

# The `settobox` package

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## Abstract

Commands are defined for getting box sizes similar to  $\text{\LaTeX}$ 's `\settowidth` commands.

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## 1 Usage

### 1.1 Get box dimensions

<code>\settoboxwidth{&lt;<math>\text{\LaTeX}</math> length&gt;}{&lt;<math>\text{\LaTeX}</math> box&gt;}</code>
<code>\settoboxheight{&lt;~&gt;}{&lt;~&gt;}</code>
<code>\settoboxdepth{&lt;~&gt;}{&lt;~&gt;}</code>
<code>\settoboxtotalheight{&lt;~&gt;}{&lt;~&gt;}</code>

A  $\langle\text{\LaTeX} box\rangle$  is allocated by `\newsavebox`. It can be filled by `\sbox` or the environment `lrbox`. The commands above extract then the desired lengths.

## 1.2 Set box dimensions

```
\setboxwidth{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxheight{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxdepth{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}
```

These commands allow the manipulation of the box. Package `calc` is supported in the  $\langle L^A T_E X \text{ length expression} \rangle$ . Also the following length are available in this expression:

<code>\width</code>	width of the box
<code>\height</code>	height of the box
<code>\depth</code>	depth of the box
<code>\totalheight</code>	totalheight of the box

Note, the base point (point at the left margin of the baseline) always remain constant.

## 1.3 Move box

```
\setboxmoveleft{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxmoveright{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxlower{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxright{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}
```

Note, the box is shifted relative to the base point. The base point is always inside the box, however the width and height of the box change along with the movement.

## 1.4 Example

### 1.4.1 Short example

```
\newsavebox{\mybox}  
\newlength{\mylength}  
\sbox{\mybox}{Hello World}  
\settoboxwidth{\mylength}{\mybox}
```

### 1.4.2 Test file that shows box manipulations

```
1 \langle *example\rangle  
2 \documentclass{article}  
3  
4 \usepackage{settobox}  
5 \usepackage{calc}  
6  
7 \newsavebox{\mybox}  
8  
9 \setlength{\fboxsep}{0pt}  
10 \setlength{\parindent}{20pt}  
11 \setlength{\parskip}{10pt}  
12 \pagestyle{empty}  
13  
14 % \test{#1}  
15 % The macro is called with commands in #1 that manipulates  
16 % the box \mybox. These commands along with the result of  
17 % the manipulation is shown. Thus the essence of the  
18 % macro is:  
19 %  
20 % a) \sbox{\mybox}{The cracy fox.}  
21 % b) #1 % manipulates \mybox
```

```

22 % c) Print #1 commands.
23 % d) Print box with frame
24 %
25 % The implemenation looks more weird:
26 \makeatletter
27 \newcommand*{\test}[1]{%
28   \par
29   \begingroup
30     \raggedright
31     \edef\x{\detokenize{#1}}
32     \let\do\@makeoother
33     \dospecials
34     \catcode'\~\active
35     \catcode'\ =10\relax
36     \def~{\}%
37     \noindent
38     \texttt{\scantokens\expandafter{x}}
39     \par
40   \endgroup
41   \begingroup
42     \let~\relax
43     \sbox{\mybox}{The cracy fox.}
44     #1%
45     A---\fbox{\usebox{\mybox}}---B
46   \endgroup
47   \par
48 }
49 \makeatother
50
51 \begin{document}
52
53 \test{\setboxwidth{\mybox}{1.25\width}}
54 \test{\setboxheight{\mybox}{0pt}}
55 \test{\setboxheight{\mybox}{2\height}}
56 \test{\setboxdepth{\mybox}{\height}}
57 \test{\setboxmoveleft{\mybox}{5pt}}
58 \test{%
59   \setboxmoveleft{\mybox}{5pt}~%
60   \setboxwidth{\mybox}{\width + 5pt}%
61 }
62 \test{\setboxmoveright{\mybox}{0.5\width}}
63 \test{\setboxlower{\mybox}{\height}}
64 \test{\setboxraise{\mybox}{\depth}}
65 \test{%
66   \setboxmoveright{\mybox}{5pt}~%
67   \setboxwidth{\mybox}{\width + 5pt}~%
68   \setboxheight{\mybox}{\height + 5pt}~%
69   \setboxdepth{\mybox}{\depth + 5pt}%
70 }
71
72 \end{document}
73 </example>

```

The result:

---

`\setboxwidth {\mybox }{1.25\width }`

A—The cracy fox.—B

`\setboxheight {\mybox }{0pt}`

A—The cracy fox.—B

```

\setboxheight {\mybox }{2\height }

A—The cracy fox.—B

\setboxdepth {\mybox }{\height }

A—The cracy fox.—B

\setboxmoveleft {\mybox }{5pt}

A—The cracy fox.—B

\setboxmoveleft {\mybox }{5pt}
\setboxwidth {\mybox }{\width + 5pt}

A—The cracy fox.—B

\setboxmoveright {\mybox }{0.5\width }

A—The cracy fox.—B

\setboxlower {\mybox }{\height }

A—The cracy fox.—B

\setboxraise {\mybox }{\depth }

A—The cracy fox.—B

\setboxmoveright {\mybox }{5pt}
\setboxwidth {\mybox }{\width + 5pt}
\setboxheight {\mybox }{\height + 5pt}
\setboxdepth {\mybox }{\depth + 5pt}

A—The cracy fox.—B

