

# The `showkeys` package\*

David Carlisle      Morten Høgholm

2024/05/23

This file is maintained by the L<sup>A</sup>T<sub>E</sub>X Project team.  
Bug reports can be opened (category `tools`) at  
<https://latex-project.org/bugs.html>.

## 1 Introduction

`sec:intro`

`showkeys.sty` modifies the `\label`, `\ref`, `\pageref`, `\cite`, and `\bibitem` commands so that the ‘internal’ key is printed. The package tries hard to position these labels so that the formatting of the rest of the document is unchanged. `\label` and `\bibitem` cause the key to appear in a box either in the margin, or in a T<sub>E</sub>X box of zero width, which may possibly over-print other text. The `\ref`, `\pageref` and `\cite` commands print their arguments in small type, raised just above the line, like this: I. This package works with the `fleqn` option, the packages in the AMS-L<sup>A</sup>T<sub>E</sub>X collection, and the `varioref`, `natbib` and `harvard` packages.

## 2 Package Options

`options`

Some people have commented that the printing of the `\ref` and `\cite` keys is less useful than the printing of the `\label` keys and so `showkeys` now supports two options that can be given in the `\usepackage` command:

**`notref`** to stop the redefinition of `\ref` and `\pageref`, and related commands from the `varioref` package.

**`notcite`** to stop the redefinition of `\cite` and related commands from the `harvard` and `natbib` packages.

So if the package is loaded with `\usepackage[notref]{showkeys}` then `\ref` will have its standard definition, but `\label` will print its key argument (usually in the margin).

If you find the printed keys distracting, but don’t want to use the above options to stop them altogether, you may use:

**`color`** Print the keys in a distinguishing colour. The default value is a light grey.

---

\*This file has version number v3.21, last revised 2024/05/23.

The colours may be changed by redefining the following two colours after the package is loaded: `refkey` (also used for `\cite`) and `labelkey` (also used for `\bibitem`). The defaults are:

```
\definecolor{refkey}{gray}{.75}
\definecolor{labelkey}{gray}{.75}
```

If this option is used the `color` package will be loaded.  
The package accepts two further options.

**final** to suppress the action of this package, for ‘final’ versions.

**draft** the normal behaviour of this package.

Clearly there is not much point in entering the `final` option directly in the `\usepackage` command, as just not loading this package would have the same effect, and execute more quickly, however the `final` option may be useful as it may be used once in the `documentclass` command to affect any number of packages that may be loaded. The `draft` option does not do anything, but is there to honour an informal convention that packages have these options in pairs.

You can also control the appearance of the typeset label with the command `\showkeyslabelformat`, which takes one argument. The default is

```
\providecommand*\showkeyslabelformat[1]{%
  \fbox{\normalfont\small\ttfamily#1}}
```

The command is called inside a group so you can put in local modifications of `\fboxsep`, for instance, without them leaking to the rest of the document.

### 3 More Examples

examples

The only other similar package that I could find in the macro index, `DMJ:mi` `[3]`, was `anon:sk` `GN:sl` `[1]`. After the first draft of this package was written, I found `anon:sk` `[2]` on my local installation! I think the current package is more robust than `[2]`, but I thought that `showkeys` was rather a good name, so I have stolen it for this file.

`e~1` 1. This has `\label` immediately after `\item`.

`e~2` 2. This has the `\label` at the end.

A minipage :- { Within environments like this `minipage`, we cannot use `\marginpar`<sup>1</sup>, so the appearance is slightly different. Here is that `enumerate` environment again:

`m&e~1` 1. This has `\label` immediately after `\item`.

`m&e~2` 2. This has the `\label` at the end.

Displayed math (without equation counter).

$$0 = 0 \text{ `disp`}$$

Some text referring to the maths on page <sup>disp</sup>2, and the item <sup>le^1</sup>1.

