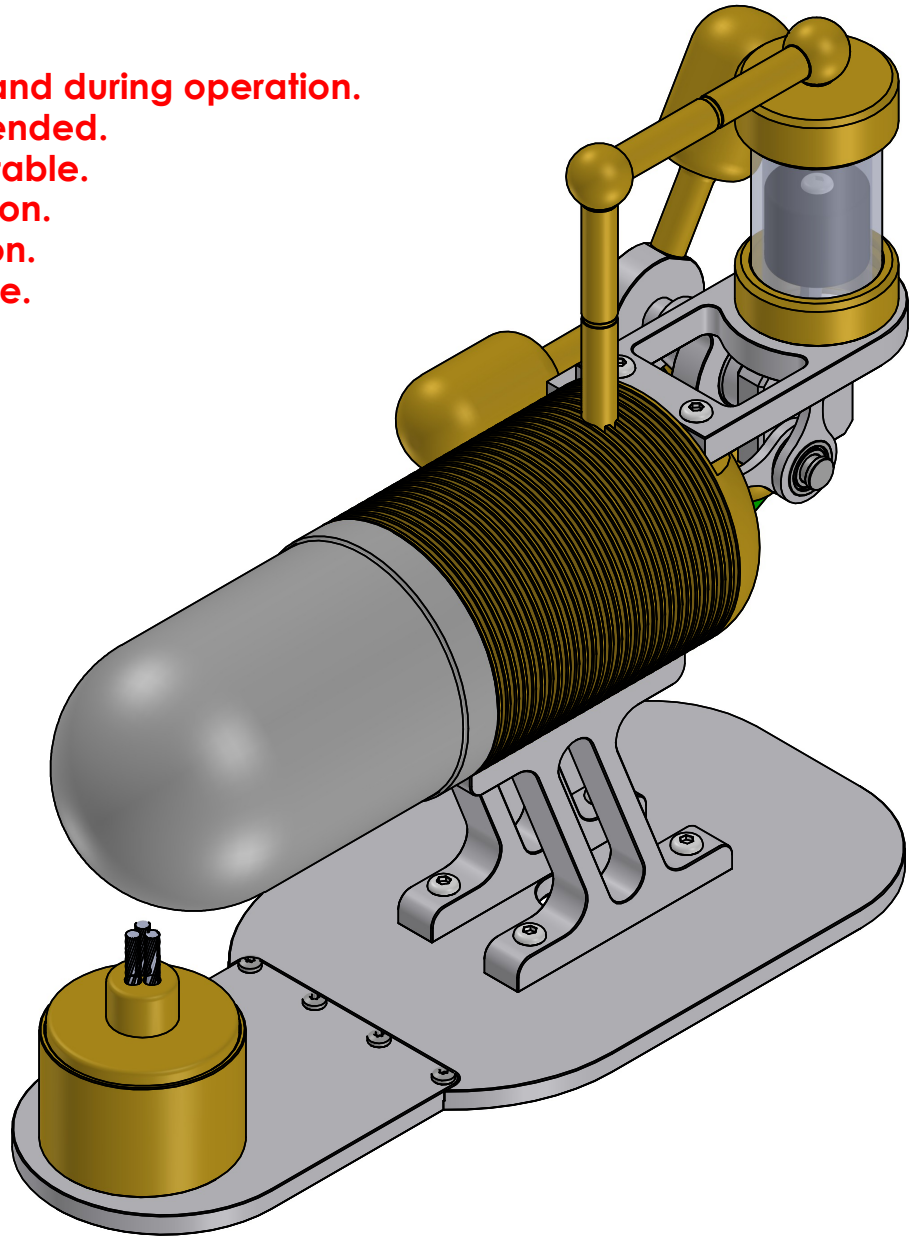
Kontax Flame Pump operation and maintenance instructions

- **Make sure you have a suitable fire extinguisher to hand during operation.**
- **Never leave a running engine or naked flame unattended.**
- **Take care the engine does not vibrate itself off your table.**
- **All parts of the engine will be very hot during operation.**
- **The engine will take time to cool down after operation.**
- **The flame produced by a steel wick is almost invisible.**
- **Ensure burner is fully extinguished after use.**
- **Make sure children are fully supervised.**



Please read all the way through the assembly instructions to familiarise yourself with the process before you start and pay close attention to the alignment of all the parts in the diagrams.

Assembly time should be approximately 35-40 minutes.

Please take great care when opening the bag of small parts! It is recommended to remove the packing tray from the box and open the bag over the box to catch dropped parts.

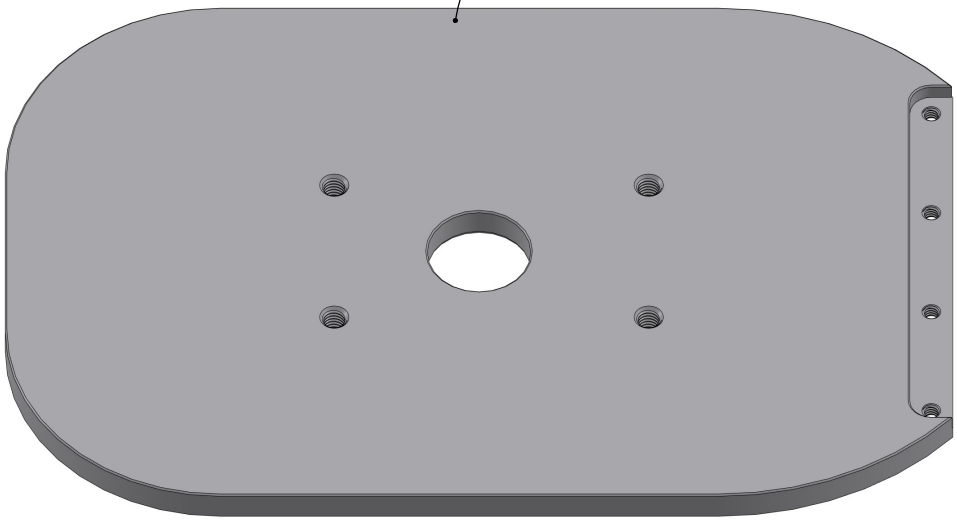
The engine parts list starts on the next page.

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

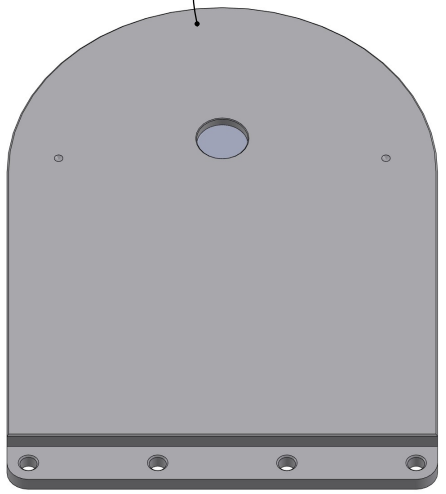
© Kontax Engineering Ltd 22/10/2025

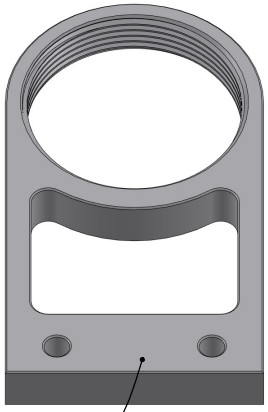
Parts 1

1x
Base



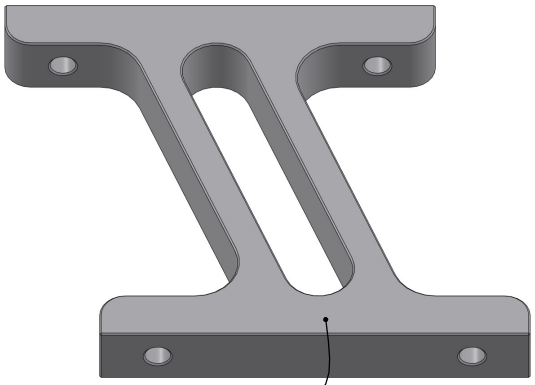
1x
Base strut



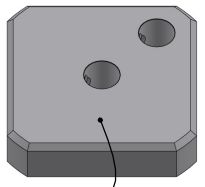


Top strut
1x

Side strut
1x



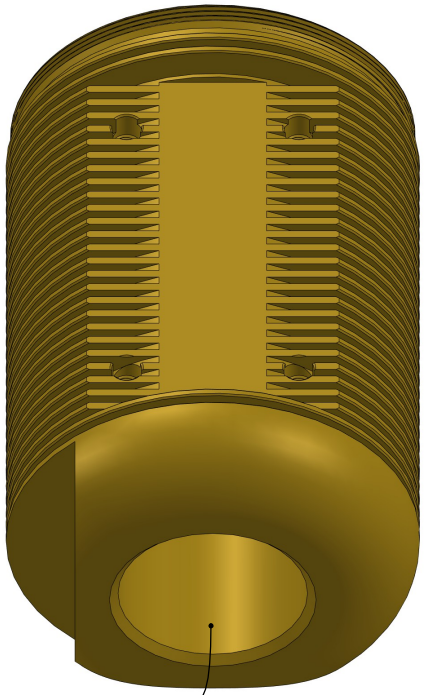
Foot
2x



Crank
1x

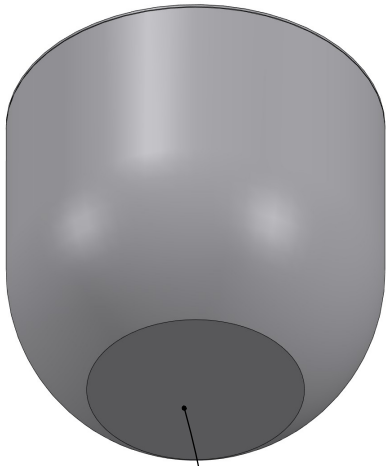
© Kontax Engineering Ltd 22/10/2025

Parts 2



Fins
1x

Hot cap
1x

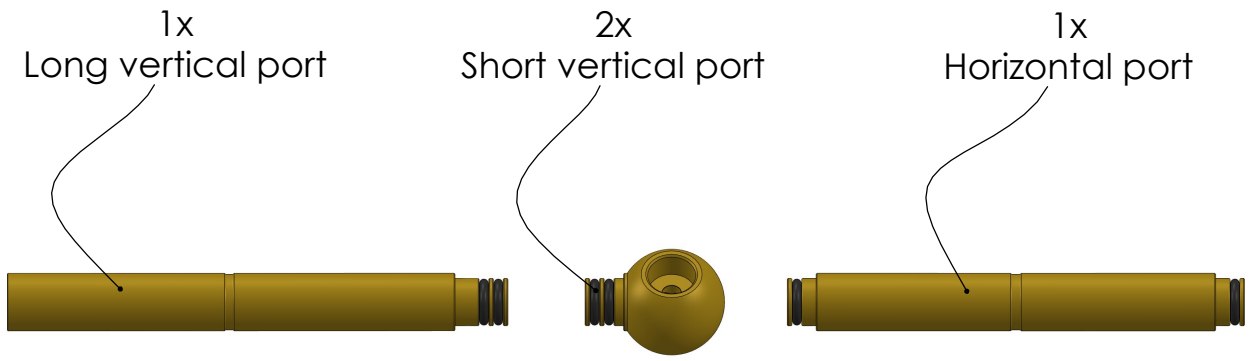


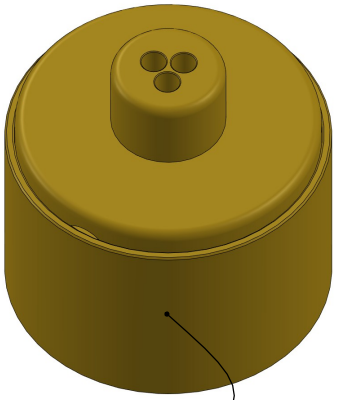
Displacer
1x

Flyweight
3x

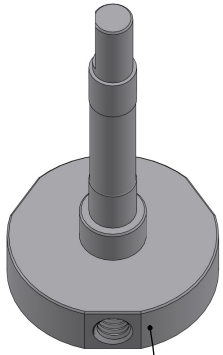
© Kontax Engineering Ltd 22/10/2025

Parts 3





Burner & burner cap
1x

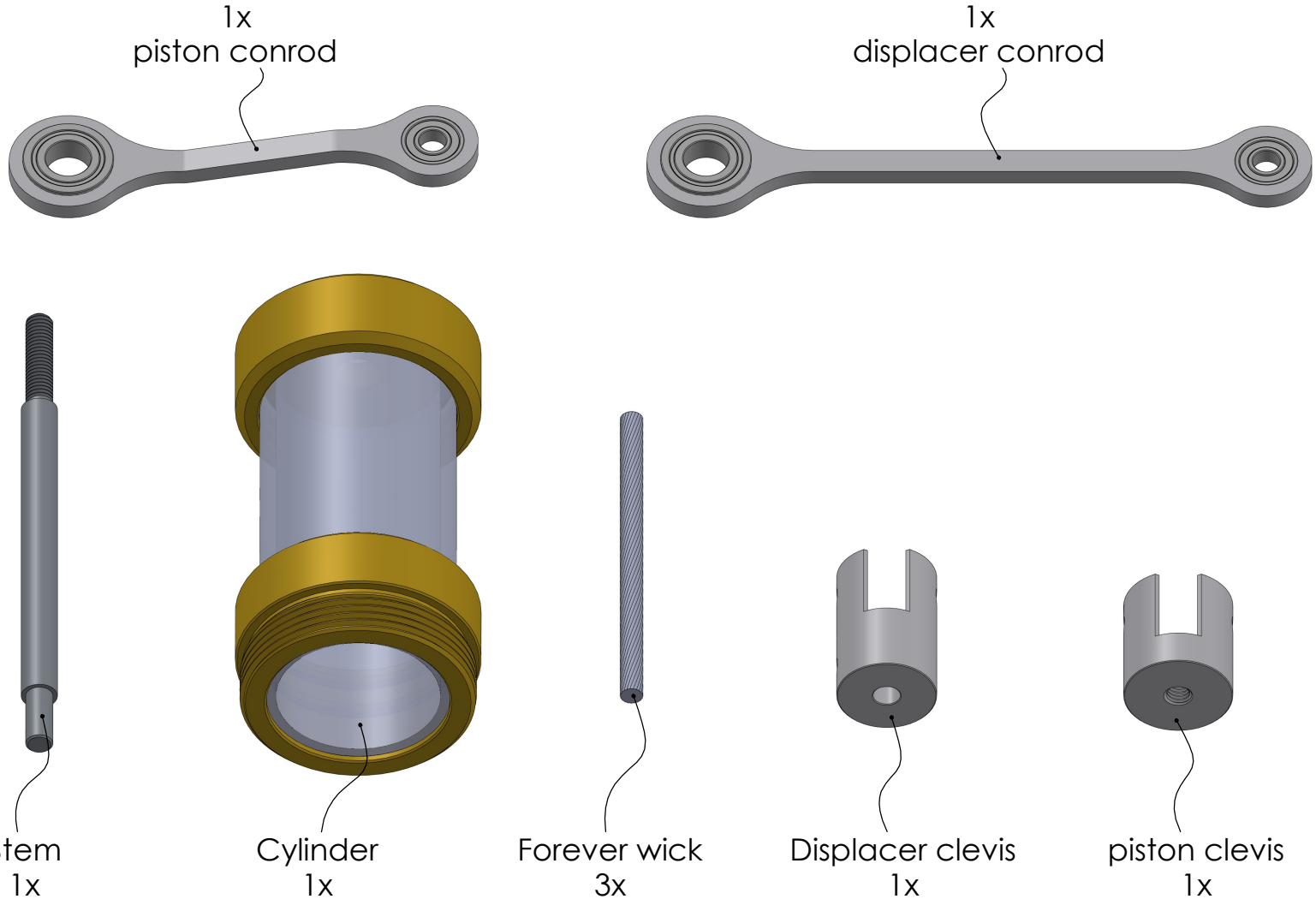


1x
Hub/axle

Piston
1x

© Kontax Engineering Ltd 22/10/2025

Parts 4

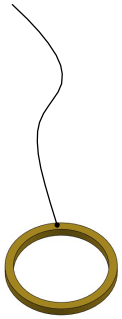


© Kontax Engineering Ltd 22/10/2025

Parts 5

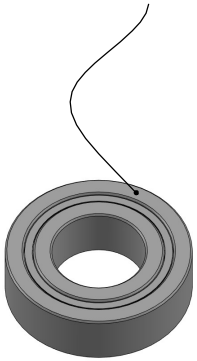
2x
Clevis bush

1x
Crank spacer

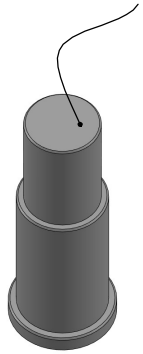


6x
rubber foot

2x
Axle bearing

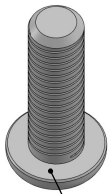


1x
Crank pin

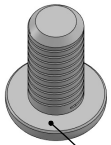


Bearing spacer
1x

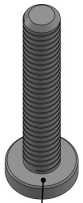
M3x10 screw
12x



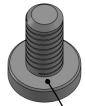
M3x6 screw
1x



M2x12 screw
2x

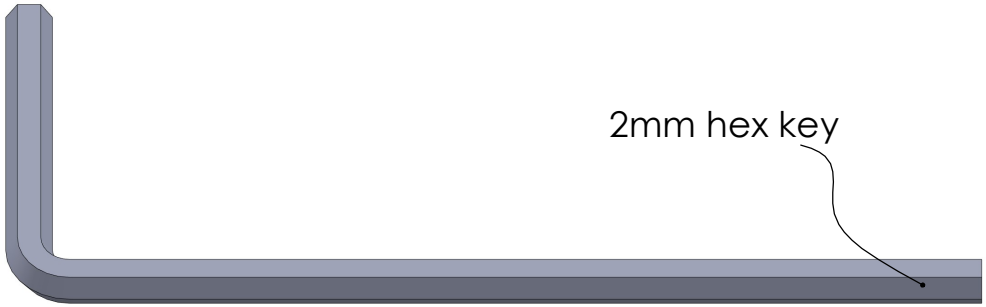


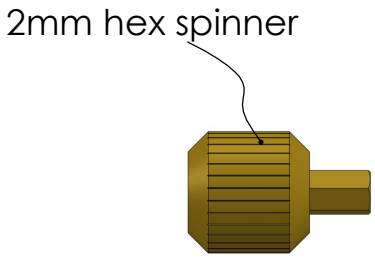
M2x4 screw
4x

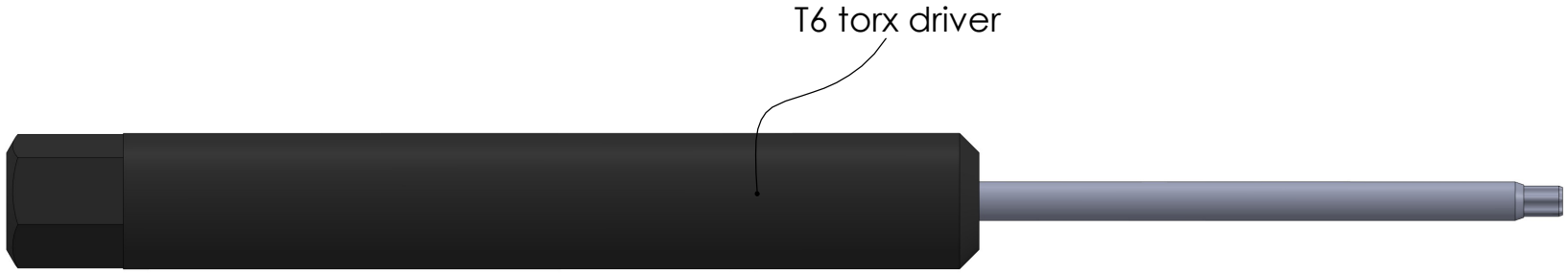


© Kontax Engineering Ltd 22/10/2025

Tools included

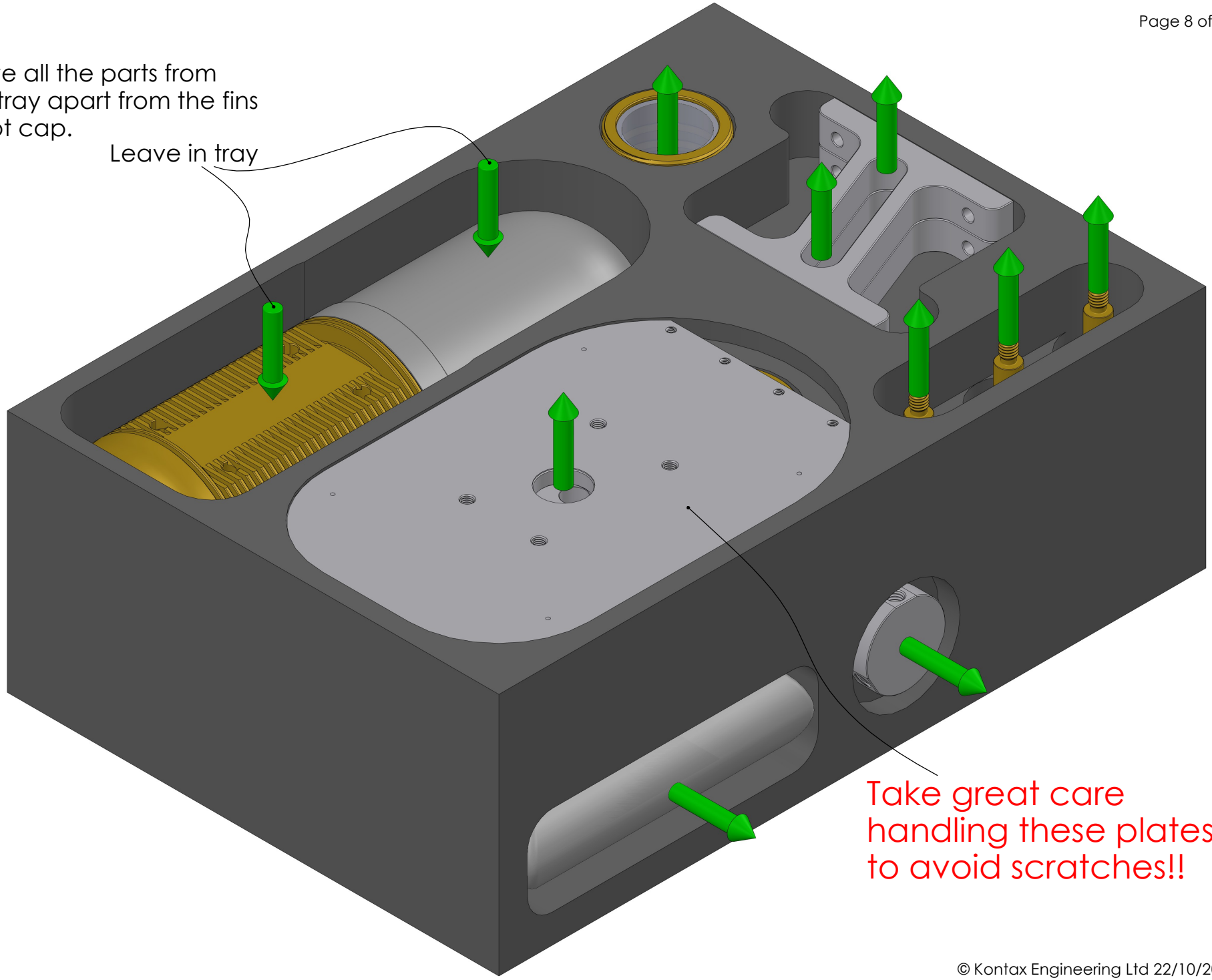






© Kontax Engineering Ltd 22/10/2025

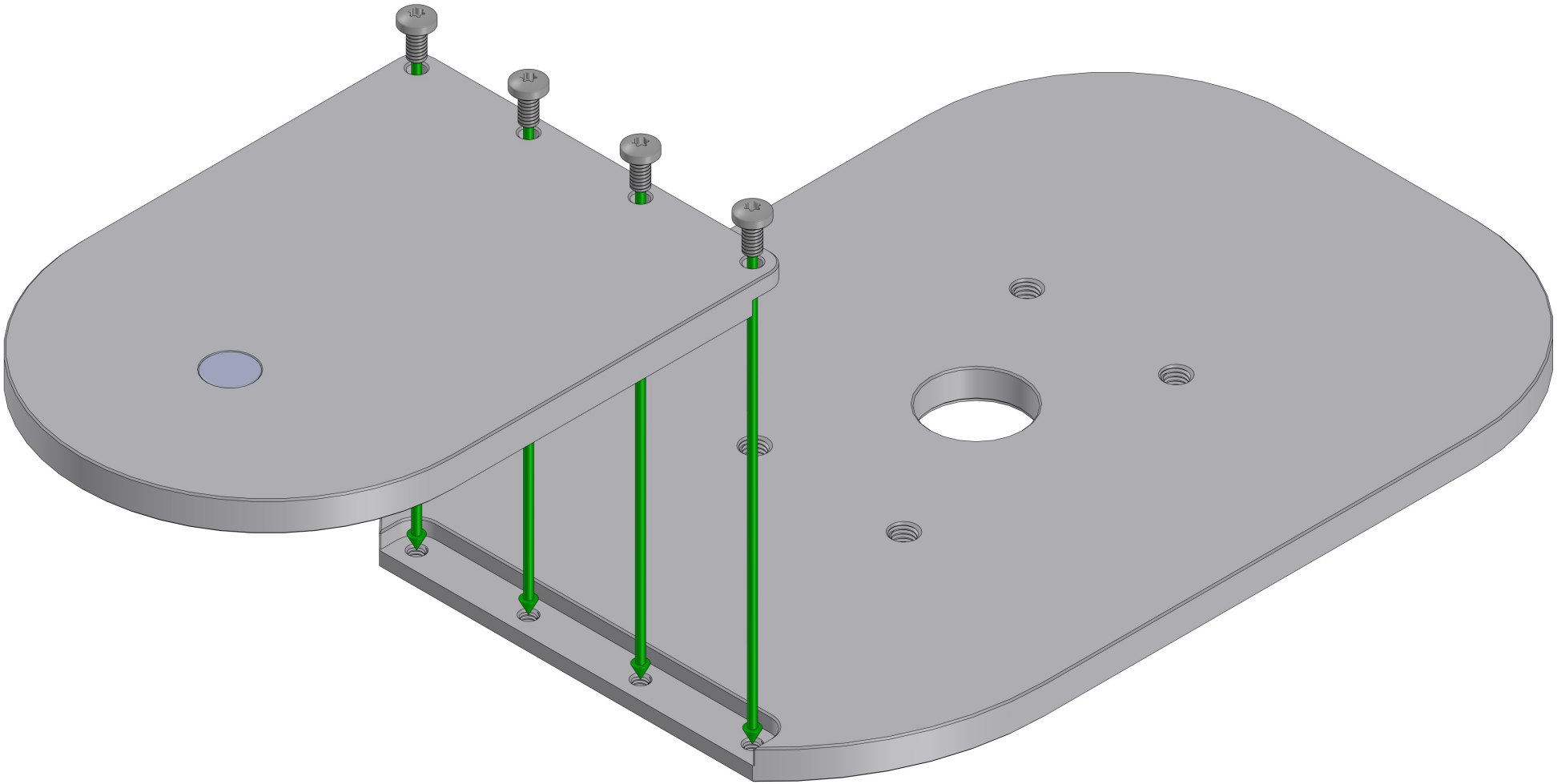
Remove all the parts from the kit tray apart from the fins and hot cap.



