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| Document Type: | Instruction Manual |
| Product Name: | E-Boost Street 30psi |
| Product Description: | Electronic boost controller |
| Product Number: | TS-0302-1001 |



BEFORE YOU START – IMPORTANT NOTES

- Turbosmart recommends that your E-Boost Street is fitted by an appropriately qualified technician.
- Consult your local tuning specialist before setting your boost pressure as setting boost beyond your engines capability can result in severe engine damage or failure
- Turbosmart recommends that the engines Air/Fuel ratio is checked once the desired boost pressure is set. Any increase in boost pressure can cause the engine to run lean resulting in severe engine damage or failure
- Turbosmart recommends that the E-Boost Street is not used in conjunction with any type of “Draw Through” induction System.
- Turbosmart recommends that boost pressure is set using a Dynamometer and not on public roads.
- The E-Boost Street may not be able to completely compensate for a drop in boost pressure at high RPM due to the turbocharger operating beyond its maximum efficiency range i.e. incorrect turbocharger sizing or excessive exhaust backpressure.
- The E-Boost Street cannot compensate for increases in boost pressure at high RPM due to inadequate waste gate flow capacity; the turbo system must maintain a steady base boost curve before you start using a boost controller.
- The E-Boost Street cannot be used with external waste gates that are in a poor, worn or non-serviceable condition.
- For best results your turbocharger should be correctly sized for your application.
- Erratic operation of electronic parts can be caused by Electro Magnetic Interference (EMI). EMI can be generated by aftermarket ignition systems such as CDI which, if wired incorrectly, generate large amounts of EMI through the vehicles electrical system. This can cause items such as ECU's and boost controllers to be effected. Please follow ignition system installation instructions VERY carefully to avoid EMI affecting the E-Boost Street. Sometimes, using resistor type spark plugs can reduce this problem.
- The E-Boost Street is not waterproof and must be mounted inside the cabin. The unit has an operating temperature range of -5°C to 70°C.

INSTALLATION

Wiring

Red Wire – +12 Volts switched through ignition – connect via 5 Amp fuse supplied

Black Wire – Chassis, earth or ground

Yellow Wire – To 3.5V – 12V Square wave (RPM) Signal

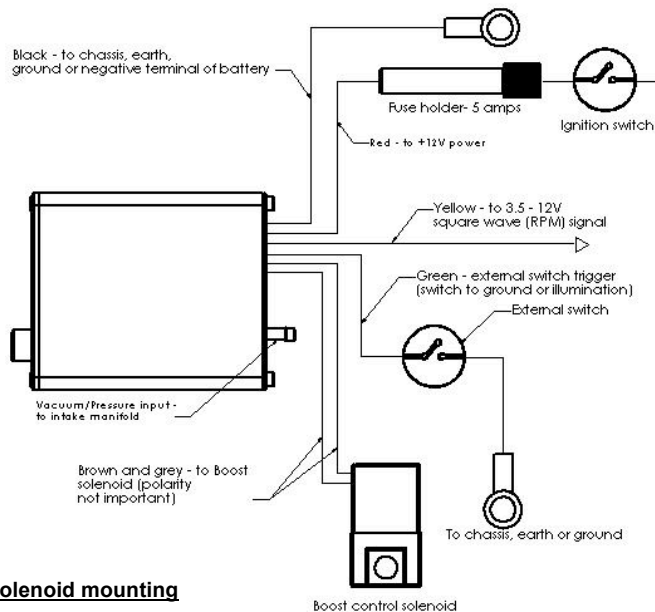
Green Wire – External set point switching or auto dimming trigger wire (Ground to activate)

Brown and grey wire – to boost control solenoid (Polarity not important)

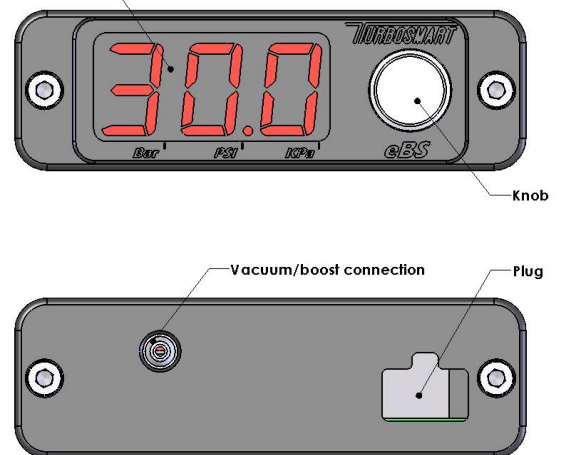
Vacuum/pressure signal

Route the supplied hose through the engine bay and connect it to a pressure/vacuum signal from the inlet manifold.

