

Sub Frame

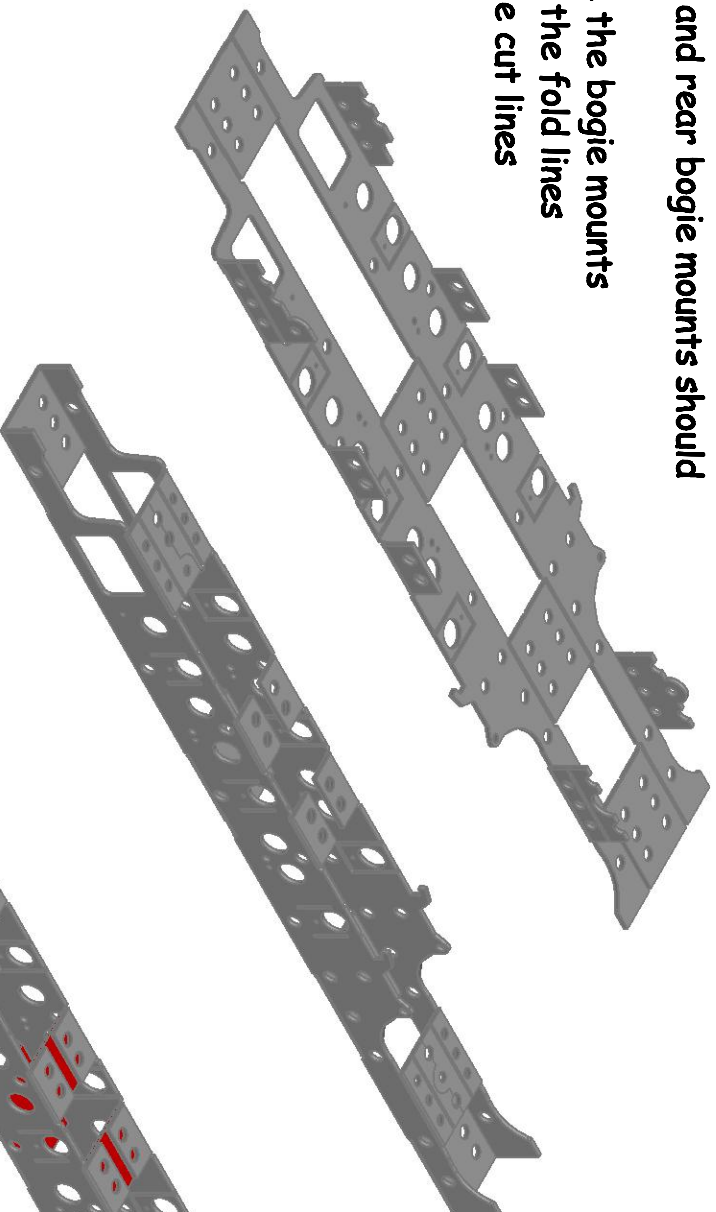
Fold the sub frame into a box section

The front and rear bogie mounts should meet

Make sure the bogie mounts

fold along the fold lines

and not the cut lines



Solder single sided PCB through the holes on the inside of the spacers

Leave the front spacer clear for now

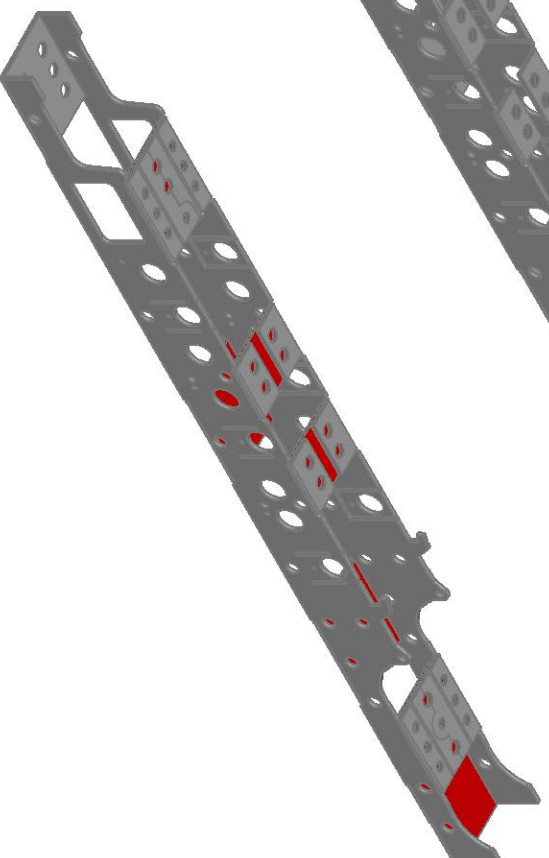
At the cut lines, using a saw or knife file remove

