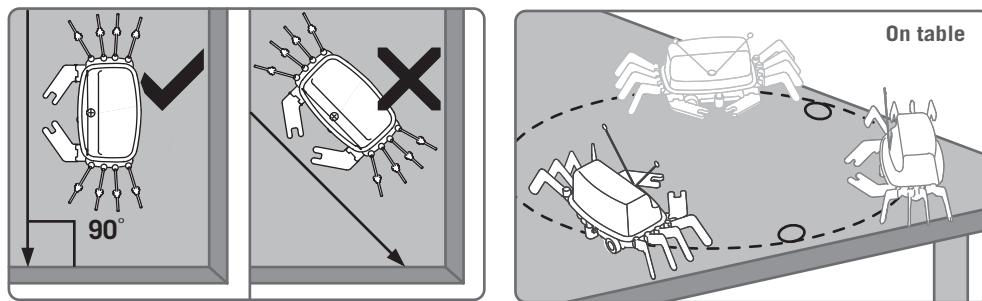


## E. OPERATION

Put your Table Top Robot in the centre of a clear table top (or on a toy box). Switch on to make the robot go. The robot will move sideways. Make sure the starting angle of the robot is about perpendicular to the table edge, so that when it walks towards the table edge, it can turn and keep going. Otherwise it may fall off the edge.



## F. TROUBLESHOOTING

If the motor does not run:

- Check that you are using a fresh battery.
- Check that the battery is inserted the correct way round in the battery case.
- Check that all four wires are touching the metal terminals

If the robot falls off from the table:

- Check that the starting angle is about perpendicular to the table edge.

## G. HOW DOES IT WORK?

The battery provide electricity to the motor, which turns the rotor at high speed. The gears reduce the speed of rotation so that the wheels turn quite slowly. It turns the two driving wheels and a third, single wheel at right angles to the others. This third wheel doesn't quite touch the table because of the roller. When the robot reaches the edge of the table, the rollers go over the edge, allowing the third wheel to touch the table. This makes the robot turn until the rollers move back onto the table. Cams on the axle push the plates that the legs and claws are attached to turn from side to side.

## H. FUN FACTS

- The robot legs are specially designed for adsorbing impact. If the robot accidentally falls off the table, the legs will be the first part to touch the ground. This makes the legs absorb most of the impact force, minimizing the damage to the chassis. If the impact is big, the legs may come off from the chassis. Don't worry, they can be reinstalled and used over and over again!
- Many robots crabs have been built that walk sideways in the same way as real crabs.
- The fastest crab is the ghost crab, which can scuttle along at speeds up to 16 kilometres per hour (10 miles per hour) — much faster than your walking pace!
- Crabs walk sideways because they can't walk forwards! The middle joints in their legs can only bend up and down, not from side to side.
- Cams move the Table Top Robot's legs and claws. The cam is a useful mechanical device for controlling movement. It was first used more than 2,000 years ago.
- Many mobile robots have sensor systems to avoid falling off edges or bumping into walls. They use touch sensors or optical sensors to detect edges and walls.
- Some robots can remember the location of the edges, walls and other obstacles they hit, so they can avoid them in the future.

# TABLE TOP ROBOT

To Parents: Please read through these instructions before giving guidance to your children.

