



ROADRUNNER ENGINEERING NEWSLETTER

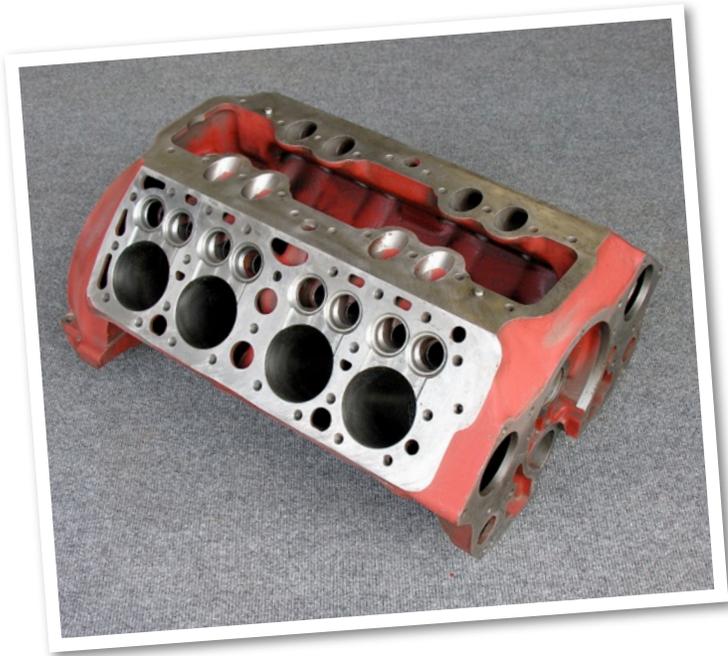
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JANUARY, 2013



NOS French Flathead Block. These high quality castings were built till 1992 or later and are similar to an 8BA in front and a 59A in back. Note factory relief.

Inside This Issue

- What's Happening - Lots of news
- Question of the Month - Flathead oil
- Preview of Future Issues - More flathead oil discussion
- Dyno Test of the Month - Don Southam's French flathead

What's Happening?

This month's featured dyno test highlights the testing of Don Southam's blown flathead engine following a rebuild by Gary McGlasson in Albuquerque. There were at least two unique features on this engine. First, the block was one of the relatively new production French blocks imported a few years ago. Second, the blower intake featured a custom 3x2 intake manifold. Don's goal was 300+ hp. Read on to find out if he succeeded.

French blocks. The last of the NOS French flathead blocks are still available from the So-Cal Speed Shop in Sacramento, CA. The blocks are similar to 8BA type Ford blocks but incorporate a half bellhousing similar to a 59A block. I have seen dates of manufacture as late as 1992. These bare blocks are available in stock configuration for \$2650 and ported for \$3650. Contact Rob Zomber at 916-924-9744 at So-Cal for details.



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Roadrunner flathead blower kits sold out again in 2012. The combination of performance, appearance and price of the kits has made the Roadrunner kits the favorite of flathead fans since 1997. Future production and availability will be announced later.

The books have been selling well also. *Blown Flathead* is out of print and some copies are being offered on Amazon for over a thousand dollars! *335 HP Flathead Ford V-8 Performance Handbook* is almost sold out. Get yours while you can from www.roadrunnerengineering.com or other sources listed on the website.

Bob Agnew of the Old Car Garage in Albuquerque completed a 6400 mile tour in his Roadrunner supercharged 1951 Victoria. In addition to the powerful engine, the car features a Ford AOD transmission that allows freeway cruising with 19 mpg economy. The car performed flawlessly in a trip to the 1949-1951 Ford Shoebox Nationals in Ohio and the Early Ford V-8 Club Central Nationals in Georgia. Bob proved his durability and that of the vehicle covering the many miles in August at temperatures over 100 degrees with matching humidity in some segments.



Bob Agnew's 1951 Ford Victoria. Yup, it has a blown flathead!



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John “Mr. Flathead” Bradley dies.

Drag racing legend John Bradley passed away 11/28/12. He was 87 years old. Bradley campaigned fuel burning flathead dragsters for over 60 years. His machines ran on 100% Nitro and at various times he was the quickest (9.08 sec) and fastest (161 mph) flathead powered dragster. His record setting car has been restored and is on display in Don Garlits' Museum of Drag Racing in Ocala, FL. Read more at <http://draglist.blogspot.com/2012/12/farewell-flathead-john-bradley.html>.



