

CPM Boiler range Flue Guide



Models covered:

CMP58

CPM77

CPM96

CPM116

CPM146

CPM176

Does not include CPM-SP range

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GENERAL

Lochinvar CPM Boilers 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). |
| C83 | Closed Flue | An appliance connected via one of its ducts to a single or common duct system. This duct system consists of a single natural draught duct (i.e. not incorporating a fan) that evacuates the products of combustion. The appliance is connected via a second of its ducts to a terminal, which supplies air to the appliance from outside the building. |

All installations should comply with the requirements of:

1. For appliances up to 70kW net input- BS5440-1:2023- 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.

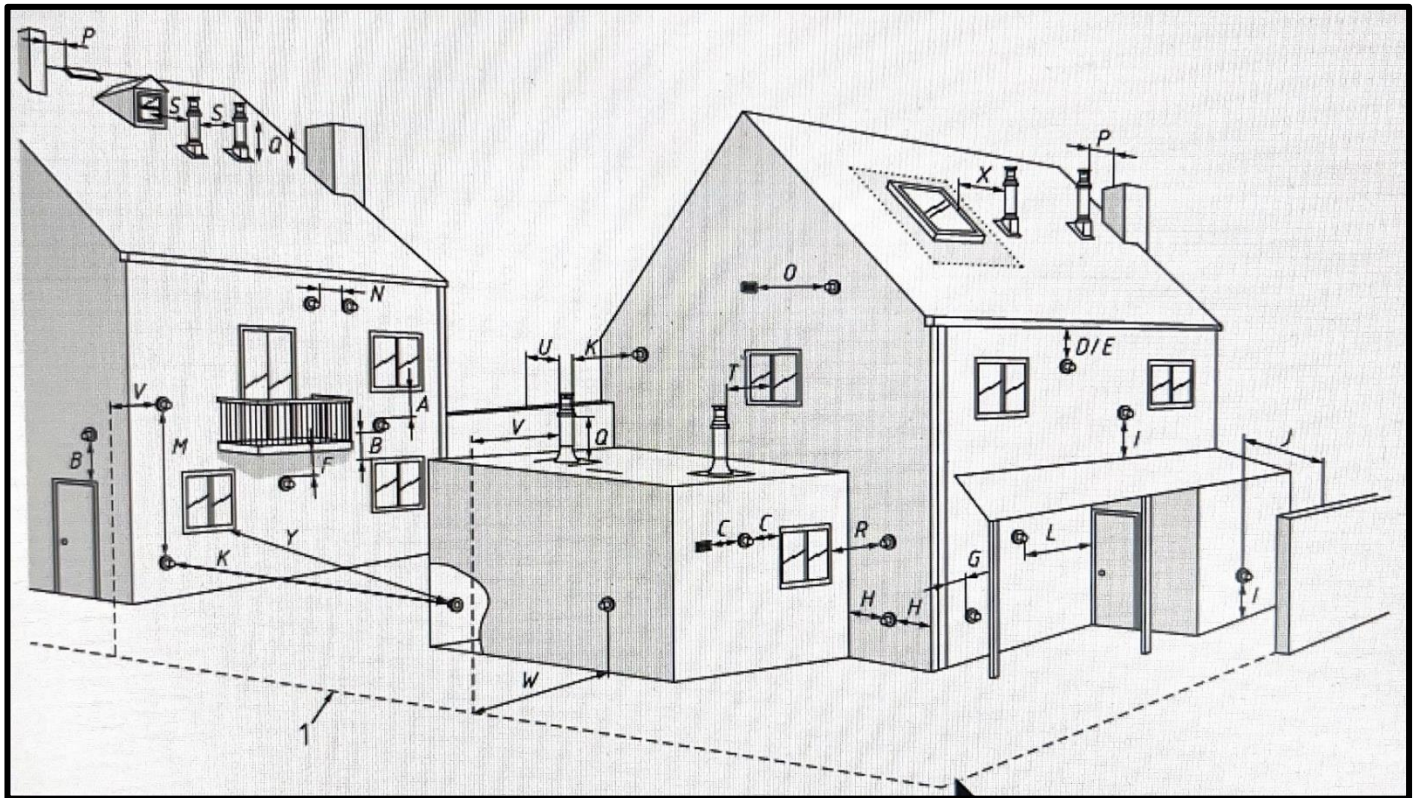


TABLE 1 BOILER TERMINAL LOCATIONS ACCORDING TO BS5440-1-2023

| Location | Description | | CPM58 |
|----------|--|----|-------|
| A | Directly below an opening, air brick, opening windows etc. | mm | 300 |
| B | Above an opening, air brick, opening windows etc. | mm | 300 |
| C | Horizontally to an opening, air brick, opening windows etc. | mm | 300 |
| D | Below a gutter or sanitary pipework | mm | 75 |
| E | Below the eaves | mm | 300 |
| F | Below a balcony or car port roof | mm | 200 |
| G | From a vertical drain or soil pipe | mm | 150 |
| H | From an internal or external corner | mm | 300 |
| I | Above ground, roof or balcony level | mm | 300 |
| J | From a surface facing the terminal | mm | 600 |
| K | From a terminal facing the terminal | mm | 1200 |
| L | From an opening in the car port (e.g., door, window) into the dwelling | mm | 1200 |
| M | Vertically from a terminal on the same wall | mm | 1500 |
| N | Horizontally from a terminal on the same wall | mm | 300 |
| O | Horizontally from a mechanical air inlet on the same wall | mm | 1000 |
| P | From a vertical structure on the roof | mm | N/A |
| Q | Above intersection with the roof | mm | 300 |
| R | Diagonally across from an opening into a building on a different wall | mm | 600 |
| S | Vertical terminal from another vertical terminal | mm | 600 |
| T | Vertical terminal adjacent to an opening into a building | mm | 1500 |
| U | Vertical terminal from a wall | mm | 500 |
| V | Terminal alongside a boundary | mm | 300 |
| W | Terminal facing a boundary | mm | 600 |
| X | Adjacent to an opening into a building on a pitched roof | mm | * |
| Y | Terminal facing an opening into a building | mm | 2000 |

* Contact Lochinvar technical support for help.

