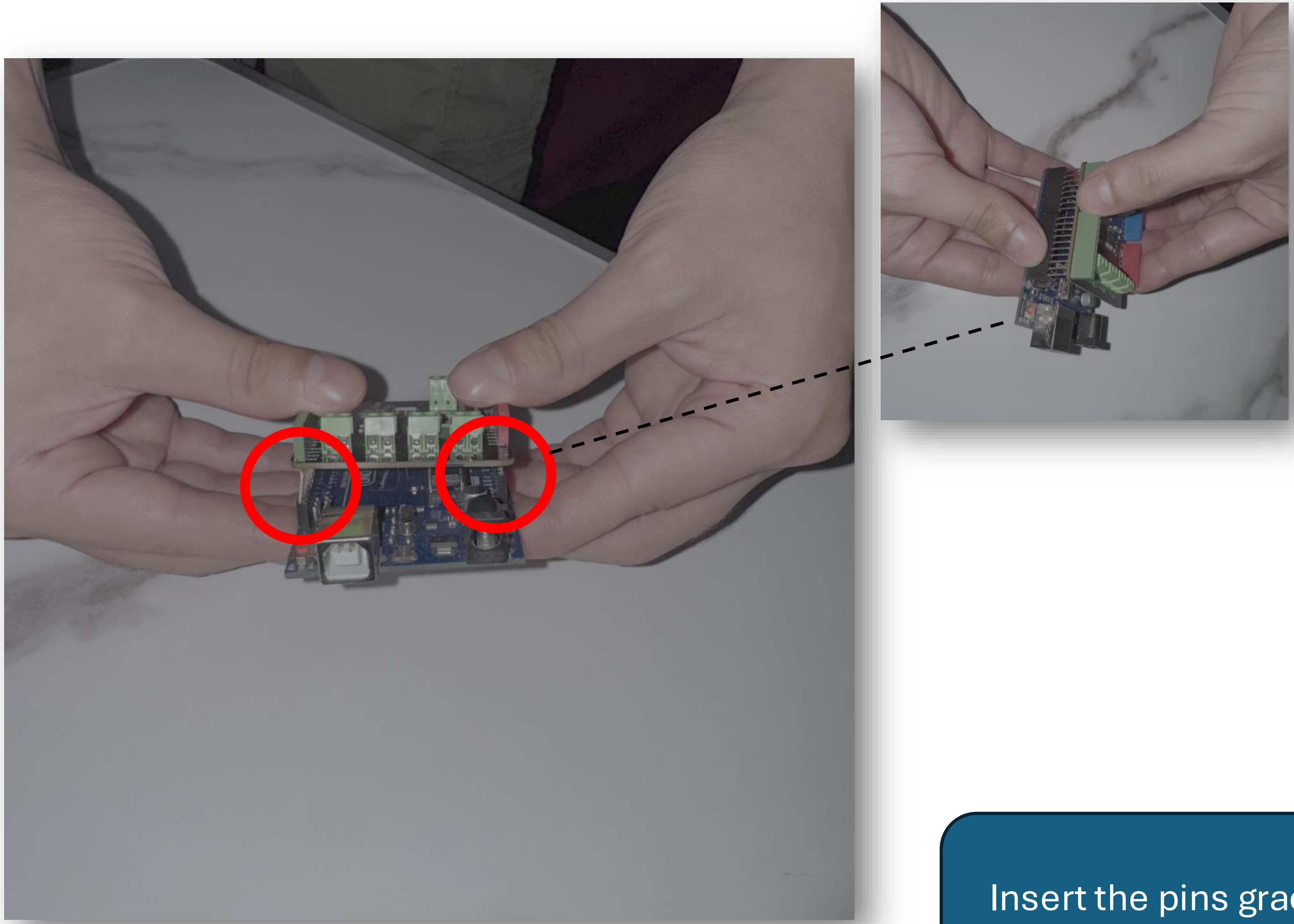
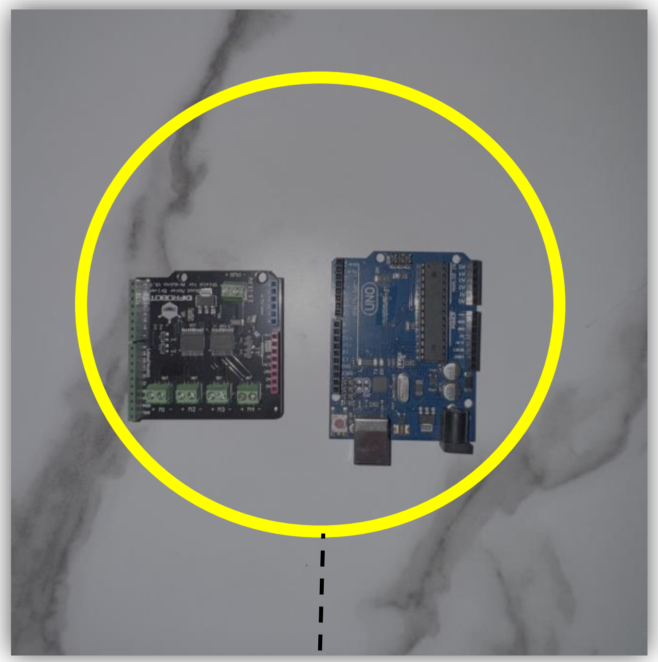
Assembly

FART HOLE COMMI$IONING

Install Shield to Arduino



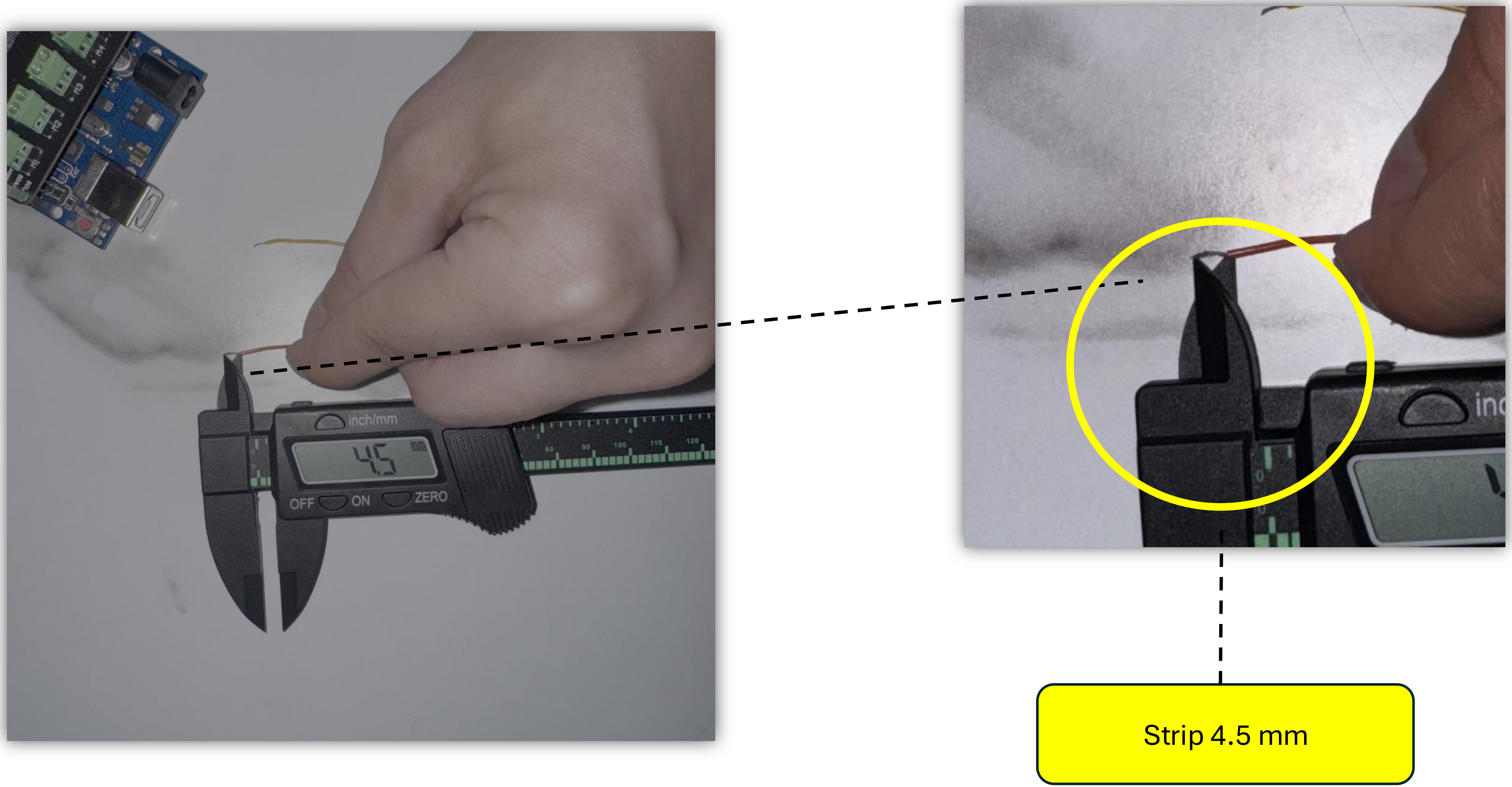


Peep the orientation for
The stack

Insert the pins gracefully, be careful to not bend the pins.

