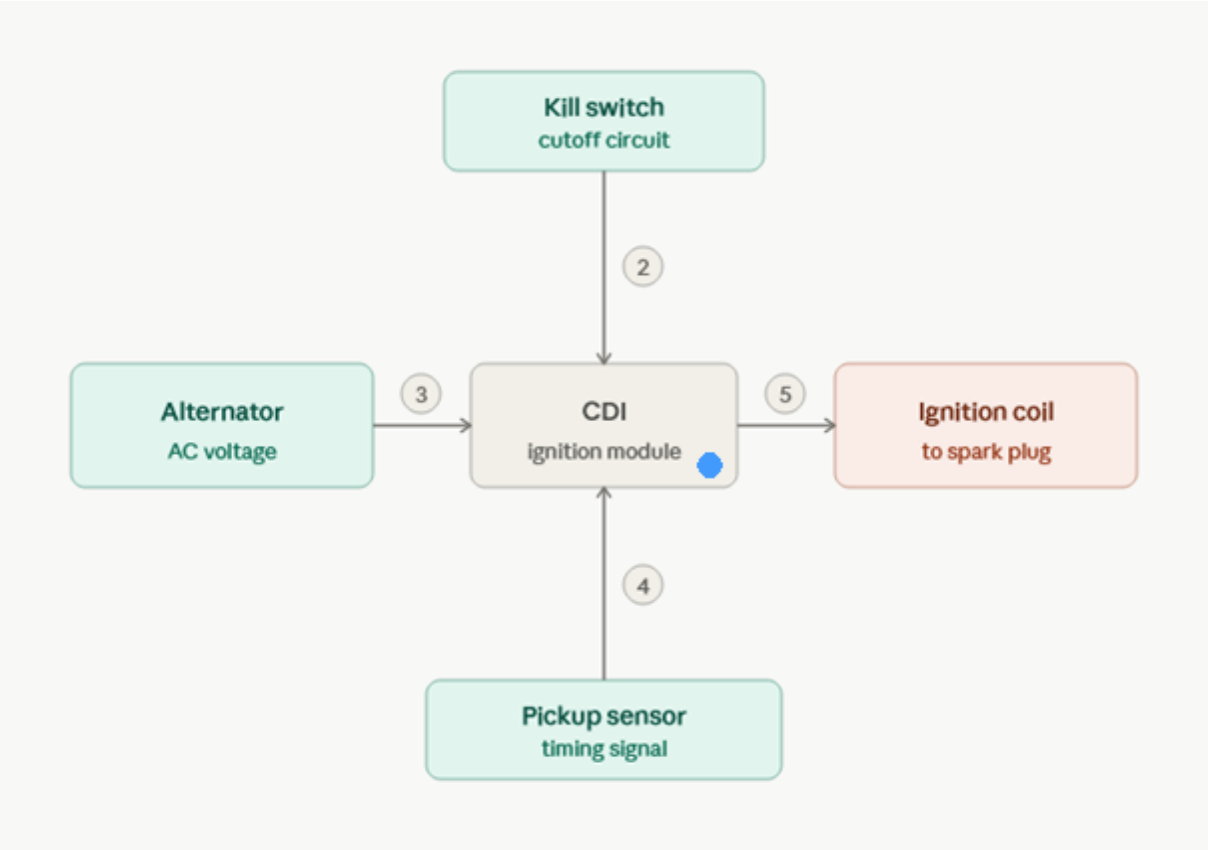
AC-CDI troubleshoot procedure



0. What we are testing

A stator coil (charging coil/source coil/Alternator) generates an AC voltage that charges an internal capacitor in the CDI module.

A pulse sensor (VR/pickup/pulser/trigger) provides the timing.

The CDI discharges the capacitor into the primary winding of the ignition coil, increasing the voltage to the spark plug.

The kill switch generally works by grounding either the AC voltage or the pickup signal—hence the importance of isolating it first.

1. Safety and Preparation

- Engine off, key in OFF position.
- Visually inspect the connectors (oxidation, loose pins, broken wires near body penetrations).
- Check the ground: continuity between the CDI unit, the engine, and the chassis (near-zero resistance is expected).
A poor ground connection will invalidate all subsequent measurements.

2. Isolate the kill switch

The kill switch is a very common cause of ignition failures falsely attributed to the CDI (oxidized contacts, intermittent faulty connection, wire rubbing against and touching ground).

- Disconnect the kill switch wire pin 6

- Disconnect the Security wire pin 10 and confirm that the Security setup is disabled.

#3. Measuring the charging voltage (alternator → CDI capacitor)

This is the voltage that charges the internal capacitor. It is alternating, pulsed, in the range of 100 to 300+ Vac depending on the model and RPM — a standard multimeter in AC voltage mode may give an incorrect or out-of-range reading and is not designed for this type of signal.

