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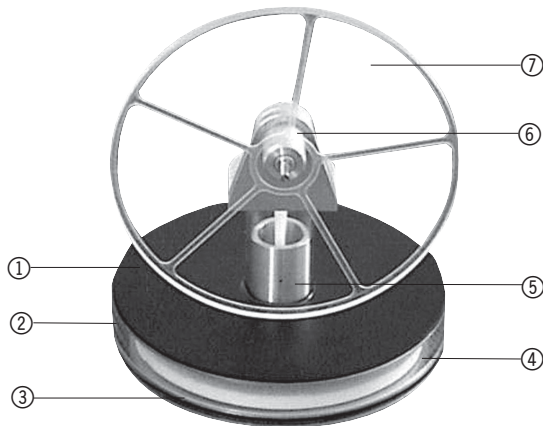
U10060 Low-temperature Stirling engine

Operating instructions

1/03 ALF

① Top plate

② Housing wall

③ Bottom plate

④ Displacement piston

⑤ Cylinder with operating piston

⑥ Housing with crankshaft

⑦ Flywheel

This low-temperature model is used to demonstrate the operation and basic design of a Stirling engine.

1. Safety instructions

- The Stirling engine does not need any lubrication.
- Avoid exposure of the device to dust.
- Do not clean the device with acetone or similar solvents.

2. Description, technical data

The low-temperature Stirling engine can be powered by the warmth of the human hand alone. It only requires a temperature difference of about 5°C between the bottom and top plates.

The operating cylinder consists of precision glass, while the displacement cylinder and flywheel are made of acrylic glass. This allows the movement of the operating piston, displacement piston and crank mechanism to be observed clearly. The crankshaft and connecting rod are furnished with high-precision miniature ball bearings in order to minimize losses due to friction.

The matt black coating of the top plate also allows the Stirling engine to run on solar energy.

Speed: Approximately 80 rpm at ∆T 10ºC
Flywheel: 110 mm Ø
Dimensions: 138 mm x 110 mm Ø

3. Procedure

- Place the Stirling engine on your hand or any other warm surface, e.g. across the rim of a cup of coffee.
- The bottom plate will heat up sufficiently after 1 or 2 minutes. In warm weather, the temperature difference might prove too small, in which case the top plate would need to be cooled with a moist cloth.
- Set the flywheel in clockwise motion (relative to the front end of the crankshaft).
- The Stirling engine will turn anti-clockwise if the top plate heats up, for instance, through solar radiation or warmth emanated by a lamp. For this purpose, place the engine on a cool surface such as a window sill.