

F. HOW IT WORKS

The battery powers the motor, making it spin the fan at high speed. The fan sucks air in through top of the robot's body and blows it out through the slot in the front of the body. The motor also turns a set of gears that turns the rotor with the bubble wands attached. The gears change the high speed of the motor into slow speed of the rotor. The bubble wands dip into the mixture as the rotor turns, coating the wands with a thin film of mixture. As the wands move in front of the blower, the air pushes the film of mixture in a stream of bubbles.

G. MIX YOUR OWN BUBBLE SOLUTION

A bubble solution is included in this kit. You could also buy bulk bubble solution from a toy store or follow the recipes below to mix your own bubble solution for more fun.

MIXTURE 1

Materials required: standard or ultra dish-washing detergent, sugar, glycerin (available from your local pharmacy, this is optional), a container for mixing.

Put 200 ml (6.7 fl oz) of warm (not hot) water into a measuring jug. Stir in a tablespoon of sugar until the sugar has dissolved. Add 50 ml (1.5 fl.oz) of standard dish-washing liquid or 30 ml (1 fl.oz) of ultra dish-washing detergent to the water. Stir in a tablespoon of glycerin, if you have some. Finally, add 300ml (10 fl.oz) of water into the mixture and stir well.

MIXTURE 2

Materials required: standard or ultra dish-washing detergent, baking powder and a container for mixing.

Put 500ml water into a container. Add 50 ml of (1.5 fl.oz) standard dish-washing detergent or 30 ml (1 fl.oz) of ultra dish-washing detergent to the container. Stir in a tablespoon of baking powder. If you keep this home-made bubble solution undisturbed for 24 hours, you will find it performs better.

H. TROUBLESHOOTING

If the motor does not run:

- check that you have fresh batteries and that the batteries are inserted into the battery holder the correct way round
- check that you have made the correct connections at the terminal blocks (see assembly step 3)
- check that the bare metal of all the wires is in contact with the metal terminals

If the Robot fails to make bubbles:

- check that there is enough bubble solution in the trough

If you hear a clicking sound from inside the robot:

- check that you have pushed the fan properly onto the motor spindle (you will have to take the robot apart to do this).

If the wands contain plenty of bubble solution but there are no bubbles:

- insert fresh batteries to increase the flow of air

I. FUN FACTS

- The skin of a bubble is called a film. It's less than a thousandth of a millimetre thick. And it's stretchy, like a balloon, which is why you can blow up a bubble.
- The skin is held together by a force called surface tension, made by the tiny particles in the mixture clinging on to each other. The detergent in the mixture makes the skin more stretchy.
- Bubbles are round because the skin of a bubble always tries to shrink to the smallest surface area possible.
- A bubble bursts because the water in the skin slowly evaporates into the air.
- The colours of the rainbow you see in a bubble are made by light bouncing off the inside and outside of the bubble's skin.
- The world record longest-lasting bubble didn't burst for 341 days — that's nearly a year!

