

The **blowup** package

Rolf Niepraschk

Version 2.1.0 (2022/09/22)

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

```

1 \RequirePackage{atbegshi, keyval, graphics}
2 \@ifpackageloaded{typearea}{}{%
3   \newcommand*\BL@save@dimen[1]{%
4     \@ifundefined{BL@#1}{%
5       \expandafter\newlength\csname BL@#1\endcsname}{}%
6     \csname BL@#1\endcsname\csname #1\endcsname
7     \g@addto@macro\BL@restore@dimens{%
8       \csname #1\endcsname\csname BL@#1\endcsname}%
9   }%

```

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

```

10 \newcommand*\BL@restore@dimens{}%
11 \BL@save@dimen{paperwidth}%
12 \BL@save@dimen{paperheight}%
13 \BL@save@dimen{textwidth}%
14 \BL@save@dimen{textheight}%
15 \BL@save@dimen{evensidemargin}%
16 \BL@save@dimen{oddsidemargin}%
17 \BL@save@dimen{topmargin}%
18 \BL@save@dimen{headheight}%
19 \BL@save@dimen{headsep}%
20 \BL@save@dimen{topskip}%
21 \BL@save@dimen{footskip}%
22 \BL@save@dimen{baselineskip}%
23 \let\l@addto@macro=\relax
24 \RequirePackage[pagesize=false]{typearea}%
25 \expandafter\let\csname ver@typearea.sty\endcsname=\relax
26 \BL@restore@dimens
27 \let\BL@save@dimen=\relax
28 \let\BL@restore@dimens=\relax
29 }

```

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

```

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

```

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

```

31 \newlength\tPaperWidth
32 \newlength\tPaperHeight

```

```

\oPaperWidth The size of the original pages.
\oPaperHeight 33 \newlength\oPaperWidth \oPaperWidth=\z@
               34 \newlength\oPaperHeight \oPaperHeight=\z@

\BL@resize Resizes the shipout box.
             35 \newcommand*\BL@resize[1]{#1}

\BL@scalePage The whole scaling process of the the shipout box to the dimension of the new
               paper size.
             36 \newcommand*\BL@scalePage{%
Normalize the shipout box
             37 \setbox\AtBeginShipoutBox=\vbox{%
             38 \vskip1in\moveright1in\box\AtBeginShipoutBox}%
             39 \setbox\AtBeginShipoutBox=\hb@xt@\paperwidth{%
             40 \box\AtBeginShipoutBox\hss}%
             41 \setbox\AtBeginShipoutBox=\vb@xt@\paperheight{%
             42 \box\AtBeginShipoutBox\vss}%
             43 \ifBL@noscale\else
             44 \ifdim\oPaperWidth>\z@
             45 \setbox\AtBeginShipoutBox=\hbox{\resizebox{\oPaperWidth}{\oPaperHeight}%
             46 {\box\AtBeginShipoutBox}}%
             47 \else
             48 \def\BL@resize##1{\resizebox{\tPaperWidth}{!}{##1}}%
             49 \setbox\@tempboxa=\hbox{\BL@resize{\copy\AtBeginShipoutBox}}%
             50 \ifdim\ht\@tempboxa>\tPaperHeight
             51 \def\BL@resize##1{\resizebox{!}{\tPaperHeight}{##1}}%
             52 \fi
             53 \fi
             54 \fi
             55 \setbox\@tempboxa=\vb@xt@\tPaperHeight{%
             56 \kern\z@\BL@t
             57 \hb@xt@\tPaperWidth{\BL@l\BL@resize{\box\AtBeginShipoutBox}\BL@r}%
             58 \BL@b\kern\z@
             59 }%
             60 \ifBL@mirroring
             61 \setbox\@tempboxa=\hbox{\scalebox{\BL@h}{\BL@v}{\box\@tempboxa}}%
             62 \fi

Denormalize the shipout box
             63 \setbox\AtBeginShipoutBox=\vbox{%
             64 \vskip-1in\moveright-1in\box\@tempboxa}%
             65 }

             66 \newcommand\BL@tempa{}
             67 \newcommand\BL@tempb{}
             68 \newcommand*\BL@strip@comma{}
             69 \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.
             70 \newcommand*\BL@is@dimen@pair[1]{%
             71 \expandafter\BL@@is@dimen@pair#1,\@nil
             72 }

