

Model AR4 Travel Track

NOTES:

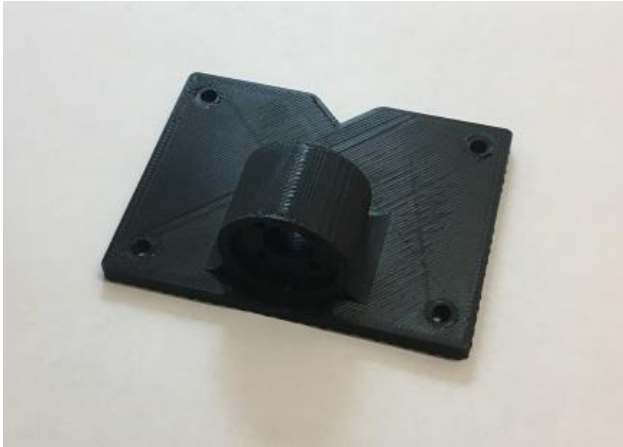
This manual shows the construction of the AR2 or AR3 travel track using 500mm length guides but you can build the track any length you want. Track can be screw drive as shown or you can design your own track or use a belt drive if desired.

Any stepper motor can be used as long as its wired as shown and in the electrical enclosure manual.

- 3D printed components require all threaded holes to be cleared with appropriate drill size.
- All printed components were printed at minimum 50% solid at 2mm layer height and thick shells.

BILL OF MATERIALS

3D Printed Components



DRIVE MOUNT (x1)

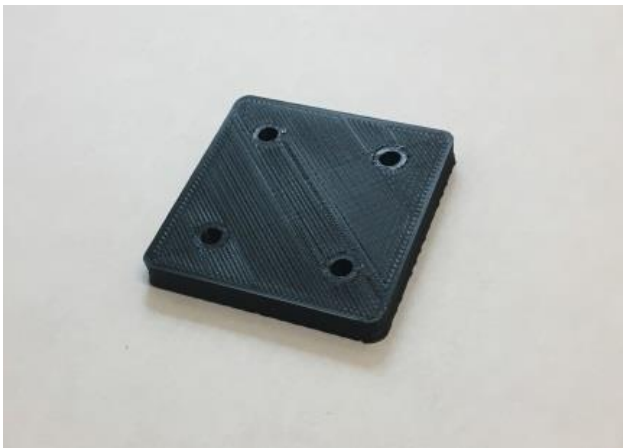


BEARING SPACERS

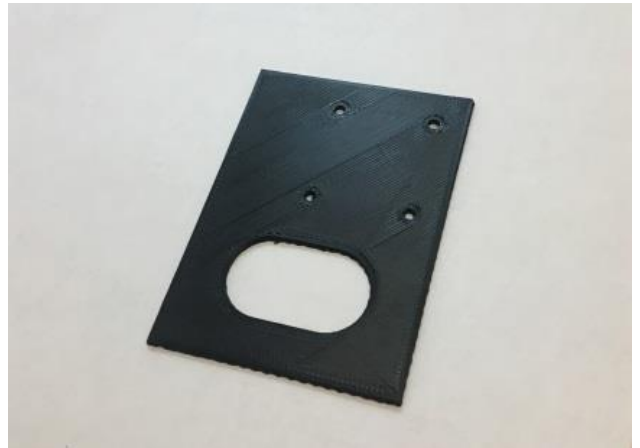
You will need 2 spacers:

- (1) 13mm spacer
- (1) 15mm spacer

(They look identical except for the height)



BLOCK SPACER (x4)



TEMPLATE (x1)

Stepper Motors

Stepper motors as well as stepper drivers and brackets
are available from Stepper Online

<http://www.omc-stepperonline.com/>



Nema 17 Bipolar 59Ncm (84oz.in) 2A 42x48mm 4 Wires w/ 1m Cable & Connector

★★★★★ 19 reviews | Write a review

SKU: 17HS19-2004S1

\$11.14 ~~\$14.21~~

Bulk quantity price break:

