The eso-pic package*

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1 Introduction

This package makes it easy to add some picture commands to every page at absolute positions.

2 Usage

See also the example LaTeX documents (eso-*.tex).

2.1 Basic commands for adding LaTeX stuff to the page background

\AddToShipoutPictureBG All the picture commands which are parameters of an \AddToShipoutPictureBG command will be added to the internal macro \ESO@HookIBG. This macro is part of a zero-length picture environment with basepoint at the lower left corner of the page (default) or at the upper left corner (package option "texcoord"). The picture environment will be shipped out at every new page.

\AddToShipoutPictureBG* \AddToShipoutPictureBG* works like \AddToShipoutPictureBG but only for the current page. It used the internal macro \ESO@HookIIBG which contents will be removed automatically.

For compatibility the macros \AddToShipoutPicture and \AddToShipoutPicture* are aliases for \AddToShipoutPictureBG and \AddToShipoutPictureBG*.

\AddToShipoutPictureFG Works like \AddToShipoutPictureBG but the picture commands are on the
\AddToShipoutPictureFG* top of the normal document content.

\ClearShipoutPictureBG A call of \ClearShipoutPictureBG clears the contents of \ESO@HookIBG.

For compatibility the macro \ClearShipoutPicture is an alias for \ClearShipoutPictureBG.

\ClearShipoutPictureFG A call of \ClearShipoutPictureFG clears the contents of \ESO@HookIFG.

\LenToUnit [Allows a length as parameter to a picture command.] Note that this macro exist only for compatibility to older versions of this package. A recent LaTeX version allows dimensions in picture commands.

\gridSetup \gridSetup[⟨*gridunitname*⟩]{⟨*gridunit*⟩}{⟨*labelfactor*⟩}{⟨*griddelta*⟩}{⟨*gridDelta*⟩}{⟨*gap*⟩}. For details see the implementation section.

*This document corresponds to eso-pic v3.0d, dated 2025/12/10.

\AtPageUpperLeft
\AtPageLowerLeft
\AtPageCenter
\AtTextUpperLeft
\AtTextLowerLeft
\AtTextCenter
\AtStockUpperLeft
\AtStockLowerLeft
\AtStockCenter

Helper macros for easier positioning on the page.

2.2 Package options

Option	Value	Comments
`pscoord`	empty or *true*, *false*	The zero point of the coordinate system is the lower left corner of the page (the default).
`texcoord`	empty or *true*, *false*	The zero point of the coordinate system is the upper left corner of the page.
`grid`	empty or *true*, *false*	A grid is drawing; default: false.
`gridBG`	empty or *true*, *false*	Put the grid in the background; default: false.
`gridunit`	*mm*, *in*, *bp*, *pt*	Distance between gridlines are multiples of `gridunit`. default: mm.
`gridcolor`	a valid color name	Color of the main gridlines; default: black
`subgridcolor`	a valid color name	Color of the subgridlines; default: black.
`subgridstyle`	*solid* or *dotted*	'dotted' is very slow! default: solid.
`colorgrid`	empty or *true*, *false*	Shortcut for 'grid=true', 'gridcolor=red' and 'subgridcolor=green'; default: false.
`dvips`	empty or *true*, *false*	Is also true if the package option `dvips` is used by color or graphics. If true package eepic is loaded for better performance of dotted lines.

3 Implementation

3.1 The main functionality

\LenToUnit

Only for compatibility

```
\providecommand*\LenToUnit[1]{#1}
```

```
\newdimen\ESO@tempdima
\newdimen\ESO@tempdimb
```

\ESO@isMEMOIR

Support for the memoir class.

```
\newcommand\ESO@isMEMOIR[2]{#2}
\@ifclassloaded{memoir}{\renewcommand\ESO@isMEMOIR[2]{#1}}{}
```

\AtPageUpperLeft

```
\newcommand\AtPageUpperLeft[1]{%
  \put(0,-\ESO@yoffsetI){#1}%
}
```

\AtPageLowerLeft

```
\newcommand\AtPageLowerLeft[1]{\AtPageUpperLeft{%
  \put(0,-\paperheight){#1}}}
```

\AtPageCenter

```
\newcommand\AtPageCenter[1]{\AtPageUpperLeft{%
```

```
  \put(.5\paperwidth,-.5\paperheight){#1}}%
}
```

