SECTION BOOKLET

E Idle Button

6 guides · compiled Oct 25, 2026 · https://help.impactwiringsolutions.com/section/tuning-overview/idle-button
Each guide keeps its own page numbers and version stamp. The newest versions are always online.

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IMPACT ECU · IDLE BUTTON GUIDE

Idle Button Overview

The **Idle** button in TunerStudio holds the settings that keep the engine running smoothly when your hand is off the twist grip: the idle speed, how far the throttle opens to get there, and how the ECU holds that speed steady. This guide is the map to its menu: what each item is for, and which guide explains it.

Your bike's throttle body is electronic, so there's no separate idle valve: to idle, the ECU simply holds the throttle open a little. The menu still calls this the **idle valve**. Your tune came with these set for your bike, and most of them never need changing.

How the ECU handles idle

STEP 1 **CRANKING**	While the starter turns the engine, the ECU opens the throttle to the **Cranking Idle Valve Curve** position, so the engine gets enough air to start.
STEP 2 **JUST STARTED**	Over the first several seconds, the **Idle Valve Crank-to-Run Taper** moves the throttle from the cranking position to the normal idle position.
STEP 3 **IDLING**	With the twist grip closed, the throttle opens to the **Base Idle Valve Position**. The ECU then fine-tunes the opening and the spark timing to hold the **Target RPM**.
STEP 4 **RIDING**	Open the twist grip and your grip sets the throttle. Close it at higher RPM and the ECU waits until the engine slows close to the target before it idles again.

Before you change anything

- **Save a copy of your tune first**, so you can always go back.
- **Burn means save.** Changes go to the ECU as you make them, but are only kept after you click **Burn**.
- **Greyed-out items** are switched off by another setting. Each guide says which one.
- **Cranking Idle Valve Curve greyed out or missing?** Set **Setup ▸ Vehicle Information ▸ Tuning View** to **Full**.
- **Change one thing at a time.** Not sure? Call us first.

The Idle menu, item by item



Item 4 needs Tuning View set to Full. Items 7 to 10 are optional tables, off in our tunes.

1. **Idle settings** Idle control mode, idling limits, fan adders, closed-loop and extra settings.
2. **Target RPM** The idle speed the ECU aims for, by engine temperature.
3. **Base Idle Valve Position** How far the throttle opens at idle, by engine temperature.
4. **Cranking Idle Valve Curve** How far the throttle opens while cranking, and the ETB idle maximum angle.
5. **Idle Valve Crank-to-Run Taper** How long the move from cranking to idle position takes.
6. **Closed-loop idle timing** Small spark timing changes that help hold the idle speed.
7. **IAC PID multiplier** Optional. Scales the closed-loop idle correction.
8. **Coasting IAC position** Optional. A separate throttle opening for coasting.
9. **Idle VE** Optional. A separate fuel table for idle.
10. **Idle Ignition advance** Optional. A separate timing curve for idle.

Three more idle items, in other menus, are greyed out on your bike: leave them as set. They're **Sensors ▸ ETB-style Idle valve position sensor**, and **Controller ▸ Idle flow estimate** and **Idle airmass/timing equivalence**. The ETB idle maximum angle (item 4) also shows in **Advanced ▸ Electronic Throttle Body actuator**: it's the same setting.

Which guide to read

GUIDE	MENU ITEMS	WHAT IT COVERS
Idle Settings	1	Idle control mode, idling limits, fan adders, closed-loop and extra settings
Target Idle RPM	2	The idle speed by engine temperature
Idle Valve Position	3–5	Idle, cranking and crank-to-run throttle opening
Idle Timing	6, 10	Closed-loop idle timing and the optional idle timing curve
Optional Idle Tables	7–9	IAC PID multiplier, coasting position and Idle VE

Which setting fixes what?

IF THE BIKE…	LOOK AT
Idles high when cold	Normal. The target idle speed is higher on a cold engine (**Target RPM**) and comes down as it warms up
Won't come back down to idle when you close the twist grip while riding	**Base Idle Valve Position** (see the Idle Valve Position guide)
Idle hangs high for a while after you close the twist grip	Lower **Base Idle Valve Position** at the temperatures where it hangs, 1 at a time
Idle stays above the target as the engine warms up	Lower **Base Idle Valve Position** at that temperature, 1 at a time
Idles more than about 50 RPM below the target	Raise **Base Idle Valve Position** at that temperature, 1 at a time. Within 50 RPM is normal
Idles more than about 150 RPM above the target	Lower **Base Idle Valve Position** at that temperature, 1 at a time. Up to about 150 RPM above is normal
Idle swings up and down (hunts)	Check the fueling at idle. Also check that **Base Idle Valve Position** isn't set too high or too low, leaving the closed-loop correction to make up the difference
Dips low or stalls as you come to a stop	Raise **Base Idle Valve Position**, 1 at a time
Starts, then dies within a few seconds	**Base Idle Valve Position** too low, or the mixture too lean (Fuel button)

