



PROTOTYPE BRUSHLESS MOTOR OBJECTIVES

Top quality brushless motor
Speed feedback sensors built into controller
Top quality brushless controller
Best available power supply (even better if it can run from battery)
High quality motor bearing
RPM approx 300 rpm would be ideal (for similar size pulley as we use at the moment)
Small size and high momentum and quick start up time
Extra low vibration needed

Ideally we need a feedback check on the motor to maintain constant speed, a high quality brass bush bearing ...or ball raced...should give little or no noise...

Especially if the motor RPM is low ...even less vibrations/hum

High filtered mains power supply is expensive and in some cases unreliable ...new lithium polymer or NIMh batteries will give stable power. So the operating voltage of the motor needs be very low.... and the big plus is that the power supply only needs be a simple charger ...like a Nokia phone charger for example (just under 4volts for the NIMh batteries)

Plus in theory the more batteries you have the better

Ideally we need the motor to fit inside existing space in all turntables...so little conversion is need to fit on any turntable

FLOPPY CONVERSION —has all the above—



BASIC FLOPPY DRIVE is very cheap...

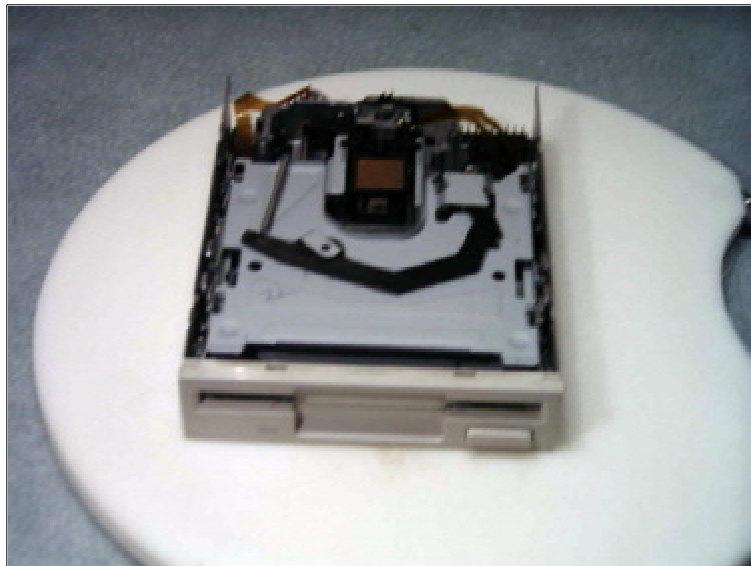
But the **electronics controlling it are very sophisticated** and the bearing is very good quality... and can be

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replaced if necessary

Remove the top cover:

Normally just a few screws ...or in this case just a screwdriver to lift up the back ends



remove the screws on underside to take bottom cover off



Unit now needs the heads and metal floppy cage removed

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@ The bottom 6 screws hold the PCB onto the metal frame

...Remove the 6 screws



Now we have the basic PCB visible

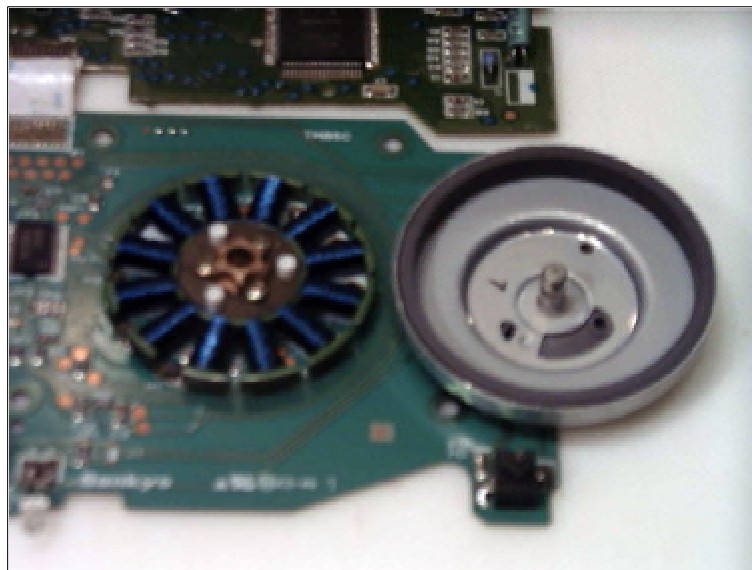
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This is now getting to a stage we can almost test it...

