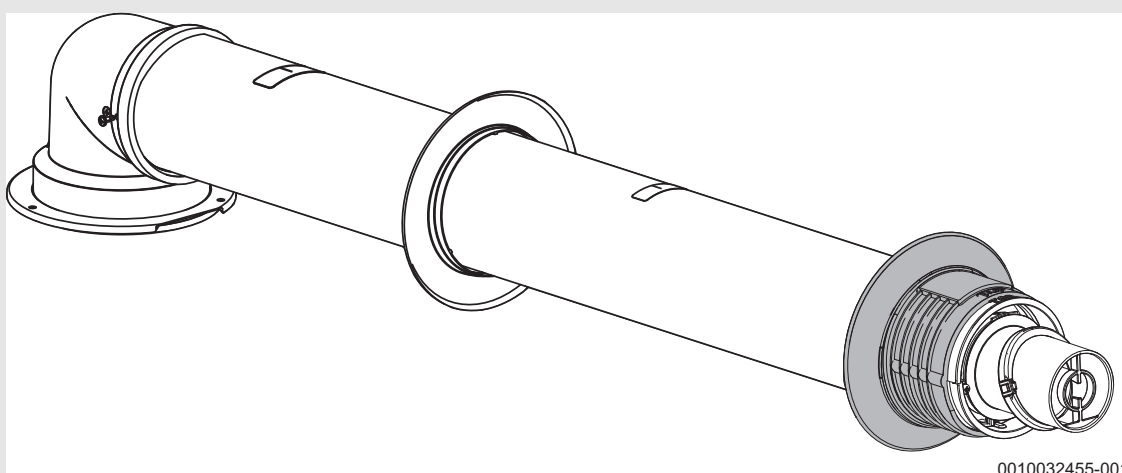


Flue kit installation instructions

## Wall mounted gas condensing appliance flue

### **Greenstar Condensfit II**

60/100 Horizontal flue kit - High rise 7 733 601 221



0010032455-001



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# 1 Explanation of symbols and safety instructions

## 1.1 Explanation of symbols


### Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimising danger are not taken.


The following signal words are defined and can be used in this document:


**DANGER:**

**DANGER** indicates that severe or life-threatening personal injury will occur.


**WARNING:**

**WARNING** indicates that severe to life-threatening personal injury may occur.



**CAUTION:**

**CAUTION** indicates that minor to medium personal injury may occur.

**NOTICE:**

**NOTICE** indicates that material damage may occur.

### Important information



The info symbol indicates important information where there is no risk to people or property.

### Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document
•	a list entry
–	a list entry (second level)

Table 1

## 1.2 General safety instructions

**⚠ Important - These instructions are to be used in conjunction with appliance Installation and maintenance instructions.**

Please read these instructions in conjunction with the appliance Installation and maintenance instruction manual carefully before starting installation.

- ▶ Observe all the safety precautions described in the Installation and maintenance instructions for the appliance this accessory is being installed onto.

### ⚠ Packaging

The following points should be observed during unpacking.

- ▶ Check the delivery immediately upon receipt for completeness and possible transport damage.

- ▶ In the event of transport damage, the delivery should only be accepted conditionally.
- ▶ Do not use damaged components for assembly.
- ▶ Carefully unpack the unit.
- ▶ Ensure that all packaging material is removed and that the unit is free from all materials that may prevent the unit from operating correctly.

### 1.3 Requirements

#### Condensate disposal with the flue system

Extended horizontal flue runs (over the standard flue length) need to allow for proper disposal of condensate through the flue system back to the appliance.

- ▶ All horizontal flue sections must rise by at least 52mm per metre away from the appliance to ensure that the condensate flows back into the appliance for safe disposal via the condensate waste pipe.

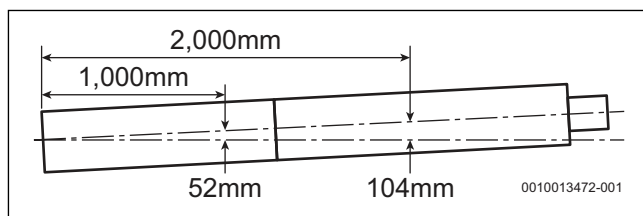


Fig. 1 Slope for condensate disposal

- ▶ Although referred to as 90° elbow they are in fact 93°.
  - They have a built in 3° (52mm per metre) rise from the appliance to help maintain condensate flow back into the appliance for safe disposal.

#### Flue and plume management termination positions

The flue termination positions and, if fitted, the plume management termination positions are covered in the appliance Installation and maintenance instructions as they are part of the appliance installation location considerations.

- Ensure the maximum flue length and, if fitted, the plume management maximum length are not exceeded for the appliance model, maximum lengths are detailed in the appliance Installation and maintenance instructions.

#### Installation

The flue installation must be fitted and terminated in accordance with your local regulations.

#### Support

Flues require adequate support throughout their entire run. It is advised to support the flue at every metre and changes of direction.

#### Flue System



Only use the approved Condensfit II flue system accessories with this flue kit.

#### Replacing an existing flue

When replacing an existing Condensfit II flue on an appliance:

- ▶ Ensure it is the correct flue system for the appliance as we have a separate flue system for Wall Hung and Floor Standing gas appliances.
- ▶ Ensure the flue installation meets current Building Regulation requirements.
  - Building Regulation requirements may have changed from the original date of installation of the existing flue system.

#### Flue system in voids

Where a flue system is going to be concealed, provision for access must be made for service and inspection:

- ▶ Access points for inspection of the flue system must be sufficiently sized for visual inspection, particularly at any joint in the flue system.
  - The access panels must be no less than 300mm square.
  - Larger access panels can be considered if the whole flue system needs to be viewed.
  - Any access must not contravene any other building regulations or fire regulations. Refer to Building Regulations Approved Documents B, L and E.
- ▶ Flue joints within the void must not be more than 1.5m from the edge of the inspection hatch.
- ▶ Inspection hatches should be located at changes of flue direction.
  - If this is not possible, elbows should be viewable from both directions.

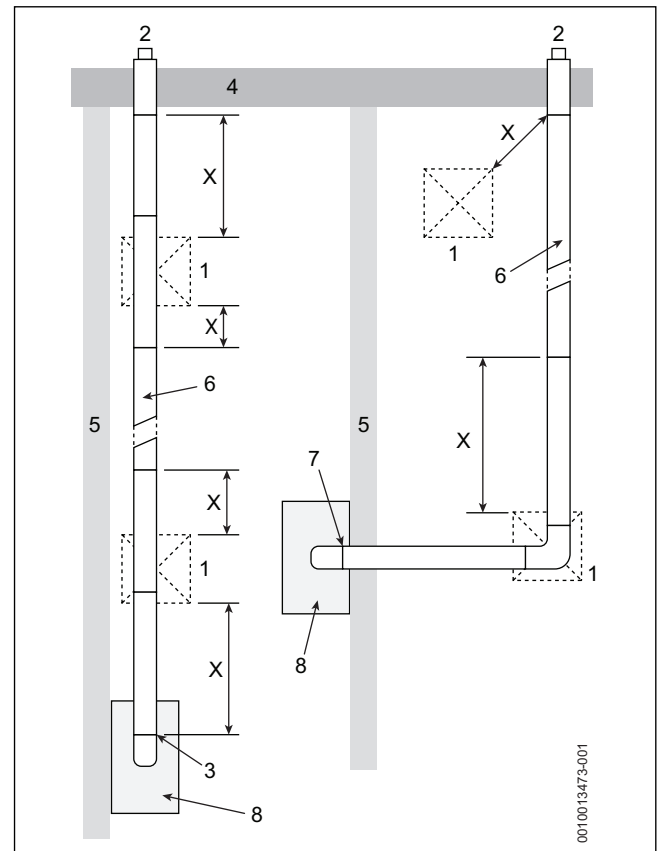


Fig. 2 Flues in voids

- [X] This dimension must not be more than 1.5 metres.
- [1] Inspection hatch
- [2] Flue terminal
- [3] Concealed flue connection
- [4] External wall
- [5] Internal wall
- [6] Any intervening joints must be visible within 1.5 metres of the inspection hatch.
- [7] Accessible flue connection

#### Annual inspection

When the flue system is inspected during the annual service, the engineer must inspect and confirm that:

- ▶ The flue system is continuous without any breaks.
- ▶ All joints in the flue system are secure and correctly assembled according to the manufacturers instructions.
- ▶ The flue has a fall of 3° (52 millimetres per metre) back to the boiler.
- ▶ The terminal is not damaged or restricted.
- ▶ The plume management kit is not damaged (if fitted).

## 2 Product Information

### Intended use

These instructions cover the following flue accessory kits:

- 7 733 601 221 - Horizontal flue kit 60/100 - High rise
- 7 716 191 086 - Plume management system

The 60/100mm flue kit accessories are intended for use with Worcester Greenstar wall mounted condensing gas appliances.

The flue elbow has an in-built 3° angle giving the flue assembly the rise from the appliance to ensure the condensate flows back to the appliance. The flue terminal plume re-direct allows to change the discharge direction of the plume exhaust. The terminal plume redirect can also be replaced with the plume management system to discharge away from the property to a more suitable location.

### 2.1 Standard package

- 60/100mm Horizontal fixed flue kit - High rise
  - Part No.: 7 733 601 221

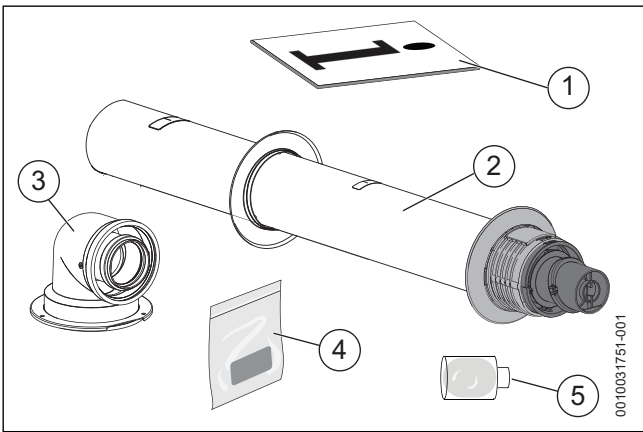


Fig. 3 Standard package contents

1. Instructions
2. Fixed flue assembly
  - Inner wall seal (white)
  - Outer wall seal (black)
  - Fixed flue (860mm)
3. Flue elbow
4. Screw pack
  - Securing screws x 2
5. Grease sachet

### 2.2 60/100mm flue accessories

1	High level horizontal flue adaptor *	7 719 002 432
2	220mm extension	7 716 191 133
3	1,000mm extension	7 716 191 083
4	2,000mm extension	7 716 191 172
5	90° elbow	7 716 191 084
6	45° elbow (set of 2)	7 716 191 085
7	Support bracket kit	7 716 191 177
8	Support bracket kit (set of 6)	7 716 191 178

Table 2

\* High level horizontal flue adaptor is required when connecting the horizontal flue kit for higher level flue discharge compared to the standard 90° flue elbow.

