

Metering Rod Guide

Thank you for being a SmartCarb customer. Please refer to this guide for a better understanding of our patented metering rods.

Introduction

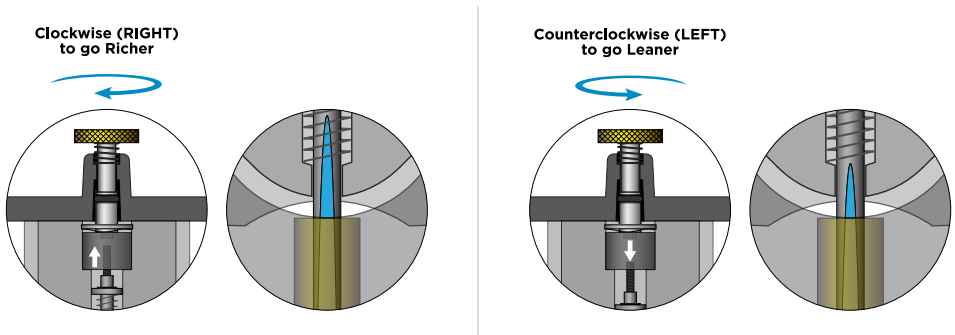
The SmartCarb is a single circuit fuel system that uses a metering rod to provide fuel flow through the entire throttle range. SmartCarb metering rods are precision machined with an angled flat on the down-stream side of the metering rod. The flat, called a grind angle or fuel profile, varies between different metering rods in order to suit the fueling needs of a wide variety of applications, engine characteristics, modifications, and fuel selections. Note that elevation and temperature changes are not considered in metering rod selection due to the SmartCarb's automatic air density compensation features.



The A-Q11 is a very commonly used metering rod for many applications, particularly for most enduro 250cc & 300cc 2-stroke dirt bikes.

Optimum performance from the SmartCarb requires both the correct metering rod fuel profile for the given application's fueling needs and correct positioning of that profile using the Clicker adjuster on top of the SmartCarb. The bottom end or idle and off idle response is tuned first with assessment of the mid to top performance occurring after.

The Clicker raises or lowers the metering rod independent of the throttle slide. Clicking to the right or clockwise raises the metering rod which moves the fuel profile in the richer direction. Clicking to the left or counterclockwise lowers the metering rod, moving the fuel profile in the leaner direction. In short, click Right for Rich (RR) and Left for Lean (LL).



Remember that the bottom end performance is tuned first. Should the application require either more or less fuel through the mid to top range, a different metering rod selection may be advised.

Introduction cont.

Note that the fueling differences between rods in a series are minimal if not identical at idle. Two different rods will progressively diverge from one another in how much or little fuel they provide through the throttle range relative to one another with the biggest differences being at full throttle or wide open.

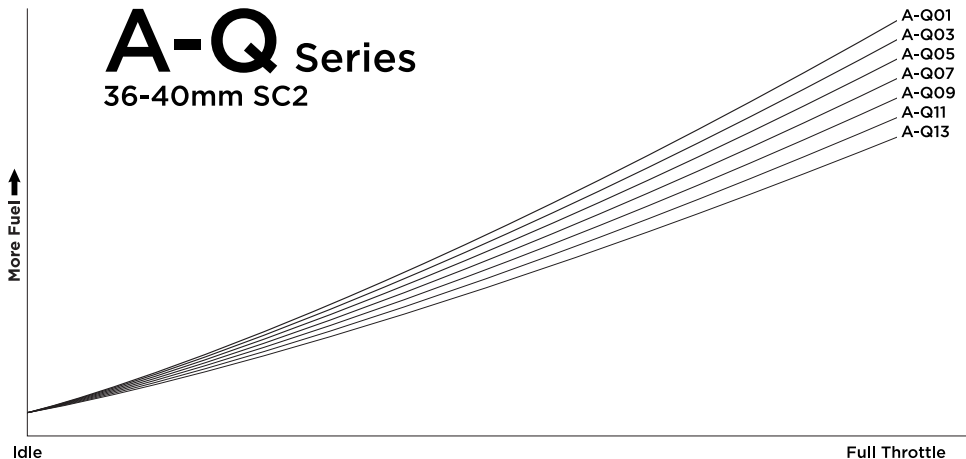
Most applications for which solid tuning baselines have been established will use one of two or three metering rods, depending on a few factors. For example a stock 2019 KTM 300 XC will use the A-Q11 in most cases, however the A-Q09 may be better, providing more fuel through the mid to top to accommodate a high compression head, hotter ignition, race fuel, and/or if the bike is seeing harder than normal engine loading (supermoto, desert racing, hill climbing, or snowbiking).

