

Product Name: **IWG75 Twin Port**
Product Description: Twin Port Internal Wastegate Actuator
Product Number: TS-06XX-XXXX



IMPORTANT NOTES ON YOUR IWG75 TWIN PORT INTERNAL WASTEGATE ACTUATOR

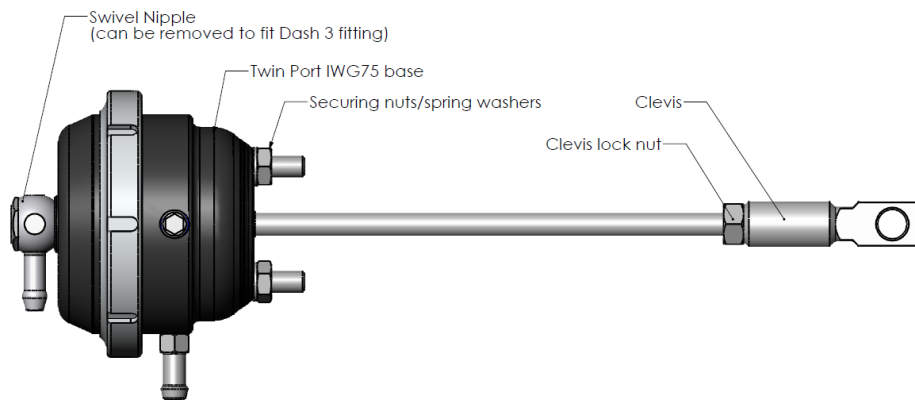
- Consult your local specialist before setting your desired boost pressure, setting boost beyond your engines capability may result in engine damage.
- **Allow for adequate cool airflow around the top diaphragm housing**

RECOMMENDATIONS

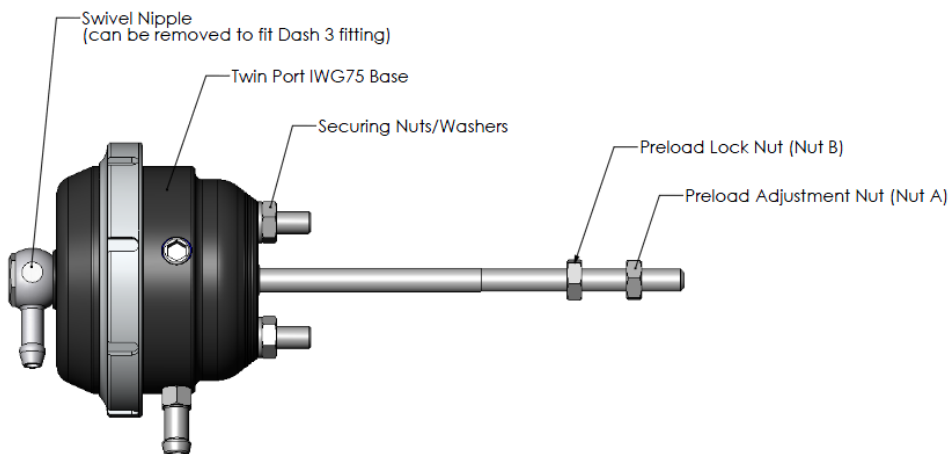
- Turbosmart recommends that boost pressure is set using a Dynamometer and not on public roads.
- Turbosmart recommends that a boost gauge be permanently fitted to the vehicle.
- Turbosmart recommends that the engines Air/Fuel ratio is checked while setting the desired boost pressure, as any increase in boost pressure can cause the engine to run "LEAN", resulting in possible engine damage.

BASIC COMPONENTS OF YOUR IWG75 TWIN PORT INTERNAL WASTEGATE ACTUATOR

Disclaimer: Please note that the images shown below portray examples of assembled products for explanation purposes. The purchased product will have some of the components in separate packaging.



