

|   |                            |  |
|---|----------------------------|--|
| <b>BOAT</b><br>Name <b>HANSEN</b><br>Sail Nr <b>DEN 68</b>  | <b>GPH</b><br><b>604.4</b> | <b>HULL</b><br>Length Overall <b>11.320m</b><br>Maximum Beam <b>3.490m</b><br>Displacement <b>6,224kg</b><br>Draft <b>1.984m</b><br>IMS Reg. Division <b>Cruiser/Racer</b><br>Dynamic Allowance <b>0.000%</b><br>Fwd Accommodation <b>Yes</b><br>Hull Construction <b>Cored</b><br>Carbon Rudder <b>No</b><br>Crew Arm Extension <b>0.00</b> |
| <b>GENERAL</b><br>Class <b>X-37</b><br>Designer <b>JEPPESEN</b><br>Builder <b>X-YACHTS</b><br>Series <b>01/2004</b><br>Age <b>01/2005</b><br>Age Allowance <b>0.455%</b><br>Offset File <b>DEN68e.off - 30/06/2017 20:06:02</b><br>Measurement by <b>QUIST/SCHMIDT - 11/06/2015</b> |                            | IMSL <b>10.039m</b> VCGD <b>-0.040m</b> Sink <b>20.12kg/mm</b><br>RL <b>8.838m</b> VCGM <b>0.050m</b> WS <b>26.69m<sup>2</sup></b><br>LSM0 <b>9.819m</b> Displacement/Length ratio <b>6.5746</b>   |



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**2018**  
ORC International  
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**Rating Office**

Offshore  
Racing  
Congress



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| <b>SCORING OPTIONS</b> |                                |               |               |                           |               |               |
|------------------------|--------------------------------|---------------|---------------|---------------------------|---------------|---------------|
|                        | <b>COASTAL / LONG DISTANCE</b> |               |               | <b>WINDWARD / LEEWARD</b> |               |               |
| Time on Distance       | <b>588.8</b>                   |               |               | <b>658.0</b>              |               |               |
| Time on Time           | <b>1.0189</b>                  |               |               | <b>1.0258</b>             |               |               |
| Triple Number          | Low                            | Medium        | High          | Low                       | Medium        | High          |
| Time on Distance       | <b>685.4</b>                   | <b>536.8</b>  | <b>484.1</b>  | <b>883.2</b>              | <b>659.6</b>  | <b>580.7</b>  |
| Time on Time           | <b>0.9848</b>                  | <b>1.2575</b> | <b>1.3942</b> | <b>0.7643</b>             | <b>1.0233</b> | <b>1.1624</b> |

| <b>TIME ALLOWANCES</b> |               |              |              |              |              |              |              |
|------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Wind Velocity          | 6 kt          | 8 kt         | 10 kt        | 12 kt        | 14 kt        | 16 kt        | 20 kt        |
| Beat VMG               | <b>1005.1</b> | <b>834.4</b> | <b>743.2</b> | <b>710.3</b> | <b>698.0</b> | <b>691.6</b> | <b>682.5</b> |
| 52°                    | <b>659.1</b>  | <b>554.0</b> | <b>508.2</b> | <b>493.6</b> | <b>488.1</b> | <b>485.8</b> | <b>478.9</b> |
| 60°                    | <b>624.5</b>  | <b>530.4</b> | <b>494.5</b> | <b>480.3</b> | <b>474.7</b> | <b>471.6</b> | <b>465.5</b> |
| 75°                    | <b>598.5</b>  | <b>515.6</b> | <b>484.4</b> | <b>467.8</b> | <b>456.6</b> | <b>450.4</b> | <b>443.4</b> |
| 90°                    | <b>604.0</b>  | <b>517.1</b> | <b>482.3</b> | <b>464.2</b> | <b>447.9</b> | <b>434.0</b> | <b>415.9</b> |
| 110°                   | <b>610.7</b>  | <b>508.8</b> | <b>472.1</b> | <b>449.1</b> | <b>432.7</b> | <b>420.9</b> | <b>393.7</b> |
| 120°                   | <b>626.3</b>  | <b>518.3</b> | <b>476.7</b> | <b>450.6</b> | <b>426.5</b> | <b>406.3</b> | <b>383.8</b> |
| 135°                   | <b>689.2</b>  | <b>560.7</b> | <b>497.2</b> | <b>468.0</b> | <b>443.6</b> | <b>419.1</b> | <b>373.2</b> |
| 150°                   | <b>815.4</b>  | <b>651.1</b> | <b>551.3</b> | <b>496.2</b> | <b>469.0</b> | <b>446.1</b> | <b>401.8</b> |
| Run VMG                | <b>941.5</b>  | <b>751.8</b> | <b>636.1</b> | <b>563.2</b> | <b>513.1</b> | <b>480.1</b> | <b>435.4</b> |

