

The adjustbox Package

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CTAN: <http://www.ctan.org/pkg/adjustbox>

VC: https://bitbucket.org/martin_scharrer/adjustbox

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Abstract

This package allows to adjust general \LaTeX material in several ways using a key=value interface. It got inspired by the interface of `\includegraphics` from the `graphicx` package. This package also loads the `trimclip` package which code was once included in this package.

1 Introduction

The standard \LaTeX package `graphicx` (the extended version of `graphics`) provides the macro `\includegraphics[<options>]{<file name>}` which can be used to include graphic files. Several options can be used to scale, resize, rotate, trim and/or clip the graphic. The macros `\scalebox`, `\resizebox` and `\rotatebox` are also provided to apply the corresponding operation on \LaTeX material, which is subsequently placed inside a `\hbox`. However no macros are provided to trim or clip \LaTeX material, most likely because this operations are not done by \TeX but by the output format, i.e. using PostScript (PS) or PDF operations.

This package started by providing the missing macros `\clipbox` and `\trimbox`. Then a general `\adjustbox` macro which allows to combine many operations using a key=value syntax was added and further extended until it represented the main feature of this package. Newly added keys are also provided as dedicated macros and corresponding environments. The `\clipbox` and `\trimbox` macros were then moved together with the required output driver code to a dedicated package `trimclip`. This allows documents and other packages to use these basic features without loading the full `adjustbox` package.

1.1 Dependencies

The `adjustbox` package and its `trimclip` sub-package require the author's other packages `adjcalc` (bundled with `adjustbox`) and `collectbox`, as well as the packages `xkeyval`, `graphicx` and `ifpdf`. The `varwidth` package is automatically loaded if installed, otherwise the `varwidth` and `stack` keys are disabled as well as `\stackbox` and the `stackbox` environment. For features which use colors the `xcolor` package must also be loaded manually (the `color` package is fine, too). The experimental `split` and `pagebreak` features also require the `storebox` package to be loaded manually.

1.2 Verbatim Support

The macros provided by `adjustbox` and `trimclip` read the content as a horizontal \TeX box and not as a macro argument in order to support verbatim content. This means that the braces around the content can also be written as `\bgroup` and `\egroup`:

```
\adjustbox{key=value,...}\bgroup <content>\egroup
```

Special care is taken to allow the `<content>` to be a single macro (except `\bgroup`) without any braces:

```
\adjustbox{key=value,...}\somemacro
```

This is to support the habit of some \TeX users to drop the braces for single token arguments. All environments support verbatim content. Note that the plain \TeX syntax for environments (`\adjustbox ... \endadjustbox`) can not be used because it will trigger `\adjustbox` as a macro. However, the braces around the content can be replaced by `\bgroup` and `\egroup`.

2 Package Options

This package accepts the following options:

export Exports most keys of `\adjustbox` to `\includegraphics` so that they can be used with this macro as well.

Export Sets `\includegraphics` to be identical to `\adjincludegraphics`, which also allows the usage of all `\adjustbox` keys.

pgf This option is passed to `trimclip` and makes it to use the `pgf` package for all clip operations. This overrides all automatically detected drivers.

PGF This option will pass the `pgf` to `trimclip` and enable the `pgfmath` option of `adjcalc`, i.e. the `pgf` package is used for clip operations and the `pgfmath` package is used to parse length arguments.

minimal Only load a minimal set of code, i.e. `trimclip` and `\adjustbox/adjustbox` but no additional keys and macros.

The following options define the way length values are processed by the provided macros. They are passed to the `\adjcalcset` macro of the `adjcalc` package and load any required packages. These options can also be used as local keys on `\adjustbox`. See the `adjcalc` manual for more details on them.

etex Uses the ϵ - \TeX primitive `\glueexpr` to parse length values.

calc Uses the `calc` package to parse length values.

pgfmath Uses the `pgfmath` package of the `pgf` bundle to parse length values.

defaultunit=`<unit>` This sets the default unit used for values which accept length without units, e.g. `trim`.

In addition, all driver options of the `trimclip` package are also accepted and passed to it. All unknown options are passed to the `graphicx` package, which might pass them down to the `graphics` package.

3 Main macros

The following macros and environments represent the main functionality of this package. Special care is taken so that the macros and the environments can have the same name. For starred environments the star can be either part of the name or an optional argument.

3.1 Adjust Box Content

```
\adjustbox{<key=value, ...>}{<content>}
```

The `\adjustbox` macro allows the modification of general (L)T_EX content using a key=value syntax. This can be seen as an extension of the `\includegraphics` macro from images to any (L)T_EX material. The macro supports the all `\includegraphics` keys and many more. However, they are provided as a mandatory not as an optional argument, because an `\adjustbox` without options would not make sense and can be replaced by a simple `\mbox`. As already stated the content is read as a box, not as a macro argument, therefore verbatim or other special content is supported and the braces can also be replaced by `\bgroup` and `\egroup`. There is no starred version of this macro.

```
\begin{adjustbox}{<key=value, ...>}{<content>}
\end{adjustbox}
```

The environment version of `\adjustbox`. A difference to the macro is that it includes `\noindent` to suppress paragraph indentation.

