

# Hydrolink

Windows Version 15  
User Manual



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### HydroLink Program

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### HydroLink User Manual

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## About this Manual

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This manual describes Hydrolink, an application which may be used to export Maxsurf design files to a variety of other file formats.

It has been assumed that you have read the Maxsurf manual, and that you are familiar with the basic concepts of working in any Windows application.

This manual is divided into two chapters:

[Chapter 1 Using Hydrolink](#)

Contains a step by step guide to setting up and using Hydrolink.

[Chapter 2 Hydrolink Reference](#)

Gives details on each of Hydrolink's menus.



## Chapter 1 Using Hydrolink

---

Hydrolink is a program designed specifically for translation of hull data from one file format to another. It is intended to be used for the transfer of hull offsets files to various hydrostatics and stability programs currently in use by Maxsurf users. In addition Hydrolink supports transfers to the IMS LPP & VPP programs, and a two way translation of the US Naval Academy NURBS surface format.

Once Hydrolink has been started, the first step is to decide on the kind of translation required, e.g. USNA to Maxsurf, Maxsurf to IMS LPP, Maxsurf to BMT Microship etc. You can then use the File menu to select the Input File Format and Output File Format based on this information.

This chapter contains:

- [Input File Formats](#)
- [Output File Formats](#)
- [Shipflow \(Flowtech\) interface](#)

### Input File Formats

---

Hydrolink supports the following input file formats.

- **Maxsurf**
- **IGES**
- **DXF**
- **IMSA Nurbs**
- **US Navy**

With most Input File Formats, there are different ways that programs can export this data. In order to cater for this and provide maximum flexibility when importing different formats, Hydrolink has a Set Import Parameters dialog.

In the case of the USNA to Maxsurf translation, the input is a text file that is converted into a Maxsurf design. To create the new Maxsurf design, select the file required after choosing the 'Open USNA file' option from the File menu. Hydrolink will read in the USNA file and create a Maxsurf design that will be displayed in the viewing windows. At this stage you can set up the Grid Spacing, Zero Point and Frame of Reference for the design by choosing commands from the data menu. To save the Maxsurf hull shape, select Save Design from the File menu.

For all the other translations, the starting point is a Maxsurf hull that is read in by selecting Open Design from the File menu. Some file formats have requirements for particular numbers of stations and you will be prompted where necessary.

Once you are satisfied that the design is how you want it, you can save it in the chosen output format using the Save Design menu item, and then choose a filename to save it as.

### Output File Formats

---

Hydrolink supports the following output file formats.

- Maxsurf
- IGES
- DXF
- IMSA Nurbs
- USNA
- SHCP
- MHCP
- IMS LPP
- BMT Microship
- IMSA Hull Parameters
- Wintech
- Nakashima Stereo Format
- IHI Ajisai Data Format
- Parametric contour format
- VERES (previously MASHIMO)
- GHS/Autohydro hull sections
- Wolfson Unit LFH Format

Output file type format is set by:

- **Selecting Output File Format from the File menu**

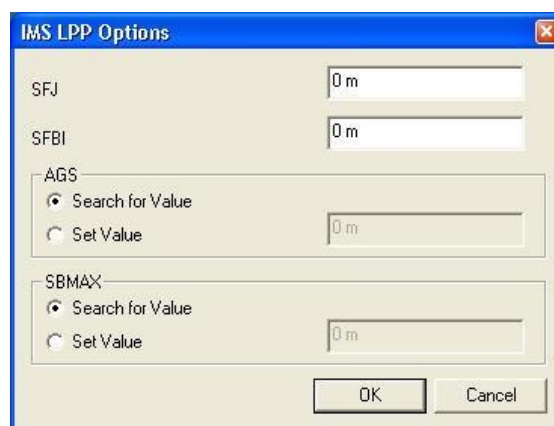
For some output formats, such as IMS LPP, Nakashima Stereo and IHI, additional information needs to be given in order to export the data correctly. You will be prompted to enter additional information into a dialog box which will appear when you save the file:

- **Select Save <Output Type format > File from the File menu**

### **IMS LPP Export Options**

---

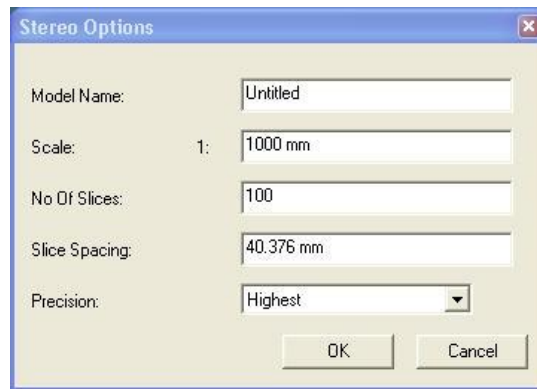
When exporting to the IMS LPP format, you will be prompted to enter additional information needed for the IMS calculations.



