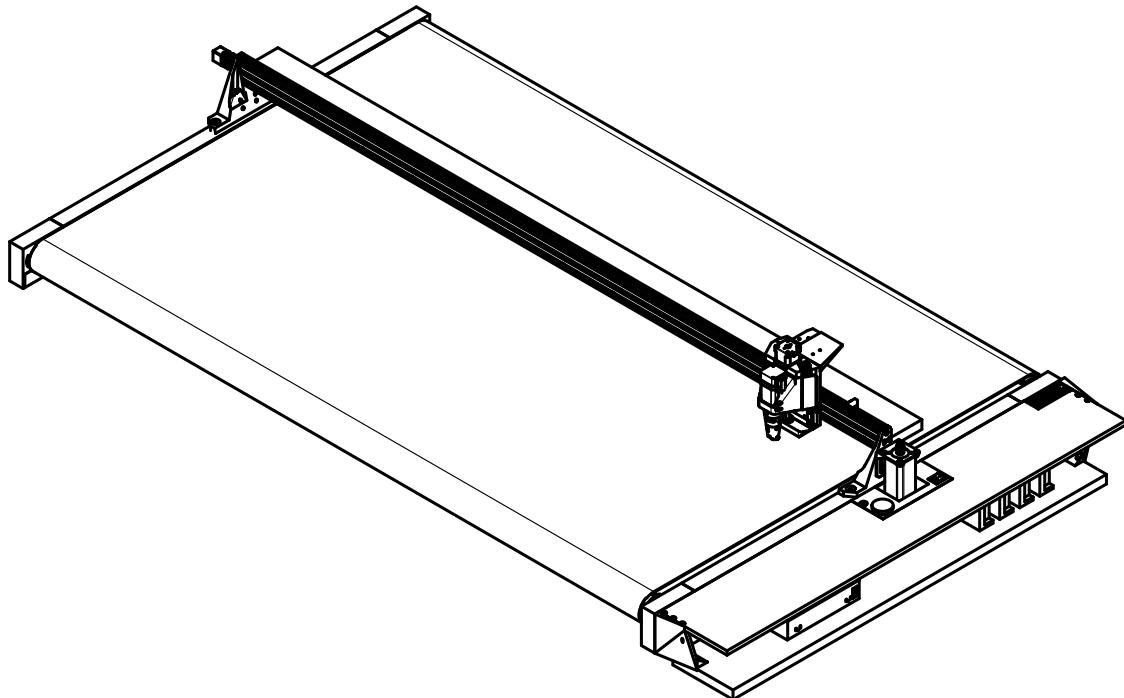


**Dinner 2.28**

**Conveyor Belt 4 Axis Tangential Rotary Knife Fabric Cutter**

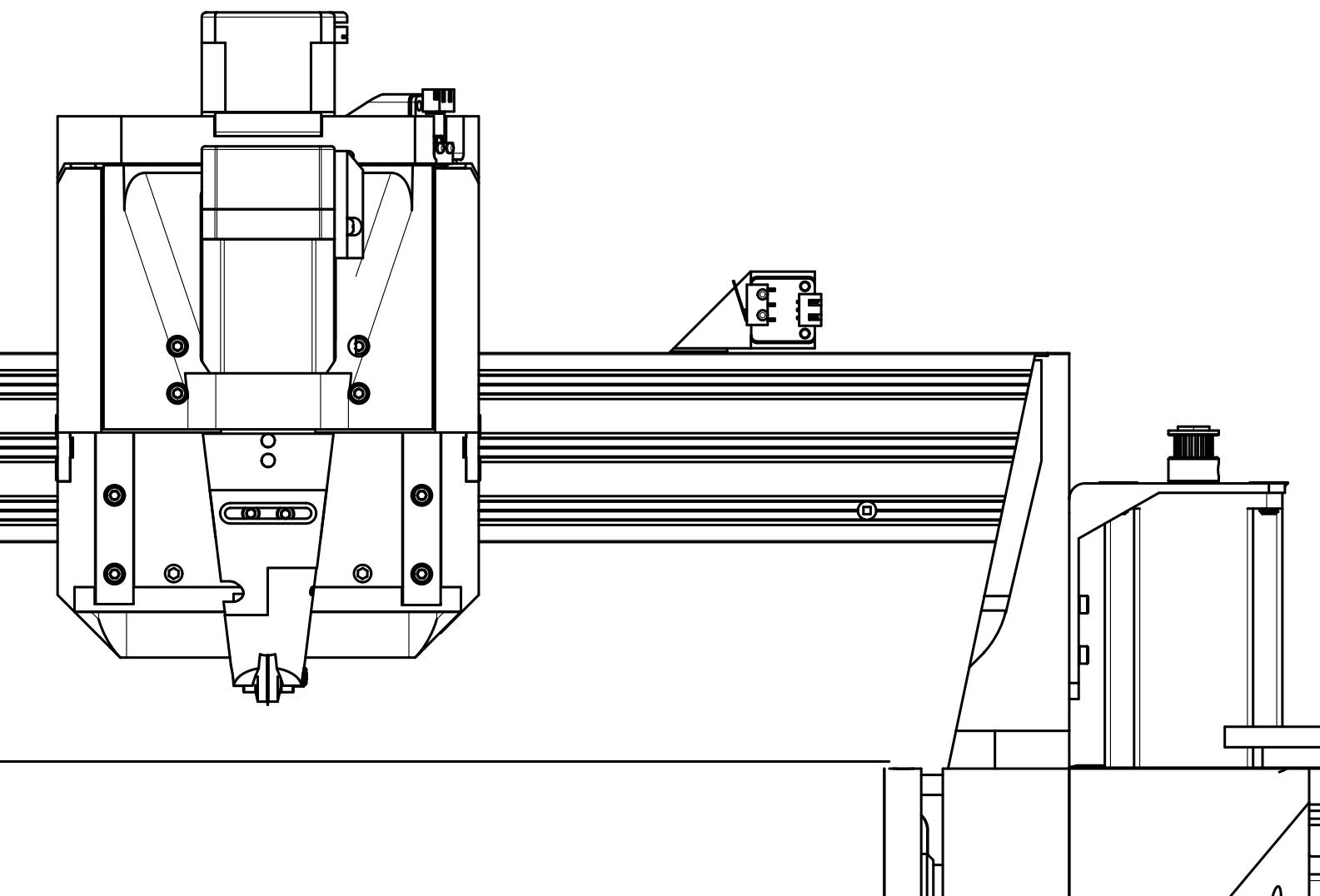
**Assembly Guide**

Rose Buttress, 2023 - 2024

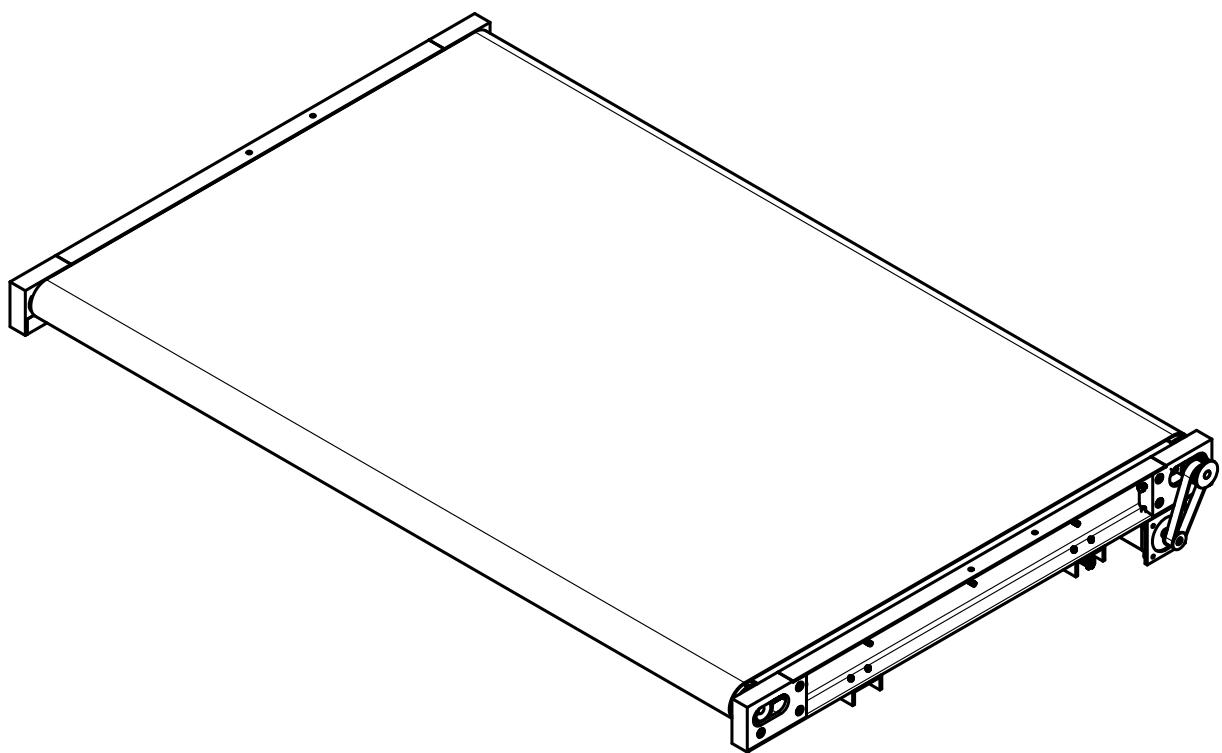


## **Contents**

- 1. Y AXIS**
- 2. Electrical Case**
- 3. X AXIS**
- 4. Z AXIS**
- 5. A AXIS**
- 6. ZA**
- 7. XYZA Electrical**

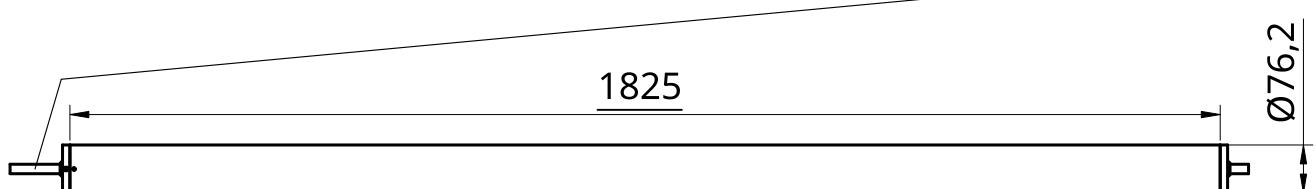
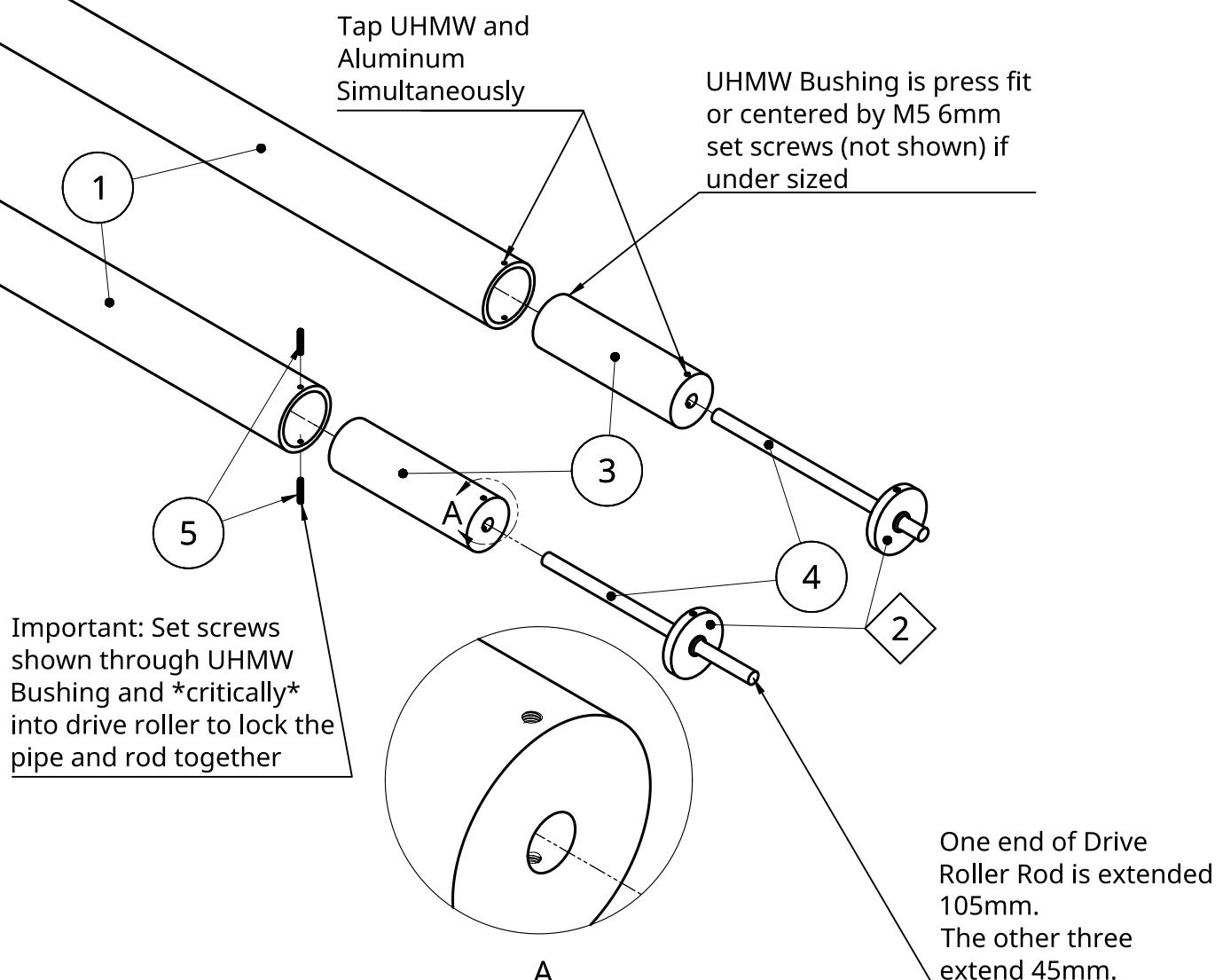


