EBCS Pro for Universal Fitment

07/13/10

Thank you for purchasing the PERRIN EBCS Pro. Persons experienced in the installation and proper operation of Subaru engines and ECU tuning products should only perform installation of this part. Please read through all the instructions before performing the installation.

WARNING: This part is designed, manufactured, and sold solely for use on off-road and racing vehicles not controlled by federal and or local emissions laws. It is not intended for use on vehicles that operate on public streets and highways. Use of this part on emissions controlled vehicles may be in violation of federal or local law! ASMC, LTD. is not responsible for any damages as a result of misuse of this part. Check your local laws prior to use or installation.

IMPORTANT NOTICES!

- WARNING: An accurate boost gauge and tuneable ECU/ECM is 100% required for proper installation and adjustment of this product. Improper installation and use of this product WILL damage turbocharger, engine and or result in injury or death. PERRIN PERFORMANCE is not responsible for any and all damages as a result from installation of this product. CONTACT YOUR PERRIN DEALER FOR MORE INFORMATION!
- Must Read Tuner notes at bottom of page for details on how the EBCS works. Failure to understand how the solenoid may work on your car can results in engine damage.

Parts Included with the PERRIN EBCS Pro:

- **(1) PERRIN EBCS Pro**
- **(1) Universal Bracket**
- **(1) Straight Nickel plated brass fitting**
- **(2) 90 Degree Nickel plated brass fitting**
- **(2) #10 SS flat washers**
- **(2) 8-32 SS screws**
- **(1) M8 Socket cap screw**
- **(1) M8 flat washer**
- **(6') 5/32" vacuum hose**
- **(1) 3/16" Tee**
- **(2) Blue butt connectors**
- **(5) 8" Zip ties**

Wiring your EBCS Pro

1. If being installed on Subaru or Mitsubishi, simply unplug OEM solenoid and plug in the EBCS Pro.
2. If using as universal boost controller, locate and cut factory boost solenoid plug from harness. Strip roughly 1/4" of sheathing from both wires on harness side.
3. Using supplied blue butt connectors and a wire-crimping tool, crimp connectors to each of the factory wires.
4. Connect either EBCS wire to either factory wires using crimp tool. Do this again to remaining EBCS wire and factory wire. It isn't important which factory wire (positive or negative) gets connected to each EBCS wire.

See website for more ideas on how to mount the EBCS on your car!

Mounting your EBCS Pro

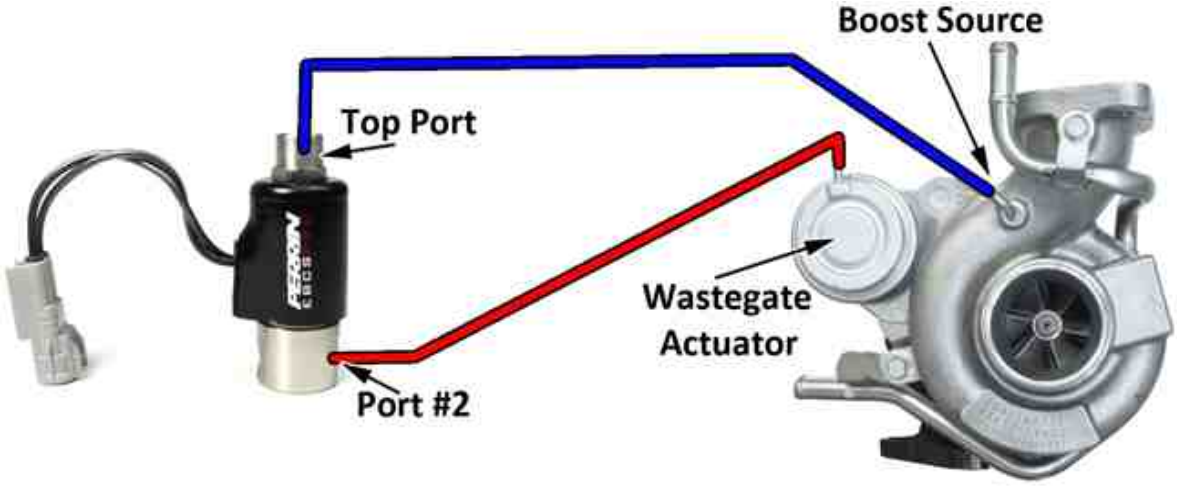
1. Determine where EBCS is going to be mounted. Keep in mind solenoid is rated to work from -40F to 250F, so mounting over turbo or other extremely hot parts is not a good idea. Mounting directly to intake manifold like found in OEM applications is perfectly acceptable.
2. After suitable location is found, mount solenoid to bracket using supplied 8-32 screws and washers.
3. Mount bracket to engine using supplied M8 bolt and washer or reuse OEM bolt.
4. Many other methods can be used to mount solenoid. Using supplied screws and washers, solenoid can be mounted to a surface that holes can be drilled into(Hole spacing for base is .712"). Zip ties can be used to secure to a suitable location also.
5. Keep in mind that the body of the EBCS can be rotated around to allow for wires to point in different directions.
6. Included with kit are 2 different types of NPT fittings, straight and 90-degree type. Either can be used on any of the ports. Determine which fittings to use after you determine which Method of boost control you are going to use.
7. NPT fittings seal by tightening down, they NEVER will bottom on out body of EBCS Pro. Simply thread in by hand and turn roughly _ turn to ensure a proper seal is had. A small amount lube on the threads will help them thread in smoother and further if the desired angle of fitting needs to change.

