

Hi and thanks for your purchase of The Jiggernaut. Before you get started be sure to read and familiarize yourself with the **Terms of Sale** and **Safety Warnings**.

SAFETY WARNING

1) THE JIGGERNAUT IS A WOOD PRODUCT. IT IS MADE FROM MEDIUM DENSITY FIBERBOARD (MDF). IT CAN CATCH FIRE DURING OR EVEN AFTER USE. ALWAYS TAKE PRECAUTIONS AGAINST THIS INCLUDING BUT NOT LIMITED TO:

- **ALWAYS HAVE A FIRE EXTINGUISHER PRESENT**
- **IF THE JIGGERNAUT IS BURNED OR CHARRED DURING USE, DOUSE ARE WITH WATER AND MOVE TO A SAFE AREA UNTIL AND BURNING OR SMOLDERING SUBSIDES.**
- **INHALATION OF SMOKE AND FUMES CAN BE HARMFUL. WORK IN A WELL VENTILATED AREA AND USE RESPIRATORY PROTECTION. FUMES AND SMOKE CAN RESULT FROM VAPORIZATION OF BRAZING FLUX, VAPORIZATION OF SOLVENTS, BURNING OF THE MDF, SURFACE TREATMENTS ON THE STEEL TUBING AND HARDWARE, COMBUSTION OF WELDING OR BRAZING GASES AND SOLVENTS.**
- **WORK AWAY FROM FLAMMABLE LIQUIDS AND OTHER FLAMMABLE MATERIALS.**
- **DO NOT USE INDOORS**
- **ALWAYS USE TWO PEOPLE WHEN LIFTING THE JIGGERNAUT**
- **WEAR PROPER PERSONAL PROTECTION EQUIPMENT INCLUDING BUT NOT LIMITED TO:**
 - **EYE PROTECTION**
 - **FACEMASK**
 - **SKIN PROTECTION SUCH AS LEATHER GLOVES AND LEATHER SLEEVES AND PANTS**
 - **RESPIRATOR**
 - **HAVE A SECOND PERSON PRESENT TO WATCH FOR FIRES WHILE YOU ARE WELDING / BRAZING**
 - **STEEL TOED BOOTS**

2) THE JIGGERNAUT IS TO BE USED TO BUILD A BICYCLE FRAME. IT IS IMPORTANT THAT WHOEVER IS JOINING THE METAL FOR THE FRAME BE AN EXPERT WELDER / METALS JOINER. FRAMES BUILT USING THE JIGGERNAUT SHOULD NOT BE YOUR FIRST WELDING / BRAZING PROJECT. YOU WILL NOT HAVE ENOUGH EXPERIENCE TO ENSURE STRONG JOINTS. THE JOINTS COULD FAIL DURING USE CAUSING INJURY OR DEATH! FIND A METALS JOINING CLASS AND BECOME A MASTER AT METALS JOINING BEFORE ATTEMPTING A FRAME THAT SOMEONE WILL BE RIDING.

3) SMALL PARTS IN THE HARDWARE KIT AS WELL AS THE PACKAGING MATERIAL MAY PRESENT A CHOKING OR SUFFOCATION HAZARD FOR CHILDREN. KEEP AWAY FROM CHILDREN!

4)THE JIGGERNAUT MAY HAVE SHARP EDGES. ALWAYS USE GLOVES WHEN HANDLING IT. WEAR STEEL TOED BOOTS IN CASE YOU DROP ANYTHING ON YOUR FEET.

5) THE JIGGERNAUT IS TO BE USED BY EXPERIENCED FRAME BUILDERS ONLY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO ENSURE THAT PROPER FRAME BUILDING PROCEDURES ARE FOLLOWED. FAILURE TO FOLLOW PROPER FRAME BUILDING PROCEDURE WILL RESULT IN A FINAL PRODUCT THAT IS DANGEROUS AND COULD CAUSE PERSONAL INJURY OR DEATH!

This document will familiarize you with the individual parts of The Jiggernaut and show you how to assemble The Jiggernaut so it can be used for frame building. This **is not** an in-depth tutorial on frame building. If you are lacking that knowledge please check out the following resources (and there are many more too):

