e-Boost-40

v 1.49

&

e-Boost-60

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1. BEFORE YOU START - IMPORTANT TIPS

- Turbosmart recommends that your e-Boost is fitted by an appropriately qualified technician.
- Consult your local tuning specialist before setting your boost pressure, 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 is not used in conjunction with any type of "Draw Through" Fuel System.
- Turbosmart recommends that boost pressure is set using a Dynamometer and not on public roads.
- The e-Boost cannot 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 cannot compensate for increases in boost pressure at high RPM due to inadequate wastegate flow capacity, the turbo system must maintain a steady base boost curve.
- The e-Boost cannot be used with external wastegates that are in a poor, worn or non-serviceable condition.
- A Turbosmart Fuel Cut Defender may need to be used in conjunction with your e-Boost, Please check out our website at **www.turbosmart.com.au** or your nearest Authorised Turbosmart Dealer for more information on Fuel Cut Defenders.

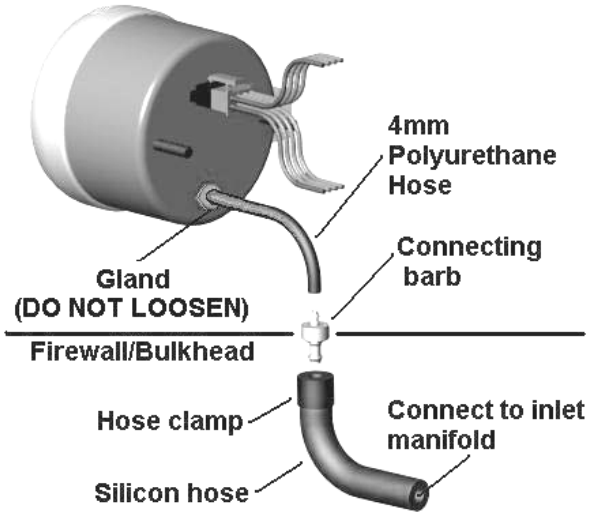
2. INSTALLATION

2a. Packing list

e-Boost-40	e-Boost-60	Description	Use
1	1	e-Boost	
1	1	e-Boost solenoid	Use in conjunction with e-Boost
2	2	M3 Screws	Secure e-Boost solenoid
2	2	M3 Nylock nuts	Secure e-Boost solenoid
1	1	Wiring loom	Connect e-Boost to vehicle
1	1	Earth eyelet	Connect to chassis
100 mm	100mm	Heat shrink	Shield solder joints
2000 mm	2000mm	Figure eight wire	Connect wiring loom to e-Boost solenoid
1	1	5 Amp fuse	Connect to 12 Volts – see wiring
10	10	Cable ties	Secure wiring
1	1	Panel mounting bracket	Secure e-Boost to panel
2	2	M4 nuts	Secure panel mount bracket
2	2	M4 spring washers	Use with M4 nuts
1500 mm	1500 mm	4mm OD Polyurethane hose	Connected to back of e-Boost
1	1	Push in 4mm hose joiner	Joins 4mm polyurethane hose (if cut)
1000 mm	-	3mm ID Silicon hose	Join polyurethane hose to intake manifold
-	2500 mm	¼ inch ID Silicon hose	Join polyurethane hose to intake manifold And connect solenoid
1	1	Connecting barb	Connect silicon hose to Polyurethane hose
1	-	3mm Tee Piece	Join 3mm ID Silicon hose to intake manifold
-	1	¼ inch Tee Piece	Join ¼ inch ID Silicon hose to intake manifold
2	-	Small spring hose clamps	Use on 3mm ID Silicon hose
750 mm	-	5mm ID Silicon hose	Connect solenoid
4	-	Large spring hose clamps	Use on 5mm ID Silicon hose
-	10	Screw type hose clamps	Use on ¼ inch ID Silicon hose
2	2	5-3mm hose reducer	Reduce 5mm hose to 3mm hose
2	2	5-6.35mm hose reducer	Reduce 6.35mm or ¼ inch hose to 5mm hose

2b. Mounting the e-Boost

- The e-boost is not waterproof and must be mounted inside the cabin.
- The e-Boost is designed to be panel mounted with the bracket supplied. Alternatively the e-Boost can be mounted in a 66mm (2 5/8 inch) gauge cup, pod or "A pillar" mount.
- The slim 4mm OD polyurethane hose is only to be used inside the cabin of the vehicle, it is not rated to withstand engine bay temperatures. The connecting barb joins the 4mm OD polyurethane hose to the thicker silicon hose. This silicon hose is rated to withstand engine bay temperatures and is easier to connect to the intake manifold.
- Route the 4mm polyurethane hose through the cabin from the e-Boost mounting position to the firewall/bulkhead taking care not to kink the hose.
- If necessary cut the 4mm polyurethane hose leaving a minimum of 50mm (2 inches) of hose protruding from the back of the e-Boost cup. Use the supplied "push in" 4mm hose joiner to reconnect the two ends of the 4mm polyurethane hose ensuring that the hose is pushed all the way into the base of the joiner.
- **WARNING!** DO NOT LOOSEN THE GLAND ON THE BACK OF THE e-BOOST UNIT! The 4mm polyurethane hose cannot be replaced by any other hose type or fitting. Loosening the gland will cause damage to the unit, rendering it inoperable. If this occurs the unit must be returned to Turbosmart and repaired at the customer's expense.



