

# The **setto**box 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 `\set-`  
`towidth` commands.

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\*Please report any issues at <https://github.com/ho-tex/oberdiek/issues>

# 1 Usage

## 1.1 Get box dimensions

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

A  $\langle L^A T_E X \text{ box} \rangle$  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}  
\setboxwidth{\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   \begingroup
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   \endgroup
42   \begingroup
43     \let~\relax
44     \sbox{\mybox}{The cracy fox.}%
45     #1%
46     A---\fbox{\usebox\mybox}---B%
47   \endgroup
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{settobox}%
79 [2016/05/16 v1.5 Assign box dimensions to length registers (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\count@}%
131 }

132 \end{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
```

---

<sup>1</sup><http://ctan.org/pkg/settobox>

**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`.

### 3.4 Refresh file name databases

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

### 3.5 Some details for the interested

**Unpacking with  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ .** The `.dtx` chooses its action depending on the format:

**plain  $\text{T}_{\text{E}}\text{X}$ :** Run `docstrip` and extract the files.

**$\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ :** Generate the documentation.

If you insist on using  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  for `docstrip` (really, `docstrip` does not need  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ ), 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 $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$` :

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

## 4 Catalogue

The following XML file can be used as source for the  [\$\text{T}\_{\text{E}}\text{X}\$  Catalogue](#). The elements `caption` and `description` are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is `settobox.xml`.

```
133 (*catalogue)
134 <?xml version='1.0' encoding='us-ascii'?>
135 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
136 <entry datestamp='$Date$' modifier='$Author$' id='settobox'>
137   <name>settobox</name>
138   <caption>Assigning dimensions of a box to a length register.</caption>
139   <authorref id='auth:oberdiek' />
140   <copyright owner='Heiko Oberdiek' year='2000,2006-2008' />
141   <license type='lppl1.3' />
142   <version number='1.5' />
```

```

143 <description>
144   Commands to assist the reuse of boxes (set up by <tt>\sbox</tt> or
145   by the <tt>\lrbox</tt> environment); the <tt>\settoebox...</tt>
146   commands behave similarly to the <tt>\settowidth</tt> (etc.)
147   commands. For example:
148   <pre>
149       \newsavebox{\mybox}
150       \newlength{\mylength}
151       \sbox{\mybox}{Hello World}
152       \settoboxwidth{\mylength}{\mybox}
153   </pre>
154   <p/>
155   The package is part of the <xref refid='oberdiek'>oberdiek</xref> bundle.
156 </description>
157 <documentation details='Package documentation'
158   href='ctan:/macros/latex/contrib/oberdiek/settoebox.pdf'/>
159 <ctan file='true' path='/macros/latex/contrib/oberdiek/settoebox.dtx'/>
160 <miktex location='oberdiek'/>
161 <texlive location='oberdiek'/>
162 <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
163 </entry>
164 </catalogue>

```

## 5 History

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

- First public release, written as answer in the newsgroup [de.comp.text.tex](#):  
“[Die Hoehe von Minipages und Bild](#)”<sup>2</sup>

### [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

### [2007/04/11 v1.3]

- Line ends sanitized.

### [2008/08/11 v1.4]

- Code is not changed.
- URLs updated.

### [2016/05/16 v1.5]

- Documentation updates.

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<sup>2</sup>Url: <http://groups.google.com/group/de.comp.text.tex/msg/c3f6446f54f66c02>



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