### **Nakashima Stereo Export Options**

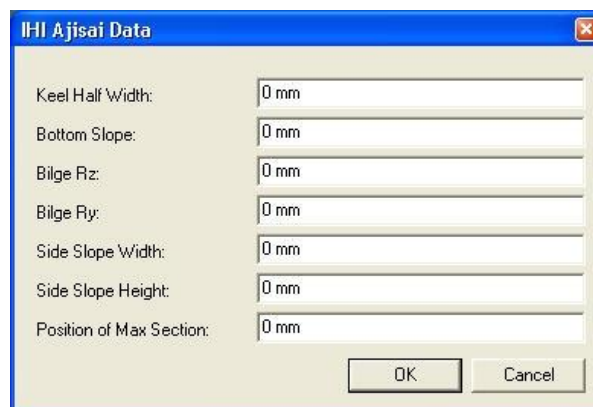
---

When exporting to the Nakashima Stereo format, you will be prompted to enter additional information needed for the creation of the sliced model.



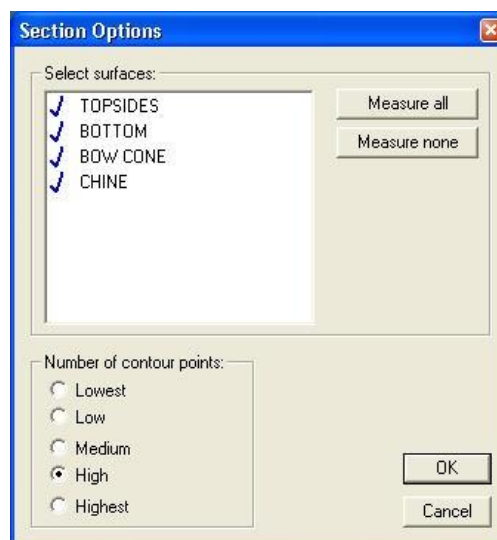
### IHI Ajsai Data Export Options

When exporting to the IHI format, you will be prompted to enter additional information needed for the creation of the model.



### VERES (MASHIMO) Export Options

The VERES (previously MASHIMO) format produces offset data on the sections specified in the Grid Spacing dialog. When saving the data, you may select the surfaces to be included and also the precision. The higher the precision, the greater the number of points on each section. Note that a maximum of 200 sections may be defined, to output more than 200 stations you will have to output two VERES files and combine them.



## GHS/Autohydro Export Options

---

The GHS/Autohydro format produces section offset data in a format that is compatible with GHS and Autohydro. The export options are exactly the same as those for VERES (see above).

## Multiple Designs

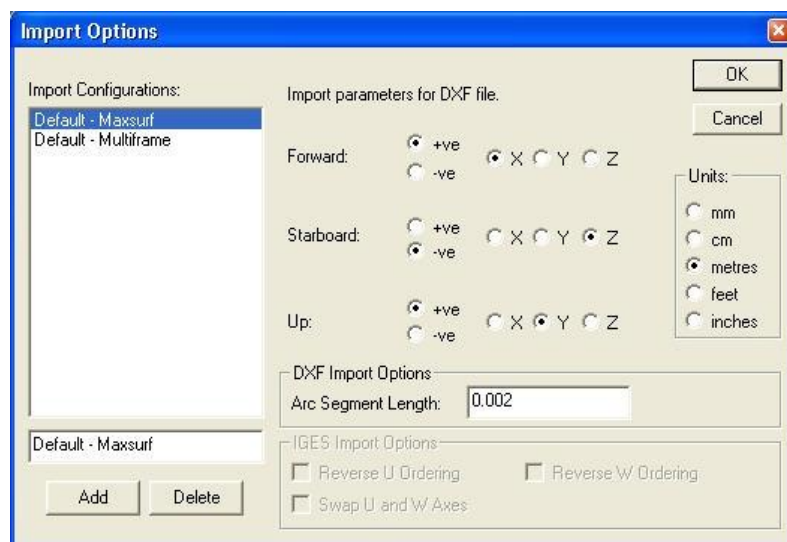
---

If multiple designs are opened in Hydrolink, they will overlay each other, and can be exported as a whole – useful for situations where several designers all contribute parts of the overall design.

All designs can be removed from memory by using the Close Design menu item in the File Menu.

## Set Import Parameters

---



The Set Import Parameters option (in the Edit menu) is designed to provide flexibility when importing designs into Hydrolink. Using this option it is possible to change the way that Hydrolink imports the current file format, allowing you to conveniently import data from a number of applications without any need to “tweak” the data later.

This dialog is broken up into two sections – the first one we will cover here is the Import Parameters section. This is the section to the right of the list box and contains a number of radio buttons which allow you to change the way that data is imported into the application. You can change the axis ordering, or flip the orientation of particular axes, set the default units for the import, alter arc segment lengths (DXF only), and even reverse U/W ordering and swap the U/W axes (IGES only).

