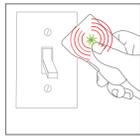
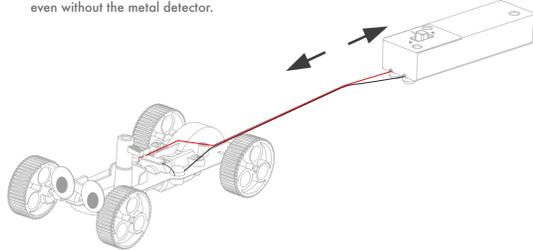


## HAND HELD METAL DETECTOR

You can detach the metal detector from the Robot unit, and use it as a mini hand held metal detector. Simple press and hold the "ON" button at the side, and adjust the sensitivity as described above. You can use it to detect hidden metal around your house, such as metal screws behind wall switches. It's a useful gadget, which you can even attach to a key ring.



When the metal detector is detached from the Robot chassis, you can attach the moving eyes to the lower base of the chassis. Then, you have a remote control Robot even without the metal detector.



## F. TROUBLESHOOTING

If you do not hear beeping when the detector is over a metal object, the object may be too small or not close enough to the detector. In this case, you can try readjusting the sensor.

If you are trying to detect a very small metal object, try placing the detector just above it. Turn the sensitivity knob down, until you hear the beep. Now very gently turn the knob up just until the beep stops. Repeat your search for the item. If your detector does not beep, turn the knob a fraction, and try again. Repeat this "fine tuning" until you can detect the tiny metal item.

If the Robot does not move when you press the switch on the remote control, the remote-control batteries may be run down. Try replacing them. If this doesn't work, make sure the bare wire on the end of each wire is in contact with the metal parts of the terminals. You can also try lubricating the gears and all axles with cooking oil, to reduce any friction that may be slowing down or stopping the Robot.

If the detector does not beep when you turn the sensitivity fully down, the detector's batteries may be flat – try replacing them. Or check if the plastic stripe has been removed from the battery case as in step D 12.

If the Robot moves in the opposite direction to that indicated on the control, check if the wires are correctly connected.

Since the lubricating oil inside the motor may solidify after being stored for a long time, it is recommended that you remove the motor housing cover and rotate the worm gears several turns by hand before using the robot after storing it for a long time. This ensures that the lubricating oil can be spread evenly and the motor will run smoothly.

## G. HOW DOES IT WORK?

A metal detector contains a wire coil. An alternating electric current (a current that changes direction many times a second) passes through the coil. This turns the coil into an electromagnet, which creates a fluctuating magnetic field around it. If there is a metal object in the magnetic field, the field creates an electric current flow in the object, resulting in the object having its own magnetic field. The metal detector detects this new magnetic field and beeps.

## H. FUN FACTS

Metal detecting is a popular hobby. Metal-detecting enthusiasts use their metal detectors to look for metal objects hidden in the ground. They often search old battlefields and other historical sites, hoping to find old coins, jewellery and other treasure.

In 2009, metal-detecting enthusiast Terry Herbert discovered a hoard of treasure containing more than 1,500 gold coins and items of jewellery in Staffordshire, UK. The hoard was buried more than a thousand years ago.

Military bomb-disposal experts use metal detectors to search for land mines hidden below roads and in mine fields.

At airports, metal detectors are used to search passengers for metal objects such as knives and guns.

In food factories, metal detectors check that no metal items from factory machinery have fallen into the food by accident.

Electricians use metal detectors to search for electrical cables hidden in walls.

In 1881, one of the first metal detectors was used to try to find a bullet inside US President James Garfield. It didn't work, as Garfield was lying on a bed with many metal springs!

## IMPORTANT INFORMATION FOR METAL DETECTOR

This device may temporarily cease functioning in electrostatic discharge environments, but resumes its normal operation by reinstalling the batteries.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## 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) 25911546, Tel: (852) 28936241, Web site: WWW.4M-IND.COM

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# METAL DETECTOR ROBOT



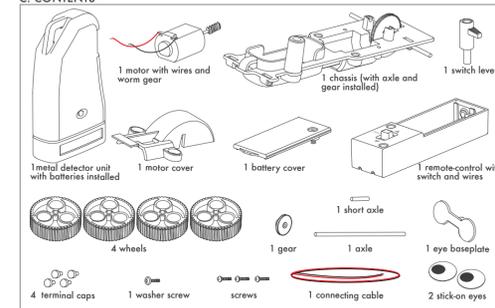
## A. SAFETY MESSAGES

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. To prevent possible short circuits, never touch the contacts inside the battery cases with any metal.

## B. USE OF THE BATTERIES

1. The Robot chassis requires 1 x AA, 1.5 volt battery (not included) and the metal detector unit requires 2 x 1.5 volt AG13/LR44 alkaline button cell batteries (already installed).
2. For best results, always use new batteries.
3. Make sure you insert the batteries with the correct polarities.
4. Remove the batteries if you are not using the Metal Detector Robot away for more than a few days.
5. Replace empty batteries straight away, to avoid possible damage.
6. Rechargeable batteries must be removed from the battery case before recharging.
7. Rechargeable batteries should be recharged under adult supervision.
8. Do not attempt to recharge non-rechargeable batteries.
9. Do not mix different types of batteries or new and used batteries are not to be mixed.
10. Remove empty batteries from the toy.
11. Do not short-circuit the supply terminals.
12. Do not connect the toy to more than the recommended number of power supplies.