**Certificate**

Number **31914**  
ORC Ref **DEN00000289**  
Issued On **11/03/2018**  
VPP Ver. **2018 1.00**  
Valid until **31/12/2018**

**Crew Weight**

Default 671kg  
Maximum **765kg**  
Minimum\* **574kg**  
*\*when applied by the NoR and SI*  
Non Manual Pwr **No**

**Special Scoring**

|              |              |               |
|--------------|--------------|---------------|
|              | ToD          | ToT           |
| Double H.GPH | <b>609.3</b> | <b>0.9848</b> |
| Double H.OSN | <b>595.9</b> | <b>1.0068</b> |
| Non Spin GPH | <b>635.2</b> | <b>0.9446</b> |
| Non Spin OSN | <b>618.0</b> | <b>0.9708</b> |

| <b>Selected Courses</b> |              |              |              |              |              |              |              |
|-------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Windward / Leeward      | <b>973.3</b> | <b>793.1</b> | <b>689.7</b> | <b>636.7</b> | <b>605.6</b> | <b>585.8</b> | <b>558.9</b> |
| Circular Random         | <b>825.5</b> | <b>669.1</b> | <b>586.5</b> | <b>539.6</b> | <b>511.3</b> | <b>492.6</b> | <b>467.2</b> |
| Coastal / Long Distance | <b>970.1</b> | <b>745.4</b> | <b>623.5</b> | <b>558.1</b> | <b>522.7</b> | <b>493.9</b> | <b>447.5</b> |
| Non Spinnaker           | <b>881.0</b> | <b>708.3</b> | <b>615.6</b> | <b>562.1</b> | <b>529.5</b> | <b>508.4</b> | <b>481.5</b> |

**Sails Limitations**

|           |            |
|-----------|------------|
| Headsails | Spinnakers |
| <b>5</b>  | <b>3</b>   |

