

# The `settobox` package

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## 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	Some details for the interested	6
<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
<b>5</b>	<b>Index</b>	<b>7</b>

## 1 Usage

### 1.1 Get box dimensions

<code>\settoboxwidth</code> { $\langle$ L <sup>A</sup> T <sub>E</sub> X length $\rangle$ } { $\langle$ L <sup>A</sup> T <sub>E</sub> X box $\rangle$ }
<code>\settoboxheight</code> { $\langle$ L <sup>A</sup> T <sub>E</sub> X length $\rangle$ } { $\langle$ L <sup>A</sup> T <sub>E</sub> X box $\rangle$ }
<code>\settoboxdepth</code> { $\langle$ L <sup>A</sup> T <sub>E</sub> X length $\rangle$ } { $\langle$ L <sup>A</sup> T <sub>E</sub> X box $\rangle$ }
<code>\settoboxtotalheight</code> { $\langle$ L <sup>A</sup> T <sub>E</sub> X length $\rangle$ } { $\langle$ L <sup>A</sup> T <sub>E</sub> X box $\rangle$ }

A  $\langle$ L<sup>A</sup>T<sub>E</sub>X 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 \example  
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{settobox}%
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- $\TeX$ :

```
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  $\TeX$  distribution (`te $\TeX$` , `mik $\TeX$` , ...) rely on file databases, you must refresh these. For example, `te $\TeX$`  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  $\LaTeX$ .** The `.dtx` chooses its action depending on the format:

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

**$\LaTeX$ :** Generate the documentation.

If you insist on using  $\LaTeX$  for `docstrip` (really, `docstrip` does not need  $\LaTeX$ ), 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.

<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.

Symbols		
<code>\@makeother</code> .....	32	<code>\copy</code> ..... 110, 113
<code>\%</code> .....	36	<code>\count@</code> ..... 124, 128
<code>\~</code> .....	34	
		<b>D</b>
		<code>\depth</code> ..... 64, 69, 119
		<code>\detokenize</code> ..... 31
<code>\_</code> .....	35	<code>\dimen@</code> ..... 120, 121, 122, 123, 124
		<code>\do</code> ..... 32
		<code>\documentclass</code> ..... 2
		<code>\dospecials</code> ..... 33
		<code>\dp</code> ..... 80, 83, 92, 119, 121
		<b>E</b>
		<code>\end</code> ..... 72
		<b>F</b>
		<code>\fbox</code> ..... 45
		<code>\fboxsep</code> ..... 9
		<b>A</b>
<code>\active</code> .....	34	
<code>\addtolength</code> .....	83	
<code>\advance</code> .....	121	
		<b>B</b>
<code>\begin</code> .....	51	
		<b>C</b>
<code>\catcode</code> .....	34, 35	

<b>H</b>		<code>\scantokens</code> . . . . . 38	
<code>\hbox</code> . . . . .	110, 113	<code>\setbox</code> . . . . . 110, 113	
<code>\height</code> . . . . .	55, 56, 63, 68, 118	<code>\setboxdepth</code> . . . . . 2, 56, 69, 91	
<code>\ht</code> . . . . .	79, 82, 89, 118, 120	<code>\setboxheight</code> . . . . . 2, 54, 55, 68, 88, 91	
<b>K</b>		<code>\setboxlower</code> . . . . . 2, 63, 100	
<code>\kern</code> . . . . .	110	<code>\setboxmoveleft</code> . . . . . 2, 57, 59, 94	
<b>L</b>		<code>\setboxmoveright</code> . . . . . 2, 62, 66, 97	
<code>\lower</code> . . . . .	101	<code>\setboxraise</code> . . . . . 64, 103	
<b>M</b>		<code>\setboxright</code> . . . . . 2	
<code>\makeatletter</code> . . . . .	26	<code>\setboxwidth</code> . . . . . 2, 53, 60, 67, 85	
<code>\makeatother</code> . . . . .	49	<code>\setlength</code> 9, 10, 11, 78, 79, 80, 82, 123	
<code>\mybox</code> . . . . .	7, 16, 20, 21, 43, 45, 53, 54, 55, 56, 57, 59, 60, 62, 63, 64, 66, 67, 68, 69	<code>\settobox@calc</code> . . . . . 107, 110, 113, 115	
<b>N</b>		<code>\settobox@horiz</code> . . . . . 95, 98, 109	
<code>\NeedsTeXFormat</code> . . . . .	75	<code>\settobox@length</code> . . . . . 86, 89, 92, 106	
<code>\newcommand</code> . . . . .	27, 78, 79, 80, 81, 85, 88, 91, 94, 97, 100, 103	<code>\settobox@vert</code> . . . . . 101, 104, 112	
<code>\newsavebox</code> . . . . .	7	<code>\settoboxdepth</code> . . . . . 1, 80	
<code>\noindent</code> . . . . .	37	<code>\settoboxheight</code> . . . . . 1, 79	
<b>P</b>		<code>\settoboxtotalheight</code> . . . . . 1, 81	
<code>\pagestyle</code> . . . . .	12	<code>\settoboxwidth</code> . . . . . 1, 78	
<code>\par</code> . . . . .	28, 39, 47	<b>T</b>	
<code>\parindent</code> . . . . .	10	<code>\test</code> . . . . . 14, 27, 53, 54, 55, 56, 57, 58, 62, 63, 64, 65	
<code>\parskip</code> . . . . .	11	<code>\texttt</code> . . . . . 38	
<code>\ProvidesPackage</code> . . . . .	76	<code>\the</code> . . . . . 128	
<b>R</b>		<code>\totalheight</code> . . . . . 122	
<code>\raggedright</code> . . . . .	30	<b>U</b>	
<code>\raise</code> . . . . .	104	<code>\usebox</code> . . . . . 45	
<b>S</b>		<code>\usepackage</code> . . . . . 4, 5	
<code>\sbox</code> . . . . .	20, 43	<b>W</b>	
<b>X</b>		<code>\wd</code> . . . . . 78, 86, 117	
		<code>\width</code> . . . . . 53, 60, 62, 67, 117	
<b>X</b>			
<code>\x</code> . . . . .	31, 38, 125, 128		