

The `longfigure` Package*

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1 Usage

The `longfigure` package uses and relabels components of the well-known `longtable` package, written by David Carlisle, to provide a table-like environment that can display a stream of subfigures as a single figure that can break across pages.

The `longtable` package defines a `longtable` environment, which produces tables that can be broken by \TeX 's standard page-breaking algorithm. Similarly, the `longfigure` package defines a `longfigure` environment, which produces figures that can be broken by \TeX 's standard page-breaking algorithm. The internal structure of a long figure is similar to a long table. Rows might contain (for example) tables or graphics. Page breaks can occur only between rows.

The `longfigure` package differs from the `longtable` package in the following ways:

- The `longfigure` package supports two additional key-value options:
 - The `figname=` option specifies the counter for numbering `longfigure` environments. You can specify any string; the default is `figure`. When you specify a `figname=` value for which no counter already exists, the `longfigure` package loads the `tocloft` package and creates the counter.
 - The `resetby=` option specifies a counter (for example, `resetby=chapter`) such that output numbering is reset each time the counter value changes. If a counter is specified that does not exist, the `tocloft` package is loaded to create the new counter. For information about how the lists are typeset, see the `tocloft` package documentation.
- The counters and macros that start with `\LT` in the `longtable` package are renamed to start with `\LF` in the `longfigure` package to avoid namespace conflicts when the two packages are used together. The generic macros that are defined in the `longtable` package (`\endfirsthead`, `\endhead`,

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`\endfoot`, and `\endlastfoot`) are also renamed with `\LF` as a prefix in the `longfigure` package.

- The `\LF@name` macro is based on the `\fnum@table` macro from the `longtable` package. The `\LF@name` macro returns the capitalized counter name and value. For example, if the counter is `figure` and the macro is processing the second `longfigure`, the `\LF@name` macro would contain the value “Figure 2.”

You can use the `longfigure` package defaults to produce a *List of Figures* by inserting the following tag in your document at the point where you want the list to appear:

```
\listoffigures
```

The default counter used to display figures is the `figure` counter, but you can specify a different counter. For example, if you want your figures to be labeled as “Display,” specify `figname=display` when you load the `longfigure` package; to display a *List of Displays*, insert the following command in your document at the point where you want the list to appear:

```
\listofdisplay
```

Note: If you specify a counter that does not exist, an auxiliary file with extension `.lft` is created to contain the information needed to create the list.

If you want to use more advanced features of the `tocloft` package, load it before you load the `longfigure` package so that the `longfigure` package sees that the counters specified by the `figname=` and `resetby=` options are already defined and does not attempt to create them.

1.1 Example

The following lines produce a single figure that contains three images and one tabular environment. Each element is a row of the `longfigure` environment. Page breaks can occur between rows.

```
\documentclass{book}
\usepackage{graphicx}
\usepackage{longfigure}

\begin{document}
  \begin{longfigure}{c}
    \caption{My Long Figure}\label{mlfig}\\
    \includegraphics[width=3in]{myfig1}\\
    \includegraphics[width=3in]{myfig2}\\
    \includegraphics[width=3in]{myfig3}\\
    \begin{tabular}{ll}
      one & two \\
      three & four
    \end{tabular}
  \end{longfigure}
```

```

\end{longfigure}
\end{document}

```

In this example, the `{c}` argument in the `\begin{longfigure}` command specifies only a single centered column. You can also specify multiple columns and, if needed, use the `\multicolumn` command for more flexibility.