TABLE 2 RISK ASSESSMENT ACCORDING TO BS5440-1-2023

| | | | |
|--|---|-----------|------------|
| 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 through 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 | | | |

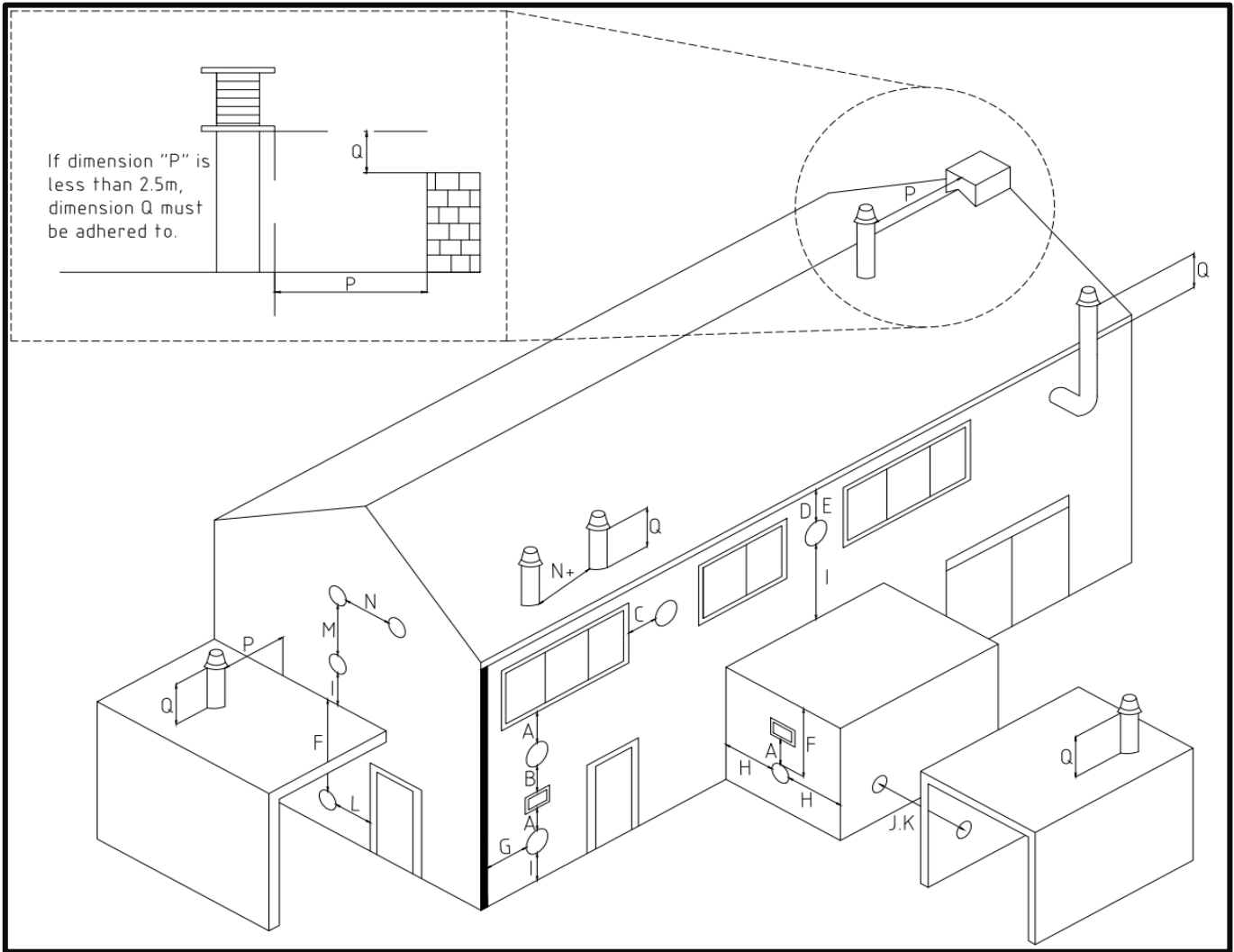


TABLE 3 BOILER TERMINAL LOCATIONS ACCORDING TO IGEM/UP/10 EDITION 4 +A: 2016

| Location | Description | | CPM77 | CPM96 | CPM116 | CPM144 | CPM175 |
|----------|---|----|--|-------|--------|--------|--------|
| A | Directly below an opening, air brick, opening windows etc.# | mm | 2500 | 2500 | 2500 | 2500 | 2500 |
| B | Above an opening, air brick, opening windows etc. | mm | 631 | 760 | 896 | 1092 | 1294 |
| C | Horizontally to an opening, air brick, opening windows etc.# | mm | 631 | 760 | 896 | 1092 | 1294 |
| D | Below a gutter or sanitary pipework | mm | 200 | 200 | 200 | 200 | 200 |
| E | Below the eaves | mm | 200 | 200 | 200 | 200 | 200 |
| F | Below a balcony or car port roof | mm | Not recommended see UP10 risk assessment | | | | |
| G | From a vertical drain or soil pipe | mm | 150 | 150 | 150 | 150 | 150 |
| H | From an internal or external corner | mm | 1099 | 1513 | 1948 | 2573 | 3220 |
| I | Above ground, roof or balcony level | mm | 300 | 300 | 300 | 300 | 300 |
| J | From a surface facing the terminal | mm | 1100 | 1514 | 1948 | 2573 | 3220 |
| K | From a terminal facing the terminal | mm | 2083 | 2429 | 2792 | 3314 | 3855 |
| L | From an opening in the car port (e.g. door, window) into the dwelling | mm | Not recommended see UP10 risk assessment | | | | |
| M | Vertically from a terminal on the same wall | mm | 2500 | 2500 | 2500 | 2500 | 2500 |
| N | Horizontally from a terminal on the same wall | mm | 600 | 600 | 900 | 900 | n/a* |
| N+ | Vertically from a terminal on the same roof | | 600 | 600 | 900 | 900 | n/a* |
| P | From a vertical structure on the roof | mm | 1500 | 1500 | 1500 | 1500 | 1500 |
| Q | Above intersection with the roof | mm | 311 | 359 | 409 | 481 | 556 |

*Please contact Lochinvar technical support for guidance on CPM175 termination.

