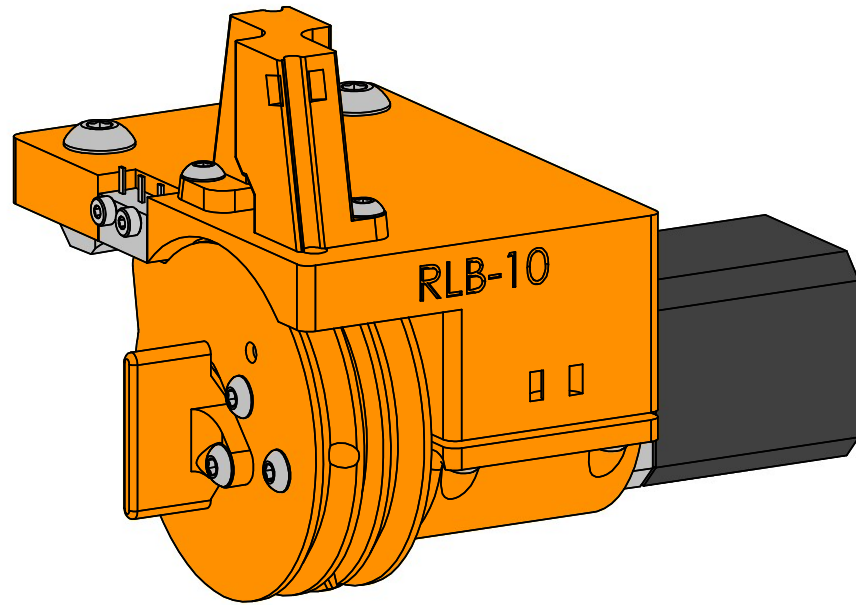


2

1

B

B



A

A

2

1

### Remote Elastic Lock Assembly



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

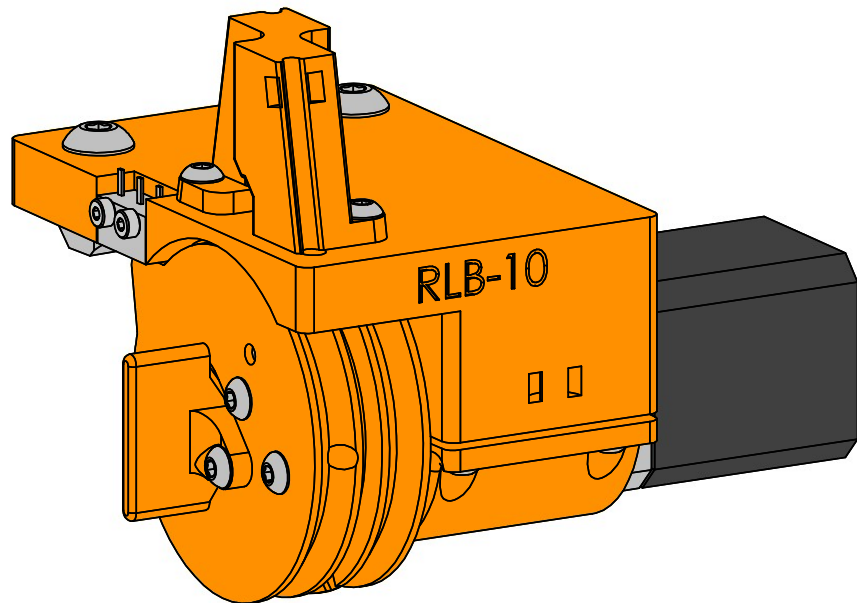
SCALE: 1:1

SHEET 1 OF 17

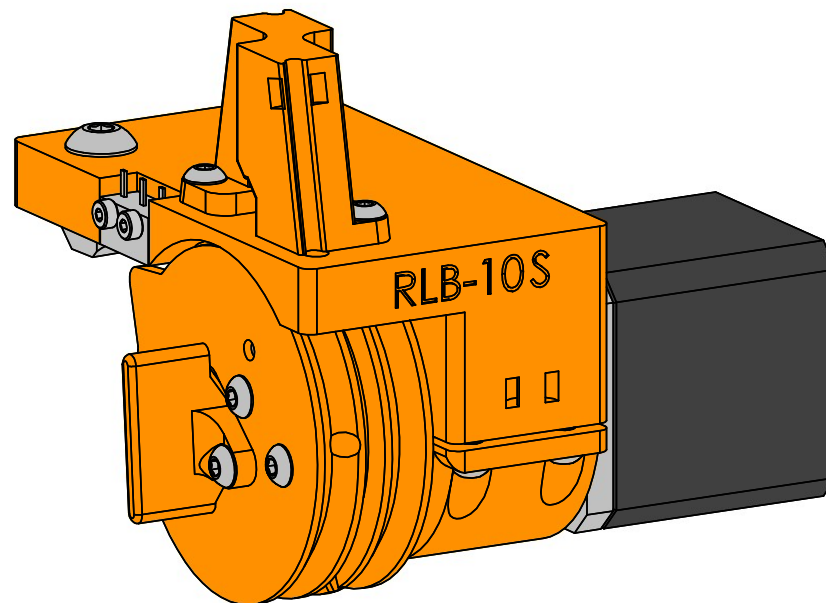
2

1

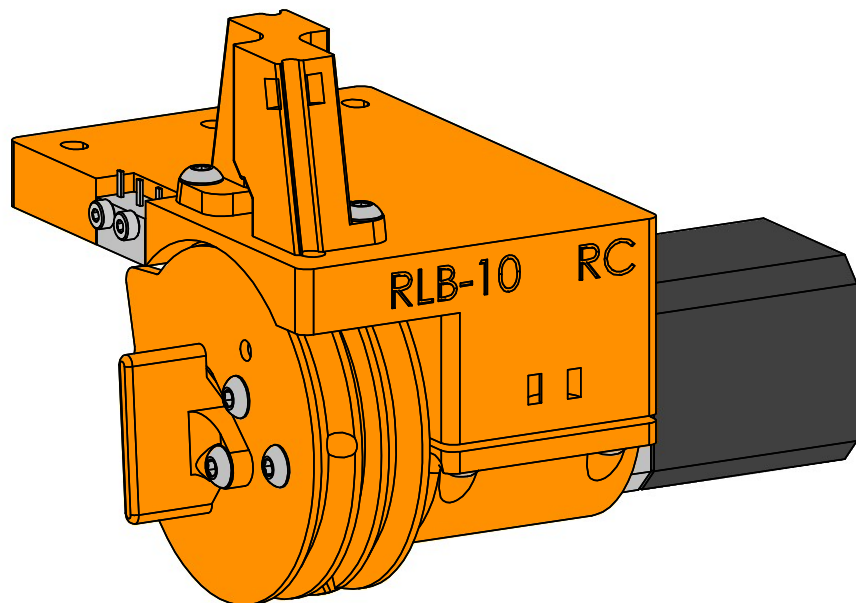
B



B



A



A

Note: There are three variants of this subsystem.

- RLB-09 for Jubilee
  - use an LDO motor
- RLB-09S for Jubilee
  - uses a StepperOnline motor
- RLB-09RC for the Railcore
  - uses an LDO motor

Each variant has a unique base plate. RLB-09S uses a unique base plate and motor clip. Make sure you've printed the parts that correspond to your motor.