The following lines display another example that specifies a 'continued' heading when the figure breaks over a page. It also displays a double horizontal line at the end of the figure.

```

\documentclass{book}
\usepackage{graphicx}
\usepackage{longfigure}

\begin{document}
  \begin{longfigure}{c}
    \caption{My Long Figure}\label{mlfig2}\\
    \hline\endLFfirsthead
    \caption{continued}\\
    \hline\endLFhead
    \hline\endLFfoot
    \hline\hline\endLFlastfoot
    \includegraphics[width=3in]{myfig1}\\
    \includegraphics[width=3in]{myfig2}\\
    \includegraphics[width=3in]{myfig3}\\
    \begin{tabular}{ll}
      one & two \\
      three & four
    \end{tabular}
  \end{longfigure}
\end{document}

```

2 Implementation

This section describes the implementation of the `longfigure` package. The comments describe only the changes from the `longtable` package code. For complete details about the logic and usage of the `longtable` environment, see Carlisle (2004).

```

1 \ProvidesPackage{longfigure}[2014/01/06 longfigure]

```

The following statement loads the `xkeyval` package for declaring and processing package options:

```

2 \RequirePackage{xkeyval}

```

The following statement defines a new command, `\LFcounter`, to contain the string `figure`. Later code tests whether a counter with that name exists.

```

3 \newcommand*{\LFcounter}{figure}

```

The following statement defines a new command, `\LFreset`, to contain the name of the counter within which the `longfigure` number should reset. If no value is specified, the long figures are numbered consecutively through the document.

```
4 \newcommand*\LFreset{}\@empty}
```

2.1 Options

The `\LFcounter` and `\LFreset` commands support the package options `figname=` and `resetby=` as follows:

```
5 \DeclareOptionX{figname}[figure]{\renewcommand*\LFcounter}{#1}}
6 \DeclareOptionX{resetby}{\renewcommand*\LFreset}{#1}}
```

The following statements further define the options that the `longtable` package defines:

```
7 \DeclareOptionX{set}{}
8 \DeclareOptionX{final}{}
9 \DeclareOptionX{errorshow}{\def\LF@warn{\PackageInfo{longfigure}}}
10 \DeclareOptionX{pausing}{\def\LF@warn#1{\LF@err{#1}{This is not really an error}}}
11 \ProcessOptionsX
```

The following statements process the options:

```
12 \def\LFProcessOptions#1{
13   \ifundefined{c@#1}{%
14     \RequirePackage{tocloft}
15     \def\LFuc##1##2{\MakeUppercase{##1}{##2}}
16     \expandafter\def\csname list#1name\endcsname{List of \LFuc#1s}
17     \ifx\@empty\LFreset%
18       \newlistof{#1}{lft}{\csname list#1name\endcsname}
19     \else
20       \newlistof[\LFreset]{#1}{lft}{\csname list#1name\endcsname}
21     \fi
22   }{}%
23 }
24 \expandafter\LFProcessOptions\expandafter{\LFcounter}
```

If a counter is specified that does not exist, its name (`\c@countername`) is undefined and the `longfigure` package loads the `tocloft` package in order to use its commands to create the new counters and list.

Thus, the `tocloft` package is required only when a new counter is specified, and this automatic loading takes place only if the counter that is specified in the package options is not defined.

You can load the `tocloft` package before loading the `longfigure` package and retain all of the flexibility that the `tocloft` package offers. However, you must define the new counters yourself by using the `\newlistof` command in the `tocloft` package, and you must define the new list to use an auxiliary `lft` file where its auxiliary information is written.

2.2 Utilities

`\strcfstr` The following macro, `\strcfstr`, checks whether two strings, which are provided as arguments, are equal (Wilson, 2001). A new boolean `\ifLF@same` contains the result of the test.

```

25 \newif\ifLF@same
26 \newcommand{\strcfstr}[2]{%
27   \LF@samefalse
28   \begingroup\def\2{#2}
29   \ifx\2#1\endgroup\LF@sametrue
30   \else\endgroup
31   \fi
32 }
```

`\LFupcase` The following macro, `\LFupcase`, uppercases the first letter of a string (Lazarides, 2010):

```

33 \def\LFupcase#1{%
34   \def\x##1##2{%
35     \MakeUppercase{##1}{##2}}\x#1%
36 }
```

