

The X-Kilt

A Contemporary Kilt You Can Sew Yourself

Developed for the Members of www.XMarksTheScot.com

Who, What, Why and How

I developed the design of this kilt in July 2006 to answer a need that had become apparent among the members of www.XMarksTheScot.com. Namely, lots of guys wanted to sew a kilt themselves, but were put off by the expense, the perceived difficulty of the job and the time involved. After having sewn up two kilts myself; the first being a plain canvas kilt and the second a traditionally made-hand-sewn tartan kilt, I was aware of the differences in terms of cost, difficulty and time between the two. I wanted to design something that anyone with a little bit of patience could sew, as long as they could get a few yards of suitable plain material and had a sewing machine in the house. Yet at the same time, I didn't want to create something that borrowed too heavily from the existing contemporary kilts currently on the market. Two prototype kilts were made for two non-kilt-wearing friends, who told me of their preferences. Those preferences were heavily influenced by the fact that neither man was Scottish (one was Irish) and both had seen a number of Utilikilts (<http://www.utilikilts.com>). I took what I had learned from the first two kilts and sewed up two more, one for myself and one for another member of www.XmarksTheScot.com. From my experiences I developed this manual, which you can use to sew up your own contemporary **X-Kilt**.

OK, so what is this thing, the **X-Kilt**?

- It's made out of plain twill weave material, either solid color or camouflage
- It's not tartan (plaid)
- It has a narrow front apron (much like a "Utilikilt")
- It's box-pleated (not knife-pleated)
- It closes with Velcro
- It's easy to sew
- The materials will cost you about \$30
- It will take you about 10-14 hours to sew it up....meaning one week of evenings after work, or a weekend just going at it.
- You can wear it anywhere you'd wear a casual set of pants

Who is the **X-Kilt** designed for?

- Men

It is entirely feasible to stitch up an X-Kilt for a woman. However, I'm going to show my personal prejudices here, and ask the ladies not to do that. Women,

you have thousands of options when it comes to “unbifurcated” garments. Leave the kilt for the guys. I know this is not a traditional kilt, and we could go on and on with arguments and discussion on the topic over what is, and is not a kilt. Suffice it to say that if you really want to make an **X-Kilt** for yourself, well, I’m certainly not going to stop you, am I? Humour me and do this one thing; reverse the direction of the pleat layout so that it opens on the LEFT side, not the right side. Every other step is identical. Just have it open on the left side, and call it an **X-Skirt**. It’s all semantics, anyway.



There’s your author, looking grumpy (which I’m not, incidentally) wearing X-Kilt prototype #3. I need to hike it up a bit in front, it’s not sitting at my navel.

OK, now that we have that out of the way, lets get more specific. Guys, you need to be fairly trim in order for an X-Kilt to fit properly. If you have a significant beer-gut, or as our mentor and member at X-MarksTheScot.com (and Master Kiltmaker) Barbara Tewksbury says, “a bit of a corporation”, the **X-Kilt** is probably not going to fit very well. Adjusting for a significant “beer-gut” requires taking more measurements and sewing in adjustments that are beyond the scope of this project. There are commercially available contemporary kilts that will fit you better. Note that I’m not saying that you can’t carry a few, or more than a few extra pounds. Lord knows I have more mass that I ought to. It’s not your weight I refer to, but where that weight is distributed. If your waist measurement (at the navel) is larger than your chest measurement (at the nipples), then this is YOU I’m talking about. This does not mean that you can’t make and wear an **X-Kilt**. Just be aware that it might not fit as well as a kilt adjusted for your body type.

Why a box-pleat?

- Box pleats are traditional. The very first tailored kilts back in the early 1800’s were usually box-pleated.

- Box pleats take less sewing time than knife pleats, because there are fewer pleats
- A Box-pleated kilt requires less material than a knife-pleated kilt
- As of right now, no other contemporary kiltmaking company that I know of is making box-pleated kilts, so we're not stepping on anyone's toes, here.

OK, so how are you going to do this? I'm going to give you the thumbnail step-by-step right here, so you can visualize the whole process.

- Measure yourself (get a friend to help)
- Buy the fabric, Velcro, and thread
- Wash the fabric
- Quick-iron the fabric
- Cut out the fabric
- Cut out the front waistband strip
- Iron it all flat
- Sew half the Velcro to the front waistband strip
- Mark the pleats with chalk
- Add the front waistband strip to the rest of the kilt
- Sew down the right edge of the over-apron
- Sew down the hem
- Sew the pleats from hem to the bottom of the fell (the lower 2/3rds)
- Fold up the kilt, taper the pleats and pin the pleats
- Sew down the fell/upper 1/3rd of the pleats
- Attach the other half of the Velcro
- Finish raw edge of under-apron
- Make belt loops and attach
- (optional) Make cargo pockets and attach
- Strut your stuff

All right, maybe you didn't recognize all the terminology in that list of steps up there. You need to spend more time online at <http://www.xmarksthescot.com!>

Once you have gone through the whole process, you will have an appreciation for what professional Kiltmakers do, and you will know why a professionally made kilt costs as much as it does. Not only that, but you will have a garment you can wear with pride, because YOU MADE IT.

OK, Let's make a Kilt!

Measuring

The **X-Kilt** is designed to ride a bit higher than most contemporary kilts, but lower than a traditional kilt. This is just my personal prejudice. You can wear it

wherever you want, including over your head if you want to. However, be aware that if you take the measurements as outlined below, but then wear the kilt pushed down on your hipbones (*like I am in those pictures, up above*) the kilt won't look as good as if you wear it where it was designed to sit. Primarily, the apron will hang lower than the pleats, and that looks a little bit funny.

I would suggest that you get help with the following measurements. The Waist is easy enough to do yourself, but the other ones aren't. If you do them all yourself, you'll be likely to get numbers that are an inch off so find someone you're friendly with, and draft them to help. You will need four measurements: waist, rump, fell, and drop.

Waist: this is the measurement, to the nearest inch around your middle right at your navel. A traditional kilt is worn a couple inches above the navel. Most contemporary kilts nowadays are worn down on the hipbones where you wear a pair of trousers. I'm going to have you split the difference and set this kilt right at navel level.

Rump: this is the measurement, to the nearest inch around the biggest part of your rear end. Do not cheat on this. This is the most important measurement in terms of making a good-fitting **X-kilt**.

Fell: This is the measurement, down your side, from the waist circumference you just measured, to the rump circumference. You can also just use eight inches, which is going to be pretty close on nearly everyone.

Drop: This is the measurement from the waist circumference to the hem of the kilt. It's how long the kilt is going to be. Traditional kilts usually hit the wearer right about the top of the knee. Lots of guys like to wear contemporary kilts a bit longer than that, say to mid-knee. Some guys like them to the bottom of the knee. I made mine to hit at the bottom of the knee. You pick what you want. It's going to be somewhere between 21 inches for a really short guy, to 26 inches for a six-and-a-half foot tall dude with a long thighbone.

OK, write down those measurements, here.

Waist: _____ **Rump:** _____ **Fell:** _____ **Drop:** _____

Now, go shopping.

This is what you're going to need.

One piece of chalk with a sharp edge...like a NEW piece of chalk, eh? You can also use dressmakers pencil, though for God's sake don't use a

dressmakers pencil on a traditional wool kilt. Just go buy some chalk, OK? It's cheap. I got a box at the drugstore for 89 cents.

Ten inches of 2-inch wide Velcro. Black, white, whichever. It won't be visible when you have the kilt on. This is enough for one kilt and cargo pockets. If you don't want cargo pockets on your kilt, you can just get six inches.

One box of pins. These are for pinning hems and stuff to hold the fabric in place while you sew it. If you're using cotton twill or cotton/polyester twill you can get "regular" pins. If you're sewing in denim or canvas you'll want extra-long, extra-beefy pins. You don't need a lot; thirty pins is enough.

Two spools of thread: Do you want your kilt to be sewn up with same-color thread as the material, or with contrasting color thread? It's your choice. Be aware that if you use contrasting-color thread, then your stitching had better be good! Get cotton-colored polyester all-purpose thread, two decent sized spools of it. You won't need all of both spools, but if you sew down the inside of your pleats you'll probably run out if you only have one spool.

4 yards of fabric: This is more complicated than it sounds, so keep reading.