3.2 Adjust Images

```
\adjustimage{<key=value, ...>}{<image filename>}
```

This macro can be used as an extension of `\includegraphics`. While `\adjustbox` is based on the same interface as `\includegraphics` it provides more keys and allows global keys set by `\adjustboxset`. Most keys can be exported to `\includegraphics` using the `export` option, but there is no support for global keys¹. Therefore it can make sense to use `\adjustbox{<key/value pairs>}{\includegraphics{<filename>}}`, which is the definition of `\adjustimage`. However, it does not use `\includegraphics` directly, but an internal macro, to allow the redefinition of `\includegraphics`. This macro does not require the `export` option and therefore helps to avoid option clashes if `adjustbox` is loaded at several places.

```
\adjincludegraphics[<key/value pairs>]{<image filename>}
```

Like `\adjustimage` but in the same format as `\includegraphics`, i.e. with an optional argument. This macro allows to use all features of `\adjustbox` on images, however special care must be taken if the values include ‘[]’. In this case

¹However some keys, but not all, can be set globally using `\setkeys{Gin}{<includegraphic key=value pairs>}`

either the whole value or the while optional argument must be wrapped in ‘{ }’:

`\adjustboxset[key={...},...]{...}` or

`\adjustboxset[{key=...},...]{...}`.

It is possible to redefine `\includegraphics` to `\adjustboxset` and this is done by the `Export` option (not to be confused with the `export` option).

3.3 Setting keys globally

`\adjustboxset{<global keys to be executed before local keys>}`

`\adjustboxset*{<global keys to be executed after local keys>}`

Using these two macros all keys can be set globally, i.e. for all future `\adjustbox` macros and `adjustbox` environments. Note that these settings are actually *local* to the current \TeX group and only really global if used in the preamble or outside any group. The normal macro will place all given keys before the keys used in first argument of `\adjustbox` / `adjustbox`, while the starred version will place them afterwards.

If these macros are used several times there keys are accumulated. This happens in the given order for the normal version and in reversed order for the starred version, i.e. the keys of further `\adjustboxset` or `\adjustboxset*` are always added so they face inwards. If used without any keys but an empty argument, all keys previously set with the same macro are removed (from the current \TeX scope). This means `\adjustboxset{}` clears all keys set by previous usages of `\adjustboxset{<keys>}` and `\adjustboxset*{}` clears all set by `\adjustboxset*{<keys>}`. Such resets are again local to the current \TeX group.

Examples:

The macros:

```
\adjustboxset{keya=1}
\adjustboxset*{keyc=3}
\adjustbox{keyb=2}{content}
```

are effectively the same as:

```
\adjustbox{keya=1,keyb=2,keyc=3}{content}
```

The macros:

```
\adjustboxset{keya=1,keyb=2}
\adjustboxset{keyc=3,keyd=4}
\adjustboxset*{keyg=7,keyh=8}
\adjustboxset*{keyi=9,keyj=10}
\adjustbox{keye=5,keyf=6}{content}
```

are effectively the same as:

```
\adjustbox{keya=1,keyb=2,keyc=3,keyd=4,keye=5,keyf=6,
keyi=9,keyj=10,keyg=7,keyh=8}{content}
```

3.4 Argument Values

All length values given in the arguments of all macros and keys provided by this package are parsed by an advanced version of `\setlength` (called `\adjsetlength`) which uses either ϵ -TeX expressions (default), the `calc` package (default fall-back) or the `\pgfmathparse` of the `pgf` package. This allows for arithmetic expressions in these arguments. See the package options in [section 2](#) to learn how to change the used length parser. Note that early versions of this package used `\pgfmathparse` by default. Older documents therefore might need now use the `pgfmath` option to compile correctly.

Note that the four values for `\trimbox` and `\clipbox` as well as for the `trim` and `viewport` option of `\adjustbox` are separated by spaces. If the expression of any of these values holds a space or ends with a macro (eats trailing spaces!) it must be wrapped into braces ‘`{ }`’.

`\width \height \depth \totalheight`

These TeX lengths hold the current dimensions of the content and can be used as part of all length arguments. When the size of the content is changed by a key these lengths will be adjusted to hold the new size for all further keys. The `totalheight` is the height plus depth. With the `patch` option these lengths can also be used for `\includegraphics`.

`\Width \Height \Depth \Totalheight`

These TeX lengths hold the original dimension of original unchanged content and are not modified. They are useful if the size of the content is modified by several keys, but further keys should still work relative to the original content.

Default unit

If no unit is provided for the bounding box coordinates (`llx`, `lly`, `urx`, `ury`) in the `trim` and `clip` features then PostScript points (*big points*, `bp`, `72bp = 1inch`) are used, as it is the default behaviour of the `trim` and `viewport` options of `graphicx`'s `\includegraphics`. Note that `graphicx` converts all values, independent if a unit is provided or not, internally to `bp`, because graphics were traditionally stored in Encapsulated PostScript (EPS) files. The more modern PDF files also use `bp` instead of `pt`. Because the `adjustbox` package macros target (La)TeX material and users will mostly use `pt` values this internal conversion to `bp` got disabled for them to avoid unnecessary rounding errors. Since v0.5 the default unit can be changed using the `defaultunit=<unit>` key (which is also usable as global package option).

4 Adjustbox Keys

This package provides the following `\adjustbox` keys with matching macros and environments.

4.1 Trimming and Clipping

The following keys allow content to be trimmed (i.e. the official size is made smaller, so the remaining material laps over the official boundaries) or clipped (overlapping material is not displayed). These keys come in different variants, where the lower-case keys represent the behavior of the corresponding `\includegraphics` keys. The corresponding macros (`\trimbox`, `\clipbox`, etc.) and environments (`trimbox`, `clipbox`, etc.) are included in the accompanying `trimclip` package and are explained in its manual.

```
trim=<llx> <lly> <urx> <ury>
trim=<all sites>
trim=<left/right> <top/bottom>
```

This key represents the original `trim` key of `\includegraphics` but accepts its value in different forms. Unlike most other keys it always acts on the original content independent in which order it is used with other keys. The key trims the given amounts from the lower left (ll) and the upper right (ur) corner of the box. This means that the amount `<llx>` is trimmed from the left side, `<lly>` from the bottom and `<urx>` and `<ury>` from the right and top of the box, respectively. If only one value is given it will be used for all four sites. If only two values are given the first one will be used for the left and right side (llx, urx) and the second for the bottom and top side (lly, ury).

```
viewport=<llx> <lly> <urx> <ury>
```

