

### Syringe Tool Assembly



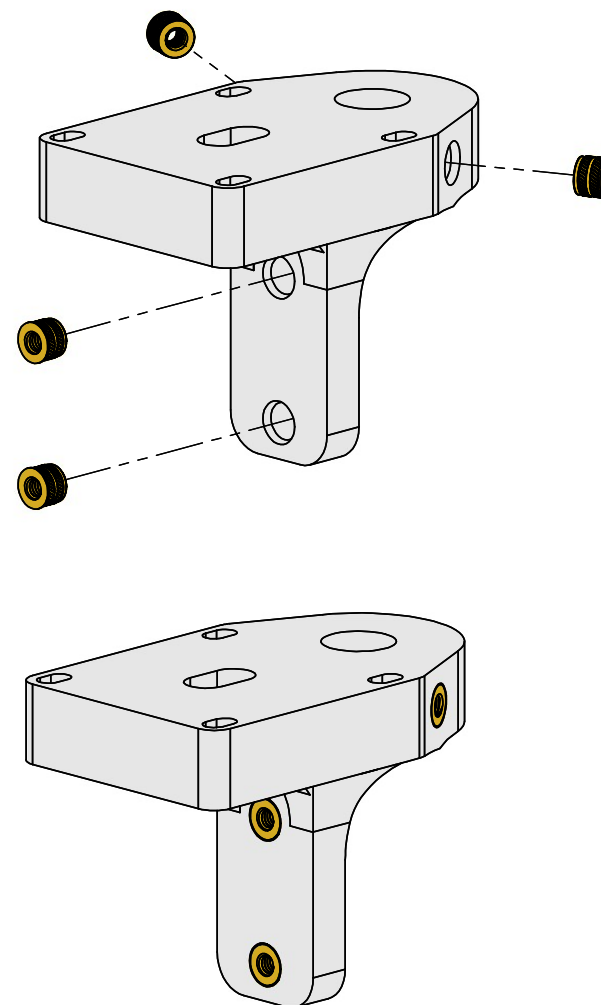
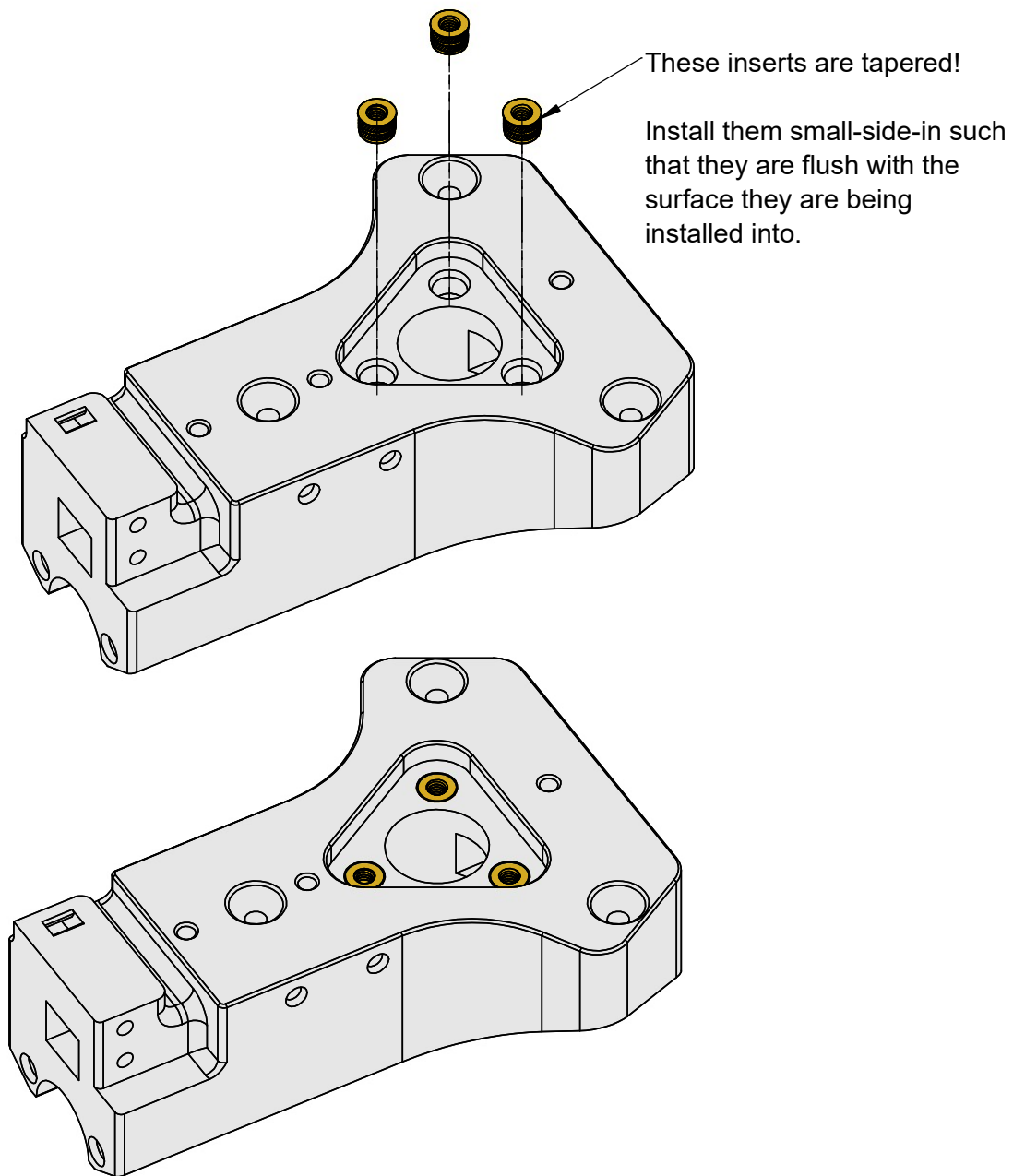
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Use a soldering iron with a heat-set insert tip to install these heat-set inserts. For more information, have a look at the [plate press technique](#).



### Heat Set Insert Installation

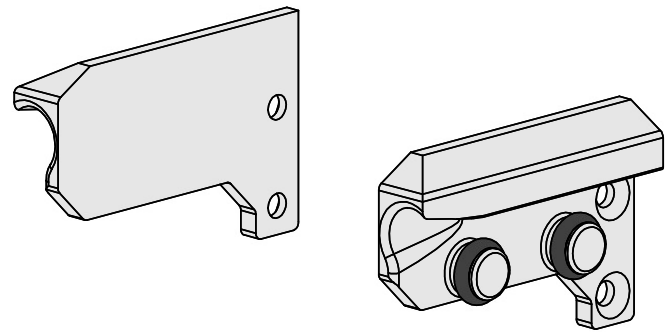
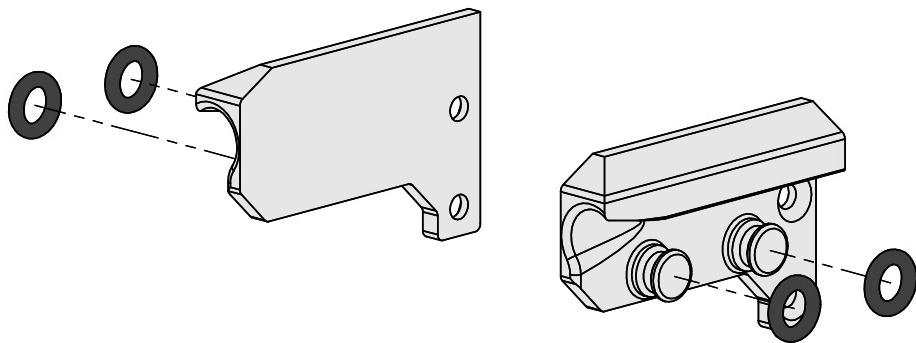


