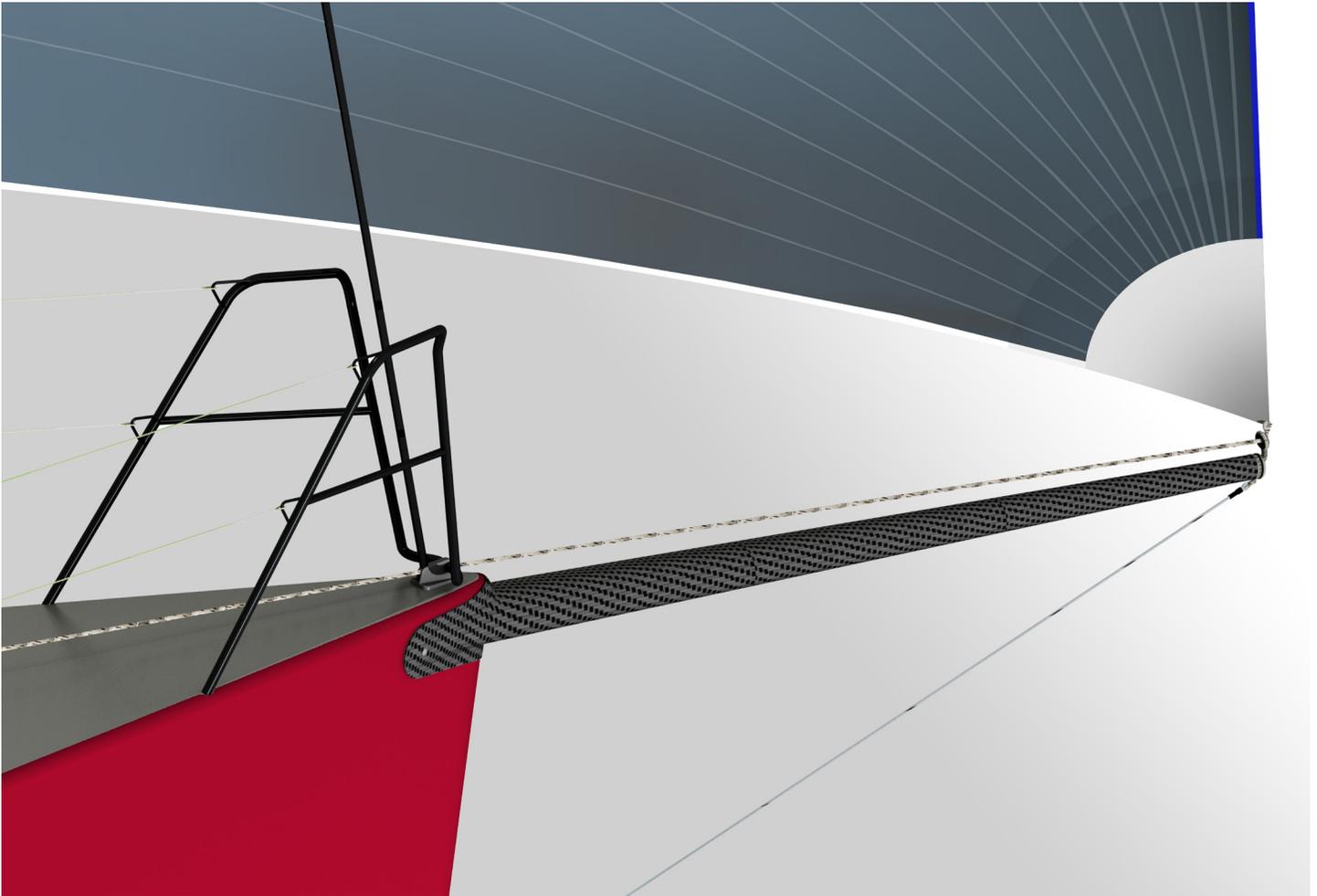


## Farr 30 IRC-Optimized Bowsprit



Farr Yacht Design has designed a removable, IRC optimized bowsprit for the Farr 30 One Design. The bowsprit measures 1.79m from the stem, a length which was chosen after evaluating similar boats and determining that the increased downwind boat speed eclipsed the induced rating penalty. The bowsprit's cross sectional shape was derived from FYD's proprietary formula that minimizes aerodynamic drag without compromising structural rigidity. 3D modeling tools were used to ensure that the bowsprit conforms perfectly to the bow geometry.

The tackline is routed through existing hardware on the bow, reducing the amount of additional hardware required. A single bolt per side attaches the bowsprit to the hull; the bowsprit is easily removed so that the boat can get back into its one design configuration.

