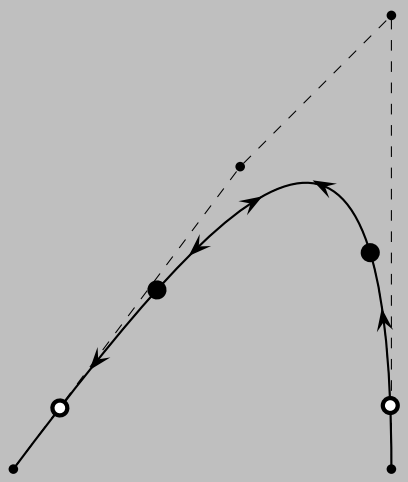
PSTricks

pst-arrow

A PSTricks package for drawing arrows; v.0.01

September 1, 2016



Package author(s):
Herbert Voß

Contents

The `pstricks` related package provides more arrow types.

1 Arrows

`pst-arrow` defines the following "'arrows"':

Value	Example	Name
`-`		None
`<->`		Arrowheads.
`>-<`		Reverse arrowheads.
`<<->>`		Double arrowheads.
`>>-<<`		Double reverse arrowheads.
`|-|`		T-bars, flush to endpoints.
`|*-|*`		T-bars, centered on endpoints.
`[-]`		Square brackets.
`]-[`		Reversed square brackets.
`(-)`		Rounded brackets.
`)-(`		Reversed rounded brackets.
`o-o`		Circles, centered on endpoints.
`*-*`		Disks, centered on endpoints.
`oo-oo`		Circles, flush to endpoints.
`**-**`		Disks, flush to endpoints.
`|<->|`		T-bars and arrows.
`|>-<|`		T-bars and reverse arrows.
`h-h|`		left/right hook arrows.
`H-H|`		left/right hook arrows.
`v-v|`		left/right inside vee arrows.
`V-V|`		left/right outside vee arrows.
`f-f|`		left/right inside filled arrows.

F-F|	left/right outside filled arrows.
t-t|	left/right inside slash arrows.
T-T|	left/right outside slash arrows.

You can also mix and match, e.g., `->`, `*-)` and `[->` are all valid values of the `arrows` parameter. The parameter can be set with

`\psset{`*arrows=<type>*`}`

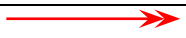
or for some macros with a special option, like

```
\psline[<general options>]{<arrow type>}(A)(B)
\psline[linecolor=red,linewidth=2pt]{|->}(0,0)(0,2)
```

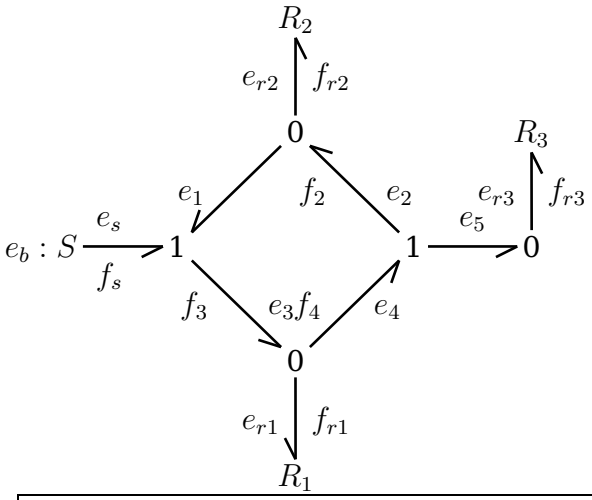
1.1 Multiple arrows

There are two new options which are only valid for the arrow type << or >>. `nArrow` sets both, the `nArrowA` and the `nArrowB` parameter. The meaning is declared in the following tables. Without setting one of these parameters the behaviour is like the one described in the old PSTricks manual.

Value	Meaning
`->>`	-A
`<<->>`	A-A
`<<-`	A-
`>>-`	B-
`-<<`	-B
`>>-<<`	B-B
`>>->>`	B-A
`<<-<<`	A-B

Value	Example
`\psline{->>}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3]{->>}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=5]{->>}(0,1ex)(2.3,1ex)`	
`\psline{<<-}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3]{<<-}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=5]{<<-}(0,1ex)(2.3,1ex)`	
`\psline{<<->>}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3]{<<->>}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=5]{<<->>}(0,1ex)(2.3,1ex)`	
`\psline{<<-|}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3]{<<-<<}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=5]{<<-o}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3,nArrowsB=4]{<<-<<}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=3,nArrowsB=4]{>>->>}(0,1ex)(2.3,1ex)`	
`\psline[nArrowsA=1,nArrowsB=4]{>>->>}(0,1ex)(2.3,1ex)`	