E-Boost Street Wiring Diagram



7 Segment display



Unit Layout

Solenoid mounting

- The control solenoid is rated to a maximum temperature of 100 degrees Celsius (212 degrees Fahrenheit), ensure that it is mounted a minimum of 250mm (10 Inches) away from the heat of the turbo or exhaust manifold, otherwise heat shielding is required.
- Mount the E-Boost Street solenoid in an appropriate position in the engine bay with the mounting kit supplied.

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FUNCTIONALITY

OFF mode

The E-Boost Street can be switched off by holding the turn knob down for 10 seconds. This will disable the functionality of the E-Boost Street and result in wastegate spring tension boost levels. To turn the unit back on, press the button.

Live mode menu

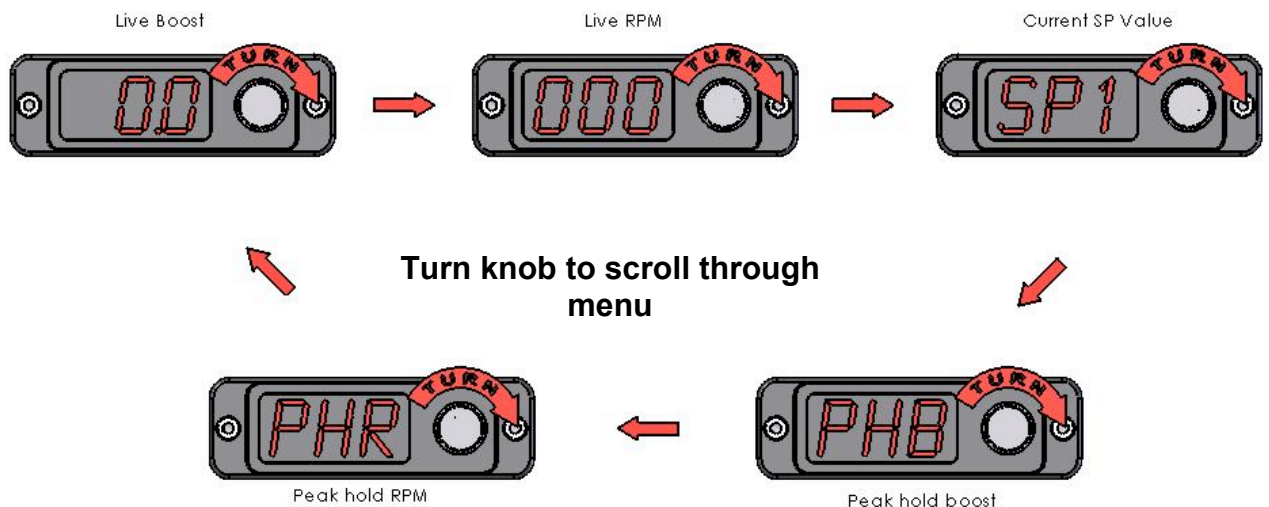
LIVE BOOST: Displays the amount of vacuum/boost being read by the unit.

LIVE RPM: Displays the RPM X100 (020 = 2000 RPM) of the engine if the RPM wire is connected to a Square wave signal from the ECU.

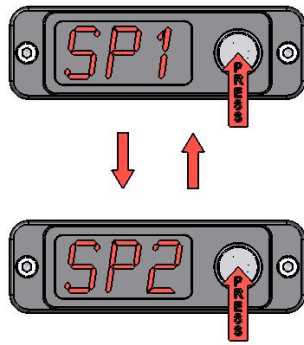
CURRENT SP VALUE: Displays the SP value the unit is currently set to.

