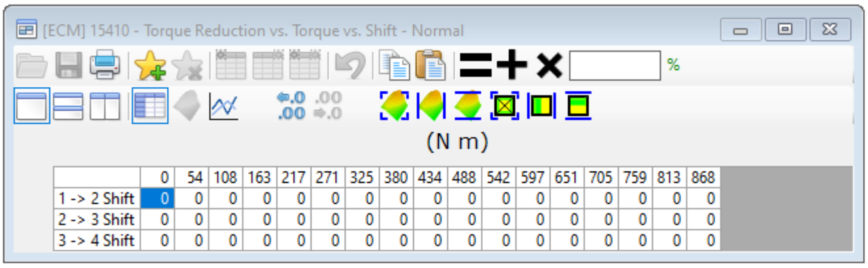
There is Tuning and Tooning. I find it funny when I see the forums and Facebook posts of odd looking Maps and multiple commenters on how poor these are without any explanation of why and what the tuner has done wrong, and how it should be.

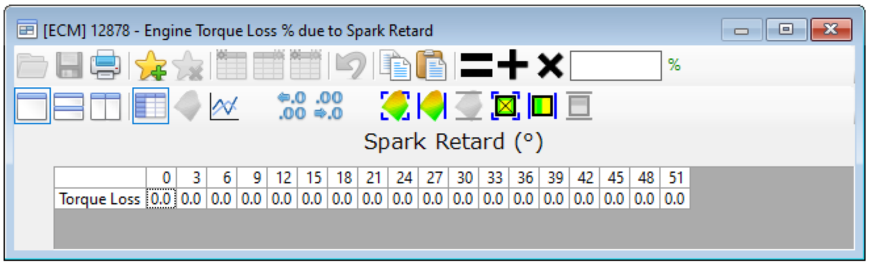
So I thought I would offer a few examples of what I have seen in recent times many from reputable tuners who's claims to big numbers and fast ¼ mile times give them credibility. Unfortunately, the easiest way to tune is wrongly and a good-looking dyno figure does not denote a quality or correct tune.

Turning off intentionally or accidentally transmission torque reduction. Modern gearboxes are fully clutched and rely on a slip/stick principle where there is some forced slippage as the oncoming clutch takes up the torque, this occurs as the next gear is engaging and the internal gearbox parts adjust to the correct speed.



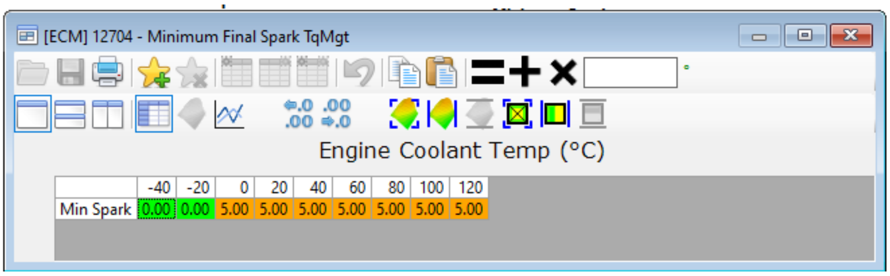
	0	54	108	163	217	271	325	380	434	488	542	597	651	705	759	813	868
1 -> 2 Shift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 -> 3 Shift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 -> 4 Shift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

If we remove the torque reduction by setting the requests to 0, it only overstresses the transmission.



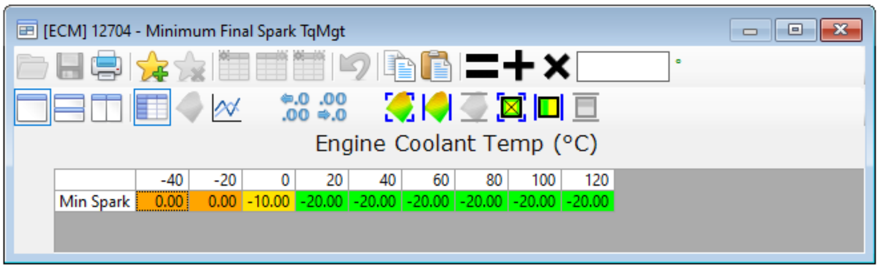
	0	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51
Torque Loss	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

If we alter the engines' ability to calculate the torque loss vs spark retard we loose spark torque reduction even if the gearbox requests are still present.