The **plastic strips** on top of motor, I removed them with a sharp knife

(How to connect the correct pins and cheat the sensors will come later)



Spindle simply pulls off J - this makes **cleaning very easy**

Motor magnet and main spindle removed for inspection

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Clock timer and processor controller now flipped under the motor board and test pulley fitted on top of spindle

We will be trimming the PCB smaller later



neat!!! -WORKING PROTOTYPE -

The 33-rpm and 45rpm 2-step pulley made from ally (will be turned down to $\frac{1}{2}$ the size seen here look below)

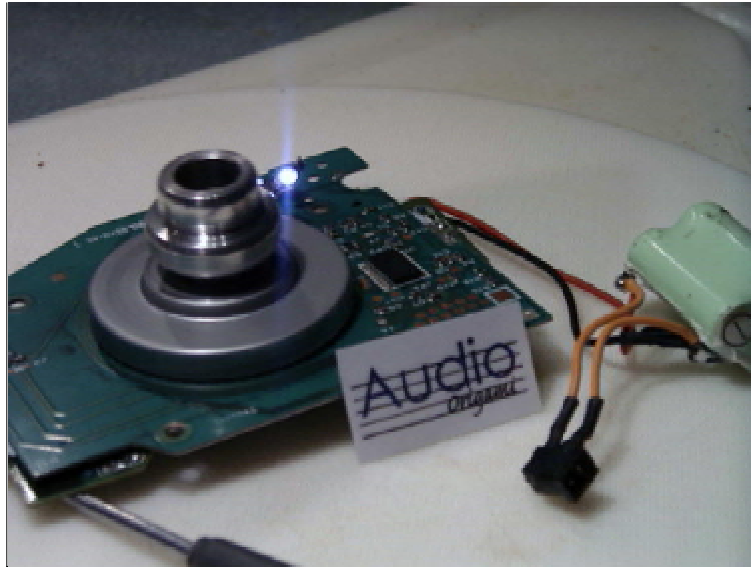
Also the PCB area will be trimmed down to much smaller

And to save time I have glued the pulley on with super glue....

...The tidy up will come much later!

I have already got the sizes I need for the 33 rpm...the 45-rpm I have just guess for the moment J

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3.6volt NIMh battery powers this unit for days and days...current draw with the led fitted is 20ma ß- my meter must be faulty ...surly J

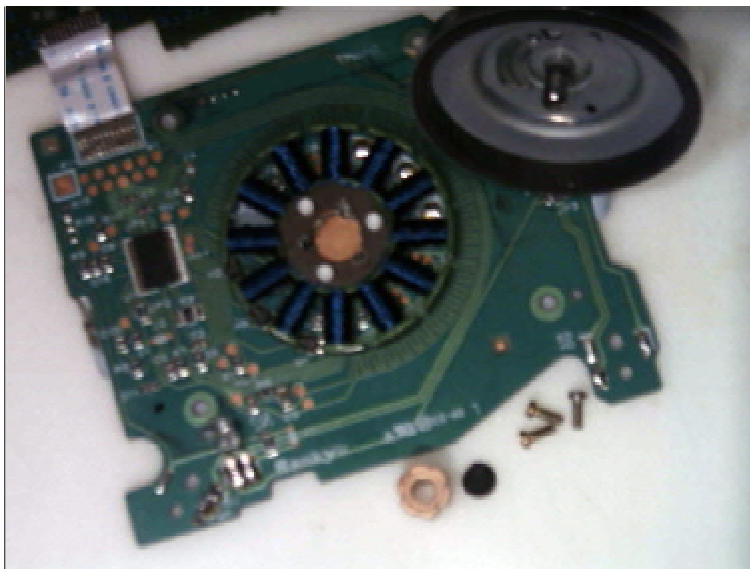


CONCEPT—— Nokia charger (or similar) can recharge the batteries...

