ROADRUNNER ENGINEERING NEWSLETTER

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Roadrunner Big Kahuna Supercharger Kit with Auto Tensioner and Custom Polished 1-Wire Alternator.

Inside This Issue

What's Happening?

Roadrunner flathead blower kits sold out in 2012, 2013, and 2014, including all but four kits of the limited production anniversary run which were held back until all previous orders were filled. **Parts are now available for approximately two polished and two satin 1-belt kits for either 59A or 8BA engines.** The combination of performance, appearance and price of the Roadrunner kits has made them the overwhelming favorite of flathead fans since 1997.

Polished compact alternators and automatic belt tensioners are now available again. See above. Call or email roadrunnerengr@msn.com for info.

The new book, ***Ford & Mercury Flathead V-8 Identification and Rebuilder's Guide*** has been selling very well. Whether stock or modified, this 184 page book will help you to determine what you have and what you need to build a quality engine that meets your performance and appearance goals. See the Table of Contents and a preview on www.roadrunnerengineering.com . Click on "books". Books can be purchased online at the above website (free domestic shipping) or from the Early Ford V-8 Foundation, Amazon and other fine book sellers. Flathead part sources such as Speedway, The Old Ford Store, Bob Drake Reproductions, C&G Ford parts, So-Cal AZ, Honest Charley Speed Shop and others also carry the book.

335 HP Flathead Ford V-8 Performance Handbook reprints are still available. Get your copy while you can from the sources listed above.

Blown Flathead has been sold out for years although used copies are available from various sources for really big bucks. The original $11.95 price was a great investment! Don't be left out of the market on the new books.

Ford Flathead Right and Left Head Interchangeability

Questions:

I am rebuilding a 1939-1941 flathead block. I have four heads, all marked as left heads, two 81A-6050 and two 59A-6050B heads, but I do not have any -6049 right heads in the lot.

1) Is there a reason why I can't use a -6050 on both banks? I have read your newest Ford and Mercury flathead V-8 book [very good publication] and the chapter on heads, but found no left to right interchangeability info. I have put a head gasket on both head and block surfaces and don't see any differences, is there any?

2) The Edelbrock and Offenhauser finned heads don't specify a right or left, why is this?

Barry M., Mead, NE

In the photo, we see three generations of flathead heads. Left to right we see typical 1932-1937 first generation heads, 1938-1948 second generation heads, and 1949-1953 third generation heads. Second generation

Answer:

All of the second generation heads (1938-1948, see figure) with the center water outlets are physically interchangeable side to side. The 81A, 81T, 99A and 29A heads and possibly others came in -6949 versions which differed primarily from the -6050 versions in heater outlet hose and instrument sensor port hole presence or location. If these features or the marking (for judging) are not important to you, use the -6050 head on both sides.

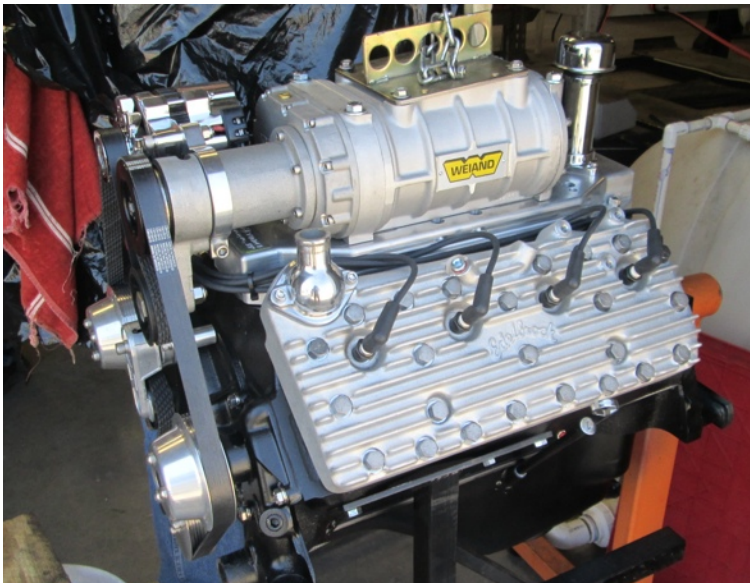
Make sure to check for head to valve, head to piston, and valve to spark plug clearance on any engine build where non-original parts are used. The easiest and most conservative way to do this is to lay the head on the block (use two studs or bolts for location but not restricting upward movement) without a head gasket and rotate the engine rotating assembly and look for head movement.