1.2 hookarrow



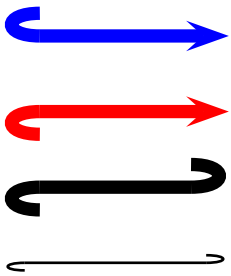

```
\psset{arrowsize=8pt,arrowlength=1,linewidth=1pt,nodesep=2pt,shortput=tablr}
\large
\begin{psmatrix}[colsep=12mm,rowsep=10mm]
      &  & $R_2$       \\
      &  &  0  &  & $R_3$\\
$e_b:S$ & 1 &  & 1 & 0 \\
      &  &  0          \\
      &  &  $R_1$      \\
\end{psmatrix}
\ncline{h-}{1,3}{2,3}<{$e_{r2}$}>{$f_{r2}$}\ncline{-h}{2,3}{3,2}<{$e_1$}
\ncline{-h}{3,1}{3,2}^{$e_s$}_{$f_{s}$} \ncline{-h}{3,2}{4,3}>{$e_3$}<{$f_3$}
\ncline{-h}{4,3}{3,4}>{$e_4$}<{$f_4$} \ncline{-h}{3,4}{2,3}>{$e_2$}<{$f_2$}
\ncline{-h}{3,4}{3,5}^{$e_5$}
\ncline{-h}{3,5}{2,5}<{$e_{r3}$}>{$f_{r3}$}
\ncline{-h}{4,3}{5,3}<{$e_{r1}$}>{$f_{r1}$}
```

1.3 hookrightarrow and hookleftarrow

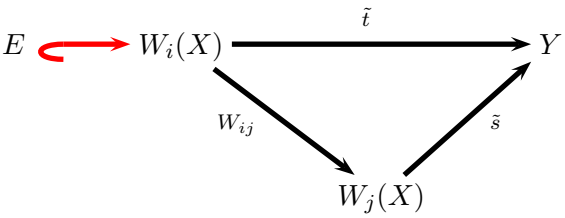
This is another type of arrow and is abbreviated with `H`. The length and width of the hook is set by the new options `hooklength` and `hookwidth`, which are by default set to

```
\psset{hooklength=3mm,hookwidth=1mm}
```

If the line begins with a right hook then the line ends with a left hook and vice versa:



```
\begin{pspicture}(3,4)
\psline[linewidth=5pt,linecolor=blue,hooklength=5mm,hookwidth=-3mm]{H->}(0,3.5)(3,3.5)
\psline[linewidth=5pt,linecolor=red,hooklength=5mm,hookwidth=3mm]{H->}(0,2.5)(3,2.5)
\psline[linewidth=5pt,hooklength=5mm,hookwidth=3mm]{H-H}(0,1.5)(3,1.5)
\psline[linewidth=1pt]{H-H}(0,0.5)(3,0.5)
\end{pspicture}
```




```
$\begin{psmatrix}
E&W_i(X)&&Y\\
&&W_j(X)
\psset{arrows=->,nodesep=3pt,linewidth=2pt}
\everypsbox{\scriptstyle}
\ncline[linecolor=red,arrows=H->,%
  hooklength=4mm,hookwidth=2mm]{1,1}{1,2}
\ncline{1,2}{1,4}^{\tilde{t}}
\ncline{1,2}{2,3}<{W_{ij}}
\ncline{2,3}{1,4}>{\tilde{s}}
\end{psmatrix}$
```

1.4 ArrowInside Option

It is now possible to have arrows inside lines and not only at the beginning or the end. The new defined options

Name	Example	Output
ArrowInside	\psline[ArrowInside=->](0,0)(2,0)	
ArrowInsidePos	\psline[ArrowInside=->,% ArrowInsidePos=0.25](0,0)(2,0)	
ArrowInsidePos	\psline[ArrowInside=->,% ArrowInsidePos=10](0,0)(2,0)	
ArrowInsideNo	\psline[ArrowInside=->,% ArrowInsideNo=2](0,0)(2,0)	
ArrowInsideOffset	\psline[ArrowInside=->,% ArrowInsideNo=2,% ArrowInsideOffset=0.1](0,0)(2,0)	

Name	Example	Output
ArrowInside	\psline[ArrowInside=->]{->}(0,0)(2,0)	
ArrowInsidePos	\psline[ArrowInside=->,% ArrowInsidePos=0.25]{->}(0,0)(2,0)	
ArrowInsidePos	\psline[ArrowInside=->,% ArrowInsidePos=10]{->}(0,0)(2,0)	
ArrowInsideNo	\psline[ArrowInside=->,% ArrowInsideNo=2]{->}(0,0)(2,0)	
ArrowInsideOffset	\psline[ArrowInside=->,% ArrowInsideNo=2,% ArrowInsideOffset=0.1]{->}(0,0)(2,0)	
ArrowFill	\psline[ArrowFill=false,% arrowinset=0]{->}(0,0)(2,0)	
ArrowFill	\psline[ArrowFill=false,% arrowinset=0]{«-»}(0,0)(2,0)	
ArrowFill	\psline[ArrowInside=->,% arrowinset=0,% ArrowFill=false,% ArrowInsideNo=2,% ArrowInsideOffset=0.1]{->}(0,0)(2,0)	

Without the default arrow definition there is only the one inside the line, defined by the type and the position. The position is relative to the length of the whole line. 0.25 means at 25% of the line length. The peak of the arrow gets the coordinates which are calculated by the macro. If you want arrows with an absolute position difference, then choose a value greater than 1, e. g. `10` which places an arrow every 10 pt. The default unit `pt` cannot be changed.

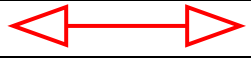
> The `ArrowInside` takes only arrow definitions like `->` into account. Arrows from right to left (`<-`) are not possible and ignored. If you need such arrows, change the order of the pairs of coordinates for the line or curve macro.

