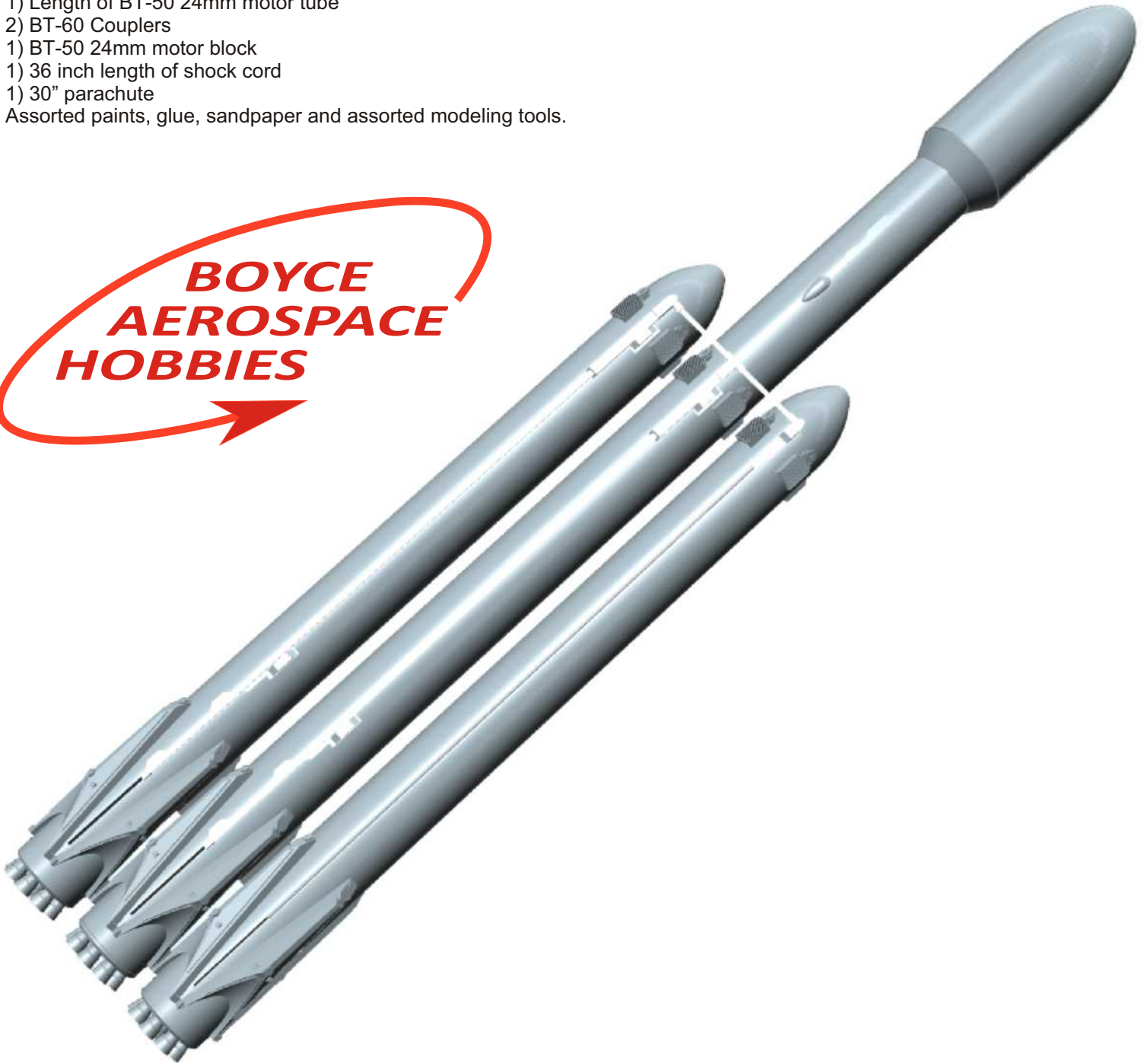


1/89TH SCALE SPACEX FALCON HEAVY WITH FAIRING BUILDERS KIT

DISCLAIMER - *The products sold by Boyce Aerospace Hobbies are intended for display and/or flight with use of explicitly stated model rocket motors. Launching of model rockets may be dangerous; use our products at your own risk. Boyce Aerospace Hobbies is not responsible for any damages or injuries incurred from the use or misuse of our products. Our kits are not intended to be modified or used with motor sizes different than stated. The product should be purchased by an adult and if used by a minor, under the supervision of a parent at all times.*

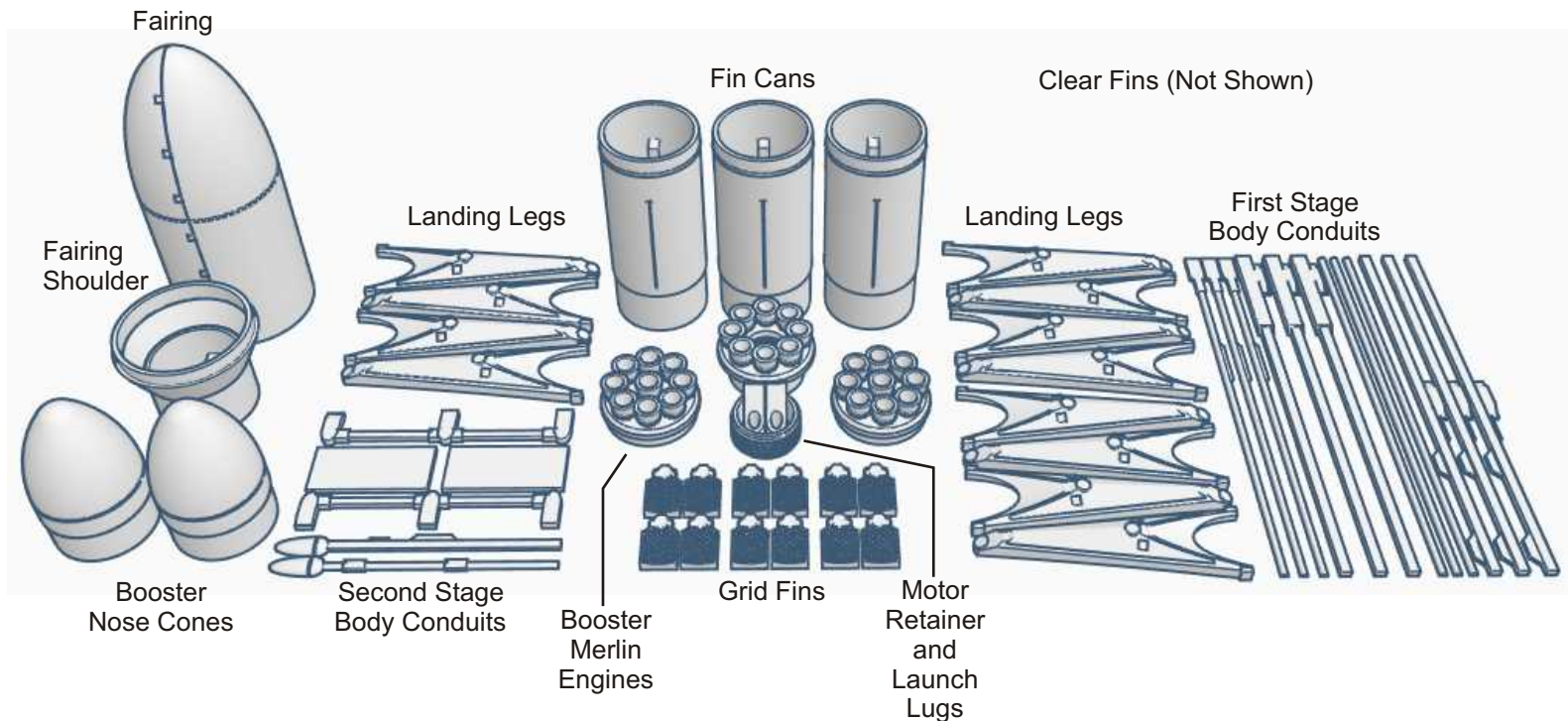
Additional Parts Needed to Complete Your Model:

- 4) Lengths of BT-60 body tube 18" long.
 - 1) Length of BT-50 24mm motor tube
 - 2) BT-60 Couplers
 - 1) BT-50 24mm motor block
 - 1) 36 inch length of shock cord
 - 1) 30" parachute
- Assorted paints, glue, sandpaper and assorted modeling tools.