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## O-Ring Installation

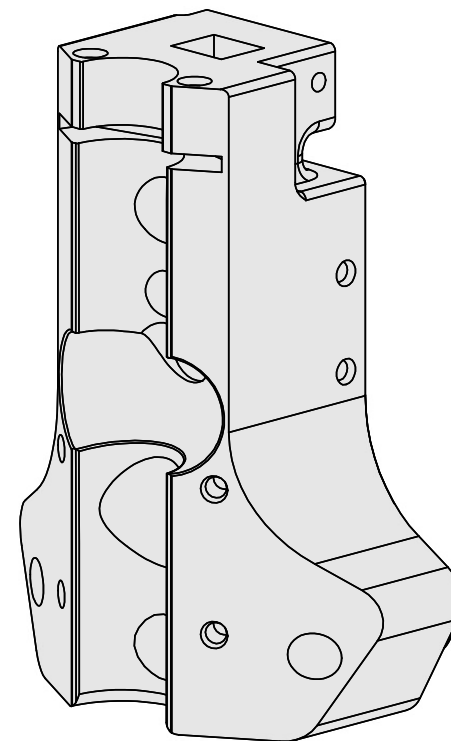
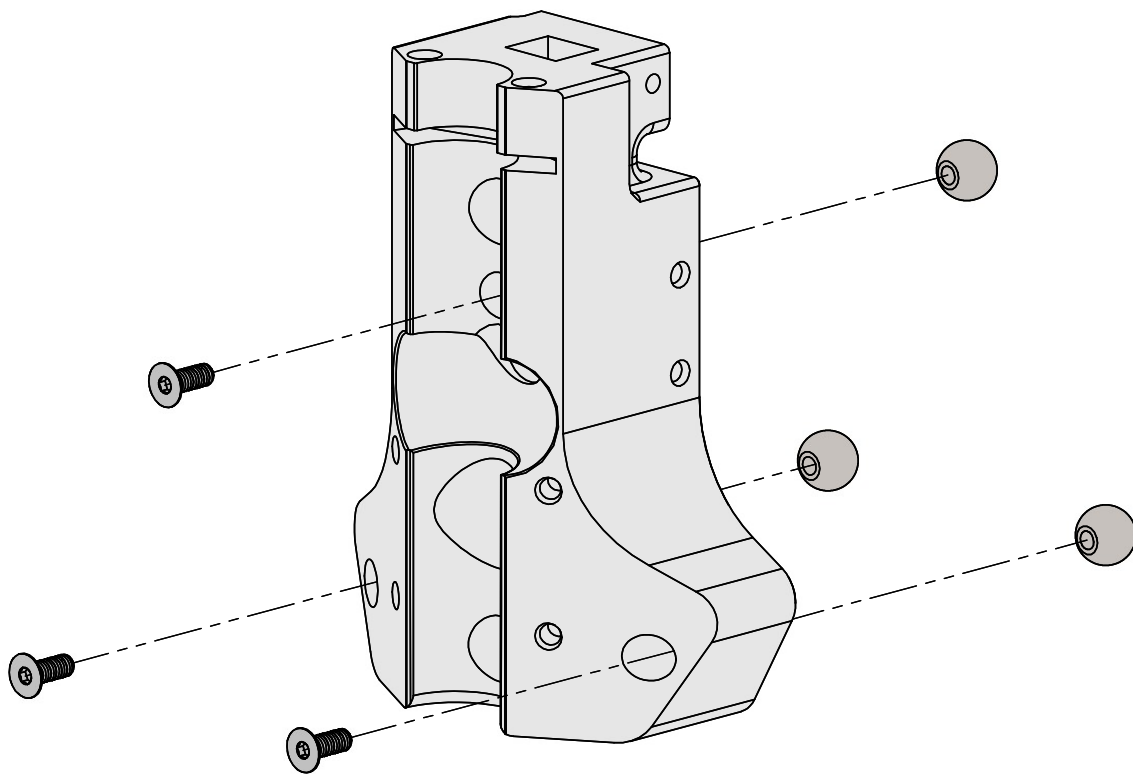


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ITEM NO.	DESCRIPTION	QTY.
1	Syringe Tool Base with Inserts	1
2	M3 8mm Threaded Tool Balls	3
3	M3 Flathead Screw, 8mm long	3

### Tool Ball Installation

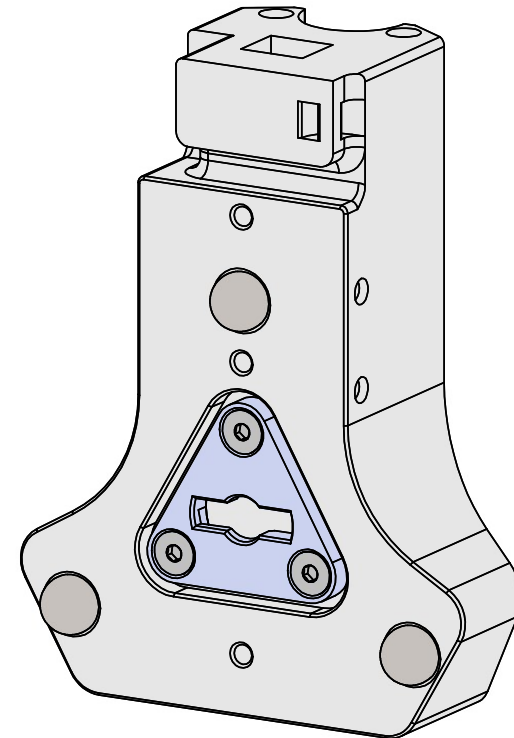
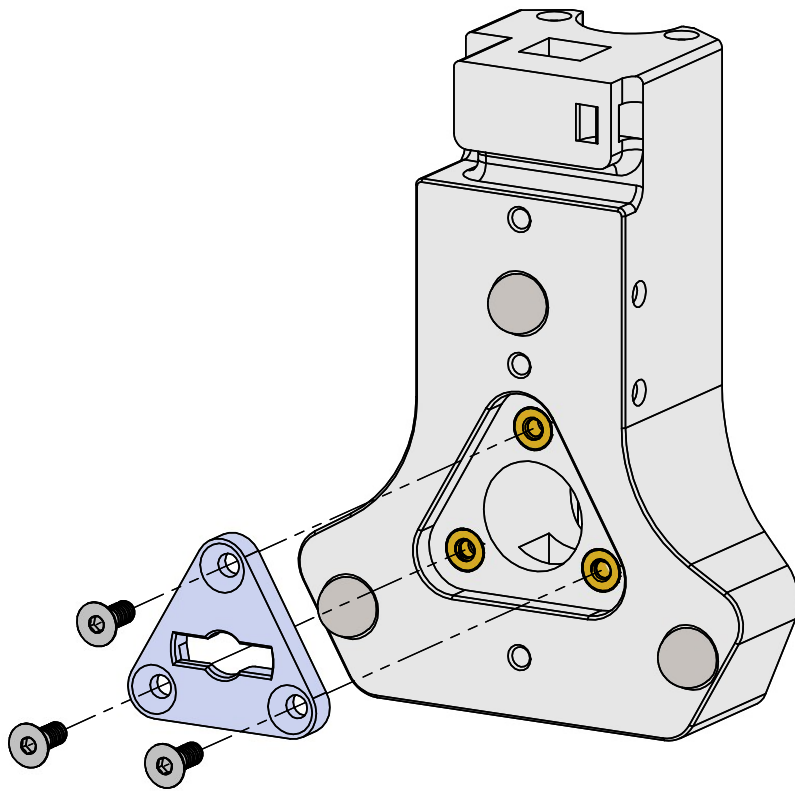


