

# The `settobox` package

Heiko Oberdiek  
<oberdiek@uni-freiburg.de>

2007/04/11 v1.3

## Abstract

Commands are defined for getting box sizes similar to L<sup>A</sup>T<sub>E</sub>X's `\settowidth` commands.

## Contents

<b>1</b>	<b>Usage</b>	<b>1</b>
1.1	Get box dimensions	1
1.2	Set box dimensions	2
1.3	Move box	2
1.4	Example	2
1.4.1	Short example	2
1.4.2	Test file that shows box manipulations	2
<b>2</b>	<b>Implementation</b>	<b>4</b>
<b>3</b>	<b>Installation</b>	<b>6</b>
3.1	Download	6
3.2	Bundle installation	6
3.3	Package installation	6
3.4	Refresh file name databases	7
3.5	Some details for the interested	7
<b>4</b>	<b>History</b>	<b>7</b>
[2000/02/11 v1.0]		7
[2000/09/07 v1.1]		7
[2006/02/20 v1.2]		7
[2007/04/11 v1.3]		8
<b>5</b>	<b>Index</b>	<b>8</b>

## 1 Usage

### 1.1 Get box dimensions

<code>\settoboxwidth{&lt;L<sup>A</sup>T<sub>E</sub>X length&gt;}{&lt;L<sup>A</sup>T<sub>E</sub>X box&gt;}</code>
<code>\settoboxheight{&lt;L<sup>A</sup>T<sub>E</sub>X length&gt;}{&lt;L<sup>A</sup>T<sub>E</sub>X box&gt;}</code>
<code>\settoboxdepth{&lt;L<sup>A</sup>T<sub>E</sub>X length&gt;}{&lt;L<sup>A</sup>T<sub>E</sub>X box&gt;}</code>
<code>\settobxtotalheight{&lt;L<sup>A</sup>T<sub>E</sub>X length&gt;}{&lt;L<sup>A</sup>T<sub>E</sub>X box&gt;}</code>

A `<LATEX box>` 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

<code>\setboxwidth</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>
<code>\setboxheight</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>
<code>\setboxdepth</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>

These commands allow the manipulation of the box. Package `calc` is supported in the `\langle LATEX 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

<code>\setboxmoveleft</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>
<code>\setboxmoveright</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>
<code>\setboxlower</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>
<code>\setboxright</code>	<code>{\langle L<sup>A</sup>T<sub>E</sub>X box\rangle}{\langle L<sup>A</sup>T<sub>E</sub>X length expression\rangle}</code>

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

```

22 % b) #1 % manipulates \mybox
23 % c) Print #1 commands.
24 % d) Print box with frame
25 %
26 % The implemenation looks more weird:
27 \makeatletter
28 \newcommand*{\test}[1]{%
29   \par
30   \begin{group}
31     \raggedright
32     \edef\x{\detokenize{#1}}%
33     \let\do\@makeoother
34     \dospecials
35     \catcode'\~\active
36     \catcode'\ =10\relax
37     \def~{\}%
38     \noindent
39     \texttt{\scantokens\expandafter{\x}}%
40     \par
41   \end{group}
42   \begin{group}
43     \let~\relax
44     \sbox{\mybox}{The cracy fox.}%
45     #1%
46     A---\fbox{\usebox{\mybox}}---B%
47   \end{group}
48   \par
49 }
50 \makeatother
51
52 \begin{document}
53
54 \test{\setboxwidth{\mybox}{1.25\width}}
55 \test{\setboxheight{\mybox}{0pt}}
56 \test{\setboxheight{\mybox}{2\height}}
57 \test{\setboxdepth{\mybox}{\height}}
58 \test{\setboxmoveleft{\mybox}{5pt}}
59 \test{%
60   \setboxmoveleft{\mybox}{5pt}~%
61   \setboxwidth{\mybox}{\width + 5pt}%
62 }
63 \test{\setboxmoveright{\mybox}{0.5\width}}
64 \test{\setboxlower{\mybox}{\height}}
65 \test{\setboxraise{\mybox}{\depth}}
66 \test{%
67   \setboxmoveright{\mybox}{5pt}~%
68   \setboxwidth{\mybox}{\width + 5pt}~%
69   \setboxheight{\mybox}{\height + 5pt}~%
70   \setboxdepth{\mybox}{\depth + 5pt}%
71 }
72
73 \end{document}
74 %END
75 </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

```
76 (*package)
Package identification.
77 \NeedsTeXFormat{LaTeX2e}
78 \ProvidesPackage{settoebox}%
79 [2007/04/11 v1.3 Getting box sizes (HO)]
80 \newcommand*{\settoboxwidth}[2]{\setlength{#1}{\wd#2}}
81 \newcommand*{\settoboxheight}[2]{\setlength{#1}{\ht#2}}
82 \newcommand*{\settoboxdepth}[2]{\setlength{#1}{\dp#2}}
83 \newcommand*{\settoboxtotalheight}[2]{%
84   \setlength{#1}{\ht#2}%
85   \addtolength{#1}{\dp#2}%
86 }