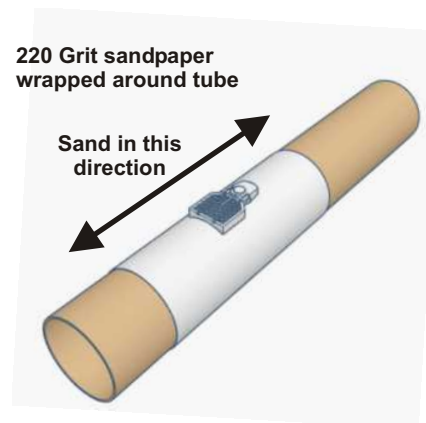
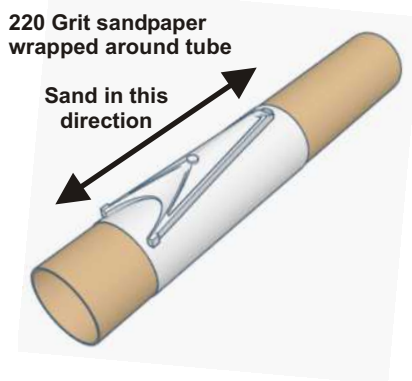
SpaceX Falcon Heavy Builders Kit

Thank you for purchasing a Boyce Aerospace Hobbies Space X Falcon Heavy with Fairing Builders Kit. Please review the drawings below before gluing and assembling your kit.



1

Remove and sand the grid fins and landing legs from their "raft". The parts are removed by flexing the raft away from the parts. If the parts are stubborn you can slide a sharp hobby knife or razor blade under the part and work around the part perimeter. Use 220 grit dry sandpaper to sand away the layer lines on the top and side surfaces of the landing legs and grid fins. Wrap a piece of 220 grit sandpaper around a BT-60 tube and sand the bottom sides of the parts to make sure they are conformal and fit flush against a BT-60.



2

Carefully sand the body conduits and longerons while they are still on their rafts. Use 400 grit sandpaper so you don't accidentally remove too much plastic. When the sanding is complete, carefully remove the conduit and longeron parts from their rafts. The easy way is to use a sharp razor knife under each part after flexing the raft away.

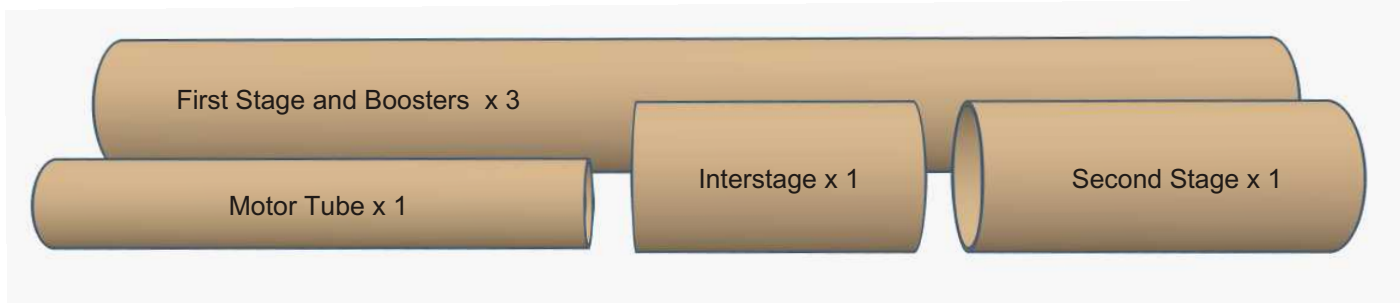
Using 220 grit sandpaper sand the three fin cans in all exterior areas. Don't sand the shoulder of the fin cans unless they are too tight when tested for fit in a BT-60 tube. Sand the motor retainer and dummy Merlin engine parts if needed. Finally sand the FDM printed fairing and shoulder with 220 grit wet/dry sandpaper.

SpaceX Falcon Heavy Builders Kit

3

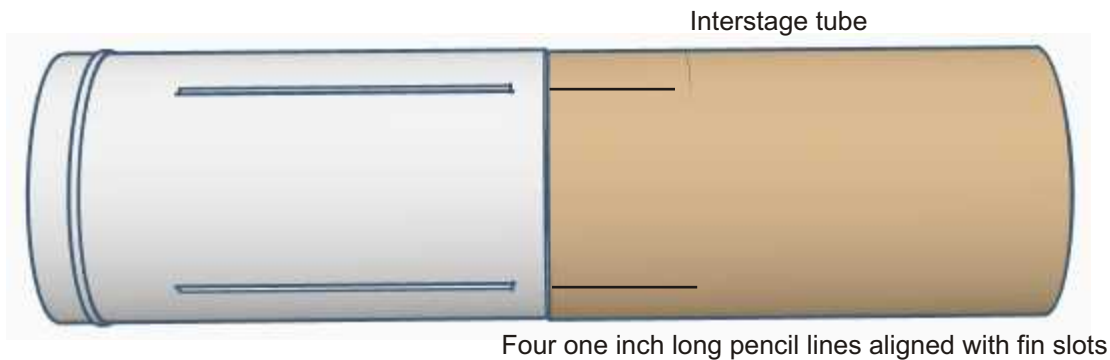
Cut the BT-60 and BT-50 body tubes to the lengths listed below:

- 3) BT-60 First Stage and Booster Tubes - 363.5 mm
- 1) BT-60 Interstage Tube - 77.5 mm
- 1) BT-60 Second Stage Tube - 99.5 mm
- 1) BT-50 Motor Tube - 152.5 mm



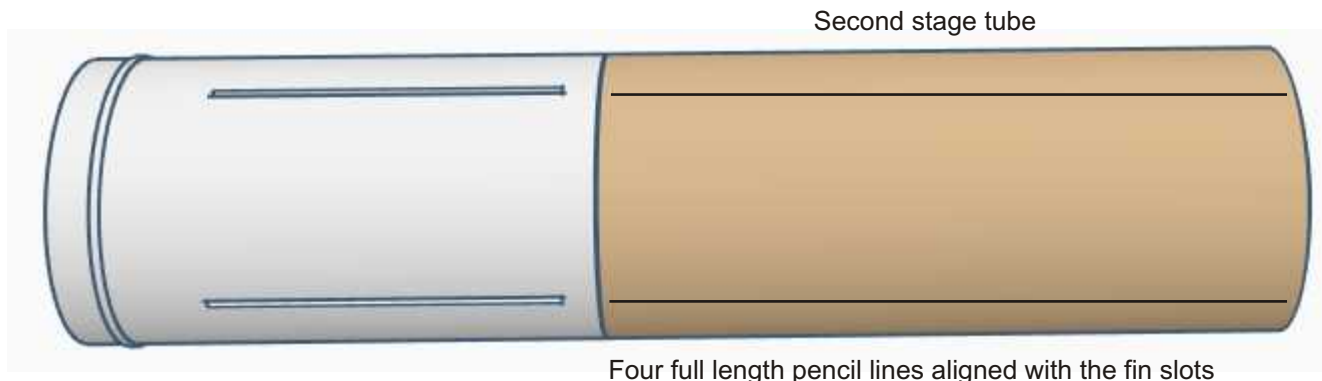
4

Using one of the fin cans as a marking guide, insert the can into the 77.5mm long interstage tube and draw pencil lines one inch long in line with all four fin slots in the fin can. Remove the fin can when done.



5

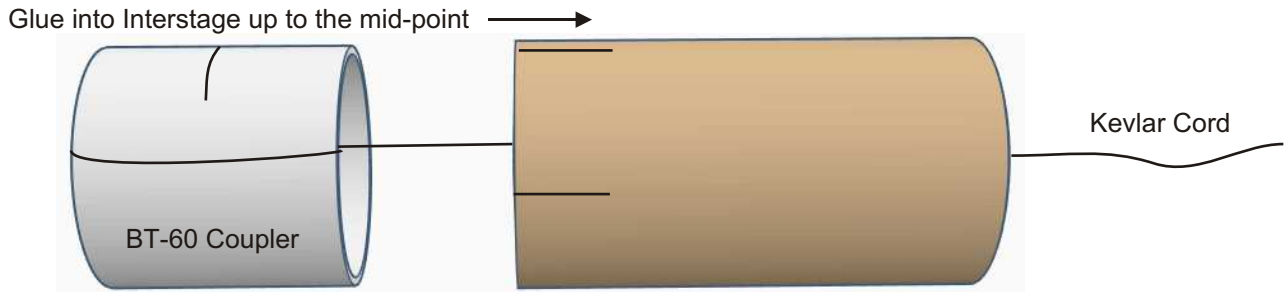
Using one of the fin cans as a marking guide, insert the can into the 99.5mm long second stage tube and draw four pencil lines the full length of the tube, 90 degrees opposite each other, in line with two opposing fin slots on the fin can. Remove the fin can when done.