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Won't come back down to idle when you close the twist grip while riding	**Base Idle Valve Position** (see the Idle Valve Position guide)
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Idle swings up and down (hunts)	Check the fueling at idle. Also check that **Base Idle Valve Position** isn't set too high or too low, leaving the closed-loop correction to make up the difference
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IMPACT ECU · IDLE BUTTON GUIDE

Target Idle RPM

This curve sets the idle speed the ECU aims for, by engine temperature. A cold engine idles faster so it runs smoothly while it warms up; the target comes down as the engine gets warm.

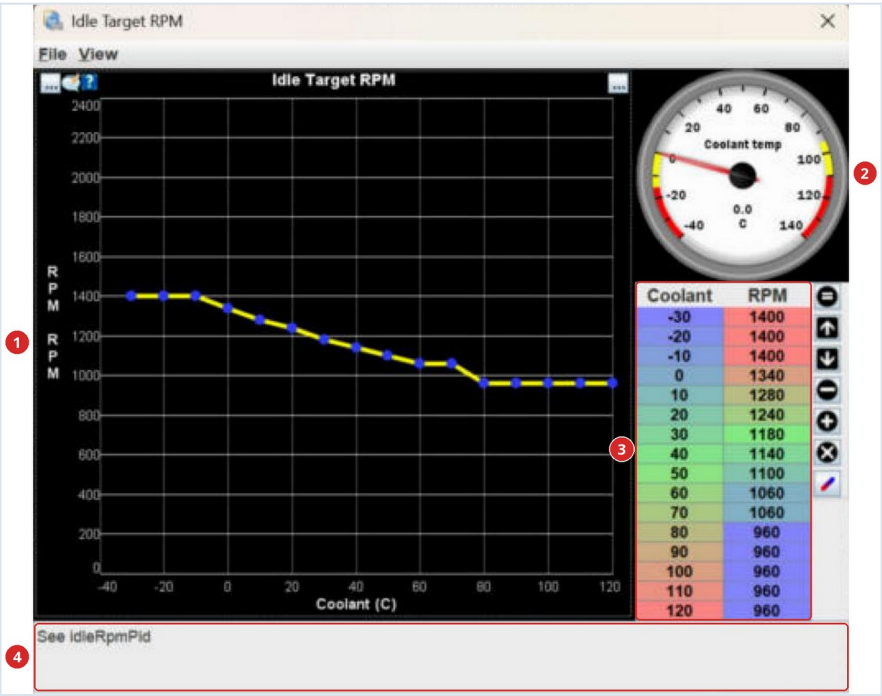
Your tune came with this set for your bike.

WHERE TO FIND IT
Idle ▸ Target RPM

The numbers in these pictures come from one example bike. Your tune's numbers will be different, so don't copy them. Units are Metric (°C, kPa, km/h). Red numbers in each picture match the table below it.

The settings

The window is titled **Idle Target RPM**.



#	SETTING	WHAT IT DOES
1	**Idle Target RPM** LEAVE AS SET	A graph of the target against engine temperature. Its numbers are in 3.
2	**Coolant temp gauge** DISPLAY ONLY	Live engine temperature. It reads 0.0 when TunerStudio isn't connected.

#	SETTING	WHAT IT DOES
3	**Coolant and RPM columns** MAIN SETTING	The target idle speed at each engine temperature. In this example: **1400** RPM at −10 °C (14 °F) and colder, **1240** at 20 °C (68 °F), **1100** at 50 °C (122 °F), **1060** at 60 and 70 °C (140 and 158 °F), and **960** RPM from 80 °C (176 °F) up.
4	**Help box** DISPLAY ONLY	It says “See idleRpmPid”, a note for programmers. You can ignore it.

Burn means save. Changes go to the ECU as you make them, but they are only kept after you click **Burn**.

If you change it, go one or two steps (20–40 RPM) at a time, then click **Burn**. Too low a target can make the idle rough or stall the engine. Not sure? Call us.