\setboxwidth

87 \newcommand*{\setboxwidth}[2]{%
88   \settobox@length\wd{#1}{#2}%
89 }

\setboxheight
```

```

90 \newcommand*\setboxheight}[2]{%
91   \settobox@length\ht{#1}{#2}%
92 }

\setboxheight

93 \newcommand*\setboxdepth}[2]{%
94   \settobox@length\dp{#1}{#2}%
95 }

\setboxmoveleft

96 \newcommand*\setboxmoveleft}[2]{%
97   \settobox@horiz{-}{#1}{#2}%
98 }

\setboxmoveright

99 \newcommand*\setboxmoveright}[2]{%
100   \settobox@horiz{}{#1}{#2}%
101 }

\setboxlower

102 \newcommand*\setboxlower}[2]{%
103   \settobox@vert\lower{#1}{#2}%
104 }

\setboxraise

105 \newcommand*\setboxraise}[2]{%
106   \settobox@vert\raise{#1}{#2}%
107 }

\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

108 \def\settobox@length#1#2#3{%
109   \settobox@calc{#2}{#3}{#1#2=##1sp\relax}%
110 }

\settobox@horiz

111 \def\settobox@horiz#1#2#3{%
112   \settobox@calc{#2}{#3}{\setbox#2=\hbox{\kern#1##1sp\copy#2}}%
113 }

\settobox@vert

114 \def\settobox@vert#1#2#3{%
115   \settobox@calc{#2}{#3}{\setbox#2=\hbox{#1##1sp\copy#2}}%
116 }

\settobox@calc

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

```

```

127     \def\x##1{\endgroup
128         #3%
129     }%
130     \expandafter\x\expandafter{\the\count0}%
131 }

132 </package>

```

## 3 Installation

### 3.1 Download

**Package.** 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.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

*TDS* refers to the standard “A Directory Structure for T<sub>E</sub>X Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

### 3.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

### 3.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain-T<sub>E</sub>X:

```
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`.

---

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

### 3.4 Refresh file name databases

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

### 3.5 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 intention:

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

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

**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 `pdf $\text{\LaTeX}$` :

```
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

- Line ends sanitized.

## 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.

Symbols			
<code>\@makeoother</code> .....	33	<code>\newcommand</code> .....	28, 80, 81, 82, 83, 87, 90, 93, 96, 99, 102, 105
<code>\\</code> .....	37	<code>\newsavebox</code> .....	8
<code>\~</code> .....	35	<code>\noindent</code> .....	38
A		P	
<code>\_</code> .....	36	<code>\pagestyle</code> .....	13
<code>\active</code> .....	35	<code>\par</code> .....	29, 40, 48
<code>\addtolength</code> .....	85	<code>\parindent</code> .....	11
<code>\advance</code> .....	123	<code>\parskip</code> .....	12
B		<code>\ProvidesPackage</code> .....	78
<code>\begin</code> .....	52	R	
C		<code>\raggedright</code> .....	31
<code>\catcode</code> .....	35, 36	<code>\raise</code> .....	106
<code>\copy</code> .....	112, 115	S	
<code>\count@</code> .....	126, 130	<code>\sbox</code> .....	21, 44
D		<code>\scantokens</code> .....	39
<code>\depth</code> .....	65, 70, 121	<code>\setbox</code> .....	112, 115
<code>\detokenize</code> .....	32	<code>\setboxdepth</code> .....	2, 57, 70, 93
<code>\dimen@</code> .....	122, 123, 124, 125, 126	<code>\setboxheight</code> .....	2, 55, 56, 69, 90, 93
<code>\do</code> .....	33	<code>\setboxlower</code> .....	2, 64, 102
<code>\documentclass</code> .....	3	<code>\setboxmoveleft</code> .....	2, 58, 60, 96
<code>\dospecials</code> .....	34	<code>\setboxmoveright</code> .....	2, 63, 67, 99
<code>\dp</code> .....	82, 85, 94, 121, 123	<code>\setboxraise</code> .....	65, 105
E		<code>\setboxright</code> .....	2
<code>\end</code> .....	73	<code>\setboxwidth</code> .....	2, 54, 61, 68, 87
F		<code>\setlength</code> 10, 11, 12, 80, 81, 82, 84, 125	
<code>\fbox</code> .....	46	<code>\settobox@calc</code> ....	109, 112, 115, 117
<code>\fboxsep</code> .....	10	<code>\settobox@horiz</code> .....	97, 100, 111
H		<code>\settobox@length</code> ....	88, 91, 94, 108
<code>\hbox</code> .....	112, 115	<code>\settobox@vert</code> .....	103, 106, 114
<code>\height</code> .....	56, 57, 64, 69, 120	<code>\settoboxdepth</code> .....	1, 82
<code>\ht</code> .....	81, 84, 91, 120, 122	<code>\settoboxheight</code> .....	1, 81
K		<code>\settoboxtotalheight</code> .....	1, 83
<code>\kern</code> .....	112	<code>\settoboxwidth</code> .....	1, 80
L		T	
<code>\lower</code> .....	103	<code>\test</code> .....	15, 28, 54, 55, 56, 57, 58, 59, 63, 64, 65, 66
M		<code>\texttt</code> .....	39
<code>\makeatletter</code> .....	27	<code>\the</code> .....	130
<code>\makeatother</code> .....	50	<code>\totalheight</code> .....	124
<code>\mybox</code> .....	8, 17, 21, 22, 44, 46, 54, 55, 56, 57, 58, 60, 61, 63, 64, 65, 67, 68, 69, 70	U	
N		<code>\usebox</code> .....	46
<code>\NeedsTeXFormat</code> .....	77	<code>\usepackage</code> .....	5, 6
		W	
		<code>\wd</code> .....	80, 88, 119
		<code>\width</code> .....	54, 61, 63, 68, 119
		X	
		<code>\x</code> .....	32, 39, 127, 130