

# FLUE KIT INSTALLATION INSTRUCTIONS

**7 716 190 064 ROOM SEALED 80/125mm STANDARD TELESCOPIC FLUE**

**7 716 190 062 ROOM SEALED 80/125mm SHORT TELESCOPIC FLUE**

**7 716 190 092 80mm PLUME MANAGEMENT SYSTEM**

**7 731 600 218 ROOM SEALED 80/125mm VERTICAL FLUE**

## GREENSTAR OILFIT FLUE RS

FOR USE WITH WORCESTER OIL FIRED APPLIANCES:

Greenstar ErP, ErP+ and 2022+ Range

Greenstar Utility 18/25, Danesmoor 12/18, 18/25 & 25/32

Greenstar Danesmoor Wall Hung 12/18 & 18/25, Heatslave 12/18, 18/25 & 25/32,

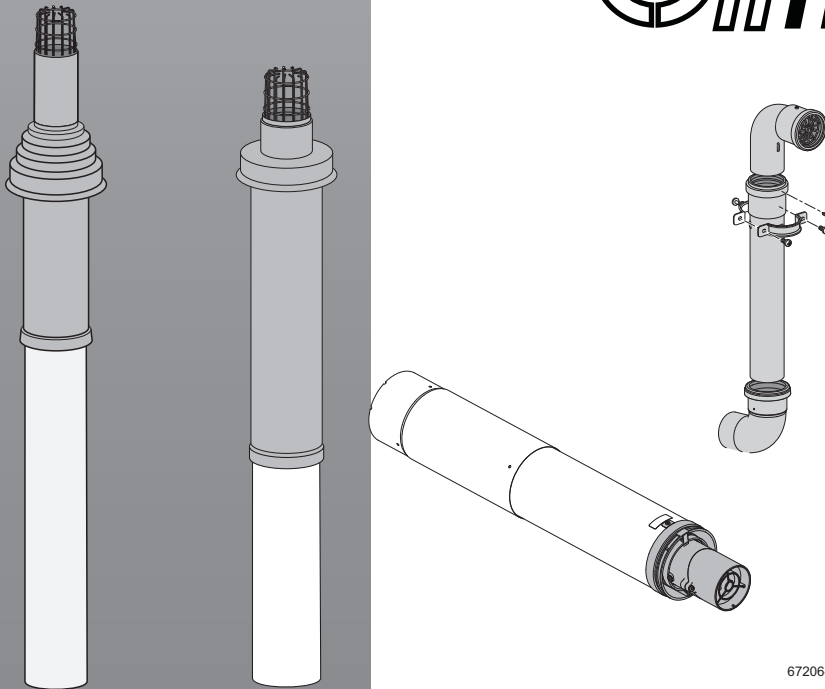
Greenstar Camray Kitchen 12/18, 18/25 & 25/32, Camray 12/18, 18/25 & 25/32,

Greenstar Camray 18/25 & 25/32 External and Heatslave 12/18, 18/25 & 25/32 External.

Greenstar Heatslave II 12/18, 18/25 & 25/32 and Heatslave II 12/18, 18/25 & 25/32 External

Greenstar Danesmoor (2013) 12/18, 18/25 & 25/32

DO NOT USE WITH ANY OTHER MODEL OF APPLIANCE



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**CONTENTS**

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<b>1</b>	<b>Key to symbols and safety instructions</b>	<b>3</b>
1.1	Key to symbols	3
1.2	Safety precautions	3

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<b>2</b>	<b>Product information</b>	<b>4</b>
2.1	Room sealed vertical flue components	4
2.2	Room sealed telescopic horizontal flue components	4
2.3	Room sealed flue extension components	5

---

<b>3</b>	<b>Pre-installation</b>	<b>6</b>
3.1	Flue terminal positions	6
3.2	Flue systems in voids	8

---

<b>4</b>	<b>Installation</b>	<b>8</b>
4.1	Room sealed flue measurement	8
4.1.1	Determine the effective flue length (L)	9
4.1.2	Actual flue length	9
4.2	Flue adjustment and cutting	10
4.2.1	Telescopic flue adjustment	10
4.2.2	Reducing the telescopic flue length	10
4.2.3	Reducing flue length	10
4.3	Room sealed flue fitting	11
4.4	Room sealed flue terminal & extensions	13
4.4.1	Vertical terminals	13
4.4.2	Horizontal terminals	13
4.4.3	Extensions	13

---

<b>5</b>	<b>Plume management product Information</b>	<b>14</b>
5.1	Plume management system components	14

---

<b>6</b>	<b>Plume management</b>	<b>15</b>
6.1	Pre-installation	15
6.2	Plume management options & measurement	17
6.3	Determine the plume management system length	18
6.3.1	Flue dampers	18
6.3.2	Plume management	18
6.3.3	Plume management length	
	- floor standing boilers	19
6.4	Measuring for a plume management system	19
6.5	Modify Non telescopic flue to accept plume management	20

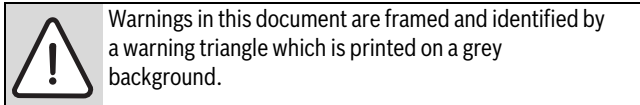
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<b>7</b>	<b>Installation</b>	<b>21</b>
7.1	Plume management installation - standard	21
7.2	Plume management installation - External boilers	22
7.3	Plume management installation - extended	22
7.4	Redirecting the flue discharge	24
7.5	Extended plume management installation for a balcony or overhang	25

# 1 KEY TO SYMBOLS AND SAFETY INSTRUCTIONS

## 1.1 KEY TO SYMBOLS

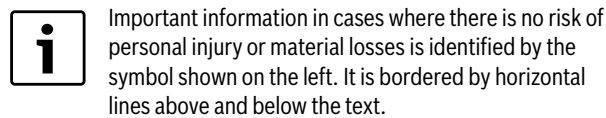
### WARNINGS



Keywords indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates that material damage may occur.
- **CAUTION** indicates that minor to medium injury may occur.
- **WARNING** indicates that serious injury may occur.
- **DANGER** indicates possible risk to life.

### IMPORTANT INFORMATION



### ADDITIONAL SYMBOLS

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

### ABBREVIATIONS

∅	Diameter
RS	Room Sealed

## 1.2 SAFETY PRECAUTIONS

### IN THE EVENT OF ANY OIL SMELLS, LEAKS OR FUMES FROM THE APPLIANCE:

- ▶ PUT OUT NAKED FLAMES
- ▶ OPEN DOORS AND WINDOWS
- ▶ ISOLATE THE ELECTRICAL SUPPLY
- ▶ ISOLATE THE FUEL SUPPLY AT THE BOILER
- ▶ RECTIFY THE FAULT

### BOILER OPERATION:

**This boiler must only be operated by a responsible adult who has been instructed in, understands, and is aware of the boiler's operating conditions and effects.**

### HEALTH AND SAFETY

The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988).

### COMBUSTION AND CORROSIVE MATERIALS

Do not store or use any combustible materials (paper, thinners, paints etc.) inside or within the vicinity of the appliance.

The combustion air must be free from chemically aggressive substances which can corrode the appliance and invalidate any warranty.

### FITTING AND MODIFICATIONS

Fitting the appliance and any controls to the appliance may only be carried out by a competent engineer in accordance with these instructions and the relevant Installation Regulations.

Flue systems must not be modified in any way other than as described in the fitting instructions. Any misuse or unauthorised modifications to the appliance, flue or associated components and systems could invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

### IMPORTANT

The service engineer must complete the Service Record at the back of the manual after each service.

### SERVICING:

Advise the user to have the system regularly serviced by a competent, qualified engineer (such as OFTEC registered personnel) using approved spares, to help maintain the economy, safety and reliability of the appliance.

### INSTALLATION REGULATIONS

Failure to install appliances correctly could lead to prosecution.

#### COMPLYING WITH THE BUILDING REGULATIONS:

The boiler and flue form part of the controlled services for the building. It is law that all controlled services for buildings must comply with building regulations. You must be able to satisfy your Local Authority Building Control Body (LABC) that the work carried out concerning the installation and commissioning of the heating appliances has been carried out to a satisfactory standard.

OFTEC operate a competent persons scheme and registered installers are able to certify that their work complies with building regulations.

Under the scheme:

- OFTEC must be informed about every installation.
- OFTEC will issue a building regulations compliance certificate to the householder and will notify LABC.

OFTEC provide controlled document forms CD10 and CD11 for use during installation and commissioning respectively.

Other organisations operate self-certification schemes e.g. NAPIT and BESCA Ltd. and it may be possible for installers who are members of these organisations to self certify their work.

Alternatively you must submit a building control notice to the LABC before installing any boiler.

The LABC will then arrange regular inspection visits during the work to ensure that the installation complies with the regulations.

The appliance must be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble free operation the appliance must be commissioned by a qualified OFTEC engineer. The compliance with a British Standard does not, in itself, confer immunity from legal obligations. In particular the installation of this appliance must be in accordance with the relevant requirements of the following British Standards and regulations in respect of the safe installation of equipment.

BS 5410: part 1: Code of practice for Oil Fired Boilers. The Building Regulations Part J and L1 England and Wales; Part F and Part J Section III Scotland;

Part L and Part F Northern Ireland.

Local water company bye-laws. The Control of Pollution (Oil) Regulations.

OFTEC Standards.

Where no specific instruction is given, reference should be made to the relevant codes of practice.

## 2 PRODUCT INFORMATION

### 2.1 ROOM SEALED VERTICAL FLUE COMPONENTS

<b>80/125mmØ RS Vertical flue kit comprising:</b>	
<b>Part No.: 7 731 600 218</b>	
<b>Use this kit with the Heatslave II and Danesmoor</b>	
1	Terminal assembly
2	Elbow 80/125mmØ
3	Installation manual
4	Infill cover panel
5	Drill pack, containing: 3.3mm HSS jobber's drill and solvent free grease sachet
6	Clamp bracket
7	Pipe clamp with screws, washers and wall plugs
8	Fire stop plate with screws, washers and wall plugs

Table 1 80/125 Vertical flue components

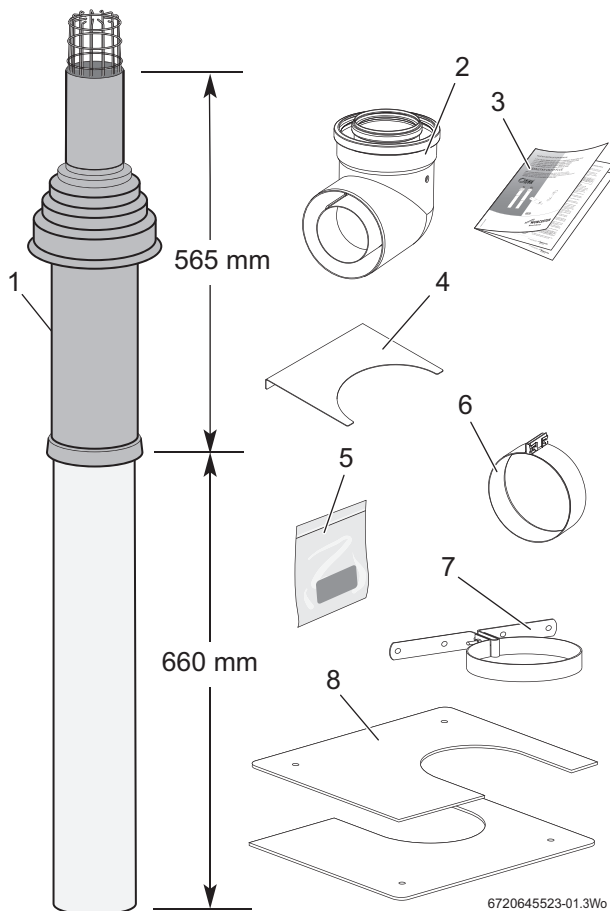


Fig. 1 80/125 RS Vertical flue kit

### 2.2 ROOM SEALED TELESCOPIC HORIZONTAL FLUE COMPONENTS

<b>80/125mmØ RS Telescopic horizontal flue kit comprising:</b>	
<b>Part No. 7 716 190 064 or 7 716 190 062</b>	
1*	Terminal assembly
2	Installation manual
3	Clamp bracket
4	Wall plates with screws, washers and wall plugs
5	Drill pack, containing: 3.3mm HSS Jobber's drill, No.8 x 13mm self tapping screws x 3 and solvent free grease sachet
6	Wall seal

\* Flue terminal lengths of less than 350mm are achieved by shortening the inner terminal section.

