

# The One Ounce GoFast Pack

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A 2000 cubic inch pack that weighs one ounce. That's right ... ONE OUNCE.

Imagine yourself skipping down the trail, Mr. Bluebird whistling accompaniment to all the furry little woodland animals singing with a full orchestra playing in the background. Your pack is so light that it lifts the load from your back and pushes you down the trail taking all the effort of hiking away from you.

OK, so perhaps the reality is that none of these things will happen if you build this pack, but I can tell you that you'll end up with a pretty neat little pack made from just 1 linear yard of 0.6 ounce Cuben fiber that only tips the scales at 1 ounce.

To be sure, there are a but a few primary pack designs on the market today, yet each with a different feel, a different purpose, and with their own variations on common themes. To whit, all of my pack designs to date were variations on a rectangular sack with straps to allow it to be carried.

When thinking about this however, and remembering a lecture from long ago engineering classes that discussed the dark arts of the surface areas of different shapes verses their volume, I recalled that a cylinder utilizes up to 30 % less surface area per unit of volume, which in the world of backpacking, translates to 30 % less material to make the body of the pack. What does this mean? Well, to the layman it means elimination of the front corner seams on the pack to save weight.

After working up a few prototypes in different materials, I added the additional challenge to myself to make my prototypes out of one linear yard of material, with the thought that given the cost of some of today's post space age materials one yard of material would deliver the most value for a hard dollar earned.

With that background given, in this article we will construct two different packs, which I've affectionately coined the go fast packs, with one of one linear yard of Silicone coated Nylon, cut to the same dimensions as a linear yard of Cuben (36 inches by 50 inches) and one of one linear yard of 0.6 ounce per square yard cuben fiber (36 inches by 50 inches).

One running yard at the above stated dimensions comes in at 1.33 square yards and weighs in at 0.8 ounces in 0.6 Cuben and 1.8 ounces in 1.35 ounce Silicone coated Nylon. With this much material we'll create a 2000 cubic inch pack from the Silicone that comes in at right around 2 ounces and a diminutive 1 ounce for the Cuben pack. Both packs have a load capacity of around 15 lbs and ride very comfortably at 13 lbs. The Sil nylon I'm using for this project weighed out at 1.45 ounces per square yard on my scale, meaning that my starting piece weighs in at exactly 2.0 ounces. Finished weight for the prototype pack made of this material came in right at 2.4 ounces, using 1 inch grosgrain instead of the ½ inch that the design calls for. With standard materials and the ½ inch grosgrain this should tip the scales right around 2.1 ounces.

I recommend that the first time pack maker follow this same example, and use the less expensive sil

nylon for the first pack so that you don't waste an expensive piece of Cuben fiber.

You can scale the same design up or down to meet your own needs. Warning, there will be some limited need of math and basic geometry. I have made a prototype up to 3200 cu in from this design, however, the weight starts climbing quickly as you add yardage to the pack. You will also need to add a heavier strap to make carrying a heavier load comfortable.

Please note as we go forward that you can simplify this design by elimination of the pocket and lid, instead making an extension collar out of the same material, but be warned that you'll need to add compression loops on the pack. Other design modifications can be incorporated as well if you wish, such as adding a waist belt, or using webbing for the pockets, or using webbing for the pack strap attachments. These, however, will be left up to you.

Measure twice, cut once, take your time sewing, and enjoy your project for years to come.

And remember .... setting up your sewing machine properly is 80% of the success of the project.

Part one:

The Go Fast pack:

You will need the following per pack built:

1 running yard of silnylon in your choice of colors (I'm using a pretty red that I had laying around) or 1 linear yard of 0.6 ounce Cuben fiber.

1 yard of 1/2 inch Grosgrain webbing.

3 yards of thin elastic cord.

1 spool of 100% polyester thread in a matching or contrasting color to your material

1 pair of sharp scissors

1 sewing machine

1 or 2 yardsticks (I like to use two)

A sharpie pen in a color close to your your thread color so that it blends in.

