Week 10

Motor 2 --- more precise

Servo motors

- Servo motors are DC motors that are geared to be stronger and slower
- They have variable resistor (potentiometer inside) that measure and **remember its position**
- There are two types of servo motor
  a. Standard 180 degrees rotation
  b. Continuous 360 degrees rotation
- Usually common hobby servo uses 5V

Servo Library

Libraries are collections of code which are intended to make difficult tasks easier.

To work with servo motors, we will be using a library called Servo.

To add the library to your sketch, use:

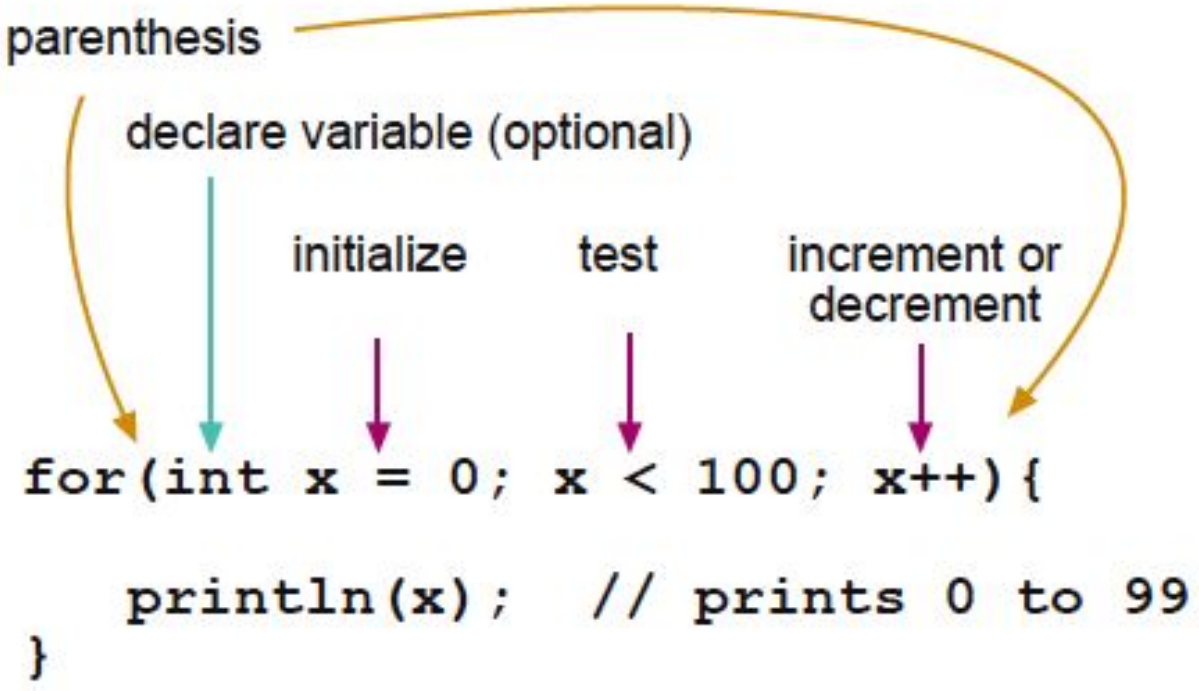
Sketch > Import Library… > Servo

Servo exercise

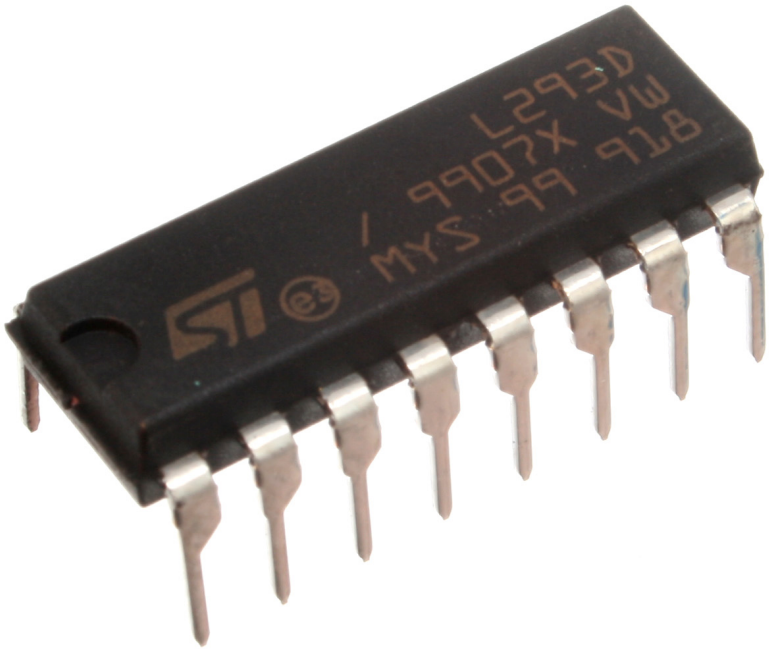
1. Open **servo_standard_three_positions** sketch and give different values to degrees of motor and delay time
2. Open **servo_sweeping** sketch and change the speed of rotation
3. Make a narrow degrees of rotation (example: 30 to 60 degrees instead of full 0 to 180 degrees
4. Open sketch from File > Examples > Servo > Sweep investigate the difference
5. In the Sweep sketch from example, make the sweep going 0 → 180 slower than going 180 → 0
6. Open sketch from File > Examples > Servo > Knob add knob to control positions
7. Add a button to tell arduino to go to a specific degree when button is press