Table 2 RSF Telescopic flue components

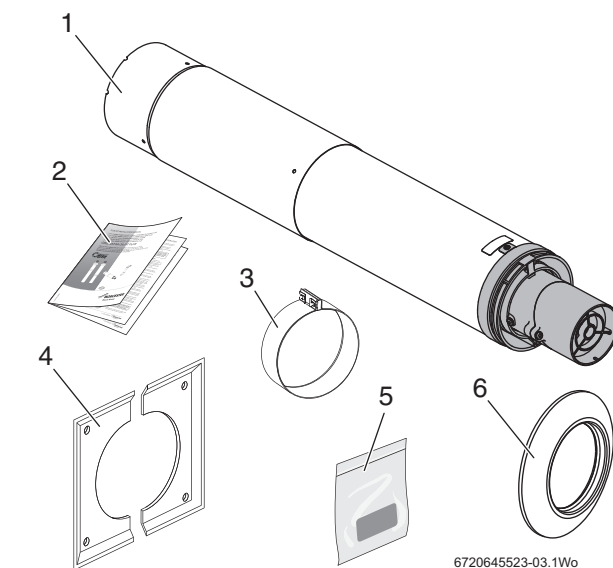


Fig. 2 Telescopic components

## 2.3 ROOM SEALED FLUE EXTENSION COMPONENTS

<b>80/125mmØ RS Flue extension comprising:</b> <b>Part No.: 7 716 190 033</b>	
1	<ul style="list-style-type: none"> <li>• Extension tube - 1000mm</li> <li>• Pipe clamp with screws and washers</li> <li>• Solvent free grease pack, containing: No. 8 screws x 2 and grease sachet</li> </ul>
<b>80/125mmØ RS Flue extension comprising:</b> <b>Part No.: 7 716 190 097</b>	
1	<ul style="list-style-type: none"> <li>• Extension tube - 600mm</li> <li>• Pipe clamp with screws and washers</li> <li>• Solvent free grease pack, containing: No. 8 screws x 2 and grease sachet</li> </ul>
<b>80/125mmØ RS 45° Elbow comprising:</b> <b>Part No.: 7 716 190 035</b>	
2	<ul style="list-style-type: none"> <li>• 45° Elbow x2</li> <li>• Solvent free grease pack, containing: No. 8 screws x 2 and grease sachet</li> </ul>
<b>80/125mmØ RS 90° Elbow comprising:</b> <b>Part No.: 7 716 190 034</b>	
3	<ul style="list-style-type: none"> <li>• 90° Swept elbow</li> <li>• Solvent free grease pack, containing: No. 8 screws x 2 and grease sachet</li> </ul>
<b>Plate, room sealed - Infill pack comprising:</b> <b>Part No. 7 716 191 185</b>	
4	<ul style="list-style-type: none"> <li>• Infill plates</li> </ul>

Table 3 Extension components

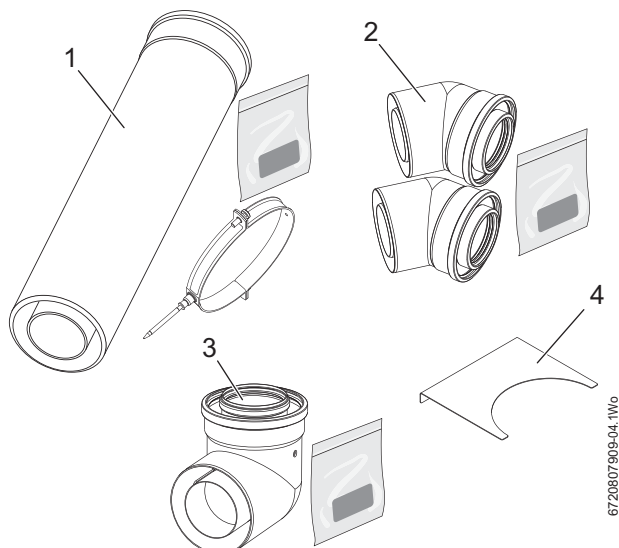


Fig. 3 RSF Extension components

### 3 PRE-INSTALLATION

#### 3.1 FLUE TERMINAL POSITIONS

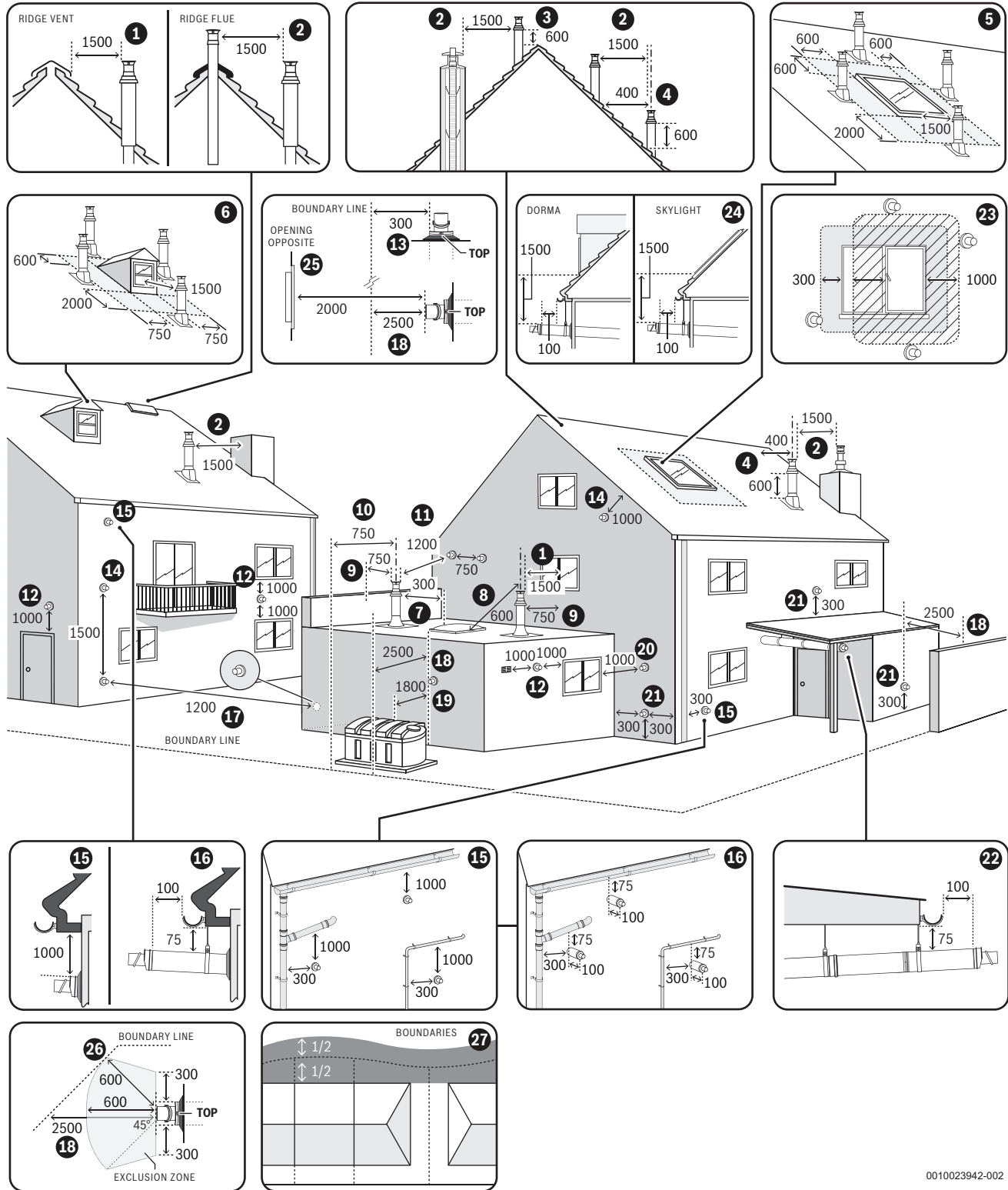


Fig. 4 Flue terminal positions

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**NOTICE:**

- ▶ All measurements are the minimum clearances required.
- ▶ Terminals must be positioned so to avoid combustion products entering the building.
- ▶ Support the flue at approximately one metre intervals and at a change of direction, use suitable brackets and fittings:  
- flue bracket 125mm x 1- Part No.: 7 716 191 179
- ▶ In spite of the dimensions given here, the terminal must not be closer than 300mm to combustible material, in the case of a thatched roof double this dimension.
- ▶ Terminals must be positioned so to avoid products of combustion accumulating in stagnant pockets around the building or entering the building.
- ▶ Terminals must be at least 1.8m from an oil storage tank unless a wall with of at least 30 minutes fire resistance and extending 300mm wider and higher than the tank is between the tank and the terminal.

**Key to illustration 25:**

1. 1,500mm measured between an opening or vented window and vertical flue terminal. This measurement can be reduced to 1000mm providing the flue terminal is at least 300mm above the opening.
2. Minimum clearance to an additional flue, 1,500mm between room sealed flues or room sealed flue and open flue, 1,000mm between open flues.
3. 600mm above a vertical structure less than 750mm from the side of the terminal.
4. The flue must extend at least 600mm above the intersection of the roof (flat and pitched) and be 400mm horizontally from a pitched roof or 500mm in regions with heavy snow fall
5. The flue must not penetrate the roof in the shaded area. The flue must be at least 1,000mm from the opening or vent when sited below the window, 300mm when sited to either side or above. The terminal must be at least 1,500mm room sealed, 1,000mm open flue from the opening or vent when measured horizontally.
6. The flue must not penetrate the roof in the shaded area. The flue must be at least 1,000mm from the opening or vent when sited below the window, 750mm when sited to either side and 300mm above. The terminal must be at least 1,500mm room sealed, 1,000mm open flue from the opening or vent when measured horizontally.
7. 300mm minimum clearance measured from a non opening skylight to a vertical flue. Vertical flue clearance,
8. 600mm minimum clearance measured from an opening or vented skylight to a vertical flue. If the terminal is within 1,500mm of the opening or vented skylight then it must be at least 600mm above the opening.
9. 750mm clearance to a structure from a vertical flue.  
Not required if the terminal is 600mm above the structure.
10. 600mm adjacent to a boundary line unless it will cause a nuisance. BS 5410: Part 1 recommended that care is taken when siting terminal in relation to boundary lines.
11. 1,200mm separation measured between a vertical flue and a horizontal flue terminal. Not required if the horizontal flue is 1,500mm above vertical flue terminal.
12. 1,000mm (BS 5410-1) above, below and either side of an opening door, air vent or opening window. These clearances are required by BS 5410 Part 1 to reduce a possible plumbing nuisance. If 1,000mm cannot be achieved then the distance can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
13. 300mm adjacent to a boundary line unless it will cause a nuisance. BS 5410: Part 1 recommended that care is taken when siting terminal in relation to boundary lines.
14. 1,500mm vertically between terminals and the same wall.
15. 1,000mm (BS 5410-1:2014) below eaves, gutters and sanitary pipe and 300mm from vertical sanitary pipes and drains. If 1,000mm cannot be achieved then the distance below eaves, gutters and sanitary pipe can be reduced to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute. 75mm if combustible material is protected or 600mm without protection to combustible material. 2500mm to a surface facing a terminal, unless it will cause a nuisance. This could be reduced if there was no plumbing nuisance, seek guidance from the local authority building control
16. The dimension below eaves, gutters, pipes and drains can be reduced to 75mm, as long as the flue terminal is extended by 100mm past any overhang. The telescopic flue joint must be sealed with suitable silicone sealant if it is external to the building
17. 1,200mm between terminals facing each other.
18. 2,500mm (BS 5410-1) distance to a surface or boundary line. If 2,500mm cannot be achieved then the distance can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
19. Terminals must be at least 1,800mm from an oil storage tank unless a wall with of at least 30 minutes fire resistance and extending 300mm wider and higher than the tank is between the tank and the terminal. The flue air intake must be at least 900mm away from the oil storage tank vent.
20. 1000mm diagonally to an opening door, air vent or opening window.
21. 300mm to an internal or external corner. 300mm above a surface, such as the ground/ floor level or roof surface.
22. The dimension below eaves, balconies and car ports can be reduced to 75mm, as long as the flue terminal is extended to clear any overhang. The telescopic flue joint of the terminal must be sealed with suitable silicon sealant if it is external to the building.
23. 1,000mm (BS 5410-1) from an opening or vented window, 300mm to a fixed unvented window. If 1,000mm cannot be achieved then the distance from an opening or vented window can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
24. The flue must be at least 1,500mm from the opening or vented skylight when sited below the opening or vented skylight.
25. Proximity of flue duct outlet to boundaries, 2000mm distance to an opening in adjacent building facing a terminal. BS 5410: Part 1 recommended that care is taken when siting terminal in relation to boundary lines.
26. The distance between a boundary facing a flue terminal can be measured diagonally from the point of discharge with a minimum distance of 600mm which must be maintained. The exclusion zone ensures compliance with Approved Document J of the building regulations.
27. For the purpose of determining suitable flue terminal positions for oil appliances discharging over public boundaries, the boundary can be considered to extend to the centre line of any adjacent routes or waterways e.g. paths, streets, rights of way, canals, rivers or railways.



**NOTICE:**

- ▶ Installations in car ports are not recommended.
- ▶ Dimensions from a flue terminal to a fanned air inlet to be determined by the ventilation equipment manufacturer.

**3.2 FLUE SYSTEMS IN VOIDS**

When installing a new flue system consider the following information.

**CAUTION:** Flue systems in ceilings or roof voids. Access must be provided for service and inspection:

- ▶ Voids containing concealed flues must have at least one inspection hatch no less than 300mm square.
- ▶ 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, bends should be viewable from both directions.

**FLUE SYSTEMS IN CEILINGS OR ROOF VOIDS**

When installing a flue system in a ceiling or roof void, the following points must be observed:

1. Access points for inspection of the flue system must be sufficiently sized for visual inspection, particularly at any joint in the flue system.
2. The flue system must not pass through a neighbouring property, as access may not be possible at the time of inspection.
3. Any access must not contravene any other building regulations or fire regulations. Refer to Building Regulations Approved Documents B, L and E.
4. 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.
5. The flue system must be adequately supported at regular intervals, approximately every one metre.