1.5 `ArrowFill` option

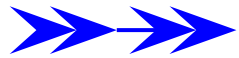
By default all arrows are filled polygons. With the option `ArrowFill=false` there are "white" arrows. Only for the beginning/end arrows are they empty, the inside arrows are overpainted by the line.

```
\psline[arrowscale=2.5,linecolor=red,arrowinset=0]{<->}(-1,0)(2,0)
```

```
\psline[arrowscale=2.5,linecolor=red,arrowinset=0,ArrowFill=false]{<->}(-1,0)(2,0)
```

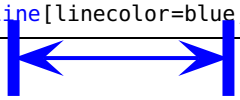


```
\psline[arrowscale=2.5,linecolor=red,arrowinset=0,arrowsize=0.2,
 ArrowFill=false]{<->}(-1,0)(2,0)
```

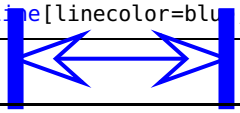


```
\psline[arrowscale=2.5,linecolor=blue,arrowscale=4,ArrowFill]{>>->>}(-1,0)(2,0)
```

```
\psline[linecolor=blue,arrowscale=3,ArrowFill=false]{>>->>}(-1,0)(2,0)
```

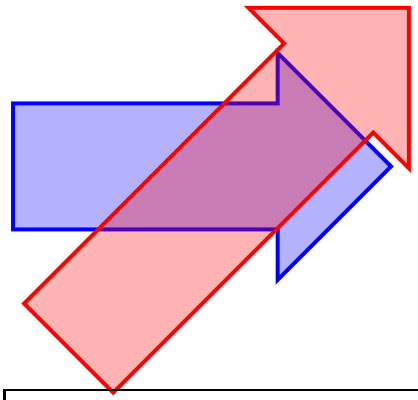


```
\psline[linecolor=blue,arrowscale=3,ArrowFill]{>|->|}(-1,0)(2,0)
```



```
\psline[linecolor=blue,arrowscale=4,ArrowFill=false]{>|->|}(-1,0)(2,0)
```

1.6 Big Arrows

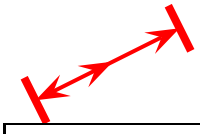


```
\begin{pspicture}(5,5)
\psset{doublesep=1cm}
\psBigArrow[fillstyle=solid,
  fillcolor=blue!30,linecolor=blue](0,3)(5,3)
\psBigArrow[fillstyle=solid,opacity=0.3,
  fillcolor=red,linecolor=red](0.5,0.5)(5,5)
\end{pspicture}
```

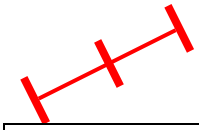
1.7 Examples

All examples are printed with `\psset{arrowscale=2,linecolor=red}`.

\psline



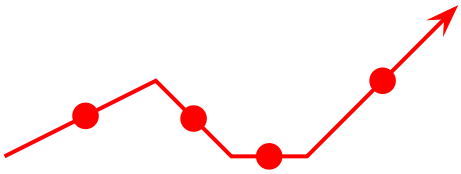
```
\begin{pspicture}(2,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=->]{|<->|}(2,1)
\end{pspicture}
```



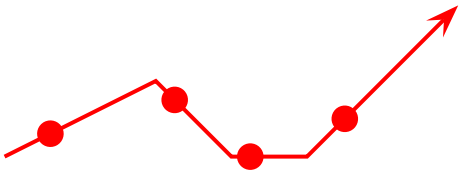
```
\begin{pspicture}(2,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-|]{|-|}(2,1)
\end{pspicture}
```

```
\begin{pspicture}(2,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=->,ArrowInsideNo=2]{->}(2,1)
\end{pspicture}
```

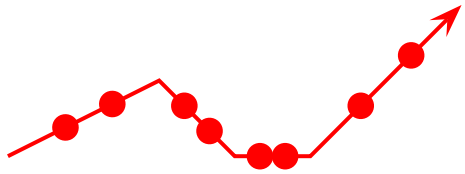
```
\begin{pspicture}(2,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=->,ArrowInsideNo=2,ArrowInsideOffset=0.1]{->}(2,1)
\end{pspicture}
```



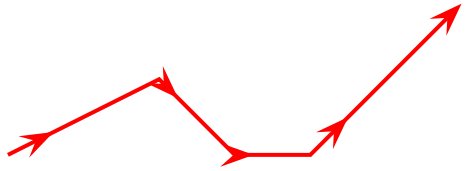
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-*]{->}(0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



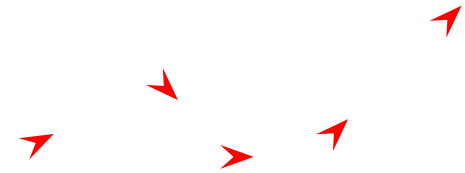
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-*,ArrowInsidePos=0.25]{->}(0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



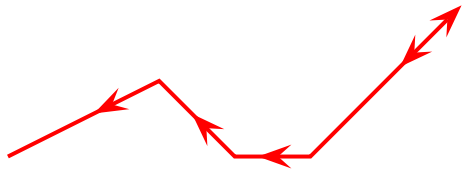
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-*,ArrowInsidePos=0.25,ArrowInsideNo=2]{->}%
  (0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



