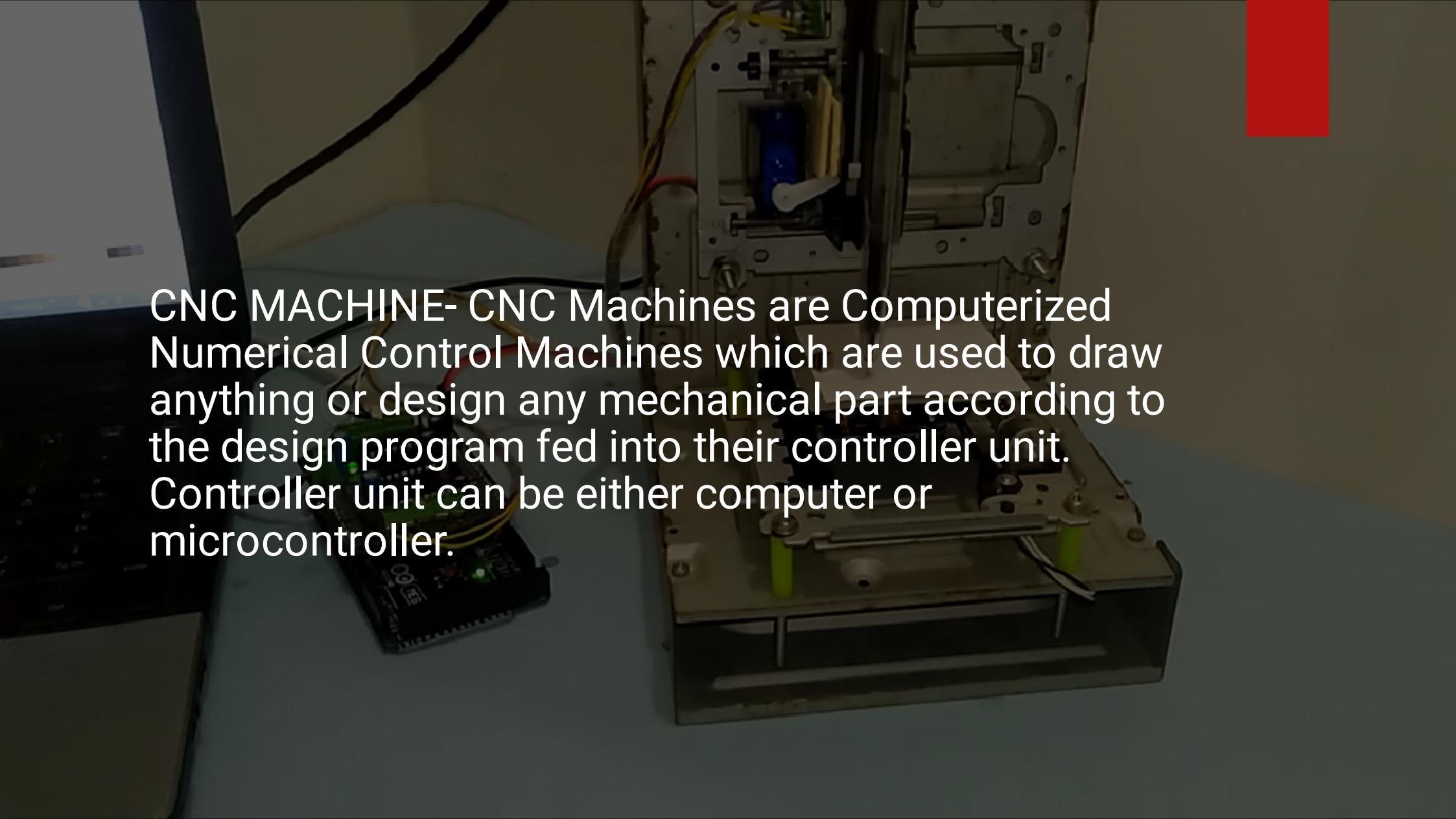


THE CNC Machine

PRESENTATION BY –
KAUSHIK KAMAL KALITA
UDIT CHAUHAN
PRITAM GOGOI
HIMJYOTI BOL.



CNC MACHINE- CNC Machines are Computerized Numerical Control Machines which are used to draw anything or design any mechanical part according to the design program fed into their controller unit. Controller unit can be either computer or microcontroller.

