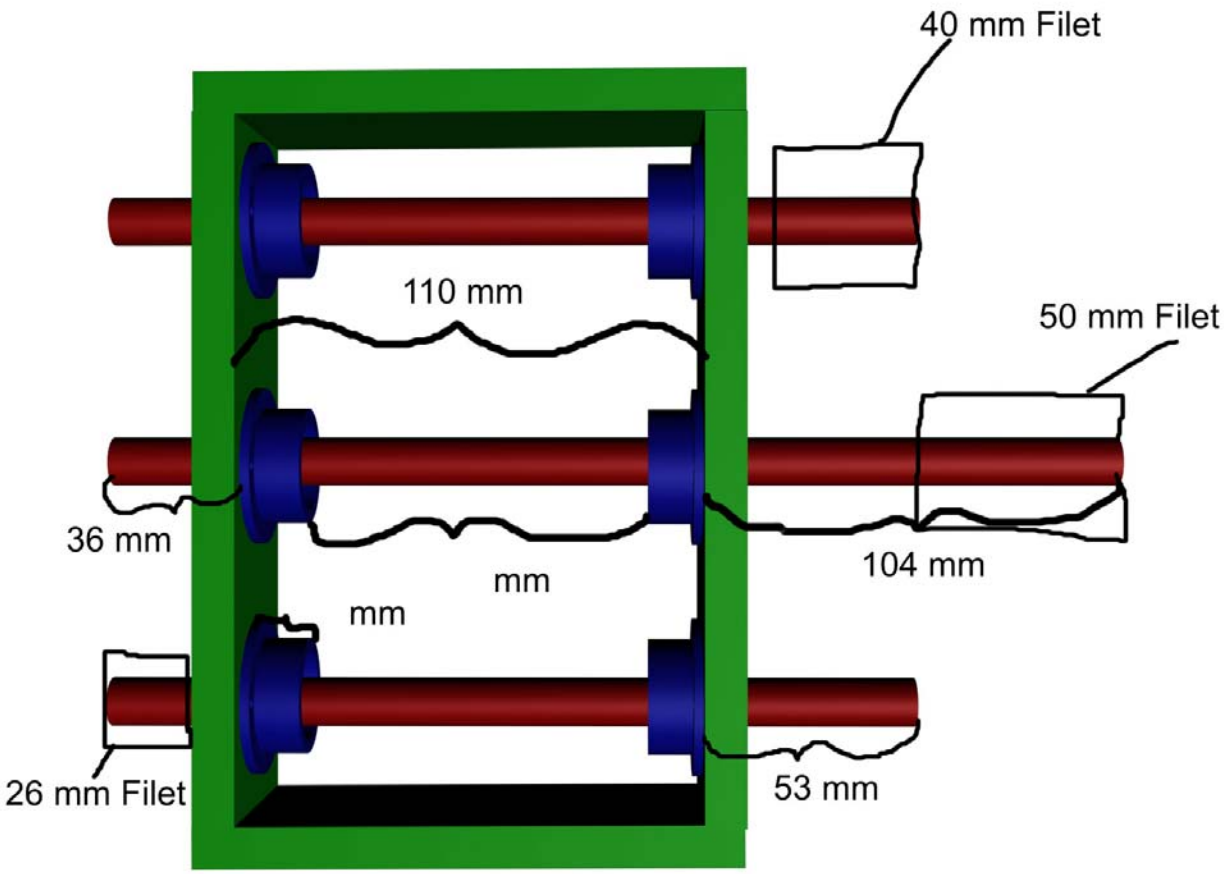
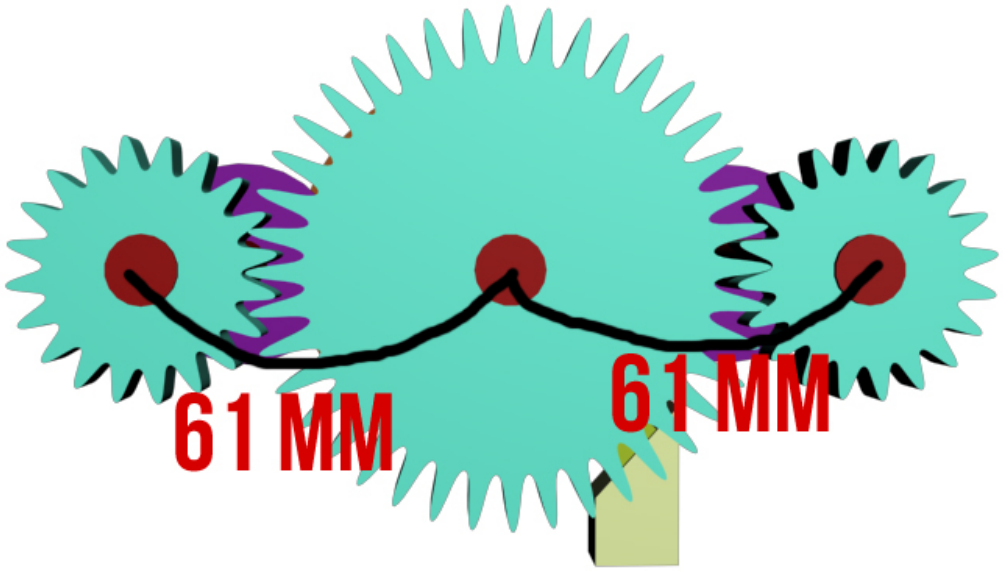
Motor Spec