FART HOLE COMMI$IONING

Strip Solenoid wires 4.5 mm



Strip 4.5 mm

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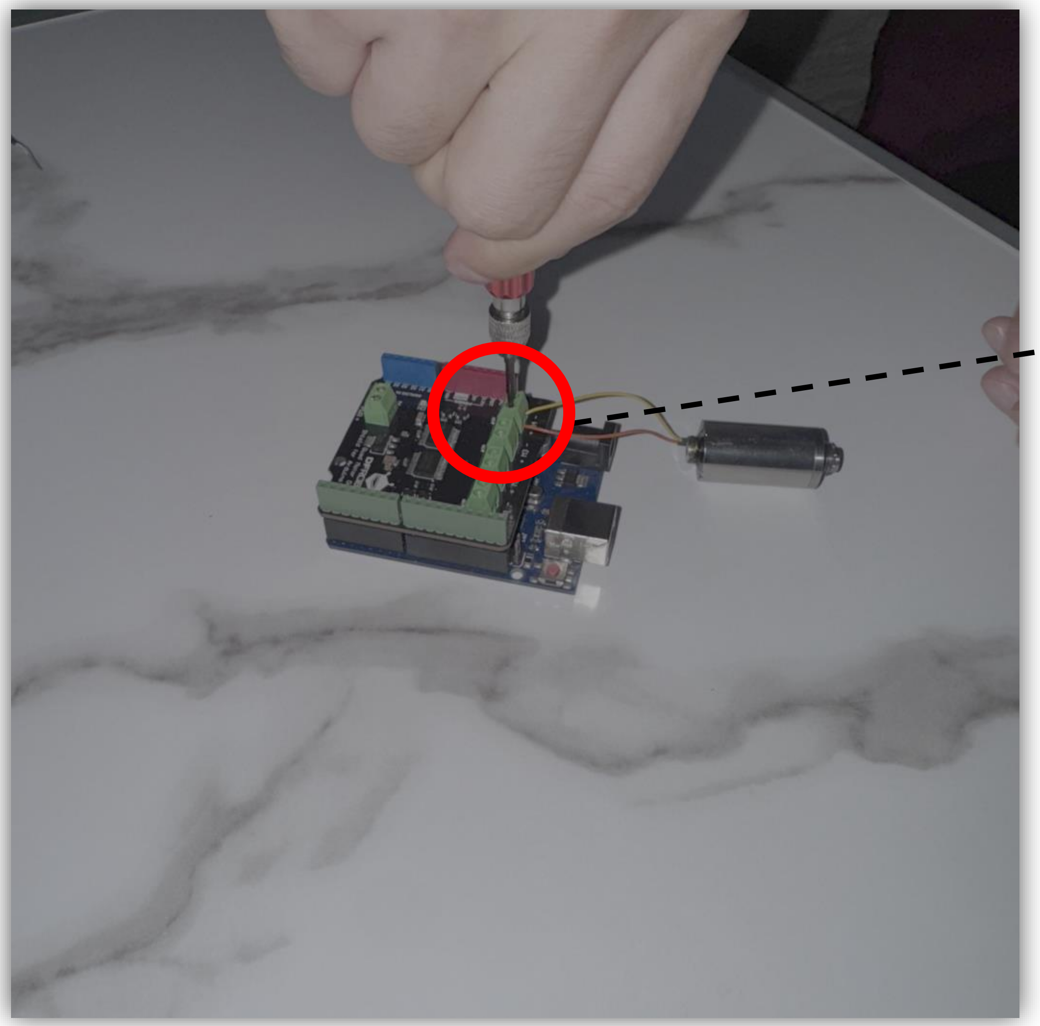
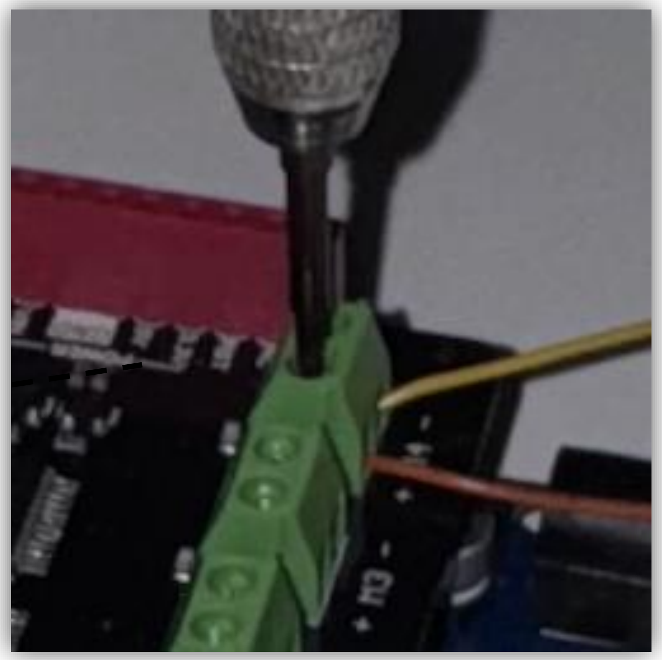
FART HOLE COMMI$IONING