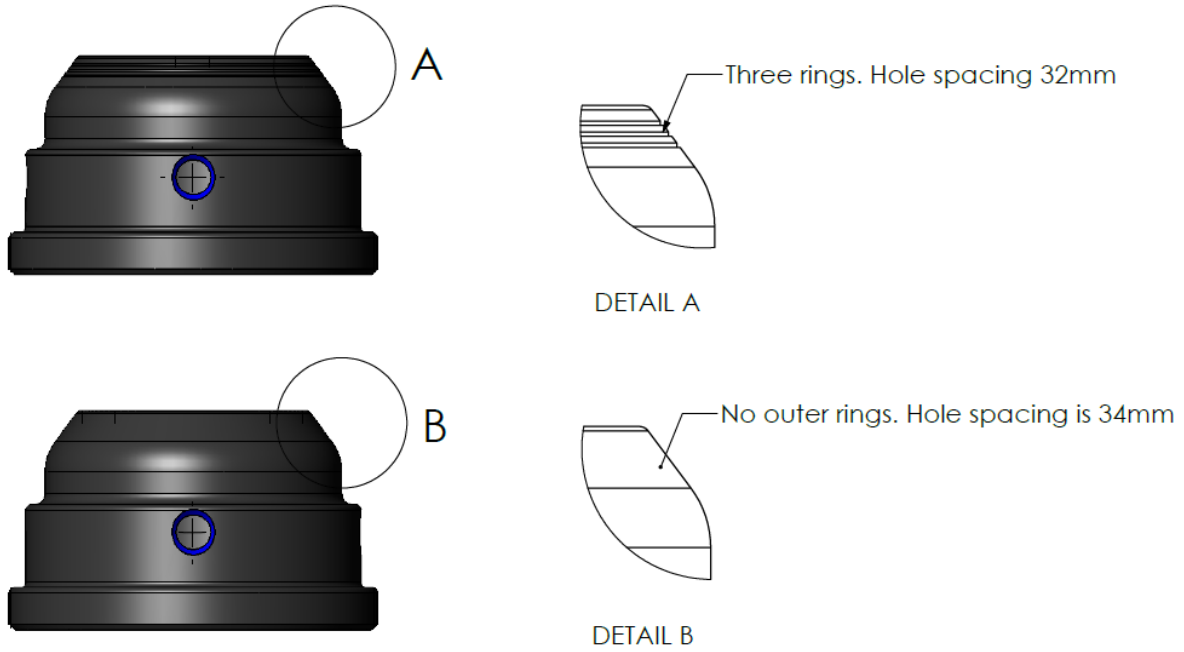
Clevis type TP IWG75 (not to scale)



Non-clevis type TP IWG75 (not to scale)