the nickel and copper down to the PCB substrate

Cut through the front spacers

Check each side are electrically isolated and the

bogie mounting holes are isolated from both



Motor mounting

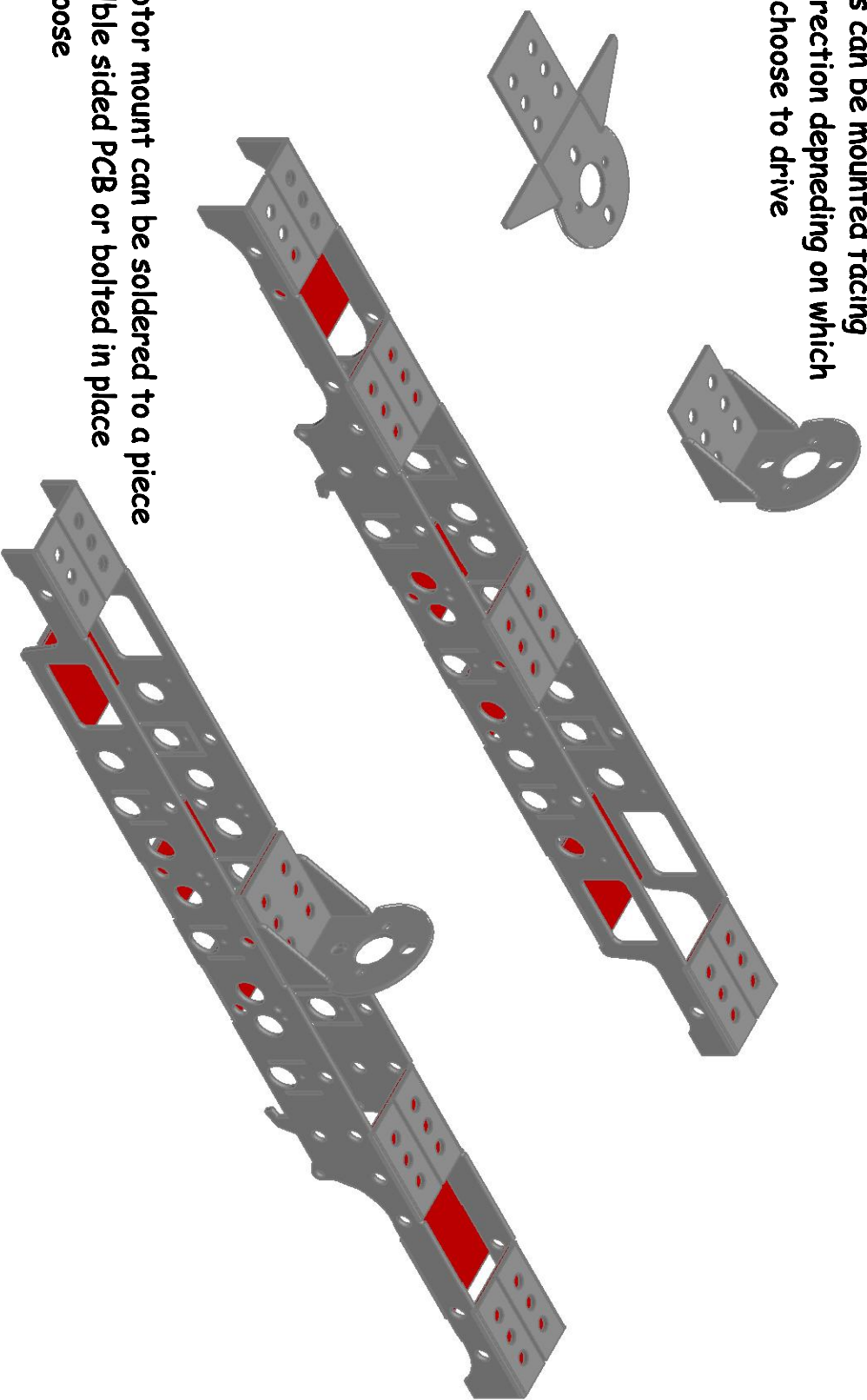
Fold the motor mount up as shown

Check the fit for your chosen motor

Note this can be mounted facing

either direction depending on which

axle you choose to drive



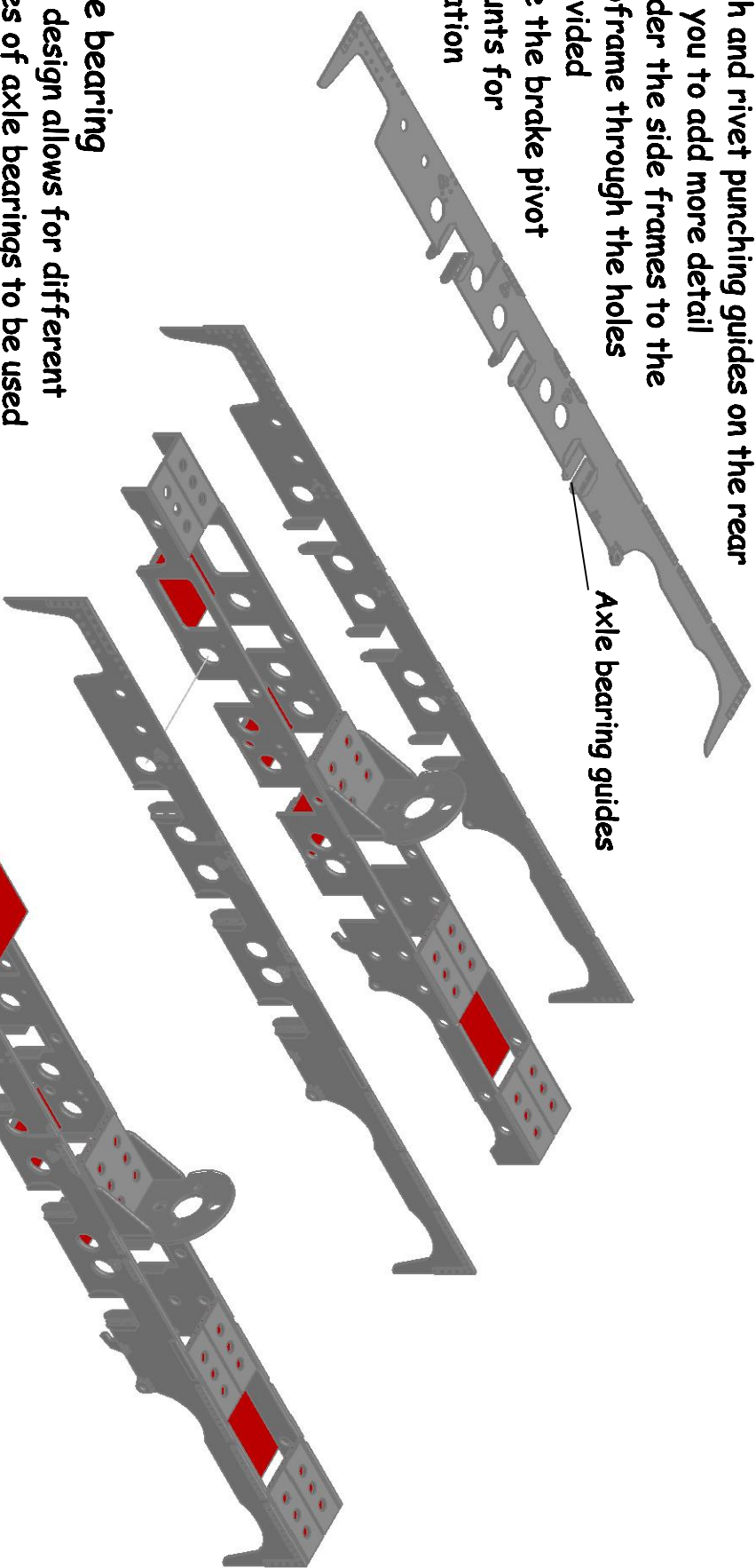
The motor mount can be soldered to a piece of double sided PCB or bolted in place you choose

Side Frames

The side frames have details added in half etch and rivet punching guides on the rear for you to add more detail

Solder the side frames to the subframe through the holes provided

Use the brake pivot mounts for location



Axle bearing

The design allows for different

types of axle bearings to be used

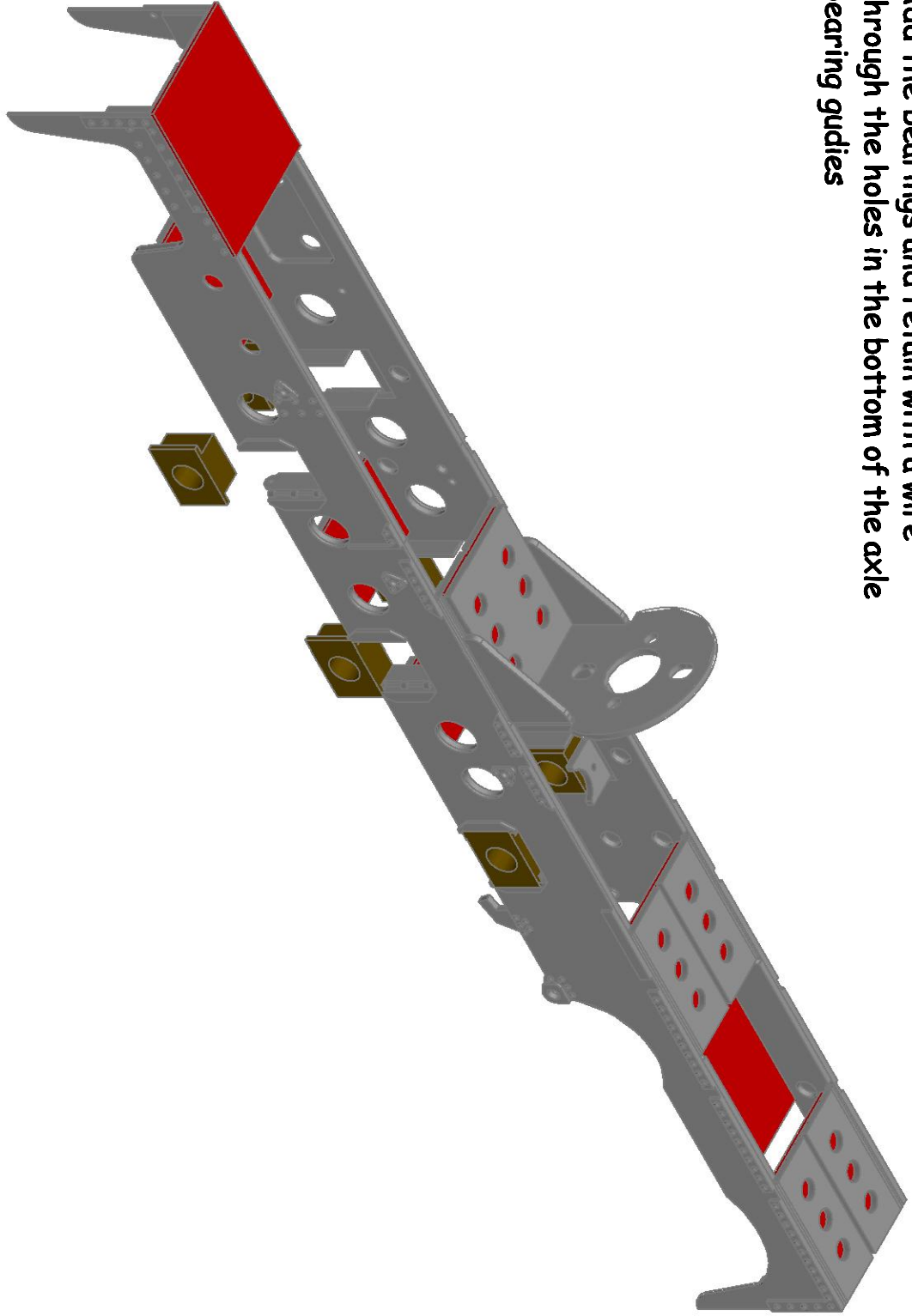
The independantly sprung axle bearings are illustrated here

