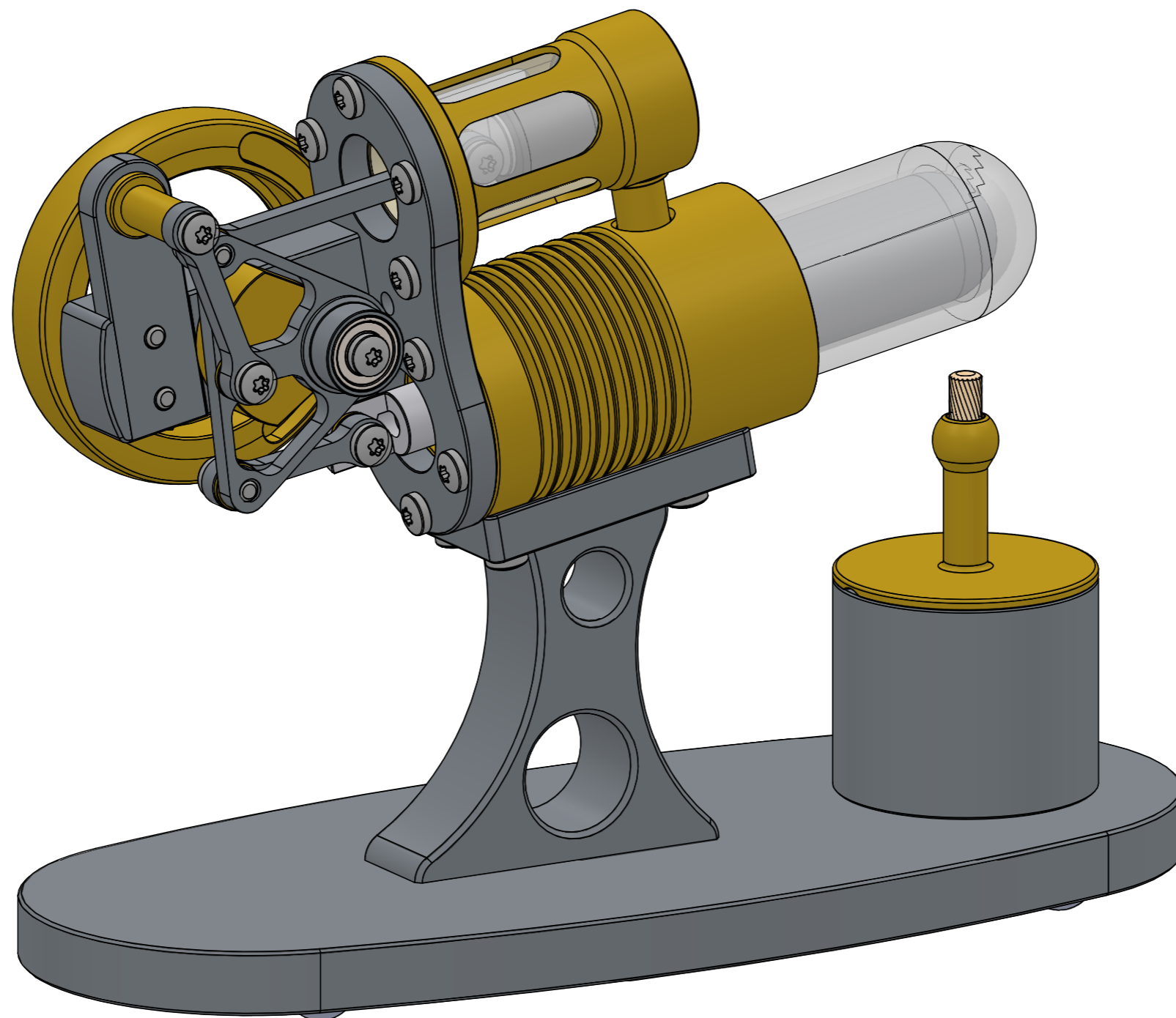


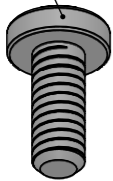
Please read all the way through the assembly instructions to familiarise yourself with the process before you start.

Pay close attention to the alignment of all the parts in the diagrams.

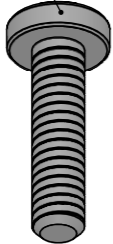
Maintenance and operation instructions can be found at the end of this document.



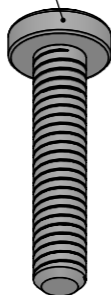
14X  
M2x5 screw



13X  
M2x8 screw



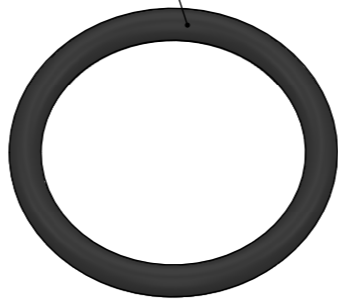
1X  
M2x10 screw



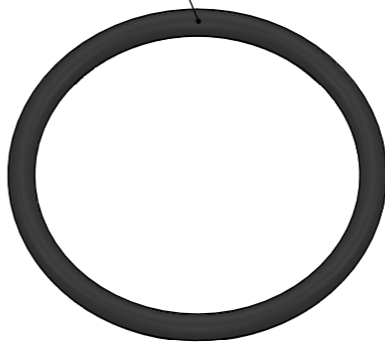
2X  
3mm O ring



1X  
10mm O ring



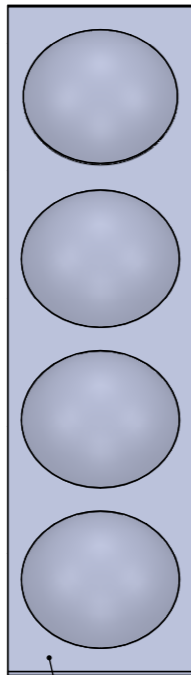
1X  
13mm O ring



2X  
17mm O ring



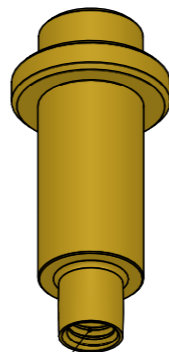
Wick  
1X



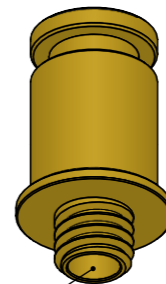
Rubber feet  
4X



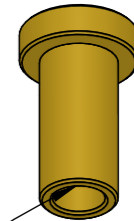
Cylinder  
1X



Strut pin  
1X

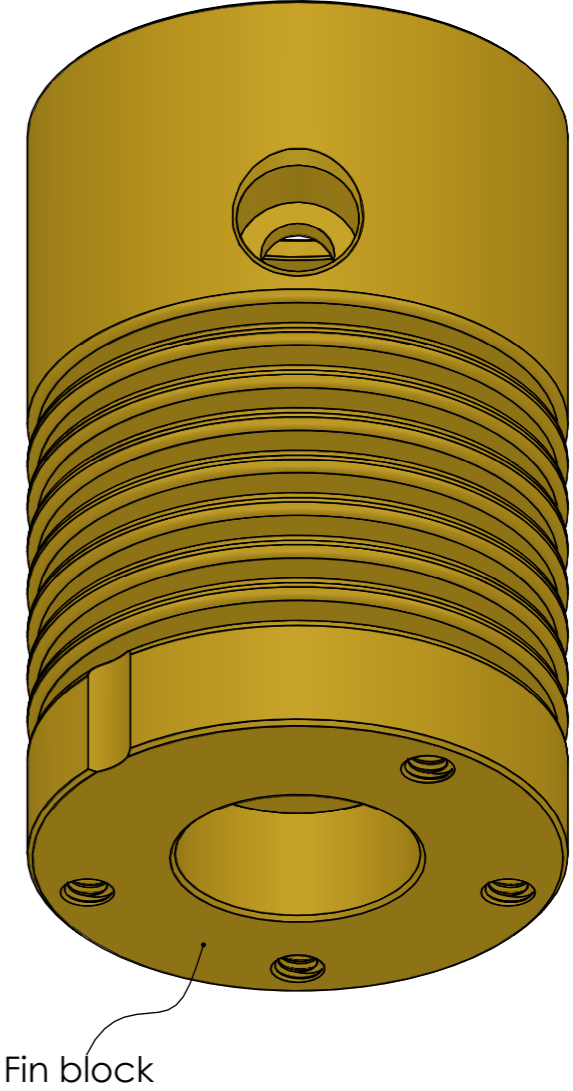
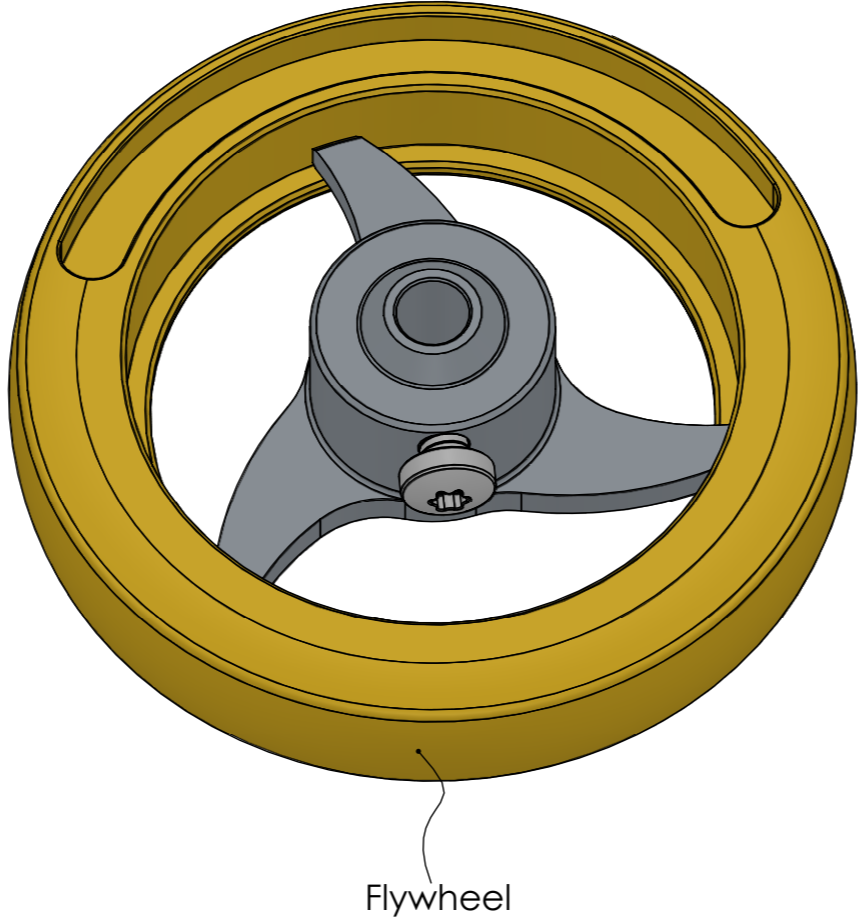
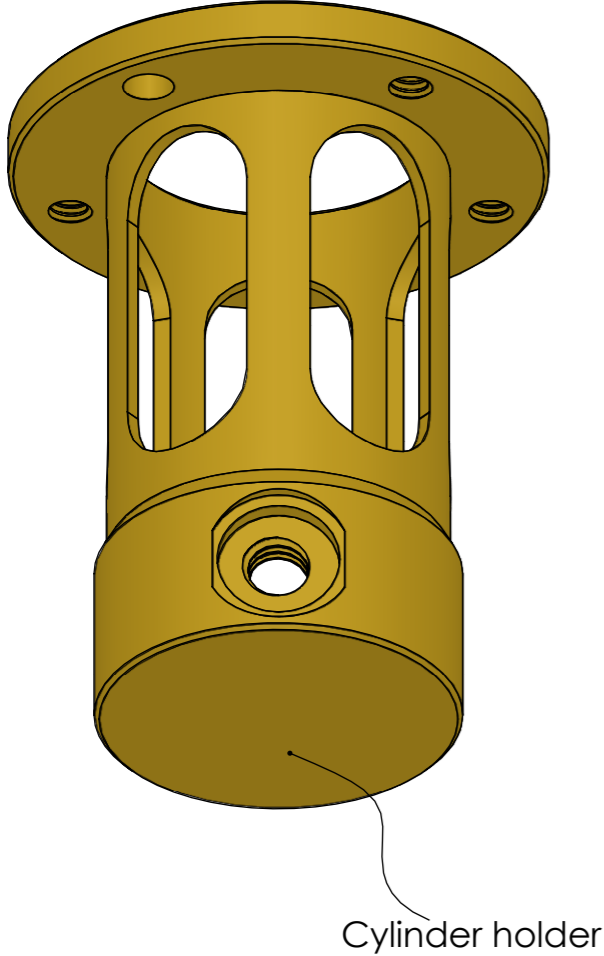
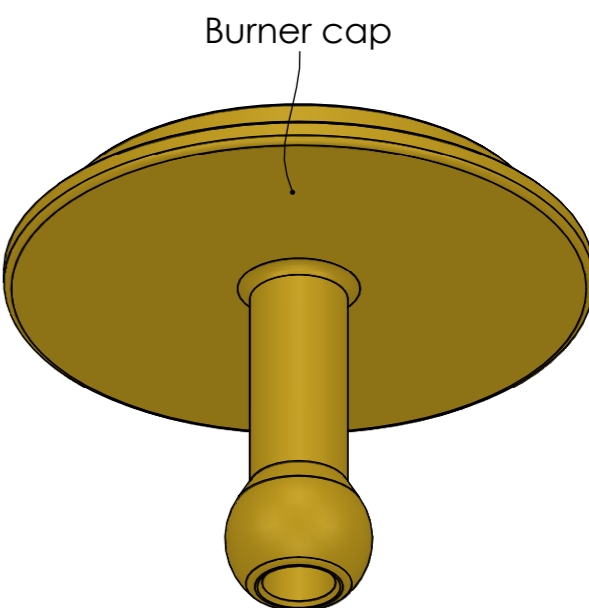
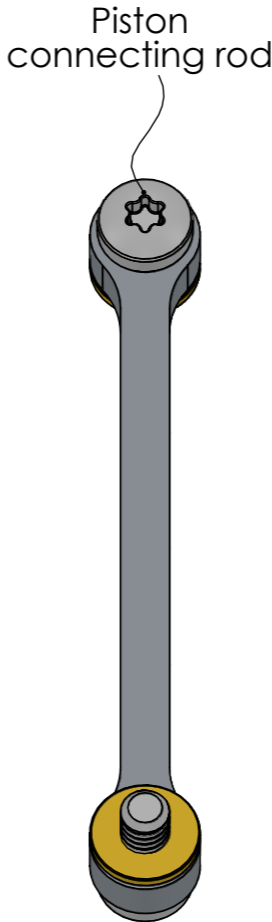
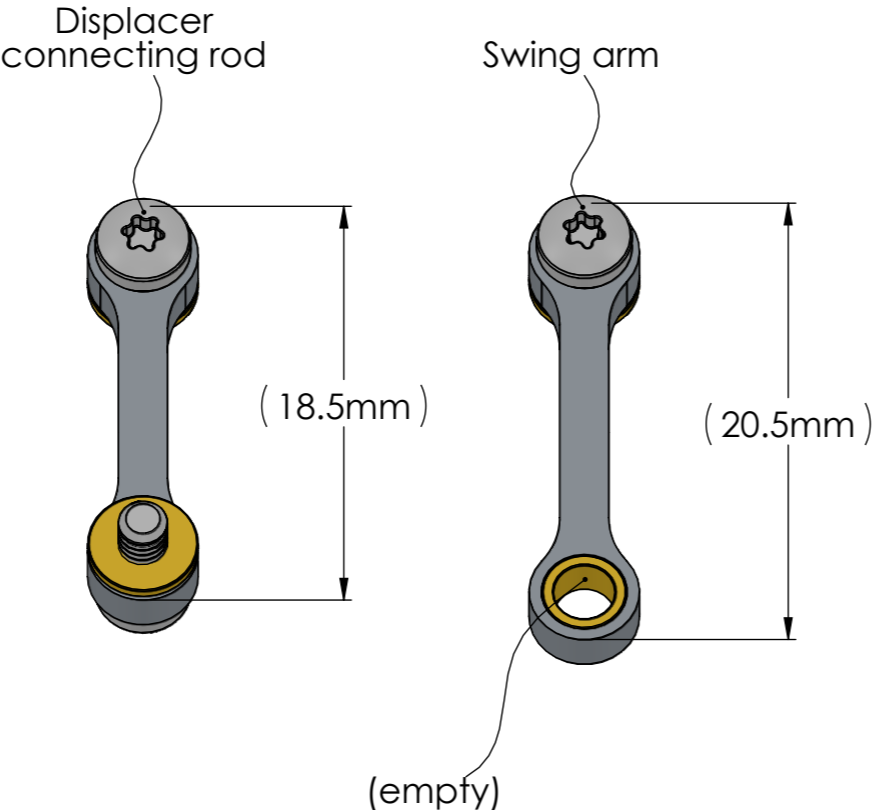
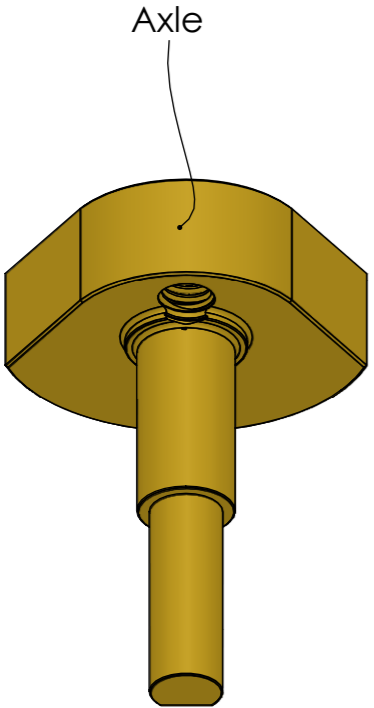


