

Pocket Drunken Robot

by [Grathio](#) on July 8, 2009

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Author: Grathio Grathio Labs

Creative swashbuckler. Writer for MAKE Magazine, presenter of inventions on TV, radio, magazines and newspapers. Professional problem solver. Annoyingly curious. Hacker of all things from computers to clothes to cuisine.

Intro: Pocket Drunken Robot



Step 1: Parts and Tools

Here's the parts you'll need to make one pocket-sized drunken robot. But make more than one since it's no fun to drink alone.

Parts

- 1 vibrator motor from a pager or cell phone. (I used these. You can find the same motor [here](#).)
- 1 AG13 button cell battery. A common watch battery that also goes by the aliases 357A, L1154, LR44, GPA76 or PX76A.
- 1 square inch of sheet tin, copper or other easy to work with metal sheeting. You can probably use a tin can but it might be hard to work with. I'll be using 0.008" sheet tin from the local hobby store.
- The PDF template linked below.

Tools

- Pliers
- Tin snips. (or old crafty scissors you don't mind messing up to cut some tin.)

Now that you have everything, lets get started!

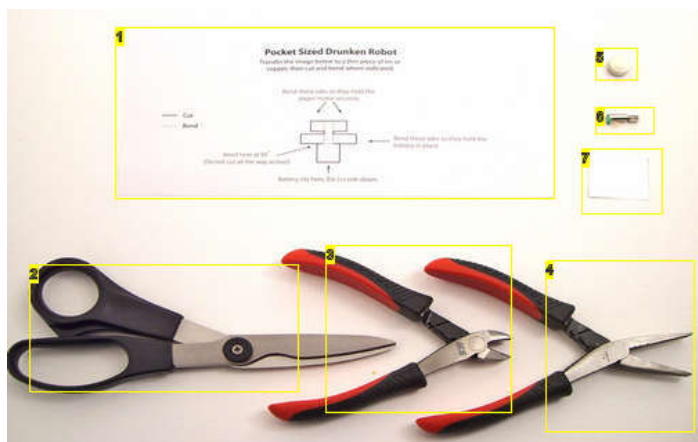


Image Notes

1. A printout of the PDF below.
2. Not the good scissors.
3. Angle cutter isn't necessary, but handy.
4. Some regular flat pliers.
5. An "AG13" Watch battery. Available wherever watch batteries are sold.
6. A tiny pager motor.
7. A 1 inch square of 0.008" tin.

File Downloads



[drunken_robot_tempate.pdf](#) ((612x792) 60 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to 'drunken_robot_tempate.pdf']

Step 2: Cut The Tin

Print out the template from step 1 (also linked below) Be sure to print it at 100% and transfer the design to your piece of tin. (Cut it out and trace it or just glue it on with some temporary adhesive.)

Cut and snip your tin on the solid lines. Please be careful when cutting and handling sheet metal since it can get really sharp. Gloves and safety goggles are recommended.

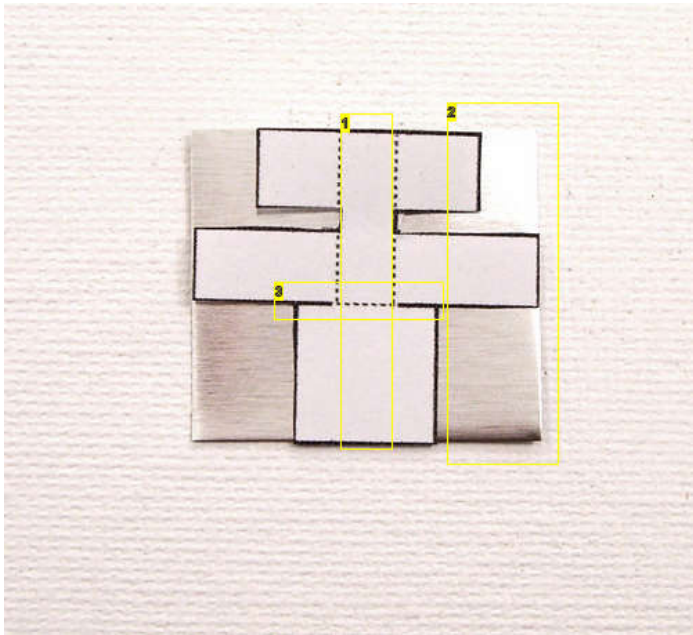


Image Notes

1. You can't see it, but this is stuck on with a bit of double sided tape.
2. The reason there's no "In Progress" photo on this one is because I managed to cut my finger on a sharp corner and bleed all over the template. Wear gloves unless you like cleaning up blood. No foolin'.
3. Cut on the solid line, but not the dotted.

