

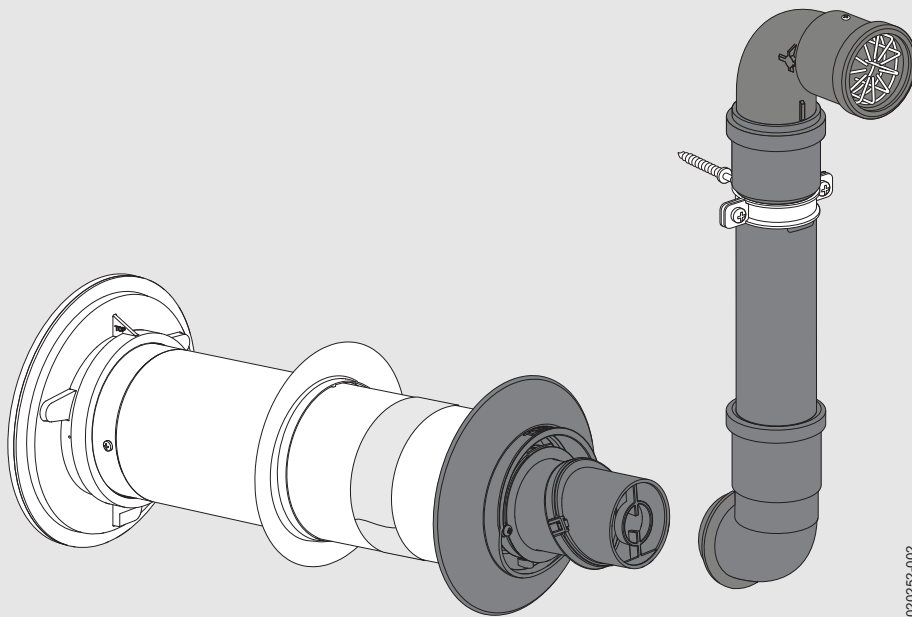
Flue kit installation instructions

8000 F Flue Kit 60/100 Horizontal

Greenstar Condensfit II Floor Standing

7724001996 | 7716191086

Condensfit II FLOOR
STANDING



0010020252-002



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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 minimizing danger are not taken.

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



DANGER

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



WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in serious personal injury or danger to life.



CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor to moderate personal injury.

NOTICE

ATTENTION 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.

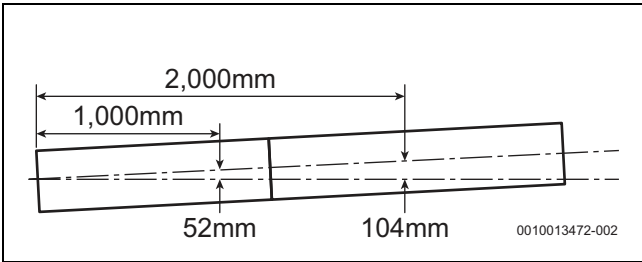


Fig. 1 Slope for condensate disposal

- ▶ 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

Support the flue at approximately one metre intervals and at a change of direction, use suitable brackets and fittings.

Flue System



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

Replacing an existing flue

When replacing an existing Condensfit II floor standing 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.

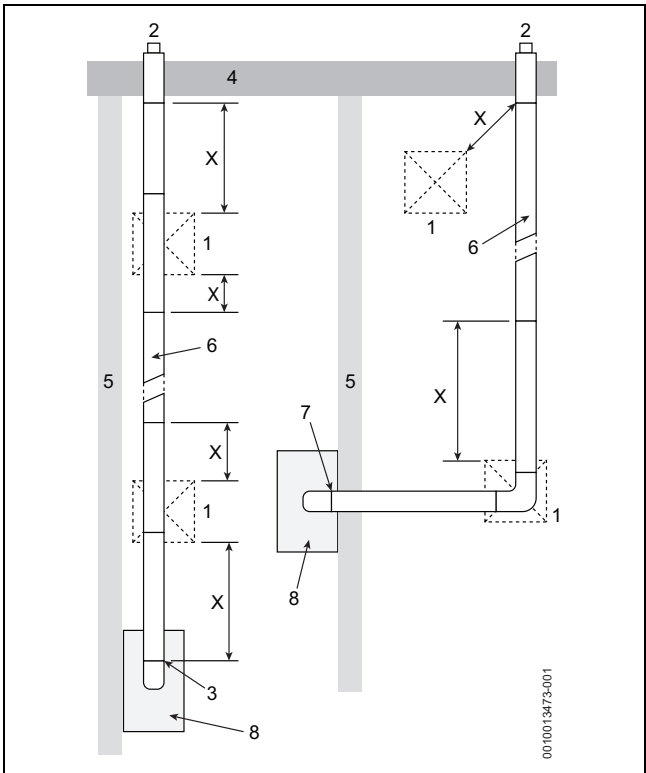


Fig. 2 Flues in voids (example shown as horizontal flue)

- [X] This dimension must not be more than 1.5 metres (applies to all flue orientations).
- [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 (applies to all flue orientations).
- [7] Accessible flue connection
- [8] Appliance

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 accessories kits:

- 7 724 001 996, 8000 F Flue Kit 60/100 Horizontal
- 7 716 191 086, Plume management system

These 60/100mm flue kit accessories are intended for use with Worcester Greenstar floor standing condensing gas appliances listed in the following Appliance Compatibility section.

The flue elbow and flue connector have 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 Appliance Compatibility

For use with the following Worcester gas-fired floor standing appliances:

- Greenstar 8000 F 35kW Combi
- Greenstar 8000 F 50kW Combi
- Greenstar 8000 F 35kW Regular
- Greenstar 8000 F 50kW Regular

2.2 Scope of delivery

- 7 724 001 996

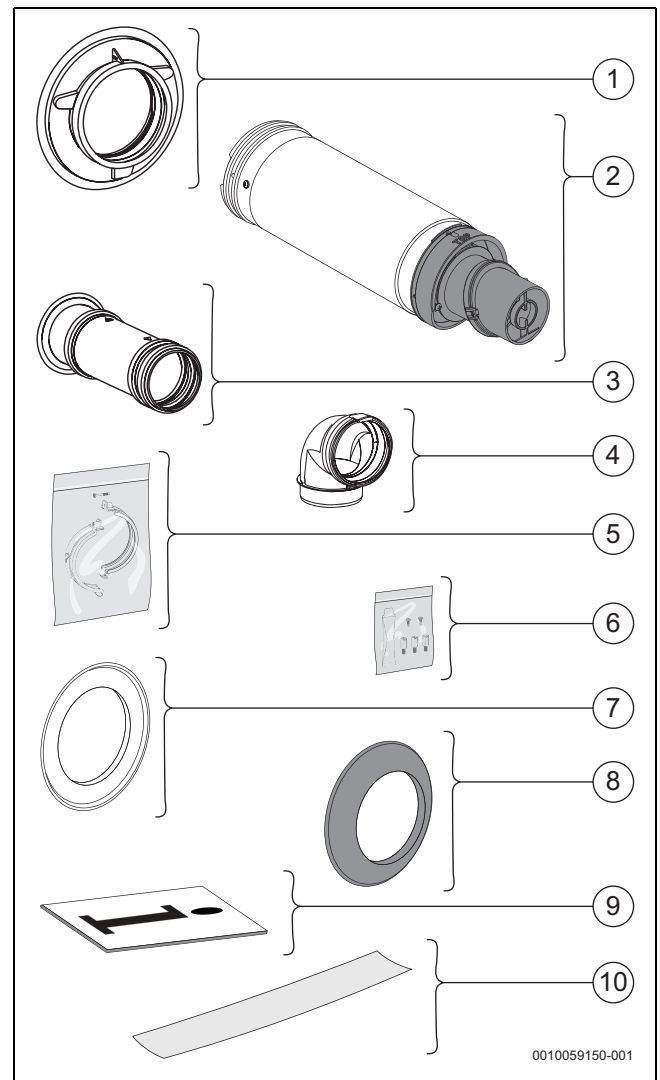


Fig. 3 Scope of delivery

- [1] Flue connector
- [2] Telescopic flue
- [3] Flue adaptor
- [4] 93° Elbow
- [5] Flue retainer clamp - large
- [6] Grease pack
 - Securing screws x 2
 - Sachet of grease
- [7] Inner seal (white)
- [8] Outer seal (black)
- [9] Instructions
- [10] Aluminium tape

2.3 60/100mm flue accessories

1	Vertical flue connector and small clamp ¹⁾	7 733 601 590
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

1) Vertical flue connector is required when connecting the horizontal flue kit for higher level flue discharge compared to the standard rear/side horizontal flue discharge.

Table 2 Accessories

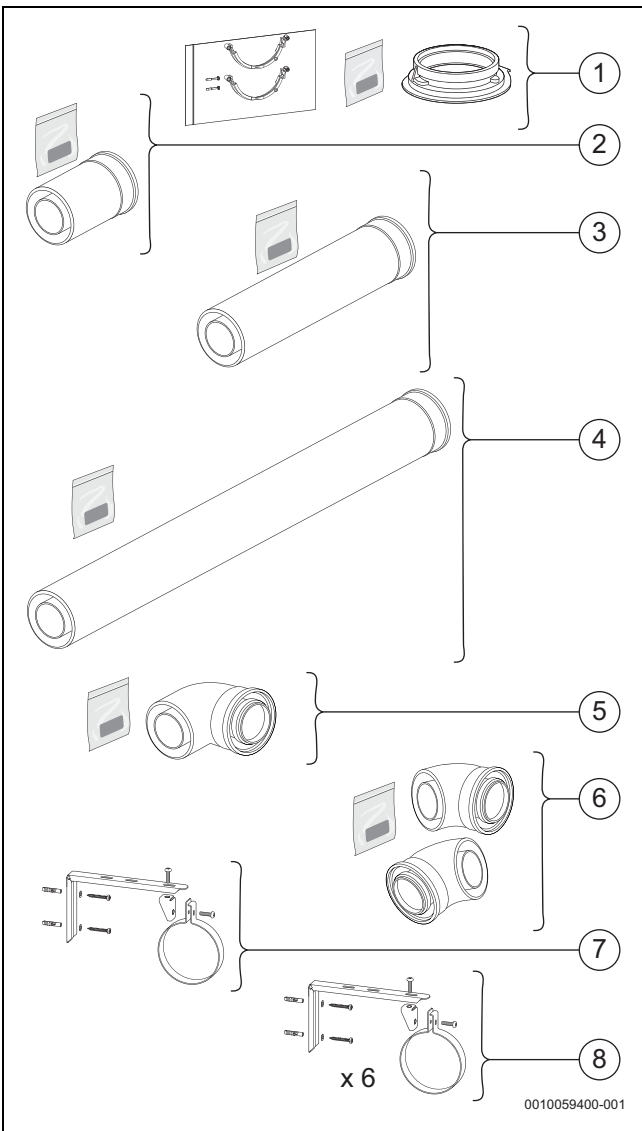


Fig. 4 Accessories

3 Pre-installation



CAUTION

Flue joints and cut sections

- Secure all joints and the telescopic flue adjustment tubes 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 the plastic inner flue.
- When cutting sections, always take care not to damage the tubes, chamfer the edge of the plastic inner tube and remove any burrs from both tube sections to assist in ease of connection and to prevent seal damage.



Flue joints 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:

- For maximum flue lengths see the Installation and maintenance instructions manual for the appliance the flue kit is being installed onto.

3.1 Preparation

3.1.1 Flue measuring

NOTICE

Flue and plume management length:

- ▶ 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.



There is a lip [1] on the inside of the flue adaptor that prevents the flue from being pushed into the boiler (→ figure 5).

The telescopic flue assembly allows for adjustment and can reduce the need for cutting extensions for some flue lengths.

- ▶ Measure the flue length L from the flue adaptor, along the route of the flue system, to the face of the outside wall.
- ▶ Select the required number of extensions and elbows to achieve the required flue run.
- ▶ If the flue requires cutting:
 - Set the telescopic flue length to 400mm.
 - Secure the joint with the screws and tape provided.
 - Subtract 400mm from the measured flue length L to determine the amount to be cut off an extension.