Port  
1X

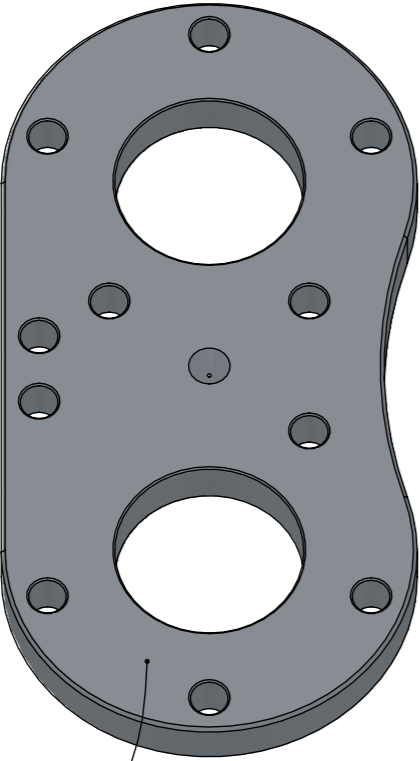
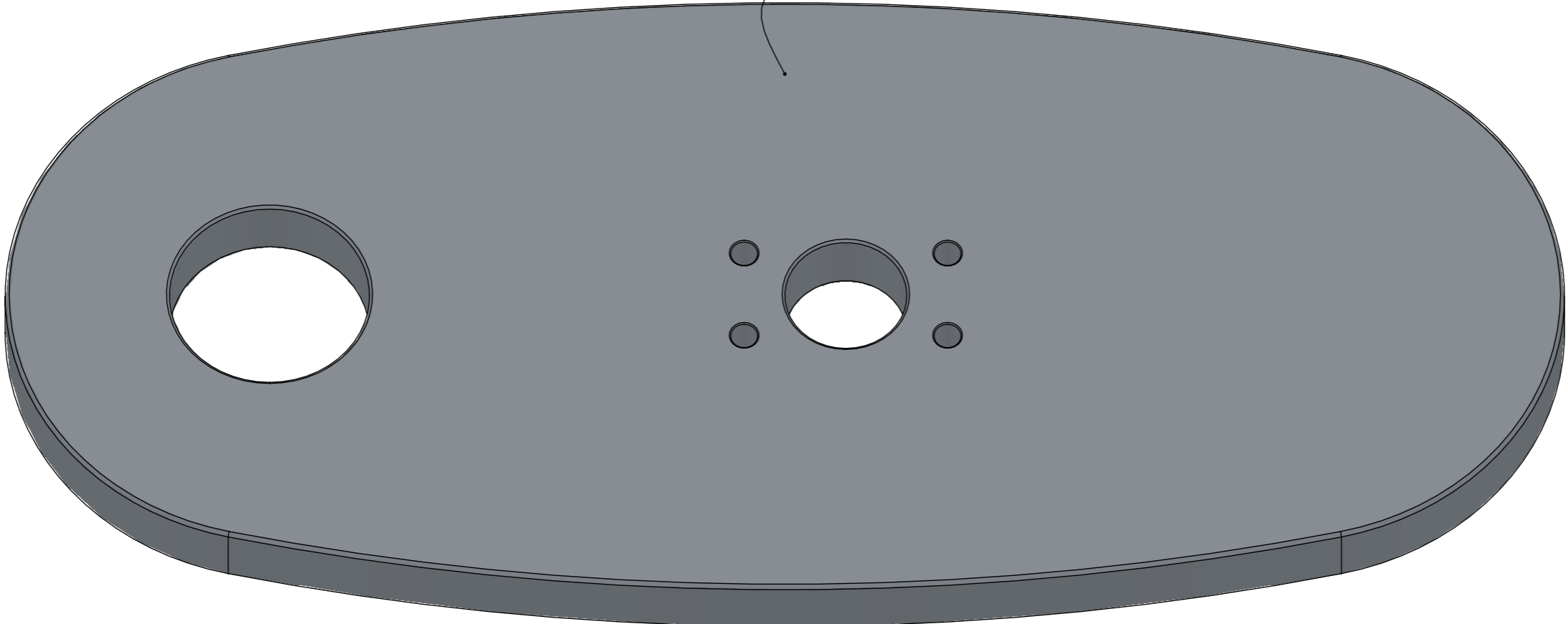


Crank bush  
1X

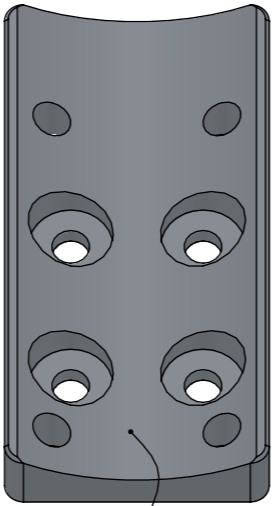




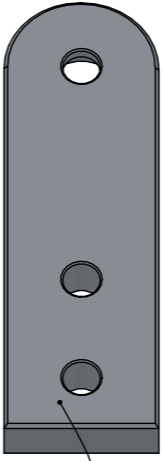
1X  
Base



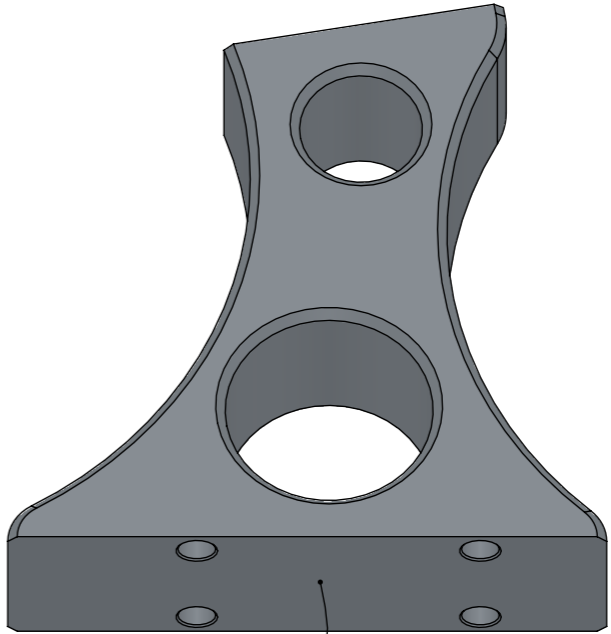
Front plate  
1X



Foot bracket  
1X

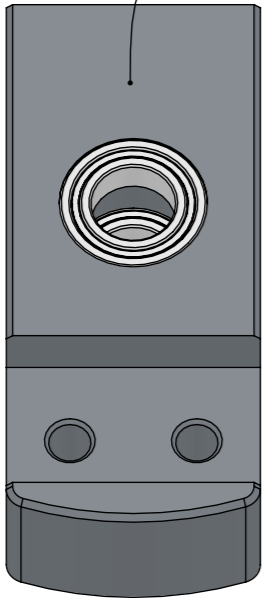


Strut  
1X

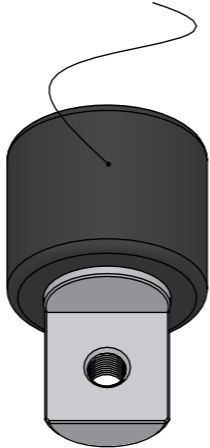


Foot  
1X

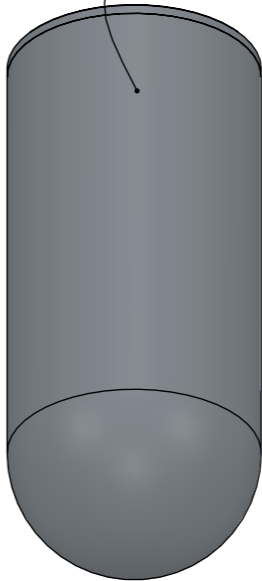
1X  
Bearing bracket



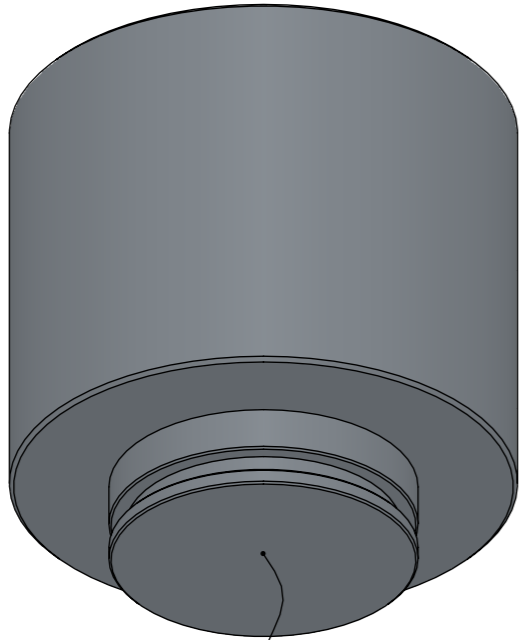
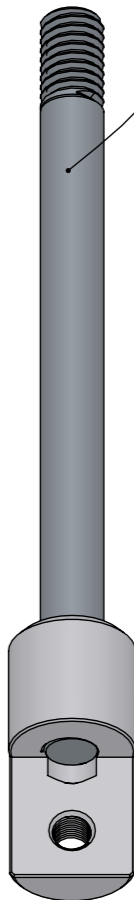
1X  
Piston



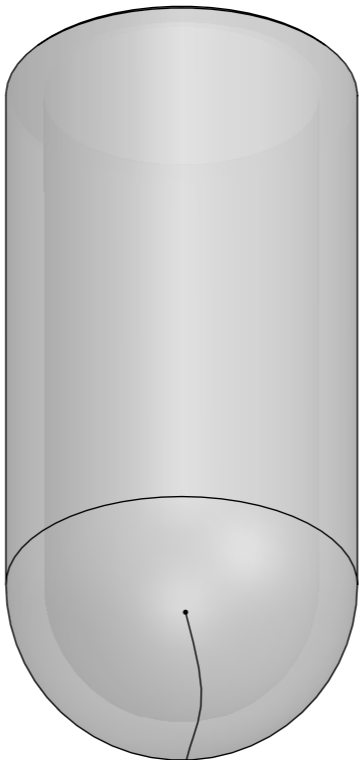
1X  
Displacer



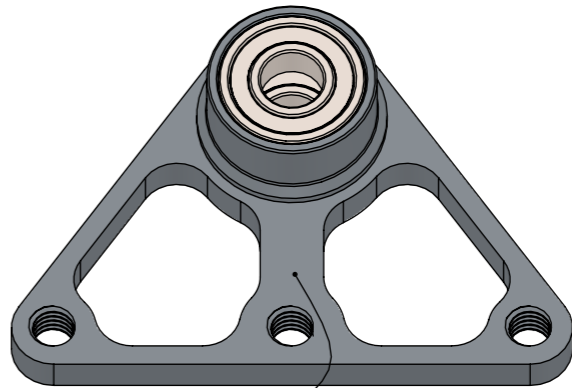
1X  
Displacer stem



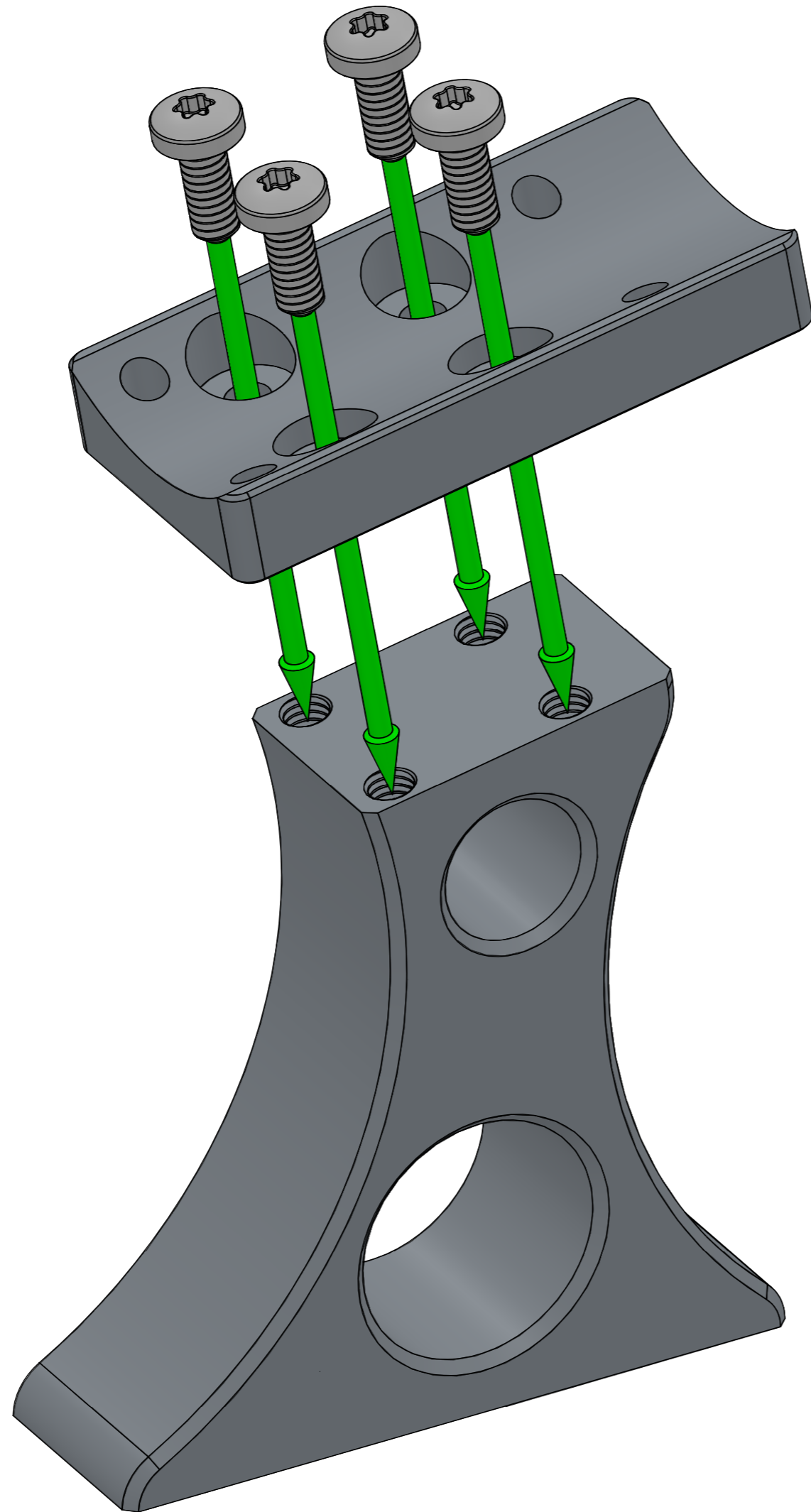
Burner body  
1X



Hot cap  
(borosilicate glass)  
1X



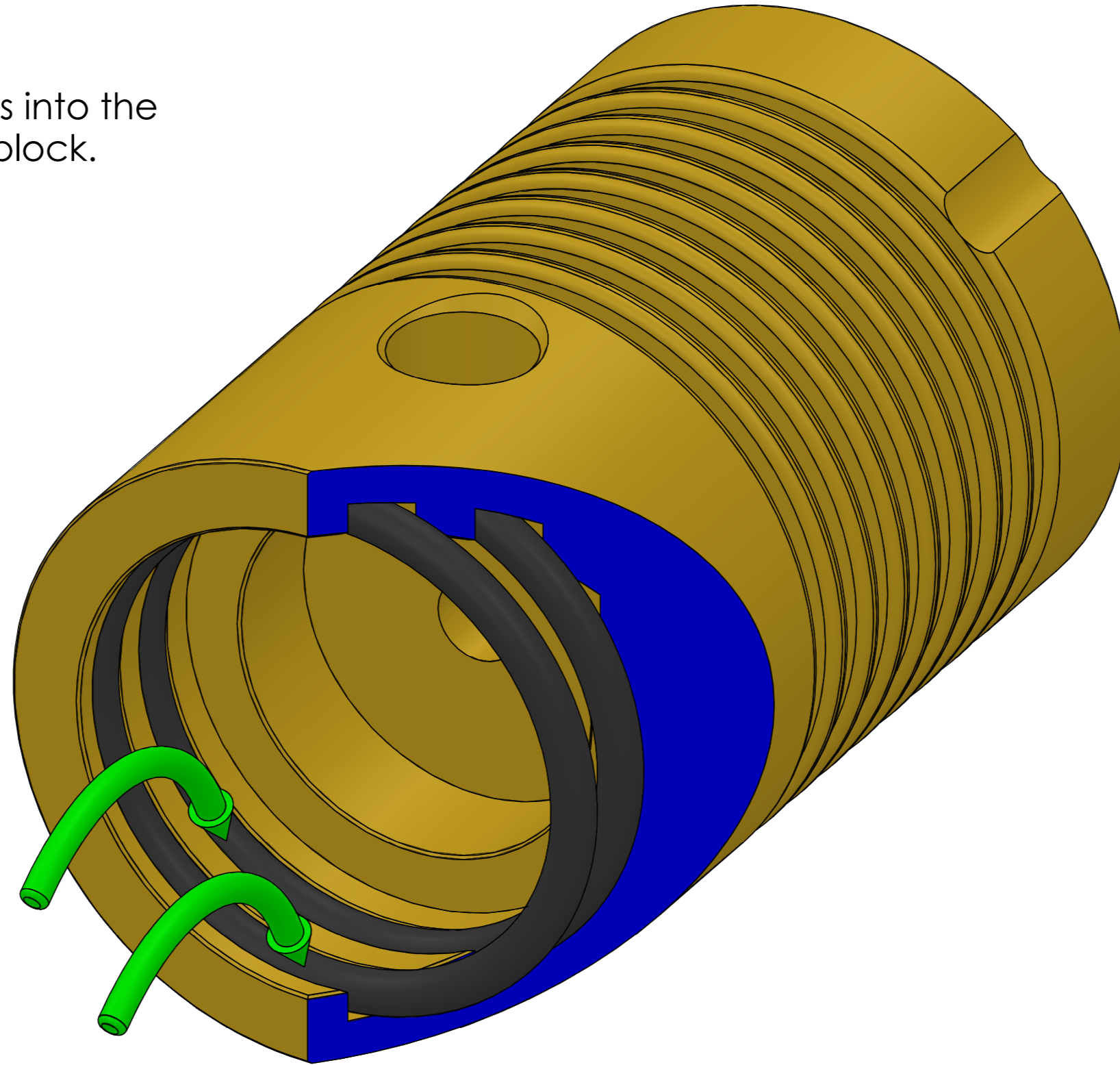
Yoke  
1X



Screw 4x M2x5 screws through the foot bracket into the foot and tighten.



