

**ELEMENT**

**4**



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# Vent Calculation Manual

## Preface

Element4 gas fireplaces can be situated in almost any room. These are closed system fireplaces (Direct Vent fireplaces).

### Closed system

Direct vent fireplaces do not extract the oxygen for combustion from the living space, but directly from outside via a concentric vent. The vent gases are discharged through the inner vent pipe whilst the fresh air is supplied through the outer pipe.

All Element4 gas fires are tested for vent gas discharge through the wall , through the roof or with flexible exhaust pipes through an existing chimney (C91)

The diameter of the vent can be 150/100 mm (4/6 inches) or 200/130 mm (5/8 inches), depending on the fireplace and the course of the run .

### Calculation

For the fireplace to function properly, it is important that the vent gas termination meets the requirements. A vent chart has been created to determine this.

The products of Element 4 are divided into categories, each category has its own possibilities and limitations.

### Vent material

The following vent systems are approved for use with the Element4 fireplaces:

- BDM Bernard Dalsin Manufacturing - Pro-Form Direct-Temp
- Hart and Cooley - Amerivent Direct Vent
- ICC Industrial Chimney Company - EXCELDirect
- M&G DuraVent Inc. - DirectVent Pro
- Olympia Chimney Supply, Inc. - Ventis Direct Vent
- Selkirk Corporation – Direct Temp

These manufacturers are the only approved vent products for Element4 fireplaces.

### Power-Vent

A Power-Vent can be used for vent configurations where natural draft will not allow. For detailed installation instructions and operation, please refer to the Power-Vent manual.

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## 1 Rules for vent gas discharge.

### Determine the diameter of the vent gas outlet

The main rule is that you must always run the vent in diameter 200/130mm or 5/8 inches. Furthermore the vent always starts with a minimal vertical length of 0.5 meters or 20 inches on the fireplace.

### Exceptions

- If the vent collar outlet on the fireplace itself has a diameter of 150/100 or 4/6 inch, then corresponding concentric vent may be used.
- If the vent run is only running vertically with no elbows then you can use a reducer so you can use 150/100mm or 4/6 inch vent on most Element4 fires

#### Please note:

For Element 4 fireplaces it is preferable to not reduce the vent diameter. Please also note that not every vent run can be reduced. The vent categories state whether or not a fire can be reduced. When reducing the vent, regardless of the position of the reduction, you must adhere to the vent configuration table for a reduced vent (Table 3.1.3 or 3.6.3).

### Determine Maximum Vertical Length

If you use diameter 200/130 mm or 5/8 inch, your maximum total vertical length (TVL) is 22 meters / 72 feet. If you have reduced your vent gas outlet in accordance with the above exception rules to diameter 150/100 mm or 4/6 inch, the maximum permitted TVL of your vent gas outlet is 11 meters / 36 feet.

### Determine Maximum Horizontal Length

To see if the intended vent will work properly, you must first determine the category to which your fire applies. After you have determined which category your fire falls into, search for the corresponding calculation tables.

See **chapter 3** - category distribution.

Each category contains (in any case) two tables:

- A table for a horizontal termination.
- A table for a vertical termination.

You take the table that applies to you. You calculate your total vertical length (TVL) and your total horizontal length (THL). In the table you can read the advice with TVL on the vertical axis and THL on the horizontal axis.

### Calculating Total Vertical Length (TVL):

You calculate the Total Vertical Length by adding up all the vertical rises in the course of the vent run.

### Calculate Total Horizontal Length (THL):

You calculate the Total Horizontal length by adding up all horizontal sections in the course of the vent run.

### Important:

Take notice of all the elbows in your vent configuration! Elbows provide extra resistance in the system and should therefore be included in the TVL and THL.

There are two types of elbows:

- 45° and 90° elbows from vertical to horizontal and vice versa. (Type N)
- 45° and 90° elbows from horizontal to horizontal (Type Q)

You do not have to include the first 3 N-elbows (from vertical to horizontal) in your calculations. The next elbows of type N are each counted as 1 horizontal meter or 3.5 feet in the THL.

For a bend of type Q (horizontal to horizontal):

- 90° bend in the horizontal section counts for 2 horizontal meters or 7 feet in the THL.
- 45° bend in the horizontal section counts for 1 horizontal meter or 3.5 feet in the THL.

#### Vent sections in a 45° rising pipe:

Rising sections under an angle 45° are calculated both vertically and horizontally.

#### Explanation results table

Check the cell in the correct table at the desired TVL and THL. There are 3 possible outcomes:

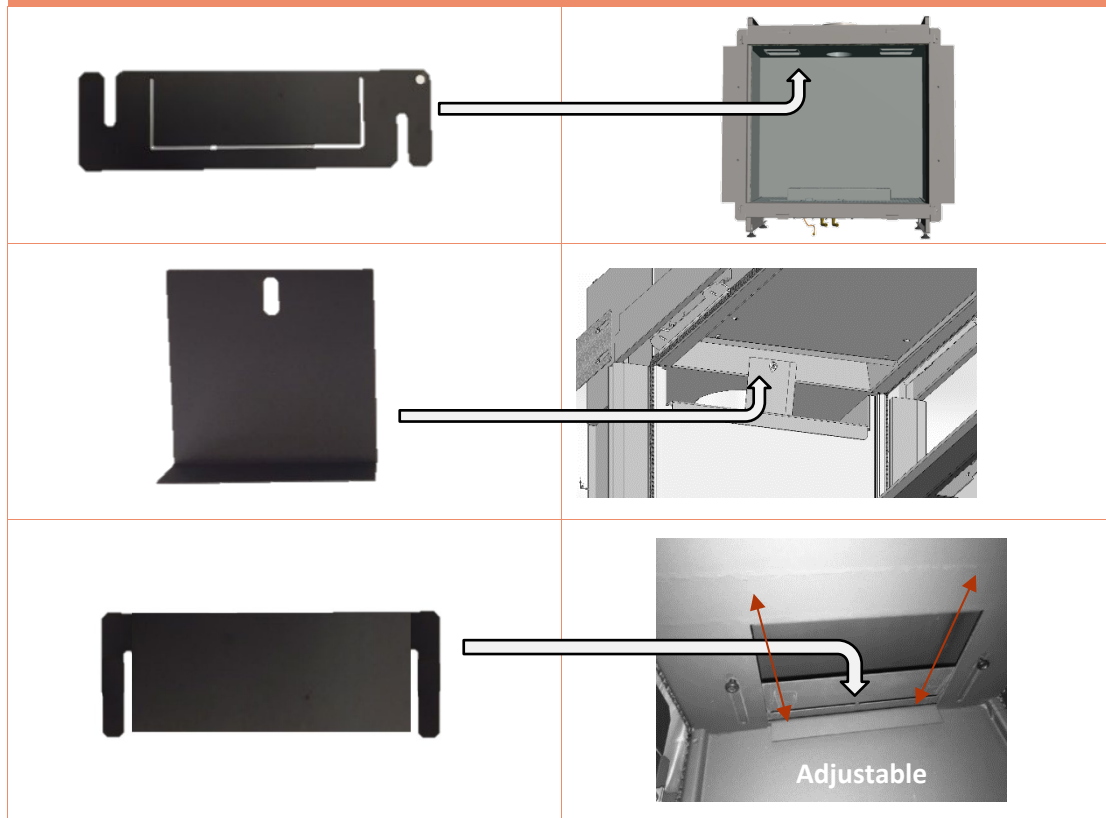
**X** - The installation is not allowed with this vent configuration. Try adjusting the dimensions.

