

Product Name: **Pro-Gate 50**
 Product Description: 50mm External Wastegate
 Product Number: TS-0502-1XXX



IMPORTANT NOTES ON YOUR EXTERNAL WASTEGATE

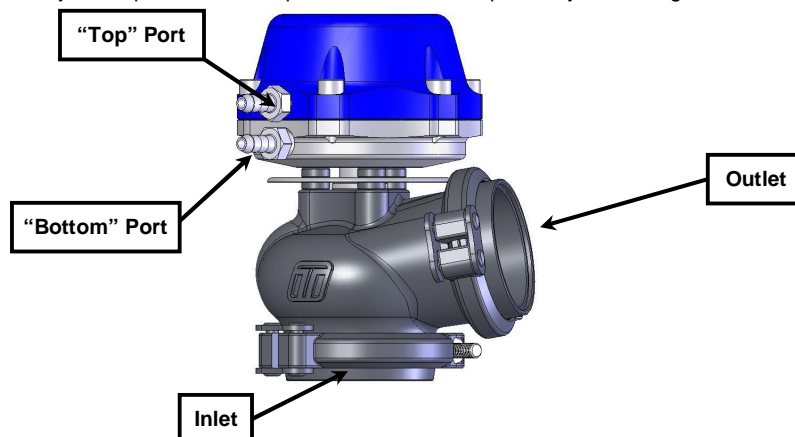
- Fitting your Pro-Gate50 may require fabrication or modification to your exhaust manifold. Turbosmart recommends that your Pro-Gate50 is fitted by an appropriately qualified technician.
- The Pro-Gate50 is designed for use with a turbocharger that does not have an internal wastegate.
- Consult your 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 PRO-GATE50 50MM 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 Pro-Gate50 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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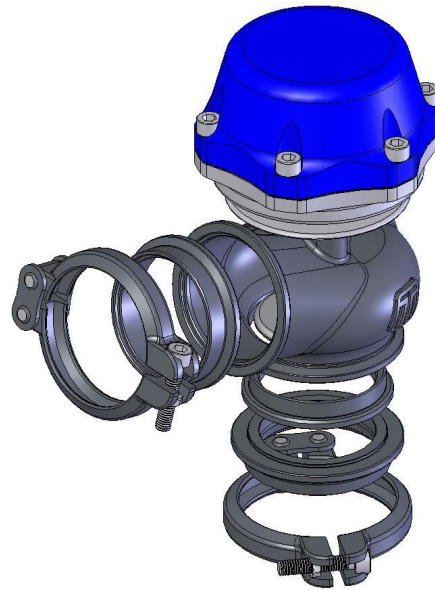
Please make sure that the following parts have been included in the box