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

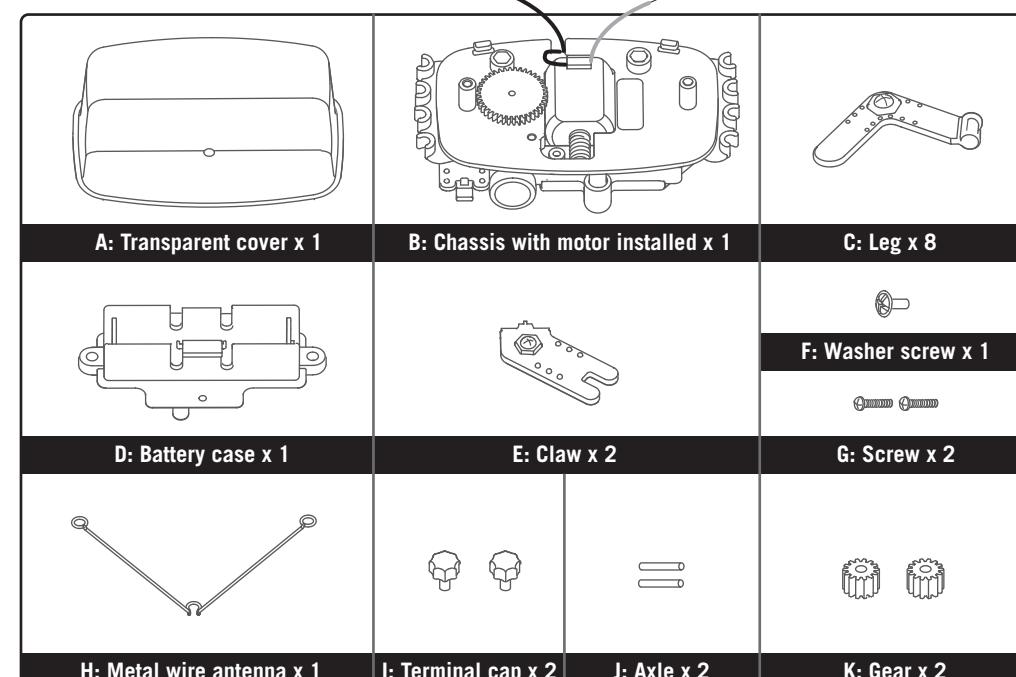
## A. SAFETY MESSAGES

1. Adult supervision and assistance are required at all times.
2. This kit is intended for children 8 years or older.
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.

## B. USE OF THE BATTERY

1. Requires one 1.5V AA battery (not included).
2. For 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 an 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



Also required, but not included: 1 x 1.5V AA battery, small crosshead screwdriver.

## D. ASSEMBLY

1. Put the chassis with motor installed on your work surface, the same way round as in the diagram. Push one of the axles (Part J) into the hole next to the large gear wheel in the chassis, and slide one of the gears (Part K) onto it, so that the gear interlocks with the large gear wheel.

2. Push the other axle into the hole in the motor recess, next to the first gear. Slide another gear onto it, so that this gear interlocks with the first gear, and the worm gear of the motor.

3. Slot the battery case into place on top of the chassis, making sure that the axles slot into the two holes on the underside of the case. Secure it with two screws (Part G).

4. Put the red wire from the battery case and the red wire from the motor into one of the terminals, and push in a terminal cap (Part I) to trap and connect the wires. Put the black wire from the battery case and the black wire from the switch into the other terminal, and push in a terminal cap to trap and connect the wires.

5. Make sure the switch is off. Slot a 1.5-volt, AA battery into the battery case, with the negative terminal of the battery (the flat end) touching the spring in the battery case.

