

Published in a variety of whitewater organization newsletters and internet websites. (Three part set, "Introduction", "Guidelines", and "Thigh Strap System". Including diagrams and photos)

**"TRIED AND TRUE"
OUTFITTING FOR ADVANCED
WHITEWATER CANOEING.
INTRODUCTION
BY SAMMER ELIAS**

Tried and True Outfitting for Advanced Whitewater Canoeing" includes written guidelines, illustrations, diagrams, and photos.

I have been working on this package for quite a while now, which is based on some years of research, testing, problem solving, outside guidance, and personal experience. I think the initial drive came from all the confusion one could find in the world of whitewater canoeing, which included: bad outfitting practices, good outfitting practices, bad info being passed on, sloppy outfitting systems, great ideas, quirky ideas, dangerous set-ups, general lack of consistency, and the surprising absence of any real existing guidelines or diagrams.

I just wanted to know what works and what doesn't, what makes sense and what doesn't. And since I worked so hard to figure most of it out, I thought that I should share it with everyone else, and possibly produce the first set, that I know of, of OC1 outfitting guidelines and diagrams. I am very confident and sure in the ideas and guidelines I have produced. What I wasn't sure about, I didn't include. I believe that these are the best methods for outfitting. I utilized some existing methods, and I developed some better ones. I've done a lot of changing and modifying in my own canoes over time as part of the research and testing. The canoe I paddle now is outfitted according to these guidelines and systems, and I continue to be extremely impressed and completely pleased. It works, it makes sense, and it has given me much more control, responsiveness, security, and performance than I had ever experienced in any other outfitting.

If, or when, you utilize part or all of these guidelines and systems to outfit your OC1, please give me your thoughts. The most reward I could get from producing this, is knowing that other people benefitted from it.

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GUIDELINES
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Where and how to start.

* The most important guideline for laying out your outfitting is that your hip bone is 4" behind the centerline of the boat. This is the starting point. It puts your body in the right position in the boat. So figure out where your hip bone is going to line up on your saddle. Then place the saddle in the boat so that your hip bone will be 4 inches behind the centerline. Then use the centerline of the boat as a reference point for all your other measurements.

* Measure and mark-out where your outfitting will go before installation. This is obvious. But to find out where your outfitting should go for your body type and preferences, place the saddle, knee pads, anchors and thigh straps in the boat before gluing them in. You can tape the anchors in place with the thigh straps attached. Then get in and feel things out. Be sure to "feel things out" while slightly leaning forward in an aggressive paddling position. Keep your back straight too. This changes the position of your knees and feet. Determine your layout for your outfitting while in this position, which is a lot more accurate and beneficial.

Saddle.

* Your saddle should be 8" - 9.5" above the floor at the part where your butt actually sits.

* If possible, use a saddle with minimal length. A long saddle creates more of a "dam" in the center of your boat that prevents water from coming across to the other side when rolling. You need the water to flow as freely as possible along the bottom of your boat when rolling, making the roll a lot easier. I like a saddle length of 12".

* Cut out water tunnels in your saddle, also to enhance the free flow of water across to the other side of the boat when rolling. Rolling gets really tough otherwise.

Knee pads.

* Place your knee pads as wide apart as you can in a solo boat, right up against the sides. Placing them on the chines of the boat is even more advantageous. If your boat has double chines, place them between the two. As for how far forward or back to place them, lean forward slightly while sitting in the saddle, and find out where your knees rest naturally.

Thigh straps and their anchor points.

* I believe in eight points of attachment for thigh straps. Double straps for each leg, each strap having its own two anchors. This system gives you a lot more

control, holds you in better during paddling and rolling, and in general is a lot more ergonomic and custom. One of the advantages of being more ergonomic and custom, is significantly less movement and slippage of the thigh straps while paddling, which I see as a great benefit. And don't worry about being trapped in the boat by overly secure outfitting. By having a system that fits your body better, you'll find less need to over tighten your outfitting, which is one of the more significant factors to getting trapped. I will go into more detail below on how to make your outfitting ergonomic, and safe, while giving you more control, responsiveness, and security.

