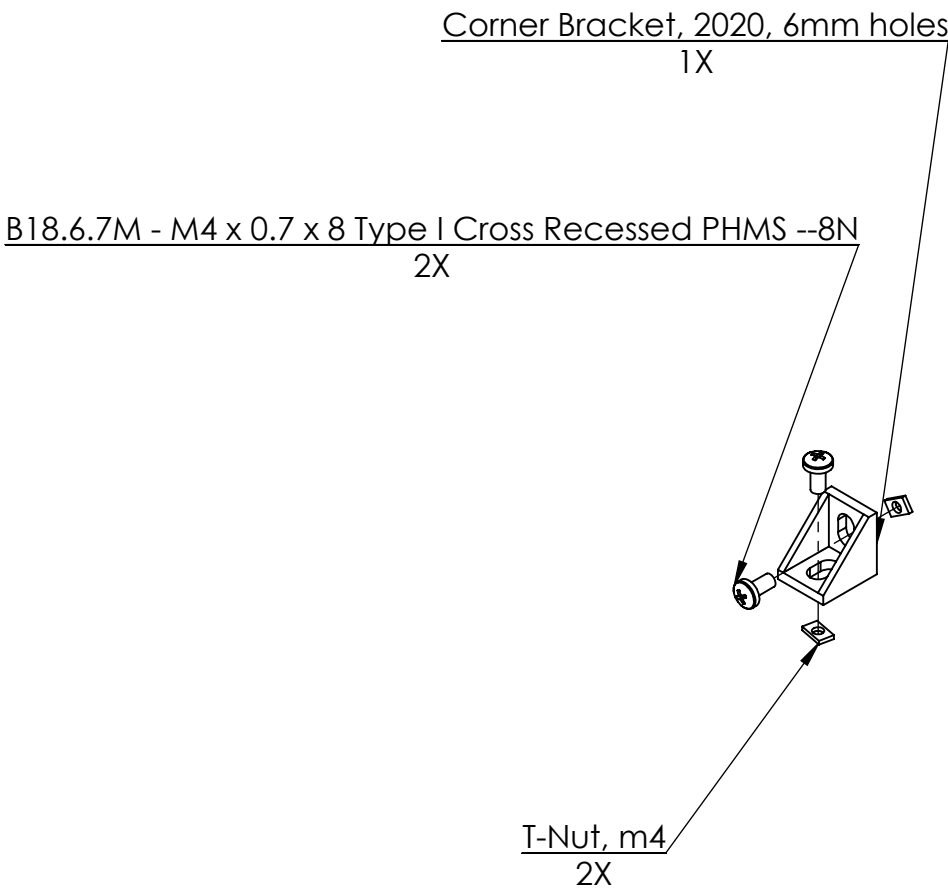
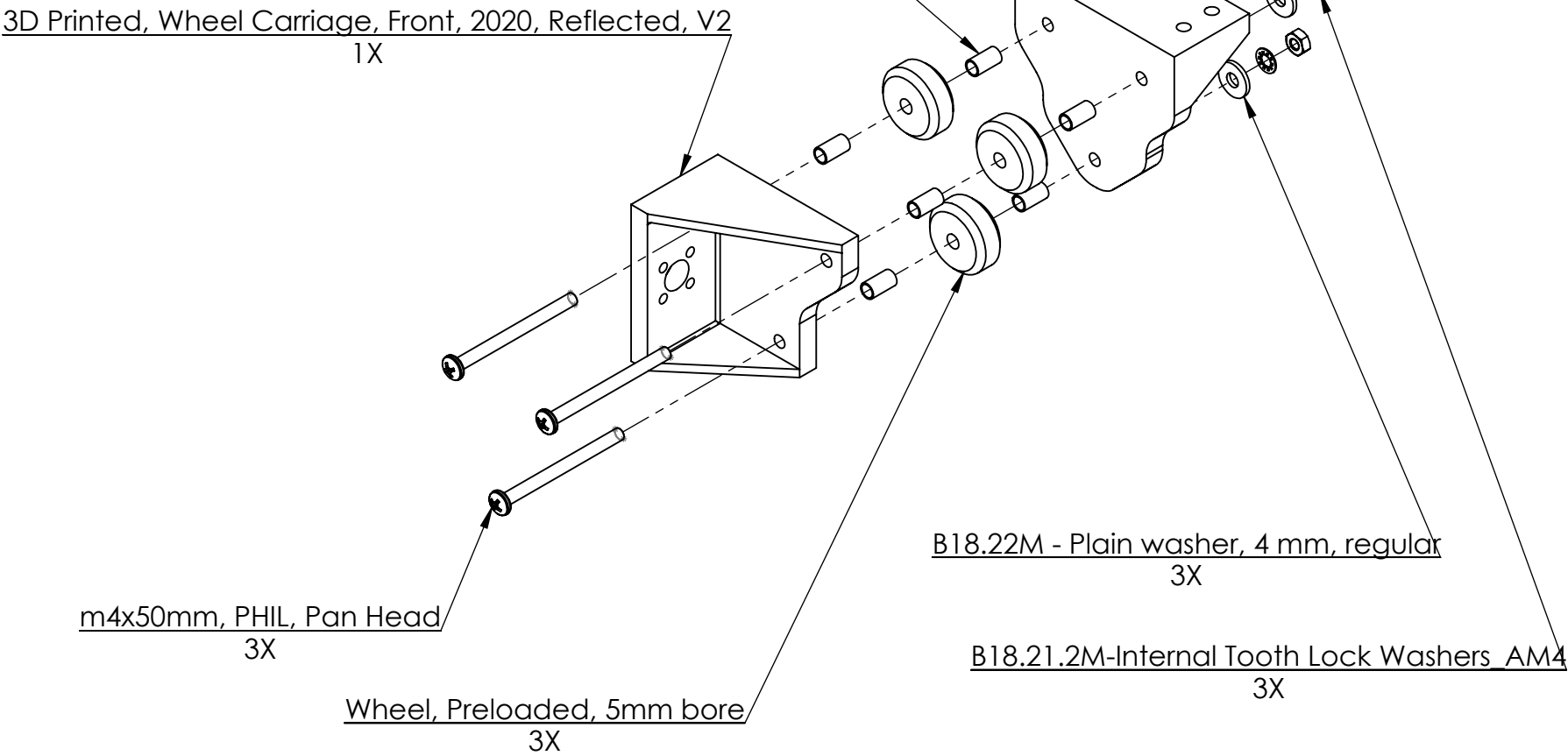


MECHANICAL



NOTES:
1. This common assembly is used throughout, always in this configuration.



NOTES:
1. Construction of Y-Axis carriage assembly.
2. Only documents RH version. LH version is identical except that the "3D Printed, Wheel Carriage, Front, 2020, V2" is used.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: <h1>ASSEMBLY DRAWING</h1>			
DIMENSIONS ARE IN INCHES		DRAWN	DL				03/29/21
TOLERANCES: FRACTIONAL ±		CHECKED					
ANGULAR: MACH ± BEND ±		ENG APPR.					
TWO PLACE DECIMAL ±		MFG APPR.					
THREE PLACE DECIMAL ±							
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MATERIAL					B	QC CNC Machine V2, Assembly (PRJ3)	0
FINISH							
DO NOT SCALE DRAWING							
				SCALE: 1:5	WEIGHT:	SHEET 1 OF 12	

4

3

2

1

B

B18.2.4.1M - Hex nut, Style 1, M3 x 0.5 --D-N
4X

Lead Screw Nut, M8
1X

B18.6.7M - M3 x 0.5 x 16 Type I Cross Recessed PHMS --16N
4X

NOTES:

1. Construction of Y-Axis carriage assembly.
2. Only documents RH version. LH version is identical except that the "3D Printed, Wheel Carriage, Front, 2020, V2" is used.

3

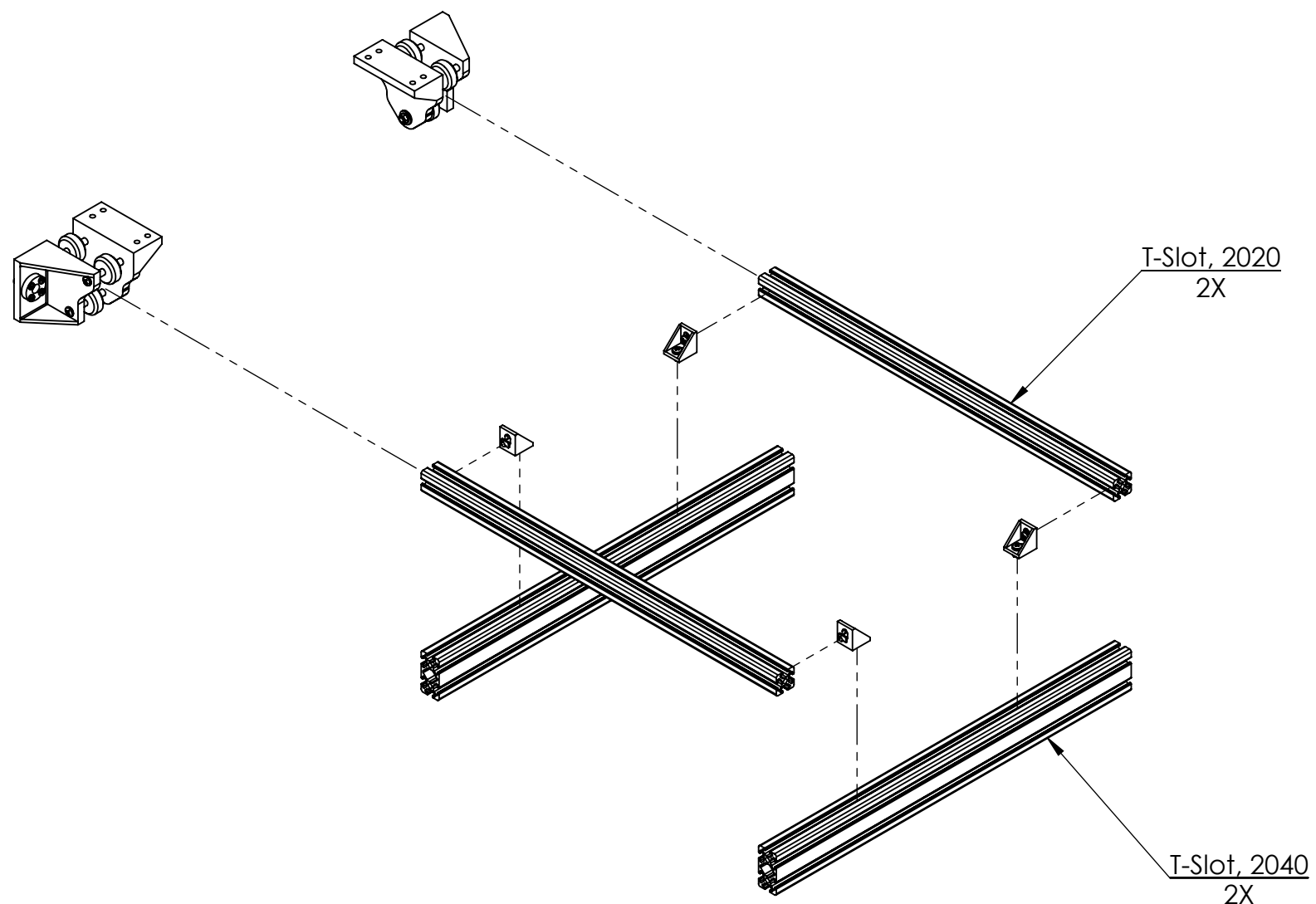
NOTES:

1. Place Y-axis carriage assemblies onto 2020 rail first. Check that carriage easily glides without too much play. If carriage is too tight, drill out printed holes on carriage front and back slightly larger.
2. All T-slot aluminum extrusion should be ordered or cut to 400mm.