4 yards of lightweight cord or 100 lb spectra line (don't use the course spectra, it will cut the grossgrain)

3 micro cord locks.

A lighter to burn the ends of the cord to prevent fraying.

1 small safety pin

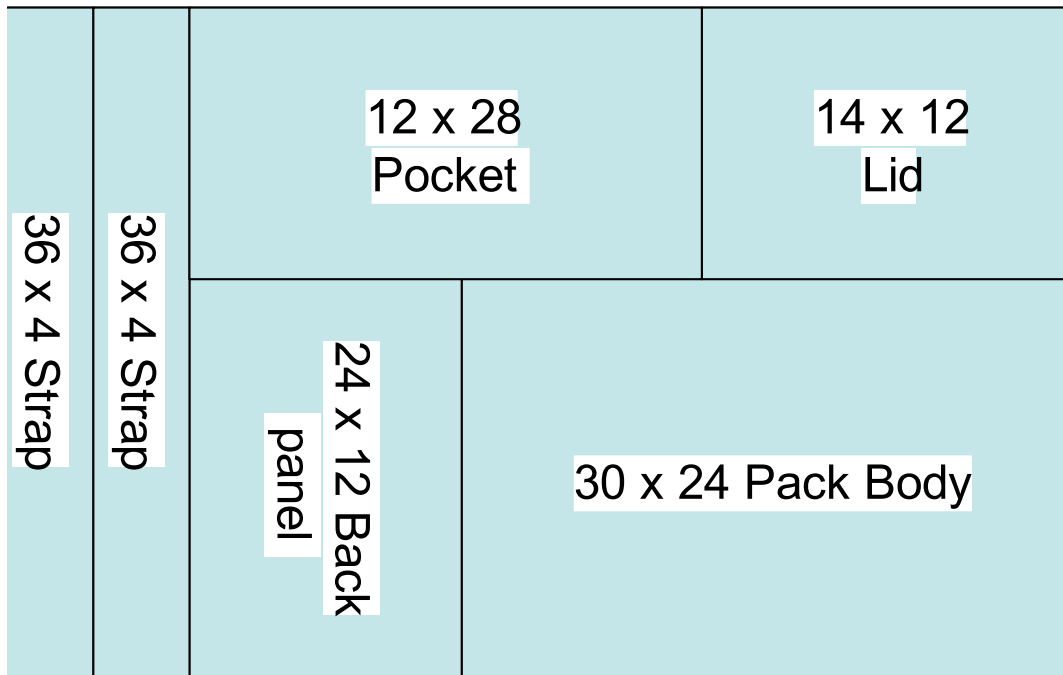
A good cup of coffee or soft drink (save your more refreshing libations until after the sewing is done.

Sewing machine needles are SHARP).

A little Patience and some peace and quiet.

We will begin by marking and cutting the material to specific dimensions.

Here is the cutting pattern:



Be very careful on marking and cutting your pieces. A mistake here will carry through the entire project. Clean cuts and accurate dimensions will make sewing easier and nothing will ruin the appearance of your project quicker than uneven cuts now.

The first step is construction of the pack straps. This design is using a simplified strap design that includes the ability to stuff the straps with whatever soft material you may be carrying that you can use as padding.



Fold one pack strap in half lengthwise, then cut 6 inches off of one side of one end (the non folded end) and overlap it downwards by an inch. Sew the strap using a 1/8 inch seam allowance down both sides.

Turn the straps inside out after you've finished sewing. You'll end up with two 15 inch long pack straps with a overlapped slit 5 inches down from the end on each strap.



Cut a two inch piece of grosgrain and singe the ends with a lighter to prevent fraying. You'll push in the sewn seam on both sides, tapering the sides up about 5 or 6 inches, so that the end is a bit wider than the grosgrain.

Fold the grosgrain strip in half and sew it over the end of the strap material. Put two lines of stitching across the grosgrain and go over each line of sewing twice. Then you're going to top stitch along the edges of the strap to stabilize it. Sew as close as you can to the edge of the strap along each side. You will be sewing through four layers of material so take your time and don't let the strap pull or warp on you as you sew.



