

Product Name: **Power-gate 60**
 Product Description: 60mm External Wastegate
 Product Number: TS-0503-1XXX



IMPORTANT NOTES ON YOUR EXTERNAL WASTEGATE

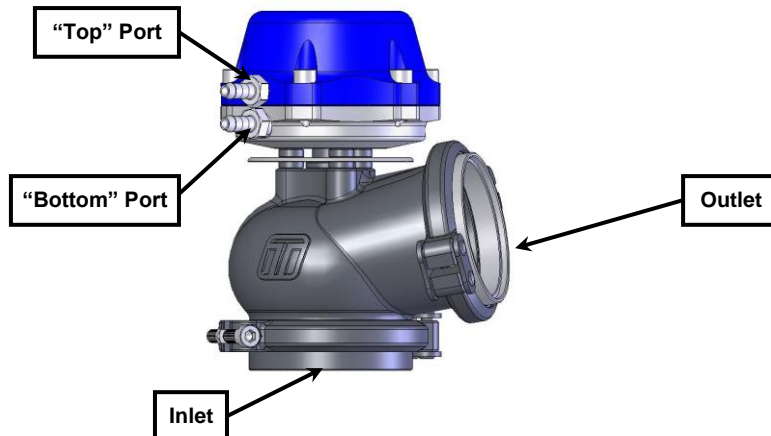
- Fitting your Power-Gate60 may require fabrication or modification to your exhaust manifold. Turbosmart recommends that your Power-Gate is fitted by an appropriately qualified technician.
- The Power-Gate60 is designed for use with a turbocharger that does not have an internal wastegate.
- Consult your local specialist before setting your desired boost pressure, setting boost beyond your engines capability may result in engine damage.
- **DO NOT wrap the body of the wastegate with exhaust wrap**
- **DO NOT Mount the wastegate so that the top diaphragm housing is less than 100mm from a heat source**
- **Allow for adequate cool airflow around the top diaphragm housing**

RECOMMENDATIONS

- 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.

BASIC COMPONENTS OF YOUR POWER-GATE 60MM 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, it 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 Power-Gate60 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)

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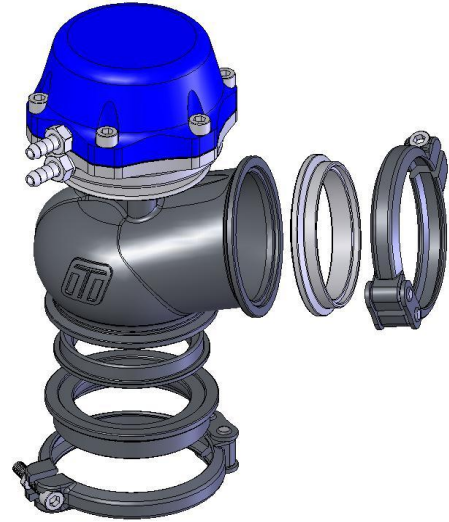
Please make sure that the following parts have been included in the box

Part	Quantity	Description
Power-gate 60 mm wastegate	1	60mm external wastegate with pre-fitted spring (check the label on the box for rating)
Inlet weld flange	1	Power-gate60 Stainless steel inlet weld flange
Valve seat	1	Power-gate60 Stainless steel valve seat
Outlet weld flange	1	Power-gate60 Stainless steel outlet weld flange
Inlet V-Band clamp assembly	1	Power-gate60 inlet V-Band clamp assembly
Outlet V-band clamp assembly	1	Power-gate60 outlet V-Band clamp assembly
10 PSI Middle spring	1	Power-gate60 10 PSI spring (Black/blue)

