

## David Kastrup

### Fixing `\vtop`

`\vtop` happens to lose the correct top of line information when it starts with a `whatsit`. We can reconstitute this in the following manner:

```
\def\fvtop#{\vtop\bgroup
  \setbox0\vbox\bgroup
  \aftergroup\fvboxii
  \let\next=}

\def\fvboxii{\setbox0\vtop{\break\unvbox0}%
  \dimen0=\maxdimen
  \ifdim\dp0>0pt \advance\dimen0-\dp0 \fi
  {\splittopskip\dimen0 \setbox0\vsplit0to0pt}%
  \advance\dimen0-\ht0%
  {\splittopskip-\maxdimen\setbox0\vsplit0to0pt}%
  \advance\dimen0\ht0%
  \hrule height\dimen0 depth-\dimen0
  \unvbox0
  \egroup}
```

The trick here is to use `\vsplit` which pads the followup box sufficiently to reach a given line height on the top line. We essentially tell it to make this line fit `\maxdimen` minus a safety margin and see how far it gets. Then we remove the padding with another split and start the box with a strut that establishes the corrected height.

```
\def\example{\hbox{First good line}%
\hbox{Second good line}%
\hbox{Third good line}}

\leavevmode
\vtop{\example}%
\vtop{\write-1{\example}%
\fvtop{\write-1{\example}}

First good line First good line First good line
Second good line First good line Second good line
Third good line Second good line Third good line
Third good line Third good line
```