

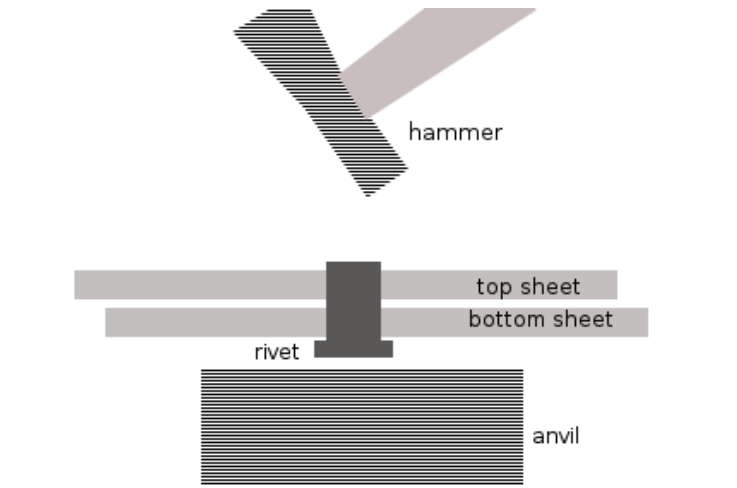
RIVETING

MATERIALS:

- 1mm – 2mm wire, 1mm – 5mm tube, or small brass or copper tack
- Materials to connect

TOOLS

- Piercing saw / Flush cutters
- Small cross pein hammer
- Anvil
- Doming punch
- Files and emery papers



Riveting works well for metals and materials such as vintage pieces which can't be soldered. It also can allow for joints to be flexible or articulated. To have solid joint use two or more rivets, for a moving part use one rivet to allow the components to swivel.

Rivets can be solid wire or rod, headed pins or hollow tubing.

PIN RIVETING

1, Mark the location for all your rivets on the front section, centre punch and drill all the holes in **just** the front layer. The holes need to be a snug fit for the riveting wire so match the drill bit to the rivet diameter.

2, Using the front piece as a template, mark and drill the first hole. **Drill and finish each rivet individually to make sure all the holes line up.**

3, Thread the rivet through the holes.

4, Turn the piece over and snip off the excess rivet with flush cutters or a piercing saw . You need to leave about 0.5mm of the rivet sticking out. Wear eye protection as the cut end can ping off.

5, Place the piece upside down on a metal block or anvil. Be careful as it's easy to loose the rivet at this point. Use a cross pein hammer to tap the back of the rivet and flare it out. Hammer in a cross shape to evenly spread the end of the rivet.

6, Once it is secure and even you can turn the hammer and use the face end to finish off the rivet. If you want the pieces to move, use a piece of card between the metal sheets. Remove it when you've finished the rivet and it should leave enough give to let the pieces swivel.

7, Finish each rivet in turn until the piece is secure.

WIRE RIVETING

- 1, Mark the location for all your rivets on the front section, centre punch and drill all the holes in **just** the front layer. The holes need to be a snug fit for the riveting wire so match the drill bit to the rivet diameter.
- 2, Using the front piece as a template, mark and drill the first hole. **Drill and finish each rivet individually to make sure all the holes line up.**
- 3, Make sure the end of the wire is completely flush and even.
- 4, Thread the wire through the hole and mark the length to be about 1mm longer than the depth of all the layers. Sometimes it's easier to cut the wire while it's in place. Cut with flush cutters or a piercing saw. If you use flush cutters leave enough to be able to file the end flat. You need to leave about 0.5mm of the rivet sticking out. Wear eye protection as the cut end can ping off.
- 5, Thread the wire in place and put the piece upside down on a metal block or anvil. Be careful as it's easy to lose the rivet at this point.
Use a cross pein hammer to tap the back of the rivet and flare it out. Hammer in a cross shape to evenly spread the end of the rivet. Keep turning the piece to make sure both sides are even.
- 6, Once it is secure and even you can turn the hammer and use the face end to finish off the rivet.
If you want the pieces to move, use a piece of card between the metal sheets. Remove it when you've finished the rivet and it should leave enough give to let the pieces swivel.
- 7, Finish each rivet in turn until the piece is secure.

TUBE RIVETING

- 1, Mark the location for all your rivets on the front section, centre punch and drill all the holes in **just** the front layer. The holes need to be a snug fit for the tube so match the drill bit to the rivet diameter.
- 2, Using the front piece as a template, mark and drill the first hole. **Drill and finish each rivet individually to make sure all the holes line up.**
- 3, Make sure the end of the tube is completely flush and even.
- 4, Thread the tube through the hole and mark the length to be about 2mm longer than the depth of all the layers. Sometimes it's easier to cut the tube while it's in place. Cut with a piercing saw and file the end flat.
- 5, Thread the tube in place and put the piece upside down on a metal block or anvil. Be careful as it's easy to lose the rivet at this point. Use a sharp point to gently begin spreading the end of the tube out. If you are using tiny 1mm tube then a darning needle, grain raiser or similar is perfect. For larger tube a pointed centre punch works well. Put the point of the tool into the end of the rivet and work it around in small circles. Start gently, especially with the small tube. With thicker tube you may need to use a light hammer to encourage it to spread. As soon as you have enough spread to keep the top layer in place turn the piece over and do the other side, keep turning it to get both sides even.
- 6, Once it is secure and even you can turn the hammer and use the face end to finish off the rivet. If you are using a larger tube, you may need to use a doming punch to flatten the top of the rivet a little.
If you want the pieces to move, use a piece of card between the metal sheets. Remove it when you've finished the rivet and it should leave enough give to let the pieces swivel.
- 7, Finish each rivet in turn until the piece is secure.