Recommended method: multimeter + DVA adapter

- The DVA (Direct Voltage Adapter) is a device inserted between the wiring harness and the multimeter. It rectifies/attenuates the pulsed signal to provide a stable and reliable DC reading on a standard multimeter.

- Connect the DVA (Dual Voltage Detector) to the two wires of the charging coil (at the stator output, before the CDI), with the multimeter set to DC. (pins 2,4)

- Kick Start the engine and note the voltage.

- If you don't have a DVA, some multimeters with a "*Peak Hold*" function in AC mode can give an approximate reading, but it's less reliable.

➜ Voltage too low or zero = the stator charging coil is suspect (also measure its internal resistance in ohms, with the engine off and the connector disconnected) before suspecting the CDI.

4. Checking the pulse sensor signal (pickup/pulser)

- A low-amplitude AC signal (often a few volts) that provides the timing to the CDI.

- Connect the DVA (Dual Voltage Detector) to the two wires of the charging coil (at the stator output, before the CDI), with the multimeter set to DC. (pins 7,8)

- a standard multimeter in AC voltage mode may give an incorrect and is not designed for this type of signal

- ACCDI powered on, the LED flashes with each detected pulse from the pickup (or from the Hall sensor).

5. Measuring the CDI → ignition coil output (oscilloscope)

This is a very brief pulse (around 0.002 second) at each spark moment — completely invisible to a multimeter, even in "*peak hold*" mode. An oscilloscope is required. *

- Probe the CDI output wire to the primary winding of the ignition coil (use a suitable attenuating probe if the amplitude exceeds the oscilloscope/probe range).

- Kick Start the engine (or simulate the firing if it can be disassembled on a test bench) and observe:

- presence of the pulse at each engine cycle
- amplitude of the peak
- regularity over time (no misfires)
- synchronization with the pickup signal observed in step 4 (ideally both oscilloscope channels simultaneously).

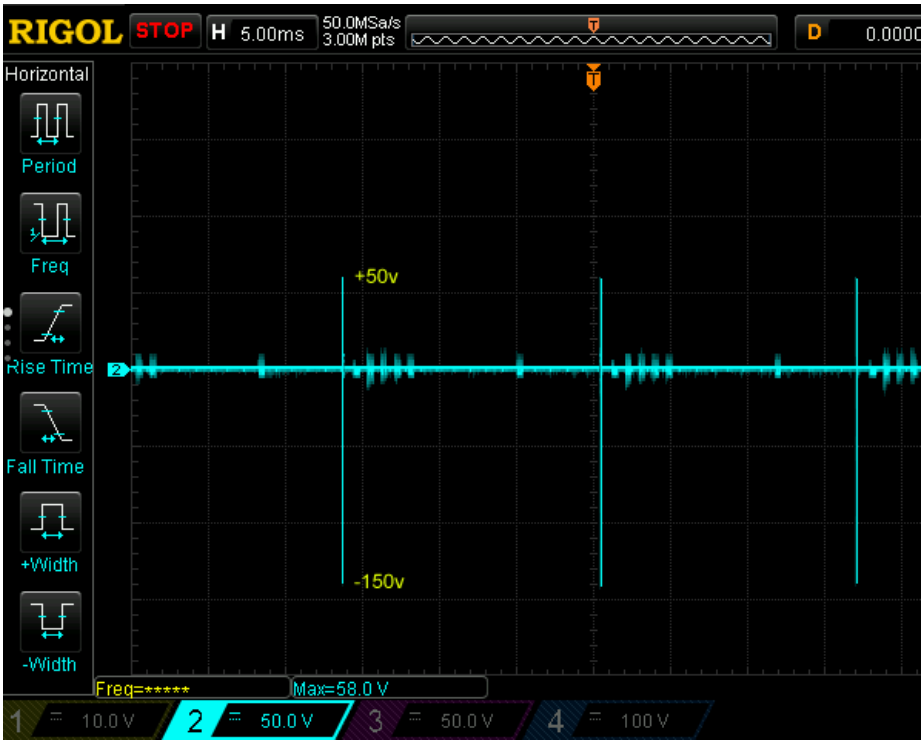
**An AC multimeter will display an average voltage of 0.18Vac on a running engine a 1200rpm at pin 1.*

1200rpm = 60Hz = 16.67ms.
Pulse duration: 20µs
Pic voltage: 150v
Duty:

$$D = \frac{20\ \mu s}{16,67\ ms} = 0,0012$$

Average voltage:

$$V_{moy} = 150 \times 0,0012 = 0,18\ V$$



➜ Kill switch OK (step1) + AC voltage OK (step 3) + pickup signal OK (step 4) + no output or irregular output to the coil (step 5= = CDI module itself suspected.

6. Downstream Test (coil and spark)

- Measure the primary and secondary resistance of the ignition coil (manufacturer's values).

- Test the actual spark with a spark gap tester set to the specified gap — a strong spark that "jumps" the gap confirms that the entire chain is working.

