Building a Fireball XL5 Rocket **March 2024**

By Gary Reighn

General 3D Printing and Assembly Instructions

Introduction: The model described below is a combination of the 3D rendering of the Fireball XL5 rocket found in the 3D Warehouse and credited to Simon C. The files used here have been heavily modified from Simon's original SketchUp files to produce acceptable results when 3D printing and to include additional details. **However, this model is for an experienced builder as the original 3D drawings were not designed to be 3D printed and assembled. I have corrected that in some areas (like the rough cutouts where the wings and top fin meet the body tube) but it will still require significant modeling skills to assemble and finish a nice-looking model.**

The Fireball XL5 Rocket is based on the model found in the 3D Warehouse and credited to Simon C. There is licensing information about this model on https://3dwarehouse.sketchup.com/. Search for "Fireball" and select the model attributed to Simon C. Modifications and new original parts of this model were designed by me in SketchUp and TinkerCAD, both free 3D modeling programs. You may use these files to build a model or models for your own personal use without compensation. You may also modify any of these files to change the look, design, size, etc. of these objects as part of your assembly. **My licensing requirement is that you do not use these files, even if modified by you, to create a kit or built-up model for sale to the public or upload them to any 3D sites (i.e. Thingiverse, etc.) without contacting me first.** I also do not take any responsibly or liability for how these files are used or their suitability for any purpose. Use them at your own risk.

The stl files are available at https://cults3d.com/en/3d-model/art/fireball-xl5-rocket for a nominal charge.

Scaling: The files have all been scaled to produce a finished model roughly 24" (~608mm) in length. Shrinking them smaller may result in a possible reduction in quality/structural strength depending on the type of printer you use. You will need to decide how large your finished model will be, and will the parts fit in the build area of your printer. If they do not fit, you can use any of the programs mentioned to split a piece into multiple pieces. I also provide files of the main body section split into 4 pieces and the top wing split into two in order to build as large a model as I could fit on my Creality Ender 2's build plate (150mmx150mmx200mm).

Layer Height: As is always the case with FDM printers, the smaller the layer height, the finer the results. However, reducing the layer height below .2mm increases the build time substantially. Use your own judgment for this. I used a 0.4mm nozzle for all my prints and a layer height of .12.

Glues – I use a plastic adhesive which melts the parts together. It is called "Same Stuff" available from Micromark.com. You can also use CA adhesive or other plastic cements or epoxy. Test first for best results.

Clear Parts: I have included window forms or blanks for the JR and the second bridge. You will need to print these out and use a vacuum forming machine to create the clear windows as it is not yet possible to print an optically clear canopy with the hobby technology we are using. You may also need to scale the blanks down before printing so that the finished vacuum form piece is the correct size to fit the model.

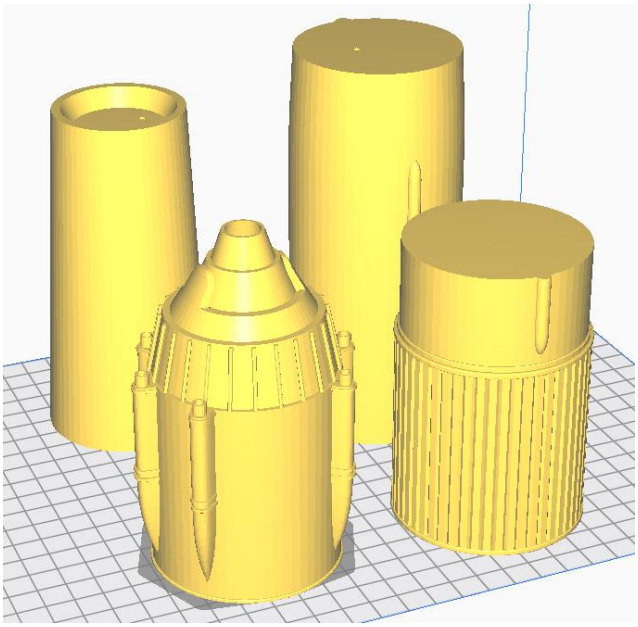
Finishing – The finish you achieve for the parts largely depends on the quality of your printer. You should print some test pieces to determine the appropriate settings to achieve the desired results. Use whatever settings work best for you and your printer. Expect to need to use a good filler/primer paint to hide some of the layer lines if an FDM printer was used. Plastic putty is also good for fixing any other larger printing flaws or gaps that may happen.

I have also provided some pdf and MS Word doc files to be used to create your own decals for the model. These may need to be scaled before printing to ensure they match your model. Refer to photos of the show model for sizing and placement. You can get inkjet or laser printer decal paper to make your own decals from www.micromark.com.