| <b>Velocity Prediction in Knots for True Wind Speeds</b> |               |               |               |               |               |               |               |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Wind Velocity  | 6 kt          | 8 kt          | 10 kt         | 12 kt         | 14 kt         | 16 kt         | 20 kt         |
| Beat Angles  | <b>43.8°</b>  | <b>41.8°</b>  | <b>41.1°</b>  | <b>40.0°</b>  | <b>39.9°</b>  | <b>39.1°</b>  | <b>39.9°</b>  |
| Beat VMG   | <b>3.58</b>   | <b>4.31</b>   | <b>4.84</b>   | <b>5.07</b>   | <b>5.16</b>   | <b>5.21</b>   | <b>5.27</b>   |
| 52°  | <b>5.46</b>   | <b>6.50</b>   | <b>7.08</b>   | <b>7.29</b>   | <b>7.38</b>   | <b>7.41</b>   | <b>7.52</b>   |
| 60°  | <b>5.76</b>   | <b>6.79</b>   | <b>7.28</b>   | <b>7.50</b>   | <b>7.58</b>   | <b>7.63</b>   | <b>7.73</b>   |
| 75°  | <b>6.02</b>   | <b>6.98</b>   | <b>7.43</b>   | <b>7.70</b>   | <b>7.88</b>   | <b>7.99</b>   | <b>8.12</b>   |
| 90°  | <b>5.96</b>   | <b>6.96</b>   | <b>7.46</b>   | <b>7.76</b>   | <b>8.04</b>   | <b>8.30</b>   | <b>8.66</b>   |
| 110°   | <b>5.90</b>   | <b>7.08</b>   | <b>7.63</b>   | <b>8.02</b>   | <b>8.32</b>   | <b>8.55</b>   | <b>9.14</b>   |
| 120°   | <b>5.75</b>   | <b>6.95</b>   | <b>7.55</b>   | <b>7.99</b>   | <b>8.44</b>   | <b>8.86</b>   | <b>9.38</b>   |
| 135°   | <b>5.22</b>   | <b>6.42</b>   | <b>7.24</b>   | <b>7.69</b>   | <b>8.12</b>   | <b>8.59</b>   | <b>9.65</b>   |
| 150°   | <b>4.42</b>   | <b>5.53</b>   | <b>6.53</b>   | <b>7.25</b>   | <b>7.68</b>   | <b>8.07</b>   | <b>8.96</b>   |
| Run VMG  | <b>3.82</b>   | <b>4.79</b>   | <b>5.66</b>   | <b>6.39</b>   | <b>7.02</b>   | <b>7.50</b>   | <b>8.27</b>   |
| Gybe Angles  | <b>142.2°</b> | <b>148.8°</b> | <b>150.8°</b> | <b>157.6°</b> | <b>180.0°</b> | <b>180.0°</b> | <b>180.0°</b> |

**Class Division Length**

CDL = **9.439**

**Storm Sails Areas**


Heavy Weather Jib **32.77**  
Storm Jib (JL=10.13) **12.14**  
Storm Trysail **13.12**

**Owner**

|   |  |
|---|--|
| <b>BOAT</b>   |  |
| Name <b>HANSEN</b><br>File <b>31914 - X37 - DEN</b> | Sail Nr <b>DEN 68</b><br>Data in <b>meters/kilograms</b> |

|  |                  |                       |  |
|--|------------------|-----------------------|--|
| <b>INCLINING TEST AND FREEBOARDS</b>     |                  |                       |  |
| Inclining Test <b>Current Inclining</b>  |                  |                       |  |
| Flotation date <b>22/10/2017</b>         |                  | SG <b>1.0120</b>      |  |
| FFM <b>0.740</b>                         | FF <b>0.743</b>  | SFFP <b>0.120</b>     |  |
| FAM <b>0.224</b>                         | FA <b>0.231</b>  | SAFP <b>11.344</b>    |  |
| W1 <b>90.0</b>                           | PD1 <b>583.8</b> | WD <b>11.890</b>      |  |
| W2 <b>90.0</b>                           | PD2 <b>584.5</b> | GSA <b>1.0</b>        |  |
| W3 <b>90.0</b>                           | PD3 <b>584.8</b> | RSA <b>1.0</b>        |  |
| W4 <b>90.0</b>                           | PD4 <b>584.7</b> | PLM <b>9000.0</b>     |  |
| LCF from stem on CL / on sheer           |                  | <b>6.393 / 6.603</b>  |  |
| Maximum beam station from stem           |                  | <b>7.500</b>          |  |
| RM Measured                              |                  | <b>144.2kg·m</b>      |  |
| RM Default                               |                  | <b>160.8kg·m</b>      |  |
| Limit of positive stability / Stab.Index |                  | <b>117.2° / 120.4</b> |  |
| Freeboard at mast at 4.335               |                  | <b>1.198</b>          |  |

