

# The `rotfloat` package\*

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2002/02/02

## Abstract

The `float` package [1] provides commands to define new floats of various styles (`plain`, `boxed`, `ruled`, and userdefined ones); the `rotating` package [2] provides new environments (`sidewaysfigure` and `sidewaystable`) which are rotated by 90° or 270°. But what about new rotated floats, e.g. a rotated ruled one? This package makes this possible; it builds a bridge between both packages and extend the commands from the `float` package to define rotated versions of the new floats, too.

## 1 The user interface

To use this package just type

```
\usepackage[<options>]{rotfloat}
```

in the preamble of your document. The options are exactly the same as for the `rotating` package, because all options will be passed to the `rotating` package. (The `rotfloat` package hasn't got any own options at all).

`\newfloat`     The commands `\newfloat` and `\restylefloat` from the `float` package (re)define  
`\restylefloat` the float type *<type>* and now additionally a rotated one called *<sideways>**type*:

```
\newrotfloat{<type>}{<placement>}{<ext>}[<within>]  
\restylerotfloat{<type>}
```

E.g. the code

```
\floatstyle{ruled}  
\floatname{program}{Program}  
\newfloat{program}{tbp}{lop}[section]
```

defines the new floating environments `program`, `program*`, `sidewaysprogram`, and `sidewaysprogram*` which behave equivalent to `figure`, `figure*`, `sidewaysfigure`, and `sidewaysfigure*`. (Note that `sidewaysfigure*` has been introduced to version 2.10 of the `rotating` package, therefore you only get a `sidewaysprogram*` environment if you use this or a newer version of the `rotating` package.)

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\*This package has version number 1.1, last revised 2002/02/02.

The code

```
\floatstyle{boxed}
\restylefloat{table}
```

will restyle the environments `table`, `table*`, `sidewaystable`, and `sidewaystable*`.

Please take a look at the `float` package for a complete description of these commands. Additionally an example file is provided with this package.

## 2 What has changed since version 1.0?

Version 1.0 of this package was a quick & dirty but working hack. This version takes it all more serious, it tries to patch as less code from the `float` package as possible and especially it lets the `[H]` code for the not-sideways floats intact. (Version 1.0 had just patched `[H]` to `[!ht]` to make thinks easier to handle.)

Furthermore it was adapted to the new versions 1.3 of the `float` and 2.10 of the `rotating` package.

## 3 A final note

This package was tested with the versions 1.2, 1.2*c*, 1.2*d*, 1.2*e*, 1.3*c*, and 1.3*d* of the `float` package and version 2.6, 2.9, 2.10, 2.12, and 2.13 of the `rotating` package.

You should **not** use this package together with older versions of them! Future versions of these packages may make some trouble, but I hope they will not. If they do please don't hesitate to send me a bug report including a simple non-working example and the logfile produced by TeX.

## 4 The code

Note: If you really want to know what's exactly going on here, you have to study the code from the packages `float` and `rotating` first!

### 4.1 The identification part

```
1 \NeedsTeXFormat{LaTeX2e}[1994/12/01]
2 \ProvidesPackage{rotfloat}[2002/02/02 v1.1 rotfloat package (AS)]
3 \typeout{Package: rotfloat v1.1 <2002/02/02> (Axel Sommerfeldt)}
```

### 4.2 The declaration and execution of options

The `rotfloat` package hasn't got any own options, so we just pass everything we get to the `rotating` package.

```
4 \DeclareOption*{\PassOptionsToPackage{\CurrentOption}{rotating}}
5 \ProcessOptions
```

### 4.3 The package loading part

Of course this package needs the float and the rotating package, so we load them both here.

```
6 \RequirePackage{float}[1994/06/20] % >= version 1.2
7 \RequirePackage{rotating}[1995/01/06] % >= version 2.6
```

