The blowup package

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1 Introduction

This package only defines the user-level macro `\blowUp`, which can be used to scale all pages of a document up or down. It is similar to the TEX primitive `\mag`, but more accurate and user-friendly. `\blowUp` can be useful for creating posters from a normal sized document and for many other types of fine-tuning of a finished document (e.g., minor scaling changes and position of the pages).

2 Usage

The only user macro is `\blowUp{`⟨*key=value*⟩`}`. Call it before `\begin{document}` to scale all pages of the document:

key	**value**
target	The final paper size: `letter`, `legal`, `executive` or a paper size from the ISO/DIN paper series A, B, C, D (e. g., `a8`, `c7`,..., `b1`, `a0`) or a pair of dimensions in curly brackets (e. g., `target={925mm,1225mm}`) or the letter 'x' followed by a scaling factor (e. g., `target=x1.414213`).
origin	Scaled size of the source document: `letter`, `legal`, `executive` or a paper size from the ISO/DIN paper series A, B, C, D (e. g., `a8`, `c7`,..., `b1`, `a0`) or a pair of dimensions in curly brackets (e. g., `origin={925mm,1225mm}`) or the letter 'x' followed by a scaling factor (e. g., `origin=x1.414213`).
h-mirroring	horizontally mirroring of the final pages `true` (the same as no value) or `false` (default: `false`).
v-mirroring	vertically mirroring of the final pages `true` (the same as no value) or `false` (default: `false`).
landscape	Exchanges paperwidth and paperheight: `true` (the same as no value) or `false` (default: `false`).
noscale	No scaling of the original paper size: `true` (the same as no value) or `false` (default: `false`).
pos	Position of the page on the paper:

`left` or `right`, `inside` or `outside`, `top` or `bottom` (only the first letter is significant; default is centering), or a pair of dimensions in curly brackets which means the offset from the lower left or lower outside corner of the final paper. Only meaningful for `noscale=true` and up-scaled paper size.

onepage — Suppresses the second page and all following pages: `true` (the same as no value) or `false` (default: `false`). Useful for creating a one-page document like a poster.

See also the example documents `blowup-ex?.tex`.

3 Implementation

Load some packages for utility macros.

```
\RequirePackage{keyval,graphics}
\@ifpackageloaded{typearea}{}{%
  \newcommand*\BL@save@dimen[1]{%
    \@ifundefined{BL@#1}{%
      \expandafter\newlength\csname BL@#1\endcsname}{}%
    \csname BL@#1\endcsname\csname #1\endcsname
    \g@addto@macro\BL@restore@dimens{%
      \csname #1\endcsname\csname BL@#1\endcsname}%
  }%
```

`\BL@restore@dimens` Some dimensions changed by typearea must be saved and restored.

```
  \newcommand*\BL@restore@dimens{}%
  \BL@save@dimen{paperwidth}%
  \BL@save@dimen{paperheight}%
  \BL@save@dimen{textwidth}%
  \BL@save@dimen{textheight}%
  \BL@save@dimen{evensidemargin}%
  \BL@save@dimen{oddsidemargin}%
  \BL@save@dimen{topmargin}%
  \BL@save@dimen{headheight}%
  \BL@save@dimen{headsep}%
  \BL@save@dimen{topskip}%
  \BL@save@dimen{footskip}%
  \BL@save@dimen{baselineskip}%
  \let\l@addto@macro=\relax
  \RequirePackage[pagesize=false]{typearea}%
  \expandafter\let\csname ver@typearea.sty\endcsname=\relax
  \BL@restore@dimens
  \let\BL@save@dimen=\relax
  \let\BL@restore@dimens=\relax
}
```

`\vb@xt@` Similar to `\hb@xt@`

```
\providecommand*\vb@xt@{\vbox to}
```

`\tPaperWidth` `\tPaperHeight` The size of the scaled final pages.

```
\newlength\tPaperWidth
\newlength\tPaperHeight
```

\oPaperWidth The size of the original pages.
\oPaperHeight

```
\newlength\oPaperWidth  \oPaperWidth=\z@
\newlength\oPaperHeight \oPaperHeight=\z@
```

\BL@resize Resizes the shipout box.

```
\newcommand*\BL@resize[1]{#1}
```

\BL@scalePage The whole scaling process of the the shipout box to the dimension of the new paper size.

```
\newcommand*\BL@scalePage{%
```