PEAK HOLD BOOST: Displays the peak boost level the unit has measured.

PEAK HOLD RPM: Displays the peak RPM the unit has measured.



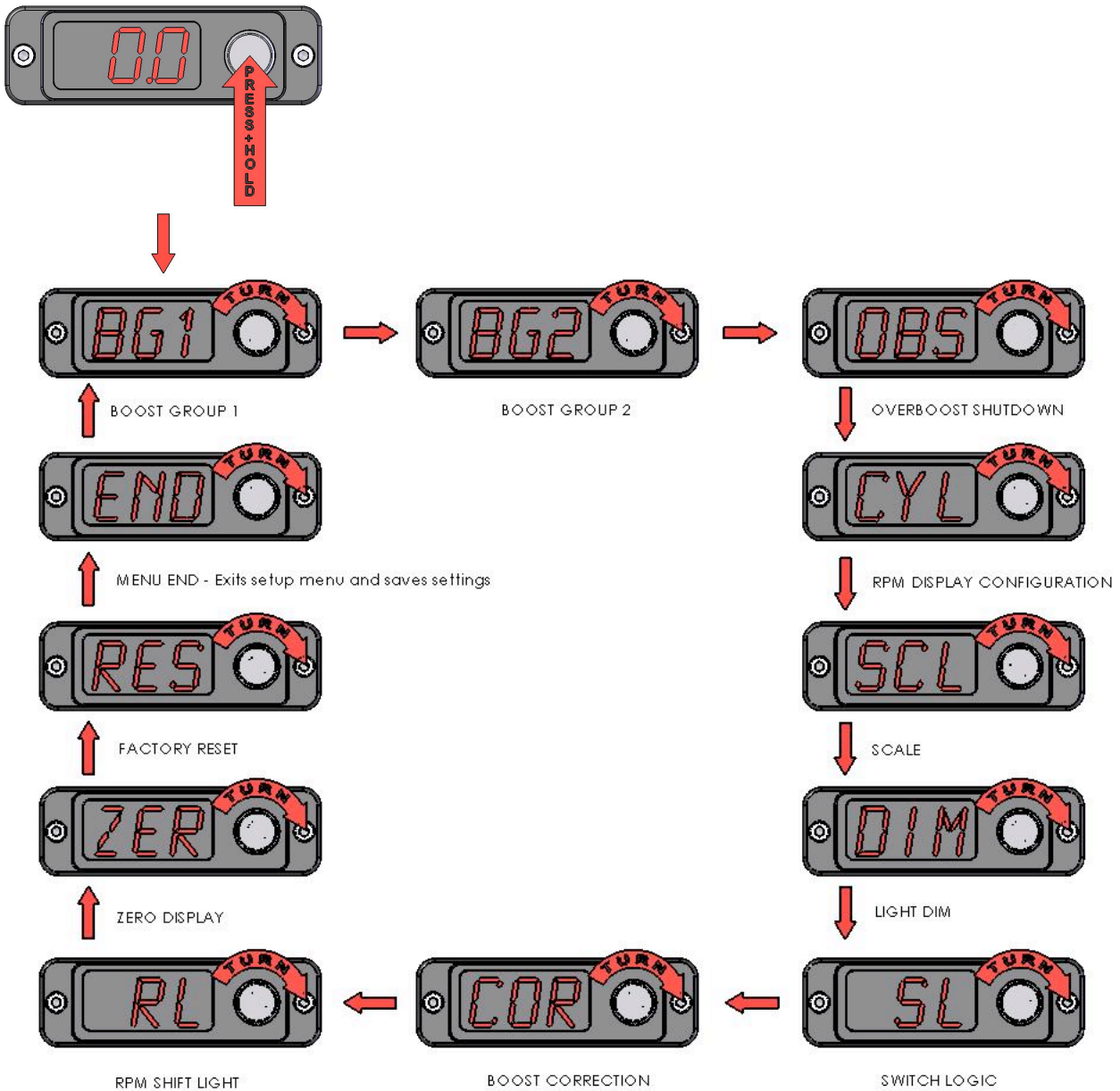
Changing between 2 boost groups



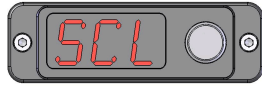
Press knob to change between boost groups

SETUP MENU

To enter the setup menu, press and hold the knob for 3 seconds. To navigate through the setup menu, rotate the knob to the left or right for the various options as shown below. To enter any of the menus, press the knob. To exit any menu, press the knob for 3 seconds or alternatively, go to END in the menu. This will take you back to the previous menu.



