# Tension Hinge Bracelet

OD: Outer Diameter
ID: Inner Diameter
WT: Wall Thickness
G: Gauge

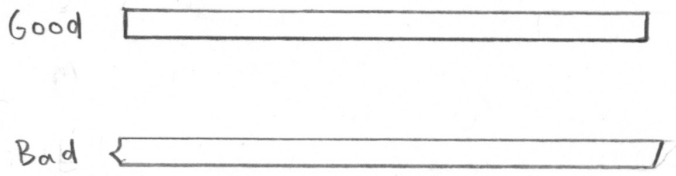
Choosing your material (used in demo)

- -Silver tube for hinges: 2.03OD 1.02ID .51WT Rio#: 100450
- -Silver tube for hinges: 3.66OD 2.03ID .81WT Rio#: 100954
- -Square Silver wire for bracelet: 10G. Round wire can be used as well.
- -18g silver round wire for hinge pin.
- -.98mm spring steel (for holding knuckles in place)

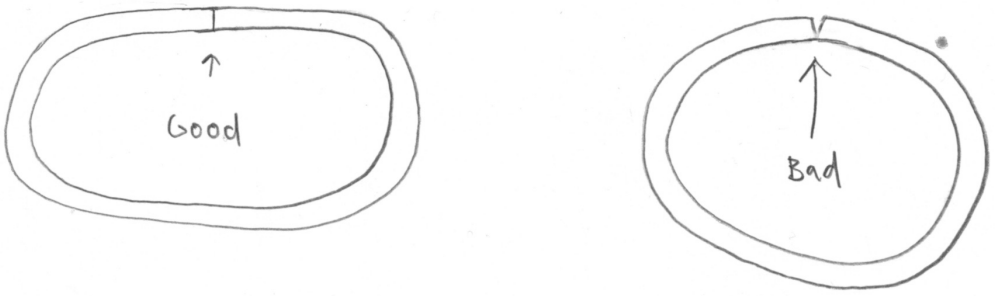
Bracelet size chart (Length of 10G silver wire):

- -Small= 6.5 inch
- -Medium= 7inch
- -Large= 7.5 inches

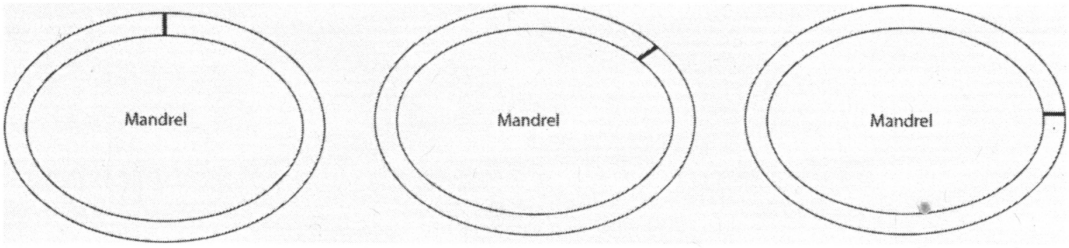
1. Cut 10G wire to length of desired bracelet size. You can go smaller than 6.5 or larger than 7.5 if you desire an even smaller or larger bracelet. Make sure that ends of wire are cut flat/square.



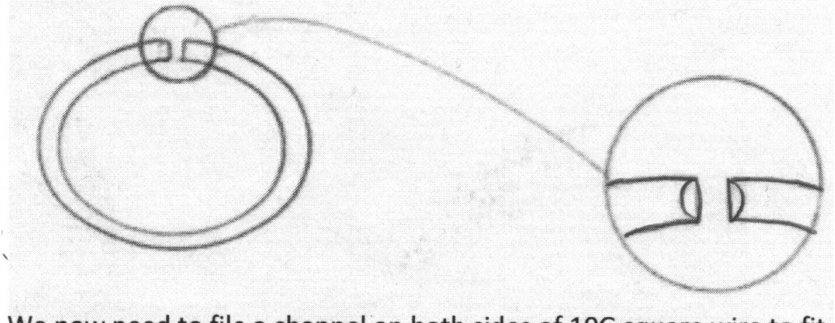

2. Bend 10G wire into oval shape until both ends touch and have a good clean connection
   a. Overall shape is not important yet, only that the connection is tight and clean.



