

EcoSword range Flue Guide



Models covered:

LGC160-210
LGC160-350
LGC200-210
LGC200-350
LGC245-420
LGC245-560
LGC285-420
LGC285-560
LGC380-560

DOCUMENT CONTROL

Article	Language	Version	Modified by
EcoSword flue guide	English	V1.5 July 2024	S Addis

Contents

GENERAL.....	3
Drawing 1 Water Heater terminal locations.....	4
Table 1 Water Heater terminal locations.....	4
Risk Assessment.....	5
CONCENTRIC FLUE SYSTEMS.....	6
Standard concentric horizontal and vertical flue.....	6
Plume kit for use with Horizontal concentric flue.....	7
Twin-pipe flue.....	8
CONVENTIONAL (EXHAUST ONLY) FLUE SYSTEMS.....	9
Common flue systems.....	10
ORDER FORM AND NOTES.....	11

GENERAL

Lochinvar Water Heaters are certified for use on the following flue categories:

Installation type	Category	Description
B23	Open flue	An appliance intended to be connected to a flue that evacuates the products of combustion to the outside of the room containing the appliance. The combustion air is drawn directly from the room.
C13	Closed Flue	An appliance connected to either a concentric or twin-pipe flue system with a Horizontal flue terminal. Both the air inlet and flue exhaust must be in the same pressure zone.
C33	Closed Flue	An appliance connected to either a concentric or twin-pipe flue system with a Vertical flue terminal. Both the air inlet and flue exhaust must be in the same pressure zone.
C43	Closed Flue	An appliance connected to a common air inlet and flue exhaust system, which is designed for more than one appliance. This common system has a single air inlet and flue exhaust and is part of the building not the appliance.
C53	Closed Flue	An appliance connected to a twin-pipe flue system with a Horizontal or Vertical flue terminal. Both air inlet and flue exhaust may be in different pressure zones.
C63	Closed Flue	An appliance intended to be connected to a separately approved and marketed system for the supply of combustion air and discharge of combustion products (i.e. other than that supplied by the water heater manufacturer).

All installations should comply with the requirements of:

1. For appliances up to 70kW net input- BS5440-1:2008- Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases). Specification for installation of gas appliances to chimneys and for maintenance of chimneys.
 - a. Refer to drawing 1 and table 1 for details of terminal locations.
2. For appliances over 70kW net input- IGEM/UP/10 Edition 4 +A: 2016 - Installation of flued gas appliances in industrial and commercial premises, specific attention should be paid to the following sections.
 - a. Refer to drawing 1 and table 1 for details of terminal locations.
 - b. Horizontal terminations shall be located according to the minimum distances given in table 1, and subject to the risk assessment criteria shown in table 2.
 - c. Horizontal flue terminations (other than for fan dilution systems) must not be installed for any single appliance or group of appliances with a total nett input exceeding 333kW net heat input.
 - d. For any single appliance or group of appliances with a total net heat input exceeding 333 kW, the general requirements of IGEM/UP/10 Edition 4 +A: 2016 shall apply and approval must be sought from the Local Authority prior to commencement of the installation.
3. The Clean Air Act for installations exceeding 333kW nett input.