If `showkeys` thinks that the current environment is going to produce an “equation number”, then it does not show the label where the `\label` command occurs, but tries to put it in the margin, as shown with equation <sup>eq:xx</sup>1. The package ‘knows’ about the standard `equation` and `eqnarray` environments, and also all the numbered alignment environments offered by the AMS $\LaTeX$  package, `amsmath`.

$$1 = 1 \tag{1} \boxed{\text{eq:xx}}$$

$$2 = 2 \tag{2} \boxed{\text{eqnar:a}}$$

$$3 = 3$$

$$4 = 4 \tag{3} \boxed{\text{eqnar:b}}$$

Within a `figure` environment, the `\label` must not come before the `\caption` command. If you place `\label` inside the argument of `\caption` the label will be shown like this:

Figure 1: Within the caption argument. cap:a

If you place `\label` immediately after the `\caption` command it will be shown like this:

Figure 2: Immediately after the caption argument. cap:b

If you place the `\label` command at some random point after the `\caption` command, it may be shown like:

Figure 3: In vertical mode not immediately after a box.

cap:c

## References

- [1] Gil Neiger, *showlabels.sty*, Undated package, similar to this one, but shows labels inline, affecting the formatting of the document.
- [2] Anonymous, *showkeys.sty*, Package, dated 14 May 1988. Very similar to this one, also uses `\marginpar` in outer vertical mode.
- [3] David M. Jones, *TeX Macro Index*, A catalogue of  $\TeX$  macros, including  $\LaTeX$  packages, available from all good  $\TeX$  archives.

## 4 The Macros

1 (\*package)

First we handle the options. Normally all related commands are defined to show their ‘keys’. But since v3.03 one can specify:

---

<sup>1</sup>Actually `\marginpar` is not used at all in this package now.

notref to stop the redefinition of \ref (and \pageref, and related commands from varioref package),

notcite to stop the redefinition of \cite and related commands from the harvard and natbib packages.

```
2 \DeclareOption{notref}{\let\SK@ref\@empty}
3 \DeclareOption{notcite}{\let\SK@cite\@empty}
```

\SK@refcolor Colour commands. Normally no-op.

```
\SK@labelcolor 4 \let\SK@refcolor\relax
5 \let\SK@labelcolor\relax
```

color option loads the color package and defines the colours. Delayed to the end of the package as package loading not allowed in this option section.

```
6 \DeclareOption{color}{\AtEndOfPackage{%
7 \RequirePackage{color}%
8 \definecolor{refkey}{gray}{.75}%
9 \definecolor{labelkey}{gray}{.75}%
10 \def\SK@refcolor{\color{refkey}}%
11 \def\SK@labelcolor{\color{labelkey}}}}
```

Allow final to be specified in the document class options to suppress the loading of this package.

```
12 \DeclareOption{final}{%
13 \providecommand*\showkeyslabelformat[1]{}%
14 \endinput}
15 \DeclareOption{draft}{}
16 \ProcessOptions
```

\SK@label The saved original definitions

```
\SK@bibitem 17 \let\SK@label\label
\SK@lbibitem 18 \let\SK@bibitem\@bibitem
19 \let\SK@lbibitem\@lbibitem
```

\label The new definition, print the argument, and then do the old definition.

```
20 \ifl@t@r\fmtversion{2023-06-01}
21 {\AddToHookWithArguments{label}{\SK@\SK@@label{#1}}}
22 {\def\label#1{%
23 \@bsphack
24 \SK@\SK@@label{#1}%
25 \begingroup
26 \SK@label{#1}%
27 \endgroup
28 \@esphack}}
```

\@bibitem For \bibitem, position the showkeys code as for a standard list with \item and \@lbibitem \label.

```
29 \def\@bibitem#1{%
30 \SK@bibitem{#1}\SK@\SK@@label{#1}\ignorespaces}
31 \def\@lbibitem[#1]#2{%
32 \SK@lbibitem[#{1}]{#2}\SK@\SK@@label{#2}\ignorespaces}
```

`\SK@` Grab hold of #2 via `\meaning` so characters like `&` and `^` do not cause problems later, and pass the result on to the command #1.

```
33 \def\SK@#1#2{%
34   \protected@edef\@tempa{#2}%
35   \expandafter#1\meaning\@tempa\SK@}
```

`\showkeyslabelformat`

```
36 \providecommand*\showkeyslabelformat[1]{%
37   \fbox{\normalfont\small\ttfamily#1}}
```

`\SK@@label` Strip off the initial segment of the `\meaning` output, and then put the rest either in a `\marginpar` or in a box of size 0pt, hopefully not disturbing the surrounding text.

```
38 \def\SK@@label#1>#2\SK@{%
```

Need to work globally as in some cases like alignments, and `fleqn`, the counter will be printed in a different group to the `\label` command.

```
39   \gdef\SK@lab{\smash{\SK@labelcolor\showkeyslabelformat{#2}}}%
40   \ifvmode
41     \if@inlabel
```