The following macro, `\LF@name`, creates a string to provide a label and number for an output. Analogous to the `\fnum@table` macro in the `longtable` package, it contains the capitalized version of the counter name and the counter number (for example, Figure~3).

```

37 \def\LF@name{\expandafter\LFupcase%
38   \expandafter{\LFcounter}~%
39   \expandafter\csname the\LFcounter\endcsname}%

```

The remainder of this package follows the `longtable` package almost identically, except that macros, skips, counters, and so on use an `\LF` prefix instead of the `\LT` prefix that the `longtable` package uses.

```

40 \def\LF@err{\PackageError{longfigure}}
41 \def\LF@warn{\PackageWarning{longfigure}}
42 \def\LF@final@warn{%
43   \AtEndDocument{%
44     \LF@warn{\LFcounter \@width s have changed. Rerun \LaTeX\.\@gobbletwo}}%
45   \global\let\LF@final@warn\relax}
46 %
47 \newskip\LFleft      \LFleft=\fill
48 \newskip\LFright     \LFright=\fill
49 \newskip\LFpre       \LFpre=\bigskipamount
50 \newskip\LFpost      \LFpost=\bigskipamount
51 \newcount\LFchunksize \LFchunksize=20
52 \let\c@LFchunksize\LFchunksize
53 \newdimen\LFcapwidth  \LFcapwidth=4in
54 \newbox\LF@head
55 \newbox\LF@firsthead
56 \newbox\LF@foot
57 \newbox\LF@lastfoot

```

```

58 \newcount\LF@cols
59 \newcount\LF@rows
60 \newcounter{LF@tables}
61 \newcounter{LF@chunks}[LF@tables]
62 %
63 \newtoks\LF@p@ftn
64 \mathchardef\LF@end@pen=30000
65 \def\longfigure{%
66   \par
67   \ifx\multicols\@undefined
68   \else
69     \ifnum\col@number>\@ne
70     \@twocolumntrue
71     \fi
72   \fi
73   \if@twocolumn
74     \LF@err{longfigure not in 1-column mode}\@ehc
75   \fi
76   \begingroup
77   \@ifnextchar[\LF@array{\LF@array[x]}%
78 \def\LF@array[#1]#2{%
79   \refstepcounter{LF@counter}\stepcounter{LF@tables}%
80   \if l#1%
81     \LFleft\z@ \LFright\fill
82   \else\if r#1%
83     \LFleft\fill \LFright\z@
84   \else\if c#1%
85     \LFleft\fill \LFright\fill
86   \fi\fi\fi
87   \let\LF@mc@l\multicolumn
88   \let\LF@t@barray\@tabarray
89   \let\LF@hline\hline
90   \def\@tabarray{%
91     \let\hline\LF@hline
92     \LF@t@barray}%
93   \let\@LF@tabularcr\let\@tabularnewline\%
94   \def\newpage{\noalign{\break}}%
95   \def\pagebreak{\noalign{\ifnum'=0\fi\@testopt{\LF@no@pgbk-}4}}%
96   \def\nopagebreak{\noalign{\ifnum'=0\fi\@testopt{\LF@no@pgbk4}}%
97   \let\hline\LF@hline \let\kill\LF@kill\let\caption\LF@caption
98   \@tempdima\ht\strutbox
99   \let\@endpbox\LF@endpbox
100  \ifx\extrarowheight\@undefined
101    \let\@acol\@tabacol
102    \let\@classz\@tabclassz \let\@classiv\@tabclassiv
103    \def\@startpbox{\vtop\LF@startpbox}%
104    \let\@@startpbox\@startpbox
105    \let\@@endpbox\@endpbox
106    \let\LF@LL@FM@cr\@tabularcr
107  \else

