

Podium Premium Newsletter

January 2014



Welcome to the Podium *Premium* Club!

The technical information found at www.antiquetractorpullguide.com is like no other information out there. In depth explanation of the **how and why** of successful tractor pulling are designed to improve your performance at the next tractor pull, while having more fun at the same time.

Lightweight components around the heavy engine

This month the Continental B427 flathead six engine for the Massey Harris 101 Senior build was finally finished. Just to recap, the stock specifications for this engine were 4-5/16" x 4-7/8" bore & stroke, 427 cubic inches, 6.73:1 compression ratio and around 145hp at 2800rpm. The bore was increased to 4.39" with Ford 429 V8 pistons and 9" c-c Perkins 203 rods were used along with an offset grind on the crankshaft. This combination yields a bore and stroke of 4.39" x 5.125" for a staggering 465 cubic inches. Compression ratio was also increased with the displacement and head work to near 9:1. The drawback to using an engine of this size is weight. The Continental manual lists the stock weight of this engine as 950 lbs. The B427 cylinder head is 31.5" long and 9.5" wide! Compared to the stock F226 flathead six, this is about 400 lbs heavier. Also for comparison, this is about 300 lbs heavier than a 265 Chrysler. Actual weight as seen below is 769lbs, which is with the starter, flywheel and bell housing but no other accessories.



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Lightweight (cont)

Because of the hefty engine, it becomes even more important to choose the accessories carefully and put the chassis together to compensate for the added weight. The target for this project is simply a strong 6mph tractor for 4000-5000lb weight classes. Because the early Chrysler powered MH 101 can make a 3500lb class, it is very feasible to achieve 4000lbs with the heavier engine. As discussed in previous newsletters, careful attention was paid to the rear axles, housings and hubs.

The picture to the right shows the 101 Senior rear end assembled to transport during the recent move. Notice how short the standard tread axle housings are and the special light weight Doc Joe hubs.



This is what the chassis currently looks like. The 12.4-38 tires and wheels are simply used to move the chassis around and are certainly not enough tire for the big engine. The next step is to start fitting the engine and components.



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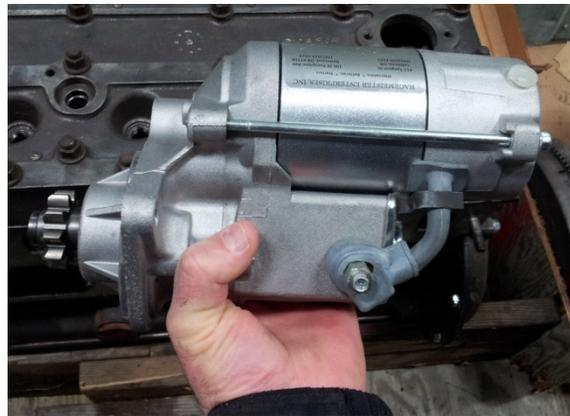
Lightweight (cont)

Let's start with engine accessories. There are several components that can often be upgraded and/or lightened. For this project, it could be called a "component build" in that different parts are sourced from all over the place to form the lightest possible combination. Let's look at some of these.

Starter – Since the original starter was meant to turn over the F226 engine, it may have been able to be reworked to handle the bigger engine. It's a good practice to take care of any components that might be a problem when going bigger. For this build, a Denso replacement starter was matched in bolt pattern, pilot, gear and reach to the original. This is also a gear reduction starter, which means it puts out much higher torque than the original. Another feature of the starter is that it is light, about 12lbs vs. almost 30lbs for the original. The starter was cross referenced by Hagemeister Enterprises, Inc., our local "go to" electrical source. www.heielectric.com



Original Autolite Starter

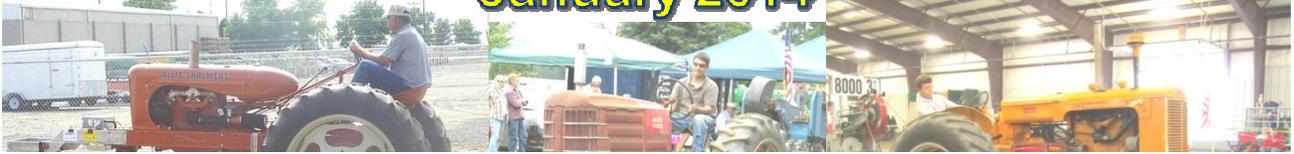


Lightweight Denso Gear Reduction Starter

The new Denso fits perfectly



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Lightweight (cont)

