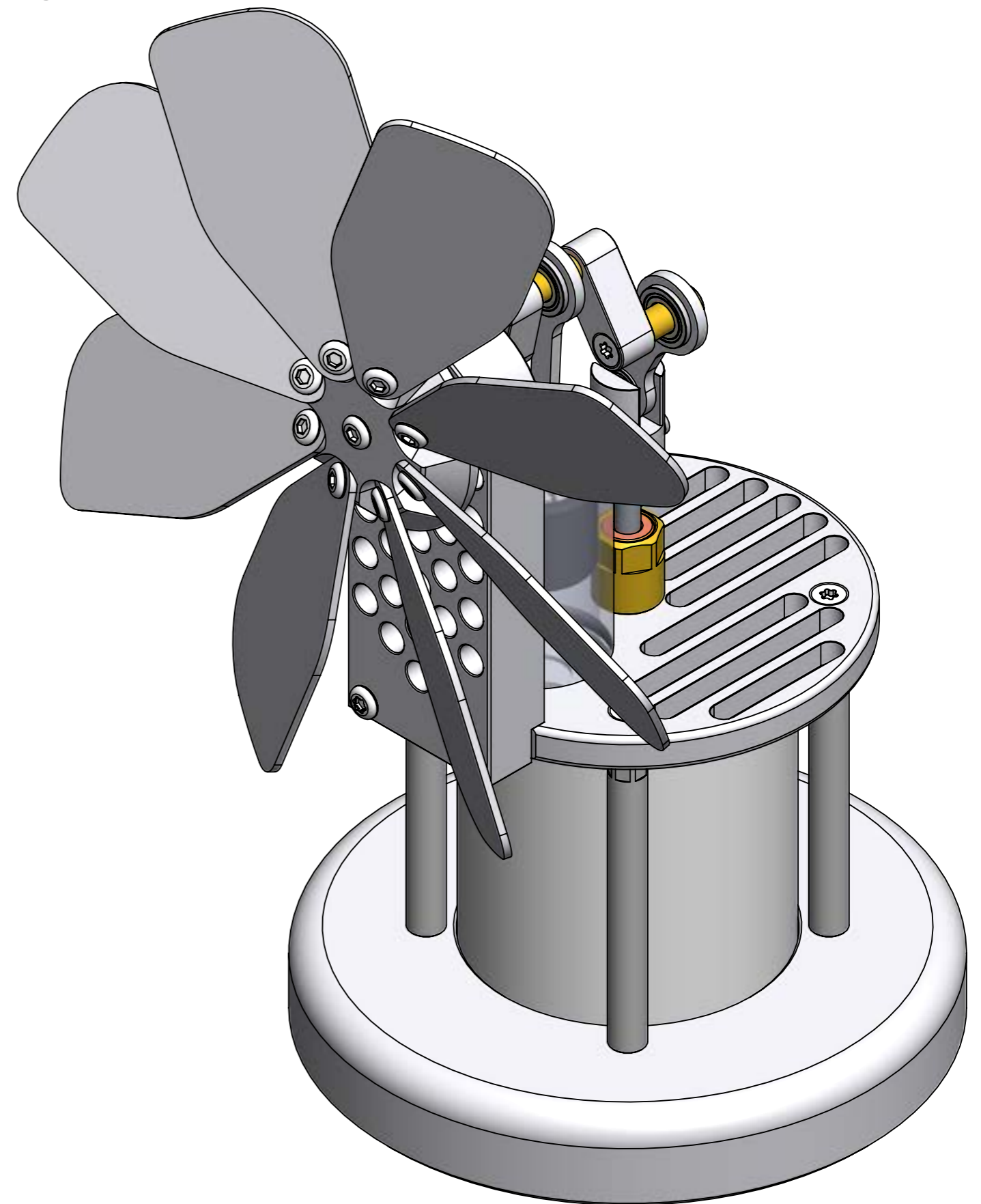


# Vulcan Mini Stove Fan Instructions

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 5-10 minutes.

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



## **WARNING: DO NOT OIL YOUR FAN**

The fan is designed to not need regular oiling. Oil applied to the ball bearings or piston WILL have a detrimental effect on your engine and will void the warranty.

The fan is a precision piece of engineering, in order to retain its efficiency it must be kept clean and dust free. Keep away from any **frying/saucepans** that are being used on the stove, as this has been known to splatter oil onto the fan and stop it from working.