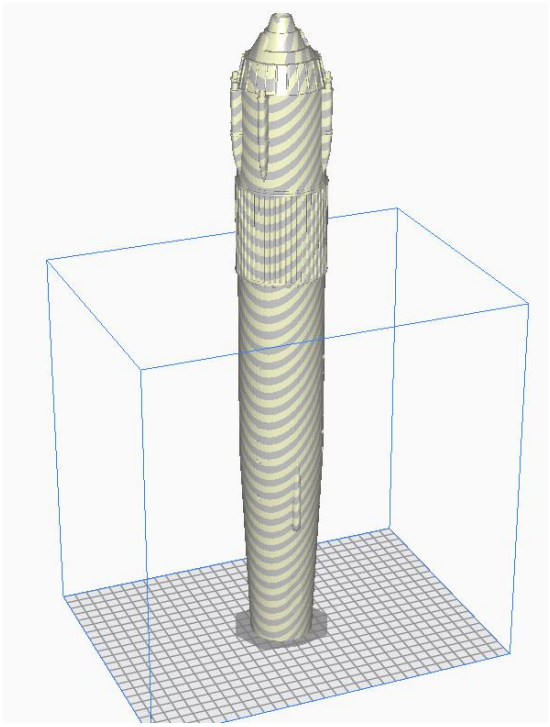
Parts List – A picture of all the .stl files for this project can be found at the end of this document.

Printing the Models

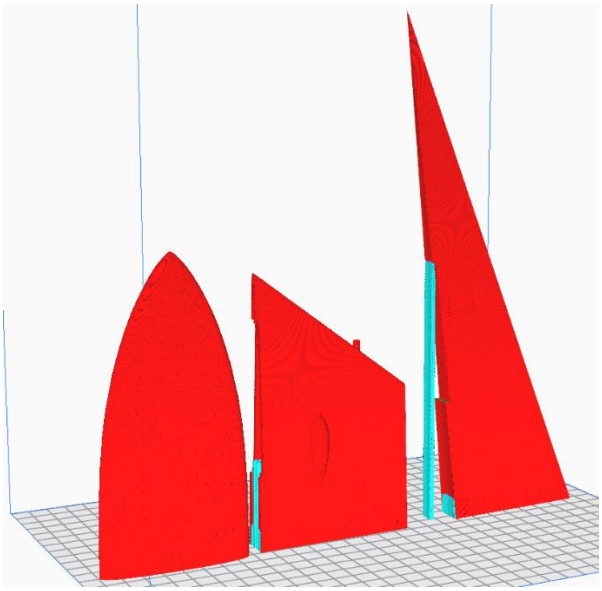
The main rocket body tube can be printed as a single piece or split into 4 pieces to accommodate smaller printers. When printing the 4 individual pieces, orient them as shown below to eliminate the need for any supports. They can be printed all at once or individually depending on your printer.



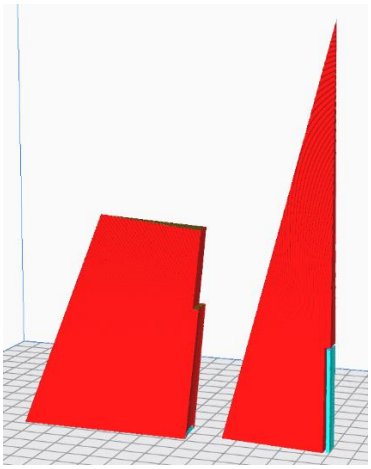
Or you can print the full tube if you have a printer that can handle the size (as you can see my printer can't) and you have the stomach for it.



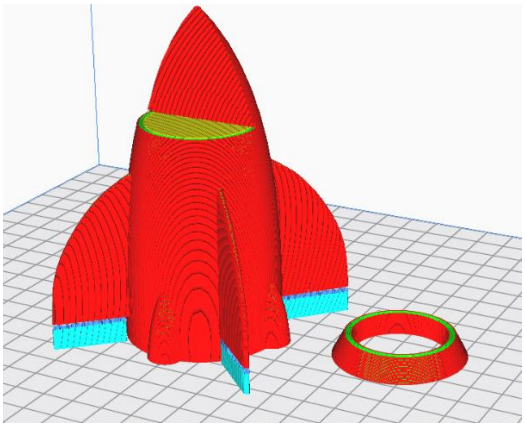
The wings and fins should be oriented as shown below when printing. You will need to turn on supports for the recessed sections at the bottoms of all the wings and fins. Be sure to print a mirror image of the main wing for the other side and two copies of the side mounted fin.



I have also included a version of the top fin split in two in case the complete one doesn't fit on your printer.