### 4.4 Adaption of the float package

`\rotfloat@xoftwo` If the float is a normal one, `\rotfloat@xoftwo` is defined to `\@firstoftwo`. If it is a sideways one, it will be (locally) defined to `\@secondoftwo`.

```
8 \let\rotfloat@xoftwo\@firstoftwo
```

From now on we have different code for version 1.2 and version 1.3 of the float package. If `\@float@HH` is not defined we assume version 1.2, otherwise version 1.3.

```
9 \ifx\@float@HH\undefined
10 \wlog{rotfloat package: v1.2 of float detected}
```

First the code for version 1.2 of the float package:

`\rotfloat@HH` We save the old definitions of `\@HHfloat` and `\restylefloat` because we need them later on.

```
11 \let\rotfloat@HH\@HHfloat
12 \let\rotfloat@restyle\restylefloat
```

`\@HHfloat` We do not support the placement specifier `[H]` for sideways floats, therefore we have to patch it to `[!ht]` if it is a sideways one.

```
13 \def\@HHfloat#1[H]{%
14 \rotfloat@xoftwo{\rotfloat@HH{#1}[H]}\@Hxfloat{#1}[!ht]}
```

`\restylefloat` The new code for `\restylefloat` behaves like the old one, but it defines a sideways float as well. What differs sideways floats from the ‘normal’ ones?

1. `\rotfloat@xoftwo` is defined to `\@secondoftwo`. (`\rotfloat@xoftwo` will be used in `\@HHfloat`.)
2. `\columnwidth` is set to `\textheight` before calling `\@float`. (`\@float` itself set `\hsize` to `\columnwidth`.)
3. `\rotfloat@end` is used instead of `\float@end`.

If `\@rotdblfloat` is defined we have included rotating version 2.10 or newer. In this case we can define a star form as well. Otherwise we define a star form, too, but this causes an error and will do the non-star form instead.

```
15 \renewcommand*\restylefloat[1]{%
16 \rotfloat@restyle{#1}%
17 \@namedef{sideways#1}{%
18 \let\rotfloat@xoftwo\@secondoftwo\columnwidth\textheight
19 \@nameuse{fst#1}\@float{#1}}%
20 \expandafter\let\csname endsideways#1\endcsname\rotfloat@end
21 \ifx\@rotdblfloat\undefined
```

```

22     \@namedef{sideways#1*}{%
23         \PackageError{rotfloat}{%
24             You need rotating version 2.10 or newer to do this}{\@ehd}%
25         \@nameuse{sideways#1}}%
26     \expandafter\let\csname endsideways#1*\endcsname\rotfloat@end
27 \else
28     \@namedef{sideways#1*}{%
29         \let\rotfloat@xoftwo\@secondoftwo\columnwidth\textheight
30         \@nameuse{fst#1}\@dblfloat{#1}}%
31     \expandafter\let\csname endsideways#1*\endcsname\rotfloat@dblend
32 \fi}

```

`\rotfloat@end` To understand the following code we first have to understand what is going on  
`\rotfloat@dblend` inside `\float@end`. Well, mainly it looks like this:

```

\newcommand\float@end{%
  \egroup
  \global\setbox\@currbox\vbox\bgroup
  \float@makebox\end@float\egroup}

```

The `\egroup` will finish the current definition of the float inside the `vbox` `\@currbox`. Afterwards the float is redefined to `\float@makebox` (which will build up a new float contents) plus `\end@float` (which will mainly finish the definition of the new float with `\egroup`). The `\egroup` finally closes the group which started at the beginning of the environment (see `\restylefloat`).