Also the unit can be used worldwide. ...Used with your own phone charger J

I'll need a simple charge- cut off- circuit.... the parts are cheap

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BEARING removed ...simple but high quality bush bearing with black nylon thrust plate.... we are going to isolate the main bearing from the PCB/...but still keep it earthed to the copper on the PCB (stops static)

Small amount of silicon rubber solution @ the bottom of bearing will isolate it much better @ this stage ...plus the silicon will help make a seal to hold oil in our brass bush bearing

PULLEY tidied up- this 1 made from easy-machined aluminium 33 and 45rpm

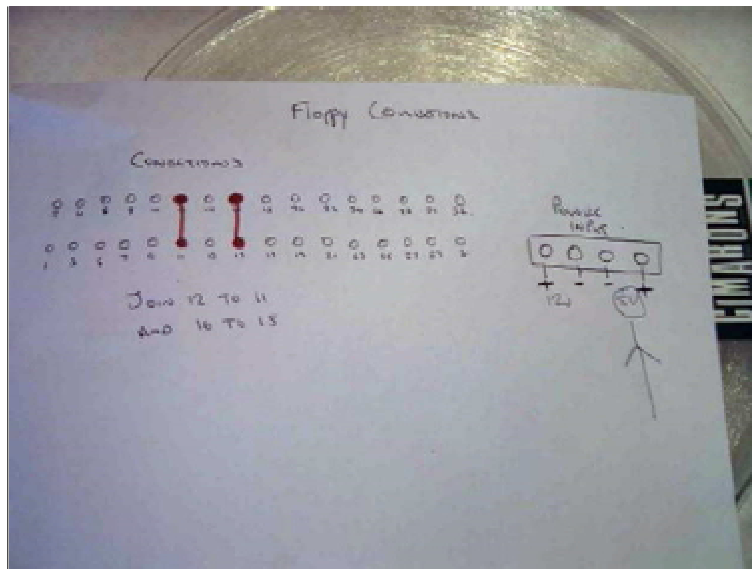


FITTING TO THE TEST BED

PART 2

Floppy Conversion Part 2

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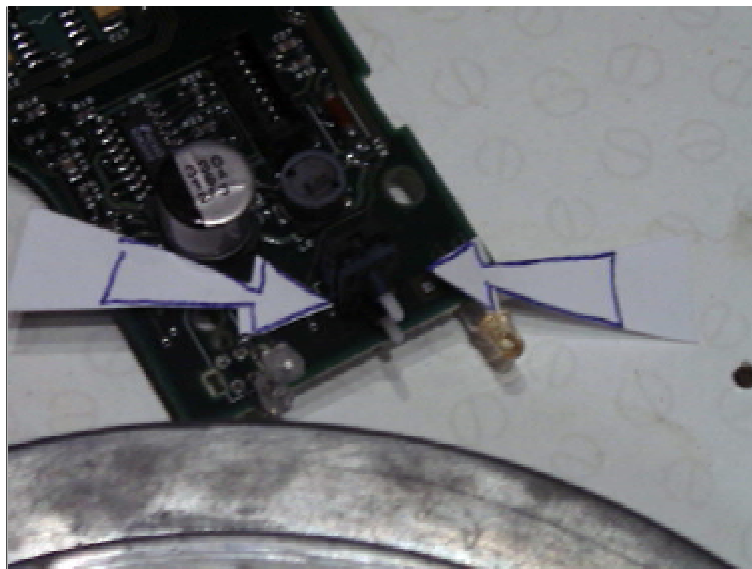


Join pins 12 to 10 and 16 to 15 in the IDE connector...the power goes in the right hand side connector though the 5volt input



We can see the 2 pins bent here and easy 4 or 5volt input

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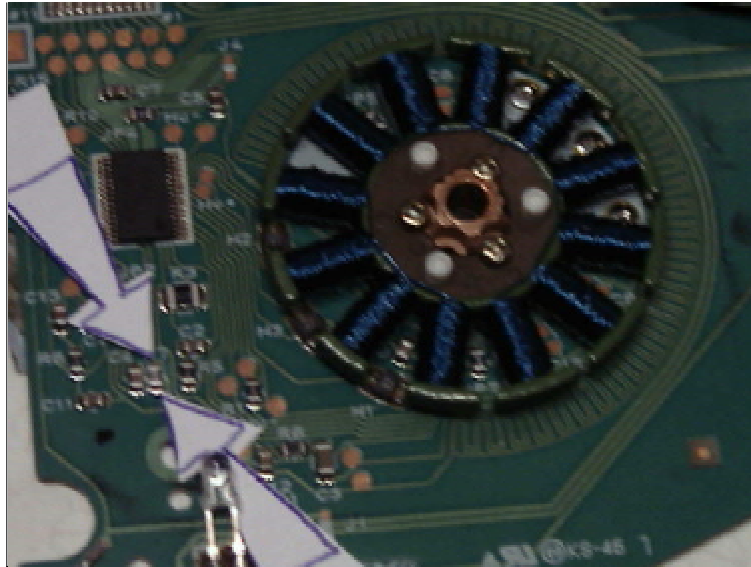