SpaceX Falcon Heavy Builders Kit

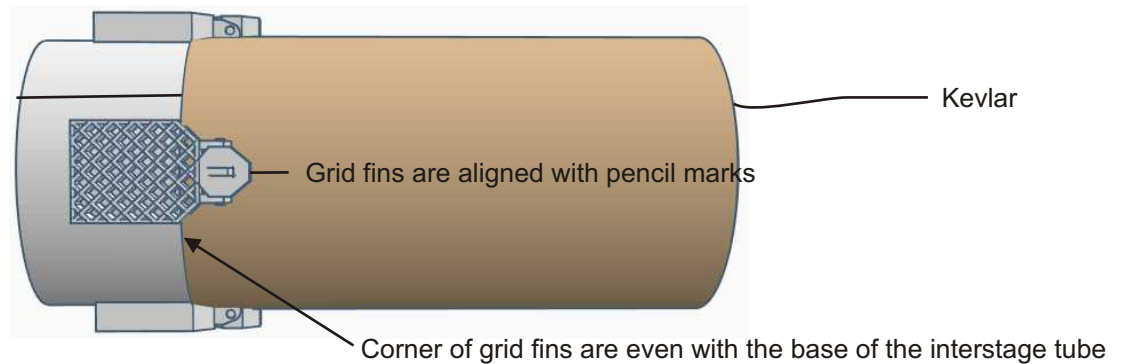
6

Place a pencil mark at the mid-point of the coupler. Tie the end of the length of Kevlar cord around the coupler tube as shown. Place a drop of super glue on the double knot that you tied to secure it in place. Wipe a generous amount of white glue into the inside edge of the interstage and insert the coupler to the mid-point mark.



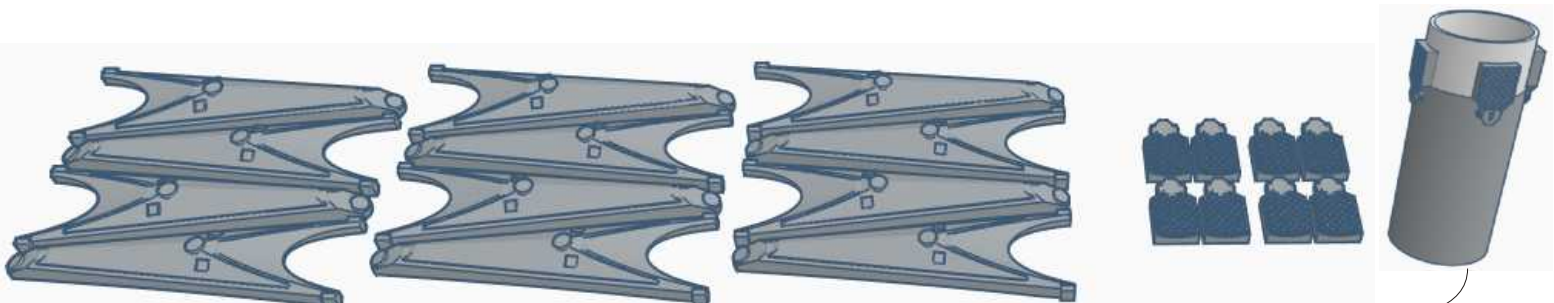
7

After the glue has dried the grid fins can be attached. Using a very small drill bit drill a few holes into the interstage and coupler at the attachment point for each grid fin. Only the portion of the grid fin that comes in contact with the BT-60 interstage tube is glued. Either use epoxy or super glue gel to attach the grid fins. Each fin should be aligned as shown below.



8

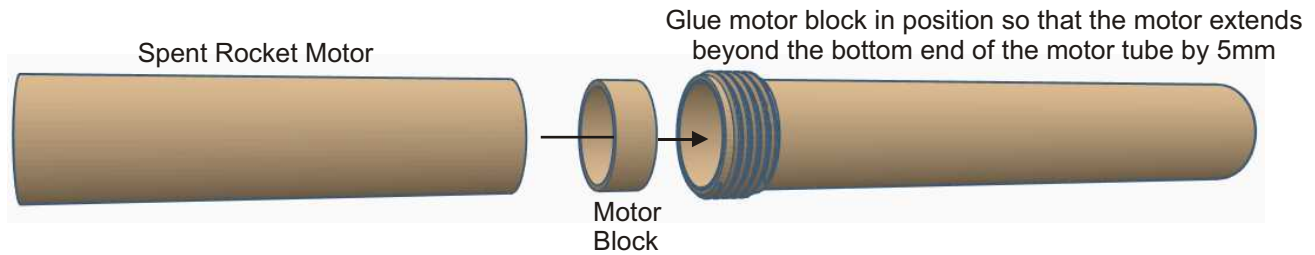
When the interstage and attached grid fins are dry insert a scrap piece of BT-60 carefully onto the coupler and under the grid fins. Paint the interstage assembly along with the top side of all the landing legs with three coats of flat black paint. Also paint the top sides of the remaining eight grid fins along with the top side of all the first stage conduit pieces flat black. When dry remove the scrap section of BT-60 from the coupler.



SpaceX Falcon Heavy Builders Kit

9

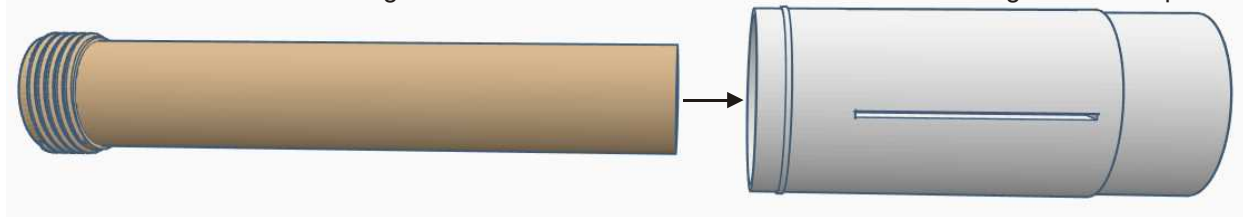
Gather the following parts in order to assemble the motor/fin can assembly. You'll need the fin can, the section of BT-50 motor tube, the 24mm motor block and the two part motor retainner with Merlin engines. Start by gluing the male threaded motor retainner flush to the end of the motor tube. Sand the inside of the part if needed prior to gluing. Determine if you want to use only short 24mm motors or long motors. Using the appropriate sized spent motor casing apply white glue to the inside of the BT-50 at the approximate location for the motor block using a dowel stick. Then using the spent motor casing quickly push the motor block into the tube and glue until only 5mm of the motor extends past the end of the motor tube. Quickly remove the casing before it becomes accidentally glued in place. Set the motor tube on it's top end so that if any glue drips down and dries it will not interfere with loading the rocket motor.



10

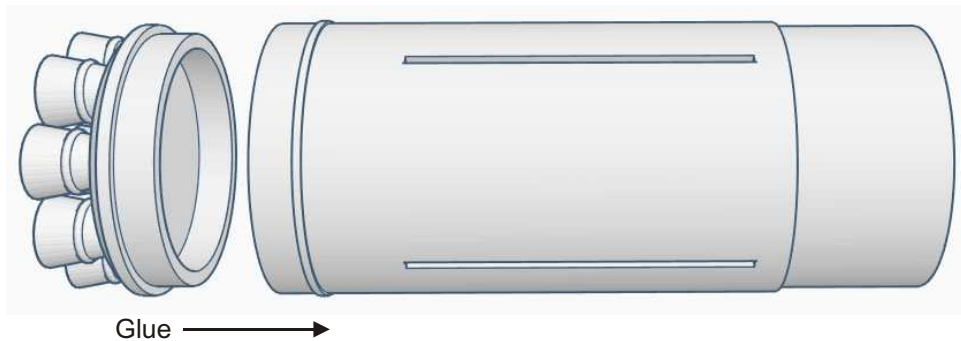
When the assembly is dry, test fit the part into the fin can. Sand if needed. Proceed to glue the motor tube into the fin can making sure to seat the tube as far as possible into the fin can.