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ITEM NO.	DESCRIPTION	QTY.
3	Wedge Plate	1
4	M3 Flathead Screw, 8mm long	3

### Wedge Plate Installation

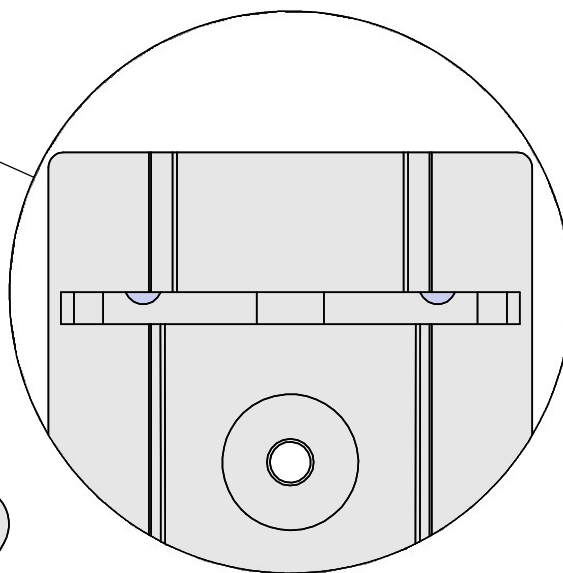
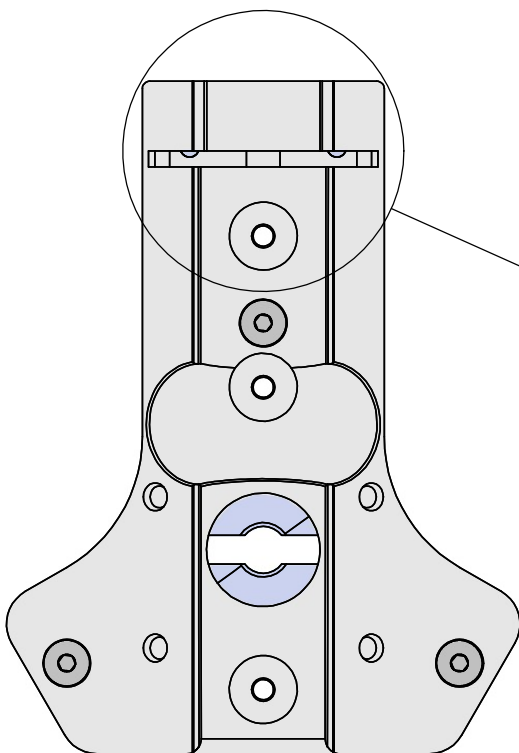
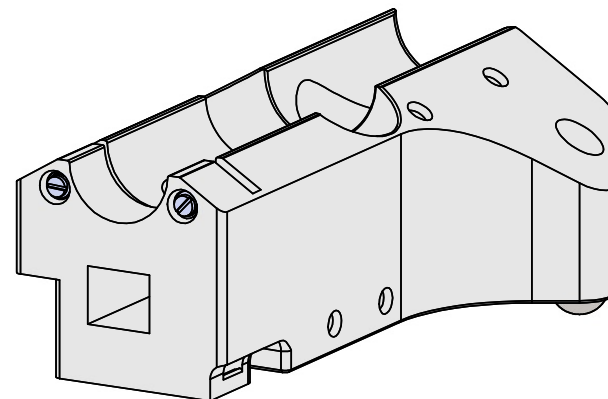
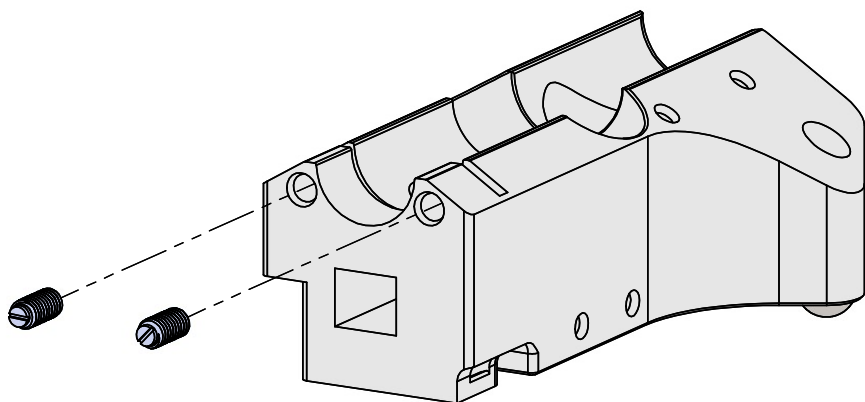


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ITEM NO.	DESCRIPTION	QTY.
5	M3 Spring Plunger	2

### Spring Plunger Installation

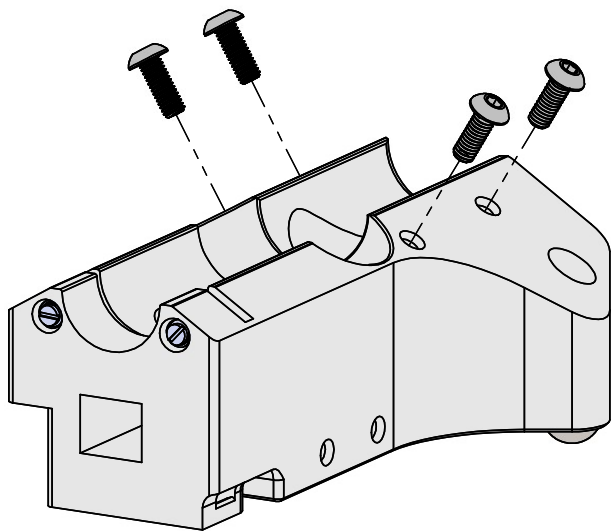


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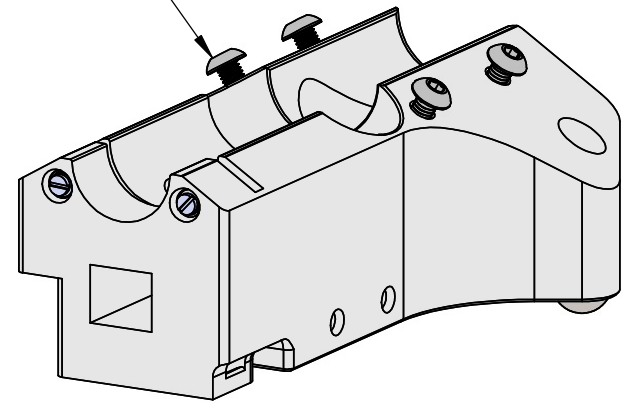
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SCALE: 1:1

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These screws will hard-stop  
before fully screwing in.