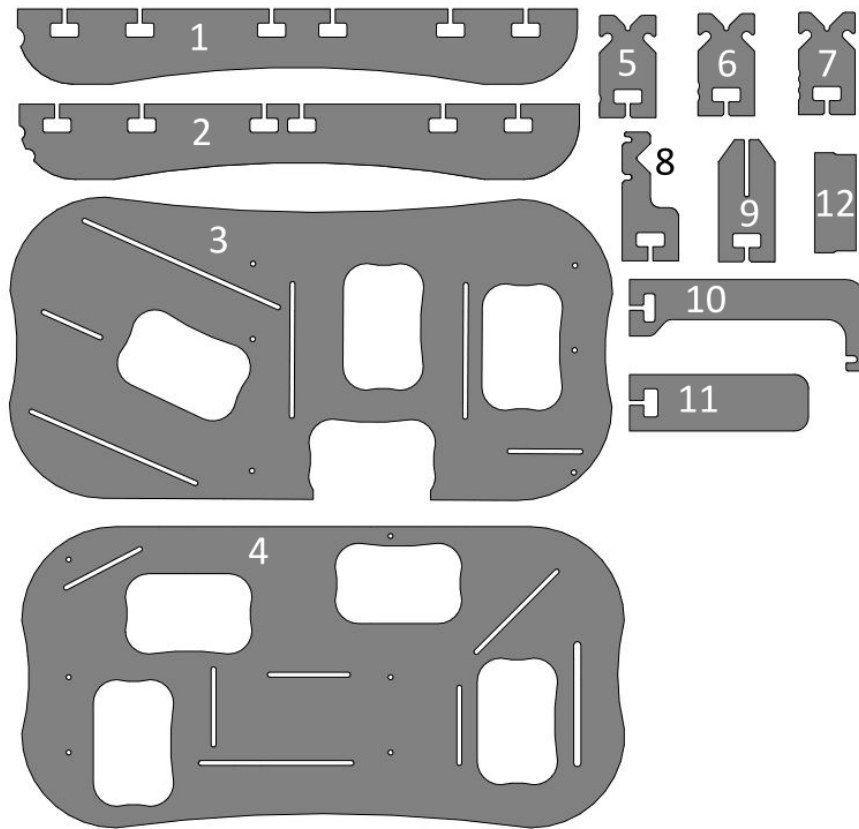
“The Paterek Manual for Bicycle Frame Building”

“The Proteus Framebuilding Handbook: A Guide for the Novice Bicycle Framebuilder”

“Designing and Building Your Own Frameset: An Illustrated Guide for the Amateur Bicycle Builder”

First let's familiarize ourselves with the parts that came in the box. You should find a stack of

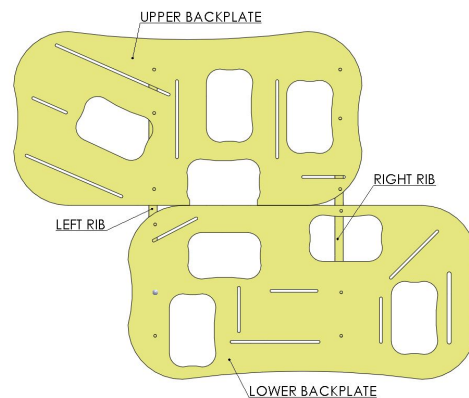
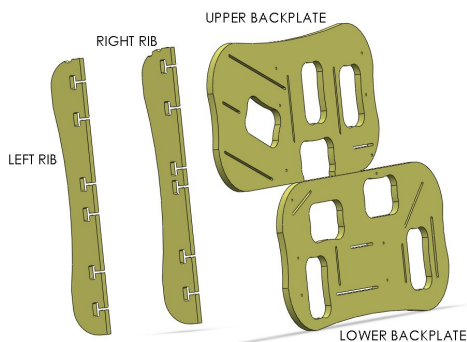
CNC routed MDF parts as well as a kit of hardware. The image below shows the parts of The Jiggernaut laid out and numbered. We will refer to parts by number in this document. There may be multiples of some of these parts too, but each part can be identified using the image below.



1. Left Rib 2. Right Rib 3. Upper Backplate 4. Lower Backplate 5. V Block 25.4 6. V Block 28.6 7. V Block 31.7 8. V Block Multi Size 9. HT Bracket 10. Dropout Holder 11. CS/SS Support 12. Dropout Ruler (130mm / 135mm)

Now that you can identify all of the parts in the kit, let's move on to an overview of how the jig is setup.

The first step is to fasten the **Left Rib** and **Right Rib** to the **Backplate Upper** and **Backplate Lower**. This will form an assembly that from now on we'll just refer to as **The Backplate**. The Backplate serves as a flat surface that every other part is fastened to.