BUBBLE ROBOT



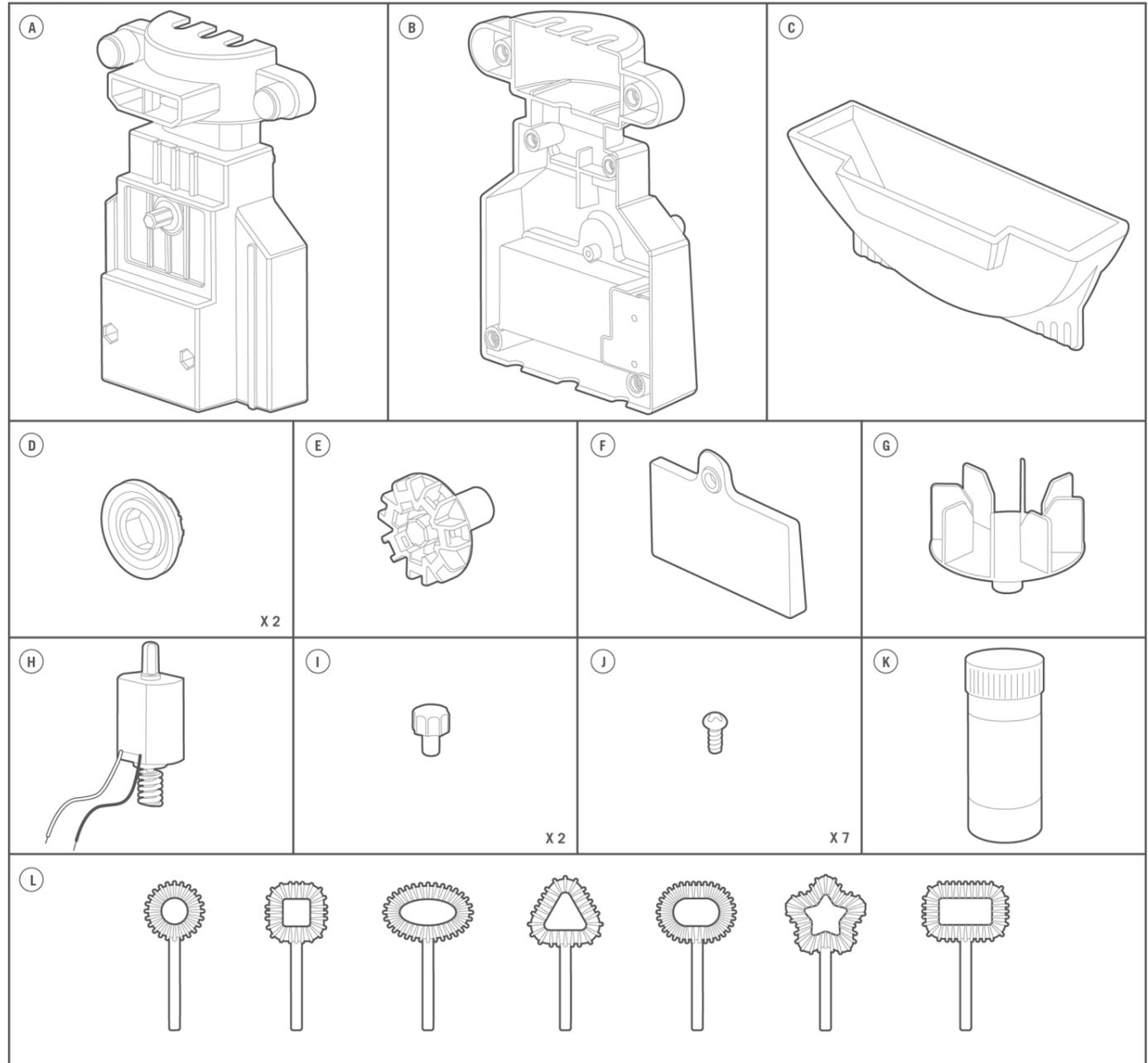
A. SAFETY MESSAGES

1. Adult assistance and supervision 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.
6. Always wash your hand after playing with bubbles. Avoid contact between bubble solution and your mouth or eyes.
7. Playing with bubble solution can be messy, so it is best to carry out all the experiments outdoors. If you have to work indoors, cover surfaces with newspapers before you start.

B. USE OF BATTERIES

1. Requires two 1.5 V AAA batteries (not included).
2. For best results, always use fresh batteries.
3. Make sure you insert the batteries with the correct polarity.
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 must be recharged under adult supervision.
8. Make sure 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

