EMT 1130

ELECTRO-MECHANICAL MANUFACTURING LABORATORY

(UPDATED FOR PLASTIC ENCLOSURE)

REVISED FALL2020

(UPDATES BY: D. PATRICK & C. RODRIGO)

Parts and Tools List

Electronic Tools Kit (Electronix Express)

- Soldering Iron with Stand (15 watts to 35 watts)
- Solder for electronic components (60/40 Rosin Core)
- Long Nose Plier (no bigger than 6”)
- Diagonal Cutter (no bigger than 6”)
- Wire Stripper (goes up to 22-24)
- Safety Goggles

Miscellaneous Materials and Tools

- Combination Square
- Hand Chuck Pin Vise
- Step Drill Bit
- Center Punch
- Sand Paper – one sheet (Fine grade)
- Rubber Feet or Protective Bumpers
- Silver Sharpie (Fine Tip)
- Plastic Enclosure (Electronix Express)

(Last page has links to some parts and materials listed above)

C. Rodrigo 10/2020

Bottom Enclosure

Measurements:

Use a combination square to measure the lines and holes for the digital trainer. (Figure 1-1)

- Using a pencil, measure and mark the lines for the Vector Board. Start with the bottom left corner and work your way around counter-clockwise.
- Next, measure the hole labeled “Y” in the diagram. The distance for the second hole is 2-1/2”.
- Finally, measure and draw position “Z” for the strain relief hole. This should be on the side wall of the enclosure where the transformer is positioned.

Once the lines are checked, scribe the lines with a metal scriber and combination square to keep all points squared. Use the center punch to make dents where each of the holes will be. Once each of the holes are center punched, use bit #3 (1/8” diameter) from the pin vise to start making the holes for each of the measurements. Make sure to keep the pin vise straight as you apply a slight pressure downward while turning the handle clockwise. Change out the small bit with the Step drill bit to make the following holes for each of the points.

Hole Sizes:

The size of the holes for both the Vector Board(4) and Transformer(2) are each 3/16” of diameter.
For the hole marked “Z” should be 9/16” of diameter.

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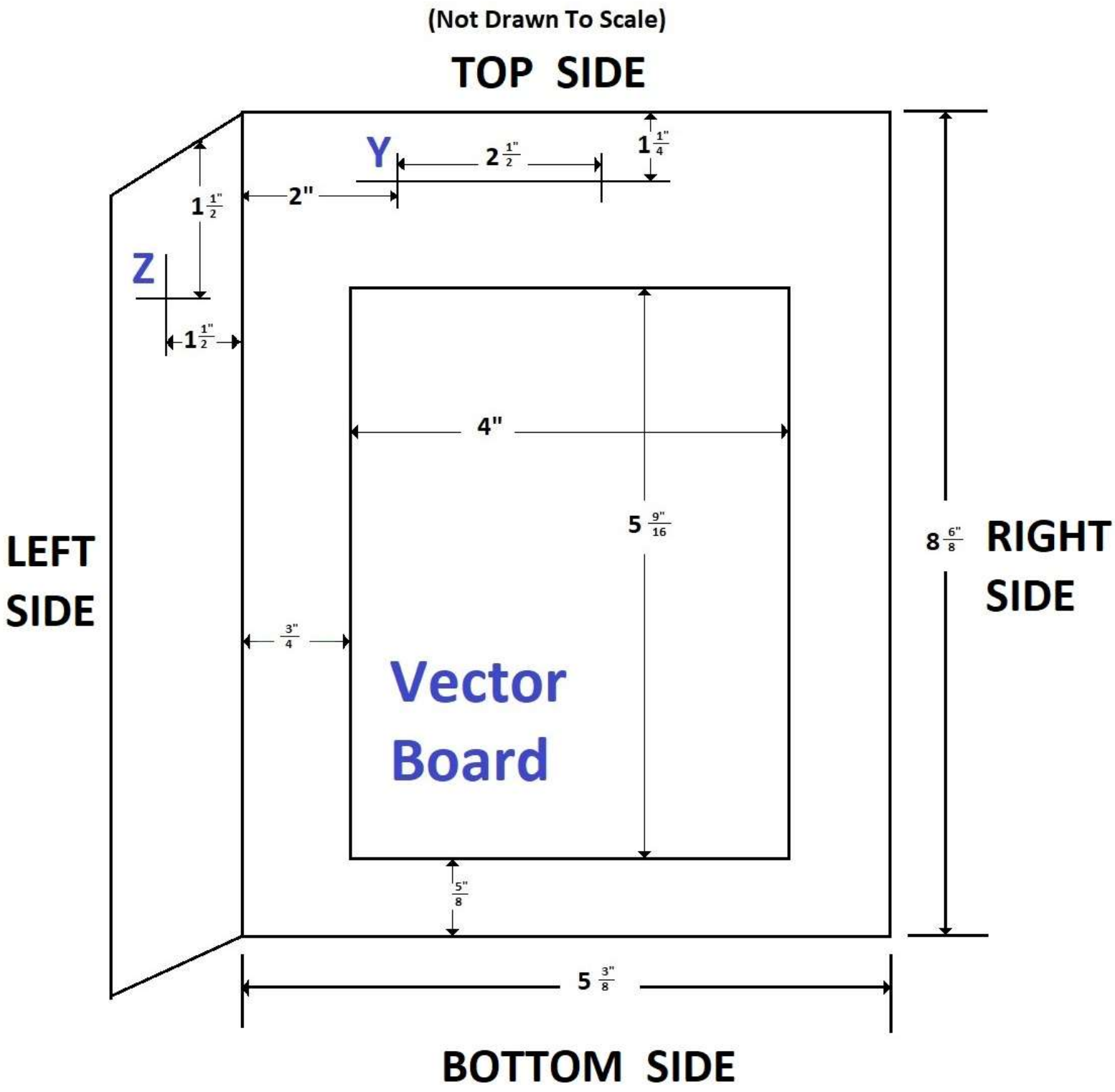
Figure 1-1