Normalize the shipout box

```
  \setbox\ShipoutBox=\vbox{%
    \vskip1in\moveright1in\box\ShipoutBox}%
  \setbox\ShipoutBox=\hb@xt@\paperwidth{%
    \box\ShipoutBox\hss}%
  \setbox\ShipoutBox=\vb@xt@\paperheight{%
    \box\ShipoutBox\vss}%
  \ifBL@noscale\else
    \ifdim\oPaperWidth>\z@
      \setbox\ShipoutBox=\hbox{\resizebox{\oPaperWidth}{\oPaperHeight}%
        {\box\ShipoutBox}}%
    \else
      \def\BL@resize##1{\resizebox{\tPaperWidth}{!}{##1}}%
      \setbox\@tempboxa=\hbox{\BL@resize{\copy\ShipoutBox}}%
      \ifdim\ht\@tempboxa>\tPaperHeight
        \def\BL@resize##1{\resizebox{!}{\tPaperHeight}{##1}}%
      \fi
    \fi
  \fi
  \setbox\@tempboxa=\vb@xt@\tPaperHeight{%
    \kern\z@\BL@t
    \hb@xt@\tPaperWidth{\BL@l\BL@resize{\box\ShipoutBox}\BL@r}%
    \BL@b\kern\z@
  }%
  \ifBL@mirroring
    \setbox\@tempboxa=\hbox{\scalebox{\BL@h}[\BL@v]{\box\@tempboxa}}%
  \fi
```

Denormalize the shipout box

```
  \setbox\ShipoutBox=\vbox{%
    \vskip-1in\moveright-1in\box\@tempboxa}%
}

\newcommand\BL@tempa{}
\newcommand\BL@tempb{}
\newcommand*\BL@strip@comma{}
\def\BL@strip@comma#1,{#1}
```

\BL@is@dimen@pair The parameter two will be executed if the first parameter is a comma-separated pair of two dimensions. If not the parameter three will be executed.

```
\newcommand*\BL@is@dimen@pair[1]{%
  \expandafter\BL@@is@dimen@pair#1,\@nil
}
```

```
\newcommand*\BL@@is@dimen@pair{}
\def\BL@@is@dimen@pair#1,#2\@nil{%
  \edef\BL@tempa{#1}\edef\BL@tempb{#2}%
  \@tempswafalse
  \ifx\BL@tempb\@empty\else
    \edef\BL@tempb{\expandafter\BL@strip@comma\BL@tempb}%
    \ifdimen{\BL@tempa}{%
      \ifdimen{\BL@tempb}{\@tempswatrue}{}%
    }{}%
  \fi
  \if@tempswa
    \expandafter\@firstoftwo
  \else
    \expandafter\@secondoftwo
  \fi
}

\newcommand*\BL@strip@x{}
\def\BL@strip@x#1x{#1}
```

`\BL@is@factor` The parameter two will be executed if the first parameter is the small letter x ('times') immediately followed by a number. If not the parameter three will be executed.

```
\newcommand*\BL@is@factor[1]{%
  \expandafter\BL@@is@factor#1x\@nil
}
\newcommand*\BL@@is@factor{}
\def\BL@@is@factor#1x#2\@nil{%
  \edef\BL@tempa{#2}%
  \@tempswafalse
  \ifx\BL@tempa\@empty\else
    \edef\BL@tempa{\expandafter\BL@strip@x\BL@tempa}%
    \ifdimen{\BL@tempa pt}{\@tempswatrue}{}%
  \fi
  \if@tempswa
    \expandafter\@firstoftwo
  \else
    \expandafter\@secondoftwo
  \fi
}
```

`\BL@getDimens` Sets the two dimen registers (`#2` and `#3`) according to parameter `#1`.

```
\newcommand*\BL@getDimens[3]{%
  \BL@is@dimen@pair{#1}{%
    \global#2=\BL@tempa\relax
    \global#3=\BL@tempb\relax
  }{%
    \BL@is@factor{#1}{%
      \global#2=\BL@tempa\paperwidth
      \global#3=\BL@tempa\paperheight
    }{%
      \begingroup
        \KOMAoptions{paper=portrait,paper=#1}%
        \global#2=\paperwidth
```

```
        \global#3=\paperheight
      \endgroup
    }%
  }%
}
```

The key-value definitions for `\blowUp`:

```
\define@key{BL@}{origin}{%
  \BL@getDimens{#1}{\oPaperWidth}{\oPaperHeight}%
}
\define@key{BL@}{target}{%
  \BL@getDimens{#1}{\tPaperWidth}{\tPaperHeight}%
}
\newif\ifBL@noscale \BL@noscalefalse
\newif\ifBL@mirroring \BL@mirroringfalse
\define@key{BL@}{noscale}[true]{%
  \global\csname BL@noscale#1\endcsname
}
\define@key{BL@}{h-mirroring}[true]{%
  \global\csname BL@mirroring#1\endcsname
  \gdef\BL@h{-1}%
}
\define@key{BL@}{v-mirroring}[true]{%
  \global\csname BL@mirroring#1\endcsname
  \gdef\BL@v{-1}%
}
\newcommand*\BL@l{}
\newcommand*\BL@r{}
\newcommand*\BL@i{}
\newcommand*\BL@o{}
\newcommand*\BL@t{}
\newcommand*\BL@b{}
\newcommand*\BL@h{1}
\newcommand*\BL@v{1}
```

