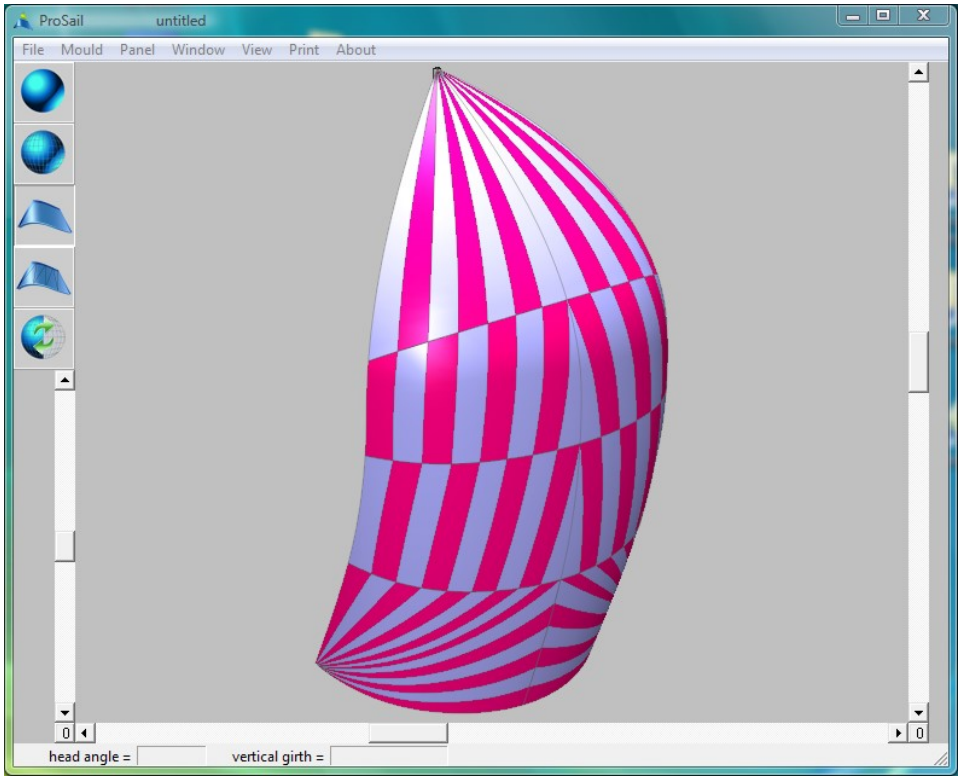
Spinnaker 4

Manual



Armstrong-White Automation (NZ) Ltd

22 Kereru Grove, Greenhithe, Auckland 0632, New Zealand.

tel +64 9 413-7642

info@prosailcutter.com

www.prosailcutter.com

July 2017

Licence Agreement

This is a legal agreement between you, the end user, and Armstrong-White Automation (NZ) Ltd. This software is owned exclusively by Armstrong-White Automation (NZ) Ltd. Armstrong-White Automation (NZ) Ltd grants you the right to use this software by way of this licence agreement. It is important to note that if you loose the software, it will be replaced free of charge. However, if you loose the dongle (or serial converter) which protects this software, you have lost your entire software licence. Hence it is recommended that the dongle (or serial converter) be insured for the full replacement cost of this software licence. If however the dongle (or serial converter) is only damaged, it will be replaced in exchange for the damaged one for no more than the material cost.

Disclaimer

Armstrong-White Automation (NZ) Ltd is not liable or responsible to the purchaser or user for loss or damage caused, or alleged to be caused, directly or indirectly by the software or hardware and its attendant documention, including (but not limited to) interruption of service, loss of business, or anticipatory profits.

Dongle

A dongle is a small USB connector that plugs into a USB port on your computer. For many ProSail machines, a dongle is required for the software to run.

USB to Serial converter

With the ProSail plotter mkIII or the ProSail digitiser, the dongle is an optional extra and is not supplied as standard. With these machines the software will run so long as the USB cable from the "USB to Serial converter" is plugged into the computer (the machine does not need to be turned on, just the USB cable plugged in to the computer).

Contents

Introduction

ProSail Spinnakr is a moulded spinnaker program. Although a mould has the advantages of producing a fair shape and is easily scalable, it is important to note in the case of spinnakers that the flying shape will differ from the 3D view on the screen. This is a result of the fact that spinnakers are only attached at 3 points and in particular the spinnaker pole can be raised or lowered. **As a general rule the flying spinnaker will have significantly higher shoulders than the spinnaker on the screen. This is a result of the spinnaker being lifted by the low air pressure above the spinnaker. Similarly the cross-sectional chord shapes will be flatter on the flying spinnaker than they appear on the screen due to the low pressure around the sides of the spinnaker.**

Because of this, the spinnaker on the screen should have lower shoulders and fuller chords. <u>If this is not done, the head will crease.</u>

Although the 3D view will appear different, the conventional Folded (Flattened) view of the spinnaker will be the same. Hence the Flattened facility can be used to compare mould designs with your current floor designs.

<u>Designing a Spinnaker comprises three main steps:</u>

1) Generate a Mould :

(i) **Dimensions** from the **Mould** menu : Specify luff, foot, girths etc.

(ii) **Chords** from the **Mould** menu : Specify the cross-sectional (chord) shapes of the mould at the head, mid-section and foot.

(iii) **Shaping** from the **Mould** menu : Specify the lower part of the centre seam.

2) Generate Panels over the Mould :

(i) **New** or **Open** from the **Panel** menu : Specify the panel layout.

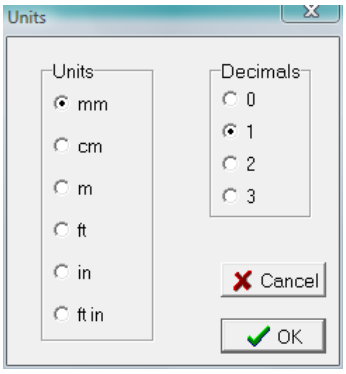
(ii) **Patches** from the **Window** menu.

(iii) **Colour Panels** from the **Window** menu. Colour the panels to identify fabric.

3) Production :

Send the panels to the Nesting window for nesting and driving a plotter or cutter.

Selecting **Units** from the **File** menu :



This dialogue determines the current units and decimal places displayed in all of the dialogues throughout the program.

Although numbers will be displayed in these units they can be entered in any of the above units. For example if you want to enter 1.5 feet into a dialogue, you can enter 1.5f or 1.5' or 1f6i or 1'6". Then after pressing the Enter key it will be converted to the current units you selected in the Units dialogue. e.g. 457.2mm

If the current field is already displayed in the units that you want then when you enter a new number there is no need to add the units letters after the number. Just type the number.

Most dialogues have a % button that toggles between % and the current unit when you click in it.

If for example mm is displayed in the % button then fields in the dialogue will be displayed in mm.

If however % is displayed in the % button then some fields will be displayed as a %. Then if you enter a number into these fields it will be assumed to be a % unless you add the units letters to the end of the number.

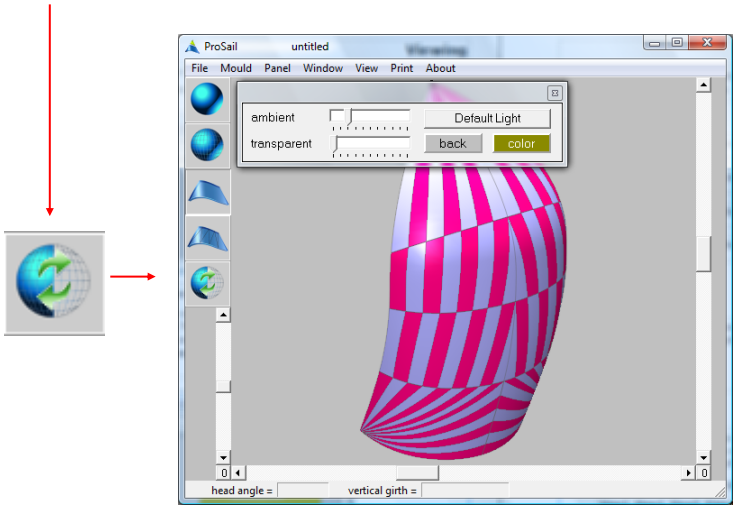
Some examples

entered	**converted**
4.2f	1280.2mm
1.4m	1400.0mm
4.2f - 7mm	1273.2mm
10i	254mm
100+10.7	110.7mm

Viewing

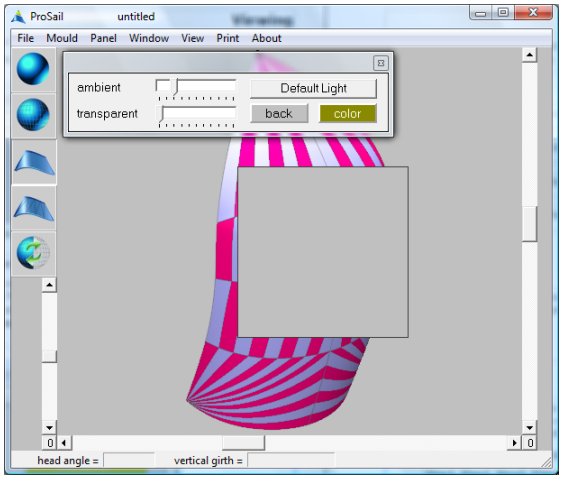
You can view your spinnaker as a 3D "wire frame" or as a "solid rendering".