**V** - The installation is allowed, but there is no need to install a restrictor.

**R** - The installation is allowed, but a restrictor needs to be fitted.

Depending on the discharge situation, you must use one of the supplied vent restrictors. As standard, three vent restrictors are supplied with the device (with some exceptions). It is highly dependent on the desired discharge situation which vent restrictors must be installed. The exact position of the vent restrictors is indicated in the installation manual supplied with the fireplace.

#### Position of the restrictor plate (differing per fireplace).



**Please note:** When the result of the desired vent is an “X”, proper functioning of the fire is not guaranteed. In this case the PowerVent might be a good solution.

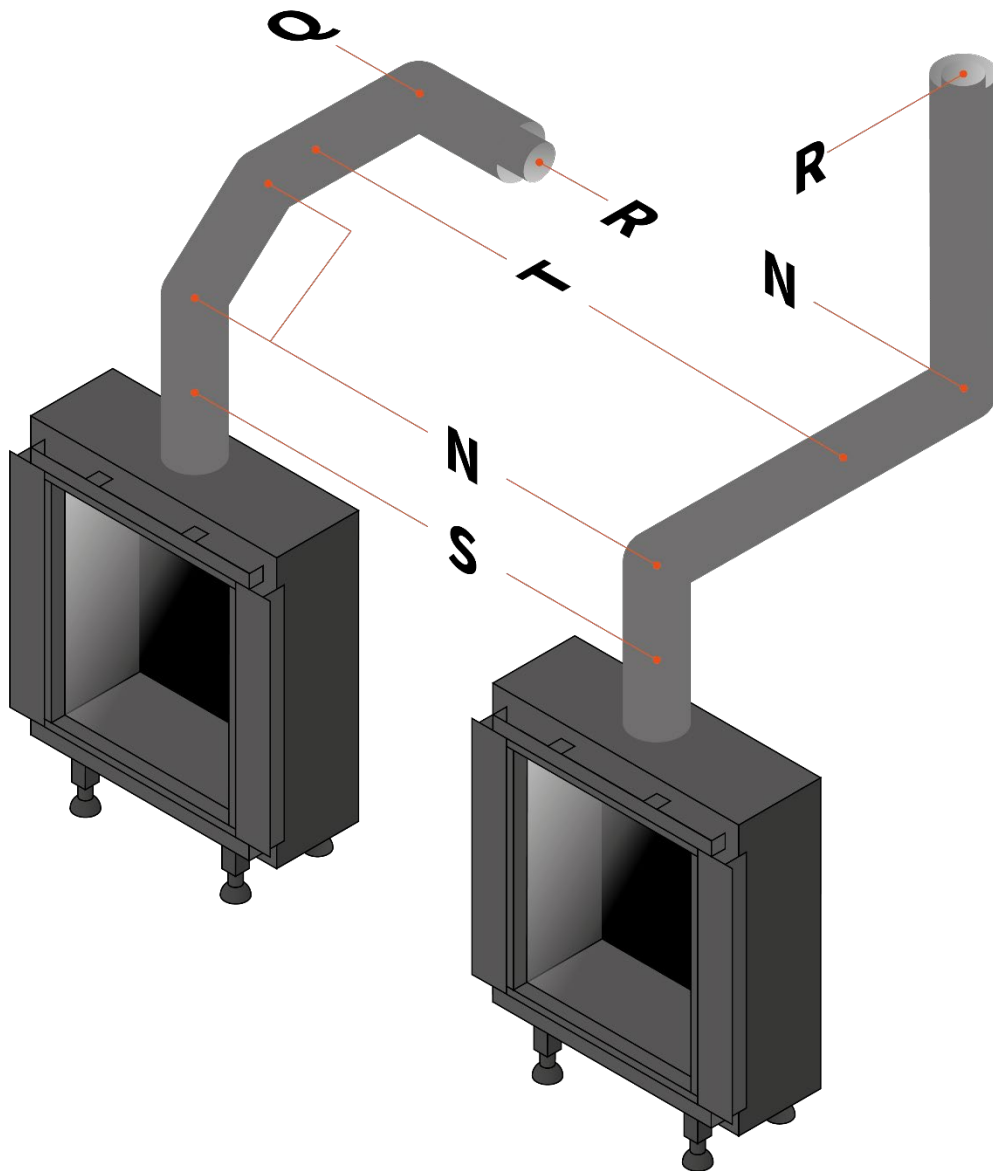
## 2 Vent calculation example

### 2.1 The six questions of vent calculation

To find out whether the desired vent configuration is possible for your fireplace, the following six questions can be asked:

1. In what category is the fireplace that is to be installed.  
*Use the table in chapter 3 as a guideline .*
2. What is the desired vent diameter?  
*Please note that this question is only relevant when one wishes to reduce the vent diameter.*
3. Does your vent have a vertical or horizontal termination?  
*Depending on the answer choose table 1.1. or 1.2 from the category from question 1.*
4. What is the Total Vertical Length?  
*Add all the vertical sections of the vent.  
Do not forget the extra resistance of the elbows to add to the THL.*
5. What is the Total Horizontal Length?  
*Add all the horizontal sections of the vent.  
Do not forget the extra resistance of the elbows.*
6. Which result can be found when all the answers found above are combined?  
*Check the cross product of the TVL and THL in the corresponding table.  
The different possibilities are **V**, **X** or **R***

## 2.2 Example vent configuration



Horizontal or vertical termination	R
45° & 90° elbow vertical to horizontal and vice versa	N
45° & 90° elbow horizontal to horizontal	Q
Vent section horizontal	T
Vent section vertical	S

