2 External Adjustments

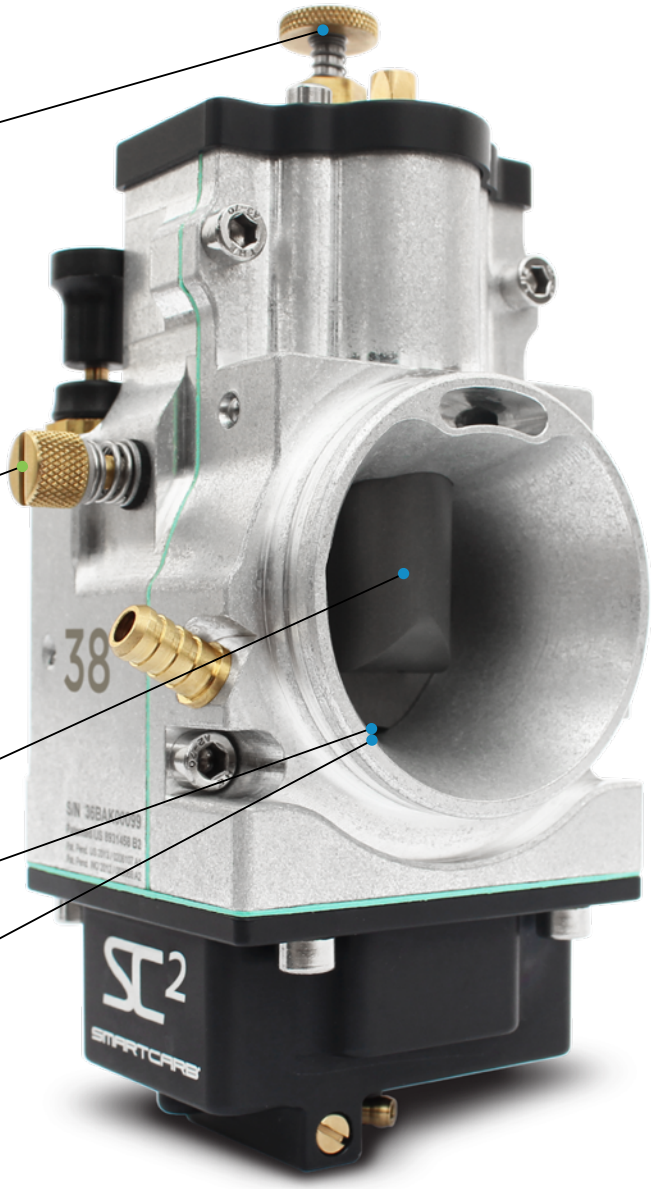
(38MM BILLET SC2 SMARTCARB)

Clicker Adjuster

Low speed air/fuel mixture adjustments are made externally by hand, using the high resolution Clicker Adjuster to raise or lower the metering rod independently within the slide. With the engine off, simply raise the slide, depress the Clicker Adjuster, and turn right for richer and left for leaner.

Idle Set Screw

Fine low speed and idle adjustments can be made by hand to raise or lower the slide cutaway allowing for more or less airflow and precision tuning of the carburetor at idle.



INTRODUCTION

The SmartCarb is a precision air/fuel metering instrument, capable of high-resolution adjustments forvery fine tuning of your engine. When set up properly, the SmartCarb offers substantial increases in performance, fuel economy, and run-ability. In this Mini Guide we explain the two simple external adjustments on the SmartCarb and how they work together to provide proper **low speed** air/fuel mixtures.

NOTE: Top end mixtures are controlled by the grind angle or fuel profile of the metering rod. Changing top end mixture values requires changing the metering rod.