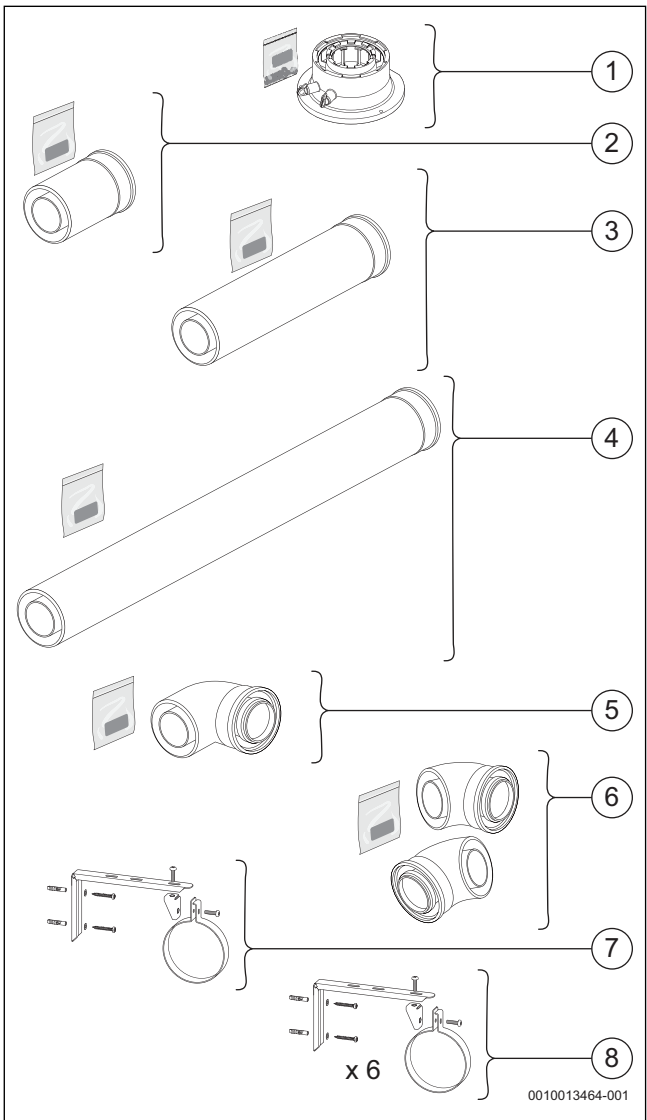


Fig. 4 Accessories

## 3 Pre-installation

### 3.1 Pre-Installation



#### WARNING:

#### Flue joints and cut flue sections

Possible carbon monoxide leakage

- Secure all joints with the screws supplied in the appropriate flue kit and accessory.  
The sole purpose of the screws is to ensure that a correctly assembled joint cannot become separated due to external influences. They are not intended to provide any mechanical strength or support.
- A hole must be pre-drilled in the outer flue using a 3mm drill-bit wherever a screw is to be used to secure a joint. The joint may not be properly secured if the outer flue is not pre-drilled. Ensure you do not accidentally drill into the inner flue.
- When cutting sections, always take care not to damage the tubes, chamfer the edge of the inner tube and remove any burrs from both tube sections to assist in ease of connection and to prevent seal damage.





### Flue joint fixing screws

- ▶ Whenever possible, two screws should be fitted, at 180° from each other on the flue connections, however we recognise that some installation may make it difficult to access the joint sufficiently to fit two screws. On these occasions we would deem one screw to be acceptable.
- ▶ Where only one screw is used, the screw must be in a visible position for inspection purposes.
- ▶ Whenever a flue is identified to have only one screw in each joint, providing the flue is correctly supported and the screw is only being used for its intended purpose to prevent the joint from separating and not for mechanical support, then this would be acceptable.



### Maximum flue lengths:

- ▶ Refer to the Installation and maintenance instructions manual for the appliance for maximum flue lengths.

## 3.2 Preparation

### 3.2.1 Flue measuring

#### NOTICE:

#### Flue and plume management lengths:

- ▶ Do not exceed the maximum straight length for a horizontal 60/100mm flue or a 60mm plume management system (if used) as stated in the relevant appliance Installation and maintenance instructions manual.



The maximum flue length can be found in the Installation and maintenance instructions manual for the appliance.

The horizontal fixed flue length can be reduced for an effective length [L] of less than 860mm if required.

- ▶ Measure the flue length [L] from the centre line of the flue outlet or flue elbow (if fitted), along the route of the flue system, to the face of the outside wall.
- ▶ For flues longer than the standard (860mm) refer to section 3.2.2.

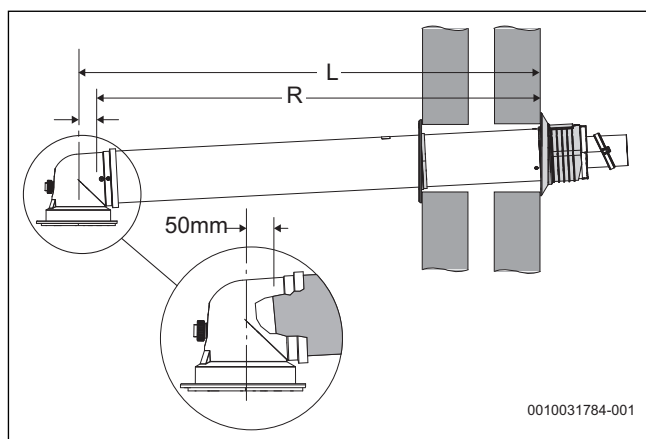


Fig. 5 Flue length determination

- [L] Effective length of the flue system  
[R] Actual length of the flue system ( $L - 50\text{mm} = R$ )



### Effective length

- ▶ Each flue elbow is rated as a certain straight length of flue, refer to the relevant appliance Installation instructions. The “effective length” of each elbow is added to the straight length of flue. Adding elbows to the flue system reduces the actual flue length available.
- ▶ The effective length of the flue must not exceed that stated in the relevant appliance Installation and maintenance instructions manual.

### 90° Elbow offset dimensions

Figure 6 shows the offset between 2 x 90° elbows.

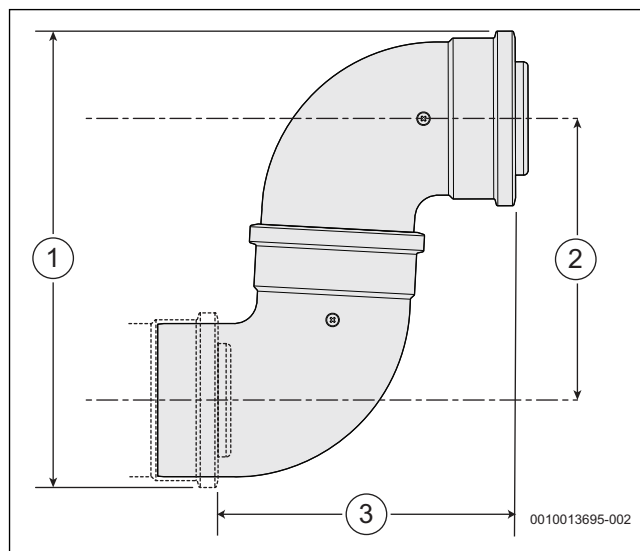


Fig. 6 90° elbows offset

- [1] 299mm  
[2] 185mm  
[3] 190mm

Figure 7 shows the actual length added by a 90° elbow when used with an extension in either orientation.

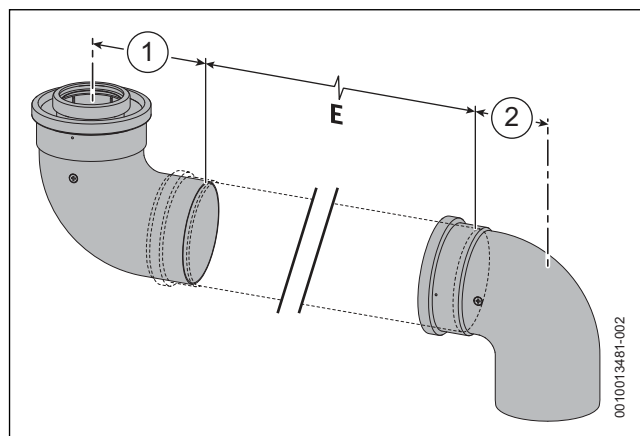


Fig. 7 90° elbow with extension offset dimensions

- [E] Extension flue length  
[1] 112mm  
[2] 73mm

### Minimum extension length between elbows

The minimum extension length between two elbows/offsets is 130mm, this allows for a good seal at the connection joints.

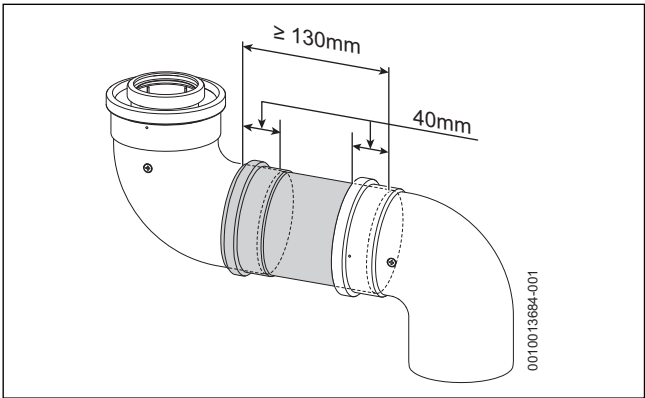


Fig. 8 Example with 90° elbows

**45° Elbows offset dimensions**

Figure 9 shows the 45° elbow offset.

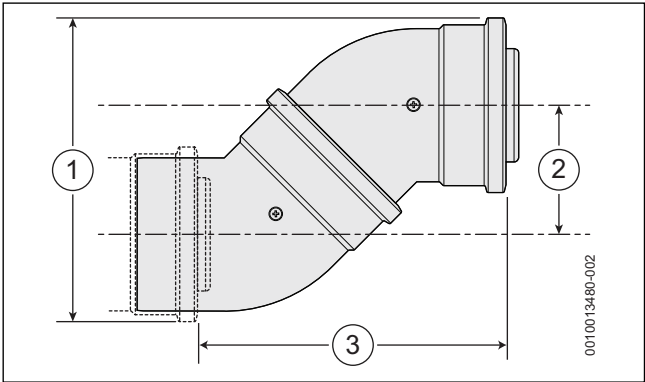


Fig. 9 45° elbows offset dimensions

- [1] 197mm
- [2] 85mm
- [3] 200mm

If using an extension between the 2 x 45° elbows, for offset between centres refer to graphs in elbow instructions manual.

**45° elbow offset to the wall**



Not all appliances can use this option.

- This option can be used for the following appliances:
  - Greenstar Si, i Junior and i System.
  - Greenstar Compact Combi's and System.
  - Greenstar Compact Ri.
  - Greenstar Compact ErP Combi's and System.
  - Greenstar Compact ErP Ri

Figure 10 shows a possible application for a 45° elbow in conjunction with the 90° flue elbow, this can be used when exiting the appliance from either the left or right. In this application the flue would be 100mm closer to the wall.