SCALE (SCL)



The E-Boost Street readout can be configured in either Bar, PSI or KPa, the default setting is in psi. This allows you to tailor the readout to suit your own preference. Note that when the PSI scale is selected and the E-Boost Street is under vacuum conditions the display will read in inches of Mercury (inHg), not negative PSI.

OVER BOOST SHUTDOWN (OBS)



In order to successfully program your E-Boost Street you MUST carefully follow this section. Turbosmart recommends that this function is used in conjunction with another form of Over-boost protection such as fuel/ignition cut or over-boost valve. The OBS will not stop an over-boost scenario if there is a mechanical failure on the car that inhibits the E-Boost Street from controlling the wastegate or if electromagnetic interference due to incorrect wiring causes electrical interference to the E-Boost Street.

If the OBS is triggered the E-Boost Street will reduce the boost pressure to half of that set in the OBS parameter. Once this safe pressure is achieved the E-Boost Street will return to normal operation. OBS must be set to the maximum safe level your engine can handle and your set points must be below the OBS setting. When the OBS is triggered OBS will flash on the display to indicate that your boost pressure has reached the over boost shut down value. OBS will flash on the screen when triggered in live mode and when a set point is being edited. Please note, OBS will not work in setup mode.

The OBS is factory set to 7 PSI (0.48 Bar or 48 KPa), so you must enter a figure in order for the E-Boost Street to produce more than the standard boost pressure. The purpose of this feature is to protect your engine against accidentally entering a boost set point value that is too high, preventing a dangerously high boost pressure. Extreme care should be taken when setting this parameter. Turbosmart recommends that you seek advice from an appropriately qualified technician with regard to the OBS setting.

Boost Group Setup (bG1 and bG2)

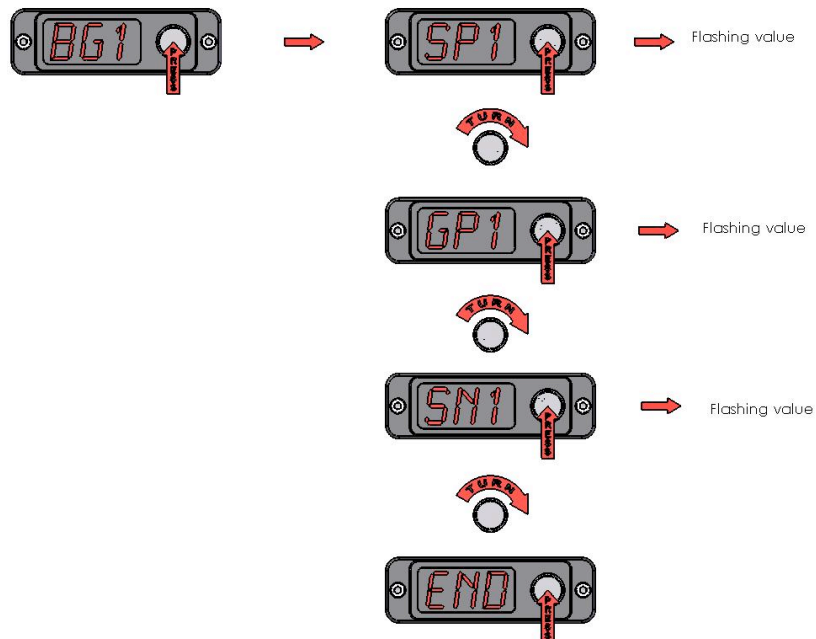


The E-Boost Street has the ability to control two levels of boost. The parameters that can be adjusted in each boost group are set point (SP1/SP2), gate pressure (GP1/GP2) and sensitivity (SN1/SN2). Set up the boost groups in the following order:

1) Set Point (SP1/SP2): The SP value determines the duty cycle the solenoid will operate at when the gate pressure is reached. This is a value between 0 – 99. The larger the value, the more boost the turbocharger will produce. Start the setup by increasing the SP value to 10. Bring the car onto boost and see what the maximum boost pressure is. Increase the value in small increments until you achieve you desired boost pressure. The SP value can also be adjusted while the car is on boost however, instead of the SP value being displayed, the boost pressure will be displayed so you know what pressure you are achieving. This is the easiest way to set your set points.

