PREFACE

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

The Powervent 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 Powervent. Leave this manual with the device for future references.

The Powervent 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
Powervent

Applicable EC directives and specifications
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 Powervent 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

European Home warrants this product against defects in materials and workmanship for a period of TWO (2) YEARS from the date of original retail purchase.

If a defect exists, European Home will, at its option, either

1. Provide needed components using new or refurbished replacement parts or
2. Exchange the product with one which is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product.

A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes the property of European Home. All warranty claims must be submitted through the dealer from which you purchased the product. Check with your dealer in advance for any costs to you when arranging a warranty call. Shipping and/or delivery charges for parts are not covered by this warranty.

Nothing in the above shall be deemed to imply that this warranty shall apply to work which has been abused or neglected or shows evidence of changes or modifications by others with or without permit, damages caused by the acts of God, building settlement or moving, fire or vandalism. In addition, installation of this product that varies from the requirements stated in the instruction manual will void the warranty.
CONTENTS

PREFACE 4

DECLARATION 4

1 INSTALLATION 7
  1.1 Inspection 7
  1.2 Installation Points 7
  1.3 Assembly 7
  1.4 Vent material 8
  1.5 Terminations 9
  1.6 Fire safety 10

2 LOCATION OF TERMINATIONS 11

3 VENT SYSTEM 12
  3.1 Vent configurations 12
  3.2 Configurations 13
  3.3 Calculating the length of the vent 15
  3.4 Extra resistance in the vent run 17
  3.5 Sample vent configuration calculation 18
  3.6 Condensation 20

4 ADJUSTING THE POWERVENT 21
  4.1 Set initial position 21
  4.2 Start 21
  4.3 Fine-tuning 21

5 FUNCTION OF THE REMOTE 22

6 TECHNICAL DATA 22

7 TECHNICAL DRAWINGS 23
1 INSPECTION

1.1 Inspection

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

Make sure the following parts are included
- Powervent
- Powervent module
- Powervent module connection cables
- 120 volt connection cable
- Adapter / splitter
- Installation manual

1.2 Installation Points

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

It is recommended that the Powervent be placed in an area that is large enough for the Powervent to be removed.

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

Note: A minimum distance of 7' (2 m) from the fireplace is required to prevent the fan from malfunctioning.

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

1.3 Assembly

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

Make sure the Powervent 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 Powervent and the wall to prevent resonance.

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

1.3.1 Mounting Powervent Module

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

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

1.3.2 Assembly of venting

Ensure that all connections of the individual vent parts are sealed. Leakage will adversely affect the operation of the Powervent and cause the fireplace to switch off.

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

1.3.3 Power connection

The Powervent is equipped with a grounded power cord. For the power supply, a 120VAC - 60Hz wall outlet must be mounted within a range of 3'-3" (1 m) from the Powervent.

1.3.4 Powervent cable

The cable must not come into contact with the venting. The standard length is 65'-7 1/2" (20 m), this can be spliced or replaced by a longer cable supplied by the installer.
1.4 Flue material

The Powervent can be connected with the following brands of venting

**Concentric**

5"/8" (120/200 mm) round metal concentric vent pipe by the following manufacturers:
- Duravent
- Selkirk
- ICC Industrial Chimney
- Hart & Cooley Inc.
- Olympia Chimney Supply Inc.

**Single walled or B Vent**

Between splitter and Powervent 4" (100mm) round metal single wall or B vent flue pipe (either flexible or rigid acceptable)

*Note:* Different manufacturers will have different distances to combustible material, review those manuals before installing.

Of the following manufacturers:
- Duravent
- Selkirk
- ICC Industrial Chimney
- Hart & Cooley Inc.
- Olympia Chimney Supply Inc.

---

**Single walled**

Between Powervent and termination

A PelletVent Pro Ravelli Adapter by Duravent (Duravent part # 3PVP-ADR) is needed on the exhaust port of the Powervent to adapt 80 mm powervent outlet to 3" exhaust venting. After you can run 3" venting or adapt it to 4" using a tapered or step 3-4 adapter from Duravent (Duravent part # FS0304T1 or FS 341).