This key represents the original `viewport` key of `\includegraphics`. It always trims the original content to the given view port independent from its position.

```
clip
clip=true|false
```

This boolean key represents the original `clip` key of `\includegraphics`. It is intended to be used to make `trim` or `viewport` clip the trimmed material. Note that the material will still be part of the output file but is simply not shown. It might be exported from the output file using special tools, so using it to censor classified information is a bad idea.

```
Trim=<llx> <lly> <urx> <ury>
Trim=<all sites>
Trim=<left/right> <top/bottom>
Viewport=<llx> <lly> <urx> <ury>
```

The normal `trim` and `viewport` keys are applied on the original content before any resizing or (most) other keys take effect. This is because for `\includegraphics` the trimming is done by the internal graphic driver, while the effects can be applied later (but can also be driver dependent). If the `trim` and `viewport` keys are used multiple times only the last values will be used for the trimming, i.e. the content is only trimmed once. The upper case variants `Trim` and `Viewport` will wrap the content internally in a `\trimbox` or `\trimbox*` macro which can be applied multiple times, e.g. before and after the content is rotated. These two keys awaits the same

format as the original keys. However, the `clip` key has no effect on them.

```
Clip=<llx> <lly> <urx> <ury>  
Clip=<all sites>  
Clip=<left/right> <top/bottom>  
Clip*=<llx> <lly> <urx> <ury>
```

The `Clip` key will clip the given amounts from the current content and can be used several times if required. The starred version will use the given coordinates as `viewport`. These keys work by wrapping the content internally in a `\clipbox` or `\clipbox*` macro.

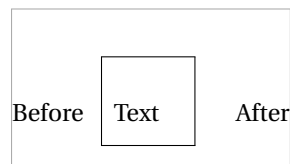
4.2 Margins and Vertical Spacing

```
margin=<all sites>  
margin=<left/right> <top/bottom>  
margin=<llx> <lly> <urx> <ury>
```

This key can be used to add a margin (white space) around the content. It can be seen as the opposite of `Trim`. The original baseline of the content is preserved because `<lly>` is added to the depth. It is also available under the alternative name `padding`, which can be used to more visually distinguish an inner margin from an outer margin e.g. if a frame is added.

Example:

Before `\adjustbox{padding=1ex 2ex 3ex 4ex,frame,margin=1ex 2ex 3ex 4ex}{Text}` After

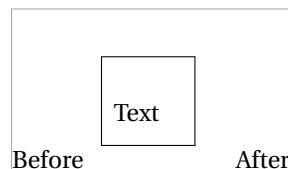


```
margin*=<all sites>  
margin*=<left/right> <top/bottom>  
margin*=<llx> <lly> <urx> <ury>
```

This starred version is almost identical to the normal `margin` key, but also raises the content by the `<lly>` amount, so that the original depth is preserved instead of the original baseline. Note that while `margin` is basically the opposite of `Trim`, `margin*` is not the opposite of `Trim*`. Instead it also takes the same values as the unstarred key and not viewport values like `Trim*`. An alternative name of `margin*` is `padding*`.

Example:

Before `\adjustbox{padding*=1ex 2ex 3ex 4ex,frame,margin*=1ex 2ex 3ex 4ex}{Text}` After



```
vspace=<above/below>  
vspace=<above> <below>
```

The `vspace` key adds a vertical space before and after the content. This is done by adding paragraph breaks and `\vspace` macros, which will yield better spacing between paragraphs than when using the `margin` key. However `vspace` forces vertical mode around the content. Adding further keys after `vspace` will force restricted horizontal mode again and the vertical space will be ignored. For this situation the `margin` key is better suited.

```
vspace*=<above/below>  
vspace*=<above> <below>
```

Identical to `vspace` but uses `\vspace*` instead. The difference is that the vertical space is not ignored at page breaks, but its full amount is always forced.

4.3 Minimum and Maximum Size

The following keys allow to set a minimum or maximum size. The content will be scaled down or up if required.

```
min width=<width>  
max width=<width>  
min height=<height>  
max height=<height>  
min totalheight=<total height>  
max totalheight=<total height>
```

These keys allow to set the minimum and maximum width, height or totalheight of the content. The current size of the content is measured and the content is resized if the constraint is not already met, otherwise the content is unchanged. Multiple usages of these keys are checked one after each other, and therefore it is possible that a later one is undoing the size changes of an earlier one. A good example is `max width=\textwidth` which will limit large content to the text width but will not affect smaller content.


```

min size={⟨width⟩}{⟨height⟩}
max size={⟨width⟩}{⟨height⟩}
min totalsize={⟨width⟩}{⟨total height⟩}
max totalsize={⟨width⟩}{⟨total height⟩}

```

These keys allow to specify the minimum or maximum width and (total)height of the content together, which is more efficient than using the width and (total)height keys described earlier.

```

\minsizebox{⟨width⟩}{⟨height⟩}{⟨content⟩}
\minsizebox*{⟨width⟩}{⟨totalheight⟩}{⟨content⟩}

```

This macro is like `\resizebox` of the `graphics/x` package, but only resizes the content if its natural size is smaller than the given `⟨width⟩` or `⟨height⟩`. If only one value should be set the other one can be replaced by `!`. If required the content is scaled up so that the width and height is equal or larger than the given values, but does not change the aspect ratio. The star variant uses the total height instead of only the height. This macro is used internally for the `min width`, `min height`, `min totalheight` and `min totalsize` keys.