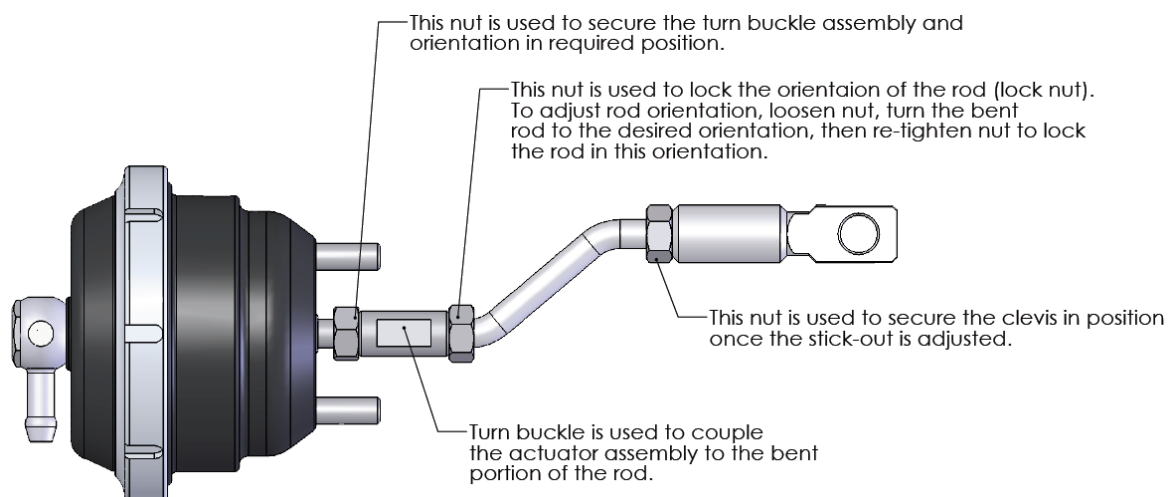
MOUNTING YOUR IWG75 TWIN PORT

Depending on the product purchased, the IWG75 might not be provided with a bracket. You will need to either modify the existing bracket for the standard internal wastegate actuator or fabricate a bracket depending on the application. Depending on the product purchased, the spacing between the mounting holes is either 32mm or 34mm. To distinguish between the two options, note the number of outer rings at the base of actuator. If there are no rings on the base, the spacing for the mounting bolts is 34mm however, if there are three rings on the base, the spacing for the mounting bolts is 32mm. Please refer to picture below. The fabricated bracket should be made from an appropriate material such as stainless steel that can handle high temperature and withstand high spring forces. Use the supplied nuts and spring washers to secure the IWG75 to the bracket or compressor cover whichever is applicable.



MOUNTING YOUR IWG75 TWIN PORT – BENT ROD

Some IWG75 twin port actuators may incorporate a bent rod in their design such as image below. For such actuators, a turn buckle is utilised to allow the bent rod to be set in the appropriate orientation. This is in order for the clevis to be in-line with wastegate flap for correct mounting. Loosen the turn buckle nut to allow the bent portion of the rod (clevis side) to be rotated to the necessary orientation. Once this is set, re-tighten the nut to lock the rod in position.

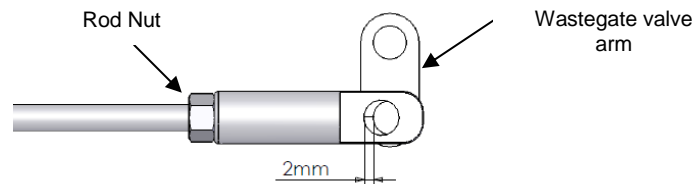


SETTING YOUR PRELOAD

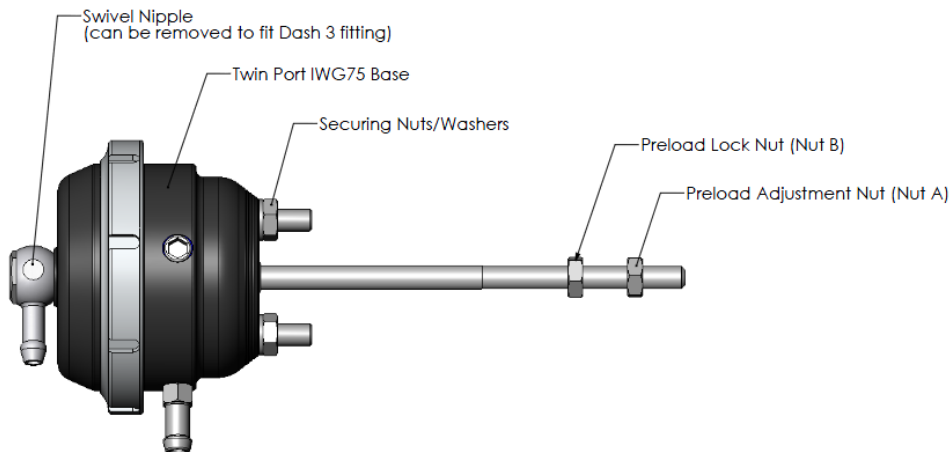
The internal wastegate actuator is designed to have 2mm of preload applied to the rod during installation. Please ensure that this is set accordingly.

Clevis Type Actuator

For a clevis type actuator, when installing the clevis of the IWG75 Twin Port onto the wastegate valve arm, make sure that there is 2mm of preload. Then use compressed air - the amount of air pressure applied should be slightly higher than what the IWG75 spring is rated to, (do not apply air pressure supply higher than 3 bar (40psi) gauge). This is required to pressurise the IWG75 so that the clevis can be hooked onto the wastegate valve arm easily. Remember to reinstall the standard R-Clip or circlip to secure the clevis to the wastegate valve arm. Then tighten the rod nut to secure the clevis onto the rod.