The aftermarket finned aluminum heads are usually drilled identically for heater hose and sensor holes for both sides on all heads. You just plug the unused holes or add holes as needed.

Dynamometer Test Report for Jon Kitchen's 273 cu.in. Engines Tested 4/6-4/7/2015 at Albuquerque Dyno Service

Summary

The engines were built, tested and tuned by Gary McGlasson of McGlasson Racing Engines in Albuquerque, NM. Joe Abbin, Dave McLain, and Jon Kitchens (engine owner) assisted with testing and tuning.



Kitchens Engine #1 (Satin Finish)

The attached graph at the end of this section summarizes the results of dynamometer testing and analysis of the subject engines. The graph plots the torque, horsepower, boost, & air-fuel ratio values for both 273 cu.in. blown flatheads. Detailed individual tabular data sheets are available at no charge upon request. The engines were identically equipped and performed almost identically with the same Holley 570 cfm Street Avenger carburetor. Both engines produced about 270+ hp @ 5200 rpm (maximum test rpm) and 290+ ft-lbs. of torque @ 4000 rpm, with about 4.7 psi boost at maximum rpm (all values corrected to standard sea level conditions). Testing was limited to 5200 rpm to be conservative.

The engines ran on 91-octane pump gas during all tests.

Engine #2 was also tested with an MSD Atomic EFI mounted on the blower. Time limitations did not permit optimization of this unit, but limited testing indicates approximately the same peak power and torque outputs fuel injected as carbureted. Drivability can only be evaluated on the street. The EFI unit is "self-learning" under driving conditions which are difficult to simulate on the dyno.

The engine characteristics are listed on next page.

Engine Definition (both, with exceptions noted)

Block assembly

The 8BA block assemblies consisted of the following:

a) 3.248" bore (.060" oversize), Ross 3-ring forged pistons (3/16" domes) with standard Hastings cast ring pack (3/32", 3/32", 3/16") installed in Engine #1. Engine #2 had Arias pistons with the same specifications as the Ross and with the same rings.

b) 4.125" stroke Scat crank and rods, heavy duty steel center main cap.

c) 1.6" stainless intake and exhaust valves, block ported and relieved.

d) Melling M15 High volume oil pump.

e) Iskenderian 400 Jr cam with single Isky 185G valve springs (75 lbs. on the seat). Solid (non-hollow) lifters were used.

Heads

Unmodified Edelbrock 1116 aluminum heads with 74 cc head combustion chamber volume. This head volume results in a 7.7:1 compression ratio for the test engines. These are excellent heads jointly developed by Roadrunner and Edelbrock especially for supercharged flatheads. See discussion for problem encountered.

Intake

Roadrunner manifold and Weiand 142 blower with 50% overdrive (3.75"/5.63") pulleys. Both engines were tested with the same Holley Street Avenger 4-bbl carburetor rated at 570 cfm. Excellent results were obtained with #57 primary jets and #67 secondary jets. Testing indicated that slightly richer jets would have yielded even better results. With the same carburetor and jetting, Engine #2 ran about 0.5 to 0.6 A/F points richer that Engine #1.

Engine #2 was also tested with an MSD Atomic electronic fuel injection system, master kit part number 2900. This unit will accommodate supercharging and support up to 700 HP. The system retails for about $2500. The air/fuel ratio set parameters were 14:1 for idle & cruise, 12:1 for wide-open throttle, and 11.8:1 under boost. These values were not optimized due to testing time constraints.

No air cleaner was used for any of the tests.

Exhaust

Free flowing center-dump dyno headers and large truck mufflers were used during test. No center exhaust baffles in the blocks.

Ignition

Top mount point type Mallory distributors with mechanical advance and high performance coils were used. Engine #1 used Autolite 404 plugs (non-extended tip), gapped at .035". Engine #2 used Champion RC12YC (see discussion). A slow advance curve (0 degrees initial, 17 degrees total) that was not fully advanced until about 3000 rpm was used. In service, the recommended parameters are 4 degrees initial with 24 degrees total, in conjunction with a boost retard device which retards the spark about 1.5 degree for each psi of boost (e.g. an MSD 6BTM, set at “1.5” for these engines).

Water pumps

8BA stock type water pumps were used during test. Excellent units of this type with modern seals, etc. are available from Bob Drake, Speedway and others.

Thermostats

160 degree stock type units were used during test and recommended in service.