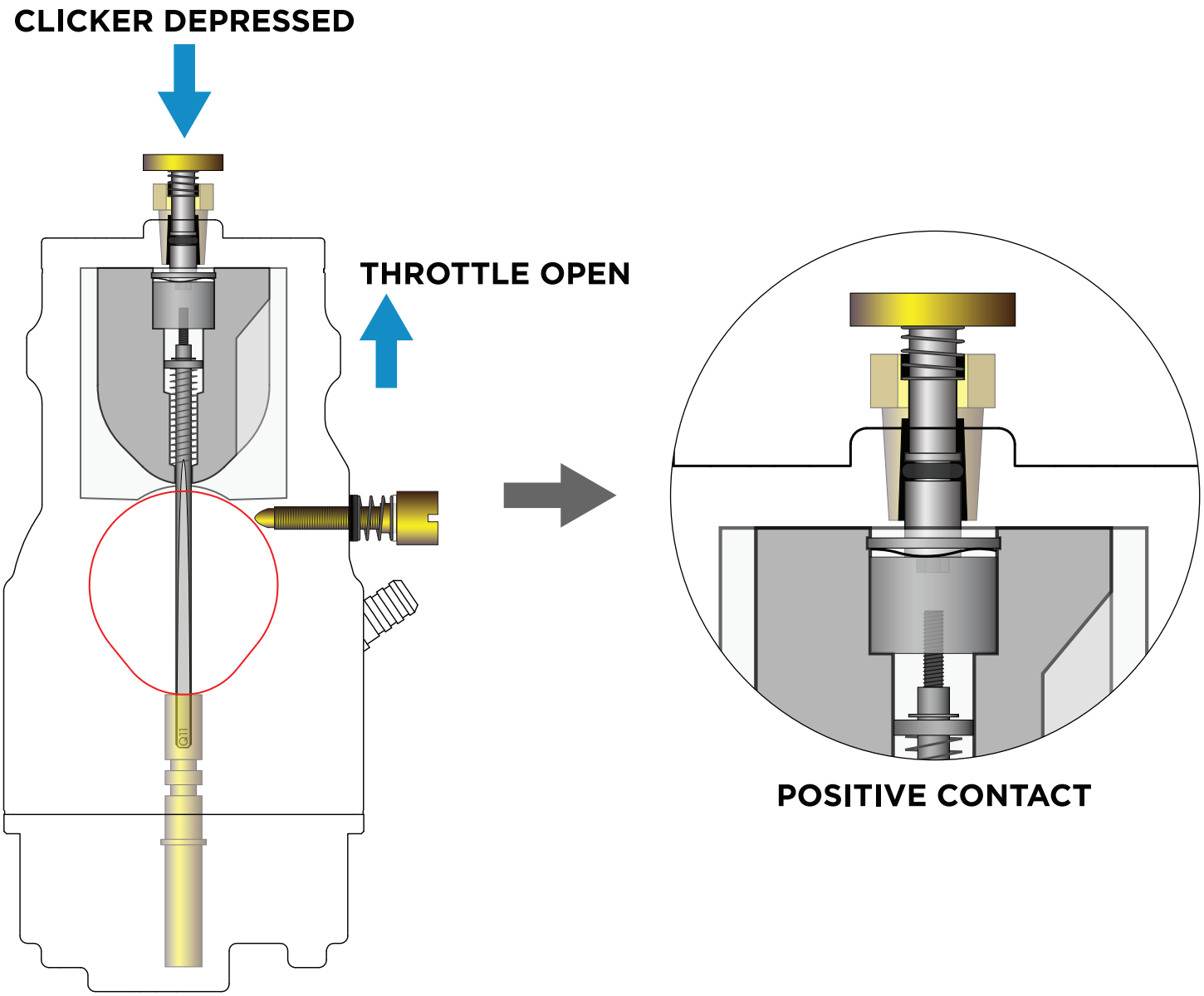
The two external adjustments on the SmartCarb that determine low speed air/fuel mixture values are the **Clicker Adjuster** on the top and the **Idle Set Screw** located at the side of the carburetor.

The **Clicker Adjuster** raises or lowers the fuel metering rod within and independent of the slide, allowing for more or less fuel to be drawn up the nozzle and past the metering rod. The **Idle Set Screw** raises or lowers the height of the slide cutaway, allowing for more or less air through the carburetor at idle. Proper mixture settings for the low speed are achieved when these two are **balanced.**