Hardware
Arduino UNO/
MEGA

Qty-1

L293D Motor
shield

-Qty-1

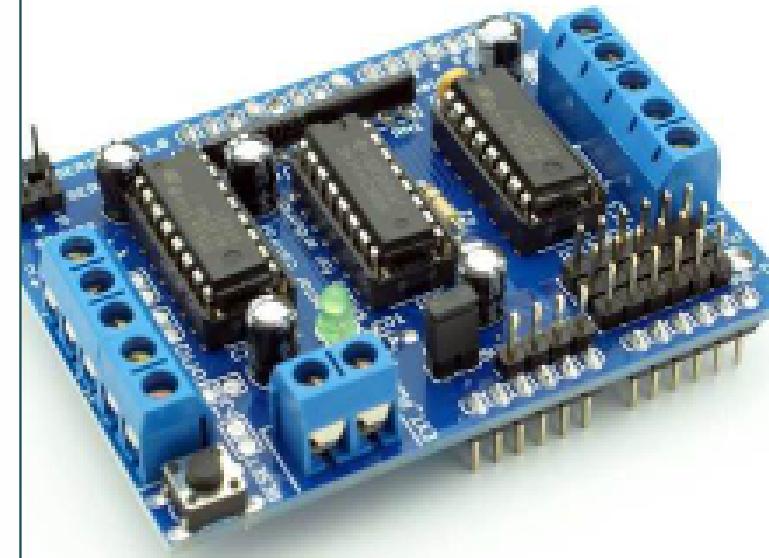
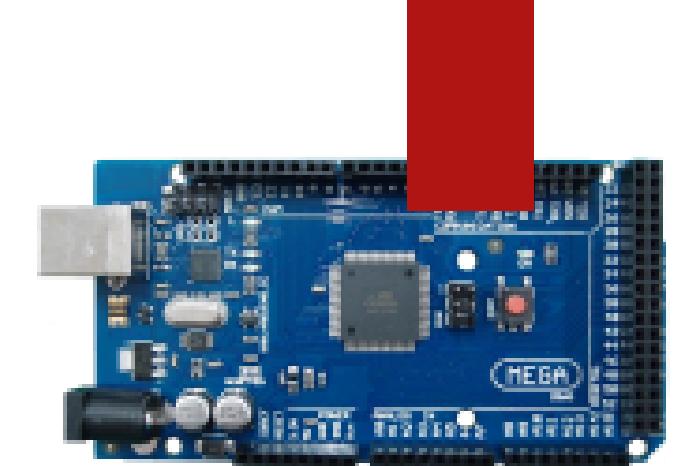
Mini Servo
Motor

Qty-1

Software
Arduino IDE (Version 1.6.3)
(<https://www.arduino.cc/en/Main/Software>)

Processing IDE (Version 3.0.2)
(<https://processing.org/download/?processing>)

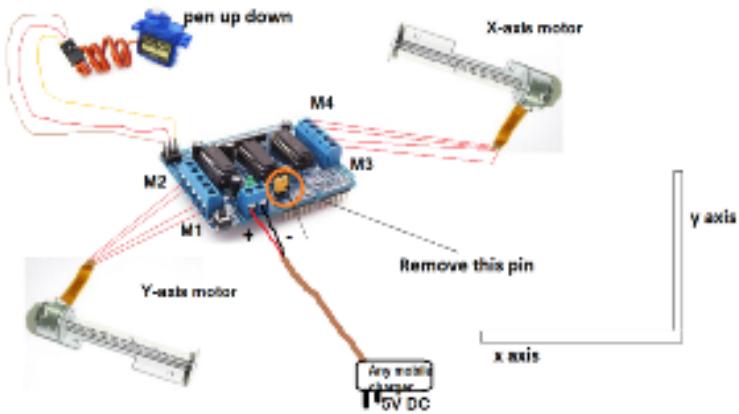
Inkscape (version 0.48.5) (<https://inkscape.org/en/download/>)



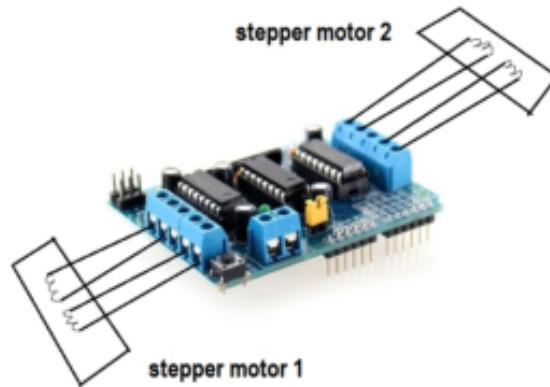
Role of Hardware & Software in this Machine –