Examples:

`\minsizebox{3cm}{2ex}{Some Text}` which will be enlarged

Some Text which will be enlarged

`\minsizebox{!}{4ex}{\fbox{Some Text}}` which will be enlarged

Some Text which will be enlarged

`\minsizebox*{!}{4ex}{\fbox{Some Text}}` which will be enlarged

Some Text which will be enlarged

`\minsizebox{3cm}{!}{Some Text}` which will be enlarged

Some Text which will be enlarged

`\minsizebox{1cm}{1ex}{Some Text}`, already large enough

Some Text, already large enough

```

\maxsizebox{⟨width⟩}{⟨height⟩}{⟨content⟩}
\maxsizebox*{⟨width⟩}{⟨totalheight⟩}{⟨content⟩}

```

This macro is like `\resizebox` of the `graphics/x` package, but only resizes the content if its natural size is larger than the given `⟨width⟩` or `⟨height⟩`. If only one value should be set the other one can be replaced by `!`. If required the content is

scaled down so that the width and height is equal or smaller than the given values, but does not change the aspect ratio. The star variant uses the total height instead of only the height. This macro is used internally for the `max width`, `max height`, `max totalheight` and `max totalsize` keys.

Examples:

`\maxsizebox{1cm}{1ex}{Some Text}` which will be reduced

Some Text which will be reduced

`\maxsizebox{!}{1ex}{\fbox{Some Text}}` which will be reduced

Some Text which will be reduced

`\maxsizebox*{!}{1ex}{\fbox{Some Text}}` which will be reduced

Some Text which will be reduced

`\maxsizebox{1cm}{!}{Some Text}` which will be reduced

Some Text which will be reduced

`\maxsizebox{3cm}{1cm}{Some Text}`, already small enough

Some Text, already small enough

4.4 Scaling

`scale=⟨factor⟩`
`scale={⟨h-factor⟩}{⟨v-factor⟩}`

The normal `scale` key of `graphicx` only allows for one scale factor which is used for both the horizontal and vertical scaling. With `adjustbox` it is also possible to provide the horizontal and vertical scale factors separately.

Examples:

`\adjustbox{scale=2}{Some text!}`

Some text!

`\adjustbox{scale={2}{1}}{Some text!}`

Some text!

`reflect`

This key reflects the content by using `\reflectbox` internally, which is identical to `\scalebox{-1}[1]`, i.e. this key is identical to `scale={-1}{1}`.

Examples:

`\adjustbox{reflect}{Some text!}`

Some text!

```
\scalebox{<h-factor>}[<v-factor>]{<content>}
\reflectbox{<content>}
```

These macros are provided by the loaded `graphicx` package and only mentioned here for the sake of completeness. See the `grfguide` for more details.

4.5 Frame

The following keys can be used to draw frames around the content.

```
fbox
fbox=<rule width>
fbox=<rule width> <sep>
fbox=<rule width> <sep> <margin>
```

Draws a framed box around the content like `\fbox` would do. Using the optional space separated values the rule width, the separation (inner padding) and the outer margin can be set. If not they default to the values `\fbox` uses by default: `\fboxrule`, `\fboxsep` and zero margin.

Examples:

```
\adjustbox{fbox}{Like \cs{fbox}}
```

Like `\fbox`

```
\adjustbox{fbox=1pt}{With 1pt rule width}
```

With 1pt rule width

```
\adjustbox{fbox=1pt 2pt}{With 1pt rule width and 2pt separation}
```

With 1pt rule width and 2pt separation

```
\adjustbox{fbox={\fboxrule} 1pt}{With normal rule width and 1pt separation}
```

With normal rule width and 1pt separation

```
\adjustbox{fbox=1pt 1pt 1pt}{With 1pt for rule width, separation and outer margin}
```

With 1pt for rule width, separation and outer margin

```
frame
frame=<rule width>
frame=<rule width> <sep>
frame=<rule width> <sep> <margin>
```

The `frame` key has the same effect as the `fbox` key but is modeled after \TeX 's `\frame` macro (not the version Beamer defines). This means it adds a tight frame with zero separation around the content by default. Besides that it accepts the same space separated values. This key is useful to easily add a tight frame around images where the normal separation wouldn't fit.

Examples:

`\adjustbox{frame}{Tight box}`

Tight box

```

cbox=<color>
cbox=<color> <rule width>
cbox=<color> <rule width> <sep>
cbox=<color> <rule width> <sep> <margin>

```

Identical to `fbox` but uses the given color for the frame. The `xcolor` package must be loaded manually in order for this key to work.

Example:

`\adjustbox{cbox=blue 1pt}{Like a blue \cs{fbox} with \cs{fboxrule}=1pt}`

Like a blue \fbox with \fboxrule=1pt

```

cframe=<color>
cframe=<color> <rule width>
cframe=<color> <rule width> <sep>
cframe=<color> <rule width> <sep> <margin>

```

Identical to `frame` but uses the given color for the frame. The `xcolor` package must be loaded manually in order for this key to work.

Example:

`\adjustbox{cbox=blue!50!green}{Like a blue and green \cs{frame}}`

Like a blue and green \frame

4.6 Vertical Alignment

The following keys can be used to adjust the vertical alignment and size of the content.

`valign=<letter>`

This key allows to vertically align the content to the top, middle and bottom. The uppercase letters T, M and B align to the content top (i.e. all depth, no height), the geometric, vertical center (equal height and depth) and to the bottom (all height, no depth), respectively. This allows the alignment of content of different size, but will not result in good alignment with text. The lowercase letters t, m and b are aligning the content again to the top, center and bottom but take the current text size in account. The t letter leaves a certain height given by the macro² `\adjboxvtop` (by default set to the height of `\strut`, i.e. `\ht\strutbox`, which is `.7\baselineskip`), while b sets a certain depth given (as negative length) by the macro `\adjboxvbottom` (by default equal

²A macro and not a length is used to allow for font size relative values like 1ex.

to the (negated) `\strut` depth, i.e. `-\dp\strutbox`, which is `.3\baselineskip`). The `m` letter will center towards the vertical center of the text line which is determined by the macro `\adjboxvcenter` (by default `1ex`).