2

1

B



A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: <div>ASSEMBLY DRAWING</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	DL	03/29/21			
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	ENG APPR.					
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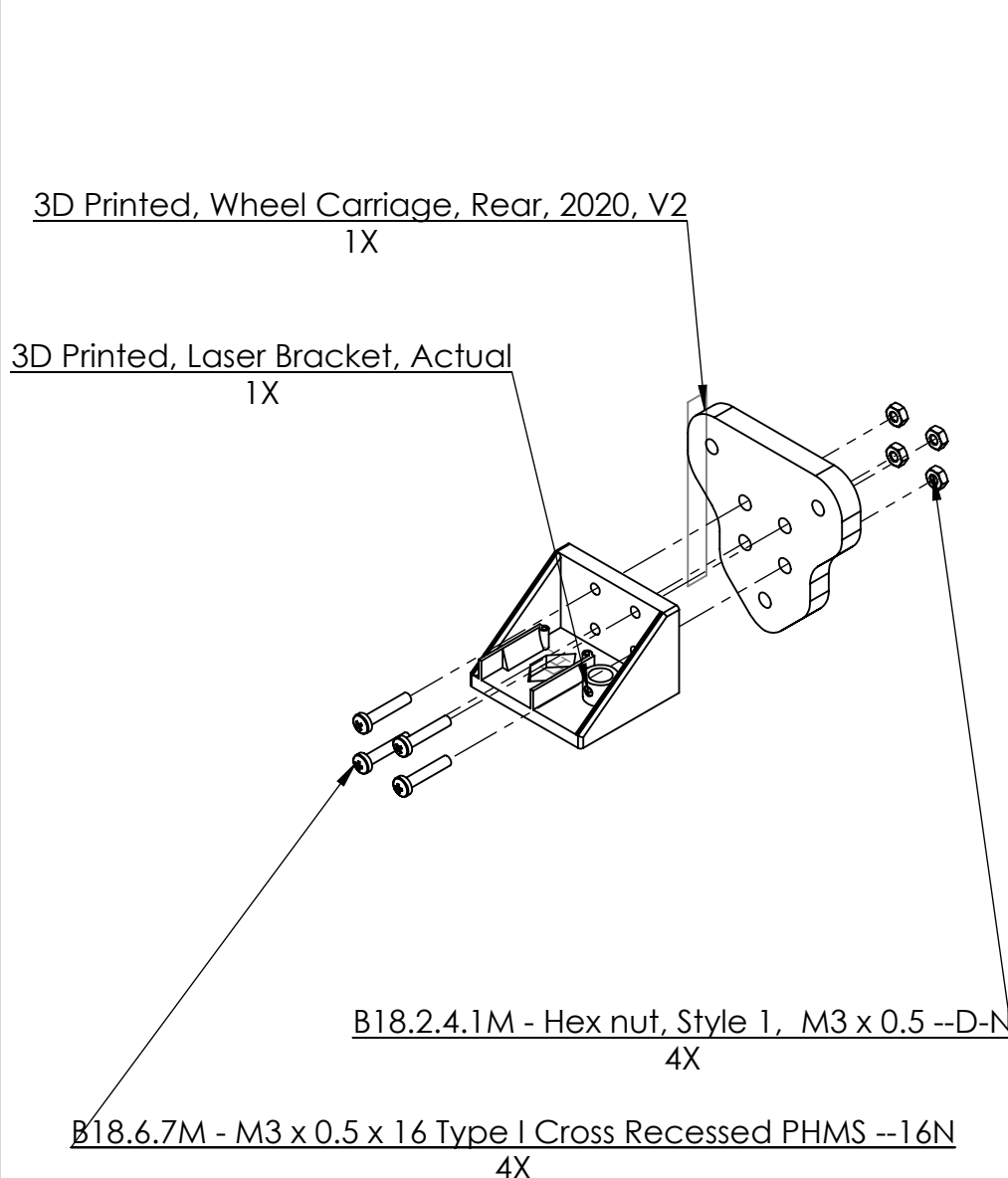
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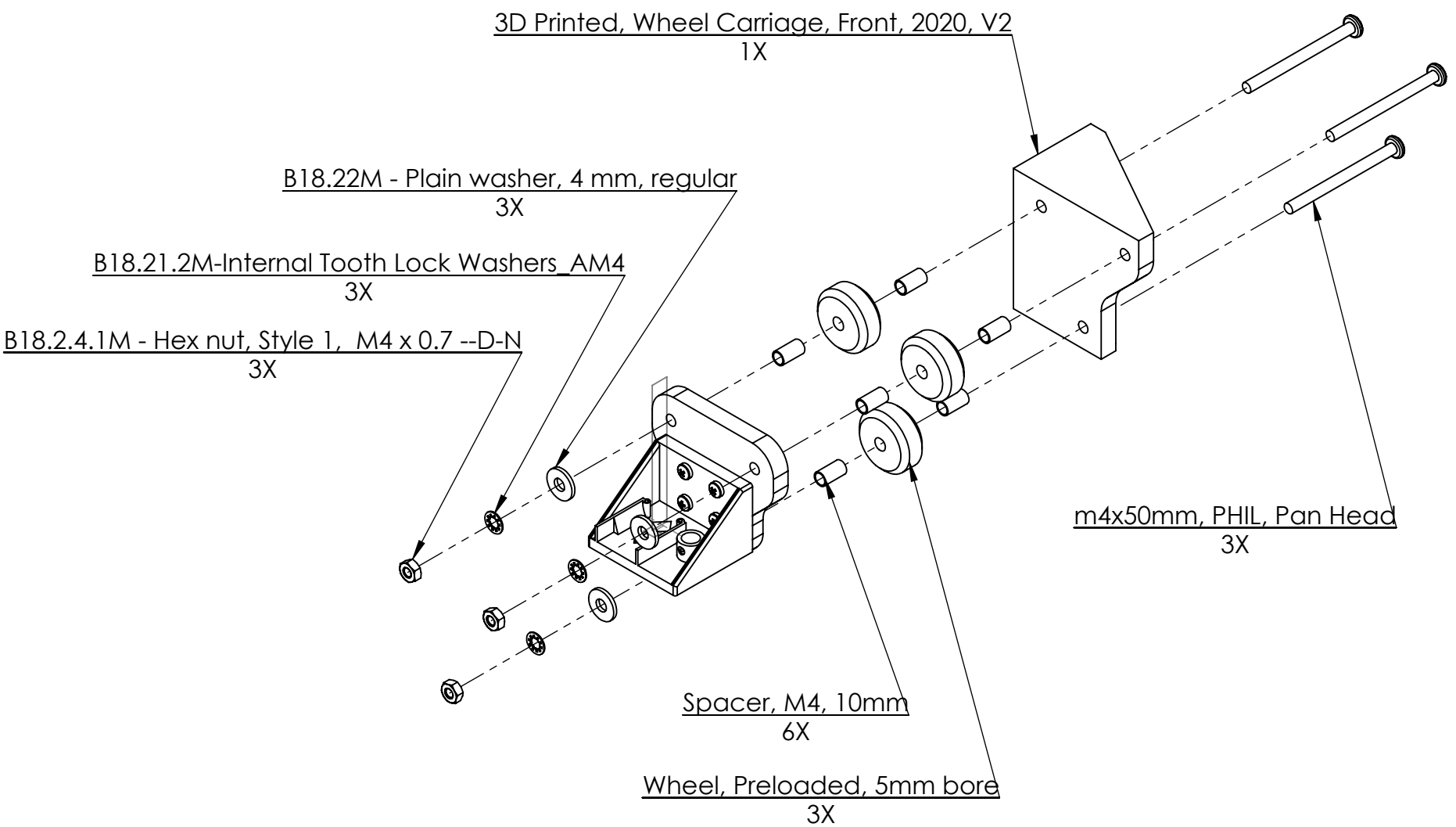
B



A

NOTES:
1. Construction of X-Axis carriage assembly.
2. Laser Range Finder bracket here depicted, however "3D Printed, Wheel Carriage, Rear, 2020, V2" may be edited to accommodate other tools suitable for 2D CNC.