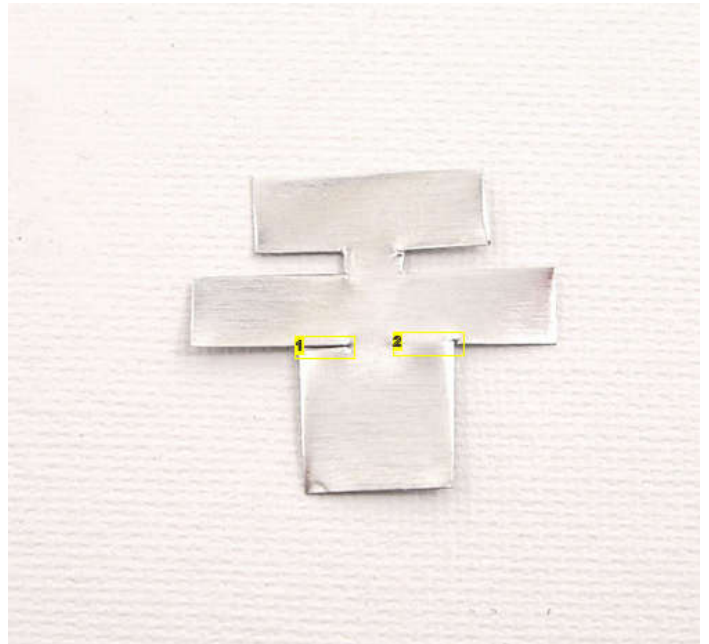


Image Notes

1. Cut in a bit but not all the way across.
2. Same on this side (though its hard to see in this photo)

File Downloads



[drunken_robot_tempate.pdf](#) ((612x792) 60 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to 'drunken_robot_tempate.pdf']

Step 3: Make The Holder For The Battery

We want to make a solid connection to the side and bottom of the battery. To do that first bend the piece of tin up at right angles where it's indicated on the diagram. Then place the battery in the middle and fold the arms around so it holds it securely.