© Kontax Engineering Ltd 22/10/2025

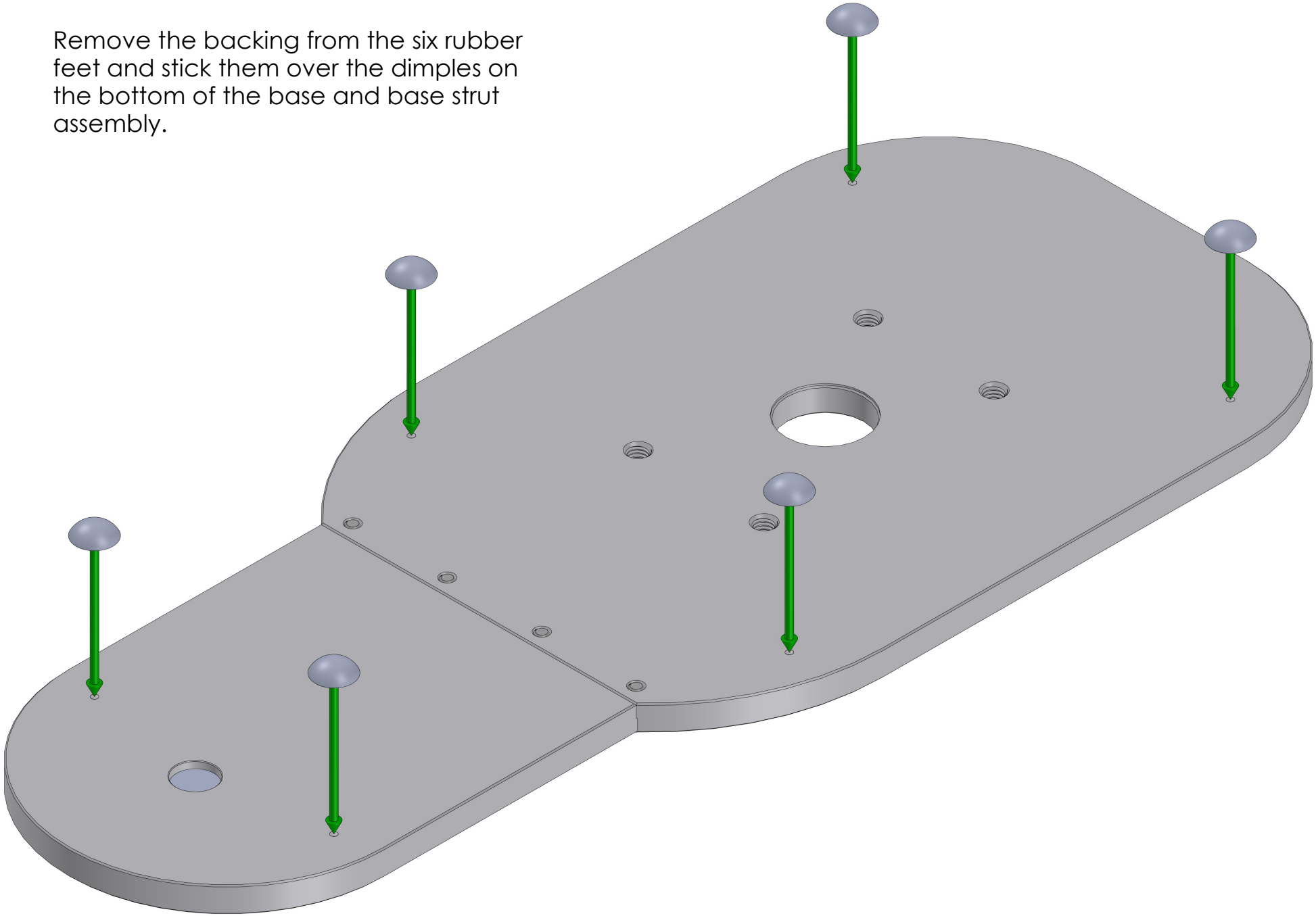
Position the step in the base strut in the slot in the base.

Screw four M2x4 screws through the base strut into the base and tighten with the T6 driver.

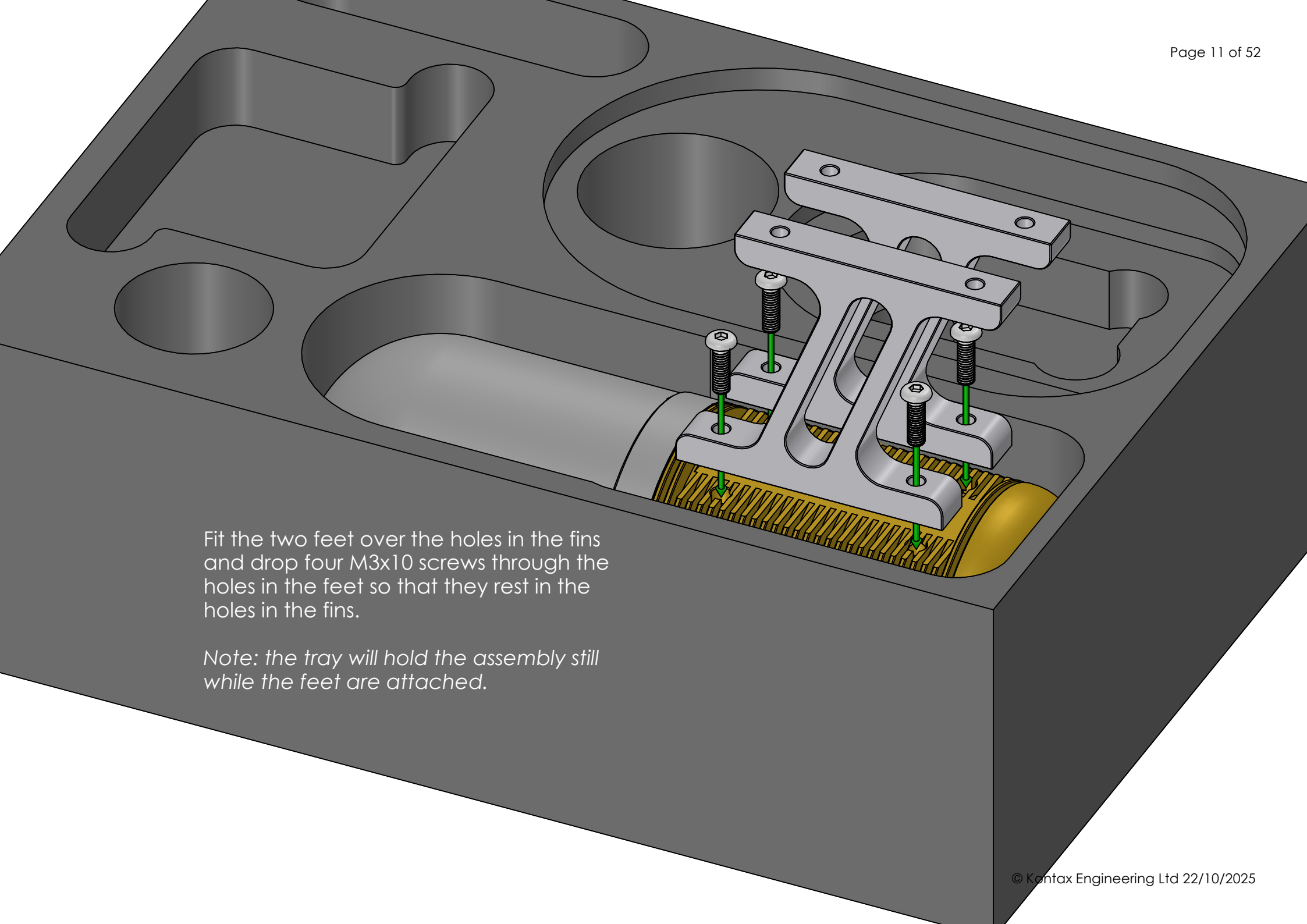


© Kontax Engineering Ltd 22/10/2025

Remove the backing from the six rubber feet and stick them over the dimples on the bottom of the base and base strut assembly.



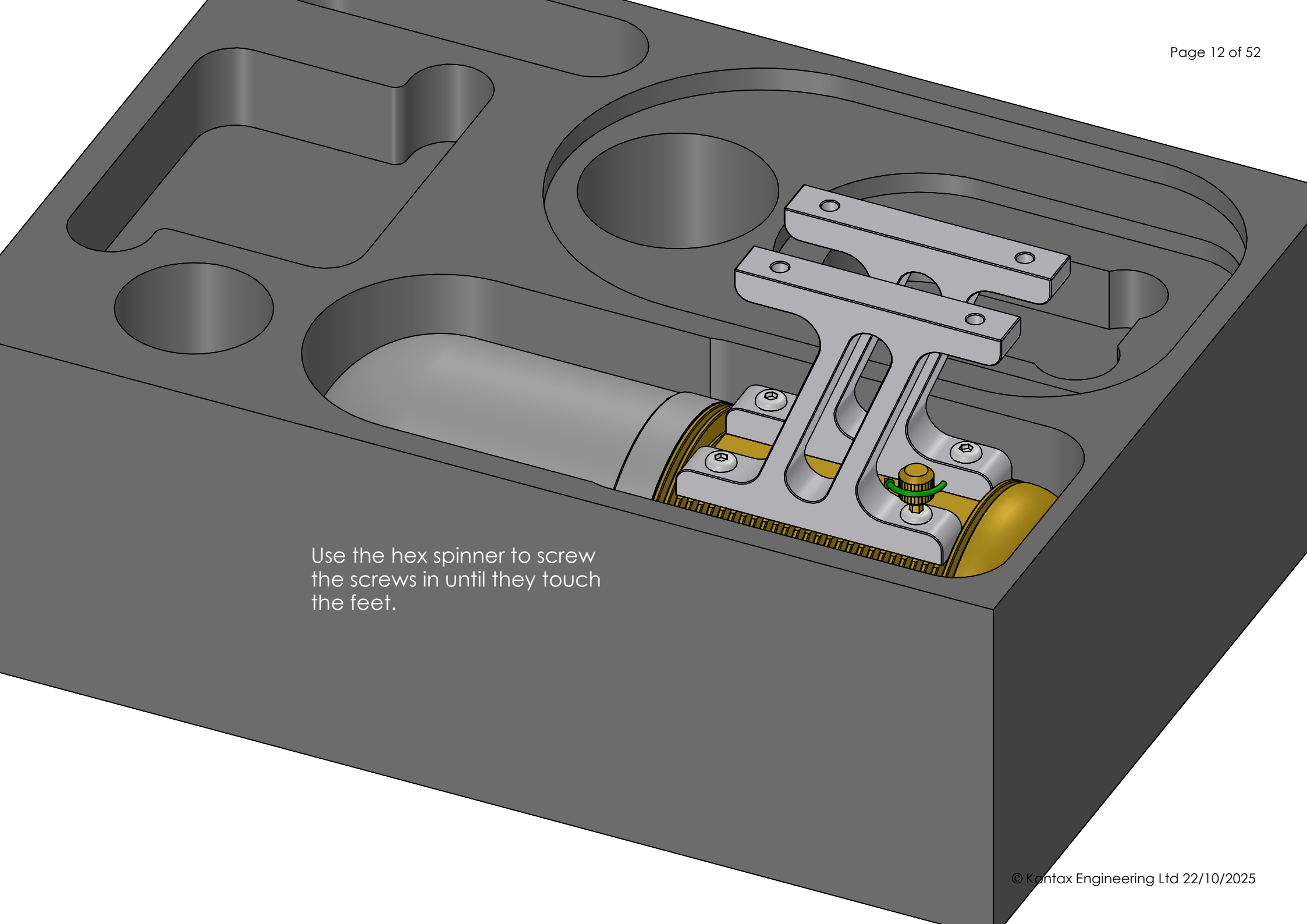
© Kontax Engineering Ltd 22/10/2025



Fit the two feet over the holes in the fins and drop four M3x10 screws through the holes in the feet so that they rest in the holes in the fins.

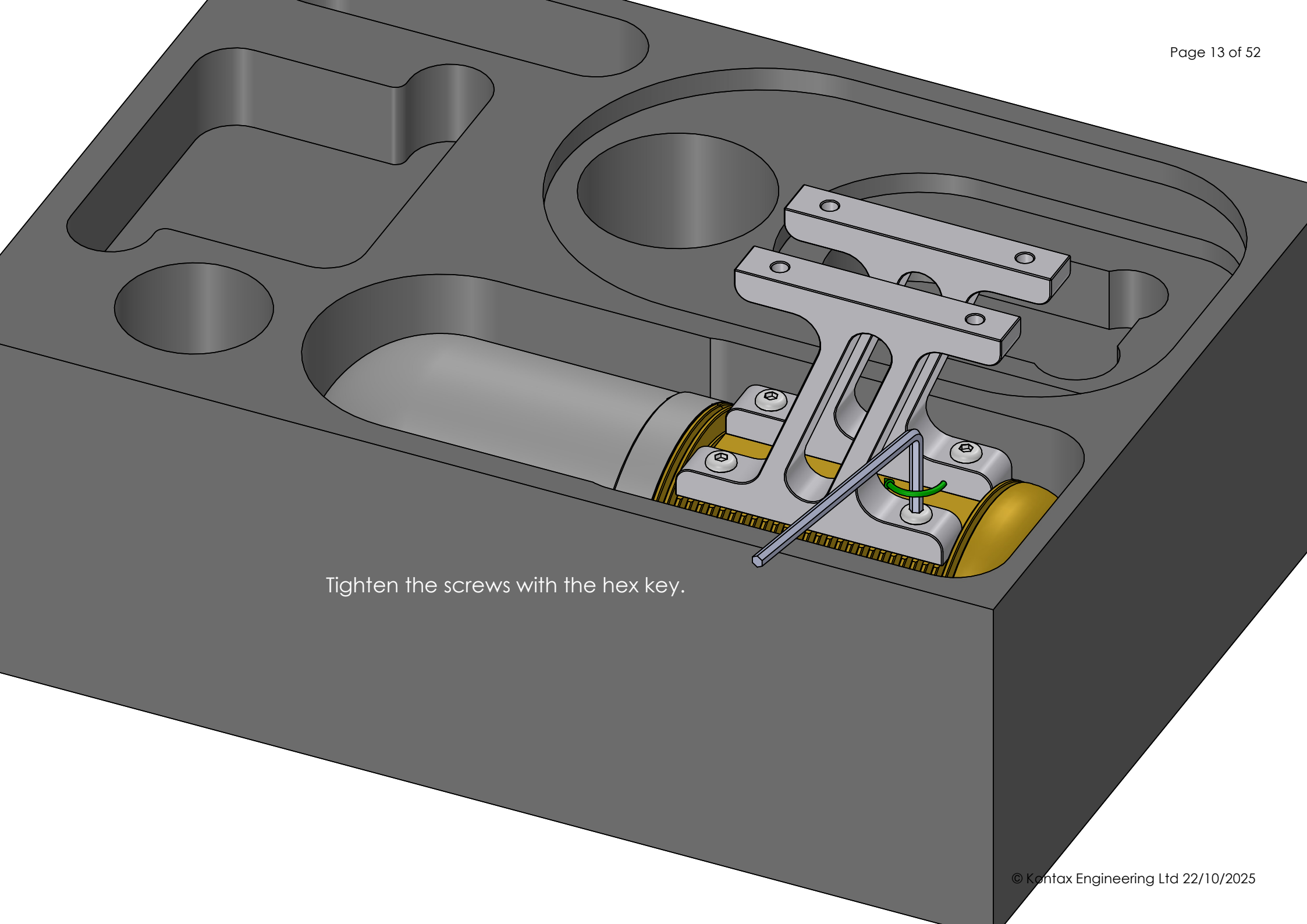
Note: the tray will hold the assembly still while the feet are attached.

© Kontax Engineering Ltd 22/10/2025



Use the hex spinner to screw the screws in until they touch the feet.

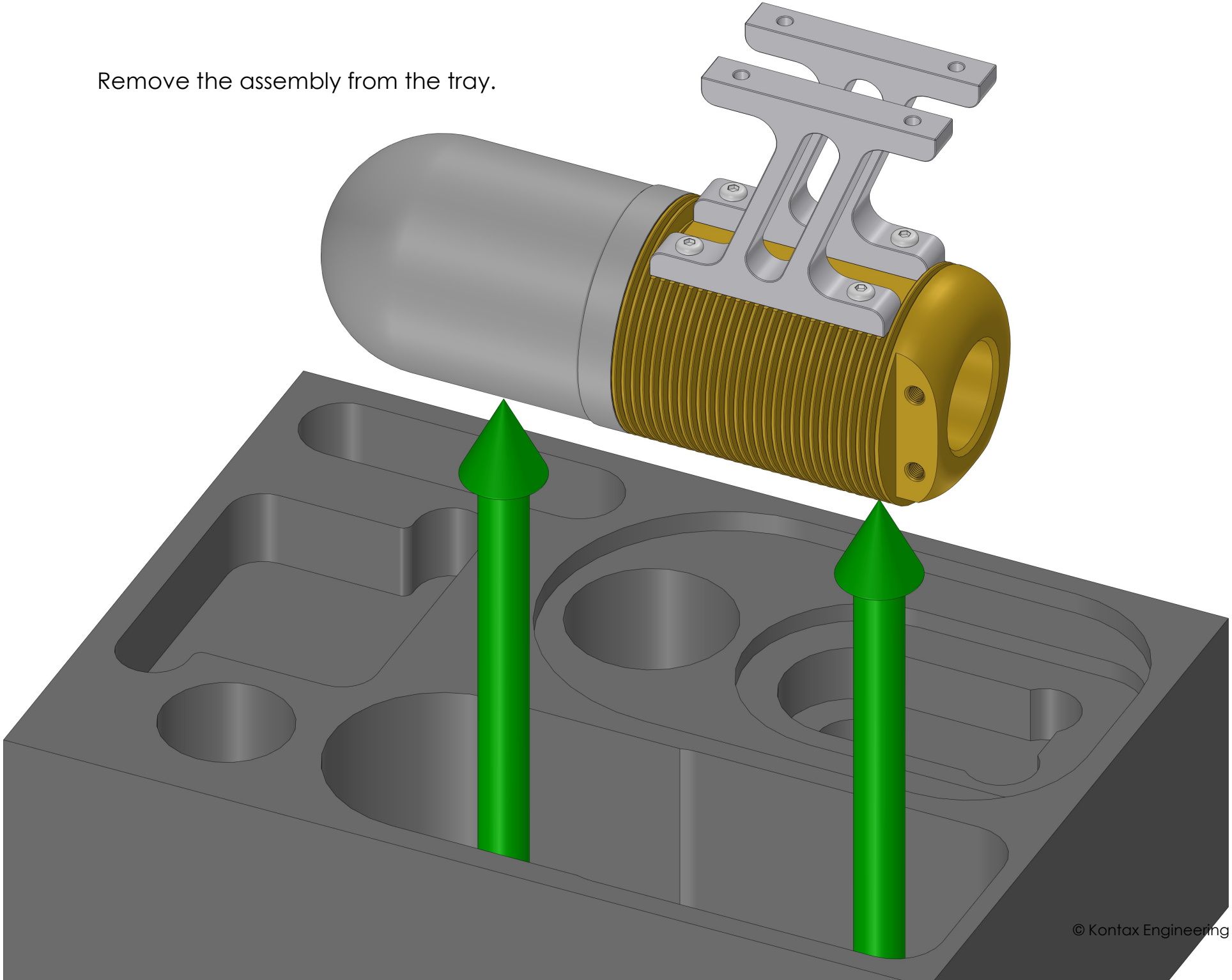
© Kontax Engineering Ltd 22/10/2025



Tighten the screws with the hex key.