Glue the motor tube into fin can seating the tube until the male motor retainner threads are against the stops in the fin can.



11

Test fit and sand the two dummy Merlin engine bulkheads into the rear of the remaining two fin cans. When a good fit has been obtained glue the motor bulkheads in place making sure every other engine bell is aligned with a fin slot.



SpaceX Falcon Heavy Builders Kit

12

Install the fin can with the motor tube into the first stage body tube. Use epoxy or super glue gel to glue the fin can in place.

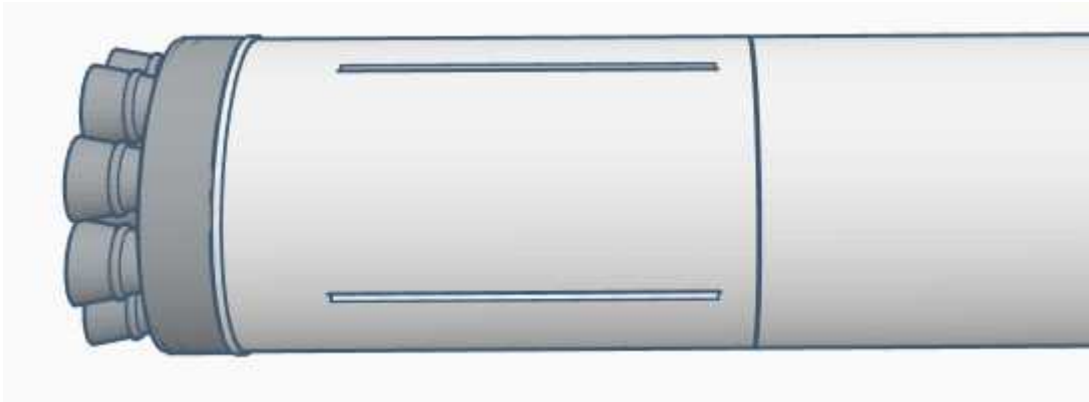


Glue the two remaining fin cans into the two remaining first stage booster tubes.



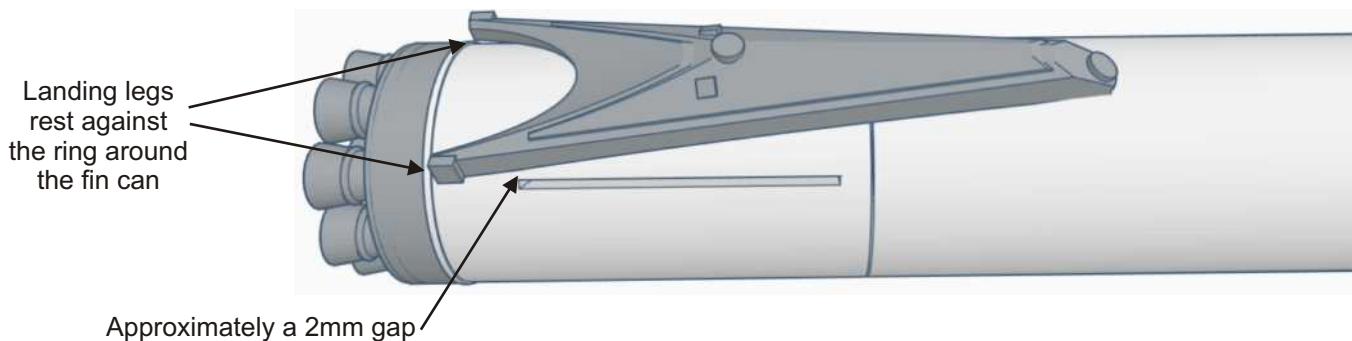
13

Paint all three first stage boosters flat white. When finished (2-3 coats) allow to dry. When dry mask off the boosters except for the lower bottom section and engine bells then paint the section flat black.



14

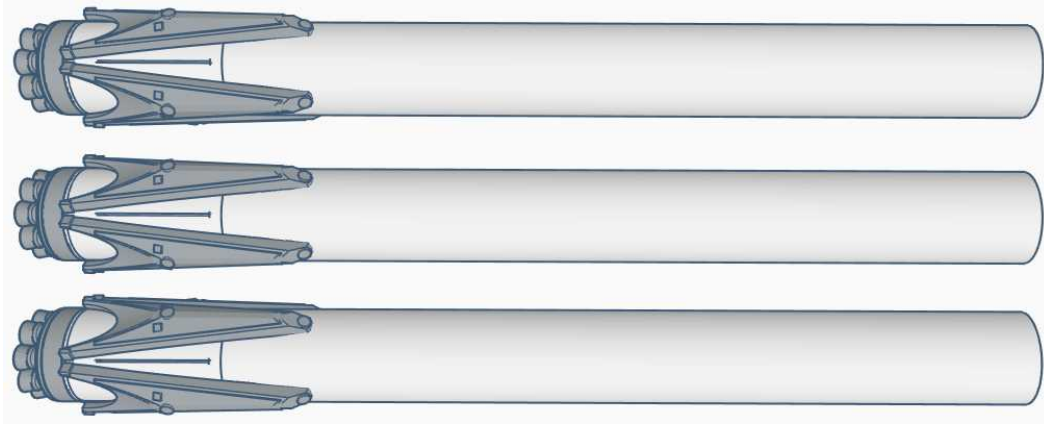
Attach the landing legs to the fin can and the bottom of the first stage core body tube. We used super glue gel that was spread evenly over the base of each leg with cheap disposable dollar store paint brushes. Align each leg by pressing it's bottom leg points against the alignment ring then pivoting the leg down to the fin can making sure that the leg is centered between the fin slots.



SpaceX Falcon Heavy Builders Kit

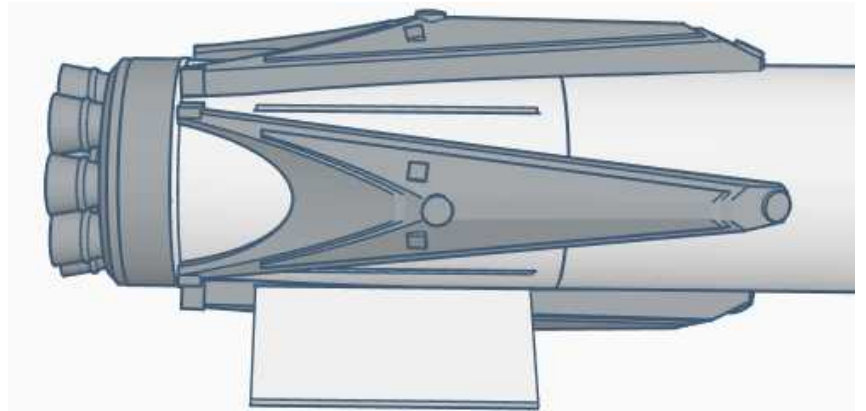
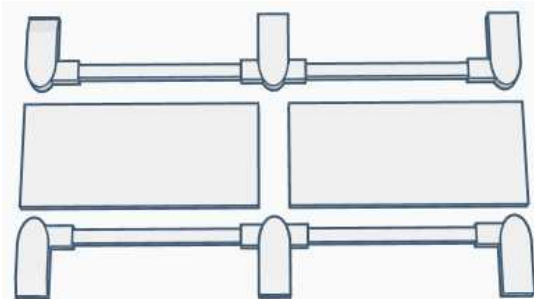
15

The three first stage boosters should look like this when all the legs are attached. In the next step, when the side boosters are attached to the core make sure that the first stage tube with the motor mount remains in the center position.