## Section 1 Y AXIS

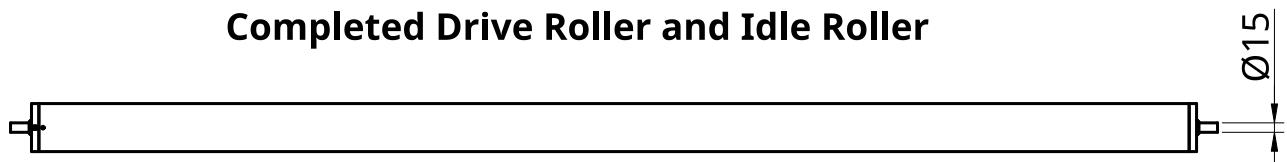


## Section 1.1 Y AXIS - Roller Assembly

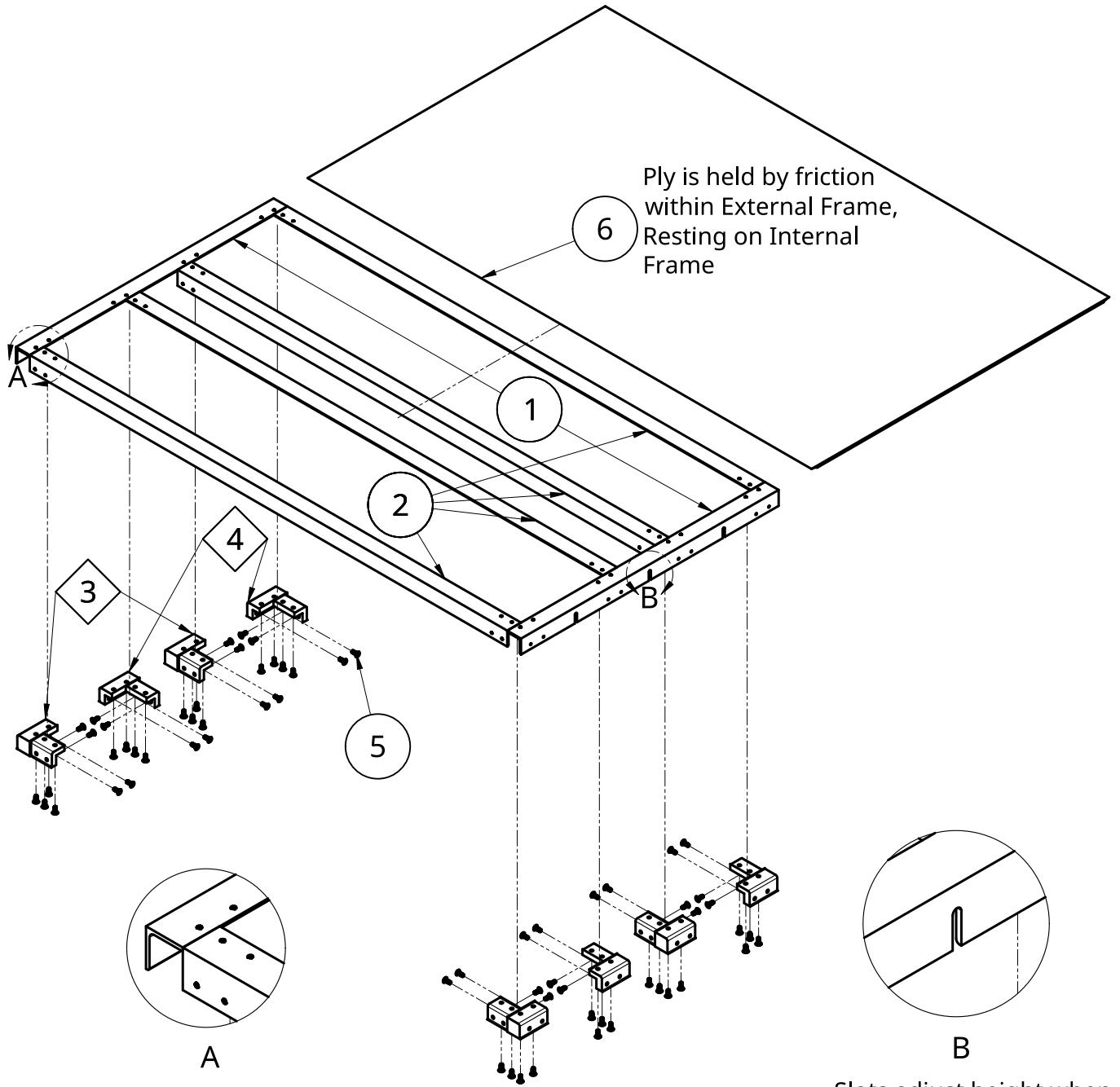
Item	Quantity	Part number	Description
1	2	3x.25in Aluminum Pipe	1825mm length
2	4	Spacer	3D Printed
3	4	UHMW bushing	machined and tapped
4	4	15mm Hardened Rod	300mm length scrap treadmill
5	2	M5 set screw	30mm lg



**Completed Drive Roller and Idle Roller**

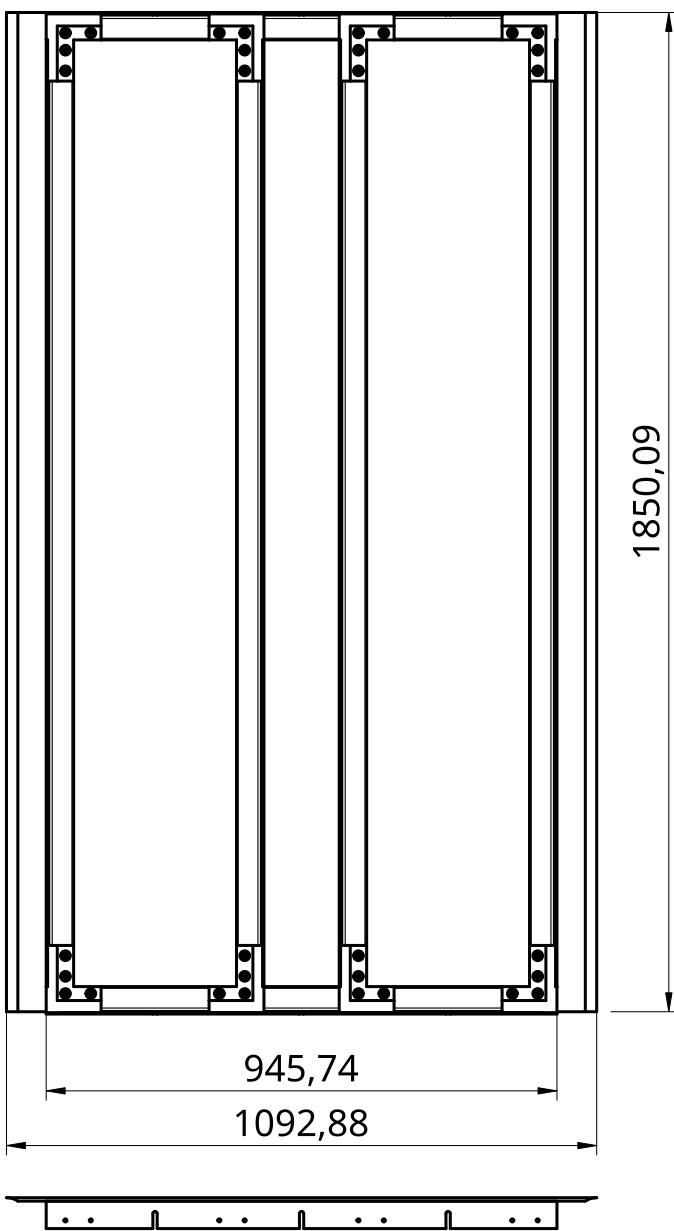


## Section 1.2 Y AXIS - Inner Frame Assembly

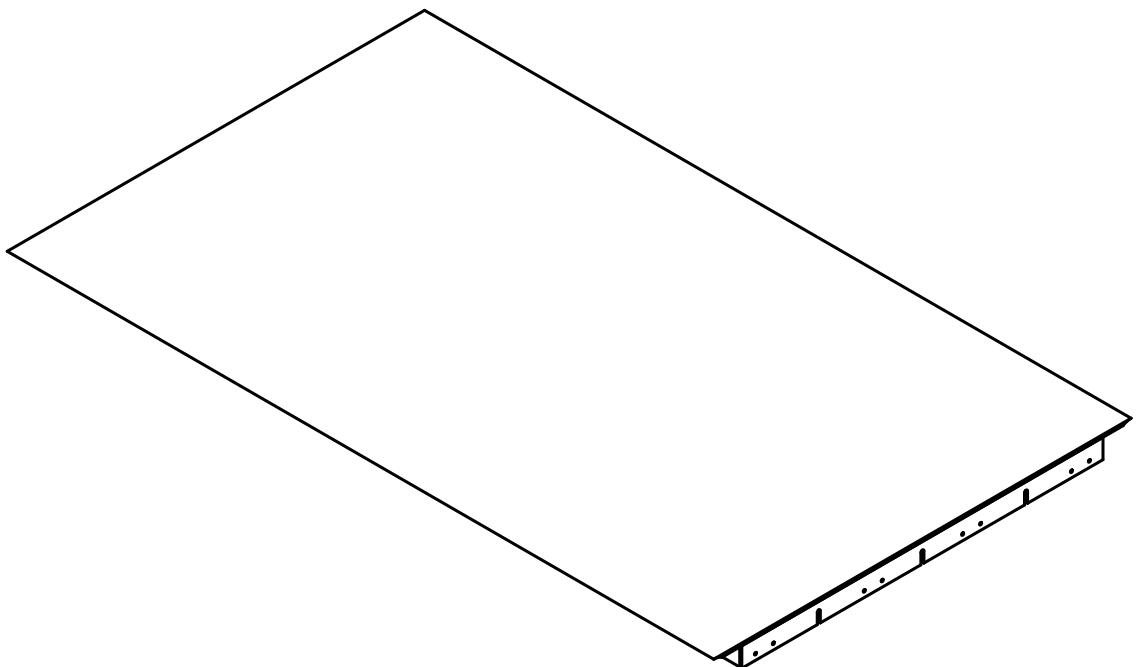


Item	Quantity	Part number	Description
1	2	Aluminum Angle 2 X 2 X 3/16 6061	945mm lg
2	4	Aluminum Angle 2 X 2 X 3/16 6061	1753mm lg
3	4	Inner Frame Support A	3D Printed
4	4	Inner Frame Support B	3D Printed
5	64	M8 Bolt 30mm lg	Flat Head
6	1	Ply Wood	1850x1090x12mm

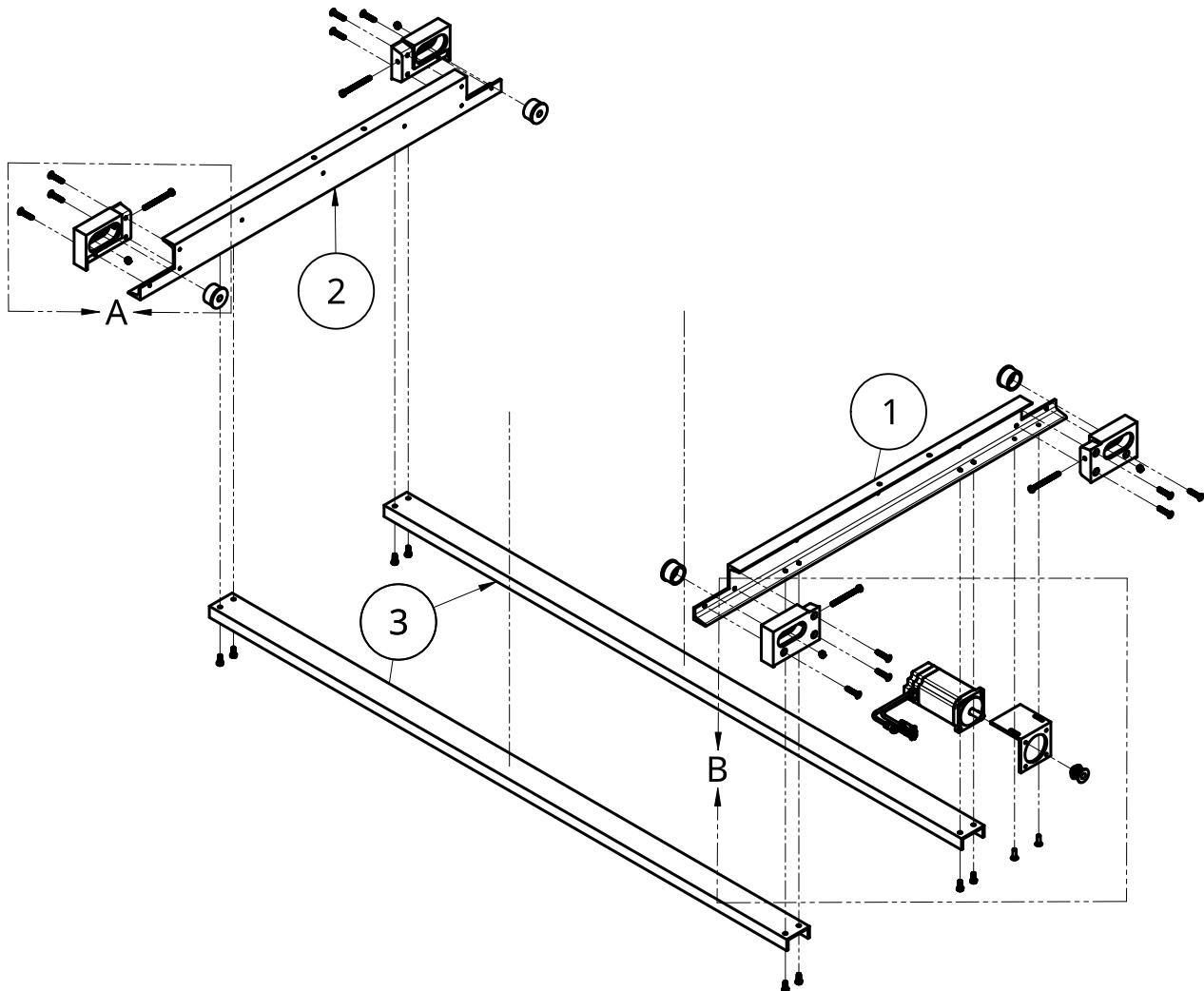
## Section 1.2 Y AXIS - Inner Frame Assembly