The second section, on the left of the dialog, contains the Import Configurations list, along with an edit field below and two buttons called Add and Delete. An Import Configuration is a way of storing the import parameters specified used for a particular file format.

You can freely add and delete and rename configurations, and then set the Import Parameters differently for each configuration.

This allows you to be able to set up configurations for the applications or file formats you most commonly use, and all you need to do is select the configuration you wish to use and all of the parameters that you set along with it will be set up automatically.

## Shipflow (Flowtech) interface

This section describes how the Hydrolink to Shipflow interface works. For information on the Shipflow program see: <http://www.flowtech.se/>

In this section:

- [Licensing](#)
- [Shipflow group definition](#)
- [Other features](#)
- [Shipflow Samples](#)

## Licensing

The Shipflow export feature in Hydrolink is only available if you have purchased the additional license. If you have done so, you will be given an authorisation code. To enter the authorisation code, select About Hydrolink from the Help menu and click on the Options button. Type in the authorisation code you have been given:



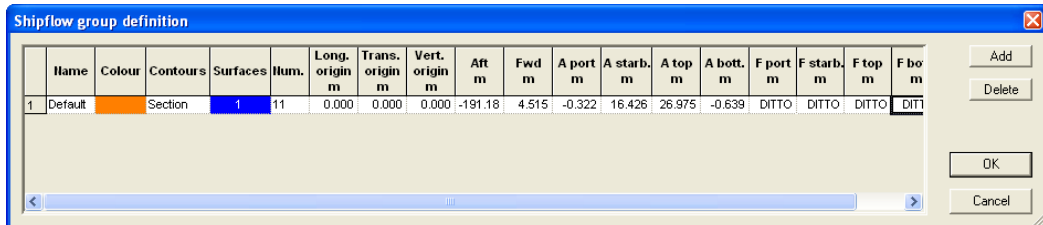
Hydrolink is able to export a Shipflow compatible offsets file. Various options are available to define the different “groups” in the Shipflow file.

- **Load the model into Hydrolink: (Sample designs\Ships\ContainerShip\ContainerShip\_Pro.msdl)**
- **Set the Output file to Shipflow: File | Output file Format | Shipflow**
- **Choose save from the File menu.**
- **Define the groups required in the Shipflow file.**
- **Click OK.**
- **Choose a file and click OK to save the file.**

### Shipflow group definition

The most important part of the procedure is setting up the groups required in the Shipflow file. The groups are defined by selecting the surfaces to be measured and defining a boundary box that defines the limiting extents of the group. Contours will be formed through the selected surfaces and then trimmed back to the bounding box.

In the Shipflow group definition dialog, any number of groups may be added and for each group you can specify the following:



Hydrolink "Shipflow group definition" dialog

#### Name

This is the name of the group as it will appear in the Shipflow file. This name should be unique.

#### Colour

The colour to be used to draw the contours, bounding box and group name of the group once the contours have been calculated. This is used in Hydrolink only.

#### Contours

The type of contours to be used: sections or waterlines. Generally sections ( $x = \text{constant}$ ) are used for Shipflow "body" groups and waterlines ( $z = \text{constant}$ ) are used for "lift" groups.

For each group, sections are ordered starting from the furthest forward section to the furthest aft. On each section the points are listed from the lowest point on the transverse origin plane (normally the centre-line plane) up to the deck.

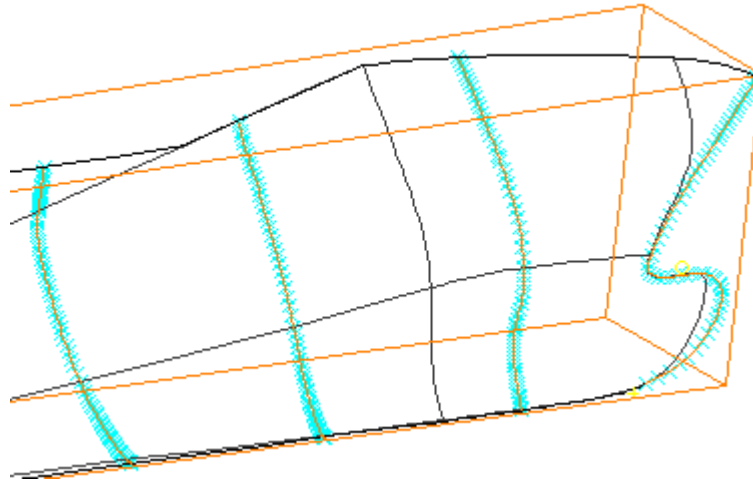
Waterlines are ordered from the lowest in the group to the highest; on each waterline, the points are listed from aft forward.

