

# TS-0604-1155 - vIWG R56 Mini Cooper S - Instructions

Product Name: vIWG R56 Mini Cooper S - 6InHg  
Product Description: vIWG R56 Mini Cooper S - 6InHg  
Product Number: [TS-0604-1155](#)



## Important Notes on Your Vacuum Internal Wastegate

- Turbosmart accepts no responsibility for the incorrect installation of this product which is potentially hazardous and can cause serious engine damage or personal injury.
- The Vacuum Internal Wastegate (VIWG) is designed as a factory replacement for Vacuum-operated turbocharger applications.
- Ensure the engine is cold before installation.

## Recommendations

- Turbosmart recommends that an appropriately qualified technician fits your VIWG
- The vacuum IWG requires the wastegate to be set at a certain Vacuum pressure to operate correctly. Vacuum Pumps are not usually a part of a basic tool set.

## Kit Contents



Please check that the following items have been provided in your Vacuum Internal Wastegate packaging.

Part	Description	Use
1	Turbosmart Vacuum Wastegate	Main Unit
2	Turbosmart Sticker	
3	4 x M6 Nuts & Bolts	Nuts Required for Installation

Figure 1 - Kit Contents



## **Tools Required**

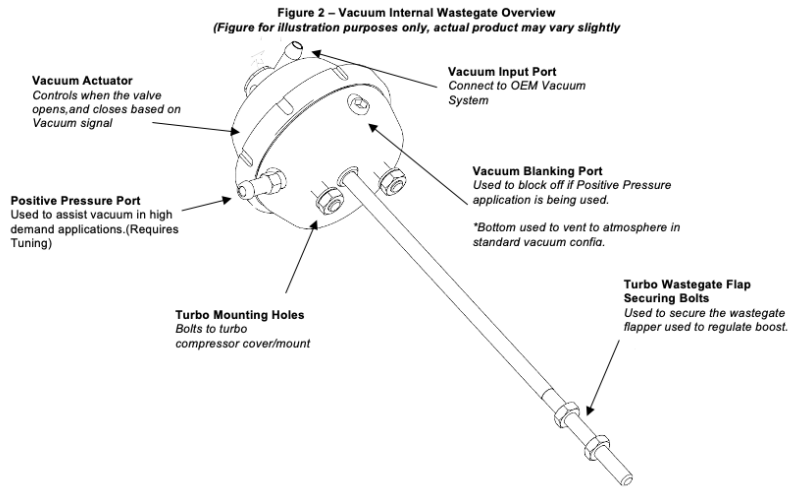
- Basic Socket Set
- Vacuum Operated Hand Pump

## **About Your Vacuum Internal Wastegate**

Turbosmart Upgraded Vacuum-operated Wastegate Actuators have been developed to provide the maximum possible boost response for your factory frame turbocharger. The Turbosmart vIWG Series of upgraded Actuators benefit from an increased 'Working Ratio' over the factory equipment resulting in improved boost response throughout the RPM range.

This Improved 'working ratio' is achieved through an increase to the effective surface area of the diaphragm & revisions to the actual springs fitted, resulting in greater leverage of the forces the actuator is working against (boost and back-pressure) while still being super-responsive.

Upgrading with the same base pressure as the factory, you can expect a broader boost & torque curve through peak boost being achieved earlier in the RPM and being held longer into higher RPM. These improvements can be amplified with higher base pressures, however, tuning & recalibration are recommended for optimal performance.



## Fitting Your Vacuum Internal Wastegate

### Identify OEM Wastegate Actuator Location

On the model designation 2nd Generation Mini Cooper (R56/7), the Wastegate Actuator valve is located on the underside of the turbo. It requires some intake components to be removed for ease of installation. On the model designation 2nd Generation Mini Cooper (R56/7), the Wastegate Actuator valve is located on the underside of the turbo. It requires some intake components to be removed for ease of installation.

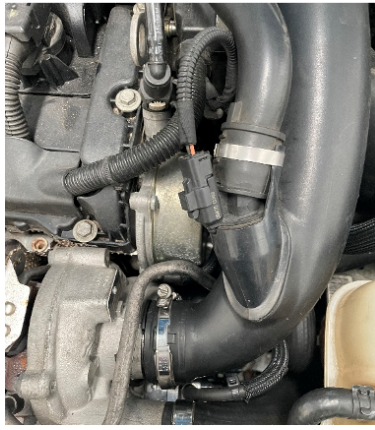


**NOTE!** It may be required to remove auxiliary components to access the Wastegate Actuator, ensure you consult your local specialist or a service manual for correct disassembly procedures.

