

MOTORISED ROBOTIC ARM

PLEASE SCAN THE QR CODE FOR VIEWING MULTI-LANGUAGE INSTRUCTIONS.



FR. Veuillez scanner le code QR pour afficher les instructions multilingues pour ce kit. DE. Bitte scannen den QR-Code, um die mehrsprachige Anleitung für dieses Set anzusehen. NL. Scan de QR-code om de instructies voor deze set in verschillende talen te bekijken. IT. Scansiona il codice QR per visualizzare le istruzioni multi-lingua per questo kit. ES. Escanee el código QR para ver instrucciones en varios idiomas para este kit. JA. QRコードをスキャンして、本キットの多言語説明書をご覧ください。

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

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

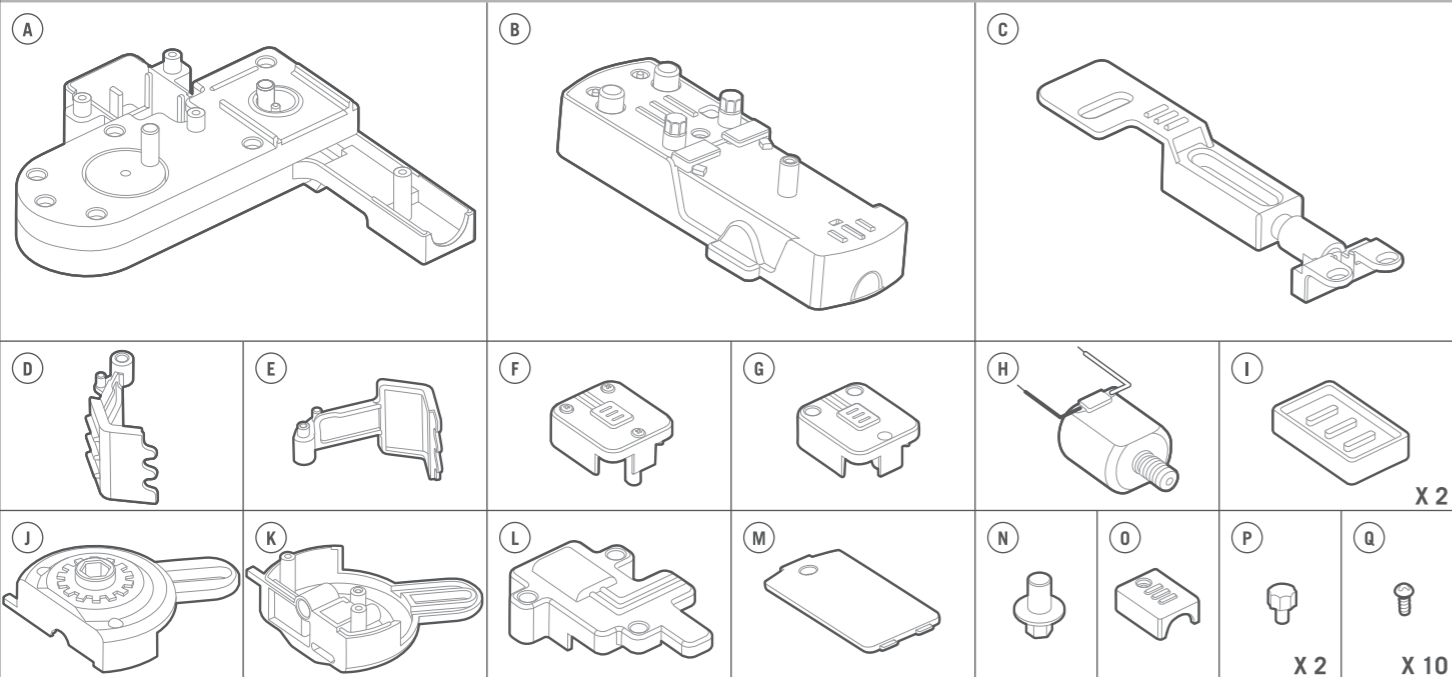
A. SAFETY MESSAGES

1. Adult supervision and assistance are required at all times.
2. This kit is intended for children over 8 years of age.
3. This kit and its finished product contain small parts which may cause choking if misused. Keep away from children under 3 years old.
4. To prevent possible short circuits, never touch the contacts inside the battery case with any metal objects.
5. Only install batteries after you have assembled the product. Adult supervision is required.