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Top Enclosure

Measurements:

Use the Combination square to measure and draw all the points shown in the Diagram for the Top enclosure. **(Figure 1-2)**

- Using a pencil, measure and draw lines (A),(B-C) and all three (E)'s with all the points in between them.
- After all of the measurements have been checked, use a Scriber with the Combination square to scribe in the lines with the points in between them.
- Use the Center punch to make dents for each of the points that will be made into holes for the Top Enclosure.

Once each of the holes are center punched, use bit #3 (1/8" diameter) from the pin vise to start making the holes for each of the measurements. Make sure to keep the pin vise straight as you apply a slight pressure downward while turning the handle clockwise. Change out the bit with the Step drill bit to make the following holes for each of the points.

Hole Sizes:

- Holes marked **(E)** – There are 3 sets of 10. For each of the **2 end holes** 3/16" in diameter and the remaining **inner** 8 holes 1/4" in diameter.
- Holes marked **(A)** – There are 7 of these. Measure the diameter of the **L.E.D. Holders**. (5/16" diameter)
- Holes marked **(B)** – There are 4 of these. Measure the diameter of the **Toggle Switches**. (1/2" diameter)
- Holes marked **(C)** – There are 2 of these. Measure the diameter of the **Momentary Switches**. (1/4" diameter)
- Hole marked **(D)** – There is only 1 of these. Measure the diameter of the **1MΩ Potentiometer**. (5/16" diameter)