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

- Distances shown ensure the boiler will operate without problems under most conditions, these distances can be reduced in certain circumstances
- The above should be read in conjunction with the latest edition of BS5440-1 and IGEM UP10
- For boiler 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

Table 4 risk assessment

The table below is an excerpt from IGEMUP10 and should be used in conjunction with that document

Further to the requirements in IGEM/UP/10 Edition 4 +A: 2016 Section 8 under clause 8.7.3.3 and Figure 7 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 exceeding 70 kW and not exceeding 333 kW low level flue discharge risk assessment (including net heat input for groups of appliances) | | | |
|--|---|----|-----|
| No. | Regarding the flue position | No | Yes |
| 1 | Is the proposed flue termination within the distance in Figure K of a road, path, track, thoroughfare, walkway, property boundary or area, which is used for general public access other than for maintenance purposes? | No | Yes |
| 2 | Is the proposed flue termination within the distance in Figure K to a playground, school, yard, seating area, or area where there may be a public gathering | No | Yes |
| 3 | If the proposed flue termination enclosed on more than two sides then does it comply with the requirements of Figure 11B? | No | Yes |
| 4 | Is the proposed flue termination within the distance in Figure K of a surface or building element that may be affected by corrosion or deterioration from plume condensate? | No | Yes |
| 5 | Is the proposed flue position in an area where vehicles could be parked within distances from Figure 12 Line G to the flue? | No | Yes |
| 6 | Are there shrubs or trees within minimum distances shown on Figure K of the proposed terminal position? | No | Yes |
| 7 | Is the proposed flue termination within a light well? | No | Yes |
| 8 | Are the products of combustion from the proposed flue position likely to build up under unfavourable atmospheric conditions, due to poor cross flow of air caused by enclosures or adjacent structures and/or likely to cause nuisance? | No | Yes |
| 9 | Is the flue termination position likely to cause a nuisance to adjoining properties? | No | Yes |
| Building Regulations part J | | | |
| 10 | Is the proposed flue termination less than 300 mm from the boundary of the property, as measured from the side of the terminal to the boundary? | No | Yes |
| Regarding the Clean Air Act | | | |
| 11 | Is the total output of the individual, or group of flue terminals (if within 5U (see A3.7)), greater than 333 kW net heat input? | No | Yes |
| General | | | |
| 12 | Are there any other considerations that are required for this risk assessment, see separate sheet. | No | Yes |
| 13 | Comments: | | |
| | | | |
| 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 | | | |

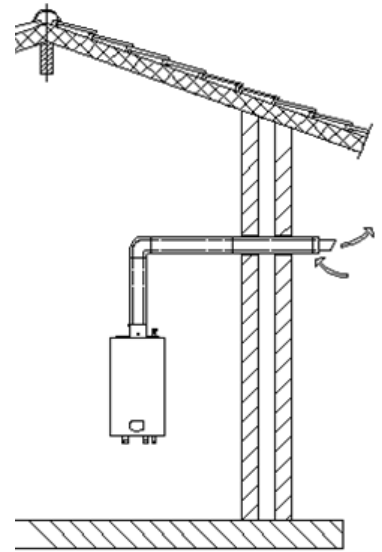
BOILER FLUE INFORMATION

| Model Number | | CPM58 | CPM77 | CPM96 | CPM116 | CPM144 | CPM175 |
|--|------|---------------|--------------|--------------|--------------|--------------|--------------|
| FLUE DATA TYPE B ₂₃ | | | | | | | |
| Nominal flue diameter | mm | 80 | | 100 | | 130 | |
| Maximum flue gas temp | °C | 95 | | | | | |
| Flue gas temperature | °C | 85-95 | | | | | |
| Flue draught requirements | mbar | -0.03 to -0.1 | | | | | |
| Available pressure for the flue system | Pa | 200 | | | | | |
| Maximum flue gas volume | g/s | 5.59 to 28.9 | 6.52 to 38.6 | 7.69 to 47.9 | 11.6 to 57.7 | 15.2 to 71.7 | 20.1 to 86.2 |
| FLUE DATA TYPE C ₁₃ & C ₃₃ | | | | | | | |
| Nominal flue diameter | mm | 80/125 | | 100/150 | | | |
| Maximum flue gas temp | °C | 95 | | | | | |
| FLUE DATA TYPE C ₄₃ & C ₅₃ | | | | | | | |
| Nominal flue diameter | mm | 80 | | 100 | | 130 | |
| Maximum flue gas temp | °C | 95 | | | | | |

CONCENTRIC FLUE SYSTEMS

HORIZONTAL TYPE C₁₃

| CPMH001 CONCENTRIC HORIZONTAL FLUE ASSEMBLY MODELS - CPM58, CPM77 | | | | |
|---|---|----------|-------|-------|
| Item No | Description | Included | CPM58 | CPM77 |
| LV310757 | CONCENTRIC HORIZONTAL TERMINAL - Ø80/125mm PP | 1 | 44.8 | 80.1 |
| M28925B | TERMINAL WALL PLATES | 1 | - | - |
| LV310735 | CONCENTRIC BEND 90° Ø80/125mm PP | 1 | 16.1 | 28.7 |
| Maximum resistance in the flue system ≤200pa | | Total | 60.9 | 108.8 |

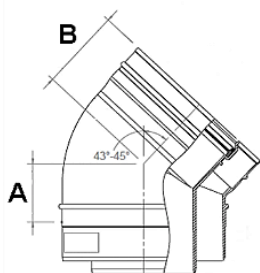


| Additional Flue Ancillary Items | | |
|---------------------------------|--|-------------------|
| Item No. | Description | Dimensions |
| LV310740B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 250mm |
| LV310745B | CONCENTRIC EXTENSION - Ø80/125mm PP | 500mm |
| LV310742B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 1000mm |
| LV310743B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 2000mm |
| LV310744B | CONCENTRIC EXTENSION - Ø80/125mm PP TELESCOPIC | 240mm-360mm |
| LV310734B | CONCENTRIC BEND 45° Ø80/125mm PP | See Drawing Below |
| LV310735B | CONCENTRIC BEND 90° Ø80/125mm PP | See Drawing Below |
| M84481B | WALL CLAMP Ø125mm | N/A |

| CPMH003 CONCENTRIC HORIZONTAL FLUE ASSEMBLY MODELS - CPM96, CPM116 | | | | |
|--|--|----------|-------|--------|
| Item No | Description | Included | CPM96 | CPM116 |
| LV310758B | CONCENTRIC HORIZONTAL TERMINAL Ø100/150mm PP | 1 | 58 | 84 |
| M84410B | CONCENTRIC BEND 90° Ø100/150mm PP SHORT RADIUS | 1 | 23.6 | 34.2 |
| Maximum resistance in the flue system ≤200pa | | Total | 81.6 | 118.2 |