ITEM NO.	DESCRIPTION	QTY.
5	M3 Buttonhead Screw, 8mm long	4

#### Retention Screw Installation

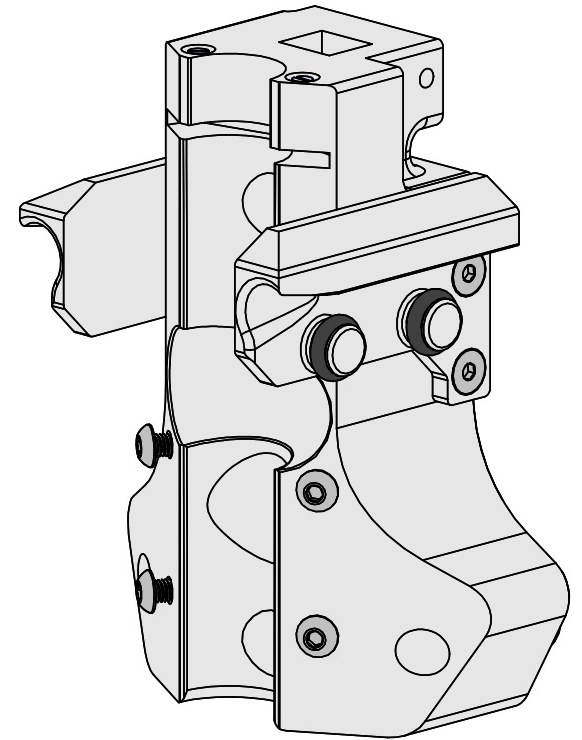
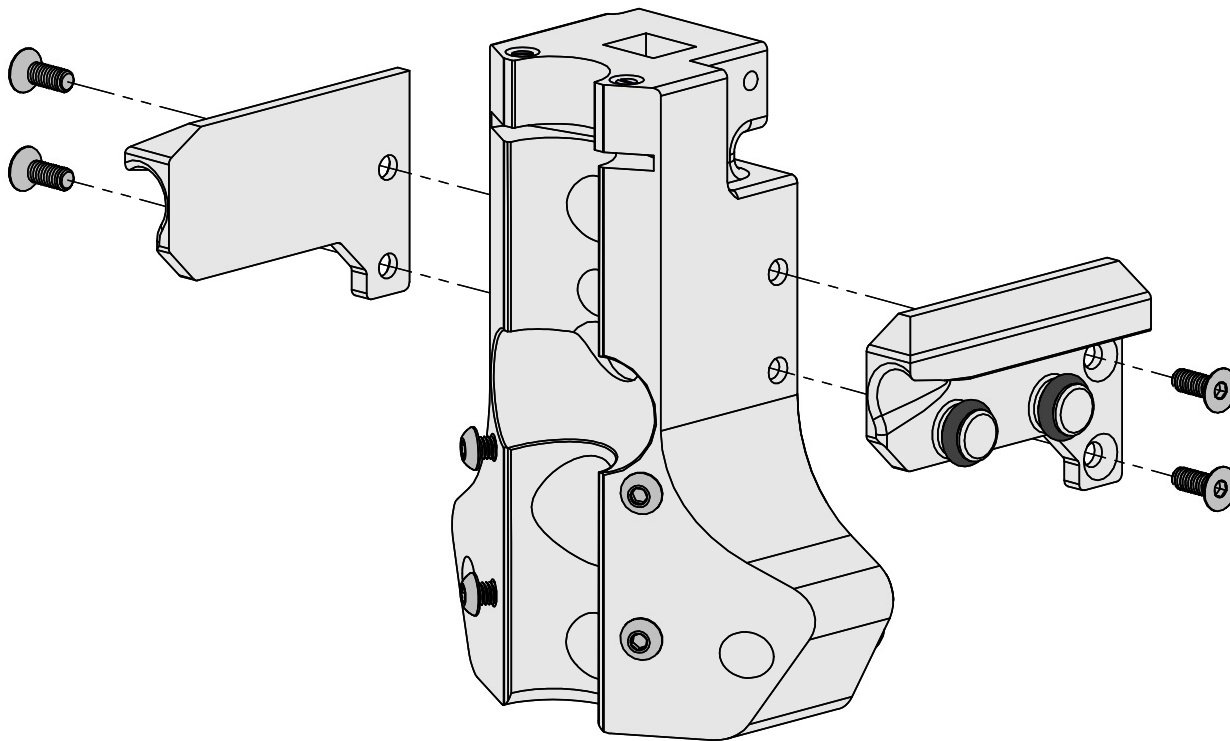


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ITEM NO.	DESCRIPTION	QTY.
4	M3 Flathead Screw, 8mm long	10
7	Left O-Ring Wing with O-Rings	1
8	Right O-Ring Wing with O-Rings	1