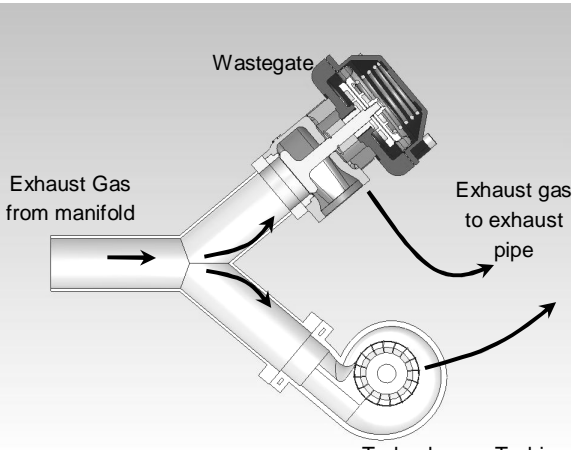
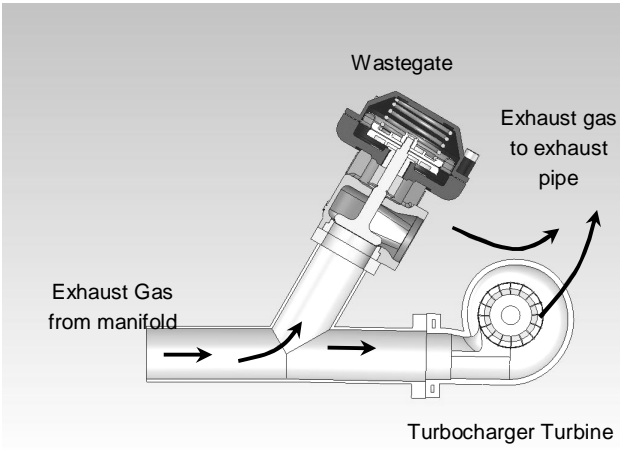
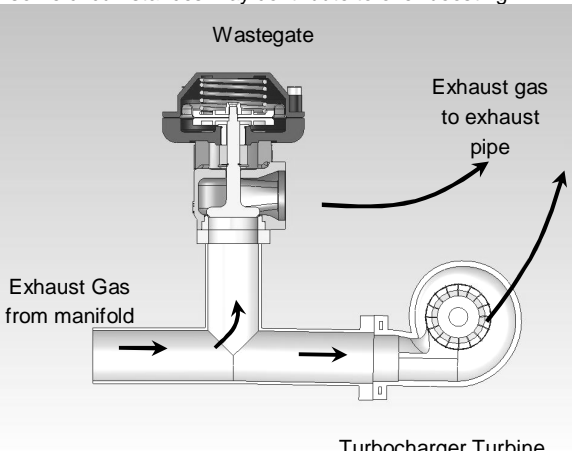
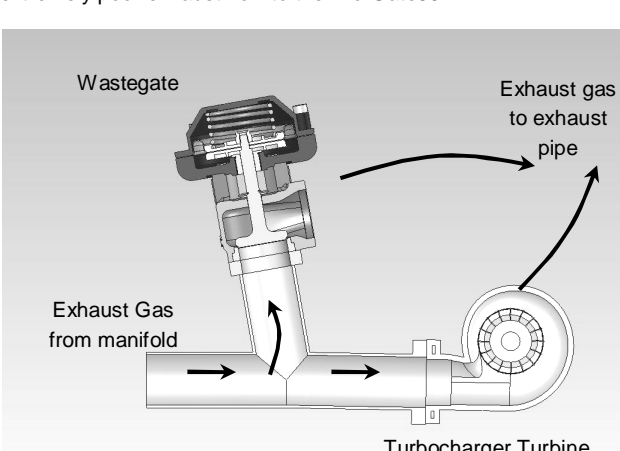
Part	Quantity	Description
Pro-gate 50 mm wastegate	1	50mm external wastegate with pre-fitted spring (check the label on the box for rating)
Inlet weld flange	1	Pro-Gate50 Stainless steel inlet weld flange
Valve seat	1	Pro-Gate50 Stainless steel valve seat
Outlet weld flange	1	Pro-Gate50 Stainless steel outlet weld flange
Inlet V-Band clamp assembly	1	Pro-Gate50 inlet V-Band clamp assembly
Outlet V-band clamp assembly	1	Pro-Gate50 outlet V-Band clamp assembly
10 PSI Middle spring	1	Pro-Gate50 10 PSI spring (Black/blue)

RECOMMENDATIONS FOR MOUNTING YOUR PRO-GATE50

The mounting position of your Pro-Gate50 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 Pro-Gate50.

- The weld flanges should be welded to your exhaust system. The weld flanges are compatible with Stainless Steel and Mild steel welding rod material.
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- The Pro-gate50 valve seat is compatible with the Pro-gate48 weld flange. If you have an existing Pro-gate48 weld flange on your manifold, you can mount the Pro-gate50 directly onto the flange using the V-Band clamp supplied with the Pro-gate50.
- Secure the Pro-gate50 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 Pro-Gate50 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.