Fabric generally comes in bolts, which are made either 45 inches wide or 60 inches wide (plus or minus an inch). You are going to need a length of material between 3 and 5 yards long and roughly 22-25 inches wide. You'll also be cutting out a long strip that's 4 inches wide. OK, so the budget-conscious readers out there will have already figured out that they could buy two yards of 60-inch wide fabric, cut it in half and sew the halves together, end to end. That's what you do with a traditional kilt. Well, I'm going to tell you to NOT do that.

Why? Because it's complicated. You can't predict ahead of time where that seam is going to fall, and it's complicated to design the kilt so that the seam is hidden inside a pleat. This is supposed to be an easy kilt to sew. If the material cost \$50 a yard, then it would be worth it, but you're buying stuff which probably costs between \$4 and \$8 a yard. It's not worth the headache. Just buy four yards of material. You can use the leftovers to make a second kilt for yourself or a buddy, or maybe an **X-Skirt** for your Lady.

If the material is 45 inches wide then you'll have to buy four yards of it, anyway.

If you are a really big guy, and by that I mean with a rump size over 50 inches, then buy five yards of material, You'll have leftovers, but the stuff is cheap. If your rump size is over 60 inches then I don't know what to tell you to do. Buy another yard of stuff and forge ahead. I made myself an **X-Kilt** and had just barely enough left over out of my four yards to make a couple of cargo pockets, if I'd wanted them. If my rump had been three inches bigger I wouldn't have had enough, and at 48 inches, my bottom is big enough as it is. Use that as a guide.

OK, what kind of material should you buy? You can make an **X-Kilt** out of whatever the heck you want, but I strongly suggest the following:

- Plain color canvas
- 8 - 10 ounce, solid-color cotton or cotton-polyester twill
- 8 - 10 ounce, cotton or cotton-polyester camouflage material
- 8 - 10 ounce, solid-color cotton or cotton-polyester fabric with some random pattern
- Bull denim (a polyester/cotton denim material)

If you want to make an **X-Kilt** out of material with a regular pattern like a plaid it's going to be tough to make it look good. The art of aligning plaid/tartan is beyond the scope of this project. Stick with solid colors or randomized patterns like camouflage. You could even try corduroy. I've seen two knife-pleated kilts in corduroy, and they looked good. Just make sure that you buy stuff with a small nap to it, not the super big, thick, roly stuff.

Pros and cons of the materials.... Canvas is indestructible and will wear like iron. Carhart work clothes are made out of canvas, and you know their reputation! If you sew it well, the kilt will last for a decade. It's stiff and heavy, and will tend to say down in a breeze. However, it will wrinkle quickly, and you'll have to iron it a lot. It will look like a nightmare when it comes out of the washing machine and you'll have to spend half an hour ironing it. The first two **X-Kilt** prototypes were canvas and I have to say that they're OK, but I sure like the cotton/poly twill better. In fact, I like it a LOT better.

Cotton twill is easy to work with and cheap. However, it lacks some stiffness and weight and will tend to fly more in a breeze. It will also continue to shrink a little bit through continuous washing. However, it doesn't wrinkle too badly, though you'll have to iron your kilt now and then.

Cotton-polyester twill is hard to beat. The stuff that "Dockers" "khaki" work pants is made out of is cotton-polyester twill. Ditto for "Dickies" brand work pants. It's easy to sew, essentially the same price as cotton twill, and doesn't tend to wrinkle as much. Ironing will be minimized, though you will have to iron it now and then. If I were you, I'd buy this stuff. I made the third and fourth **X-Kilt** prototypes out of dark blue cotton/poly twill after making the first two out of canvas and I'm convinced. This stuff is by far the easiest to work with and the easiest to care for.

Corduroy, well.... I haven't made a kilt out of corduroy, yet so I can't comment. If you make an **X-Kilt** out of corduroy, let us all know how it comes out.

Bull Denim: I haven't made a kilt out of this stuff yet, either, but after handling it a couple of times in the fabric store, I think I might use it for my next contemporary

kilt. It will be a bit harder to work with than cotton/poly twill, but the weight and substance of the fabric will be worth it. We'll see how it holds up in the "wrinkle" department.

I'd recommend putting a lid on buying expensive material to work with for your first kilt.... No imported Italian suiting wools here, OK? Keep it under \$10 a yard, maximum. If you just HAVE to spend a lot of money, get nice wool tweed and make an **X-Kilt** out of that. Make sure to visit the www.XMarkstheScot.com forum and show us pictures, if you do that.

Preparing the Fabric for Cutting

OK, the first thing you do when you get home is take that material and put it in the washing machine. Do NOT, I repeat... do NOT wash it with anything else. If the dye bleeds at all, it will ruin anything else you put in the machine. Just put it in the washing machine by itself and wash it on hot, with detergent. Dry it on the hot setting. Shrink the dickens out of that stuff now, BEFORE you put the hours into sewing up a proper-fitting kilt. If you bought canvas you might consider washing it twice, both times with a fabric softener like "Downy". Downy smells like perfume, though, so get a clothespin for your nose. Canvas is really stiff, and one guy at www.XmarksTheScot.com actually recommends putting canvas in a concrete mixer with river pebbles for a while, before washing it the second time. Having made three kilts out of canvas, now I think he might have a point.

Just don't put the fabric in there with any cement, OK?

If you bought wool, unless you bought a wool/poly or wool/nylon blend, do not wash it. You're going to have to get your kilt dry-cleaned.

Ok, your material is going to come out of the dryer with all the raw (cut) edges of the fabric frayed, big-time. However, the two finished edges will be fine. Those edges have been "selvedged", meaning that the weavers folded the edge threads back into the material so it stabilized the edge. Don't worry about the frayed edges right now. Just take your fabric and iron the wrinkles out.

You are not striving for perfection in ironing, this time. It doesn't matter if the stuff has some little wrinkles. You just want to get the material pretty flat so that you can measure it. Put the iron on a hot setting, just hot enough to generate steam. If you have a cotton/poly blend, don't go to the top end of the temperature setting. Just get it so that the iron generates steam and then wrestle the stuff around on the ironing board and give it a decent once-over.

Here's a hint....once you've done initial ironing, don't fold your fabric any more...roll it! If you roll it you'll put a lot fewer wrinkles in it. You can roll it around a cardboard mailing tube or a piece of clean 2-3 inch PVC tube from the

hardware store, or just roll it up on itself if you don't have a tube.

Cut out Your Fabric

OK, you need a really big, CLEAN...read that again...**clean** surface. Personally, I have hardwood floors in my house, so I move a bunch of furniture in my living room, sweep the living room floor, and then sweep it again. Then I do a quick once-over with a sponge, to pick up any sticky stuff, and dry the floor. In my dreams I have a 14-foot long table with a hard Formica surface, but for now the floor will do, because I don't have a cat....yet. You might not have hardwood floors. OK, well, do your best. Lay all of your fabric out, flat.

By the way, if you do your sewing on the kitchen table, be sure to seriously clean the table before you start sewing. The last thing you want is the oil from last night's pasta to get into your fabric.

I'd suggest aligning the weave of the twill so that the side of the fabric that shows the diagonal thread alignment the strongest is facing up. In a traditional kilt, the twill lines always run from the lower right to the upper left. In a contemporary kilt, I don't think it really matters, but you do what seems best to you.

OK, now you have to think. Look at the selvedged edge of the fabric. You have to decide if you want that edge to show in your finished kilt, or if you want to hem it. Traditional kilts have a nearly invisible selvedged edge that shows when the kilt is finished. However, your material probably has a selvedge that looks a little bit different from the middle of the fabric. Do you like the look of having that edge show? You decide.

If you choose to hem your kilt, then decide exactly where the bottom of the kilt will be, and mark that point with the chalk, just at one location on the material close to one end.

OK, now look at the measurement you wrote down for your DROP. Write it in the box, below.

Are you going to hem your kilt? If the answer is "no" then put in Zero in that space. If the answer is "yes", then measure how much fabric you will be hemming up, and put that number in the "Hem" space.

DROP: _____
HEM: _____
TOTAL: _____

Now add up the numbers and write down the total. That is the distance from the selvedged edge to where you are going to cut.

OK, get out the tape measure or a yardstick, and starting at one end, work your

way down the piece of fabric, measuring exactly that much from the edge. Put a pin in about every foot, or you can mark it with chalk, instead. Chalk is great, and this is a good place to start using it. Go all the way from one end of the fabric to the other. If you use chalk you can connect all the dots with a straightedge, and make a nice straight line to cut on.