RECOMMENDATIONS FOR MOUNTING YOUR POWER-GATE60

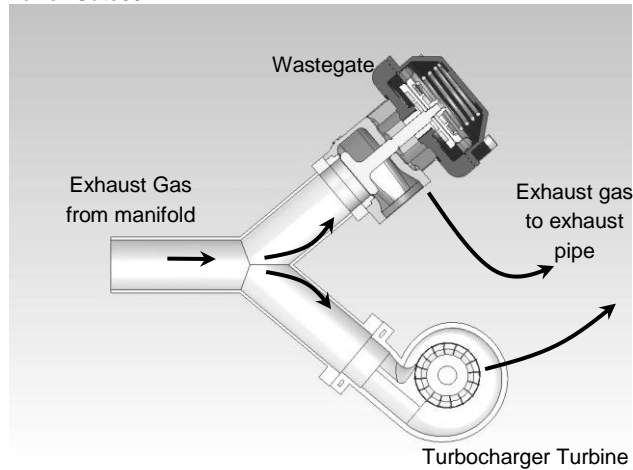
The mounting position of your Power-Gate60 will be largely determined by your turbo and manifold setup and may be constrained by space restrictions in your engine bay. The following points should be considered when mounting your Power-Gate60.

- The weld flanges should be welded to your exhaust system. The weld flanges are compatible with Stainless Steel and Mild steel welding rod material.
- Secure the Power-gate60 to the weld flanges with the supplied V-Band clamps. Do not forget to put the valve seat into the body before mounting the unit on the exhaust manifold. Tighten the supplied M6 screws to a torque value of 14 Nm (10 ft/lbs)
- For best results an attempt should be made if space allows to mount the Power-Gate60 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.



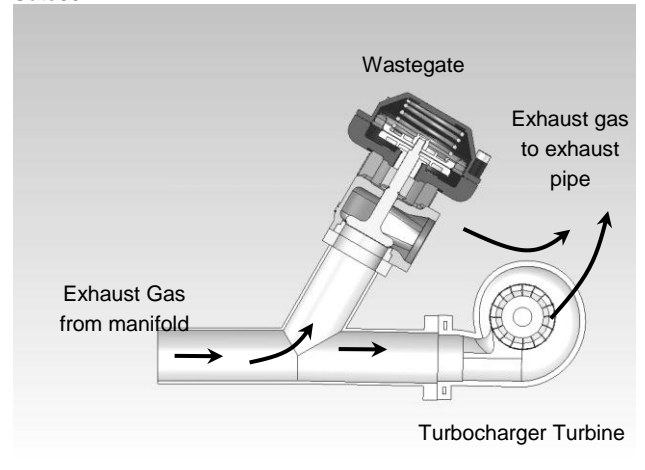
Best Flow – Symmetric Mounting

Symmetric mounting allows an excellent flow of exhaust to the Power-Gate60.



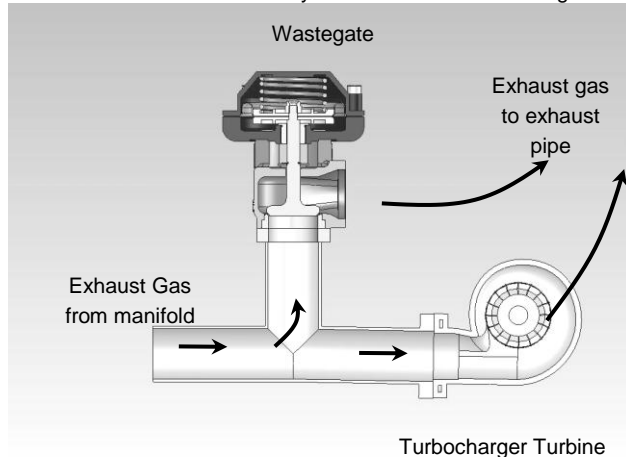
Good Flow – Angled Mounting

Angled mounting allows a good flow of exhaust to the Power-Gate60.



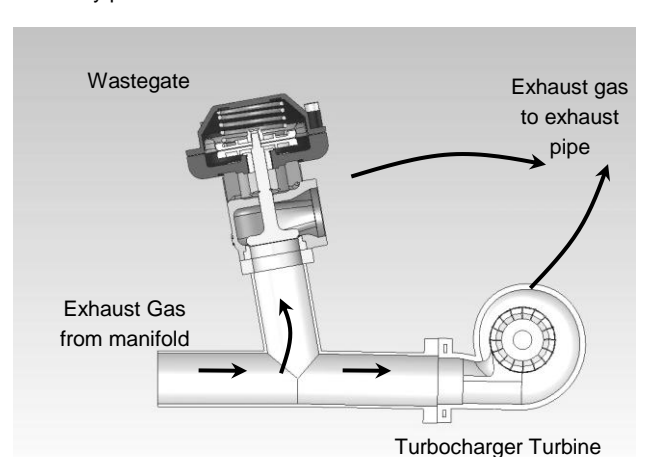
Poor Flow – 90 Degree Mounting

90 degree mounting gives poor exhaust flow to the Power-Gate60 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 Power-Gate60.



