

# The atbegshi package

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2011/01/30 v1.15

## Abstract

This package is a modern reimplementaion of package `everyshi` without the burden of compatibility. It makes use of  $\epsilon$ -TeX's if available. Both L<sup>A</sup>T<sub>E</sub>X and plain T<sub>E</sub>X are supported.

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# 1 Documentation

Package `atbegshi` redefines `\shipout` to insert hooks for user code that is executed before the page is shipped out. The code may modify or even discard the output page. Three hooks are implemented:

1. A hook that is executed for every page, see `\AtBeginShipout`
2. A hook that is executed for the next page only, see `\AtBeginShipoutNext`
3. A hook that is only executed for the first page, see `\AtBeginShipoutFirst`

The hooks are executed in this order. The following three macros provide the user interface for adding code to these hooks:

`\AtBeginShipout {⟨code⟩}`

Execute the `⟨code⟩` for every page. The page contents is held in box register `\AtBeginShipoutBox` and may be modified. Use `\AtBeginShipoutDiscard` if you want to discard the page.

*Note:* Package `everyshi` uses box register 255. With package `atbegshi` you must use `\AtBeginShipoutBox` instead.

If  $\text{\LaTeX}$  calls `\shipout` in `\@outputpage` (part of its output routine), the meaning of `\protect` is `\noexpand`.  $\text{\LaTeX}$  sets `\protect` to the appropriate `\@typeset@protect` in the box that is shipped out. This is too late for the hooks, they are called earlier in the redefined `\shipout`. Therefore package `atbegshi` sets `\protect` to `\@typeset@protect` before it calls the hooks. (In `\EveryShipout` of package `everyshi` the user is responsible for the correct setting of `\protect`.)

`\AtBeginShipoutNext {⟨code⟩}`

This reimplements package `everyshi`'s `\AtNextShipout`. The `⟨code⟩` is executed at shipout time of the next page only. It is just a convenience macro, it can be easily replaced by something like:

```

\newcommand{\MyShipoutHook}{}%
\AtBeginShipout{\MyShipoutHook}
\gdef\MyShipoutHook{%
  ... do something with next page ...
\gdef\MyShipoutHook{}%
}

```

(This can be necessary, if hook order does matter).

`\AtBeginShipoutFirst {<code>}`

This reimplements L<sup>A</sup>T<sub>E</sub>X's `\AtBeginDvi`. This hook is usually used for `\special` commands that include PostScript header files. The `\code` is directly executed in a `\vbox` that is put at the beginning of the output page. Dealing with the output box `\AtBeginShipoutBox` is not necessary and not permitted here.

`\AtBeginShipoutDiscard`

This macro notifies package `atbegshi` that the output page is discarded. The remaining hook code and the remaining hooks are not executed and the page is thrown away. Also `\deadcycles` is cleared to zero like an ordinary `\shipout` would do.

`\AtBeginShipoutInit`

Usually the redefinition of `\shipout` is delayed by `\AtBeginDocument` (if this macro exists). This can be too late, if other packages also redefines `\shipout` and the order does matter. `\AtBeginShipoutInit` forces the immediate redefinition of `\shipout`.

`\AtBeginShipoutUpperLeft {<background material>}`

This is a macro that puts material in the background of box `\AtBeginShipoutBox`. The *<background material>* is set in an `\hbox`, the reference point is the upper left corner of the output page. In case of pdf<sub>T</sub>E<sub>X</sub> in PDF mode, the settings of `\pdfhorigin` and `\pdfvorigin` are respected.

The macro `\AtBeginShipoutUpperLeft` is intended to be used in one of the hook setting macros, such as `\AtBeginShipout`, `\AtBeginShipoutFirst`, or `\AtBeginShipoutNext`.

For L<sup>A</sup>T<sub>E</sub>X users the *<background material>* is set inside a `picture` environment:

```

\begin{picture}(0,0)
  \setlength{\unitlength}{1pt}%
  <background material>
\end{picture}

```

`\AtBeginShipoutUpperLeftForeground {<foreground material>}`

See `\AtBeginShipoutUpperLeft`. The difference is that the material is put in the foreground.

`\AtBeginShipoutOriginalShipout {<box>}`

It stores the meaning of `\shipout` at the time this package is loaded.

## 1.1 Examples

### 1.1.1 Example: circle in background

In this example we put a circle in the background in the middle of the paper.

```
1 <*example1>
2 \documentclass[a4paper]{article}
3 \usepackage{color}
4 \usepackage{atbegshi}
```

Package `picture` makes life a little easier, because we can now also use length specifications in `picture`'s commands.

```
5 \usepackage{picture}
```

Now we draw the circle in the middle of the paper. `\put` moves downwards, because the origin is at the top of the page, not at its bottom.

```
6 \AtBeginShipout{%
7   \AtBeginShipoutUpperLeft{%
8     \put(0.5\paperwidth,-0.5\paperheight){\circle{10}}%
9   }%
10 }
11 \begin{document}
12 \section{Hello World}
13 \newpage
14 \AtBeginShipoutNext{%
15   \AtBeginShipoutUpperLeft{%
16     \color{red}%
17     \put(0,-0.5\paperheight){\line(1,0){\paperwidth}}%
18     \put(0.5\paperwidth, 0){\line(0,-1){\paperheight}}%
19   }%
20 }
21 Only on this page we add a red cross.
22 \newpage
23 This page has the circle only.
24 \par
25 \vspace{\fill}
26 The next page will be discarded.
27 \newpage
28 \AtBeginShipoutNext{%
29   \AtBeginShipoutDiscard
30 }
31 This page is discarded.
32 \newpage
33 The last page.
34 \end{document}
35 </example1>
```

### 1.1.2 Example: adding TrimBox for dvipdfmx

Now an example from “real life” follows. Someone from the mailing list for `dvipdfmx` wants to put a `TrimBox` on every page. If we use `\AtBeginShipout`, we have to put the `\special` inside the box `\AtBeginShipoutBox` that gets shipped out.

```
36 <*example2>
37 \documentclass{minimal}
38 \usepackage{atbegshi}
39 \usepackage[
40   dvipdfm,
41   paperwidth=630bp,
42   paperheight=810bp
43 ]{geometry}
44 \AtBeginShipout{%
```

```

45 \setbox\AtBeginShipoutBox=\hbox{%
46   \special{pdf: put @thispage <</TrimBox[9 9 621 801]>>}}%
47   \box\AtBeginShipoutBox
48 }%
49 }
50 \begin{document}
51   First page
52   \newpage
53   Second page
54 \end{document}
55 \end{example2}

```

Remember, in `\AtBeginShipoutBoxFirst` the `\setbox` wrapper code is implicitly given and the `\special` is used directly.

## 2 Method of `\shipout` overloading

### 2.1 `\shipout`

The  $\text{\TeX}$  primitive command `\shipout` takes a box specification and puts the box as a new page in the output file. There are two kinds of box specifications:

**Direct boxes:** They are given by `\hbox`, `\vbox`, or `\vtop`,  
e.g. `\shipout\hbox{Hello World}`.

**Indirect boxes:** `\box` or `\copy` references a box register by number. The box register contains the contents of the box.

