ELEMENT 4

INSTALLATION & USER MANUAL

POWERFAN MKII

PLEASE LEAVE THIS MANUAL WITH THE FIREPLACE FOR FUTURE REFERANCE


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LISTED
US

PREFACE

Congratulations on the purchase of your Element 4 PowerFan MKII. The PowerFan is designed to safely discharge flue gases.

The PowerFan makes it possible to use long horizontal stretches and even down-flow configurations.

Read this manual carefully and instruct your customer about the operation and maintenance / inspection of the PowerFan. Leave this manual with the device for future references.

The PowerFan may only be installed by a qualified installer / dealer in accordance with the applicable guidelines at the time of installation.

DECLARATION

Hereby we declare that the product released by Element4 meets the essential requirements due to its design and construction.

Product
Flue gas fan

Type
Powerfan MkII

Applicable EC directives and specifications
BSEN 613: 2001 + A1: 2008
ANSI Z21.50 Edition: 2014/02/01 ED: 7; Err. 2015
CSA 2.22 Edition: 2014/02/01
CSA P.4.1: 2015 Ed.3

In connection with the ETL inspection, the PowerFan MkII should only be sold as a set and not as individual parts.

This declaration loses its validity when changes to the device are made without written permission of Element4. You can request a copy of the test certificate via info@element4.nl.

Jan Kempers
CEO

CONTENTS

1 INSTALLATION

1.1 Delivery check

Note: Check the PowerFan for transport damage before first use and report any damage to your supplier immediately.

Make sure the following parts are included
- PowerFan MkII
- PowerFan module
- PowerFan module connection cables
- 220 volt connection cable
- Adapter / splitter
- 2x Wall terminal Ø4in / 100mm
- Installation manual

1.2 Points of attention during installation

Note: The PowerFan must be accessible at all times for service and inspection. It should be mentioned here that the regular service hatch of Element 4 (BDLE4) is not sufficient for the size of the PowerFan MkII. The installer must make a provision for this himself. ***Figure 1.1***.

It is recommended that the PowerFan MkII be placed in a room that is large enough for the PowerFan to be removed without having to interrupt the conversion.

Avoid extreme, wind-sensitive positions for the flue gas outlet, since this can lead to annoying shutdowns of the system (See also **CHAPTER 2**).

NB: A minimum distance of two meters from the fireplace is required to prevent the fan from malfunctioning.

The PowerFan does not require any additional maintenance, but an annual inspection is recommended. Provide the installation with removable connections on the PowerFan. This facilitates the disassembly of the motor or circuit board.

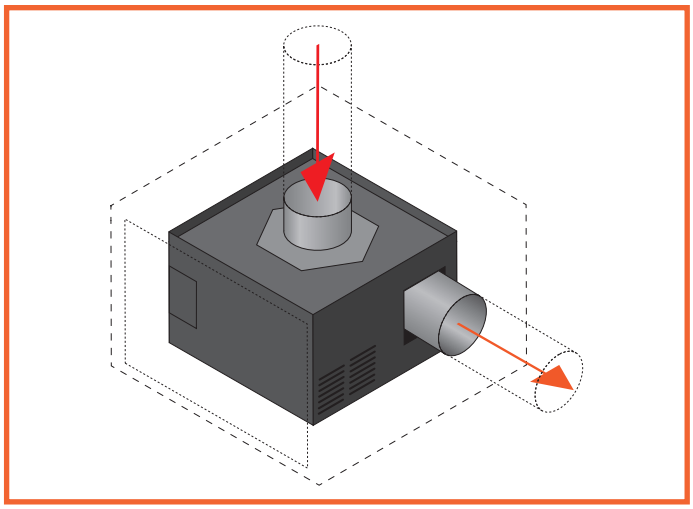

Figure 1.1 - Service area around the PowerFan MkII

1.3 Assembly

The PowerFan has three mounting brackets. For the PowerFan to function properly, it makes no difference how the outlet is positioned ***(Figure 1.2)***.

Make sure the PowerFan brackets are not tightened too tightly to prevent resonance of the casing, for unnecessary noise.

Note: Preferably use rubber vibration dampers (not supplied by Element4) between the PowerFan and the wall to prevent resonance.

The inside of the fan is equipped with rubber suspension for more flexibility.

1.3.1 Mounting PowerFan Module

The module ensures that communication can occur between the fireplace and PowerFan. The cable required for this is supplied with the PowerFan. See ***Figure 1.3***.

When the PowerFan is not connected to the receiver of the fireplace, it will function as a regular fan when connected to the socket. It is therefore important to check that the PowerFan is correctly connected. When the fire is off, the fan must also be off.

1.3.2 Assembly flue material

Ensure that all connections of the individual flue parts are closed. Leakage will adversely affect the operation of the PowerFan and cause the fire to switch off.

Note: Element4 cannot be held liable for leaks of flue poured into concrete or buried flue.

1.3.3 Power connection

The PowerFan is equipped with a service plug. For the power supply, a 120VAC - 60Hz wall socket must be mounted within a range of 3'3" / 1 meter from the PowerFan.

1.3.4 PowerFan cable

The cable must not come into contact with the flue material. The standard length is 65'7.5"/20 meters, this can be replaced by a longer cable.

1.4 Flue material

The PowerFan can be connected with the following brands of flue gas pipes.

Concentric

4"/ 10mm round metal single wall pipe by the following manufacturers:

- Duravent
- Selkirk
- ICC Industrial Chimney
- Hart & Cooley Inc.
- Olympia Chimney Supply Inc.

Single walled

Between adapter and PowerFan & PowerFan and terminations

- Flexible tube
- Rigid tube

Of the following manufacturers

- Duravent
- Selkirk
- ICC Industrial Chimney
- Hart & Cooley Inc.
- Olympia Chimney Supply Inc.

Ensure that the used flue materials meet the requirements for the conditions of use specified in this manual. The performance declaration provides more information on this (see ***Table 1.1***).

EN1856-1 T600 N1 D Vm L50040 G0

EN1856-1	=	Norm number
T600	=	Temperature class
N1	=	Pressure density N = Under pressure P = Over pressure H = High over pressure
D	=	Condensation resistance D = Dry W = Wet
Vm L50040	=	Corrossion class + material types Thickness of the inner flue
G0	=	Chimney fire resistancy (G = Yes, 0 = No) Distance to flammable material (in mm)

Table 1.1

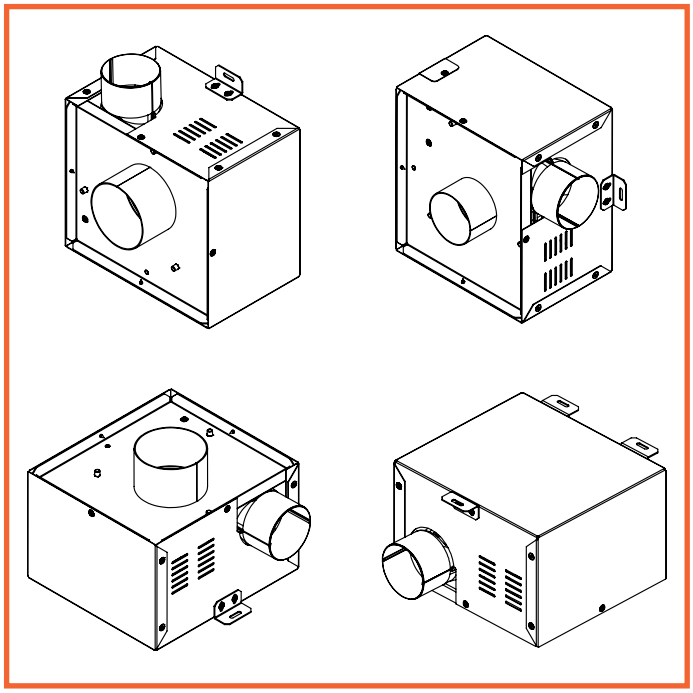

Figure 1.2 - Mounting possibilities PF MkII

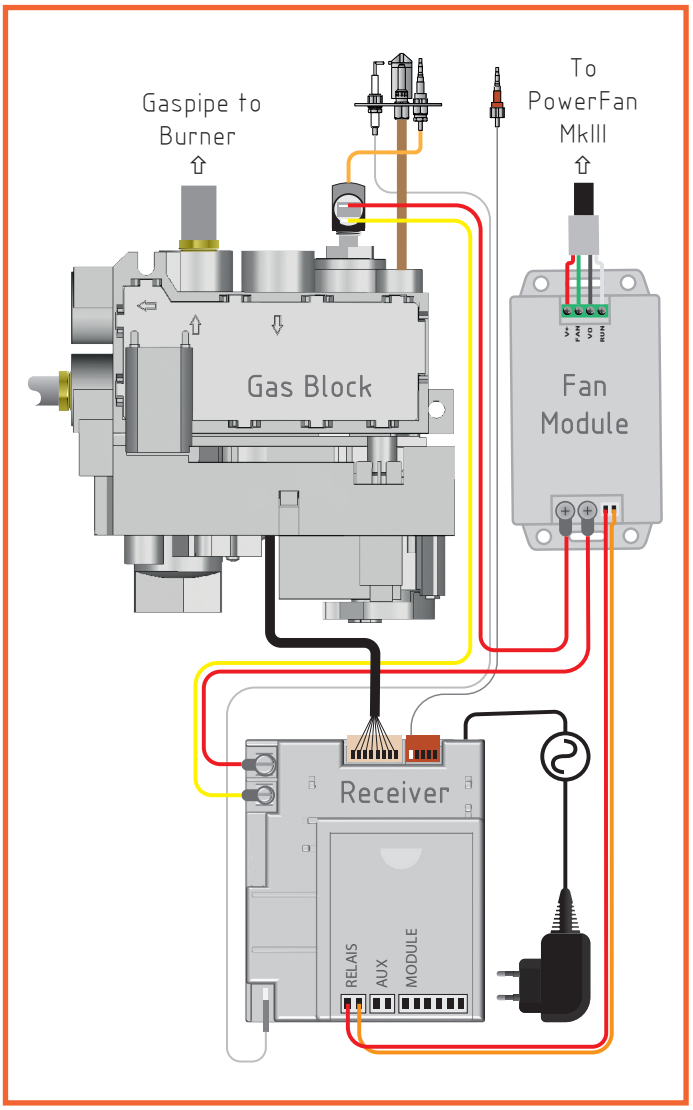

Figure 1.3 - Connection scheme PowerFan MkII

1.5 Terminals

For the proper functioning of your PowerFan, the supply of air and the discharge of combustion gases must not be impeded. You can end up both horizontally (by means of a wall terminal) and vertically (by means of a roof terminal).

Note: Due to the mechanical discharge of the flue gases, it is not necessary for the combustion air supply and the flue gas discharge to end up in the same pressure range.

Two identical horizontal outlets are supplied as standard. The outlet position must at all times comply with local regulations regarding nuisance and ventilation openings. For other outlets, these regulations must also be taken into account.