	-40	-20	0	20	40	60	80	100	120
Min Spark	0.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

If we reduce the amount of available spark retard, we remove the ability to reduce torque the required amount. This is worse than requesting less torque reduction as the gearbox will request a reduction that will not be deliverable.



	-40	-20	0	20	40	60	80	100	120
Min Spark	0.00	0.00	-10.00	-20.00	-20.00	-20.00	-20.00	-20.00	-20.00

We can see here in the stock file the spark retard limit is much lower (more retarded) allowing for a larger torque loss.

Given that in most instances the vehicles are road cars whose customers expect reasonable drivetrain life and with a higher torque output to retain transmission life retain the torque reduction.

Removing shift torque reduction is the equivalent of driving a manual transmission car and shifting gears without taking your foot off the accelerator, how long would the clutch last?. Shift torque reduction is the last piece of the shift puzzle, its job is to reduce the torque such that the on coming clutch can grab 100% and stop slipping, by not having shift torque reduction clutch life will be compromised.

Using the PE enrichment as a trim table to achieve a pretty dyno AFR.

Taken from the same vehicle below shows a lack of understanding of the boost upgraded operating system in HP and how not to use the PE tables.

[ECM] 12370 - Boost Enrichment vs. MAP

Manifold Absolute Pressure (kPa)

	105	110	114	119	124	128	133	138	143	147	152	157	161	166	171	175	180	185	189	194	199	203	208	213	218	222	227	232	236	241	246	250	255
EQ Ratio	1.300	1.300	1.300	1.300	1.300	1.273	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240

[ECM] 12400 - Power Enrich EQ Ratio

Engine Speed (rpm)

	0	250	500	750	1,000	1,250	1,500	1,750	2,000	2,250	2,500	2,750	3,000	3,250	3,500	3,750	4,000	4,250	4,500	4,750	5,000	5,250	5,500	5,750	6,000	6,250	6,500	6,750	7,000	7,250	7,500	7,750	8,000
EQ Ratio	1.100	1.100	1.100	1.100	1.100	1.202	1.226	1.236	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.240	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200

The software will run the richer value in the tables at any time. 1.3 EQ on 98 equates to the AFR of the fuel/1.3 or

14.64/1.3= 11.26:1.

Do we really want to run 11.26: AFR at 105 kpa and then 12.2:1 at higher boost?

Do we really want to run 12.2:1 as soon as PE enables which was set at 5% throttle? The vehicle was returning 120kls per tank, not to mention the potential damage to the engine from fuel dilution and bore wear.

