

**Note from the Editor:** I received this email on March 8, 2009 from a webBikeWorld visitor who modified the [Jett Battery Heated Vest](#) for his wife, who has breast cancer. I edited the document and I am posting this information in the hope that it may help others, but note that I have no personal knowledge of whether this process is an effective treatment

Dear webBikeWorld:

Thanks to your enthusiastic reviews of the Jett Battery powered vest, I bought one last month. The vest is all that I hoped it would be: a powerful heater, easy to use, well made, and comfortable.

You could pass this information along if another reader asks if a front chest heater or heated vest for hyperthermia treatment for cancer exists.

My wife Lois and I do have a motorcycle, but our more vital issue is that she has breast cancer that has spread to the skin of her chest. We bought the vest to assist her therapy.

She is taking an oral chemotherapy drug called Xeloda which is supposed to be effective on the skin. I have also read that heat will assist in treatment of cancer.

See the [Duke University Medical Center, Hyperthermia Treatment Program at the Department of Radiation Oncology, Duke Comprehensive Care Center](#) for more information. Also this Google search result for "[hyperthermia cancer treatment](#)".

My intuition says that the best way to beat a resilient cancer is with a strong immune system, and the immune system's usual tactic is to start a fever.

I believe the vest will help Lois, and moving the heaters to the front suited my need to make a personal contribution and to simply DO MORE. She wears it at least 5 hours per day.

I would be glad to correspond with others who want a battery powered vest that heats in front, or who are involved in breast cancer and want to explore hyperthermia.

Lois is doing very well so far, though it is too early to say anything definite. She is as active as ever. We live day to day, and hope. Thanks again for your tip.

### **How to Modify a Jett Battery Powered Vest to a Front Heater for the Chest**

All of the nice things they say about this vest on webBikeworld.com are true.

When I say "right," I mean the right of the person wearing the vest.

What you need:

- Enough ability with a sewing machine to use it in very awkward places.
- A seam ripper is a small hand tool with a pointed end and a sharpened notch just below.
- Nylon fabric any color, about a square foot.
- I recommend a dark color thread rather than black, so you can more easily fix your mistakes, and later show off your sewing to your friends. Very little new sewing shows on the outside.
- A skinny worn out bar of soap with a sharp edge.
- 2 pieces of 22 gage stranded wire, 24 inches long. Most likely telephone cable, but be sure its stranded.
- Soldering iron and solder.
- 6 inches of heat shrink tubing, approximate outside diameter 3/32 inch.

- 5 hours, plus or minus a lot.
- Willingness to risk destroying the heating ability.
- Willingness to end up with a garment that looks (on the inside) less than "Factory perfect."

Some warnings. Except for one cut described below, do not change the wiring, open any factory wiring terminal, or sew across a wire. Do not add to or reduce the heating capacity. Be careful not to cut the nylon fabric of the garment with those scissors.

Where do you want to move the heaters to? They will fit between the arm hole and the center opening, and above the drawstrings at chest level. This is where these instructions describe putting them, and the wires are long enough to reach this on the right side.

I spliced in more wires to reach that place on the left. Suit yourself. You can use the edge of a worn out bar of soap to temporarily draw squares or lines as you consider this.

Remove the battery and the heat controller.

Release all drawstrings to the most slack possible.

On the inside bottom of the vest, use the seam ripper to unsew the bottom seam for the full distance between places that the drawstring cord comes out, then make the opening two inches wider on each side.

The seam which runs from the arm hole to the bottom of the vest should be modified for easier reassembly by slitting the lowest  $\frac{3}{4}$  inch of white insulation away from the seam.

Lay the vest with its lining side down, with the opened seam toward you. Lift the back to expose a little of the inner side of the liner. Note how the maker used patches to make paths for the wires. You'll do that the same way.

Use the seam ripper to unsew the wire patches from the riveted cord strain taker to the lower heater and between the heaters. Don't remove the strain taker.

Note how a heater has wires you can feel in a serpentine pattern. Don't unsew these wire paths, but there is square sewn around the outside of the heater which you should unsew from both heaters. All wiring is now free after the riveted strain taker.

The following step that did not occur to me until the project was done. With the heaters at the upper chest, the chest draw strings will cause the heater to bunch up, and that does make hot spots. I would remove the two chest draw strings.

With the vest still in the same position, use two hands to find the right breast area, under the vest shell, under the insulation, on the inner surface of the liner, where the chest drawstring meets the zipper. You may only be able to flatten out a couple inches square area, but you can work with that.

Set the lower heater near that, with its wires entering from the direction of the wearer's center back. I think that is your lower left. If the heating wire's "S" pattern is running up and down, flip the heater over to make the S pattern run side to side. Undo any extra twisting of the wires from the strain taker to this heater.

