

VEX ROBOTICS ONLINE CHALLENGE: MAKE IT REAL CAD ENGINEERING CHALLENGE SPONSORED BY AUTODESK®

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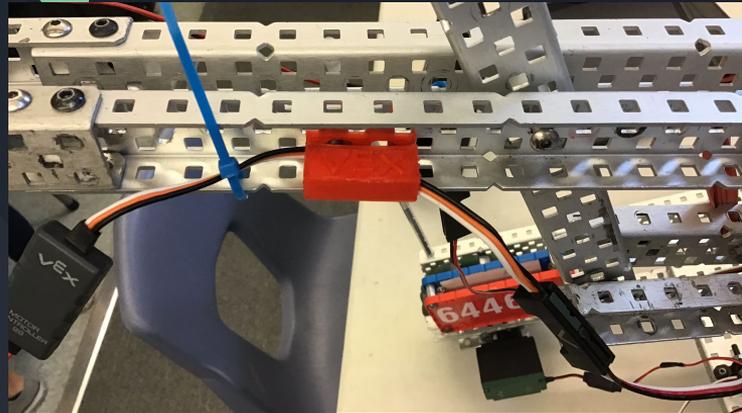
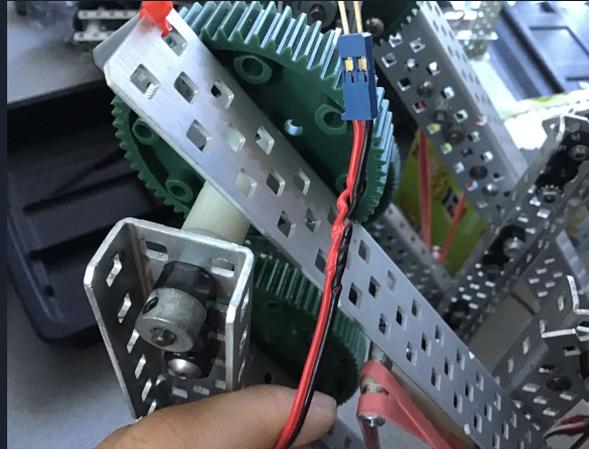


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Idea - Problem

This new piece was created to hold the wires safely without getting stuck somewhere. For example, even though I used zip ties, they were too flimsy and the wires got stuck on a gear and ruined it. Also, once I accidentally tightened the zip tie too much and the wire connector got stuck on it and got unplugged during an entire match.



Idea -Solution

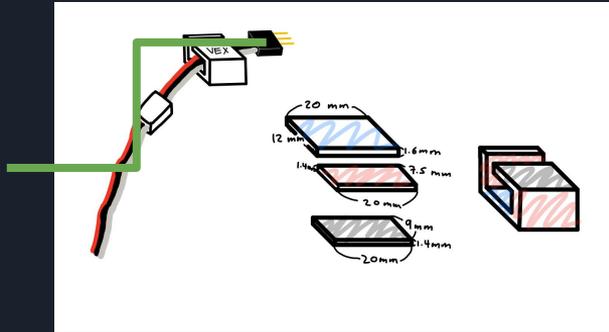
To solve this problem, my team discussed on how to hold the wire safely so that the wire doesn't dangle around and the wire connector can go through as well. So we came up with the idea of the VEX Wire Holder (VWH). Our team agreed on the design that it would be the best way to hold wire. Adding on, this piece can be attached anywhere on the robot; the lift, the tower, and/or the chassis. Also, it was designed in a way that even wire clips can pass through.

This piece will be the final touch for our robot. We hope this design will be officially approved by VEX so there won't be any more problems involving wires.

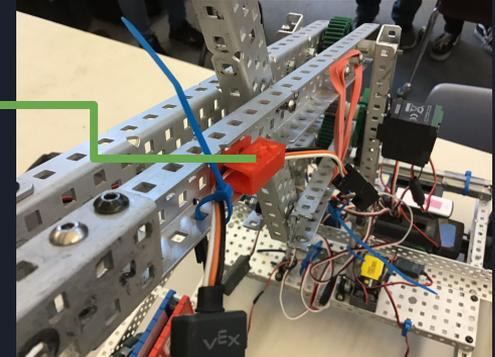
-Wire connector passes through

-Wire clip passes through

-Stable



-More efficient

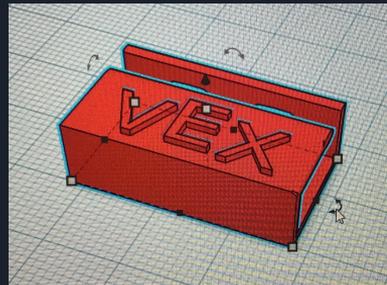


Software

To design the new piece, I decided to use Tinkercad. First of all, I chose to use Tinkercad because it is free. Also, I decided to use Tinkercad because it's simpler to use than other softwares; I learned how to use this software in few hours and was able to design the piece. Adding on, since my design was very simple, I knew I could use Tinkercad to design the VWH. For example, applying measurements and making the structure was very simple.

