

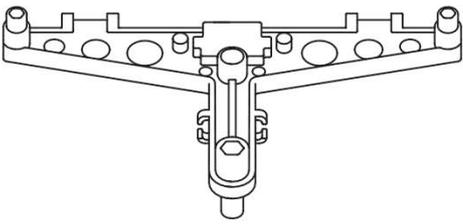
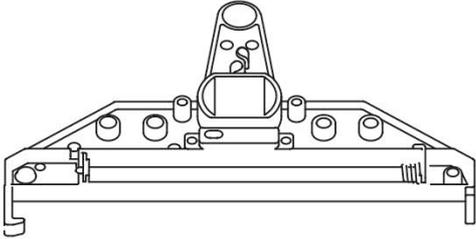
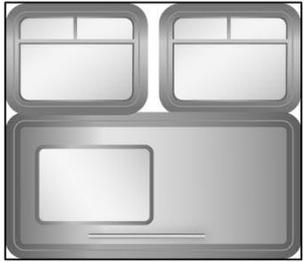
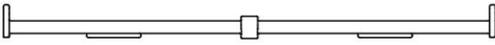
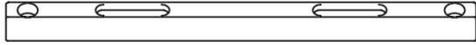
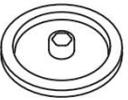
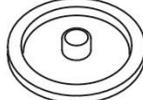
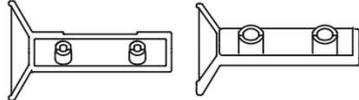
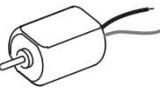
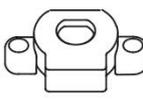
TIN CAN CABLE CAR

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.