Good to know

- The ECU blends between points. Colder than the first point or hotter than the last, it uses the end values.
- Targets go in steps of 20 RPM. TunerStudio changes a number in between to a 20 RPM step.
- If the engine temperature sensor fails, the ECU uses the 0 °C (32 °F) target, **1340** RPM here, for a safe, higher idle.
- The target also decides when the engine counts as idling (see the Idle Settings guide) and which rows of the Base Idle Valve Position table are used (see the Idle Valve Position guide).
- In a datalog (a recording of what the engine is doing), **Idle: Target RPM** shows the target in use.

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IMPACT ECU · IDLE BUTTON GUIDE

Idle Valve Position

These settings decide how far the ECU opens the throttle body when your hand is off the twist grip: while cranking, right after the start, and at idle. Your bike has no separate idle valve: the electronic throttle body does the job.

Your tune came with these set for your bike.

WHERE TO FIND IT

- (A) **Idle ▸ Base Idle Valve Position**
- (B) **Idle ▸ Cranking Idle Valve Curve** needs Tuning View set to Full
- (C) **Idle ▸ Idle Valve Crank-to-Run Taper**

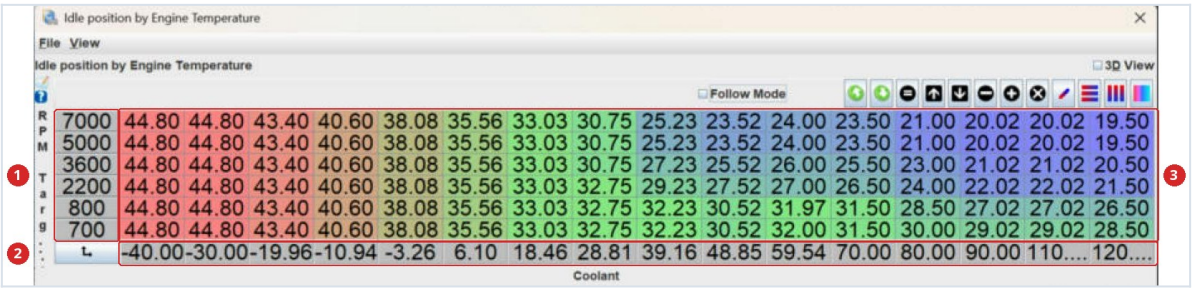
The numbers in these pictures come from one example bike. Your tune's numbers will be different, so don't copy them. Units are Metric (°C, kPa, km/h). Red numbers in each picture match the table below it.

How the idle opening works

- Idle positions are in **%** of the idle range, not of the whole throttle. 100% idle position is the **ETB idle maximum angle** (B1): a **15%** throttle opening here.
- **Example:** a warm engine (80 °C, 176 °F) with the 960 RPM target uses about **28%** idle position, so the throttle opens about **4%** (28% of 15%).
- While cranking, the opening comes from the Cranking Idle Valve Curve (B). After the start, it moves to the Base Idle Valve Position (A) over the Crank-to-Run Taper (C).
- At idle, the ECU adds its closed-loop correction to hold the target, and the **Fan #1 adder** while Fan 1 runs (see the Idle Settings guide).
- When you open the twist grip, the throttle opens further, starting from the idle opening.
- In a datalog (a recording of what the engine is doing), **Idle: Position** shows the idle position in use.

A Base Idle Valve Position

The window is titled **Idle position by Engine Temperature**. It was made wider for this picture.



#	SETTING	WHAT IT DOES
1	**Target RPM rows**	The idle target in use (see the Target Idle RPM guide). The ECU blends between rows. With this bike's targets (960 to 1400 RPM) it uses the **800** and **2200** rows; the others aren't used.
2	**Coolant columns**	Engine temperature, from −40 °C (−40 °F) to 120 °C (248 °F). The window cuts the last two labels short: they're 110 and 120.
3	**Cells (%)** MAIN SETTING	The idle position at each temperature and target. In this example: **44.8%** at −40 °C (−40 °F), about **37%** at 0 °C (32 °F), about **33%** at 20 °C (68 °F) and about **28%** at 80 °C (176 °F), for the targets in use.

With a failed engine temperature sensor, the ECU uses 0 °C (32 °F): about 37% here, plus the fan adder.

TUNING TIPS **Save a copy of your tune first.** Work in neutral, on the stand: changes act as you type them. Up to about 50 RPM below or 150 RPM above the target for that temperature is normal.

