

VEX TEAM 3547: VIRUS

## FIELD RISER PLANS AND ORDERING INFORMATION



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# Bill of Materials:

Here is the complete order to send to 80/20 Incorporated.

| PART      | QTY. | LENGTH | DESCRIPTION/MACHINING   | Price   | Ext. Price    |
|-----------|------|--------|---|---------|---------------|
| 1515 lite | 16   | 24     | 7060 right end; 7050 in R at .75" from left end, 7050 in S at 2.25" from left end; 7257 in B at .75" from left end, 7257 in A at 2.25" from left end. | \$ 0.45 | \$ 172.80     |
| 1515 lite | 19   | 45     | 7060 both ends  | \$ 0.45 | \$ 384.75     |
| 1515 lite | 2    | 48     | 7257 in A at .75", 24", and 47.25" from left end  | \$ 0.45 | \$ 43.20      |
| 1530 lite | 8    | 45     | 7045 both ends; 7257 in F at 22.5" from left end  | \$ 0.82 | \$ 295.20     |
| 1530 lite | 8    | 45     | 7045 both ends.   | \$ 0.82 | \$ 295.20     |
| 1530 lite | 8    | 48     | 7257 in F at .75", 24", and 47.25" from left end  | \$ 0.82 | \$ 314.88     |
| 7010      | 37   |        | CUT TO LENGTH 1515  | \$ 1.95 | \$ 72.15      |
| 7020      | 24   |        | CUT TO LENGTH 1530  | \$ 2.45 | \$ 58.80      |
| 7045      | 32   |        | 5/16-18 END TAP 1530  | \$ 3.80 | \$ 121.60     |
| 7050      | 32   |        | DRILL ACCESS HOLE   | \$ 1.95 | \$ 62.40      |
| 7060      | 54   |        | 5/16-18 END TAP 1515  | \$ 1.95 | \$ 105.30     |
| 7257      | 70   |        | .328 DRILL THRU @ .531 SPOT FACE  | \$ 2.95 | \$ 206.50     |
| 2195      | 16   |        | ECONOMY LEVELING FOOT   | \$ 1.55 | \$ 24.80      |
| 3130      | 70   |        | 5/16-18 x 2 SHCS  | \$ 0.59 | \$ 41.30      |
| 3330      | 72   |        | 5/16-18 FBHSCS  | \$ 0.36 | \$ 25.92      |
| 3355      | 96   |        | 5/16-18X11/16 FBHSCS & DOUBLE ECON TNUT   | \$ 1.50 | \$ 144.00     |
| 3380      | 32   |        | 5/16-18 END FASTENER WITH SCREW   | \$ 1.60 | \$ 51.20      |
| 4303      | 24   |        | 4 HOLE INSIDE CORNER BRACKET  | \$ 4.40 | \$ 105.60     |
| 4336      | 16   |        | 4 HOLE INSIDE GUSSET CORNER BRACKET   | \$ 6.25 | \$ 100.00     |
| 4338      | 16   |        | 8 HOLE INSIDE GUSSET CORNER BRACKET   | \$ 8.95 | \$ 143.20     |
| 13055     | 48   |        | 5/16-18 SLIDE IN TNUT WITH BALL SPRING  | \$ 2.00 | \$ 96.00      |
|           |      |        |   |         |               |
|           |      |        | TOTAL:  |         | \$ 2,864.80   |
|           |      |        | LESS 40%  |         | \$ (1,145.92) |
|           |      |        | TOTAL:  |         | \$ 1,718.88   |

Copy and paste this order, just as written (especially the descriptions), and you'll get all the parts (except the part 4303's) machined and ready to assemble. You'll have to drill and tap 24 holes in the part 4303s yourself. You could do all the machining yourself and save \$495, but

it's not really worth it in the end. If you want to do that, leave off the machining descriptions and drop items 7045-7257 from the list. You'll need a milling machine and many hours of time to do it yourself.

80/20 has always given our robotics team (and other teams) a 40% discount. They are big supporters of First Robotics, who uses this stuff more. Contact our supplier and tell them that Mike Mohn from Worthington Specialty Processing gave you all the details about the 40% discount for robotics teams.