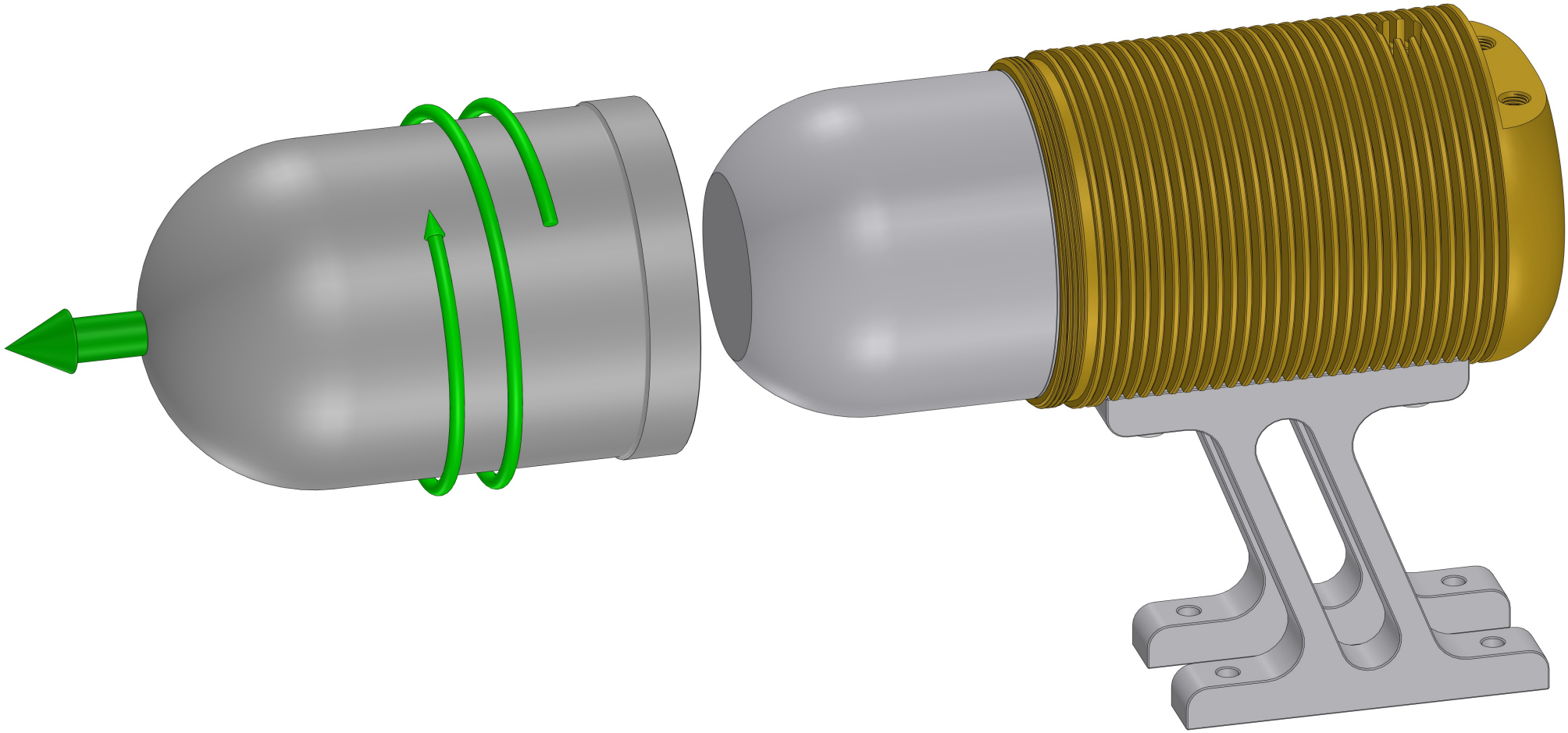
© Kontax Engineering Ltd 22/10/2025

Remove the assembly from the tray.



© Kontax Engineering Ltd 22/10/2025

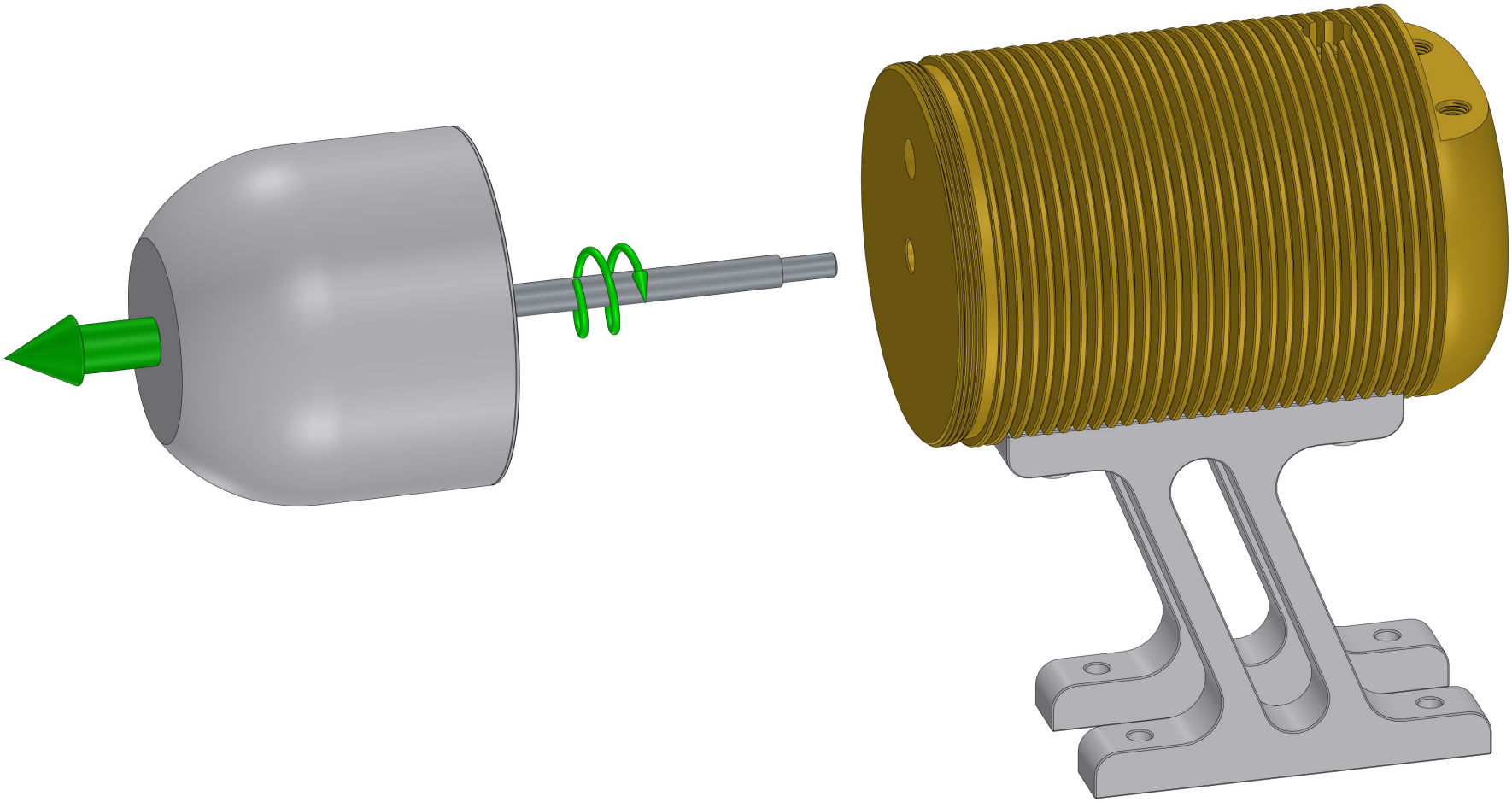
Unscrew the hot cap from the fins and remove the wadding from inside.



© Kontax Engineering Ltd 22/10/2025

Remove the displacer and stem from the fins.

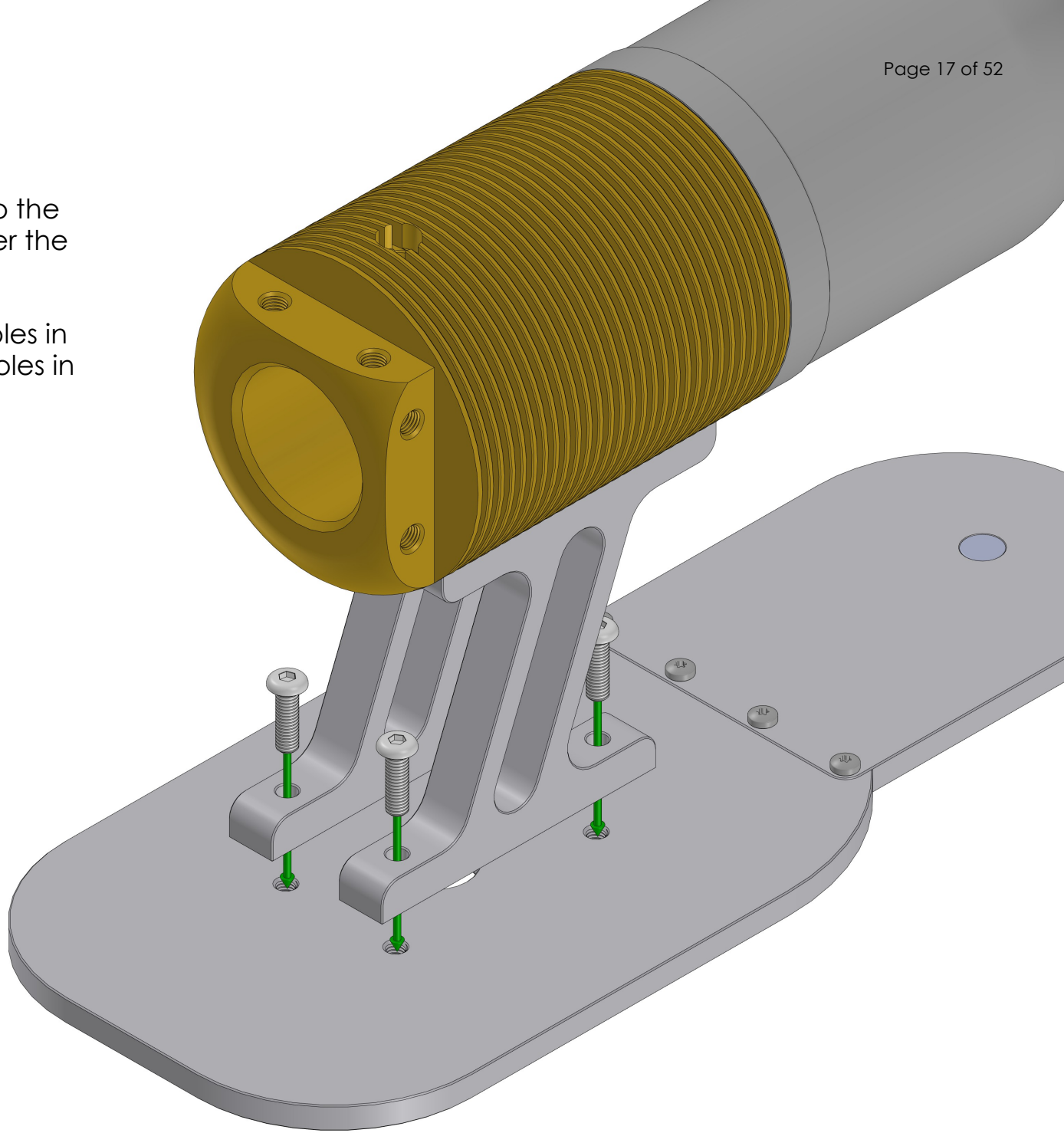
Unscrew the stem from the displacer.



© Kontax Engineering Ltd 22/10/2025

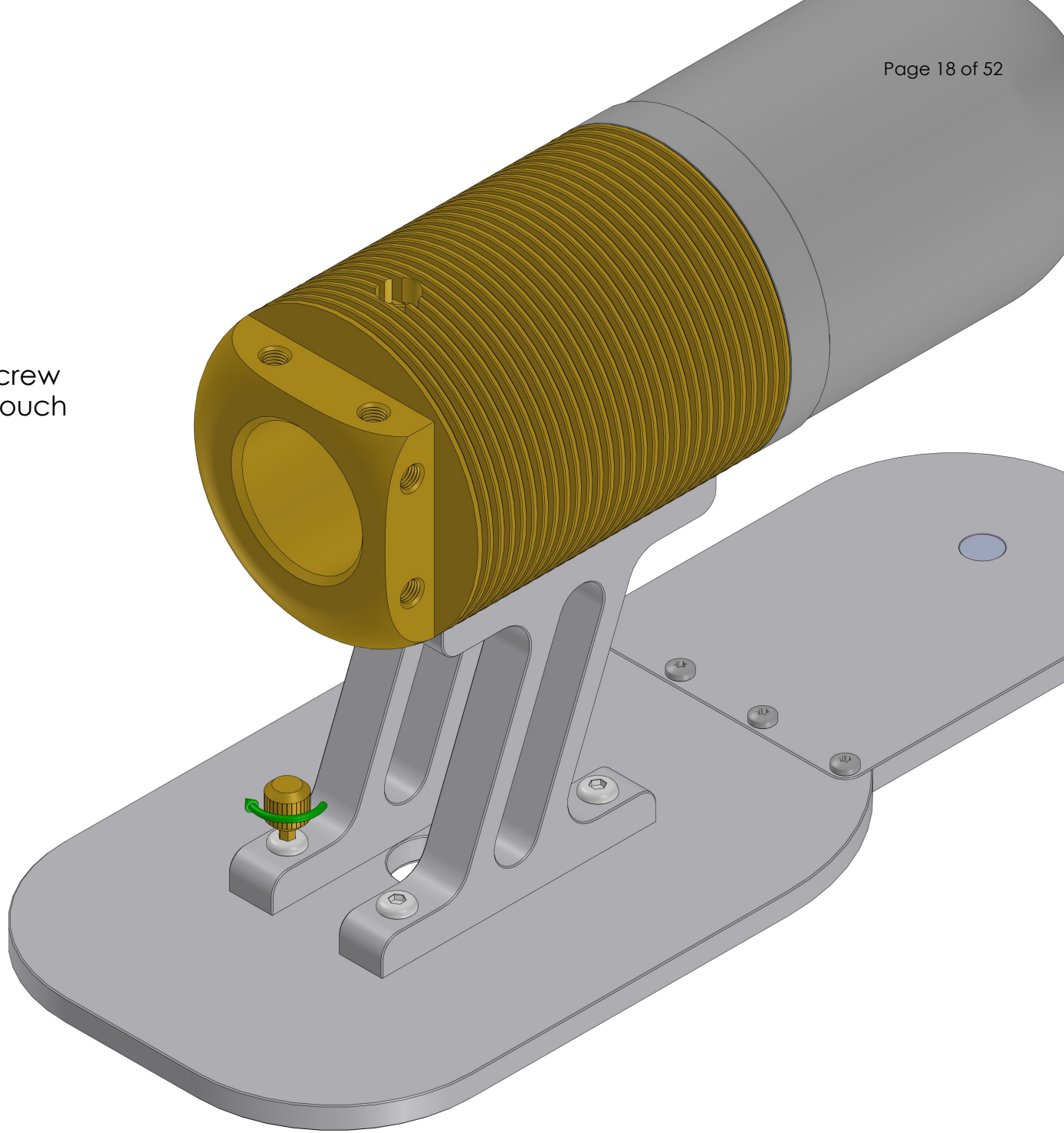
Lower the fins and feet down onto the base with the holes in the feet over the holes in the base.

Drop four M3x10 screw into the holes in the feet so that they rest on the holes in the base.



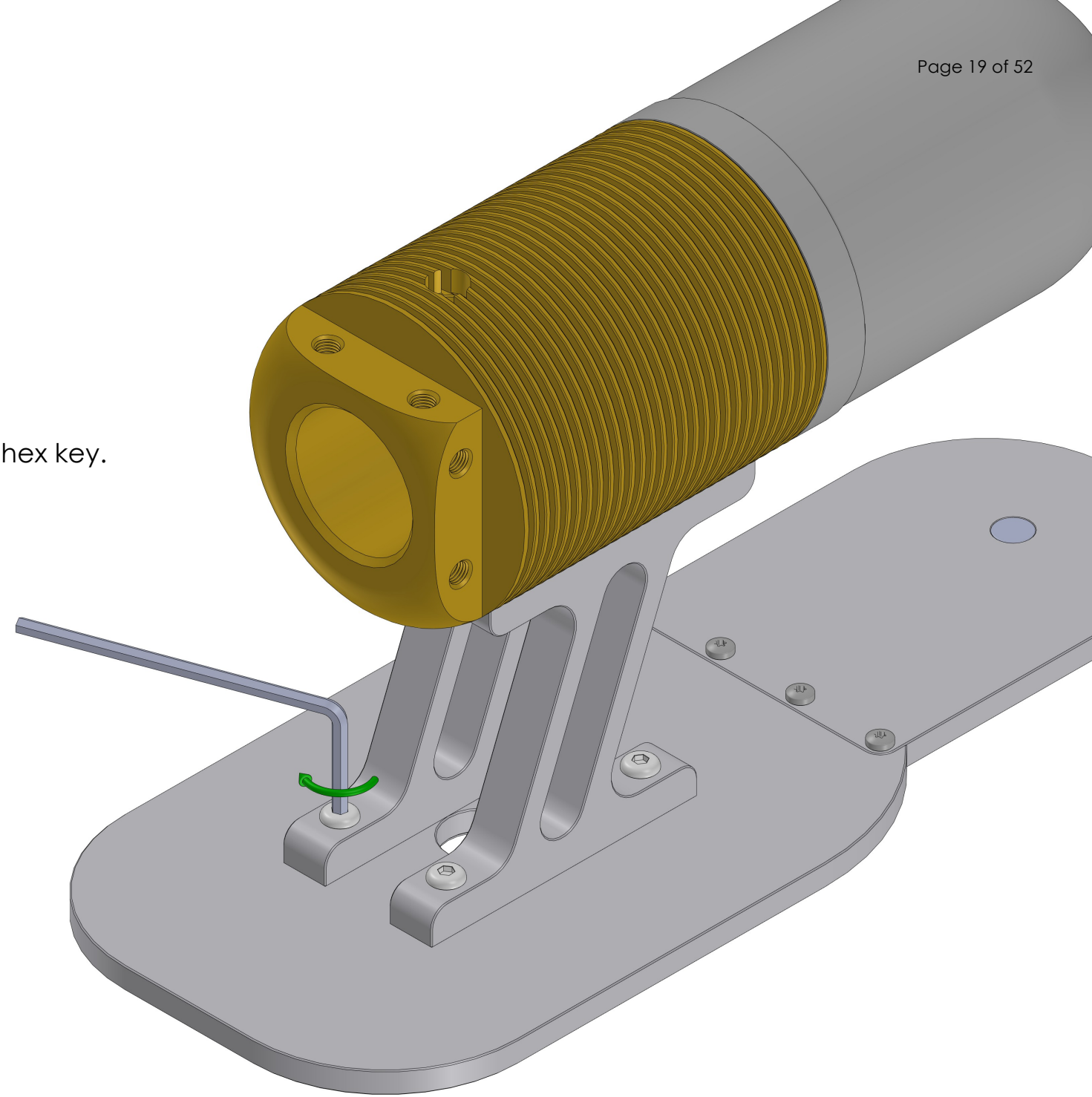
© Kontax Engineering Ltd 22/10/2025

Use the hex spinner to screw the screws in until they touch the feet.



© Kontax Engineering Ltd 22/10/2025

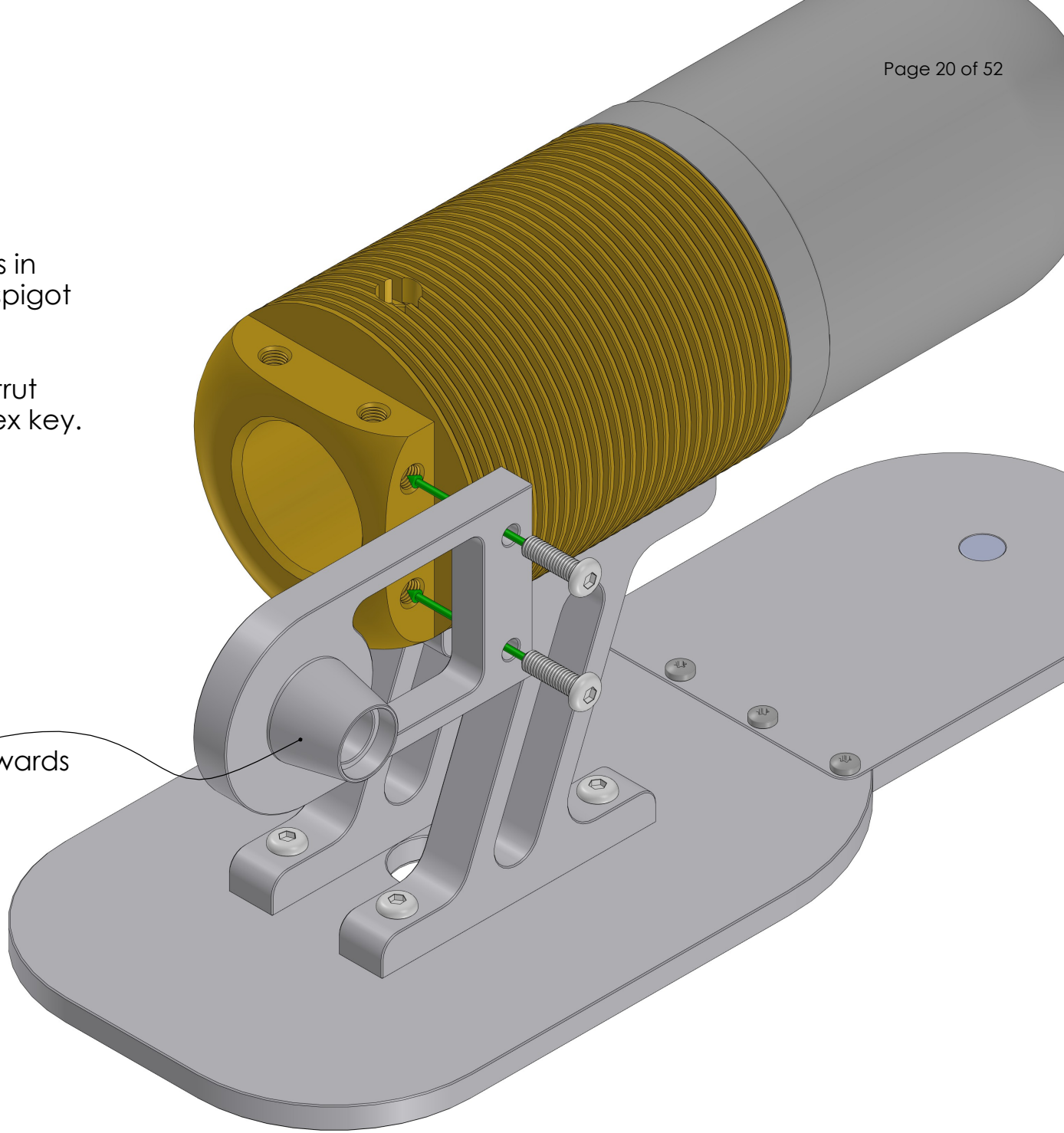
Tighten the screws with the hex key.



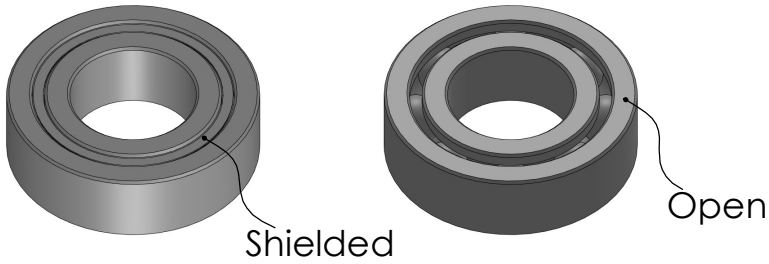
© Kontax Engineering Ltd 22/10/2025

Position the side strut over the holes in the side of the fins with the longer spigot facing outwards.

Fit two M3x10 screws through the strut into the fins and tighten with the hex key.