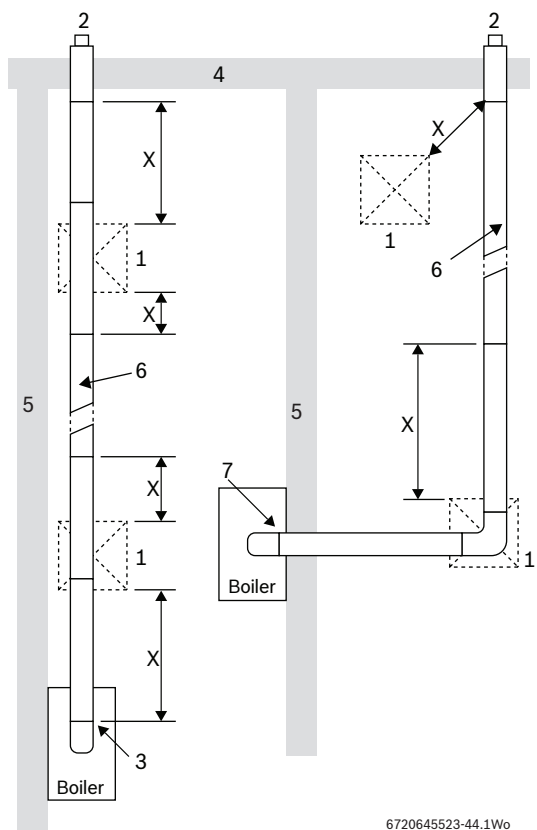


Fig. 5 Flues in voids

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X	This dimension must not exceed 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

Table 4 Key to figure 5

**ANNUAL INSPECTION**

When the flue system is inspected under 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 sound and correctly assembled according to the manufacturers instructions.
- ▶ the flue has a fall of at least 3° (52 millimetres per metre) back to the boiler.

**4 INSTALLATION**

**4.1 ROOM SEALED FLUE MEASUREMENT**

**NOTICE: CONDENSATE DISPOSAL**

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

**i** Cutting the horizontal flue to an exact measurement is not normally required as the telescopic flue terminal can allow for some adjustment.

**HORIZONTAL FLUES**

The determination of the effective flue length (L) is made by measuring the flue path from the boiler casing to the outside wall and adding the effective length of any bends used.

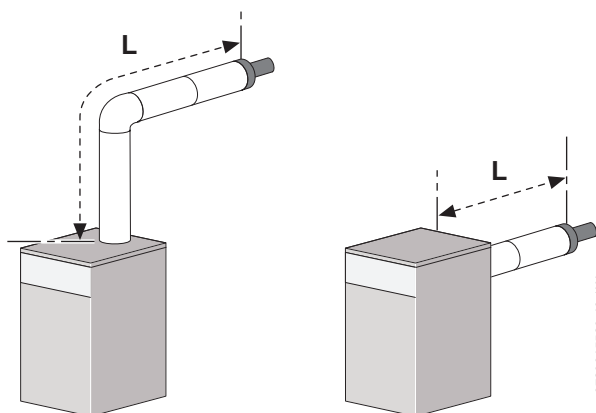


Fig. 6 Effective length - horizontal

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**VERTICAL FLUES**

The determination of the effective flue length (L) is made by measuring the flue path from the boiler casing to the outside of the roof, plus at least 600mm of flue that must project beyond the roof.

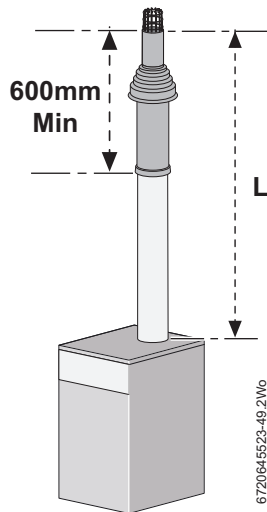


Fig. 7 Effective length - vertical

Greenstar Appliance	Model	Maximum effective flue length (L) in metres				Flue Ø (mm)
		High level horizontal	Low level horizontal rear	Low level horizontal side	Vertical	
	12/18	5*	6*	5*	8*	80/125
	18/25	5*	6*	5*	8*	80/125
	25/32	5**	6**	5**	8**	80/125

Table 5 Maximum flue lengths

[\*] Flue damper required

[\*\*] Flue damper required only at 32kW output with flues less than 4m

**\* Flue damper required!**  
Refer to Table 7 for more information



For pre-ErP+ flue lengths please refer to the boiler installation manual.

**4.1.1 DETERMINE THE EFFECTIVE FLUE LENGTH (L)**

1. Measure the length of the flue path required from the flue opening outside the building to the boiler outer casing.
2. Add the “effective length” of each bend to the straight length of flue. Adding bends to the flue system reduces the actual flue length available.

Flue bends are rated as an effective length of flue:

Bend	Effective length
90°	1 metre
45°	0.5 metres

Ensure that the effective length does not exceed the values stated in table 9 for your boiler.

The flue will project outside the building by the measurements shown in the table below.

Flue termination	Minimum projection
Horizontal	120mm
Vertical	600mm (minimum)

**4.1.2 ACTUAL FLUE LENGTH**

1. Add dimension “X” to the effective flue length (L) to allow the flue to fit to the outlet/elbow inside the boiler casing.
2. Refer to figure 8 and table 6 for dimension X for flue outlet options 1, 2, 3 or 4.

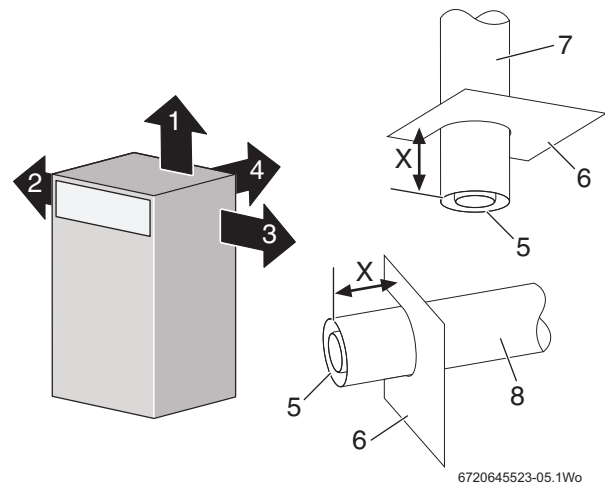


Fig. 8 Fluing options from the boiler

Flue outlet	Length X (mm)	
	Greenstar Danesmoor ErP+ & 2022+	Greenstar Heatslave II ErP+ & 2022+
1	30	30
2	120	270
3	120	120
4	260	260

5	Flue outlet
6	Boiler outer casing
7	Vertical flue or extension
8	Horizontal flue or extension

Table 6 Key to figure 8

**INSTALLATION**

**4.2 FLUE ADJUSTMENT AND CUTTING**



Ensure that the TOP label of both sections are aligned before securing the two parts at the required length.

**4.2.1 TELESCOPIC FLUE ADJUSTMENT**

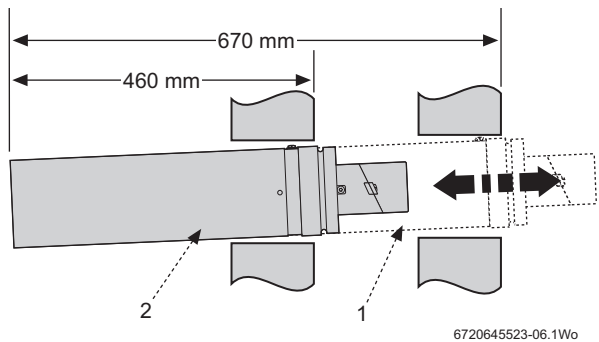


Fig. 9 Standard telescopic flue

Extend the tube [1] by withdrawing from tube [2] to achieve a flue length required between 460 - 670mm

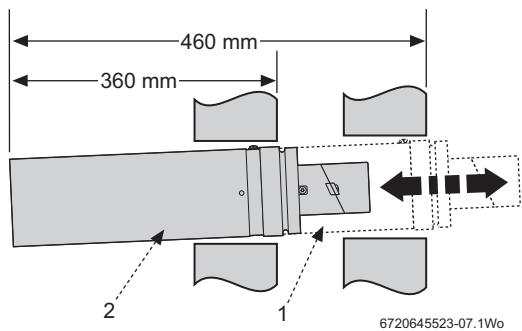


Fig. 10 Short telescopic flue

Extend tube [1] by withdrawing from tube [2] to achieve the flue length required, between 360- 460mm.

Secure with screw provided and seal joint with the aluminium tape supplied.

**4.2.2 REDUCING THE TELESCOPIC FLUE LENGTH**

The flue terminal **MUST** be fitted with the 'TOP' label uppermost to allow the correct fit and use of the plume management system.

- ▶ Slide terminal section [2] from the terminal assembly [1] and discard.

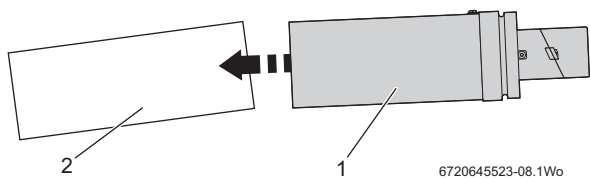


Fig. 11 Reducing the telescopic flue

**Reducing the telescopic flue length further:**

- ▶ Mark the length required for the terminal as shown in figure 12 (min. 160mm) and cut square, taking care not to damage the tubes.
- ▶ Remove any burrs and chamfer the outer edge of the tubes to assist ease of connection and prevent seal damage.



The aluminium tape is not required when reducing the terminal.

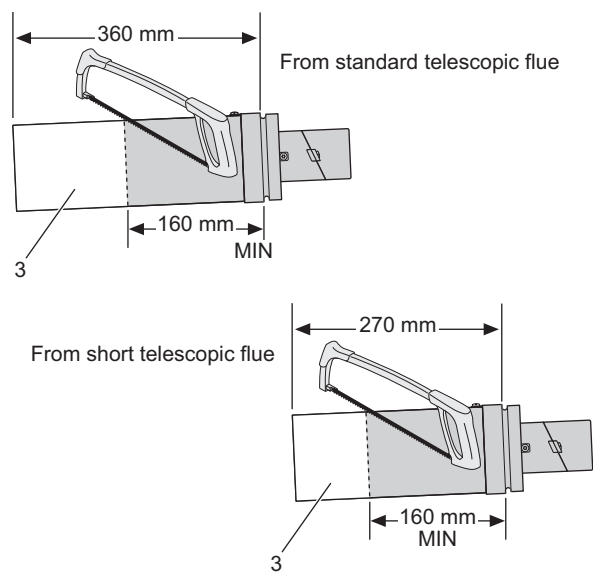


Fig. 12 Reducing the flue further

**4.2.3 REDUCING FLUE LENGTH**

- ▶ Mark the extension tube to the required distance, measuring from the socket end and cut the tube square, taking care not to damage the tubes.
- ▶ Remove any burrs and chamfer the outer edge of the tubes to ease the connection and prevent damage to the seals.

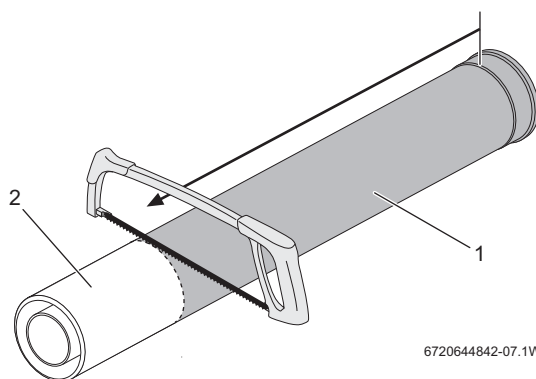


Fig. 13 Reducing flue length

### 4.3 ROOM SEALED FLUE FITTING

**NOTICE:** Flue assembly

- ▶ To ease assembly of the flue components, grease seals lightly with the solvent free grease supplied.
- ▶ Check all the seals are seated properly in the grooves provided and are in good condition.

#### FITTING A STRAIGHT FLUE EXTENSION TO THE BOILER OUTLET

1. Remove the bracket retaining screws.
2. Remove the bracket and discard.

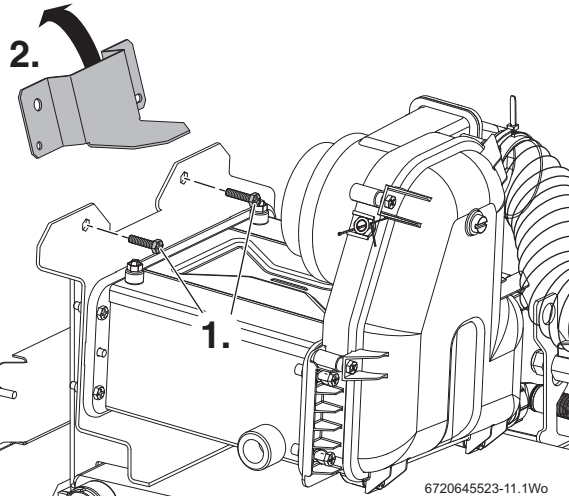


Fig. 14 Discard bracket

1. Ensure that the seal [1] is correctly seated and grease has been applied to ease assembly.
2. Slide the clamping collar [3] over the flue extension [2] and mate the extension tube to the boiler outlet. Ensuring that the inner tube slides fully into the seal of the boiler outlet.
3. Position the clamp over the extension tube and boiler outlet and tighten firmly.

