4M 3653 KidzRobotix Tin Can Robot Operating Installation

Contents

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To Parents: Read all instructions before providing guidance to your children.

SAFETY WARNINGS

1. Please read carefully through all these instructions.
2. Adult supervision and assistance are required at all times.
3. This kit is intended for children over 8 years of age.
4. This kit and the finished product contain small parts which may cause choking if misused. Keep away from children under 3 years of age.
5. Metal parts may have sharp edges. Adult assistance is required when assembling these parts.
6. To prevent possible short circuits, never touch the contacts inside the battery case with any metal.

USE OF THE BATTERY

1. This kit requires a one ‘AA 1.5-volt 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 robot when not in use.
5. Replace an exhausted battery straight away to avoid possible damage to the robot.
6. Do not attempt to recharge non-rechargeable batteries.

7. Rechargeable batteries must be removed from the kit before recharging.
8. Rechargeable batteries should be recharged under adult supervision.
9. Make sure that the supply terminals are not to be short-circuited.

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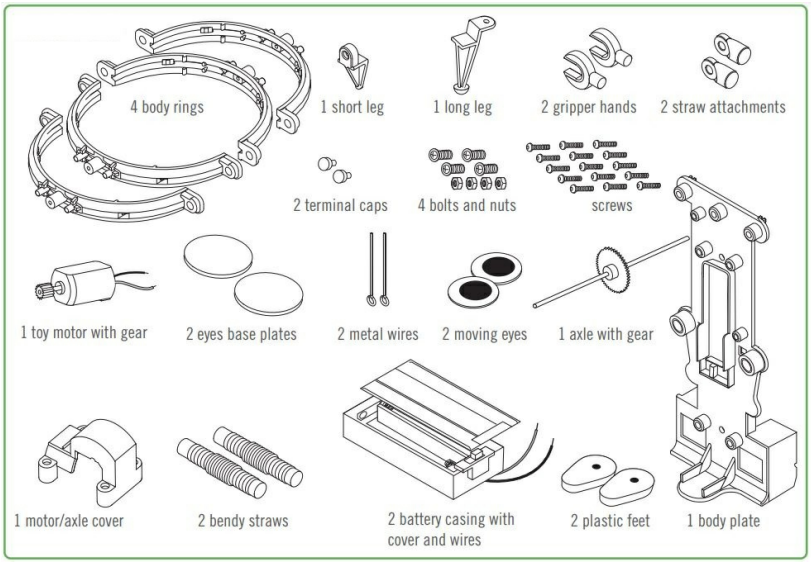


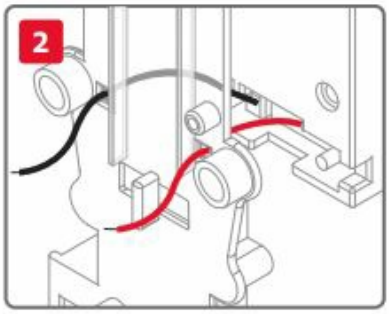
Remarks: Also required but not included in this kit: 1 'AA' 1.5-volt battery, small crosshead screwdriver, and a used, cleaned tin can.

ASSEMBLY

Follow these steps to assemble your Robot. Colored numbers refer to the diagrams.

BATTERY

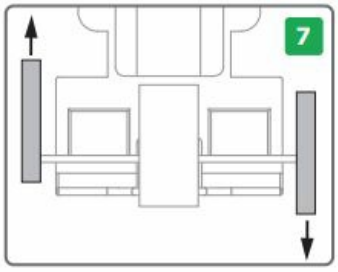
1. Look at the body plate. On one side are two metal eyelets. Slot two body rings to this side. Their pegs go into the holes which are about two centimeters from either end of the plate. Fix each ring with a screw inserted from the other side of the body plate.
2. Turn the body plate over so that it stands on the rings, with the motor and gear housings nearest you. The battery case fits on the flat area of the body plate furthest from you, with the switch nearest the gear housing. First, gently thread the wires through the two smaller square holes in the body plate. The black wire goes through the right-hand hole, and the red wire through the left-hand hole.



3. Lower the battery case onto the body plate so that the pegs in the battery case slot into the holes in the body plate. Be careful not to trap the wires between the battery case and the body plate. Fix the battery case in place with two screws through its base. Do not put a battery in the case yet.