Fasten solenoid to M4

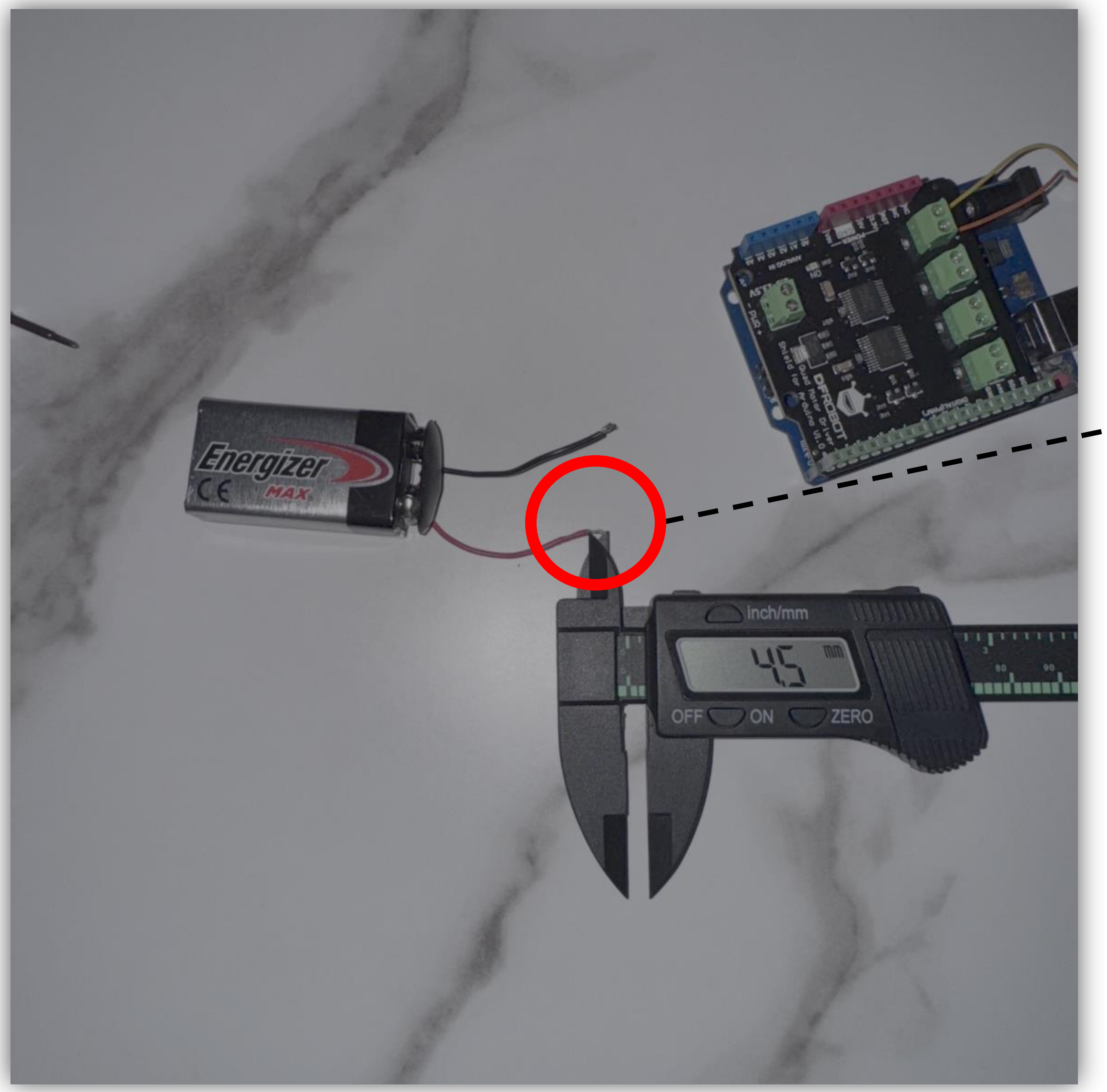


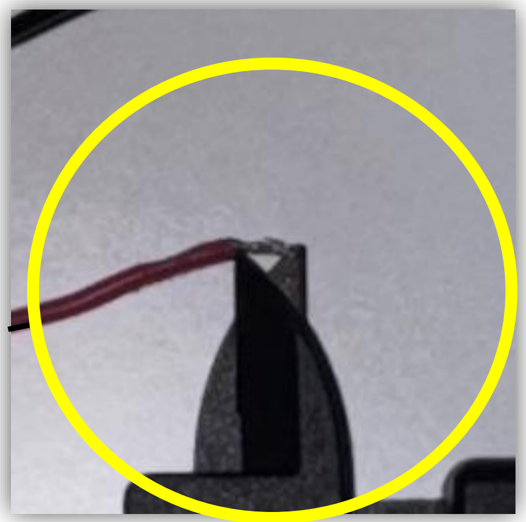


Fasten the orange wire to M4 +
Fasten the yellow wire to M4 -

FART HOLE COMMI$IONING

Strip 9v wires 4.5mm

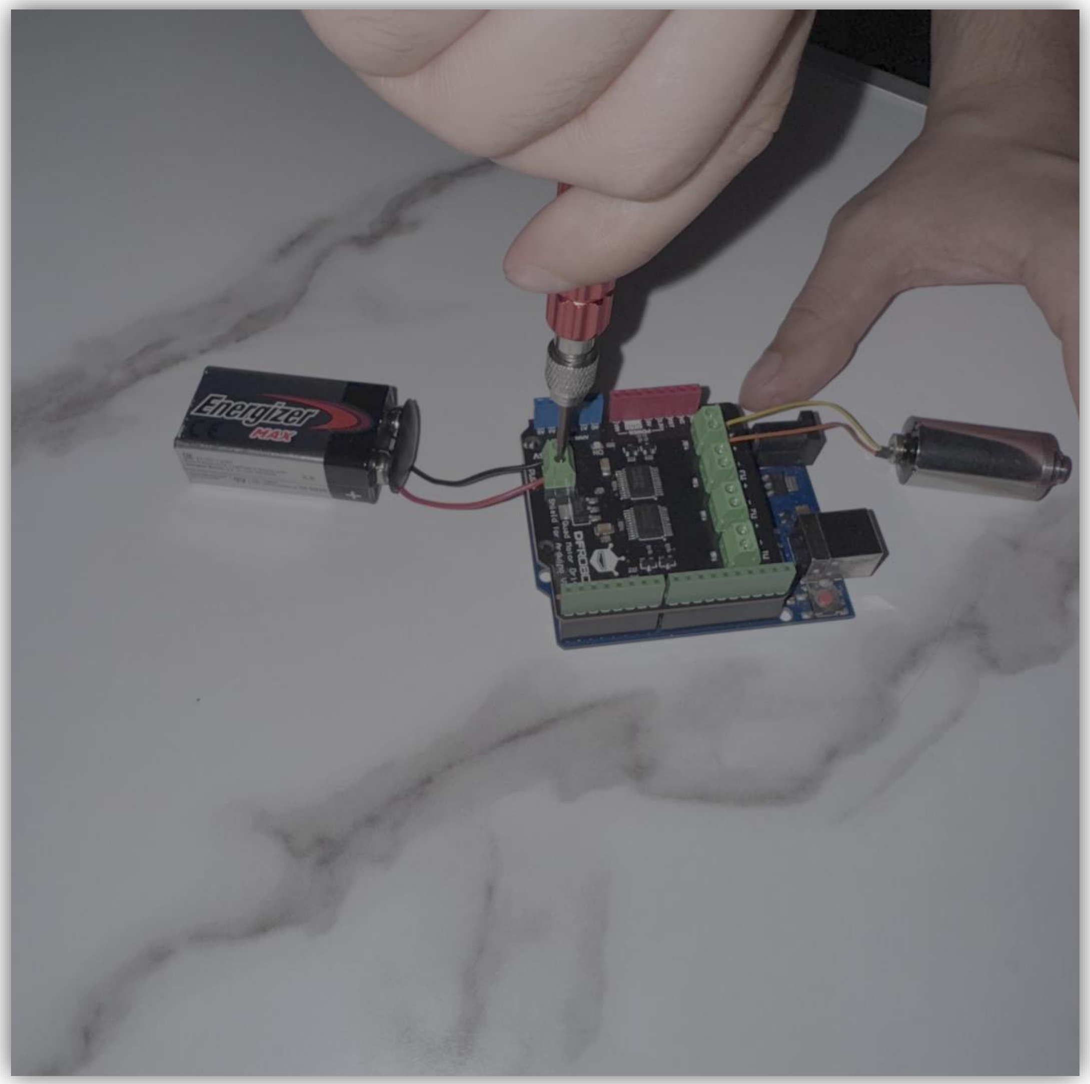




Strip 4.5 mm

FART HOLE COMMI$IONING

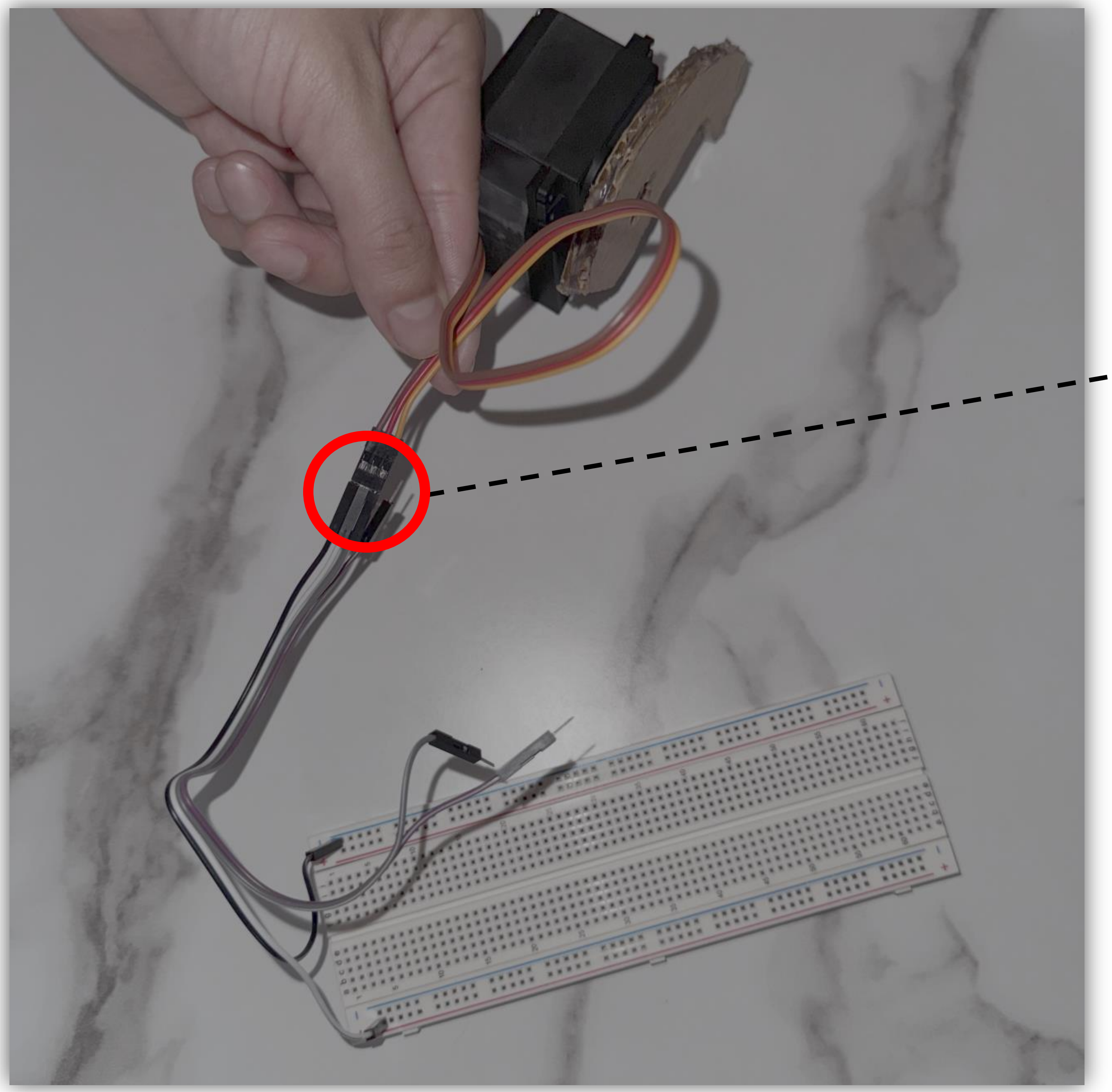
Fasten 9v Battery

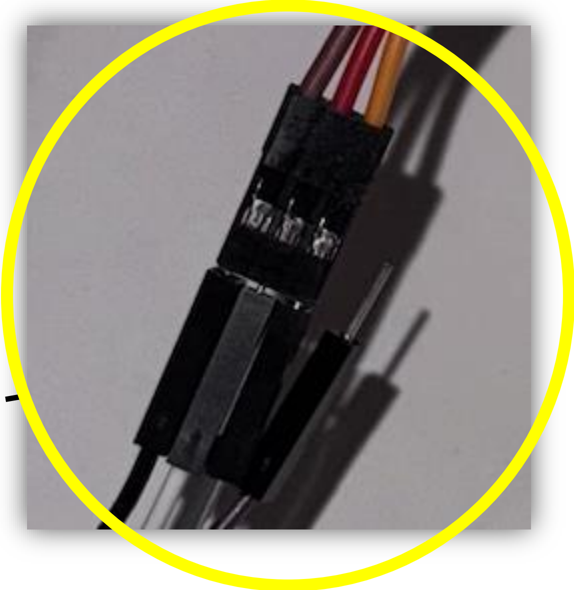


Fasten the black wire to -
Fasten the red wire to +

FART HOLE COMMI$IONING

Connect Power servo to jumpers





Pinout:
Brown > Black
Red > white
Orange > Grey

Leave purple wire hanging

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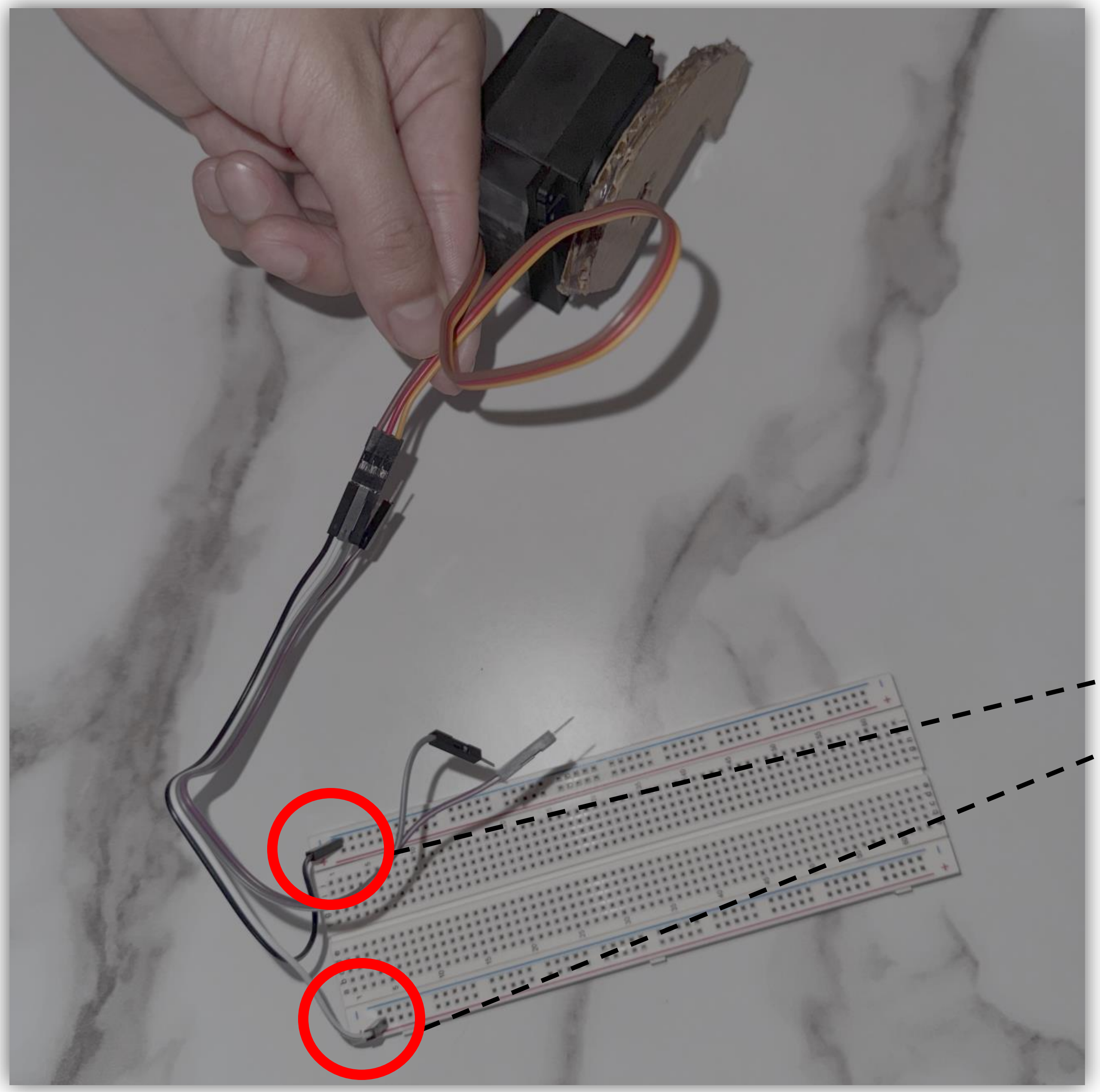
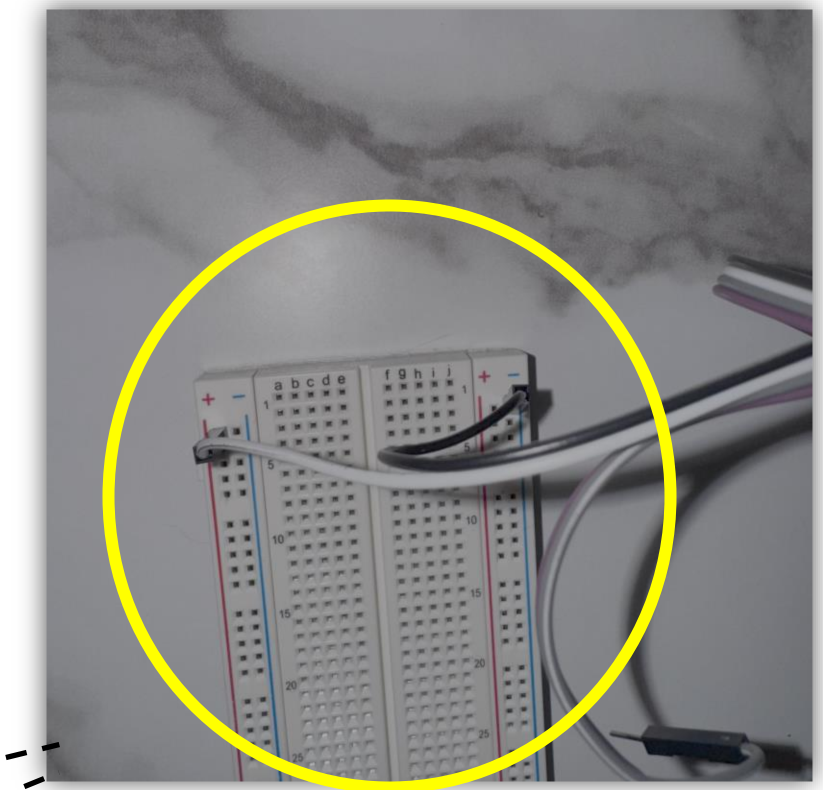
FART HOLE COMMI$IONING

