Full-Race VW 1.8T Turbo Manifold Test<br>ProStreet Tubular Manifold vs. Log Style Manifold.


#### Abstract

Full-Race Motor sports conducted a back to back manifold experiment testing the performance gains of our ProStreet manifold versus a log or cast style manifold. All variables during this experiment were held constant as possible. The test proved that FullRace ProStreet manifold offers greater performance than a log or cast style manifold!. Midrange and overall power band gains where also greater with the ProStreet manifold when compared to the log or cast style manifold.


## 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. All testing was performed on an engine dyno. The only variable that was manipulated was the swapping of manifolds. The tests performed were setup with the following conditions:

## Test \#1

-VW 1.8T motor
-Log/Cast manifold
-Garrett GT30R


Figure 1. Cast/Log Style Manifold

Test \#2
-VW 1.8T motor
-FR ProStreet Manifold
-Garrett GT30R


Figure 2. FR-ProStreet Turbo Manifold


Figure 3. Engine Dyno

## Results

The results were quite astonishing, but do make a lot of sense. The log manifold spooled the turbo about 100 rpm sooner than the equal length. From $\sim 4400 \mathrm{rpm}$ on the log manifold could not keep up with the ProStreet manifold.

ATP LOG vs FULL-RACE IND. RUNNER MANIFOLD


Figure 4. Full Race manifold power output vs ATP log at identical boost pressures.


Figure 5.100 octane, 23.5psi boost pressure comparison graphs. FR manifold output is denoted as trq=aqua line and bhp=red line. Cast manifold output is denoted as trq=green line and blue=bhp.


Figure 6. Engine dyno data.

| Listing of: BBQU8364 (C: \WINDYN\901\05\BOBQ\BBQU8364.SED) <br> Channel Group: Torque, Power, AFR, Pressures and Temps etc Page 1 Printed on Apr 20, 2005 at 10:57:13 <br> Test Description: Accel. Test $-200 \mathrm{rpm} / \mathrm{second}$ |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EngSpd RPM | STP HP CHp | STPTrq Clb-ft | O2AFR Ratio | VolEff | $\begin{array}{r} \text { Oil } \\ \text { psig } \end{array}$ | $\begin{array}{r} \text { Oil } \\ \operatorname{deg} \mathrm{F} \end{array}$ | Water degF | AirTmp $\operatorname{deg} \mathrm{F}$ |
|  | 4100 | 166.8 | 213.6 | 11.7 | 0.0 | 94.9 | 168 | 180 | 72 |
|  | 4200 | 176.4 | 220.6 | 11.6 | 0.0 | 96.1 | 168 | 180 | 72 |
|  | 4300 | 191.2 | 233.5 | 11.5 | 0.0 | 97.4 | 168 | 180 | 72 |
|  | 4400 | 213.0 | 254.2 | 11.4 | 0.0 | 99.4 | 168 | 180 | 72 |
|  | 4500 | 225.1 | 262.7 | 11.2 | 0.0 | 100.8 | 168 | 180 | 72 |
|  | 4600 | 250.9 | 286.5 | 11.2 | 0.0 | 102.4 | 168 | 180 | 72 |
|  | 4700 | 269.8 | 301.5 | 11.2 | 0.0 | 103.2 | 168 | 180 | 72 |
|  | 4800 | 285.1 | 311.9 | 11.3 | 0.0 | 104.6 | 168 | 180 | 73 |
|  | 4900 | 307.2 | 329.3 | 11.3 | 0.0 | 105.4 | 168 | 180 | 74 |
|  | 5000 | 320.3 | 336.4 | 11.3 | 0.0 | 106.4 | 168 | 180 | 73 |
|  | 5100 | 327.8 | 337.6 | 11.2 | 0.0 | 108.1 | 168 | 179 | 72 |
|  | 5200 | 337.3 | 340.7 | 11.2 | 0.0 | 109.3 | 168 | 179 | 72 |
|  | 5300 | 345.6 | 342.5 | 11.1 | 0.0 | 109.2 | 168 | 178 | 71 |
|  | 5400 | 364.6 | 354.6 | 11.1 | 0.0 | 111.5 | 168 | 178 | 72 |
|  | 5500 | 381.9 | 364.7 | 11.1 | 0.0 | 113.6 | 168 | 178 | 72 |
|  | 5600 | 394.8 | 370.2 | 11.1 | 0.0 | 115.0 | 168 | 178 | 72 |
|  | 5700 | 400.8 | 369.3 | 11.1 | 0.0 | 116.0 | 168 | 178 | 73 |
|  | 5800 | 410.2 | 371.5 | 11.1 | 0.0 | 116.8 | 168 | 178 | 73 |
|  | 5900 | 417.1 | 371.3 | 11.1 | 0.0 | 119.4 | 168 | 179 | 73 |
|  | 6000 | 421.9 | 369.3 | 11.1 | 0.0 | 118.8 | 166 | 179 | 73 |
|  | 6100 | 424.9 | 365.9 | 11.0 | 0.0 | 120.2 | 167 | 179 | 73 |
|  | 6200 | 425.5 | 360.5 | 11.0 | 0.0 | 120.6 | 167 | 179 | 73 |
|  | 6300 | 434.7 | 362.4 | 11.0 | 0.0 | 120.6 | 168 | 179 | 72 |
|  | 6400 | 437.5 | 359.0 | 11.0 | 0.0 | 121.7 | 168 | 180 | 73 |
|  | 6500 | 454.3 | 367.1 | 11.0 | 0.0 | 121.4 | 168 | 181 | 73 |
|  | 6600 | 464.3 | 369.4 | 11.0 | 0.0 | 122.4 | 168 | 181 | 73 |
|  | 6700 | 474.7 | 372.1 | 11.0 | 0.0 | 123.6 | 168 | 181 | 73 |
|  | 6800 | 484.9 | 374.5 | 11.0 | 0.0 | 123.8 | 168 | 181 | 73 |
|  | 6900 | 490.0 | 373.0 | 11.0 | 0.0 | 124.3 | 168 | 181 | 73 |
|  | 7000 | 494.5 | 371.0 | 11.0 | 0.0 | 125.4 | 168 | 181 | 73 |
|  | 7100 | 494.7 | 365.9 | 11.0 | 0.0 | 125.7 | 168 | 181 | 73 |
|  | 7200 | 496.7 | 362.3 | 11.0 | 0.0 | 126.3 | 169 | 181 | 73 |
|  | 7300 | 494.4 | 355.7 | 11.0 | 0.0 | 126.4 | 169 | 181 | 73 |
|  | 7400 | 496.7 | 352.5 | 11.0 | 0.0 | 127.1 | 169 | 181 | 73 |
|  | 7500 | 502.0 | 351.5 | 11.0 | 0.0 | 126.7 | 169 | 181 | 73 |
|  | 7600 | 499.1 | 344.9 | 11.1 | 0.0 | 127.6 | 169 | 181 | 74 |
| **Rar | ge: 500 | RPM - | 7500 RP |  |  |  |  |  |  |
| AVG: | 6250 | 430.5 | 361.2 | 11.1 | 0.0 | 119.2 | 168 | 180 | 73 |
| MIN: | 5000 | 320.3 | 336.4 | 11.0 | 0.0 | 106.4 | 166 | 178 | 71 |
| MAX: | 7500 | 502.0 | 374.5 | 11.3 | 0.0 | 127.1 | 169 | 181 | 73 |

Figure 7. Engine dyno data.


Figure 8. Engine dyno data.


Figure 9. Engine dyno data.


Figure 10 . Engine dyno data