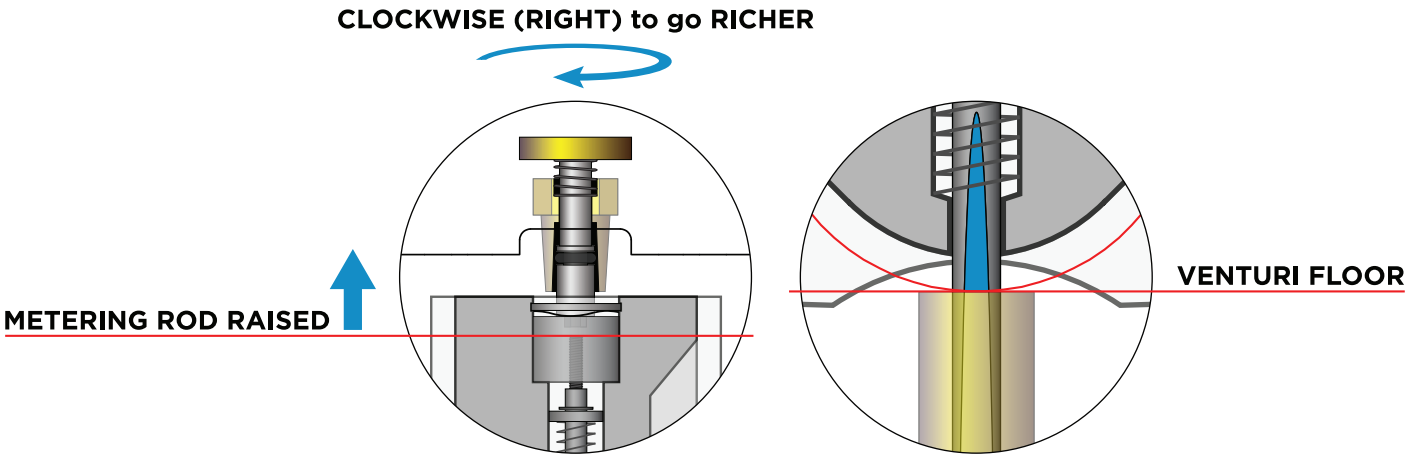
NOTE: Small adjustments can have large impacts on tuning and performance. All adjustments should be made in SMALL increments when tuning your SmartCarb. See the back of the Quick Start Guide that came with your purchase for your factory **Clicker Adjuster** and **Idle Set Screw** settings.

CLICKER ADJUSTMENTS

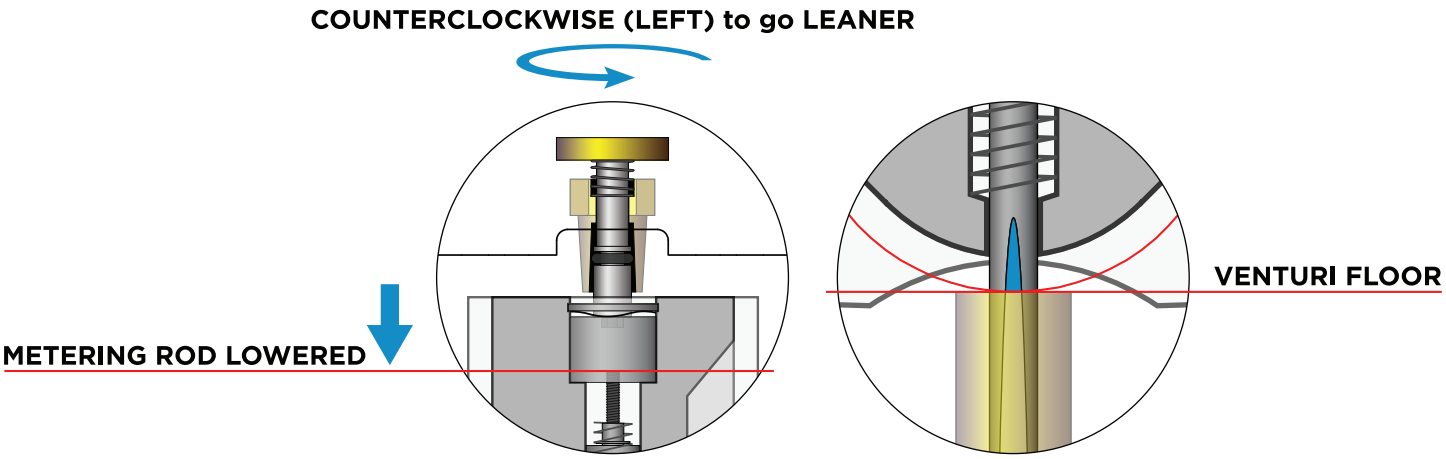
Clicker adjustments are made by opening the throttle all the way (while the engine is OFF), depressing the **Clicker Adjuster** down into the slide with positive contact, and then turning the clicker either left or right, clockwise or counterclockwise. Once properly engaged you will feel individual clicks (10 per single revolution of the Clicker).