- * Set up your thigh straps so that you are securing both extreme ends of each leg, the knee and the upper thigh. This is where you need the most security, and where you do the most controlling. For clarification, I will talk about the forward strap and the rear strap. The forward one being the one that is closest to your knee, the rear one being closer to your hip. Each leg having a forward and rear thigh strap. I will also talk about floor anchors and side anchors. The floor anchors being on the floor of the boat, the side anchors being on the side walls of the boat. Anchors are D-rings or whatever else you choose.

- * Place the floor anchors for the forward straps a couple inches back from the front of your knees. In regards to their position in the width of the boat, place them so that they are vertically flush with the inside of your legs. Having the thigh straps be vertically flush with the inside of your legs keeps your legs from moving inward when pressure is applied. It also helps against strap slippage. In regards to the horizontal position of the side anchors for the forward straps, place them so that the straps will come across the top of your legs at an angle of 90 degrees to the angle of your legs. Again, less slippage. As for the vertical position of the side anchors for the forward straps, place them flush with the top of your legs where that thigh strap comes across. No lower, no higher. In this position they provide a direct line of pull, keeping the inside of your legs from moving in, while simultaneously keeping your legs down. If you go lower, you will lose stiffness from the vertical part of the strap, along the inside of your leg. In addition, you don't need the straps to support the outside of your legs, your knee in the knee pad, up against the side of the boat will give you that support. If you go any higher on that anchor point, the thigh strap will not prevent your leg from rising upward.

- * Place the floor anchors for the rear straps as far back as possible, up against the front of the saddle. As for their position in the width of the boat, just like with the forward straps, place them so that they are vertically flush with the inside of your legs. So, looking from above, if you make an imaginary line that connects the two floor anchors, front and rear on one side, that line should parallel the natural angle of the inside of your leg. Now to the side anchors for the rear straps. Lined up with your hip bone is about the right horizontal position. You want them that far back to give you support high on your upper thigh. Also, the rear pull will help prevent forward strap slippage. Going too far back will make it difficult to get in and out of the boat. I will describe how to test the safety of your outfitting, before gluing, further down below. In regards to the vertical position of the side anchors for the rear straps, place them flush with the top of your legs

where that thigh strap comes across, for the same reasons described above. No lower, no higher.

Foot cups/pegs.

* You should determine where your knee pads will go first, then find out where your feet end up.

* Make sure that you place them in a position where your feet are making an angle of no less than 90 degrees to your shins. The problem with going less than 90 degrees, is that it makes it difficult to slide your feet out of foot pegs, and also prevents you from being able to slide back out of your outfitting while pivoting on your ankles in both foot pegs and foot cups.