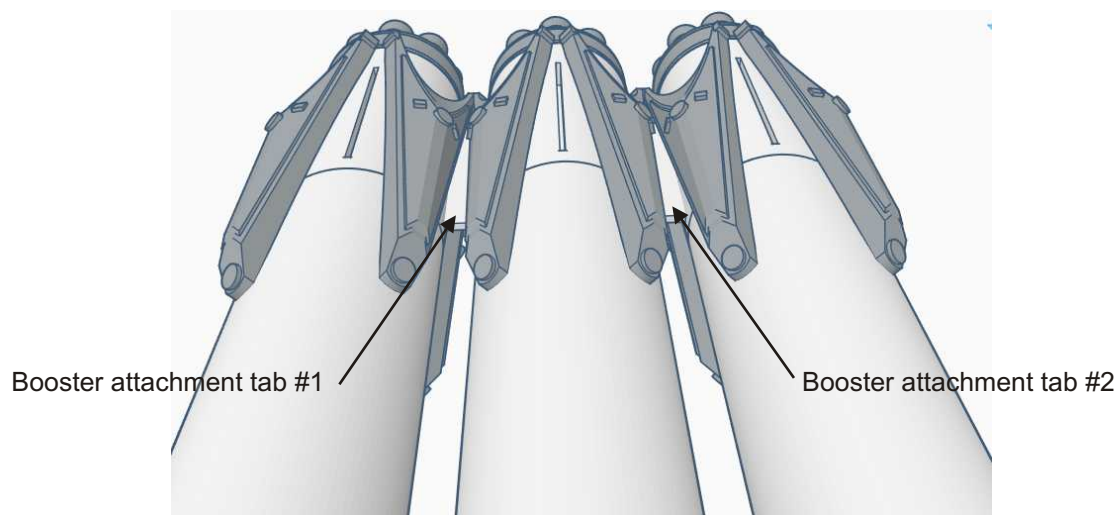
16

Find the raft with the longerons and the two rectangular panels. Remove the two panels from the raft. These two panels are the lower booster attachment tabs. The tabs are sanded for a nice fit into the side fin slots and are then glued into the slots holding the bottoms of the vehicle together. Make sure that the tabs are fully inserted into the fin slots on the fin cans and that the boosters are parallel when glued in place.



17

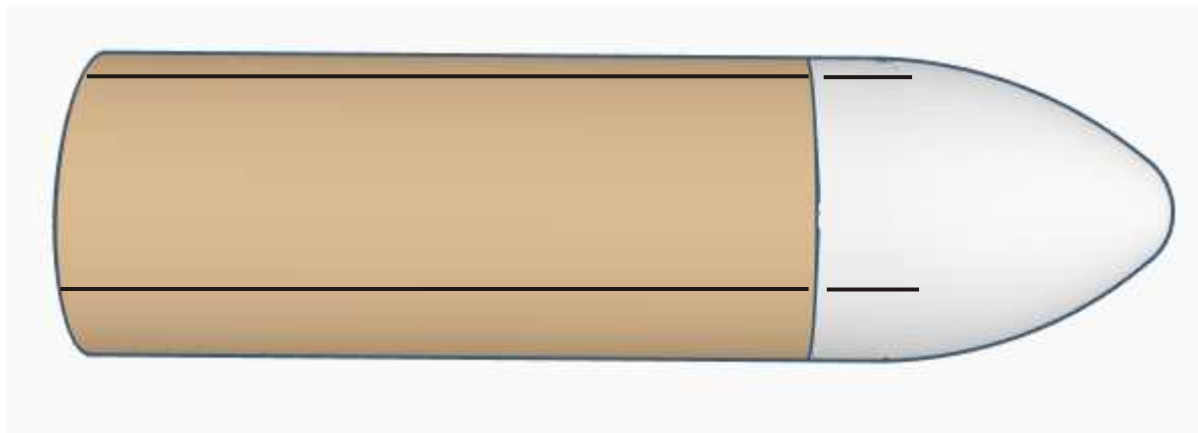
This is what the rear of the vehicle should look like after both booster attachment tabs are glued in place.



SpaceX Falcon Heavy Builders Kit

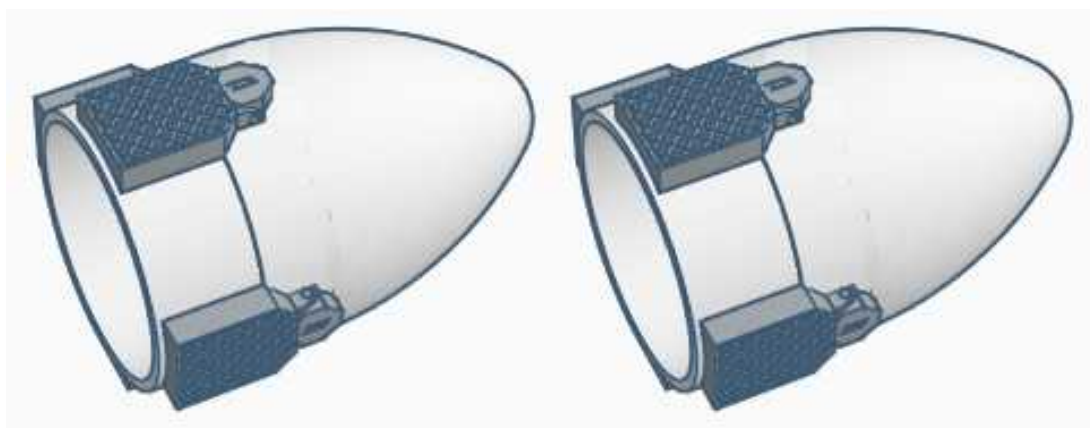
18

Paint both of the booster nose cones flat white. When dry, slide the previously marked second stage tube onto the shoulder of the cones one at a time and mark a short centerline for reference in marking the location of each booster grid fin.



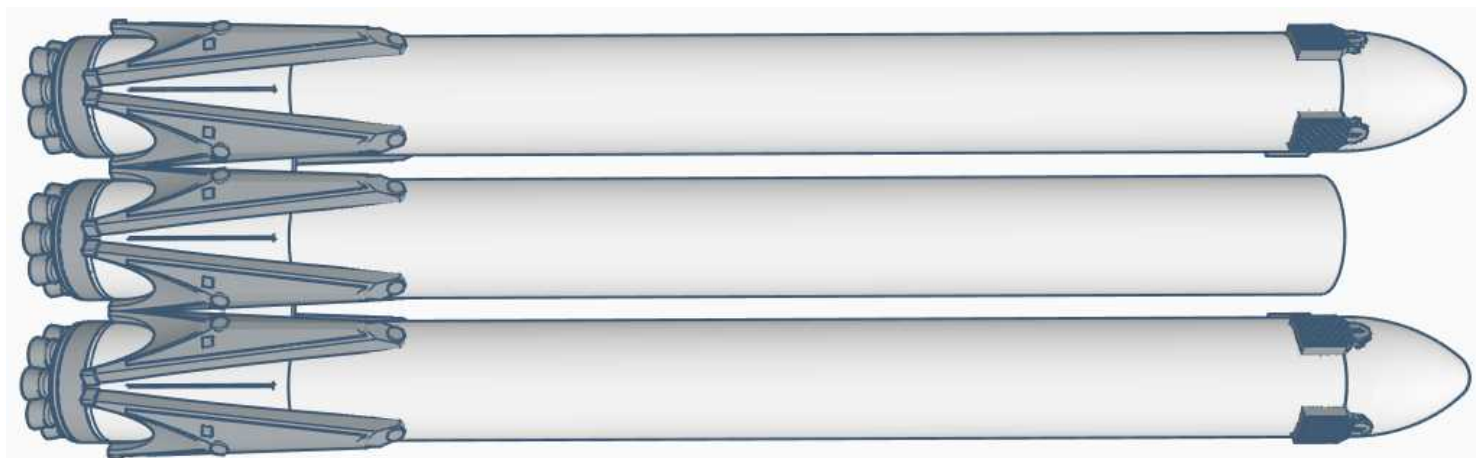
19

Attach the grid fins as shown below. The shoulder of each grid fin should be located at the nose cone shoulder transition point. Only apply glue at the part of the grid fin that is attached on the surface of the nose cone. No glue should be on the shoulder.