Set the heater in the little flat place you made. The critical corner is just above the drawstring, at the zipper. A flap of the heater fabric can overlap the drawstring or the zipper, but you must have at least a quarter inch (a half inch is better) of space between the heating wires and the drawstring and between the heating wires and the zipper. Soon you will sew thru there.

Use a pin to hold that corner to the vest liner (not to insulation or shell). Use more pins, avoiding the wires, patiently, spreading out the heater and pinning it to the liner. Do it over if it wants to lie on the zipper or draw string, or if it bunches up, or if it becomes a parallelogram.

The result must be a heater that lays flat against you, or it will make a dangerously hot spot. I had to pin it several times to get it right. I recommend using eight pins per heater so that it will stay in place as you sew it.

I want to keep "how to sew" out of this, but I also recommend that before you take the vest to the sewing machine each time, that you hold the vest up to make sure that you have not pinned to layers you don't intend, or included folds of fabric under pins.

Sew the heater to the vest liner an inch at a time, starting next to the wires' entry, around to the other side of the wires. Don't sew across garment wires or heater wires. You may sew closer to the heater wires than the factory did, where that suits you.

Now that you are committed, the next step is to make the wires longer to the farther (formerly the upper) heater. As I said at the beginning, 24 inches extra was enough for where I put the heaters in a size Large vest. It would be good to have the wires be a little longer than necessary. Is 24 inches enough for you?

Cut the red and black wires at half way between the two heaters. Strip a half inch of insulation from the four cut ends, and from the four ends of the add-on wires. The vest's wires seem smaller than 22 gage, but 22 feels substantial. Color doesn't matter except to your sense of propriety, nor does connecting red to black as long as you complete the circuit thru the heater.

Add 4 pieces 1½ inches long of very small heat shrink tubing at each end of the extra wires. The best wire splice is as if you grab someone else's wrist and that person grabs yours. No 180 degree bends. Twist wire A around wire B, and B around A, so that each will nearly reach the other's insulation. Solder the joint, slide the heat shrink tubing over the splice, and shrink it.

The next step is the patch over the wire from the first heater back to the strain taker. Lay the vest on its back with the zipper spread wide enough to let you feel the two ends of the wire you will cover.

Measure the length of the patch you will need. Either use a patch you removed or make a patch. The factory used unhemmed patches, but I find it easier to cut the patch a bit wider (1½ inches) and hem the four sides. This gives it some stability.

Before you move the vest, use 3 or 4 pins thru the liner only, to mark the route of the patch. Turn the vest over, expose the inside of the liner and part of the pins, and use the soap to draw the path. Remove the marker pins. Pin one edge of the patch to the side of the path and sew it on.

Back on your work table, put the wires and their connectors under the patch. The wires to the second heater emerge at the bottom of the first heater. Carefully keeping the wiring away from the patch's second edge, sew that also.

Before you can attach the second heater at the left, the Jett logo must be removed with the seam ripper because it is sewed thru all layers. Once it is off, you'll see a different red logo beneath. If you like the outer logo better, you can re-sew it on thru the insulation and the shell.

Attach the second heater by following the instructions above for the first one. Except for the wires going in at the opposite lower corner. Your experience will make it go faster, but observe all precautions, please.

The route for the wires across the back can be a straight line between corners of heaters. Make the first patch run about half way across. Add a second patch for the rest of the distance. Make patches from scrap nylon, whatever color it is will never show.

Use the marker pin and soap method. Where the wires are too long, they can be folded back on themselves (since they are not heating) and tied with thread so that they will go easily under the patch.

Before you reclose the bottom of the vest, test the heaters by briefly connecting the controller and battery.

The bottom drawstring should be laid in the folded up back of the vest. I found it helpful to pin the fold tightly around the drawstring. This keeps the string out of the way and defines where the fold in the back should be.

Did you notice how the first sewer of the vest had some trouble sewing over the seams that come down from the armholes? Cutting the lowest 3/4 inch of insulation away from that seam made it much easier.

Next you pin the turned up flap of the back thru the inner liner, the white insulation, and the back. The tricky part is to get enough of the inner liner to go in there. Perhaps a line drawn with soap would help. Use lots of pins.

I write this on the day that I finished the project, so feedback from my wife is preliminary. She likes the feeling of front heat. Perhaps the chest draw strings should NOT be tightened because they may cause the heater to make a fold on itself, causing a hot spot.

We invite you to edit, correct, and improve these notes. The second time thru a process always shows improvements. We don't care if you republish this version or your improvements.

Our motivation for modifying the vest is not primarily comfort while motorcycling, though that we will appreciate it. My wife has breast cancer and we hope heat will enhance the chemotherapy. A Google search for "breast cancer hyperthermia" led us to the web site of Duke Hospital in North Carolina. They're quite clever.

Ben and Lois Brown.