



ROADRUNNER ENGINEERING NEWSLETTER

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JULY, 2016



Roadrunner Big Kabuna Supercharger Kit with Auto Tensioner and Custom Polished 1-Wire Alternator. Kits available again.

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What's Happening?

New Engine Building Videos Available

The **blown flathead channel** on YouTube has been expanded to include a series of five short videos featuring the buildup and test of a high performance flathead built for Dr. Royal Langford of Broken Arrow, OK. These videos provide an overview of the major engine assembly processes and dyno testing of the engine both normally aspirated and supercharged. I think you will find the videos instructive and entertaining.

The individual video YouTube links are as follows.

The Buildup and Test of a High Performance Flathead

Part 1- Introduction & Overview <https://youtu.be/MIqXqdOzOoE>

Part 2- Installing Camshaft, Crankshaft & Front Cover <https://youtu.be/rd5AEJpx6JE>

Part 3- Piston-Rod Assembly & Installation <https://youtu.be/J9PuEnzpu-k>

Part 4- Pan, Valve & Head Assembly <https://youtu.be/oK9dTdfI5Gk>

Part 5- Engine Dyno Testing <https://youtu.be/KLZmC5gqEOY>

In addition YouTube has several videos of other Roadrunner equipped engine dyno tests including one for Killer, the current engine in the Motorhead Mart Special. (www.youtube.com/watch?v=U8x47lRNslc). This engine produced over 335 horsepower. Fred Edeskuty's 280 HP flathead is featured in another video (www.youtube.com/watch?v=hyHr-joNRKM).

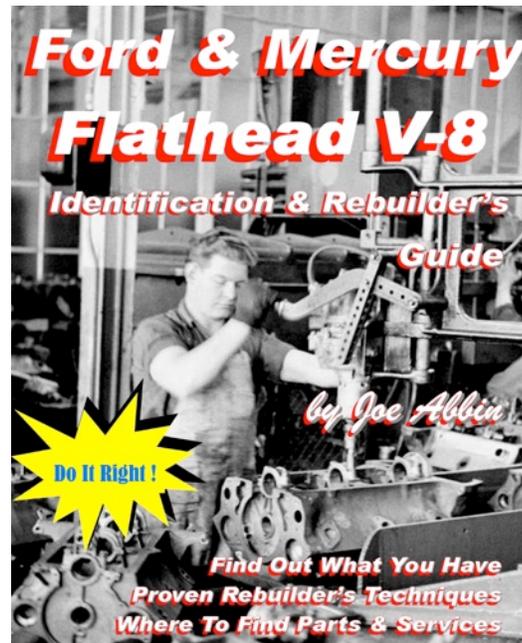
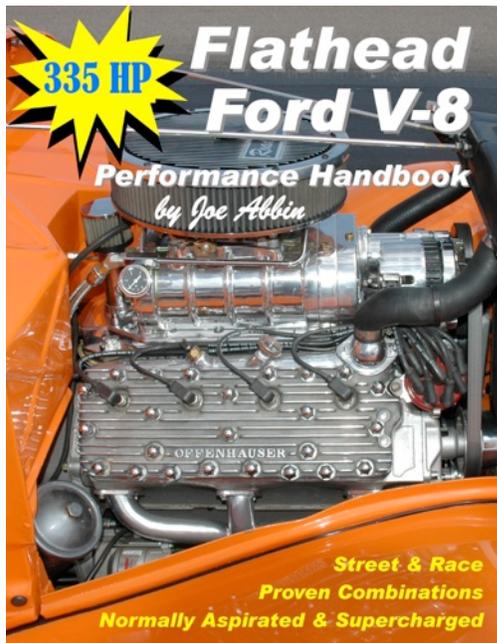
You can also see the Motorhead Mart Special run on the dragstrip at Denver where it was Hot Rod Eliminator (www.youtube.com/watch?v=3sUXCi5I6nc), at Bakersfield where it posted the best ever recorded times for a flathead-powered street rod (www.youtube.com/watch?v=AhLcHV3iVNU), and at Phoenix the first time with fenders (www.youtube.com/watch?v=DsSOTFooLkYi).

Last, but certainly not least, you can see over 150 Roadrunner supercharged vehicles and engines in just a little over four minutes! Check them out at (www.youtube.com/watch?v=4hOnT-jo68A)!