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.

Turbosmart recommends the ideal setup for achieving your target boost pressure is to use the Power-Gate60 in conjunction with a Turbosmart e-Boost controller.

IMPORTANT NOTES ON SETTING THE WASTEGATE SPRING PRESSURE

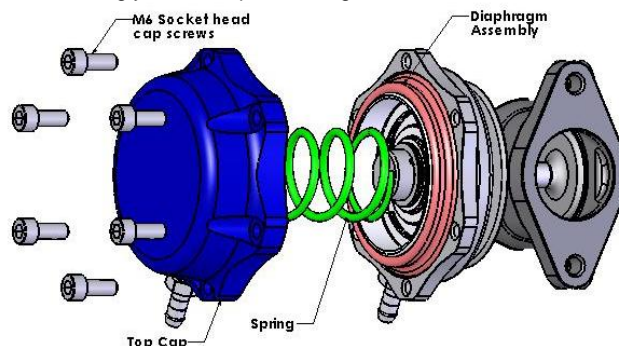
A stiffer spring should only be used when necessary. The Power-Gate60 allows for different combinations of spring pressures. All springs that are adaptable with the Power-Gate60 are shown in the table below. The tuner can use combinations of up to 3 springs to achieve the following base boost pressures. 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 identify the wastegate spring. Please see the following detailed instructions on setting your Power-Gate60's spring pressure. The springs chosen should be rated to the lowest boost level desired.

PROGATE50/POWERGATE60 SPRING CHART						
Pressure rating	5 PSI Inner	7 PSI Inner	10 PSI middle	14 PSI middle	7 PSI outer	12 PSI outer
Part number	TS-0502-2001	TS-0502-2002	TS-0502-2003	TS-0502-2004	TS-0502-2005	TS-0502-2006
Colour	BLK/GRY	BLK/WHT	BLK/BLU	BLK/YEL	BLK/PUR	BLK/RED
Dimensions	36.5mm OD, 75mm length	36.5mm OD, 93mm length	49mm OD, 90mm length	49mm OD, 113mm length	59mm OD, 85mm length	59mm OD, 121mm length
Pressure						
PSI	BAR	KPa				
5	0.345	34.47	▲			
7	0.483	48.26			▲	
10	0.69	68.95		▲		
12	0.827	82.74	▲		▲	
14	0.965	96.53		▲		
15	1.03	103.4	▲	▲		
17	1.172	117.2		▲	▲	
19	1.31	131	▲		▲	
21	1.448	144.8		▲	▲	▲
22	1.517	151.7	▲	▲	▲	
24	1.655	165.5		▲	▲	▲
26	1.793	179.3	▲		▲	▲
28	1.931	193.1		▲	▲	▲
29				▲		▲
31			▲		▲	▲
33				▲		▲

Changing the springs

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

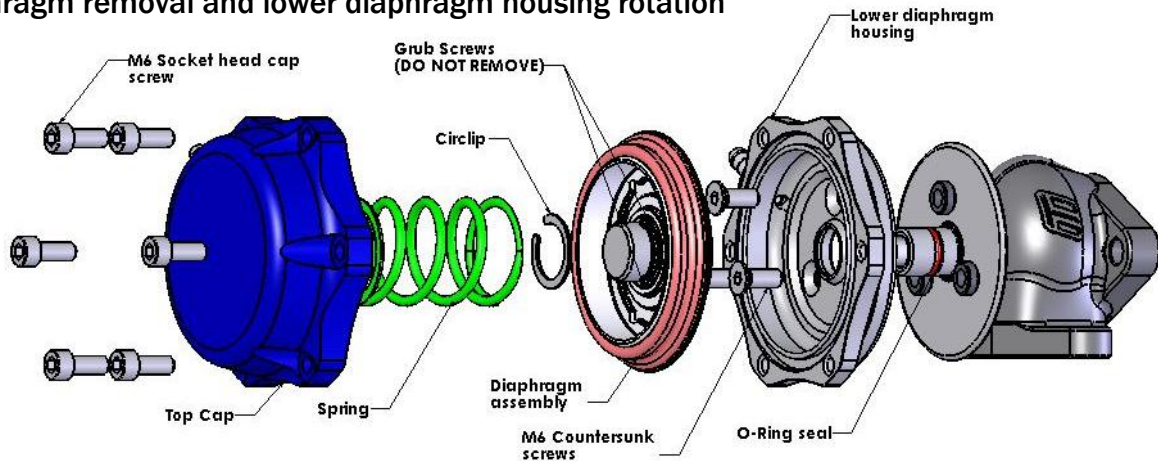
Turbosmart recommends adjusting your boost controller back to its minimum setting and measuring the new minimum boost pressure achieved by the new spring, before increasing your boost pressure again.



