

Ferrari 360 "Bespoke Series ECU Software" : Product Documentation



360trev

Hone to perfection...

00: BACKGROUND

Welcome, I hope you find this guide a valuable source of inspiration on your quest to make your Ferrari the car it always deserved to be. Enzo would approve!

The novel technical solutions presented here encompass thousands of man hours worth of painstaking work in both tireless research and development spanning multiple years of engine software calibration and tweaking.

All the work has been dynamometer and road tested (and sometimes even race tested) by professional drivers (some ex-Ferrari!) and customers alike across multiple countries and climates. Work passionately carried out in the pursuit of absolute driving perfection.

They combine to make the experience of driving your car absolutely transformed, ***completely re-imaged***. The focus has therefore been very much on playful character and perfect balance, banishing all numbness and delay, optimizing feel and response, giving you absolute control. You'll instantly notice within seconds of getting behind the wheel how much it has been transformed.

You literally won't find anything else out there that comes even close to what these upgrades can offer.

As such I am very proud, delighted and excited to share with you what it possible and how much of a difference it will make to the pleasure and enjoyment of your car.

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Non-Endorsement: This product is not endorsed in any way by Ferrari SpA or Ferrari North America.

01: STRADALE SPEC

- § The 'Challenge Stradale' base upgrade is a fantastic starting point to improve any 360 !
 - § It is an excellent base for **any 360 Modena, Spider or even Challenge Racecar.**
- § This upgrade rolls up all of the engine management software improvements (not just the calibration maps) to an improved later software release which;
 - § Fixes Bugs on earlier firmware releases (especially important on earlier model year cars).
 - § Introduces differences in exhaust valve control strategy with different calibrations for Sport and Race.
 - § Gains Torque and Horsepower across entire rev range (even on a stock 360 Modena)
 - § Improves Drivability
 - § Improves Throttle responses
 - § Fixes broken fault code system and detonation sensing on some vehicles.
- § This upgrade works on **BOTH** F1-Paddleshift and 6-Speed gated shift cars
 - § It has taken many man hours of work to perfect and just 'works' across all model years.
 - § This isn't just a CS firmware re-flashed, its not possible without considerable R&D efforts
 - § It takes into consideration all of the vast array of differences (wiring, sensors, actuators, etc.) across all the different model years, model geographies and vehicle configurations.



“Even the CS software itself can be significantly improved upon”

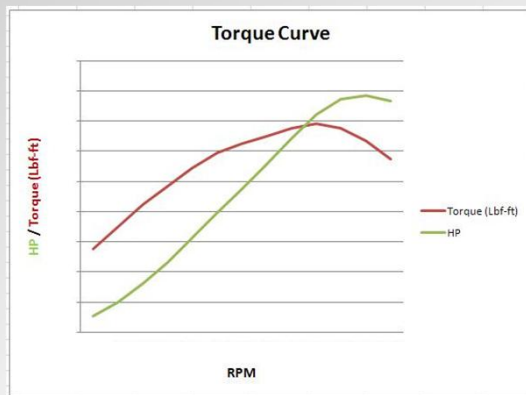
02: INSTANT TORQUE

$$\text{HP} = \frac{\text{RPM} \times T}{5252}$$

revolutions per minute torque
horsepower

$$\text{Power (Kw)} = \frac{2\pi \times \text{Speed} \times \text{Torque(nm)}}{60}$$

$$\text{Torque (Nm)} = \frac{60 \times \text{Power (kW)}}{2\pi \times \text{Speed (Rpm)}}$$

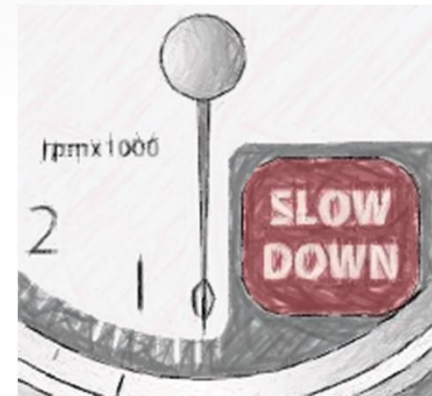


- § Instant Torque *is something we strongly recommend.*
- § This upgrade dramatically improves the way you interact with the engine and how the car feels to drive. Driver engagement is greatly improved.
 - § The interface between the throttle and engine power is sped up so that unnecessary and annoying delays between your right foot and torque application to wheels are completely eliminated.
 - § You feel more in control as it allows you to steer the vehicle on throttle, you gain more precision and better drivability.
 - § The only thing you may experience is that traction may prove more challenging in some circumstances so more caution may be needed on poor traction surfaces.
 - § It suits keen drivers who have awareness of their actions on the controls.