John Bradley & Max Romero doing their thing at Bandimere Raceway in 2003.

Question of the Month

Question: What kind of oil should I use in my flathead?

Answer: Valvoline VR-1 20W50 Racing oil will meet all the factory requirements of your flathead for operation at temperatures over 32F. This oil and other racing oils are formulated with sufficient ZDDP and other additives to protect the engine rather than a catalytic converter or an oxygen sensor. Due to the lower detergent levels, racing oils should be changed more frequently than the regular SN oils (every 1000 miles or so is fine).

What's Coming Up?

Next issue we will discuss in more detail the subject of engine oils for everyday service and for initial break-in of an engine after rebuild.



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Dyno Test and Engine Build Report on Don Southam's Blown Flathead Ford Engine. Tested October 2 and 3, 2012 at Albuquerque Dyno Service, Albuquerque, NM

Summary: The engine was originally built several years ago but had internal damage from fuel "wash downs" caused by a malfunctioning fuel injection system. The engine was totally rebuilt by McGlasson Racing Engines, Albuquerque, NM prior to the subject test series. Gary McGlasson and Joe Abbin (Roadrunner Engineering) tested and tuned the subject engine at Albuquerque Dyno Services.

This report describes the engine and summarizes the results of dynamometer testing and analyses of this very stout street engine. Additional pictures and detailed individual tabular data sheets are available upon request.

Discussion: The 286 cu.in. flathead engine was supercharged for all tests with a Weiland 142 blower and a Roadrunner Engineering installation kit. Two carburetion systems and two blower overdrive ratios were evaluated. Representative torque & horsepower results are noted below and shown in a plot at the end of this report. Test rpm was conservatively limited to 5100. Peak power for all runs occurred below the maximum test rpm. All testing was performed with an alternator and the water pumps installed using 91-octane premium pump gas. All power and boost pressure values are corrected to standard sea level dry air conditions of 60 F and 29.92 in.Hg.

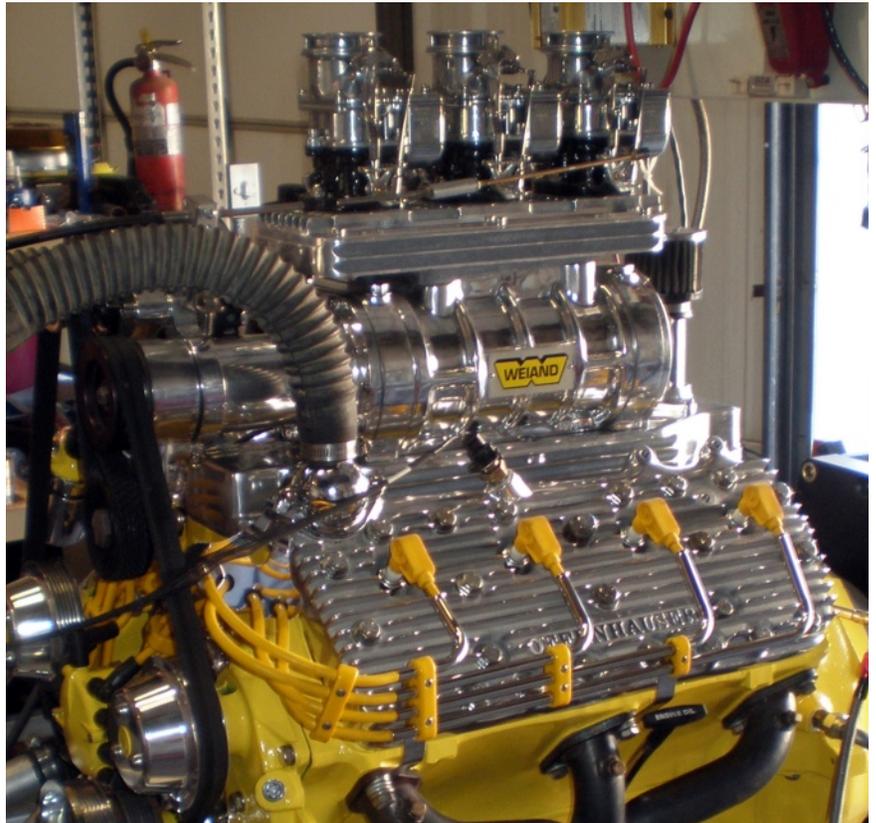


Figure 1. Southam Engine With Custom 3x2 Induction.