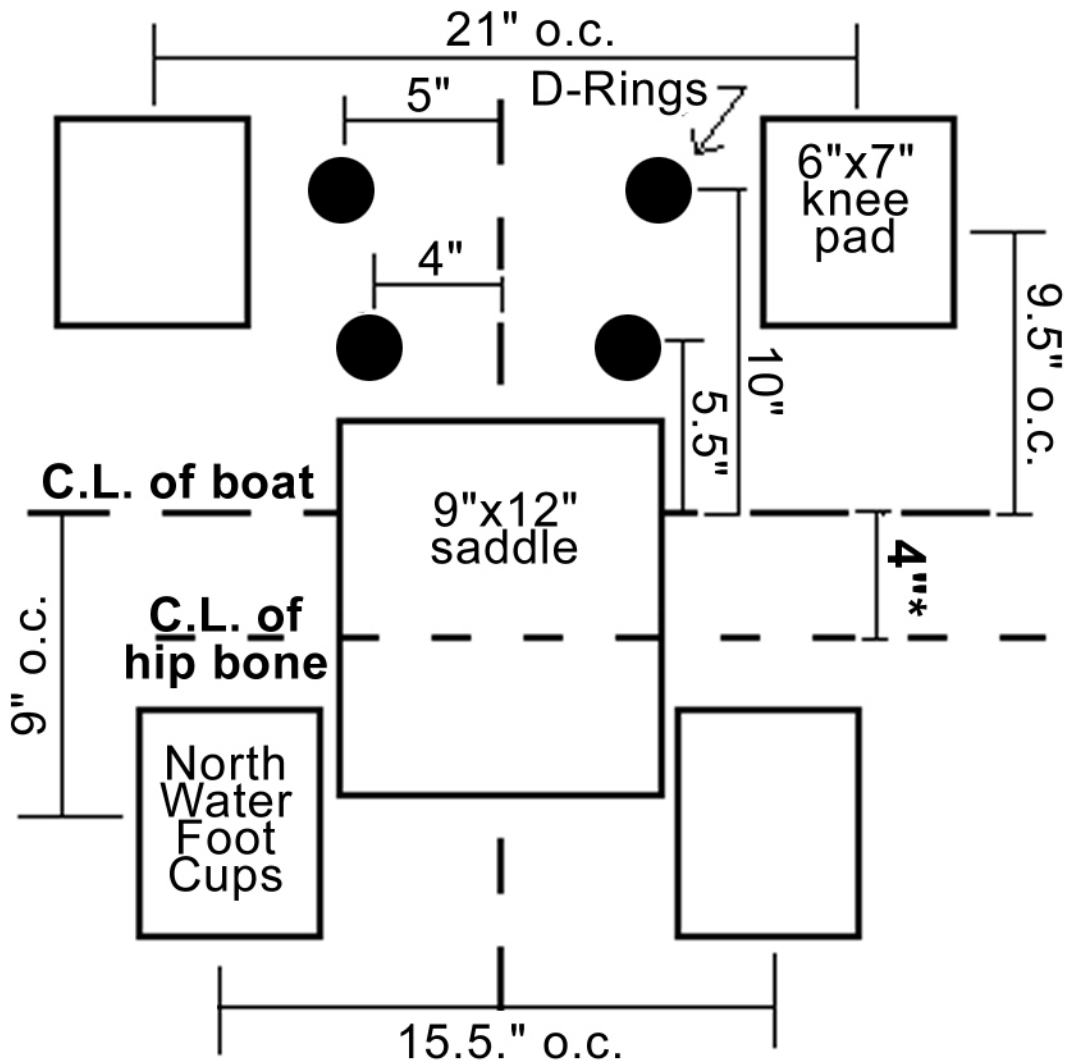
Safety check.

When you are done figuring out where the saddle, knee pads, and foot pegs/cups go, glue them in. But don't glue in the anchors for the thigh straps. Tape them in place. Tape them very well, and attach the straps to them. Then get in and tighten down the straps. Now try to get out of your outfitting. Make sure to push back and out when trying to get out, which makes it easier than just trying to stand up. If you can get out without ripping the tape out, then you are fine. If the tape keeps ripping out, and you have followed these guidelines pretty closely, then move the side anchors for the rear thigh straps slightly forward. Keeping moving them forward until you can get out without ripping the tape out.

Be sure to take a look at the photos for a better understanding of the whole set-up.