03: SLOW DOWN

- § This removes the entire troublesome hardware associated with factory catalyst temperature monitoring. Many issues and faults can exist and even replacement parts may not resolve your issues entirely.
 - § Cat Temperature thermistors probes are deleted.
 - § Cat ECU control stations are deleted.
 - § You can leave everything plugged in or remove them (entirely up to you).
 - § The associated SLOW DOWN light monitoring CEL's are deleted.
 - § Monitoring can now uses 'Cat Temperature' Estimation modelling exactly like later models (which also don't need cat ecu's or thermistors) or be deleted entirely with no adverse effects.
 - § This improves reliability of your 360 considerably. Never get a slow down fault again!

Note: If you remove thermistors you **must** fit bungs to block the holes left.



"Cat Ecu's are prone to failures and can be software emulated"

04: SPORTS CATS



“CEL’s can be triggered by Sports Cats even when they are operating perfectly”

- § This removes the CEL’s which trigger when higher quality high-flow sports cats are fitted or for track days installation of ‘test pipes’.
 - § For many years removal of the troublesome catalytic converters in the manifolds/headers of some cars and fitment of sports cats has caused many enthusiasts countless headaches with CEL’s.
 - § This fix eliminates the control strategy entirely so the Cat Efficiency CEL’s will never trigger (even under cold start worst case scenario’s) that will always eventually impact any other solution such as ‘cat extenders’.
 - § This also removes the need to fit or have fitted operational Secondary O2 Sensors. They are normally only used to calculate catalytic efficiency.
 - § This improves reliability (less to go wrong..)
 - § In some regions this may only be used “Off Road Use Only”.
- § **Note:** If you remove secondary O2 sensors you must fit bungs to block the holes left.
- § **Note:** Cat protection is still active and fueling is still restricted under some circumstances to protect cats from damage.

05: RACE CAR CONVERSION

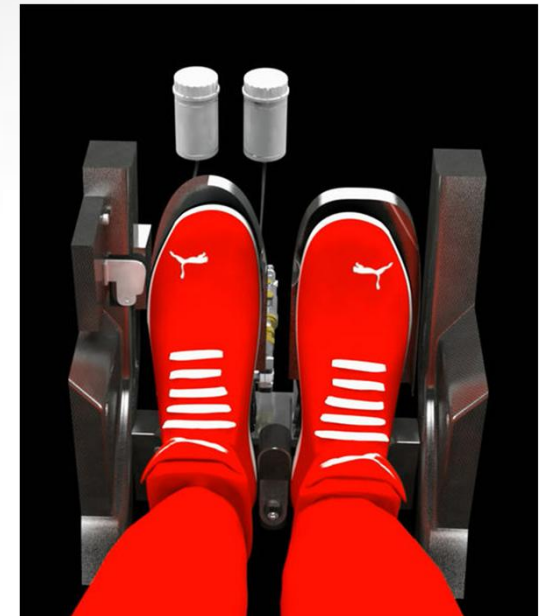
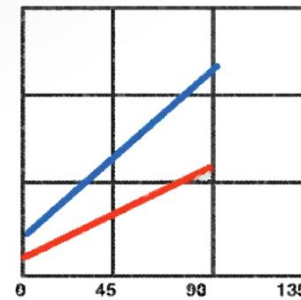
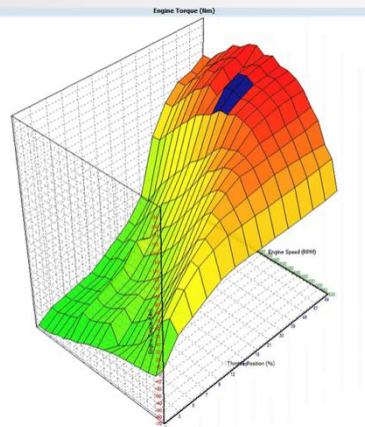