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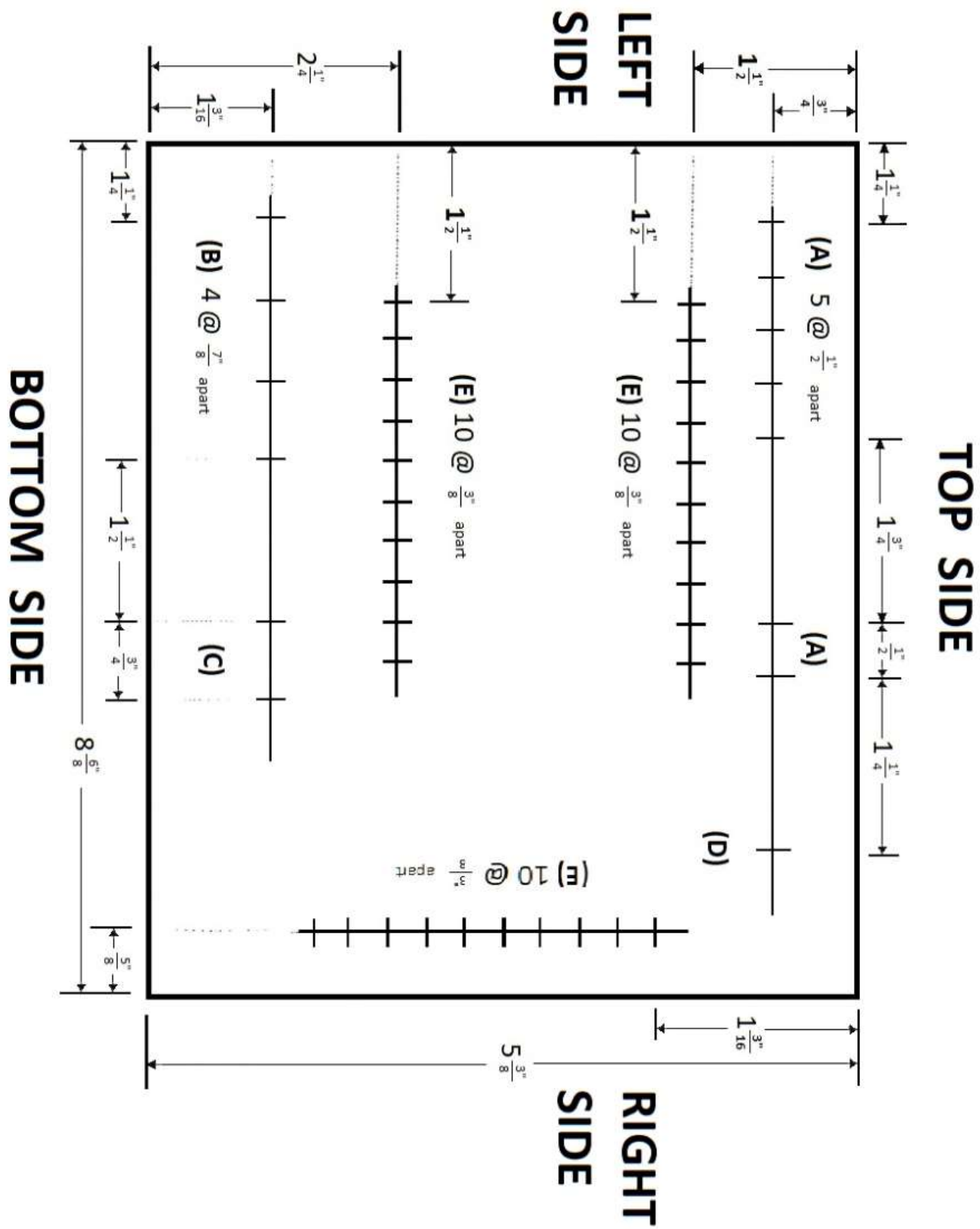
Figure 1-2

(Not Drawn to Scale)