**Completed Inner Frame**

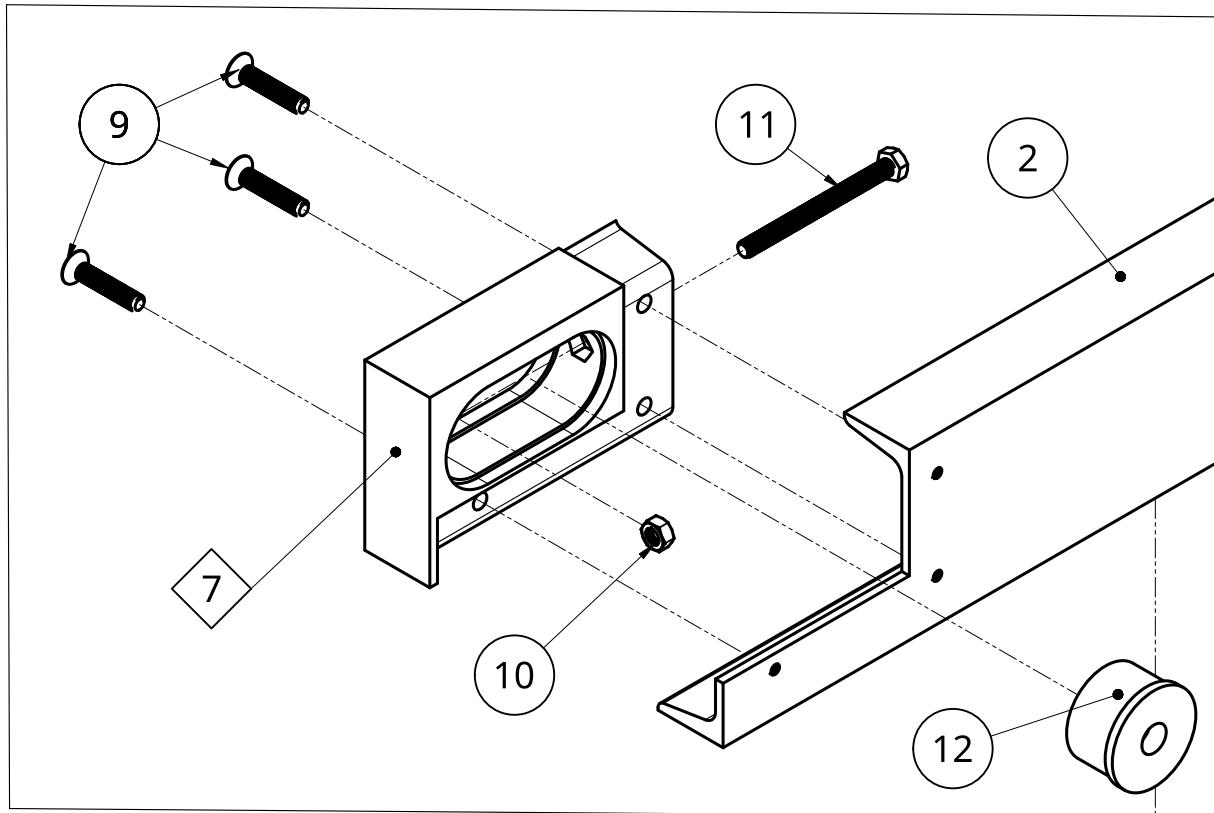


## Section 1.3 Y AXIS - External Frame Assembly

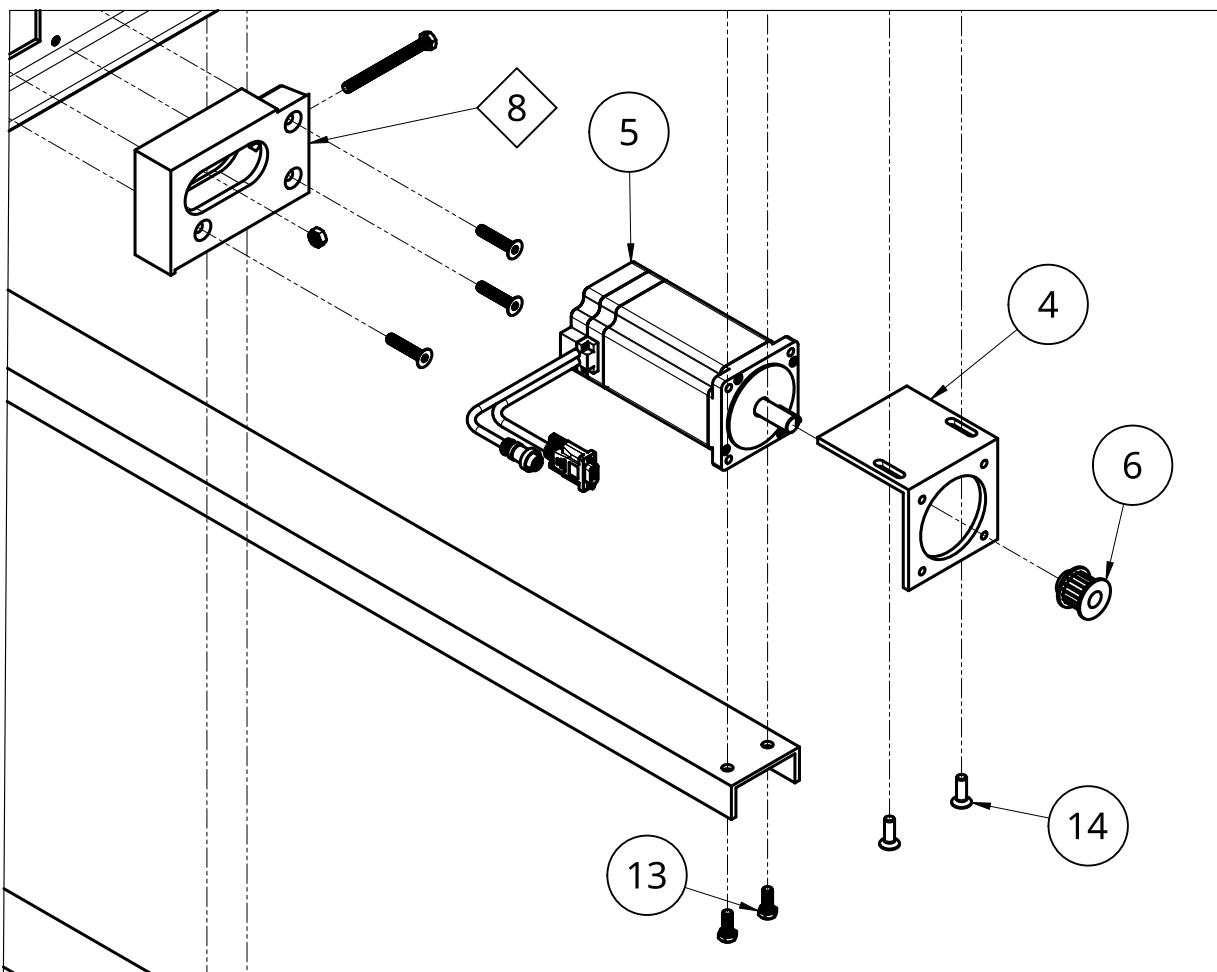


Item	Quantity	Part number	Description
1	1	Aluminum Channel 4 X 1.58 X .180 web 6061-T6 (AS)	Machined with taps and angle Grinder
2	1	Aluminum Channel 4 X 1.58 X .180 web 6061-T6 (AS)	Machined with taps and angle Grinder
3	2	Aluminum Channel 3 x 1-1/2 x 3/16 6063-T52	Interchangable with respect to the lower support and mounting surface
4	1	NEMA 34 Motor Mount	Generic
5	1	NEMA 34 Closed Loop Stepper	Stepper Online Kit
6	1	18T 14mm Bore 5M Timing Belt Pulley (set screw not shown)	<a href="https://www.ebay.com/item/163998408706?var=463617067241">https://www.ebay.com/item/163998408706?var=463617067241</a>
7	2	Roller Mount B	3D Printed
8	2	Roller Mount A	3D Printed
9	12	M8 Bolt 30mm lg	Flat Head
10	4	M8 Nut 13mm	Generic
11	4	M8 Bolt 120mm lg	Any head type
12	4	48 OD X 15 ID Bearing	Salvaged from Treadmill
13	8	M8 Bolt 20mm lg	Hex Head
14	2	M8 Bolt 20mm lg	Flat Head

