

15. Match up the polarities of the battery with the markings on the case before you put it in. Secure with the battery cover. Your water pump is now complete!

16. Pour water into the pump base until it is halfway full. Pour just a little bit of water into the tube to help the system get started.

17. Flip the switch on the battery case to the solar setting. Place it underneath the sun and watch the figurine come to life and pump out water!

18. Flip the switch to the battery setting to get the figurine moving in any setting where sunlight is not available. Switch to the solar-powered setting to turn the water pump off.

#### E. TROUBLESHOOTING

If the pump does not work in solar-powered mode: • The sunlight may not be strong enough. Adjust the angle of the panel so that it directly faces the sun. If the pump does not work in battery mode: • Check that you have inserted a fresh battery and if the polarities are matched correctly. Also check the following: • If the wire connections are correct according to step 8 and make sure each wire is in contact with the metal in each terminal block. • If the gearbox was pushed down fully in step 6 so the gears can run smoothly. Afterwards, turn the two rotating gear joints to kickstart the system. • If water spills into the gearbox or battery case during use, remove the water with a cloth or sponge. • If the gears do not have enough lubrication, apply cooking oil or lotion to help the system run smoothly. Friction between the gear wheels will affect the performance of the motor.

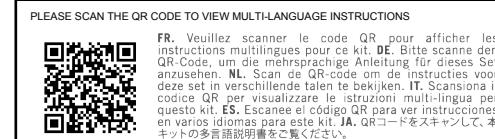
#### F. HOW IT WORKS

Sunlight is a form of energy. When sunlight falls on the solar cell, it transforms a portion of photons (particles of light) into electricity. Electric current flows from the cells to the motor, making the motor turn. Switching to battery power allows electricity from the battery to flow to the motor instead. The purpose of the gears inside the gearbox is to slow down the motor speed and generate more power for the machine to pump out water.

#### G. FUN FACTS

• Millions of people around the world live with limited access to water. In many rural communities, ground water is extracted through systems that require expensive diesel fuel, regular maintenance and they emit carbon dioxide polluting the atmosphere. After years of research and technological advances, solar water pumping has proven to be operationally, financially, and environmentally sustainable. In recent years, the cost of solar technology has dropped tremendously, with solar panel prices dropping by up to 80%. In addition, these panels last around 25 years, requiring little maintenance while providing people with easy access to water. • The role of pumps are very important in the fight against climate change because environmentally friendly pumps help conserve energy and water. Pumps account for 10% of the world's total electrical energy consumption and up to 90% of them are inefficient. • In order to power the entire Earth on renewable energy, we would need to install solar panels on over 191,000 square miles. Considering there are over 57 million square miles of land on Earth, we have room to spare.