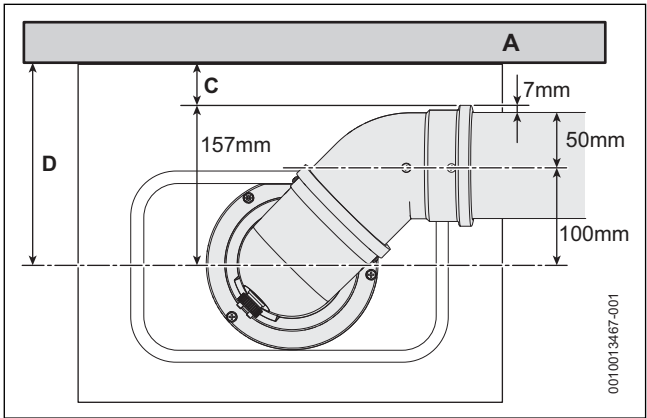


Fig. 10 45° elbow offset to wall

- [A] Wall
- [C] Clearance between flue system and wall
- [D] Depth from centre of appliance flue outlet to wall

Appliance	Depth [D]	Clearance [C]
Greenstar Si, i Junior & i System	189mm	32mm
Greenstar Compact Combi's & System	180mm	23mm
Greenstar Compact Ri	170mm	13mm
Greenstar Compact ErP Combi's & System	180mm	23mm
Greenstar Compact ErP Ri	170mm	13mm

Table 3 Dimensions when using 45° elbow offset to wall

**45° Elbow offset from wall dimension - High level horizontal**

Figure 11 shows a possible application for a 45° elbow in conjunction with the 90° elbow and high level horizontal flue adaptor, this can be used when exiting the appliance from either the left or right. In this application the flue would be 105mm further from the wall.



The flue centre can be found in the Installation and maintenance instructions manual for the appliance.

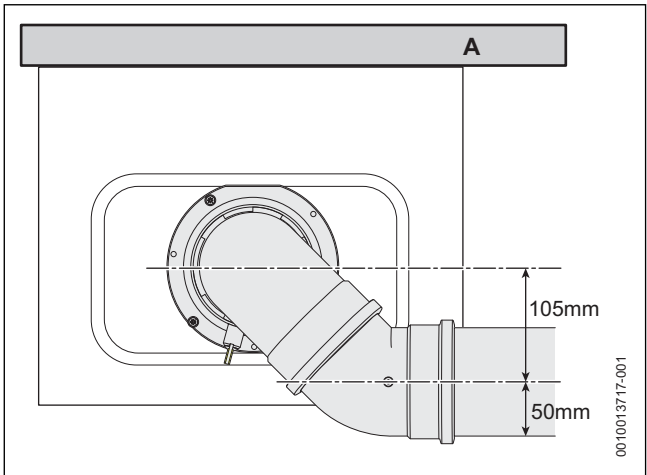


Fig. 11 45° elbow offset from the wall

- [A] Wall

**3.2.2 Horizontal fixed flue length**

Using the length measured in section 3.2.1, assemble a flue of the required length.

The fixed flue is 860mm in length but this can be reduced if required by cutting the fixed flue.

### Reducing the fixed flue length

Refer to figure 12

- ▶ Mark the length required from the inside face of the seal [1] on the terminal end, down the length of the terminal section ( minimum 100mm).
- ▶ The flue has a centralising spacer to support the inner tube. Move this spacer into the flue past the section to be cut to support the flue during cutting.
- ▶ Cut square, taking care not to damage the tubes, remove the unwanted sections [2], chamfer the edge of the inner aluminium tube and remove any burrs from both tube sections.

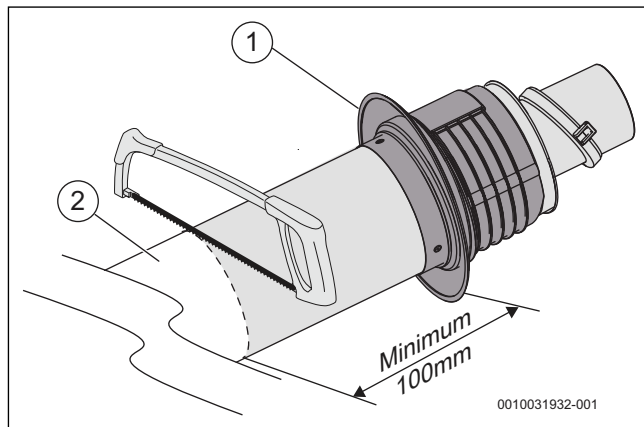


Fig. 12 shortening the flue assembly

### Extending the flue length

- ▶ Select the required number of extensions and elbows to achieve the required flue run.
- ▶ Add the flue extensions between the flue elbow and fixed terminal.
- ▶ If cutting is required:
  - Where possible it is recommended to cut extensions rather than the horizontal fixed flue.

### 3.2.3 Reducing extension flue tube length



Flue extensions:

- ▶ Flue extension are available in 3 sizes, a 220mm, 1,000mm and 2,000mm lengths.

To shorten the flue extension tube:

- ▶ Mark the length required on the extension tube, measuring from the socket end [1].

- ▶ Cut square, taking care not to damage the tubes, remove the unwanted sections [2], chamfer the edge of the plastic inner tube and remove any burrs from both tube sections.

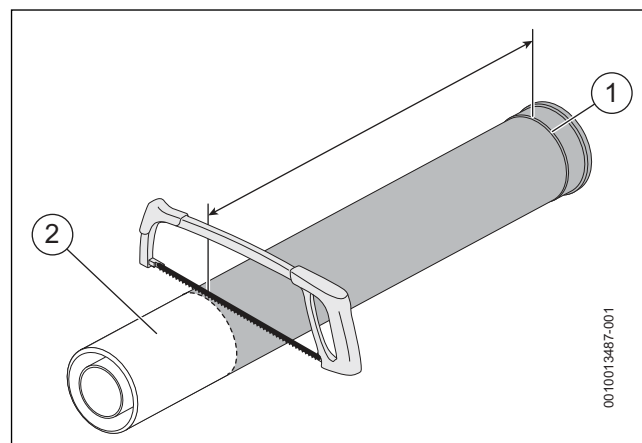


Fig. 13 Cutting an extension tube

### 3.2.4 High level horizontal flue installation

It is possible to convert the horizontal fixed flue kit to a high level horizontal flue system, there are a few considerations to be taken into account.

- ▶ Removal of the flue elbow.
- ▶ Discard the flue elbow.
- ▶ Fit a high level horizontal flue adaptor (part no. 7 719 002 432) to the appliance flue outlet.
- ▶ A 90° elbow (part no. 7 716 191 084) can be fitted directly into the high level horizontal flue adaptor or use an extension between the high level horizontal flue adaptor and the 90° elbow.

Once the wall template has been fixed to the wall, the new position for the flue outlet must be measured to correctly mark and drill the hole for the flue exit. When installing with the high level horizontal flue adaptor the flue is 68mm taller than the standard horizontal fixed flue option.

- ▶ For the new centre line for the 60/100mm flue, on the appliance wall mounting template:
  - Measure above from the existing 60/100mm centre 68mm.
  - Mark the new centre line [1] for the 60/100mm flue exit.
  - Drill hole a 150mm in diameter using a core drill or similar.

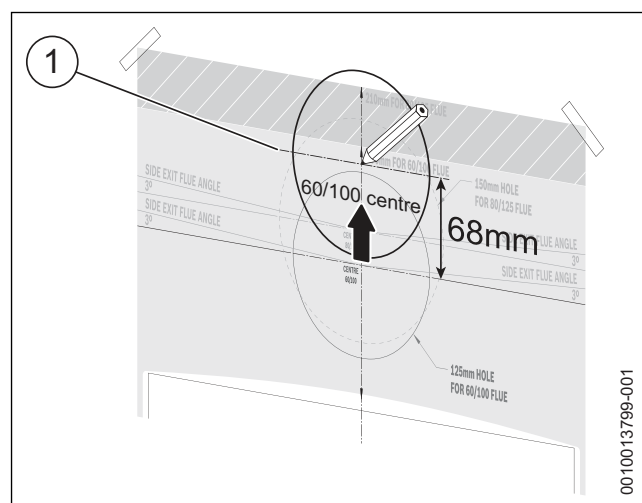


Fig. 14 Adjusted 60/100mm flue exit hole

## 4 Installation



Flue considerations:

- ▶ If extensions are to be added then the complete flue must rise at an angle of 3° or 52mm for every metre of flue length.
- ▶ When using a 100mm diameter flue, a 150mm diameter hole is required through the wall. However, When installing the flue from inside the property with the weather sealing collar fitted. Push the weather seal through the wall until the seal is outside the building, then pull the flue back until the seal is firmly up against the outside face of the wall.



### WARNING:

#### Risk of poisoning due to escaping flue gases!

Flue gases can escape from a damaged flue system.

- ▶ When drilling fixing points in the outer flue tube, take care not to drill into the inner tube.
- ▶ Ensure all seals are correctly seated.
- ▶ Ensure joints are secured with the screws provided in the flue kit and accessories.
- ▶ Ensure the flue system is adequately supported, approximately one metre intervals and a change of direction.
- ▶ Ensure you carry out a flue integrity check when commissioning the appliance.

### 4.1 Flue assembly



Correct orientation of the terminal assembly:

- ▶ Ensure that the words **TOP** on the terminal assembly are orientated correctly before securing the fixed flue in position.
- ▶ This ensures rain ingress into the appliance is kept to a minimum.
- ▶ This must be done to allow the correct fit and use of the plume management system.

Assemble the flue before fitting through the wall.

Refer to figure 15

- ▶ Slide the inner wall seal [1] onto the flue.
- ▶ Insert the flue [2] fully into the flue elbow [3].
- ▶ Ensure that words **TOP** [4] on the flue terminal are at the top.
- ▶ Secure the flue to the flue elbow with the two “self drilling” screws [5] through the two pre-formed holes in the flue elbow.

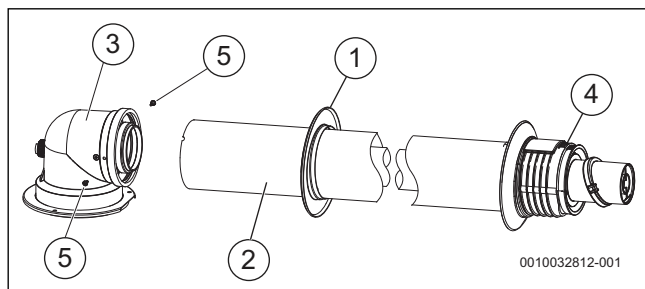


Fig. 15 Assembling the flue

- [1] Inner wall seal
- [2] Flue tube
- [3] Flue elbow
- [4] The word s **TOP**
- [5] Self drilling screws (x2)

### 4.2 Installing the fixed flue through the wall



### WARNING:

#### Products of combustion

To ensure products of combustion do not enter the property through the flue outlet.

- ▶ As a minimum, the flue must be sealed to the inner wall using a suitable non-combustible building material and the rubber collar fitted to the flue against the outside face. Providing the face of the outside wall is flat then the rubber collar is considered to be an adequate seal.

Refer to figure 16

Fitting the flue assembly

- ▶ Push the terminal [3] through the flue opening in the wall until the outer seal is outside the building then pull the flue back until the outer seal makes contact with the outer wall.
- ▶ Seal the inner wall around the opening with a suitable building non-combustible material and then slide the decorative inner wall seal [1] against the wall.

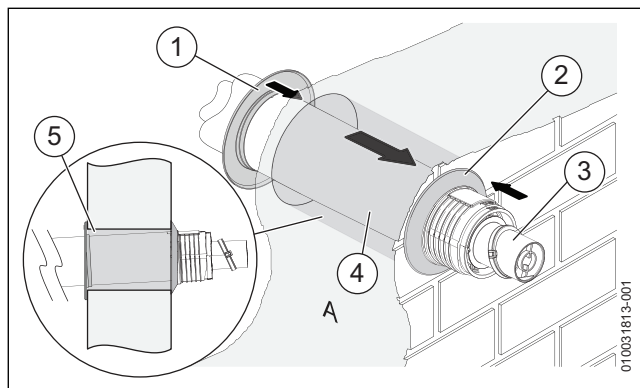


Fig. 16 Fitting the flue through the wall

- [A] Wall
- [1] Inner wall seal
- [2] Outer wall seal
- [3] Terminal
- [4] Flue tube
- [5] Flue hole

### 4.3 Flue elbow installation

The flue elbow is fixed by three screws to the top of Greenstar wall mounted condensing gas appliance.

