FRS 106

Final Presentation

Electrical Team

Our Team

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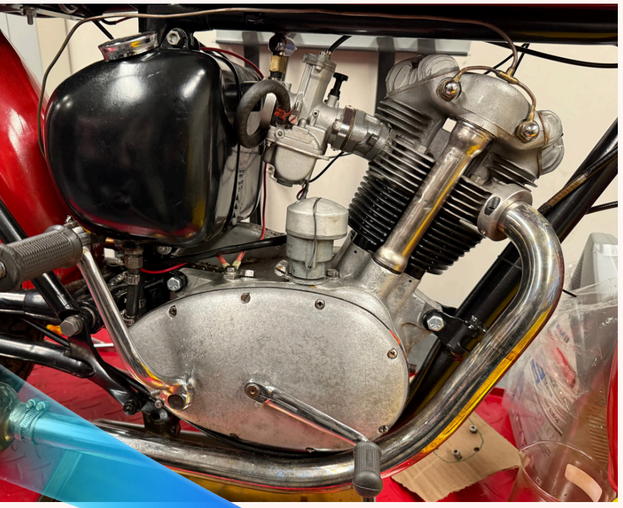
Electrical Group

Introduction - Our year!



- Secured ignition coil
- Spark plug & Spark tester
- Crimping process (redid connections for battery)
- Used mill to fabricate threaded piece for switch.
- Gasket sealant

Topic 1: Electrical Switch

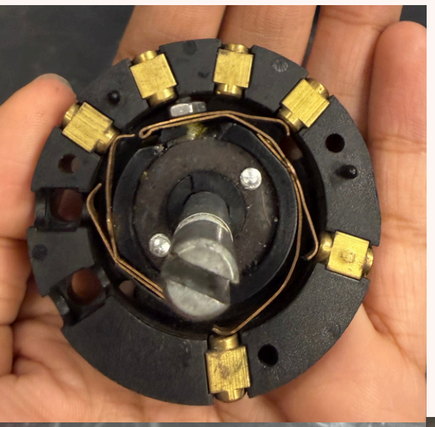
The electrical switch is the control hub of the motorcycle. 6V switch

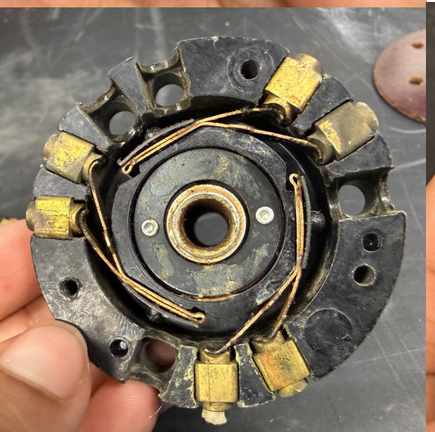
Two-layered switch:

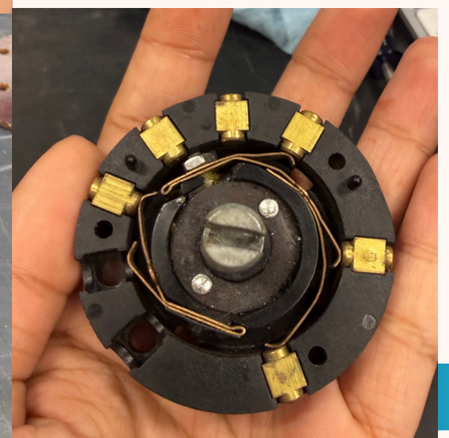
- keyed ignition layer
- screw/knob layer

Current flows in continuous path

- Tested each connection using a multimeter to confirm continuity.
- Made table of connections from schematic



