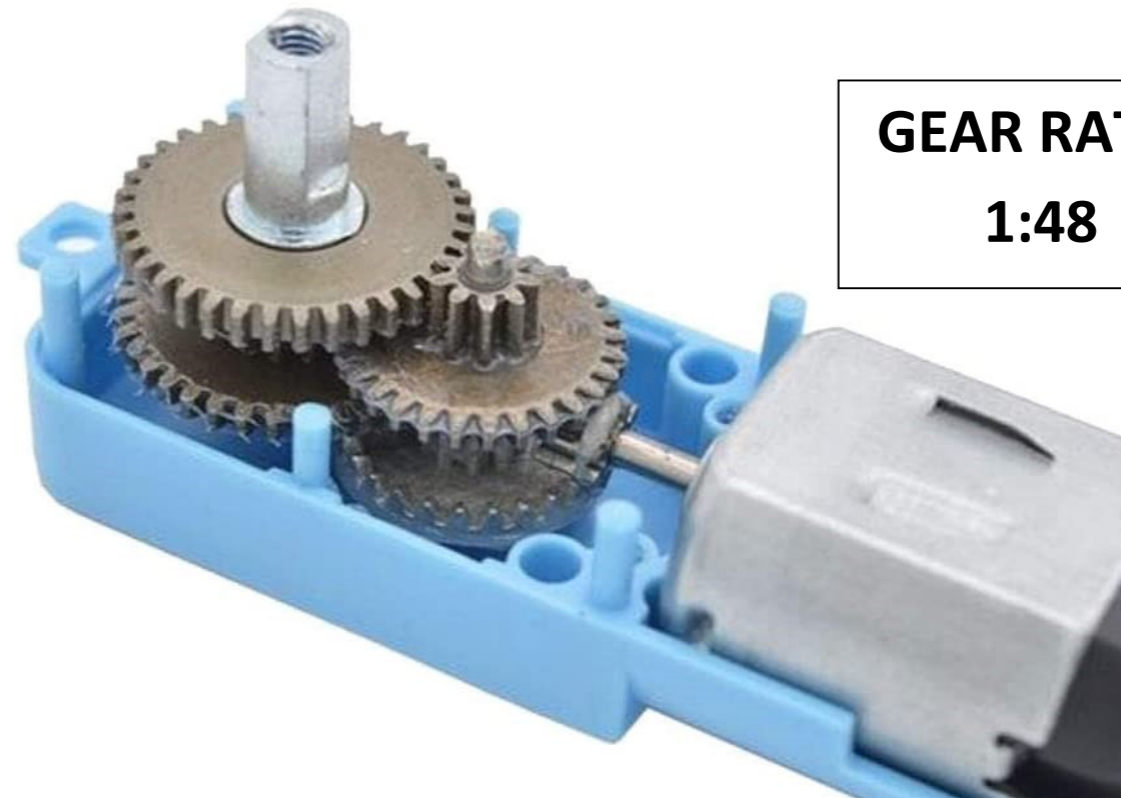