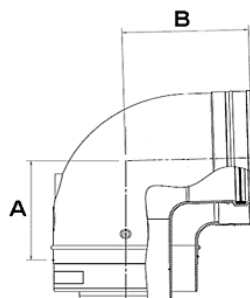
| CPMH004 CONCENTRIC HORIZONTAL FLUE ASSEMBLY MODELS - CPM144 | | | |
|---|--|----------|--------|
| Item No | Description | Included | CPM144 |
| LV310758B | CONCENTRIC HORIZONTAL TERMINAL Ø100/150mm PP | 1 | 129.9 |
| E61-001-172B | CONCENTRIC CONVERSION KIT | 1 | - |
| M84410B | CONCENTRIC BEND 90° Ø100/150mm PP SHORT RADIUS | 1 | 52.9 |
| Maximum resistance in the flue system ≤200pa | | Total | 182.8 |

| Additional Flue Ancillary Items | | |
|---------------------------------|--|-------------------|
| Item No. | Description | Dimensions |
| M84405B | CONCENTRIC EXTENSION Ø100/150mm Cuttable | 500mm |
| M84402B | CONCENTRIC EXTENSION Ø100/150mm PP FIXED | 1000mm |
| M84412B | CONCENTRIC BEND 90° Ø100/150mm PP | See Drawing Below |
| M84413B | CONCENTRIC BEND 45° Ø100/150mm PP | See Drawing Below |
| M84421B | SAMPLING POINT Ø100/150mm PP | 115mm |
| M87196B | WALL CLAMP Ø150mm | |



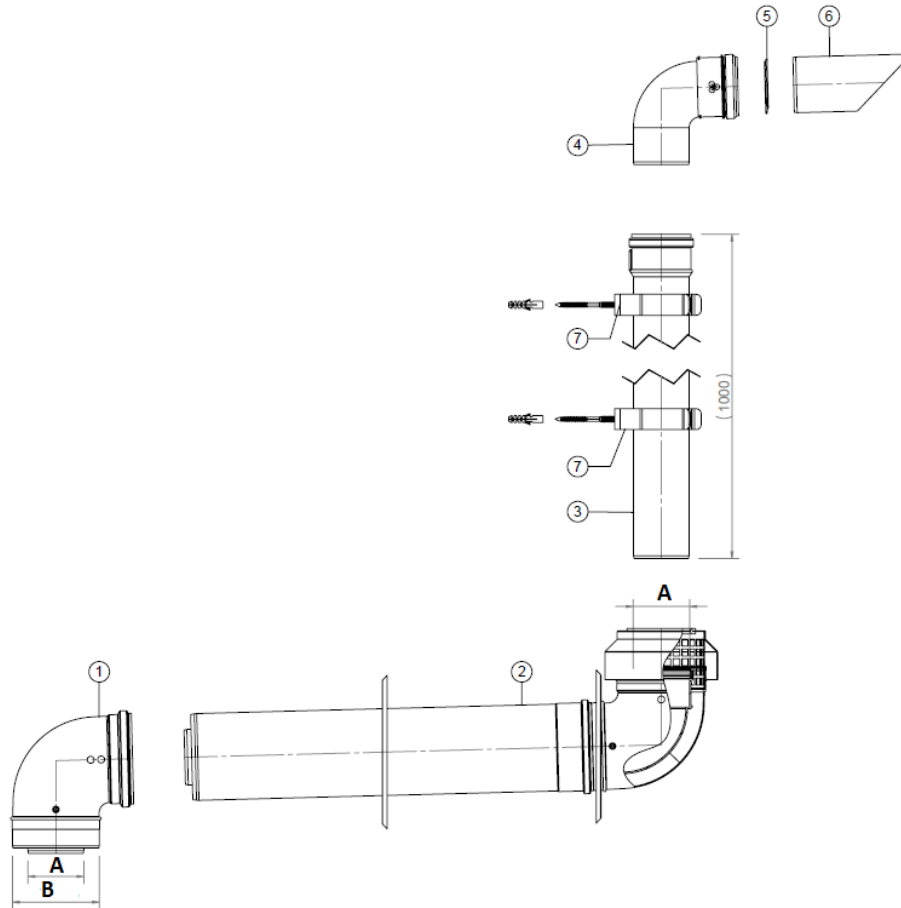
CPM58-77
A=45mm
B=62.5mm

CPM96-175
A=128mm
B=128mm



CPM58-77
A=95mm
B=110mm

CPM96-175
A=223mm
B=208mm



| PLUME MANAGEMENT KITS | |
|-----------------------|---------------------------------|
| LG800008B | PLUME MANAGEMENT KIT Ø80/125mm |
| LG800009B | PLUME MANAGEMENT KIT Ø100/150mm |

| No | Description | CPM58 | CPM77 | CPM96 | CPM116 | CPM144 | CPM175 |
|----|--|-----------|-----------|------------|------------|--------|--------|
| 1 | CONCENTRIC BEND 90°-PP | Ø80/125mm | Ø80/125mm | Ø100/150mm | Ø100/150mm | N/A | N/A |
| 2 | CONCENTRIC HORIZONTAL PLUME KIT TERMINAL -PP | Ø80/125mm | Ø80/125mm | Ø100/150mm | Ø100/150mm | N/A | N/A |
| 3 | EXTENSION -PP CUTABLE (1000mm) | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| 4 | BEND 90°-PP | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| 5 | PLUME KIT BIRD GUARD | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| 6 | PLUME KIT FLUE EXIT-PP | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| 7 | WALL CLAMP | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| A | INTERNAL DIAMETER | Ø80mm | Ø80mm | Ø100mm | Ø100mm | N/A | N/A |
| B | EXTERNAL DIAMETER | Ø125mm | Ø125mm | Ø150mm | Ø150mm | N/A | N/A |