|                                |                            |                   |                   |
|--------------------------------|----------------------------|-------------------|-------------------|
| <b>RIG</b>                     |                            |                   |                   |
| Forestay Tension <b>Aft</b>    | Spreaders <b>2</b>         |                   |                   |
| Inner Stay <b>None Fitted</b>  | Runners <b>0</b>           |                   |                   |
| Carbon Mast <b>Yes</b>         | Jumper Struts <b>None</b>  |                   |                   |
| Taper Hollows <b>No</b>        | Jib Furler <b>No</b>       |                   |                   |
| Fiber Rigging <b>Yes</b>       | Main Furler <b>No</b>      |                   |                   |
| Lenticular Rigging <b>No</b>   | Without Backstay <b>No</b> |                   |                   |
| Articulated Bowsprit <b>No</b> |                            |                   |                   |
| P <b>14.700</b>                | E <b>5.100</b>             | MDT1 <b>0.114</b> | MW <b>0.210</b>   |
| IG <b>15.519</b>               | J <b>4.335</b>             | MDL1 <b>0.210</b> | GO <b>0.227</b>   |
| ISP <b>15.600</b>              | SFJ <b>0.000</b>           | MDT2 <b>0.090</b> | BD <b>0.175</b>   |
| BAS <b>1.769</b>               | SPL <b>4.630</b>           | MDL2 <b>0.160</b> | MWT <b>147.00</b> |
| FSP <b>0.074</b>               | TPS <b>0.000</b>           | TL <b>0.916</b>   | MCG <b>5.250</b>  |




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**2018**

**IMS Measurement Certificate**

**Certificate**

Number **31914**  
ORC Ref **DEN00000289**  
Issued On **11/03/2018**  
VPP Ver. **2018 1.00**  
Valid until **31/12/2018**



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|                             |  |
|-----------------------------|--|
| <b>MIZZEN RIG AND SAILS</b> |  |
| <b>N/A</b>                  |  |

|                              |                    |                  |  |
|------------------------------|--------------------|------------------|--|
| <b>PROPELLER</b>             |                    |                  |  |
| Installation <b>Strut</b>    | PRD <b>0.424</b>   |                  |  |
| Type <b>Folding 2 blades</b> | PBW <b>0.105</b>   |                  |  |
| Twin Screw <b>No</b>         | PIPA <b>0.0033</b> |                  |  |
| ST1 <b>0.041</b>             | ST3 <b>0.183</b>   | ST5 <b>0.260</b> |  |
| ST2 <b>0.183</b>             | ST4 <b>0.110</b>   | EDL <b>2.475</b> |  |

|                            |  |
|----------------------------|--|
| <b>COMMENTS</b>            |  |
| BULB KEEL NEW OFF FARO DSV |  |

|                        |  |
|------------------------|--|
| <b>MOVABLE BALLAST</b> |  |
| <b>N/A</b>             |  |

|                    |  |
|--------------------|--|
| <b>CENTERBOARD</b> |  |
| <b>N/A</b>         |  |

|                              |               |       |       |      |      |  |
|------------------------------|---------------|-------|-------|------|------|--|
| <b>SAILS (Maximum Areas)</b> |               |       |       |      |      |  |
| Mainsail                     | MHB           | MUW   | MTW   | MHW  | MQW  | Area Area (r) Formula  |
|                              | 0.190         | 1.24  | 2.16  | 3.47 | 4.36 | 46.55 47.74 P/8 · (E + 2·MQW+ 2·MHW + 1.5·MTW + MUW + 0.5·MHB) |
| Symmetric                    | SLU           | SLE   | SL    | SHW  | SFL  | 107.59 SL · (SFL + 4·SHW) / 6                                  |
|                              | 15.40         | 15.40 | 15.40 | 8.57 | 7.64 |  |
| Asymmetric                   | Not Available |       |       |      |      |  |