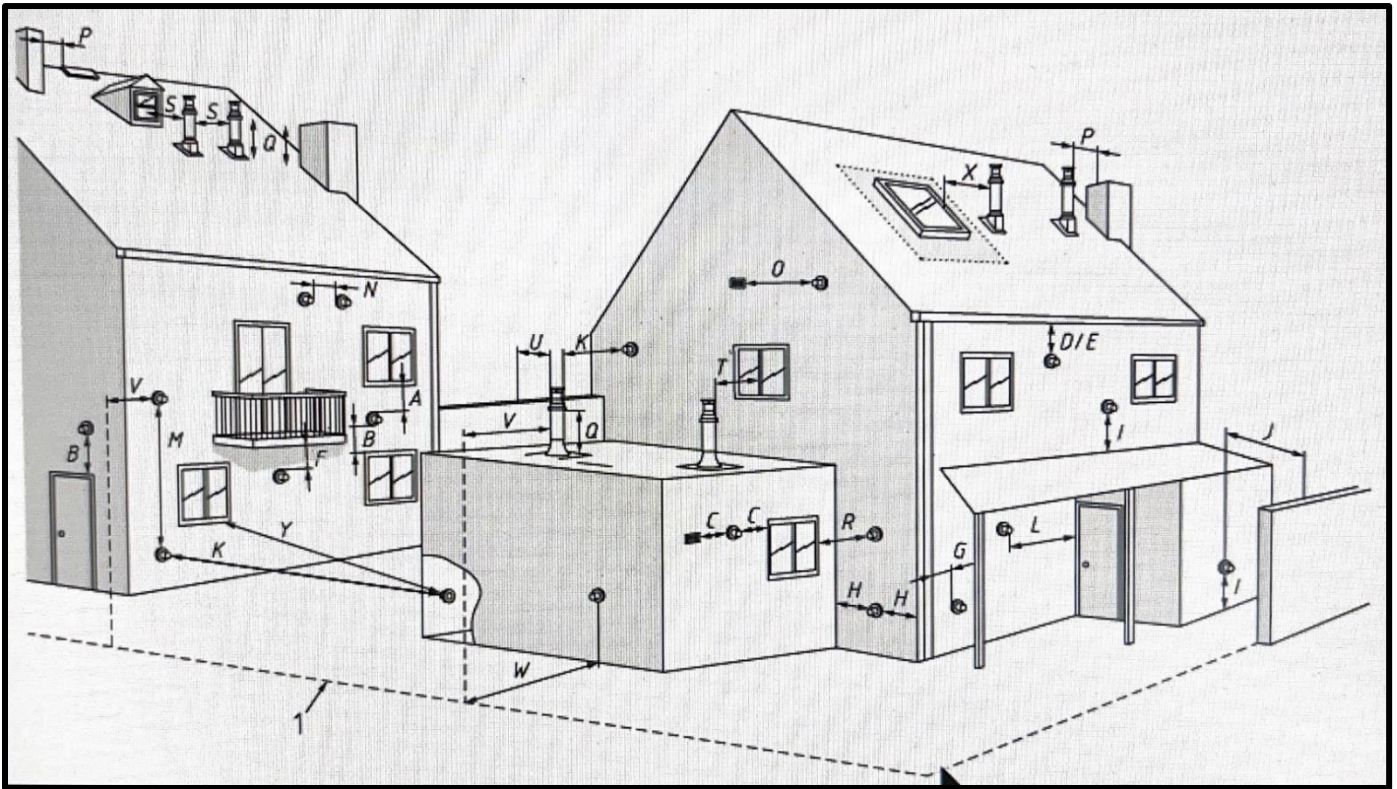


TABLE 1 WATER HEATER TERMINAL LOCATIONS

Location	Description	kW	LGC160-210 GPCE	LGC160-350 GPCE	LGC200-210 GPCE	LGC200-350 GPCE	LGC245-420 GPCE	LGC245-560 GPCE	LGC285-420 GPCE	LGC285-560 GPCE	LGC380-560 GPCE
			11	18.2	11	18.2	22.2	29.3	22.2	29.3	29.3
	Water heater nett input	kW	11	18.2	11	18.2	22.2	29.3	22.2	29.3	29.3
A	Directly below an opening, air brick, opening windows etc.	mm	300	300	300	300	300	300	300	300	300
B	Above an opening, air brick, opening windows etc.	mm	300	300	300	300	300	300	300	300	300
C	Horizontally to an opening, air brick, opening windows etc.	mm	300	300	300	300	300	300	300	300	300
D	Below a gutter or sanitary pipework	mm	75	75	75	75	75	75	75	75	75
E	Below the eaves	mm	300	300	300	300	300	300	300	300	300
F	Below a balcony or car port roof	mm	200	200	200	200	200	200	200	200	200
G	From a vertical drain or soil pipe	mm	150	150	150	150	150	150	150	150	150
H	From an internal or external corner	mm	300	300	300	300	300	300	300	300	300
I	Above ground, roof or balcony level	mm	300	300	300	300	300	300	300	300	300
J	From a surface facing the terminal	mm	600	600	600	600	600	600	600	600	600
K	From a terminal facing the terminal	mm	1200	1200	1200	1200	1200	1200	1200	1200	1200
L	From an opening in the car port (e.g. door, window) into the dwelling	mm	1200	1200	1200	1200	1200	1200	1200	1200	1200
M	Vertically from a terminal on the same wall	mm	1500	1500	1500	1500	1500	1500	1500	1500	1500
N	Horizontally from a terminal on the same wall	mm	300	300	300	300	300	300	300	300	300
O	Horizontally from a mechanical air inlet on the same wall	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000
P	From a vertical structure on the roof	mm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q	Above intersection with the roof	mm	300	300	300	300	300	300	300	300	300
R	Diagonally across from an opening into a building on a different wall	mm	600	600	600	600	600	600	600	600	600
S	Vertical terminal from another vertical terminal	mm	600	600	600	600	600	600	600	600	600
T	Vertical terminal adjacent to an opening into a building	mm	1500	1500	1500	1500	1500	1500	1500	1500	1500
U	Vertical terminal from a wall	mm	500	500	500	500	500	500	500	500	500
V	Terminal alongside a boundary	mm	300	300	300	300	300	300	300	300	300
W	Terminal facing a boundary	mm	600	600	600	600	600	600	600	600	600
X	Adjacent to an opening into a building on a pitched roof	mm	Contact Lochinvar Technical support								
Y	Terminal facing an opening into a building	mm	2000	2000	2000	2000	2000	2000	2000	2000	2000