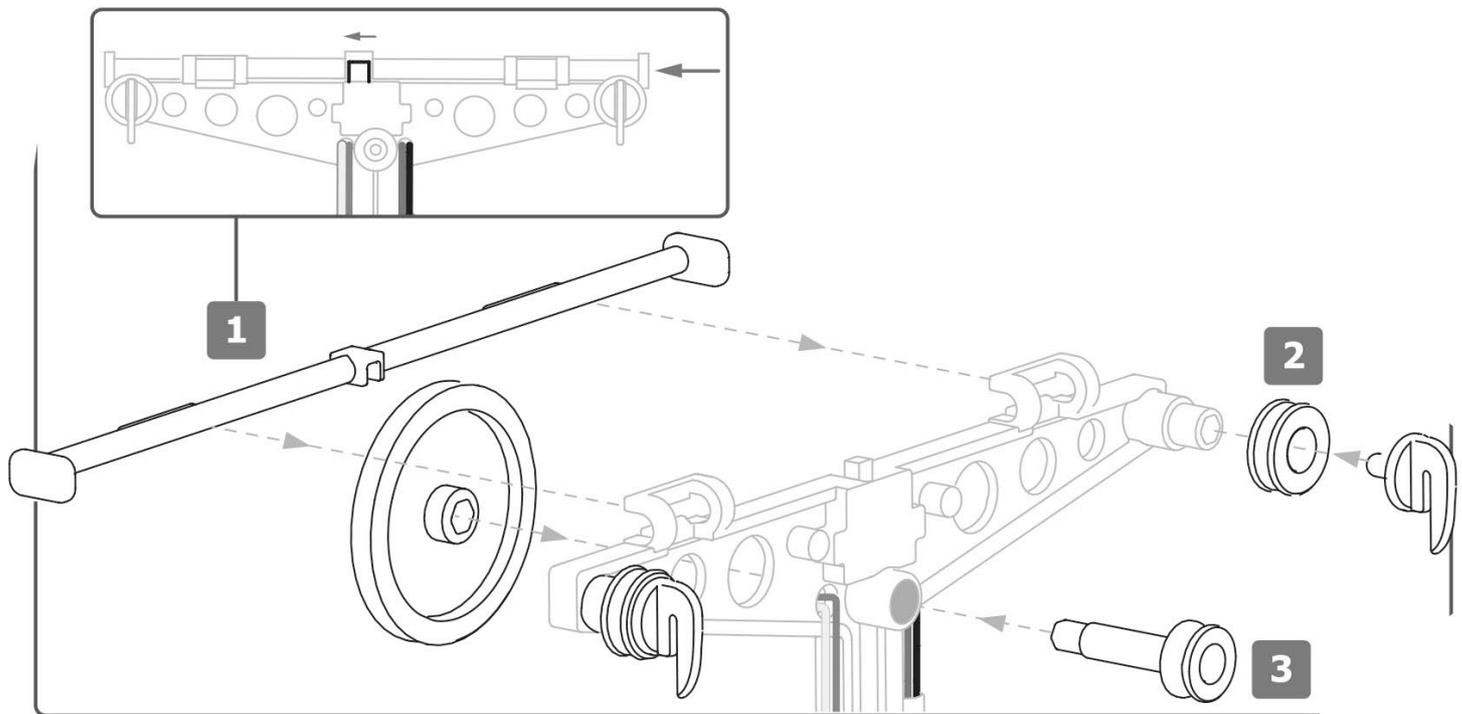
B. USE OF THE BATTERY

1. Requires two 1.5V AAA batteries (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.
10. Do not mix old and new batteries.
11. Do not mix alkaline, standard (carbon-zinc), or rechargeable (Ni-Cd) batteries.

								
A: Wheel support x 1		B: Motor housing x1		C: Can sticker x 1				
								
D: Reversing shaft x 1		E: Battery cover x 1		F: String				
								
G: Medium pulley wheel x1	H: Large pulley wheel x1	I: Cable stop halves set x 2 (4 pcs)		J: Motor x 1	K: Motor cover x 1	L: Elastic band x 2		
								
M: Large wheel lock x 1	N: Medium wheel spindle x1	O: Swivel joint lock x1	P: Motor pulley wheel x 1	Q: Side wheel lock x 2	R: Terminal cap x 4	S: Can spindle x 1	T: Side wheel x 2	U: Screw x 4