Adjusting the **Clicker Adjuster** to the right, or clockwise, will raise the metering rod within the slide. Raising the metering rod will add more fuel to the mixture as it exposes more of the angled surface grind of the metering rod at the top of the nozzle near the venturi floor.



Adjusting the **Clicker Adjuster** to the left, or counterclockwise, will lower the metering rod within the slide. Lowering the metering rod will reduce fuel being added to the mixture as it exposes less of the angled surface grind of the metering rod.



A simple rule of thumb is to consider the Clicker thumbwheel as if it is a steering wheel. Turn it Right for Rich (RR) and Left for Lean (LL).

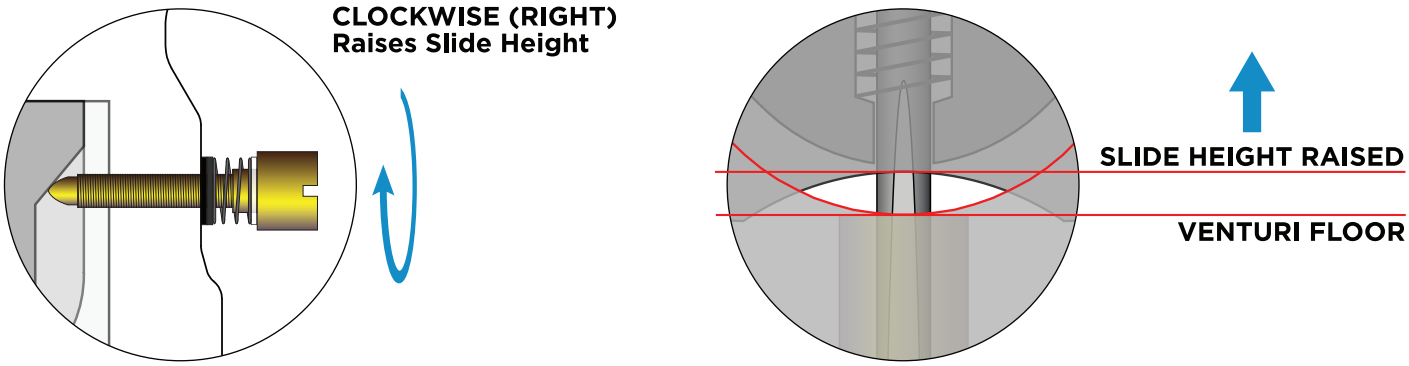
NOTE: Make sure that when making adjustments you don't leave the clicker mid-way between clicks. Also be sure to assist the spring on the **Clicker Adjuster** plunger by manually pulling it up to the top, helping to seat the internal o-ring and preventing air leaks or mud and dirt from entering the carburetor slide cavity.

Small **Idle Set Screw** adjustments may be required when making changes to the **Clicker Adjuster** setting. Subtracting or adding fuel by adjusting the metering rod will affect the idle speed. Richer settings will tend to make the engine idle lower, while leaner settings will make the engine idle higher. If more than slightly lean the **Idle Set Screw** will have little to no effect on idle speed. If excessively lean, the engine will be difficult to start without the choke on and will idle up and down erratically and may die off after a short period of running.