- Use the connecting barb to join the 4mm OD polyurethane hose to the 3mm ID (e-Boost-40) or ¼ inch ID (e-Boost-60) silicon hose at the firewall/bulkhead. Ensure the 4mm OD polyurethane hose is pressed all the way onto the connecting barb and that the polyurethane hose does not enter the engine bay.
- Route the silicon hose through the engine bay and connect it to a pressure/vacuum signal from the inlet manifold. Use the supplied tee piece if necessary.
- Secure all connections with the supplied hose clamps.

2c. Installing the e-Boost solenoid

- Mount the e-Boost solenoid in an appropriate position in the engine bay with the screws supplied.
- The e-Boost 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 maybe required.

2d. Single Internal Wastegate Connection

Most factory turbocharged vehicles use an internal wastegate system to control boost pressure. The e-Boost controls boost pressure by controlling the pressure signal that the wastegate actuator receives from the turbocharger. Please note that the e-Boost cannot be used to obtain a boost pressure lower than the standard wastegate actuator's pressure setting.

If your vehicle is fitted with a factory boost control solenoid it MUST BE REMOVED from the hose that runs between the pressure source and the wastegate actuator.

WARNING! Failure to remove the solenoid will cause erratic or fluctuating boost pressure, and **over boosting may occur.**

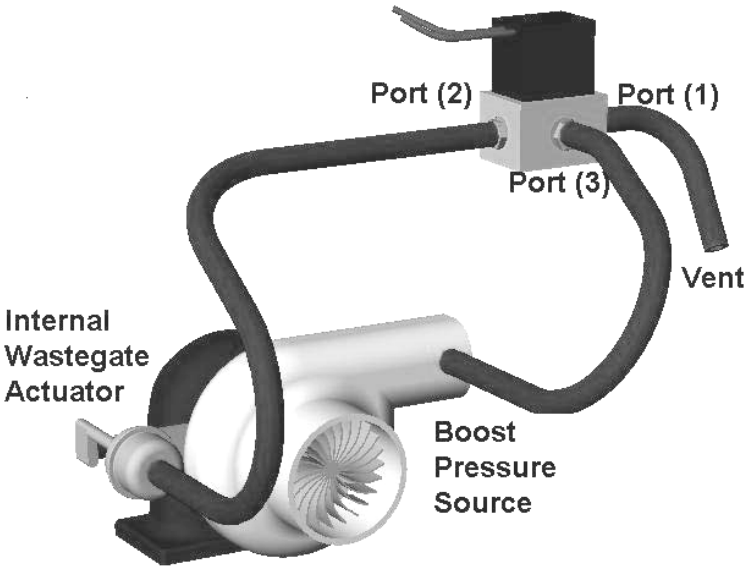
- Ensure that this solenoid remains connected to the ECU's wiring harness, If not the "Check Engine" light may be triggered.
- The factory boost control solenoid is NOT a sensor of any kind, its removal from the wastegate actuator hose will NOT cause any adverse effects.
- Some wastegate actuators have two inlet fittings, eg Toyota GT4 (All-Trac) Celica, MR2, JZA80 Supra. Identify the hose that connects from the boost control solenoid to the wastegate 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.
- Turbosmart recommends using the silicon hose (and reducers if necessary) to connect the e-Boost solenoid.
- Secure all connections with the supplied hose clamps.

Connect the three ports on the e-Boost solenoid according to the diagram below.

- Port (1) vents pressure from the e-Boost solenoid. Connect this hose to the intake side of the turbo, between the air cleaner and the inlet of the turbocharger. Otherwise connect a short piece of the silicon hose and face the vent downwards to stop water or debris entering the solenoid. If you have removed a factory boost control solenoid connect this hose to where the factory solenoid originally vented.

- Port (2) Connects to the internal wastegate actuator (See above if your actuator has two inlet fittings)

- Port (3) Connects to a "boost only" pressure source, typically from the compressor housing on the turbocharger. If your turbocharger does not have this fitting, connect to a "boost only" pressure source before the throttle-body or butterfly. Do not connect to the intake manifold, as the pressure signal will have both vacuum and boost pressure.



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

WARNING! Fitting a higher pressure wastegate 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.