Disclaimers:

- This document is intended only to be a general guide to understanding the basic differences between SmartCarb metering rods and metering rod series.
- SmartCarb metering rods are patent protected. Do NOT attempt to create or modify a metering rod for use in any SmartCarb. Doing so will void your warranty and may constitute an intellectual property violation. SmartCarb Fuel Systems, Inc retains all rights.
- Optimum SmartCarb tuning requires proper SmartCarb installation and that your application is in good working order and up to date on maintenance. Failing any of these requirements may make tuning difficult, if not impossible.
- Fuel composition may vary by region and even seasonally which can affect tuning baselines and in some cases metering rod selection.
- We are available to advise you on metering rod selection for unique applications. We do not offer custom metering rods.

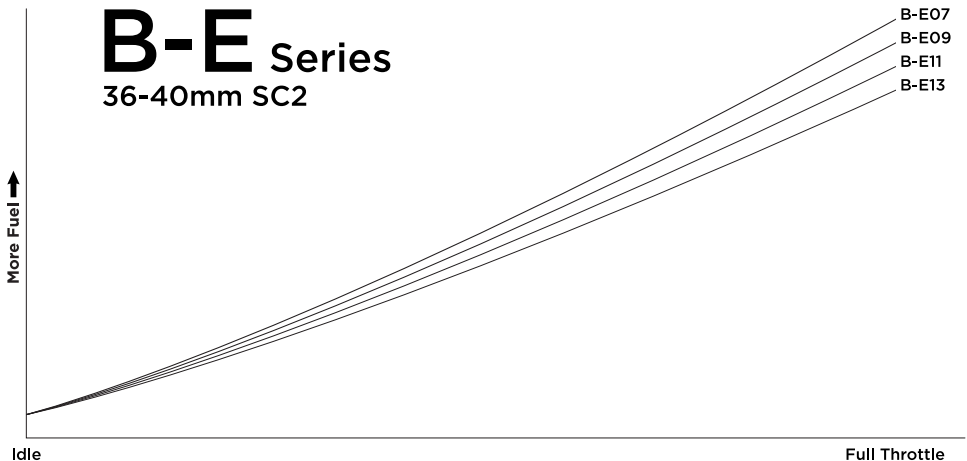
A-Q Series

The A-Q series metering rods provide ideal fuel profiles in many applications using 36-40mm size SmartCarbs. As mentioned before the A-Q11 is commonly used in 250cc & 300cc 2-stroke enduro bikes. Another example is the A-Q07, which is the go-to rod for nearly all 250cc motocross bikes.



