

Now  
for Windows

# Hydro

## *Hydrostatics and Intact Stability*

Hydro is a Windows-based PC program for the calculation of flotation and righting moments of an elongated floating body such as the hull of a boat or ship. It runs as a MultiSurf macro (or as a stand-alone program).

**Accurate results**

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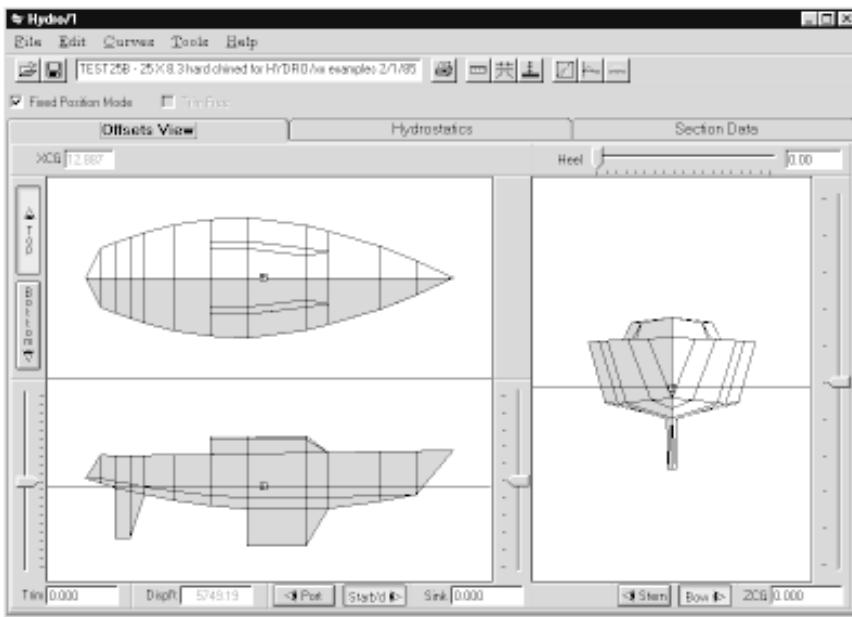
**Easy-to-use  
Windows interface**

+

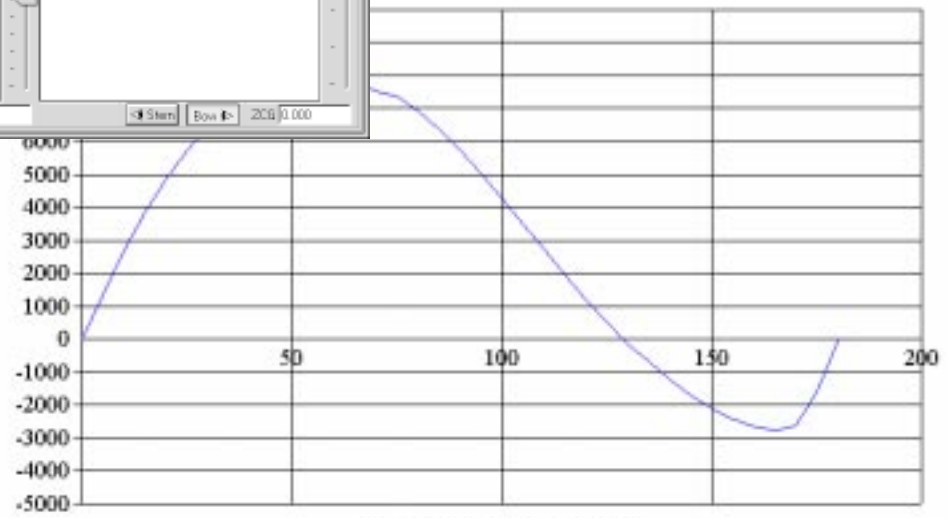
**Speed of computer  
calculations**

=

**Great time savings**



Righting  
Moment  
(ft-lb)



Details on back.

Heel Angle (degrees)

# Hydro Product Description

## Hydro Technical Features and Benefits

### Hydrostatics and intact stability in Windows 95 or NT environment

- Interactive interface
- Easy access from MultiSurf: go to View/ Offsets, then click Tools/Hydro

### Fixed position hydrostatics

Place the model in the water in any position and orientation; the program calculates all the integral quantities of interest to the naval architect.

### Equilibrated hydrostatics

An automatic balancing algorithm will bring the model into a position of hydrostatic equilibrium under whatever conditions of heel and loading you specify — you can specify trim free or fixed when bringing the model to equilibrium.

### Graphs

View and print graphs and tabulated data. Multicolored graphs can be marked with symbols for monochrome printing.

- Curves of Form
- Stability Curves
- Section Area Curve

Bonjean and dynamic stability (righting energy) data included.

### Special calculations

- Ballast weight and CG
- ZCG from RMPD
- Sink & Trim from Freeboards
- Sink & Trim from Drafts

### Critical points

You can name and key in the coordinates of up to six specific points whose heights above or below the waterplane will be reported.

### Units

- US, metric, or other
- Conversion between units or just label change

### Interactive tabs

- Offsets View (graphic display of vessel position in relation to waterplane, CG, and critical points)
- Hydrostatics View (text display of hydrostatics report)
- Section Data (tabulated report of section data)

Change vessel position using sliders and/or numerical fields.

Change data in either the Offsets or Hydrostatics view and it is automatically updated in the other view as well as in the Section Data table.

### Color control

- Port and starboard sides of vessel
- Center of gravity mark
- Critical point marks
- Graph backgrounds

### Toolbar and keyboard shortcuts

### Save setup

### How to... examples

- Position a boat to its design waterline
- Get upright hydrostatics for an existing boat for which freeboards have been measured
- Get upright hydrostatics for an existing boat for which drafts have been measured
- Get total enclosed volume of boat
- Get total skin area of hull and appendages
- Get upright hydrostatics for a boat whose weight and center of gravity are known
- Check the effect of adding a weight at a particular location

### Hydrostatic output quantities

- *Position*: Attitude of vessel in terms of Sink, Heel, and Trim.
- *Center of Gravity* (CG): X,Y,Z of CG.
- *Coefficients*: Waterplane, prismatic, block, midsection, and displacement/length ratio.
- *Displacement*: Volume, weight of displaced volume, and longitudinal center of buoyancy.
- *Dimensions*: Waterline (WL) length, WL forward X, WL aft X, WL beam, draft.
- *Center of Buoyancy* (CB): X,Y,Z of CB.
- *Waterplane* (WP): WP area, longitudinal center of flotation, and the center of flotation.
- *Specific Weight*: Specific weight of substance in which model is being immersed (typically sea water or fresh water). For ballast and CG calculations, value is specific gravity of ballast material (e.g. lead).
- *Wetted Surface* (WS): WS area and the center of WS area.
- *Initial Stability*: Calculated when heel is zero. Includes: moment of inertia (of the waterplane), metacentric height, and righting moment per degree (RMPD).
- *Heeled Stability*: Calculated in 'Trim Free' mode when heel is nonzero. Includes: transverse and longitudinal righting arms and moments.
- *Critical Points*: The calculated heights with reference to the waterplane.

### Documentation and on-line help

- Comprehensive, illustrated manual
- "How to" examples
- On-line help duplicates all the textual information and examples in the manuals

### System requirements

- PC: 486 or higher recommended
- 8 MB RAM
- Windows 95 or Windows NT
- 800 x 600 or higher resolution
- 10 MB free disk space
- math coprocessor (recommended)

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