Now get out your sharpest pair of scissors and cut the fabric in a dead-straight line along your markings. When you're done, pull the pins out and drop them back in the box you bought them in, or stick them back in your pincushion. Roll up the extra piece and store it away for **X-Kilt** number two or your Lady's **X Skirt**.

Now's the time to trim off the frayed end, too. I'm talking about the end that will be the right hand edge of the over-apron. It got frayed when you washed the fabric and now there's a mess of threads hanging off of it. Trim it off at something pretty close to a right angle to the edges.

OK, now cut out a piece of material that 3 inches wide and equal in length to the width of your over-apron. If you haven't jumped ahead and figured out your over-apron size already, then cut a piece that's 3 inches wide and a foot long. The alignment doesn't matter but if you can cut it from the far left edge (*where you'll likely have excess material*) so that it's aligned the same as the rest of the kilt, that's groovy.

Prepare the Inner, Over-Apron Strip

The lower raw edge on the 3-inch strip you just cut out is going to fray over time, so you need to stabilize it. The first thing to do is pick which raw edge is going to be the bottom, eh? The other edge is going to be up at the waistband. It really doesn't matter, as it's not going to show.

If your sewing machine has a overlock stitch specifically for that purpose, then use it, and run a line of stitching right next to the bottom raw edge all the way down the fabric. If your machine doesn't have a stitch like that, then just put it on the zig-zag setting, with a medium-wide stitch, and run that right along the raw edge. After you do one run of zig-zag, then go back over it again with another run, right on top of the first one, and offset a little bit. If you want, you can then run a single line of straight stitching smack-dab through the middle of those two zig-zags. You can use any color thread for this, 'cause it won't show on the outside of the kilt. The two zig-zag lines and the straight stitch are just as good as a specialized stitch at stabilizing that edge.

Now that edge will NEVER fray!

If your sewing machine doesn't have a zig-zag, you can still stabilize this edge though I don't recommend doing this next step if you're working in canvas. It's OK in cotton or cotton/poly twill, though. Just fold over the raw edge about a

quarter of an inch, pin it down along the whole length about every 2-3 inches and hem it. Make sure that the raw edge will be INSIDE, up against the over-apron, not up against your abdomen. I don't recommend doing this in canvas because the extra thickness will create a bit of a lump in the kilt. The lighter twills aren't so thick, and it looks fine. Mine is built this way.

This strip of fabric has two long "raw edges" doesn't it? You don't have to stabilize the other one, because that one will be buried inside the waistband.

Sewing : Velcro and the Over-Apron Strip

OK, so take your Velcro and trim it so that it's 4 inches shorter than the width of your over-apron. Don't know what that is, yet? OK, just make it 5 inches long. This will leave you a little bit of velcro that you can use for cargo pockets later if you want, so save the bits. Now take either half of the velcro, hook or fuzz and pin it down on the strip of fabric you've been working on.

Look at the drawing! You're sewing the velcro more-or-less at what will be the far right edge of the over-apron strip. Leave yourself two inches at the right. You can use any color thread to sew down the velcro, it won't show. Remember that it's going to get yanked on a lot, so make sure to really stitch down the ends of the velcro. Maybe you could go over the ends twice, with zig-zag stitch. That's what I do.



OK put the strip aside, and move on to the hem.

Sewing : The Hem

OK, if you decided, back when you were cutting out your fabric, that you wanted to hem you kilt, now is the time to do it. If you're not hemming your kilt, and are letting the selvedged edge show, then skip this step.

Take your fabric and put it on the ironing board. Fire up the iron to a steam setting. You're going to fold over the hem, there just above the selvedged edge and iron a crease in it. You're probably going to turn up about an inch of fabric, more or less. You've got about twelve feet to turn up and iron, so settle in. Iron in a really straight crease, and iron it hard. If the fabric cooperates, you might get

away with not pinning it for the next step.

Oh, heck...it's twelve feet of hem. If you put in a pin, perpendicular to the edge, every six inches, then that means you're putting in only 24 pins, right? Go ahead and do it...or if you like living dangerously, don't pin your hem. Slap it down on the sewing machine, set to straight stitch at the size of stitch that you like and go to it. Hem that puppy, the full length of the fabric. Try hard to keep the stitching at an even distance from the edge of the fabric. I find that a hem line about half an inch from the edge looks about right.

OK, let's talk about stitching. In a traditional (more-or-less) kilt where parts of it are machine-sewn, I think it looks best if the machine stitches are really small. OK, but this isn't a traditional kilt. If you go look at a pair of Levi's, you'll notice that the gold thread is stitched in with pretty large stitches. Personally, I think that a contemporary kilt looks good, especially a canvas one, with bigger stitches in most places. Why don't you take some fabric-*/ scraps, double them over, and practice running a few lines of stitching down 'em. Pick a stitch size that looks good to you, and then tackle your hem. I like about 6 stitches to the inch, personally.

Figuring out your Pleats

All right, time to set up the kilts pleating structure. Lay the whole length of fabric out on the floor, or your work table, with the outside of the kilt facing up and the hem/selvedge away from you. It's time to talk about the nitty gritty of this design, which makes it workable for many sizes of guys.

You are going to combine a number of standard-width box pleats with varying apron widths to create a kilt that works for you. All the box pleats will be 3 inches wide. The apron will vary between 8 - 11 inches, depending on the size of the wearer. In general, if you're a smaller guy, use a smaller apron size if you can....bigger guys try to use larger sizes. I used a ten inch over-apron for a guy with a 30 inch waist and a 40 inch rump, but a twelve inch over-apron for a guy with a 42 inch waist and a 45 inch rump. However, I rebuilt that second kilt with the twelve-inch apron to have a ten-inch, and I made my own **X-Kilt** to have a nine-inch apron. I have a 48-inch rump and I'm a bit over 6 feet tall. Be forewarned.

MOST important point...focus on the RUMP measurement here, not the waist measurement. Forget everything you ever thought about when buying pants. YOU are a KILTMAKER! Ha!.....so focus on your rump, not your waist.

You're going to build this kilt by combining a certain number of three inch box pleats and an apron width to go around your RUMP size, not your WAIST size. OK, got that?

Here are some examples:

30 inch rump measurement (very small guy):

Seven, three-inch box pleats and a nine-inch apron

7 pleats x 3 inches/pleat = 21 inches (in pleats)

21 inches + 9 inches = 30 inches (total)

35 inch rump measurement (small guy)

eight, three inch box pleats and an eleven-inch apron

8 pleats x 3 inches/pleat = 24 inches (in pleats)

24 inches + 11 inches = 35 inches (total)

This guy probably should build a kilt with nine, three inch pleats and an 8-inch apron, but an eight inch apron is pretty narrow. Still, it would work just fine, and it probably would look better than the wider apron. Utilikilts have six-inch aprons, but then the under-and-over-aprons don't overlap very much...not good from a modesty standpoint. If you build a narrow apron like an 8-inch then make the under-apron quite a bit wider so that it wraps around further than the over-apron and you have more overlap.

40 inch rump measurement (medium sized guy)

ten, three inch box pleats and a ten inch apron

10 pleats x 3 inches/pleat = 30 inches (in pleats)

30 inches + 10 = 40 inches (total)

48 inch rump measurement (this is your author)

thirteen, three-inch box pleats and a nine inch apron

13 pleats x 3 inches /pleat = 39 inches (in pleats)

39 inches + 9 inches = 48 inches (total)

I'd learned that narrower aprons looked better than wide ones, so I tried a really narrow apron on my kilt and yup.....it looks good.

52 inch rump measurement (one BIG guy)

fourteen, three inch box pleats and a ten inch apron

14 pleats x 3 inches/pleat = 42 inches (in pleats)
42 inches + 10 inches = 52 inches (total)

Box pleated kilts with less than seven pleats start looking kind of weird to me, so if your rump is smaller than 30 inches, you might think about making two-and-a-half-inch box pleats. That will change all the measurements from here on out, so I'll let you figure it out. Then again, maybe having only six pleats doesn't bother you at all. Many of Matt Newsome's box-pleat tartan kilts have less than six box pleats. It's your call.

Remember that the X-Kilt is a contemporary, narrow-apron kilt. You want the apron to be at least six inches smaller than half of your waist measurement. Whoaaahhhh, we're talking about waist measurement, all of a sudden. Read that again..... That will allow at least one whole pleat to "wrap-around" your hips. So if your waist is 40, then half of that is 20, right? OK, so subtract 6 inches from 20 and that gives you 14 inches. That's the absolute BIGGEST apron size you should accept, and it'd be much better to go three inches smaller, to 11 inches.