#### First section profile

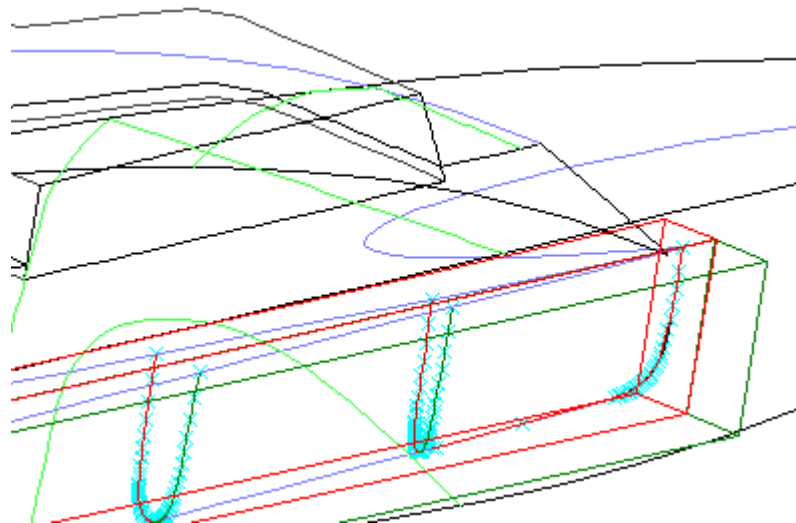
If the group is made up of section contours (rather than waterlines), then it is possible to have the first section as a profile rather than a section. The profile is calculated from a buttock line placed at the group's y-zero point. For a monohull, this would typically be on the centreline; and for a catamaran, the demihull centreline. If a number of contours are specified, the first contour will be the profile; if the grid is to be used for the section locations, an additional profile contour will be added. The profile contour is still trimmed to the group's bounding box and is extended aft to the first proper section (a small gap is included so that it does not duplicate points on the first section).

This option is selected on a group-by-group basis, by typing "Profile" in the corresponding "First section" column of the group:

Group definition					
Name	Colour	Contour	First section	Surfaces	Number
Default	Orange	Section	Profile	Blue	11



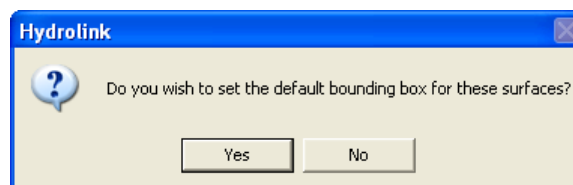
'First section: Profile' option turned on for containership with bulbous bow.



Profile option for wave piercing catamaran

### Surfaces

Double click in this cell to select the surfaces that should be used to calculate the contours for this group. If no surfaces are selected, the cell will be white with the text "none". After you have selected the surfaces, you will be prompted to automatically fit the bounding box to the extents of the selected surfaces:

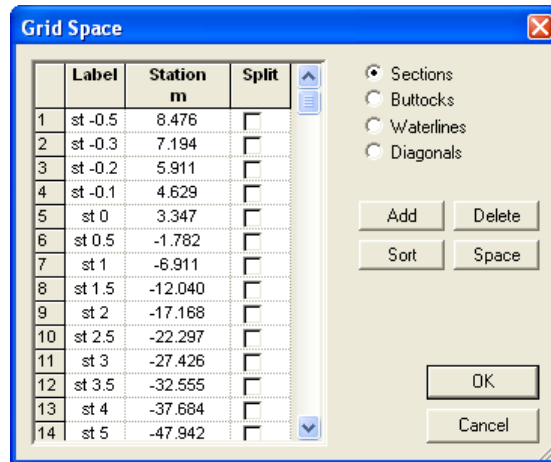


Choosing “yes” will adjust the bounding box so that it contains the selected surfaces. Slight margins are applied to ensure that the surfaces are completely contained and that the first and last contours go through the surfaces. The dimensions of the bounding box may be adjusted manually if required. Choosing “No” will leave the bounding box unchanged.

**Number of contours**

There are two options for defining the location and number of contours to be used in the groups:

Firstly you may use the Maxsurf/Hydrolink grid of sections and waterlines to define the contour positions. Do this by typing “Grid” in this cell. If the contours are sections, then the sections defined in the Grid spacing dialog will be used. If the contours are waterlines, then the defined waterlines will be used. You can edit the number and positions of the sections and waterlines by selecting Grid Spacing from the Data menu: (Note that if you wish to save any changes made to the grid spacing, then you will have to change the output file format to Maxsurf and save the design.)



Grid Space dialog

This method of specifying the sections is useful when a high degree of control over the contour locations is required and also when it is required that sections in different groups in the stern region of the vessel lie in the same planes.

The second way of specifying the contours is simply to enter the number of contours to be calculated for the group. The contours are spaced equally along the length (sections) or depth (waterlines) of the boundary box.