Connect Power servo jumper to breadboard





Pinout:
White > Positive
Black > Negative

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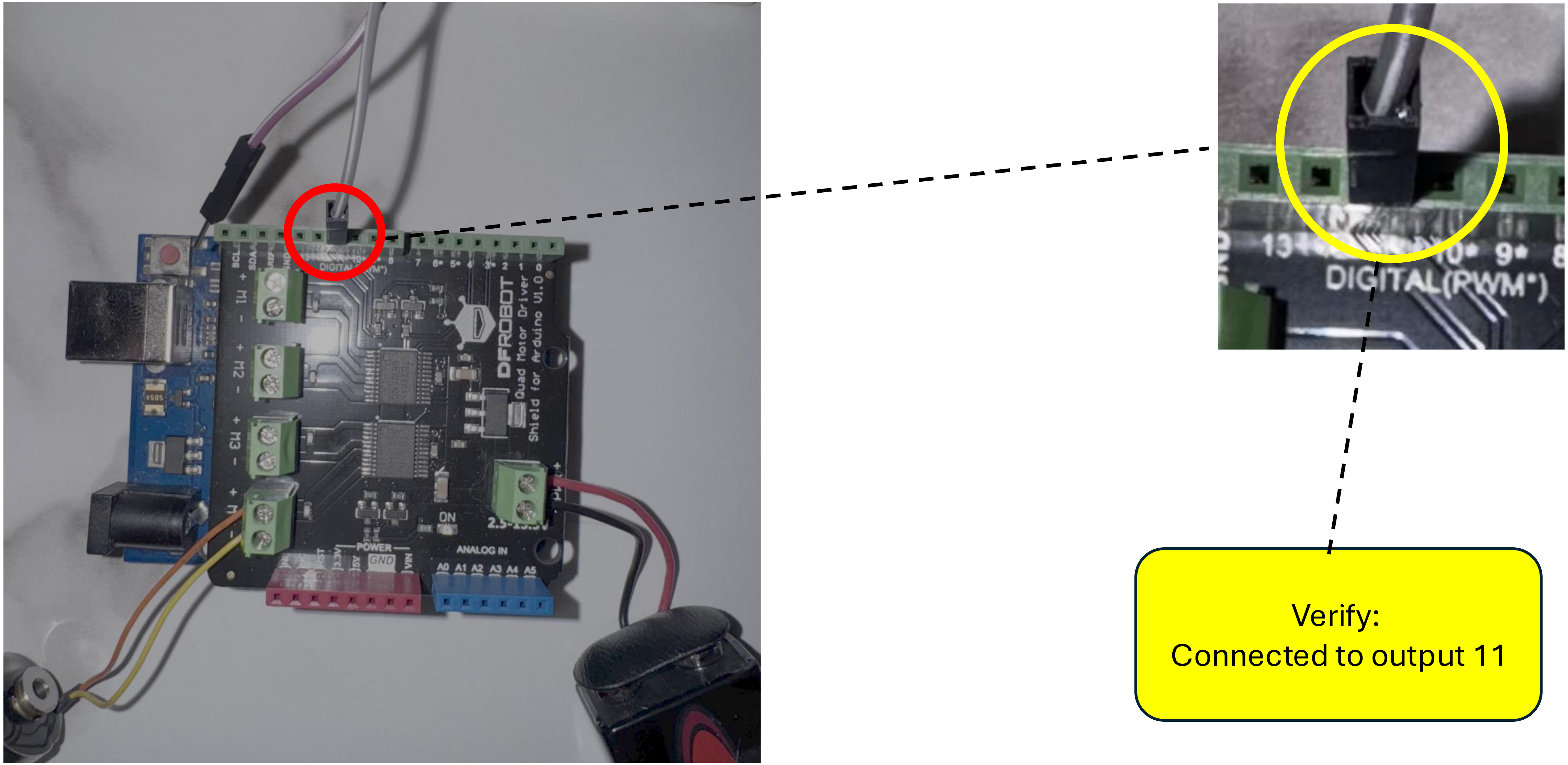
FART HOLE COMMI$IONING

Connect Orange servo wire to digital output 11



Verify:
Connected to output 11

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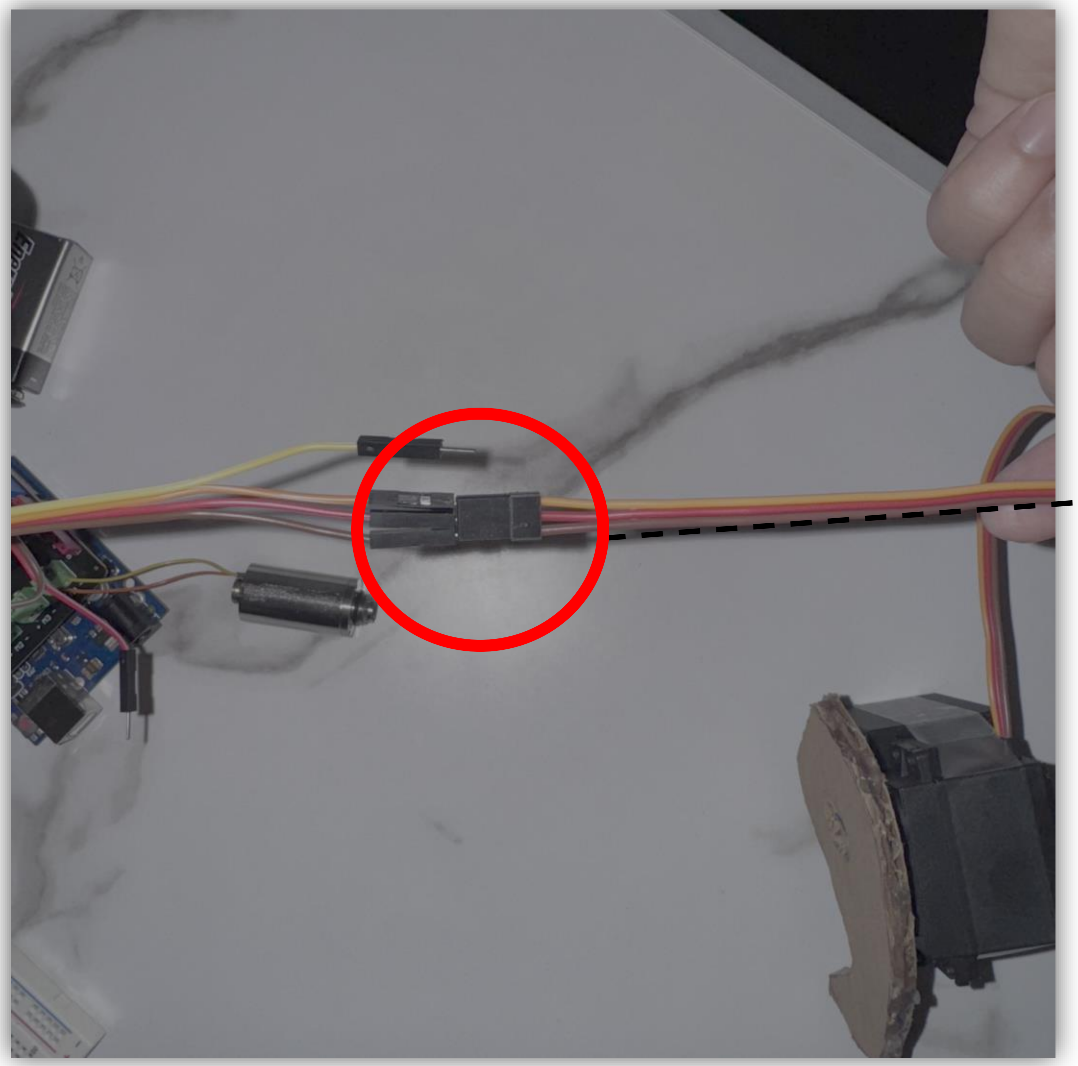
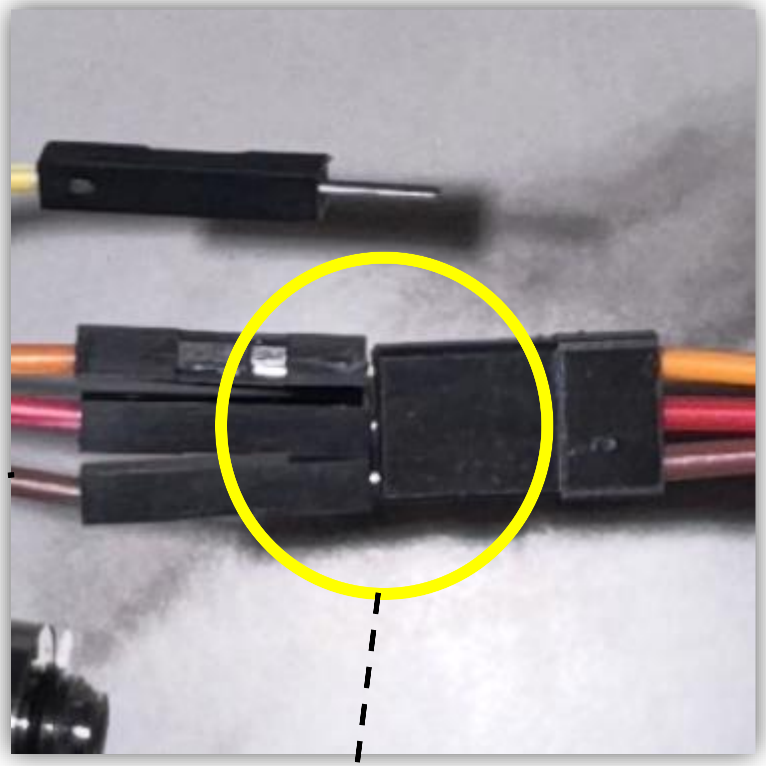
FART HOLE COMMI$IONING