All right, refer to the pleating diagram in Appendix I. Go there now. Look at it. That's the (*modified*) pleating diagram for **X-Kilt** prototype #2. I built that kilt for Jason, who had a rump measurement of 40 and a waist measurement of 33. You'll see that he got a kilt with ten, three inch pleats and a ten inch over-apron.

OK, so now it's your turn. How many pleats is your kilt going to have, and how big will the over-apron be? Write it down, here.

Pleats _____ **Over-Apron** _____

Pleat Structure

Look at this picture of the end-view of the three-inch box pleats that you'll be making for your kilt.



Pleat Dimensions

As you can see, the outer, flat part of the box pleat, the part that faces the outside is three inches wide. The inside folds are 1.25 inches, each. Of course if you lay a 1.25 inch pleat fold next to another 1.25 inch pleat fold, it won't add up to 3 inches. There's a half-inch gap. That gap is there because you're going to use that gap, in the fell, to taper your pleats from rump to waist.

Look at that diagram, and then refer to the pleating diagram in Appendix I, and it should all start to make more sense to you.

Marking the Pleats

Ok, get out your chalk and your tape measure. You're going to use the chalk to draw where to fold each pleat, directly on the cloth. Don't worry, chalk comes out in the wash. Basically, you are going to replicate the drawing in Appendix I on the OUTER side of your kilt.

Put the kilt down on your work table or the floor (after you've swept and cleaned it.) Have it facing up at you. In other words the outside of the kilt is facing UP. The top of the kilt (the waistband) should be "towards" you and the hem should be "away". The right hand edge will be the over-aprons right edge.

Refer to the illustration in Appendix I. The very first thing you're going to do is set the right hand edge. For this you need a straight edge and something that is an accurate right angle. A T-square is good, but you can get good results with a really big book, like an Atlas or something. You just want something big that will give you an accurate 90 degree angle. This is IMPORTANT...read that again....this angle is IMPORTANT so do it right. If you botch it, all your pleats will hang at an angle instead of straight up and down, and the kilt will only look right after you've drunk a lot of beer. . An eighth of an inch doesn't matter but half an inch does matter.

OK, so move in about 3 inches from the right hand, raw edge of the fabric and mark a chalk line that's an accurate right-hand angle from the selvedged edge, up to the folded-over waistband edge. All your measuring is going to be based from this line. Now go and look at the pleating illustration again. Does it make sense?

The next thing you do is chalk in your fell line. This has to be perfectly straight and exactly the distance from the waistband that you wrote down for your fell, back on page 2. That's the dotted blue line in the pleating layout illustration, and it should be about 8 inches from the waistband edge. Chalk in the line all the way down your material.

Once the fell line is in, start measuring out the over-apron. It'll be somewhere between 8 and 12 inches wide, so go back to where you figured out how wide your apron will be and make note of the measurement. Measure that far from the right hand edge line that you marked and put a chalk mark at the waistband. Go to the hem and repeat the process. Now take a straightedge, and join the two marks with a chalk line. Eyeball it closely and make drop-dead sure that everything is at right angles to each other. It should be a perfect rectangle. You're going to work your way down the kilt, measuring as you go, using the

diagram in **Appendix I** as your guide. Then you're going to repeat the process at the hem, keeping a sharp eye out for mistakes. If you ever join one mark at the hem to it's corresponding mark at the waistband to and your eye tells you "that's not a right angle!"...believe your eye and check your marks.

The first "forward-facing inner pleat fold" and the last "forward-facing inner pleat fold" are deeper than half the depth of the pleat, right? In fact, they're three inches deep; the depth of the whole pleat! That's a lot, but this will help with keeping the pleats flat. All the rest of the markings should make sense to you. If they don't, go back to the "end-view of the pleats" diagram at the top of the page and think about it until the geometry makes sense. When you're finished, you will have reproduced the diagram in Appendix I on your fabric, adjusted for your number of pleats and apron width, and drawn in chalk.

When you're all done marking with chalk you can trim off the excess cloth if you're brave. Me, I always leave it there, just in case I've messed up and left out a pleat or something.

A-Shaping the Over-Apron

You don't have to do this, and building the kilt is a very tiny little bit simpler if you don't, but A-Shaping will make your kilt look better. It's one of the steps that I added on recommendation of the X-Marks gang. Awwwww, come on, GO for it, it's all of five minutes. Here's what you do.

Go to the hem (or *selvedge...the bottom of the kilt, whatever*) and find the marks you made that outline the over-apron. It's a perfect rectangle, right? Measure one-and-a-half inches out from each of these marks, and make a little "X", right at the hem, with chalk. If you're a Big Guy, make it an inch and three-quarters. Now draw a chalk line from the top of the over-apron at the waistband, down to these new marks at the hem. You've now outlined new dimensions for the over apron, so that it's three inches wider at the bottom than it is at the top. It's now a trapezoid, right? That's A-Shaping. You'll be folding/stitching over the apron along these new lines, instead of along the right-angle ones.

That wasn't hard, was it? ... Well, except for the fact that you had to look up the word "trapezoid" in the dictionary.

Sewing Down the Outer Pleat Folds

Now you're going to do some power sewing! This part usually takes me an hour and a half to two hours, just sewing/going at it, so brace yourself! OK, look at **Appendix I**. You are going to fold over the kilt and sew all the OUTSIDE edges of the box pleats. That's all the red lines that go from the hem to the fell. You're only going to sew from hem to fell because you'll be tapering the kilt from the fell to the waist, so you don't want to sew in that part of the pleats, yet.

OK, so THINK, here. You've divided up a lot of the kilt fabric into 3 inch and 5.25 inch sections. You know that the box pleats will be three inches wide. That means that those 5.25 inch sections will be the INSIDE folds of the box pleats, right? Which way do you have to fold the fabric along those lines you chalked in so that you get nice, sharp 3-inch wide box pleats? Think about it, and you'll figure it out.

Here's what I do. I find a mark at the hem and then I find the corresponding mark at the waistband. I pinch the fabric between thumb and forefinger right at those marks. My left hand pinches the hem, my right hand pinches the waistband. The excess fabric lies on the table off to my left. That pinching action puts a bit of a crease right down the chalk line that joins the marks.

Now I take the fabric, and holding on tightly to those "pinches" I shake it a bit to even it out, and then lay it on the table. Then I pat it down with my hand to create a definite fold right along the chalk line. Then I pin it about an inch from the chalk line to hold the fabric in place. Four pins does it...one an inch above the hem, one an inch below the fell line and two more spread out along the pleat. Now I'm ready to sew it down.

Here's a word to the wise. A line of stitching done by a sewing machine doesn't look the same from the top as it does from underneath. You want the TOP stitching to show....it's neater looking. What that means is that you're going to want to stitch from hem to fell along one side of a 3-inch box pleat, and then reverse direction on the next edge of that same pleat....stitching from fell to hem. It's a little bit more hassle than just motoring down the whole length of cloth and doing them all going the same direction, but it's worth it.

Sounds complicated, doesn't it? It's miserable to explain, but trust me, if you just GO SLOW and really look and think about what you are doing, you will figure it out. Besides, look at it this way.... the top stitching and the under-stitching don't look THAT different, so if you don't figure this out, nobody is going to notice but you.

What you are doing with this stitching is making crisply folded-over edges to the outside of your box pleats. Without these edges, you'll never get the pleats straight again after washing the kilt. The purpose of the stitching is to create a crisp edge and define it to the observer, so try hard to keep your stitching within an eighth of an inch of the edge of pleat, and as straight as you can. You might practice on a few spare lengths of material until you're a whiz at it.

Ok, start at one end and just work your way down the kilt, pinching, patting, pinning and sewing until all your pleats are done. When you get to the left-hand edge of the over-apron, check the next section. Hurrah! You've set up your box pleats!

Attaching the Over-Apron Strip

OK, go find the over-apron strip that you sewed the velcro onto, hours ago. You're going to attach that strip to the inside of the over-apron, and then fold over the right hand edge of the over apron and hem it in the next step.