**Number of points (on contours)**

There are three options for specifying the number and distribution of points around the contour:

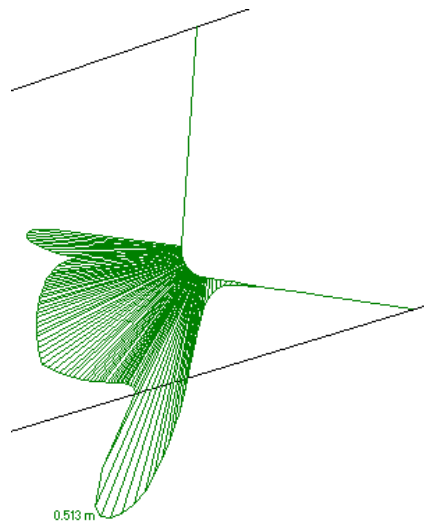
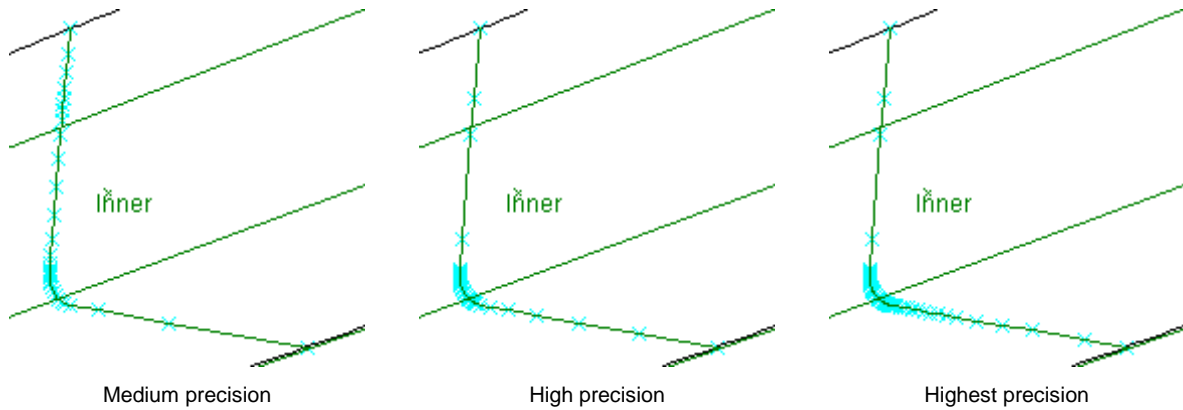
- **Default**
- **Specified number**
- **Populate.**

**Note:**

For highest quality always use highest precision for any of the options below.

### Default

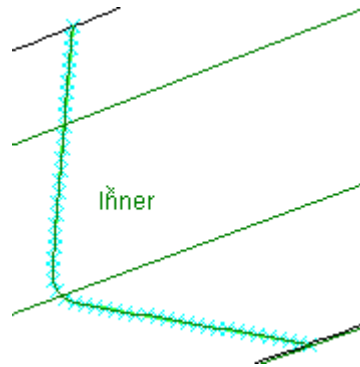
The default option uses the standard Maxsurf data points. In this mode, the number of points can be changed by changing the Precision in the Data menu. Default number of points (below) at different precisions. Notice that at Highest precision, points are concentrated around areas of high curvature, but removed from flat areas of the curve.



Curvature plot on contour.

### Specified number

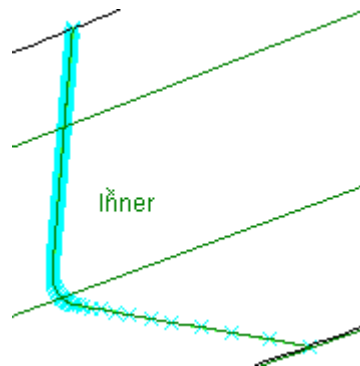
Alternatively you can specify the number of points on the contours. The same number of points will be used on all contours. The points are spaced equally (within a few percent) along the girth of the contour.



Specified number of points – 50 (these are spaced equally around the girth)

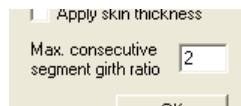
### Populate

Finally, a populate option is available. With this option turned on, additional points are inserted into the contour such that successive intervals between points does not vary by more than a specified ratio.



Populate option using Max. consecutive segment girth ratio of 2.0

The same ratio is used for all groups. This is defined in the “Max. consecutive segment girth ratio” box in the dialog:

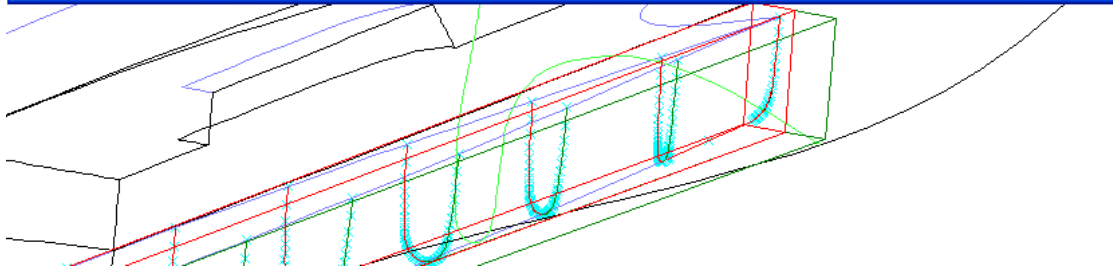
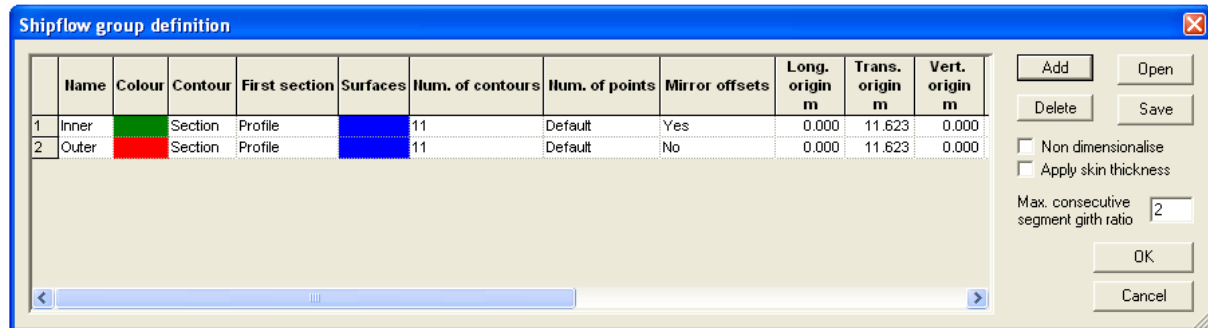


Tip: If you need a higher resolution around the intersection between the wave surface and the hull, the populate option can give you good results. It can also resolve panels "sagging" at the bottom, which sometimes occurs for the other alternatives.

### Mirror offsets

---

To assist with the definition of catamarans, there is a “Mirror offsets” option. This mirrors the offset value about the local y-zero-point when the data is saved. This is useful for the groups which define the inside of a catamaran demihull. This option is specified independently for each group:



Use of the 'Mirror offsets' feature

### Shipflow group origin

This specifies the local origin to be used for the group. By default the longitudinal origin is at the design zero point; the transverse origin is on the centre-line; and the vertical origin is at the Maxsurf/Hydrolink vertical zero point. The longitudinal origin may be specified numerically, or you can type AP for aft perpendicular or FP for forward perpendicular. For the vertical origin, again this can be specified numerically or you can specify DWL for the datum waterline or Baseline for the baseline.

### Bounding box extents

The bounding box is specified by giving the longitudinal positions of the aft and forward extents. The port, starboard, top and bottom limits are specified. In body-plan the bounding box is rectangular, but for groups of sections, the bounding box may taper in the plan and profile views if necessary; for waterline groups, the box must be rectangular in all three views.

### Other features

#### Adding and deleting groups

Additional groups can be added above the currently selected group in the table by clicking the Add button or pressing Alt+A. To add several groups, select the required number of rows. Groups are deleted by selecting the groups and clicking the Delete button or pressing Alt+D.

#### Open and Save group definitions

These enable saving and retrieving of the group settings from a file.

#### Non-Dimensionalise

Shipflow offsets are exported in the currently selected units, unless non-dimensionalised. Use this checkbox to specify whether the output should be non-dimensionalised with respect to LPP.

**Skin thickness**

Skin thickness can be included by ticking the “Apply skin thickness” checkbox in the Group Definition dialog if it is projected outside (or on either side of) the NURB surface. Skin thickness will be included for all the groups when this option is selected.

**Shipflow group sorting**

Groups may be sorted by double clicking on the column you wish to sort by. Successive double click cycle through sort ascending, sort descending and unsorted.

