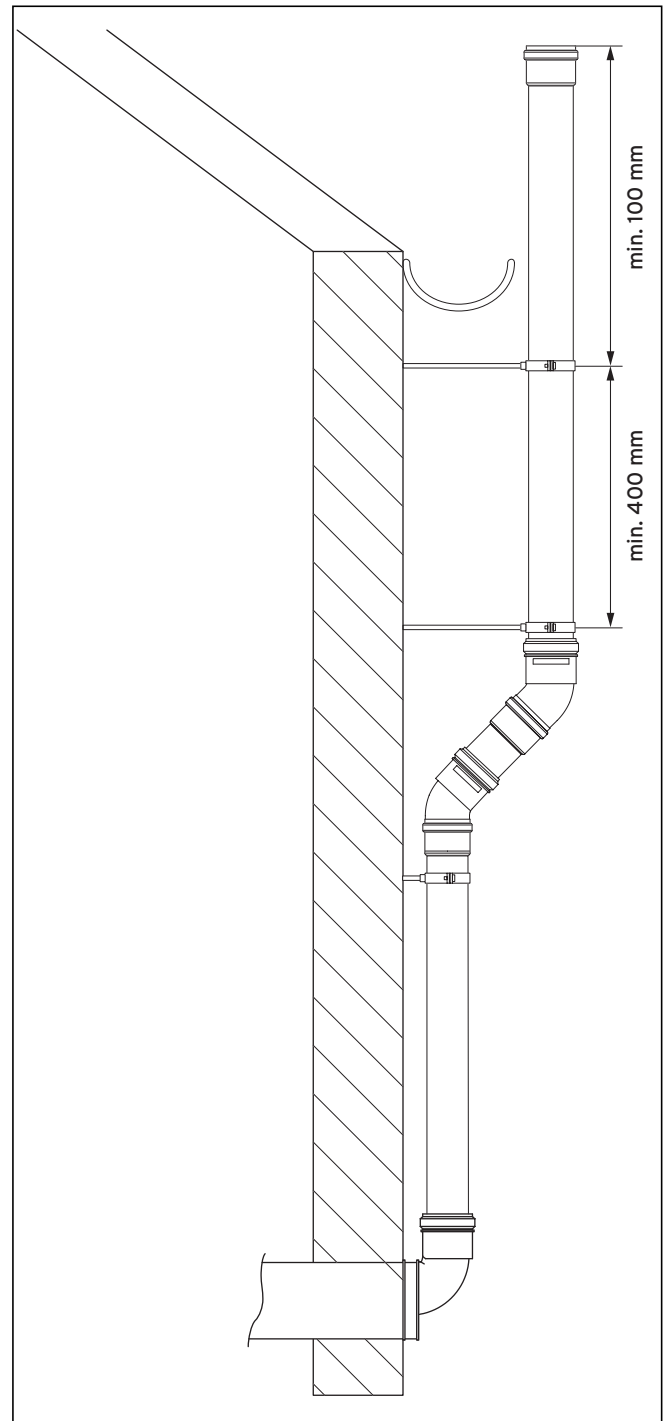
**Danger!**  
Before starting up the appliance, check that the entire flue pipe is firmly seated and sealed.



**Caution!**  
During annual maintenance, check the flue system for

- visible defects, such as embrittlement or damage
- tight connection of the pipes
- dirt in the air intake and flue exits due to leaves, insects etc.

### 2.7.5 Routing around roof eaves



**Fig. 2.34 Routing around roof eaves**

When routing the variable termination kit around the roof eaves, additional lengths of M8 threaded bar will be required for the support clips. Threaded bar can be purchased from most local merchants.

- Change the bird protection grille from the 87° elbow to the extension installed at the end.



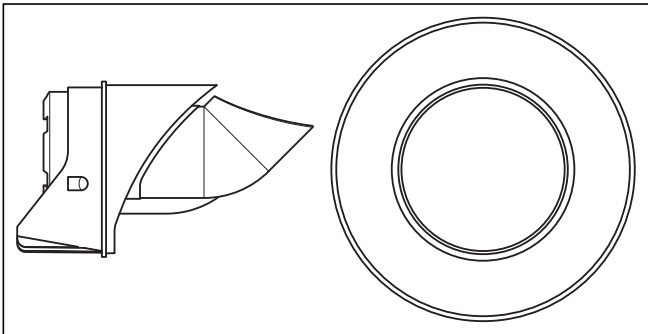
**Note**

**If using the 87° elbow, use the seal from the pipe extension.**

- The final pipe extension must be fixed to the wall using two support clips with a minimum distance of 400 mm.
- Additional 45° bends may be required.

**2.8 Installing the deflector set**

**2.8.1 Contents included with delivery**



**Fig. 2.35 Deflector set**

**Deflector set DN 60 PP-black**

(Accessory No.: 0020060584)

Contents of the accessory:

- Black terminal
- External wall seal

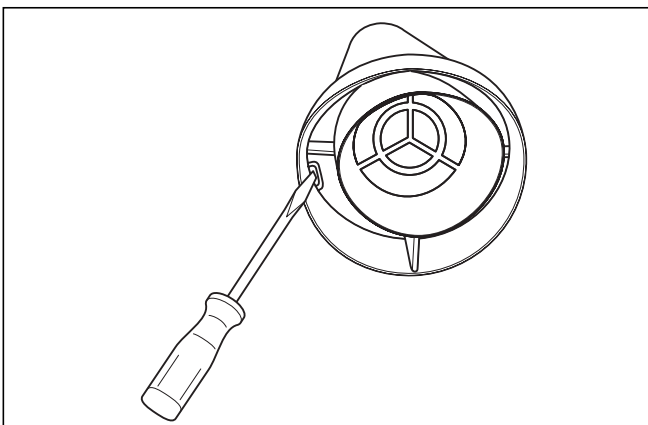
**Deflector set DN 60 PP-white**

(Accessory No.: 0020060585)

Contents of the accessory:

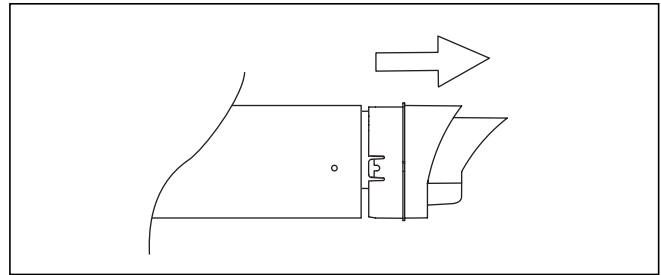
- White terminal

**2.8.2 Assembly of the deflector set before installing the flue gas pipe**



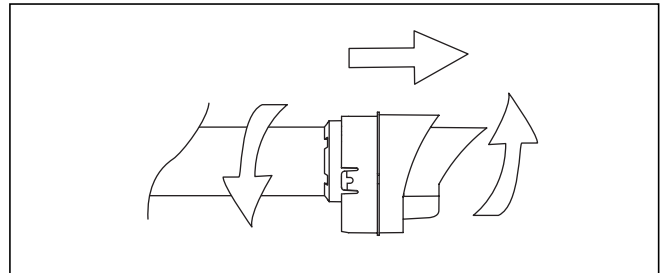
**Fig. 2.36 Releasing the catches**

- Use an 8 mm screwdriver to bend the catches inwards.



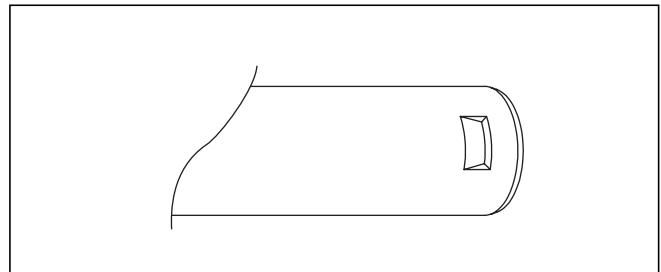
**Fig. 2.37 Pulling out the terminal**

- Pull the terminal with the flue duct out of the air duct.



**Fig. 2.38 Unlocking the catch**

- Unlock the catch between the terminal and the flue duct by twisting them against each other.
- Pull the terminal out of the flue duct.
- Push the variable terminal into the flue duct and click to lock.



**Fig. 2.39 Flue duct**



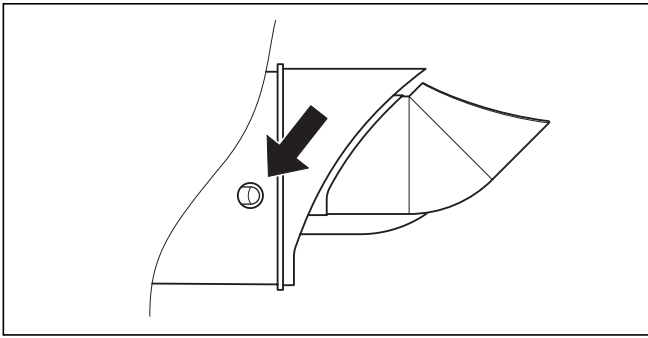
**Caution!**

**The catch on the top of the terminal must lock firmly into the notch in the flue duct.**

**Caution!**

**Make sure the seal fits tightly.**

## 2 Standard Concentric Systems Ø 60/100



**Fig. 2.40 Locking the catch**

- Push the flue gas pipe and the deflector back into the air pipe and lock the two catches.



**Caution!**  
The seam of the air duct must be at the top.

- Fit the horizontal air/flue duct as described in section 2.4 and 2.5.

### 2.8.3 Installation of the deflector set after installing the flue gas pipe



**Caution!**  
The deflector flue terminal must point directly upwards in the centre position.

#### Flue terminal clearances

The minimum flue terminal clearances are defined in BS 5440, and these must be adhered to unless the boiler manufacturer has received approval to use smaller clearances that are not considered to be safety critical. Vaillant have reduced the flue terminal clearances and these are given in the boiler installation instructions. These are the minimum clearances to be used on all installations.

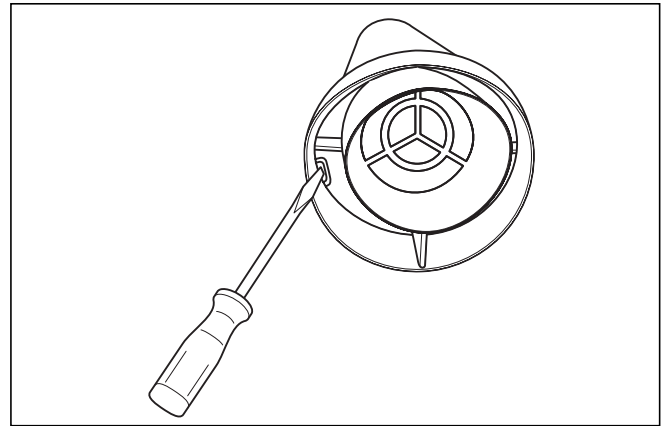
The minimum terminal clearances A, B and C for the deflector are reduced to 150 mm from an opening such as a window. This means that the terminal on the horizontal flue gas pipe becomes the air inlet when a deflector is connected, and hence can be situated less than 300 mm from an opening window or airbrick.