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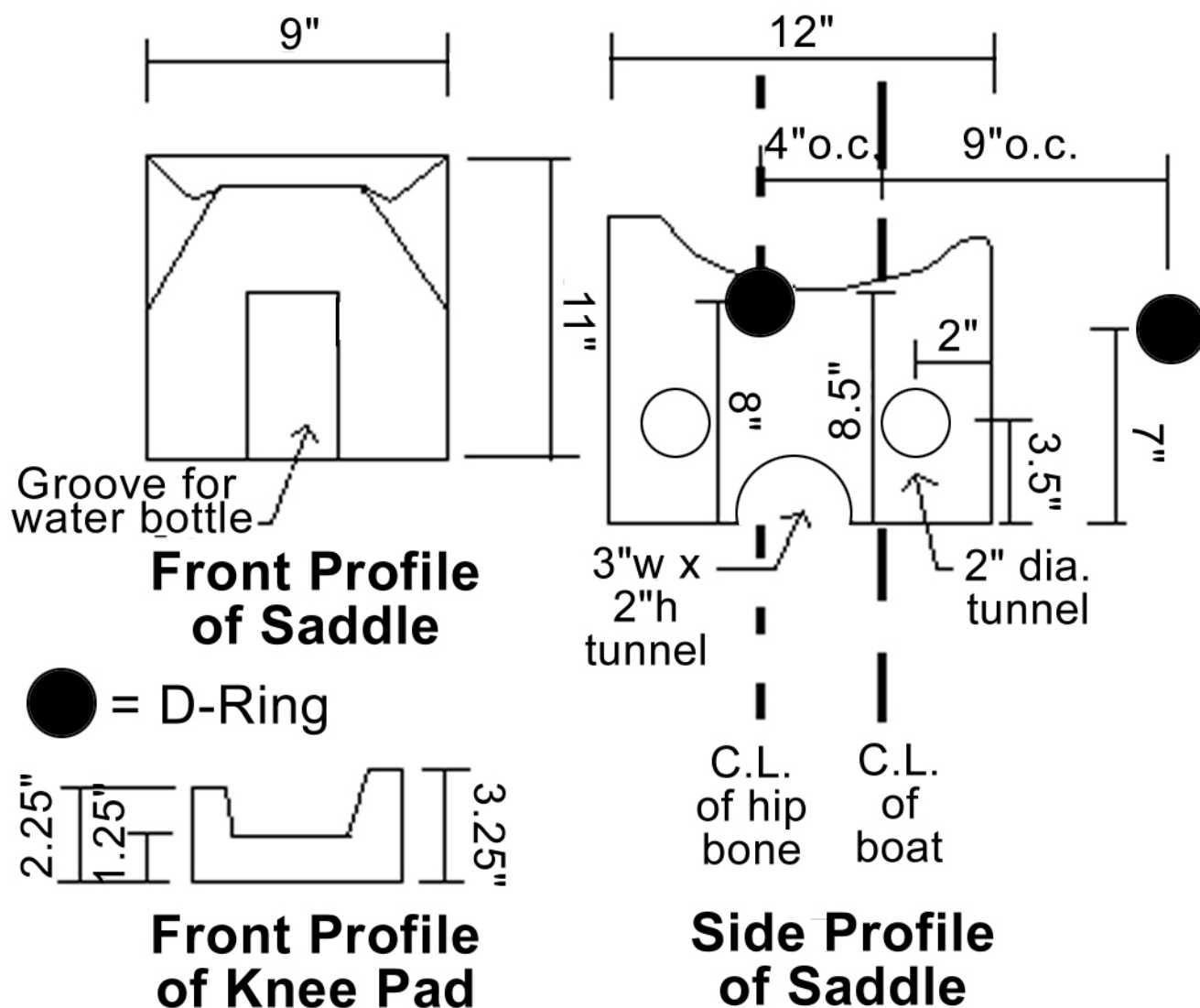
LAYOUT
BY SAMMER ELIAS



These diagrams illustrate what is described in the "Guidelines" pages. The dimensions shown here are for direction, but should fluctuate for each individual.

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PROFILES BY SAMMER ELIAS



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THIGH STRAP SYSTEM
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Make your own, custom molded, semi-rigid, suspended, thigh straps. After much research and experimentation, I came up with a way of making my own thigh straps that utilized all the best existing ideas, along with some of my own innovations. Rigid straps are nice because they somewhat stand-up on their own, allowing easy, quick entry. But from a manufacturer they have a generic rigid form, which doesn't fit everyone's legs very well, and they have minimal adjustability. Suspending soft straps with rope or shock cord is also a good idea. But it's hard to make it work well since they don't stay very open, or the pull of the cord enhances strap slippage. The system I came up with uses a combination of these ideas, and it works wonderfully.

Here is how you can do it . . .

Use 2" tubular webbing, found at your local climbing store, for the thigh straps. In case you are wondering, you don't need any additional padding on the webbing, they are soft enough even on bare skin.