Qty	3	10	30	100
Price	\$10.70	\$9.81	\$9.36	\$8.47
Save	27%	33%	36%	42%

Availability: 8126

* Ship from

[China](#) [United States](#) [Germany](#) [United Kingdom](#) [Australia](#) [Russian Federation](#)

- 1 + [ADD TO CART](#) [♡](#)

[Report error](#) / [Notify inventory](#) / [Request bulk price](#)

NEMA 17 stepper motor
SKU: 17HS19-2004S1



Nema 17 Bracket for Stepper Motor and Geared Stepper Motor Alloy Steel Bracket

★★★★★ 8 reviews | Write a review

SKU: ST-M1

\$2.44

Bulk quantity price break:

Qty	3	10	30	100
Price	\$2.28	\$2.12	\$1.96	\$1.79
Save	6.67%	13.33%	20%	26.67%

Availability: 471

* Ship from

[China](#) [United States](#) [Germany](#) [United Kingdom](#) [Australia](#) [Russian Federation](#)

- 1 + [ADD TO CART](#) [♡](#)

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NEMA 17 bracket
SKU: ST-M1

Hardware

SFU1204 12mm 500mm End Machine Ball Screw Single Flange BallNut US Stock



Price: **\$22.80** & **FREE Shipping**

New (1) from **\$22.80** + FREE Shipping

Specifications for this item

Part Number	1SBA1733140VQ0G409
UPC	190459164566
Brand Name	CHUANGNENG

Qty.(1) SFU1204 Ball Screw. In this build we are using 500mm long screw and guides but you can use any length you like. This item is typically available from Amazon, AliExpress or other online bearing suppliers – There are a number of brands out there but any SFU1204 will work.

CNC Linear Guide Way Rail Kit Set --- 2pcs Fully Support SBR 12-500mm 12mm Ball Bearing Linear Slide Rail Shaft + 4pcs SBR12UU Blockbearing

[Be the first to review this item](#)

Price: **\$61.29** & **FREE Shipping**

Note: Not eligible for Amazon Prime.

In Stock.

Get it as soon as March 28 - April 18 when you choose **Standard Shipping** at checkout.

[Ships from and sold by nineone.](#)

- Metal linear bearing rail and blocks with pre-drilled holes for ease of mounting
- Durable construction for long-lasting performance
- Can be used in automatic industry machines such as robot, calculator, automatic recorder, accurate printer, etc.
- This set included 2pcs SBR12-500mm Linear Bearing Rail and 4pcs SBR12UU Block Bearing.
- This linear bearing is durable and sturdy, which can prolong the transmission life span of your machines.



Qty.(1) SBR-12 12mm linear slide with bearings. In this build we are using 500mm long screw and guides but you can use any length you like. This item is typically available from Amazon, AliExpress or other online bearing suppliers.



PGN - KP08 Pillow Block Ball Bearing - 8mm Bore - P08 Base (2 Pack)

Price: \$6.45 ✓prime

New (1) from \$6.45 ✓prime FREE Shipping

Specifications for this item

Part Number	PB-KP08/2
UPC	760655001042
Measurement System	Metric
Specification Met	Iso 9001 , Aisi 52100
Bore Diameter	8.00 millimeters

Qty.(1) KP08 – 8mm bore pillow block bearing. These are typically sold in pairs of 2 so you will have 1 extra. This item is typically available from Amazon, AliExpress or other online bearing suppliers.



PGN - KP000 Pillow Block Ball Bearing - 10mm Bore - P000 Base (2 Pack)

★★★★★ 1 rating

Price: \$7.45 ✓prime

New (1) from \$7.45 ✓prime FREE Shipping

Specifications for this item

Part Number	PB-KP000/2
UPC	760655001028
Measurement System	Metric
Specification Met	Iso 9001 , Aisi 52100
Bore Diameter	10.00 millimeters

Qty.(1) KP000 – 10mm bore pillow block bearing. These are typically sold in pairs of 2 so you will have 1 extra. This item is typically available from Amazon, AliExpress or other online bearing suppliers.