## Section 1.3 Y AXIS - External Frame Assembly



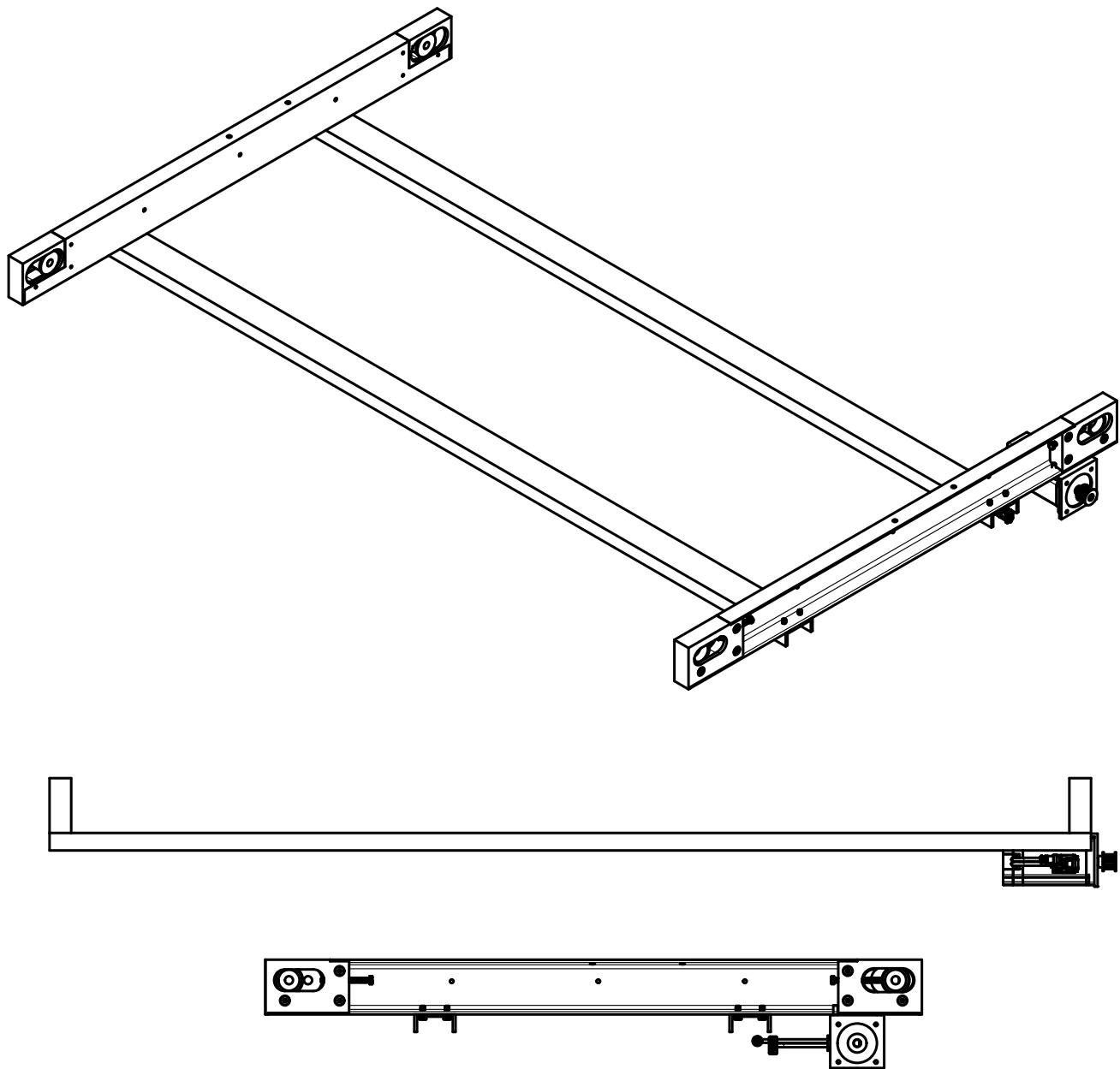
A



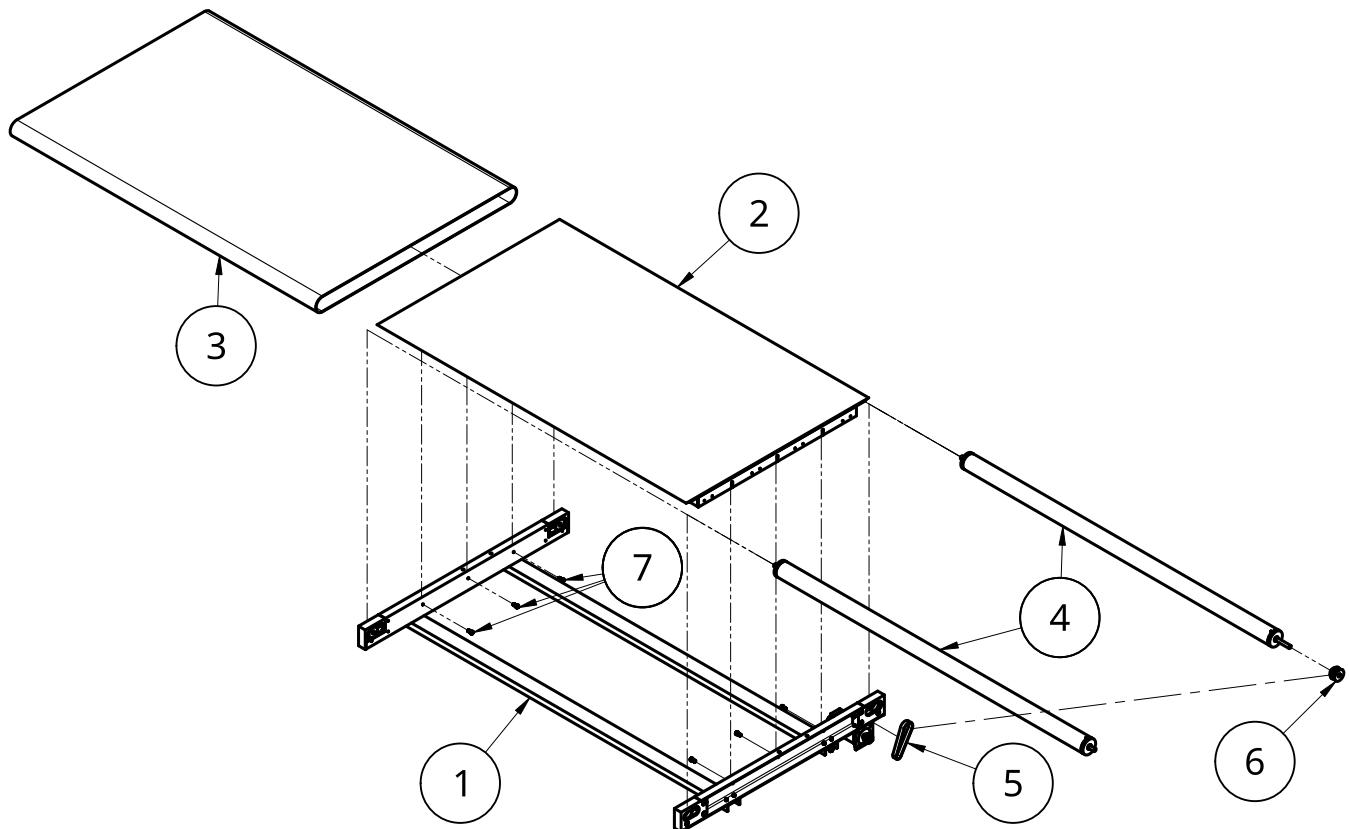
B

## Section 1.3 Y AXIS - External Frame Assembly

**Completed External Frame**

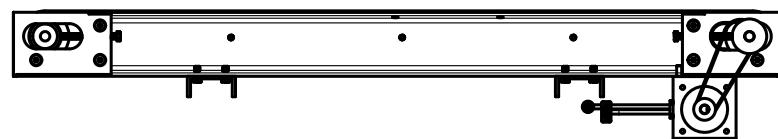
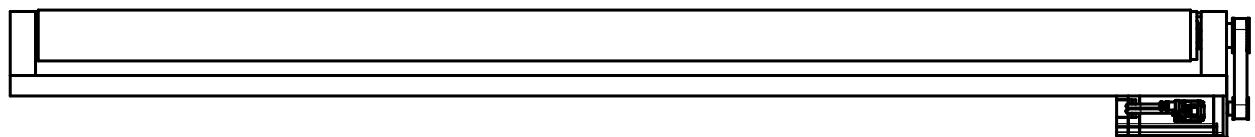
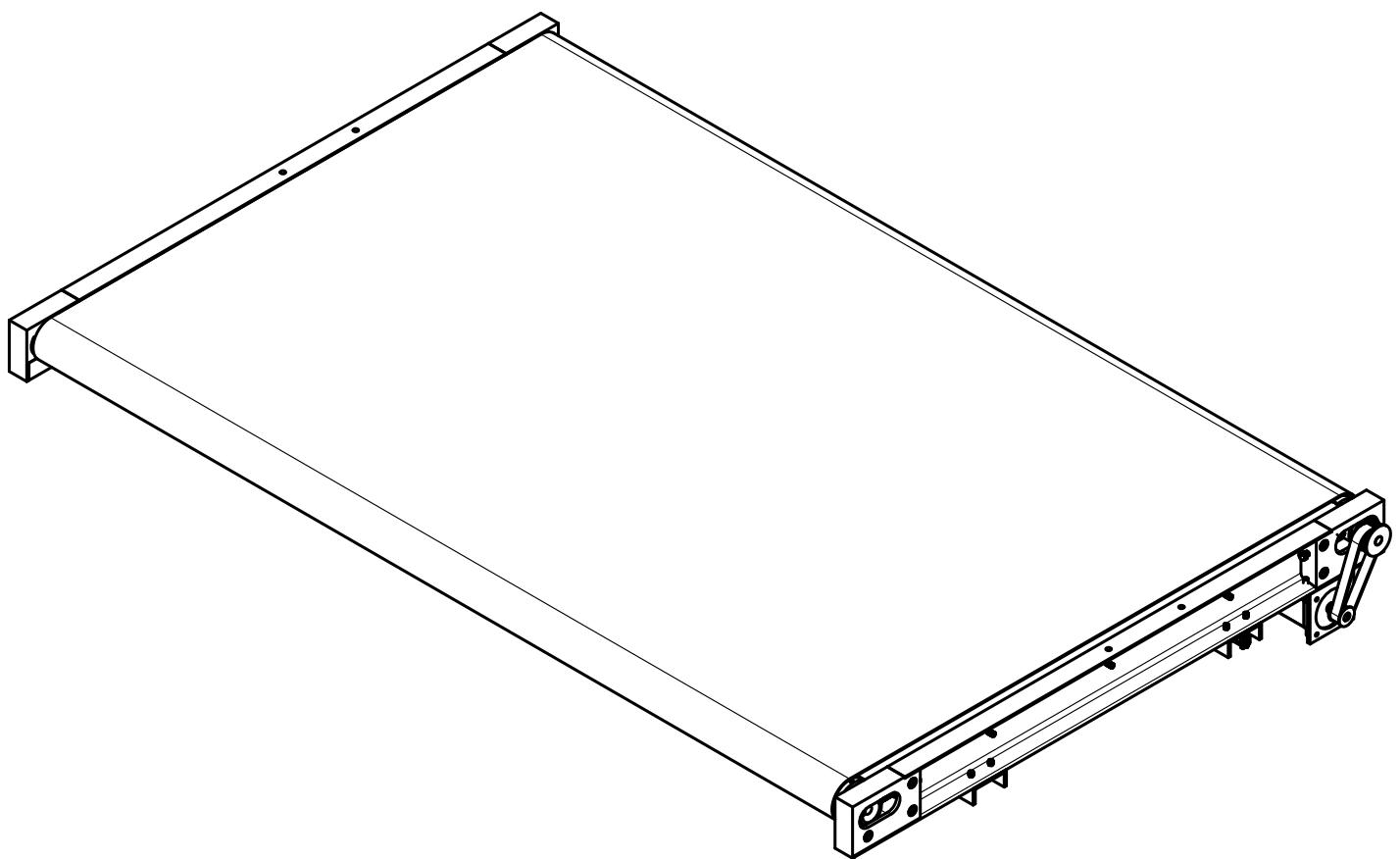


## Section 1.4 Y AXIS Assembly

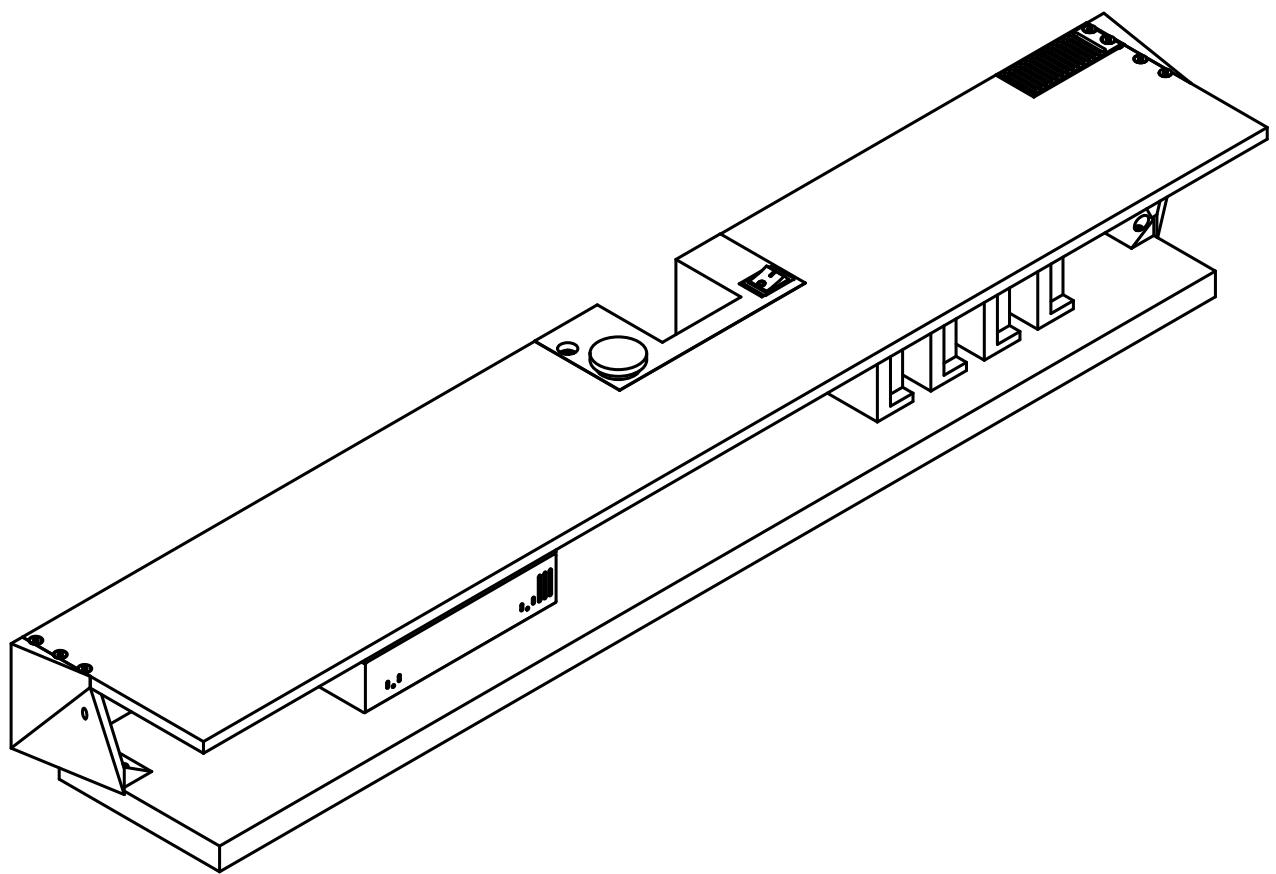


Item	Quantity	Part number	Description
1	1	Completed External Frame	
2	1	Completed Internal Frame	
3	1	Polyurethane Rubber Conveyor Belt	FDA Food Safe, Endless, 97x72" source: Pooley Inc.
4	1	Completed Roller Assembly	
5	1	HTD5M-340-20	Timing Belt
6	1	32-5M-20 Timing Belt Pulley	80-90mm pitch
7	6	M8 Bolt 20mm lg	Hex Head

