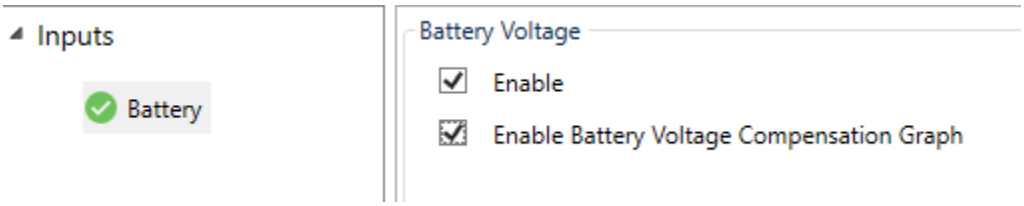
Spitronics - Battery Charge Voltage - Guide

1. Overview



Battery and alternator voltage have a significant influence on ECU operation.

- During cranking, battery voltage can drop to around **9 V** (especially on cold days)
- When the engine is running, voltage can rise to approximately **14.3 V**

This variation affects:

- Coil energy
- Injector opening speed

👉 The ECU compensates for these changes using dedicated correction graphs

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2. Compensation Strategy

The Spitronics ECU uses two graphs:

Fuel Compensation Graph

- Adds fuel during low-voltage conditions (e.g. cranking)

Coil Charge Time Graph

- Adjusts coil charge time based on voltage
- Improves spark energy during cranking

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3. Tuning Considerations

This is not a straightforward tuning process, as accurate setup ideally requires a variable power supply in place of the battery.

Practical Approach

- Compare spark quality:
  - Cold engine (low voltage)
  - Hot engine (normal voltage)

👉 Aim for consistent spark performance

Important

⚠ Do not overcharge the coils

👉 Excessive charge time can damage coils and drivers

Battery Health Check

On a cold start:

👉 Monitor ECU voltage during cranking

- A healthy battery should not drop below **11 V**

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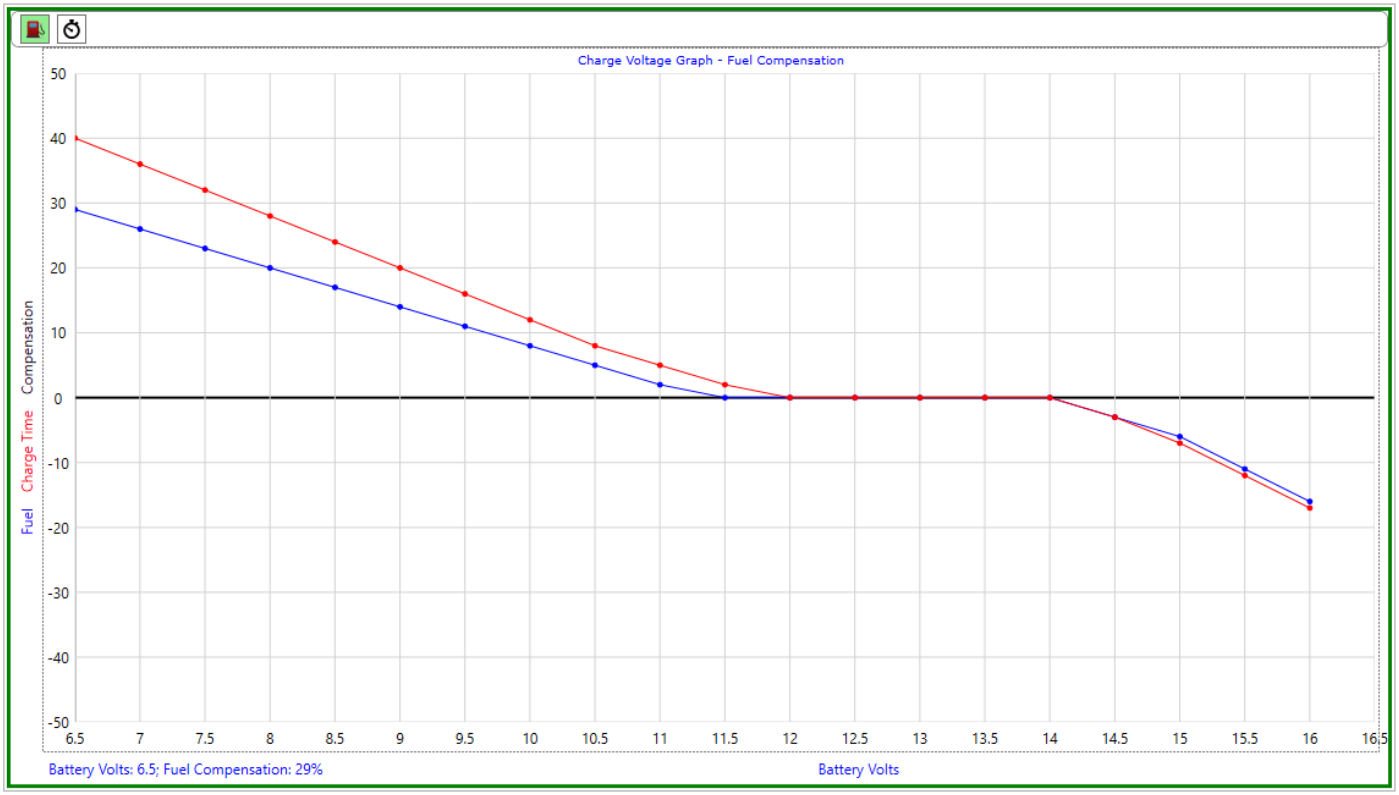
4. Charge Voltage Graph



- **Blue graph** → Adds a percentage to injector time
- **Red graph** → Adds a percentage to coil charge time

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5. Adjustment Guidelines

- Start with lower values
- Test engine starting performance

👉 If there is no improvement, reduce values further

👉 Always aim for the **lowest effective values**

High Voltage Conditions

- Reduce values as battery voltage increases
- Helps protect coil drivers

👉 These graphs are interpolated across the voltage range

Notes

- Voltage compensation directly affects starting performance
- Incorrect settings can damage ignition components
- Always verify battery condition before tuning