TURBOSMART®

PART NUMBER
FG-WGATE-38

ULTRA-GATE 38MM WASTEGATE INSTRUCTIONS

ULTRA-GATE PACKING LIST

Please check that the following items have been provided with your Ultra-Gate.

Qty	Description	Use	Replacement Part #
1	Ultra-Gate 38mm external wastegate	Assembled Ultra-Gate fitted with 7 psi outer purple spring	FG-WGATE-38
2	Weld flange	Designed to be welded to exhaust system	FG-WG38-WFL
2	Belpa Mica Gasket	Seals the inlet and outlet flange to the Ultra-Gate	FG-WG38-GSKT
2	Nipple 1/8 BSP	For connection to Top & Bottom ports	
2	Reducer	5mm to 6.3mm hose reducer	
1	White 7 psi inner spring	7 psi inner spring – White	FG-WG38-SPO7IN
1	Blue 10 psi outer spring	10 psi outer spring – Blue	FG-WG38-SP10
2	M8x25 Screw	Designed to bolt into threaded outlet flange	Supplied in FG-WG38-WFL
2	M8x35 Screw	Designed to bolt through the inlet flange	Supplied in FG-WG38-WFL
2	M8 Nuts	Use on the inlet flange bolts	Supplied in FG-WG38-WFL
1	Valve Seat	Seals the valve	FG-WG38-SEAT

IMPORTANT NOTES ON YOUR ULTRA-GATE 38MM EXTERNAL WASTEGATE

- Fitting your Ultra-Gate will require fabrication of a custom manifold and or modification to an exhaust manifold. Turbosmart recommends that your Ultra-Gate is fitted by an appropriately qualified technician.
- The Ultra-Gate is designed for use with a turbocharger that does not have an internal wastegate.
- Consult your local specialist before setting your desired boost pressure, setting boost beyond your engines capability may result in engine damage.
- Turbosmart recommends that boost pressure is set using a Dynamometer and not on public roads.
- Turbosmart recommends that a boost gauge be permanently fitted to the vehicle.
- Turbosmart recommends that the engines Air/Fuel ratio is checked while setting the desired boost pressure, as any increase in boost pressure can cause the engine to run “LEAN”, resulting in possible engine damage.
- To safeguard against “pinging” or detonation, always use the highest octane fuel available.

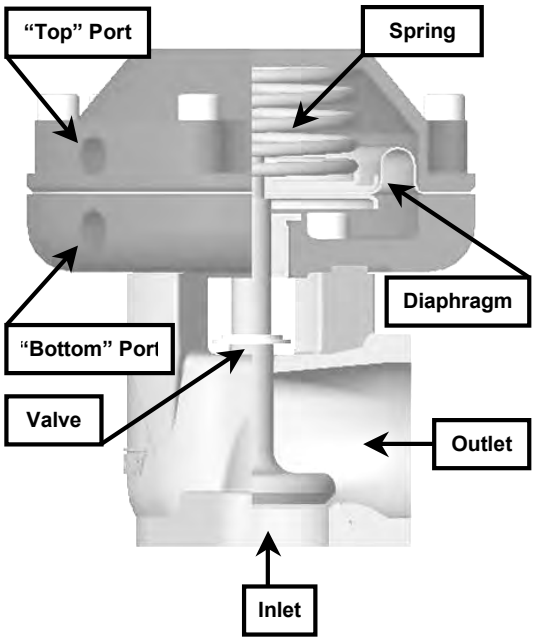
Please check www.turbosmart.com.au for the latest updates and information on fitting your Turbosmart Ultra-Gate.

IMPORTANT NOTES ON FITTING YOUR ULTRA-GATE

Note: **Please thoroughly read and understand these instructions before commencing this installation.**

BASIC COMPONENTS OF YOUR ULTRA-GATE 38MM EXTERNAL WASTEGATE

Use the diagram to help identify the “top” and “bottom” ports, and inlet/outlet ports 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.
- The Inlet is connected to the exhaust manifold before the turbine housing of your turbocharger. See recommendations following for Ultra-Gate mounting position.
- Outlet returns exhaust gas back into the exhaust system after the turbocharger. (NOTE if mounted on a dedicated race car the outlet can be vented directly to atmosphere towards the ground)
- The Ultra-Gate is guaranteed to handle exhaust gas temperatures up to 1000^{O}C. Your actual exhaust gas temperature is affected by engine tune, type of fuel and flame front propagation. The temperature of exhaust gas flowing through the Ultra-Gate is also largely dependant on the distance the Ultra-Gate is mounted from the exhaust ports. The Ultra-Gate valve is coated in heat paint which changes colour when exposed to various exhaust gas temperature ranges as illustrated in the following chart.