- § Cat protection elimination can be useful if you do full catalytic deletion by fitment of 'test pipes' when preparing a car for track only use preparation.
 - § This is exclusively for customers who intend to use their 360 for track days only – or for converted race cars that don't require to pass any emissions regulations.
 - § In some regions this is permissible. For instance 360's destined for UAE did not come equipped with any catalyzers at all (they borrowed hollow cats from the 360 Challenge race cars).
 - § It removes the ecu cat protection calibrations so requested fueling is never restricted.
 - § This lifts performance further (as used in Challenge race cars) as normally fueling is restricted in some circumstances to protect catalyzers from being damaged by too much fuel.
 - § This full catalyzer delete is intended for '**Off Road Use Only**'.
 - § It cannot be used on the public roads in countries or regions which have emissions regulations.
 - § Note: This option can also be used 'in reverse' so that a race car can be used effectively with "Sports Cats" without ruining them with overfueling.

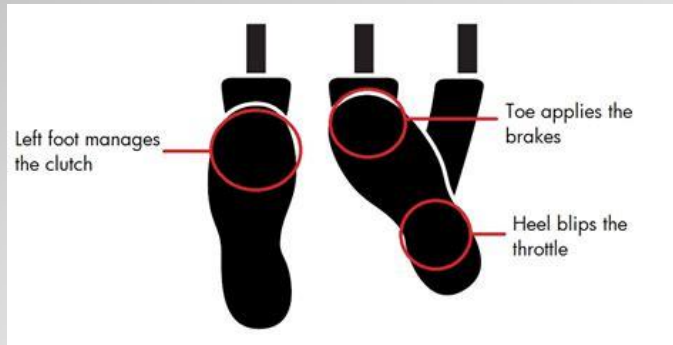
06: E-THROTTLE

- § Improvements to the calibration associated with electronic throttle including the sensitivity.
- § The sensitivity is re-calibrated for improved torque feeling, particularly at the lower to mid-range level where you need it most
- § This gives a more satisfying take off the line and is useful for F1 to reduce clutch slip and improve clutch life for F1-AMT equipped vehicles
- § *Selectable maps will be available later in the year from your smartphone app

		Throttle Position (%)															
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
5000	0.02	31.32	41.85	52.39	62.92	66.92	67.12	67.42	67.62	68.22	68.82	69.42	70.12	71.02			
4500	16.18	47.82	60.69	85.19	94.32	100.42	100.79	101.02	101.32	102.32	103.23	104.23	105.12	107.90			
4000	19.26	35.52	64.88	87.15	102.23	119.23	115.13	118.02	120.02	123.73	123.23	123.73	123.23	120.83			
3500	23.36	14.72	45.09	67.26	93.52	118.52	127.63	130.82	137.42	136.42	136.42	140.53	141.53	144.43			
3000	32.36	3.28	32.62	49.52	75.42	106.79	127.02	130.82	144.03	150.42	150.42	152.23	153.13	155.08			
2500	35.36	16.96	6.92	30.82	54.72	90.12	117.52	137.42	147.23	141.42	140.42	138.23	137.23	135.23			
2000	37.50	28.49	4.95	10.59	30.12	72.32	114.42	128.13	142.92	146.73	139.23	138.23	137.23	135.23			
1500	30.36	24.36	14.72	4.95	24.62	56.12	88.42	120.82	140.23	140.23	137.23	136.23	135.23	133.23			
1000	34.59	44.99	23.66	5.38	12.52	41.52	73.82	106.82	136.42	144.02	144.02	141.02	140.02	138.02			
500	38.49	17.49	18.75	3.82	3.12	29.42	59.02	91.32	111.02	144.02	144.02	141.02	140.02	138.02			
4000	43.59	23.86	17.75	11.63	5.48	20.02	46.32	77.32	107.82	155.02	147.02	146.02	145.02	143.02			
3500	47.49	28.26	24.26	18.88	13.19	11.81	36.52	44.72	100.32	160.02	160.02	157.02	156.02	154.02			
3000	50.76	34.99	28.66	22.38	16.99	2.72	26.02	35.42	85.62	144.23	172.02	164.02	163.02	161.02			
2500	56.86	31.09	22.72	14.35	5.56	15.11	10.81	45.72	75.82	120.52	162.53	171.53	160.53	159.53			
2000	62.96	45.66	48.22	24.75	29.08	13.88	2.58	15.22	42.12	127.42	166.32	175.32	164.32	163.32			
1500	65.96	50.99	46.16	41.38	36.99	22.28	7.88	19.12	49.22	110.42	142.53	158.53	164.53	170.53			
1000	68.96	54.76	49.46	44.52	39.59	24.79	9.88	4.92	71.82	99.52	133.52	150.52	166.52	172.52			
500	71.96	58.89	54.06	56.49	46.39	33.69	21.99	8.48	15.22	87.12	120.73	139.03	143.42	134.32			
0	73.96	54.26	53.06	54.92	46.26	33.86	21.16	8.48	15.22	87.12	120.73	139.03	143.42	134.32			



