

COBB™ TUNING

ACCESSPORT™

Calibration Notes for 2004-2006 Subaru STi
AccessPORT Calibration Stage1 93 v111



COMPATIBLE

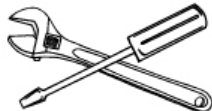
Compatible with **AccessPORT 2.0**

Calibration Name: Stage1 93 v111

Latest Calibration Rev: 1.11

Calibration and Map Notes Updated: 11/21/06

Description: Stage 1 for 2004-2006 Subaru Impreza WRX STi vehicles with STOCK INTAKE SYSTEM ONLY running 93 or 94 octane.



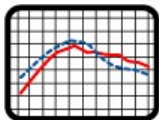
HARDWARE

Hardware Requirements: Otherwise stock vehicle with a STOCK INTAKE SYSTEM ONLY. The addition of any other hardware may make the vehicle perform poorly.



FUEL REQUIREMENTS

Fuel Requirement: 93 or 94 octane. If detonation is present, you should use octane booster or a calibration developed for a lesser quality fuel, Stage1 91 v111.



POWER OUTPUT

Power Output: 325 HP / 340 ft-lbs which is a 40 ft-lb & 25 HP increase over stock. Peak torque is achieved by ~3800RPM compared to ~4000RPM for the stock vehicle.



BOOST

Boost Targets: ~16.5psi +/- 0.5psi peak boost pressure tapering down to ~12psi, depending on vehicle and conditions. If your vehicle is not achieving or exceeding the boost targets, you may need to mechanically adjust your boost control system, please refer to this document "[How Subaru's Factory Boost Control System Works v1.X](#)" for instructions.

<<<<<<CRITICAL INFORMATION!!! CRITICAL INFORMATION!!! CRITICAL INFORMATION!!!>>>>>>

We have noticed that comparing the below dyno graphs to other dyno graphs that we have recorded on the same chassis dyno is difficult to do. Several factors must be taken into account including gearing (both the ratio of the gear these tests were performed in and the final drive ratio), aerodynamics, testing conditions, parasitic drivetrain losses, etc. We have published these graphs because we want to do what we can to educate our end users. Several qualitative improvements have been made to the calibration for this vehicle which cannot be graphically represented. Please take these dyno graphs for what they are, a graphical representation of measured torque and calculated horsepower across the below RPM range during a wide open throttle pull in 4th gear. We hope that you enjoy the improvements we have made to the calibration for this vehicle.

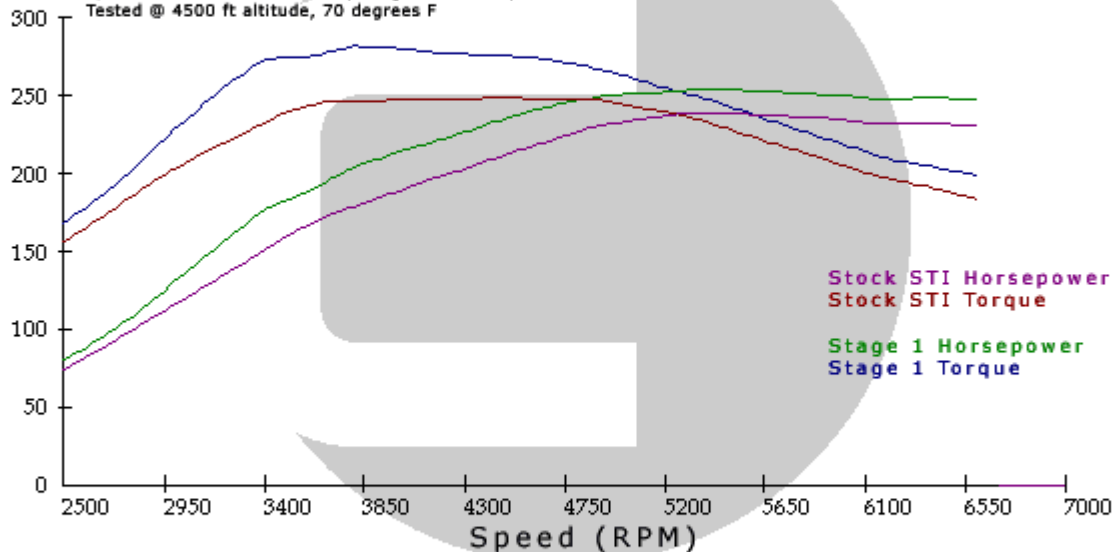
<<<<<<CRITICAL INFORMATION!!! CRITICAL INFORMATION!!! CRITICAL INFORMATION!!!>>>>>>

COBB

STI Stage 1

Estimated Flywheel HP: 320HP (91 oct) / 325HP (93 oct)
Estimated Flywheel TQ: 340 lb/ft

Boost: 16psi tapering to 12psi by redline
A/F Ratio: 11.2:1 on boost tapering to 10.8:1 by redline
Tested @ 4500 ft altitude, 70 degrees F



TEST DATA

Stock HP: 238.0 @ 5300 RPM
Stock Torque: 248.2 @ 4500 RPM

Stage 1 HP: 254.6 @ 5400 RPM **+16.6**
Stage 1 Torque: 281.9 @ 3800 RPM **+33.7**

As measured on COBB Tuning's in-house Mustang AWD Dyno
(all power figures are measured at the wheels. NOT corrected for drivetrain losses)

* Graphs may not be those of the 93 octane calibration testing. Generally speaking, the 93 calibrations have a more aggressive ignition advance curve and a slightly leaner fuel curve which allow the vehicle to take advantage of the improved fuel qualities inherent to the 93 or 94 octane fuels.