Colour Change Sequence	Initial Colour	1	2	3	4	5	6	7	8	9	10
Colour	Bright Orange/Red	Brown	Brown/ Yellow	Bright Yellow	Orange	Green	Mottled Red	Brown	Green/ Grey	Grey	Black
Temperature	0-490^{O}C	490^{O}C	570^{O}C	610^{O}C	670^{O}C	750^{O}C	850^{O}C	910^{O}C	1040^{O}C	1080^{O}C	1250^{O}C

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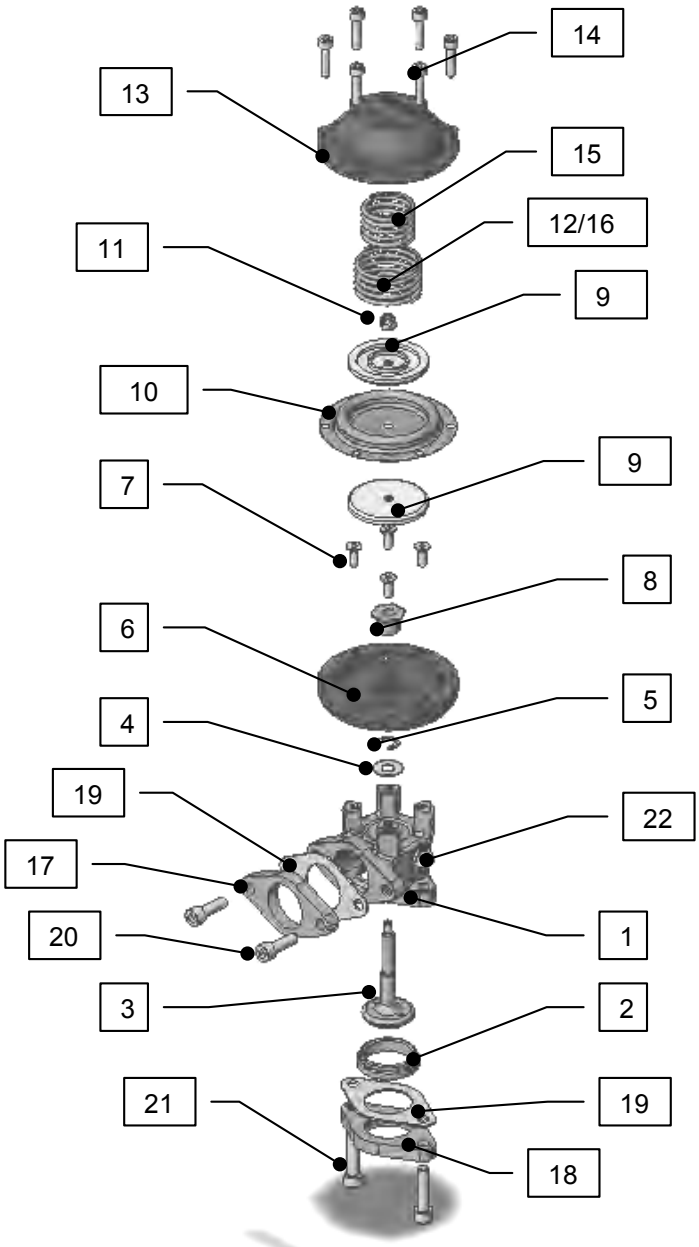
ULTRA-GATE 38MM WASTAGATE ASSEMBLY EXPLODED VIEW