[ECM] 12420 - Hot Power Enrich Enable TPS Threshold vs. RPM

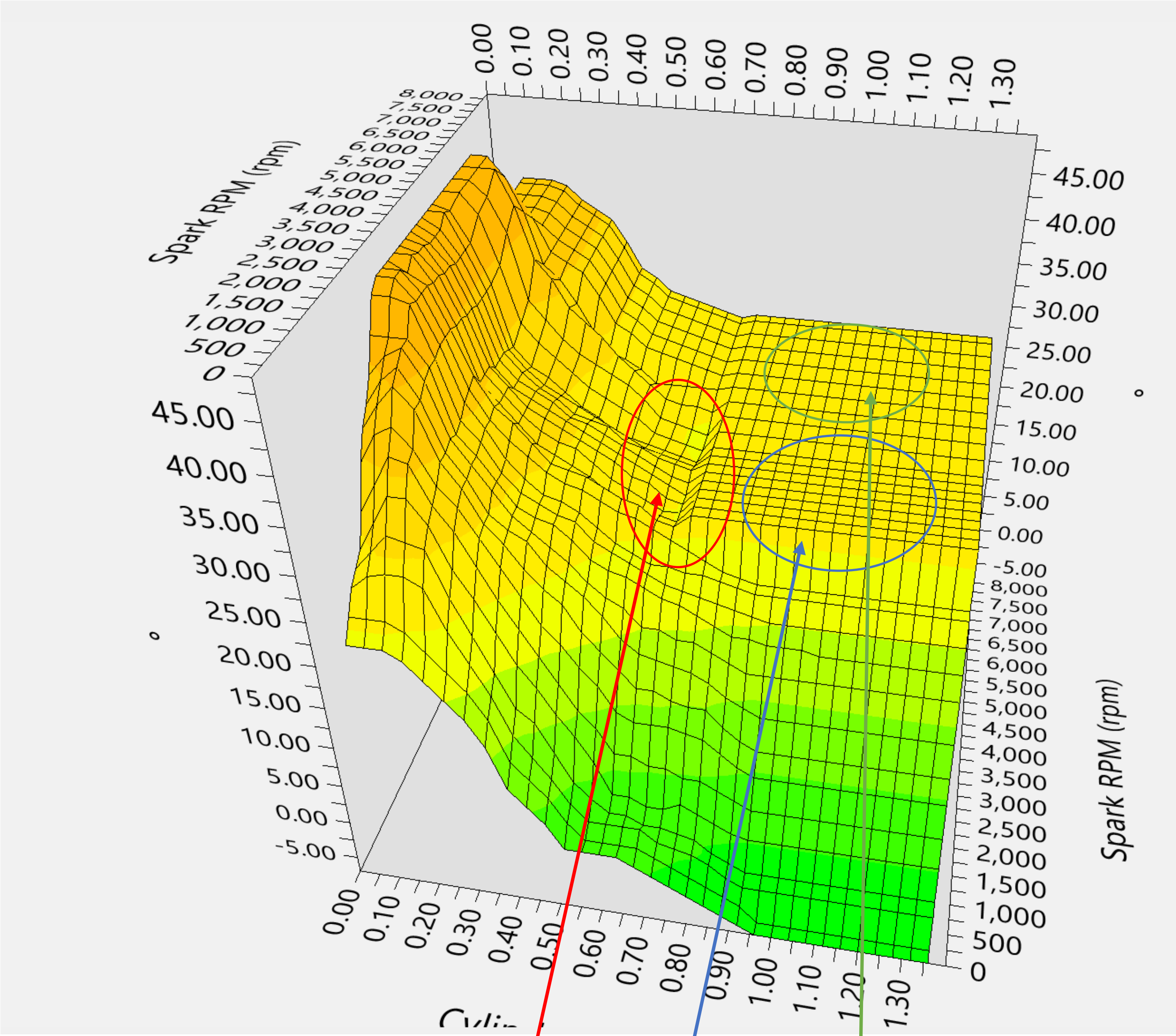
Engine Speed (rpm)

	0	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000
Enable TPS	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Done correctly, the commanded fuel will be set to what is desired and when it is desired, then with the correct injector data the airflow calculation is adjusted so the commanded mixture is what is achieved.

Timing is critical.