For fixed axle bearing leave the 4mm holes in the sides of the sub frame and remove the bearing guides from the side frames

Compensated axle systems can also be made

Add a layer of 0.4mm double sided PCB to front spacer and cut to provide isolation

Bearings
Add the bearings and retain with a wire
through the holes in the bottom of the axle
bearing guides



Brakes

Fold the brake shoe in thirds to form a retaining slot

Attached the shoe to the hanger with a 0.5mm rod

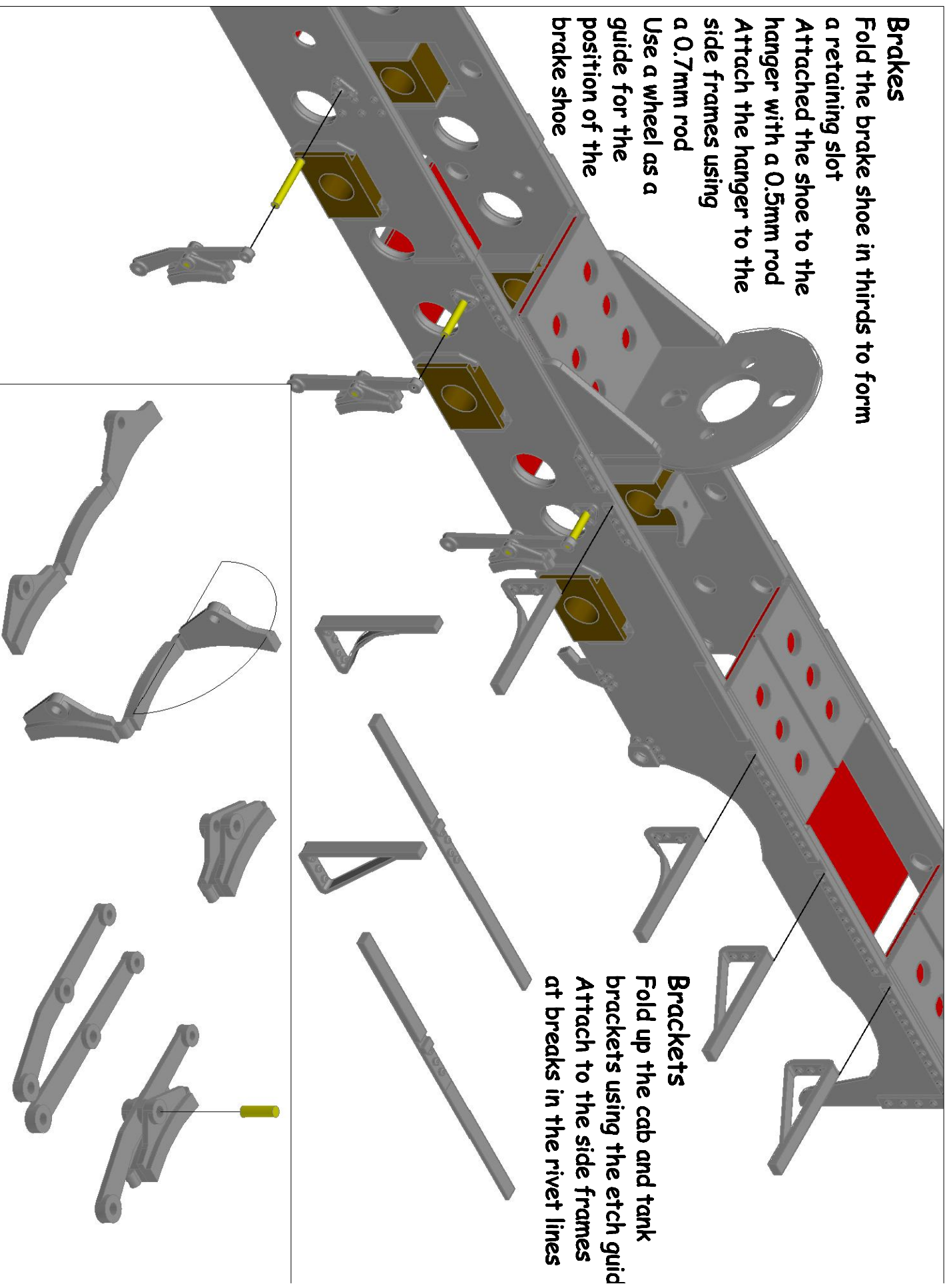
Attach the hanger to the side frames using a 0.7mm rod