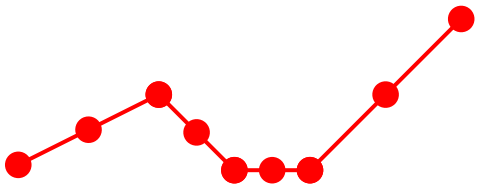
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=->, ArrowInsidePos=0.25]{->}%
      (0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



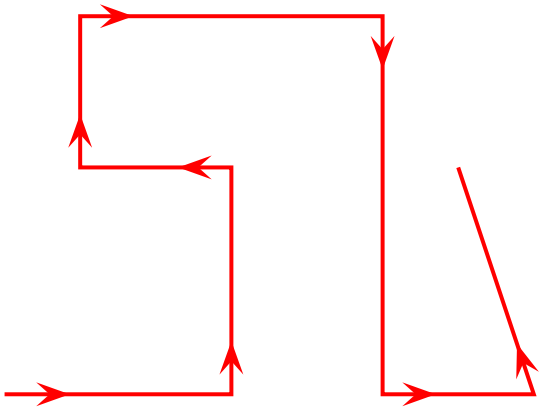
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[linestyle=none,ArrowInside=->,ArrowInsidePos=0.25]{->}%
      (0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



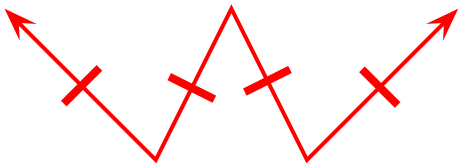
```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-<, ArrowInsidePos=0.75]{->}%
    (0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```



```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true,ArrowInside=-*}
\psline(0,0)(2,1)(3,0)(4,0)(6,2)
\psset{linestyle=none}
\psline[ArrowInsidePos=0](0,0)(2,1)(3,0)(4,0)(6,2)
\psline[ArrowInsidePos=1](0,0)(2,1)(3,0)(4,0)(6,2)
\end{pspicture}
```

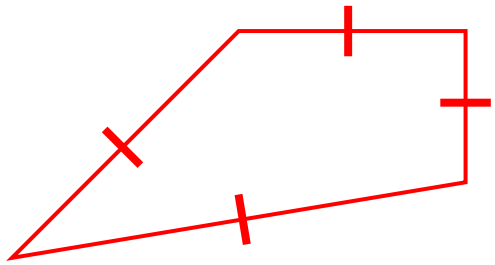


```
\begin{pspicture}(6,5)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=->,ArrowInsidePos=20](0,0)(3,0)%
     (3,3)(1,3)(1,5)(5,5)(5,0)(7,0)(6,3)
\end{pspicture}
```

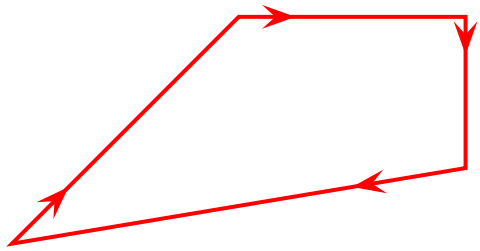


```
\begin{pspicture}(6,2)
\psset{arrowscale=2,ArrowFill=true}
\psline[ArrowInside=-|]{<->}(0,2)(2,0)(3,2)(4,0)(6,2)
\end{pspicture}
```

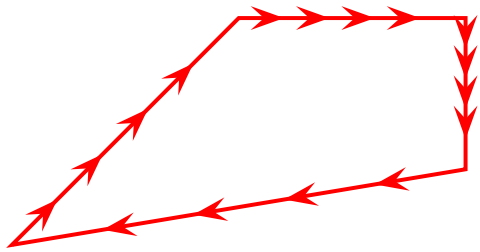
\pspolygon



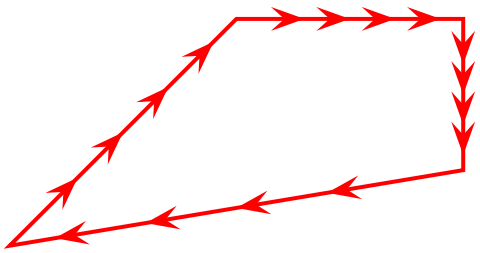
```
\begin{pspicture}(6,3)
\psset{arrowscale=2}
\pspolygon[ArrowInside=-|](0,0)(3,3)(6,3)(6,1)
\end{pspicture}
```



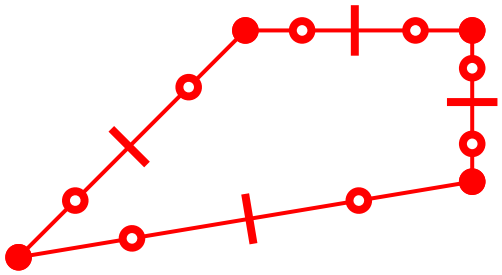
```
\begin{pspicture}(6,3)
\psset{arrowscale=2}
\pspolygon[ArrowInside=->,ArrowInsidePos=0.25]%
    (0,0)(3,3)(6,3)(6,1)
\end{pspicture}
```



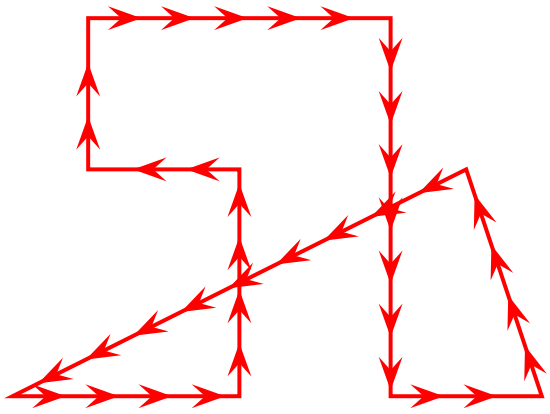
```
\begin{pspicture}(6,3)
\psset{arrowscale=2}
\pspolygon[ArrowInside=->,ArrowInsideNo=4]%
     (0,0)(3,3)(6,3)(6,1)
\end{pspicture}
```