ITEM NO.	Quantity	Replacement Part #	DESCRIPTION
1	1		MAIN BODY
2	1	FG-WG38-SEAT	VALVE SEAT
3	1		VALVE
4	1		9.1 ID x 20 OD x 1 mm SS
5	1		EXTERCLIP 9mm 11mm SS
6	1		LOWER DIAPHRAGM HOUSING
7	4		M6x45 HKK STAINLESS STEEL
8	1		VALVE BUSH
9	2		DIAPHRAGM SUPPORT
10	1	FG-WG38-DIA	DIAPHRAGM SILICON NOMEX
11	1		M6 304 S/S GLENLOCK NUT
12	1	FG-WG38-SP07	7 PSI SPRING - PURPLE
13	1		UPPER DIAPHRAGM HOUSING
14	6		M6 x 25 304 S/S SOCKET CAP SCREW
15	1	FG-WG38-SP07IN	7 PSI SPRING - WHITE
16	1	FG-WG38-SP10	10 PSI SPRING - BLUE
17	1	FG-WG38-WFL	OUTLET WELD FLANGE
18	1	FG-WG38-WFL	INLET WELD FLANGE
19	2	FG-WG38-GSKT	BELPA MICA GASKET
20	2		M8X25 SCHS SS
21	2		M8X35 SCHS SS
22	2		M8 NUT SS
NOTE: VALVE LOCKING TOOL - PART # FG-WG38-VLT REQUIRED TO REPLACE THE DIAPHRAGM			



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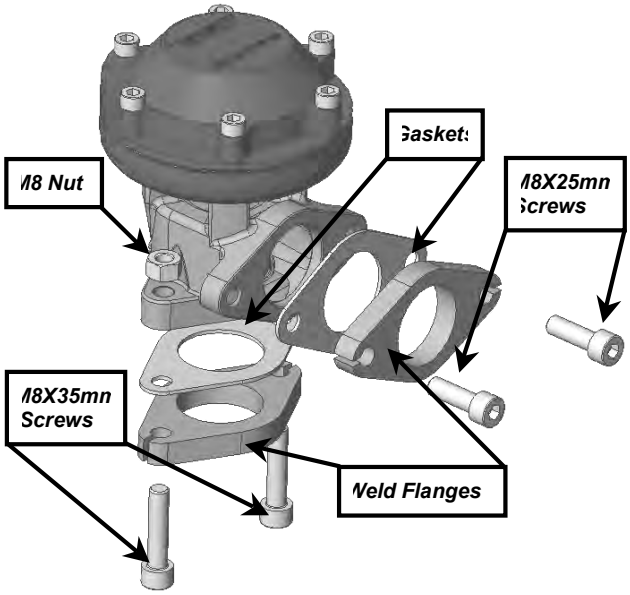
RECOMMENDATIONS FOR MOUNTING YOUR ULTRA-GATE

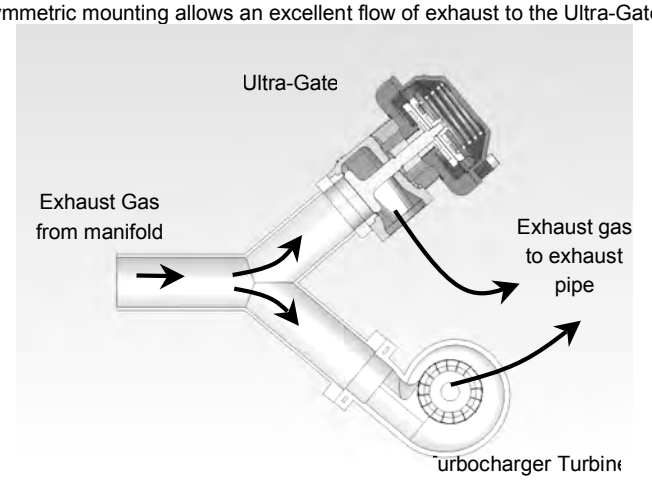
The mounting position of your Ultra-Gate will be largely determined by your turbo and manifold setup and may be constrained by space restrictions in your engine bay. The following points should be considered when mounting your Ultra-Gate.

- The supplied exhaust weld flanges should be welded to your exhaust system. The weld flanges are compatible with Stainless Steel and Mild steel welding rod material.
- When securing your Ultra-Gate use the supplied gaskets between the weld flanges and the inlet/outlet flanges. Use the M8X25 screws to secure the outlet flange (Note: The bolts screw into the threaded holes on the outlet flange). Use the M8 nuts and M8X35 screws if needed to secure inlet flange to your manifold (Note: Your manifold may have studs to suit so the screws may not be necessary). Tighten the screws and nuts to a torque of 8 Nm & lubricate with Never Seize regularly.
- For best results an attempt should be made if space allows to mount the Ultra-Gate at an angle to the exhaust flow to allow for better flow than a 90 degree mounting. See the schematic diagrams below for examples of mounting positions.