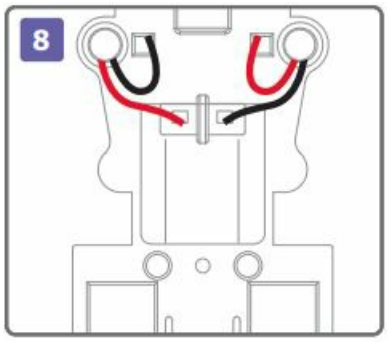
MOTOR AND AXLE

4. Gently thread the wires from the motor through the square holes in the body casing. Thread the red wire through the right-hand hole and the black wire through the left-hand hole. Slot the motor into the motor housing.
5. Put the axle into the axle housing so that it lies in the cut-outs at the top of the housing. The gear wheel on the axle should interlock with the worm gear on the motor shaft. Lubricate the gears with grease. (Cooking oil from the kitchen will serve the purpose).
6. Drop the motor/axle cover over the motor and axle and push it down onto the four pegs on the body plate. Fix the cover in place with four screws.
7. Carefully but firmly push a cam onto one end of the axle. Push the other cam onto the other end of the axle so that the hump on its cam points in the opposite direction to the first cam.



CONNECT THE WIRES

8. You need to connect the wires from the battery to the wires from the motor. Push the red wire from the motor and the black wire from the battery case into one of the metal eyelets. Press a terminal cap into the eyelet to keep the wires in place. Put the black wire from the motor and the red wire from the battery case into the other eyelet. Add the other terminal cap.

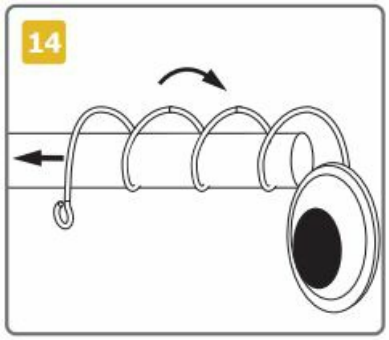


COMPLETE BODY RINGS

9. Take a body ring and position it over the body ring that is attached at the motor case end of the body plate. Align the holes in the two rings and insert two bolts into the holes. Put nuts on the bolts and tighten them.
10. Repeat step 9 for the other body ring, but this time put a straw attachment on the bolt before inserting it into the rings.

LEGS, ARMS, AND EYES

11. Push the long leg onto the peg under the battery case, and secure it with a screw.
12. Push the short leg onto the peg on the outside of the body ring nearest the axle. Secure with a screw.
13. Push a bendy straw onto each straw attachment on the body ring. Push a gripper hand onto the other end of each straw.
14. Place a ring on one end of a wire into a peg on one eye base plate. Attach the wire to the eye base plate with a screw. Repeat for the other eye. Peel off the cover sheet at the back of the moving eyes and attach them to the eye plates. Using screws, attach the other ends of the wires to the pegs on the end of the body plate near the battery case. Bend the wire to achieve the shape you like. If you would like to make spirals, wind the wires around a pen as illustrated, and then slide the pen out.



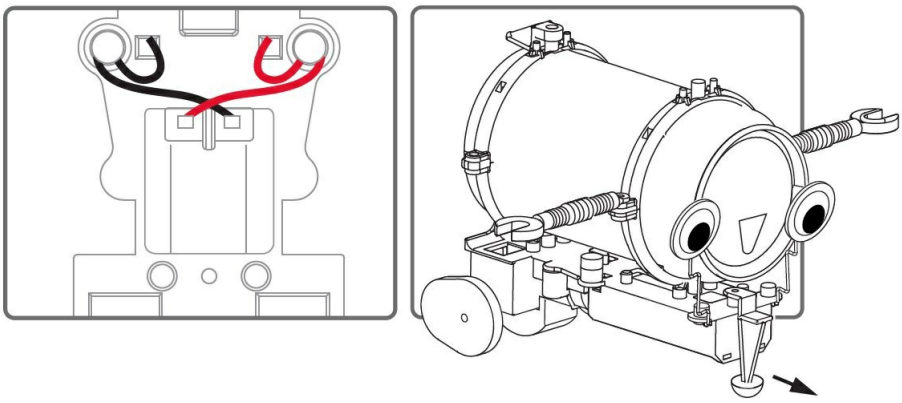
FINAL ASSEMBLY

15. Slide an empty, clean tin can into the body rings. You may need to loosen the nuts on the rings to get the can in. Tighten them again afterward.
16. Insert a ‘AA’ 1.5-volt battery into the battery case. The negative terminal of the battery (the flat end) goes against the spring in the battery case. If the motor runs, flick the switch to turn it off. Attach the bbattery case cover with a screw.

Congratulations!
Your Tin Can Robot is now complete. Stand your Tin Can Robot on the end and switch on the motor. The Robot will walk along, wobbling from side to side, making a buzzing noise. You can create different walking movements by adjusting the angles of the cams to each other

ROBOTIC MONSTER

You can make the robot walk horizontally, too. Remove the tin can. Swap the wires so that the two red wires are in one metal eyelet, and the two black wires are in the other. Remember to replace the terminal caps. (If you do not swap the wires over, the Robot will walk backward!) Place the robot down horizontally as shown. It is now a robotic monster!



