

Podium Premium Newsletter

Sept Oct 2015



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.

101 Senior finishing touches

The last Massey Harris 101 Senior update showed the chassis painted and the engine set neatly in position. It seemed so close to being finished at that time but the sad fact is there was an enormous amount of time in the finishing details. Since the B427 engine is a tight fit, a high amount of fabrication for the accessory components was required. This included the fuel tank, water pump, alternator, throttle linkage and more. In the weeks leading up to the Northwest Fall National pull in Moses Lake, WA there was a marathon of work done over the course of many late nights, weekends and even a few days off from work. Let's look step by step how the tractor ultimately arrived to what is shown below.

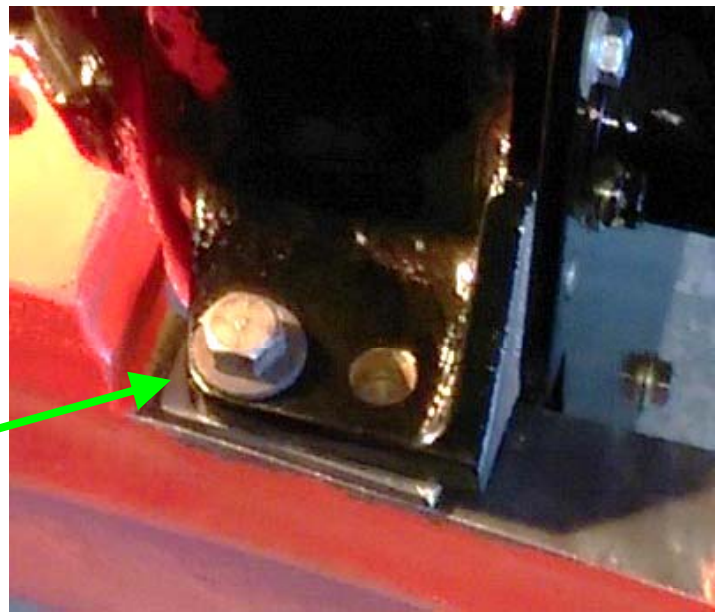
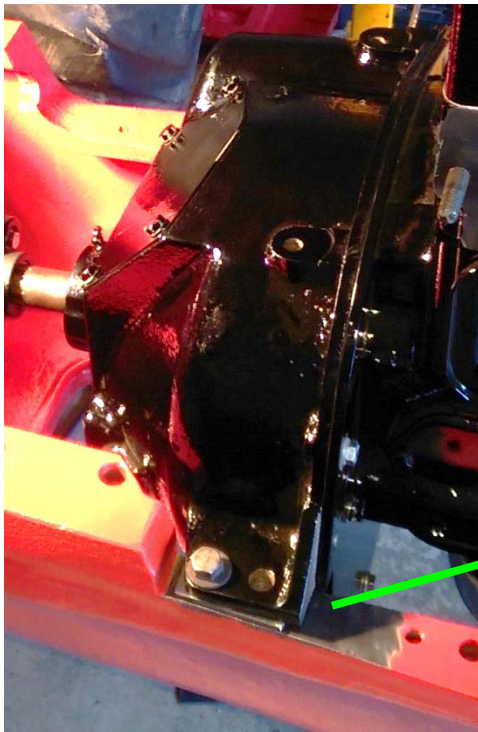


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101 Senior finishing touches (cont)

Let's start where we left off...the engine was secured in the chassis and needed components and wiring needed to make it run. The first fabrication done was a safety measure – making sure the engine stays put in the chassis. The original design of the bell housing features two ears that bolt down to the frame, holding the engine in place on dowel pins with a single bolt on each side. No surprise, these flanges tend to chip or break when an engine is removed because of the fragile design. In the case of the B427, the engine was only to be held at the rear by ½” bolts and without locating dowel pins. This means that the flanges were susceptible to cracking or breaking if the engine torqued too hard or under sudden loading. To head off any problems on the track, stabilizing steel straps were added to capture the upper bolt flanges in the bell housing. Even though the bell housing is ultimately only held down by two fasteners, at least now it can't move at all.