- ▶ Some models use an additional three screws for the appliance flue connector.
  - Refer to relevant Installation and maintenance Instructions.
- ▶ Remove the three appropriate screws securing the flue outlet to the appliance.
- ▶ Align the flue elbow to the appliance flue outlet with the flat [2] facing to the rear of the appliance.

- Fit to the appliance using the three screws removed previously (1) and secure the flue elbow in position.

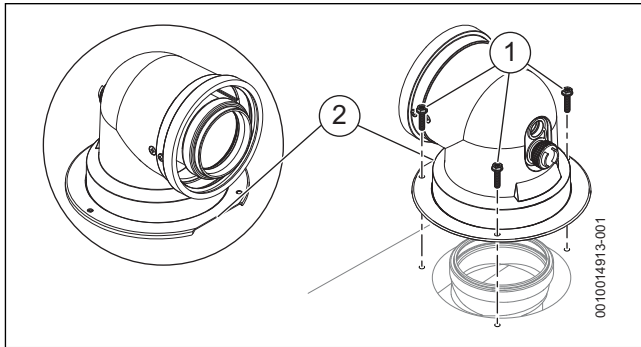


Fig. 17 Flue elbow installation

#### 4.4 Vertical flue adaptor installation

The vertical adaptor is fixed by three screws to the top of the Greenstar wall mounted condensing gas appliance.

- Some models use an additional three screws for the appliance flue connector.
  - Refer to relevant Installation and maintenance Instructions.
- Remove the three appropriate screws securing the flue outlet to the appliance and discard.
- Align the high level horizontal flue adaptor to the appliance flue outlet with the flat [2] facing to the rear of the appliance.
- Fit to the appliance using the three longer screws (1) provided with the high level horizontal flue adaptor.

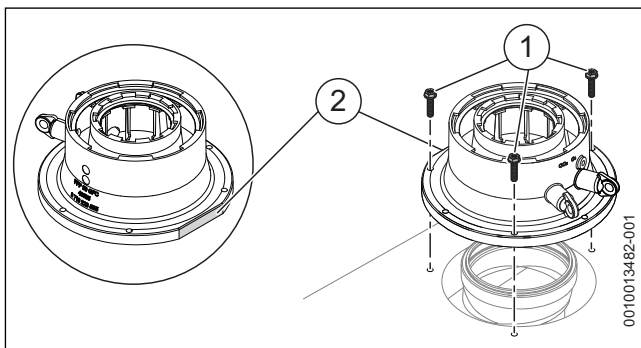


Fig. 18 Adaptor installation

#### 4.5 Flue joint connection examples



**CAUTION:**

##### Damage to flue system!

- Take care when drilling fixing points in the outer flue tube, do not to drill into the inner tube.

##### Connection to the flue adaptor, Greenstar wall mounted condensing gas appliances

Flue extension and 90° elbow (→ figure 19A)

- Fit the extension piece [4] into the flue adaptor [5] and drill pilot hole through the flue adapter [5] and the outer flue tube of extension [4].
- Secure with the screw provided in the high level horizontal flue adaptor kit.
- Fit the 90° elbow [1] firmly into the extension piece [4] use the silicone grease provided with the extension kit.
- Drill two pilot holes, through the outer flue tube of extension [4] and 90° elbow [1].
- Secure the 90° elbow [1] into the extension piece [4] with the screws [3] provided with the extension kit.

90° elbow (→ figure 19B)

- Fit the 90° elbow [1] firmly into the flue adaptor [5] and drill pilot hole through the flue adaptor [5] and 90° elbow [1].
- Secure with the screw provided.

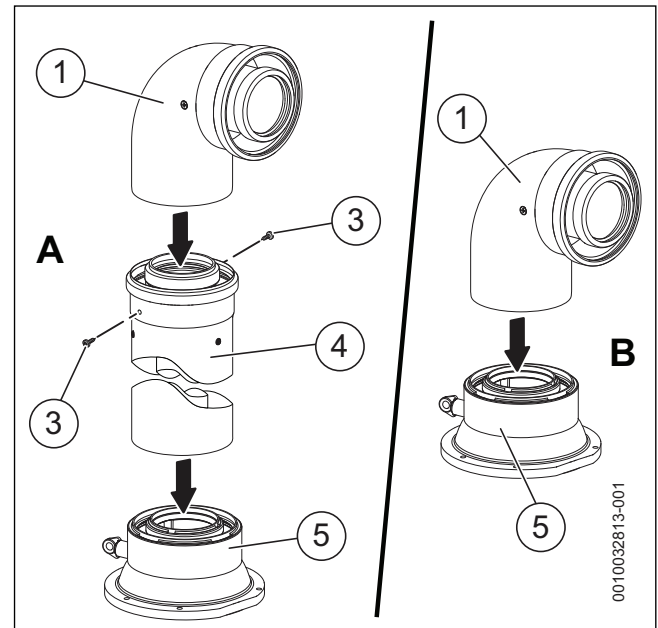


Fig. 19 Connection to the flue adaptor examples

##### Elbow connections example (90° elbow)

Flue extension into a 90° elbow (vertical orientation → figure 20)

- Slide the support clamps [3] onto the flue extension.
- Fit the extension piece [4] into the 90° elbow using the silicone grease provided as a lubricant. Working from the appliance, secure the support clamps [3] to its wall bracket to take the weight of the flue.
- Drill two holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided.

Flue extension into a 90° elbow (horizontal orientation → figure 20)

- Working from the appliance, support the flue extension with elbow using the support clamps [5].
- Slide the support clamps [3] onto the flue extension.
- Fit the extension piece [4] into the 90° elbow using the lubricant provided. Working from the appliance, fit the support clamps [3] to their wall brackets to take the weight of the flue.
- Drill two holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided for all assembled joints.

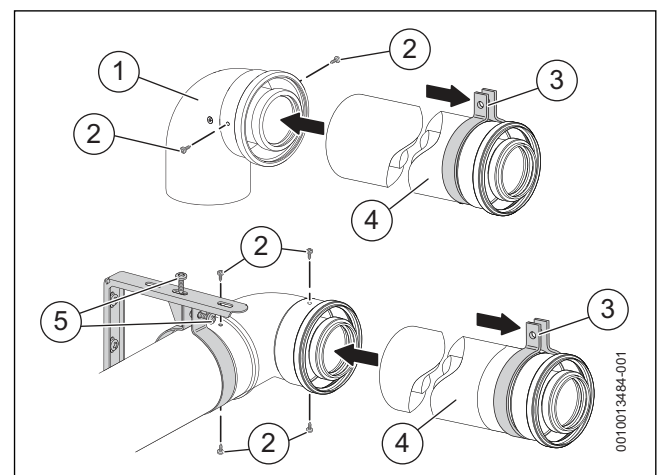


Fig. 20 Elbow connection examples (90° elbow)



### Extension and fixed flue connection examples

Additional extensions (→ figure 21)

- ▶ Working from the appliance, support the first extension flue using the wall brackets and support clamps [1]. Drill and secure using the two screws provided.
- ▶ Slide the support clamps [3] onto the next flue extension using the silicone grease provided as a lubricant.
- ▶ Fit the extension [4] into the previous extension using the lubricant provided. Fit the wall bracket and support clamps [3] to take the weight of the flue.
- ▶ Drill two holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided.

Fixed flue into flue extension (→ figure 21)

- ▶ Working from the appliance, support the flue extension using the wall bracket and support clamps [1].
- ▶ Fit the fixed flue [5] into the flue extension using the lubricant provided.
- ▶ See section "Extension and fixed flue connection examples" for installing the fixed flue through a wall.
- ▶ Drill two holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided.

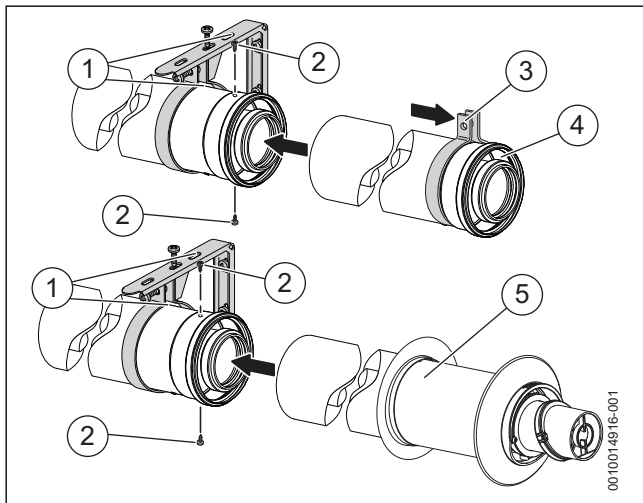


Fig. 21 Extension and fixed flue connection examples

### 4.6 Flue terminal plume redirection

The flue discharge can be re-directed to allow some plume redirection control. Alternatively, a complete plume management system can be fitted to the flue terminal.

#### Re-directing the flue discharge

##### NOTICE:

##### Damage to the flue or terminal outlet

The flue terminal outlet has built-in stops to limit rotation for plume redirection. This ensures that condensate runs back to the boiler for safe disposal.

- ▶ Do not rotate the complete flue terminal assembly.
- ▶ Do not attempt to force beyond the limit stops.
- ▶ Using a suitable tool release the clip [2] either side, unclip the terminal end [1].
- ▶ Rotate the end by 180° and refit the terminal end [1], ensuring to engage the clips [2] to secure.
  - If it is required to also angle the plume off the vertical line, the deflector can be rotated 80° either side.
- ▶ Loosen the screws securing the entire outlet assembly and rotate by  $\pm 80^\circ$  to the desired position and re-secure the assembly.