## **Handling your fan**

**The fan will be very hot** while in operation and will take time to cool down once removed from the stove. If removing from the stove place on something that can withstand the heat. The fan can be picked up by the blades when idle, this is particularly useful if it is still hot.

## **What does it do?**

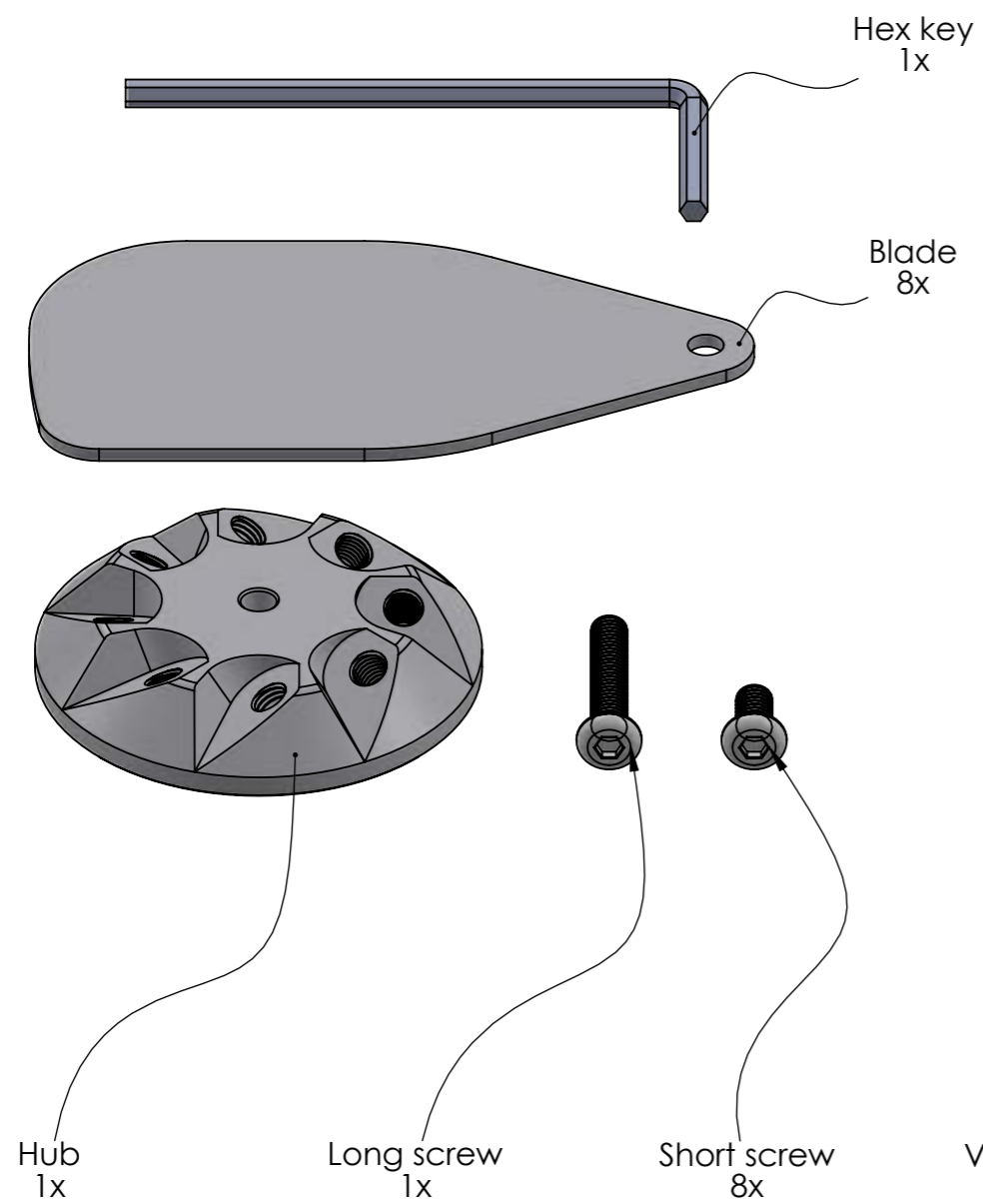
The Vulcan Stove Fan is a Stirling engine-powered fan that quietly and efficiently circulates warm air from your wood stove, coal stove or other heat source, through your home or workshop, dramatically increasing the effectiveness of your heating appliance and improving your comfort level. No longer will you have to stoke your stove to blazing hot temperatures only to end up with a VERY hot area in the near your stove and mildly warm air across the room. The Vulcan stove fan helps to uniformly circulate the air, leaving you a cozy, comfortable atmosphere to enjoy while reducing the amount of fuel your appliance consumes. In addition, the fan costs you absolutely nothing to operate!