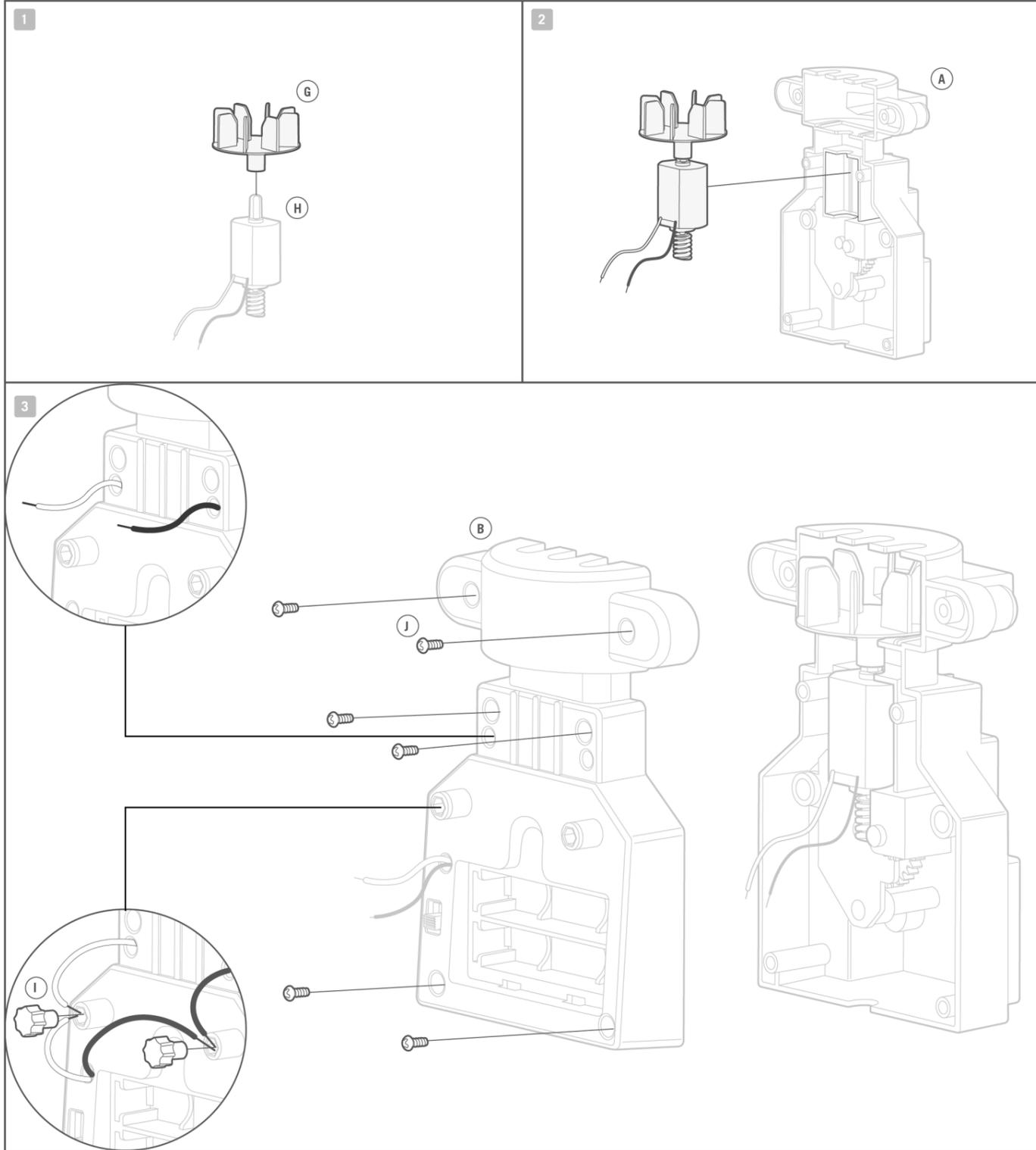


Part A: Front body x 1, Part B: Rear body x 1, Part C: Trough x 1, Part D: Eyes x 2, Part E: Rotor hub x 1, Part F: Battery compartment cover x 1, Part G: Fan x 1, Part H: Motor x 1, Part I: terminal caps x 2, Part J: screws x 7, Part K: Bubble solution x 1, Part L: Bubble wands x 7. Also required but not included in this kit: a small crosshead screwdriver, 2 x 1.5V AAA batteries.