Non-Clevis Type Actuator



For a non-clevis type actuator, the preload is set by adjusting both of the M6 nuts accordingly. The thread on the rod is M6x1.0 which means that one full turn of the nut equals 1mm change in rod extension, hence 1mm of preload. To set preload, hand-tighten the preload adjustment nut (nut A) clockwise to hold the wastegate flap shut. Now, use a 10mm spanner to turn nut-A two complete turns in a clockwise direction. The preload is now set to 2 mm. To lock the preload setting, tighten the preload lock nut (Nut-B) in an anticlockwise direction until it is hand-tight against the wastegate valve arm. Use a torque wrench to tighten both nuts to 6.5Nm (4.79 ft-lb).

Confirm that preload is set correctly by applying air pressure (from a regulated air pressure supply no higher than 3 bar (40psi) gauge pressure) to the top cap of the IWG, the rod should move without hesitation once the air pressure applied to the cap of IWG is higher than the spring pressure.

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 actuator i.e. the boost pressure achieved by the wastegate actuator spring only.
- The desired level of boost pressure and the difference between this and your wastegate spring pressure.
- The size of your turbocharger, 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 wastegate actuator in conjunction with a Turbosmart boost controller.

IMPORTANT NOTES ON SETTING THE WASTEGATE ACTUATOR SPRING PRESSURE

A stiffer spring should only be used when necessary. The wastegate actuator allows for different combinations of spring pressures. All springs that are adaptable with the wastegate actuator 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 spring. Please see the following detailed instructions on setting your wastegate actuator spring pressure. The springs chosen should be rated to the lowest boost level desired.

Notes:

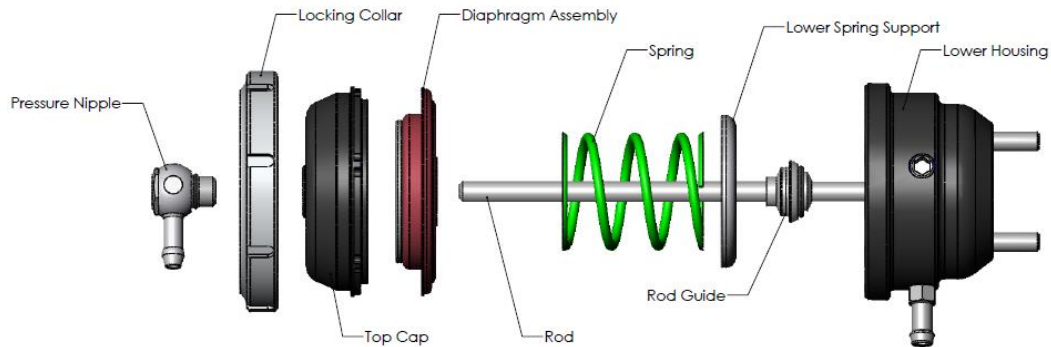
1. As a rough guide it is possible to double the base pressure when accompanying a Turbosmart IWG75 with a Turbosmart boost controller if the system is adequately sized. Results will vary depending on every application.
2. Check the spring combination in your IWG75. If more springs are required, they can be purchased from your Turbosmart dealer by using the TS-xxx-xxxx part numbers shown below each spring.

| Pressure rating | | | 3 PSI Inner | 5 PSI Inner | 7 PSI Middle | 11 PSI Middle | 10 PSI Outer | 7 PSI Outer |
|------------------------|-------|-------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Part number | | | TS-0505-2001 | TS-0505-2002 | TS-0505-2003 | TS-0505-2004 | TS-0505-2005 | TS-0505-2006 |
| Colour | | | BRN/BLK | BRN/GRY | BRN/PUR | BRN/RED | BRN/BLU | BRN/PNK |
| Dimensions | | | 29mm OD, 32mm Length | 29mm OD, 36mm Length | 36.5 OD, 43mm Length | 36.5 OD, 52mm Length | 44mm OD, 68mm Length | 44mm OD, 57mm Length |
| Desired Boost Pressure | | | | | | | | |
| PSI | BAR | KPa | | | | | | |
| 3 | 0.207 | 20.68 | ▲ | | | | | |
| 5 | 0.345 | 34.47 | | ▲ | | | | |
| 7 | 0.483 | 48.26 | | | ▲ | | | |
| 10 | 0.69 | 68.95 | | | | | ▲ | |
| 11 | 0.76 | 75.84 | | | | ▲ | | |
| 12 | 0.827 | 82.74 | | ▲ | ▲ | | | |
| 13 | 0.89 | 89.6 | ▲ | | | | ▲ | |
| 14 | 0.965 | 96.53 | | | ▲ | | | ▲ |
| 15 | 1.03 | 103.4 | | ▲ | | | ▲ | |
| 16 | 1.1 | 110 | | ▲ | | ▲ | | |
| 17 | 1.172 | 117.2 | | | ▲ | | ▲ | |
| 19 | 1.31 | 131 | | ▲ | ▲ | | | ▲ |
| 20 | 1.38 | 138 | ▲ | | ▲ | | ▲ | |
| 21 | 1.45 | 145 | | | | ▲ | ▲ | |
| 22 | 1.517 | 151.7 | | ▲ | ▲ | | ▲ | |
| 23 | 1.59 | 159 | | ▲ | | ▲ | | ▲ |
| 24 | 1.655 | 165.5 | ▲ | | | ▲ | ▲ | |
| 26 | 1.793 | 179.3 | | ▲ | | ▲ | ▲ | |