	0	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,800	5,200	5,600	6,000	6,400	6,800	7,200	7,600	8,000	8,192
0.08	23.00	25.00	27.00	28.00	29.00	32.00	36.00	38.50	40.00	42.00	45.00	48.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	49.00	45.00	40.00	40.00	40.00	40.00	40.00
0.12	23.00	25.00	28.50	30.00	32.00	35.00	39.00	41.00	42.50	44.00	45.00	48.00	49.00	49.00	48.00	49.00	48.50	48.50	48.00	48.00	48.00	49.00	48.50	49.00	49.00	49.00	49.00	44.50	40.00	40.00	40.00	40.00	40.00
0.16	23.00	25.00	29.00	32.00	35.00	38.00	40.00	43.00	44.00	45.00	45.00	47.50	47.00	47.00	47.00	46.50	46.50	46.00	46.00	45.50	45.50	45.50	45.50	47.00	47.50	49.00	47.00	43.50	40.00	40.00	40.00	40.00	40.00
0.20	22.00	24.00	29.00	31.50	35.00	37.50	38.00	41.00	41.00	42.00	42.50	42.50	43.00	43.00	43.00	42.50	42.50	42.00	42.00	41.50	41.50	41.50	41.50	42.00	44.00	45.50	43.50	41.50	39.50	39.50	39.50	39.50	39.50
0.24	20.00	22.00	28.00	31.00	32.50	33.50	34.50	36.00	36.00	36.50	36.00	36.50	37.50	38.00	38.50	37.00	37.00	37.00	36.00	36.00	36.00	35.50	35.00	36.00	37.00	40.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
0.28	18.00	20.00	23.50	26.00	28.00	31.00	32.50	33.50	33.50	34.00	34.00	34.50	35.00	35.00	35.50	35.00	35.00	35.00	34.00	34.00	34.00	33.50	33.00	34.00	35.00	38.00	36.50	37.00	37.00	37.00	37.00	37.00	37.00
0.32	16.00	18.00	20.00	22.00	25.00	27.50	29.50	30.00	30.00	31.50	31.50	31.50	32.00	33.00	34.00	33.00	33.00	33.00	33.00	33.00	32.50	32.00	32.00	32.50	33.00	35.00	34.00	36.00	36.00	36.00	36.00	36.00	36.00
0.36	13.00	15.00	16.50	18.00	21.50	24.00	26.50	28.00	28.50	29.00	29.00	29.50	30.00	31.50	32.00	31.00	31.50	32.00	32.00	32.00	31.50	31.00	30.50	31.00	31.50	33.50	31.00	33.50	33.50	33.50	33.50	33.50	33.50
0.40	8.00	10.00	12.00	14.00	18.00	21.00	23.50	25.50	27.50	27.50	28.00	28.50	28.50	30.00	30.00	30.00	30.50	31.00	31.00	30.50	30.00	30.00	29.00	29.50	30.50	32.00	29.00	30.50	30.50	30.50	30.50	30.50	30.50
0.44	6.00	8.00	9.50	12.50	15.50	18.00	20.50	23.50	25.00	26.00	27.50	27.50	28.00	29.00	29.50	29.00	30.00	30.00	30.00	30.00	29.50	29.00	28.00	28.50	29.50	30.00	28.00	29.50	29.50	29.50	29.50	29.50	29.50
0.48	4.00	6.00	7.00	9.00	12.50	15.00	18.50	22.00	23.50	24.50	26.00	27.00	27.00	28.50	29.00	28.00	28.50	29.00	29.00	29.00	29.00	28.00	26.50	27.50	28.50	28.50	27.00	28.00	28.00	28.00	28.00	28.00	28.00
0.52	1.00	3.00	4.00	5.50	10.00	12.00	16.00	19.00	22.00	22.50	24.00	25.00	25.50	27.50	28.00	26.50	27.00	28.00	28.00	28.00	27.50	27.00	26.00	26.50	27.00	27.00	25.50	27.50	27.50	27.50	27.50	27.50	27.50
0.56	1.00	1.00	2.00	3.50	7.00	10.00	14.00	17.00	20.00	21.00	23.00	24.00	24.00	26.50	27.00	25.00	26.00	26.50	27.00	27.00	27.00	26.00	25.50	25.00	25.00	25.50	25.50	27.00	27.00	27.00	27.00	27.00	27.00
0.60	1.00	1.00	2.00	2.00	3.00	7.00	11.00	15.00	17.50	20.00	22.50	23.00	23.00	26.00	26.50	25.00	25.00	26.00	26.00	26.00	26.00	25.50	25.00	24.50	24.50	25.00	25.50	26.50	26.50	26.50	26.50	26.50	26.50
0.64	1.00	1.00	2.00	2.00	3.00	7.00	10.00	13.00	16.00	18.00	21.50	22.00	22.00	25.00	25.00	24.50	24.00	24.50	25.00	25.00	25.50	25.00	24.50	24.00	24.00	25.00	25.50	26.00	26.00	26.00	26.00	26.00	26.00
0.68	0.00	1.00	2.00	1.00	2.00	6.00	10.00	13.00	15.50	18.00	20.50	21.00	22.00	24.00	24.50	24.00	24.00	24.00	24.00	24.50	25.00	24.50	24.00	23.50	23.50	24.50	25.50	25.50	25.50	25.50	25.50	25.50	25.50
0.72	-1.00	0.00	0.50	1.00	2.00	6.00	10.00	12.00	15.00	17.00	20.00	20.50	21.50	23.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.76	-2.00	-1.00	0.00	0.50	3.00	5.00	9.50	11.50	14.50	17.00	19.00	20.00	21.50	22.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.80	-3.00	-2.00	-0.50	0.00	2.00	5.00	9.00	11.50	13.50	16.00	18.00	19.50	21.00	21.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.84	-4.00	-3.00	-1.50	-1.50	1.00	4.00	7.50	9.50	12.00	15.00	17.00	19.00	20.50	20.50	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.88	-5.00	-4.00	-3.00	-2.50	0.00	3.00	6.00	8.00	11.00	14.00	17.00	18.50	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.92	-6.00	-5.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.50	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
0.96	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.50	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.00	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.50	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.04	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.08	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.12	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.16	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.20	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.24	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.28	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.32	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
1.36	-7.00	-7.00	-4.00	-3.50	-0.50	2.00	5.00	7.00	10.00	14.00	16.00	18.00	20.00	20.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00