**Copy and paste**

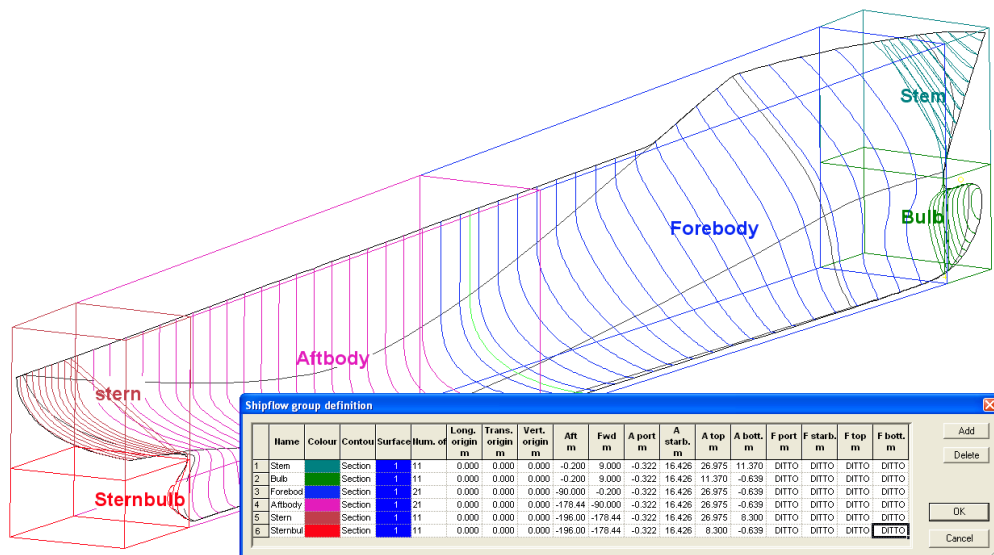
The table supports full copy and paste capability. So you can store your group definitions in Microsoft Excel (for example, however ensure that the cells are formatted as text and not general otherwise the colour and surface selection data will become corrupted).

In addition the group definition is appended as comments to the end of the output Shipflow file (along with other relevant information). This facilitates regenerating the data if the model is updated or adjusting the groups.

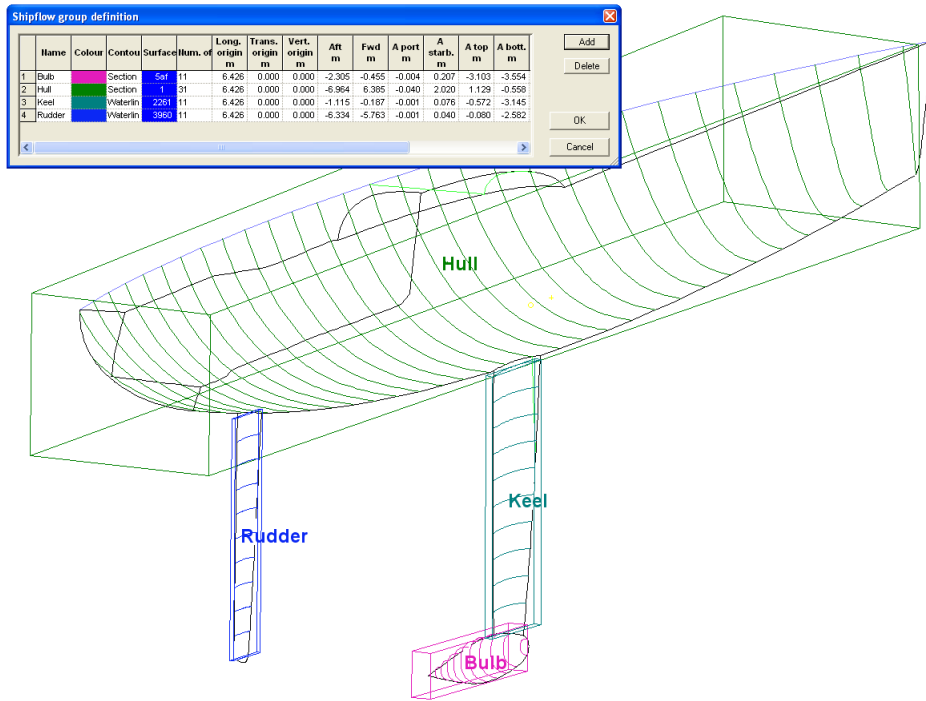
**Shipflow Samples**

In the c:\Program Files\Maxsurf\Sample Design directory on your computer you will find Shipflow group definition and export files in the following folders:

- Ships\ContainerShip
- SailingYachts\FastYacht



Shipflow section groups for the Containership\_Pro.msdx sample model



Fast Yacht sample model using both *Section* groups for the hull and bulb groups and *Waterline* groups for the keel and rudder lifting surfaces

## Chapter 2 Hydrolink Reference

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This chapter describes the menu commands and toolbars available in Hydrolink.

- [Windows](#)
- [Toolbars](#)
- [Menus](#)

The toolbars and windows in Hydrolink are exactly the same as in Maxsurf, please refer to the Maxsurf manual for more information.

### Windows

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The windows that are available in Hydrolink are the same as in Maxsurf. Please refer to the Maxsurf manual for more information.

### Toolbars

---

The toolbars that are available in Hydrolink are the same as in Maxsurf. Please refer to the Maxsurf manual for more information.

### Menus

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The following menus are available in Hydrolink:

- [File Menu](#)
- [Edit Menu](#)
- [View Menu](#)
- [Display Menu](#)
- [Data Menu](#)
- [Window Menu](#)
- [Help Menu](#)

#### File Menu

---

The File menu contains commands for opening and saving files, importing and exporting data.

##### [Open Maxsurf Design](#)

---

Use the Open command to open an existing Maxsurf design from your disk.