### Tool Wing Installation



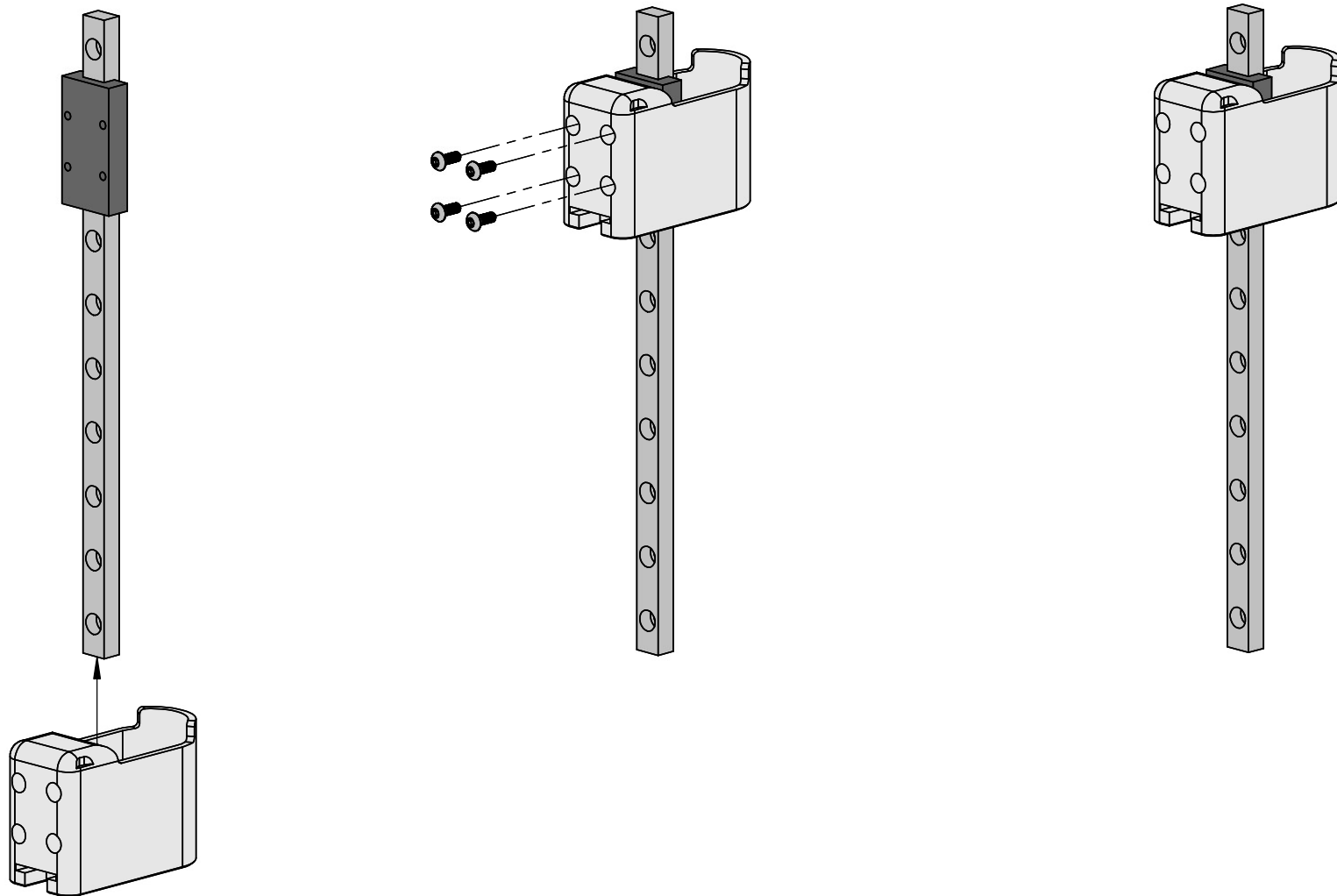
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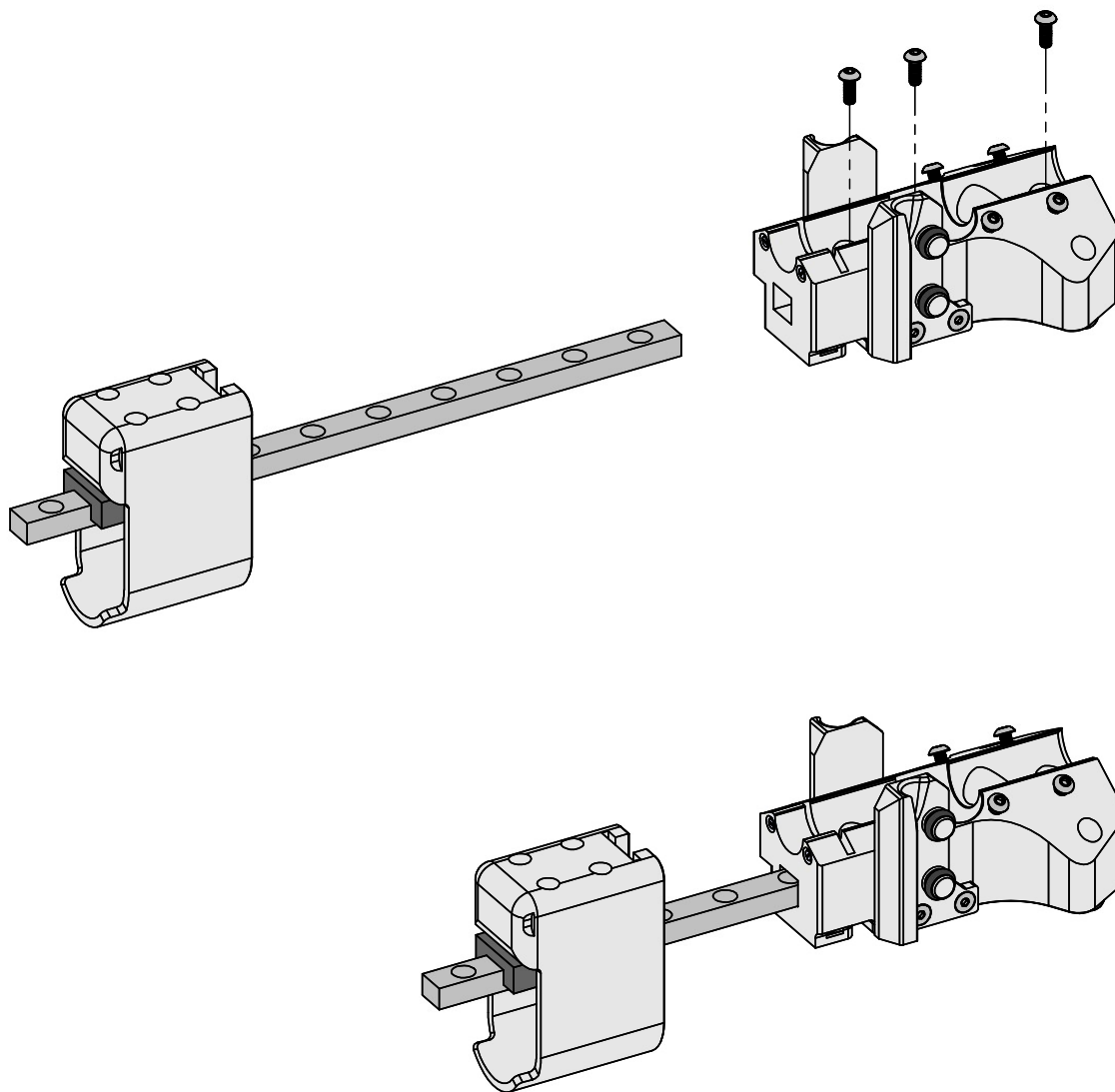
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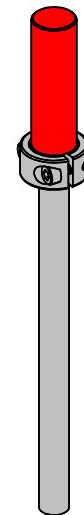
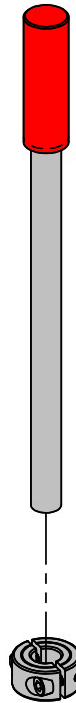
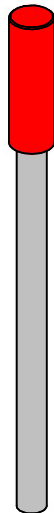
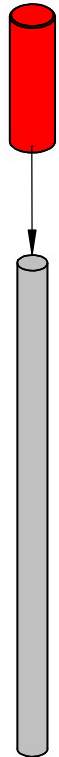
ITEM NO.	DESCRIPTION	QTY.
1	Plunger Actuator	1
2	MGN9 Carriage Block	1
3	MGN9 Rail, 200mm	1
4	M3 Buttonhead Screw, 8mm long	4

Rail Assembly		
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	SCALE: 1:2	SHEET 9 OF 21




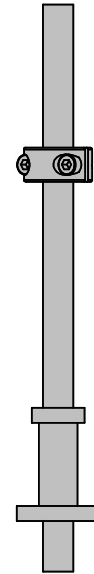
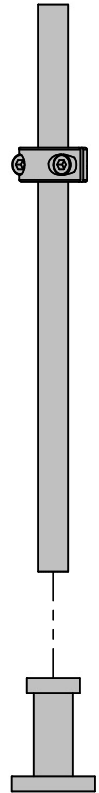
ITEM NO.	DESCRIPTION	QTY.
3	M3 Buttonhead Screw, 8mm long	3

Rail Installation		
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ITEM NO.	DESCRIPTION	QTY.
1	T8x2 Leadscrew, 150mm long	1
2	8mm Nonmarring Clamp Collar	1
3	Printed Leadscrew Jig	1

Leadscrew Prep 1		
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ITEM NO.	DESCRIPTION	QTY.
3	8mm T8x2 Small Delrin Anti-Backlash Nut	1

## Leadscrew Prep 2



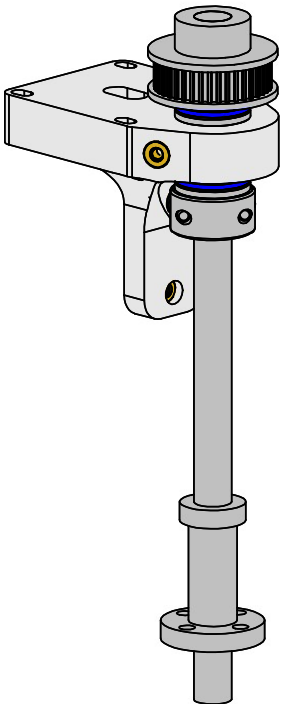
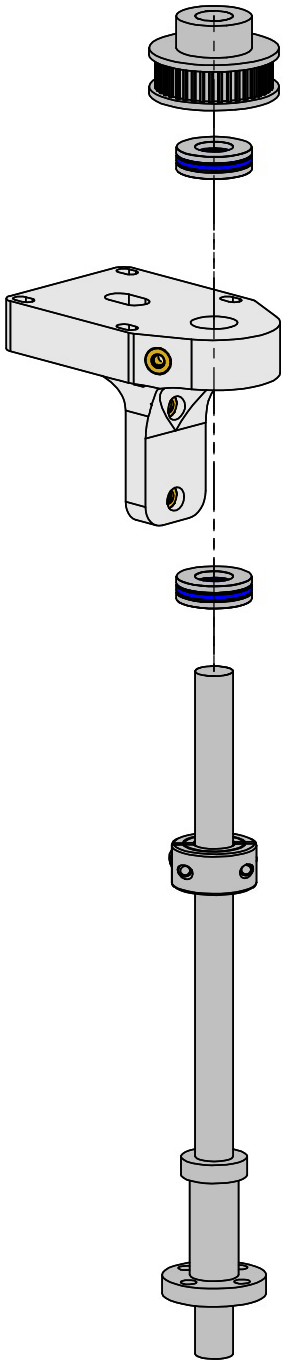
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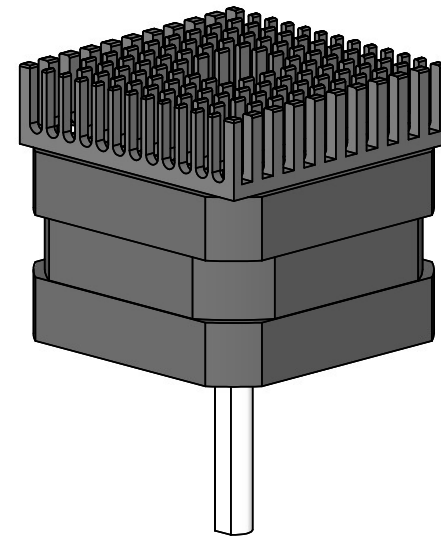
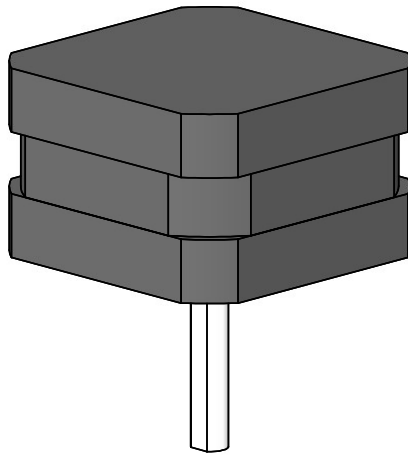
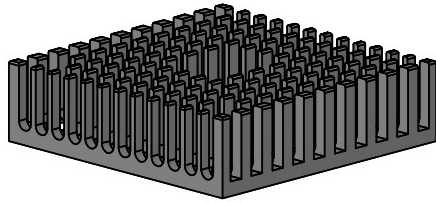
Compress this assembly by hand, and then tighten both set screws.