### 2.8.4 Installing the variable terminal set after installing the flue gas pipe



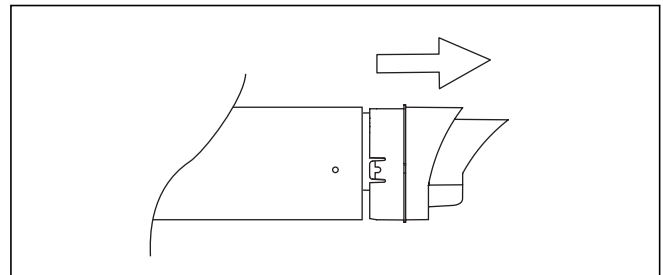
**Danger!**  
**Risk to life from escaping flue gas!**  
Before starting work, shut down the boiler and prevent it from being switched on unintentionally.

- Remove the wall seal from the terminal.



**Fig. 2.41 Releasing the catches**

- Use an 8 mm screwdriver to bend the catches inwards.

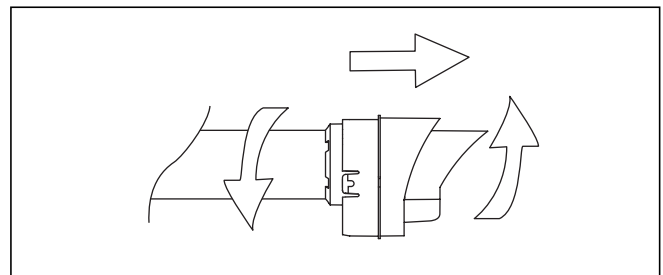


**Fig. 2.42 Pulling out the terminal**

- Pull the terminal with the flue duct out of the air duct.



**Caution!**  
Do not twist the flue gas pipe when doing this. Turning can cause the following flue gas pipe to come away from the spacer.



**Fig. 2.43 Unlocking the catch**

- Unlock the catch between the terminal and the flue duct by twisting them against each other.
- Pull the terminal out of the flue gas pipe.
- Fit the deflector to the flue gas pipe.



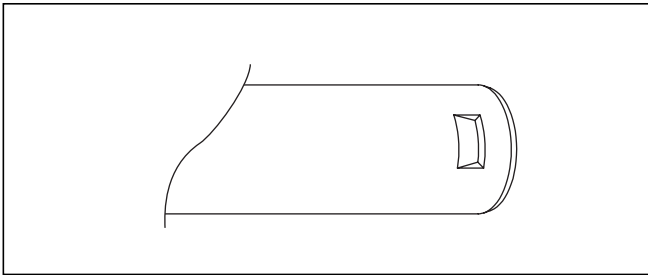


Fig. 2.44 Flue pipe

**Caution!**  
The catch on the top of the terminal must lock firmly into the notch in the flue duct.

**Caution!**  
Make sure the seal fits tightly.

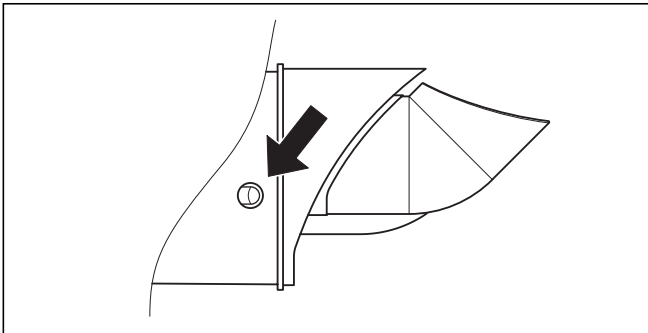


Fig. 2.45 Locking the catch

- Push the flue gas pipe with the terminal back into the air duct.
- Carefully push the flue gas pipe back into the sleeve of the pipe or bend behind it.
- Lock the two catches (fig. 2.45).

**Caution!**  
The seam of the flue gas pipe must be at the top.

- Fit the wall seal to the deflector.

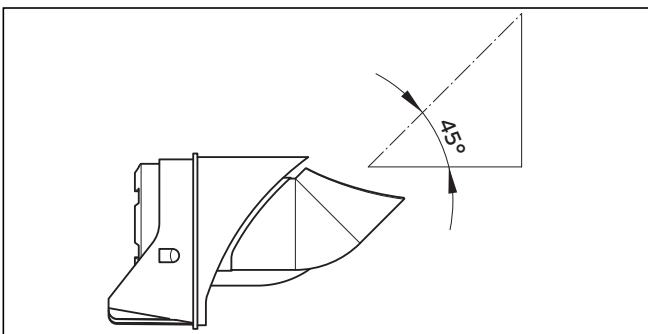


Fig. 2.46 Angle of flue gas stream in centre position

Setting the deflector in the centre position will direct the stream of flue gases upwards at an angle of approx. 45°.

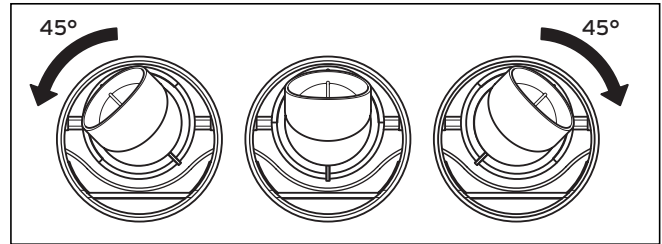


Fig. 2.47 Lateral setting options

The terminal of the deflector can be turned to the left or the right by 45°, if required. These settings permit additional optimisation of the flue gas guiding.

**Caution!**  
Turn the deflector until it latches palpably in one of the three positions shown in Fig. 2.47. The latching ensures that the deflector cannot twist of its own accord.

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

**Note**  
Observe the maximum flue lengths as detailed in sections 2.2.3 and 2.2.4.

#### 2.9.1 Contents included with delivery

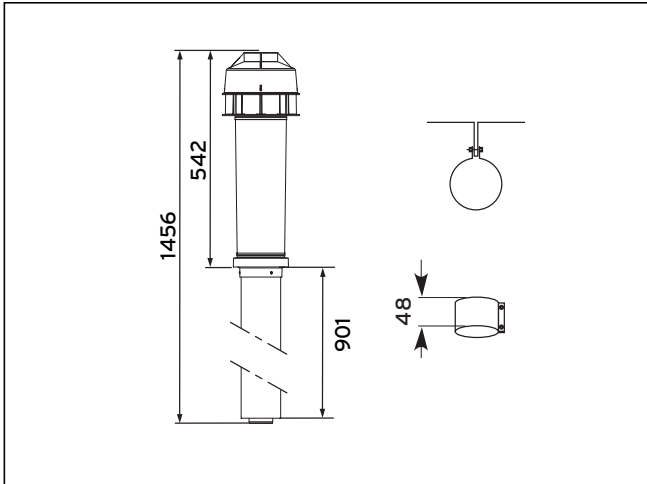


Fig. 2.48 Vertical roof duct

#### Vertical air/flue duct

Accy. No.: 0020060570 (black)

Accy. No.: 0020060571 (red)

Accy. No.: 0020065937 (black)

Contents of the accessory:

- Vertical air/flue duct and terminal assembly
- 48 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.

#### 2.9.2 Preparation

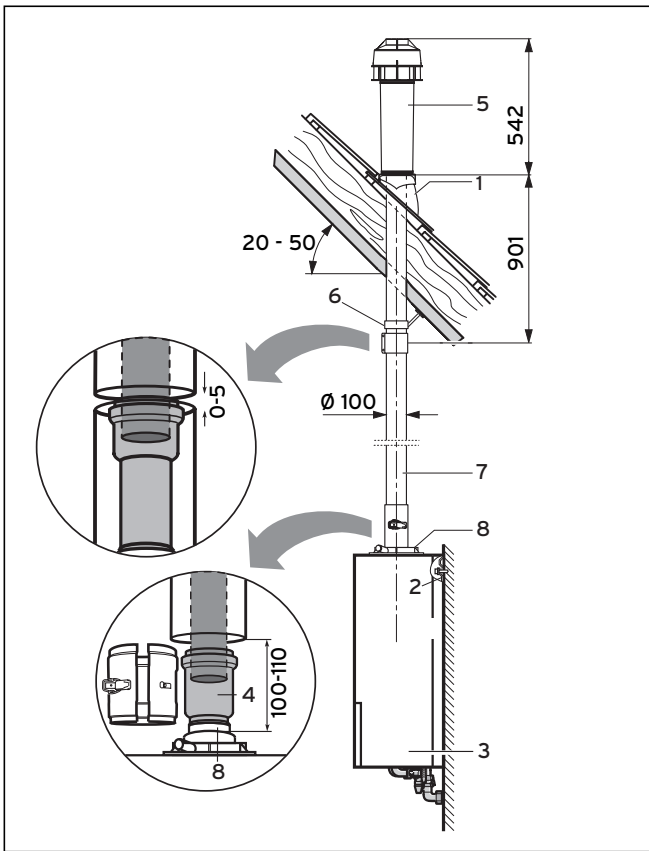
- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Determine the point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

**Note**  
The vertical air/flue duct and terminal accessory (Accy. No. 0020060570, 0020060571, 0020065937) may be shortened. The outer 'white' duct should be shortened first, then the inner flue duct cut so that it protrudes 13 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.

#### Note

If a 87° elbow is connected directly to the boiler, use the 48 mm air duct clamp supplied with the vertical air flue duct at this position.

### 2.9.3 Pitched roof installation



**Fig. 2.49 Fitting the appliance and the vertical roof duct to a building with a pitched roof**

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937
- \*\* = 750 mm ecoTEC exclusive combination
- \*\* = 530 mm ecoTEC plus open vent (top holes of bracket)
- \*\* = 622 mm ecoTEC plus system & combination
- \*\* = 622 mm ecoTEC plus 937

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
- Fit the flexible pitched roof (Accy. No. 303 980) tile (1, Accy. No. 303 980).
- Working from above, insert the vertical roof duct (5) through the roof tile and push it firmly into place.
- Vertically align the roof duct and attach it to the roof structure with the fixing bracket (6) supplied.
- Fit the boiler hanging bracket (2).
- Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.



#### Note

See section 2.11 for further details on the installation of extensions and elbows.