Water Pump – This was a no brainer. The original water pump weighs a whopping 21 lbs! Not only is it heavy, but it also takes up a lot of space on the front of the engine with the enormous pulley. The whole unit was removed in favor of a 12V electric water pump. For this build a Zeke's Engineering "dragster" style pump was sourced from Ebay. This pump circulates 20 gal/min at low pressure, which is perfect for this application and features 1" fittings. The best part about an electric water pump is that water can be circulated and the engine cooled without the engine running. This 12V water pump weighs only 6 lbs. The weight savings is starting to add up...



The huge original water pump



Water pump removed



12V electric pump

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Lightweight (cont)

Distributor – A little bit of weight can be saved by perhaps running an aluminum housed distributor. The main reason for replacing the Autolite distributor on this tractor is that repair costs are high to have it rebuilt. For the B427 engine, the F226 distributor can be used, and thus a suitable aftermarket can also be sourced. For this, a complete Pertronix unit was purchased through Ebay that is brand new and also contains the electronic ignition module. Slam dunk. Pertronix makes a full line of distributors that fit all sorts of applications and may fit (or adapted to) other antique tractors.



Original Distributor



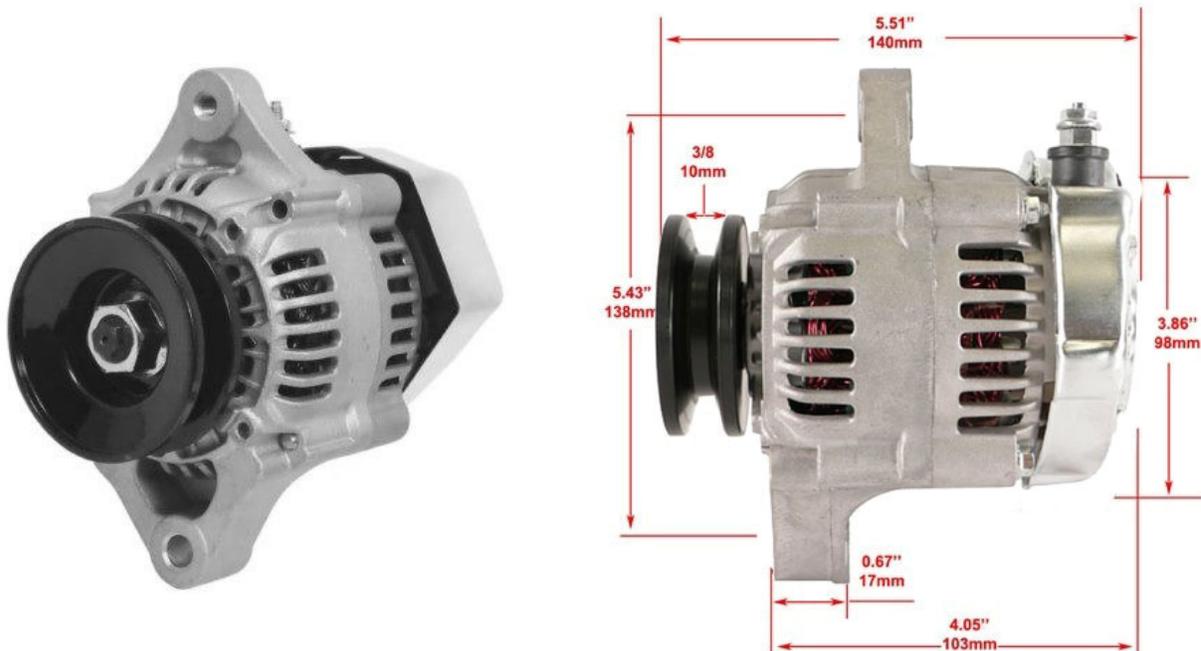
Pertronix D61-06A Distributor
www.pertronix.com

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Lightweight (cont)