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The engine was subjected to 13+ 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. These initial tests were performed with the custom blower inlet manifold mounting three Stromberg 97 carburetors shown in **Figure 1**. Peak horsepower for this setup was 285 at 5000 rpm with about 4.2 psi maximum boost pressure. Peak torque was 330 ft-lbs at 3800 rpm and was remarkably constant over the entire test rpm range. This is the engine configuration that will be used on the street and will provide outstanding performance in the owner’s 1932 Ford roadster.

Carburetor base vacuum readings in early testing indicated that engine power would benefit from additional carburetion. The three carburetor setup with a total flow capacity of 465 cfm was then replaced by a single 650 cfm Holley four-barrel carburetor bolted directly to the blower inlet. Peak horsepower for this setup increased to 299 at 4900 rpm with about 4.6 psi maximum boost. Peak torque was 345 ft-lbs at 3800 rpm.

At this point, it was decided to step up the blower overdrive from 1.47 to 1.59 to meet or exceed the 300 HP level. Peak horsepower for this configuration was 312 at 4900 rpm with about 5.8 psi max boost. Peak torque was 357 ft-lbs at 3800 rpm.

The engine characteristics are listed below.

Engine Test Definition:

French Short Block Assembly

- 3.800 inch bore, Ross forged pistons with stock dome and metric ring pack (1 mm, 1 mm, and 3mm width).
- 4 inch-stroke Mercury crank, stock rods, heavy duty French main caps.
- Stainless 1.6 inch intake and 1.5 inch exhaust valves, block ported and relieved by Motor City Flathead.
- Melling M15 high volume oil pump.
- Crower 262 grind cam with single Isky 185G valve springs, shimmed as necessary to get 80 lbs at the seat. Valve clearance was .012 inch (intake) and .014 inch (exhaust). This cam has a lobe lift of 0.383 inch and a duration of approximately 238 degrees at .050 inch lift. It produced excellent high-end power and low-end torque.

Heads

Modified Offenhauser 425 aluminum heads with a 74 cc head volume were used. The heads were modified by McGlasson as described in 335 HP Flathead Ford V-8 Performance Handbook. This configuration is optimized for a supercharged flathead designed to operate at sea level with moderate boost and premium pump gas. The resulting compression ratio was 8.1 for this 286 cu.in. engine.



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Intake-Supercharged

A Roadrunner single-plane blower manifold and a Weiland 142 blower with overdrive pulleys as described previously were used for tests. Both the 3x2 setup and the single 650 cfm Holley 4-bbl (P/N 082651) carburetor with stock jets were used for testing. Interestingly, both setups yielded identical air-fuel ratios of about 11.5 at full throttle. The Stromberg two-barrel carbs used #45 main jets and #65 power valve jets. The very rich mixture at full throttle is desirable for supercharged engines because it provides an intercooling effect which increases power and reduces detonation tendencies.

Initial tests were run with 3.48 inch diameter supercharger pulley resulting in a supercharger overdrive ratio of 1.47. This produced peak boost readings of 3.5 psi (4.2 psi at sea level) at full throttle. The engine was delivered with this pulley installed to assure fuel compatibility during cross-country driving at low altitude. A 3.23 inch diameter pulley was used for the higher horsepower tests. This resulted in an overdrive ratio of 1.59 and produced a peak boost reading of 4.7 psi (5.8 psi at sea level).

No air cleaners were used during testing. A large capacity air cleaner is recommended in service. Also, fuel pressure should be limited to 2-1/2 to 3-1/2 psi for the 3x2 carburetors.

Exhaust

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

Ignition

A front mount electronic MSD distributor with mechanical advance and Champion H10 plugs gapped at .030 inch were used for all tests. Total advance was limited to 20 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 degrees for part load cruising economy.