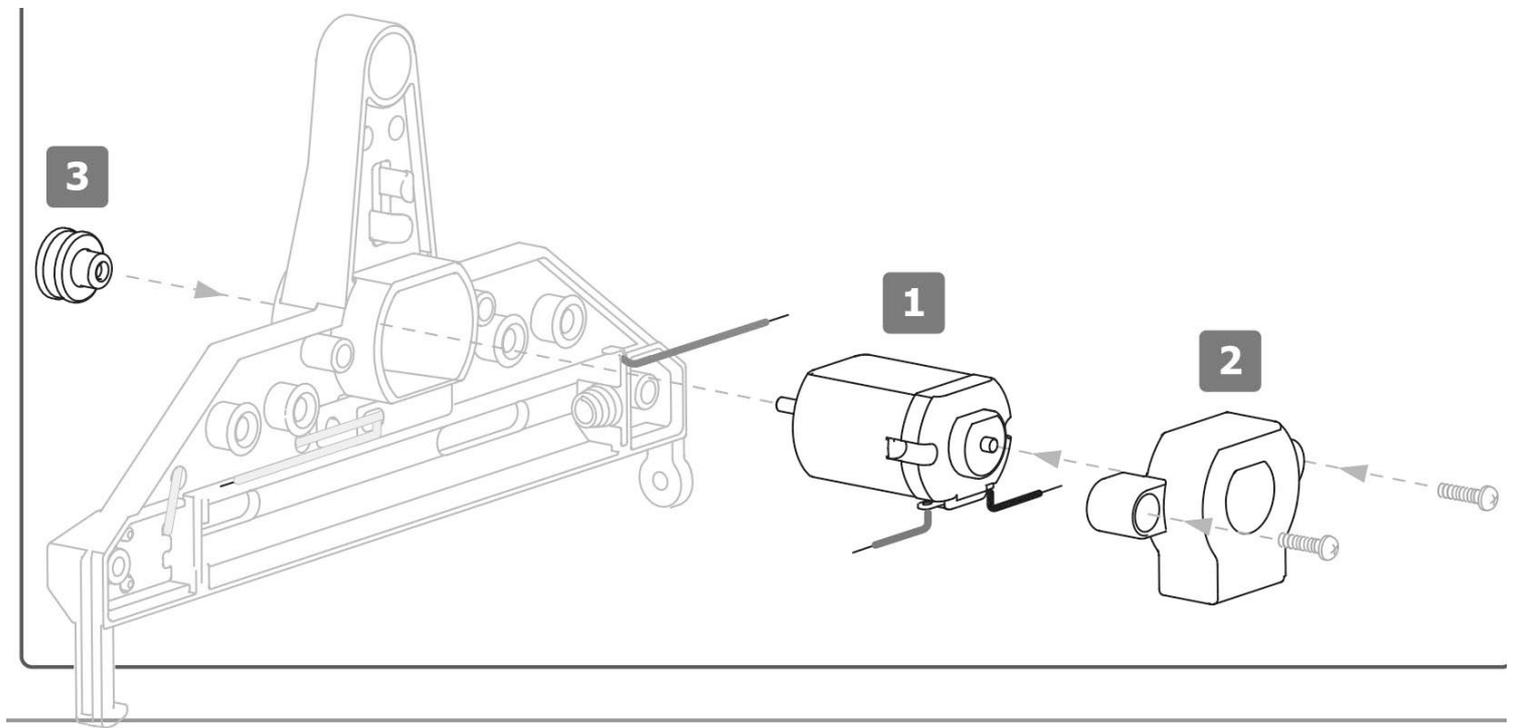
C. CONTENTS

Also requires two "AAA", 1.5v batteries (not included). Screw driver for cross head screws required from home, please ask an adult for assistance. You need to recycle a used soda can to complete the project.



