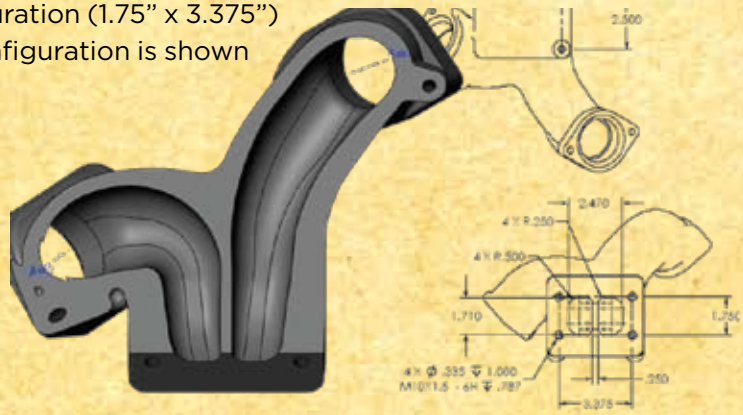
ATS DIESEL PERFORMANCE

ATS 7.3L AURORA TURBOCHARGER KIT ENGINEERING DOCUMENT

The new ATS 7.3L Turbocharger Kit increases truck performance and reliability through proven technology.

The pedestal was designed to employ clockwise rotation turbochargers. Clockwise rotation turbochargers are much more available and in many different frame sizes. For the 7.3L, ATS can supply Aurora turbochargers that are rated for 65 lbs./min., all the way up to 105 lbs./min. A cutaway view of the ATS pedestal is shown below.

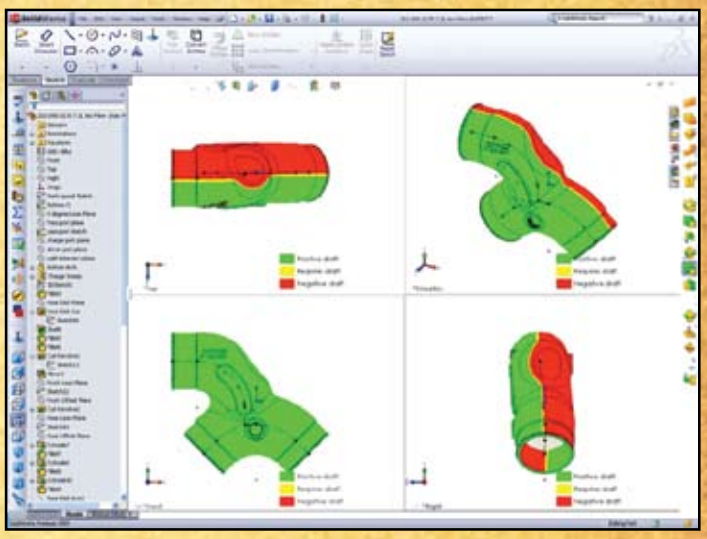
The pedestal will be available in both the T3 flange configuration (1.75" x 3.375") and the T4 flange configuration (2.75" x 3.25"). The T3 configuration is shown next to the factory up-pipe connection (pedestal).



A huge complaint among 7.3L owners is the leaking up-pipe gaskets. The factory donut-style gaskets were originally designed for low pressure exhaust couplings, like those found in most gasoline vehicles. The drive pressure required to drive the turbine wheel in the turbocharger causes the donut gaskets to wear prematurely. The ATS pedestal and up-pipes do not use the donut seal. The ATS system was designed with leak-free stamped sheet metal gaskets.

Changing from the factory counterclockwise to a clockwise rotation turbocharger made it difficult to fit the intake manifold Y-pipe with the larger Aurora 5000 and 6000 turbocharger compressor housings. To clear the v-band clamp on the two larger turbochargers, ATS engineers had to add a large relief (or dent) in the rear of the first fabricated Y-pipe manifold. The picture on the right shows the large relief in the steel prototype.

Using SolidWorks, ATS engineers were able to minimize the relief in the rear of the Y-pipe by offsetting the centerlines. The Y-Pipe centerlines were offset in two directions, 5/8" toward the passenger side of the vehicle and 5 degrees toward the front. Shown on the right is a 4-view screen shot of the draft analysis.



The draft analysis in SolidWorks is used to show if the design can be turned into a mold for the casting process. The yellow line shows where the mold would separate. Cast designs often provide consistent dimensional control at lower cost. The intake heater port was relocated to the rear and three 1/8NPT ports were added to the front for water injection, nitrous, or an easy boost gauge installation

Once the pedestal and mounting system were finalized, the design of the molded silicone intake began. To obtain the exact coordinates, a steel mock piece was built on the vehicle and adjusted for optimal alignment. The steel sample was then measured on a CMM. Using the data from the CMM, ATS engineers were able to generate a 3D model in SolidWorks. Using the 3D model, the manufacturer then built tooling that produces an exact silicone replica of the digital file. The bump visible on the outside of the silicone hose is a steel reinforcement ring that prevents the hose from collapsing during hard accelerations (high CFM, high vacuum).

The picture on the left shows the evlolution of the intake pipe. From left to right you will see the steel prototype, 3D Model and the final four-inch silicone intake. The Aurora 3000 and 4000 kits include the four inch-intake and the T3 pedestal. The Aurora 5000 and 6000 kits include the five-inch intake and the T4 pedestal. Both intakes are designed to connect directly to the factory crankcase breather coupling.

ATS engineers have dedicated an enormous amount of time designing and manufacturing the Aurora 7.3L Turbocharger kits, hoping that the install will be an easy, one-time job.

7.3L TURBOCHARGER OPTIONS

Garrett TP38 / GTP38 (Approx 62 lbs./min.) – Stock Turbocharger

- Compressor wheel inducer: 60mm, 9-blade or 5-blade
- Compressor wheel exducer: 80mm, 9-blade or 10-blade
- Turbine Housing 0.80 A/R Reverse rotation, V-band clamp flange
- Turbine Wheel: 10-blade 76mm inducer / 67mm exducer

Aurora 3000 (Approx 65 lbs./min.)

- Capable of 30 horsepower over stock turbocharger
- Lower EGT's
- Compressor wheel: inducer 59mm, 7-blade
- Compressor wheel: exducer 83mm, 14-blade
- Turbine Housing: 0.85 A/R T3 flange
- Turbine Wheel: 11-Blade 74mm inducer / 65mm exducer

Aurora 4000 (Approx 75 lbs./min.)

- Capable of 130 horsepower over stock turbocharger
- Lower EGT's
- Compressor wheel: inducer 64mm, 7-blade
- Compressor wheel: exducer 92mm, 14-blade
- Turbine Housing: 0.85 A/R T3 flange
- Turbine wheel: 10-blade 76mm inducer / 70mm exducer

Aurora 5000 (Approx 95 lbs./min.)

- Capable of 330 horsepower over stock turbocharger
- Compressor wheel: inducer 71mm, 7-blade
- Compressor wheel: exducer 100mm, 14-blade
- Turbine housing: 0.90 A/R T4 flange
- Turbine wheel: 10-blade 83mm inducer / 74mm exducer

Aurora 6000 (Approx 105 lbs./min.)

- Capable of 430 horsepower over stock turbocharger
- Compressor wheel: inducer 75mm, 7-blade
- Compressor wheel: exducer 105mm, 14-blade
- Turbine housing: 0.90 A/R T4 flange
- Turbine wheel: 10-blade 83mm inducer / 80mm exducer

COMPLETE ATS 7.3 L TURBOCHARGER KIT
AURORA 3000 TURBOCHARGER SHOWN.