CHANGING THE SPRINGS – STRAIGHT ROD ACTUATORS

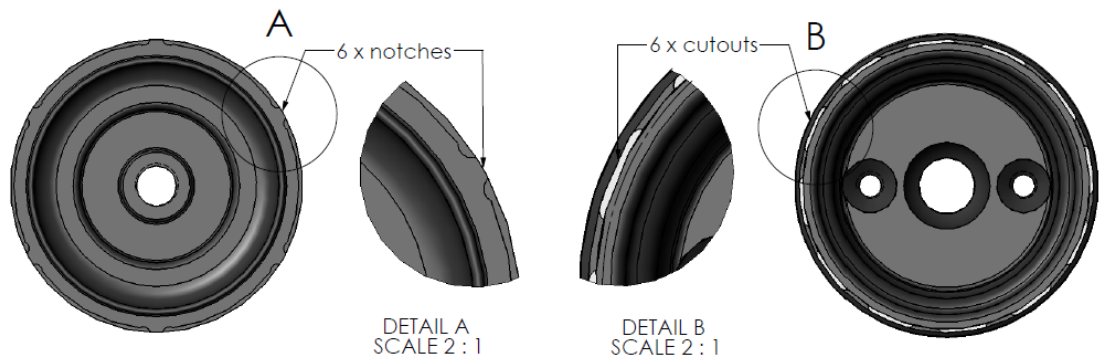
WARNING! Fitting a wastegate actuator with a higher spring pressure may cause a higher than expected increase in boost pressure.

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.



IMPORTANT: A press or clamping device must be used when removing or installing the collar as clamping the cap down removes the load off the collar from the diaphragm and allows the collar to be removed.

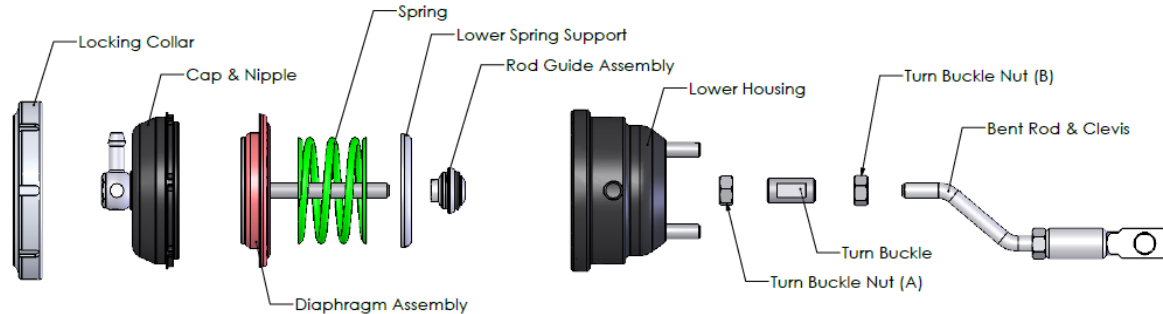
1. If the engine has been running, allow it to cool down before removing the actuator from its bracket.
2. Use a press or a vice to clamp down the cap to the body and remove collar.
3. Remove the actuator from the clamping device carefully as the cap is under spring load.
4. Remove cap, diaphragm and upper spring support with rod.
5. Change the springs making sure that they sit in the right grooves in the lower spring support
6. Reassemble in reverse order. Ensure that the diaphragm is installed in the centre of the upper spring support and when installing the cap, make sure that the cap and diaphragm are centred and that the locating notches on the cap match the cut-outs in the lower housing. **When installing the clevis, make sure that there is 2mm worth of preload.**