- ☒ **1) ARDUINO** Arduino is basically work as a brain of CNC Machine a CNC code uploaded to arduino so that when Gcode stream to arduino Arduino commands motor shield to run stepper motors.
- ☒ **2) L293D Motor shield**
This is dedicated shield to control verities of motor with arduino here this shield control two stepper motor(x-axis & y-axis) and one servo motor,
- ☒ **.3) Servo motor** Basically this motor is used here just to UP/DOWN pen servo is connected with motor shield
- ☒ **4) Arduino IDE** This is used to upload code to Arduino
- ☒ **5) Processing IDE** This is used to implement.
- ☒ **G-CODE to arduino6) Inkscape** This is used to make G-CODE file of any image

Connection with L293D Motor shield



stepper motor connection with motor shield



Wiring drawing -

The Working Mechanism-

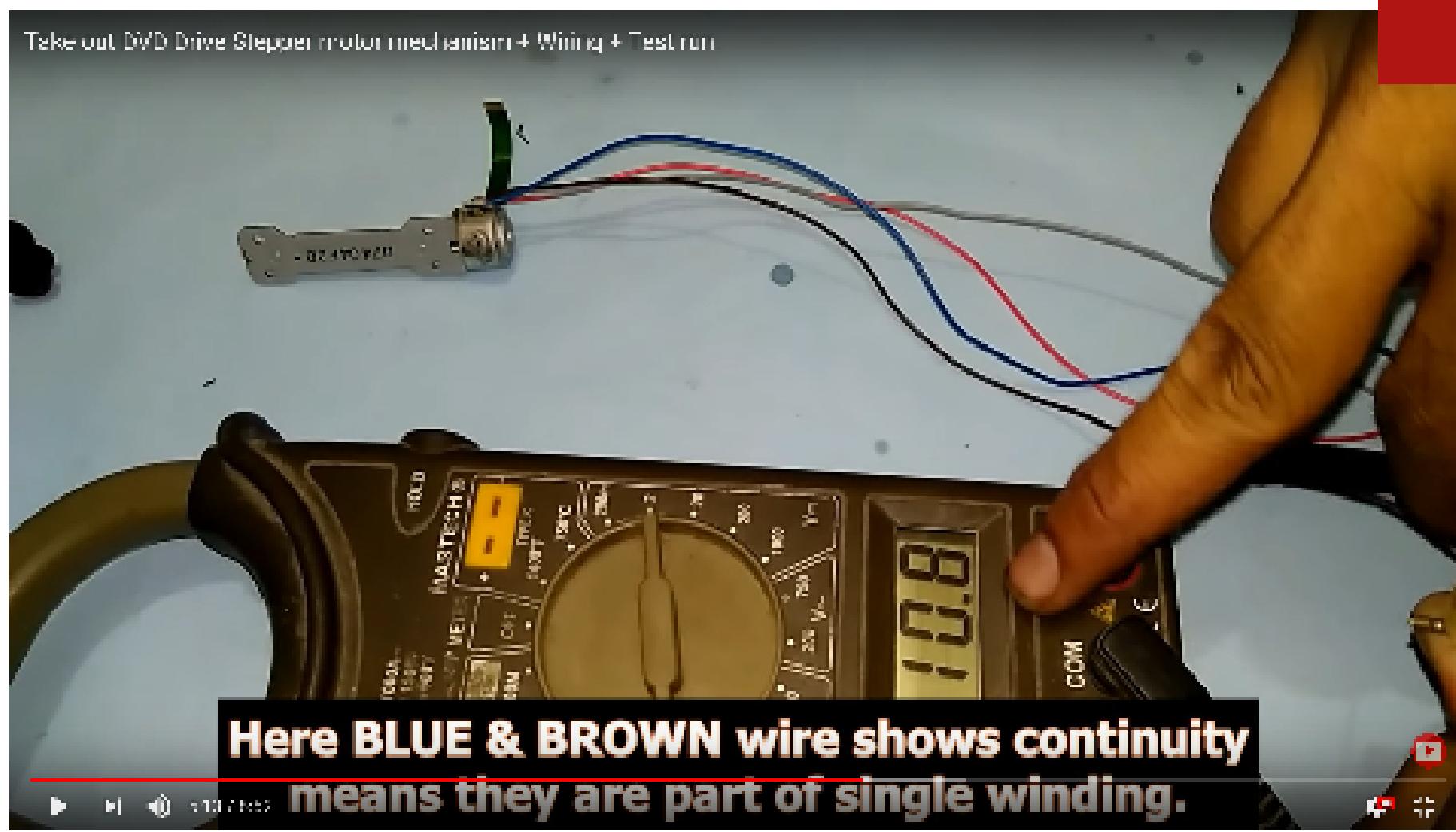
- ☒ Before this we have to find the winding of the stepper motor
- ☒ For finding this we have to use One volt meter.

