

Spitronics ECU - RapidFire and Spinning - Guide

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Overview

RapidFire and Spinning functions allow the driver to adjust RPM-limiting behaviour and, where configured, create controlled limiter effects.

The system can use:

- A Tuning POT.
- A RapidFire push button.
- Engine Limiter settings.
- Launch / Spinning settings.

The exact behaviour depends on the firmware and enabled Features.

This implementation allows the driver to move between normal Engine Limiter behaviour and a more aggressive Launch / Spinning limiter without changing Tunes.

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Driver Controls

A typical installation uses:

- Tuning POT for RPM adjustment.
- RapidFire push button for mode or frequency control.

The TuneBox may combine these controls into one convenient driver interface.

Product-specific wiring and connector information belongs under the applicable Product information.

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POT Selection

Under the applicable POT Input settings, select:

Spinning

This assigns the Tuning POT to the Spinning / limiter function.

Because POT Selection is a Critical Setting, verify the applicable Pin Layout and final configuration after changing it.

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POT Sensor

POT Selection Spinning 

POT Value 0 

Basic Operation

The system uses the POT position and RapidFire button to determine the required limiter behaviour.

This firmware version uses approximately:

95% POT position

as the transition between the two operating regions.

Engine Limiter Mode

With the POT fully clockwise, the normal Engine Limiter is used.

Typical behaviour:

- Engine Limiter active.
- POT controls RPM limit.
- No additional Launch / Spinning timing retard.
- No additional Launch / Spinning Fuel Enrichment.
- Engine retains normal performance below the limiter.

This mode is intended for normal performance limiting rather than controlled limiter effects.

Launch / Spinning Mode

When the POT is below the Engine Limiter region and the RapidFire button is activated, the Launch / Spinning limiter can become active.

Depending on firmware configuration, this may apply:

- Separate RPM limit.
- Ignition limiting.
- RapidFire operation.
- Ignition timing retard.
- Fuel Enrichment.

This mode is intended for Spinning and controlled limiter-effect applications.

It should not automatically be treated as the same function as drag-racing Launch Control.

Mode Selection Rule

For this firmware version:

POT near maximum → Engine Limiter

POT below approximately 95% + RapidFire button → Launch / Spinning Limiter

The exact threshold and behaviour are firmware-dependent.

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Engine Limiter Setup

Open:

Features → **Engine Limits**

Typical settings include:

- Normal RPM Limit.
- Limiter Type.
- RapidFire Frequency.

The exact settings visible depend on firmware.

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Normal RPM Limit	6500  (RPM)
Limiter Type	Spark Only
Rapid Fire Frequency	3 

Limiter Types

Hard Cut

Hard Cut provides a conventional RPM-limiting action.

It is normally the preferred limiter where a clean and predictable RPM limit is required.

Spark Only

Spark Only limits RPM primarily through ignition events.

This can create more noticeable exhaust noise because unburned mixture may enter the exhaust.

RapidFire

RapidFire applies a repeating ignition-cut pattern to create a more regular exhaust-beat effect.

The exact cut pattern and frequency depend on firmware.

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RapidFire Frequency

RapidFire Frequency controls the spacing or repetition rate of the limiter events.

Changing the frequency changes the character and speed of the limiter pulses.

In this driver-control logic, the RapidFire button cycles through the available frequency settings.

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Launch / Spinning Setup

Open the applicable Launch / Spinning settings.

Typical settings include:

- Limiter Type.
- RapidFire Frequency.
- Ignition Timing.
- Fuel Enrichment.
- Activation Method.

These settings are used to create the more aggressive limiter behaviour associated with Spinning.

Limiter Type	Spark Only
Rapid Fire Frequency	4 ↑ ↓
Timing	6 ↑ ↓ (*BTDC)
Fuel Enrichment	10 ↑ ↓ (%)
Launch Activation Method	POT

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Ignition Timing

The Launch / Spinning limiter can apply different ignition timing while active.

Retarding ignition timing can:

- Reduce engine torque.
- Move more combustion energy into the exhaust.
- Increase exhaust temperature.
- Increase exhaust noise.
- Increase turbocharger energy on turbocharged engines.

More aggressive timing retard creates substantially more thermal load on:

- Exhaust valves.
- Exhaust manifold.
- Turbocharger.
- Catalytic converter where fitted.

Use conservative values.

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Fuel Enrichment

Additional fuel can be applied during RapidFire / Spinning operation.

Increasing Fuel Enrichment can increase the amount of combustible mixture entering the exhaust during ignition-cut operation.

This may increase:

- Exhaust noise.
- Exhaust temperature.
- Visible flame where the exhaust system and operating conditions allow it.

Excessive enrichment can also cause:

- Spark-plug fouling.
- Bore wash.
- Oil contamination.
- Catalytic converter damage.
- Excessive exhaust temperature.