### 3 Categories

Name of the device	Vent collar diameter		Category
	Metric	Imperial	
<b>Bidore 100</b>	200/130 mm	5/8 inches	1
<b>Bidore 100H</b>	200/130 mm	5/8 inches	4
<b>Bidore 140 (Double burner)</b>	200/130 mm	5/8 inches	2
<b>Bidore 140 (Quad Burner)</b>	200/130 mm	5/8 inches	3
<b>Bidore 240H</b>	200/130 mm	5/8 inches	5
<b>Bioptica</b>	150/100 mm	4/6 Inches	2
<b>Club 140</b>	230/130 mm	5/8 inches	3
<b>Club 240</b>	230/130 mm	5/8 inches	5
<b>Cupido 50</b>	150/100 mm	4/6 Inches	1
<b>Cupido 70</b>	150/100 mm	4/6 Inches	1
<b>Lucius 100</b>	230/130 mm	5/8 inches	4
<b>Lucius 140 (Double Burner)</b>	230/130 mm	5/8 inches	2
<b>Lucius 140 (Quad Burner)</b>	230/130 mm	5/8 inches	3
<b>Lucius 240H</b>	230/130 mm	5/8 inches	5
<b>Modore 75H</b>	230/130 mm	5/8 inches	4
<b>Modore 100</b>	230/130 mm	5/8 inches	1
<b>Modore 100H</b>	230/130 mm	5/8 inches	4
<b>Modore 140 (Double burner)</b>	230/130 mm	5/8 inches	2
<b>Modore 140 (Quad Burner)</b>	230/130 mm	5/8 inches	3
<b>Modore 185</b>	230/130 mm	5/8 inches	5
<b>Modore 240</b>	230/130 mm	5/8 inches	5
<b>Modore 240H</b>	230/130 mm	5/8 inches	5
<b>Optica</b>	150/100 mm	4/6 Inches	2
<b>Sky L<sup>1</sup> (Double burner)</b>	230/130 mm	5/8 inches	2
<b>Sky L (Real Flame burner)</b>	230/130 mm	5/8 inches	2
<b>Sky M</b>	230/130 mm	5/8 inches	2
<b>Sky S</b>	230/130 mm	5/8 inches	2
<b>Summum 70</b>	230/130 mm	5/8 inches	1
<b>Summum 100</b>	230/130 mm	5/8 inches	2
<b>Summum 140</b>	230/130 mm	5/8 inches	4
<b>Summum 190</b>	230/130 mm	5/8 inches	4
<b>Tenore 100</b>	230/130 mm	5/8 inches	4
<b>Tenore 140 (Double Burner)</b>	230/130 mm	5/8 inches	2
<b>Tenore 140 (Quad Burner)</b>	230/130 mm	5/8 inches	3
<b>Tenore 240</b>	230/130 mm	5/8 inches	5
<b>Tenore 240H</b>	230/130 mm	5/8 inches	5
<b>Trisore 100</b>	230/130 mm	5/8 inches	1
<b>Trisore 100H</b>	230/130 mm	5/8 inches	4
<b>Trisore 140 (Double burner)</b>	230/130 mm	5/8 inches	2
<b>Trisore 140 (Quad Burner)</b>	230/130 mm	5/8 inches	3

**Note:** The 140 models with a **Glass Safety Barrier** will be equipped with the double burner.

**Please note:** For fires where the configuration is not specified, such as the Summums, for each configuration the same vent category is applicable.

<sup>1</sup> Per introduction of the Sky S in 2020, to distinguished between the three different sizes the Sky and Sky T are now indicated as Sky LF, respectively Sky LT.



### 3.1 Category 1 (Metric) – Ratio 1:4

The tables below are the same for fireplaces with Vent collar diameter 200/130 and 150/100. Fireplaces in this category are never to be reduced to ensure a correctly functioning fireplace.

#### 3.1.1 Calculation table horizontal termination 200/130

11	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
10	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
9	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
8	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
7	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
6	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
5	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
4	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
3.5	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
3	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
2.5	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
2	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
1.5	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X	X
1	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X	X	X
0.5	V	V	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X
	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	

#### 3.1.2 Calculation table vertical termination 200/130

For a vertical termination a minimal starting length of 0.5m before an elbow is required and - **Total Vertical Length** is 1 m.

22	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
21	R	R	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X
20	R	R	R	R	V	V	X	X	X	X	X	X	X	X	X	X	X
19	R	R	R	R	R	R	V	V	X	X	X	X	X	X	X	X	X
18	R	R	R	R	R	R	R	R	V	V	X	X	X	X	X	X	X
17	R	R	R	R	R	R	R	R	R	R	V	V	X	X	X	X	X
16	R	R	R	R	R	R	R	R	R	R	R	R	V	V	X	X	X
15	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	X
14	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
13	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
12	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
11	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
10	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
9	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
8	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
7	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
6	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
5	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
4	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
3.5	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	V
3	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
2.5	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
2	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
1.5	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X	X
1	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X	X	X
	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8

### 3.1.3 Calculation table vent diameter 150/100

**Please note:** This table is only applicable when vent is reduced. Fireplaces with a 150/100 Vent collar do not apply to this table, but instead [table 3.1.1](#) or [3.1.2](#) is to be used.

For a vertical termination a **Total Vertical Length** of at least 2 meter is necessary!

11	V	V	X	X	X	X	X
10	R	R	V	V	X	X	X
9	R	R	R	R	V	V	X
8	R	R	R	R	R	R	V
7	R	R	R	R	R	R	V
6	R	R	R	R	R	R	V
5	R	R	R	R	R	V	X
4	R	R	R	R	V	X	X
3.5	R	R	R	V	X	X	X
3	V	V	V	V	X	X	X
2.5	V	V	V	V	X	X	X
2	V	V	V	V	X	X	X
1.5	V	X	X	X	X	X	X
1	V	X	X	X	X	X	X
	0	0.5	1	1.5	2	2.5	3
	Total Horizontal Length						
	Total vertical Length						

### 3.2 Category 2 (Metric) - Ratio 1:2.5

The tables below are the same for fireplaces with vent collar diameter 200/130 and 150/100. Fireplaces in this category are never to be reduced to ensure a correctly functioning fireplace.

#### 3.2.1 Calculation table horizontal termination

Total vertical Length	0	0.5	1	2	2.5	3.5	4	4.5	5
11	R	R	R	R	R	R	V	V	V
10	R	R	R	R	R	R	V	V	V
9	R	R	R	R	R	R	V	V	V
8	R	R	R	R	R	R	V	V	V
7	R	R	R	R	R	R	V	V	V
6	R	R	R	R	R	R	V	V	V
5	R	R	R	R	R	R	V	V	V
4	R	R	R	R	R	R	V	V	V
3.5	R	R	R	R	R	R	V	V	V
3	V	V	V	V	V	V	V	V	V
2.5	V	V	V	V	V	V	V	V	V
2	V	V	V	V	V	V	V	V	V
1.5	V	V	V	V	V	V	V	X	X
1	V	V	V	V	V	X	X	X	X
0.5	V	V	V	X	X	X	X	X	X