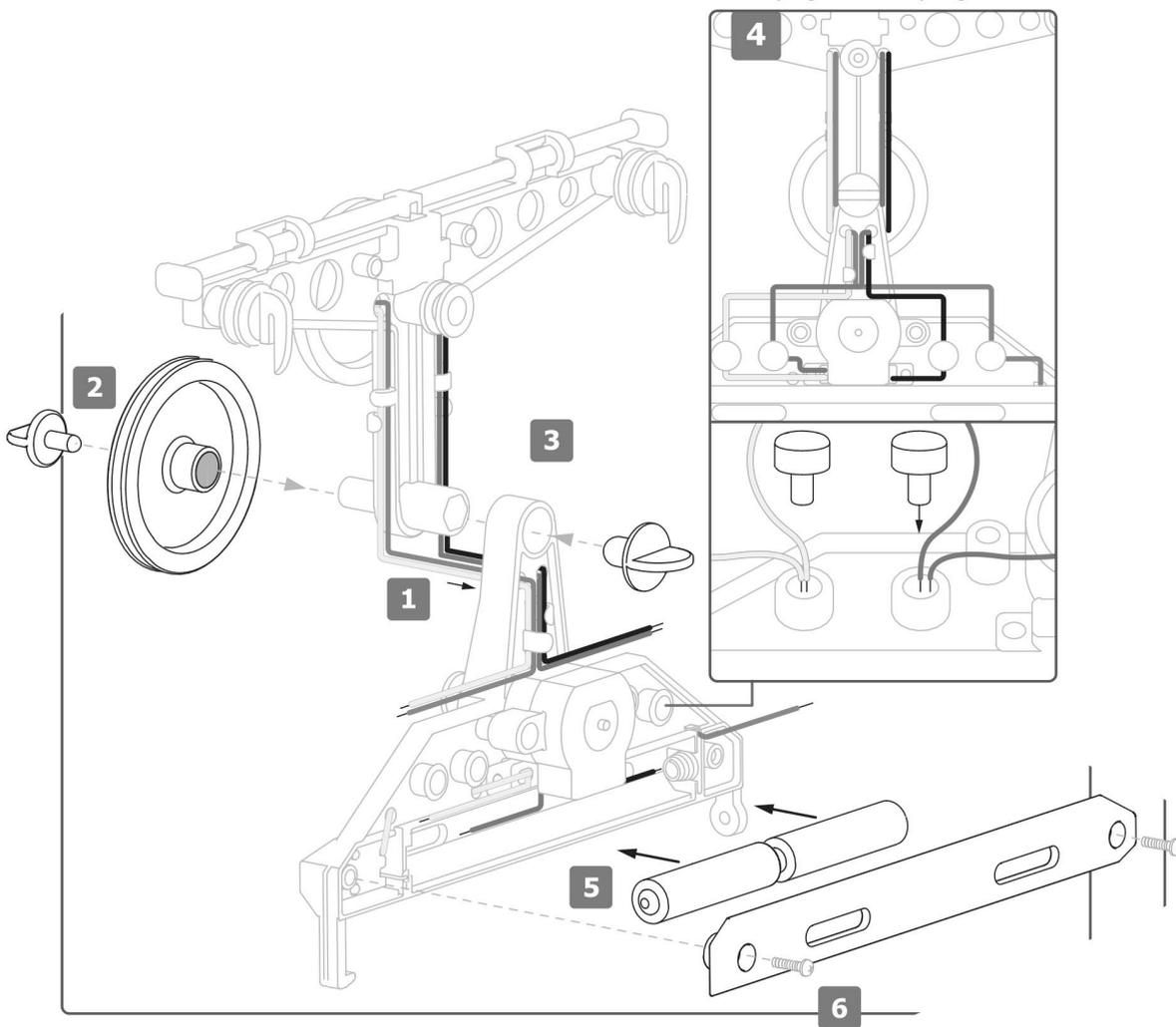
D. ASSEMBLY OF THE WHEEL SUPPORT

1. Clip the reversing shaft (Part D) into position along the top of the wheel support (Part A), making sure that the centre cut-out in the shaft slots over the reversing switch. **IMPORTANT:** Push the reversing shaft so that the reversing switch is slid to one end. Ensure that it remains in this position before the Cable Car is switched ON and after it is switched OFF. If it moves to the middle, this will affect the function of the Cable Car and make it stop. This will be explained later in Section H.
2. Push the two side wheels (Part T) onto the axles at the ends of the wheel support. Push on the two side wheel locks (Part Q) to hold the wheels in place.
3. Push the medium wheel spindle (Part N) through the hole in the centre of the wheel support. Make sure you push it through from the correct side, as shown. Push the medium pulley wheel (Part G) onto the end of the spindle. (Lubrication has been applied to the joining hole of the wheel support, marked in purple on the diagram.)



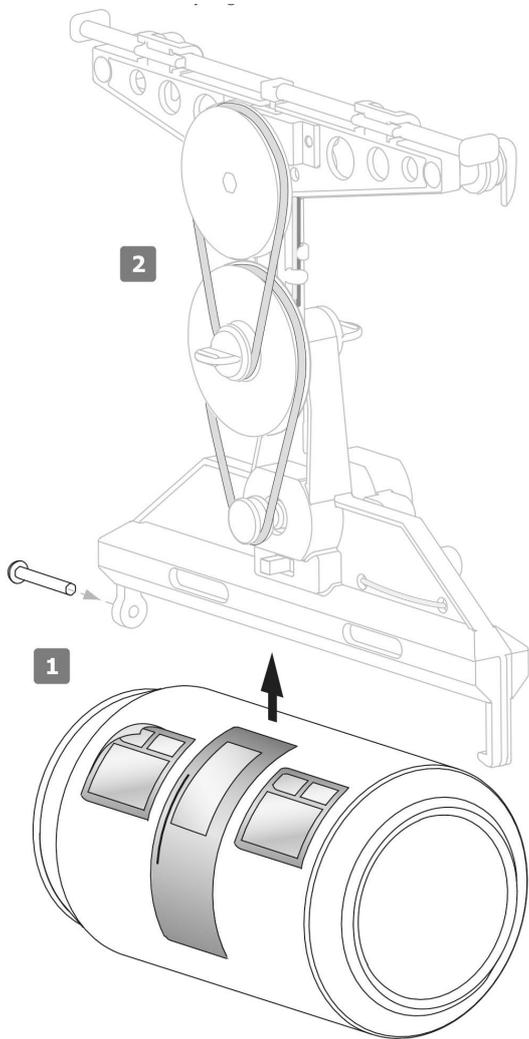
E. ASSEMBLY OF THE MOTOR HOUSING

- 1. Push the motor, spindle end first, into its hole in the motor housing (Part B), with the wire terminals at the bottom.**
- 2. Place the motor cover (Part K) over the end of the motor and secure it with two screws (Part U). The wires should come out through the bottom of the cover.**
- 3. Push the motor pulley wheel (Part P) onto the spindle of the motor.**



