

Knowledge Domain: Electrical Simple

Unit: Switches

Skill: Cleaning Contacts

Tools and Parts Required:

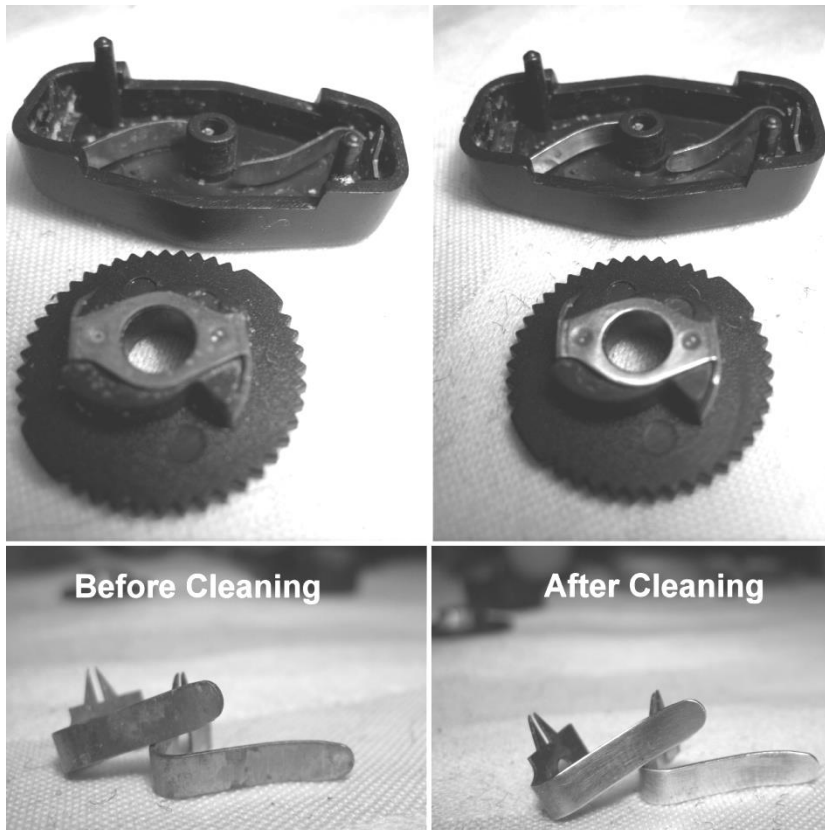
- 1) Dirty switch
- 2) Steel wool or sandpaper
- 3) Screwdriver(s)
- 4) Pliers (optional)
- 5) Multimeter

Introduction

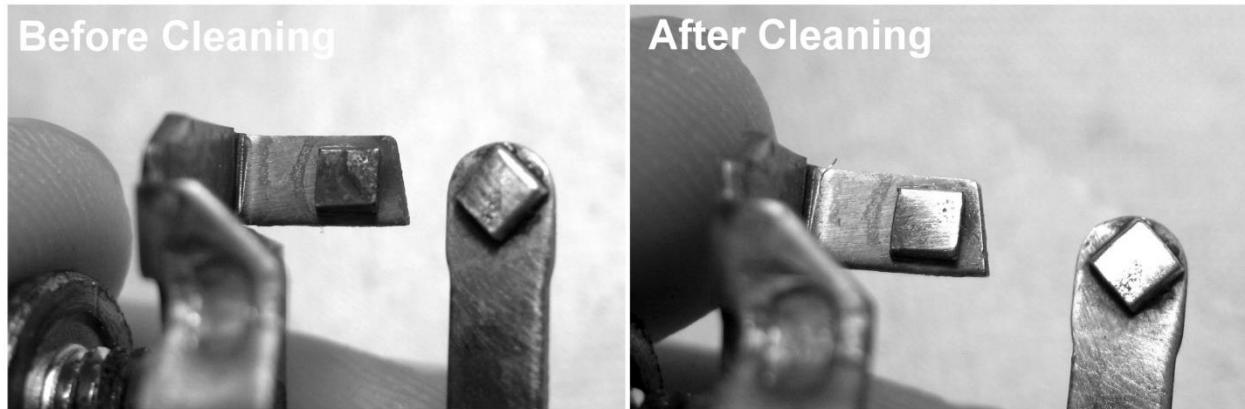
Switches are electrical components used in many machines and equipment. The conductive parts in the switch are called contacts. When the contacts touch, electricity can flow between the contacts. This is generally the 'ON' or '1' position. When the contacts do not touch, electricity cannot flow between the contacts. This is generally the 'OFF' or '0' position. If the contacts are dirty or corroded, electricity cannot flow between them. Cleaning the electrical contacts may allow electricity to flow again.