Line up the right hand edges of the fabric with the strip on the **INSIDE** of the kilt. Set it up so that the right-hand edge of the strip is about a quarter inch shy of the edge of the over-apron. Pin the strip to the kilt along the top, raw edges. Don't turn the strip upside down, and have the stabilized edge at the top! When you have it pinned, straight-stitch the strip to the over apron, about a quarter inch from the raw edges. Not to worry, that line of stitching will be hidden by the waistband.

If you stitched the strip on there with the velcro on the inside, up against the over apron and not available to stick to anything, then I will now take the liberty of informing you that you are unclear on the concept of velcro.....

OK, so now move to the other end of the over-apron-strip and trim it with scissors so that it's exactly aligned with the chalk line you drew for A-Shaping the left hand edge of the over-apron. Of course, that chalk line is on the other side of the over-apron from where the strip is, isn't it? Creative use of pins, pinning the pieces of fabric together right along that line and then drawing a chalk line on the strip where the pins poke through will get you pretty darned close.

Don't forget to pull the pins before the next step.

Sewing Down the Over-Apron Edges

Find the A-Shaping chalk line you drew for the left hand edge of the over-apron. Make **SURE** that you've got the A-Shaping line, and not the square, measuring line! Fold that over from the hem all the way up to the waistband and pin it down. Don't stop at the fell, go all the way to the waistband on this one. Make sure that you capture the left-hand edge of the over-apron strip with a couple of pins, inside your fold. Now stitch that puppy down, and double-check to make drop-dead sure that you've stitched the over-apron-strip into the fold. Are you going to run two lines of stitching on the right hand edge of the over-apron? If so, you should match that with two lines of stitching on the left side, too. I recommend two lines of stitching anyway; it tends to stiffen up the edges of the apron and that's a good thing, especially if you're working with cotton/poly twill.

Be sure you're pinning/stitching along the A-SHAPING chalk lines you put in!

Move over to the right hand edge of the over-apron and fold over the right hand edge, following the A-SHAPING LINE. Fold it under twice so that the raw edge is

buried. Make sure that the edge of the over-apron strip is captured in your fold-over. This will leave a substantial flap of material folded in towards the center of the apron. That's good, it helps stiffen up the apron a bit. It'll be narrower at the bottom than at the top because of the A-Shaping.

OK, so pin down that folded-over edge and stitch it down, matching the stitching pattern you used on the left-hand edge of the apron. Double check to make sure that the over-apron-strip got fastened in there, too. Heck, stitch it down twice, eh? That's what I recommend. Make those two lines of stitching about a quarter inch apart, or so. Take some care with these lines, they're the most obvious lines of stitching on the whole kilt. It gets pretty thick up there at the top, so go slow and make it right.

Now you've got your over-apron!

Marking and Ironing in the Box Pleats

What you have now is a long strip of fabric, about 20-something inches wide. It has sewn-in ridges every 3, alternating with 5.25 inches, and an over-apron with it's attached strip and velcro. At the other end is a loose bunch of fabric that will be your under-apron. OK, lay the fabric out flat on the floor or your work table and get out your chalk.

Tune up your eyes.

At the chalked-in fell-line put a mark in the center of each 5.25 inch space. Repeat the process at the hem. Eyeballing it is OK but if you want to measure, be my guest. When you're done you'll have chalk marks in the middle of each 5.25 inch section of fabric, at the hem and the fell. You're going to use these as guides when folding and ironing your kilt.

Set up your ironing board and your iron. Put water in the iron and turn it up to where you'll get some good steam. OK, summon some patience here, I find this step to be "trying".

Work on about 2-3 pleats at a time, no more than that. Lay them out on the widest part of the ironing board. Find a way to support the excess material so that the weight of it doesn't drag fabric out of alignment, or off onto the floor. You're going to make your box pleats.

Make a series of "accordion folds" underneath the 3-inch outside sections of the box pleats. Bring the outside edge of each pleat absolutely right next to the edge of the next pleat. Make sure that the pleat edges meet each other **DIRECTLY OVER A CHALK MARK** at the fell line and the hem. That's what those chalk marks in the middle of the 5.25-inch sections are for.

Look at your edges closely...lift them up and double-check...then move down the row doing two or three pleats. Are they evenly distributed? Are the edges *right next* to one another? No Gaps Allowed! Stick your finger inside the pleats and smooth down the inner folds until everything is smooth and even in those 2-3 box pleats that you're working on. Take some care, here. It will take you a while, so be patient.

When you have 2-3 pleats absolutely perfect, lying there on your ironing board, then steam 'em down hard with the iron. I mean, SET those pleats. Blast 'em a couple of times with steam and put some weight into it!

When you've done 2-3 pleats, move down the kilt and do 2-3 more until you've gotten them all set. Make them as close to perfect as you can stand. Remember that on the INSIDE of the kilt, the inside pleat edges will have about a half-inch gap. On the OUTSIDE of the kilt, the outside edges of the pleats should lie right next to one another.

Hey, look.....you've made an accordion bellows!

Bar-Tacking the Pleats

OK, back to the sewing machine with you!

Lay your length of accordion pleated fabric out on the table and fold everything up, just like it was on the ironing board. Now slide it up onto your machine until the point where the edges of two pleats join one another, right at the fell line. Look for the chalk line at the fell.

Set your machine on zig-zag, and choose a relatively wide stitch. Go back and forth with the stitches, using the zig-zag to fasten those edges to one another, and tack them down to the material below. You want to do about 6-7 zig-zag stitches, then reverse the machine and stitch 6-7 more going backwards. Do 6-7 more, going forwards again. Do that reversing direction thing about four times, and it'll never let go. Mind you, you're only doing this at the fell line, don't attach the pleat edges above or below the line. 6-7-8 stitches is plenty. Just go over 'em a few times.

After you do one set of pleat edges, move to the next pair. After you do two, you'll notice that there's a lot of material squashed under the sewing machine arm. I find that if I neatly roll up the kilt in there, I can get more into that space and not drive myself batty trying to wrestle this mass of wadded-up cloth in there.

See, I'm batty enough as it is, I don't need any more help in that department.

BTW, when you get to the last/first pleat edge(s), the last one right next to the

under-apron, and the first one just after the big pleat that goes under the over-apron, there won't be another pleat edge to attach it to. I mean, you're at the EDGE, right? For appearances sake, just bar-tack the one edge down, as written above. That way they all look the same.

When you're done bar-tacking the pleats together at the fell line, pull your kilt out of the machine, unroll it and look at it. You know what? It's actually starting to look like a KILT!

Checking Yourself

Part of the process of doing all this is making a mistake, ripping it out, and re-doing it. Don't feel bad if you have to do that a lot....everybody does it. Here's a good point to check and see if you've made a horrendous mistake.

OK, lay the kilt out on the table. Lay it really flat, tidy up the box-pleats-to-be above the fell line, and give it a few little tugs along the fell line to encourage maximum flatness. Now get out your measuring tape. Measure from the right hand edge of the over-apron, eight inches down from the waistband, to the last pleat edge you just tacked down. Don't measure any of the under-apron....just from the edge of the over-apron to the last pleat edge. Measure right along the fell line where you bar-tacked the pleat edges together.

Write down that number. **THAT NUMBER** _____

OK, that number should be within an inch of your rump measurement back from page 2. Hopefully it's a little bit bigger than your rump measurement, say about half an inch or an inch at the very most. Better too big than too small. However, if it's bigger than that, then:

- You added wrong when you calculated your combination of apron width and number of pleats. As long as you don't have way too many pleats, and you're only off by a maximum of three inches, you can correct this by making the over-apron smaller. You'll have to rip out the finished edge, and maybe the velcro strip, too, and re-sew it....OR
- As you bar-tacked your pleat edges together, you got gaps between the edges. This is bad. You have to go back, rip out all the bar tacks that don't hold pleat edges absolutely right next to each other, and re-sew them. OR
- You accidentally made one or more pleats bigger than 3 inches wide. Are they all the same width? Look 'em over. You didn't accidentally make all your pleats 5.25 inches wide, did you? If you boffed up one or two pleats, then just rip out the bar-tacking and the edge stitching and stitch it/them up again at the right width. You'll have extra material in the folds under the box-pleat(s), but you can fudge something together that'll look OK, I'm sure. If you made all your pleats 5.25 inches wide, then you've messed up

bigtime, and mixed up the outside of the box pleats with the inside. I hate to tell you this, but honestly you should probably start over.

If it's smaller than your rump measurement, then one of the following things has likely gone wrong.

