

Monohull Rigging Overview



Rigging Your Yacht

Ultimately the set up depends on your needs. With that in mind the overall concepts and requirements are presented here.

The Purpose

A bobstay is a structural component of the Trogear bowsprit. It keeps the bowsprit in a horizontal position preventing it from flying upwards when under load.

Hinge Attachment

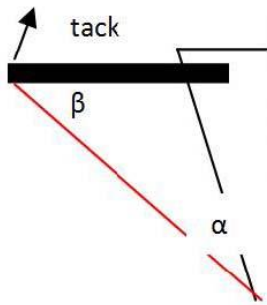
The main feature of the Trogear bowsprit is the hinge attachment, which enables the sprit to rotate up and down. To take full advantage of this design, it is recommended to rig the bobstay with a 2:1 purchase system, with a control line leading to a clutch and a winch to the cockpit. This will allow you to remotely adjust the sail luff tension or bring the bowsprit to the upright position (for stowing or attaching/removing tack sails or furler).

Loads on the Bobstay

The load generated by a Code 0 or Asymmetrical spinnaker could be very high (the load on the bobstay is generally 1.5 times the tack load), especially when reaching, or if subjected to shock loads. Therefore, the bobstay components need to be sized accordingly with a minimum safety factor of two.

Estimating Tack Loads

BOBSTAY LOAD CALCULATION

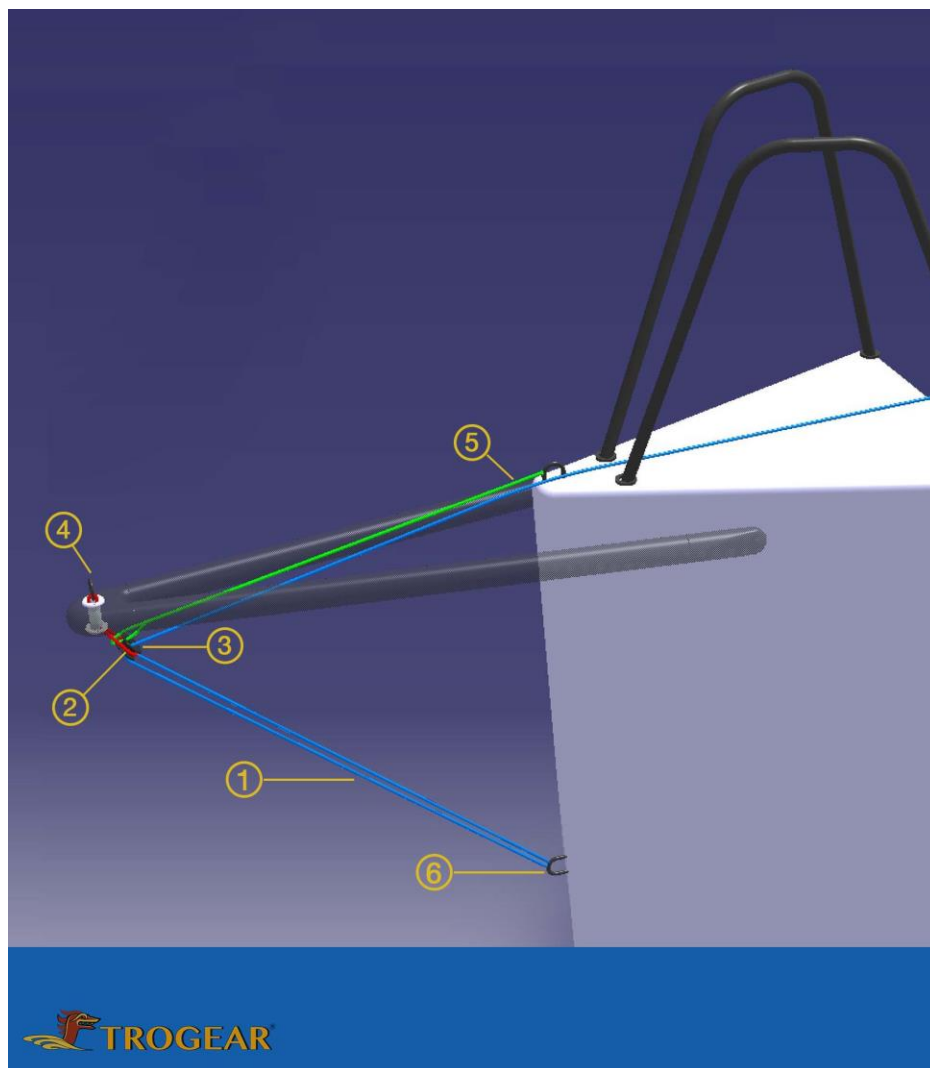


Rope Angle with Load (degrees)		Increased Force or Tension Factor - θ -
- α -	- β -	
0	90	1.00
5	85	1.00
10	80	1.02
15	75	1.04
20	70	1.07
25	65	1.10
30	60	1.16
35	55	1.22
40	50	1.31
45	45	1.41
50	40	1.56
55	35	1.74
60	30	2.00
65	25	2.37
70	20	2.92
75	15	3.86
80	10	5.76
85	5	11.5

Following is one of the methods used to calculate the bobstay load:

- Tack Load in lb = area in square feet
- Tack load in kg = area in square meters x5
- example $100\text{m}^2 \times 5 = 500\text{kg}$
- Bobstay angle - assuming: 45deg (multiply by 1.41 - see chart)
- Bobstay load: $500 \times 1.41 = 700\text{kg}$
- Bobstay control line to clutch has 2:1 purchase, so tension will $700/2 = 350\text{kg}$

Rigging Components



The final setup for your rigging depends on your sailing needs but the following is a list of items that are either essential or optional.