To switch between wire frame and solid rendering click the icon on the left of the screen.



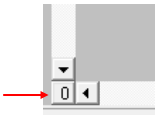
The view direction can be changed by dragging any of the 3 scroll bars around.

An easier way to change the view direction is with the Animate feature. Select **Animate** from the **View** menu (or click the "F1" key on the keyboard, or right click the mouse and click on **Animate**. A square outline will appear on the screen. As soon as the mouse enters the square the animate feature is activated. By moving the mouse from side to side and up or down you can rotate the view.



There are two animation modes when moving the mouse horizontally. It will either rotate the view in a horizontal plane or it will tilt the view clockwise/anticlockwise. To toggle between these 2 modes, press and release the Ctrl key on the keyboard while animating. This will redisplay the square outline. After moving the mouse into this square again, the mode will have changed.

To deactivate animation, click the mouse anywhere on the screen.

Clicking the small square at the bottom left of the screen will show the plan view. 

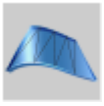
Viewing

The maximum rotation of the view (either 180 or 360 degrees) is set in **preferences** from the **File** menu : **scroll bars 360 degrees**.

Displays the surface mould with minimal number of lines.

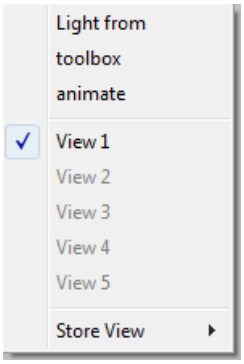
Displays the surface mould with a large number of lines.

Displays the panels that have been generated.



Displays the panels that have been generated showing development lines.

Right clicking the mouse on the screen will display this popup menu :



Light from : Click on this to animate the direction of the light source. Works in a similar way to animating the view except it displays 2 arrows indicating the direction of the light source. The arrows are largest when pointing directly into the screen and change colour when at 90 degrees to this direction.

*There are actually 2 light sources - one directly in front which is fixed and another one that you can change the direction of using **Light from**.*

toolbox : Displays the lighting toolbox. See next page.

View1, View1, View3, View4, View5 : Click on one of these to go to that stored view. A quicker way is to use the "F2" key on the keyboard to loop through the different views you have stored.

Store View : Up to 5 different views including different light settings for each can be stored. Click **Store View** and select one of the 5 views to store the current view.

Toolbox

Ambient: Changes the intensity of ambient light.

Transparent: Changes the level of transparency of the surface.

Color: Changes surface color.

Back: Changes the background color.

Default Light: Changes **color**, light direction, **ambient** and **transparent** to the default values.

Zoom view

To zoom into part of the surface, hold down the Ctrl key on the keyboard and with it still held down press and release the Z key on the keyboard. Then release the Ctrl key. A horizontal and vertical line will be displayed at the mouse location. Move the mouse to the area you want to zoom in on. Click and hold down the left mouse button and drag the resulting selection box to encompass the area you want zoomed. When the mouse button is released, the selection box will be zoomed to fill the entire window.

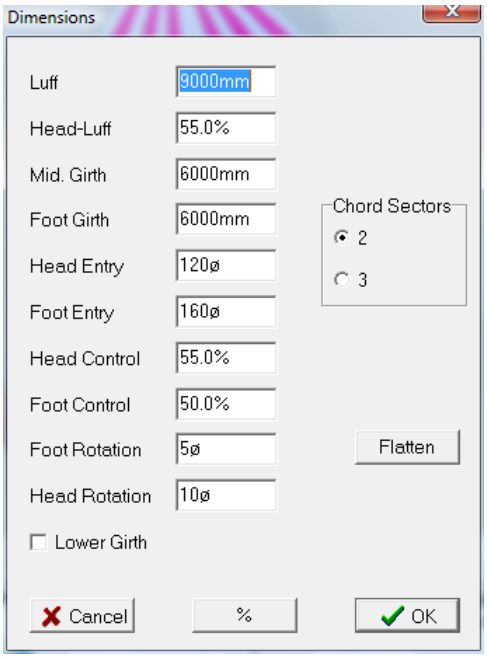
If viewing the surface as a solid render, you are able to animate the view while it is zoomed. The point on the surface at the centre of the window will remain at the centre as you animate.

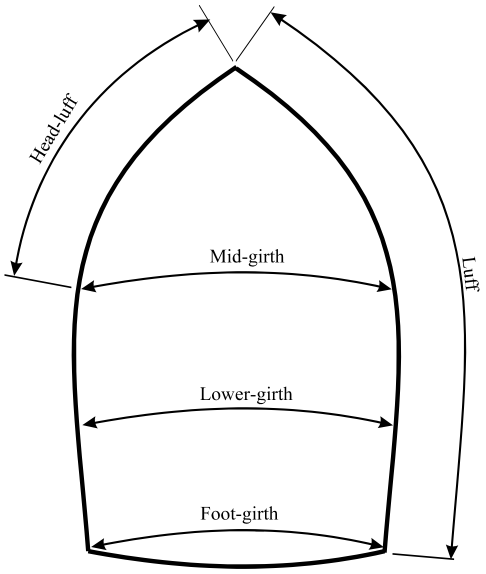
To unzoom, click on any of these icons :

Note: there are two modes when dragging the selection box. Either the click of the mouse will correspond to one corner of the selection box or the click will correspond to the centre of the selection box. To swap between these two modes, press and release the Ctrl key while the selection box is visible.

Dimensions

Select **Dimensions** from the **Mould** menu.





Luff Luff length around the sail.

Head-Luff Location of the **mid-girth** measured as a % down the **luff**.

Mid. Girth Girth measured around the mid-chord at the **Head-luff** location. This is a close approximation to the girth measured on the flattened sail.

Foot Girth Girth measured around the foot-chord. This is a close approximation to the girth measured on the flattened sail so long as **Foot Rotation** is small.

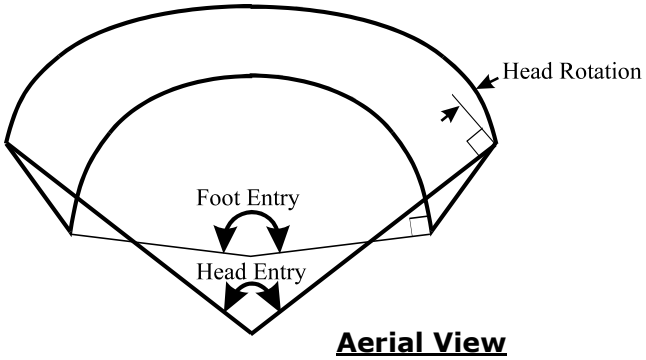
Lower Girth ProSail Spinnakr will generate two different types of spinnakers depending upon whether **Lower Girth** is ticked :

(i) If **Lower Girth** is ticked, you can specify a girth measured mid-way between the foot and the mid-section. This is often used for Dinghy sails where this girth can be greater than the **Mid. Girth**. Girths throughout the sail will change in a smooth way between the three girth points and the head.

(ii) If **Lower Girth** is not ticked, the girths throughout the sail will change in a smooth way from the foot to a maximum value (which can be the same as the foot) at the **Mid. Girth** then reduce to the head. This is used for IMS/IOR type spinnakers.

Chord Sectors This determines how many arc sections are used to define the shape of the chords. See Chords chapter. It is recommended that only 2 be used for ease of use.