Revision Notes:

1.11 - Added additional CEL defeats related to the use of catless exhaust systems, see below.

1.10 - This map has been updated to latest ProTUNER™ file format, v1.10. Increased boost cut by 0.1 bar. Minor smoothing of fuel and timing maps for improved drivability.

1.04 - Skipped. Syncing versions numbers to reduce confusion.

1.03 - Revised boost mapping to assist in more accurate boost targeting.

1.02 - Revised wastegate duty cycle tables to accommodate for an obvious tolerance range for the factory VF39 turbochargers. Not all STI producing consistent boost levels, even in testing unmapped, unmodified cars. Developed a wider variety mapping with different wastegate duty cycle tables to accommodate for this tolerance. Fixed error with speed limiter. Moved from 147 mph to 186 mph.

1.01 - Revised fuel mapping to compensate for initial testing at altitude versus additional testing at sea level. Verified accuracy of altitude compensations in base mapping.

1.00 - Original Mapping. Adjusted Fuel, Timing, Boost, closed loop control, and base programming logic.

Base Map vs. Real Time Map Differences -

The base mapping contains some additional logic for improved performance and is HIGHLY recommended to be used if you plan on operating at a Stage1 level.

Here is a list of tables (parameters) that may change when you select a Realtime map with your **AccessPORT**:

AVCS Intake Cam Advance

Boost Limiter

Boost Targets

Turbo Dynamics (i.e.: turbo "gain")

Wastegate Duty Cycles (Low & High)

Closed Loop Modified Load *

Closed Loop TPS *

Fuel Injector Parameters (size and latency)

Intake Calibration (MAF Sensor)

Primary Fuel

Dynamic Advance A, B, & C (the ignition self-tuning table or what is sometimes referred to as a Knock Correction table)

Primary Ignition

Rev Limits

Features such as defeated CELs and Closed Loop tables are not changed with Realtime. This is why we highly recommend you running the Stage Base Map that best matches your car's modification. Running the Stock Mode Base Map with a Stage Realtime map over it will get you some of the improvements but no where NEAR what you would get if you were to run the proper Stage Base map.

Additional Notes:

For use with stock or very mildly modified 2004-2005 STis. Additional modifications such as underdrive pulley, panel filter, or the Cobb Tuning SF intake system are still within the acceptable parameters of this mapping. When upgrading to a full turbo-back exhaust you will need to use the Stage2 mapping. MUST USE STOCK FUEL INJECTORS, FACTORY INTAKE, OR COBB TUNING SF INTAKE. NO OTHER AFTERMARKET INTAKES ARE CERTIFIED COMPATIBLE WITH THIS MAPPING. Best if used with 93 or 94 octane. If any knock is present even when using 93 octane, try using octane booster. Keep in mind Subaru recommends 93 octane for even a STOCK STi.

Target peak boost pressure is approximately 16.5psi +/- 0.5psi depending on vehicle and conditions. Boost will likely taper to ~14.5psi by redline to increase reliability. This is due to high exhaust gas backpressure and thus heat created at higher RPM and high boost. When the exhaust system is further optimized with Stage2, we are able to increase boost levels at higher RPM.

If after 1-2 weeks worth of driving you are still unable to reach target boost pressures; you may try using the HWG version of this map.

If you receive a P0422 CEL accompanied by the engine cutting out, like a rev limiter, under full throttle; you are producing beyond safe levels of boost with this mapping and you will need to use the LWG version of this map.

Boost cut at sea level is increased to 20.01 psi.

Target A/F Ratios are mid 12's under load before the onset of boost. Under full load by 4000 RPM the A/F Ratio should drop to mid 11:1 and gradually run richer as RPM increase ending at high 10:1 A/F at redline.

CEL Codes Defeated [WHEN USING AS BASE MAP] (means new to latest revision):**

P0137 - Rear O2 Sensor Circuit Low Voltage
P0138 - Rear O2 Sensor Circuit High Voltage
P0139 - Rear O2 Sensor Circuit Slow Response
P0420 - Catalyst System Efficiency Below Threshold
P2096 - Post Catalyst Fuel Trim System Too Lean Bank 1 **
P2097 - Post Catalyst Fuel Trim System Too Rich Bank 1 **

*** = Only applicable to 2004-2005 year models.**