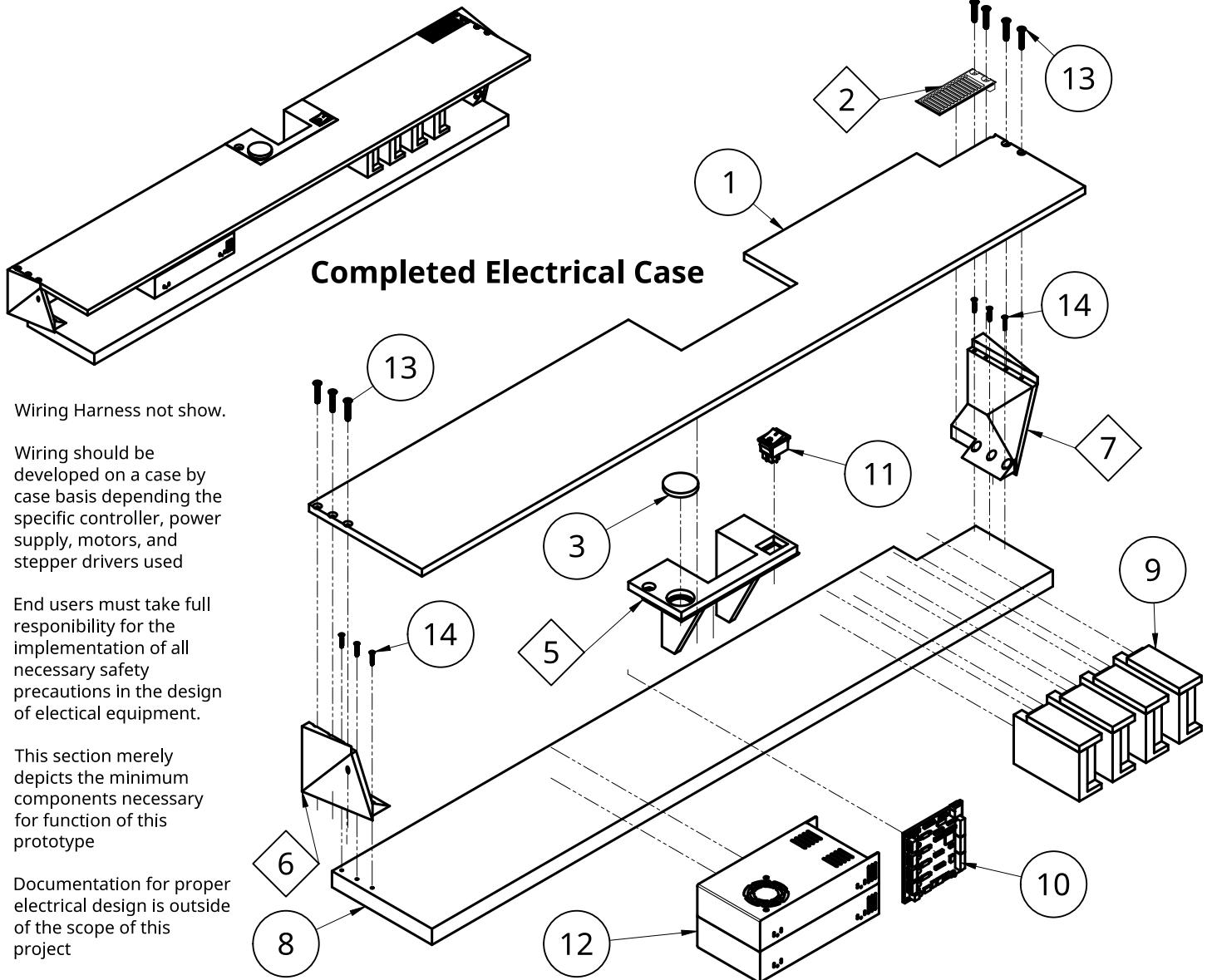
## Completed Y AXIS



## Section 2 Electrical Case

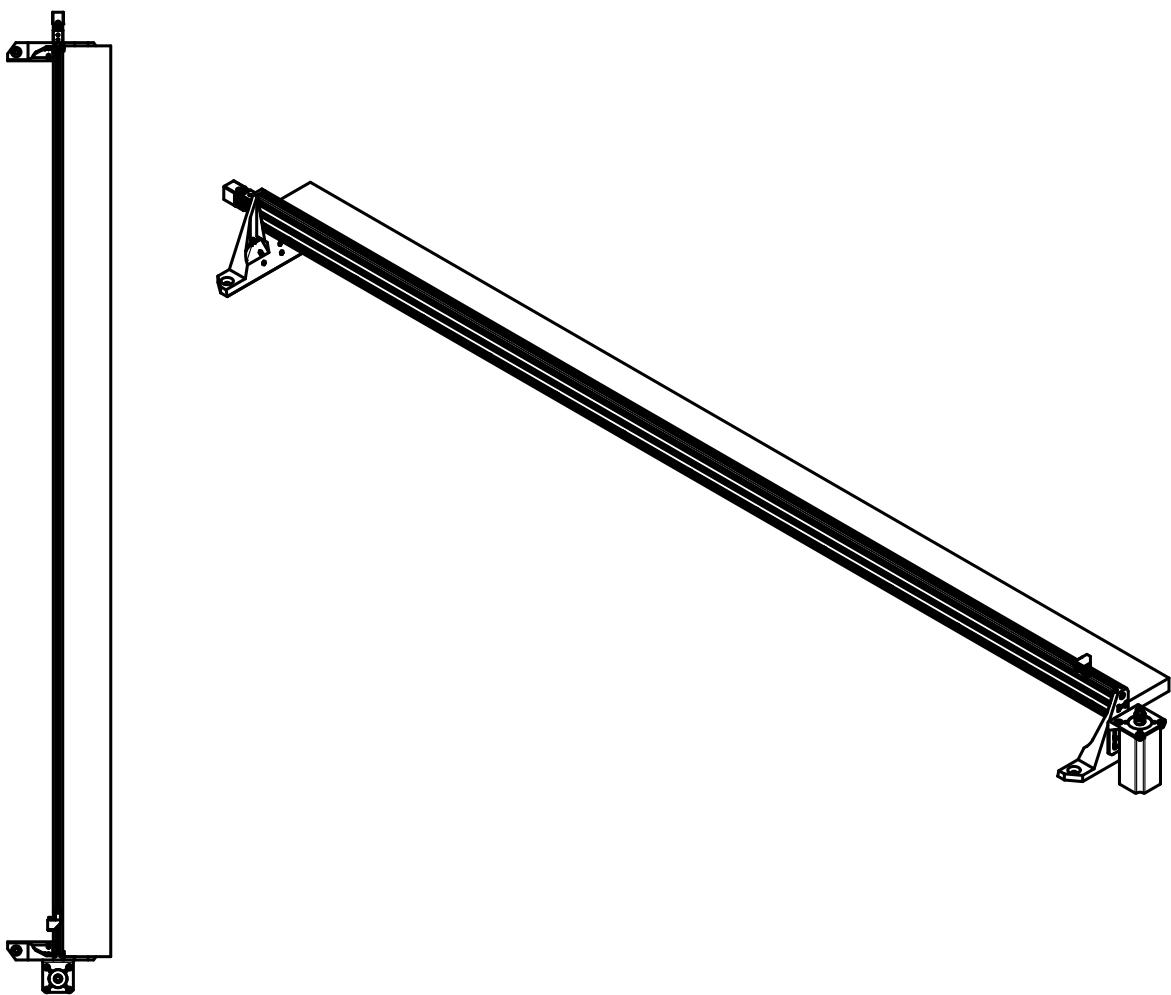


## Section 2.1 Electrical Case Assembly



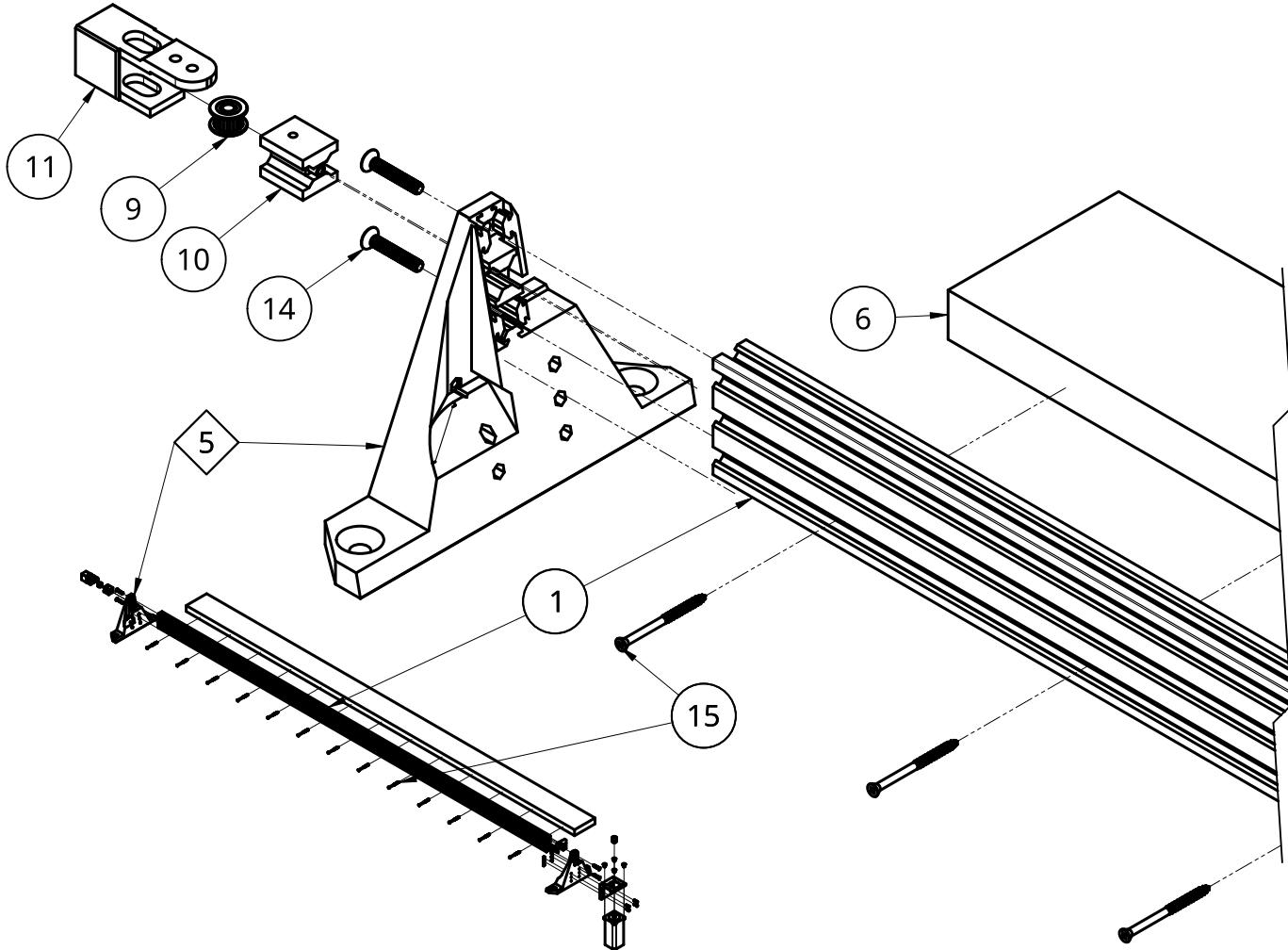
Item	Quantity	Part number	Description
1	1	Acrylic .5"	Any .5" flat material will do
2	1	Belt Cover	3D Printed
3	1	Emergency Stop	Normally Open, Connected to reset pin
4	4	Stepper Drivers	CL42T-V41, DM542T, CL86T-V41
5	1	Interface	3D Printed
6	1	Electrical Case Support B	3D Printed
7	1	Electrical Case Support B	3D Printed
8	1	Wooden Board 1"	Metal or plastic would be safer
9	4	Terminal Block Connectors	Specific to Stepper Drivers
10	1	TinyG controller	<a href="https://github.com/synthetos/TinyG/wiki">https://github.com/synthetos/TinyG/wiki</a>
11	1	Rocker Switch, Illuminated	Generic
12	2	LRS-150-24	24V DC Power Supplies
13	7	Hex Drive M5 Bolt	Flat Head 20 mm lg
14	6	Flat Head Thread-Forming Screws for Plastic	6 Size, 3/4" lg