<p>Best Flow – Symmetric Mounting</p> <p>Symmetric mounting allows an excellent flow of exhaust to the Pro-Gate50.</p> 	<p>Good Flow – Angled Mounting</p> <p>Angled mounting allows a good flow of exhaust to the Pro-Gate50.</p> 
<p>Poor Flow – 90 Degree Mounting</p> <p>90 degree mounting gives poor exhaust flow to the Pro-Gate50 and in some circumstances may contribute to over boosting.</p> 	<p>Not recommended – Less than 90 Degree Mounting</p> <p>An angled mounting as shown is not recommended and gives extremely poor exhaust flow to the Pro-Gate50.</p> 

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 Pro-Gate50 in conjunction with a Turbosmart e-Boost controller.

IMPORTANT NOTES ON SETTING THE WASTEGATE SPRING PRESSURE

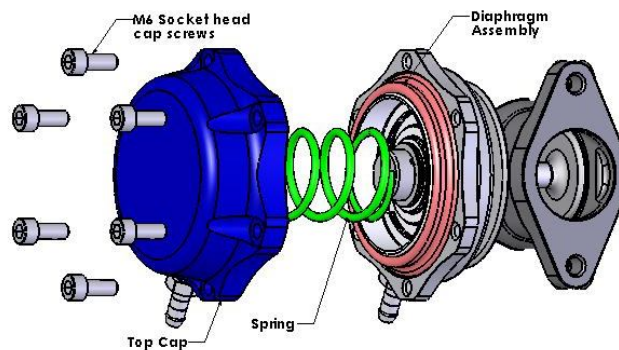
A stiffer spring should only be used when necessary. The Pro-Gate50 allows for different combinations of spring pressures. All springs that are adaptable with the Pro-Gate50 are shown in the table below. The tuner can use combinations of up to 3 springs to achieve the following base boost pressures. 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 Pro-Gate50's spring pressure. The springs chosen should be rated to the lowest boost level desired.

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

Changing the springs

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

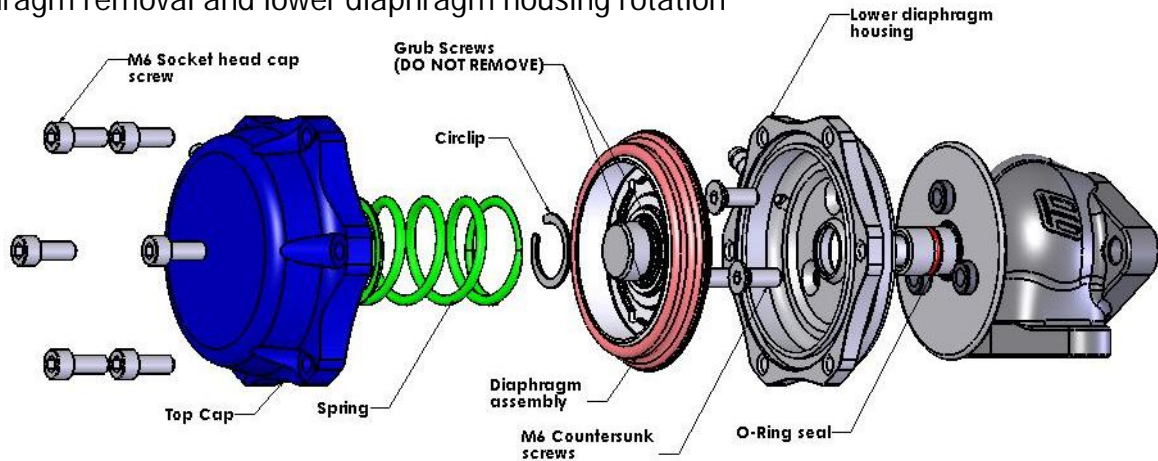
Turbosmart recommends adjusting your boost controller back to its minimum setting and measuring the new minimum boost pressure achieved by the new spring, before increasing your boost pressure again.