Fit 2x 17mm O rings into the grooves in the fin block.

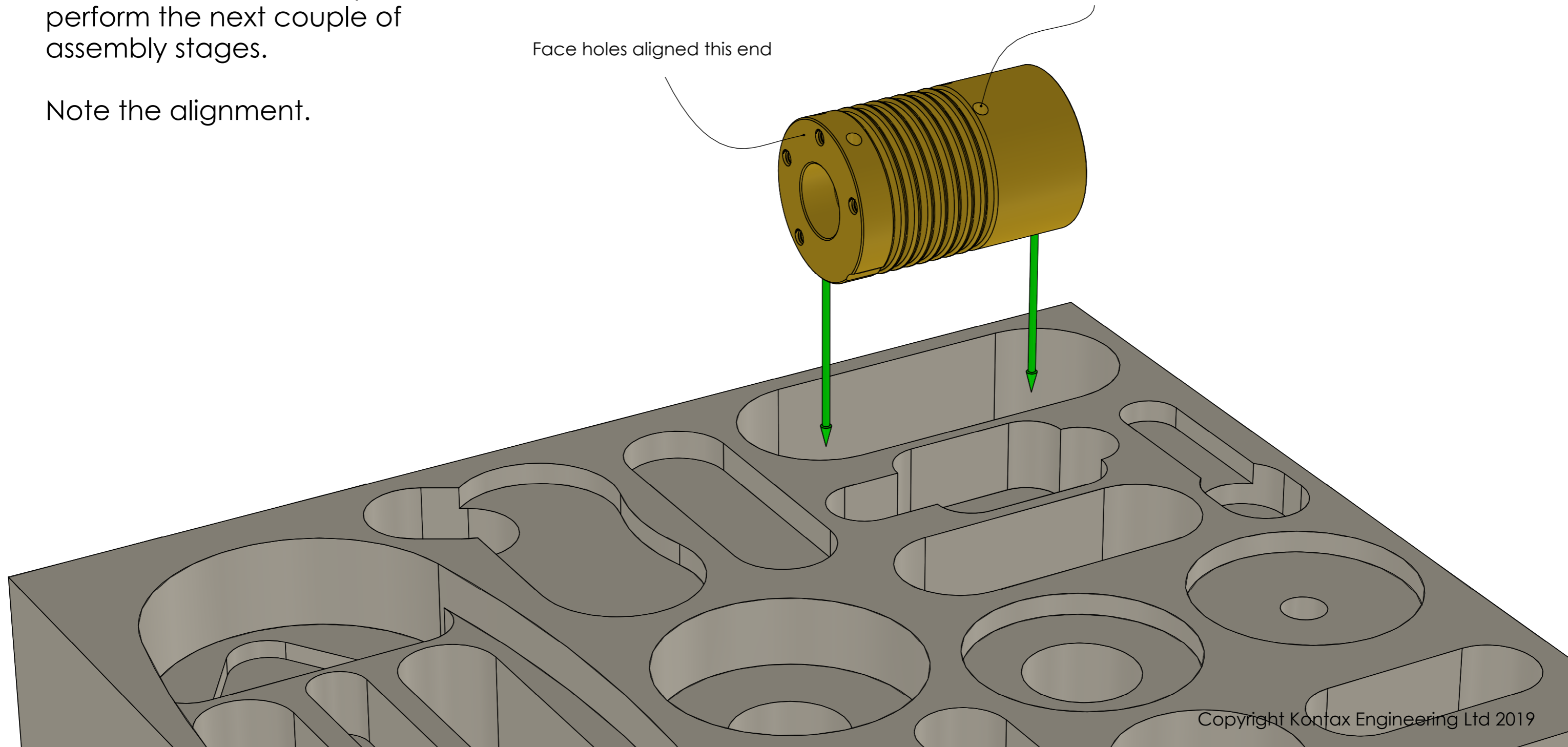


Push the fin block into the pocket in the packing tray. This will hold it still while you perform the next couple of assembly stages.

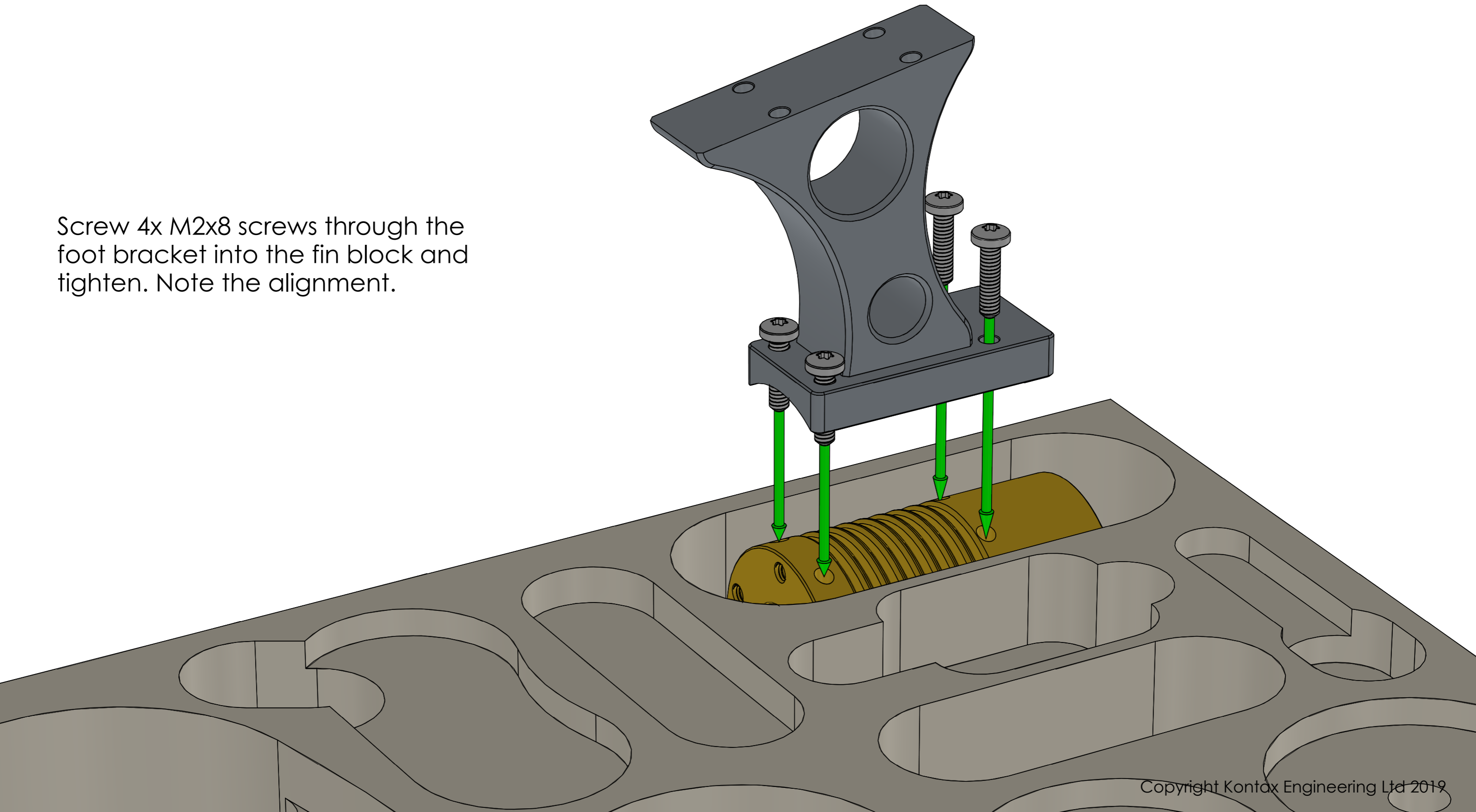
Note the alignment.

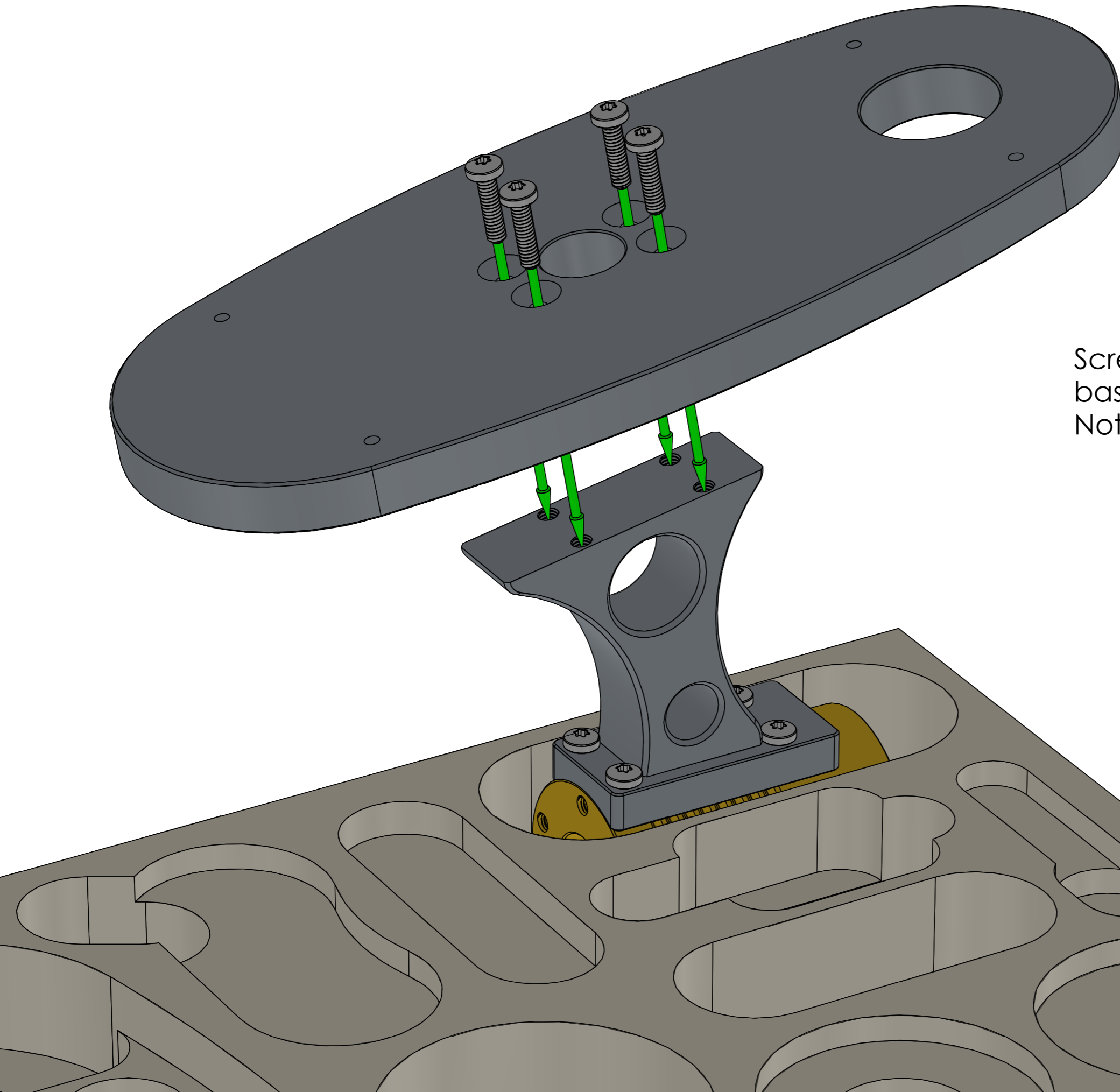
Face holes aligned this end

Side holes aligned upwards



Screw 4x M2x8 screws through the foot bracket into the fin block and tighten. Note the alignment.

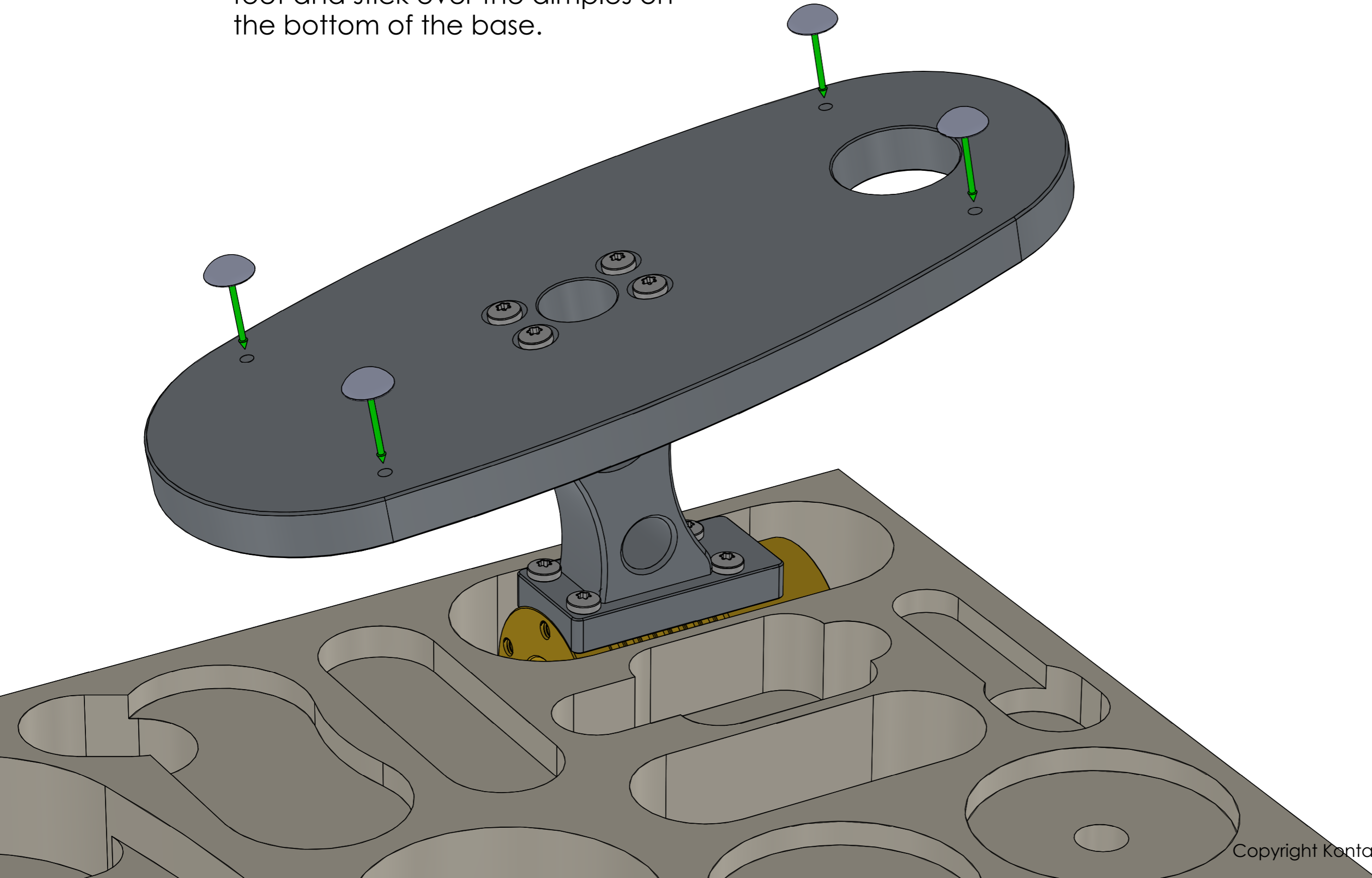




Screw 4x M2x8 screws through the base into the foot and tighten. Note the alignment.