3



B

A

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: <div>ASSEMBLY DRAWING</div>					
DIMENSIONS ARE IN INCHES		DRAWN	DL					03/29/21	
TOLERANCES: FRACTIONAL ±		CHECKED							
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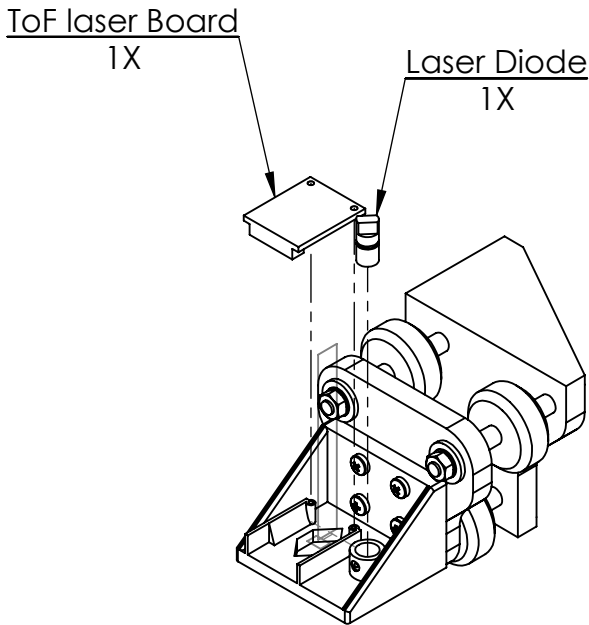
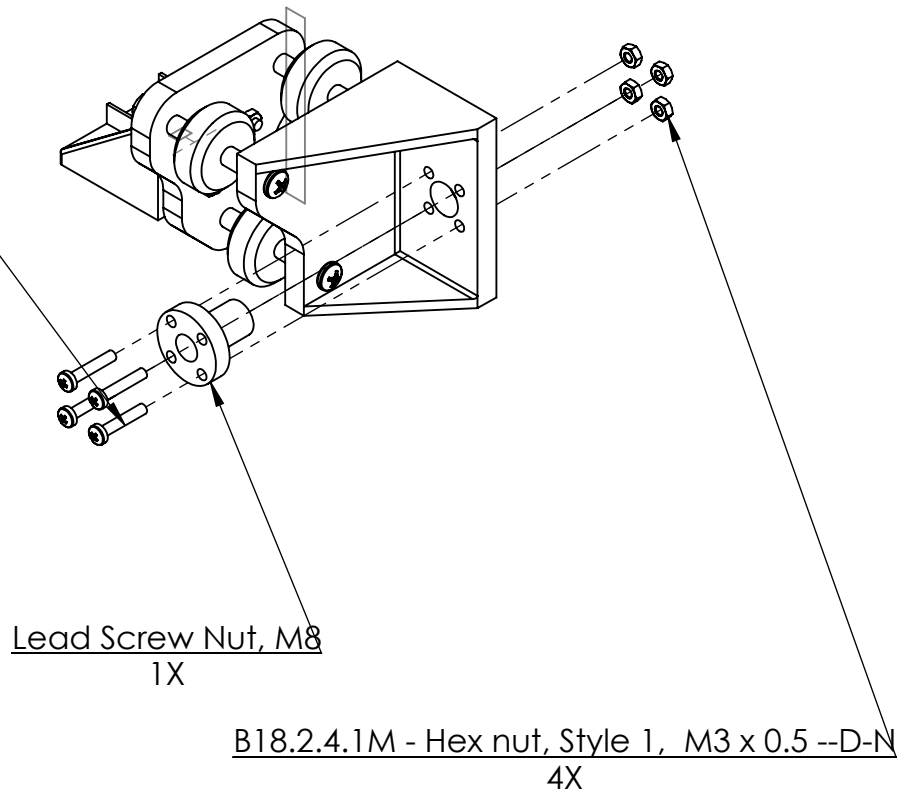
B

B

A

A

B18.6.7M - M3 x 0.5 x 16 Type I Cross Recessed PHMS --16N
4X



- NOTES:
1. Construction of X-Axis carriage assembly.
 2. Laser Range Finder and Diode are secured using self tapping M1.6 screws.

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DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		DRAWN	DL				03/29/21	
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DO NOT SCALE DRAWING								

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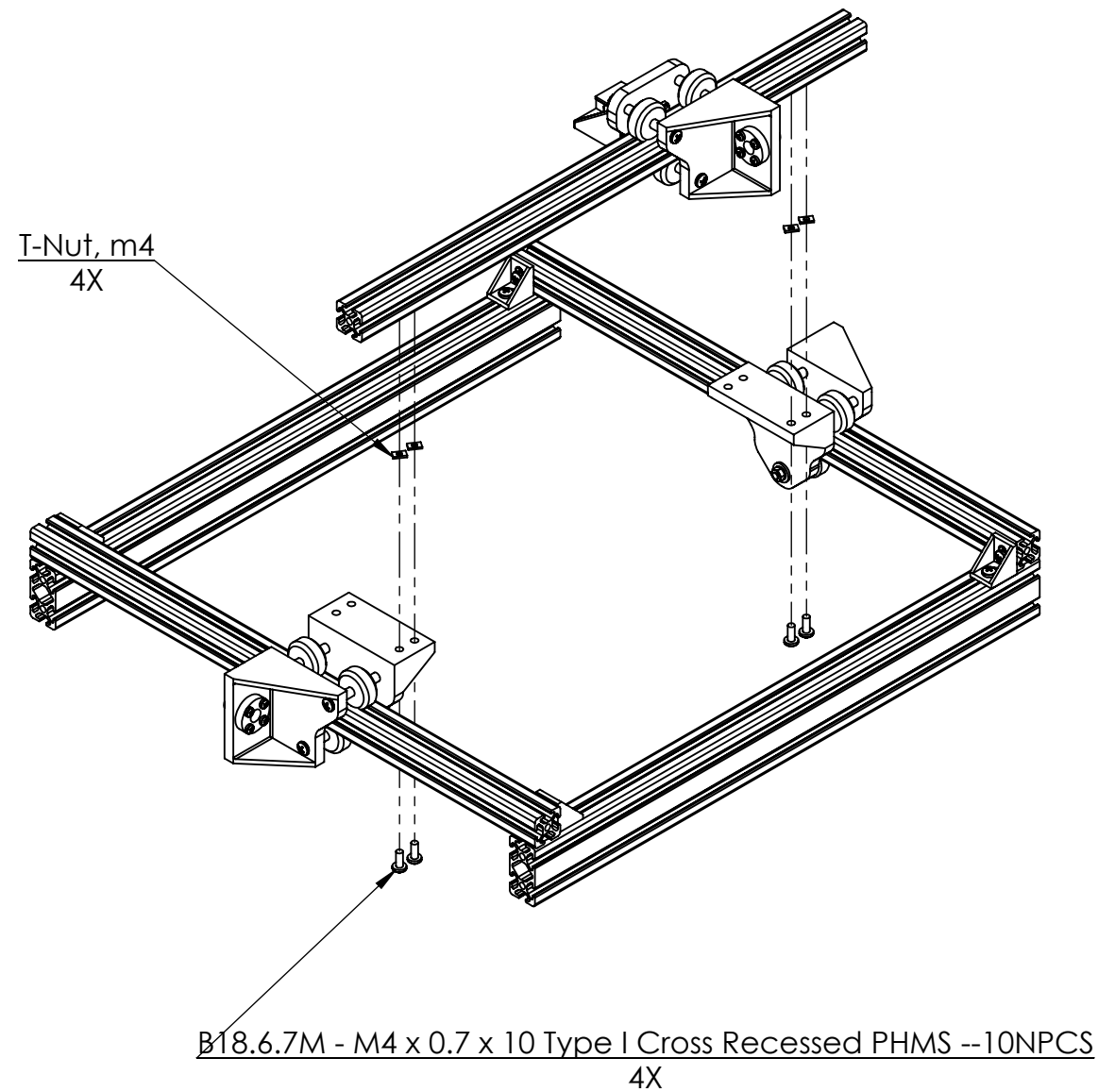
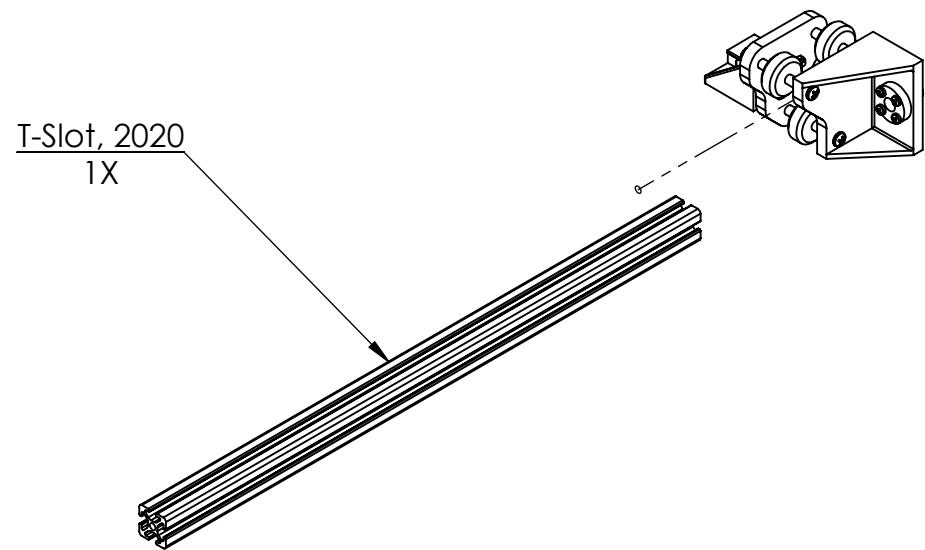
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4

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1



- NOTES:
1. Place X-axis carriage assembly onto 2020 rail first. Check that carriage easily glides without too much play. If carriage is too tight, drill out printed holes on carriage front and back slightly larger.
 2. All T-slot aluminum extrusion should be ordered or cut to 400mm.