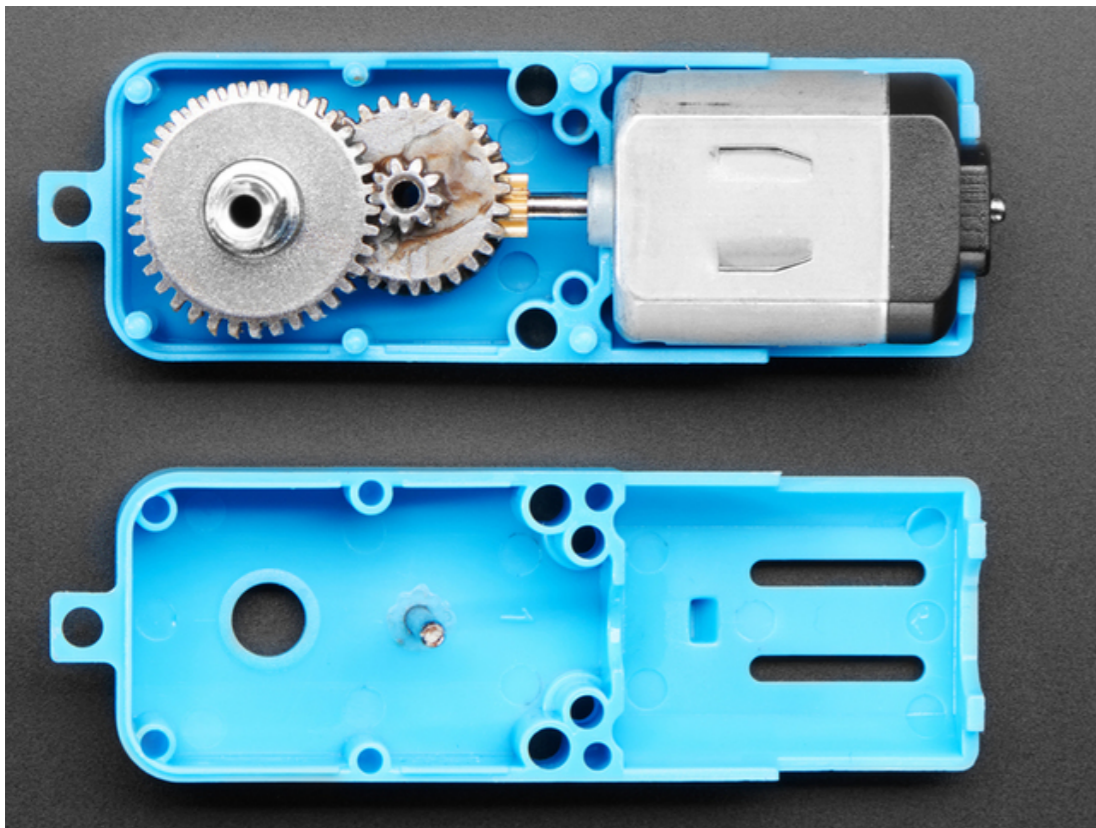
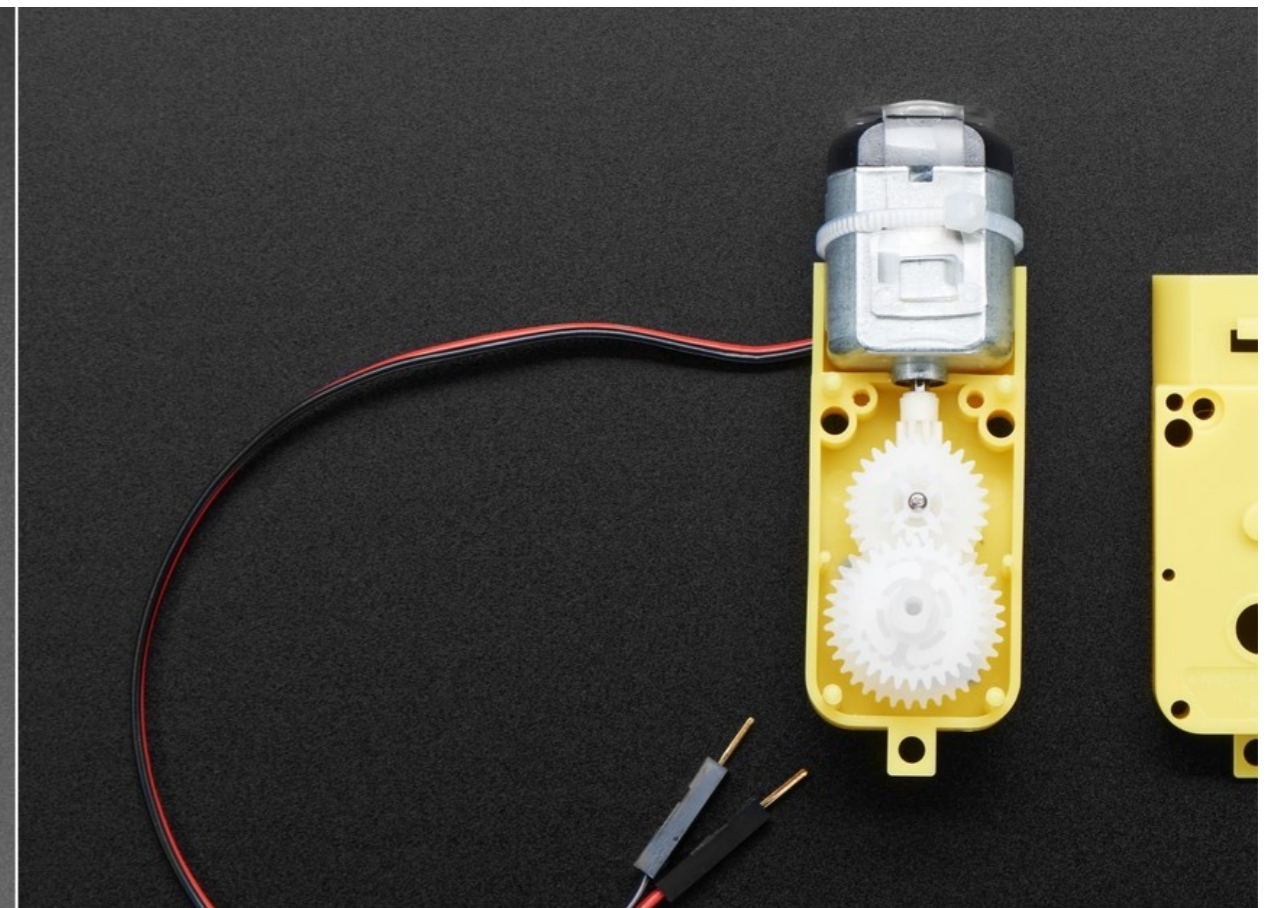
