The Rotary Evaporator

What is it used for?
The Rotary Evaporator is a common laboratory apparatus used for quick removal of solvents from reaction mixtures. This is done by heating mixtures gently under reduced pressures to accelerate the rate of evaporation.

Components
- **Vacuum tap** - this creates a reduced pressure to allow solvents to evaporate quickly
- **Water tap** - this creates a flow of water within the condenser
- **Condenser** - this is where solvent condenses as it comes into contact with a regular flow of water which acts as a coolant
- **Waste Jar** - this is where the evaporated solvents are captured and retained
- **Rotary Motor** - this creates the rotary action of the reaction flask
- **Adjustment handles** - one is used to set the angle of the apparatus and the other is used to adjust its height
- **Splashguard** - prevents excessive backflow of condensing solvent and protects the apparatus internals from any accidental splashing from the reaction flask
- **Adapter** - fits reaction flask to create a tight seal
- **Water bath** - used to gently heat the reaction flask

How to use it?
1. Ensure the splashguard and adapters are clean before used. Use a clamp to secure these into place. Dispose of any waste present in the waste jar appropriately.

2. Open the water flow and switch on the water bath, setting a temperature of around 15 degrees below the boiling point of solvent in the reaction flask. As a general rule the temperature of the water bath can be set at around 30-45 degrees
which should be sufficient to remove most common solvents without excessive heating (which may cause changes in the reaction mixture).

3. Connect your flask, clamp it and ensure the angle and height of the rotary evaporator are sufficient to immerse the flask effectively within the water bath.

4. Open the vacuum valve completely and turn on the vacuum line from the tap. Start the rotation as the vacuum line is fully on and slowly start closing the vacuum valve.

5. Once condensation is observed (a cloudiness appears within the condenser or you see some evidence of evaporation) you can stop closing the valve. Be sure to avoid too high a vacuum as this will result in bubbling of the solvent and could cause splashing of the reaction flask mixture into the rest of the apparatus.

6. Once all solvent appears to be removed close the vacuum tap fully and leave drying for around 15 minutes. Once done adjust the angle to near horizontal if necessary to prevent backflow of the solvent.

7. Slightly open the vacuum valve and close the vacuum line completely while still leaving the rotation on. Once the vacuum is off, remove the clamps and the flask and return the setup to the diagonal position.

8. Close the water and turn off the water bath and switches.

9. Discard the waste in the waste jar and clean the splashguard and adapter.

**Precautions**
- Take great care when handling the setup - the glass components are very fragile, and very expensive!

- There is no need to heat excessively - that’s what the reduced pressure is for. A general temperature range of 30-45 degrees should be sufficient for most solvent mixtures.

- When using the adjustment handles, always keep hold of the the setup to maintain its balance. One of the adjustment handles is fitted with a spring and letting go of it may cause damage.

- Take care not to mix halogenated and non-halogenated solvents during disposal of waste.

- Never attempt to remove the flask while the setup is under vacuum. This will most definitely cause... a mess.