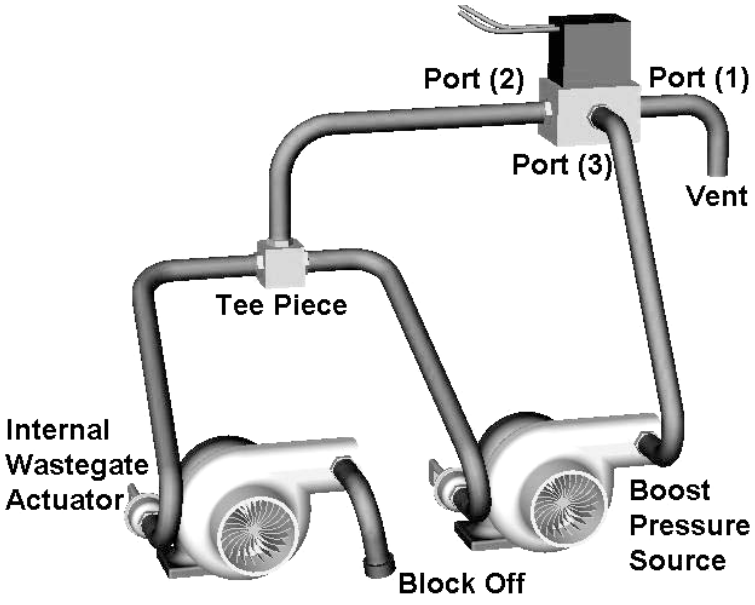
If you are still unable to achieve your desired boost pressure ensure that your turbocharger is correctly sized for your application

2e. Twin Internal Wastegate Connection

- The e-Boost solenoid is capable of controlling two internal wastegate actuators as typically found on most factory parallel twin turbo vehicles such as the Nissan Skyline GTR, 300ZX, and Toyota Soarer.

- The solenoid is connected as per the single internal wastegate instructions above, with the addition of a tee-piece (not supplied) to connect both wastegate actuators to port number (2).

- If there is a fitting on both compressor housings on the turbochargers, use the most convenient fitting to connect to port number (3), and block the other fitting. If your turbochargers do not have these fittings, connect port number (3) to a "boost only" pressure source before the throttle-body or butterfly. Do not connect to the intake manifold, as the pressure signal will have both vacuum and boost pressure.

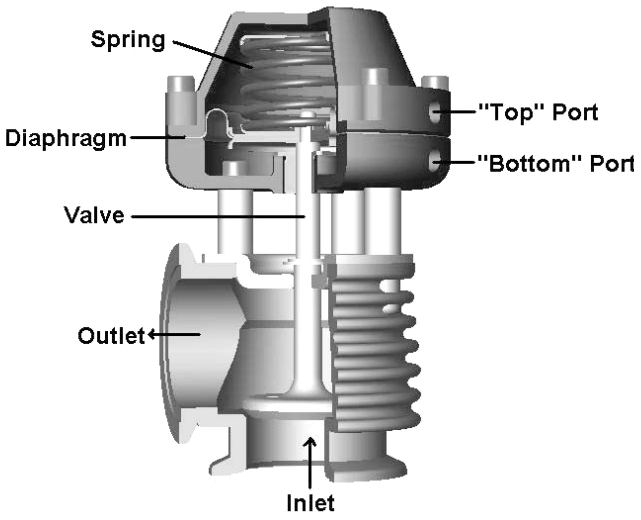


WARNING! Do not connect more that one standard e-Boost solenoid! This will overload the e-Boost circuit causing permanent damage!

For more than two internal wastegate actuators, use the Twin Solenoid Kit, Part # FG-EBOOST-TSK (instructions supplied with kit), to ensure sufficient flow to accurately control boost pressure.

2f. External Wastegate Connection

Most external wastegates share a similar design layout.
Use the diagram to help identify the "top" and "bottom" port of your wastegate.



- When pressure is applied to the "bottom" port of a wastegate, i.e. underneath the wastegate diaphragm, it acts against the wastegate spring and the wastegate valve opens.

- When pressure is applied to the "top" port of a wastegate, i.e. above the wastegate diaphragm, its acts with the wastegate spring and helps to close the wastegate valve.

There are two methods for connecting the e-Boost to an external wastegate. The method used depends on the following factors.