**CAUTION!** Ensure the engine has cooled down to ambient temperature before proceeding.

### Removing OEM Low-Pressure Charge Pipe

Removing the charge pipe requires two hose clamps. These are 8mm clamps. They are noted in Red. Removing the vacuum line from the vacuum pump can be removed if more space is required. It can be undone by pushing the white connector circled below.



## **Moving Coolant Reservoir Bolt**

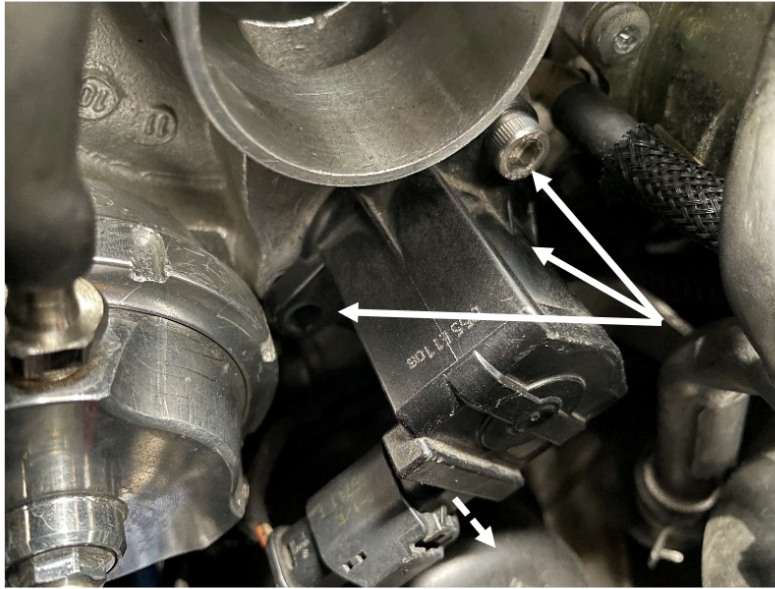
The coolant reservoir can be manipulated to allow more room for the Wastegate Actuator. The bottle can become brittle over time, so be careful in moving it. We need a 10mm socket to remove the screw that holds the reservoir.



## **Removing Divorter Valve from Compressor Cover**

Removing the Divorter valve allows a hand to be placed underneath the bottom of the wastegate actuator. This makes it much easier to undo.

With the Low-Pressure Charge pipe moved out of the way, we need to remove the electrical connector and the 3 Allen bolts that hold the diverter valve. A 5mm Allen key is required to remove these bolts. The Connector needs the locating lug at the front to be lifted, as noted by the dashed line. It is very easy to drop these bolts. It is handy having a magnet to assist in taking them off.



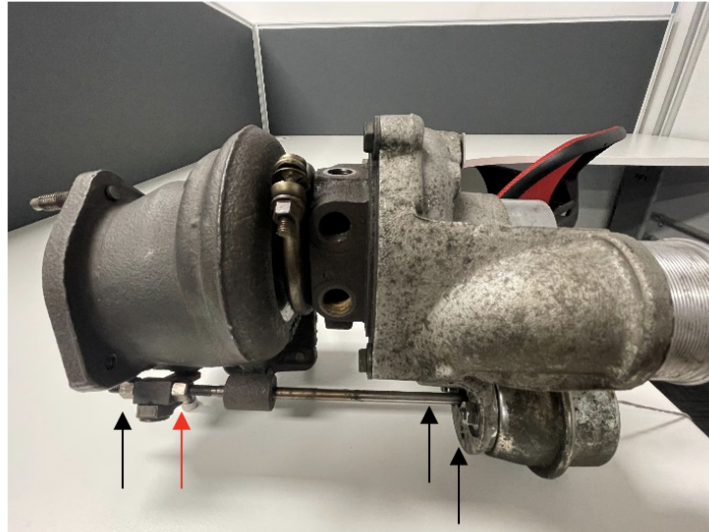
## Removing OEM Heat Shield

Although not pictured, the heat shield is held with 10mm bolts, as pictured below. The O2 Sensor will require removal if the heat shield cannot be moved far enough to allow access to the Vacuum Wastegate rod bolts near the bottom right arrow.



## Removing your OEM Vacuum Actuator

With the heat shield removed, the actuator can be removed from the car; to do this, the bolts marked in black must be removed. The red bolt is best left in place. It is good practice to mark this with a marker and undo it one full turn. This will take any load off the back nut and allow it to come out as it no longer has a load. With one turn back in the rod, it can be used to set the VIWG to the correct pressure. As the Diverter Valve/BOV was removed before, we have a passage that allows hands to be placed under the actuator bolts as they are removed.