- 1) Remove the wastegate from the exhaust manifold. Use **CAUTION!** The wastegate may still be **HOT!**
- 2) Hold the cap down in a press or vice. Using a 5mm Allen Key, remove the M6 Socket head cap screws that secure the upper wastegate cap. **WARNING!** The cap is under spring tension, wear safety glasses and remove with care! Slowly back off the vice or press and remove the cap.

- 3) 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.
- 4) Ensure that the diaphragm is inside the diaphragm groove. The six holes on the outer ring of the wastegate diaphragm should be in line with the 6 holes in the lower wastegate cap.
- 5) Slowly push the top cap down on the lower diaphragm housing in a vice or press. As the cap reaches the diaphragm, slowly turn the cap left and right as you lower the cap to the lower diaphragm housing. Make sure that the convolution of the diaphragm is not pinched between the top cap and the lower diaphragm housing. Refit the upper wastegate cap re-using the M6 Socket head cap screws. Again you may find it helpful to use a press to hold down the cap with a press or a clamp while tightening these screws. Tighten the M6 Socket head cap screws using a 5mm Allen Key and torque to 8 N-m (5.9 lb-ft)

Diaphragm removal and lower diaphragm housing rotation



- 1) Follow steps 1 and 2 of the spring change instructions.
- 2) Using a pair of circlip pliers, remove the retaining circlip on the diaphragm support.
- 3) Back off the 3 securing grub screws in the top of the diaphragm support, **DO NOT REMOVE COMPLETELY FROM DIAPHRAGM SUPPORT.**
- 4) Remove diaphragm assembly and valve.
- 5) Remove the 3 M6 counter sunk cap screws and remove lower diaphragm housing. Check that the sealing O-Ring is in good condition. Replace if necessary (TS-0501-3004).
- 6) Refit the lower diaphragm housing in the desire orientation and replace M6 Countersunk screws.
- 7) Slide the valve back through the guide and place the diaphragm assembly on top of the valve. Apply a **small drop of Loctite** onto the threads of the grub screw and tighten. **Make sure that the valve is hard up against the diaphragm assembly.**
- 8) 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.
- 9) Ensure that the diaphragm is inside the diaphragm groove. The six holes on the outer ring of the wastegate diaphragm should be in line with the 6 holes in the lower wastegate cap.
- 10) Slowly push the top cap down on the lower diaphragm housing in a vice or press. As the cap reaches the diaphragm, slowly turn the cap left and right as you lower the cap to the lower diaphragm housing. **Make sure that the convolution of the diaphragm is not pinched between the top cap and the lower diaphragm housing.** Refit the upper wastegate cap re-using the M6 Socket head cap screws. Again you may find it helpful to use a press to hold down the cap with a press or a clamp while tightening these screws. Tighten the M6 Socket head cap screws using a 5mm Allen Key and torque to 8 N-m (5.9 lb-ft)

