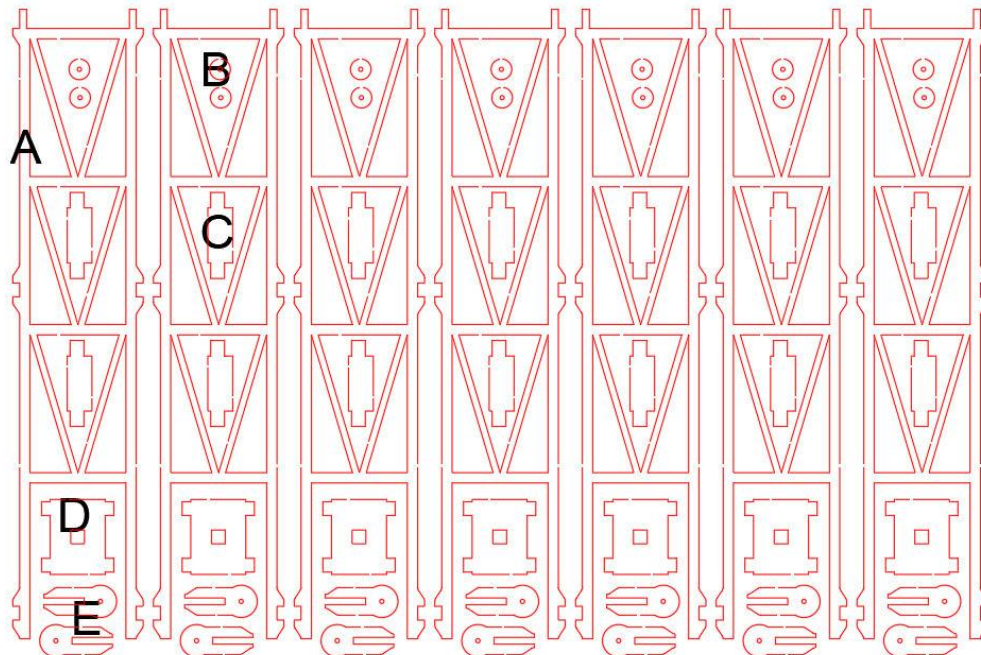
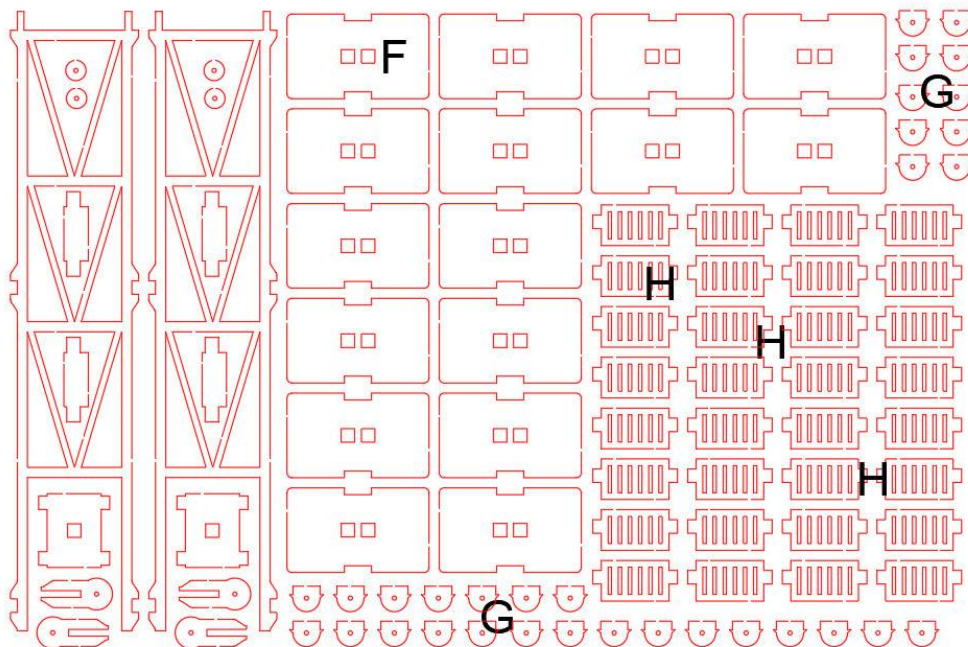