Connect Vibe servo to jumpers





Connect:
Orange > Orange
Red > Red
Brown > Brown

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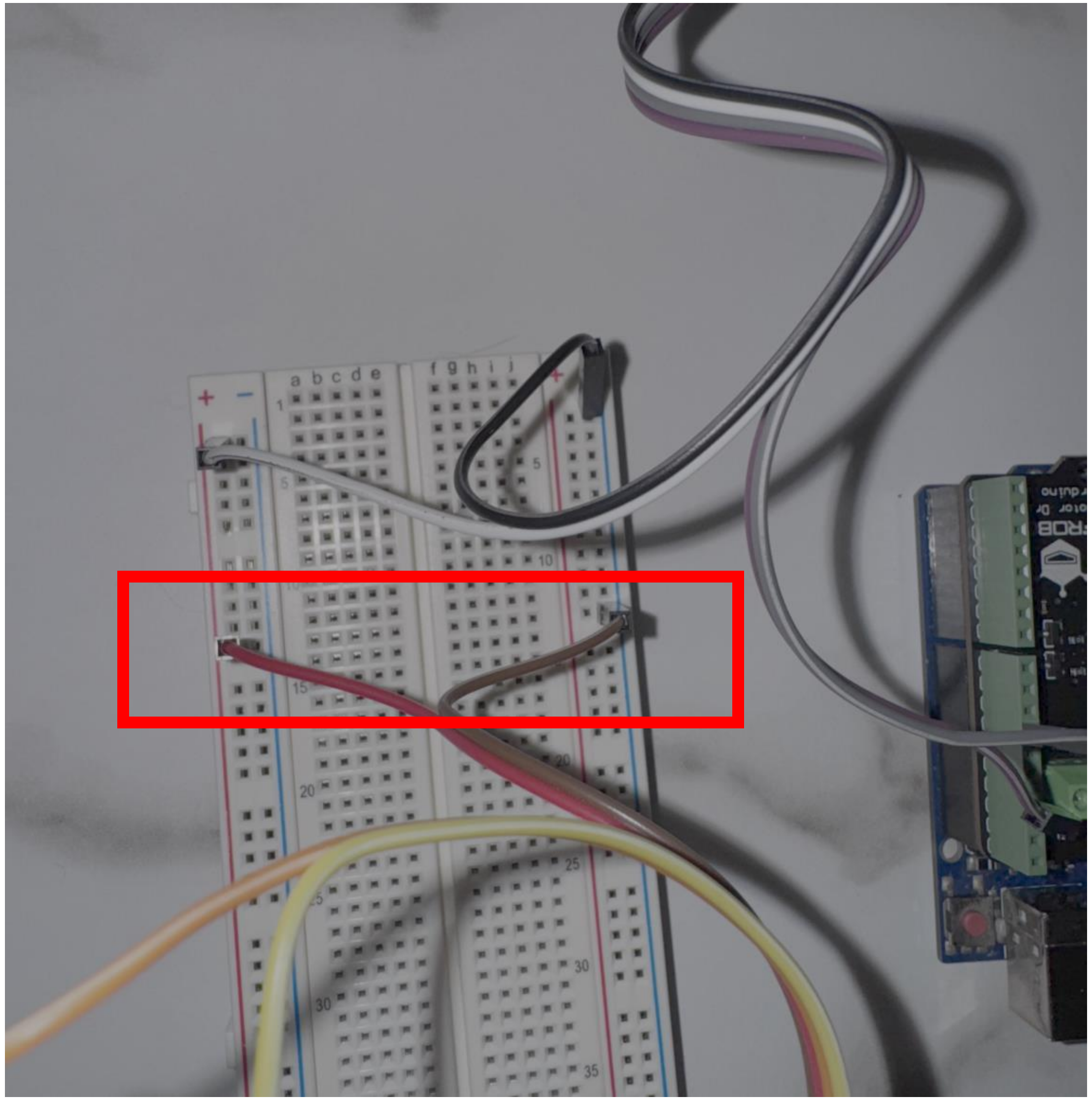
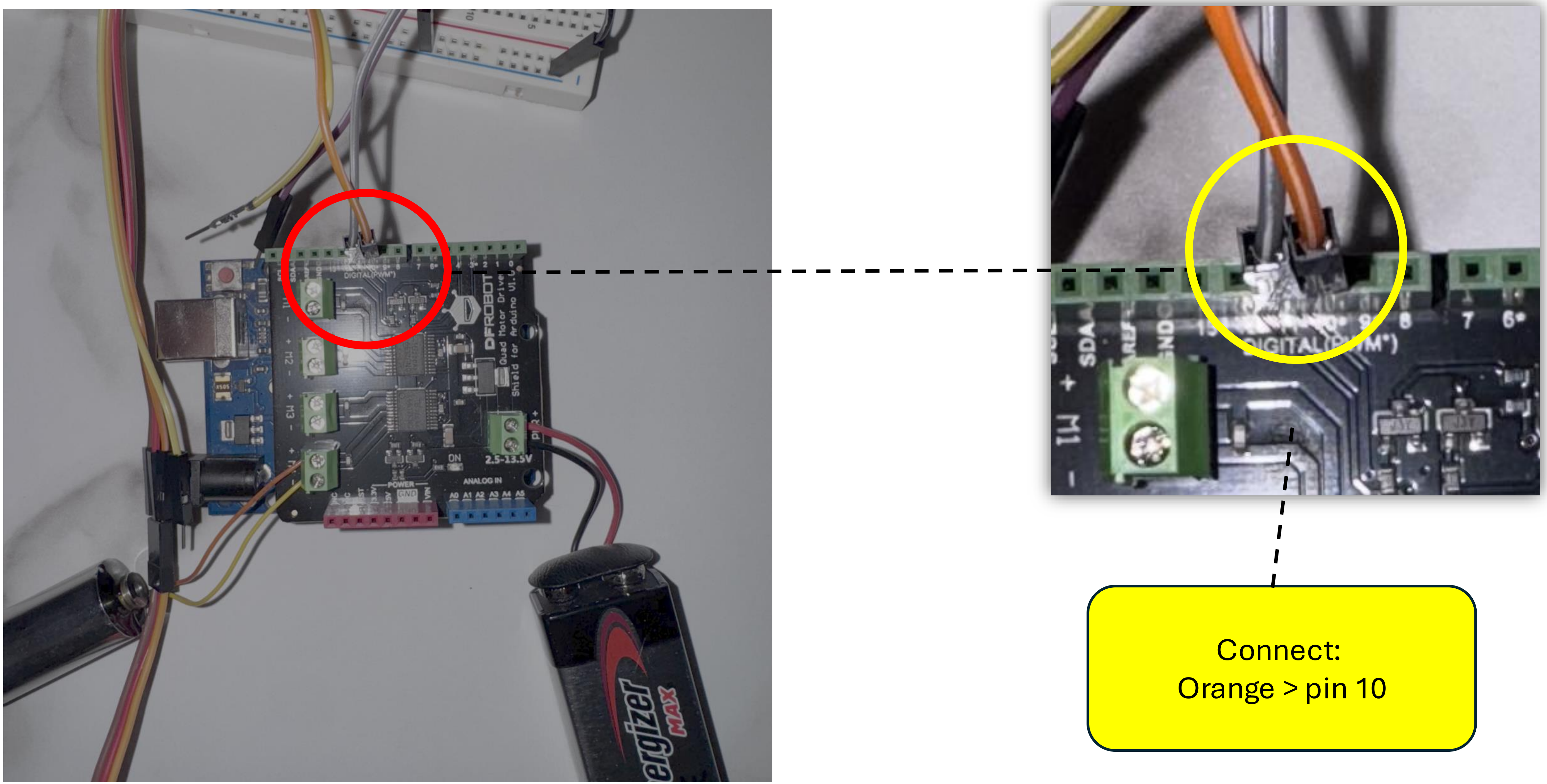
Connect Vibe jumpers to bread board



FART HOLE COMMI$IONING

Connect Vibe servo to pin 10 digital out put



Connect:
Orange > pin 10

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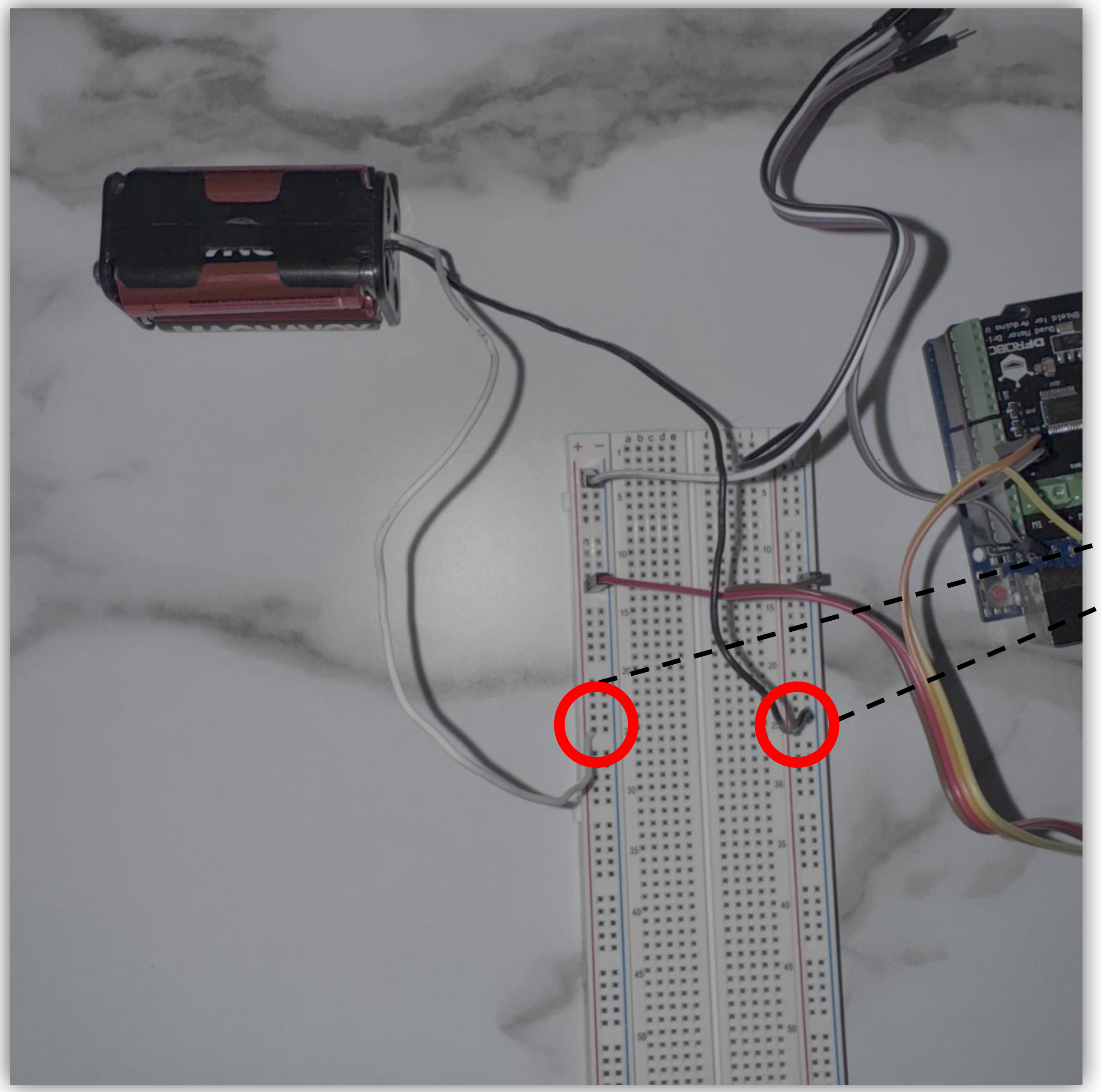
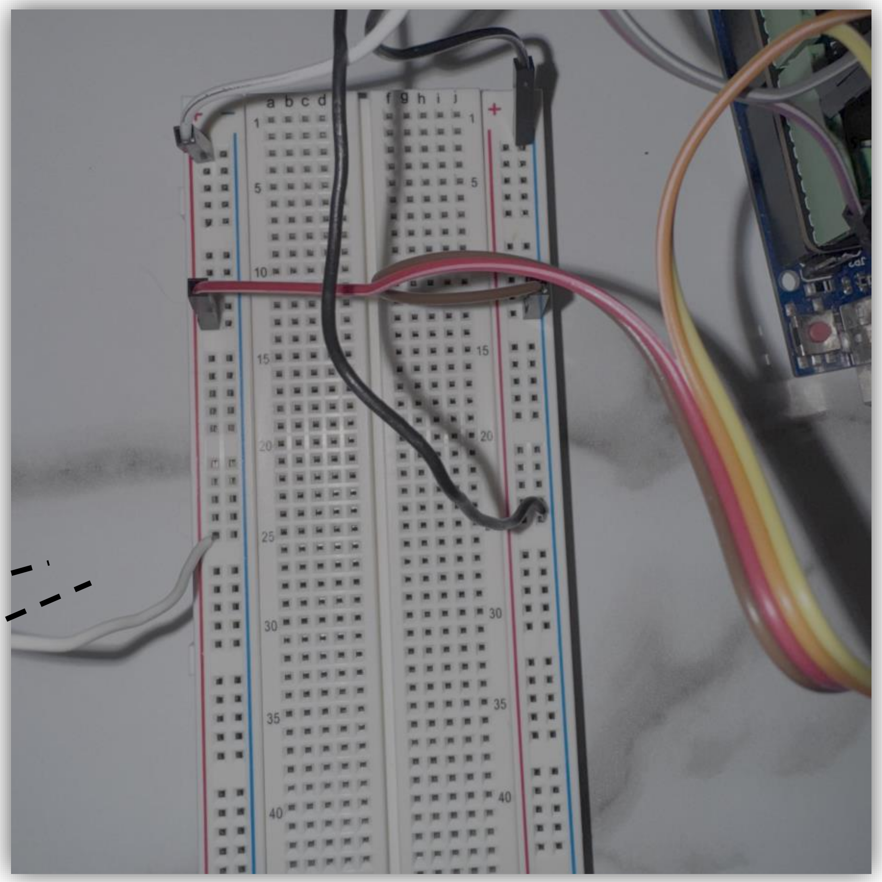
FART HOLE COMMI$IONING