For loop

1. The for statement is used to repeat a block of statements enclosed in curly braces.

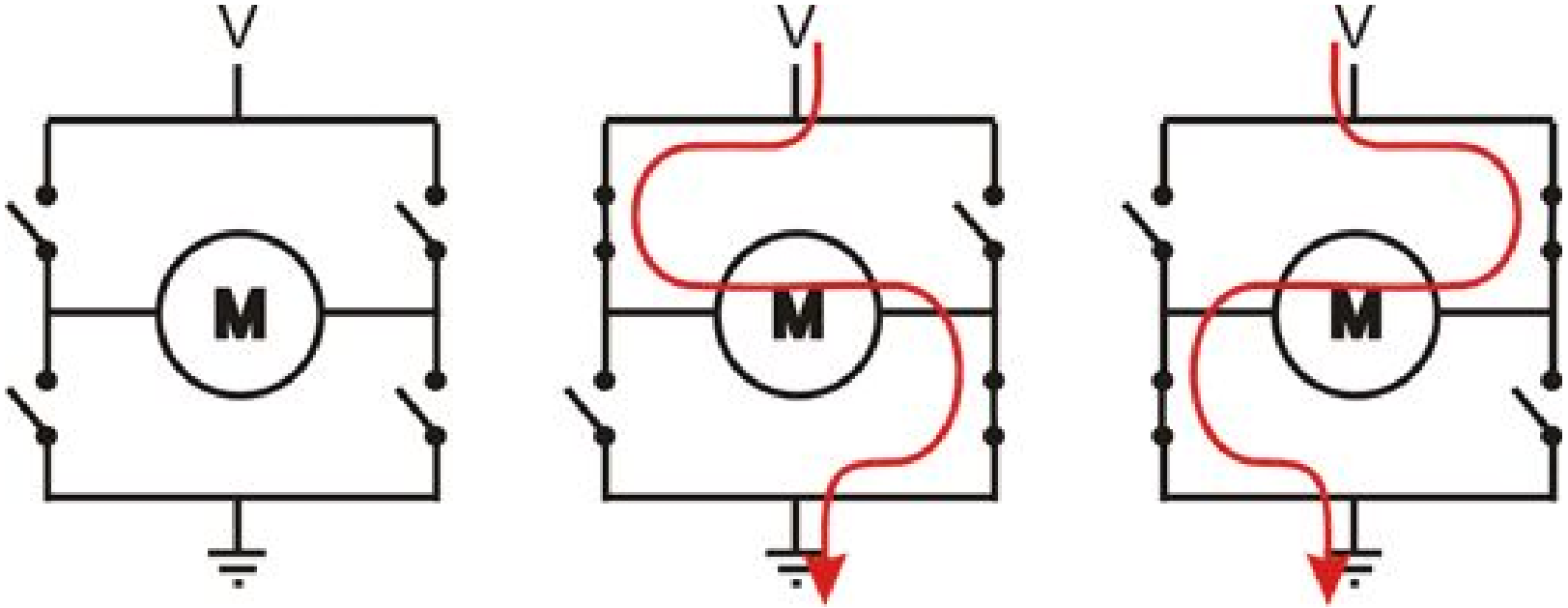


Better motor control

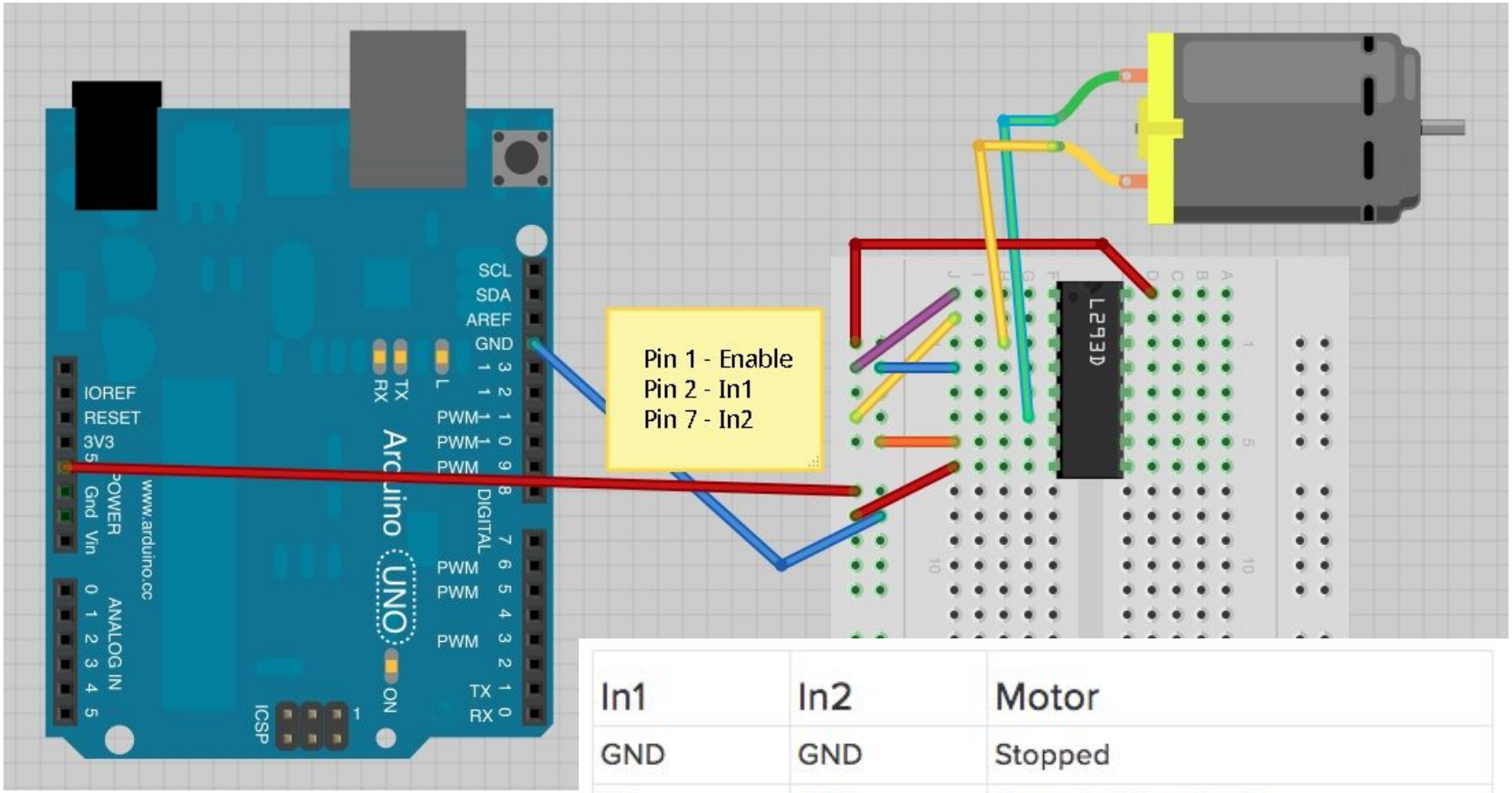


An H-Bridge IC can be used to drive multiple motors at varying speeds in different directions.

H - Bridge



Testing L293D



In1	In2	Motor
GND	GND	Stopped
5V	GND	Turns in Direction A
GND	5V	Turns in Direction B
5V	5V	Stopped