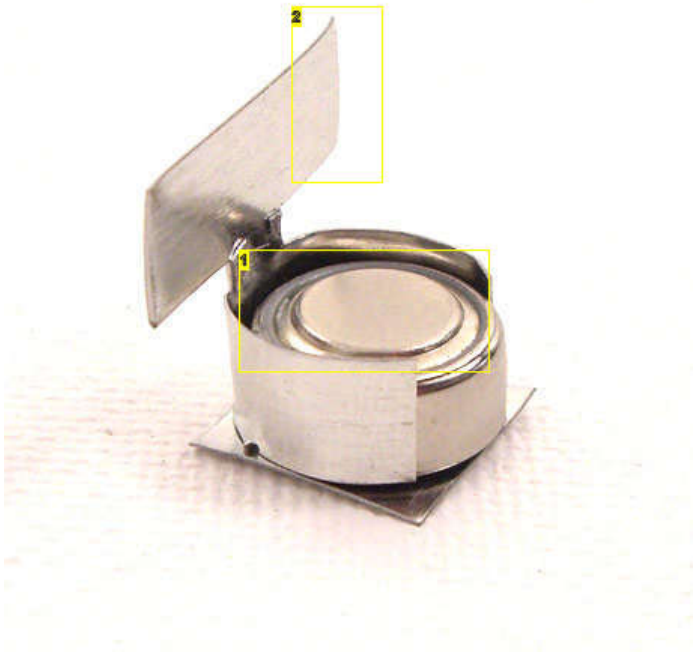


Image Notes

1. Note that the battery is negative side up.
2. These tabs will hold the pager motor.

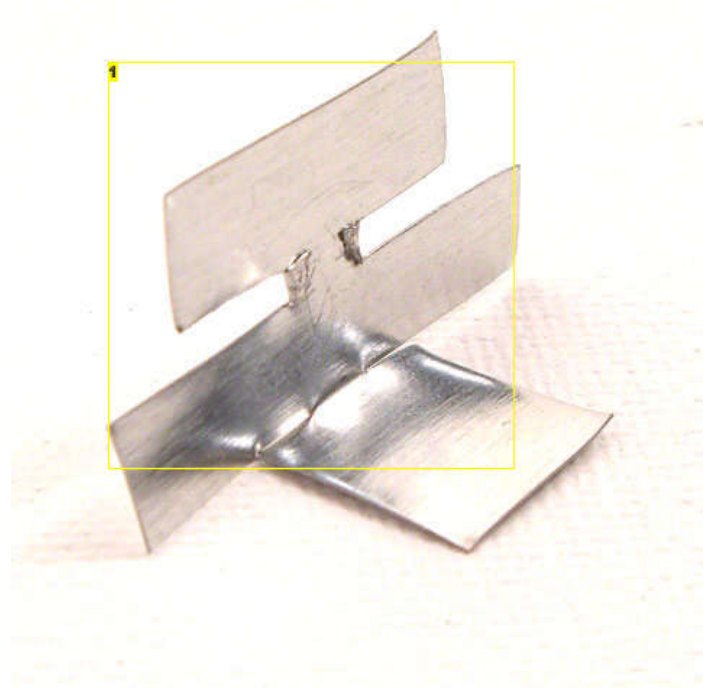


Image Notes

1. First bend the main body straight up



Image Notes

1. Then bend the arms around so they make a cradle for the battery.

Step 4: Prepare The Motor

Our pager motor has two leads. One needs to be connected to each side of the battery for the motor to work.

The flat side of the battery (+) is already making contact with our tin support. To get a contact with the top of the battery (-) we bend one of the pins back underneath the motor. When we put the motor in place this lead will spring in contact with the top of the watch battery. (Picture is worth a few hundred words here.)

If you're using a different motor, say one with wires then you might need to get busy with a soldering iron to replicate what we have here. **Do not** solder directly to the battery. Applying that much heat to a battery is dangerous and can cause it to burst.