Dimensions

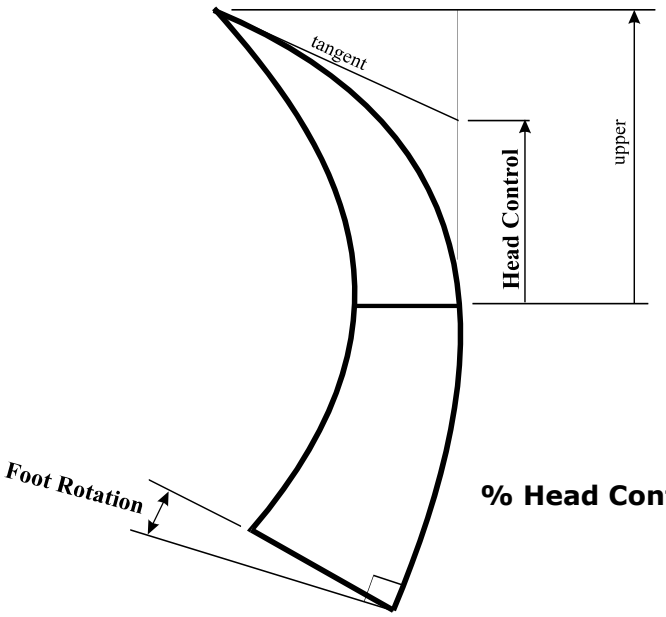


Aerial View

Head Entry Projected angle of the flying head as seen from high above the flying sail (see diagram above). The actual head angle measured on the floor by flattening the head will be less than the **Head Entry** (e.g. to achieve a head angle of 110 degrees you may need to enter a **Head Entry** of 120 or more). The actual head angle is displayed in the lower left corner of the screen when the sail is re-scaled. i.e. after selecting ok to the Dimensions dialogue. *(The vertical girth up the centre seam of the sail is also displayed after rescaling in the lower left corner of the screen. See Girth chapter.)* As well as determining the actual head angle, the **Head Entry** will also determine the entry angle for the mid and head chords. See Chords chapter.

Head Rotation This increases the entry angle of the mid and head chords in the sail. If set at zero, the entry angle of these chords will be 90 degrees to the luff as seen from an aerial view (see diagram above). **Head Rotation** has the effect of increasing the amount of shape in the flattened view of the sail (see Flatten chapter) without increasing the actual head angle. It also has the effect of reducing the luff round on the luff head panel. If set at zero the luff head panel will be almost symmetrical. Increasing **Head Rotation** will reduce the amount of round on the luff. Increasing **Head Rotation** further will introduce hollow on the luff. This hollowing effect is greater the narrower the head panels are.

Foot Entry This is similar to the Head Entry and is the projected angle of the flying foot as seen from high above the flying sail (see diagram above). This determines the entry angle of the foot chord. See Chords chapter.



% Head Control = Head Control / upper

Head Control This is very important and controls how flat the head is. Increasing **Head Control** will increase the fullness in the head. It is very important not to make **Head Control** too large. Remember that the flying sail will lift and so the picture on the screen should have significantly lower shoulders than the flying shape. A typical value is 55%. Larger values may result in the head folding. If in doubt specify a lower **Head Control**.

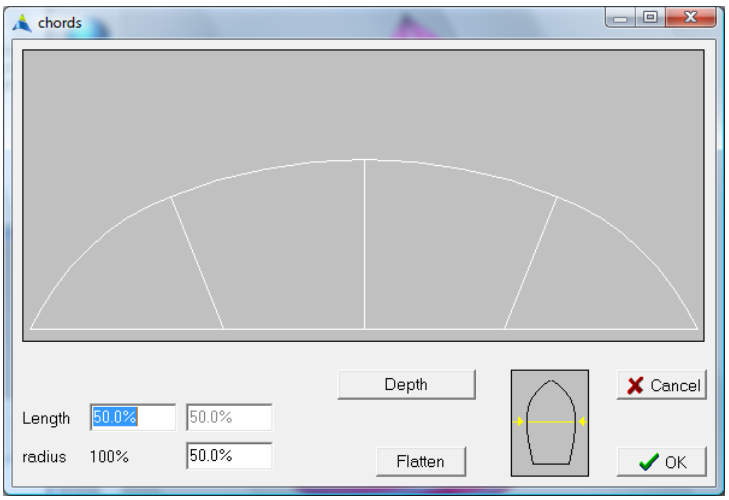
Foot Rotation During panel development, fabric is laid over the mould. The foot round (as specified in the Shaping window) is added to the bottom of the foot panel. As a result, the bottom of the foot panel will lay off the end of the mould. This is not a problem but if you want to have control of the mould close to where the foot will eventually lay, you can rotate the mould at the foot with **Foot Rotation** (see diagram above). However please note that increasing **Foot Rotation** does not generate more foot round. It only rotates the foot of the mould. The foot round specified in the Shaping window determines the amount of foot round. Also making **Foot Rotation** too large can reduce the accuracy of the generated **Foot Girth**. Its best to keep **Foot Rotation** small. A typical value is 5 degrees.

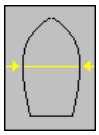
Foot Control This is not a very important variable. It determines how the entry angle of the cross-sections vary over the lower half of the sail. At the mid section the entry angle will be defined by **Head Entry** and **Head Rotation**. At the foot it will be defined by **Foot Entry**. However between the mid-section and the foot it will gradually change. **Foot Control** influences the way in which it changes. The smaller the value for **Foot Control** the greater the influence of the **Foot Entry** angle on the intermediate sections.

Chords

Select **Chords** from the **Mould** menu.

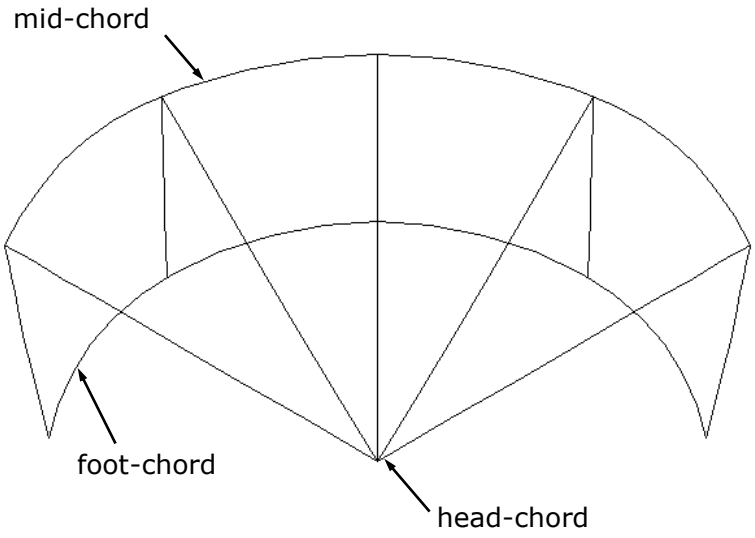
The following window determines the cross-sections (chords) at the head, mid-section and foot. Between these sections the cross-sectional shape will vary in a fair manner up the sail. Although the head has zero width, the head-section shape influences the cross-sectional shape between the mid-section and the head.





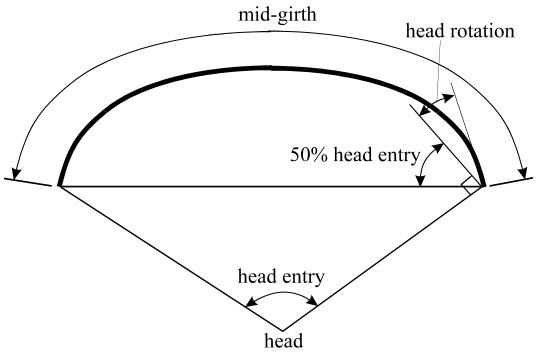
Click on this picture at the head, mid-section or foot to display the chords at those three locations.

Aerial view



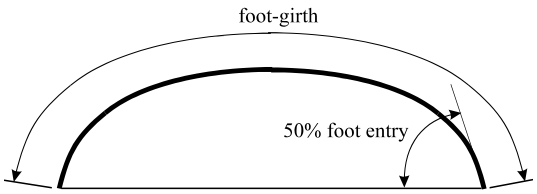
Chords

Before entering the Chord window, some of the dimensions entered in the **Dimensions** dialogue already partially define the shape of the chords. For the mid-chord, the girth is equal to **Mid. Girth**. The entry angle of the chord is equal to the **Head Rotation** + half the **Head Entry** :

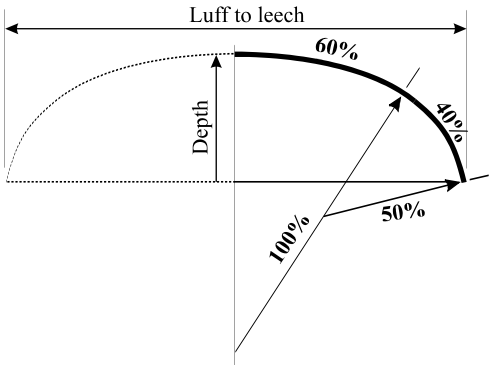


In the case of the head-chord, the entry angle is the same as the mid-chord except the girth is of course equal to zero. Although its girth is zero, the shape of the head-chord influences the area between the mid-chord and the head.

For the foot-chord, the girth is equal to the **Foot Girth**. The entry angle is equal to half the **Foot Entry** :



As well as the girths and entry angles which are defined by the **Dimensions** dialogue, the shape of each chord can be further defined using arcs. The number of arcs is determined by **Chord Sectors** in the **Dimensions** dialogue. If **Chord Sectors** is set at 2 (recommended) the follow geometry defines a chord (half of a chord for symmetry) made up of 2 arcs :



length defines the % of the chord girth each arc covers. In this case the inner arc covers 60% of the chord girth and the outer arc covers 40%.

radius defines the radius of the outer arc as a % of the radius of the inner arc. *(The inner arc has a percentage value of 100% by definition. The physical value of the inner arc is determined by the program to achieve the specified entry angle.)* In this case the radius of the outer arc is 50% of the inner arc radius. The smaller the outer radius, the flatter the chord will be.