6. Put the transparent cover over the battery case. Fit the cover into the two slots at the rear of the chassis.

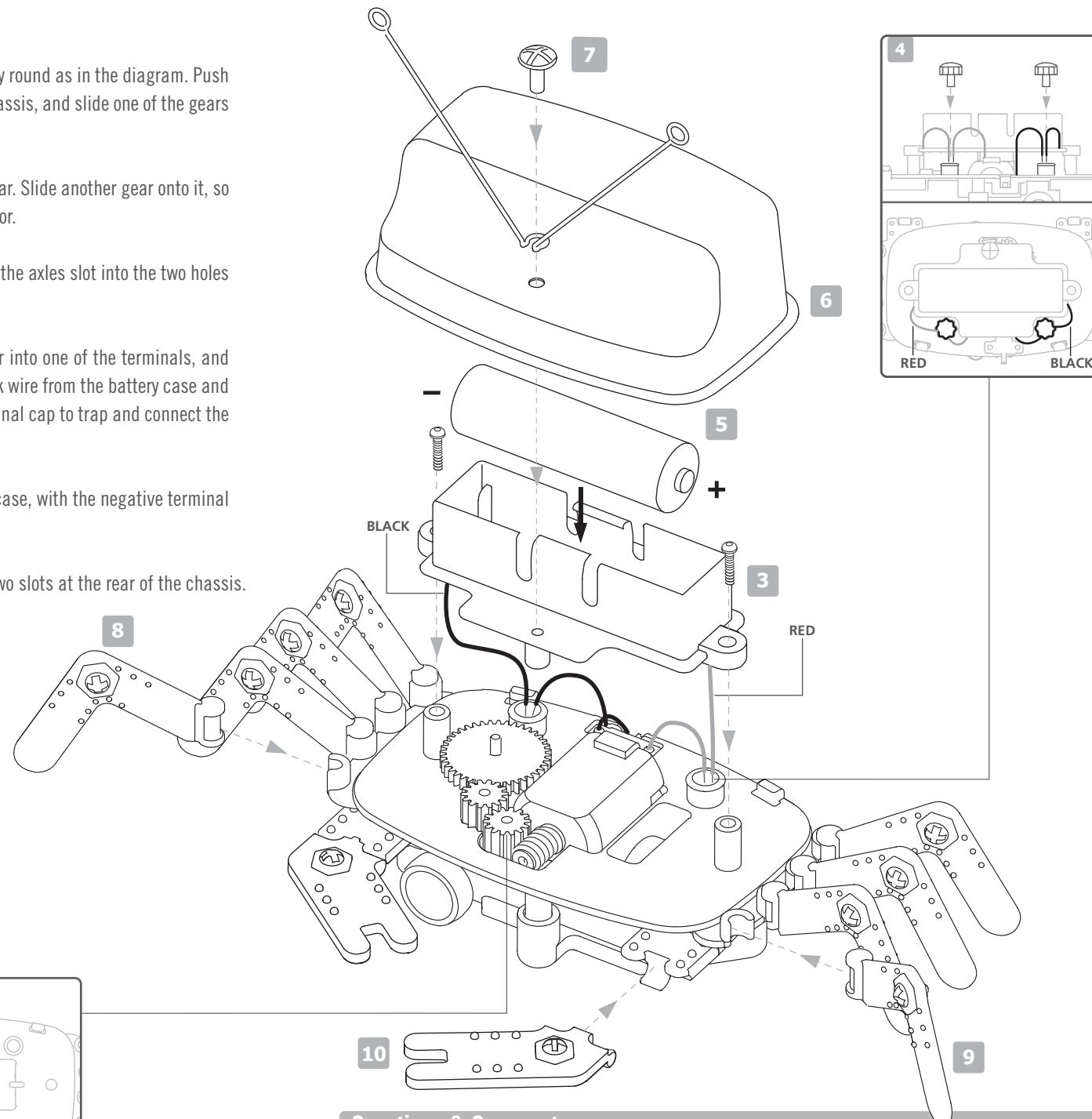
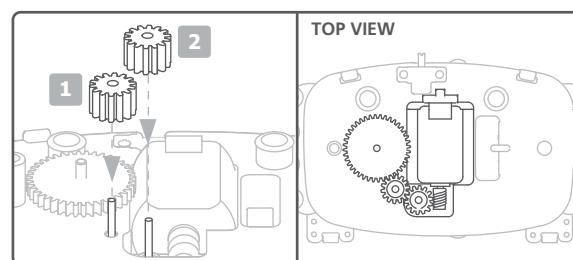
7. Hold the metal wire antenna (Part H) in place and attach it and the transparent cover to the battery case with a washer screw (Part F). You can gently bend the wire to adjust the angle of the antenna.

8. Clip four legs into one end of the chassis.

9. Clip four legs into the other end of the chassis.

10. Clip the two claws onto the chassis.

Congratulations! Your Table Top Robot is ready to go!



### Questions & 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, Web site: WWW.4M-IND.COM