UNLESS OTHERWISE SPECIFIED:		NAME		DATE		TITLE: <div>ASSEMBLY DRAWING</div>					
DIMENSIONS ARE IN INCHES		DRAWN		DL							
TOLERANCES:		CHECKED									
FRACTIONAL ±		ENG APPR.									
ANGULAR: MACH ± BEND ±		MFG APPR.									
TWO PLACE DECIMAL ±						DISTRIBUTED UNDER CC THE INFORMATION CONTAINED IN THIS DRAWING IS DISTRIBUTED UNDER A CC LICENSE. THE AUTHOR AND DESIGNER ACCEPTS NO LIABILITY FOR THE USE OR MISUSE OF THE INCLUDED DESIGN.	SIZE DWG. NO. QC CNC Machine V2, Assembly (PRJ3)	REV 0			
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INTERPRET GEOMETRIC TOLERANCING PER:											
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DO NOT SCALE DRAWING											

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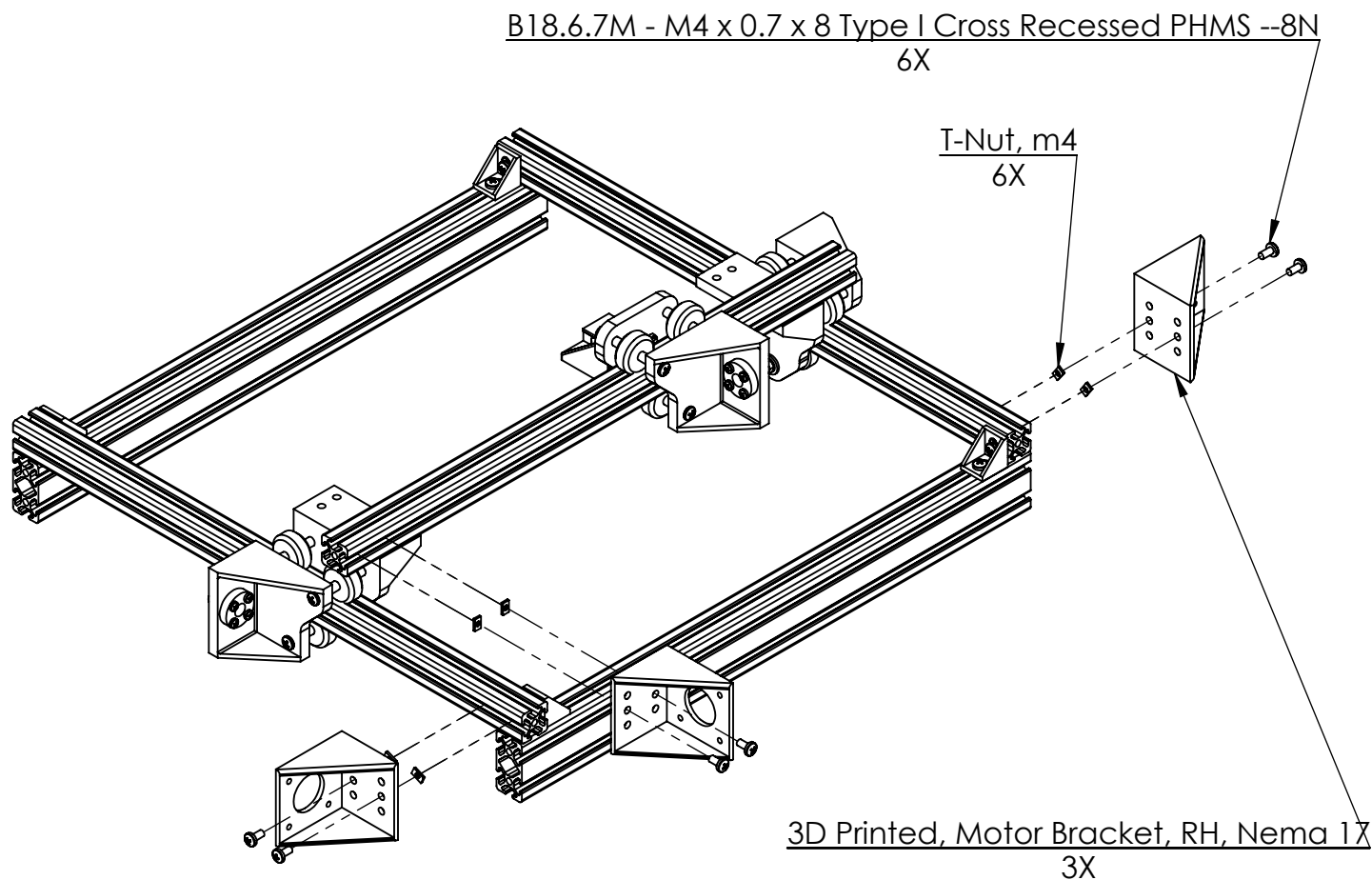
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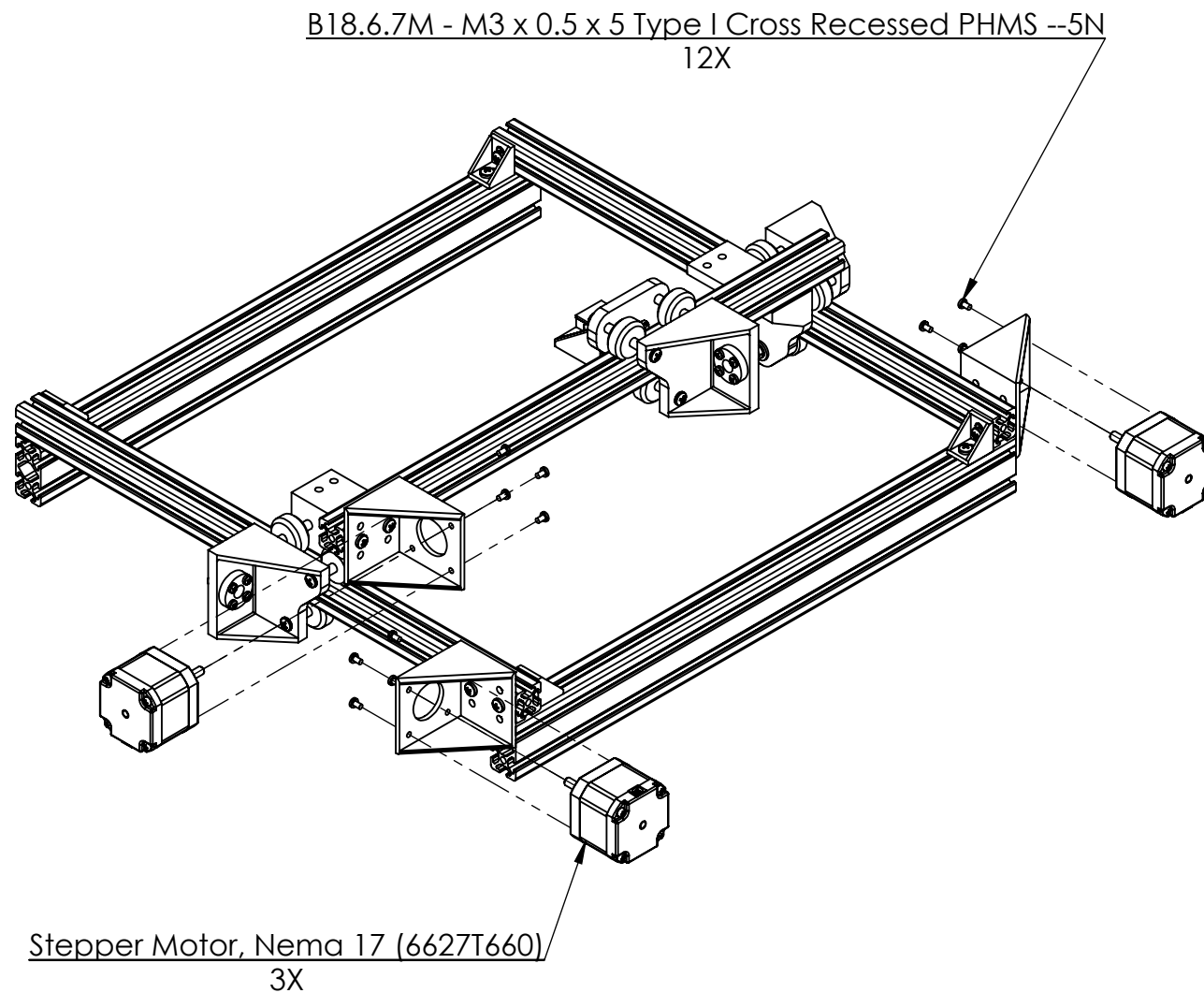
1

B



NOTES:
1. Only use center holes of Motor Brackets. LH and RH holes are artifacts of previous design iterations.