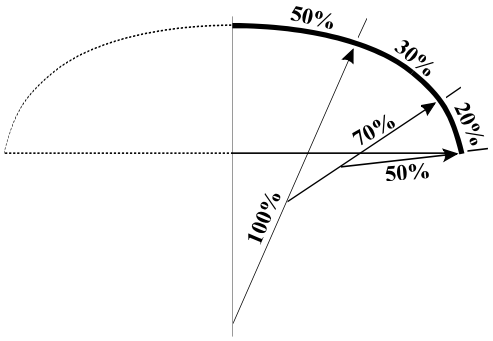
The cross-sectional shape of the flying sail will flatten as the shoulders are pulled outward when flying. Hence it is important not to make the mid-chord too flat on the computer otherwise it will not be able to be supported by the airflow and the sail will fold. Typical values for the mid-chords outer **radius** is 50 - 100%. If in doubt use 100%.

Unlike the mid-chord, the head-chord needs to be flattened to prevent too much shape in the top of the radial head panels. A typical value for the head-chords outer radius is 20%. Making this value too large can result in the top of the head creasing.

The foot-chord is usually quite round with an outer **radius** at least the same as the mid-chord.

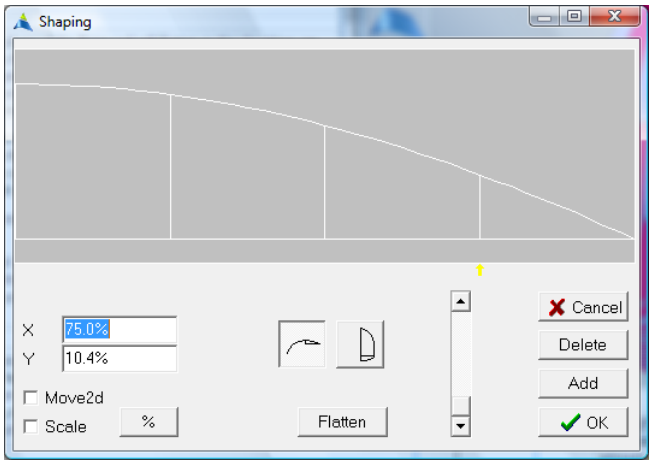
To produce a fair sail it is recommended that the **length** values for each arc are kept similar for all three chords. e.g. if the **length** values for the mid-chord are 60% and 40%, use similar values for the foot-chord and head-chord.

The **depth** button displays the amount of %Depth in the chord. %Depth = **Depth** / **Luff to leech**; see diagram on previous page. If you wish to specify the %Depth of a chord, click on the **depth** button and type in the required depth. After selecting **Ok**, the outer radius of the chord will have changed (if it is possible) to achieve the desired depth.



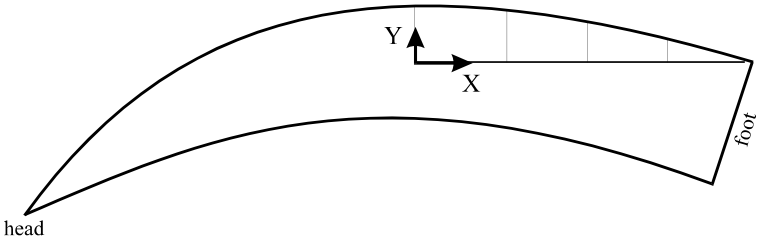
If more than 2 arcs are required to define the chord shape, then select 3 **Chord Sectors** in the **Dimensions** dialogue. This gives you more control but makes shaping more complex. Very few people use 3 arcs.

Select **Shaping** from the **Mould** menu.



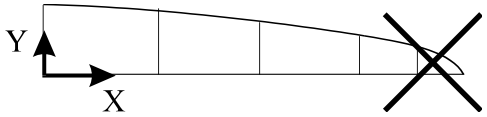
This window operates in exactly the same way as the shaping window in the headsail/mainsail program.

Displays the lower part of the 3D view of the centre seam from the mid-section on the left to the foot on the right :

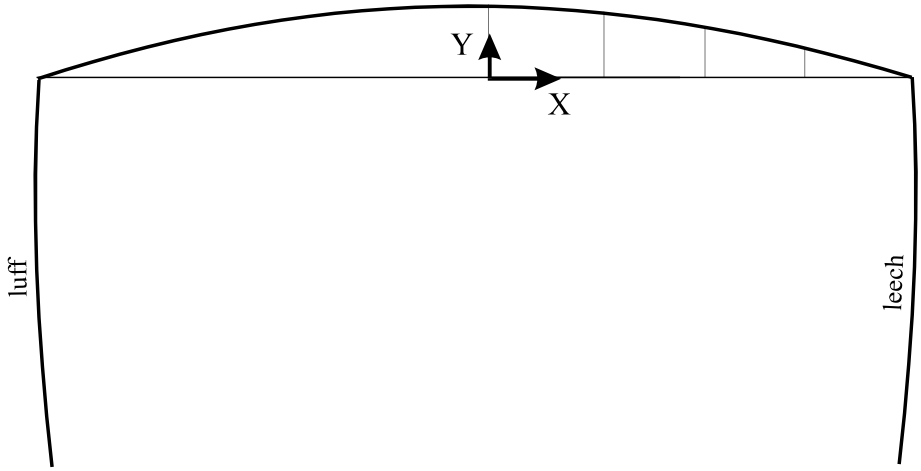


As with the Depth curve in the headsail/mainsail program, the more curvature there is in this curve, the more shape there will be in the panels in that region. Making this curve fuller will have the effect of pushing the foot aft and hence increasing the amount of shape in all the panels in the lower half of the sail.

Please note however that it is not a good idea to make the foot end of this curve bend down sharply. If a highly shaped panel is required here, it should be done with PanelMaker or by hand.



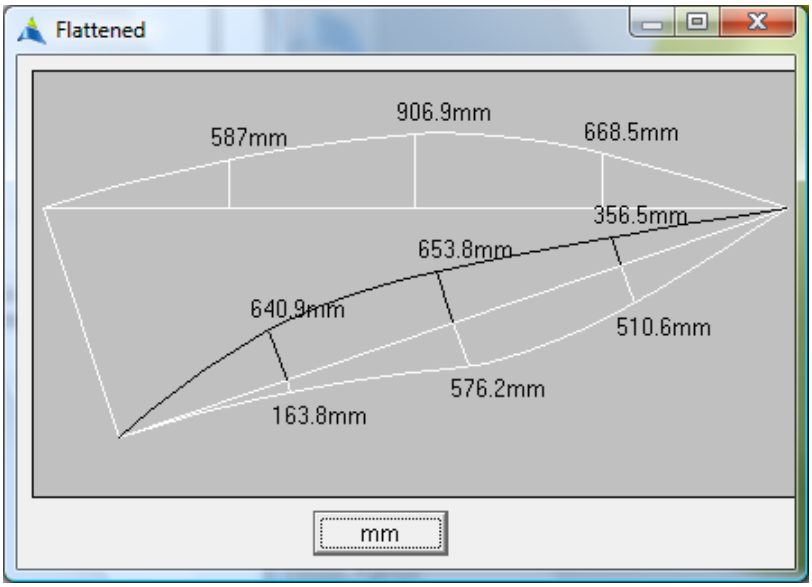
Displays <u>half</u> of the foot round (symmetry is used) :



This shape is added to the bottom of the foot panel after panel development. See the note on **Foot Rotation** in the Dimensions chapter.

Flatten

Select **Flatten** from the **Window** menu or click the **Flatten** button in the **Dimensions**, **Chords** or **Shaping** dialogues.



This outline is the conventional flattened spinnaker (that most people are familiar with) produced by folding the spinnaker down the centre seam and pinning it out as flat as possible on the floor. This is similar to the Flattened method in the ProSail (headsail/mainsail) program except of course it only looks at half the sail.

The top curve is the centre seam, the bottom curve is the luff/leech. The intermediate hollowed curve is the fanned leech you would get if you were to tension just the leech of the spinnaker. i.e. The same as the fanned method used in the headsail/mainsail program.

The maximum amount of shape on the centre fold versus the maximum amount of shape on the leech is very important. Most people want a ratio of 2 : 1 or more. The higher the ratio the more highly shaped the sail is and the more stable it is.