#### Variants



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

SHEET 2 OF 17

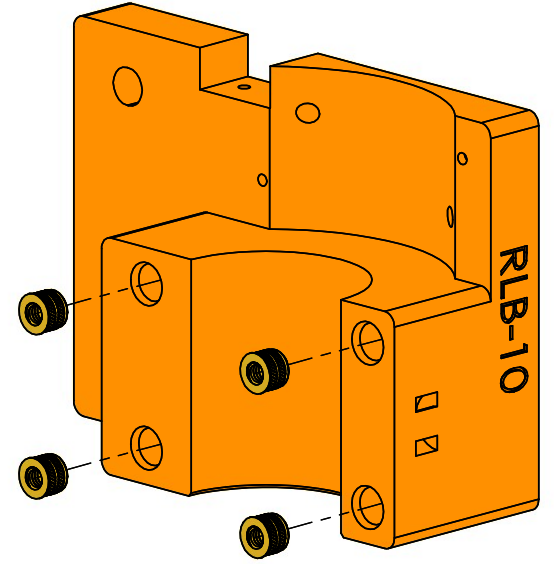
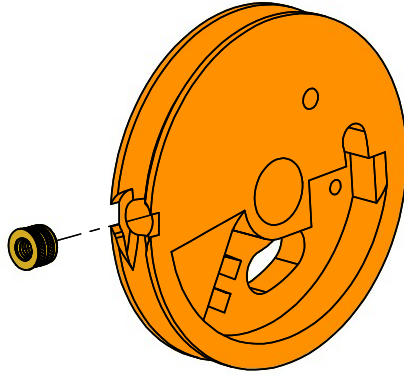
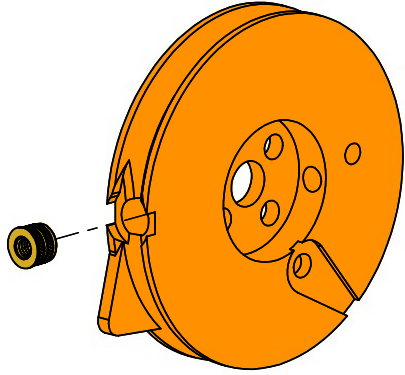
2

1

2

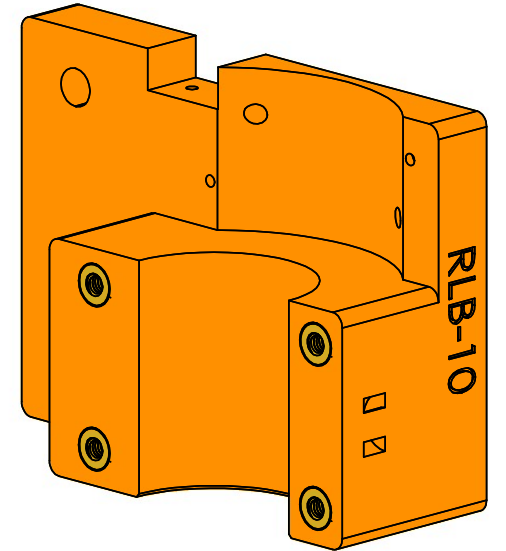
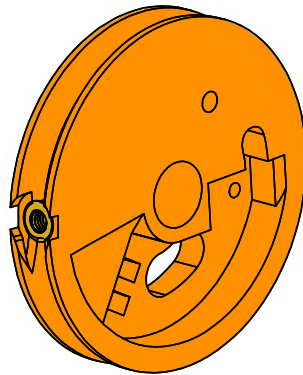
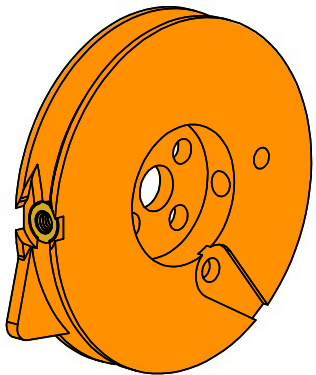
1

B



B

A



A

2

1

Parts with Inserts



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Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

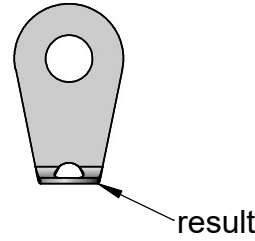
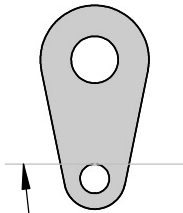
SHEET 3 OF 17

2

1

B

B




With a set of Needle nose pliers, bend the terminal lug upwards about 90 degrees along this line.  
Do this for both terminal lugs.

A

A

ITEM NO.	DESCRIPTION	QTY.
1	M3 Solder Terminal Lug	2

Part Prep		
	Created by: Joshua Vasquez	last edited: 6/12/2020
	SCALE: 2:1	SHEET 4 OF 17

