

# CrackerJax Modified

How to build fast and stable Crackerbox

by Marek Pleskacz

## Introduction

15 years ago in Europe I was racing (against time) F3 class boats.

My F3 boat was very similar in shape to Crackerbox. Flat bottom and straight shaft. So when I first time saw Crackerbox hopping and flipping over on the small breeze I new this boat can do better.

Two years ago in Batavia Dan from Danvo Models felt generous and give me a CrackerJax kit and this was an opportunity for me to prove to my friends in Toronto that this boat can be fast, stable and fun to drive.

It is also very inexpensive boat.

Ok, lets start building it.

## Selecting the kit.

Danvo Models have the CrackerJax in three kits. They differ by the level of assembly.

The good news is that what you need is the least expensive one. Box of unglued plastic parts.

From this kit you will need only three plastic parts of the hull - Bottom, Top deck and the hatch.

## First step - reinforcing

As a first step you will lay down two or three layers of 2" wide fiberglass and epoxy inside in the middle of the bottom of the hull.

After it is cured cut of the plastic turn fin and stuffing box.

Fill the holes with epoxy and finish the bottom smooth.

## Second step - motor mount

Make your own motor mount.

I made it out of material used to make printed circuit boards. The shape of it you can see on the photo.

You will ask why it is so complicated? As you can see the motor is located well under front deck of the boat.

That shape of the mount will let you remove the motor from the boat.

Since that mount goes from one side of the boat to the other it also stiffens the hulls bottom.

Before you will glue the mount to the boat you will have to make the drive shaft and the stuffing box.

## Third step - drive shaft

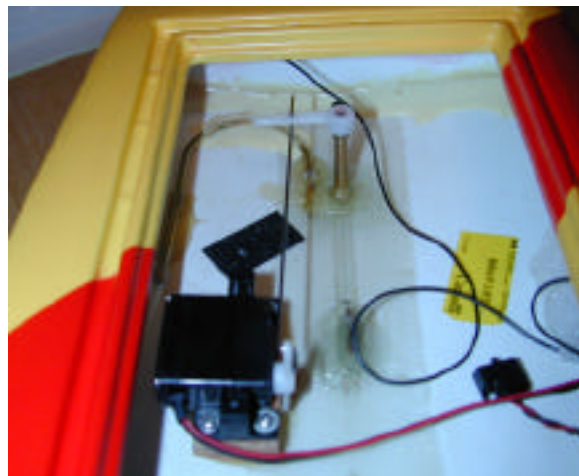
In my Crackerbox I am using piano wire drive but you can use anything you are comfortable with. In case you chose to follow me here is how I do it after learning it from Miha Holc from Slovenia.



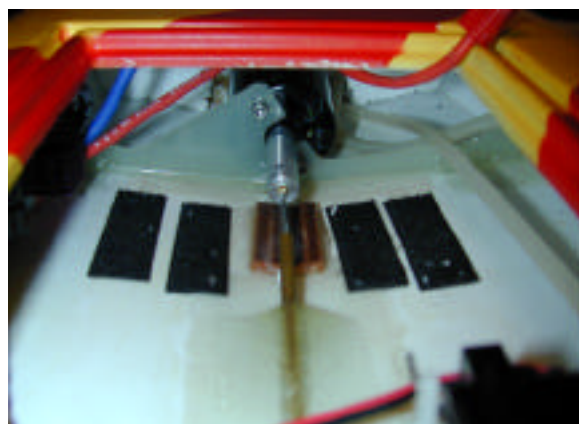
Top view



Back view



Bottom reinforcement



Shape of the motor mount

Drawings show the motor side and the prop side.

The piano wire is 0.047" diam.

Teflon tube is 1/8" OD

The smaller diam. long brass tube is 5/32" OD and 1/8" ID

The bigger diam. short brass tube is 1/4" OD and 5/32" ID

Drive dog is made by Octura

The 1/8" OD brass tubes at the ends of the piano wire are tin soldered to it.

The coupling is aluminum tube 1/8" ID with two set screws.

Small 1/8" tube is soldered after assembling piano wire and teflon tube together.

This system can be used for subsurface parallel or straight drive as well as for surface drive.

In case of Crackerbox, rules demand it to be subsurface and in the straight tube.

### **Forth step - gluing in the drive shaft**

Attache the motor to the mount and connect the 1/8" straight rod to the motor with the coupling. Slide the stuffing box (5/32" OD and 1/8" ID brass tube) on the 1/8" shaft.

Now you have stiff connection between the motor and the stuffing box. It will keep it straight as you gluing it to the hull.

Make two holes in the hull bottom. One for the stuffing box (7" from the transom) and the other for support blade at the end of it (~4.5" from the transom).

Insert this drive assembly (motor, motor mount and stuffing box) into the hull.

The motor mount is about 10.5" from the transom.

Use epoxy and glass fibre to glue it.

Reinforce the stuffing box and support plate from inside with more fiberglass and epoxy.