The table above should be used in conjunction with the following notes:

- The above should be read in conjunction with the latest edition of BS5440-1 and IGEN UP10
- For Water Heater installation above 333kW nett input the table above should not be used, these installations are covered by the clean air act and must comply with its requirements in full, contact your local environmental health team for further guidance

For further guidance please contact Lochinvar Technical support

Further to the requirements in BS5440-1:2023 Annex D and Figure C.8, table C.1 the following risk assessment gives guidance for the positioning of horizontal flues. This form should be completed before work commences and undertaken by a person who is competent to undertake the risk assessment.

Type C appliances with net heat input not exceeding 70kW Low level flue discharge risk assessment (including net heat input for groups of appliances)			
No.	Regarding the flue position	No	Yes
1	Will the flue terminal contravene the positions set out in table C.1 for room sealed chimney outlets?	No	Yes
2	Will the terminal be sited in a position that will likely allow products of combustion to build up (e.g. enclosed by adjacent structures)?	No	Yes
3	Is the termination in a light well?	No	Yes
4	Is the termination within a carport without two unobstructed sides?	No	Yes
5	Will the termination be in an area that might have combustible material in the vicinity?	No	Yes
6	Will the termination be in an area that might have hazardous material in the vicinity (e.g. petrochemicals)?	No	Yes
7	Will the termination be sited within a covered walkway?	No	Yes
8	Are there any restrictions stopping the fitting of a terminal guard if required?	No	Yes
9	Will the termination discharge over a boundary?	No	Yes
10	Is a plume management kit required to circumvent the termination distances as required in table C.1?	No	Yes
No.	Nuisance considerations	No	Yes
11	Is the termination sited over a pathway that is likely to cause nuisance (e.g. head height or plumbing towards users)?	No	Yes
12	Is the termination likely to cause a nuisance to neighbours?	No	Yes
No.	Chimney/flue routes	No	Yes
	Will the flue be installed in a void that will not be able to satisfy a full visual inspection?	No	Yes
	Are there any restrictions that will prevent the flue from being supported throughout its entire length?	No	Yes
	Do the flue materials contravene building regulations(e.g. high risk buildings)?	No	Yes
	Will the flue route pass though any fire protected areas without the ability to maintain its protection?	No	Yes
	Will the flue pass through another dwelling?	No	Yes
	Is the flue likely to be damaged due to its route/location(e.g. materials stored on it in a plantroom or storeroom)?	No	Yes
	Does the flue affect the integrity of the structure it is in (e.g. lintels, cavity trays, barriers or membranes)?	No	Yes
If all answers are Blue then the flue position should be suitable			
If any answer is Orange then the flue position is unsuitable, consider revising the position or type of flue outlet or contact the local Environmental Health officer for assistance and/or approval			