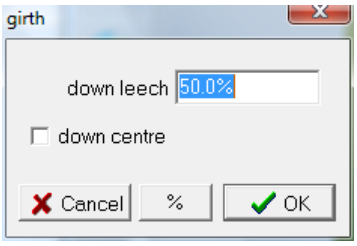
One way to increase the amount of shape on the centre fold (and reduce it on the leech) is to go to the Shaping window and increase the shaping curve using the scale option. This will increase the amount of shape in the panels below the mid-section. However the more this curve is increased, the more hollow there will be on the leech radial-clew panel which may cause problems with panel development (see headsail/mainsail manual).

Another way to increase the ratio is to make the mid-chord fuller (i.e. increase the outer radius). This also has the effect of reducing the amount of fanned hollow on the leech.

Another way to increase the ratio is to specify a **Head Rotation** in the Dimensions dialogue. This essentially takes the flattened view of the sail and rotates the head clockwise. It also has the effect of reducing the amount of round on the leech head-panel. In fact **Head Rotation** can be increased to the point that the leech head-panel will have hollow on the leech. Typically most people specify around 10 degrees or more.

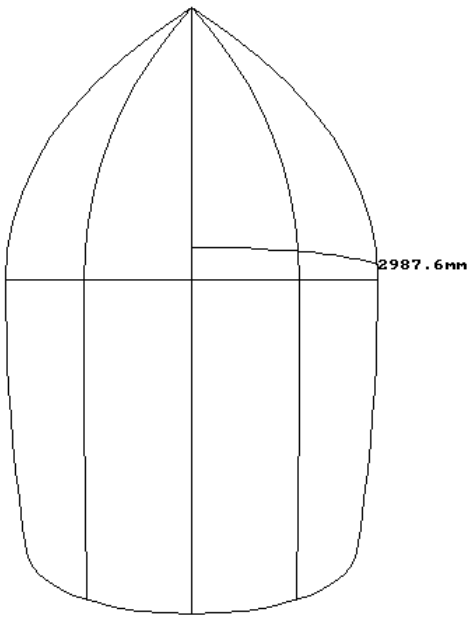
Girths

Select **Girths** from the **Window** menu.



Enter the desired location down the leech. This will calculate the shortest distance from this leech location to the centre seam. This will be half the girth across the sail at that location. To generate a girth from a leech location to a location down the centre seam, tick **down centre** and enter a value.

After selecting OK the path will be drawn on the screen with its girth :

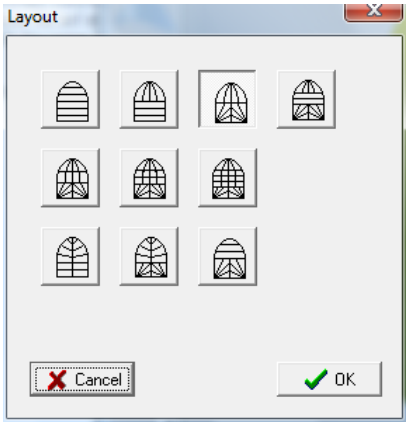


Vertical Girth :

The vertical girth up the entire centre seam of the sail is calculated by Spinnakr. It is displayed in the lower left corner of the screen (next to the actual head angle) after the sail is re-scaled. i.e. after selecting OK to the dimensions dialogue or after panels have been developed on the sail. If panels have been developed, this girth will include the foot round. If panels have not been developed, it will only make an approximation of the foot round needed (since the foot panel determines the exact location of the foot).

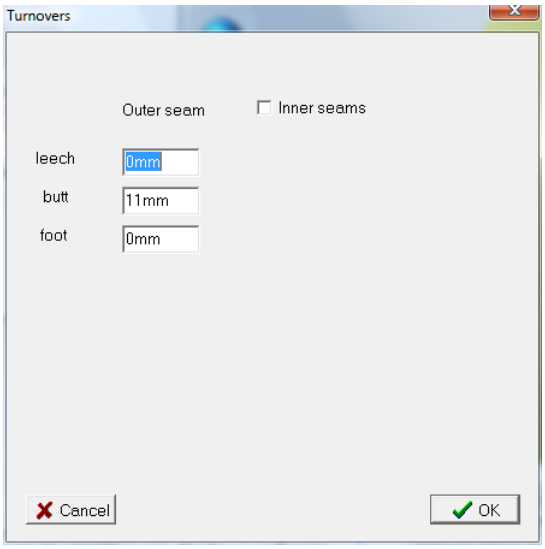
Panel Development

To develop the current sail into panels, either select **New** from the **Panel** menu to create a new panel layout or select **Open** from the **Panel** menu to use an existing panel layout. If **New** is selected, the following Panel Layout dialogue will appear :



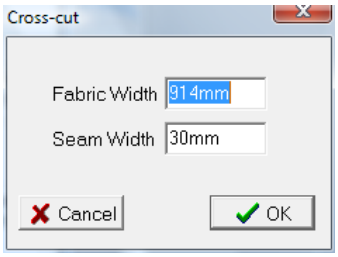
Double click on the layout you want.

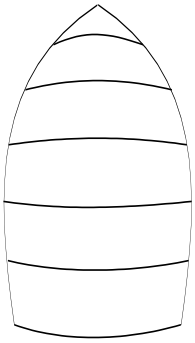
The Turnover dialogue will appear next :



Specify the extra seam allowances you want around the sail for turnovers. These seams are added to the sail dimensions entered in the Dimensions dialogue. If you don't want any, just set everything to zero. Butt is the seam required down the centre seam.

Cross-cut



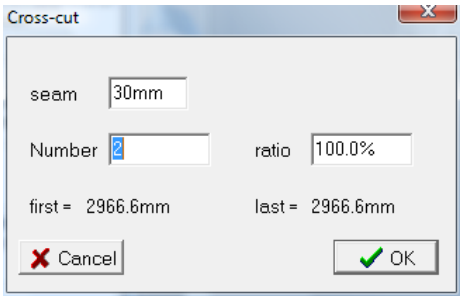


These panels are developed from the bottom of the sail up to the head. Since this is the opposite direction from normal, the panels are shaped on their bottom edge and straight on the top.

With these panel configurations, the panels are generated in the same way as above but are rotated so they are at 90 degrees to the leech.

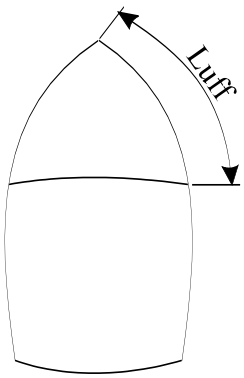
In the tri-radial panel configuration, the horizontal panels are developed in the conventional direction, and hence are shaped on the top edge and straight on the bottom.

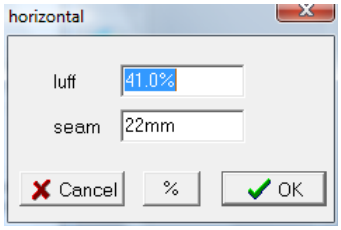
These horizontal panels are also shaped on the top edge and straight on the bottom. To generate these panels, the following dialogue is displayed where you specify the **number** of panels required and **ratio**. **Ratio** is equal to the width of the foot panel divided by the width of the top horizontal panel. This is the preferred panel layout to take through to PatternMaker if using PatternMaker.



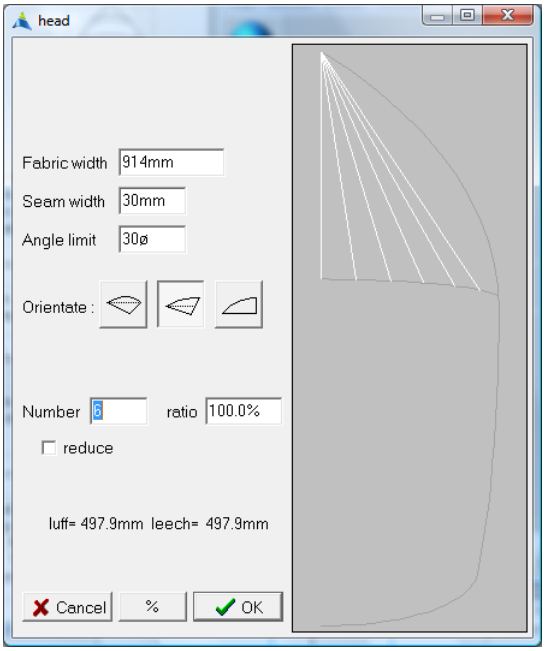
Horizontal Interface

When a panel configuration requires a horizontal interface seam, the following dialogue will appear. **Luff** is the distance down from the head that the seam will intersect the luff and leech.





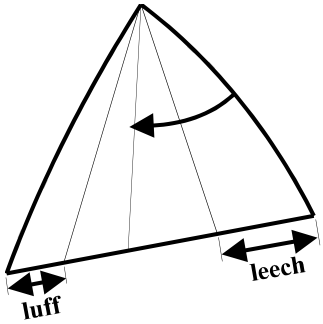
Radial-Head



All radial-head panels are shaped on both sides. They are however not symmetrical and are of different lengths. The radial head dialogue operates the same as for headsails and mainsails except it only displays half of the head panels.