- Push the sliding sleeve (4) firmly into place on the extension.
- Join the vertical roof duct (5) to the extension (7).
- Join the sliding sleeve (4) to the appliance's connection piece (8).



#### 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.

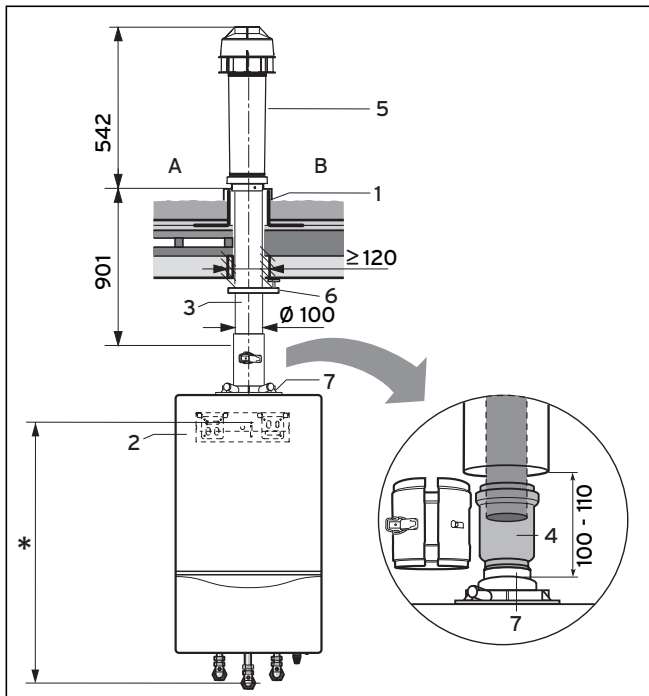


#### Note

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.

### 2.9.4 Flat-roof installation



**Fig. 2.50** Fitting the appliance and vertical flue duct to a building with a flat roof

#### Key

- A cold roof
- B warm roof
- \* = 750 mm ecoTEC exclusive combination
- \* = 530 mm ecoTEC plus open vent (top holes of bracket)
- \* = 622 mm ecoTEC plus system & combination
- \* = 622 mm ecoTEC plus 937

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
- Fit the flat roof penetration collar (1).
- 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 (5) 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 (6) supplied.
- Fit the boiler hanging bracket (2).
- Install the appliance (2) with reference to the installation and servicing instructions supplied with the boiler.



#### Note

See section 2.11 for further details on the installation of extensions and elbows.

- Push the sliding sleeve (4) firmly into place on the extension.
- Join the vertical roof duct (5) to the extension (3).

- Join the sliding sleeve (4) 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.

## 2.10 Installing the ridge tile terminal

**Note**  
Observe the maximum flue gas pipe lengths as detailed in sections 2.2.3 and 2.2.4.

### 2.10.1 Contents included with delivery

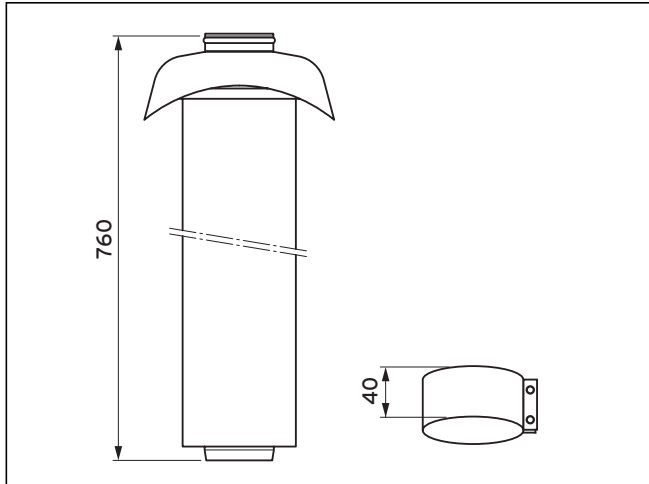


Fig. 2.51 Ridge tile terminal

#### Ridge tile terminal

Accessory No.: 303982 (black)

Contents of the accessory:

- Ridge tile terminal
- 40 mm air duct clamp

**Note**  
See section 2.2 for details of air/flue gas pipe elements.

When connecting the ridge tile terminal to the boiler, elbows and extensions can be added to the air/flue gas pipe to produce longer flue gas pipes.

### 2.10.2 Preparation

Determine the installation site for the boiler with reference to the installation and maintenance instructions supplied with the boiler.

- Ensure that all the clearances required for installation and maintenance are available and that the boiler flue gas pipe can be installed as detailed in these instructions.
- Determine the point where the ridge tile terminal is to pass through the ridge.

**Note**  
If an 87° elbow is connected directly to the boiler, use the 40 mm air duct clamp supplied with the vertical air flue duct at this position.

### 2.10.3 Installing the ridge tile

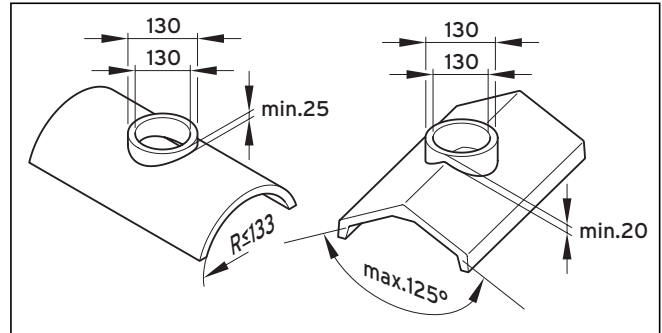


Fig. 2.52 Ridge tile dimensions

The ridge tile must be purchased from a roof tile manufacturer:

Recommended manufacturer:

Aspect East Anglia Limited

The Old Mill, East Harling

NORWICH, Norfolk

NR16 2QW

Website: [www.aspectroofing.co.uk](http://www.aspectroofing.co.uk)

Contact: Chris Haythorpe

General Manager - Tile Division

Tel: 01953 717777

Fax: 01953 717164

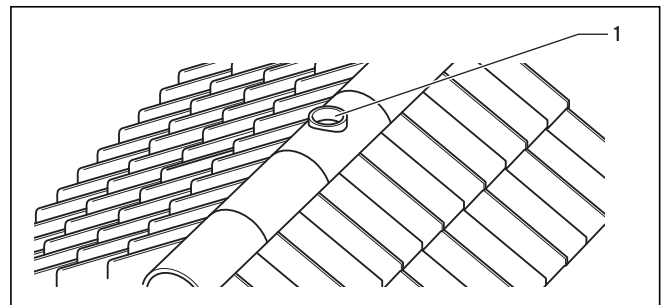


Fig. 2.53 Assembly of the ridge tile

- Fit the ridge tile (1) in accordance with the tile manufacturer's guidelines.

### 2.10.4 Installing the ridge tile terminal

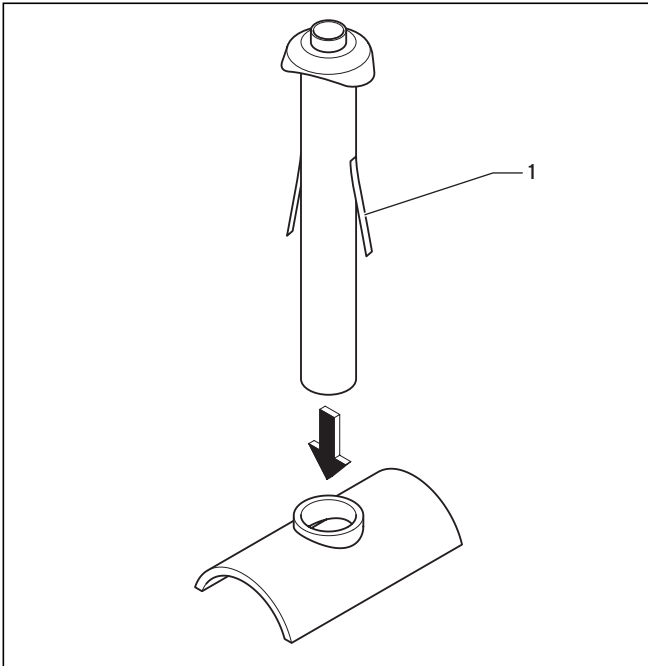


Fig. 2.54 Installing the ridge tile terminal

- Insert the ridge tile terminal into the ridge tile.
- Align the ridge tile terminal in such a way that the two fixing straps (1) are sitting across the run of the ridge tile. This ensures that the combustion air can be drawn in between the ridge tile and the cowling above it.

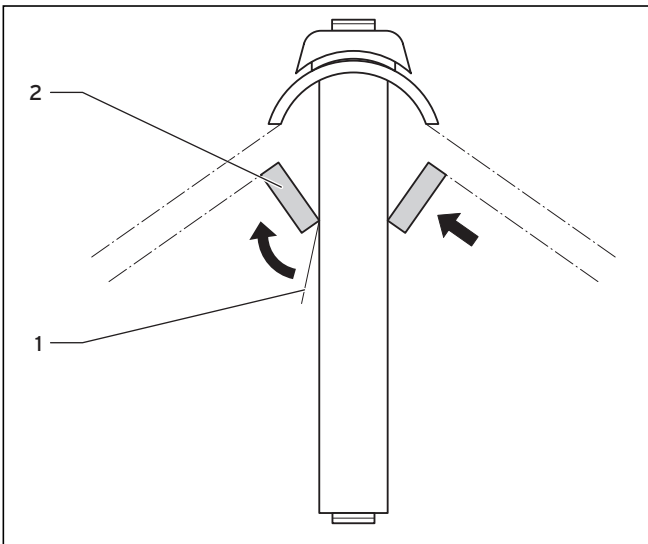


Fig. 2.55 Fastening the ridge tile terminal

- Bend the two fixing straps (1) over a beam (2) and secure with nails or bolts.
- Install the boiler with reference to the installation and maintenance instructions supplied with the boiler.



#### Note

See section 2.11 for further details on the installation of extensions and elbows.

- Connect the ridge tile terminal and the boiler using extensions and elbows.
- Drill two holes (3 mm Ø) in the air duct of the flue gas/boiler clamp through the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue gas pipe).
- Screw the clamp to the air ducts of the flue assembly, the elbow and the boiler using the bolts supplied.
- Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.
- Ensure that at least one pipe clamp supports the air/flue gas pipe at each extension fitted.