Alternator – Given that the electrical system will be taxed with a big engine to turn over on start up, an electric fan and electric water pump, it's a good idea to have enough charging available to keep the system up. The original generator on the tractor is out of the question for this. For stock or stock+ applications a generator works great but in this case we need more current. And, this time we are going even smaller than on the other MH 101 puller. Instead of a traditional size GM alternator, this time it will be a mini Denso that puts out a high amp rating. These are widely available at auto parts stores and online sources. Actual output varies, but there are some that peak around 70-80 amps. For a pulling application, at least 30-40 amps will be required to run the electrical components and keep the battery charged. Remember, tractor alternators should be hooked up in a 3 wire configuration for low rpm excitation and to avoid the trickle drain of a 1 wire system. Original generators are also heavy compared to this ~5 lb solution.



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Lightweight (cont)

Radiator – The original Massey Harris 101 radiator is huge. It holds quite a bit of coolant however it would never package with the B427 engine. This time I'll use a radiator similar to the Ford Galaxy radiator used on the other MH 101 tractor. The one twist is a complete solution this time – the aluminum radiator sized to fit that includes an electric fan and shroud. The shroud helps with better cooling. Based on a dimensional search, the 1932 Ford roadster is narrow enough that it is sized correctly for a Massey Harris 101. Aftermarket aluminum radiators of all sizes are very plentiful in places like Ebay.



Original Radiator



Ford Galaxy Radiator

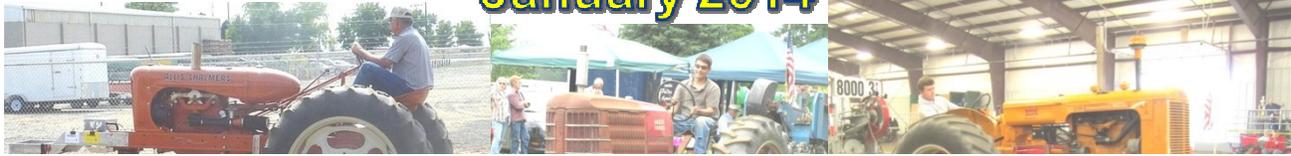


1932 Ford Roadster w/ shroud and fan

Oil Filter – The original oil filter canister was big and bulky and featured a core type element. Upgrading to a remotely mounted spin on filter saves a few pounds and makes service much easier. Use a small block Chevy two quart filter.



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Bell Housing Final Fit

The last issue on the engine build to take care of was the location of the backing plate. There are a few holes that the F226 backing plate aligned to the B427 engine block, however the plate was not in the correct location. In the first attempt, it looked like the flywheel ring gear would have a clearance issue with the bell housing. It turns out the hole pattern in the backing plate had to be slid down about 3/8" to align with the centerline of the B427 crankshaft. That means when physically looking at the assembly, the backing plate and bell housing moved up 3/8". This is such a small amount that it isn't that noticeable when looking at the assembled bell housing, but it was very important from a functionality standpoint. Upon relocation, the starter lined up properly, the flywheel had no clearance issues and the clutch shaft is aligned with the pilot bearing in the flywheel. In order to achieve this, nothing was left up to chance. It was measured and precision milled.



Final fit. Notice two upper holes are not used as they do not align. Secondary holes outboard of the block may have to be located to secure bell hsg to backing plate.



Backing plate in the Mill

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Dyno Fix

This month the M&W P300 dyno was upgraded and sold to a tractor club near Spokane, WA. Pete Holtgrew in Iowa (712-490-2920) supplied the parts for the dyno, even the brand new Horsepower pressure gauge. Other parts included the missing top cover and reprints of original manuals. It sure made this little dyno look nice!



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Move complete!

After packing up everything and moving south 100 miles to Corvallis, OR, we have finally settled into our new routine. It's hard to beat living near family, our tractor collection and a new job at the family business. Despite the interruption of the move, the Podium Premium Newsletter and our pulling projects are back on track!



Various restoration and tractor pulling projects await attention in the family collection.

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Coming next month...

I want to hear from you! If you have feedback, requests or information you would like featured, please send an email to:
zack@antiquetractorpullguide.com.

- Big carbs part 2
- The rolling chassis
- Let's talk stock
- And more...

February issue will be available 2/26/13



Rebuilt B427 Continental