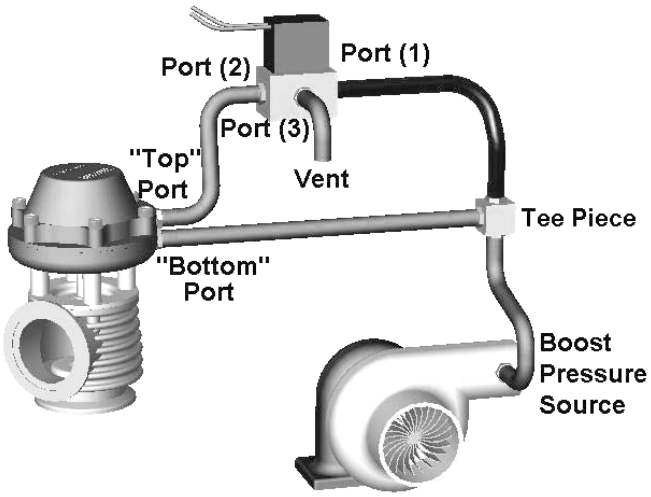
- The size of the spring fitted in your wastegate i.e. The boost pressure achieved by the wastegate spring only.
- The desired level of boost pressure and the difference between this and your wastegate spring pressure.
- The size of your turbocharger and wastegate and the resulting exhaust manifold backpressure in your system

Turbosmart recommends using the "Two port" connection method (1) as a starting point. If this connection method does not achieve the desired boost pressure, fit a heavier wastegate spring to increase your minimum boost pressure, or use the next connection method.

WARNING! Fitting a heavier wastegate spring may cause a higher than expected increase in boost pressure.
Turbosmart recommends resetting the Boost Set Point values to Zero and measuring the new minimum boost pressure achieved by the new spring, before increasing your Boost Set Point values.

2g. "Two Port" Connection Method (1)

Connect the three ports on the e-Boost solenoid according to the diagram below.



- Port (1) Connects to a "boost only" pressure source, typically from the compressor housing on the turbocharger. If your turbocharger does not have this fitting, connect to a "boost only" pressure source before the throttle-body or butterfly. Do not connect to the intake manifold, as the pressure signal will have both vacuum and boost pressure.

- Port (2) Connects to the "Top" port on the external wastegate. For Further information on external wastegate port identification see section 2f.

- Port (3) vents pressure from the e-Boost solenoid. Connect this hose to the intake side of the turbo, between the air cleaner and the inlet on the front of the turbocharger. Otherwise connect a short piece of the silicon hose and face the vent downwards to stop water or debris entering the solenoid.

- Connect the "Bottom" port on the external wastegate to the same "boost only" pressure source as Port (1) on the solenoid. For Further information on external wastegate port identification see section 2f.

- Use a tee-piece (not supplied) to share the "boost only" pressure source if necessary.

If you are unable to achieve your desired boost pressure it is normally due to exhaust manifold backpressure forcing the wastegate valve open. To increase your boost pressure further, fit a heavier wastegate spring to increase your minimum boost pressure, or use the "Two Port" connection method (2) as below.

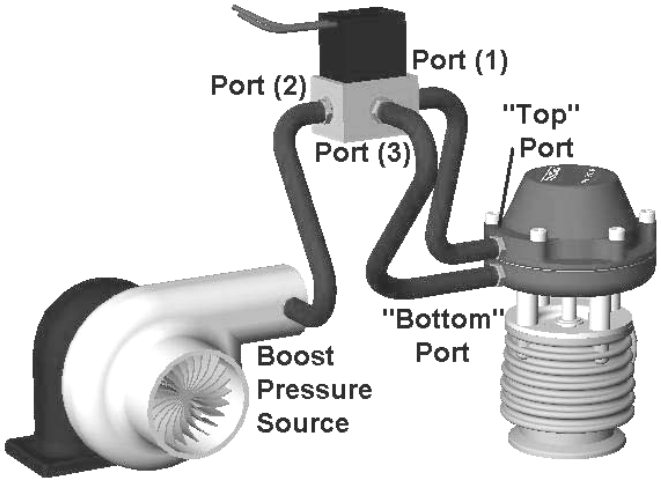
2h. "Two Port" Connection Method (2)

The "Two Port" connection method (2) is used to achieve the maximum possible boost pressure that your system can develop.
It is the most suitable method if you are unable to develop your desired boost pressure due to high exhaust manifold back pressure.

WARNING! An increase in your minimum boost pressure is expected when using this method. Ensure all Boost Set Point Values are set to Zero and measure the new minimum boost pressure achieved by this method of connection before increasing your Boost Set Point values.

Connect the three ports on the e-Boost solenoid according to the diagram below.

- Port (1) Connects to the "Top" port on the external wastegate. For Further information on external wastegate port identification see section 2f.
- Port (2) Connects to a "boost only" pressure source, typically from the compressor housing on the turbocharger. If your turbocharger does not have this fitting, connect to a "boost only" pressure source before the throttle-body or butterfly. Do not connect to the intake manifold, as the pressure signal will have both vacuum and boost pressure.
- Port (3) Connects to the "Bottom" port on the external wastegate. For Further information on external wastegate port identification see section 2f.



If you are unable to achieve your desired boost pressure it is normally due to exhaust manifold backpressure forcing the wastegate valve open. To increase your boost pressure further, fit a heavier wastegate spring to increase your minimum boost pressure. If you are still unable to achieve your desired boost pressure ensure that your turbocharger is correctly sized for your application.