## **How does it work?**

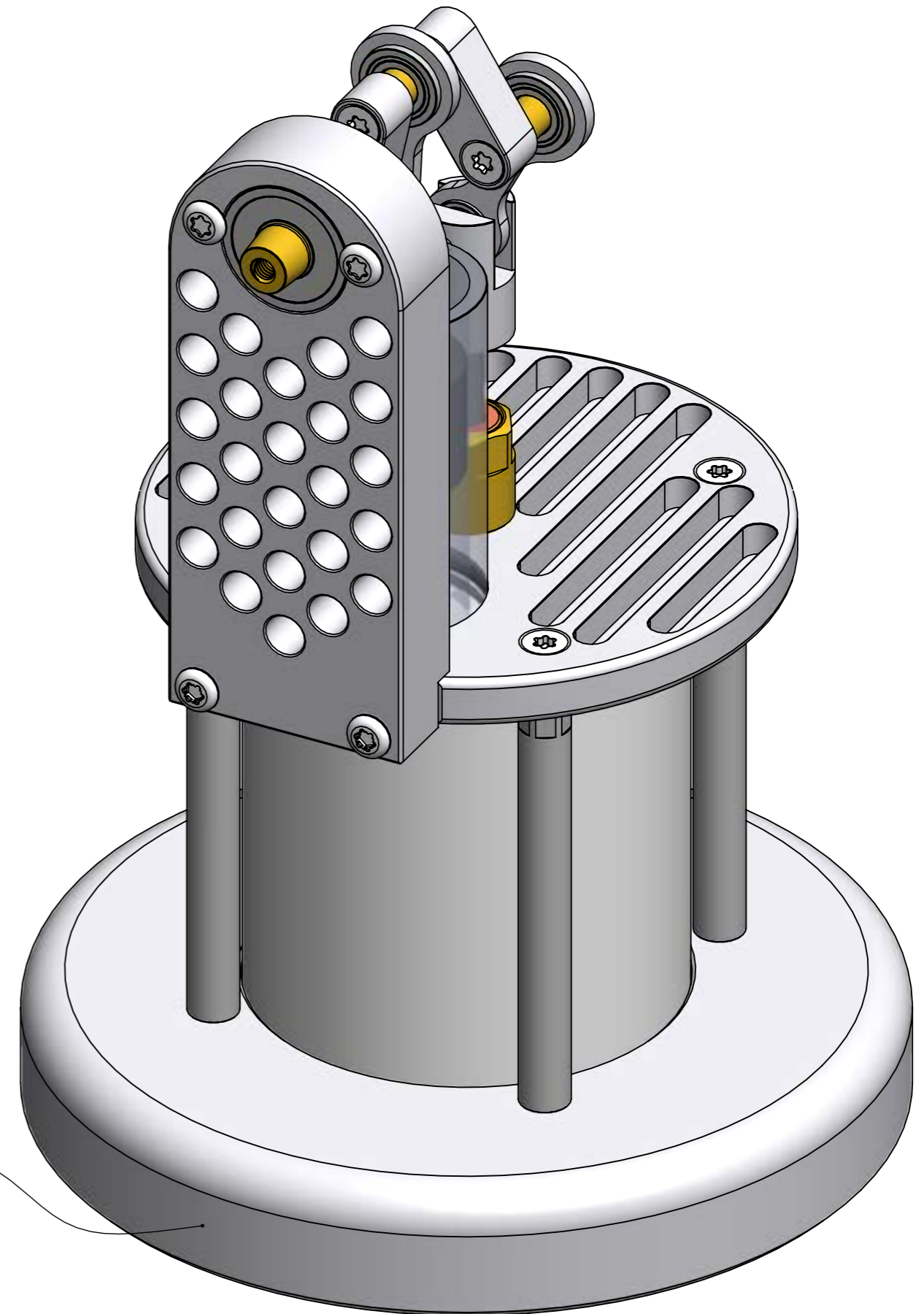
The Vulcan Mini Stove Fan does not require any electricity whatsoever! No batteries. No mains electricity. The fan is self-powered just from the heat of the stove. It utilizes a small, quiet Stirling cycle power plant built into the fan. The Stirling cycle power plant obtains its power from rapid cyclic heating and cooling of the air inside the fan chamber. When the air is heated, it expands, pushing the piston upward and driving the blades around; when the air is cooled, it contracts, pulling the piston downward and continuing to drive the blades.