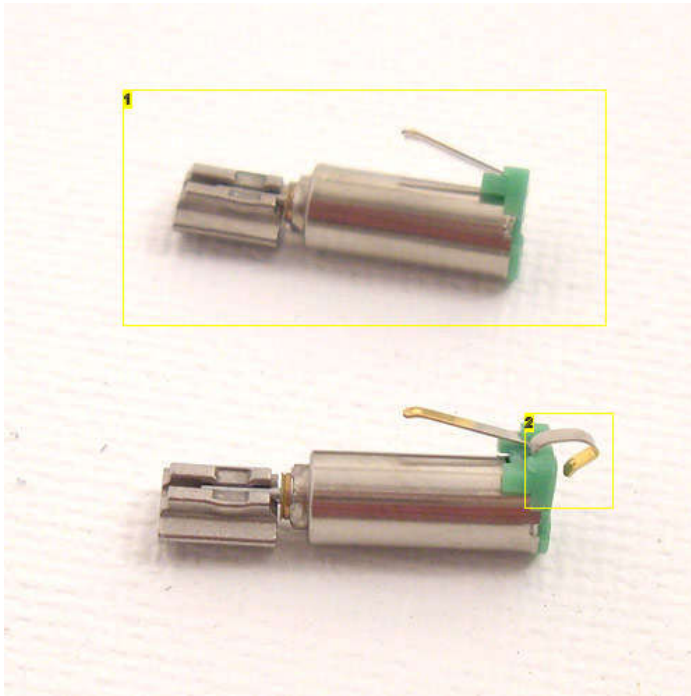


Image Notes

1. Motor before with no bent leads.
2. Motor after with one of the leads bent. Either one is fine.

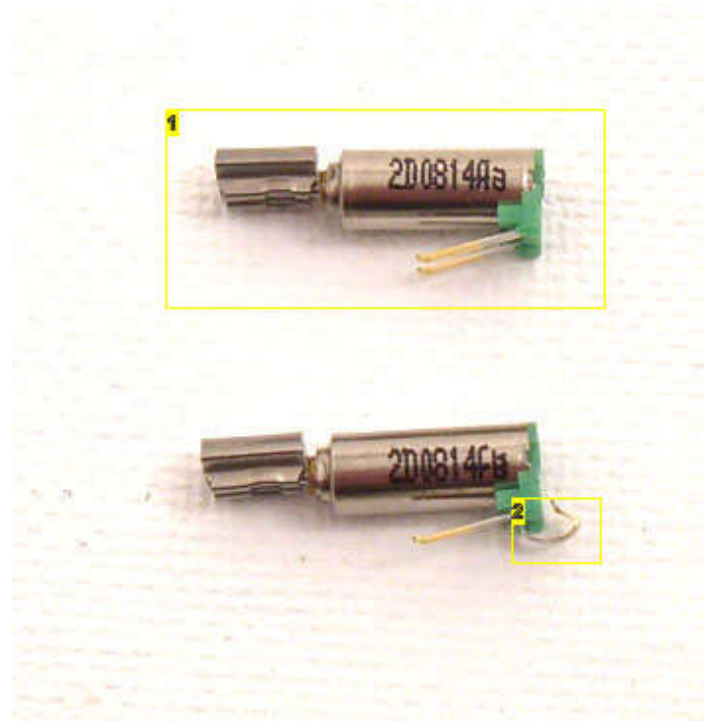


Image Notes

1. Alternate angle. Motor before, with no bent leads.
2. Alternate angle: Motor after with one of the leads bent around.

Step 5: Mount The Motor

Now we're going to complete the circuit by crimping the motor (*lightly!*) into the top pair of tabs. This will press the bent tab in contact with the top of the battery and the lead into contact with the tin which will complete our circuit.

First bend the top tabs of our tin into a U shape so we can rough everything into place. Then place the motor so that the bottom lead is in firm contact with the battery while the other lead is pressed against the metal of our tabs.

(You might want to put a piece of paper or tape over the top of the battery to keep our robot quiet while we're working on him.)

Very carefully crimp this closed with pliers. You want the motor to stay in place, but you don't want to damage the casing of the motor.

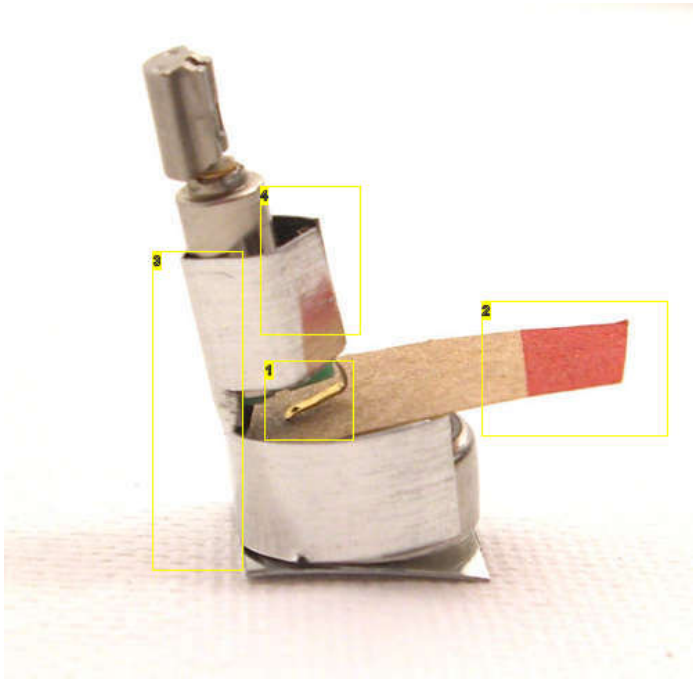


Image Notes

1. This is the lead that needs to touch the top part of the battery--and nothing else! If it touches any other metal your robot will short out and not work.
2. Piece of paper stuck in here to keep the robot from running while we're working on it.
3. Yes, it has a bit of a lean. We can fix that later.
4. Not fully crimped yet, we're just checking the placement. We probably want to push it down a millimeter or two for final placement.

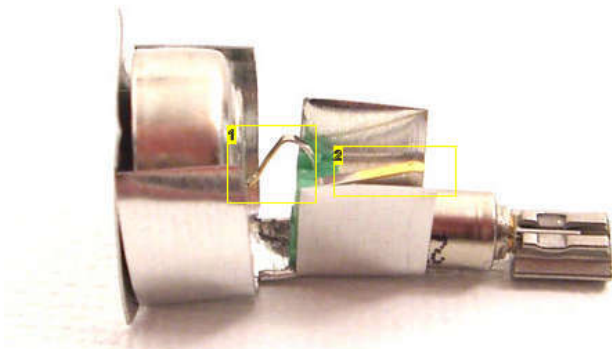


Image Notes

1. The bent lead that connects to the top (-) of the battery. This is a bit more clearance than we want. We should move the motor down (left) a millimeter or so to make more firm contact.
2. This lead will be inside the tabs when we finish crimping it. This will provide the connection to the bottom(+) of the battery through the tin frame.