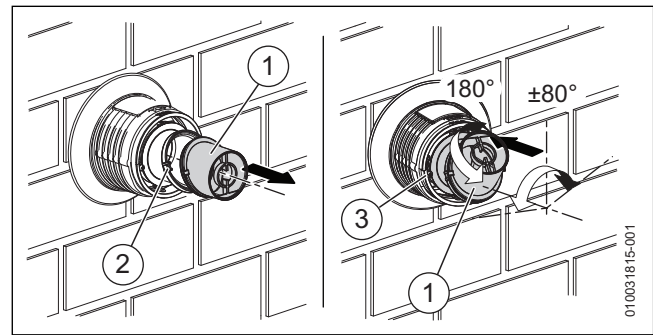


Fig. 22 Plume redirection

##### NOTICE:

##### Outlet positions

- ▶ The flue terminal outlet position must not allow flue product to enter the building.
- ▶ When redirecting the flue discharge the terminal end must be at least 1,500mm from any opening in the direction of the discharge to prevent combustion products from entering the building as shown in figure 23

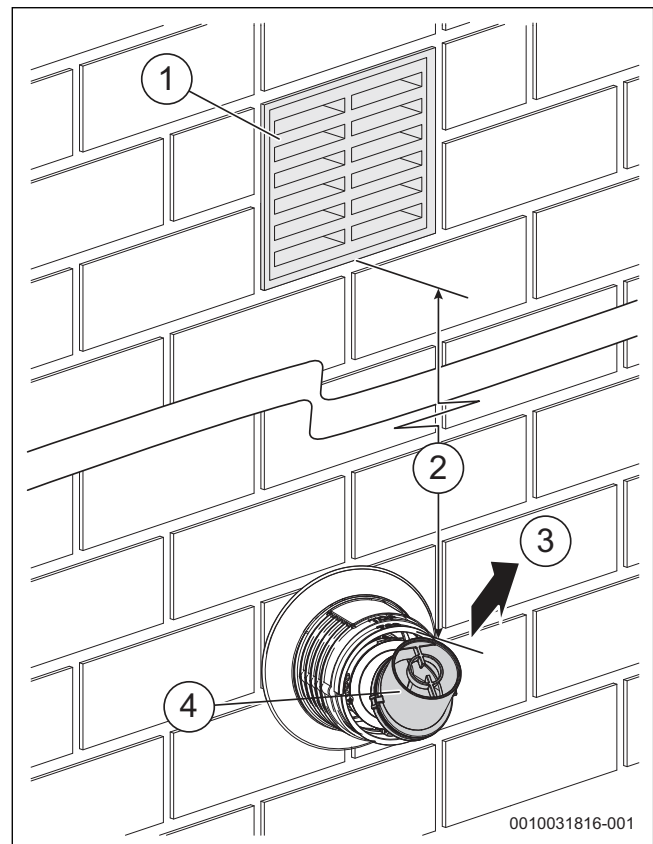


Fig. 23 Plume redirect distance to an opening

- [1] Opening to building
- [2] Minimum 1,500mm from an opening in the building
- [3] Flue gas discharge
- [4] Terminal end

## 5 Plume management system

### 5.1 Plume management product information

#### Plume management kit - 7 716 191 086

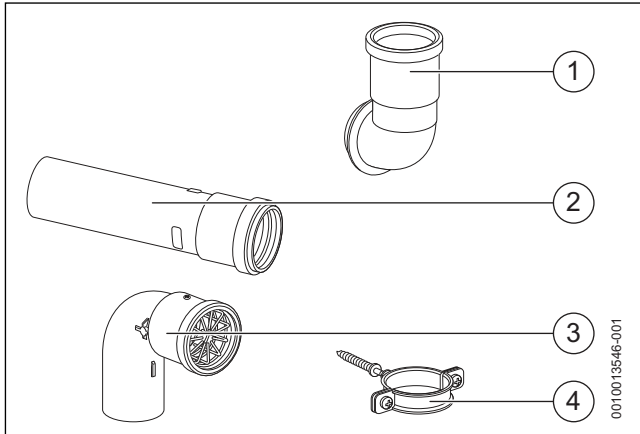


Fig. 24 60mm plume management kit components

- [1] Terminal elbow
- [2] Extension 500mm
- [3] Outlet assembly
- [4] Support bracket

#### 60mm plume management accessories

1	1000mm extension with support clamp	7 716 191 087
2	90° elbow	7 716 191 088
3	45° elbow (set of 2)	7 716 191 089
4	Support bracket	8 716 111 275 0

Table 4

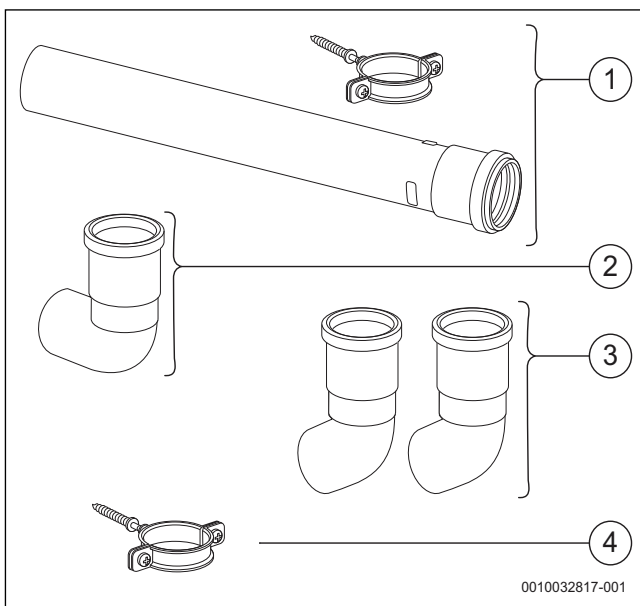


Fig. 25 Plume management accessories

### 5.2 Plume management options and measurements



#### WARNING:

#### Minimum plume management length:

A minimum measured distance of 500mm must be maintained between air inlet and exhaust.

- Do not terminate the plume management inside the terminal exclusion zone (shaded area) shown in figure 26.

#### NOTICE:

#### Plume management length:

- The plume management length must be a minimum of 500mm. The plume management length must not exceed the maximum straight length for a horizontal Ø 60/ 100mm flue with a 60mm plume management system. The maximum Ø 60/ 100mm flue lengths are stated in the relevant appliance Installation and maintenance instructions.



Horizontal plume management runs:

- The initial run from the terminal elbow must have a minimum of a 10° fall back, to the appliance for proper disposal of condensate (stop tabs in the elbow ensure that fall back is not less than 10°).
- Any further runs after an elbow must be at least 3° fall back to the appliance.



Effective plume management length:

- Because of the longer terminal end, two 45° bends must be employed to bring the plume management close enough to the wall for a support clamp to be fitted.
- The 45° bends can found in the 60mm plume management accessory kit.
- The effective length of the minimum measured 500mm will be two 45° bends at 1,500mm effective length plus a straight piece of plume extension, at approximately 300mm. This will achieve a measured 500mm from the flue inlet, but an effective length of 1,800mm. This must be taken into account when calculating the effective total length of the plume management.

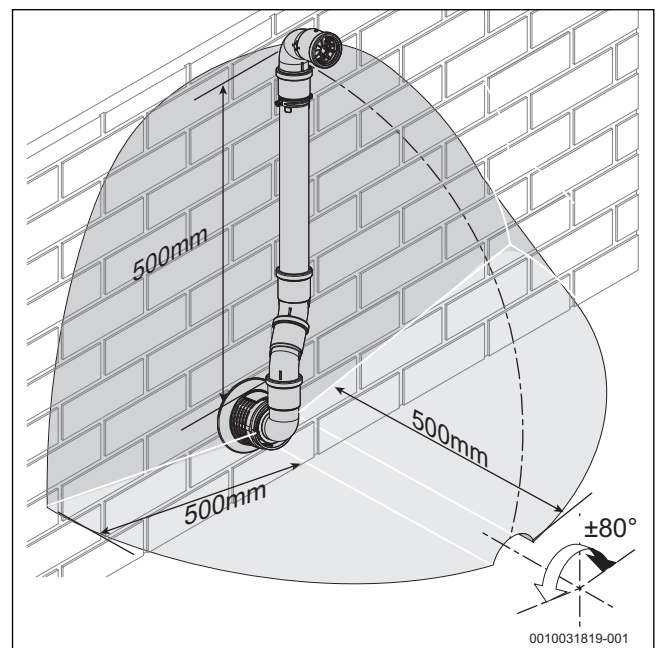


Fig. 26 Terminal exclusion zone

#### 5.2.1 Example plume management installation options

M	Plume management effective length
X	Terminal exclusion zone
1	Terminal elbow
2	Extension 500mm
3	Outlet assembly/90° elbow