Flathead Blower Kits Available Again

Roadrunner flathead blower kits sold out in 2012, 2013, 2014, and 2015. **A production run of new kits is now available.** These kits are expected to sell out quickly so reserve your kit now with a deposit as soon as possible. The combination of performance, appearance and price of the Roadrunner kits has made them the overwhelming favorite of flathead horsepower fans since 1997. Kit prices range from \$3000 to \$4000.

Polished compact alternators and automatic belt tensioners are now available again. Call 505-268-6768, or email roadrunnerengr@msn.com for info.



Books Available

The **335 HP Flathead Ford V-8 Performance Handbook** reprints sold out in August but a third printing is now available. The new printing has been re-digitized in high resolution and all color. This book has been described by some readers as the “bible” for flathead modification. Although there are many flathead speed manuals available, this book stands apart because it features actual dyno test and track results. The author’s 1934 Ford Tudor, the **Motorhead Mart Special** (see later in this article), is believed to be the quickest flathead powered street rod ever. The proof is on the asphalt! The car and engine are fully described in this book. Get your copy from the sources listed below.

The **Ford & Mercury Flathead V-8 Identification and Rebuilder’s Guide** sold out, but now has been reprinted. 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, Van Pelt Sales, The Old Ford Store, Bob Drake Reproductions, C&G Ford parts, So-Cal AZ, Honest Charley Speed Shop and others also carry the book.

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!

New Product - Heavy Duty Center Main Caps, Now Available



A new item is now available from Roadrunner. These are heavy duty center main caps from Mike Davidson at FlatAttack in Australia. They are high quality items recommended for supercharged street engines. The old favorites produced by Doug King are no longer available, but these are a better replacement. They require line honing of the block main bearing bores. Current price from Roadrunner is \$150 while they last.

Dyno Test Report on Bert Griffin 293 cu.in. Engine (#3)

Tested 5/31/16

Summary

The attached sheets summarize the results of dynamometer testing and analyses of the subject engine (#3) built by Clay Smith Engineering, Buena Park, CA and for the two previous engines (#1 & #2) built by Taylor Precision Engines, Whittier, CA. Detailed individual tabular data sheets are available at no charge upon request. Table 2 lists measured torque & horsepower curves for the 293 cu.in. blown flathead designated #3. The engine produced 316 hp @ 5200 rpm and 324 ft-lbs. of torque @ 4200 rpm corrected to standard sea level conditions. 74% overdrive supercharger pulleys produced about 9-10 psi peak boost. These figures equate to 10-12 psi at sea level. The engine ran on 110-octane VP racing gas during test. The engine characteristics as I understand them are listed below.

Engine Definition

Block assembly

The long block machining, porting and assembly were performed by Clay Smith Engineering, Buena Park, CA. I have no documentation on detailed engine measurements. The block assembly consisted of the following:

- a) 3-5/16" bore, Arias forged pistons with 7/16" popup domes.
- b) 4.25" stroke Scat crank, Cunningham rods, full girdle main cap supports.
- c) 1.687" stainless intake and 1.562" exhaust valves, block ported and relieved.
- d) Melling M15 high volume oil pump.
- e) Isky 433 cam with single Isky 185G valve springs (75 lbs on seat) & Johnson hollow lifters.

Heads

Baron aluminum heads with a 7.5:1 compression ratio (144 cc head volume).

Intake

Roadrunner manifold and Weiland 174 blower (S/N 30205) with 74% overdrive (3.23/5.63) pulleys. A custom Holley/ProForm 4-bbl carburetor built by C & J Engineering of Whittier, CA was used. This carburetor had an 812 cfm flow capacity and best power was obtained with #71 primary jets and #81 secondary jets at the test altitude. These jets should be replaced by #73 and #83 jets for racing at 2000 ft elevation. No air cleaner was used.

Exhaust

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

Ignition

Top mount electronic (magnetic pickup) MSD distributor with mechanical advance and high performance coil were used. The distributor was modified to produce a slow advance curve (4 degrees initial, 20 degrees total) that was not fully advanced until about 2500-3000 rpm. Champion RC12YC plugs, gapped at .035" were used

Water pumps

A single electric water pump was used during test and will be used for racing.

Thermostats

None.

