

**YACHT DATA AND PERFORMANCE CHARACTERISTICS – OHLSON 38  
OFFSHORE PAYLOAD CONDITION**

**General:** the tables below on the Ohlson 38 are from a wider study into the design and performance characteristics of cruising yachts. This extract is presented for your interest and reflection. Please be aware it is one person’s evaluation and *not an authentic set of Ohlson statistics*. Even so they may serve to stimulate discussion, further analysis or help question yacht capabilities/limitations/upgrade possibilities.

**Table 1 Design Data:** facts and figures have been obtained from various sources. Some variation existed so personal judgement was used to identify the “best source”. Incorrect data here, especially sail area and displacement, has a major impact on later results. Individual yachts may vary so please check and moderate if necessary.

**Table 2 Derived Data:** uses the information from Table 1 to calculate or estimate important design and performance determinants.

**Table 3 Performance Ratios:** presents selected ratios and compares them with standard values (sampled from cruising yacht designers, experienced ocean sailors, RCD, the yachting press). Use your own benchmarks if you disagree with those listed.

| <b>1. DESIGN DATA</b>                   |                  |                              |
|---|------------------|------------------------------|
| <i>DESCRIPTION</i>                      | <i>OHLSON 38</i> |                              |
| <b><i>Hull Specification</i></b>        |                  |                              |
| LOA (Length Overall) (ft)               | 37.500           |                              |
| LOH (Length Over Hull) (ft)             | 37.500           |                              |
| LWL (Loaded Waterline Length) (ft)      | 26.250           |                              |
| Bmax (Maximum Beam) (ft)                | 10.208           |                              |
| Draught (ft)                            | 5.583            |                              |
| Ballast (lb)                            | 6000.000         |                              |
| Published Displacement (lb)             | 14650.000        |                              |
| Water Tank Capacity (Imperial Gallons)  | 42.000           |                              |
| Diesel Tank Capacity (Imperial Gallons) | 20.000           |                              |
| <b><i>Sail Specification</i></b>        |                  |                              |
| I Dimension                             | 44.792           |                              |
| J Dimension                             | 14.438           |                              |
| P Dimension                             | 39.375           |                              |
| E Dimension                             | 12.958           |                              |
| Area Main Sail with No Roach (100%)     | 255.111          |                              |
| Area: Main Sail with Roach (sq ft)      | 269.000          |                              |
| Area: Headsail (sq ft)                  | 323.353          | 100% - overlap value better  |
| Area: Staysail (sq ft)                  | na               |                              |
| Area: 100% foretriangle (sq ft)         | 323.353          |                              |
| Total Sail Area 100% Fore/Roached Main  | 592.353          |                              |
| Total Sail Area 100% Fore/100% Main     | 578.464          |                              |
| Total Sail Area - Sloop                 | 592.353          | Conditioned by headsail area |
| Total Sail Area – Cutter                | na               |                              |

| <b>2. DERIVED DESIGN DATA</b>                     |                  |  |
|---|------------------|--|
| <i>DESCRIPTION</i>                                | <i>OHLSON 38</i> |  |
| <b><i>Performance Factors</i></b>                 |                  |  |
| Bwl (Beam at WL) (ft)                             | 9.187            |  |
| Speed-Length Ratio (using HLD:LWL)                | 1.250            |  |
| Radius  | 3.604            |  |
| Moment of Inertia (I)                             | 711490.177       |  |
| <b><i>Light Ship Weight Displacement</i></b>      |                  |  |
| LSW Increment (-lb)                               | 100.000          |  |
| Displacement Nominal LSW (lb)                     | 14550.000        |  |
| Displacement Nominal LSW (cu ft)                  | 227.344          |  |
| Displacement Effective LSW (lb)                   | 16345.000        |  |
| <b><i>Offshore Payload/Displacement</i></b>       |                  |  |
| Weight Corrections/Upgrades (lb)                  | 1460.000         |  |
| Fixed Payload (lb)                                | 670.000          |  |
| Fixed Half-Load Payload (lb)                      | 583.000          |  |
| Variable Half Load Payload (lb)                   | 295.760          |  |
| Half Load Payload Increment (lb)                  | 3008.760         |  |
| Half Load Displacement (lb)                       | 17558.760        |  |
| Full-Load Payload Increment (lb)                  | 878.760          |  |
| Full Load PIN Payload (lb)                        | 3887.520         |  |
| Displacement FLD (lb)                             | 18437.520        |  |
| <b><i>Allowable Half-Load Payload/Sinkage</i></b> |                  |  |
| Waterplane Area (sq ft)                           | 168.815          |  |
| Pounds per Inch Immersion                         | 899.783          |  |
| Max Sinkage (1% LWL ins)                          | <b>3.150*</b>    |  |
| Allowable 1% Payload (lb)                         | <b>2834.316</b>  |  |
| Allowable 20% LSW Payload (lb)                    | <b>2910.000</b>  |  |
| Max 20% sinkage (ins)                             | <b>3.234*</b>    |  |
| Half Load Sinkage (ins)                           | 3.344*           |  |
| Full Load Sinkage (ins)                           | 4.321            |  |

**\*\* Lower value of two sinkage methods used to calculate allowable payload.**

\* Indicates sinkage resulting from estimated Offshore half-load payload (3008.760lb).

Note: Three payload states are often considered when determining performance ratios. The *Offshore* half load condition is used here to better reflect the typical cruising environment. Alternatively, *Coastal* (lighter) or *Ocean* (heavier) conditions could be used.

