

The Cambered Panel Junk Rig

A DIY guide to rigging a boat with cambered panel sails
by Arne Kverneland



Chapter 1: *Preface*

List of contents

I guess this “book” one day will contain these chapters:

1. **Preface.**
2. **The boat** - finding a suitable boat to buy, build or have built.
3. **Choosing a sailplan** - finding the balance and other practical considerations
4. **Drawing a detailed sail.** Includes a set of ten CAD-generated master sails
5. **Making the sail(s);** real cutting in canvas.
6. **The (wooden) mast.** Deciding the mast strength. Making mast, steps and partners.
- 6b **The Hybrid Mast.** Lower section of aluminium, and upper section of wood.
7. **Rigging the sail.** All those ropes!
8. **Handling under sail.** *NS)
9. **Miscellaneous,** more details, possible improvements. *NS)
10. **Possible afterthoughts** *NS)

Note: *NS)= not started



(*Johanna*, mine since 1998, showing off her cambered panels)

Why am I writing this?

The idea is neither to write a new *Practical Junk Rig* (PJR, see next page) nor to make a PJR appendix. It is simply to pass on the experience gained after having designed and made a few junk rigs myself. The goal is to enable you to make your own sail, and maybe even design it yourself. However, I have no ambitions to write a new *Junk Rig Bible* where every detail is discussed from A to Z. Since I am not a very systematic teacher, I suggest you read through each chapter a couple of times before you go to work. If it still seems Greek to you, then I suggest you read one of the books listed below on the subject. You should find that chapter 7 on rigging the sail will contain most of the running and fixed ropes you will have to know.

(.. or could I suggest you read my 10-page write-up called *Junk Rig for Beginners?*..)

Other sources of JR knowledge:

To get a better overview of junk rigs I suggest you read some of these books:

- **"Practical Junk Rig"** (PJR) by Hasler and McLeod. (ISBN 0-229-11798 8). This book is *very good!* It is at its best when showing you a number of sail plan forms and possible ways of fitting sheets, halyards and parrels. In short, it gives you the overview. With PJR in hand I rigged my first JR on *Malena* without outside help. At that time there was no help available from the *Army of Internet Armchair Expertise* – the net wasn't there. Still, PJR is not fully up to date: The sails are flat and in my view the wooden masts are over-strong and thus over-heavy.
- **"The Chinese Sailing Rig"** by Derek van Loan. A good and practical book. It shows an alternative DIY-friendly way of making a pole mast. That alone makes it worth reading – if you are to make a wooden mast.
- **"Easier Rigs for safer Cruising"** by John Campbell. (ISBN 0-370-30698-8 paperback). A little dated maybe, but gives you a good comparison between different rigs. A good read.
- There is some useful info on the www too. Be critical though as there are many armchair experts out there, particularly on the e-groups. Make sure they have tried their solutions themselves and have given accurate reports on the results before you jump at them.

My learning curve:

I've fiddled with boats and sails (.. or anything that floated...) for almost as long as I can remember. I made my first sprit sail when I was a teenager back in 1970. During the seventies I sailed with Bermuda rigs like most others. During the eighties, I designed, built and sailed some gaff rigs too. Since 1990 I have mostly concentrated on junk sails, first a flat sail in 1990, which I modified by fitting hinged battens in 1991, and from 1994 I have designed my junk sails with straight battens and cambered panels. I've found these easy to make, safe and reliable to use and to give a good performance — including to windward. After more than 15 years in use with very few snags the cambered junk sail is no longer an experimental sail. I now consider it to be a fully operational rig capable of going anywhere.



1991, hinged battens



1994, new sail with cambered panels



1999, with taller mast and 7 panels.

Here are a few photos of Malena and her junk sails. I had her from 1981 to 1999. The new owners still speak to me..

Why camber?

The cambered junk sail is a result of a 4-year cutting and trying period between 1990 and 1994. At that time I had an Albin Viggen, *Malena*. The first flat sail she received generally handled well. The sail went up and came down as it should and downwind we were much faster than with the original Bermuda rig. However, I soon found that *Malena* wouldn't perform well to windward even with a generous SA/disp. of over 24. Tacking angle was never better than 100°, even in the best of conditions – and tacking was *sooo sloooow*... Something better was needed.

The first step was to fit hinges to the battens. That was an improvement, but to cut a long story short, I continued the search for something simpler than those hinges and the increased weather helm that I experienced with them.

Take a good look at the photos of *Malena*'s blue sail (p.3). The junk sail shown is not flat, but the battens are straight! The baggy, bulging, quilted or simply cambered panels — call them what you like — are cut to something resembling a barrel shape before being joined along each batten. As the wind fills the sail, each panel inflates. Observed horizontally, from an incoming air molecule's perspective, most of the sail area is just like any cambered sail; lug, gaff or Bermuda. The air mass is deflected by the sail's camber, both on the weather and the lee side — just as in any western sail. In other words, *Johanna*'s junk sail enjoys the easy handling of the flat junk, but performs a lot better. In practice, with this sail *Johanna*'s upwind performance is about the same as most Bermuda rig cruisers of her size, and sometimes better. Add to this her roaring performance on a beam reach, and good speed downwind – and you have a cruising machine. I might sound very race oriented, but I'm not that bad.

The object is to get an easily handled sailboat that performs so well that you end up sailing it, not just motoring around.

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.. I should rather be doing this...

PS:

Slieve McGalliard will proofread these chapters for me, but I'm not allowed to tell, so if you find bad English here, it is my entire fault...