*Note:* `\box` also clears the box register globally.

Then we have to differentiate between void and empty boxes:

**Void:** Initially or after `\box` there is no box in the box register. In this cases the box register is not empty, but *void*.

**Empty:** A box with empty contents, such as `\hbox{}` ( $= \text{\null}$ ) or `\vbox{}` is an *empty  $\hbox$*  or *empty  $\vbox$* . If a box register holds such a box, the box still exists, therefore the box register is *not void*.

### 2.2 `\afterassignment`

We want to overload `\shipout` to do something with the box. It is quite impossible to do this reliable by catching the box using macro arguments. The variety of box specifications is too large, Examples:

```

\shipout\null
\shipout\vbox{...}
\shipout\vtop\bgroup ... \egroup
\shipout\box255

```

Even worse, the braces don't need to be balanced:

```

\shipout\hbox\bgroup}
\shipout\vbox{\egroup

```

Happily  $\text{\TeX}$  provides a reliable way via `\afterassignment`. It takes a macro name and executes it just after the assignment.

Now we can redefine `\shipout`. The box specification that follows `\shipout` is caught by `\setbox`. This is an assignment to a box register. `\afterassignment` notifies  $\text{\TeX}$ , that we want to call `\@test` right after the assignment:

```

\shipout :=
  \afterassignment\@test
  \setbox\mybox=

```

We have seen different box specifications. Indirect boxes are easy to understand:

```
\shipout\box0 ⇒ \setbox\mybox=\box0 \@test
```

However direct boxes can have arbitrary contents with lots of other assignments. It would be quite unpredictable if  $\text{\TeX}$  would put `\@test` after the first of such an assignment or after the box specification if the box lacks of assignments. Therefore  $\text{\TeX}$  puts `\@test` right at the beginning of the box specification, e.g:

```
\shipout\hbox{Hello World}
⇒ \setbox\mybox=\hbox{\@test Hello World}
```

## 2.3 Test for direct or indirect boxes

Now we want to execute `\@test`, but where are we? We can be after the completed box assignment, if `\shipout` was called with an indirect box. Or we are right at the beginning of a direct box.

### 2.3.1 With $\varepsilon\text{-TeX}$

With the  $\varepsilon\text{-TeX}$ 's extensions the answer is very easy: Being inside the direct box means that we are inside a new group. The new primitive command `\currentgrouplevel` tells how deeply the groups are currently nested. Macro `\@test` just compares the previously stored group level with the current one:

```
\shipout :=
\edef\saved@grouplevel{\number\currentgrouplevel}
\afterassignment\@test
\setbox\mybox=

\@test :=
\ifnum\saved@grouplevel=\currentgrouplevel
  % case: indirect box, the assignment is completed
  \@output
\else
  % case: direct box, we are inside the box
  \aftergroup\@outbox
\fi
```

### 2.3.2 Without $\varepsilon\text{-TeX}$

Life becomes complicate without  $\varepsilon\text{-TeX}$ . We cannot ask the group level. However, if we are inside a direct box, the box register `\mybox` is not yet changed by `\setbox`. Thus we need a special initial value and compare it in `\@test` with the current value of the box.

What can be used as initial value? Arbitrary box contents cannot be compared.  $\text{\TeX}$  only tells us a few properties:

- Box type: `\ifhbox`, `\ifvbox`
- Dimensions: `\wd`, `\ht`, `\dp`
- Voidness: `\ifvoid`

Unhappily all these qualities even combined are not sufficient for constructing an initial box value, because `\shipout` can be called with a box that is accidentally just the same as the choosen initial value.

Nevertheless we have two alternatives for an initial value:

- A box of some type with some funny settings that are unlikely to occur in real life, e.g a height of `4911sp-\maxdimen`.
- A void box.

A collision between this initial value and an indirect `\shipout` box with just the same value is possible. Then `\@test` will make a wrong decision that it is executed inside a direct box and delays `\@output` by `\aftergroup`. Thus `\@output` is not called at the place we want. In contrary, the result is an uncertainty about the place:

- `\shipout` is used in a group that perhaps closes some pages later. A bad place for `\@output`.
- Without a surrounding group `\aftergroup` effectively kills its argument.

In the first case of a box with special dimensions we can even loose the page. However in the case of the void box, this effect is even desired, because the original `\shipout` does not output void boxes. All we have to do is to ensure that our box `\mybox` is always void except for the phase when the overloaded `\shipout` is executed. And secondly we must keep this semantics of `\shipout` for the void case in our macros, namely `\@output`.

```
\shipout :=
% trick to get a void box \mybox
\begingroup
\setbox\mybox=\box\mybox
\endgroup
\afterassignment\@test
\setbox\mybox=

\@test :=
\ifvoid\mybox
\aftergroup\@output
\else
\@output
\fi
```

The nasty case is `\shipout\box\voidb@x` where the indirect box is void and that must not generate an output page. If a surrounding group is missing the output is ignored because of `\aftergroup`. Otherwise output is called some time later when the surrounding group closes. But `\mybox` is void outside the execution phase of the redefined `\shipout`. Also `\@output` checks for a void box and cancels the page output. The disadvantage remains that the hook in `\@output` is called for a page that will not be output.

### 2.3.3 `\lastkern` method

At the beginning of a new box, there is no `\kern`, the contents of the box is still empty and `\lastkern` returns 0 pt. This can be used to distinguish between direct and indirect boxes: We execute `\setbox` in a box with a preceding non-zero kern. After an indirect box, `\lastkern` sees this kern, otherwise it returns 0 pt.

```
\shipout :=
\begingroup
\setbox\mybox=\hbox\bgroup
\kern1pt
\afterassignment\shipout@test
\global\setbox\mybox=

\@test :=
\ifdim\lastkern=0pt
% direct box
\aftergroup\egroup
\aftergroup\endgroup
\aftergroup\@output
\else
\egroup
\endgroup
```

```

\@output
\fi

```

We have two `\setbox` commands. The first creates a controlled context box where we can safely insert a `\kern`. We get rid of this temporarily used context box by putting the local `\setbox` in a group.

After the group we want to have our shipout box in `\mybox`. Therefore we use a global assignment here.

## 2.4 Output

With or without  $\varepsilon$ -TeX we ensure the original behaviour of `\shipout` that void boxes do not generate output pages.

Now we can place the hook `\@hook` for the user code that wants to manipulate the output box.

```

\@output :=
\ifvoid\mybox
% cancel output of void box
\else
\@hook
\ifvoid\mybox
% user code in \@hook could has voided the box
\else
\original@shipout\box\mybox
\fi
\fi

```

## 2.5 Separate box register

So far we have said nothing about the box number of `\mybox`. The following case that outputs the same page twice shows that we are not free in the use of the box register:

```

\shipout\copy<num> \shipout\box<num>

```

We manipulate the box by the hook and without  $\varepsilon$ -TeX the box must even be voided. However, the use case above requires that the box contents does not change at all. Therefore we must reserve a separate box register to avoid collisions with user box registers.

*Note:* Box register number 255 is special for the output routine, because TeX complains if this box is not voided by the output routine. However, this requirement does not apply to `\shipout` at all. In fact `\shipout` does not change any box register. This is usually done by a call of `\box`, but the output routine can do it later *after* invoking of `\shipout`.