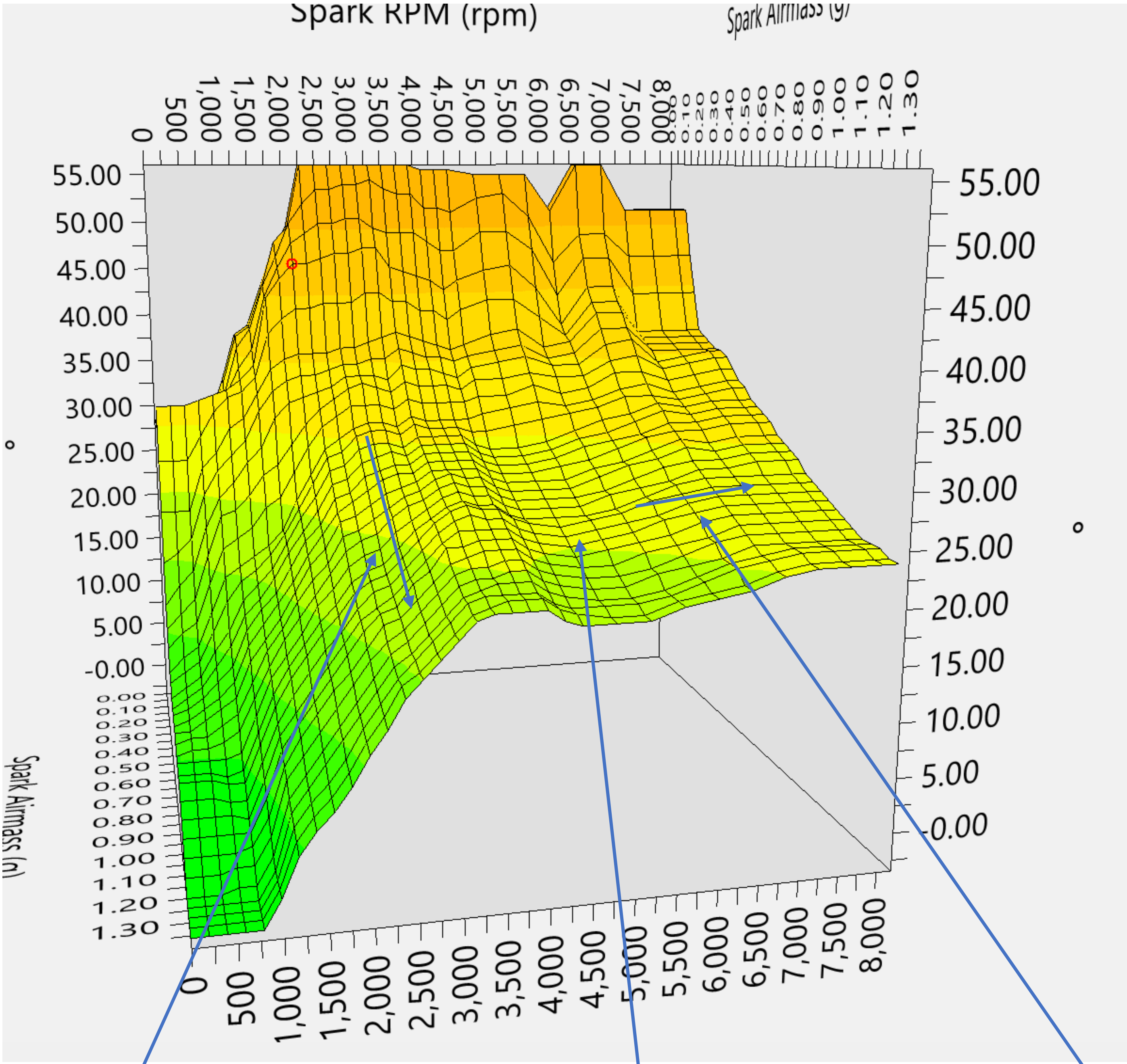


How much time can we spend at full throttle relative to part throttle in reality? The above spark table is one of the most common lazy edits I have come across. For an LS with a CAM I would agree that the full throttle timing is close, but this lacks finesse, will likely knock in some areas which degrades the timing onto the low octane MAP and will be lacking in timing leaving power on the table in other areas.

Understanding how an engine works, camshaft efficiency, piston speed and cylinder pressure help form the correct spark map however time and experimentation on the dyno will also.

Copying the high-octane spark MAP to the low octane spark MAP is not the solution to false knock. The low octane spark table provides safety for varying fuel quantity. The correct tuning of the knock sensors provides optimum spark and protection from poor fuel quality.

In theory and general practice, a spark table will need to have similar traits.



Reduced timing at peak torque, this is the peak cylinder pressure.

Increasing timing after peak torque, as the engine continues to speed up its ability to fill the cylinders as efficiently as possible falls away, to the point where the torque loss will be greater that the RPM increase and power will drop. Reduced cylinder efficiency (pressure) requires more timing, increased piston speed requires more timing, generally after peak torque the timing should continue to rise to maintain maximum torque and power.

Reducing timing with increasing load, opening the throttle fills the cylinder with more air and fuel resulting in greater turbulence, faster combustion speed and higher cylinder pressures requiring less timing.

The old hole in the throttle.

I find it hard to believe this still happens and it can create some tuning challenges when it comes to making a car slow down. Cruise control should only happen when you push the cruise button! The software provides all the adjustment and logging needed to dial in the throttle blade or IAC motor to correctly control the idle speed.

Jeep things.