Finished strap

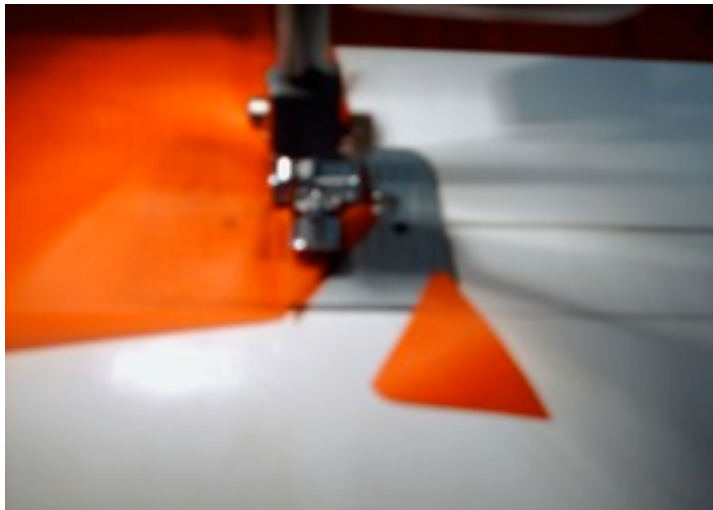


Next we'll work on the pocket



Take your pocket material and fold down one of the 28 inch long sides about  $\frac{1}{2}$  inch and sew a drawstring channel the width of the material.

Cut a 45 degree piece the width of the drawstring channel on one end only. You can fold the material in instead of cutting the material for extra re-enforcement if you would like.



Measure up along the pack body 10 inches from the 24 inch width. Mark and draw a line across the 24 inch width of the material.

This is the easiest way I know of to make a pocket.

You going to lay the pocket upside down, with the drawstring channel upside down and down, overlapping the 10 inches, and sew the pocket in 10 inches from the pack body side, lining up the pocket edge with the edge of the pack body using a 1 inch seam allowance.



Remove the piece from the machine and trim the ends of the thread.

Turn the pack body around and line up the edge of the pocket with the other side of the material. Sew along the line you drew again using a 1 inch seam allowance. When you get to the middle of the pocket you'll have a 4 inch overlap of material. Continue to sew along the line with the 1 inch seam allowance, trapping the fold of material in the seam.



Using this method you don't need to pin the pocket into place and you don't lose the fold when you're sewing the seam because it's trapped by the previous step. Sew a second seam right next to the previous seam across the width of the pack body.

Fold the pocket along the seam towards the top of the pack body.

You should have all the the seams facing the pack body at this point.

Feed elastic through the drawstring channel on the pocket.



Sew the pocket to the pack body trapping the elastic in the sewn seam on one side. Sew from the bottom of the pocket to the top to make sure that your pocket is even along the top. Sew twice more across the elastic.

Fold the elastic cord inside the pocket at the 45 degree drawstring channel angle, on the other side of the pocket, being very careful not to trap the elastic in this seam as well.

Next we're going to attach the back panel to the pack body.

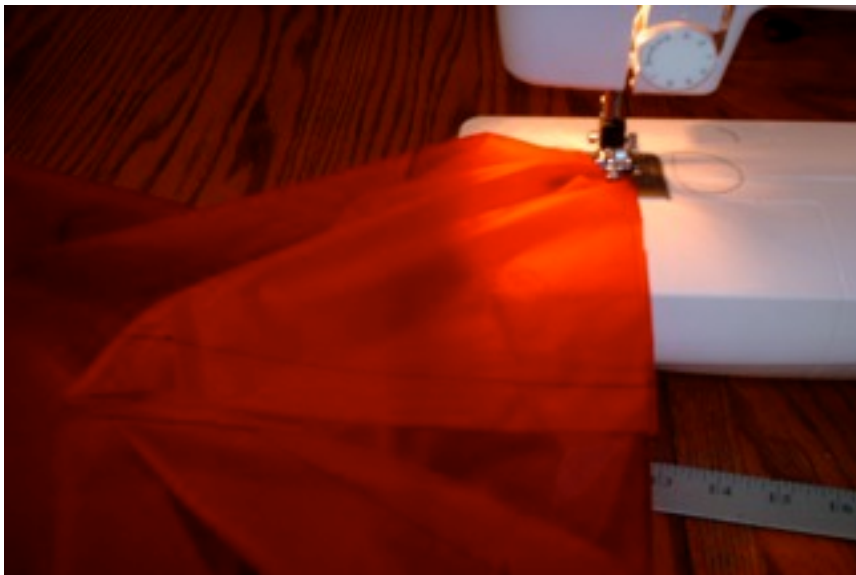
Attach any additional loops for compression, etc. To the pack back facing inwards in the same way we attached the pack strap attachment loops at this point.