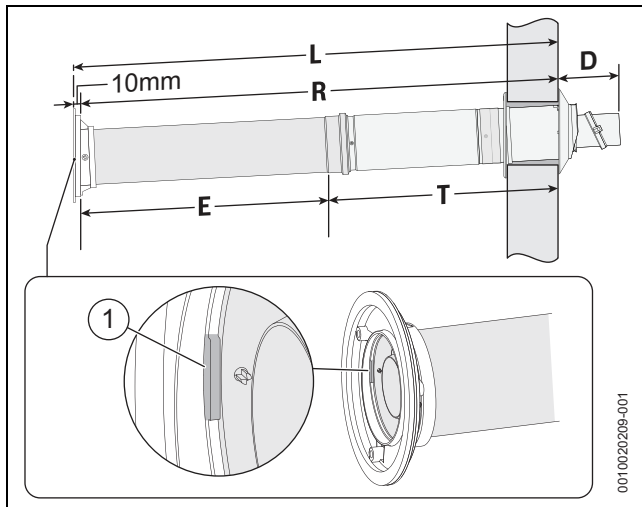


Fig. 5 Flue length determination (extended flue example)

- [1] Lip preventing flue from being pushed into the appliance
- [D] Terminal protrusion 110mm
- [L] Effective length of the flue system
- [R] Actual length of the flue sections ($L - 10\text{mm} = R$)
- [E] Extension flue length
- [T] Telescopic flue length



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.

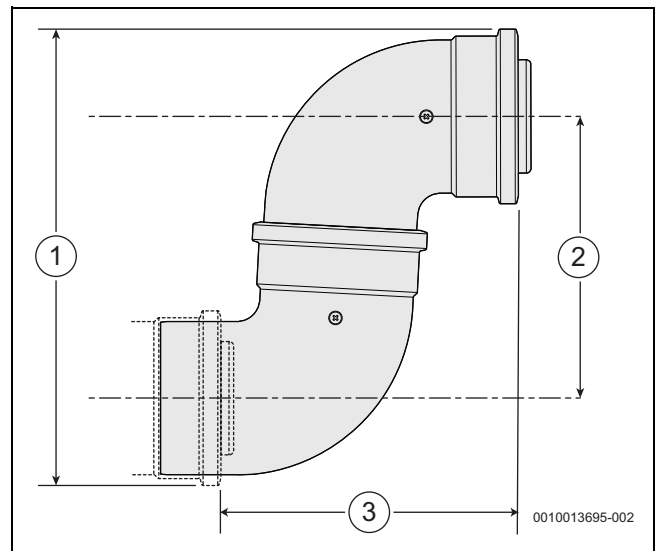


Fig. 6 90° elbows offset

- [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.

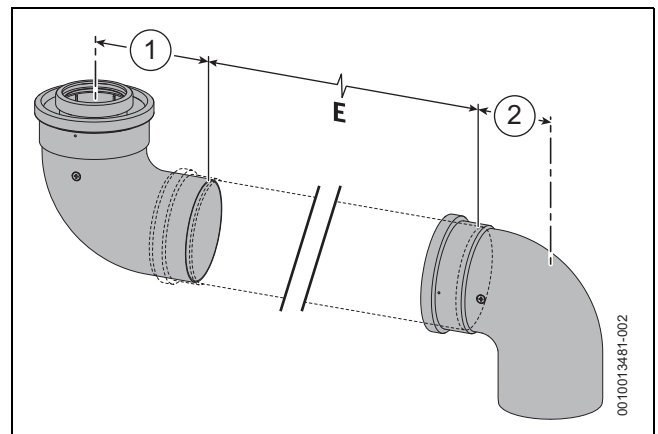


Fig. 7 90° elbow with extension offset dimensions

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

45° Elbows offset dimensions

Figure 8 shows the 45° elbow offset.

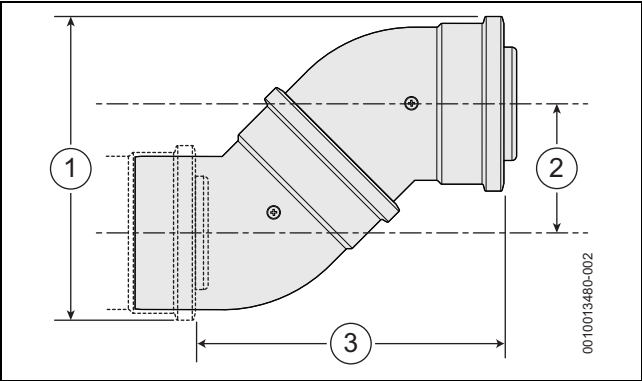


Fig. 8 45° elbows offset dimensions

- [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.

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.

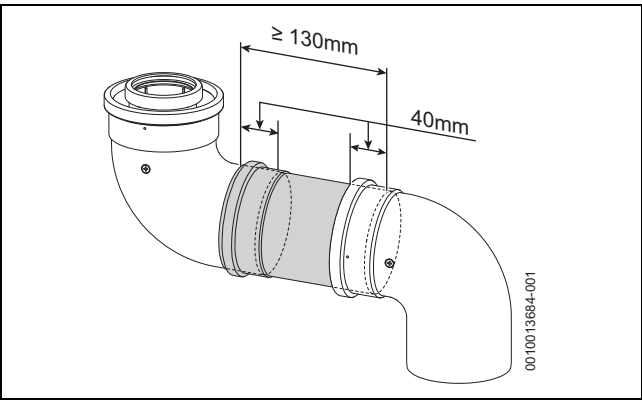


Fig. 9 Example with 90° elbows

3.1.2 Telescopic flue lengths

The telescopic flue can be adjusted to accommodate most wall thicknesses, see figure 10. The flue length can be reduced by cutting the terminal assembly section of the telescopic flue see figure 12.

Adjusting the telescopic flue length

- Extend the terminal assembly (inner section) [1] by withdrawing from the sleeve section (outer section) [2] to achieve the flue length required to exit the wall [3].

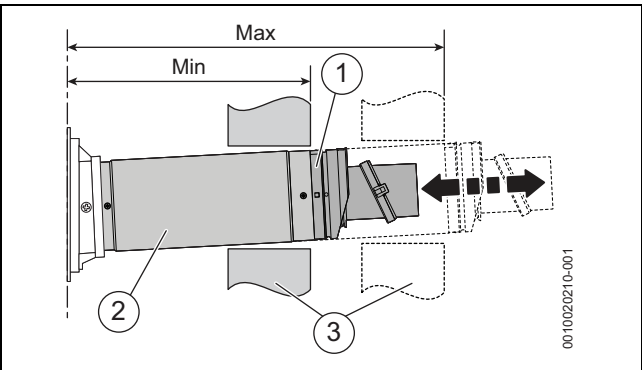


Fig. 10 Telescopic flue kit lengths

Telescopic flue kit	Minimum length	Maximum length
Standard	310mm	530mm

Table 3 Telescopic flue kit lengths

Reducing the telescopic flue length

Refer to Figure 11.

- Remove the securing screws [2] located each side, at the end of the flue connector [1] and separate the flue connector from the telescopic flue.
- Separate the sleeve section [4] from the terminal assembly section [3] and discard the sleeve section [4].

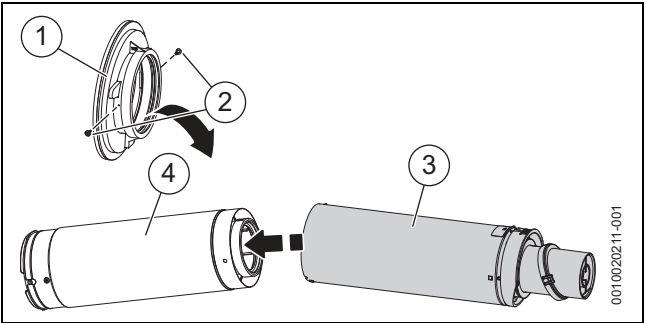


Fig. 11 Removing flue connector and separating telescopic flue

Refer to figure 12

- To use the terminal assembly section [2] without cutting, remove the location lug [1] on the plastic inner tube and remove any burrs.
- For a shorter length:
 - Mark the length required from the raised tab [3] on the terminal end down the length of the terminal section, minimum 130mm.
 - Cut square, taking care not to damage the tubes, remove the unwanted section [4], chamfer the edge of the plastic inner tube and remove any burrs from both tube sections.

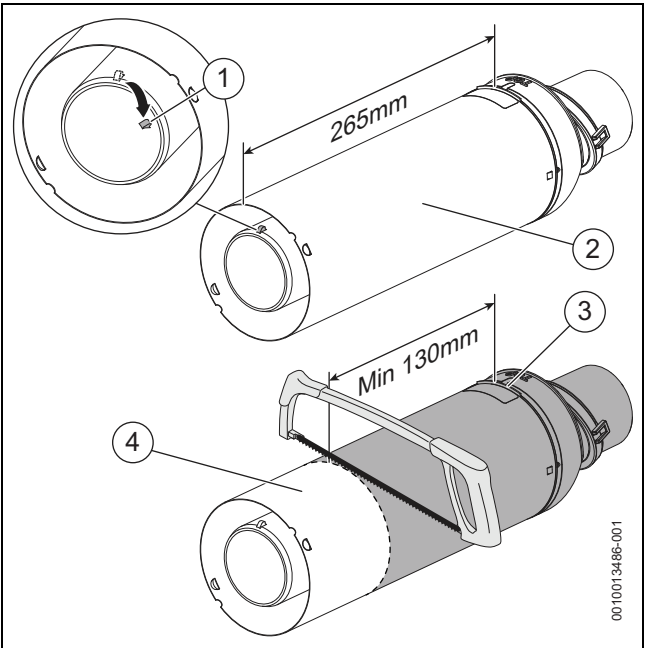


Fig. 12 Shortening the terminal assembly

Telescopic flue kit	Terminal assembly length [Ta]
Standard	265mm

Table 4 Terminal assembly length

Horizontal flue connector correct orientation

Figure 13 shows the correct orientation when refitting the horizontal flue connector to the horizontal flue.

- ▶ Ensure the horizontal flue connector [1] is correctly orientated for refitting.
 - “TOP” indicated on flue connector ensuring the 3° rise from the appliance for correct flue installation.
- ▶ Fit the horizontal flue [3] firmly into the horizontal flue connector [1] and drill 3mm pilot hole through the outer flue tube of horizontal flue [3] and the horizontal flue connector [1].
- ▶ Secure with the screws [2] provided with the horizontal flue connector [1].

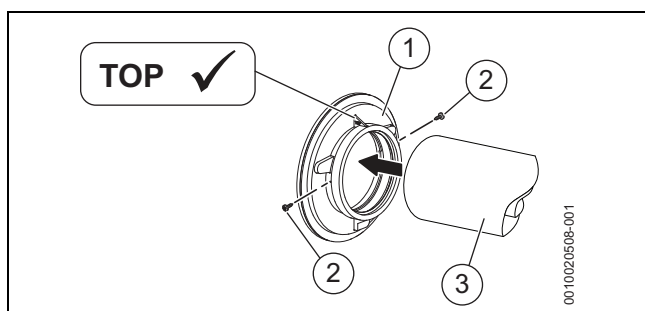


Fig. 13 Horizontal flue connector fitting

- [1] Flue connector
- [2] Securing screws
- [3] Horizontal flue

3.1.3 Reducing extension flue tube length



Flue extensions:

- ▶ Flue extensions 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.

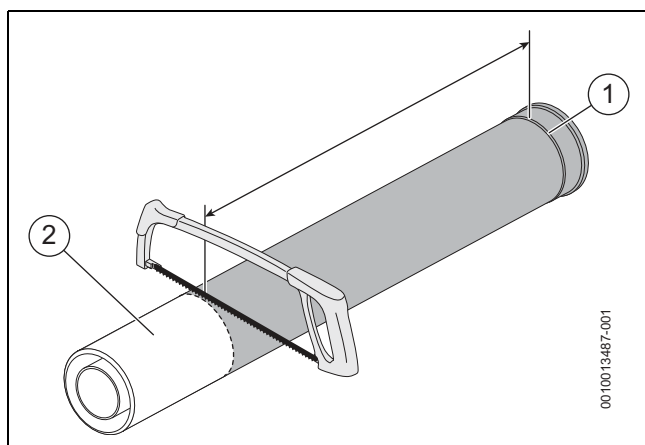


Fig. 14 Cutting an extension tube

3.1.4 Horizontal flues through pitched roofs

Whilst this is an acceptable method of installation, it is preferred that a vertical flue terminal is used where possible through a pitched roof.