Instructions

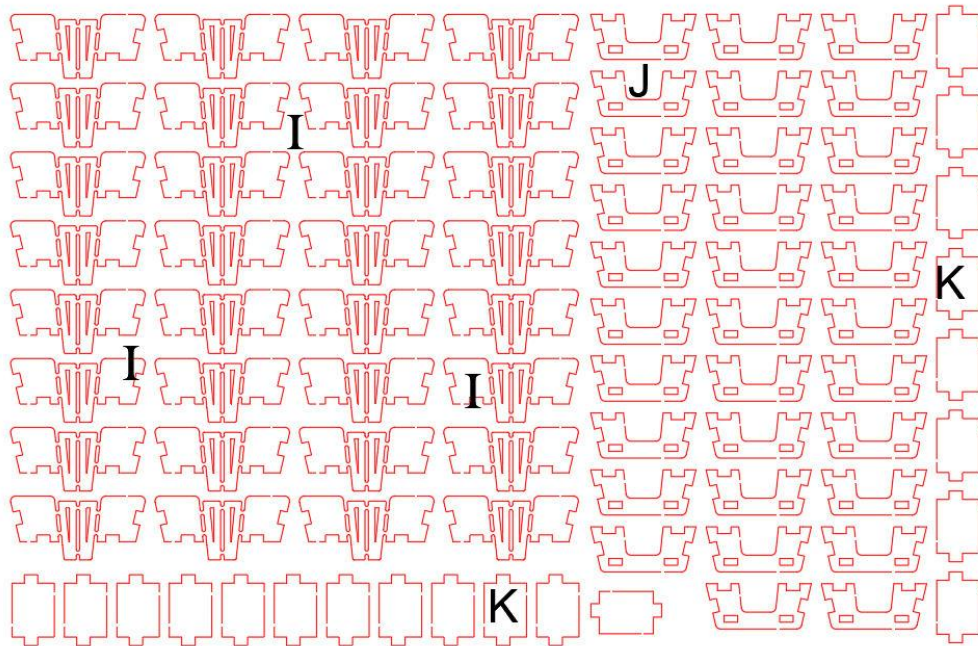
Sheet 1 and 2



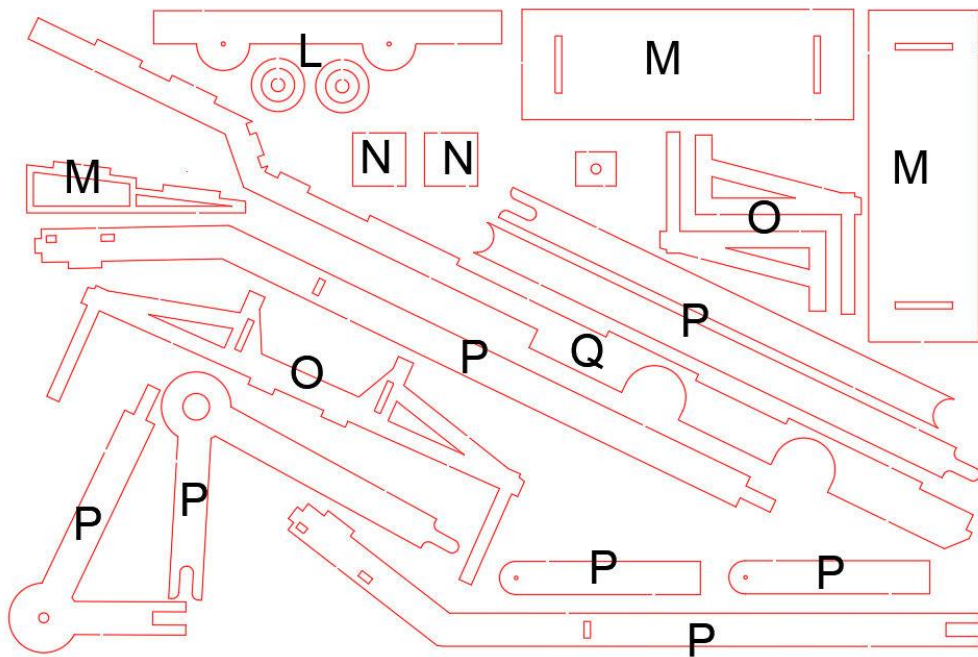
Sheet 3



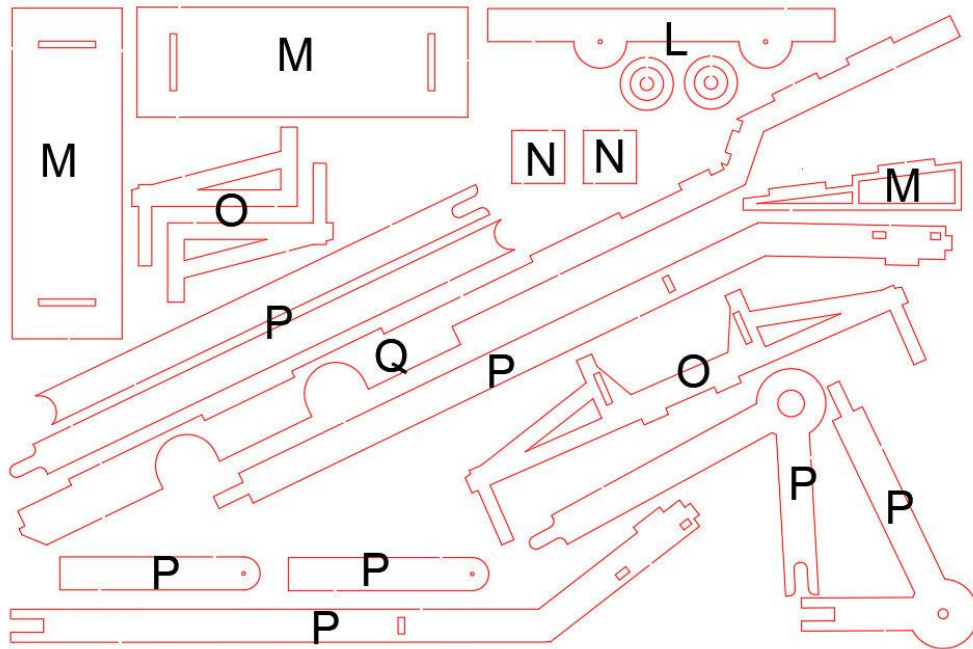
Sheet 4



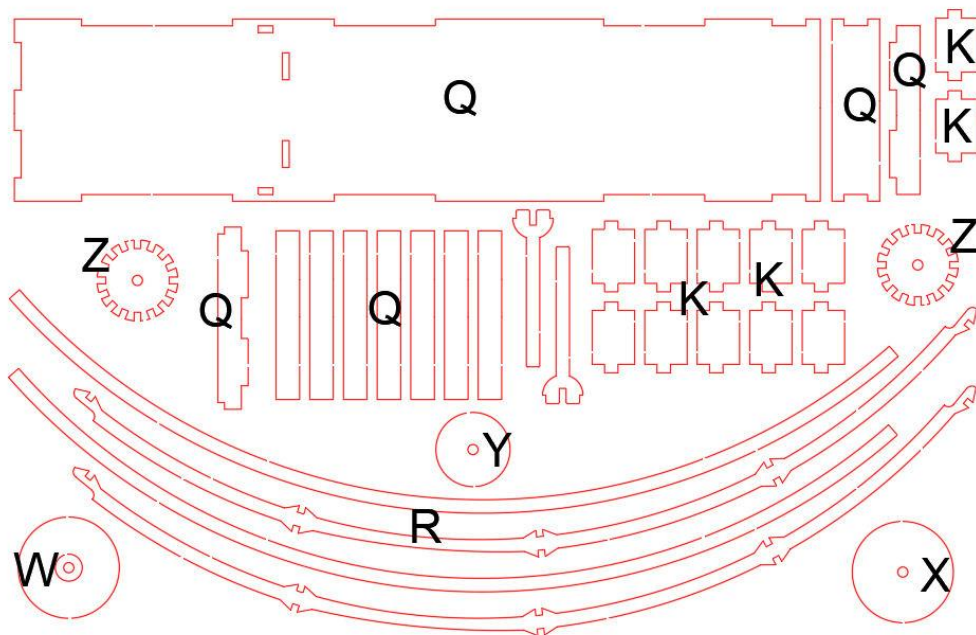
Sheet 5



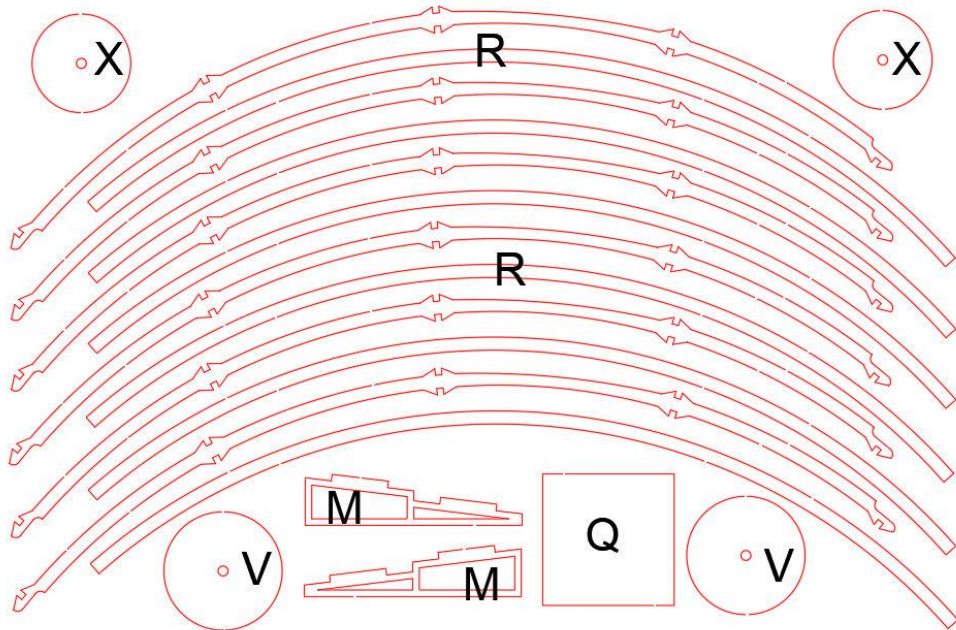
Sheet 6



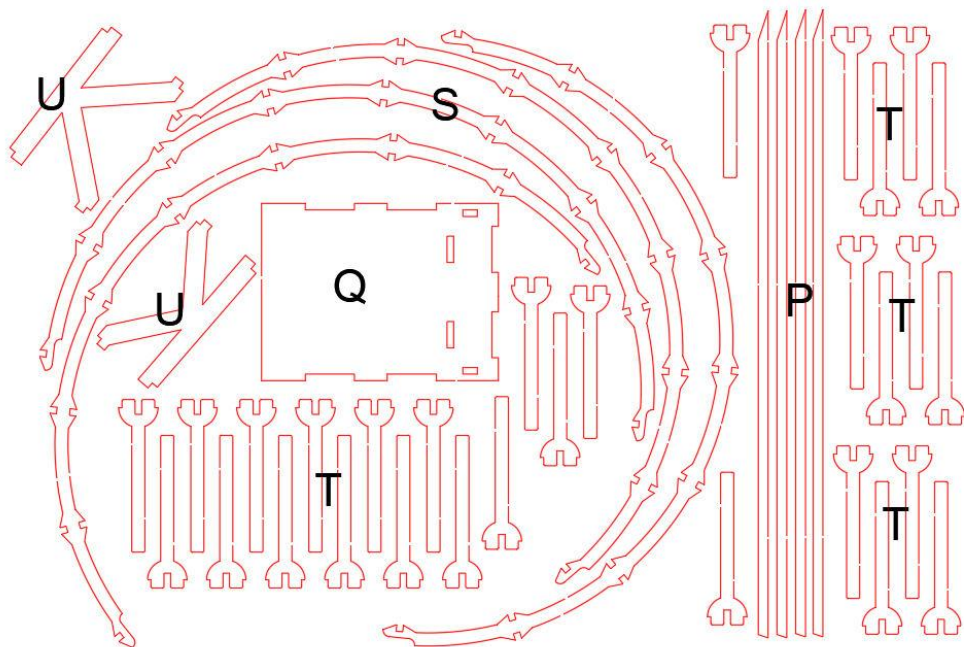
Sheet 7



Sheet 8

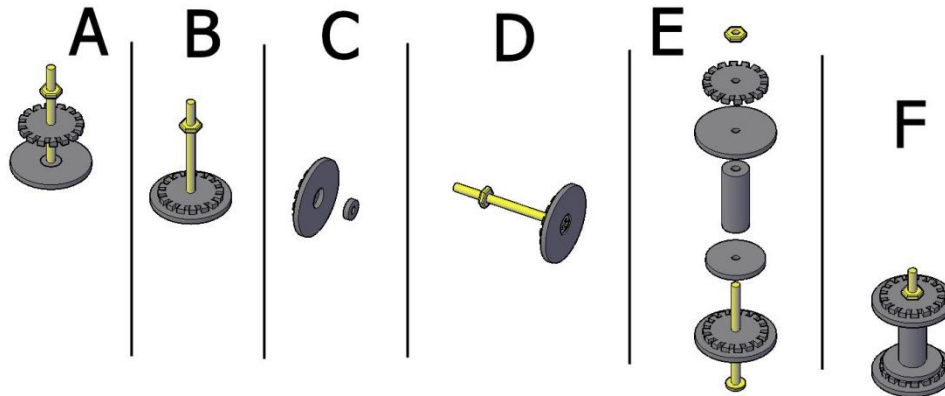


Sheet 9



Hub assembly parts W,X,X,Y,Z,Z on sheet 7 and 8

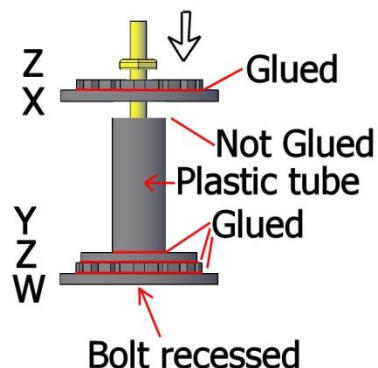
Plastic tube spacer and 3mm (M3) nut and bolt



(fig A and B above) – Glue W to Z and secure with nut and bolt until dry, don't get glue on the small disk in the centre of W.

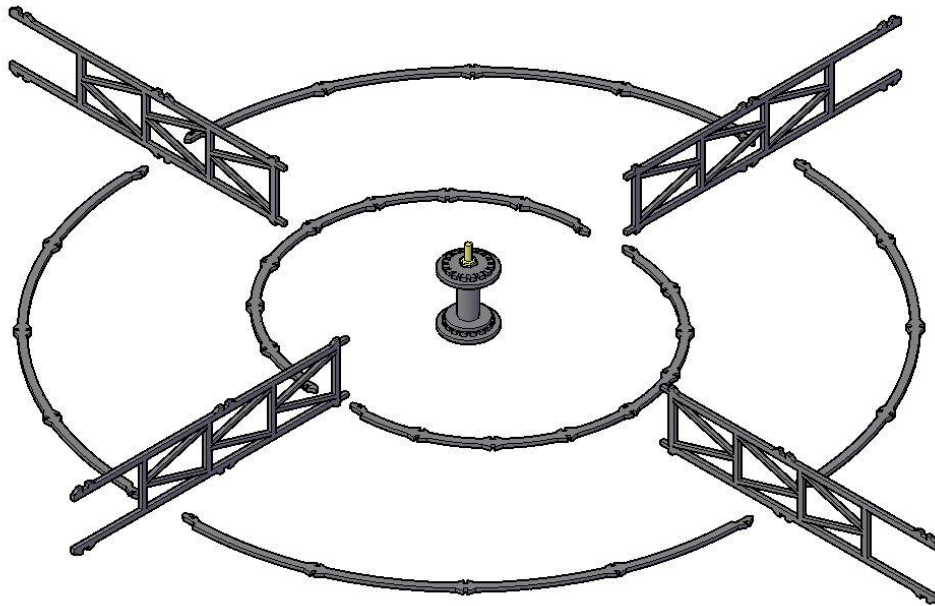
(fig C and D above) – When dry remove the bolt and cut out the small centre disk from W, replace the bolt, the bolt head is now reassessed.

(fig E and F above) – Fit parts in order W,Z, smaller disk Y, plastic tube, X, Z. Glue all MDF parts together. Using superglue or epoxy - glue the plastic tube to the MDF on the lower end only, fit the nut and bolt to hold all while it dries – the top MDF section should be able to rotate but not be slack (See lower diagram).