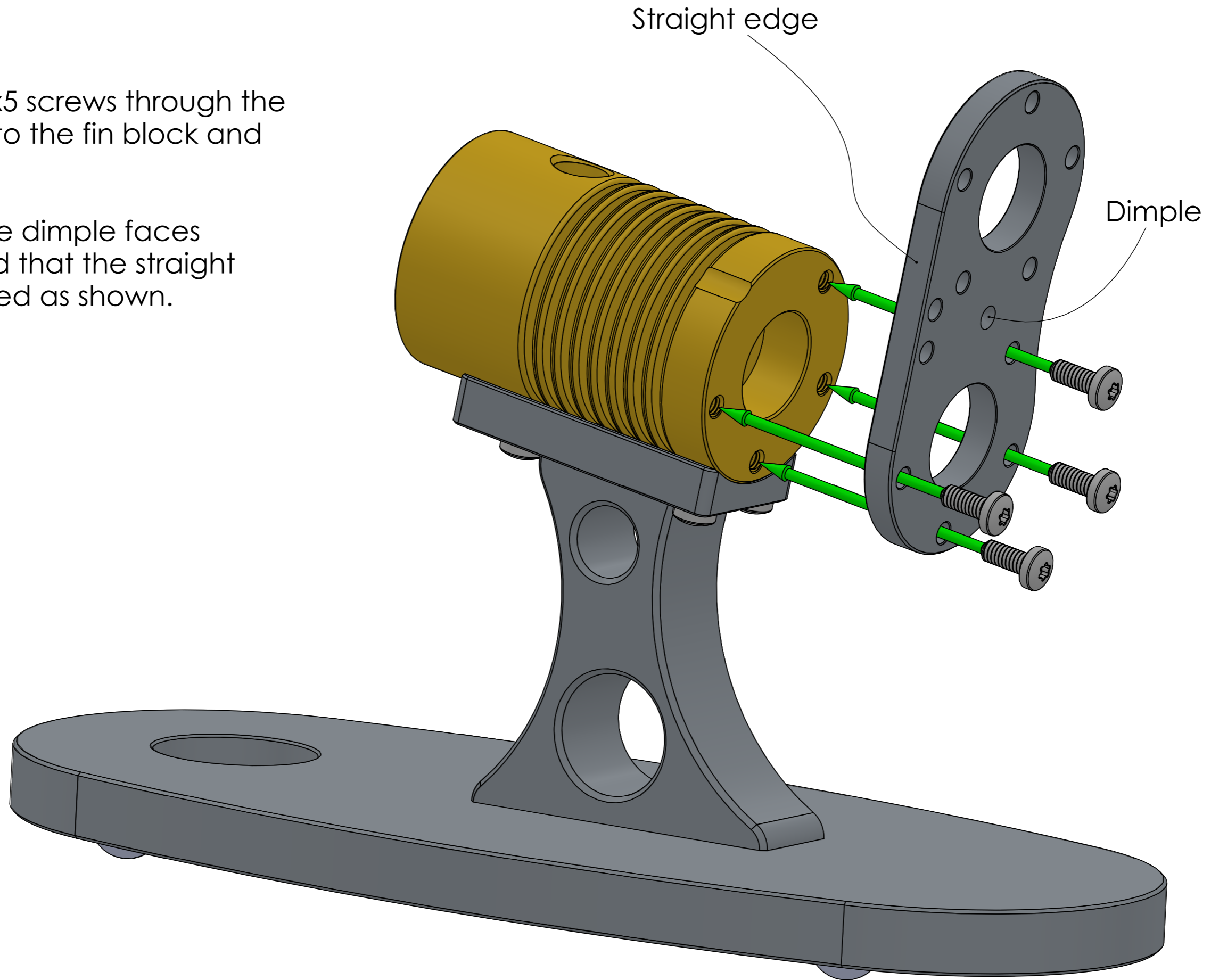


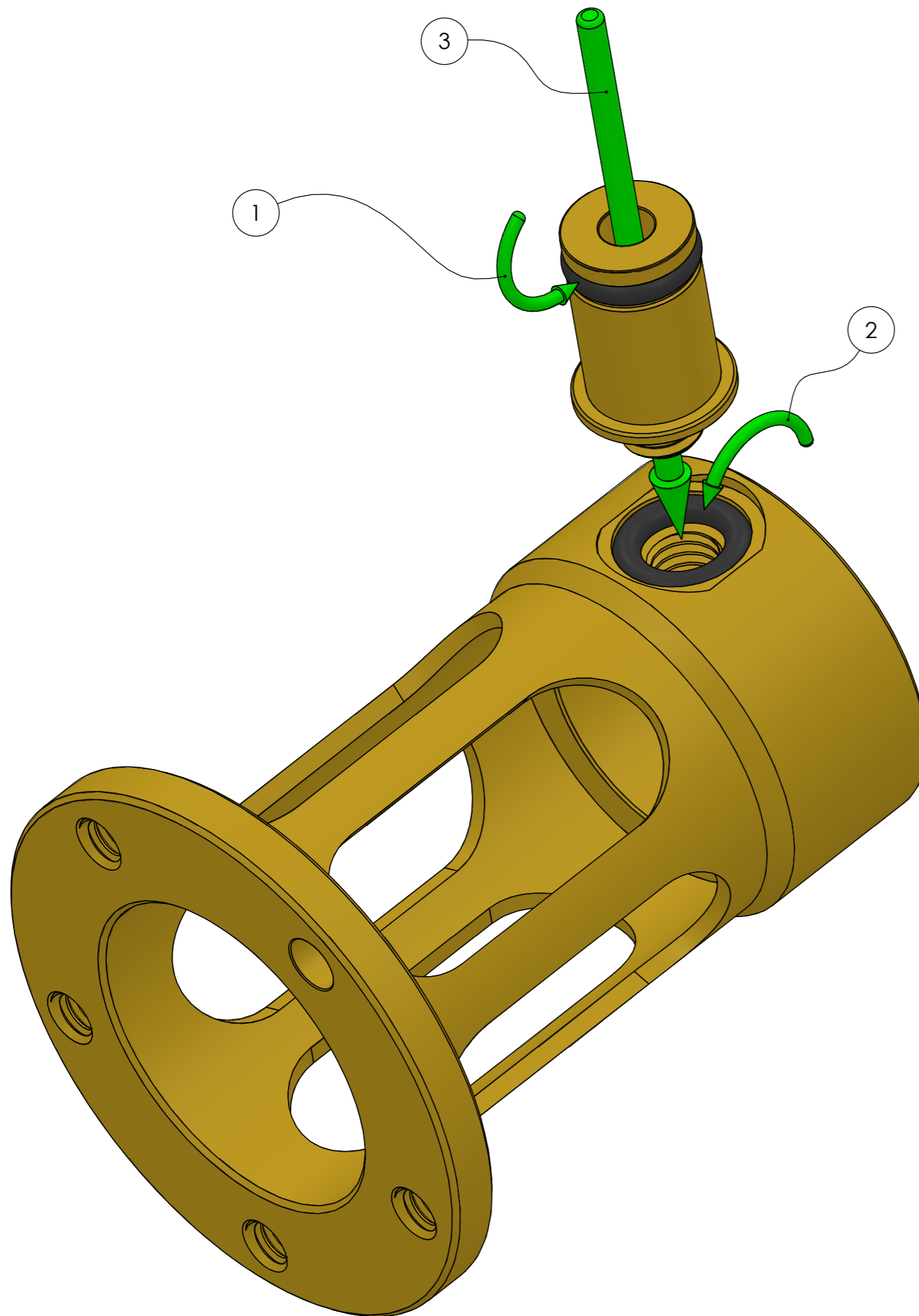
Peel the backing off the 4x rubber feet and stick over the dimples on the bottom of the base.



Screw 4x M2x5 screws through the front plate into the fin block and tighten.

Make sure the dimple faces outwards and that the straight edge is aligned as shown.



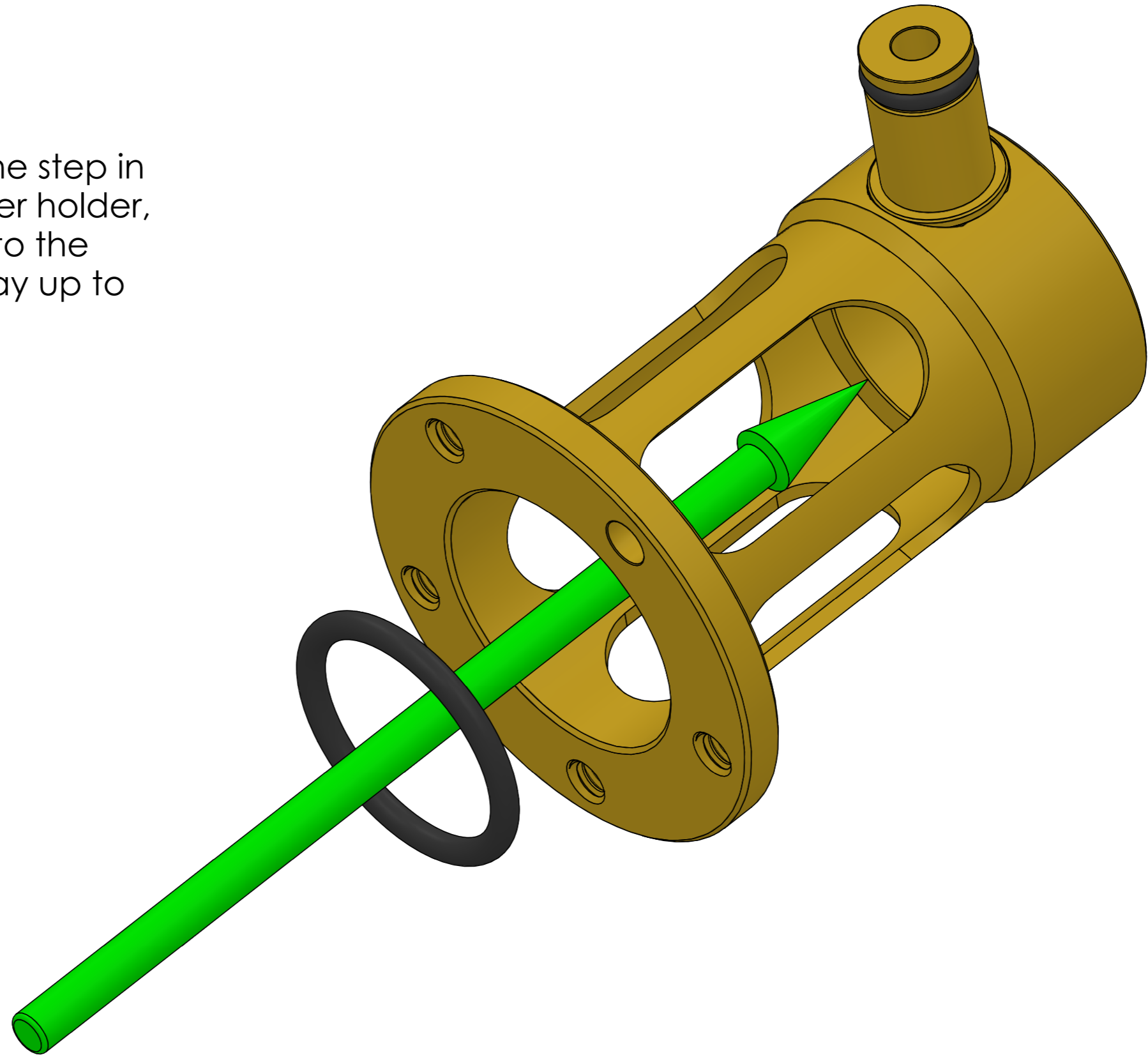


1. fit 1x 3mm O ring into the groove in the end of the cylinder port.

2. Fit 1x 3mm O ring into the recess on the side of the cylinder holder.

3. Screw the cylinder port into the cylinder holder and tighten no more than finger tight, take care not to pinch or dislodge the 3mm O ring.

Fit 1x 10mm O ring into the step in the bottom of the cylinder holder, then slide the cylinder into the cylinder holder all the way up to the 10mm O ring.



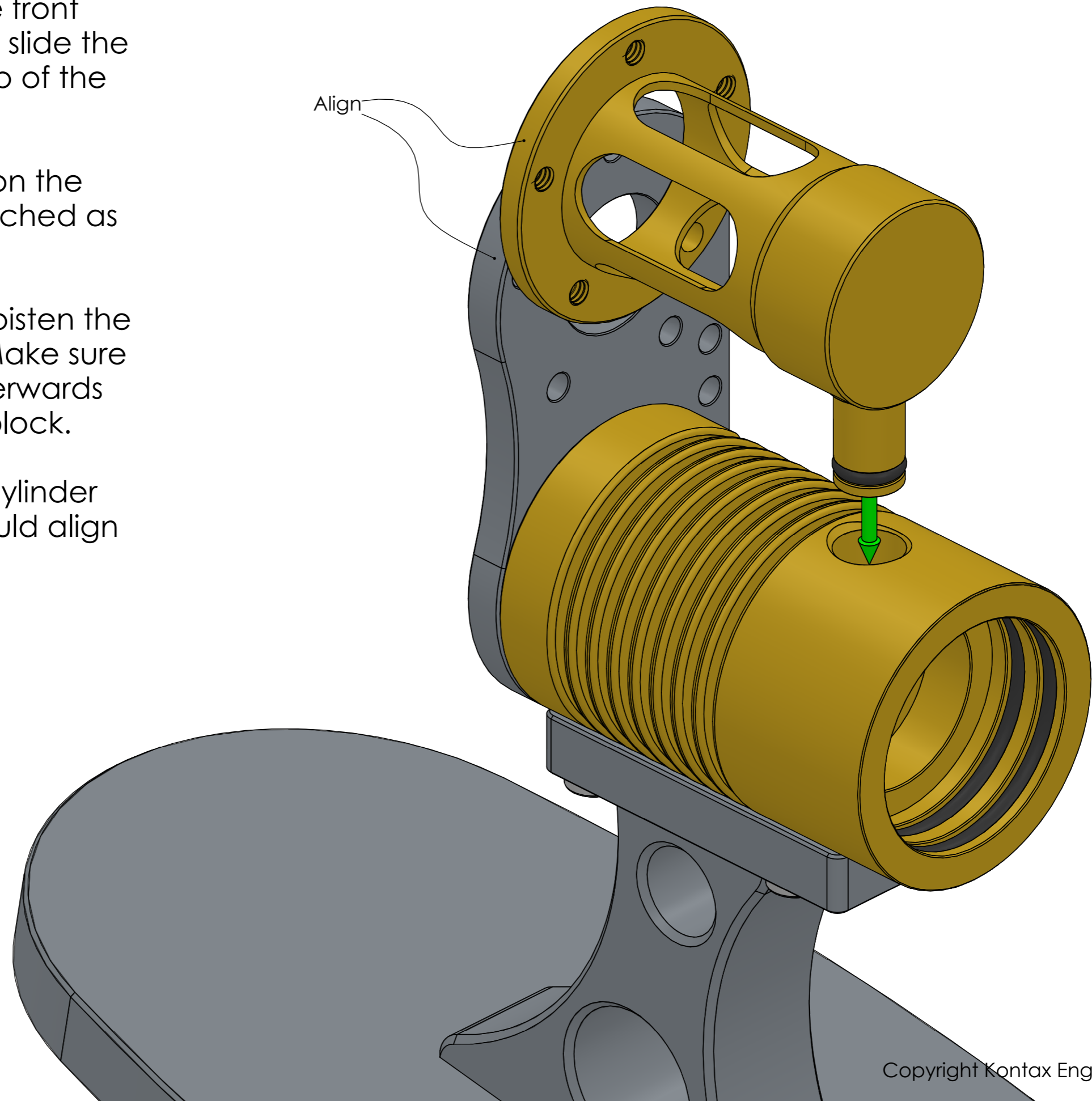


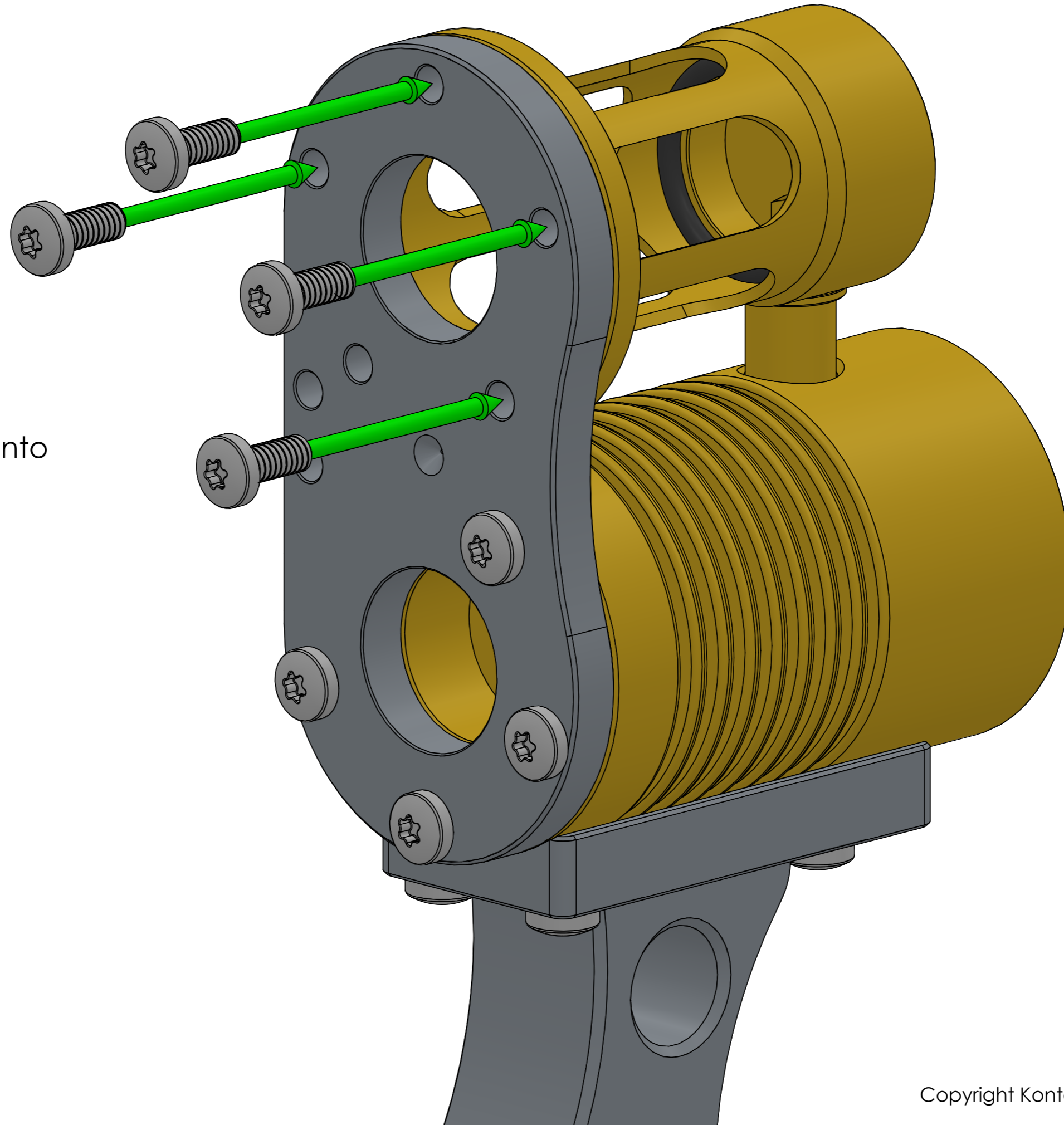
Position the flat surface of the cylinder holder against the front plate as shown and gently slide the port into the hole in the top of the fin block.

Take care that the O ring on the port does not become pinched as you slide it in.

It may help to sparingly moisten the O ring with soapy water. Make sure to wipe off any excess afterwards or you risk staining the fin block.

