

SPEAKER LOG (Detailed Steps)

***Refer to page 4 for shorter version of the log (summary)

Dec 11 2016

- Bought copper wire at Sayal store
- Completed blueprints (3 orthographic drawings), speaker paragraph, and a cover page

Dec 18 2016

- Gathered materials
- Calculated how much wire I need to reach a certain amount of resistance (Used the coil wrapping guide calculator)

Problem: Found out that I need to wrap the coil about 1000 times around the paper roll to achieve an impedance of 8Ω

Solution: Decided to ask the teacher

- Wrapped a paper roll around a glue stick to make a voice coil

Dec 19 2016

- Finished making the voice coil by wrapping three layers of wire around the paper roll (Used plastic tape in-between the layers)

Problem: The voice coil got stuck on glue stick (Didn't slide out)

Solution: Cut a little bit of the roll at top and pulled the coil as hard as I can

Dec 20 2016

- Showed my voice coil to the teacher

Problem: Found out that I have to remove the tape layers in the voice coil or start over again (As the tape will melt once the wire starts to heat up) (No solution but to restart- too much tape to take off)

Jan 3 2016

- Made a brand new voice coil by wrapping two layers of wire around the paper roll, which was wrapped around a glue stick (Used superglue this time)

Jan 4 2016

- Took out the plastic washers in between the magnets

- Applied hot glue on the surface of the metal washer and attached it to the bottom of the pencil sharpener shavings container
 - Carefully placed the stack of magnets on top of the washer in the pencil sharpener case
 - Applied hot glue on the bottom surface of the pencil sharpener shavings container and attached it to the bottom of the speaker frame (big plastic container)
 - Cut out the bottom circle of the Styrofoam container to make a spider
 - Cut out a piece of fabric to the size of the Styrofoam container bottom
 - Attached the fabric to the bottom of the container where a circle has been cut out (Applied hot glue around the circle to secure it)
 - Cut a hole at the center of the fabric to a size of the paper roll of the voice coil
 - Cut out a circle from a cereal box, with a diameter slightly bigger than the diameter of the speaker frame
 - Made a slit on the circle cereal box, cut out a small circle from the center (slightly larger than the diameter of the voice coil), and rolled up the circle to make it into a cone
 - Cut out a surround of the speaker from a large piece of fabric, and attached it to the cone
 - Made a long paper roll that fits perfectly inside the paper roll of the voice coil (this new roll will help keep everything centered till the very end of the construction process)
 - Inserted the new paper roll into the voice coil, and inserted the whole thing into the pencil sharpener case
 - Placed the spider over the magnet case by sliding it down the paper roll
 - Brought the ends of the voice coil wires on top of the spider
 - Serrated the tip of the cone, applied hot glue, and attached it to the end of the voice coil
- Problem: Should have done the next 6 bullet points before attaching the cone to the voice coil, so that there is more space and makes it easier (No solution, just continued on)
- Made 2 holes in the frame using an awl, and placed bolts in each hole
 - Made another hole in the frame to insert two crocodile clip wires
 - Stripped and burnt the ends of the voice coil leads with a knife and a lighter
 - Attached one of the alligator clips inside the frame to one of the bolt, and the other clip to one of the leads

- Wrapped the other voice coil lead around the other remaining bolt
- Attached a normally closed switch (AKA push-to-break switch) to the two crocodile clips outside the speaker frame
- Applied hot glue to the top rim of the speaker and folded the surround down to secure it
- Made another small cone from paper and attached it to the center of the cone as a dust cap

Jan 12 2017

- Tested the speaker in class
- Mr. Salavati suggested that I remove the switch, and put a box around the frame

Problem: Big bolts (terminals) and the switch was creating resistance in the speaker, producing less sound

Solution: Decided to remove the switch, and replace bolts with alligator clips

Jan 18 2017

- Removed the switch and re-wired the circuit
- Connected alligator clips to the voice coil leads to use them as terminals
- Made a speaker box around the frame

Jan 19 2017

- Tested the speaker in class
- Mr. Salavati Suggested that I make a bigger speaker box that will surround the frame completely
- Made a bigger speaker box
- FINISHED THE SPEAKER

Jan 22 2017

- Re-created new, updated orthographic drawings
- Finished the speaker log
- Put everything up on Weebly website

SPEAKER LOG (Summary)

Dec 11 2016

- Bought materials
- Completed blueprints (3 orthographic drawings), speaker paragraph, and a cover page

Dec 18 2016

- Gathered materials
- Wire length and impedance calculation
- Made paper roll for the voice coil

Dec 19 2016

- Finished making the voice coil

Dec 20 2016

- Showed the voice coil to the teacher, received advice

Jan 3 2017

- Made a brand new voice coil

Jan 4 2017

- Secured the magnets at the bottom of the frame
- Made a spider, speaker cone, surround and a dust cap
- Created terminals using bolts
- Connected the voice coil leads to the terminal and the switch
- Assembled all parts together
- Finished the speaker

Jan 12 2017

- Tested the speaker

Jan 18 2017

- Removed the switch and re-wired the circuit

- Connected alligator clips to the voice coil leads to use them as terminals
- Made a speaker box

Jan 19 2017

- Tested the speaker
- Made a bigger speaker box
- FINISHED THE SPEAKER

Jan 22 2017

- Re-created new, updated orthographic drawings
- Finished the speaker log
- Put everything up on Weebly website

Table 1. Problems that were encountered and their solutions

Problems	Solutions
Found out that I need to wrap the coil about 1000 times around the paper roll to achieve an impedance of 8Ω	Decided to ask the teacher for an advice
The voice coil got stuck on glue stick (Didn't slide out)	Cut a little bit of the roll at top and pulled the coil as hard as I can
Found out that I have to remove the tape layers in the voice coil or start over again (As the tape will melt once the wire starts to heat up)	No solution but to restart- too much tape to take off on each of the three layers of coil
Realized that I should have done the terminals, switch and wiring before attaching the cone to the voice coil, so that there is more space for the hands inside the speaker frame and makes it easier to do things	No solution- just continued on
Big bolts (terminals) and the switch was creating resistance in the speaker, producing less sound	Removed the switch, and replaced bolts with alligator clips