## 2.6 Summary

### 2.6.1 With $\varepsilon$ -TeX

Putting the pieces together we get for  $\varepsilon$ -TeX:

```

\newbox\mybox
\let\original@shipout\shipout

\shipout :=
\edef\saved@grouplevel{\number\currentgrouplevel}
\afterassignment\@test
\setbox\mybox=

\@test :=
\ifnum\saved@grouplevel<\currentgrouplevel

```

```

        \expandafter\aftergroup
\fi
\@output

\@output :=
\ifvoid\mybox
% cancel output of void box
\else
\@hook
\ifvoid\mybox
% user code in \@hook could have voided the box
\else
\original@shipout\box\mybox
\fi
\fi

```

## 2.6.2 Without $\varepsilon$ -TeX, traditional way

And for TeX without  $\varepsilon$ -TeX:

```

\newbox\mybox
\begingroup
\setbox\mybox=\box\mybox % ensure \mybox is void
\endgroup
\let\original@shipout\shipout

\shipout :=
% trick to get a void box \mybox
\begingroup
\setbox\mybox=\box\mybox
\endgroup
\afterassignment\@test
\setbox\mybox=

\@test :=
\ifvoid\mybox
\expandafter\aftergroup
\fi
\@output

\@output :=
\ifvoid\mybox
% cancel output of void box
\else
\@hook
\ifvoid\mybox
% user code in \@hook could have voided the box
\else
\original@shipout\box\mybox
\fi
\fi

```

## 2.6.3 \lastkern method

And for TeX without  $\varepsilon$ -TeX using the \lastkern method:

```

\newbox\mybox
\let\original@shipout\shipout

\shipout :=
\begingroup
\setbox\mybox=\hbox\bgroup
\kern1pt

```

```

\afterassignment\@test
\setbox\mybox=

\@test :=
\ifdim\lastkern=0pt
\expandafter\aftergroup
\fi
\@output

\@output :=
\egroup
\endgroup
\ifvoid\mybox
% cancel output of void box
\else
\@hook
\ifvoid\mybox
% user code in \@hook could have voided the box
\else
\original@shipout\box\mybox
\fi
\fi

```

### 3 Implementation

Package atbegshi uses  $\epsilon$ -TeX's `\currentgrouplevel`, if it is available. Otherwise the `\lastkern` method is used.

```
56 (*package)
```

#### 3.1 Reload check and package identification

Reload check, especially if the package is not used with L<sup>A</sup>T<sub>E</sub>X.

```

57 \begingroup\catcode61\catcode48\catcode32=10\relax%
58 \catcode13=5 % ^~M
59 \endlinechar=13 %
60 \catcode35=6 % #
61 \catcode39=12 % '
62 \catcode44=12 % ,
63 \catcode45=12 % -
64 \catcode46=12 % .
65 \catcode58=12 % :
66 \catcode64=11 % @
67 \catcode123=1 % {
68 \catcode125=2 % }
69 \expandafter\let\expandafter\x\csname ver@atbegshi.sty\endcsname
70 \ifx\x\relax % plain-TeX, first loading
71 \else
72 \def\empty{}%
73 \ifx\x\empty % LaTeX, first loading,
74 % variable is initialized, but \ProvidesPackage not yet seen
75 \else
76 \expandafter\ifx\csname PackageInfo\endcsname\relax
77 \def\x#1#2{%
78 \immediate\write-1{Package #1 Info: #2.}%
79 }%
80 \else
81 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
82 \fi
83 \x{atbegshi}{The package is already loaded}%
84 \aftergroup\endinput
85 \fi

```

```

86 \fi
87 \endgroup%
Package identification:
88 \begingroup\catcode61\catcode48\catcode32=10\relax%
89 \catcode13=5 % ^^M
90 \endlinechar=13 %
91 \catcode35=6 % #
92 \catcode39=12 % '
93 \catcode40=12 % (
94 \catcode41=12 % )
95 \catcode44=12 % ,
96 \catcode45=12 % -
97 \catcode46=12 % .
98 \catcode47=12 % /
99 \catcode58=12 % :
100 \catcode64=11 % @
101 \catcode91=12 % [
102 \catcode93=12 % ]
103 \catcode123=1 % {
104 \catcode125=2 % }
105 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
106 \def\x#1#2#3[#4]{\endgroup
107 \immediate\write-1{Package: #3 #4}%
108 \xdef#1{#4}%
109 }%
110 \else
111 \def\x#1#2[#3]{\endgroup
112 #2[{#3}]%
113 \ifx#1\@undefined
114 \xdef#1{#3}%
115 \fi
116 \ifx#1\relax
117 \xdef#1{#3}%
118 \fi
119 }%
120 \fi
121 \expandafter\x\csname ver@atbegshi.sty\endcsname
122 \ProvidesPackage{atbegshi}%
123 [2011/01/30 v1.15 At begin shipout hook (H0)]%

```

## 3.2 Catcodes

```

124 \begingroup\catcode61\catcode48\catcode32=10\relax%
125 \catcode13=5 % ^^M
126 \endlinechar=13 %
127 \catcode123=1 % {
128 \catcode125=2 % }
129 \catcode64=11 % @
130 \def\x{\endgroup
131 \expandafter\edef\csname AtBegShi@AtEnd\endcsname{%
132 \endlinechar=\the\endlinechar\relax
133 \catcode13=\the\catcode13\relax
134 \catcode32=\the\catcode32\relax
135 \catcode35=\the\catcode35\relax
136 \catcode61=\the\catcode61\relax
137 \catcode64=\the\catcode64\relax
138 \catcode123=\the\catcode123\relax
139 \catcode125=\the\catcode125\relax
140 }%
141 }%
142 \x\catcode61\catcode48\catcode32=10\relax%
143 \catcode13=5 % ^^M

```

```

144 \endlinechar=13 %
145 \catcode35=6 % #
146 \catcode64=11 % @
147 \catcode123=1 % {
148 \catcode125=2 % }
149 \def\TMP@EnsureCode#1#2{%
150   \edef\AtBegShi@AtEnd{%
151     \AtBegShi@AtEnd
152     \catcode#1=\the\catcode#1\relax
153   }%
154   \catcode#1=#2\relax
155 }
156 \TMP@EnsureCode{40}{12}% (
157 \TMP@EnsureCode{41}{12}% )
158 \TMP@EnsureCode{44}{12}% ,
159 \TMP@EnsureCode{45}{12}% -
160 \TMP@EnsureCode{47}{12}% /
161 \TMP@EnsureCode{46}{12}% .
162 \TMP@EnsureCode{58}{12}% :
163 \TMP@EnsureCode{91}{12}% [
164 \TMP@EnsureCode{93}{12}% ]
165 \TMP@EnsureCode{94}{7}% ^ (superscript)
166 \TMP@EnsureCode{96}{12}% '
167 \edef\AtBegShi@AtEnd{\AtBegShi@AtEnd\noexpand\endinput}