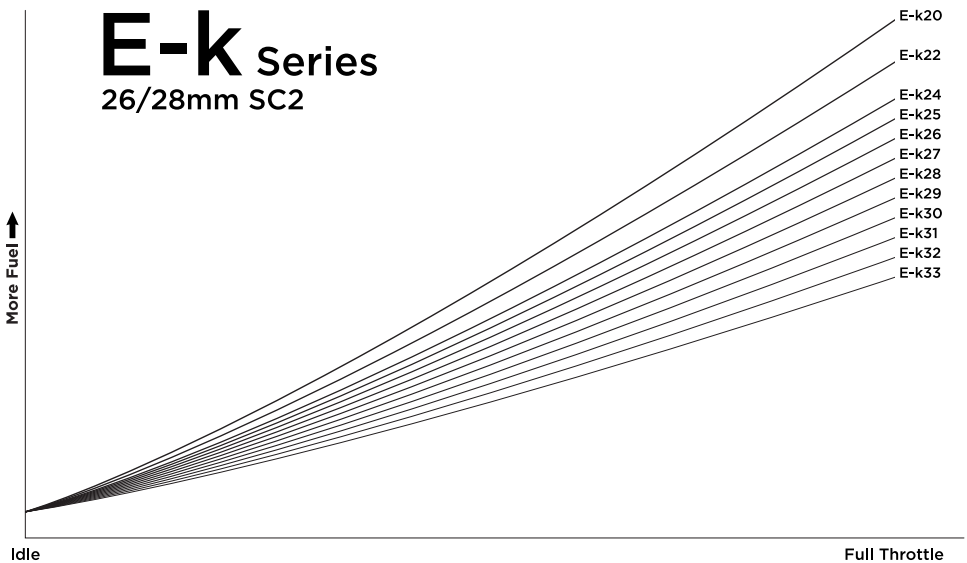
B-E Series

The B-E series metering rods are also used in 36-40mm size SmartCarbs, though in less common applications. They have a shorter grind length which makes for a more rapid, aggressive fuel profile that tends to be too rich too quickly for most applications. One notable exception is the KTM/Husqvarna 150cc bikes which use the B-E13 rod.



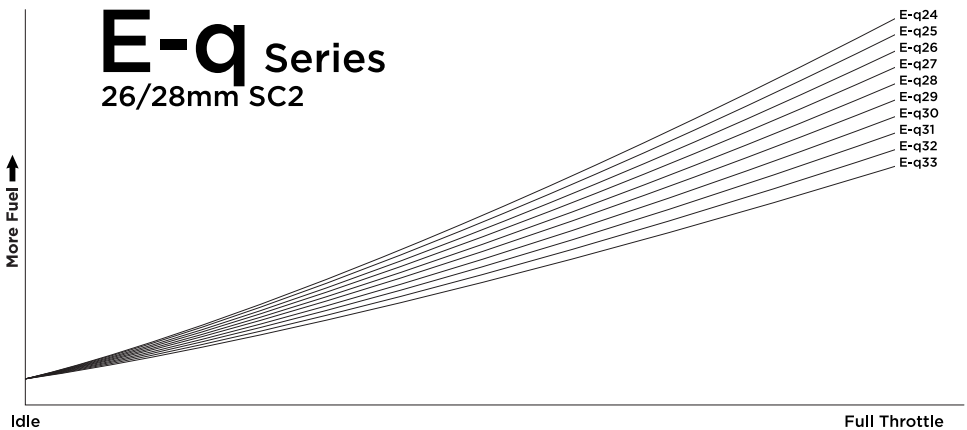
E-k Series

The E-k series metering rods provide optimum fuel profiles in many applications using 26mm & 28mm size SmartCarbs, including most fast and high revving 65-112cc mini motocross 2-strokes, 125-300cc trials bikes, 180-300cc paramotors, competition pit-bikes, and more.



E-q Series

The E-q series metering rods are also used in 26mm & 28mm size SmartCarbs, however their longer grind lengths make them more suitable for less aggressive, slower revving applications or those that require a more gradual fuel profile such as vintage 2-stroke scooters or trials bikes and older piston port engines.



C-A Series

The C-A series metering rods are used in 26mm & 28mm size SmartCarbs and their fuel profiles are similar to that of the E-q series, however their longer overall length spreads the fueling out over an even longer distance. These rods are not commonly used, however one exception is the KTM Freeride, which uses either the C-A31 or C-A30 depending on the nature of any engine, exhaust, and/or air filter modifications.