|   |            |            |            |            |            |            |             |            |            |                  |                 |                |
|---|------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------------|-----------------|----------------|
| <b>HEADSAILS</b>  |            |            |            |            |            |            |             |            |            |                  |                 |                |
| Area = 0.1125·HLU · (1.445·HLP + 2·HQW + 2·HHW + 1.5·HTW + HUW + 0.5·HHB) |            |            |            |            |            |            |             |            |            |                  |                 |                |
| <b>HHB</b>  | <b>HUW</b> | <b>HTW</b> | <b>HHW</b> | <b>HQW</b> | <b>HLP</b> | <b>HLU</b> | <b>Area</b> | <b>Btn</b> | <b>Fly</b> | <b>Meas.Date</b> | <b>Material</b> | <b>Comment</b> |
| 0.14  | 0.75       | 1.39       | 2.53       | 3.51       | 4.50       | 15.53      | 37.54       | Y          |            | 23/06/2017       | Carbon          | JL17           |
| 0.14  | 0.78       | 1.40       | 2.49       | 3.50       | 4.49       | 15.45      | 37.22       | Y          |            | 23/06/2016       | Spectra         | JM16           |
| 0.10  | 0.75       | 1.43       | 2.52       | 3.51       | 4.47       | 15.40      | 37.18       | Y          |            | 30/06/2016       | Carbon          | JT16           |
| 0.10  | 0.53       | 1.01       | 2.05       | 3.15       | 4.23       | 15.53      | 32.51       | Y          | Y          | 08/06/2017       | Polyest         | WS17           |
| 0.13  | 0.57       | 1.07       | 2.13       | 3.24       | 4.44       | 14.60      | 31.85       | Y          |            | 16/06/2015       | Carbon          | JH15           |
| 0.06  | 0.51       | 0.98       | 1.94       | 2.90       | 3.86       | 13.31      | 25.85       | Y          |            | 25/06/2016       | Kevlar          | SS16           |