- 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)

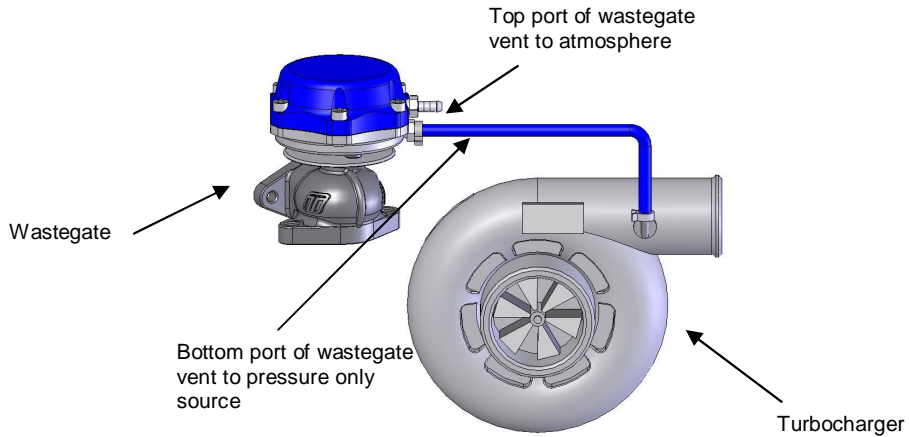
NOTES ON BOOST CONTROL HOOKUP

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

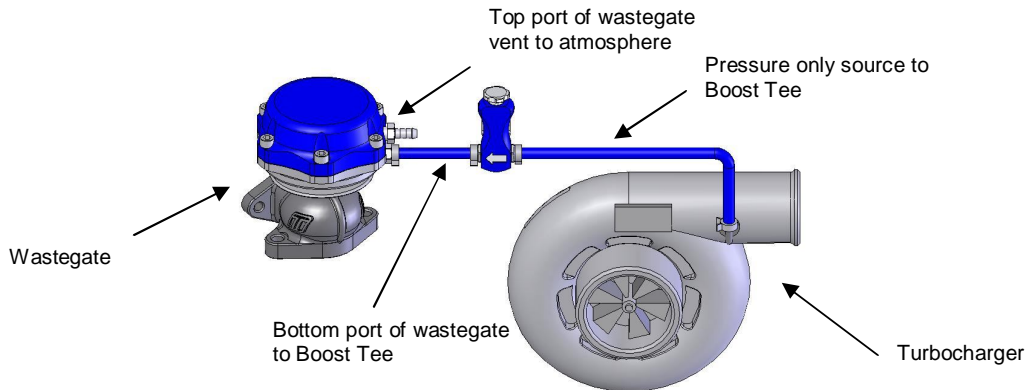
If no boost controller is being used connect the boost pressure source to the “bottom” port as shown. Connect the wastegate “top” port to the intake side of the turbo, between the air cleaner and the inlet on the front of the turbocharger. Otherwise connect a short piece of the silicon hose and face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

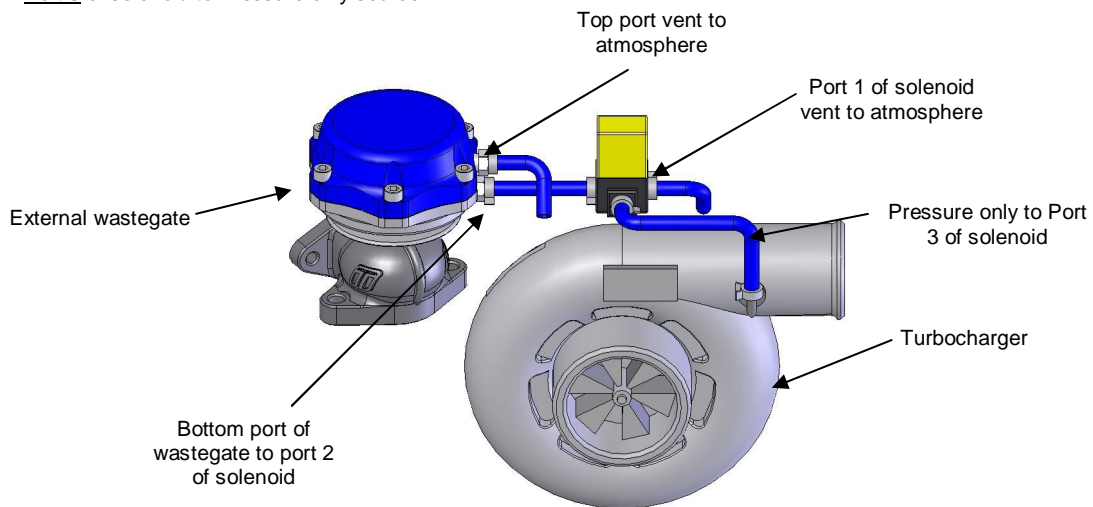
Turbosmart recommends using the wastegate in conjunction with the Turbosmart e-Boost.