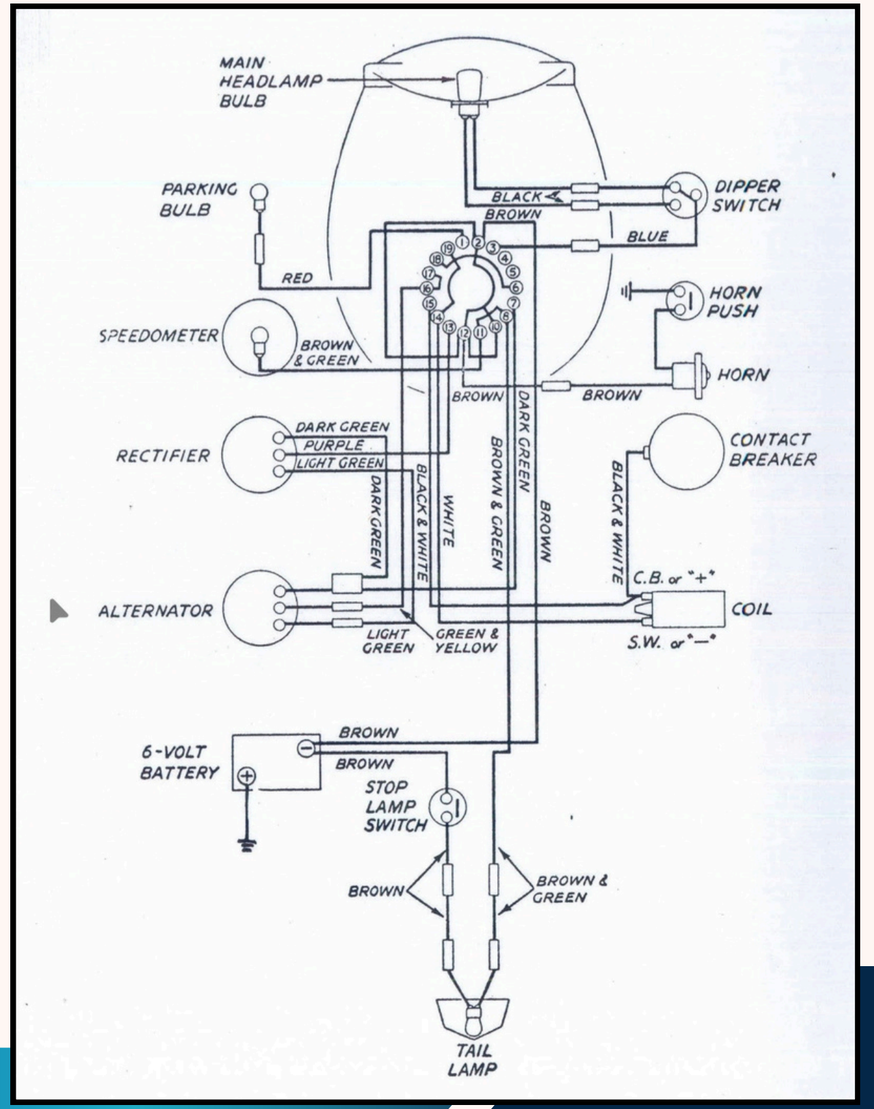




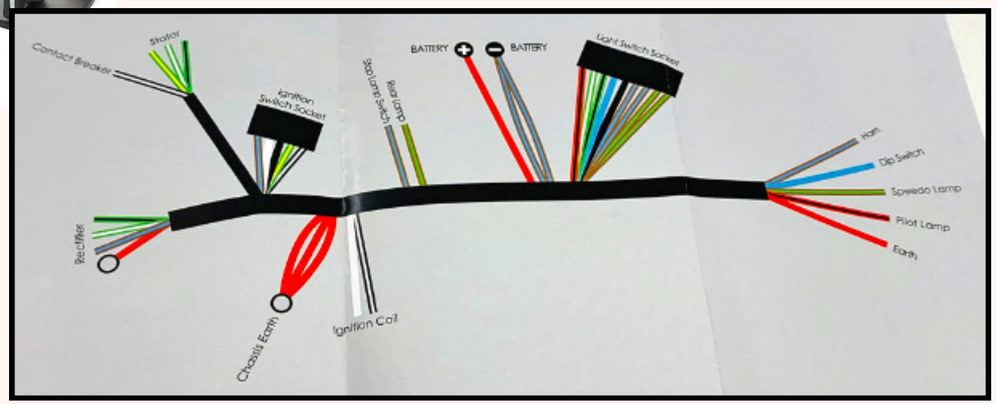
- Switch works by physically connecting to and shifting copper contacts
- Different switch positions create different circuit configurations
- Internal Connections prevent sudden power loss