CONCENTRIC FLUE SYSTEMS

STANDARD CONCENTRIC HORIZONTAL AND VERTICAL FLUE

ELGH001 CONCENTRIC HORIZONTAL FLUE ASSEMBLY ALL MODELS

COMPONENTS INCLUDED

Item No.	Description	Included
LV310759	CONCENTRIC HORIZONTAL FLUE ASSEMBLY 80/125mm PP	1
LV310744	CONCENTRIC EXTENSION - Ø80/125mm PP TELESCOPIC	1

INCLUDES 90 BEND, 500mm LENGTH AND WALL PLATES

Centre Line Measurement

A DIMENSION FOR MODELS LGC160-210 / LGC200-350	1800mm
A DIMENSION FOR MODELS LGC245-420 / LGC380-560	1840mm

ELGV001 CONCENTRIC VERTICAL FLUE ASSEMBLY ALL MODELS

COMPONENTS INCLUDED

Item No.	Description	Included
LV310744	CONCENTRIC EXTENSION - Ø80/125mm PP TELESCOPIC	1
LV310755	CONCENTRIC VERTICAL FLUE ASSEMBLY 80/125mm PP	1

INCLUDES 1000MM EXTENSION AND FLAT ROOF FLASHING AND TERMINAL

Maximum Flue Lengths

Maximum equivalent flue length = 40 Metres

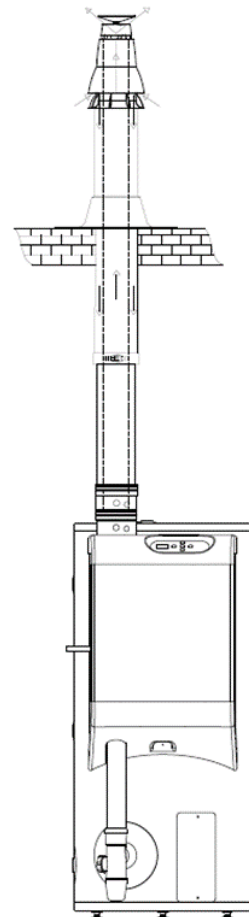
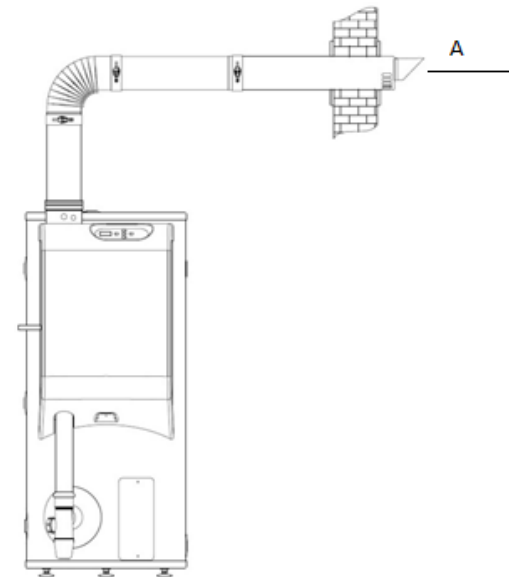
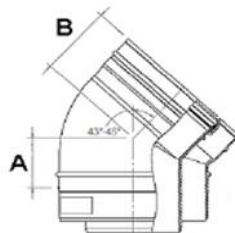
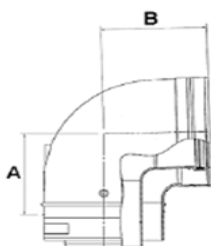
Maximum number of bends allowed = 8

