

J/105 Keel & Rudder Measurement Procedure

Deep Keel

February 23, 2003

What you need:

- two people
- tape measure (metric)
- pencil
- masking tape to mark keel & rudder sections
- spreadsheet for recording measurements and additional paper if you're not recording measurements on the computer
- Leading Edge Measurement Point Locator Template
- Trailing Edge Measurement Point Locator Template
- Keel Section A Template – marked "J105 DEEP KEEL SECTION A"
- Keel Section D Template – marked "J105 DEEP KEEL SECTION D"
- Minimum Thickness Template Keel Section A – marked "J105 DEEP KEEL SECTION A", "U" shaped
- Minimum Thickness Template Keel Section D – marked "J105 DEEP KEEL SECTION D", "U" shaped
- Keel Bulb Template – marked "J105 DEEP KEEL BULB"
- Rudder Section 2 Template – marked "J105 RUDDER SECTION 2"
- Rudder Section 5 Template – marked "J105 RUDDER SECTION 5"
- Minimum Thickness Template Rudder Section 2 – marked "J105 RUDDER SECTION 2", "U" shaped
- Minimum Thickness Template Rudder Section 5 – marked "J105 RUDDER SECTION 5", "U" shaped

Keel:

1. Locate Keel Measurement Points:
 - Place Leading Edge and Trailing Edge Measurement Point Locator Templates along the hull such that the two points rest on hull centerline with the third point intersecting the keel at leading/trailing edge centerline to identify Measurement Points 1 (leading edge at Section A) and 2 (trailing edge at Section A).
 - Measure down the center of the leading and trailing edges (at a distance shown in the diagram from Measurement Points 1 & 2) to identify Measurement Points 3 (leading edge at Section D) & 4 (trailing edge at Section D).
2. Measure Keel Section A:
 - Align Keel Section A Template along the horizontal plane defined by Measurement Points 1 and 2 – i.e. section A.
 - Check chord length vs. template and document (measure in millimeters; max chord in Official Offsets is 1320 mm). The "chord length" of the keel and rudder is measured parallel to the keel/rudder axis – not over the curved surface. The template indicates the maximum, but we suspect a number of keels – particularly those that have not been faired – to be in excess of max.
 - Check section shape conformity with Keel Section A Template - note any obvious variation from template section shape (e.g. maximum foil thickness farther forward than template); note as pass ("P") or fail ("F") if there's a variation. Explain "fail" by a footnote (may need a separate page).
 - Test thickness using Minimum Thickness Template Keel Section A by sliding over the keel from leading edge and aligning on horizontal plane defined by Measurement Points 1 and 2. If template fits on this plane or doesn't slide over the keel, then keel is at least minimum thickness. If there is any space between template and keel, then keel is too thin. Note as pass or fail. If "Fail", please elaborate in a footnote by how much the keel fails.
3. Measure Keel Section D:
 - Align Keel Section D Template along the horizontal plane defined by Measurement Points 3 and 4 – i.e. section D.
 - Check chord length vs. template and document (measure in millimeters; max chord in Official Offsets is 975 mm)
 - Check section shape conformity with Keel Section D Template - note any obvious variation from template section shape; note as pass or fail if there's a variation. Explain any "fail" by a footnote (may need a separate page).
 - Test thickness using Minimum Thickness Template Keel Section D by sliding over the keel from leading edge and aligning on horizontal plane defined by Measurement Points 3 and 4. If template fits on this plane

or doesn't slide over the keel, then keel is at least minimum thickness. If there is any space between template and keel, then keel is too thin. Note as pass or fail. Explain "fail" by footnote.