4	Support clamp
5	1,000mm extension with support clamp
6	45° elbow
7	60mm support clamp (third party)

Table 5 Key to example installation options

5.2.2 Standard plume management kit

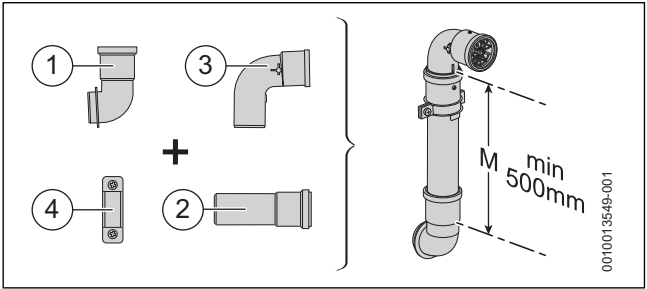


Fig. 27 Standard option

5.2.3 Extended vertical plume management kit example

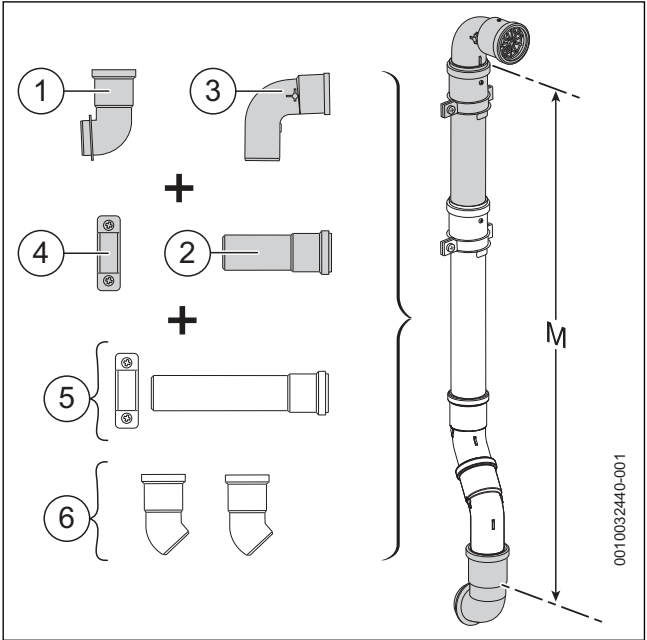


Fig. 28 Extended option

5.2.4 Offset plume management kit example

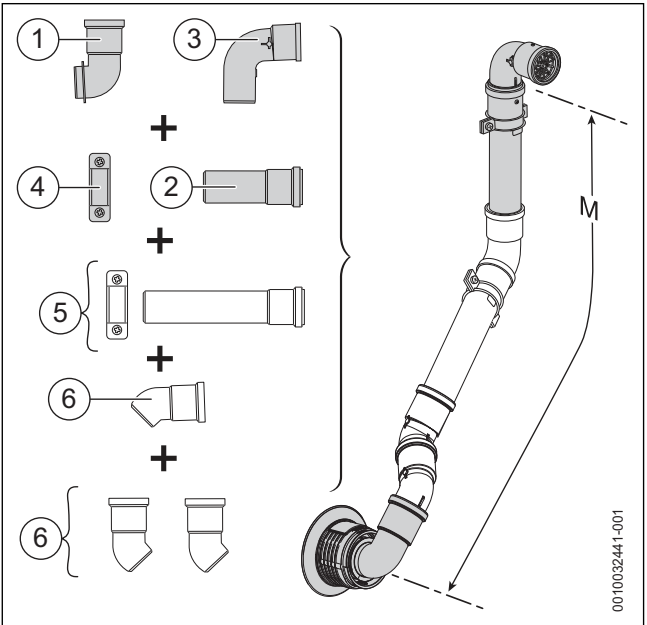


Fig. 29 Offset option

5.2.5 45° Elbow offset plume management kit example

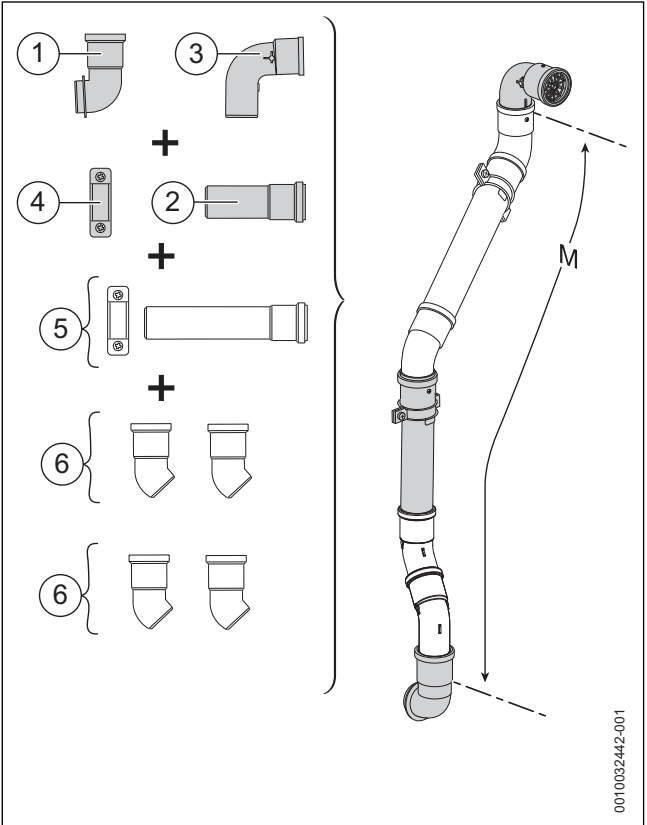


Fig. 30 45° offset option

### 5.2.6 Angled plume management kit example

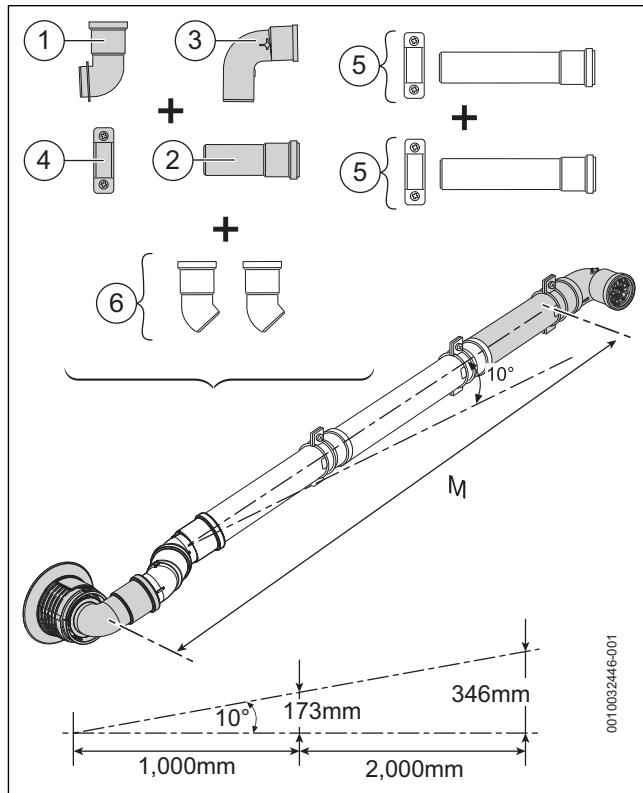


Fig. 31 Angled option

### 5.2.7 Plume management kit under a balcony-overhang



The extension pipe [2] must be supported as close to the 90° elbow [3] and before the end of the balcony/overhang to provide adequate support.

- If the supplied brackets are not long enough then third party 60mm pipe brackets [7] can be used.



The shaded area is the exclusion zone for plume discharge. The discharge must be outside this zone.

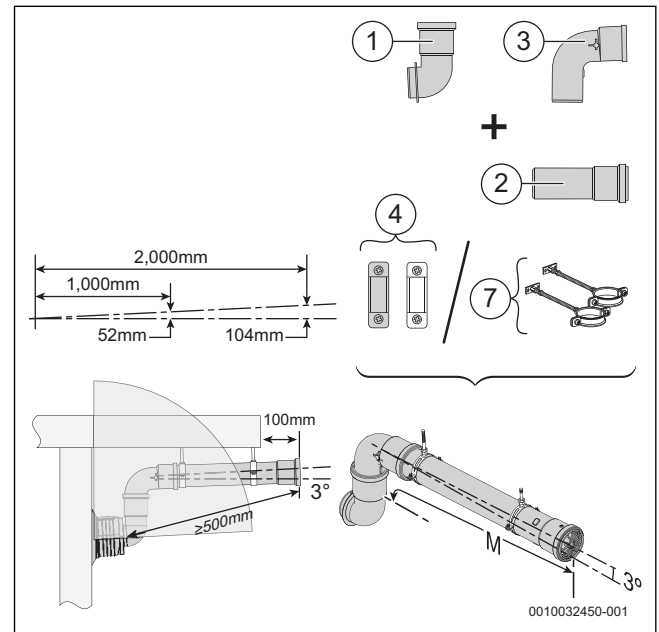


Fig. 32 Under a balcony/overhang option

### 5.2.8 Extended plume management kit under a balcony



The shaded area is the exclusion zone for plume discharge. The discharge must be outside this zone.



Because of the extended flue terminal, two 45° elbows [6] are required in the extension to bring the plume management close enough to the wall so that the support bracket can be used.

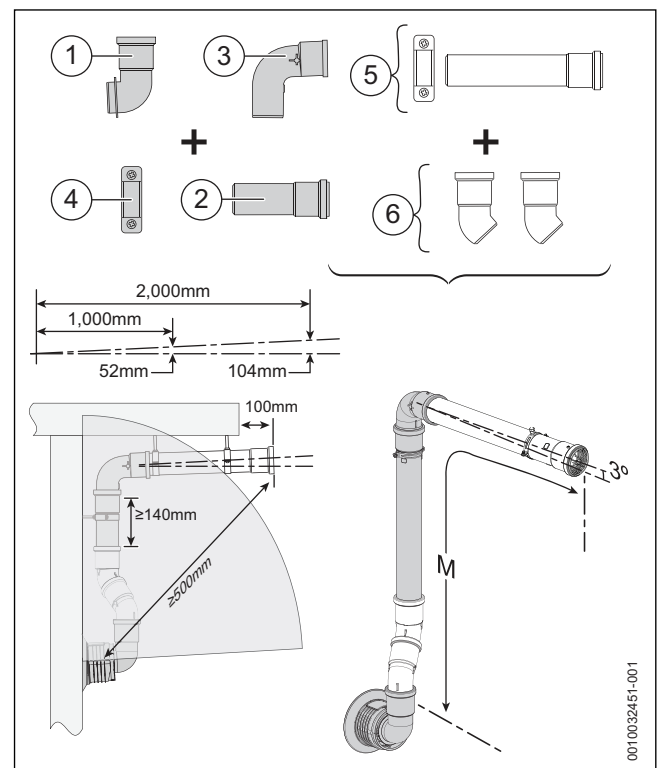


Fig. 33

### 5.2.9 Vertical plume discharge above roof/overhang



This type of installation is only used if it is not possible to terminate the plume management kit in the normal manner.

- ▶ Ensure the discharge pipe is adequately supported as potentially the majority of the discharge pipe extends past the roof/overhang.
- ▶ The discharge pipe must vertically clear the roof/overhang by a minimum of 100mm.
- ▶ The discharge pipe must have a clearance of 300mm to a surface or boundary line.
- ▶ If the supplied brackets are not long enough then third party 60mm pipe brackets can be used.

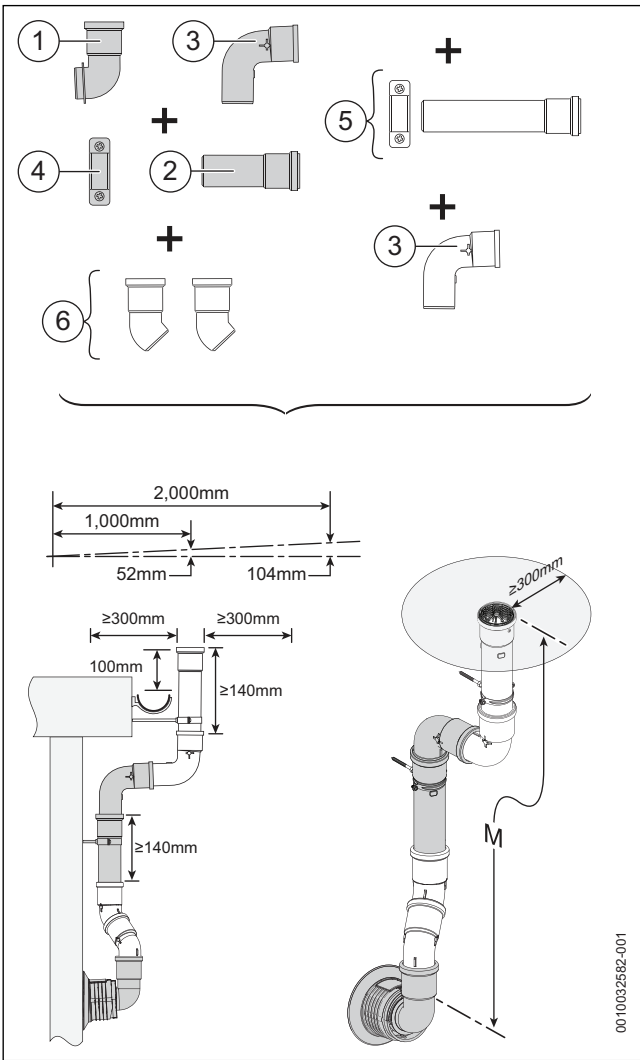


Fig. 34 Vertical plume discharge above roof/overhang option

### 5.3 Determine the plume management system length



The maximum permissible length of the plume management for Worcester Greenstar wall mounted condensing gas appliances is 4,500mm. The primary length of internal Condensfit II flue will be reduced by fitting the plume management kit.

Refer to relevant appliance Installation instructions to determine the appropriate plume length (M) versus the flue length (L).

The flue length is the effective length (L), which includes the effective length of any elbows plus the straight flue lengths.

Once the length L is known, find that value in the relevant appliance Installation instruction to determine the maximum plume length (M) allowed.

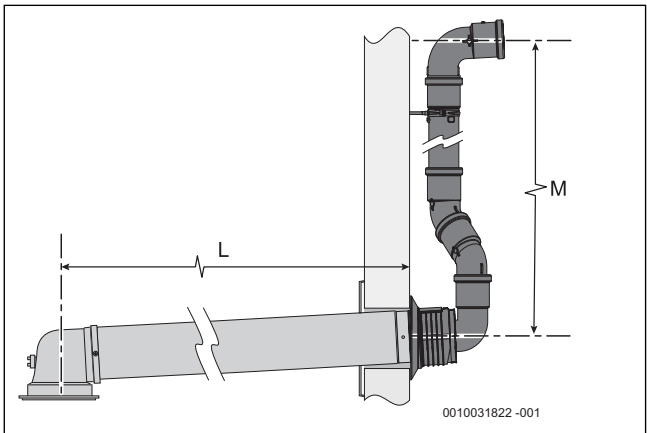


Fig. 35 Effective lengths determination

[L] Effective flue length

[M] Effective plume management length

#### Effective flue lengths versus plume management lengths

The graph for the appliances listed below detail the effective flue lengths versus plume management lengths, for all other appliances the details are in the Flue sections of the appliance Installation and maintenance instructions.

The lengths for both plume and flue are the effective lengths, which includes the effective length of any elbows plus the straight lengths.