Example

Here is a picture of a rotary switch before cleaning (left) and after cleaning (right). The bottom panels show a close-up of the switch contacts.



Here is a picture of the blades from a toggle switch before cleaning (left) and after cleaning (right).



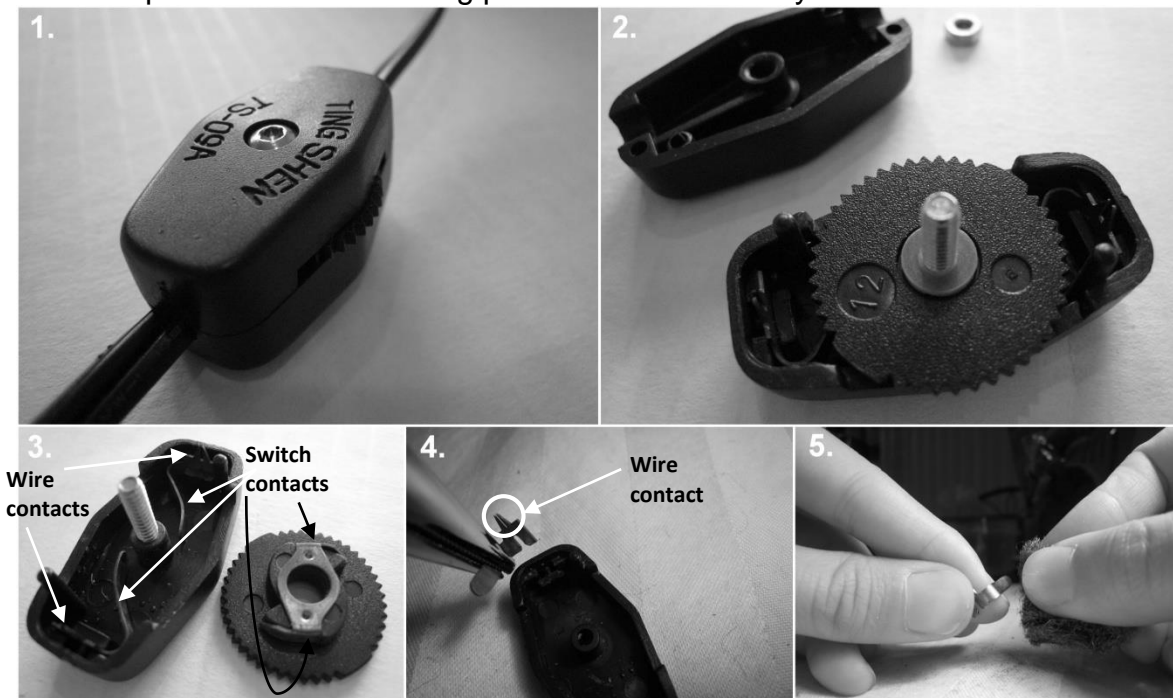
Identification and Diagnosis

Unplug the machine or remove the batteries. Insure all switches are in the “ON” position. Use a multimeter to test for continuity at various points in the circuit. Refer to *Electrical-Connections-Continuity Tester* for more information. If there is no continuity through a switch, the switch may be dirty or corroded. The switch’s corroded contacts will look rough or dull.