CHANGING THE SPRINGS – BENT ROD ACTUATORS

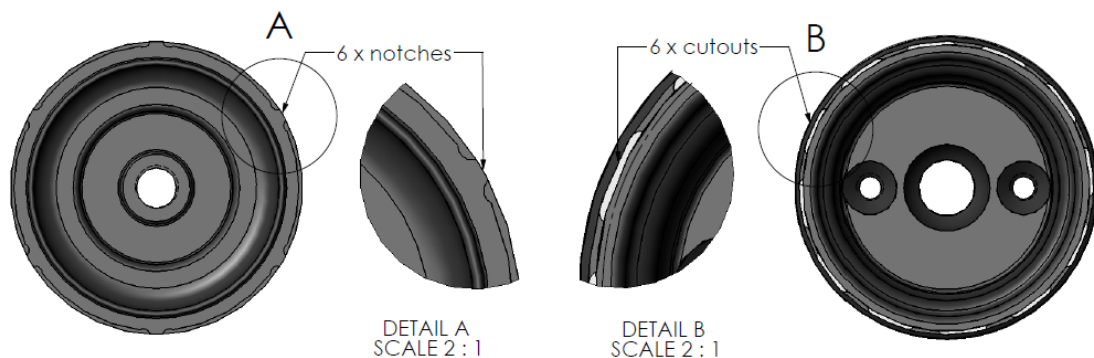
WARNING! Fitting a wastegate actuator with a higher spring pressure may cause a higher than expected increase in boost pressure.

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.



IMPORTANT: A press or clamping device must be used when removing or installing the collar as clamping the cap down removes the load off the collar from the diaphragm and allows the collar to be removed.

1. If the engine has been running, allow it to cool down before removing the actuator from its bracket.
2. Once the actuator is separated from the turbocharger assembly, loosen turn buckle nut (B) and remove the bent rod and clevis assembly.
3. Remove the turn buckle and turn buckle nut (A).
4. Use a press or a vice to clamp down the cap to the body and remove collar.
5. Remove the actuator from the clamping device carefully as the cap is under spring load.
6. Remove cap and lower housing.
7. Remove the rod guide assembly and the lower spring support.
8. Change the springs making sure that they sit in the right grooves.
9. Reassemble in reverse order. Ensure that the diaphragm is installed in the centre of the upper spring support and when installing the cap, make sure that the cap and diaphragm are centred and that the locating notches on the cap match the cut-outs in the lower housing. **When installing the clevis, make sure that there is 2mm worth of preload.**

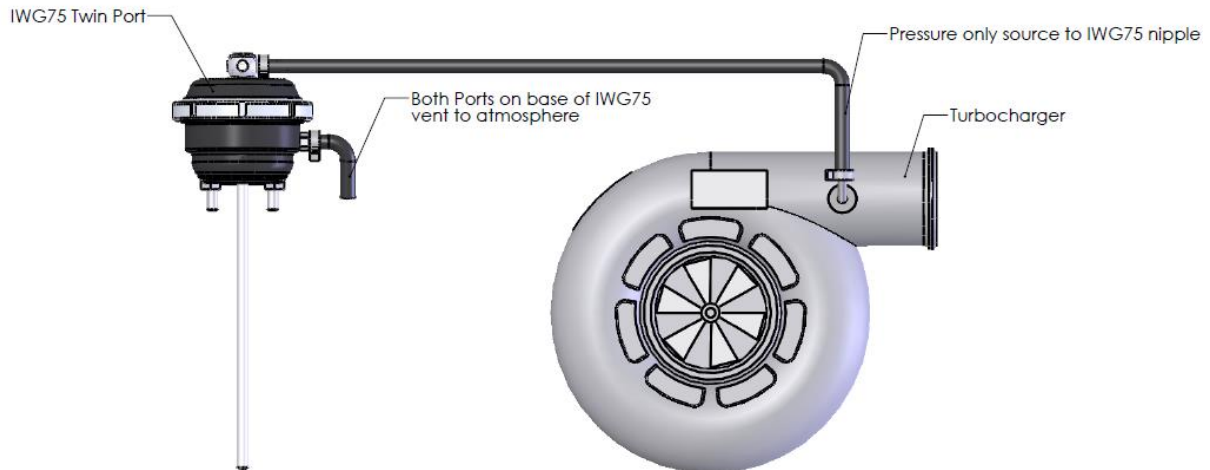


NOTES ON BOOST CONTROL HOOKUP

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.