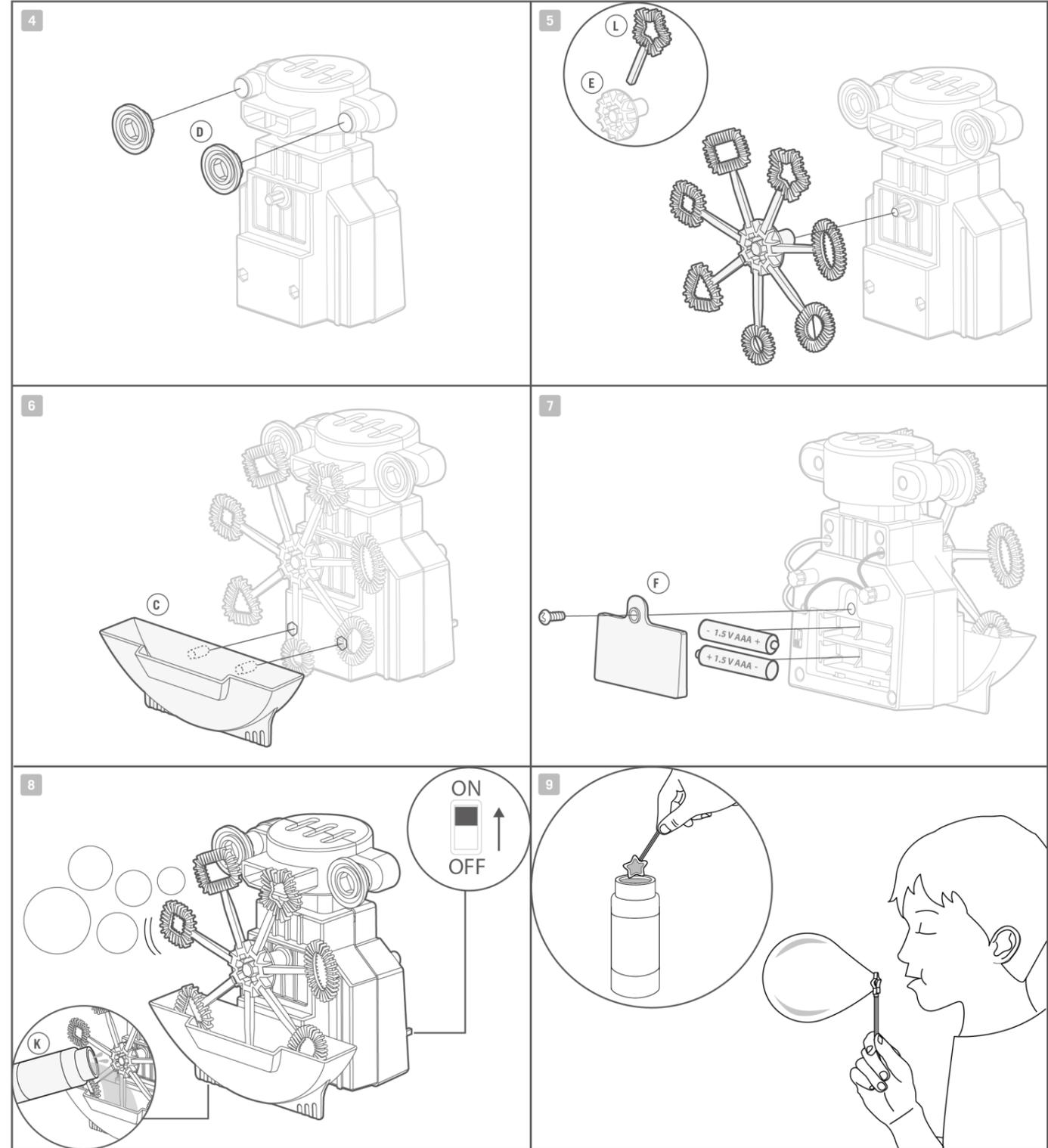
QUESTION AND COMMENTS

We treasure you as a customer and your satisfaction with this product is important to us. In case you have any comments or questions, or you find any parts of this kit missing or defective, please do not hesitate to contact our distributor in your country, whose address is printed on the package. You are also welcome to contact our marketing support team at Email: infodesk@4M-IND.com, Fax (852) 25911566, Tel (852) 28936241, Web site: WWW.4M-IND.COM

D. ASSEMBLY



1. Push the fan (part G) onto the spindle of the motor (part H). Make sure you push the fan fully onto the spindle as in the diagram for step 2.
2. Slot the motor and fan assembly into the front body (part A).
3. Push the rear body (part B) onto the front body. Feed the wires from the motors through the holes in the rear body as shown. Fix the body together with six screws (part J). Put the bare metal ends of the two red wires into one of the terminal holes and secure them in place with a terminal cap (part I). Repeat with the two black wires in the other terminal.



4. Push the two eyes (parts D) onto their pins on the body.
5. Also push the bubble wands (parts L) onto the rotor hub (part E). Push the hub onto the spindle on the front of the robot body.
6. Push the trough (part C) onto the robot body. Slide it up from beneath the rotor before slotting it into place.
7. Insert two 1.5-volt AAA batteries into the battery compartment, making sure they are the correct way round. Secure the battery compartment cover (part F) with a screw.
8. Place your Bubble Robot on a flat surface. Pour some bubble solution (part K) into the trough. Flick the switch to the ON position. Watch the bubbles stream from the Robot!
9. You can use the bubble wands to blow bubbles yourself too.

E. OPERATION

8. Place your Bubble Robot on a flat surface. Pour some bubble solution (part K) into the trough. Flick the switch to the ON position. Watch the bubbles stream from the Robot!
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