```

```

73 \newcommand*\BL@is@dimen@pair{}
74 \def\BL@is@dimen@pair#1,#2\@nil{%
75   \edef\BL@tempa{#1}\edef\BL@tempb{#2}%
76   \@tempswafalse
77   \ifx\BL@tempb\@empty\else
78     \edef\BL@tempb{\expandafter\BL@strip@comma\BL@tempb}%
79     \ifdimen{\BL@tempa}{%
80       \ifdimen{\BL@tempb}{\@tempswatrue}{}%
81     }{%
82   \fi
83   \if@tempswa
84     \expandafter\@firstoftwo
85   \else
86     \expandafter\@secondoftwo
87   \fi
88 }

89 \newcommand*\BL@strip@x{}
90 \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.

```

91 \newcommand*\BL@is@factor[1]{%
92   \expandafter\BL@is@factor#1x\@nil
93 }
94 \newcommand*\BL@is@factor{}
95 \def\BL@is@factor#1x#2\@nil{%
96   \edef\BL@tempa{#2}%
97   \@tempswafalse
98   \ifx\BL@tempa\@empty\else
99     \edef\BL@tempa{\expandafter\BL@strip@x\BL@tempa}%
100    \ifdimen{\BL@tempa pt}{\@tempswatrue}{}%
101  \fi
102  \if@tempswa
103    \expandafter\@firstoftwo
104  \else
105    \expandafter\@secondoftwo
106  \fi
107 }

```

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

```

108 \newcommand*\BL@getDimens[3]{%
109   \BL@is@dimen@pair{#1}{%
110     \global#2=\BL@tempa\relax
111     \global#3=\BL@tempb\relax
112   }{%
113     \BL@is@factor{#1}{%
114       \global#2=\BL@tempa\paperwidth
115       \global#3=\BL@tempa\paperheight
116     }{%
117       \begingroup
118         \KOMAoptions{paper=portrait,paper=#1}%
119         \global#2=\paperwidth

```

```

120     \global#3=\paperheight
121     \endgroup
122   }%
123 }%
124 }

The key-value definitions for \blowUp:
125 \define@key{BL@}{origin}{%
126   \BL@getDimens{#1}{\oPaperWidth}{\oPaperHeight}%
127 }

128 \define@key{BL@}{target}{%
129   \BL@getDimens{#1}{\tPaperWidth}{\tPaperHeight}%
130 }

131 \newif\ifBL@noscale \BL@noscalefalse
132 \newif\ifBL@mirroring \BL@mirroringfalse

133 \define@key{BL@}{noscale}[true]{%
134   \global\csname BL@noscale#1\endcsname
135 }
136 \define@key{BL@}{h-mirroring}[true]{%
137   \global\csname BL@mirroring#1\endcsname
138   \gdef\BL@h{-1}%
139 }
140 \define@key{BL@}{v-mirroring}[true]{%
141   \global\csname BL@mirroring#1\endcsname
142   \gdef\BL@v{-1}%
143 }

144 \newcommand*\BL@l{}
145 \newcommand*\BL@r{}
146 \newcommand*\BL@i{}
147 \newcommand*\BL@o{}
148 \newcommand*\BL@t{}
149 \newcommand*\BL@b{}
150 \newcommand*\BL@h{1}
151 \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.

```

152 \newcommand\BL@setPos[1]{%
153   \def\BL@l{\hss}\def\BL@r{\hss}%
154   \def\BL@o{\hss}\def\BL@i{\hss}%
155   \def\BL@t{\vss}\def\BL@b{\vss}%
156   \BL@is@dimen@pair{#1}{%
157     \edef\BL@b{\vskip\BL@tempb}%
158     \if@twoside
159       \edef\BL@l{\noexpand\ifodd\value{page}%
160         \hskip\BL@tempa\noexpand\else\hss\noexpand\fi}%
161       \edef\BL@r{\noexpand\ifodd\value{page}%
162         \hss\noexpand\else\hskip\BL@tempa\noexpand\fi}%
163     \else
164       \edef\BL@l{\hskip\BL@tempa}%
165     \if
166   }%