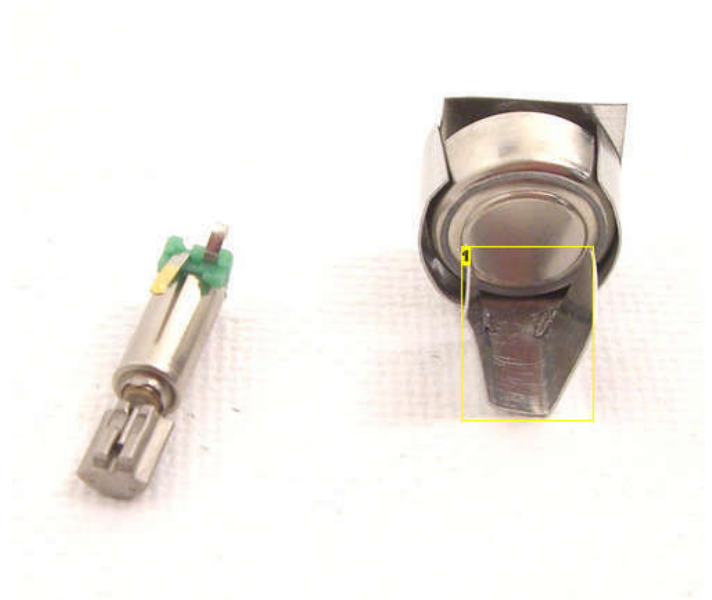


Image Notes

1. First bend the remaining arms into a U shape so they're ready to accept the motor.

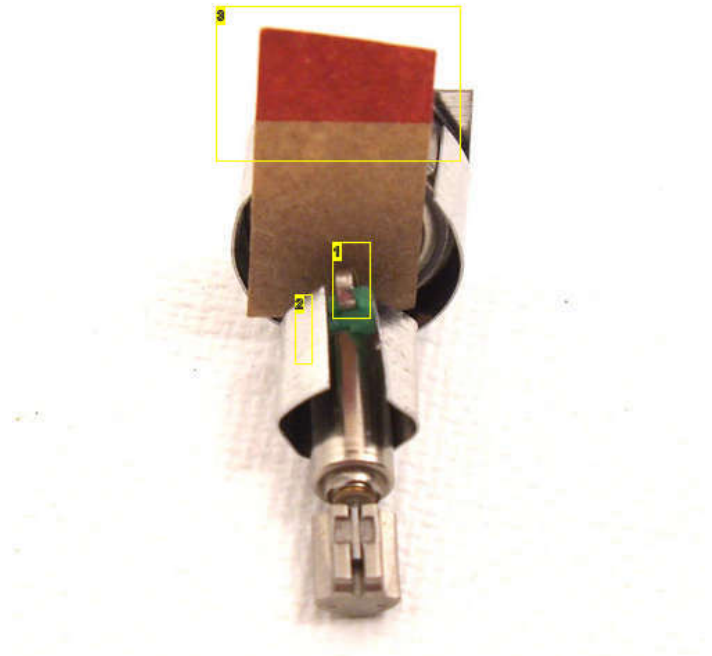


Image Notes

1. Another angle of our bent (-) pin.
2. You can't see it, but the other lead (-) is behind here, which is exactly where we want it.
3. Again the tab of paper to keep our robot sleeping while we're working.

Step 6: Enjoy!

If everything is working right all you have to do is put it on a flat surface and let go. It should vibrate around drunkenly and only occasionally fall over. Make several and have a cocktail party! Give them tiny drinks and party hats. (Optional)

If you would like to carry a few with you take an old dental floss box, open it up, pull out the spindle and line the inside with craft foam. Holds two. (An Altoids tin will hold a full party.)

If you want to keep your robots ready for instant action, slide a piece of paper between the top of the battery and the motor lead. Pull it out when you're ready to see them go.

Troubleshooting

It doesn't go at all.

- First be sure that the motor leads are touching the things they need to touch, and *only* those things. One should be touching the top of the battery and the other should be firmly pressed against our tin framework.
- Check for shorts. Make sure that the only bit of metal touching the top of the battery is
- Make sure that there is nothing keeping the weight at the top from spinning.

It falls over more than I'd like.

There are several ways you can counteract this.

- Bend the motor back towards the center of the battery so its center of gravity is more in the middle.
- Bend down the corners of the "front" of bottom platform.
- It might be too vigorous, you can try letting the battery run down a bit so it doesn't jump as much.
- Try a different surface. I found that a pad of paper was the most reliable. On a harder surface they'll bounce easier.
- Get out a file and remove some of the weight from the top of the motor.