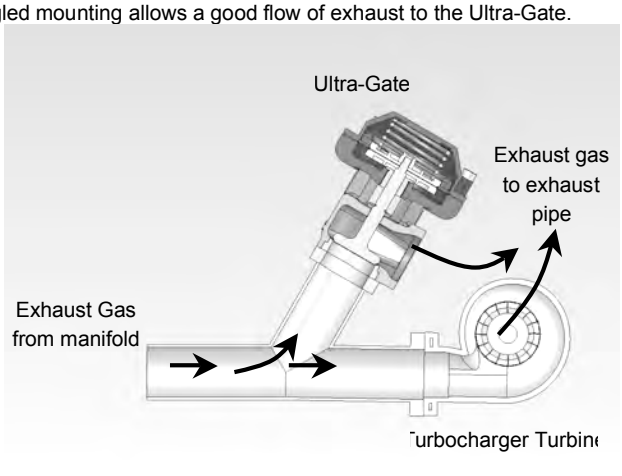
Best Flow – Symmetric Mounting

Symmetric mounting allows an excellent flow of exhaust to the Ultra-Gate.



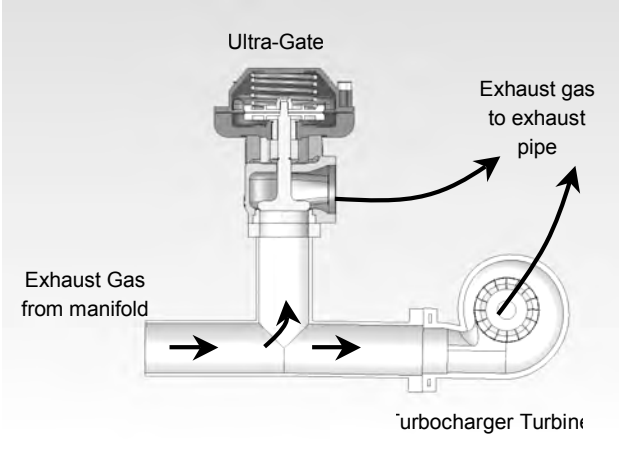
Good Flow – Angled Mounting

Angled mounting allows a good flow of exhaust to the Ultra-Gate.



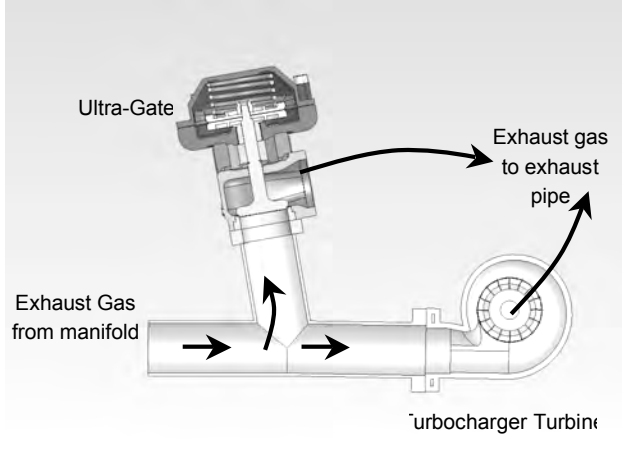
Poor Flow – 90 Degree Mounting

90 degree mounting gives poor exhaust flow to the Ultra-Gate and in some circumstances may contribute to over boosting.



Not recommended – Less than 90 Degree Mounting

An angled mounting as shown is not recommended and gives extremely poor exhaust flow to the Ultra-Gate.



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ACHIEVING YOUR TARGET BOOST PRESSURE

There are various factors involved in achieving your target boost pressure including.

- 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.

Turbo smart recommends the ideal setup for achieving your target boost pressure is to use the Ultra-Gate in conjunction with a Turbosmart e-Boost controller.

IMPORTANT NOTES ON SETTING THE WASTEGATE SPRING PRESSURE

The Ultra-Gate is factory assembled with a single 7 psi outer spring (PURPLE). Turbosmart recommend using the standard spring as this allows maximum valve travel and therefore exhaust flow through the Ultra-Gate. A stiffer spring should only be used when necessary. The Ultra-Gate is supplied with 2 additional springs that allow a combination of spring pressures. All springs that are included with the Ultra-Gate are shown in the table below. The tuner can use combinations of the 2 springs to achieve the following base boost pressures. To aid in the identification of these springs they are supplied colour coded. If this colour coding is not clear please use the dimensions in the following table to identity the wastegate spring. Please see the following detailed instructions on setting your Ultra-Gate's spring pressure.