- You added wrong when you calculated your combination of apron width and number of pleats. If you're just about exactly three inches too small, then just add one more box pleat.
- You added right when you calculated your combination of apron width and number of pleats, but when you put in your chalk lines, you forgot one pleat. OK, so add one more box pleat. Aren't you glad that you didn't trim off the excess fabric, yet?.
- If it's smaller by about 2 inches, then you have to get creative. Being an inch too small isn't the end of the world, so if you can get an extra inch somewhere, you should be OK. You might try ripping out the finishing job you did on the over-aprons right-hand edge, and re-doing it in a different way that uses less fabric. You could also just add one more box pleat and drink a lot of beer and eat a few bags of potato chips.

Hopefully, your kilt is just about right, with "That Number" either spot-on, or about half an inch bigger than your rump measurement.

Sewing the Inside Folds of the Pleats

This is kind of optional.

If you've hemmed your kilt, then I recommend at least sewing the inside folds down at the double-thick part of the hem. The double-thickness tends to resist keeping a pleat, and will tend to open up. As that happens, the kilt starts looking messy. This goes ten times over if you're building your kilt out of canvas. Doubled-over canvas hems laugh at your silly steam iron, and only cooperate by holding a crease for a few hours at most. .Stitch those puppies down. On cotton twill and cotton/poly twill, I'd stitch down your hems, too.

If you've got the patience, there's no reason why you can't stitch down the inside folds of all your box pleats from the bottom of the kilt, to the fell. It's up to you, but I'll tell you this, sewn-up inner folds sure makes ironing that kilt easier after you wash it!

Now that I've worn my prototype (*X-Kilt #3*) for a week or two I'm going to recommend that you stitch down the inside of the reverse pleat that lies under the over-apron. The one fault I find with this kilt is that it tends to "pooch" along that fold. If you followed these directions, then your fold is two inches deeper than mine, but I still wager that you'll need to stitch it down. Stiffen it up with a line of stitching in there. Heck you might even put in two lines, close together.

A word to the wise... before stitching down your kilts inside folds, put the thing on the ironing table again. This time iron it with the INSIDE of the kilt facing up. Even everything out with incredible care, going 2-3 pleats at a time, and apply steam and heat directly to the pleat edges in question. Once that's done and those pleat edges are really definite, then take the kilt to the sewing machine for the stitch-down.

By the way, if you do this, you will notice something. On the outside of the kilt, the pleat edges meet and touch. You made sure they did that, right? But on the inside, there's a three-eighths to a half-inch gap between the inner pleat edges. Did you goof? No, you didn't goof. That space is there on purpose, and you're going to make use of it in tapering your kilt from fell to waist, which is next.

Tapering the Fell: Calculating the Taper

This step is time consuming, but it has a lot to do with how well your kilt will fit, so take your time. What you're going to do is fold over each box-pleat above the fell so that it's smaller at the top than it is right at the fell. For example, right at the fell, all your box pleats are exactly 3-inches wide, right? You're probably going to make many of them about 2 inches wide at the waistband.

Here's the principle... Let's say you are 46 inches around at the rump, and 40 inches at the waist. Your kilt has twelve pleats. The difference between your rump measurement and your waist measurement is six inches. Therefore, you need to take up six inches of pleat width over those twelve pleats.....or a half-inch of taper per pleat. Got it? In fact, you're not quite going to do it that way, but it gives you an idea of how to think about it.

OK, some pleats are going to be tapered more than others. It works like this:

- Don't taper the first and last pleats at all, and no matter what happens, don't taper the front edge of both the first and last pleats. eg. The pleats right next to the aprons at the front of your body should have no taper.
- Maximize the taper where the kilt goes 'round your hips. This means that pleats two and three, and the next-to-the-last, and the "next-to-the-next-to-the-last" pleats are heavily tapered. You want the kilt to curve strongly at this point to wrap around your hips. You can taper from three inches at the fell to as small as two inches at the waistline on these four pleats.
- Pleats in the middle of your backside should be less taper than the ones at the hips, but should still have some taper unless your rump/waist measurement is very nearly the same.

To achieve this, lay the kilt out on a flat surface, outside-up, with the waistband-end of the pleats towards you. Fold up the box-pleats and tidy up everything. Get your fingers inside those pleats and make sure nothing is bunched up. Even up

everything so you have a good starting point. Look at your rump/waist numbers again so you know how much tapering you have to do.

The way the pleats are designed, you have about half an inch space between the inner folds of the under-pleats. That means if you just pull the top of the inner pleat folds in until those edges touch, you're going to taper the fell roughly one-half inch for each pleat you work on. Will that be enough? Keep in mind that you're not going to be tapering the first and the last pleats. Here's a table to help you.

Number of pleats	Subtracting the first and last	Amount of taper
14	12	6 inches
13	11	5.5 inches
12	10	5 inches
11	9	4.5 inches
10	8	4 inches

Most average guys will need between 7 and 9 inches of taper. Many "standard" kilts that you buy off the rack are made with 8 inches of taper. As you can see, you won't get that amount of taper by just using the "gap" built into this pleat design. You're going to have to build in more taper by overlapping the inside pleats at the waist. Overlapping the inner pleat folds make for a lot of material piled on top of itself there at the waistband. If we didn't have that gap between the inner folds already, it'd be even worse! This is a royal PAIN to pin in place, but pin it, you will have to do.

All right, so using the principles outlined above, work out your tapers. Here are mine. Remember that my waist is 40 inches and my rump is 48, and my kilt has 13 pleats.

Pleat	Taper
1	none
2	1 inch (<i>3 inches at fell to 2 inches wide at waistband</i>)
3	1 inch (<i>3 inches at fell to 2 inches wide at waistband</i>)
4	½ inch (<i>3 inches at fell to 2.5 inches wide at waistband</i>)
5	½ inch (<i>3 inches at fell to 2.5 inches wide at waistband</i>)
6	½ inch
7	1 inch
8	½ inch
9	½ inch
10	½ inch
11	1 inch
12	1 inch
13	none

Total taper = 8 inches

Note the symmetry of how my tapers are distributed. The one in the middle of my rump is deeper than the ones next to it. OK, so you work out something along the same lines for your measurements.

Tapering the Fell: Sewing the Tapers

Work on 2-3 of the tapers at a time. If you do more than that it gets awkward. Start at either end of the pleats and just work your way 'round the kilt until you are done. NOTE: as you put in the tapers, the kilt will seem to fan out. The pleats will fan out at the bottom, and the whole kilt will seem to curve on the table. It used to lie flat, and now it won't! This is exactly what it's supposed to do, and actually as you lay out your tapers, you want to encourage this curvature.

OK, so referring to your table, fold in the tapers you need. Overlap the insides of the inner folds of the pleats where you have to. Make sure everything is flat and as even as you can make it, inside these tapers. Get a fingertip in there, or the smooth handle of a pair of scissors. When it's all groovy and your tapers are even, pin them in place. I use three pins per tapered edge, evenly distributed over the pleat. Three pins go on one pleat, on one side, and three pins go on the other side of the same pleat...six pins total for each pleat. Line up the edges of each tapered pleat right next to each other, NO GAPS! That gets tough to do up near the waistband, but do your best. Take your time and make each tapered pleat as symmetrical as you possibly can. Pinning these tapers is a PAIN, but grin and bear it and do your best.

Word to the wise: make sure your pleats/tapers are symmetrical. It's pretty easy to accidentally take in all the material for the taper from one side of the pleat. If you do that, the kilt will hang all funny and look weird.

When you've pinned down 2-3 pleats and their tapers, put the kilt on your sewing machine, and stitch down each pleat from fell to waistband. Be sure to reverse the direction of stitch of the machine for 6-7 stitches at the waistband, so the very top of the pleats are double-stitched. That will help with strength.

When you're all done, pull the pins and move on to the next section of pleats and taper them to your numbers. Four rounds of this, and you're done.

You can actually put the thing on, now and belt it on yourself! Go check it in the mirror and start to gather in the admiring and respectful stares of your family members! They cannot believe that you have made this thing. Ha! That will teach them to doubt you!

OK, quit patting yourself on the back, now, and make note of where you want to trim off the inner apron while it's strapped around your rump.