Take out DVD Drive Stepper motor mechanism + Wiring + Test run

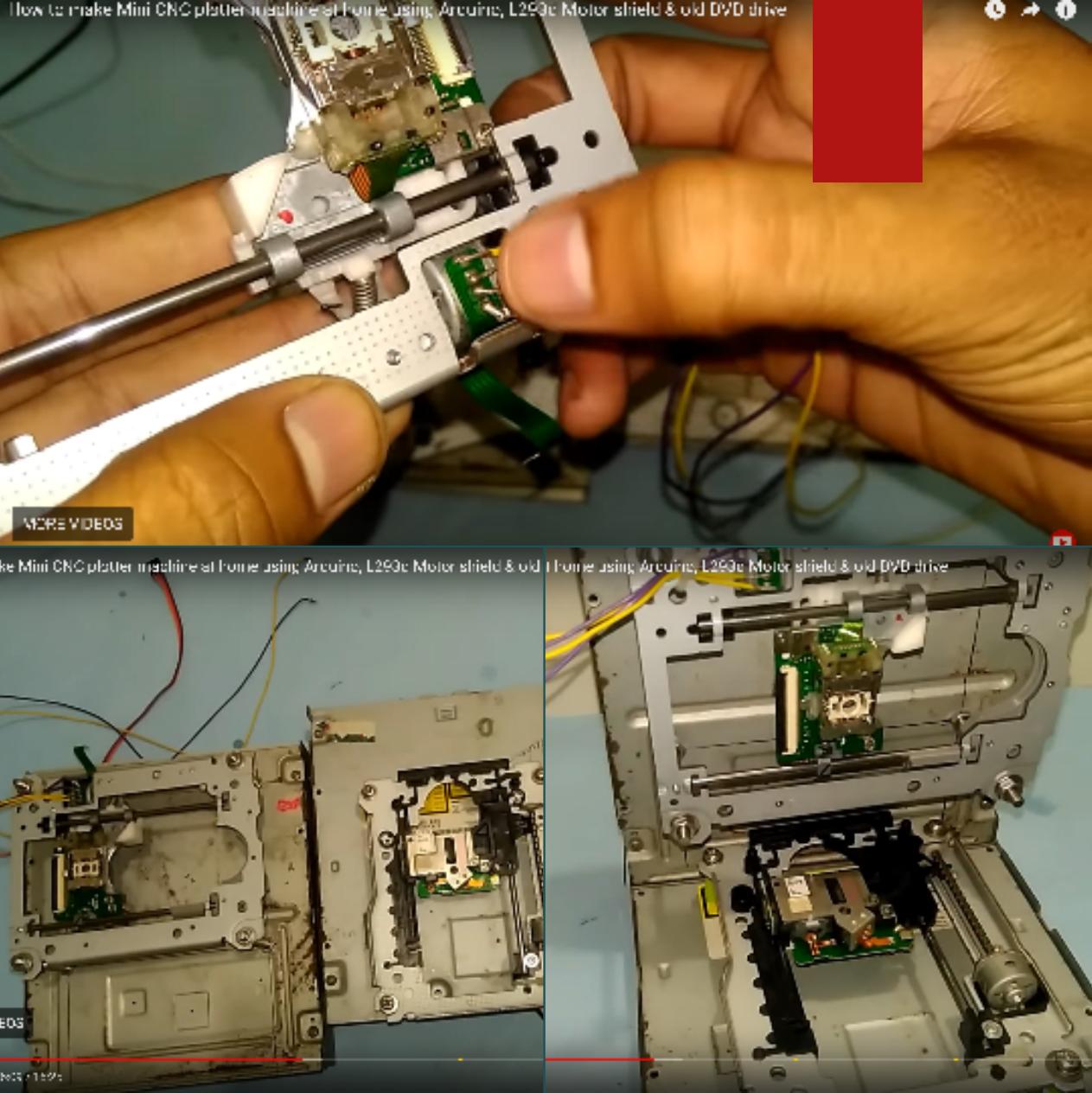


**Stepper motor have two winding so we need to