```

### 3.3 Preparations

```

168 \begingroup\expandafter\expandafter\expandafter\endgroup
169 \expandafter\ifx\csname RequirePackage\endcsname\relax
170   \def\TMP@RequirePackage#1[#2]{%
171     \begingroup\expandafter\expandafter\expandafter\endgroup
172     \expandafter\ifx\csname ver@#1.sty\endcsname\relax
173       \input #1.sty\relax
174     \fi
175   }%
176   \TMP@RequirePackage{infwarerr}[2007/09/09]%
177   \TMP@RequirePackage{ltxcmds}[2010/03/01]%
178 \else
179   \RequirePackage{infwarerr}[2007/09/09]%
180   \RequirePackage{ltxcmds}[2010/03/01]%
181 \fi

```

\AtBegShi@CheckDefinable

```

182 \begingroup\expandafter\expandafter\expandafter\endgroup
183 \expandafter\ifx\csname @ifdefinable\endcsname\relax
184   \def\AtBegShi@CheckDefinable#1{%
185     \ifcase\ifx#1\relax
186       \ltx@one
187     \else
188       \ifx#1\@undefined
189         \ltx@one
190       \else
191         \ltx@zero
192       \fi
193     \fi
194     \@PackageError{atbegshi}{%
195       \string#1\space is already defined%
196     }\@ehd
197   \fi
198 }%
199 \else
200   \def\AtBegShi@CheckDefinable#1{%
201     \@ifdefinable{#1}{}%
202   }%

```

```

203 \fi

204 \ltx@newif\ifAtBegShi@Discarded

\AtBeginShipoutDiscard

205 \AtBegShi@CheckDefinable\AtBeginShipoutDiscard
206 \def\AtBeginShipoutDiscard{%
207   \deadcycles=\ltx@zero
208   \global\AtBegShi@Discardedtrue
209 }

210 \begingroup\expandafter\expandafter\expandafter\endgroup
211 \expandafter\ifx\csname currentgrouplevel\endcsname\relax
212   \catcode'X=9 % ignore
213   \catcode'E=14 % comment
214 \else
215   \catcode'X=14 % comment
216   \catcode'E=9 % ignore
217 \fi

\AtBegShi@Shipout

218 \def\AtBegShi@Shipout{%
219 X \begingroup
220 X \setbox\AtBeginShipoutBox=\hbox\bgroup
221 X \kern\p@
222 E \edef\AtBegShi@GroupLevel{\number\currentgrouplevel}%
223 \afterassignment\AtBegShi@Test
224 X \global
225 \setbox\AtBeginShipoutBox=%
226 }

\AtBegShi@Test

227 \def\AtBegShi@Test{%
228 X \ifdim\lastkern=0pt %
229 E \ifnum\AtBegShi@GroupLevel<\currentgrouplevel
230   \expandafter\aftergroup
231 \fi
232 \AtBegShi@Output
233 }

\AtBegShi@Output

234 \def\AtBegShi@Output{%
235 X \egroup
236 X \endgroup
237 \ifvoid\AtBeginShipoutBox
238   \@PackageWarning{atbegshi}{Ignoring void shipout box}%
239 \else
240   \let\AtBegShi@OrgProtect\protect
241   \csname set@typeset@protect\endcsname
242   \global\AtBegShi@Discardedfalse
243   \AtBegShi@Hook
244   \expandafter\gdef\expandafter\AtBegShi@HookNext
245   \expandafter{\expandafter}%
246   \AtBegShi@HookNext
247   \ifAtBegShi@Discarded
248     \@PackageInfoNoLine{atbegshi}{Shipout page discarded}%
249     \global\AtBegShi@Discardedfalse
250     \begingroup
251     \setbox\AtBeginShipoutBox\box\AtBeginShipoutBox
252     \endgroup
253     \let\protect\AtBegShi@OrgProtect
254   \else

```

```

255     \AtBegShi@First
256     \let\protect\AtBegShi@OrgProtect
257     \AtBeginShipoutOriginalShipout\box\AtBeginShipoutBox
258     \fi
259     \fi
260 }

261 \catcode'\X=11 %
262 \catcode'\E=11 %

\AtBegShi@First
263 \def\AtBegShi@First{%
264   \begingroup
265   \def\@empty{%
266     \ifx\AtBegShi@HookFirst\@empty
267     \else
268       \setbox\ltx@zero=\vbox{%
269         \begingroup
270         \AtBegShi@HookFirst
271         \endgroup
272       }%
273       \wd\ltx@zero=0pt %
274       \ht\ltx@zero=0pt %
275       \dp\ltx@zero=0pt %
276       \global\setbox\AtBeginShipoutBox=\vbox{%
277         \baselineskip 0pt\relax
278         \lineskip 0pt\relax
279         \lineskiplimit 0pt\relax
280         \copy\ltx@zero
281         \copy\AtBeginShipoutBox
282       }%
283     \fi
284     \global\let\AtBegShi@First\@empty
285     \global\let\AtBeginShipoutFirst\AtBegShi@FirstDisabled
286   \endgroup
287 }

\AtBegShi@Hook
288 \gdef\AtBegShi@Hook{}

\AtBegShi@HookNext
289 \gdef\AtBegShi@HookNext{}

\AtBegShi@HookFirst
290 \gdef\AtBegShi@HookFirst{}

\AtBeginShipout
291 \AtBegShi@CheckDefinable\AtBeginShipout
292 \def\AtBeginShipout{%
293   \AtBegShi@AddHook\AtBegShi@Hook
294 }

\AtBeginShipoutNext
295 \AtBegShi@CheckDefinable\AtBeginShipoutNext
296 \def\AtBeginShipoutNext{%
297   \AtBegShi@AddHook\AtBegShi@HookNext
298 }

\AtBeginShipoutFirst
299 \AtBegShi@CheckDefinable\AtBeginShipoutFirst
300 \def\AtBeginShipoutFirst{%
301   \AtBegShi@AddTo\AtBegShi@HookFirst
302 }

```

\AtBegShi@FirstDisabled

```
303 \long\def\AtBegShi@FirstDisabled#1{%
304   \@PackageWarning{atbegshi}{%
305     First page is already shipped out, ignoring\MessageBreak
306     \string\AtBeginShipoutFirst
307   }%
308 }
```

\AtBegShi@AddTo

```
309 \begingroup\expandafter\expandafter\expandafter\endgroup
310 \expandafter\ifx\csname g@addto@macro\endcsname\relax
311   \long\def\AtBegShi@AddTo#1#2{%
312     \begingroup
313       \toks\ltx@zero\expandafter{#1#2}%
314       \xdef#1{\the\toks\ltx@zero}%
315     \endgroup
316   }%
317 \else
318   \let\AtBegShi@AddTo\g@addto@macro
319 \fi
```

\AtBegShi@AddHook

```
320 \long\def\AtBegShi@AddHook#1#2{%
321   \AtBegShi@AddTo#1{\AtBegShi@Item{#2}}%
322 }
```

\AtBegShi@Item

```
323 \long\def\AtBegShi@Item#1{%
324   \ifAtBegShi@Discarded
325   \else
326     #1%
327   \ifAtBegShi@Discarded
328   \else
329     \ifvoid\AtBeginShipoutBox
330       \@PackageWarning{atbegshi}{%
331         Shipout box was voided by hook,\MessageBreak
332         ignoring shipout box%
333       }%
334       \AtBeginShipoutDiscard
335     \fi
336   \fi
337 \fi
338 }
```