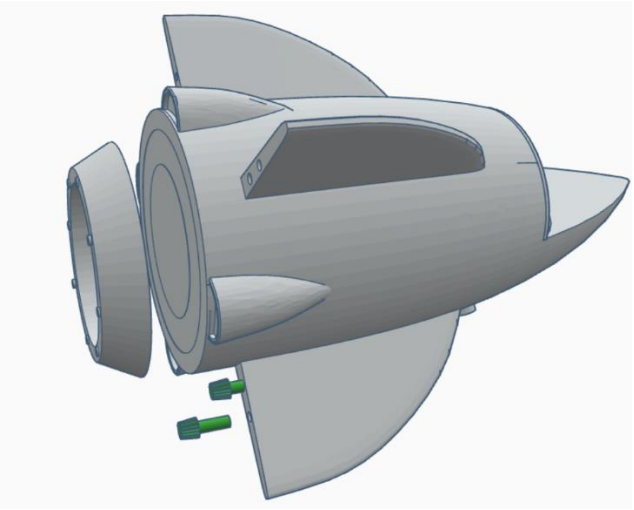
To print the Jr, place it on the build plate as shown below. You will need to set supports to hold up the back of the wings.

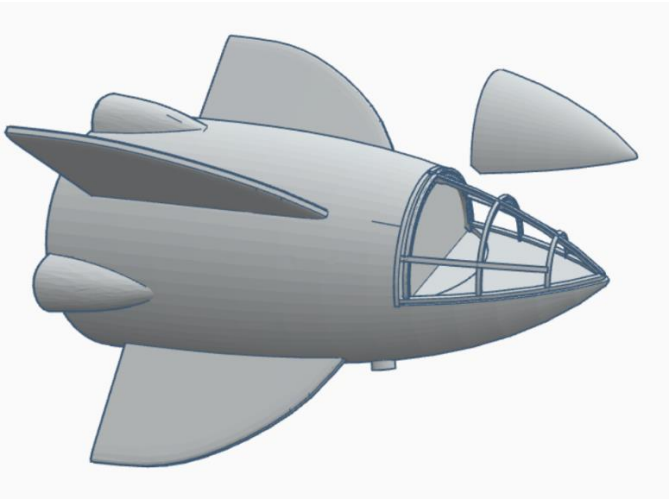


Assembling the Models

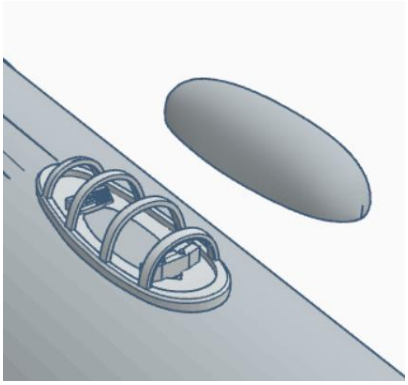
To assemble the Jr., add the docking ring on the back and the 8 thruster nozzles to the wings. If they are too small to print, you can substitute a length of brass tubing or wire. For the cockpit, if you plan to make a clear canopy, you can add the cockpit frame and use the solid window model as the form for the canopy. Otherwise, you can paint the solid canopy and add the window frames with paint.

Note: Both the cockpit and second bridge frames are extremely small at this scale. They will probably not successfully print using an FDM printer. I was able to print mine using an SLA (i.e. a resin) printer. As an alternative you can use the solid pieces, paint them silver and paint on any other details.





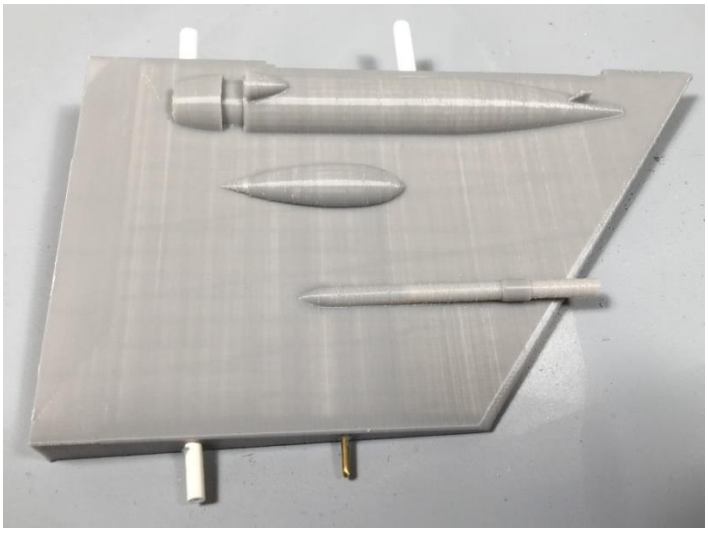
The same applies for the second bridge frame and window.