Connect Servo battery pack to breadboard

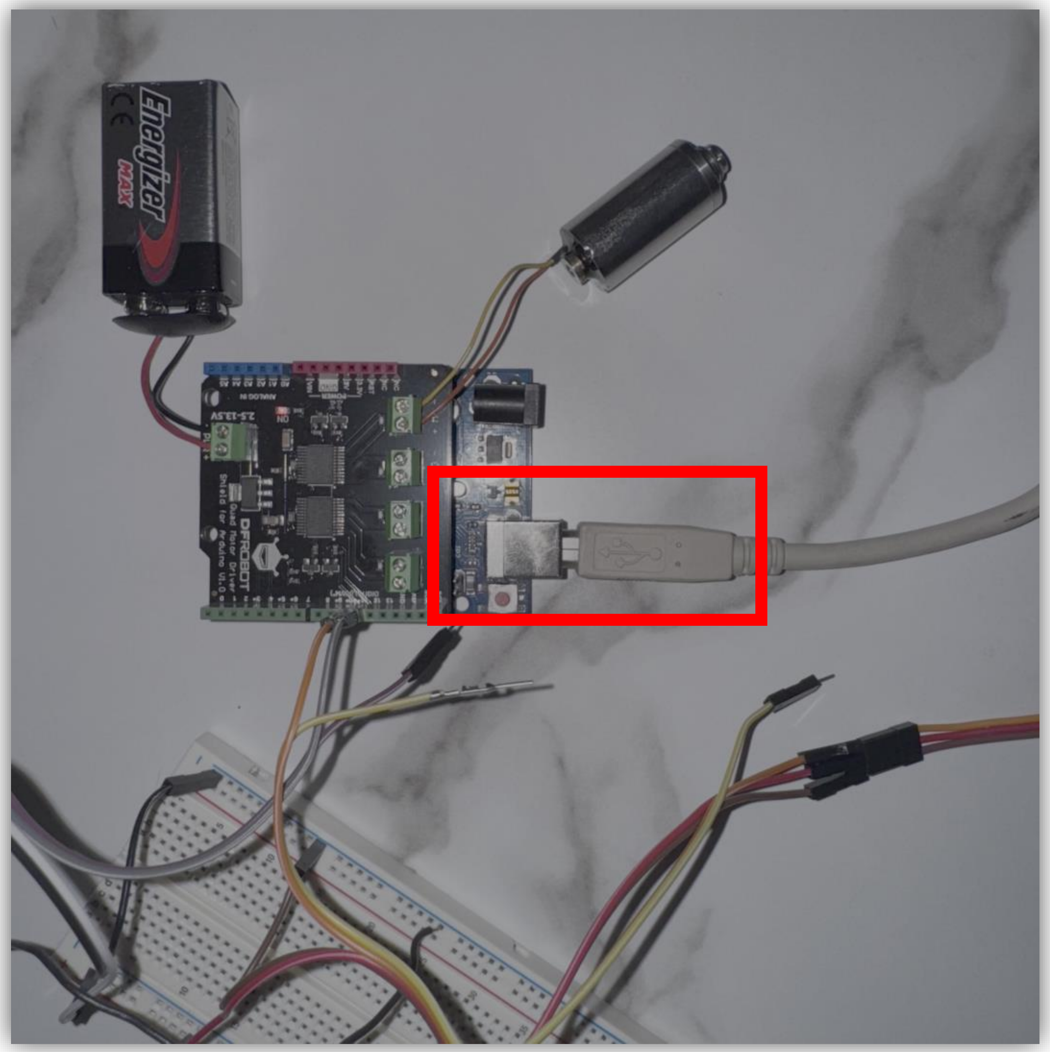




Insert the pins gracefully, be careful to not bend the pins.

FART HOLE COMMI$IONING

Connect power supply to Arduino



Verify no debris is in the power supply, then gracfully plug into the arduino

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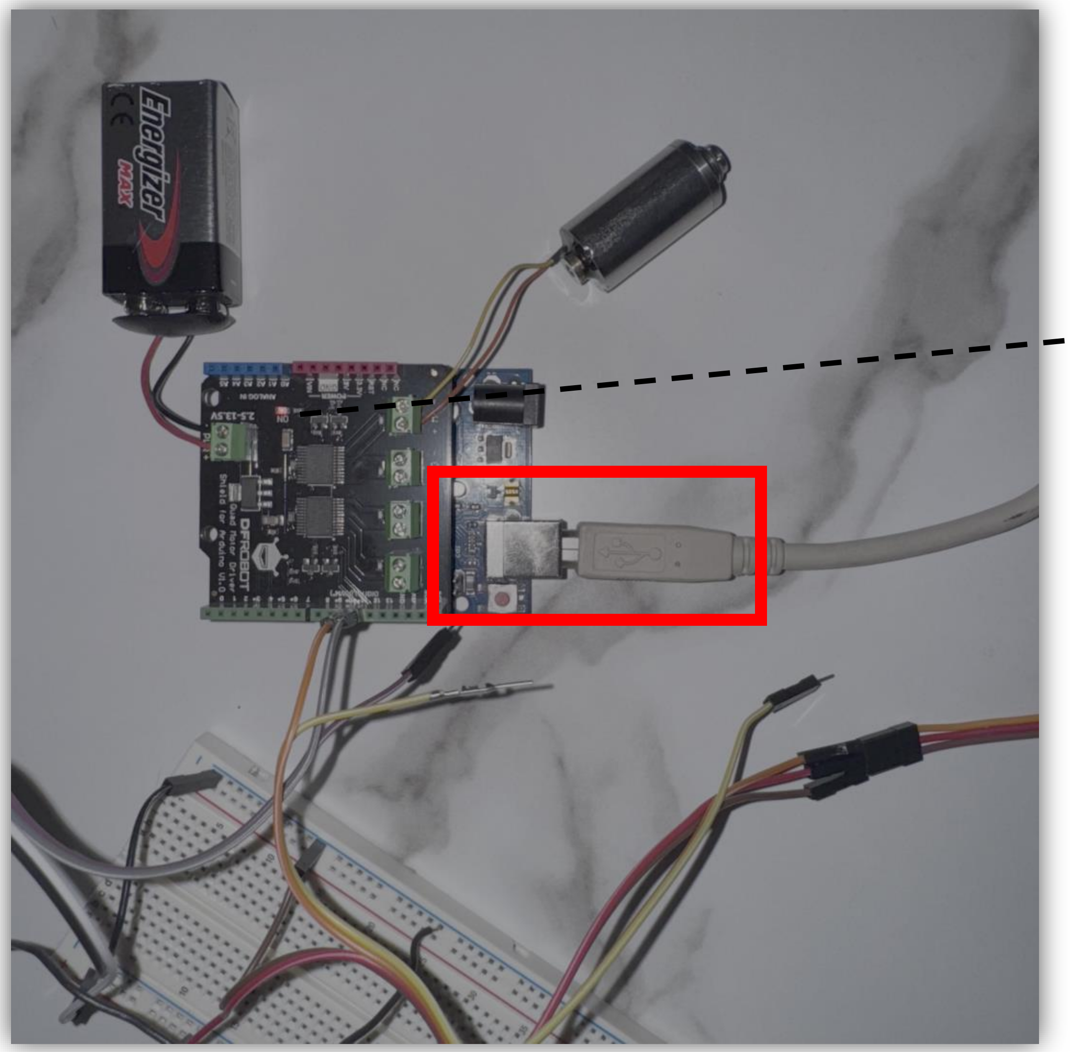
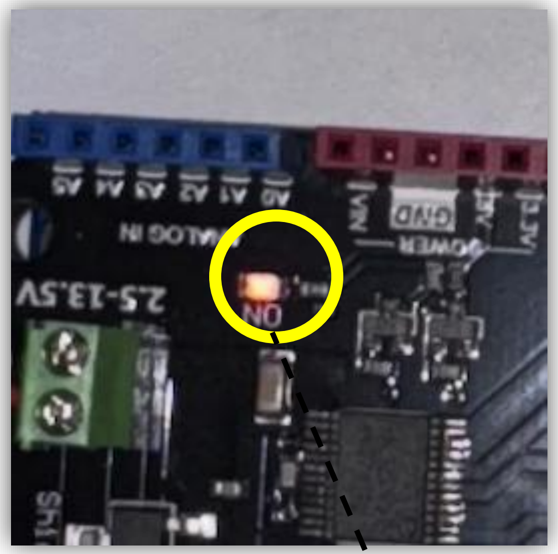
FART HOLE COMMI$IONING

Verify Power





Verify:
Power indicator
energized on

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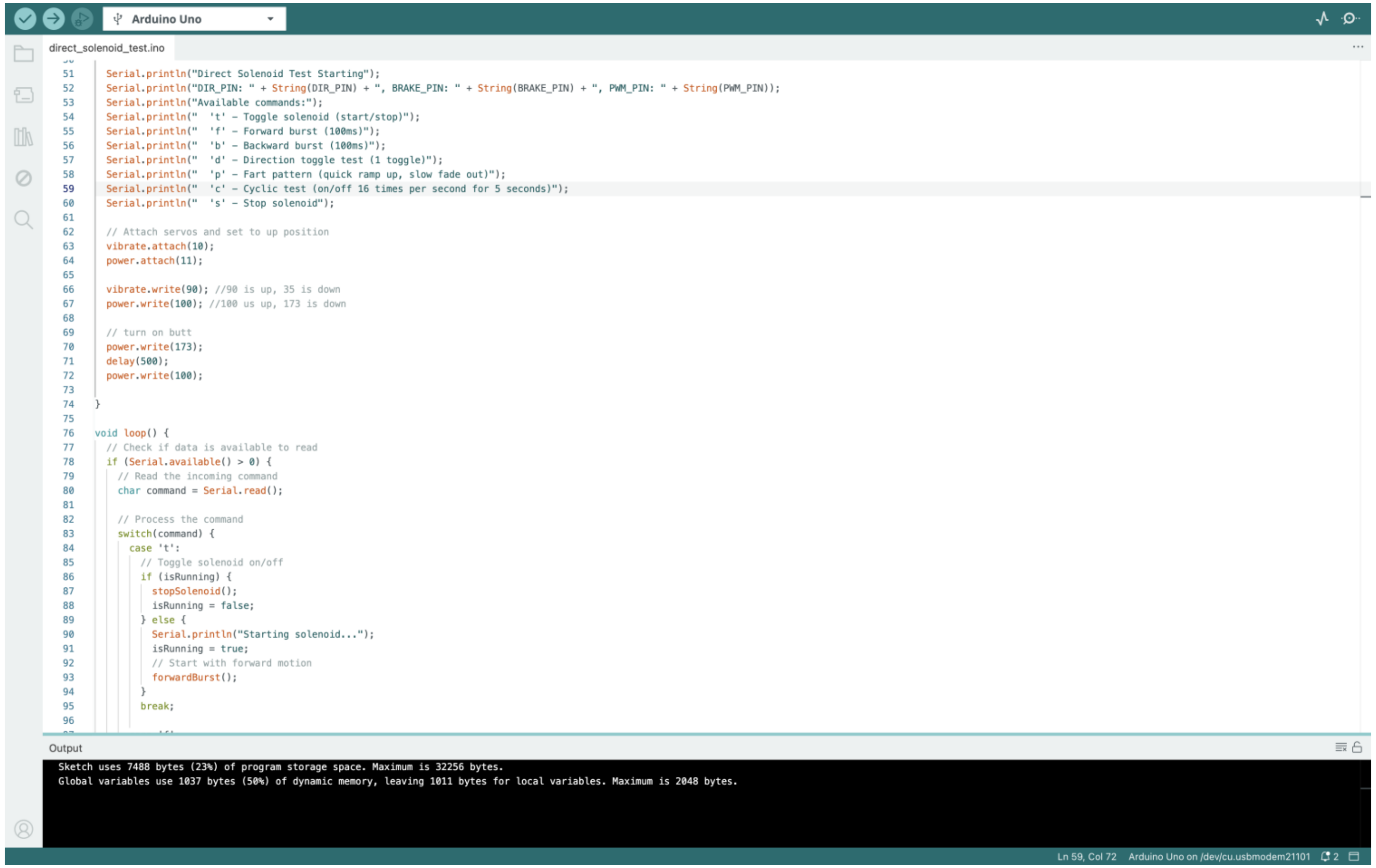
Functions Test