find out its terminal so we need a multimeter**

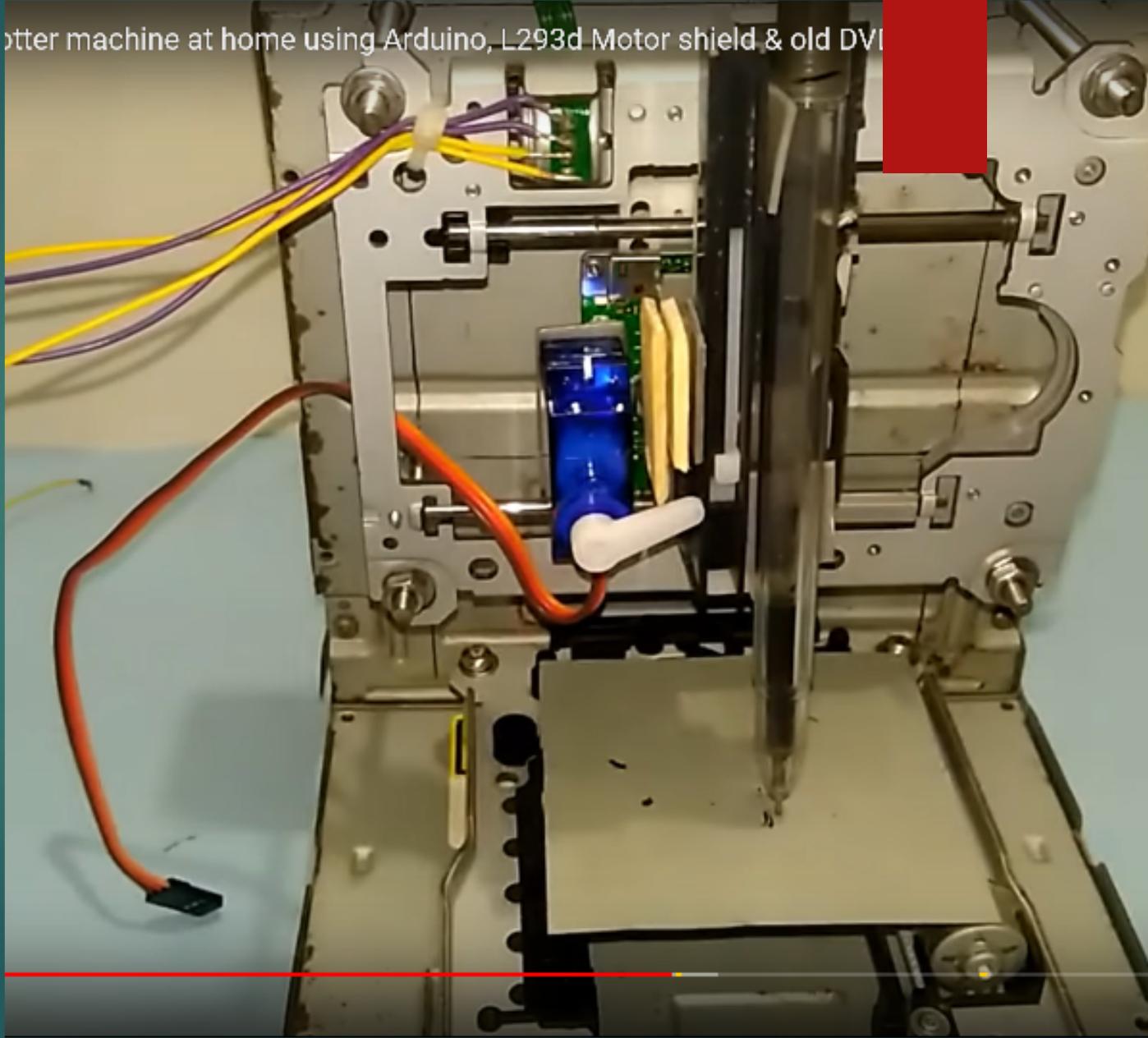
Take out DVD Drive Stepper motor mechanism + Wiring + Test run