20

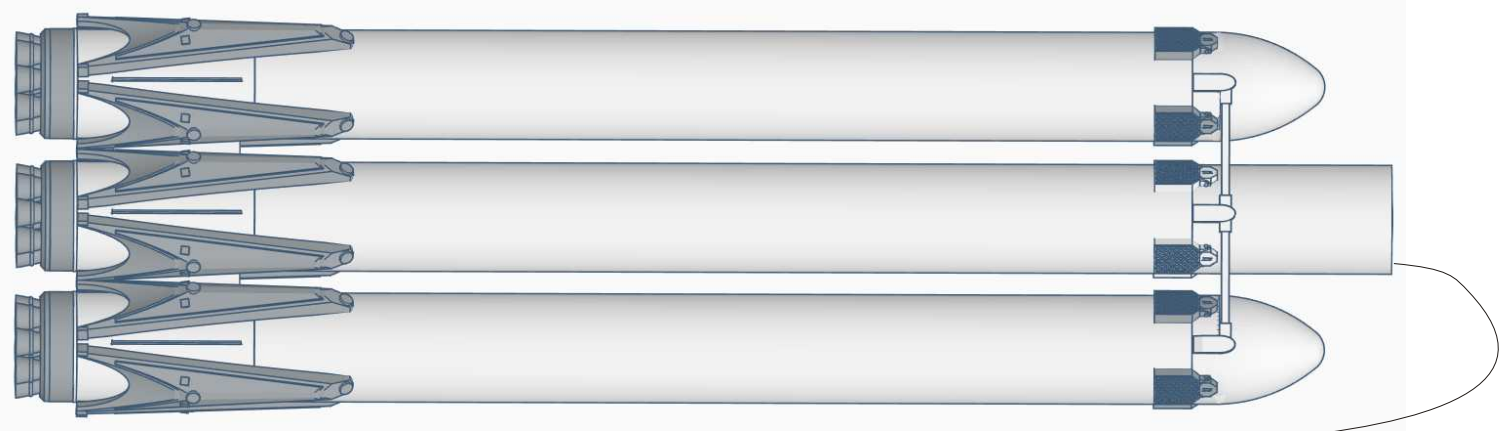
Test fit the booster nose cones. Glue the booster nose cones in place making sure the grid fins are aligned with the landing legs.



SpaceX Falcon Heavy Builders Kit

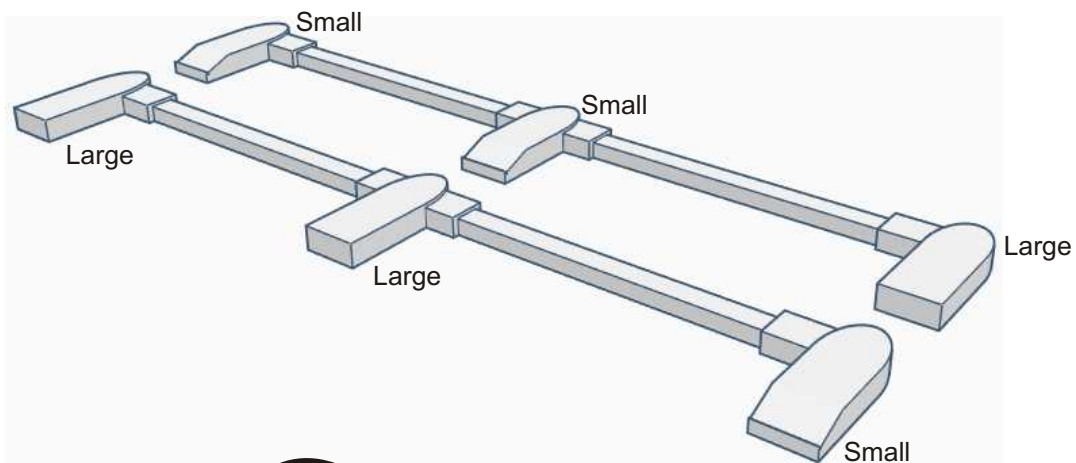
21

Test fit and glue the core interstage to the first stage stack. Again make sure the four grid fins are aligned with the landing legs.



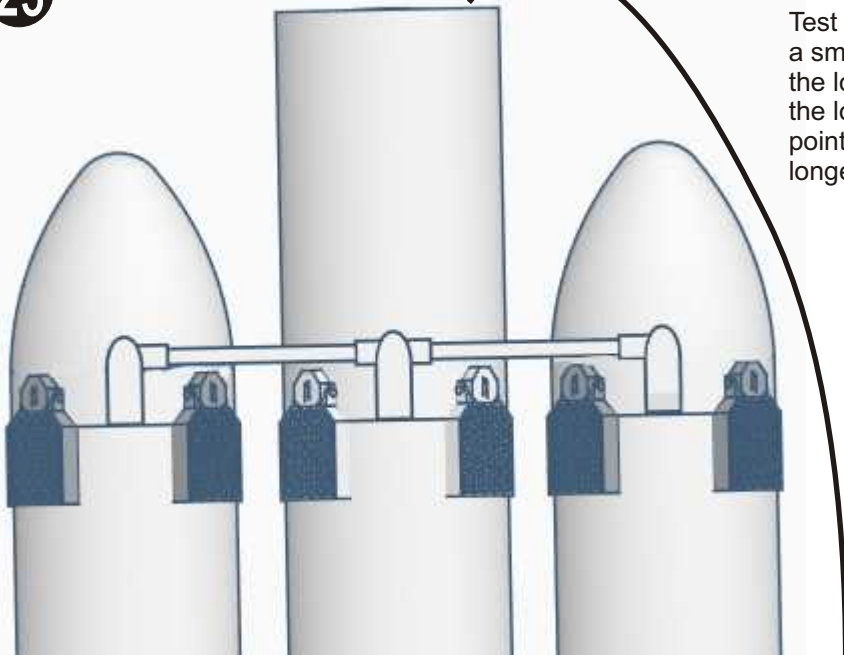
22

Sand and paint the two longerons flat white. Note that the two longerons are slightly different as one aligns with two small conduits and one large conduit while the other is the opposite.



23

Test fit a longeron at the top of the first stage stack. Using a small drill make holes under the attachment locations of the longeron. Epoxy the longeron in place making sure the longeron is centered on each booster at its attachment point. When dry flip the model over and attach the remaining longeron.



SpaceX Falcon Heavy Builders Kit

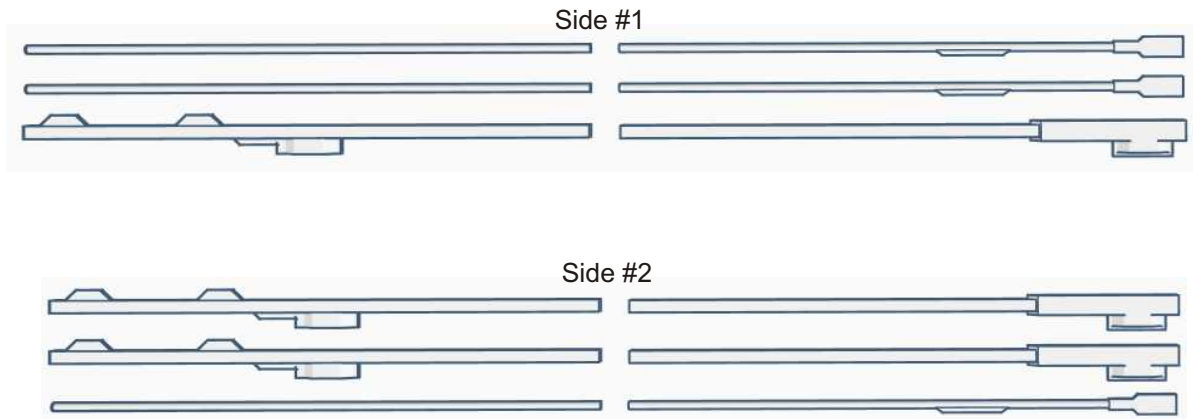
24

Using a narrow straight edge. Draw a light pencil line from the top edge of each fin slot to the center of the longeron conduit attachment point. Repeat for the other side of the vehicle.