```

```

167 \@for\BL@tempa:=#1\do{%
168 \edef\BL@tempb{\expandafter\@car\BL@tempa\@nil}%
169 \expandafter\let\csname BL@\BL@tempb \endcsname\relax
170 }%
171 \if@twoside
172 \ifx\BL@i\relax
173 \def\BL@r{\ifodd\value{page}\hss\else\relax\fi}%
174 \def\BL@l{\ifodd\value{page}\relax\else\hss\fi}%
175 \fi
176 \ifx\BL@o\relax
177 \def\BL@l{\ifodd\value{page}\hss\else\relax\fi}%
178 \def\BL@r{\ifodd\value{page}\relax\else\hss\fi}%
179 \fi
180 \else
181 \let\BL@l=\BL@o
182 \let\BL@r=\BL@i
183 \fi
184 }%
185 }

186 \define@key{BL@}{pos}{%
187 \BL@setPos{#1}%
188 }

189 \newif\ifBL@landscape \BL@landscapefalse

190 \define@key{BL@}{landscape}[true]{%
191 \csname BL@landscape#1\endcsname
192 }

193 \newcommand*\BL@setup{}

194 \define@key{BL@}{onepage}[true]{%
195 \csname if#1\endcsname
196 \def\BL@setup{\gdef\shipout{\deadcycles\z@\setbox\@tempboxa=}}%
197 \fi
198 }

```

`\blowUp` The only user-level macro.

```

199 \newcommand*\blowUp[1]{%
200 \global\tPaperWidth=\paperwidth
201 \global\tPaperHeight=\paperheight
202 \setkeys{BL@}{#1}%
203 \ifBL@landscape
204 \@tempdima=\tPaperWidth
205 \global\tPaperWidth=\tPaperHeight
206 \global\tPaperHeight=\@tempdima
207 \fi
208 \AtBeginDocument{%
209 \AtBeginDvi{\BL@pagesize@code{\tPaperWidth}{\tPaperHeight}}%
210 \AtBeginShipout{\BL@setup\BL@scalePage}
211 }%
212 \gdef\blowUp##1{%
213 \PackageWarning{blowup}{Only the first call of ‘\string\blowUp’
214 \MessageBreak is effective}}%
215 }

```

```

216 \@onlypreamble\blowUp
\BL@pagesize@code Page size information (depending on the TeX compiler or driver).
217 \newcommand*\BL@pagesize@code[2]{%
218 \RequirePackage{iftex}
219 \ifluatex
220 \PackageInfo{blowup}{Generating code for LuaTeX}%
221 \@ifundefined{pagewidth}{%
222 \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
223 \global\pdfpageheight=#2}%
224 }{%
225 \def\BL@pagesize@code#1#2{\global\pagewidth=#1 %
226 \global\pageheight=#2}%
227 }
228 \else
229 \ifxetex
230 \PackageInfo{blowup}{Generating code for XeTeX}%
231 \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
232 \global\pdfpageheight=#2}%
233 \else
234 \ifvtex
235 \PackageInfo{blowup}{Generating code for VTeX}%
236 \def\BL@pagesize@code#1#2{\global\mediawidth=#1 %
237 \global\mediaheight=#2}%
238 \else
239 \ifpdf
240 \PackageInfo{blowup}{Generating code for pdfTeX}%
241 \def\BL@pagesize@code#1#2{\global\pdfpagewidth=#1 %
242 \global\pdfpageheight=#2}%
243 \else
244 \PackageInfo{blowup}{Generating code for dvips}%
245 \def\BL@pagesize@code#1#2{%
246 \@tempdima=#1 \@tempdimb=#2 %
247 \special{papersize=\the\@tempdima,\the\@tempdimb}%
248 }%
249 \fi
250 \fi
251 \fi
252 \fi

```

Change History

0.1a	2.1.0
General: Initial version. (RN)	1
2.0.0	\BL@scalePage: New options
General: Major parts rewritten.	'h-mirroring' and 'v-mirroring'
(RN)	(RN)
	3