Part Number	Spring Type	OD	Length	Wire Diameter	Colour
FG-WG38-SPNG-07IN	Ultra-Gate 7 psi Inner	36.5mm	54.0mm	3.15mm	**WHITE**
FG-WG38-SPNG-07	Ultra-Gate 7 psi Outer	45.0mm	75.0mm	3.15mm	**PURPLE**
FG-WG38-SPNG-10	Ultra-Gate 10 psi Outer	45.0mm	77.0mm	3.50mm	**BLUE**

Spring Pressure	7 psi	10 psi	14 psi	17 psi	
Ultra-Gate 7 psi Inner			•	•	**WHITE**
Ultra-Gate 7 psi Outer	•		•		**PURPLE**
Ultra-Gate 10 psi Outer		•		•	**BLUE**

The Ultra-Gate is factory assembled with a 7 psi outer spring (PURPLE). To fit a heavier spring or spring combination follow the instructions below.

WARNING! Fitting a heavier wastegate spring may cause a higher than expected increase in boost pressure**.**

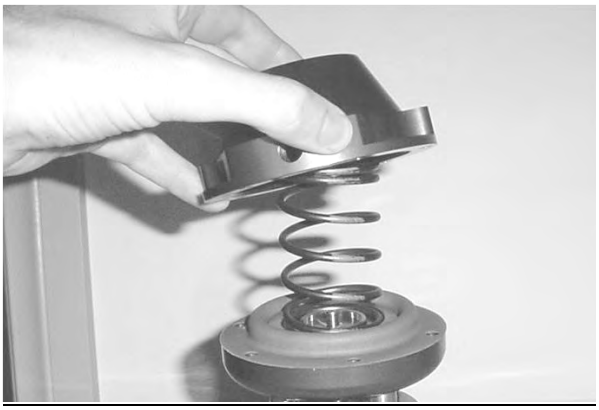
Turbosmart recommends adjusting your boost controller back to its minimum setting and measuring the new minimum boost pressure achieved by the new spring, before increasing your boost pressure again.

1. Remove the Ultra-Gate from the exhaust manifold. Use **CAUTION!** the wastegate may still be **HOT!**

2. Using a 5mm Allen Key, remove the Allen head bolts that secure the upper wastegate cap.

WARNING! The cap is under spring tension, wear safety glasses and remove with care! You may find it helpful to use a press to hold down the cap while loosening the bolts and to aid in releasing the cap slowly while under spring pressure.

3. Release Cap slowly as it is under spring pressure and remove cap.



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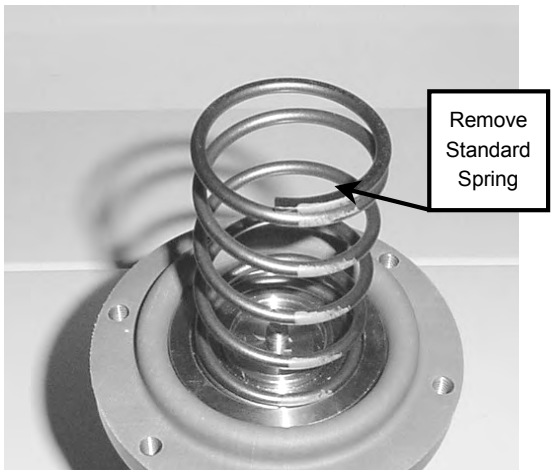
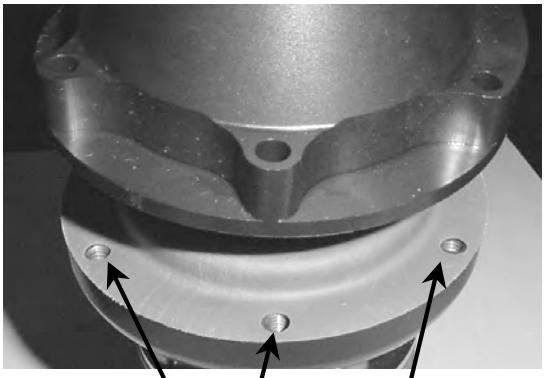
4. Remove the standard purple 7 psi wastegate spring.