Discussion

The subject test engine (#3) was built from parts of engine #2 which was severely damaged in racing, requiring a new block and camshaft. Summary test results from engines #1 & #2 are attached for comparison. For full report see www.roadrunnerengineering.com

The engine was subjected to several dyno “pulls” to do optimization tuning and to check for proper function of all components. The testing took place on 5/31/2016. Table 2 (attached) summarizes the final test results. Overall, the engine performed very well but did not match the performance of the two previous engines tested in 2009 Those engines were two of the most powerful flatheads tested by Roadrunner.

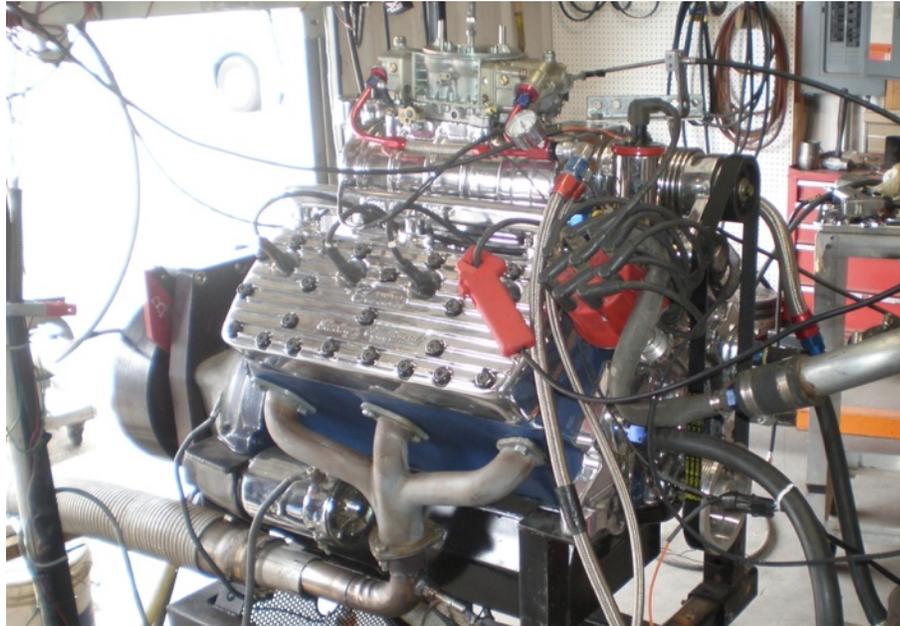
Engine #3 exhibited a similar HP curve shape to #2, which was all done by about 5000 RPM. Engine #2 was found to have low valve spring force (35 lbs at the seat) which contributed to valve float and this may be part of the issue with #3. Both engines had the same or similar cams, so this might be characteristic of that cam. However, the # 2 engine peak was 333 HP at 5100 RPM with about 7 PSI boost (uncorrected) while engine #3 only managed 316 HP at 5200 RPM with almost 9 psi boost (uncorrected) indicating a breathing (porting difference). **All else being equal, a better breathing engine will indicate lower boost because the better breathing engine can actually accept more of the given mass of air and fuel rather than it being compressed in the intake manifold.**

For land speed racing it will be important to keep the engines cool for maximum power and resistance to detonation. Less than 160 degrees would be a desirable target.

Please contact Roadrunner Engineering if you require further information.