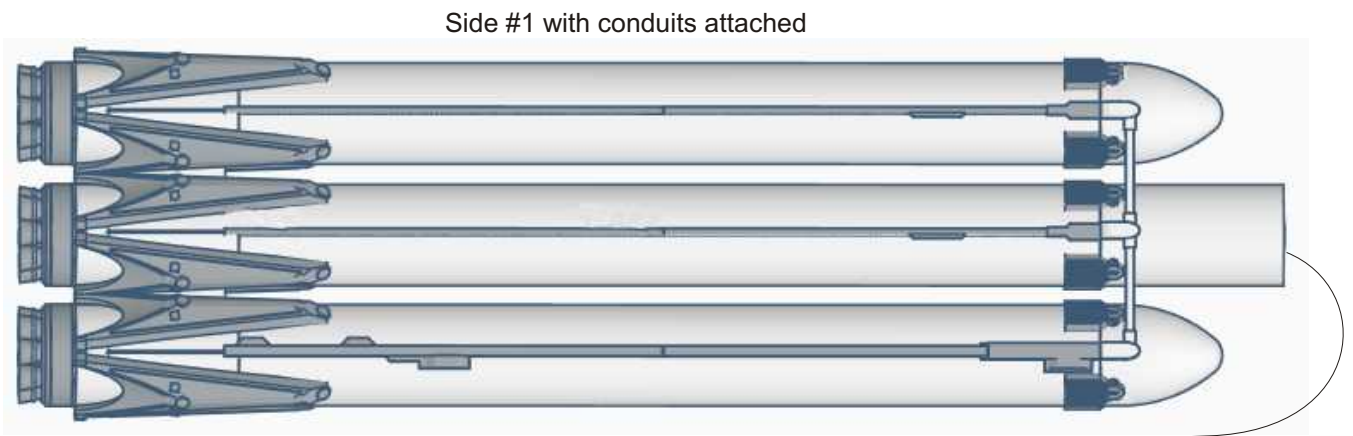
25

Determine which conduit sections will be needed for the vehicle side you are working on and stage them in front of you in the correct order and orientation for attachment.



26

Glue the conduits in place over the pencil lines.



SpaceX Falcon Heavy Builders Kit

27

When dry, flip the vehicle over and attached the conduits on side #2.

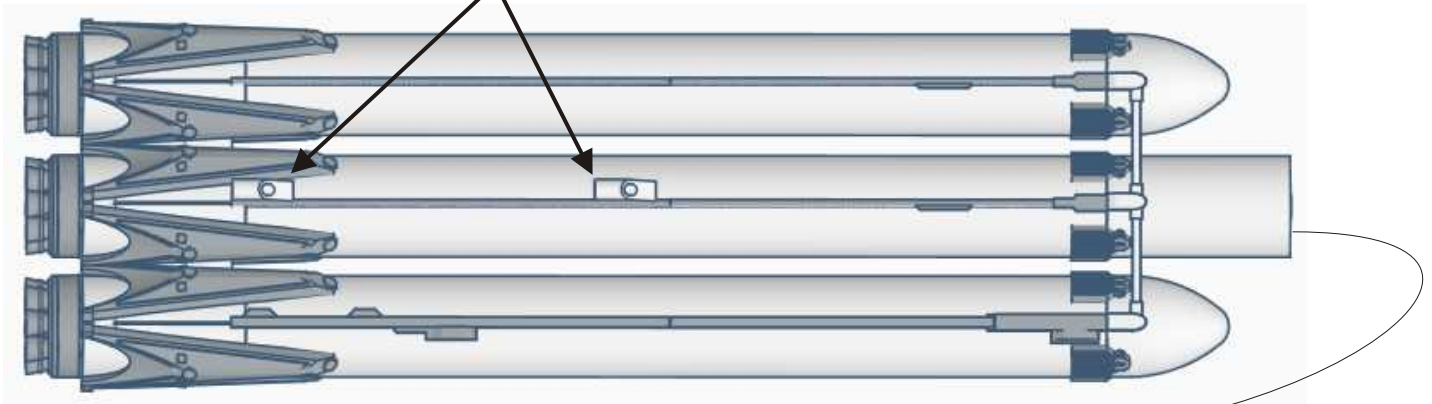
Side #2 with conduits attached



28

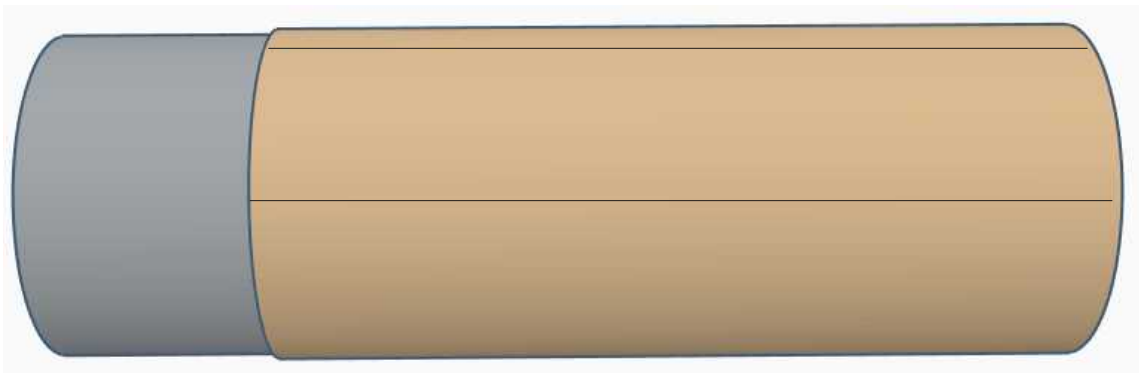
Position the launch lugs as shown below on the #1 side of the vehicle. Use a small drill to make holes in the attachment location prior to gluing in place.

Launch lug attachment locations



29

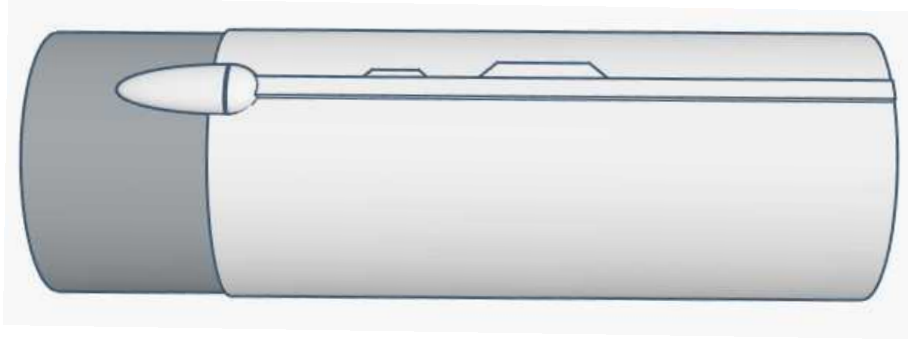
Mark the remaining BT-60 tube coupler at it's mid-point and then glue it into the second stage airframe tube up to the mark. When dry, extend two of the four pencil lines to the inside of the tube to mark the location of the second stage conduits. Slide a piece of scrap BT-60 tube over the coupler and paint the outside of the second atage tube flat white..



SpaceX Falcon Heavy Builders Kit

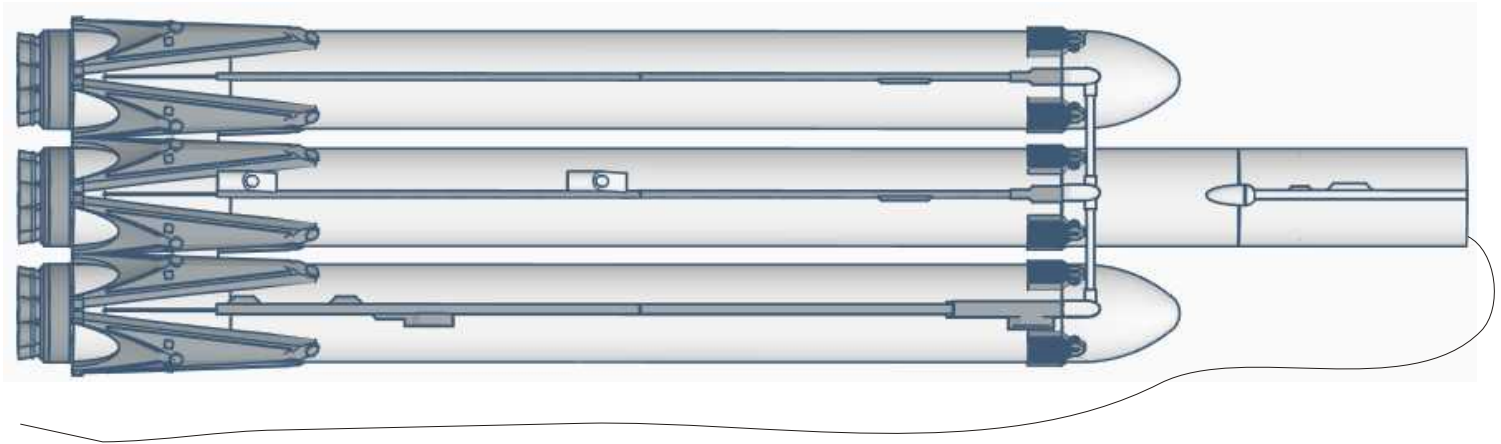
30

When the paint has dried extend the two pencil lines (180 degrees apart) to the outside of the second stage. Sand and paint the top surfaces of the two second stage conduits. When dry glue them in place as shown. Do not apply glue to the part of the conduit that will overhand the coupler.