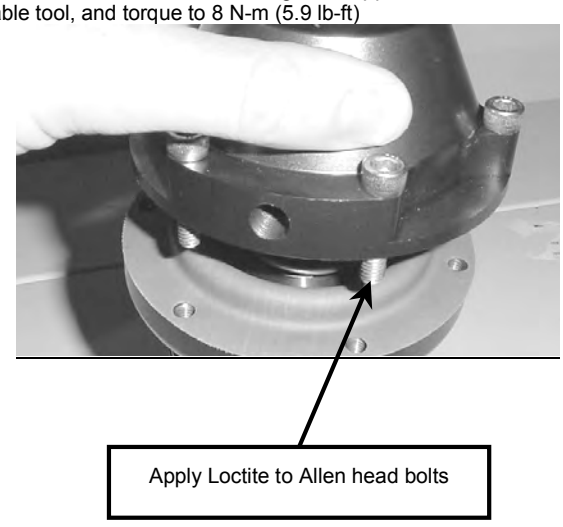


5. Select and locate the required wastegate spring or combination of inner and outer springs on the upper diaphragm spring support.
See spring information above for detail on wastegate spring identification and selection.

6. Ensure that the diaphragm is correctly aligned. The six holes on the outer ring of the wastegate diaphragm should be in line with the 6 holes in the lower wastegate cap.



7. Refit the upper wastegate cap re-using the Allen head bolts. Use Loctite or a similar thread locking product on these screws. Again you may find it helpful to use a press to hold down the cap while tightening these bolts.
Tighten the Allen head bolts using the supplied 5mm Allen Key, or suitable tool, and torque to 8 N-m (5.9 lb-ft)



8. Refit the wastegate to the exhaust manifold using the supplied vee band clamps.

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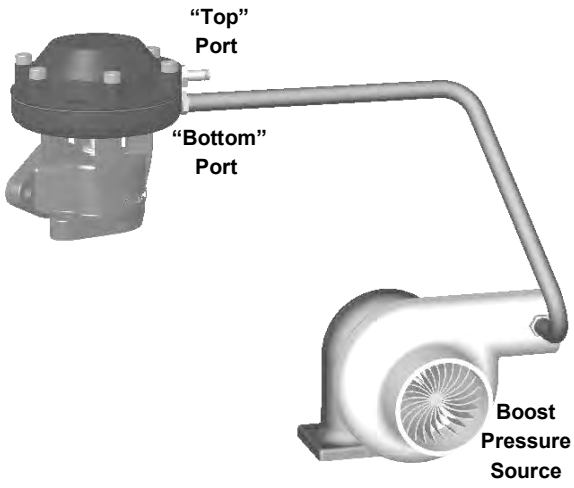
NOTES ON BOOST CONTROL HOOKUP

WARNING! Changing your 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.

IMPORTANT! Refer to your boost controller instructions for most suitable connection method to an external wastegate.

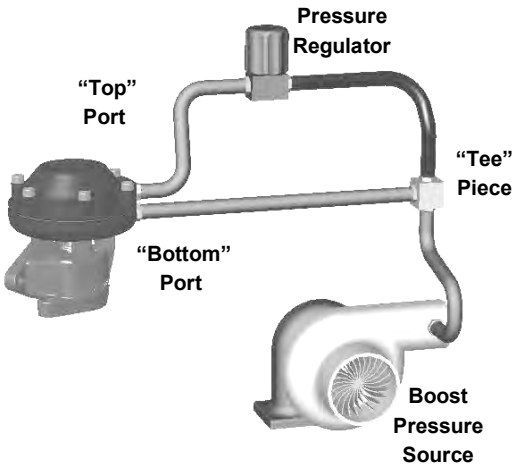
BASIC HOOK UP

If no boost controller is being used connect the boost pressure source to the “bottom” port as shown. Connect the Ultra-Gate “top” port 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 top port.



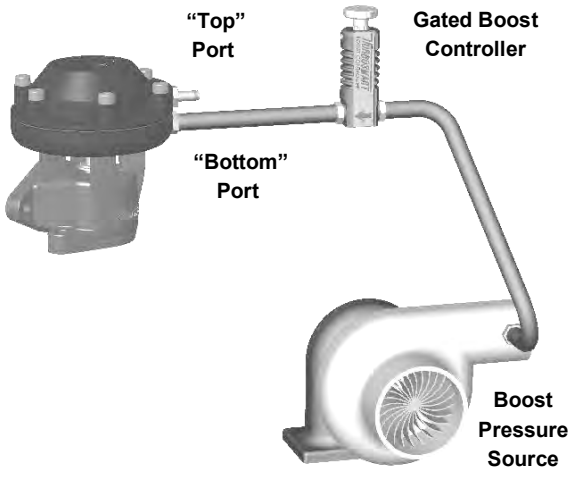
PRESSURE REGULATOR HOOK UP

When using your Ultra-Gate in conjunction with a pressure regulator Turbosmart recommends it should be fitted by an appropriately qualified technician. A possible layout is illustrated but Turbosmart makes no recommendations in regard to the best hook up of a pressure regulator.



