



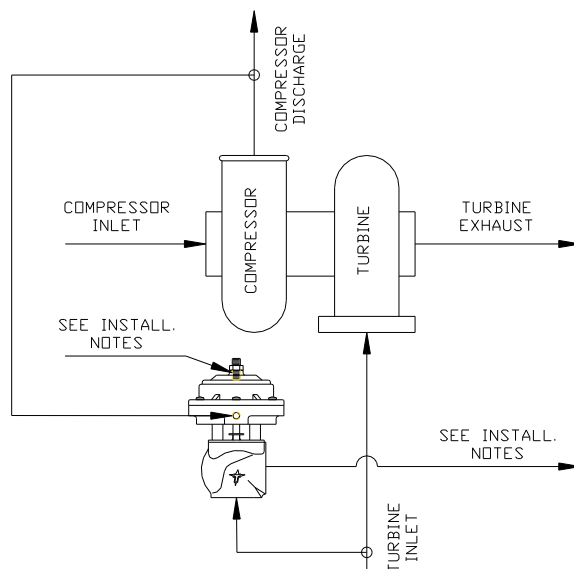
## INSTALLATION INSTRUCTIONS – *Racegate Performance Wastegate*

**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.

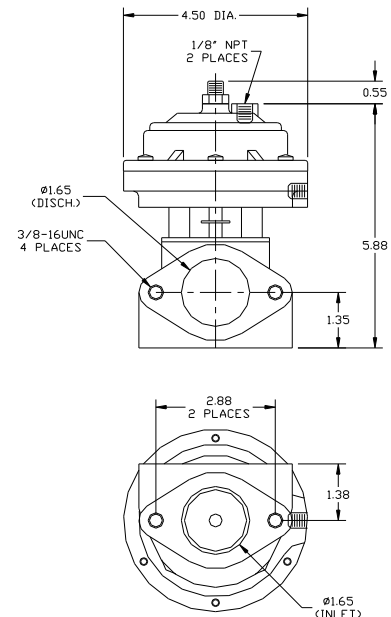
**SUMMARY:** Turbonetics' *Racegate Performance Wastegate* has been specifically designed to “raise the bar” in modern wastegate performance. Properly applied and installed, it can reliably control turbocharger boost pressure in high-performance, single turbo applications up to 700 horsepower. Design features include:

- High temp. ceramic-coated cast iron housing
- 1.85” (47mm) diameter stainless steel valve
- Stainless stand-off legs help keep heat away from actuator section
- Billet machined and anodized actuator base
- Fabric-reinforced flourosilicone diaphragm
- Easy-access spring preload adjustment

**OPERATION:** The *Racegate* 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 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. 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 shipper involved.

1. The **Racegate** may be located anywhere between the engine exhaust and the turbine inlet of the turbocharger (refer to Figure 1), preferably near the header collector, just before the turbine housing. The wastegate may be mounted in any orientation that is convenient, either directly on a cast exhaust manifold (with integral mounting flange), or on a flange that has been welded to a fabricated manifold. In the case of a welded flange, a minimum flange thickness of 3/8" is recommended to minimize flange warpage. 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 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 **Racegate** was designed to be used with 1-1/2" or 2" (14-16gauge) 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 **Racegate** features industry-standard flange-mount inlet and discharge connections (refer to Figure 2). Discharge gaskets are supplied with the wastegate kit, and mating weld flanges are available for purchase. Be sure all mating surfaces are flat and free of irregularities. Once all mounting and discharge routing provisions have been determined and fabricated, install and secure the wastegate with 3/8-16UNC fasteners (grade 5 or better recommended) and mechanical locknuts (conventional lockwashers lose their holding power when exposed to high temps). **NOTE:** A variety of mating flanges, fittings and other accessories are available from your nearest Turbonetics distributor (see common accessories list on last page).
4. Refer to the sensing line schematic shown in Figure 1. A minimum sensing line size of 1/8" ID is recommended for proper response. The wastegate actuator ports are 1/8" NPT pipe thread. Use Teflon tape 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 **Racegate** is to be installed as a conventional wastegate, the boost sensing line (bottom port) may be connected to any convenient post-turbo pressure source, such as compressor discharge. The top port may be plugged with a filtered vent or connected to the air intake system after the filter.
  - **Variable boost control installation:** If **Racegate** 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 the pressure signal source (do NOT tee into this line for any other function).
5. The **Racegate** has been factory calibrated to control boost within 1psi of the "boost level" decal affixed to the actuator cover (the number refers to the factory installed spring; 3, 5, 7 or 9). Using a suitable manifold pressure 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 **Racegate** is fitted with a preload adjustment screw on top of the actuator. To adjust the preload of the installed spring (and therefore the opening pressure of the wastegate), you can do one of the following:

- To decrease spring load, remove the top actuator cover by removing the 6 screws (take caution, as the installed spring will be loaded), and install a smaller spring. Re-assemble and road test to verify new setting.
  - To increase spring load by a small amount, loosen the locknut and rotate the load screw clockwise (into the actuator cover). Re-tighten locknut and road test to verify new setting.
  - To increase spring load by a larger amount, remove the top actuator cover by removing the 6 screws (take caution, as the installed spring will be loaded), and install a larger spring. Re-assemble and road test to verify new setting. If adjustment isn't enough, "fine tune" the setting by adjusting the load screw.
  - **CAUTION:** When increasing the setting, adjust load screw 1-2 turns at a time, to avoid excessive boost and possible detonation (for reference, a 1/4" load screw adjustment corresponds to approximately a 3-4psi change in boost setting).
6. Under normal use, the **Racegate** 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 deposits on the valve or shaft mechanism. It is also a good idea to periodically check all hose & flange connections for leaks, especially after install.

**KIT CONTENTS (part number in bold):**

The following items are included in the **Racegate Performance Wastegate** kit - **10307**:

- (1) Main wastegate assembly (one of the springs will be installed)
- (1) 3 PSI spring (green) – **10113**
- (1) 5 PSI spring (blue) – **10115**
- (1) 7 PSI spring (silver) – **10117**
- (1) 9 PSI spring (black) – **10119**
- (2) Discharge gaskets – **20396**
- (2) Hose fittings, straight, 1/8 NPT x 5/32 – **30306**
- (2) Hose fittings, elbow, 1/8 NPT x 5/32 – **30307**
- (6ft) Silicone hose (sensing line), 5/32, 3 colors avail. – **30542-XX**
- (1) Instruction sheet – **60120**

The following items are common accessories used with the **Racegate**:

- Mating flange, drilled, steel – **20397**
- Mating flange, drilled, stainless – **20397S**
- Hose fitting, 3-way tee, 5/32 – **30308**
- Variable Boost Controller, 3 sizes avail. – **10402-XX**