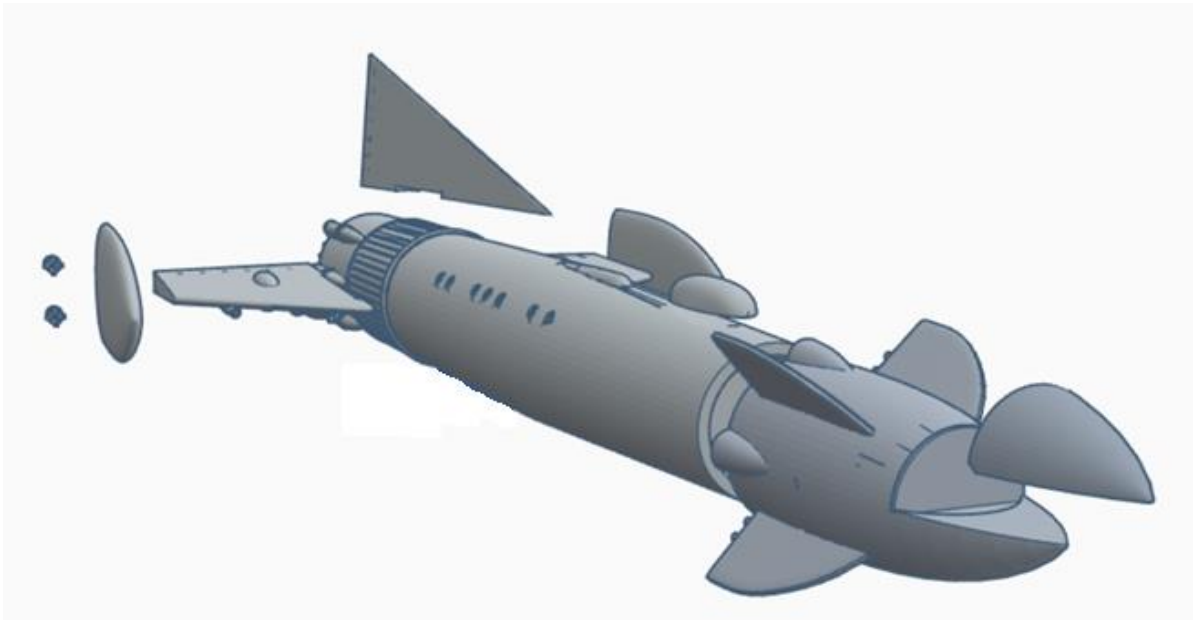
Fireball Jr. can be permanently attached to the front, or you can add magnets on the body tube and the back of the Jr. so that it is separable.

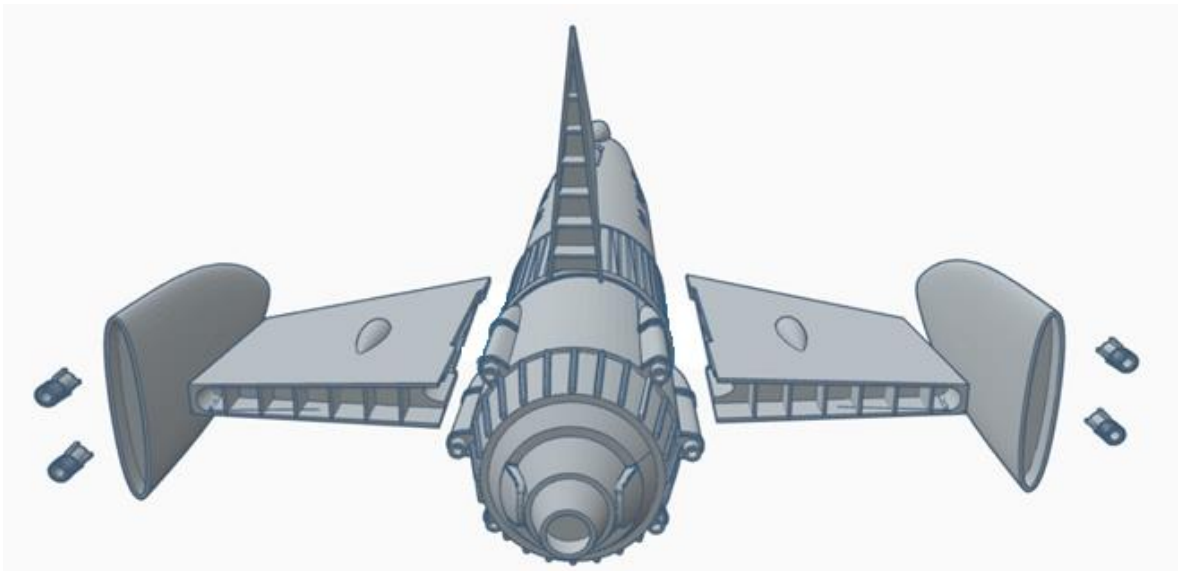
For the window in the Jr. and the secondary bridge window, I've provided parts that can be printed solid and painted black or silver as desired. If you have access to a vacuum forming machine, you can use these parts as forms or blanks to produce clear plastic pieces. Be sure to scale them down slightly when printing to account for the thickness of the window material for vacuum forming so the finished clear piece fits properly.