How this software was helpful:

Learning how to use this software helped our team because now I was able to design our robot in 3D, which helped us when we wanted to add new parts to our robot. Also, I was able to teach other teams how to 3d design so that they can enter the online challenge as well.





Conclusion

From this challenge, first of all, I learned how to use Tinkercad, and learned how important it is to know how to design 3D figures. For example, I started 3d designing our robot so whenever our team makes any changes, we will know what to do and how to do it. Also, I started teaching other teams how to 3D design for the same reason.

3D designing helped our team on a real VEX tournament during the interview. We were able to entertain the judges more and got us the Judges Award. Also, we were able to explain better about our robot changes because we were able to show the changes visually with my 3D designs of our lift; we were able to get the Create Award.

Learning 3D designing will help my career path because I want to become a car or movie designer, and both involves 3D designing.

In the future, I wish the VWH becomes an official part so it can be used by everyone and to have no more wire-problems. As I said, our team had many problems involving wires, and it all happened because they were not held firmly. Hopefully, this new piece will improve the VEX EDR community.

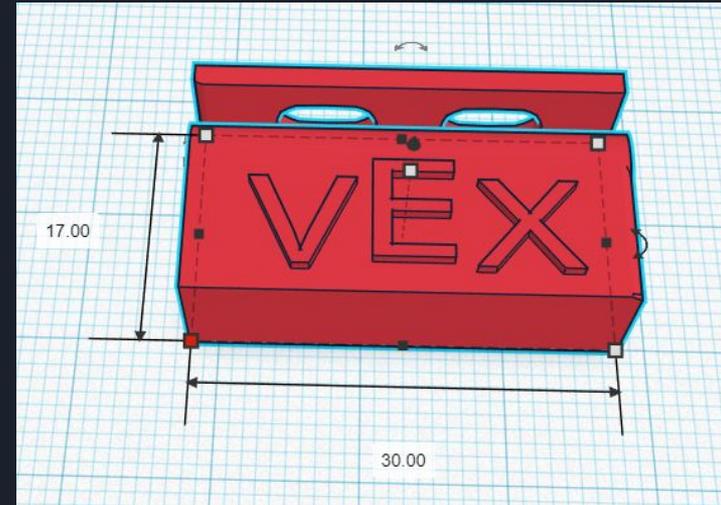
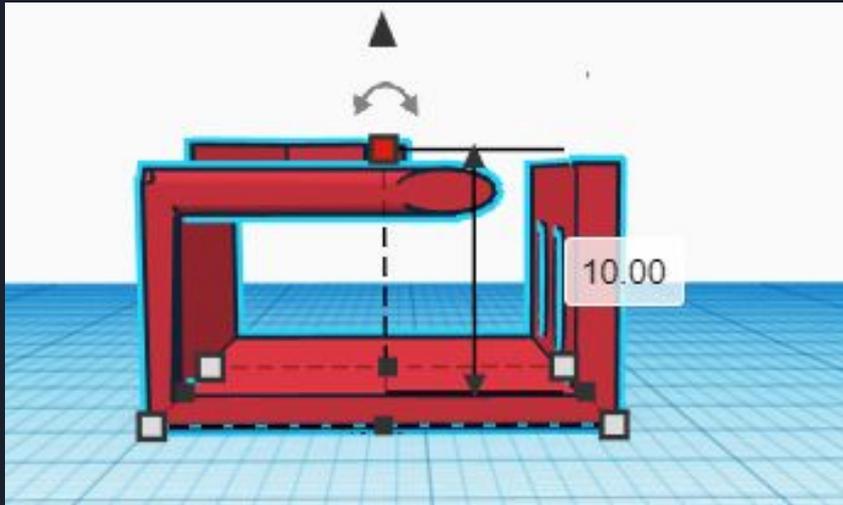
Measurements