It is possible to install a horizontal concentric flue through a pitched roof so long as the following criteria are met:

- ▶ Ensure the minimum distance of 300mm measured vertically between the roof pitch and the flue terminal.
- ▶ Ensure no exposed flue joints are external to the roof flashing.
 - This includes the adjustable joint on the terminal section.
- ▶ The flue must be adequately supported to ensure a constant fall back to the appliance at an angle of 3°, (52mm per metre).
 - Supporting approximately every metre for example at flue joint connections and any change of direction.
- ▶ Ensure that the terminal cannot be affected by a build up of snow etc.
- ▶ All flue terminal clearance must be kept as per appliance Installation and maintenance instructions.

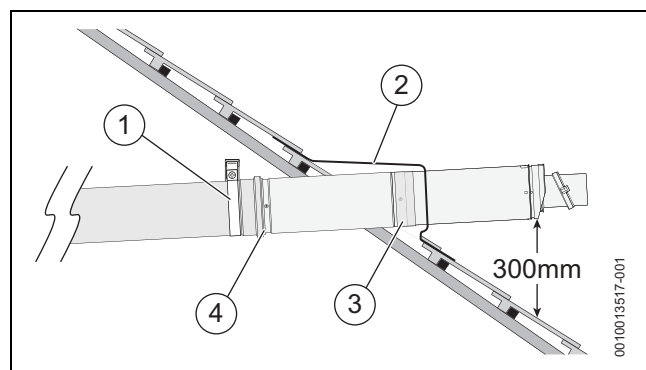


Fig. 15 Example horizontal flue through a pitched roof

- [1] Support bracket
- [2] Roof flashing
- [3] Telescopic flue kit joint
- [4] Flue joint



Roof flashing considerations:

- ▶ The flue should be weather sealed to the roof using an Ubbink type flashing, lead flashing can be used at the installer's discretion, but the installer must ensure a weather tight seal.

3.1.5 Extended terminal outside the building fabric



This Installation is acceptable if the standard flue positions are not possible.

- This type of installation is only used if it is not possible to terminate the flue in the normal manner.

Installations under eaves, balconies or car ports

In order to prevent the products of combustion and condensation emissions from impinging on any bordering surfaces, the practice of extending the flue terminal past the external face of the wall is considered acceptable where the following conditions are met:

- The flue must not be closer than 25mm to combustible material.
- The flue must be adequately supported to ensure a constant fall back to the appliance at an angle of 3°, (52mm per metre).
 - The telescopic assembly must be supported beyond the telescopic joint, the telescopic joint securing screw must not be used to provide support.
 - Supporting approximately every metre, for example, at flue joint connections and any change of direction.
- The flue terminal must extend 100mm past any overhang to avoid excessive over flow run off from roofs and gutters [1].
- The minimum clearances according to BS 5440-1:2008 are met.
- The maximum equivalent flue length (as stated in the Installation and maintenance instructions manual) must not be exceeded.
- The telescopic flue joint (once secured in position with the supplied screws), must be sealed with a UV stable silicone sealant to prevent any water ingress.
 - The aluminium tape provided in the flue kit is not sufficient to weather proof the telescopic flue joint.

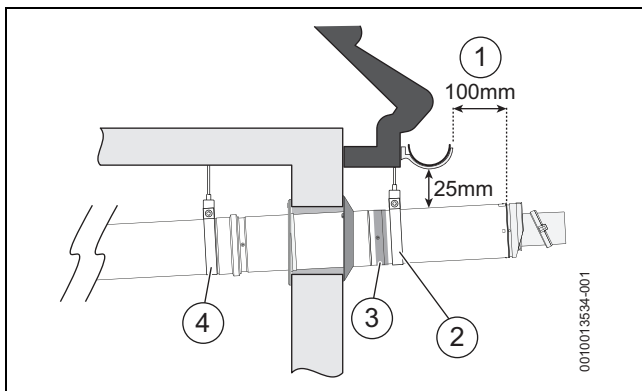


Fig. 16 Installations under eaves example

- [1] 100mm clearance to avoid excessive over flow run off from roofs and gutters from entering the air intake.
- [2] Support bracket after the telescopic flue joint.
- [3] UV stable silicone sealing telescopic flue joint
- [4] Support bracket, supporting approximately every metre for example at flue joint connections and any change of direction.

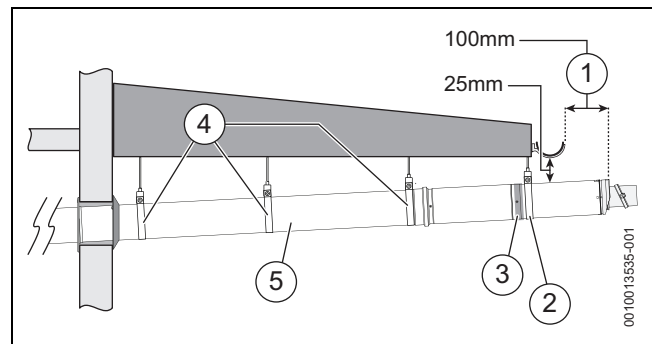


Fig. 17 Installations under balconies or car ports example

- [1] 100mm clearance to avoid excessive over flow run off from roofs and gutters from entering the air intake.
- [2] Support bracket after the telescopic flue joint.
- [3] UV stable silicone sealing telescopic flue joint
- [4] Support bracket, supporting approximately every metre for example at flue joint connections and any change of direction.
- [5] Using 2,000mm extension reduces the connection joints external to building fabric and adds more stability to the flue run.

Installations below pipes or service ducts/tubes

In order to prevent the products of combustion and condensation emissions from impinging on any bordering surfaces, the practice of extending the flue terminal past the external face of the wall is considered acceptable where the following conditions are met:

- The flue must not be closer than 25mm to combustible material.
- The flue must be adequately supported to ensure a constant fall back to the appliance at an angle of 3°, (52mm per metre).
 - Supporting approximately every metre for example at flue joint connections and any change of direction.
- The flue terminal must extend 100mm from the wall to avoid combustion and condensation emissions from impinging on any bordering surfaces pipes or service ducts/tubes[1].
- The minimum clearances according to BS 5440-1:2008 are met.
- The maximum equivalent flue length (as stated in the Installation and maintenance instructions manual) must not be exceeded.

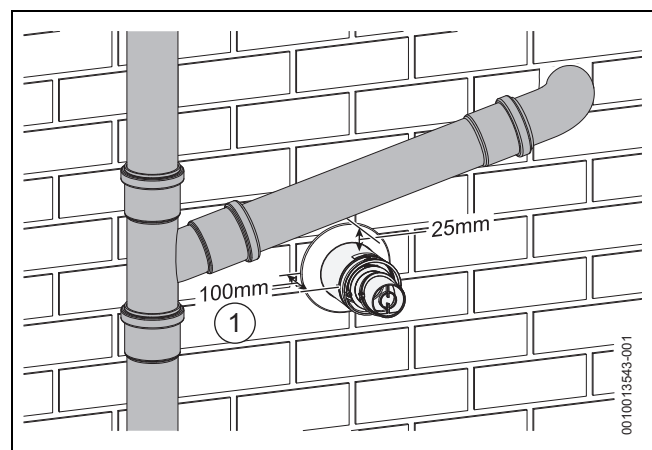


Fig. 18 Installations under pipes or service ducts/tubes

- [1] 100mm clearance from the wall to avoid combustion and condensation emissions from impinging on any bordering surfaces pipes or service ducts/tubes.

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 125mm diameter hole through the wall is required.
However, if installing the flue from inside the property and fitting the weather sealing collar before the flue is pushed through the hole, then a 150mm diameter hole is required.
- ▶ Flue terminations close to a light source can become dirty due to large numbers of flying insects. Point out to the homeowner that the outlet should be regularly cleaned.



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.



WARNING

Risk of poisoning due to escaping flue gases!

Flue gases can escape from incorrectly assembled flue system.

- ▶ 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.

Flue adaptor configuration options

The connection to the appliance exhaust outlet will depend on the exit point from the appliance for the flue installation.

Refer to figure 19.

- ▶ Choose the adaptor elbow/flue adaptor combination to suit the installation flue requirement.



Horizontal exit configurations.

- ▶ 60/100 Flue options: 80/60 flue adaptor must be cut to suit all horizontal exit flue configurations.

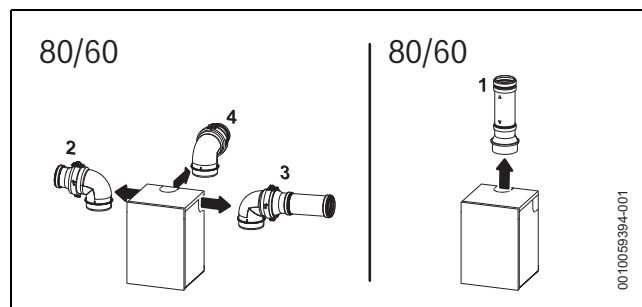


Fig. 19 Flue adaptor configuration options

- [1] **Vertical exit**
Unmodified 80/60 flue adaptor
- [2] **Left exit**
93° adaptor elbow and modified 80/60 flue adaptor - short
- [3] **Right exit**
93° adaptor elbow and modified 80/60 flue adaptor - long
- [4] **Rear exit**
93° adaptor elbow and modified 80/60 flue adaptor - short

adaptor elbow and flue adaptor assembly adaptor elbow and modified flue adaptor short.

Refer to figure 20.

- ▶ Remove the seal [1] from the flue adaptor.
- ▶ Cut the excess [2] off the adaptor square along the mark as shown, de-burr and clean the adaptor face.
- ▶ Replace the seal [1] in the adaptor.
- ▶ Push the adaptor [3] into the elbow [4] until secured with the clip.
- ▶ Engage the hinge end [5] onto the pivot [6] of the clamp.
- ▶ Test fit the clamp [L] around the flue adaptor/elbow to determine in which clamp half to fit the screw, this will depend upon which flue exit is chosen, left or rear.
 - The screw needs to be accessible for tightening.
 - Ensure that the arrow points in the direction of the exhaust flow.
 - Ensure that the slot in the clamp engages with the tab on the top the adaptor elbow [4].
- ▶ Secure the clamp [L] in position.
 - Tighten the screw [7] sufficiently to close up the clamp, do not over-tighten as this will damage the clamp material.

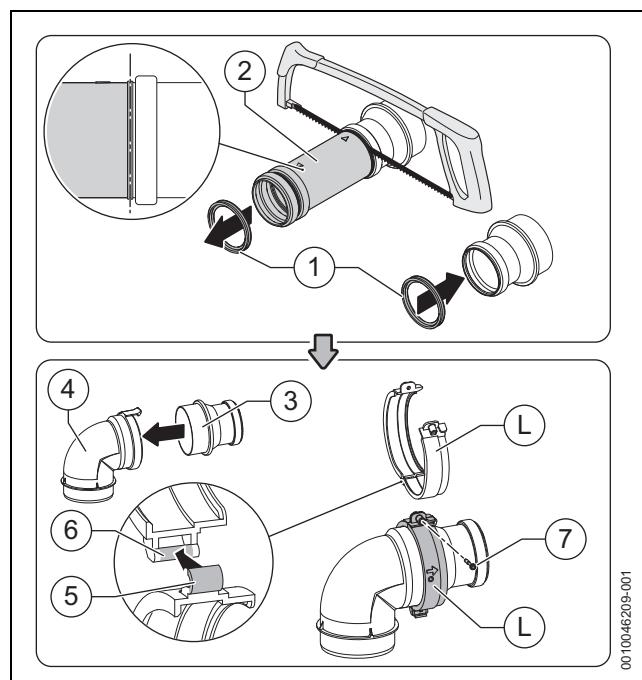


Fig. 20 Short flue adaptor and elbow configuration

Adaptor elbow and modified flue adaptor long.

Refer to figure 21.