If the `\label` is straight after `\item` (`\bibitem` is handled by this case as well) then the item label has not been added to the page yet. It is hanging around in the box `\@labels` waiting for the paragraph to start. So just need to attach the label to this box.

```
42     \global\setbox\@labels\hbox{%
43       \llap{\SK@lab\SK@lab@relax
44         \kern\@totalleftmargin\kern\marginparsep}%
45       \unhbox\@labels}%
46     \else
```

If we insert a box into the main vertical list, do not want to change `\prevdepth` as that would affect vertical spacing in the document. (The box itself should not cause any difference in break points as there is a node there anyway coming from the `\write` to the aux file.)

```
47     \dimen@prevdepth
48     \nointerlineskip
```

The inner vertical mode cases are mainly designed to do the right thing with float captions, but seem to work OK in other cases as well.

```
49     \ifinner
50     \skip@\lastskip\unskip
```

In inner vertical mode, attach the label to the right of the immediately preceding box, if it is a box before the current point. Otherwise just put it in a box of zero dimensions, with no interline skip. This may slightly move the surrounding text (but perhaps not now that `\prevdepth` is restored).

```
51     \advance\skip@\lastskip\unskip
52     \setbox\z@\lastbox
53     \ifvoid\z@
54       \llap{\SK@lab\SK@lab@relax\kern\marginparsep}%
55     \else
56       \hbox{\box\z@\rlap{\kern\marginparsep\SK@labx}}%
```

```

57     \fi
58     \vskip\skip@
59     \else

```

In outer vertical mode, previously used a `\vadjust` at the start of the next paragraph (and before that used `\marginpar`). These methods sometimes cause extra space, eg if paragraph starts with a math display, so now just insert the box directly, taking care not to change `\prevdepth`.

```

60     \llap{\SK@lab\SK@lab@relax\kern\marginparsep}%
61     \fi

```

Restore `\prevdepth`.

```

62     \prevdepth\dimen@
63     \fi
64     \else

```

If we are in a numbered equation-style environment, do nothing as the code to print the number will also print the label, otherwise just stick the label at the current point, in a box of zero dimensions.

```

65     \csname SK@\@currenvir\endcsname
66     \ifSK@equation\else
67     \ifmmode
68     \SK@labx
69     \else

```

Inner horizontal mode. Not much we can do, just stick it here.

```

70     \ifinner
71     \rlap\SK@lab
72     \else

```

In outer horizontal mode use `\vadjust` to get to the margin.

```

73     \vadjust{\llap{\SK@lab\kern\marginparsep}}%
74     \fi
75     \SK@lab@relax
76     \fi
77     \fi
78     \fi}

```

```

\tagform@ Firstly we grab \@eqnnum.
\@eqnnum 79 \AtBeginDocument{%
\maketag@@@ 80 \let\SK@eqnnum\@eqnnum

```

Then check for `amsmath` where we grab the internal commands `\tagform@` and `\maketag@@@`. Redefine them and redefine `\@eqnnum` as well.

```

81 \ifpackageloaded{amsmath}{%
82 \let\SK@tagform@\tagform@
83 \let\SK@maketag@@@\maketag@@@
84 \iftagsleft@
85 \def\tagform@#1{%
86 \ifx\df@label\@empty
87 \SK@lab@relax
88 \else
89 \expandafter\SK@@label\meaning\df@label\SK@
90 \fi
91 \llap{\SK@lab\kern\marginparsep}%

```

```

92     \SK@lab@relax\SK@tagform@{#1}}%
93     \def\maketag@@@#1{%
94         \ifx\df@label\@empty
95             \SK@lab@relax
96         \else
97             \expandafter\SK@@label\meaning\df@label\SK@
98             \fi
99             \llap{\SK@lab\kern\marginparsep}\SK@lab@relax
100        \SK@maketag@@@{#1}%
101    }%
102    \def\@eqnnum{%
103        \llap{\SK@lab\kern\displaywidth\kern\marginparsep}%
104        \SK@lab@relax\SK@eqnnum}%
105    \else

```

Almost the same for tags on the right, except we use `\rlap` and typeset it after the tag.

```

106    \def\tagform@#1{%
107        \ifx\df@label\@empty
108            \SK@lab@relax
109        \else
110            \expandafter\SK@@label\meaning\df@label\SK@
111            \fi
112            \SK@tagform@{#1}%
113            \rlap{\kern\marginparsep\SK@lab}\SK@lab@relax}%
114    \def\maketag@@@#1{%
115        \ifx\df@label\@empty
116            \SK@lab@relax
117        \else
118            \expandafter\SK@@label\meaning\df@label\SK@
119            \fi
120            \SK@maketag@@@{#1}%
121            \rlap{\kern\marginparsep\SK@lab}\SK@lab@relax
122    }%
123    \def\@eqnnum{\SK@eqnnum\rlap{\kern\marginparsep\SK@lab}%
124        \SK@lab@relax}%
125    \fi
126 }%