Connecting your EBCS Pro To Your Turbocharger

- If using an OEM internal type wastegate (or one with a single port on it), we highly recommend using the Fast Response Mode (AKA Interruption Type) as this will provide the widest range and best response all applications. This method does require retuning of ECU, see notes below regarding ECU tuning.
- If using an aftermarket wastegate (or wastegate with 2 or more ports) it is best to use the External Wastegate Method. This will provide the best response and allow a very wide range of boost pressures to be had using very light wastegate springs. This method also requires retuning ECU.
- If you do not want to retune your ECU, you can use the Slow Response Method but there is no benefit of running the EBCS Pro this way.

Internal Wastegate FAST RESPONSE Mode (Interruption type)

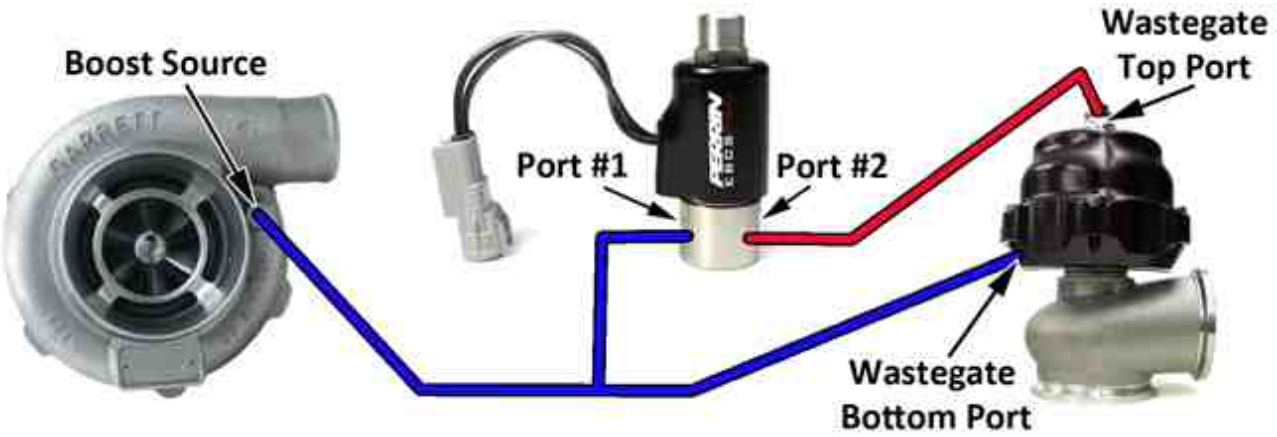
1. Open hood and locate wastegate bolted to turbocharger.
2. Locate and **REMOVE ALL** factory boost management, solenoid(s), hoses, tees etc. from turbo and wastegate actuator. **NOTE: Many factory boost control systems have restrictors in the hoses, which if left in place will affect boost control. Make sure and remove all hoses to ensure no restrictors are in place.**
3. Install desired barb fitting into Top Port (with built in hex fitting) on Boost solenoid. Connect hose from Top Port on EBCS to Boost source on turbocharger. Use supplied zip ties to secure hose both fittings. **NOTE: Boost source is generally located on compressor housing of turbo (the silver side). If no boost source is found on turbo, you can use a fitting on the intake manifold.**
4. Install desired barb fitting into PORT #2 (stamped on side of solenoid). Connect hose from barb fitting to fitting on wastegate actuator. Use supplied zip ties to secure hose. ***NOTE: This same method can be used on external wastegates. Make sure to connect to bottom port only and leave top port open.***
5. DO NOT BLOCK OFF PORT #1 EXTRA FITTING! In this situation, do not block off or restrict airflow to the extra port.



Solenoid can be oriented so PORT #1 is on right side, if this is desired, make sure to follow the directions not the picture.