Turn this assembly by hand. It should have a minimal but consistent amount of resistance. If it feels like it is rubbing periodically, check to make sure the pulley is not seated at an angle.

ITEM NO.	DESCRIPTION	QTY.
1	3-piece, Thrust Bearing, 8mm Bore	2
2	2GT Pulley, 40T	1
3	Pulley Housing with inserts	1

Pulley Block Assembly		
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	SCALE: 5:8	SHEET 13 OF 21



ITEM NO.	DESCRIPTION	QTY.
1	Nema 17 Motor Heatsink	1
2	LDO-42STH25-1404MAC Nema 17 Stepper Motor	1

## Heatsink Installation

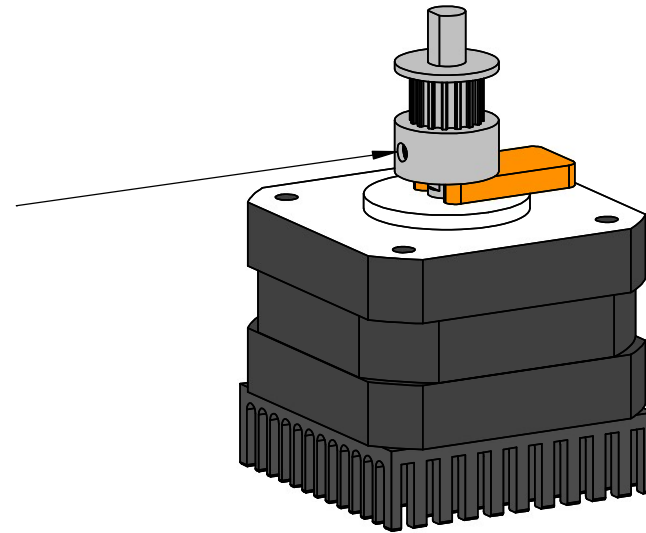
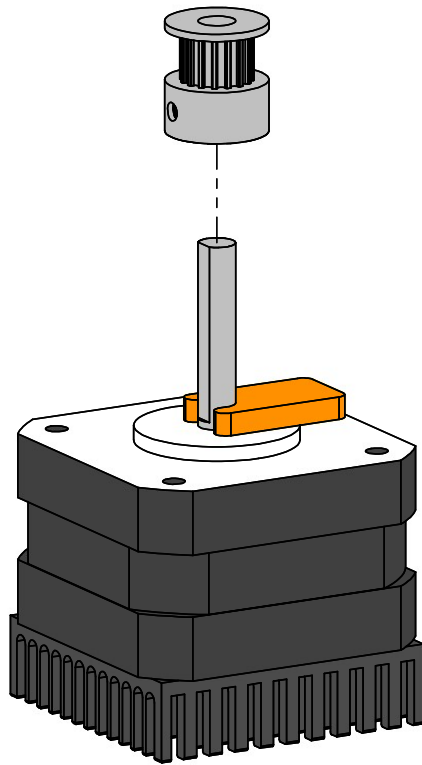


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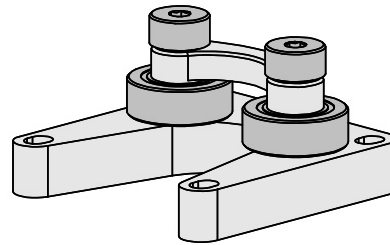
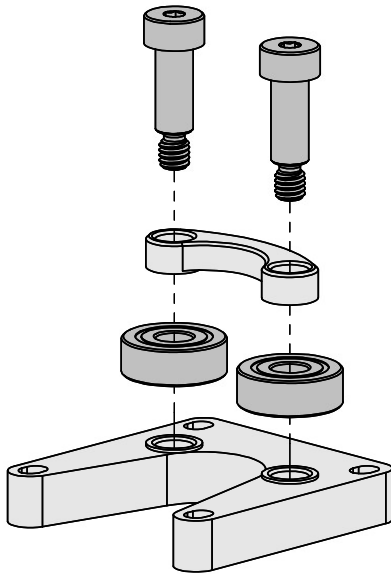
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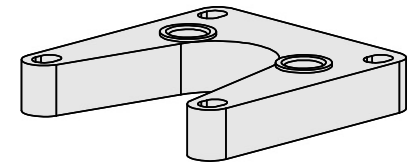
ITEM NO.	DESCRIPTION	QTY.
1	16-T 2GT Drive Pulley for 6mm belt	1
4	Drive Pulley Height Spacer	1
5	M3 Set Screw, 4mm len	2

Motor Pulley Installation		
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This Assembly is not necessary.  
We will skip its inclusion in the subsequent steps.



The rest of the assembly will just use this  
minimal configuration.