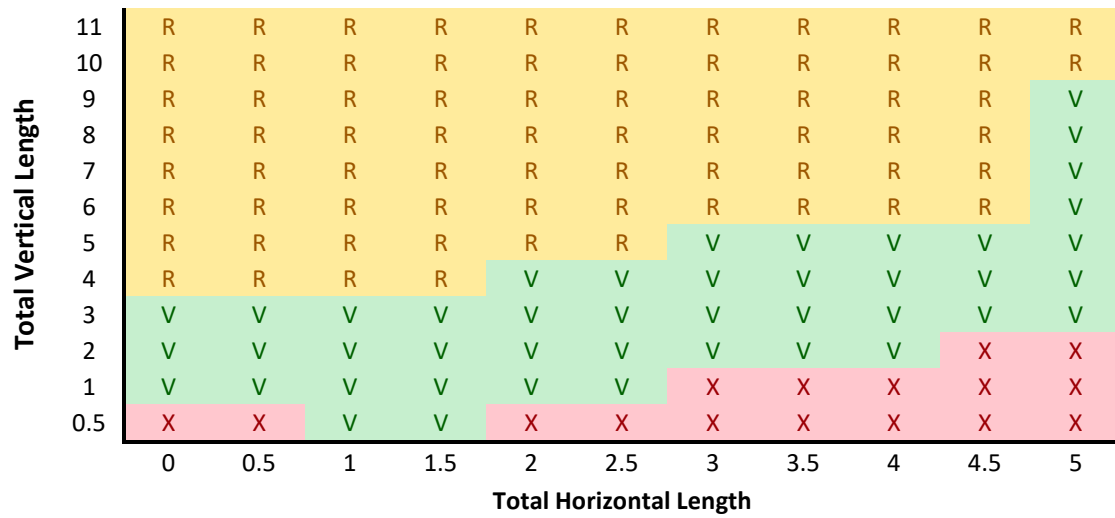
#### 3.2.2 Calculation table vertical termination vent diameter 200/130

For a vertical termination a min. starting length of 0.5m before an elbow and min. **Total Vertical Length** of 1 m is required.

Total Vertical Length	0	0.5	1	1.5	2	2.5	3.0	3.5	4	4.5	5
22	V	X	X	X	X	X	X	X	X	X	X
21	V	V	V	X	X	X	X	X	X	X	X
20	R	R	V	V	V	X	X	X	X	X	X
19	R	R	R	V	V	V	X	X	X	X	X
18	R	R	R	R	R	V	V	V	V	V	X
17	R	R	R	R	R	R	R	R	R	V	V
16	R	R	R	R	R	R	R	R	R	R	V
15	R	R	R	R	R	R	R	R	R	R	V
14	R	R	R	R	R	R	R	R	R	R	V
13	R	R	R	R	R	R	R	R	R	R	V
12	R	R	R	R	R	R	R	R	R	R	V
11	R	R	R	R	R	R	R	R	R	R	V
10	R	R	R	R	R	R	R	R	R	R	V
9	R	R	R	R	R	R	R	R	R	R	V
8	R	R	R	R	R	R	R	R	R	R	V
7	R	R	R	R	R	R	R	V	V	V	V
6	R	R	R	R	R	R	R	V	V	V	V
5	R	R	R	R	R	R	R	V	V	V	V
4	R	R	R	R	R	R	R	V	V	V	V
3.5	R	R	R	R	R	R	R	V	V	V	V
3	V	V	V	V	V	V	V	V	V	V	V
2.5	V	V	V	V	V	V	V	V	V	V	X
2	V	V	V	V	V	V	V	V	V	X	X
1.5	V	V	V	V	V	V	V	V	X	X	X
1	V	V	V	V	V	V	V	C	X	X	X

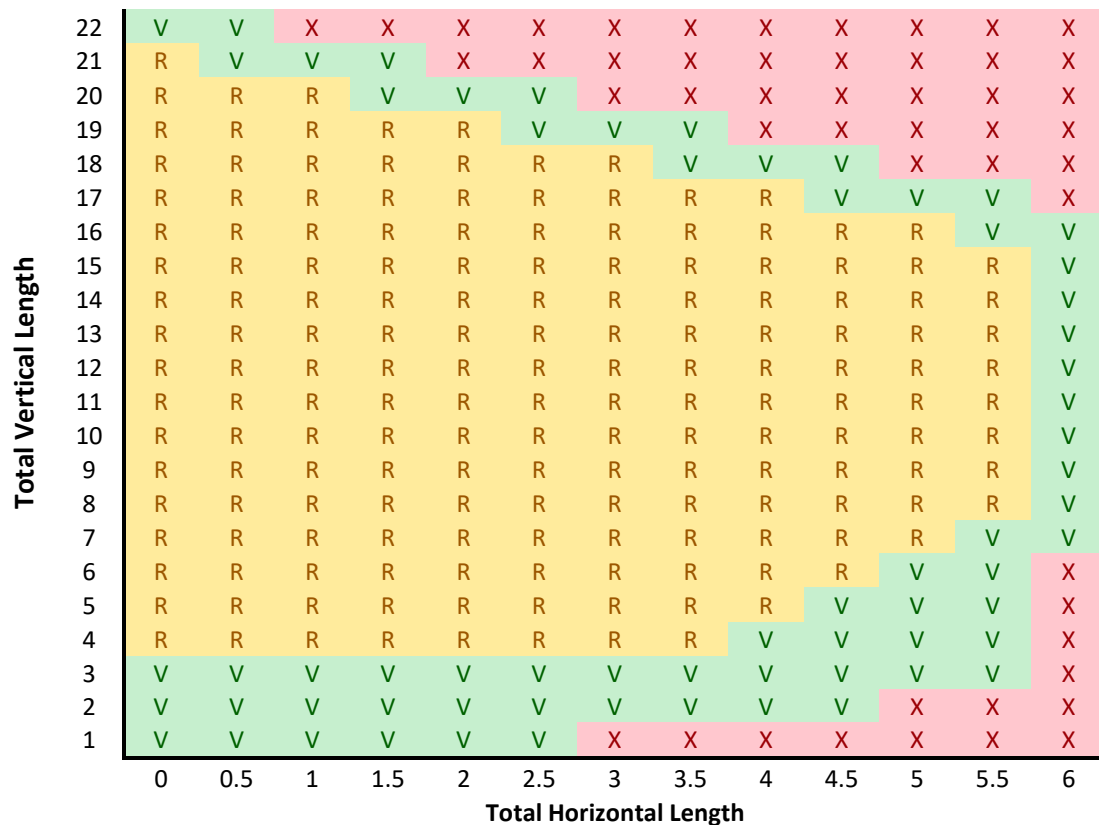
### 3.3 Category 3 (Metric) – Ratio 1:2

#### 3.3.1 Calculation table horizontal termination vent diameter



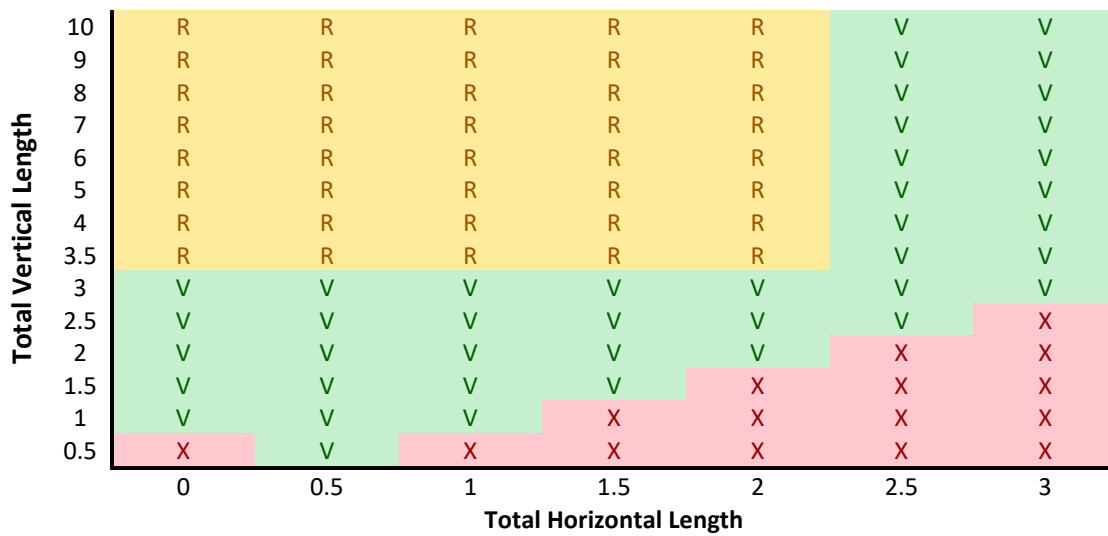
#### 3.3.2 Calculation table vertical termination vent diameter