Discussion

Engine #1 was tested first and subjected to several undocumented dyno "pulls" to break-in the engine, do initial tuning and to check for proper function of all components. After break-in, the engine exhibited erratic performance and very lean air-fuel mixtures during initial power pulls. The carburetor was richened up with minimal improvement in operation. Further investigation revealed that the spark plugs on the driver's side had the gaps nearly closed and that the exhaust valves had been hitting the plug electrodes. The spark plug counter bores in the left head measured about .210" deep while the right head counter bores were shallower at .140".

The Champion RC12YC plugs were replaced with non-power tip equivalent Autolite 404 plugs. The engine performed flawlessly thereafter. **This experience confirms the importance of checking the plugs for proper clearance as well as combustion characteristics.**

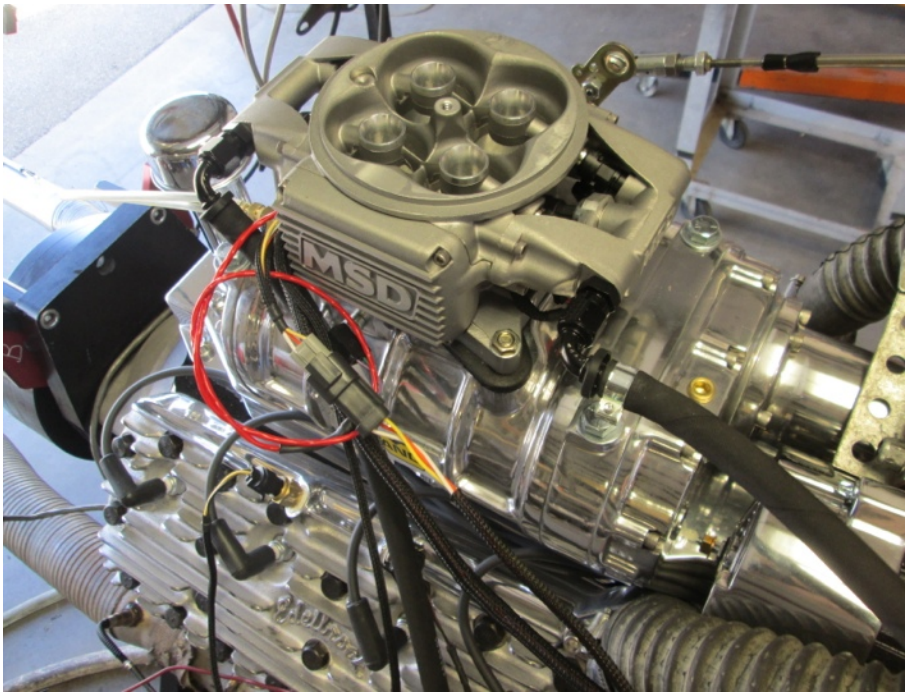
Engine #2 had the .210" spark plug counter-bores, and there was evidence that the valves were just barely kissing the valves, but not enough to alter the gap and so the Champions were left installed due to availability. A shorter reach or a non-power tip plug is recommended for both engines in service to provide proper clearance. Edelbrock was contacted to report this issue and future product will have a nominal .10" spark plug counter-bore.

Based on the test results from Engine #1, Engine #2 was tested with the best performing tune-up specifications, and as expected, the results were similar. Overall, both engines performed very well to this point.