GATED BOOST CONTROL VALVE HOOK UP

When using your Ultra-Gate in conjunction with Turbosmart gated boost controller fit the controller between the boost pressure source and “bottom” port as shown. Ensure the arrow on the controller is pointing in the direction illustrated. Connect the Ultra-Gate “top” port 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 top port.
Refer to the instructions supplied with your Gated Boost Control Valve for further detail if necessary.



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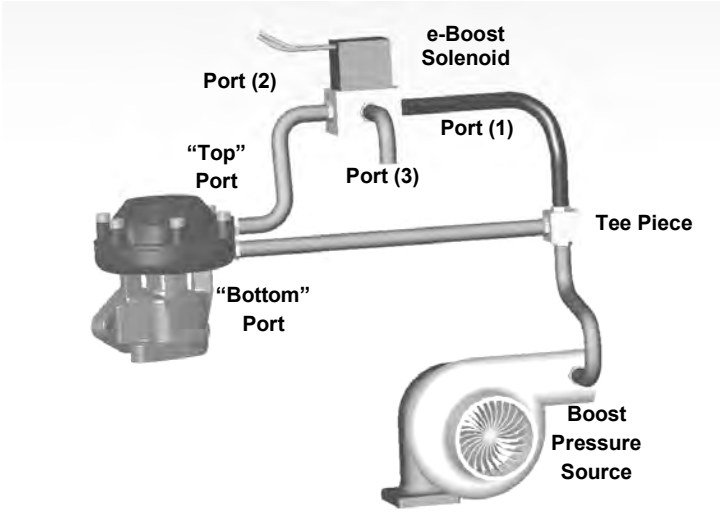
Turbosmart recommends using Ultra-Gate in conjunction with the Turbosmart e-Boost and trying the "Two port" connection method (1) as a starting point. If this connection method does not achieve the desired boost pressure, fit a heavier wastegate spring to the Ultra-Gate to increase your minimum boost pressure, or use the next connection method ("Two port" connection method (2)).

"TWO PORT" CONNECTION METHOD (1)

When using your Ultra-Gate in conjunction with a Turbosmart e-Boost connect the three e-Boost solenoid ports according to the diagram below.

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



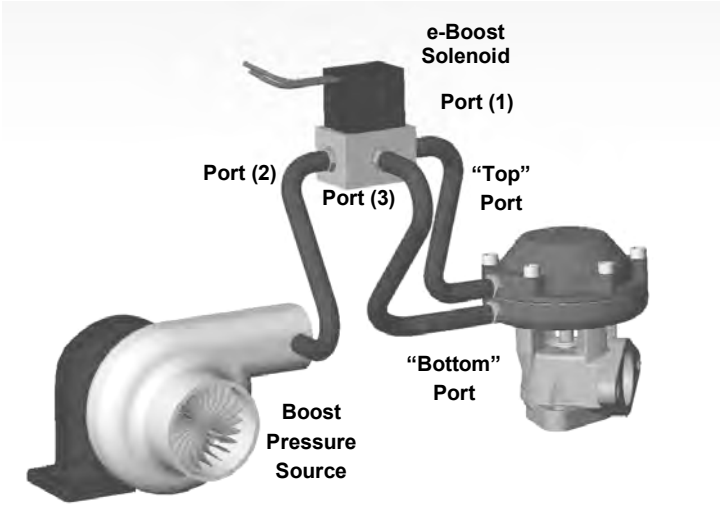
- Port (1) Connects to a "boost only" pressure source, typically from the compressor housing on the turbocharger. If your turbocharger does not have this fitting, connect to a "boost only" pressure source before the throttle-body or butterfly. Do not connect to the intake manifold, as the pressure signal will have both vacuum and boost pressure.
- Port (2) Connects to the "Top" port of the Ultra-Gate
- 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 Ultra-Gate to the same "boost only" pressure source as Port (1) on the solenoid.
- 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 the Ultra-Gate to increase your minimum boost pressure, or use the "Two Port" connection method (2) as below.