Panel Development

Panels are developed based on **Number** and **ratio**. They are developed from the leech to the centre where **ratio** determines how the edge width of the panels change :



leech : Edge width of the leech panel. This does not include the seam allowance or shaping.

luff : Edge width of the centre panel. This does not include the seam allowance or shaping.

ratio = luff / leech as a %

NOTE : **Fabric Width** is not used to generate the panel size since panel size is totally defined by **Number** and **ratio**. However it is used after the panel has been generated as a test to see if the panel has exceeded this size. If it has, a warning message will be displayed.

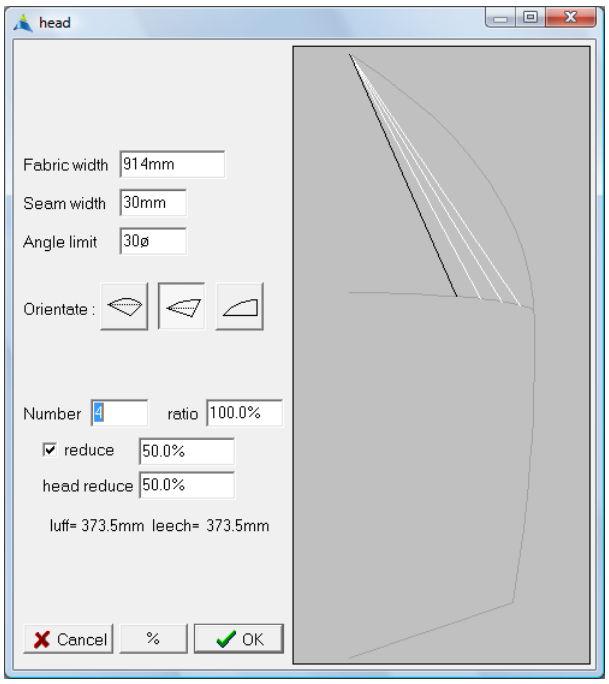
Angle Limit is similar to **Fabric Width** in that it is only a test to see if the angle of the panel (measured near the head) has exceeded this angle. This is useful for some fabrics where you might not want to exceed say 6 degrees for example. If you are not worried about angle, specify a large value. e.g. 30.

Orientation defines the orientation of all the head panels on the fabric :

The panels will be orientated on the fabric so one side will be parallel with the fabric. This will correspond to the leech side of the spinnaker. This will produce the most efficient use of the fabric.

The panels will be orientated on the fabric so the centre of the panel will be parallel with the fabric. This is the common orientation but is very wasteful on fabric.

Ratio is useful for smoothly changing panel widths. However when a sudden change in panel width is required, tick **reduce** :

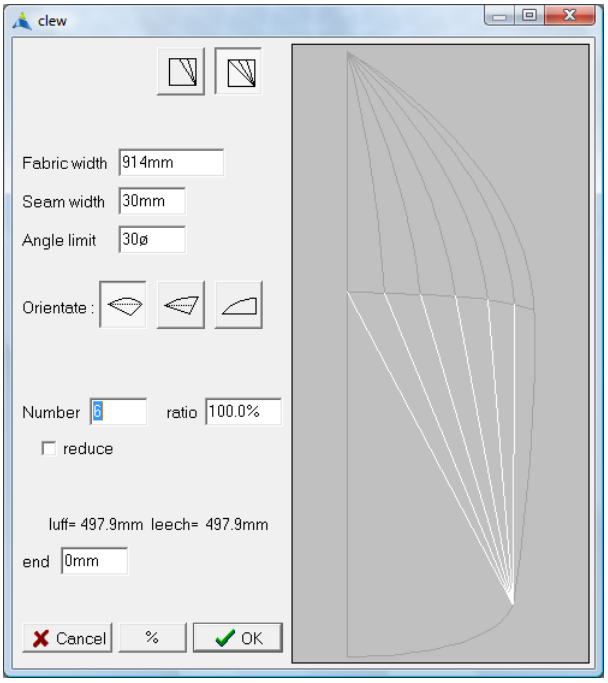


Reduce splits the head panels into regions. The value specified for **reduce** is the length of the region either as a % of the horizontal interface seam or in absolute length. As well as specifying a value for reduce, you can also click on the end of this reducing line and drag it to the required location along the horizontal interface.

Within this region the panels are defined using **Number** and **ratio**. Once this region has been generated the radial head dialogue will be displayed again for the remainder of the head. If desired this can be split again using **reduce**.

Radial-Clew

Radial-Clew panels are specified in a similar way to Radial-Head panels except in two sections. The first section defines the panels that touch the horizontal interface seam.



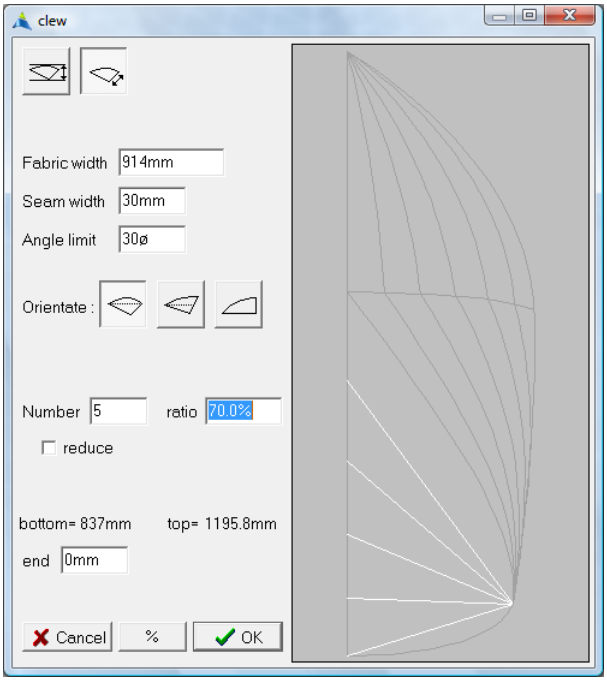
To make these panel seams line up with the seams above, use the same **Number** and **ratio** as the panels above.

If selected, panels will be generated right to the end.

If selected, panels will stop short of the end. This allows the next panel to straddle the corner. This is commonly used if the next panels are to be made to the full fabric width.

end If zero, the panels will all terminate at the clew. If non-zero, the clew end of the panels will have a width equal to this value (excluding the seam width). i.e. they will radiate along the foot.

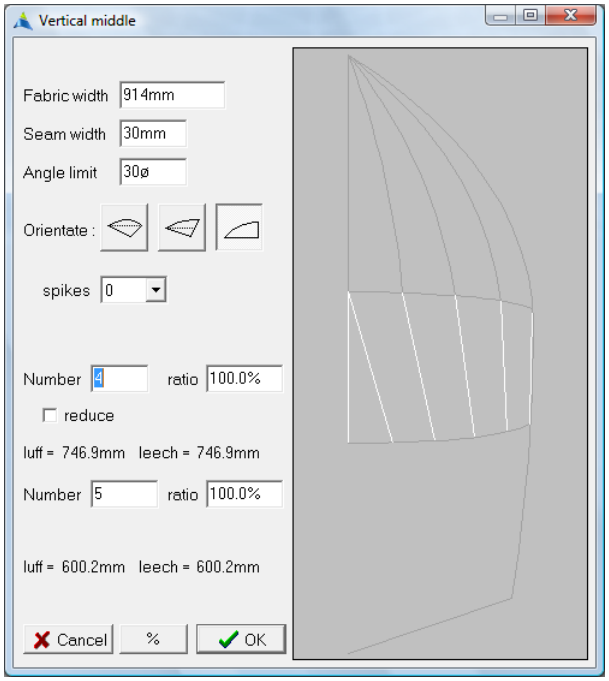
The next section defines the clew panels that touch the centre seam :



If selected, panels are developed so their edge width is defined by **Number** and **ratio** as described previously.

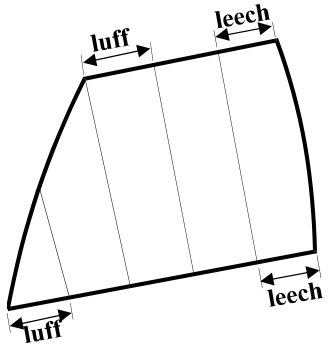
If selected, panels are developed to either their full **Fabric Width** or to their full **Angle Limit** whichever is the most limiting. If angle is not important, specify a large Angle Limit.

Mid-Vertical panels



Vertical panels in the middle of the sail are specified using two sets of **Number** and **ratio** :

The top set define the seams on the upper interface. The bottom set define the seams on the lower interface.