When assembling the wings to the body, I added some support in the form of tubing to help ensure their long-term stability. I just drilled holes in the sides facing the body tube and the tube itself and inserted some plastic and/or brass rods to provide some structural reinforcement where they attach. This is purely optional.



The picture below shows an exploded view of the parts involved in this model. Once printed, assembly is straight forward. Expect to need to add some additional plastic and/or filler putty to achieve nice results.

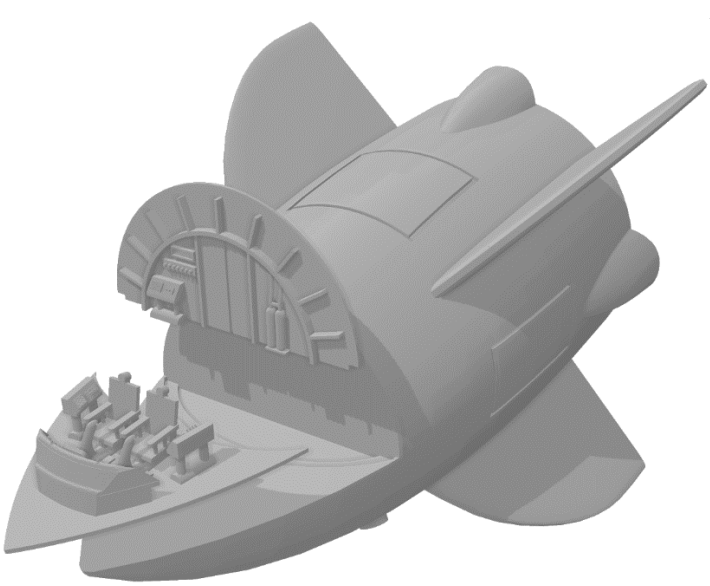


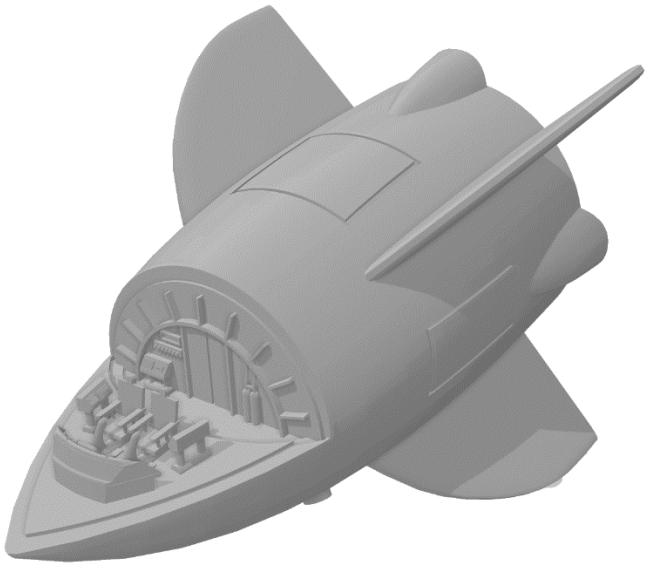


As mentioned above, images are provided for you to use to make your own decals. These may need to be scaled to fit the dimensions of the model you print.

UPDATE*

Included in the download now are files for a detailed cockpit interior. The parts consist of a back-wall and the floor with seats and control panels installed. It is recommended you print these in resin to capture all of the detail.