2) Gate Pressure (GP1/GP2): This feature helps bring boost on faster at lower rpm and will give an increase in torque. Start by setting the gate pressure 5 PSI below the desired boost pressure with the corresponding SP value. If this setting is too high, you will get a boost spike. You can increase the gate pressure until you get a spike, then reduce the gate pressure until the spike is gone.

3) Sensitivity (SN1/SN2): The sensitivity is how sensitive the E-Boost Street is to changes in the boost curve. Under normal circumstances the sensitivity is left at the factory set level of 20. If your boost curve is wavy through the rev range, reduce the sensitivity, if your boost curve drops off at the end of the rev range, increase the sensitivity.



RPM DISPLAY CONFIGURATION (CYL)



If you have connected the yellow RPM wire to an RPM signal from your ECU or negative terminal of an ignition coil you will need to input the number of cylinders / rotors in order to configure the RPM signal correctly i.e. the number of pulses per revolution being picked up from the RPM output of the ECU. The number of cylinders available is between 1 and 16. The RPM input can accept a square wave signal between 3.5 and 12V. For Mazda Rotary engines, 13B and 20B engines can be configured as 4 and 6 cylinders respectively.

LIGHT DIM (DM)



The brightness of the display can be adjusted on a scale of 0 – 6. The display can also be dimmed automatically by earthing the green wire when the vehicle's light system is switched on and setting the scale to 0. This function cannot be used when switch logic is set to ESP.

SWITCH LOGIC (SL)



The switch logic determines how the E-Boost Street switches between boost groups BG1 and BG2. It is factory set to internal switching (ISP) where boost groups are changed by pushing the knob. Alternatively, boost groups can be switched remotely when the switch logic is set to external switching (ESP). By earthing the green wire using a switch, you can toggle change from SP1 to SP2. Un-earthing this wire will return the set point back to SP1. This function cannot be used with the dimming function.

BOOST CORRECTION (COR)



This function is used to reduce or eliminate boost drop off at high RPM. Switching this function on will display the boost correction menu in the boost group menu. This function is best performed on a chassis dyno where the graph of the boost curve can be displayed and accurately interpreted.

The boost correction function requires 3 parameters to work; the START RPM, the END RPM and the correction factor.

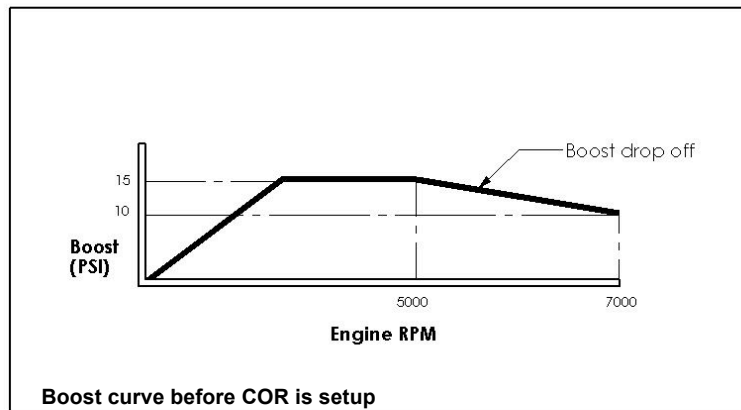
START RPM (RP1): This is the engine RPM at which boost begins to drop off.

END RPM (RP2): This is the engine RPM at which you want to turn off the boost correction function, normally set at redline.

Correction factor (FAC): The percentage at which boost is dropping off between the START and END RPM.

Example:

The following boost curve shows that between 5000 and 7000 RPM, the boost drops off from 15 PSI to 10 PSI.

