P.A.R.T.S

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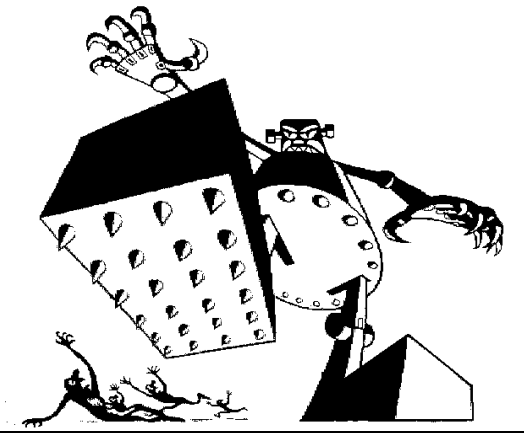
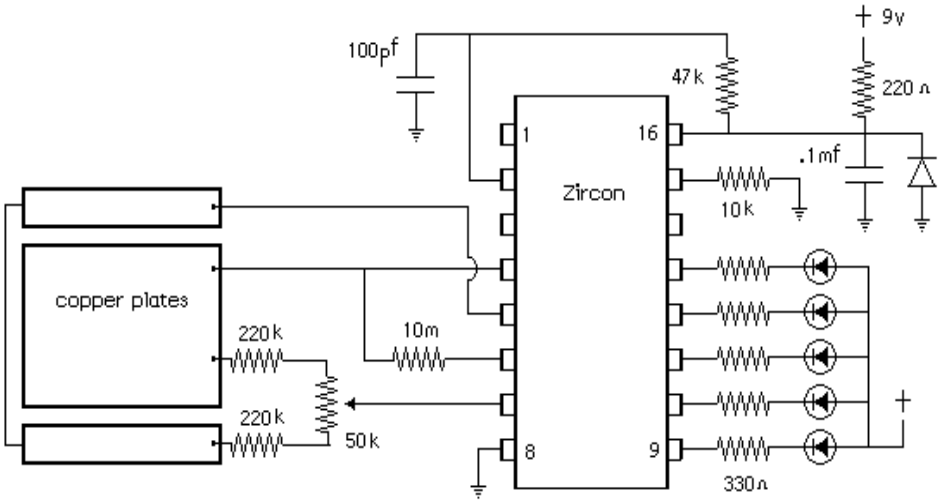


Can't Touch This:

One of the things I like about building robots is, you never know what you might find that will come in handy to build a robot. Years ago, while I was in college I went with a date to a movie theater. Walking down the isle of the theater, I noticed something that would make a great robot body. 'Wow - perfect' I thought, as I stuck my hands inside to examine this perfect robot body. I looked up with a smile, and my date looked mortified. It was then that I realized I had both my hands inside of a garbage can.

Luckily now I am married a woman who understands me.

Anyway I received Email form Tom Cicatelli. He said he had a been experimenting with an electronic stud sensor, and thought it would be useful for robots. He explained the stud sensor as a device that you slid it against a wall, and LEDs displays the relative density of the wall. I quickly went down to the local hardware store and purchased a hand held stud sensor from Zircon for only $11.99.



Zircon Stud Sensor

I had the stud sensor taken apart as soon as I was home. Inside I found a small circuit board, with one IC and a handful of resistors, capacitors and LEDS. The most interesting part was the three flat copper panels on the circuit borad. This was the sensor. Activating the device, the circuit calibrates itself to the surrounding area. If any object moves toward the sensor, its capacitance changes, and the LEDs

display the change. The stud sensor can be adjusted and I found that I could sense my hand from several inches away. The display changes as I moved my hand closer. OK it can see my hand. Can it see a pencil? Yes. Can it see a piece of paper? Yes. Can it see glass? Yes. The stud sensor could see everything I could throw at it.

It took about 20 min. to connect the stud sensor to my Explorer Bot*. I connected the output of two of the LEDs to the robot. One signal indicated when the robot was too far from the wall, and the other indicated when it was too close. A few lines of code and I had a simple wall following robot. The stud sensor would keep the robot about 3 inches away from the wall without ever touching it.

Theory of operation for the stud sensor: The circuit sets up one oscillator and two one shot multivibrators. The two one shots are triggered by the oscillator at a constant rate. One multivibrators is connected to the copper plate, this is a sensor plate. The other multivibrator connects to a fixed capacitor. The difference between the discharge rates of the one shots determines the relative strength of the capacitive field.

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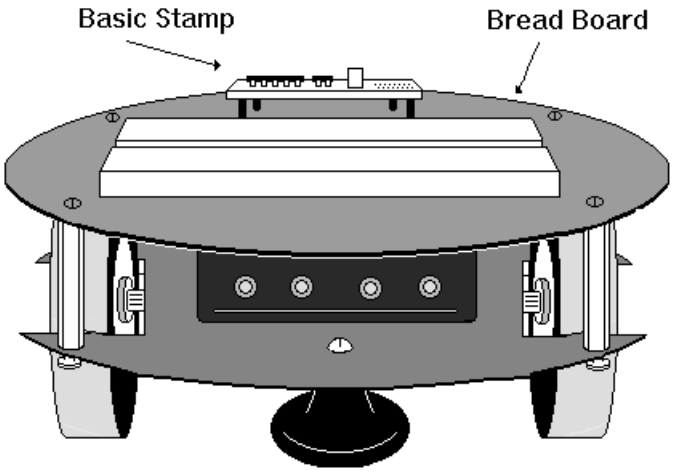
* The Explorer BOT: is a simple robot that is designed as an experimental platform. The base has two RC servos, a Basic Stamp, and a bread board area. Simple and sweet. With the bread board I can very quickly test different circuits such as the stud finder, phot cells, or IR detector. With the Basic Stamp on the robot, I can very quickly write code to test the hardware. Simple. Fast. Fun.



Explorer BOT

The meeting place for PARTS has changed to Mount Hood Community College. The meetings are the 1st Saturday of every month, at Mt. Hood Community College. Room 1277 at 10:30 am. A special thanks to Vern Hartshorn for making this wonderful meeting place available. Thanks Vern!

If you would like more information about our club contact: Kile Kroker @ (503) 239-5853, Steve Schoeneman @ (360) 247-6237, or Marvin Green @ (503) 666-5907.