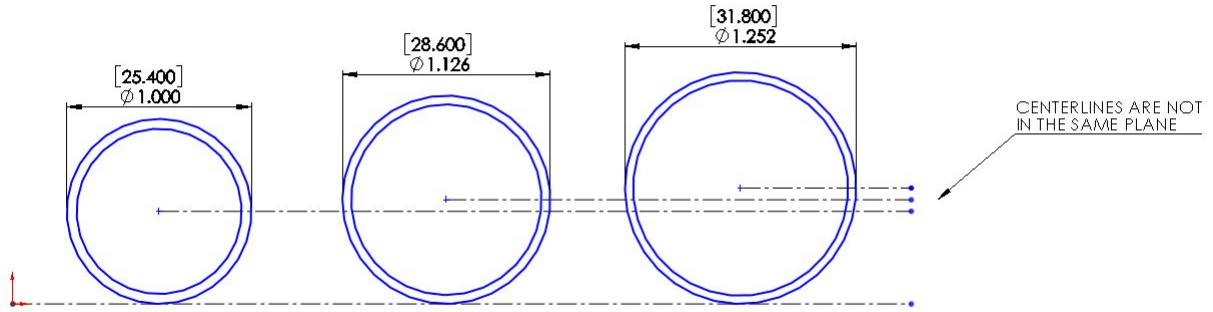
The images above show the assembly steps of The Backplate. This assembly step should be performed on a flat table. There are 6 holes in both the upper backplate and 6 holes in the Lower backplate that should have a carriage bolt inserted into them (from the front side) and tapped with a hammer to seat the head of the carriage bolt. No need to hit them really hard, just a light tap to seat the square part of the carriage bolt into the wood. The 12 holes can be seen in the upper right image. The left and right ribs should then be positioned against the back of the backplates with the carriage bolts sticking into the 'T slot' of the ribs as shown in the lower left hand image. A nut and washer can then be threaded onto each carriage bolt as in the lower right hand image. Once everything is in place snug each nut using a wrench. Double check that the left and right ribs are vertical and that the upper and lower backplates are horizontal (See the upper right hand image for reference). When everything lines up finish tightening the nut.

DO NOT OVER TIGHTEN

Congratulations, the backplate is now assembled! Before we jump into bolting on all of the tube holding brackets, let's discuss some important concepts.

When building the main triangle of a bike frame it's important that the centerlines of all of the tubes sit in the same plane to ensure that the frame is built straight and without twist. One thing that complicates this is the fact that you will be using different diameter tubing for the Top Tube (TT), Seat Tube (ST) and Down Tube (DT). If you were to just set all of these different tubes on a flat table top, the centerlines would not sit in the same plane (See image below).

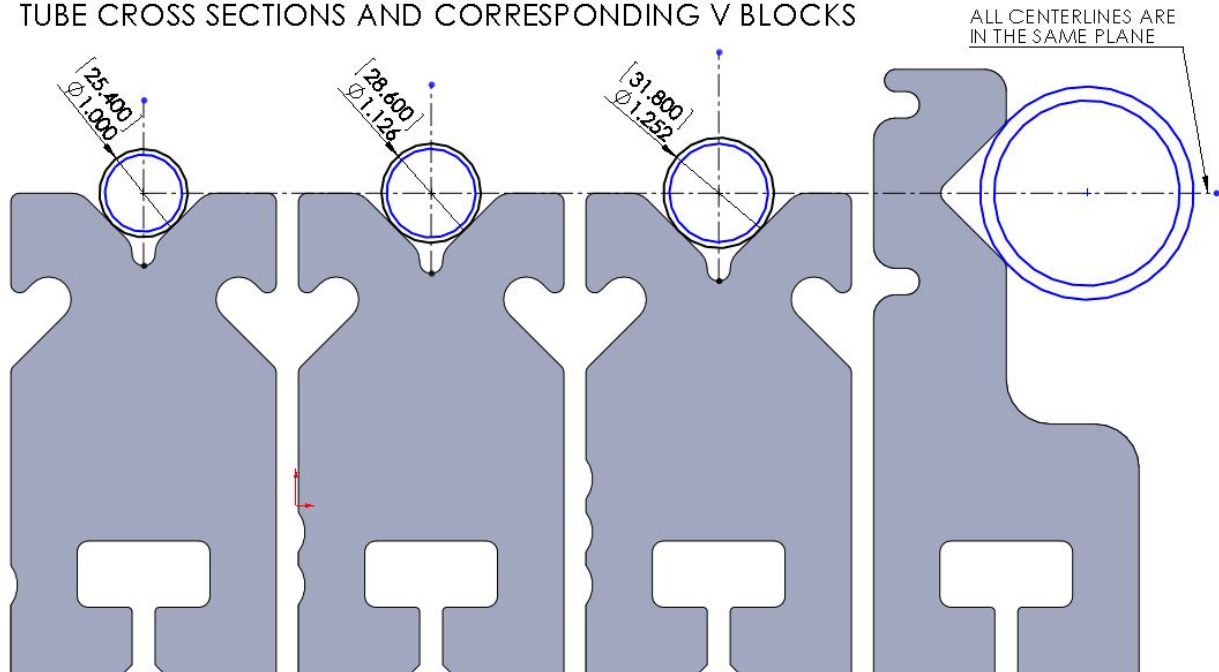
TUBE CROSS SECTIONS



WRONG

To solve this problem, The Jiggernaut uses V blocks of different heights to hold specific tube sizes. (See image below)