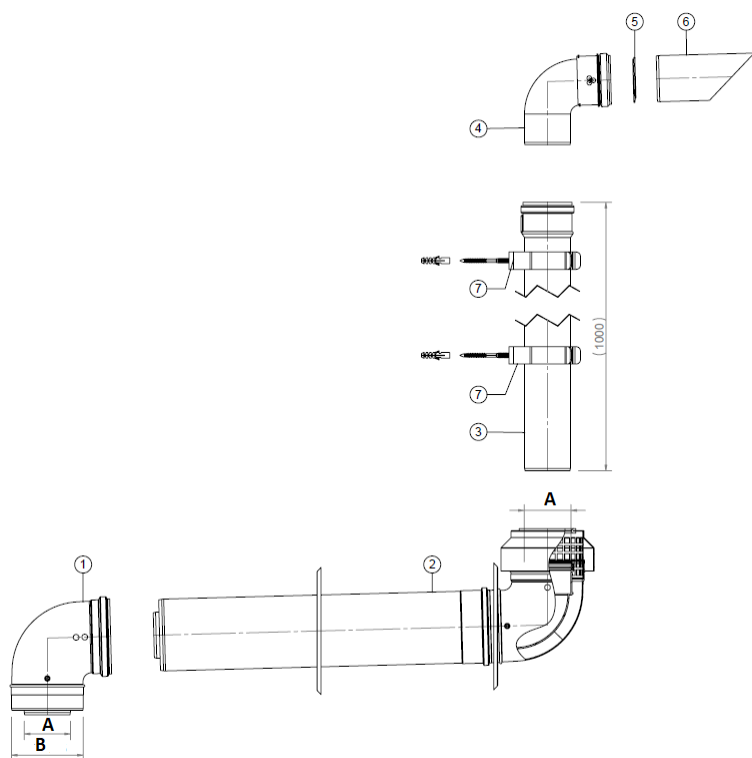


Even if using less than the maximum number of bends, the maximum pipe length may not be exceeded. Even if using less than the maximum pipe length, the maximum number of bends may not be exceeded.

Additional Flue Ancillary Items

Item No.	Description
LV310740	CONCENTRIC EXTENSION - Ø80/125mm PP FIXED (250mm)
LV310745	CONCENTRIC EXTENSION - Ø80/125mm PP (500mm) Cut to length
LV310742	CONCENTRIC EXTENSION - Ø80/125mm PP FIXED (1000mm)
LV310743	CONCENTRIC EXTENSION - Ø80/125mm PP FIXED (2000mm)
LV310744	CONCENTRIC EXTENSION - Ø80/125mm PP TELESCOPIC
LV310734	CONCENTRIC BEND 45° Ø80/125mm PP (A = 45mm, B=62.5mm)
LV310735	CONCENTRIC BEND 90° Ø80/125mm PP (A=95mm, B=110mm)
LV303506	SLOPING ROOF FLASHING Ø80/125MM (25°-45°) LEAD
M84481	WALL CLAMP Ø125mm





Plume management kit	
LG800008A	PLUME MANAGEMENT KIT Ø80/125mm

No	Description	All models
1	CONCENTRIC BEND 90°-PP	Ø80/125mm
2	CONCENTRIC HORIZONTAL PLUME KIT TERMINAL -PP	Ø80/125mm
3	EXTENSION -PP CUTABLE (1000mm)	Ø80mm
4	BEND 90°-PP	Ø80mm
5	PLUME KIT BIRD GUARD	Ø80mm
6	PLUME KIT FLUE EXIT-PP	Ø80mm
7	WALL CLAMP	Ø80mm
A	INTERNAL DIAMETER	Ø80mm
B	EXTERNAL DIAMETER	Ø125mm



The plume kit must not be used to correct an illegal terminal location

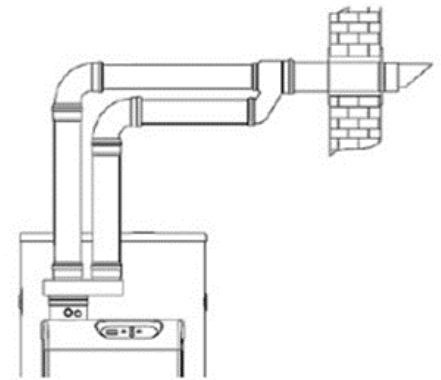
Additional Flue Ancillary Items all Models		
Item No	Description	Dimensions
LG800012A	BEND 90° Ø80mm PP BLACK EXTERNAL	N/A
LG800014A	EXTENSION Ø80mm (1000mm) PP BLACK EXTERNAL	1000mm

Maximum Flue Lengths	
Maximum flue length = Standard flue kit plus 4 additional 1000mm lengths	
Maximum number of additional bends allowed = 3	
	<p>Even if using less than the maximum number of bends, the maximum pipe length may not be exceeded. Even if using less than the maximum pipe length, the maximum number of bends may not be exceeded.</p>