2

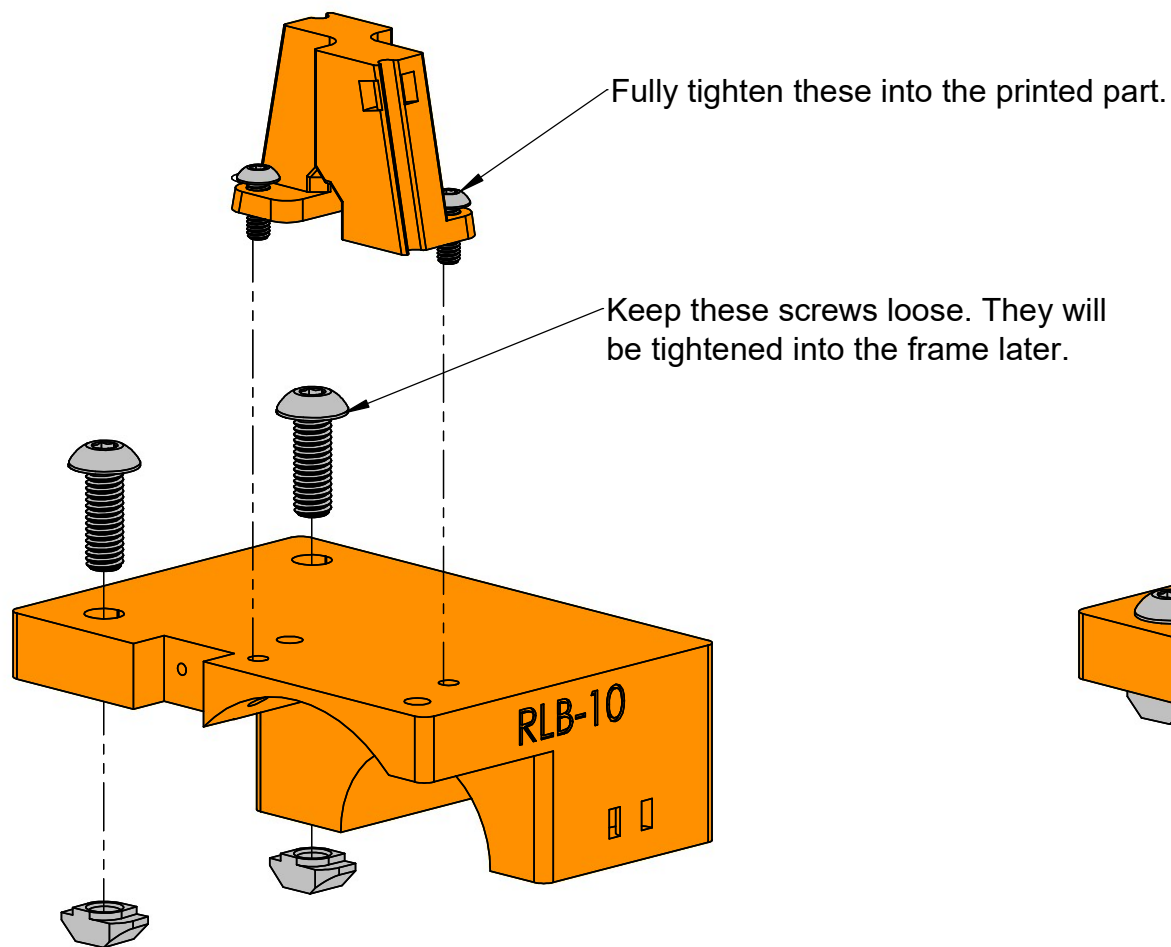
1

2

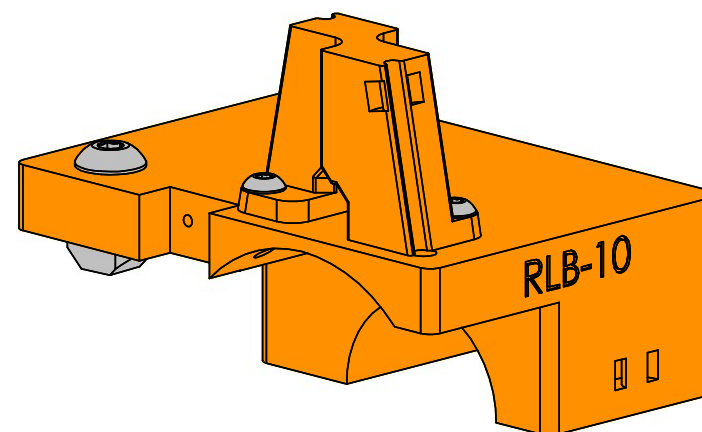
1

B

B



Exploded View



Assembled View

A

A

ITEM NO.	DESCRIPTION	
1	REL Base with Inserts	1
2	Spring Guide Anchor Block	1
3	M3 Buttonhead Screw, 8mm long	2
4	M5 Buttonhead Screw, 14mm long	2
5	M5 Drop-In T-Nut for 20x20 Extrusion	2

## Base Plate Assembly



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

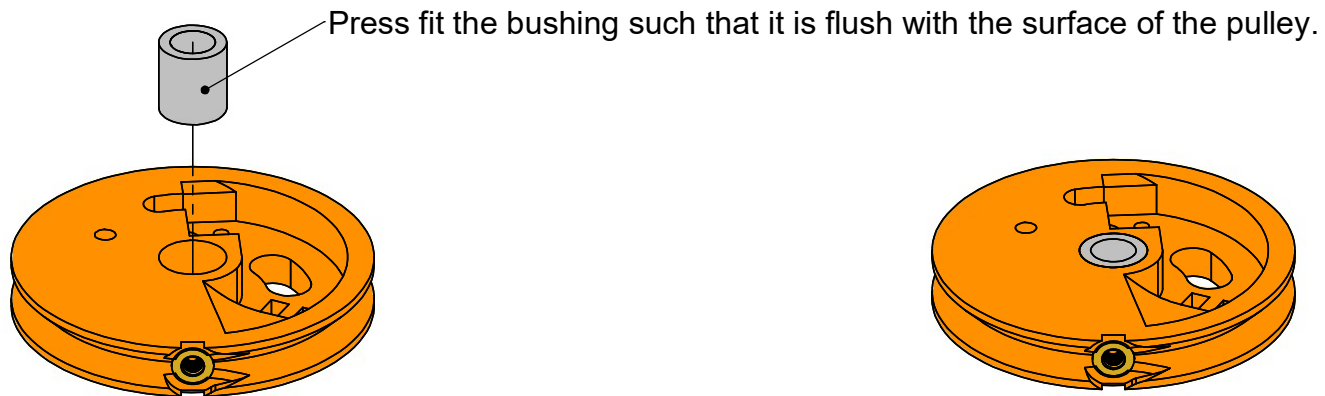
SHEET 5 OF 17

2

1

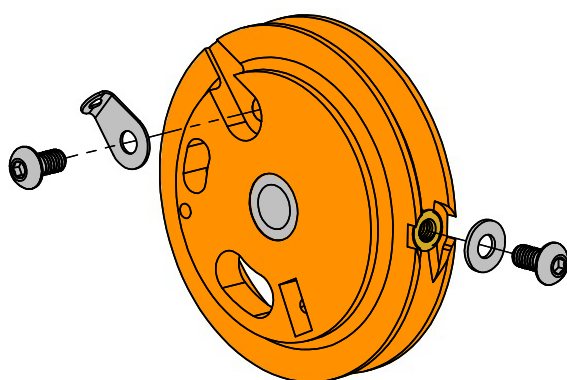
2

1

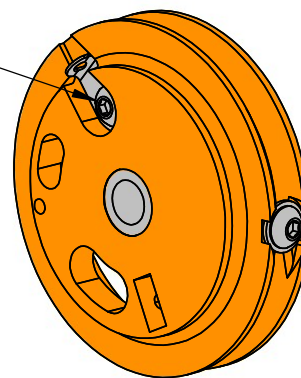


B

B



Fully tighten this screw.



This screw can stay loose.

A

A

ITEM NO.	DESCRIPTION	QTY.
1	Floating Half Pulley with Insert	1
2	M3 Buttonhead Screw, 6mm long	2
3	Bent M3 Solder Terminal Lug (Bend A)	1
4	Sleeve Bearing, 6mm bore, 10mm long	1
5	M3 Washer	1

### Floating Half Pulley Assembly



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

SHEET 6 OF 17

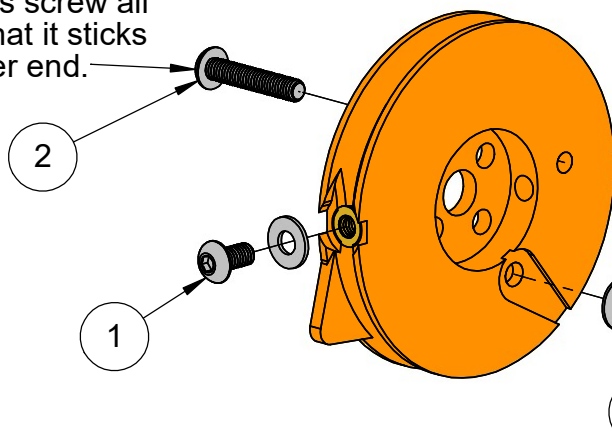
2

1

2

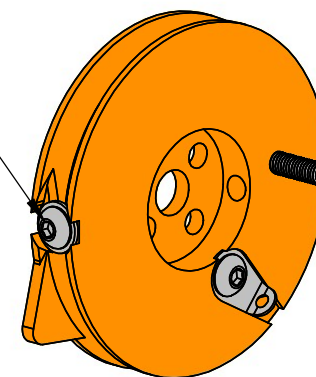
1

Fully tighten this screw all the way such that it sticks out on the other end.



This screw can stay loose.

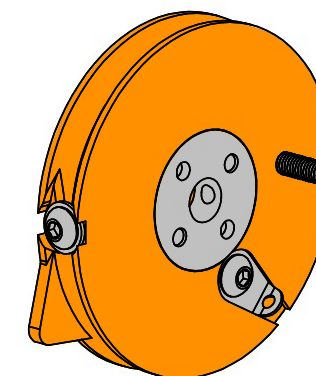
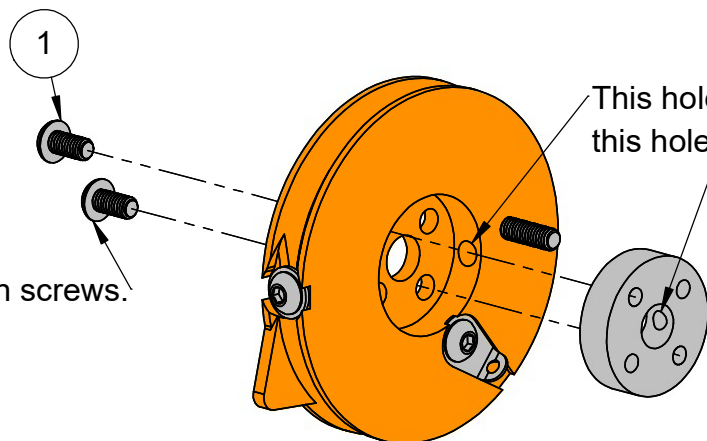
Fully tighten this screw.



