

## How Stirling engines work.

All Stirling engines are powered by a difference in temperature. In this low temperature engine this difference is normally achieved by warming the bottom plate to above room temperature and allowing the top plate to stay at room temperature.

In operation the engine cyclically heats and cools the air inside. This process is shown in the simplified cut-away diagrams below (It helps to remember that the large blue displacer disk just moves the air from top to bottom and back again, and it is the small black piston that actually drives the flywheel).

Figure 1: With the large blue displacer disk at the top, all the air inside is at the bottom, where it is heated by the warm plate. As it warms, it expands, pushing the small black piston upwards, and driving the flywheel around.

figure 2: As the flywheel turns, the large blue displacer disk is moved to the bottom of the chamber. With the displacer at the bottom, all the air is at the top, where it is cooled by the cold plate. As it cools, it contracts, which has the effect of pulling the small black piston downwards, and driving the flywheel around some more.

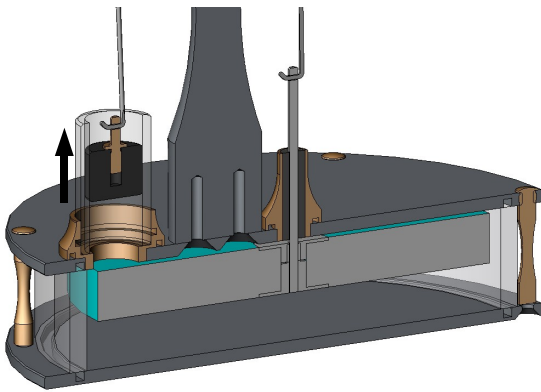


Figure 1

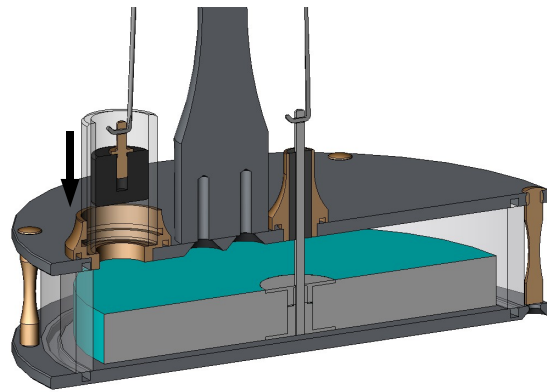


Figure 2

With the bottom plate being warmer than the top plate, the engine will spin in a clockwise direction.

But, if you reverse the heat flow and chill the bottom plate then the engine will spin in an anti-clockwise direction.

It doesn't really matter to the engine which of the two plates is the warmer, just so long as one plate *is* warmer.

The cut-away sections shown above are of the KS90 engine, but the explanations are valid for all of the Low temperature engines we make and sell.