```

If `amsmath` wasn't loaded we check explicitly if the `leqno` option was used in `\documentclass` and redefine accordingly.

```

127 {%
128     \@ifundefined{ver@leqno.clo}{%
129         \def\@eqnnum{\SK@eqnnum\rlap{\kern\marginparsep\SK@lab}%
130             \SK@lab@relax}%
131     }{%
132         \def\@eqnnum{%
133             \llap{\SK@lab\kern\displaywidth\kern\marginparsep}%
134             \SK@lab@relax\SK@eqnnum}%
135     }%
136 }%
137 }

```

`\SK@labx` Print the label, and then globally reset the print command to `\relax`.

```

138 \def\SK@labx{\rlap\SK@lab\global\let\SK@lab\relax}
\SK@lab@relax Clear the label.
139 \def\SK@lab@relax{\global\let\SK@lab\relax}\SK@lab@relax

\SK@equation The following environments print an equation number, so \label should not print
\SK@eqnarray its argument at the point where it appears. Note this will fail to show the label if
you are in an eqnarray environment, and use \label together with \nonumber.
This might just about make sense if you are going to use \pageref, but that is
too bad...
140 \newif\ifSK@equation
141 \let\SK@equation\SK@equationtrue
142 \let\SK@eqnarray\SK@equationtrue

\eqnarray When the AMS packages are loaded showkeys assumes environments work ‘The
AMS way’. However, eqnarray (unlike equation) is not redefined, so here we
need to remove some of the AMS hacks.
143 \toks@\expandafter{\eqnarray}
144 \edef\eqnarray{\let\noexpand\tagform@\noexpand\SK@tagform@\the\toks@}

\SK@align The AMS environments
\SK@alignat 145 \let\SK@align\SK@equationtrue
\SK@xalignat 146 \let\SK@alignat\SK@equationtrue
\SK@xxalignat 147 \let\SK@xalignat\SK@equationtrue
\SK@gather 148 \let\SK@xxalignat\SK@equationtrue
\SK@multline 149 \let\SK@gather\SK@equationtrue
\SK@flalign 150 \let\SK@multline\SK@equationtrue
151 \let\SK@flalign\SK@equationtrue

\SK@align* Starred versions of the AMS environments.
\SK@alignat* 152 \expandafter\let\csname SK@align*\endcsname\SK@equationtrue
\SK@flalign* 153 \expandafter\let\csname SK@alignat*\endcsname\SK@equationtrue
\SK@gather* 154 \expandafter\let\csname SK@flalign*\endcsname\SK@equationtrue
\SK@multline* 155 \expandafter\let\csname SK@gather*\endcsname\SK@equationtrue
\SK@equation* 156 \expandafter\let\csname SK@multline*\endcsname\SK@equationtrue
157 \expandafter\let\csname SK@equation*\endcsname\SK@equationtrue

\SK@def This macro redefines a command #1. The new definition can make use of the
old definition as \SK@old name. If #1 is really a \protect’ed command with the
real definition in a ‘space’ command then the ‘space’ version is used as the old
definition. Need to test this for each command as some package may have changed
the status of a command to being ‘protected’. The new definition is made as if with
\DeclareRobustCommand, but with \def syntax for the argument specification.
158 \def\SK@def#1{%
159 \edef\@tempa{\expandafter@gobble\string#1}%
160 \@ifundefined{\@tempa\space}%
161 {\expandafter\let\csname SK@\@tempa\endcsname#1}%
162 {\expandafter\let\csname SK@\@tempa\expandafter\endcsname
163 \csname\@tempa\space\endcsname}%
164 \expandafter\def\expandafter#1\expandafter{%
165 \expandafter\protect\csname\@tempa\space\endcsname}%
166 \expandafter\def\csname\@tempa\space\endcsname}

```



The next section redefines `\ref` and `\pageref` (unless the `notref` option was given).

```
167 \ifx\SK@ref\@empty
```

Even if `notref` option is used, need to fudge the `varioref` commands as they use `\label` internally.

```
168 \else
```