\AtBeginShipoutInit

```
339 \AtBegShi@CheckDefinable\AtBeginShipoutInit
340 \def\AtBeginShipoutInit{%
341   \ltx@ifundefined{newbox}{%
342     \@PackageError{atbegshi}{%
343       \string\AtBeginShipoutInit\space failed\MessageBreak
344       because of missing \expandafter\string\csname newbox\endcsname
345     }\@ehc
346   }{%
347     \csname newbox\endcsname\AtBeginShipoutBox
348     \AtBegShi@CheckDefinable\AtBeginShipoutOriginalShipout
349     \global\let\AtBeginShipoutOriginalShipout\shipout
350     \global\let\shipout\AtBegShi@Shipout
351   }%
352   \gdef\AtBeginShipoutInit{%
353 }
```

```

354 \begingroup\expandafter\expandafter\expandafter\endgroup
355 \expandafter\ifx\csname AtBeginDocument\endcsname\relax
356   \AtBeginShipoutInit
357 \else
358   \AtBeginDocument{\AtBeginShipoutInit}%
359 \fi

```

### 3.4 Positioning

```

360 \begingroup\expandafter\expandafter\expandafter\endgroup
361 \expandafter\ifx\csname RequirePackage\endcsname\relax
362   \input ifpdf.sty\relax
363 \else
364   \RequirePackage{ifpdf}\relax
365 \fi

366 \ifpdf
367   \def\AtBegShi@horigin{\pdfhorigin}%
368   \def\AtBegShi@vorigin{\pdfvorigin}%
369 \else
370   \def\AtBegShi@horigin{72.27pt}%
371   \def\AtBegShi@vorigin{72.27pt}%
372 \fi

373 \begingroup
374 \ifcase
375   \expandafter\ifx\csname picture\endcsname\relax
376     1%
377   \else
378     \expandafter\ifx\csname endpicture\endcsname\relax
379       1%
380     \else
381       0%
382     \fi
383   \fi
384 \endgroup
385 \def\AtBegShi@BeginPicture{%
386   \begingroup
387   \picture(0,0)\relax
388   \begingroup\expandafter\expandafter\expandafter\endgroup
389   \expandafter\ifx\csname unitlength\endcsname\relax
390     \else
391       \unitlength=1pt\relax
392     \fi
393   \ignorespaces
394 }%
395 \def\AtBegShi@EndPicture{%
396   \endpicture
397   \endgroup
398 }%
399 \else
400   \endgroup
401   \def\AtBegShi@BeginPicture{%
402     \setbox\ltx@zero=\hbox\bgroup
403     \begingroup
404     \ignorespaces
405   }%
406   \def\AtBegShi@EndPicture{%
407     \endgroup
408     \egroup
409     \ht\ltx@zero=0pt\relax
410     \dp\ltx@zero=0pt\relax
411     \copy\ltx@zero
412   }%

```

```

413 \fi
414 \def\AtBeginShipoutUpperLeft#1{%
415   \global\setbox\AtBeginShipoutBox=\hbox{%
416     \rlap{%
417       \kern-\AtBegShi@horigin\relax
418       \vbox to Opt{%
419         \kern-\AtBegShi@vorigin\relax
420         \kern-\ht\AtBeginShipoutBox
421         \AtBegShi@BeginPicture
422         #1%
423         \AtBegShi@EndPicture
424         \vss
425       }%
426     }%
427   \box\AtBeginShipoutBox
428 }%
429 }

430 \def\AtBeginShipoutUpperLeftForeground#1{%
431   \global\setbox\AtBeginShipoutBox=\hbox to \wd\AtBeginShipoutBox{%
432     \rlap{%
433       \copy\AtBeginShipoutBox
434     }%
435     \rlap{%
436       \kern-\AtBegShi@horigin\relax
437       \vbox to Opt{%
438         \kern-\AtBegShi@vorigin\relax
439         \kern-\ht\AtBeginShipoutBox
440         \AtBegShi@BeginPicture
441         #1%
442         \AtBegShi@EndPicture
443         \vss
444       }%
445     }%
446     \hss
447   }%
448 }

```

### 3.5 Patches

Patches for L<sup>A</sup>T<sub>E</sub>X packages that redefine `\shipout`. L<sup>A</sup>T<sub>E</sub>X is now supposed to use  $\varepsilon$ -T<sub>E</sub>X. Thus we do not patch, without L<sup>A</sup>T<sub>E</sub>X and  $\varepsilon$ -T<sub>E</sub>X.

```

449 \def\AtBegShi@AbortIfUndefined#1{%
450   \begingroup\expandafter\expandafter\expandafter\endgroup
451   \expandafter\ifx\csname#1\endcsname\relax
452     \expandafter\AtBegShi@AtEnd
453   \fi
454 }
455 \AtBegShi@AbortIfUndefined{currentgrouplevel}%
456 \AtBegShi@AbortIfUndefined{AtBeginDocument}%
457 \AtBegShi@AbortIfUndefined{@ifpackageloaded}%
458 \AtBegShi@AbortIfUndefined{@ifclassloaded}%

```

#### 3.5.1 Package crop

Fix of method and box.

```

459 \def\AtBegShi@PatchCrop{%
460   \begingroup
461     \def\AtBegShi@Crop@shipout{%
462       \afterassignment\CROP@ship
463       \setbox\@cclv=%
464     }%
465     \def\AtBegShi@Crop@ship{%

```

```

466     \ifvoid\@cclv
467     \expandafter\aftergroup
468     \fi
469     \CROP@@ship
470 }%
471 \def\AtBegShi@Crop@shiplist{%
472     \lineskip\z@
473     \lineskiplimit\z@
474     \baselineskip\z@
475     \CROP@kernel
476     \box\@cclv
477 }%
478 \def\AtBegShi@Crop@@ship{%
479     \CROP@shipout\vbox{%
480         \CROP@shiplist
481     }%
482 }%
483 \ifx\AtBegShi@Crop@ship\CROP@ship
484     \ifx\AtBegShi@Crop@shiplist\CROP@shiplist
485         \ifx\AtBegShi@Crop@@ship\CROP@@ship
486             \let\AtBegShi@found\relax
487             \ifx\shipout\AtBegShi@Crop@shipout
488                 \def\AtBegShi@found{\shipout}%
489             \else\ifx\AtBeginShipoutOriginalShipout\AtBegShi@Crop@shipout
490                 \def\AtBegShi@found{\AtBeginShipoutOriginalShipout}%
491             \else\ifx\@EveryShipout@Org@Shipout\AtBegShi@Crop@shipout
492                 \def\AtBegShi@found{\@EveryShipout@Org@Shipout}%
493             \else\ifx\GPTorg@shipout\AtBegShi@Crop@shipout
494                 \def\AtBegShi@found{\GPTorg@shipout}%
495             \else\ifx\THBorg@shipout\AtBegShi@Crop@shipout
496                 \def\AtBegShi@found{\THBorg@shipout}%
497             \else\ifx\mem@oldshipout\AtBegShi@Crop@shipout
498                 \def\AtBegShi@found{\mem@oldshipout}%
499             \fi\fi\fi\fi\fi\fi
500             \ifx\AtBegShi@found\relax
501             \else
502                 \expandafter\endgroup
503                 \expandafter\def\AtBegShi@found{%
504                     \edef\AtBegShi@GroupLevel{\number\currentgrouplevel}%
505                     \afterassignment\CROP@ship
506                     \setbox\AtBeginShipoutBox=%
507                 }%
508                 \def\CROP@ship{%
509                     \ifnum\AtBegShi@GroupLevel=\currentgrouplevel
510                     \else
511                         \expandafter\aftergroup
512                         \fi
513                     \CROP@@ship
514                 }%
515                 \def\CROP@shiplist{%
516                     \lineskip Opt\relax
517                     \lineskiplimit Opt\relax
518                     \baselineskip Opt\relax
519                     \CROP@kernel
520                     \box\AtBeginShipoutBox
521                 }%
522                 \def\CROP@@ship{%
523                     \ifvoid\AtBeginShipoutBox
524                     \else
525                         \setbox\AtBeginShipoutBox=\vbox{%
526                             \CROP@shiplist
527                         }%