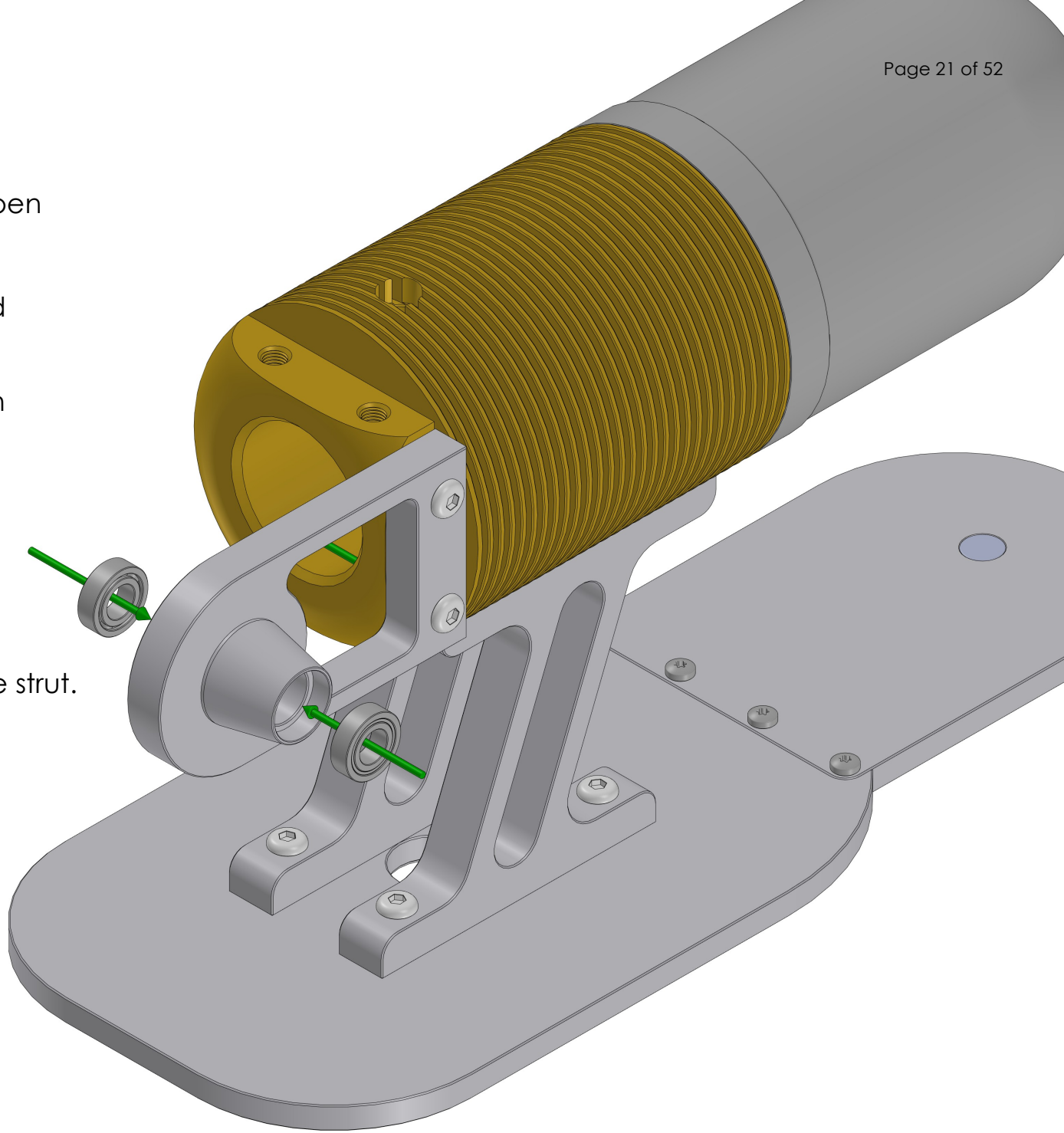
© Kontax Engineering Ltd 22/10/2025



The axle bearings have an open side and a shielded side.

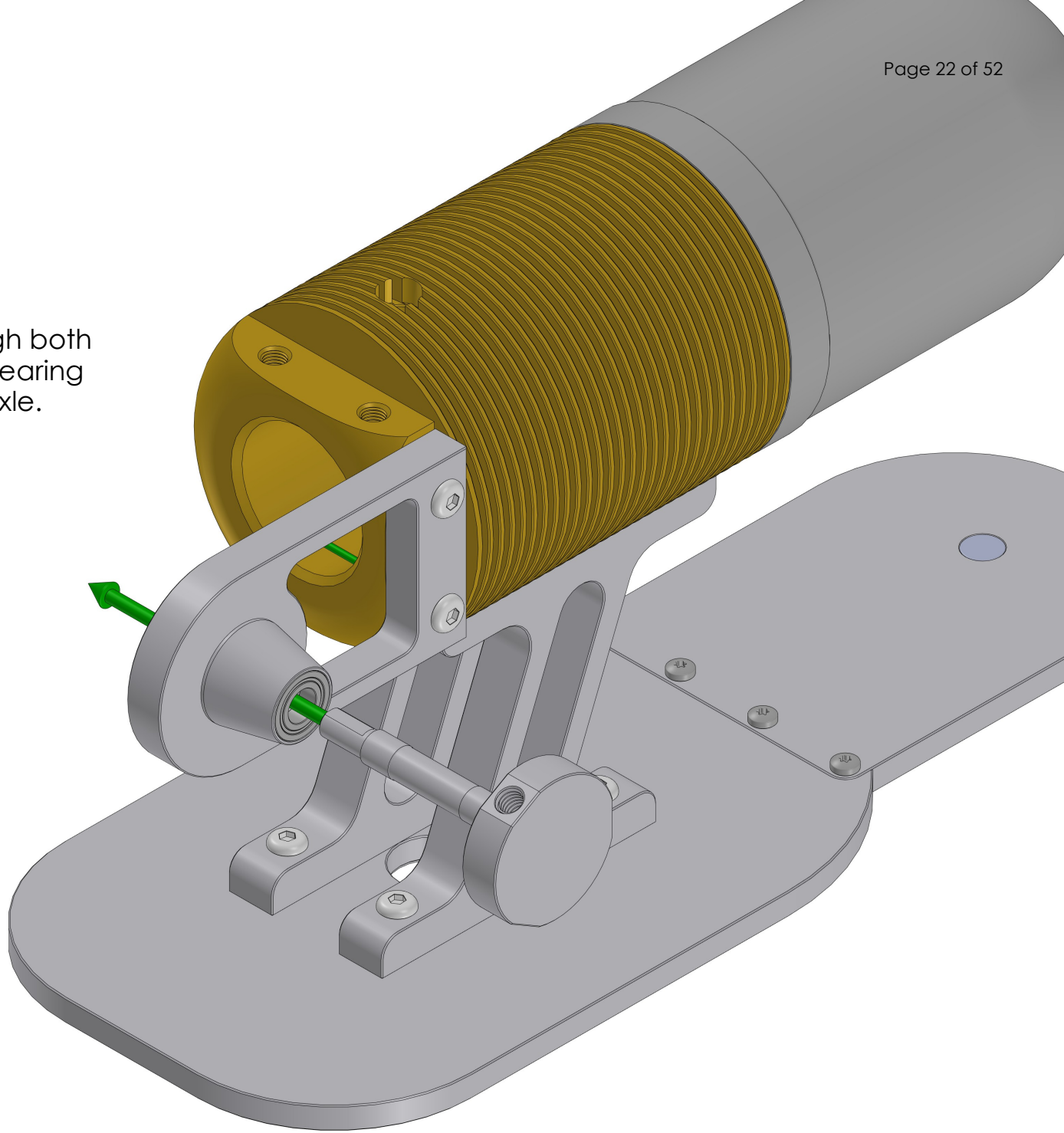
The open sides should face inwards when inserted to help prevent ingress of dust.

Fit the two axle bearings into the strut.



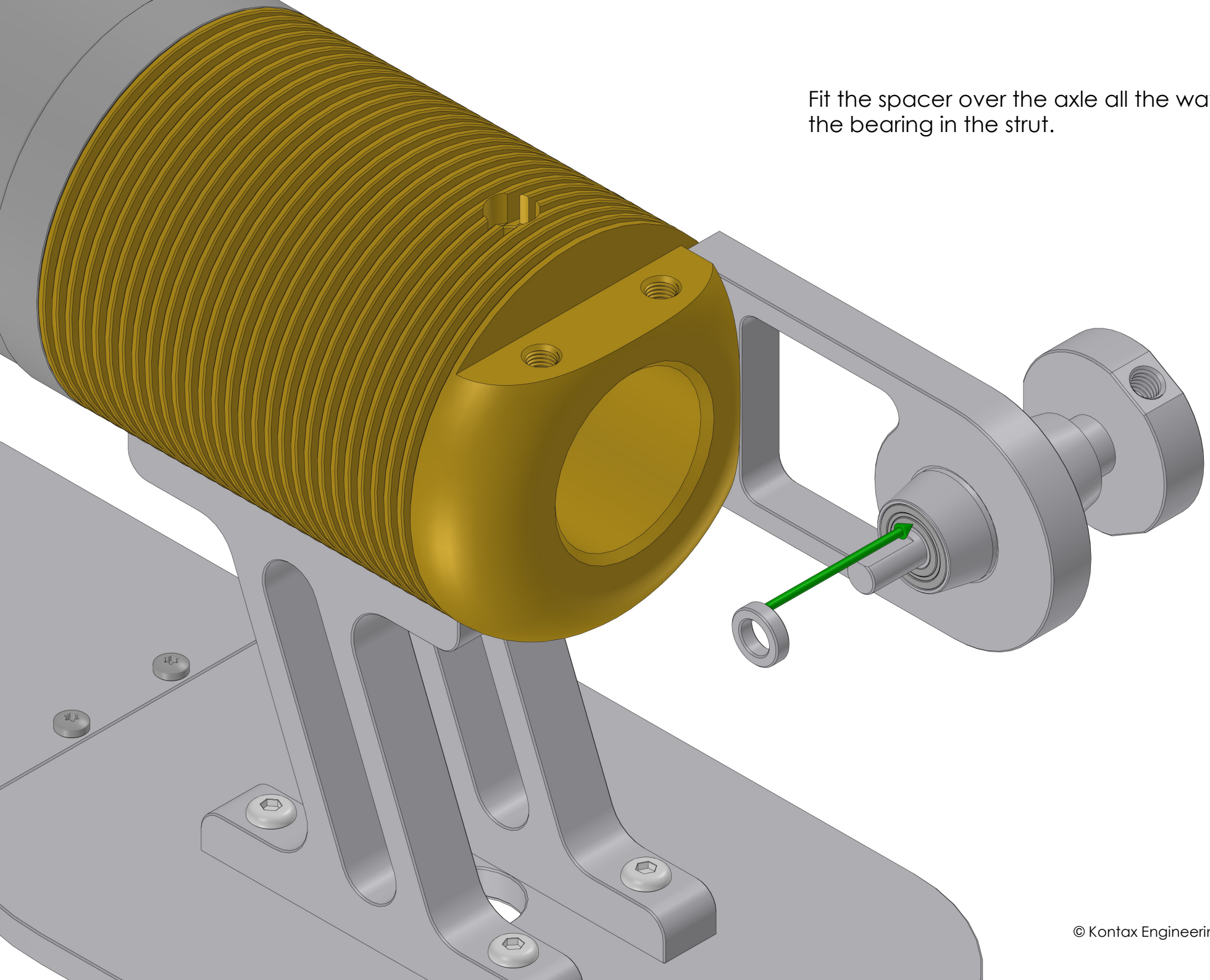
© Kontax Engineering Ltd 22/10/2025

Fit the hub/axle all the way through both bearings. Take care the second bearing does not get pushed out by the axle.



© Kontax Engineering Ltd 22/10/2025

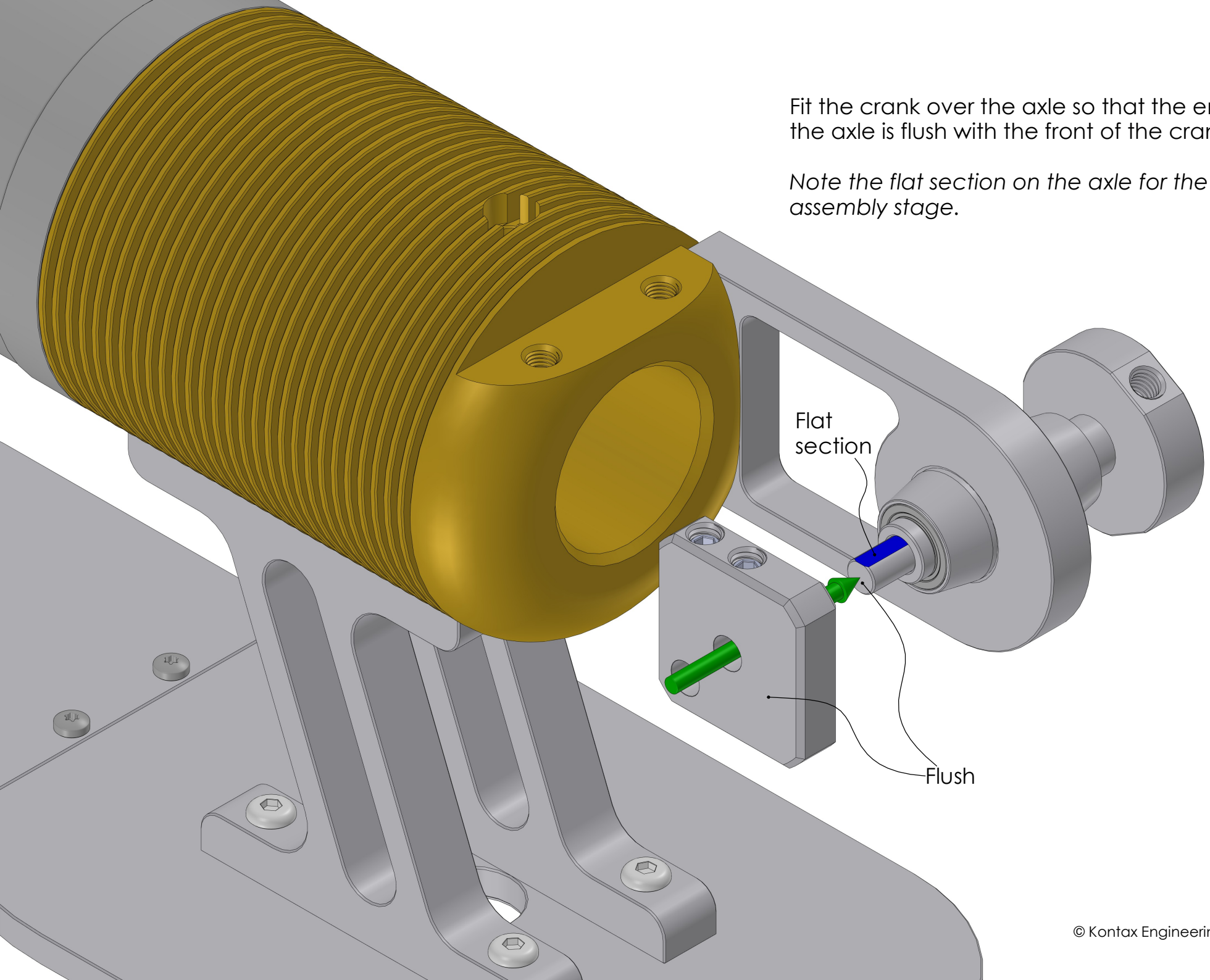
Fit the spacer over the axle all the way up to the bearing in the strut.



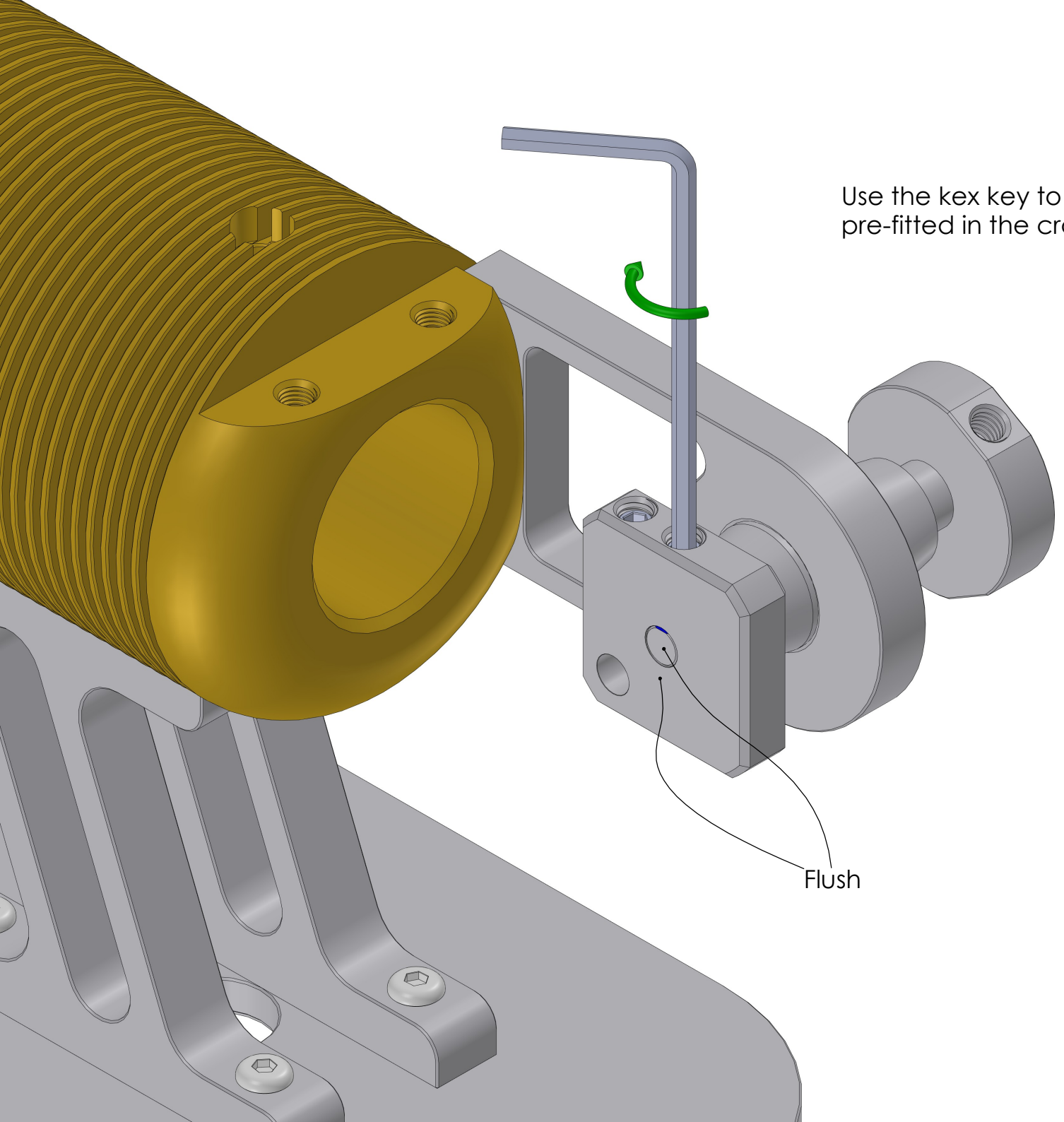
© Kontax Engineering Ltd 22/10/2025

Fit the crank over the axle so that the end of the axle is flush with the front of the crank.

Note the flat section on the axle for the next assembly stage.

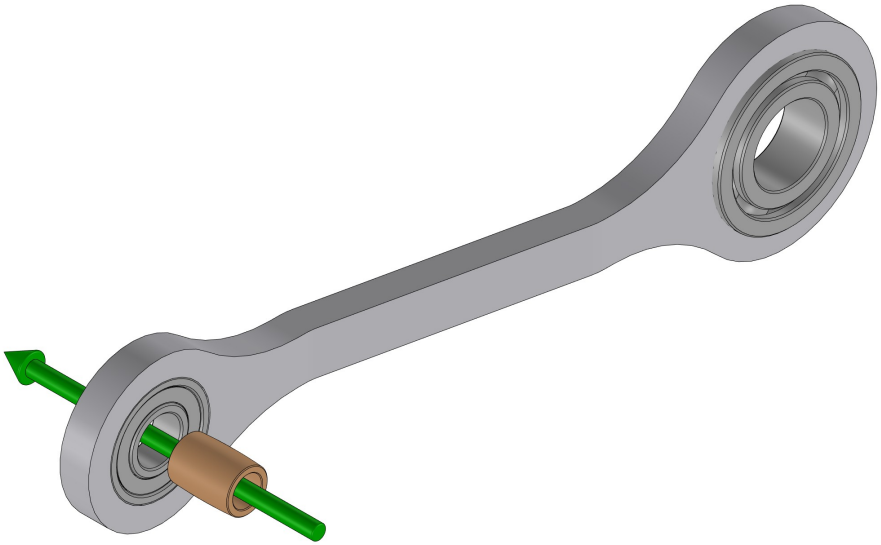


© Kontax Engineering Ltd 22/10/2025

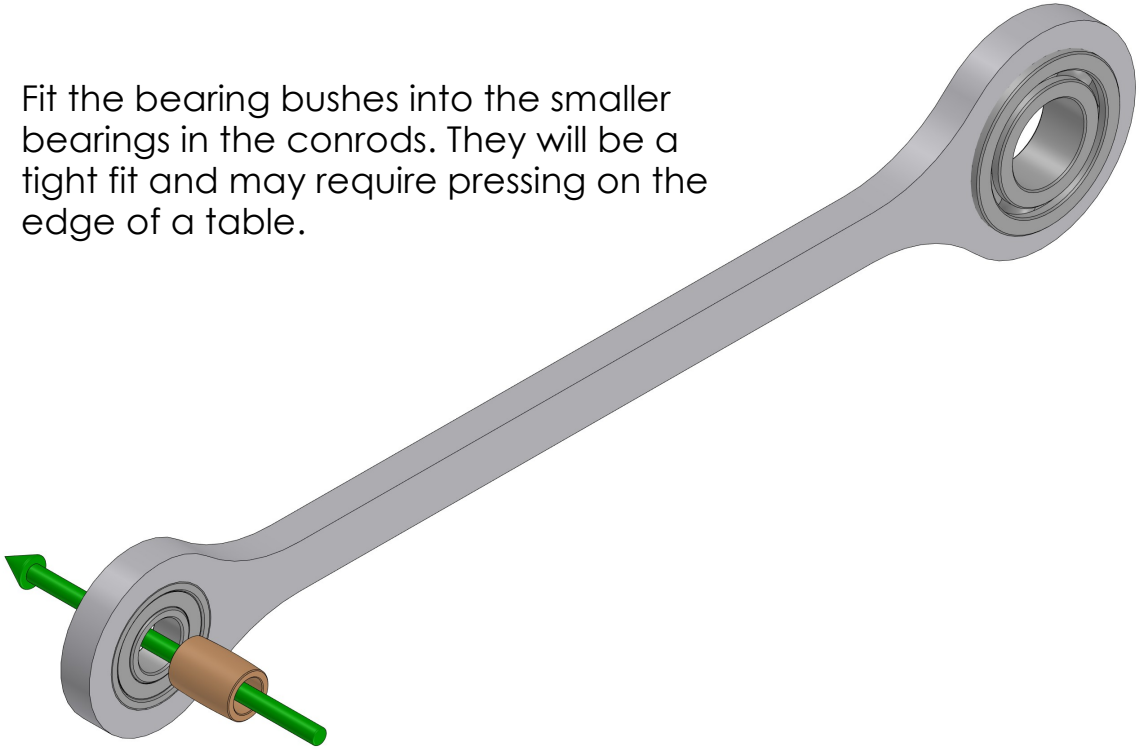


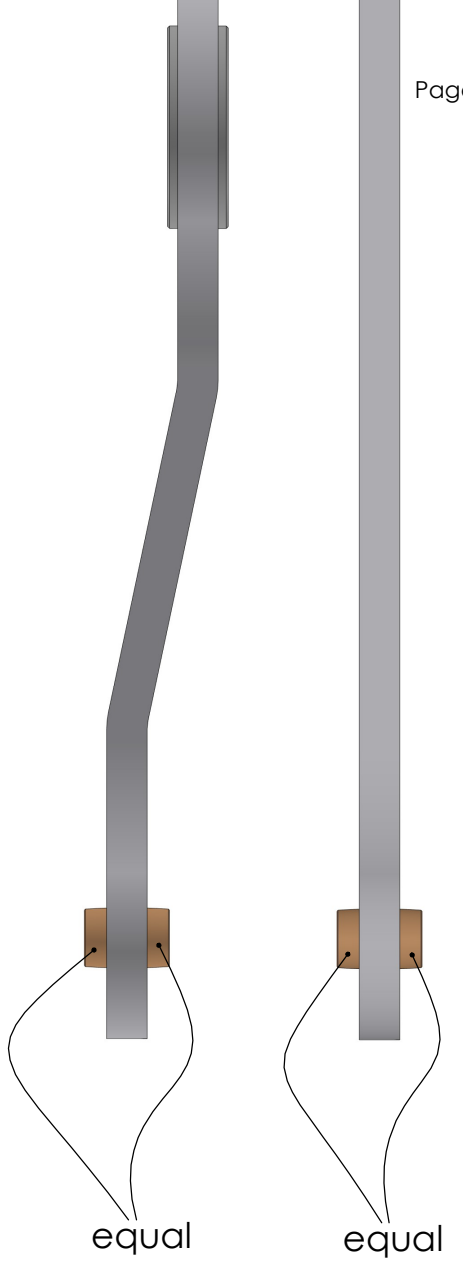
Use the kex key to tighten the crank screw that is pre-fitted in the crank onto the flat on the axle.