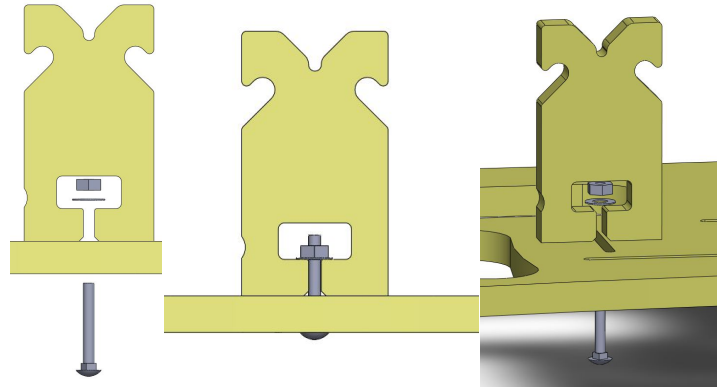
TUBE CROSS SECTIONS AND CORRESPONDING V BLOCKS



CORRECT

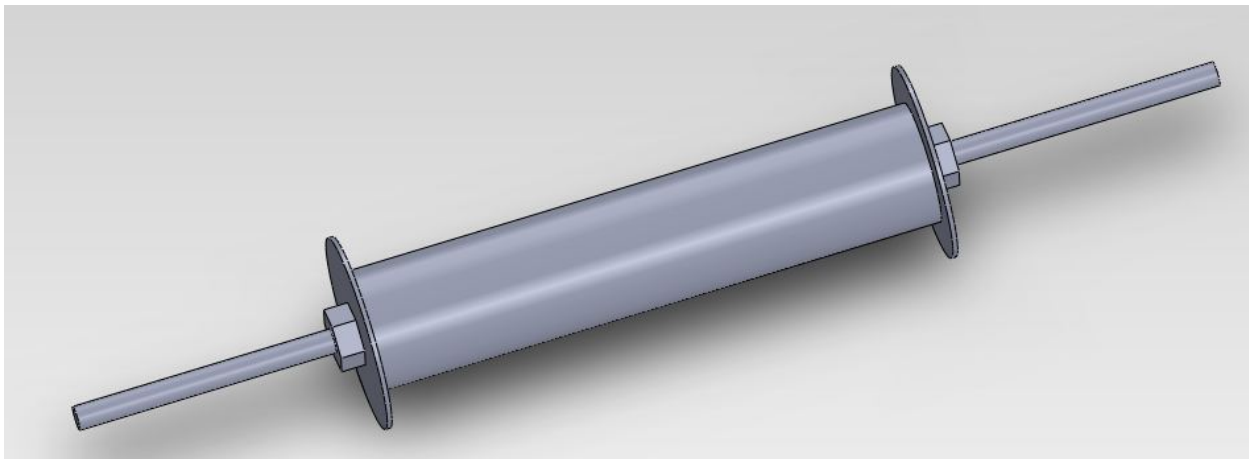
Note each V block shown has dimples on the lower left side. A single dimple indicates the V block is made for a 25.4mm diameter tube, two dimples is for a 28.6mm diameter tube, and three dimples is for a 31.7mm diameter tube. These are very common tube sizes and should work for most frames. But what if I'm not using those sizes??? You're in luck because we also have included a universal V block that can hold a tube of any diameter in the same plane (shown as right most V block in picture above).

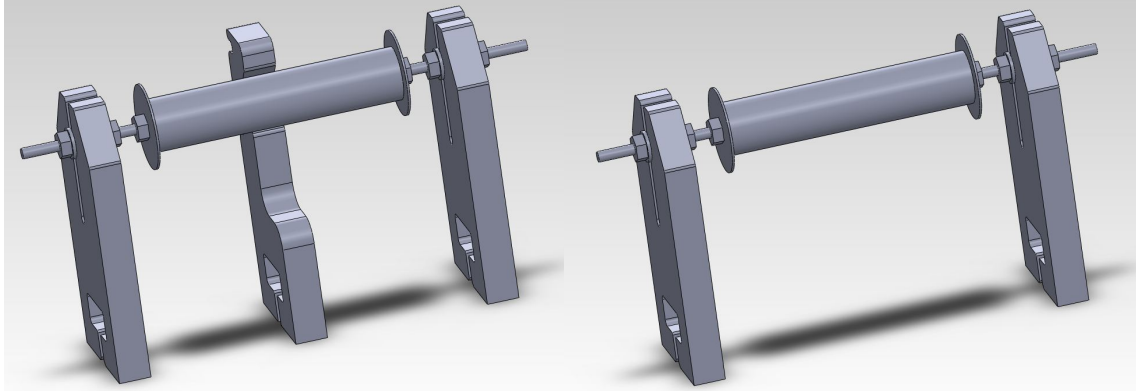
The V blocks, as well as all of the other brackets are bolted to the backplate as shown below:



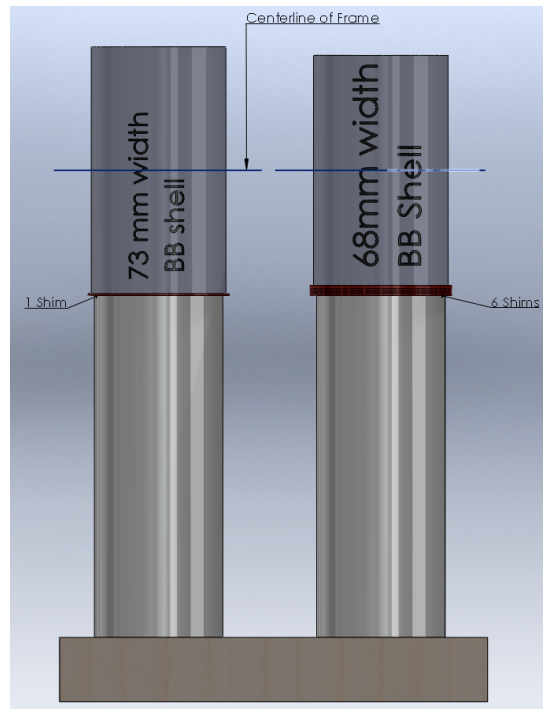
You may want to secure tubes to v-blocks. This is done using steel or copper wire, wrapping it under the hooks on the v block and over the tube and twisting with a pliers. This will pull the tube against the surface of the V and hold it securely. Bend exposed wire tails out of the way to avoid them scratching or poking you.

We covered the ST, DT and TT, but what about the Head Tube (HT)? We elected to fixture the HT differently than the ST, DT and TT. The HT is mounted using the HT Brackets as part #9 in one of the earlier figures. The HT has a $\frac{1}{4}$ " threaded rod run through it and is secured to the threaded rod using a fender washer and two nuts on each end. The threaded rod is then inserted into the slot of part #9, the correct height of the HT is found using the Universal V Block and then the threaded rod is bolted to the HT Bracket. Once secured, the Universal V block is removed and the assembly can be fastened to the backplate. See Below for a step by step illustration.