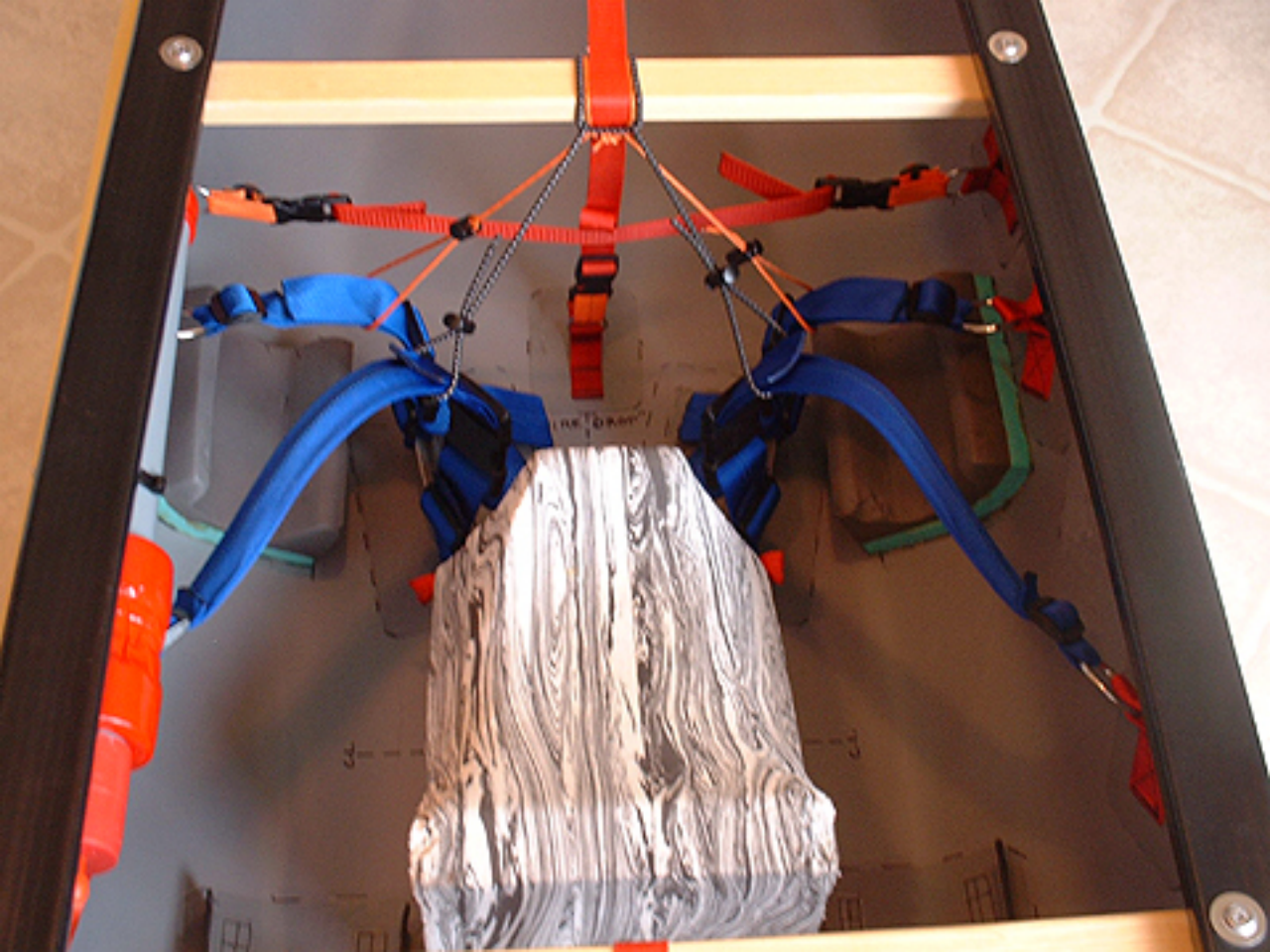
Use 2" side release buckles as a quick release for the straps. They can be released either by squeezing the side levers, or by pulling up on the ends of the buckles.