© Kontax Engineering Ltd 22/10/2025



Fit the bearing bushes into the smaller bearings in the conrods. They will be a tight fit and may require pressing on the edge of a table.



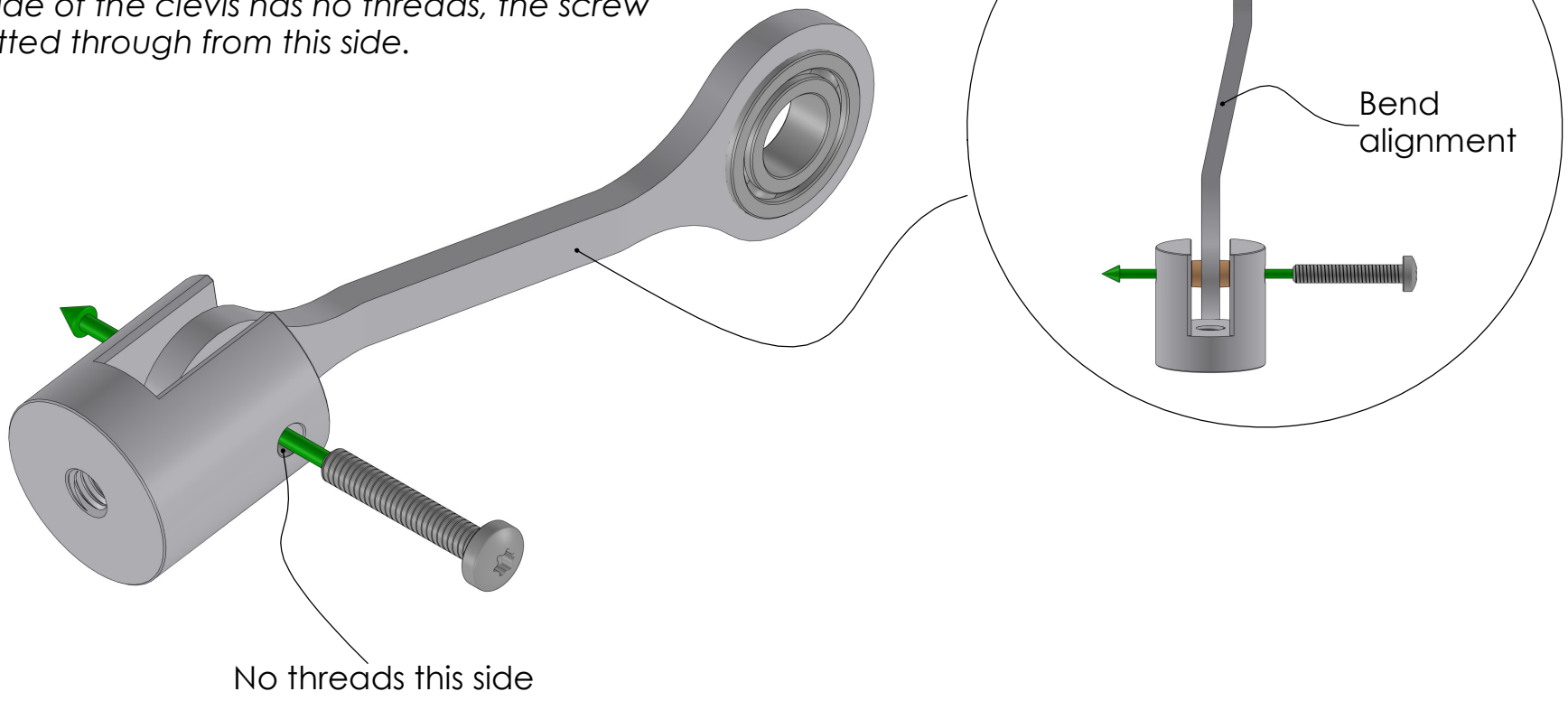


The bushes should be positioned so that they are centralised on the bearings.

© Kontax Engineering Ltd 22/10/2025

Fit the short conrod and bearing bush into the slot in the piston clevis with the bend aligned as shown and with the hole in the bush lined up with the hole in the clevis. Screw one M2x12 screw into the clevis, through the bush and tighten with the T6 driver.

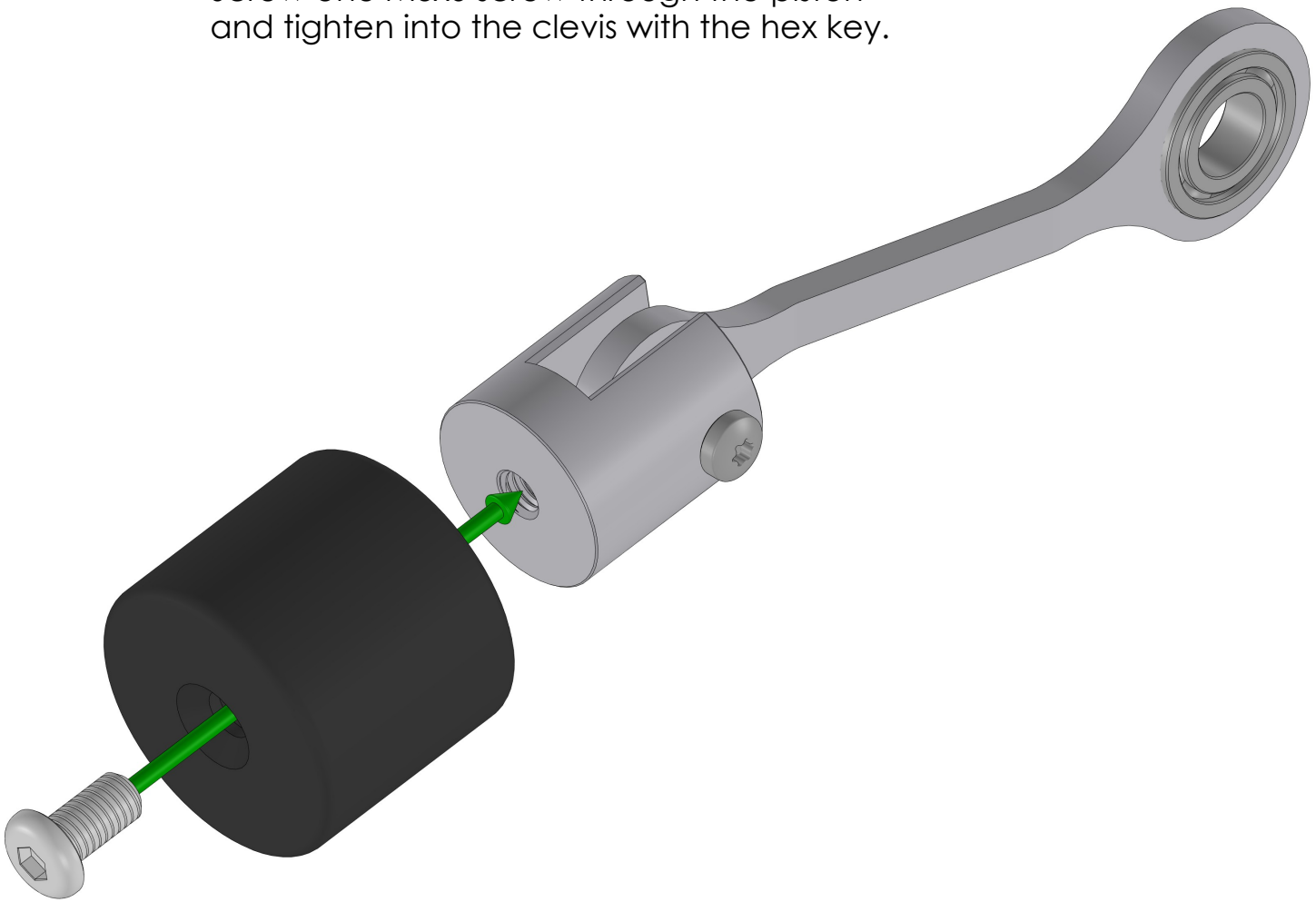
Note: one side of the clevis has no threads, the screw should be fitted through from this side.



© Kontax Engineering Ltd 22/10/2025

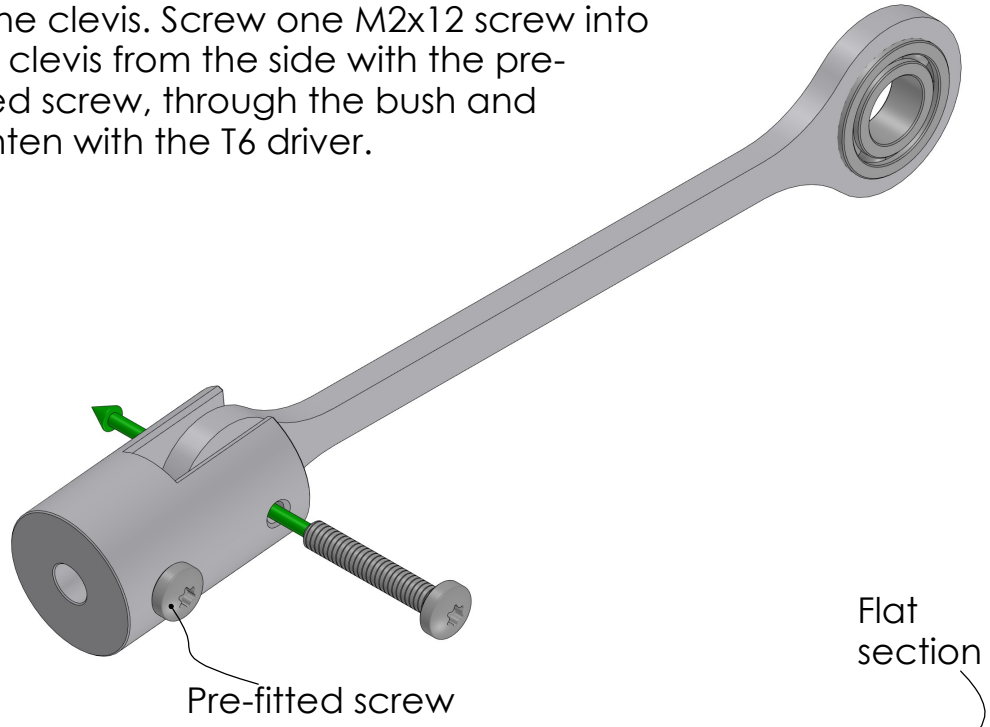
Fit the piston over the clevis.

Screw one M3x6 screw through the piston
and tighten into the clevis with the hex key.



© Kontax Engineering Ltd 22/10/2025

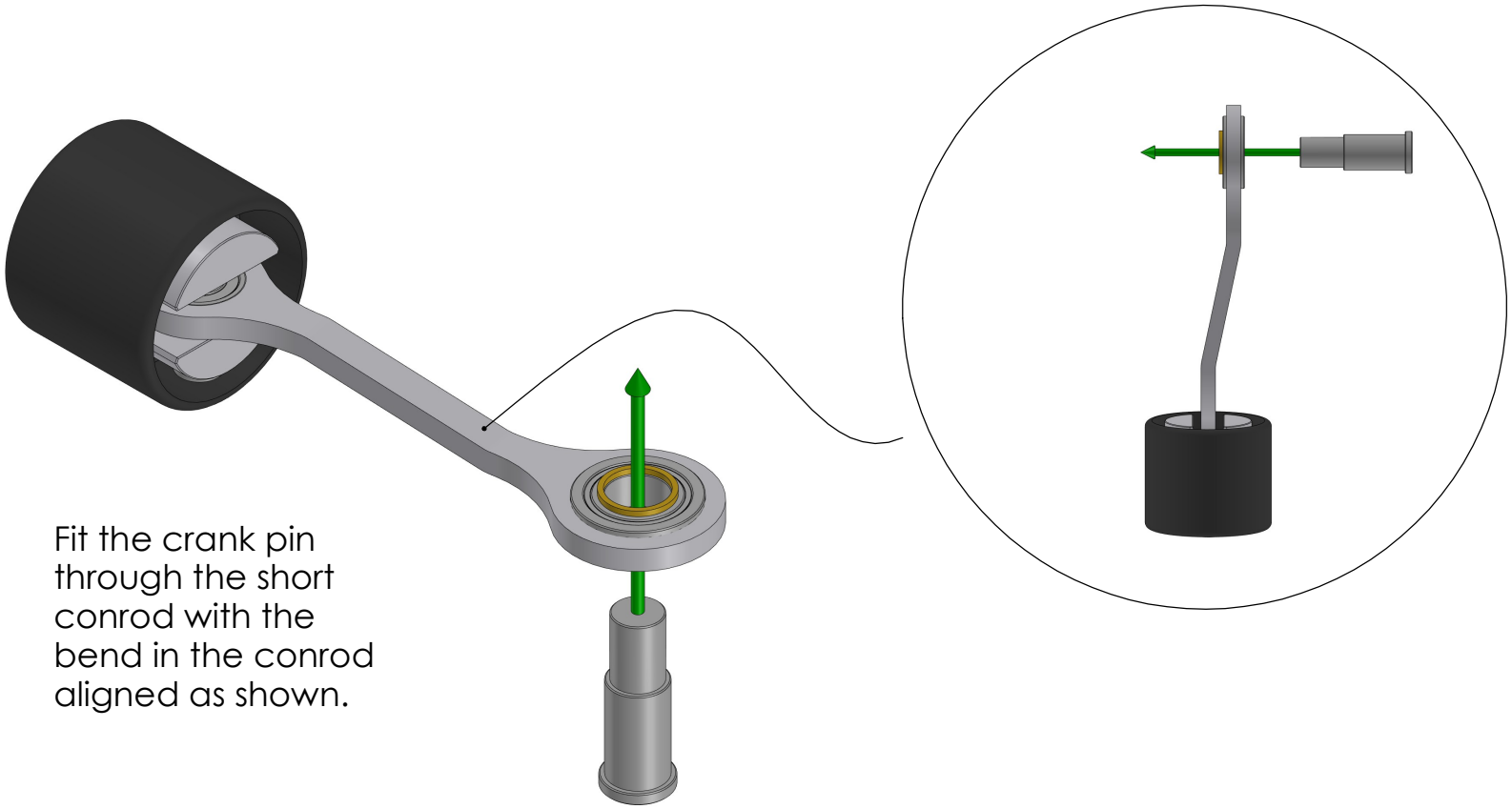
Fit the long conrod and bearing bush into the slot in the displacer clevis so that the hole in the bush lines up with the hole in the clevis. Screw one M2x12 screw into the clevis from the side with the pre-fitted screw, through the bush and tighten with the T6 driver.



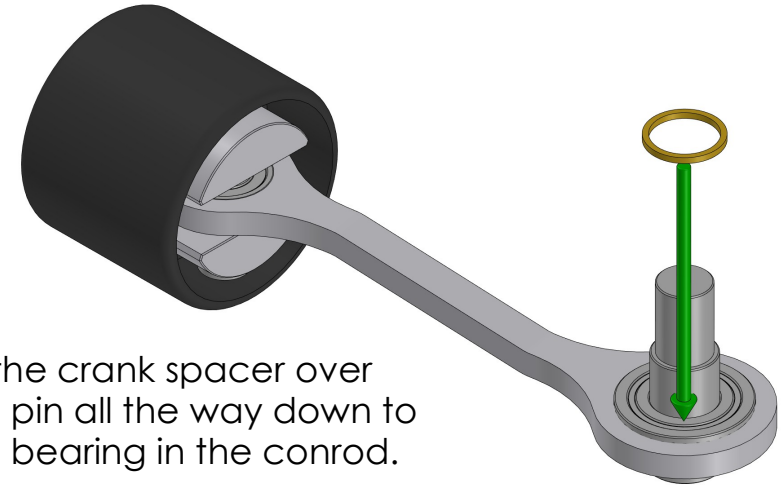
Fit the displacer stem into the end of the clevis. Note the flat section on the end of the stem highlighted in blue.

Tighten the pre-fitted screw in the clevis onto the flat on the stem with the T6 driver.

© Kontax Engineering Ltd 22/10/2025



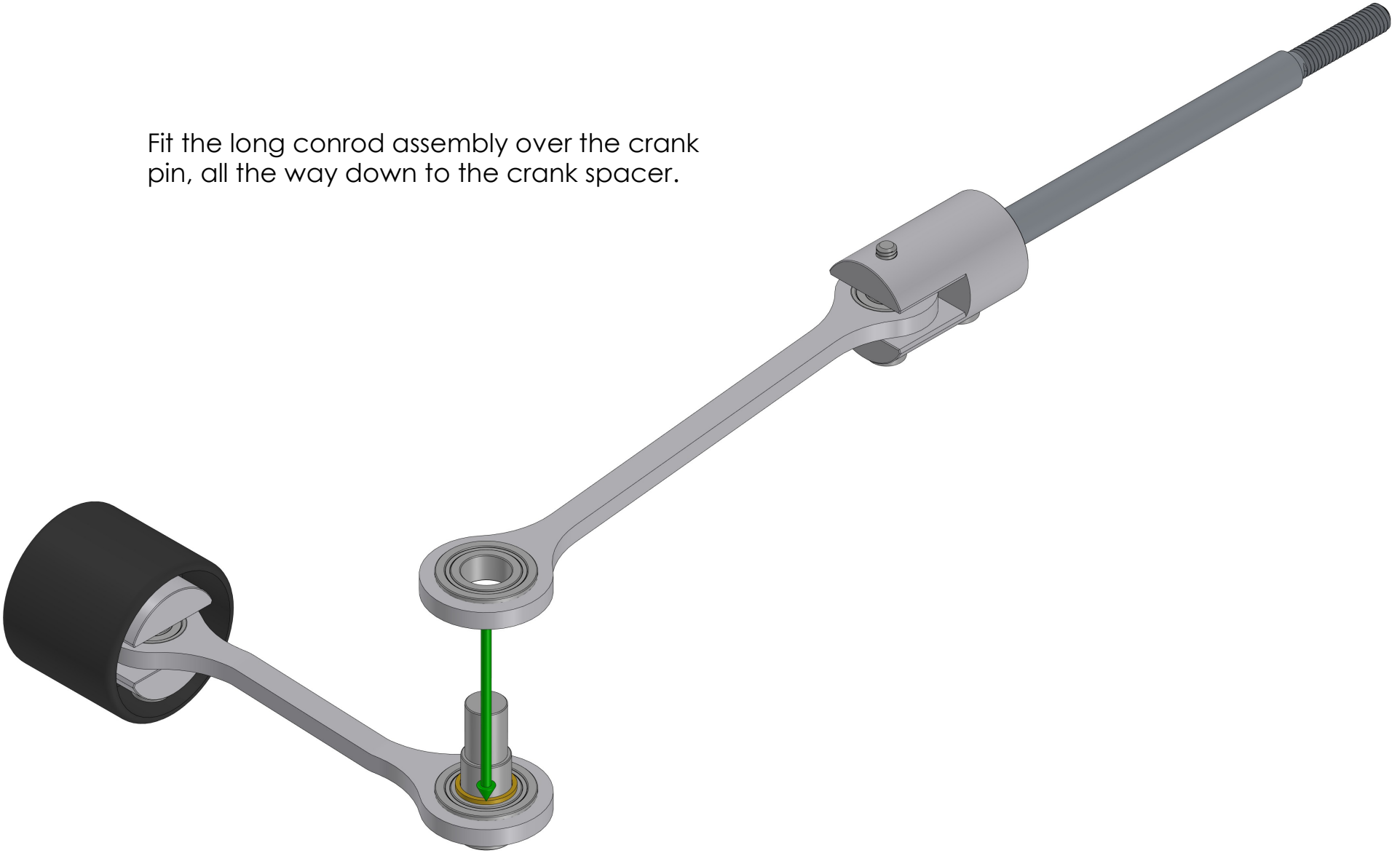
Fit the crank pin through the short conrod with the bend in the conrod aligned as shown.



Fit the crank spacer over the pin all the way down to the bearing in the conrod.

© Kontax Engineering Ltd 22/10/2025

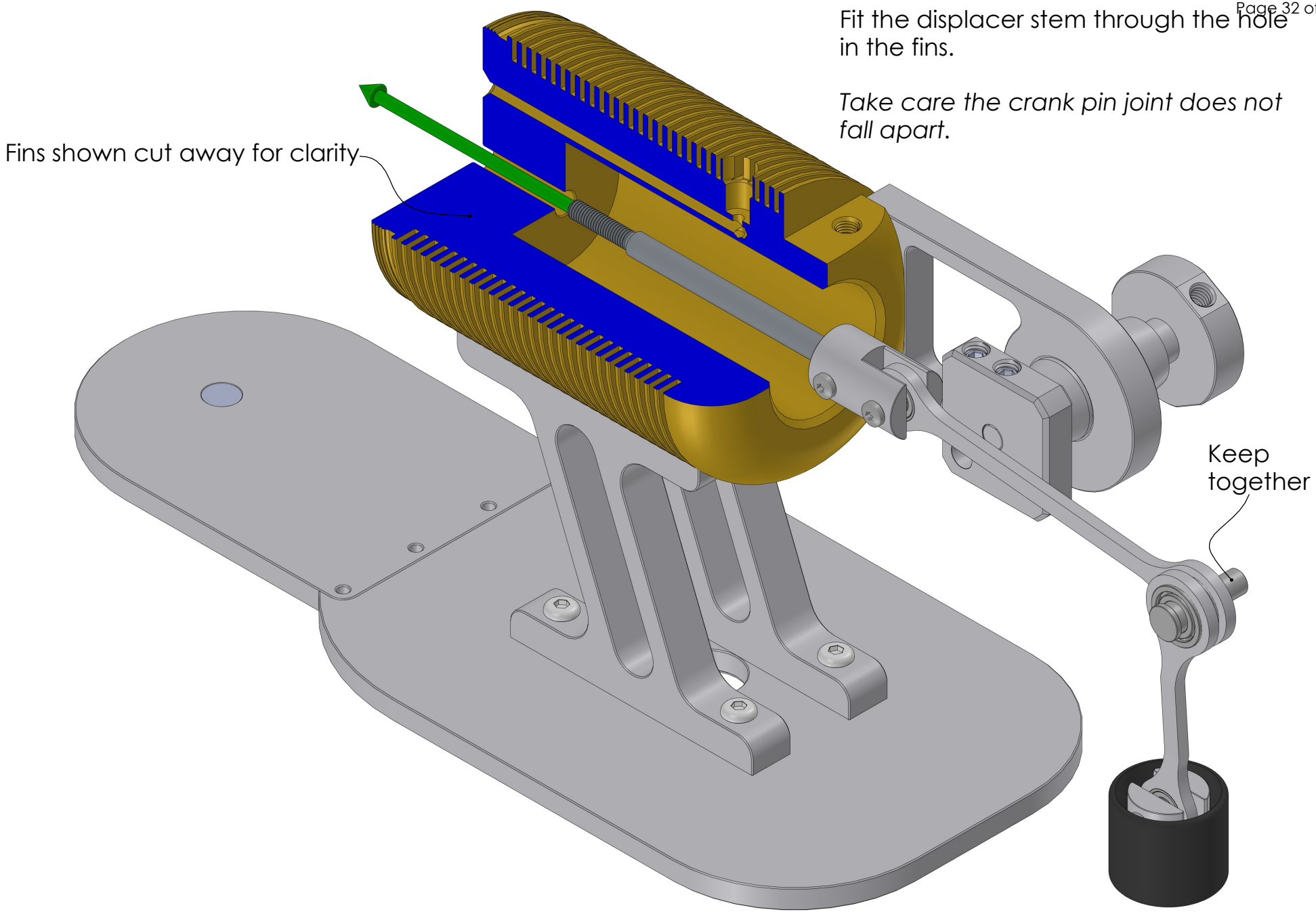
Fit the long conrod assembly over the crank pin, all the way down to the crank spacer.



