

GREEN SCIENCE

DYNAMO TORCH

Turn a simple toy motor into a generator that converts hand motion into electrical energy and powers a light bulb. No battery, no pollution, just amazement. The generator could be used as an awesome emergency torch. **Caution: High Voltage Inspiration and Fun!**

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



A. BEFORE YOU START

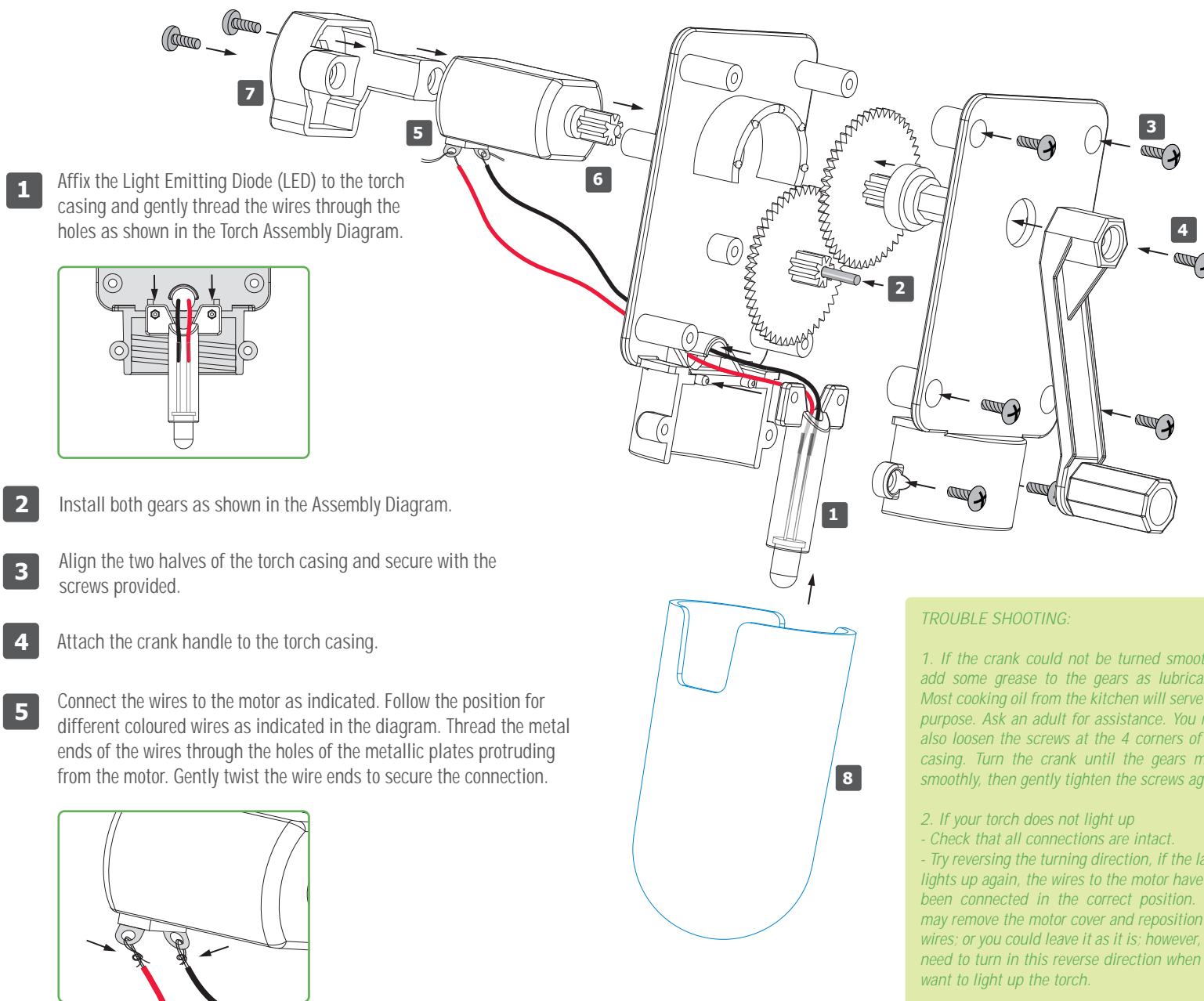
1. Please read all instructions before you begin.
2. Adult assistance and supervision is recommended.
3. The kit is intended for children ages over 8.
4. This kit and its finished products contain small parts which may pose a choking hazard. Keep away from children under 3 years old.
5. Do not connect any of the parts provided to any AC wall socket or batteries. This may cause electric shock or a short circuit.