## Section 3 X AXIS

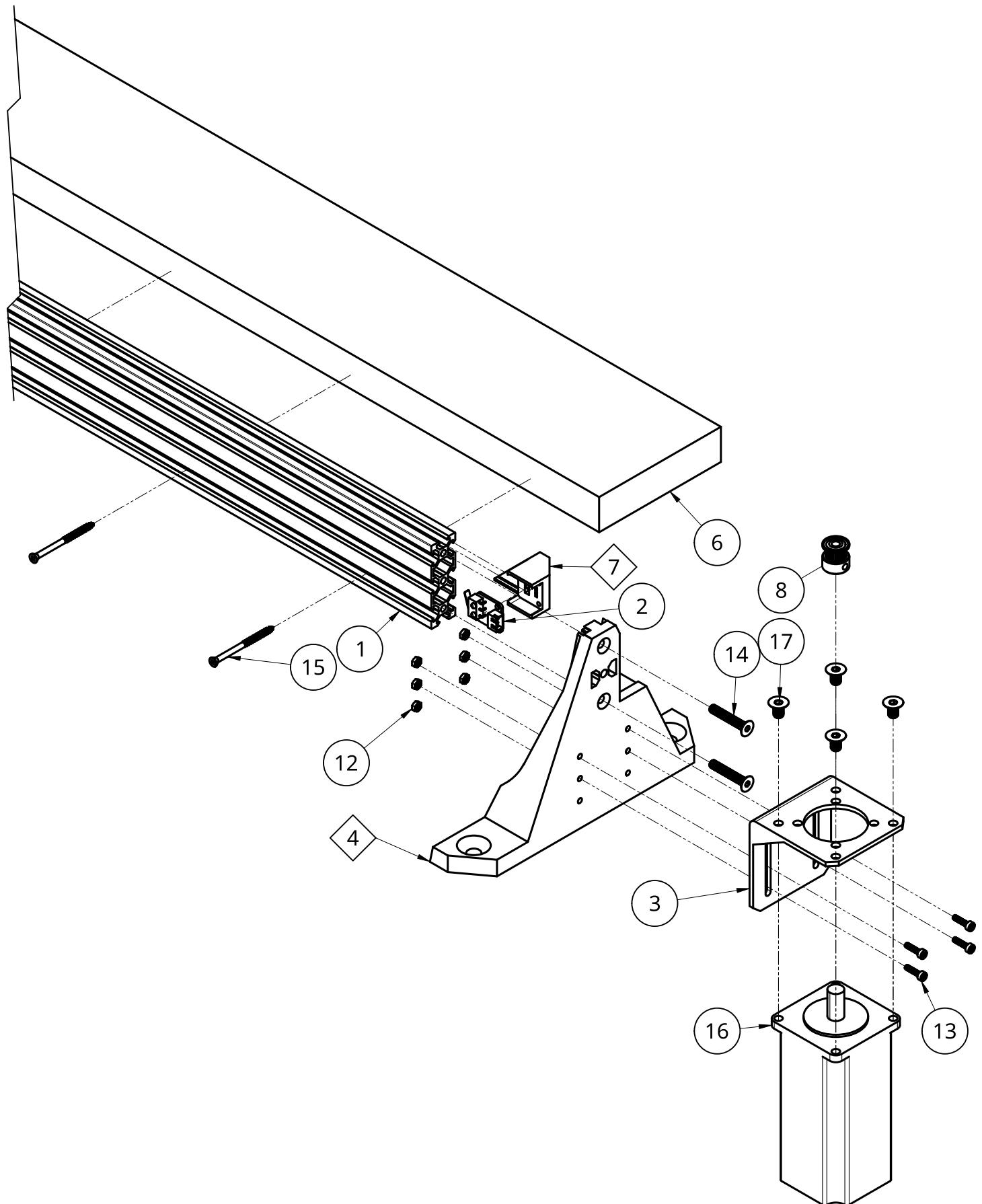


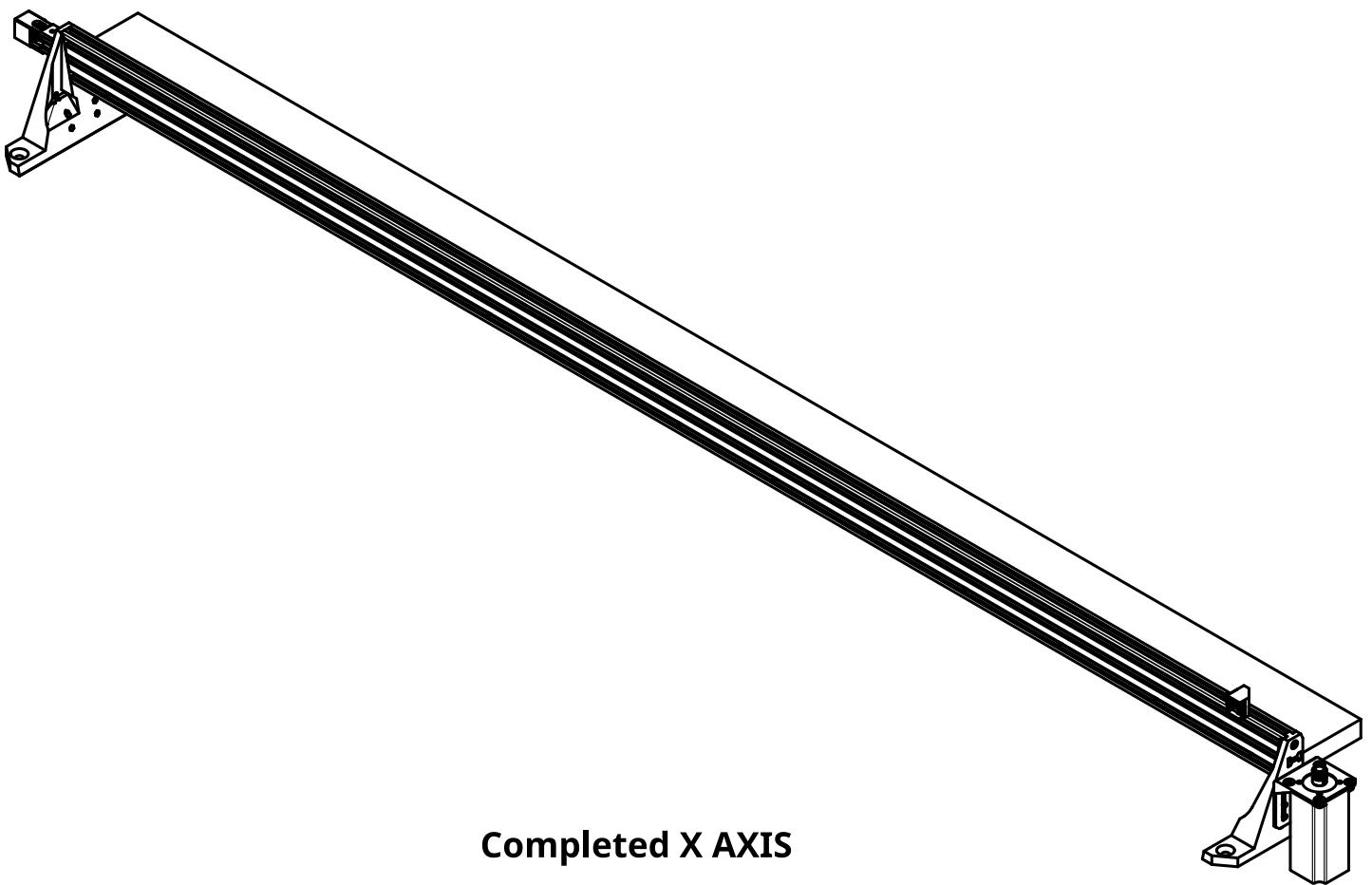
## Section 3.1 X AXIS Assembly

Item	Quantity	Part number	Description
1	1	20x60 V-Slot Rail Aluminum Extrusion	
2	1	Creality Limit Switch	
3	1	NEMA 23 Motor Mount	
4	1	Gantry Mount A	
5	1	Gantry Mount B	
6	1	1" Hardwood	75-3/4 x 4 x 1"
7	1	Limit Switch Mount	
8	1	GT2 Timing Belt Drive Pulley	Set screws not shown
9	1	GT2 Timing Belt Idler Pulley	Timing Belt not shown
10	1	Belt Tensioner Mount	
11	1	Creality Belt Tensioner Upgrade Kit	
12	6	M3 Nut	
13	4	M3 12mm Socket Head Bolt	
14	4	M5 25mm Flat Head Bolt	
15	13	Small Head Wood Screw	
16	1	NEMA 23 Stepper Motor	
17	4	M6 10mm Flat Head Bolt	



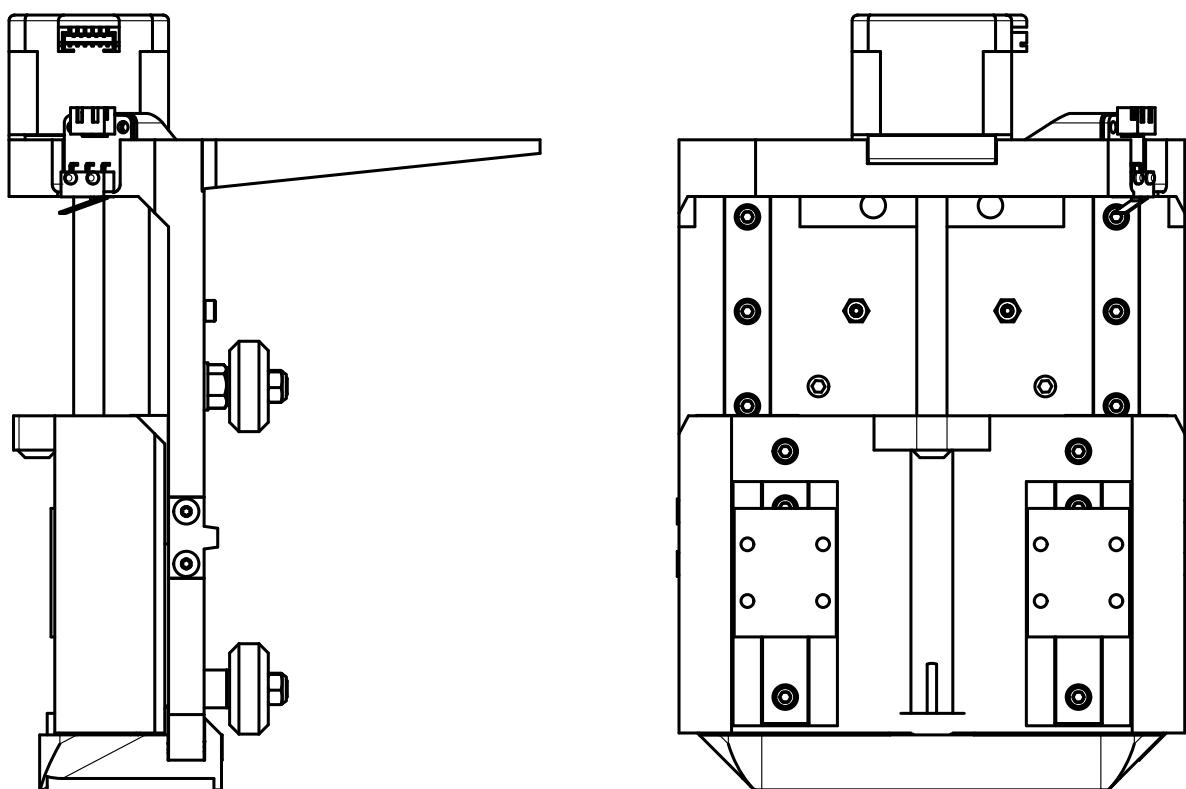
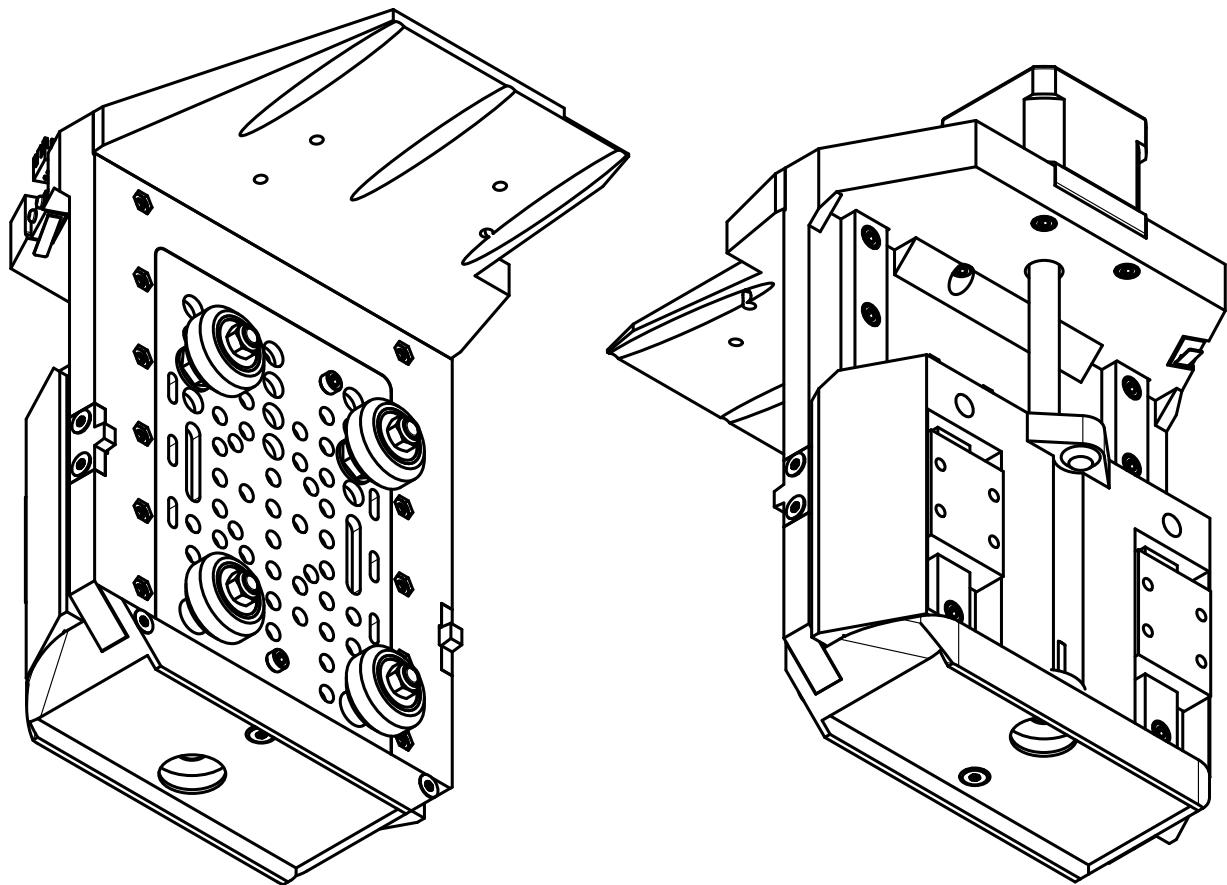
## Section 3.1 X AXIS Assembly