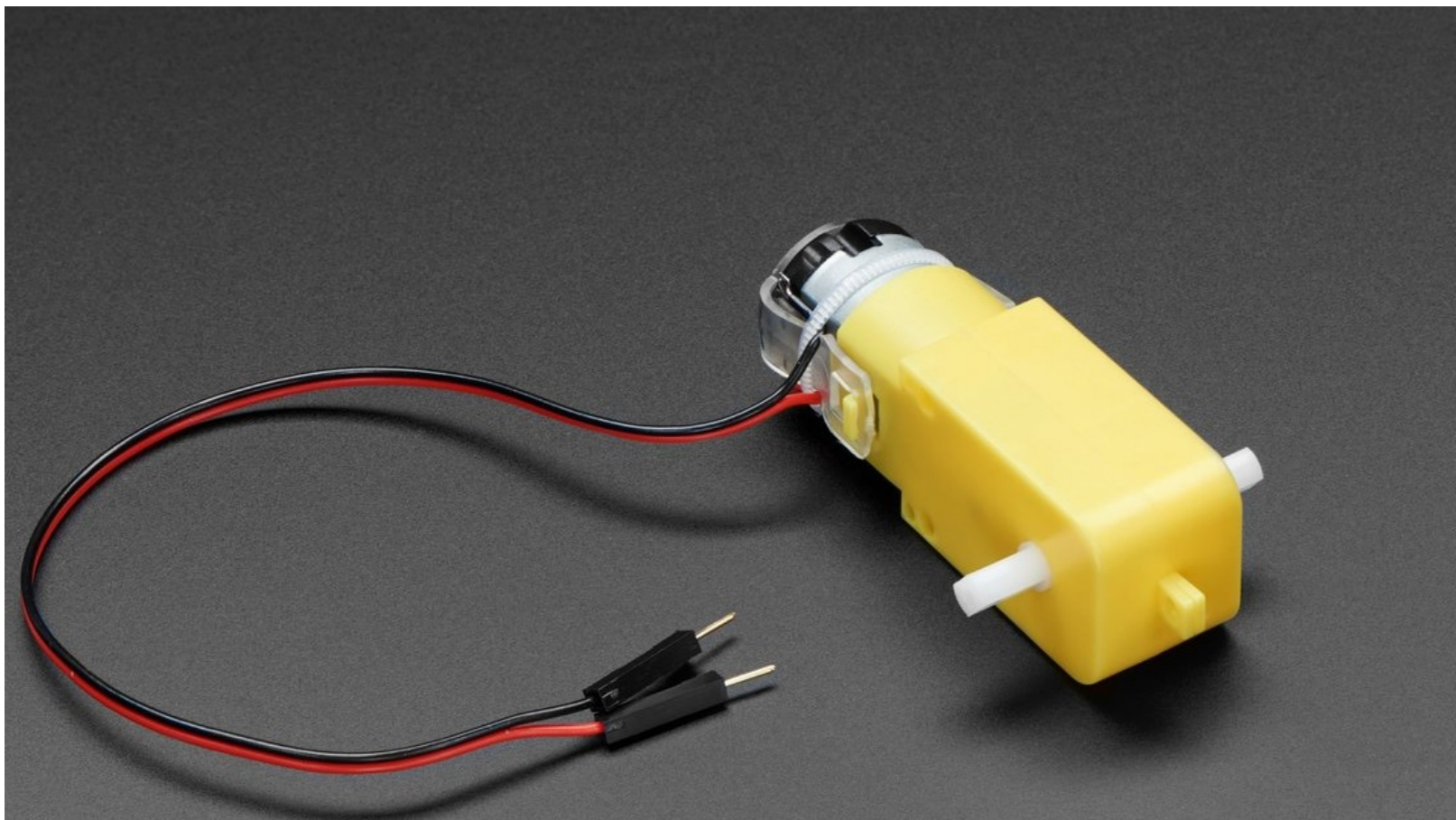