```

---

## 2 Implementation

```
74 (*package)
```

Package identification.

```

75 \NeedsTeXFormat{LaTeX2e}
76 \ProvidesPackage{settoebox}%
77 [2006/02/20 v1.2 Getting box sizes (H0)]
78 \newcommand*{\settoboxwidth}[2]{\setlength{#1}{\wd#2}}
79 \newcommand*{\settoboxheight}[2]{\setlength{#1}{\ht#2}}
80 \newcommand*{\settoboxdepth}[2]{\setlength{#1}{\dp#2}}
81 \newcommand*{\settoboxtotalheight}[2]{%
82   \setlength{#1}{\ht#2}%
83   \addtolength{#1}{\dp#2}%
84 }

```

`\setboxwidth`

```

85 \newcommand*{\setboxwidth}[2]{%
86   \settobox@length\wd{#1}{#2}%
87 }

```

`\setboxheight`

```
88 \newcommand*{\setboxheight}[2]{%
```

```

89 \settobox@length\ht{#1}{#2}%
90 }

\setboxheight
91 \newcommand*\setboxdepth[2]{%
92 \settobox@length\dp{#1}{#2}%
93 }

\setboxmoveleft
94 \newcommand*\setboxmoveleft[2]{%
95 \settobox@horiz{-}{#1}{#2}%
96 }

\setboxmoveright
97 \newcommand*\setboxmoveright[2]{%
98 \settobox@horiz{}{#1}{#2}%
99 }

\setboxlower
100 \newcommand*\setboxlower[2]{%
101 \settobox@vert\lower{#1}{#2}%
102 }

\setboxraise
103 \newcommand*\setboxraise[2]{%
104 \settobox@vert\raise{#1}{#2}%
105 }

\settobox@length The work for the \setbox... commands is done by \settobox@length. Inside
the length expression \width, \height, \depth, \totalheight are set to the
dimensions of the box.
#1: the property of the box that is to be changed (\wd, \ht, \dp)
#2: the box
#3: length expression
106 \def\settobox@length#1#2#3{%
107 \settobox@calc{#2}{#3}{#1#2=##1sp\relax}%
108 }

\settobox@horiz
109 \def\settobox@horiz#1#2#3{%
110 \settobox@calc{#2}{#3}{\setbox#2=\hbox{\kern#1##1sp\copy#2}}%
111 }

\settobox@vert
112 \def\settobox@vert#1#2#3{%
113 \settobox@calc{#2}{#3}{\setbox#2=\hbox{#1##1sp\copy#2}}%
114 }

\settobox@calc
115 \def\settobox@calc#1#2#3{%
116 \begingroup
117 \def\width{\wd#1}%
118 \def\height{\ht#1}%
119 \def\depth{\dp#1}%
120 \dimen@ \ht#1\relax
121 \advance\dimen@ \dp#1\relax
122 \def\totalheight{\dimen@}%
123 \setlength{\dimen@}{#2}%
124 \count@\dimen@
125 \def\x##1{\endgroup

```

```

126      #3%
127    }%
128    \expandafter\x\expandafter{\the\count@}%
129  }

130 </package>

```

## 3 Installation

**CTAN.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/settobox.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/settobox.pdf](#) Documentation.

**Unpacking.** The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain- $\text{\TeX}$ :

```
tex settobox.dtx
```

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```

settobox.sty      → tex/latex/oberdiek/settobox.sty
settobox.pdf      → doc/latex/oberdiek/settobox.pdf
settobox-example.tex → doc/latex/oberdiek/settobox-example.tex
settobox.dtx      → source/latex/oberdiek/settobox.dtx

```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

**Refresh file databases.** If your  $\text{\TeX}$  distribution (`te $\text{\TeX}$` , `mik $\text{\TeX}$` , ...) rely on file databases, you must refresh these. For example, `te $\text{\TeX}$`  users run `texhash` or `mktexlsr`.

### 3.1 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk settobox.pdf unpack_files output .
```

**Unpacking with  $\text{\LaTeX}$ .** The `.dtx` chooses its action depending on the format:

**plain- $\text{\TeX}$ :** Run `docstrip` and extract the files.

**$\text{\LaTeX}$ :** Generate the documentation.

If you insist on using  $\text{\LaTeX}$  for `docstrip` (really, `docstrip` does not need  $\text{\LaTeX}$ ), then inform the autodetect routine about your intension:

```
latex \install=y\input{settobox.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

<sup>1</sup><http://ftp.ctan.org/tex-archive/>

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfL<sup>A</sup>T<sub>E</sub>X:

```
pdflatex settobox.dtx
makeindex -s gind.ist settobox.idx
pdflatex settobox.dtx
makeindex -s gind.ist settobox.idx
pdflatex settobox.dtx
```

## 4 History

### [2000/02/11 v1.0]

- First public release, written as answer in the newsgroup `de.comp.text.tex` in the thread *Die Hoehe von Minipages und Bild*, date: 2000/02/11.

### [2000/09/07 v1.1]

- Documentation added.
- CTAN release.

### [2006/02/20 v1.2]

- `\setboxwidth`, `\setboxheight`, `\setboxdepth` added.
- Box move commands added.
- DTX framework.
- LPPL 1.3

## 5 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

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