B. USE OF BATTERIES

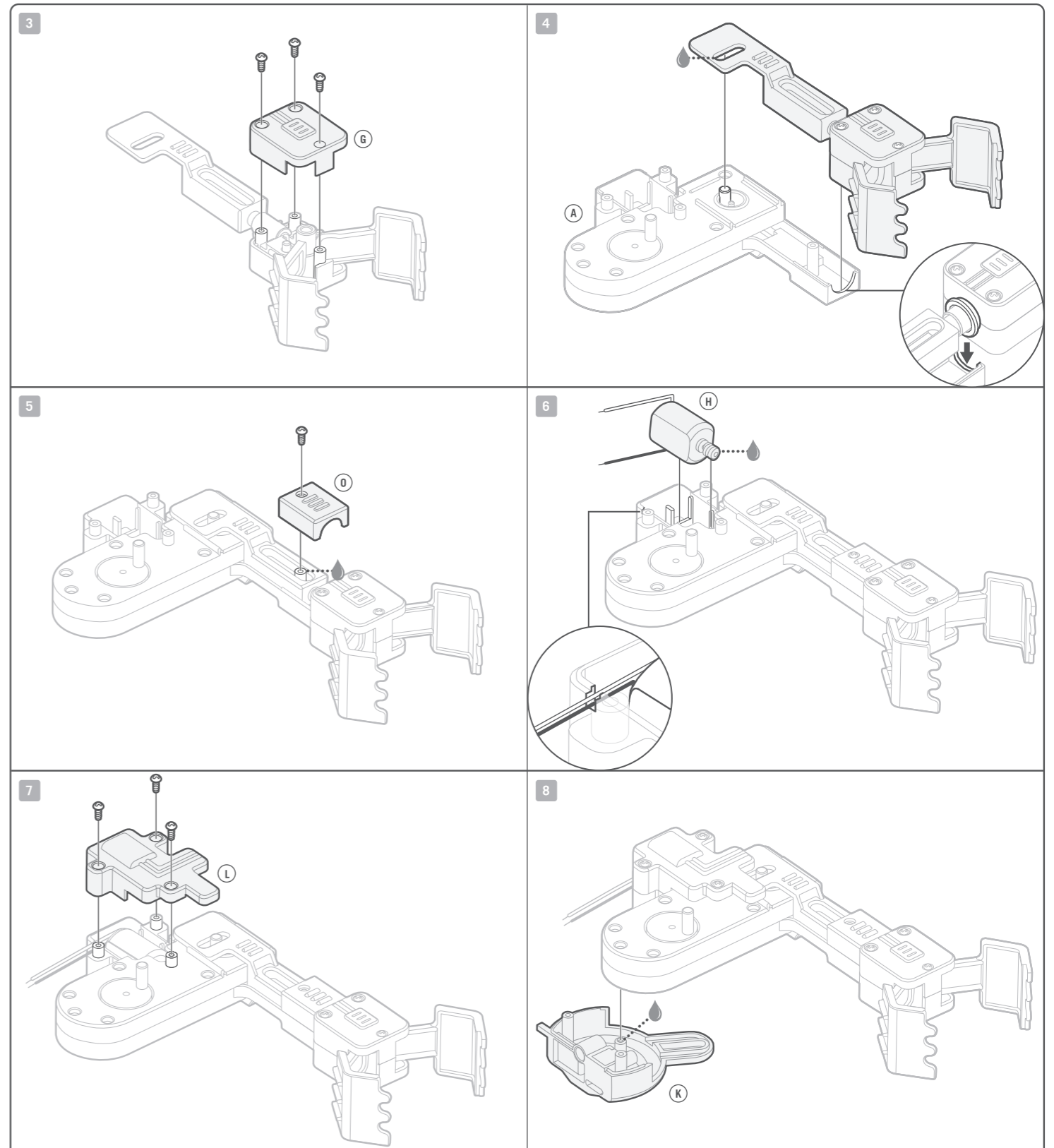
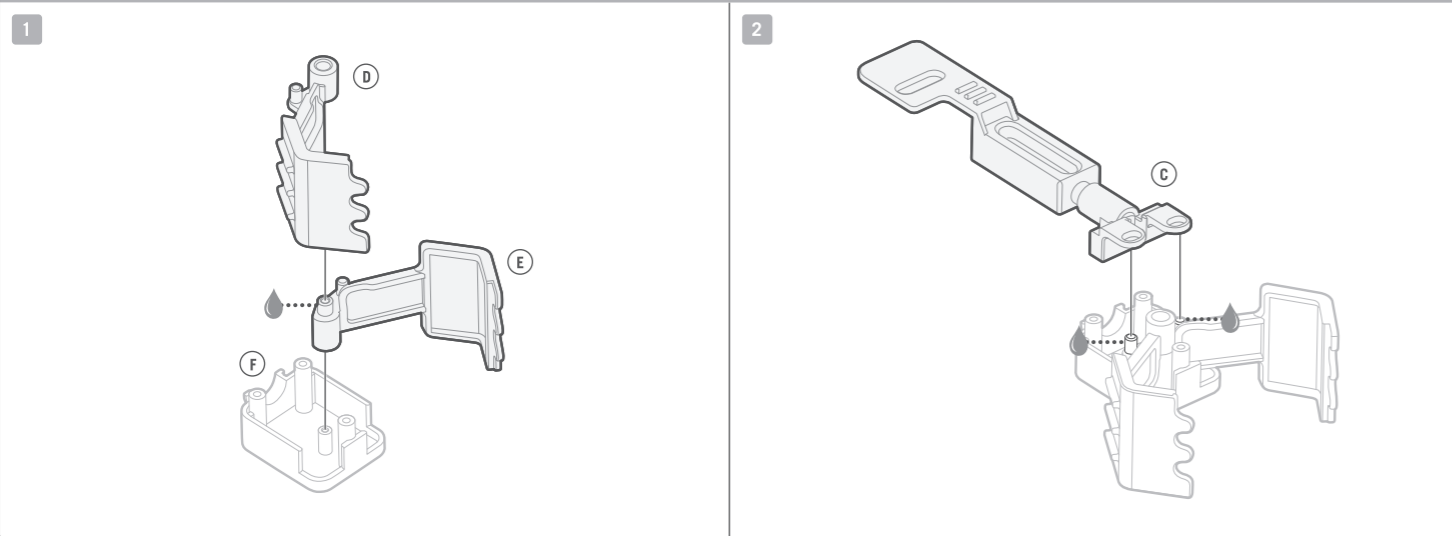
1. Requires two 1.5V AA batteries (not included).
2. For best results always use fresh batteries.
3. Make sure you insert the batteries with the correct polarities.
4. Remove the batteries from the kit when not in use.
5. Replace exhausted batteries straight away to avoid possible damage to the kit.
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.
10. Do not mix old and new batteries.
11. Do not mix alkaline, standard (carbon-zinc), or rechargeable batteries.