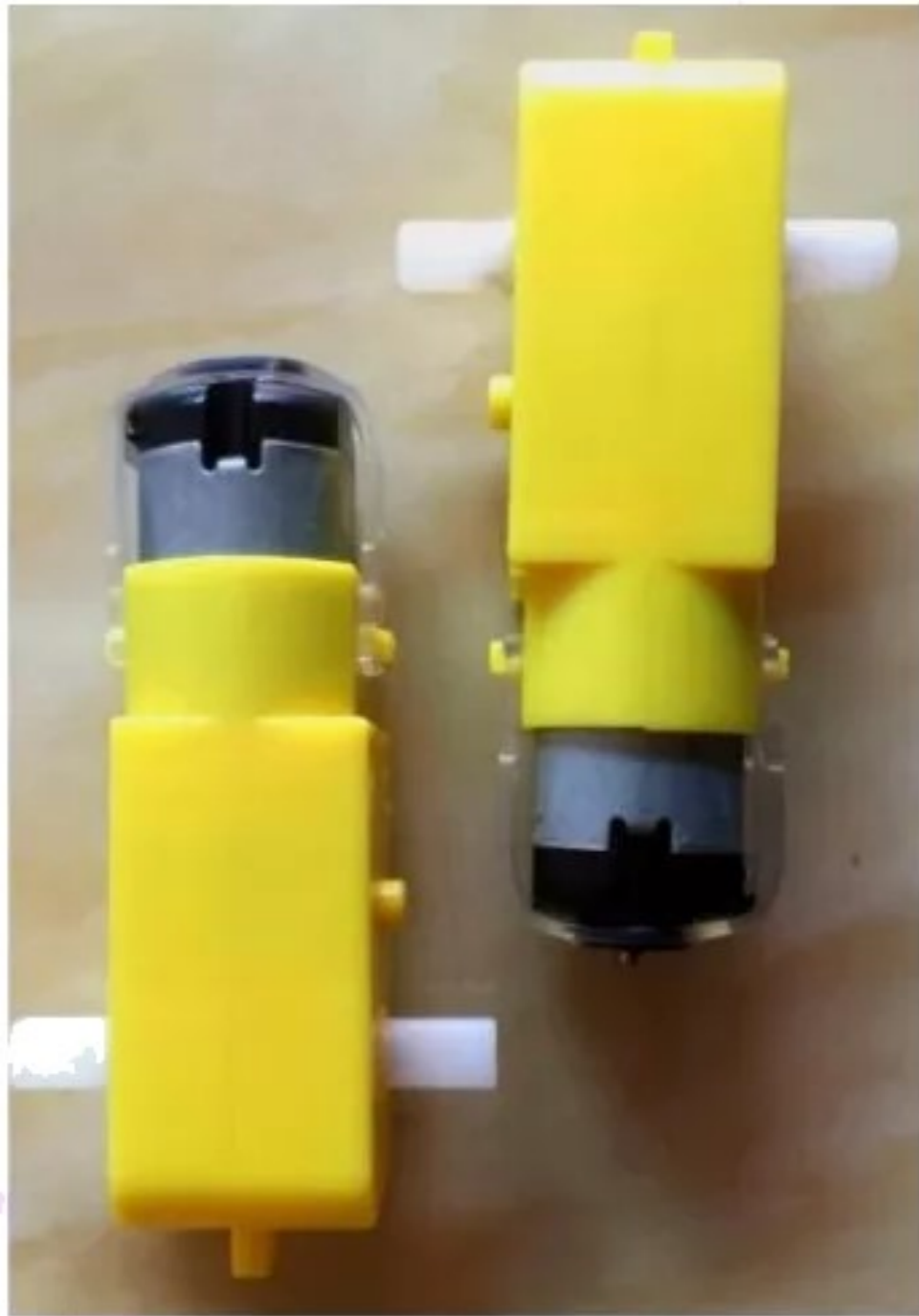
# GEAR DC MOTOR 3V-12V



**GEAR RATIO**  
**1:48**

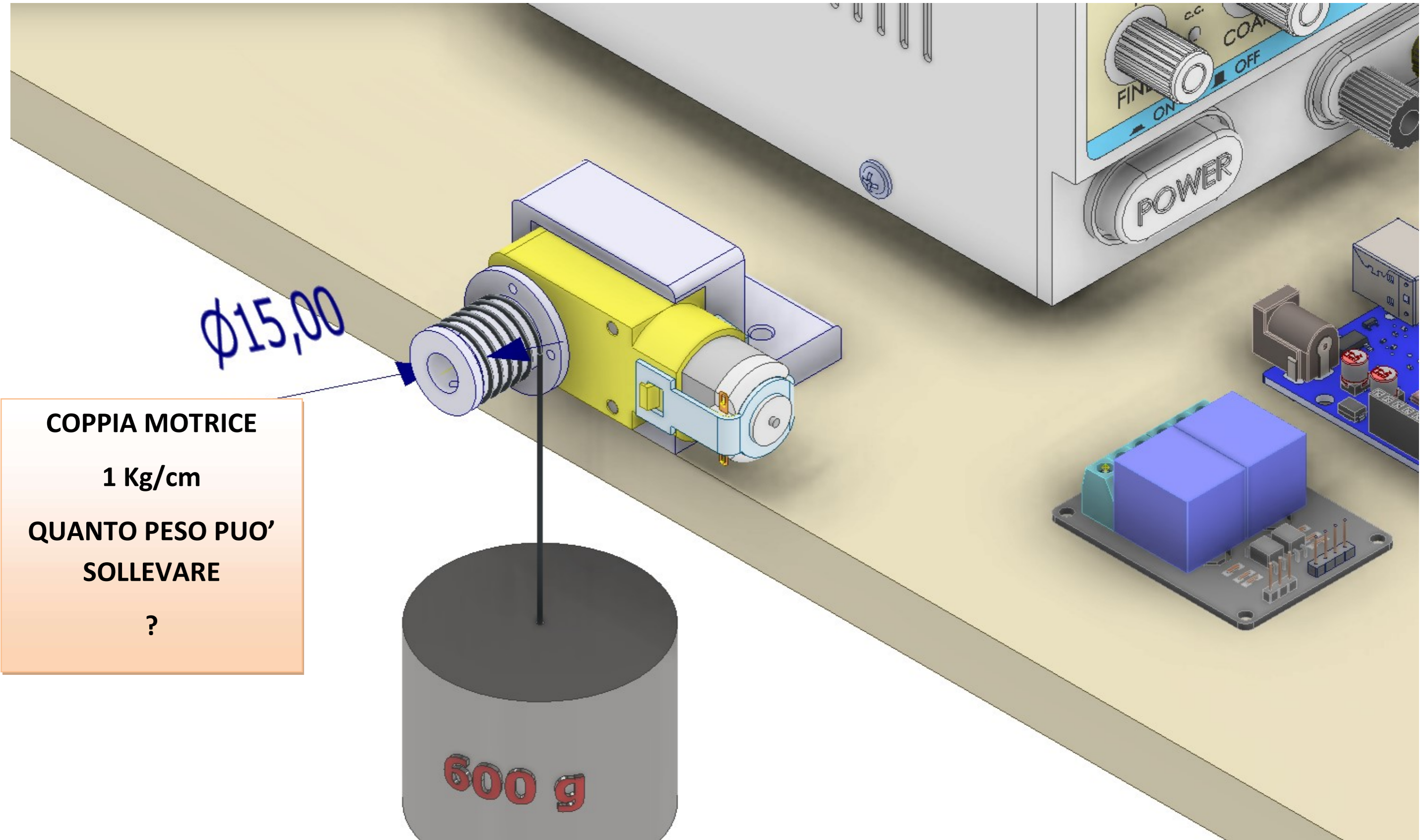


# DC TT Motor Gear Box

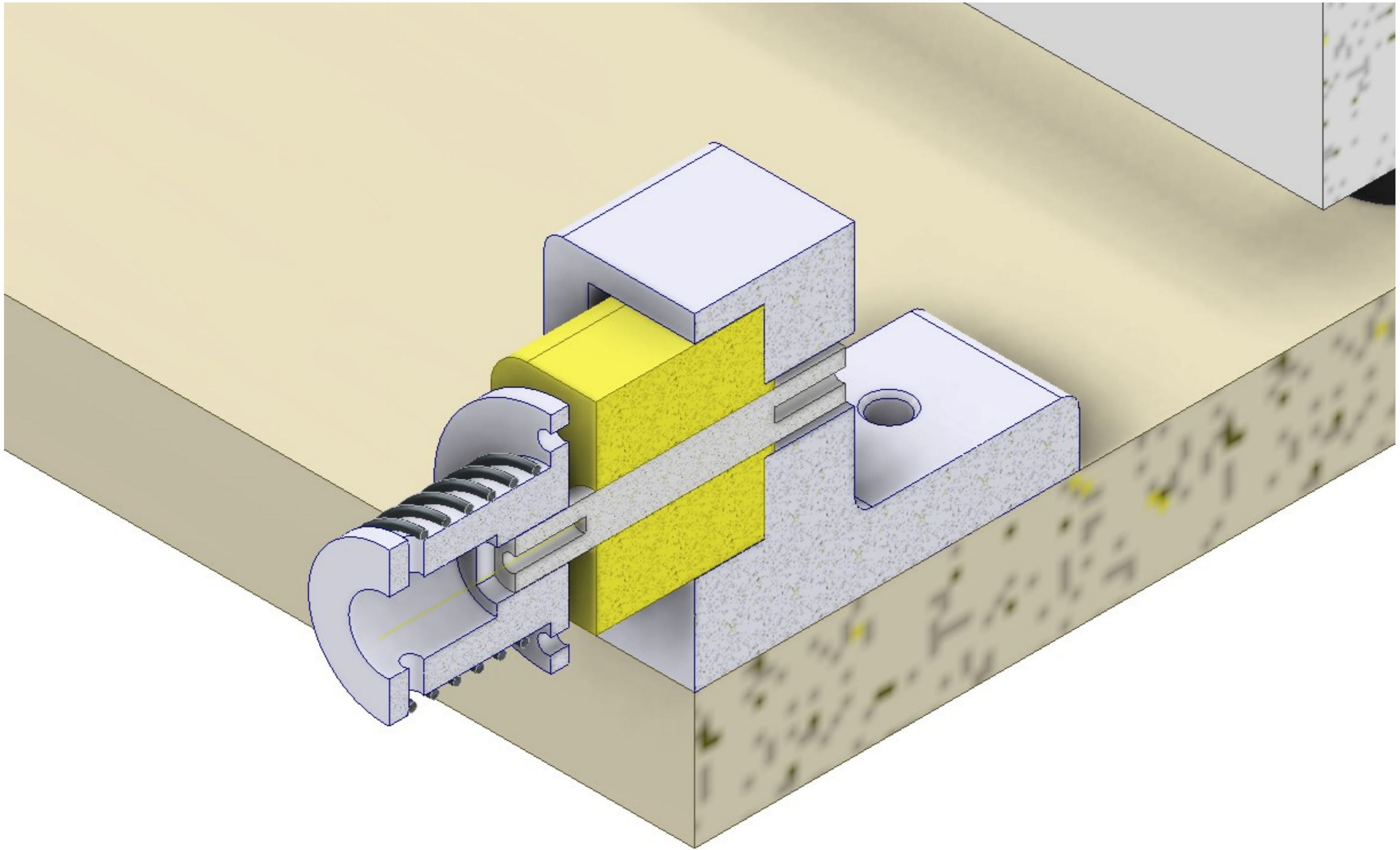


- DC130 TT motor box
- GearRatio: 1:48, 1:120, 1:1:1:220, 1:256, 1:288) total types
- Operating Voltage: 3.0~1
- Output Torque: 1~5 kgf.cm
- WEIGHT: 30g
- MOTOR: carbon
- Connector Wire Length: : mm.