2i. Multiple External Wastegate Connection

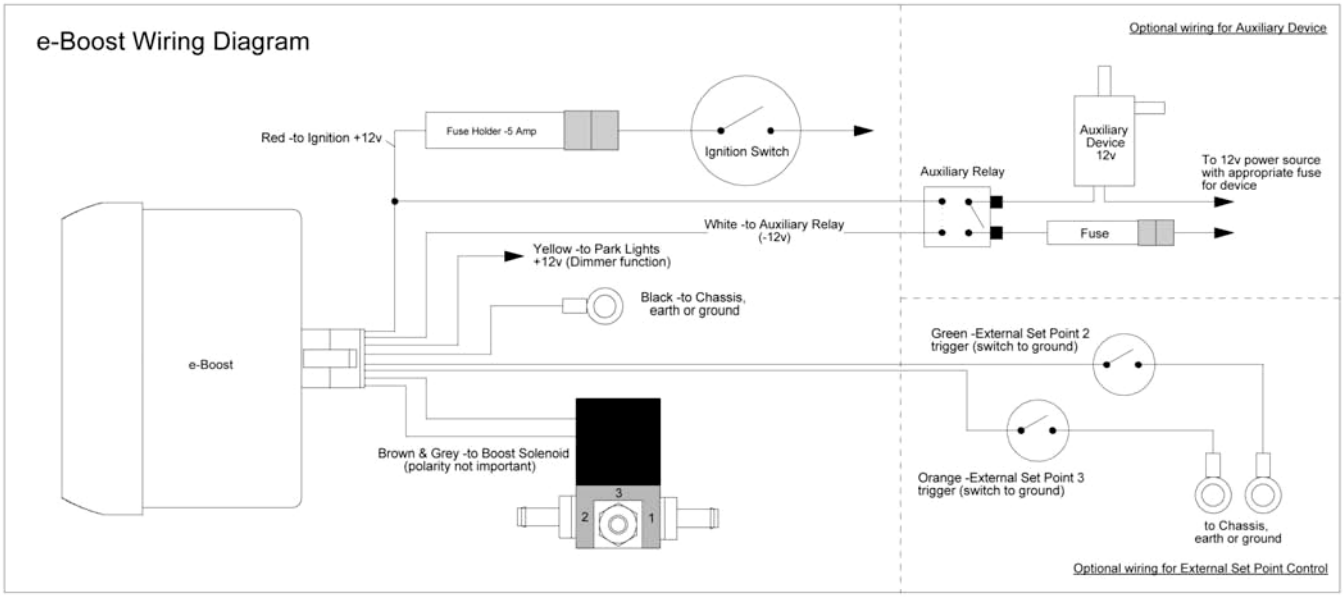
WARNING! Do not connect more that one standard e-Boost solenoid! This will overload the e-Boost circuit causing permanent damage!

The e-Boost solenoid is capable of controlling one external wastegate. For two external wastegates use the Twin Solenoid Kit,
Part # FG-EBOOST-TSK (instructions supplied with kit).

2j. Wiring

- The e-Boost must be connected to a 12 volt negative earth electrical system.
- All electrical connections must be soldered.
- Refer to the following table and diagram for detail on wiring the e-Boost.

Wire	Connect to
RED	+ 12 Volts switched through ignition – connect via 5 Amp fuse supplied
BLACK	Chassis, earth or ground
GREY	Solenoid wire 1 – connect using wire supplied – polarity not important
BROWN	Solenoid wire 2 - connect using wire supplied – polarity not important
YELLOW	Dimmer circuit + 12 Volts
WHITE	Auxiliary output – switched to ground – see diagram below
GREEN	External set point 2 refer to section 5d
ORANGE	External set point 3 refer to section 5d



3. BASIC OPERATION

3a. Live Mode

When the e-Boost is powered up it will automatically go to **Live Mode**. In this **Mode** the readout and bar graph will display accurate **Live** boost or vacuum readings. In **Live Mode** you can change between three boost pressure settings called boost set points. These appear on the readout as SP1, SP2 and SP3, refer to section 4d for detail. When the e-Boost is powered up it always defaults to SP1. To change between the boost set points simply press the up or down arrow, the set point will be displayed for one second and then the readout will return to **Live** boost or vacuum readings.

3b. Boost Pressure

Boost pressures are set by entering a number in each of the three the boost set points, see section 4d for more detail. To view the boost set point value in **Live Mode** press the **Mode** button momentarily. Press the up or down arrows to view the three different boost set point values, i.e. SP1, SP2 or SP3. Press the **Mode** button twice to return to **Live Mode**. Note the boost set point value that was last viewed will be active.