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>\@car</code>	168	
<code>\@ifpackageloaded</code> . .	2	
<code>\@onlypreamble</code>	216	
A		
<code>\AtBeginDocument</code> . .	208	
<code>\AtBeginDvi</code>	209	
<code>\AtBeginShipout</code> . . .	210	
<code>\AtBeginShipoutBox</code> .		
.	37, 38,	
	39, 40, 41, 42,	
	45, 46, 49, 57, 63	
B		
<code>\BL@is@dimen@pair</code> .		
.	71, 73, 74	
<code>\BL@is@factor</code> 92, 94, 95		
<code>\BL@b</code>	58, 149, 155, 157	
<code>\BL@getDimens</code>		
.	108, 126, 129	
<code>\BL@h</code>	61, 138, 150	
<code>\BL@i</code>	146, 154, 172, 182	
<code>\BL@is@dimen@pair</code> .		
.	70, 109, 156	
<code>\BL@is@factor</code>	91, 113	
<code>\BL@l</code> 57, 144, 153, 159,		
	164, 174, 177, 181	
<code>\BL@landscapefalse</code> .	189	
<code>\BL@mirroringfalse</code> .	132	
<code>\BL@noscalefalse</code> . .	131	
<code>\BL@o</code>	147, 154, 176, 181	
<code>\BL@pagesize@code</code> .		
.	209,	
	<u>217</u> , 222, 225,	
	231, 236, 241, 245	
<code>\BL@r</code>	57, 145, 153,	
	161, 173, 178, 182	
<code>\BL@resize</code>		
.	35, 48, 49, 51, 57	
<code>\BL@restore@dimens</code> .		
.	7, <u>10</u> , 26, 28	
<code>\BL@save@dimen</code>		
.	3, 11, 12, 13, 14,	
	15, 16, 17, 18,	
	19, 20, 21, 22, 27	
<code>\BL@scalePage</code>	<u>36</u> , 210	
<code>\BL@setPos</code>	<u>152</u> , 187	
<code>\BL@setup</code>	193, 196, 210	
<code>\BL@strip@comma</code> . . .		
.	68, 69, 78	
<code>\BL@strip@x</code>	89, 90, 99	
<code>\BL@t</code>	56, 148, 155	
<code>\BL@v</code>	61, 142, 151	
<code>\blowUp</code>	<u>199</u> , 216	
<code>\oPaperWidth</code>		
.	<u>33</u> , 44, 45, 126	
P		
<code>\PackageInfo</code>	220,	
	230, 235, 240, 244	
<code>\PackageWarning</code> . . .	213	
<code>\pageheight</code>	226	
<code>\pagewidth</code>	225	
<code>\paperheight</code>		
.	41, 115, 120, 201	
<code>\paperwidth</code>		
.	39, 114, 119, 200	
<code>\pdfpageheight</code>		
.	223, 232, 242	
<code>\pdfpagewidth</code>		
.	222, 231, 241	
R		
<code>\RequirePackage</code> . . .		
.	1, 24, 218	
<code>\resizebox</code>	45, 48, 51	
S		
<code>\scalebox</code>	61	
<code>\setbox</code> 37, 39, 41, 45,		
	49, 55, 61, 63, 196	
<code>\setkeys</code>	202	
<code>\shipout</code>	196	
<code>\special</code>	247	
T		
<code>\tPaperHeight</code>	<u>31</u> ,	
	50, 51, 55, 129,	
	201, 205, 206, 209	
<code>\tPaperWidth</code>		
.	<u>31</u> , 48, 57, 129,	
	200, 204, 205, 209	
V		
<code>\vb@xt@</code>	<u>30</u>	
D		
<code>\deadcycles</code>	196	
<code>\define@key</code>	125,	
	128, 133, 136,	
	140, 186, 190, 194	
I		
<code>\if@twoside</code>	158, 171	
<code>\ifBL@landscape</code> 189, 203		
<code>\ifBL@mirroring</code> 60, 132		
<code>\ifBL@noscale</code>	43, 131	
<code>\ifdim</code>	44, 50	
<code>\ifdimen</code>	79, 80, 100	
<code>\ifluatex</code>	219	
<code>\ifpdf</code>	239	
<code>\ifvtex</code>	234	
<code>\ifxetex</code>	229	
K		
<code>\KOMAOptions</code>	118	
M		
<code>\mediaheight</code>	237	
<code>\mediawidth</code>	236	
<code>\MessageBreak</code>	214	
O		
<code>\oPaperHeight</code> <u>33</u> , 45, 126		