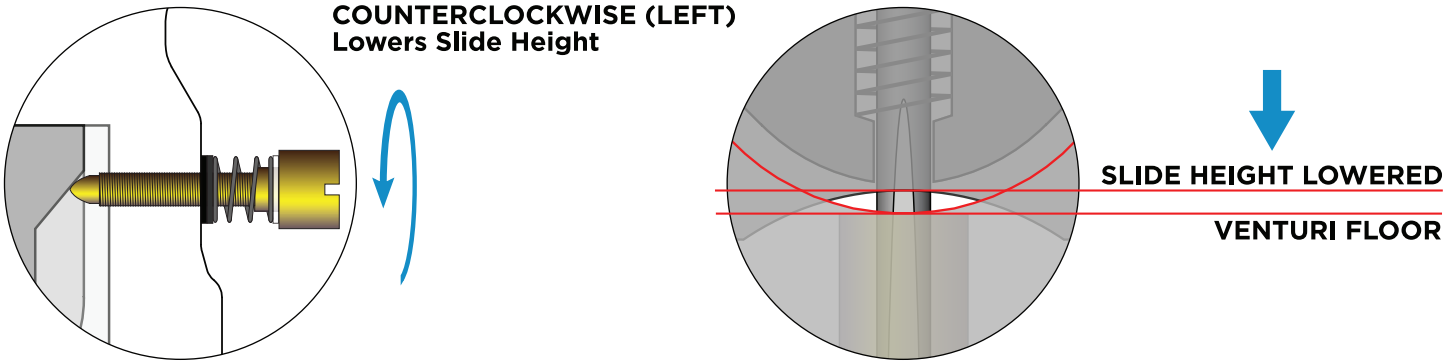
IDLE SET SCREW ADJUSTMENTS

Idle Set Screw adjustments are made by turning in or out the **Idle Set Screw.**

Turning the screw in clockwise to the right will raise the slide height:

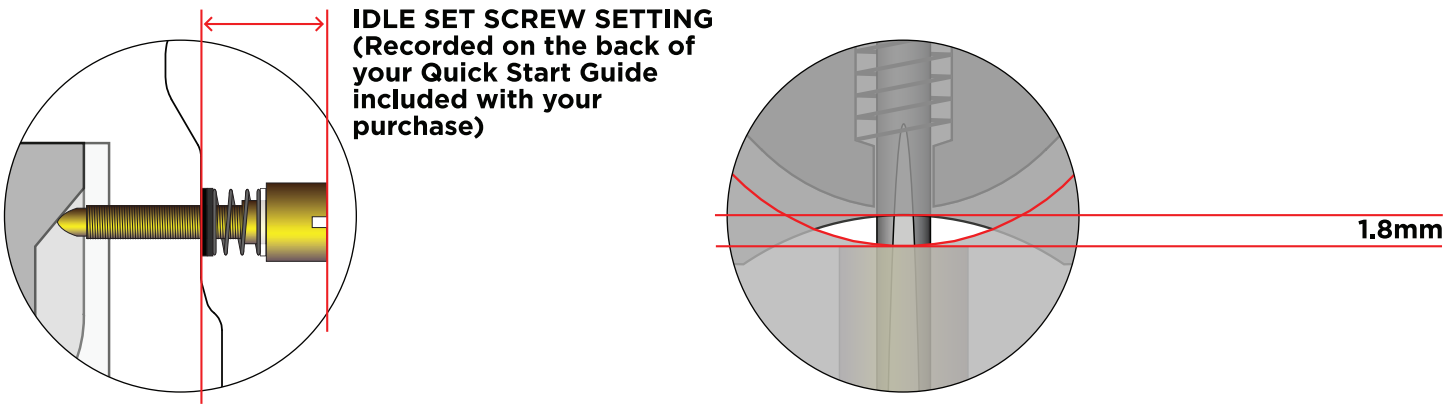


Turning the screw out counterclockwise to the left will lower the slide height:



NOTE: If turning the screw out does not lower the slide height, the slide may be hung up on the throttle cable and a throttle cable length adjustment may be necessary. `

NOTE: Remember to make adjustments in small increments such as quarter turns. While there is some slight variance between different engines and custom builds, a good starting point is to have the **Idle Set Screw** set to where the slide height is close to **1.8mm** for proper idle RPMs. The 1.8mm is measured from the floor of the venturi to the top middle of the slide cutaway as seen below and applies only to SmartCarbs sized 36-40mm.



A 1.8mm slide height maximizes the signal through the venturi for high air velocity, brings the engine down smoothly back to idle when the throttle is closed, and improves cold starting by letting most of the air pass through the choke circuit providing proper cold start enrichment and high idle warmup.

NOTE: If the idle setting is too high, the engine will be difficult if not impossible to start when cold, as a high idle setting allows incoming air to bypass the choke circuit, cheating its ability to pull fuel into the air stream. Furthermore the high slide cutaway creates a lean condition ineffective for cold starting.

NOTE: If the idle setting and slide cutaway are too low, the engine may stumble coming off idle and/or may bog or die when the throttle is whacked wide open quickly. You may also experience heavy pipe banging under deceleration as the excessively low slide cutaway effectively shuts off all but a very small amount of airflow to the engine when the throttle is closed. This is especially noticeable on hard decelerations after sustained wide open running.

NOTE: The 1.8mm recommendation is not guaranteed to be a proper idle setting. A slight variance of +.5mm (up to one full turn in from the baseline setting) may be found between different engines and custom builds. The 1.8mm recommendation only applies to SmartCarbs sized 36-40mm.