Hammond

Hammond 1591BSBK ABS Project Box Black



56 customer reviews | 8 answered questions

Price: **\$6.51** ✓prime

FREE One-Day Pickup. [Details](#)

Get \$70 off instantly: Pay \$0.00 upon approval for the Amazon Prime Rew

In Stock.

Want it Friday, March 9? Order within **7 hrs 6 mins** and choose **Two-Day !**

[Details](#)

Sold by [Gerber Electronics](#) and [Fulfilled by Amazon](#). Gift-wrap available.

- Black ABS Multipurpose Plastic Enclosure
- 4.4" x 2.4" x 1.1" (112mm x 62mm x 27mm)
- Integral card guides accept 1.5 mm (0.062") P.C. cards.

Electrical project box (x1)



Hilitchi 30 Piece Nylon Plastic Waterproof Adjustable 3.5 - 13mm Cable Glands Joints Cable Gland - PG7, PG9, PG11, PG13.5, PG16



2 customer reviews

Price: **\$10.41** ✓Prime

/ Your cost could be **\$5.41**. Qualified customers get \$5 in Gift Card funds on first \$100 reload of their Amazon Gift Card Balance. [Learn more](#)

In Stock

Sold by [Hilitchi](#) and [Fulfilled by Amazon](#). Gift-wrap available.

Color: **Black 30pcs**



- High Quality Cable Gland Kit, Applied to Cable Fixing, Waterproof Design
- Package Includes: 30pcs (6 each size)
- Model: PG7, PG9, PG11, PG13.5, PG16

PG7 gland nut (x1)



4 Pin Metal Male Female Panel Connector 10 GX16-4 Silver Aviation Plug of 10 pcs

★★★★☆ 1 customer review

Note: This item is only available from third-party sellers (see all offers)

Available from these sellers.

- Product Name : Aviation Connector Plug;Model : 16-4;Type : Male Female
 - Contacts Pin Number : 4
 - Rated : 125V/5A;WorkingVoltage : AC 200V;Withstand Voltage : AC
 - Total Size : 4.7 x 1.9cm/ 1.8" x 0.7" (Lx Max.W);
 - Material&Package: Metal;10 Pairs Aviation Connector Plug
- See more product details

Compare with similar items

New (1) from \$12.99 + \$5.27 shipping

GX-16 aviation plug (x1)

6061 Aluminum Sheets, Bars, and Cubes



Bars

Wd.	Temperature Range, °F	1 ft. Lg.
1/4" Thick. (-0.012" to 0.012" Tolerance)		
6"	-320° to 300°	8975K437 \$13.37

6061 Aluminum, 1/4" Thick x 6" Wide, 1 Foot Long

1 Each

ADD TO ORDER

In stock

12" x 6" x 1/4" aluminum plate (x1)- McMaster Carr

ASSEMBLY



Place template on corner of aluminum plate as shown and then use spring loaded center punch to mark the 4 holes. Rotate and flip template to each corner and repeat until all 16 holes are marked.



Drill all 16 holes to clearance 5mm screw.



Countersink all 16 holes.



Draw centerline on aluminum plate as shown.



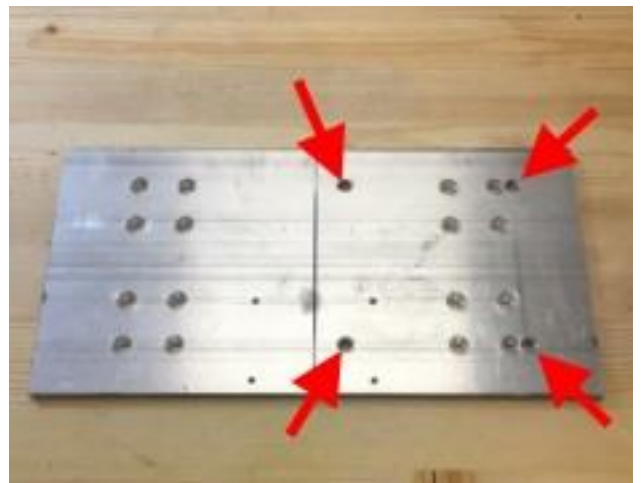
Place drive mount on plate aligned on centerline. Use spring loaded center punch to mark (x4) holes.