3c. Boost Parameters

To access the **boost parameter menu** press and hold the **Mode** button and the **down arrow** simultaneously. The readout will begin to flash between the selected parameter and its value, scroll up or down to the parameter you want to edit. Press and hold the **Mode** button for two seconds and the parameter will begin to flash. To change the value of the parameter press the up or down arrow until the desired value appears on the readout. To store this value press the **Mode** button momentarily. To exit the boost parameter menu press the **Mode** button again, the e-Boost will display END as confirmation of exiting the boost parameter menu. This will return you to **Live Mode**.

3d. User Parameters

To access the **user parameter menu** press and hold the **Mode** button and the **up arrow** simultaneously. The readout will begin to flash between the selected parameter and its value, scroll up or down to the parameter you want to edit. Press and hold the **Mode** button for two seconds and the parameter will begin to flash. To change the value of the parameter press the up or down arrow until the desired value appears on the readout. To store this value press the **Mode** button momentarily. To exit the boost parameter menu press the **Mode** button again, the e-Boost will display END as confirmation of exiting the boost parameter menu. This will return you to **Live Mode**.

3e. Turning the e-Boost off

To turn the e-Boost off, press and hold the **Mode** button for five seconds. This will revert your boost pressure back to standard, the unit is therefore fail safe. Standard boost pressure depends on your actuator, most are approximately 0.5 bar (7 psi or 50 kpa).

To turn the e-Boost on press the **Mode** button momentarily, the display will light up and the e-Boost is on.

4. SETTING UP YOUR e-Boost

This section outlines how to use and program the basic parameters offered in the e-Boost, for advanced set-up refer to section 5. The diagram pictured below indicates how the menu is structured in the e-Boost.

Up or Down Arrows

Hold the **Mode** button **and** press the **Down** arrow

Hold the **Mode** button **and** press the **Up** Arrow

Live Mode	Boost Parameters	User Parameters
SP 3	GP3	ISP/ESP
SP2	SP3	PSI/KPA/BAR
SP 1	GP2	OBS
	SP2	BGR
	GP1	AL
	SP1	AU
	SEN	

When in Live Mode press the **Mode** button	Once	- To display boost set point values
	Twice	- To access Peak Hold
	Three times	- To clear Peak Hold

Key:

SP1, SP2, SP3 – Boost Set Point 1,2 & 3

GP1, GP2, GP3 – Gate Pressure 1,2 & 3

SEN – Sensitivity

AU–Auxiliary Output

AL – Audible Alarm

BGR – Bar Graph Scale

OBS – Over Boost Shutdown

PSI/KPA/BAR – Display Units

ISP/ESP – Internal Set Point Switching & Internal Set Point Switching

4a. Over Boost Shutdown – VERY IMPORTANT! In order to successfully program your e-Boost you MUST carefully follow this section.

The Over Boost Shutdown or OBS is a very important safety feature of the e-Boost. The OBS must be set to a SAFE level at least 0.15 bar (2.2psi or 15kpa) above the highest boost pressure you want to produce. The OBS is factory set to 0.48 bar (7 psi or 48 kpa), so you must enter a figure in order for the e-Boost to produce more than standard boost pressure. The purpose of this feature is to protect the user 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.

If the OBS is triggered the e-Boost begins to reduce the boost pressure to half of that set in the OBS parameter. Once this safe pressure is achieved the e-Boost returns to normal operation.

To change the Over Boost Shutdown enter the **user parameter menu**, then scroll to the OBS parameter. Press and hold the **Mode** button for two seconds, press the up or down arrow to scroll to the desired pressure. Press the **Mode** button momentarily and the OBS value will be stored. Press the **Mode** button again to return to **Live Mode**.

4b. e-Boost Readout

The e-Boost readout can be configured in either Bar, Psi or Kpa, the default setting is in bar. This allows you to tailor the readout to suit your own preference. The e-Boost readout is factory set to bar. To change the readout enter the **user parameter menu**, then scroll to the readout parameter. Press and hold the **Mode** button for two seconds, press the up or down arrow to scroll to the desired units, kpa, psi or bar. Press the **Mode** button momentarily and the selected units will be stored. Press the **Mode** button again to return to **Live Mode**.

4c. Bar Graph

The e-Boost bar graph can be configured to indicate a pressure between zero and full scale, depending on your **Mode**l this will be either 2.7 bar / 40 psi or 4.1 bar / 60 psi. The bar graph has ten segments, seven green segments and three red segments. When seven segments are illuminated you have reached the pressure that has been programmed in this parameter. The bar graph has been factory set to one bar.

To change the bar graph enter the **user parameter menu**, then scroll to the bGr parameter. Press and hold the **Mode** button for two seconds, press the up or down arrow to scroll to the desired pressure. Note, the number that appears in this parameter will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail. Press the **Mode** button momentarily and the bGr pressure will be stored. Press the **Mode** button again to return to **Live Mode**.