© Kontax Engineering Ltd 22/10/2025

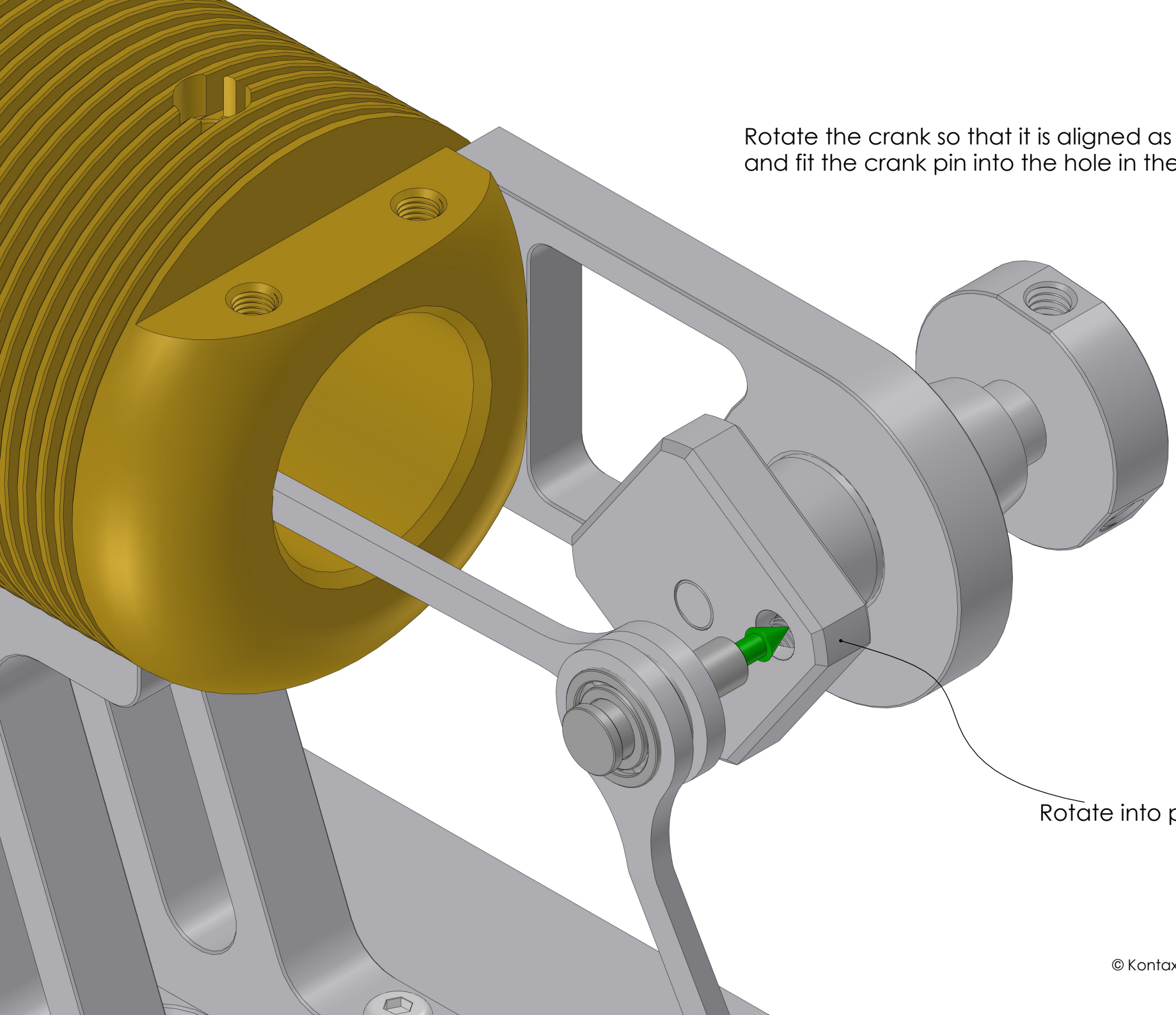
Fit the displacer stem through the hole in the fins.

Take care the crank pin joint does not fall apart.

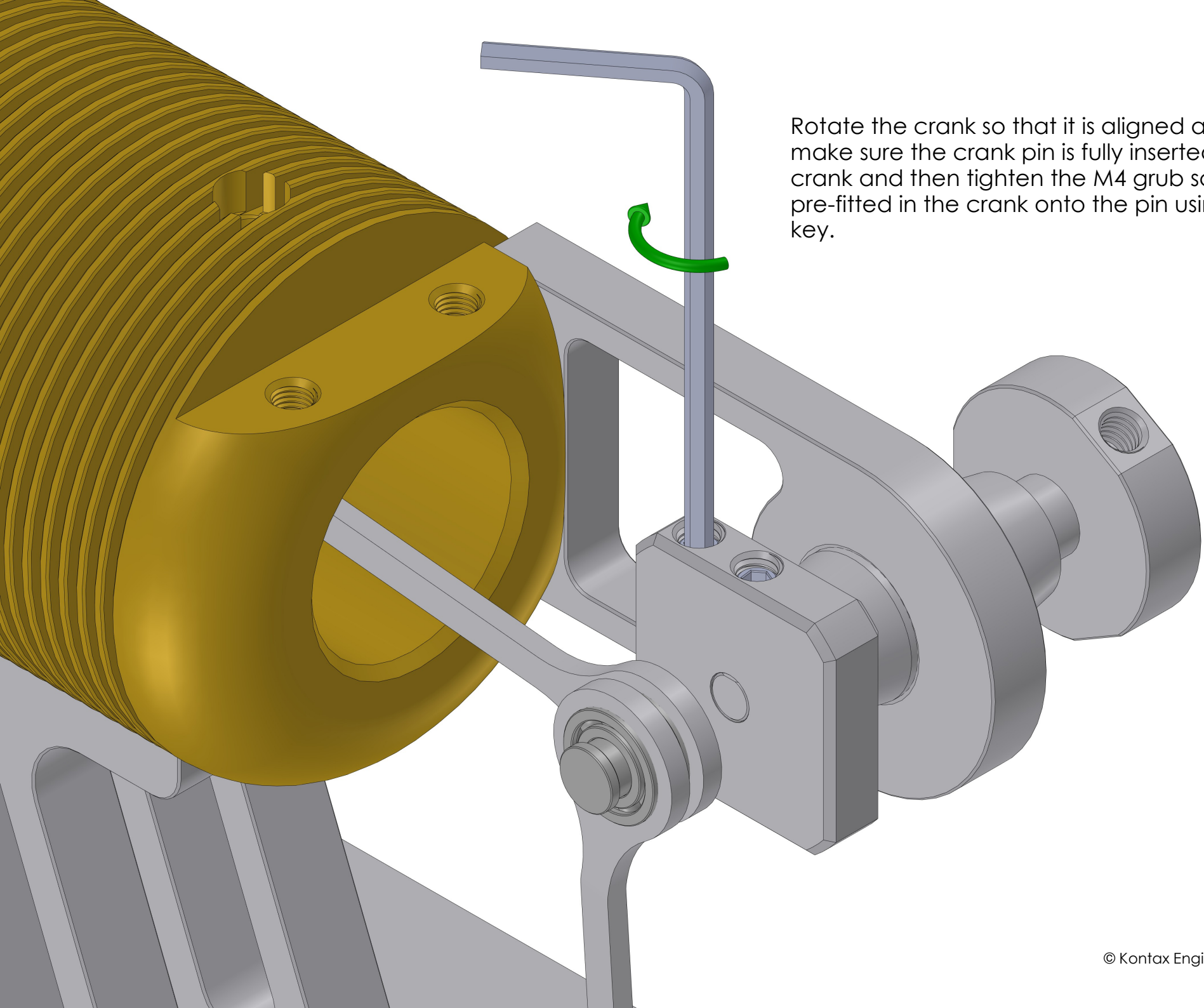


© Kontax Engineering Ltd 22/10/2025

Rotate the crank so that it is aligned as shown and fit the crank pin into the hole in the crank.



© Kontax Engineering Ltd 22/10/2025

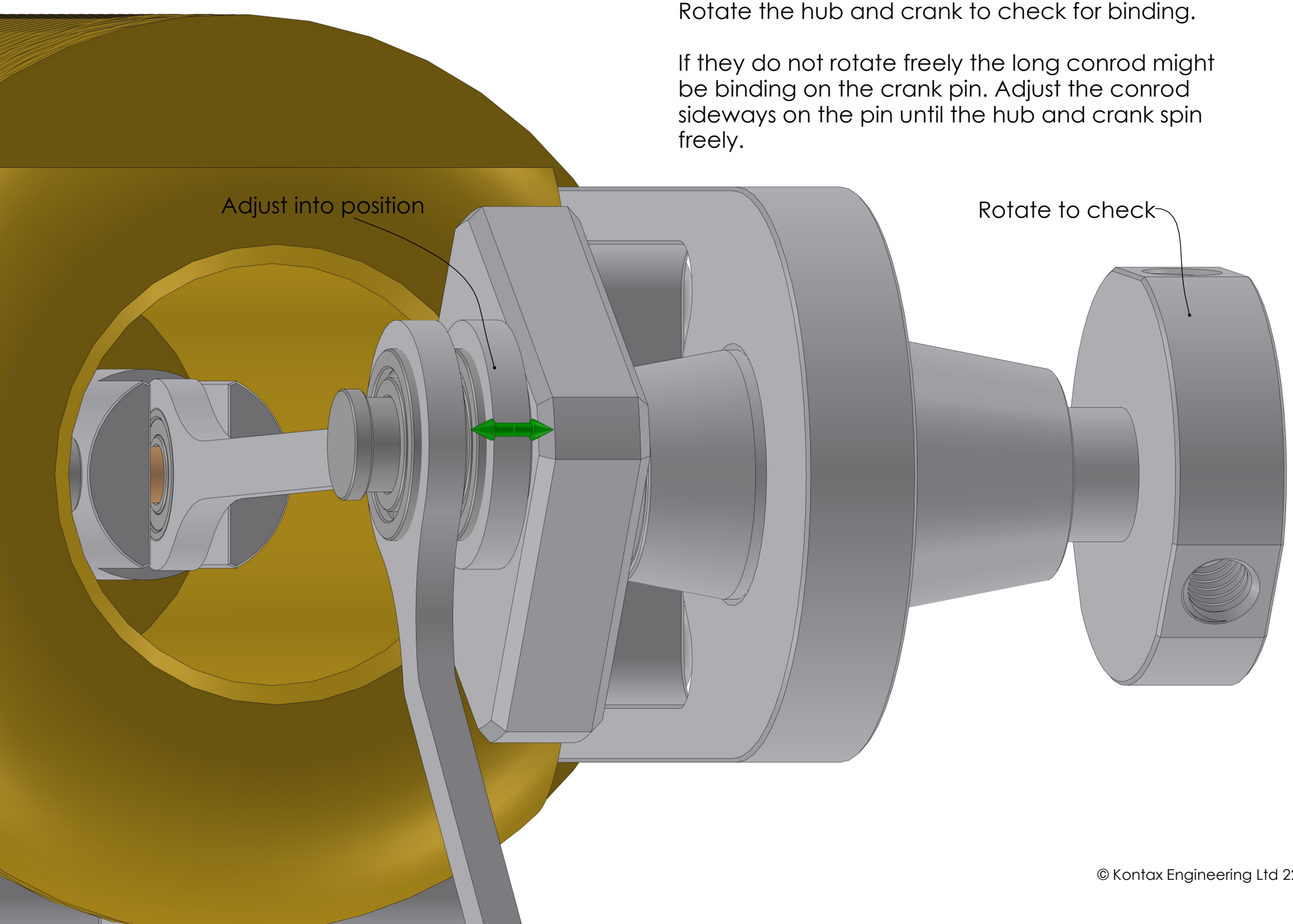


Rotate the crank so that it is aligned as shown, make sure the crank pin is fully inserted into the crank and then tighten the M4 grub screw that is pre-fitted in the crank onto the pin using the hex key.

© Kontax Engineering Ltd 22/10/2025

Rotate the hub and crank to check for binding.

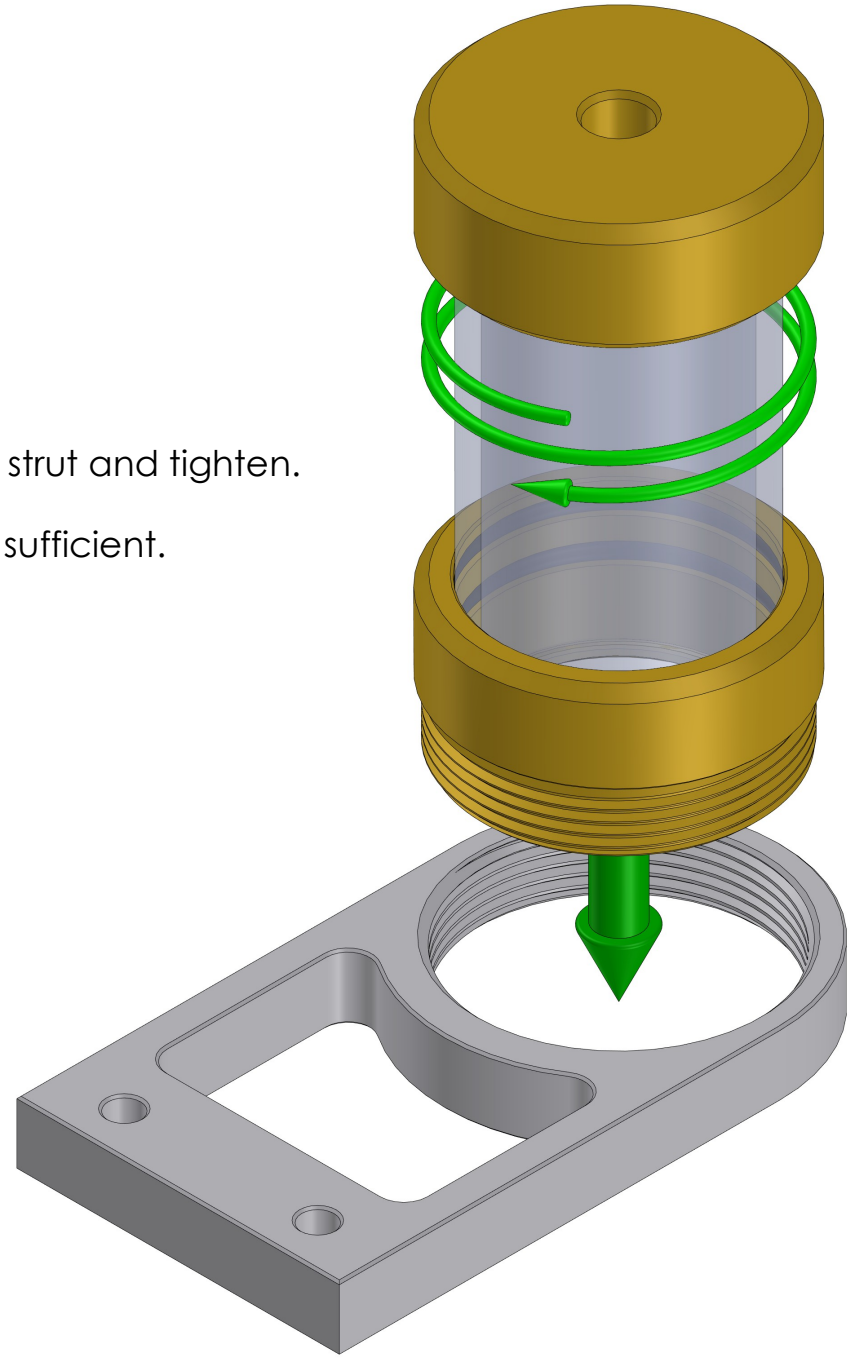
If they do not rotate freely the long conrod might be binding on the crank pin. Adjust the conrod sideways on the pin until the hub and crank spin freely.



© Kontax Engineering Ltd 22/10/2025

Screw the cylinder into the top strut and tighten.

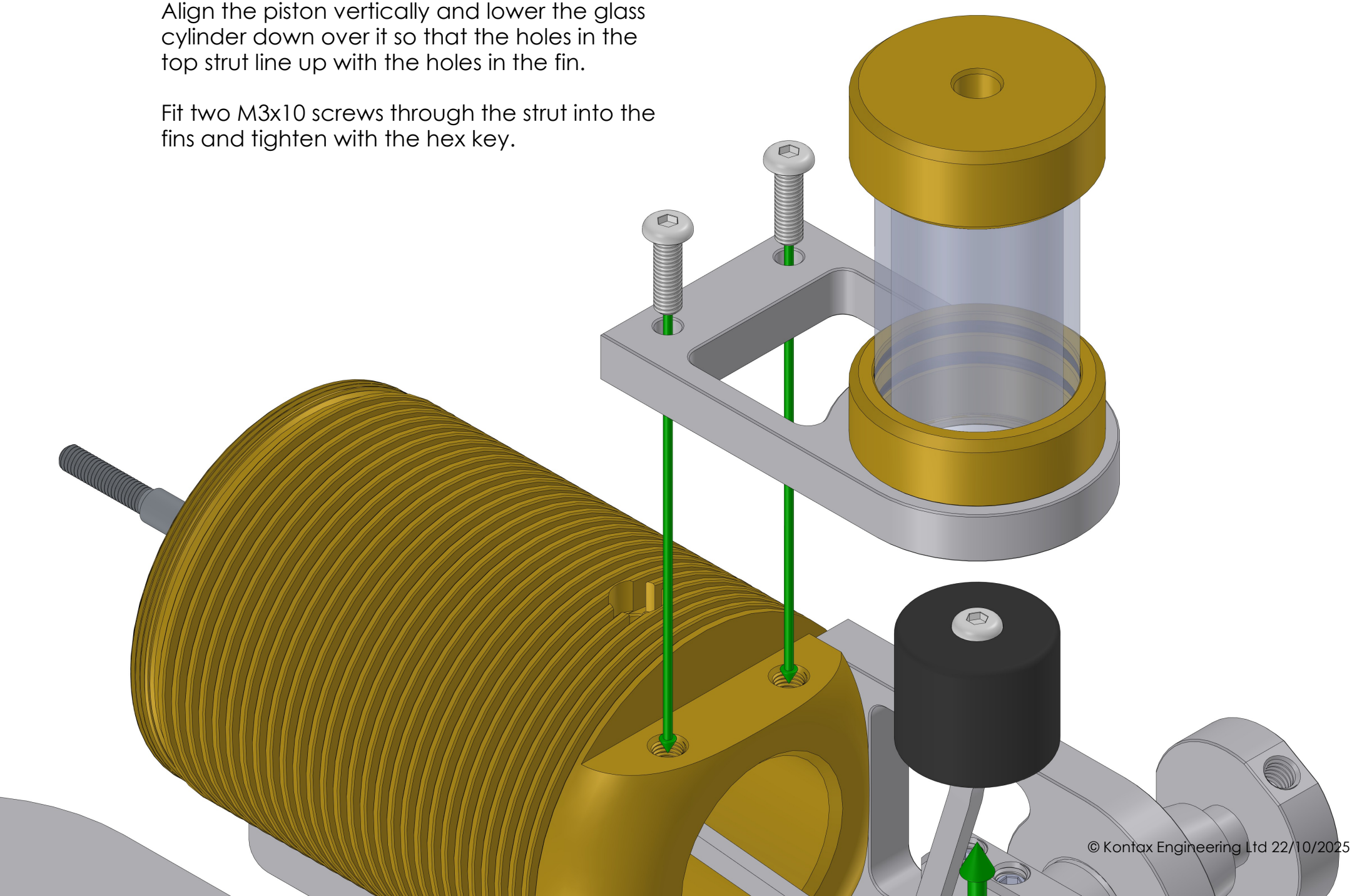
A medium tightness by hand is sufficient.



© Kontax Engineering Ltd 22/10/2025

Align the piston vertically and lower the glass cylinder down over it so that the holes in the top strut line up with the holes in the fin.

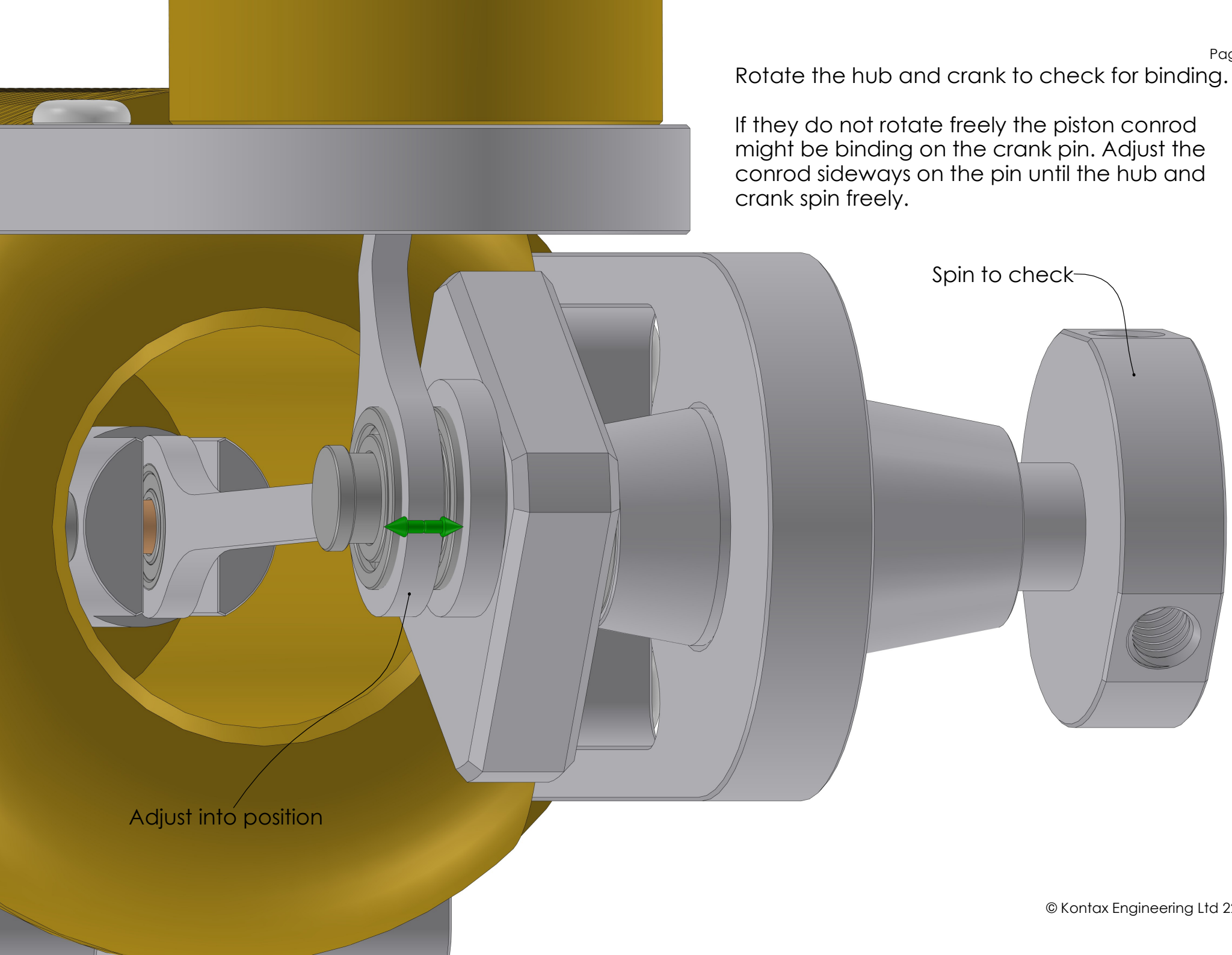
Fit two M3x10 screws through the strut into the fins and tighten with the hex key.