1.5.1 Distance between outlets

When opening into the same horizontal outlet area, the following distances must be observed, with regard to the outlets of supply air and flue gas discharge (see also ***figures 1.4*** and ***-1.5***);

D_h = Horizontal distance = at least 12"/ 30 cm
D_v = Vertical distance = minimum 6"/ 15 cm, whereby a partition must be used to prevent mixing of combustion air (blue arrow) and flue gases (red arrow).

In the case of a vertical outlet, both for supply (Ø4"/100mm) and discharge (Ø3.15"/80mm) one must create a feed-through with approved regular flueage materials, as shown in ***figures 1.6*** and ***Figure 1.7,*** where **A** is air inlet, **B1** and **B2** are exhaust pipes and **C** is the possible concentric flue used before splitting.

The distance between inlet and exhaust terminal must be 30 cm / 1 foot apart and the exhaust terminal must be situated higher than the inlet by also 30 cm / 1 foot.

Pay attention:
Never terminate flue gasses under the fresh air supply, when both terminals are on the same wall.

Make sure that both outlets are at least 12"/ 30 centimeters from the ground level and that there is no way to block the openings.

For all distances regarding termination, please see **CHAPTER 2**.

NOTE: Local codes or regulations may require different clearances than the onces mentioned in the next chapter.

NOTE: Location of the vent termination must not intervere with access to the electrical service. Fire safety

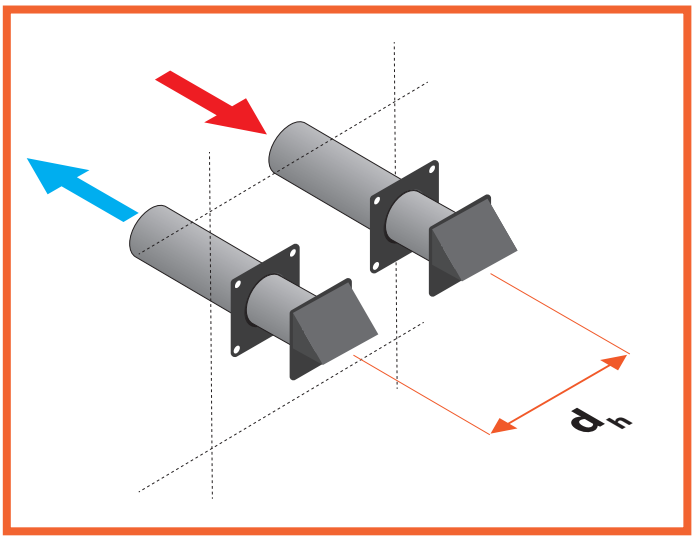

Figure 1.4 - Verticale afstand tussen uitmondingen

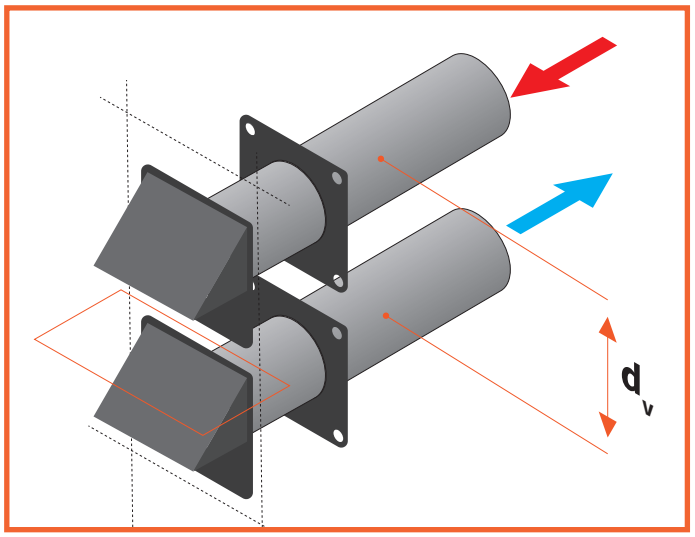

Figure 1.5 - Horizontal distance between terminals

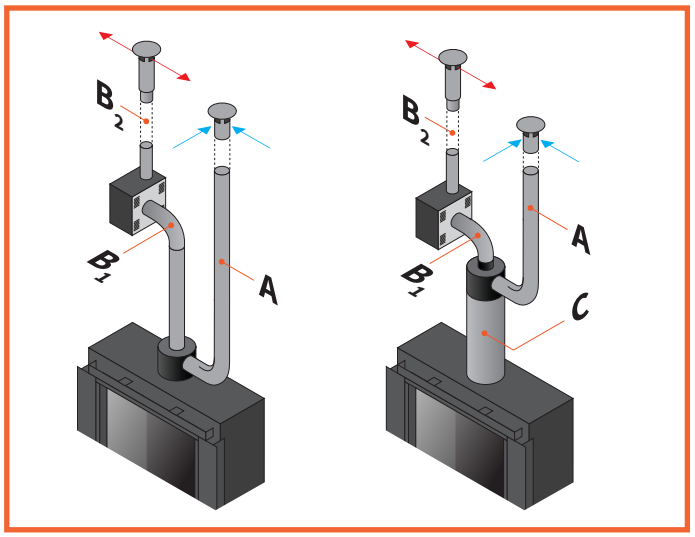

Figure 1.6 - Vertical terminals

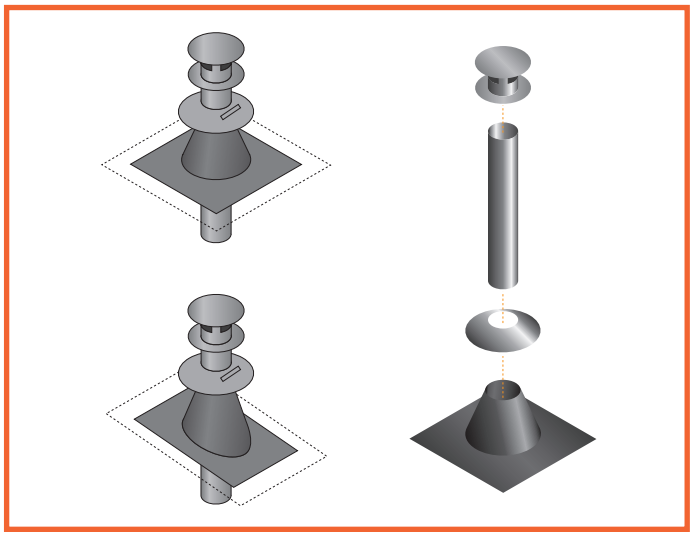

Figure 1.7 - Roof terminal supplies

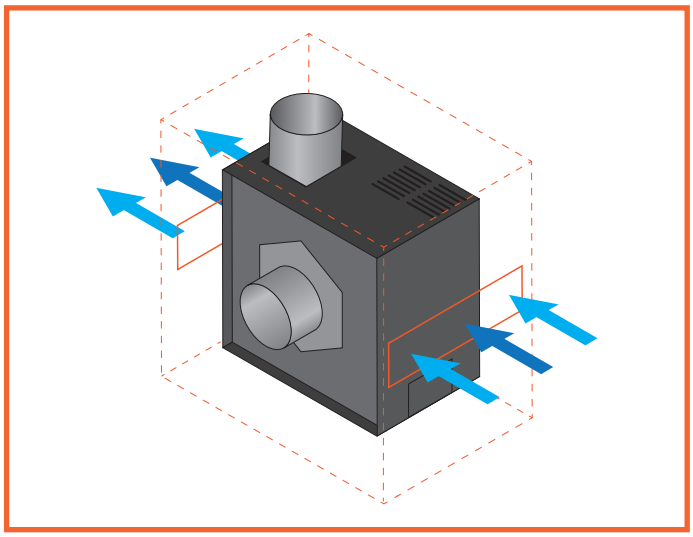

Figure 1.8 - Ventilation around PowerFan MkII

1.5.2 Installation of the PowerFan

Always provide a free space around the PowerFan with a minimum of 4"/100mm. Take extra account of distance with regard to combustible materials and ventilation. When the PowerFan is placed in an enclosure, the necessary ventilation openings must be made in the enclosure (See ***Figure 1.8***).

Note: Provide the enclosure with at least 2 gratings with a free passage of 0.155 $inch^2$/100mm^2 per grid.

1.5.3 Flue material

Single-walled flue material must always be covered with non-combustible building materials. In all other cases, concentric flue material must always be used. Concentric flue material can also be used, whereby the outer casing serves as an insulation and ventilation option for the inner pipe.

Note: Please make sure that no heat bridges can occur by brackets around the concentric or single-tube material.

2 LOCATION OF TERMINALS

	Clearance	U.S. Minimum		Canadian Minimum	
		Inches	mm**	Inches	mm*
A	Clearance above the grade, a veranda, porch, deck, or balcony.	12	305	12	305*
B	Clearance to window or door that may be opened.	24	610	24	610
C	Clearance to permanently closed window.	9	229	12	305
D	Vertical clearance to ventilated soffit located above the termination within a horizontal distance of 2 ft. (61 cm) from the center line of the termination.	18	458	18	458
E	Clearance to an unventilated soffit.	12	305	12	305
F	Clearance to an outside corner.	24	610	24	610
G	Clearance to an inside corner.	24	610	24	610
H	Clearance to each side of centerline of gas meter/regulator assembly.	36	915	36	915
I	Clearance to a service regulator vent outlet.	36	915**	36	915*
J	Clearance to non-mechanical air supply inlet into building or the combustion air inlet to any other appliance.	9	228**	12	305
K	Clearance to mechanical (powered) air supply inlet.	36	915**	72	1830
L	Clearance above a paved sidewalk or paved driveway located on public property.	84	2134**	84	2134
M	Clearance under veranda, porch, deck or balcony.	12	305 (4)	12	305 (4)
N	Maximum Depth of Alcove	36	915**	36	915*
O	Clearance to Termination (Alcove)	6	152**	6	152*
P	Minimum Width of Alcove	36	915*	36	915*
Q	Clearance to Combustible Above (Alcove)	18	458**	18	458*
R	Minimum horizontal distance between air supply inlet and terminal.	9	228	12	305
S	Distance horizontal terminal to soffit	6	152	6	152
T	Distance horizontal terminal to top of exterior wall	18	458	18	458

