`\vtop` ⟨*vertical mode material*⟩
`\vtop to` ⟨*dimen*⟩ `{` ⟨*vertical mode material*⟩ `}`
`\vtop spread` ⟨*dimen*⟩ `{` ⟨*vertical mode material*⟩ `}`
`\vbox {` ⟨*vertical mode material*⟩ `}`
`\vbox to` ⟨*dimen*⟩ `{` ⟨*vertical mode material*⟩ `}`
`\vbox spread` ⟨*dimen*⟩ `{` ⟨*vertical mode material*⟩ `}`

These commands produce a vbox (vertical box) containing ⟨*vertical mode material*⟩. The braces around ⟨*vertical mode material*⟩ define a group. TEX is in internal vertical mode when it's assembling the box. TEX won't change the size of the box once it's been produced.

The difference between `\vtop` and `\vbox` lies in where TEX puts the reference point of the constructed vbox. Ordinarily, the reference point gotten from `\vtop` tends to be at or near the top of the constructed vbox, while the reference point gotten from `\vbox` tends to be at or near the bottom of the constructed vbox. Thus a row of vboxes all constructed with `\vtop` will tend to have their tops nearly in a line, while a row of vboxes all constructed with `\vbox` will tend to have their bottoms nearly in a line.

`\vtop` and `\vbox` are often useful when you want to keep some text together on a single page. (For this purpose, it usually doesn't matter which command you use.) If your use of these commands prevents TEX from breaking pages in an acceptable way, TEX will complain that it's found an overfull or underfull vbox while `\output` is active.

The height of a vbox depends on the arguments to `\vtop` or `\vbox`. For `\vbox`, TEX determines the height as follows:

- If you specify only ⟨*vertical mode material*⟩, the vbox will have its natural height.
- If you specify `to` ⟨*dimen*⟩, the height of the vbox will be ⟨*dimen*⟩.
- If you specify `spread` ⟨*dimen*⟩, the height of the vbox will be its natural height plus ⟨*dimen*⟩, i.e., the height of the vbox will be stretched vertically by ⟨*dimen*⟩.

For `\vtop`, TEX constructs the box using its rules for `\vbox` and then apportions the vertical extent between the height and the depth as described below.

Ordinarily, the width of a constructed vbox is the width of the widest item inside it.[1] The rules for apportioning the vertical extent between the height and the depth are more complicated:

- For `\vtop`, the height is the height of its first item, if that item is a box or rule. Otherwise the height is zero. The depth is whatever vertical extent remains after the height is subtracted.

[1] More precisely, it's the distance from the reference point to the rightmost edge of the constructed vbox. Therefore, if you move any of the items right using `\moveright` or `\moveleft` (with a negative distance), the constructed vbox might be wider.

- For `\vbox`, the depth is the depth of its last item, if that item is a box or rule. Otherwise the depth is zero. The height is whatever vertical extent remains after the depth is subtracted.[2]

The `\vfil` command (p. '`\vfil`') is useful for filling out a vbox with empty space when the material in the box isn't as tall as the vertical extent of the box.

Example:

```
\hbox{\hsize = 10pc \raggedright\parindent = 1em
\vtop{In this example, we see how to use vboxes to
produce the effect of double columns.  Each vbox
contains two paragraphs, typeset according to \TeX's
usual rules except that it's ragged right.\par
This isn't really the best way to get true double
columns because the columns}
\hskip 2pc
\vtop{\noindent
aren't balanced and we haven't done anything to choose
the column break automatically or even to fix up the
last line of the first column.\par
However, the technique of putting running text into a
vbox is very useful for placing that text where you
want it on the page.}}
```

produces:

In this example, we see how to use vboxes to produce the effect of double columns. Each vbox contains two paragraphs, typeset according to TEX's usual rules except that it's ragged right.

This isn't really the best way to get true double columns because the columns aren't balanced and we haven't done anything to choose the column break automatically or even to fix up the last line of the first column.

However, the technique of putting running text into a vbox is very useful for placing that text where you want it on the page.

[2] In fact, there's a further complication. Suppose that after the depth has been determined using the two rules just given, the depth turns out to be greater than `\boxmaxdepth`. Then the depth is reduced to `\boxmaxdepth` and the height is adjusted accordingly.

Example:

```
\hbox{\hsize = 1in \raggedright\parindent = 0pt
\vtop to .75in{\hrule This box is .75in deep. \vfil\hrule}
\qquad
\vtop{\hrule This box is at its natural depth. \vfil\hrule}
\qquad
\vtop spread .2in{\hrule This box is .2in deeper than
                  its natural depth.\vfil\hrule}}
```

produces:

This box is .75in deep.

This box is at its natural depth.

This box is .2in deeper than its natural depth.

Example:

```
% See how \vbox lines up boxes at their bottoms
% instead of at their tops.
\hbox{\hsize = 1in \raggedright
\vbox to .5in{\hrule This box is .5in deep.\vfil\hrule}
\qquad
\vbox to .75in{\hrule This box is .75in deep.\vfil\hrule}}
```

produces:

This box is .5in deep.

This box is .75in deep.