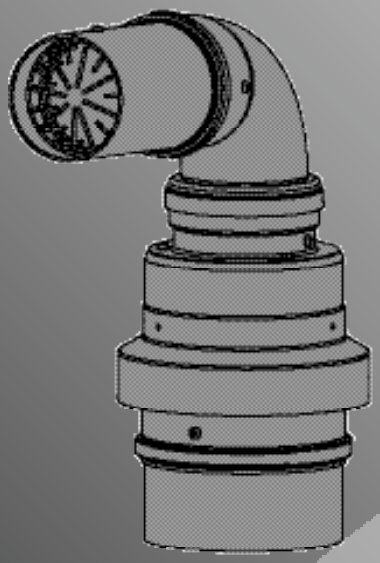
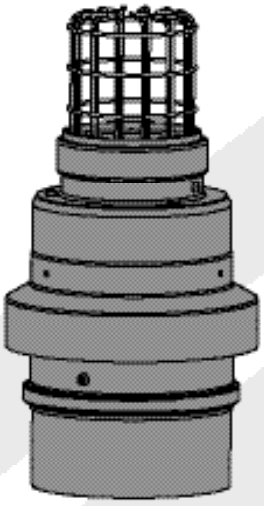
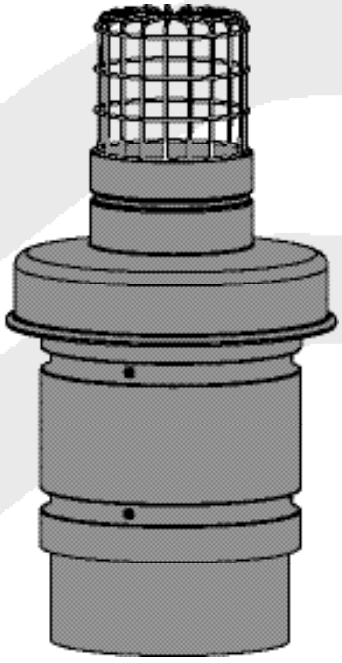
GREENSTAR OILFIT EXTERNAL

EXTERNAL BALANCED FLUE

For use with the following Greenstar oil fired appliances:
Greenstar Utility 18/25
Greenstar Danesmoor 18/25
Greenstar Heatslave 12/18, 18/25, 25/32
Greenstar Heatslave External 12/18, 18/25, 25/32
Greenstar Camray Kitchen 12/18, 18/25, 25/32
Greenstar Camray Utility & System 12/18, 18/25, 25/32
Greenstar Camray External 12/18, 18/25, 25/32







Greenstar™ Oilfit EXTERNAL

GB

WORCESTER
Bosch Group

INSTRUCTION MANUAL
FLUE DUCT KIT INSTALLATION

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

THESE INSTRUCTIONS ARE APPLICABLE TO THE WORCESTER APPLIANCE MODEL(S) STATED ON THE FRONT COVER OF THIS MANUAL ONLY AND MUST NOT BE USED WITH ANY OTHER MAKE OR MODEL OF APPLIANCE.

THE INSTRUCTIONS APPLY IN THE UK ONLY AND MUST BE FOLLOWED EXCEPT FOR ANY STATUTORY OBLIGATION.

THIS APPLIANCE MUST BE INSTALLED BY A COMPETENT PERSON. FAILURE TO INSTALL CORRECTLY COULD LEAD TO PROSECUTION.

IF YOU ARE IN **ANY DOUBT** CONTACT THE WORCESTER TECHNICAL HELPLINE.

DISTANCE LEARNING AND TRAINING COURSES ARE AVAILABLE FROM WORCESTER, BOSCH GROUP.

PLEASE LEAVE THESE INSTRUCTIONS WITH THE USER OR WITH THE APPLIANCE AFTER INSTALLATION OR SERVICING.

ABBREVIATIONS USED IN THIS MANUAL:

Ø	Diameter
CF	Conventional flue
BF	Balanced flue
SEDBUK	Seasonal Efficiency of Domestic Boilers in the United Kingdom
OFTEC	Oil Firing Technical Association for the Petroleum Industry

CONTENTS

SAFETY PRECAUTIONS

OIL SMELLS, LEAKS OR FUMES FROM THE APPLIANCE:

- Extinguish any naked flames.
- Open windows and doors (internal models only).
- Isolate the electrical supply.
- Isolate the fuel supply to the boiler.
- Rectify fault.

HEALTH & 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). Where applicable, the CE mark indicates compliance with relative EU Directives.

COMBUSTIBLE 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 kept clear of chemically aggressive substances which can corrode the appliance and invalidate any warranty.

FITTING & 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.

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 the 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.

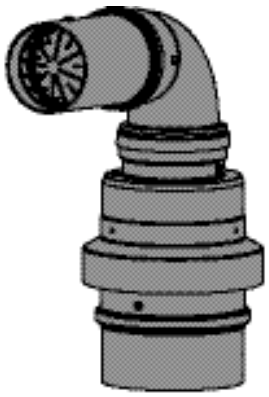
The appliance must be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble free operation the appliance must 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.