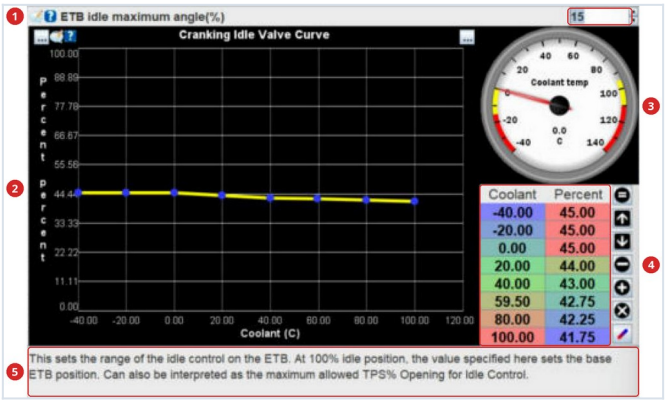
More than 150 RPM above the target, or hanging as it warms up? Lower the cells at that temperature by 1 (28.5 to 27.5, say). More than 50 RPM below it? Raise them by 1. Change the whole column, or both columns if you're between two.

Click **Burn**, let it idle for a minute, and check again (the cold temperatures on the next cold start). Stalls or nearly stalls at a stop? Put the old numbers back and call us.

Burn means save. Changes go to the ECU as you make them, but they are only kept after you click **Burn**.

B Cranking Idle Valve Curve

The window is titled **Cranking Idle Valve Curve**. It also holds the ETB idle maximum angle, which every idle position uses.



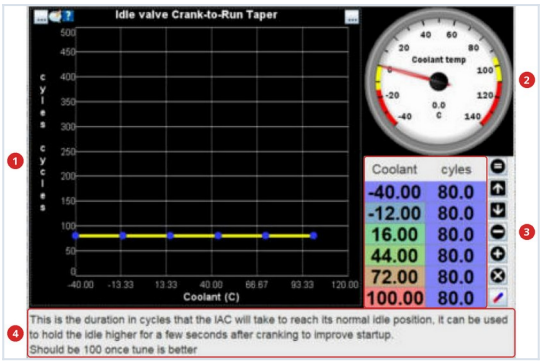
#	SETTING	WHAT IT DOES
1	**ETB idle maximum angle (%)** LEAVE AS SET	The throttle opening at 100% idle position: **15%** here (ETB = electronic throttle body). Every idle position (A, B, the fan adders and the closed-loop correction) is a % of this, so changing it changes them all. Also shown in Advanced ▸ Electronic Throttle Body actuator.
2	**Cranking Idle Valve Curve** LEAVE AS SET	A graph of the cranking idle position against engine temperature. Its numbers are in 4.
3	**Coolant temp gauge** DISPLAY ONLY	Live engine temperature. It reads 0.0 when TunerStudio isn't connected.
4	**Coolant and Percent columns** LEAVE AS SET	The idle position while cranking: **45%** at 0 °C (32 °F) and colder, down to **41.75%** at 100 °C (212 °F). With the 15% maximum angle, that's a throttle opening of about 6.3 to 6.8%.
5	**Help box** DISPLAY ONLY	The help for the setting you click; here, the ETB idle maximum angle.

It's used while cranking: from a stop until the Cranking RPM limit (600 RPM here). After the start, the Crank-to-Run Taper (C) fades from it to the Base Idle Valve Position, so it also sets the idle for the first few seconds.

Burn means save. Changes go to the ECU as you make them, but they are only kept after you click **Burn**.

C Idle Valve Crank-to-Run Taper

The window is titled **Idle Valve Crank-to-Run Taper**.



#	SETTING	WHAT IT DOES
1	**Idle valve Crank-to-Run Taper** LEAVE AS SET	A graph of the taper length against engine temperature. Its numbers are in 3.
2	**Coolant temp gauge** DISPLAY ONLY	Live engine temperature. It reads 0.0 when TunerStudio isn't connected.
3	**Coolant and cycles columns** LEAVE AS SET	Engine cycles for the move from the cranking position to the base idle position, counted from when cranking starts: **80** at every temperature here. One cycle is two crankshaft turns, so that's about 7 seconds at a cold idle and 10 at a warm idle. (The window spells it "cyles".)
4	**Help box** DISPLAY ONLY	General notes. "Should be 100 once tune is better" is a general starting point: your tune's number is set for your bike.

The count starts over every time the engine stops. During the taper, closed-loop idle and closed-loop idle timing wait.

Burn means save. Changes go to the ECU as you make them, but they are only kept after you click **Burn**.

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IMPACT ECU · IDLE BUTTON GUIDE

Idle Timing

At idle, a small change in spark timing changes the engine speed much faster than the throttle can. **Closed-loop idle timing** uses that to hold the idle steady: a little more advance when the RPM drops below the target, a little less when it rises above it.