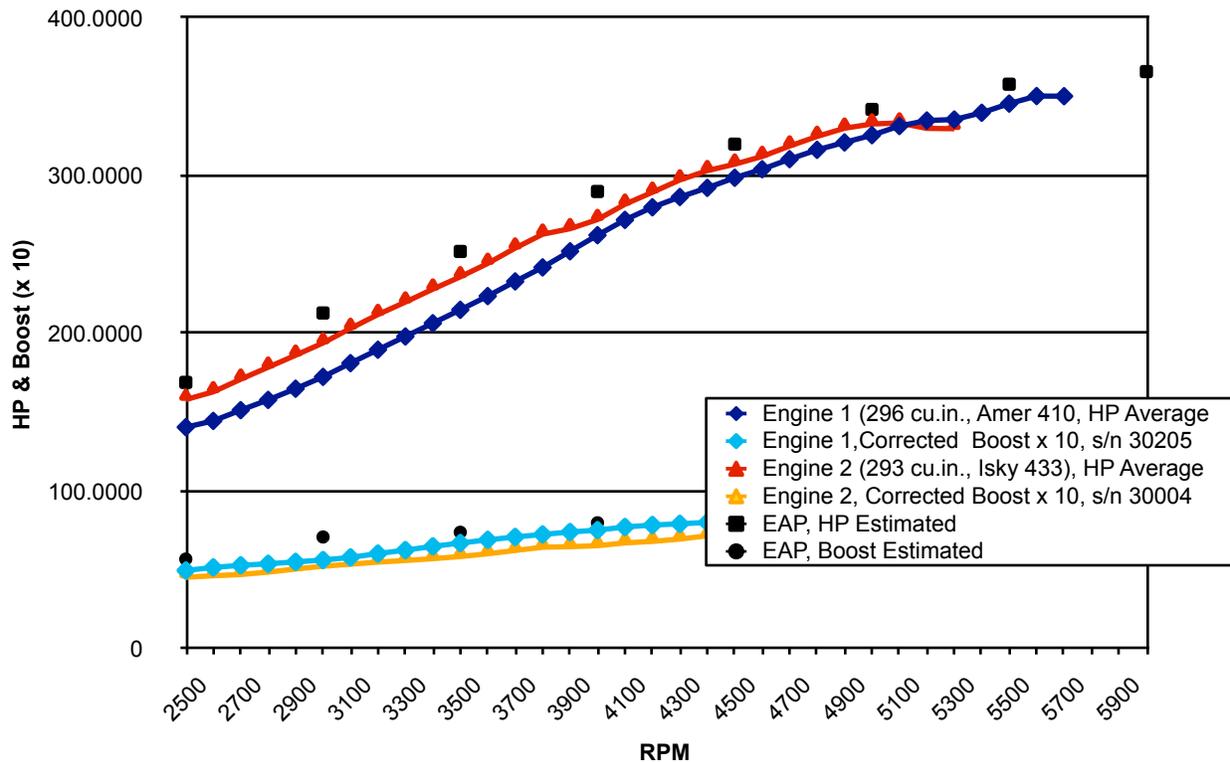
Home for the Engine – Bert Griffin’s Model A





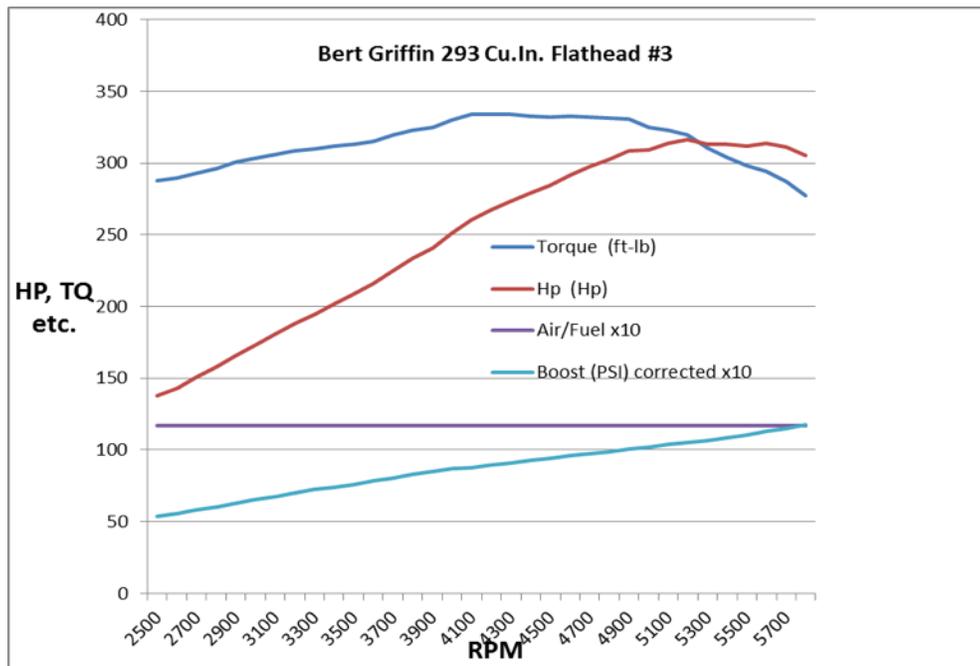
Bert Griffin Engine #3 on the Dyno

Figure 1 Bert Griffin Flathead Dyno Test Comparison Tests Run 4/30/2009



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Test Results Bert Griffin 293 Cu.In. Flathead #3 tested on 2016-05-31 @15-56-11