```
\begin{pspicture}(6,3)
\psset{arrowscale=2}
\pspolygon[ArrowInside=->,ArrowInsideNo=4,%
  ArrowInsideOffset=0.1](0,0)(3,3)(6,3)(6,1)
\end{pspicture}
```

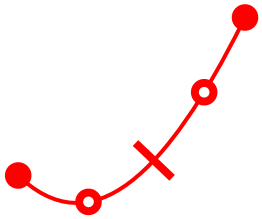


```
\begin{pspicture}(6,3)
\psset{arrowscale=2}
 \pspolygon[ArrowInside=-|](0,0)(3,3)(6,3)(6,1)
 \psset{linestyle=none,ArrowInside=-*}
 \pspolygon[ArrowInsidePos=0](0,0)(3,3)(6,3)(6,1)
 \pspolygon[ArrowInsidePos=1](0,0)(3,3)(6,3)(6,1)
 \psset{ArrowInside=-o}
 \pspolygon[ArrowInsidePos=0.25](0,0)(3,3)(6,3)(6,1)
 \pspolygon[ArrowInsidePos=0.75](0,0)(3,3)(6,3)(6,1)
\end{pspicture}
```

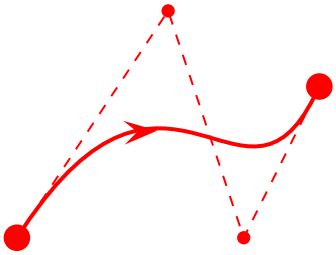