# TOWARDS ROTATION CONTROL OF DC GEAR MOTOR



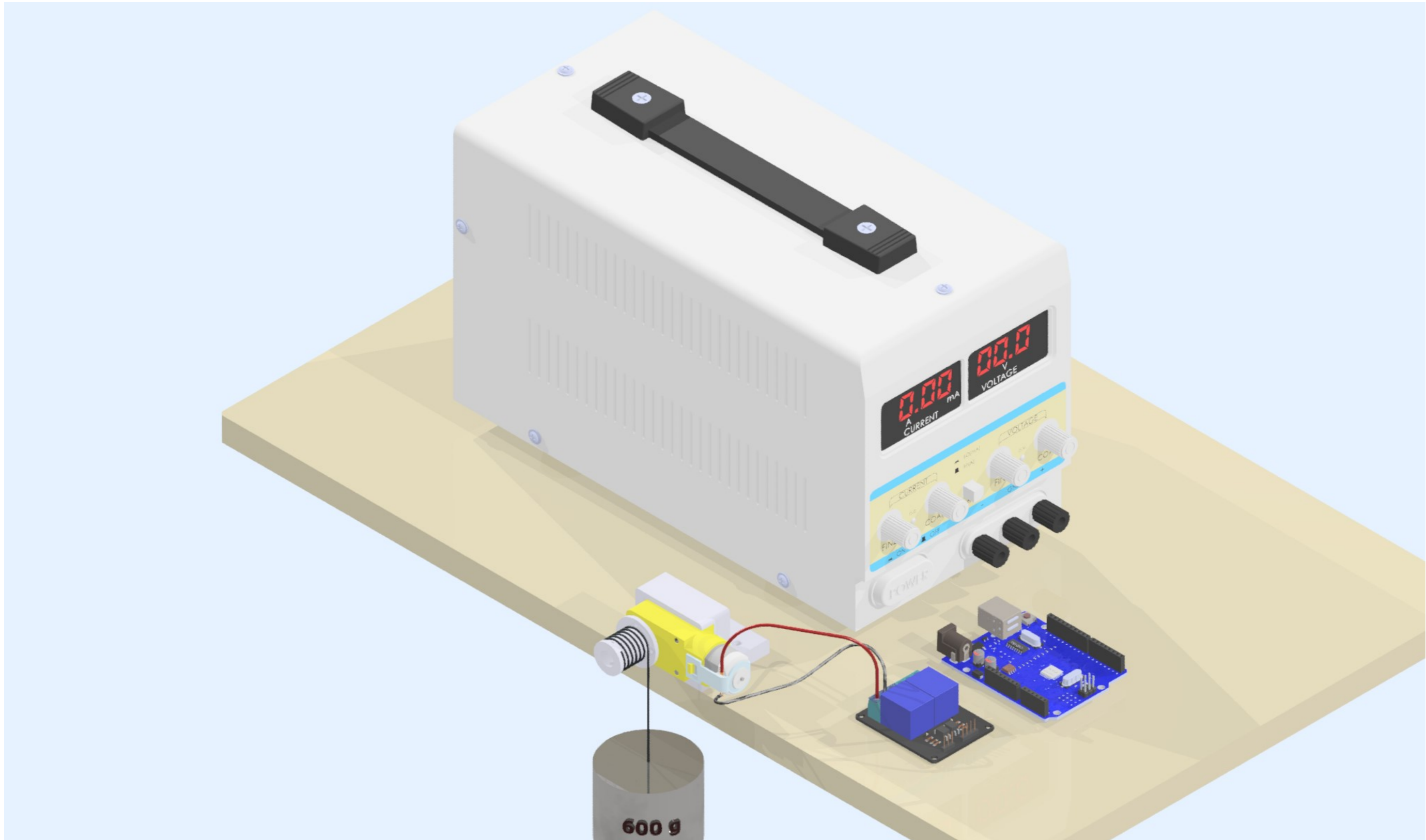
**3D DESIGN IN INVENTOR**



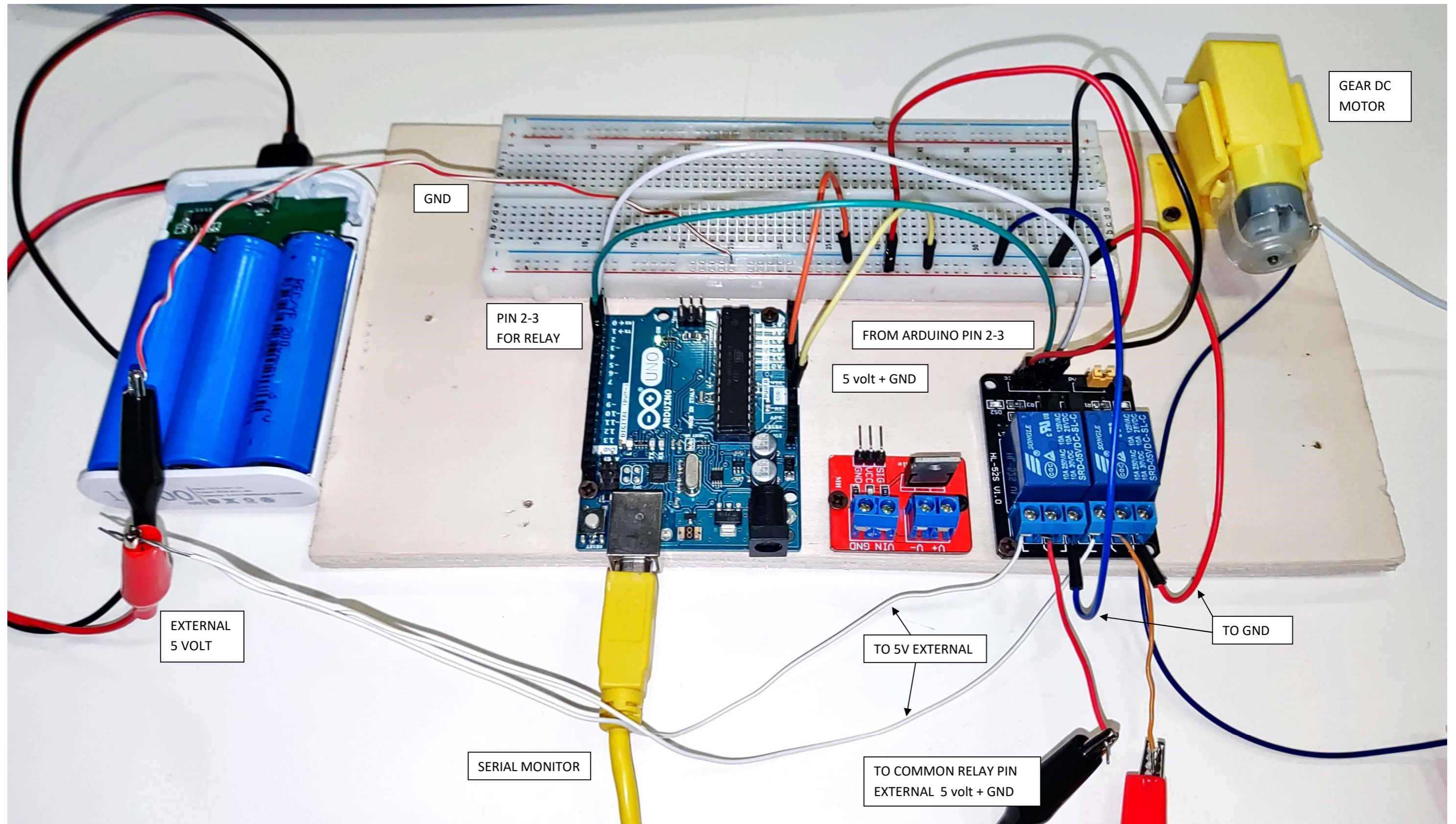
**3D DESIGN IN INVENTOR**

# ANIMATION 3D IN INVENTOR

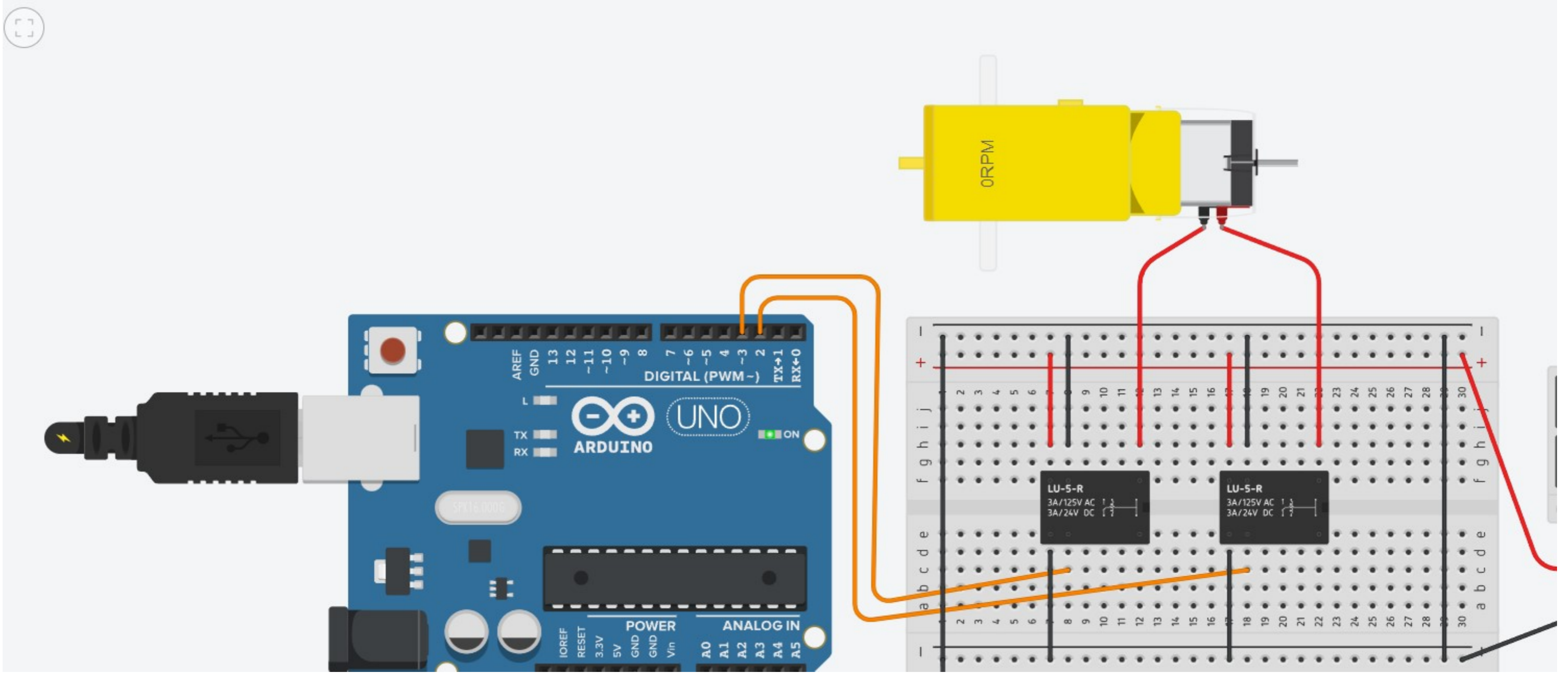
<https://www.youtube.com/watch?v=dT4KQN4JPJc>



# TOWARDS ROTATION CONTROL: ARDUINO CIRCUIT WIRING



# THINKERCAD SCHEMATIC SIMULATION



# THINKERCAD SCHEMATIC: CLOCKWISE ROTATION

SEND "1" ON SERIAL MONITOR (3 OR 4 TO STOP)