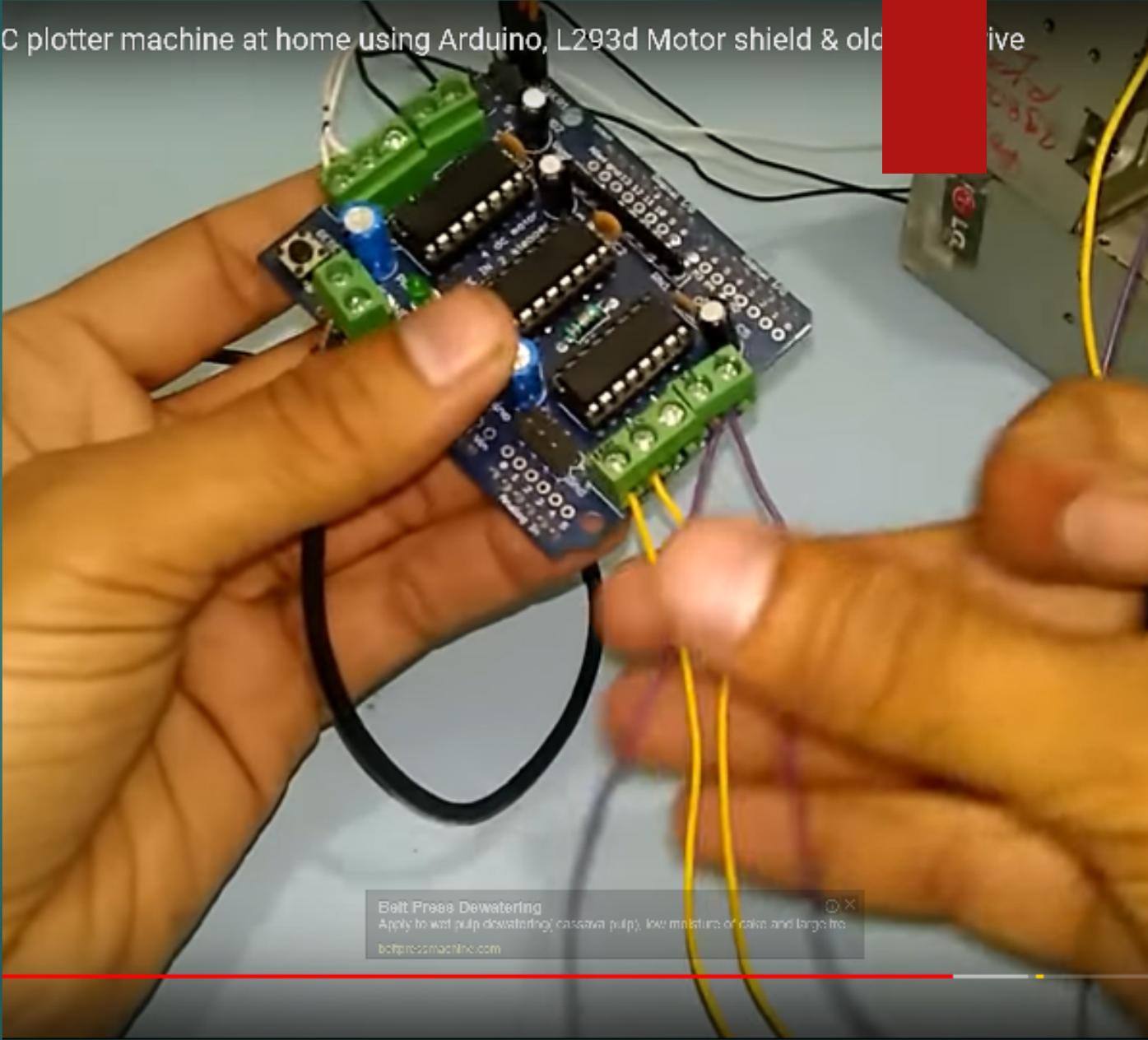
After this we have to do the sholdering of the stepper motor and allining the disc drivers at 90 degree for reference of x-axis and y-axis for the motor driver.

