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INSTALLATION INSTRUCTIONS – *RG-45 Wastegate*

IMPORTANT: Read instructions completely before proceeding. Engine or turbocharger damage may occur if any wastegate is improperly applied or installed. Consult a knowledgeable turbo installer or Turbonetics tech support specialist with any questions about correct wastegate application or installation.

SUMMARY: Turbonetics' *RG-45 Wastegate* has been specifically designed to advance the “state of the art” in modern wastegate design. Properly applied and installed, it can reliably control turbocharger boost pressure in high-performance applications up to 800 horsepower per wastegate. Design features include:

- Investment cast stainless steel housing
- “Floating” valve seat, which also serves as the inlet seal & weld flange
- 1.77” (45mm) diameter valve, made from a special “corrosion & galling resistant” stainless steel
- Specially contoured valve bottom surface, designed to efficiently direct air flow thru the housing
- Fabric-reinforced “rolling” diaphragm
- Set screw-type spring preload (boost pressure) adjustment
- Polished & painted actuator cover
- 4 actuator control ports & fittings, to give users more flexibility when choosing a mounting location

The *RG-45 Wastegate* has been designed to replace the Racegate wastegate, offering improvements of better materials, greatly improved air flow, better aesthetics, and v-band connections.

OPERATION: The *RG-45 Wastegate* controls turbocharger boost by bypassing the turbine inlet gas flow in response to the actuator spring load and/or boost level control signal. The actuator section is fitted with 2 sensing ports on both sides of the diaphragm, allowing precise control of valve motion, and use of any optional external variable boost controller, manual or electronic. Depending on the application & installation requirements, 1 to 3 of the ports will be plugged off. A choice of actuator springs is included, to suit specific application requirements.

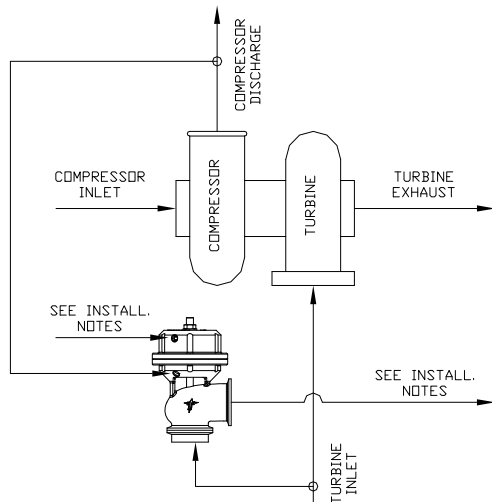


Figure 1:

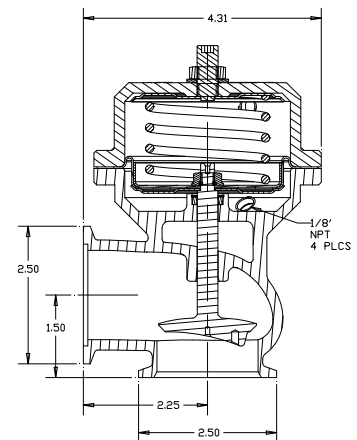
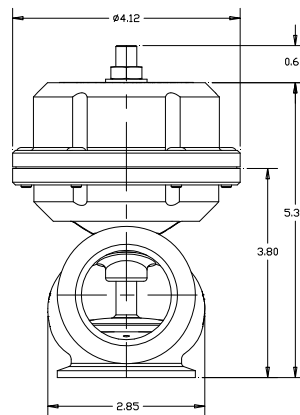


Figure 2:

INSTALLATION: Remove the wastegate from its carton and inspect for any obvious physical damage. All wastegates are thoroughly inspected prior to shipment from the factory. If any shipping damage is evident, contact your supplier and request that they process a claim with the distributor or shipper involved.

