

# Chess Robot Materials List

## **Mechanical**

2x 24" Acme Lead Screw <https://www.mcmaster.com/#99030A005>

2x 0.5" Ball Bearings <https://www.mcmaster.com/#60355K505>

2x 24" Carbon Steel Rod <https://www.mcmaster.com/#1327K68>

1x 14" - 1.5"x1.5" per square Chessboard

2x 5mm x 6.35mm Motor Coupler <http://amzn.to/2qUJCmG>

1x 5mm x 5mm Motor Coupler <http://amzn.to/2r5IH7y>

2x Nema 23 Stepper Motor

<http://www.omc-stepperonline.com/nema-23-cnc-stepper-motor-28a-126nm1785ozin-23hs222804s-p-108.html>

1x Nema 17 Stepper Motor <https://www.sparkfun.com/products/9238>

2x Nema 23 Stepper Motor Holder <http://amzn.to/2sC45hm>

3x Stepper Motor Driver

<http://www.omc-stepperonline.com/bipolar-stepper-motor-driver-max-4a-current-40vdc-input-16-subdivision-st6600-p-246.html>

1x 1.75mm Red ABS Filament (for 3D printer) <http://amzn.to/2D50gGw>

1x Trossen ASM-RGS-13 Servo Motor <http://www.trossenrobotics.com/rg-180-servo>

## **Plastic (PVC)**

1x 1/2" Thick, 4" Wide, 2 ft. PVC Bar <https://www.mcmaster.com/#8740K73>

1x 1" Thick, 3" Wide, 1 ft. PVC Bar (cut into 2" and 4" bar with some to spare)  
<https://www.mcmaster.com/#8740K63>

3x 1/2" Thick, 1-1/2" Wide, 2 ft. PVC Bar <https://www.mcmaster.com/#8740K24>

2x 1/2" Thick, 1" Wide, 2 ft. PVC Bar <https://www.mcmaster.com/#8740K14>

2x 1/2" Thick, 2" Wide, 1 ft. PVC Bar <https://www.mcmaster.com/#8740K35>

1x 1" Thick, 2" Wide, 1 ft. PVC Bar <https://www.mcmaster.com/#8740K37>

## **Screws**

100x Number 6 Size, 1/2" Long Tap Screw (1/8 drill) <https://www.mcmaster.com/#90190A110>

100x Number 6 Size, 1" Long Tap Screw (1/8 drill) <https://www.mcmaster.com/#90190A153>

100x Number 6 Size, 1-1/2" Long Tap Screw (1/8 drill) <https://www.mcmaster.com/#90190A157>

100x 4-40 Thread 1/2" 2.5M Long Hex Screw <https://www.mcmaster.com/#91251A110>

25x 4-40 Thread 1" 2.5M Long Hex Screw <https://www.mcmaster.com/#90044A111>

100x 4-40 Thread Steel Hex Nut <https://www.mcmaster.com/#90480A005>

## **Wood**

1x 4' x 4' Plywood (Base)

1x 1x4 - 8 ft. Plywood (Arms)

2x 1.5"x3.25"x20" Wood Beam (Base Stand)

## Electrical

1x Arduino Uno <http://amzn.to/2FBTARG>

1x Arduino Mux Shield <http://mayhewlabs.com/products/arduino-mux-shield>

3x Breadboard

<https://www.digikey.com/product-detail/en/bud-industries/BB-32621/377-2094-ND/4156445>

1x Copper Grounding Wire Roll <http://amzn.to/2mvd29Y>

1x Electrical Solder

1x Electrical Tape Roll

1x Extension Cord

3x Limit Switch <http://amzn.to/2FCHAze>

3x Jumper Wire Bundle 65 PCS

<https://www.digikey.com/product-detail/en/bud-industries/BC-32625/377-2093-ND/4156446>

100x 4.7k Ohm Resistor

<https://www.digikey.com/product-detail/en/stackpole-electronics-inc/CF14JT4K70/CF14JT4K70CT-ND/1830366>

100x 220 Ohm Resistor

<https://www.digikey.com/product-detail/en/stackpole-electronics-inc/CFM12JT220R/S220HCT-ND/2617576>

1x 12V Power Supply <http://amzn.to/2sR2G5W>

2x Premium Male/Male Jumper Wires - 20 x 6" <https://www.adafruit.com/product/1957>

2x Premium Male/Male Jumper Wires - 20 x 12" <https://www.adafruit.com/product/1955>

3x Push Button (product is 100 pack) <http://amzn.to/2D2LQqn>

64x Reed Switches (purchase 100 in case some break)

<https://www.digikey.com/product-detail/en/standex-meder-electronics/ORD211-1015/374-1083-ND/2171060>

1x Ribbon Cable <http://amzn.to/2D4bhb7>

## Tools

1/2-10 Acme Tap <http://www.victornet.com/detail/TAAC-1/2.html>

Drill <http://amzn.to/2EF7kK0>

Drill Bit Set

Z-Drill Bit

Hex Wrench Set

Hot Glue Gun

Lathe (3 Cuts to Acme Lead Screws to 5mm for the motor couplers)

3D-Printer (Prints Gripper)

Saw (Power tool recommended)

Screwdriver

Soldering Iron