```

```

108 \advance\@tempdima\extrarowheight
109 \col@sep\tabc@sep
110 \let\@startpbox\LF@startpbox\let\LF@LL@FM@cr\@arraycr
111 \fi
112 \setbox\@arstrutbox\hbox{\vrule
113 \@height \arraystretch \@tempdima
114 \@depth \arraystretch \dp \strutbox
115 \@width \z@}%
116 \let\@sharp#\let\protect\relax
117 \begingroup
118 \@mkpream{#2}%
119 \xdef\LF@bchunk{%
120 \global\advance\c@LF@chunks\@ne
121 \global\LF@rows\z@\setbox\z@\vbox\bgroup
122 \LF@setprevdepth
123 \tabskip\LF@left \noexpand\halign to\hsize\bgroup
124 \tabskip\z@ \@arstrut \@preamble \tabskip\LF@right \cr}%
125 \endgroup
126 \expandafter\LF@nofcols\LF@bchunk&\LF@nofcols
127 \LF@make@row
128 \m@th\let\par\@empty
129 \everycr{}\lineskip\z@\baselineskip\z@
130 \LF@bchunk}
131 \def\LF@no@pgbk#1[#2]{\penalty #1\@getpen{#2}\ifnum'={0}\fi}
132 \def\LF@start{%
133 \let\LF@start\endgraf
134 \endgraf\penalty\z@\vskip\LF@pre
135 \dimen@ \pagetotal
136 \advance\dimen@ \ht\ifvoid\LF@firsthead\LF@head\else\LF@firsthead\fi
137 \advance\dimen@ \dp\ifvoid\LF@firsthead\LF@head\else\LF@firsthead\fi
138 \advance\dimen@ \ht\LF@foot
139 \dimen@ii\v fuzz
140 \vfuzz\maxdimen
141 \setbox\@tw@\copy\z@
142 \setbox\@tw@\vsplit\@tw@ to \ht\@arstrutbox
143 \setbox\@tw@\vbox{\unvbox\@tw@}%
144 \vfuzz\dimen@ii
145 \advance\dimen@ \ht
146 \ifdim\ht\@arstrutbox>\ht\@tw@\@arstrutbox\else\@tw@\fi
147 \advance\dimen@\dp
148 \ifdim\dp\@arstrutbox>\dp\@tw@\@arstrutbox\else\@tw@\fi
149 \advance\dimen@ -\pagegoal
150 \ifdim \dimen@>\z@\vfil\break\fi
151 \global\@colroom\@colht
152 \ifvoid\LF@foot\else
153 \advance\vsz-\ht\LF@foot
154 \global\advance\@colroom-\ht\LF@foot
155 \dimen@\pagegoal\advance\dimen@-\ht\LF@foot\pagegoal\dimen@
156 \maxdepth\z@
157 \fi

```

```

158 \ifvoid\LF@firsthead\copy\LF@head\else\box\LF@firsthead\fi\nobreak
159 \output{\LF@output}}
160 \def\endlongfigure{%
161 \crrc
162 \noalign{%
163 \let\LF@entry\LF@entry@chop
164 \xdef\LF@save@row{\LF@save@row}}%
165 \LF@echunk
166 \LF@start
167 \unvbox\z@
168 \LF@get@widths
169 \if@filesw
170 {\let\LF@entry\LF@entry@write\immediate\write\@auxout{%
171 \gdef\expandafter\noexpand
172 \csname LF@\romannumeral\c@LF@tables\endcsname
173 {\LF@save@row}}}%
174 \fi
175 \ifx\LF@save@row\LF@@save@row
176 \else
177 \LF@warn{Column \@width s have changed\MessageBreak
178 in table \thetable}%
179 \LF@final@warn
180 \fi
181 \endgraf\penalty -\LF@end@pen
182 \endgroup
183 \global\@mparbottom\z@
184 \pagegoal\vsizer
185 \endgraf\penalty\z@\addvspace\LF@post
186 \ifvoid\footins\else\insert\footins{}\fi}
187 \def\LF@nofcols#1&{%
188 \futurelet\@let@token\LF@nofcols}
189 \def\LF@nofcols{%
190 \advance\LF@cols\@ne
191 \ifx\@let@token\LF@nofcols
192 \expandafter\@gobble
193 \else
194 \expandafter\LF@nofcols
195 \fi}
196 \def\LF@tabularcrrc{%
197 \relax\iffalse\fi\ifnum0='}\fi
198 \@ifstar
199 {\def\crrc{\LF@crrc\noalign{\nobreak}}\let\crrc\crrc
200 \LF@t@bularcrrc}%
201 {\LF@t@bularcrrc}}
202 \let\LF@crrc\crrc
203 \let\LF@setprevdepth\relax
204 \def\LF@t@bularcrrc{%
205 \global\advance\LF@rows\@ne
206 \ifnum\LF@rows=\LF@chunksize
207 \gdef\LF@setprevdepth{%