```

```

528             \expandafter\CROP@shipout
529             \expandafter\box
530             \expandafter\AtBeginShipoutBox
531         \fi
532     }%
533     \@PackageInfoNoLine{atbegshi}{Package 'crop' patched}%
534     \begingroup
535     \fi
536 \fi
537 \fi
538 \fi
539 \endgroup
540 \let\AtBegShi@PatchCrop\relax
541 }
542 \@ifpackageloaded{crop}{%
543   \AtBegShi@PatchCrop
544 }{%
545   \AtBeginDocument{\AtBegShi@PatchCrop}%
546 }

```

### 3.5.2 Package everyshi

Fix of method. Use of box 255 is not changed.

```

547 \def\AtBegShi@PatchEveryshi{%
548   \begingroup
549     \long\def\AtBegShi@Everyshi@shipout{%
550       \afterassignment\@EveryShipout@Test
551       \global\setbox\@cclv= %
552     }%
553     \long\def\AtBegShi@Everyshi@Test{%
554       \ifvoid\@cclv\relax
555         \aftergroup\@EveryShipout@Output
556       \else
557         \@EveryShipout@Output
558       \fi
559     }%
560     \ifx\AtBegShi@Everyshi@Test\@EveryShipout@Test
561       \let\AtBegShi@found\relax
562       \ifx\shipout\AtBegShi@Everyshi@shipout
563         \def\AtBegShi@found{\shipout}%
564       \else\ifx\AtBeginShipoutOriginalShipout\AtBegShi@Everyshi@shipout
565         \def\AtBegShi@found{\AtBeginShipoutOriginalShipout}%
566       \else\ifx\CROP@shipout\AtBegShi@Everyshi@shipout
567         \def\AtBegShi@found{\CROP@shipout}%
568       \else\ifx\GPTorg@shipout\AtBegShi@Everyshi@shipout
569         \def\AtBegShi@found{\GPTorg@shipout}%
570       \else\ifx\THBorg@shipout\AtBegShi@Everyshi@shipout
571         \def\AtBegShi@found{\THBorg@shipout}%
572       \else\ifx\mem@oldshipout\AtBegShi@Everyshi@shipout
573         \def\AtBegShi@found{\mem@oldshipout}%
574       \else
575         \expandafter\ifx\csname @EveryShipout@Org@Shipout\endcsname
576           \relax
577           \ifx\@EveryShipout@Shipout\AtBegShi@Everyshi@shipout
578             \def\AtBegShi@found{\@EveryShipout@Shipout}%
579           \fi
580         \fi
581       \fi\fi\fi\fi\fi\fi
582       \ifx\AtBegShi@found\relax
583         \else
584           \expandafter\endgroup
585           \expandafter\def\AtBegShi@found{%

```

```

586         \edef\AtBegShi@GroupLevel{\number\currentgrouplevel}%
587         \afterassignment\@EveryShipout@Test
588         \setbox\AtBeginShipoutBox=%
589     }%
590     \def\@EveryShipout@Test{%
591         \ifnum\AtBegShi@GroupLevel=\currentgrouplevel
592         \else
593             \expandafter\aftergroup
594         \fi
595         \AtBegShi@Everyshi@Output
596     }%
597     \def\AtBegShi@Everyshi@Output{%
598         \ifvoid\AtBeginShipoutBox
599         \else
600             \global\setbox\ltx@cclv\box\AtBeginShipoutBox
601             \expandafter\@EveryShipout@Output
602         \fi
603     }%
604     \@PackageInfoNoLine{atbegshi}{Package 'everyshi' patched}%
605     \begingroup
606     \fi
607 \fi
608 \endgroup
609 \let\AtBegShi@PatchEveryshi\relax
610 }
611 \@ifpackageloaded{everyshi}{%
612     \AtBegShi@PatchEveryshi
613 }{%
614     \AtBeginDocument{\AtBegShi@PatchEveryshi}%
615 }

```

### 3.5.3 Class memoir

Fix of method and box.

```

616 \def\AtBegShi@PatchMemoir{%
617     \begingroup
618     \def\AtBegShi@Memoir@shipout{%
619         \afterassignment\mem@shipi
620         \setbox\@cclv=%
621     }%
622     \def\AtBegShi@Memoir@shipi{%
623         \ifvoid\@cclv
624             \expandafter\aftergroup
625         \fi
626         \mem@shipii
627     }%
628     \def\AtBegShi@Memoir@shipiiA{%
629         \mem@oldshipout\vbox{%
630             \trimmarks
631             \unvbox\@cclv
632         }%
633     }%
634     \def\AtBegShi@Memoir@shipiiB{%
635         \ifvoid\@cclv
636             \mem@oldshipout\box\@cclv
637         \else
638             \mem@oldshipout\vbox{%
639                 \trimmarks
640                 \unvbox\@cclv
641             }%
642         \fi
643     }%

