



# How to Hand Forge a Hummingbird

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The following technique for forging a Hummingbird is primarily the same technique used by Bill Epps with a few modifications.

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Start with a piece of 1/2" square bar 18-24" long. (Length is so I don't have to use tongs to hold the piece.)

Heat about 2" of the end to near welding heat (yellow, around 2200 degrees).



- With a hot cut chisel, split the end in the middle all the way through, approximately 1". (You can mark the center and length of the cuts before you heat the metal by measuring equal distances from each side and mark with a center punch.)
- Make sure and split half way from both sides. Cut half way through one side, turn 180 degrees and cut the rest of the way through.



Place in a vise and use the hot cut chisel to make the cut square at the bottom.

- With a blunt chisel clean up or smooth the bottom of the cut to prevent the piece from cracking.



- Spread the split by using a chisel or drive down on a cut off hardie to form a 'V'. Remove most of the chisel marks on the inside of the 'V' using a hot rasp or file.
- Close the 'V' by heating and hammer square on the anvil.

Heat about 2" of the split end again. Looking at the split, rotate 90 degrees either way and split in the middle for approximately 1". Cut through only one side.

- Rotating 90 degrees from the 1<sup>st</sup> split. Place an uncut side on the anvil and split with a hot cut chisel. Cut only half way through.
- Place in a vise and use the chisel to make this cut square at the bottom.
- Again, with a blunt chisel clean up or smooth the bottom of the cut to prevent the piece from cracking.
- Heat and square splits up on the anvil.



At this point you should have a bar with one end split leaving 3 pieces. The two 1/4" wide pieces of the split will form the wings and the 1/2" part will form the body and tail.



Now, heat about 2" of the split end again.

- With the 1/4" side facing down (touching the anvil), extend the split approximately 1/8"- 1/4" beyond the far side of the anvil.

- Set the piece down using a half face blow (half of the hammer face over the anvil & half extended beyond the edge of the anvil). Don't hit the piece too hard or too many times. You are just trying to raise the wings above the head a little bit.



- With the 1/4" side down and on the face of the anvil, round up or chamfer the wide side (body) with a hammer.



Take another heat to form the neck. I use a guillotine tool with fuller dies.

- Start fuller at the point you set the piece down in previous step.
- Rotate the piece as you strike the fuller forming the rounded part of the neck. Don't make the neck too thin or skinny. You're just trying to give it definition.



Heat and form the head. I use the guillotine tool again.

- Start fuller on the diamond approximately 3/8 - 1/2" or so from where the neck was formed.
- Again, rotate the piece until you have formed what will later be the beak. Don't fuller it too much! Leave enough to hold the piece while you form the wings and tail.



- Round up the head using a hammer and the edge of the anvil. Use both sides of the anvil. When using the edge closest to you, hold the bar down approximately 45 degrees with the beak on the edge of the anvil, strike the neck side with the hammer. When using the far side of the anvil hold the bar up approximately 45 degrees with the neck side on the anvil and strike the beak side with a hammer. Rotate the bar along the edge as you strike the piece giving it a round shape.



Heat and form the wings.

- After taking a good heat, spread what will become the wings 90 degrees to the body. Make sure you take a good heat you don't want to break or crack the piece at this point!
- When Hummingbird spread their wings they are flat across the top and make a gentle curve upward from the body to the tip. To achieve something that resembles this curve, point the beak down and draw just the end out to a gentle curve on the horn.



- Try to maintain the original thickness as you form this curve. Form curve on both wings.
- Place the bottom of the wing on the face of the anvil. To spread and thin out the wing, strike the top side using a cross peen hammer. Hold the peen long ways and not across what will be the wing. I start in the middle of the piece I'm spreading and work towards the edges. Spread the wing approximately 1/2" wide. This measurement is taken halfway from the body to the end of the wing. If you formed the curve at the end correctly before you started the spreading process, you should end up with a gentle curve to the end of the wing.
- Use the same technique on both wings.



Heat and spread the tail.

- Heat the tail section taking care not to burn the wings. Spread the tail over the horn of the anvil.
- Start in the center and spread out the tail using a cross peen hammer. The horn should give the tail a slight curve downward.
- Use peen parallel to the body. This will spread the tail and not lengthen the piece much.
- Spread the end of the tail approximately twice the width.



Heat and form the beak. Forming the beak is the hardest part of forging a Hummingbird. If you are not careful, you will either crack or break off the beak.

- Leaving enough material to form the beak, cut off using a hot cut chisel or whatever method is easiest. Leave approximately 1/4" or so.
- Holding with your tongs, form the beak by drawing it out to a point on the horn and face of the anvil. I like to use my guillotine tool with flat dies in it. I can gently draw out the beak by rotating the piece while lightly striking the tool. Whatever method you use be careful not to crack the beak.

Heat and form the eyes.

- You can either punch eyes with a center punch or simply leave it without eyes. Either way, you will know it's a Hummingbird.



Finish it any way you like. Weld it to a flower and you're really getting artistic!!