```
\begin{pspicture}(6,5)
\psset{arrowscale=2}
 \pspolygon[ArrowInside=->,ArrowInsidePos=20]%
   (0,0)(3,0)(3,3)(1,3)(1,5)(5,5)(5,0)(7,0)(6,3)
\end{pspicture}
```

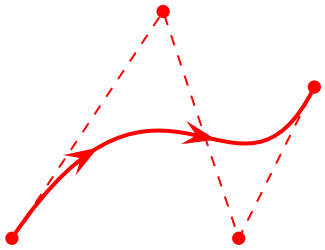
\psbezier



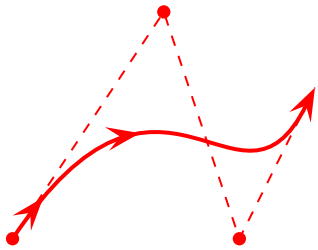
```
\begin{pspicture}(3,3)
\psset{arrowscale=2}
 \psbezier[ArrowInside=-|](0,1)(1,0)(2,1)(3,3)
 \psset{linestyle=none,ArrowInside=-o}
 \psbezier[ArrowInsidePos=0.25](0,1)(1,0)(2,1)(3,3)
 \psbezier[ArrowInsidePos=0.75](0,1)(1,0)(2,1)(3,3)
 \psset{linestyle=none,ArrowInside=-*}
 \psbezier[ArrowInsidePos=0](0,1)(1,0)(2,1)(3,3)
 \psbezier[ArrowInsidePos=1](0,1)(1,0)(2,1)(3,3)
\end{pspicture}
```



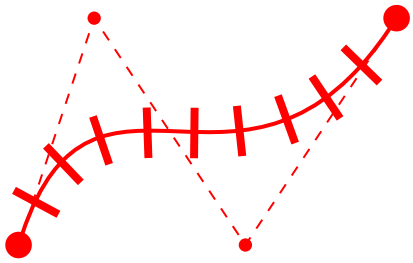
```
\begin{pspicture}(4,3)
\psset{arrowscale=2}
\psbezier[ArrowInside=->,showpoints]%
 {*-*}(0,0)(2,3)(3,0)(4,2)
\end{pspicture}
```



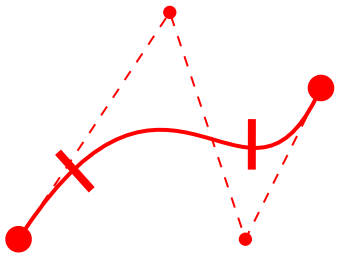
```
\begin{pspicture}(4,3)
\psset{arrowscale=2}
 \psbezier[ArrowInside=->,showpoints=true,
    ArrowInsideNo=2](0,0)(2,3)(3,0)(4,2)
\end{pspicture}
```



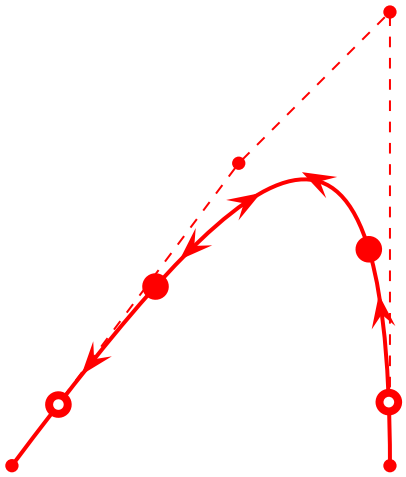
```
\begin{pspicture}(4,3)
\psset{arrowscale=2}
 \psbezier[ArrowInside=->,showpoints=true,
   ArrowInsideNo=2,ArrowInsideOffset=-0.2]%
    {->}(0,0)(2,3)(3,0)(4,2)
\end{pspicture}
```



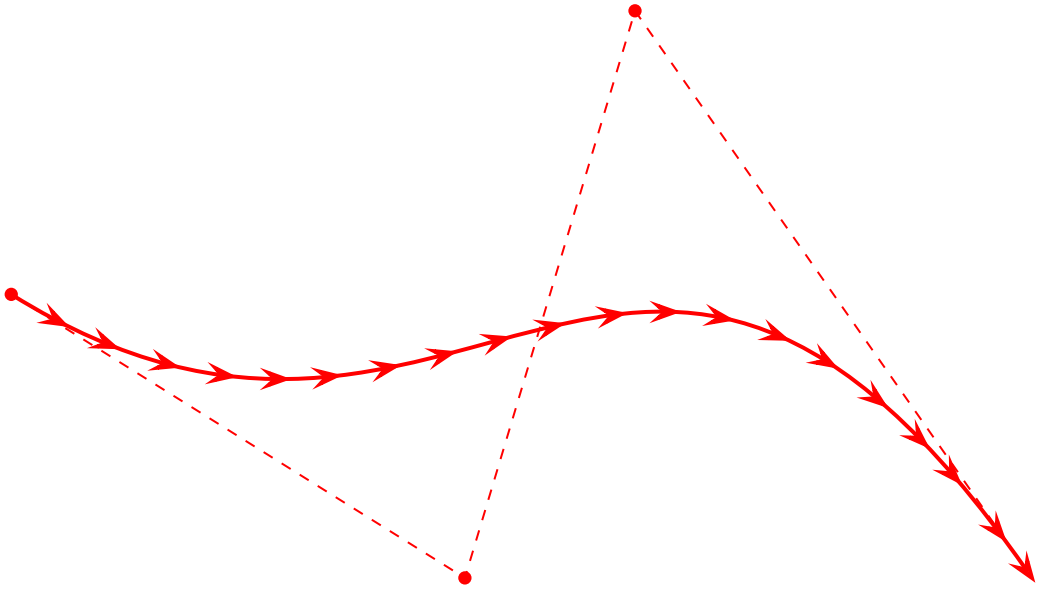
```
\begin{pspicture}(5,3)
\psset{arrowscale=2}
 \psbezier[ArrowInsideNo=9,ArrowInside=-|,%
   showpoints=true]{*-*}(0,0)(1,3)(3,0)(5,3)
\end{pspicture}
```



```
\begin{pspicture}(4,3)
\psset{arrowscale=2}
 \psset{ArrowInside=-|}
 \psbezier[ArrowInsidePos=0.25,showpoints=true]{*-*}(2,3)(3,0)(4,2)
 \psset{linestyle=none}
 \psbezier[ArrowInsidePos=0.75](0,0)(2,3)(3,0)(4,2)
\end{pspicture}
```



```
\begin{pspicture}(5,6)
\psset{arrowscale=2}
  \pnode(3,4){A}\pnode(5,6){B}\pnode(5,0){C}
  \psbezier[ArrowInside=->,%
    showpoints=true](A)(B)(C)
  \psset{linestyle=none,ArrowInside=-<}
  \psbezier[ArrowInsideNo=4](0,0)(A)(B)(C)
  \psset{ArrowInside=-o}
  \psbezier[ArrowInsidePos=0.1](0,0)(A)(B)(C)
  \psbezier[ArrowInsidePos=0.9](0,0)(A)(B)(C)
  \psset{ArrowInside=-*}
  \psbezier[ArrowInsidePos=0.3](0,0)(A)(B)(C)
  \psbezier[ArrowInsidePos=0.7](0,0)(A)(B)(C)
\end{pspicture}
```



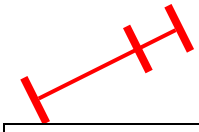
```
\psset{unit=0.75}
\begin{pspicture}(-3,-5)(15,5)
  \psbezier[ArrowInsideNo=19,%
     ArrowInside=->,ArrowFill=false,%
     showpoints=true]{->}(-3,0)(5,-5)(8,5)(15,-5)
\end{pspicture}
```

\pcline

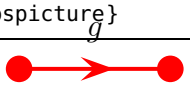
These examples need the package pst-node.