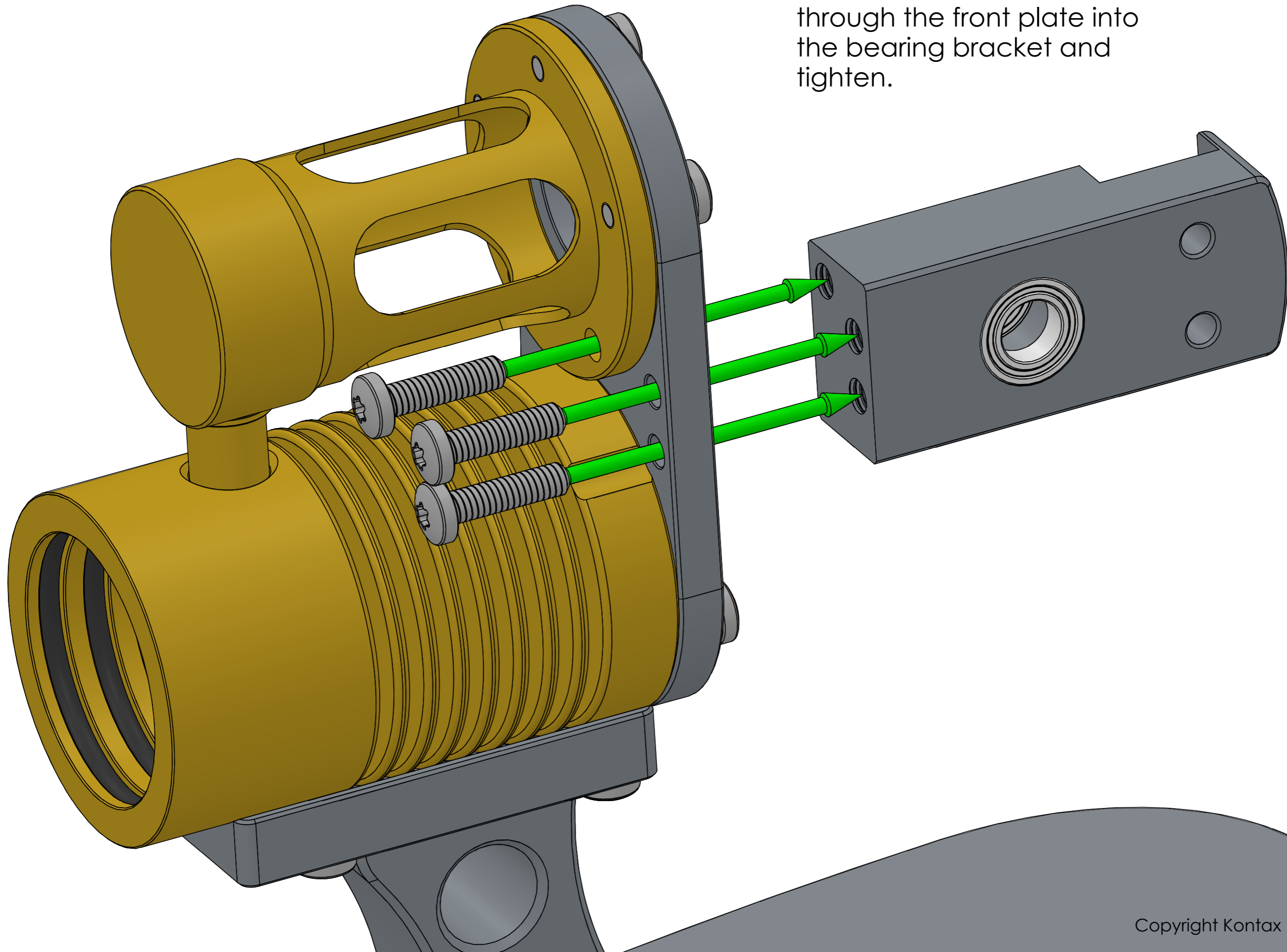
The outside edges of the cylinder holder and front plate should align after this step.





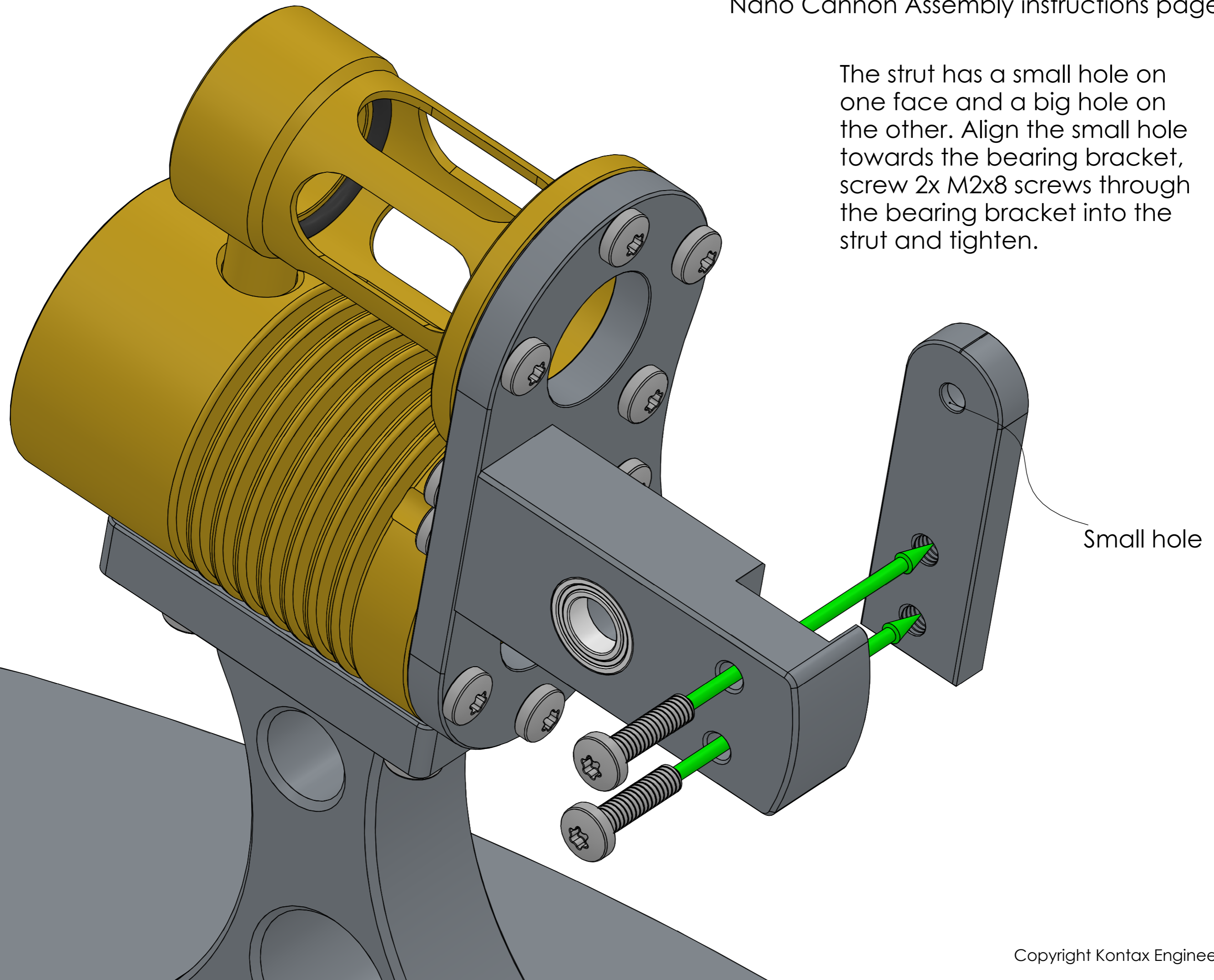
Screw 4x M2x5 screws through the front plate into the cylinder holder and tighten.

Screw 3x M2x8 screws  
through the front plate into  
the bearing bracket and  
tighten.



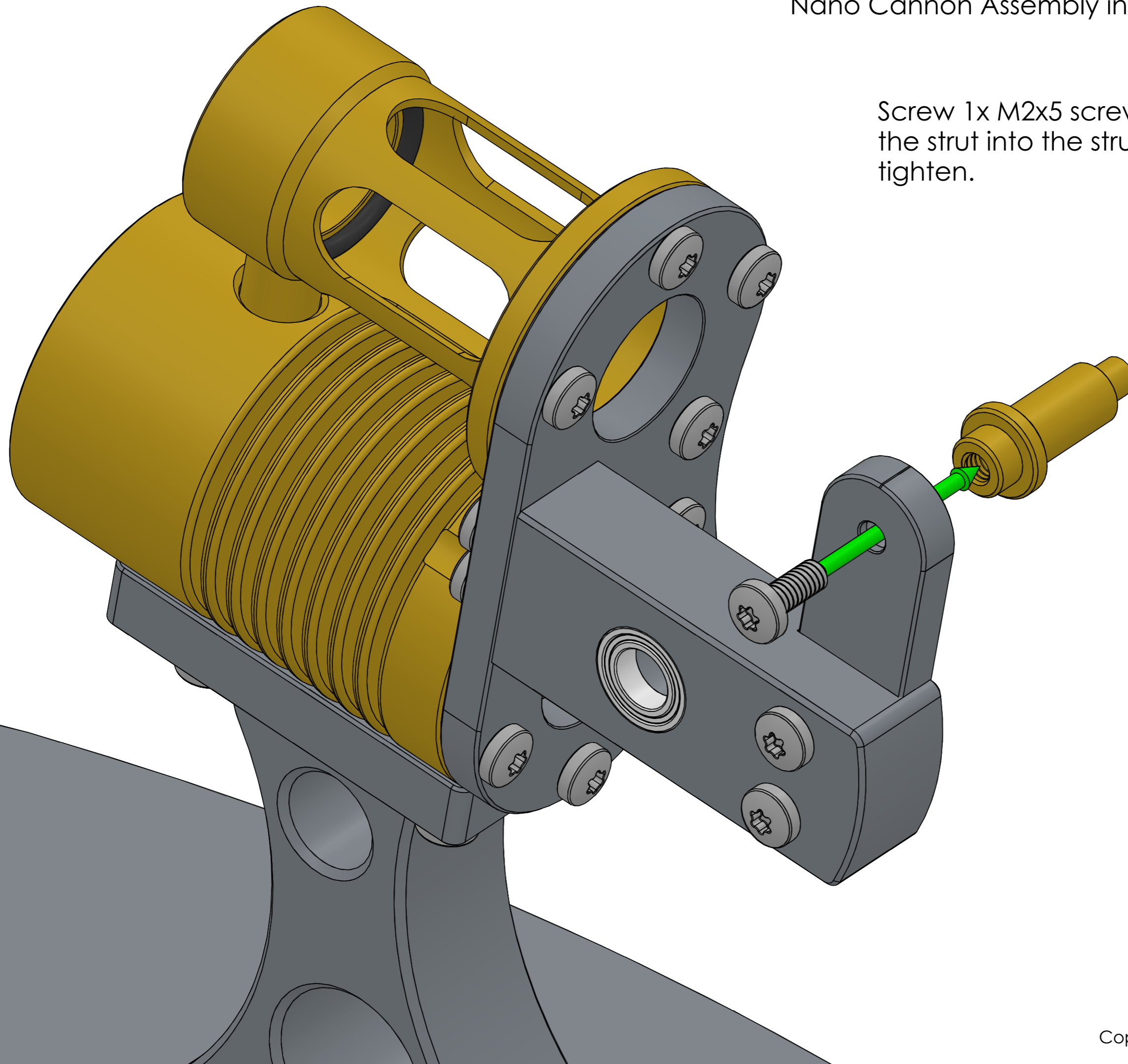


The strut has a small hole on one face and a big hole on the other. Align the small hole towards the bearing bracket, screw 2x M2x8 screws through the bearing bracket into the strut and tighten.

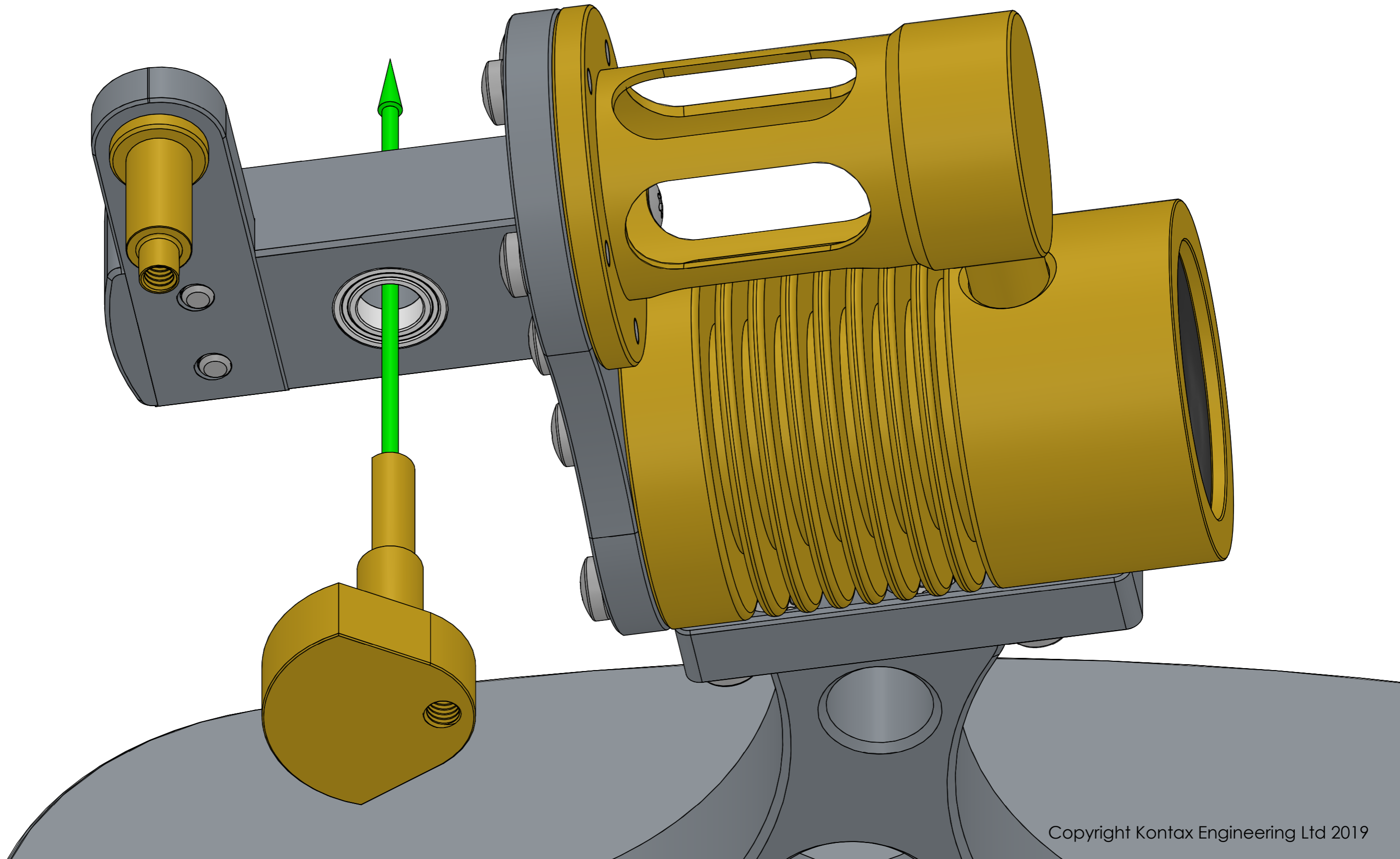




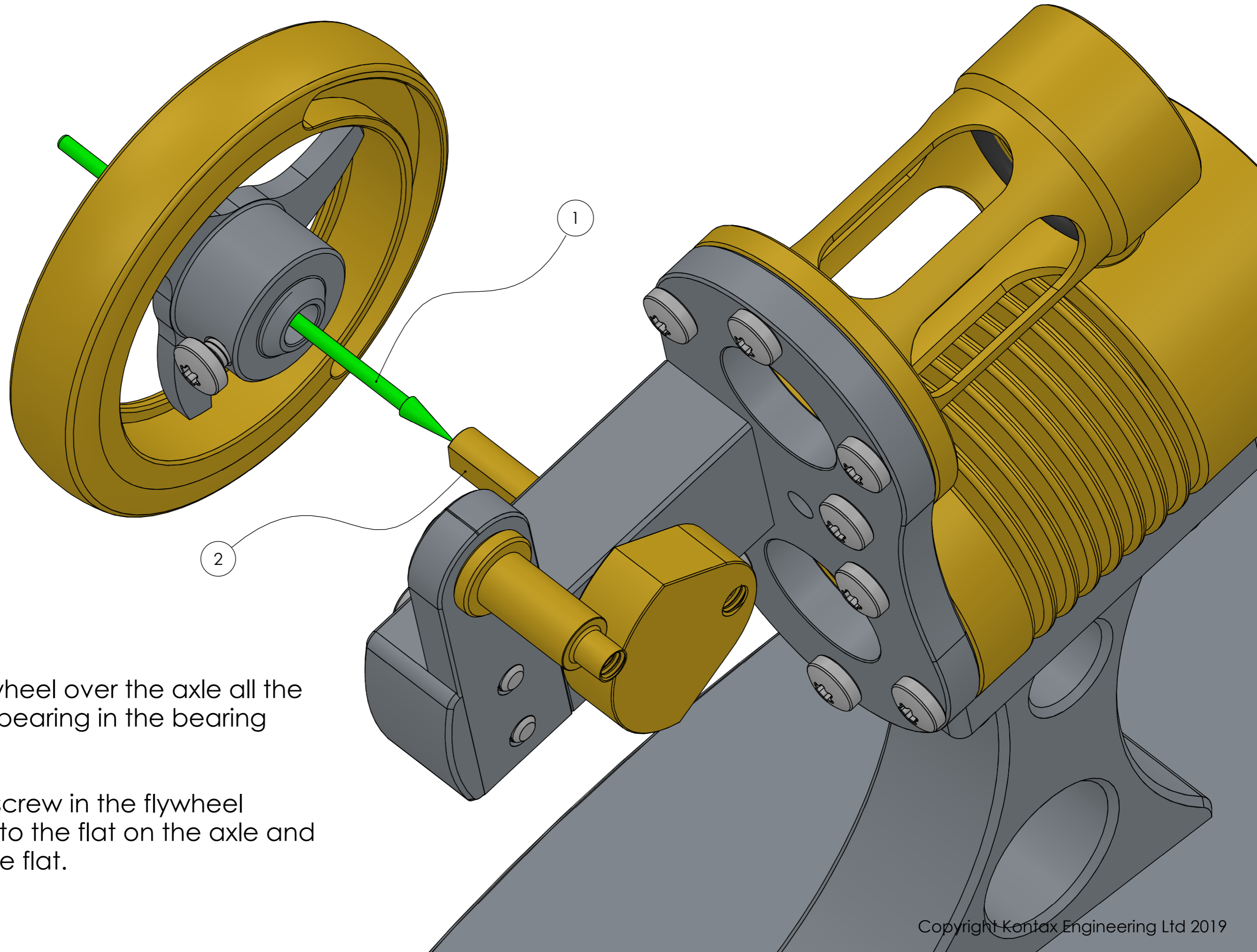
Screw 1x M2x5 screw through the strut into the strut pin and tighten.