# HYBRID SOLAR-POWERED WATER PUMP



**WARNING:**  
CHOKING HAZARD - Small parts.  
Not for Children under 3 years.

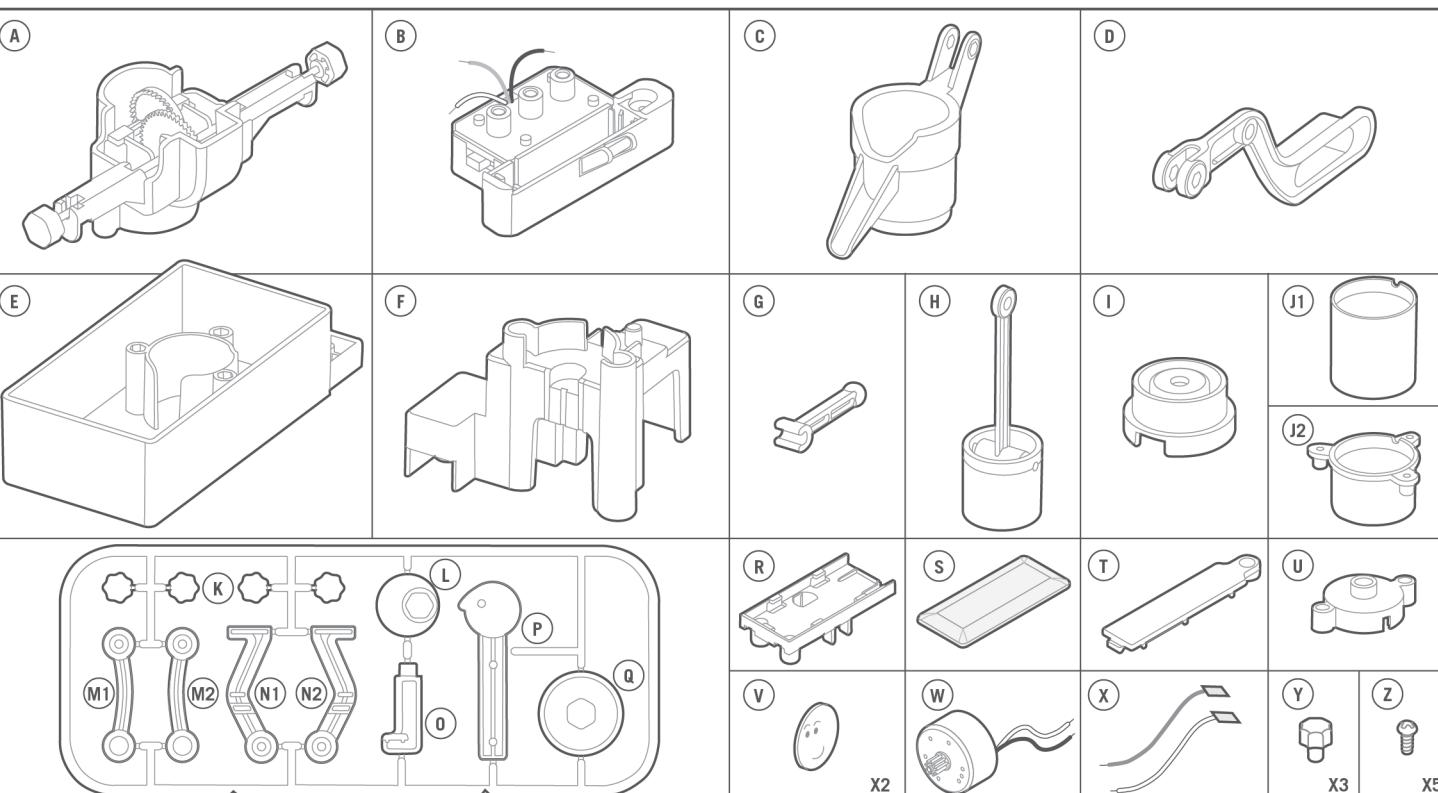
TO PARENTS: PLEASE READ THROUGH THESE INSTRUCTIONS BEFORE PROVIDING GUIDANCE TO YOUR CHILDREN

#### A. SAFETY MESSAGES

1) Adult assistance and supervision is required at all times. 2) This kit is intended for children over the age of 5. 3) This kit and its finished product contain small parts which may cause choking if misused. Keep away from children under the age of 3. 4) Do not attempt to take the solar panel apart. 5) To prevent the possible short circuits, never touch the contacts inside the battery case with any metal objects.