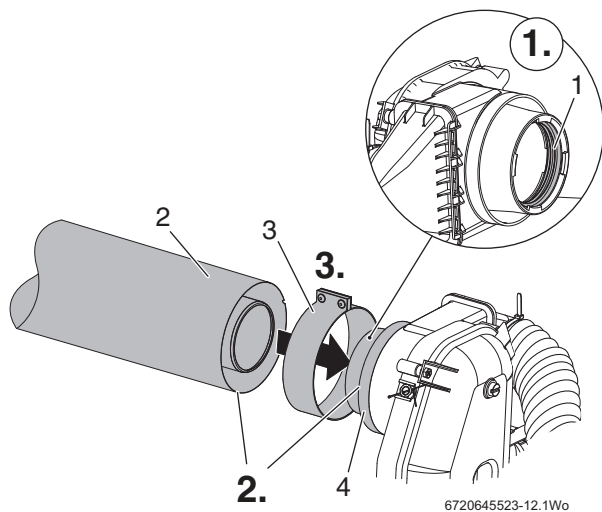


Fig. 15 Flue fitting

### FLUE DAMPER

**WARNING:** Fitting the flue damper

- ▶ Failure to fit the flue damper, when required, will effect the performance of the boiler and may cause “lockouts”

**i** The flue damper is only fitted to the models stated in table 7.  
**The CO<sub>2</sub> must be re-adjusted when a damper is used**

**i** For pre-ErP+ appliances please refer to the boiler installation manual for flue damper requirements.

Model range	Output kW	Flue damper fitted
12/18	13	Yes
	15	Yes
	18	Yes
18/25	18	Yes
	21.5	Yes
	25	Yes
25/32	25	No
	28	No
	32	Yes ≤ 4m flue length
	32	No > 4m flue length

Table 7

**i** For the CO<sub>2</sub> settings refer to the relevant Installation Commissioning & Servicing manual.

Fit the flue damper into the flue as shown in figure 16. Ensure that the rubber seal is fitted into the inner tube.

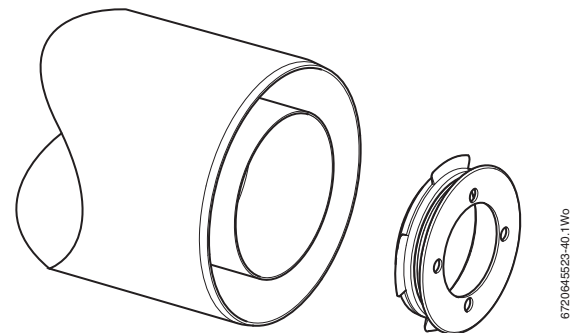


Fig. 16 Flue damper detail

Insert the flue damper into the inner flue tube of the 90° elbow or straight extension and fit the flue as detailed in figure 15 or figure 18 as required.

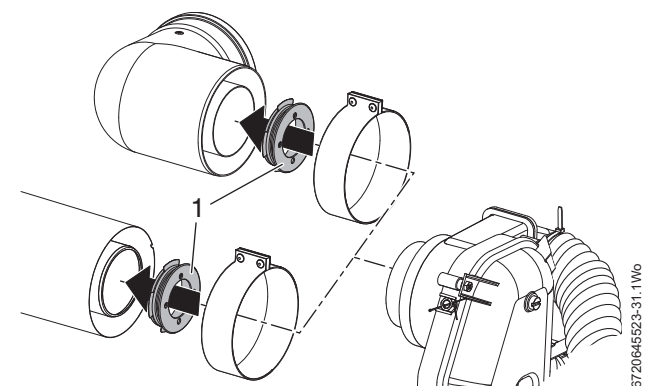


Fig. 17 Flue damper fitting

**INSTALLATION**

**FITTING AN ELBOW TO THE BOILER OUTLET**

1. Ensure that the seal [1] is correctly seated and grease has been applied to ease assembly.
2. Loosen the nuts and bolts securing the retaining bracket [2], but do not remove.
3. Slide the clamping collar [4] over the elbow [3] and mate the elbow to the boiler outlet.  
Ensuring that the inner tube slides fully into the seal of the boiler outlet.
4. Align the elbow to the direction of the flue path, either left, right or vertically.
5. Position the clamp over the elbow and boiler outlet and tighten firmly.

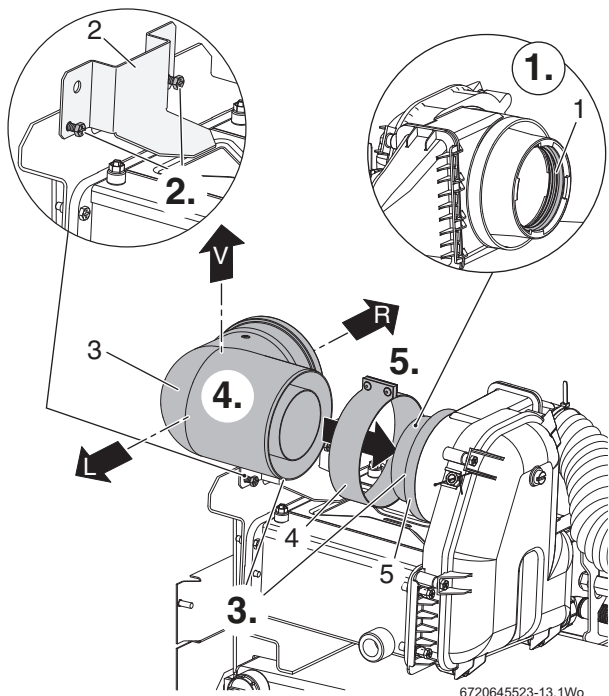


Fig. 18 Flue bend fitting

1. With the elbow in the required position.
2. Re-secure the retaining bracket [1]

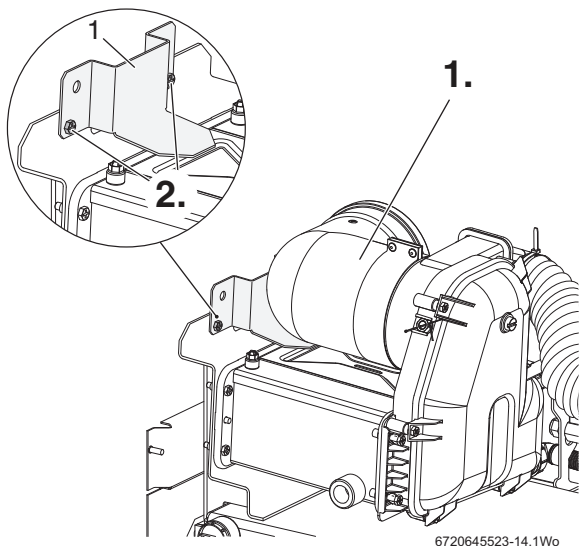


Fig. 19 Securing bracket

**FITTING THE VERTICAL FLUE IN-FILL PANEL**

When installing the flue vertically, the top panel must have the in-fill panel fitted after the “knock out” section is removed.

- ▶ To release the boiler top panel from the case, pull up the front edge of the panel and slide towards you

1. Remove the “knock out” panel and file smooth the tags left behind

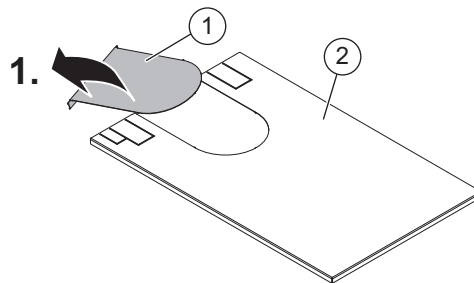


Fig. 20 Removing the cut-out

- [1] Vertical flue cut-out panel
- [2] Boiler top panel

- ▶ Fit the vertical flue section to the vertically aligned elbow, refer to section 4.4.1 for fitting instructions

2. If the back of the boiler is mounted close the wall, position the in-fill panel [3] behind the flue as shown in the figure below
3. Slide the boiler top panel [2] back onto the top of boiler case so that the in-fill panel engages with the slot on the underside of the top panel

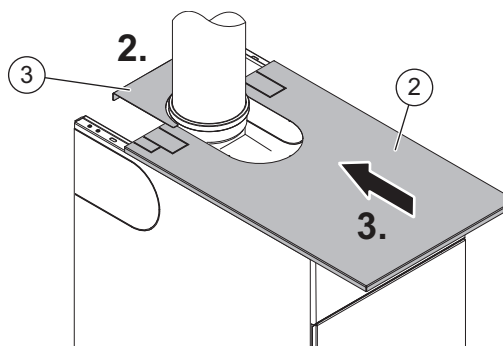


Fig. 21 Fitting the panels

- [2] Boiler top panel
- [3] Infill panel

- ▶ Push the top panel back onto the case to locate the tags on either side of the case with the slots in the back of the top panel.
- ▶ Push down at the front edge of the panel to engage the ball catches into case

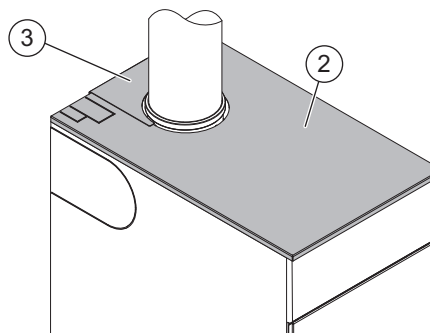


Fig. 22 Top panel in position

#### 4.4 ROOM SEALED FLUE TERMINAL & EXTENSIONS

**NOTICE:** Flue assembly

- ▶ To ease assembly of the flue components, grease seals lightly with the solvent free grease supplied.
- ▶ Check all the seals are seated properly in the grooves provided and are in good condition.
- ▶ All flue joints must be sealed to prevent leakage of condensate and flue products.

##### 4.4.1 VERTICAL TERMINALS

**i** Specially designed roof flashing for the 80/125 vertical flue are available under the following numbers:  
7 716 191 091 for pitched roof applications or  
7 716 191 090 for flat roof applications

1. Fit the roof flashing [1], not supplied, and weatherproof terminal exit to roof.
2. Fit flue terminal [2] through the flue opening in the roof flashing, ensuring that the flue extends beyond the roof by the distance shown, as a minimum.  
The collar on the external part of the flue is designed to rest on top of the roof flashing.
3. Secure the fire stop plates [3] to the ceiling above the boiler with the screws provided.

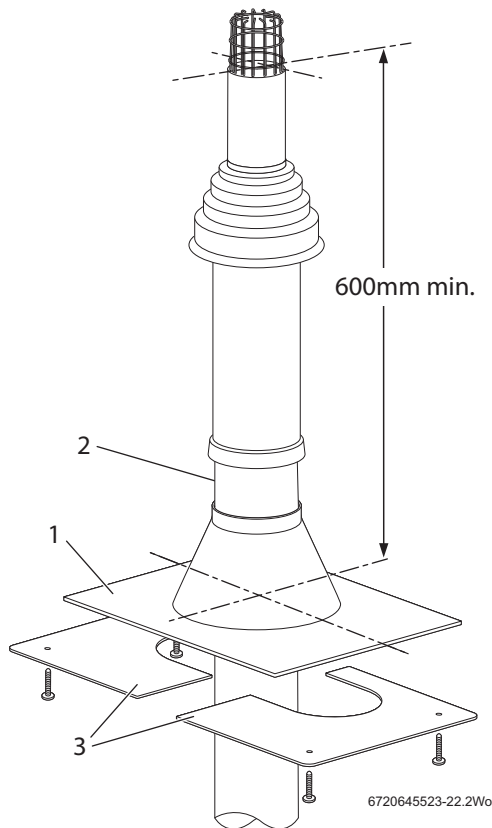


Fig. 23 Vertical flue assembly

**WARNING:** Support the flue correctly.

- ▶ Do not allow the boiler to support the weight of the flue.

- ▶ Fit the flue support clamps [1] at regular intervals to support the weight of the flue.

##### 4.4.2 HORIZONTAL TERMINALS

Fit the terminal through the flue opening in the wall to the outside of the building by the distance shown. Ensure that the flue is correctly rotated so that the "TOP" label at the top.

1. Slide on the outer wall seal, locating the ridge on the seal with the groove on the terminal.
2. Position terminal through the flue opening in the wall to the outside of the building by the distance shown.
3. Set the telescopic flue to the required length and secure with the screws provided and seal the joint with the aluminium tape provided.
4. Attach the other flue extensions/elbows as required.
5. Secure the fire stop plates to the wall with the screws provided

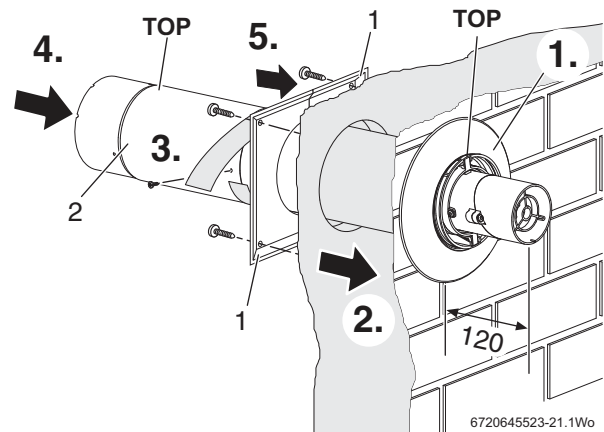


Fig. 24 Telescopic flue installation

##### 4.4.3 EXTENSIONS

▶ Referring to figure 25 and 26 slide the support clamps (1) onto the additional flue extensions (2).