Height: 10 mm

Length: 30 mm

Width: 17 mm

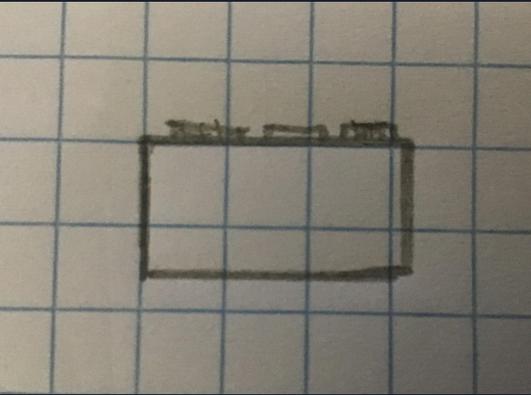
Thickness: 1 mm



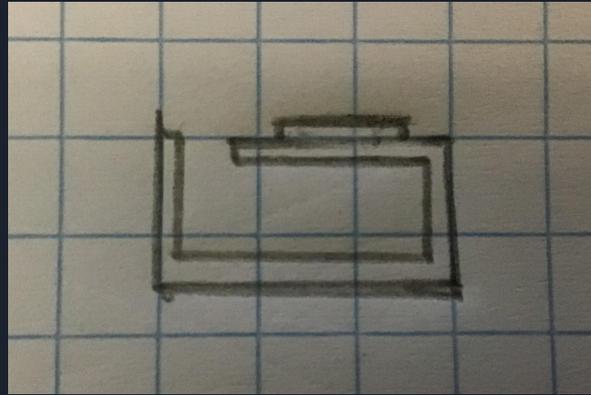
This piece was built this way so that wire clips and wire connectors can pass through as well.