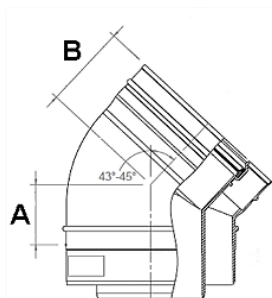
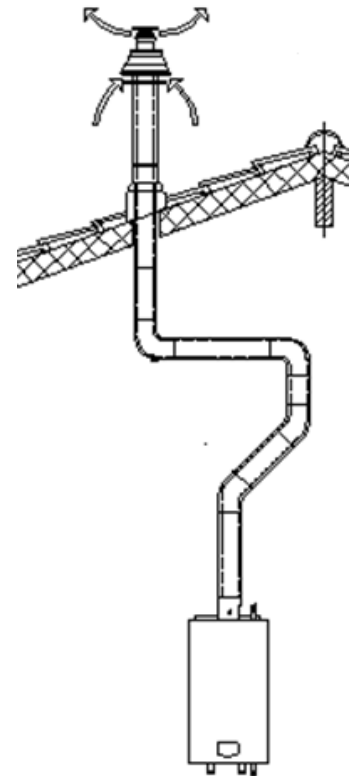
The plume kit must not be used to correct an illegal terminal location

| CPMV001 CONCENTRIC VERTICAL FLUE ASSEMBLY MODELS - CPM58, CPM77 | | | | |
|---|--|----------|-------|--------|
| Item No | Description | Included | CPM58 | CPM77 |
| LV310753 | CONCENTRIC VERTICAL TERMINAL - Ø80/125mm PP | 1 | 61.5 | 109.8 |
| LV310745B | CONCENTRIC EXTENSION - Ø80/125mm PP (500mm) | 1 | 5.1 | 9.05 |
| LV310742B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED (1000mm) | 1 | 10.2 | 18.1 |
| Maximum resistance in the flue system ≤200pa | | Total | 76.8 | 136.95 |

| Additional Flue Ancillary Items | | |
|---------------------------------|--|-------------------|
| Item No. | Description | Dimensions |
| LV310740B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 250mm |
| LV310745B | CONCENTRIC EXTENSION - Ø80/125mm PP | 500mm |
| LV310742B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 1000mm |
| LV310743B | CONCENTRIC EXTENSION - Ø80/125mm PP FIXED | 2000mm |
| LV310744B | CONCENTRIC EXTENSION - Ø80/125mm PP TELESCOPIC | 240-360mm |
| LV310734B | CONCENTRIC BEND 45° Ø80/125mm PP | See Drawing Below |
| LV310735B | CONCENTRIC BEND 90° Ø80/125mm PP | See Drawing Below |
| M87195B | WALL CLAMP Ø130mm | N/A |
| LV302520 | FLAT ROOF FLASHING Ø140mm ALU | N/A |

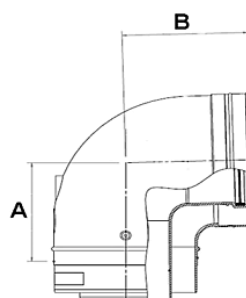
| CPMV003 CONCENTRIC VERTICAL FLUE ASSEMBLY MODELS - CPM96, CPM116 | | | | |
|--|---|----------|-------|--------|
| Item No | Description | Included | CPM96 | CPM116 |
| LV310754B | CONCENTRIC VERTICAL TERMINAL Ø100/150mm PP | 1 | 80 | 115.9 |
| M84405B | CONCENTRIC EXTENSION Ø100/150mm (500mm) Cuttable | 1 | 6.5 | 9.45 |
| M84402B | CONCENTRIC EXTENSION Ø100/150mm (1000mm) PP FIXED | 1 | 13 | 18.9 |
| Maximum resistance in the flue system ≤200pa | | Total | 99.5 | 144.25 |

| Additional Flue Ancillary Items | | |
|---------------------------------|--|-------------------|
| Item No. | Description | Dimensions |
| M84405B | CONCENTRIC EXTENSION Ø100/150mm Cuttable | 500mm |
| M84402B | CONCENTRIC EXTENSION Ø100/150mm PP FIXED | 1000mm |
| M84412B | CONCENTRIC BEND 90° Ø100/150mm PP | See Drawing Below |
| M84413B | CONCENTRIC BEND 45° Ø100/150mm PP | See Drawing Below |
| M84421B | SAMPLING POINT Ø100/150mm PP | 115mm |
| M87196B | WALL CLAMP Ø150mm | |



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A=45mm
B=62.5mm

CPM96-175
A=128mm
B=128mm



CPM58-77
A=95mm
B=110mm

CPM96-175
A=223mm
B=208mm



Concentric flue is unable to be used with CPM175

CONCENTRIC FLUE SIZING/CALCULATIONS

| Item | Resistance in Pa | | | | | |
|-------------------|------------------|---------------|----------------|-----------------|-----------------|-----------------|
| | CPM 58 80/125 | CPM 77 80/125 | CPM 96 100/150 | CPM 116 100/150 | CPM 144 100/150 | CPM 175 100/150 |
| Wall terminal | 44.8 | 80.1 | 58 | 84 | 129.9 | 188 |
| Roof terminal | 61.5 | 109.8 | 80 | 115.9 | 179.2 | 259.3 |
| Straight tube (m) | 10.2 | 18.1 | 13.0 | 18.9 | 29.2 | 42.2 |
| 45° Elbow | 8.6 | 15.4 | 15.5 | 22.4 | 34.7 | 50.2 |
| 90° Elbow | 16.1 | 28.7 | 23.6 | 34.2 | 52.9 | 76.5 |
| Plume kit | 10 | 10 | 20 | 25 | n/a | n/a |

To be used for Lochinvar supplied M&G flue system components resistance only

Use the table below to calculate the total flue system resistance

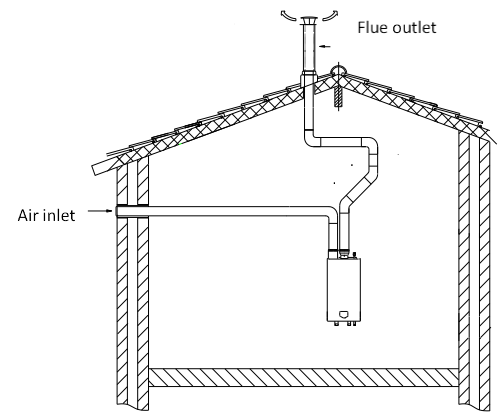
| Item | Quantity | Resistance | Total |
|------------------------------|----------|------------|-------|
| Wall terminal | | | |
| Roof terminal | | | |
| Straight tube (m) | | | |
| 45° Elbow | | | |
| 90° Elbow | | | |
| Plume kit | | | |
| Total Resistance (Pa) | | | |