1. Working from the boiler, fit the support clamps (1), to take the weight of the flue elbows and extensions (2).
2. Drill two holes with the jobber's drill bit provided (180° apart if possible) through the outer flue tube (L) on each flue joint, taking care NOT to drill the inner flue tube, and secure with screws provided.

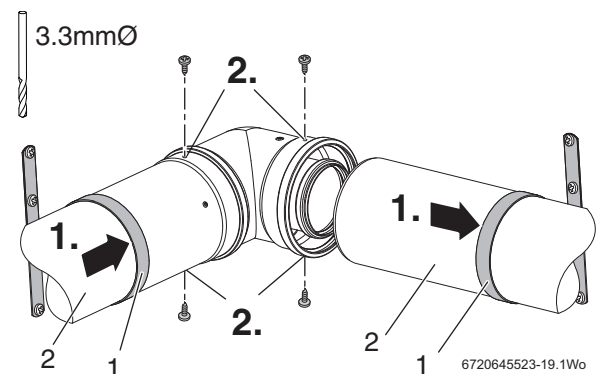


Fig. 25 Extensions employing elbows

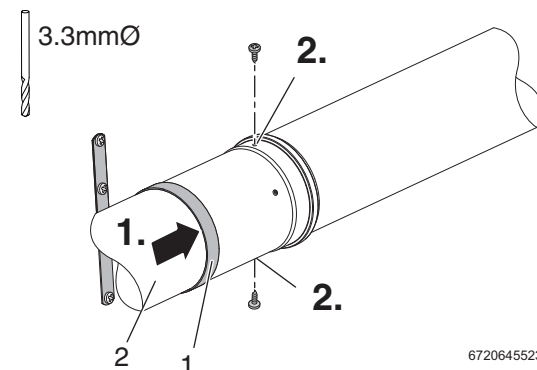


Fig. 26 Straight extensions

**5 PLUME MANAGEMENT PRODUCT INFORMATION**

**5.1 PLUME MANAGEMENT SYSTEM COMPONENTS**

<b>PLUME MANAGEMENT COMPONENTS</b>	
<b>Ø 80mm PLUME MANAGEMENT KIT comprising:</b>	
<b>Part No.: 7 716 190 092</b>	
1	90° bend
2	Extension 500mm
3	Outlet assembly
4	Clamp pack
5	Flue damper
6	Screw pack, containing: No.8 x 13mm self tapping screws x 2 and solvent free grease sachet

Table 8 80mm Plume management kit

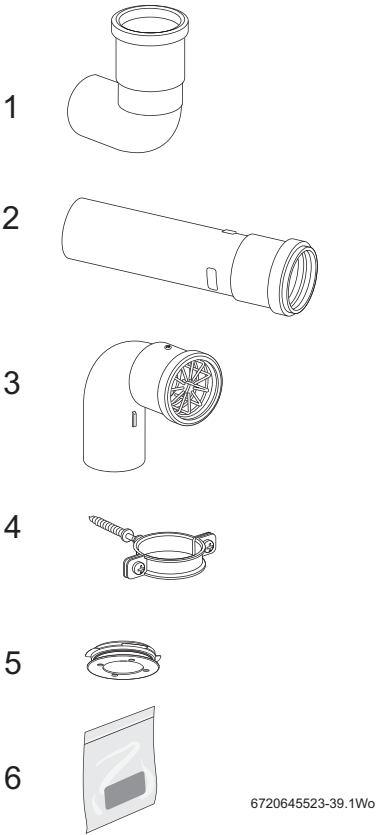


Fig. 27 Plume management kit components

<b>EXTENSION COMPONENTS</b>	
<b>Ø 80mm EXTENSION comprising:</b>	
<b>Part No.: 7 716 190 093</b>	
7	Extension 1000mm
8	Clamp pack
<b>90° BEND comprising:</b>	
<b>Part No.: 7 716 190 095</b>	
9	90° Bend
<b>45° BEND comprising:</b>	
<b>Part No.: 7 716 190 094</b>	
10	45° Bend x 2
<b>80/125mmØ Terminal ring adaptor comprising:</b>	
<b>Part No.: 7 716 190 100</b>	
11	Terminal ring

Table 9 Ø 80mm Extension

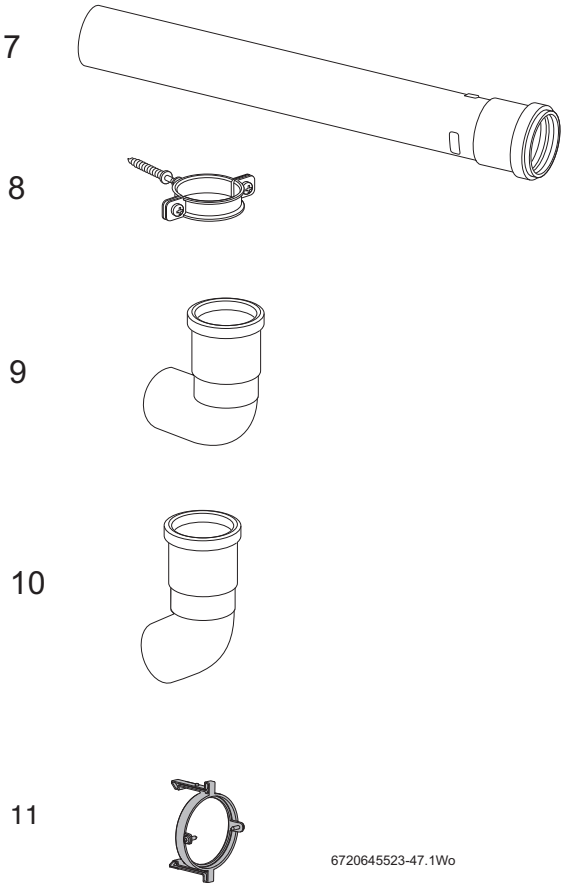


Fig. 28 Plume management extension components

## 6 PLUME MANAGEMENT

### 6.1 PRE-INSTALLATION

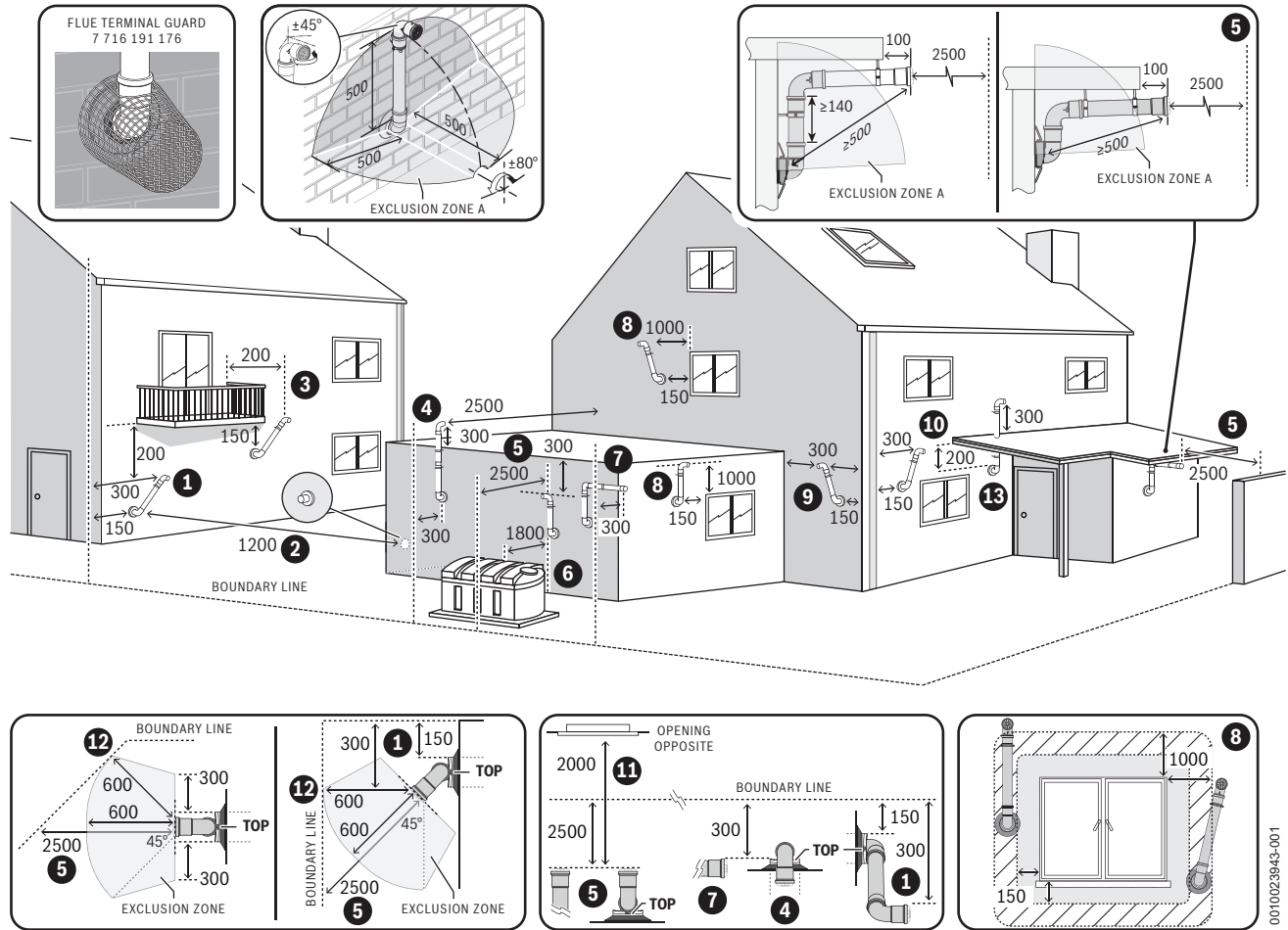


Fig. 29 Plume terminal positions



**NOTICE:**

- ▶ All measurements are the minimum clearances required.
- ▶ Terminals must be positioned so to avoid combustion products entering the building.
- ▶ Support the flue at approximately one metre intervals and at a change of direction, use suitable brackets and fittings.

**KEY TO ILLUSTRATION**

1. Plume Management kit air intake can be reduced to 150mm providing the flue exhaust outlet is no less than 300mm adjacent to a boundary line.
2. 1,200mm between the terminals on opposing walls. Where two plume management kits are used 1200mm must be maintained between both opposing terminals and air inlets. Each terminal should use a minimum length of 500mm plume management
3. Below balcony or overhang. The air intake clearance can be reduced to 150mm providing the flue exhaust outlet has a 1000mm clearance in BS 5410-1.
4. 300mm distance from a boundary line to the air intake as long as the exhaust terminal faces away from the boundary line. The exhaust terminal must have a minimum 300mm clearance to a surface below and there must be at least 2,500mm (BS 5410- 1) clearance when measured horizontally in a straight line from the exhaust outlet to any other surface. If 2,500mm cannot be achieved then the flue exhaust outlet distance can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
5. 2,500mm (BS 5410-1) distance to a surface or boundary line. If 2,500mm cannot be achieved then the distance can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
6. Terminals must be at least 1,800mm from an oil storage tank unless a wall with of at least 30 minutes fire resistance and extending 300mm wider and higher than the tank is between the tank and the terminal. The flue air intake must be at least 900mm away from the oil storage tank vent.
7. 300mm adjacent to a boundary line unless it will cause a nuisance. BS 5410: Part 1 recommended that care is taken when siting terminal in relation to boundary lines.
8. Above, below and either side of an opening door, air vent or opening window. Using a Plume Management kit the air intake measurement can be reduced to 150mm providing the flue exhaust outlet has a 1,000mm (BS 5410-1) clearance. If 1,000mm cannot be achieved then the flue exhaust outlet distance can be reduced to 600mm to comply with Approved Document J of the building regulations if it will not cause a nuisance or dispute.
9. Internal/external corners. The air intake clearance can be reduced to 150mm providing the flue exhaust outlet has a 300mm clearance.

## PLUME MANAGEMENT

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10. Vertical sanitary pipe: 150mm to the flue air intake and 300mm to the flue exhaust outlet.
11. Proximity of flue duct outlet to boundaries, minimum 2,000mm distance to an opening in adjacent building facing a terminal. BS 5410: Part 1 recommended that care is taken when siting terminal in relation to boundary lines.
12. The distance between a boundary facing a terminal can be measured diagonally from the point of discharge with a minimum distance of 600mm which must be maintained. The exclusion zone ensures compliance with Approved Document J of the building regulations,
13. A plume management kit must not be terminated within the confines of a carport or other covered, partially enclosed extension. The exhaust terminal must be sited at least 300 mm beyond the footprint of the structure, and maintain a distance of at least 600mm to any opening sited within the confines of the structure.  
The exhaust terminal can also be routed through the roof of the carport providing 25mm clearance is provided around the flue pipe to any flammable material and that it extends at least 300mm above the roof. The air intake must have a minimum 150mm clearance to any opening in the building in order to ensure the integrity of the structure is maintained. If the air intake is sited within the footprint of the carport then the carport must have at least one completely open side.