Sew the back panel to the body with the grosgrain loops facing inwards. Align the top of the pack body to the top of the back panel and sew downwards with a ½ inch seam allowance, letting the seam run out at the end. You will have a lot of extra material at the bottom. This will be used to create the pack

bottom, so don't trim it off. Sew the other side the same way. Ensure that you capture the elastic in the seam that you intend to capture it in and not in the other one. Sew a second continuous seam down each side right inside the other seam.

Next we're going to create the pack bottom.

Take the pack body and back panel assembly and find one of the corners where the seam ran out from attaching the back to the body. Turn the extra flap of material at the bottom 90 degrees at the point where the seam ran out, and sew it to the bottom of the back panel with a ½ inch seam allowance.



Turn the pack around and do the same to the other side. You'll have both sides of the pack body attached to the bottom of the back panel with a “tube of open material” created by the front of the body of the pack left free. This tube, when stretched out, will be the same exact width as the back panel.

Align one stretched out corner of the “tube” to the edge of the back panel and sew across the length of the back panel, attaching the open tube to the back of the pack.



You should now have a very nice semi-articulated fold from each edge attaching the pack back panel to the back body, creating a sealed bottom. This bottom will yield a little depending on what you store in the pack. This yield will take a lot of stress off the bottom seam. Since the seams are the most stressed portion of your pack, this means your pack will last a lot longer in normal service. Fold the bottom seam over three times about  $\frac{1}{4}$  inch, creating a flat felled seam, and sew across the bottom of the pack.

Next we move to the top of the pack and create a drawstring channel around the top.

The top should be even all around the circumference of the pack. With the pack still inside out, Fold down  $\frac{3}{4}$  of an inch of material and sew a drawstring channel around the entire circumference of the pack with a quarter inch seam allowance.

Find the center of the pack body and cut a small hole in the top of the drawstring channel. Cut a matching hold in a small piece of Grosgrain webbing and sew it over the top of the drawstring channel hole you cut earlier.



Feed the remaining elastic webbing through the top drawstring channel in the same manner you fed the elastic through the pocket drawstring channel.

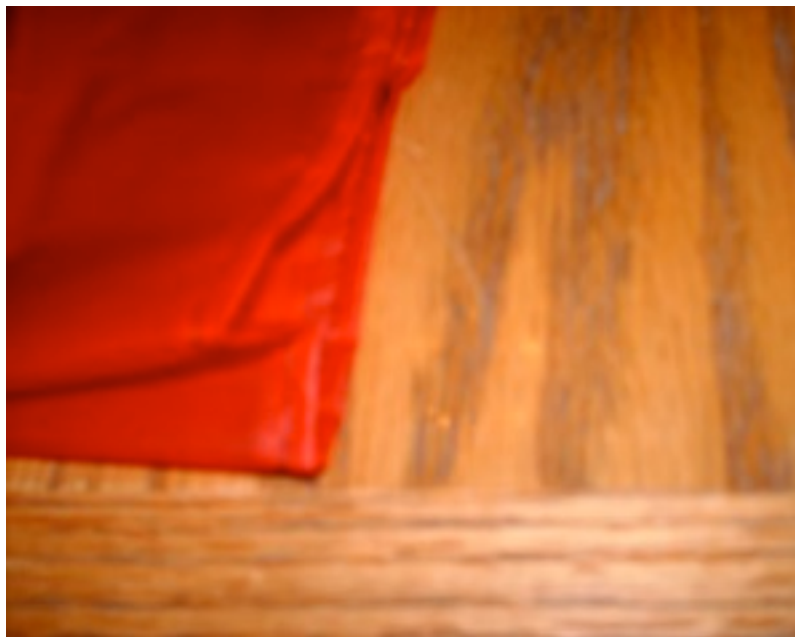
Next we work on the lid.

