ROADRUNNER ENGINEERING NEWSLETTER

PO BOX 53296 ALBUQUERQUE, NM 87153
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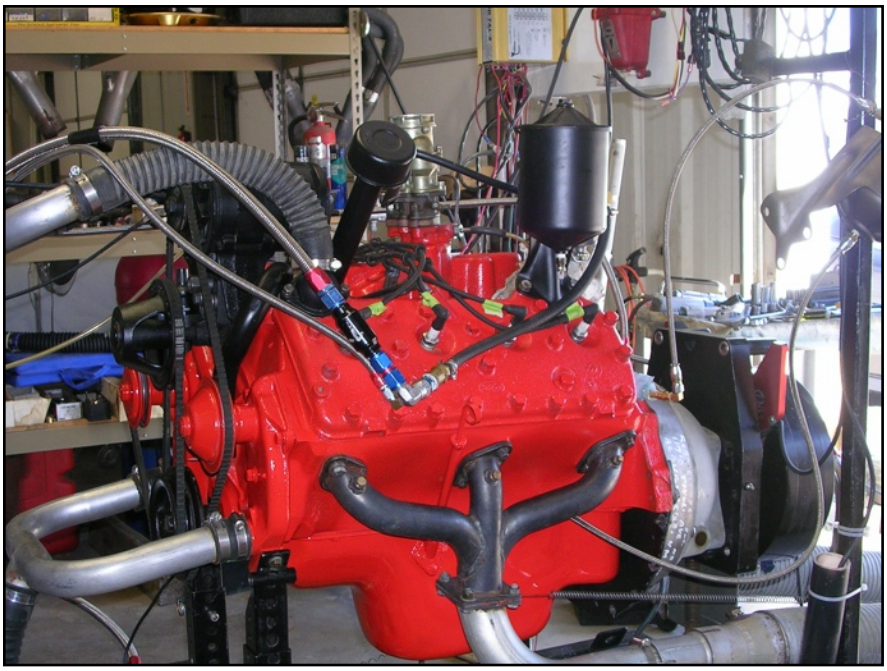
DECEMBER, 2011



Patterson Engine on the Dyno

Featured Dyno Test

This issue features a test of a stock 1953 Ford engine. Dyno testing revealed major tuneup problems that were resolved prior to installation of the engine in the vehicle. These problems resulted in a 30 horsepower deficit that would have taken much longer to identify and fix in the vehicle. The dyno testing also allowed a controlled and proper break-in of the engine. See details later in this newsletter. Future tests will include more performance oriented engines including the most powerful flathead tested by Roadrunner (even more powerful than "Killer").

Newsletter to Feature Dyno Tests and Tech Questions

Beginning with this newsletter I will present a featured flathead dyno test conducted at Dyno Services of Albuquerque (I am a partner). My partner, Gary McGlasson and I have tested over 20 flatheads from stock to hot. Tested engines include units from builders located in other states as well as those built in the Albuquerque area. In any case, the tests represent real engines and real results.

Each issue of this newsletter will also feature a flathead related question and answer submitted by readers and Roadrunner 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 Sold Out for 2011
Order Now for 2012

I am taking a break after selling about 250+ supercharger kits for the Ford flathead. Starting immediately, however, I will be taking orders for delivery after February 1, 2012. Orders require a $500 deposit (personal check ok) and a completed worksheet (can be downloaded from the "Technical Information" webpage). Orders will be filled on a first-come basis. 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

HAPPY HOLIDAYS FROM ROADRUNNER ENGINEERING!

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Featured Question - Full Throttle Performance Lacking

Question: My car runs good until I get to three quarter throttle or more and then it falls on its face. The plugs turn black quickly and need to be cleaned/replaced every hundred miles or so. I think the power valve(s) in one or more of the two carburetors may be bad. What do you think? I've included the engine description and specification list for the engine.

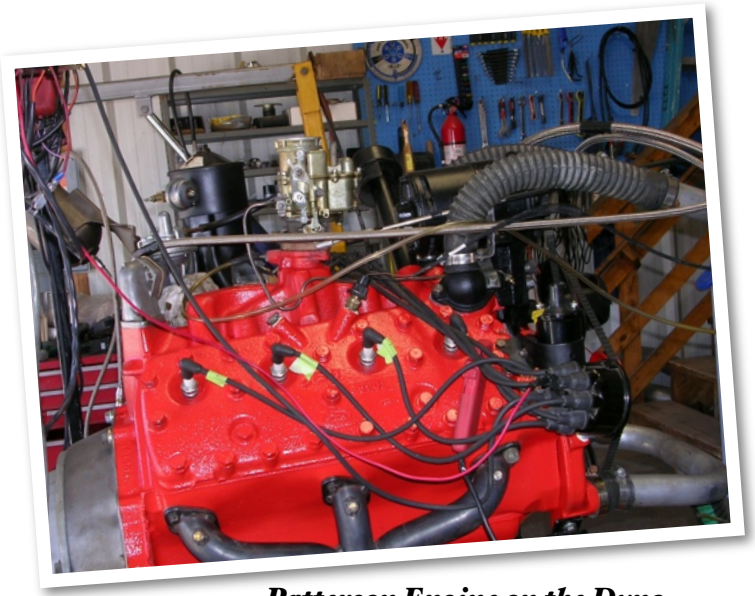
Answer: A bad power valve would show up at idle and low speed too. After reviewing the customer's equipment and consulting on his problem with Jere Jobe, I suggested that he remove his air cleaners temporarily and see how the car runs. Undersize or restrictive air cleaners are always a performance and mileage killer. The customer removed his little air cleaners and here is his report back.