C. CONTENTS



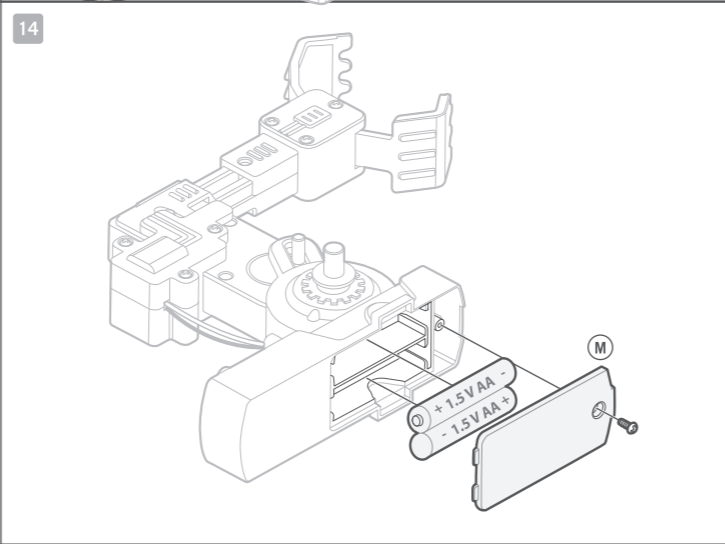
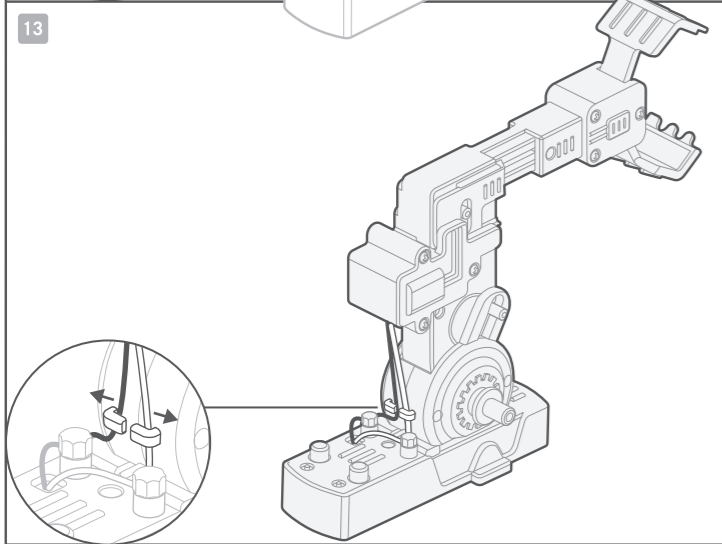
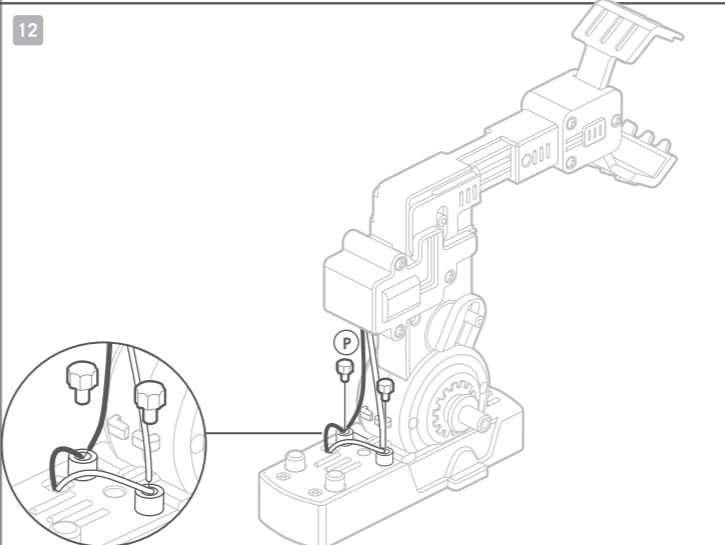
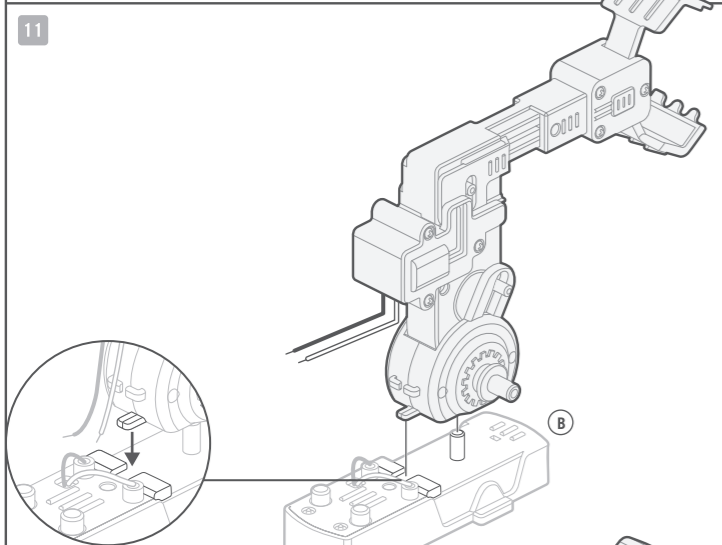
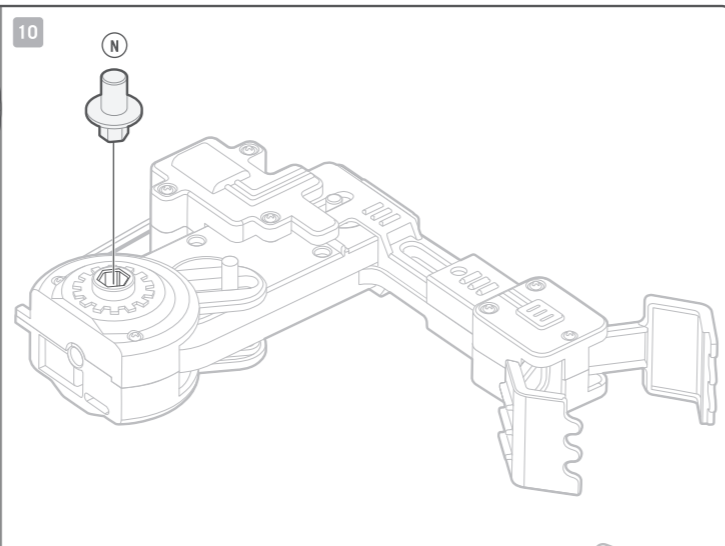
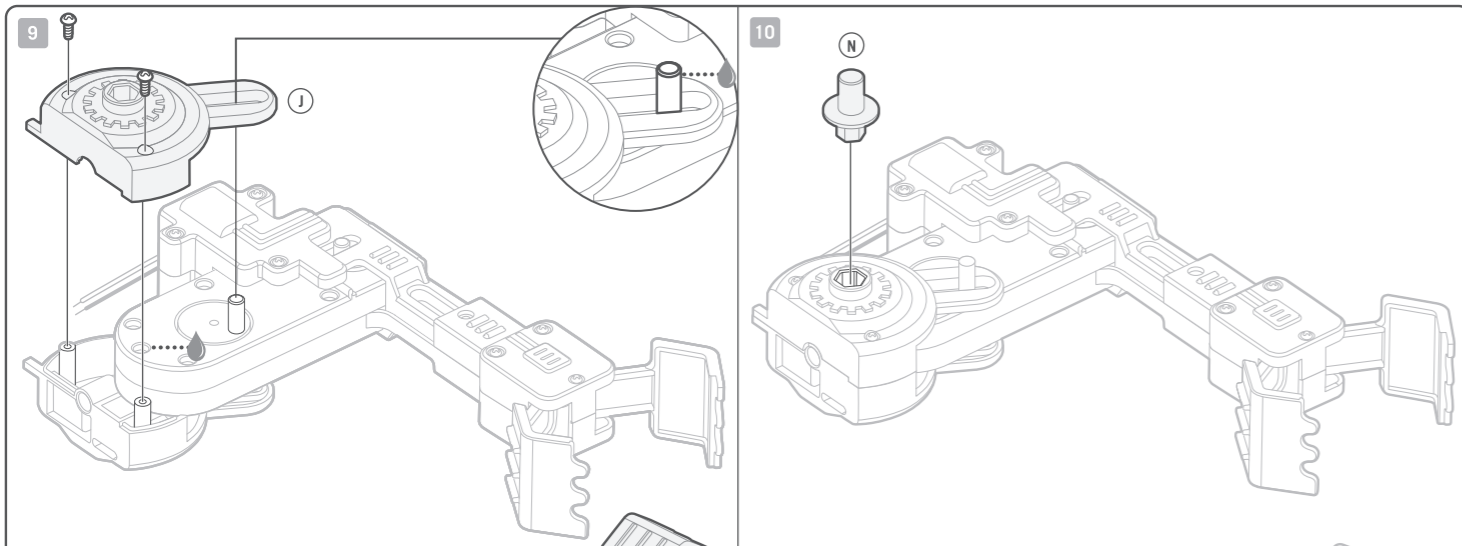
Part A: Arm body x 1, Part B: Base x 1, Part C: Gripper bracket x 1, Part D: Gripper claw (right) x 1, Part E: Gripper claw (left) x 1, Part F: Lower gripper case x 1, Part G: Upper gripper case x 1, Part H: Motor x 1, Part I: Brick x 2, Part J: Shoulder right section x 1, Part K: Shoulder left section x 1, Part L: Motor cover x 1, Part M: Battery cover x 1, Part N: Handle x 1, Part O: Gripper cap x 1, Part P: Terminal cap x 2, Part Q: Screws x 10. Also required, but not included in this kit: a small cross-head screwdriver, 2 x 1.5V AA batteries.