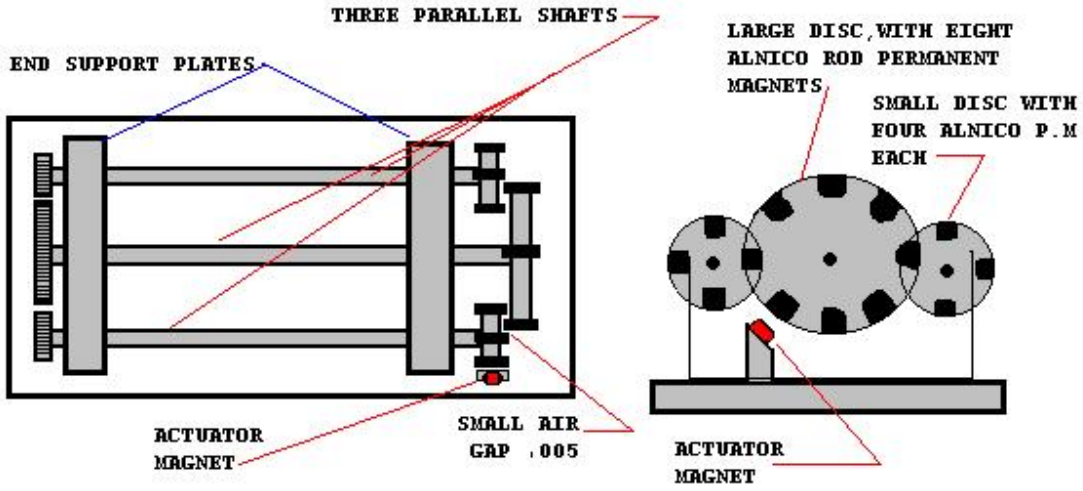


2/1 RATIO BETWEEN WHEELS

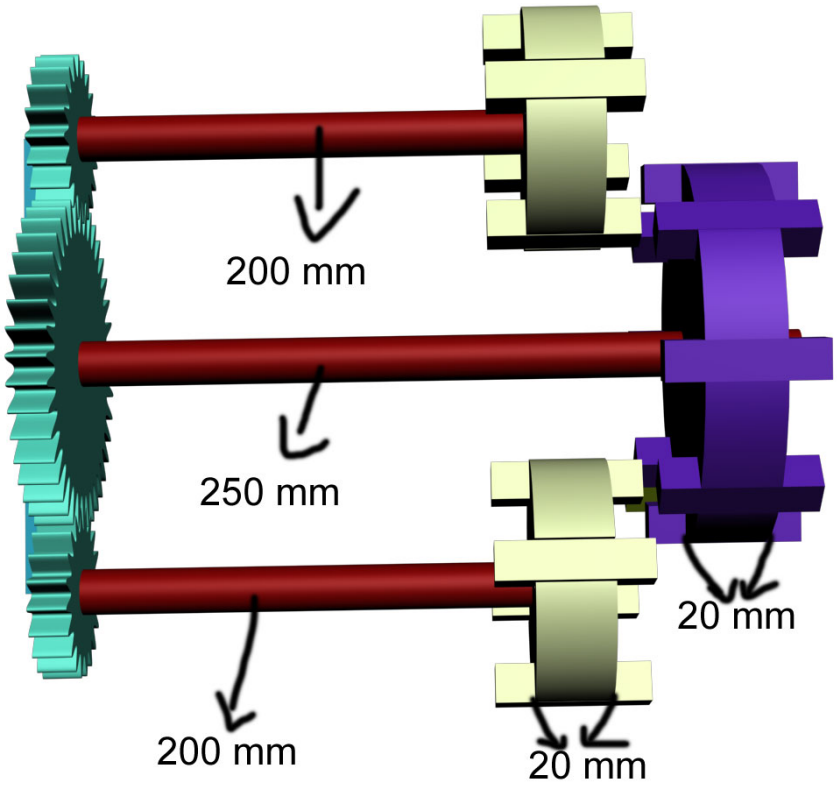


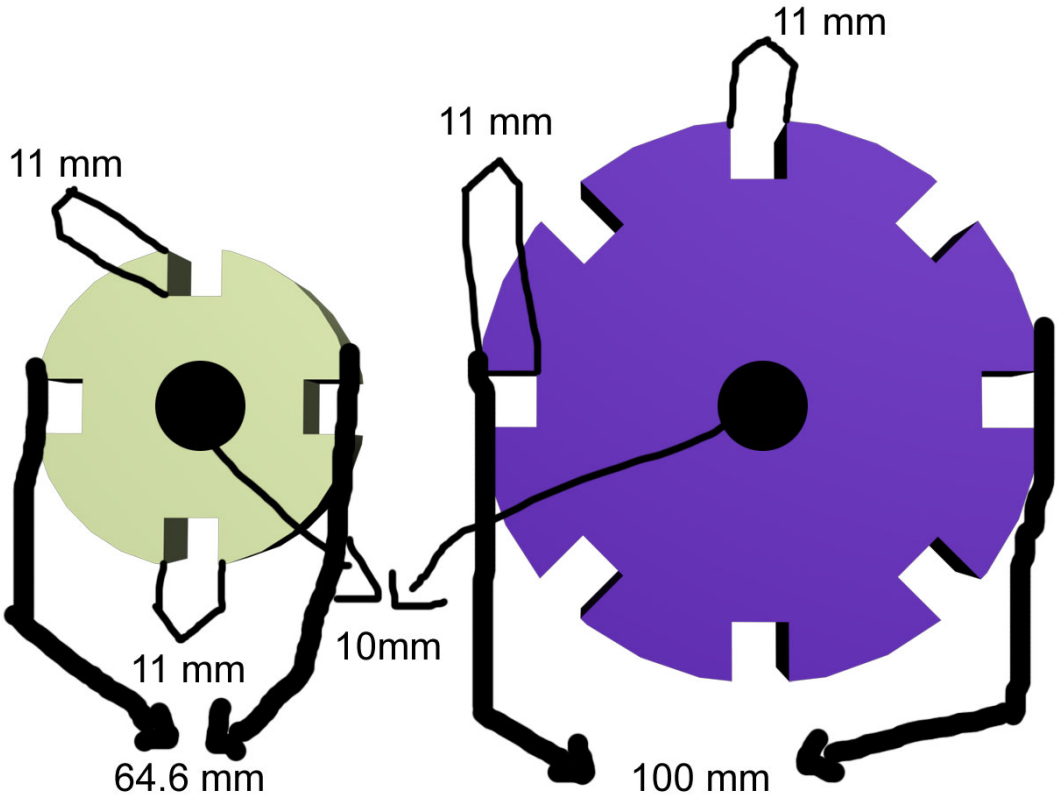
THE BOWMAN PERMANENT MAGNET MOTOR

1954



Shaft / Wheels Dimensions





This is the case for the bearings, depending on the bearings that you will use, you will go on a workshop and tell them to create this type of case to secure in place your bearings.

The magnets I used on this project can be found here :

EU: http://www.supermagnete.de/eng/Q-40-10-10-N

or

US: http://www.magnet4less.com/product_info.php?cPath=1_5&products_id=57

If you buy magnets from US, their dimensions will be 2" x 0.5" x 0.5".