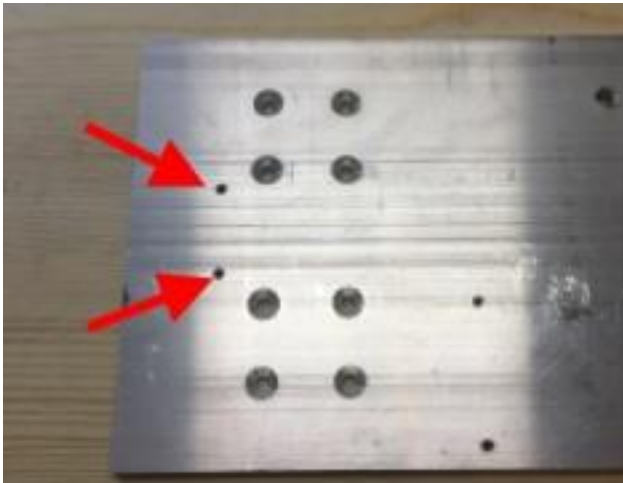
Drill and tap (x4) M4 holes as shown.



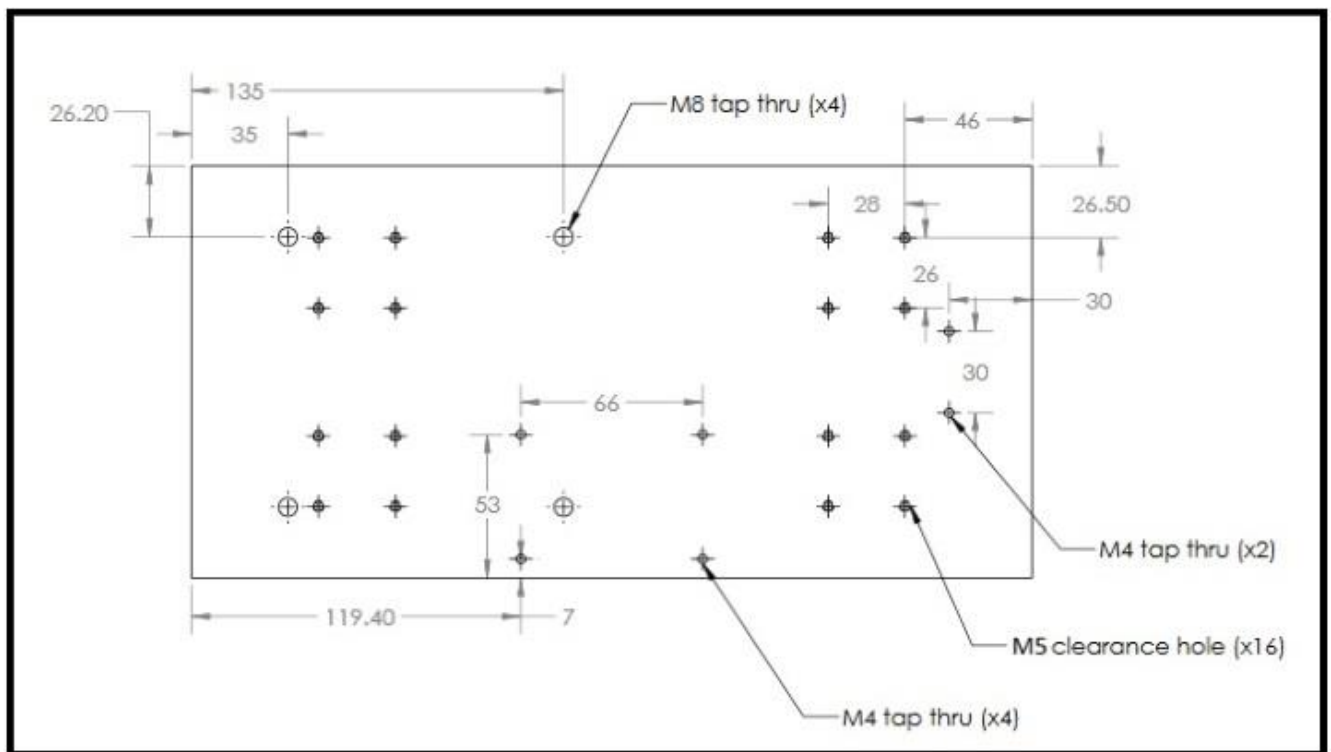
Center J1 support spacer as shown and mark (x4) mounting holes.