- ▶ The flue cannot be lower than 1,000mm from the top of a light well due to the build up of combustion products.
  - ▶ Plume kits running horizontally must have at least a 3° fall back to the appliance for proper disposal of condensate. The initial plume kit horizontal run will have at least a 10° fall back to the appliance, due to the terminal elbow design, for proper disposal of the condensate.
-

**6.2 PLUME MANAGEMENT OPTIONS & MEASUREMENT**

**NOTICE: PLUME MANAGEMENT**

▶ All plume management sections must rise away from the air inlet by a minimum of 173mm per metre (10°) to allow the condensate to drain back to the boiler.

The figure 31 shows the components required for typical plume management configurations.

**MINIMUM PLUME MANAGEMENT LENGTH**

The minimum plume length is 500mm to ensure that the air inlet and exhaust have a minimum distance of 500mm between them. The plume management can be in any configuration, within the parameters of the plume management installation instructions, as long as it does not terminate inside the shaded area.

**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 shaded area shown in figure 30

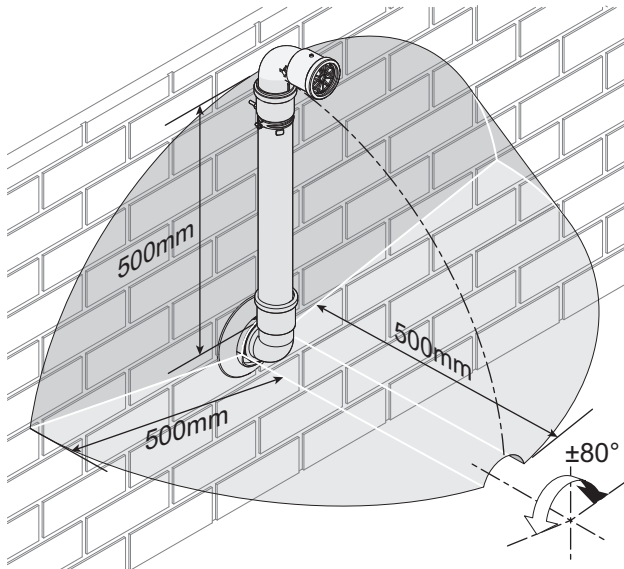


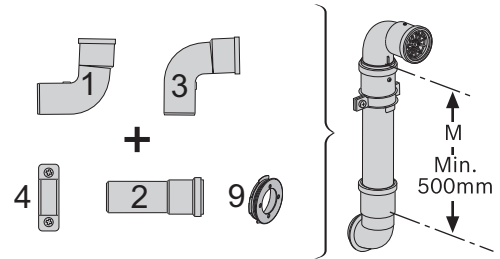
Fig. 30 Terminal exclusion zone

**NOTICE: Cutting the 500mm pipe**

If the 500mm plume management pipe kit is cut, an additional elbow will be required to join the pipe work.

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

**PLUME MANAGEMENT KIT**

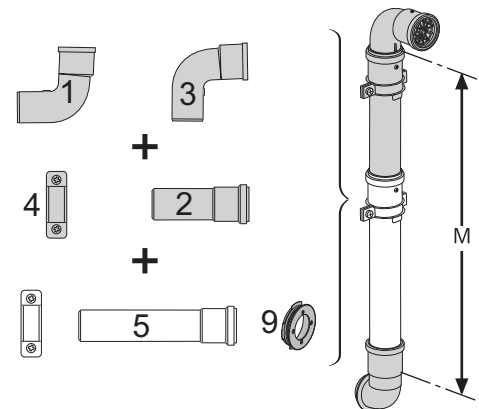


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Fig. 31 Plume management components

- [1] 90° bend
- [2] Extension 500mm
- [3] Outlet assembly
- [4] Clamp
- [9] Flue damper

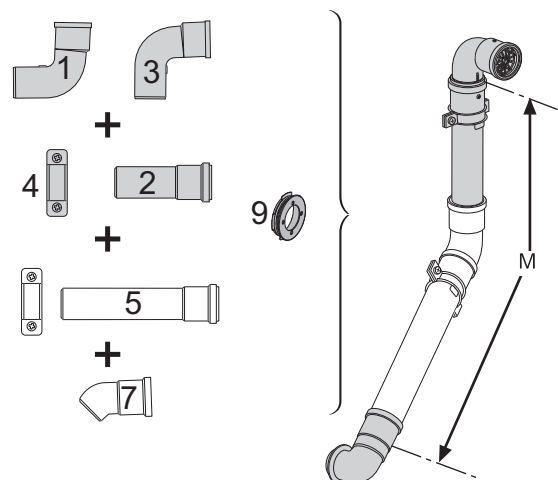
**PLUME MANAGEMENT KIT PLUS OPTIONAL PARTS**



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Fig. 32 Optional components in white

- [5] Extension tube 1000mm and clamp
- [6] 90° bend
- [7] 45° bend



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Fig. 33 Plume management with bend

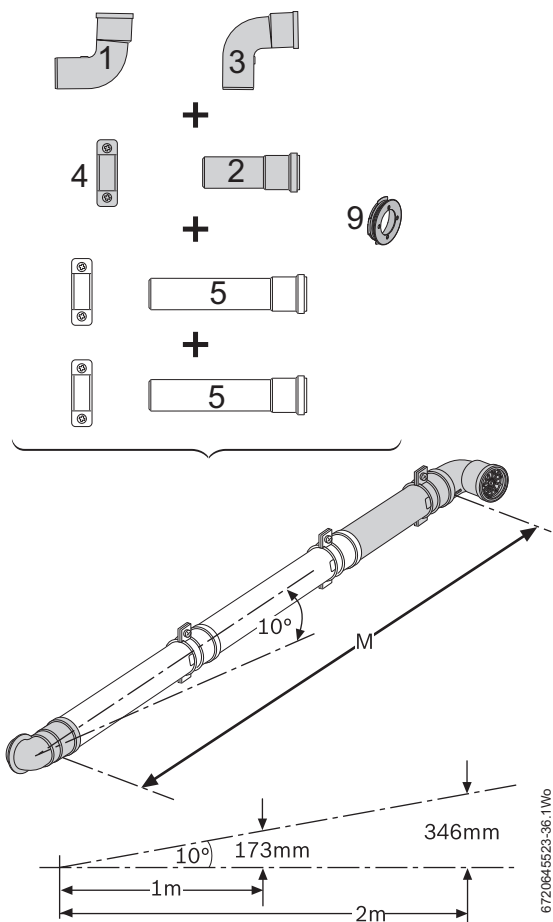


Fig. 34 Plume management with straight extension

**NOTICE: PLUME MANAGEMENT LENGTH**  
 ▶ Measurement M must be a minimum of 500mm and must not exceed the maximum stated in tables 11 to 20.

**6.3 DETERMINE THE PLUME MANAGEMENT SYSTEM LENGTH**

**6.3.1 FLUE DAMPERS**

**WARNING:** Fitting the flue damper  
 ▶ Failure to fit the flue damper, when required, will effect the performance of the boiler and may cause "lockouts"

**NOTICE: CO<sub>2</sub> SETTINGS**  
 ▶ After fitting a plume management system and/or a flue damper, check and if necessary re-adjust the CO<sub>2</sub> settings as described in the Installation, Commissioning and Servicing manual for that boiler.

**NOTICE:** Flue dampers  
 When plume management is utilised then a flue damper must be fitted to the following boilers:  
 ▶ Greenstar Camray 18/25  
 ▶ Greenstar Camray 25/32  
 ▶ Greenstar Danesmoor wall-mounted 18/25  
 ▶ Greenstar Heatslave II  
 ▶ Greenstar Danesmoor - (cross firing)

**FLUE DAMPER FITTING**

The flue damper can be fitted into the flue system as shown in section 4.3.

If the flue system has already been fitted then the Manifold Access Cover can be removed and the damper inserted into the flue inner tube. Take care not to damage the Flue Overheat Thermostat Phial.

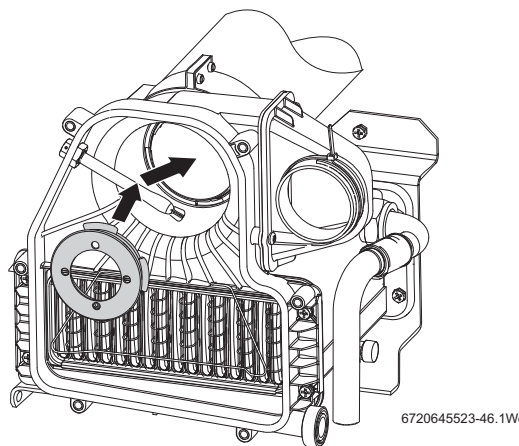


Fig. 35 18/25 boiler detail

**DANESMOOR WALL MOUNTED 18/25**

The flue damper cannot be fitted into the boiler and therefore must be fitted into the plume management system. Refer to figures Fig. 40 and Fig. 47 for flue damper fitting information.

**6.3.2 PLUME MANAGEMENT**

**i** The minimum plume length for all boilers stated on the front page of this manual is 500mm.

Refer to the following tables 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.

**WARNING:** Bends used in the system  
 ▶ Please refer to the table that relates to your boiler to determine how many bends may be used in the Flue and Plume management system.  
 ▶ The plume management system always employs two bends, the stated maximum bends that can be used are in addition to the first bend exiting the flue system and the terminal bend.

Effective lengths of elbows		
Bend	Flue	Plume
90°	1000mm	1000mm
45°	500mm	500mm

Table 10 Effective lengths of bends

### 6.3.3 PLUME MANAGEMENT LENGTH - FLOOR STANDING BOILERS

Once the length L is known, refer to the tables 11 to 20 opposite that relates to your boiler and select the appropriate plume management length (M).

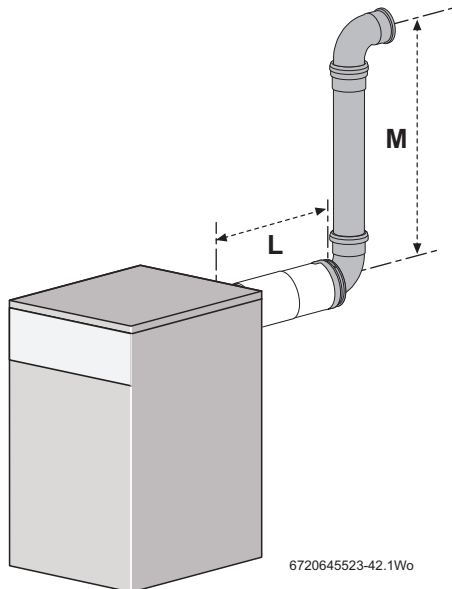


Fig. 36 PM length - floor standing boilers

#### PLUME MANAGEMENT VERSUS FLUE LENGTH

The plume management system always employs two bends, the stated maximum bends that can be used are in addition to the first bend exiting the flue system and the terminal bend.

Greenstar Camray 12/18		
	Flue length (L)	Plume length (M)
	600 - 2000mm	500 - 5000mm
Bends	1	No additional

Table 11 Camray 12/18

Greenstar Camray 18/25		
A damper must be fitted if plume management is used, refer to Flue damper on page 11 or figure Fig. 35 .		
	Flue length (L)	Plume length (M)
	160 - 2000mm	500 - 5000mm
	2001 - 3000mm	500 - 1500mm
	3001 - 4000mm	500 - 1000mm
Bends	maximum of 2	maximum of 3

Table 12 Camray 18/25

Greenstar Camray 25/32		
A damper must be fitted if plume management is used, refer to Flue damper on page 11 or figure Fig. 35 .		
	Flue length (L)	Plume length (M)
	160 - 2000mm	500 - 5000mm
	2001 - 3000mm	500 - 3500mm
	3001 - 4000mm	500 - 2000mm
Bends	maximum of 2	maximum of 2

Table 13 Camray 25/32

Greenstar Heatslave 12/18, 18/25 & 25/32 Danesmoor 18/25(pre 2011)		
	Flue length (L)	Plume length (M)
	160 - 2000mm	500 - 5000mm
	2001 - 3000mm	500 - 3500mm
	3001 - 4000mm	500 - 2000mm
Bends	maximum of 2	maximum of 3

Table 14 Heatslave 12/18, 18/25, 25/32 & Danesmoor 18/25

Greenstar Heatslave II 12/18 & 18/25 up to & including 2022+ Danesmoor 12/18 & 18/25 (2013)		
	Flue length (L)	Plume length (M)
	160 - 2000mm	500 - 5000mm
Bends	maximum of 2	maximum of 2

Table 15 Heatslave II 12/18, 18/25 & Danesmoor 12/18 & 18/25

Greenstar Heatslave II 25/32 up to & including 2022+ Danesmoor 25/32 (2013)		
	Flue length (L)	Plume length (M)
	160 - 2000mm	500 - 4000mm
Bends	maximum of 2	maximum of 2

Table 16 Heatslave II 25/32 & Danesmoor 25/32

### 6.4 MEASURING FOR A PLUME MANAGEMENT SYSTEM



All boilers have a maximum permissible plume management length, refer to page 19.

1. Measure the plume management flue (M) from the centre of terminal, along the required route to the centre of the plume outlet.