#### Appliances covered

- ▶ For the CDi range of appliances including British Gas variants, the available plume length [M] is reduced as the flue length [L] increases.
- ▶ The Si, i System, i Junior and Ri can use up to 4,500mm of plume management regardless of flue length.
- ▶ Any flue must have a minimum of 500mm plume length.

The graph can be used to calculate:

- **Effective flue length [L]** if a specific effective plume length is required.
- **Effective plume length [M]** if a specific effective flue length is required.

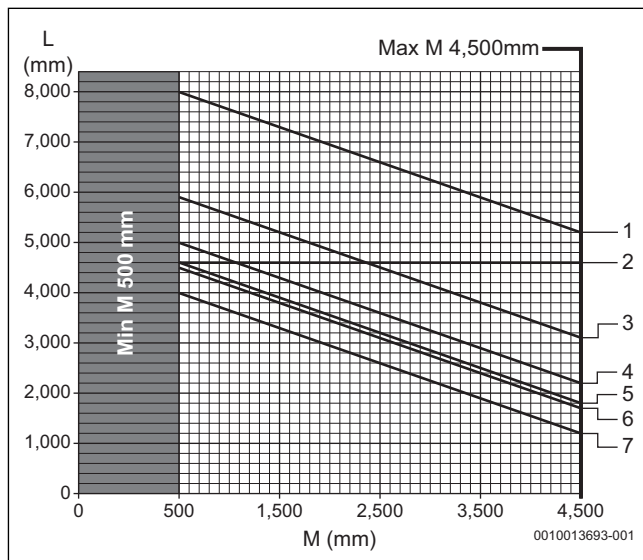


Fig. 36 Effective flue lengths versus plume management lengths

[L] Effective flue length

[M] Plume management length allowed

Appliance	
1	Greenstar 27CDi
2	Greenstar Si, i Junior, i System & Ri
3	BG430/i, Greenstar 30CDi Regular, System, 29CDi ErP, 30CDi Regular ErP & 30CDi System ErP
4	Greenstar 30CDi, 34CDi Erp & 35CDi System ErP
5	BG532/i
6	BG537/i & Greenstar 37CDi
7	BG542/i Greenstar 42CDi, 40CDi Regular, 40CDi Regular ErP, 38CDi ErP & 42CDi ErP

Table 6 Appliances effective flue lengths versus plume management lengths

### 5.3.1 Plume management length

Plume management length (M) is calculated from the centre of the terminal, along the required route to the centre of the plume outlet.

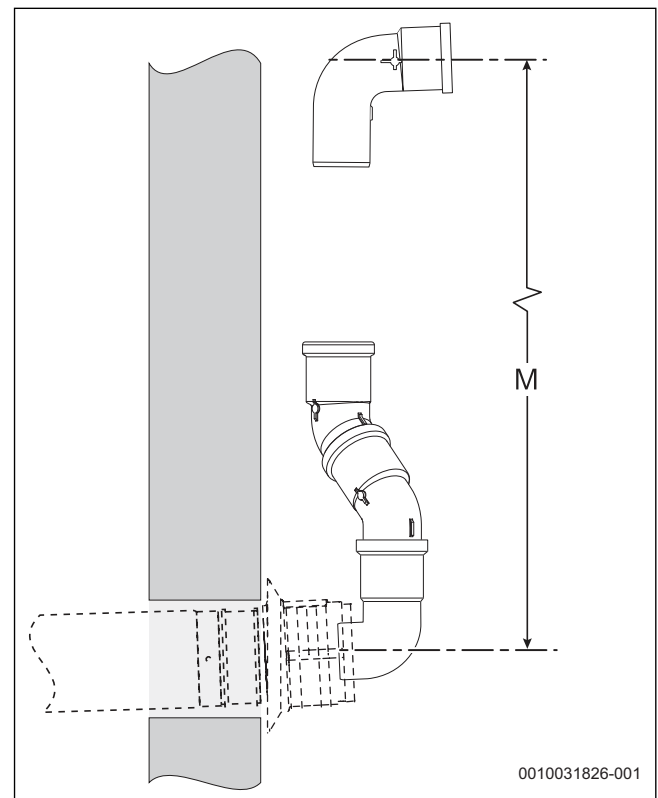


Fig. 37 Plume management length M

### Minimum plume extension length

The minimum extension length between two elbows/offsets is 140mm, this allows for a good seal at the connection joints,

Also remember when fitting the extension tube into elbows/extension fully into the outlet assembly [2], then withdraw the tube approximately 10mm to allow for expansion

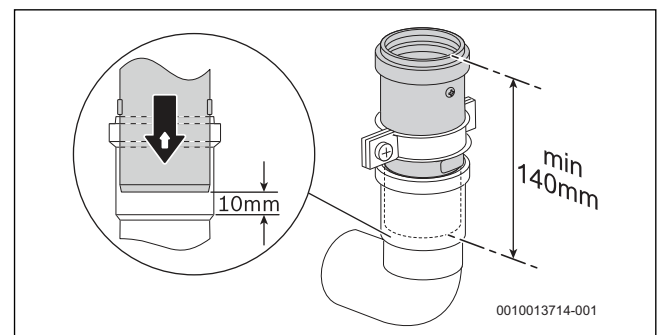


Fig. 38

### 5.3.2 Plume management elbows

Adding additional elbows to the standard plume management kit system reduces the actual plume management length. Each elbow has an equivalent straight length and must be factored into the overall effective length.

- 90° elbow is equivalent to 1,500mm.
- 45° elbow is equivalent to 750mm.

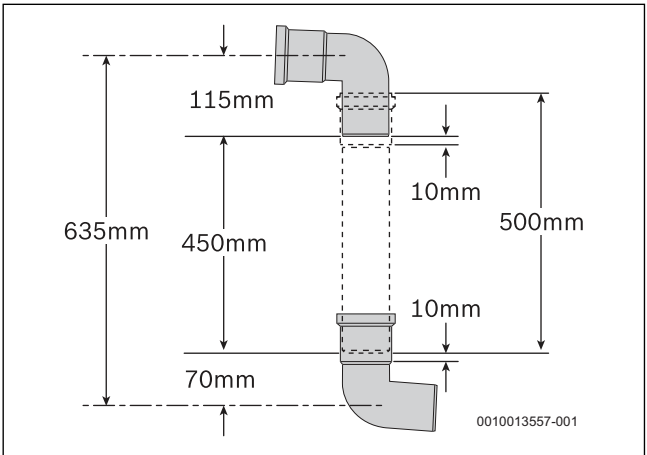


Fig. 39 Plume management 90° elbows offset example

#### 90° Elbows offset dimensions



The plume management kit run must be adequately supported to ensure it does not separate.

- Use support brackets either side of the offset.

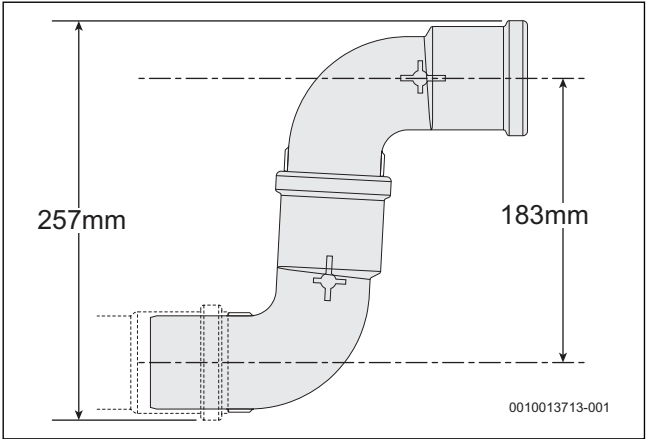


Fig. 40 90° elbows offset dimensions

#### 45° Elbows offset dimensions



The plume management kit run must be adequately supported to ensure it does not separate.

- Use support brackets either side of the offset.

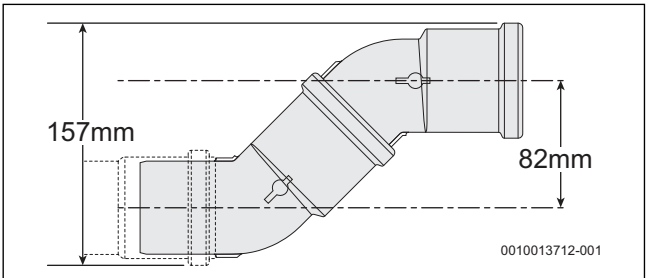


Fig. 41 45° elbows offset dimensions

### 5.4 Plume management Installation



To ease assembly of the flue components, lightly grease the seals with the solvent-free grease supplied.

- Check all the seals are properly seated in the grooves provided and are in good condition.
- All flue joints must be sealed to prevent leakage of condensate and flue products.



Horizontal plume management runs:

- The initial horizontal run from the terminal elbow must have a minimum 10° fall back, (stop tabs in the elbow prevent less than 10°) to the appliance for proper disposal of condensate.
- Any further horizontal runs after an elbow can be 3°.

#### NOTICE:

#### Damage to flue or terminal outlet.

Do not rotate the complete flue terminal assembly.

- The flue terminal outlet has built-in stops to limit rotation for horizontal fluing. This prevents unwanted rain water from entering the appliance. Do not attempt to force beyond the limit stops.

#### 5.4.1 Installation examples



The plume extensions include a support clamp and are used to support the plume management system at the joint connection point. Each support clamp retains one length of Plume management extension. When assembling multiple lengths of plume management, fully engage the extension and then withdraw the tube approximately 10mm to allow for expansion and contraction during operation and expansion due to weather conditions.

#### Support clamp fitting

Support clamp (→ figure 42)

- Mark the position [1] for the wall clamp [2] so that it coincides with the extension tube just below the top fitting (there are tabs [3] that will position the clamp up against the top fitting). Allow for the 10mm expansion gap on all joints.
- Drill a hole to suit the wall plug and fit the wall plug.
- Screw in the support clamp into the wall plug to the distance shown in figure 42.

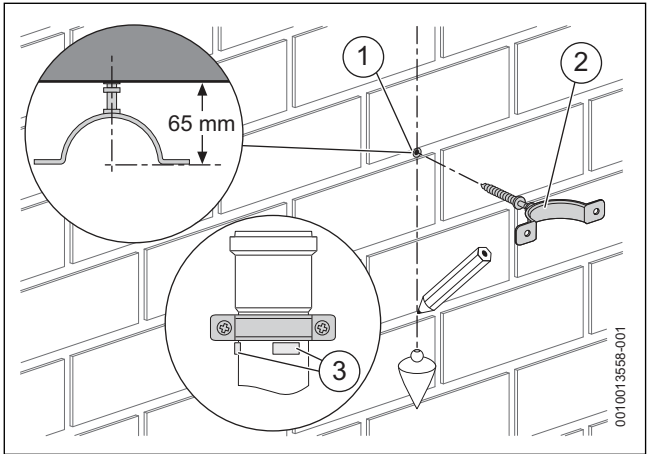


Fig. 42 Support clamp fitting

### Terminal elbow fitting

Terminal elbow (→ figure 43)

- ▶ Remove and retain the retaining screws [2] and discard the terminal end [3].
- ▶ Fit the terminal elbow [1] to the terminal outlet and set the rotation of the terminal elbow depending on the plume installation option required.
- ▶ Secure the terminal end [1] with the screws [2] removed previously.