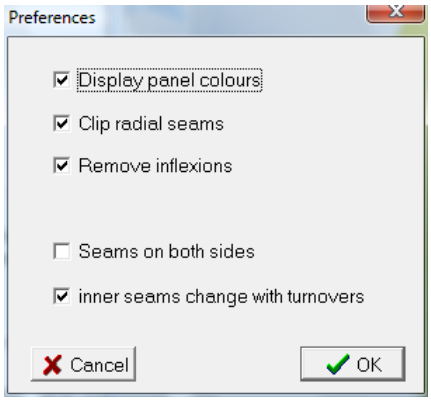


ratio = luff / leech as a %

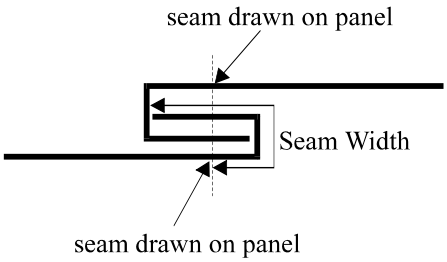
ratio = luff / leech as a %

Panel Preferences

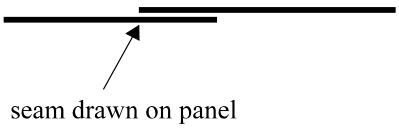
Select **Preferences** from the **Panel** menu :



If **Seam on both sides** is ticked, the seam can be joined as follows where the **Seam Width** entered in the panel dialogues is 1.5 times the the size of the overlap :

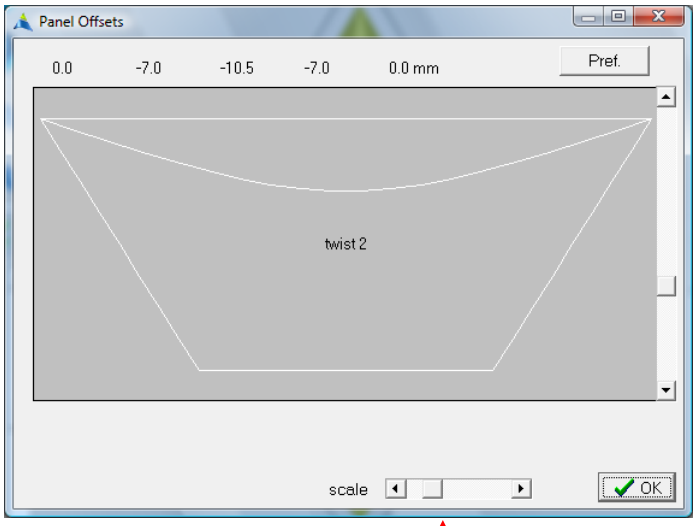


If **Seam on both sides** is not ticked, the overlap is simply the **Seam Width** :



View Panels

Select **Panels** from the **Window** menu.

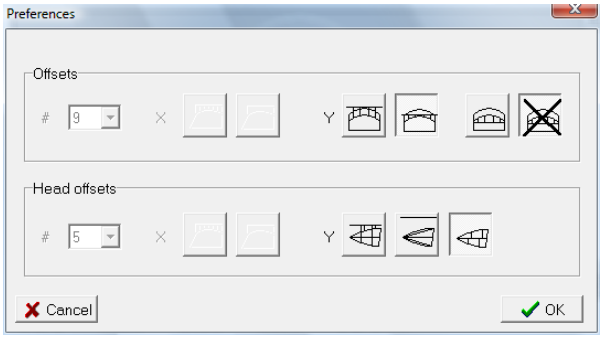


Loops through all the panels.

Visually exaggerates panel curves for ease of viewing.

The offset numbers correspond to 0, 25, 50, 75 and 100% locations.

To specify the way the panel offsets are displayed, click on the **Pref** button to display the following :



Offsets are measured up from a flat line between the ends. Most common.

Offsets are NOT measured up from a flat line between the ends. They are measured down from the maximum depth point on the curve. The following 2 icons determine whether this includes the seam allowance :

Includes seam allowance.

Does not include seam allowance.

For head panels the following icons define how the offsets are displayed :

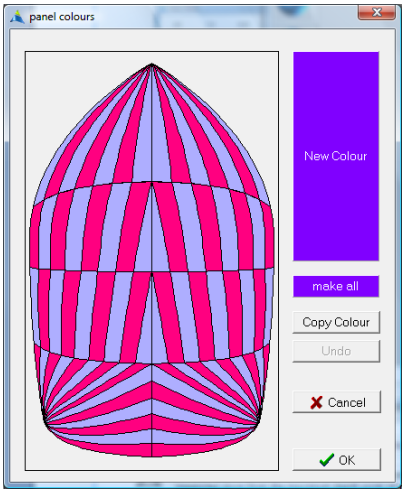
From Fabric edge

From centre

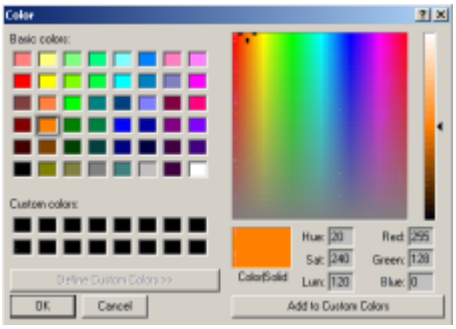
From line corresponding to zero shape.

Colour Panels

Select **Colour Panels** from the **Window** menu:



Click on the large **New Colour** button to display the following :



You can either select a colour by clicking in one of the boxes under the heading **Basic Colors** or under the heading **Custom Colors**. Click **Ok** to leave the dialogue. Or you can define (and store) your own custom colours.

To define your own custom colours :

1) First click in one of the empty boxes under the heading **Custom Colors**. This is where your custom colour will be stored. It is important to click here before defining the colour otherwise it will by default be stored in the first location which might overwrite one of your previously stored colours. Very annoying.

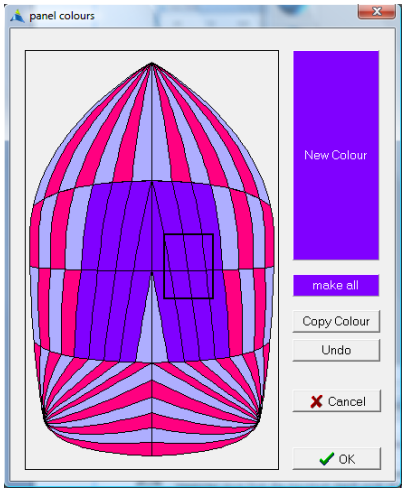
2) Then click the closest colour to the colour you want in one of the colours under the heading **Basic Colors**. Alternatively you can click on the large rainbow coloured square in the right half of the dialogue.

3) You can then modify the colour using the controls on the right half of the dialogue. The far right vertical scroll bar is useful for specifying luminosity (intensity). Red, Green, Blue give the relative mix of each of these colours that creates the resulting colour. These vary between 0 and 255 and you can enter them directly if you wish. The colour black corresponds to Red, Green, Blue all being 0. White corresponds to them all being 255.

4) Once you are happy with your colour, click on **Add Custom Colors** to add this colour to the original position you selected at point 1). Click **Ok** to leave the dialogue.

Colour Panels

To make a panel the same colour as the **New Colour** button (current colour), simply click in that panel. Do this for all the panels you want to make that colour. You can also click (and with the mouse button still down) drag a selection rectangle across multiple panels. All the panels that intersect that rectangle will become that colour.



To make all the panels the current colour click the **make all** button.

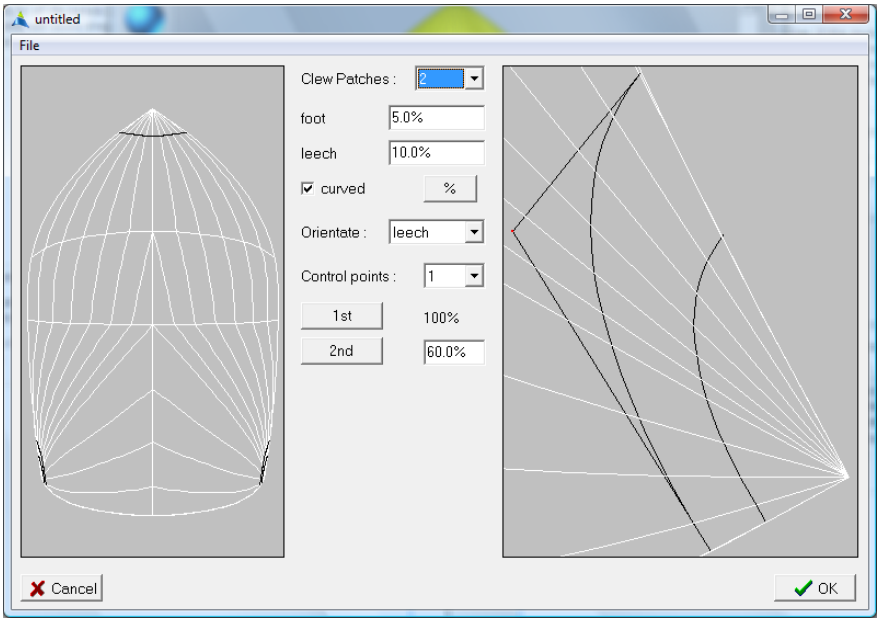
To make the current colour the same colour as one of the panels, first click the **Copy Colour** button and then click on that panel.