Use a wheel as a guide for the position of the brake shoe

Brackets

Fold up the cab and tank brackets using the etch guid

Attach to the side frames at breaks in the rivet lines



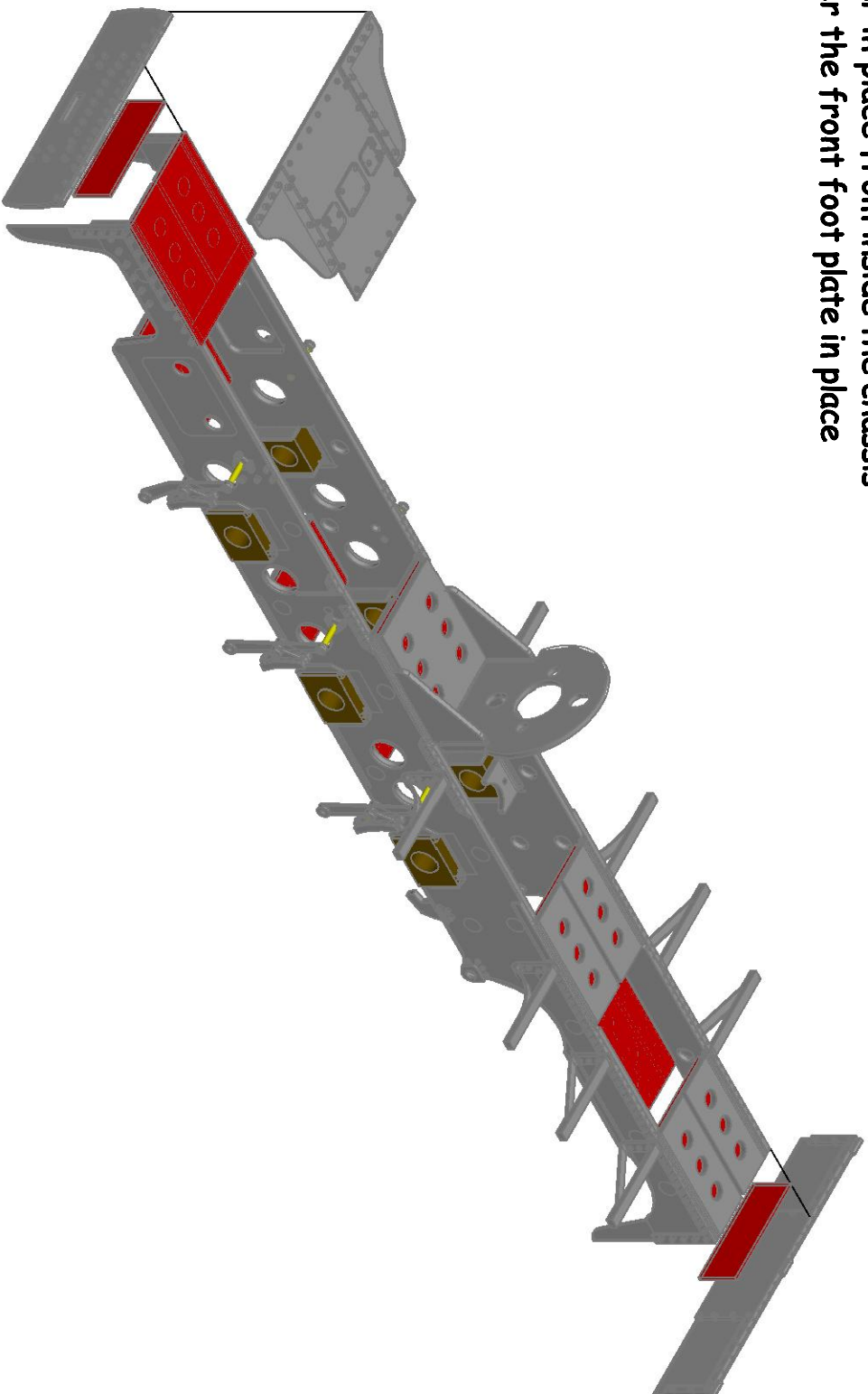
Head stock and Tail stock

Punch the rivets and fold the head stock and tail stocks 180 degrees

Use a piece of 0.4mm PCB to insulate these from the main chassis

Solder in place from inside the chassis

Solder the front foot plate in place



Body mounting

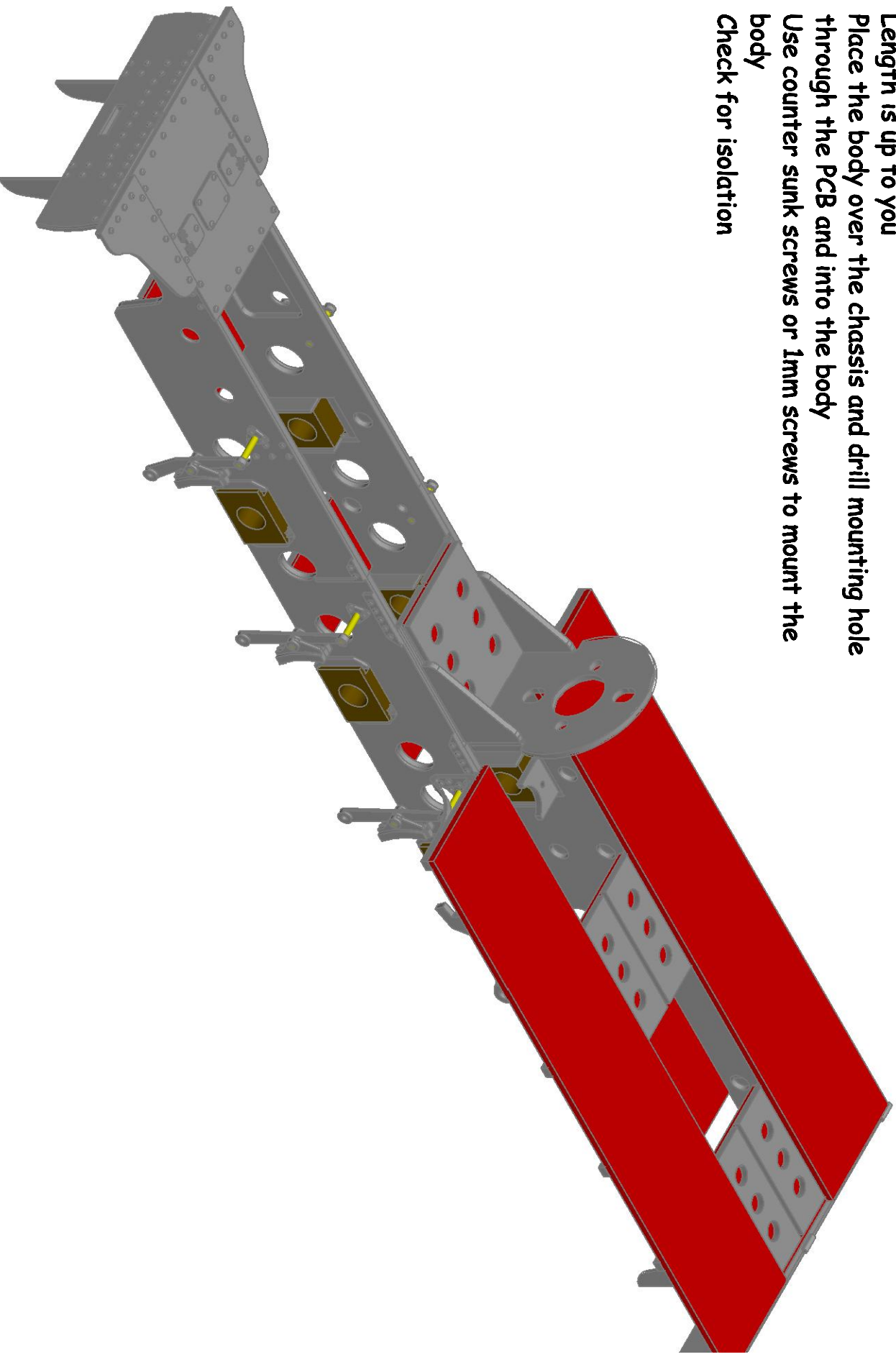
Use pieces of 0.4mm PCB to form insulated mounting plates for the body