1. The **RG-45 Wastegate** may be mounted in any convenient location, between the engine and the turbine inlet of the turbocharger (refer to Figure 1). For best results, the preferred location would be near the header collector, just before the turbine housing. When choosing the location of the wastegate, careful consideration should be taken to insure that the actuator section (top half of wastegate) is NOT exposed to extreme heat. If selected location places the actuator section close to a severe heat source, the use of a heat shield is highly recommended.
2. Once a suitable mounting location has been selected, determine the routing of the wastegate exhaust. It may exit either away to the side or rear of the vehicle via a dedicated line, or reconnect to the vehicle exhaust system after the turbine housing. **NOTE:** Federal and state laws require that all vehicle exhaust must exit away from the passenger compartment. The exhaust must be connected to the vehicle exhaust system or routed to the outside of the vehicle away from passenger compartment. The **RG-45 Wastegate** has designed to be used with 1-3/4" (14-16gauge) steel tubing, for both inlet and discharge. Be sure to avoid routing any exhaust piping near any fuel or brake lines, or any other heat sensitive components.
3. The **RG-45 Wastegate** features 2.50" diameter v-band connections, and the wastegate kit includes mating flanges & clamps (refer to Figure 2). No flange gaskets are required. Be sure all flange surfaces are clean and free of irregularities. Once all mounting and discharge routing provisions have been determined and fabricated/welded in place, install and secure the wastegate with included clamps. **NOTE:** A variety of fittings and other accessories are available from your nearest Turbonetics distributor (see common accessories list on last page).
4. Refer to the schematic shown in Figure 1. A minimum sensing line (vacuum hose) size of 1/8" ID is recommended for proper response. The wastegate actuator ports are 1/8" NPT pipe thread. Use Teflon tape or comparable sealant on all fitting threads. Sensing line material should be suitable for automotive under-hood environment, and compatible with gasoline vapor. Care should be taken in routing sensing lines to avoid damage from any sharp edges or excessive temperatures.
 - **Stand-alone Installation:** If wastegate is to be installed as a conventional wastegate, the boost sensing line (bottom port) may be connected to any convenient manifold pressure source, such as compressor discharge or engine intake manifold plenum (plenum runner locations not recommended, as they may cause pulsing which may affect control stability). The top port may be plugged with a filtered vent fitting or connected to the air intake system after the filter, or left open to atmosphere. **NOTE:** Do not plug both holes, as the top half of the actuator needs to "breathe".
 - **Variable boost control installation:** If wastegate is to be used in conjunction with a variable boost control device, follow the manufacturer's instructions relative to connections and routing. As in the conventional wastegate installation, it is strongly recommended that the boost sensing line be connected directly to a pressure signal source, such as compressor outlet or engine intake manifold. **NOTE:** Do not "tee" into this line for any other pressure or vacuum function).
5. The **RG-45 Wastegate** has been factory calibrated to control boost within plus or minus 1psi of the installed spring rating. A choice of actuator springs (usually designed in 2-3psi increments) is included in the kit, to suit a variety of application requirements. Using a suitable manifold pressure (boost) gauge, road test the vehicle to ascertain proper operation. If boost levels exceed specified limits during road testing, recheck all sensing line connections for proper location and leaks. Re-test to verify. **CAUTION:** If detonation occurs, discontinue testing until source of detonation has been located and resolved. DO NOT operate vehicle in detonation, as severe engine damage may result. Any damage incurred as a result of improper installation or usage is a customer responsibility.

BOOST ADJUSTMENT: The **RG-45 Wastegate** is designed with a preload set screw spring adjustment system. To adjust the preload of the installed spring (and therefore the boost control pressure of the wastegate), simply “dial in or out” the preload set screw on top of the wastegate.

- To adjust the spring preload (boost pressure) up or down by more than 2psi, you must remove & replace the coil spring inside the wastegate. To do this, carefully remove the wastegate actuator cover by removing the 6 cap screws (be careful, as the cover is spring loaded), then remove the installed coil spring and replace it with an appropriate spring needed for your desired boost setting, re-assemble and road test to verify new setting.
- To increase spring preload (boost pressure) by a small amount, loosen the set screw nut, and then “dial in” the preload set screw by 2 or 3 rotations (refer to Figure 3). **CAUTION:** When increasing boost, adjust in small enough increments to avoid excessive boost and possible detonation (for reference, 2 or 3 inward rotations of the preload set screw = approximately 1psi increase in boost).
- To decrease spring preload (boost pressure) by a small amount, loosen the set screw nut, and then “dial out” the preload set screw by 2 or 3 rotations (refer to Figure 3).

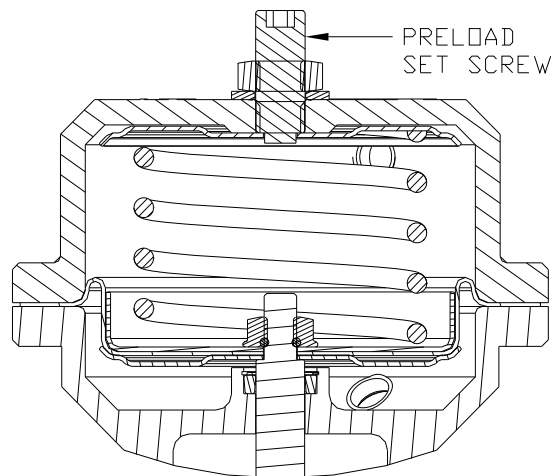


Figure 3:

6. Under normal use, the **RG-45 Wastegate** requires no maintenance. As a preventative maintenance measure, it is suggested that the vehicle be “exercised” (operated at controlled boost levels) as often as possible to avoid any sticking concerns generated by build-up of carbon deposits on the valve or shaft. It is also a good idea to periodically check all hose connections for leaks or damage.

KIT CONTENTS (part number in bold):

The following items are included in the **RG-45 Wastegate** kit - **11240**:

- (1) Main wastegate assembly (one of the springs will be installed)
- (1) 5 PSI spring (2 brown stripes) – **31151-5**
- (1) 8 PSI spring (2 green stripes) – **31151-8**
- (1) 11 PSI spring (2 black stripes) – **31151-11**
- (1) 15 PSI spring (2 purple stripes) – **31151-15**
- (1) Valve seat / v-band weld flange – **21507**
- (1) V-band weld flange, outlet – **21509**
- (2) Vacuum hose fittings, straight, 1/8 NPT x 5/32 – **30306**
- (2) Vacuum hose fittings, elbow, 1/8 NPT x 5/32 – **30307**
- (2) Plug fitting, socket hd, 1/8” NPT – **30598**
- (6ft) Silicone vacuum hose (sensing line), 5/32 – **30542**
- (2) 2.50” v-band clamps – **30625**
- (1) Instruction sheet – **60168**