Use only the amount required for the intended result.

0% = No additional Fuel Enrichment

Larger values apply progressively more additional fuel.

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RapidFire Button

Repeated RapidFire button presses change the selected frequency.

When the end of the available range is reached, the selection cycles through the range again.

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POT Behaviour

The Tuning POT performs two functions:

- Adjusts the RPM limit.
- Determines whether the system is in the normal Engine Limiter region or Launch / Spinning region.

Typical behaviour:

- Fully clockwise → normal Engine Limiter.
- Turn anti-clockwise → lower RPM limit.
- Below the mode threshold → Launch / Spinning becomes available with the RapidFire button.

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Returning to Normal Operation

To return to normal Engine Limiter operation:

Turn the POT fully clockwise.

This moves the control back into the normal Engine Limiter region.

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Status and Information Codes

Some firmware generations may display information codes while limiter functions are active.

In this firmware version:

- Code 9 = Engine Limiter active.
- Code 12 = Launch Limiter active.

These are operating-status indications rather than ECU fault codes.

Driver Quick Reference

Normal Engine Limiter

POT fully clockwise

- Normal Engine Limiter.
- Maximum configured performance range.
- POT can adjust RPM.

Spinning / RapidFire

Reduce POT position and activate RapidFire

- Launch / Spinning limiter becomes available.
- POT controls RPM.
- RapidFire button changes frequency.
- Timing and Fuel Enrichment depend on the configured setup.

Setup Procedure

A practical setup sequence is:

1. Configure the Tuning POT for Spinning.
2. Set the normal Engine RPM Limit.
3. Select the normal Engine Limiter Type.
4. Configure Launch / Spinning activation.
5. Set a conservative RapidFire Frequency.
6. Start with conservative ignition timing.
7. Start with little or no additional Fuel Enrichment.
8. Test operation briefly.
9. Increase the effect only where required.
10. Monitor engine and exhaust-system temperature.

Safety and Mechanical Stress

RapidFire and aggressive limiter operation place considerably more stress on the engine and exhaust system than normal running.

Possible effects include:

- High exhaust temperature.
- Turbocharger thermal stress.
- Exhaust valve heating.
- Exhaust manifold damage.
- Catalytic converter damage.
- Spark-plug fouling.
- Ignition-coil heating.
- Increased fuel consumption.
- Fuel dilution of engine oil.

Avoid prolonged operation.

Do not use aggressive limiter settings as a substitute for proper engine tuning.

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Turbocharged Engines

On turbocharged engines, retarded ignition and exhaust combustion can increase turbine energy.

This may cause the turbocharger to:

- Maintain boost.
- Spool more rapidly.
- Produce higher exhaust temperature.

RapidFire / Spinning should therefore normally be configured more conservatively on turbocharged engines than on naturally aspirated engines.

Monitor:

- Boost pressure.
- AFR or Lambda.
- Exhaust temperature where available.
- Turbocharger behaviour.

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Catalytic Converters

Do not use aggressive RapidFire or flame-producing settings where the catalytic converter must be protected.

Unburned fuel entering the catalytic converter can cause extreme temperature and permanent damage.

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Fault Finding

Symptom	Possible Cause	Check
POT does not adjust RPM	Incorrect POT Selection	Verify POT is assigned to Spinning
Wrong limiter becomes active	POT position near transition	Verify POT position and button operation
RapidFire does not activate	Activation not configured	Check Launch / Spinning setup
Limiter effect weak	Conservative timing or fuel settings	Increase cautiously
Excessive flame or heat	Too much Fuel Enrichment or timing retard	Reduce settings
Engine loses excessive power before limiter	Incorrect limiter configuration	Verify Engine Limiter settings
Ignition coils become hot	Excessive limiter operation or ignition setup problem	Stop testing and inspect
Turbo boost rises unexpectedly	Excessive exhaust energy	Reduce retard/effect and verify boost control

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Setup Check

Before using RapidFire / Spinning:

- ☐ Tuning POT is correctly configured.
- ☐ RapidFire button operates correctly.
- ☐ Normal Engine RPM Limit is safe.
- ☐ Correct Limiter Type is selected.
- ☐ Launch / Spinning RPM is suitable.
- ☐ RapidFire Frequency is conservative.
- ☐ Ignition timing retard is appropriate.
- ☐ Fuel Enrichment is appropriate.
- ☐ Engine is correctly tuned before enabling limiter effects.
- ☐ AFR or Lambda remains safe.
- ☐ Turbo boost remains controlled where applicable.
- ☐ Exhaust and turbo temperatures remain acceptable.

[] Catalytic converter is protected where fitted.

[] Driver understands how to return to normal Engine Limiter operation.

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