The following table shows the different alignments for three different sized blocks:

T	M	B	Text
			Mxy
			Mxy
			Mxy
t	m	b	Text
			Mxy
			Mxy
			Mxy

```
raise=<amount>
raise={<amount>}{<height>}
raise={<amount>}{<height>}{<depth>}
```

This key uses `\raisebox{<amount>}{...}` to raise the content upwards for the given `<amount>` (length). A negative length moves the content down. The two optional arguments of `\raisebox{<amount>}[<height>][<depth>]{...}` are also available as optional brace arguments. They can be used to set the official height and depth of the content. This is also possible using the `set height` and `set depth` keys.

Examples:

Is `\adjustbox{raise=1ex}{higher}`
than the normal text

Is higher than the normal text

Is `\adjustbox{raise={1ex}{\height}}{higher}`
than the normal text but sill has
its original official height

Is higher than the normal text but sill has its original official height

Is `\adjustbox{raise={1ex}{1ex}{0pt}}{higher and`
`\rotatebox{-90}{deeper}}` but with limited official
height and no depth.

Is higher and deeper but with limited official height and no depth.

```
set height=<height>
```

This sets the official height of the content without actual changing it. This can be seen as a form of trimming. It uses the same internal code as `\raisebox{0pt}[<height>]{<content>}`.

Example:

```
\adjustbox{set height=.5\height}
{\shortstack{some stacked\\content}}
```

some stacked
content

```
set depth=<depth>
```

This sets the official depth of the content without actual changing it. This can be seen as a form of trimming. It uses the same internal code as

```
\raisebox{0pt}[\height][<depth>]{<content>}.
```

Example:

```
\adjustbox{set depth=0pt}
{\shortstack{some stacked\\content
with \raisebox{-1ex}{depth}}}
```

some stacked
content with
depth

```
set vsize={<height>}{<depth>}
```

This sets the official height of depth of the content without actual changing it. This key is simply the combination of `set height` and `set depth`.

Example:

```
\adjustbox{set vsize={2pt}{1pt}}
{\shortstack{some stacked\\content
with \raisebox{-1ex}{depth}}}
```

some stacked
content with
depth

4.7 Horizontal Alignment

The following keys can be used to adjust the horizontal alignment and size of the content.

```
center
center=<width>
```

This key places the content in a horizontal box which is by default `\linewidth` wide (i.e. as wide as a normal text paragraph) and centers it in it. The effect is very similar to `\centerline`. The original content is unchanged, but simply identical white space is added as a left and right margin. This is useful if the content is a figure or table and can be used as a replacement for `\centering`. One important difference is that the content will then have the given width which might influence (sub-)caption placement. If the content is wider than the available width it will stick out on both sides equally without causing an overfull hbox warning. Note that when `\adjustbox` paragraph is used at the beginning of a paragraph the normal paragraph indentation is added, which will push the while box to the right and might cause an overfull line. In such cases a `\noindent` must be added beforehand. The `adjustbox` environment already uses this macro.

Examples:

`\adjustbox{center}{Some content}`

Some content

`\adjustbox{center=5cm}{Some content}`

Some content

`right`
`right=<width>`

Like `center` this key places the content in a box with the given width (by default `\linewidth`) but right aligns it. If the content is wider than the available width it will stick out into the left side without causing an overfull hbox warning.

Examples:

`\adjustbox{right}{Some content}`

Some content

`\adjustbox{right=5cm}{Some content}`

Some content

`left`
`left=<width>`

Like `center` this key places the content in a box with the given width (by default `\linewidth`) but left aligns it. If the content is wider than the available width it will stick out into the right side without causing an overfull hbox warning.

Examples:

`\adjustbox{left}{Some content}`

Some content

`\adjustbox{left=5cm}{Some content}`

Some content

`inner`
`inner=<width>`

Like `center`, `left` and `right` this key places the content in a box with the given width (by default `\linewidth`) but aligns it towards the inner margin. If the content is wider than the available width it will stick into the outer margin without causing an overfull hbox warning. In `twoside` mode this key is equal to `left` for odd pages and equal to `right` for even pages. For `oneside` mode it is always equal to `center`, because there is no inner or outer margin. Note that the page-is-odd test might not always lead to correct results for some material close to a page boundary, because \TeX might not have decided on which page it will be placed. This can be improved

by loading the changepage package with the `strict` option, which uses a reference to determine the correct page number (and requires the usual additional compiler run).

```
outer
outer=<width>
```

Identical to `inner` but aligns the content towards the outer margin. If the content is wider than the available width it will stick into the outer inner without causing an overfull hbox warning.

Lapping

The following features can be used to make the content lap over its left or right boundary. This is basically the same as trimming, but provides a different, more dedicated interface.

```
lap=<lap amount>
lap={<length>}{<lap amount>}
```

This key will make the content lap over the surrounding elements to the right or left by the given amount.. A positive amount will make the content lap over to the right and a negative one to the left. The optional `<length>` argument allows to set the final width. If not used the resulting width will be the original width minus the absolute lap amount. This key internally uses `\lapbox{<lap amount>}{...}` and `\lapbox[<length>]{<lap amount>}{...}`, respectively.