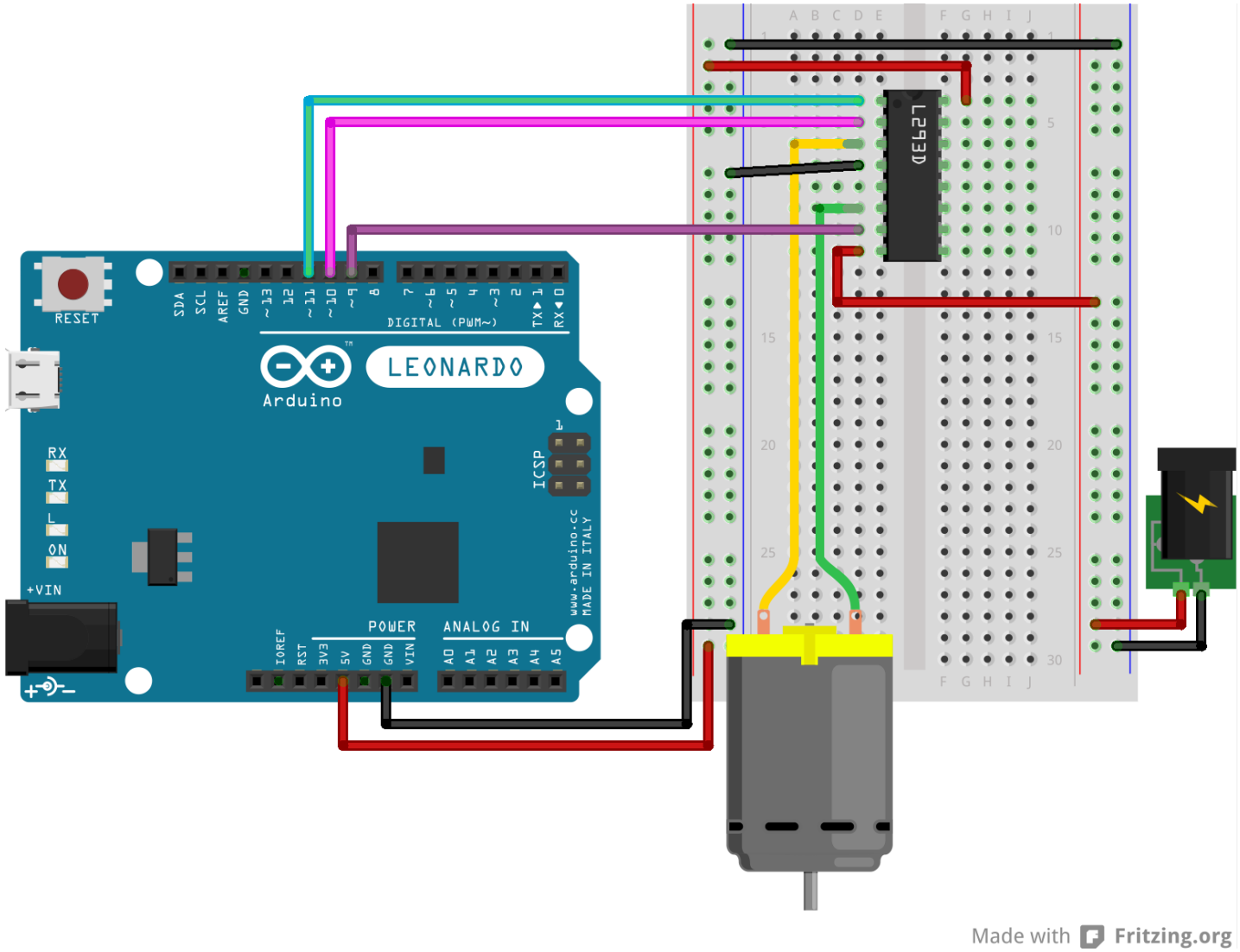
Using External Power Supply

When you use external power supply that is separate from Arduino, **make sure they are connected only by Ground**

Never connect Positive (+) of external power supply to Arduino 5V bus on the breadboard