FINDING A BALANCE

Simply put, use the **Clicker Adjuster** to set the low speed fuel flow first and then use the **Idle Set Screw** to maximize signal and blend air into the idle mixture. When the two settings are close to optimum it will then be very easy to make corrections to achieve the desired idle speed and initial throttle response.

Remember that factory settings are detailed on the back of the Quick Start Guide included with your purchase. If you feel that the listed settings are incorrect, have been altered, or you have lost them, the factory settings are recorded with us and we can provide them by phone call or email along with technical advice.

SMART CARB®

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CASE STUDIES

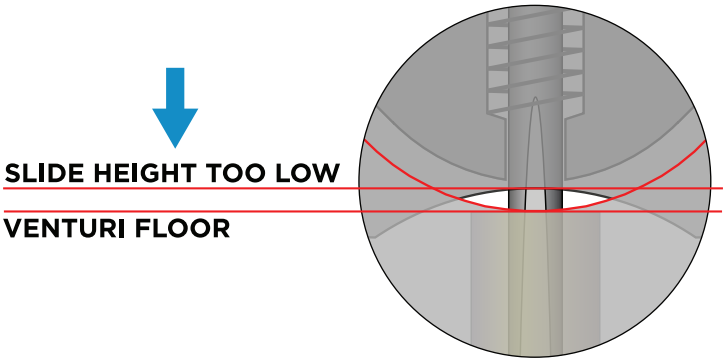
SmartCarb Fuel Systems always recommends that new users begin tuning their SmartCarb by first dialing in their **Clicker Adjuster** to set the low speed fuel flow, before adjusting the **Idle Set Screw** for steady idle speed. Difficulty narrowing down optimal settings can result when inexperienced users adjust **Clicker** settings while also making adjustments to the **Idle Set Screw**. Mixture settings made with the **Clicker** can affect idle RPMs as well, leading some inexperienced users to compensate for a non-optimal **Clicker** setting by changing the **Idle Set Screw** settings.

NOTE: It's important to remember that the best **Idle Set Screw** setting will produce a slide cutaway measurement that is very close to 1.8mm. If you are having running issues related to the **Clicker** or **Idle Set Screw** settings, it may be that your Clicker setting is not ideal, and you have compensated with the **Idle Set Screw.**

NOTE: Below are two examples of non-optimal tuning scenarios and how to correct them. They are assuming that the user is moderately able to get close to ideal and is not either extremely rich or extremely lean with their settings. If either is the case, adjustments to the **Idle Set Screw** will have little to no effect on engine idle RPMs and further work is needed with the **Clicker Adjuster** before proceeding.

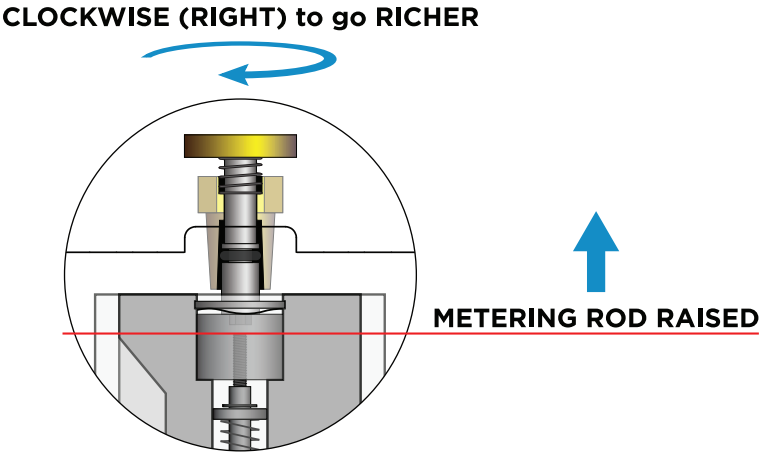
Example 1: The user has tuned his/her SmartCarb by setting the low speed fuel flow with the **Clicker Adjuster,** and has good running performance, however it is still a bit too lean resulting in a slightly higher RPM at idle or is a little lazy returning to idle. Rather than making a small adjustment to the **Clicker** to richen the mixture slightly to lower the idle RPMs, they choose to compensate for the slightly lean **Clicker** setting by lowering the **Idle Set Screw** setting. However, this leaves the slide cutaway height well below the 1.8mm baseline. Then they may begin to notice a stumble coming off idle, the engine bogs or dies when the throttle is whacked open, or heavy pipe banging on hard decelerations.