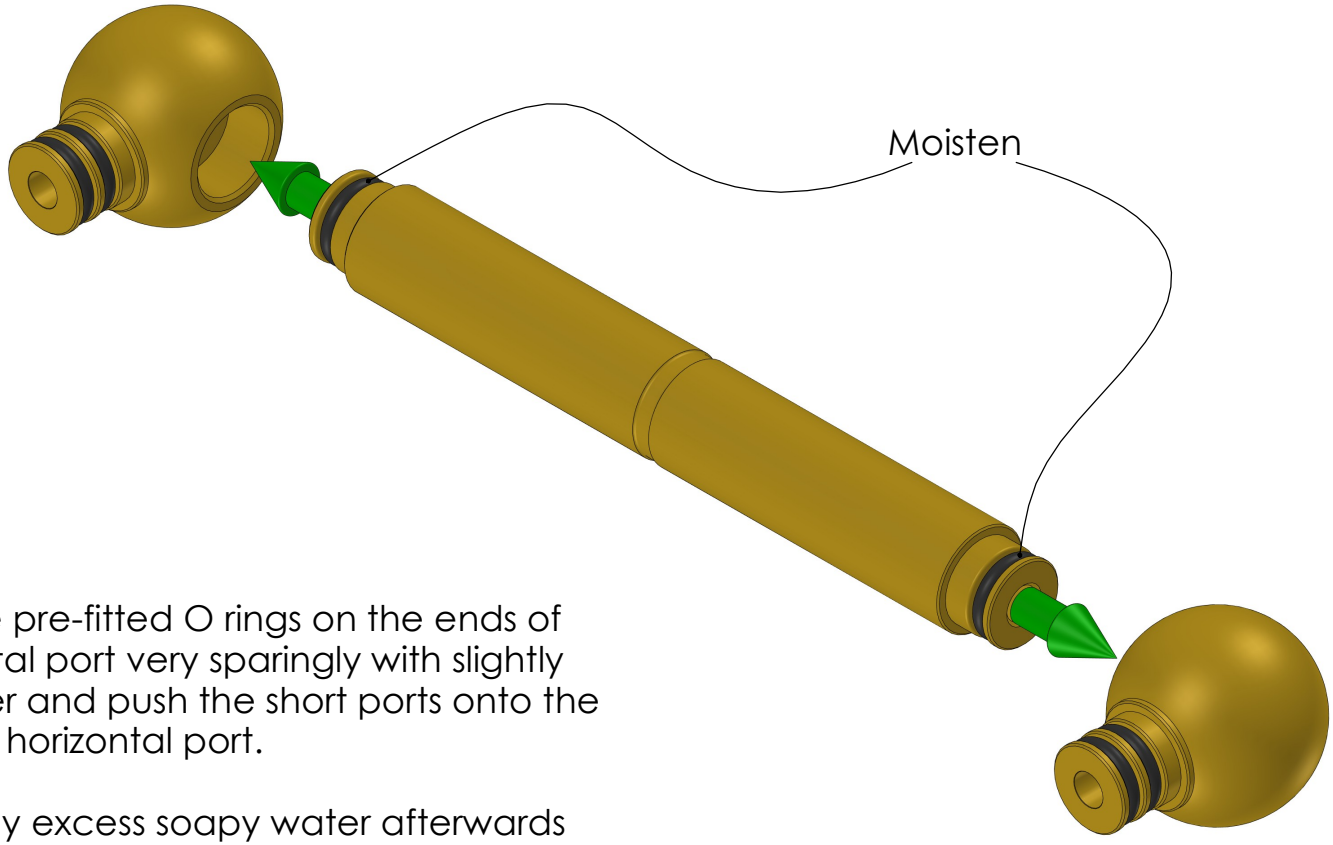
© Kontax Engineering Ltd 22/10/2025

Rotate the hub and crank to check for binding.

If they do not rotate freely the piston conrod might be binding on the crank pin. Adjust the conrod sideways on the pin until the hub and crank spin freely.



© Kontax Engineering Ltd 22/10/2025



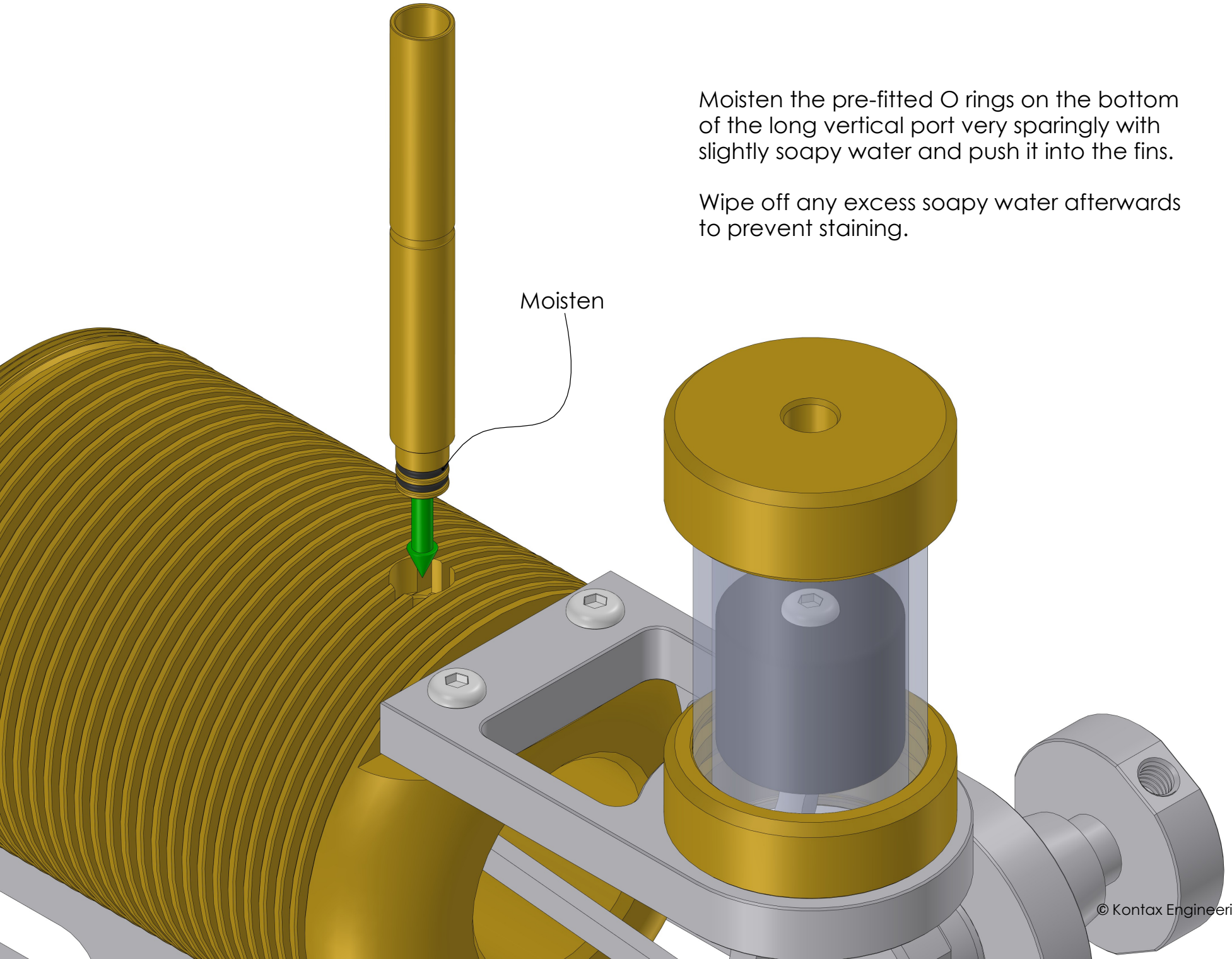
Moisten the pre-fitted O rings on the ends of the horizontal port very sparingly with slightly soapy water and push the short ports onto the ends of the horizontal port.

Wipe off any excess soapy water afterwards to prevent staining.

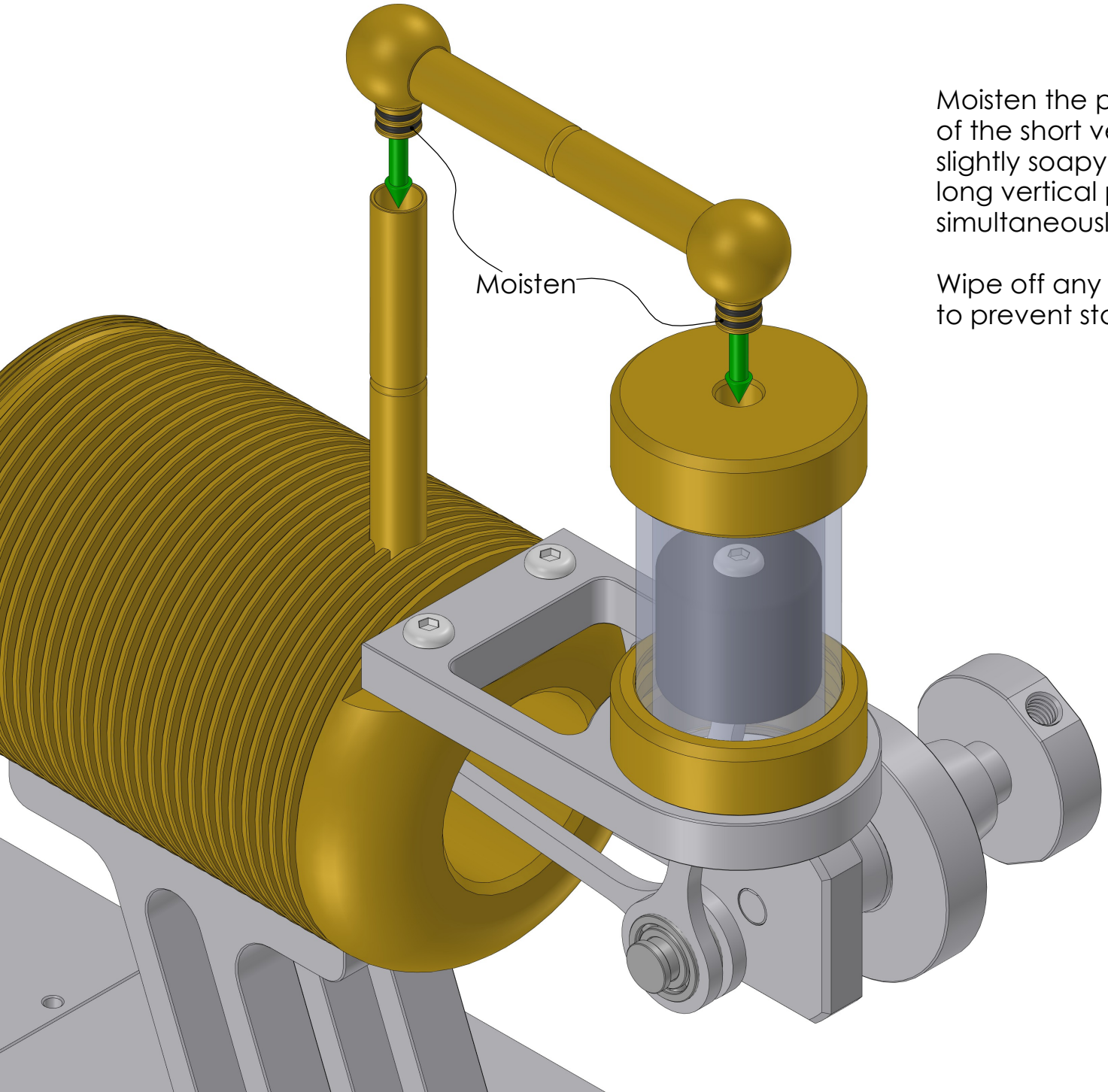
© Kontax Engineering Ltd 22/10/2025

Moisten the pre-fitted O rings on the bottom of the long vertical port very sparingly with slightly soapy water and push it into the fins.

Wipe off any excess soapy water afterwards to prevent staining.



© Kontax Engineering Ltd 22/10/2025



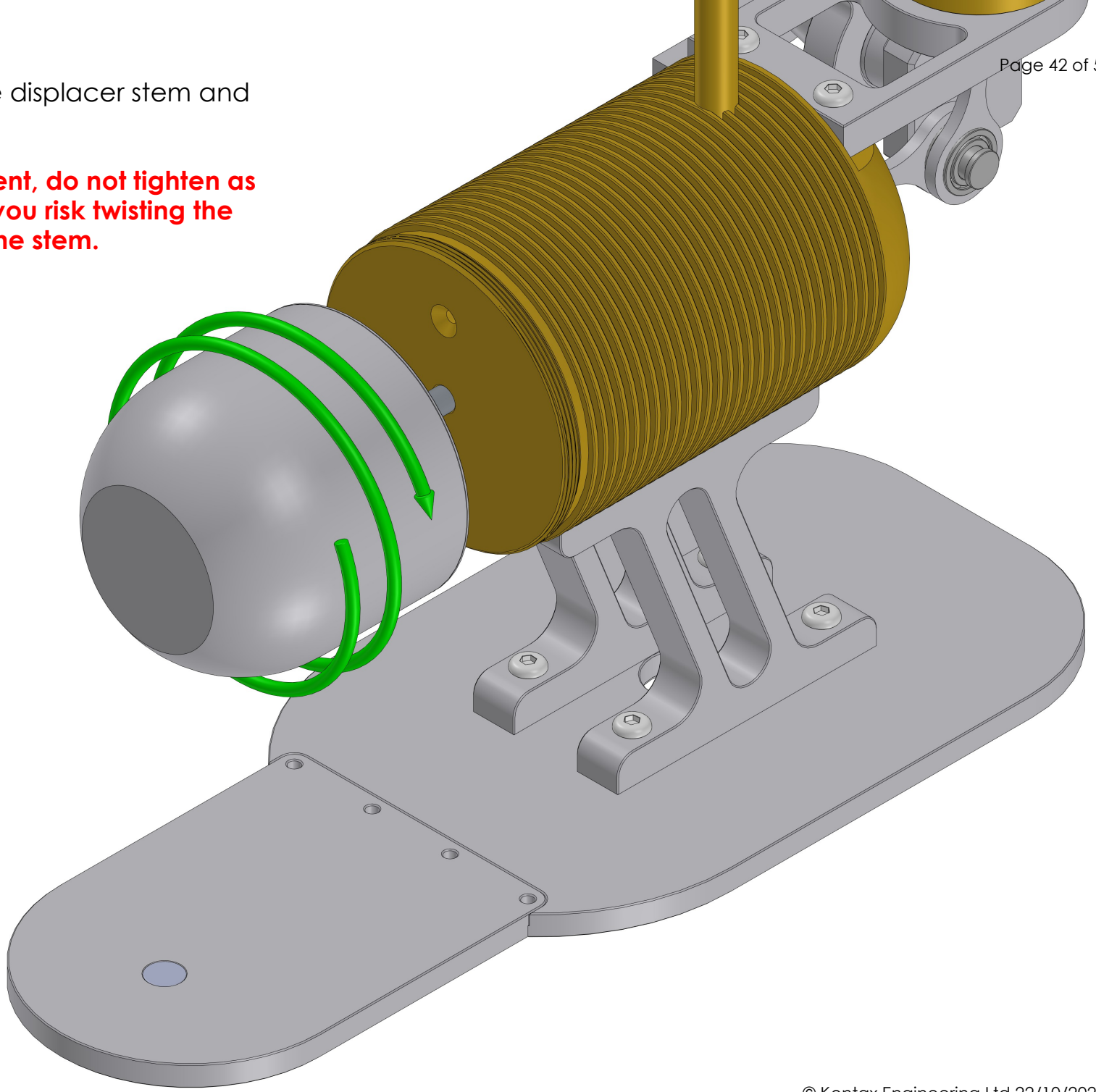
Moisten the pre-fitted O rings on the bottoms of the short vertical ports very sparingly with slightly soapy water and push them into the long vertical port and cylinder cap simultaneously.

Wipe off any excess soapy water afterwards to prevent staining.

© Kontax Engineering Ltd 22/10/2025

Screw the displacer onto the displacer stem and gently tighten.

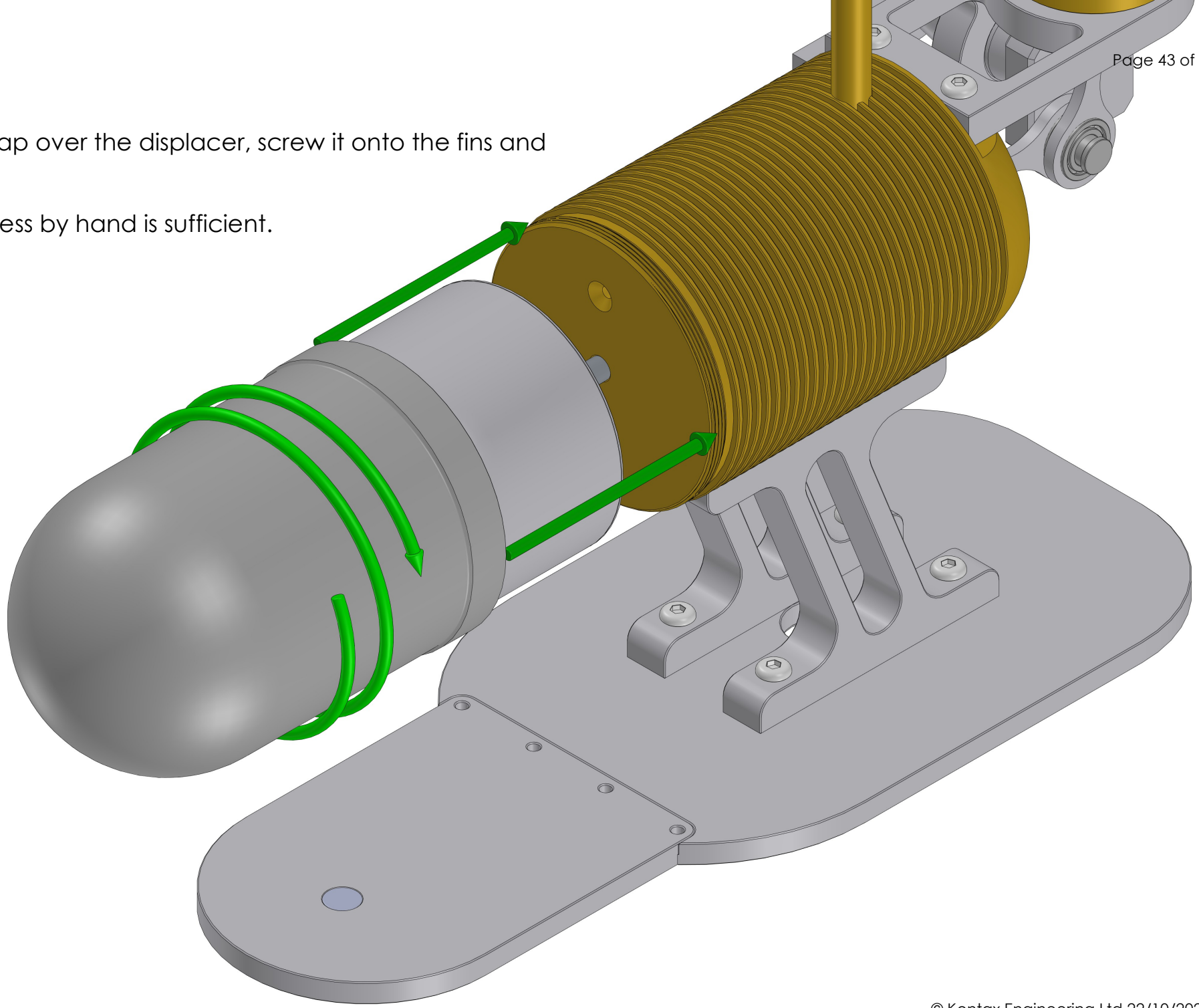
A medium tightness is sufficient, do not tighten as tight as you possibly can or you risk twisting the conrod on the other end of the stem.



© Kontax Engineering Ltd 22/10/2025

Fit the hot cap over the displacer, screw it onto the fins and tighten.

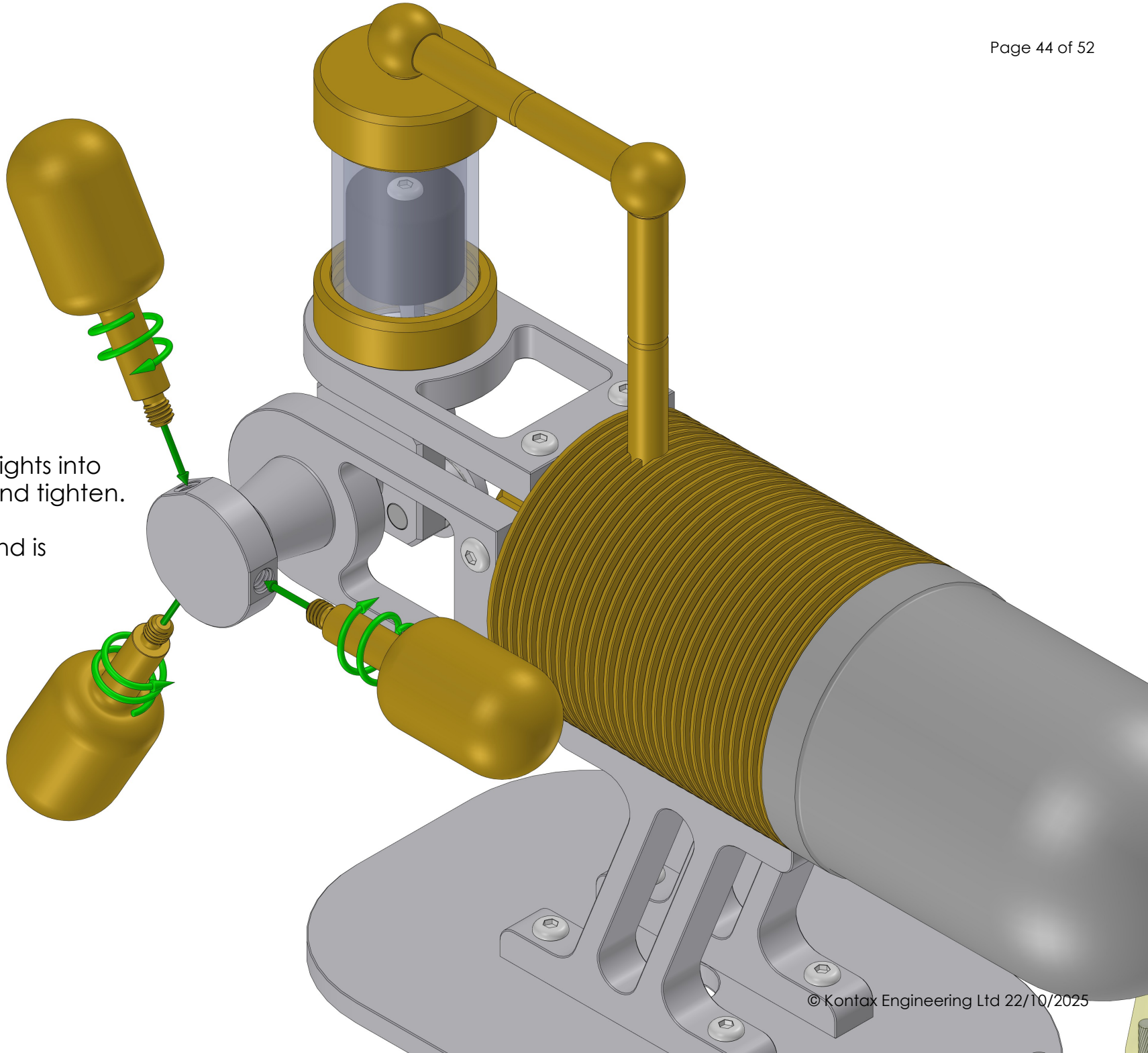
A firm tightness by hand is sufficient.



© Kontax Engineering Ltd 22/10/2025

Screw the three flyweights into the holes in the hub and tighten.

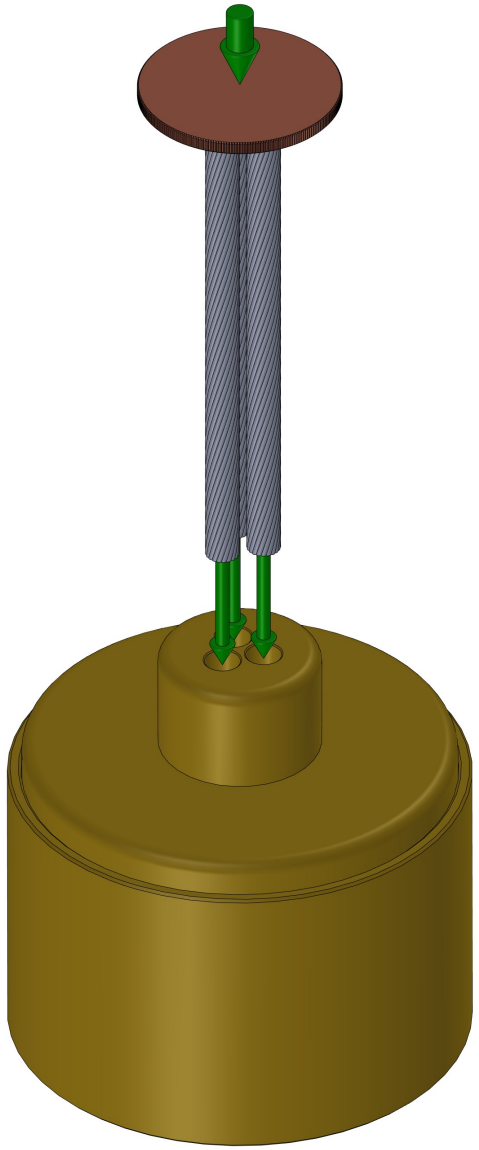
A firm tightness by hand is sufficient.