### 2.11 Fitting air/flue duct extensions

#### 2.11.1 How to add extensions

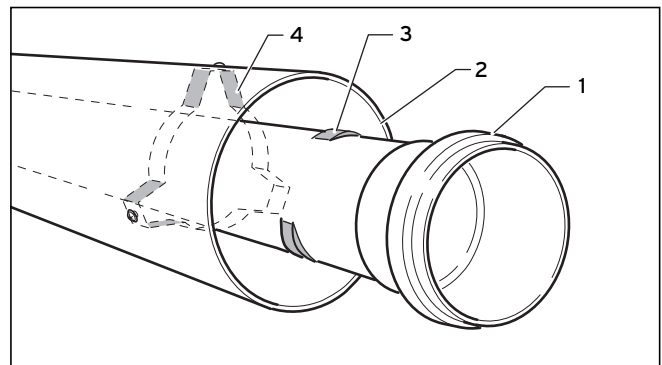


Fig. 2.56 Loosening the flue conduit



#### Note

No tools are required when separating extensions for cutting to size air and flue tubes separately. When doing so, the flue conduit 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 conduit and secure it to the air conduit.

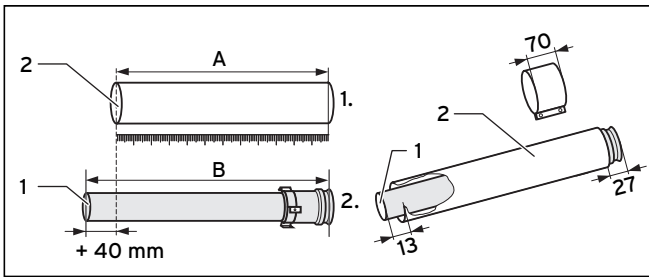


Fig. 2.57 Cutting tubes to size

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

$$L_{exhaust} = L_{air} + 40 \text{ mm}$$

$L_{exhaust}$  = length of flue conduit (B)  
 $L_{air}$  = length of air conduit (A)

\* Minimum length of air-conduit 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 exhaust conduit with the fixing device in order to ensure that it is correctly centred relative to the air conduit.

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

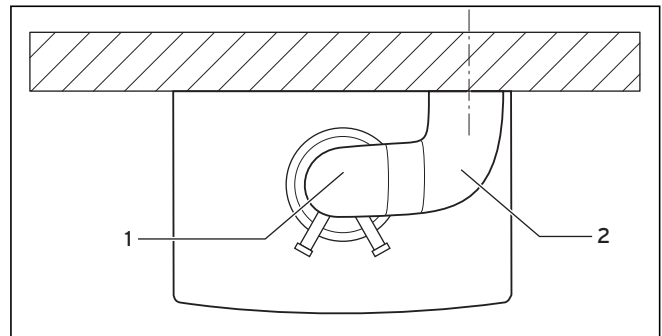


Fig. 2.58 Arrangement of 2 x 87° elbows - View from above

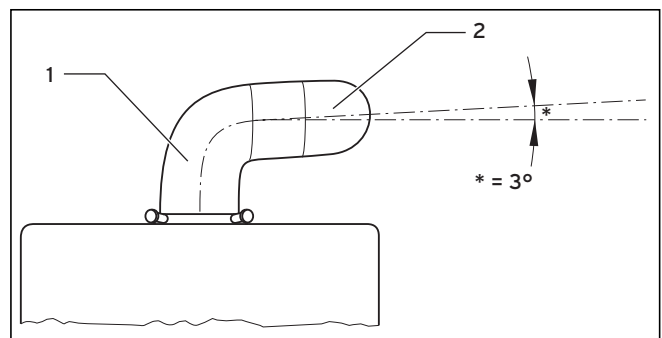


Fig. 2.59 Arrangement of 2 x 87° elbows - View from front

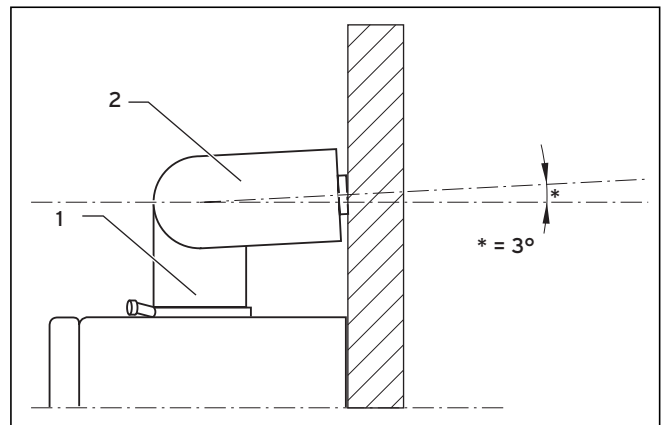


Fig. 2.60 Arrangement of 2 x 87° elbows - View from side

When using 2 x 87° elbows follow fig. 2.58 to fig. 2.60 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  $3^\circ$  to ensure that the second 87° elbow (2) exits the wall perpendicular.

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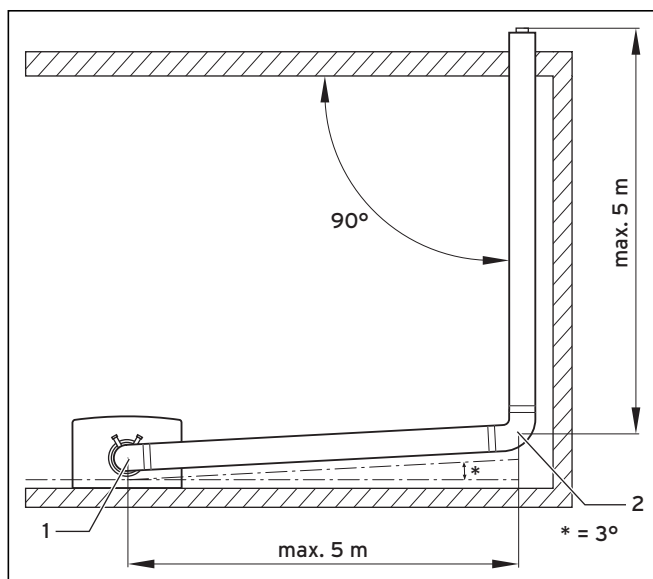


Fig. 2.61 Connecting extensions with 87° elbows

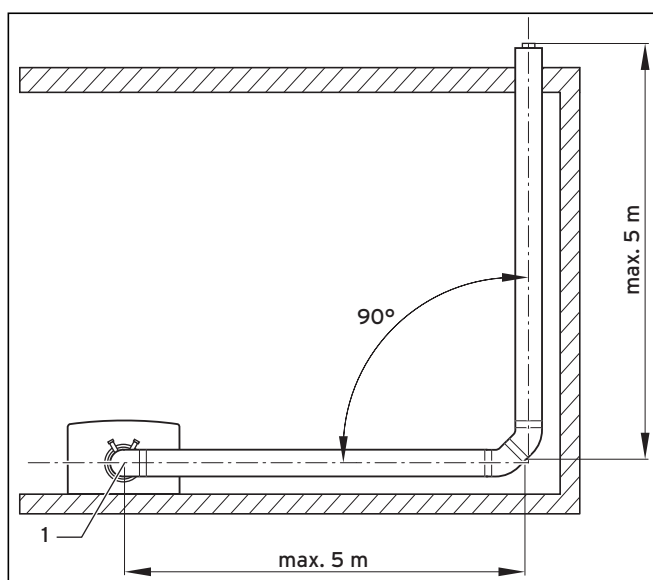


Fig. 2.62 Connecting extensions with 45° elbows

When using elbows for long flue runs in a corner follow fig. 2.61 and fig. 2.62 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.

### Note

When using 87° elbow install with a slope of 3° between wall and air-flue pipe (fig. 2.61) or use 2 x 45° elbows (fig. 2.62).



## 2.11.3 How to install 87° elbows

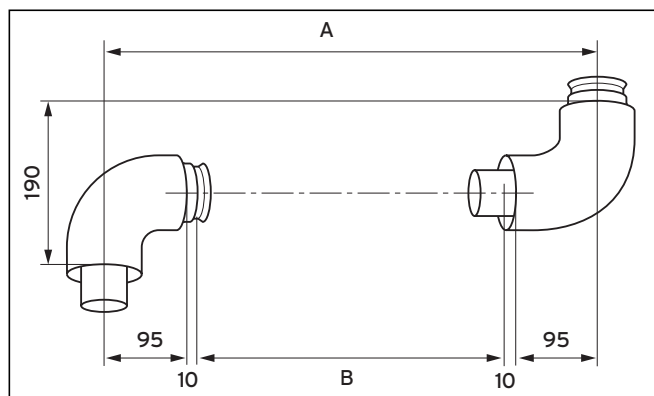


Fig. 2.63 Installation of 87° elbows, Accy. No.: 303 910

### Key

A = Offset

B = Length of air conduit



### Note

The elbow delivered with the flue kits 303 933 and 303 936 is not the same dimension as shown here.



### Caution!

This gives a corresponding exhaust-conduit length of  $190 + 40 = 230$  mm.

Example:

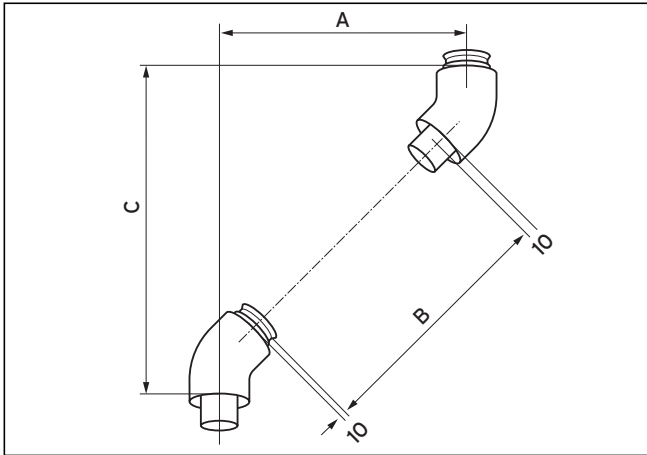
An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air conduit (= 190 mm in this case).

Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]
> 190 to < 210 mm	0	440	230	630	420
		445	235	635	425
		450	240	640	430
> 215 to < 265 mm	not possible	455	245	645	435
		460	250	650	440
		465	255	655	445
> 270 to < 290 mm	80	470	260	660	450
		475	265	665	455
		480	270	670	460
295	85	485	275	675	465
300	90	490	280	680	470
305	95	495	285	685	475
310	100	500	290	690	480
315	105	505	295	695	485
320	110	510	300	700	490
325	115	515	305	705	495
330	120	520	310	710	500
335	125	525	315	715	505
340	130	530	320	720	510
345	135	535	325	725	515
350	140	540	330	730	520
355	145	545	335	735	525
360	150	550	340	740	530
365	155	555	345	745	535
370	160	560	350	750	540
375	165	565	355	755	545
380	170	570	360	760	550
385	175	575	365	765	555
390	180	580	370	770	560
395	185	585	375	775	565
400	190	590	380	780	570
405	195	595	385	785	575
410	200	600	390	790	580
415	205	605	395	795	585
420	210	610	400	800	590
425	215	615	405		
430	220	620	410		
435	225	625	415		

Table 2.5 Length of surplus with 87° elbows

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### 2.11.4 How to install 45° elbows



#### Key

A = Offset  
B = Length of air conduit  
C = Height



**Caution!**  
This gives a corresponding exhaust-conduit 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 conduit (= 284 mm) and the height (= 420 mm).