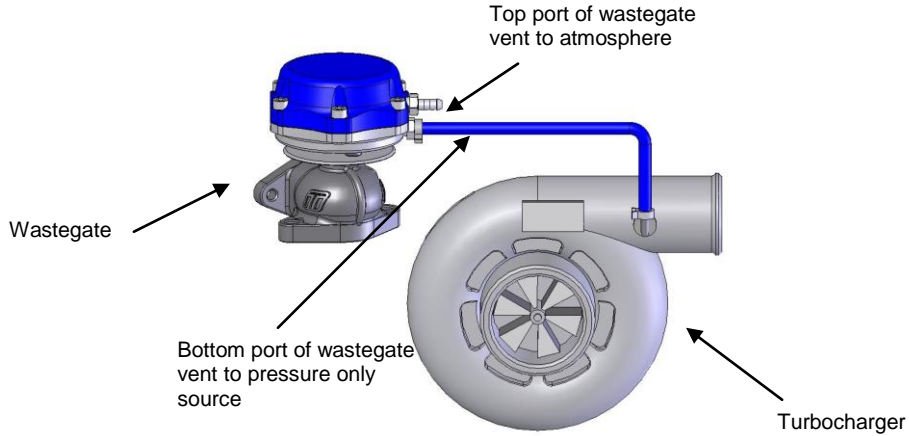
NOTES ON BOOST CONTROL HOOKUP

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 setup

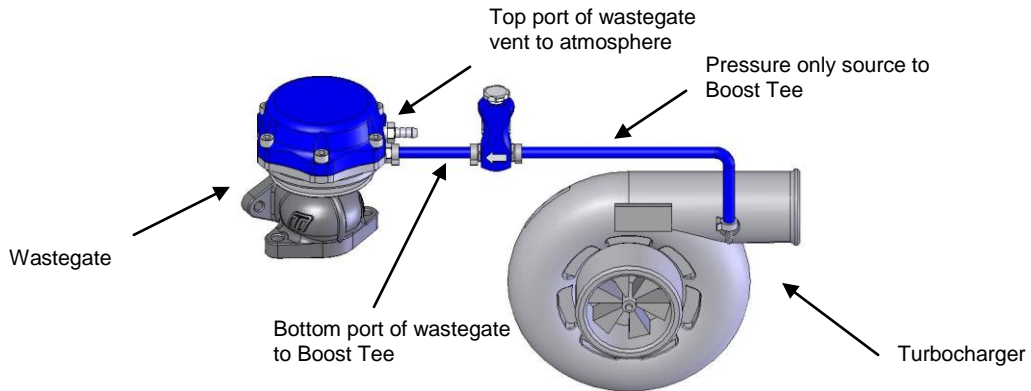
If no boost controller is being used connect the boost pressure source to the “bottom” port as shown. Connect the wastegate “top” port to the intake side of the turbo, between the air cleaner and the inlet on the front of the turbocharger. Otherwise connect a short piece of the silicon hose and face the vent downwards to stop water or debris entering the top port.



Boost Tee setup

When using your wastegate in conjunction with a Turbosmart Boost Tee, fit the controller between the boost pressure source and “bottom” port as shown. Ensure the arrow on the Boost Tee is pointing in the direction illustrated. Connect the wastegate “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 Boost Tee for further detail if necessary.



e-Boost 2 connection methods

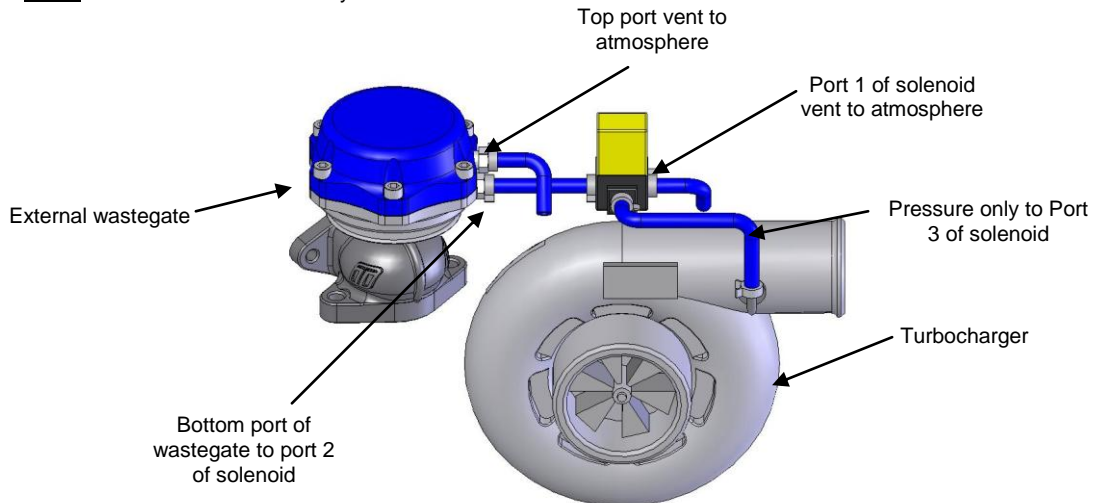
Turbosmart recommends using the wastegate in conjunction with the Turbosmart e-Boost.

