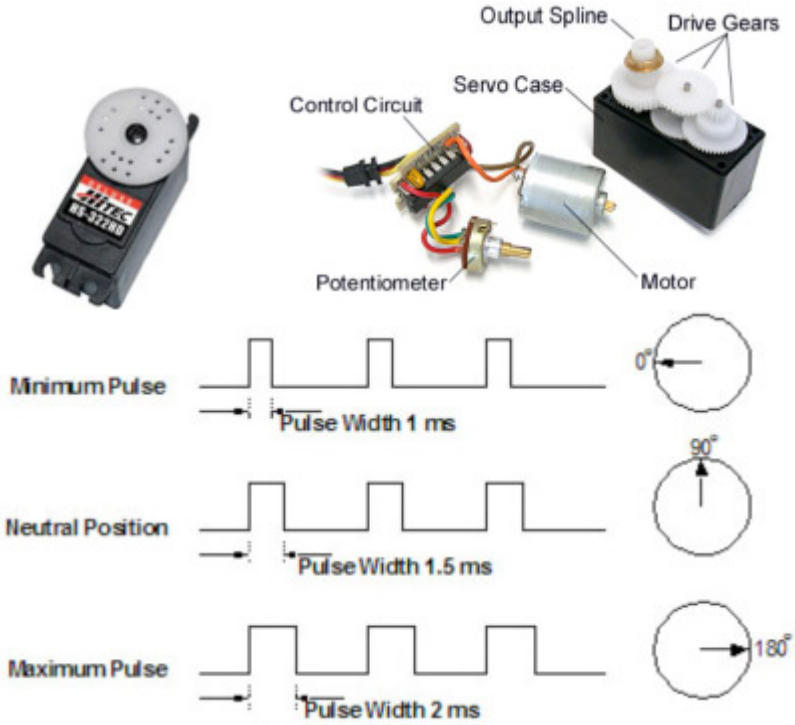
Hacking the Servo

What is the servomotor?

The servo is an energy efficient motor that we will use to drive our sumo bots. The power delivered to the motor isn't consistent. When the shaft of the motor is at the desired position (0° or 180°), power supplied to the motor is stopped. The motor's speed is proportional to the difference between its current position and desired position. Our current servos can only be turned 180°. We want our robot to turn a full 360° both ways.

http://www.jameco.com/Jameco/workshop/howitworks/how-servo-motors-work.html



1. Unscrew the top cap (pic)
2. Clip off the extra plastic stopper using a wire cutter (the red tool) from the white output spline. See diagram on the inside of the servo above.
3. Take the white plastic tab off the potentiometer (pic)
4. Turn the knob of the potentiometer counter clockwise until it can't be turned any more (we will call this position 0°).
5. Turn the knob 90°. At 90°, the potentiometer thinks the servo needs full power to turn the wheel to 0° or 180° (90° is the 'starting' position). With this hacked servo, the servo will be constantly providing full power.
6. Hot glue the knob of the potentiometer. Make sure not to add too much glue. If you do, the cap won't fit back on. You can ask a TA to check this for you. If you do add too much glue, the solution is simple. You will have to use a wire cutter to clip off the extra glue.
7. Fit the top cap back on with the appropriate gears in place. Refer to the picture for the placement of the gears.
8. Screw the four tall screws and the black wheel screw back in place
9. To test to see if your servo is properly hacked, try turning the wheel a full 360°. If it works, you're done. If not, you'll have to open it back up and try clipping more glue off or removing more of the plastic stopper on the output spline.