Examples:

<code>\adjustbox{lap=.5\width}{Some content}</code>	<div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div> Some content
<code>\adjustbox{lap=-.5\width}{Some content}</code>	Some content <div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div>
<code>\adjustbox{lap=\width}{Some content}</code>	Some content <div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div>
<code>\adjustbox{lap=-\width}{Some content}</code>	Some content <div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div>
<code>\adjustbox{lap={\width}{\width}}{Some content}</code>	<div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div> Some content
<code>\adjustbox{lap={\width}{-\width}}{Some content}</code>	Some content <div style="border: 1px solid black; display: inline-block; width: 100px; height: 1.2em; vertical-align: middle;"></div>

```
rlap
llap
```

This makes the content to be officially 0pt wide and lap over to the right or left, respectively, like the \TeX macros `\rlap` and `\llap` do. These are shortcuts for `lap=\width` and `lap=-\width`, respectively. The values for these keys are ignored and should not be used.

Examples:

`\adjustbox{rlap}{Some content}` Some content

`\adjustbox{llap}{Some content}` Some content

`\lapbox[<width>]{<lap amount>}{<content>}`

This macro is a generalisation of the \TeX core macros `\rlap{<content>}` and `\llap{<content>}` which lap the text to the right or left without taking any official space. The `\lapbox` macro can be used to only partially lap the content to the right (positive amount) or left (negative amount). As with all macros of this package the original width can be references using `\width`. The resulting official width of the box is normally the original width minus the absolute lap amount. However, it can also be set explicitly using the option argument. It is also possible to use lap amount which absolute values are larger than the original width. In this case the resulting official width will be zero by default and the content will padded with the required white space. Note that the lap amount always states the distance between the right side of the official box and the right side of the actual content for positive amounts or the distance between the left side of the official box and the left side of the actual content for negative values.

Examples:

General lapping:

<code>\lapbox{1cm}{Some Text}</code>	Some Text
<code>\lapbox{-1cm}{Some Text}</code>	Some Text
<code>\lapbox[4cm]{1cm}{Some Text}</code>	Some Text
<code>\lapbox[3cm]{2cm}{Some Text}</code>	Some Text

Like `\rlap`:

<code>\lapbox[0pt]{\width}{Some Text}</code>	Some Text
--	-----------

Like `\llap`:

<code>\lapbox[0pt]{-\width}{Some Text}</code>	Some Text
---	-----------

A centering `\clap` macro can be achieved using:

<code>\lapbox[0pt]{-.5\width}{Some Text}</code>	Some Text
<code>\lapbox[0pt]{.5\width}{Some Text}</code>	Some Text

4.8 Background

`bgcolor=<color>`
`bgcolor={<model>}{<color>}`

This key adds a colored background to the content. The `xcolor` package (or `color` or `xxcolor`) needs to be loaded as well in order for this to work. The value is passed to an internal `\color` macro.

Examples:

```
\adjustbox{bgcolor=blue}{Text with blue background.}
```

Text with blue background

```
\adjustbox{bgcolor={rgb}{0 0 1}}{Text with blue background in the RGB color model.}
```

Text with blue background in the RGB color model

```
\adjustbox{margin=1ex, bgcolor=green}{green with a little more margin}
```

green with a little more margin

```
\adjustbox{margin=1ex, bgcolor=green, margin=1pt, bgcolor=yellow}{Emulation of colored frame}
```

Emulation of colored frame

`bgcolor*=<color macro>`

Like `bgcolor` but awaits a full color macro as value. This allows to use other macros as `\color` like `\blendcolors`. See the `xcolor` manual for more details.

Examples:

```
\color{blue}Blue text
```

```
\adjustbox{bgcolor*=\blendcolors{!10!yellow}\color{.}}{with a yellow-bluish background}
```

Blue text with a yellow-bluish background

```
\color{green}Green text
```

```
\adjustbox{bgcolor*=\blendcolors{!10!yellow}\color{.}}{with a yellow-greenish background}
```

Green text with a yellow-greenish background

`bgimage=<image filename>`

`bgimage={ <key=value pairs for image> } { <image filename> }`

Adds a background image to the content. The image is stretched if required to fit exactly to the content. It is also possible to provide `\adjustbox` or `\includegraphics` keys to modify the image (before the resizing is done).

`\bgimagebox [<key=value pairs>] { <image filename> }`

Standalone version of the `bgimage` key. Also available as `bgimagebox` environment.

4.9 Density / Pixel size

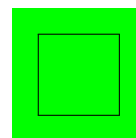
The following keys allow to adjust the effective length of pdf_{tex} special px (pixel) unit. This can be required for images which do not have the correct DPI meta-data included.

`dpi=<number (dots per inch)>`

The `dpi` key provides a simple interface to set the pixel size to the given DPI (dots per inch) value. For pdf_{latex} the length unit px can be used to specify pixels. However, the equivalent dimension (length) of one pixel must be set using the `\pdfpxdimen` length register. To set a specific DPI value this length must be set using `\setlength\pdfpxdimen{1in/<dots>}`, which is done by the `dpi=<dots>` key. Note that the key won't affect the setting for the content but only for the further used keys. However, it is possible to use `\setkeys{adjbox}{dpi=<number>}` inside the content or anywhere else in the document to set `\pdfpxdimen` using this interface.

Example:

```
\adjustbox{dpi=72,trim=10px,frame}{%  
  \setkeys{adjbox}{dpi=72}%  
  \textcolor{green}{\rule{50px}{50px}}%  
}
```



`pxdim=<length>`

Alternatively to the `dpi` key the `\pdfpxdimen` length can be set directly to the given value. Afterwards 1px will stand for the given `<length>`.