1

This hole should line up with this hole.

Fully tighten both screws.



A

A

ITEM NO.	DESCRIPTION	QTY
1	M3 Buttonhead Screw, 6mm long	4
2	M3 Buttonhead Screw, 16mm long	1
3	M3 Washer	1
4	Bent M3 Solder Terminal Lug (Bend A)	1
5	Fixed Pulley with Insert	1
6	Hub, 6mm bore	1

### Fixed Half Pulley Assembly



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Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

SHEET 7 OF 17

2

1

2

1

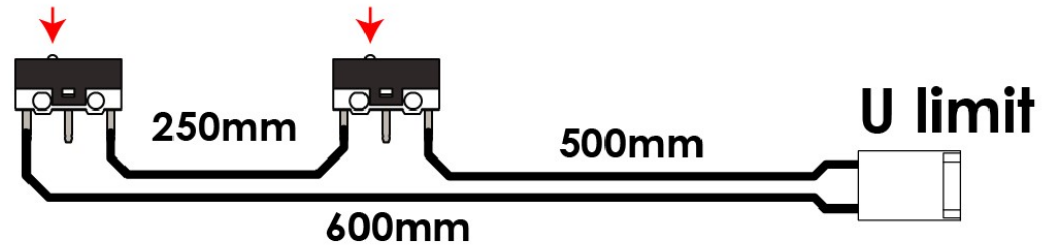
Solder together the following limit switch harness.  
Optional: insulate the solder connections with heat-shrink tubing.

Note wire lengths with respect to switch buttons.  
Note: the KK Connector is included in the Duet2 box.

B

B

24-26AWG all limit switch wires




Internal  
"Floating" Pulley  
Limit Switch

External  
Base Mounted  
Limit Switch

U limit

A

A

Wiring		
	Created by: Joshua Vasquez	last edited: 6/12/2020
	SCALE: 1:1	SHEET 8 OF 17

2

1

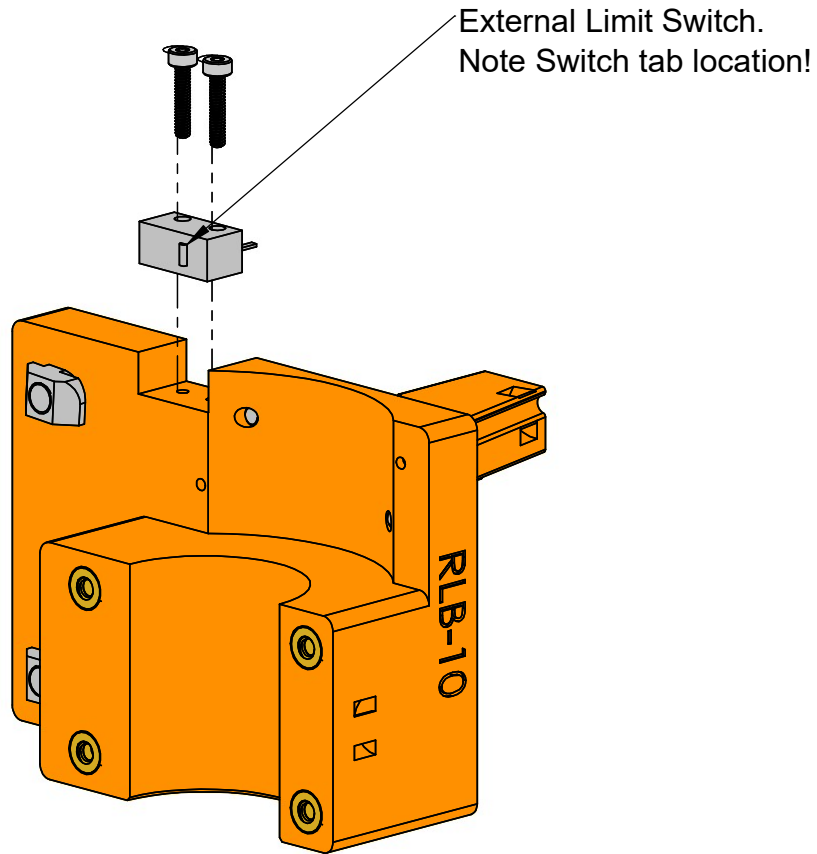


2

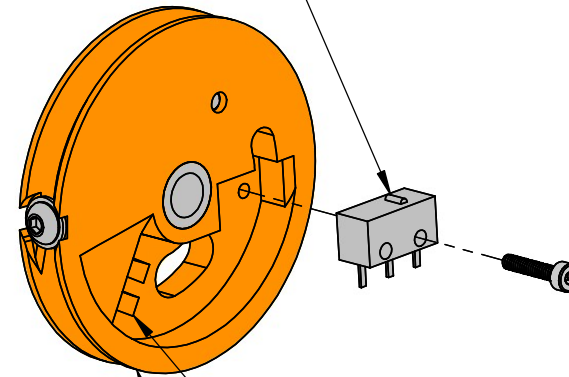
1

B

B



Internal Limit Switch.  
Note Switch tab location!



This part will dangle by the wires for a couple steps and is not shown in the in-between steps.

A

A

ITEM NO.	DESCRIPTION	QTY.
1	Floating Half Pulley with Insert	1
2	REL Base Plate with Inserts	1
3	M2 Screw, 10mm long	3
4	Mechanical Limit Switch	2

### Limit Switch Installation



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

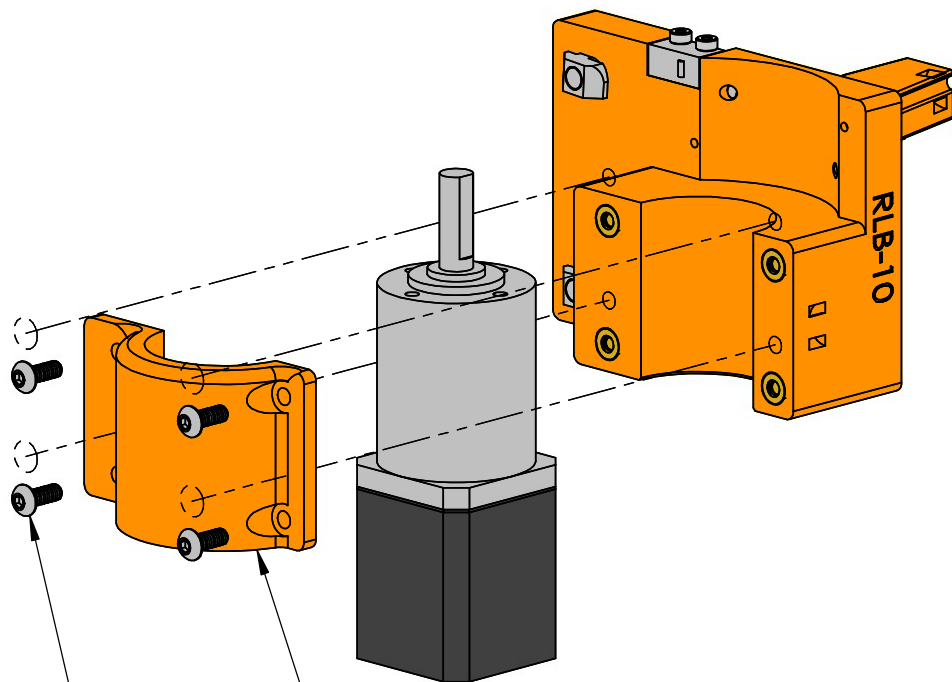
SHEET 9 OF 17

2

1

2

B

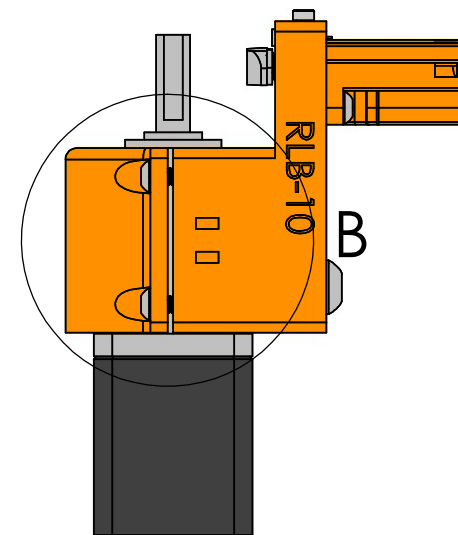


The motor clip only attaches one way.