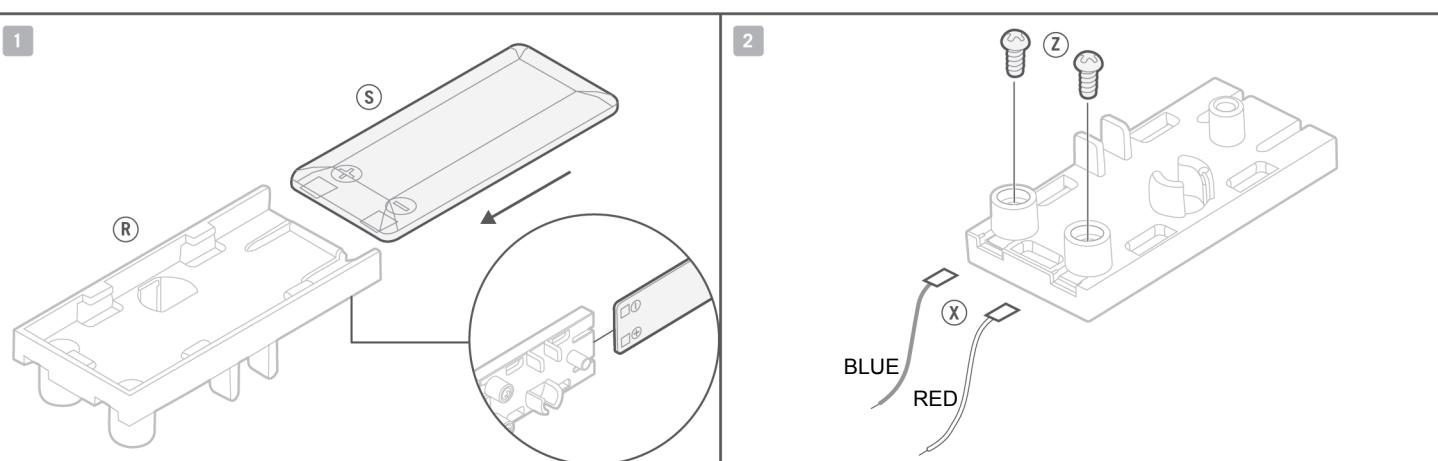
#### B. USE OF BATTERY

1) Requires one 1.5V AAA battery (not included). 2) For the best results always use a fresh battery. 3) Make sure you insert the battery with the correct polarities. 4) Remove the battery from the kit when not in use. 5) Replace exhausted battery straight away to avoid possible damage to the kit. 6) Rechargeable batteries must be removed from the kit before recharging. 7) Rechargeable batteries should be recharged under adult supervision. 8) Make sure that the supply terminals in the battery case are not short circuited. 9) Do not attempt to recharge non-rechargeable batteries.