Water pumps

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

Belt Tensioner

The standard 1-belt Roadrunner supercharger manual belt tensioning system was adjusted to a belt tension of about 200 pounds for all testing. No slippage was observed.

Miscellaneous Notes: The engine ran strongly during all tests. Static compression pressure was measured after testing and all readings were found to be very consistent and varied from 110 to 115 psi at the 5300 foot test altitude.

The heads were re-torqued to 50 ft-lbs after the first day of testing and should be re-torqued cold at least one more time after a few street miles.

Contact Roadrunner Engineering for further information.



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Don Southam Ford Flathead Dyno Test Comparison of Different Induction Systems Tests Run 10/2-3/2012

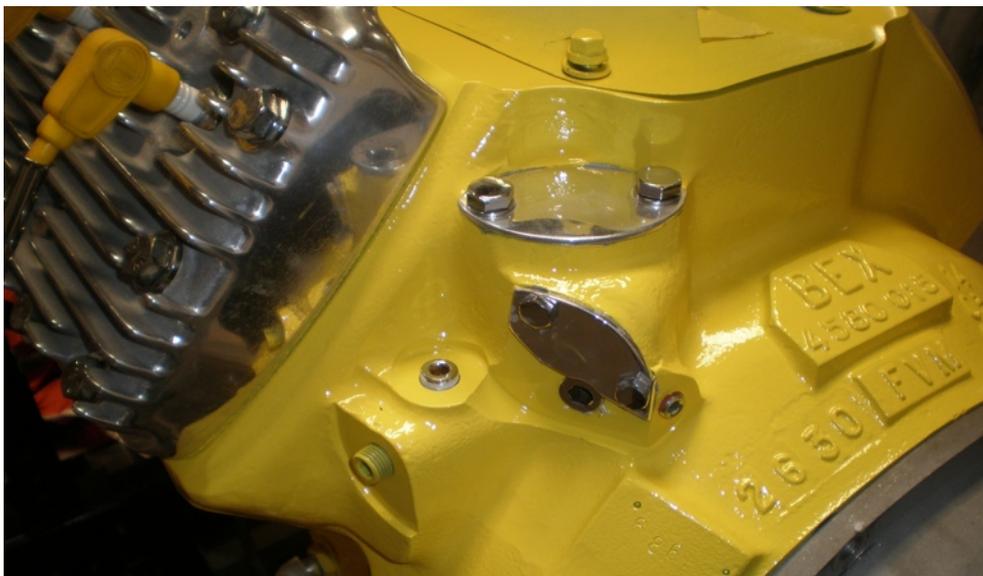
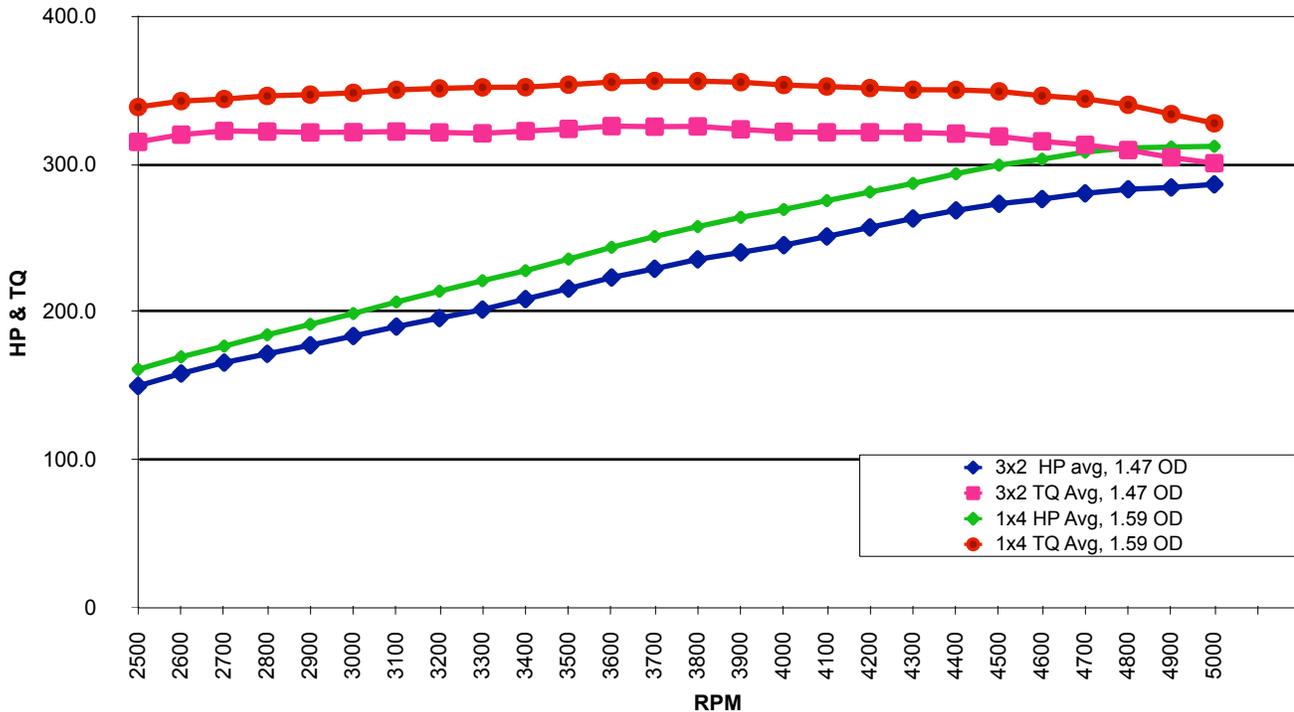


