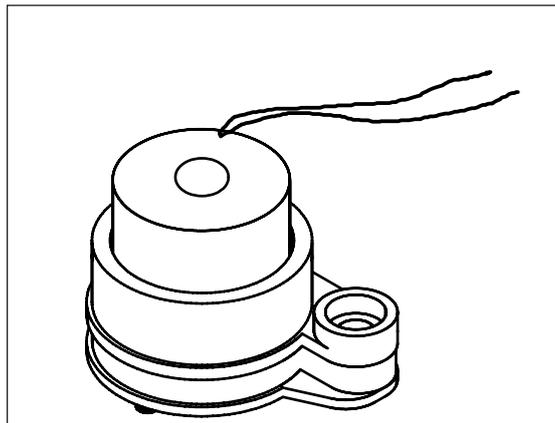


# OPITEC

**1 2 4 . 1 3 3**

***Solar water pump***



***Please Note***

The OPITEC range of projects is not intended as play toys for young children. They are teaching aids for young people learning the skills of Craft, Design and Technology. These projects should only be undertaken and tested with the guidance of a fully qualified adult.

The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Danger of suffocation!

## 1. Product Information

**Article:** Pump in kit form

**Use:** In Design Technology, Key stage 3-4

## 2. Material Information:

**2.1 Material:** Plastic ( Polycarbonate )  
Transparent, shatterproof  
Oil and petrol proof

**Joining:** Slotting together and gluing

**Finish:** No special finish necessary

**2.2 Material:** Magnets ( Ceramic)

**Joining:** Gluing

**Finish:** No special finish is necessary

## 3. Tools

**Glue:** Two component glue (Cat no 300.317)

**Note!** Read the instructions on the pack before using!  
Glue must be ordered separately

#### 4. Parts List

| Part                             | Material | Quantity | Size          | Diagram   |
|----------------------------------|----------|----------|---------------|---|
| Housing base, PC (Polycarbonate) |          | 1        |               |  |
| Flywheel PC (Polycarbonate)      |          | 1        |               |  |
| Pump housing PC (Polycarbonate)  |          | 1        |               |  |
| Drive wheel PC (Polycarbonate)   |          | 1        |               |  |
| Solar Motor                      |          |          | 1ø 25 x 12 mm |  |
| Magnets                          | Ceramic  |          | 6ø 6 x 2.2 mm |  |
| HO Connectors                    |          | 2        |               |   |

#### 5. Function:

Place the assembled pump in the container and fill it with water until the pump housing is half submersed.  
Connect the solar cell and expose it to enough light ( Sun or Halogen ) and the pump should work.

**Note:** The motor must not come into contact with the water!!

#### 6. Technical Data:

##### technical data:

|             |   |
|-------------|---|
| Supply      | 1,5-3 Volt DC                           |
| Water head  | maximum 8cm at 3 Volts                  |
| Flow        | maximum 13l/h (at 3 Volts)              |
| Temperature | +1 degrees Centigrade to 100 Centigrade |

## 7. Assembly

### Tip:

We recommend gluing the parts with two component glue or super glue

1. Glue the magnets in the drive wheel

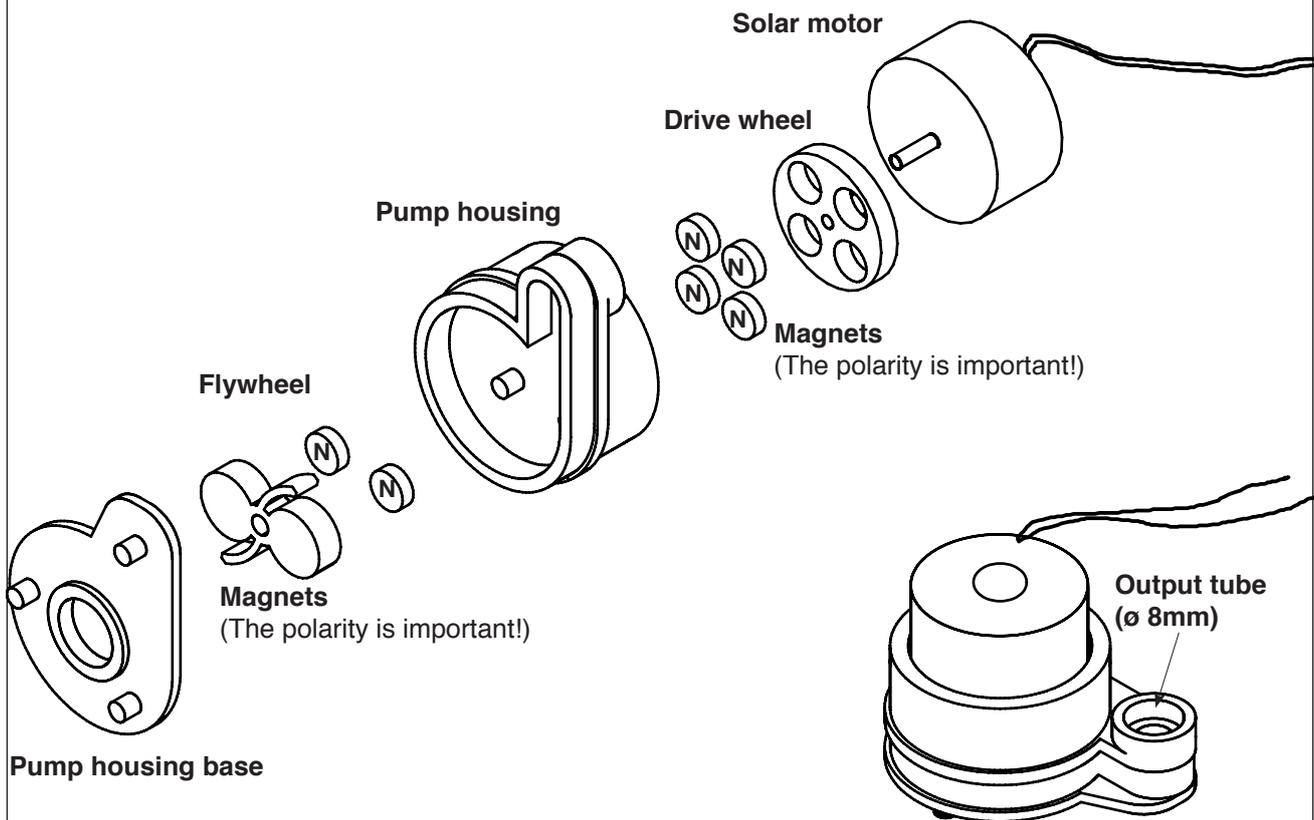
**Note:** Watch the polarity ( See diagram)!

2. Slide the drive wheel on the motor shaft as far as possible, with its open side facing away from the motor
3. Place the motor and drive wheel assembly from above into the pump housing, until the motor is flush with the housing.
4. Should the motor move in the housing (eg. be a little loose) either hold it place with a small bead of glue, or place a small strip of sellotape around the motor, before inserting it.

**Note:** When assembling the flywheel check the action of the pump, if the flywheel is lightly turned the motor shaft should turn with it. If does not happen, remove the motor from the housing and push the drive wheel further on the shaft , re-assemble and try it again

5. Carefully spread a bead of glue all around the base and glue it to the housing

**Note:** Be extra careful that none of the glue creeps inside and fouls the flywheel etc!!



## 8. Testing:

Testing for water tightness, once the glue has set run a brush full of soapy water around the glued joint. Then blow down the output tube at the same time as covering the input and see if any air bubbles appear, if yes, it will need to be re-glued. Dry the pump and re-glu.