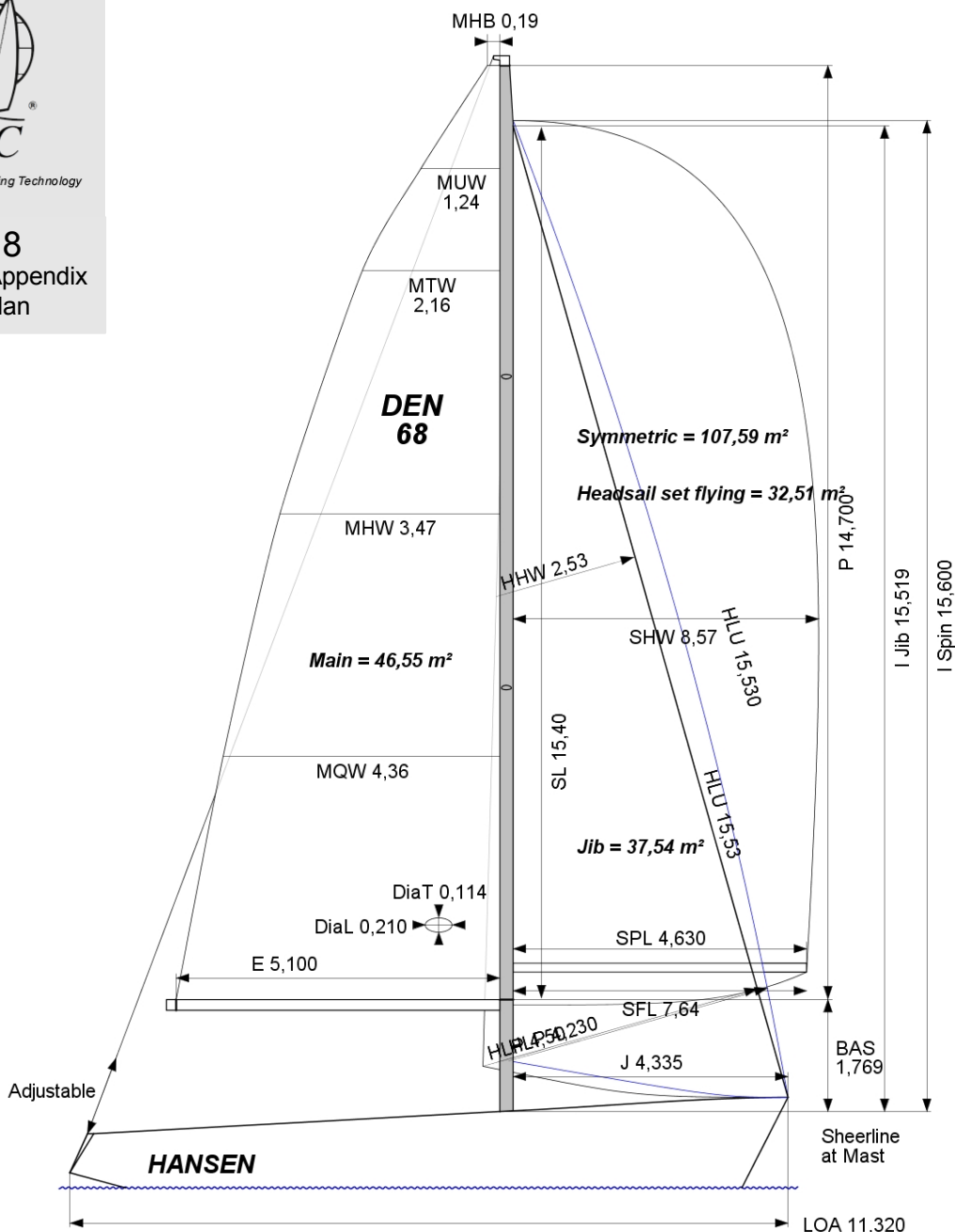
|  |                  |               |                    |                        |
|--|------------------|---------------|--------------------|------------------------|
| <b>MEASUREMENT INVENTORY</b>   |                  |               |                    |                        |
| Measurer <b>Michael Quist</b><br>Date <b>22/10/2017</b><br>Comment <b>Rungsted</b> |                  |               |                    |                        |
| <b>Id</b>  | <b>Item</b>      | <b>Weight</b> | <b>Distance</b>    | <b>VCG Description</b> |
| <b>Id</b>  | <b>Item</b>      | <b>Maker</b>  | <b>Model</b>       |                        |
| 1  | Engine           | Yanmar        | 3YN -30            |                        |
| <b>Id</b>  | <b>Item</b>      | <b>Weight</b> | <b>Description</b> |                        |
|  | <b>Fwd Items</b> |               |                    |                        |

|                              |             |                 |                  |                        |                            |            |                           |
|------------------------------|-------------|-----------------|------------------|------------------------|----------------------------|------------|---------------------------|
| <b>MEASUREMENT INVENTORY</b> |             |                 |                  |                        |                            |            |                           |
| <b>Id</b>                    | <b>Item</b> | <b>Tank Use</b> | <b>Tank Type</b> | <b>Capcty</b>          | <b>Dist.</b>               | <b>VCG</b> | <b>Condtn Description</b> |
| 1                            | Tank        | Water           | Plastic          | 120.0                  | 5.43                       | 0.00       | 0-0                       |
| 2                            | Tank        | Diesel          | Stainless        | 80.0                   | 9.03                       | -0.15      | 20-0                      |
| 3                            | Tank        | Holding         | Plastic          | 40.0                   | 8.73                       | 0.65       | 0-0                       |
| <b>Id</b>                    | <b>Item</b> | <b>Weight</b>   | <b>Distance</b>  | <b>VCG Description</b> |                            |            |                           |
| 1                            | Battery     |                 | 5.83             | 0.00                   | Battery, 160Ah             |            |                           |
| 2                            | Battery     |                 | 7.53             | 0.25                   | Battery, 68 Ah             |            |                           |
| 1                            | Misc        | 10.5            | 8.93             | -0.05                  | ISOtemp slim, water heater |            |                           |