Figure 2. Unique Bell-Housing Area of the French Flathead.

This one was manufactured March 14, 1986. Although basically similar, there are several differences between these engines and the US engines.



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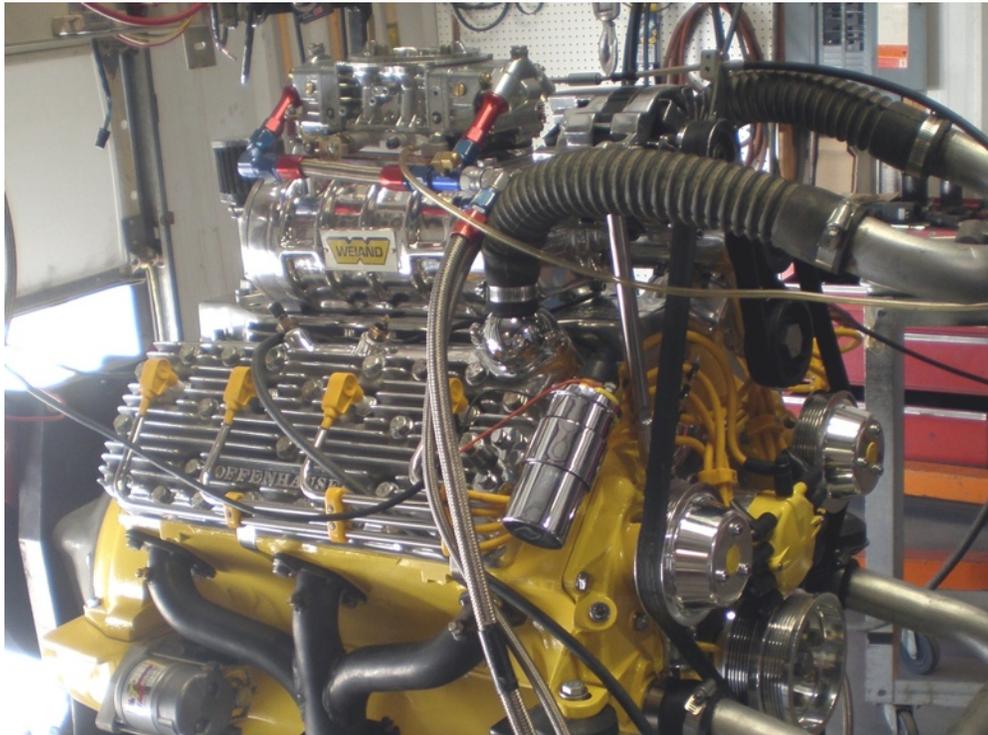


Figure 3. Southam Engine With Single Four Barrel Induction.