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

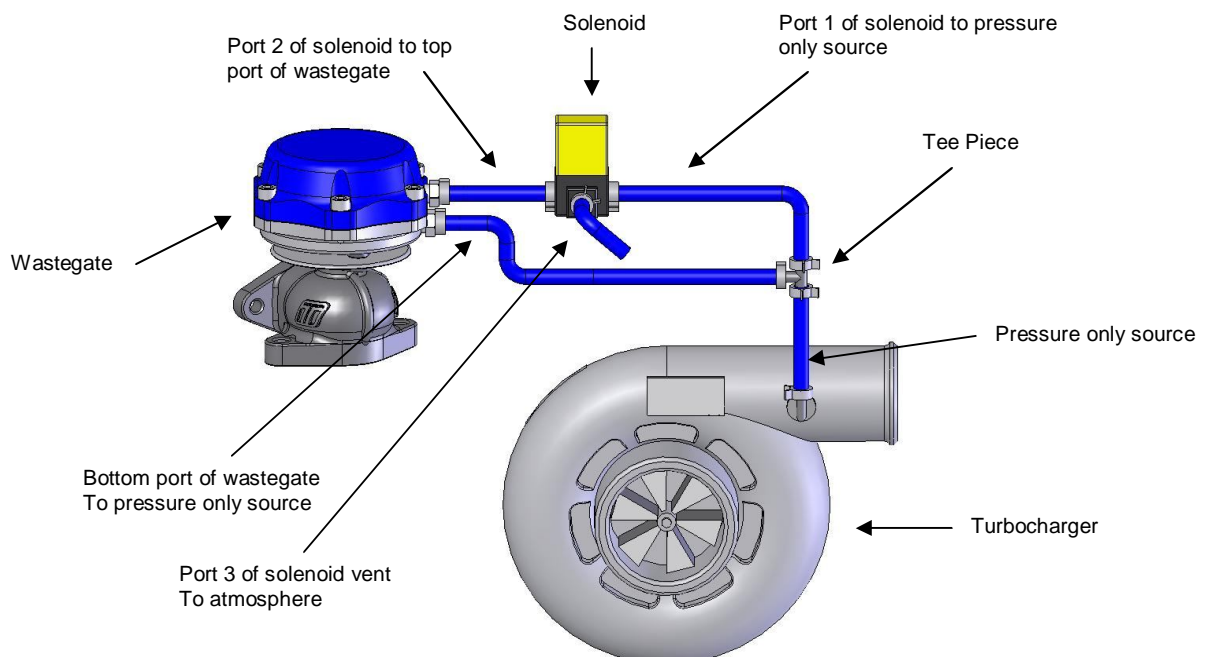
- Port 1 of solenoid vent to atmosphere
- Port 2 of solenoid to bottom port of wastegate
- Port 3 of solenoid to Pressure only source