Mike Carrell, Application Engineer  
AutoCraft  
1800 Fruit St.  
Algonac, MI 48001

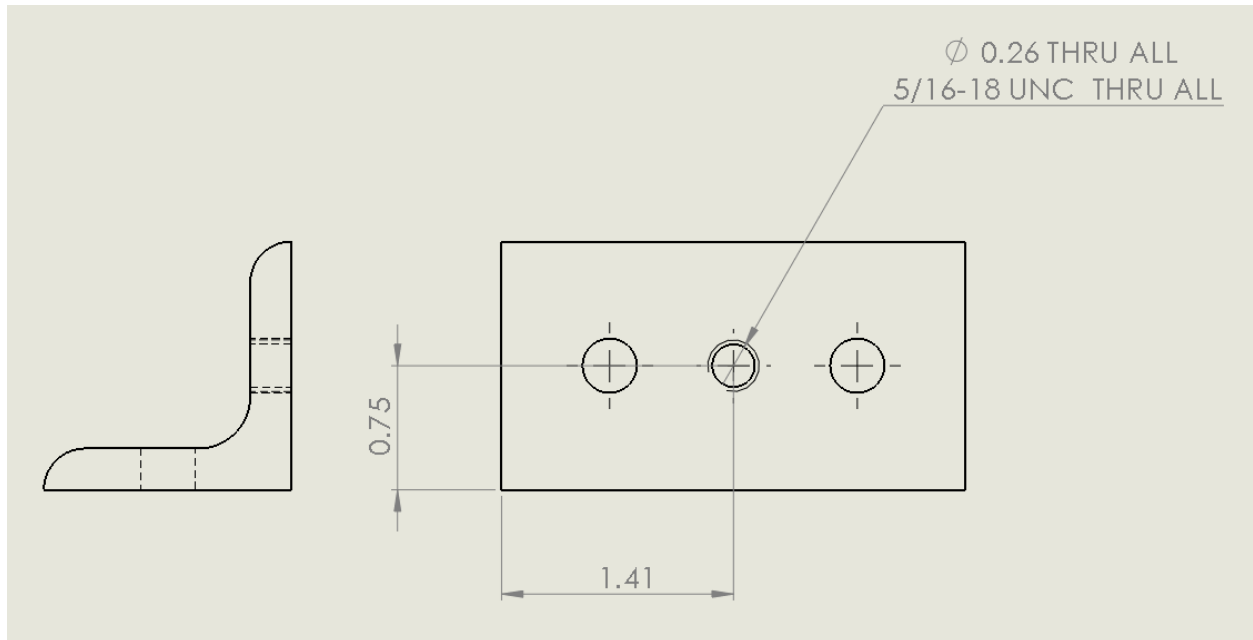
Phone: 810-794-8160  
[m.carrell@auto-craft.com](mailto:m.carrell@auto-craft.com)

Shipping will be added on. 80/20 ships from Ft. Wayne, Indiana, and they sell through various local dealers, who then place the order for you. You could certainly find your local dealer and ask them about the discount 80/20 gives to Robotics teams.

# Building the field:

You'll need to machine one part yourself (24 pieces total). Here are the details:

Drill exactly between the two existing holes with an "F" drill (17/64 is close). Tap the hole to 5/16-18, then install a 5/16-18x5/8 button head cap screw with locktite into the hole.



Here's the part with the screw installed, and t-nuts ready to assemble.