Basic setup

If no boost controller is being used connect the **BOOST PRESSURE ONLY SOURCE** to the wastegate actuator pressure nipple as shown.



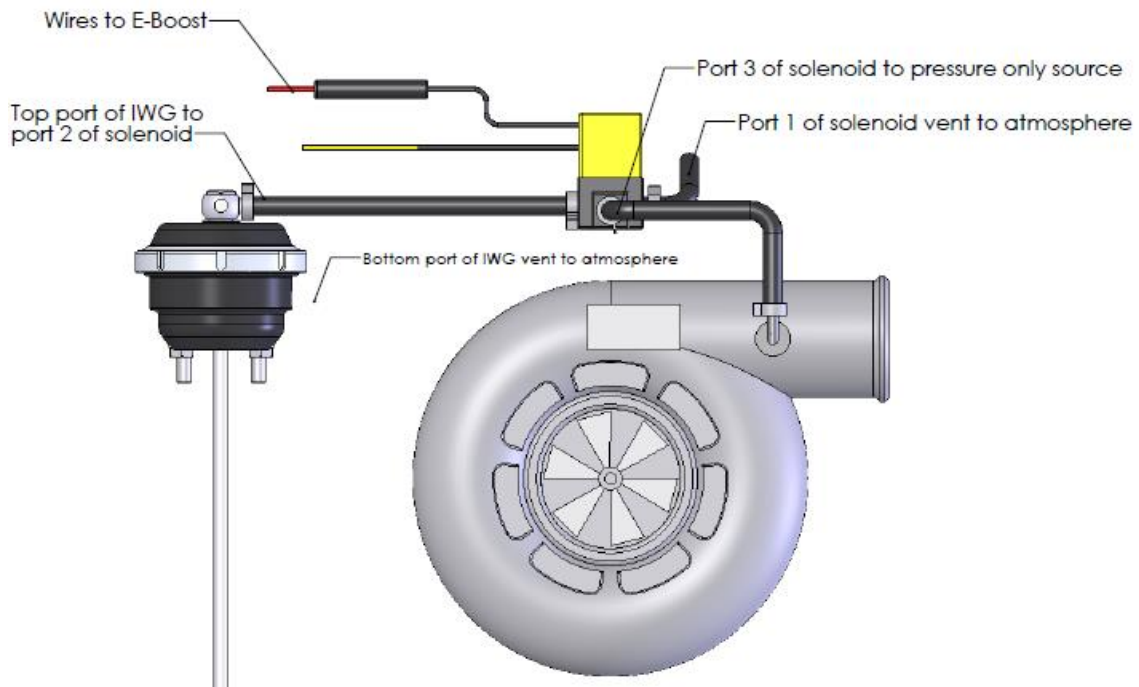
Boost Tee setup

When using your wastegate actuator in conjunction with a Turbosmart Boost Tee, fit the controller between the boost pressure source and pressure nipple as shown. Ensure the arrow on the Boost Tee is pointing in the direction illustrated. Refer to the instructions supplied with your Boost Tee for further detail if necessary.



E-Boost connection Method

- Port 1 of solenoid vent to atmosphere
- Port 2 of solenoid to pressure nipple of wastegate actuator
- Port 3 of solenoid to **pressure only source**



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

Disclaimer: Please note that base boost pressure will increase when using this method. Reset your Turbosmart electronic boost controller to factory settings prior to further configuration.

- Connect the Top port of the wastegate and port 1 of the solenoid to a pressure only source (by teeing into source)
- Port 2 of the solenoid to the bottom port of the wastegate
- Port 3 of solenoid vent to atmosphere