It falls over less than I'd like or doesn't act very drunkenly.

- Give it a double whiskey neat and wait 10 minutes.
- You might be using an underpowered battery., especially if you're using a bigger motor. Try a fresh battery or a more powerful cell. (If you use a different battery you'll need to rework the tin holder.
- Make sure the motor isn't shaking loose. If it is, a dab of glue or tape can take care of your troubles.





Image Notes

1. An old box of dental floss makes a perfect pocket cozy for a few of your robot drinking friends.

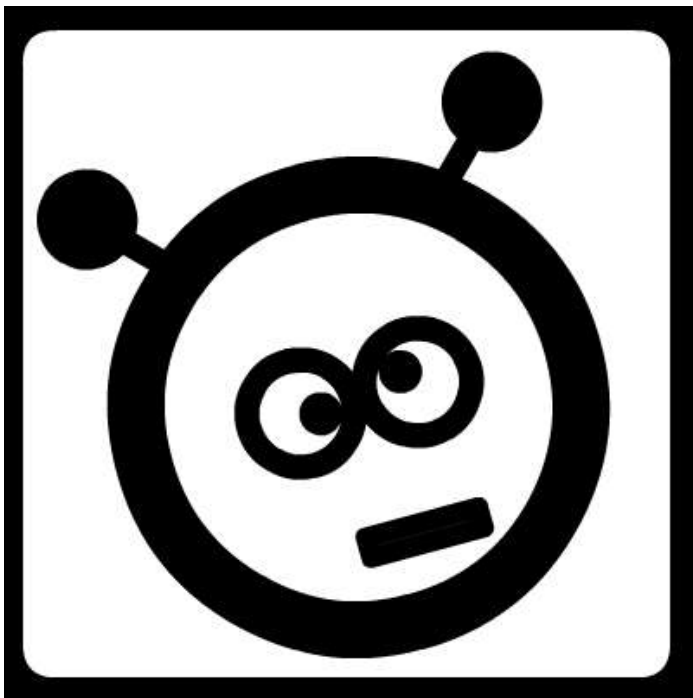
Step 7: Become A Master of Drunken Robots

If you build one and post a photo (or better yet a video) of it in comments, you'll receive a Master of Drunken Robots patch* and a place in the Hall of Fame.

*As long as I have patches left to hand out.

Masters of Drunken Robots:

- ALPHA G33K (And his robot)
- cooperkevin95
- skullbe for putting these drunken guys to work.
- 79spitfire for his great comment about adding a coin to the bottom.



Related Instructables



Vibrobots table
by ronouweland



No solder Vibrobot by Computothought



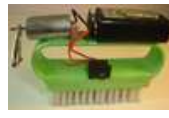
The "Barb" Vibrobot (Photos) by eurofyter966



Drunken drawing robot !
by skullbee



Vibrobot Paintings by hay_jumper



Brushrobot by mad10000

Comments

[50 comments](#) [Add Comment](#)

[view all 86 comments](#)



Geekmandude says:

Dec 13, 2009. 1:24 PM [REPLY](#)

I made one!

It started out pretty much like yours, but with a Zip Zaps motor with a glue gun glue blob instead a pager motor, and I make the body out of thin cardboard, because of the anatomy of my motor. It just went in circles with the ordinary base, so it got stranger and stranger, I tried adding angled fins, which made it a lot better, but it still turned more than I wanted, so I elongated the neck and put on some legs, now it works GREAT! It zoom's forward tilted like crazy and turns occasional, and sometimes falls over;-). Unfortunately I only got photos of the last version. Its a hilarious little thing.



astro boy says:

Dec 13, 2009. 2:11 PM [REPLY](#)

cool! you should post a video on you tube of it running and post it here (you wouldn't have to edit it or anything because it would be on here and people here would know what its about) by the way COOL!



Geekmandude says:

Yes I would like to, but I do not have a YouTube account.
It is fun to put it on my desk while I am doing a project - it will potter around for a while and then go racing off teetering back and forth:-)

Dec 13, 2009. 5:54 PM [REPLY](#)



astro boy says:

then make one. i have and its been quite helpful sharing videos i try not to show my face but it doesn't really mater. id love to se this robot it sounds quite funny and enjoyable to watch.

Dec 13, 2009. 6:11 PM [REPLY](#)



Grathio says:

It looks fantastic! Thanks for posting the photos, it looks pretty hilarious just in the stills.
(Your Master of Drunken Robots patch is on its way!)