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2018  
Certificate Appendix  
Sail Plan



**SAILS INVENTORY**

**MAINSAIL (2)**

| Id    | MHB   | MUW  | MTW  | MHW  | MQW  | Area  | Measurer | Meas.Date  | Manufacture | Material | Comment |
|-------|-------|------|------|------|------|-------|----------|------------|-------------|----------|---------|
| 90326 | 0.190 | 1.24 | 2.16 | 3.47 | 4.36 | 46.55 | 302      | 23/06/2017 | OneSails    | Carbon   | MN17    |
| 92214 | 0.190 | 1.24 | 2.16 | 3.47 | 4.36 | 46.55 | 302      | 23/06/2016 | OneSails    | Spectra  | MN16    |

**HEADSAILS (6)**

| Id    | HHB  | HUW  | HTW  | HHW  | HQW  | HLP  | HLU   | Ovrlp | Area  | Btn | Fly | Measurer | Meas.Date  | Manufacture | Material | Comment |
|-------|------|------|------|------|------|------|-------|-------|-------|-----|-----|----------|------------|-------------|----------|---------|
| 90339 | 0.14 | 0.75 | 1.39 | 2.53 | 3.51 | 4.50 | 15.53 | 104%  | 37.54 | Y   | 302 | 302      | 23/06/2017 | OneSails    | Carbon   | JL17    |
| 85655 | 0.14 | 0.78 | 1.40 | 2.49 | 3.50 | 4.49 | 15.45 | 104%  | 37.22 | Y   | 302 | 302      | 23/06/2016 | OneSails    | Spectra  | JM16    |
| 90431 | 0.10 | 0.75 | 1.43 | 2.52 | 3.51 | 4.47 | 15.40 | 103%  | 37.18 | Y   | 302 | 302      | 30/06/2016 | OneSails    | Carbon   | JT16    |
| 91178 | 0.10 | 0.53 | 1.01 | 2.05 | 3.15 | 4.23 | 15.53 | 98%   | 32.51 | Y   | 302 | 302      | 08/06/2017 | OneSails    | Polyest  | WS17    |
| 87745 | 0.13 | 0.57 | 1.07 | 2.13 | 3.24 | 4.44 | 14.60 | 102%  | 31.85 | Y   | 302 | 302      | 16/06/2015 | North       | Carbon   | JH15    |
| 92779 | 0.06 | 0.51 | 0.98 | 1.94 | 2.90 | 3.86 | 13.31 | 89%   | 25.85 | Y   | 302 | 302      | 25/06/2016 | North       | Kevlar   | SS16    |

**SYMMETRIC SPINNAKERS (3)**

| Id    | SLU   | SLE   | SL    | SHW  | SFL  | Area   | Measurer | Meas.Date  | Manufacture | Material | Comment |
|-------|-------|-------|-------|------|------|--------|----------|------------|-------------|----------|---------|
| 92287 | 15.40 | 15.40 | 15.40 | 8.57 | 7.64 | 107.59 | 302      | 02/06/2017 | OneSails    | Nylon    | S4-17   |
| 91478 | 15.40 | 15.40 | 15.40 | 8.56 | 7.66 | 107.54 | 302      | 31/05/2017 | OneSails    | Nylon    | S2-17   |
| 91473 | 15.60 | 15.60 | 15.60 | 8.31 | 8.12 | 107.54 | 302      | 31/05/2017 | OneSails    | Nylon    | S1-17   |

**ASYMMETRIC SPINNAKERS (0)**

| Id | SLU | SLE | SL | SHW | SFL | Area | Kind | Measurer | Meas.Date | Manufacture | Material | Comment |
|----|-----|-----|----|-----|-----|------|------|----------|-----------|-------------|----------|---------|
|----|-----|-----|----|-----|-----|------|------|----------|-----------|-------------|----------|---------|