D. ASSEMBLY

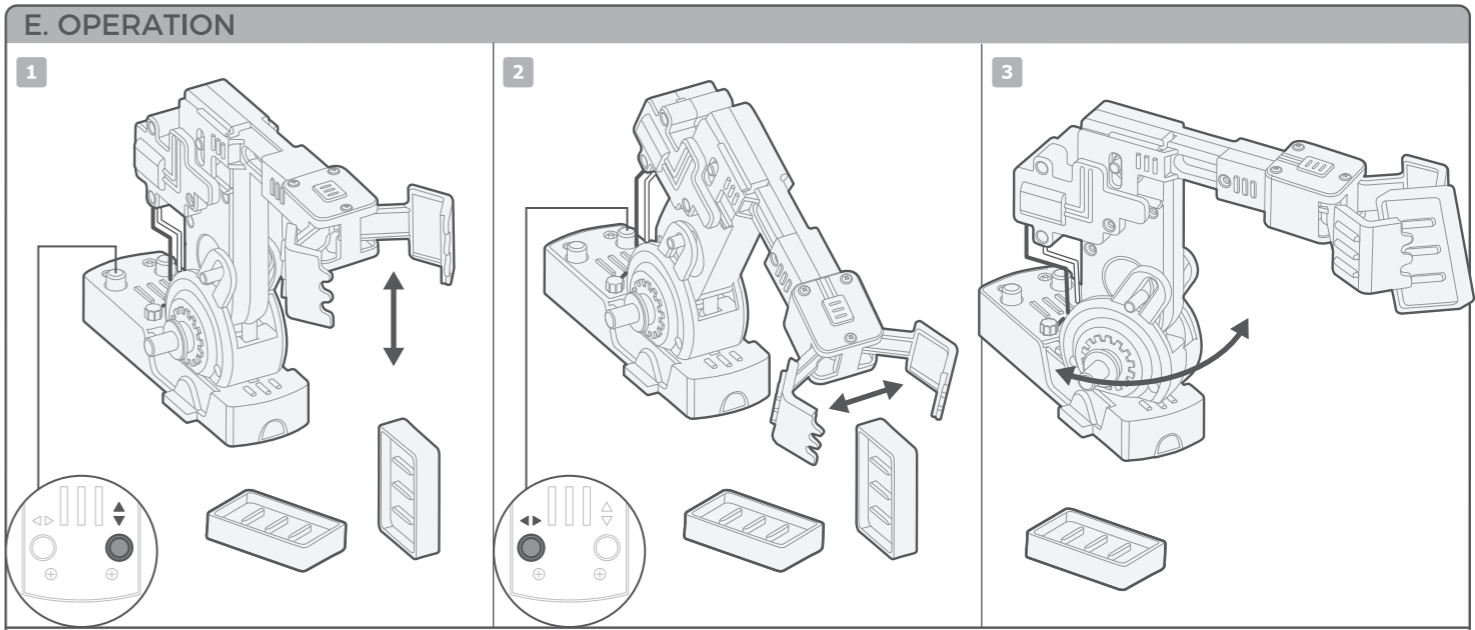


Remarks: It is recommended that you apply some lubricant to the joints or moving parts when assembling the product. This helps to reduce friction and enhance mechanical performance. You may use some cooking oil or lotion for this purpose. In the instructions, the "waterdrop symbols" indicate the areas which may require lubrication.

1. Slot the two gripper claws together and slot them onto the pin inside the lower gripper case.
2. Place the end of the gripper bracket into the lower gripper case. The pins on the gripper claws must fit into the slots on gripper bracket. Make sure that the gripper bracket is the correct way up, as shown in the diagram.
3. Put the upper gripper case in place and secure it with three screws.
4. Place the gripper assembly from step 3 into the arm body. Make sure the collar on the gripper case sits inside the lip on the arm body.
5. Lock the gripper assembly and the arm body together with the gripper cap. Secure the cap with a screw.
6. Insert the motor into the arm body with the wire connections facing upwards. Feed the wires through the slot on the body as shown.
7. Put the motor cover over the motor and secure it with three screws.
8. Place the assembled arm into the shoulder left section.