B



A

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DIMENSIONS ARE IN INCHES		DRAWN	DL				03/29/21			
TOLERANCES:		CHECKED								
FRACTIONAL ±		ENG APPR.								
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TWO PLACE DECIMAL ±										
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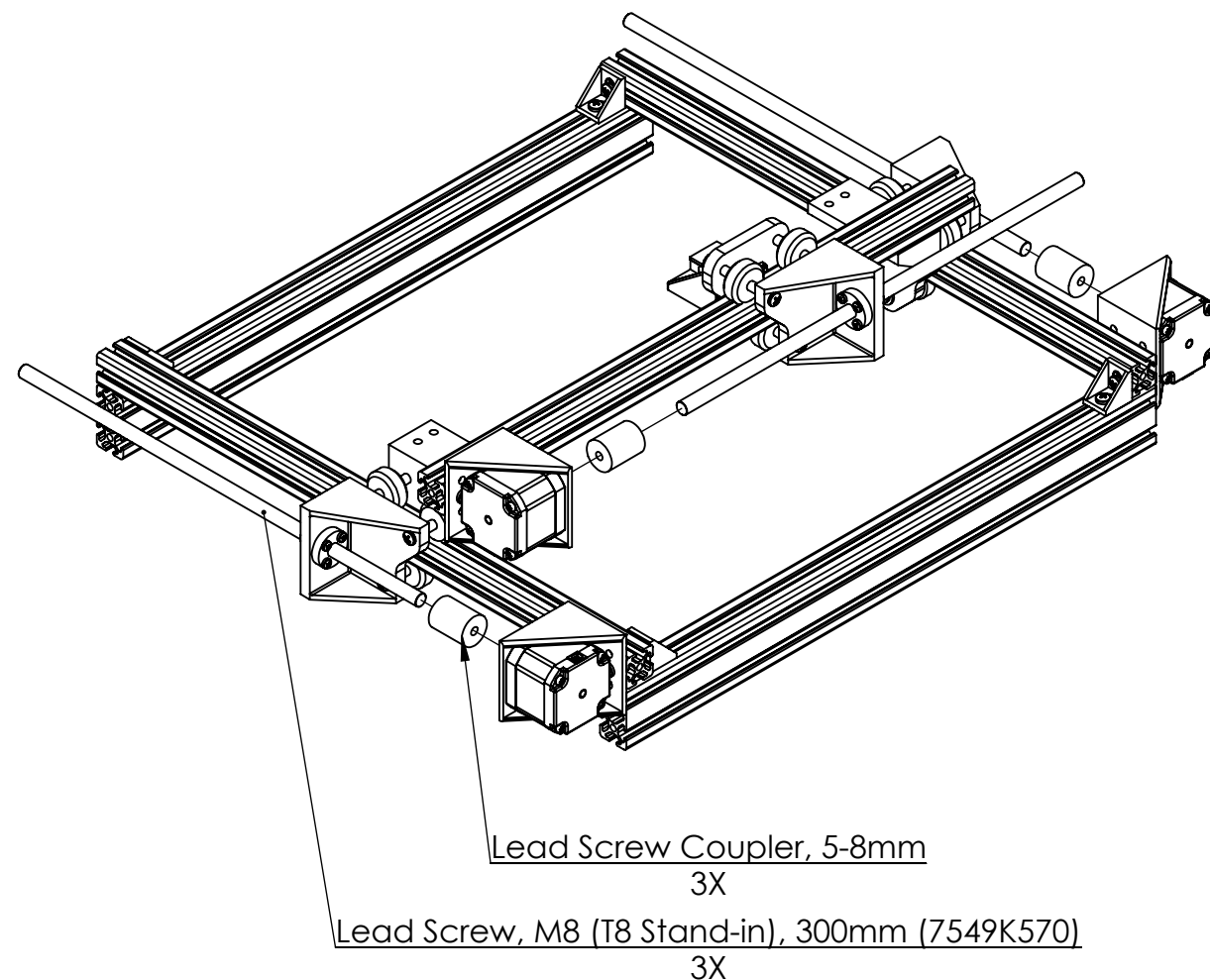
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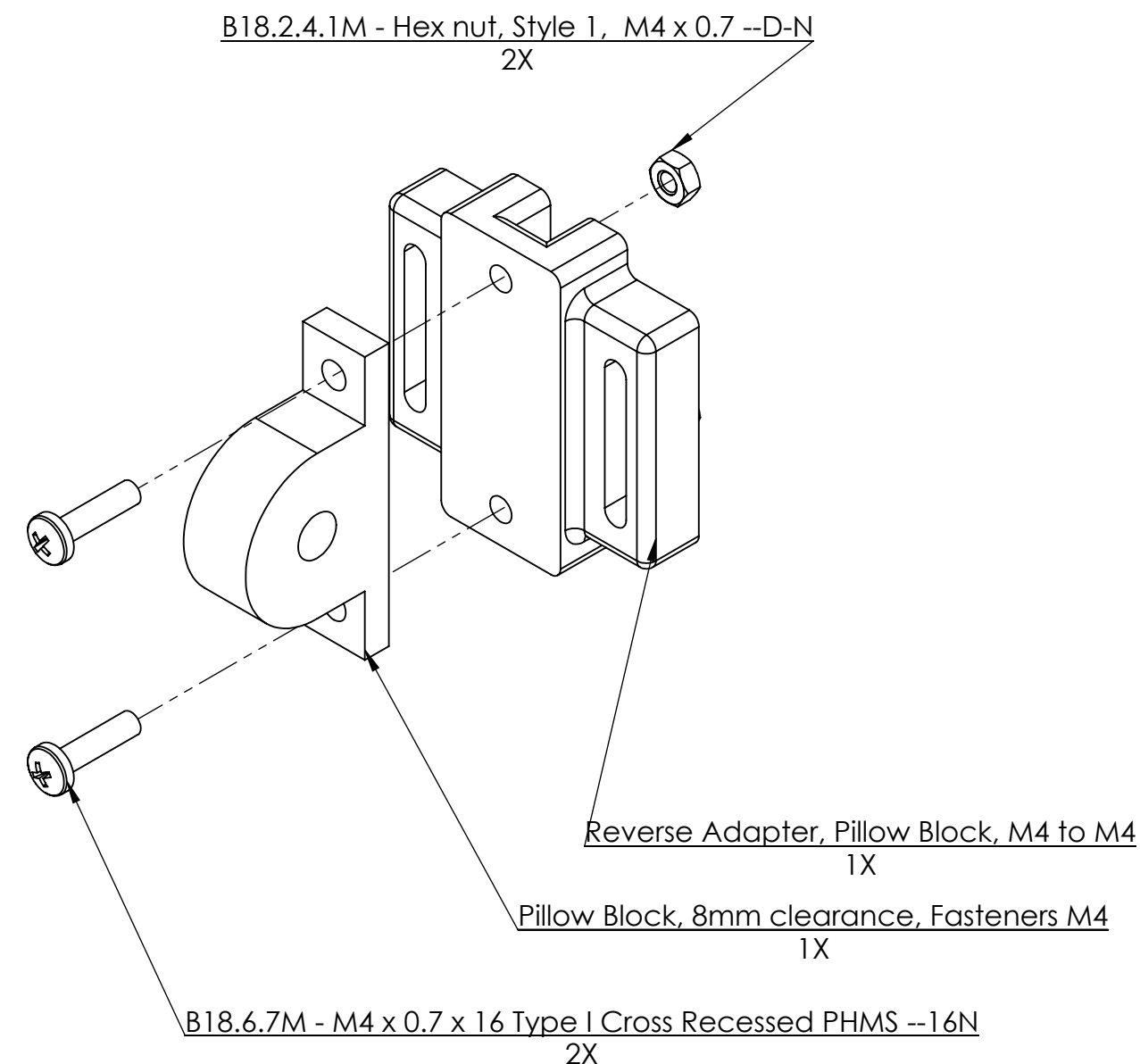
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1



NOTES:

1. Thread lead screws through nut in Y and X axis and tighten screws on couplers to fasten.
2. Ensure that lead screw is parallel to extrusion (non-parallel screws will be most obviously noticed as x-axis approaches Y steppers). If not add shims (paper or tin-foil) underneath stepper bracket until parallel.
3. Depicts Pillow block assembly which is commonly used throughout the rest of the assembly.



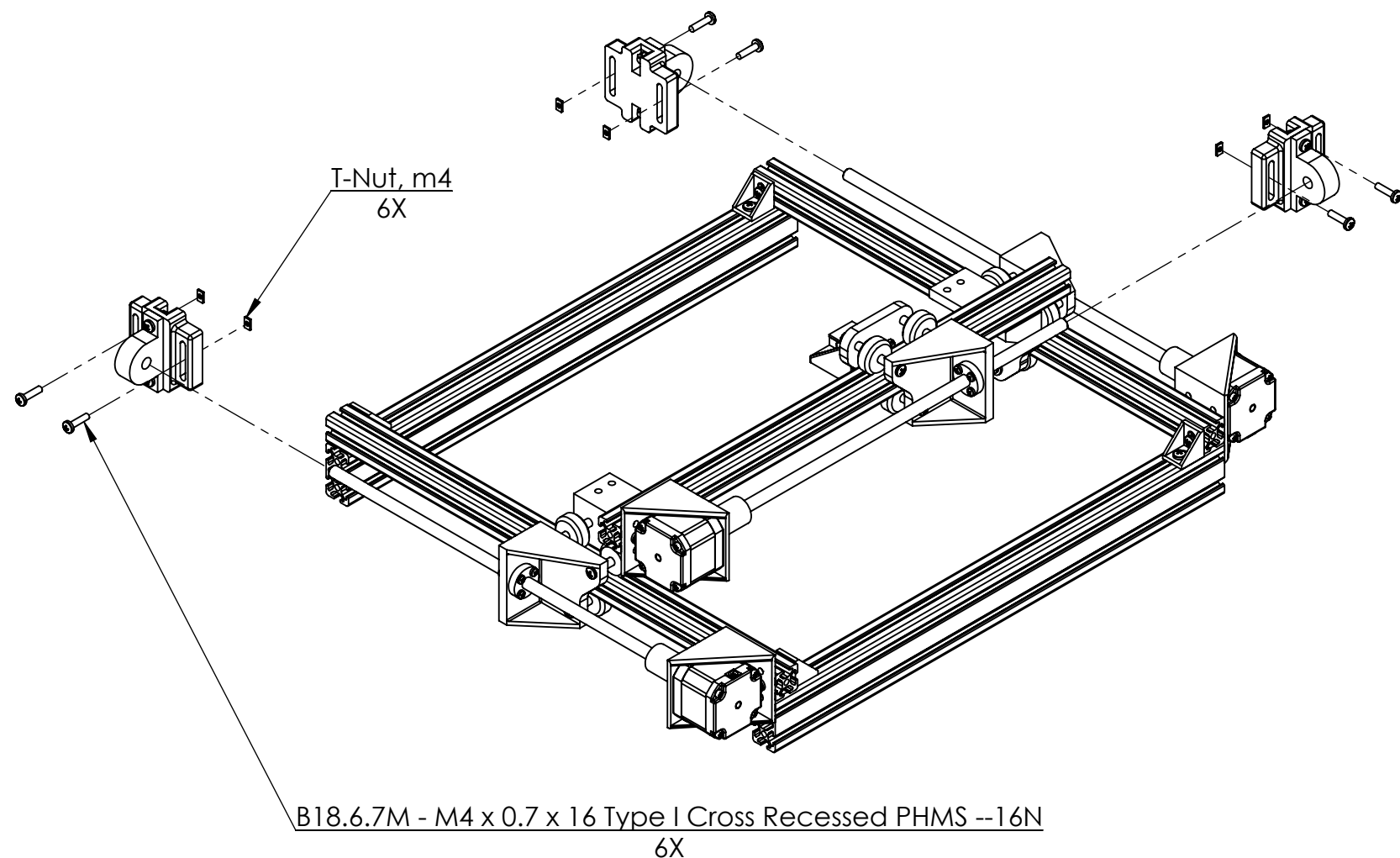
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	MFG APPR.		
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MATERIAL			
FINISH			
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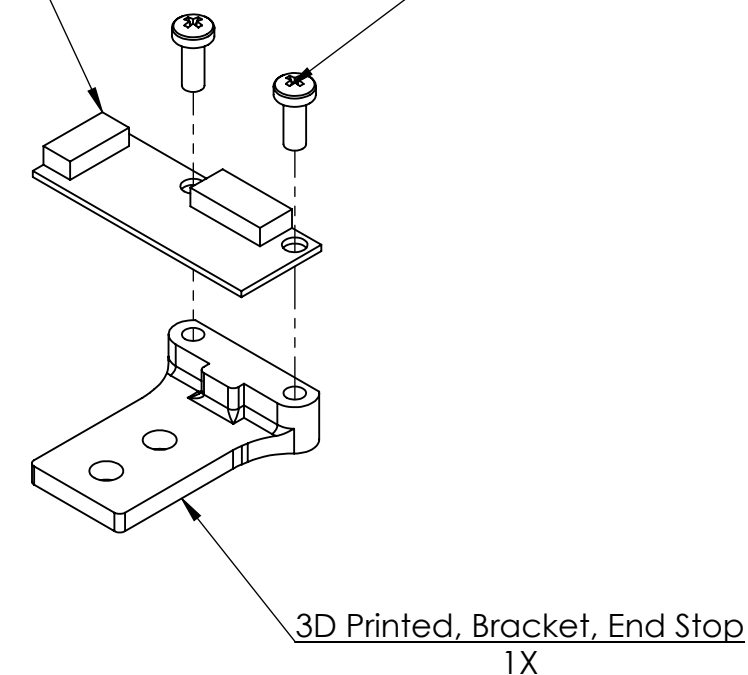


NOTES:

1. Thread T-nuts loosely into pillow block assembly. Slide T-nuts into channel, and bearing over rod. Tighten screw on bearing to couple bearing and lead screw. Add shims underneath pillow block assembly until gap is almost completely taken up, only then should T-nut screws be tighten slightly to locate.
2. WARNING: Over-tightening T-nuts or failure to add appropriate shims will bow the threaded rod, causing grinding, skipped steps, and possibly premature failure of the lead screw nut.