© Kontax Engineering Ltd 22/10/2025

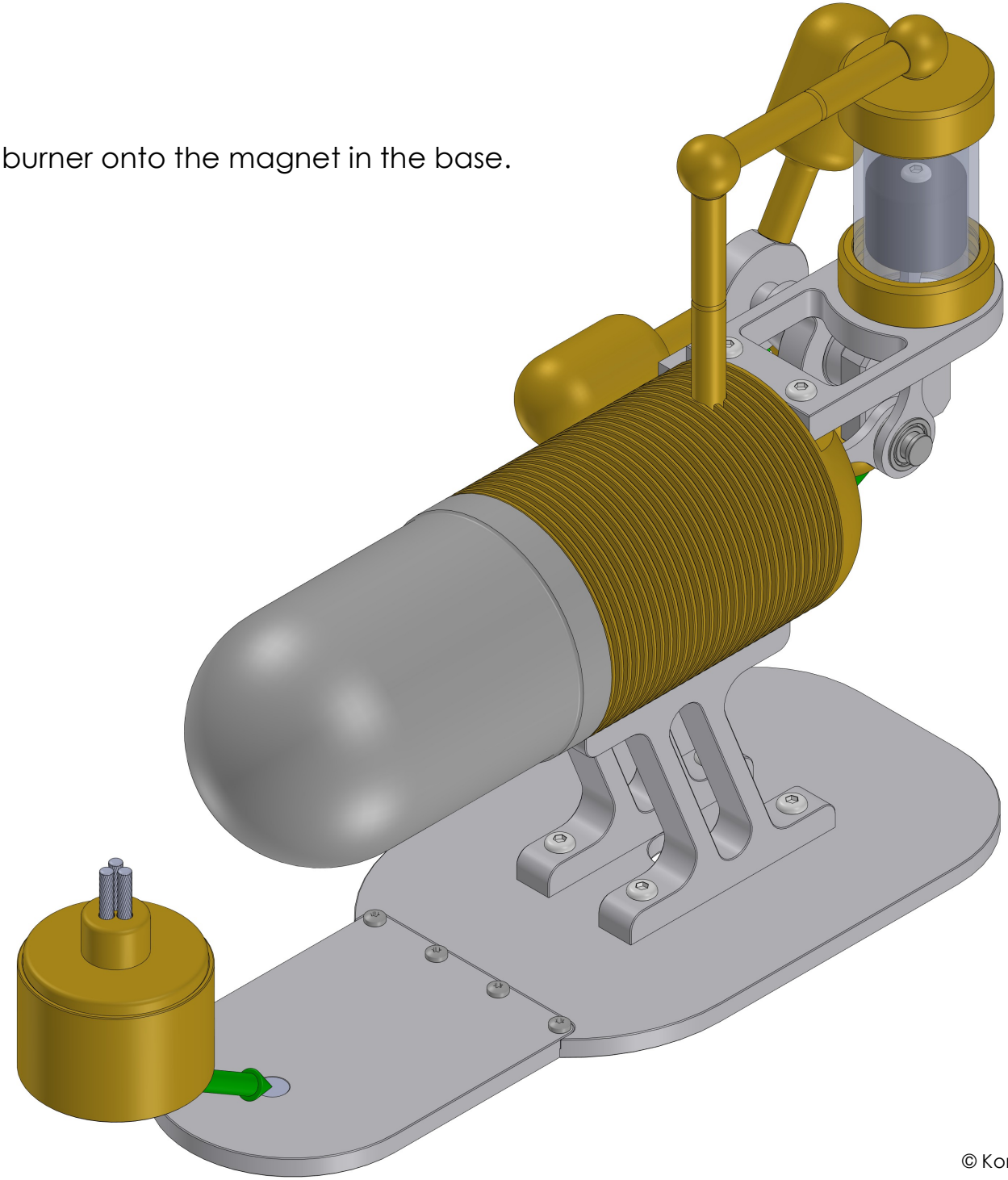
Fit the wicks into the burner cap. Use a coin to push the wicks all the way into the bottom of the burner body.

Be careful of sharp strands on the wicks!



© Kontax Engineering Ltd 22/10/2025

Fit the assembled burner onto the magnet in the base.



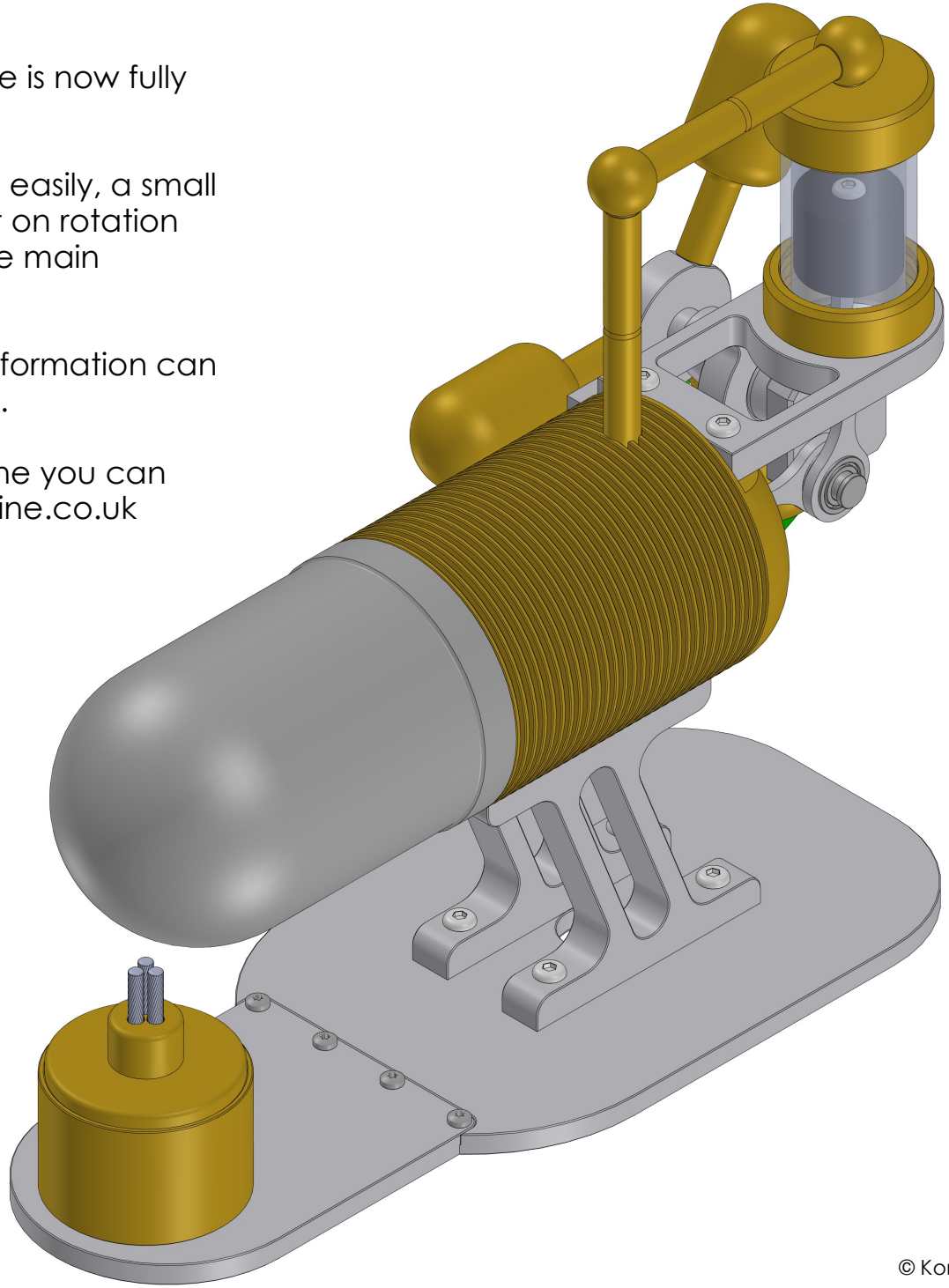
© Kontax Engineering Ltd 22/10/2025

Your Kontax Flame Pump engine is now fully assembled.

Check that the flywheel rotates easily, a small amount of resistance will be felt on rotation due to the air pressure inside the main chamber.

Operation and maintenance information can be found in the next few pages.

If you need help with your engine you can email us at: support@stirlingengine.co.uk



© Kontax Engineering Ltd 22/10/2025

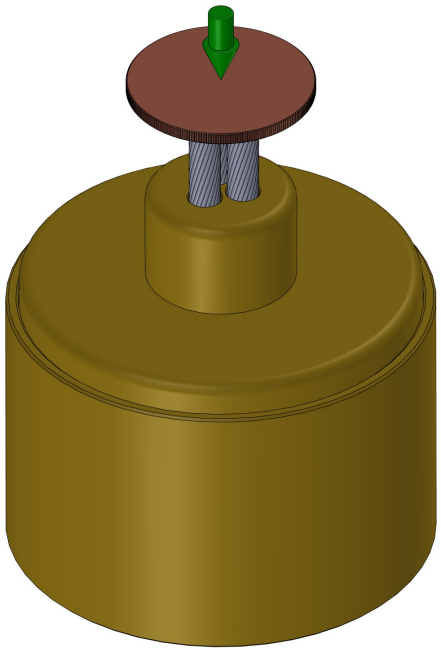
SAFETY NOTICE:

- All parts of the engine will be very hot while in operation and will take time to cool down after running.
- The flame produced by a steel wick can be almost invisible, ensure burner is extinguished after use.
- Make sure you have a suitable fire extinguisher to hand in case of emergencies.
- Never leave a running engine or naked flame unattended.
- Make sure children are fully supervised.

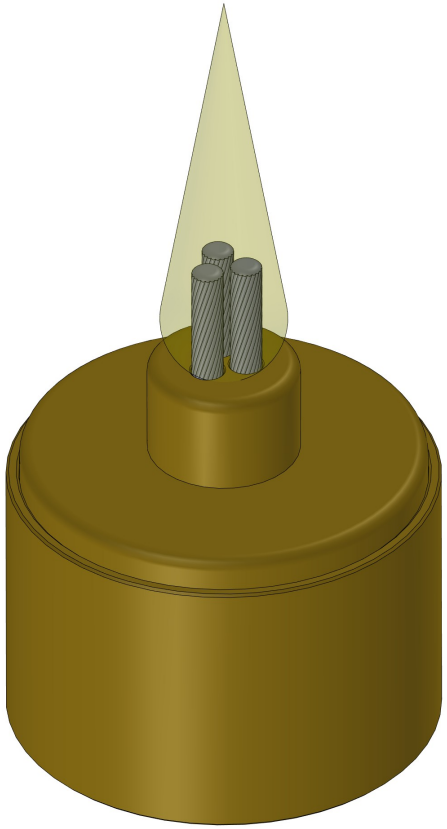
The engine uses Methylated Spirits or Denatured Alcohol as fuel.

Remove the burner cap and wicks from the burner body and fill the body with fuel to the fill line.

DO NOT FILL HIGHER THAN THE FILL LINE!



Fit the burner cap back into the burner body and press the wicks with a coin to make sure they are the correct length.



Wait 10-15 seconds for the wicks to draw up some fuel and then light them.

You should get a flame about 20-30mm high.

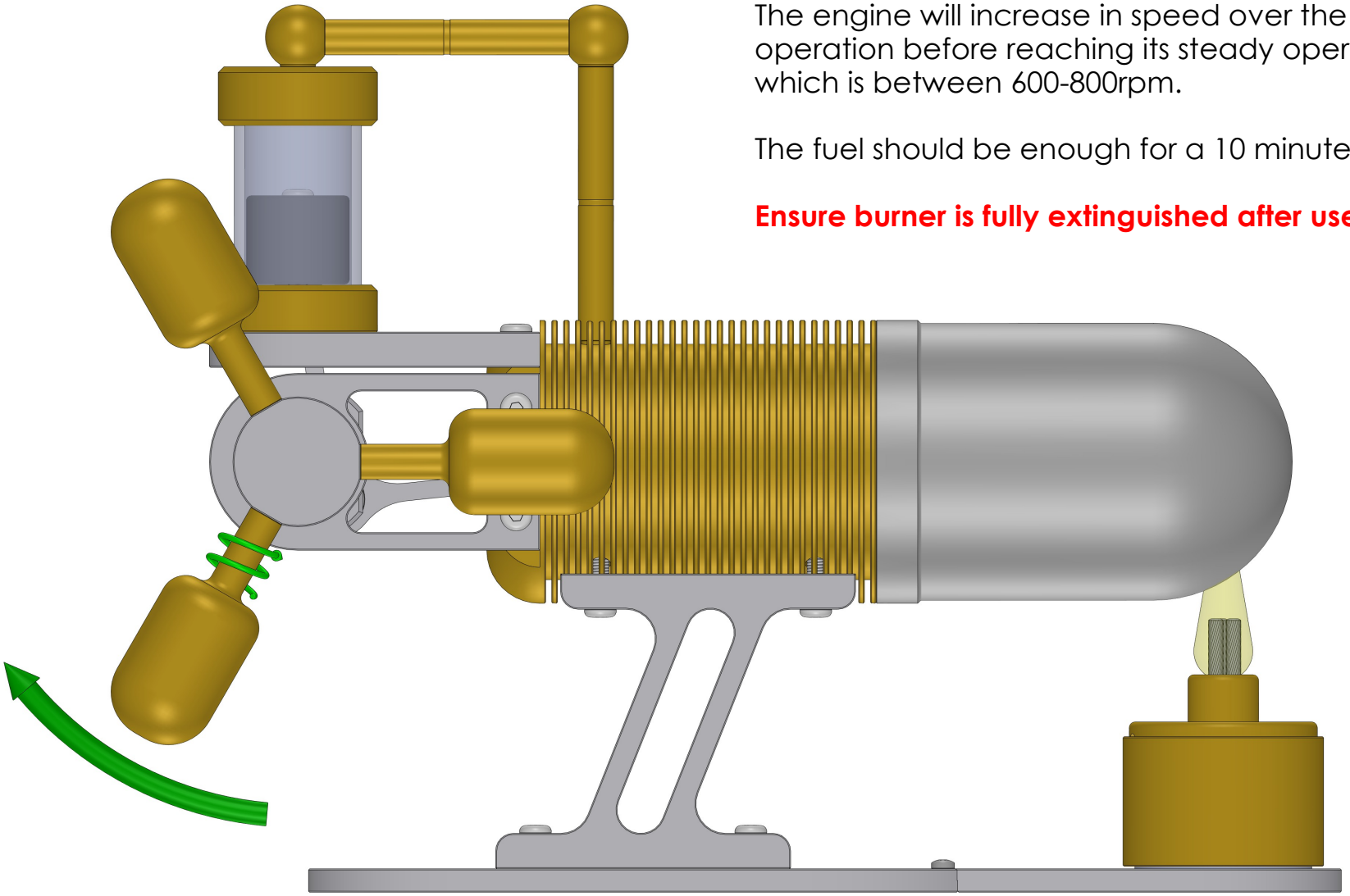
© Kontax Engineering Ltd 22/10/2025

Carefully place the burner on the base magnet, wait 30 seconds and give the flywheel a spin as indicated.

The engine will increase in speed over the first 2 minutes of operation before reaching its steady operational speed, which is between 600-800rpm.

The fuel should be enough for a 10 minute run.

Ensure burner is fully extinguished after use!

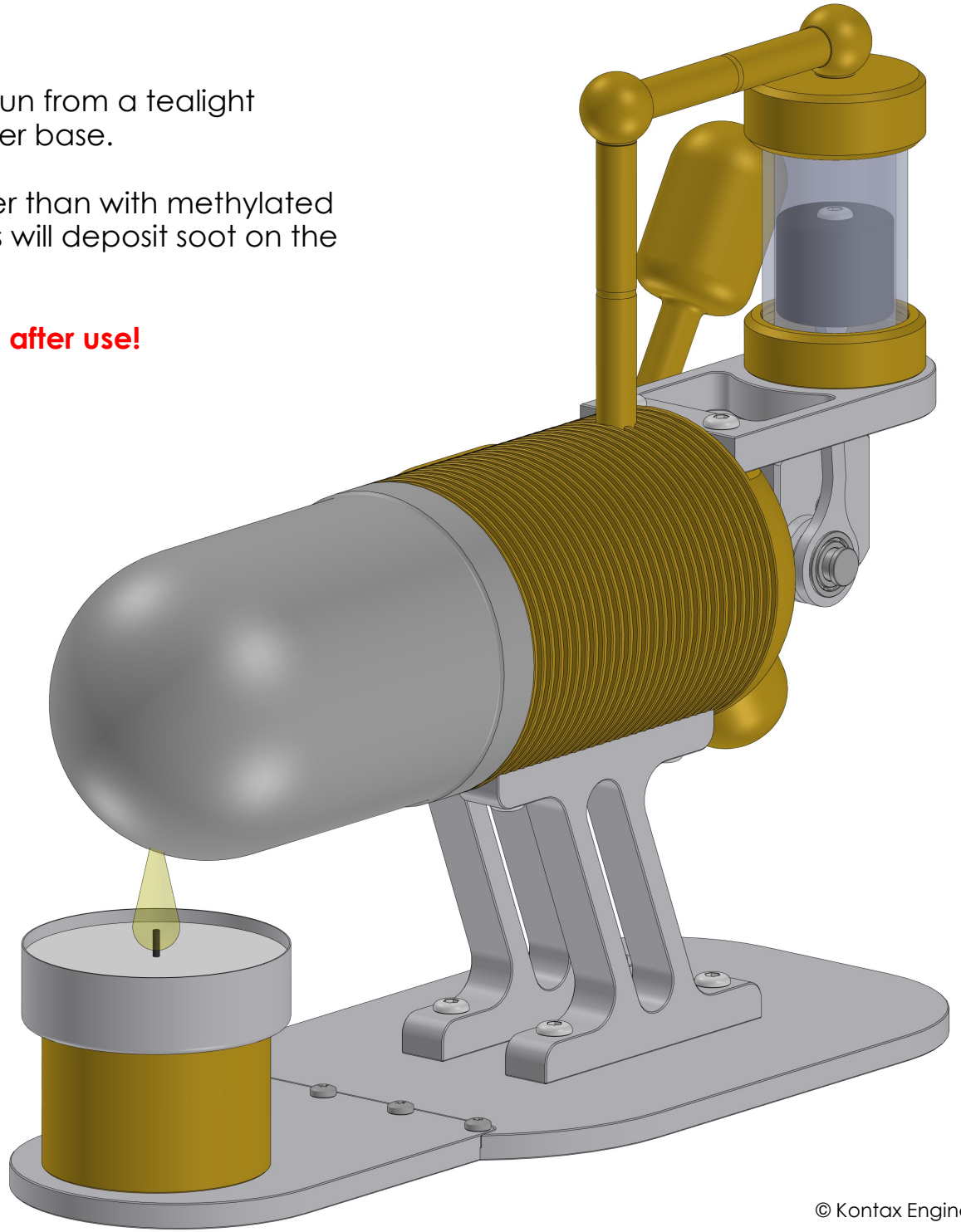


© Kontax Engineering Ltd 22/10/2025

The engine is sensitive enough to run from a tealight candle placed on top of the burner base.

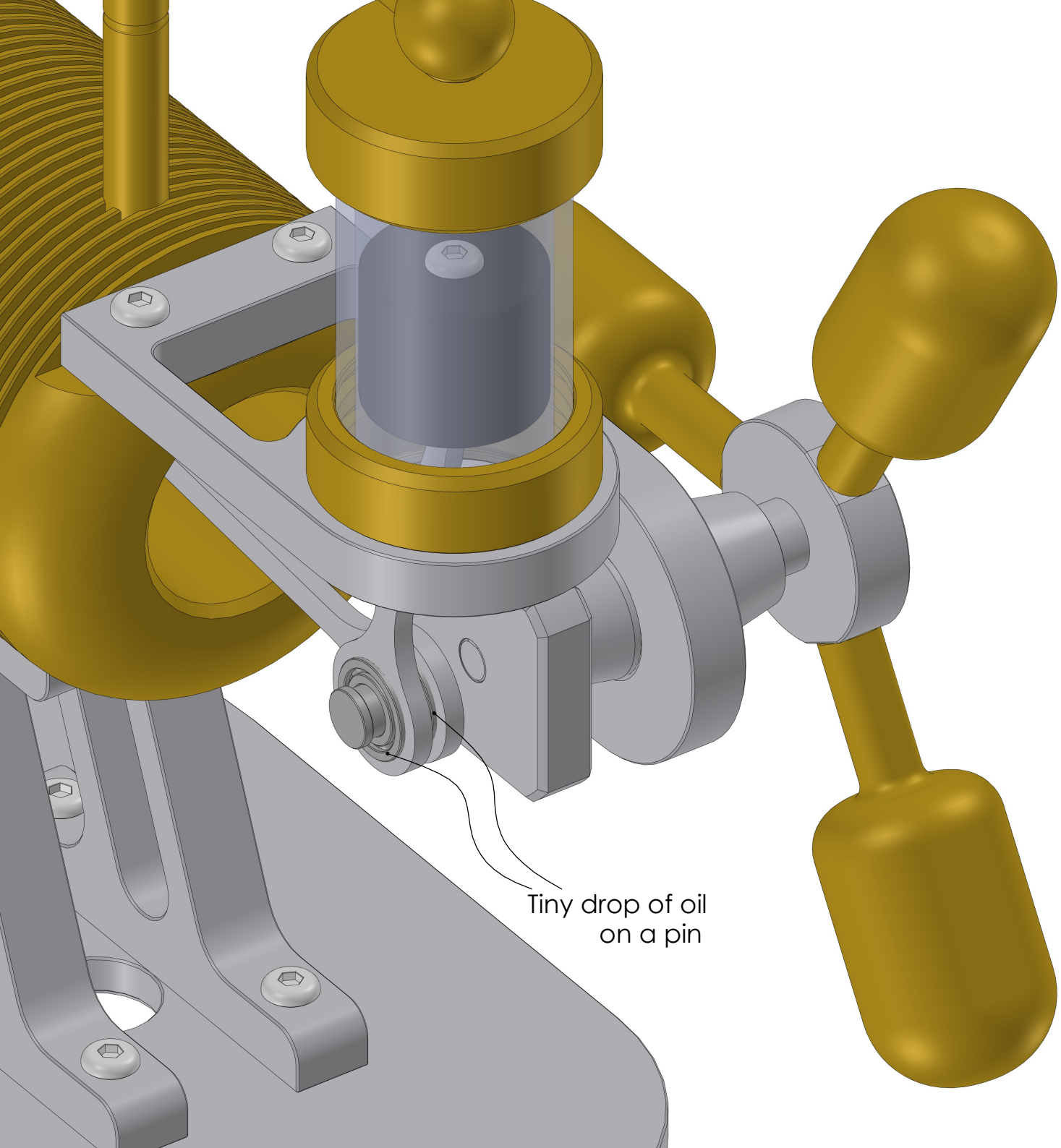
Be aware the engine will run slower than with methylated spirits and certain tealight candles will deposit soot on the hot cap.

Ensure candle is fully extinguished after use!



© Kontax Engineering Ltd 22/10/2025

Maintenance



The engine is designed to be as maintenance-free as possible, with only a tiny drop of oil required every few hours of run time, or if the engine has been left idle for a period of months in a hot environment.

Sewing machine CT15 or 4-in-1 oil is recommended, and can be applied by dipping a pin in the oil to get a tiny drop on the end and then dabbing it on each bearing.

© Kontax Engineering Ltd 22/10/2025

Our workshop is located in the Thames Valley, United Kingdom and is staffed by a skilled team of designers, machinists and assemblers. We have 3 CNC mills, 3 CNC lathes and 3 CNC mill-turn centres.

© Kontax Engineering Ltd 22/10/2025