Total calculated system resistance must be less than 200pa

TWIN-PIPE FLUE SYSTEMS TYPE C₅₃

| CPM TWIN-PIPE FLUE ASSEMBLY MODELS CPM58, CPM77 | | | | |
|---|------------------------------|-------------|-------|-------|
| Vertical Flue | | | | |
| Item No | Description | No Required | CPM58 | CPM77 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| LV305016 | HORIZONTAL AIR INLET Ø80mm | 1 | - | - |
| M28925B | TERMINAL WALL PLATES (PAIR) | 1 | - | - |
| M85283 | EXPANDER Ø80mm - Ø100mm PP | 1 | - | - |
| LM410084992 | EXPANDER Ø100mm - Ø130mm PP | 1 | - | - |
| Maximum resistance in the flue system 200pa | | Total | 38.8 | 38.8 |



| CPM TWIN-PIPE FLUE ASSEMBLY MODELS CPM58, CPM77 | | | | |
|---|---|-------------|-------|-------|
| Horizontal Flue | | | | |
| Item No | Description | No Required | CPM58 | CPM77 |
| LV310757B | CONCENTRIC HORIZONTAL TERMINAL Ø80/125mm PP | 1 | 29.86 | 53.4 |
| LV305016 | HORIZONTAL AIR INLET Ø80mm | 1 | - | - |
| M28925B | TERMINAL WALL PLATES (PAIR) | 1 | - | - |
| Maximum resistance in the flue system ≤200pa | | Total | 29.86 | 53.4 |

| Additional Flue Ancillary Items | | |
|---------------------------------|------------------------------------|-------------------|
| Item No. | Description | Dimensions |
| LV310718B | EXTENSION - Ø80mm PP CUT TO LENGTH | 250mm |
| M85271B | EXTENSION Ø80mm PP CUT TO LENGTH | 500mm |
| M85272B | EXTENSION Ø80mm PP CUT TO LENGTH | 1000mm |
| LV310721B | EXTENSION - Ø80mm PP CUT TO LENGTH | 2000mm |
| LV310722B | EXTENSION - Ø80mm PP TELESCOPIC | 240-360mm |
| M85292B | BEND 45° 80mm PP | See Drawing Below |
| M85291B | BEND 90° 80mm PP | See Drawing Below |
| M87191B | WALL CLAMP Ø80mm | N/A |

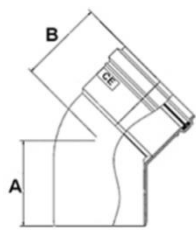
| CPM TWIN-PIPE FLUE ASSEMBLY MODELS CPM96, CPM116 | | | | |
|--|------------------------------|-------------|-------|--------|
| Vertical Flue | | | | |
| Item No | Description | No Required | CPM96 | CPM116 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| LV305039 | HORIZONTAL AIR INLET Ø100mm | 1 | - | - |
| M28925B | TERMINAL WALL PLATES (PAIR) | 1 | - | - |
| LM410084992 | EXPANDER Ø100mm - Ø130mm PP | 1 | - | - |
| Maximum resistance in the flue system 200pa | | Total | 38.8 | 38.8 |

| CPM TWIN-PIPE FLUE ASSEMBLY MODELS CPM96, CPM116 | | | | |
|--|--|-------------|-------|--------|
| Horizontal Flue | | | | |
| Item No | Description | No Required | CPM96 | CPM116 |
| LV310758B | CONCENTRIC HORIZONTAL TERMINAL Ø100/150mm PP | 1 | 38.66 | 56 |
| LV305039B | HORIZONTAL AIR INLET Ø100mm ALU | 1 | - | - |
| Maximum resistance in the flue system ≤200pa | | Total | 38.66 | 56 |

| Additional Flue Ancillary Items | | |
|---------------------------------|-----------------------------------|-------------------|
| Item No. | Description | Dimensions |
| M85176B | EXTENSION Ø100mm PP CUT TO LENGTH | 500mm |
| M85177B | EXTENSION Ø100mm PP CUT TO LENGTH | 1000mm |
| M85181B | BEND 90° 100mm PP | See Drawing Below |
| M85182B | BEND 45° 100mm PP | See Drawing Below |
| M87193B | WALL BAND (100mm) | n/a |

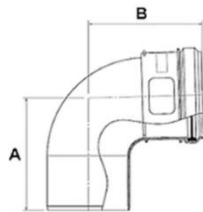
| CPM TWIN-PIPE FLUE ASSEMBLY MODELS CPM144, CPM175 | | | | |
|---|---------------------------------|-------------|--------|--------|
| Vertical Flue | | | | |
| Item No | Description | No Required | CPM144 | CPM175 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| LV307178 | HORIZONTAL AIR INLET Ø130mm ALU | 1 | - | - |
| Maximum resistance in the flue system ≤200pa | | Total | 38.8 | 38.8 |

| Additional Flue Ancillary Items | | |
|---------------------------------|---------------------|------------|
| Item No | Description | Dimensions |
| M70242 | EXTENSION Ø130mm PP | 1000mm |
| M70251 | BEND 90° PP | 130mm |
| M70252 | BEND 45° PP | 130mm |
| M87195 | WALL CLAMP | 130mm |



CPM58-
CPM77
A=72.5mm,
B=72.5mm

CPM96-
CPM116
A=78mm,
B=65mm



CPM58-
CPM77
A=110mm,
B=110mm

CPM96-
CPM116
A=78mm,
B=65mm

| Item | Size (mm) | Resistance (Pa) | | | | | |
|---------------------------|-----------|-----------------|--------|--------|---------|---------|---------|
| | | CPM 58 | CPM 77 | CPM 96 | CPM 116 | CPM 144 | CPM 175 |
| Straight tube (per metre) | 80 | 4.6 | 8.2 | X | X | n/a | n/a |
| Straight tube (per metre) | 100 | 1.3 | 2.3 | 3.5 | 5.0 | n/a | n/a |
| Straight tube (per metre) | 130 | 0.3 | 0.6 | 0.9 | 1.2 | 1.9 | 2.8 |
| 45° Elbow | 80 | 4.2 | 7.6 | X | X | n/a | n/a |
| 45° Elbow | 100 | 2.9 | 5.1 | 7.9 | 11.5 | n/a | n/a |
| 45° Elbow | 130 | 0.6 | 1.0 | 1.6 | 2.3 | 3.5 | 5.1 |
| 90° Elbow | 80 | 10.1 | 18.0 | X | X | n/a | n/a |
| 90° Elbow | 100 | 4.6 | 8.3 | 12.7 | 18.4 | n/a | n/a |
| 90° Elbow | 130 | 1.4 | 2.4 | 3.7 | 5.4 | 8.4 | 12.1 |