- ▶ Remove the seal [1] from the flue adaptor.
- ▶ Cut the excess [2] off the adaptor square along the mark as shown, de-burr and clean the adaptor face.
- ▶ Replace the seal [1] in the adaptor.
- ▶ Push the adaptor [3] into the elbow [4] until secured with the clip.
- ▶ Engage the hinge end [5] onto the pivot [6] of the clamp.
- ▶ Test fit the clamp [L] around the flue adaptor/elbow to determine in which clamp half to fit the screw.
 - The screw needs to be accessible for tightening.
 - Ensure that the arrow points in the direction of the exhaust flow.
 - Ensure that the slot in the clamp engages with the tab on the top the adaptor elbow [4].
- ▶ Secure the clamp [L] in position.
 - Tighten the screw [7] sufficiently to close up the clamp, do not over-tighten as this will damage the clamp material.

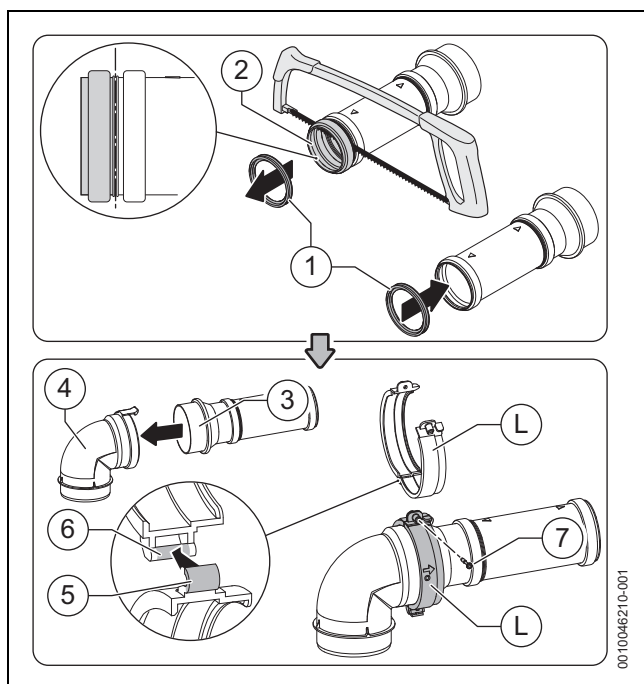


Fig. 21 Long flue adaptor and elbow configuration

Rear exit configuration



Apply silicone lubricant supplied in the flue kit to the seals to aid fitting.

Fitting the flue connector to the appliance.

Refer to figure 22.

- ▶ Slide the appliance onto the mounting frame, leaving enough of a gap between the appliance and the wall to allow access to connect the fixing points on the flue connector.
- ▶ Position the flue connector [1] with 'TOP' uppermost to align with the three holes in the appliance inner casing.

- ▶ Secure the flue connector [1] from inside the appliance case using three hexagonal bolts [2].

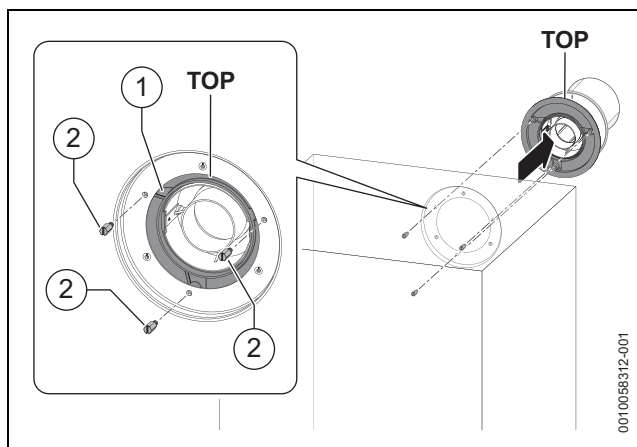


Fig. 22 Rear flue connection

- ▶ Carefully slide the appliance with rear exit flue the remaining distance onto the mounting frame until fully located in position.
- ▶ Secure appliance to mounting frame with screw (left hand side rail).

Fitting the adaptor assembly.

Refer to figure 23.

- ▶ Remove the adaptor clamp [M], already fitted to the appliance exhaust outlet.
 - Remove securing screw [1].
 - Open the clamp utilising the pivot point and remove.
- ▶ Fit the adaptor assembly.
 - Slide the flue adaptor into the inner flue tube.
 - Slide the elbow into the appliance exhaust outlet [3], ensuring that the clips either side [2] secure the elbow into position.
- ▶ Re-fit the adaptor clamp [M] around the appliance exhaust outlet and adaptor joint.
 - Ensure that the adaptor clamp [M] is fully located over the clips [2] of the appliance exhaust outlet [3].
- ▶ Pinch the adaptor clamp [M] halves together to close the clamp and align the screw fittings. Secure with screw [1] to retain the clamp.

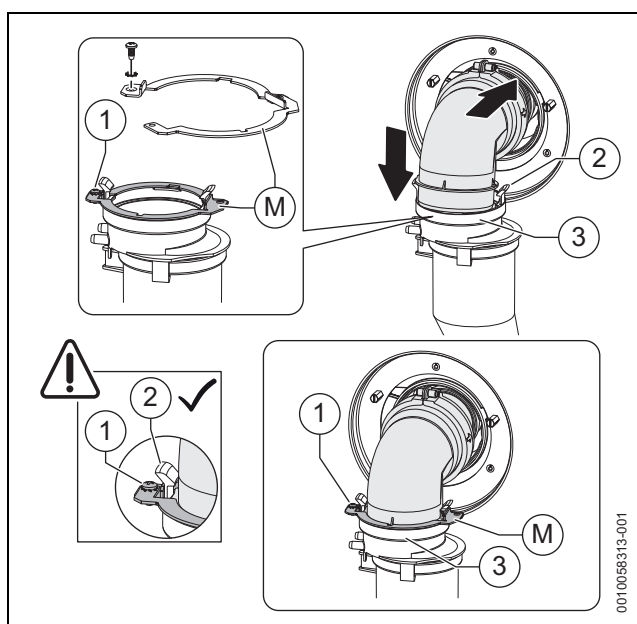


Fig. 23 Adaptor assembly fitting to appliance exhaust outlet

Converting from rear exit flue

The appliance is supplied ready to fit a rear flue outlet. To convert the flue outlet from rear to side or top, the following actions need to be completed:

- Select the required outlet position for the flue configuration.

Refer to figure 24, right hand side example shown.

- Remove the knock-out panel [1] from the outer casing.
- Remove the flue outlet blanking plate, comprising the three screws [2] and the cover plate [3] and gasket [4].

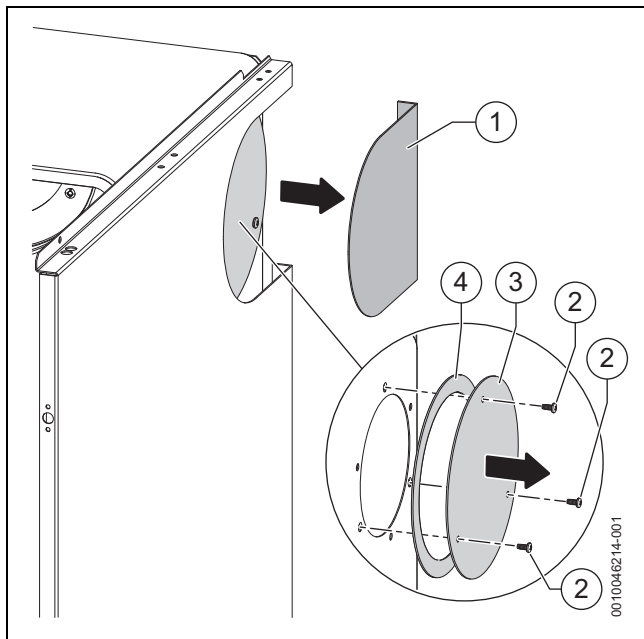


Fig. 24 Removing knock-out panel and flue outlet blanking plate (right hand side example)

- Refit the flue outlet blanking plate to the rear exit outlet.
 - Ensure gasket is in good condition and secured with the three screws.

Side exit configuration



Apply silicone lubricant supplied in the flue kit to the seals to aid fitting.

Fitting the flue connector to the appliance.

Refer to figure 25, right hand side example shown.

- Position the flue connector [1] with 'TOP' uppermost to align with the three holes in the appliance inner casing.



50kW output appliances for right hand side exit configurations. Supplied in the flue kit screw pack is a short hexagonal bolt for the lower fixing point of the flue connector.

- Pre fit the lower fixing point with the short head hexagonal bolt into the flue connector and slide into lower slot [5] before securing with remaining two hexagonal bolts.
- Secure the flue connector [1] from inside the appliance case using three hexagonal bolts [2].
- Push the flue [3] firmly into the flue connector [1].

- Drill two 3mm holes through the connector and into the outer sleeve of the flue and secure with the screws [4] provided.

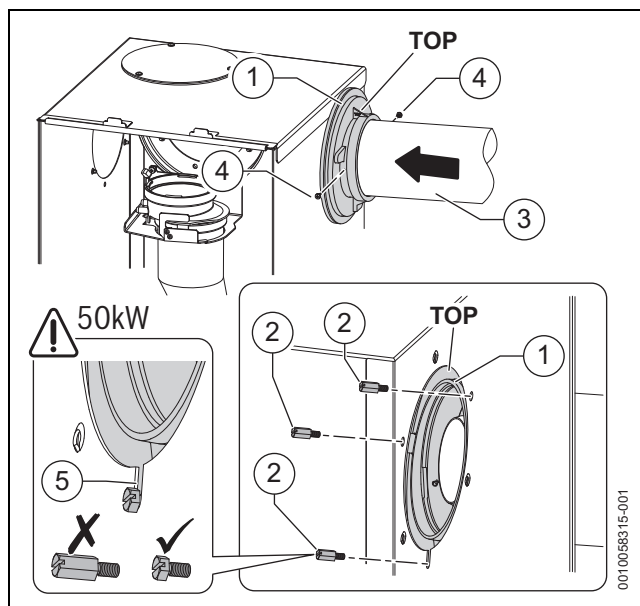


Fig. 25 Side flue connection (right hand side example)

Fitting the adaptor assembly.

Refer to figure 26.

- Remove the adaptor clamp [M], already fitted to the appliance exhaust outlet.
 - Release securing screw [1].
 - Open the clamp utilising the pivot point and remove.
- Fit the adaptor assembly.
 - Slide the flue adaptor into the inner flue tube.
 - Slide the elbow into the appliance exhaust outlet [3], ensuring that the clips either side [2] secure the elbow into position.
- Re-fit the adaptor clamp [M] around the appliance exhaust outlet and adaptor joint.
 - Ensure that the adaptor clamp [M] is fully located over the clips [2] of the appliance exhaust outlet [3].
- Pinch the adaptor clamp [M] halves together to close the clamp and align the screw fittings. Secure with screw [1] to retain the clamp but do not over-tighten as this will damage the clamp material.

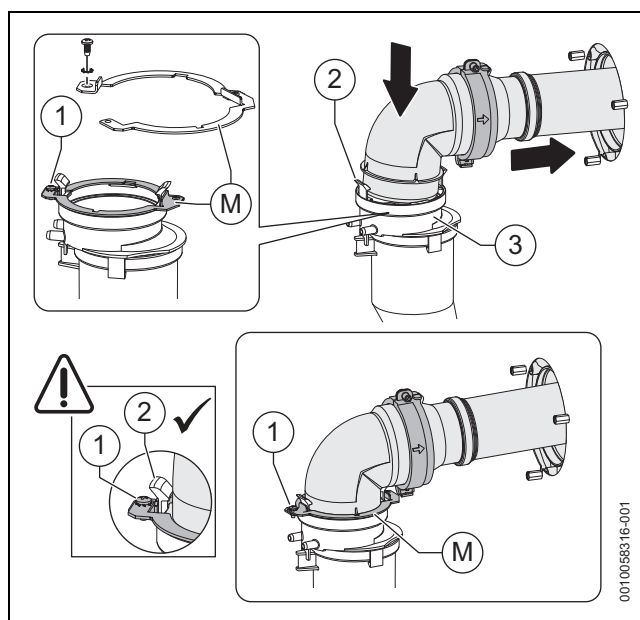


Fig. 26 Adaptor assembly fitting to appliance exhaust outlet

Vertical exit configuration



Vertical flue connector

- **High level horizontal flue options:**
The vertical flue connector is available separately.
- **Vertical flue options:**
The vertical flue connector is supplied as part of the vertical flue kit.