**Cheat the floppy insert sensors to make it think there is a floppy inserted
(you can stick them in with tape ...or remove from PCB and put little shorts in**



**Ok, here we are running a old LINN inner platter /LINN belt... and almost the same pulley size as LP12....
the unit also has a variable resistor fitted (MORE ON THIS IN A MIN)...
and this is currently working our test bed model**

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I found this 800ohm resistor inline to the motor controller...
(by jumpering each resistor with a 1000ohm resistor to see if any speed change was possible)

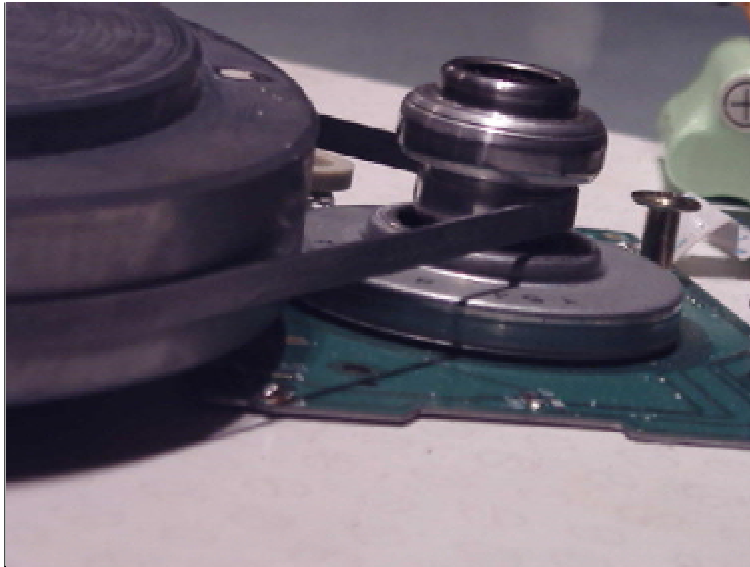
Each floppy will be different...so if you want to try varying the speed you will need spend a few minutes checking

The basic floppy works fine without all this if you have a 2-size pulley for 33 and 45 rpm



I have piggy backed the variable resistor over the original resistor (as a safety net) to test with at 1st

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So 2 choices vary speed with 1 pulley size
And single standard speed with 2 pulley sizes

The motor noise varies with speed selected ...at standard speed its very quiet....so that's worth the hassle of 2 speed pulley....on the other hand vary speed offers speeds of 16/33/45/78 rpm....maybe a little nosier ...but ill work on that for **part 3**

Also coming next...we will rubber mount the motor, make new pulleys, cut PCB smaller and compare sound of single speed and vary speed motors

PART 3

Floppy Conversion Part 3

Now I have a working floppy motor I decided to make a unit that can have a removable pulley and magnet with 33rpm and 45rpm pulleys....

I wanted to make a new turntable to house it in.

I used henk the fisherman for my woodwork

I needed a new turntable to mount the floppy in... and this starts with the main bearing.



Here we can see massive steel bearing with a PTFE white liner.

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The bottom plate is removable on this custom bearing...its almost silent in operation
I'm using booster oil to make it ultra slippery!



Here we can see the bearing mounted into a solid wood base.