For a vertical termination a minimal starting length of 0.5m before an elbow and minimal **Total Vertical Length** of 1 m is required.



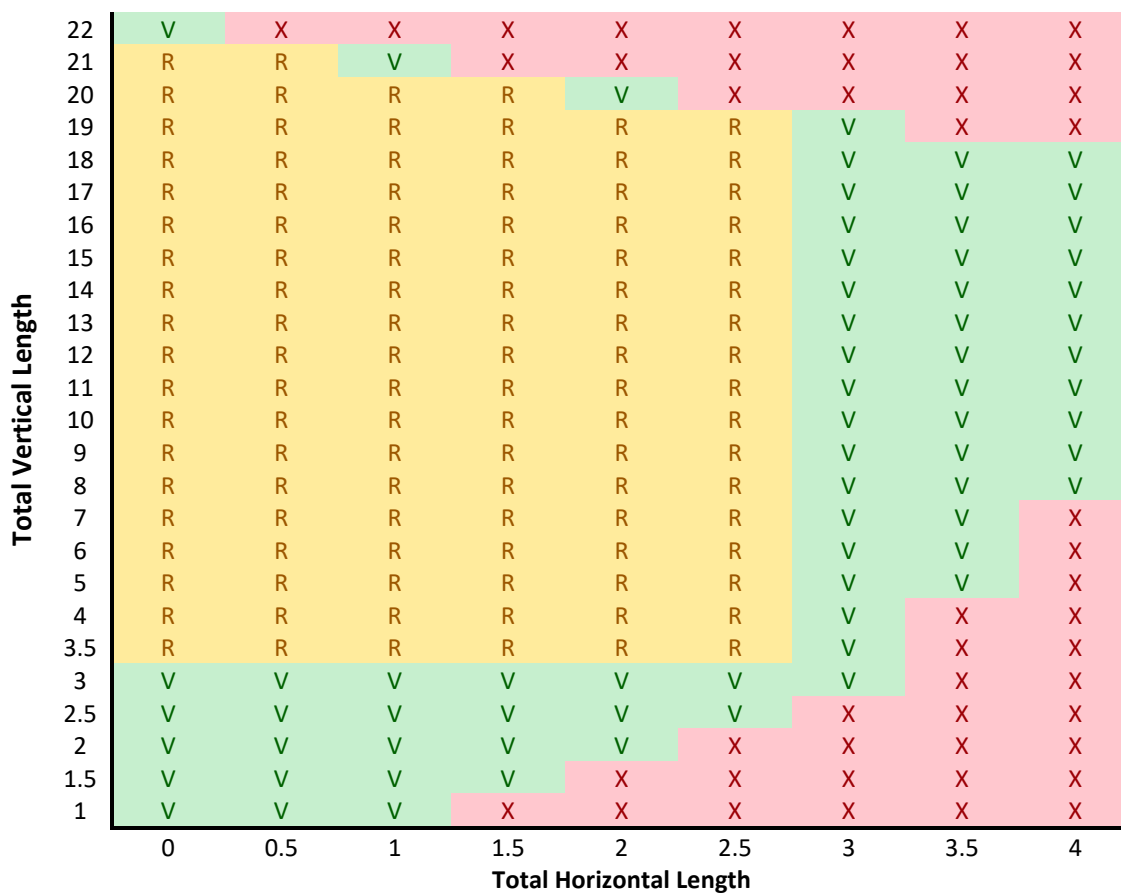
### 3.4 Category 4 (Metric) – Ratio 1:1

#### 3.4.1 Calculation table horizontal termination vent diameter 200/130



#### 3.4.2 Calculation table vertical termination vent diameter 200/130

For a vertical termination a minimal starting length of 0.5m before an elbow and minimal **Total Vertical Length** of 1 m is required.



#### 3.4.3 Calculation table vertical termination vent diameter 150/100

When the vent is exclusively vertical, it may be reduced to a diameter 150/100mm flue, given the **Total Vertical Length** is a minimum of 2 meters. In this case you do not have to use a restriction plate.

### 3.5 Category 5 (Metric) – Ratio 2:1

Fireplaces in this category are never to be reduced to vent diameter 150/100mm.

**NB: For the Modore /Tenore 240 a restriction plate is never necessary.**

#### 3.5.1 Calculation table horizontal termination vent diameter 200/130

Total Vertical Length	0	0.5	1	1.5	2	2.5	3
10	R	R	R	V	V	V	V
9	R	R	R	R	R	V	V
8	R	R	R	R	R	V	V
7	R	R	R	R	R	V	V
6	R	R	R	R	R	V	V
5	R	R	R	R	R	V	X
4	R	R	R	R	V	X	X
3	V	V	V	V	X	X	X
2	V	V	V	X	X	X	X

#### 3.5.2 Calculation table vertical termination vent diameter 200/130

For a vertical termination the minimal starting length (before an elbow) as well as the minimum **Total Vertical Length** is 2 m.

Total Vertical Length	0	0.5	1	1.5	2	2.5	3
22	V	V	V	X	X	X	X
21	R	R	V	V	V	X	X
20	R	R	R	R	V	V	V
19	R	R	R	R	R	R	V
18	R	R	R	R	R	R	V
17	R	R	R	R	R	R	V
16	R	R	R	R	R	R	V
15	R	R	R	R	R	R	V
14	R	R	R	R	R	R	V
13	R	R	R	R	R	R	V
12	R	R	R	R	R	R	V
11	R	R	R	R	R	R	V
10	R	R	R	R	R	R	V
9	R	R	R	R	R	R	V
8	R	R	R	R	R	V	V
7	R	R	R	R	R	V	V
6	R	R	R	R	R	V	X
5	R	R	R	R	R	V	X
4	R	R	R	R	V	X	X
3	V	V	V	V	X	X	X
2	V	V	V	X	X	X	X

### 3.6 Category 1 (Imperial) – Ratio 1:4

The tables below are the same for fireplaces with vent collar diameter 5/8 and 4/6. Fireplaces in this category are never to be reduced to ensure a correctly functioning fireplace.