```

```

644 \ifx\AtBegShi@Mmemoir@shipi\mem@shipi
645 \ifcase\ifx\AtBegShi@Mmemoir@shipiiA\mem@shipii
646 \ltx@zero
647 \else
648 \ifx\AtBegShi@Mmemoir@shipiiB\mem@shipii
649 \ltx@zero
650 \else
651 \ltx@one
652 \fi
653 \fi
654 \let\AtBegShi@found\relax
655 \ifx\shipout\AtBegShi@Mmemoir@shipout
656 \def\AtBegShi@found{\shipout}%
657 \else\ifx\AtBeginShipoutOriginalShipout\AtBegShi@Mmemoir@shipout
658 \def\AtBegShi@found{\AtBeginShipoutOriginalShipout}%
659 \else\ifx\CROP@shipout\AtBegShi@Mmemoir@shipout
660 \def\AtBegShi@found{\CROP@shipout}%
661 \else\ifx\GPTorg@shipout\AtBegShi@Mmemoir@shipout
662 \def\AtBegShi@found{\GPTorg@shipout}%
663 \else\ifx\THBorg@shipout\AtBegShi@Mmemoir@shipout
664 \def\AtBegShi@found{\THBorg@shipout}%
665 \else\ifx\@EveryShipout@Org@Shipout\AtBegShi@Mmemoir@shipout
666 \def\AtBegShi@found{\@EveryShipout@Org@Shipout}%
667 \fi\fi\fi\fi\fi\fi
668 \ifx\AtBegShi@found\relax
669 \else
670 \expandafter\endgroup
671 \expandafter\def\AtBegShi@found{%
672 \edef\AtBegShi@GroupLevel{\number\currentgrouplevel}%
673 \afterassignment\mem@shipi
674 \setbox\AtBeginShipoutBox=%
675 }%
676 \def\mem@shipi{%
677 \ifnum\AtBegShi@GroupLevel=\currentgrouplevel
678 \else
679 \expandafter\aftergroup
680 \fi
681 \mem@shipii
682 }%
683 \def\mem@shipii{%
684 \ifvoid\AtBeginShipoutBox
685 \else
686 \setbox\AtBeginShipoutBox=\vbox{%
687 \trimmarks
688 \ifvbox\AtBeginShipoutBox
689 \unvbox\AtBeginShipoutBox
690 \else
691 \box\AtBeginShipoutBox
692 \fi
693 }%
694 \expandafter\mem@oldshipout
695 \expandafter\box
696 \expandafter\AtBeginShipoutBox
697 \fi
698 }%
699 \@PackageInfoNoLine{atbegshi}{Class 'memoir' patched}%
700 \begingroup
701 \fi
702 \fi
703 \fi
704 \endgroup
705 \let\AtBegShi@PatchMemoir\relax

```

```

706 }
707 \@ifclassloaded{memoir}{%
708   \AtBegShi@PatchMemoir
709 }{%
710   \AtBeginDocument{\AtBegShi@PatchMemoir}%
711 }
712 \AtBegShi@AtEnd%
713 \end{package}

```

## 4 Test

### 4.1 Catcode checks for loading

```

714 \def\testl{
715   \catcode'\{=1 %
716   \catcode'\}=2 %
717   \catcode'\#=6 %
718   \catcode'\@=11 %
719   \expandafter\ifx\csname count@\endcsname\relax
720     \countdef\count@=255 %
721   \fi
722   \expandafter\ifx\csname @gobble\endcsname\relax
723     \long\def\@gobble#1{%
724   \fi
725   \expandafter\ifx\csname @firstofone\endcsname\relax
726     \long\def\@firstofone#1{#1}%
727   \fi
728   \expandafter\ifx\csname loop\endcsname\relax
729     \expandafter\@firstofone
730   \else
731     \expandafter\@gobble
732   \fi
733   {%
734     \def\loop#1\repeat{%
735       \def\body{#1}%
736       \iterate
737     }%
738     \def\iterate{%
739       \body
740       \let\next\iterate
741     \else
742       \let\next\relax
743     \fi
744     \next
745   }%
746   \let\repeat=\fi
747 }%
748 \def\RestoreCatcodes{
749   \count@=0 %
750   \loop
751     \edef\RestoreCatcodes{%
752       \RestoreCatcodes
753       \catcode\the\count@=\the\catcode\count@\relax
754     }%
755   \ifnum\count@<255 %
756     \advance\count@ 1 %
757   \repeat
758 }
759 \def\RangeCatcodeInvalid#1#2{%
760   \count@=#1\relax
761   \loop

```

```

762 \catcode\count@=15 %
763 \ifnum\count@<#2\relax
764 \advance\count@ 1 %
765 \repeat
766 }
767 \def\RangeCatcodeCheck#1#2#3{%
768 \count@=#1\relax
769 \loop
770 \ifnum#3=\catcode\count@
771 \else
772 \errmessage{%
773 Character \the\count@\space
774 with wrong catcode \the\catcode\count@\space
775 instead of \number#3%
776 }%
777 \fi
778 \ifnum\count@<#2\relax
779 \advance\count@ 1 %
780 \repeat
781 }
782 \def\space{ }
783 \expandafter\ifx\csname LoadCommand\endcsname\relax
784 \def\LoadCommand{\input atbegshi.sty\relax}%
785 \fi
786 \def\Test{%
787 \RangeCatcodeInvalid{0}{47}%
788 \RangeCatcodeInvalid{58}{64}%
789 \RangeCatcodeInvalid{91}{96}%
790 \RangeCatcodeInvalid{123}{255}%
791 \catcode'\@=12 %
792 \catcode'\=0 %
793 \catcode'\%=14 %
794 \LoadCommand
795 \RangeCatcodeCheck{0}{36}{15}%
796 \RangeCatcodeCheck{37}{37}{14}%
797 \RangeCatcodeCheck{38}{47}{15}%
798 \RangeCatcodeCheck{48}{57}{12}%
799 \RangeCatcodeCheck{58}{63}{15}%
800 \RangeCatcodeCheck{64}{64}{12}%
801 \RangeCatcodeCheck{65}{90}{11}%
802 \RangeCatcodeCheck{91}{91}{15}%
803 \RangeCatcodeCheck{92}{92}{0}%
804 \RangeCatcodeCheck{93}{96}{15}%
805 \RangeCatcodeCheck{97}{122}{11}%
806 \RangeCatcodeCheck{123}{255}{15}%
807 \RestoreCatcodes
808 }
809 \Test
810 \csname @@end\endcsname
811 \end
812 </test1>
813 <*test2>
814 \input atbegshi.sty\relax
815 \def\msg#{\immediate\write16}
816 \msg{File: atbegshi-test2.tex 2011/01/30 v1.15 Test file for plain-Tex}
817 \def\testmsg#1#2{%
818 \msg{}%
819 \msg{*** Test with box (#1), expected page output [#2]}% hash-ok
820 }
821
822 \newbox\voidbox
823 \def\void{\box\voidbox}

```

```

824 \begingroup
825   \setbox\voidbox=\void
826 \endgroup
827
828 \count0=0\relax
829 \AtBeginShipout{%
830   \global\advance\count0 by 1\relax
831   \msg{* Inside \string\AtBeginShipout: [\the\count0]}%
832 }
833
834 \AtBeginShipoutFirst{%
835   \msg{* Inside \string\AtBeginShipoutFirst}%
836   Hello World%
837 }
838
839 \testmsg{\string\null}{1}
840 \shipout\null
841
842 \AtBeginShipoutFirst{%
843   This is too late%
844 }
845
846 \testmsg{void}{}
847 \shipout\void
848
849 \testmsg{\string\copy255 (not void)}{2}
850 \setbox255\hbox{\vrule height 10bp width 10bp}
851 \shipout\copy255 %
852
853 \testmsg{\string\copy255 (again)}{3}
854 \shipout\copy255 %
855
856 \testmsg{\string\box255}{4}
857 \shipout\box255 %
858
859 \testmsg{\string\box255 (again)}{}
860 \shipout\box255 %
861
862 \testmsg{\string\hbox}{5}
863 \shipout\hbox{\vrule height 5bp width 20bp}
864
865 \testmsg{\string\vbox}{6}
866 \shipout\vbox{\hrule height 20bp width 5bp}
867
868 \testmsg{\string\null, voided by hook}{}
869 \def\VoidBox{%
870   \begingroup
871     \setbox\AtBeginShipoutBox=\box\AtBeginShipoutBox
872   \endgroup
873 }
874 \AtBeginShipout{\VoidBox}
875 \shipout\null
876 \def\VoidBox{}
877
878 \msg{*** \string\begingroup}
879 \begingroup
880   \testmsg{void}{}%
881   \shipout\void
882 \msg{*** \string\endgroup}
883 \endgroup
884
885 \msg{*** \string\begingroup}