Tack Down the Top of the Outer Apron

Move 'round to the front of the kilt and lay out the left hand edge of the over apron next to the forward-facing edge of pleat #1. Align and pad-down the big reverse pleat you just made that lies under the over-apron. You might pin it in place, but I bet you can hand-hold this. Put the kilt on the sewing machine and tack down about 3 inches of the very top of the over-apron's left edge to the waistband beneath it. Run a line of stitching along the edge, and then reverse the stitching direction on the machine so that it's double-stitched for strength. I recommend aligning the top few inches of the left hand edge right next to the leading edge of pleat #1 and parallel to it.

Take the kilt to the ironing board and open up that deep reverse pleat that lies under the over-apron. Fold back about 2.5 – 3 inches, down at the hem, and make a nice even fold on that deep pleat all the way up to the waistband. It will get deeper as you approach the waistband, OK?...only 2.5 inches deep at the hem, but nearly 5 inches deep at the waistband.

Iron that inner, reverse pleat down, hard.

Anchor the Top of the Pleats

You don't have to do this step, but it's a lot easier to deal with putting the waistband on if you do this. Just lay all those tops of the inner pleat folds down neatly right at the top edge. Overlap them with care, in some symmetrical pattern that looks good to you. Pin the floppy folds in place. Now put the kilt on the sewing machine and run a continuous line of stitching right 'round the entire waistband-edge of the pleats, about $\frac{1}{4}$ - $\frac{1}{2}$ inch down from the very top. That will anchor all those floppy pleat folds in place and the line of stitching will be hidden by the waistband, anyway.

The Waistband; the Outside

Go to your leftover fabric (the other half of that 4 yards your bought) and cut a 4-inch wide strip of fabric off of it. That's going to be your waistband. The strip should be the length of the waistline (the top) of your kilt including both the aprons. Mmm-Hmmm; the whole thing; over-apron, pleats, under-apron... Add 3-4 extra inches onto that measurement, just to be safe.

Now leave yourself about a half-inch that sticks out past the right hand edge of the over-apron, and start pinning that strip to the outside of the kilt. Align one raw edge of the strip with the very top of the kilt and pin it about every 3 inches. You're going to need a lot of pins because the kilt curves and you have to induce the waistband strip to curve with it. So don't be shy with the pins. Pin that sucker

down as accurately as you can, aligned with the very top of the kilt. Be SURE to pin it to the OUTSIDE of the kilt.

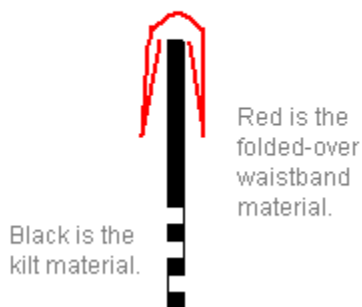
When you're all done pinning, put the kilt/waistband strip on your sewing machine, with the strip facing up. Stitch the waistband strip to the kilt about $\frac{3}{4}$ to 1 inch from the top edge with a straight stitch. Put some effort into keeping your line of stitching pretty consistent all the way around the kilt.

You're halfway done with the waistband.

The Waistband; Inside

Here's a picture of how you'll be folding over the waistband strip. It's an "edge view".

waistband fold-over



Do you see how all the raw edges, both the kilts raw edge and the waistband raw edges are buried inside the fold-over?

OK, so replicate that drawing, hiding all the raw edges inside the waistband, all the way around the kilt. Pin it down, and make it nice and neat.

Now you have to choose how to sew it...

You can machine-sew it, going right 'round the top of the kilt and sewing through all the thicknesses of material. The other option is to get out a needle and thread and hand-sew the inner, folded edge of the waistband just to the inner surface of the kilt, making sure that your stitches don't go all the way through. They don't show so they don't have to be blinkin' PERFECT.

Machine sewing is easier and faster. However, there's a lot of material here, and your machine simply may not do it. Unless you have an industrial machine, it almost for sure won't do it, if you're working in canvas or denim. Then again, it might DO it, but very, very unhappy with all the material it has to ram its needle through and make really awful-looking stitches. If you machine sew it, you will also see a line of stitching in your waistband. That's no big deal to anyone but a

mad perfectionist, but hey, maybe you have obsessive-compulsive issues.

If you hand-sew it, it takes a lot longer, but not THAT long. You may not have a choice, actually. Look, if it was a traditional kilt, you'd be hand-sewing it! The advantage is that the stitching won't show on the outside, and that's nice, especially for you compulsive types.

So take your pick....challenge your sewing machine, or get out a needle and thread and go to it. Hand-sewing the inside of a waistband is about an hours work. Try to do about 5 stitches to the inch; that's plenty. Keep them as small as you can stand.

When you're all done, pull the pins.

Fold the ends of the waistband inside the waistband itself at the right-hand edge of the over apron, and at the left-hand edge of the under-apron. Basically, you're folding the waistband "tube" into itself so the raw edges don't show. Stitch the waistband "tube" closed, either by hand or with a few passes of the machine.

Finishing Touches

What's left? Velcro, the inner apron, and belt loops. By now you're a whiz at this, so I don't think I really need to tell you how to put on the inner layer of velcro. Line it up with where the outer layer should contact it, and don't put it too close to the leading edge of your last pleat. Stitch it down firmly to the under-apron.

Trim off the far left edge of the under-apron, fold it over and hem it. You're an expert now, you don't need me to tell you how to do this! Besides, that hem is on the INSIDE of the kilt and nobody will ever see it. I recommend that you not make this a right-angle cut, but instead make the under-apron about 3-4 inches wider on the hem than it is at the waist. That extra fabric helps with modesty on windy days....trust me.

Finally, belt loops. I put four or five belt loops on my *X-Kilts*. Here's how I do it.

First, I cut a strip about 18 inches long and about two inches wide, of the material I'm going to use for the loops. I take that strip to the ironing board, and fold it lengthwise, in thirds. I make sure that the bottom third doesn't quite reach the edge of the strip. Now I have an 18-inch long, narrow strip of three-thicknesses of cloth. Then I iron those folds flat-down, hard.

I take this strip to the sewing machine and run a continuous line of straight-stitching down each edge, about 1/8th of an inch in from the edge. Finally I go back and run a wide zig-zag down the length of the strip, right down the middle.

That anchors the raw edge underneath it and helps keep it from fraying. I just made a fabric strap, about $\frac{3}{4}$ of an inch wide.

Now I look at my kilt belt. With an **X-Kilt** I don't wear a traditional kilt belt, so I don't need 3 inch belt loops. I make 2.5 inch belt loops. That means I cut 5, 2.75 inch sections out of this 18 inch long strap that I just made. If you want to wear a traditional kilt belt, then make 4-inch long sections, probably 4 of them.

I bar-tack these on to the kilt, using the zig-zag stitch on my machine. Tack them down hard at the top and the bottom so that the ends don't fray and make sure you've covered the raw, cut ends of those loops with lots of thread. I put belt loops at each edge of the over-apron, right up at the waistband. Then I distribute the other belt loops 'round the pleated part of the kilt, so that they're symmetrical. Three belt loops 'round your backside is plenty. You could fold over the ends of those belt loops and tack them down, but that is a LOT of material for your home sewing machine to deal with, so I don't bother. If you're the meticulous sort, then cut your loops half an inch longer than you need them, fold them over, and hand-tack them down.