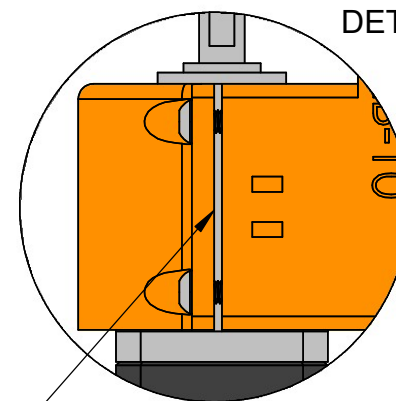
Evenly tighten these screw such that:you cannot twist the motor relative to the plate by hand

1

B



DETAIL B



There will be a gap here on both sides. Ensure that it is even.

A

A

ITEM NO.	DESCRIPTION	
1	Nema 11 Planetary Stepper,13.76:1, 1A	1
3	Lock Actuator Motor Clip	1
4	M3 Buttonhead Screw, 8mm long	4

### Motor Installation



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Joshua Vasquez

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6/12/2020

SCALE: 3:4

SHEET 10 OF 17

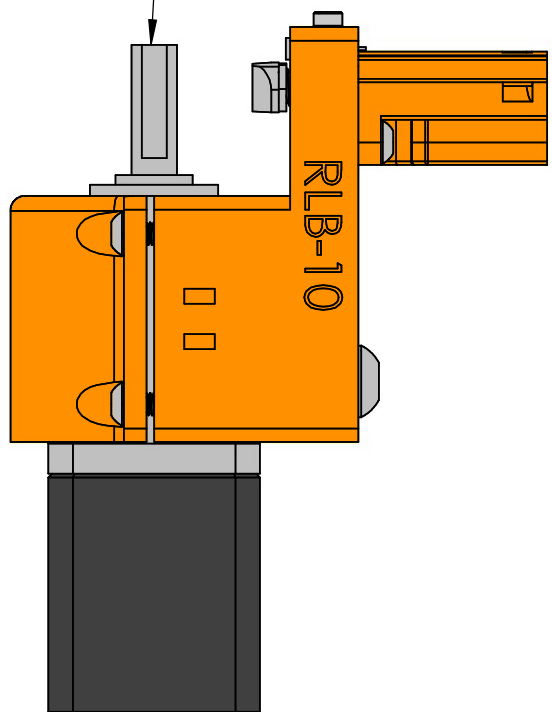
2

1

2

1

By hand, turn the motor shaft such that the flat part faces the orientation with the part number as shown here.



B

B

A

A

2

1

### Shaft Alignment

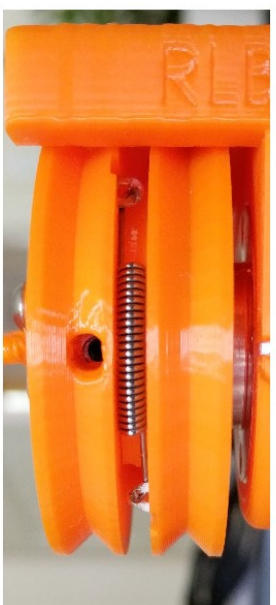
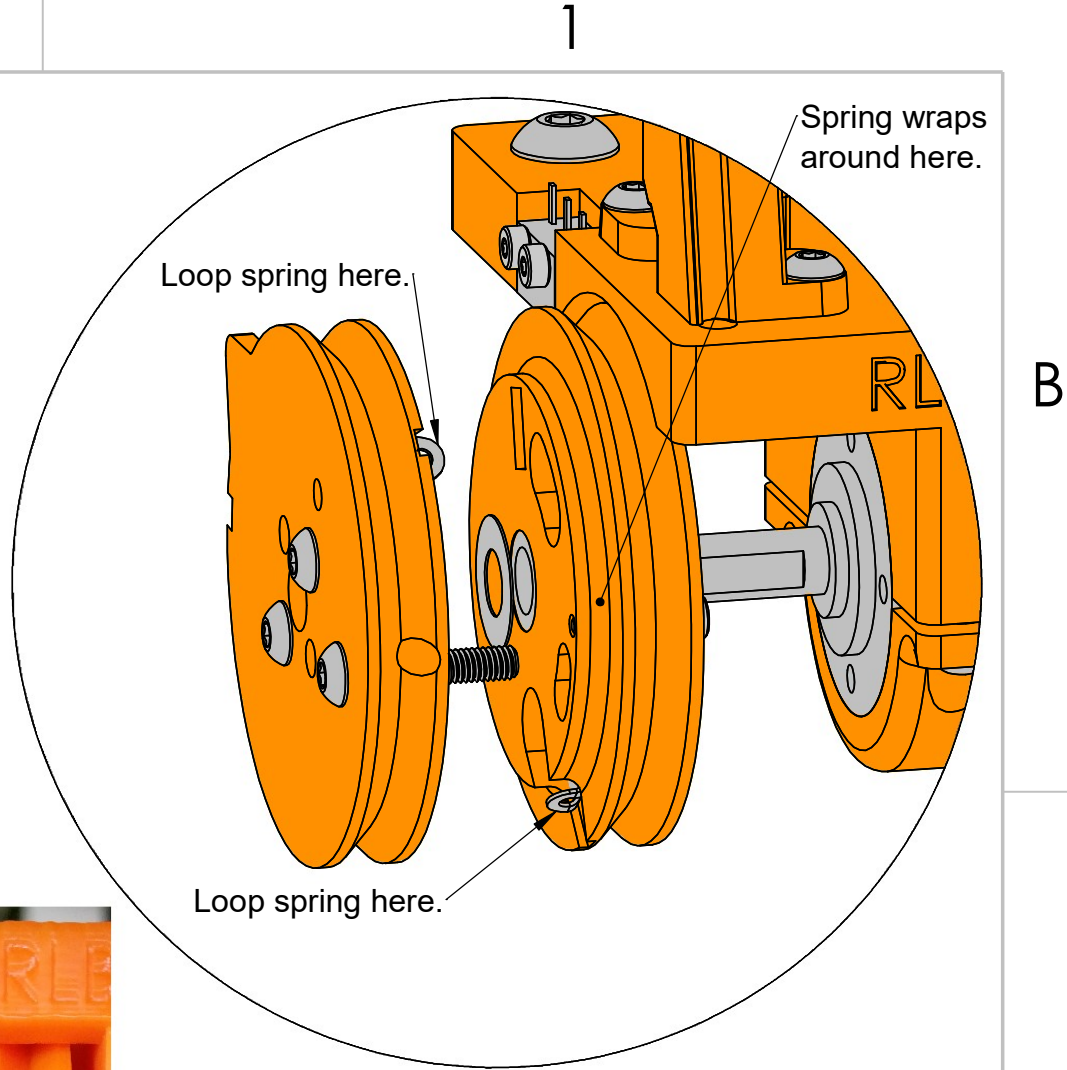
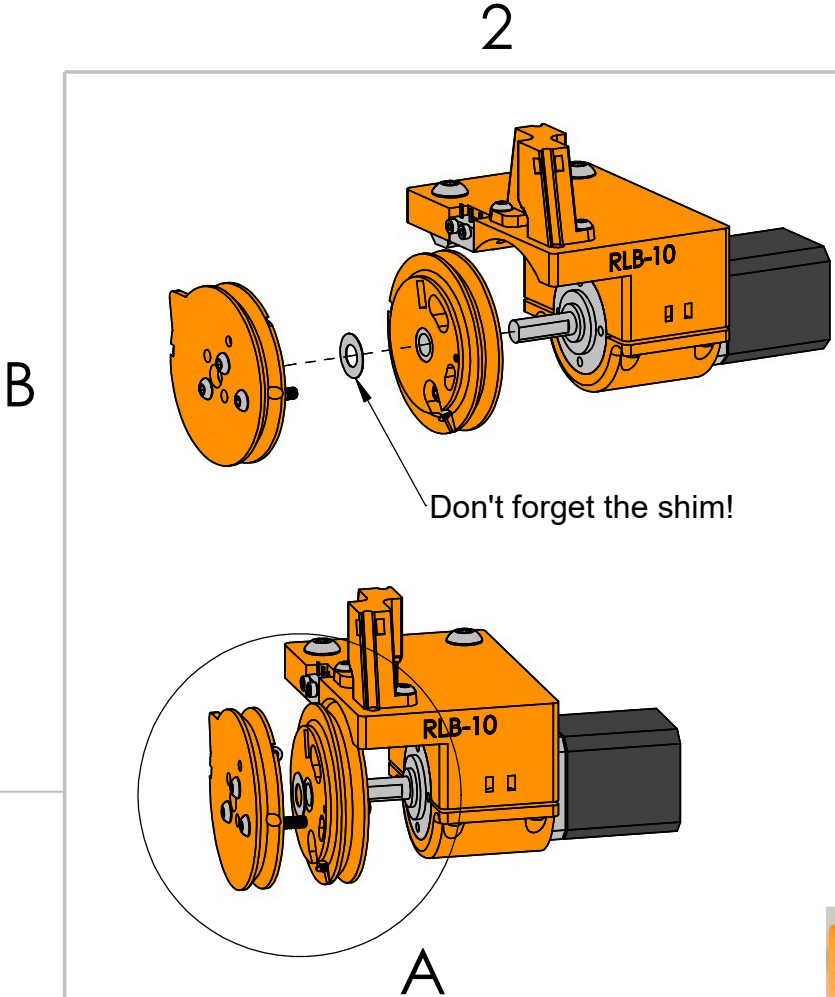


