

Perplexing Dyno Results

Posted by afonseca - 04 Aug 2015 16:03

As a follow-up to my [WSC experience post](#) , I thought I'd share my dyno sheets with the group for a couple of reasons. One, for transparency to support my previous statements on the numbers I observed this past weekend and two, in case anyone has insight on what this might mean as I'm at a loss.

In the dropbox location linked below, I am sharing dyno results from MCE as follows:

Within 944 spec limits:

May 17, 2015 - Auto Club Speedway

July 31, 2015 - Laguna Seca

No changes were made to the car between July 31 - August 2nd.

Outside 944 spec limits:

August 2, 2015 - Laguna Seca

August 2, 2015 - Laguna Seca #2

There's also a comparison between the Friday run and the first Sunday run:

August 2, 2015 - Laguna Seca Friday vs Sunday

www.dropbox.com/sh/z491lky94gj6rv5/AADrc...twZiKix2dNUljua?dl=0

If there are any dyno guru's out there that can help shed some light on the above I'd appreciate it as I'm starting from ground 0 in terms of dyno knowledge here. The only uninformed observation I'm able to make is, the runs that look "squigglier" result in lower power vs the smoother looking runs. I also observed the same when seeing Dan's runs where he produced similar numbers just in the opposite order (high on Friday, low on Sunday).

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Re: Perplexing Dyno Results

Posted by tcomeau - 09 Aug 2015 09:18

Hey guys.

Alberto, not Alfredo, and I have exchanged several emails over the past few days. We are still at a loss to explain the variance in dyno readings.

During testing that I supervised, the 944's were all up to temp (between 180 and 200 F according to their gauges) , centered on the dyno, with rear tire pressures set to 30. If the gearboxes were cooler, they would have *decreased* the HP readings.

Depending on stock or aftermarket gauges and senders, the temp can vary a little. Stock temp is taken at the block near the head's water exit. I've seen temp sensors installed at the rear of the head. Regardless, all the 944's tested were up to temp, having been idled or fast idled prior to testing. Yes, the cars will run hotter during a race. Oil temp takes longer to rise.

One variable that I asked about was strapping the cars down. Some cars moved more forward and backwards during testing. I asked if this could make a dyno curve look more jagged, but was told by the dyno operator that it was insignificant.

I'd like to know more about the part of the dyno that was "baking in the sun" at east coast races. Should we shade that part? Still, the SAE correction factor was 1.03 for every test except the last pull for Alberto, where it changed to 1.04 - accounting for a half degree temp change and 1% humidity change.

Another thing I noticed was that the HP scale along the left side of the dyno report would change from 0-150 to 20-160, making it more difficult to compare curves between cars. I'd like to standardize that if we could.

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Re: Perplexing Dyno Results

Posted by Manuel_M - 09 Aug 2015 17:42

Do you by any chance have your A/F ratios from the different runs? Attached is my run where only 2 pulls were made due to A/F ratios around 15 and 16 producing 121HP and 133TQ. The graph looks similar to yours from auto club.

Unbeknownst to me, I had adjusted my TPS sensor out of range when adjusting the idle set screw causing it not to read WOT. After readjustment my A/F ratios read around 10.5 at idle and ~12.5 at WOT. I have not been back to the dyno but can only assume better numbers. Could you have adjusted your idle set screw or have intermittent TPS issues?

Doc, could you go into more detail on tuning the car for decreasing and increasing power based on the DME fuel quality switch settings (maybe start another thread?). I'm aware of how the AFM tuning works (from the thread on here) but could not really find any info on how the advance/retard settings on the

DME affect power output. Thanks!

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Re: Perplexing Dyno Results

Posted by Sterling Doc - 09 Aug 2015 20:25

I don't have time to get into the details tonight, but you can search the FQS settings online. Some of the settings retard timing, which cuts HP a bit. These were meant for low octane fuel correction.

With Alberto's (my apologies on the name change!) test, the HP was climbing significantly with each test. Whether this represents a warming gearbox, or higher engine oil temps, or what, I don't know, but I don't think we can say that the testing in that circumstance found the potential of that motor. It may well be it would have stopped going up before it hit 140+, but we don't know where it would have stopped, only that it was climbing.

As far as the checklist, it is a copy of the rules, and then a careful effort to make sure we have enough pulls to see the HP stop going up before we start compliance runs.

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Re: Perplexing Dyno Results

Posted by afonseca - 09 Aug 2015 20:59

Manuel_M wrote:

Do you by any chance have your A/F ratios from the different runs? Attached is my run where only 2 pulls were made due to A/F ratios around 15 and 16 producing 121HP and 133TQ. The graph looks similar to yours from auto club.

Since all those tests were compliance runs paid for by NASA they didn't include the A/F ratios. It's my understanding you have to pay extra to get those? I will do so when I do my own test dyno runs here.

Manuel_M wrote:

Unbeknownst to me, I had adjusted my TPS sensor out of range when adjusting the idle set screw causing it not to read WOT. After readjustment my A/F ratios read around 10.5 at idle and ~12.5 at WOT. I have not been back to the dyno but can only assume better numbers. Could you have adjusted your idle set screw or have intermittent TPS issues?

I haven't made any adjustments but that doesn't rule out intermittent issues so that's something I'll have to check. Thanks for sharing, your dyno definitely looks "squiggly" like what I saw.

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Re: Perplexing Dyno Results

Posted by afonseca - 09 Aug 2015 21:07

Sterling Doc wrote:

As far as the checklist, it is a copy of the rules, and then a careful effort to make sure we have enough pulls to see the HP stop going up before we start compliance runs.

Thank you, that is helpful so we can all be on the same page. I know this may vary but I'm curious roughly how many pulls does it take to have the HP stop going up before you start the compliance runs?

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Re: Perplexing Dyno Results

Posted by Sterling Doc - 10 Aug 2015 04:07

Well, 1st we have the dyno operator get the car warm enough to meet the specs in the rules at a minimum - if the car is cool, that can sometimes take a bit. The benefit of warming the car on the dyno is that it also warms the gearbox. If the motor is warm, but the gearbox is cold, I've seen it take 7-10 runs to get the number to stabilize. If the car is just off the track, then it is typically warm, and 3-4 runs will often do it. If the car is waiting for others to dyno, then getting it hot on the dyno is often needed. Then there are other variables - cars with big oil coolers take longer, etc.

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