B18.6.7M - M3 x 0.5 x 8 Type I Cross Recessed PHMS --8NPCS
2X

Board, End Stop
1X



NOTES:

1. Depicts End-stop assembly which is commonly used throughout the rest of the assembly

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DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	DL	03/29/21			
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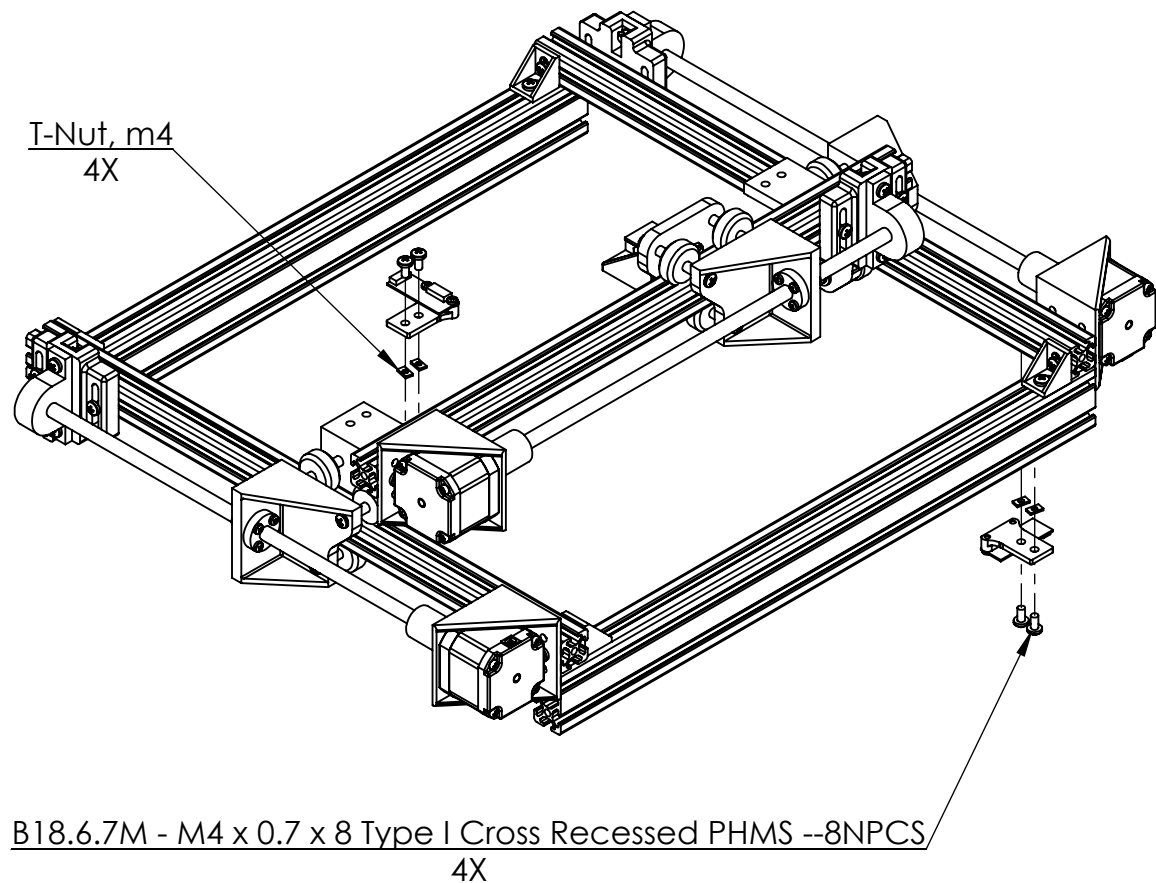
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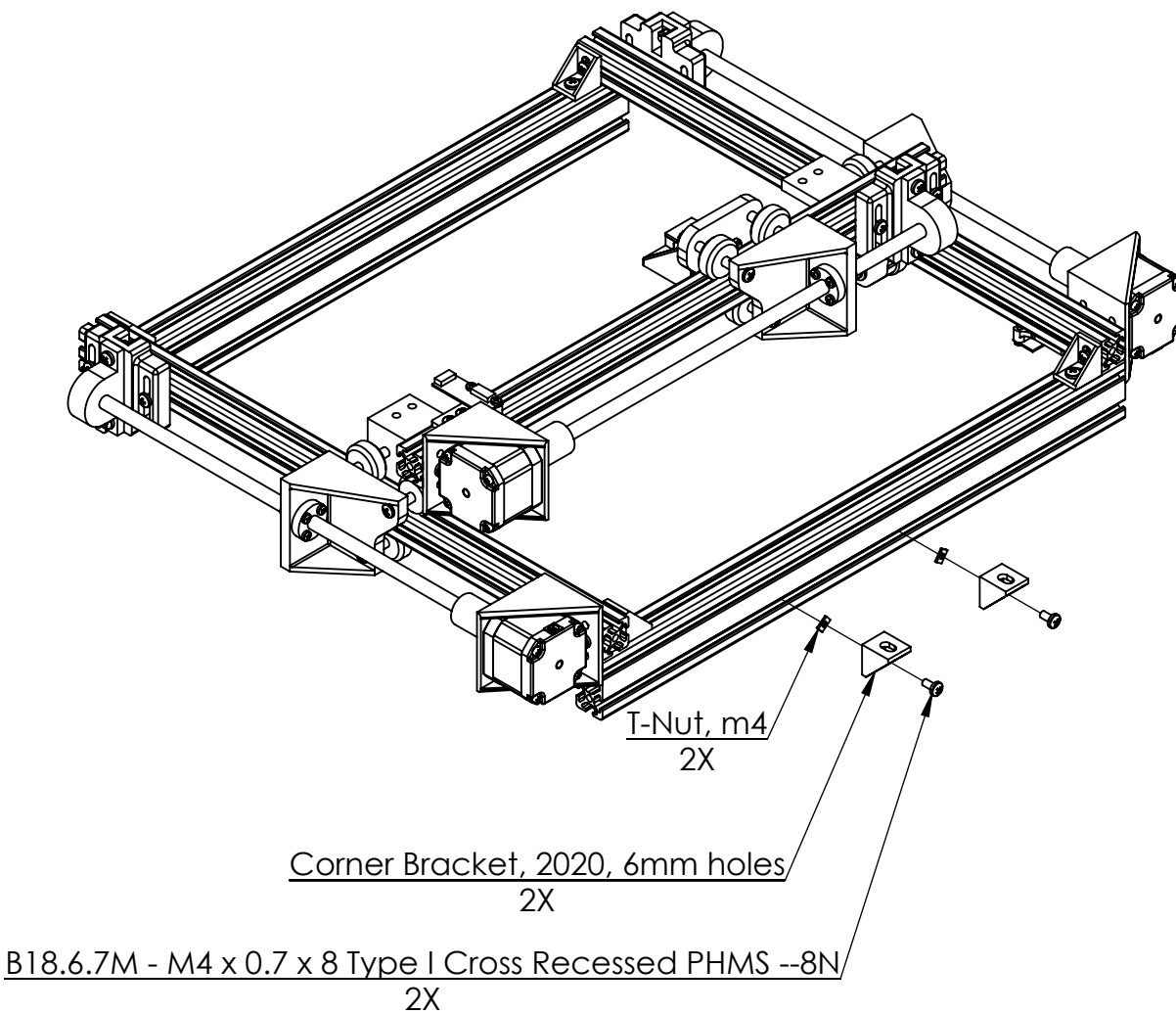


A

- NOTES:
1. End-stops are placed on the underside of the Y-Axis on the RH-side and on the X-axis, both as close to their respective stepper bracket as possible.

- NOTES:
1. Place brackets face up for future connection of electronics board. Spacing between them should be measured off holes drilled on to electronics bracket.