BALANCED HORIZONTAL EXTERNAL FLUE COMPONENTS

80/125mmØ Horizontal External Flue Kit:
Part Number: 7 716 190 057

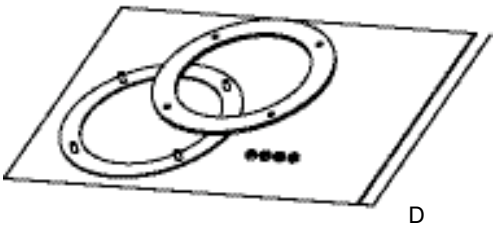
A Terminal assembly
B 80/125 weather seal
C External elbow
D External cabinet flue seal and plate
E Clamp bracket
F Drill Pack containing 3.3mm HSS Jobber drill and solvent free grease sachets



A

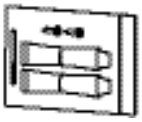
B

C



D

E

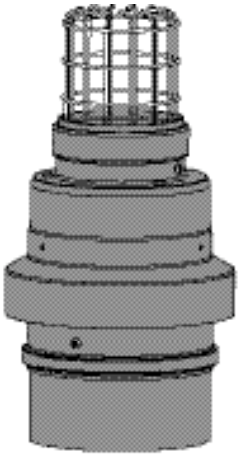


F

BALANCED VERTICAL
EXTERNAL FLUE COMPONENTS

80/125mmØ Vertical External Flue Kit:
Part Number: 7 716 190 053

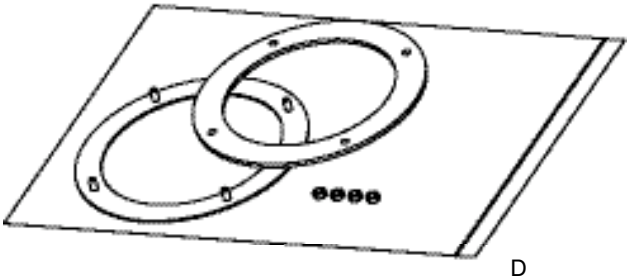
A Terminal assembly
B 80/125 weather seal
C External elbow
D External cabinet flue seal and plate
E Clamp bracket
F Drill Pack containing 3.3mm HSS Jobber drill and solvent free grease sachets



A

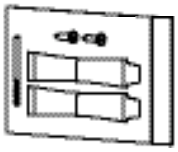
B

C

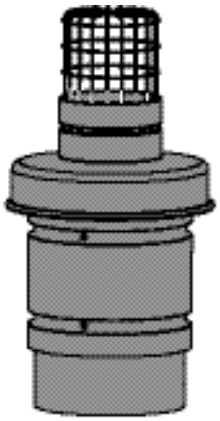


D

E



F



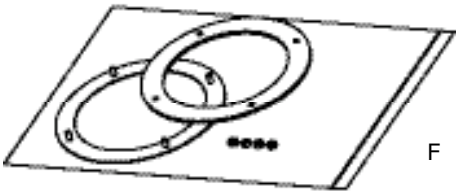
A

B

C

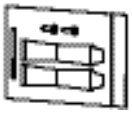
D

E



F

G



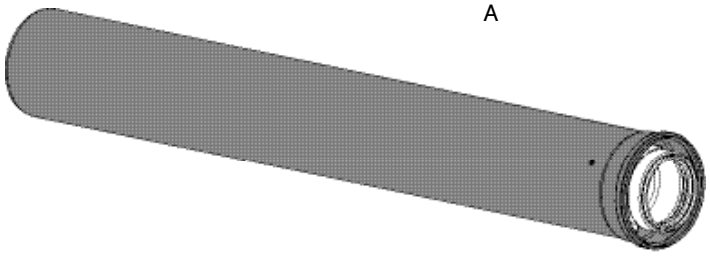
H

BALANCED VERTICAL
EXTERNAL FLUE COMPONENTS

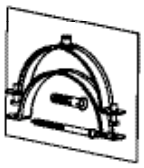
100/150mmØ Vertical External Flue Kit:
Part Number: 7 716 190 058

A Terminal assembly
B 100/150 weather seal
C Inline External 80/125 to 100/150mm adaptor
D 80/125 weather seal
E External elbow
F External cabinet flue seal and plate
G Clamp bracket
H Drill Pack containing 3.3mm HSS Jobber drill and solvent free grease sachets

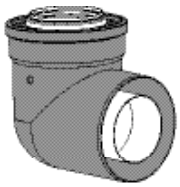
BALANCED EXTERNAL FLUE EXTENSION COMPONENTS



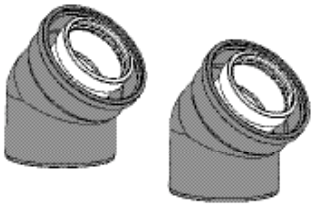
A



B



C



D

E

F

80/125mmØ Balanced Flue Extension:
Part Number: 7 716 190 054

A Extension tube
B Pipe clamp with screws, washers, and wall plugs
E 80/125 weather seal
F Solvent free grease pack containing 2 No. 8 screws and grease sachets

80/125mmØ Balanced Flue 90° Elbow:
Part Number: 7 716 190 055

C 90° swept elbow
E 80/125 weather seal
F Solvent free grease pack containing 2 No. 8 screws and grease sachets

80/125mmØ Balanced Flue 45° Elbow:
Part Number: 7 716 190 056

D 45° elbow x2
E 80/125 weather seal
F Solvent free grease pack containing 2 No. 8 screws and grease sachets

100/150mmØ Balanced Flue Extension:
Part Number: 7 716 190 060

A Extension tube
B Pipe clamp with screws, washers, and wall plugs
E 100/150 weather seal
F Solvent free grease pack containing 2 No. 8 screws and grease sachets

100/150mmØ Balanced Flue 45° Elbow:
Part Number: 7 716 190 061

D 45° elbow x2
E 100/150 weather seal
F Solvent free grease pack containing 2 No. 8 screws and grease sachets

Minimum dimensions of flue terminal positions for oil-fired appliances:

	TERMINAL POSITION	B(V)	B(H)
A[1 2]	Directly below an opening, air brick, opening window, etc	N/A	600mm
B[1 2]	Horizontally to an opening, air brick, opening window, etc	N/A	600mm
C	Below a plastic/painted gutter, drainage pipe or eaves if combustible material protected	N/A	75mm
D[3]	Below a plastic/painted gutter, drainage pipe or eaves without protection to combustible material	N/A	600mm
E	From vertical sanitary pipework	N/A	300mm
F	From an external or internal corner or from a surface or boundry alongside the terminal	N/A	300mm
G	Above ground or balcony level	N/A	300mm*
H	From a surface or boundary facing the terminal	N/A	600mm**
J	From a terminal facing the terminal	—	1200**mm
K	Vertically from a terminal on the same wall	N/A	1500mm
L	Horizontally from a terminal on the same wall	—	750mm
M	Above the point of highest intersection with the roof	600mm	—
N	From a vertical structure to the side of the terminal	750mm	—
O	Above a vertical structure less than 750mm from the side of the terminal	600mm	—
P	From a ridge terminal to a vertical structure on the roof	—	—
Q	Above or to the side of any opening on a flat or sloping roof	300mm	—
R	Below any opening on a sloping roof	1000mm	—

Key: — Not applicable, N/A Not allowed, CF Conventional flue, RS(H) Room Sealed Horizontal flue, RS(V) Room Sealed Vertical flue.