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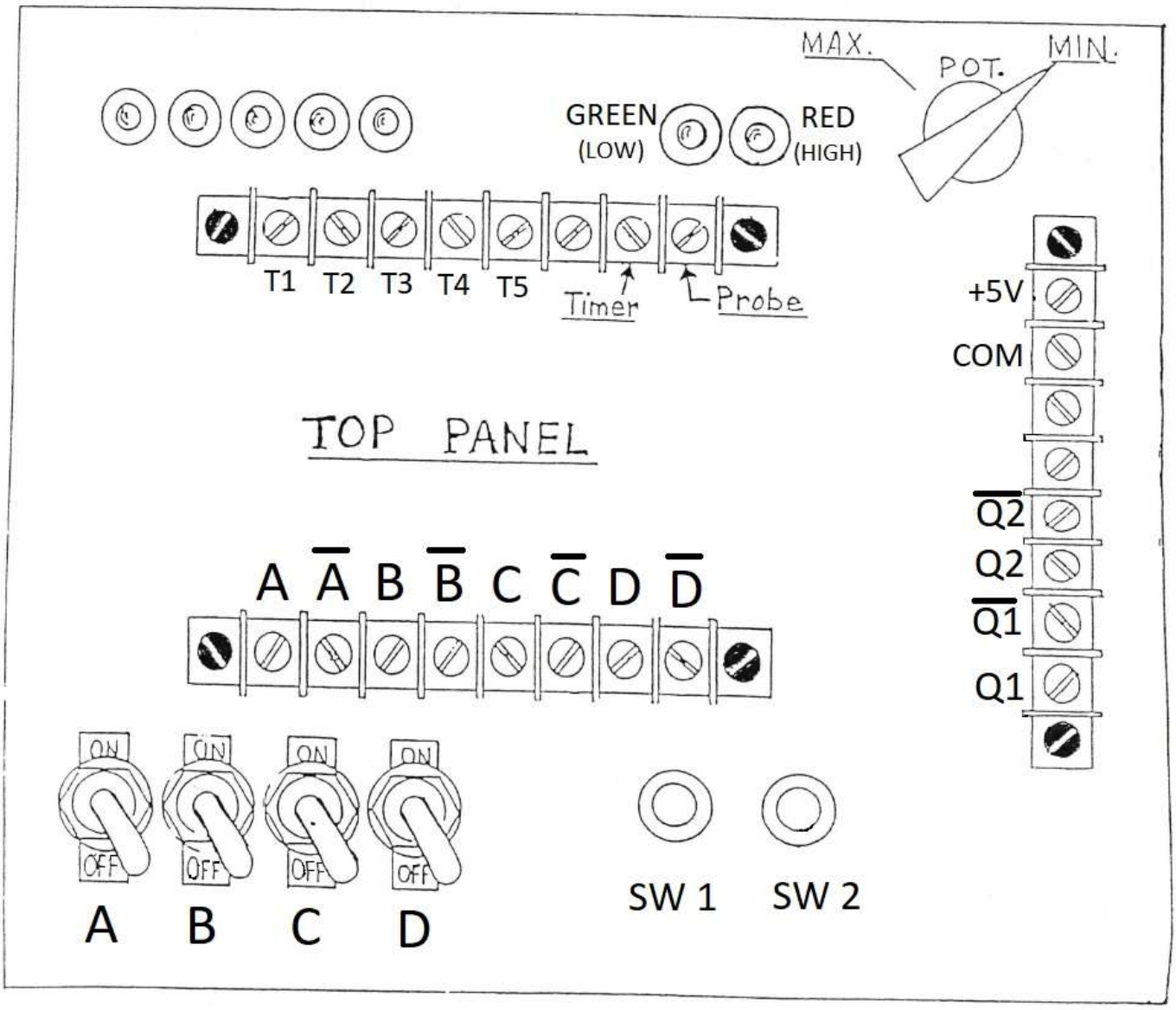
Label For Top Panel



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Below is the list of tools and materials that will be needed to build the digital trainer, along with the 3 lab kits and PC Board purchased from the City Tech Bookstore.

Electronic Tool Kit

https://www.elexp.com/32toolkit2tool-kit-2.html

Plastic Enclosure (box)

https://www.elexp.com/061163plastic-enclosures-8-7-in-x-5.html

Hand Chuck Pin Vise

https://www.amazon.com/gp/product/B06XQC7H9B/ref=ppx_yo_dt_b_asin_title_o02_s00?ie=UTF8&psc=1

Step Drill Bit & center punch

https://www.amazon.com/KOWOOD-Automatic-Center-Titanium-Coated/dp/B0872Q1MQD/ref=pd_rhf_sc_p_img_1?_encoding=UTF8&psc=1&refRID=CG4XAE29KPFMXVHCRHXP

Combination Square

https://www.amazon.com/Mr-Combination-Carpentry-Carpenter-Woodworking/dp/B07Q74TLLL/ref=rtpb_7?_encoding=UTF8&pd_rd_i=B07Q74TLLL&pd_rd_r=4017c68d-180c-45c5-b75d-c6f65047b9fd&pd_rd_w=OLvbC&pd_rd_wg=5JxXZ&pf_rd_p=8e29e6d3-1af9-49e1-9000-62311a8a6943&pf_rd_r=FM3Z9CCM34VS02KN8WGP&psc=1&refRID=FM3Z9CCM34VS02KN8WGP