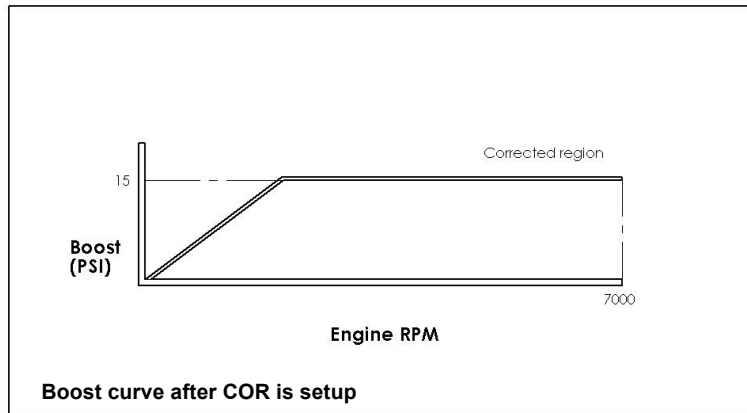


To reduce or eliminate this boost drop off, you need to input the following values:

RP1 = 050 (5000 RPM)

RP2 = 070 (7000 RPM)

FAC = $100 - [(10 \div 15) \times 100] = 33$



RPM SHIFT LIGHT (RL)



This function allows the user to preset a RPM value at which the display will begin to flash. The RPM will continue to flash until the engine RPM drops below the preset value. RPM values are entered in multiples of 100, e.g. 5000 RPM = 050. The yellow wire needs to be connected as per the wiring diagram.

ZERO DISPLAY (ZER)



The E-Boost Street is factory calibrated to read zero at standard atmospheric pressure and temperature. The E-Boost Street is altitude compensated however a large change in temperature can cause the display to read slightly above or below zero even when there is zero pressure applied to the E-Boost Street. This function allows you to zero the E-Boost Street if your display reads up to 1 psi (or equivalent in other units if selected) above or below the original zero point. **IMPORTANT! Before using the zero function ensure the vacuum/pressure line is removed from the back of the unit.** This function only allows a reading to be corrected up to plus or minus 1 psi.

FACTORY RESET (RES)



This function performs a factory reset and returns all the settings back to factory default. Be sure that you have written down the settings that you wish to keep before performing this function.

SOLENOID HOOK UP METHODS

WARNING! Changing to different connection method can cause a higher than expected increase in boost pressure. Turbosmart recommends adjusting your boost controller back to its minimum setting and measuring the new minimum boost pressure achieved by the new setup before increasing your boost again.

Note: If your vehicle is fitted with a factory boost control solenoid, the hoses that run from the pressure source and to the wastegate actuator must be disconnected. Leave the solenoid plugged into the wiring loom so that the ECU is not affected. Failure to disable the factory boost control solenoid and hoses will result in erratic or fluctuating boost pressures which could damage your engine.