To be used for Lochinvar supplied M&G air inlet system components resistance only

| Item | Size (mm) | Resistance (Pa) | | | | | |
|---------------------------|-----------|-----------------|--------|--------|---------|---------|---------|
| | | CPM 58 | CPM 77 | CPM 96 | CPM 116 | CPM 144 | CPM 175 |
| Straight tube (per metre) | 80 | 4.0 | 7.1 | X | X | n/a | n/a |
| Straight tube (per metre) | 100 | 1.1 | 2.0 | 3.0 | 4.4 | n/a | n/a |
| Straight tube (per metre) | 130 | 0.3 | 0.5 | 0.7 | 1.1 | 1.7 | 2.4 |
| 45° Elbow | 80 | 3.7 | 6.5 | X | X | n/a | n/a |
| 45° Elbow | 100 | 2.5 | 4.4 | 6.8 | 9.9 | n/a | n/a |
| 45° Elbow | 130 | 0.5 | 0.9 | 1.4 | 2.0 | 3.0 | 4.4 |
| 90° Elbow | 80 | 8.7 | 15.6 | X | X | n/a | n/a |
| 90° Elbow | 100 | 4.0 | 7.1 | 11.0 | 16.0 | n/a | n/a |
| 90° Elbow | 130 | 1.2 | 2.1 | 3.2 | 4.7 | 7.2 | 10.5 |
| Vertical exhaust terminal | | 61.5 | 109.8 | 80 | 115.9 | 179.2 | 259.3 |
| Vertical single terminal | | - | - | - | - | 38.8 | 38.8 |

To be used for Lochinvar supplied M&G flue exhaust system components resistance only

Use the table below to calculate the flue system resistance.

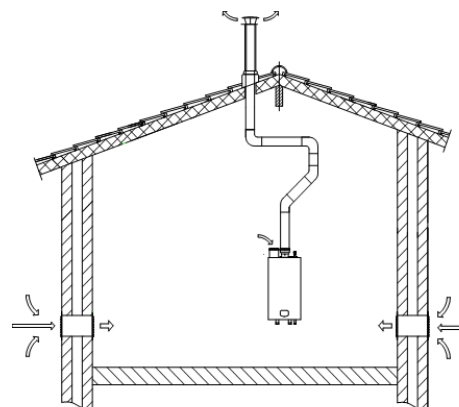
| Flue exhaust | Item | Quantity | Resistance | Total | |
|---|---|----------|------------|-------|--|
| | Straight tube (m) | | | | |
| | 45° Elbow | | | | |
| | 90° Elbow | | | | |
| | Concentric Vertical terminal | | | | |
| | Total Resistance flue exhaust (Pa) | | | | |
| | Total Resistance flue exhaust (Pa) | | | | |
| Air Inlet | Item | Quantity | Resistance | Total | |
| | Straight tube (m) | | | | |
| | 45° Elbow | | | | |
| | 90° Elbow | | | | |
| | Air Inlet | | | | |
| | Total Resistance air inlet (Pa) | | | | |
| Total Resistance air inlet and flue exhaust (Pa) | | | | | |



Total calculated system resistance must be less than 200pa

CONVENTIONAL (EXHAUST ONLY) FLUE SYSTEMS TYPE B₂₃

| CPM CONVENTIONAL FLUE ASSEMBLY MODELS CPM58, CPM77 | | | | |
|--|---|-------------|-------|-------|
| Item No | Description | No Required | CPM58 | CPM77 |
| LV305030B | APPLIANCE AIR INTAKE GUARD Ø80/125mm | 1 | 10.8 | 19.2 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| M85283 | EXPANDER Ø80mm - Ø100mm PP | 1 | - | - |
| LM410084992 | EXPANDER Ø100mm - Ø130mm PP | 1 | - | - |
| Maximum resistance in the flue system ≤200pa | | Total | 51.8 | 92.4 |

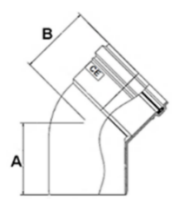


| Additional Flue Ancillary Items | | |
|---------------------------------|------------------------------------|-------------------|
| Item No. | Description | Dimensions |
| LV310718B | EXTENSION - Ø80mm PP CUT TO LENGTH | 250mm |
| M85271B | EXTENSION Ø80mm PP CUT TO LENGTH | 500mm |
| M85272B | EXTENSION Ø80mm PP CUT TO LENGTH | 1000mm |
| LV310721B | EXTENSION - Ø80mm PP CUT TO LENGTH | 2000mm |
| LV310722B | EXTENSION - Ø80mm PP TELESCOPIC | 240-360mm |
| M85292B | BEND 45° 80mm PP | See Drawing Below |
| M85291B | BEND 90° 80mm PP | See Drawing Below |
| M87191B | WALL CLAMP Ø80mm | N/A |