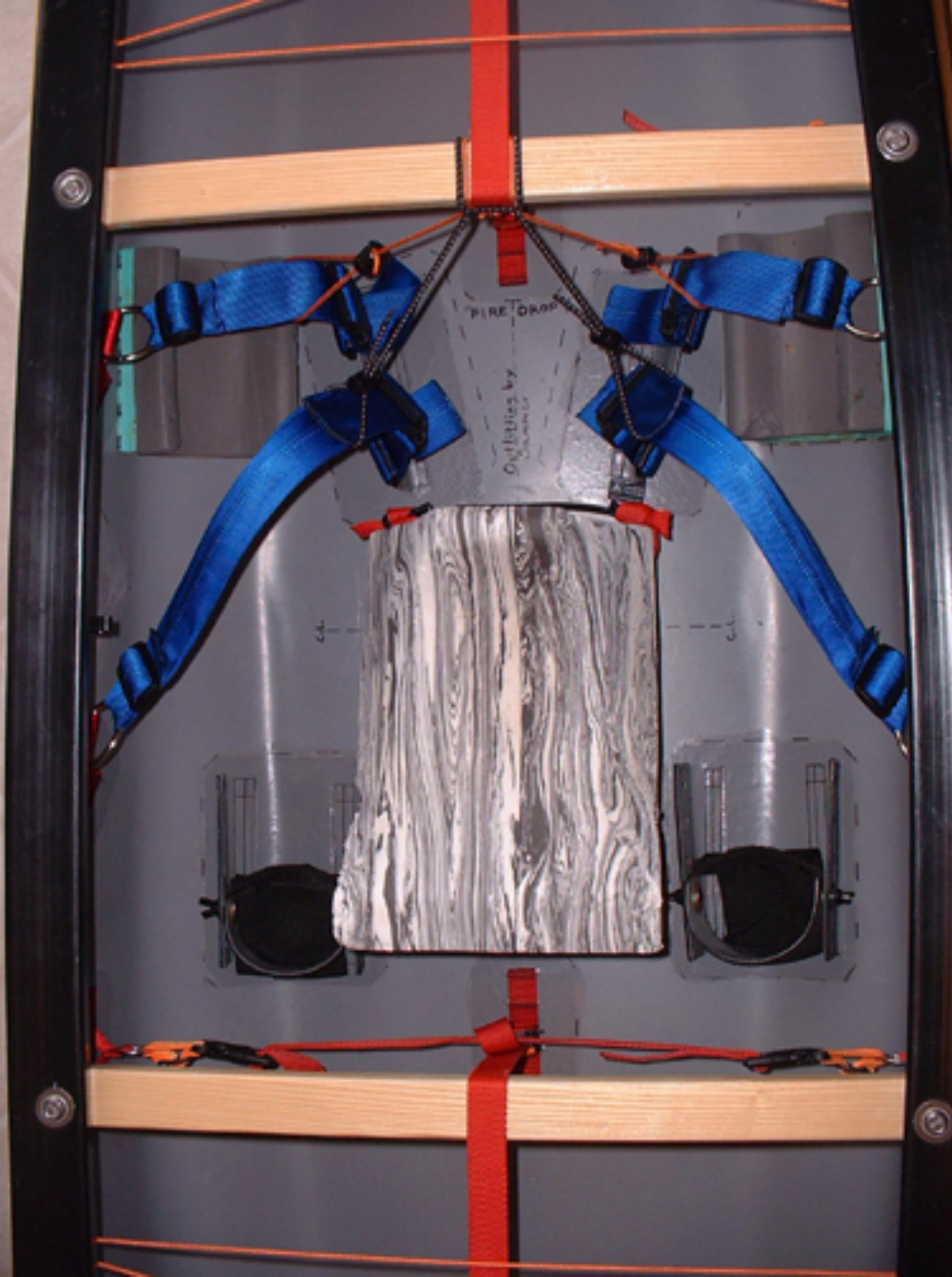
"Tri-Glides" are used to secure the straps to the anchors. Both the side release buckles (sometimes called "Fastex Buckles") and "Tri-Glides" can be found at most well-equipped backpacking stores like REI.