Sketch Version

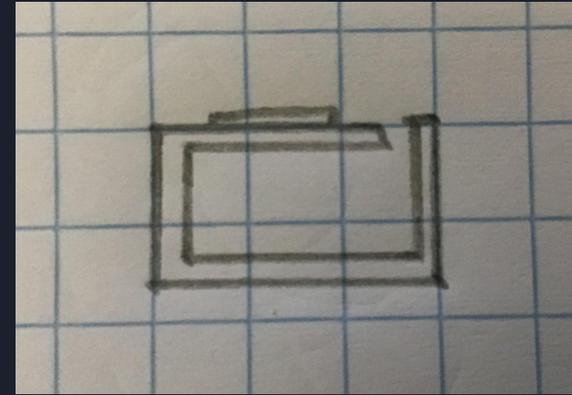
Front View



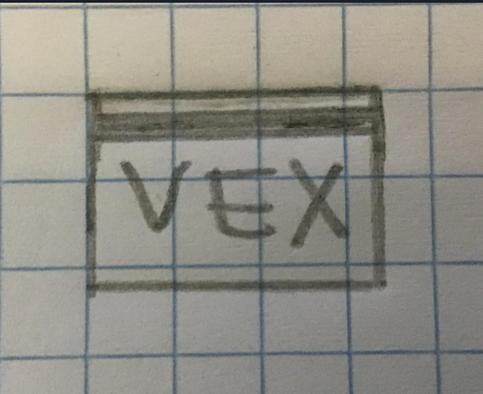
Left View



Right View



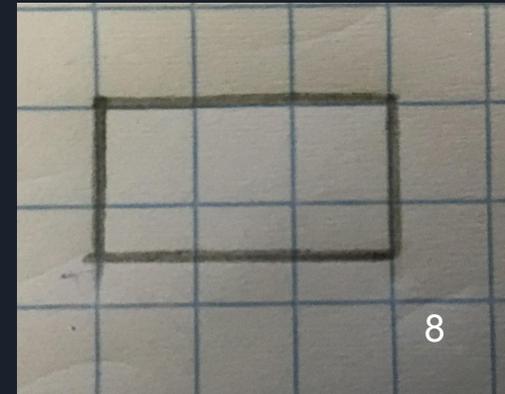
Top View



Back View

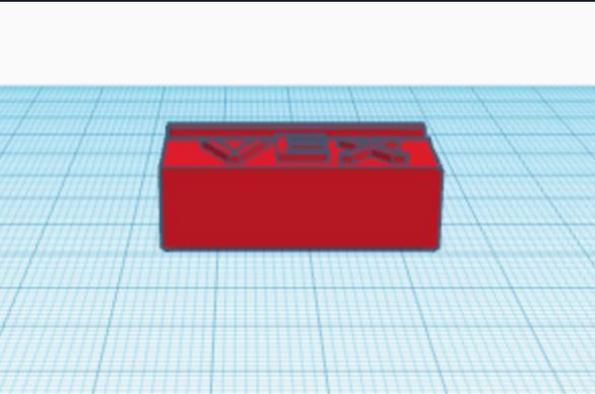


Bottom View

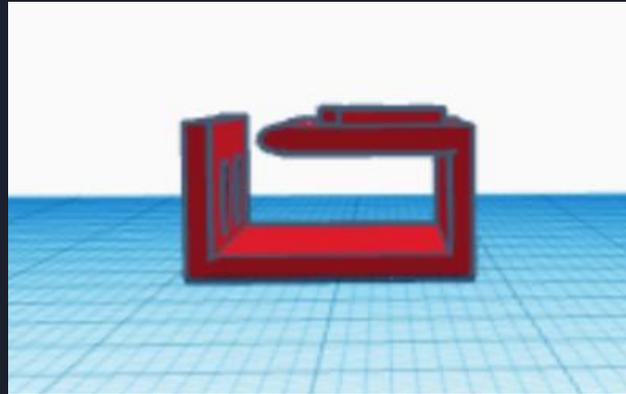


3D Design Version

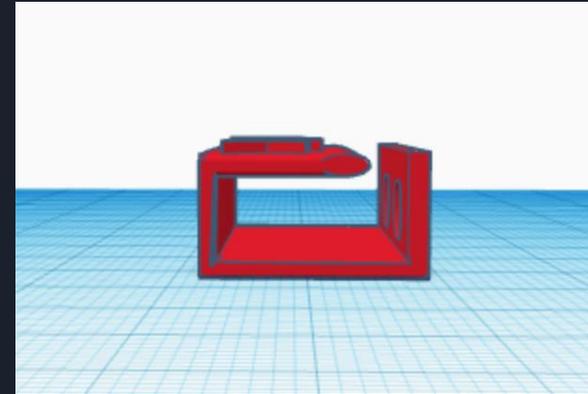
Front View



Left View



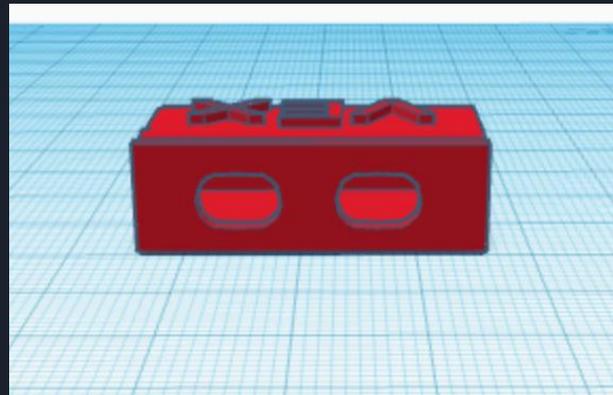
Right View



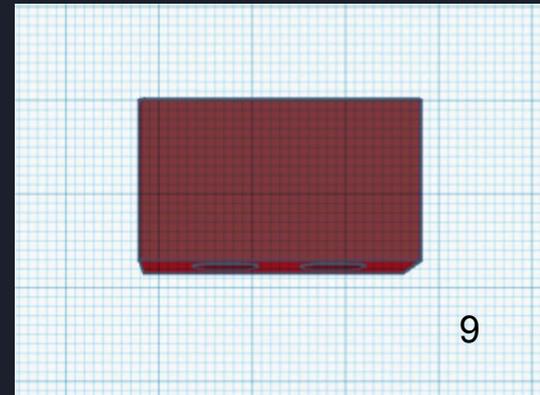
Top View



Back View



Bottom View



Printed Version

Front View



Left View



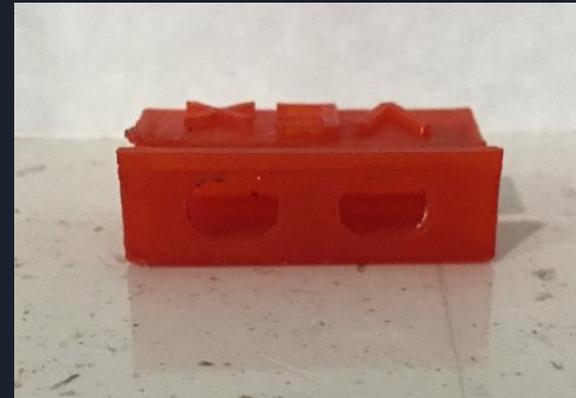
Right View



Top View



Back View



Bottom View



Schedule I

November 2018							Day	Week	Month	Year	Q	+
Sun	Mon	Tue	Wed	Thu	Fri	Sat						
4 Daylight Saving Time...	5	6 Election Day	7 Diwali	8	9 • Brainstorm Idea 3 PM	10						
11 Veterans Day	12 Veterans Day (observ...	13	14	15	16 Design	17						
18	19	20	21 Thanksgiving	22 Print	23	24						
25 • Brainstorm Idea 9 PM	26	27	28	29	30 Register for challenge	Dec 1						

Each Friday, I set up a schedule for myself to work on the challenge. I usually worked on it from 3:00 p.m. to 4:30 p.m.; I worked 1 hour and a half on the project and decided to turn in the project few days early just in case.

Schedule II

December 2018

Day Week **Month** Year

Sun	Mon	Tue	Wed	Thu	Fri
2 Hanukkah	3	4	5	6 Start on report	7
9	10	11	12	13 Continue on report 3 PM	14
16	17	18	19	20	21

January 2019

Day Week **Month** Year

Sun	Mon	Tue	Wed	Thu	Fri
		1 New Year's Day	2	3	4 Final touches
6	7	8	9	10	11 Turn in report
13	14	15	16	17	18



THANK
YOU!



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