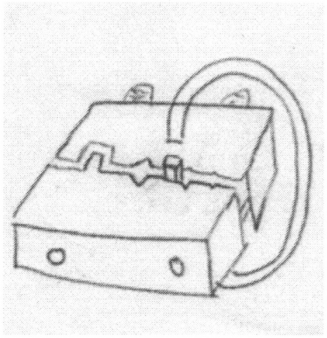
3. Solder connection closed.
4. Form bracelet around desired mandrel. Oval for an oval bracelet, circle for circle bracelet.
    a. On an oval mandrel, place solder seam where you want the hinge to open. (not relevant on circle bracelet).

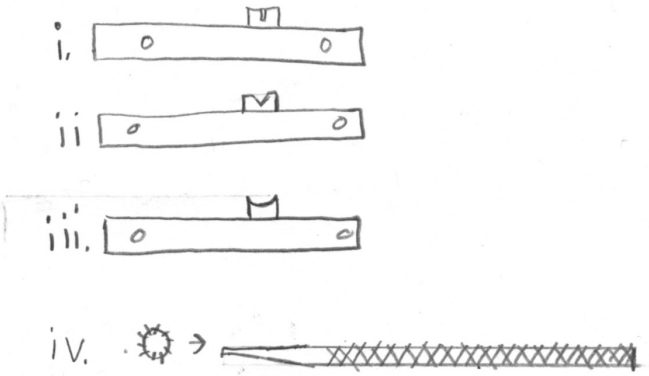



5. Once bracelet is formed, saw open seam. Make sure to saw straight through.

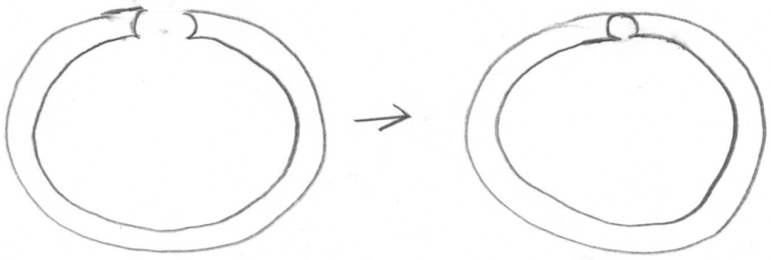


6. We now need to file a channel on both sides of 10G square wire to fit our large tubing.
    a. I use miter Jig to gold wire in place and at 90 degrees. Use could also use a table vice, preferably with nylon jaws, such as a Pan-a-vise. Stretch bracelet apart slightly so you can fit saw blade and files.
        i. Use a saw to cut a line in center of wire
        ii. Use a triangle file to open channel more
        iii. Use a round file to open channel to desired tube size (3.66OD)
        iv. Parallel round files work great for this because they don't taper

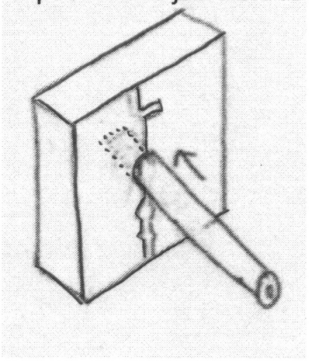


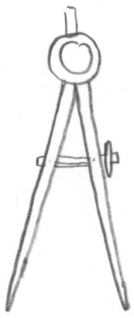


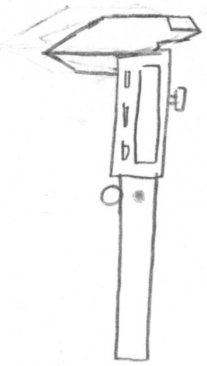
7. Your bracelet should now have a channel on both ends that fits 3.66OD tube
    a. Add tension back to bracelet to that the opening almost touches.



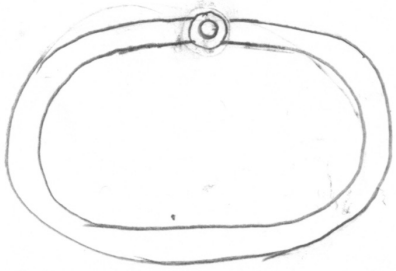
8. Cut two 10mm pieces of large tubing using miter jig or tube cutter.
    a. Mark 10mm with dividers or calipers.
    b. When using miter jig place 10mm section inside jig and leave rest of the tubing exposed. Use jewelers saw to cut tubing and file flat.