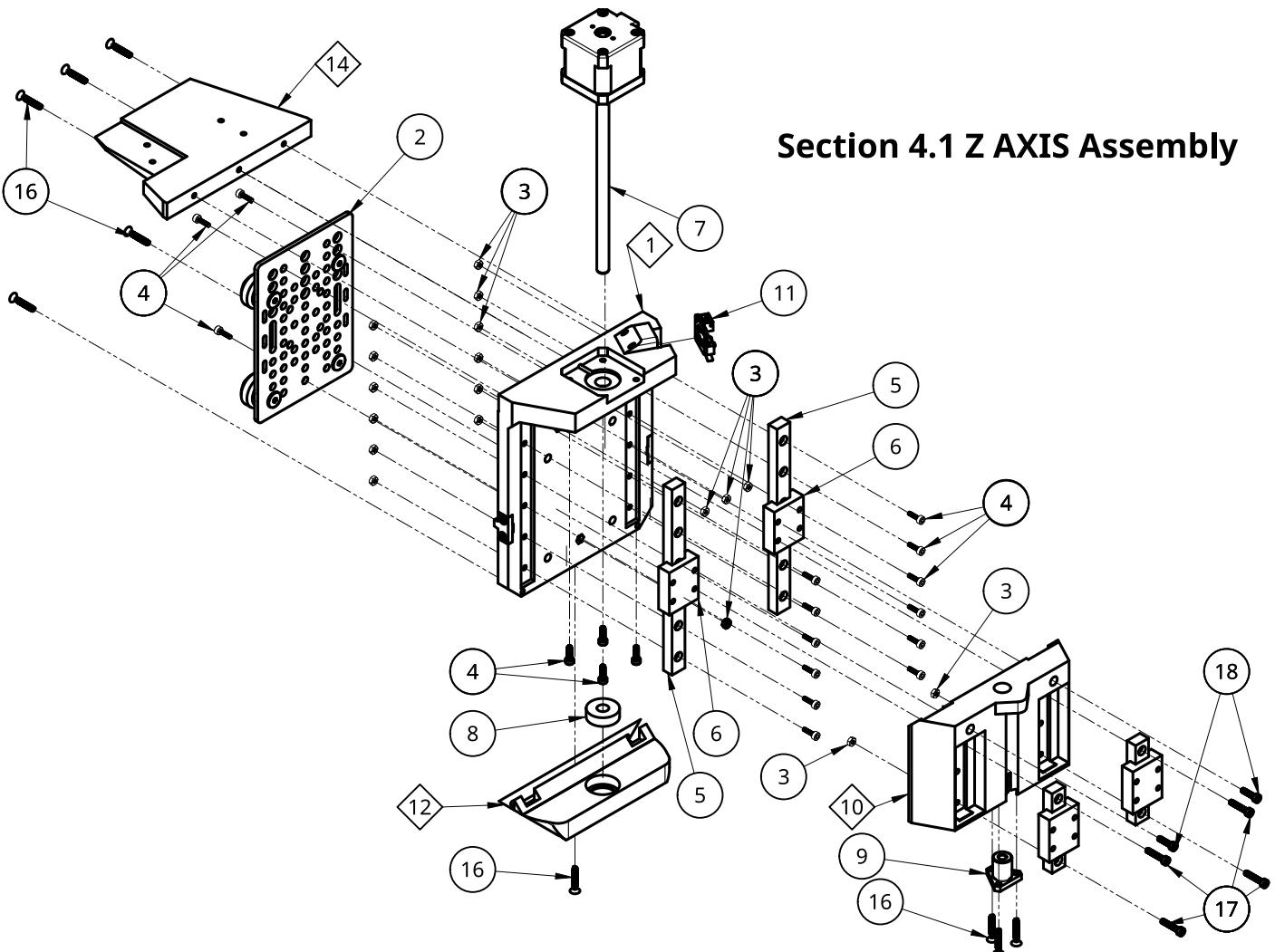


**Completed X AXIS**

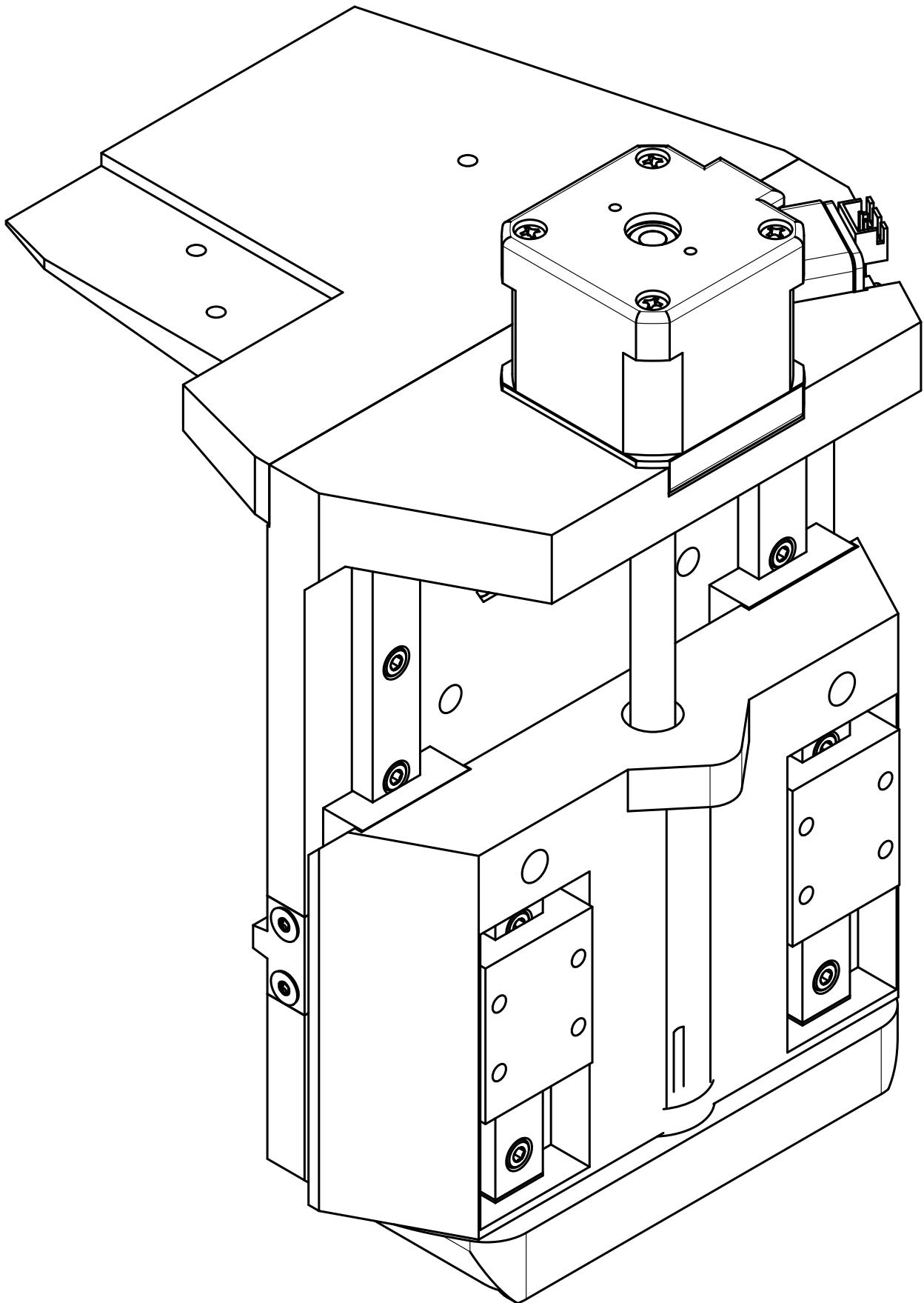
## Section 4 Z AXIS



## Section 4.1 Z AXIS Assembly

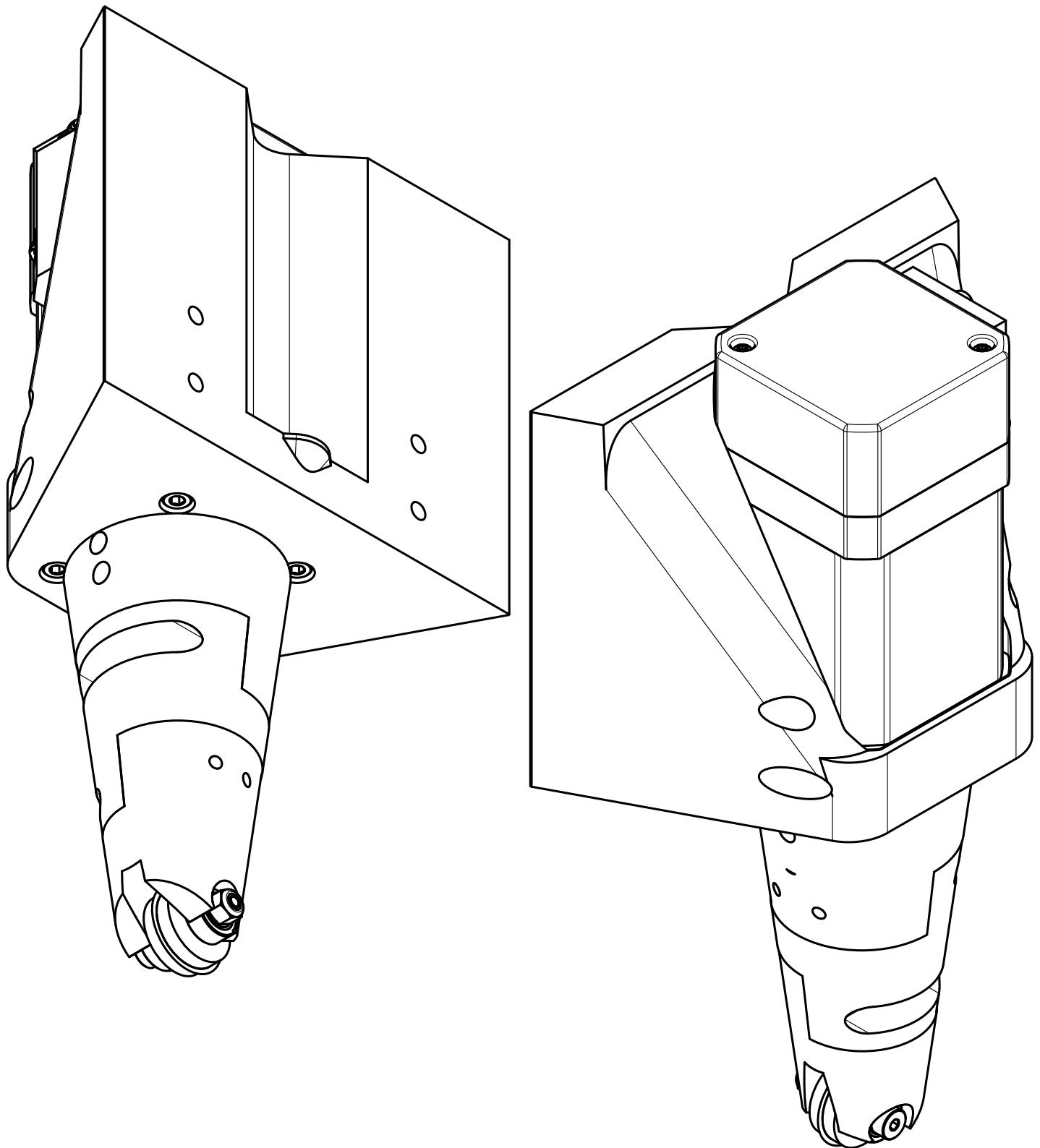


Item	Quantity	Part number	Description
1	1	Z Gantry Plate	3D Printed
2	1	Openbuilds V-Slot Gantry Kit - Universal	<a href="https://openbuildspartstore.com/">https://openbuildspartstore.com/</a>
3	19	M3 Nut	
4	19	M3 10mm Bolt	Socket Head
5	2	150mm Linear Rail	LML12B
6	4	12mm Linear Rail Slide	LML12B
7	1	NEMA 17 150mm Lead Screw Motor	STP-LE17-2A06ANN
8	1	8x21x7 Bearing	
9	1	Flanged Lead Screw Nut	Included with Lead Screw Motor
10	1	Z Primary Fixture	3D Printed
11	1	Creality Limit Switch	
12	1	Z Lower Plate	3D Printed
13	2	65mm Linear Rails	LML12B, Cut to Length
14	1	Cable Harnet Mount	3D Printed
15	2	GT2 timing belt clip	Timing belt not shown, Cut from 15' length
16	13	Thread forming Screws for plastic	Size 6
17	4	M3 16mm Bolt	Socket Head
18	2	M3 12mm Bolt	Socket Head