Notes:

***1.** Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.*

***2.** Vertical structure in N, O and P includes tank or lift rooms, parapets, dormers etc.*

***3.** Terminating positions should be at least 1.8m from an oil storage tank unless a wall with at least 30 min fire resistance and extending 300mm higher and wider than the tank is provided between the tank and the terminating position.*

***4.** Where a flue is terminated less than 600mm away from a projection above it and the projection consists of plastics or has a combustible or painted surface, then a heat shield of at least 750mm wide should be fitted.*

***5.** If the lowest part of the terminal is less than 2m above the ground, balcony, flat roof or other place to which any person has access, the terminal should be protected by a guard.*

***6.** Notwithstanding the dimensions given above, a terminal should not be sited closer than 300mm to combustible material. In the case of a thatched roof, double this separation distance should be provided. It is also advisable to treat the thatch with a fire retardant material and close wire in the vicinity of the flue.*

***7.** It is essential that a flue or chimney does not pass through the roof within the shaded area delineated by dimensions Q and R.*

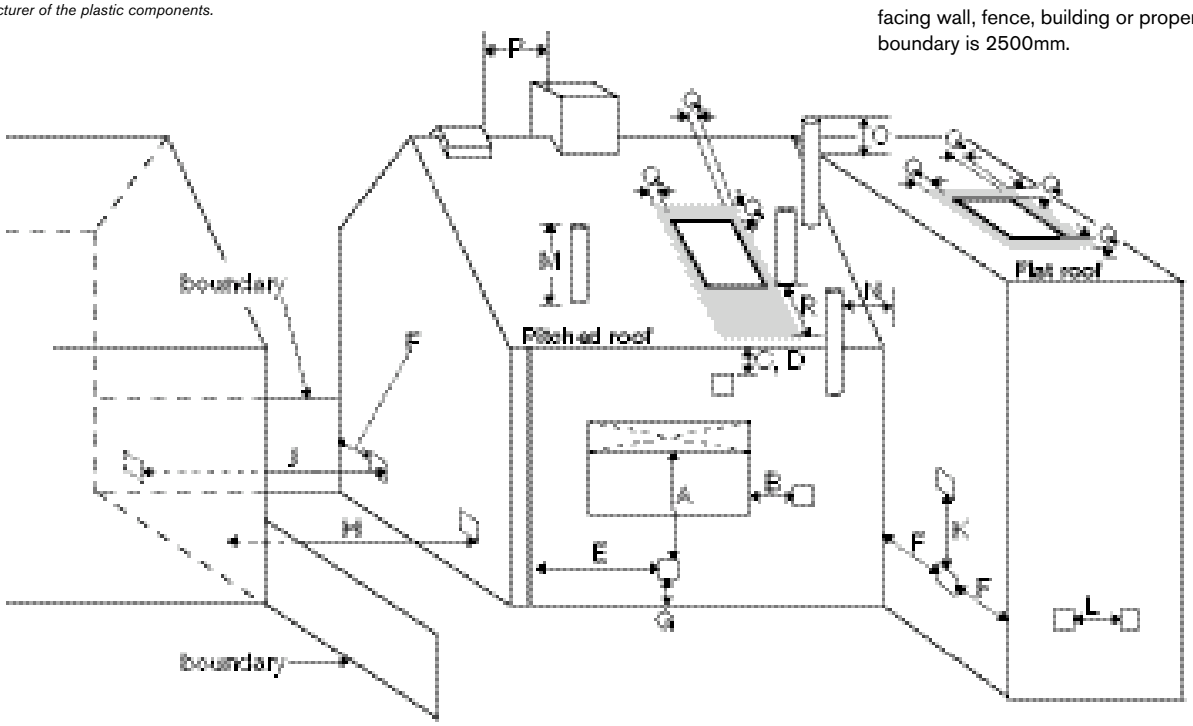
***8.** Where protection is provided for plastic components, such as guttering, it is essential that this is to the standard specified by the manufacturer of the plastic components.*

FLUE TERMINAL POSITIONS

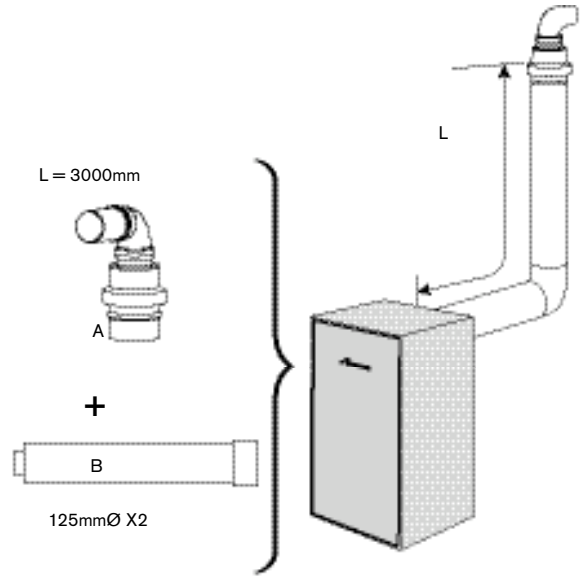
- Flue terminals must be positioned to avoid combustion products entering into buildings.
- The flue must be fitted and terminated in accordance with the recommendations of BS5410.
- The flue must not cause an obstruction.
- Discharge from the flue outlet must not be a nuisance.
- Flue gases have a tendency to plume and in certain weather conditions a white plume of condensation will be discharged from the flue outlet which could be regarded as a nuisance, for example, near security lighting.
- There should be no restriction preventing the clearance of combustion products from the terminal.
- The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5410:1
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface where people have access.
  The guard must be spaced equally (minimum 50mm) around the flue and fixed to the wall with plated screws.