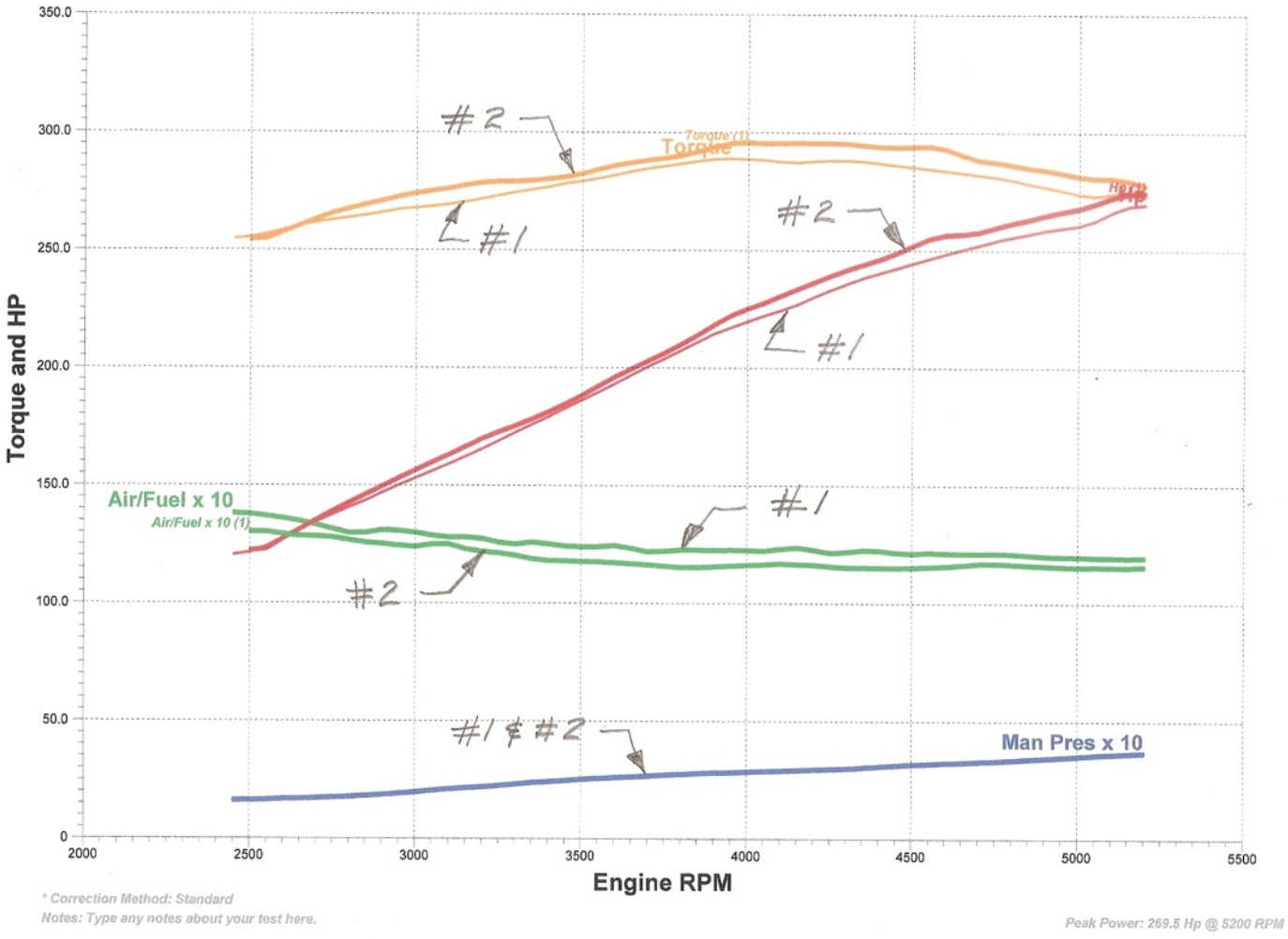
Next an MSD Atomic EFI system was installed on Engine #2. This is a very complete kit and relatively simple to hookup, but required about a half day to install and achieve a stable idle. This did not allow for much time for performance testing on the dyno. The system is "self-learning" for optimization of performance and this is best accomplished on the street. Nevertheless the engine demonstrated preliminary EFI performance very similar to that of the

Kitchens Engine #2 (Polished Finish) on the Dyno with EFI

fairly well optimized carburetor system (although at a $2000 cost premium). Peak torque and peak HP values about 1% higher were recorded with the EFI. Improved drivability would be the expected advantage. Go to www.AtomicEFI.com for a description of this product.



Engine #2 with the Atomic EFI by MSD. This unit comes with a fuel pressure regulator, a control unit, sensors, etc. not shown. Street driving will provide the best test of this combination.



Kitchens' Engine #1 (satin Finish) and Engine #2 (polished) Performance Comparison. These engines were essentially identical (see text) and were both outstanding performers. The same carburetor was used on both engines, but a difference in air-fuel ratio can be seen in the plot. Manifold pressure (boost) was virtually identical for both engines so only one is shown.

Quickest Flathead Powered Street Rod Ever Contest

I believe the ***Motorhead Mart Special*** to be the quickest flathead powered street rod ever. If you have documentation otherwise, please submit to me at roadrnnerengr@msn.com . Best submittal(s) will be published here and receive a complimentary copy of ***335 HP Flathead Ford V-8 Performance Handbook.***

The Motorhead Mart Special turned a best elapsed time of 12.41 seconds in the quarter mile at Bakersfield, CA in 2006. Any quicker flathead street rods?