Dec 14, 2009. 1:03 PM [REPLY](#)



Geekmandude says:

I would get one, but I do not agree with YouTube's user agreement, so that makes it a bit tricky, and I wouldn't use it that much, other than times like this;-).
Also, I may have slightly misrepresented how fast it goes, it does not zoom compared to biking or running or walking or anything, but it is much faster then any other vibrobot I have seen a video of (but I have not seen many, just a few on instructables and Make:).
Cheers,
G33K

Dec 14, 2009. 3:53 PM [REPLY](#)



79spitfire says:

I found that taping or gluing a penny to the bottom can help with excessively "drunk" robots that won't stay up!

May 22, 2010. 11:34 PM [REPLY](#)



Grathio says:

This is a really great tip! We did this for our small party of drunk robots for Maker Faire (on your suggestion!) and it let us do other things besides helping face-down drunk robots. They spin around extra crazy, but they fall over a lot less.

May 25, 2010. 5:15 PM [REPLY](#)

It's a great idea! Thanks for sharing. (Your Master of Drunken Robots patch is on the way!)



79spitfire says:

Your welcome

May 25, 2010. 7:44 PM [REPLY](#)



frenzy says:

Congratulations! This comment has won day 4 of the "I Made It" Challenge. Thanks for being a great part of the instructables community!

Jun 4, 2010. 10:40 AM [REPLY](#)

For More info on the "I Made It" Challenge check out this post.

Thanks and Happy "I Made It" Month!



Grathio says:

Fantastic! Congratulations Geekmandude!

Jun 5, 2010. 10:54 AM [REPLY](#)



zombiefire says:

cut an aluminium can

Aug 26, 2010. 6:32 AM [REPLY](#)



Grathio says:

I've tried it with aluminum soda cans and it didn't really work well. It was too springy and weak to hold everything together properly. A better household option is a tin (steel) can lid.

Aug 27, 2010. 10:54 AM [REPLY](#)



Geekmandude says:

Nice, 5 stars!
I just tried to make one, I took apart my tooth brush, and I don't think it is quite a pager motor;-)
Would it work to attach a piece of metal a ZipZaps motor?
Thanks.

Dec 7, 2009. 6:31 PM [REPLY](#)





astro boy says:

yes probably, as long as it was big enough and unbalanced enough to vibrate a bit and would fit in the design.

Dec 9, 2009. 8:14 PM [REPLY](#)



keeganlegg says:

My drunken robot is the best

May 21, 2010. 12:49 PM [REPLY](#)



cooperkevin95 says:

Very good job on this and the tutorial! :D

Feb 14, 2010. 4:50 PM [REPLY](#)

I made one out of a .44 Magnum Brass (cut with a Dremel tool). I glued a small square of cardboard to the battery, and it allows for changing the battery in and out.

Here's a picture:



Grathio says:

Too bad the picture didn't come through, it sounds awesome!

Feb 15, 2010. 2:23 PM [REPLY](#)



pogoman12345 says:

lol those are awesome

Feb 10, 2010. 4:08 PM [REPLY](#)



kcls says:

Oh noes! American Science and Surplus doesn't have those motors listed anymore!

Jan 29, 2010. 1:54 PM [REPLY](#)



Grathio says:

Boy, they sure are!

Jan 30, 2010. 12:16 PM [REPLY](#)

Looking around this one appears to be the identical model that I used and it's a pretty reasonable price.



pbecker83 says:

Fun

Jan 20, 2010. 5:39 PM [REPLY](#)



Dreistein says:

were do u get old pagers or cell phones

Dec 18, 2009. 11:10 PM [REPLY](#)



Geekmandude says:

Here is a good way to get them free: <http://www.instructables.com/id/Get-free-cellphones/> I got about 20 this way a few weeks ago, many of which worked just fine! My brother (FR33K) even got a working SIM card!

Jan 5, 2010. 3:51 PM [REPLY](#)



deblhunt says:

like hogdog9, I don't know where to get the motor. I want to try this! Where do you get the motors?

Jul 23, 2009. 9:28 AM [REPLY](#)



cbgthree says:

<http://www.radioshack.com/product/index.jsp?productId=2914700>

Nov 13, 2009. 5:31 PM [REPLY](#)



Colonel88 says:

Who's the designated driver lol?

Oct 6, 2009. 11:54 AM [REPLY](#)



kcls says:

I ordered the motor that you said to use and it had a small blue plastic thing around it, and I see yours don't have that. Did yours come with the blue thing, and if it did, how did you remove it?