The fan's speed increases relative to the temperature increase of its heat source. So, the hotter your stove, the faster the fan will run and the higher the volume of air circulated. The Vulcan Mini Stove Fan uses the latest and best technology, including borosilicate glass cylinder, graphite piston and ultra-low friction demagnetised bearings to ensure it is completely maintenance free. You never have to oil it!

# Parts

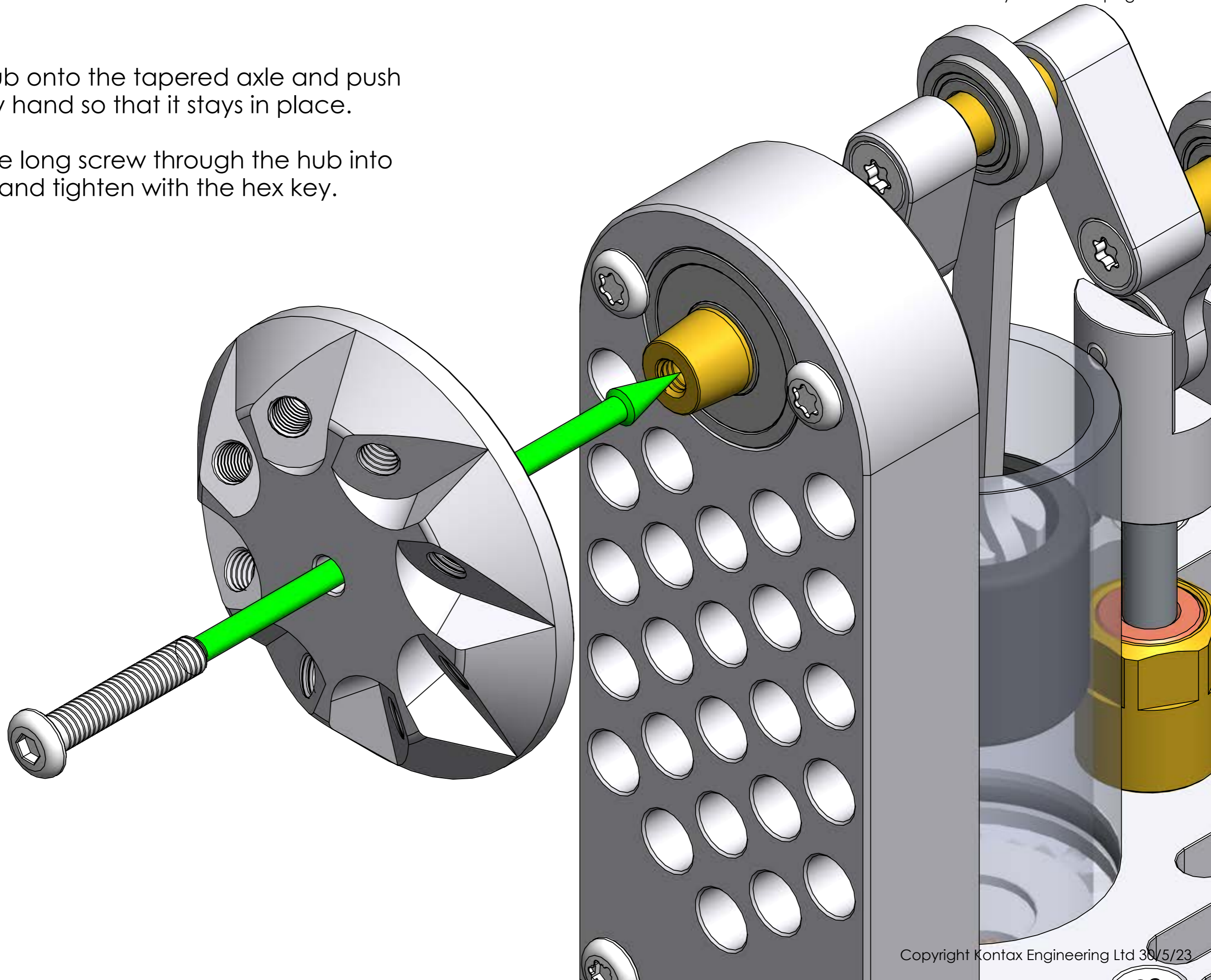


Vulcan mini base unit

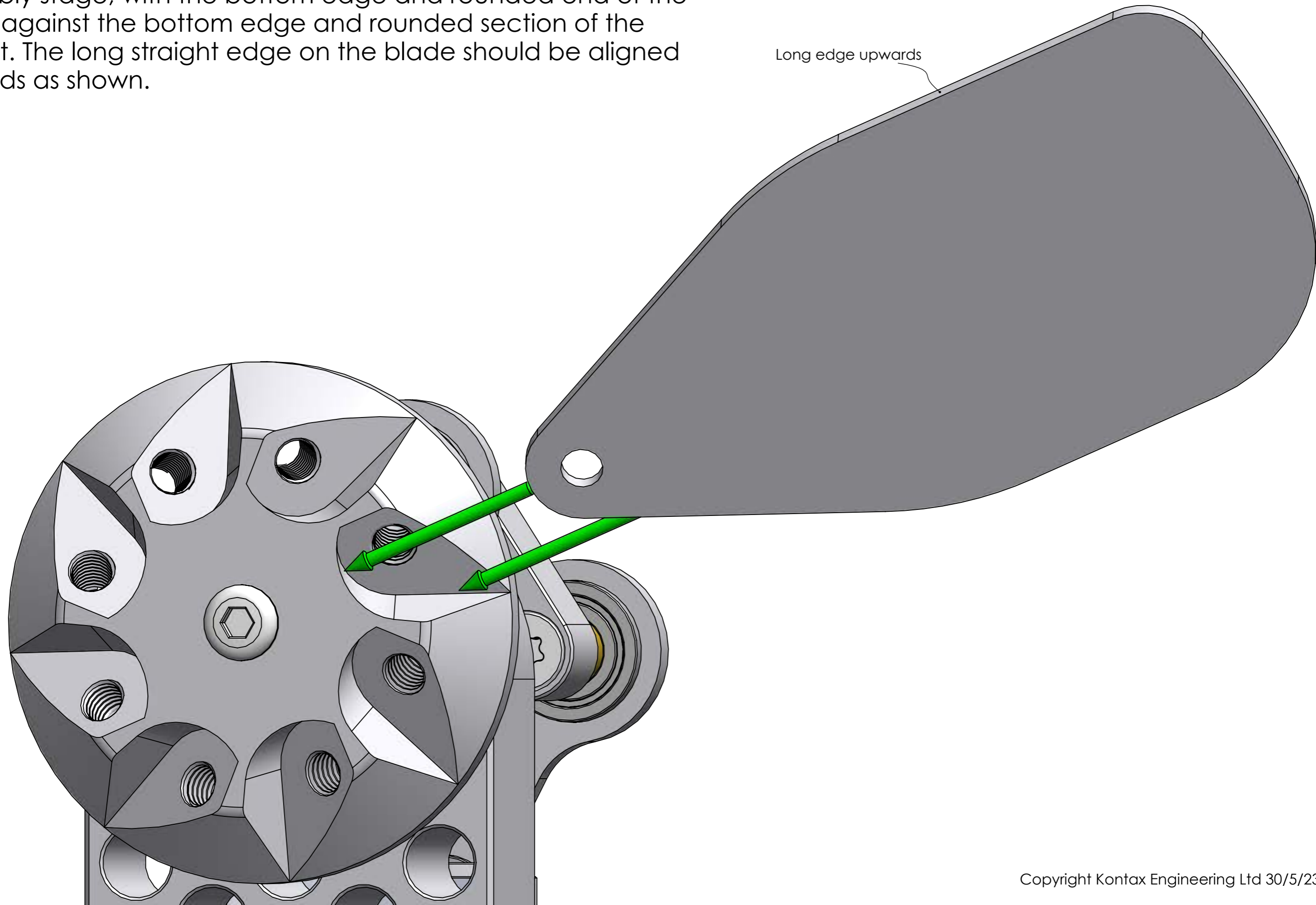


Fit the hub onto the tapered axle and push it tight by hand so that it stays in place.

Screw the long screw through the hub into the axle and tighten with the hex key.



