A fireplace should provide a home with beauty, comfort and enjoyment. The width and height of the fireplace opening, as well as the size of the chimney’s flue, are of utmost importance to its operation. On this sheet we will attempt to furnish easy to follow formulas and examples so that you may determine the proper ratio of one to the other.

**FORMULA TO DETERMINE IF THE FIREPLACE OPENING IS CORRECT**

The height of the fireplace opening should not be more than 2/3rds to 3/4ths of its width.

**EXAMPLE**

\[
\begin{align*}
\frac{2}{3}\text{rd of } 36" &= 24" \\
\frac{3}{4}\text{th of } 36" &= 27"
\end{align*}
\]

The fireplace on the right, being 30" high, is out of proportion to the 36" width. It is 3 to 6" too high. A HY-C Smoke Guard across the opening would reduce the height by 4", to 26". This would be more nearly the proper ratio and should hold the smoke in.

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**FORMULA TO DETERMINE FLUE SIZE NEEDED IN RELATION TO FIREPLACE OPENING.**

The effective square inch area of the flue lining in your chimney (see reverse side for chart) should be near 1/10th of the width x height of the fireplace opening.

**EXAMPLE**

The 30 x 36" fireplace opening above equals 1080 square inches — 10 = 108 square inches of effective flue area needed. A 13 x 13" flue lining only provides 99 sq. in. This means the lining is too small for a 30 x 36" fireplace opening. By lowering the height of the opening by 4", to 26" (when you install a HY-C Smoke Guard), you arrive at these figures. 26 x 36" = 936 Sq. In. — 10 = 93.6 effective flue area needed. This is well within the capacity of the 13 x 13" lining. (See attached chart)

Of course, all fireplace openings and all linings are different, but this sheet should enable you to determine if simply lowering the opening, you could solve a “smoky" fireplace problem.

(Over)
### FIREPLACE DIMENSION
*(In Inches)*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>24 x 84</td>
</tr>
<tr>
<td>Height</td>
<td>2/3 to 3/4 width</td>
</tr>
<tr>
<td>Depth</td>
<td>1/2 to 2/3 height</td>
</tr>
<tr>
<td>Flue (Effective Area)</td>
<td>See Recommended Flue Sizes, Effective Area Sq. In. (below)</td>
</tr>
<tr>
<td>Square Inch</td>
<td>1/8 width x height for Unlined Flue</td>
</tr>
<tr>
<td></td>
<td>1/10 width x height for Rectangular Lining</td>
</tr>
<tr>
<td></td>
<td>1/12 width x height for Round Lining</td>
</tr>
<tr>
<td>Throat Area</td>
<td>1/4 to 1/2 larger than Flue Area</td>
</tr>
<tr>
<td>Throat Width</td>
<td>3” minimum to 4½” maximum</td>
</tr>
</tbody>
</table>

### RECOMMENDED FLUE SIZES
*(In Inches)*

<table>
<thead>
<tr>
<th>Fireplace Width</th>
<th>Rectangular Flues</th>
<th>Equivalent Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outside Dimension</td>
<td>Inside Dimension</td>
</tr>
<tr>
<td>24</td>
<td>8½ x 8½</td>
<td>7¼ x 7¼</td>
</tr>
<tr>
<td>30 to 34</td>
<td>8½ x 13</td>
<td>7 x 11½</td>
</tr>
<tr>
<td>36 to 44</td>
<td>13 x 13</td>
<td>11¼ x 11¼</td>
</tr>
<tr>
<td>46 x 56</td>
<td>13 x 18</td>
<td>11¼ x 16¼</td>
</tr>
<tr>
<td>58 to 68</td>
<td>18 x 18</td>
<td>15½ x 15¾</td>
</tr>
<tr>
<td>70 to 84</td>
<td>20 x 24</td>
<td>17 x 21</td>
</tr>
<tr>
<td>Over 84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>