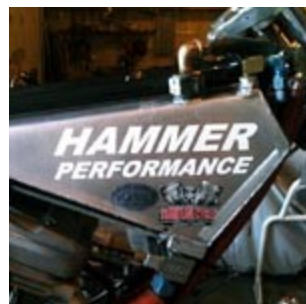


View Single Post

Thread: [Stock O2 sensors vs power vision](#)

5th September 2017

#6



aswrcing
A Million Facts & Figures

Join Date: Jan 2005
Location: Famous Potatoes
Posts: 10,201
Reputation: 2979240



The stock sensors are narrow band. A 14.6 in an AFR cell causes the ECM to read the sensors and adjust fueling accordingly. That's closed-loop mode.

When a cell has something other than 14.6 in it, it's open loop. The sensors are ignored, and the ECM instead calculates how much fuel it needs to inject (to achieve the target AFR) based on the air flow model.

Here's what SLD was getting at:

Air-Fuel Ratio (Stoich)											
Original2007-1200.pvt											
RPM	MAP (KPa)										
	20	25	30	40	50	60	70	75	80	90	100
750	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
1000	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
1250	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
1500	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
1750	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
2000	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
2250	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
2500	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
2750	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
3000	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
3500	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
4000	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
4500	13.0	14.3	14.6	14.6	14.6	14.6	14.6	14.6	14.6	12.5	12.5
5000	13.0	14.3	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
5500	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
6000	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
6500	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5

As you can see, the meat of the riding range is all closed-loop. But when you whack the throttle wide open (i.e. the right side of the chart), it's actually very fat at 12.5:1. Likewise when you chop the throttle it's fairly fat, which is probably all about reducing decel popping.

Running lean like that in the meat of the riding range is good for mpg and emissions. However, when you have the throttle open, you're not lean anymore, at least not if your airflow model is correct.

Just an FYI, this 14.6-to-signal-closed-loop thing changed in 2014 with the CAN-Bus bikes. Here's a sample AFR table from a 2014:

Air-Fuel Ratio (Lambda)

Stock 2014 1200.pvt

RPM	MAP (kPa)											
	20	25	30	40	50	60	70	80	85	90	95	100
750	14.5	14.7	14.7	14.7	14.7	14.7	14.5	14.4	14.4	13.6	12.9	12.9
1000	14.5	14.7	14.7	14.7	14.7	14.7	14.5	14.4	14.4	13.6	12.9	12.9
1125	14.5	14.7	14.7	14.7	14.7	14.7	14.5	14.4	14.4	13.6	12.9	12.9
1250	14.5	14.7	14.7	14.7	14.7	14.7	14.5	14.4	14.4	13.6	12.9	12.9
1500	14.5	14.7	14.7	14.6	14.6	14.5	14.5	14.4	14.4	13.6	12.9	12.9
1750	14.5	14.6	14.6	14.5	14.5	14.5	14.5	14.4	14.4	13.6	12.9	12.9
2000	14.5	14.6	14.6	14.5	14.5	14.5	14.5	14.4	14.4	13.6	12.9	12.9
2250	14.5	14.6	14.6	14.5	14.5	14.5	14.5	14.4	14.4	13.6	12.9	12.9
2500	14.5	14.6	14.6	14.5	14.5	14.5	14.5	14.4	14.4	13.6	12.9	12.9
2750	14.5	14.6	14.6	14.5	14.5	14.5	14.5	14.4	14.4	13.6	12.9	12.9
3000	14.5	14.6	14.6	14.5	14.4	14.4	14.4	14.4	14.4	13.6	12.9	12.9
3500	14.5	14.6	14.6	14.5	14.4	14.4	14.4	14.4	14.4	13.6	12.9	12.9
4000	13.5	14.5	14.5	14.5	14.3	14.3	14.3	14.3	13.8	13.1	12.8	12.8
4500	13.1	14.5	14.5	14.5	14.3	14.3	14.3	13.6	13.1	12.6	12.4	12.4
5000	12.6	13.6	13.6	13.6	13.6	13.6	13.6	12.9	12.7	12.5	12.4	12.4
5500	12.6	13.1	13.1	13.1	13.1	13.1	13.1	12.7	12.6	12.4	12.4	12.4
6000	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.5	12.4	12.4	12.4	12.4

Notice how all cells that are between 14.3 and 14.7 have a circle around the value. That's to tell you it's closed loop. There are settings in the tune that allow you to adjust both the upper and lower limits of the closed loop range.

One other note on these AFR tables. I look at a LOT of stock tunes. There are differences in these tables between 883's and 1200's, but also between different markets, and even year to year without a change in the Cal number, you see differences in the tables. So don't take the above as gospel, because a given bike may or may not have that exact table, even if it's the same year and model. However, the basic pattern is always the same in a stock tune. Lean in the meat of the riding range and fatter when the throttle is closed or wide open.

[Click Here to Contact Me](#)



Close this window