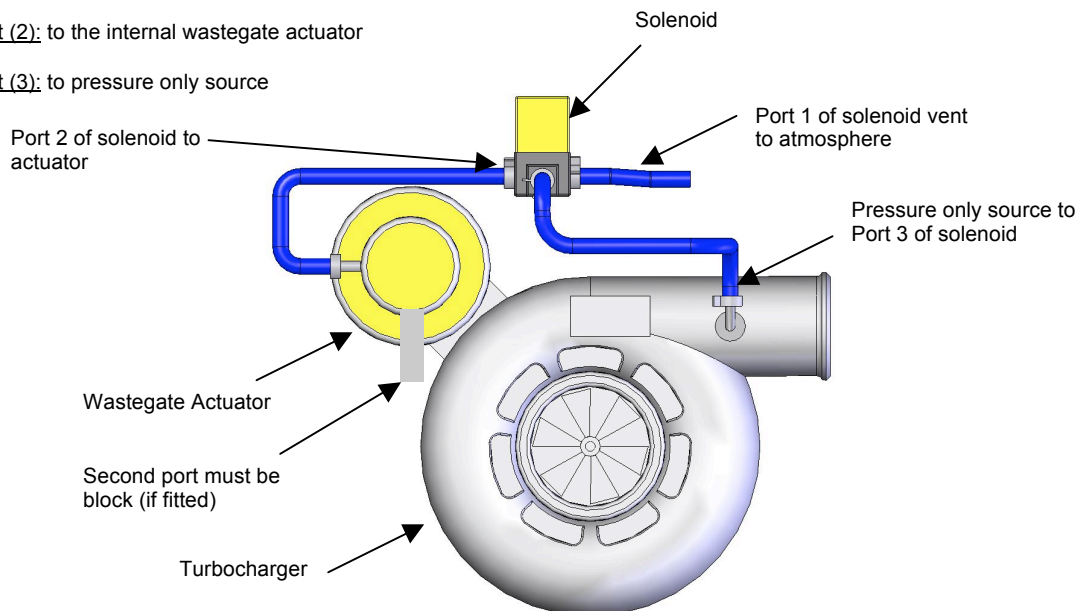
Internal wastegate connection methods

Most factory turbocharged vehicles use an internal waste gate system to control boost pressure. The E-Boost Street controls boost pressure by controlling the pressure signal that the waste gate actuator receives from the turbocharger. Please note that the E-Boost Street cannot be used to obtain a boost pressure lower than the standard waste gate actuator's pressure setting. This is usually 7 PSI.

- Some waste gate actuators have two inlet fittings, eg Toyota GT4 (All-Trac) Celica, MR2, JZA80 Supra. Identify the hose that connects from the factory boost control solenoid to the waste gate actuator, and block both ends of this hose.
- Some factory hoses have a small restrictor fitted inside them, if the factory hoses are reused over boosting or boost spiking may occur.
- Secure all connections with hose clamps.

Single solenoid, single turbocharger hook up (For basic single internal wastegate turbocharger setups)

- **Port (1):** vents pressure from the solenoid. Connect a short piece of the silicon hose and face the vent downwards to stop water or debris entering the solenoid or connect to the air filter box.
- **Port (2):** to the internal wastegate actuator
- **Port (3):** to pressure only source



If you are unable to achieve your desired boost pressure it is normally due to exhaust manifold backpressure forcing the internal waste gate to open. To increase your boost pressure further, fit a higher pressure waste gate actuator to increase your minimum boost pressure.

WARNING! Fitting a higher pressure waste gate actuator may cause a higher than expected increase in boost pressure.

Turbosmart recommends resetting the boost set point values to Zero and measure the new minimum boost pressure before increasing your boost set point values.

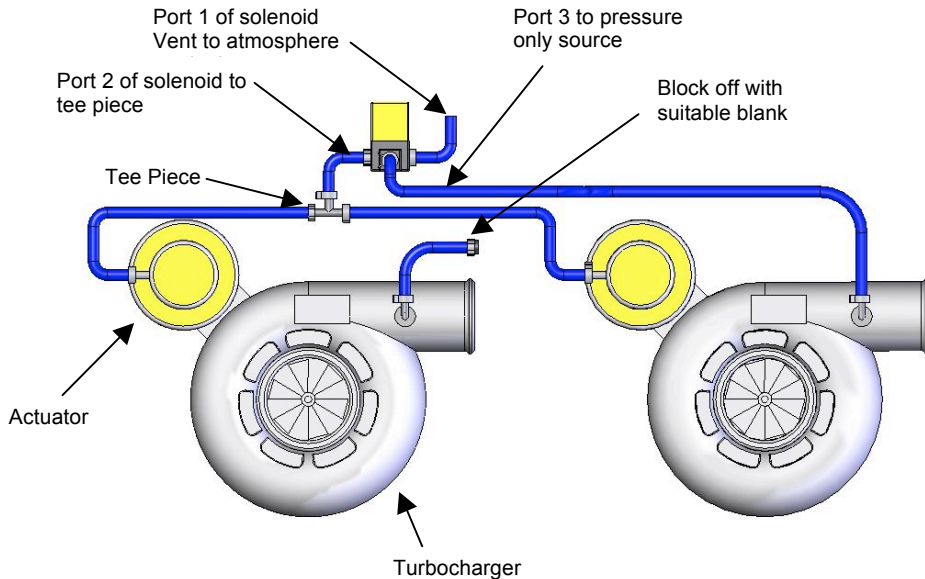
Single solenoid, twin parallel turbocharger hook up (For straight configuration twin parallel turbocharger engines E.g. RB26DETT)

- The E-Boost Street is capable of controlling twin internal wastegate turbochargers with a single or twin solenoid for a V configuration engine.
- This method is used when the turbochargers are mounted close to each other allowing the solenoid to be mounted close to both actuators
- Each solenoid port is connected as follows:

Port (1): vents pressure from the solenoid. Connect a short piece of the silicon hose and face the vent downwards to stop water or debris entering the solenoid or connect to the air filter box.