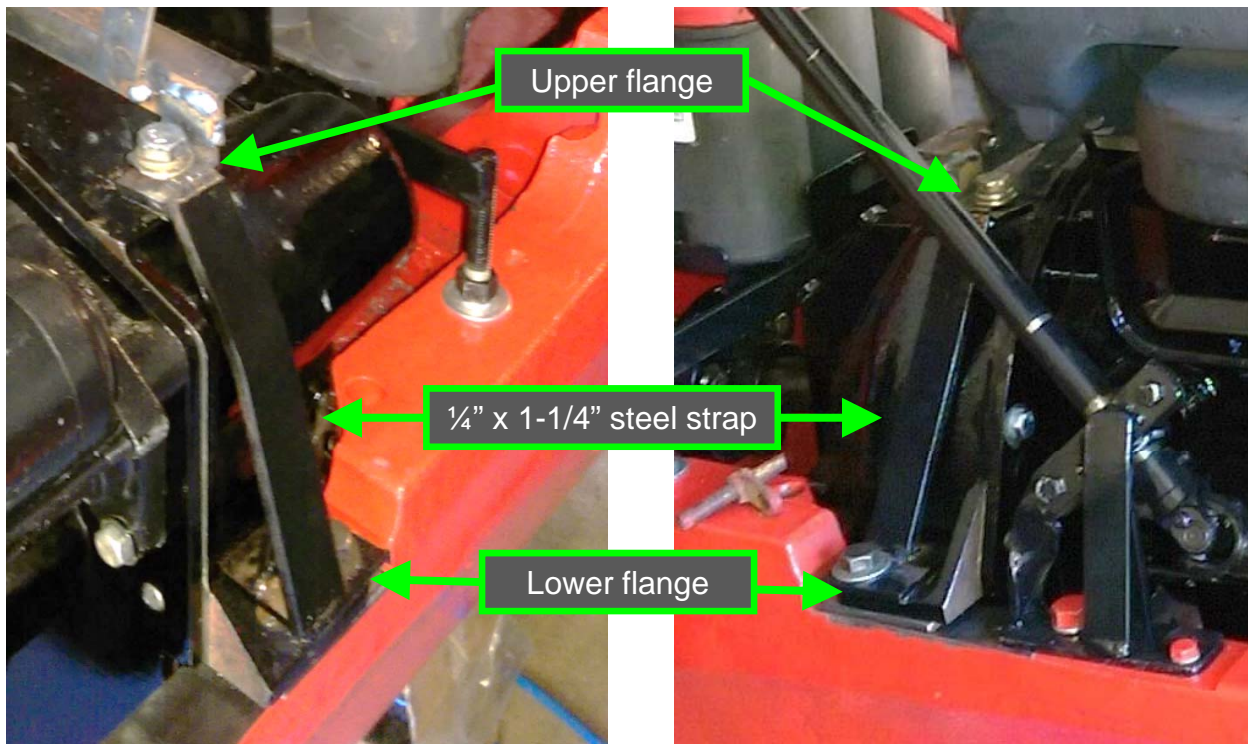
Notice bolt through flange prone to cracking

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101 Senior finishing touches (cont)

These steel strap brackets were fabricated by first bolting down pieces onto each flange and then welding a strap in between. The left side strap had to be bent slightly around the starter relief in the casting.



Left Side

Right Side

Upper Water Flange

Because fabrication work takes a certain amount of time, a chance to avoid fabrication is a good thing. On this engine, it just so happens the upper water flange shape and bolt pattern is exactly the same as a big block MOPAR. Not only did this \$12 part work perfectly, it also allowed an easy thermostat installation similar to the original.



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101 Senior finishing touches (cont)

Fuel Tank

The stainless steel 3.5 gallon fuel cell had to be custom mounted up under the hood in the space where the original fuel tank was cut away. Why mount it under the hood and not in a more convenient location such as the front weight bracket? I wanted the tractor to have a clean look to it when finished, which means no extras hanging off or gaudy weight brackets. Plus, with the heavy engine, adding a fuel cell up front is probably not the best place for it. The round tank is held in place with two metal straps and the trick to locating it was to build the supporting lattice underneath. This lattice also has dual purpose as a support for the sheet metal and mounting for other components. To do this, the tank was mocked into position with the filler neck through the hole in the hood. From there, steel strapping was welded in place until the lattice was formed. The finished product is a very light but strong structure.