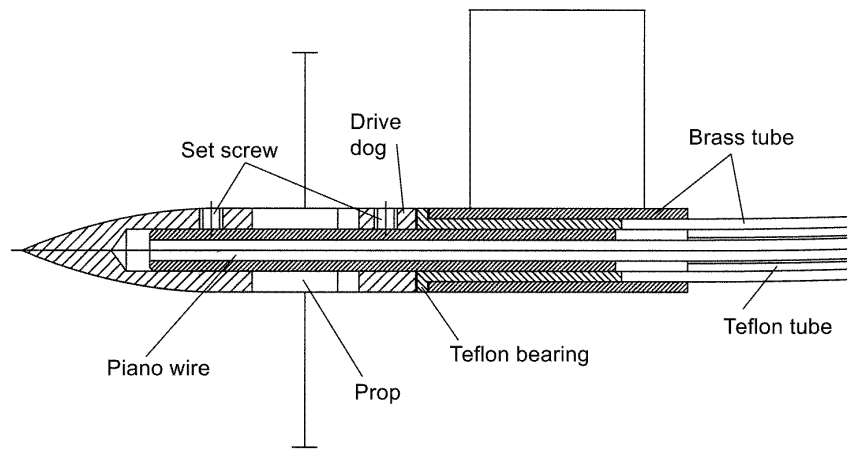
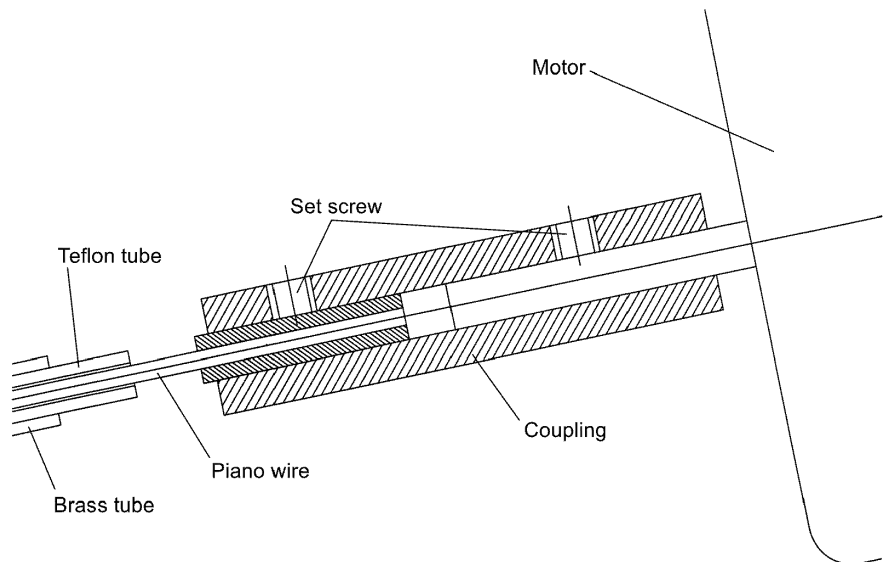
### **Fifth step - gluing the deck**

Insert the styrofoam flotation in the bow (in front of the motor).

Glue the deck to the hull.

### **Sixth step - making the rudder**

Rudder is made out of 1/32" brass sheet and 1/8" steel or brass rod.



Bottom view



The stuffing box for rudder is made out of brass tubing 1/8" ID.

Rudder is under the boat 2" from the transom.

### **Seventh step - installing the turn fin**

For oval racing the turn fin is probably not needed but this boat is much more fun to drive with the turn fin installed 9.5" from the transom to the center of the turn fin.

Turn fin is 1" wide and 0.5" high.

### **Eight step - radio, batteries, water cooling and the ESC**

Batteries are mounted three on each side of the drive shaft right next to the motor.

ESC, in my case Novak 410Hpc, is mounted next to the motor on the port side.

As a general rule try to keep everything as far to the front as possible because the CG of the boat should be minimum 9" from the transom.

If you decide to make water cooling for the motor, which I strongly recommend, you can make the water pickup out of 1/8" ID brass or aluminum tube. The tube can be glued into the hull next to the rudder (0.5" away from it) at 15 degree angle. Only the tip of the tube should be below the bottom of the boat presenting the diameter of the tube to the water flow.

### **Ninth step - prop**

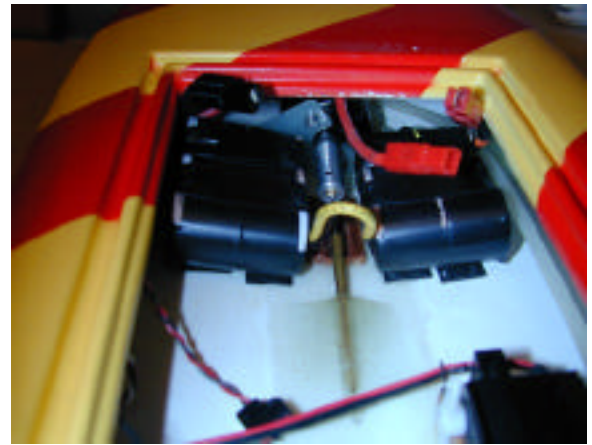
You can use X series props from Octura but in my view they have to much blade surface for stock motor and subsurface drive. In my Crackerbox I am running X432 prop with reduced blade surface. See the picture and you will see the difference between the original X432 and modified.

### **Conclusion**

When you do everything right you will not need the trim tabs to have this boat run fast and smooth and you should do everything in your power to avoid them.

On the personal note, this project was the most fun I ever had building the R/C boats and in my view you should have the same fun building and running it

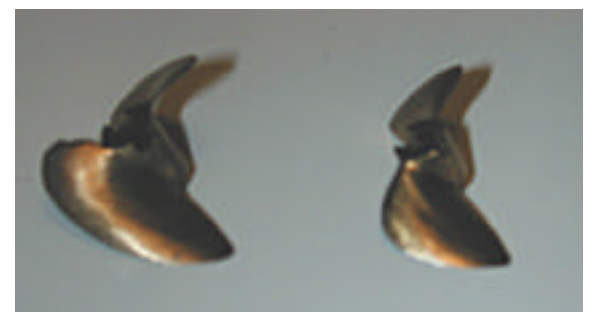
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Battery position



Receiver and ESC



Original and Modified X432 prop