**Duravent FasNSeal must be used for all exhaust venting and terminations after the Powervent.** Please note: There are 3 different types of FasNSeal vent pipe with different distances to combustibles. Please review the manufacturers manual for distances to combustible materials.

- FasNSeal Flex
- FasNSeal
- FasNSeal W2

---

![Figure 1.2 - Mounting possibilities Powervent](image)

![Figure 1.3 - Connection diagram](image)
1.5 Terminations

For the proper functioning of your Powervent, the supply of air and the exhaust of combustion gases must not be impeded. You can terminate either horizontally (by means of a wall termination) or vertically (by means of a roof termination).

**Note:** Due to the mechanical exhaust of the vent gases, it is not necessary for the combustion air supply termination and the vent exhaust gas termination to be in the same pressure range.

1.5.1 Distance between terminations

When opening into the same horizontal termination area, the following distances must be observed, with regard to the termination of combustion air and vent exhaust discharge (see also figures 1.4 and -1.5):

\[ D_h = \text{Horizontal distance} = \text{at least 12” (30 cm)} \]
\[ D_v = \text{Vertical distance} = \text{minimum 6” (15 cm)}, \text{whereby a partition must be used to prevent mixing of combustion air (blue arrow) and exhaust gases (red arrow).} \]

In the case of a vertical termination, both for supply (Ø4” (100mm)) and discharge (Ø3.15” (80mm)) one must create a feed-through with approved venting, as shown in figures 1.6 and Figure 1.7.

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.

1.5.2 Supply of combustion air

The supply of combustion air may only come from outside. You must take into account a thermal bridge. The combustion air supply may be carried out in PVC or flexible venting.

**Note:**

Never terminate exhaust vent under the fresh air supply, when both terminals are on the same wall.

Make sure that both terminations are at least 12” (30 cm) from ground level and that there is no way to block the openings.

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

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

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

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

**Note:** If enclosing the Powervent, provide the enclosure with at least 2 air openings with a free passage of 0.155 inch² (100mm²) per air opening.

1.6.2 Venting material
Single-walled venting material must always be enclosed 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. Concentric flue manufacture clearance requirements must be adhered to.

**Note:** Please make sure that no heat bridges can occur by brackets around the concentric or single-wall material.
LOCATION OF TERMINALS

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

Figure 2.1 - Wall termination location
3 VENT SYSTEM

3.1 Vent configurations

The Powervent is a very flexible solution for difficult vent configurations for all Element4 fireplaces. By making use of a separate air supply and exhaust discharge, you can achieve the desired vent configuration in many ways.

In this chapter these different options are explained, in what ways the vent configuration can be installed.

The following applies to all construction options in chapter 3.2 (see also accompanying figures 3.2 to 3.8):

- **A** = Combustion air supply
  Vent diameter \( A \) is \( Ø4" \) (100 mm)
- **B\(_1\)** = Exhaust outlet
  Vent diameter \( B\(_1\) \) is \( Ø4" \) (100 mm)
- **B\(_2\)** = Exhaust outlet
  Pipe diameter \( B\(_2\) \) is \( Ø3.14" \) (80 mm)
- **C** = Concentric venting
  Diameter is \( Ø5"/8" \) (130/200 mm)
  \( Ø4"/6" \) (100/150 mm)

**Note:** In the event that a Powervent is installed on a fireplace with a \( Ø4"/6" \) (Ø100/150mm) vent collar, the vent must be increased to \( Ø5"/8" \) (Ø130/200mm) using the supplied adapter. (Image 3.1 and table 3.1)

(1) = Termination area 1
(2) = Termination area 2

Chapter 3.3 explains how the above-mentioned lengths can be calculated for each vent configuration.