Drill and tap (x4) M8 holes as shown.



Drill and tap (x2) M4 holes centered 30mm apart and 30mm from edge as shown.



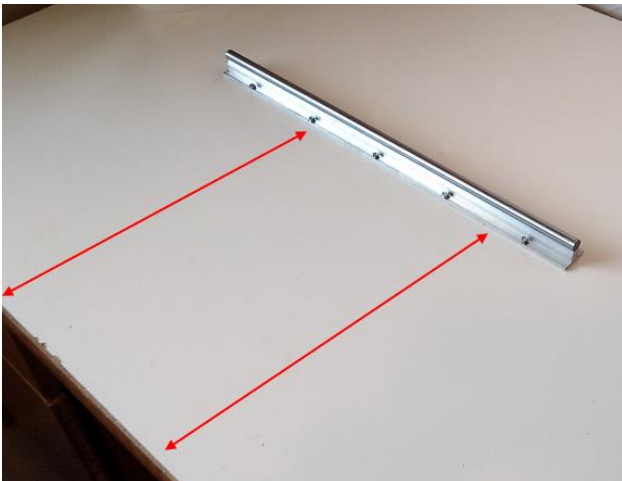
When complete aluminum plate should be drilled as shown in this drawing.



Install (x4) linear bearings with block spacers between aluminum plate and bearing as shown. Secure with (x16) M5x20 flat head screws. (do not fully tighten M5 screws yet)



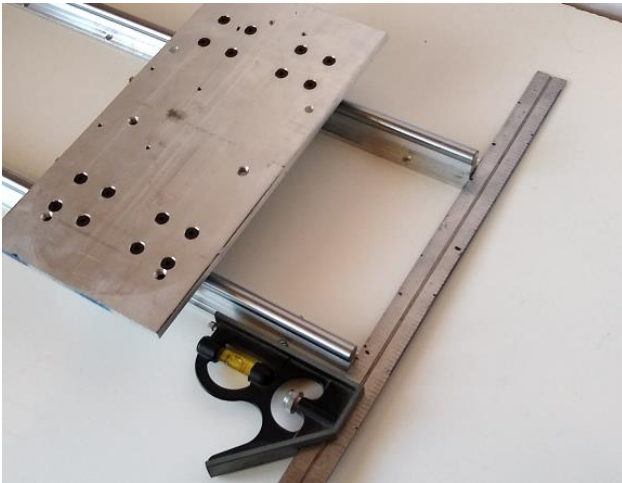
Secure drive mount assembly to aluminum plate as shown using (x4) M4x20 socket head cap screws.