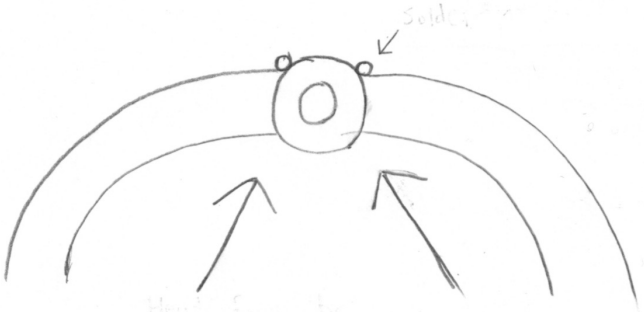


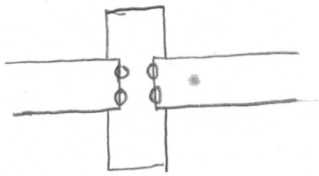


9. Place 10mm piece of tube in open channel of bracelet

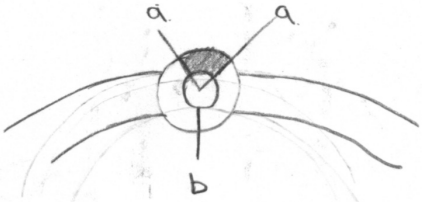


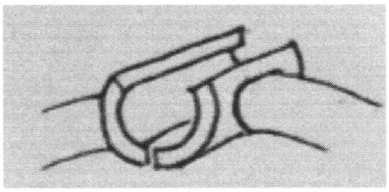
10. Using hard solder, solder both sides of bracelet to tubing



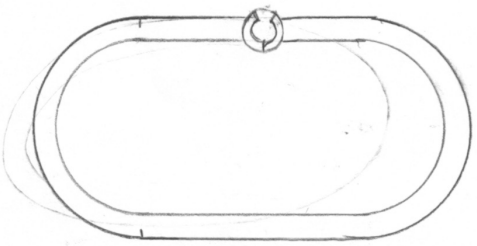


11. Place bracelet in vice/clamp and cut out a slice of the tube
    a. Be sure not so cut too much of the tube away so cut on the small side, you can always file it open more after.
    b. Then cut through the bottom of tube.

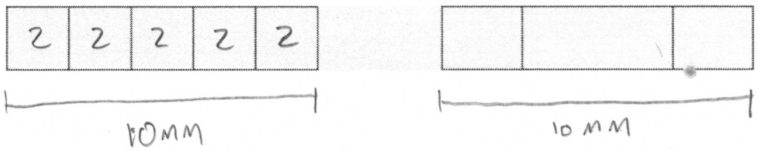


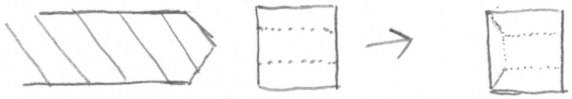



12. You should now have this.

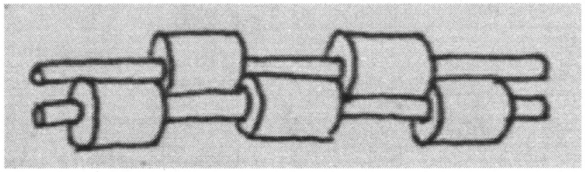


13. Cutting the knuckles for the hinge
    a. You can make a 3 or 5 knuckle hinge
        i. In a 5 knuckle hinge all knuckles will be 2mm
        ii. In a 3 knuckle hinge the middle knuckle needs to be larger
    b. Cut your knuckles from the small 2.03OD tubing
    c. Use calipers/dividers to mark tube before cutting or set your tube cutter to the desired length.
    d. Use 2mm drill bit or slightly larger to ream out the middle of the knuckles

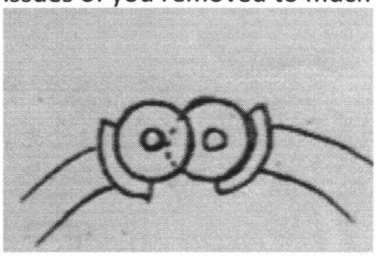


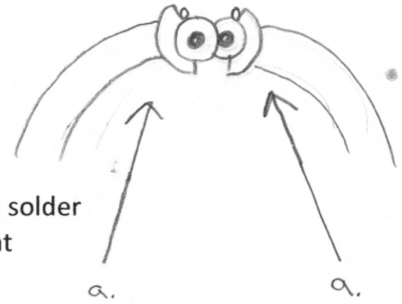



14. Use .98mm spring steel to separate knuckles into two rows.

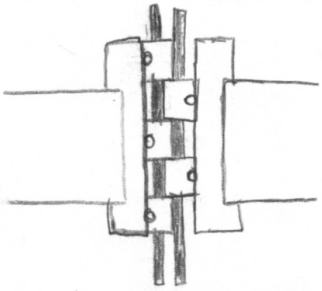


15. Place two rows of knuckles into housing created with larger tubing soldered to bracelet. Use the tension of the bracelet to hold knuckles in place. This is where you will have issues of you removed to much of the tubing when you cut a slice out (See step 11).