\AtStockLowerLeft

```
\newcommand\AtStockLowerLeft{}
\ESO@isMEMOIR{%
  \renewcommand\AtStockLowerLeft[1]{%
    \begingroup
      \ESO@tempdima=-\stockwidth
      \advance\ESO@tempdima\trimedge
      \advance\ESO@tempdima\paperwidth
      \if@twoside\ifodd\c@page\else
        \ESO@tempdima=-\trimedge
      \fi\fi
      \ESO@tempdimb=-\stockheight
      \advance\ESO@tempdimb\paperheight
      \advance\ESO@tempdimb\trimtop
      \AtPageLowerLeft{%
        \put(\ESO@tempdima,\ESO@tempdimb){#1}%
      }%
    \endgroup
  }
}{%
  \let\AtStockLowerLeft=\AtPageLowerLeft
}
```

\AtStockUpperLeft

```
\newcommand\AtStockUpperLeft{}
\ESO@isMEMOIR{%
  \renewcommand\AtStockUpperLeft[1]{%
    \AtStockLowerLeft{%
      \put(0,\stockheight){#1}%
    }%
  }%
}{%
  \let\AtStockUpperLeft=\AtPageUpperLeft
}
```

\AtStockCenter

```
\newcommand\AtStockCenter{}
\ESO@isMEMOIR{%
  \renewcommand\AtStockCenter[1]{%
    \AtStockLowerLeft{%
      \put(.5\stockwidth,.5\stockheight){#1}%
    }%
  }%
}{%
  \let\AtStockCenter=\AtPageCenter
}
```

\AtTextUpperLeft

```
\ESO@isMEMOIR{%
  \newcommand\AtTextUpperLeft[1]{%
    \begingroup
```

```
      \if@twoside
        \ifodd\c@page
          \ESO@tempdima=\spinemargin
        \else
          \ESO@tempdima=\paperwidth
          \advance\ESO@tempdima-\textwidth
          \advance\ESO@tempdima-\spinemargin
        \fi
      \else
        \ESO@tempdima=\spinemargin
      \fi
      \ESO@tempdimb=-\uppermargin
      \AtPageUpperLeft{%
        \put(\ESO@tempdima,\ESO@tempdimb){#1}%
      }%
    \endgroup
  }%
}{%
  \newcommand\AtTextUpperLeft[1]{%
    \begingroup
      \ESO@tempdima=1in\relax
      \if@twoside
        \ifodd\c@page
          \advance\ESO@tempdima\oddsidemargin
        \else
          \advance\ESO@tempdima\evensidemargin
        \fi
      \else
        \advance\ESO@tempdima\oddsidemargin
      \fi
      \ESO@tempdimb=-1in\relax
      \advance\ESO@tempdimb-\topmargin
      \advance\ESO@tempdimb-\headheight
      \advance\ESO@tempdimb-\headsep
      \AtPageUpperLeft{%
        \put(\ESO@tempdima,\ESO@tempdimb){#1}%
      }%
    \endgroup
  }
}
```

\AtTextLowerLeft

```
\newcommand\AtTextLowerLeft[1]{\AtTextUpperLeft{%
  \put(0,-\textheight){#1}}}
```

\AtTextCenter

```
\newcommand\AtTextCenter[1]{\AtTextUpperLeft{%
  \put(.5\textwidth,-.5\textheight){#1}}}
```

\ESO@HookIBG
\ESO@HookIIBG
\ESO@HookIIIBG
\ESO@HookIFG
\ESO@HookIIFG
\ESO@HookIIIFG

```
\newcommand{\ESO@HookIBG}{}
\newcommand{\ESO@HookIIBG}{}
\newcommand{\ESO@HookIIIBG}{}
\newcommand{\ESO@HookIFG}{}
```

```
\newcommand{\ESO@HookIIFG}{}
\newcommand{\ESO@HookIIIFG}{}
\newcommand{\ESO@HookI}{}
\newcommand{\ESO@HookII}{}
\newcommand{\ESO@HookIII}{}
\let\ESO@HookI=\ESO@HookIBG
\let\ESO@HookII=\ESO@HookIIBG
\let\ESO@HookIII=\ESO@HookIIIBG
```

\AddToShipoutPictureBG
\AddToShipoutPictureFG

```
\newcommand{\AddToShipoutPictureBG}{%
  \@ifstar{\g@addto@macro\ESO@HookIIBG}{\g@addto@macro\ESO@HookIBG}}
\newcommand{\AddToShipoutPicture}{}
\let\AddToShipoutPicture=\AddToShipoutPictureBG
```

\AddToShipoutPictureFG

```
\newcommand{\AddToShipoutPictureFG}{%
  \@ifstar{\g@addto@macro\ESO@HookIIFG}{\g@addto@macro\ESO@HookIFG}}
```