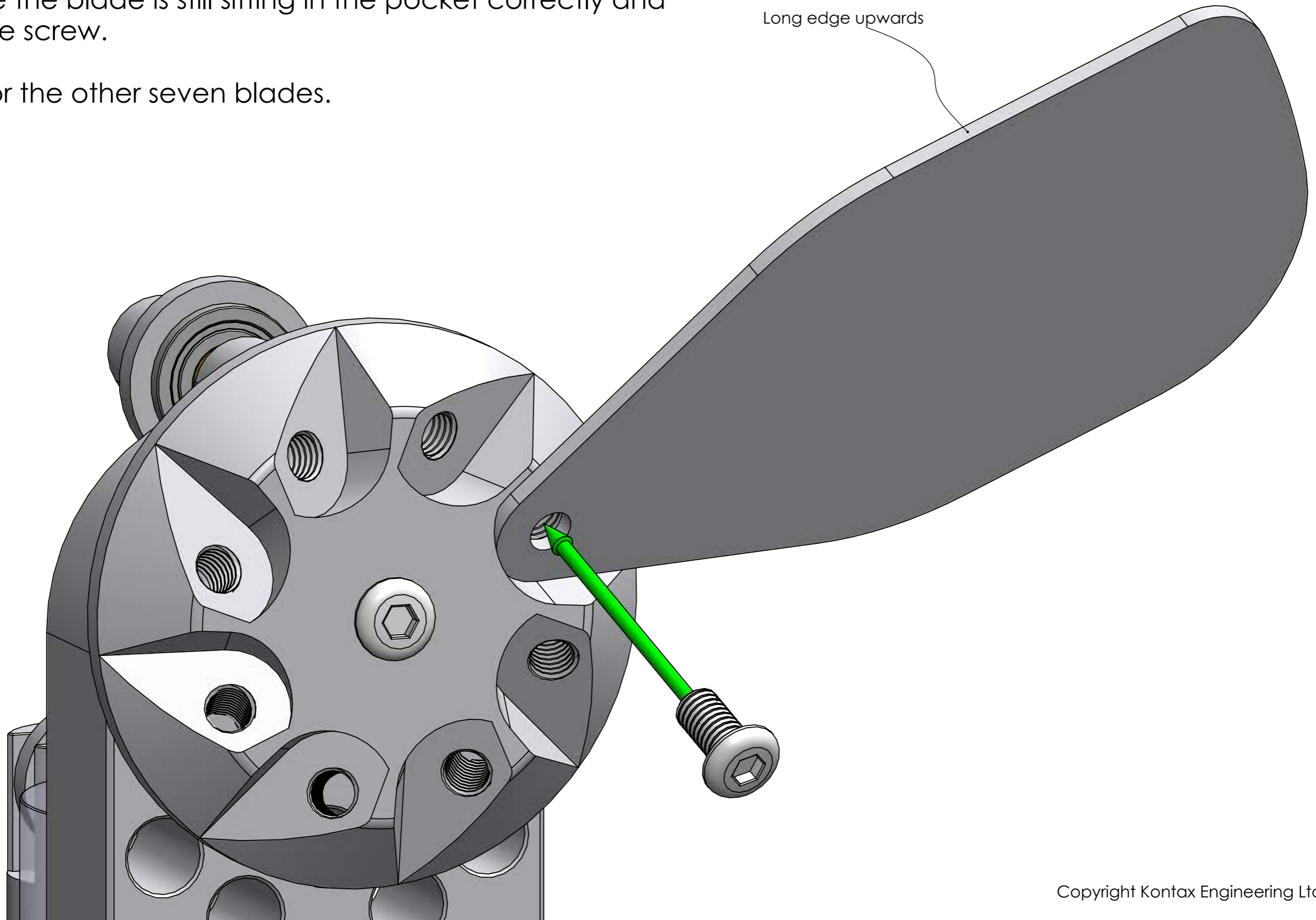
This diagram shows the correct fitting of the blade in the next assembly stage, with the bottom edge and rounded end of the blade against the bottom edge and rounded section of the pocket. The long straight edge on the blade should be aligned upwards as shown.



With the blade positioned as shown on the previous page screw a short screw through the hole in the blade and into the hub so that it just holds the blade lightly.

Make sure the blade is still sitting in the pocket correctly and tighten the screw.

Repeat for the other seven blades.



# Adjustment

The connecting rods have been factory-set to the correct position but can become displaced during transit so it is important to check their position before first use.