Port (2): to tee piece that feeds both actuators

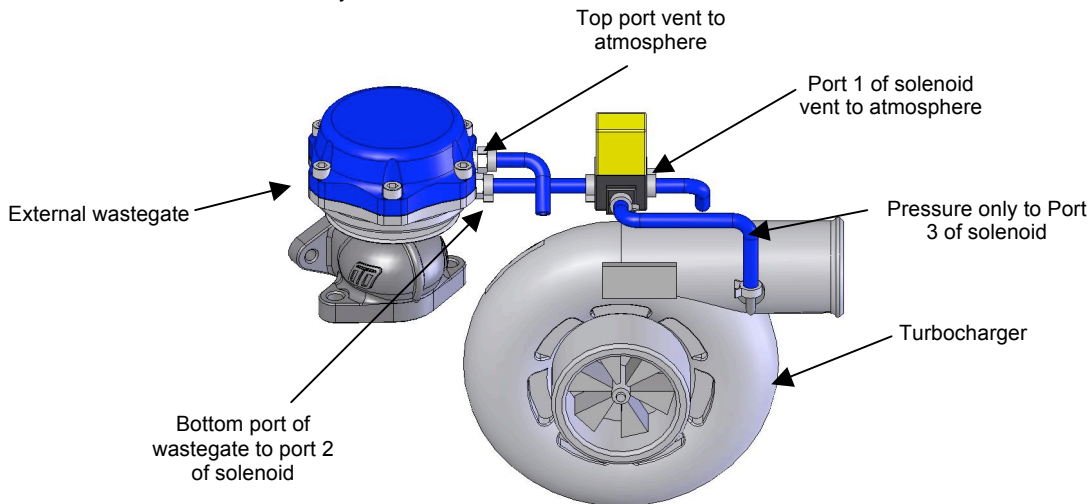
Port (3): to pressure only source



External wastegate connection methods

Single port connection Method

- Port 1 of solenoid vent to atmosphere
- Port 2 of solenoid to bottom port of wastegate
- Port 3 of solenoid to Pressure only source



*Note: For more advanced solenoid connection methods, please read the E-Boost 2 instruction manual on the download section of our website: www.turbosmartonline.com

TROUBLESHOOTING

The following points should be checked if you find that your engine is over-boosting, under-boosting or the boost pressure is fluctuating erratically. Please note the following checks will cure 99% of problems experienced when fitting a Turbosmart E-Boost Street.

- Check that the E-Boost Street solenoid is installed correctly.
- Ensure the factory boost control solenoid is not connected in the hose between the pressure source and the waste gate actuator
- Ensure the length of the waste gate actuator rod has not been modified, refer to the manufactures specifications
- Check to see if the E-Boost Street solenoid is not blocked or contaminated with dirt, oil build up or debris
- Check the joining hoses for splits, cracks or loose connections and ensure they are not blocked, kinked or restricted, particularly if the existing hose was reused
- Pressure test the waste gate actuator for leakage, the diaphragm or housing may be cracked or split
- Ensure the smooth and free operation of the waste gate arm in the turbo exhaust housing.
- Check that the hose between the E-Boost Street and the inlet manifold is not obstructed, broken or kinked.
- Check that the OBS is set higher than the boost pressure you are aiming for.
- Check the Blow-off Valve for leakage, some are used as over-boost valves
- Gate pressure maybe set too close to your desired boost pressure
- Ensure correct sensitivity setting.
- Check to see you can achieve constant steady boost with only the wastegate actuator connected directly to the pressure only source on the turbocharger.

The Turbosmart Pledge

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The Turbosmart Team

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