Fig. 2.64 Installation of 45° bends, Accy. No.: 303 911

Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]
90	0	210	325	320	445	525	602	645
95	0	215	330	327	450	530	610	650
100	0	220	335	334	455	535	617	655
> 105 to < 155 mm	not possible		340	341	460	540	624	660
			345	348	465	545	631	665
			350	355	470	550	638	670
			355	362	475	555	645	675
160	86	280	360	369	480	560	652	680
165	93	285	365	376	485	565	659	685
170	100	290	370	383	490	570	666	690
175	107	295	375	390	495	575	673	695
180	115	300	380	397	500	580	680	700
185	122	305	385	404	505	585	687	705
190	129	310	390	412	510	590	694	710
195	136	315	395	419	515	595	701	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	206	365	445	489	565	645	772	765
250	214	370	450	496	570	650	779	770
255	221	375	455	503	575	655	786	775
260	228	380	460	511	580	660	793	780
265	235	385	465	519	585	665	800	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			
290	270	410	490	553	610			
295	277	415	495	560	615			
300	284	420	500	567	620			
305	291	425	505	574	625			
310	298	430	510	581	630			
315	306	435	515	588	635			
320	313	440	520	595	640			

Table 2.6 Length of surplus with 45° bends

### 3 Optional Concentric System Ø 80/125

Galvanized steel air duct/plastic flue duct.

#### 3.1 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

Two types of flue gas installation are available for ecoTEC boilers:

- standard concentric flue gas installations (outer diameter 100 mm)
- a concentric system with a larger diameter (outer diameter 125mm) which can be used to achieve longer air/flue gas pipes.

#### 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.

## 3 Optional Concentric System Ø 80/125

### 3.2 Planning the air/flue duct layout

#### 3.2.1 Alternative termination accessories available
















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



**303 926** = Appliance connection piece



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

Optional connection accessories	Accy. No.	303 200	303 209
			
Appliance connection piece 	303 926	X	X
Air/flue duct extensions, concentric 470 mm - Ø 80/125 	303 202	X	X
Air/flue duct extensions, concentric 970 mm - Ø 80/125 	303 203	X	X
Air/flue duct extensions, concentric 1970 mm - Ø 80/125 	303 205	X	X
Bends (PP), concentric (pack of 2) 45° - Ø 80/125 	303 211	X	X
Elbow (PPs), concentric 87° - Ø 80/125 	303 210	X	X
Flue support clips (pack of 5), Ø 125 	303 616	X	X
Sliding sleeve (PPs) Ø 80/125 	303 215	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 3.1 Product program**

3.2.2 Element descriptions

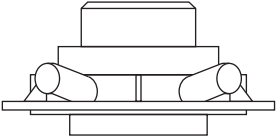
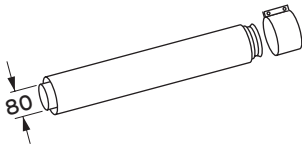
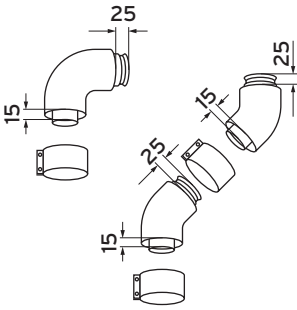
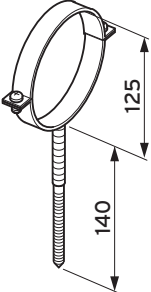
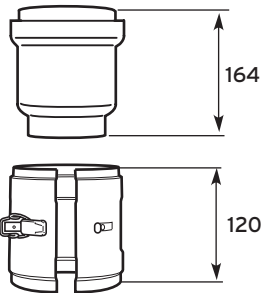
Element	Description
	<b>Appliance connection piece Ø 80/125</b> Accy. No.: 303 926 (with 2 measuring apertures)
	<b>Air/flue duct extension (PPs) Ø 80/125</b> 470 mm: Accy. No.: 303 202 970 mm: Accy. No.: 303 203 1970 mm: Accy. No.: 303 205
	<b>Elbow (PPs), 87°, Ø 80/125</b> Accy. No.: 303 210 <b>Bends (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

Table 3.2 Elements 80/125

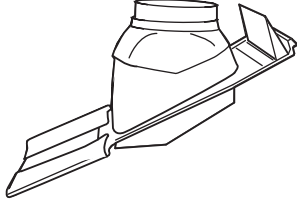
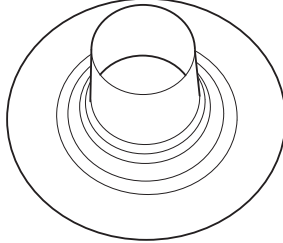
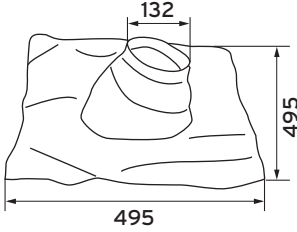
Element	Description
	<b>Adjustable roof tiles for pitched roof</b> Accy. No.: 009 076 (black)
	<b>Flat roof penetration collar</b> Accy. No.: 009 056
	<b>Flexible pitched roof seal (black)</b> Accy. No.: 303 980

Table 3.2 Elements 80/125 (continued)

### 3 Optional Concentric System Ø 80/125

#### 3.2.3 Maximum flue lengths for use with ecoTEC exclusive

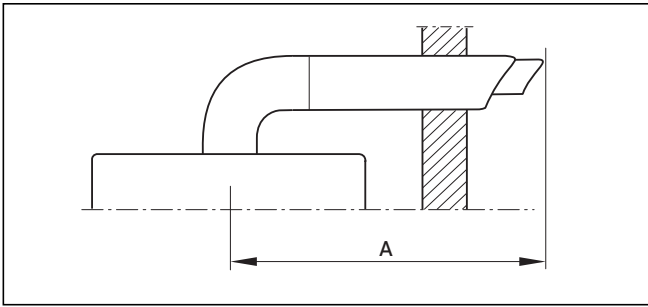
Accessories	Accy.-Nr.		ecoTEC exclusive	
			832 838	
Horizontal flue systems	303 209	Max. permitted concentric flue length	21.0 m incl. 1 elbow 87°	Maximum length of flue is reduced by 2.5 m for each additional 87° elbow Maximum length of flue is reduced by 1.0 m for each additional 45° elbow
Vertical flue systems	303 200	Max. permitted concentric flue length	22.0 m	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

Table 3.3 Maximum flue lengths for use with ecoTEC exclusive

#### 3.2.4 Maximum flue lengths for use with ecoTEC

Accessories	Accy.-Nr.		ecoTEC				
			plus 612 plus 615	plus 618 plus 624 plus 630 plus 824 plus 831	plus 637 plus 837 plus 937	pro 24 pro 28	plus 415 plus 418 plus 428 plus 438
Horizontal flue systems	303 209	Max. permitted concentric flue length	13.0 m incl. 1 elbow 87°	25.0 m incl. 1 elbow 87°	21.0 m incl. 1 elbow 87°	25.0 m incl. 1 elbow 87°	20.0 m incl. 1 elbow 87°
			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				
Vertical flue systems	303 200	Max. permitted concentric flue length	14.0 m	27.0 m	23.0 m	27.0 m	20.0 m
			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				

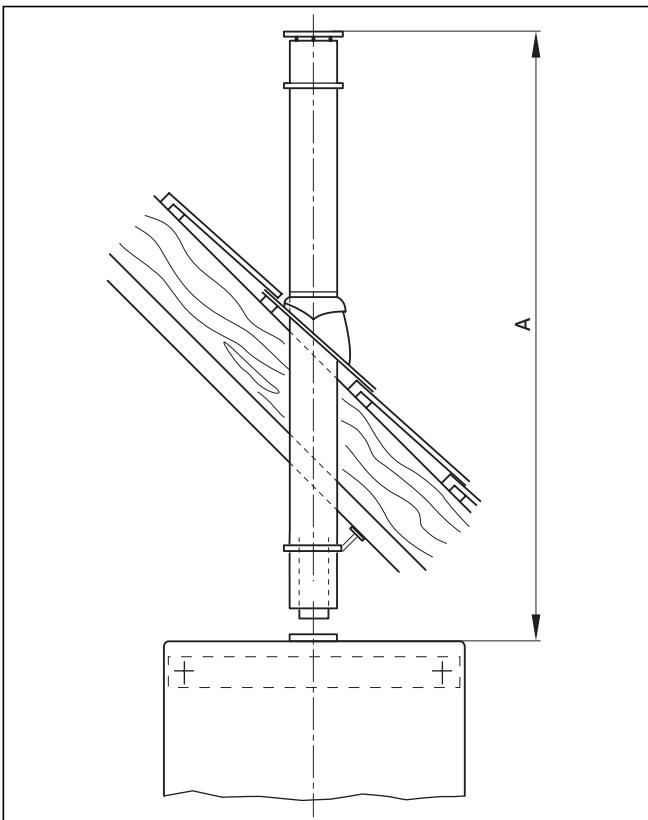
Table 3.4 Maximum flue lengths for use with ecoTEC



**Fig. 3.1 Horizontal flue systems**

**Key**

A Maximum flue length



**Fig. 3.2 Vertical flue systems**

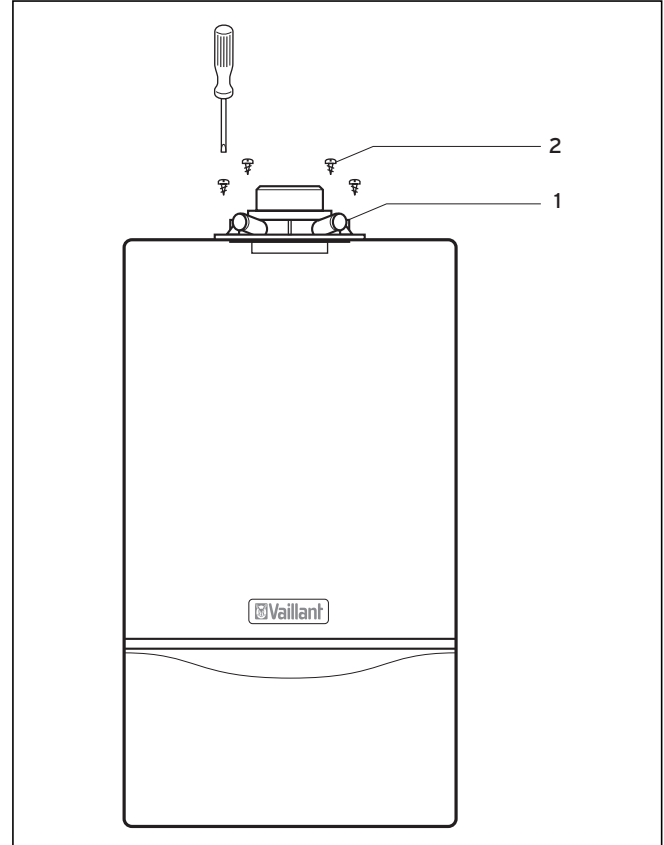
**Key**

A Maximum flue length

**3.3 Changing the appliance connection piece**

**Installation**

Accy No.: 303 926



**Fig. 3.3 Fitting the appliance connection piece**

The appliance is supplied ready-fitted with the connection piece for the 60/100 air/flue duct system.