Slide the axle all the way through the bearings in the bearing bracket.



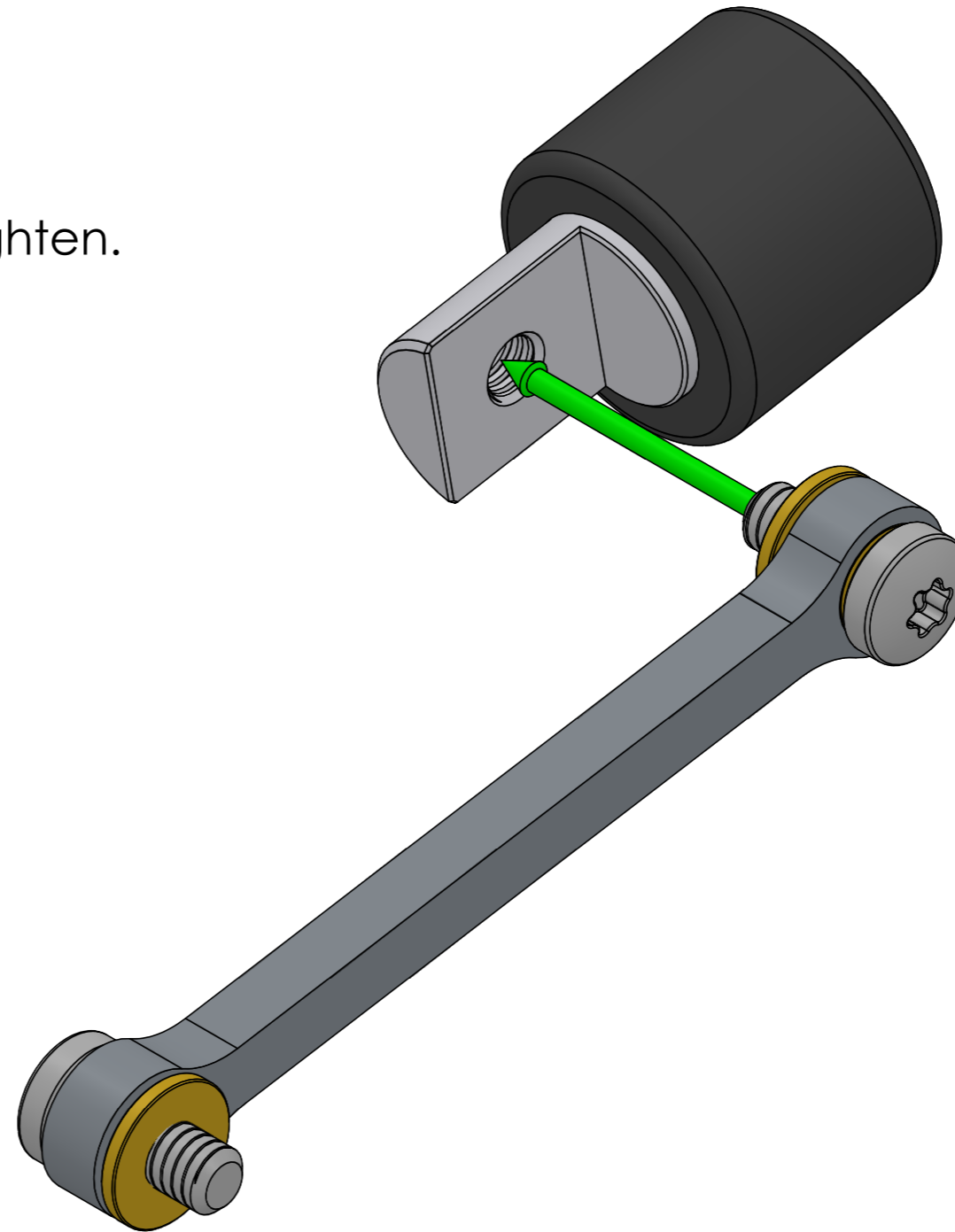




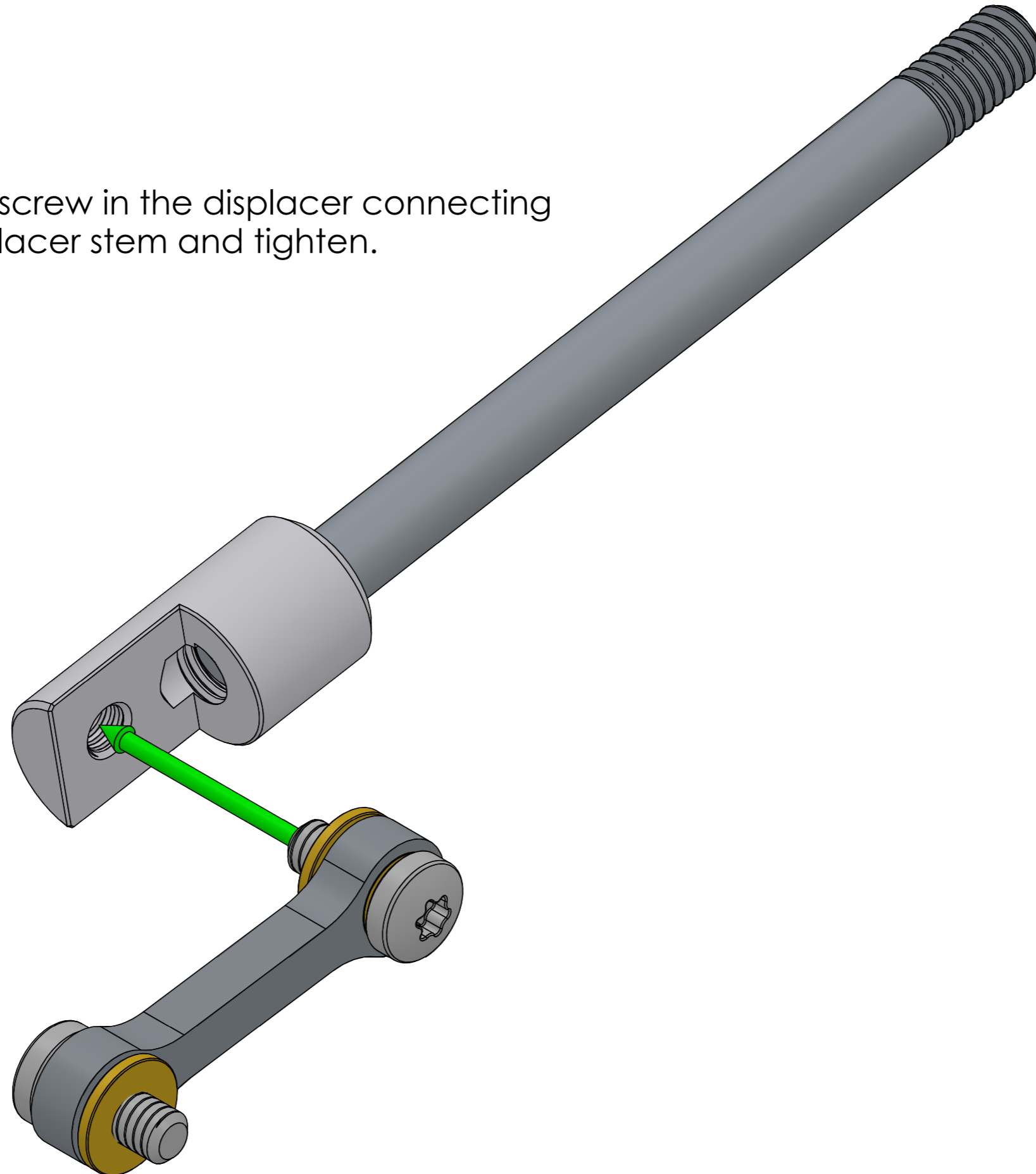
1. Slide the flywheel over the axle all the way up to the bearing in the bearing bracket.

2. Position the screw in the flywheel perpendicular to the flat on the axle and tighten onto the flat.

Screw the M2x5 screw in the piston connecting rod into the piston and tighten.

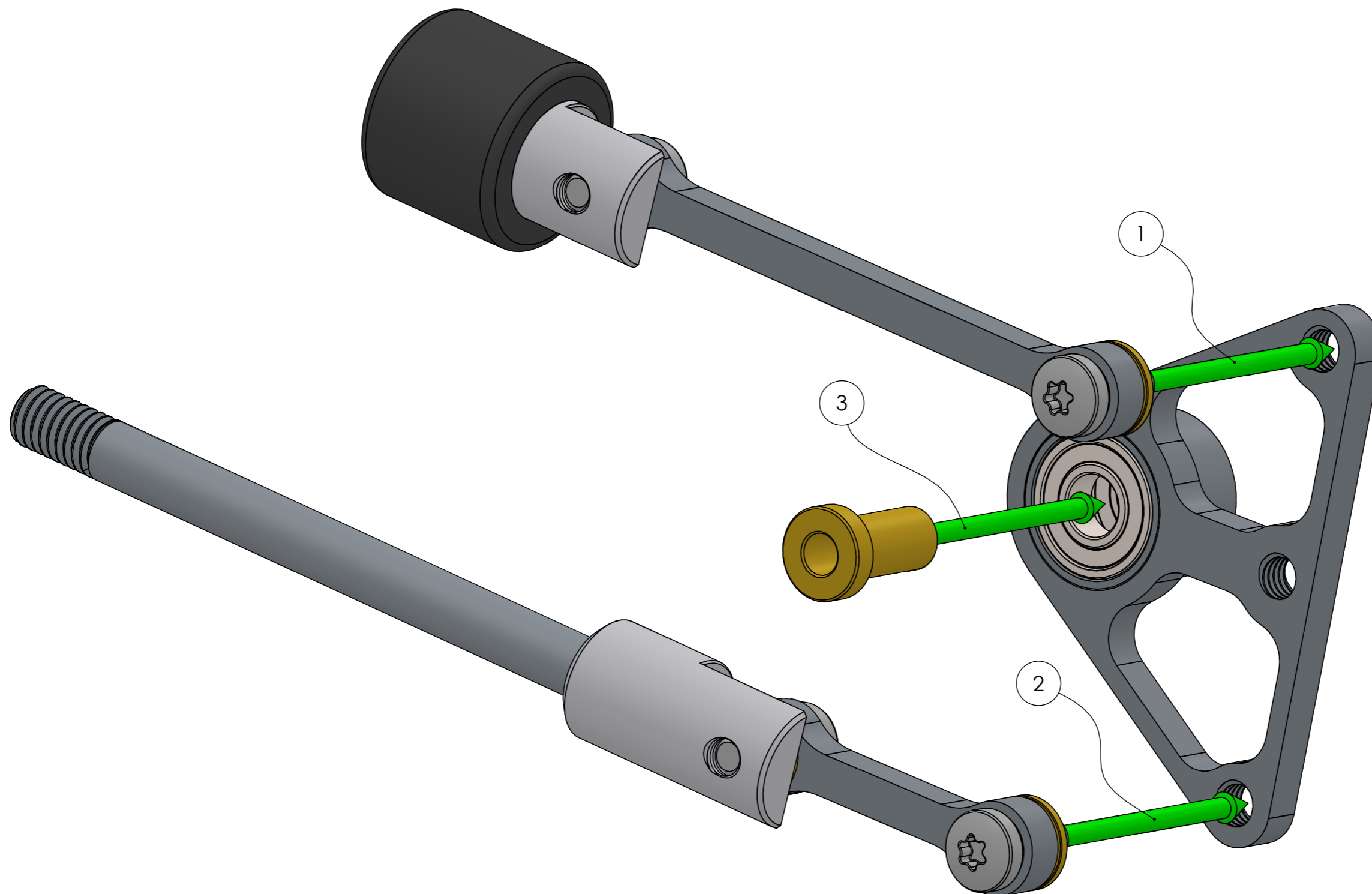


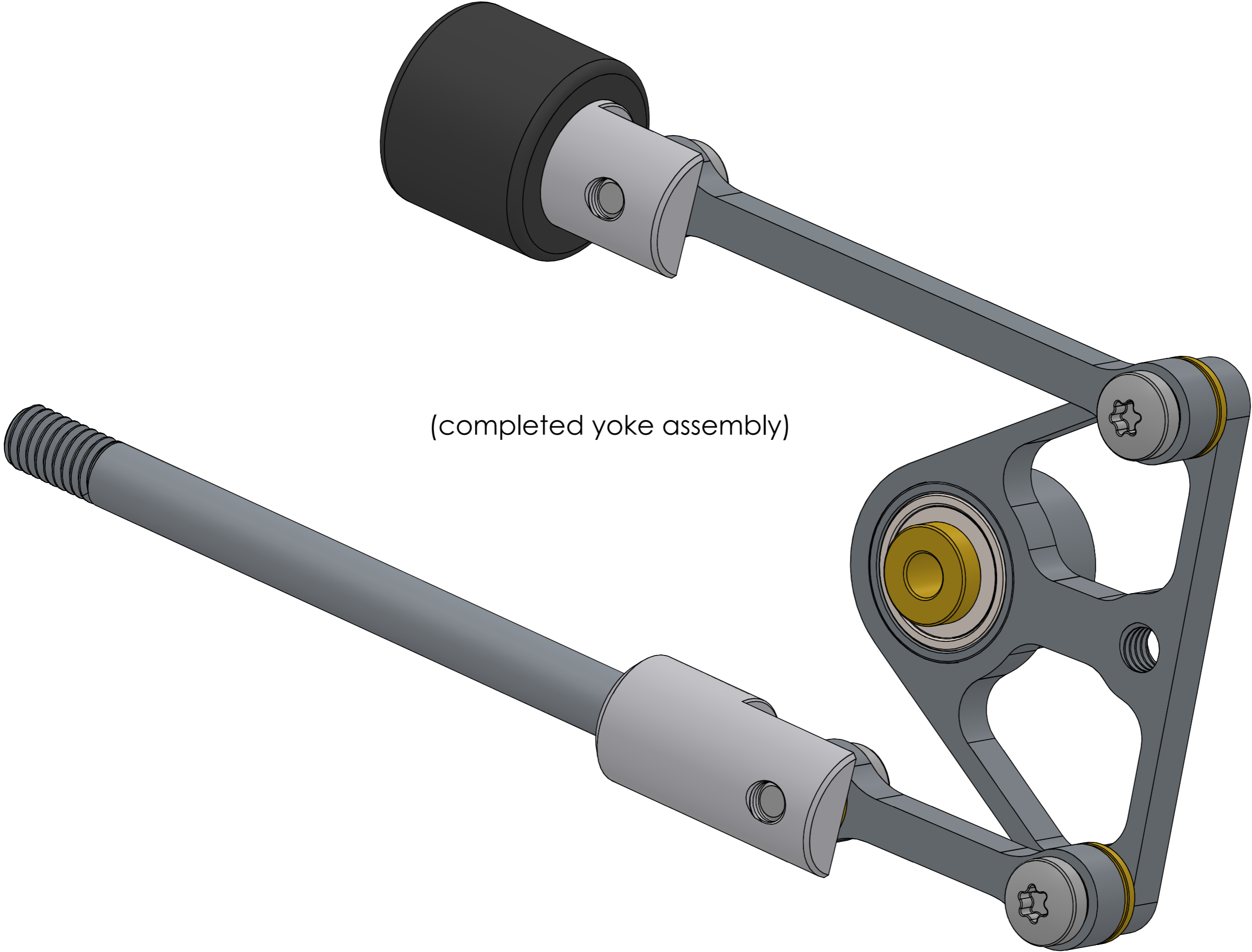
Screw the M2x5 screw in the displacer connecting rod into the displacer stem and tighten.