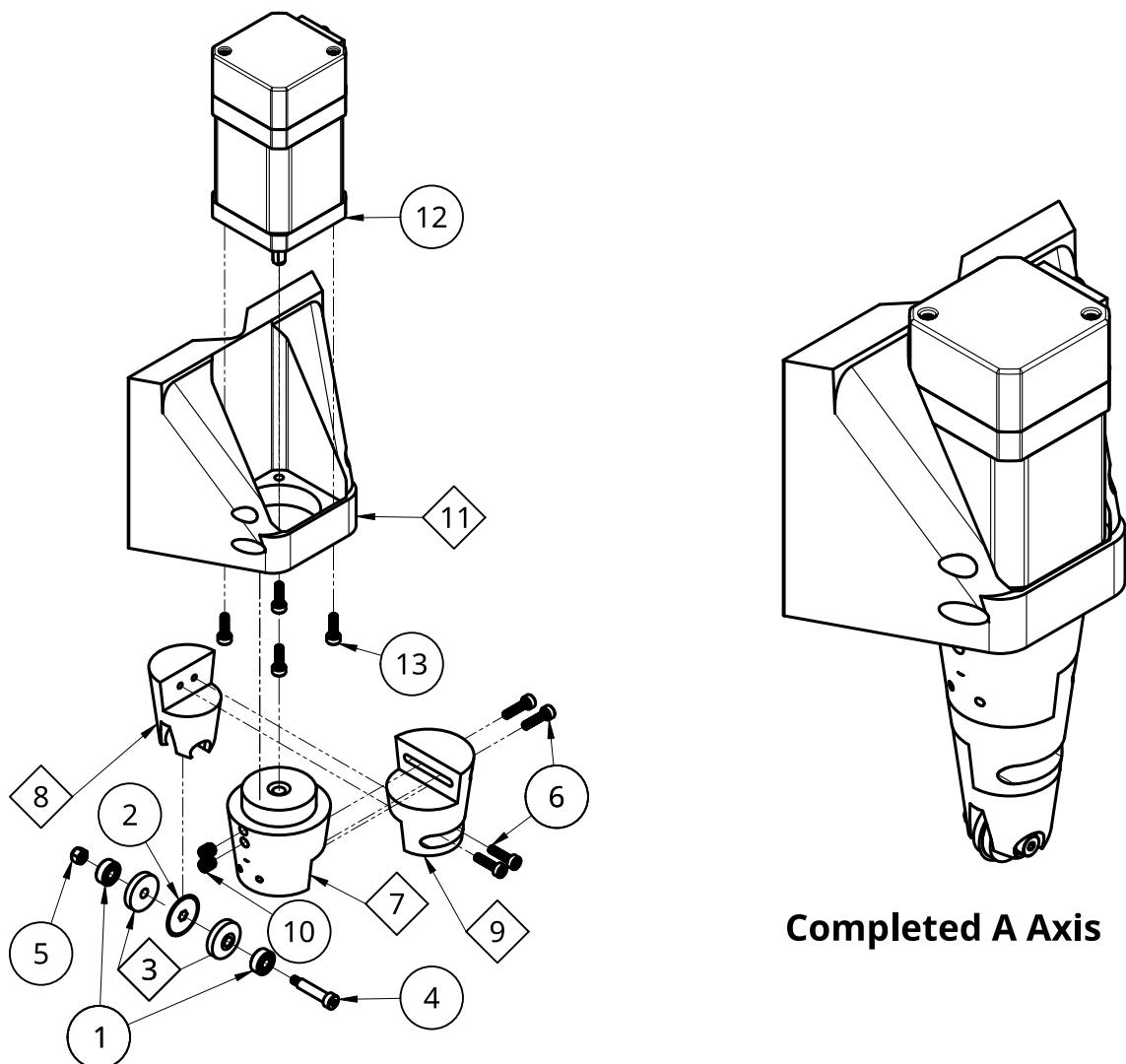


**Completed Z AXIS**

## Section 5 A AXIS



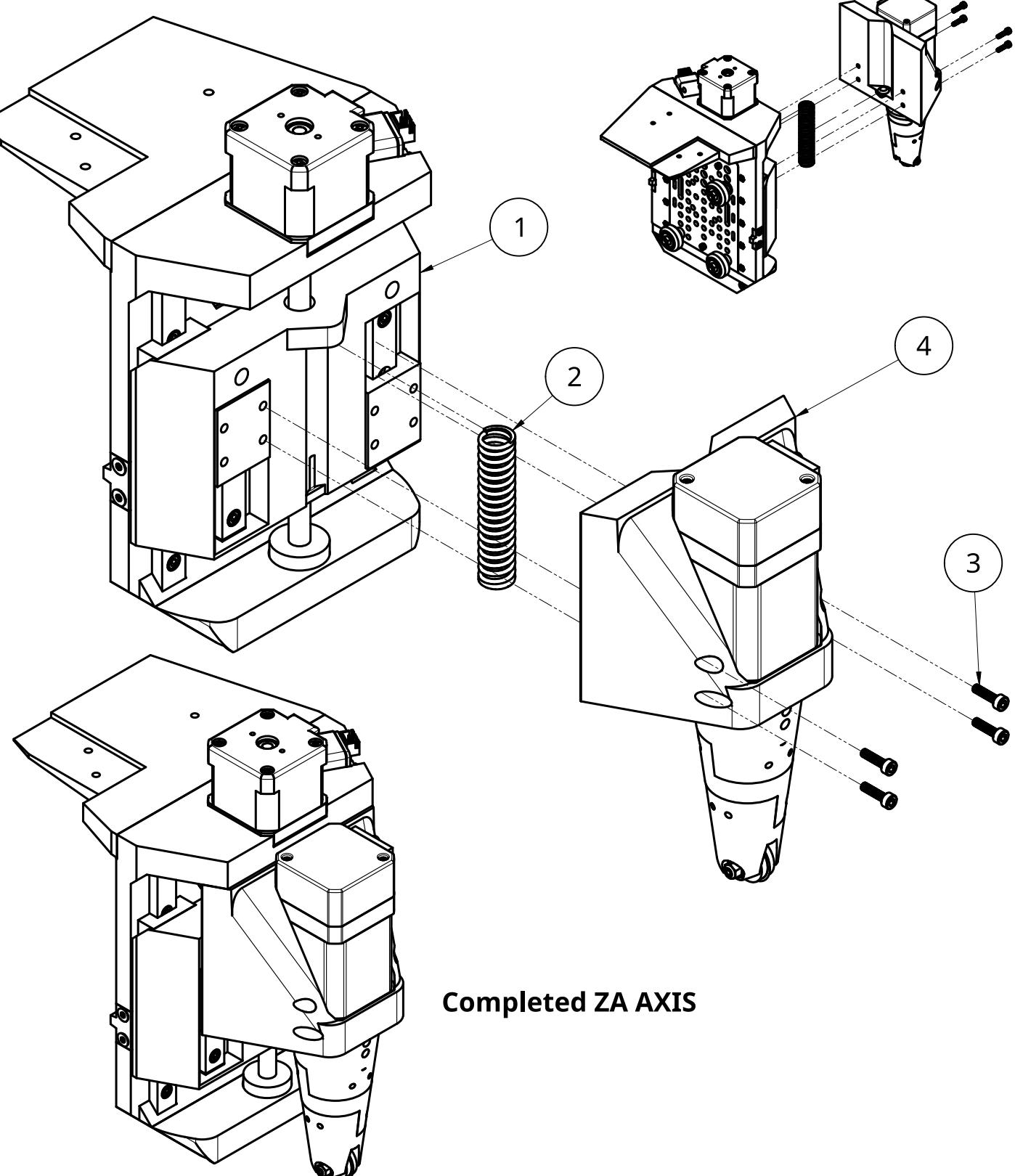
## Section 5.1 A AXIS Assembly



**Completed A Axis**

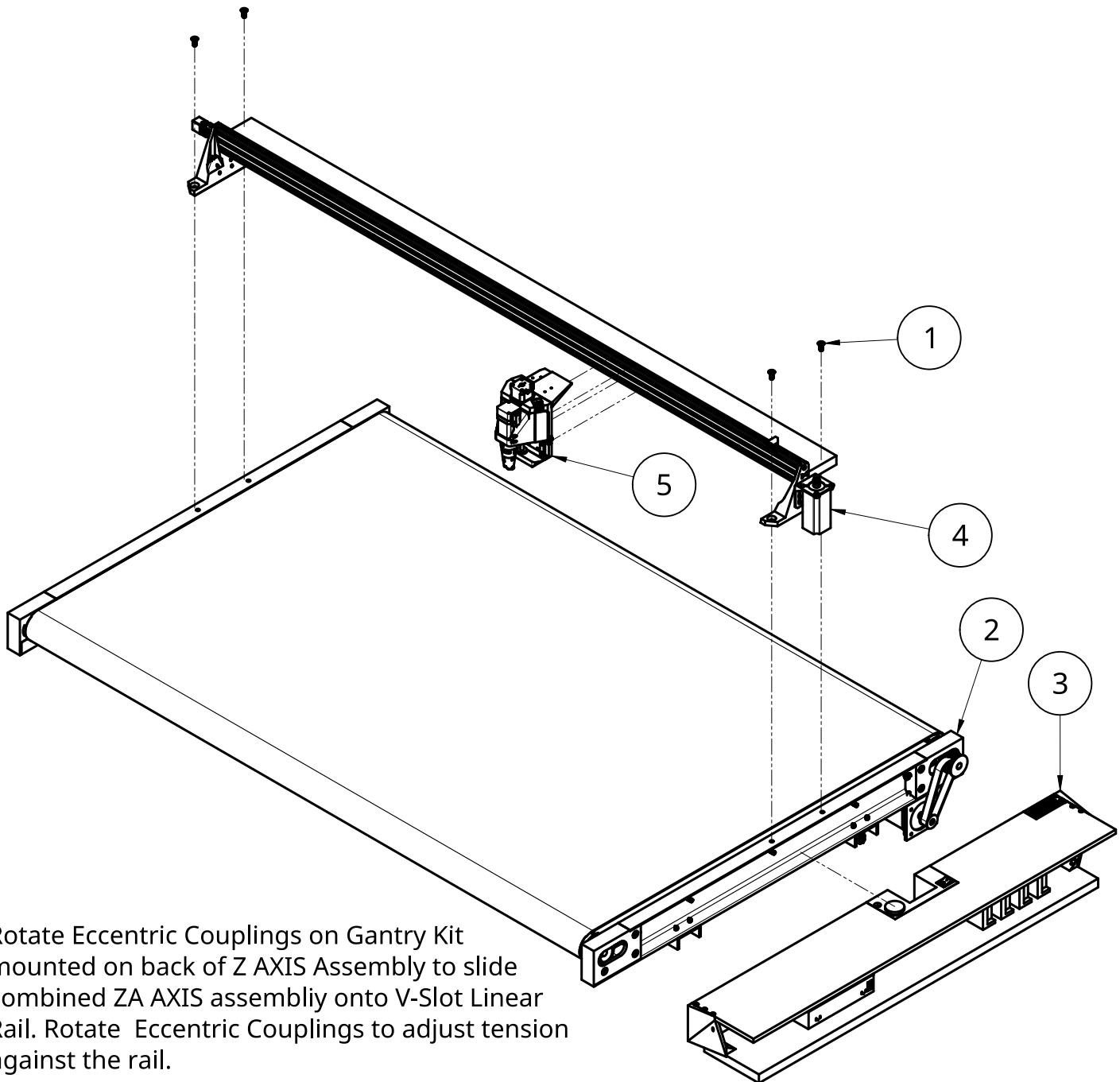
Item	Quantity	Part number	Description
1	2	104-2Z Bearing	4mm x 10mm x 4mm
2	1	18mm Rotary Blade	
3	2	Blade Tire	Depth limiting, 3D printed
4	1	M3 4mm Shoulder Screw	16mm lg
5	1	M3 Nylon Locknut	
6	4	M3 12mm Bolt	Socket Head
7	1	Tool - Motor Mount	3D Printed
8	1	Tool - Knife Mount	3D Printed
9	1	Tool - Tuning Column	3D Printed
10	2	M5 Set Screw 6mm	
11	1	A AXIS Motor Mount	3D Printed
12	1	NEMA 17 Closed Loop Stepper Motor	
13	4	M3 10mm Bolt	Socket Head

## Section 6 Combine ZA AXIS



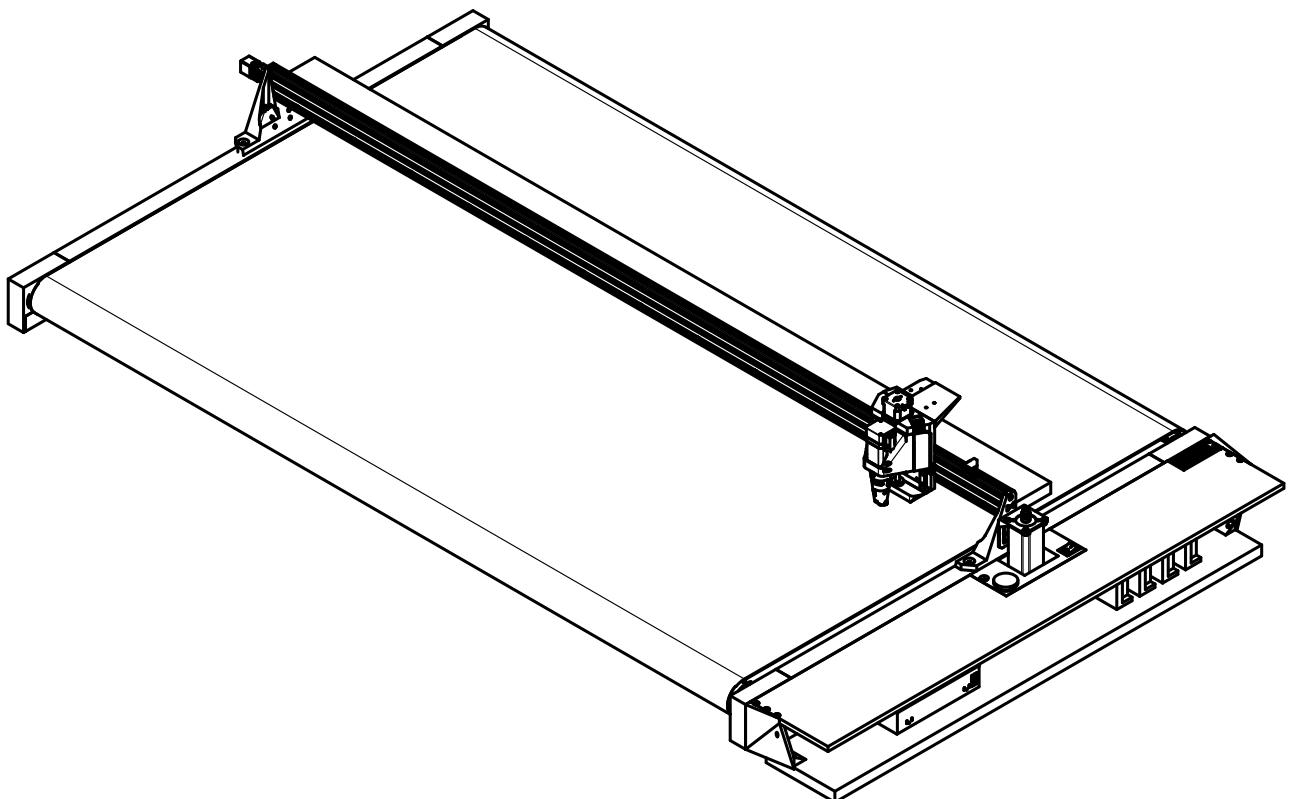
Item	Quantity	Part number	Description
1	1	Completed Z AXIS	
2	1	Steel Compression Spring	2.5" Long, 0.531" OD, 0.405" ID
3	4	M3 12mm Bolt	Socket Head
4	1	Completed A AXIS	

## Section 7 XYZA-Electrical

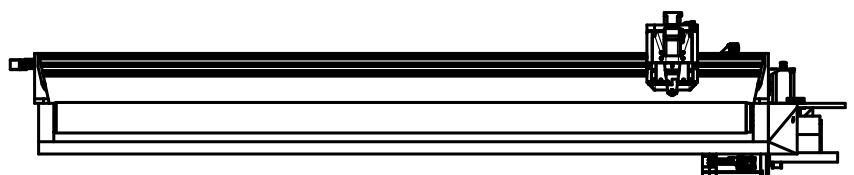
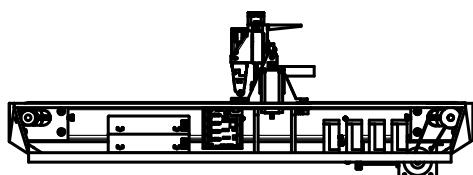


After ZA AXIS is installed onto X Axis, install GT2 6mm wide Timing Belt from Z AXIS Belt Clip to X AXIS NEMA 23 Motor Timing Belt Pulley to Belt Tensioner Idler Pulley to opposite Z AXIS Belt Clip. ~14' cut to length length

Item	Quantity	Part number	Description
1	4	M8 20mm Flat Head Bolt	
2	1	Complete Y AXIS	
3	1	Completed Electrical Case	Wire harness not shown
4	1	Completed X AXIS	
5	1	Completed ZA AXIS	



**Complete**



2/22/24 Rose Buttress

Supported in part by The Center For Craft and The Processing Foundation  
Questions: and Collaboration: rosebuttress@gmail.com