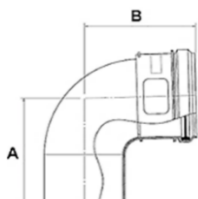
| CPM CONVENTIONAL FLUE ASSEMBLY MODELS CPM96, CPM116 | | | | |
|---|--|-------------|-------|--------|
| Item No | Description | No Required | CPM96 | CPM116 |
| LV304872B | APPLIANCE AIR INTAKE GUARD Ø100/150mm | 1 | 11.6 | 16.8 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| Maximum resistance in the flue system ≤200pa | | Total | 64.9 | 94.06 |

| CPM CONVENTIONAL FLUE ASSEMBLY MODELS CPM144, CPM175 | | | | |
|--|-------------------------------------|-------------|--------|--------|
| Item No | Description | No Required | CPM144 | CPM175 |
| M81660 | APPLIANCE AIR INLET GUARD Ø130mm | 1 | 8.7 | 12.6 |
| LM410084006 | VERTICAL TERMINAL - 130MM PP | 1 | 38.8 | 38.8 |
| Maximum resistance in the flue system ≤200pa | | Total | 47.5 | 51.4 |

| Additional Flue Ancillary Items | | |
|---------------------------------|---------------------|------------|
| Item No | Description | Dimensions |
| M70242 | EXTENSION Ø130mm PP | 1000mm |
| M70251 | BEND 90° PP | 130mm |
| M70252 | BEND 45° PP | 130mm |
| M87195 | WALL CLAMP | 130mm |



CPM58-CPM77
A=72.5mm, B=72.5mm
CPM96-CPM116
A=78mm,
B=65mm



CPM58-CPM77
A=110mm,
B=110mm
CPM96-CPM116
A=78mm,
B=65mm

| Item | Size (mm) | Resistance (Pa) | | | | | |
|---------------------------|-----------|-----------------|--------|--------|---------|---------|---------|
| | | CPM 58 | CPM 77 | CPM 96 | CPM 116 | CPM 144 | CPM 175 |
| Straight tube (per metre) | 80 | 4.0 | 7.1 | X | X | n/a | n/a |
| Straight tube (per metre) | 100 | 1.1 | 2.0 | 3.0 | 4.4 | n/a | n/a |
| Straight tube (per metre) | 130 | 0.3 | 0.5 | 0.7 | 1.1 | 1.7 | 2.4 |
| 45° Elbow | 80 | 3.7 | 6.5 | X | X | n/a | n/a |
| 45° Elbow | 100 | 2.5 | 4.4 | 6.8 | 9.9 | n/a | n/a |
| 45° Elbow | 130 | 0.5 | 0.9 | 1.4 | 2.0 | 3.0 | 4.4 |
| 90° Elbow | 80 | 8.7 | 15.6 | X | X | n/a | n/a |
| 90° Elbow | 100 | 4.0 | 7.1 | 11.0 | 16.0 | n/a | n/a |
| 90° Elbow | 130 | 1.2 | 2.1 | 3.2 | 4.7 | 7.2 | 10.5 |
| Vertical single terminal | | - | - | - | - | 38.8 | 38.8 |

To be used for Lochinvar supplied M&G air inlet system components resistance only

Use the table below to calculate the flue system resistance.

| Item | Quantity | Resistance | Total |
|---|----------|------------|-------|
| Straight tube (m) | | | |
| 45° Elbow | | | |
| 90° Elbow | | | |
| Concentric Vertical terminal | | | |
| Total Resistance flue exhaust (Pa) | | | |



Total calculated system resistance must be less than 200pa

In general, boilers are certified with their own purpose supplied Concentric or Twin Pipe flue systems, C63 certified appliances allow the installer to use other flue systems when installing the boiler however, they must be of a suitable minimum standard as per table below.

| CE string Flue gas material | European standard | Temperature class | Pressure class | Resistance to condensate | Corrosion resistance class | Metal: liner specifications | Soot fire resistance class | Distance to combustible material | Plastics: | Plastics: fire behaviour | Plastics: |
|-----------------------------|-------------------|-------------------|----------------|--------------------------|----------------------------|-----------------------------|----------------------------|----------------------------------|-----------|--------------------------|-----------|
| min. eis PP | EN 14471 | T120 | P1 | W | 1 | n/a | O | 30 | I of E | C/E | L |
| min. eis RVS | EN 1856-1 | T120 | P1 | W | 1 | L20040 | O | 40 | n/a | n/a | n/a |

| Material | Boiler | d _{nom} | D _{outside} | d _{inside} | Linsert |
|----------|---------------|------------------|----------------------|---------------------|------------|
| SS | CPM58-CPM77 | 80 | 80 +0,3/ -0,7 | 81 +0,3/ -0,3 | 50 +2/ -2 |
| SS | CPM96-CPM116 | 100 | 100 +0,3/ -0,7 | 101 +0,3/ -0,3 | 50 +2/ -2 |
| SS | CPM144-CPM175 | 130 | 130 +0,3/ -0,7 | 131 +0,5/ -0,5 | 50 +2/ -2 |
| PP | CPM58-CPM77 | 80 | 80 +0,6/ -0,6 | | 50 +20/ -2 |
| PP | CPM96-CPM116 | 100 | 100 +0,6/ -0,6 | | 50 +20/ -2 |
| PP | CPM144-CPM175 | 130 | 130 +0,9/ -0,9 | | 50 +20/ -2 |



Aluminium flue pipe must not be used on this appliance as it may lead to premature failure of the heat exchanger and will invalidate the warranty.

COMMON FLUE SYSTEMS

Lochinvar can supply a PP common flue header see separate guide available at www.lochinvar.ltd.uk

Alternatively the installer can use a flue installation specialist to design and supply a separate flue system under the flue designation C63 using the specifications shown on page 13 and information in the table below.

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 boiler, must be taken into account. 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.

| | CPM 58 | CPM 77 | CPM 96 | CPM 116 | CPM 144 | CPM 175 |
|---|--------|--------|--------|---------|---------|---------|
| Available pressure at the flue gas outlet | 200Pa | 200Pa | 200Pa | 200Pa | 200Pa | 200Pa |
| Flue Gas Mass Rate (G20) 96% (g/sec) | 22.6 | 29.8 | 37.1 | 45.1 | 55.6 | 67.3 |
| Flue Gas Mass Rate (G20) 25% (g/sec) | 5.7 | 7.5 | 9.3 | 11.3 | 13.9 | 16.8 |
| Flue Gas Mass Rate (G31) 96% (g/sec) | 23.2 | 30.6 | 38.8 | 46.2 | 57 | 69 |
| Flue Gas Mass Rate (G31) 25% (g/sec) | 5.8 | 7.7 | 9.7 | 11.6 | 14.3 | 17.3 |



The CPM boiler range does not have an internal Non Return Valve (NRV) as such any flue must be designed on zero or negative pressure unless a suitable NRV is fitted and if necessary interlocked to the appliance. Non Return Valves are included with the Lochinvar common flue header.

Blank



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