See 'Contact Information' on the back cover for flue guard information.

- The following additional guidelines (from part L Exceptions Guidance Document) are recommended when determining the flue outlet position:
- Avoid discharging flue gases into car ports or narrow passageways.
- *Minimum distance of the flue terminal from above ground is 2100mm where directed to a public footpath, private access route or a frequently used area and 2500mm from a car parking area.
- **Minimum distance of the flue terminal to a facing wall, fence, building or property boundary is 2500mm.



Horizontal terminal options:



A - Horizontal Terminal Kit (incl. 90° elbow)
B - Straight Flue Extension Kit
C - 90° Flue Elbow Kit
D - 45° Flue Elbow Kit (2 x 45° elbows)
E - Vertical Terminal Kit (incl. 90° elbow)

BALANCED EXTERNAL FLUE OPTIONS

The diagrams (opposite) show the components used and the maximum flue length (L) for each flue configuration.

- To achieve the maximum flue length (L), a flue section will have to be reduced in length.
- Only flue extensions can be reduced in length by cutting.

IMPORTANT:
All horizontal sections must rise away from the boiler by 52mm per metre (3°) to allow the condensate to drain back to the boiler.

Calculating the flue length:
Measure the total flue length required, noting that the maximum straight flue length including the terminal is:

Appliance	Model	Maximum flue length (L) (mm)		Flue diameter (mm)
		Horizontal terminal	Vertical terminal	
Greenstar Danesmoor Kitchen	12/18, 18/25 & 25/32	2000*	6000**	80/125
Greenstar Danesmoor Utility	12/18, 18/25 & 25/32	2000*	6000**	80/125
Greenstar Heatslave	12/18, 18/25 & 25/32	2000*	6000**	80/125
Greenstar Heatslave External	12/18, 18/25 & 25/32	2000*	6000**	80/125
Greenstar Camray Kitchen	12/18 & 18/25	2000*	8000**	80/125
	25/32	2000*	-	80/125
		-	8000**	100/150
Greenstar Camray Utility & Utility System	12/18 & 18/25	2000*	8000**	80/125
	25/32	2000*	-	80/125
		-	8000**	100/150
Greenstar Camray External	12/18 & 18/25	2000*	8000**	80/125
		2000*	-	80/125
	25/32	-	8000**	100/150

*from the boiler casing, (the horizontal kit elbow is ignored when calculating the flue length).
**from the boiler casing (the vertical kit elbow is ignored when calculating the flue length) maximum 2m of horizontal flue.

Then reduce the total straight flue length for each extra flue bend by:
1000mm for each 90°
500mm for each 45°

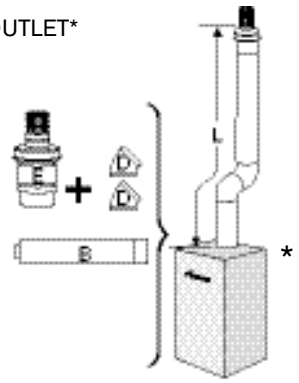
Flue Extension Lengths:
Horizontal & Vertical 1000mm overall length. Effective length when engaged into sockets within the flue run is 950mm

Flue Terminal Lengths:
Horizontal 80/125mmØ: 305mm
Vertical 80/125mmØ: 185mm + cage
Vertical 100/150mmØ: 270mm + cage

Vertical terminal options:

80/125mmØ

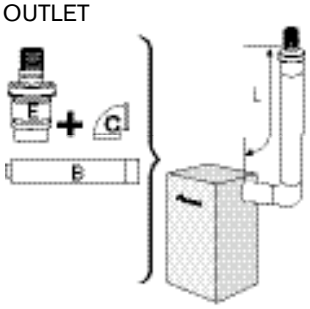
TOP OUTLET*



Danesmoor & Heatslave
L = 5000mm (E + D + Bx5)

Camray 12/18 & 18/25
L = 7000mm (E + D + Bx7)

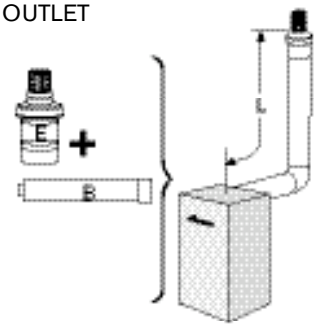
SIDE OUTLET



Danesmoor & Heatslave & Heatslave External
L = 5000mm (E + C + Bx5)

Camray 12/18 & 18/25 Camray External 12/18 & 18/25
L = 7000mm (E + C + Bx7)

REAR OUTLET

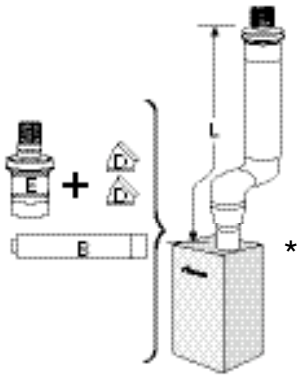


Danesmoor & Heatslave & Heatslave External
L = 6000mm (E + Bx6)

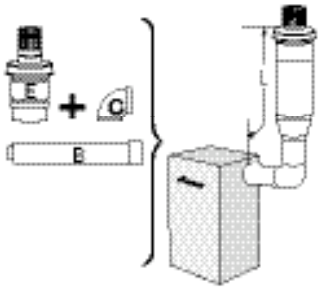
Camray 12/18 & 18/25 & Camray External 12/18 & 18/25
L = 8000mm (E + Bx8)

N.B. For satisfactory flue performance it is recommended that no more 2 metres of the vertical flue is run horizontally.