- Loosen the four screws (2) and pull the appliance connection piece (1) upwards to remove it.
- Push the appliance connection piece with the selected connection diameter down from above, inserting the push-in end onto the sleeve of the flue collecting chamber. Now push the appliance connection piece downwards until the flange comes into contact with the low-pressure chamber.
- Refit the fixing screws (2).



**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.

### 3.4 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.

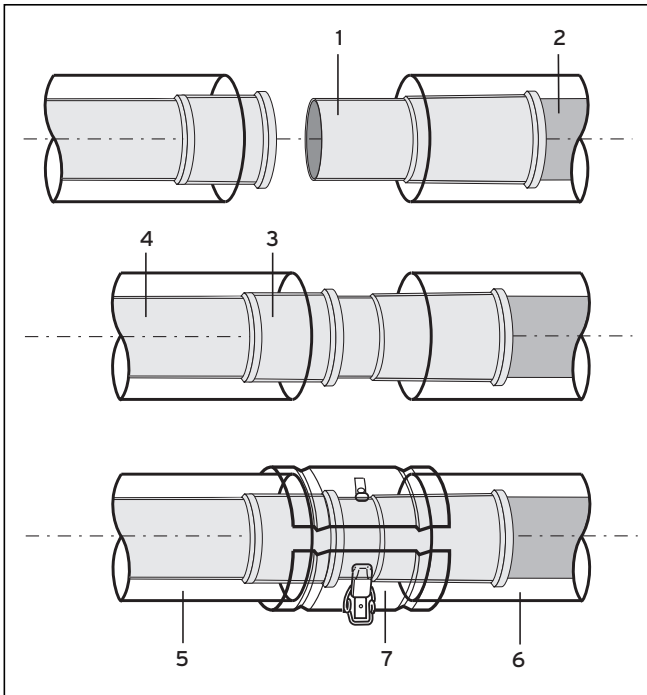


Fig. 3.4 Installing the sliding sleeve

- 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.

### 3.5 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.

Where extensions are used, these must be installed with a slope at  $3^\circ \pm 1^\circ$  (equivalent to 50 mm  $\pm$  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 3.2.3 and 3.2.4.

##### Note

See section 3.2 for details of air/flue duct elements.

#### 3.5.1 Contents included with delivery

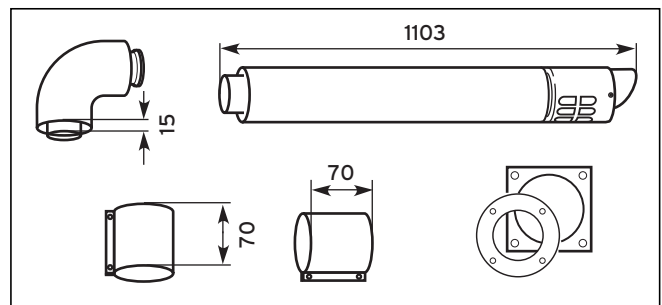


Fig. 3.5 Horizontal air/flue conduit

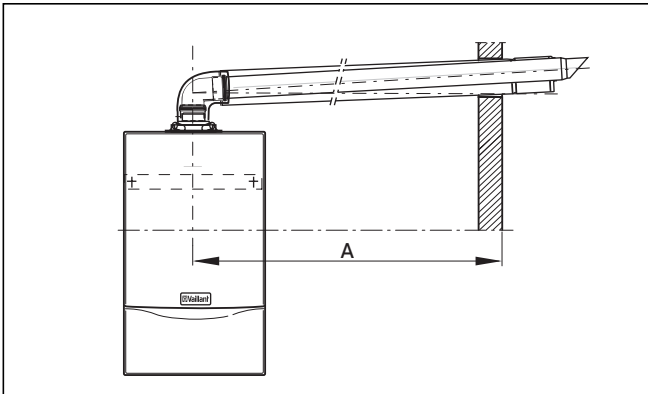
#### Horizontal air/flue duct

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





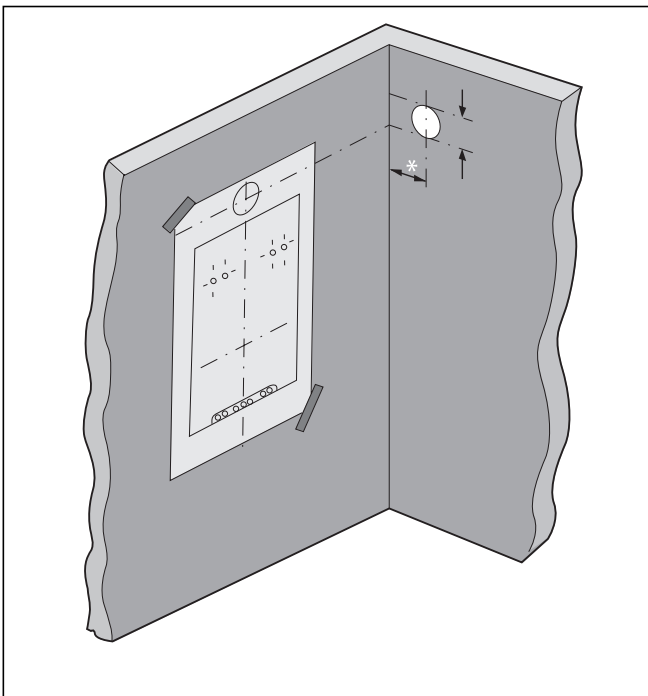
**Fig. 3.6 Example of installation with horizontal air/flue duct**

### 3.5.2 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.
- 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.

### 3.5.3 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:

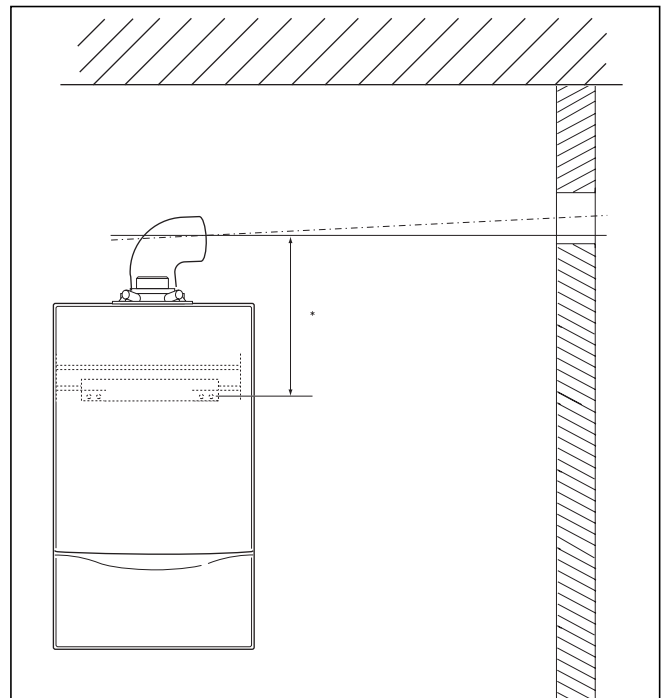


**Fig. 3.7 Installation template**

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

- Identify the correct measurement as shown in fig. 3.7, 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. 3.8 Distance between hanging bracket and wall break-through**

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937

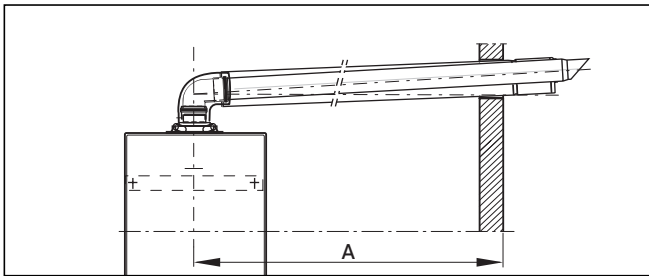
- The position of the flue exit hole should allow the flue to be installed with an upwards slope towards the terminal of approximately  $3^\circ \pm 1^\circ$ , equivalent to  $50 \text{ mm} \pm 20 \text{ mm}$  rise per metre of flue length. Calculate the required rise according to the flue length and mark the position of the flue exit hole (fig 3.8).



**Note**

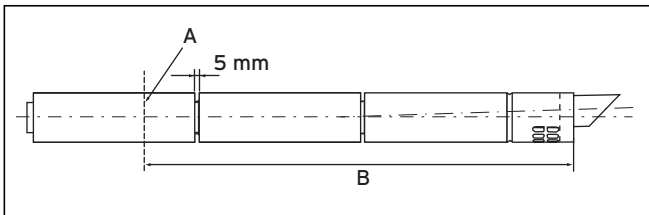
Due to the long lengths of flue possible and the slope required, it may be necessary to adjust the location of the boiler installation template. Please check that both the boiler installation site and flue termination are in accordance with these instructions prior to drilling any holes for the boiler 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°.
- Measure the distance from the outside face of the wall to the centre of the fan outlet on the boiler (fig. 3.9). This is dimension A.



**Fig. 3.9 Distance to external wall**

- For installations where the measured distance dimension A (fig. 3.9) 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. 3.10 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. 3.10).