Fuel tank in position with some bracing added



Finished in position



Finished lattice removed to show simplicity

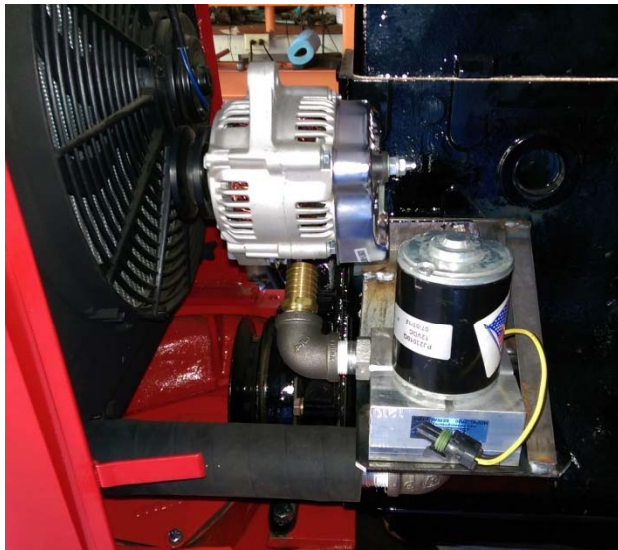
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101 Senior finishing touches (cont)

Electric Water Pump

The Zeke's electric water pump needed to be mounted near the bottom of the radiator as per instructions to ensure proper operation. For this, an angle bracket was fabricated that allowed the intake to come up through the bottom. This bracket mounts to the left side of the block and the alternator bracket also mounts to the same point.



Water pump sitting on fabricated bracket



Water pump ready for paint



Painted water pump and alternator installed

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101 Senior finishing touches (cont)

Oil Filter

The original cartridge type oil filter housing was replaced in favor of an aftermarket spin on type. The filter base is widely available and the filter is a 1515 type, likely one of the most common ever used. For the oil lines, 3/8" oil line was installed using barb fittings. This is quick, easy and much less of a hassle than copper hard lines.



Barb fittings installed



Fitting for the gauge in the dash



Finished install. Notice pressure switch on the left and line running to gauge on the right.

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101 Senior finishing touches (cont)

Electric Fuel Pump

Fortunately the fuel pump mounted fairly easily onto the fuel tank lattice. A pressure regulator was added inline and the pump energizes when the ignition switch is on.



Fuel pump installed to fuel tank lattice



Fuel line to carburetor, throttle linkage in foreground



Note round fuel pressure regulator mounted inline, also ¼ turn ball valve fuel shut off at carb

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101 Senior finishing touches (cont)

Wiring

This is the part that was fairly tricky when it came to the finishing touches. Beyond the regular ignition circuit with MSD box and shielded spark plug wires, there were smart circuits installed to safeguard engine operation. As mentioned before, an oil pressure switch was added to switch power on for the electric radiator fan and electric water pump when the engine is cranking and/or running. The high current power is routed through relays and only the signal circuit runs through the pressure switch. There is also an override switch to turn on the fan and water pump when the engine is not running to cool it more quickly when needed. To make things more visible, LED lights were added to the dash for each component so that the driver can see if things are functioning properly. In similar fashion, the electric fuel pump is on a relay with the ignition circuit so that it only operates when the ignition is switched on. Even though it took much more time to complete the wiring on this tractor, in the long run it will make things easier and safeguard the engine against possible operator error.