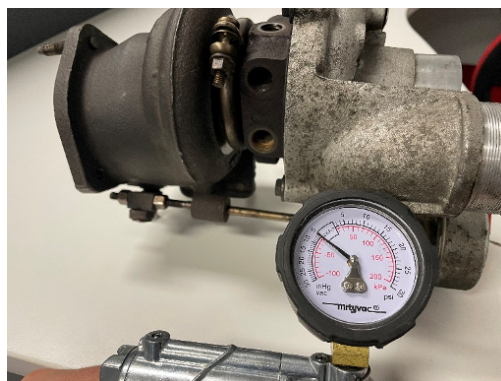


## Fitting your TurboSMART Vacuum Actuator

With installation, we would like to match the rod length to the RED arrow as closely as possible. Once set, we need to place it into the car. The canister bolts will need to be set and tightened down. It is easy to drop the bolts, so ensure the passage from underneath is ready to catch and help install the bolts. We will leave the last rod bolt loose.


## Setting your TurboSMART Vacuum Actuator

The vIWG requires the actuator to be set at a certain Vacuum pressure. This is defined by the spring. With the Mini, we need to set a vacuum at 6inHg (203mm bar) to seat the wastegate flap fully. Once the pressure is achieved, we need to move the nut up until it sits on the turbine housing. Unnecessary preload will limit rod stroke and hamper performance. It needs to be just enough to sit correctly.



## Vacuum Plumbing

With the Valve in place, we can connect the actuator to the OEM Vacuum Signal. The hose is attached to a barb fitting to ensure a good seal.

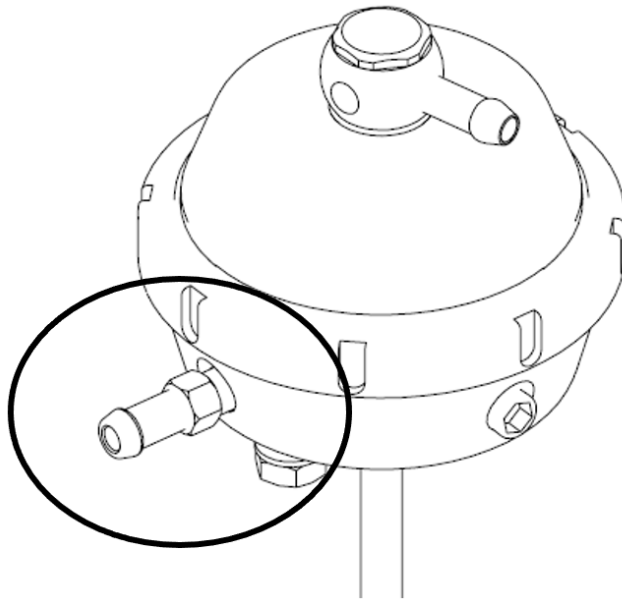
 **NOTE:** The bottom port must be left to vent to the atmosphere when used solely as a Vacuum actuator.



### **OPTIONAL Positive Pressure Assistance Plumbing**

The vIWG can be used with Positive Pressure assistance. This is located by the black circle. We can use the positive pressure that the ECU controls to assist the vacuum system(Top Port) from not being overcome.

The grub screw must be used in this application to maintain pressure in the bottom port.



## Fitting Removed Parts Required for vIWG Install

- With the vIWG being fitted to the car and connected. Fitting the parts that have been removed must now commence before taking a test drive.
- The heatshield can now be placed back into its correct place and tightened up.
- The Diverter valve and BOV can now be placed back into the car and refitted.
- The charge pipe that was removed from the car in step 2 can be placed back into the car and tightened up with the 8mm hose clamps.
- The Coolant overflow must also be located back into its correct position, it has a locating plug on the bottom and requires the top to be positioned first before pushing it into the side. With the Overflow located. The 10mm screw can be fixed onto the car.

Congratulations, your TurboSmart vIWG is installed and ready for use. Double check all connections and mounting screws. Start your engine and check for leaks.

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## **i Troubleshooting**

- Any issues must be resolved before heavy driving.
- The car feels sluggish; the rod length and pressure required for the seat flap must be correctly set. Ensure correct pressure is achieved to seat fully
- Car over boosts, the same as above, the rod is set at a too-low pressure, allowing it to close before being commanded.
- Failing the above, submit a [Technical Support Query Form](#) with information about your engine, oil type and photos of the installation and one of our expert technicians will respond as soon as possible.