### Belt Retention Block Assembly



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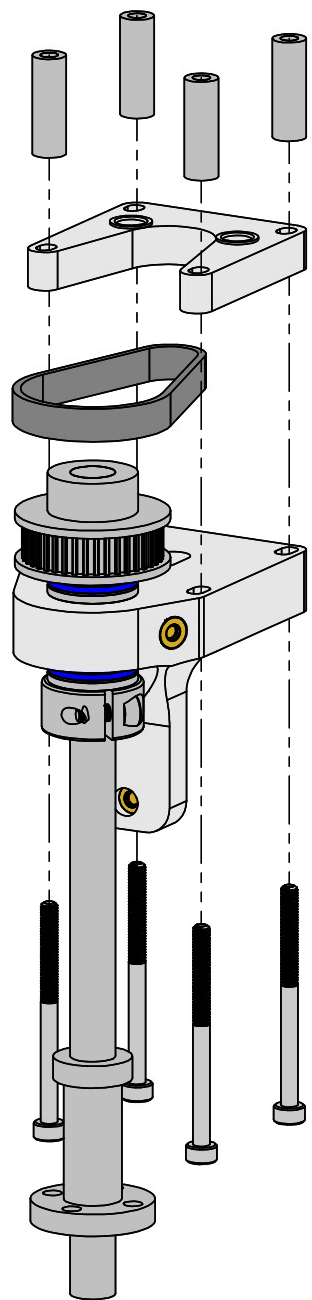
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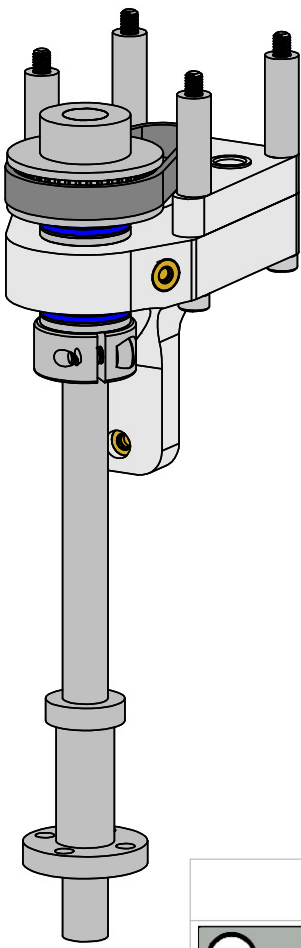
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Everything in this step will be loose until the next step.



ITEM NO.	DESCRIPTION	QTY.
1	M3 Socket Cap Screw, 40mm long	4
2	M3 Spacer, 18mm long	4
3	Pulley Block Assembly	1
4	Belt Retention Block	1
6	110T, 2GT Timing Belt, 6mm Tall	1



Actuator Assembly 1/2

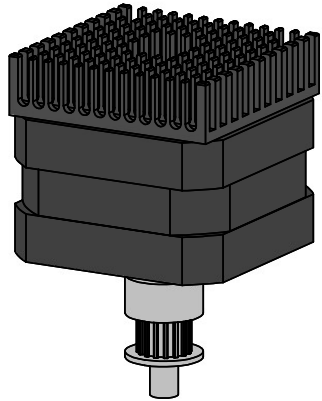


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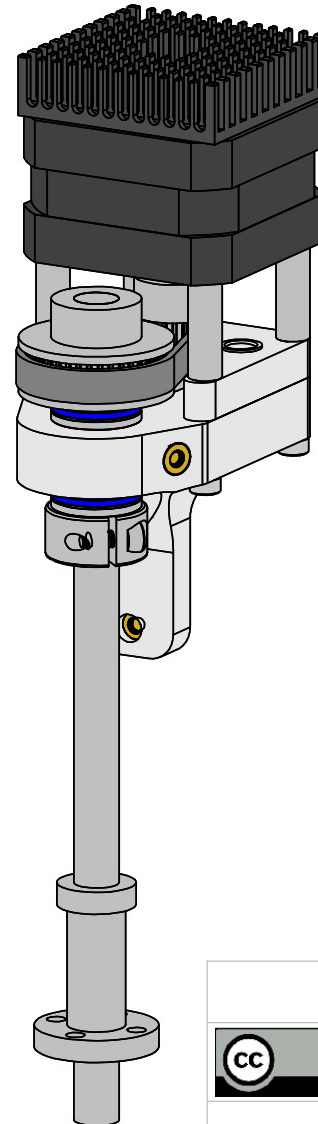
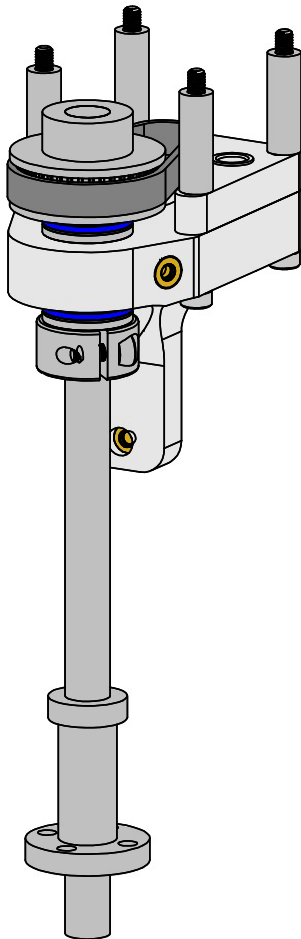
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SHEET 17 OF 21



The motor screws rest in slots. When screwing in the motor assembly, pull it away from the big pulley to apply gentle tension on the belt. Fully tighten it this way.

Once tightened, check that the motor can spin freely without binding.



## Actuator Assembly 2/2

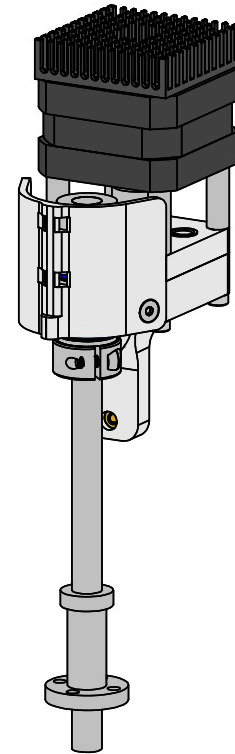
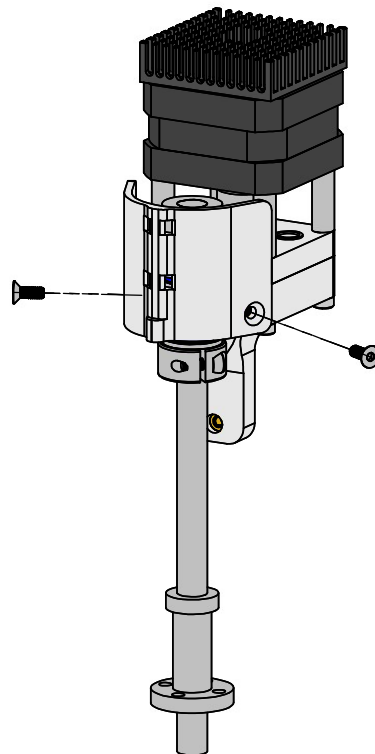
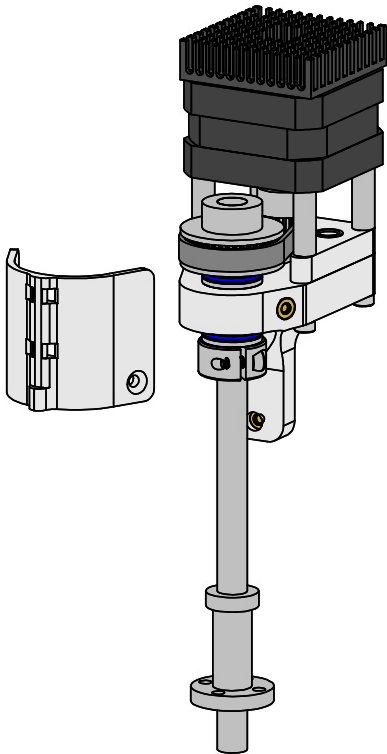