**ELGPH001 TWIN PIPE HORIZONTAL FLUE ASSEMBLY
ALL MODELS**

COMPONENTS INCLUDED

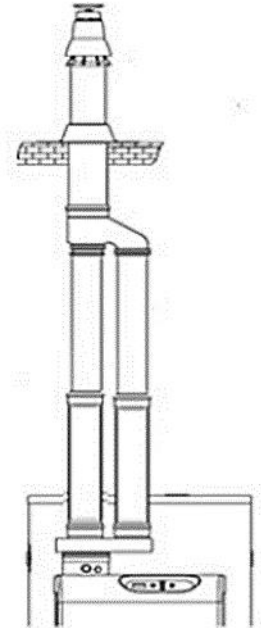
Item No.	Description	Included
LV310728	CONC HORZ TERMINAL - Ø80/80mm TO Ø80/125mm PP	1
M85291	BEND 90° Ø80mm PP	2
LV310718	EXTENSION - Ø80mm (250mm) PP	2
LV310722	EXTENSION - Ø80mm PP TELESCOPIC	2
LV312209	CONC TO TWIN PIPE ADAPTOR - Ø80/125 - 80/80 PP/ALU	1



**ELGPV001 TWIN PIPE VERTICAL FLUE ASSEMBLY
ALL MODELS**

COMPONENTS INCLUDED

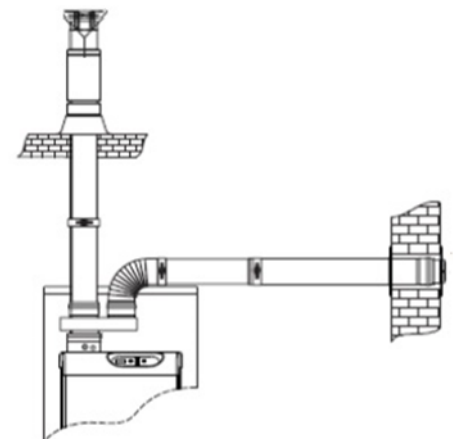
Item No.	Description	Included
LV310708	VERTICAL CONC TERMINAL - Ø80/80mm TO Ø80/125mm PP	1
M85272	EXTENSION Ø80mm (1000mm) PP	2
LV310722	EXTENSION - Ø80mm PP TELESCOPIC	2
LV312209	CONC TO TWIN PIPE ADAPTOR - Ø80/125 - 80/80 PP/ALU	1



**TWIN PIPE HORIZONTAL FLUE ASSEMBLY UTILISING SEPARATE AIR INLET AND FLUE
OUTLET-ALL MODELS**

COMPONENTS INCLUDED

Item No.	Description	Included
LV312209	CONC TO TWIN PIPE ADAPTOR - Ø80/125 - 80/80 PP/ALU	1
LV305016	HORIZONTAL AIR INLET Ø80mm	1
LV310753	CONCENTRIC VERTICAL TERMINAL - Ø80/125mm PP	1
LV310757	CONCENTRIC HORIZONTAL TERMINAL - Ø80/125mm PP	1
M28925	TERMINAL WALL PLATES	1



Maximum Flue Lengths

Maximum equivalent flue length = 50 Metres

90 Bend = 3.9 equivalent length

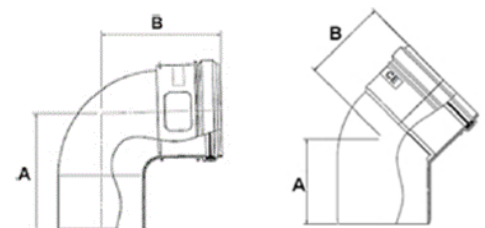
45 Bend = 1.1m equivalent length



Even if using less than the maximum number of bends, the maximum pipe length may not be exceeded. Even if using less than the maximum pipe length, the maximum number of bends may not be exceeded.

