

## Freshwater Rigging: Care and Maintenance

Presenters: Steve King – President Brad Terpstra – Director of Operations

# Who is Offshore Spars?

- Founded in 1976
- 50,000 sq. ft. manufacturing facility located in Chesterfield, MI
- Primary market segments are superyacht and performance cruising
- Male molded masts with male or female molded booms using prepreg carbon fiber and a 90 PSI autoclave cure
- Expanding refit and USA performance market



#### Carbon Shop



#### 110ft Autoclave



#### Fabrication



#### Assembly & Machine Shop



# **Recent Projects**



#### Sonny III

- 91' Flush Deck Sloop
- Under construction at Brooklin Boat Yard in Maine
- P 106 ft
- J 30.5 ft
- E 32 ft
- Shipping in March











#### Andrews 70 - Mr. Bill

- High Modulus Racing Rig, Boom & Overlength Spinnaker Pole
- 3 Spreader with EC6 Rigging
- P 67 ft
- J 22.3 ft
- E 25 ft
- Old rig pictured







#### R/P 70 – Taxi Dancer

- High Modulus Racing Rig & Overlength Spinnaker Pole
- 4 Spreader with EC6 Rigging
- Internal Halyard Locks
- Old rig pictured





#### N/M 33 Boom

- Carbon fiber tube boom
- Anodized aluminum ends



(Photo Credit: Skip Dieball)

## Atalante

- Hoek 126
- Built at Klaussen Shipyard in the Netherlands
- 150ft tall 4 Spreader Sloop







![](_page_20_Picture_0.jpeg)

## Trader

- Donovan 85
- Being built in Anacortes, WA
- 124ft tall 4 Spreader Sloop

![](_page_21_Picture_4.jpeg)

![](_page_22_Picture_0.jpeg)

![](_page_23_Picture_0.jpeg)

![](_page_24_Picture_0.jpeg)

## Wire Rigging

- Most common type of standing rigging
- Many different types, 1x19 most common
- Usually seen on boats <~35ft but can be on boats in the 60-70ft range
- General rule of thumb is replace every 15 years in freshwater
  - Could be more or less depending on boat usage and location
- Fittings are mechanically attached and cannot be removed without damage to wire
- Always in a continuous configuration

![](_page_25_Figure_0.jpeg)

# How the wire gets swaged:

![](_page_26_Picture_1.jpeg)

#### Things to watch out for

Corrosion

![](_page_27_Picture_2.jpeg)

#### Broken Strands

#### Damage/Stress

![](_page_27_Picture_5.jpeg)

![](_page_27_Picture_6.jpeg)

## Care & Upkeep

- Friction and corrosion are the enemy
- Ideally, yearly inspection of all fittings
- Clean all metal-to-metal surfaces with solvent
- Look for damage and stress marks after cleaning
- Apply a high-pressure lubricant to all metal-to-metal bearing surfaces (e.g. Tef-Gel)
  - This is mainly pins and stemball fittings for wire rigging

![](_page_29_Picture_0.jpeg)

## Rod Rigging

- Sized by tensile strength of rod
  - E.g. -12 rod is rated to 12,000lbs
- Most common racing boat standing rigging type
- General rule of thumb is replace every 10 years in freshwater
  - Could be more or less depending on boat usage and location
- Fittings are captive and can usually be removed without or with minimal damage to stay
- Rod is hydraulically formed into the head that captures the fittings
- Can be continuous or discontinuous, discontinuous is the preferable system

![](_page_30_Figure_0.jpeg)

#### What does a rod fitting look like inside?

![](_page_31_Picture_1.jpeg)

## How a rod head is made:

![](_page_32_Picture_1.jpeg)

#### Things to watch out for

#### Corrosion

![](_page_33_Picture_2.jpeg)

#### **Cracked Heads**

![](_page_33_Picture_4.jpeg)

#### Damage/Stress

- Deformations /Dents
- Gauling
- Burrs

## Care & Upkeep

- Ideally, yearly inspection of all fittings. Minimum inspection every 2-3 years.
- Clean all metal-to-metal surfaces with solvent
- Look for damage and stress marks after cleaning
  - Any suspect heads or fittings should be looked at by a inspector
- Apply a high-pressure lubricant to all metal-to-metal bearing surfaces (e.g. Tef-Gel or Marelube) The liss Tel-Gel
  - It is **CRITICAL** to ensure rod heads & threads are well lubricated

## Rod Peened Fittings

- Older fittings will have been peened shut
- DO NOT try to unthread them as you will destroy the fitting
- These unfortunately cannot be inspected, and therefore should be replaced if older than 10-15 years

![](_page_35_Picture_4.jpeg)

## Ordering Rigging

- Best option is to just bring us the stay you want replaced
- Measure diameter of wire or rod
- Rigging lengths are measured from center of pin to center of pin
- Pin diameter at each end is the other critical dimension
- Identify the end fittings, or take pictures and send with measurements above

![](_page_36_Figure_6.jpeg)

## **Rigging Inspections**

- Most insurance mandates an inspection every 2 or 3 years
- CANNOT be done while rig is in the boat
- A jewelers loup can be used to closely inspect the rod heads
- Questionable fittings can be dye-inspected to determine if a crack exists
- When in doubt, consult a professional

![](_page_37_Picture_6.jpeg)

#### Need Carbon Tubing?

Sold by the foot in any configuration.

![](_page_38_Picture_2.jpeg)

#### Certified Hydraulics Repair Facility

![](_page_39_Picture_1.jpeg)

Hayn Made By

In addition to the above services, we also stock products from most major vendors

![](_page_40_Picture_1.jpeg)

## Questions, comments?

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Find us on Facebook! <u>www.facebook.com/offshorespars</u>

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![](_page_41_Picture_5.jpeg)

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