```
\begin{pspicture}(2,1)
\psset{arrowscale=2}
\pcline[ArrowInside=->](0,0)(2,1)
\end{pspicture}
```

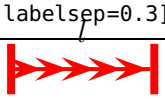
```
\begin{pspicture}(2,1)
\psset{arrowscale=2}
\pcline[ArrowInside=->]{<->}(0,0)(2,1)
\end{pspicture}
```



```
\begin{pspicture}(2,1)
\psset{arrowscale=2}
\pcline[ArrowInside=-|,ArrowInsidePos=0.75]{|-|}(0,0)(2,1)
\end{pspicture}
```



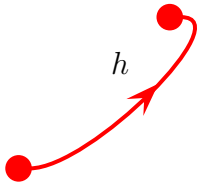

```
\psset{arrowscale=2}
\pcline[ArrowInside=->,ArrowInsidePos=0.65]{*-*}(0,0)(2,0)
\naput[labelsep=0.3]{\large$g$}
```



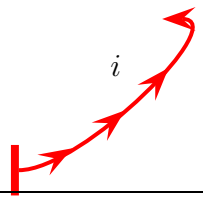

```
\psset{arrowscale=2}
\pcline[ArrowInside=->,ArrowInsidePos=10]{|-|}(0,0)(2,0)
\naput[labelsep=0.3]{\large$l$}
```

\pccurve

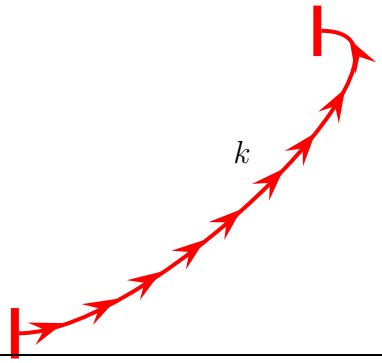
These examples also need the package pst-node.




```
\begin{pspicture}(2,2)
\psset{arrowscale=2}
\pccurve[ArrowInside=->,ArrowInsidePos=0.65,showpoints=true]{*-*}(0,0)(2,2)
\naput[labelsep=0.3]{\large$h$}
\end{pspicture}
```




```
\begin{pspicture}(2,2)
\psset{arrowscale=2}
\pccurve[ArrowInside=->,ArrowInsideNo=3,showpoints=true]{|->}(0,0)(2,2)
\naput[labelsep=0.3]{\large$i$}
\end{pspicture}
```

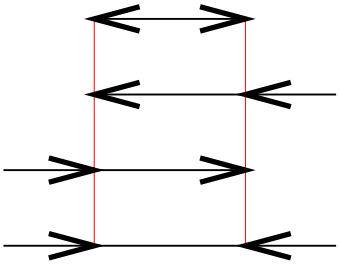



```
\begin{pspicture}(4,4)
\psset{arrowscale=2}
\pccurve[ArrowInside=->,ArrowInsidePos=20]{|-|}(0,0)(4,4)
\naput[labelsep=0.3]{\large$k$}
\end{pspicture}
```

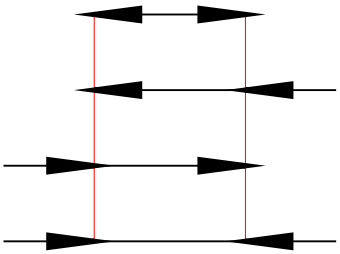
1.8 Special arrows v-V,t-T, and f-F

Possible optional arguments are

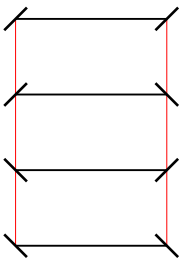
name	*meaning*
veearrowlength	default is 3mm
veearrowangle	default is 30
veearrowlinewidth	default is 0.35mm
filledveearrowlength	default is 3mm
filledveearrowangle	default is 15
filledveearrowlinewidth	default is 0.35mm
tickarrowlength	default is 1.5mm
tickarrowlinewidth	default is 0.35mm
arrowlinestyle	default is solid



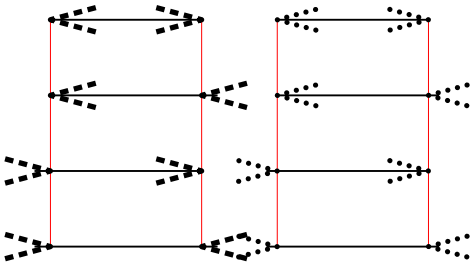
```
\psset{unit=5mm}
\begin{pspicture}(4,6)
  \psset{dimen=middle,arrows=c-c,
    arrowscale=2,linewidth=.25mm}
  \psline[linecolor=red,linewidth=.05mm](0,0)(0,6)
  \psline[linecolor=red,linewidth=.05mm](4,0)(4,6)
  \psline{v-v}(0,6)(4,6)
  \psline{v-V}(0,4)(4,4)
  \psline{V-v}(0,2)(4,2)
  \psline{V-V}(0,0)(4,0)
\end{pspicture}
```



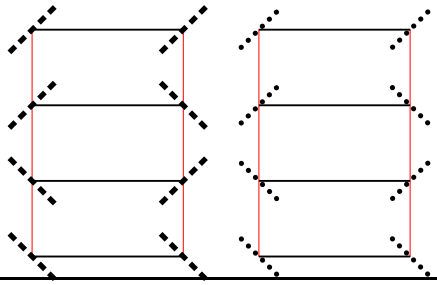
```
\psset{unit=5mm}
\begin{pspicture}(4,6)
  \psset{dimen=middle,arrows=c-c,
    arrowscale=2,linewidth=.25mm}
  \psline[linecolor=red,linewidth=.05mm](0,0)(0,6)
  \psline[linecolor=red,linewidth=.05mm](4,0)(4,6)
  \psline{f-f}(0,6)(4,6)
  \psline{f-F}(0,4)(4,4)
  \psline{F-f}(0,2)(4,2)
  \psline{F-F}(0,0)(4,0)
\end{pspicture}
```