Apply silicone lubricant supplied in the flue kit to the seals to aid fitting.

Fitting the flue connector to the appliance.

Refer to figure 27.

- Slide the vertical flue adaptor [2] over the inner flue tube of the vertical flue section [1].
 - Push the adaptor almost all the way into the flue, leaving enough of the adaptor showing to be able to pull the adaptor down later.
- Align the holes in the vertical flue connector [3] with the holes in the case and secure from inside the case with the three bolts [4] provided.
- Fit the vertical flue section [1] into the vertical flue connector [3].
- Using the two indents, drill two 3mm holes through the connector and into the outer sleeve of the flue and secure with the screws [5] provided.

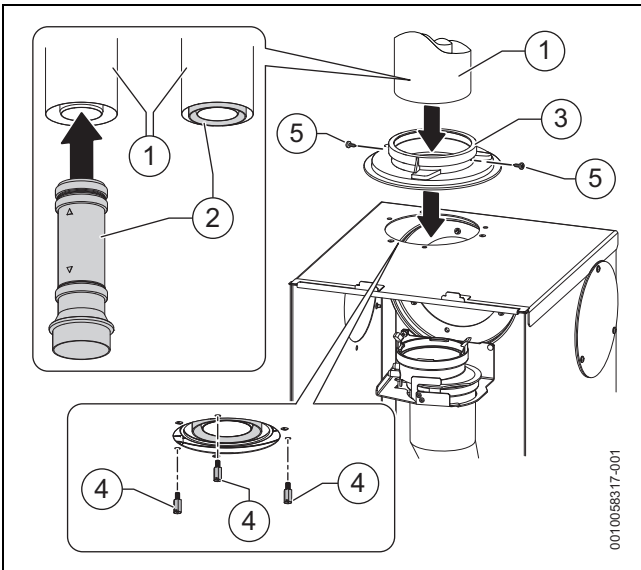


Fig. 27 Top exit flue connection

Fitting the vertical flue adaptor.

Refer to figure 28.

- Remove the adaptor clamp [M], already fitted to the appliance exhaust outlet.
 - Release securing screw.
 - Open the clamp utilising the pivot point and remove.
 - This component is swapped for vertical exit configurations.
- Connect the vertical flue adaptor.
 - Slide the flue adaptor [2] down into the appliance exhaust outlet [4].
 - Ensure that the clips either side [3] secure the adaptor into position.
- Fit the adaptor clamp [S] (supplied in the Vertical flue kit/vertical flue connector) around the appliance exhaust outlet and adaptor joint.
 - Ensure that the adaptor clamp [S] is fully located over the clips [3] of the appliance exhaust outlet [4].

- Pinch the adaptor clamp [S] halves together to close the clamp and align the screw fittings. Secure with screw [1] to retain the clamp but do not over-tighten as this will damage the clamp material.

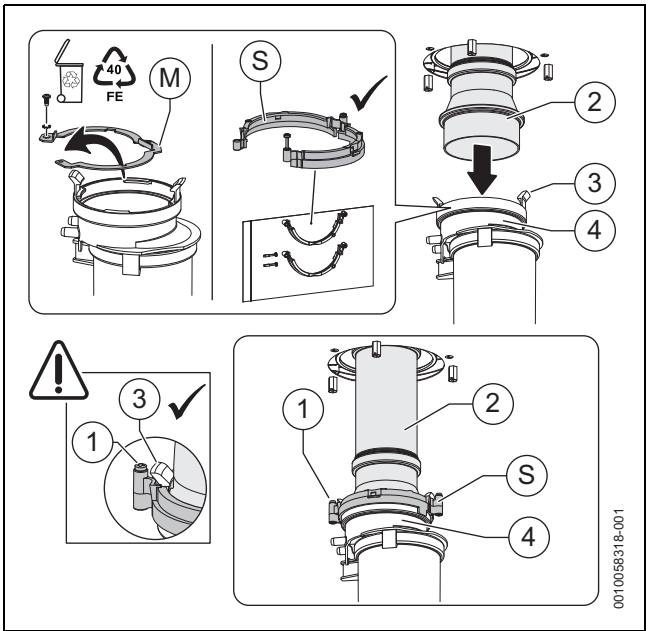


Fig. 28 Vertical flue adaptor fitting to appliance exhaust outlet

4.1 Setting the telescopic flue length

Refer to figure 29

- Set the flue length to the distance required.
- Drill two 3mm holes in the outer flue tube of the terminal assembly and secure with screws supplied [2].
- Seal the joint with the aluminium tape [1].

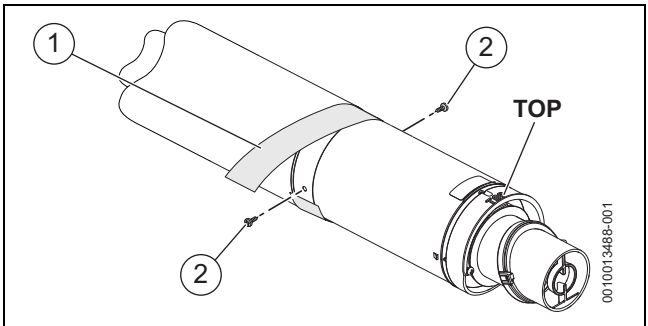


Fig. 29 Setting the telescopic flue length

4.2 Installing the telescopic flue through the wall



WARNING

Products of combustion!

To ensure products of combustions do not enter the property through the flue hole.

- ▶ Where possible the flue hole should be sealed to the building fabric on the inner and outer face using a suitable building material. As a minimum, the flue must be sealed to the inner wall using a suitable 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.



Correct orientation of the terminal assembly:

- ▶ Ensure that the "TOP" label on the terminal assembly is orientated correctly before securing the two parts at the required length. This must be done to allow the correct fit and use of the plume management system.

Refer to figure 30

- ▶ If installing an unmodified telescopic flue kit:
 - Slide the inner wall seal [1] onto the telescopic flue.
- ▶ If fitting the flue from inside the property:
 - Slide on the outer wall seal [2], locating the ridge on the seal with the groove on the terminal.
 - Slide the telescopic flue [4] through the flue hole [5] until the outer wall seal opens out again on the outside wall.
 - Pull the telescopic flue [4] back towards the appliance until the outer wall seal is in contact with the external wall.
 - If the flue terminal is in a position that cannot be accessed with reasonable ease then the flue must be sealed to the inner wall with a suitable building material before sliding the inner wall seal [1] into position. Providing the outer wall surface is flat then the rubber collar is deemed to be an adequate seal.
- ▶ If fitting the outer seal from outside the building:
 - Slide the outer wall seal onto the terminal as shown, locating the ridge on the seal with the groove on the terminal.
 - Slide the telescopic flue [4] through the flue hole [5].
 - Position terminal [3] through the flue hole [5] in the wall to the outside of the building by the distance shown.
 - The flue should be sealed to the outside wall with a suitable building material once the flue is assembled.
 - Before sliding the inner wall seal [1] against the wall, seal the gap around the telescopic flue to secure in position.

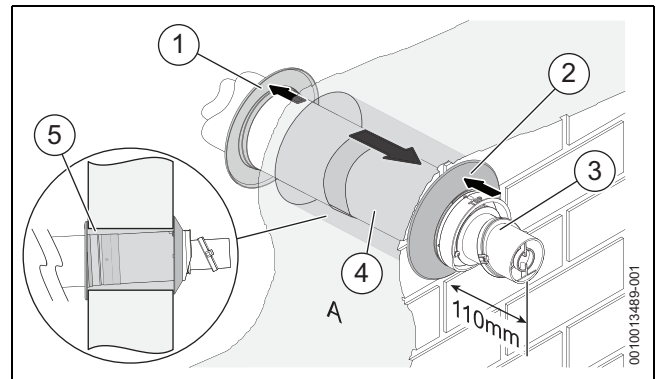


Fig. 30 Telescopic flue through the wall

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

4.3 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 connector with extension example

Vertical flue connector, flue extension and 90° elbow (→ figure 31)

- ▶ Fit the extension piece [3] into the vertical flue connector [7] and drill 3mm pilot hole into the vertical flue connector [7] through to the outer flue extension tube [3].
- ▶ Secure with the screws [6] provided with the vertical flue connector [7].
 - The flat edge of the vertical flue connector faces the rear of the appliance.
- ▶ Fit the 90° elbow [1] firmly into the extension piece [3] use the silicone grease provided with the extension kit.
- ▶ Drill two 3mm holes, through the outer flue tube of extension [3] and 90° elbow [1].
- ▶ Secure the 90° elbow [1] into the extension piece [3] with the screws [2] provided with the extension kit.

Horizontal flue connector and flue extension (→ figure 31)

- ▶ Ensure the horizontal flue connector [4] is correctly orientated.
 - "TOP" indicated on flue connector ensuring the 3° rise from the appliance for correct flue installation.
- ▶ Fit the extension piece [3] firmly into the horizontal flue connector [4] and drill 3mm pilot hole through the outer flue tube of extension [3] and the horizontal flue connector [4].
- ▶ Secure with the screws [5] provided with the horizontal flue connector [4].
 - If required a 90° elbow can be fitted in the same way as with the vertical flue connector example.

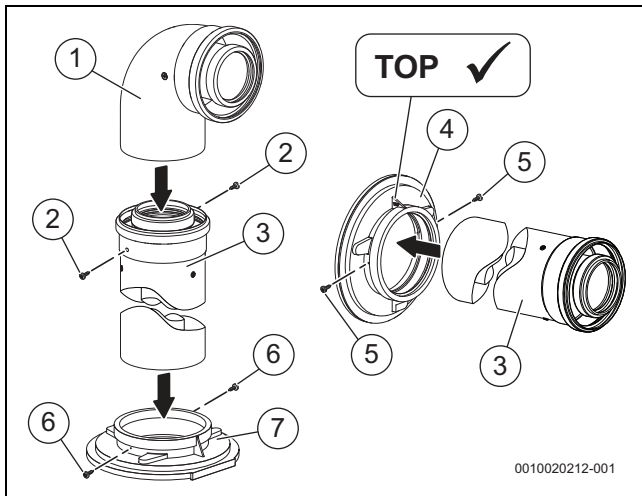


Fig. 31 Connection to the flue connector examples

Elbow connections example (90° elbow)

Flue extension into a 90° elbow (vertical orientation → figure 32)

- Slide the support clamps [3] onto the flue extension.
- Fit the extension piece [4] into the 90° elbow [1] 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 3mm 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 32)

- Working from the appliance, support the flue extension with elbow using the support clamps [3].
- Slide the support clamps [3] onto the flue extension.
- Fit the extension piece [4] into the 90° elbow [1] using the silicone grease provided as a lubricant. Working from the appliance, fit the support clamps [3] to their wall brackets using the screws provided [5] to take the weight of the flue.
- Drill two 3mm holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided for all assembled joints.

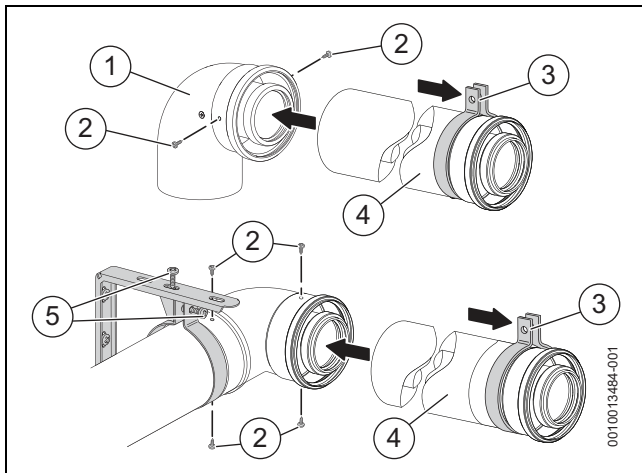


Fig. 32 Elbow connection examples (90° elbow)

Extension and telescopic flue connection examples

Additional extensions (→ figure 33)

- 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.

- Fit the extension [4] into the previous extension using the silicone grease lubricant provided. Fit the wall bracket and support clamps [1] to take the weight of the flue.
- Drill two 3mm holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided.