`\ref` Save the redefinition to `\begin{document}` so that this package can work with `\pageref` packages that redefine `\cite`. Tested with `harvard` and `natbib` packages. Also add code at this point to support `varioref`.

```
169 \AtBeginDocument{%
```

```
170 \let\@kernel@ref@\@kernel@ref
```

```
171 \let\@kernel@sref@\@kernel@sref
```

```
172 \SK@def\@kernel@ref#1{\SK@\SK@@ref{#1}\SK@@kernel@ref{#1}}%
```

```
173 \SK@def\@kernel@sref#1{\SK@\SK@@ref{#1}\SK@@kernel@sref{#1}}%
```

```
174 \SK@def\@kernel@pageref#1{\SK@\SK@@ref{#1}\SK@@kernel@pageref{#1}}%
```

```
175 \SK@def\@kernel@spageref#1{\SK@\SK@@ref{#1}\SK@@kernel@spageref{#1}}%
```

```
176 \SK@def\@kernel@Ref#1{\let\@kernel@ref@\@kernel@ref\SK@\SK@@ref{#1}\SK@@kernel@Ref{#1}}%
```

```
177 \SK@def\@kernel@sRef#1{\let\@kernel@sref@\@kernel@sref\SK@\SK@@ref{#1}\SK@@kernel@sRef{#1}}%
```

`varioref` support.

```
178 \ifpackageloaded{varioref}{%
```

```
179 \SK@def\@vpageref#1[#2]#3{%
```

```
180 \leavevmode\unskip\SK@\SK@@ref{#3}\SK@@vpageref{#1}[[#2]][#3]}%}
```

```
181 }{}}
```

```
182 \fi
```

Now redefine `\cite` unless `notcite` option given.

```
183 \ifx\SK@cite\@empty
```

```
184 \AtBeginDocument{%
```

```
185 \ifx\HAR@checkdef\@undefined\else
```

```
186 \expandafter\let\expandafter
```

```
187 \SK@HAR@bi\csname\string\harvarditem\endcsname
```

```
188 \expandafter\def\csname\string\harvarditem\endcsname[#1]#2#3#4{%
```

```
189 \SK@HAR@bi[#{#1}]{#2}{#3}{#4}\SK@\SK@@label{#4}}%
```

```
190 \fi}
```

```
191 \else
```

`\cite`

```
192 \AtBeginDocument{%
```

```
193 \ifx\HAR@checkdef\@undefined
```

Standard (non-harvard) support, including extra `cite` commands from `natbib` and `cite`.

If `cite` or `overcite` is being used, redefine `\citen` rather than `\cite` so as not to spoil the space and punctuation calculations done by those packages.

```
194 \ifx\citen\@undefined
```

```
195 \SK@def\@citex[#1]#2{\SK@citex[#{#1}]{#2}}%
```

```
196 \else
```

```
197 \SK@def\citen#1{\SK@\SK@@ref{#1}\SK@citen{#1}}%
```

```
198 \fi
```

```
199 \SK@def\citeauthor#1{\SK@\SK@@ref{#1}\SK@citeauthor{#1}}%
```

```

200 \SK@def\citefullauthor#1{\SK@\SK@@ref{#1}\SK@citefullauthor{#1}}%
201 \SK@def\citeyear#1{\SK@\SK@@ref{#1}\SK@citeyear{#1}}%
202 \else

```

In the harvard style do *not* redefine individual cite commands. Just redefine one internal command that is used in all the citation forms.

```

203 \SK@def\HAR@checkdef#1#2{%
204 \expandafter\SK@\expandafter\SK@@ref\expandafter{#1}}%
205 \SK@HAR@checkdef{#1}{#2}}%
206 \expandafter\let\expandafter
207 \SK@HAR@bi\csname\string\harvarditem\endcsname
208 \expandafter\def\csname\string\harvarditem\endcsname[#1]#2#3#4{%
209 \SK@HAR@bi[{#1}]{#2}{#3}{#4}\SK@\SK@@label{#4}}%
210 \fi}
211 \def\SK@citex[#1]#2{%
212 \SK@\SK@@ref{#2}\SK@citex[{#1}]{#2}}
213 \fi

```

`\SK@@ref` This is much simpler than the printing of the label, as we know that we can be in horizontal mode. Note extra group for colour safety.

```

214 \def\SK@@ref#1>#2\SK@{%
215 \leavevmode\vbox to\z@{{%
216 \vss
217 \SK@refcolor
218 \rlap{\vrule\raise .75em%
219 \hbox{\underbar{\normalfont\footnotesize\ttfamily#2}}}}}}
220 \endpackage)

```