Example:

```
\adjustbox{pxdim=2pt,trim=2px,frame}  
{\textcolor{green}{\rule{20pt}{20pt}}}
```



4.10 Minipage or other inner environments which change the processing of the content

The following keys set the way the content is processed before it is stored in a box. These keys will overwrite each other and only the latest used key will take effect. Because they affect the inner content directly their order relative to other, normal keys is not meaningful. Also they are only defined for `adjustbox` but do not apply for `\includegraphics`. Because they are therefore only used inside a mandatory argument and never in an optional these keys allow for optional bracket arguments.

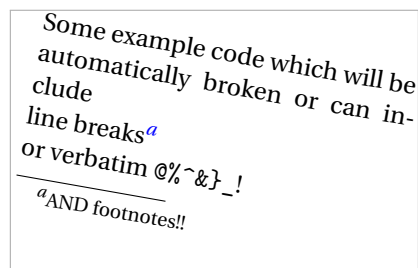
`minipage=<width>`
`minipage=[<position>] [<height>] [<inner position>] {<width>}`

This key wraps the inner content in a minipage with the given `<width>` before it is stored as horizontal box. Its order relative to other keys is not meaningful (except that future keys of this sub-section will overwrite it). This allows for line breaks and

footnotes in the `adjustbox`. All optional arguments of `minipage` are supported. If only the width is given it does not have to be enclosed in braces. The *⟨position⟩* argument must be ‘t’ for top baseline, ‘b’ for bottom baseline and ‘c’ for center alignment relative to other text, i.e. defines the resulting baseline. If a *⟨height⟩* is defined the *⟨inner position⟩* defaults to *⟨position⟩* but can also be ‘s’ to stretch the content over the whole height. This requires the content to include some vertical stretchable material. Note that all length arguments can include arithmetic expressions like for other keys.

Examples:

```
\adjustbox{minipage=5cm,angle=-10}{%
  Some example code which will
  be automatically broken or can include \\
  line breaks\footnote{AND footnotes!!}\\
  or verbatim \verb+@%~&}_+!%
}
```



Some example code which will be
automatically broken or can in-
clude
line breaks^a
or verbatim @%~&}_+!

^aAND footnotes!!

Before `\begin{adjustbox}{minipage=[b][3cm][s]{5cm}}`
Some example code

```
\vfill
with line breaks\footnote{AND footnotes!!}
```

```
\vfill
or verbatim \verb+@%~&}_+!%
\end{adjustbox} After
```

Some example code		
with line breaks ^a		
or verbatim @%~&}_+!		
Before	<hr style="width: 20%; margin: 0 auto;"/> ^a AND footnotes!!	After

```

tabular=[<position>]{<column specification>}
tabular*=[<position>]{<width>}{<column specification>}
array=[<position>]{<column specification>}

```

Places the content in a `tabular`, `tabular*` or `array` environment, respectively. These keys require different implementations for macro (`\adjustbox`) and environment mode (`adjustbox` environment) in order to insert the end code correctly. Note that the environment mode is more efficient and fully stable, while the macro mode requires the last row to end with an explicit `\\` (which can be followed by `\hline` or any other macro which uses `\noalign` internally). In macro mode the `\\` is internally redefined to check for the closing brace. While this was successful tested for normal usages it might still cause issues with unusual or complicated cases. Note that these environments are taken as part of the content and so the usage of arithmetic expressions for length arguments is not supported.

Examples:

```

\adjustbox{tabular=lll}{%
    \hline
    A & B & C \\ \hline
    a & b & c \\ \hline
}

```

A	B	C
a	b	c

```

\begin{adjustbox}{tabular=lll}
    A & B & C \\
    a & b & c
\end{adjustbox}

```

A	B	C
a	b	c

```

stack
stack=<horizontal alignment>
stack={<horizontal alignment>}{<vertical alignment>}

```

```

\stackbox[<horizontal alignment>][<vertical alignment>]{<content>}

```

```

\begin{stackbox}[<horizontal alignment>][<vertical alignment>]
    <content>
\end{stackbox}

```

The `stack` key and its corresponding macro and environment can be used to stack multiple lines similar to the `\shortstack` macro, but both the horizontal and vertical alignment can be selected by a single letter each. Also a proper baseline skip is inserted. This is implemented using the `varwidth` environment which is based on the `minipage` environment. Its maximal width arguments is fixed internally to `\linewidth`.

Possible horizontal alignments are: ‘l’ (left), ‘r’ (right), ‘c’ (centered, default), ‘j’ (justified). Possible vertical alignments are the same as for `minipage`: ‘t’ (top baseline), ‘b’ (bottom baseline, default), ‘c’ (vertical centered). Because these arguments are always single letters the ‘{ }’ around them can be skipped, so that the value can simple be two concatenated letters.

Example:

```
.\adjustbox{stack}{A\\B\\CC}.
```

A
B
CC

```
.\adjustbox{stack=r}{A\\B\\CC}.
```

A
B
CC

```
.\adjustbox{stack=ct}{A\\B\\CC}.
```

A
B
CC

```
innerenv=<environment name>
innerenv={<environment name>}<environment options>
```

Wraps the inner content in the given *<environment>* before it is stored as horizontal box. It should be kept in mind that there is some internal code between the begin of the environment and the content. For this reason a tabular, array or similar environment will not work here, because that code will be taken as part of the first cell. Note that such a environment is taken as part of the content and so the usage of arithmetic expressions for length arguments is not supported.

Example:

```
\newenvironment{myenv}[2][ ]{Before [#1] (#2)}{After}
\adjustbox{innerenv={myenv}[ex]{amble}}{Content}
```

Before [ex](amble)	Content	After
--------------------	---------	-------

```
\adjustbox{innerenv={myenv}}{amble}{Content}
```

Before [](amble)	Content	After
------------------	---------	-------

```
innercode={<begin code>}{<end code>}
```

Places the given code before and after the inner content before it is stored as horizontal box. Note that such code is taken as part of the content and so the usage of arithmetic expressions for length arguments is not supported.