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Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

SHEET 11 OF 17



A

ITEM NO.	DESCRIPTION	QTY
1	Fixed Half Pulley Assembly	1
2	Floating Half Pulley Assembly	1
3	M6 Shim, 0.2mm thick	1
4	REL Extension Spring	1
9	M3 Set Screw, 5mm long	1

Pulley and Spring Assembly

Created by: Joshua Vasquez last edited: 6/12/2020

SCALE: 1:2 SHEET 12 OF 17

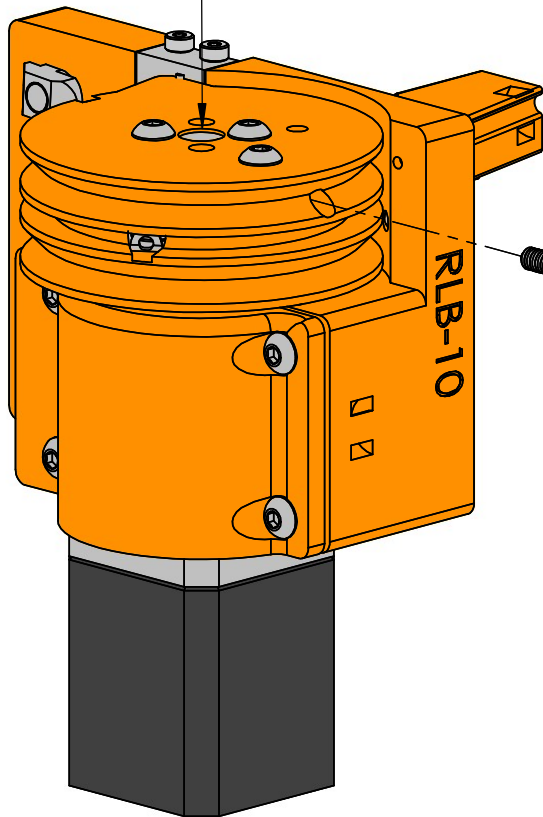
CC BY

2

1

Push down on the fixed pulley while tightening the set screw.

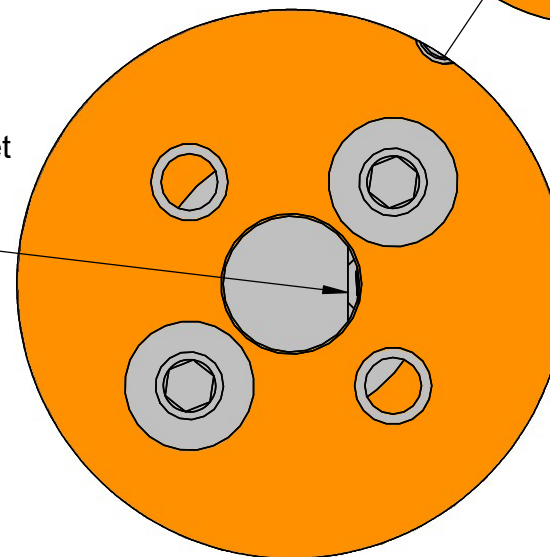
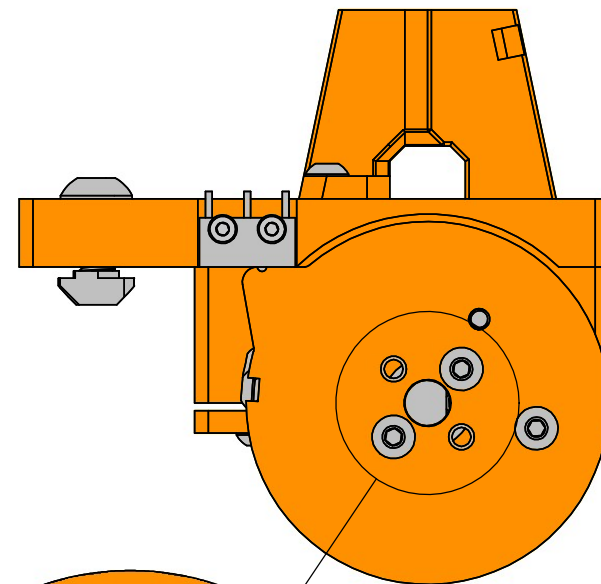
B



Apply threadlock to the threads of this set screw; then fully tighten it into the flat part of the shaft.

After tightening, ensure that the set screw is actually fixed onto the flat part of the shaft.