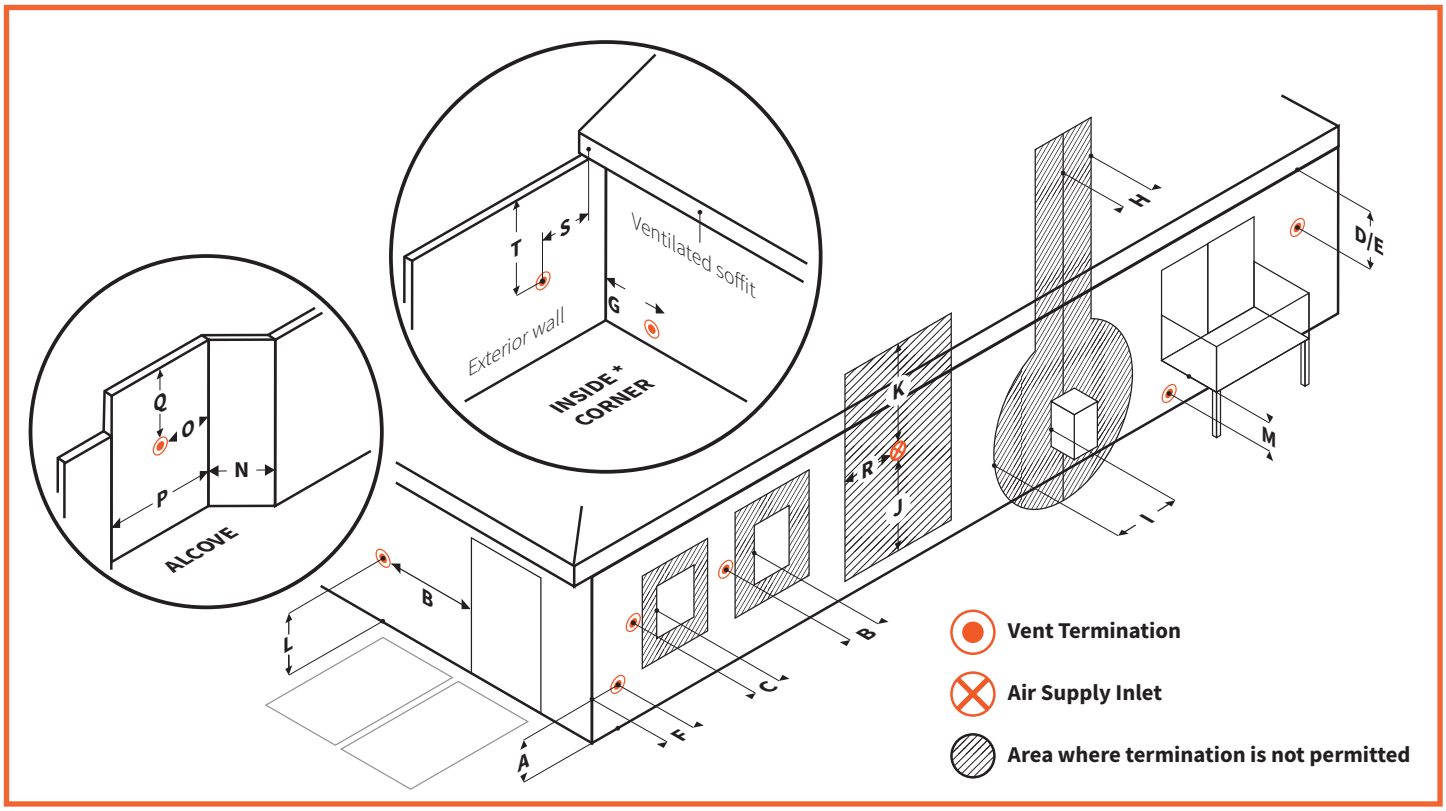

Figure 2.1 - Wall terminal location

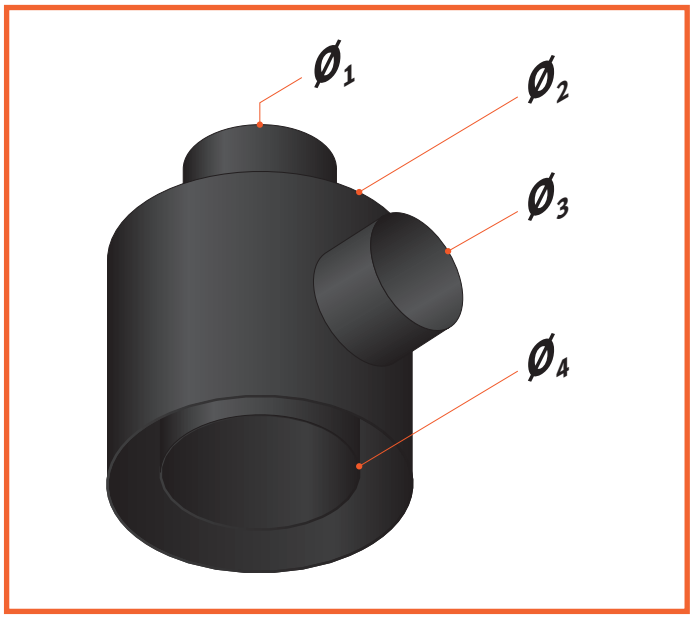

Figure 3.1 - Adapter 200/130

	Adapter 200/130	
	Inches (")	**Millimeters (mm)**
Ø1	Ø 4"	Ø 100 mm
Ø2	Ø 8"	Ø 200 mm
Ø3	Ø 4"	Ø 100 mm
Ø4	Ø 5 ⅛"	Ø 130 mm

Table 3.1 - Measurements adapter

3 FLUE SYSTEM

3.1 Flue configurations

The PowerFan MkII is a very flexible solution for difficult flue situations for all Element4 fireplaces. By making use of a separate air supply and flue gas discharge, you can achieve the desired flue situation in many ways.

In this chapter these different options are explained, in what ways the flue situation can be carried out.
The following applies to all construction options in **chapter 3.2** (see also accompanying ***figures 3.2*** to ***3.8***):

- **A** = Combustion air supply channel
  Pipe diameter **A** is Ø100 mm
- **B_1** = Flue gas outlet
  Pipe diameter **B_1** is Ø4"/ 100 mm
- **B_2** = Flue gas outlet
  Pipe diameter **B_2** is Ø3.14" / 80 mm
- **C** = Concentric channel
  Diameter is Ø8"/5" or 200/130 mm
  Ø6"/4" or 150/100 mm

Note: In the event that a PowerFan MkII is applied to a fireplace with a Ø6"/4" or Ø150/100mm flue connection, the flue must be increased to Ø8"/5" or Ø200/130mm on the supplied adapter or a separate Ø6"/4" or Ø150/100mm concentric splitter must be used . The latter component is not provided by Element4. (***Image 3.1*** and ***table 3.1***)

(1) = Terminal area 1
(2) = Terminal area 2

Chapter 3.3 explains how the above-mentioned lengths can be calculated for each construction situation.

Because not every flue configuration is completely straight, bends must often be used. When the PowerFan MkII is used, the flue configuration is often a special case. **Chapter 3.4** explains the effect of the bends and also of a negative flue on the length of your flue configuration.

In **chapter 3.5** you will find a calculation method for calculating the flue configuration. Where necessary, you can always consult the manufacturer in exceptional situations.

* In conformance with the current CAN/CGA B149 Gas Installation Code

** In conformance with the current ANSI Z223.1/ NFPA 54 National Fuel Gas Codes

A vent shall not terminate directly above a sidewalk or paved driveway which is located between two single family dwellings and serves both dwellings

(4) Permitted ONLY if veranda, porch, deck or balcony is fully open on a minimum of two sides below the floor.

3.2 Configurations

With the PowerFan MkII, the discharge of the fireplace can be constructed in two ways, respectively directly with separate supply and discharge and with a (partially) concentric structure.

Below a more detailed explanation of the different mounting systems.

3.2.1 Configuration 1
Separate air supply and flue gas discharge directly on the fireplace.

Supply and discharge are split directly on the fireplace by means of the included splitter. The combustion air and flue gases can be individually guided with a rigid or flexible tube to the desired terminal area. This can be the same area for both terminals, but both can also end into a different area. See also ***figures 3.2*** to ***3.4*** for various variations of this mounting system.

Components
In system 1 we recognize the following components

A = Supply of combustion air
B = Flue gas discharge, where $\mathbf{B_1}$ is the part before the PowerFan and $\mathbf{B_2}$ is the part after.

(1) = Terminal area 1
(2) = Terminal area 2

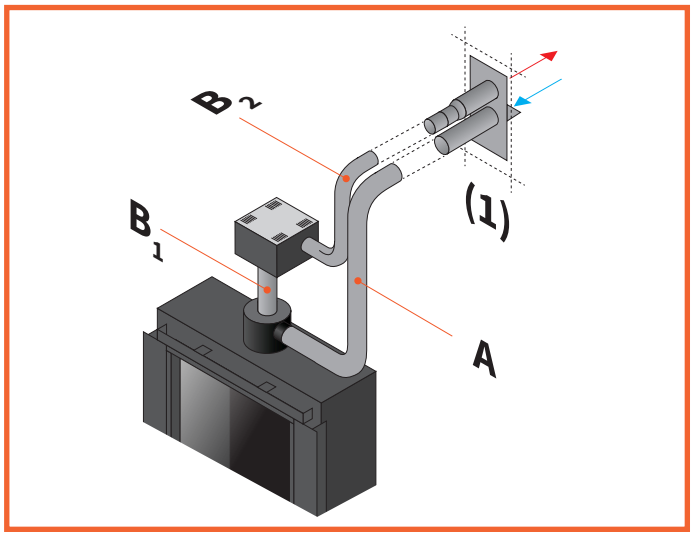

Figure 3.2 - Adapter directly on the fireplace and with horizontal terminal in the same area

3.2.2 Configuration 2
(partial) concentric flue configuration.

In this situation the flue (partially) is carried out with a regular concentric tube, after which the flue is split by means of the included adapter. The combustion air and flue gases can be led individually with a rigid or flexible tube to the desired terminal area. This can be the same discharge area for both terminals, but both can also lead to a different area. See ***figures 3.5*** to ***3.9*** for different variations of this construction system.