Example:

```
\adjustbox{innercode={\color{green}}{!}}{Content}
```

Content!

4.11 Adding own Code or Environments

```
env=<environment name>  
env={<environment name>}<environment options>
```

Adds an *<environment>* around the content and the already existing code around it which was added by other keys beforehand. Potential *<environment options>* (or any other code) can follow the environment name if it was set inside braces. At this stage the content is already boxed and format macros won't have any effect on any included text. For this the *innerenv* key needs to be used instead.

```
addcode={<code before>}<code after>}
```

Adds some *<code before>* and some *<code after>* the content and the already existing code around it which was added by other keys beforehand. At this stage the content is already boxed and format macros won't have any effect on any included text.

```
appcode=<code afterwards>
```

Appends come *<code after>* the content and the already existing code around it which was added by other keys beforehand. More complex code should be enclosed in braces.

```
precode=<code before>
```

Prepends come *<code afterwards>* the content and the already existing code around it which was added by other keys beforehand. More complex code should be enclosed in braces.

```
execute=<code>
```

Simply executes the code immediately. This is done in the key processing phase and is intended mostly for debugging purposes. Previous (normal) keys won't have an effect yet.

```
Execute=<code>
```

Simply executes the code immediately. This is done in the key processing phase for inner environments (see [subsection 4.10](#)) and is intended mostly for debugging purposes. Only previously used special keys for modifying the boxing of the content will have an effect yet. All other keys are not yet processed.

4.12 Change or discard content

```
phantom  
phantom=h  
phantom=v
```

This key replaces the content with an empty phantom box of the same dimension. If the 'h' or 'v' value is used the box will only have the same horizontal size or vertical

sizes (height and depth) while using zero for the other dimension(s). For this the standard \TeX macros `\phantom`, `\hphantom` and `\vphantom` are used internally.

`\phantombox{<width>}{<height>}{<depth>}`

This macro produces an empty box with the given width, height and depth. It is equivalent to `\phantom{\rule[-<depth>]{<width>}{<height>+<depth>}}` but more efficient and more user friendly.

Example:

Before `\fbox{\phantombox{1cm}{2ex}{1ex}}` After



`gobble`
`discard`

These two keys are aliases and will discard the content after it was fully processed. Any keys used after one of this keys will operate on an empty content. These keys can be used in combination of the `gstore ...` keys to only measure but not typeset some content.

`content=<new content>`

This key discards the current content completely after it was fully processed and all earlier keys were applied and sets the content to the given `<new content>`. This can be used to implement some draft box or censoring features.

Example:

```
\adjustbox{frame,rotate=-30,gstore sizes=\somelengtha{}{}\somelengthb,
content={Censored!},rotate=30,totalheight=\somelengtha,width=\somelengthb,frame}
{The real content}
```



4.13 Store box content

`gstore=<\boxregister>`
`gstore*=<\boxregister>`

These keys globally store the current content into the given box register. With the normal version the content is still preserved and can be further adjusted. With the

starred version the content will be consumed and further keys will be applied to an empty content.

```
gstore width=<\lengthregister>
gstore height=<\lengthregister>
gstore depth=<\lengthregister>
gstore totalheight=<\lengthregister>
```

These key globally store the width, height, depth and totalheight into a length register, respectively. The content will not be altered by these keys. There are no starred versions like for `gstore`. If the content should only be measured but not typeset the `gobble/discard` key can be used afterwards.

```
gstore sizes=<\lengthregister><\lengthregister><\lengthregister><\lengthregister>
```

Stores all four size values (width, height, depth and totalheight) of the content in the given length registers. This key should be used if more than one dimension should be stored, because it is much more efficient than using multiple of the above keys. If a dimension is not required it can be replaced by an empty argument, i.e. '{}'. Trailing dimensions can be skipped altogether if they are not required.

4.14 Experimental Keys

The following features are experimental and may not work correctly yet. At the moment the `storebox` package must be loaded manually for this keys.

```
\splitbox{<split width>}{<split height>}{<content>}
```

This macro boxes the given content and splits it in multiple fragments of the given width and height. This is done row by row starting from the upper left corner. The last column and row can have a smaller size than requested. Every fragment is placed using `\splitboxcmd{<fragment box>}` which is empty by default but can be redefined to e.g. draw a frame around each fragment. After every row except the last the macro `\splitboxnewline` is inserted which defaults to `\\`, but can also be redefined freely. After the last row the macro `\splitboxlastnewline` is inserted which defaults to `\splitboxnewline`.

The `\splitbox` content is stored using `\storebox` from the `storebox` package and therefore the whole content should only be stored once in the output file if the format is supported by that package (currently only PDF).

```
\begin{splitbox}{<split width>}{<split height>}{
  <content>
}\end{splitbox}
```

Environment version of `\splitbox`.

```
split={⟨split width⟩}{⟨split height⟩}
```

The `split` key can be used with `\adjustbox` and uses `\splitbox` internally.

```
\pagebreakbox{⟨content⟩}
```

The `\pagebreakbox` macro will split the content into multiple parts so that it fits on the current page. If it is larger than the rest of the current page and the full next page it is broken again until the last part fits on a page. This doesn't take any baselines into account and text line in the content may be split in two. This might be compensated manually by redefining the `\pagebreakboxoffset` macro (default: `'\ht\strutbox'`), which adjust the vertical offset of the first part.

```
\begin{pagebreakbox}  
\end{pagebreakbox}
```

Environment version of `\pagebreakbox`.

```
pagebreak
```

The key version of `\pagebreakbox`. There should no be any further keys used afterwards, because they will interfere with the page breaks.