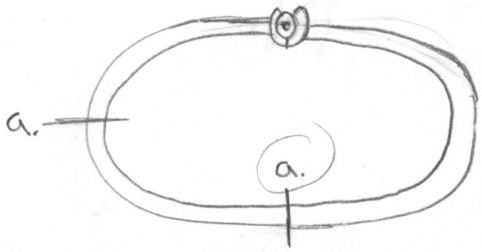





16. Solder all 5 knuckles at once with medium solder
    a. Heat from the bottom left and right

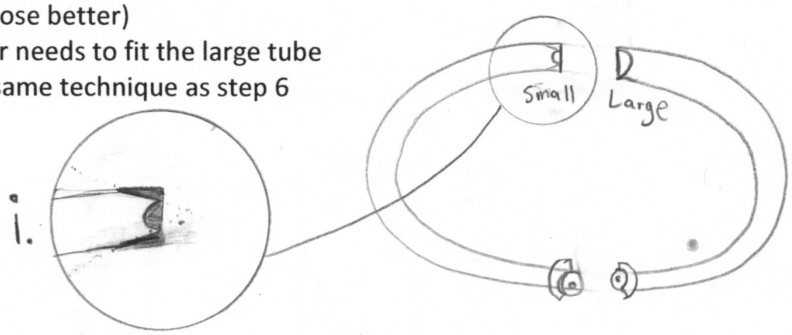


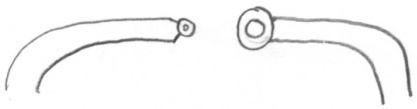
17. Now that knuckles are soldered, choose where you want to place clasp.
    a. This can vary depending on where you placed hinger
    b. Once decided cut apart that spot with your jeweler saw.



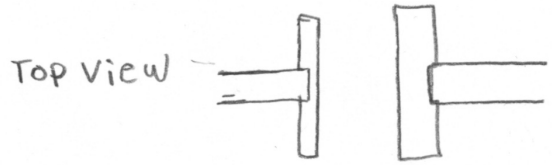

## Tension Clasp

18. Now that you have two separate sides again you will need to file two more channels in the 10G square wire.
    a. One channel needs to fit the small tube
        i. Taper both top and bottom of smaller tube side (this will help the clasp close better)
    b. The other needs to fit the large tube
    c. Use the same technique as step 6

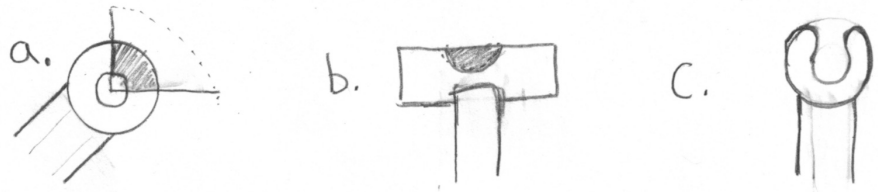




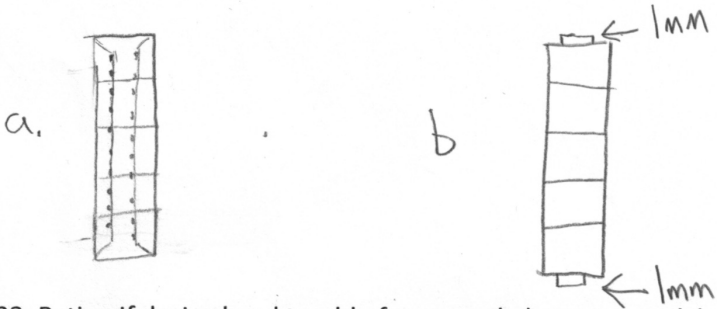
20. Solder 10mm large tube to large channel said and solder 10mm small tube to smaller channel.