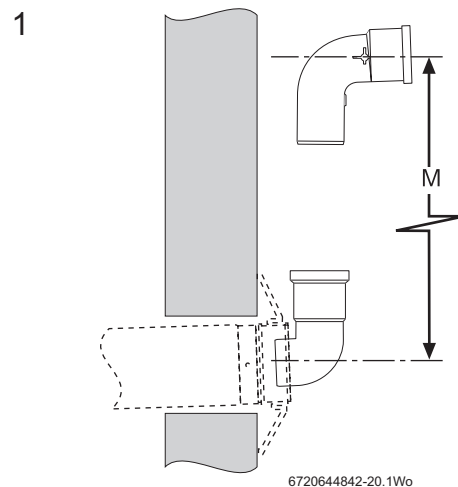


Fig. 37 Plume management length M

#### ADDITIONAL BENDS:

2. Adding bends to the plume management system reduces the actual plume management length. Each bend has an equivalent straight length and must be factored into the overall effective length.
  - 90° bend is equivalent to 1000mm.
  - 45° bend is equivalent to 500mm

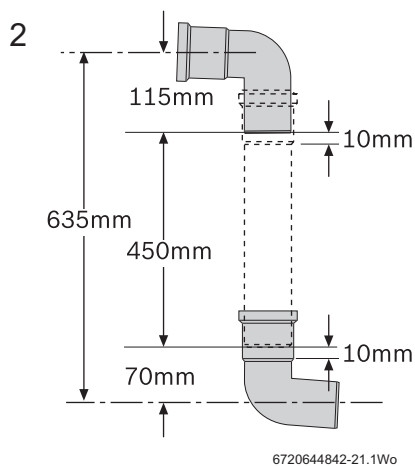


Fig. 38 Plume management bends

**EXAMPLE:**

Using two 45° bends will reduce the permissible length by 1000mm.

**6.5 MODIFY NON TELESCOPIC FLUE TO ACCEPT PLUME MANAGEMENT**



80/125mmØ Terminal ring adapter,  
Part number 7 716 190 100,  
order the item as an accessory.

A terminal ring adapter can be used to convert existing non telescopic flue to accept the plume management system.

1. Use two long screwdrivers to lift the clip on the flue terminal end and pull the terminal end forward slightly to release.
2. Repeat the procedure for the other clip, whilst holding the first clip in the released position.
3. Pull the terminal end forward to remove completely and discard.
4. Fit the plume management terminal ring adapter, ensuring that the two clips fully engage and are secure in the flue.

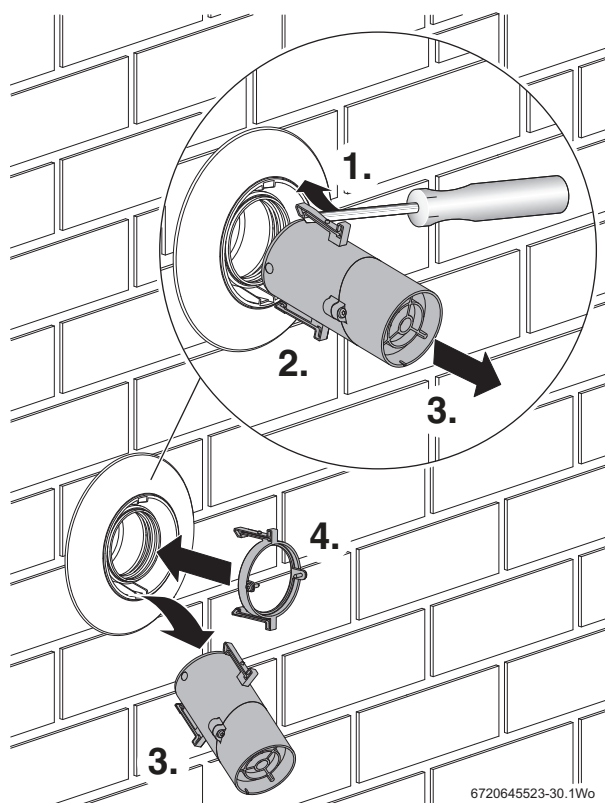


Fig. 39 Modifying the non telescopic flue

## 7 INSTALLATION

### 7.1 PLUME MANAGEMENT INSTALLATION - STANDARD



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.



**NOTICE: PLUME MANAGEMENT**

► All plume management sections must rise away from the terminal by a minimum of 173mm per metre (10°) to allow the condensate to drain back to the boiler.

**FITTING STANDARD PLUME MANAGEMENT SYSTEM:**

Refer to figure 41 for terminal bend installation.

1. Remove and retain the screws and discard the terminal end.
2. Fit the new 90° bend to the terminal outlet and secure with the screws removed previously.
3. Mark the position for the wall clamp so that it coincides with the extension tube just below the top fitting (Refer to figure 42 point 2). Drill a hole to suit the wall plug and fit the wall plug.
4. Screw the clamp into the wall plug to the distance shown in figure 41.

Refer to figure 42 plume management installation.

1. Push the extension tube fully into the 90° bend, then withdraw the tube by approximately 10mm to allow for expansion.
2. Secure the extension to the wall with the clamp and screws provided.
3. Push the plume terminal fully into the extension tube.
4. Rotate the plume terminal to the required direction.
5. Secure the plume terminal to the extension with the self-tapping screw provided.



**NOTICE: Flue damper**

► Fit a flue damper into the plume management for 18/25 wall mounted Danesmoor boiler only. Fit the damper (1) as shown in the figure below, ensuring the correct orientation of the damper. The rubber seal is inserted into the terminal end.

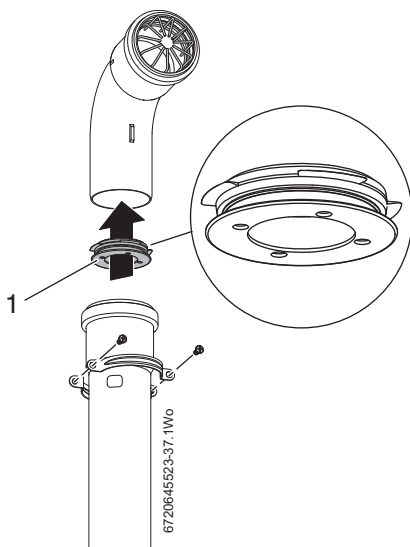


Fig. 40 Flue damper

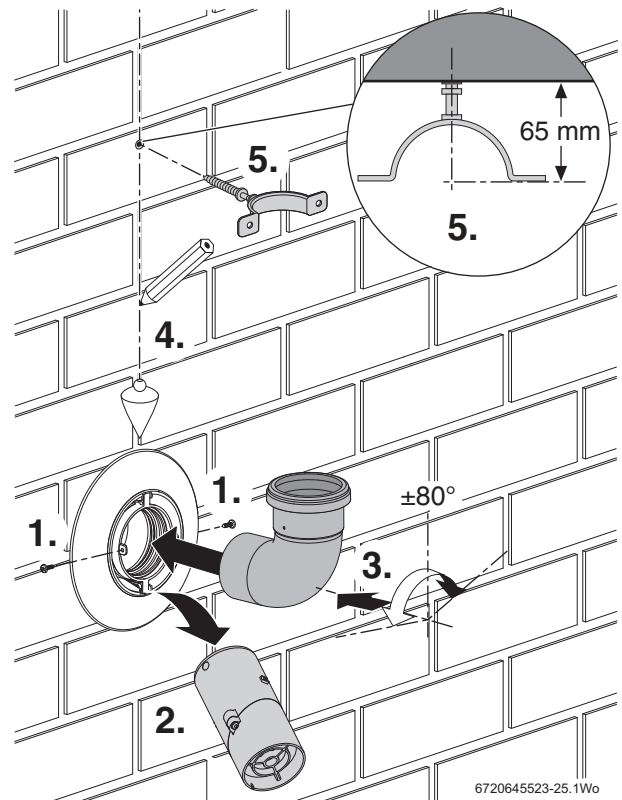


Fig. 41 Terminal bend installation

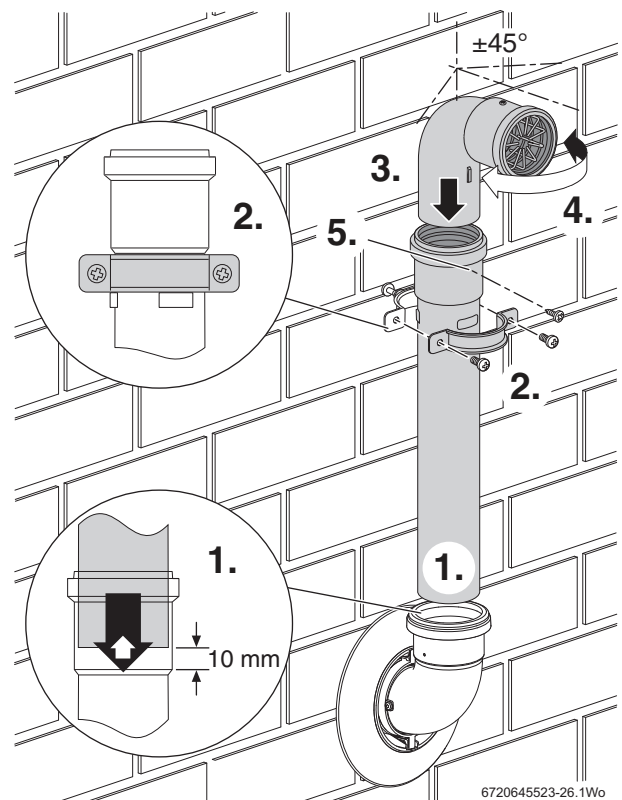


Fig. 42 Plume management installation

**INSTALLATION**

**7.2 PLUME MANAGEMENT INSTALLATION - EXTERNAL BOILERS**

**NOTICE: Camray 12/18 external boiler.**  
▶ Plume management installation is not available for this boiler.

**SELECTING THE PLUME MANAGEMENT LENGTH**

**NOTICE: Flue length:**  
▶ The flue length of all the external boilers using this plume management application will be in the range of 160 to 2000mm.

Refer to section 6.3 for information concerning:

- ▶ the flue damper installation
- ▶ the plume management system length
- ▶ the number of bends that can be employed in the plume management system.

**FITTING THE TERMINAL ELBOW**

Once the terminal elbow is fitted to the boiler, plume management assembly is as detailed in section 7.1 “Plume Management installation - Standard”

1. Remove and retain the screws that secure the terminal end into the flue.
2. Discard the terminal end.
3. Fit the terminal elbow into the flue but do not secure with the screws until the plume management system has been assembled.

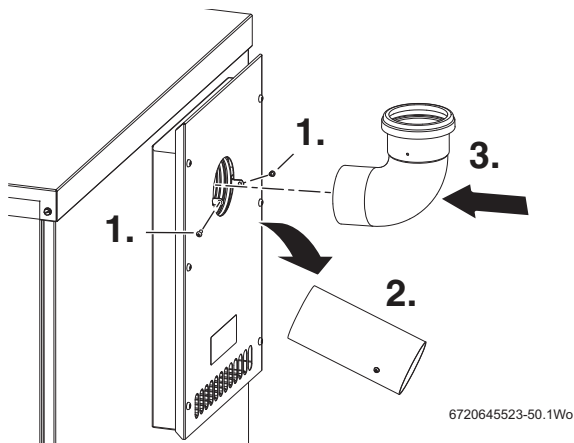


Fig. 43 Fitting the terminal bend

1. Refer to section 7.1 and assemble the plume management system.
2. Once the plume management system is in place and secured to the wall, secure the terminal bend with the screws remove earlier.
- ▶ The terminal end can be positioned up to 45° either side of the central position, for plume re-direction.
- ▶ Adjust the plume management terminal end into the desired position and secure with the screws provided.

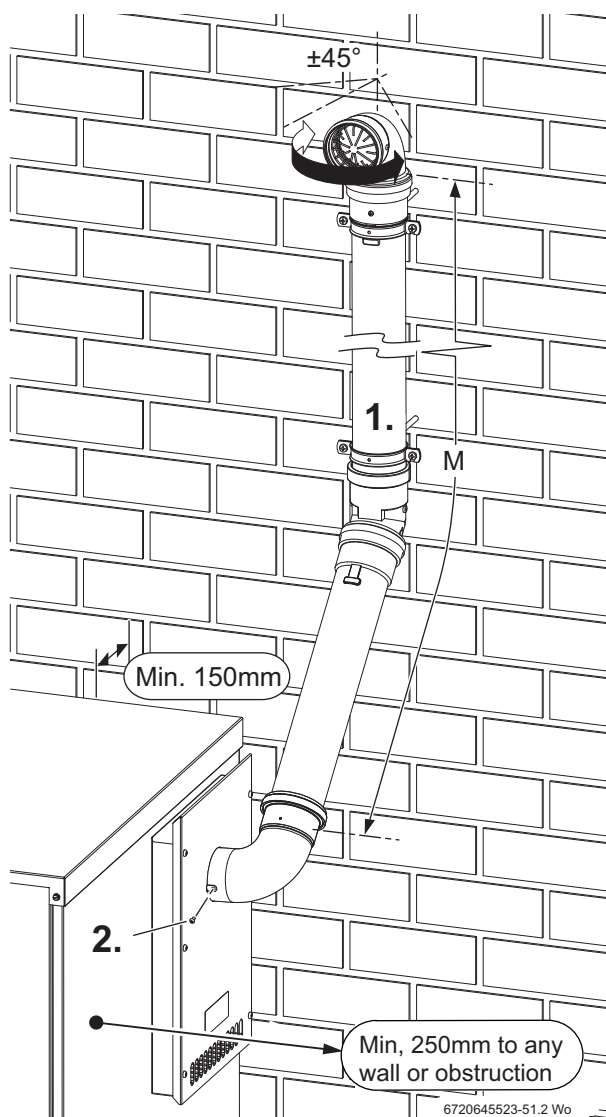


Fig. 44 Plume management detail

**7.3 PLUME MANAGEMENT INSTALLATION - EXTENDED**

**i** 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.

**NOTICE: PLUME MANAGEMENT**  
▶ All plume management sections must rise away from the terminal by a minimum of 173mm per metre (10°) to allow the condensate to drain back to the boiler.