**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.

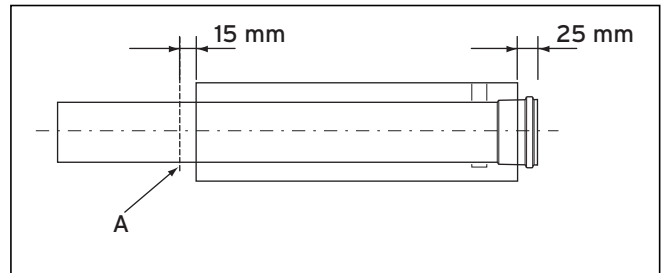
- Assemble the flue such that there is a gap of about 5 mm between each air duct, which will ensure the correct flue duct penetration into the flue sockets of 30 mm. All flue sockets should point towards the flue terminal.
- Measure from the flue terminal and mark the air duct to a length of: Dimension A + 60 mm.
- Take the extension(s) to be shortened and remove the 3 screws. Separate the ducts.



**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.
- Refit the flue duct into the air duct and secure using the 3 screws.



**Fig. 3.11 Flue duct**

**Key**

A = Mark flue duct here

- Cut the flue duct as detailed in fig. 3.11.
- 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 3.7.
- 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.

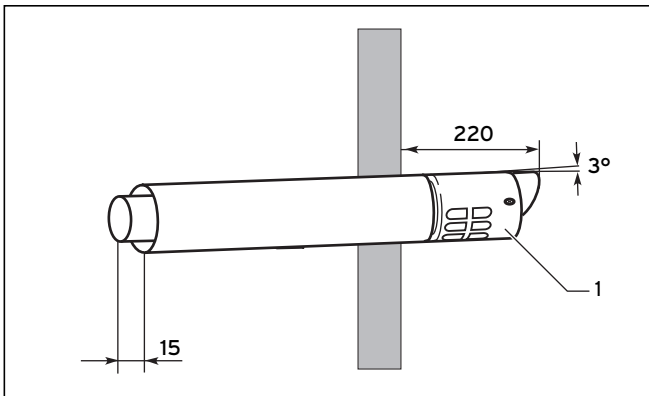


Fig. 3.12 Installing the horizontal wall duct

- 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.

### 3.5.4 Indirect installation

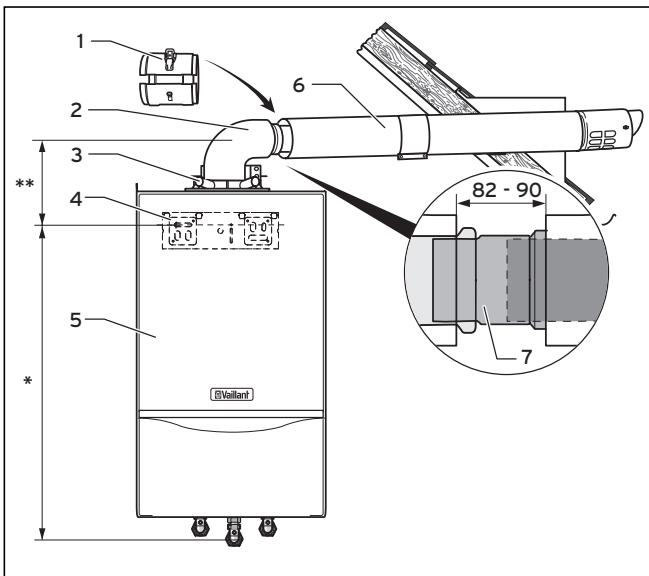


Fig. 3.13 Distance to external wall

#### Key

- \* = 750 mm ecoTEC exclusive combination
- \* = 530 mm ecoTEC plus open vent (from top holes on bracket)
- \* = 622 mm ecoTEC plus system & combination
- \* = 622 mm ecoTEC plus 937
- \*\* = 253 mm ecoTEC exclusive combination
- \*\* = 210 mm ecoTEC plus open vent (from top holes on bracket)
- \*\* = 238 mm ecoTEC plus system & combination
- \*\* = 238 mm ecoTEC plus 937

- Fit the wall mounting (4).
- Install the appliance (5) with reference to the installation and servicing instructions supplied with the boiler.

- Change the appliance connection piece (3) as described in section 3.3.
- Join the 87° elbow to the appliance connection piece.
- 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.

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

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

☞ **See section 3.7 for further details on the installation of extensions and elbows.**

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

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

**Note**  
Observe the maximum flue lengths as detailed in sections 3.2.3 and 3.2.4.

#### 3.6.1 Contents included with delivery

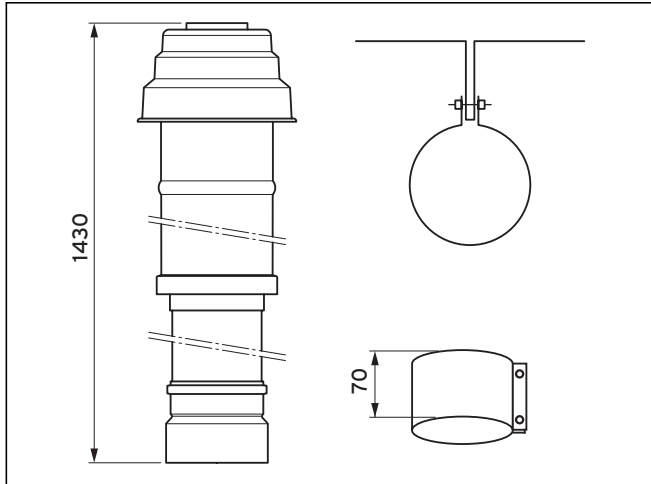


Fig. 3.14 Vertical roof duct

#### 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 3.2 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.

#### 3.6.2 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.

**Please 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.

#### 3.6.3 Pitched roof installation

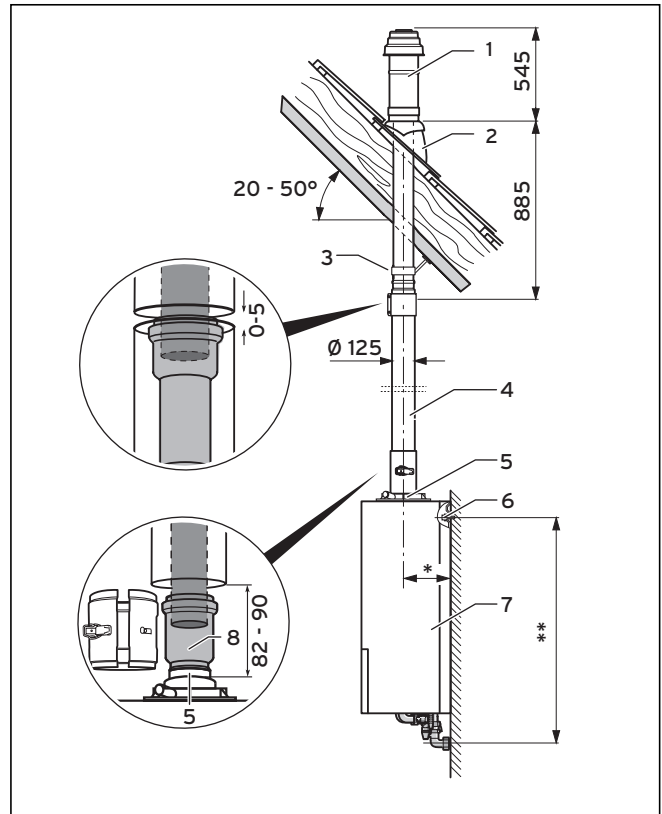


Fig. 3.15 Fitting the appliance and the vertical roof duct to a building with a pitched roof

#### Key

- \* = 190 mm ecoTEC exclusive combination
- \* = 176 mm ecoTEC plus open vent
- \* = 125 mm ecoTEC plus system & combination
- \* = 323 mm ecoTEC plus 937
- \*\* = 750 mm ecoTEC exclusive combination
- \*\* = 530 mm ecoTEC plus open vent (top holes of bracket)
- \*\* = 622 mm ecoTEC plus system & combination
- \*\* = 622 mm ecoTEC plus 937

- 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 roof 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 3.7 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).

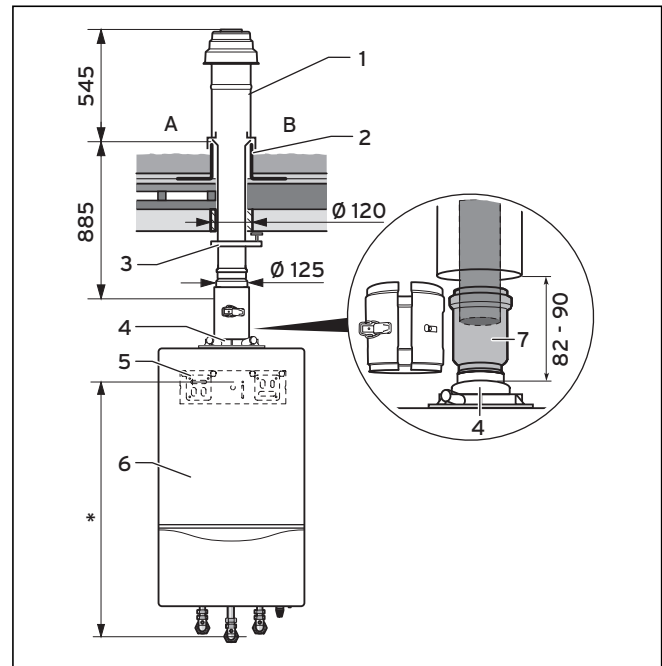
**Note**  
Using the sliding sleeve allows the appliance to be easily removed and replaced without dismantling the flue.

- 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.

### 3.6.4 Flat-roof installation



**Fig. 3.16** Fitting the appliance and vertical flue duct to a building with a flat roof

#### Key

- A cold roof
- B warm roof
- \* = 750 mm ecoTEC exclusive combination
- \* = 530 mm ecoTEC plus open vent (top holes of bracket)
- \* = 622 mm ecoTEC plus system & combination
- \* = 622 mm ecoTEC plus 937

- 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 3.7 for further details on the installation of extensions and elbows.

### 3 Optional 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.

### 3.7 Fitting air/flue duct extensions

#### 3.7.1 How to add extensions

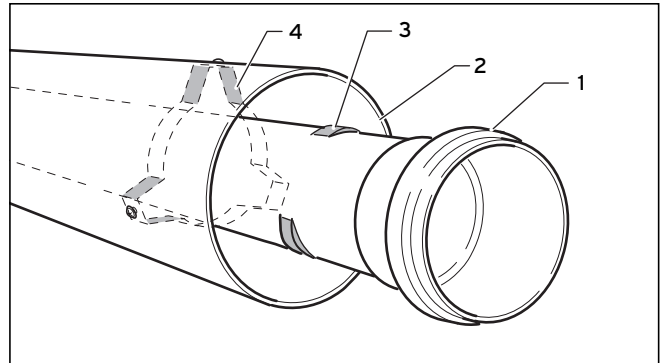


Fig. 3.17 Loosening the flue conduit



#### Note

No tools are required when separating extensions for cutting to size air and flue tubes separately. When doing so, the flue conduit 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 conduit and secure it to the air conduit.