"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 and gate pressure 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 Ultra-Gate.
- 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 of the Ultra-Gate.

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.

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THE TURBOSMART PLEDGE

DO NOT USE ANY TURBOSMART PRODUCT UNTIL YOU HAVE CAREFULLY READ AND UNDERSTOOD THE FOLLOWING AGREEMENT.

Please call if you have any questions or do not understand this agreement. Refer to our brochure, website or catalogue for terms and conditions and further information regarding your product. Turbosmart appreciates your business and pride ourselves on our customer service. We are always happy to offer you advice and will provide you with help in any way we can. The purpose of this agreement is to avoid any problems or hard feelings.

We sometimes make mistakes, as do our dealers, distributors and suppliers. Even customers can sometimes order the wrong parts. Do not use, modify, install, trial assemble, nick, drop, scratch or adjust any part until you first check for any damage. Damage must be reported immediately. NO EXCEPTIONS. If there are any components missing please contact your authorised reseller immediately upon receipt of your shipment. Missing components must be reported within five (5) business days of receipt. Parts returned for any reason MUST BE IN RESALABLE CONDITION. It is YOUR responsibility, "THE CUSTOMER" to carefully package any returns to avoid shipping damage. Insurance is highly recommended. Credit cannot be issued for damaged goods.

Turbosmart Pty Ltd warranties the quality of the products it designs and manufactures to be free of defects in material and workmanship. This limited warranty is extended only to the original purchaser and may not be transferred or assigned. This limited warranty applies to any product, which after careful inspection by Turbosmart Pty Ltd, after receipt of the product from our authorised reseller, is found to have a defect in either material or workmanship. Any modifications to the product will void any and all warranties and will not be exchanged. Before installation, check new car warranty. Turbosmart Pty Ltd is not responsible for voiding any original manufactures warranty.

All warranty claims must be returned to the authorised reseller, you must return the product and sales receipt, at your own expense, accompanied by a letter stating the reason for the claim. Proof of purchase must be provided with any warranty claim and will be verified with the authorised reseller from which the product was purchased.

If all the above procedures are followed, and the product is found to be defective in either workmanship or material, Turbosmart Pty Ltd shall either repair or replace the product, at its sole discretion, and sole cost. This limited warranty does not cover or apply to any personal injury, labour charges or any other incidental costs or damages caused by the defective product. The individual purchaser acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this agreement and the individual purchaser agrees to indemnify Turbosmart Pty Ltd and to hold Turbosmart Pty Ltd harmless for any claim related to the item of the equipment purchased. Under no circumstances will Turbosmart Pty Ltd be liable for any damages or expenses by reason of use or sale of any such equipment.

THIS LIMITED WARRANTY IS THE ONLY EXPRESS WARRANTY, WHICH APPLIES TO TURBOSMART PTY LTD PRODUCT AS EXPRESSLY GIVEN IN LIEU OF ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING THAT OF MERCHANTABILITY. ANY IMPLIED WARRANTY INCLUDING THAT OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICCULAR PURPOSE IS HEREBY LIMITED BY THE SAME TERMS AND TIME LIMITATIONS SET FORTH IN THIS LIMITED EXPRESS WARRANTY AND OTHERWISE EXCLUDED.

EXCEPT FOR THOSE OBLIGATIONS ASSUMED HEREIN, TURBOSMART PTY LTD ASSUMES NO OTHER OBLIGATIONS IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

IN THE EVENT THAT THE INDIVIUDAL PURCHASER DOES NOT AGREE WITH THIS AGREEMENT THE BUYER MAY PROMPTLY RETURN THIS PRODUCT, IN A NEW AND UN-USED CONDITION, WITH A DATED PROOF OF PURCHASE, TO THE PLACE OF PURCHASE WITHIN SIXTY (60) DAYS FROM THE DATE OF PURCHASE FOR A FULL REFUND.

THE INSTALLATION OF THIS PRODUCT INDICATES THAT THE INDIVIDUAL PURCHASER HAS READ AND UNDERSTOOD THIS AGREEMENT AND ACCEPTS ITS TERMS AND CONDITIONS.

Happy motoring!

The Turbosmart Team.

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