9. Add the shoulder right section, making sure the pin on the arm assembly fits through the slot on the shoulder right section. Secure the two halves of the shoulder section together with two screws.
 10. Slot the handle into the shoulder section.
 11. Slot the arm onto the base. Make sure that the peg on the bottom of the arm fits between the two pegs on the base. This will prevent the arm from swinging too far to one side or the other.
 12. Put the red wire from the motor and the red wire from the battery case into one of the terminals, making sure that the bare metal of the wires touches the metal of the terminal. Repeat with the black wires from the motor and the battery case. Secure the wires with the terminal caps provided.
 13. Slot the wires from the motor behind the two clips on the arm.
 14. Insert two 1.5V AA batteries into the battery compartment, making sure that the flat ends of the batteries are against the springs in the compartment. Replace the battery cover and secure it with a screw. Place the Robotic Arm in its standing position and rotate the gripper claw 90°. You're now ready to start lifting!



E. OPERATION

1. Place the Robotic Arm down with the control button facing towards you. Press the right-hand button to make the arm move up and down. The arm will continue to move up and down until you release the button.
2. Press the left-hand button to make the gripper jaws open and close. The jaws will continue to open and close until you release the button. You can swivel the gripper around so that it opens vertically or horizontally.
3. Use the handle on the side of the arm to turn the arm left and right.

Can you pick up the brick, swing the arm and put the brick down again?
 Remarks: Only press one button at a time. Operation may fail if both buttons are pressed simultaneously.

F. TROUBLESHOOTING

- If the motor does not turn, check that the batteries are the correct way round in the battery compartment, and make sure that the bare wires under the base are touching the metal terminals. If this does not work, replace the batteries with fresh batteries and retry.
- If the buttons work the wrong way round (i.e. the left button moves the arm), check that the two black wires and the two red wires are connected together.

G. HOW IT WORKS

The Robotic Arm is operated by an interesting mechanism. Here's how it works:

- The motor, powered by the batteries, turns gears inside the arm. The motor rotates quite fast, but the gears reduce this speed of movement.
- Pressing the right-hand button operates a switch that makes the motor turn in one direction. This engages one set of gears that turns the large cam wheel on the arm body. As the cam turns, its pin moves up and down in the slot on the shoulder, and this forces the arm to move up and down.
- Pressing the left-hand button reverses the direction in which the motor turns. This engages a different set of gears that turns the small cam wheel on the arm body. As the cam turns, its pin forces the gripper bracket to move backwards and forwards, which operates the gripper jaws.

H. FUN FACTS

- The first robot arm was invented by the American inventor George Devol. It was called Unimate. The arm worked in a car factory in the 1960s, lifting heavy metal car parts.
- Today, thousands of robot arms are used in factories, lifting and moving materials, and using tools to do painting, welding and cutting tasks.
- A robot arm's gripper has pressure sensors on the jaws that measure how tightly the gripper is holding an object. The sensors allow the gripper to pick up very delicate objects, such as eggs.
- Robot arms are taught how to perform a task by a human teacher. The teacher moves the robot's tool (such as its gripper) into the positions needed and the robot remembers the moves.
- Cams (the wheels with pins on them) are an important part of many different machines, where they turn circular movement into linear (backwards and forwards) movement.
- The joints in an industrial robot arm are named after the joints in a human arm – shoulder, elbow, and wrist.
- There is a robot arm on the International Space Station that moves pieces of the station around when they need to be repaired or replaced.
- A robotic prosthetic arm is a robot arm that replaces an arm lost by a human.
- The latest prosthetic robot arms can be controlled by thoughts of the wearer, by detecting signals in the wearer's spinal cord.
- A new prosthetic hand developed in 2018 sends signals back from its skin to the wearer's nerves to give the wearer a sense of touch!

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QUESTION AND COMMENTS: We value you as a customer and your satisfaction with this product is important to us. If you have comments or questions, or you find any part of this kit missing or defective, please do not hesitate to contact our distributor in your country. You will find the address printed on the package. You are also welcome to contact our Marketing Support Team: Email: infodesk@4m-ind.com, Fax (852) 25911566, Tel: (852) 28936241, Website: WWW.4M-IND.COM