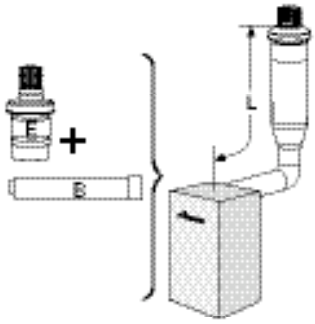
Camray 25/32 100/150mmØ



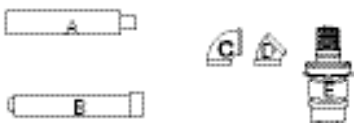
Camray 25/32
L = 7000mm (E + D + Bx7)



Camray 25/32 & Camray External 25/32
L = 7000mm (E + C + Bx7)



Camray 25/32 & Camray External 25/32
L = 8000mm (E + Bx8)



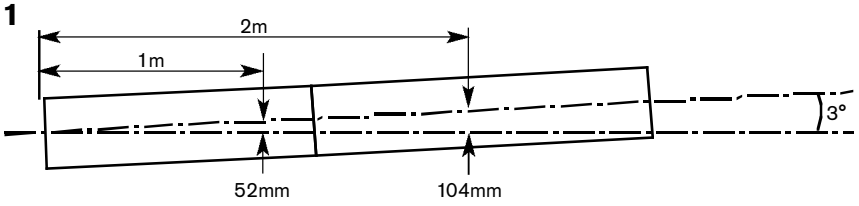
A - Horizontal Terminal Kit (incl. 90° elbow)
B - Straight Flue Extension Kit
C - 90° Flue Elbow Kit
D - 45° Flue Elbow Kit (2 x 45° elbows)
E - Vertical Terminal Kit (incl. 90° elbow)

* Top outlet not available on External models.

PRE - INSTALLATION

BALANCED FLUE MEASURING & CUTTING

1

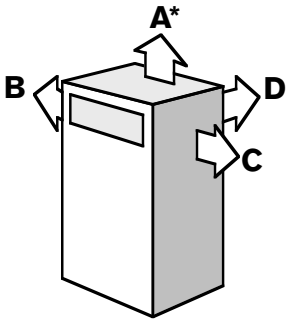


1 ▶ **All horizontal flue sections must rise at 52mm for each metre away from the boiler to ensure that condensate flows back into the boiler for safe discharge via the condensate waste pipe.**

Any internal sections of the flue can be run in either the standard Oilfit (white) or the External Oilfit (black) flue components depending upon the customers requirements. All standard Oilfit and External Oilfit components with the same diameter have the same dimensions and connections and are fully interchangeable.

Only External Oilfit components should be used externally as these incorporate an additional weather seal.

2



FLUE OUTLET	LENGTH **X** (mm)				
	DANESMOOR	HEATSLAVE	CAMRAY	HEATSLAVE EXTERNAL	CAMRAY EXTERNAL
A	40	40	30	N/A	N/A
B	100	250	100	350	235
C	100	100	100	235	270
D	210	210	270	425	470

Measuring the flue:

2 ▶ Measure the flue length (L) required from the flue terminal to the outer boiler casing (E) at the required flue outlet position (A*, B, C or D).
*Flue outlet position A is not available on External models.

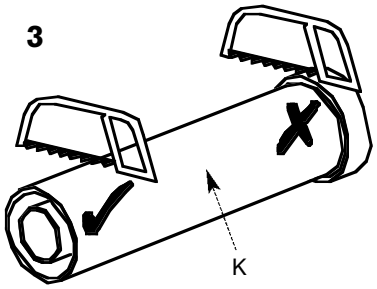
▶ Add dimension 'X' to the flue length, as shown for flue outlet A, B, C or D in the table opposite (to allow the flue to fit to the outlet/elbow inside the boiler casing).

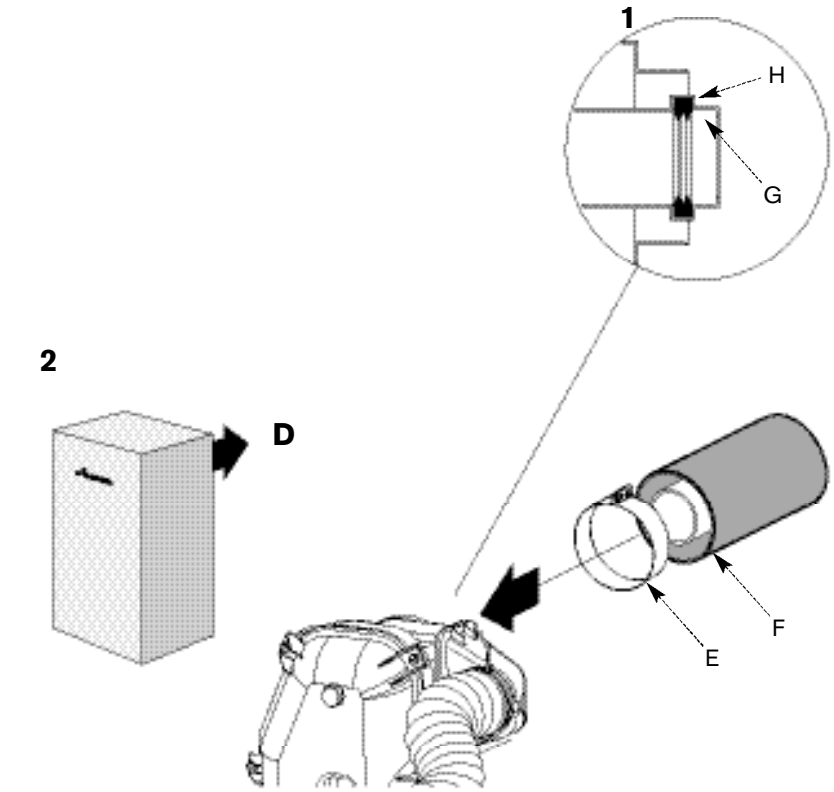
Reducing extension flue tube length:
Only cut *straight extension* tubes