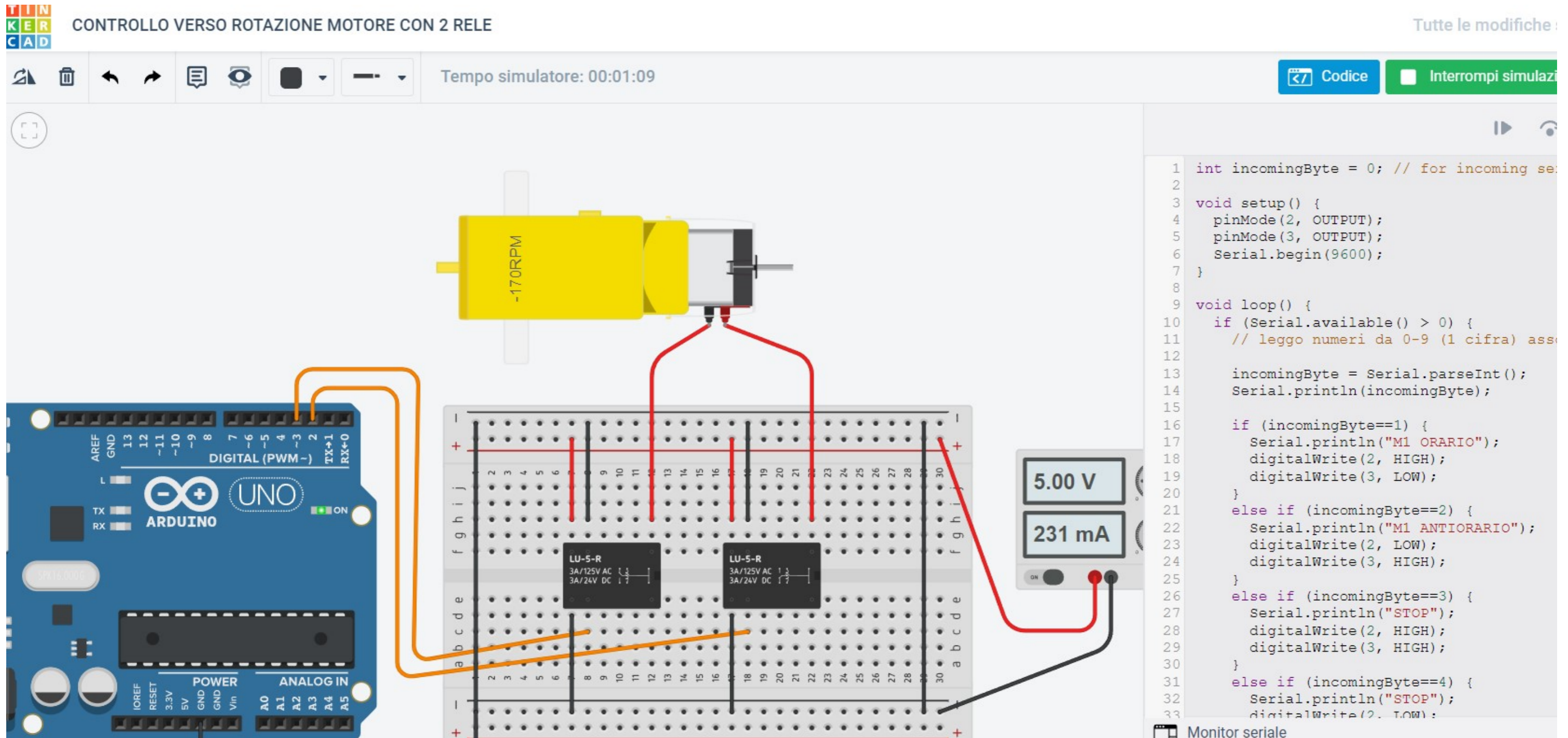
The image shows a Thinkercad schematic of an Arduino Uno microcontroller board connected to a breadboard circuit. The breadboard contains two relays (LU-5-R) and a 170RPM motor. The motor is connected to the relays, which are controlled by the Arduino's digital pins 2 and 3. A digital multimeter is connected to the breadboard, displaying 5.00 V and 231 mA. The code on the right side of the image is as follows:

```
1 int incomingByte = 0; // for incoming serial data
2
3 void setup() {
4   pinMode(2, OUTPUT);
5   pinMode(3, OUTPUT);
6   Serial.begin(9600);
7 }
8
9 void loop() {
10  if (Serial.available() > 0) {
11    // leggo numeri da 0-9 (1 cifra) ass
12
13    incomingByte = Serial.parseInt();
14    Serial.println(incomingByte);
15
16    if (incomingByte==1) {
17      Serial.println("M1 ORARIO");
18      digitalWrite(2, HIGH);
19      digitalWrite(3, LOW);
20    }
21    else if (incomingByte==2) {
22      Serial.println("M1 ANTIORARIO");
23      digitalWrite(2, LOW);
24      digitalWrite(3, HIGH);
25    }
26    else if (incomingByte==3) {
27      Serial.println("STOP");
28      digitalWrite(2, HIGH);
29      digitalWrite(3, HIGH);
30    }
31    else if (incomingByte==4) {
32      Serial.println("STOP");
33      digitalWrite(2, LOW);
```



# THINKERCAD SCHEMATIC: CCW ROTATION

SEND "2" ON SERIAL MONITOR (3 OR 4 TO STOP)



TINKERCAD CONTROLLO VERSO ROTAZIONE MOTORE CON 2 RELE

Tempo simulatore: 00:01:09

5.00 V  
231 mA

```
1 int incomingByte = 0; // for incoming serial data
2
3 void setup() {
4   pinMode(2, OUTPUT);
5   pinMode(3, OUTPUT);
6   Serial.begin(9600);
7 }
8
9 void loop() {
10  if (Serial.available() > 0) {
11    // leggo numeri da 0-9 (1 cifra) assume
12
13    incomingByte = Serial.parseInt();
14    Serial.println(incomingByte);
15
16    if (incomingByte==1) {
17      Serial.println("M1 ORARIO");
18      digitalWrite(2, HIGH);
19      digitalWrite(3, LOW);
20    }
21    else if (incomingByte==2) {
22      Serial.println("M1 ANTIORARIO");
23      digitalWrite(2, LOW);
24      digitalWrite(3, HIGH);
25    }
26    else if (incomingByte==3) {
27      Serial.println("STOP");
28      digitalWrite(2, HIGH);
29      digitalWrite(3, HIGH);
30    }
31    else if (incomingByte==4) {
32      Serial.println("STOP");
33      digitalWrite(2, LOW);
```

Monitor seriale

# ARDUINO CODE

```
int incomingByte = 0; // for incoming serial data
```

```
void setup() {  
  pinMode(2, OUTPUT);  
  pinMode(3, OUTPUT);  
  Serial.begin(9600);  
}
```

```
void loop() {  
  if (Serial.available() > 0) {  
    // leggo numeri da 0-9 (1 cifra) associati
```

```
    incomingByte = Serial.parseInt();  
    Serial.println(incomingByte);
```

```
    if (incomingByte==1) {  
      Serial.println("M1 ORARIO");  
      digitalWrite(2, HIGH);  
      digitalWrite(3, LOW);  
    }
```

```
    else if (incomingByte==2) {  
      Serial.println("M1 ANTIORARIO");  
      digitalWrite(2, LOW);  
      digitalWrite(3, HIGH);  
    }
```

```
    else if (incomingByte==3) {  
      Serial.println("STOP");  
      digitalWrite(2, HIGH);  
      digitalWrite(3, HIGH);  
    }
```

```
    else if (incomingByte==4) {  
      Serial.println("STOP");  
      digitalWrite(2, LOW);  
      digitalWrite(3, LOW);  
    }
```

```
    else  
    {  
      Serial.println("????");  
    }
```

```
  }  
}
```