```



```

208     \prevdepth\z@\global
209     \global\let\LF@setprevdepth\relax}%
210     \expandafter\LF@xtabularcr
211   \else
212     \ifnum0='{ }\fi
213     \expandafter\LF@LL@FM@cr
214   \fi}
215 \def\LF@xtabularcr{%
216   \@ifnextchar[\LF@argtabularcr\LF@ntabularcr}
217 \def\LF@ntabularcr{%
218   \ifnum0='{ }\fi
219   \LF@echunk
220   \LF@start
221   \unvbox\z@
222   \LF@get@widths
223   \LF@bchunk}
224 \def\LF@argtabularcr[#1]{%
225   \ifnum0='{ }\fi
226   \ifdim #1>\z@
227     \unskip\@xargarraycr{#1}%
228   \else
229     \@yargarraycr{#1}%
230   \fi
231   \LF@echunk
232   \LF@start
233   \unvbox\z@
234   \LF@get@widths
235   \LF@bchunk}
236 \def\LF@echunk{%
237   \crr\LF@save@row\cr\egroup
238   \global\setbox\@ne\lastbox
239   \unskip
240   \egroup}
241 \def\LF@entry#1#2{%
242   \ifhmode\@firstofone{&}\fi\omit
243   \ifnum#1=\c@LF@chunks
244     \else
245       \kern#2\relax
246     \fi}
247 \def\LF@entry@chop#1#2{%
248   \noexpand\LF@entry
249     {\ifnum#1>\c@LF@chunks
250       1}{0pt%
251       \else
252       #1}{#2%
253       \fi}}
254 \def\LF@entry@write{%
255   \noexpand\LF@entry^^J%
256   \@spaces}
257 \def\LF@kill{%

```

```

258 \LF@echunk
259 \LF@get@widths
260 \expandafter\LF@rebox\LF@bchunk}
261 \def\LF@rebox#1\bgroup{%
262   #1\bgroup
263   \unvbox\z@
264   \unskip
265   \setbox\z@\lastbox}
266 \def\LF@blank@row{%
267   \xdef\LF@save@row{\expandafter\LF@build@blank
268     \romannumeral\number\LF@cols 001 }}
269 \def\LF@build@blank#1{%
270   \if#1m%
271     \noexpand\LF@entry{1}{0pt}%
272     \expandafter\LF@build@blank
273   \fi}
274 \def\LF@make@row{%
275   \global\expandafter\let\expandafter\LF@save@row
276     \csname LF@\romannumeral\c@LF@tables\endcsname
277   \ifx\LF@save@row\relax
278     \LF@blank@row
279   \else
280     {\let\LF@entry\or
281       \if!%
282         \ifcase\expandafter\expandafter\expandafter\LF@cols
283         \expandafter\@gobble\LF@save@row
284         \or
285         \else
286         \relax
287         \fi
288         !%
289       \else
290         \aftergroup\LF@blank@row
291       \fi}%
292   \fi}
293 \let\setlongfigures\relax
294 \def\LF@get@widths{%
295   \setbox\tw@\hbox{%
296     \unhbox\@ne
297     \let\LF@old@row\LF@save@row
298     \global\let\LF@save@row\@empty
299     \count@\LF@cols
300     \loop
301       \unskip
302       \setbox\tw@\lastbox
303       \ifhbox\tw@
304         \LF@def@row
305         \advance\count@\m@ne
306       \repeat}%
307   \ifx\LF@save@row\@undefined