B. CONTENTS

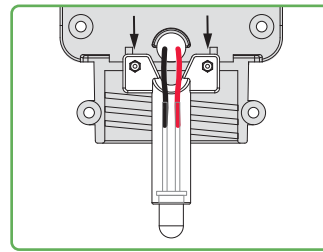


1 LED lamp with holder and wires connected, 1 toy motor, 2 gears, 1 set dynamo torch casing accessories (assembly required), 1 transparent torch cover, screws, detailed assembly instructions with fun facts. (Pocket screw driver, for cross head screws, required from home; please ask an adult for assistance.)

C. TORCH ASSEMBLY DIAGRAM



- 1 Affix the Light Emitting Diode (LED) to the torch casing and gently thread the wires through the holes as shown in the Torch Assembly Diagram.

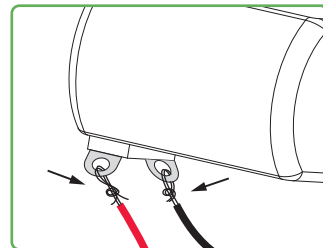


- 2 Install both gears as shown in the Assembly Diagram.

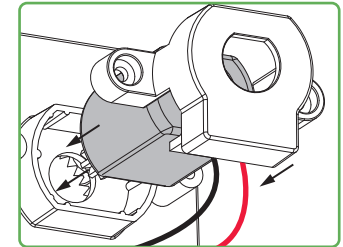
- 3 Align the two halves of the torch casing and secure with the screws provided.

- 4 Attach the crank handle to the torch casing.

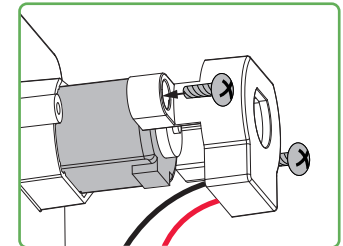
- 5 Connect the wires to the motor as indicated. Follow the position for different coloured wires as indicated in the diagram. Thread the metal ends of the wires through the holes of the metallic plates protruding from the motor. Gently twist the wire ends to secure the connection.



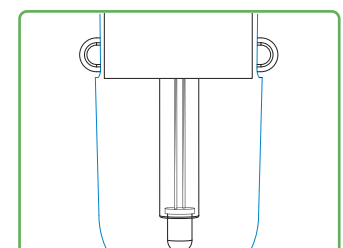
- 6 Insert the end of the motor into the torch casing as shown.
NOTE: To avoid having to disassemble the torch, take a moment to turn the crank clockwise and verify that the LED illuminates. If the light does not come on, verify that the wires are correctly attached to the motor, and that you are turning the crank in a clockwise direction.



- 7 Using 2 screws, secure the motor by aligning the cover to the base.



- 8 Cover the LED with the transparent cover. Press gently until it fixes into place. Your very own Dynamo Torch is complete. Turn the crank in a clockwise direction and the torch will light up.



TROUBLE SHOOTING:

1. If the crank could not be turned smoothly, add some grease to the gears as lubricants. Most cooking oil from the kitchen will serve the purpose. Ask an adult for assistance. You may also loosen the screws at the 4 corners of the casing. Turn the crank until the gears move smoothly, then gently tighten the screws again.

2. If your torch does not light up
- Check that all connections are intact.
- Try reversing the turning direction, if the lamp lights up again, the wires to the motor have not been connected in the correct position. You may remove the motor cover and reposition the wires; or you could leave it as is; however, you need to turn in this reverse direction when you want to light up the torch.