B



DETAIL D

A

A

ITEM NO.	DESCRIPTION	QTY.
2	M3 Set Screw, 5mm long	1

## Fixed Pulley Securing



Created by:  
Joshua Vasquez

last edited:  
6/12/2020

SCALE: 1:1

SHEET 13 OF 17

2

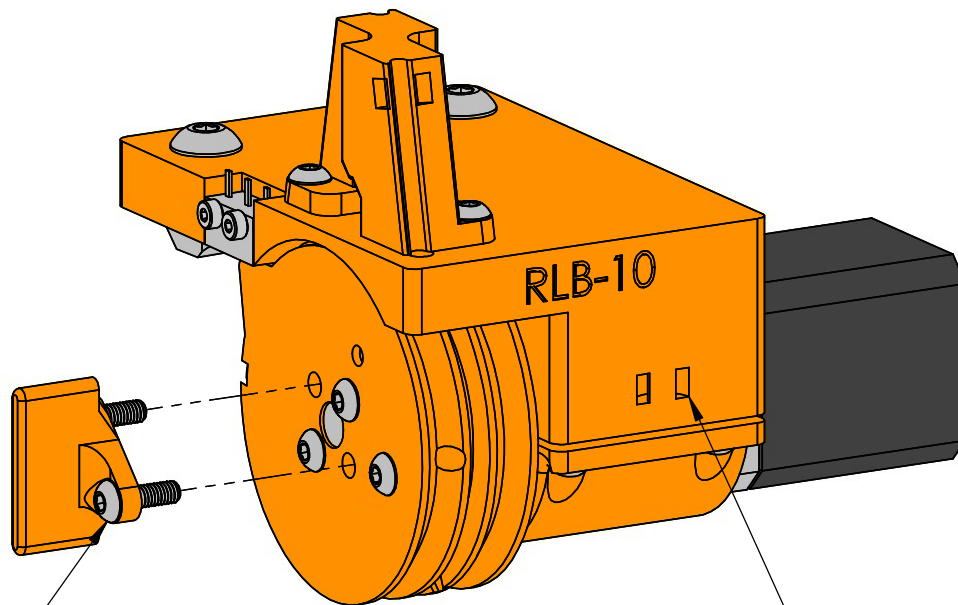
1

2

1

B

B



Fully tighten these screws.

Secure loose wires with a zip tire here.

A

A

ITEM NO.	DESCRIPTION	QTY.
1	REL Knob	1
2	M3 Buttonhead Screw, 10mm long	2

Knob and Cable Management		
	Created by: Joshua Vasquez	last edited: 6/12/2020
	SCALE: 1:1	SHEET 14 OF 17

2

1

Note: this is just a schematic representation. Join these parts loosely together on a flat table following the color coding.

Note: tape the spring guide to the table for ease of assembly.

B

B

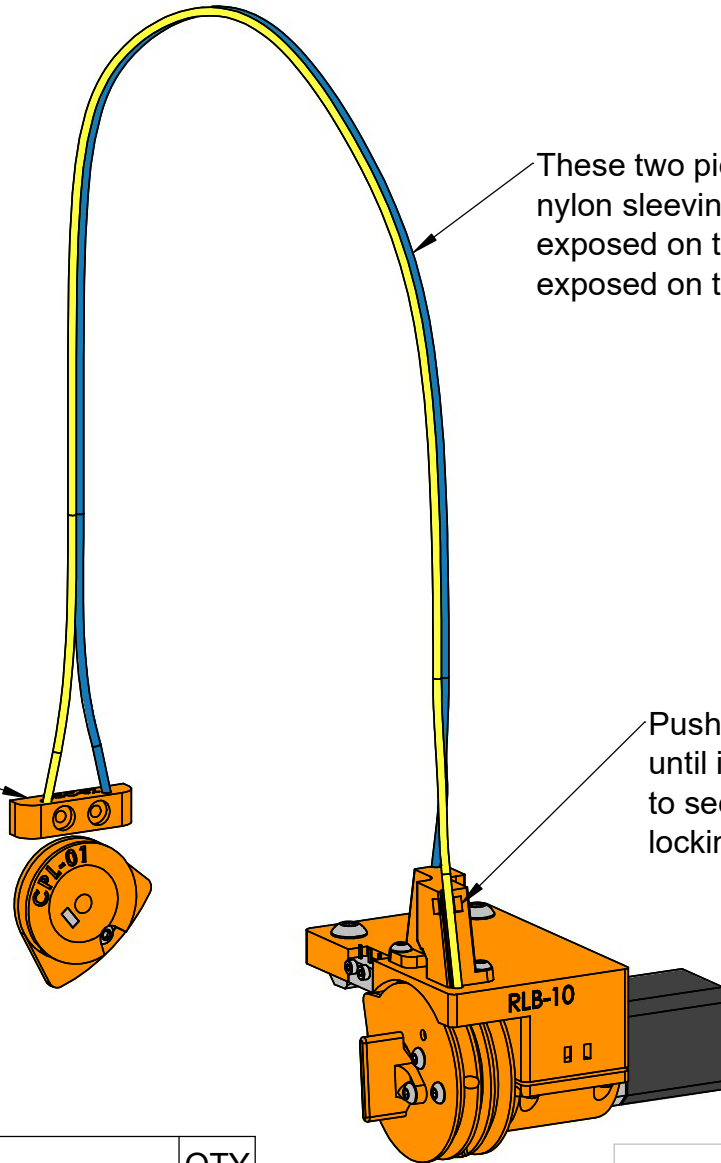
Push each spring guide into the printed part until they hard-stop at about 10mm deep.

These two pieces can be sleeved together in a nylon sleeving, but leave at least 100mm exposed on th carriage side and 150mm exposed on the Lock side.

Push each Spring Guide into the hole until it hard-stops. Then apply two zip ties to secure each spring guide at the locking side..

A

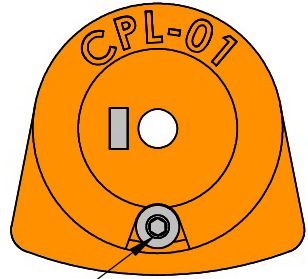
A



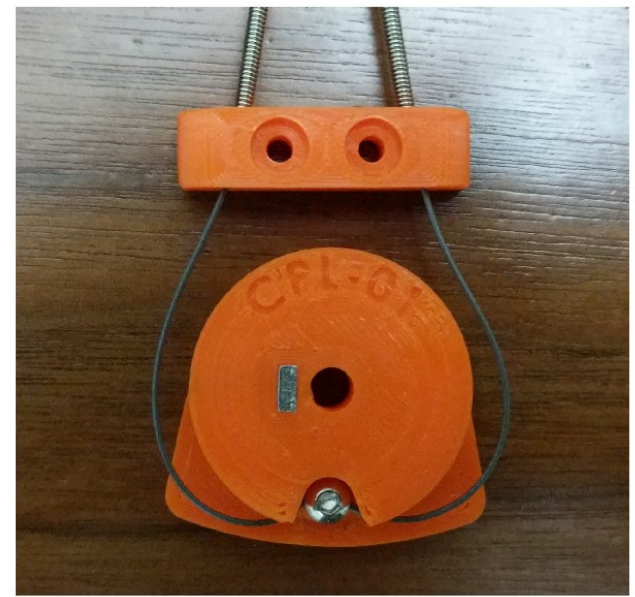
ITEM NO	DESCRIPTION	QTY
1	1600 mm wire rope	1
2	Carriage Pulley Assembly	1
3	Spring Guide, 600mm long	2
4	Optonal: Braided Cable Sleeving 350mm long	1

Spring Guide Installation		
	Created by:	last edited:
	Joshua Vasquez	6/12/2020
SCALE: 1:2	SHEET 15 OF 17	

B



Loop the wire rope behind this screw at the halfway point and fully tighten the screw.