\ClearShipoutPictureBG
\ClearShipoutPicture
\ClearShipoutPictureFG

```
\newcommand{\ClearShipoutPictureBG}{\global\let\ESO@HookIBG\@empty}
\newcommand{\ClearShipoutPicture}{}
\let\ClearShipoutPicture=\ClearShipoutPictureBG
\newcommand{\ClearShipoutPictureFG}{\global\let\ESO@HookIFG\@empty}
```

```
\ESO@isMEMOIR{%
  \newcommand*\ESO@MEMOIR@corr{%
    \ESO@tempdima=-\trimedge
    \advance\ESO@tempdima-\paperwidth
    \advance\ESO@tempdima\stockwidth
    \if@twoside\ifodd\c@page\else
      \advance\ESO@tempdima2\trimedge
      \advance\ESO@tempdima\paperwidth
      \advance\ESO@tempdima-\stockwidth
    \fi\fi
    \ESO@tempdimb=\ESO@yoffsetI
    \advance\ESO@tempdimb-\trimtop
  }
  \AddToHook{shipout/background}{%
    \ESO@MEMOIR@corr
    \put(\ESO@tempdima,\ESO@tempdimb){%
      \ESO@HookIIIBG\ESO@HookIBG\ESO@HookIIBG
      \global\let\ESO@HookIIBG\@empty
    }%
  }%
  \AddToHook{shipout/foreground}{%
    \ESO@MEMOIR@corr
    \put(\ESO@tempdima,\ESO@tempdimb){%
      \ESO@HookIFG\ESO@HookIIFG\ESO@HookIIIFG
      \global\let\ESO@HookIIFG\@empty
    }%
  }%
}{%
```

```
  \AddToHook{shipout/background}{%
    \put(0,\ESO@yoffsetI){%
      \ESO@HookIIIBG\ESO@HookIBG\ESO@HookIIBG
      \global\let\ESO@HookIIBG\@empty
    }%
  }%
  \AddToHook{shipout/foreground}{%
    \put(0,\ESO@yoffsetI){%
      \ESO@HookIFG\ESO@HookIIFG\ESO@HookIIIFG
      \global\let\ESO@HookIIFG\@empty
    }%
  }%
}
```

3.2 The background grid

```
\RequirePackage{keyval}
```

Initialising some macros

```
\newif\ifESO@dvips\ESO@dvipsfalse \newif\ifESO@grid\ESO@gridfalse
\newif\ifESO@texcoord\ESO@texcoordfalse \newif\ifESO@gridBG\ESO@gridBGfalse
\newcommand*\ESO@gridunitname{}
\newcommand*\ESO@gridunit{}
\newcommand*\ESO@labelfactor{}
\newcommand*\ESO@griddelta{}\newcommand*\ESO@griddeltaY{}
\newcommand*\ESO@gridDelta{}\newcommand*\ESO@gridDeltaY{}
\newcommand*\ESO@gridcolor{}
\newcommand*\ESO@subgridcolor{}
\newcommand*\ESO@subgridstyle{dotted}% ???
\newcommand*\ESO@gap{}
\newcommand*\ESO@yoffsetI{}\newcommand*\ESO@yoffsetII{}
\newcommand*\ESO@gridlines{\thinlines}
\newcommand*\ESO@subgridlines{\thinlines}
\newcommand*\ESO@hline[1]{\ESO@subgridlines\line(1,0){#1}}
\newcommand*\ESO@vline[1]{\ESO@subgridlines\line(0,1){#1}}
\newcommand*\ESO@Hline[1]{\ESO@gridlines\line(1,0){#1}}
\newcommand*\ESO@Vline[1]{\ESO@gridlines\line(0,1){#1}}
\newcommand\ESO@fcolorbox[3]{\fbox{#3}}
\newcommand\ESO@color[1]{}
\newcommand\ESO@colorbox[2]{%
  \begingroup
    \fboxrule=\z@\fbox{#2}%
  \endgroup
}
```

`\gridSetup`

```
\newcommand\gridSetup[6][]{%
  \edef\ESO@gridunitname{#1}\edef\ESO@gridunit{#2}
  \edef\ESO@labelfactor{#3}\edef\ESO@griddelta{#4}
  \edef\ESO@gridDelta{#5}\edef\ESO@gap{#6}}
```