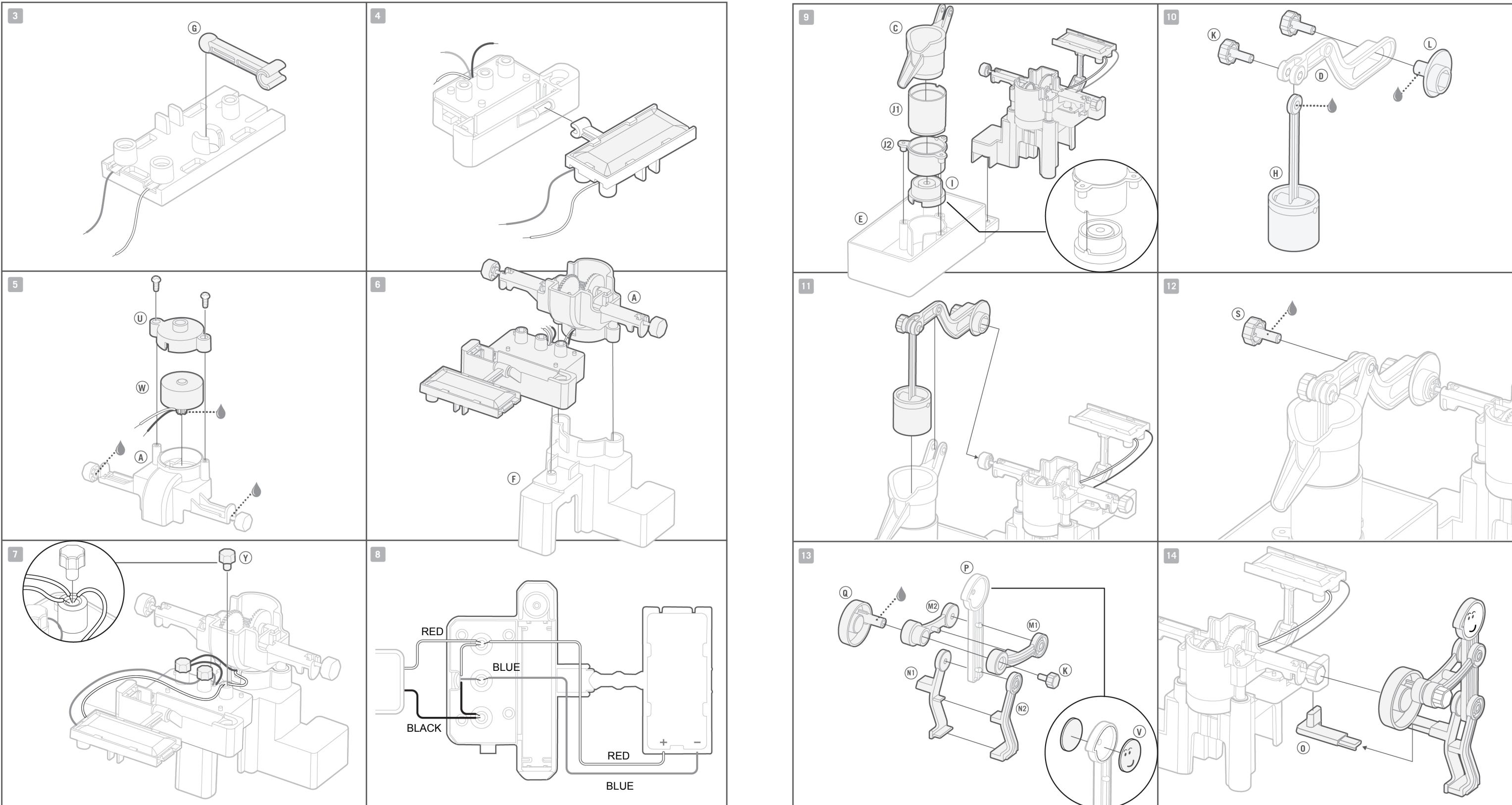
#### C. CONTENTS

Part; A: Gearbox, B: Battery Module, C: Cylinder Top, D: Piston Connector, E: Pump Base, F: Main Frame, G: Solar Panel Joint, H: Piston, I: Cylinder Base, J1: Middle Cylinder, J2: Cylinder Connector, K: Pegs, L: Small Gear Joint, M: Figurine Arms, N: Figurine Legs, O: Figurine Connector, P: Figurine Body & Head, Q: Large Gear Joint, R: Solar Panel Base, S: Solar Panel, T: Battery Cover, U: Motor Cover, V: Face Cutouts (From Box Packaging), W: Motor, X: Solar Panel Wires, Y: Terminal Caps, Z: Small Screws. Also required but not included in this kit: Small crosshead screwdriver, one 1.5V AAA battery.



#### D. ASSEMBLY

- Slide the solar panel onto the base. Make sure the +/- connections on the bottom of the solar panel line up with the markings on the base as shown.
- Insert the red wire into the positive terminal and the blue wire into the negative terminal. Secure in place with a screw.



3. Insert the joint into the socket as shown.

4. Clip the solar panel into the battery case's joint.

Remark: The oil drop symbol indicates the areas which may require lubrication. It is recommended that you apply some cooking oil or lotion to the joints or moving parts when assembling the product. This helps to reduce friction and enhance mechanical performance.

5. Lubricate the motor head and shaft with cooking oil or lotion before inserting it into the gearbox with the wires facing you. Place the motor cover over top allowing for the wires to come out of the cover's slot. Secure with two small screws.

6. Slide the gearbox and battery module into position.

7. Secure two black wires in the left terminal, two blue wires in the middle terminal and three red wires in the right terminal with a terminal cap.

8. Check this diagram to ensure you have connected the wires correctly.

#### QUESTIONS AND COMMENTS

We value you as a customer and your satisfaction with this product is important to us. If you have any comments or questions, or you find any parts of this kit missing or defective, please contact our distributor in your country, whose address is printed on the packaging. You are also welcome to contact our marketing support team via email: infodesk@4M-IND.com, fax (852) 25911566, telephone (852) 28936241, or our website: WWW.4M-IND.COM.

9. Align each notch with the small cutout on parts (C, I, J1, and J2) as shown in the small diagram. Insert (J2)'s 3 joints into the holes on the pump base to secure the completed cylinder in place. Water will flow smoothly through the system only if the pieces are connected correctly. Finally, connect the main frame to the pump base as shown.

10. Use pegs to connect the piston and small motor joint to the piston connector. The small motor joint should be inserted from the flat side of the piston connector. Remember to lubricate the areas identified by the oil symbol.

11. Connect the small motor joint to the gearbox and then slide the piston into the cylinder.

12. Create a secure connection between the piston and cylinder connector by inserting a peg as shown. Remember to lubricate the areas identified by the oil symbol.

13. Connect the arms, figure body and large gear joint together with a peg. Clip the legs to the figure body. Punch out two faces from the product's packaging and push them into the head.

14. Insert the figurine connector into the bottom of the battery case. Slide the large gear joint onto the gearbox and figure onto the joint connected to the battery case.