```

```

308   \let\LF@save@row\LF@save@row
309   \fi}
310 \def\LF@def@row{%
311   \let\LF@entry\or
312   \edef\@tempa{%
313     \ifcase\expandafter\count@\LF@old@row
314     \else
315       {1}{0pt}%
316     \fi}%
317   \let\LF@entry\relax
318   \xdef\LF@save@row{%
319     \LF@entry
320     \expandafter\LF@max@sel\@tempa
321     \LF@save@row}}
322 \def\LF@max@sel#1#2{%
323   {\ifdim#2=\wd\tw@
324     #1%
325   \else
326     \number\c@LF@chunks
327   \fi}%
328   {\the\wd\tw@}}
329 \def\LF@hline{%
330   \noalign{\ifnum0='}\fi
331   \penalty\@M
332   \futurelet\@let@token\LF@@hline}
333 \def\LF@@hline{%
334   \ifx\@let@token\hline
335     \global\let\@gtempa\@gobble
336     \gdef\LF@sep{\penalty-\@medpenalty\vskip\doublerulesep}%
337   \else
338     \global\let\@gtempa\@empty
339     \gdef\LF@sep{\penalty-\@lowpenalty\vskip-\arrayrulewidth}%
340   \fi
341   \ifnum0='{ \fi}%
342   \multispan\LF@cols
343     \unskip\leaders\hrule\@height\arrayrulewidth\hfill\cr
344   \noalign{\LF@sep}%
345   \multispan\LF@cols
346     \unskip\leaders\hrule\@height\arrayrulewidth\hfill\cr
347   \noalign{\penalty\@M}%
348   \@gtempa}

```

2.3 Captioning

You can easily change how a long figure is captioned by redefining the `\LF@makecaption` macro after loading the `longfigure` package. The following statements show the default definition of the `\LF@makecaption`:

```

349 \def\LF@caption{%
350   \noalign\bgroup

```

```

351 \@ifnextchar[{\egroup\LF@c@ption\@firstofone}\LF@capti@n}

```

The `\LF@caption` command begins the process. If it includes an optional argument, it calls `\LF@c@ption`; otherwise it calls `\LF@capti@n`, which then calls `\LF@c@ption`.

```

352 \def\LF@c@ption#1[#2]#3{%
353   \LF@makecaption#1\LF@name{#3}%
354   \def\@tempa{#2}%
355   \ifx\@tempa\@empty\else

```

If a list of long figures is requested, the following code uses the previously defined `\strcfstr` macro and `\ifLF@same` boolean to determine the name of the counter and set the output file to contain the `longfigure` information.

The code writes to one of the following files.

- If the counter is `figure`, write to the `lof` file.
- If the counter is `table`, write to the `lot` file.
- Otherwise, write to `lft`, a file created here for this purpose.

```

356   {\let\\\space
357   \strcfstr{\LF@counter}{figure}
358   \ifLF@same\def\LF@outfile{lof}\else
359     \strcfstr{\LF@counter}{table}
360     \ifLF@same\def\LF@outfile{lot}\else
361       \def\LF@outfile{lft}\fi\fi
362   \addcontentsline{\LF@outfile}{\LF@counter}
363   {\expandafter\protect\expandafter\numberline\expandafter%
364   {\expandafter\csname the\LF@counter\endcsname}{#2}}}%
365   \fi
366 }