The grooves in the plastic wheels should have 0.52” for a tight fit, or 0.55” and you will have more space for the magnets.

I’ve found out that a tight fit is better.

Video Transcripts

I will start by disassembling the gears from the first device that I've built. The magnets are bad so it doesn't work.

These are the magnets that I will use on my second attempt building a working magnet motor.

I've made these wheels at a workshop. They are made of plastic. The production cost me around $50 for all six of them. You can find details regarding dimensions in the book that comes within this package.

Inside the canals dag in the front wheels I will fix the magnets with poxipol (a strong adhesive).

The shafts are made of bronze, to ensure that the magnets won't interact with the moving parts. Detailed dimensions can be also found within the book.

This wheel will be mounted in the middle and the smaller ones on the sides.

This case is used to keep the bearings in place. Dimensions for the case and also the series numbers of the bearings can be found in the book.

I will use 6 bearings to secure the shaft in place.

I will start inserting the bearings in their metal cases.

I want to mention that you can't find these pieces at a hardware store. You will need to custom build them at a workshop using the details from my book.

I will test and see if the bearing fits easily into the shaft.

Another way of inserting the bearing in the metal case is using a vice.

One of the bearings would not fit inside the shaft so, using a piece of sandpaper, I will sand off the shaft until the bearing will fit.

I will measure the exact dimensions between the metal cases so I can start building the box for my motor. If the workshop delivered the pieces according to plan, you should have the same dimensions displayed in the book. It's a good idea to measure them yourself and see if you got the right dimensions. If not, you can build the housing box according to your new dimensions.

I am using a piece of plywood 1 cm thick for the housing of my motor.

I will measure and mark the piece of wood, then I will start cutting it with the saw.

Now I will measure again and cut the piece in half.

After this step is completed, I will measure the piece and cut it down to size.

These two pieces will be used for the front and back cover of the motor. I will mark the center of each piece then I will make another two marked measurements 6.1mm from the center.

I will make sure that the distance from the top is equal on each of the other two marks from the sides.

Now using a wood drill bit I will make the holes.

I will measure again to see if I've drilled the holes right.

Using a bigger drill bit I will enlarge the holes to make sure that the shafts will enter smoothly.

I will mark and drill the holes to fix the bearings in place.

Now I will insert the screws and tighten the nuts to fix the metal case and the bearing in place.

The screw heads are embedded in the plywood for making sure that the magnets won’t interact with them.

I will insert one of the shafts to measure the exact distance between them for marking the place of the holes that will secure the other bearing in place.

I will fix the second bearing in place now.

I will check now and see if the distance between shafts is the right one. If everything is ok, I can tighten the screws for good.

I will mark and drill the holes for the third metal case now.

One of the sides is ready now. I will insert the shafts and I will check and see if the gears fit..

I will block two nuts against each other to fix the gears on the shaft.

The nuts are also made from bronze.

The gears are spinning right so now I can start working on the other side.

I will do the same thing as before, marking and drilling the holes in the plywood.

I will insert the bearings for making the marks on the second piece of plywood.

Now I will start drilling the holes.

I will fix the bearings in place using the same 4mm screws and nuts. The length of the screws I've used is 40 mm.

I will check to see if the shafts spin freely.

After this step is completed, I'll start working on the bottom side of the motor. The exact dimensions I used for building the case are found in the PDF file or inside the printed book.

I will check again to see if the shafts are spinning alright.

Now I can attach the sides of the motor’s case.

When you are building the case, make sure you check at different stages of the process that the shafts spin freely, for you may force one of the sides and thus the shafts can be blocked, a lot of the motor's energy can be lost this way.

The case of the motor is ready now so I can start fixing the magnets on to the plastic wheels.

The first thing that I need to do is find a pole of the magnet and mark it.

All the magnets will be mounted this way, with the same pole on the outside.

The magnet I am using is 4 by 1 by 1 cm. To make sure that the magnet will be mounted right in the middle, I will make two marks, 1 cm out from each side. When the magnet is in place, those marks should be right on the edge of the plastic wheel.

This step is very important because the magnets from all three wheels should have a very small gap between them, in order to make this motor spin. Make sure you review the schemes from the book to understand where the 1.3mm gap should be.

To fix the magnets in place I will use transparent poxipol (same strong adhesive as earlier, the transparent version).