Telescopic flue into flue extension (→ figure 33)

- Working from the appliance, support the flue extension using the wall bracket and support clamps [1].
- Fit the telescopic flue [5] into the flue extension using the silicone grease lubricant provided.
- See section 4.2 "Installing the telescopic flue through the wall" for installing the telescopic flue through a wall.
- Drill two 3mm holes, 180° apart, through the outer flue tube of the extension and secure with the screws [2] provided.

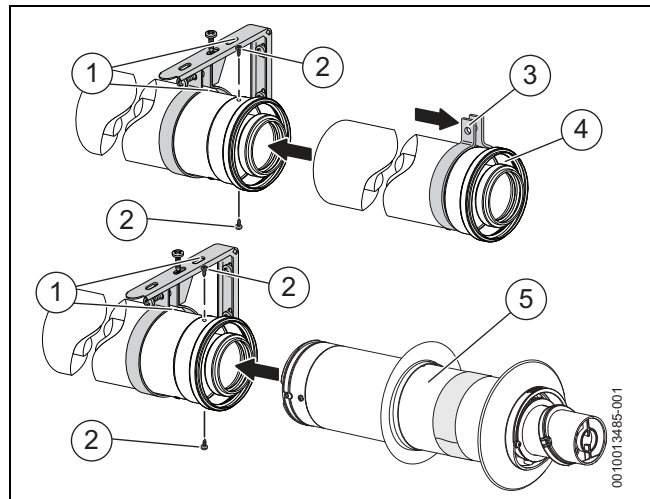


Fig. 33 Extension and telescopic flue connection examples

4.4 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 flue or terminal outlet.

The flue terminal outlet has built-in stops to limit rotation for horizontal flueing. This allows condensate to run 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 [3] and rotate by $\pm 80^\circ$ to the desired position and re-secure the assembly.

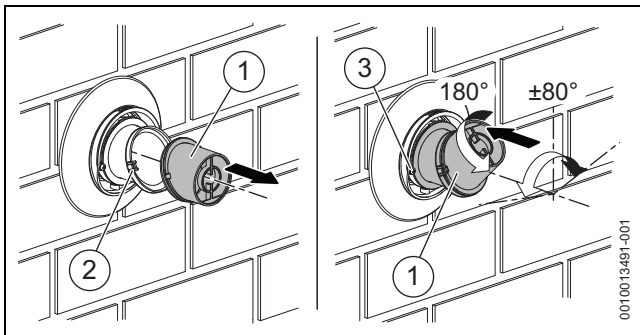


Fig. 34 Plume redirection

NOTICE

Outlet positions

- ▶ The flue terminal outlet position must follow those shown in figure 35.
- ▶ 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

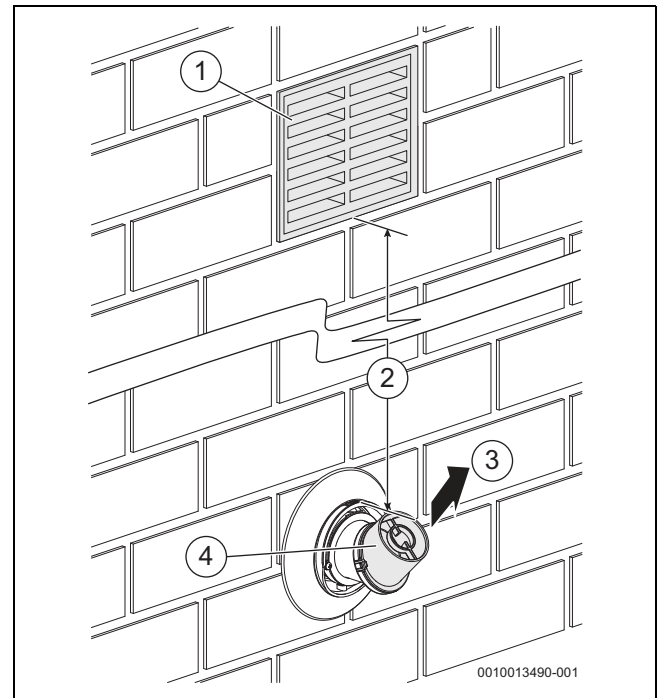


Fig. 35 Plume redirect distance to opening

- [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

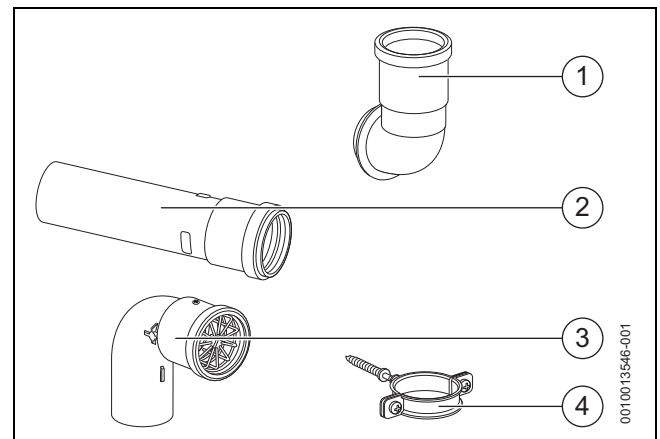


Fig. 36 60mm plume management kit components

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

60mm plume management accessories

1	1,000mm 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	Terminal guard	7 716 191 176
5	Support bracket	8 716 111 275 0

Table 5

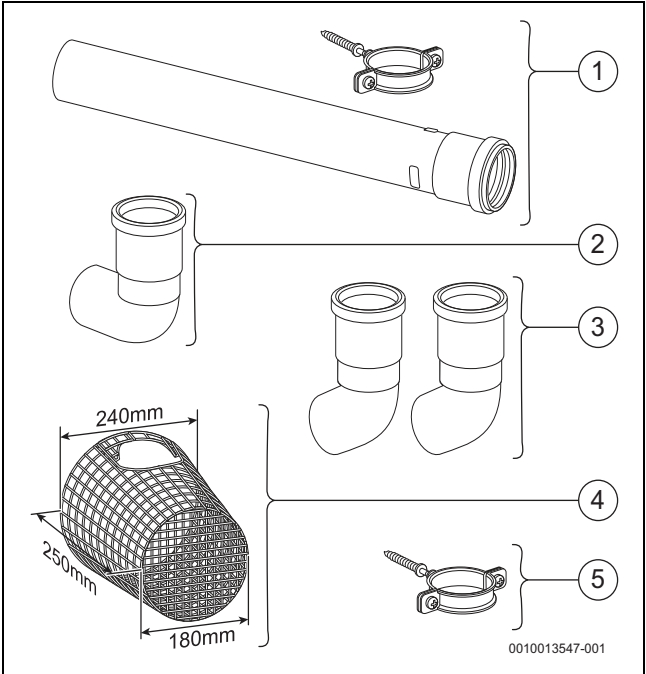


Fig. 37 Plume management accessories

5.2 Plume management options and measurements

NOTICE

Plume management length:

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



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°.



WARNING

Minimum plume management length:

The minimum 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 38.

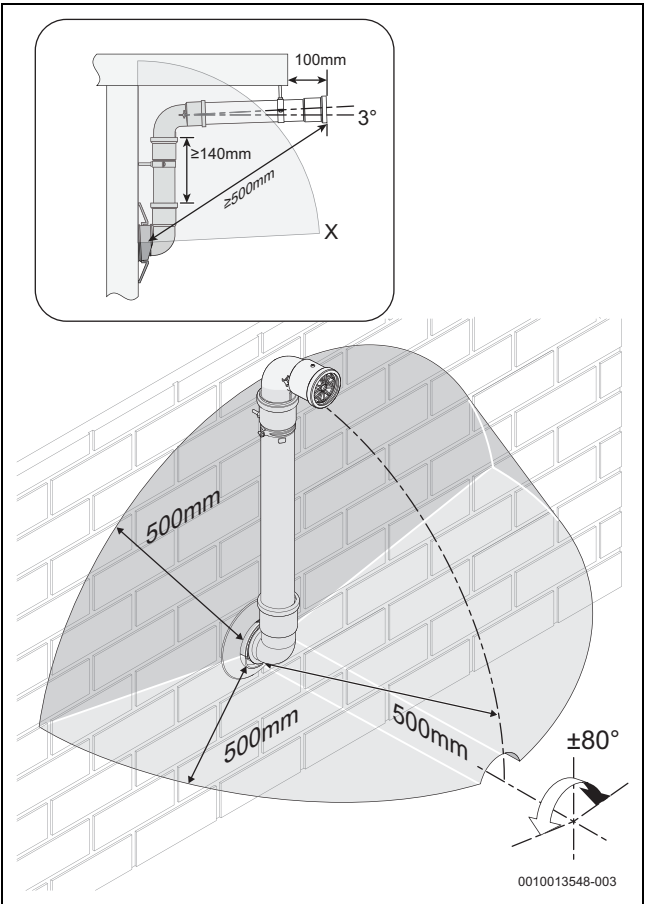


Fig. 38 Terminal exclusion zone X

NOTICE

Cutting the 500mm pipe

If the 500mm plume management pipe kit is cut, an additional components will be required to extend the pipe outside of the exclusion zone.

- The Plume management extension kit contains the components required for such a configuration.

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 6 Key to example installation options

