

HOW COMPONENTS FAIL

Knowing *how* a component fails *most of the time* can help you to diagnose a circuit problem.

How the following components can fail:

CAPACITOR - Difficult to tell a failure - best to test with special tester,
If suspect, the best way to test for a bad one is to replace it, they are cheap.

CIRCUIT BREAKERS - **Mechanical** - switch contact are ALWAYS normally (at rest) closed.
Test with an ohmmeter - if they show 1Ω , replace.
Electronic - Polycarbonate Latching- very reliable
Test for open with ohmmeter.

COILS - Fuel Injector

Relay

Solenoid

Ignition Primary

Ignition Secondary

Any of the above coils can: short to copper and lower their resistance.

become work hardened in time and increase in resistance.

open or short to ground

DC MOTORS - can: open

develop brushes that arc causing radio frequency interference noise.

develop bearings that can seize

develop internal shorts to copper lowering resistance, which increases amp draw

drag - slow down in speed, and increase current draw above fuse or circuit breaker value.

DIODE - 99 out of 100 diodes will SHORT when they fail rather than open.

FUSES - open

never do a visual on a round glass cartridge fuse, they can open on the end under the metal cap and you will never see it. Always use a test light or meter on glass fuses to test if they are open.

IC - INTEGRATED CIRCUIT - made up of diodes, resistors, and transistors.

RESISTOR - Always OPEN - will always increase in value before they open.

A resistor will never short circuit or partially short circuit.

SWITCH CONTACT - resistance increase, sometimes weld together.
can stay OPEN.

TRANSISTOR - Usually SHORT, but can open.

The one thing that can accelerate the failure of all of the above components is **heat!** ©