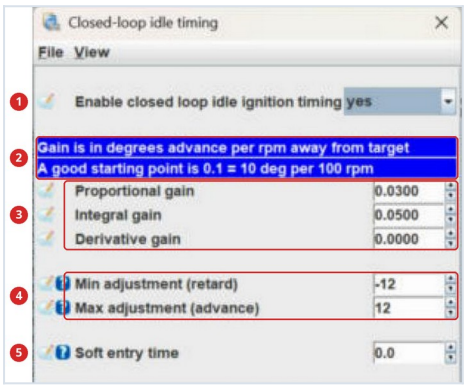
Your tune came with this set for your bike. **You should never need to change it.**

WHERE TO FIND IT

- **A** **Idle ▸ Closed-loop idle timing**
- **B** **Idle ▸ Idle Ignition advance** greyed out: off in our tunes

The numbers in these pictures come from one example bike. Your tune's numbers will be different, so don't copy them. Units are Metric (°C, kPa, km/h). Red numbers in each picture match the table below it.

A Closed-loop idle timing



1. **Enable closed loop idle ignition timing** LEAVE AS SET
   yes here. **no** turns it off.

2. **Blue notes** DISPLAY ONLY
   General notes on the gains. Your tune uses its own numbers.

3. **Proportional, Integral and Derivative gain** ADVANCED
   How strongly and quickly the timing reacts. Proportional gain is degrees per RPM off target: **0.03** here, about 3° per 100 RPM.

4. **Min adjustment (retard), Max adjustment (advance)** LEAVE AS SET
   The most timing it can take out or add: **−12°** and **+12°** here (degrees, though their help says "duty cycle").

5. **Soft entry time** LEAVE AS SET
   Eases the correction in over this many seconds when the engine first settles into idle. **0.0** = off, as here.

Burn means save. Changes go to the ECU as you make them, but they are only kept after you click **Burn**.

When it works

- Only while idling: twist grip closed (2% or less), RPM no more than 500 above the target, and after the Crank-to-Run Taper. Not while cranking, coasting or riding.
- It adds to the normal timing from the Ignition button: the timing table and the temperature corrections.
- In a datalog (a recording of what the engine is doing), **Idle: Timing adjustment** shows the degrees it's adding (+) or taking away (−).

B Idle Ignition advance

An optional timing curve just for idle, by RPM (window **Idle Advance Angle**). It's only used when **Idle ▸ Idle settings ▸ Separate idle ignition table** is **enabled**. Then, while idling and right after a start (during the Crank-to-Run Taper), the timing comes from this curve instead of the normal timing tables, and blends back to them as you open the twist grip from 1% to 2%. Closed-loop idle timing and the temperature corrections still add to it.

In our tunes it's **disabled**, so this menu item is greyed out and the normal tables are used at idle. Leave it off unless we set it up for you.

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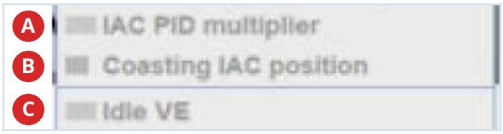
Optional Idle Tables

Three items in the Idle menu are extra tables a tuner can use for special cases. They're **off** in our tunes, so they're greyed out in the menu. IAC means idle air control: on your bike, that's the throttle body's idle opening.

Leave them off unless we set one up for you.

WHERE TO FIND IT

- (A) **Idle ▸ IAC PID multiplier** greyed out
- (B) **Idle ▸ Coasting IAC position** greyed out
- (C) **Idle ▸ Idle VE** greyed out



(A) IAC PID multiplier

An 8 × 8 table, by RPM and engine load, that scales the closed-loop idle correction: **1** = the full correction, **0** = none. It only opens when **Idle ▸ Idle settings ▸ Idle control mode** is **Open Loop + Closed Loop** and **Use IAC PID Multiplier Table** is **yes**.

In our tunes it's **no**, and the table is empty (all zeros). Turning it on with the table empty would switch the closed-loop idle correction off.

(B) Coasting IAC position

A curve, by RPM, of the idle position to use while coasting (twist grip closed, RPM well above the target). It only opens when **Idle ▸ Idle settings ▸ Separate coasting idle table** is **enabled**. Then, while coasting, it replaces the Base Idle Valve Position.

In our tunes it's **disabled**, and the curve is all zeros. Turning it on with the curve empty would close the throttle all the way while coasting.

C Idle VE

A separate 4 × 4 fuel table (VE) for idle, by RPM and engine load. There's no switch for it on any TunerStudio window, so it stays greyed out and off. Your idle fuel comes from the normal VE table in the Fuel button.

For the same reason, **Override Idle VE table load axis** in Idle ▸ Idle settings is greyed out too.

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