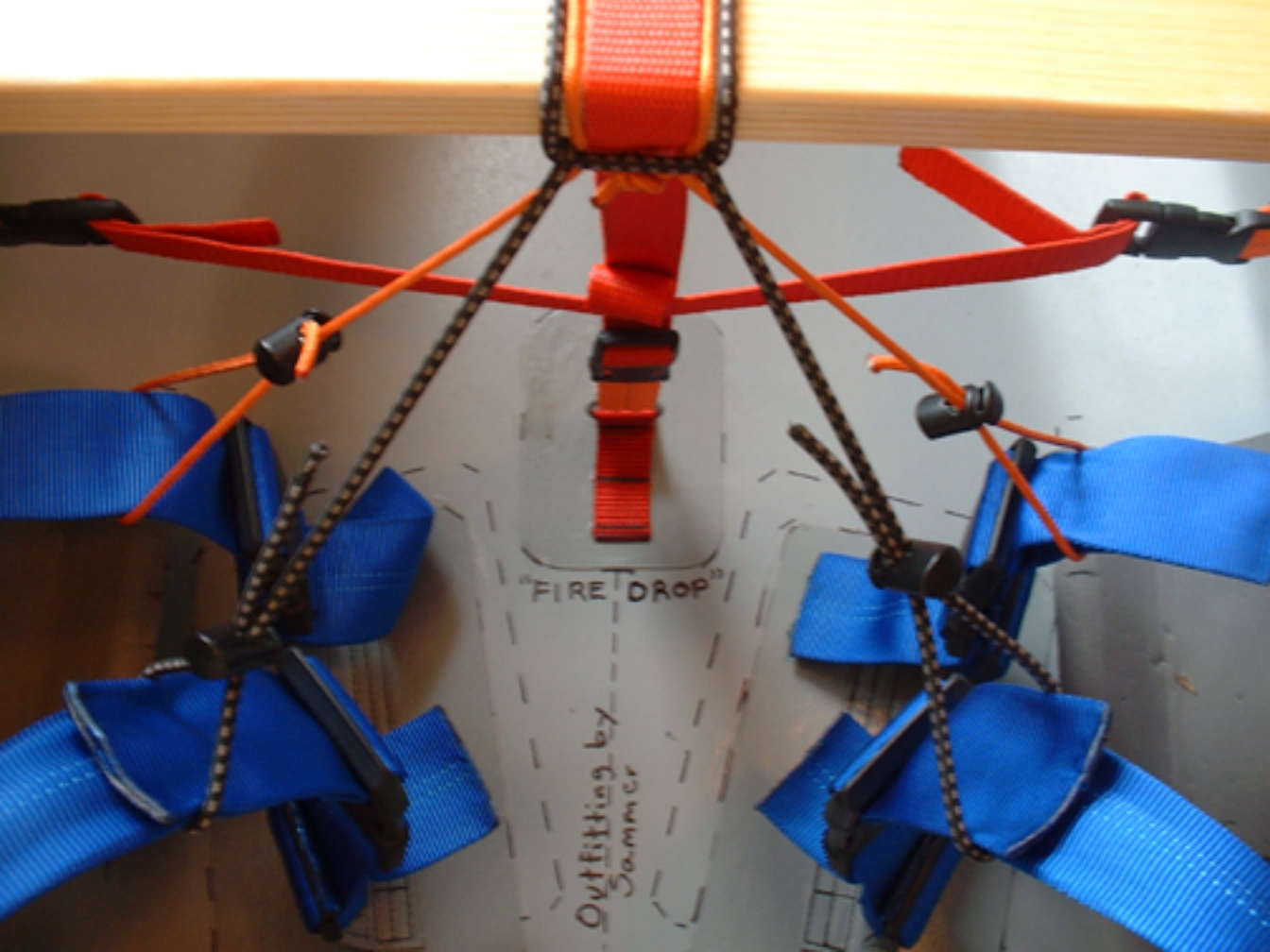
1.5" wide plastic strips that you can find at a home improvement store, are used to make the straps rigid. To do that, first attach the thigh straps and their anchors in place in the boat. Then get in and get things adjusted. Next you measure how much length there is between the quick release buckles and the side anchors. That's where the plastic strips are going to go. Cut the plastic strips to their respective lengths, and round off the corners. While sitting in the boat, in the thigh straps, heat up the plastic strips with a heat gun. When they get soft from the heat, lay them over your legs on top of the thigh straps, and mold them exactly to your legs. When they cool, remove the buckles and slide them inside the tubular webbing. Use shock cord to suspend all the straps up. For safety, attach all the shock cord with spring loaded cord locks (the ones you find on jackets). They connect the cords together, but if there is pull on the cords, the cords will come loose, which is good. For a better understanding of the whole set-up . . . take a look at the photos.

So with this thigh strap system you get custom molded, rigid straps, that stay open and hold their form when they are suspended, with a minimal amount of tension on the shock cord. In addition, all four straps cost about a total of \$18 to make. Compare that with the cost of a set of four manufactured thigh straps. Let me know if you have any questions, email me at justsammer@hotmail.com

Sammer Elias







"FIRE DROP"

Outfitted by
Summer