4. Measure Keel Bulb:

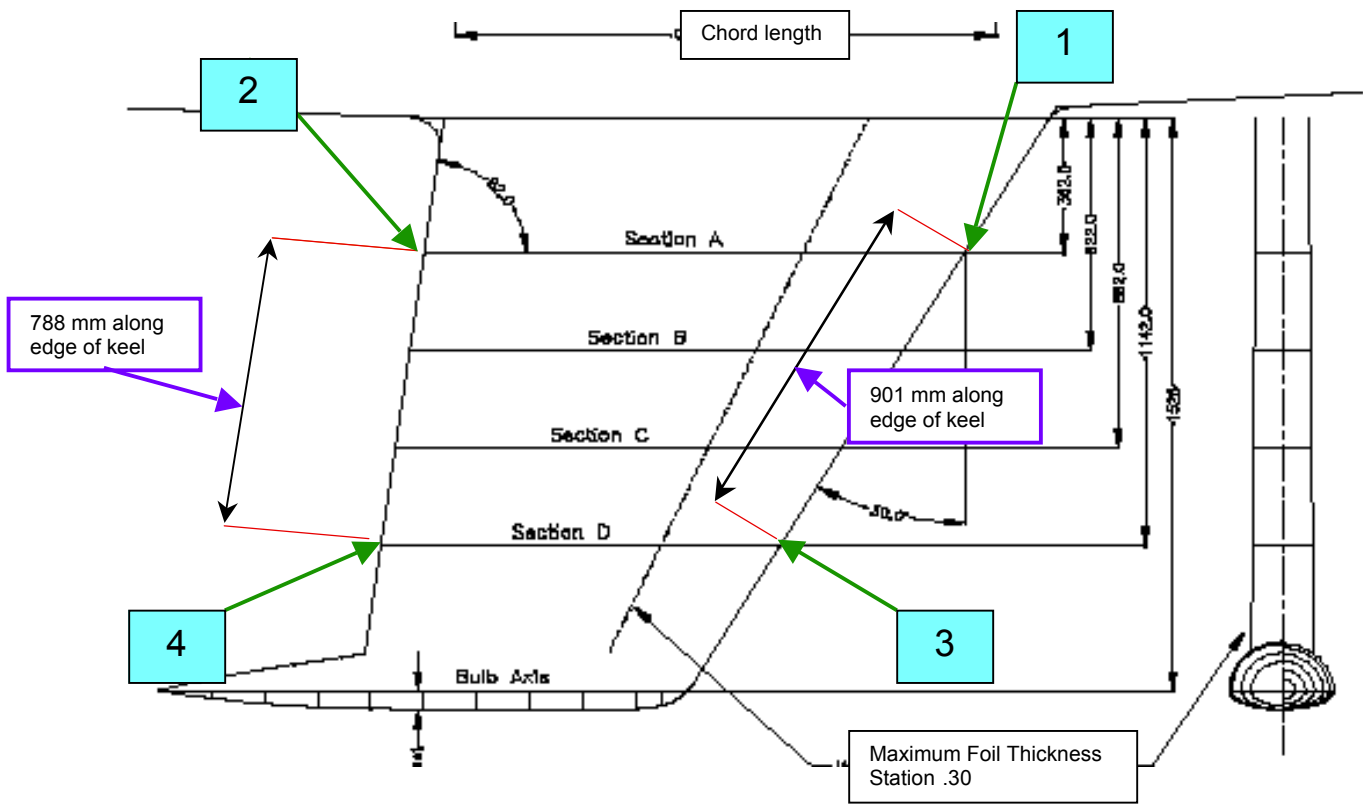
- Test bulb shape by placing Keel Bulb Template on center of bulb axis. Because the bulb is circular in section on top, this template can also be rotated about the center of the bulb to test bulb shape.
- Check section shape conformity - note any obvious variation from template section shape; note as pass or fail. Explain any "fail" by a footnote (may need a separate page).
- Check bulb chord length vs. template and document (in mm; max chord in Official Offsets is 1295 mm)

5. Measure Keel Fore & Aft Location:

- Measure from Measurement Point 2 to corner of transom on center line (same Measurement Point as for floatlines – see diagram below) - and document (in mm).

6. Measure Rudder Top & Sections 2 and 5:

- Align Rudder with centerline of hull.
- Measure top of rudder from leading edge to trailing edge and document ("Length Top of Rudder" in mm)
- Measure shortest distance from point at the trailing edge at top of rudder to the bottom of the rudder and document ("Rudder Depth" in mm; Official Offsets show 1400 mm)
- Measure down the center of the leading and trailing edges from the top of the rudder along the surface at a distance per the diagram to identify forward ("Measurement Point 5") and aft location points ("Measurement Point 6") on section 2 of the rudder.
- Measure down the center of the leading and trailing edges of the rudder (at a distance per the diagram from Measurement Points 5 & 6) to identify Measurement Points 7 (leading edge at Section 5) & 8 (trailing edge at Section 5).
- Align templates at their respective points
- Check chord length vs. template for both sections 2 and 5 and document (measure in millimeters; max chord for section 2 is 700 mm; max chord for section 5 is 430 mm)
- Check section shape conformity with Rudder Section 2 and 5 Templates - note any obvious variation from template section shape; note as pass or fail if there's a variation. Explain any "fail" by a footnote (may need a separate page).
- Test thickness using Minimum Thickness Templates Rudder Section 2 and 5 by aligning on sections from leading edge. If template fits on or doesn't slide over the rudder at either section, then rudder is at least minimum thickness. If there is any space between template and rudder, then rudder is too thin. Note as pass or fail. Explain "fail" by footnote.



Location of Measurement Point at Stern for Keel Fore/Aft Location