Length is up to you

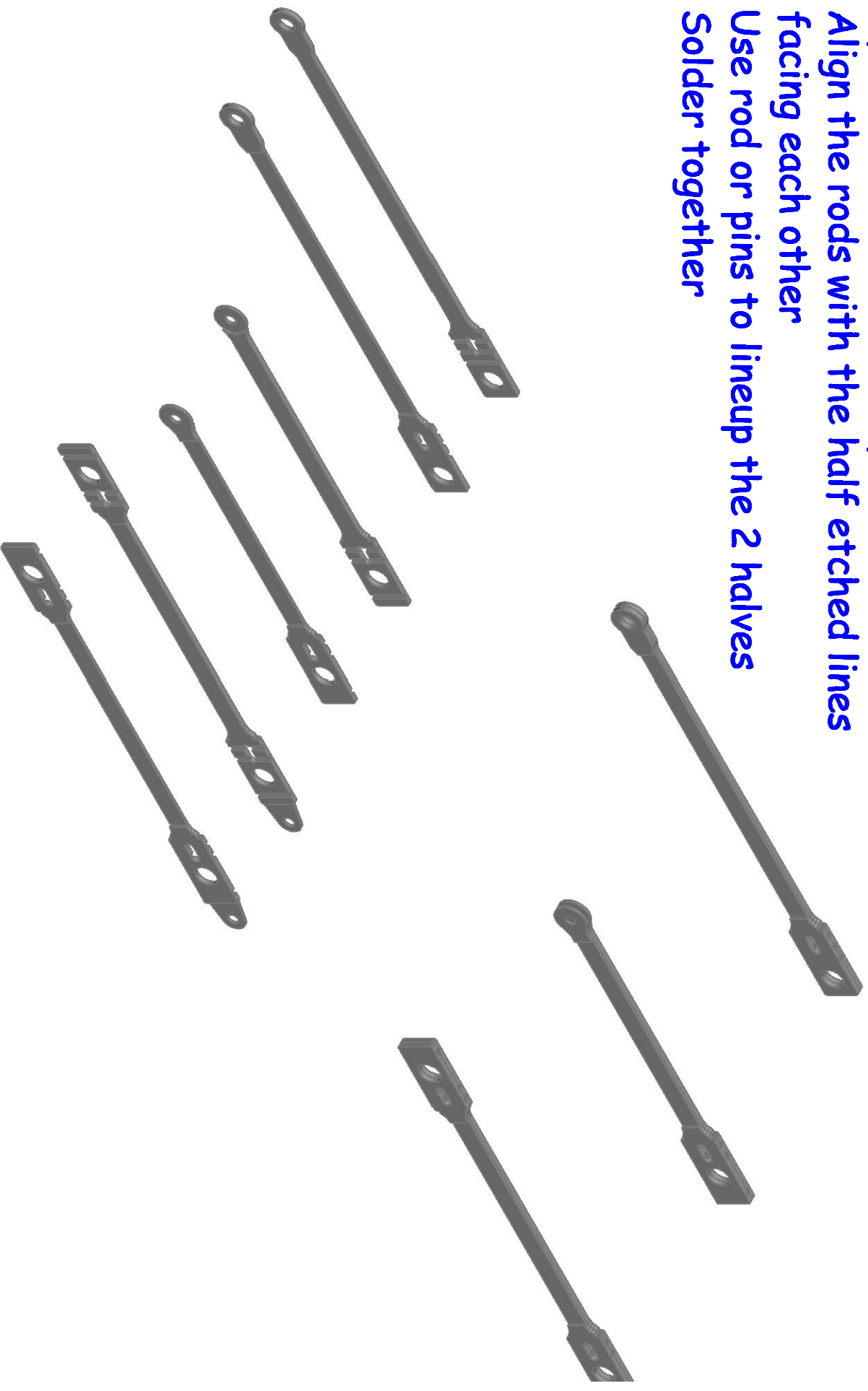
Place the body over the chassis and drill mounting hole through the PCB and into the body

Use counter sunk screws or 1mm screws to mount the body

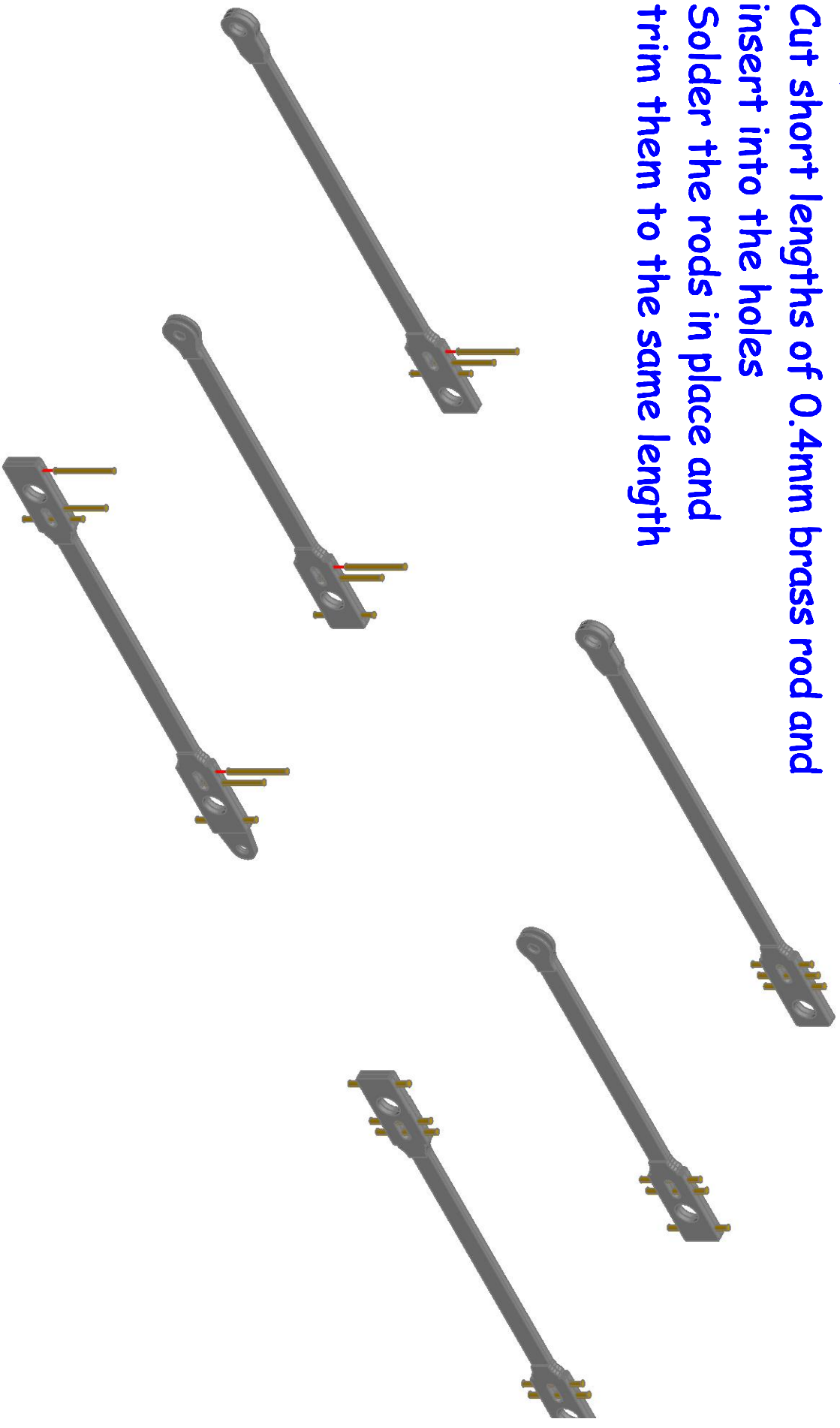
Check for isolation



Pair up the rods with the half etched front layer and the full rear layer
Align the rods with the half etched lines facing each other
Use rod or pins to lineup the 2 halves
Solder together



Clear out the holes between the layers of the rods
the rods
Cut short lengths of 0.4mm brass rod and insert into the holes
Solder the rods in place and trim them to the same length