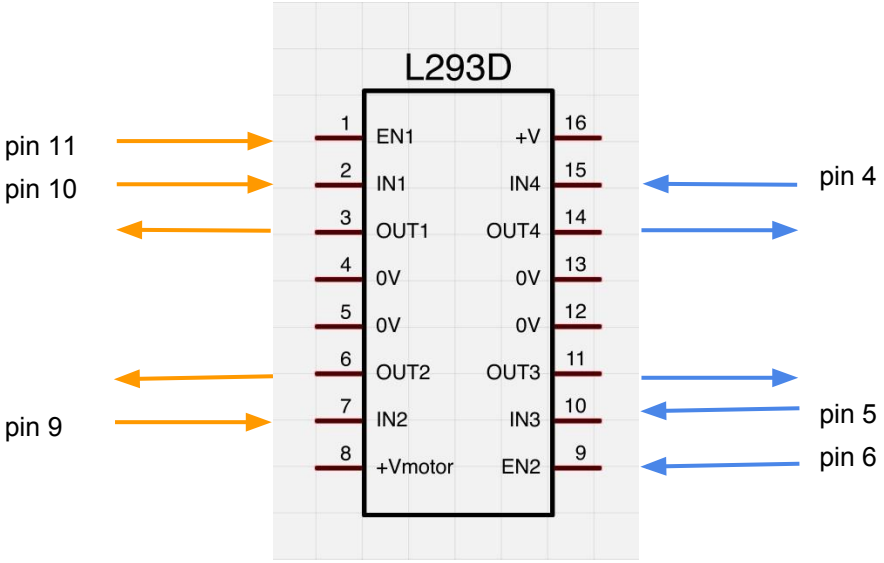
Make sure your power supply matches your needs (both Volts and Amps).

L293 Dual H-Bridge motor control



Connecting a second motor?

Remember: Notch is at the top!