Main wheel assembly 16 parts A on sheet 1 and 2

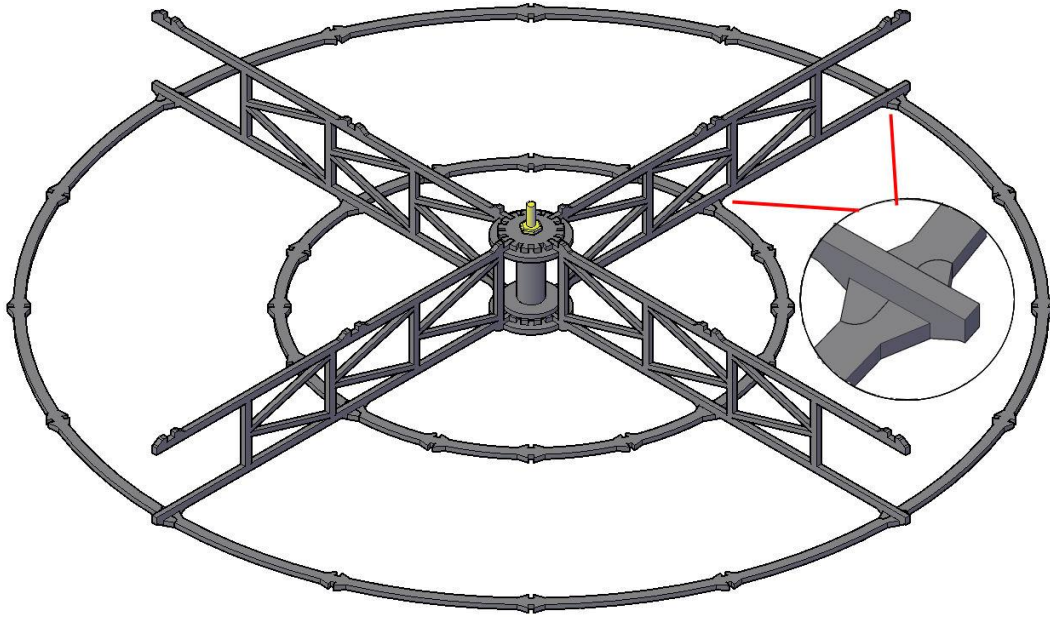
8 parts R on sheet 7 and 8, the barbed pieces only at moment not the 8 smooth ones - and the 4 parts S on sheet 9.



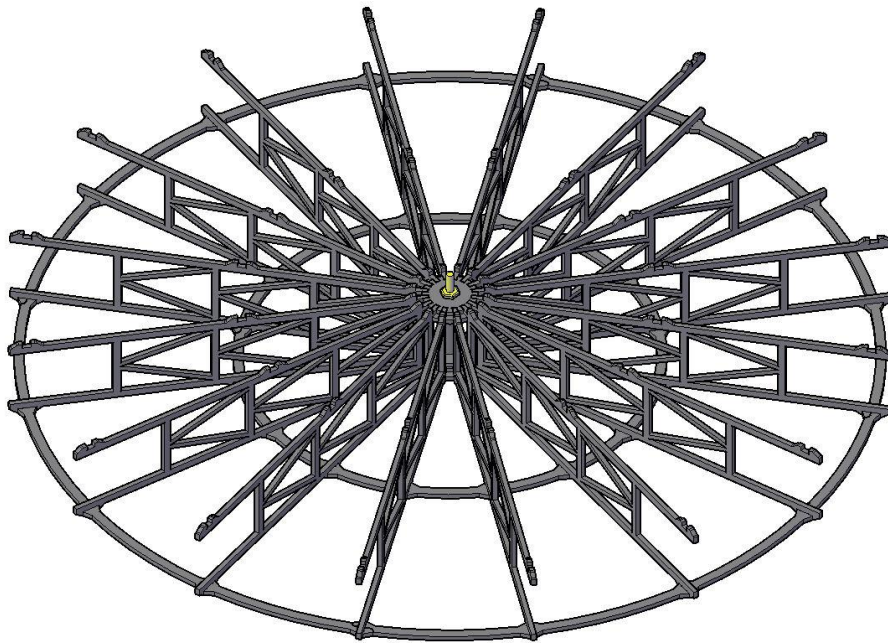
Place centre hub flat on table then turn the top of the hub so the notches line up with the bottom notches, you can fine tune this once you have fitted a radial by checking it is right angles to table.

Apply glue to the inner and outer rings where they join and fit them together with 4 evenly spaced radials, the radials are glued in the hub and glued/clipped over the rings where they joint to secure everything in place.

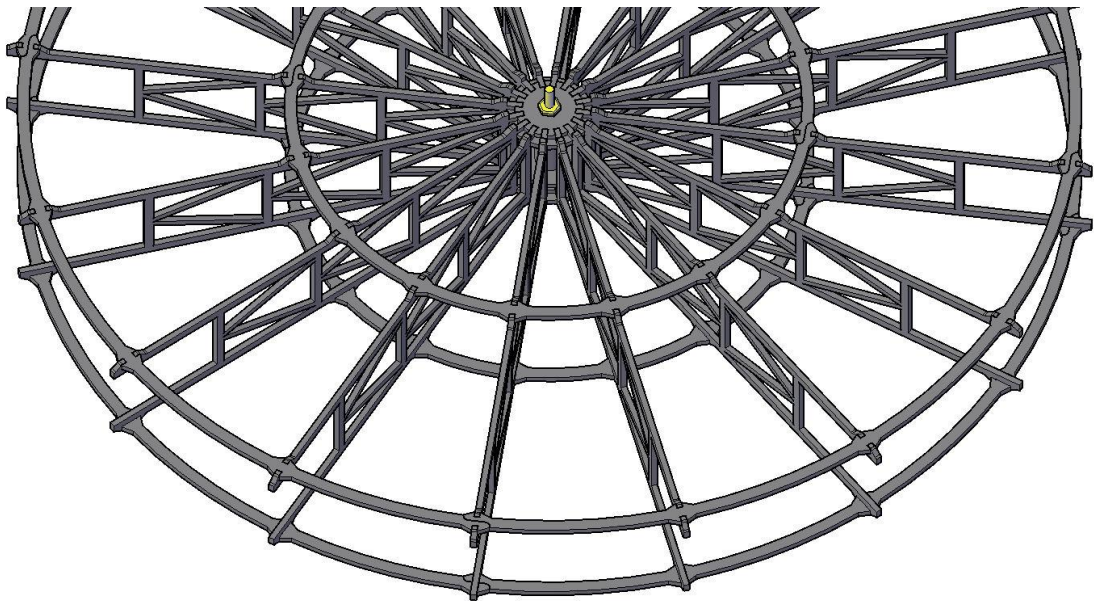
Hold everything flat to table with tape or weight until glue is set enough to commence.



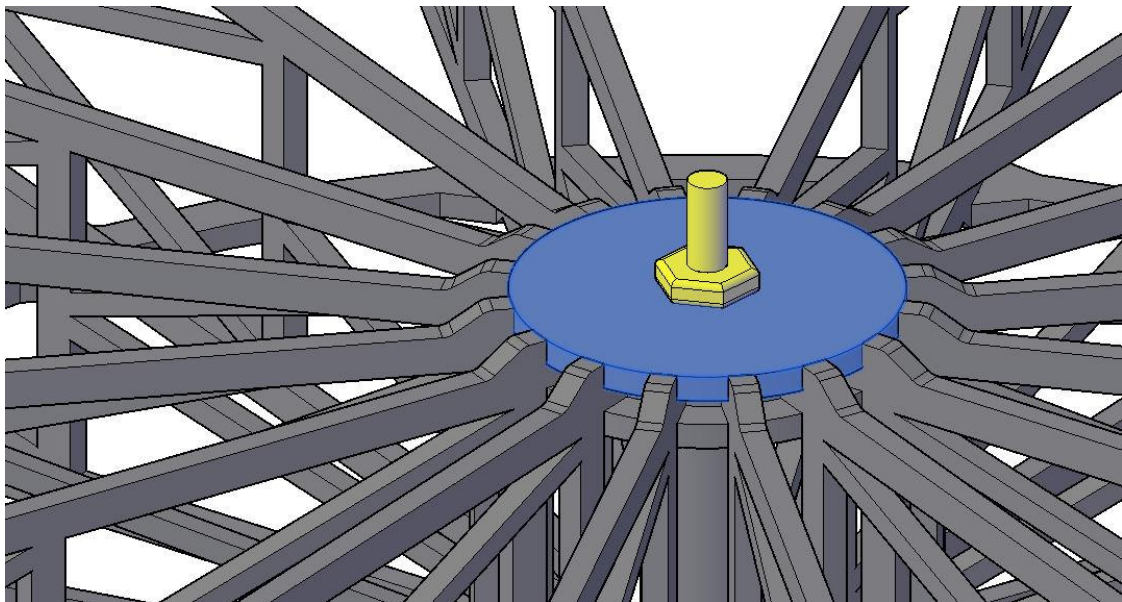
Next glue all the remaining radials in place



Next glue the other rings on the upper side to complete the main wheel.