F. JOINING THE WHEEL SUPPORT & MOTOR HOUSING

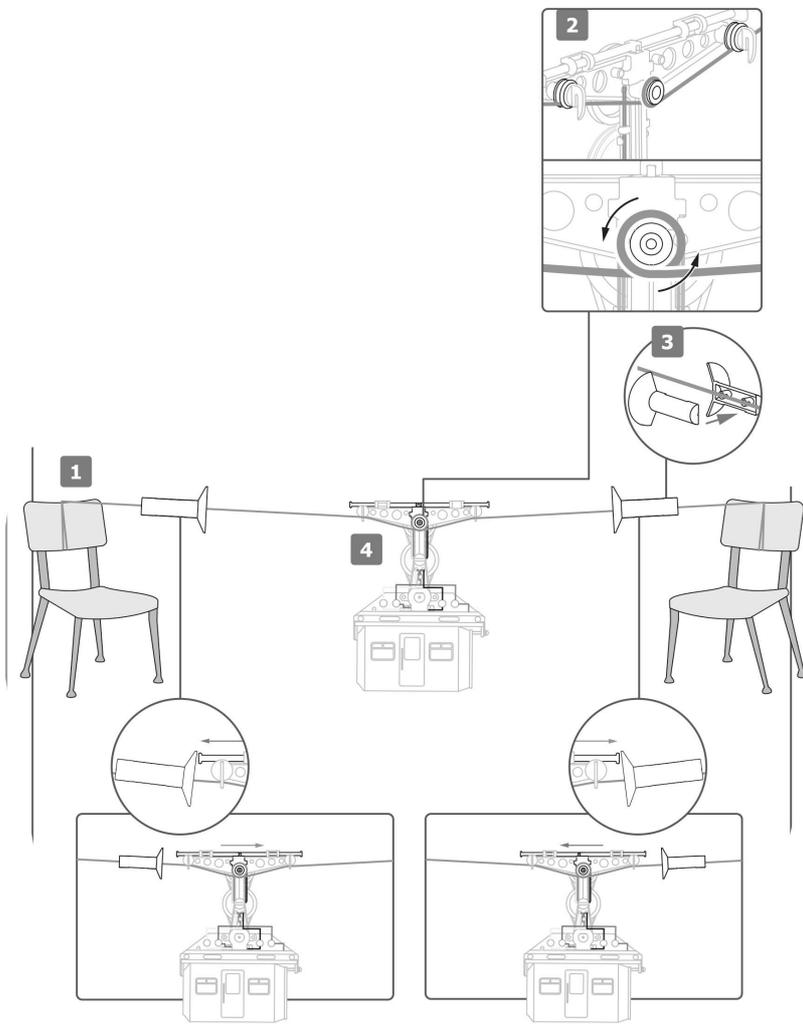
1. Lead the 4 wires from the wheel support through the small holes of the motor housing as shown in the diagram.
2. Push the large pulley wheel (Part H) onto the small axle at the bottom of the wheel support. Push in the large wheel lock (Part M) to lock the wheel in place. (Lubrication has been applied to the joining hole of the large pulley, marked in purple on the diagram.)
3. Push the large hole in the top of the motor housing over the large axle at the bottom of the wheel support. Push in the swivel joint lock (Part O) to lock the motor housing and wheel support together. The joint should be able to swivel.
4. Push the bare ends of the two yellow wires into the left-hand terminal and secure them in place with a terminal cap (Part R). Connect the two red wires in the same way in the next terminal, the two black wires in the next terminal, and the two green wires in the right-hand terminal.
5. Move the ON/OFF switch to the OFF position. Make sure the reversing switch is slid to one end as mentioned in Step D.1. Insert two 1.5V AAA batteries into the battery case in the motor housing. Both batteries should be the same way round, with the flat end of one battery against the spring. Turn the switch ON to see if the motor moves. Gently push the reversing shaft from the side where the reversing switch is located; the motor should reverse the rotation. Turn it off after checking. Ensure again that the reversing switch is at one end.
6. Put on the battery cover (Part E) and secure it in place with two screws.