As time goes by engines and engine management gets more sophisticated, a variable Camshaft means a variable volumetric efficiency. One VE table cannot calculate the variable airflow of a variable camshaft which is why Jeep, Dodge have moved to a Neural Network where multiple VE tables are trained through a Network trainer to generate an airflow for the different efficiencies of the different camshaft positions. This is more time-consuming to tune but will give superior results. There is redundant code in the later ECU than can be used to tune a single VE table as was the case prior to variable camshaft. Still commonly used along with manipulation of the injector data both methods lead to incorrect airflow calculation resulting in idle issues, torque calculation issues and drivability issues that extend beyond a modified camshaft.

[ECM] 36554 - Intake Cam Position - Normal

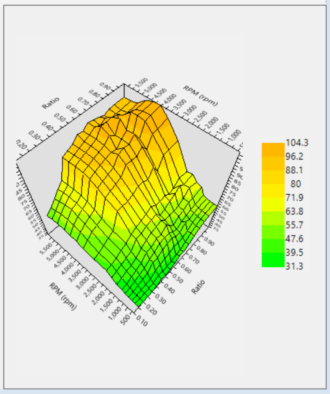
rpm (rpm) / mg/charge/cyl (mg)

	512	672	896	1,056	1,248	1,536	1,856	2,176	2,624	3,072	3,648	4,224	4,800	5,280	5,792	6,112	6,464
115	103.0	103.0	103.0	103.0	125.5	125.5	125.5	125.5	125.5	125.5	116.8	119.3	122.1	124.6	127.4	129.3	131.4
182	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	116.8	119.3	122.1	124.6	127.4	129.3	131.4
250	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	116.8	119.3	122.1	124.6	127.4	129.3	131.4
350	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	116.8	119.3	122.1	124.6	127.4	129.3	131.4
400	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	116.8	119.3	122.1	124.6	127.4	129.3	131.4
450	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	116.8	119.3	122.1	124.6	127.4	129.3	131.4
500	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	139.9	139.9	116.8	119.3	122.1	124.6	127.4	129.3	131.4
550	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	139.3	139.2	116.8	119.3	122.1	124.6	127.4	129.3	131.4
600	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.9	138.9	116.8	119.3	122.1	124.6	127.4	129.3	131.4
650	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
700	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
750	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
800	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
850	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
900	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
950	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4
1,000	103.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	138.8	138.8	116.8	119.3	122.1	124.6	127.4	129.3	131.4