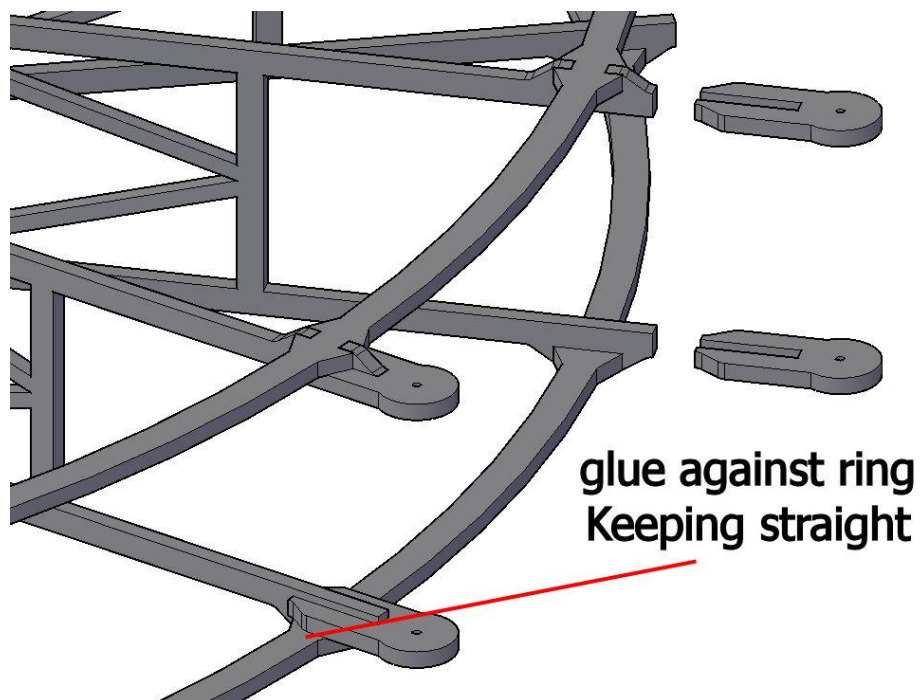


Remove nut and glue disk X on replacing the nut to hold

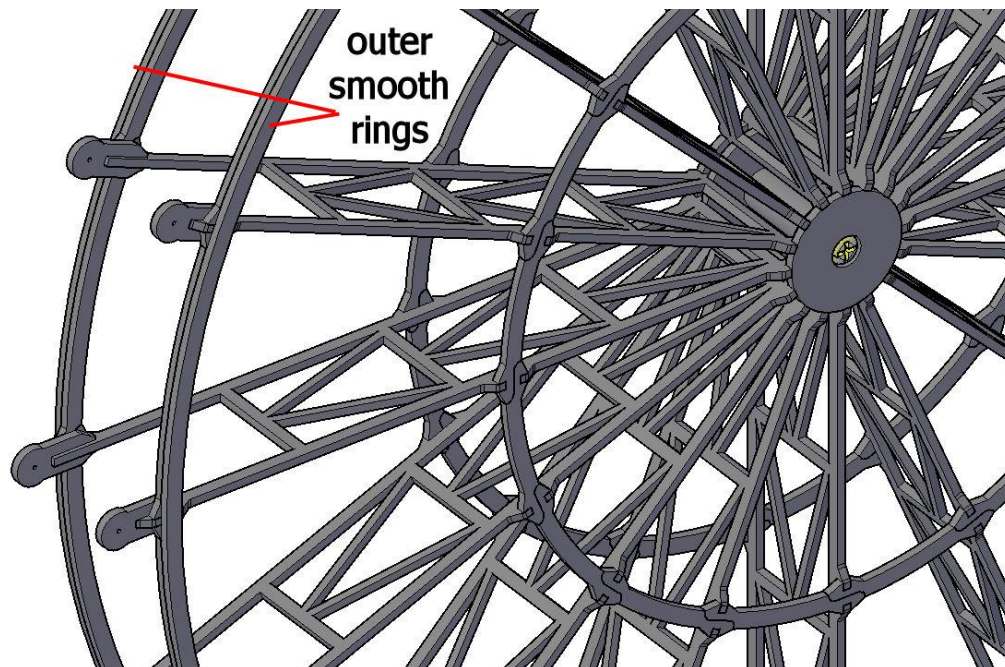


Next the gondola pivots are glued on the radial ends, Parts E on sheets 1 and 2

Make sure these are glued on straight and against the inside of the top and bottom rings.



Once complete and dry the 8 smooth ring sections R can be glued to the outer wheel rings to form the part where a drive motor wheel runs.

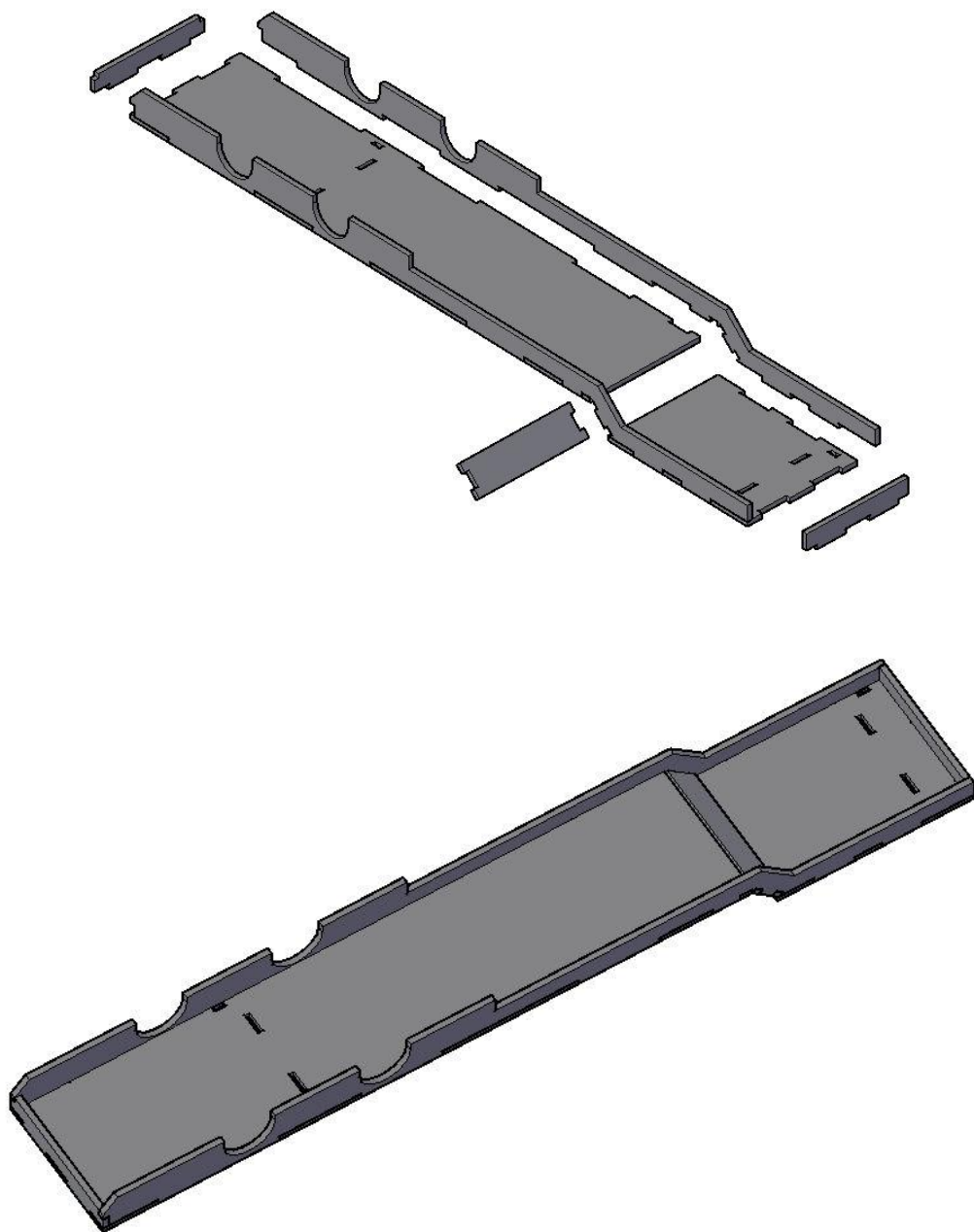


The main wheel is now complete, the bolt can be removed to allow a 3mm shaft to be inserted.

Trailer assembly

Parts L, and parts Q on sheet 5, 6, and 7

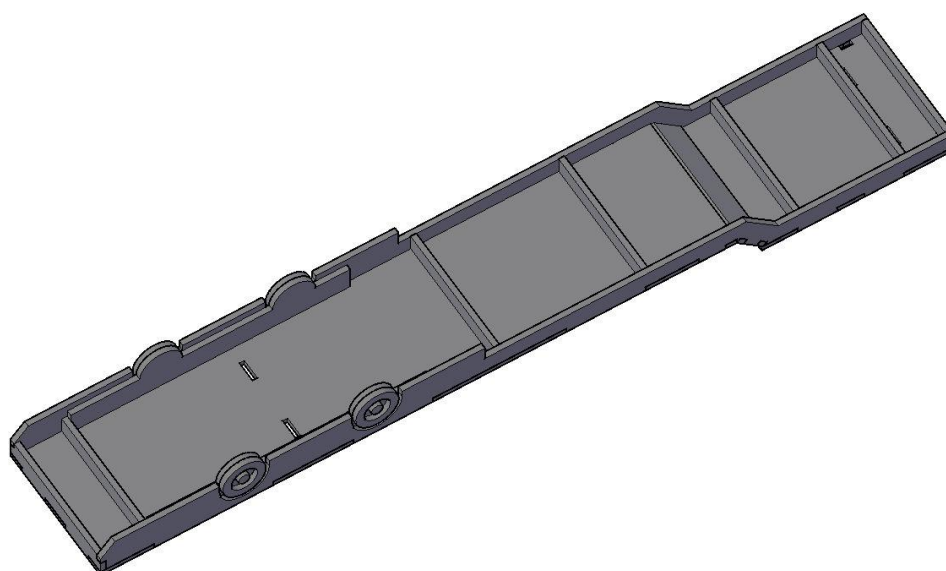
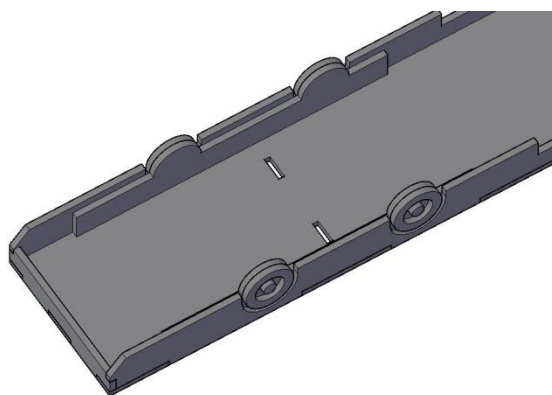
Assemble basic parts, hold together with elastic bands/tape etc till dry



Assemble wheels; these can be replaced with proper wheels with rubber tyres if required.



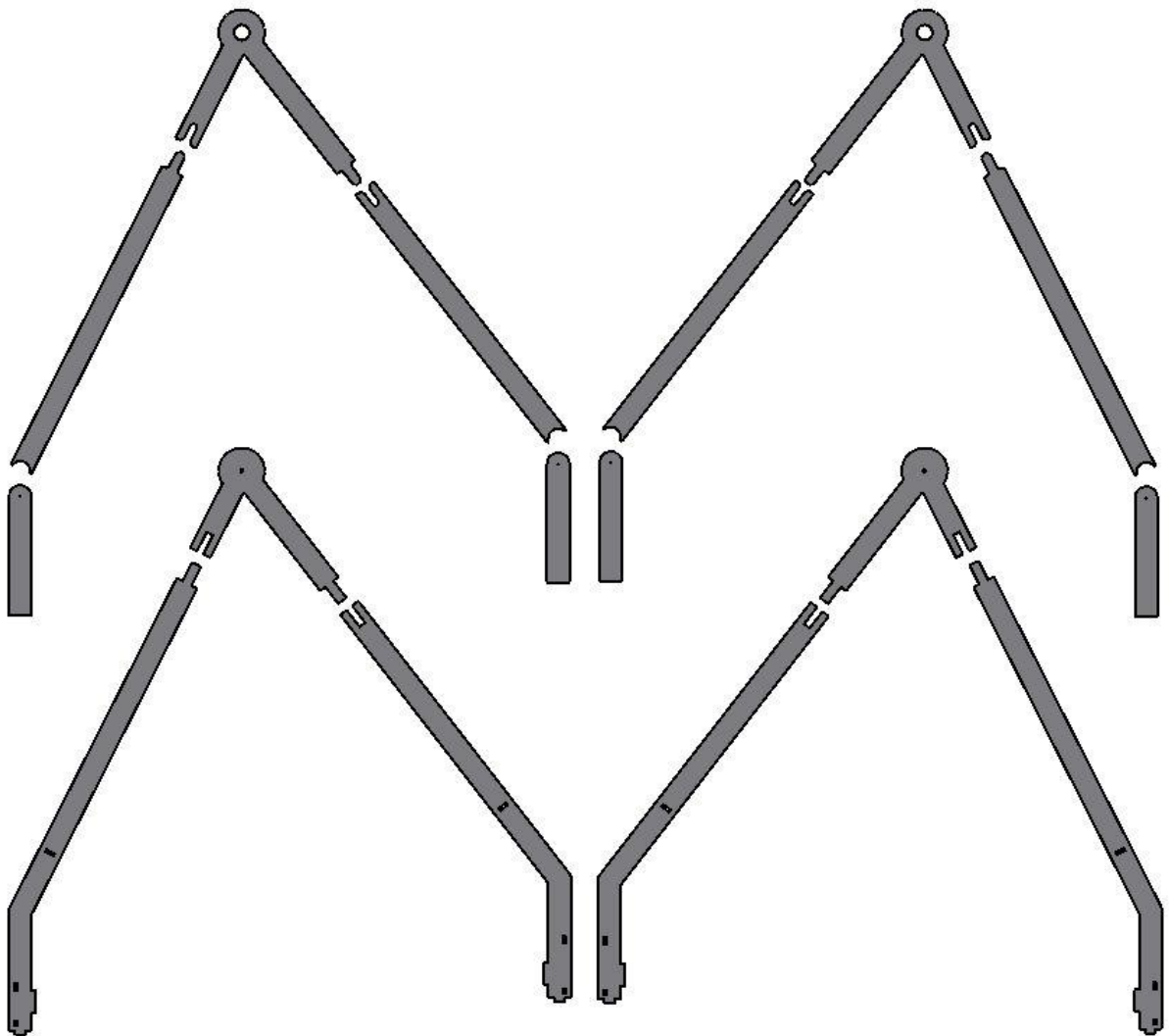
Fit wheel assemblies to trailer followed by the strengthening ribs