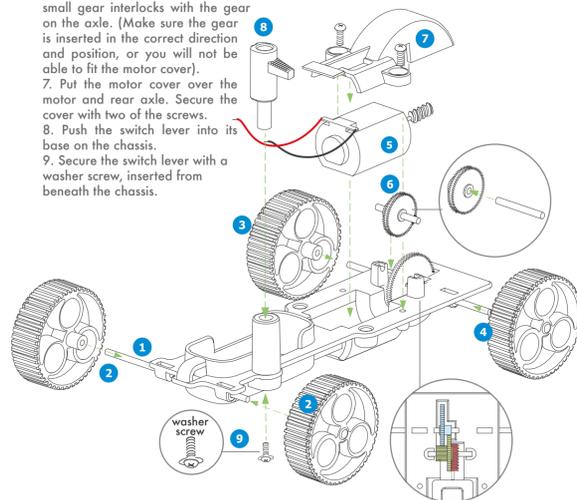
## C. CONTENTS



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

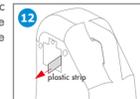
## D. ASSEMBLING THE ROBOT CHASSIS

1. Put the chassis on a work surface, with recesses for motor and metal detector facing upwards. Slide the axle into the slots under the front end of the chassis.
2. Push a wheel onto each end of the axle.
3. Push a wheel onto the end of the axle attached to the gear that is already installed in the chassis.
4. Push a wheel onto the other end of this axle.
5. Place the motor in its recess in the chassis. Make sure the connections for the wires are facing upwards.
6. Insert the short axle into the gear as in the diagram. Drop this axle into its supports, so that the large gear wheel interlocks with the worm gear on the motor, and the small gear interlocks with the gear on the axle. (Make sure the gear is inserted in the correct direction and position, or you will not be able to fit the motor cover).
7. Put the motor cover over the motor and rear axle. Secure the cover with two of the screws.
8. Push the switch lever into its base on the chassis.
9. Secure the switch lever with a washer screw, inserted from beneath the chassis.



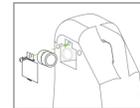
## INSTALLING THE METAL DETECTOR ON THE ROBOT CHASSIS

10. Push the metal detector into its recess in the chassis, with the sensitivity knob pointing towards the motor.
11. Stick the two eyes on the flat side of the eye base plate. Press the eye base plate into place on the chain loop of the metal detector.
12. The metal detector comes with a small strip of plastic inserted into the battery case. This is to protect the life of the batteries. Once you are ready to use the detector, remove this plastic strip.



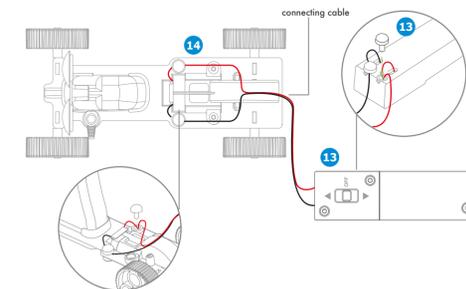
## BATTERY REPLACEMENT

The metal detector unit requires the 2 x 1.5 volt button cell alkaline batteries provided. (Please refer to section B for general instructions on battery use.) Remove the screw from the battery case cover. Take the cover off, replace the batteries, making sure that the plus and minus match those indicated in the battery compartment, then replace the cover and secure it with the screw.



## CONNECTING THE ROBOT TO THE REMOTE CONTROL UNIT

13. Get the connecting cable. Push the red wire on the remote control into its terminal hole in the case. Push a terminal cap into the hole to keep the wires in place. Repeat with the black wire from the remote-control case and the black wire on the cable.
14. Push the red wire from the motor into its terminal hole in the chassis. Push the spare end of the red wire on the connecting cable into the same hole. Push a terminal cap into the hole, to keep the wires in place. Repeat with the black wire from the motor and the spare black wire on the cable.

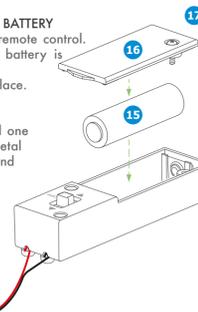


## INSTALLING THE REMOTE CONTROL UNIT BATTERY

15. Insert a 1.5 volt 'AA' battery into the remote control. Make sure the flat (negative) end of the battery is against the spring.
16. Put the remote control battery cover in place.
17. Secure the battery cover with the screw.

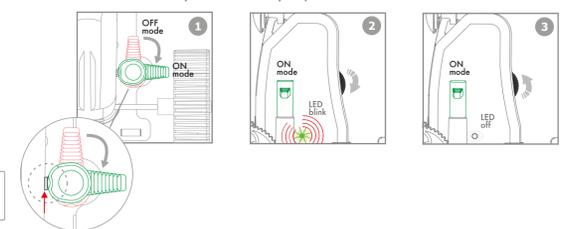
Now push the switch on the remote control one way and then the other to check that the Metal Detector Robot moves backwards and forwards.

Congratulations! Your Metal Detector Robot is ready to go.



## E. OPERATION

1. Begin by adjusting the sensor in the metal detector. Make sure the unit is away from the area being scanned or any metal object. Turn the switch lever on the chassis until it presses the "ON" button on the side of the metal detector. Your metal detector is now turned on.
2. Turn the sensitivity knob all the way down. The green LED will blink and a buzzer will sound.
3. Then, slowly turn the sensitivity knob up, until the LED light and buzzer stop. The detector's sensitivity is now correctly adjusted.



4. Now test your metal detector. Move the Robot so that the base of the metal detector is near a metallic object. You should find the green LED blinks and the buzzer sounds, indicating metal underneath.

Now you can start searching for treasure! Try hiding some coins or large paper clips under a piece of card. Drive the Robot over the card. When the detector beeps, you've found the treasure! When you have finished, remember to switch off the metal detector unit by turning the switch lever back to its original position.

