

Full-Race Honda B-Series Turbo Manifold Test

ProStreet Tubular Manifold vs. Log style Manifold.

Abstract

Full-Race Motorsports conducted a back to back manifold experiment testing the performance gains of our ProStreet manifold versus the more commonly used log style manifold. All variables during this experiment were held constant except for the exchange of exhaust manifolds. **The test proved that the Full-Race ProStreet manifold offers greater performance than a log or cast style manifold.** The Full-Race ProStreet manifold generated a peak gain of **48whp** and a peak gain of **44 ft/lb** after tuning. Midrange and overall powerband gains where also greater with the ProStreet manifold when compared to the log style manifold. Also, it should be noted that this was a “low boost” comparison. Greater gains are evident at higher boost levels. The entire experiment was videotaped using time lapse videography for documentation purposes. The video can be downloaded from our website, in the multimedia section under ‘videos’.

Introduction

A back to back manifold test was conducted to determine the performance difference between a Full-Race ProStreet turbo manifold and a traditional log or cast style turbo manifold. Every possible aspect and or variable of the experiment was controlled. A Dynapack chassis dynamometer was used to measure torque and or horsepower from the test vehicle. The only variable that was manipulated was the swapping of manifolds. The car used for testing was a Honda Civic hatchback with the following modifications:

Test #1

- Stock GSR bottom end
- JG intake manifold
- FR stage 3 turbo kit
- FR ProStreet turbo manifold

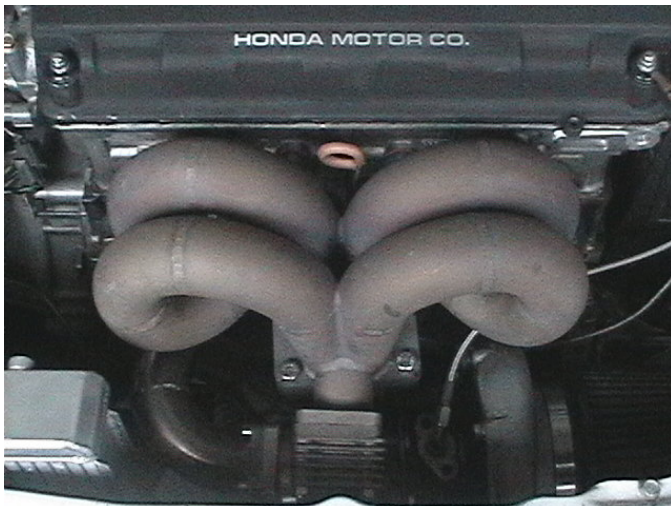


Figure 1. FR ProStreet Turbo Manifold

Test #2

- Stock GSR bottom end
- JG intake manifold
- FR stage 3 turbo kit
- Log style manifold



Figure 2. Fabricated log manifold, bottom view.



Figure 3. Fabricated log manifold, front view.

Both tests were performed with out a boost controller. The boost level on both tests was 10psi as read from the intake manifold. We were able to keep variables identical from test to test by fabricating the log manifold to position the turbocharger, down pipe, charge pipes, and associated parts in the same location as the ProStreet manifold. The purpose of this is that we were able to swap manifolds without even having to pull the turbo off of the car. By doing so, this allowed the tests to be run back to back with minimal time loss.

Results

The results were quite astonishing, but make a lot of sense. The log manifold spooled the turbo about 250-300 rpm sooner than the equal length. From ~ 4700 rpm on (where the motor begins to reach its powerband) the log manifold could not keep up with the ProStreet manifold. Overall, the ProStreet manifold generated a peak gain of ~68.3 whp before tuning, and a peak gain of ~48 whp after tuning. The torque increases were also substantial resulting in a peak gain of ~49.7 ft/lb before tuning and a peak gain of ~44 ft/lb after tuning.

The solid line is the log manifold, the dotted line is the equal length manifold



Figure 4. ProStreet vs. Log manifold dyno graph.



Figure 5. ProStreet vs. Log manifold dyno graph.