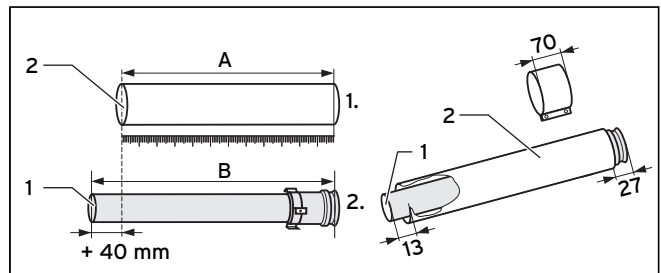


Fig. 3.18 Cutting tubes to size

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

$$L_{\text{exhaust}} = L_{\text{air}} + 40 \text{ mm}$$

$L_{\text{exhaust}}$  = length of flue conduit (B)  
 $L_{\text{air}}$  = length of air conduit (A)

\* Minimum length of air-conduit 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 exhaust conduit with the fixing device in order to ensure that it is correctly centred relative to the air conduit.

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

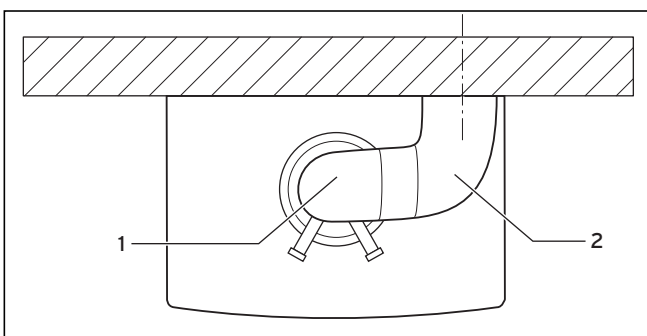


Fig. 3.19 Arrangement of 2 x 87° elbows - View from above

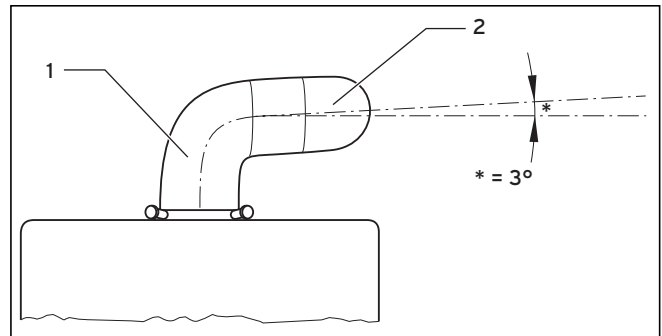


Fig. 3.20 Arrangement of 2 x 87° elbows - View from front

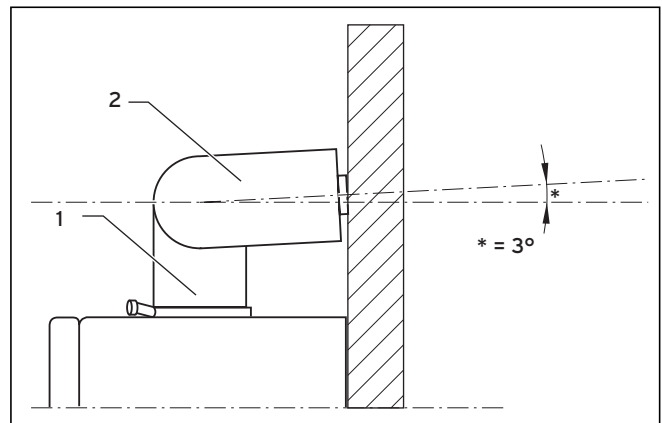


Fig. 3.21 Arrangement of 2 x 87° elbows - View from side

When using 2 x 87° elbows follow fig. 3.19 to fig. 3.21 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  $3^\circ$  to ensure that the second 87° elbow (2) exits the wall perpendicular.

### 3 Optional Concentric System Ø 80/125

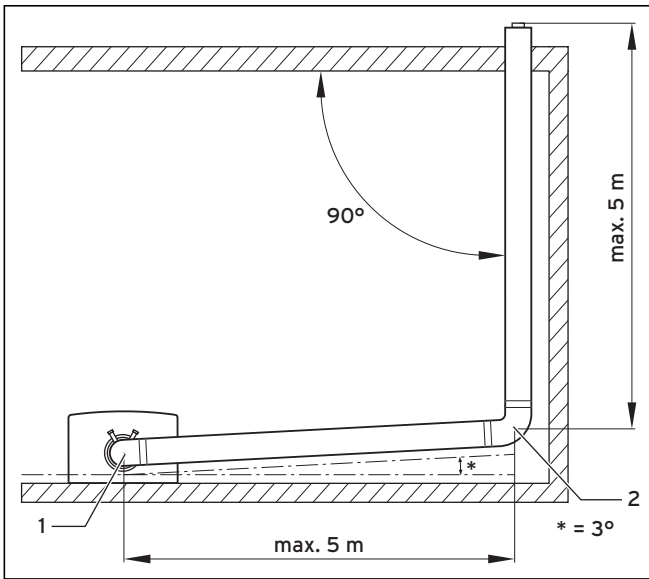


Fig. 3.22 Connecting extensions with 87° elbows



**Note**

When using 87° elbow install with a slope of 3° between wall and air-flue pipe (fig. 3.22) or use 2 x 45° elbows (fig. 3.23).

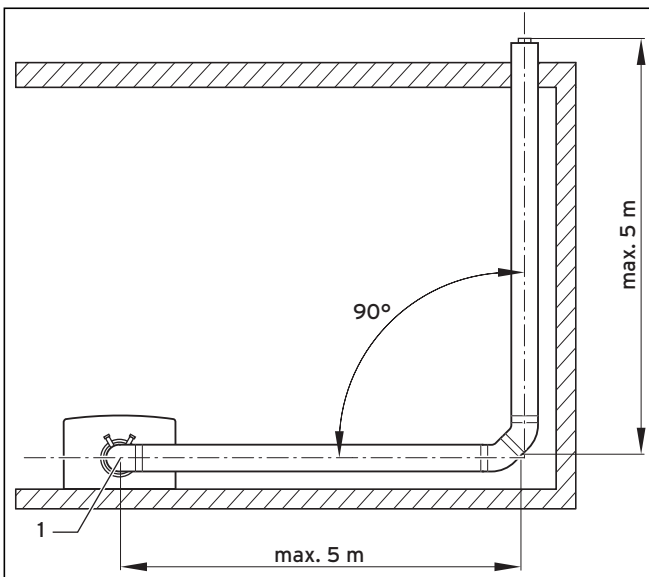


Fig. 3.23 Connecting extensions with 45° elbows

When using elbows for long flue runs in a corner follow fig. 3.22 and fig. 3.23 to avoid obstructions.



**Caution!**

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

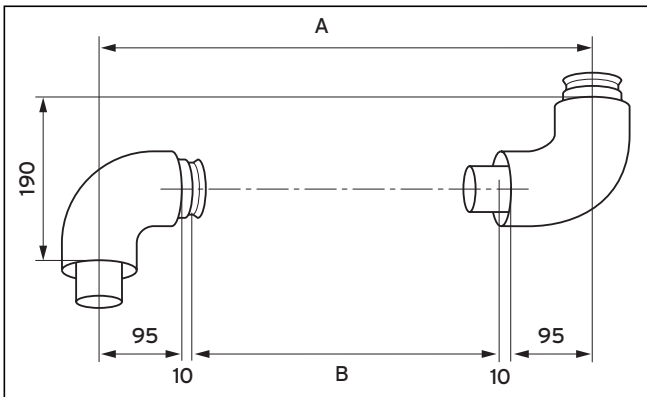


**Note**

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.



3.7.3 How to install 87° elbows



Key

A = Offset  
B = Length of air conduit



**Caution!**  
This gives a corresponding exhaust-conduit 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 conduit (= 190 mm in this case).

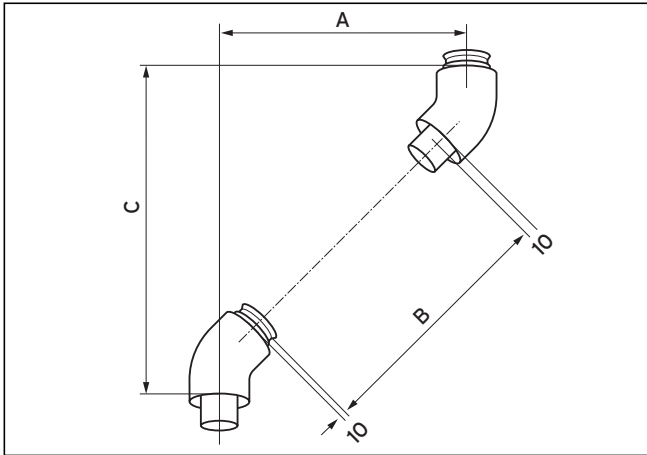
Fig. 3.24 Installation of 87° elbows, Accy. No.: 303 210

Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [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
310	100	535	325	760	550
315	105	540	330	765	555
320	110	545	335	770	560
325	115	550	340	775	565
330	120	555	345	780	570
335	125	560	350	785	575
340	130	565	355	790	580
345	135	570	360	795	585
350	140	575	365	800	590
355	145	580	370	805	595
360	150	585	375	810	600
365	155	590	380	815	605
370	160	595	385	820	610
375	165	600	390	825	615
380	170	605	395	830	620
385	175	610	400	835	625
390	180	615	405	840	630
395	185	620	410	845	635
400	190	625	415	850	640
405	195	630	420	855	645
410	200	635	425	860	650
415	205	640	430	865	655
420	210	645	435	870	660
425	215	650	440	875	665
440	220	655	445	880	670
445	225	660	450	885	675
440	230	665	455	890	680
445	235	670	460	895	685
450	240	675	465	900	690
455	245	680	470	905	695
460	250	685	475	910	700
465	255	690	480	915	705
470	260	695	485	920	710
475	265	700	490	925	715
480	270	705	495	930	720
485	275	710	500	935	725
490	280	715	505	940	730
495	285	720	510		
500	290	725	515		

Table 3.5 Length of surplus with 87° elbows

## 3 Optional Concentric System Ø 80/125

### 3.7.4 How to install 45° elbows



#### Key

A = Offset  
B = Length of air conduit  
C = Height



**Caution!**  
This gives a corresponding exhaust-conduit 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 conduit (= 284 mm) and the height (= 420 mm).

Fig. 3.25 Installation of 45° bends, Accy. No.: 303 211

Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [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 3.6 Length of surplus with 45° bends



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