### 3. PERFORMANCE RATIOS FOR OFFSHORE CONDITION

Note: PARAMETERS in *red* identify ratio values unaffected by the three conditions

| PARAMETER                                | OHLSON 38 | TARGET                        |
|--|-----------|-------------------------------|
| <b>Seakindliness</b>                     |           |                               |
| Overhang Ratio                           | 0.300     | 0.15 to 0.20 +/-10%           |
| Comfort Factor Equation (HLD)            | 41.498    | 37.0 (30.9 to 43.5) +10%      |
| Comfort Factor by Graph (HLD)            | 0.697     | <1.000                        |
| Roll Period (T secs)                     | 4.702     | 4.0 to 5.0                    |
| Roll Acceleration (g)                    | 0.035     | <0.06                         |
| <b>Ballast Ratio</b>                     |           |                               |
| Ballast: Published Displacement          | 0.410     | >0.300                        |
| Ballast: Half Load Displacement          | 0.342     | >0.300                        |
| Ballast: Full Load Displacement          | 0.325     | >0.300                        |
| Ballast: Allow Payload Displacement      | 0.345     | >0.300                        |
| <b>Displacement: Length Ratio</b>        |           |                               |
| Published Displacement: LWL              | 361.578   | 313 (247 to 365)              |
| HLD: LWL                                 | 433.369   | 400 +10%                      |
| FLD: LWL                                 | 455.058   | 400 +10%                      |
| Allowable Payload Displacement: LWL      | 429.064   | 400 +10%                      |
| <b>Payload Ratio</b>                     |           |                               |
| Allowable Payload: HLD                   | 0.942     | >1.000 -10%                   |
| Allowable Payload: LSW                   | 0.195     | <0.200                        |
| Half Load Payload Increment: LSW         | 0.207     | <0.200                        |
| <b>Sail Area: Displacement</b>           |           |                               |
| Sail Area (100%): Published Displacement | 15.431    | 16.24 (15.38 to 17.16) +/-10% |
| Sail Area (100%): HLD                    | 13.675    | 16.24 (15.38 to 17.16) -10%   |
| Sail Area (100%): FLD                    | 13.237    | 16.24 (15.38 to 17.16) -10%   |
| Sail Area (100%): Allow Payload Displ    | 13.726    | 16.24 (15.38 to 17.16) -10%   |
| Rig Sail Area: Published Displacement    | 15.801    | 16.24 (15.38 to 17.16) +/-10% |
| Rig Sail Area: HLD                       | 14.003    | 16.24 (15.38 to 17.16) -10%   |
| Rig Sail Area: FLD                       | 13.554    | 16.24 (15.38 to 17.16) -10%   |
| Rig Sail Area: Allow Payload Displmnt    | 14.097    | 16.24 (15.38 to 17.16) -10%   |
| Sail Area per Ton (HLD)                  | 73.796    | >83 (-10%)                    |
| <b>Fairness/Speed Indicators</b>         |           |                               |
| LOA: Bmax                                | 3.674     | 3.43 (3.33 to 3.71)           |
| LWL: Bwl                                 | 2.857     | >2.80                         |
| Half Angle Entrance (degrees)            | 23.000    | <25                           |
| S:L Ratio Theoretical Hull Speed (knots) | 6.404     | >6.60                         |
| Nominal Hull Speed Vh (knots)            | 6.865     | >6.70                         |
| Projected Max Speed HLD (Vm)             | 6.957     | >6.90                         |
| Vm/Vh Offshore                           | 1.013     | 1.06 (1.03 to 1.08)           |

| <b>Stability Ratios</b>                  |              |                          |
|--|--------------|--------------------------|
| <b>Capsize Screening (Nominal LSW)</b>   | <b>1.676</b> | <2.000                   |
| <b>Capsize Risk (Nominal LSW)</b>        | <b>1.618</b> | 1.64 (1.59 to 1.71) -10% |
| <b>Capsize Risk (Effective LSW)</b>      | <b>1.556</b> | 1.64 (1.59 to 1.71) -10% |
| <b>Angle of Maximum Stability</b>        | not known    | >0.6 @ 65                |
| <b>Limit of Positive Stability (LPS)</b> | not known    | >135                     |
| <b>Stability Ratio</b>                   | not known    | >6                       |
| <b>Stability Index (STIX No.)</b>        | not known    | >35.0                    |

Key:

**xxxx** - within design/performance ratio target

**xxxx** - within allowable tolerance of design/performance ratio target

**xxxx** - outside design/performance ratio tolerance

**Bold Bold** - indicates design/performance ratios considered a priority

Note: Rig SA: Displacement ratios probably understate true figure

### USING THE DATA

*EVERY EFFORT HAS BEEN MADE TO PRESENT AN ACCURATE SET OF STATISTICS FOR THE OHLSON 38. HOWEVER THE INPUTS AND PROCESS ARE VARIOUSLY SUBJECT TO ERROR, INTERPRETATION, CHOICES, ASSUMPTIONS OR OPINION.*

*WHILST THESE STATISTICS FOCUS EXCLUSIVELY ON THE OHLSON 38, INDIVIDUAL YACHTS COULD HAVE SIGNIFICANT VARIATIONS OF DESIGN, BUILD, FIT-OUT AND CONDITION. THE FINDINGS THEREFORE MAY OR MAY NOT ACCURATELY AND EQUALLY REFLECT THE CHARACTERISTICS OR QUALITIES OF EACH VESSEL.*

*CONSEQUENTLY, USERS MUST SATISFY THEMSELVES AS TO THE RELEVANCE, VALIDITY AND ACCURACY OF THE DATA FOR THE VESSEL IN QUESTION AND THE NEED TO MODIFY OR RECALCULATE IN WHOLE OR PART.*