- Servo Quality Check
- Solenoid Quality Check

Solenoid

FART HOLE COMMI$IONING

Title 1



```
  Serial.println("Direct Solenoid Test Starting");
  Serial.println("DIR_PIN: " + String(DIR_PIN) + ", BRAKE_PIN: " + String(BRAKE_PIN) + ", PWM_PIN: " + String(PWM_PIN));
  Serial.println("Available commands:");
  Serial.println("  't' - Toggle solenoid (start/stop)");
  Serial.println("  'f' - Forward burst (100ms)");
  Serial.println("  'b' - Backward burst (100ms)");
  Serial.println("  'd' - Direction toggle test (1 toggle)");
  Serial.println("  'p' - Fart pattern (quick ramp up, slow fade out)");
  Serial.println("  'c' - Cyclic test (on/off 16 times per second for 5 seconds)");
  Serial.println("  's' - Stop solenoid");

  // Attach servos and set to up position
  vibrate.attach(10);
  power.attach(11);

  vibrate.write(90); //90 is up, 35 is down
  power.write(100); //100 us up, 173 is down

  // turn on butt
  power.write(173);
  delay(500);
  power.write(100);

}

void loop() {
  // Check if data is available to read
  if (Serial.available() > 0) {
    // Read the incoming command
    char command = Serial.read();

    // Process the command
    switch(command) {
      case 't':
        // Toggle solenoid on/off
        if (isRunning) {
          stopSolenoid();
          isRunning = false;
        } else {
          Serial.println("Starting solenoid...");
          isRunning = true;
          // Start with forward motion
          forwardBurst();
        }
        break;

```

```
Sketch uses 7488 bytes (23%) of program storage space. Maximum is 32256 bytes.
Global variables use 1037 bytes (50%) of dynamic memory, leaving 1011 bytes for local variables. Maximum is 2048 bytes.
```

Ln 59, Col 72 Arduino Uno on /dev/cu.usbmodem21101 2

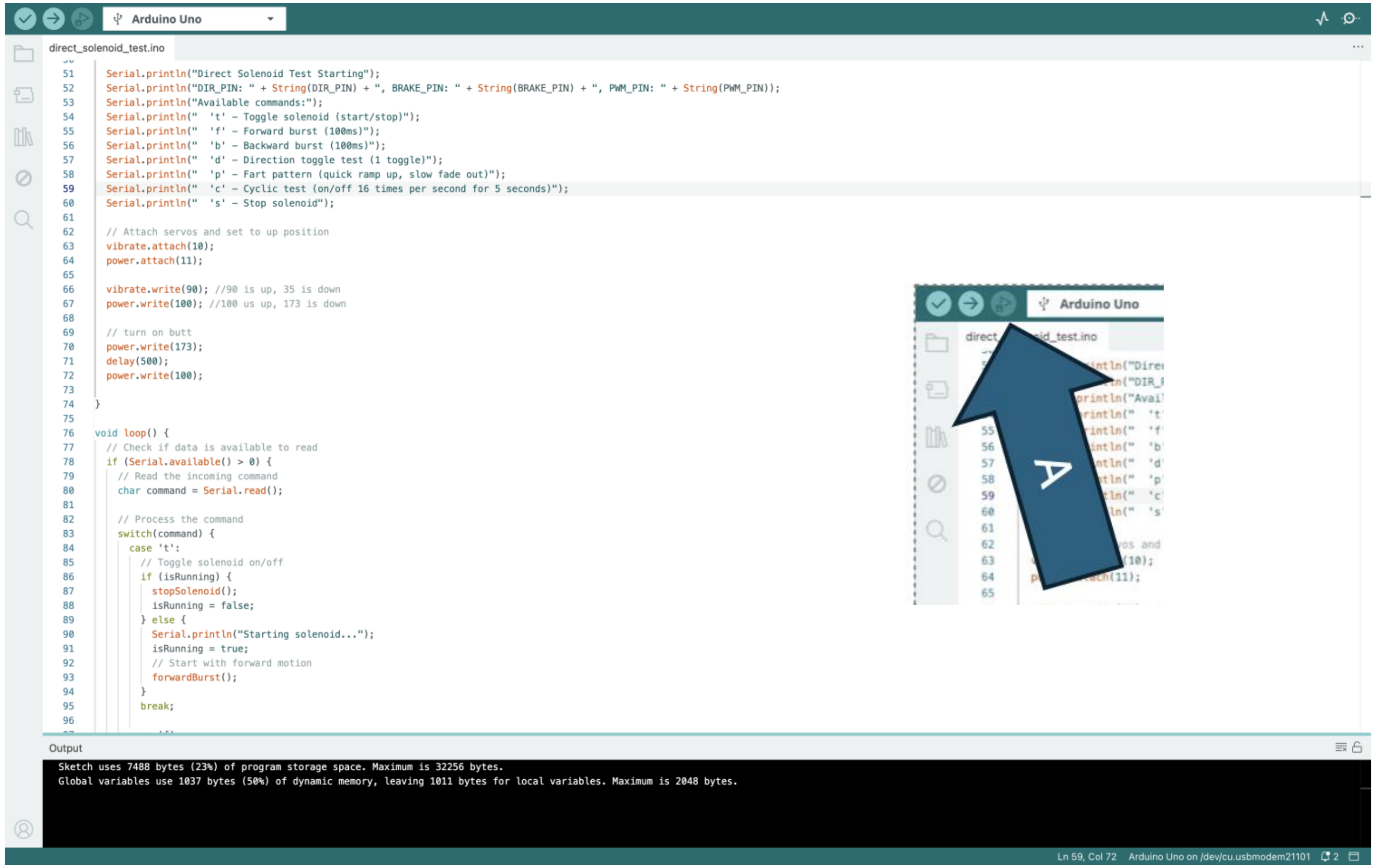
Steps	Icon
Open Arudiono IDE	
Click 'File' > Open > direct_solenoid_test.ino	
Upload .ino file to arduino	
Open serial monitor; 'Tools' > Serial Monitor	b
On serial monitor send the command C	c

Goal: Is to click check and enregize on/off the solenoid 80 times to verify healthy solenoid.

These instructions are for official fart hole use only

FART HOLE COMMI$IONING

Title 1



```
  Serial.println("Direct Solenoid Test Starting");
  Serial.println("DIR_PIN: " + String(DIR_PIN) + ", BRAKE_PIN: " + String(BRAKE_PIN) + ", PWM_PIN: " + String(PWM_PIN));
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          isRunning = false;
        } else {
          Serial.println("Starting solenoid...");
          isRunning = true;
          // Start with forward motion
          forwardBurst();
        }
        break;
```

Output

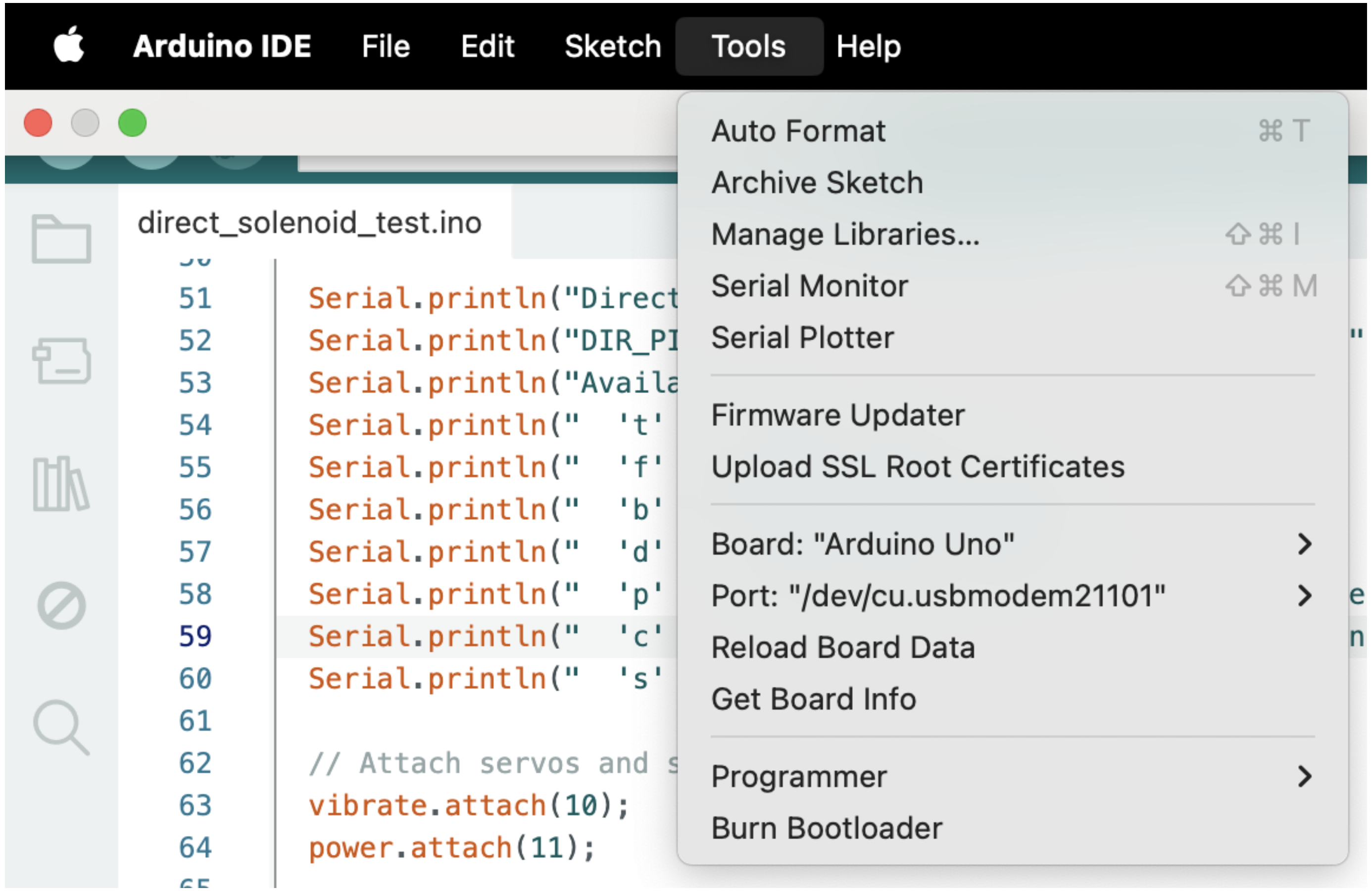
```
Sketch uses 7488 bytes (23%) of program storage space. Maximum is 32256 bytes.
Global variables use 1037 bytes (50%) of dynamic memory, leaving 1011 bytes for local variables. Maximum is 2048 bytes.
```