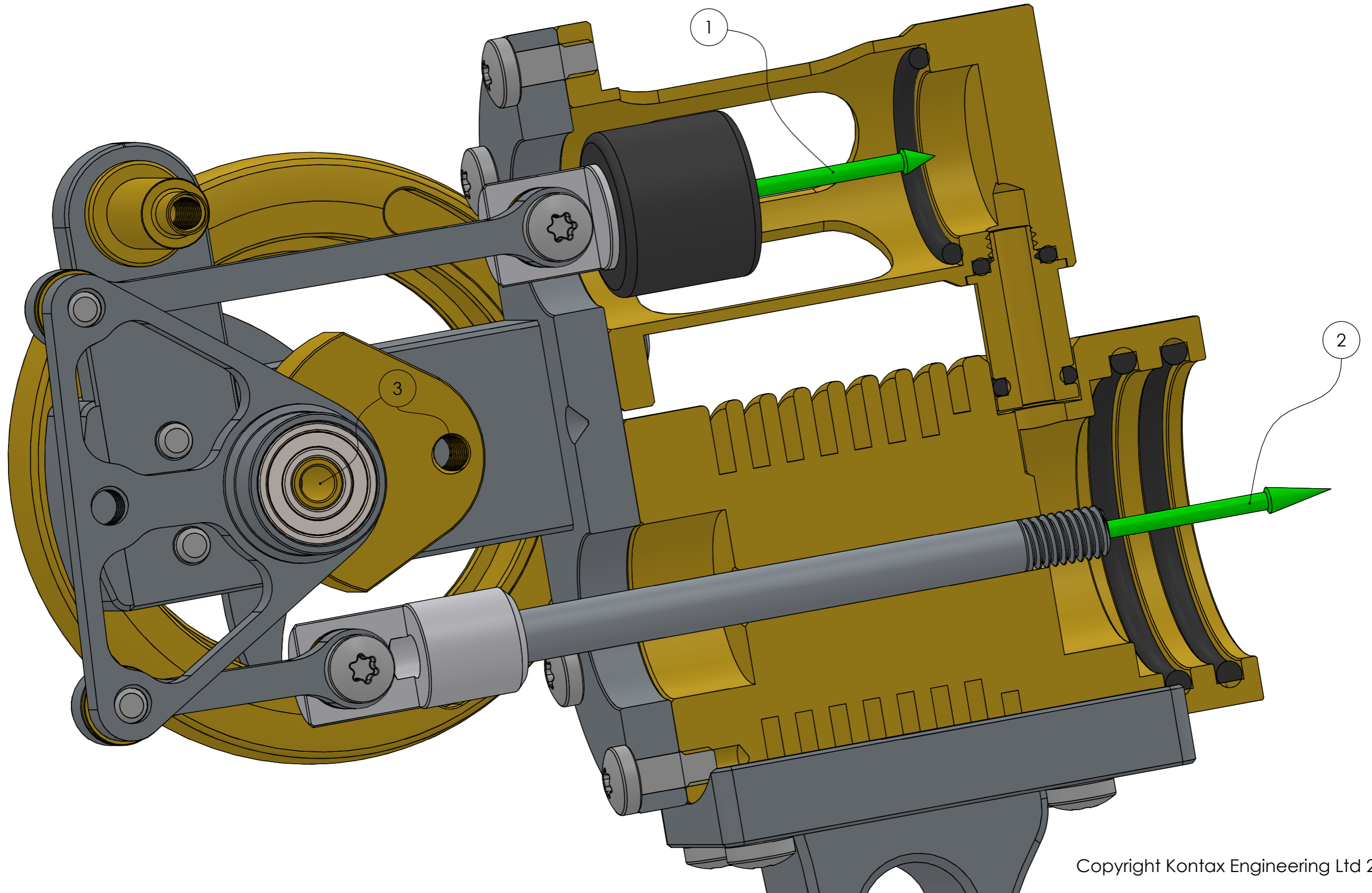


1. Screw the M2x5 screw in the end of the piston connecting rod into the yoke and tighten.
2. Screw the M2x5 screw in the end of the displacer connecting rod into the yoke and tighten.
3. Slide the crank bush into the bearings in the yoke (the completed yoke assembly is shown on the next page).



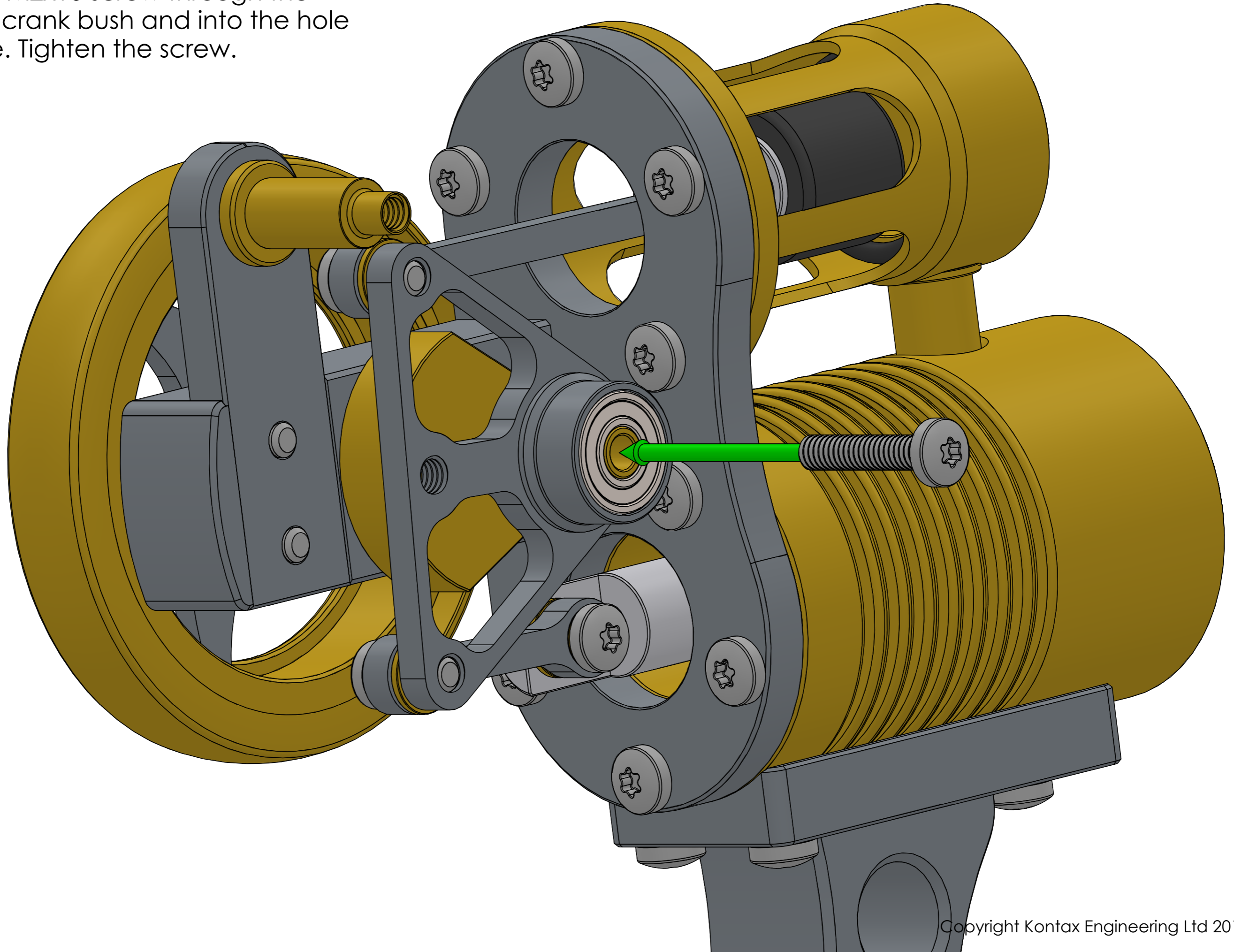


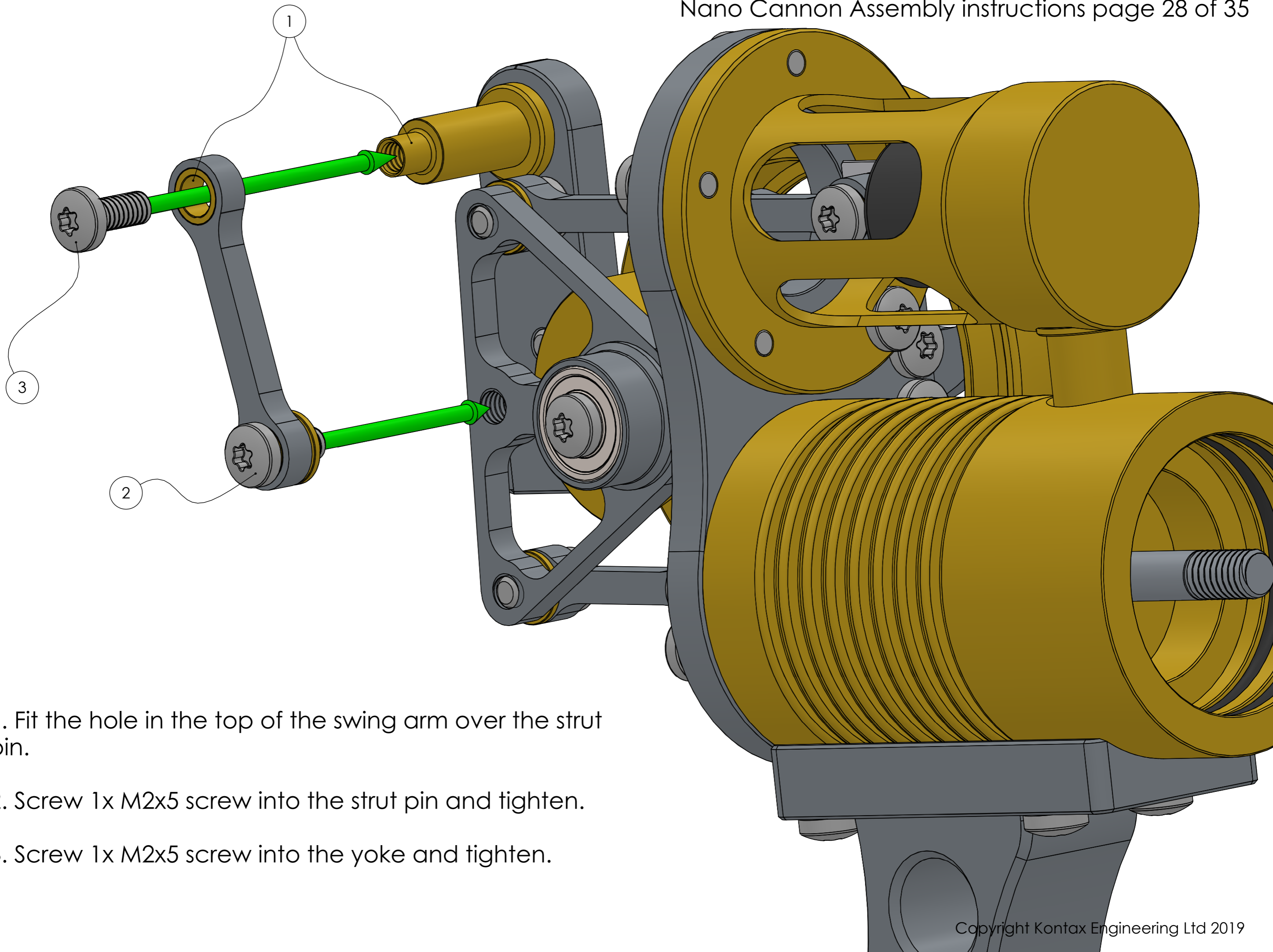
1. Slide the piston into the cylinder.
2. At the same time, slide displacer stem into the fin block.
3. Slide both in until the hole in the crank bush aligns with the hole in the axle.





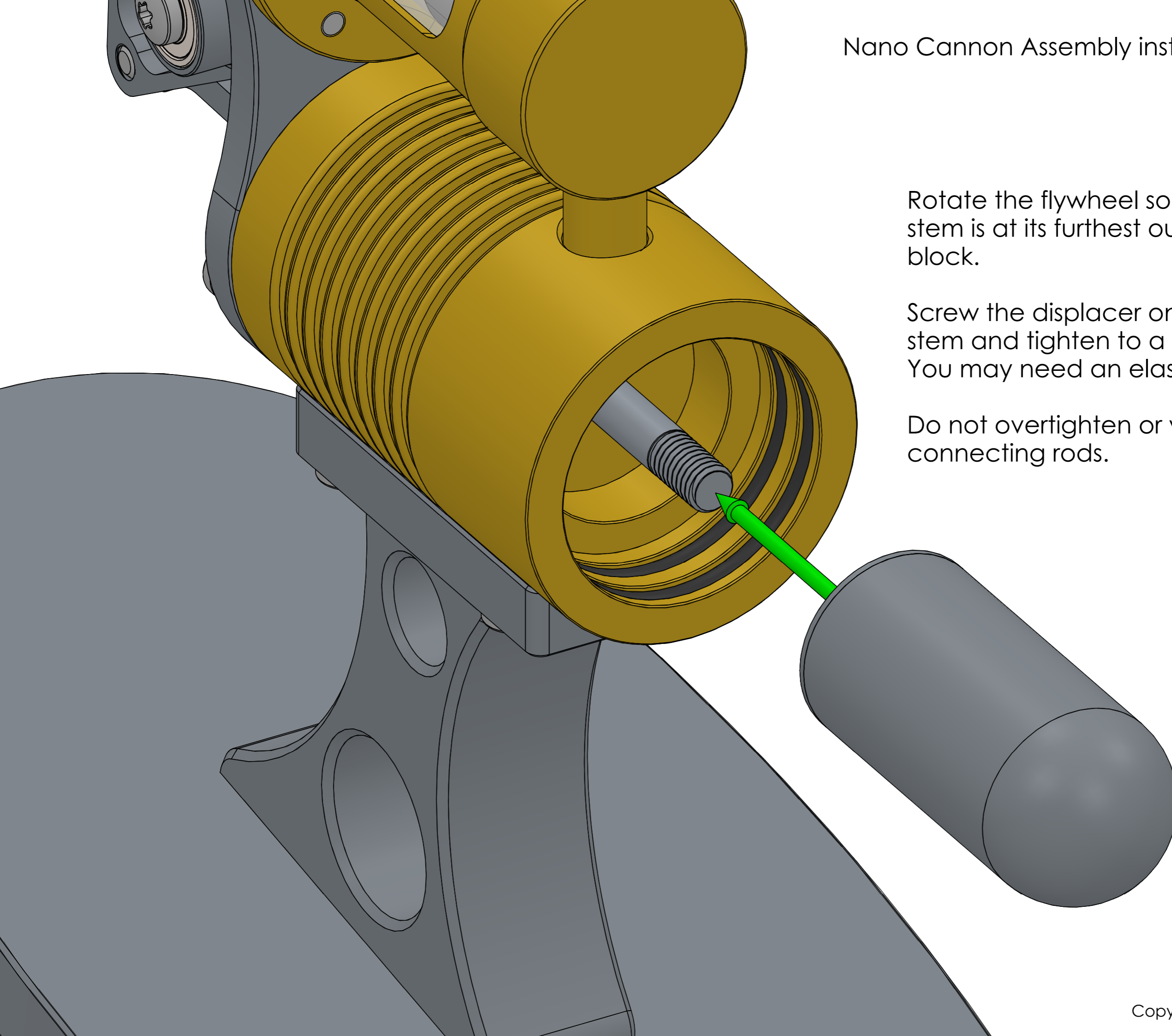
Screw the M2x10 screw through the yoke and crank bush and into the hole in the axle. Tighten the screw.





1. Fit the hole in the top of the swing arm over the strut pin.
2. Screw 1x M2x5 screw into the strut pin and tighten.
3. Screw 1x M2x5 screw into the yoke and tighten.





Rotate the flywheel so that the displacer stem is at its furthest outwards from the fin block.

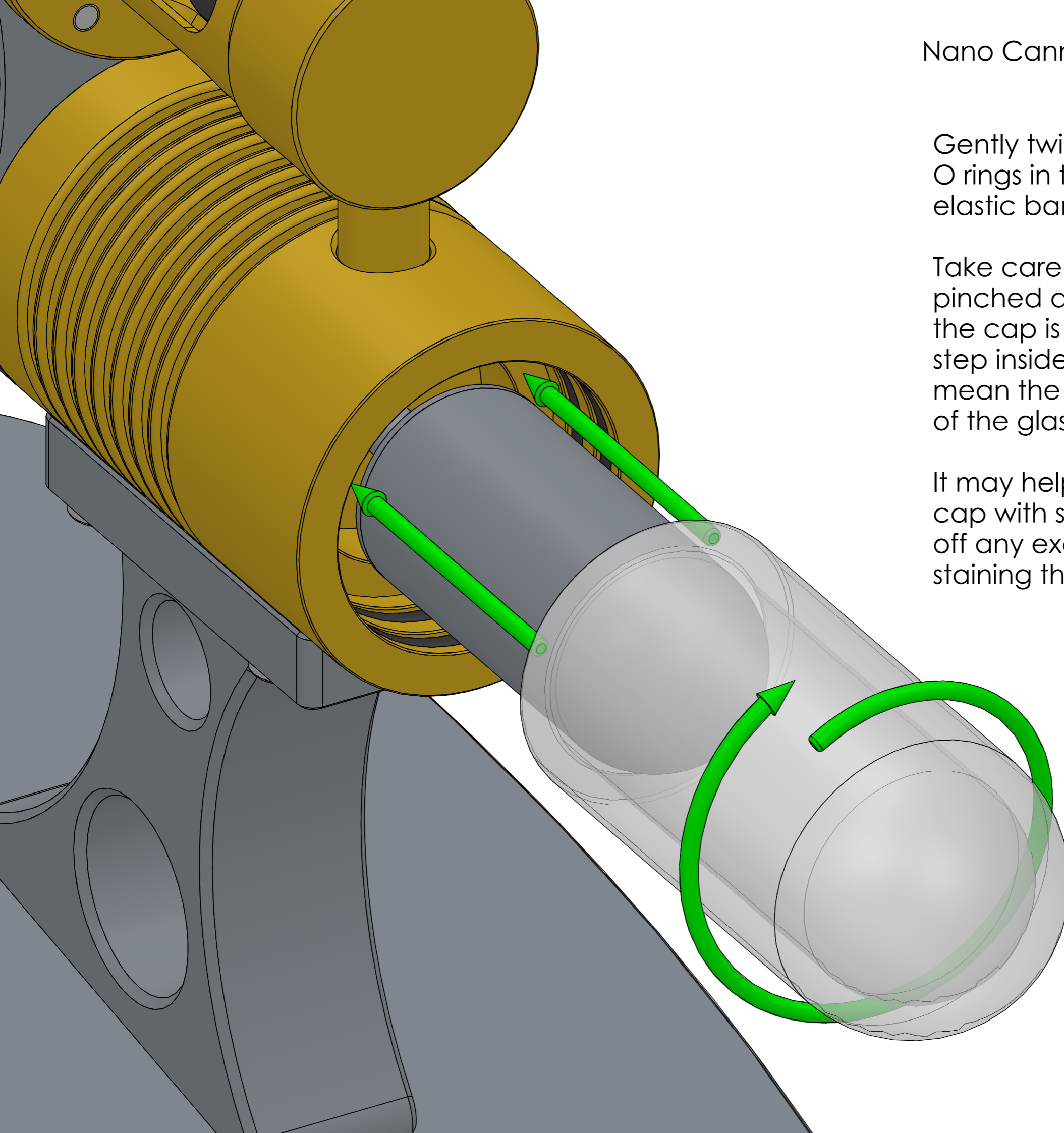
Screw the displacer onto the displacer stem and tighten to a medium tightness. You may need an elastic band for grip.