$$V=IR$$

Ohms Law



Ignition Vs. Lighting

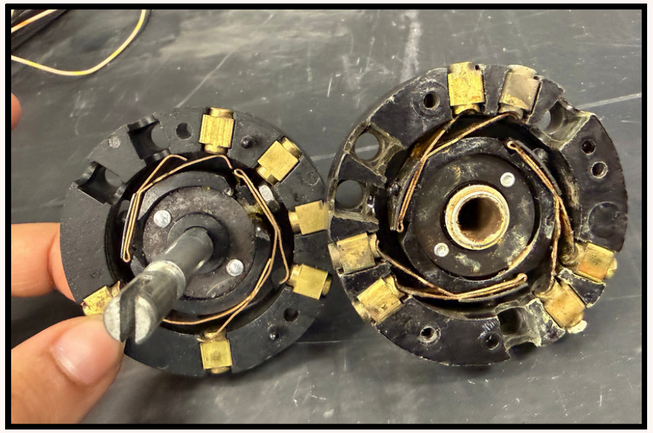


- The Rotary knob manipulates the circuits that control the lights.
  - Off → Daytime lights → Nighttime lights (High/low beams)
  - Brake light and horn receives power regardless

- The key controls the ignition system
  - Off → Ignition → Emergency
  - Off creates open circuit

- Emergency system bypasses battery
  - Alternator → rectifier → ignition coil
  - Must switch back to Ignition mode

Wiring harness



Topic 2: Sandblasting Working Principle

What is Sandblasting?

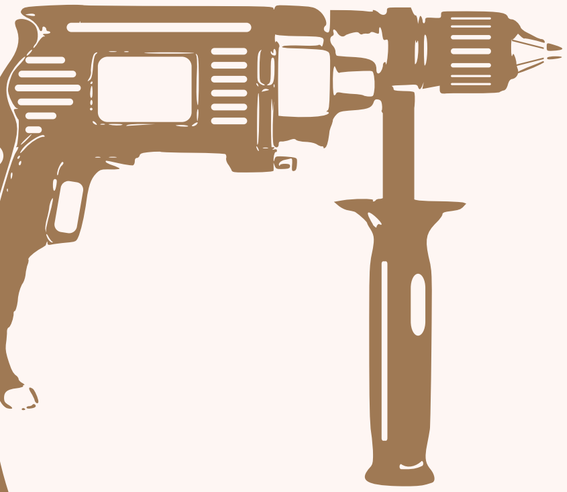
Sandblasting is a process where high-speed abrasive particles (such as sand or metal grit) are directed onto a surface to clean, smooth, or shape it.

How It Works

- Compressed air flows through a narrow nozzle at very high speed.
- The fast-moving air creates a low-pressure region.
- Abrasive particles are pulled into the airflow and accelerated.
- The particles hit the surface with high kinetic energy, removing paint, rust, or impurities.

Physics Behind It

- Based on the Bernoulli Principle:
  - As fluid velocity increases, pressure decreases.
- The pressure difference draws abrasive material into the airflow.
- The moving particles transfer kinetic energy to the surface during impact.



What We Did

We sandblasted many things, including the frame, the fuel tank, and the fenders.

This step was essential for two reasons:

1. Remove the rust and any other contaminants, giving us a clean base that allows the powder coat to bond evenly and last longer.

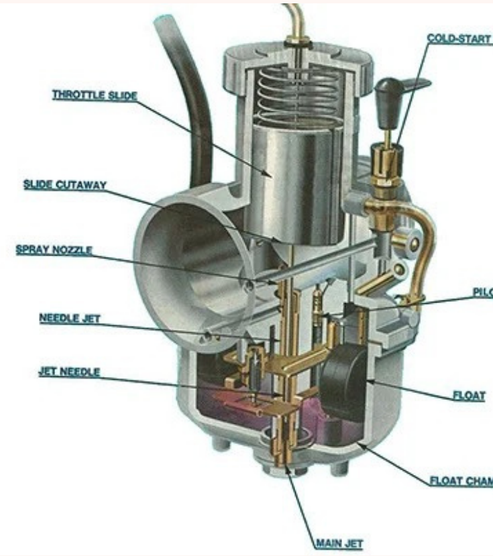
2. Ensure there weren't any cracks in the metal

Sandblasting and a Carburetor

Both sandblasting systems and carburetors use the Venturi effect and pressure differences to pull material into a fast-moving air stream.

In a Carburetor

- **Air passes through a narrow section called the Venturi tube.**
- **Air speed increases and pressure decreases.**
- **The low pressure draws fuel into the airflow.**
- **Air and fuel mix before entering the engine.**



Sandblasting	Carburetor
Air pulls abrasive particles	Air pulls fuel
Uses compressed airflow	Uses intake airflow
Low pressure created in nozzle	Low pressure created in Venturi
Particles accelerated toward surface	Fuel-air mixture sent to engine

Thank You!