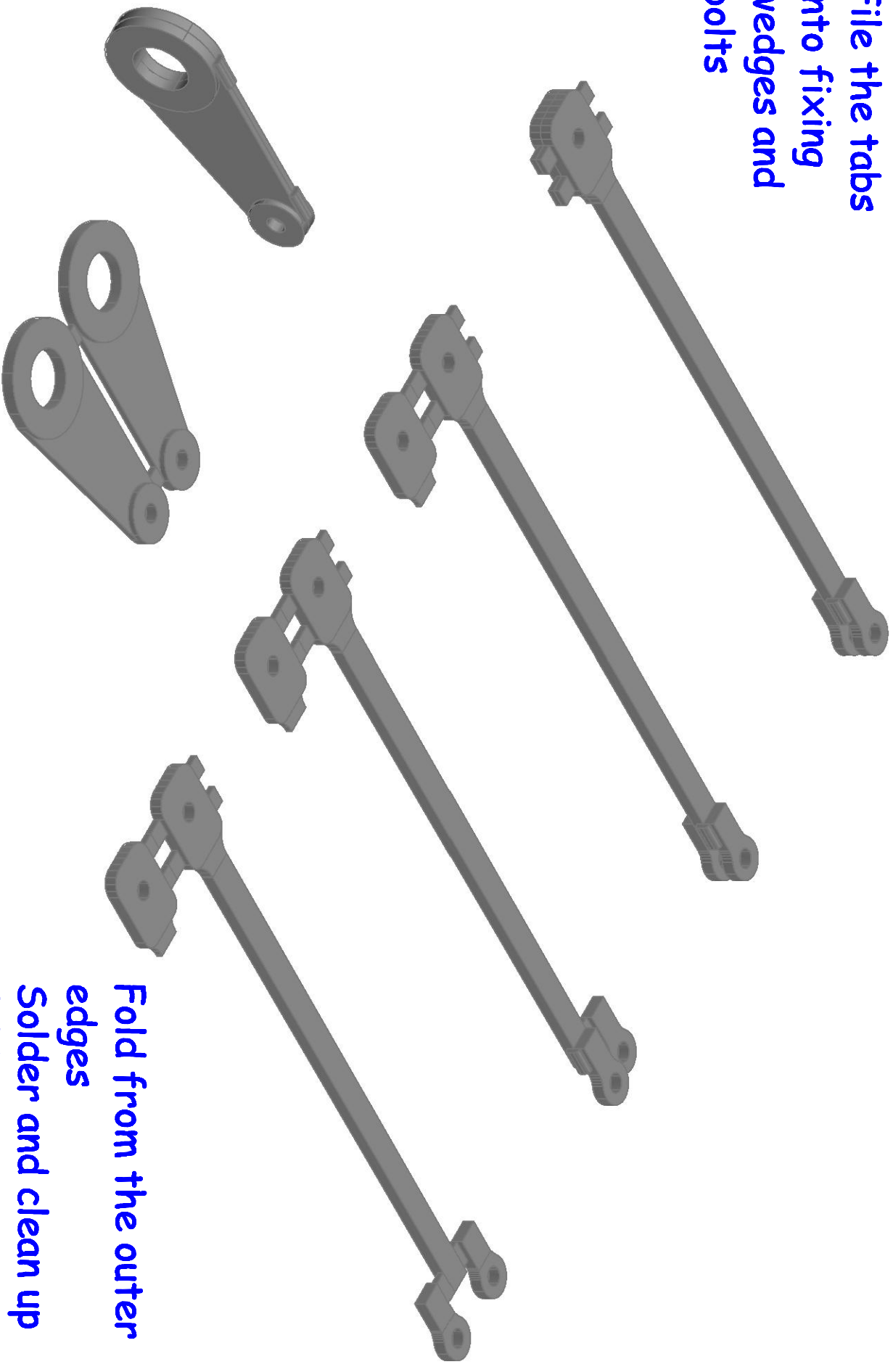


Clean up the open end of the rear rods with wet and dry sand paper to get an easy fit over the pivot point on the front rod. Chemically blacken the pivot point so the solder can't stick to it. Use a pin, rivet or simulated nut to secure the two rods together. Solder on the rear.



Eccentric Rod and Crank

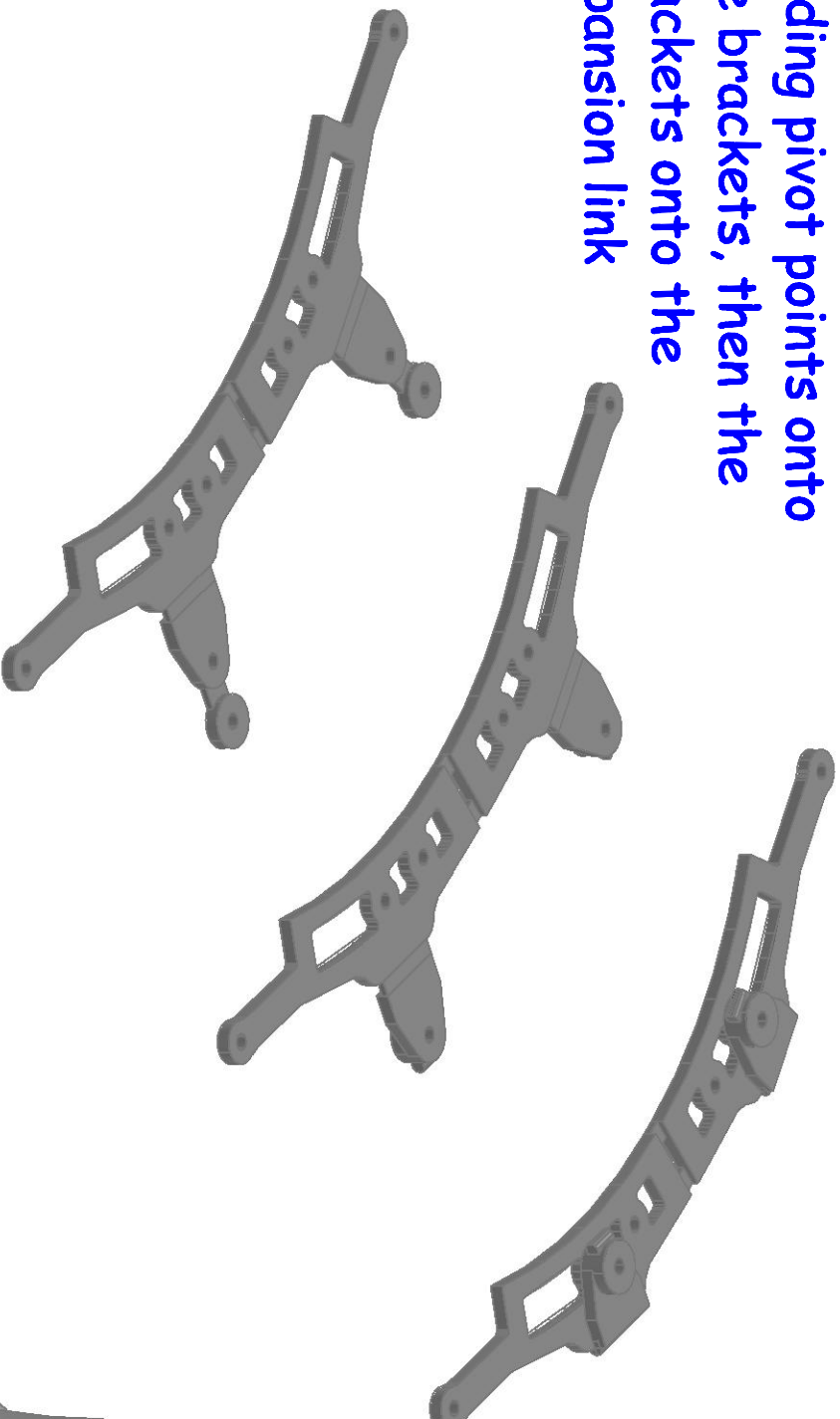
File the tabs
into fixing
wedges and
bolts



Fold from the outer
edges
Solder and clean up
fold seams

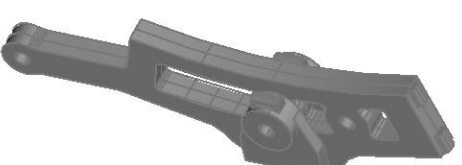
Expansion Link

Folding pivot points onto the brackets, then the brackets onto the expansion link

