

# THE EVEN KEEL

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Volume 5 Cover Story

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**One Top Designer,  
One Great Design,  
One Innovative Keel**

## SPECIFICATIONS

|                       |             |
|-----------------------|-------------|
| LOA.....              | 30.0'       |
| LWL.....              | 27.0'       |
| Beam.....             | 8.5'        |
| Draft.....            | 6.5'        |
| Displacement.....     | 3,100lbs.   |
| Upwind Sail Area..... | 600 sq. ft. |
| Dspl/L.....           | 70          |
| SA/Dspl.....          | 45          |



The design challenge for the J90 was simple. Make it the fastest, 30 foot, fixed keel sloop in the world. Easily said, but a lot more difficult to do. Enter Rodney Johnstone with a leading edge design and TPI with construction technology that leads the world. Outcome... the fastest 30 footer that is dueling against boats 10 to 20 feet longer.

At Mars we say that "**Success is Built From the Bottom Up**". The finished J90 keel in our manufacturing plant, ready for shipment, screams out 'speed'. The narrow keel fin appears wholly inadequate to support the bulb. Applied **MarsKeel TECHNOLOGY** often creates these divergent images... speed is obvious but is it strong enough?

The J90 carries 600 square feet of sail, with a total displacement of only 3100 lbs. With these specifications it is clear that the keel must be designed to drive the center of gravity to the lowest point possible, or the sailors had better be good swimmers.

The L-Keel is over half of the boat's total displacement. The fin is roughly one third (1 /3) of the weight of the keel, hence the slicingly narrow fin. The fin is Nickel, Aluminum and Bronze (NAB), cast from an alloy specified as C95500. This alloy has an extremely high shear and tensile strength that allows the narrow design. Aside from strength, the other advantage of NAB is corrosion resistance. Choosing a marine environment friendly alloy ensures reduced keel maintenance.



*L-shaped torpedo keel for J Boats' new J 90. The narrow fin design is possible because of the properties (strength/corrosion resistance) of the Nickel, Aluminum, Bronze alloy used.&Mac221; The total height is 5.4 feet.*

The antimonial lead bulb is integrally cast to the fin. This process is a hallmark of **MarsKeel TECHNOLOGY** that eliminates the need for additional bolts that may be a future site of corrosion attack. The bulb and fin junction is Kevlar wrapped to provide optimum strength and to protect against the two alloys dissimilar coefficients of expansion. The NAB fin is prepped with a phosphate wash, placed in hinged templates, and faired using 2 part epoxy, to a +/- 1 mm tolerance. The finished keel is shipped upright, ready for installation to the hull recess, using 8 - 3/4" diameter 316 stainless steel bolts.

Above the keel, lightweight materials and innovation abound. The total hull and interior structure weighs less than 1100 lbs. The composite hull and deck have a carbon fibre biaxial and unidirectional inner skin, pre-molded Corecell A 500 foam core and a Kevlar/Eglass hybrid outer skin. The entire laminate is scrimp-molded using Gougeon Pro-set epoxy resin.

The two-spreader, carbon fibre rig by Hall Spars-including carbon fibre boom, Navtec rod rigging, lightweight mechanical vang, and Technora backstay- weighs less than a J24 rig. The J90 carries 600 sq. ft. of upwind sail in mainsail and 150 percent genoa for a sail area/displacement ratio of 45.

The J90 has been raced with up to a crew of seven... so its one of the few racers where the crew may outweigh the hull. No wonder the J90 is winning PHRF "big boat" Class races, setting a new standard for performance.

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