Steps	Icon
Open Arudiono IDE	
Click 'File' > Open > direct_solenoid_test.ino	
Upload .ino file to arduino	
Open serial monitor; 'Tools' > Serial Monitor	b
On serial monitor send the command C	c

These instructions are for official fart hole use only

FART HOLE COMMI$IONING

Title 1



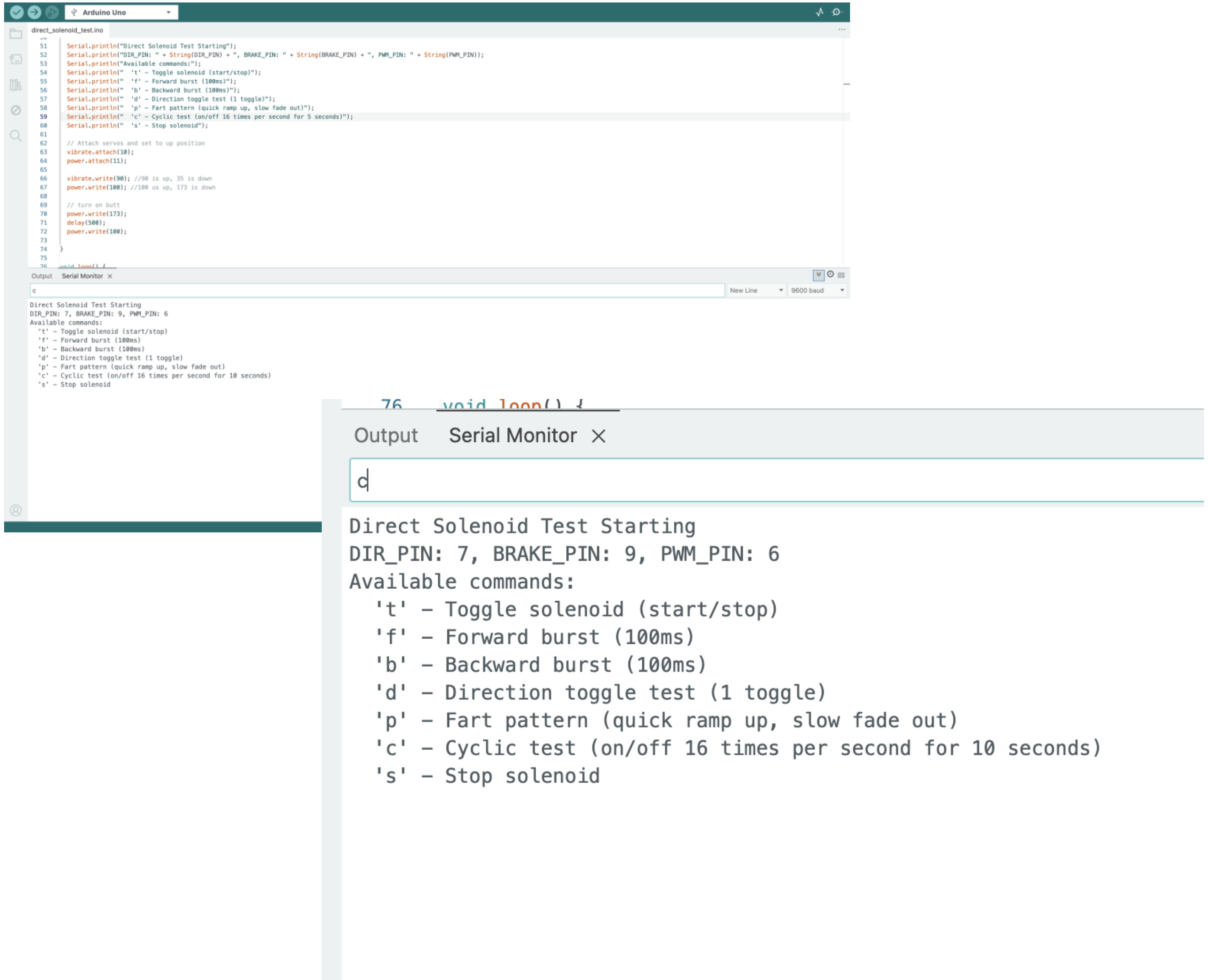
```
  Serial.println("Direct
  Serial.println("DIR_PI                                     "
  Serial.println("Availa
  Serial.println("  't'
  Serial.println("  'f'
  Serial.println("  'b'
  Serial.println("  'd'
  Serial.println("  'p'                                      e
  Serial.println("  'c'                                      n
  Serial.println("  's'

  // Attach servos and s
  vibrate.attach(10);
  power.attach(11);
```

Steps	Icon
Open Arudiono IDE	
Click 'File' > Open > direct_solenoid_test.ino	
Upload .ino file to arduino	
Open serial monitor; 'Tools' > Serial Monitor	b
On serial monitor send the command C	c

These instructions are for official fart hole use only

FART HOLE COMMI$IONING

Title 1



```
Serial.println("Direct Solenoid Test Starting");
Serial.println("DIR_PIN: " + String(DIR_PIN) + ", BRAKE_PIN: " + String(BRAKE_PIN) + ", PWM_PIN: " + String(PWM_PIN));
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power.attach(11);

vibrate.write(90); //90 is up, 35 is down
power.write(100); //100 us up, 173 is down

// turn on butt
power.write(173);
delay(500);
power.write(100);

}

void loop() {
```

```
c
```

```
Direct Solenoid Test Starting
DIR_PIN: 7, BRAKE_PIN: 9, PWM_PIN: 6
Available commands:
  't' - Toggle solenoid (start/stop)
  'f' - Forward burst (100ms)
  'b' - Backward burst (100ms)
  'd' - Direction toggle test (1 toggle)
  'p' - Fart pattern (quick ramp up, slow fade out)
  'c' - Cyclic test (on/off 16 times per second for 10 seconds)
  's' - Stop solenoid
```

Output Serial Monitor ×

c

Direct Solenoid Test Starting
DIR_PIN: 7, BRAKE_PIN: 9, PWM_PIN: 6
Available commands:
  't' - Toggle solenoid (start/stop)
  'f' - Forward burst (100ms)
  'b' - Backward burst (100ms)
  'd' - Direction toggle test (1 toggle)
  'p' - Fart pattern (quick ramp up, slow fade out)
  'c' - Cyclic test (on/off 16 times per second for 10 seconds)
  's' - Stop solenoid

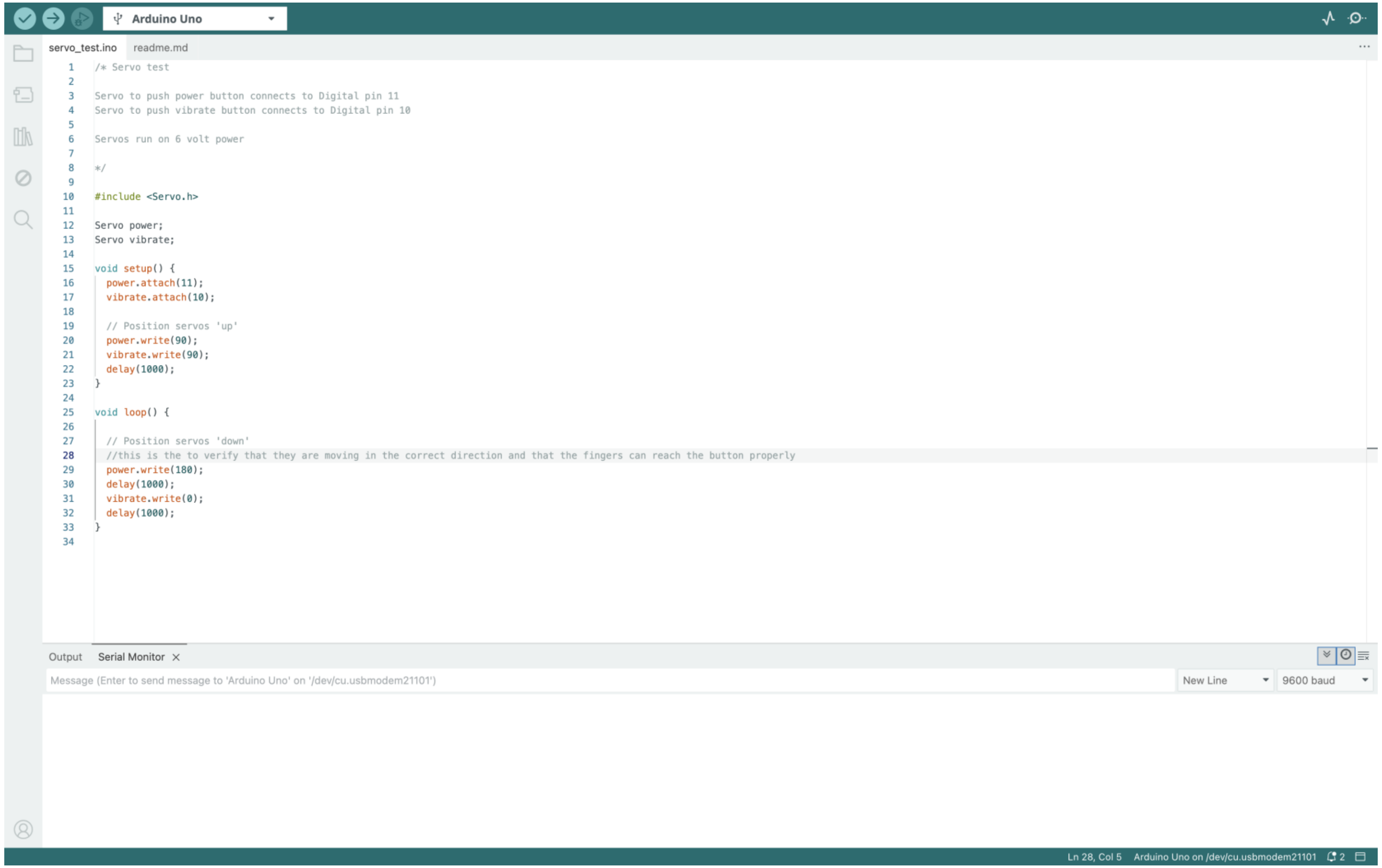
Steps	Icon
Open Arudiono IDE	
Click 'File' > Open > direct_solenoid_test.ino	
Upload .ino file to arduino	
Open serial monitor; 'Tools' > Serial Monitor	b
On serial monitor send the command C	c

These instructions are for official fart hole use only

Servos

FART HOLE COMMI$IONING

Title 1



```
/* Servo test

Servo to push power button connects to Digital pin 11
Servo to push vibrate button connects to Digital pin 10

Servos run on 6 volt power

*/

#include <Servo.h>

Servo power;
Servo vibrate;

void setup() {
  power.attach(11);
  vibrate.attach(10);

  // Position servos 'up'
  power.write(90);
  vibrate.write(90);
  delay(1000);
}

void loop() {

  // Position servos 'down'
  //this is the to verify that they are moving in the correct direction and that the fingers can reach the button properly
  power.write(180);
  delay(1000);
  vibrate.write(0);
  delay(1000);
}

```

Message (Enter to send message to 'Arduino Uno' on '/dev/cu.usbmodem21101')

New Line | 9600 baud

Ln 28, Col 5 Arduino Uno on /dev/cu.usbmodem21101 2

Steps	Actions
Open Arudiono IDE	
Click 'File' > Open > servo_test.ino	Will load script to IDE
Upload .ino file to arduino	Just by uploading this will actuate the servos

Goal: Is to check to see if servos have full range of motion should: Cycle begin at position 1 and move to position 2 (90 degree spread from both positions)

You will need to clock the fingers coherantly

These instructions are for official fart hole use only

Title 1

These instructions are for official fart hole use only

FART HOLE COMMI$IONING

Title 1

These instructions are for official fart hole use only