```
\psset{unit=5mm}
\begin{pspicture}(4,6)
  \psset{dimen=middle,arrows=c-c,linewidth=.25mm}
  \psline[linecolor=red,linewidth=.05mm](0,0)(0,6)
  \psline[linecolor=red,linewidth=.05mm](4,0)(4,6)
  \psline{t-t}(0,6)(4,6)
  \psline{t-T}(0,4)(4,4)
  \psline{T-t}(0,2)(4,2)
  \psline{T-T}(0,0)(4,0)
\end{pspicture}
```



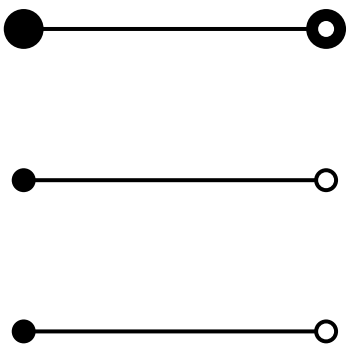
```
\psset{unit=5mm}
 \begin{pspicture}(10,6)
 \psset{dimen=middle,arrows=c-c,arrowscale=2,linewidth=.25mm,
      arrowlinestyle=dashed,dash=1.5pt 1pt}
 \psline[linecolor=red,linewidth=.05mm](0,0)(0,6)
 \psline[linecolor=red,linewidth=.05mm](4,0)(4,6)
 \psline{v-v}(0,6)(4,6) \psline{v-V}(0,4)(4,4)
 \psline{V-v}(0,2)(4,2) \psline{V-V}(0,0)(4,0)
 \psline[linecolor=red,linewidth=.05mm](6,0)(6,6)
 \psline[linecolor=red,linewidth=.05mm](10,0)(10,6)
 \psset{arrowlinestyle=dotted,dotsep=0.8pt}
 \psline{v-v}(6,6)(10,6) \psline{v-V}(6,4)(10,4)
 \psline{V-v}(6,2)(10,2) \psline{V-V}(6,0)(10,0)
\end{pspicture}
```



```
\psset{unit=5mm}
 \begin{pspicture}(10,7)
 \psset{dimen=middle,arrows=c-c,arrowscale=2,linewidth=.25mm,
      arrowlinestyle=dashed,dash=1.5pt 1pt}
 \psline[linecolor=red,linewidth=.05mm](0,0)(0,6)
 \psline[linecolor=red,linewidth=.05mm](4,0)(4,6)
 \psline{t-t}(0,6)(4,6) \psline{t-T}(0,4)(4,4)
 \psline{T-t}(0,2)(4,2) \psline{T-T}(0,0)(4,0)
 \psline[linecolor=red,linewidth=.05mm](6,0)(6,6)
 \psline[linecolor=red,linewidth=.05mm](10,0)(10,6)
 \psset{arrowlinestyle=dotted,dotsep=0.8pt}
 \psline{t-t}(6,6)(10,6) \psline{t-T}(6,4)(10,4)
 \psline{T-t}(6,2)(10,2) \psline{T-T}(6,0)(10,0)
\end{pspicture}
```

1.9 Special arrow option `arrowLW`

Only for the arrowtype `o` and $*$ it is possible to set the arrowlinewidth with the optional keyword `arrowLW`. When scaling an arrow by the keyword `arrowscale` the width of the borderline is also scaled. With the optional argument `arrowLW` the line width can be set separately and is not taken into account by the scaling value.



```
\begin{pspicture}(4,6)
\psline[arrowscale=3,arrows=*-o](0,5)(4,5)
\psline[arrowscale=3,arrows=*-o,
  arrowLW=0.5pt](0,3)(4,3)
\psline[arrowscale=3,arrows=*-o,
  arrowLW=0.3333\pslinewidth](0,1)(4,1)
\end{pspicture}
```

2 List of all optional arguments for `pst-arrow`

Key	Type	Default
veearrowlength	ordinary	3mm
veearrowangle	ordinary	30
veearrowlinewidth	ordinary	0.35mm
filledveearrowlength	ordinary	3mm
filledveearrowangle	ordinary	15
filledveearrowlinewidth	ordinary	0.35mm
arrowlinestyle	ordinary	solid
tickarrowlength	ordinary	1.5mm
tickarrowlinewidth	ordinary	0.35mm
hooklength	ordinary	3mm
hookwidth	ordinary	1mm
ArrowFill	boolean	true
nArrowsA	ordinary	2
nArrowsB	ordinary	2
nArrows	ordinary	2
ArrowInside	ordinary	[none]
ArrowInsidePos	ordinary	0.5
ArrowInsideNo	ordinary	1
ArrowInsideOffset	ordinary	0

References

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