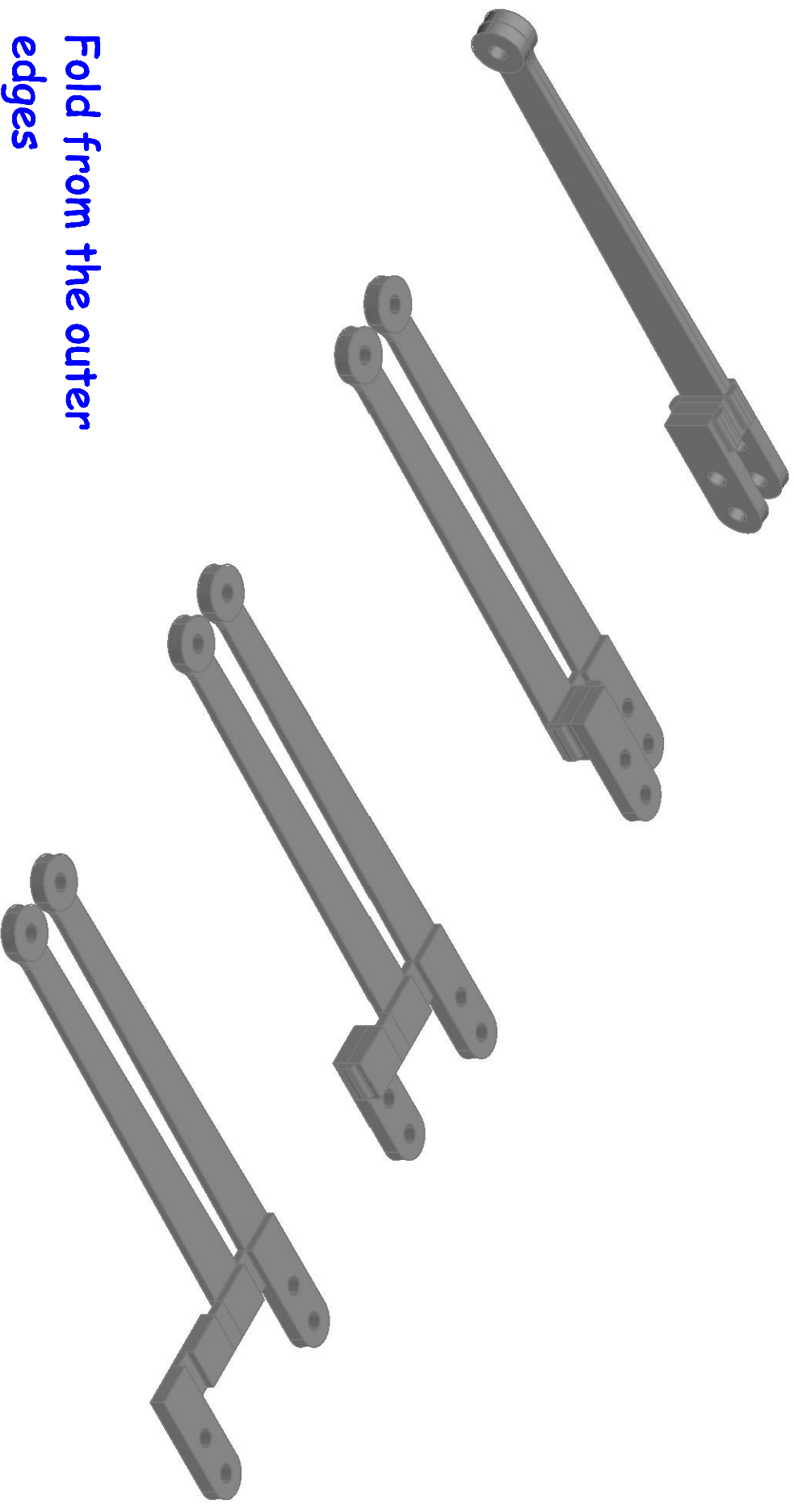


Folded to halves of the expansion link onto itself

Solder all the pieces together and clean up the fold seams



Lap and Lead Rods

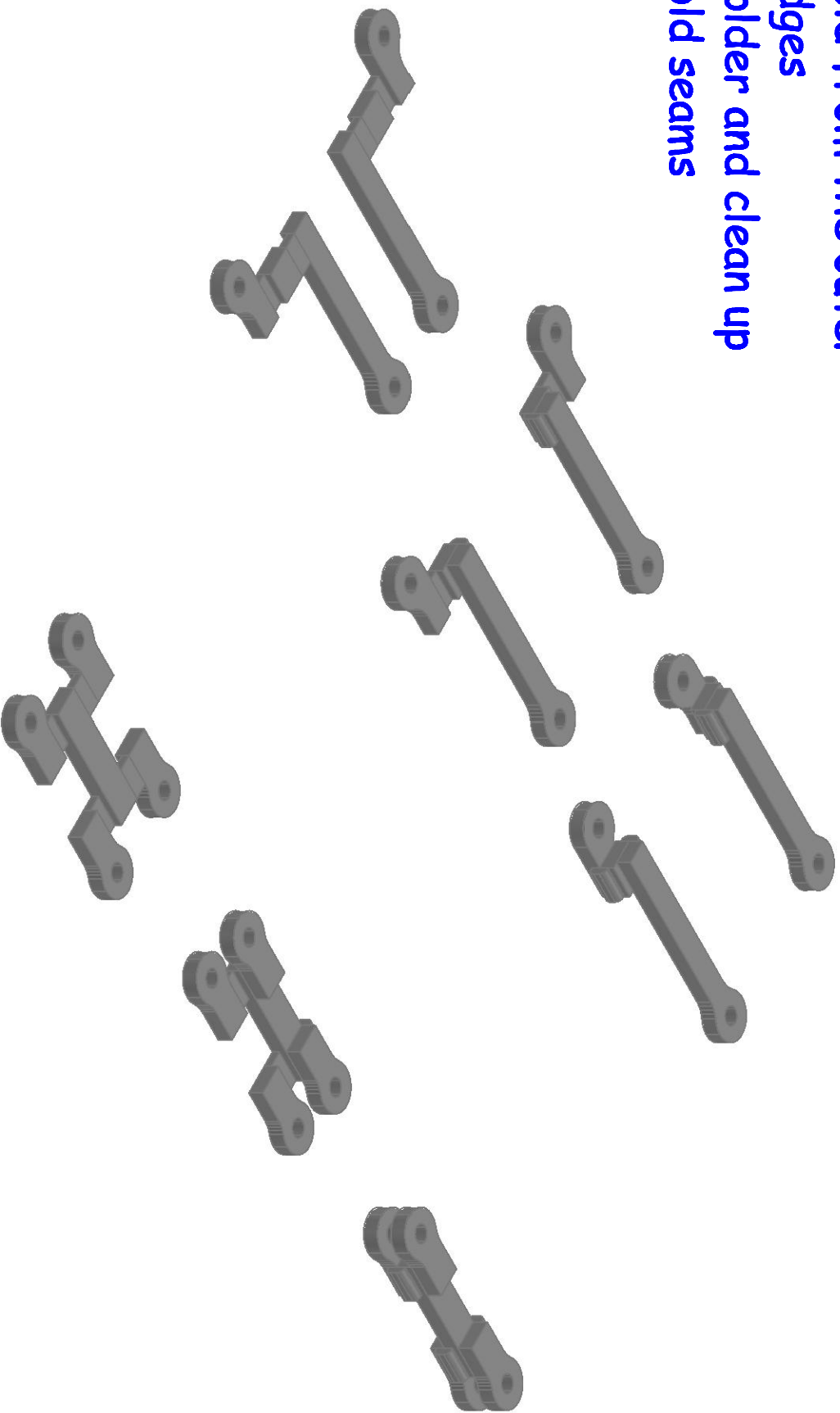


**Fold from the outer
edges**
**Solder and clean up
fold seams**

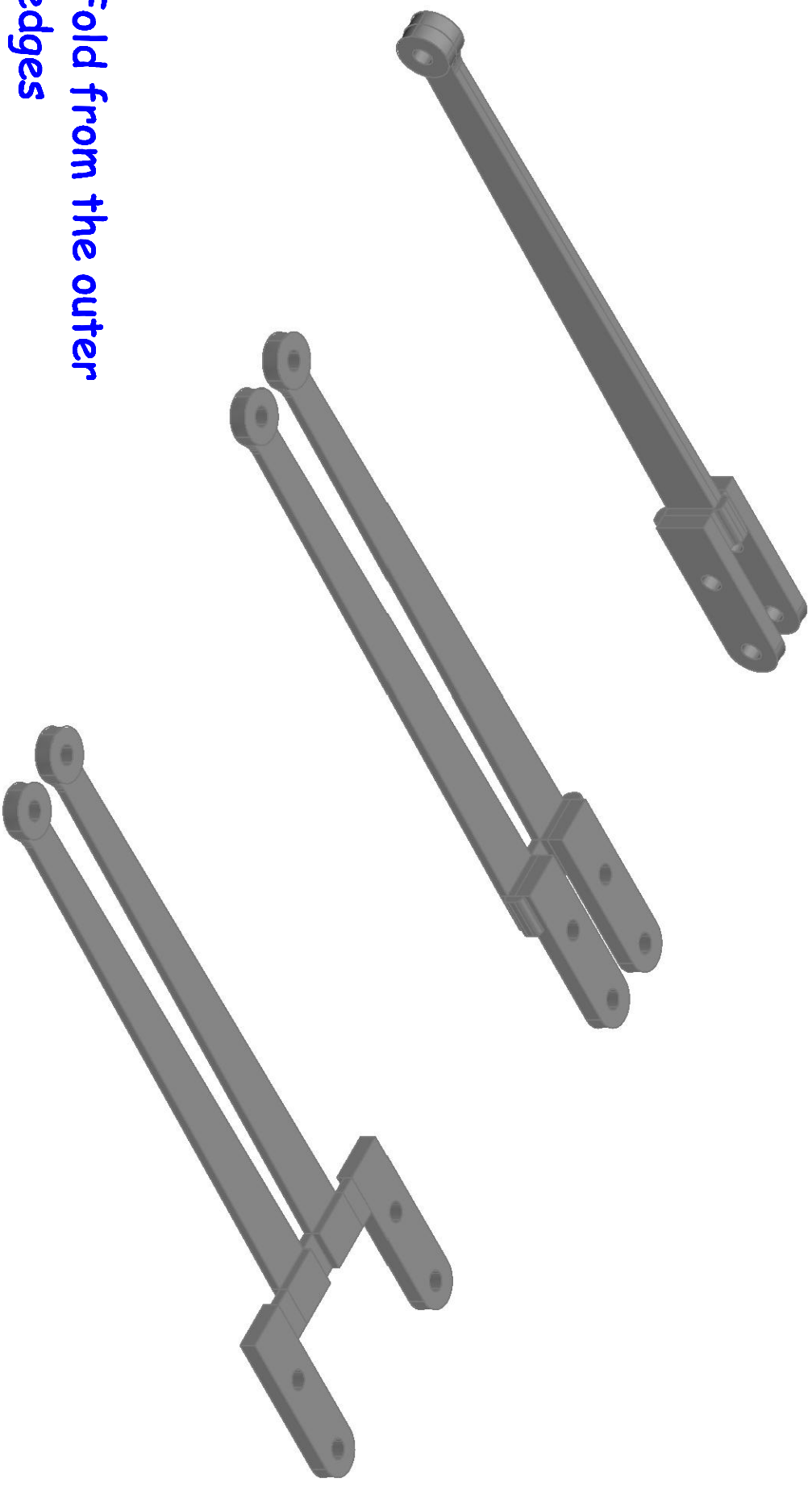
Lifting and Crosshead connecting Links