All the key-value options

```
\define@key{ESO}{texcoord}[true]{\csname ESO@texcoord#1\endcsname}
\define@key{ESO}{pscoord}[true]{\csname @tempswa#1\endcsname
  \if@tempswa\ESO@texcoordfalse\else\ESO@texcoordtrue\fi}
```

```
\define@key{ESO}{dvips}[true]{\csname ESO@dvips#1\endcsname}
\define@key{ESO}{grid}[true]{\csname ESO@grid#1\endcsname
  \setkeys{ESO}{gridcolor=black,subgridcolor=black}}
\define@key{ESO}{gridBG}[true]{\csname ESO@gridBG#1\endcsname}
\define@key{ESO}{colorgrid}[true]{\csname ESO@grid#1\endcsname
  \setkeys{ESO}{gridcolor=red,subgridcolor=green}}
\define@key{ESO}{gridcolor}{\def\ESO@gridcolor{#1}}
\define@key{ESO}{subgridcolor}{\def\ESO@subgridcolor{#1}}
\define@key{ESO}{subgridstyle}{\def\ESO@subgridstyle{#1}}%
\define@key{ESO}{gridunit}{%
  \def\@tempa{#1}
  \def\@tempb{bp}
  \ifx\@tempa\@tempb
    \gridSetup[\@tempa]{1bp}{1}{10}{50}{2}
  \else
    \def\@tempb{pt}
    \ifx\@tempa\@tempb
      \gridSetup[\@tempa]{\p@}{1}{10}{50}{2}
    \else
      \def\@tempb{in}
      \ifx\@tempa\@tempb
        \gridSetup[\@tempa]{.1in}{.1}{2}{10}{.5}
      \else
        \gridSetup[mm]{1mm}{1}{5}{20}{1}
      \fi
    \fi
  \fi
}
\setkeys{ESO}{subgridstyle=solid,pscoord=true,gridunit=mm}
```

```
\providecommand*\@classoptionslist{}
```

`\ProcessOptionsWithKV` This macro can process package options using ‘key=value’ syntax.

```
\def\ProcessOptionsWithKV#1{%
  \let\@tempc\@empty
  \@for\CurrentOption:=\@classoptionslist\do{%
    \@ifundefined{KV@#1@\CurrentOption}%
    {}{\edef\@tempc{\@tempc,\CurrentOption,}}}%
  \edef\@tempc{%
    \noexpand\setkeys{#1}{\@tempc\@ptionlist{\@currname.\@currext}}}%
  \@tempc
  \AtEndOfPackage{\let\@unprocessedoptions\relax}}%
```

```
\ProcessOptionsWithKV{ESO}%
```

`\ESO@div` Divides length `#1` by `#2` × `\ESO@gridunit` and adds one. Result is in `\@tempcnta`.

```
\newcommand\ESO@div[2]{%
  \ESO@tempdima=#1\relax\ESO@tempdimb=\ESO@gridunit\relax
  \ESO@tempdimb=#2\ESO@tempdimb\divide\ESO@tempdima by \ESO@tempdimb
  \@tempcnta\ESO@tempdima\advance\@tempcnta\@ne}
```

```
\@ifundefined{colorbox}{%
  \IfFileExists{xcolor.sty}{\RequirePackage{xcolor}}%
    {\RequirePackage{color}}%
```

```
}{}%
\let\ESO@color=\color
\renewcommand\ESO@colorbox[2]{%
  \begingroup
    \fboxsep=.4ex %
    \colorbox{#1}{#2}%
  \endgroup
}
\renewcommand\ESO@fcolorbox[3]{%
  \begingroup
    \fboxsep=.5ex %
    \fcolorbox{#1}{#2}{#3}%
  \endgroup
}
\AtBeginDocument{%
  \ESO@dvipsfalse
  \@ifundefined{Gin@driver}{}%
  {%
    \ifx\Gin@driver\@empty\else%
      \filename@parse{\Gin@driver}\def\reserved@a{dvips}%
      \ifx\filename@base\reserved@a\ESO@dvipstrue\fi
    \fi
  }%
  \ifESO@dvips\def\@tempb{eepic}\else\def\@tempb{epic}\fi
  \def\@tempa{dotted}%\def\ESO@gap{6\@wholewidth}%
  \ifx\@tempa\ESO@subgridstyle
    \IfFileExists{\@tempb.sty}%
    {%
      \RequirePackage{\@tempb}
      \renewcommand*\ESO@hline[1]{\ESO@subgridlines\dottedline{\ESO@gap}%
        (0,0)(##1,0)}
      \renewcommand*\ESO@vline[1]{\ESO@subgridlines\dottedline{\ESO@gap}%
        (0,0)(0,##1)}
    }{}
  \else
    \ifx\ESO@gridcolor\ESO@subgridcolor
      \renewcommand*\ESO@gridlines{\thicklines}
    \fi
  \fi
% \changes{v3.0b}{2023/03/23}{More code inside \cmd{\AtBeginDocument}}
  \ifESO@texcoord
    \def\ESO@yoffsetI{\z@}\def\ESO@yoffsetII{-\paperheight}
    \edef\ESO@griddeltaY{-\ESO@griddelta}\edef\ESO@gridDeltaY{-\ESO@gridDelta}
  \else
    \def\ESO@yoffsetI{-\paperheight}\def\ESO@yoffsetII{\z@}
    \edef\ESO@griddeltaY{\ESO@griddelta}\edef\ESO@gridDeltaY{\ESO@gridDelta}
  \fi
}
```