Because not every vent configuration is completely straight, elbows/bends must often be used. When the Powervent is used, the vent configuration is often a special case. Chapter 3.4 explains the effect of the elbows/bends and also of a negative vent on the length of your vent configuration.

In chapter 3.5 you will find a calculation method for calculating the vent 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.
3.2 Vent Configurations

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

Below is a more detailed explanation of the different venting methods.

3.2.1 Configuration 1
Separate combustion air and exhaust directly on the fireplace.

Combustion air and exhaust are split directly on the fireplace by means of the included splitter. The combustion air can be individually guided with a rigid or flexible tube to the desired termination area. Exhaust gases must be made with approved rigid vent pipe. 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 venting configuration.

Components
In system 1 we recognize the following components

A = Supply of combustion air  
B = Vent exhaust, where B₁ is the part before the Powervent and B₂ is the part after.  
(1) = Termination area 1  
(2) = Termination area 2

3.2.2 Configuration 2
(partial) concentric vent configuration.

In this situation the vent (partially) is carried out with a regular concentric tube, after which the vent is split by means of the included splitter. The combustion air can be led individually with a rigid or flexible tube to the desired termination area. Exhaust gases must be made with approved rigid vent pipe. This can be the same discharge area for both terminations, but both can also lead to a different area. See figures 3.5 to 3.9 for different variations of this venting configuration.

Components
In system 2 we recognize the following components

A = Supply of combustion air  
B = Vent exhaust, where B₁ is the part before the Powervent and B₂ is the part after.  
C = Concentric vent Ø5\!/8" (Ø130/200mm) or Ø4\!/6" (Ø100/150mm)  
(1) = Termination area 1  
(2) = Termination area 2
Figure 3.5 - (Partial) concentric flue configuration with horizontal termination in the same area

Figure 3.6 - (Partial) concentric vent configuration with horizontal termination in a different area

Figure 3.7 - Roof termination with (partial) concentric vent

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

Figure 3.9 - (Partial) concentric vent configuration with horizontal termination in a different area (II)
3.3 Calculating the length of the venting

3.3.1 Vent configuration - type 1
Immediate split combustion air and exhaust (See figure 3.10)

When combustion air and exhaust are split directly on the fireplace, the total combined length of both can be 130 feet (40 m) with the following requirements per part:

\[ L = \text{max. } 65 \text{ feet (20 m)} \]
\[ D = \text{min. } 7 \text{ feet (2.0 m)} \]
And
\[ T = \text{Termination} \]

3.3.2 Vent configuration - type 2
(Partially) Concentric venting

When working with a concentric venting before the combustion air and exhaust, the total combined length of both can be 98 feet (30 m). In figure 3.11 to 3.13. You will see three options that fall under type 2.

Each option is explained further below

Vent configuration - type 2.1
Maximum length of the concentric venting Ø5"/8" (130/200mm) (Figure 3.11)

In this situation, the vent configuration is carried out almost completely concentrically, with the supply and discharge being split just before the termination. Figure 3.11 serves as a reference for the minimum and maximum lengths for this venting configuration, where

\[ K = \text{max. } 98 \text{ feet (30 m)} \]
And
\[ T = \text{Termination} \]

Also in this configuration it holds that the length of the flue before the Powervent must be at least 7' (2 m) to prevent possible Powervent damage.
Vent configuration - type 2.2
Partial concentric flue - size Ø5”/8” (130/200mm)
(See figure 3.12)

In this configuration, a part of the vent 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 venting configuration, where

\[ K + L = \text{Total vent length} \]
\[ K = \text{max. 98 feet (30 m)} \]
\[ L = 65 - \frac{2}{3} \times K \text{ feet or } 20 - \frac{2}{3} \times K \text{ meters} \]
And
\[ (1) = \text{Termination} \]

Method
First calculate the length of the concentric venting. 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 combustion air and exhaust.

Vent configuration - type 2.3
(Partial) Concentric flue - flue size Ø4”/6” (Ø100/150mm)
(See Figure 3.13)

In this situation, (a part of) the flue is executed concentrically in Ø4”/6” (Ø100/150mm), after which the combustion air and exhaust are split and end up separately.

