It seems inevitable that for a portable boat that fits in the family vehicle, the sailing version should have a mast and boom that does the same thing. Past attempts at this were specific to a particular boat. Now, I am introducing a design that can be universal in nature. It can be used, with minor modifications, on any small sailboat design, past, present or future.

Review the following and see if it satisfies your specific needs.

Basically, I have taken a simple, yet ridged 12 foot mast and made it into a folding design that is now 6 feet in length. This idea can be scaled up, or down, with a 16 foot maximum length mast recommended.

Construction of the Boom is first, as it is simpler and will prepare you for the Mast assembly. It bears repeating that the design as shown can be modified to suit the builders requirements.

The design is for a sail of approximately 30 square feet in area. If you want a larger sail, and the hull can handle it, then you will have to make the boom longer and the mast higher.

The fittings should be beefed-up accordingly, to withstand the higher forces.

The rig as depicted is intended for easy transport, and the folded mast should fit in most vehicles.

BOOM CONSTRUCTION
The purpose of the double-layer mast and single layer boom is simple: It utilizes small readily available components, but is strong, has low weight, and is inexpensive to make. Best of all, when folded, it all fits in your vehicle.

68" each section
4 pcs. of 2 x 2 x 8'
Finished size: 1-1/2" x 3" x 68"

Simple set-up: Unfold, Clamp Tight, then Bolt Together for Security.

Use Harder Grade Lumber

Support Plates

BOW Side

Layer 1 Layer 2

4 pcs. of 2 x 2 x 8'

3/4" Bolt Hole

Support Plates

3/4" Layer 1 Layer 2

Heavy Duty 4" Strap Hinge

Fold-in-Half MAST

Make the grain of one section layer opposite the grain of the other section. Provides extra strength in both directions.

The 7 foot single piece Boom is made in a similar fashion, and folds to less than 4 feet length.

2-1/2" screws staggered every 12 inches. Pilot drill and c'sink.

Sail Eye Hooks

www.PortableBoatPlans.com

View Photos for more detail
The purpose for the Eye Bolt is to be able to easily tighten it without a tool, and to retain it with a lanyard so it won't become lost.

Mast Assembled
About 140” long

The Mast length can vary depending on the sail used. 16 feet should be the maximum for safety.

Mast in Locked Position

Large Draw-Clasp
1-1/2” Washer
 Grain should run lengthwise
1/4” Eye Bolt
1/2” Plywood Supports 3” x 8”

When assembled, the Eye Bolt goes through the Mast and pulls the supports together, clamping the mast in position.

Mast Folded

LAYER 1
LAYERC1

The supports can be 1/2” to 3/4” thick, depending on the plywood grade.

LAYER 2

1/4” T-Nut

When assembled, the Eye Bolt goes through the Mast and pulls the supports together, clamping the mast in position.

1/4” T-Nut

www.PortableBoatPlans.com
As you can see, the mast is easy to unfold and extend while at the waters edge. Setting the boom in place is a matter of snapping it into a eye on the mast. The 2 part mast is both rugged and reasonably lightweight, and easily fits into many different hull designs. Simplicity is always a key factor in my designs, and the folding mast and boom follow that philosophy.
Visual Parts List

Prices shown are rounded up, and are for the total of each category.

- **T-Nuts, 3/8-16 and 1/4-20 thd.** $3
  Use as fixed nuts for Security Bolts and Mast Bolts.

- **#6 Screw Eyes, 1" thd., 8 reqd.** $6 (Mast & Boom)

- **4" Strap Hinge, 1-1/2" wide, 2 reqd.** $6 (Mast & Boom)
  Zinc plated steel.

- **4" x 1-1/8" wide Draw Hasp, 2 reqd.** $10
  Zinc Plated Steel (Mast & Boom)

Substitutes are OK, just maintain minimum strength requirements.
It is the intent of the designer to provide construction ideas that will prove beneficial to the small home built boating community. I have built and tested this assembly, and find it to be adequate for small boats.

I strongly recommend that you make changes to the design to improve it, or to compliment your specific application.

One of the boats that could benefit from this design is the PDRacer, by Shorty Routh. My version of his design is the Modular PDRacer, available for free on my website, with only a lengthening of the mast to accommodate a larger sail.

These plans are also free, and can be downloaded from: [www.PortableBoatPlans.com](http://www.PortableBoatPlans.com)
FOLDING MAST RETROFIT OPTION for TOTER 2

NO Stays Required

1-1/2" Brass Screws

1/8" Steel Strap (bend to fit)

2 x 3 Mast Support

1-1/2" ref.

1/4" Bolt, Washer, and Nut

Mast support made of harder grade 2 x 3 lumber.

Notch the Folding Mast to fit in the existing Step. Fit a wedge, on either side of mast, into the existing step, to secure.

Go to: www.PortableBoatPlans.com and download the free plans for the Folding Mast in the Accessories section of the main page.
It is necessary to extend the Forward Deck to 14” min, as shown. This can be done while building, or, if the deck is already in place, add a 4 inch extension.

ADD a 1 x 2 underneath, on edge, to support this edge of the deck.

Note that the mast opening is a different size, approx. 1-1/2” x 3”

If you already made the Mast Step, it will have to be modified to suite the new mast size.

Go to [www.PortableBoatPlans.com](http://www.PortableBoatPlans.com) and download the FOLDING MAST & BOOM Plans from the Accessory Plans section, near the end of the main page.
The designed height of the Folding Mast is 12 feet, the same as the original Pollywog Mast. You can choose to increase this up to 16 feet maximum, for use of a larger sail. Of course, this means the mast, when folded, would be 8 feet in length, and this is longer than most vehicles can carry inside. The choice is yours.

You will also have to extend the length of the Boom, as described on the Folding Boom Plans, to about 9 feet in length, to agree with the POLLYWOG specifications.

All other features and dimensions of the POLLYWOG remain the same. The biggest change is that no Mast Stays will be required, and the ease of installing and raising the mast will be greatly enhanced.

It is also strongly recommended that a removable 1/4” locking pin be used to prevent the mast from rising out of the step during sailing operation.