Sep 30, 2009. 9:06 AM [REPLY](#)



Grathio says:

Good point. Sometimes those motors come with a little blue rubber collar on them. They're not really attached to the motor (no glue or anything) and they're flexible so you can just pull, slide, or pry them off. Just be careful not to damage the metal leads and pull it off the "front". (ie: The end with the offset weight.)

Sep 30, 2009. 11:11 AM [REPLY](#)



kcls says:

Yeah, i kind of figured that out on my own, literally minutes after. thanks anyway though. I apperently bent the metal leads a few to many times and one broke, but luckily we were able to solder a wire on to it. Phew!

Sep 30, 2009. 3:06 PM [REPLY](#)



Grathio says:

Glad you were able to recover from it! Those leads are definitely the weak point of those specific motors. Of the 15 or so that I've worked with I've had a lead break off of at least two.

Sep 30, 2009. 4:30 PM [REPLY](#)



kcls says:

For the metal can you cut out a soda can and flatten it out, or would that be to light?

Aug 22, 2009. 5:41 AM [REPLY](#)



Grathio says:

An aluminum soda can is probably going to be too light and springy to work well. If you want to use something from around the house I would try a soup can lid or possibly an Altoids (mint) tin.

Aug 22, 2009. 11:54 AM [REPLY](#)



kcls says:

ok. what about a steel can (the ones that canned vegetables come in) maybe?

Aug 23, 2009. 3:09 PM [REPLY](#)



Grathio says:

I think that would probably work. I haven't eaten canned veggies in a long time but I suspect it's a bit thicker than what I used in the project. I'd try to use the top or bottom of the can to get the flattest surface to start with. The problem is that the robot is so small that thick material is hard to work with at that scale, and any imperfections tend to amplify when it's small.

Aug 23, 2009. 4:37 PM [REPLY](#)



kcls says:

Thanks! once i try this i'll post the results.

Aug 23, 2009. 5:48 PM [REPLY](#)



kcls says:

and then, i could take one of my clay penguins (see my instructable: <http://www.instructables.com/id/How-to-make-an-awesome-little-clay-penguin/>)
hollow it out, and put this inside! voila! pocket drunken penguin!

Aug 23, 2009. 3:15 PM [REPLY](#)



79spitfire says:

Congratulations! it is so awesome you won! My kids and I made some of these up and they are a blast, instant gigglefest! Keep it up, and most of all THANK YOU!

Aug 23, 2009. 2:35 PM [REPLY](#)



Grathio says:

No, thank you! I've been really overwhelmed by the positive feedback that this little project has generated and I couldn't have won without all of the support from you guys. But as great as it is to be a winner in such a competitive contest, the phrase "instant gigglefest!" is going to have me smiling all week! Thank you!

Aug 23, 2009. 4:42 PM [REPLY](#)



79spitfire says:

Your welcome

Aug 23, 2009. 5:19 PM [REPLY](#)



ant_reiko says:

Congratulations on your first prize for pocket sized contest. Now you are famous...

Aug 8, 2009. 11:38 AM [REPLY](#)



fireruler12 says:

where did you get the tin

Aug 7, 2009. 10:54 PM [REPLY](#)



Grathio says:

You should be able to buy it from any hobby shop hardware store. Also better art stores. [Click here](#) to find a bunch of sources to buy it online.

Aug 7, 2009. 11:48 PM [REPLY](#)



fireruler12 says:

where did you get the tin

Aug 7, 2009. 10:55 PM [REPLY](#)



BrandonMao says:
I have a tiny old rc with a pager motor.

Aug 6, 2009. 10:20 AM [REPLY](#)



jam BD says:
so simple yet so entertaining

Aug 5, 2009. 3:15 PM [REPLY](#)



1m2i3k4e5 says:
where do you get the Motor

Jul 24, 2009. 2:06 PM [REPLY](#)



BootlegWarrior6 says:
pager or old cell phone will do.

Jul 29, 2009. 4:32 PM [REPLY](#)



BootlegWarrior6 says:
....and some vibrating toothbrushes.. most people have an old cheap one lying around

Jul 31, 2009. 12:04 AM [REPLY](#)



purplemonkeydishwasher says:
Heres an idea: turn the head into a rectangle, twist it around, decorate and you have a: NUCLEAR TOILET ROBOT!!

Jul 30, 2009. 9:56 AM [REPLY](#)

[view all 86 comments](#)