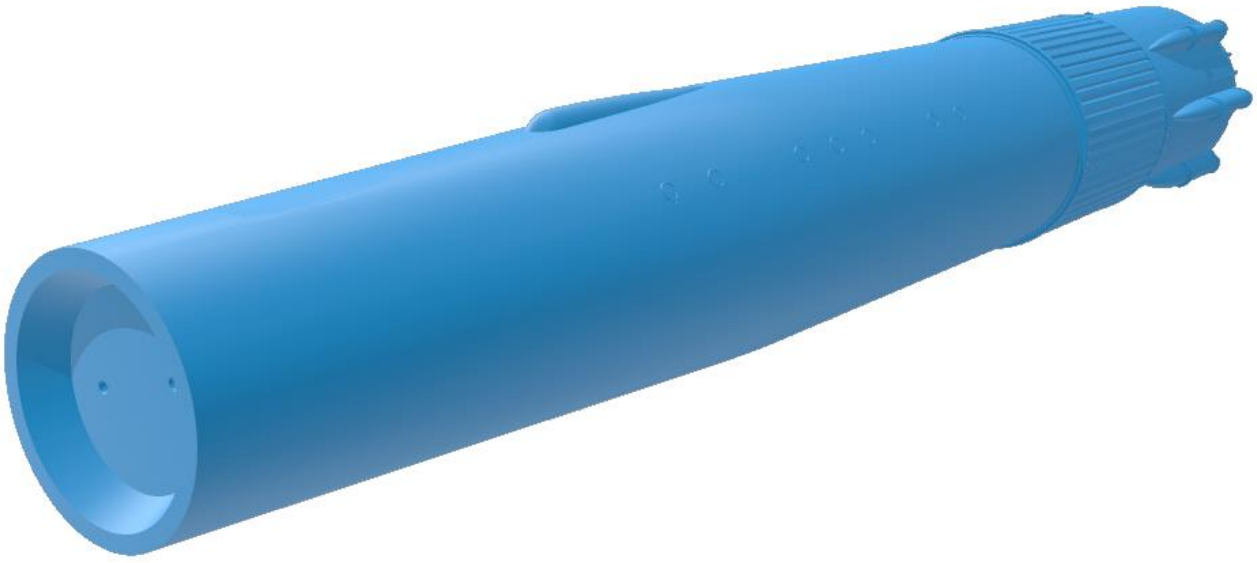




And this completes the build. **Enjoy!**

Parts List and File Identification:

Fireball Body tube (repaired 3D) reduced.stl

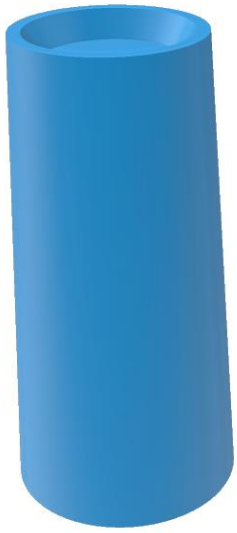


Fireball Body tube piece 1 reduced.stl

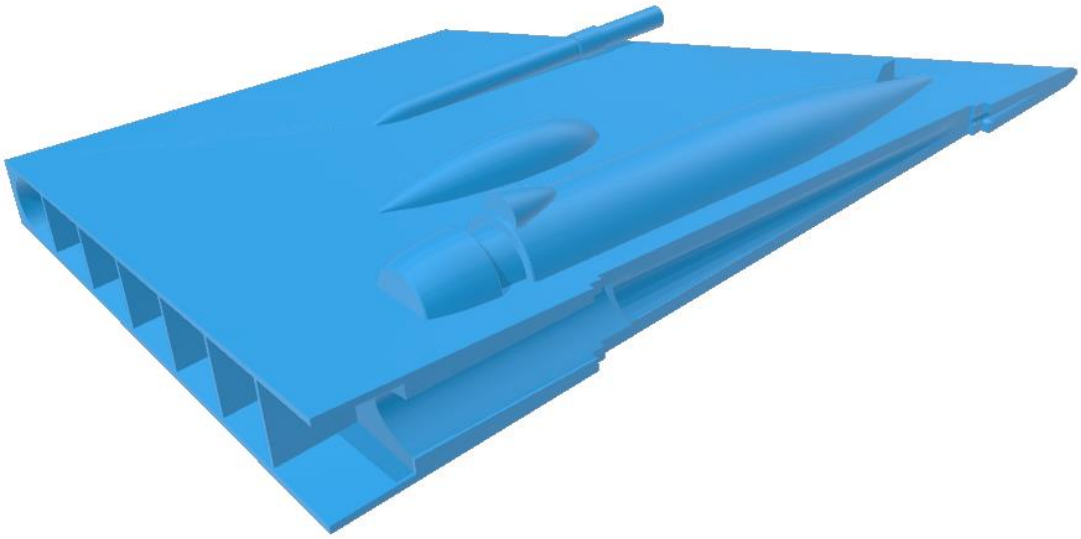
Fireball Body tube piece 2 (rep) reduced.stl

