

# Choosing Which Surface to Use (Marine Design)

<b>Masts, spars, daggerboards, flat rectangles</b>	<p>Q: Can you make the surface by sliding one curve along another?</p> <p>If yes: The simplest surface you can use is a <b>Translation Surface</b>. In this surface the moving curve stays parallel to its initial position.</p>
<b>Keel bulb is foil revolved around axis</b>	<p>Q: Can you make the surface by rotating one curve around a centerline or axis?</p> <p>If yes: You can use a <b>Revolution Surface</b>.</p>
<b>Aluminum, steel, or plywood construction</b>	<p>Q: Do you want to be able to build your surface out of a flat plate and to fabricate it by bending alone? That is, is your surface required to be <i>developable</i>?</p> <p>If yes: Use a <b>Developable Surface</b>.</p>
<b>Floor of deck-house taken from deck</b>	<p>Q: Is the surface a piece of a larger surface?</p> <p>If yes: Use a <b>SubSurface</b> or <b>Trimmed Surface</b>.</p>
<b>Wings, keels, rudders</b>	<p>Q: Are you making an airfoil or a hydrofoil?</p> <p>If your surface will be attached to another surface, use one of the other lofted surfaces with <b>Foil Curves</b> for master curves.</p>
<b>Sides of deck-house, surfaces of trapezoidal keel</b>	<p>Q: Do you need a simple, somewhat "flat" surface to span the distance between two curves smoothly?</p> <p>If yes: A <b>Ruled Surface</b> probably will meet your needs. If you want to expand it into a flat plate you can use a <b>Developable Surface</b> instead.</p>
<b>Sails, round-bottomed hulls</b>	<p>Q: Do you think of the surface as being the area inside three or four boundary curves?</p> <p>If yes: Use a <b>Tangent Boundary Surface</b>.</p>
<b>Decks, chine hulls</b>	<p>Q: Do you want the surface to be freeform, but fixed to two edge curves (the sheer line and chine for example)?</p> <p>If yes: There are two choices: you can use a <b>Ruled Surface</b>, or a <b>B-spline Lofted Surface</b>.</p>
<b>Hulls, rounded bows, general surfaces</b>	<p>We often use a <b>C-spline Lofted Surface</b> running through transverse <b>B-spline Curves</b> for boat hulls. This is a good combination between the flexibility of B-spline curves for the transverse direction and the stiffness of cubic splines longitudinally.</p>
<b>Lofted surfaces from measured points</b>	<p>Q: Do you need a surface to pass through a net of control points exactly?</p> <p>If yes: Try a <b>C-spline Lofted Surface</b> defined by <b>C-spline Curve</b> master curves.</p>