07: HEEL & TOE ENHANCEMENT



An upgrade to permit 'Heel & Toe' yields instant 'fun'....

- § This allows you to override the standard 'Bosch' pre-programmed algorithm so that you can heel and toe on a gated car!
- § The standard gated 360 Modena has throttle pedal lockout configured when you press brake and pedal together.
- § This eliminates **fuel cut** and throttle pedal **lockout** algorithm, as also engine management normally turns off fueling during clutch de-activations to save fuel.
- § This allows you to blip on downshifts on manual gated cars!
- § More satisfaction from doing it yourself
- § *Alternatively we will add an 'auto downshift' blip feature that's selectable from your phone app in future

08: AUTO-BLIP ENHANCEMENT

- This allows you to override the standard 'Bosch' pre-programmed algorithm so that the car auto-blips the throttle on downshifts on a gated vehicle.
 - Eliminates fuel cut algorithm and automatically rev matches between gear changes.
 - Sound like a pro driver!
 - Improves performance so car doesn't bog down between gears.
 - *Alternatively don't bother with 'heel and toe' manual blip feature that's selectable from your phone app in future



09: IMMOBILIZER RE-ARM



- § Annoyingly the factory default timeout after de-activating the immobilizer on the 360 is woefully too short.
- § This increases the time limit so you have enough time to start up from **25 seconds** to **1 minute** to allow more time to start the vehicle after unlocking the car with the fobs before it kicks back in.
- § Useful to eliminate frustration of having to lock/unlock every time you try to start your own vehicle!
- § This feature can even be configured and requested to NOT re-arm at all, which means it acts like a semi permanent immobilizer delete
 - § That is until you battery cycle the power then the first time after a cold power off you need to use the fob only once.
 - § At any time you can re-arm with the fob.



10: IMMOBILIZER BYPASS



- § With so many common fault directly attributed to the aging Bosch immobilizer units its often better to completely eliminate them.
- § This allows you to remove the problematic factory immobilizer system entirely from the vehicle including the 360 Challenge Race cars with start button only.
- § Once completed no fobs are required to start vehicle just your physical key.
 - § Note this means your remote central locking function is lost (*) so its not for everyone.
- § This also dramatically improves the vehicles 'off battery tender' abilities.
- § Without parasitic loads on the battery the car can be started over a month later without issues once full immobilizer is deleted.
- § This can also prevent the issue of engine starting on one bank.

11: CUSTOM EXHAUST VALVE MAPS



- § No longer do you need to choose between having exhaust valves or not. This is the best of both world.
- § Fully selectable exhaust valve maps with custom calibration maps
- § The exhaust valves can be reconfigured to open earlier and under less throttle application in both sport and race modes.
- § More details can be provided and recommended maps shown.