Wheel support structure

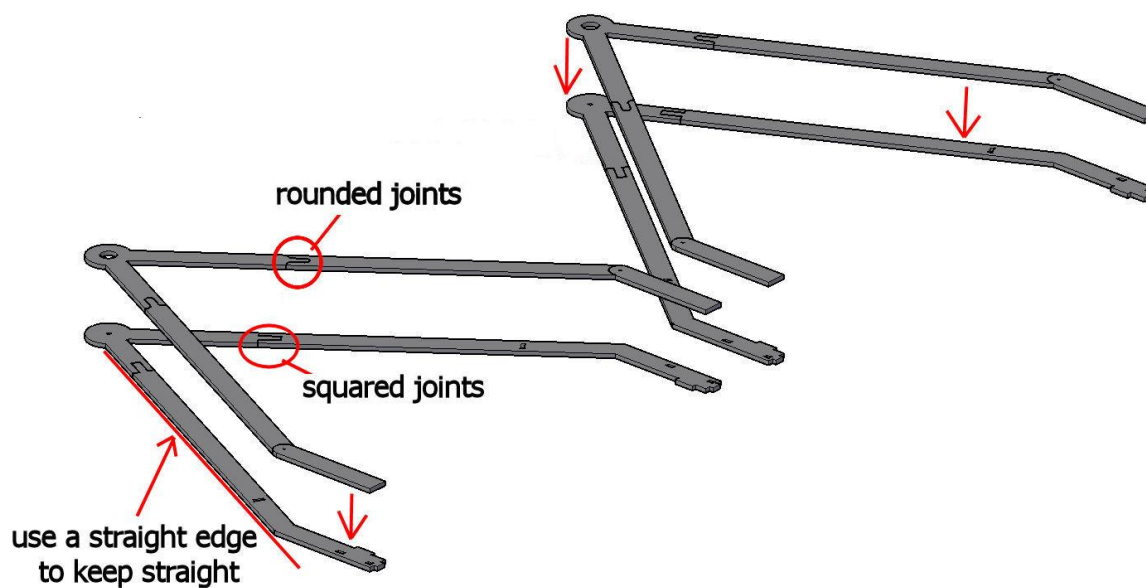
Parts P, O

Lay the parts out as the diagram bellow, the left is an identical mirror image of the left, note the hole sizes and joint shapes and leg lengths



Glue the lower sections together followed by the upper sections and glue upper and lower together, these should all be glued at once if possible and straightened then left to set.

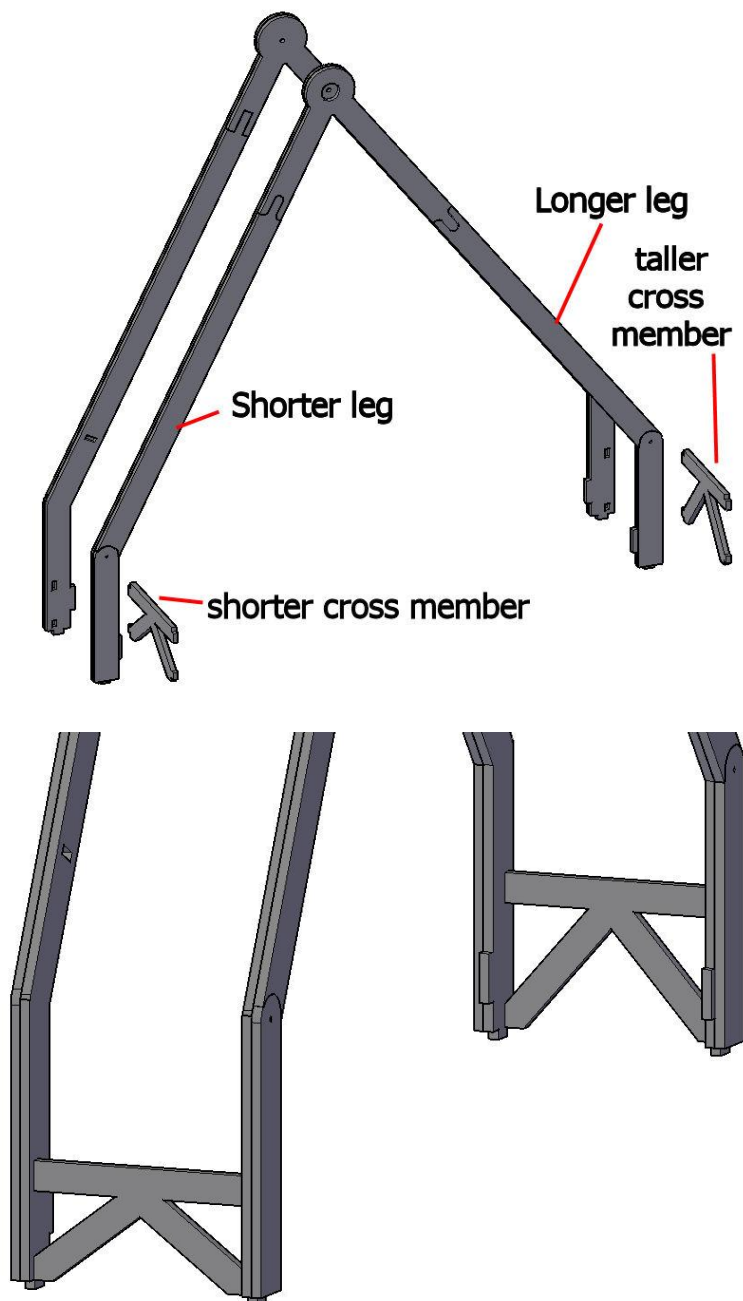
Note the lower has squared off edges on the joints while the upper has rounded edges



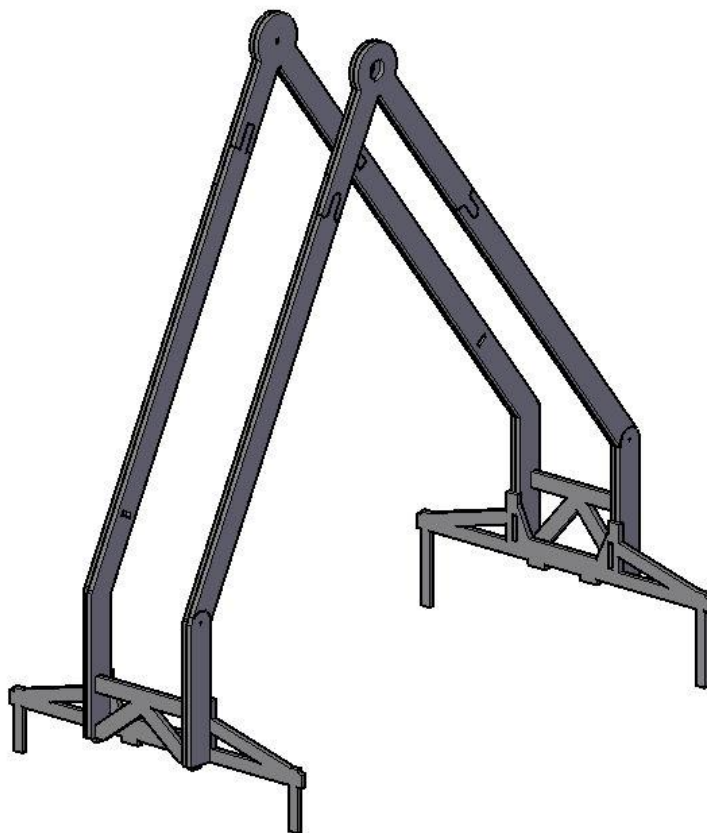
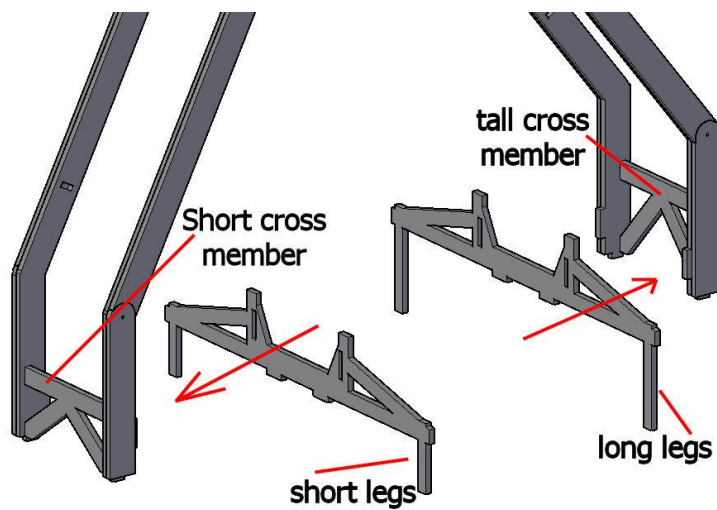
You should end up with 2 strong mirrored left and right wheel supports



