ROADRUNNER ENGINEERING NEWSLETTER

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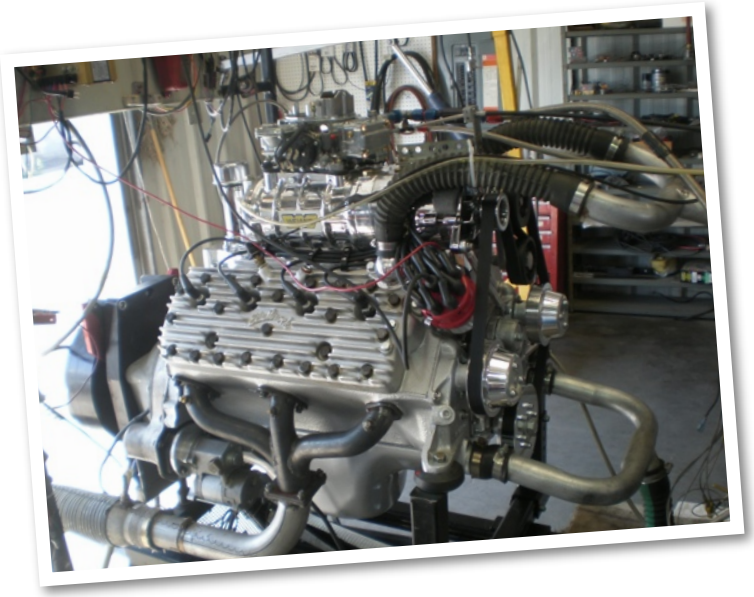
MARCH, 2012



Bob Agnew's Blown Flathead Ford Engine on the Dyno

Inside This Issue

Contact Us

Each issue of this newsletter will feature a flathead dyno test and a flathead-related question and answer submitted by readers and Roadrunner Engineering customers. Some of these responses are expected to become future tech tips.

Comments, requests, and questions are welcome. Email me at roadrunnerengr@msn.com .

Roadrunner Kits

Orders Being Taken for 2012 Delivery

Last year I took a break after selling about 250+ supercharger kits for the Ford flathead. Currently I am taking orders for delivery after March 1, 2012. Fabrication of the parts began in January. Orders require a $500 deposit (personal check OK) and a completed worksheet (can be downloaded from the website). Orders will be filled in the order received. This may be your last chance to order a Roadrunner kit. What happens after this production run depends on several factors including demand, parts availability, economic conditions and my own motivation. Spare parts and accessories will be available for the foreseeable future. Check future news notes for updates.

Joe Abbin

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Featured Question - Intercoolers and Electronic Fuel Injection for Roadrunner Blower Kits for Flathead Ford

Question: Have you guys or any of your associates devised a way to use a liquid to air intercooler with your kits? If so, what kind of performance increases have you seen with such modifications.

Answer: Yes. Super Chiller used to make an intercooler for the Weiand 142 and I have had two customers use them. The performance gains do not justify the cost and complexity for boost levels of 6 psi or less. See page 69 in 335 HP Flathead Ford V-8 Performance Handbook available at www.roadrunnerengineering.com , Amazon, etc.

Question: Also, what is your experience with EFI kits in concert your blowers?

Answer: These are expensive and time consuming to set up.

Question: If any, which EFI kits would you recommend?

Answer: At present, I don't recommend any EFI system for use with my kits. Unless you are an expert yourself and have unlimited access to a dyno you will be disappointed. Roush spent three man years developing the system for my 2007 Mustang. Nevertheless, I welcome reader input on this subject and particularly your success stories.

Engine Build and Test Report of the Bob Agnew Flathead Ford Engine, Dyno Tested 7/28-30/2011, Albuquerque, NM

Summary: The engine was originally built about nine years ago to produce a strong, reliable street engine for Bob Farnsholtz of Bosque Farms, NM. Automotive Machine Service in Albuquerque, NM did the machine work. Wayne Woody of Albuquerque, NM did the mild port and relief. Gary McGlasson of McGlasson Racing Engines, Albuquerque, NM inspected, reassembled, tested and tuned the subject engine.

This report describes the subject engine and summarizes the results of dynamometer testing and analyses of the subject engine. Additional pictures and detailed individual tabular data sheets are available. Measured torque & horsepower curves for the 276 cu.in. flathead engine are shown in a plot at the end of this report. Test rpm was conservatively limited to 4700. Peak power for all runs occurred below the 4700 maximum test rpm. All testing was performed with an alternator and the water pumps installed using 91-octane premium pump gas. All power values are corrected to standard dyno (sea level) conditions of 60 F and 29.92 in.Hg.

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The engine was subjected to 8+ dyno runs ("pulls") over the test period. The first series of pulls was performed to break-in the engine, do initial tuning and check for proper function of all components.

Peak horsepower was 240 at 4500 rpm with about 6.2 psi (corrected) max boost. Peak torque was 290 ft-lbs at 3800 rpm and was remarkably constant over the entire test rpm range. The boost level was limited to allow safe operation at sea level with the 8:1 compression ratio and 91-octane fuel.

The engine characteristics are listed below.