The first method of installation is a one port connection. If the desired boost level is not achieved i.e. boost level is too low, or not controllable, it is recommended that the wastegate spring be changed to a spring which is closer to the desired boost pressure or to trial a 2 port connection method.

There are 3 different 2 port connection methods that can be trialed to achieve different results. The 2 port method (1) can be used if there is high exhaust manifold back pressure forcing the valve open. The 2 port method (2) allows the user to achieve the maximum boost pressure their turbo system is capable of. If a wide range of boost pressures is desired i.e. 5 – 40 PSI, a 2 port connection with a 4 port solenoid (sold separately – TS-0301-2003) might be needed.

Single port connection Method

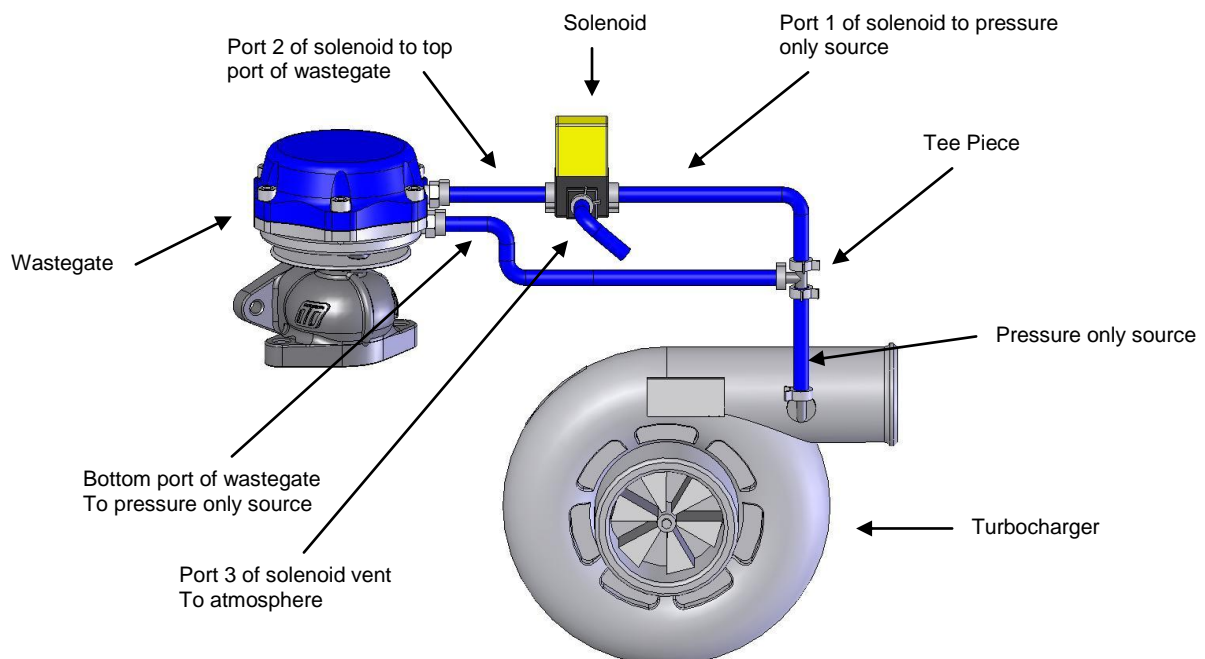
- Port 1 of solenoid vent to atmosphere
- Port 2 of solenoid to bottom port of wastegate
- Port 3 of solenoid to Pressure only source



***NOTE:** An increase in your minimum boost pressure is expected when using any of the 2 port connection methods. 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.