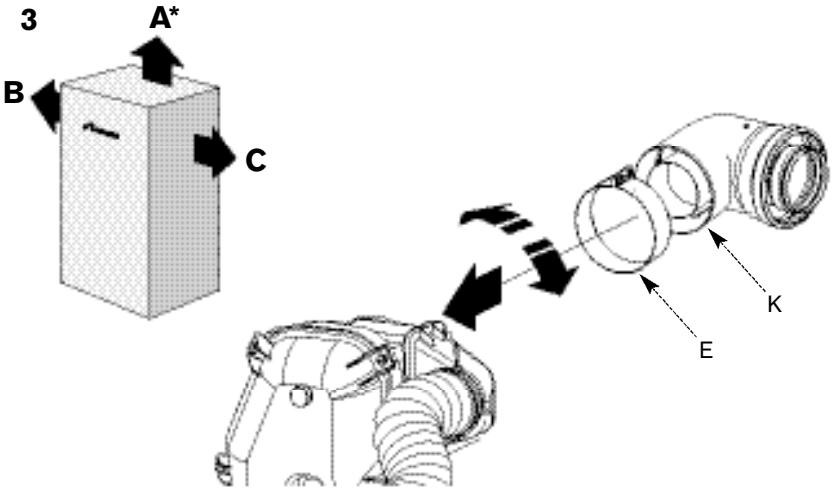
3 ▶ Mark flue extension (K) to measure and cut both inner and outer tubes square (at the opposite end to the seal) taking care not to distort the tubes.

▶ Remove any burrs and chamfer the outer edges of the tubes to assist ease of connection and prevent seal damage.

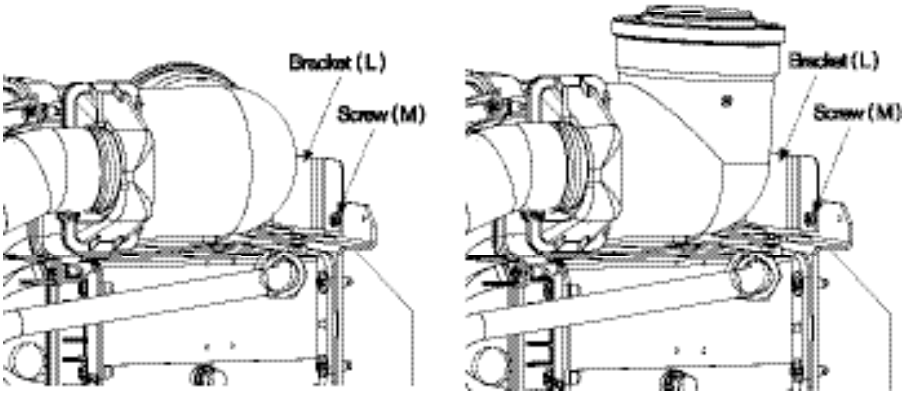
3







The retaining bracket (L) must be fitted if a flue elbow is used on the boiler flue outlet, (internal models).



NOTE: 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.

1 ▸ Check seal (G) is located in the groove of the boiler flue outlet (H).

External boiler models: For all outlets fit the outlet plate and the seal to the appropriate cabinet flue outlet before fitting the flue to the boiler.

IMPORTANT:
The boiler is not designed to take the weight of the flue system, this must be supported externally to the boiler

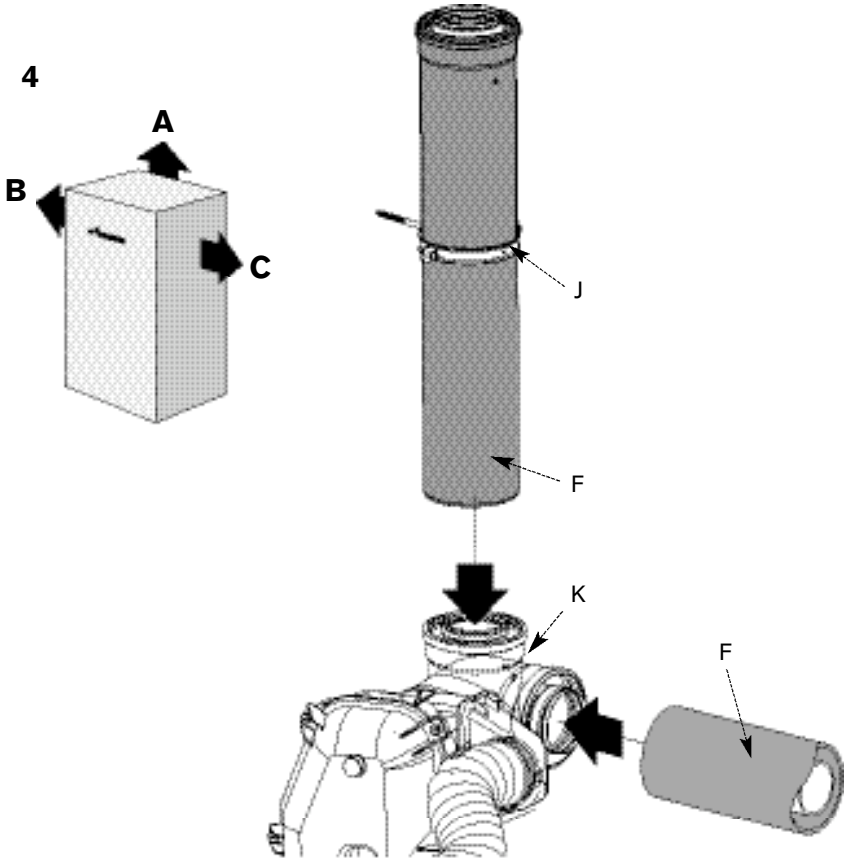
2 Rear outlet 'D':

- Loosely fix support bracket/s to support the flue weight.
- Slide flue clamp (E) onto the flue tube (F).
- Push-fit the flue (F) into the boiler flue outlet ensuring a good fit to seal (G).
- Secure flue (F) to boiler outlet with clamp (E).
- Secure flue support bracket/s.