Competition Composites Inc. (CCI) is an authorized manufacturer for the new bowsprit design. CCI is a unique Canadian manufacturing business focused on designing and building composites products for various industries, especially for the boating market. For the past several years, CCI has been manufacturing our Farr 395 and Beneteau 10R rudder upgrades. The feedback from these boat owners has been very positive regarding the craftsmanship, feel, and performance of the rudder designed by FYD, and manufactured by CCI.

CCI offers the new IRC-optimized bowsprit for \$3,900 USD, not including packaging & handling. For more details and to order, please contact CCI at [sales@fastcomposites.ca](mailto:sales@fastcomposites.ca) or +1-613-599-6951. If you wish to speak with FYD, please contact us at [info@farrdesign.com](mailto:info@farrdesign.com) or +1-410-267-0780.

## PERFORMANCE DETAILS

The sailplan (Figure 1 on page 4) shows the general arrangement for the bowsprit designed for the Farr 30. Sail and bowsprit dimensions are listed on the drawing and are further detailed below in Table 1.

<b>ISP</b>	13.62 [m]
<b>STL/TPS</b>	5.20 [m]
<b>J</b>	3.32 [m]
<b>Sprit Length from stem</b>	1.79 [m]
<b>Maximum tack working load</b>	400 [kg]

**Table 1: Relevant Bowsprit Dimensions**

The sprit was designed to be long enough to accommodate a wide variety of downwind sails without incurring an unnecessary IRC handicap penalty. The bowsprit is not designed to carry high luff-load code 0's that could be used for upwind sailing, but this sail type is not typically favored under IRC since it must be measured as a headsail (instead of a spinnaker), incurring a large handicap penalty.

As long as the sail midgirth is greater than 75% of the foot length, then all sails flown from the sprit will be rated as spinnakers and therefore, only the maximum sized sail will affect the rating. Table 2 (shown below) summarizes two options for the maximum-sized spinnaker.

	<i>Option 1: Large</i>	<i>Option 2: Smaller</i>
<b>SPA</b> [m <sup>2</sup> ]	106.9	99.4
Suggested Linear Dimensions: [m]		
<b>SLU</b>	15.6	15.29
<b>SLE</b>	13.08	13.14
<b>SFL</b>	9.06	8.29
<b>SHW</b>	8.97	8.45

**Table 2: Spinnaker Sizing Recommendations**

Two sails sizes are given since the optimum solution depends somewhat on the typical sailing profile of the boat. A larger sail will increase downwind running performance, particularly at wider apparent wind angles. Therefore the larger sail is favored on windward-leeward courses where equal parts of upwind and downwind sailing are included. A larger sail will also increase peak performance in marginal surfing conditions, as long as the sail is not overpowering the boat and causing excessive heel. It is expected that this will coincide with downwind running in the windspeeds range from 12-18 knots.

A smaller sail will more likely be favored (taking into account its handicap) on courses with more upwind than downwind sailing, and courses with reaching. This is especially true if reaching without spinnaker, but is also true if flying a small reaching sail that is less than the maximum rated size.

In both cases, the spinnaker area (SPA) is the most important suggested value. The detailed luff, leef, foot and mid girth dimensions should be selected by a sail designer to ensure that the sail flies properly. Table 3 (shown on the next page) displays the predicted downwind VMG performance versus the one design configuration. The performance deltas are shown as percentage speed gain, i.e. percentage speed increase over the one design configuration.

