

A mechanical seal is a device that stops leaks around a turning shaft in machines like water pumps. It uses two flat faces, springs, and soft rings to keep liquids or gases inside. [\[5\]](#)

How It Works

- One flat face turns with the metal shaft.
- The second flat face stays still in the pump body.
- Small springs push the two faces together so liquid cannot pass.
- A tiny layer of liquid cools and lubes the touching faces.

Main Parts

- **Rotating Face:** Moves with the shaft.
- **Stationary Face:** Fixed to the outer housing.
- **Springs:** Push the faces together with steady force.
- **Secondary Seals (O-rings):** Stop leaks around the edges of the shaft