B



A

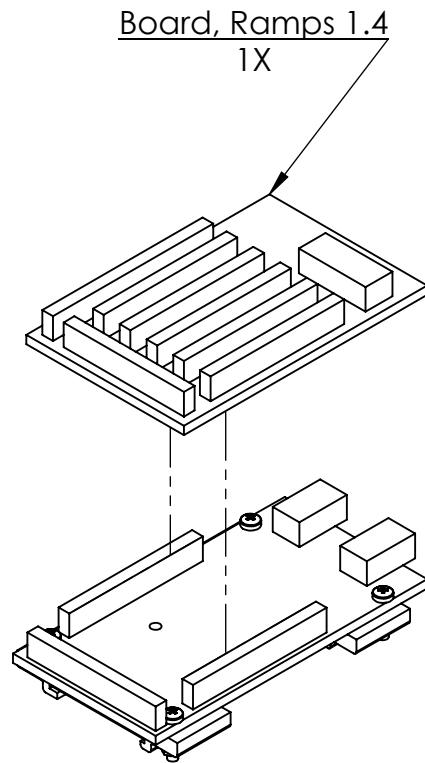
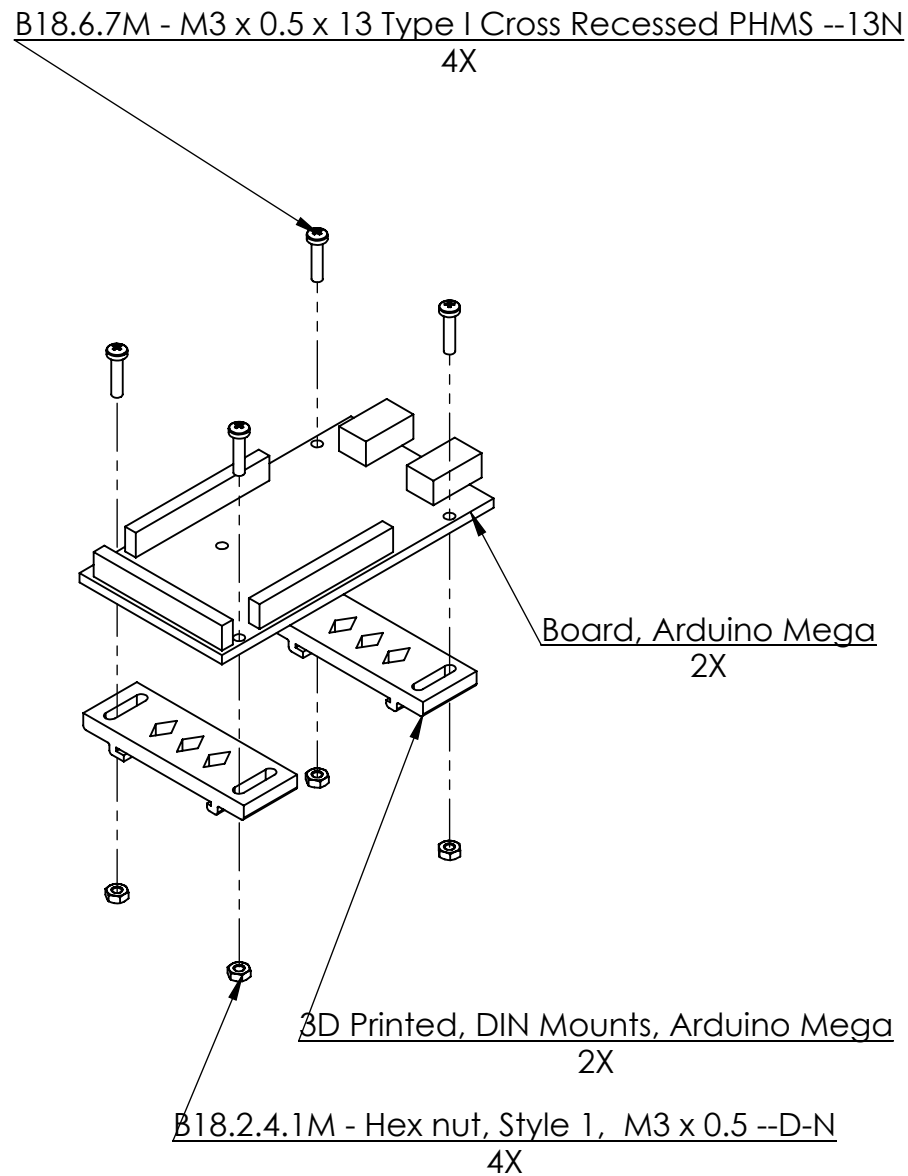
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		MFG APPR.								
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FINISH										
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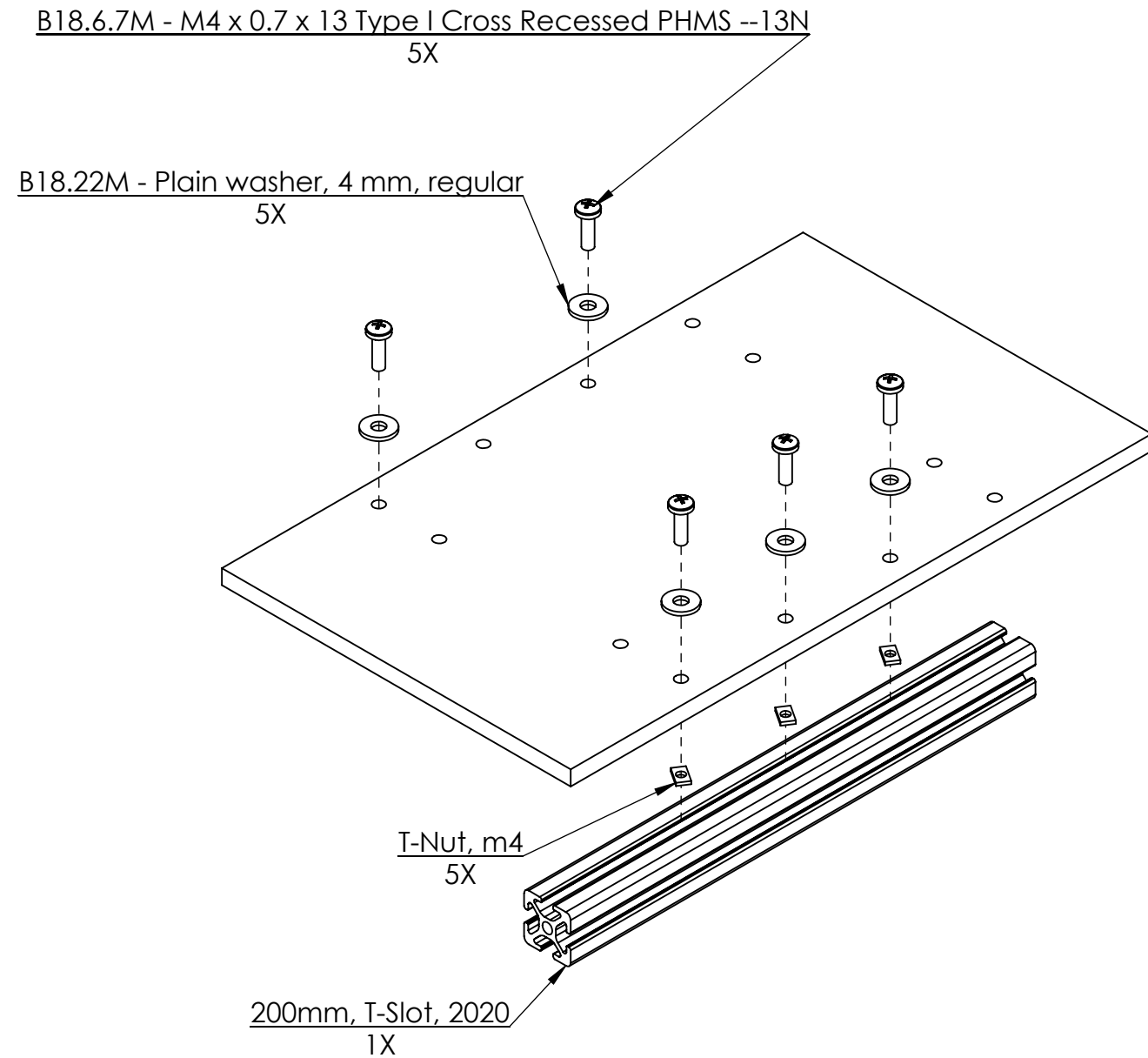
1

ELECTRONICS



NOTES:
1. Connect Ramps 1.4 appropriately. Wiring included placement of stepper drivers is not covered here. Please refer to Ramps 1.4 documentation.

NOTES:
1. Screws not connected to extrusion should be threaded loosely into nuts in preparation for further assembly.