		Rpm									
No.		0	1	2	3	4	5	6	7	8	9
		800.00	1520.00	2520.00	3000.00	3600.00	3800.00	4120.00	5000.00	6000.00	9000.00
Throttle %	0.0	PHY 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	54.0	PHY 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	63.8	PHY 0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
	69.0	PHY 0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.0	2.0	2.0
	81.0	PHY 0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	2.0	2.0
	90.0	PHY 0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	2.0	2.0

12: FUEL CAP LOOSE CEL



§ If you get annoyed that not tightening the fuel cap can cause an engine CEL you can deactivate it.

§ This feature is quite simple, it simply removes it.

§ The loose cap CEL is only to inform you that you have forgotten to completely tighten the refueling cap.

§ It should also be used if you intend to do an EVAP delete

§ If you intend to remove the entire fuel vapor system with and fit a simple vent to air solution (to save weight).
(See EVAP deletion).

13: F1/GATED SWAPS



- § This features allow you to convert between F1 and Gated transmission setup's by re-configuring the engine management firmware accordingly.
- § To reduce complexity and weight, the F1 system can be removed.
- § Full options include swapping from F1 to 6-Speed gated.
- § Or from 6-Speed gated to F1 shift paddles.
- § This configures all of the correct software calibrations so that shifting is smooth and exactly like the factory does it.
- § We can also help you to configure you dashboard panel too.

14: COLD START 'MISFIRE' CEL FIX



- § After years of blighting the Ferrari 360's (All Model years) we finally have a calibration solution.
- § No more "Phantom" cold-start random multiple misfires!
- § If you genuinely have a real misfire this will not stop the misfire CEL's, it will just prevent cold start triggering phantom CEL's.
- § This configures calibrations so that you never get a phantom cold start CEL again.

15: FUEL EVAP SYSTEM

§ Fuel evaporation system removal is typically part of conversion of a road car to racing or track only duties.

§ To reduce complexity and weight, the charcoal canister, vapour separator, solenoid actuation valves and associated pipework can be completely deleted.

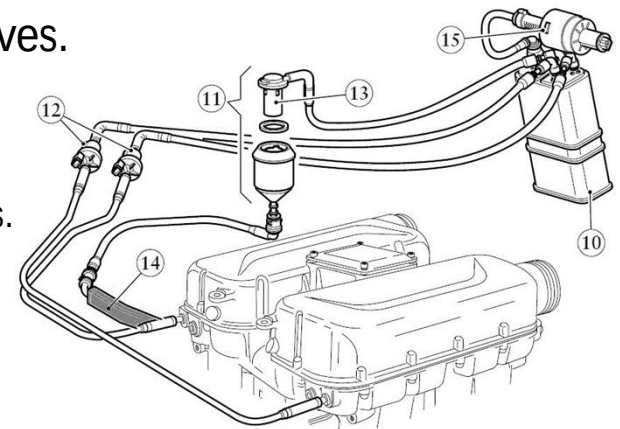
§ Installing a mini charcoal canister with vent to atmosphere valve is recommended.

§ This feature deletes the CELs and ecu control solenoid control valves.

§ Typically recommended for “off-road use only” for track vehicles.

§ Not road legal in many countries.

§ Please check applicable laws in your region if you intend to use on public roads.



10 Active charcoal filter
11 Multifunction valve
12 Canister-purge solenoid valves
13 Roll-over shut off valve
14 Fuel vapour separator
15 Soupape d'arrêt

16: SECONDARY AIR SYSTEM

§ Where fitted the Secondary Air System – this is an emissions control system used to get catalysts up to speed quickly.

§ Note: This system is not fitted on EU spec 360's

§ To reduce complexity and weight, the air injection system can be completely deactivated.