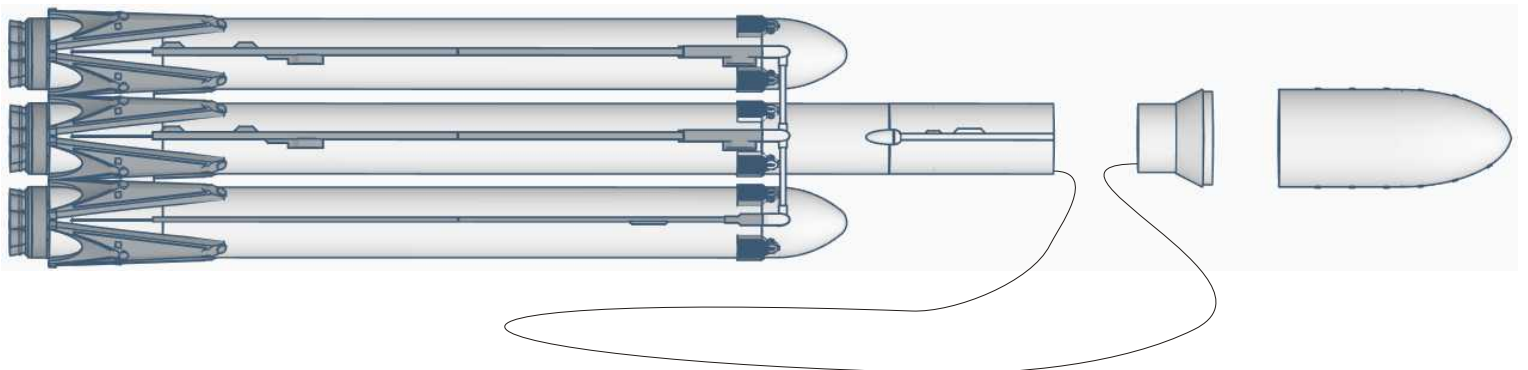
31

When dry, fish the Kevlar line through the second stage and glue it in place as shown.



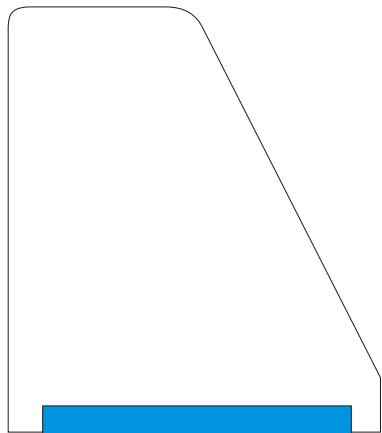
32

Sand and paint the payload fairing and the payload fairing base flat white. Do not glue the fairing to its base until nose weight is added for stability. Tie the Kevlar line to the payload fairing base and attach your parachute/shock cord.



SpaceX Falcon Heavy Builders Kit

The clear fins can either be glued in place permanently or can be friction fitted into the fin slots using blue painters tape wrapped around the root edge.

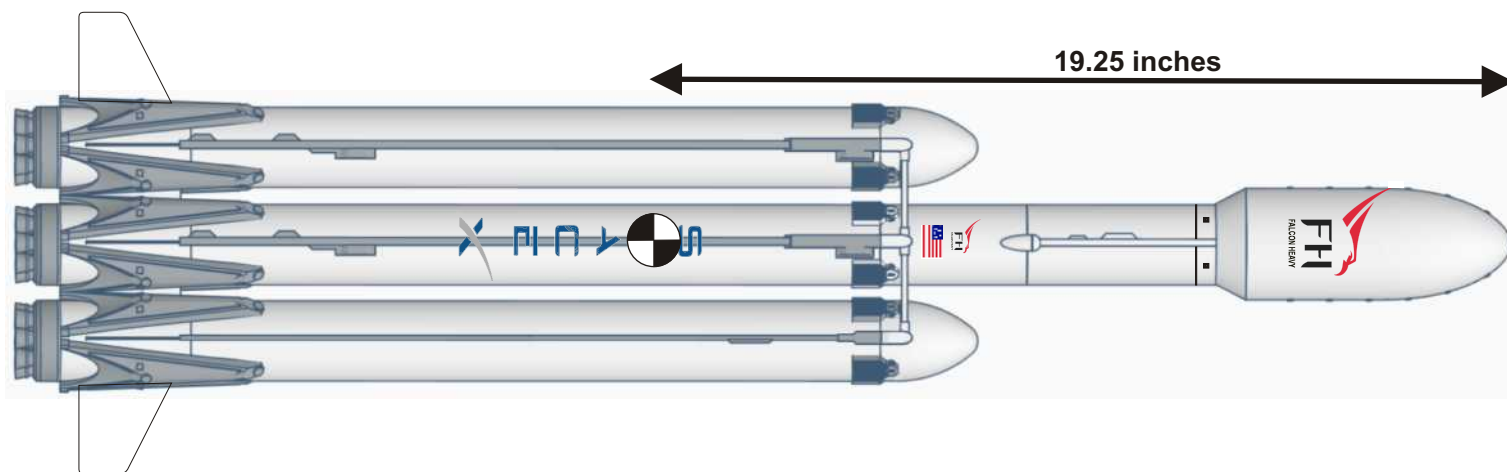


IMPORTANT!

IMPORTANT!

IMPORTANT!

Put an Aerotech 24mm F motor in the model, add recovery wadding and the chute. Install all eight of the clear fins if you have opted to have the fins be removable. Check the balance point of the model (CG or center of gravity). It should be very close to balancing at the recommended CG point after adding about 2.7-3.0 oz of clay in the tip of the nose cone. If the model balances behind the required CG add additional clay to the tip of the nose cone until the CG is correct. Pour a small amount of epoxy over the clay to hold it permanently in position. Glue the shoulder to the fairing then, when dry, slide the nose cone in position.



Failure to adjust the models C.G. to the position shown will result in an unstable flight that could injure someone, damage personal property and damage or destroy your model.

SpaceX Falcon Heavy Builders Kit

Our Falcon 9 with fairing now comes with waterslide decals. Use the images of the fairing for correct placement of the decals and follow the instructions below:

- 1) Use sharp scissors to cut out each decal element leaving a 1-2 mm border.
- 2) Using a bowl of warm water place the decal you wish to apply in the bowl and allow it to soak for 30 to 60 seconds.
- 3) Carefully check the decal with clean fingers to verify that the decal film is free from the backing paper.
- 4) Decide which edge of the decal you will position first and ease about 1/4 inch of that edge off the backing paper.
- 5) Position the decal on the model until you are in the correct location and orientation. Slide the backing paper off the back of the decal holding the positioned edge.
- 6) Using a wet finger make any needed last minute adjustments to the decals position.
- 7) Carefully rub out any bubbles under the decal with your wet finger.
- 8) Carefully blot the top of the decal with a dry paper towel.
- 9) Allow the decals to dry completely then apply a light coat of clear acrylic spray to seal and protect the decals.

RECOMMENDED MOTORS FOR FLIGHT:

Aerotech E20-4.....	475 Feet
Aerotech F44W-4.....	590 Feet
Aerotech F30FJ-6.....	660Feet
Aerotech F32T-6.....	821 Feet

Flight Prep:

- 1) Use recovery wadding and carefully pack your parachute.
- 2) Use an Estes E12-6 motor for your first flight.
- 3) Carefully fit the motor in place inside the motor mount tube then screw on the motor retainer. Insert an electric igniter per the motor manufacturer's instructions.
- 4) Load the model on a launcher with a 3/16th inch launch rod.
- 5) Attach the ignitor leads to the ignitor,
- 6) Check the sky for aircraft and the range for people.
- 7) When all is clear count down 5..4..3..2..1..Launch!

Use a software program such as ROCKSIM to model the rockets flight if higher performance motors are used. Please follow all local laws and the NAR Model Rocketry Safety Code when flying this model. Fly safe and have fun!

SpaceX Falcon Heavy Builders Kit