4d. Setting Boost Pressure

The e-Boost-40 is capable of controlling boost pressures up to a maximum of 2.72bar (40psi or 272kpa).
The e-Boost-60 is capable of controlling boost pressures up to a maximum of 4.08bar (60psi or 408kpa).

Boost pressure is determined by the boost set point value. The boost set point value can be set from 0 to 99 and is not directly related to an actual boost pressure. Boost pressure is set by increasing or decreasing the value of each of the three boost set points. Increasing the boost set point will result in a higher boost pressure and vice versa.

The boost set point changes the effect that the e-Boost has on the pressure signal going to the wastegate actuator. A boost set point of 0 will have no effect on the actuator and therefore you will produce standard boost. A setting of 99 will result in the turbo producing as much boost as it can. Realistically the boost set point will be somewhere in the middle of this range.

The e-Boost can store three different boost pressure settings, we refer to the different boost pressures as set points, SP1, SP2 and SP3. Note, SP1, SP2 and SP3 are factory set to 30, 40 and 50 respectively. When the e-Boost is powered up it will default to SP1, we recommend that you enter a boost pressure that is used most often in SP1.

Step 1: To access the **boost parameter menu** press and hold the **Mode** button and the down arrow simultaneously. The readout will begin to flash between the parameter and its value, select SP1 by pressing the up or down arrows.

Step 2: To edit SP1 press and hold the **Mode** button for two seconds. The set point value will begin to flash.

Step 3: Apply full load to the engine, in a high gear at full throttle. The **Live** boost pressure will be displayed on the readout. Note, the number that appears will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail.

Step 4: To alter the boost pressure, increase or decrease the boost set point value by pressing the up or down arrow until the desired boost pressure appears on the readout.

Step 5: To store this value press the **Mode** button momentarily, this will return you to the boost parameter menu. To exit the boost parameter menu press the **Mode** button again, the e-Boost will display END as confirmation of exiting the boost parameter menu. This will return you to **Live Mode**.

Step 6: Check that the correct Air/Fuel ratio has been maintained once boost pressure is set

Step 7: Repeat steps 1 through to 6 for SP2 and SP3

Internal Wastegates- The table below is a **guideline only** to relate boost set point values to approximate boost pressures achieved when using an internal wastegate with a 0.48 bar (7 psi or 48 kpa) wastegate actuator. If your wastegate actuator has a higher minimum boost pressure, this table will not apply.

Boost Set Point	Approximate Boost Pressure achieved
30	0.68 bar / 10 psi / 68 kpa
40	1.02 bar / 15 psi / 102 kpa
50	1.29 bar / 19 psi / 129 kpa

External Wastegates -Please use caution! Reset all Boost Set Point values to Zero (0). Follow the steps in the section 4d. Setting Boost Pressure, to adjust each of your Boost Set Point Valves

Note:
- The e-Boost cannot be used to obtain a boost pressure lower than the standard actuator setting
- The e-Boost cannot compensate for boost pressure drop at high RPM due to the turbocharger operating beyond its maximum efficiency range i.e. incorrect turbocharger sizing or excessive exhaust backpressure, or increases in boost pressure at high RPM due to inadequate wastegate flow capacity. The turbo system must maintain a steady base boost curve.
- The e-Boost cannot be used with external wastegates that are in a poor, worn or non-serviceable condition.

4e. Sensitivity

The e-Boost has a sensitivity adjustment that effects the way that the e-Boost controls boost pressure. The sensitivity is factory set to 10, this caters for the majority of turbo applications, however should you feel that the sensitivity requires adjustment it can be set from 0 to 99. Refer to the table below for more detail.

Sensitivity too low	- Achieves more boost in high gears - Takes longer to achieve boost set point - Boost drops off at higher RPM
Sensitivity correct	- Boost rises quickly and is steady
Sensitivity too high	- Boost pressure fluctuates, cycles or is not smooth - Boost pressure overshoots set point – rises too fast

Note: Actual boost pressure will increase slightly with sensitivity.

To change the sensitivity enter the **boost parameter menu**, then scroll to SEn parameter. Press and hold the **Mode** button for two seconds, press the up or down arrows to change the sensitivity value. Press the **Mode** button momentarily and the sensitivity value will be stored. Press the **Mode** button again to return to **Live Mode**.

Alternatively the sensitivity can be tuned live while editing this parameter. Apply full load to the engine, in a high gear at full throttle. The **Live** boost pressure will be displayed on the readout. Note, the number that appears will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail. You can now alter the sensitivity in real time, according to the table above.

5. ADVANCED SET-UP

5a. Setting Gate Pressure

Gate pressure control is a unique feature to the e-Boost. The Gate pressure function allows you to determine the pressure at which the wastegate begins to open. By optimising the gate pressure and keeping the wastegate closed as long as possible, your desired boost will be achieved faster and at lower RPM. Substantial gains in torque will be achieved.