`\BL@setPos` Modify the macros `\BL@l`, `\BL@r` (`\BL@i`, `\BL@o`), `\BL@t`, and `\BL@b` for positioning the page on the paper.

```
\newcommand\BL@setPos[1]{%
  \def\BL@l{\hss}\def\BL@r{\hss}%
  \def\BL@o{\hss}\def\BL@i{\hss}%
  \def\BL@t{\vss}\def\BL@b{\vss}%
  \BL@is@dimen@pair{#1}{%
    \edef\BL@b{\vskip\BL@tempb}%
    \if@twoside
      \edef\BL@l{\noexpand\ifodd\value{page}%
        \hskip\BL@tempa\noexpand\else\hss\noexpand\fi}%
      \edef\BL@r{\noexpand\ifodd\value{page}%
        \hss\noexpand\else\hskip\BL@tempa\noexpand\fi}%
    \else
      \edef\BL@l{\hskip\BL@tempa}%
    \if
  }{%
```

```
    \@for\BL@tempa:=#1\do{%
      \edef\BL@tempb{\expandafter\@car\BL@tempa\@nil}%
      \expandafter\let\csname BL@\BL@tempb \endcsname\relax
    }%
    \if@twoside
      \ifx\BL@i\relax
        \def\BL@r{\ifodd\value{page}\hss\else\relax\fi}%
        \def\BL@l{\ifodd\value{page}\relax\else\hss\fi}%
      \fi
      \ifx\BL@o\relax
        \def\BL@l{\ifodd\value{page}\hss\else\relax\fi}%
        \def\BL@r{\ifodd\value{page}\relax\else\hss\fi}%
      \fi
    \else
      \let\BL@l=\BL@o
      \let\BL@r=\BL@i
    \fi
  }%
}

\define@key{BL@}{pos}{%
  \BL@setPos{#1}%
}

\newif\ifBL@landscape \BL@landscapefalse

\define@key{BL@}{landscape}[true]{%
  \csname BL@landscape#1\endcsname
}

\newcommand*\BL@setup{}

\define@key{BL@}{onepage}[true]{%
  \csname if#1\endcsname
    \def\BL@setup{\gdef\shipout{\deadcycles\z@\setbox\@tempboxa=}}%
  \fi
}
```

`\blowUp` The only user-level macro.

```
\newcommand*\blowUp[1]{%
  \global\tPaperWidth=\paperwidth
  \global\tPaperHeight=\paperheight
  \setkeys{BL@}{#1}%
  \ifBL@landscape
    \@tempdima=\tPaperWidth
    \global\tPaperWidth=\tPaperHeight
    \global\tPaperHeight=\@tempdima
  \fi
  \AtBeginDocument{%
    \AtBeginDvi{\BL@pagesize@code{\tPaperWidth}{\tPaperHeight}}%
    \AddToHook{shipout}{\BL@setup\BL@scalePage}%
  }%
  \gdef\blowUp##1{%
    \PackageWarning{blowup}{Only the first call of `\string\blowUp'
      \MessageBreak is effective}}%
}
```

```
\@onlypreamble\blowUp
```

`\BL@pagesize@code` Page size information (depending on the TEX compiler or driver).

```
\newcommand*\BL@pagesize@code[2]{}

\RequirePackage{iftex}

\ifluatex
  \PackageInfo{blowup}{Generating code for LuaTeX}%
  \@ifundefined{pagewidth}{%
    \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
      \global\pdfpageheight=#2}%
  }{%
    \def\BL@pagesize@code#1#2{\global\pagewidth=#1 %
      \global\pageheight=#2}%
  }
\else
  \ifxetex
    \PackageInfo{blowup}{Generating code for XeTeX}%
    \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
      \global\pdfpageheight=#2}%
  \else
    \ifvtex
      \PackageInfo{blowup}{Generating code for VTeX}%
      \def\BL@pagesize@code#1#2{\global\mediawidth=#1 %
        \global\mediaheight=#2}%
    \else
      \ifpdf
        \PackageInfo{blowup}{Generating code for pdfTeX}%
        \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
          \global\pdfpageheight=#2}%
      \else
        \PackageInfo{blowup}{Generating code for dvips}%
        \def\BL@pagesize@code#1#2{%
          \@tempdima=#1 \@tempdimb=#2 %
          \special{papersize=\the\@tempdima,\the\@tempdimb}%
        }%
      \fi
    \fi
  \fi
\fi
```

Change History

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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.