Fireball Body tube piece 3 (rep) reduced.stl

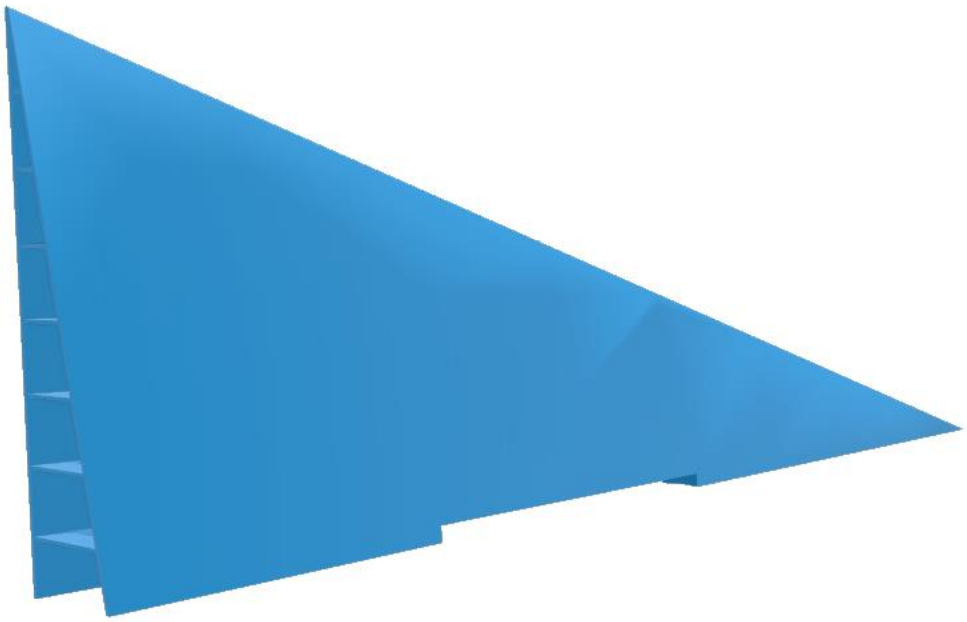
Fireball Body tube piece 4 (rep) reduced.stl



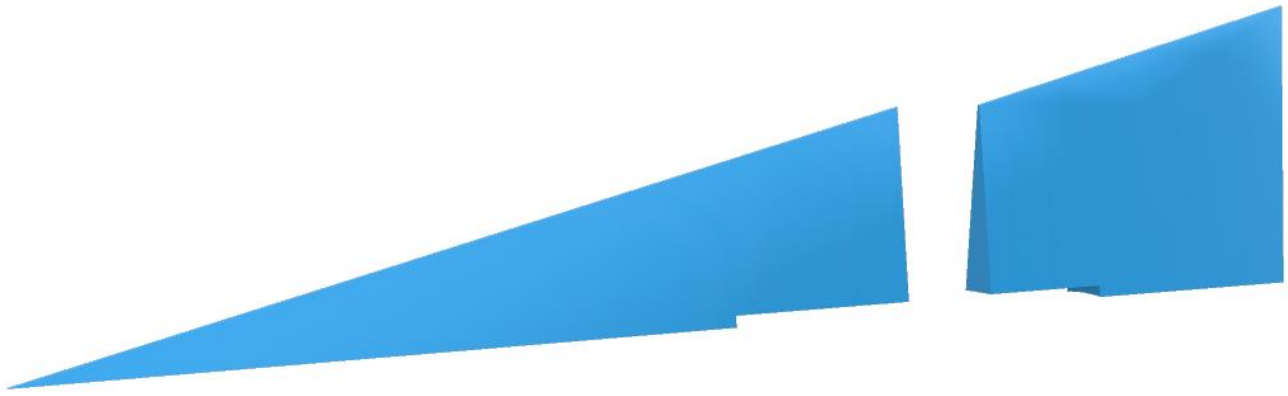
Fireball Final Wing design reduced (rep).stl (upside down view – mirror for other wing when printing)



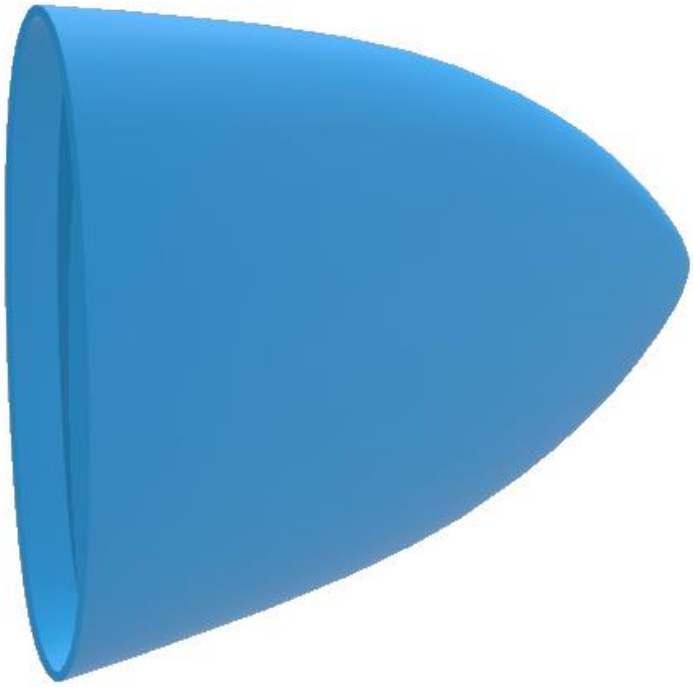
Fireball top fin curved and notched reduced (rep).stl