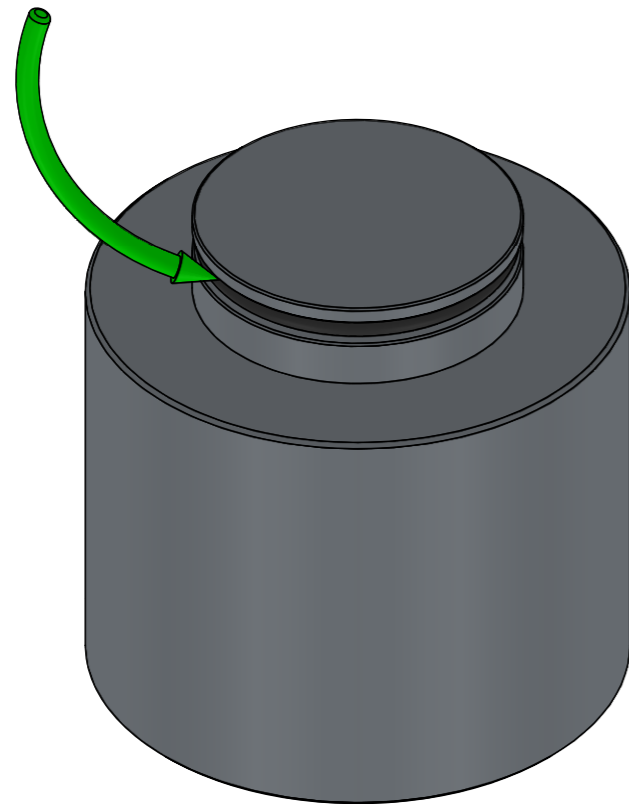
Do not overtighten or you risk bending the connecting rods.

Gently twist and push the hot cap into the O rings in the fin block. You may need an elastic band for grip.

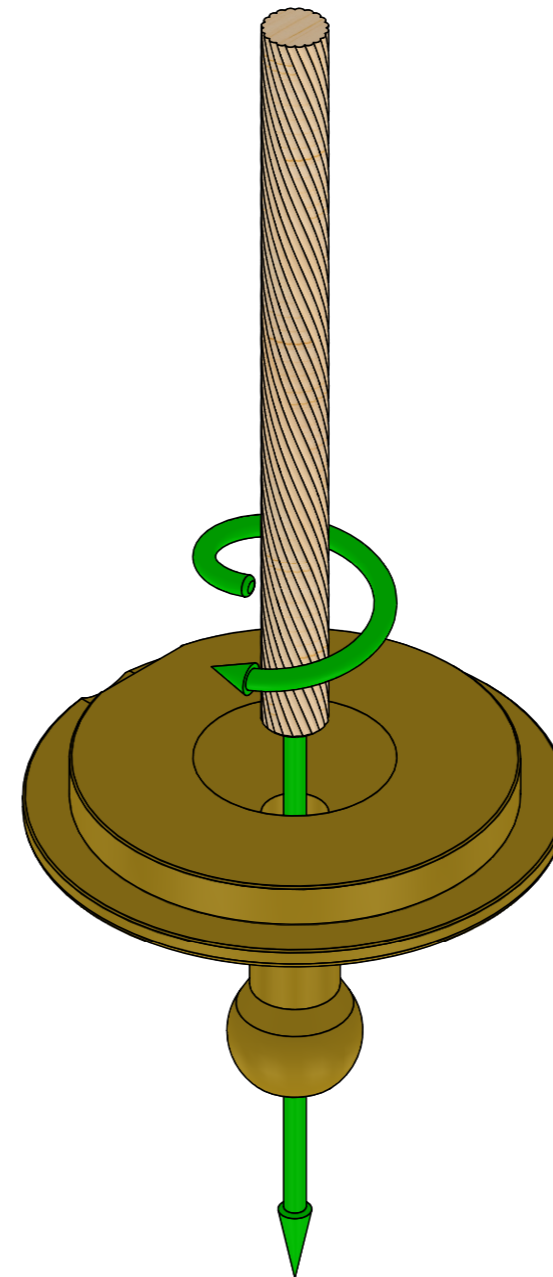
Take care that the O rings do not become pinched as you slide it in, and make sure the cap is seated completely flat on the step inside the fins. Failure to do this will mean the displacer rubbing on the inside of the glass and prevent efficient running.

It may help to sparingly moisten the hot cap with soapy water. Make sure to wipe off any excess afterwards or you risk staining the fin block.





1. Fit the 13mm O ring into the groove in the end of the burner body.



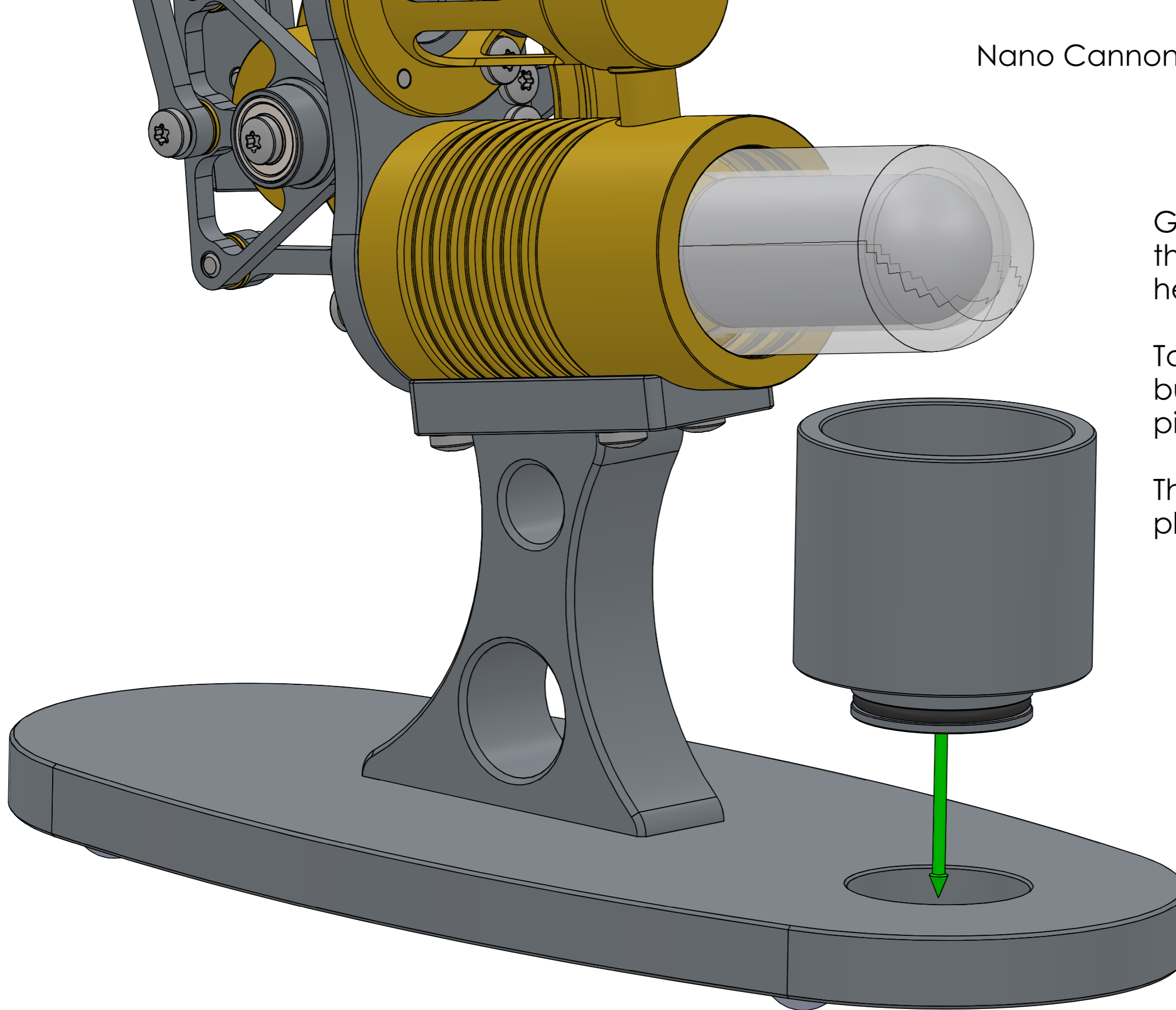
2. If the top end of the wick is frayed you will need to burn off the loose fibres, allow to cool, and then roll the end into a blunt point.

**ONLY EVER PERFORM THIS STEP ON DRY WICK, NEVER ON WICK THAT HAS BEEN SOAKED IN FUEL.**

Insert the prepared end of the wick into the burner cap, a pushing and twisting motion works best.

There must be 5mm of wick protruding from the top of the burner cap for efficient running.





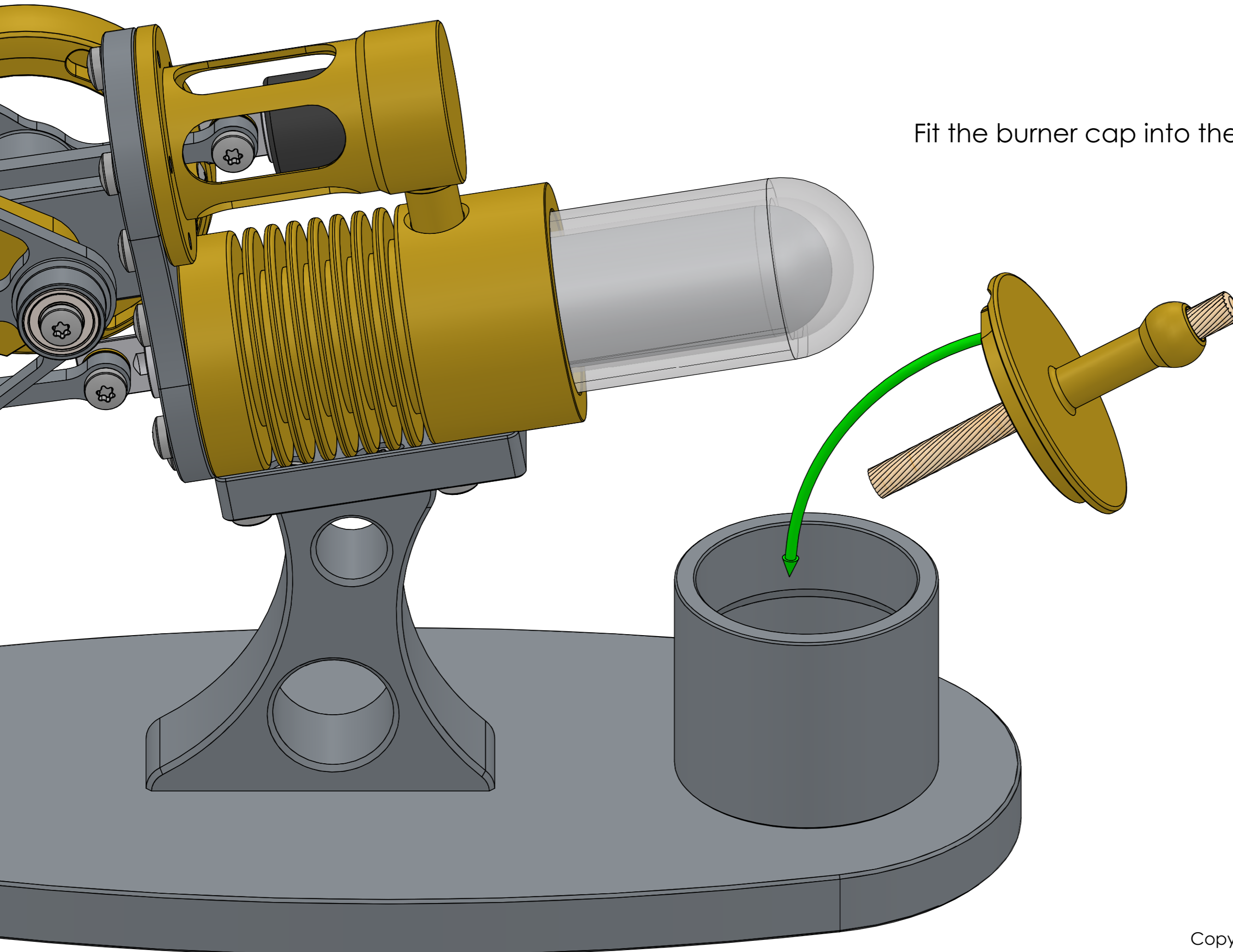
Gently slide the burner body into the base. You may need to twist to help the O ring into the hole.

Take care that the O ring on the burner body does not become pinched.

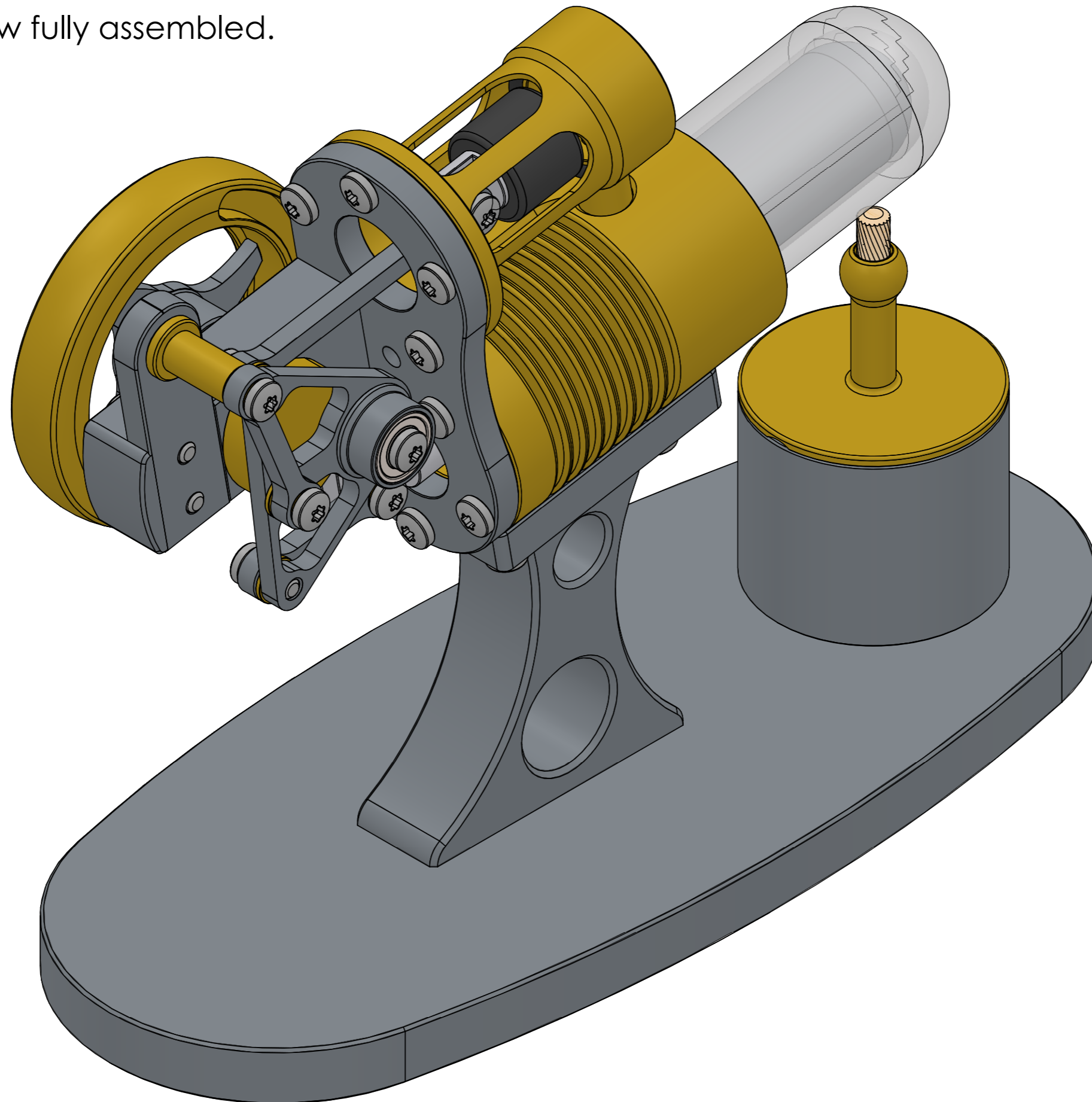
The O ring will hold the burner in place during operation.



Fit the burner cap into the burner body.



The engine is now fully assembled.



The engine uses Methylated Spirits or Denatured Alcohol as fuel.

Remove the burner cap from the burner body and trim the wick to 5mm protruding from the top and 15mm-30mm from the bottom.

Fill the burner body with fuel to the fill level AND NO MORE.

Fit the burner cap back in the burner body and wait a minute for the wick to soak up the fuel.

Light the wick and allow a minute or so for the engine to warm up, then spin the flywheel in the direction shown. The engine should start up and run for about 10-15 minutes before the fuel runs out.

It is best to extinguish the flame before the fuel runs out completely to save the wick from smouldering down to the top of the burner cap.

**Make sure you have a suitable fire extinguisher to hand in case of emergencies. Never leave a running engine or naked flame unattended. Parts of the engine will be very hot while in operation and will take time to cool down. Make sure children are fully supervised. Ensure burner is extinguished after use.**

Rotation direction

