

OPTIONS ON SETTING UP A "B" ENGINE FOR MAXIMUM PERFORMANCE

1. FSI (First Street Ignition) - <https://www.fsignitions.com/> - FSI makes two automatic advance solid state distributors. One is slightly less expensive and is their original item, which works fine but does not look like an original distributor. Their "Zipper" looks like a regular distributor, even has a spark advance lever, but it is just for looks. Both of these distributors will give a really smooth-running engine, improve gas mileage and are very easy to time with any cheap timing light. Using them is easier on the main bearings as the advance is always where it should be.
2. I have posted dyno charts of a Model A engine with a similar touring cam, and a Snyder 6:1 head. There are three tests, one with a stock Zenith Carburetor (5.5 to 1 and 6.0 to one) and the other with the Weber two-barrel carburetor. Note the horsepower goes from 54 to 56 HP with the additional compression ratio. When the Weber is added, it goes up substantially to 67 HP. These tests were run on a Model A which has 1 3/8" diameter intake ports while the B is very close to 1 1/2". This means better flow and more horsepower from the "B", but only if you have the correct manifold to take advantage of it. The Burns intake manifolds are tapered to 1 3/8" for the Model A, but can be bored out to 1 1/2" for the B. Both a single and double arrangement are available. The single works good with a single Stromberg 97, while the double is best with two Stromberg 81's. Both are available new. Other options include a Winfield Carburetor, either a Model S or SR. A single Model B or BB is a good choice having about the same venturi as two 81's. They made for updrafts and down drafts. We make steel manifolds for these carburetors; the advantage of the updraft is that no fuel pump is required. These carburetors were used on almost all the Indianapolis cars from mid-1920's to the late 1940's. They are very reliable and easy to tune. No pot metal here, they are cast steel. They can be pricey, but they do show up at swap meets. My recommendation, if you want more performance would be to either go with a Model B carburetor and use Snyder's bored out Model A Manifold, or use the Weber setup. The Weber is a little more money, but extremely reliable. It does however, require a fuel pump.
3. The camshaft is another critical area that holds the secret to the performance you want. The internal combustion engine by design can only do so much. An engine designed to produce lots of low-end torque will be light on the high horsepower at highway speed, say 2500 to 3000 RPM. On the other hand, an engine designed to produce high horsepower will not have high low-end torque. So cam design is a compromise between these extremes. Ed Winfield knew this and did some really interesting cam designs in the late 1930's. Joe Gemsa acquired Ed's patterns in the 1950's and produced some great cams. Most of these were designed for oval track racing. They were too radical for street use. Taming them down was Bill Stipe, now retired, but his street design is wonderful and available today. New cams can be purchased from Snyder's for about \$450. Jim Brierly regrinds used cams and this is a very good grind for less money. Terry Burtz also makes a cam comparable to Snyder's for about \$400. All these cams have lifts over .300 inches and the timing and duration is such they all idle nicely but have good low end torque and great highway speed horsepower.
4. As mentioned above, compression ratios make a big difference in performance. Compression ratios were kept low in the 20's and 30's as gasoline was very low octane. Today even "regular" gasoline will support compression ratios up to 8:1. A Model A engine with inserts will support a 6:1 compression ratio, providing one does not get carried away on advancing the timing. Here again the FSI distributor provides a smooth advance curve, and precise timing can be achieved with a simple timing light. The Burtz 6.5:1 head is designed to give both low end torque and high-end horsepower. A Winfield head made back in the 30's and again in the 50's gives great high-end horsepower, but poor low-end torque. The Burtz head also has

improved water flow to #4 cylinder for more even cooling. The Snyder 6:1 head is also a good head providing good all-around horsepower. The Dyno tests were run with Snyder heads and an Aries Muffler. The Model B can easily handle the 6.5:1 Burtz head. I have run several Miller and Cragar overhead valve setups, all producing well over 100 horsepower. The B engine can handle this extra horsepower with no issues. I put over 5,000 hard miles on a B with a Cragar, pushing the engine and the car to the limits on many occasions. Never had an issue with anything; it's a very tough engine.

5. Exhaust systems: Note that all the dyno tests were run with a stock Model A manifold and Aries muffler. So, do headers make a difference? Probably a few horsepower at higher RPM's but not substantially. I have tuned and driven two different Model A's, both had Miller Overhead valve engines, both dual 97 down drafts. The only difference was the exhaust systems; one had headers and the other a stock A manifold. Both High Performance Aries Mufflers. There was no difference between the two. Over the years my conclusion is that given the fact we run our engines at 3,000 RPM or below, the increased performance from headers is marginal. If we were running them up into the 4,000 or 5,000 RPM range, I think we might see more advantages. The cast Iron headers offered by several parts dealers also do not provide any great advantage. I have run one of these for several years on a car I owned, the only advantage I could tell was the exhaust pipe was further from the floorboards and firewall, slightly less heat transfer on a hot day.

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