#### 3.6.1 Calculation table horizontal termination 5/8 inch

Total Vertical Length	36'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	33'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	30'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	27'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	24'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	21'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	18'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	15'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	13'6"	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	12'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	10'6"	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
	9'	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
	7'6"	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
	6'	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
	4'6"	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X	X	X
	3'	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X	X	X
20"	V	V	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X	
		20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'	16'6"	18'	19'6"	21'	22'6"	24'	

#### 3.6.2 Calculation table vertical termination 5/8 inch

For a vertical termination a minimal starting length of 20" before an elbow is required and - **Total Vertical Length** is 3'.

Total Vertical Length	72'	V	V	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	69'	R	R	V	V	X	X	X	X	X	X	X	X	X	X	X	X	
	66'	R	R	R	R	V	V	X	X	X	X	X	X	X	X	X	X	
	63'	R	R	R	R	R	R	V	V	X	X	X	X	X	X	X	X	
	60'	R	R	R	R	R	R	R	R	V	V	X	X	X	X	X	X	
	57'	R	R	R	R	R	R	R	R	R	R	V	V	X	X	X	X	
	54'	R	R	R	R	R	R	R	R	R	R	R	R	V	V	X	X	
	51'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	X
	48'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	X
	45'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	42'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	39'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	36'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	33'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	30'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	27'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	24'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	21'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	18'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
	15'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V
13'6"	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
12'	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
10'6"	R	R	R	R	R	R	R	R	R	R	R	R	R	V	V	V	V	
9'	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
7'6"	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
6'	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
4'6"	V	V	V	V	V	V	V	V	V	V	V	V	V	V	X	X	X	X
3'	V	V	V	V	V	V	V	V	V	V	X	X	X	X	X	X	X	X
		0	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'	16'6"	18'	19'6"	21'	22'6"	24'

3.6.3 Calculation table vent diameter 4/6 inch

Please note: This table is only applicable when vent is reduced. Fireplaces with a 4/6 vent collar do not apply to this table, but instead table 3.6.1 or 3.6.2 is to be used.

For a vertical termination a Total Vertical Length of at least 7 feet is necessary!

Total Vertical Length	36'	V	V	X	X	X	X	X
	33'	R	R	V	V	X	X	X
	30'	R	R	R	R	V	V	X
	27'	R	R	R	R	R	R	V
	24'	R	R	R	R	R	R	V
	21'	R	R	R	R	R	R	V
	18'	R	R	R	R	R	R	V
	15'	R	R	R	R	R	V	X
	13'6"	R	R	R	R	V	X	X
	12'	R	R	R	V	X	X	X
	10'6"	R	R	R	V	X	X	X
	9'	V	V	V	V	X	X	X
	7'6"	V	V	V	V	X	X	X
	6'	V	V	X	X	X	X	X
		0	20"	3'	4'6"	6'	7'6"	9'
		Total Horizontal Length						



### 3.7 Category 2 (Imperial) - Ratio 1:2.5

The tables below are the same for fireplaces with vent collar diameter 5/8 and 4/6. Fireplaces in this category are never to be reduced to ensure a correctly functioning fireplace.

#### 3.7.1 Calculation table horizontal termination

Total Vertical Length	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'	16'6"
36'	R	R	R	R	R	R	R	V	V	V	V
33'	R	R	R	R	R	R	R	V	V	V	V
30'	R	R	R	R	R	R	R	V	V	V	V
27'	R	R	R	R	R	R	R	V	V	V	V
24'	R	R	R	R	R	R	R	V	V	V	V
21'	R	R	R	R	R	R	R	V	V	V	V
18'	R	R	R	R	R	R	R	V	V	V	V
15'	R	R	R	R	R	R	R	V	V	V	V
13'6"	R	R	R	R	R	R	R	V	V	V	V
12'	R	R	R	R	R	R	R	V	V	V	V
10'6"	R	R	R	R	R	R	R	V	V	V	V
9'	V	V	V	V	V	V	V	V	V	V	V
7'6"	V	V	V	V	V	V	V	V	V	V	V
6'	V	V	V	V	V	V	V	V	V	V	X
4'6"	V	V	V	V	V	V	V	X	X	X	X
3'	V	V	V	V	V	X	X	X	X	X	X
20"	V	V	V	X	X	X	X	X	X	X	X

#### 3.7.2 Calculation table vertical termination

For a vertical termination a minimal starting length of 20" before an elbow and minimal **Total Vertical Length** of 3' is required.

Total Vertical Length	0	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'
72'	V	V	X	X	X	X	X	X	X	X	X
69'	R	V	V	V	X	X	X	X	X	X	X
66'	R	R	R	V	V	V	X	X	X	X	X
63'	R	R	R	R	R	V	V	V	X	X	X
60'	R	R	R	R	R	R	R	V	V	V	X
57'	R	R	R	R	R	R	R	R	V	V	V
54'	R	R	R	R	R	R	R	R	R	R	V
51'	R	R	R	R	R	R	R	R	R	R	R
48'	R	R	R	R	R	R	R	R	R	R	R
45'	R	R	R	R	R	R	R	R	R	R	R
42'	R	R	R	R	R	R	R	R	R	R	R
39'	R	R	R	R	R	R	R	R	R	R	R
36'	R	R	R	R	R	R	R	R	R	R	R
33'	R	R	R	R	R	R	R	R	R	R	R
30'	R	R	R	R	R	R	R	R	R	R	R
27'	R	R	R	R	R	R	R	R	R	R	R
24'	R	R	R	R	R	R	R	V	V	V	V
21'	R	R	R	R	R	R	R	V	V	V	V
18'	R	R	R	R	R	R	R	V	V	V	V
15'	R	R	R	R	R	R	R	V	V	V	V
13'6"	R	R	R	R	R	R	R	V	V	V	V
12'	R	R	R	R	R	R	R	V	V	V	V
10'6"	R	R	R	R	R	R	R	V	V	V	V
9'	V	V	V	V	V	V	V	V	V	V	V
7'6"	V	V	V	V	V	V	V	V	V	V	V
6'	V	V	V	V	V	V	V	V	V	V	X
4'6"	V	V	V	V	V	V	V	X	X	X	X
3'	V	V	V	V	V	X	X	X	X	X	X

### 3.8 Category 3 (Imperial) – Ratio 1:2

#### 3.8.1 Calculation table horizontal termination vent diameter

Total Vertical Length	36'	R	R	R	R	R	R	R	R	R	R	R
	33'	R	R	R	R	R	R	R	R	R	R	R
	30'	R	R	R	R	R	R	R	R	R	R	V
	27'	R	R	R	R	R	R	R	R	R	R	V
	24'	R	R	R	R	R	R	R	R	R	R	V
	21'	R	R	R	R	R	R	R	R	R	R	V
	18'	R	R	R	R	R	R	R	R	R	R	V
	15'	R	R	R	R	R	R	R	R	R	R	V
	13'6"	R	R	R	R	V	V	V	V	V	V	V
	12'	R	R	R	R	V	V	V	V	V	V	V
	10'6"	R	R	R	R	V	V	V	V	V	V	V
	9'	V	V	V	V	V	V	V	V	V	V	V
	7'6"	V	V	V	V	V	V	V	V	V	V	V
6'	V	V	V	V	V	V	V	V	V	X	X	
4'6"	V	V	V	V	V	V	X	X	X	X	X	
3'	V	V	V	V	X	X	X	X	X	X	X	
20"	V	V	X	X	X	X	X	X	X	X	X	
		20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'	16'6"
		Total Horizontal Length										

#### 3.8.2 Calculation table vertical termination vent diameter 5/8 inch

For a vertical termination a minimal starting length of 20" before an elbow and minimal **Total Vertical Length** of 3' is required.