INCORRECT



Solution: The proper tuning method would be to adjust the **Clicker** a bit richer, one or two clicks at a time richer until the idle RPMs come down slightly. From there a small adjustment may still be necessary to the **Idle Set Screw** to fine tune the idle RPMs, but the slide cutaway height would likely remain close to 1.8mm and the user would not experience issues related to a slide cutaway height that is too low.

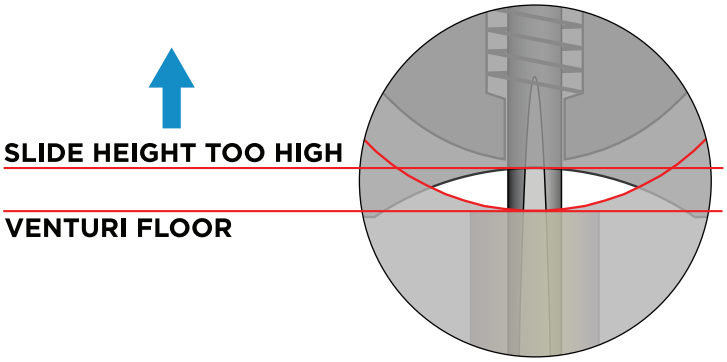
CORRECT



NOTE: Make **Clicker** adjustments in 1 or 2 click increments. Do not make large adjustments to the clicker at a time. As you get close to the ideal settings, you may notice that 1 or 2 clicks can make a very large difference, especially if your **Idle Set Screw** setting is close to ideal.

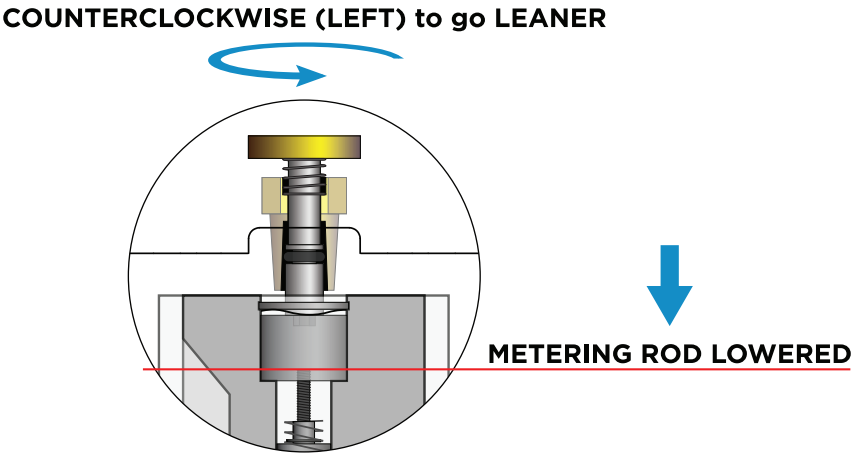
Example 2: The user has tuned his/her SmartCarb by setting the low speed fuel flow with the **Clicker Adjuster,** however it is a bit rich, resulting in a low, lazy idle RPM and tip in. Instead of making a small adjustment to the **Clicker** to lean the mixture values, raise the idle RPMs, and clean up the bottom end response, they choose instead to compensate for a non-optimal **Clicker** setting by raising the **Idle Set Screw** setting. Now the slide cutaway height is well above the 1.8mm baseline. Then they begin to notice that the bike is very hard to start when cold, even with the choke open. The bike may also come on or hit aggressively off of idle.

INCORRECT



Solution: The proper tuning method would be to adjust the Clicker leaner until the idle RPMs begin to raise slightly. A small **Idle Set Screw** adjustment may still be necessary to dial in the idle RPMs, but the slide cutaway height would likely now remain near 1.8mm and the user would not have any hard starting issues resulting from a slide cutaway height that is too high.

CORRECT



NOTE: Make **Clicker** adjustments in 1 or 2 click increments. Do not make large adjustments to the clicker at a time. As you get close to the ideal settings, you may notice that 1 or 2 clicks can make a large difference, especially if your **Idle Set Screw** setting is close to ideal.

NOTE: An air leak can also cause some of the lean conditions described in **Example 1.** If you discover that you are continuing to struggle to achieve positive results, it may require another close inspection of all fittings and checking the integrity of the rubber airboot, inlet, reeds and reed block.