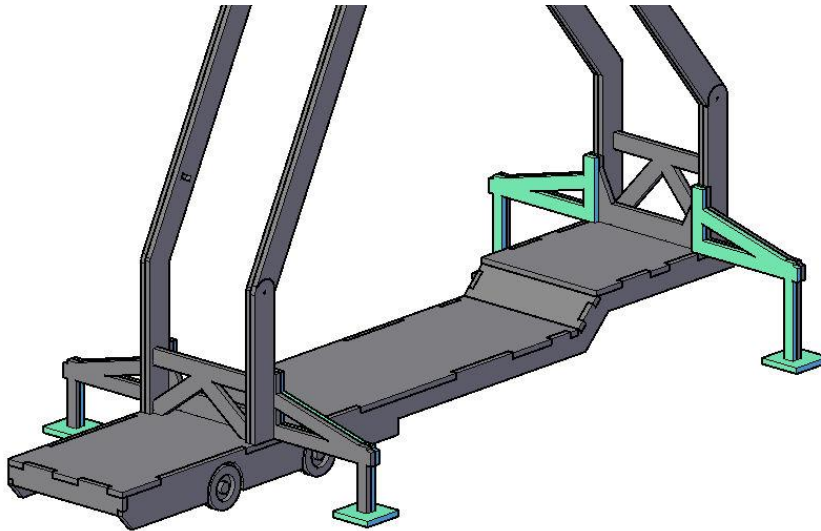
Fit the cross members to the uprights



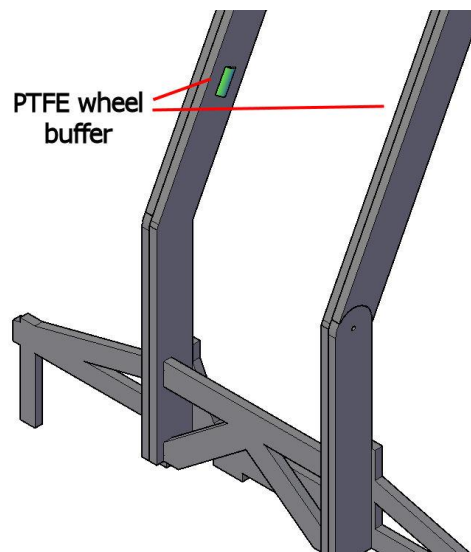
Fit the trailer stabilisers to the structure, use the long leg stabilisers at the end with the tallest cross member and short with short



Fit the wheel support structure to the trailer, the longer stabilisers are at the front on the swan neck of the trailer, glue the stabiliser feet Part N sheet5, 6 under the legs and the 4 stabiliser doublers on each inner side, you may need to support the swan neck on trailer until glue is set

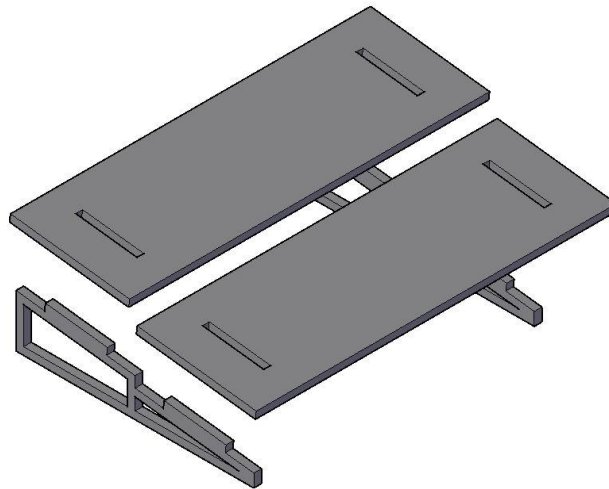


Cut 4 x 6mm long pieces of the supplied PTFE tube and glue in the slots of the inner of the wheel support legs with superglue

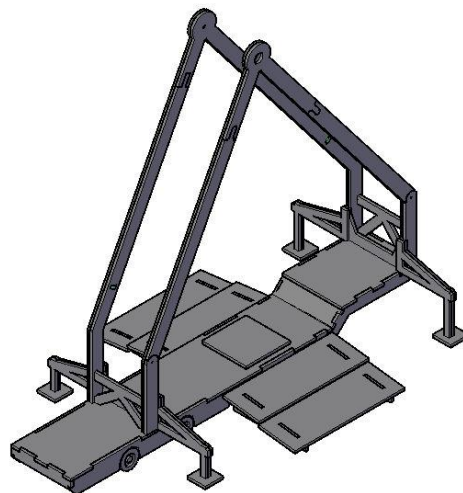


Assemble steps parts M sheets 5, 6 and 8

Take care as the step frames are delicate, any force can break them, file the slots if they are too tight then glue on

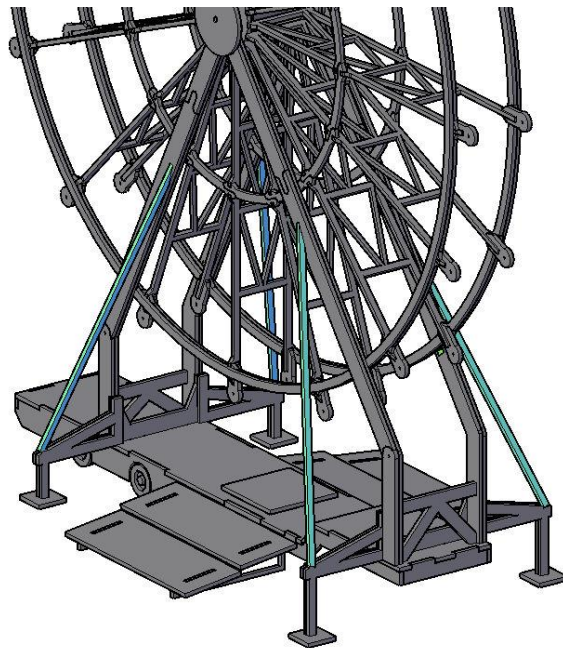
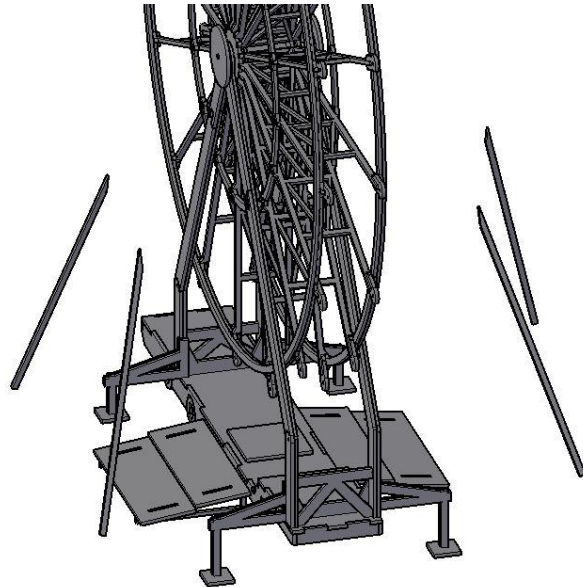


The small square pad Q fits under where the passengers enter the gondola



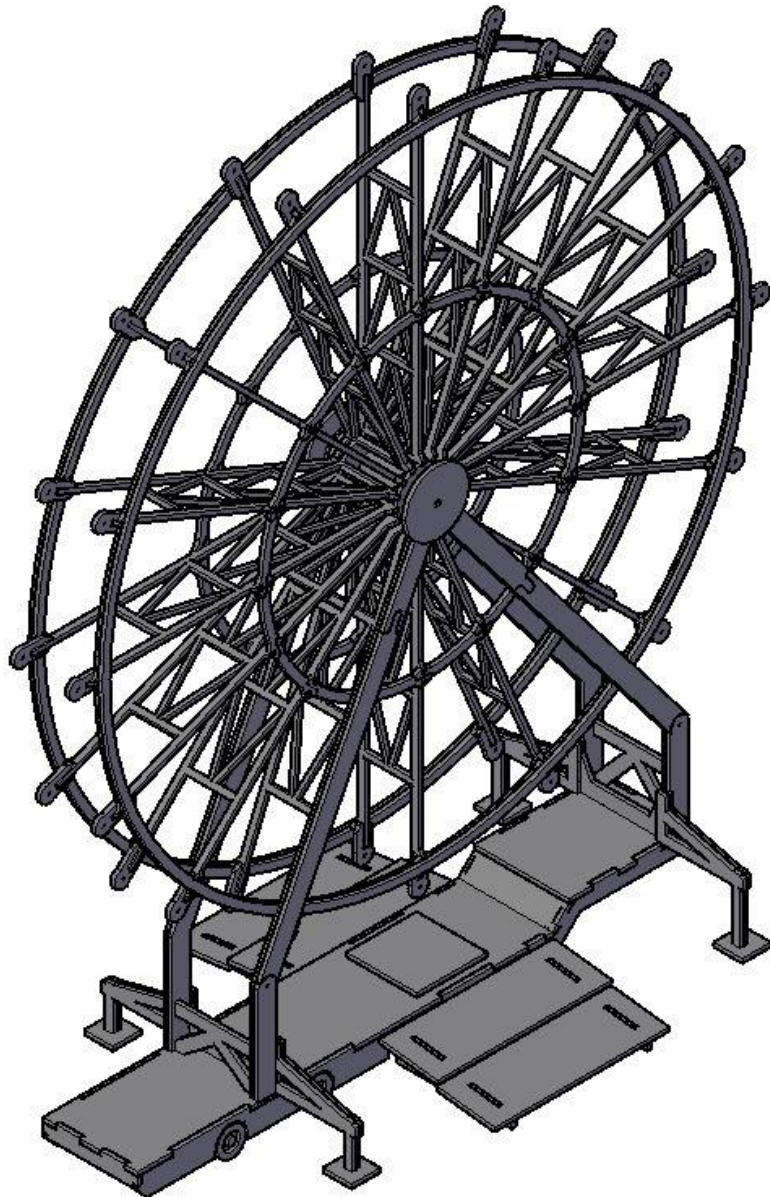
Use a few washers on each side of the wheel as spacers as needed to allow wheel to rotate freely, you can use the bolt as the pivot – just cut it down to required length or use a 3mm steel smooth spindle, the washers can be removed if you want to fit any brushes for lighting etc

There are 4 stabliser bars Parts P, these are only roughly cut to mate with the surfaces and should be filed to fit better then glued in place, these only have small contact points so it may be better to use a more stronger glue such as an epoxy to hold these, and of course care will be needed when moving the model not to damage these parts.



The trailer is now complete

If you use a spindle you may need to secure this in with small collars.
You can use the big disks Part V on the ends of the spindle.

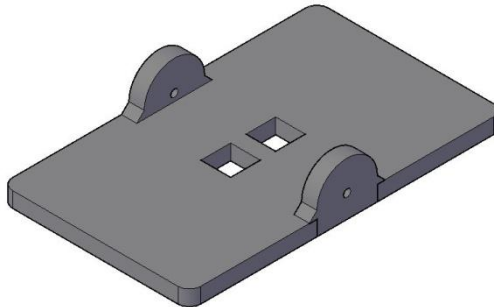


Gondola construction

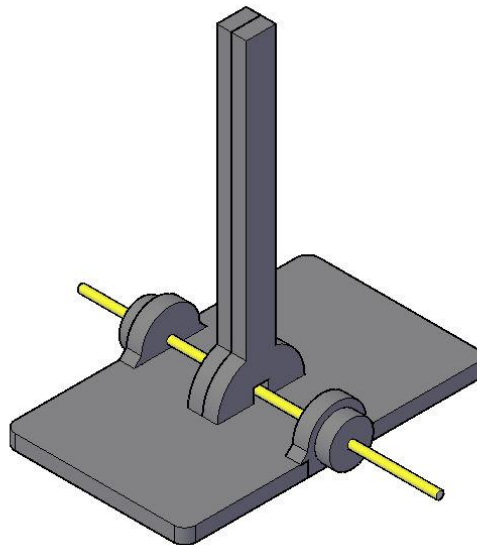
Parts B, C, D, F, H, G, I, J, K, T multiple sheets

Parts I with the gates are delicate and can easily break.