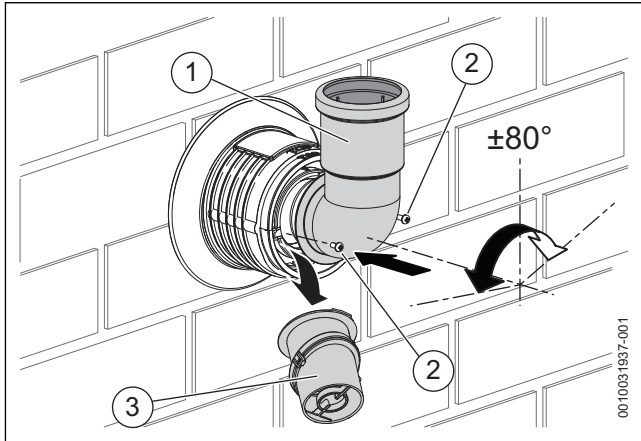


Fig. 43 Plume management terminal elbow

### Extension fitting

Extension tube - Vertical (→ figure 44)

- ▶ Push the 45° elbow [4] fully into the terminal elbow [3], the stop tabs set the depth and allow for expansion.
- ▶ Push the second 45° elbow fully into the first, the stop tabs set the depth and allow for expansion.
- ▶ Orient the 45° elbows to bring the extension close to the wall to allow a support clamp to be fitted.
- ▶ Secure the extension [2] to the wall with the support clamp and screws provided [1].

Extension tube - at 45° with additional elbow (45° elbow example → figure 44)

- ▶ Push the 45° elbow [4] fully into the terminal elbow [3], the stop tabs set the depth and allow for expansion.
- ▶ Push the second 45° elbow fully into the first, the stop tabs set the depth and allow for expansion.
- ▶ Orient the 45° elbows to bring the extension close to the wall to allow a support clamp to be fitted.
- ▶ Push the extension tube [2] fully into the 45° elbow [3], then withdraw the tube approximately 10mm to allow for expansion.
- ▶ Secure the extension [2] to the wall with the support clamp and screws provided [1].
- ▶ Push the 45° terminal elbow [4] fully into the extension tube [2], the stop tabs set the depth and allow for expansion.
- ▶ Further extensions are fitted in the same way as previously described.

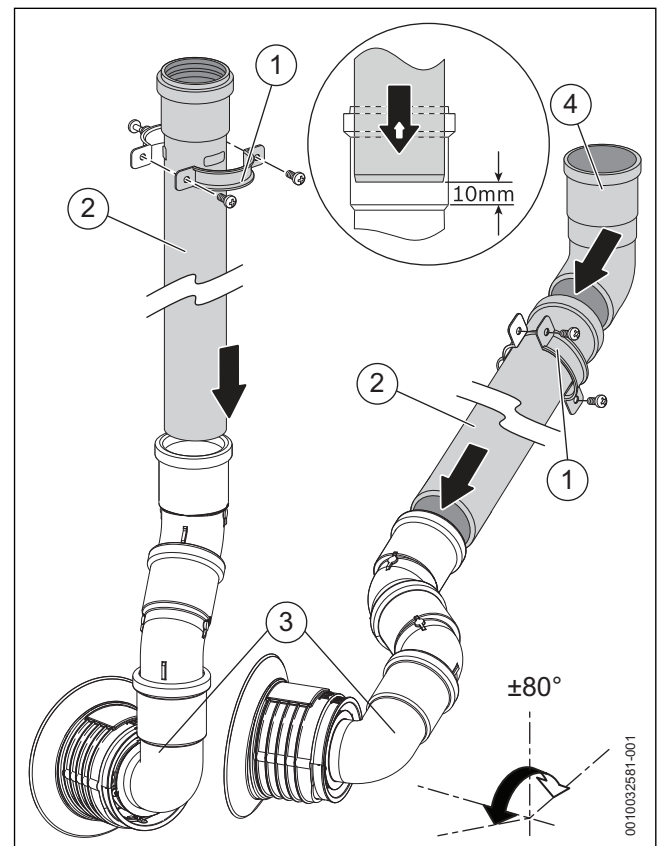


Fig. 44 Plume extension fitting

### Discharge elbow fitting

Outlet assembly (vertical orientation → figure 45)

- ▶ Secure the extension [4] to the wall with the support clamp and screws provided [3].
- ▶ Push the outlet assembly elbow [1] fully into the extension tube [4], the stop tabs set the depth and allow for expansion.
- ▶ Rotate the outlet assembly [1] to the required direction permitted.
- ▶ Secure the outlet assembly elbow [1] to the extension [4] with the self-tapping screw [2] provided.

Outlet assembly (angled orientation → figure 45)

- ▶ Secure the extension [4] to the wall with the support clamp and screws provided [3].
- ▶ Push the outlet assembly elbow [1] fully into the extension tube [4], the stop tabs set the depth and allow for expansion.
- ▶ Rotate the outlet assembly elbow [1] to the required direction permitted.

- Secure the outlet assembly elbow [1] to the extension [4] with the self-tapping screw [2] provided.

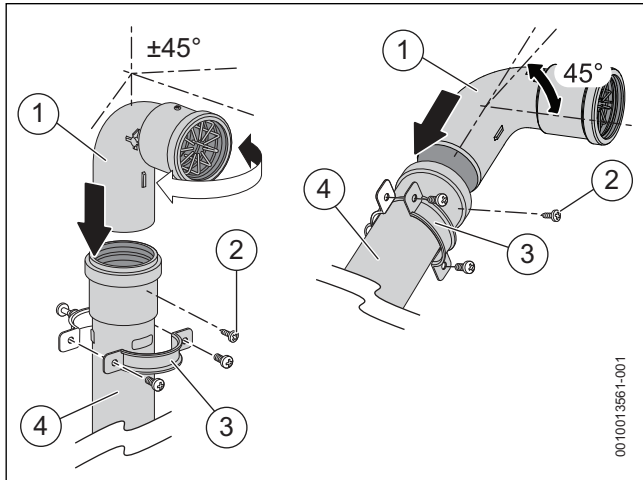


Fig. 45 Fitting the discharge elbow

#### Under balcony/overhang extension fitting

Refer to figure 46.

- Secure the extension [7] to the wall with the support clamp and screws provided [5].
- Remove the screw [1] from the outlet assembly elbow [2] and remove the grill [3].
- Push the outlet assembly elbow [2] fully into the extension tube [7], the stop tabs set the depth and allow for expansion.
- Mark the support for the extension run under the balcony/overhang, a support clamp is supplied with the extension tube.



The outlet of the extension tube must project at least 100mm past the balcony/overhang

- Drill a hole to suit the wall plug and fit the wall plug.
- Screw in the support clamp into the balcony/overhang plug to the distance shown in figure 46.
- Push the extension tube [4] fully into the outlet assembly [2], then withdraw the tube approximately 10mm to allow for expansion.
- Secure the extension [4] to the wall with the support clamp and screws provided [5].

- Drill a hole through the plume outlet end secure the grill in place with the screw [1] removed earlier from the outlet assembly elbow.

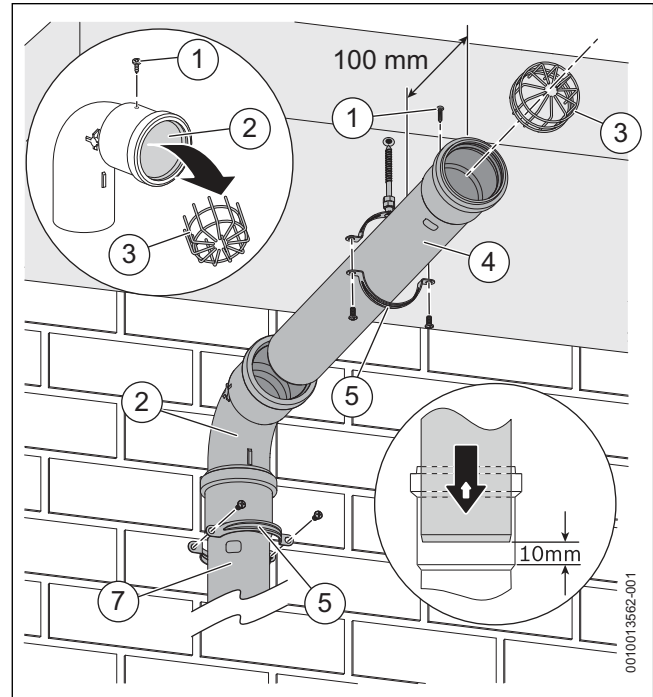


Fig. 46 Fitting extension under balcony/overhang

### 5.5 Redirecting the plume terminal discharge



The plume deflector can be adjusted to redirect the flue discharge.

#### NOTICE:

#### FLUE DISCHARGE

- The Plume terminal outlet position must follow the conditions stated in figure 47. When redirecting the flue discharge the outlet must be at least 1,500mm from and angle at least 45° away from any opening in the direction of the discharge, as shown. This is to prevent combustion products from entering the building.



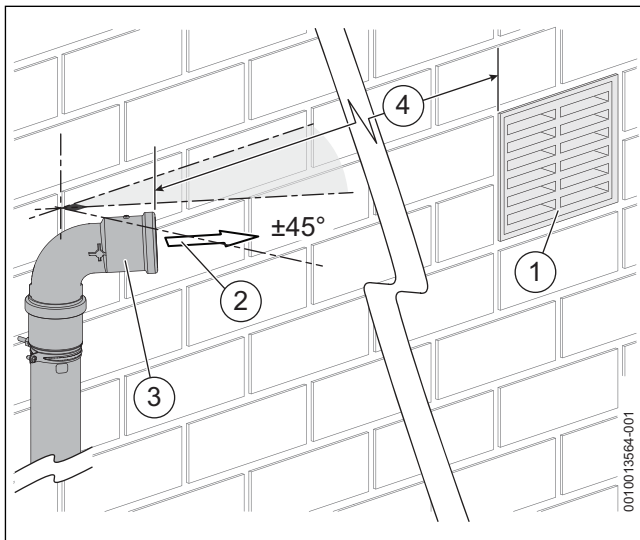


Fig. 47 Plume direction conditions

- [1] Opening in the building i.e. air brick, window.
- [2] Direction of the flue products, must be more than 45° from the wall or structure.
- [3] Plume terminal.
- [4] At least 1,500mm from any opening in the building.

## 6 Inspection and spares

### 6.1 Inspection and maintenance

- An annual visual check of the flue system including the plume management kit (if fitted) must be carried out in addition to the checks stated in the appliance Installation and maintenance Instructions.

#### NOTICE:

#### Painting

- Do not paint the plume management kit.

### 6.2 Spare parts

Replacement wall mounted horizontal flue components.











	Terminal outlet assembly 8 716 11 209 0		Wall seal - inner 8 716 11 211 0
	Flue screw pack 8 713 406 039 0		Collar - Flue elbow 8 716 11 254 0
	Air sample point plug - Flue elbow (white) 8 716 11 253 0		Flue gas sample point cap & seal - Flue elbow (white) 8 716 11 252 0
	Air sample point plug - Flue elbow (silver) 8 7137 709 576		Flue gas sample point cap & seal - Flue elbow (silver) 8 737 709 577
	Connection joint seal - 102mm 8 716 111 673 0		Connection joint seal - 62mm 8 711 004 367 0

Table 7 Spare parts list

TECHNICAL SUPPORT: 0330 123 3366  
RENEWABLE SUPPORT: 0330 123 9229  
CONTROLS AND CONNECTIVITY TEAM: 0330 123 3641  
APPOINTMENTS: 0330 123 9339  
SPARES: 0330 123 9779  
LITERATURE: 0330 123 9119  
TRAINING: 0330 123 0166  
SALES: 0330 123 9669

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