Components
In system 2 we recognize the following components

A = Supply of combustion air
B = Flue gas discharge, where $\mathbf{B_1}$ is the part before the PowerFan and $\mathbf{B_2}$ is the part after.
C = Concentric tube Ø8"/5" or Ø200/130mm (or Ø6"/4" or Ø150/100mm)

(1) = Terminal area 1
(2) = Terminalarea 2

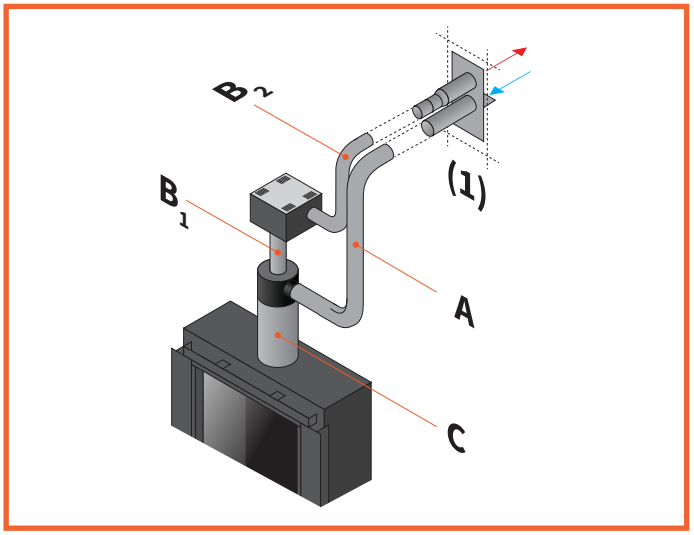

Figure 3.5 - (Partial) concentric flue configuration with horizontal terminal in the same area

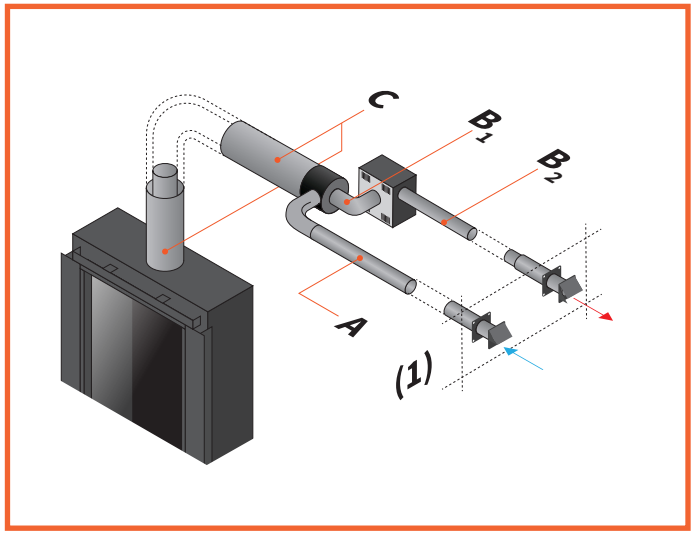

Figure 3.8 - (Partial) concentric flue configuration with horizontal terminal in the same area (II)

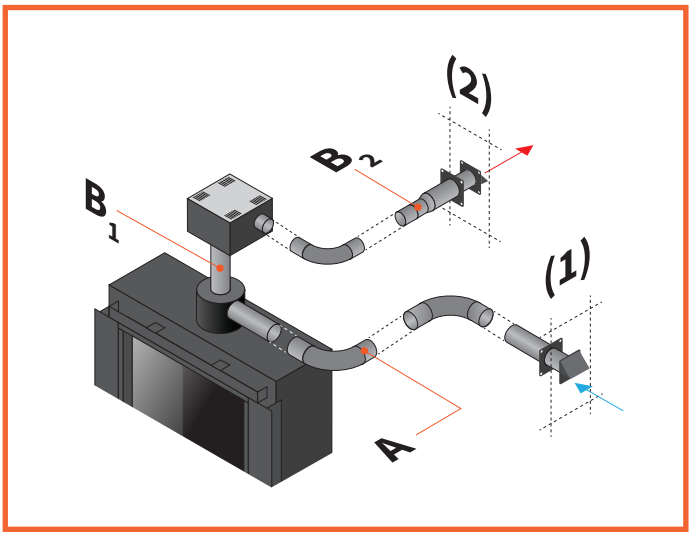

Figure 3.3 - Adapter directly on the fireplace and with horizontal terminal in a different area

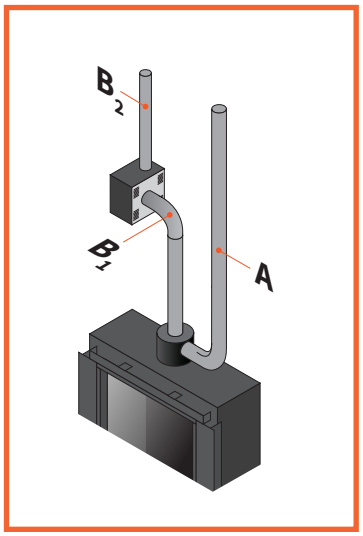

Figure 3.4 - Roof terminal with direct split by adapter

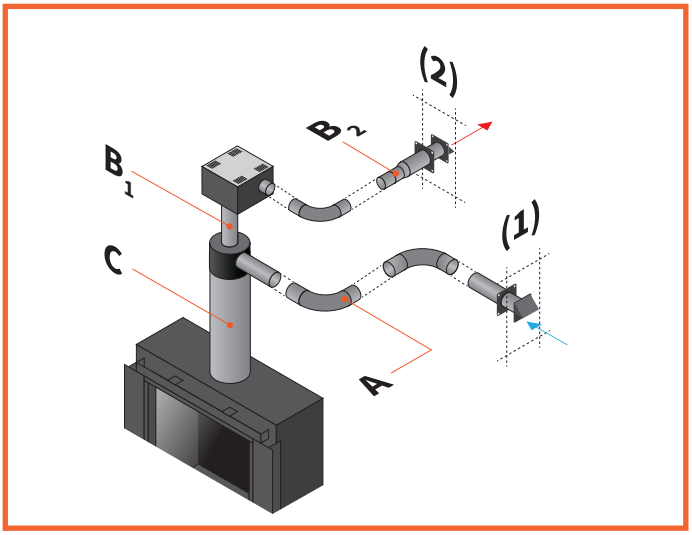

Figure 3.6 - (Partial) concentric flue configuration with horizontal terminal in a different area

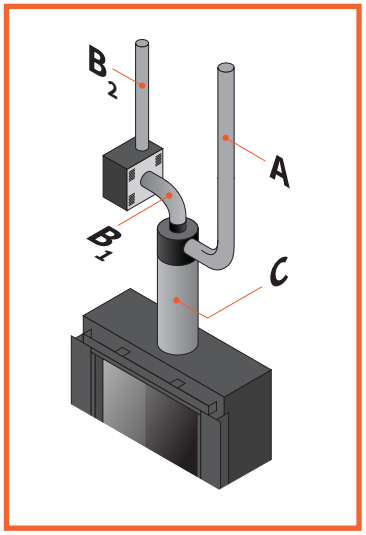

Figure 3.7 - Roof terminal with (partial) concentric flue

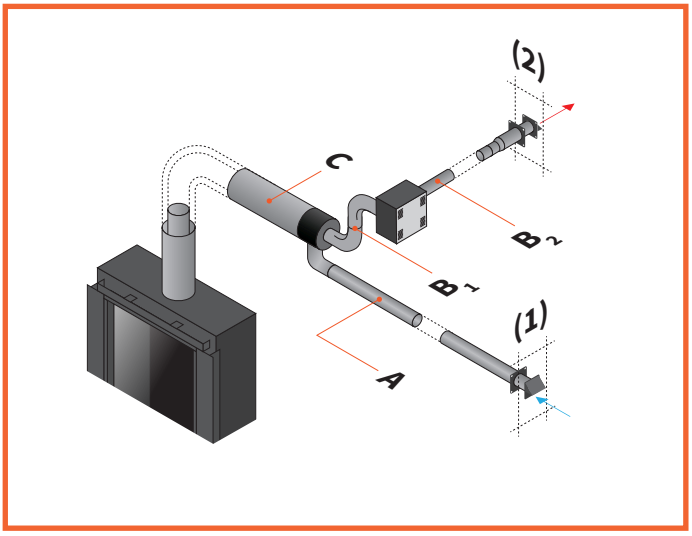

Figure 3.9 - (Partial) concentric flue configuration with horizontal terminal in a different area (II)

3.3 Calculating the length of the flue

3.3.1 Flue construction - type 1

Immediate split supply and removal (See ***figure 3.10***)

Maximum discharge lengths for the
When air supply and flue gas discharge are split directly on the fireplace, the total length of both may cover 130 feet /40 meters with the following requirements per part:

L = max. 65 feet or 20 m
D = min. 7 feet or 2.0 m
And
(1) = Terminal

3.3.2 Flue construction - type 2

(Partly) Concentric tube

When working with a concentric tube before the supply and discharge are split, the total length of supply and discharge can be 98 feet/ 30 meters. In ***figure 3.11*** to ***3.13***. You will see three options that fall under type 2.

Each option is explained further below

Flue lengths for construction - type 2.1

Maximum length of the concentric tube Ø8"/5" (200/130mm) (***Figure 3.11***)

In this situation, the flue situation is carried out almost completely concentrically, with the supply and discharge being split just before the outlet. ***Figure 3.11*** serves as a reference for the minimum and maximum lengths for this construction situation, where

K = max. 98 feet or 30 meters
And
(1) = Terminal

Also in this situation it holds that the length of the flue before the PowerFan must be at least 7 feet / 2 meters i.v.m. possible damage.