These macros now do the same, but instead of using `\float@makebox` plus `\end@float` we set the new float contents to

1. `\@rotfloat` (but without the contents of the `\@float` itself)
2. `\float@makebox` (which includes the contents of the float)
3. `\end@rotfloat` (which includes `\egroup`)

Note that we do not need the final `\egroup` here, because we do not start our sideways environments with an extra `\bgroup`.

```

33 \newcommand*\rotfloat@end{%
34     \egroup%
35     \global\setbox\@currbox\vbox\bgroup%
36     \def\@float##1[##2]{}\let\@xfloat\@float\@rotfloat{}}%
37     \float@makebox\end@rotfloat}
38 \newcommand*\rotfloat@dblend{%
39     \egroup%
40     \global\setbox\@currbox\vbox\bgroup%
41     \def\@float##1[##2]{}\let\@xfloat\@float\@rotdblfloat{}}%
42     \float@makebox\end@rotdblfloat}

```

So far the code for the version 1.2 of the float package.

```
43 \else
```

Now the code for the float package version 1.3:

```
44 \wlog{rotfloat package: v1.3 of float detected}
```

`\rotfloat@HH` `\@HHfloat` has changed to `\float@HH` here. Furthermore we need to redefine `\rotfloat@restyle` `\float@restyle` instead of `\restylefloat` so `\restylefloat*` will still work.

```
45 \let\rotfloat@HH\float@HH
46 \let\rotfloat@restyle\float@restyle
```

`\float@HH` `\@Hxfloat` has changed to `\float@Hx` here.

```
47 \def\float@HH#1[H]{%
48 \rotfloat@xoftwo{\rotfloat@HH{#1}[H]}\float@Hx{#1}[!ht]}
```

`\float@restyle` A `\float@setevery{#1}` had to be added here.

```
49 \renewcommand*\float@restyle[1]{%
50 \rotfloat@restyle{#1}%
51 \@namedef{sideways#1}{%
52 \let\rotfloat@xoftwo\@secondoftwo\columnwidth\textheight
53 \nameuse{fst@#1}\float@setevery{#1}\float{#1}}%
54 \expandafter\let\csname endsideways#1\endcsname\rotfloat@end
55 \ifx\rotdblfloat\undefined
56 \@namedef{sideways#1*}{%
57 \PackageError{rotfloat}{%
58 You need rotating version 2.10 or newer to do this}\@ehd}%
59 \nameuse{sideways#1}}%
60 \expandafter\let\csname endsideways#1*\endcsname\rotfloat@end
61 \else
62 \@namedef{sideways#1*}{%
63 \let\rotfloat@xoftwo\@secondoftwo\columnwidth\textheight
64 \nameuse{fst@#1}\float@setevery{#1}\dblfloat{#1}}%
65 \expandafter\let\csname endsideways#1*\endcsname\rotfloat@dblend
66 \fi}
```

`\rotfloat@end` Version 1.3 of float has a revised code of `\float@end`, mainly two things have changed here:

- `\@endfloatbox` is called to finish the current float instead of `\egroup`. Later on it is set to `\relax` so it don't get called within `\end@float` again.
- `\float@makebox` has a parameter now, which will be set to `\columnwidth` or `\textwidth`. (In float 1.2 the `\columnwidth` was hard wired into `\float@makebox`.)

Note that the rotating package has its own code to handle the end of the float, so we call `\@endfloatbox` to finish the (empty) float, too, but we don't need to copy the trick of setting `\@endfloatbox` to `\relax` and we don't have to finish the `\vbox` ourself.

```
67 \newcommand*\rotfloat@end{\@endfloatbox
68 \global\setbox\@currbox\vbox\bgroup%
69 \def\float##1[##2]{\let\float\float\rotfloat}%
70 \float@makebox\columnwidth\end@rotfloat}
71 \newcommand*\rotfloat@dblend{\@endfloatbox
72 \global\setbox\@currbox\vbox\bgroup%
73 \def\float##1[##2]{\let\float\float\rotdblfloat}%
74 \float@makebox\textwidth\end@rotdblfloat}
```

That's all folks.

```
75 \fi
```

## References

- [1] Anselm Lingnau: *An Improved Environment for Floats*, 1994/06/20
- [2] Sebastian Rahtz and Leonor Barroca: *A style option for rotated objects in L<sup>A</sup>T<sub>E</sub>X*, 1994/08/26