Fold the long length of the lid in half and mark the very edge of the fold on both sides.

Sew the edges of the long length of the lid material over to make a nice seam on each edge.

With the lid upside down, fold the material up a half inch at the mark you placed on the edge (which should be just visible inside the seam you just sewed, then fold the material back down.

Fold the material back upwards, making a “W” in the material. The mark you made earlier should be at the bottom corner of the first fold of the “W”. Sew this “W” in place on both sides using a ¼ inch seam allowance.



Continue the seam to the top of the piece, creating a “pocket” in the material.

Cut two half inch pieces of grosgrain webbing, sear the edges, fold them in half lengthwise, then sew

them into the corners of the “W” on both corners with the fold facing out.

Next we attach the pack straps.

Turn the Pack right side out. All the webbing loops and the pocket should be on the outside.

Find a seam where the back panel joins the body and lay the top of the pack strap right next to it with the edge of the strap overlapping the back panel. Angle the strap inwards slightly. Sew the pack strap to the pack back panel along the drawstring channel. Trap the elastic inside the drawstring channel along this sewn seam by sewing through the elastic.

Lay the Lid upside down along this seam with the pocket facing up. The lid will be longer than the back panel, so space it evenly so that it overlaps both sides equally. Sew the lid onto the back panel along the drawstring seam.



Fold the pack strap ends over the drawstring channel towards the inside of the pack and sew another seam right next to the other seams along the drawstring channel. Again, sew through the elastic as much as possible, especially at the corners of the back panel. Failure to trap the elastic in the back panel means that the pack will not ride right on your back, so make sure the elastic is trapped at the corners.

Lay the pack out on a table and stretch the pack body, back panel down, out so that it's evenly spread out, with an equal amount of pack body pulled out from the back panel.

Your going to fold down the lid across the top of the pack body, then cut two 2 inch pieces of grosgrain webbing, searing the edges. Then fold these in half lengthwise and sew them to the bottom of the drawstring channel INSIDE the pocket, so that the grosgrain loops are in alignment with the loops on the lid.

Take a long piece of Spectra cord and put it through all the loops as shown in the picture. Make it too long rather than too short, as it needs to be long enough to allow the lid to flip over the back of the pack when fully extended. Add a cord lock. Once the cord is positioned just the way you like it, cut the cord inside the loop on one side of the lid and tie the cord to the lid grosgrain using a loop in the cord. This is important for the lid to ride properly. Repeat on the other side and sear the ends of the spectra cord after you cut and tie it.



Flip the pack over and tie two 14 inch lengths of spectra cord to the grosgrain loops on the bottom of the pack body seam, then pass the cord through the grosgrain loops on the pack straps. Tie the free end of each cord to the other side of the cord with any type of prussic knot that you happen to like, I am using a magnus hitch here. The friction hitch, or prussic knot, will allow the cord to move when there is no load on the cord, but hold the knot fast on the line when there is any pressure on the line at all.



This makes for a easily adjustable pack strap.



Add cord locks to the elastic cords on the pocket and the top of the pack, then knot, trim, and singe the remaining cord ends. Be careful not to cut too much material ... you can always go back and trim a little more, but adding elastic can be challenging.

The lid pull down will also function as basic compression for the pack.

Put your extra pair of socks into the pack straps via the slit on the bottom of the straps to give you a bit more padding.

Load up your new pack and take it for a hike!