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DIMENSIONS ARE IN INCHES		DRAWN		DL				03/29/21			
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BEND ±											
TWO PLACE DECIMAL ±											
THREE PLACE DECIMAL ±											
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FINISH											
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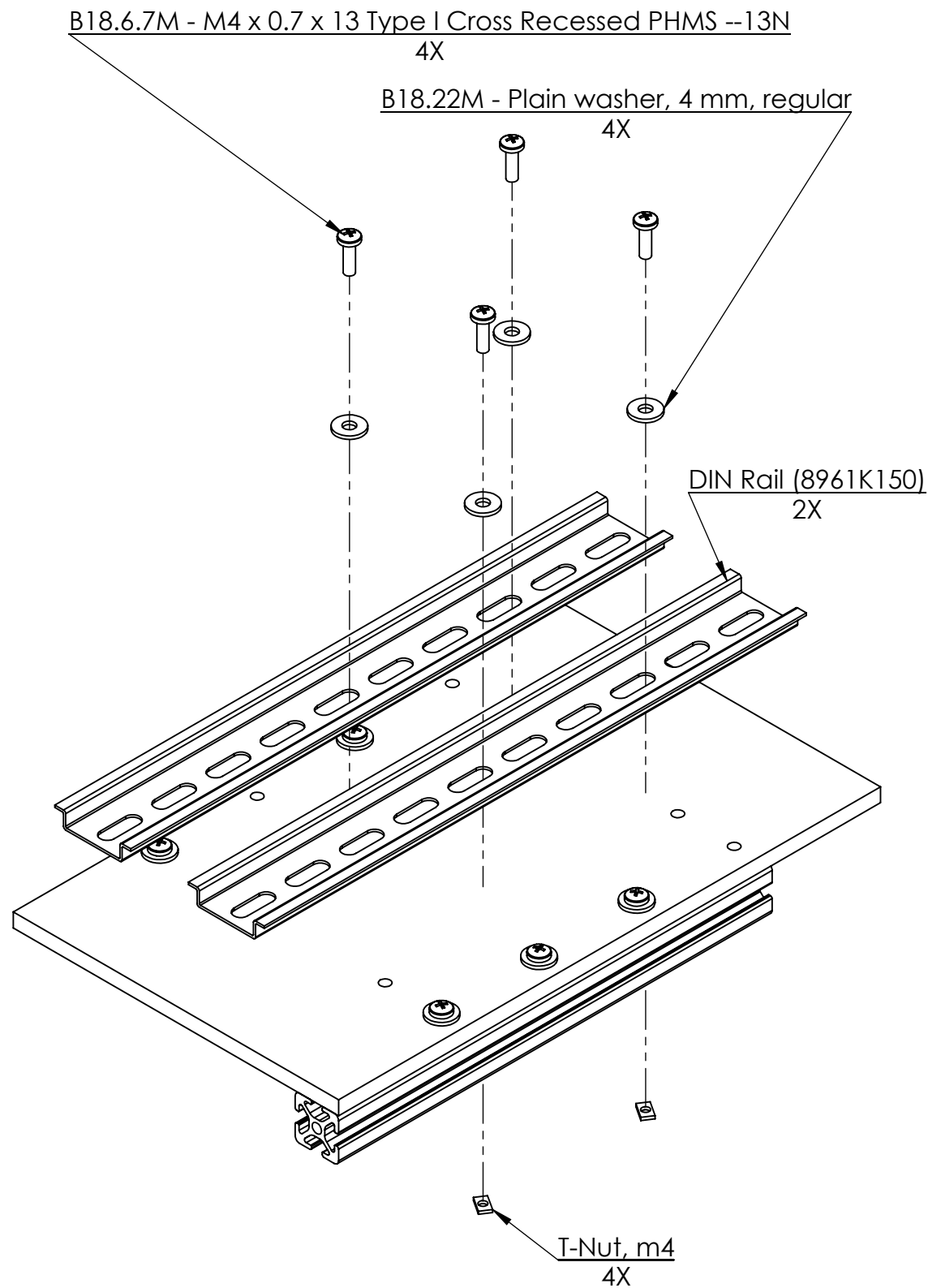
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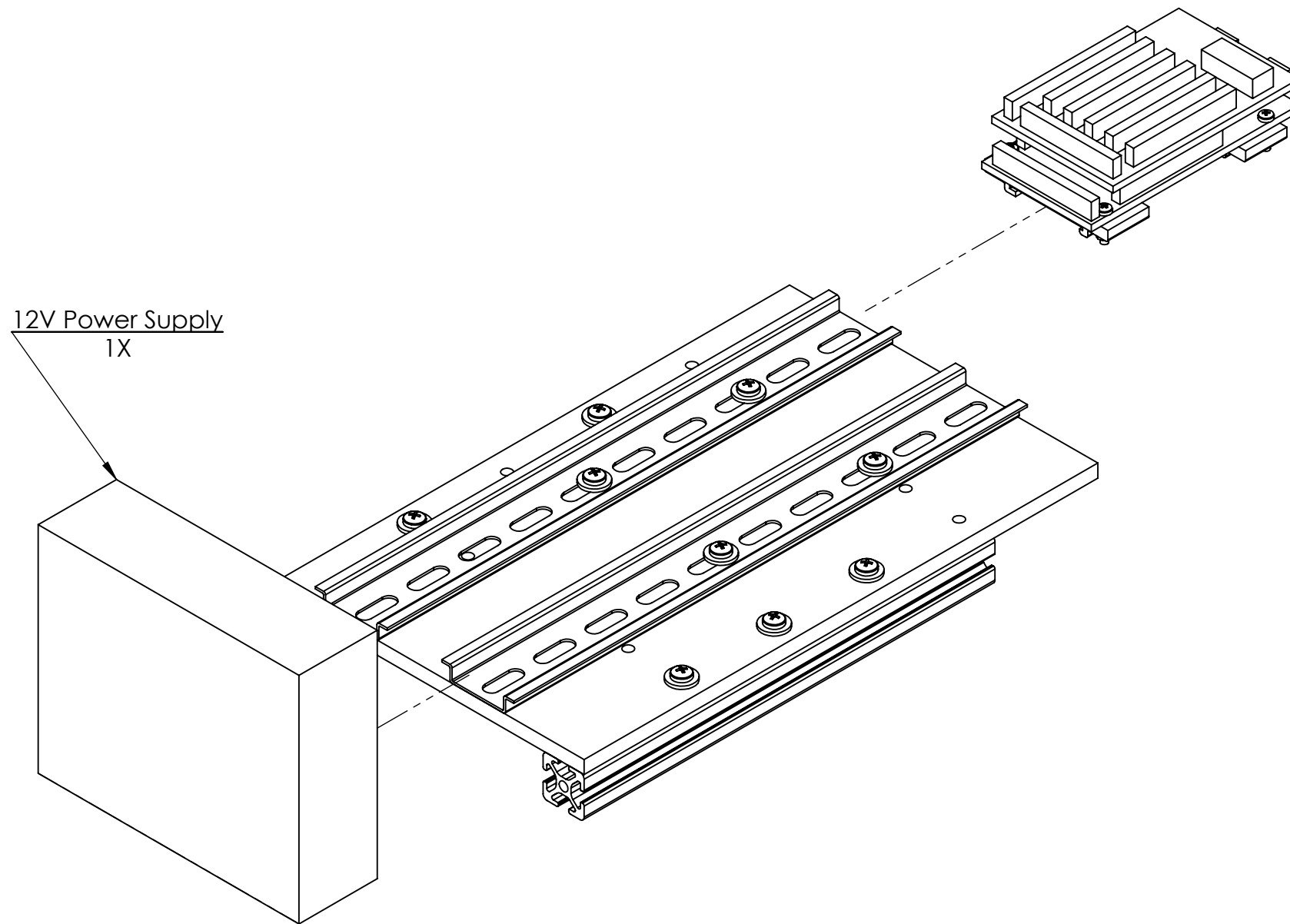
B

A



- NOTES:
1. Screw placement in this drawing is misleading. Constrain DIN rail as suggested by drilled holes.
 2. M4 nuts may be used in place of T-nuts if necessary
 3. DIN rail should be 6-inches long

12V Power Supply
1X



B

A

- NOTES:
1. Slide electronics on the two rails.
 2. No enclosure for these electronics to come in future iterations of the QC CNC design.

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DIMENSIONS ARE IN INCHES		DRAWN		DL							
TOLERANCES:		CHECKED									
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DO NOT SCALE DRAWING											

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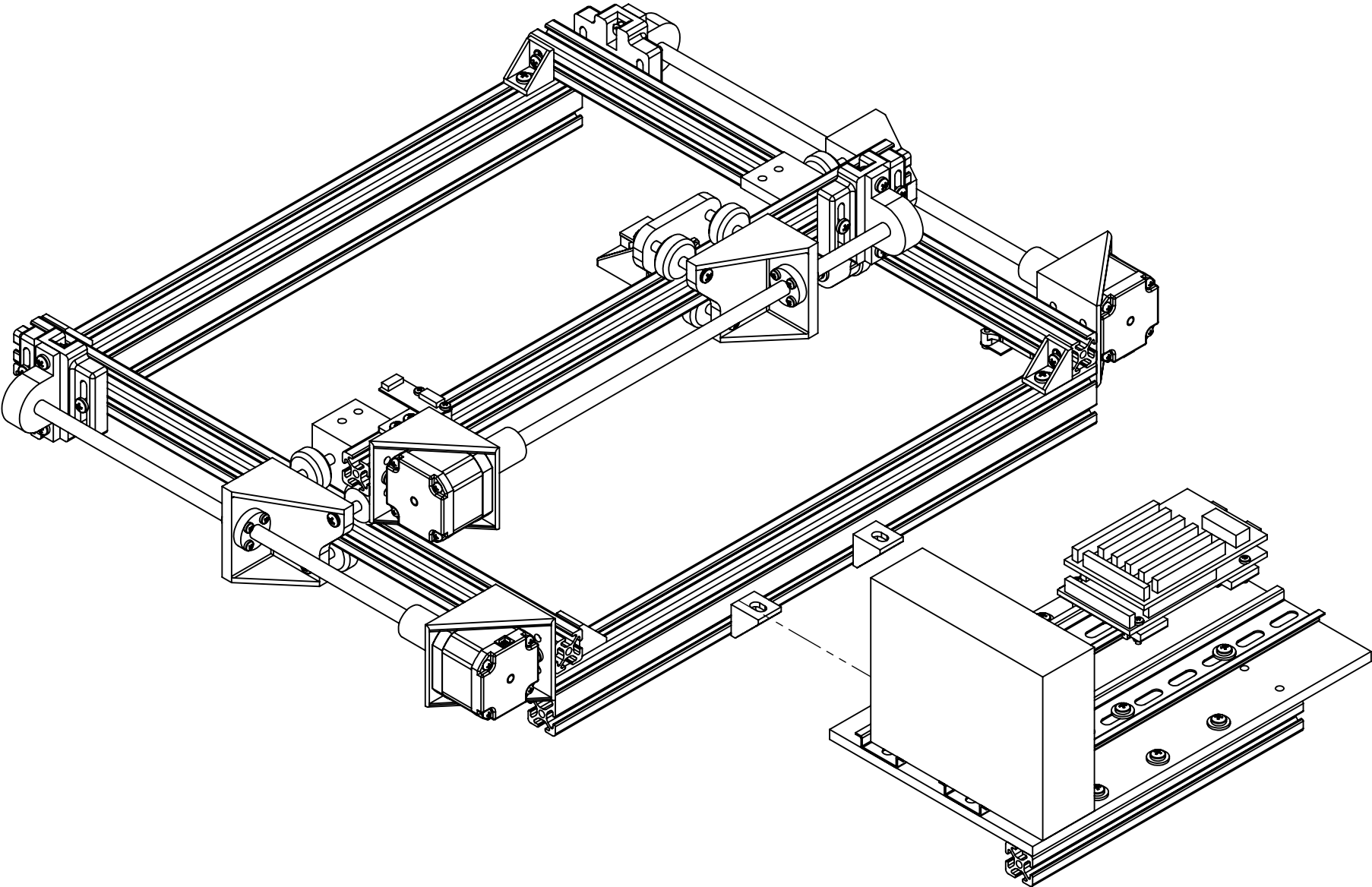
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3

2

1

FINAL ASSEMBLY



- NOTES:
- 1. Align screws over brackets and secure.
 - 2. Perform wiring of steppers, TOF sensor, End-Stops, and laser diode (again, see Ramps 1.4 documentation).
 - 3. NOTE: TOF sensor should be connected to I2C port, and laser diode to a spare digital pin.
 - 4. End-Stops have not yet been integrated into NEMO firmware..

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DIMENSIONS ARE IN INCHES		DRAWN	DL				03/29/21	
TOLERANCES: FRACTIONAL ±		CHECKED						
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MATERIAL					<div>B</div>	QC CNC Machine V2, Assembly (PRJ3)		<div>0</div>
FINISH								
DO NOT SCALE DRAWING								
		SCALE: 1:3		WEIGHT:	SHEET 12 OF 12			

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1