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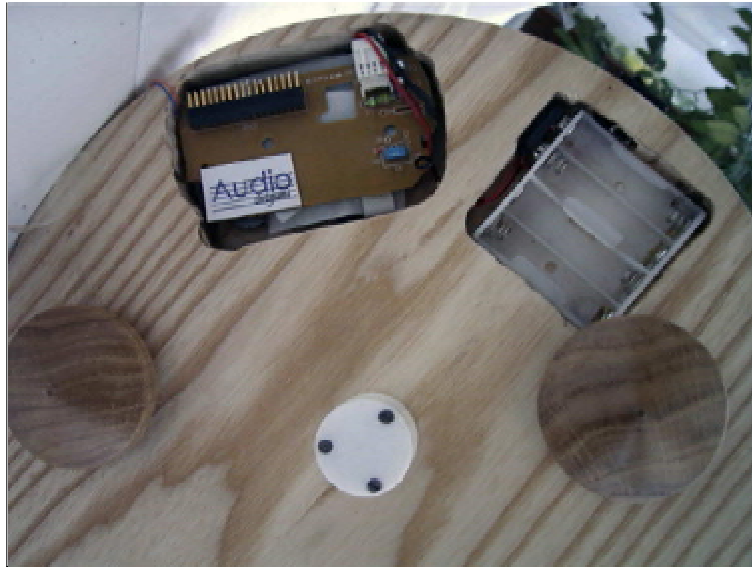


With rubber mounted feet.

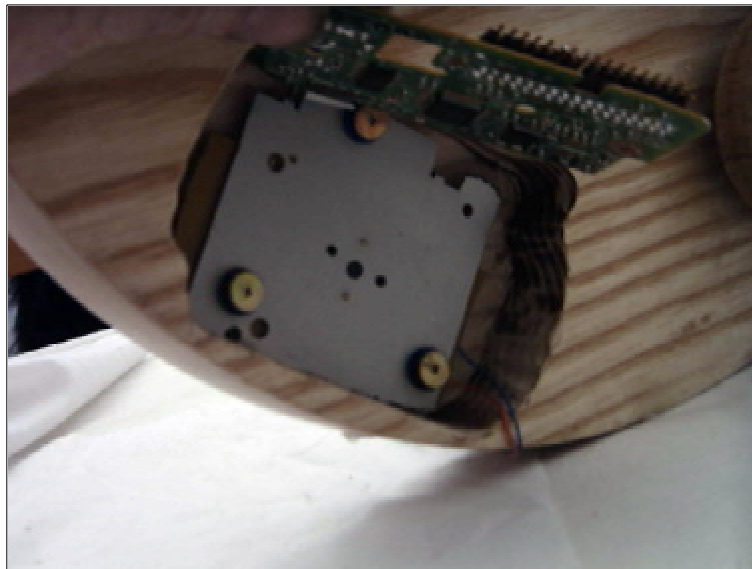


I mounted the floppy motor recessed about 10mm under the wood... This is a 33rpm pulley.

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The bottom of the deck is recessed to fit the batteries and floppy motor
I'm using 4 x AA ni-cad batts.



The floppy is rubber mounted with stepped screws.

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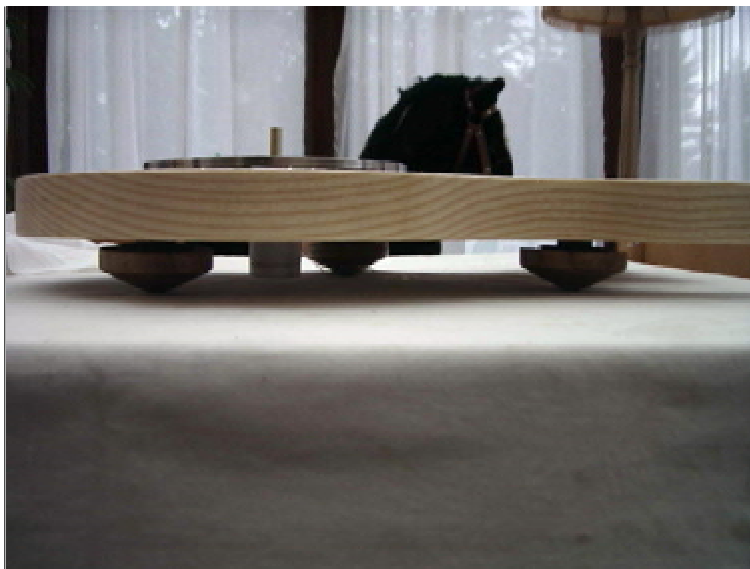


Things are almost ready.



Little switch makes life easy.

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The wood rubber mounted feet have some bounce.



Finished...the floppy motor works fantastic...
I had to fit a LED to find out when it's on because it's so quiet!!!
Sound tests from the pu2gold job will be posted shortly.

**Part 4 of the floppy will be all customers work.
I have finished what I started ...it's done its job very very well**

Thank you for the interest in the floppy conversion.