[ECM] 44273 - VE Bank 1

RPM (rpm) / Ratio

	416	608	800	992	1,184	1,376	1,664	1,952	2,240	2,976	3,616	4,016	4,416	4,768	5,216	5,600	5,984
0.15	32	33	34	34	35	37	38	42	46	47	49	51	51	52	52	52	50
0.20	31	33	32	34	36	38	40	44	48	49	54	56	58	59	58	56	54
0.25	31	32	33	36	38	41	43	46	50	52	58	60	62	65	63	62	59
0.30	31	32	34	38	41	43	44	49	53	55	60	63	66	67	67	66	65
0.35	32	33	35	39	43	46	47	51	55	58	62	66	68	70	70	69	69
0.40	35	37	40	48	48	54	54	60	60	74	78	82	85	86	86	86	86
0.45	33	35	42	47	51	53	58	60	63	74	80	84	87	88	88	88	88
0.50	35	36	43	52	56	59	61	63	65	74	82	85	89	90	90	90	89
0.55	37	36	44	54	57	58	62	65	67	76	84	87	90	92	92	92	93
0.60	42	39	46	54	57	63	63	66	70	79	90	94	92	93	94	94	93
0.65	40	39	45	50	52	56	58	59	66	79	90	95	90	98	100	96	96
0.70	44	43	46	49	50	52	59	61	65	77	89	95	95	94	100	94	95
0.75	49	49	48	56	53	56	58	65	67	84	94	99	98	103	100	97	94
0.80	52	52	53	54	55	58	59	68	64	77	88	92	89	90	99	93	93
0.85	54	55	55	56	57	62	62	71	65	87	97	102	103	102	96	94	95
0.90	56	56	56	57	58	62	69	68	71	88	97	103	103	101	95	94	95
1.00	57	57	57	58	58	64	66	70	69	88	99	104	104	102	97	96	95

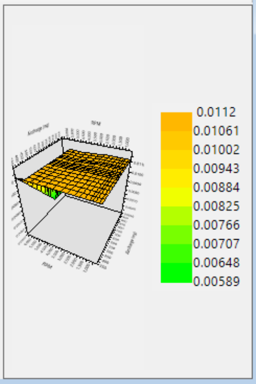


Above we can see the desired camshaft angle and to the right an attempt to tune the redundant single VE table. This vehicle also had a camshaft limiter, unfortunately the desired camshaft positions were not adjusted to reflect the restricted range of the camshaft.

[ECM] 34230 - FA Power Enrich Aircharge Based

RPM / Aircharge (mg)

	512	672	896	1,056	1,248	1,536	1,856	2,176	2,624	3,072	3,648	4,224	4,800	5,280	5,792	6,112	6,464
350	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112
400	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0109	0.0106
450	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0106	0.0100
500	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0103	0.0094
550	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0100	0.0088
600	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0097	0.0083
650	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111	0.0094	0.0077
675	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0111	0.0111	0.0092	0.0074
700	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0111	0.0111	0.0091	0.0071
725	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0089	0.0068
750	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0088	0.0065
800	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059
825	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059
850	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059
900	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059
950	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059
1,000	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0112	0.0111	0.0111	0.0110	0.0110	0.0110	0.0110	0.0085	0.0059



[ECM] 34290 - FA Stoich

Undo Last

0	0.0688

Once again in the same vehicle we see a PE table modified to make a pretty AFR on the dyno sheet but fundamentally incorrect.

The desired AFR is 1/(0.068+0.0059) =13.5:1

The desired AFR is 1/(0.068+0.012) = 12.5:1

Its pretty unlikely this tuner wants to lean the car out at 6500 rpm and is far more likely to they could not correct the airflow. This equates to an overtorque calculation which can impact the shift torque reduction as the airflow calculation is too high resulting in an overly rich mixture, leaning the commanded fuel is not correct, the mixture as measure should equal the commanded EQ.