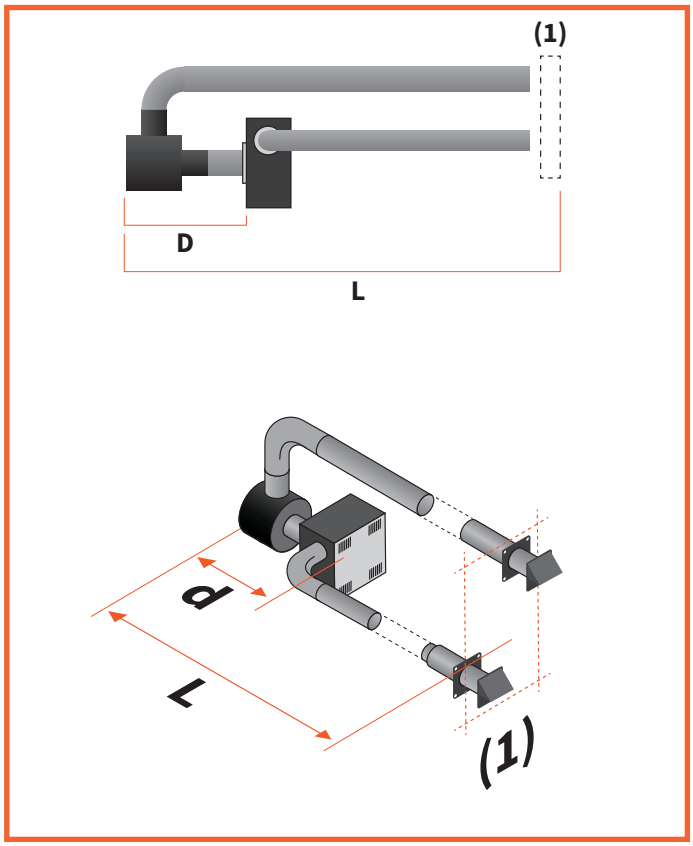

Figure 3.10- Flue construction - type 1

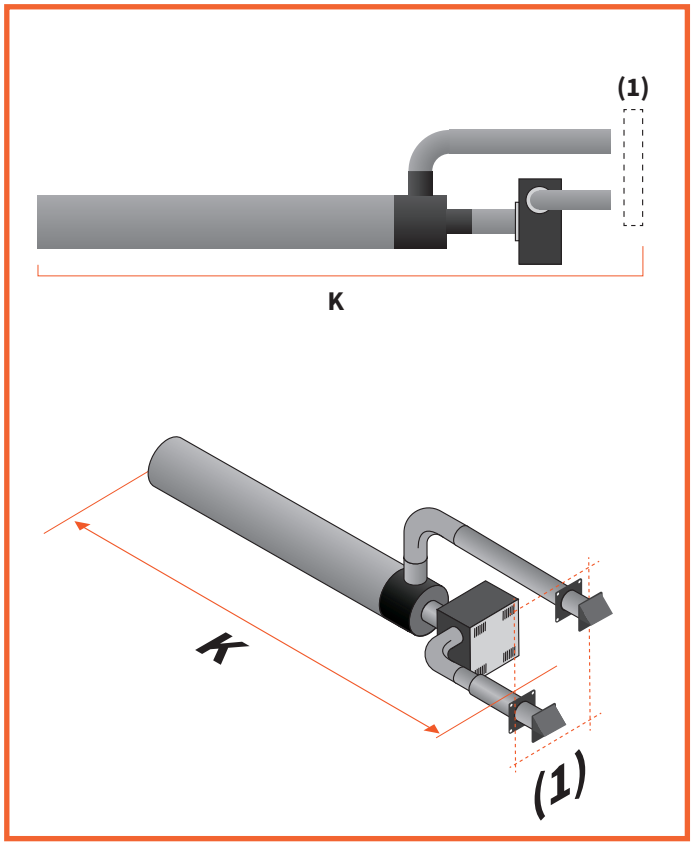

Figure 3.11 - Flue construction - type 2.1

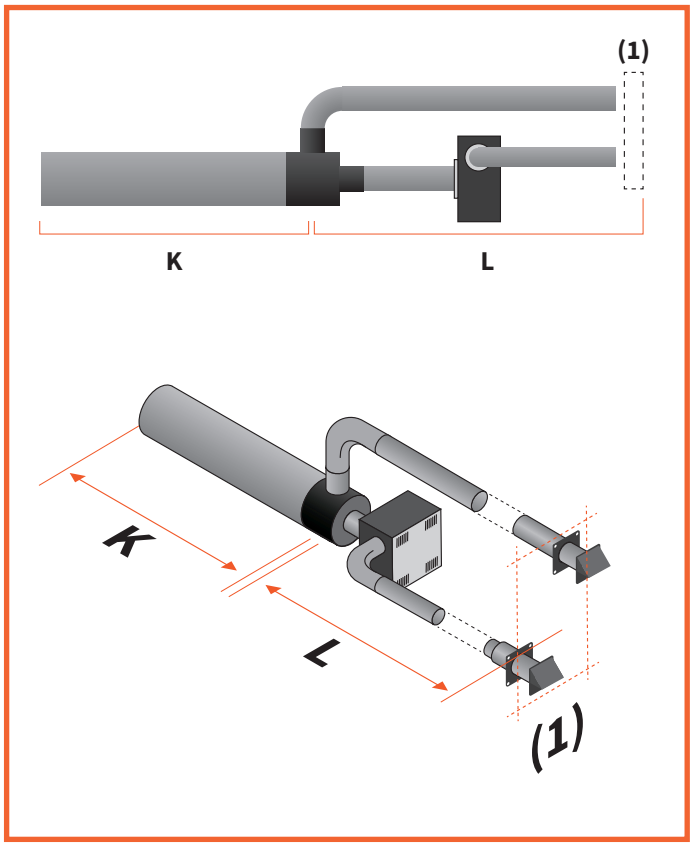

Figure 3.12 - Flue construction - type 2.2

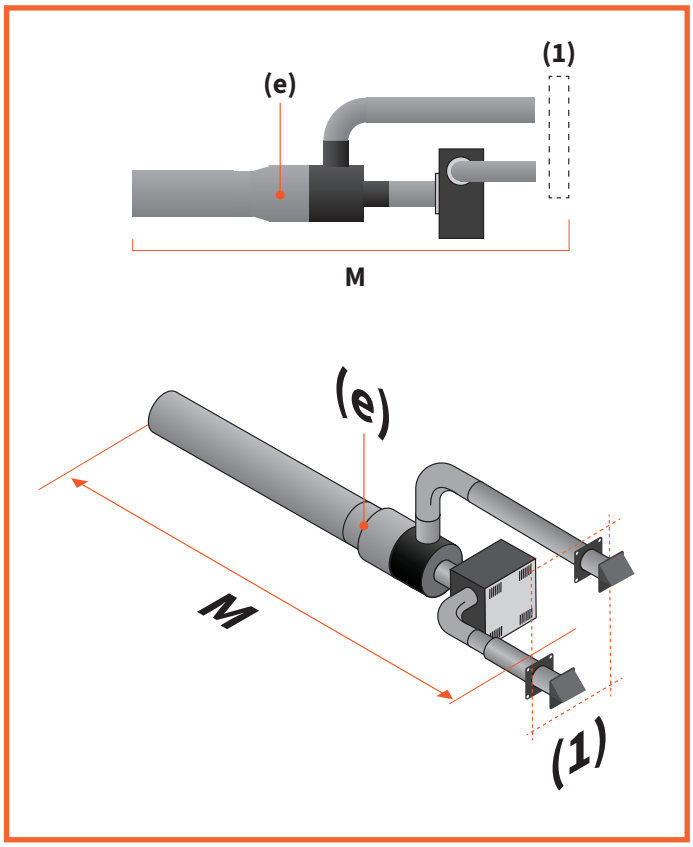

Figure 3.13 - Flue construction - type 2.3

Flue lengths construction - type 2.2
Partial concentric flue - size Ø8"/5" (200/130mmm)
(See ***figure 3.12***)

In this situation, a part of the flue is executed concentrically, after which the supply and discharge are split and end up separately. ***Figure 3.12*** serves as a reference for the minimum and maximum lengths for this construction situation, where

K + **L** = Total flue length
at which
K = max. 98 feet /30 meters
L = 65 - 2/3 * **K** feet or 20 - 2/3 * **K** meters
And
(1) = Terminal

Method
First calculate the length of the concentric part of the flue. Don't forget to include the extra resistance of bends and any negative flue lengths. Then read in table 3.2 the maximum length of your split supply and discharge.

Flue lengths construction - type 2.3
(Partial) Concentric flue - flue size Ø6"/4" (Ø150/100mm)
(See ***Figure 3.13***)

In this situation, (a part of) the flue is executed concentrically in Ø6"/4" (Ø150/100mm), after which the supply and discharge are split and end up separately.

Note: This flueage situation should be seen as if the fireplace is being split directly.

If the Ø6"/4" (Ø150/100mm) flue is used, it must be enlarged before it can be connected to the adapter.

Figure 3.13 serves as a reference for the maximum lengths for this construction situation, where;

M = max. 65 feet / 20 meters
And
(e) = Enlarger
(1) = Transit

Also in this situation it holds that the length of the flue before the PowerFan must be at least 7 feet / 2 meters i.v.m. possible damage.

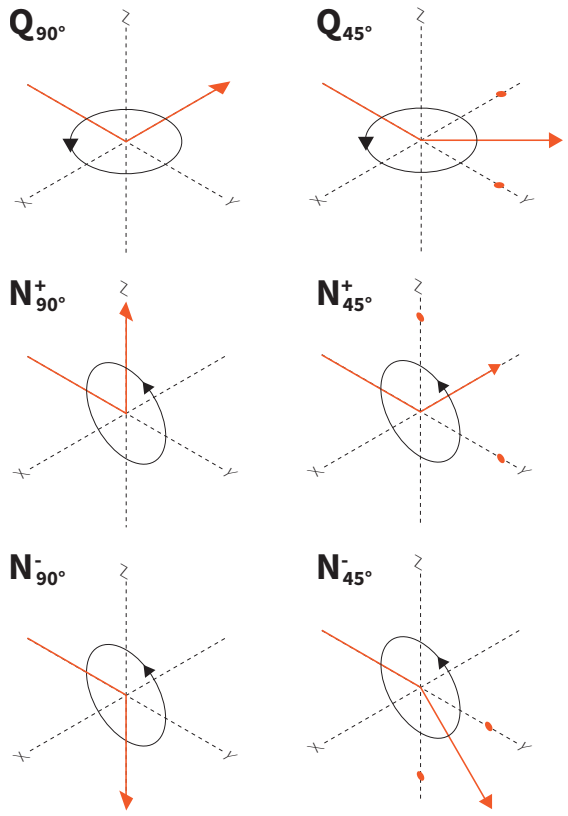

Figure 3.14 - Bend directions for extra resistance calculation

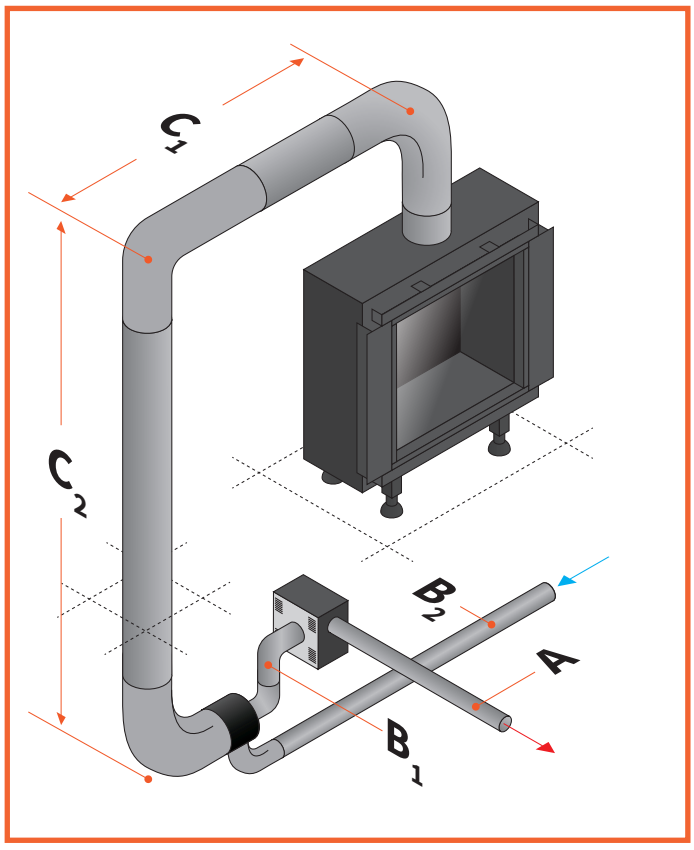

Figure 3.15 - Example setup of negative vertical flue

3.4 Extra resistance in the channel

As with a regular, non-mechanical flue situation, adding bends in the flue configuration of the PowerFan also provides extra resistance. These bends must be taken into account by counting them as an extra flue length.

There are two types of bends that may occur in a flue situation.

- **N**-bends
  Curves from the vertical plane to the horizontal plane
  or
  Curves from the horizontal to the vertical.

- **Q**-bends
  Curves in the horizontal plane

With these two bends, there are three situations that can offer extra resistance to your flue (***Figure 3.14***).

