CarbOnBal Quick-Start Guide

This QSG assumes you have already built a working CarbOnBal and are setting it up for use on your engine. This means the display comes on and the readings vary according to the suction or vacuum applied on each of the hoses. If this doesn't work you have a problem that won't be fixed by reading this QSG.

Menu entries and settings you choose on screen will be displayed in the HD44780 Font.
Step one is to power up and let the demo (press any key to continue) and self-tests run.

If you are having difficulty reading the display, press the Left / Up button to bring up the contrast menu. Using the left / right keys you can then adjust the contrast to get the best possible image. Press OK to keep the new settings, press Cancel to discard and return to the original setting.

The Right / Down button allows you to adjust the brightness of the backlight in the same way.

Note: All settings you change are immediately saved on pressing OK.

Now, with the display readable, use the OK / Menu button to enter the main menu.

The first step to take is to calibrate the sensors. Use the OK button to enter the menu and navigate to
Calibration / Calibrate Sensors.
The numbers 2,3 and 4 sensors are each calibrated to match sensor 1's readings. Choose a sensor to calibrate, press OK and then make sure to apply suction / vacuum to both the sensor to be calibrated and sensor number 1 at the same time. Take care these are joined without leaks and the hose lengths and diameters are equal for both sensors. Repeated calibration yields increasing accuracy to a point. Calibration can be done orally, via engine vacuum or using a vacuum pump.

After calibration is finished you are presented with some statistics. A keypress then takes you on to the review screen, where you can scroll right and left through the recorded values. 256 values are recorded per sensor.

After calibrating the three sensors its time to connect the vacuum hoses to the carbs or throttle bodies. All the usual precautions apply when working around hot, sharp, heavy and moving parts.

You can connect them any way you like and its possible to set the master carb from the menu:
Settings / Hardware / Master Cylinder

This is used to indicate which carb is fixed on this engine. It affects the relative display mode in which the vacuum differences between the carbs are indicated with respect to the master cylinder. The Absolute display mode is a bar graph, much like a regular fluid filled hose. It just displays the current values for each cylinder without comparing them against each other.

It is recommended to use the absolute display mode at first because the relative display mode highlights tiny differences making it much harder to use.

Change this display option under Display / Graph Type

You are now ready to use CarbOnBal. Because engines differ there are some settings in the menu which will probably need to be tweaked in order to set the display up according to your own preferences.
In the menu go to Settings / Software Here you will find the settings Damping and Responsiveness

Damping controls how quickly the display tracks changes to the vacuum pressure.
0% means the display will be updated so quickly it becomes impossible to read. 100% damping means the display will never react. I suggest settings around the middle of the range.

Responsiveness controls how quickly the damping will be reset if the engine is revved. This yields a more natural display and allows you to use high damping for easy readability and still see the effect of revving the throttle.
0% responsiveness means the display is unaffected by revving the engine, giving you the unmodified effect of the damping. A responsiveness of near 100% will make the display unstable as it effectively “undermines” the Damping.
I suggest setting the damping first, then boosting the responsiveness until everything is set up to your taste.