Total Vertical Length	72'	V	V	V	X	X	X	X	X	X	X	X	
	69'	R	V	V	V	X	X	X	X	X	X	X	
	66'	R	R	R	V	V	V	X	X	X	X	X	
	63'	R	R	R	R	R	V	V	V	X	X	X	
	60'	R	R	R	R	R	R	R	V	V	V	X	
	57'	R	R	R	R	R	R	R	R	V	V	V	
	54'	R	R	R	R	R	R	R	R	R	V	V	
	51'	R	R	R	R	R	R	R	R	R	R	R	
	48'	R	R	R	R	R	R	R	R	R	R	R	
	45'	R	R	R	R	R	R	R	R	R	R	R	
	42'	R	R	R	R	R	R	R	R	R	R	R	
	39'	R	R	R	R	R	R	R	R	R	R	R	
	36'	R	R	R	R	R	R	R	R	R	R	R	
33'	R	R	R	R	R	R	R	R	R	R	R		
30'	R	R	R	R	R	R	R	R	R	R	R		
27'	R	R	R	R	R	R	R	R	R	R	R		
24'	R	R	R	R	R	R	R	R	R	R	R		
21'	R	R	R	R	R	R	R	R	R	R	R		
18'	R	R	R	R	R	R	R	R	R	R	V		
15'	R	R	R	R	R	R	R	R	R	R	V		
13'6"	R	R	R	R	R	R	R	R	R	V	V		
12'	R	R	R	R	R	R	R	R	R	V	V		
10'6"	R	R	R	R	R	R	R	R	R	V	V		
9'	V	V	V	V	V	V	V	V	V	V	V		
7'6"	V	V	V	V	V	V	V	V	V	V	V		
6'	V	V	V	V	V	V	V	V	V	V	X		
4'6"	V	V	V	V	V	V	V	X	X	X	X		
3'	V	V	V	V	V	X	X	X	X	X	X		
		0	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"	15'	16'6"
		Total Horizontal Length											

### 3.9 Category 4 (Imperial) – Ratio 1:1

#### 3.9.1 Calculation table horizontal termination vent diameter 5/8 inch

Total Vertical Length	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'
36'	R	R	R	R	R	V	V	V
33'	R	R	R	R	R	V	V	V
30'	R	R	R	R	R	V	V	V
27'	R	R	R	R	R	V	V	V
24'	R	R	R	R	R	V	V	V
21'	R	R	R	R	R	V	V	V
18'	R	R	R	R	R	V	V	V
15'	R	R	R	R	R	V	V	V
13'6"	R	R	R	R	V	V	V	V
12'	R	R	R	R	V	V	V	V
10'6"	R	R	R	R	V	V	V	X
9'	V	V	V	V	V	V	X	X
7'6"	V	V	V	V	V	X	X	X
6'	V	V	V	V	X	X	X	X
4'6"	V	V	V	X	X	X	X	X
3'	V	V	X	X	X	X	X	X

#### 3.9.2 Calculation table vertical termination vent diameter 5/8 inch

For a vertical termination a minimal starting length of 20" before an elbow and minimal **Total Vertical Length** of 3' is required.

Total Vertical Length	0	20"	3'	4'6"	6'	7'6"	9'	10'6"	12'	13'6"
72'	V	V	V	X	X	X	X	X	X	X
69'	R	R	V	V	X	X	X	X	X	X
66'	R	R	R	R	V	V	X	X	X	X
63'	R	R	R	R	R	R	V	V	X	X
60'	R	R	R	R	R	R	V	V	V	V
57'	R	R	R	R	R	R	V	V	V	V
54'	R	R	R	R	R	R	V	V	V	V
51'	R	R	R	R	R	R	V	V	V	V
48'	R	R	R	R	R	R	V	V	V	V
45'	R	R	R	R	R	R	V	V	V	V
42'	R	R	R	R	R	R	V	V	V	V
39'	R	R	R	R	R	R	V	V	V	V
36'	R	R	R	R	R	R	V	V	V	V
33'	R	R	R	R	R	R	V	V	V	V
30'	R	R	R	R	R	R	V	V	V	V
27'	R	R	R	R	R	R	V	V	V	V
24'	R	R	R	R	R	R	V	V	V	V
21'	R	R	R	R	R	R	V	V	V	V
18'	R	R	R	R	R	R	V	V	V	V
15'	R	R	R	R	R	R	V	V	V	V
13'6"	R	R	R	R	R	R	V	V	V	V
12'	R	R	R	R	R	R	V	V	V	X
10'6"	R	R	R	R	R	R	V	V	X	X
9'	V	V	V	V	V	V	V	X	X	X
7'6"	V	V	V	V	V	V	X	X	X	X
6'	V	V	V	V	V	X	X	X	X	X
4'6"	V	V	V	V	X	X	X	X	X	X
3'	V	V	V	X	X	X	X	X	X	X

#### 3.9.3 Calculation table vertical termination vent diameter 4/6

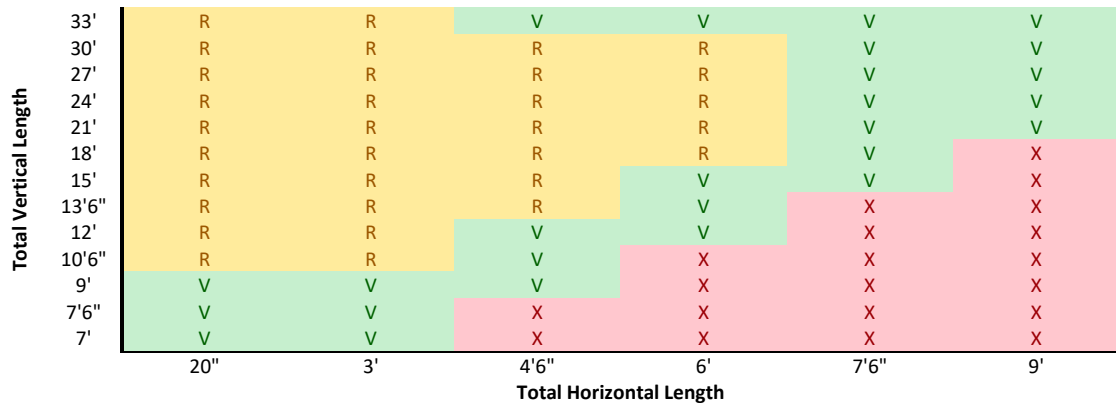
When the vent is exclusively vertical, it may be reduced to a diameter 4/6 inch flue, given the **Total Vertical Length** is a minimum of 7 feet. In this case you do not have to use a restriction plate.