External Wastegate Mode

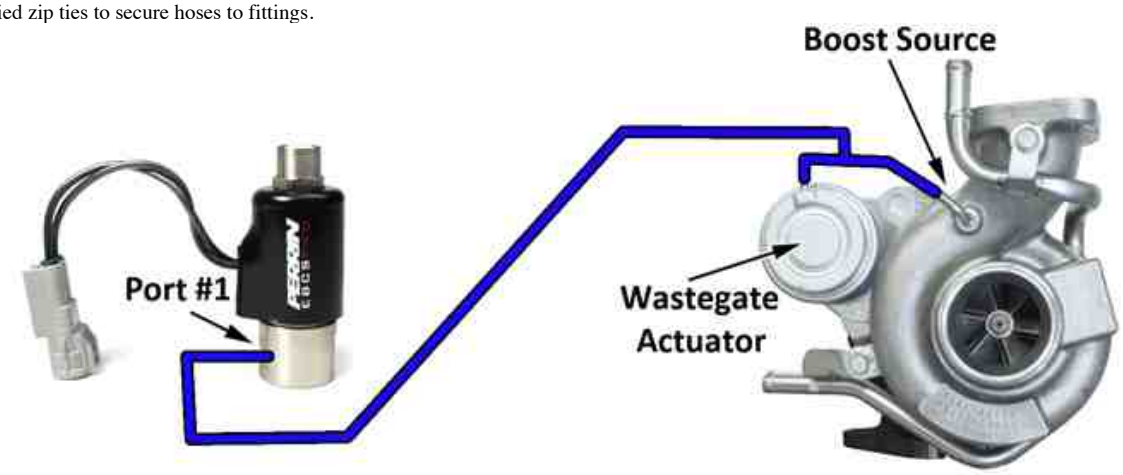
1. Open hood and locate wastegate bolted to turbocharger.
2. Locate and ***REMOVE ALL*** previously installed boost management, solenoid(s), hoses, tees etc. from turbo and external wastegate.
3. Install hose from boost source to bottom port on wastegate. **NOTE: In cases where the Wastegate is not oriented in the typical vertical fashion, the bottom port is the one closest to the exhaust connections.**
4. Some where along this hose (generally closer to the boost source) cut hose and install supplied tee between cut ends. Secure hose with zip ties.
5. Install desired barb fitting into PORT #1 (stamped on side of solenoid) and connect hose from PORT #1 to extra port on tee installed previously. Secure hose with supplied zip ties.
6. Install desired barb fitting into PORT #2 (stamped on side of solenoid) and connect hose from PORT #2 to top fitting on wastegate. **NOTE: In cases where the Wastegate is not oriented in the typical vertical fashion, the top port is the one farthest from the exhaust connections.**
7. **DO NOT BLOCK OFF THE TOP PORT! In this situation, do not block off or restrict airflow to the extra port.**



Solenoid can be oriented so PORT #1 is on right side, if this is desired, make sure to follow the directions not the picture.

Internal Waste Gate (bleed/OEM type) SLOW RESPONSE

1. Open hood and locate turbocharger and wastegate.
2. Locate factory boost management, hoses, tees etc. from turbo to wastegate. Remove OEM Boost control solenoid. Generally there are 2 hoses coming off the solenoid, one goes to the intake system and the other goes to the turbo and wastegate. Keep track of which one goes where as this will be important for the following steps.
3. Install desired barb fitting into PORT #1 (Stamped on side of solenoid). Connect OEM hose coming from turbo and wastegate to this port.
4. Install desired barb fitting into PORT #2 (stamped on side of solenoid). Connect this hose to remaining hose that normally goes to intake system. Use supplied zip ties to secure hoses to fittings.



Solenoid can be oriented so PORT #1 is on right side, if this is desired, make sure to follow the directions not the picture.

Tuner Tech Tips for EBCS setup

- If the ECU has stock tune and you are using interrupt mode, expect dangerous boost spiking. A retune is 100% ***needed*** to correct this. If ECU has stock tune, using bleed mode will produce similar results to stock solenoid. This method doesn't really have any benefit.
- If using solenoid as a replacement for aftermarket electronic boost controller, refer to the owner's manual for proper set up.
- If ECU you are using is tunable/reflashable, expect to lower the base duty cycle map(s) numbers and gain numbers to achieve desired boost. As a rough estimate, lower DC numbers by half as a starting point.
- For Subaru Reflash (as well as most ECU's), the turbo dynamics tables (or any table that deals with boost and wastegate dutycyle) need to be changed. Cutting these numbers in half is a good a good starting point. If these tables are left alone boost will be unstable do to the ECU over correcting.
- EVO X reflash users have 2 solenoids and a map for each with-in the ECU. Wastegate Solenoid 1 has a Brown plug and is controlled by the FINE wastegate solenoid map. Wastegate Solenoid 2 has a Black plug and is controlled by the COARSE wastegate solenoid map. It is up to the tuner to decide which to use, but we recommend using the FINE Wastegate Solenoid map and plugging the EBCS into the Brown plug. Either way leave remaining Solenoid plugged in.
- For UTEC owners, the boost tables and gain will have to be lowered by roughly 30%. Lower boost maps until steady desired boost is found, then change gain to control spiking.
- For ECU's that have the option of running different frequencies, we recommend running 15-30hz. Slightly higher will work also but will start to cut into the ranged of usable Duty Cycle.

FOR QUESTIONS & COMMENTS PLEASE CONTACT
TECH@PERRINPERFORMANCE.COM
503-693-1702