Additional Flue Ancillary Items Twin-pipe flue

Item No.	Description
LV310718	EXTENSION - Ø80mm (250mm) PP Cut to length
M85271	EXTENSION Ø80mm (500mm) PP Cut to length
M85272	EXTENSION Ø80mm (1000mm) PP Cut to length
LV310721	EXTENSION - Ø80mm (2000mm) PP Cut to length
LV310722	EXTENSION - Ø80mm PP TELESCOPIC
M85292	BEND 45° Ø80mm PP (A=72.5mm, B=72.5mm)
M85291	BEND 90° Ø80mm PP (A=110mm, B=110mm)
LV310703	BEND WITH SUPPORT 90° Ø80mm PP
LV310690	SUPPORT BRACKET
M87191	WALL CLAMP Ø80mm



CONVENTIONAL (EXHAUST ONLY) FLUE SYSTEMS

ELGCF001 CONVENTIONAL VERTICAL FLUE ASSEMBLY ALL MODELS

COMPONENTS INCLUDED

Item No.	Description	Included
LV310753	CONCENTRIC VERTICAL TERMINAL - Ø80/125mm PP	1
M85272	EXTENSION Ø80mm (1000mm) PP	1
LV310722	EXTENSION - Ø80mm PP TELESCOPIC	1
LV305030	APPLIANCE AIR INTAKE GUARD Ø80/125mm	1

Maximum Flue Lengths

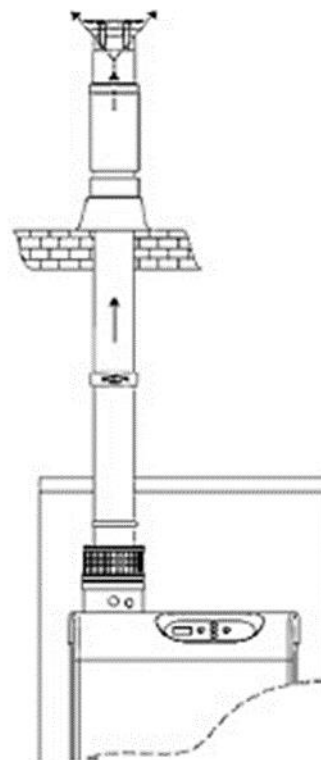
Maximum equivalent flue length = 50 Metres

90 Bend = 3.9 equivalent length

45 Bend = 1.1m equivalent length

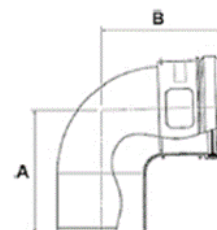
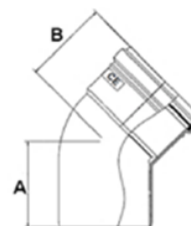


Even if using less than the maximum number of bends, the maximum pipe length may not be exceeded. Even if using less than the maximum pipe length, the maximum number of bends may not be exceeded.



Additional Flue Ancillary Items Conventional flue

Item No.	Description
LV310718	EXTENSION - Ø80mm (250mm) PP Cut to length
M85271	EXTENSION Ø80mm (500mm) PP Cut to length
M85272	EXTENSION Ø80mm (1000mm) PP Cut to length
LV310721	EXTENSION - Ø80mm (2000mm) PP Cut to length
LV310722	EXTENSION - Ø80mm PP TELESCOPIC
M85292	BEND 45° Ø80mm PP (A=72.5mm, B=72.5mm)
M85291	BEND 90° Ø80mm PP (A=110mm, B=110mm)
LV310703	BEND WITH SUPPORT 90° Ø80mm PP
LV310690	SUPPORT BRACKET
M87191	WALL CLAMP Ø80mm



Any installations using flue type C63 must be designed and installed in compliance with any local Building or planning regulations, but as these systems use a flue system not supplied by Lochinvar, Lochinvar cannot comment / advise or provide support on the design of this type of flue system. To design such a flue system, the installer/contractor must consult a specialist flue supplier who will be responsible for the design and installation of the separate flue system. When designing the type C63 flue system, the instructions in the Installation Manual, provided with the water heater, must be considered. Lochinvar will provide pressure loss figures for the specific units, but other than that, Lochinvar cannot provide support on Common Flue requests because flue certification is limited to the certified categories in the table on page 2. Lochinvar cannot accept any responsibility for Flue system design.

Maximum pressure						
	Inlet only		Outlet only		Inlet + outlet	
	Pinlet	Poutlet	Pinlet	Poutlet	Pinlet	Poutlet
	[Pa]	[Pa]	[Pa]	[Pa]	[Pa]	[Pa]
LGC-...-210	-41	0	0	33	-25	23
LGC-...-350	-74	0	0	59	-44	41
LGC-...-420	-108	0	0	108	-56	56
LGC-...-560	-192	0	0	192	-100	100

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