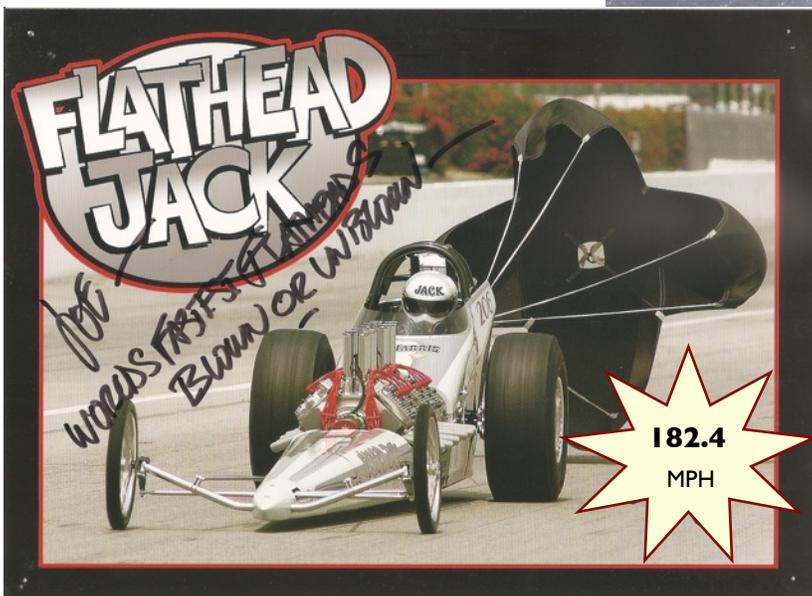
RPM (RPM)	Torque (ft-lb)	Hp (Hp)	Avg. Pwr (Hp)	Air/Fuel x10	Boost (PSI) corrected x10	Boost observed
2500	287	138	136	116.7	53.5	4.51
2600	290	143	138	116.7	55.6	4.69
2700	293	151	140	116.7	58.3	4.92
2800	297	158	143	116.7	60.6	5.11
2900	301	166	145	116.7	62.9	5.31
3000	303	173	148	116.7	65.2	5.50
3100	306	181	151	116.7	67.7	5.71
3200	308	188	154	116.7	70.1	5.91
3300	310	195	157	116.7	72.5	6.11
3400	312	202	160	116.7	74.0	6.24
3500	313	209	163	116.7	76.0	6.41
3600	315	216	167	116.7	78.3	6.61
3700	319	225	172	116.7	80.2	6.77
3800	323	234	176	116.7	83.0	7.00
3900	325	241	180	116.7	85.1	7.18
4000	330	252	185	116.7	86.8	7.32
4100	334	261	190	116.7	87.8	7.41
4200	334	267	194	116.7	89.3	7.54
4300	334	273	199	116.7	90.9	7.67
4400	333	279	203	116.7	92.6	7.81
4500	332	285	207	116.7	94.3	7.95
4600	333	292	210	116.7	95.9	8.09
4700	332	297	214	116.7	97.4	8.21
4800	331	302	218	116.7	98.8	8.33
4900	331	309	221	116.7	100.5	8.48
5000	325	310	224	116.7	102.0	8.60
5100	323	314	227	116.7	103.6	8.74
5200	320	316	231	116.7	105.0	8.85
5300	311	313	235	116.7	106.5	8.98
5400	304	313	237	116.7	108.6	9.17
5500	298	312	240	116.7	110.3	9.30
5600	294	314	242	116.7	112.9	9.53
5700	287	311	244	116.7	115.3	9.72
5800	278	306	246	116.7	117.5	9.91

Quickest and Fastest Flathead Powered Dragsters Update

As reported in the November 2015 Roadrunner Newsletter, the Slider pictured below turned a best elapsed time of 7.64 seconds @ 175.9 MPH in the quarter mile at Brainerd International Raceway in Brainerd, MN on 8/31/15. The photo shows the Slider with Rick (builder), Joel (driver) and a younger member of the Schnell family crew. 80% nitro did the trick! You can watch this run at <https://www.youtube.com/watch?v=YYUmSdh7ejk#t=20>

In an update, Flathead Jack reports that he is still the fastest in the quarter mile at 182.4 MPH @ 7.78 seconds at Sears Point.

Wouldn't we love to see a head to head between these two!



Quickest Flathead Powered Street Rod Ever Contest

No entries in the contest so far! 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 roadrunnerengr@msn.com . Best submittal(s) will be published here and receive \$25 cash or 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?