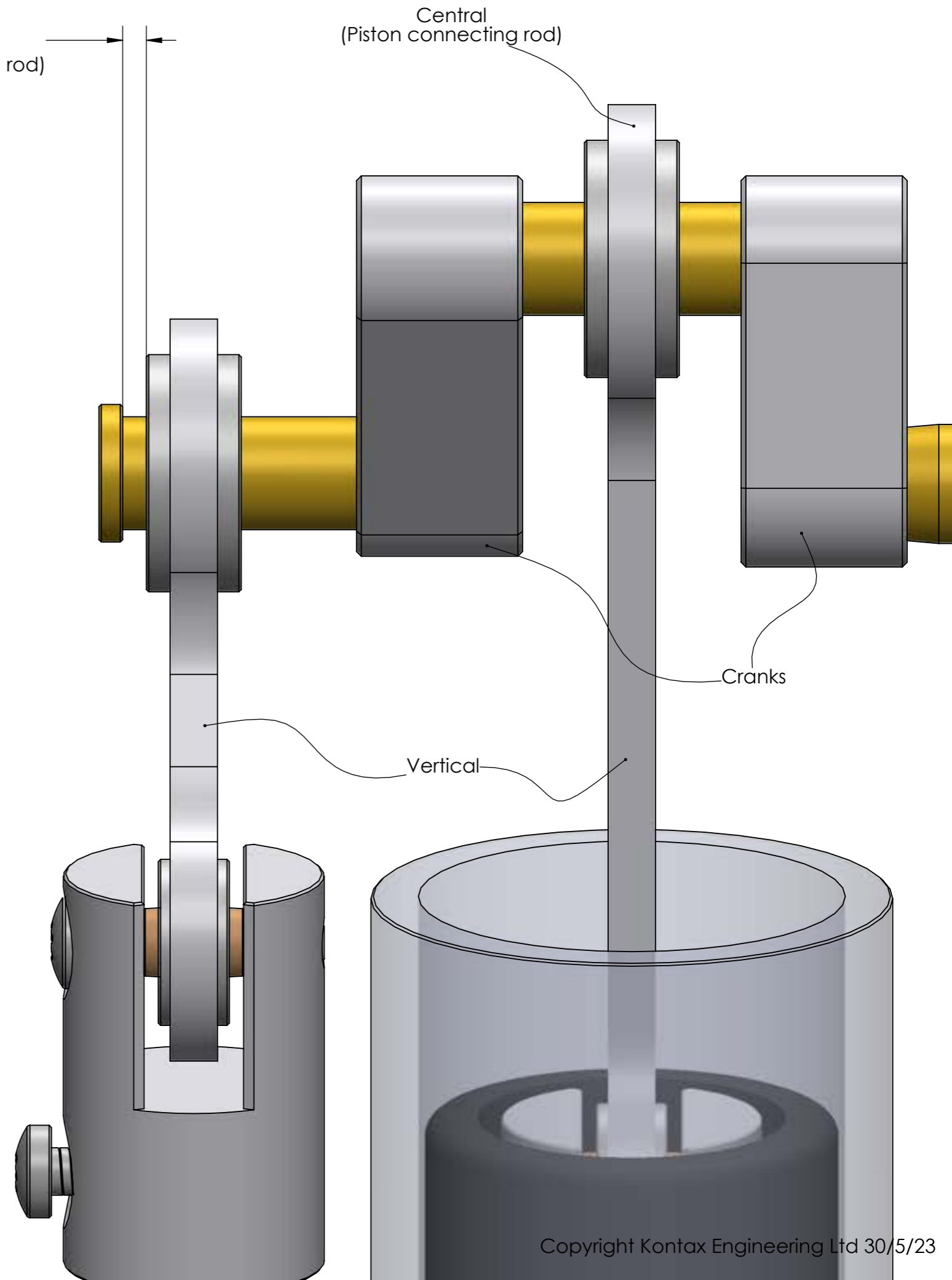
Correct positioning for each connecting rod end is as follows:

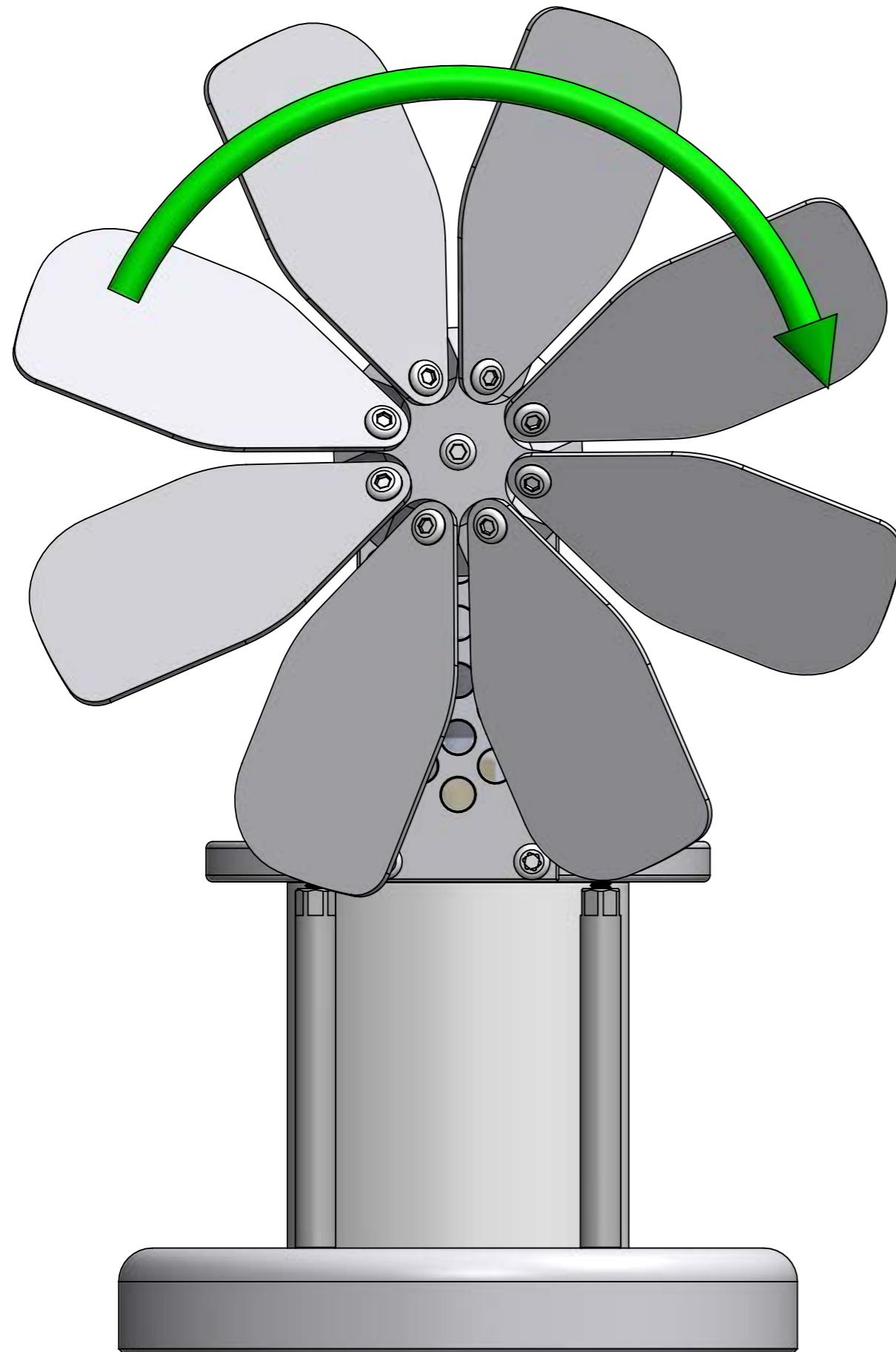
The displacer connecting rod end should be aligned vertically and have a small gap under the head of the brass pin.

The piston connecting rod end should be aligned vertically and central between the cranks.

You might find that your engine runs better with the connecting rods having a slight bias to one side or the other. When adjusting, do not move the connecting rods so far that they become jammed on their shafts or wedged against the cranks, and do not undo any screws on the cranks, these are factory-set to the correct positions.

Small gap  
0.5mm - 1mm  
(Displacer connecting rod)





The fan has been factory-set and tested to run at over 400rpm at 350°C.

Note: This fan requires a surface temperature of 175°C on your stove top for efficient operation. It may run with a temperature as low as 150°C but this is not guaranteed.

Place the fan on the hot stove top and wait a few minutes for it to heat up. Gently spin the fan clockwise with enough force to take the blades through a couple of revolutions, the fan will start to rotate slowly at first but will gain speed quite quickly. The higher the temperature of the stove, the faster the fan will operate.

If you need help with your Vulcan Mini Stove Fan you can email us at:

[support@stirlingengine.co.uk](mailto:support@stirlingengine.co.uk)





Our workshop is located in the Thames Valley, United Kingdom and is staffed by a skilled team of 9 designers, machinists and assemblers. We have 4 CNC mills, 3 CNC lathes and 3 CNC mill-turn centres.