At any stage if you make a mistake you can click the **Undo** button. Undo can be used as many times as required.

After developing panels you can define patches (if this module is present) by selecting **Patches** from the **Window** menu. This will display a picture of the sail in the left half of the window with its panels and any patches it may have.

The right half of the window shows the current corner of the sail we are looking at (namely head or clew). To look at another corner of the sail click the mouse near that corner in the picture of the sail.

The name of the corner and the number of patches it has will be displayed at the centre top of the window. In the example below we are looking at the **Clew Patches** and there are 2 of them :



*The first time you enter this dialogue there will be no picture to the right. Namely no patches. To specify clew patches, click on a number next to **Clew Patches**.*

Clew Patches : Number of clew patches. They are all the same shape but different sizes.

foot : Distance along the foot of the 1st (largest) patch.

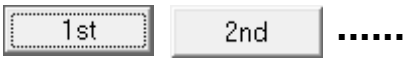
leech : Distance along the leech of the 1st (largest) patch.

Radius : For the head, a radius is specified rather than **foot** and **leech**.

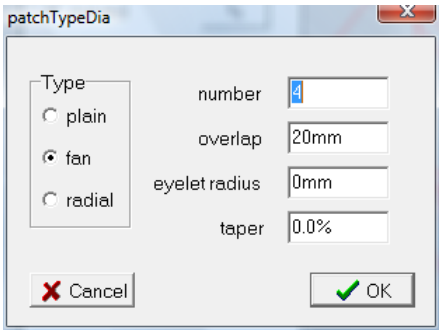
curved : Ticked if the patches are curved.

Orientate : Specifies the fabric orientation of the patches used when nesting. If you are not happy with **leech** orientation, you can select **other**. If **other** is selected, a small lever will appear with a control point on the end of it. This control point can be dragged with the mouse to define the thread line direction.

Control points : Specifies the number of small red control points the 1st patch has around it. These points can be dragged with the mouse. If **curved** is ticked, these control points will not lay on the patch but will influence it. The more points, the more control you have over the shape of the patch however the more difficult it is to produce a nice looking shape.



..... Clicking one of these buttons will display the following dialogue for the corresponding patch number :



1) If **fan** is selected the following information can be specified :

number : Number of strips in that patch.

overlap : The overlap seam on the perimeter of the patch.

Eyelet radius : How far from the corner of the sail the centreline of the strips will pass.

taper : % of seam taper. 0% means the strips will be parallel. 100% means the strips will narrow at the corner of the sail to a width equal to twice the **Eyelet radius**.

2) If **plain** is selected the patch will be made from one piece of fabric.

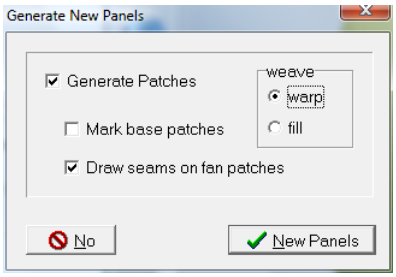
3) If **radial** is selected the patch will be made up of radial strips which exactly lay on top of the radial panels in that corner. This option is only available if you also have the PanelMaker module.

To define the other patches for that sail corner click on the corresponding button : **1st**, **2nd** etc. Each patch can be defined differently. For example a plain patch can be placed over a fan patch.

To the right of the patches corresponding button will be a %. This is the size of the patch as a % of the size of the 1st patch.

The information defining patches is saved in the Patch files. These files are handled using the **Open**, **Save** and **Save As** menu items under the **File** menu in this patch screen. Note : Patches are not saved with the sail mould. Like panel files, panel layout files and fabric files, they are saved separately from the mould. The advantage being you can load patch files generated on one mould for use on another mould. They will of course be slightly different since they need to adjust for the change in angles from one sail to another.

After developing panels, select **Nesting** from the **Window** menu to take the panels to the nesting window.

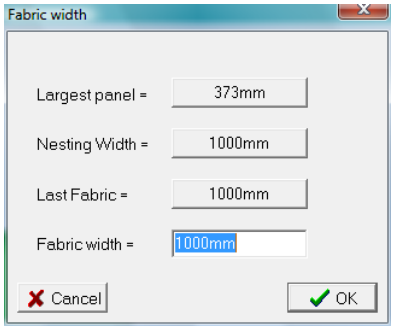


Click **New panels** to take the developed panels to the nesting window. If you click **No**, the panels on the nesting window (if any) will not change.

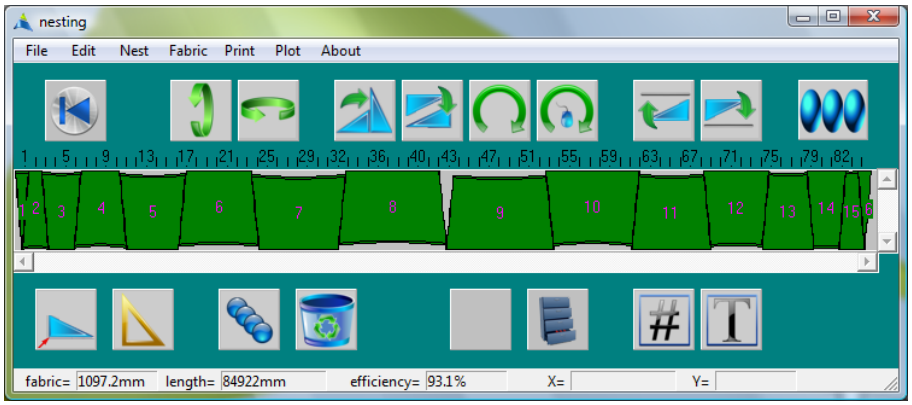
If the sail has patches, tick **Generate Patches** to have these patches added to the end of the nested panels.

If any patches are of the Plain patch type, click on **warp** or **fill** to select which way you want the panels orientated on the cloth.

If **Mark base patches** is ticked, the largest Plain patch in each corner of the sail will have the location of its smaller patches marked on it. This can help in sewing the different layers of patches together.



Enter the desired **fabric width** to be used. See the PanelMaker & Nesting manual for details.



IMPORTANT : If go back to the 3D viewing window and redevelop panels, you have to select **Nesting** from the **Window** menu again to load these new panels on to the nesting screen. If you just click on the nesting window to bring it to the front, it will still have the previous panels on it.

Menus

File

New		: Create a new Spinnaker mould file.
Open	**Ctrl O**	: Open an existing mould file.
Save	**Ctrl S**	: Save the changes made to the current mould.
Save As.		: Save the current mould with a new name.
Units		: Displays the Units Preferences dialogue.
.....		
Zoom	**Ctrl Z**	: Zoom in.
.....		
Preferences		: Displays the general preferences dialogue.
.....		
Quit	**Ctrl Q**	: Leave Spinnakr.

Mould

Shaping	**Ctrl F**	: Displays the Shaping window.
Chords	**Ctrl C**	: Displays the Chord window.
Dimensions	**Ctrl D**	: Displays the Dimensions dialogue.
.....		
Rescale	**Ctrl R**	: Force Spinnakr to rescale the mould.
Area		: Calculates the sail area around the mould including the foot round.

Panel

New	**Ctrl P**	: Display the Panel Layout dialogue for developing panels.
Open	**Ctrl W**	: Open a previously saved Panel Layout and develop panels.
Save		: Save the current panel Layout.
Save As.		: Save the current Panel Layout with a new name.
.....		
Preferences		: Display the Panel Preferences dialogue.
Show numbers		: Show or Hide panel numbering on the panels.

Window

Flatten	**Ctrl C**	: Display the flattened spinnaker window.
Girths	**Ctrl G**	: Enter the Girths window.
Panels	**Ctrl A**	: Display the panel window.
Patches		: Display the Patches window.
Colour Panels		: Enter the Panel Colouring window.
PatternMaker		: Display the PatternMaker window.
Nesting	**Ctrl N**	: Enter the Nesting window.

View

Animate	**F1**	: Animate view.
.....		
Toolbox		: Display lighting toolbox
Light from		: Change light direction
Next view	**F2**	: Loop through stored views.
Show scrolls		: Show or Hide the viewing scroll bars

Print

Dimensions	: Display the spinnaker dimensions for sending to the printer.
Offsets	: Display the panel offsets for sending to the printer.
.....	
Screen	: Prints the screen.

About

About	: Display information about software version etc.
Bug Report	: Creates a problem report file that can be e-mail to Armstrong-White for problem support.