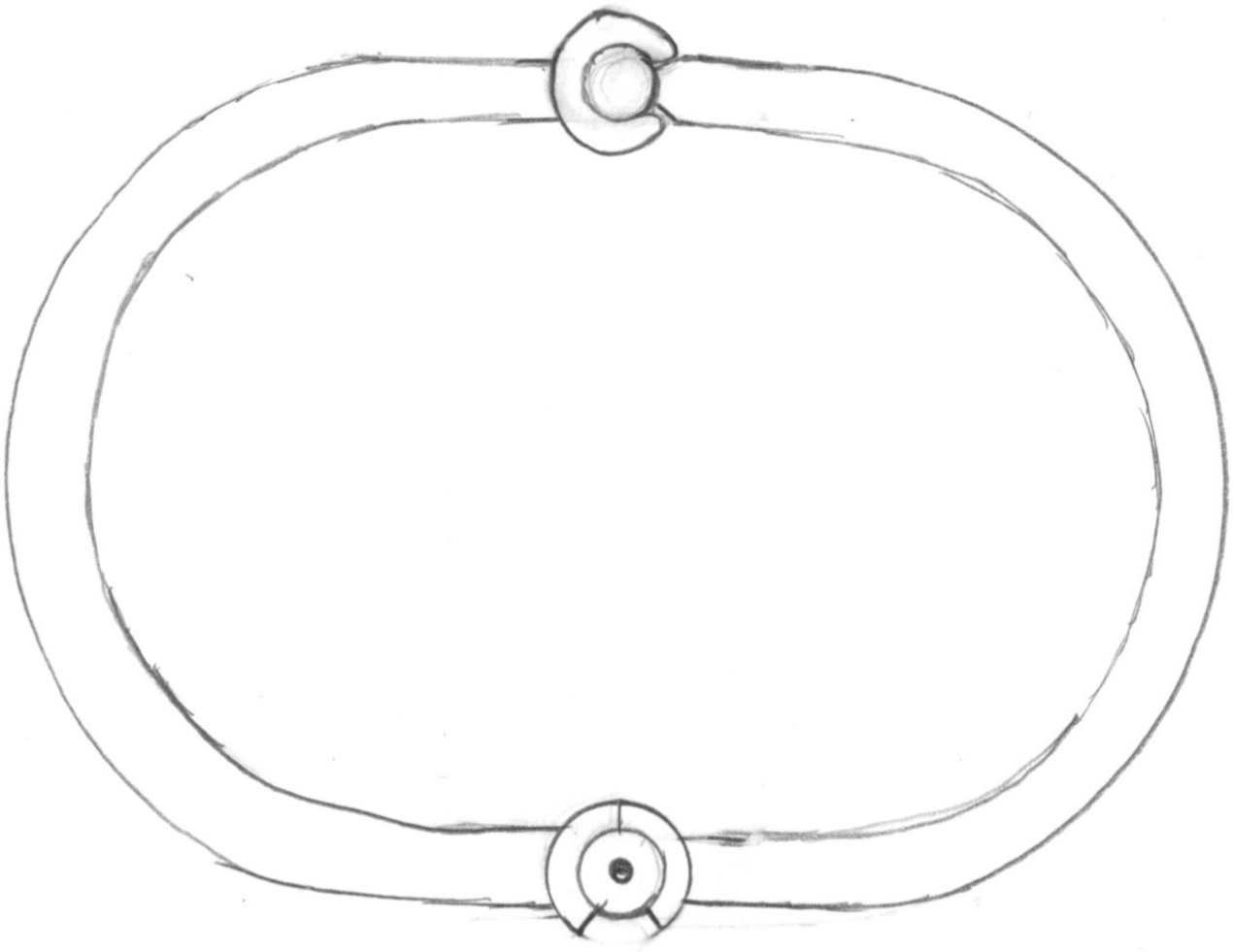



21. Cut an opening in the large tube for the small tube to tension fit into.
    a. Cut 25% of tube away
    b. Use round file to open the middle of 10mm tube
    c. Use flat files to widen opening of and round edges until small tube cliques in.




22. Set hinge Pin
    a. Before inserting 18g sterling silver wire (hinge pin) counter sink both knuckles on the outside of hinge. This will give you metal room to mushroom into
    b. Only 1mm of 18g wire is needed on both ends of hinge pin. Set hinge pin like you would a rivet.




23. Patina if desired and tumble for a couple hours to work harden.