\ESO@gridpicture

```
\newcommand\ESO@gridpicture{%
  \begingroup
    \setlength\unitlength{\ESO@gridunit}%
    \ESO@color{\ESO@subgridcolor}%
```

— horizontal subgrid lines —

```
    \ESO@div{\paperheight}{\ESO@griddelta}%
    \multiput(0,0)(0,\ESO@griddeltaY){\@tempcnta}%
      {\ESO@hline{\paperwidth}}%
```

— vertical subgrid lines —

```
    \ESO@div{\paperwidth}{\ESO@griddelta}%
    \multiput(0,\ESO@yoffsetII)(\ESO@griddelta,0){\@tempcnta}%
      {\ESO@vline{\paperheight}}%
    \ESO@color{\ESO@gridcolor}%
```

— horizontal grid lines —

```
    \ESO@div{\paperheight}{\ESO@gridDelta}%
    \multiput(0,0)(0,\ESO@gridDeltaY){\@tempcnta}%
      {\ESO@Hline{\paperwidth}}%
```

— vertical grid lines —

```
    \ESO@div{\paperwidth}{\ESO@gridDelta}%
    \multiput(0,\ESO@yoffsetII)(\ESO@gridDelta,0){\@tempcnta}%
      {\ESO@Vline{\paperheight}}%
```

— horizontal numbers —

```
    \fontsize{10}{12}\normalfont%
    \ESO@div{\paperwidth}{\ESO@gridDelta}%
    \multiput(0,\ESO@gridDeltaY)(\ESO@gridDelta,0){\@tempcnta}{%
      \@tempcntb=\@tempcnta\advance\@tempcntb-\@multicnt
      \ifnum\@tempcntb>1\relax
        \multiply\@tempcntb by \ESO@gridDelta\relax
        \ESO@tempdima=\@tempcntb sp\ESO@tempdima=\ESO@labelfactor\ESO@tempdima
        \@tempcntb=\ESO@tempdima%
        \makebox(0,0)[c]{\ESO@colorbox{white}{\the\@tempcntb}}%
      \fi}%
```

— vertical numbers —

```
    \ifx\ESO@gridunitname\@empty\def\@tempa{0}\else\def\@tempa{1}\fi
    \ESO@div{\paperheight}{\ESO@gridDelta}%
    \multiput(\ESO@gridDelta,0)(0,\ESO@gridDeltaY){\@tempcnta}{%
      \@tempcntb=\@tempcnta\advance\@tempcntb-\@multicnt%
      \ifnum\@tempcntb>\@tempa\relax
        \multiply\@tempcntb by \ESO@gridDelta\relax%
        \ESO@tempdima=\@tempcntb sp\ESO@tempdima=\ESO@labelfactor\ESO@tempdima
        \@tempcntb=\ESO@tempdima
        \makebox(0,0)[c]{\ESO@colorbox{white}{\the\@tempcntb}}%
      \fi
    }%
```

— the unit label —

```
    \ifx\ESO@gridunitname\@empty\else
      \thicklines\fboxrule=\@wholewidth
      \put(\ESO@gridDelta,\ESO@gridDeltaY){\makebox(0,0)[c]{%
        \ESO@fcolorbox{\ESO@gridcolor}{white}{%
          \textbf{\ESO@gridunitname}}}}%
    \fi
    \normalcolor%
  \endgroup
}
```

Add the grid to the shipout picture (\ESO@HookIIIFG or \ESO@HookIIIBG) is independent from the user commands \AddToShipoutPictureBG and \AddToShipoutPictureBG*).

```
\ifESO@grid
  \ifESO@gridBG
    \g@addto@macro\ESO@HookIIIBG{\ESO@gridpicture}%
  \else
    \g@addto@macro\ESO@HookIIIFG{\ESO@gridpicture}%
  \fi
\fi
```

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