##### [Close Maxsurf Design](#)

---

Select Close when you wish to finish with the current design. Before closing, a dialog box will appear asking whether you wish to save the current design. If you select Yes the current design will be saved onto the disk.

##### [Save Maxsurf Design](#)

---

Selecting Save Maxsurf Design enables you to save the current design under a new name. This is useful if you modify a design, but wish to keep a copy of the old version as well as the new.

##### [Input File Format](#)

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See “Input File Format Submenu”

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**Output File Format**

---

See “Output File Format Submenu”

---

**Recent File**

---

Provides access to any recent files you have had open in Hydrolink.

---

**Exit Hydrolink**

---

When you have finished using Hydrolink choose Exit. If Hydrolink has a design open that has not been saved to disk, you will be asked whether you wish it to be saved.

---

**Edit Menu**

---

The Edit menu contains commands for copying and pasting.

---

**Undo**

---

The Undo command performs no function in Hydrolink.

---

**Cut**

---

The Cut command performs no function in Hydrolink.

---

**Copy**

---

The Copy command performs no function in Hydrolink.

---

**Paste**

---

The Paste command performs no function in Hydrolink.

---

**Set Import Parameters**

---

The Set Import Parameters option allows you to change the way that Hydrolink imports the selected file format.

---

**View Menu**

---

The View menu contains commands for controlling the appearance of the display in the graphical windows.

---

**Zoom**

---

The Zoom function allows you to work on any part of your design by enlarging any particular area to fill the screen.

---

**Shrink**

---

Choosing Shrink will reduce the size of the displayed image in an active drawing window by a factor of two.

---

**Pan**

---

Choosing Pan allows you to move the image around within a drawing window.

---

**Home View**

---

Choosing Home View will set the image back to its Home View size. Maxsurf starts up with default Home View settings for all its drawing windows. However, the Home View may be set at any time by choosing the Set Home View function.

---

**Set Home View**

---

Choosing Set Home View allows you to set the Home View in each drawing window.

To set the Home View, use Zoom, Shrink, and Pan to arrange the view as you require, then select Set Home View from the View menu.

---

#### **Colour**

The Colour function allows you to set the colour of lines and controls.

---

#### **Font**

The Font command allows you to set the font, style, size, effects, colour and script.

---

#### **Toolbar**

The toolbar command provides access to any toolbars available to you in Hydrolink.

---

#### **Status Bar**

Makes the Status Bar visible or invisible.

---

#### **Display Menu**

Allows the user to select what is displayed

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#### **Markers**

Allows you to show or hide the markers.

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#### **Grid Display**

Allows you to show or hide the grid.

---

#### **Contours**

The Contours option allows you to select which contours are drawn to the screen at any given time. Any combination of contours may be chosen from the Contours dialog.

See the “Maxsurf Reference” section for more information on Contours.

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#### **Render**

Displays a rendered view of the model in the perspective view.

---

#### **Data Menu**

The Data menu contains commands for calculating and changing the numerical data, which defines the design.

---

#### **Units**

The Units command allows you to set the dimension and weight units.

---

#### **Grid Spacing**

This menu function allows you to precisely specify positions for all Sections, Waterlines, Buttocks, and Diagonals..

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#### **Frame of Reference**

Choosing this function allows you to set the positions of the Fore and After Perpendiculars, the DWL and the Baseline of the design; the Midships position is altered indirectly since it is assumed to be mid way between the Fore and After Perpendiculars. All values are entered relative to the Zero Point. However, it may be that the Zero Point is set to the position of one of the elements in the Frame of Reference. In this case the Zero Point is not updated until you have clicked OK in the Frame of Reference dialog.

---

**Zero Point**

---

This function sets the longitudinal and vertical reference point for all measurements.

---

**Precision**

---

Allows the user to select the precision (point density) that should be used for the Shipflow export and other export formats where the precision is not automatically set.

---

**Window Menu**

---

The Window menu allows you to make any window selected from the menu the active window.

---

**Cascade**

---

Displays all the Windows behind the active Windows.

---

**Tile Horizontal**

---

Layout all visible windows across the screen.

---

**Tile Vertical**

---

Layout all visible windows down the screen.

---

**Arrange Icons**

---

Rearranges the icons of any iconised window so that they are collected together at the bottom of the Maxsurf program window.

---

**Perspective**

---

Choosing the Perspective view allows you to view your design in 3 dimensions.

---

**Help Menu**

---

Provides access to Hydrolink Help.

---

**Hydrolink Help**

---

Invokes the Hydrolink PDF manual.

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**Online Support**

---

Provides access to a wide range of support resources available on the internet.

---

**Check for Updates**

---

Provides access to our website with the most recent version listed.

---

**About Hydrolink**

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Displays information about the current version of Hydrolink that you are using. Also enables the authorisation code for the Shipflow export to be entered. See the [Shipflow \(Flowtech\) interface](#) section on page 7 for more information.



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