- **Q**-bends (both **90°** and **45°**) are calculated as a 20"/ 0.5 meter discharge length.
- Positive **N**-bends (both **90°** and **45°**) are calculated as a 10"/ 0.25 meter discharge length.

After a negative **N**-bend, that is, an **N**-bend after which the flue goes down vertically (**N**-), the entire discharge length must be counted twice until it bends again to the horizontal plane or rises again. (***Figure 3.15***.)

So for $\mathbf{C_2}$, every meter counts for 7 feet / 2 meters.

The calculated extra resistance of the bends applies to all superstructure systems.

3.5 Sample flue configuration calculation

Step 1
Consider which flue configuration is required

Step 2
Calculate the length of the desired concentric part (**C**) of your configuration.

Note: Do not forget to include the bends and negative flue in your calculation.

Step 3 - option a
Then calculate the desired lengths from supply to the adapter (**A**) and discharge from the adapter ($\mathbf{B_1}$) and ($\mathbf{B_2}$). For your convenience, always choose the longest of both. So you only have to calculate the length once.

Metric
Enter the formula "**L** = 20 - 2/3 * **K**" to see how long your supply and removal can be.

Imperial
Enter the formula "**L** = 65 - 2/3 * **K**" to see how long your supply and removal can be.

- **K** is the length of your concentric part.
- **L** is the maximum length of the supply and discharge

Step 3 - option b
Check whether the discharge lengths for the supply to - and the discharge from the adapter are permitted with the desired concentric length, by reading in ***table 3.2*** or ***table 3.3*** the maximum length of the remaining air supply / flue gas discharge (**L**) corresponding to the desired concentric length (**K**).

If **L** is less than or equal to the desired length, you can install your flue configuration without any problems.

Step 4
Add **K** and **L** to determine the full length of your flue.
For **K** and **L** together, this distance may never be longer than 30 meters and the Powerfan should be always minimum of two meters away from the fireplace (distance $\mathbf{B_1}$).

K	L	K	L	K	L
0 m	20 m	10,5 m	13 m	20,5 m	6,25 m
1 m	19,25 m	11 m	12,5 m	21 m	6 m
1,5 m	19 m	11,5 m	12,25 m	21,5 m	5,5 m
2 m	18,5 m	12 m	12 m	22 m	5,25 m
2,5 m	18,25 m	12,5 m	11,5 m	22,5 m	5 m
3 m	18 m	13 m	11,25 m	23 m	4,5 m
3,5 m	17,5 m	13,5 m	11 m	23,5 m	4,25 m
4 m	17,25 m	14 m	10,5 m	24 m	4 m
4,5 m	17 m	14,5 m	10,25 m	24,5 m	3,5 m
5 m	16,5 m	15 m	10 m	25 m	3,25 m
5,5 m	16,25 m	15,5 m	9,5 m	25,5 m	3 m
6 m	16 m	16 m	9,25 m	26 m	2,5 m
6,5 m	15,5 m	16,5 m	9 m	26,5 m	2,25 m
7 m	15,25 m	17 m	8,5 m	27 m	2 m
7,5 m	15 m	17,5 m	8,25 m	27,5 m	1,5 m
8 m	14,5 m	18 m	8 m	28 m	1,25 m
8,5 m	14,25 m	18,5 m	7,5 m	28,5 m	1 m
9 m	14 m	19 m	7,25 m	29 m	0,5 m
9,5 m	13,5 m	19,5 m	7 m	29,5 m	0,25 m
10 m	13,25 m	20 m	6,5 m	30 m	0 m

Table 3.2 - Permitted lengths for air supply and flue gas discharge L at concentric stretch K (Imperial)

K	L	K	L	K	L
0,0 ft	65 ft	36 ft	41 ft	69 ft	19 ft
3 ft	63 ft	39 ft	39 ft	72 ft	17 ft
6 ft	61 ft	43 ft	36 ft 4 in	75 ft	15 ft
10 ft	58 ft 4 in	46 ft	34 ft 4 in	78 ft	13 ft
13 ft	56 ft 4 in	49 ft	32 ft 4 in	82 ft	1 ft
16 ft	54 ft 4 in	53 ft	29 ft 8 in	85 ft	8 ft
20 ft	51 ft 8 in	56 ft	27 ft 8 in	88 ft	6 ft
23 ft	49 ft 8 in	59 ft	25 ft 8 in	92 ft	3 ft 6 in
26 ft	47 ft 8 in	62 ft	23 ft 6 in	95 ft	1 ft 6 in
29 ft	45 ft 6 in	65 ft	21 ft 6 in	98 ft	0 ft
33 ft	43 ft				

Table 3.3 - Permitted lengths for air supply and flue gas discharge L at concentric stretch K (Metric)

3.5.1 Example

Step 1

See the desired setup in ***Figure 3.16*** and ***Table 3.4.*** The first part of the flue is designed concentrically, after which the supply and flue are split. The supply is discharged directly via a wall outlet. The flue must open vertically through a roof.

Step 2

- Add all **K** stretches for the total concentric part.
- Count $\mathbf{K_3}$ double because it goes down.
- Don't forget to add the two positive $\mathbf{N^+}$ turns. You may neglect the negative turns $\mathbf{N^-}$, these are already included in the negative vertical stretch.

Imperial

- $\mathbf{K_1} + \mathbf{K_2} + 2^*\mathbf{K_3} + \mathbf{K_4} + 2^*\mathbf{N^+}$
  So
  1m + 1m + 2 * 4m + 4m + 2 * 0.25m = 15m

Metric

- $\mathbf{K_1} + \mathbf{K_2} + 2^*\mathbf{K_3} + \mathbf{K_4} + 2^*\mathbf{N^+}$
  So
  3'4"m + 3'4"m + 2 * 13'2"+ 13'2" + 2 * 10" = 47'10" max

Step 3

Now you know the length of the concentric part. Enter this in the formula as stated in

Imperial : "**L** = 20 - 2/3 * 15 = 10 m"
Metric : "**L** = 65 - 2/3 * 46 = 34 ft 4in"

Or

read **L** from ***table 3.2*** at "**K** = 15m"
or from ***table 3.3*** from the closest (lower) value, i.e. "**K** = 46 ft".

For **K** = 15 m, the value **L** = 10 or For **K** = 46 ft, the value **L** = 34ft 4in

Because the flue outlet is longer than the air supply, calculated from the adapter, we check whether this length meets the maximum permitted length.

- $\mathbf{L_1} + \mathbf{L_2} + \mathbf{L_3} + \mathbf{L_4} + \mathbf{L_5} + 2^*\mathbf{N^+}$
  So 0.25m + 0.25m + 6m + 0.5m + 0.5m + 2 * 0.25m = 8m
  or 10in + 10in + 20ft + 20in + 20in + 2 * 10in = 26ft 8in

The desired length is less than the maximum permitted length, so this setup was approved.

Step 4

Add **K** and **L** together to check that the full length of the flue is no more than 30 meters.

- 15 + 8 = 22m, so that's good.

Also check if the PowerFan is at least 7 ft / 2 meters away from the fireplace. This is also the case, so you can install the PowerFan without problems.

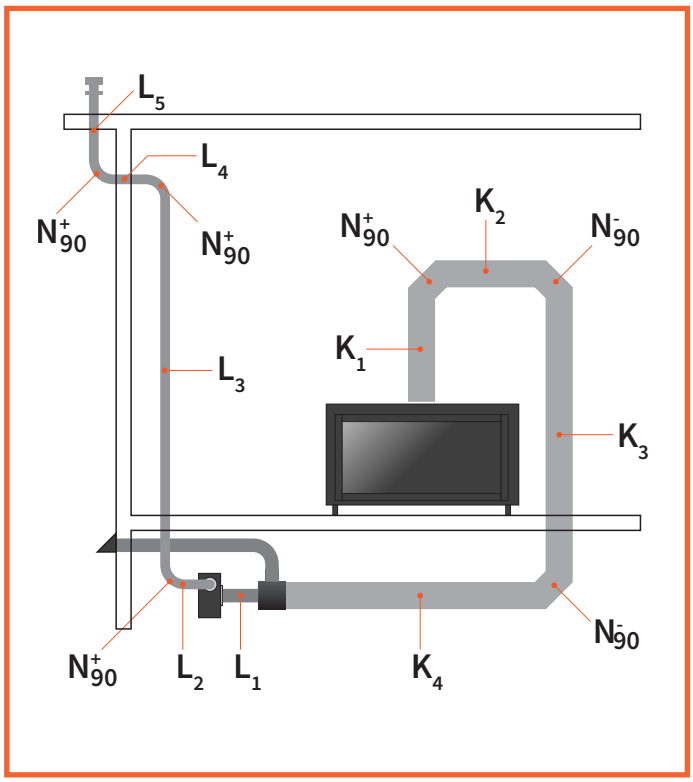

Figure 3.16 - Example setup negative flue

K_1	3'4" / 1m	L_1	10"/ 0,25m	N^+	10 "/ 0,25m
K_2	3'4" / 1m	L_2	10"/ 0,25m	N^-	-
K_3	13'2" / 4m	L_3	20' / 6m		
K_3	13'2" / 4m	L_4	20"/ 0,5m		
		L_5	20"/ 0,5m		

Table 3.4 - Values for Figure 3.16

3.6 Condensation

If the entire flue configuration is more than 15 meters or if it is expected that condensation will otherwise occur in the flue, e.g. when a large horizontal flue stretch is present (H_z in ***figure 3.17***) a condensate flue must be installed in the system, as supplied by the companies mentioned in **chapter 1.4.**

In these cases always ensure a (minimum) 3° course, approximately 0.5 inch per foot or 50 mm per linear meter, on the horizontal parts of the flue, so that the water can flow away at any time.

The condensate can be collected in, for example, a siphon cup or a condensate collector (T-shaped) with tap, as shown in ***figures 3.16*** and ***3.17***, parts **(1)** and **(2)** respectively. Place the traps / catcher at every lowest point in the flue and before the outlet of the PowerFan. Under no circumstances should the PowerFan be the lowest point of the flue situation, to prevent problems and damage to the fan.

Note: The siphon cup getting dry can cause flue gases to escape. To stop this from happening, there are liquid-free traps.

