

## HP/TQ Imbalance

Posted by Manuel\_M - 07 Nov 2016 17:37

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Gentleman, any idea what could cause the 11 point gap between HP (131.3) and TQ (142.6)?

- LC min shaved head
  - 2 Degree cam key
  - Late head / Turbo valve springs
  - Early Cam
  - Tubular Headers
  - Downpipe dumping mid car with straight thru muffler
  - ~13 - 13.5 AFR's (FQS +6% and 2 or 3 clicks on AFM)
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## Re: HP/TQ Imbalance

Posted by cbuzzetti - 08 Nov 2016 13:17

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Usually it is the increased fuel that will bump TQ. Try moving back to stock on the wheel in the AFM.

Did you try all settings on FQS?

Did you have car up to full temp. These cars make more HP and TQ when hot.

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## Re: HP/TQ Imbalance

Posted by Manuel\_M - 08 Nov 2016 14:47

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The car was very lean before this, doing a few clicks on the AFM and FQS got me down to a reasonable AFR. I did not try any additional settings based on needing more fuel. The car was up to temp (15min warm-up, ran on dyno, 6 runs total). These were runs 4 – 6, in 1 – 3 when it was lean I believe it ran 120HP/131TQ.

Tim was thinking it could be timing related. I dont believe the timing is off but need to check for sure.

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### Re: HP/TQ Imbalance

Posted by KJZ78701 - 09 Nov 2016 10:07

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Which way did you install the offset key. From the dyno charts it looks like you advanced your cam timing, shifting the power more toward the lower end of the range, rather than retarding it.

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### Re: HP/TQ Imbalance

Posted by Manuel\_M - 09 Nov 2016 12:42

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It is advanced, I think the rules say it needs to be run in the advanced position.

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### Re: HP/TQ Imbalance

Posted by KJZ78701 - 09 Nov 2016 16:04

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The PCA rules say:

**&quot;Engines with the 9.5 compression ratio may use a two degree offset camshaft key.&quot;**

The NASA rules say:

**12.5.5 A camshaft key offset 2 degrees advanced is allowed for motors equipped with the low compression 9.5:1 pistons.**

ARG!!!! You can do all of those with the 9.5 pistons a favor by turning that into a 2 degree retard and retesting your car.

I doubt that will get you the 10 ft\*lbs of torque you are missing near redline, but it will be a start as it seems to me that you have a flow problem. It's been years since I fiddled with the Porsche AFM, but I have modified over 100 Spec Miata AFMs.

You have already relaxed the spring tension in your AFM, but you can do more. Watch the wiper arm while on the dyno and note the position of the arm at redline compared to the position of the arm with the flapper door in the fully open position. You want the flapper door to get as close to fully open as possible

at redline. This means less spring tension (CCW on the spring) with a wiper arm adjustment (CW) to counteract. This is not so easy unless you make up a little electronic helper with a second AFM connector, multi-meter and DC supply voltage (12 volts on the early AFMs and 5 volts on the later AFMs). With this "tool" you can easily tune the AFM with the car on the dyno and can then make small adjustments for altitude, air density, etc. at the track. I adjust based on the output voltage with the flapper in the fully open position.

Note that if you go this far with your tuning, you would be well served to run a wideband O2 sensor in your car at all times.

If you can't get your high end numbers up with both of those tuning tricks, then I am sorry to say that your flow problem is a bit deeper. Bad casting, bad valve job (looks like it's sealing, but not flowing), etc.

PLEASE PLEASE PLEASE....do the offset key first without anything else and report back those results.

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