The e-Boost has three Gate Pressure settings that coincide with each boost set point, SP1, SP2 and SP3. This allows you to tailor each gate pressure to individual boost set points in order to get the most efficiency from your turbo. For example GP1 is used only when SP1 is selected, GP2 is used only when SP2 is selected and so on.

The Gate pressure should only be set once your boost set points have been finalised – do not attempt to set the gate pressure first. The three gate pressures have been factory set to 0.2bar (2.9psi or 20kpa). The objective when setting gate pressure is to maximise the value without causing a boost spike. Increase the gate pressure until the boost pressure overshoots the desired setting. This boost spike is a result of the wastegate actuator being held closed too long. Reduce the gate pressure value until this boost spike is eliminated.

If the gate pressure is set beyond your actual boost pressure, the e-Boost will reach the gate pressure once and then revert to your actual boost pressure. Once the e-Boost registers a vacuum, the gate pressure function is reset and so on.

This cycle is advantageous for certain applications where a momentary spike in boost is desired. To change the gate pressure value, enter the **boost parameter menu**, then scroll to GP1, GP2 or GP3. Press and hold the **Mode** button for two seconds, press the up or down arrows to change the gate pressure value. Press the **Mode** button momentarily and the gate pressure will be stored. Press the **Mode** button again to return to **Live Mode**.

5b. Auxiliary Output

The e-Boost has an auxiliary output function designed to control an auxiliary device once a certain boost pressure is achieved, i.e. water spray, water injection or warning light. This circuit must be used to control a relay, with a maximum load rating of 1amp. The auxiliary output is factory set to 1 bar (14.7 psi or 100 kpa).

To change the auxiliary output value enter the **user parameter menu**, then scroll to the Au parameter. Press and hold the **Mode** button for two seconds, press the up or down arrows to set the desired auxiliary pressure. Note, the number that appears in this parameter will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail. Press the **Mode** button momentarily and the auxiliary pressure will be stored. Press the **Mode** button again to return to **Live Mode**.

5c. Audible Alarm

The e-Boost has an audible alarm function that sounds the internal buzzer once a certain boost pressure is achieved. This alarm can be used to confirm that full boost has been reached or as an over boost warning and can be programmed for any boost pressure. The audible alarm has been factory set to 1 bar (14.7 psi or 100 kpa).

To change the audible alarm enter the **user parameter menu**, then scroll to the AL parameter. Press and hold the **Mode** button for two seconds, press the up or down arrow to scroll to the desired pressure. Note, the number that appears in this parameter will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail. Press the **Mode** button momentarily and the alarm pressure will be stored. Press the **Mode** button again to return to **Live Mode**.

5d. Using External Set Point Switching

The e-Boost has three different boost set points. These can be triggered internally, via the up / down arrows, or externally by grounding or earthing the green and or orange wires to the chassis. The external set points are selected by earthing the appropriate wire corresponding with the set point you wish to select, see the table below for detail. The e-Boost is factory set for internal set point switching.

To configure the e-boost for external set point trigger enter the **user parameter menu**, then scroll to the ISP parameter. Press and hold the **Mode** button for two seconds, press the up or down arrows to change between ISP and ESP. Press the **Mode** button momentarily and the selection will be stored. Press the **Mode** button again to return to **Live Mode**.

Active set point	Green wire	Orange Wire
Set point 1	Not connected	Not connected
Set point 2	Earthed	Not connected
Set point 3	Not connected	Earthed
Set point 3	Earthed	Earthed

For further details see section 2j. Wiring.

5e. Peak Hold Function

The e-Boost has a peak hold function PH, that records peak boost pressure. Each time a higher pressure is produced the previous figure is discarded. To access the peak hold you must be in **live mode.** Press the **Mode** button twice to view PH parameter. Note, the number that appears in this parameter will be in bar, psi or kpa, depending on what has been set in the readout parameter, see section 4b for more detail. Press the **Mode** button momentarily to clear the peak hold memory and return to **Live Mode**.

6. 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.

- Check that the e-Boost solenoid is installed correctly, refer to section 2c. for detail
- Ensure the factory boost control solenoid is not connected in the hose between the pressure source and the wastegate actuator
- Ensure the length of the wastegate actuator rod has not been modified, refer to the manufactures specifications
- Check to see if the e-Boost 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 wastegate actuator for leakage, the diaphragm or housing may be cracked or split
- Ensure the smooth and free operation of the wastegate arm in the turbo exhaust housing.
- Check that the hose between the e-Boost 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, refer to section 4a for more detail
- Check the Blow-off Valve for leakage, some are used as over-boost valves
- Gate pressure maybe set too close to your actual boost pressure
- Ensure correct sensitivity setting, refer to section 4e

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Happy motoring!
The Turbosmart Team.

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