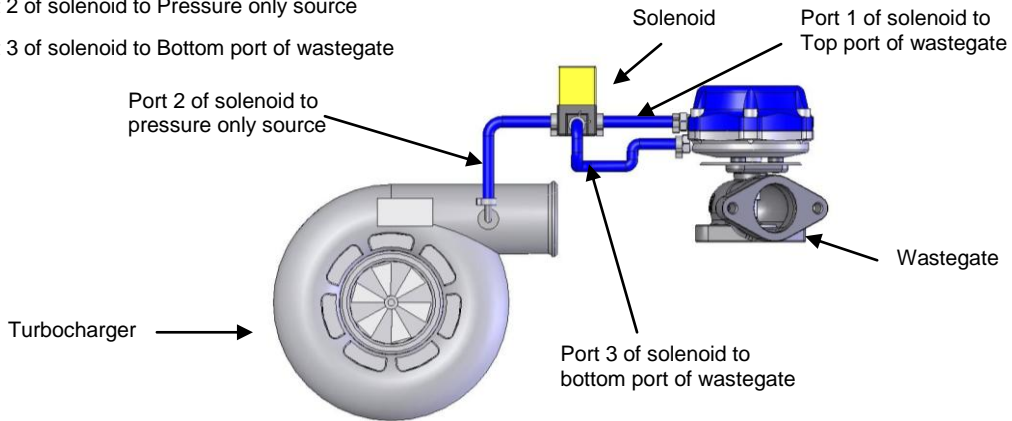
Two port connection Method (1) (For controlling boost on a turbo system with high back pressure)

- Connect the bottom port of the wastegate and Port 1 of the solenoid to a Pressure only source
- Port 2 of the solenoid to the top port of the wastegate
- Port 3 of solenoid vent to atmosphere



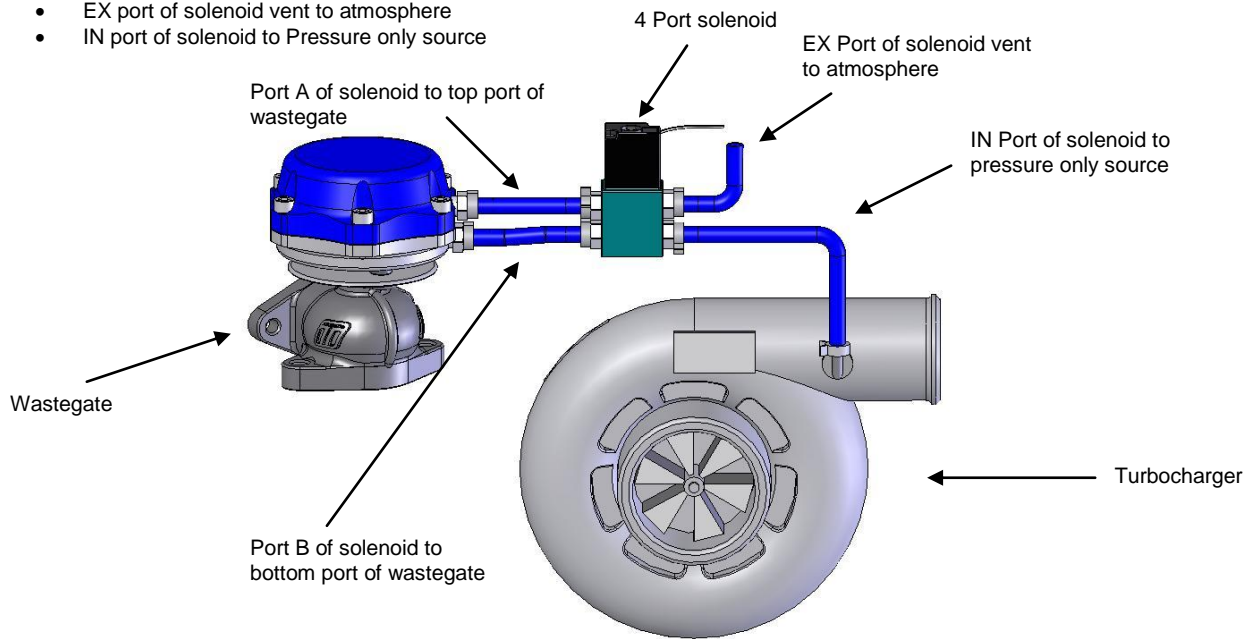
Two port connection Method (2) (For obtaining maximum boost pressure on your turbo system)