TROUBLESHOOTING

If the motor does not run

- Check that the wires are connected properly at the terminals.
- Check that the battery is inserted the correct way around (see step 16).
- Check that you are using a fresh battery.
- Check that the gear wheel and worm gear are interlocked.
- Check that the gears are lubricated. You may add lubrication to the gears through the small hole at the back.

FUN FACTS

How does it work?

The battery provides electricity to the motor, which turns the worm gear at high speed. The worm gear acts as a reduction gear. It turns the axle gear at low speed. The pieces of plastic on the ends of the axle are called cams. A cam is simply a circle with a hump. As the cam turns, the hump moves around it. When the motor is switched on, the cams make each side of the Robot lift in turn, causing the Robot to make walking movements.

Using cams

The Robot's cams turn the rotational movement of the axle into up-and-down movement. Many machines contain cams that do the same job. For example, in a car engine, cams open and close the valves that let fuel into the cylinders and exhaust gases out.

Tin can sounds

The movements of the motor, gears, and cams create vibrations that move through the Robot. More vibrations come from the leg as it rubs along the ground. The vibrations are passed to the soda can, and the air inside the can. They bounce around, making the buzzing sound louder. This bouncing is called resonance. You can hear it if you put your ear near the can. If you take the can out of its rings, you'll hear that the Robot's sound gets much quieter.

Musical instruments

Most musical instruments make use of resonance to make their sounds. For example, the sound box on a guitar makes the music louder because air resonates inside it. And air resonates inside the tube of a trumpet when it's blown. See the effect for yourself by blowing gently across the top of an empty plastic bottle until the air inside resonates.

The sea in a shell

If you put a large shell to your ear, you can hear the sea! It's not really the sea. The whooshing sound is a sound from the environment around you resonating in the shell.

Robot movement

Engineers have developed several ways for robots to get around. Most roving robots have wheels or tracks. But some have two legs, and walk like humans. Walking is a very difficult problem for robot engineers to overcome, and reliable walking robots are still being developed. However, some robots have been made to jump and even perform somersaults.

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** 41-03270/1

Frequently Asked Questions

What is a Tin Can Robot?

A Tin Can Robot is a robot made from recycled materials, typically using an empty tin can as the body.

How do you make a Tin Can Robot?

To make a Tin Can Robot, you will need an empty tin can, a motor, batteries, wires, and various other materials. There are many tutorials and guides available online that provide step-by-step instructions on how to make one.

What is the purpose of a Tin Can Robot?

The purpose of a Tin Can Robot is to provide a fun and educational way for people to learn about robotics and recycling.

What age range is Tin Can Robot suitable for?

Tin Can Robots are suitable for a wide range of ages, from children to adults.

What skills can be developed through making a Tin Can Robot?

Making a Tin Can Robot can help develop skills in problem-solving, creativity, and basic electronics.

How much does it cost to make a Tin Can Robot?

The cost of making a Tin Can Robot can vary depending on the materials used and where they are sourced from. It can range from a few dollars to over $20.

How long does it take to make a Tin Can Robot?

The time it takes to make a Tin Can Robot can vary depending on the complexity of the design and the experience of the maker. It can take anywhere from a few hours to several days.

What are some common problems people encounter when making a Tin Can Robot?

Some common problems people encounter when making a Tin Can Robot include difficulty in wiring the motor, trouble getting the robot to move, and problems with balance and stability.

How can you customize your Tin Can Robot?

You can customize your Tin Can Robot by adding decorations, painting it, or modifying the design to suit your preferences.

Can Tin Can Robots be controlled remotely?

Yes, Tin Can Robots can be controlled remotely by using a wireless remote control or through Bluetooth connectivity.

What are some fun activities you can do with a Tin Can Robot?

Some fun activities you can do with a Tin Can Robot include racing them, having them perform tasks, and competing with others to see who can make the best robot.

Can Tin Can Robots be used for educational purposes?

Yes, Tin Can Robots can be used for educational purposes, as they can teach basic concepts in robotics, electronics, and recycling.

What are some advanced features that can be added to a Tin Can Robot?

Some advanced features that can be added to a Tin Can Robot include sensors, cameras, and programmable microcontrollers.

What are some safety precautions to take when making a Tin Can Robot?

Some safety precautions to take when making a Tin Can Robot include using appropriate safety gear, such as

gloves and safety glasses, and being careful when handling sharp objects and electrical components.

What is the most important thing to keep in mind when making a Tin Can Robot?

The most important thing to keep in mind when making a Tin Can Robot is to have fun and be creative. Don’t be afraid to experiment and try new things.

Video Guide

Download the PDF Link: https://manuals.plus/wp-content/uploads/2023/05/Kid-Z-Robot-Tin-Can-Robot-Operating-Installation.mp4