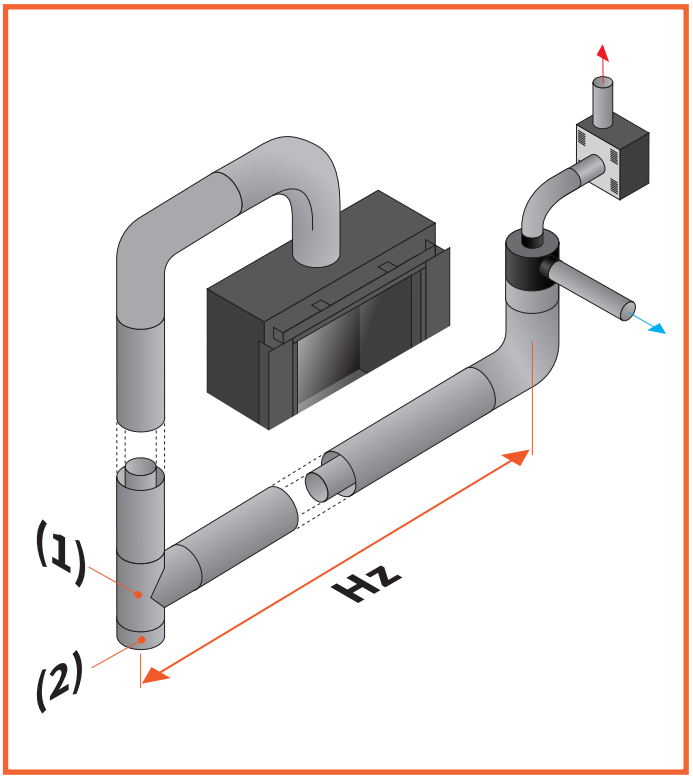

Figure 3.17 - Example of condensation tap for Hz

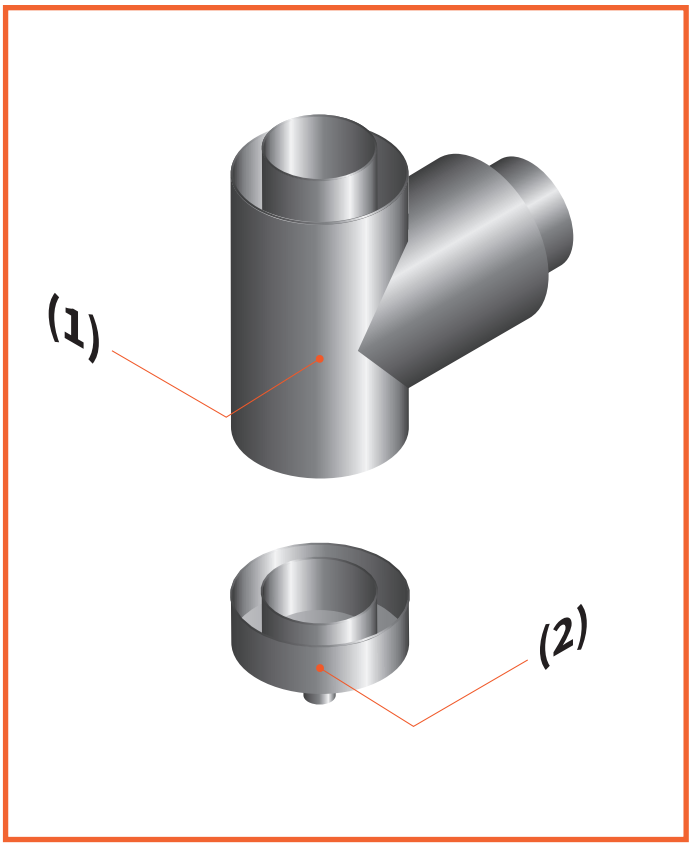

Figure 3.18 - Parts necessary for condensation tap

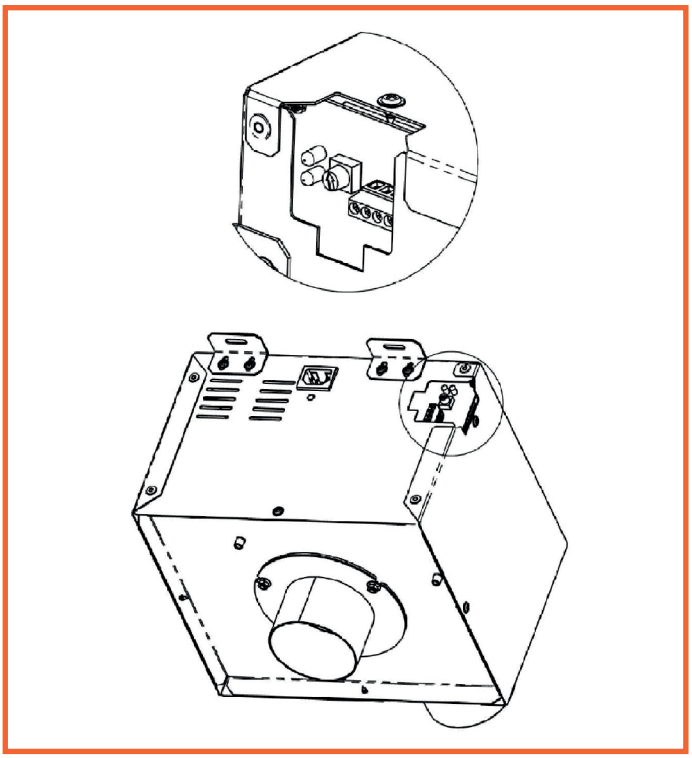

Figure 4.1 - Service cover PowerFan MkII

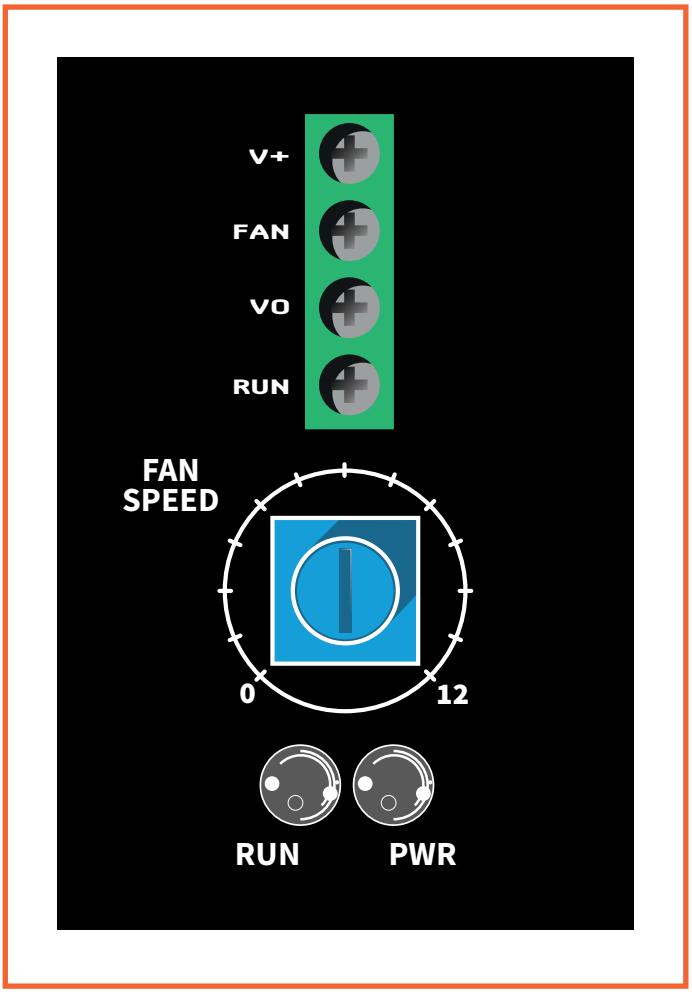

Figure 4.2 - Speed pod meter PowerFan

4 ADJUSTING THE POWERFAN

The setting of the PowerFan is done with the speed controller. With this podmeter you set the resistance of the motor. The lower the resistance, the faster the motor runs. This controller and the indicator lights are located on the PowerFan itself. A cover must be removed for this. Make sure that this cover can be reached at all times (See ***Figure 4.1***)

4.1 Set initial position

See ***Figure 4.2***

- Position 0 - Motor runs slowly.
- Position 12 - Motor is running at full power

ON THE FAN UNIT: There are two lights on the fan unit

1. On installation there will be one solid green light - this means there is power to the fan.
2. The second light signifies that the fan has been set to the correct fan speed for that installation. This will flash green in setup and solid green when the correct fan speed has been set.

4.2 Start

When the fireplace is started, the fan runs at high speed for 5 seconds, after which a signal is sent to the control cabinet and the speed drops audibly. In this position the 2 green LED lamps are lit and one is flashing.

LED is blinking

The fan checks the system for correct operation for 60 seconds. If the system works properly, the blinking stops and the LED stays green

LED flashes red

If the green light does not stop blinking or changes to red, increase the fan speed by 1 step and observe the waiting time of 60 seconds again.

Please note

To increase the fan speed:

- Turn the speed control clockwise.

To reduce the fan speed:

- Turn the speed control counterclockwise.

4.3 How to set the fan speed:

4.3.1 For fires up to 5 feet in width

1. Start the fan at level 3 - Increase the fan speed by one unit - the light will flash green.
2. Increase the fan speed by one unit - the light will flash green.
3. If the light flashes red after a period of time immediately increase the fan speed by one more unit.
4. If this then turns to a solid green light then wait for at least one minute to check that it remains a sold green and then increase the fan speed by one more unit
5. Check that the light remains a solid green for at least one more minute.

The fan speed is now set correctly.

4.3.2 For Fires with a width of over 5 feet

1. Start the fan speed at "7"
2. Increase the fan speed by one unit - the light will flash green.
3. If the light flashes red after a period of time immediately increase the fan speed by one more unit.
4. If this then turns to a solid green light then wait for at least one minute to check that it remains a sold green and then increase the fan speed by one more unit
5. Check that the light remains a solid green for at least one more minute.

The fan speed is now set correctly.

If on increasing the fan speed the light still flashes red again

1. Increase the fan speed by one unit.
2. Continue to do this every time the light flashes red until there is a solid green light.

4.3.3 Fine-tuning

When the flames are satisfactory, increase the speed (if desired) by one more step to take account of extreme weather conditions such as wind. This prevents the fire from being switched off preventively, which is experienced as a nuisance.

NOTE: ONCE A SOLID GREEN LIGHT HAS BEEN ESTABLISHED PLEASE RUN THE FIRE FOR A MINIMUM OF 20 MINUTES TO MAKE SURE THAT THE FAN HAS STABILIZED AND CONTINUES TO RUN WITH A SOLID GREEN LIGHT. IF AT ANY TIME DURING THIS PERIOD A FLASHING RED LIGHT OCCURS PLEASE REPEAT THE ABOVE PROCESS.

PLEASE NOTE THAT ONCE THE LIGHT GOES RED YOU ONLY HAVE ABOUT 10 SECONDS TO INCREASE THE FAN SPEED OR THE FIRE WILL SHUT DOWN. IF THIS HAPPENS THE FIRE WILL NEED TO BE SWITCHED BACK ON AND THE ABOVE PROCEDURE REPEATED.

WARNING

ISOLATE SUPPLY BEFORE CARRYING OUT ANY WORK OR ADJUSTMENTS.

ALL ELECTRICAL WORK MUST BE PERFORMED BY QUALIFIED PERSONEL.

5 FUNCTION OF THE REMOTE

By pressing the "Start button" (top left buttom) the fireplace and the PowerFan will start simultaneously.