```

```

886 \begingroup
887 \testmsg{void}{}%
888 \shipout\void
889 \testmsg{\string\null}{8}%
890 \shipout\null
891 \msg{*** \string\endgroup}
892 \endgroup
893
894 \testmsg{output routine}{9}
895 Hello World
896 \vfill
897 \eject
898
899 \testmsg{\string\null\space(discarded)}{}
900 \AtBeginShipout{%
901   \msg{* Inside \string\AtBeginShipout: DISCARD}%
902   \AtBeginShipoutDiscard
903 }
904 \shipout\null
905
906 \end
907 </test2>

908 (*test3)
909 \NeedsTeXFormat{LaTeX2e}
910 \ProvidesFile{atbegshi-test3.tex}[2011/01/30 v1.15 Test file for LaTeX]
911 \RequirePackage{color}
912 \pagecolor{yellow}
913 \documentclass[a5paper,showtrims]{memoir}
914 \usepackage{atbegshi}
915 \AtBeginShipout{%
916   \setbox\AtBeginShipoutBox=\vbox{%
917     \vbox to 0pt{%
918       \kern-1.5in %
919       \hbox to 0pt{%
920         \kern-1.5in %
921         \color{blue}%
922         \rule{1in}{1in}%
923         \hss
924       }%
925       \vss
926     }%
927     \hrule
928     \hbox{\vrule\box\AtBeginShipoutBox\vrule}%
929     \hrule
930   }%
931 }
932 \usepackage{eso-pic}
933 \makeatletter
934 \ifundefined{@EveryShipout@Init}{%
935   \typeout{Test skipped}%
936   \@@end
937 }{}
938 \@EveryShipout@Init
939 \let\@EveryShipout@Init\relax
940 \makeatother
941 \AddToShipoutPicture{%
942   \hspace{.52\paperwidth}%
943   \colorbox{cyan}{%
944     \rule{0mm}{\paperheight}%
945     \hspace{.48\paperwidth}%
946   }%
947 }

```

Newer versions of class memoir emulate package crop and prevents its loading. This is undone in next line for this test file.

```

948 \expandafter\let\csname ver@crop.sty\endcsname\relax
949 \usepackage[color=red,cross,a4,center]{crop}
950 \begin{document}
951 \shipout\null
952 \shipout\box\csname voidb@x\endcsname
953 \section{Hello World}
954 \end{document}
955 \end{test3}

```

## 5 Installation

### 5.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/atbegshi.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/atbegshi.pdf](#) Documentation.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

TDS refers to the standard “A Directory Structure for T<sub>E</sub>X Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

### 5.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```

chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/

```

### 5.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain T<sub>E</sub>X:

```
tex atbegshi.dtx
```

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

<code>atbegshi.sty</code>	→ <code>tex/generic/oberdiek/atbegshi.sty</code>
<code>atbegshi.pdf</code>	→ <code>doc/latex/oberdiek/atbegshi.pdf</code>
<code>atbegshi-example1.tex</code>	→ <code>doc/latex/oberdiek/atbegshi-example1.tex</code>
<code>atbegshi-example2.tex</code>	→ <code>doc/latex/oberdiek/atbegshi-example2.tex</code>
<code>test/atbegshi-test1.tex</code>	→ <code>doc/latex/oberdiek/test/atbegshi-test1.tex</code>
<code>test/atbegshi-test2.tex</code>	→ <code>doc/latex/oberdiek/test/atbegshi-test2.tex</code>
<code>test/atbegshi-test3.tex</code>	→ <code>doc/latex/oberdiek/test/atbegshi-test3.tex</code>
<code>atbegshi.dtx</code>	→ <code>source/latex/oberdiek/atbegshi.dtx</code>

<sup>1</sup>[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

## 5.4 Refresh file name databases

If your  $\text{\TeX}$  distribution (`teTeX`, `mikTeX`, ...) relies on file name databases, you must refresh these. For example, `teTeX` users run `texhash` or `mktextlsr`.

## 5.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk atbegshi.pdf unpack_files output .
```

**Unpacking with  $\text{\LaTeX}$ .** The `.dtx` chooses its action depending on the format:

**plain  $\text{\TeX}$ :** Run `docstrip` and extract the files.

**$\text{\LaTeX}$ :** Generate the documentation.

If you insist on using  $\text{\LaTeX}$  for `docstrip` (really, `docstrip` does not need  $\text{\LaTeX}$ ), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{atbegshi.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf $\text{\LaTeX}$` :

```
pdflatex atbegshi.dtx
makeindex -s gind.ist atbegshi.idx
pdflatex atbegshi.dtx
makeindex -s gind.ist atbegshi.idx
pdflatex atbegshi.dtx
```

# 6 History

[2007/04/17 v1.0]

- First version.

[2007/04/18 v1.1]

- New method based on `\lastkern` is used if  $\epsilon\text{-TeX}$  is missing.
- `\AtBeginShipoutDiscard` also resets `\deadcycles`.

[2007/04/19 v1.2]

- `\AtBeginShipoutEarly` removed for simplification reasons.
- Forgotten definition of `\AtBegShi@Info` added.
- Patches for packages `crop` and `everyshi` and class `memoir` added.

[2007/04/26 v1.3]

- Use of package `infwarerr`.
- Catcode section after generic header.

[2007/04/27 v1.4]

- Small optimizations.

[2007/06/06 v1.5]

- `\AtBeginShipoutUpperLeft` added.
- Example added.
- Fix in second test file for newer version of `memoir`.

[2007/09/09 v1.6]

- Catcode section rewritten.

[2008/07/18 v1.7]

- Documentation of `\AtBeginShipoutUpperLeft` fixed and extended.

[2008/07/19 v1.8]

- `\AtBeginShipoutUpperLeftForeground` added.

[2008/07/31 v1.9]

- Second example (`TrimBox` for `dvipdfmx`) added.
- No changes in package code.

[2009/12/02 v1.10]

- `\AtBeginShipoutOriginalShipout` added.
- Test file fixed.

[2010/03/01 v1.11]

- Compatibility with `ini-TeX` except for `\newbox`.

[2010/03/25 v1.12]

- `\AtBeginShipoutNext` can now be used inside `\AtBeginShipoutNext`.

[2010/08/18 v1.13]

- Fixes for `\AtBegShi@CheckDefinable`.

[2010/12/02 v1.14]

- Remove the warning because of void box if the hook calls `.`

[2011/01/30 v1.15]

- Already loaded package files are not input in plain `TeX`.

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<code>\RangeCatcodeInvalid</code> . . . . .	759, 787, 788, 789, 790	<b>W</b>	
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