"I really appreciate your time helping me with sorting out my roadster. You hit the nail on the head....my little foam air filter elements WERE definitely the problem with my engine. I removed the filters and went for a ride. Wow! The car has NEVER run that well. The car now screams at wide-open throttle."

Engine Build and Test Report of the Patterson Flathead Ford Engine, Dyno Tested 9/19-20/2011, Albuquerque, NM

Summary: The engine was built to produce a strong, reliable street engine. Automotive Machine Service in Albuquerque, NM did the machine work. Gary McGlasson of McGlasson Racing Engines, Albuquerque, NM assembled, tuned and tested the engine.

This report describes the engine and summarizes the results of dynamometer testing of the stock 1953 Ford engine. Additional pictures and detailed individual data sheets are available. The engine was subjected to several dyno runs ("pulls"). The first series of pulls was performed to break-in the engine, do initial tuning and check for proper function of all components. A variety of tuning issues were uncovered and corrected as described in the discussion. After tuning, the normally aspirated



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engine made about 105 HP peak at 3800 rpm. Peak torque was about 185 ft-lbs at 2000 rpm. These numbers compare favorably with the stock HP and torque specifications of 110 and 196 respectively. Best test results for the engine are shown in Table 1 at the end of this report.

The problems resolved and the performance gains certainly illustrated the value of dyno testing and tuning prior to installation of the engine in the vehicle. All testing was performed with a generator 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.

Engine Test Definition:

8BA-Type Short Block Assembly

- 3-3/16" + .030" bore, cast 4-ring pistons with stock dome and cast rings (3/32, 3/32, 3/16, 3/16, inches wide).
- 3-3/4" stroke Ford crank, stock rods.
- Stock 1.5" intake and exhaust valves. The block was not ported or relieved.
- Melling M19 standard volume oil pump.
- Stock EAB cam and valve springs, shimmed as necessary to get proper installed height. Valve clearance was .012" (intake) and .014" (exhaust).

Heads

Stock EAB heads were used.

Intake-Normally Aspirated

A Holley 94 2-bbl carburetor on a stock intake manifold was used for all testing. The best results were obtained by increasing the fixed jets from #51 to #57. This is unusual since the stock #51 jets are normally satisfactory. The source of this carburetor was unknown but appeared new.

Exhaust

Free flowing center-dump headers and large (4" inlet/exhaust) truck mufflers were used during all tests.

Ignition

A rebuilt stock 1953 distributor with vacuum advance was used. Champion H10 spark plugs gapped at .025" were used. The distributor had 24 degrees advance built-in, which was all in by 3600 rpm. Total advance was limited to 28 degrees.

Water pumps

New 8BA-type pumps were used.

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Table 1. Patterson Engine Test 14-11-03 on 9/20/2011

RPM	Torque (ft-lb)	HP	Air/Fuel	Oil Pressure (psi)	Manifold Pressure (psi)
1500	181	51.83	12.22	66.07	-0.183
1600	179	54.44	12.04	66.47	-0.218
1700	179.9	58.21	11.89	66.83	-0.265
1800	181.2	62.13	11.83	67.37	-0.299
1900	182.7	66.09	11.98	68.09	-0.324
2000	184	70	12.21	68.63	-0.353
2100	184.6	73.78	12.42	69.21	-0.392
2200	184	77.05	12.57	69.71	-0.425
2300	181.7	79.54	12.69	70.3	-0.457
2400	181	82.65	12.65	71.17	-0.503
2500	180.3	85.81	12.68	71.83	-0.543
2600	178.6	88.41	12.8	72.43	-0.582
2700	174.2	89.58	12.86	73.03	-0.63
2800	172	91.64	12.95	73.66	-0.673
2900	169.8	93.81	13.09	74.17	-0.709
3000	166.2	94.92	13.14	74.72	-0.747
3100	162.9	96.18	13.05	75.48	-0.788
3200	159.9	97.4	13.11	76.19	-0.828
3300	157.1	98.66	13.06	76.82	-0.861
3400	154.3	99.88	12.9	77.35	-0.9
3500	152.2	101.4	12.97	78.22	-0.941
3600	149.9	102.9	12.82	79.22	-0.979
3700	148	104.6	12.68	79.95	-1.007
3800	146	105.4	12.79	80.79	-1.033
3900	141.8	105.2	12.84	81.46	-1.063
4000	136.8	104.1	12.83	81.95	-1.101
4100	131.6	102.7	12.73	82.65	-1.124
4200	126.2	100.9	12.74	83.15	-1.148
4300	120.4	98.28	12.83	83.66	-1.172

Discussion:

The engine broke in quickly but ran poorly during initial testing. The distributor was advancing too far and the air-fuel mixture was too lean (16:1-17:1) across most of the operating range, both contributing to poor performance.

The distributor was advancing too far due to a faulty advance mechanism and required replacement. The best power was obtained with about 4 degrees initial and 28 degrees total ignition timing.

Increasing the primary jet size from #51 to #57 rectified the lean fuel mixture, yielding an ideal full throttle air-fuel mixture (12:1-13:1) across the engine operating range.

Please contact Roadrunner Engineering or McGlasson Racing Engines if you require further

Kathleen McCaughey New Web Mistress for roadrunnerenginering.com

Kathleen has rejoined the Roadrunner team as web mistress after previously serving as the editor of my two books, ***Blown Flathead*** and ***335 HP Flathead Ford V-8 Performance Handbook***. Many thanks to the former web master, Dan DeMartinis , who did the job for over 10 years. Expect new features and a new look.