5.2.2 Standard plume management kit

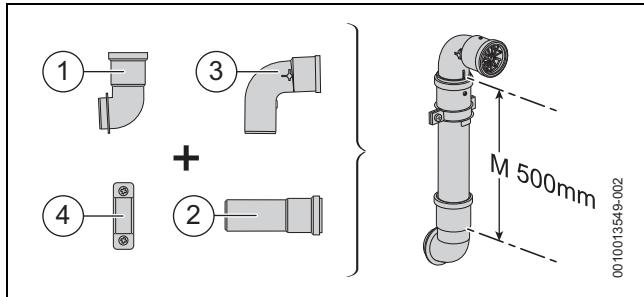


Fig. 39 Standard option

5.2.3 Extended plume management kit example

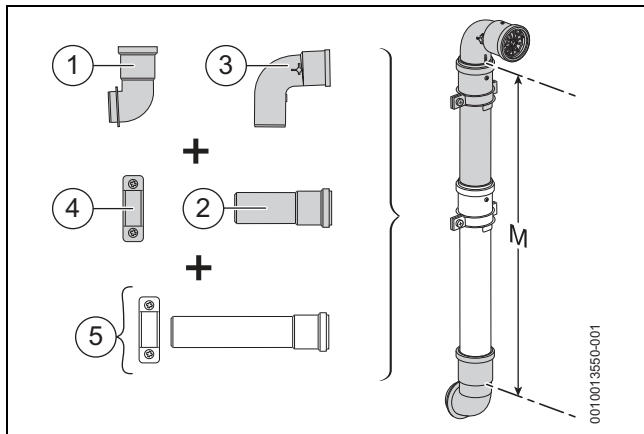


Fig. 40 Extended option

5.2.4 Offset plume management kit example

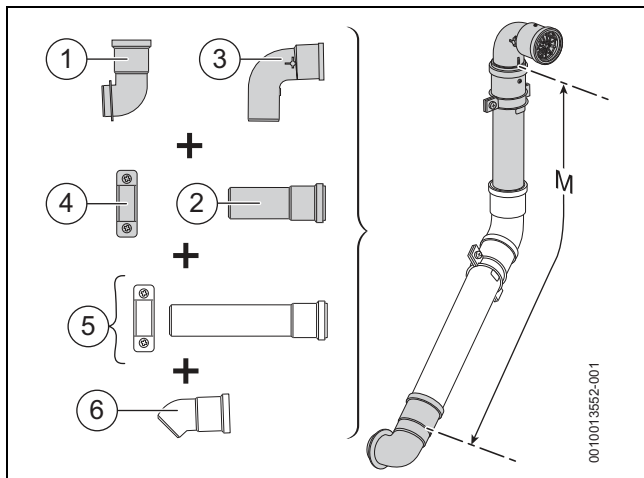


Fig. 41 Offset option

5.2.5 45° Elbow offset plume management kit example

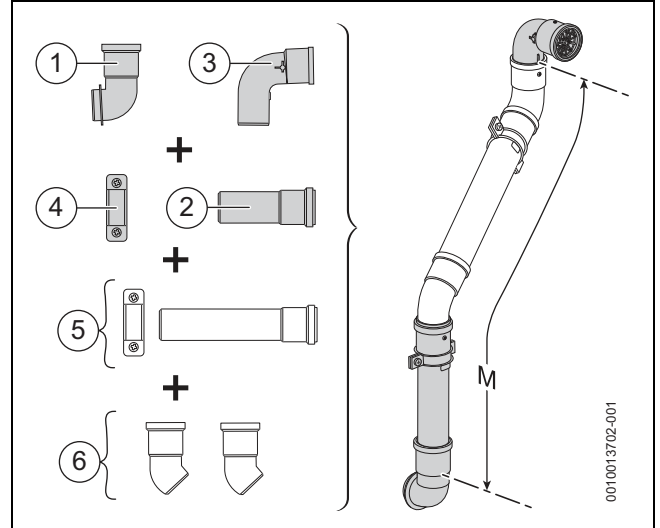


Fig. 42 45° offset option

5.2.6 Angled plume management kit example

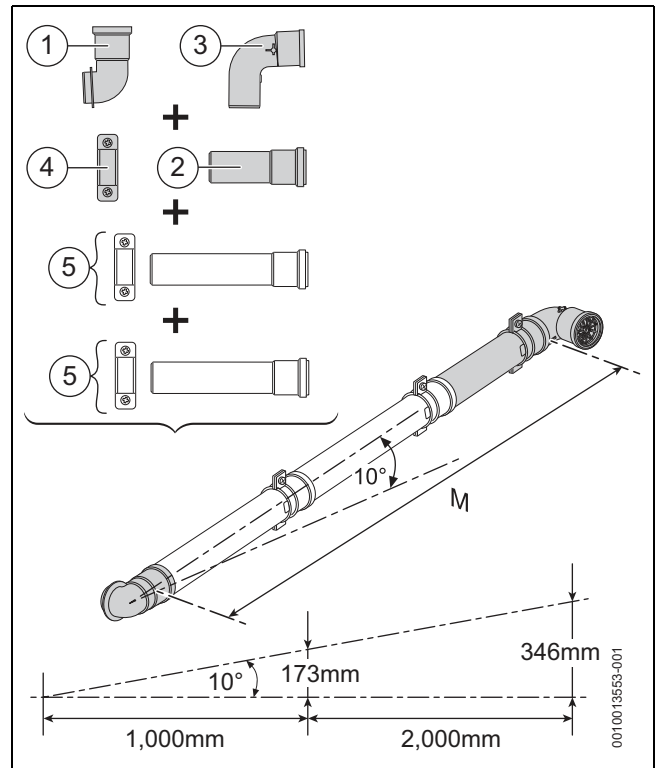


Fig. 43 Angled option

5.2.7 Plume management kit under a balcony/overhang example



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

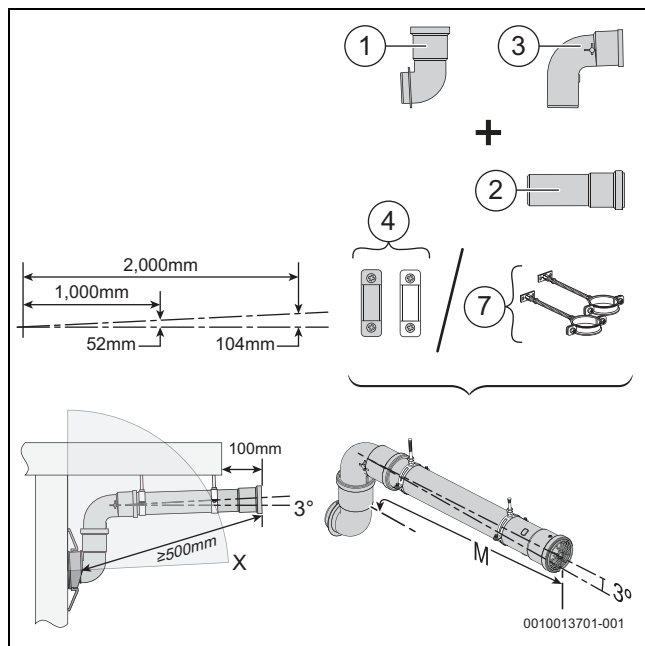


Fig. 44 Under a balcony/overhang option

5.2.8 Extended plume management kit under a balcony/overhang example



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

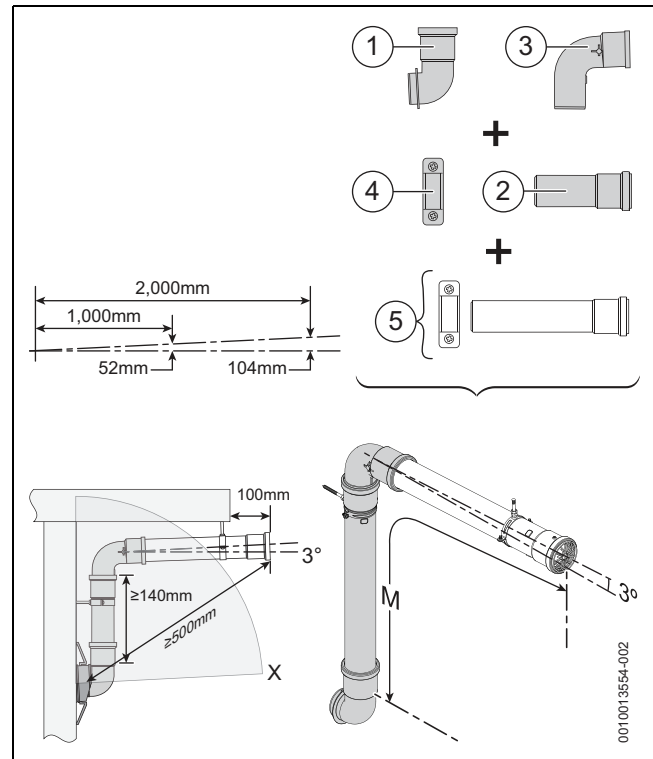


Fig. 45 Extended under a balcony/overhang option

5.2.9 Vertical plume discharge above roof/overhang example



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.

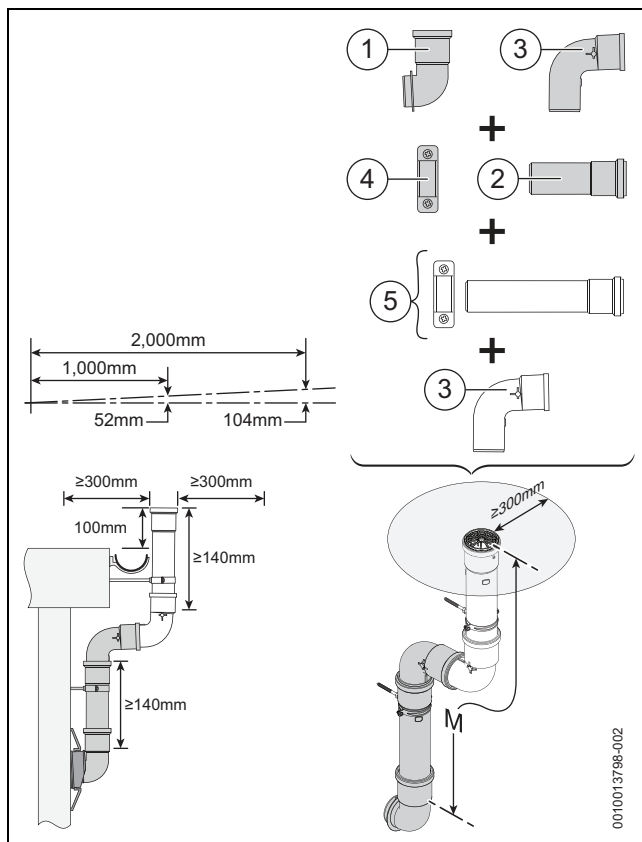


Fig. 46 Vertical plume discharge above roof/overhang option

5.3 Determine the plume management system length



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

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

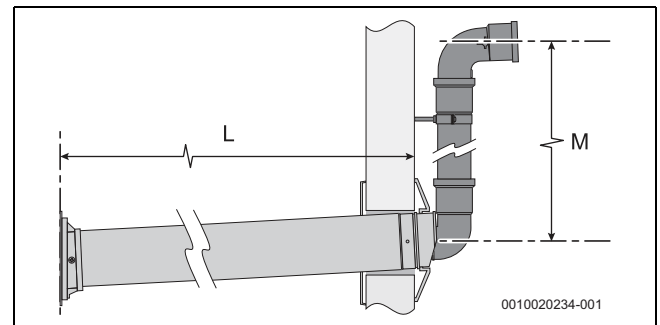


Fig. 47 Effective lengths determination

[L] Effective flue length

[M] Effective plume management 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.

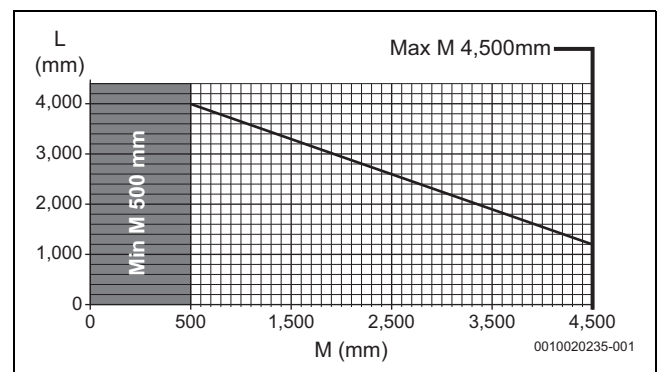


Fig. 48 Effective flue length versus plume management length

[L] Effective flue length

[M] Plume management length allowed

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.

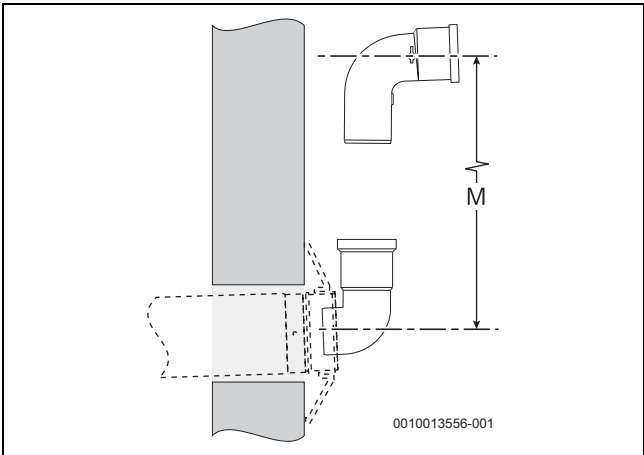


Fig. 49 Plume management length M

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/extensions, insert fully into the outlet assembly, then withdraw the tube approximately 10mm to allow for expansion.

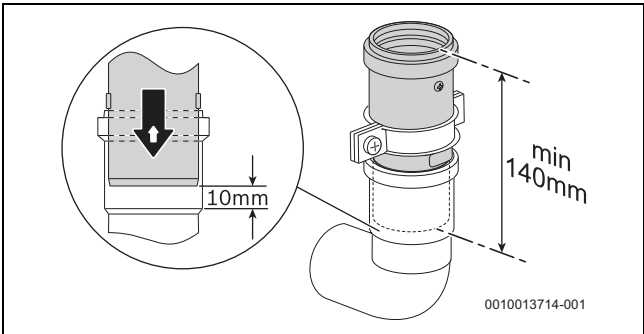


Fig. 50 Minimum plume extension length

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.

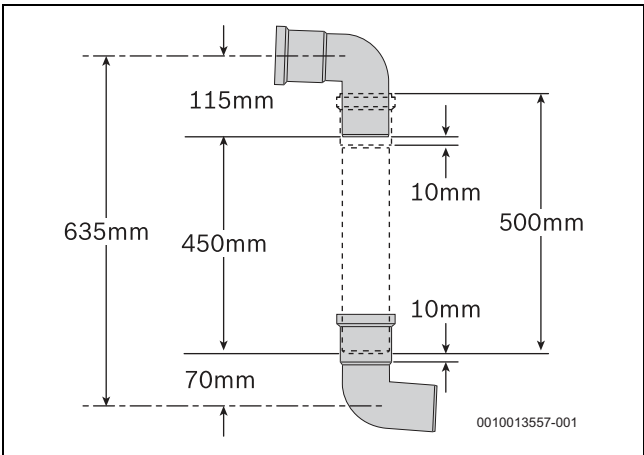


Fig. 51 Plume management 90° elbows offset example

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.

