

Spitronics - ECU - Runs but Poorly - Quick Diagnostic Guide

1. Overview

This guide helps diagnose engines that:

- Start, but run poorly
- Do not idle
- Misfire, hesitate, or stall

Follow the steps in order.

2. First Check (Quick Sanity Check)

Ensure:

- Ignition timing is correct
- No major ECU errors
- Sensors are reading correctly

👉 If not → fix before continuing

3. Does the Engine Idle?

✗ NO IDLE (Dies immediately)

👉 Problem = **Fuel / Idle setup**

Check:

- Injector ratio too low (lean)
- Start enrichment too low
- Fuel graph too low

👉 Go to:

Idle Setup and Stabilisation – Guide

⚠ IDLES BUT VERY ROUGH

👉 Go to next step

4. Check Fuel Mixture

Observe engine behaviour and vacuum bar:

✗ Too Lean

Symptoms:

- Engine stalls easily
- Needs throttle to run
- Low vacuum (bar moves right)

👉 Action:

- Increase injector ratio
- Increase fuel graph slightly

✗ Too Rich

Symptoms:

- Black smoke
- Engine sluggish
- Poor throttle response
- Wet plugs

👉 Action:

- Decrease injector ratio
- Lower fuel graph

✅ Mixture Acceptable

👉 Go to next step

5. Check Ignition Timing

✗ Incorrect Timing

Symptoms:

- Backfiring
- Kickback during cranking
- Poor running / no power

👉 Action:

- Verify with timing light
- Adjust Gear Teeth / Timing BTDC

👉 Go to:

Ignition Timing Setup – Guide

✅ Timing Correct

👉 Go to next step

6. Check Sensors

✗ Incorrect Sensor Readings

Check:

- Water temperature
- Air temperature
- MAP sensor
- TPS

👉 Symptoms:

- Wrong fueling
- Unstable idle
- Erratic behaviour

👉 Action:

- Calibrate sensors
- Disable unused sensors

✅ **Sensors OK**

👉 Go to next step

7. Check Fuel Stability

✗ Fuel Fluctuating

Symptoms:

- Idle hunting
- RPM unstable

👉 Check:

- Fuel pump supply
- Voltage drop
- Poor wiring

✅ **Fuel Stable**

👉 Go to next step

8. Throttle Response

✗ Flat Spots / Hesitation

👉 Problem = **Acceleration fueling**

Check:

- Accelerator pump settings
- Fuel graph transitions

✅ **Response OK**

👉 Go to next step

9. Final Checks

If engine still runs poorly:

- Check mechanical timing
- Check compression

- Check fuel pressure
- Check for vacuum leaks

Important Notes

- Always tune from slightly lean → richer
- Rich mixtures can hide problems
- Always monitor vacuum for feedback
- Do not adjust too many parameters at once

Reference Links

- i** [Idle Setup and Stabilisation – Guide](#)
- i** [Ignition Timing Setup – Guide](#)
- i** [Fuel System Test – Guide](#)