3 Outlets 'A', 'B' and 'C':

- When connecting a flue elbow directly to the boiler flue outlet, loosen the flue elbow retaining bracket screws (M)** before fitting the flue elbow.
- Slide flue clamp (E) over the flue elbow (K).
- Push-fit the flue elbow (K) into the boiler flue outlet ensuring a good fit to seal (G).
- Rotate flue elbow (K) to outlet position A*, B or C.
- Secure flue elbow (K) to boiler outlet with clamp (E) then tighten the bracket screws (M)**.
- Check the seals are located properly in the grooves of flue elbow (K).

* A , outlet not available on External models.
** L and M are not fitted to External models.

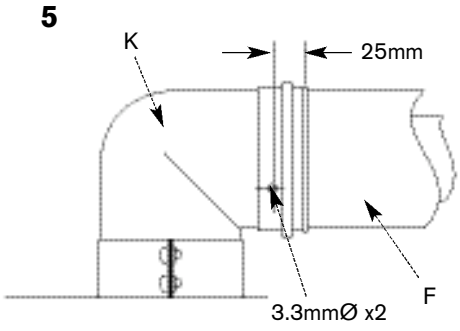


4 ▸ Loosely fix support bracket/s (J) to support the weight.
▸ Push-fit flue (F) into elbow (K).

NOTE: Camray 25/32 models using a vertical terminal, the 80/125 to 100/150mmØ vertical adaptor MUST be fitted vertically at the lowest point of the vertical section of the flue. Failure to fit the adaptor vertically will cause the condensate pool within the flue and will adversely affect the flue's performance.

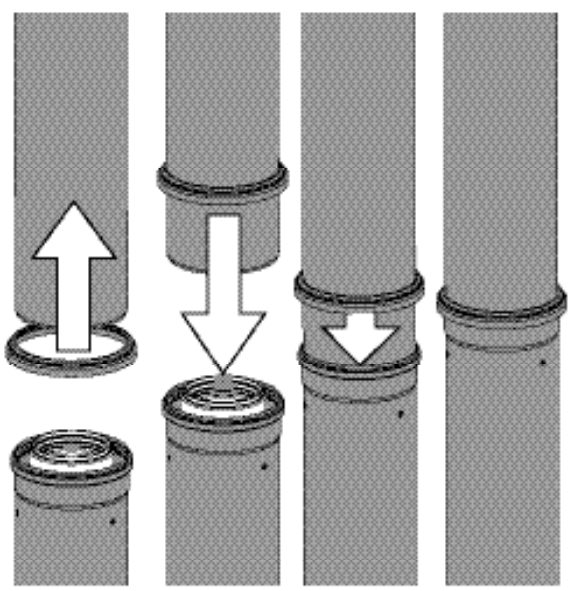
▸ Secure flue support bracket/s (J).

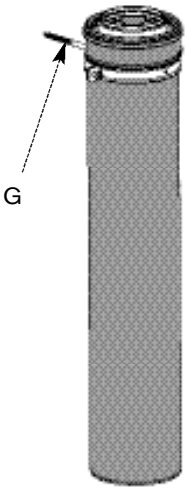
5 ▸ Drill two holes with the drill provided (180° apart if possible) through the outer flue elbow (K) into the outer flue tube (F) taking care NOT to drill the inner flue tube. Secure with screws supplied.



BALANCED FLUE TERMINAL & EXTENSIONS

1



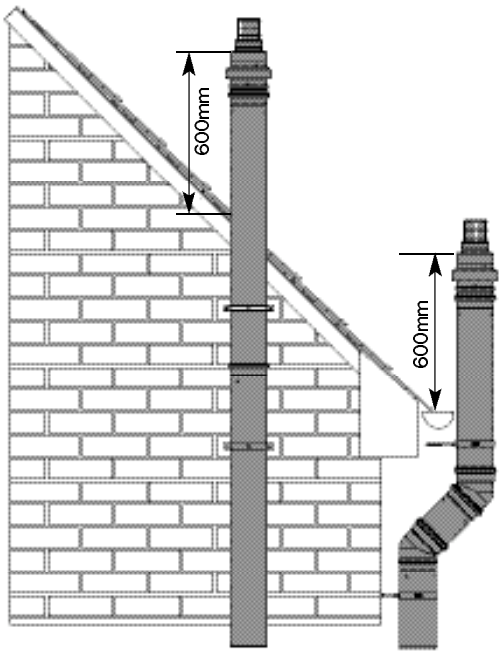


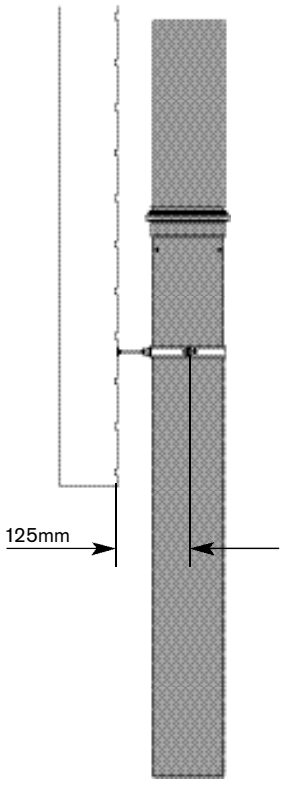
NOTE: to ease assembly of the flue components, grease seals lightly with the solvent free grease supplied. Check all the seals are seated properly in the grooves provided and are in good condition.

- All flue joints must be sealed to prevent leakage of condensate and flue products.