### 3.10 Category 5 (Imperial) – Ratio 2:1

Fireplaces in this category are never to be reduced to vent diameter 4/6".

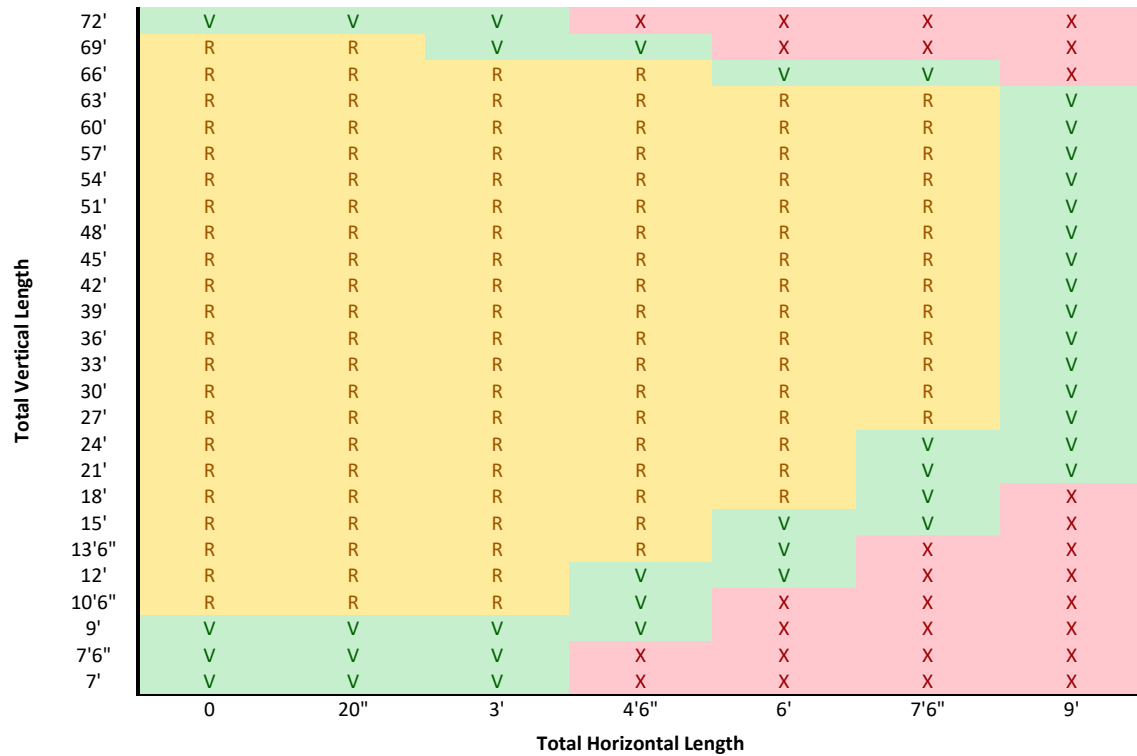
**NB: For the Modore /Tenore 240 a restriction plate is never necessary.**

#### 3.10.1 Calculation table horizontal termination vent diameter 5/8



#### 3.10.2 Calculation table vertical termination vent diameter 5/8

For a vertical termination the minimal starting length and - Total Vertical Length is 7'.



## 4 Existing Chimney

All Element4 gas fireplaces are approved, such that the fireplace can be installed with a flexible vent in an pre-existing chimney, where the chimney is functioning as the air supply in a concentric vent system. The flexible vent is the exhaust for the vent gasses.

### Please note the following

Local rules and legislation is applicable to the installation of your fireplace. Make sure that the use of flexible vent material is permitted in your area before installing the fireplace or take different precautions. Feel free to contact your installer or Element4 with any questions.

### Important

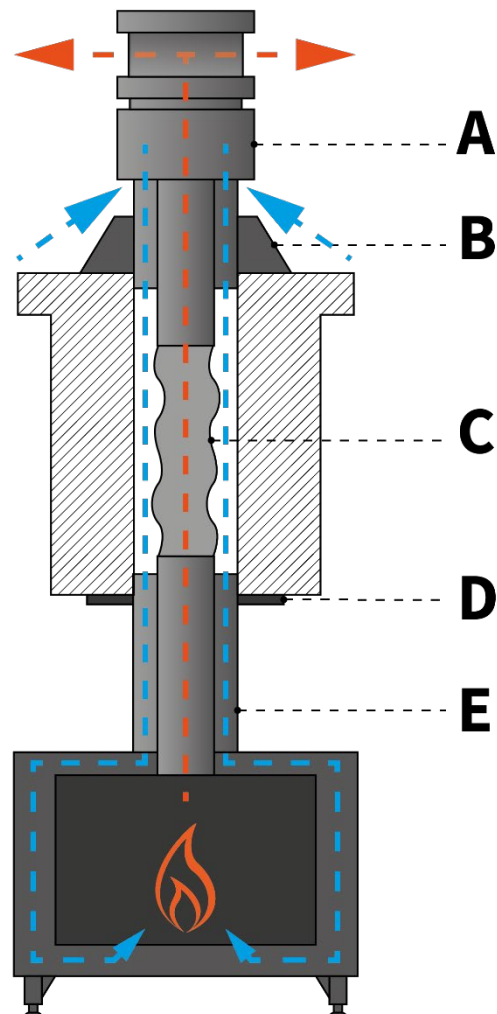
The pre-existing chimney is to be closed on the top and bottom, such that the air supply can only be taken from outside the house. This will ensure a closed system.

A flexible vent with a diameter of 100mm/4" (or 130mm/5") must comply with the norms applicable for North America. This means the pipe should have a temperature resistance of 600°C / 1112°F, which can be seen on the declaration of performance.

The chimney must fulfil the following conditions:

- For vent diameter 150/100mm or 4/6" :  
The cross section of the chimney must be a minimum of 150x150 mm or 6x6".
- For vent diameter 200/130 mm or 5/8 inch:  
The cross section of the chimney must be a minimum of 200x200 mm or 8x8"
- **No more than one fireplace is to be used per chimney!**
- The chimney must be cleaned properly before using the fireplace.
- The chimney must be checked for leakage before use.

When the total vertical length is at least 3 meters or 10 feet, an offset of 45° is allowed on the fireplace.



### Table for the diagram on the right

- |   |  |
|---|--|
| A | Roof termination   |
| B | Storm Collar   |
| C | Flexibel flue  |
| D | Chimney closing plate  |
| E | Start of the vent (minimum of 0,5m / 20")<br>possible offset of 2 times a 45° bend |



Paxtonstraat 23  
NL-8013 RP Zwolle  
The Netherlands  
Phone: +31 (0)38 4209020  
Fax: +31 (0)38 4209021  
[info@element4.nl](mailto:info@element4.nl)

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