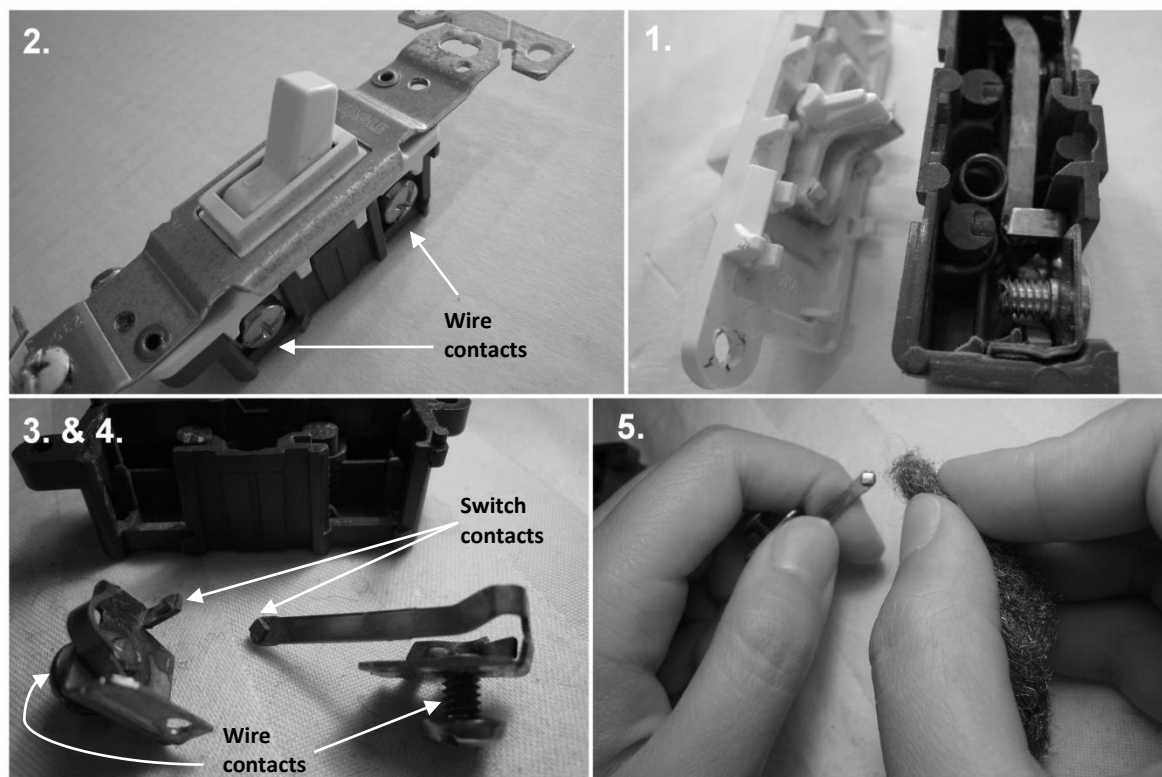
Note: Depending on the switch, you may need to do step 2 before step 1.

1. Open the switch casing with screwdrivers, pliers or other tools. (Many switches are not easily opened. You may need to break a component of the casing to open the switch casing. If you break a component, you can use tape to close the casing later.)
2. Detach switch from the machine. Remove any wires connecting to the switch.
3. Identify which parts contact each other when the switch is in the “on” position.
4. Remove the switch contacts from the casing if possible.
5. Use sandpaper or steel wool to remove any rust or residue on the switch contacts and wire terminals. The contacts should look shiny and smooth when you are done. If you have trouble cleaning the contacts, refer to Plumbing-Blockage -Descaling or Mechanical-Cleaning-Rust for more information. You can replace screws instead of cleaning them. Replace the screws with screws of a similar size and material.
6. Reassemble the switch.
7. Test the switch for continuity after reassembling.

Here are pictures of the cleaning procedure with a rotary switch.



Here are pictures of the cleaning procedure with a toggle switch



Exercise

Your instructor will provide you with a switch. Test the switch. Clean the switch contacts if necessary.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

To prevent rusting, keep machines and switches away from moisture and humidity as much as possible.

Always calibrate every medical device before returning it to use.