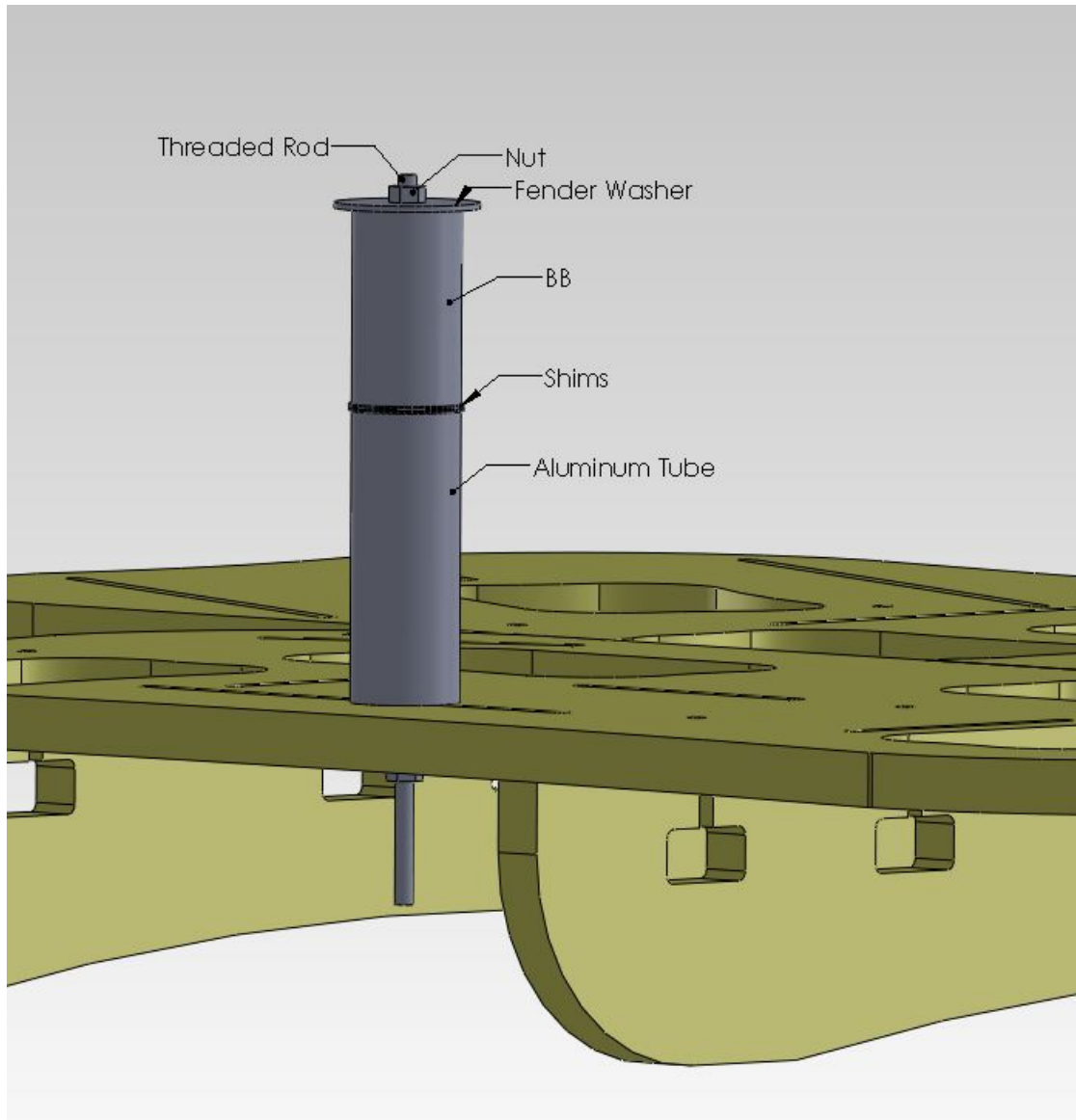




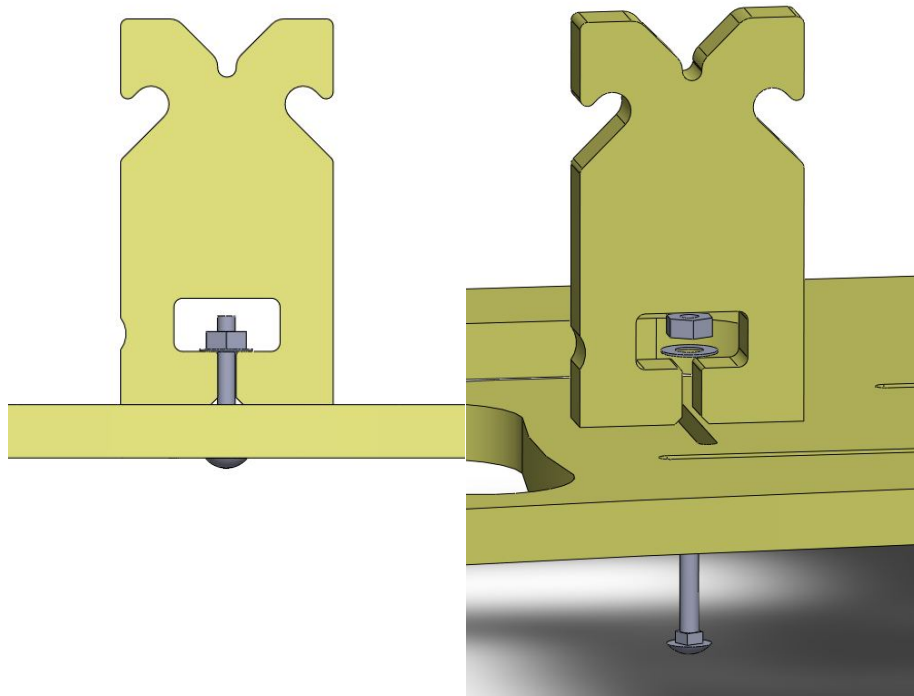
Next up is the Bottom Bracket (BB). The bottom bracket is mounted as shown in the image below:



In the image above, the lowest block is the backplate. On top of the backplate is an aluminum tube that is included in the hardware kit. On top of that sits at least one shim washer. Because there are different BB widths it is important to know the width of your BB shell and include shims accordingly. If you are using a 73mm width BB, then just use one shim, for each mm shorter add one shim. So if you are using a 68mm BB you would add 5 shims to the 1 required shim ($5+1 = 6$ shims total). It can be helpful to superglue the aluminum tube to the shims so they stay put. To mount this assembly, use one of the included $\frac{1}{4}$ " threaded rods and run it down the center of the BB assembly. Use a fender washer on the BB side and on the backside of the backplate and nuts to secure the assembly to the backplate. Also see image below:

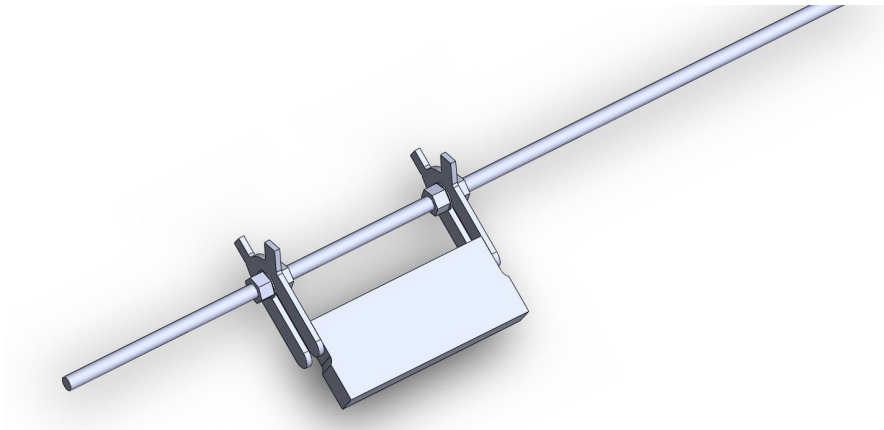


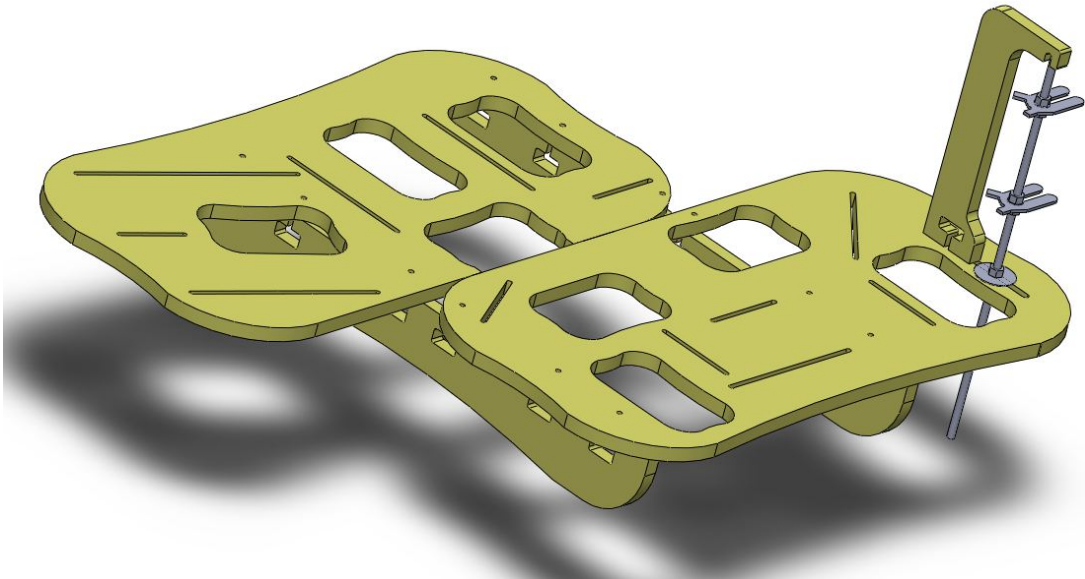
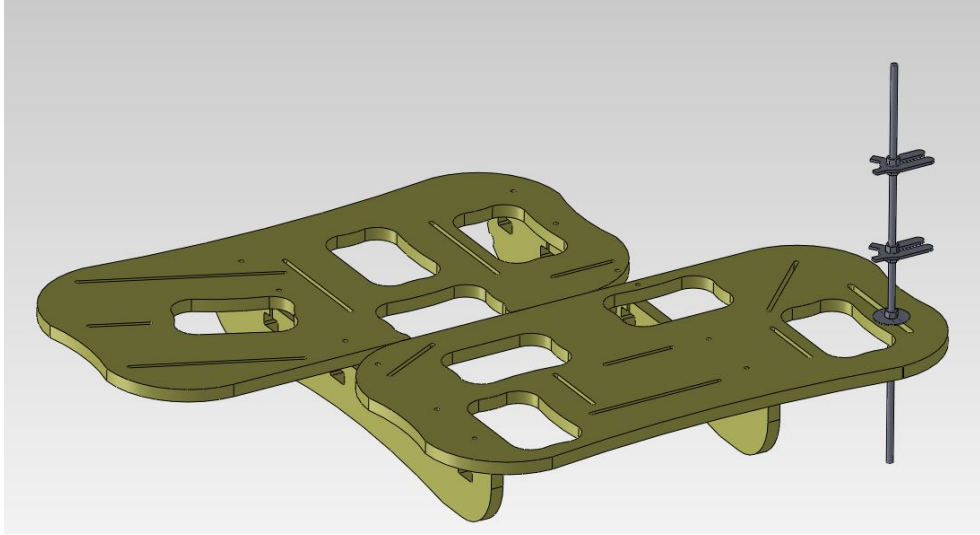
The next step will be to start bolting the brackets to the backplate. These are attached in a similar fashion to how the left and right ribs attached to the upper and lower backplates, except that in this case the carriage bolts are inserted from the backside of the backplate and the heads of the carriage bolts sit in slots, not holes. There is also no need to tap the heads of the carriage bolts with a hammer any more.