Note: This venting configuration should be seen as if the fireplace is being split directly.

If the Ø4”/6” (Ø100/150mm) flue is used, it must be enlarged before it can be connected to the splitter.

Figure 3.13 serves as a reference for the maximum lengths for this venting configuration, where:

\[ M = \text{max. 65 feet (20 m)} \]
And
\[ (e) = \text{Enlarger} \]
\[ (1) = \text{Termination} \]

Also in this configuration, vent before the Powervent must be at least 7’ (2 m) to prevent possible damage to Powervent.
3.4 Extra resistance in the channel

As with a regular, non-mechanical vent configuration, adding bends in the vent configuration of the Powervent also provides extra resistance. These bends must be taken into account by counting them as an extra vent 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
  - 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 m) discharge length.
- **Positive N-bends** (both 90° and 45°) are calculated as a 10" (0.25 m) discharge length.

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

So for C₂, every 3' 6" (1 m) counts for 7' (2 m).

The calculated extra resistance of the bends applies to all installation using the Powervent.

3.5 Vent configuration calculation

**Step 1**
Consider which vent configuration is required

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

**Note:** Do not forget to include any bends or negative flue in your calculation.

**Step 3 - option a**
Then calculate the desired lengths from supply to the splitter (A) and exhaust from the splitter (B₁) and (B₂). For your convenience, always choose the longest of both so you only have to calculate the length once.
Imperial

Enter the formula \( L = 65 - \frac{2}{3} \times K \) to see how long your combustion air and exhaust can be.

- \( K \) is the length of your concentric part.
- \( L \) is the maximum length of the combustion air and exhaust

Metric

Enter the formula \( L = 20 - \frac{2}{3} \times K \) to see how long your combustion air and exhaust can be.

### Step 3 - option b

Check whether the lengths for the combustion air and the exhaust from the splitter 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 vent configuration without any problems.

### Step 4

Add \( K \) and \( L \) to determine the full length of your vent.

For \( K \) and \( L \) together, this distance may never be longer than 98 feet (30 m) and the Powervent should be always a minimum of 6'-6 3/4" (2 m) away from the fireplace (distance \( B_1 \)).

### 3.5.1 Example

#### Step 1

See the desired setup in Figure 3.16 and Table 3.4. The first part of the venting is designed concentrically, after which the combustion air and exhaust are split. The combustion air is mounted directly mounted to a wall termination. The exhaust must exit vertically through a roof.

#### Step 2

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

#### Imperial

- \( K_1 + K_2 + 2*K_3 + K_4 + 2*N^+ \)
  - \( 3'4'' + 3'4'' + 2 * 13'2'' + 13'2'' + 2 * 10'' = 47'10'' \) max

#### Metric

- \( K_1 + K_2 + 2*K_3 + K_4 + 2*N^+ \)
  - \( 1m + 1m + 2 * 4m + 4m + 2 * 0.25m = 15m \)
Step 3
Now you know the length of the concentric part. Enter this in the formula as stated in

Imperial: \[ L = 65 - 2/3 \times 46 = 34' - 4" \]
Metric: \[ L = 20 - 2/3 \times 15 = 10 \text{ m} \]

Or

read \( L \) from table 3.2 at "\( K = 15 \text{ m} \)"
or from table 3.3 from the closest (lower) value, i.e. "\( K = 46' \).