1
- Fit a weather seal onto the bottom of each external section and push the seal up clear of the socket mating area.
- Fasten the flue supports (G) to the wall, the flue supports should support each extension piece just below the socket. An additional support (supplied) will be needed directly after any elbows.
- Push fit all extensions together starting at the boiler and working upwards to the terminal, securing the wall clamp (G) on each piece before inserting the next piece.
- Slide the weather seal onto the top of every socket to form a seal.
- Each extension must be supported using the wall clamps (G) supplied or a suitable alternative.

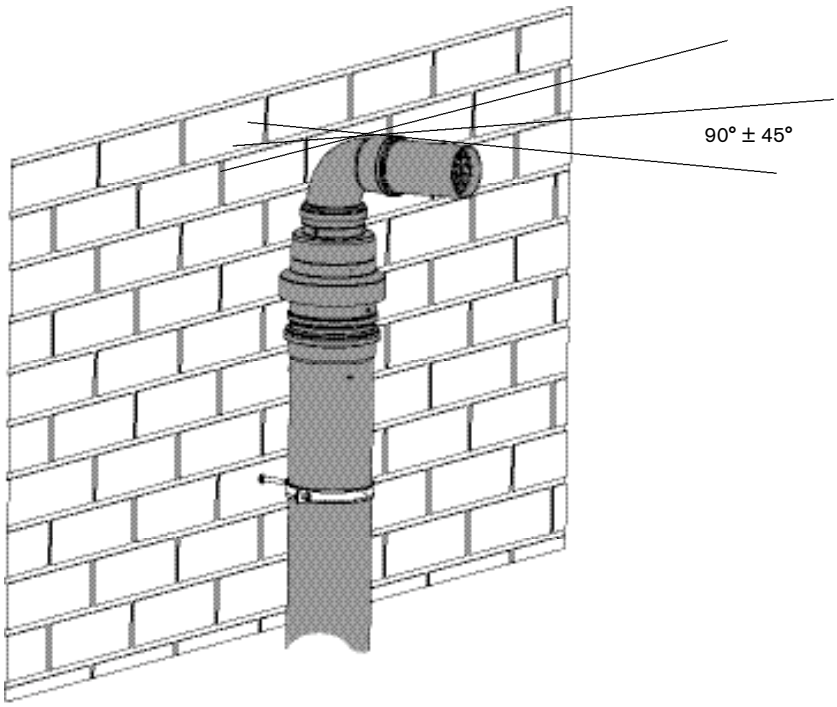
2

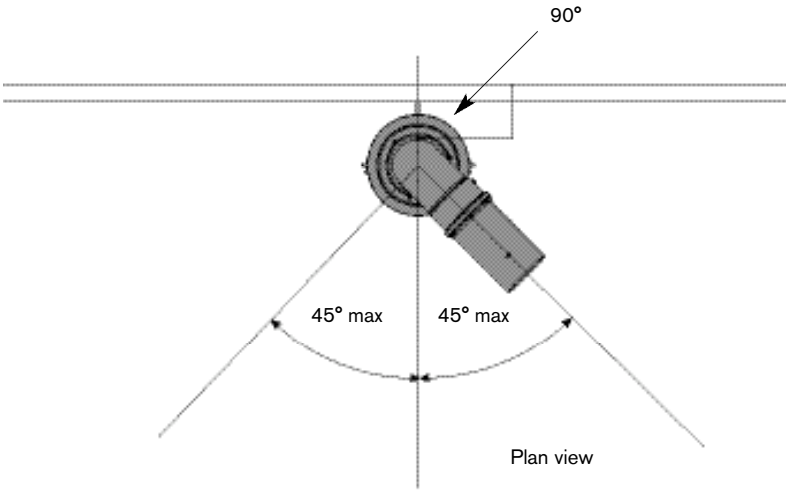




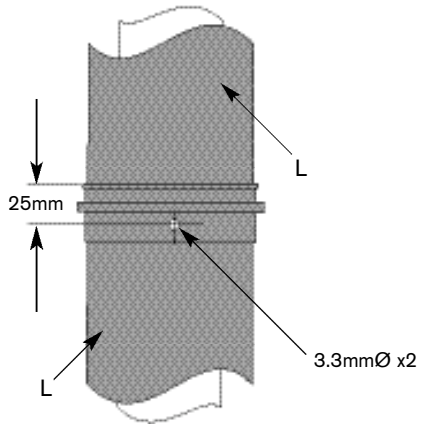
2 Vertical terminals only:
- The terminal must extend beyond the roof or wall by 600mm.
- The terminal must be at least 600mm horizontally from any vertical structure.
- Each extension must be supported using the wall clamps (G) supplied or a suitable alternative.

3





4



3 Horizontal terminals only:

- The terminal outlet must face directly away from the wall or no more than 45° from this direction, all flue clearances must be measured from the end of the terminal in the direction the terminal is facing during use.
  Each extension must be supported using the wall clamps supplied or a suitable alternative.

4 All flues:

- Drill two holes with the drill 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 the screws provided.
  The flue must be sealed to the wall using a suitable sealant where it leaves the building (internal boiler models only).

INSTRUCTION MANUAL
OILFIT EXTERNAL INSTALLATION

www.worcester-bosch.co.uk

EXCELLENCE COMES AS STANDARD

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 01905 754624 Fax. 01905 754619

8 716 113 063a (06/07)

CONTACT INFORMATION

WORCESTER, BOSCH GROUP:

TECHNICAL:	08705 266241
SERVICE:	08457 256206
SPARES:	01905 752571
LITERATURE:	01905 752556
TRAINING:	01905 752526
SALES:	01905 752640
WEBSITE:	www.worcester-bosch.co.uk

WATER TREATMENT:

FERNOX 01799 550811
www.fernox.com

SENTINEL 0151 420 9595
www.betzdearborn.com/sentinel

FLUE TERMINAL GUARD:

PART No. 7 716 190 050

WORCESTER
Bosch Group