Many different materials are used to make brush bristles, including synthetic fibres, twigs, and horse and their base station to recharge their batteries. compact loose rock and soil to make the ground firm. powders by making them jump up and down at high frequency.

Some vibrobots are solar powered, so can keep jiggling along as long as the Sun shines. A micro vibrobot is a tiny vibrobot made from a vibrating alarm from an old mobile phone and the head of a

Brush Robot is an example of a ‘vibrobot’ — a robot that moves along because it vibrates. The large brush lands again at high frequency. As the large brush lands after each vibration, its bristles bend, pushing the whole Robot a little the same way as the brush is angled. When the brush jumps again the bristles straighten. This process is repeated again and again, making Brush Robot move along.

**Fun Facts**
- Brush Robot is an example of a ‘vibrobot’ — a robot that moves along because it vibrates.
- A micro vibrobot is a tiny vibrobot made from a vibrating alarm from an old mobile phone and the head of a toothbrush.
- Some vibrobots are solar powered, so can keep jiggling along as long as the Sun shines.

**Troubleshooting**
- Check that all four wires are touching the metal terminals.
- Check that you are using fresh batteries.
- Check that all the wires are touching the metal terminals. If the small brush becomes loose, tighten up the bolts in its bracket.

**Contents**
1. Battery case with case cover
2. Motor cover
3. Terminal caps
4. Screws
5. 1 large brush
6. 1 small brush
7. 2 eyebacks
8. 2 wires for eyes
9. 1 motor
10. 1 terminal cap

**Assembly**
1. Place the baseplate. The upper side in the side in the motor housing on it. Push the battery case into the pins on this side of the baseplate. The wires from the case must not through the lid under the switch towards the motor housing. Secure the cover with two screws.
2. Drop the motor into the housing on the baseplate, with the wire connections apparent and closed to the battery case. Gently bend the wires over the back of the housing.
3. Now you need to connect the wires from the battery case to the wires from the motor. There are two terminals holes in the baseplate, one each side of the motor case. Push the two ends of the red wire from the battery case and the red wire from the motor into one hole. Push a terminal cap into the hole to keep and connect the wires. Repeat with the black wires in the other holes.
4. Push the motor cover over the motor. It should fit over the pins on the baseplate. Make sure that the motor wires fit through the two holes in the bottom of the cover without being trapped. Don’t put in the motor cover screws yet.

**Operation**
Put your Brush Robot on a smooth surface such as a table top or table on a smooth floor. Switch the switch on the battery case to make the motor run, and watch Brush Robot go!

Move the small brush up and down to make Brush Robot move backwards or forwards. The direction of movement depends on which way the large brush is tilted. You can tilt the large brush by moving the small brush up or down. The RoboBot’s speed depends on the angle of the tilt (more tilt means higher speed).

You can make the Brush Robot slower or faster by turning the small brush, then use the switch to turn it off. Attach the battery case cover with a screw.

Congratulations! Your Brush Robot is ready to go!

**Safety Messages**
1. Requires two 1.5V AAA batteries (not included).
2. For best results, always use fresh batteries.
3. Make sure that you insert the batteries with the correct polarities.
4. Remove the batteries from the kit when not in use.
5. Replace recharged batteries straight away to avoid possible damage to the kit.
6. Recyclable batteries must be removed from the kit before exchanging.
7. Rechargeable batteries should be recharged under adult supervision.
8. Do not attempt to recharge non-rechargeable batteries.
9. Do not mix old and new batteries.

Also required but not included: 2 x 1.5V AAA batteries, small combined screwdriver.

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 if 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, Telephone: +44 (0) 1274 453 300.
The battery provides electricity to the motor, which turns both sides at high speed. The centre of gravity of the robot is off to one side——it is out of line with the motor’s axis. When the robot spins, it makes the whole robot skid from side to side as it moves. This vibration makes the brushes jump off the surface and down the floor. Switch the switch on the battery case to make the motor run, and watch the robot go!

If the small brush is loose, tighten up the bolts on its bracket.

If you turn the small brush over, so that the bristles are pointing down, the brush will tend to take a more random path. If you turn the large brush to the right-hand side, the Robot should run in a straight line.

Brush Robot go!

D. ASSEMBLY

1. Examine the baseplate. The upper side is the side with the motor housing on it. Push the battery case onto the pins on this side of the baseplate. The wires from the case must not touch the slot under the switch towards the motor housing. Secure the cover with two screws.

2. Drop the motor into the housing on the baseplate with the wire connections uppermost and closest to the battery case. The negative terminal (the flat end) of each battery goes against one of the springs in the battery case. If the motor does not work, check the connections to the battery case to make sure that the motor is switched on. Connect the wires from the battery case and the red wire from the motor into one hole. Push a terminal cap into the hole to trap and hold the wires in the hole.

3. Find one of the wires and a screw. Push the screw through the ring at one end of the wire. Now push the screw into one of the screw holes in the motor case. There is a small slot next to the hole for the screw. If the screw is tight, the Motor should run. The negative terminal (the flat end) of the battery case must sit in the hole so that the spring makes contact with the flat end of the battery. In the motor case the batteries should be connected in parallel.

4. Push the motor cover over the motor. It should fit over the pins on the bracket. Make sure that the motor wires fit through the two holes in the bottom of the cover without being trapped. Don’t pull in the motor cover screws yet.

5. Turn the baseplate the right way up again. Attach the small brush bracket to the baseplate through the hole alongside the battery case, using a nut and bolt. The bracket will only fit one way round. Screw the nut until the joint is tight but can still turn from side to side.

6. Slide the large brush into the brackets. Tighten the screws in the brush brackets installed in step 7.

7. Do not mix old and new batteries.

8. Rechargeable batteries must be removed from the kit before recharging.

9. Do not mix old and new batteries.

10. Insert two 1.5 V “AAA” batteries into the battery case. The negative terminal (the flat end) of each battery goes against one of the springs in the battery case. If the motor does not run, check the switch to see if it is switched on. Attach the battery case cover with a screw.

Congratulations! Your Brush Robot is ready to go!

D. TROUBLESHOOTING

1. If the motor does not run.

• Check that the batterys are inserted in the correct way round in the battery case.

• Check that the four wires are touching the metal terminals.

2. If the small brush is loose, tighten up the bolts on its bracket.

3. If you turn the small brush over, so that the bristles are pointing down, the brush will tend to take a more random path. If you turn the large brush to the right-hand side, the Robot should run in a straight line.

D. USE OF THE BATTERY

1. Recharge the battery daily. Help recycle one of them and turn it into a useful robot made entirely of recycled batteries.

2. The kit is intended for children over 8.

3. Keep the batteries away from children and pets.

4. Do not expose to water or other liquids.

5. Do not mix old and new batteries.

6. Do not allow any sharp metal, such as a knife, to touch the battery terminals.

7. Do not mix different types of batteries.

8. Do not open the battery case.

9. Do not expose to direct sunlight, fire, or other heat sources.

10. Do not place the battery case in a refrigerator or freezer.

11. Do not dispose of the battery case in a household waste bin.

12. Do not mix different types of batteries.

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