G. FINISHING

1. Decorate an empty aluminium drinks can with the sticker. Place the can under the motor housing, with the rim on the base of the can over the hook. Push the can spindle (Part S) through its hole and into the hole in the can to secure the can in place.

2. Stretch an elastic band around the motor pulley wheel and the large pulley wheel. Stretch another elastic band around the small pulley on side of the large pulley wheel and the medium pulley wheel. Congratulations! Your cable car is ready to go!



H. OPERATION

- 1. You need to set up a cable for your cable car to run along. You need two points to tie your string to. They could be a bedpost and the back of a chair, or two chairs. They should be at least 2 metres apart.**
- 2. At the centre of the cable, loop it from the BOTTOM once around the small wheel of the spindle (Part N) in the centre of the wheel support. Then hang the two side wheels (Part T) on the cable, making sure that the pulleys are touching the cable.**
- 3. Clip together two halves of a cable stop (Part I) onto the cable close to each end of the string, making sure that the string runs across the slots at the centres of the stops.**
- 4. Now your Cable Car is about to go. Double-check the whole set-up again to ensure a smooth operation. Make sure the two side pulleys are hanging and touching the cable string (Step H.2). If not, adjust the tension or the angle of the cable string. Otherwise the reversing switch may not function properly. MAKE SURE the reversing switch on the wheel support is slid to one end. Do not switch on if the reversing switch is located in the middle. This will activate the circuit's short circuit protection device even if the cable car is not in motion. If this happens, switch it OFF, move the reversing switch to either end, and wait a few minutes for the circuit board to cool down before switching ON again.**

I. TROUBLESHOOTING

If the motor does not run:

- Check that the reversing switch is not in the middle. If it is, switch OFF the cable car and slide the reversing switch to one end. Wait a few minutes and restart.
- The system may have too much friction. Apply some lubricant to the joining holes of the wheel support (marked purple in step D.3) and the large pulley wheel (marked purple in step F.2). You may use lotion or cooking oil for this purpose. Do not lubricate the inside of the pulleys where they touch the rubber bands – they need friction to move.
- Check that you are using fresh batteries.
- Check that the batteries are inserted the correct way round in the battery case.
- Check that all the wires are touching the metal terminals.

If the cable car does not run along the cable:

- Check that the gradient of the string is not too steep.
- Check that you have put the elastic bands in the correct place.
- Check that you have taken a turn of string, starting from the bottom in a clockwise direction, around the small pulley wheel in the centre of the wheel support.

If the cable car does not reverse correctly:

- Make sure you have matched the wire colours correctly in the terminals.
- Make sure that the reversing shaft is clipped over the reversing switch properly.
- Make sure that the reversing shaft is pushed firmly when the cable car reaches the stop at each end of its run.

J. HOW DOES IT WORK?

- The batteries provide electricity to the motor, which turns the pulley wheel at high speed.
- The pulleys work as gears. They reduce the speed of rotation so that the top wheel that the string loops around turns quite slowly. This wheel is the power wheel. It pulls on the string, which pulls the cable car along. Friction between the power wheel and the string stops the cable car from sliding.
- The reversing switch changes the direction in which electricity flows through the motor. When the switch is operated, it makes the motor spin in the opposite direction, which makes the cable car change direction. When the cable car arrives at the stop at the end of the cable, the reversing shaft is pushed, which operates the reversing switch, and the cable car goes back again.

K. FUN FACTS

- The part of a cable car that people travel in is sometimes called a gondola.
- Cable cars are sometimes called aerial tramways or ropeways.
- Cable cars are used at mines to move rock or coal from place to place.
- The first passenger cable cars were built in the Alps in the 1920s to carry tourists to the tops of mountains.
- A cable car in Costa Rica carries tourists through the rainforest trees.
- The top station of the Aiguille du Midi cable car in France is 2,800 metres above the bottom station.
- Some cable cars have rotating cars to give passengers a better view of the landscape below.
- China's Tianmen Shan cable car is the longest cable car in the world. It is 7,455 meters from one end to the other.
- The biggest cable cars are double deckers that carry up to 200 people each.
- San Francisco street cable cars work on same principle as aerial cable cars. The cars run on rails in the streets and are pulled along by cables just under the ground.

QUESTIONS & 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