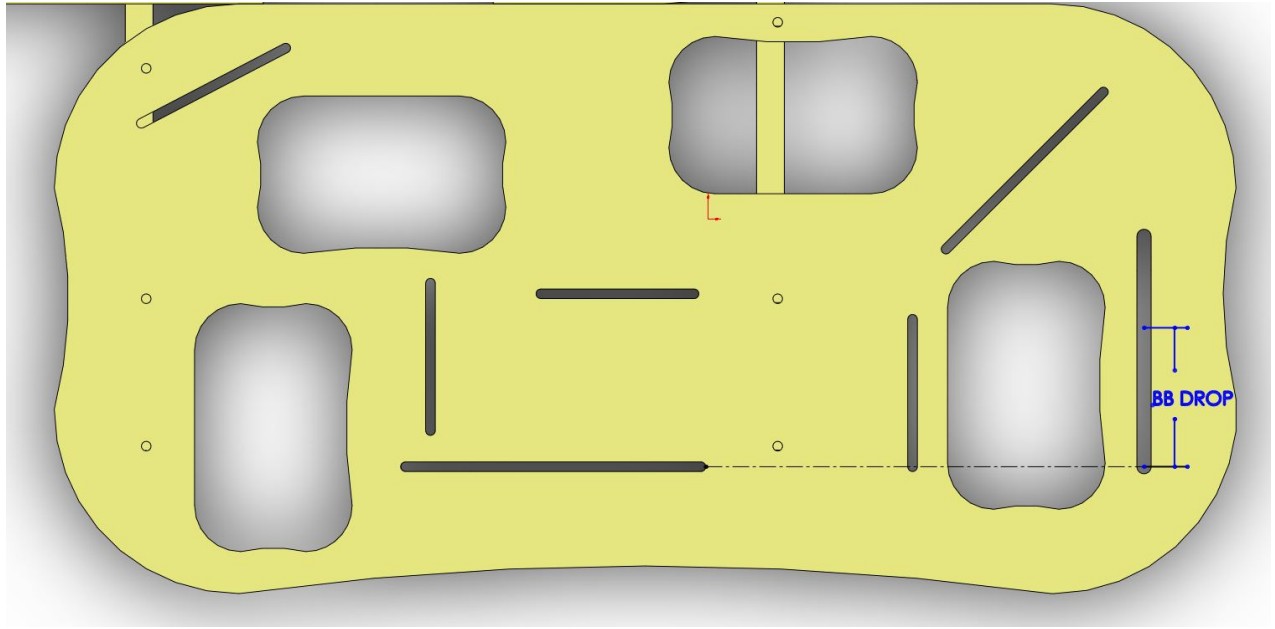


At this point we know how to jig up all of the parts for the main triangle. Let's move to the rear triangle. With the rear triangle, the goal is to get the dropouts centered between the centerline of the frame and spaced correctly for the hubs you will be using. The Chainstays (CS) and Seatstays (SS) will also need to be held in place.

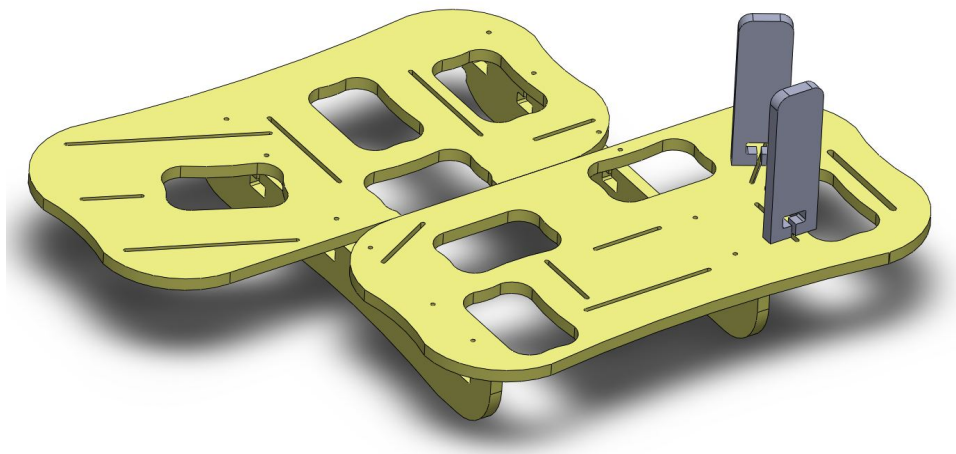
The dropouts are held in place using the included $\frac{3}{8}$ " threaded rod, nuts and washers.. The spacing (130mm or 135mm) can be set using the included measuring gauge (part #12 from the parts diagram). Set the width with the gauging tool (one edge is 100mm one is 135 mm) and pinch the dropouts between nuts and washers. Once the width is set, but threaded rod can be inserted into the backplate slot and the height of the dropouts can be set so that they straddle the centerline of the frame. Once this height is set, the BB drop (a value you pick depending on your frame geometry) can be measured along the slot for the dropouts. Finally, Part #10 from the parts list can be used to hold the end of the threaded rod. Once bolted to the backplate, Part #10 will ensure that the threaded rod is normal (at 90 degrees to) the backplate.







Part #11 is optional, but can be used to support the Seatstays and Chainstays. It can be bolted to the backplate and adjusted to cradle both CS and SS if needed. It can be seen in the entire assembly image below.



The last images we'll show here will show the entire Jiggernaut assembled with a frame. This

will give you an idea of what all of the slots are for and which brackets are destined for each slot.