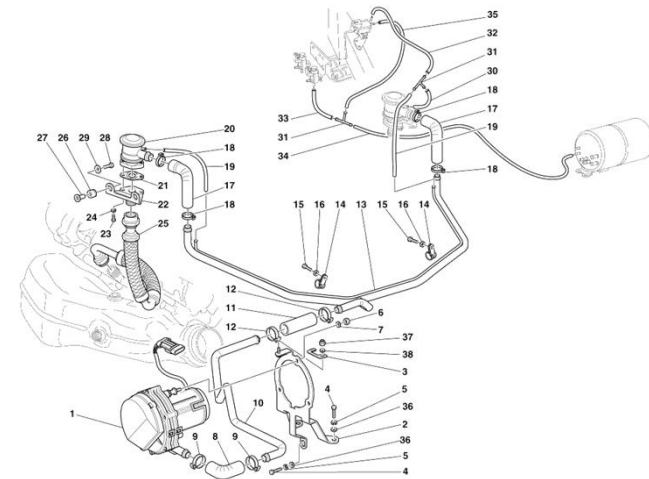
§ It deletes very rich startup condition maps as normally extra air and fuel pumped in.

§ This deletes the monitoring, CEL's and control of the air-pump.

§ Typically recommended for “off-road use only” for track vehicles.

§ Not road legal in USA and other countries.

§ Please check applicable laws in your region if you intend to use on public roads.



17: LARGER AFM UPGRADE



§ These Larger spec Air flow Meters improve performance at higher rpm's.

§ They replace the Modena AFM's and are fully recalibrated correctly.

§ Performance at peak power is improved.

§ Note: These larger AFM's require new air box covers (different fitment method, clips on Modena vs Bolts on these) or aftermarket airbox covers.

§ For more information please enquire.



18: STEP #1+ PERFORMANCE

§ Step #1 Performance upgrade takes factory calibration further.

- § We improve performance with tweak to various engine management calibrations to tailor the car to “Fast Road” use.
 - § This map is for fast road enjoyment, not to make outright peak power at the expense of enjoyment.
 - § We setup the Air to Fuel ratio's for “Optimal Torque” in all conditions vs “Optimal Fuel Efficiency” of the stock maps.
 - § These maps will still pass emissions testing as we leave the areas of the map which are tuned for emissions alone so your yearly/bi-yearly test will still be fine.
- § We remove dead and ‘flat spots’ in the rev range by tuning the performance specifically for a free flowing sports exhaust.
 - § The recommended system is the factory Challenge Style optional exhaust, or any other system which still uses valves and does a bypass of the back box (highest flow) on valve opening.
 - § Performance is specifically tuned for low back pressure systems.
 - § This map is recommended for use with “180/200 Cell Sports Cats” and a “Free flowing Sports Exhaust”.

19: STEP #2+ PERFORMANCE



§ Step #2+ Performance upgrades for “Track Performance”.

- § We improve performance with tweak to various engine management calibrations to tailor the car to “Track Usage”.
 - § This map is intended for Track usage.
 - § We setup the Air to Fuel ratio's for “Optimal Torque” in all conditions vs “Optimal Fuel Efficiency” of the stock maps.
 - § Stage 2 also calibrates the Ignition curves to be optimized for higher octane fuel so at this point its recommended to use 98+ RON octane rated petroleum.
- § We remove dead and ‘flat spots’ in the rev range by tuning the performance specifically for a free flowing sports exhaust and “test pipes”.
 - § The recommended system is the factory Challenge Style optional exhaust, or any other system which still uses valves and does a bypass of the back box (highest flow) on valve opening.
 - § This calibration is recommended for use with “Test Pipes” or free flowing “100 cell Sports cats” and a free flowing “Race Exhaust”.
 - § Performance is specifically tuned for low back pressure systems however we can also accommodate “low dB” back boxes and other dB reducing equipment (please enquire).
 - § The rev limiter is raised to 9,000 rpm. (note: this requires verification of cam timing)

20: STEP #3/4/5 PERFORMANCE

STEP
3+

§ Step #3/4/5 Fully Personal Calibration & Data Logging.

§ We work directly with you to improve performance.

- § These calibrations are fully tailored to your needs
- § A full data logging suite is installed and we can monitor telemetry in real-time.
- § Examples include;
 - § Fully Built Blue-printed engines
 - § Polished High Flow Performance Heads
 - § Cubic Capacity increases
 - § Larger Fuel Injectors
 - § Larger Throttle Bodies
 - § Re-profiled Cam shafts
 - § Recommended settings for Exhaust cam timing
- § Please enquire for more details, this stage goes right up to 550hp!