Note: The thermostat and pilot flame function are canceled with installations in combination with a PowerFan. All other functions on the remote will function normally, as described in the user action. See the user- and installation manual for the fireplace.

Figure 5.1 shows an example of a ten-button remote for Element4 fireplaces. The thermostat function (third button from the left) is cancelled.

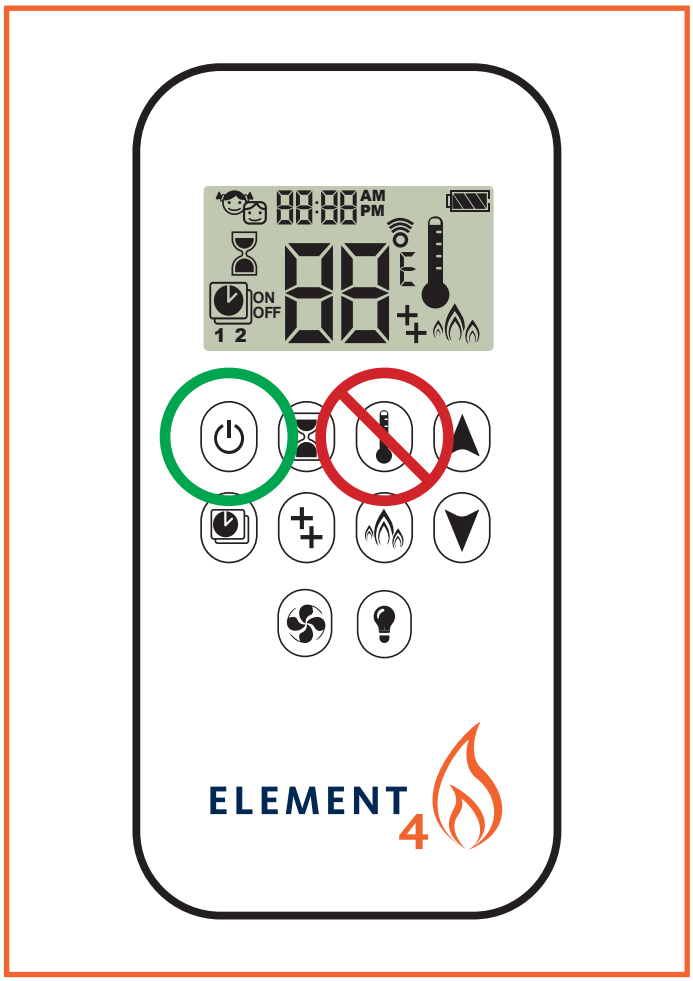

Figure 5.1 - Ten button remote Element4

6 TECHNICAL DATA

The following specifications apply to every Element4 PowerFan MkII

	Metric	Imperial
Applicable for fireplaces	≤ 90k BTU/hr	≤ 25Kw
Power Supply	230V	
Air flow	5.890 ft³/hr	165 m³/hr
Noise level	≤ 38dB at 1 meter distance	
	120V 60Hz	
Inlet current	0.4A	
Max. output pressure	30 Pa	
Max. flue temperature	842 °F	450° C

7 TECHNICAL DRAWINGS

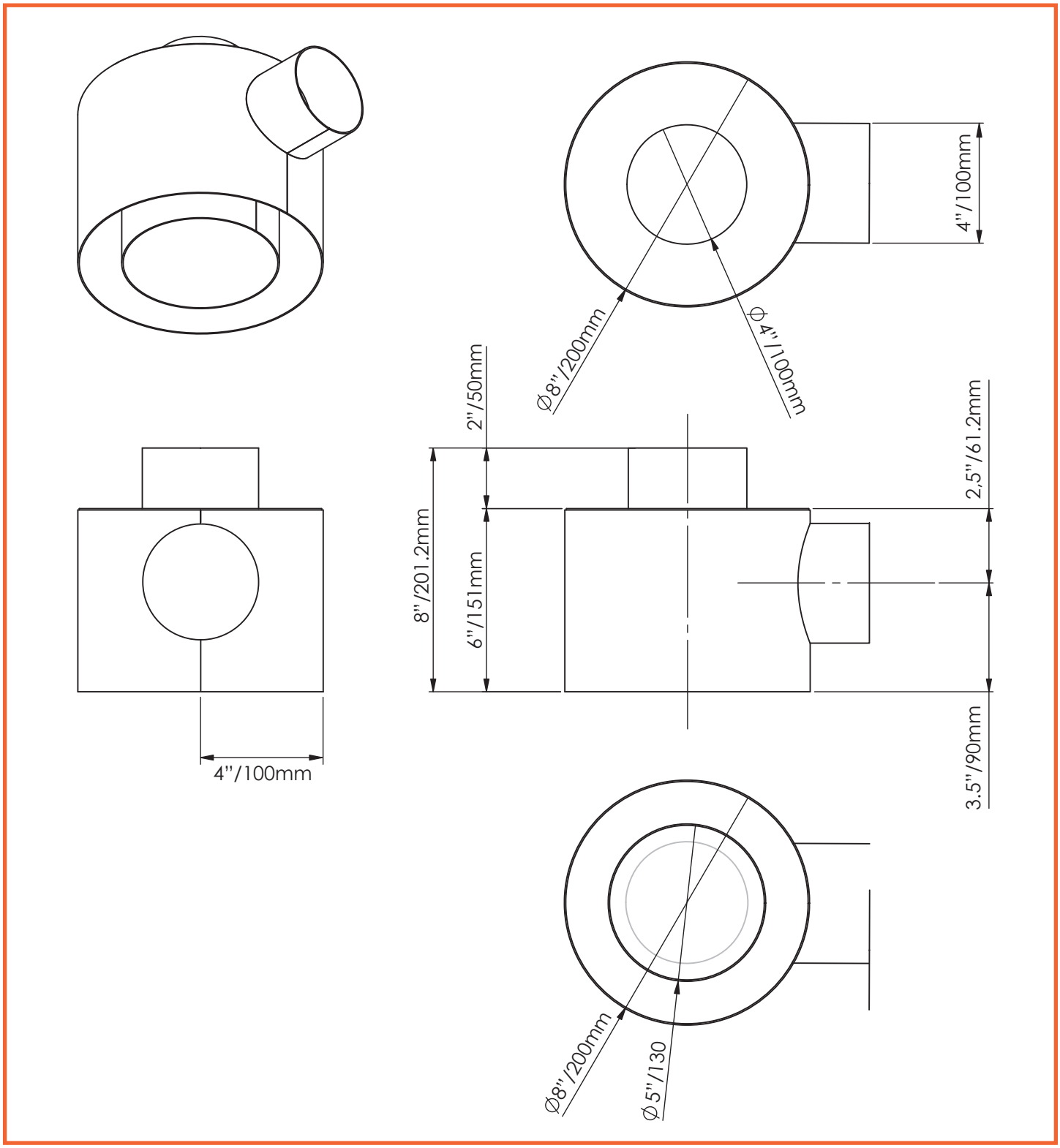

Figure 7.1 - Dimensions of the adapter

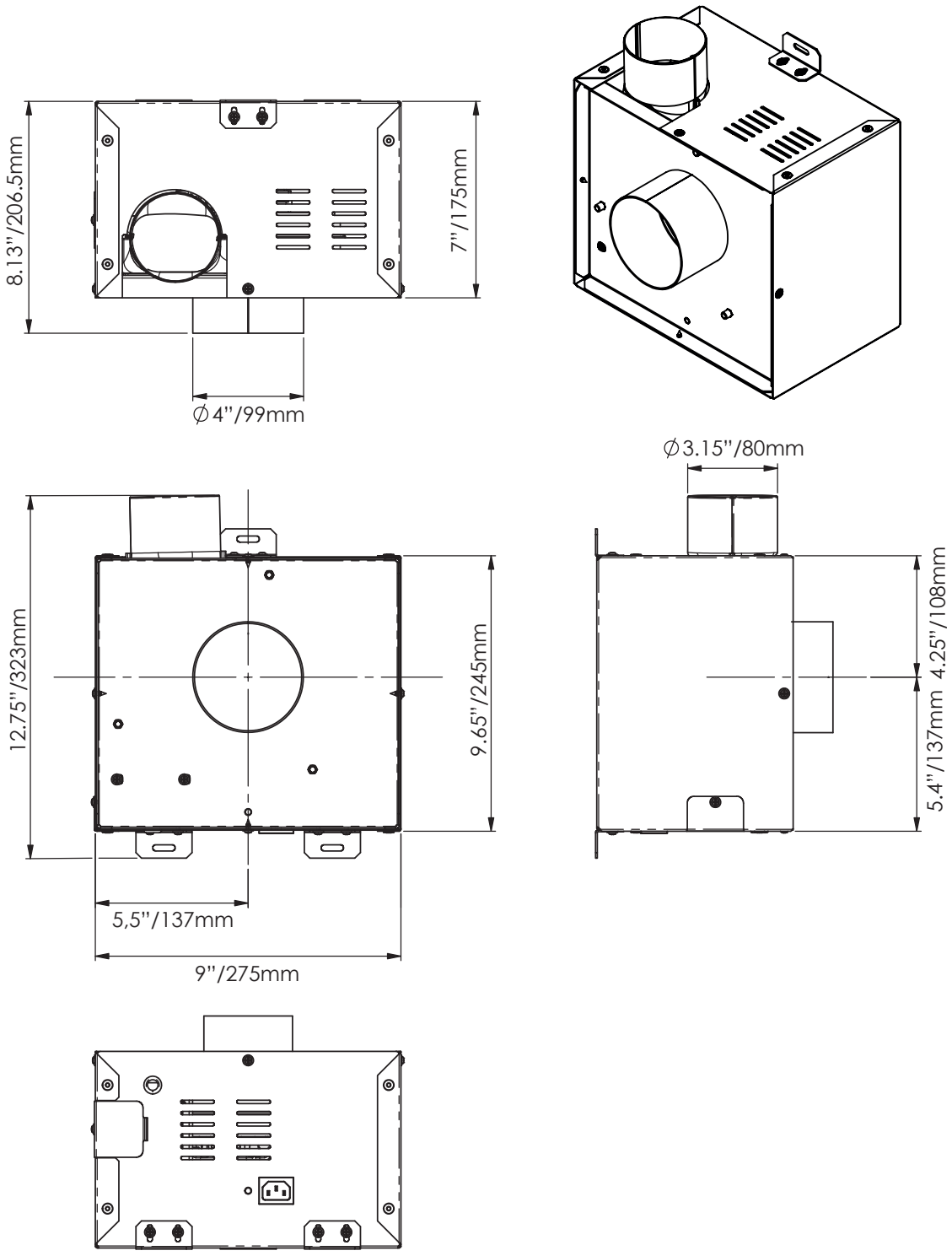

Figure 7.2 - Dimensions PowerFan MkII

ELEMENT 4

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