For \( K = 15 \text{ m} \), the value \( L = 10 \) or For \( K = 46' \), the value \( L = 34' - 4" \)

Because the exhaust is longer than the combustion air, calculated from the splitter, we check whether this length meets the maximum permitted length.

\[ L_1 + L_2 + L_3 + L_4 + L_5 + 2 \times N \]
So \( 0.25 \text{ m} + 0.25 \text{ m} + 6 \text{ m} + 0.5 \text{ m} + 0.5 \text{ m} + 2 \times 0.25 \text{ m} = 8 \text{ m} \)
or \( 10\text{ in} + 10\text{ in} + 20\text{ ft} + 20\text{ in} + 20\text{ in} + 2 \times 10\text{ in} = 26' - 8" \)

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

Step 4
Add \( K \) and \( L \) together to check that the full length of the flue is no more than 30 meters.

\[ 15 + 8 = 22 \text{ m}, \text{ so that's good.} \]

Also check if the Powervent is at least 7' (2 m) away from the fireplace. If so you can install the Powervent without problems.

---

<table>
<thead>
<tr>
<th>( K )</th>
<th>3'4&quot; / 1m</th>
<th>( L )</th>
<th>10&quot; / 0,25m</th>
<th>( N )</th>
<th>10&quot; / 0,25m</th>
</tr>
</thead>
<tbody>
<tr>
<td>( K_1 )</td>
<td>( K_2 )</td>
<td>( K_3 )</td>
<td>( K_4 )</td>
<td>( K_5 )</td>
<td>( K_6 )</td>
</tr>
<tr>
<td>3'4&quot; / 1m</td>
<td>3'4&quot; / 1m</td>
<td>13'2&quot; / 4m</td>
<td>13'2&quot; / 4m</td>
<td>20' / 6m</td>
<td>20' / 0,5m</td>
</tr>
<tr>
<td>L_1</td>
<td>L_2</td>
<td>L_3</td>
<td>L_4</td>
<td>L_5</td>
<td>L_6</td>
</tr>
<tr>
<td>10&quot; / 0,25m</td>
<td>10&quot; / 0,25m</td>
<td>20&quot; / 0,5m</td>
<td>20&quot; / 0,5m</td>
<td>20&quot; / 0,5m</td>
<td>20&quot; / 0,5m</td>
</tr>
</tbody>
</table>

Table 3.4 - Values for Figure 3.16

---

www.EuropeanHome.com

Rev# 08142020
3.6 Condensation

If the entire flue configuration is more than 49' (15 m) or if it is expected that condensation will otherwise occur in the venting, e.g. when a large horizontal venting stretch is present (H₂ in figure 3.17) a condensate drain must be installed in the system, as supplied by the approved vent manufactures.

In these cases always ensure a (minimum) 3° course, approximately 0.5" per foot (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 3.17 and 3.18, parts (1) and (2) respectively. Place the traps / catcher at every lowest point in the flue and before the outlet of the Powervent. Under no circumstances should the Powervent be the lowest point of the vent configuration, 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
4 ADJUSTING THE POWERVENT

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

4.1 Set initial position
See Figure 4.2

• Position 0 Motor is running at full power
• Position 12 Start position for each new installation
• Position 12 Motor runs slowly.

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 Powervent and the speed drops audibly. In this position the 2 green LED lamps are lit and one is flashing. Start with the fan speed at 12 and work your way up to the correct speed that the fan and unit need to be.

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.

Pay attention
• To increase the fan speed: Turn the speed control counterclockwise.
• To reduce the fan speed: Turn the speed control clockwise.

4.3 Fine-tuning
When the flames are satisfactory, increase the speed (if desired) by one more step to take account of extreme weather conditions

Note: Only after 20 minutes can you assess the flames correctly. Take this time into account for the first installation. The fan can switch off before the 20 minutes have elapsed.

WARNING
ISOLATE POWER SUPPLY BEFORE CARRYING OUT ANY WORK OR ADJUSTMENTS.
All electrical work must be performed by a suitably qualified person.
5 FUNCTION OF THE REMOTE

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

**Note:** The thermostat and pilot flame function are canceled with installations using the Powervent. All other functions on the remote will function normally. 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.

6 TECHNICAL DATA

The following specifications apply to every Element4 Powervent

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

*Figure 5.1 - Ten button remote Element4*
Figure 7.1 - Dimensions of the splitter
Figure 7.2 - Dimensions Powervent