

Airhead tuning with GROK Harmonizer

Jan. 2020

These directions will cover using the Harmonizer to tune a Bing CV carb. You can tune any carb or throttle body setup with vacuum ports in a similar manner.

Do a careful valve adjustment first. It helps immensely for smoothness.

Warm the engine to operating temperature, (take it for a ride, don't just idle for 15 minutes) then shut it off.

Put a BAF (big ass fan) on it while doing the adjustments.

There are 3 types of adjustments for balance and carb tuning.

1. Idle balance and RPM combination
2. Carburetor idle mixture
3. Higher-RPM balance

The first thing you are going to do is a rough idle balance and RPM adjustment. This will make sure the carbs are working roughly equally and are running on the idle jets instead of the main jets. This is in preparation for adjusting the idle mixture. If the bike is generally running well, this step 1 may not be necessary.

STEP 1. ROUGH BALANCE and RPM ADJUSTMENT.

PURPOSE: make sure carbs are contributing roughly equally and are operating on the idle jets by adjusting idle balance and RPM in Harmonizer **balancer mode**.

With the engine off, remove the screws and/or caps from the vacuum ports on each carb.

Plug on the Harmonizer hoses and push the red button. After some seconds, the Harmonizer will finish its calibration routine and stand ready in balancer mode. Make sure there is a very small amount of slack in the throttle cables (2-3mm) Start the motor and blip the throttle a couple of times. Adjust the idle/throttle stop screws (not the idle mixture screws) such that the Harmonizer shows balanced at around 1000 to 1100 RPM. You don't need to be too accurate here. You're going to redo it later. Shut off the motor.

STEP 2. IDLE MIXTURE ADJUSTMENTS

PURPOSE: Optimize idle mixture for each carb by adjusting for max vacuum in Harmonizer **gauge mode**.

Here's where you adjust the idle mixture for each carb. In the previous step you made sure both carbs were contributing roughly equally and were running on the adjustable idle jets. Disconnect the Harmonizer hose from the left carb and put the cap back on.

*At this point the Harmonizer should be connected with one hose only, **yellow port** to right carb.* Put the Harmonizer in **gauge mode** by holding the button pressed until you see "**gauge mode**" and release the button.

Start the engine. On the Harmonizer display you will see a left-zero graph and a numeric display that shows vacuum in inches of mercury along with the tach reading. The object is to adjust the idle mixture screw on the right carb such that the vacuum reading is as high as you can make it. Make small adjustments and give the Harmonizer a few seconds to settle after each small tweak. Once you've maximized the vacuum reading for the right carb, shut off the motor.

Disconnect the Harmonizer from the right carb, replace the vacuum port screw or cap, and remove the cap from the left carb. Connect the Harmonizer **yellow port** the left carb. Still in **gauge mode**, repeat the process of adjusting the idle mixture screw for maximum vacuum on the left carb. Shut off the motor.

STEP 3. FINE IDLE BALANCE and RPM ADJUSTMENT.

PURPOSE: Fine tune idle balance after messing about with the idle mixture adjustments in step 2.

Step 3 is basically a repeat of step 1. Change the Harmonizer back into **balancer mode** and connect both hoses. The object is to adjust the idle/throttle stop screws such that the Harmonizer shows a balanced condition and the RPM's are within specifications. Shut off motor.

STEP 4: HIGHER RPM BALANCE.

PURPOSE: Adjust relative throttle cable lengths so that the carbs are balanced above idle, while the cables are in control.

Make sure both cables have a small amount of slack - maybe 2mm or so.

Put the Harmonizer in **balancer mode** if it has automatically turned itself off. Restart the motor. Now turn the throttle so that the motor revs up to about 3000rpm.

Adjust the relative cable length by adjusting ONE of the cable adjusters (the right side is traditional) such that the Harmonizer shows a balanced condition at around 3000 RPM or so.

That should do it!

Shut off motor. Disconnect Harmonizer, replace the vacuum caps and/or screws.

Bask in your achievement!