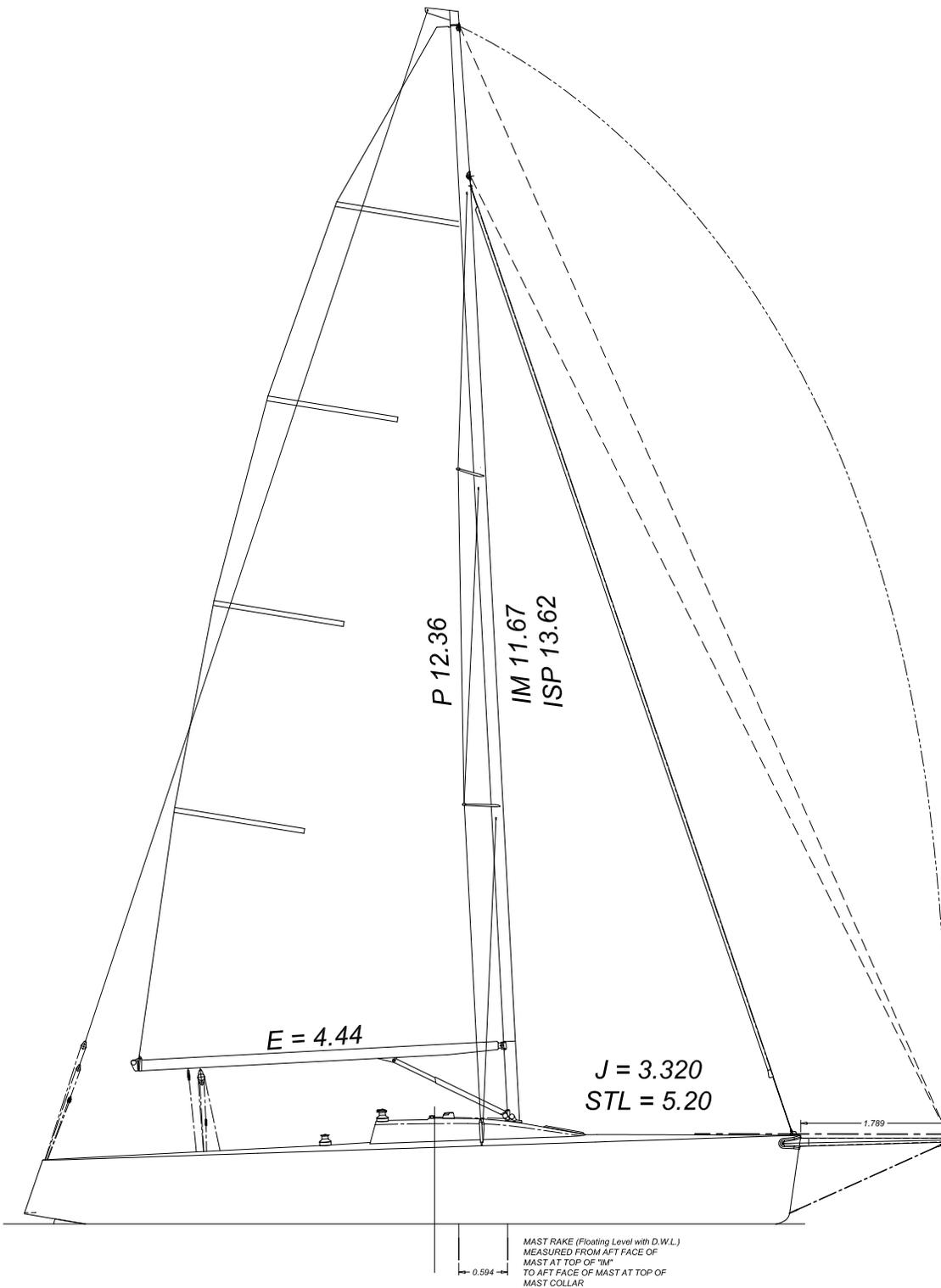
<b>Wind Speed at 10m [kts]</b>	<b><i>Spin Option 1: Large</i></b>	<b><i>Spin Option 2: Smaller</i></b>
<b>4</b>	8.1%	6.2%
<b>6</b>	5.6%	4.0%
<b>8</b>	2.8%	1.6%
<b>10</b>	2.0%	0.9%
<b>14</b>	3.2%	1.2%
<b>18</b>	4.4%	2.4%
<b>20</b>	3.8%	2.0%
<b>25</b>	1.2%	0%

**Table 3: Downwind VMG Performance Delta**

## CONSTRUCTION DETAILS

The bowsprit is carbon construction made in a female mold. It uses a single external tack line, one removable through hull bolt per side, and a simple wire bobstay. It was engineered using a 400kg working tack load; this loadcase was driven by the breaking strength of the halyard sheave at the masthead.

The hull requires very little modification, thus keeping installation costs and added weight to a minimum. The only piece of new deck hardware required is an upgraded clutch to handle the increased tack line load. Each component of the bowsprit assembly was designed to boost performance without compromising on cost and weight.



	<b>Option 1: Large</b>	<b>Option 2: Smaller</b>
<b>RECOMMENDED SIZE FOR LARGEST RUNNING SPINNAKER:</b>		
<b>SPA</b>	106.9	99.4
Suggested Linear Dimensions:		
<b>SLU</b>	15.6	15.29
<b>SLE</b>	13.08	13.14
<b>SFL</b>	9.06	8.29
<b>SHW</b>	8.97	8.45
<b>Large sail Preferred for:</b>		
Windward-leeward with equal parts up/down		
Downwind sailing in surfing conditions 12-18 knots		
Tight downwind competition - passing important		
<b>Small sail Preferred for:</b>		
Courses with more upwind sailing		
Courses with tight reacing, using code 0 and other small gennakers		
Racing against lower performance boats		