Assemble four corner leg sets:

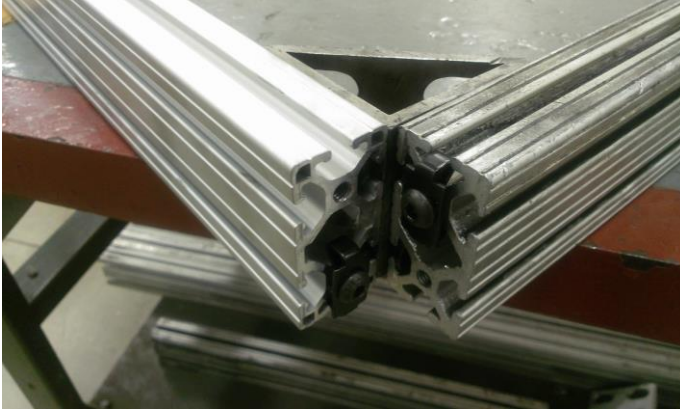


Here's what you need for **each** corner leg set (you'll make 4 in all):

- 4x 1.5x1.5x24" legs
- 2x 1.5x3.0x45" long with tapped ends and holes drilled at 22.5"
- 2x 1.5x3.0x45" long with tapped ends
- 1x 1.5x1.5x45" long with tapped ends
- 4x economy leveling foot
- 10x 5/16-18 x 2" Socket Head Cap Screws
- 4x 5/16-18 Button Head Cap Screws, locktited into the 4x part 4303
- 16x Button head cap screws and double t-nuts (for the parts 4338)
- 8x End fasteners with screws (for the legs)
- 4x part 4303 machined as directed
- 4x part 4338
- 8x button head cap screws and slide-in t-nuts (for the part 4303)

Assembly details:

1. Install the leveling feet
2. Pre-assemble the sliding t-nuts onto the parts 4303, and slide two of them into one of each type of the 45" edge bars.
3. Pre-assemble the double t-nuts onto the parts 4338.
4. Start assembling the corners by installing the part 4338 and two end fasteners into the 45" bars (one of each type), like this, making sure the 4303's are in the lower slot, and the center holes of the 45" beams is in the upper slot:



5. Slide on a leg, and add two 2" cap screws like this:



6. Add the 1.5x1.5 x 45" center piece using two 2" cap screws.
7. When you think everything is OK, tighten all the screws.

Assemble four edge frames:



Here's what you need for **each** edge frame (you'll make 4 in all):

- 2x 1.5x3.0x48" long with holes drilled at .75", 22.5", and 47.25"
  - 3x 1.5x1.5x45" long with tapped ends
  - 6x 5/16-18 x 2" Socket Head Cap Screws
  - 4x 5/16-18 Button Head Cap Screws, locktited into the 4x part 4303
  - 8x Button head cap screws and double t-nuts (for the parts 4336)
  - 2x part 4303 machined as directed
  - 4x part 4336
  - 4x button head cap screws and slide-in tnuts (for the part 4303)
1. Pre-assemble the sliding t-nuts onto the parts 4303, and slide two of them into one of the" edge bars.
  2. Pre-assemble the double t-nuts onto the parts 4336.
  3. Slide the corners all together and install the 2" long socket head cap screws.
  4. Add the center support with 2" long cap screws.
  5. When you think it's all OK, tighten all the screws.

Assemble the center frame (just one of these):



Here's what you need:

- 2x 1.5x1.5x48" long with holes drilled at .75", 22.5", and 47.25"
- 3x 1.5x1.5x45" long with tapped ends
- 6x 5/16-18 x 2" Socket Head Cap Screws
- 8x Button head cap screws and double t-nuts (for the parts 4336)
- 4x part 4336

1. Pre-assemble the double t-nuts onto the parts 4336.
2. Slide the corners all together and install the 2" long socket head cap screws.
3. Add the center support with 2" long cap screws.
4. Tighten it all down.

The field goes together like this:



Set out the four corners, then add the edge pieces between, supported by the custom brackets you made. Now is the time to level the field (you'll want a 48" level). Finally, drop in the center piece. Add 4-1/2 sheets of OSB or Plywood (1/2" thick is good enough, thicker is stronger). Plywood will last longer, OSB is cheaper. Paint the edges black if you want it to look nicer.

The legs store like this:



It drives someone with OCD nuts, but all fits in a 6' x 6' space. Two legsets can stack in one space. Or to store one legset under a raised field, set the corner legs on the floor upside down and stack in the other frames, (remove the leveling feet), and build the raised field over the upside-down legset. Double the wood decking on top to store it. You'll still have storage space under the field around the edges.