Engine Test Definition:

8BA-Type Short Block Assembly

- 3-5/16 in. bore, Ross forged pistons with stock dome and cast rings (3/32, 3/32, 3/16, inches width).
- 4 inch-stroke Mercury crank, stock rods, mild steel center main cap.
- Manley 1.6 in. stainless intake and exhaust valves, block mildly ported and relieved (.08 in. deep).
- Melling M15 high volume oil pump.
- Isky Max 1 grind cam with single Isky 185G valve springs, shimmed as necessary to get 70 lbs at the seat. Valve clearance was .010 in. (intake) and .012 in. (exhaust).

Heads

Edelbrock 1115 aluminum heads with a 71 cc head volume were used. This is optimized for a supercharged flathead designed to operate at sea level with moderate boost and premium pump gas.

Intake-Supercharged

A Roadrunner single-plane blower manifold and a Weiand 142 blower with 162% overdrive pulleys were used for all tests. A 600 cfm Holley P/N 080457 (4-bbl) carburetor with stock jets and vacuum secondaries was used for testing. A lighter vacuum secondary spring (gold vs. black marking) was substituted to get proper operation of the secondaries. The final spring choice for street use will be based on driver preference to tailor low-end torque characteristics, but will not affect peak power readings. No air cleaner was used during testing. A large capacity air cleaner is recommended in service.

Exhaust

Free flowing center-dump headers and large (4 in. inlet/exhaust) truck mufflers were used during test. The engine had no center exhaust baffles.

Ignition

A top mount electronic Vertex distributor with mechanical advance was used for the initial testing. Later a Mallory point-type distributor with external wiring was substituted to allow use of a boost retard device in service. Autolite 303 plugs gapped at .035 in. were used for test.

The Mallory distributor had 17 degrees advance built-in, which was all in by 2200 rpm. Total advance curve was limited to 22 degrees maximum. An ignition retard device such as those available from MSD (P/N's 5462 or 6462) with a retard setting of 1-2 degrees per psi of boost is recommended for the street to allow the total timing to be set to 24-26 degrees for part load cruising economy.

Water pumps

Stock 8A type new pumps with modern seals and bearings were used along with Roadrunner serpentine pulleys and hubs for all tests.

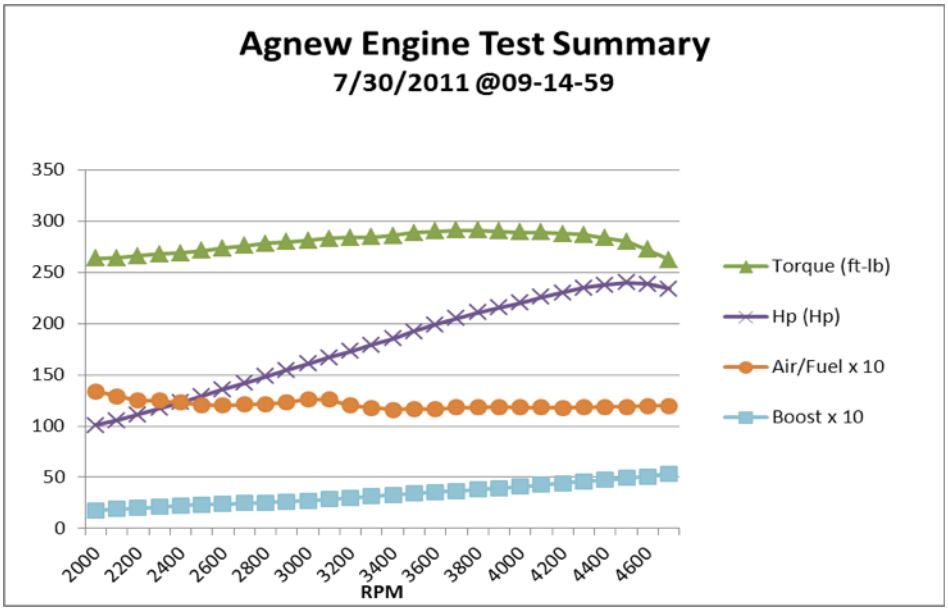
Belt Tensioner

An automatic belt tensioner was used for all testing. The normal 1-belt Roadrunner supercharger kits use a manual belt tensioning system. The automatic unit maintained the belt tension at 180-185 pounds, which is a little lower than the desired 180-200 pounds specified for the manual unit, but provides better belt wrap and maintenance free operation.

Discussion:

The engine broke in quickly and ran strongly during all tests. The jetting was left stock with #49 primary jets and a stock metering plate which yielded a somewhat rich mixture (12.2:1) for peak-supercharged power at the 5300 ft test altitude. The rich mixture gives an inter-cooling effect and reduces detonation tendencies. The fuel-air mixture will be leaner but still safe at sea level. The 600 cfm Holley has vacuum operated secondary throttle plates, which are controlled by a diaphragm/spring mechanism to control secondary throttle operation. The best results were obtained with a weaker (black) spring that allowed the secondaries to open almost full capacity.

All tests were run with 3.48 in. diameter supercharger pulley resulting in a supercharger overdrive ratio of 162%. This produced peak boost readings of 5.2 psi (6.2 psi at sea level) at full throttle. The engine will be delivered with this pulley installed to assure fuel compatibility during cross-country driving at low altitude. There is certainly room to grow here if the owner so desires.



Overall, this engine performed well on the dyno after the minor tuning issues were sorted out.

Please contact Roadrunner Engineering if you require further information.