Fireball top fin piece 1 (rep).stl & Fireball top fin piece 2 (rep).stl

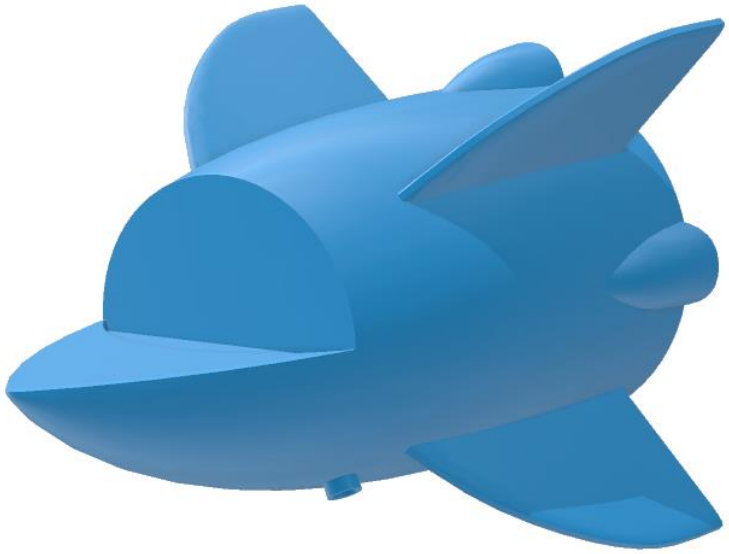


Fireball side fin (repaired) reduced.stl

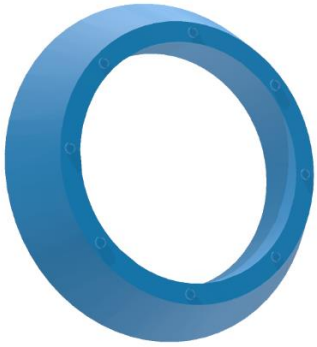


Fireball Side Wing Retro Rocket reduced.stl

Fireball Jr Body Detailed reduced rep.stl

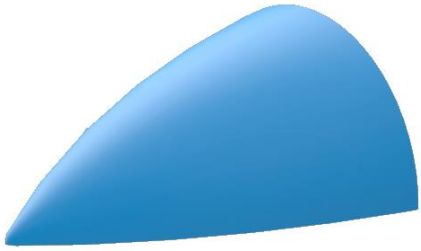


Fireball Jr docking ring reduced.stl

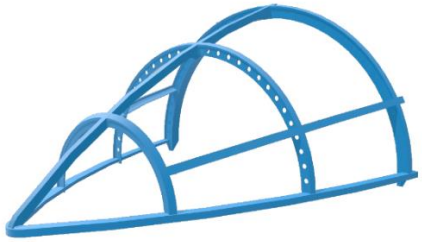


Fireball Jr thruster nozzle reduced.stl

Fireball Jr window reduced.stl



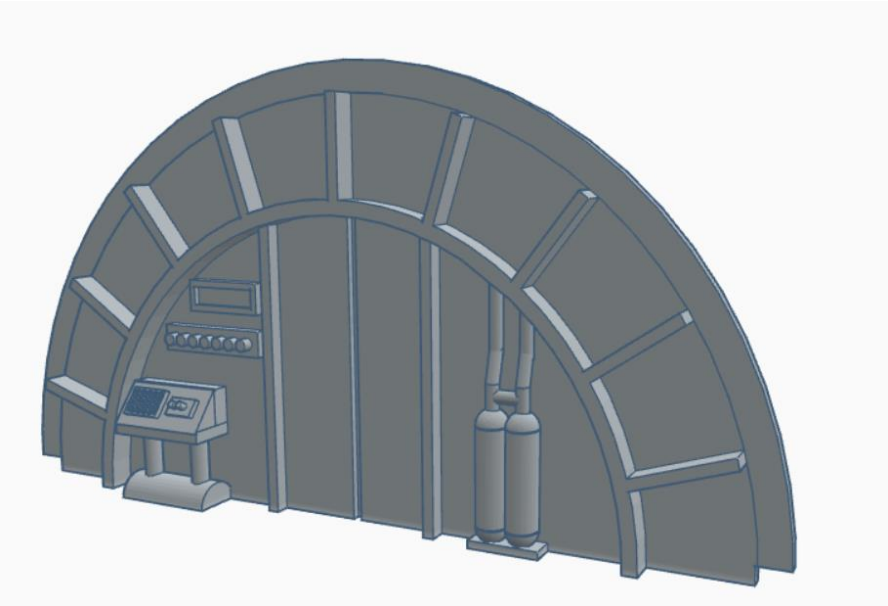
Fireball Jr Window Frame (rep) reduced.stl



Fireball Body bridge dome (rep) reduced.stl

Fireball Body Second bridge frame (rep) reduced.stl

Cockpit back wall.stl



Cockpit seats.stl