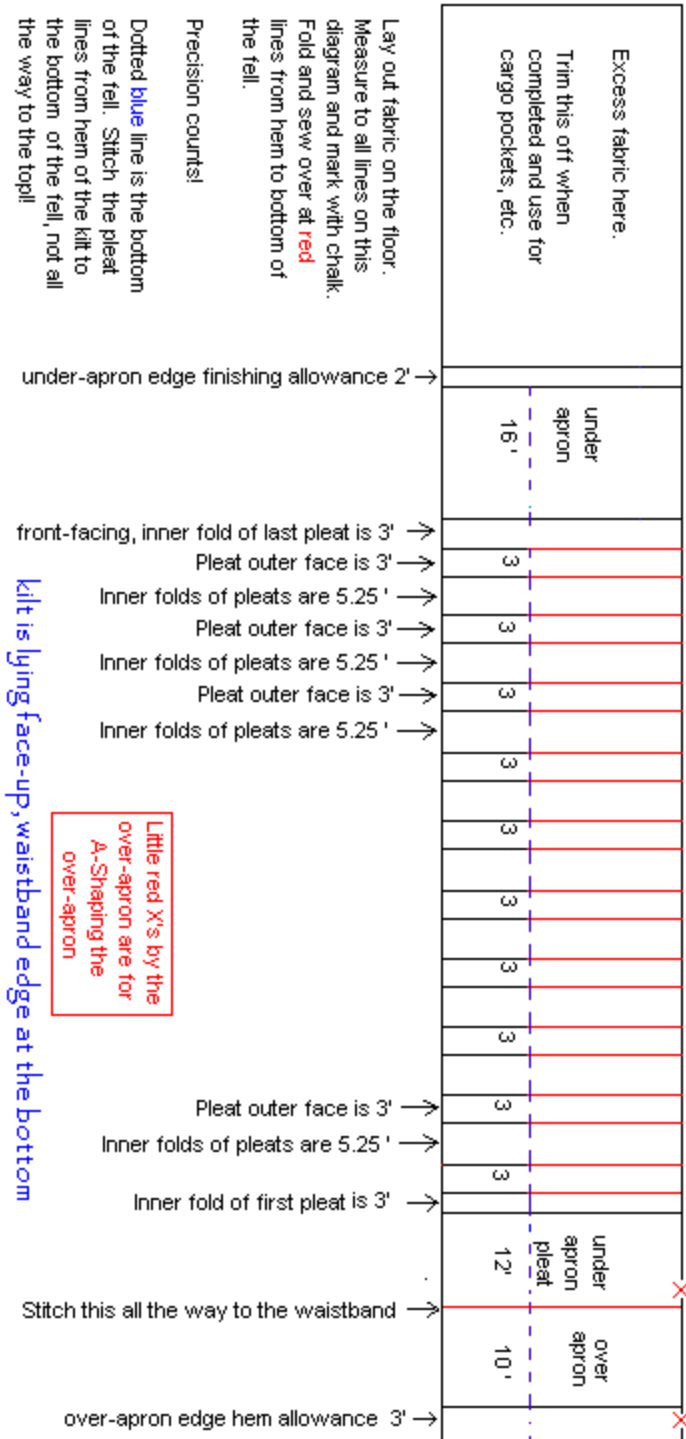
When that's done.....guess what? Congratulations! **You just made an X-Kilt!** Throw that baby in the washing machine to wash out the chalk marks, iron it up and wear it with pride!

.....Because mate, **YOU made it!**

*Alan Hebert
July/August 2006*

Appendix 1: Sample Pleating Diagram

Layout and Stitching Pattern for a Kilt with a 10 inch over apron and ten, 3-inch Pleats



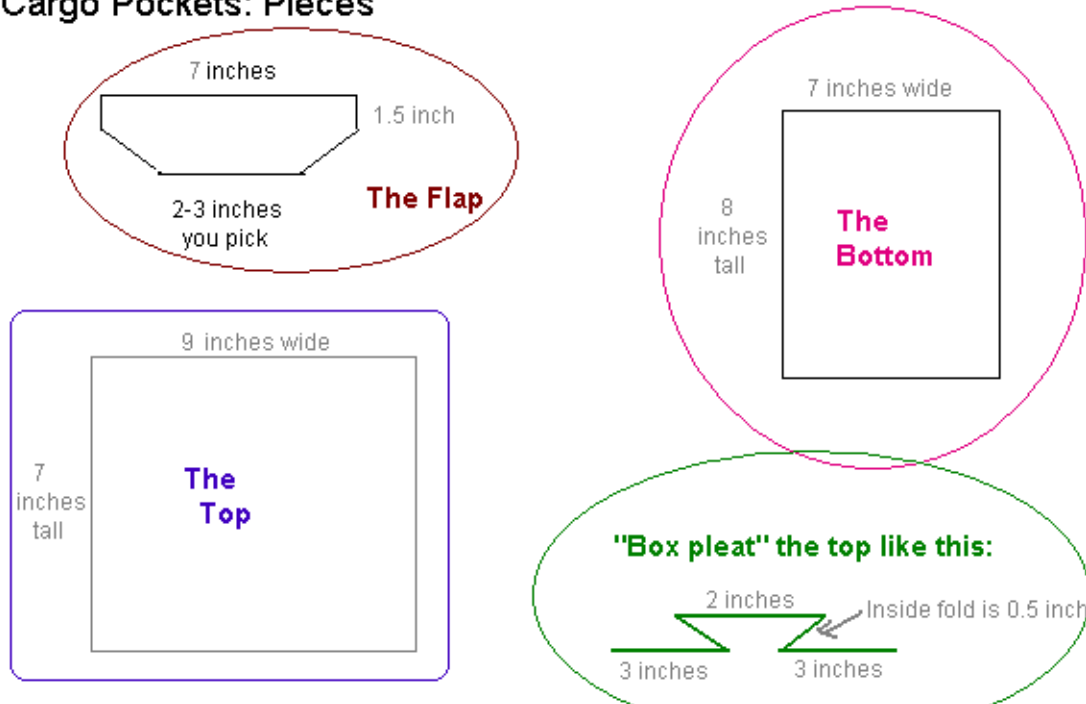
Appendix 2: Cargo Pockets

An **X-Kilt** "standard model"whatever that is....doesn't have pockets. I

designed this thing to be ultra-simple to build and so...no pockets. My own **X-Kilt** doesn't have pockets. I wear a ten-dollar fanny pack 'round the front like a sporran. That fits all my junk. Personally I'm not keen on cargo pockets, and real internal pockets are a significant challenge to make. However, you might want cargo pockets. OK, so this is how you make 'em....

Cut out the pieces like I have in the drawing, here. You need a flap, a top and a bottom. Take the top piece and put it on the ironing board and iron in a single box-pleat into it, using the dimensions in the drawing.

Cargo Pockets: Pieces



OK, after you've ironed your pocket box pleat in place, take the "Top" piece and fold over the top edge of it about $\frac{1}{4}$ of an inch. Pin it and straight-stitch that edge over. That will lock your box-pleat into the pocket.

Go cut a piece of velcro about an inch tall and 2 inches wide. Sew one-half of that velcro piece onto the outside of the top-pocket-piece, right in the middle of the box pleat, just below the turned-over edge that you just made.

Now you're going to make the "body" of the pocket. Because of the pleating, the top piece is now almost exactly as wide as the bottom piece. Put the **WRONG SIDES TOGETHER**...that means what going to be the **OUTSIDE** of the pocket is **INSIDE**. Pin the pieces together so that the body of the pocket is inside-out. Match up the bottoms of the pocket pieces so that about an inch of the "bottom" sticks above the "top of the pocket top".

Does that make sense? Oh, heck, just lineup the bottoms and sides of the two

pieces and pin those puppies. Put 'em together inside-out. You'll notice that one piece sticks up a little more than an inch above the other one. Now straight stitch right 'round the pocket, about ¼ inch from the edge. Don't close off the top, of course.

After you've stitched it, turn it right-side-out. It almost looks like a pocket, doesn't it?

OK, put that down, and move to the flap. This is tricky, so improvise. You want to fold over the edges of the flap so that it's going to be exactly the same width as the body of the pocket. I had you cut it out big enough so that you have enough for a "hem allowance" so fold it over and eyeball it and iron the edges down and eyeball it again until you have a good match. Then straight-stitch right 'round the flap so that all the edges are finished.

Stitch the other half of that bit of velcro to the inside of the pocket flap at the obvious place. Use a nifty X-pattern as you stitch it on so that it looks cool.

OK, I now tidy up the raw sides of the pocket bottom panel, up above the pocket body itself. I use a zig-zag to fold over the raw edge and tack it down. The zig-zag also helps stabilize that inch of raw edge. It's a bit rough, but it's all covered by the pocket flap, so it's not noticeable. Besides, cargo pockets are rather "rough-and-ready" items anyway, so a bit of hurly-burly stitching doesn't bother me, none.

OK, now attach the pocket flap to the upper edge of the pocket bottom **WRONG SIDES FACING EACH OTHER**. Stitch them together with a line of straight-stitch across the top. If you want you can stabilize those two raw edges with a couple of lines of zig-zag.

Fold the pocket flap over, line up the velcro bits and stick 'em together. Now take it to the ironing board and iron that flap down **HARD**.

Voila, a cargo pocket! Now repeat, and you have two.

I stitch these babies directly to the kilt by running two strong lines of stitching across the top edge of the pocket and into the kilt about an inch below the fell. I don't stitch the whole pocket down to the kilt, I just attach the upper edge and let it swing. You can do what you want. If you're **REALLY** energetic, use grommets or snaps and attach them to your kilt with those.

Stitching them on is a lot easier, though.