- Port 1 of solenoid to Top port of wastegate
- Port 2 of solenoid to Pressure only source
- Port 3 of solenoid to Bottom port of wastegate



Two port connection Method (3) (For obtaining a wide range of boost pressures e.g. 5 – 40 PSI, note that this method of boost control may not provide a smooth boost curve)

- Port A of solenoid to Top port of wastegate
- Port B of solenoid to Bottom port of wastegate
- EX port of solenoid vent to atmosphere
- IN port of solenoid to Pressure only source



ONE YEAR LIMITED WARRANTY

Turbosmart is a company built on Customer Satisfaction and Service. That is why all of our products go through regimented test procedures before they are packaged and shipped. Turbosmart stands behind its products for one full year after purchase. Terms of Warranty, Service and Returns are as follows:

Limited Warranty: Turbosmart warrants its products to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If found to be defective, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Turbosmart to the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Turbosmart be liable for special or consequential damages. This warranty is only valid on products purchased from Turbosmart Authorized Dealers.

Service: After the warranty period has expired, repair service is charged based on a minimum and maximum charge rate. (Contact Customer Service for current rate).

Returns: When returning a Turbosmart product for repair, it must be accompanied by a completed Customer Warranty Form and RMA number. To access this form please go to our website www.turbosmartonline.com and you will find it on the Downloads page.

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 authorized 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.

Warranty as to Defects – Australian Consumer Law

- 1.1 We warrant for a period of twelve (12) months from the date of supply of the Goods and/or Services that if due to the fault of Turbosmart the Goods and/or Services (as the case may be) provided by Us are defective then We will, as determined by Us do one or more of the following:
 1. In the case of Goods; the replacement of the Goods, the supply of equivalent Goods, the repair of the Goods, the payment of the cost of replacing the Goods or of acquiring equivalent Goods, or the payment of having the Goods repaired; or
 2. In the case of Services; the supplying of the Services again, or the payment of the cost of having the Services supplied again.
- 1.2 You will only be entitled to the benefit of the warranty set out in this pledge, if You have not wholly or partially caused or contributed to the defect to the Goods by the misuse of the Goods or the failure to use the Goods in accordance with any specifications or instructions applicable to the Goods.
- 1.3 The warranty contained in this pledge is provided by Turbosmart Pty Limited of 32 Milton Street North, Ashfield NSW 2131, Australia, Telephone: +(61) 1300 735 506, Email: sales@turbosmart.com.au.
- 1.4 In order for a You to make a claim on the warranty You must within twelve (12) months of delivery of the Goods or Services give written notice to Us at the address specified in clause 1.3 above of the details of any defects in respect thereof. Any Goods referred to in a notice given pursuant to this clause should be left in the state and condition in which they were delivered until such time as We or Our duly authorised agent have inspected the Goods with such inspection to be carried out within a reasonable time after service of such notice. If the Goods are not so left in the state and condition in which they were delivered then the You shall be deemed to have accepted the Goods and the warranty contained in this pledge shall not apply.
- 1.5 You shall be responsible for all expenses associated with making a warranty claim under this pledge however if the Goods and/or Services are found to be defective due to Our fault then We shall reimburse You for any expenses incurred by You in making a warranty claim upon receiving evidence satisfactory to Turbosmart to support such expenditure.
- 1.6 The benefits to You given by the warranty contained in this pledge are in addition to other rights and remedies of You have under a law in relation to the Goods or Services to which the warranty relates. In accordance with the Australian Consumer Law We makes the following statement: "Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure."

EXCEPT AS PROVIDED BY LAW, THIS LIMITED WARRANTY IS THE ONLY EXPRESS WARRANTY, WHICH APPLIES TO TURBOSMART 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 PARTICULAR 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 ASSUMES NO OTHER OBLIGATIONS IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

IN THE EVENT THAT THE INDIVIDUAL 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 SEVEN (7) 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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