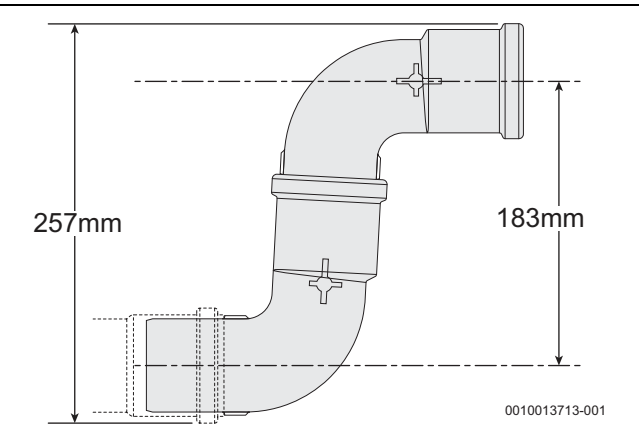


Fig. 52 90° elbows offset dimensions

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.

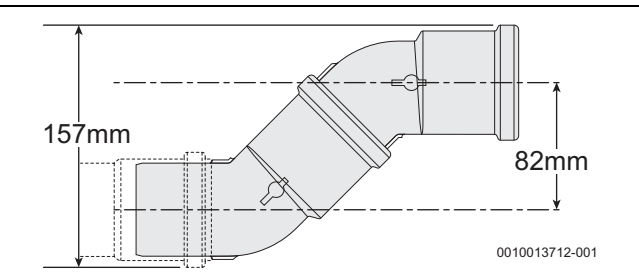


Fig. 53 45° elbows offset dimensions

5.4 Plume management Installation



To ease assembly of the flue components, lightly grease the seals with the silicone 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 54)

- ▶ 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 54.

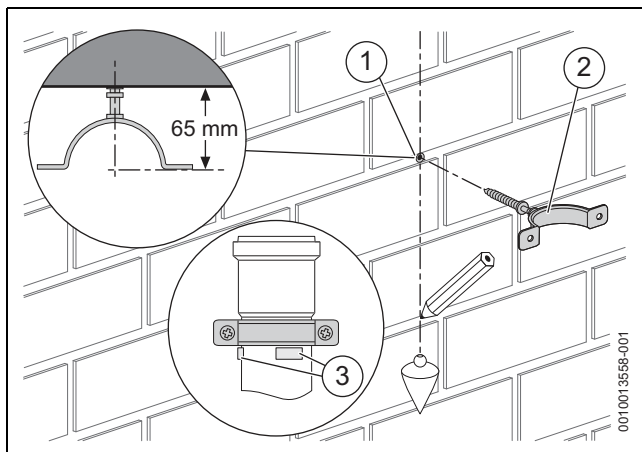


Fig. 54 Support clamp fitting

Terminal elbow fitting

Terminal elbow (→ figure 55)

- ▶ 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.

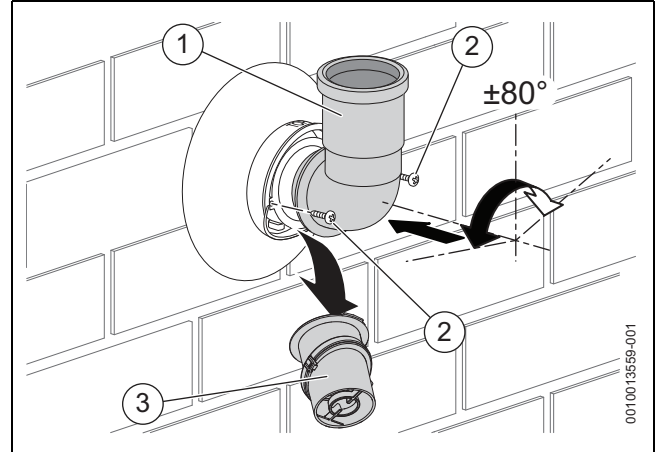


Fig. 55 Plume management terminal elbow

Extension fitting

Extension tube (→ figure 56)

- ▶ Push the extension tube [2] fully into the terminal 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].

Extension tube with additional elbow (45° elbow example → figure 56)

- ▶ Push the extension tube [2] fully into the terminal 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° 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.

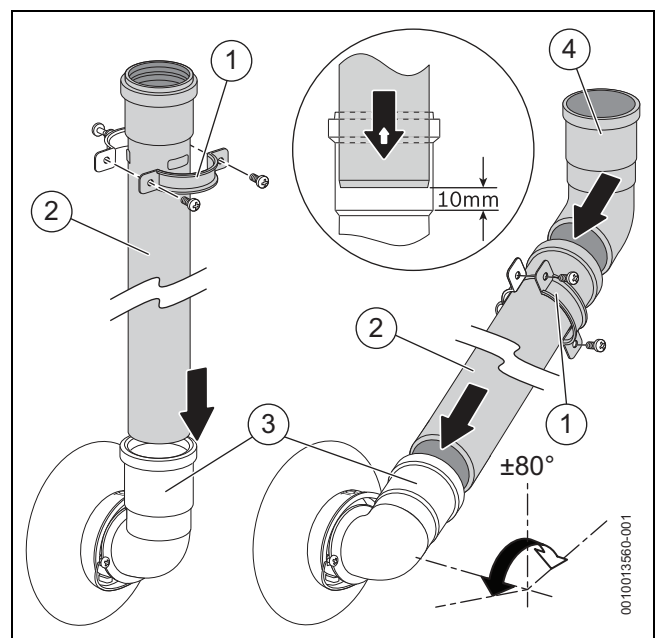


Fig. 56 Plume extension fitting

Discharge elbow fitting

Outlet assembly (vertical orientation → figure 57)

- 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 57)

- 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.

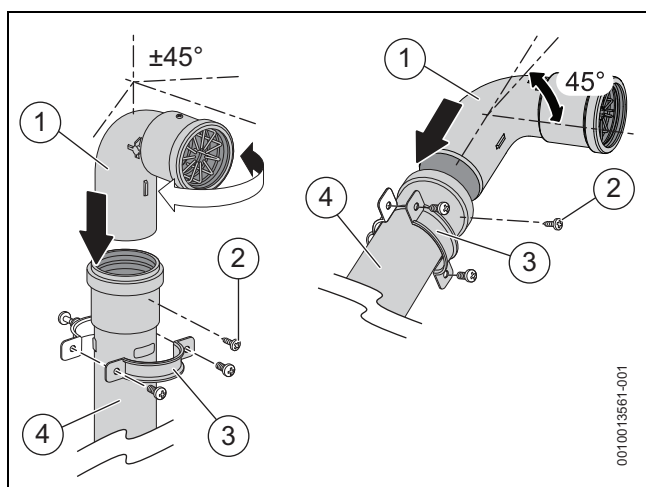


Fig. 57 Fitting the discharge elbow

Under balcony/overhang extension fitting

Refer to figure 58.

- 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 10mm 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 58.
- 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 [3] in place with the screw [1] removed earlier from the outlet assembly elbow.

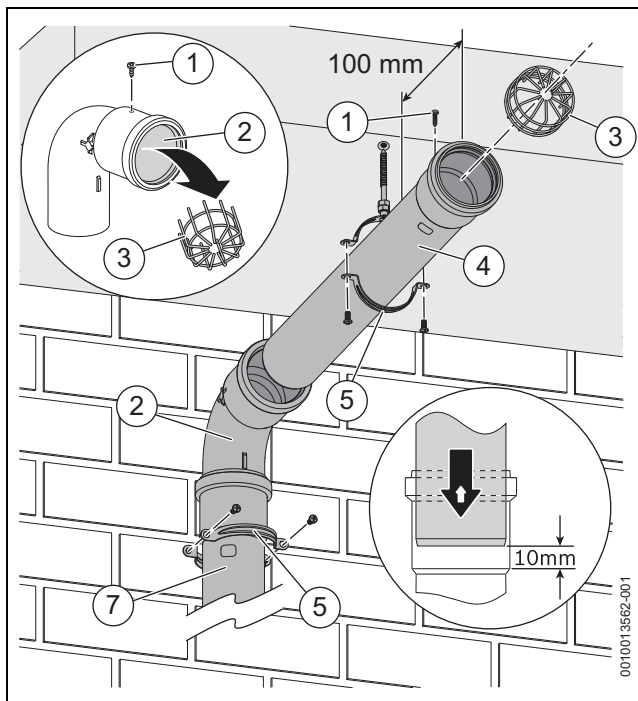


Fig. 58 Fitting extension under balcony/overhang

Terminal guard fitting

A flue terminal guard should be fitted over a terminal, if persons could come into contact with the terminal, or it could be subject to damage and where the terminal is less than 2,000mm from the finished floor level.

NOTICE

Terminal end position with terminal guard

- ▶ The terminal end must not be swivelled inside the guard. The terminal end must be mounted at right angles with respect to the wall.

Refer to figure 59.

- ▶ Fit the terminal guard centrally over the flue inlet [3] or outlet [4].
- ▶ Mount the terminal guard to the wall utilising the three mounting points attached to the guard.
- ▶ Fold the gates in the order stated below or the gates will not latch properly.
- ▶ Fold the single pronged gate [1] in and latch onto the guard frame.
- ▶ Fold the two pronged gate [2] in and latch onto the guard frame.

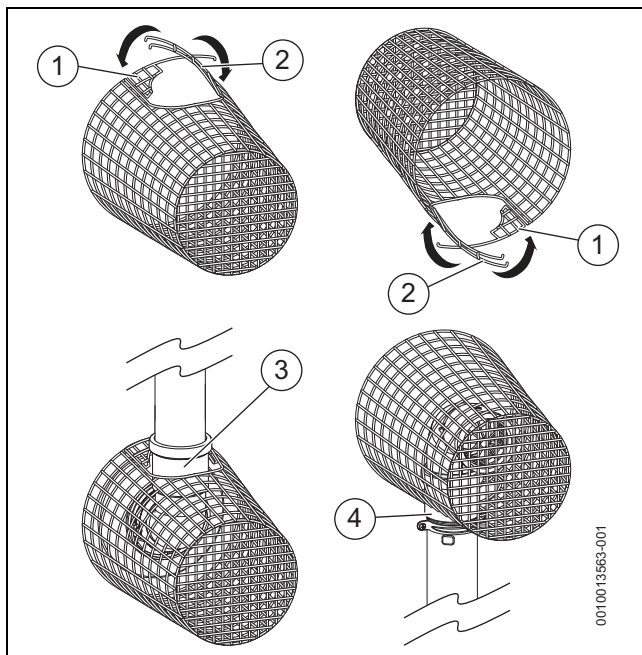


Fig. 59 Terminal guard fitting

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 60. 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.

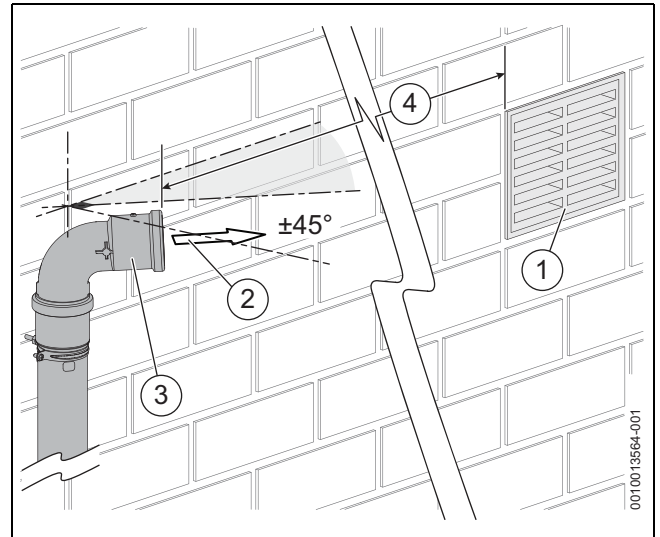


Fig. 60 Plume direction conditions

- [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 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.





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