**FITTING THE EXTENDED PLUME MANAGEMENT:**

1. Refer to figure 41, remove and retain the screws securing the terminal end and discard the terminal end.
  2. Fit the 90° bend to the terminal outlet and secure with the screws retained earlier.
  3. If required, rotate the 90° bend for angled fluing.
- Refer to figure 45 and assemble the plume extensions.
1. Mark the position for the wall clamp that coincides with the extension tube, as shown. Drill a suitable hole and fit the wall plug. Screw the clamp into the wall plug as shown.

2. Push the extension tube fully into the 90° bend, then withdraw the tube by approximately 10mm to allow for expansion.
3. Secure the extension to the wall with the clamp and screws provided.
4. Mount the other extension tubes as before and secure to the wall
5. Push the plume terminal fully into the extension tube.
6. Rotate the plume terminal to the required direction and secure the terminal to the extension with the self-tapping screw provided.

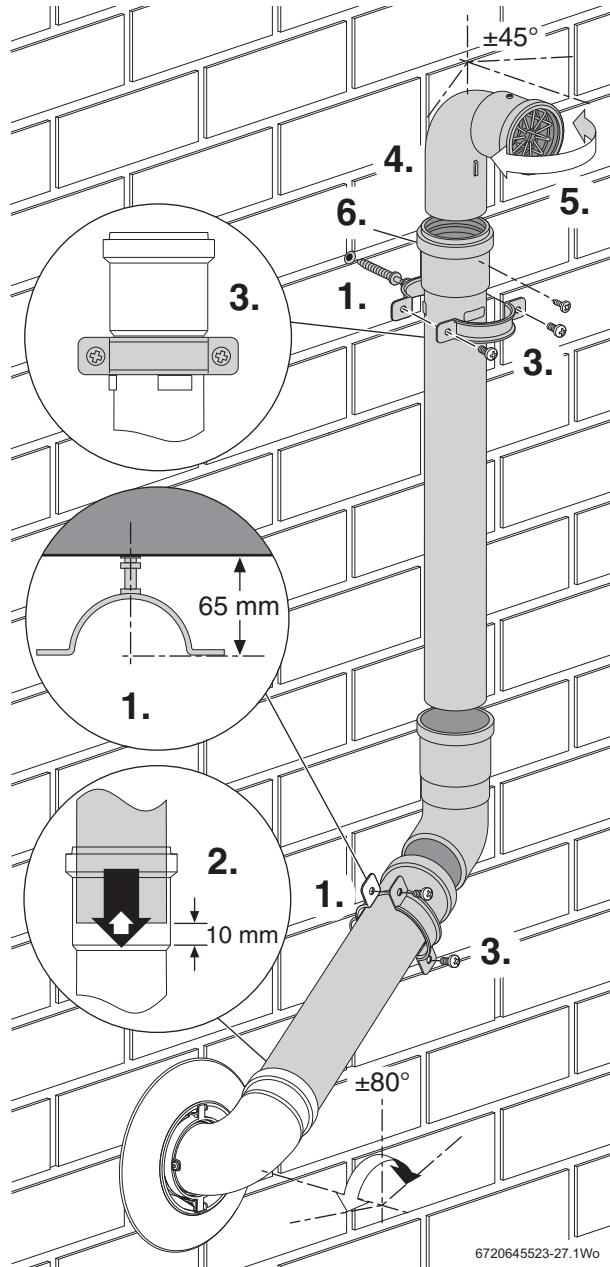


Fig. 45 Plume extensions

**7.4 REDIRECTING THE FLUE DISCHARGE**

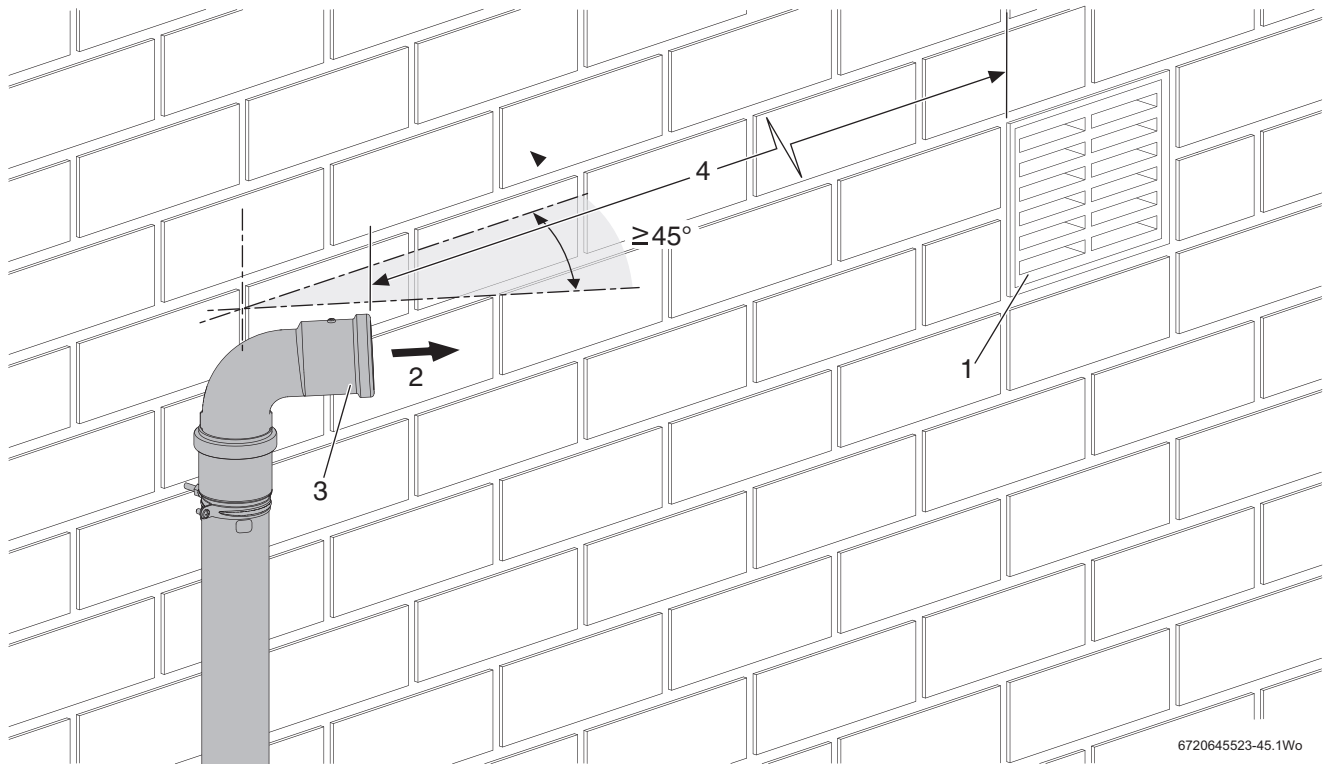


The plume terminal can be adjusted to redirect the flue discharge.



**NOTICE: FLUE DISCHARGE**

► The plume terminal position must follow those stated in figure 29. When redirecting the flue discharge the terminal must be at least 1500mm 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.



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Fig. 46 Plume direction conditions

1	Opening in the building i.e. air brick, window.
2	Direction of flue products, the angle of the terminal elbow must be more than 45° from the wall or structure
3	Plume terminal
4	At least 1500mm from any opening in the building

Table 17 Key to figure 46

**7.5 EXTENDED PLUME MANAGEMENT INSTALLATION FOR A BALCONY OR OVERHANG**



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.

1. Refer to figure 41 and remove and retain the screws and terminal end.
2. Fit the 90° bend to the terminal outlet and secure with the screws removed earlier.
3. If required, rotate the 90° bend for angled fluing.



Flue dampers must be fitted to the Greenstar Danesmoor 18/25 wall hung boiler only regardless of flue or plume management length



**NOTICE:** 18/25 wall mounted Danesmoor boiler only  
 ► Fit a flue damper into the plume management for 18/25 wall mounted Danesmoor boiler only. Fit the damper (1) as shown in figure 49, ensuring the correct orientation of the damper. The rubber seal is inserted into the extension tube. Then assemble the plume management system as shown in figure 50.

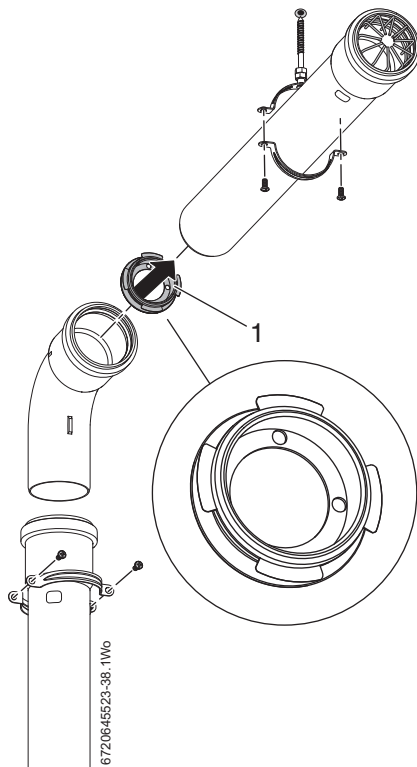


Fig. 47 Flue damper

1. Refer to figure 48 and mark the position for the wall clamp that coincides with the extension tube just below the top fitting. Drill a suitable hole and fit the wall plug. Screw the clamp into the wall plug as shown.
  2. Push the extension tube fully into the terminal bend, then withdraw the tube by approximately 10mm to allow for expansion.
  3. Secure the extension to the wall with the clamp and screws provided.
- Mount the other extension tubes as before and secure to the wall.



Ensure that the plume outlet, projects at least 100mm beyond the balcony/overhang.

4. Remove the screw from the plume terminal and remove the grill and sleeve.
5. Drill a hole through the end of the extension end and secure the grill and sleeve in place.

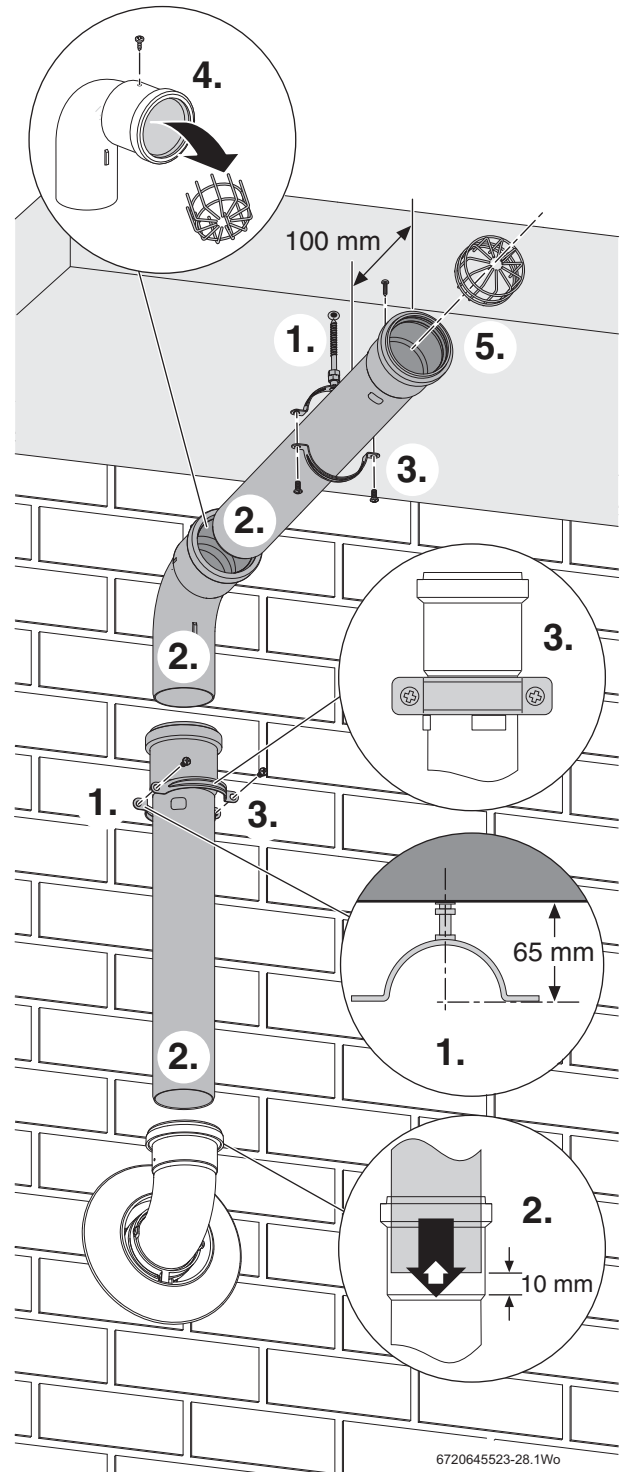


Fig. 48 Under balcony installation

## NOTES



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