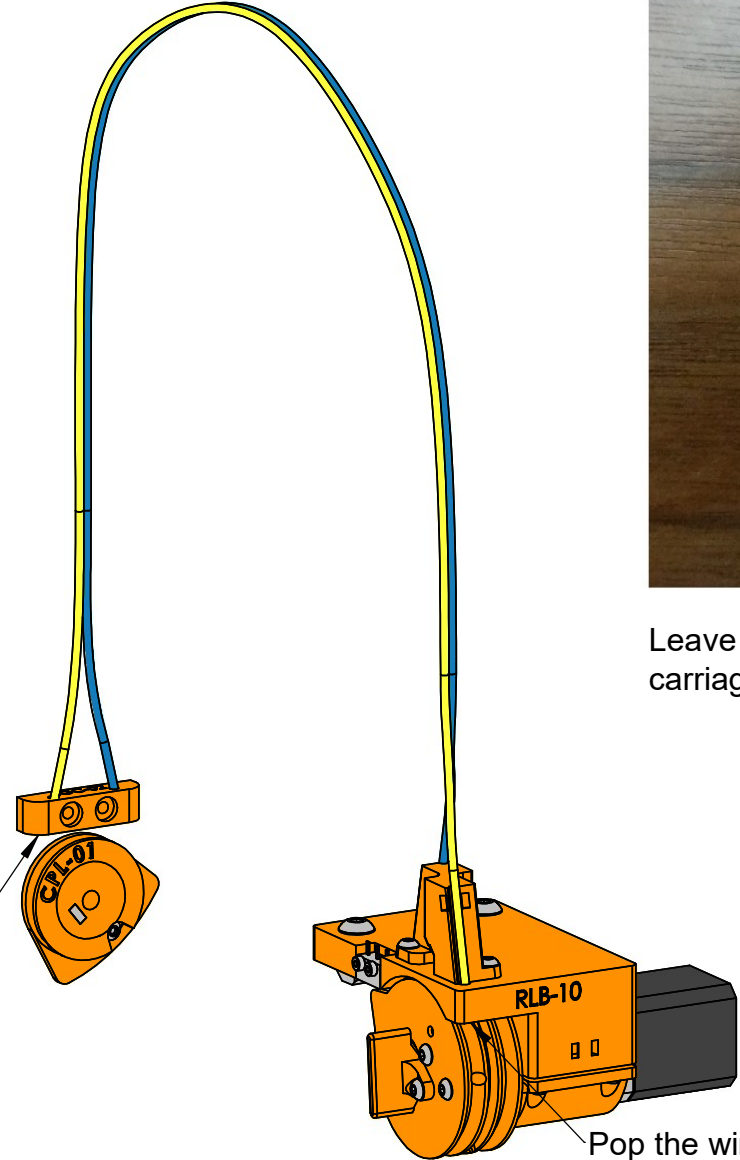


Leave some slack on both sides of the carriage for the next step.

B

A

Tuck each loop of the wire rope into the closest hole.



Pop the wires out of each exit hole here. See the next page for cinching details.

A

ITEM NO	DESCRIPTION	QTY
1	1600 mm wire rope	1
2	Carriage Pulley Assembly	1
3	Spring Guide, 600mm long	2

### Wire Rope Routing



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Joshua Vasquez

last edited:  
6/12/2020

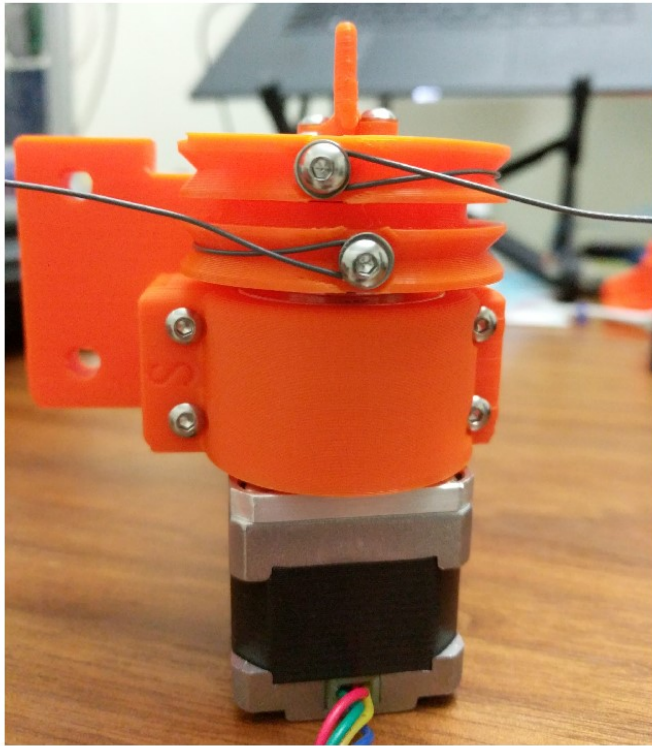
SCALE: 1:2

SHEET 16 OF 17



2

1



Cinch both wire rope ends down very lightly (upper left image), just enough such that the wire rope cannot pop out. The location of where they are cinched doesn't matter now as they will be properly located later.

B

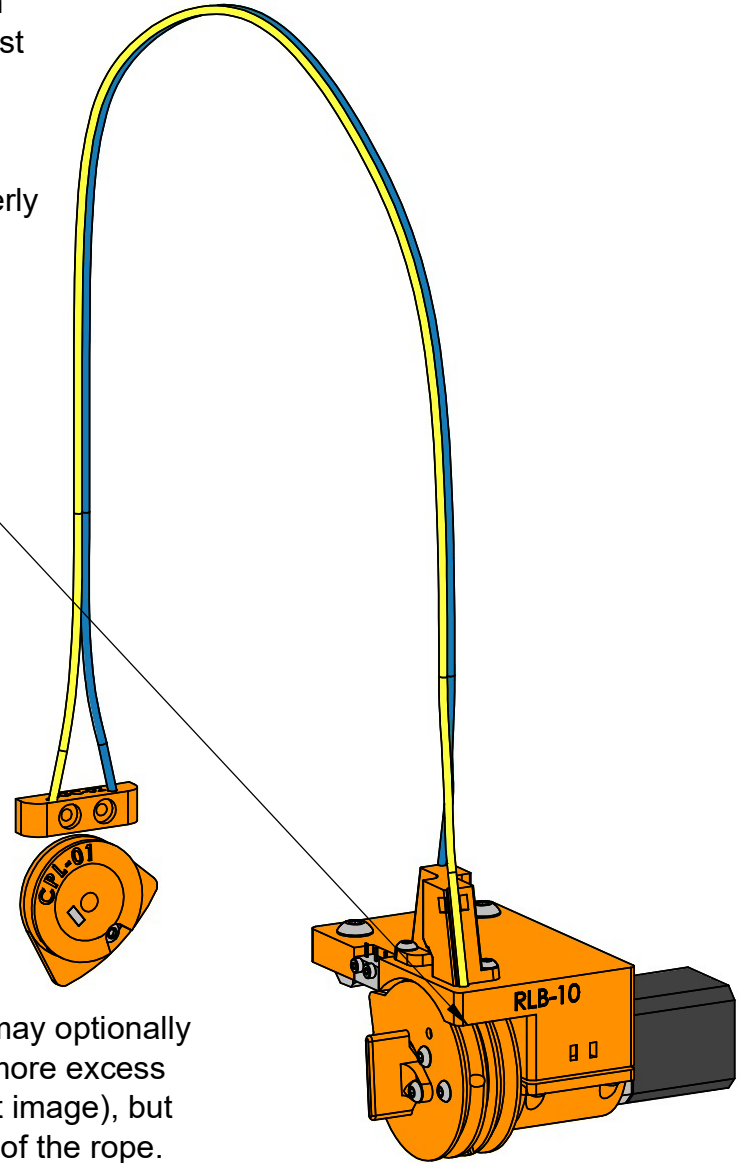
B



Once the wires are cinched, you may optionally take in the slack until there is no more excess wire rope on the carriage side (left image), but do not put tension into either side of the rope. This setup makes it easier to install on the machine later.

A

A



Wire Rope Termination		
	Created by:	last edited:
	Joshua Vasquez	6/12/2020
SCALE: 1:2	SHEET 17 OF 17	

2

1