Fold from the outer
edges

Solder and clean up
fold seams

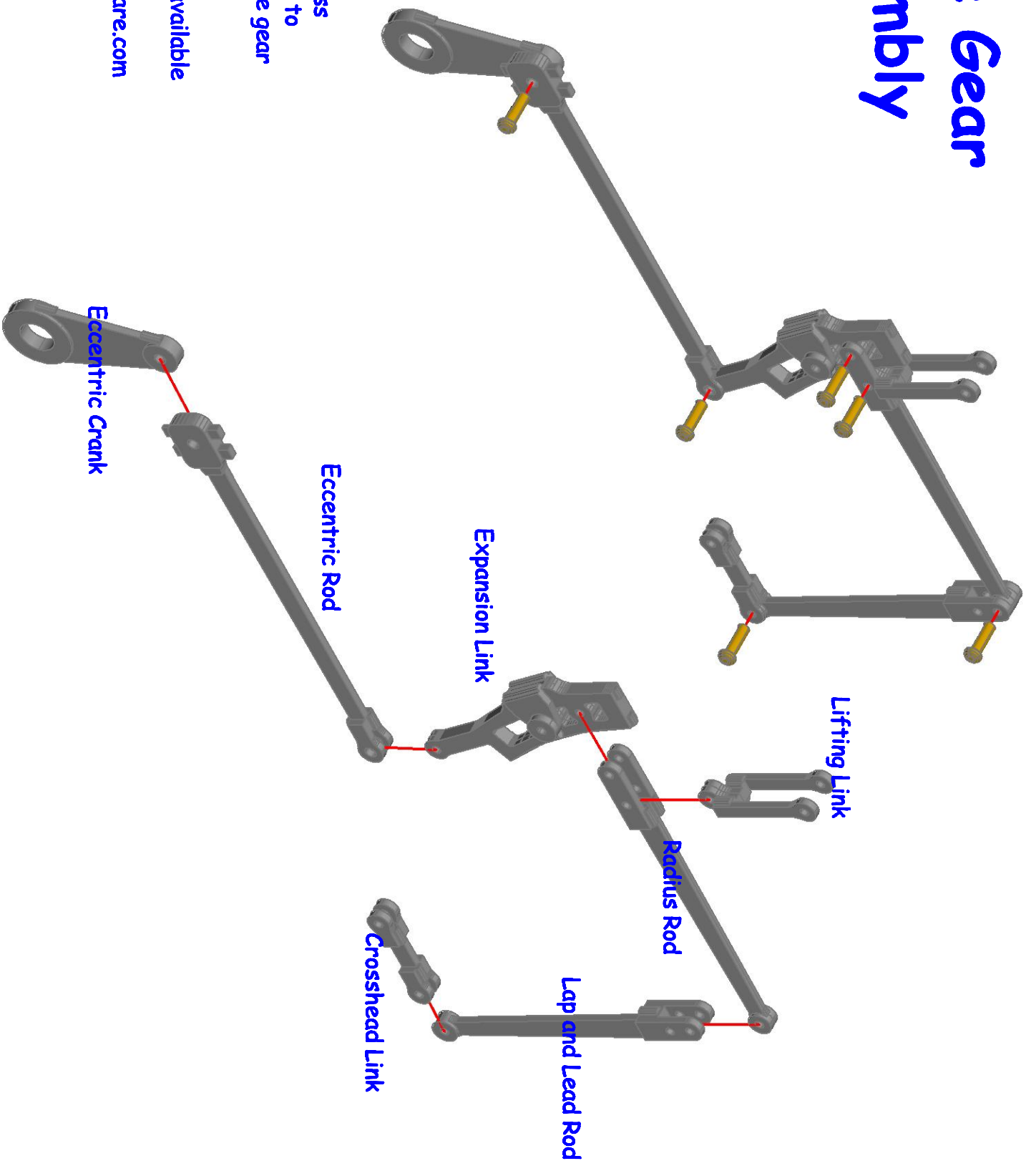


Radius Rod



**Fold from the outer
edges
Solder and clean up
fold seams**

Valve Gear Assembly



Use 0.5mm or less diameter rivets to connect the valve gear parts together

Suitable rivets available from:
www.scalehardware.com