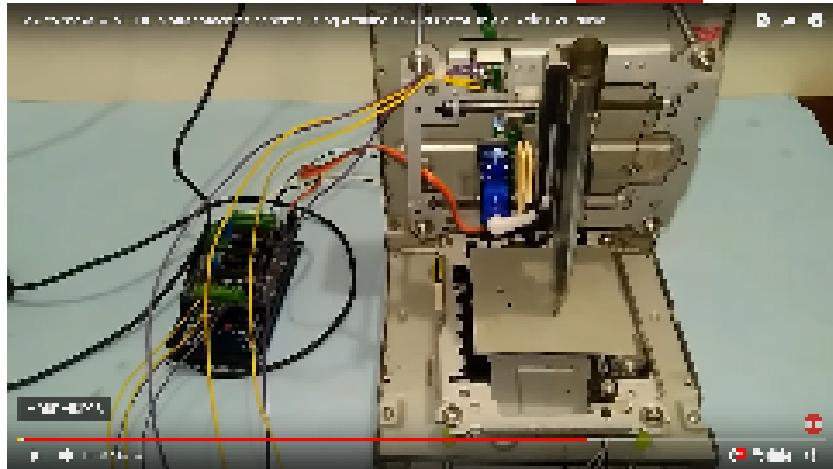
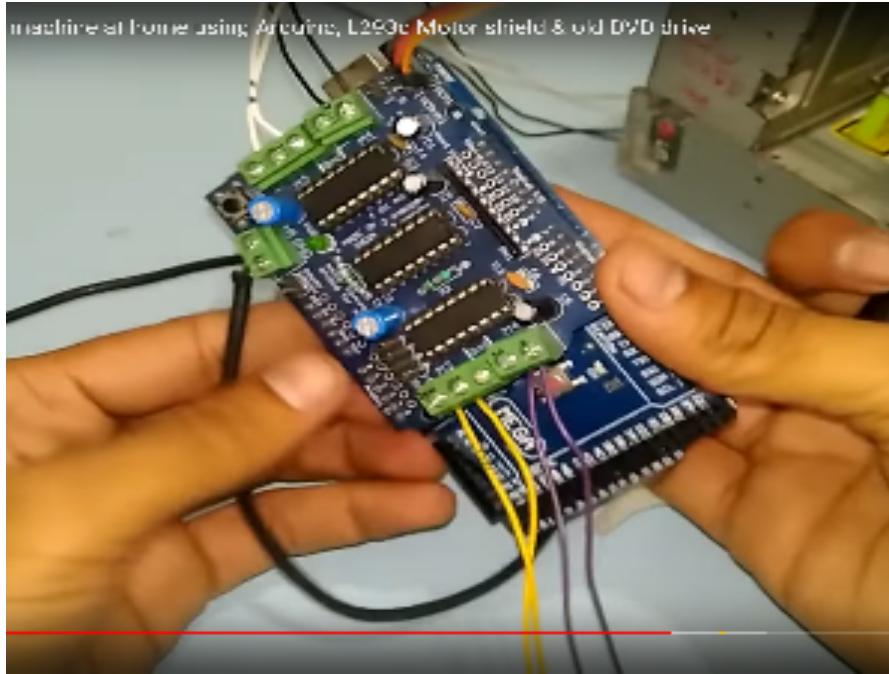


Now align the pen and attach it with the servo motor so that the pen can move vertically up and down.



Now connecting the wires of the disc drivers to M1 M2 (y-axis)M3 M4(x-axis) terminals of the motor driver as well as the servo motor





Now attach the motor driver with the Arduino and then give it a power supply os 5v dc using a mobile charger.

Now comes the programming part

- ☒ Now the machine is ready its time to give life to machine
- ☒ So we need to program arduino
- ☒ Here we are using L293D Motor shield, so it need to add some library to arduino IDE Software
- ☒ Then upload this CNC Code to Arduino.
- ☒ Here first we need to upload the library file related to the motor shield so that the Arduino can refer the cnc code from the library files.
- ☒ After successfully compiling and uploading ,arduino programming part is over now move towards G-CODE

- ☒ **Preparing G-CODE**
- ☒ **G-code is the format of file which your machine can understand and work accordingly**
- ☒ **Suppose you have to draw some text with machine so you need its Gcode**
- ☒ **Inkscape software provides a facility to convert image or text into G-code**
- ☒ **Here we will paste the image and make it according to the dimension of the page we have used to draw.**

- ⦿ Our arduino is ready our machine is ready and our g-code is also ready to print

- ⦿ So we need something which can transmit g-code to Arduino, so here we have Processing GCTRL program

- ⦿ Through this program we will be able to transmit the gcode to Arduino

- ⦿ And hence the machine starts writing on the paper.





THANK YOU.