

# COBB™ TUNING

## ACCESSPORT™

Calibration Notes for 2004-2006 Subaru STi  
AccessPORT Calibration Stage2 93 v111



### COMPATIBLE

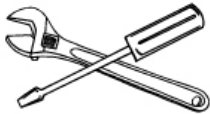
Compatible with **AccessPORT 2.0**

Calibration Name: Stage2 93 v111

Latest Calibration Rev: 1.11

Calibration and Map Notes Updated: 11/21/06

**Description:** Stage 2 for 2004-2006 Subaru Impreza WRX STi vehicles with STOCK INTAKE SYSTEM ONLY and a turbo-back exhaust system with high-flow catalytic converter running 93 or 94 octane.



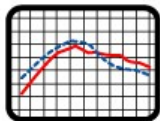
### HARDWARE

**Hardware Requirements:** Otherwise stock vehicle with a STOCK INTAKE SYSTEM ONLY, tested with a Cobb Tuning turbo-back exhaust system with high-flow catalytic converter. An equivalent turbo-back exhaust system could be used. If the turbo-back exhaust system relieves back-pressure to an excessive point boost creep is possible. If a lesser flowing turbo-back exhaust system is used then boost targets may not be achievable. 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, Stage2 91 v111.



### POWER OUTPUT

**Power Output:** 350 HP / 385 ft-lbs which is a 85 ft-lb & 50 HP increase over stock. Peak torque is achieved by ~3400RPM compared to ~4000RPM for the stock vehicle.



### BOOST

**Boost Targets:** ~17.5psi +/- 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.

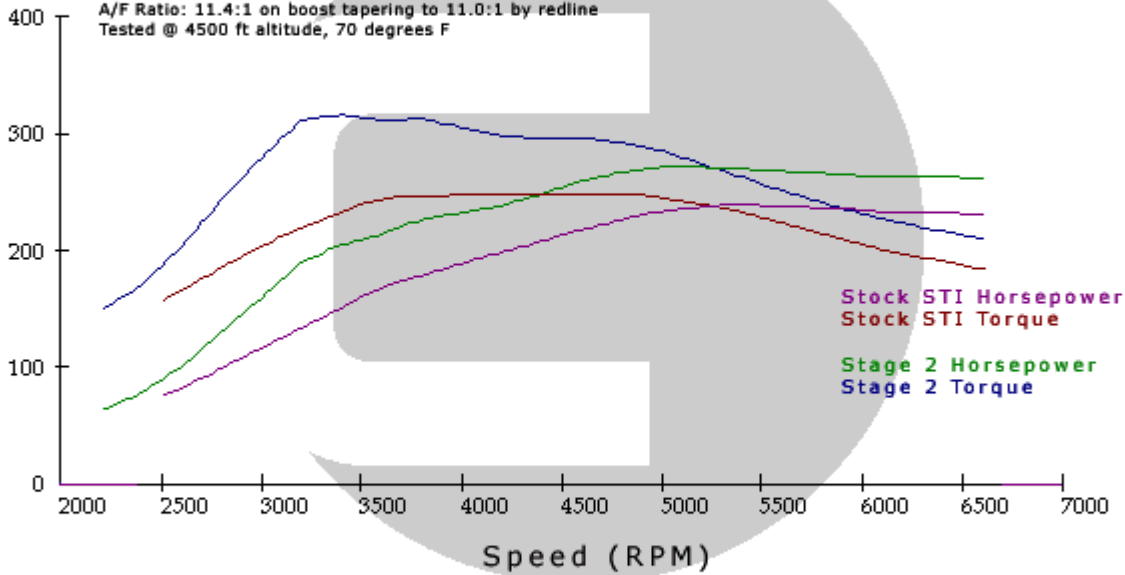
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We have noticed that comparing the below dyno graphs to other dyno graphs that we have recorded on the same chassis dyno is difficult to do. Several factors must be taken into account including gearing (both the ratio of the gear these tests were performed 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 4<sup>th</sup> gear. We hope that you enjoy the improvements we have made to the calibration for this vehicle.

# COBB STI Stage 2

Estimated Flywheel HP: 345HP (91 oct) / 350HP (93 oct)  
Estimated Flywheel TQ: 385 lb/ft

Boost: 17.5psi tapering to 12psi by redline  
A/F Ratio: 11.4:1 on boost tapering to 11.0:1 by redline  
Tested @ 4500 ft altitude, 70 degrees F



## TEST DATA

Stock HP:	238.0 @ 5300 RPM	Stage 2 HP:	277.7 @ 5400 RPM	+39.7
Stock Torque:	248.2 @ 4500 RPM	Stage 2 Torque:	316.3 @ 3400 RPM	+68.1

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 tables for improved drivability. Added additional CEL defeats related to the use of catless exhaust systems.

1.04 - Revised boost mapping to assist in more accurate boost targeting. Removed P0139 Check engine light.

1.03 - Revised Primary Ignition table to cure detonation issues reported by some users of 91 octane fuel.

**1.02** - Revised wastegate duty cycle maps 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 mapping to accommodate for this tolerance. Fixed error with speed limiter. Moved from 147 mph to 186 mph. Removed P0420 check engine light.

**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, AVCS, 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 Stage2 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 2004-2006 STIs with a turbo-back exhaust system installed. 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 or 94 octane, try using octane booster. Keep in mind Subaru recommends 93 octane for even a STOCK STi.

Target boost pressure is 17.5psi +/- 0.5psi depending on vehicle and conditions. Boost will taper at redline due to air flow limitations of the VF39 turbocharger. This is also due to high exhaust gas back pressure and thus heat created at higher RPM and high boost.

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 23.30 psi.

Target A/F Ratios are mid 12's under load before the onset of boost. Under full load by 3500 RPM the A/F Ratio will drop to mid 11:1 and gradually run richer as RPM increases 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.**