All 0V pins should connect to Arduino GND

Example codes

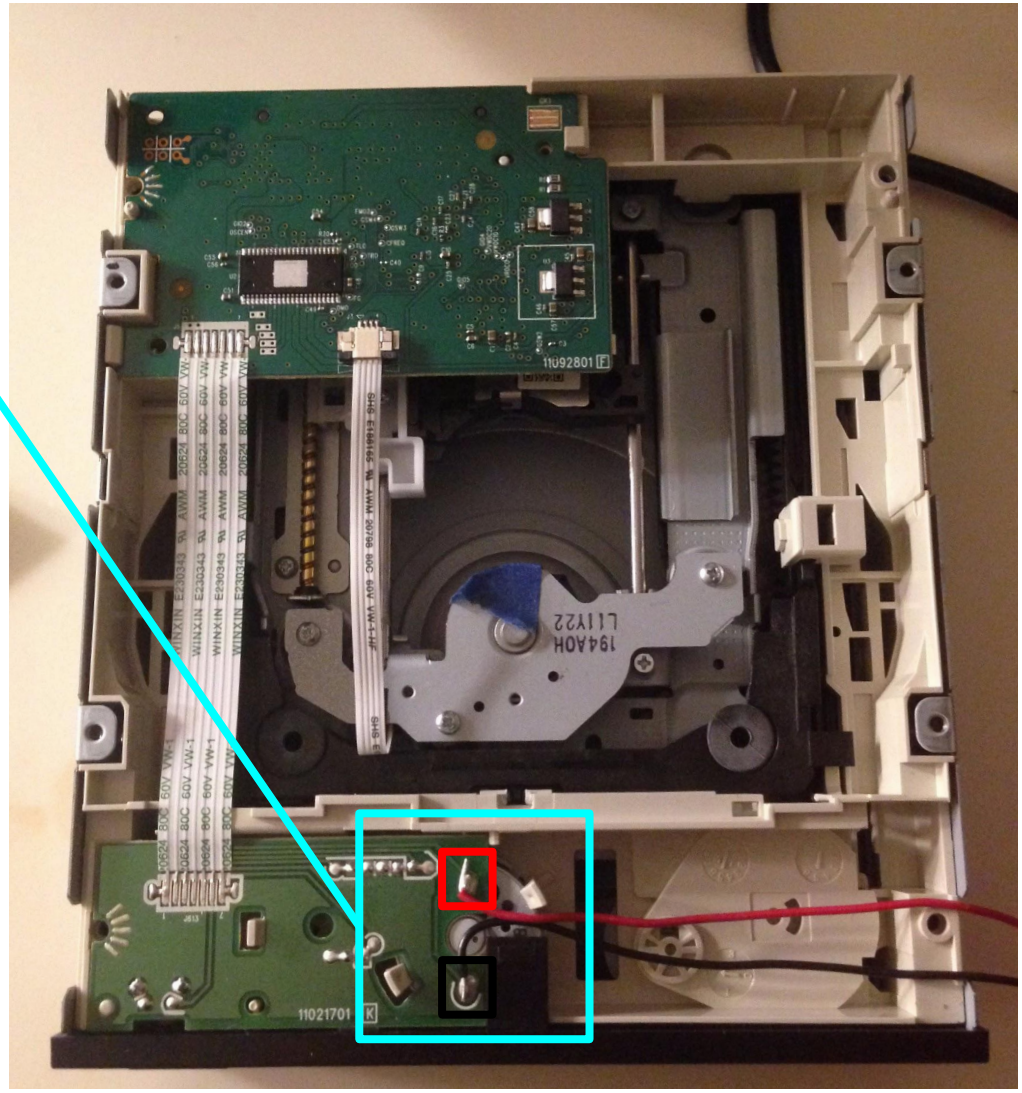
1. Open **h_bridge_basic** sketch, connect motor and reverse it
2. Open **h_bridge_trigger** sketch, add a push button
3. Open **h_bridge_trigger_auto_timer** sketch, change interval and duration of motor and experiment

CD Drive

Let’s connect arduino and H-bridge to CD drive!

CD Drive

1. Open the top up
2. Connect 9V battery to tray motor via alligator clips to test the drive
3. Connect CD drive motor to L293D pin 3 and 6



More information

- H-Bridges vary in the number of outputs and amount of Amps they can drive.
- Can be used to drive stepper motors.
- This H-Bridge can drive 2 DC motors, 4 solenoids, or 1 stepper motor depending on how it is wired.