First assemble the hanger brackets to the roofs(This can be fiddly and may require tweezers), turn roof on back and glue hangers on then leave to dry, it is better to do all 16 roofs to allow drying before moving on to the next stage. – Glue these well and allow plenty of time to dry

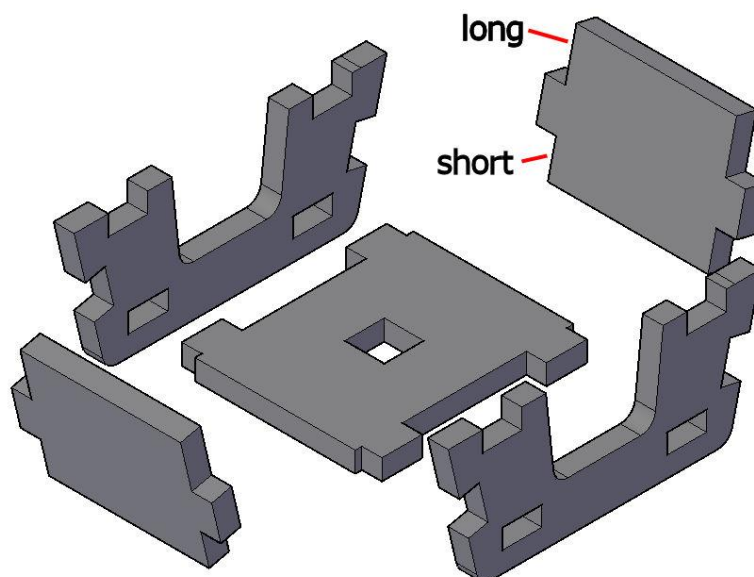


Next glue together 2 of the hanger bars Part T and glue into roof centre make sure this is straight up. Use a piece of 1mm piano wire through the hangers to centralise the holes while gluing on the spacers parts B

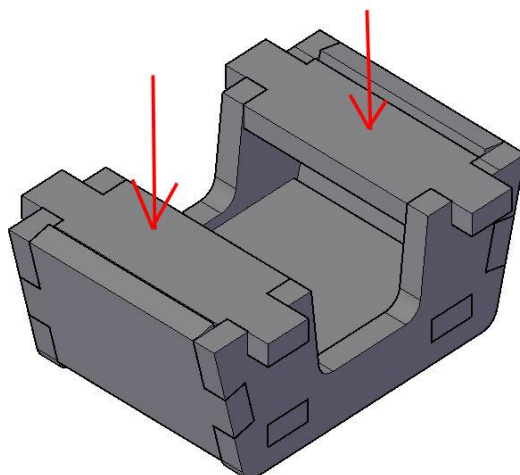


Put the roofs to one side, now parts D, J, and K

Glue the parts together as diagram making sure part K is fitted with the longer side from the tab upwards and the shorter side downwards, again it is better to do all 16 of these before moving on to allow drying time



Once dry glue on the seats tab nearest to back



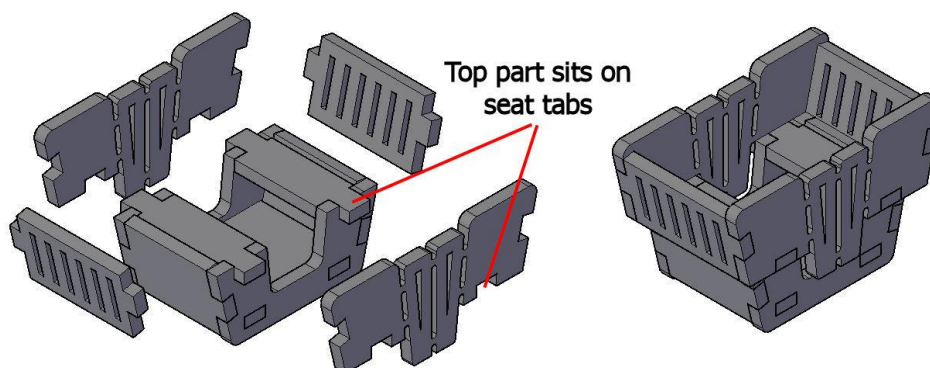
Do all 16

Next assemble the top part of the gondola Parts I and H

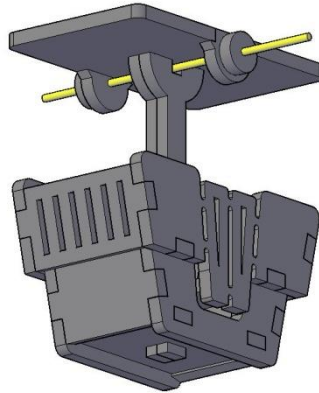
These can easily break if squeezed to hard. These can be a little awkward to glue and hold, you may find if you pinch the lower edges of part H between your fingers pressing them against the sides of the lower gondola – this will hold parts I in place while you straighten things up and place the gondola down to dry

Parts I sit on the seat tabs for support and location

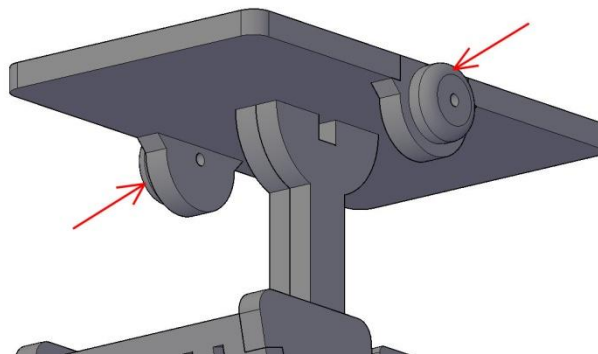
Do all 16 again to allow drying time



Finally assemble roof to lower part, hold gondola flat on table and glue the roof and hanger section in – push so it goes through the bottom and touches the table, it will be sticking out slightly, make sure the roof is straight with the gondola and leave to one side to dry – do all 16



The spacers on the gondola roof should be sanded to length to fit loosely between the hangers on the wheel then rounded off on the edges.

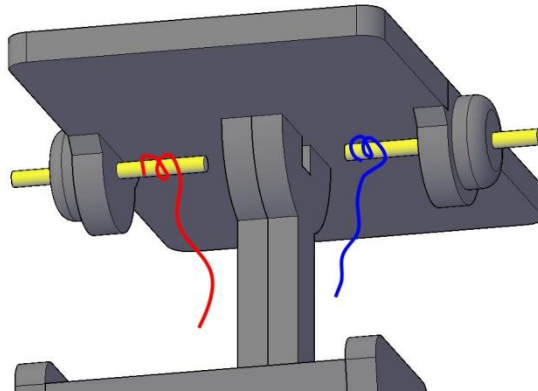


You will need to glue pins into the roof hanger/pivots, If you don't intend lighting the model you can just use a straight piece of 1mm piano wire (Not supplied) glued in protruding out of each side by 3mm.

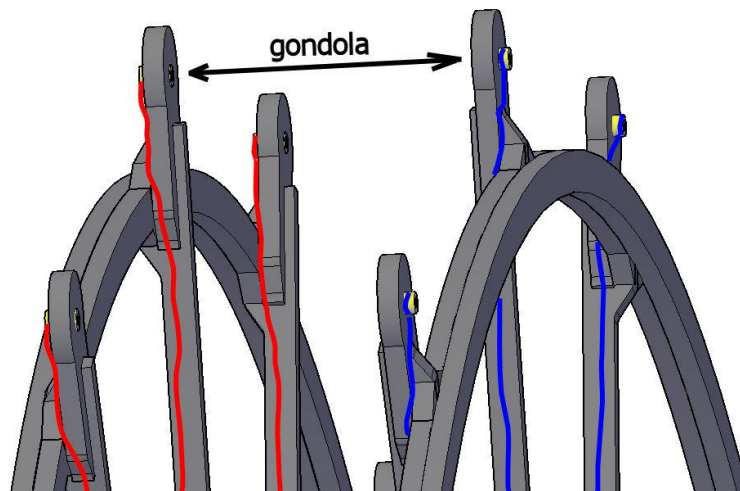
Gondolas are fitted by inserting one side then pulling the wheel apart just enough to get the second pin in, the gondolas should swing freely.

The following is a guide only to adding light and motorising

If you are going to light the gondolas then its best to use 2 separate lengths of 1mm brass rod(Not supplied) glued in sticking out by around 3mm each side, wires are soldered to these for connecting to your LED layout.



Connections to the wheel can be achieved by drilling out the pivots on the wheel to 2mm and fitting small pieces of 2mm brass tube (Not supplied) that have 1mm holes for the gondola pin, the appropriate wiring is then taken to these in whatever arrangement suits either one to the other then to the centre or each to the centre.



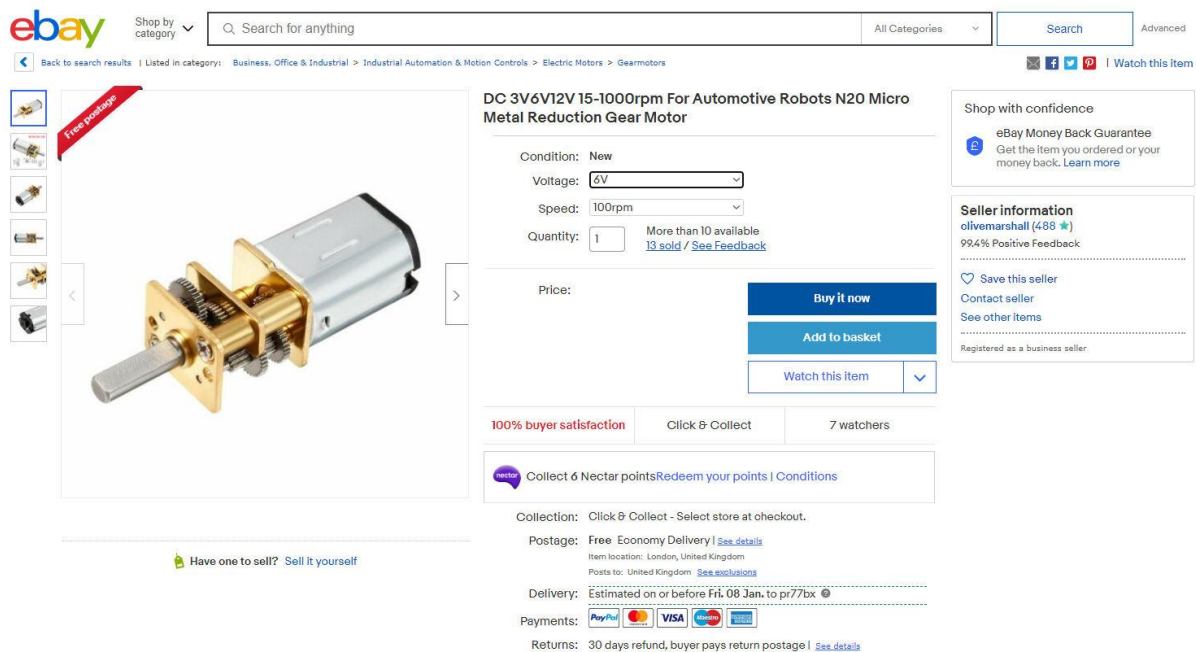
If you intend to motorise the model then A motor can be fitted to rub on the outer ring of the wheel although you will need to work this out yourself as a motor guide, a 63rpm gear motor with a 12mm wheel rubbing on the outer ring would be approx 2 revs per minute, the real ride does between 1 to 1.5 revs per min