I will mix the content from both tubes, then I will apply some on the wheel and some on the magnet.

It will take about 10 minutes to harden, but it will take up to 24 hours to harden permanently.

Now I will find the same pole and I will mark it. Remember, same pole will repel.

It's not a good idea to mix too much poxipol at once, because it will harden before you get to apply it on the second magnet.

I've found out that mixing enough poxipol for one magnet is the best way for completing this job.

Try to keep magnets away from each other to avoid accidents like you just saw in this video.

I will do the same thing as before, I will mark the magnet and I will apply poxipol to fix it in place.

I will be quiet for a while because it's not much I can say, it will be the same process until all the magnets are fixed in place.

As I said before, try to keep the magnets away from each other because separating them it's very hard.

When you get to fix the 3rd magnet on a small wheel, you need to keep it pressed down for like 2-3 minutes until poxipol hardness because the magnets will start repelling.

I will do the same thing on the second wheel.

When you'll start closing up with the magnets you will feel them repelling pretty hard and it will be kind of hard to keep them in place, but after the poxipol hardens, they will be fixed for good.

Don't forget always check to make sure that the magnets are fixed with the same pole at the outside so the motor can use the repelling force to spin the wheels.

Same thing on the 4th magnet, you should press it down for a while until the epoxy solution hardness and the magnet is fixed in place.

One of the small wheels has all the magnets in place. Now I will fix the last magnet on the second wheel.

I have another 4 magnets to fix on the bigger wheel and after that I can start testing the motor.

Be careful when you try to insert the magnets because they can slip easily from your hand.

This is the last magnet on the bigger wheel.

I will let the epoxy harden over night and tomorrow I can mount the bigger wheels and test the motor.

Now I will fix in place the gears. They should spin freely without too much friction between them. In this way we make sure that no energy is wasted from the magnet motor.

I will fix the gear in place by tightening the nuts, blocking the gear in the middle.

The same system will be used on the wheels with the magnets on.

It’s very important to have the pieces close to the magnets made of a material that’s not interacting with the magnetic field. In my case I’ve chose Bronze to work with.

I will now mount the front wheels.

Between the magnets from the small wheels and the magnets from the bigger wheel should be a small gap of just 1.3mm .

Have a look on the scheme inside the PDF file or the printed book to make sure your motor will work after you finish it.

Tighten the nuts well to make sure the wheels won’t move from position.

Before mounting the big wheel, I'll have to block the gears to keep the front wheels aligned.

It’s very easy to adjust the distance between magnets by moving the inside nut. After you’ve got the correct alignment, tighten the nuts and cut the electrical tape.

The repelling force of the magnets is huge, but if the motor is built according to plan, the wheels should stay balanced, so when I will add the actuator, the wheels will start spinning, trying to get their balance back. That’s what makes this motor work.

Now I will start working on the actuator.

I'll need to cut a block of wood at 45 degrees angle and after that I will make a groove in the wood piece where for magnet to be placed.

After I've adjusted the height of the actuator, I will check to see how it looks and then I will fix the magnet using PoxiPol .

The actuator magnet should be placed with the same pole up as the magnets fixed on the wheels. The actuator should repel the magnets from the bigger wheel.

I will add more epoxy solution to make sure that the actuator will stay fixed in place.

Now I will leave the epoxy to harden for a while, about two hours just to make sure that the magnet is well fixed.

After I've completed this step I will mark the place of the actuator and I will fix it using a self drilling screw.

I will insert the screw first. I will unscrew it until it’s no longer visible on the other side. After that I will position the actuator and I will tighten the screw thus fixing the block of wood in place.

I actually fixed it too close to the magnets in the first place, so I will try again.

It comes in handy to have someone to help you on this step.

There’s nobody around to help me, so I will need to find a way to do this by myself.

The gap between the actuator and the magnets from the bigger wheel should be around 3 mm.

It’s a bit hard finding the sweet spot, depending by the space between the magnets fixed on the plastic wheels.

Now I can start testing the motor.

To start the motor, I will spin it at first and then it will start spinning on it's own. This motor is perfect for connecting to a 48 V generator. Because it will spin day and night, you will generate a lot of electricity with it.

It’s not a hard project and if you get it done right, you will have tons of satisfaction + benefits from the free energy produced by this motor.

Thanks for watching!