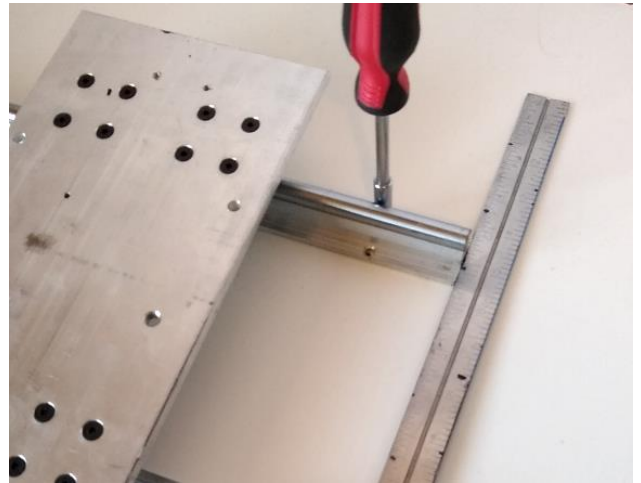
Mount the first rail to your table or workspace. Make sure rail is parallel to table (red arrows) and positioned where you want it. Secure rail with screws in each mounting hole using wood screws or cap screws depending on the surface you are mounting to.



Slide 2nd rail into rear pair of linear bearings as shown.



Slide aluminum plate & front pair of linear bearing onto the front rail which is secured to table. The rear rail is still free – use square to make sure rear rail is aligned with front rail.



Secure rear rail with screws in each mounting hole using wood screws or cap screws depending on the surface you are mounting to.



Install T8 screw, bearing and motor coupler as shown.



With platform at maximum travel to the left side secure lead screw bearing and bearing spacer to work table as shown.

Tighten bearing and coupler set screws.

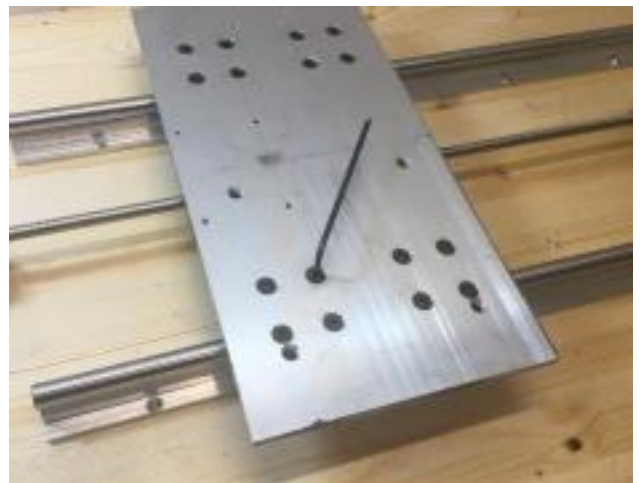


Turn screw manually and drive platform to far end. Secure opposite lead screw bearing and bearing spacer as shown at very end of screw.

Tighten bearing set screws.



Note that the drive mount should bottom out against the bearing and not allow the platform to go off the end of the rails.



Make sure platform moves smoothly and easily down rails and then tighten the (x16) M5 screws securing platform to rail bearings.



Temporarily install motor and bracket and use pencil to mark motor mount location.



Remove motor and secure motor mount to work table as shown.



Reinstall motor using (x4) M3x10 socket head cap screws.

Tighten shaft coupler set screws.



Install PG7 gland nut in side of enclosure as shown. Also drill 2 mounting holes in bottom of enclosure.



Wrap base of motor wires with spiral wrap.



Feed wires and spiral wrap through gland nut and secure enclosure to worktable as shown.

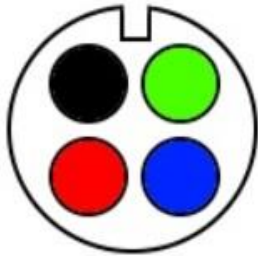


Install aviation plug in enclosure faceplate as shown.



Solder motor wires as shown to back side of aviation plug. (see next step)

Looking at the back of the connector solder the black wire to upper left , green wire upper right, red wire to lower left and the blue wire to lower right.



VIEW FROM BACKSIDE
OF CONNECTOR



Secure enclosure panel to project box as shown.



Secure robot to platform using (x4)
M8x35 metric bolts.



Drill 5mm holes 30mm apart in bottom of
enclosure and mount to back of platform
as shown.

**Travel Track assembly is now
complete. Please review the wiring
harness, electrical enclosure and startup
manuals to complete the build.**