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## Shroud Installation

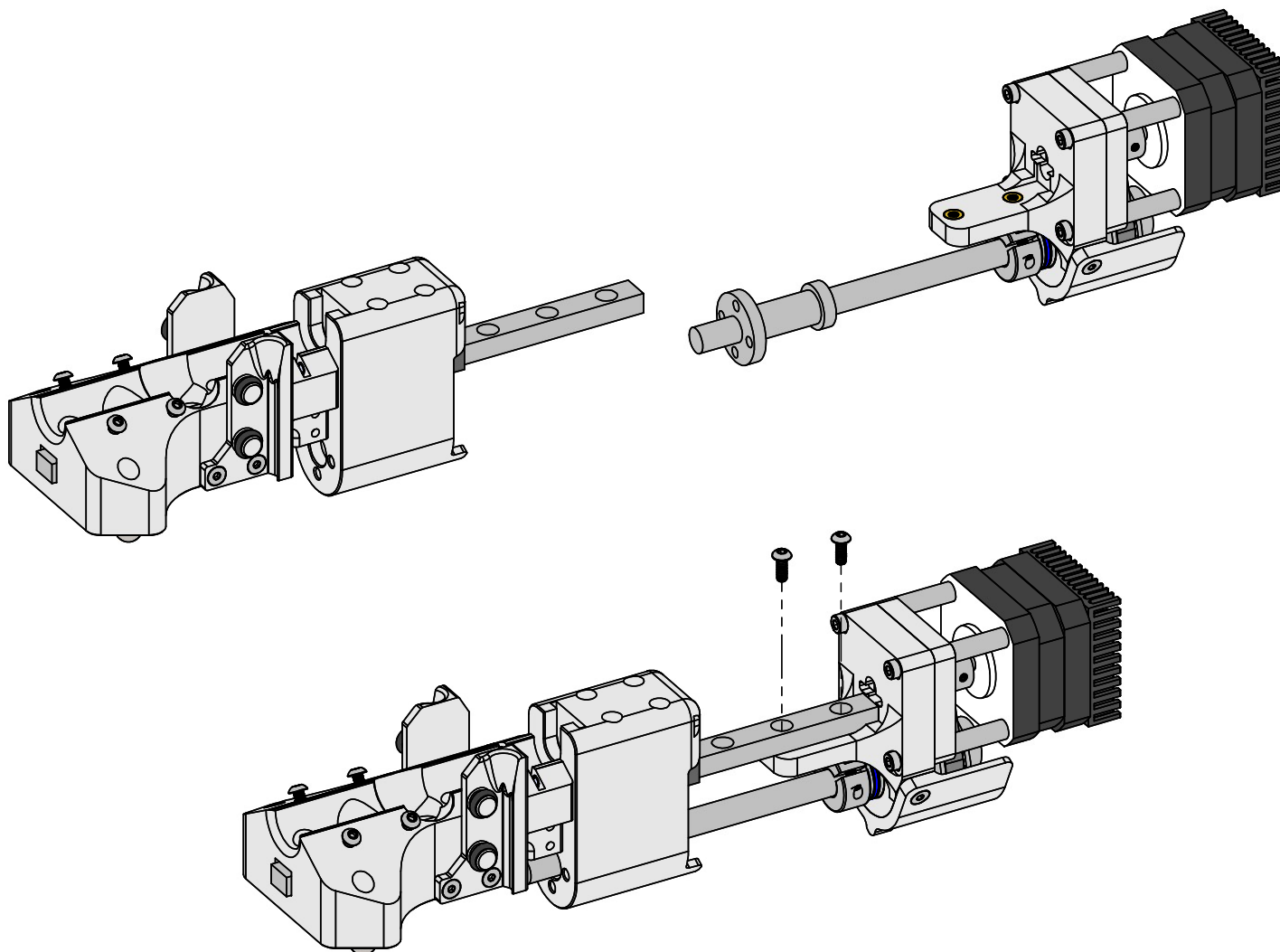


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SHEET 19 OF 21



ITEM NO.	DESCRIPTION	QTY.
1	Syringe Tool Base with Rail	1
2	Actuator Assembly	1
3	M3 Buttonhead Screw, 8mm long	2

### Actuator Installation

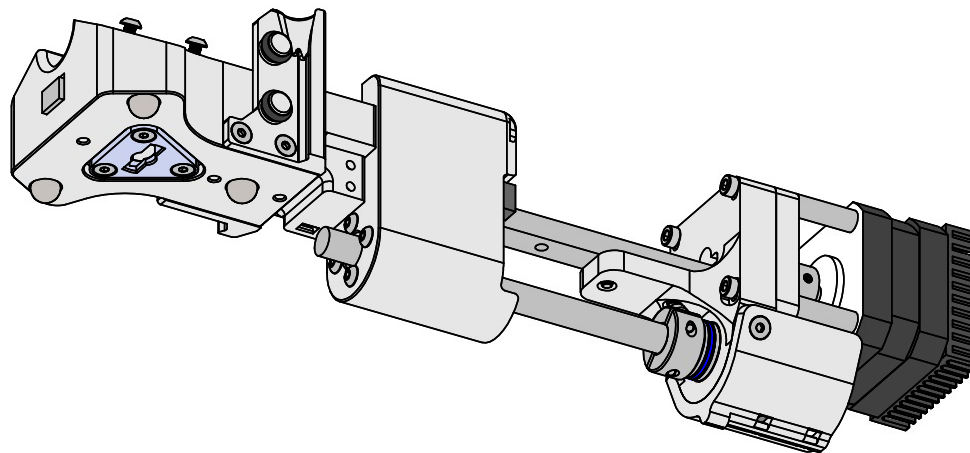
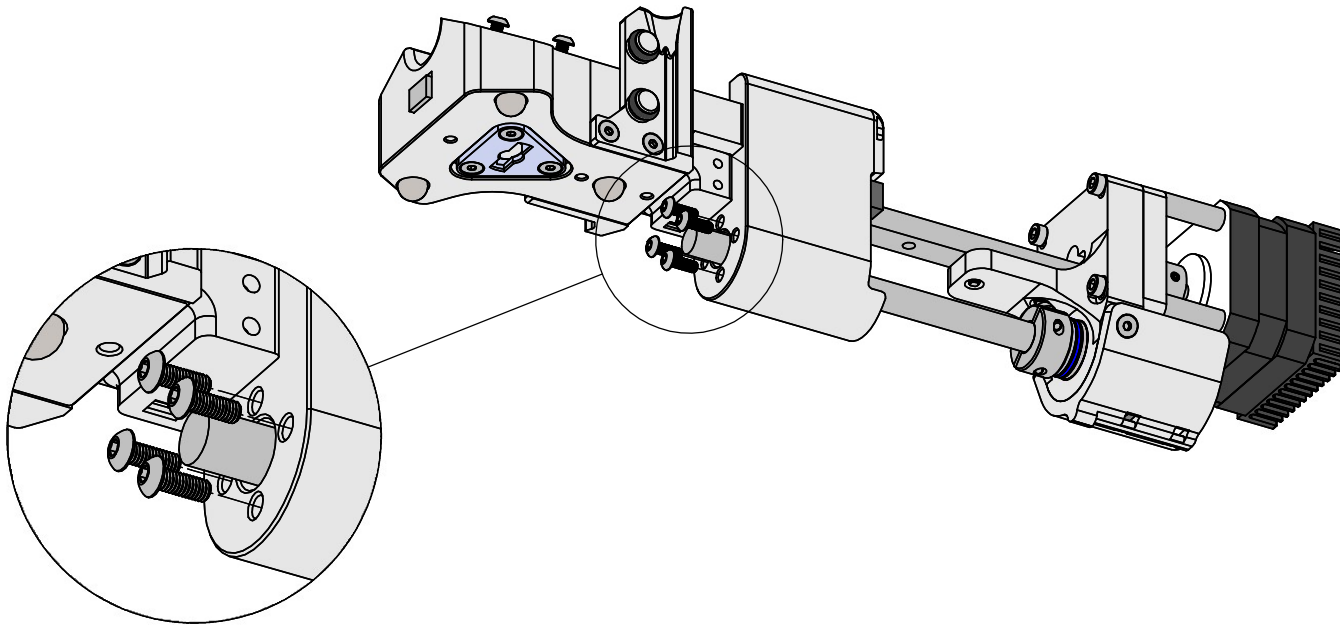


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ITEM NO.	DESCRIPTION	QTY.
3	M3 Buttonhead Screw, 8mm long	6

## Leadscrew Attachment



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