- (#1) Dyneema line for bobstay
 - 5/16 Dyneema. The bobstay purchase is 2:1. **Measurements are specific to each boat.**
- (#2) Dyneema loop used through the tack bushing*
- (#3) Low friction rings, stainless steel rings or blocks
- (#4) SS ring for furler attachment or with block with tack line
- (#5) Dyneema safety preventer**
- (#6) U-bolt for bobstay attachment to the hull or G10 tube through hull
 - Consult your rigger or sailmaker to determine the working loads for your boat.
- Bobstay control line led to a clutch in the cockpit
- Bungee Cord - brings the sprit up when bobstay released***
 - Recommendation Davis MiniShackle: <http://www.davisnet.com/product/minishackle-black-24-61-cm/>

***DYNEEMA LOOP:** Only a Dyneema loop can be used through the tack bushing. NEVER use an eye bolt.

****SAFETY PREVENTER:** The preventer MUST be used and should be made from Dyneema and attached to the headstay toggle and the lower friction ring at the tip of the Bowsprit. The length of the Dyneema should be such that the sprit does not drop past ~20deg of horizontal when under tension. Think of it as an inverted bobstay or a topping lift on a spinnaker pole. It is a preferred method of preventing the bowsprit from going down too far, important in the event the sail drops to the water.

*****WARNING:** Never fully release the bobstay when under load. If it is accidentally released, it could lead to personal injury, boat and/or equipment damage, or the failure of the bowsprit itself.

Frequently Asked Questions

Why do I need a bobstay?

Simply put, it keeps the sprit from flying upwards when under load generated by flying sails or anti torque line.

The Trogear bowsprit is designed to be used in a horizontal position, same as for any other bowsprit. The loads generated by flying sails (Code 0, Asymmetric spinnakers, or other downwind sails) will create a force upwards. The bowsprit must be held securely in a horizontal position by a bobstay to prevent it from swinging up.

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How does the sprit remain upright when not under load?

We recommend using bungee cords attached to the bowsprit tubes and to the pulpit.

The tension of the bungee cord will bring the sprit up when the bobstay is released.

WARNING: NEVER fully release the bobstay when under load.

Can I use a fixed bobstay?

Yes. The simplest way to rig your bowsprit is with a fixed length bobstay. In this case, simply attach one end to the point of attachment on the bow, and the other end through the bushing at the tip of the bowsprit terminated with an SS attachment ring. With this configuration, you would not be able to adjust the height of the bowsprit or stow the sprit upright.

Can I cleat off the bobstay near the headstay?

Yes.

How do I run the line to the cockpit?

A bobstay control line is simply led through a clutch to a winch in the cockpit, similar to a tack line.

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I want to be able to set up a code zero while the A2 is up. Is it as simple as having several blocks on the end ring?

It could be or you can lead the tack lines directly through an SS ring.

How do I make a continuous loop to be used through the tack bushing?

You can make your own loop from Dyneema line which any marine hardware store will have.

Here is a video showing how to make it: <https://youtu.be/QSyLAO92iHs>

Is furler twisting an issue?

We use a stainless steel ring on the top. Once the bobstay is under tension via tightening the luff or anti-torque line, tension is automatically placed on the bobstay, pulling the SS ring against the sprit tack bushing which prevents twisting.

We have personally been using this set up for years with no issue.

Do you provide the parts for the bobstay and other systems?

Unfortunately, Trogear does not supply any rigging gear. We are thinking about it, but nothing yet. Most sailors get this from their rigger. Stay tuned!

I have other rigging questions - can you help?

We are always available for questions, though a rigger might be better positioned to assist with your specific needs.

Trogear Custom Bowsprit on Archambault 31

Paul Cronin installing and rigging his custom sprit for his Archambault 31.



Check out Paul's videos available at his [In and OUT of The Boat Shop Series](https://vimeo.com/channels/1186312) (<https://vimeo.com/channels/1186312>) offering step-by-step videos showing how to install gear, repair and fix parts, tips & tricks, and more.

- Installation: <https://vimeo.com/201934160>
- Rigging: <https://vimeo.com/203009313>
- Rigging Update: <https://vimeo.com/226313867>

Furler Attachments

We use a stainless steel ring on the top. Once the bobstay is under tension via tightening the luff or anti-torque line, tension is automatically placed on the bobstay, pulling the SS ring against the sprit tack bushing which prevents twisting. We have personally been using this set up for years with no issue.

Also, see the photo below for an example of having the fuller ready for use, even while using the asymm. When time comes for the Code 0, the fuller is already attached. Try sailing like this before employing other methods that are most likely unnecessary.