***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.

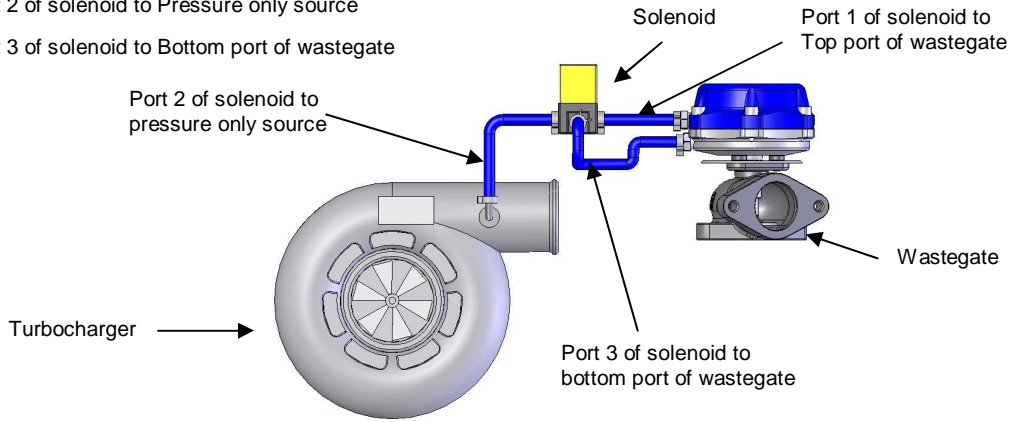
Two port connection Method (1) (For controlling boost on a turbo system with high back pressure)

- 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



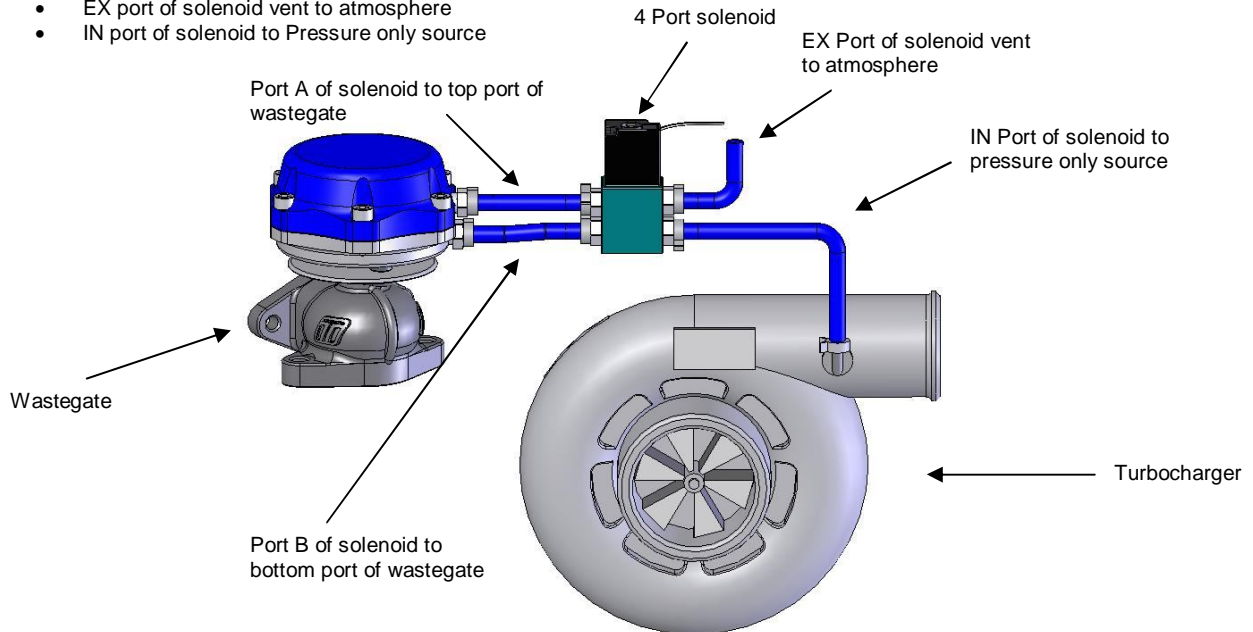
Two port connection Method (2) (For obtaining maximum boost pressure on your turbo system)

- 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 PS, 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



The Turbosmart & Pledge

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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.

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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.

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**Happy motoring!
The Turbosmart Team.**