```

The `\LF@c@ption` macro ends the process when it calls the `\LF@makecaption` macro, which typesets the caption.

```

367 \def\LF@capti@n{%
368   \@ifstar
369   {\egroup\LF@c@ption\@gobble[]}%
370   {\egroup\xdblarg{\LF@c@ption\@firstofone}}}

```

If you want to redefine how the `longfigure` is captioned, you need to override the following macro. The first argument is the name of the counter (for example, `Figure`), the second argument is the number of the counter, and the third argument is the caption itself.

```

371 \def\LF@makecaption#1#2#3{%
372   \LF@mc@col\LF@cols c{\hbox to\z@{\hss\parbox[t]{\LF@capwidth{%
373     \sbox\@tempboxa{#1{#2: }#3}%
374     \ifdim\wd\@tempboxa>\hsize
375       #1{#2: }#3%
376     \else
377       \hbox to\hsize{\hfil\box\@tempboxa\hfil}%

```

```

378 \fi
379 \endgraf\vskip\baselineskip}%
380 \hss}}
381 \def\LF@output{%
382 \ifnum\outputpenalty <-\@Mi
383 \ifnum\outputpenalty > -\LF@end@pen
384 \LF@err{floats and marginpars not allowed in a longfigure}\@ehc
385 \else
386 \setbox\z@\vbox{\unvbox\@cclv}%
387 \ifdim \ht\LF@lastfoot>\ht\LF@foot
388 \dimen@\pagegoal
389 \advance\dimen@-\ht\LF@lastfoot
390 \ifdim\dimen@<\ht\z@
391 \setbox\@cclv\vbox{\unvbox\z@\copy\LF@foot\vss}%
392 \makecol
393 \outputpage
394 \setbox\z@\vbox{\box\LF@head}%
395 \fi
396 \fi
397 \global\@colroom\@colht
398 \global\vsizel\@colht
399 \vbox
400 {\unvbox\z@\box\ifvoid\LF@lastfoot\LF@foot\else
401 \LF@lastfoot\fi}%
402 \fi
403 \else
404 \setbox\@cclv\vbox{\unvbox\@cclv\copy\LF@foot\vss}%
405 \makecol
406 \outputpage
407 \global\vsizel\@colroom
408 \copy\LF@head\nobreak
409 \fi}
410 \def\LF@end@hd@ft#1{%
411 \LF@echunk
412 \ifx\LF@start\endgraf
413 \LF@err
414 {Longfigure head or foot not at start of table}%
415 {Increase LFchunksize}%
416 \fi
417 \setbox#1\box\z@
418 \LF@get@widths
419 \LF@bchunk}

```

The following four macros do not have an `\LT` prefix in the `longtable` package, but they must be redefined to have an `\LF` prefix in order to avoid a namespace clash;

```

420 \def\endLFfirsthead{\LF@end@hd@ft\LF@firsthead}
421 \def\endLFhead{\LF@end@hd@ft\LF@head}
422 \def\endLFfoot{\LF@end@hd@ft\LF@foot}
423 \def\endLFlastfoot{\LF@end@hd@ft\LF@lastfoot}

```

```

424 %
425 \def\LF@startpbox#1{%
426   \bgroup
427   \let\@footnotetext\LF@p@ftntext
428   \setlength\hsize{#1}%
429   \@arrayparboxrestore
430   \vrule \@height \ht\@arstrutbox \@width \z@}
431 \def\LF@endpbox{%
432   \@finalstrut\@arstrutbox
433   \egroup
434   \the\LF@p@ftn
435   \global\LF@p@ftn{}}%
436   \hfil}
437 \def\LF@p@ftntext#1{%
438   \edef\@tempa{\the\LF@p@ftn\noexpand\footnotetext[\the\c@footnote]}}%
439   \global\LF@p@ftn\expandafter\@tempa{#1}}}%

```

2.4 References

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440 \langle /longfigure \rangle

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