50rpm gear motor with 15mm wheel rubbing = 2rpm

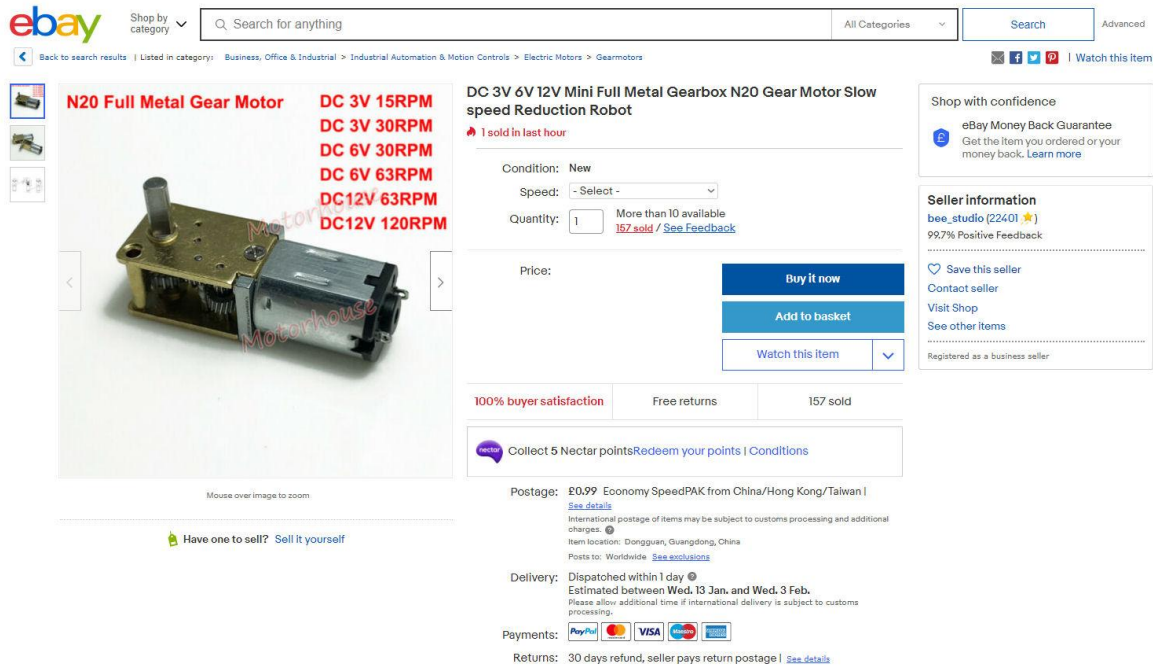
75rpm gear motor with 10mm wheel rubbing = 2 rpm

I would go with a 100rpm gear motor on a 10 or 12mm wheel but lower the gear motor speed with a cheap motor controller from eBay.

Motor suggestions are the N20 gear motors again from eBay weather a side gearbox or end gearbox will depend on how you intend to mount and drive the wheel, motors suggested are as follows



The screenshot shows an eBay product listing for a "DC 3V6V12V 15-1000rpm For Automotive Robots N20 Micro Metal Reduction Gear Motor". The product image shows a small, gold-colored gear motor with a silver metal housing and a black output shaft. The listing includes a "Free postage" badge and a "100% buyer satisfaction" badge. The product details section shows the condition as "New", voltage as "6V", speed as "100rpm", and quantity as "1". The price is listed as "£1.99". The listing also includes a "Buy it now" button, an "Add to basket" button, and a "Watch this item" button. The seller information section shows the seller's name as "olivemarsall" with a 99.4% positive feedback rating. The listing also includes a "Click & Collect" option and a "7 watchers" badge. The bottom of the listing shows the collection method as "Click & Collect - Select store at checkout", the postage as "Free Economy Delivery", the item location as "London, United Kingdom", the delivery date as "Estimated on or before Fri, 08 Jan. to pr77bx", the payment methods as "PayPal, Visa, Mastercard, American Express", and the return policy as "30 days refund, buyer pays return postage".



N20 Full Metal Gear Motor

DC 3V 15RPM
DC 3V 30RPM
DC 6V 30RPM
DC 6V 63RPM
DC 12V 63RPM
DC 12V 120RPM

DC 3V 6V 12V Mini Full Metal Gearbox N20 Gear Motor Slow speed Reduction Robot

1 sold in last hour

Condition: New

Speed: - Select -

Quantity: 1 More than 10 available 157 sold / See Feedback

Price: £0.99

Buy it now

Add to basket

Watch this item

100% buyer satisfaction Free returns 157 sold

Collect 5 Nectar points Redeem your points | Conditions

Postage: £0.99 Economy SpeedPAK from China/Hong Kong/Taiwan | See details

International postage of items may be subject to customs processing and additional charges. Item location: Dongguan, Guangdong, China

Posts to: Worldwide See shipping

Delivery: Dispatched within 1 day Estimated between Wed, 13 Jan. and Wed, 3 Feb. Please allow additional time if international delivery is subject to customs processing.

Payments: PayPal VISA Mastercard

Returns: 30 days refund, seller pays return postage | See details

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Seller information

bee_studio (22401) 98.7% Positive Feedback

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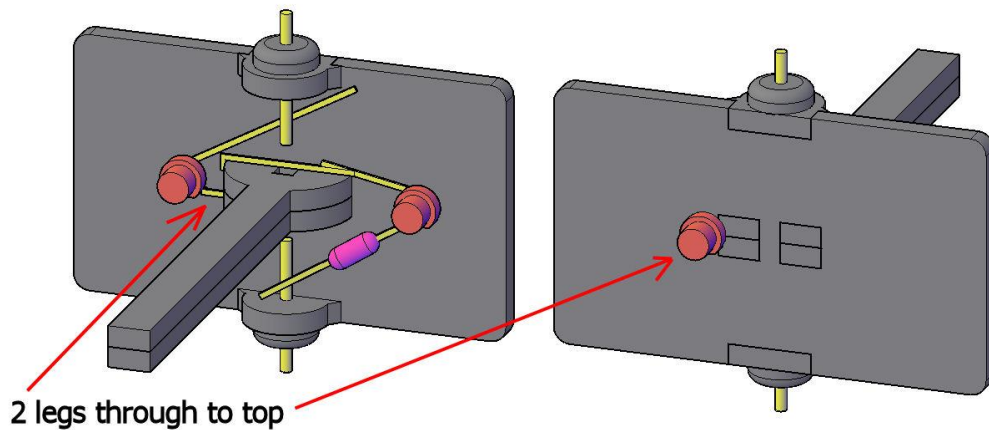
Registered as a business seller

You will need to source a suitable small wheel with rubber tyre to rub on the rim, you may need to get possibly a scalextric wheel etc and drill the hole out to 3mm to fit the motor shaft.

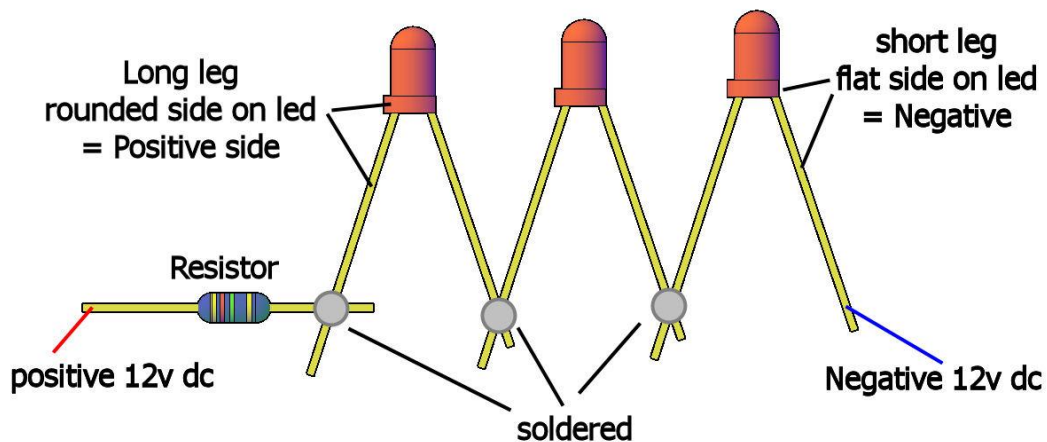
If you intend lighting the gondolas a suggestion is to put one LED on the roof aiming up to light the underside of the next gondola and 2 under the roof to light the inside of the gondola.

These can be wired in series with a small resistor if supplied with 12v dc

Suggestions are to use small flat LEDs if you are capable of working with these or use 3mm round LEDs, you can cut the top off to make them a little flatter if needed.



A rough guide to resistors with 12v is



For 3 LEDs wired in series on 12v as the previous diagram

3 White LEDs = 150 ohm (brown, green, brown) Resistor

3 green LEDs = 150 ohm (brown, green, brown) Resistor

3 blue LEDs = 150 ohm (brown, green, brown) Resistor

3 pink LEDs = 150 ohm (brown, green, brown) Resistor

3 purple LEDs = 150 ohm (brown, green, brown) Resistor

3 yellow LEDs = 330 ohm (Orange, Orange, Red) Resistor

3 orange LEDs = 330 ohm (Orange, Orange, Red) Resistor

3 red LEDs = 330 ohm (Orange, Orange, Red) Resistor

These are just a rough guide to standard 3mm round LEDs and there is always exception to the rule so check the specifications of your LEDs and adjust accordingly.

If they look too bright for your requirements just up the size of the resistor until it looks good to you, don't downsize from recommended as this will blow the LEDs.

Some other LEDs you could use are

5050 which are 5mm square but only 1.5mm deep but are more awkward to solder to or 8080 surface mount type which are tiny and even more awkward to solder too. Both of these can be used in conjunction with flat surface mount resistors.

Thank you for the purchase and hope you enjoy constructing your new model.