Engine with wiring before zip tie clean up

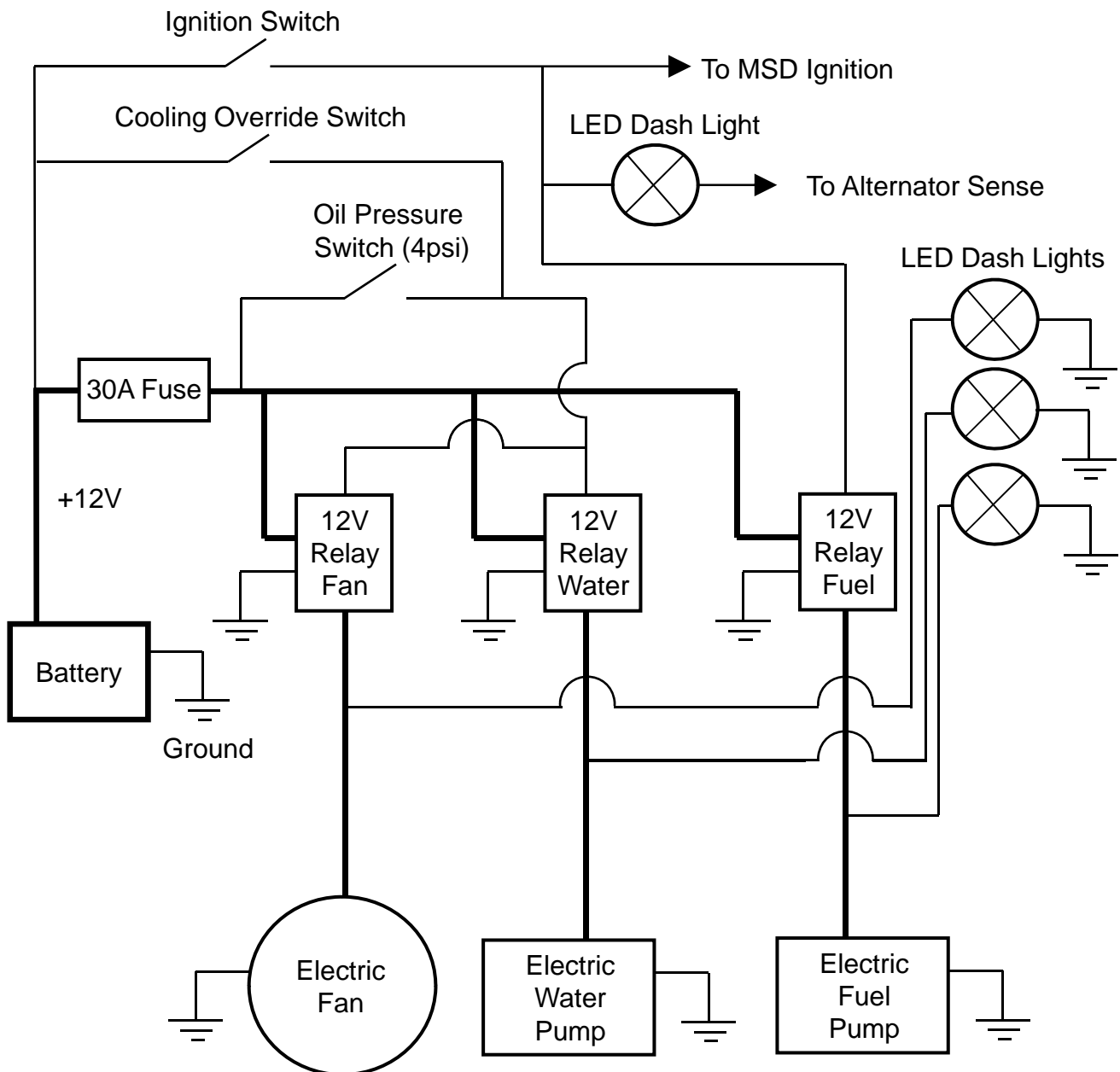
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101 Senior finishing touches (cont)

Wiring Diagram

Below is the wiring diagram for the smart circuits. The rest of the wiring not shown is fairly conventional with MSD 6AL ignition box, Pertronix ignitor and 3 wire alternator.



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101 Senior finishing touches (cont)



Massey Harris 101 Senior

Year: 1943

Engine: Continental B427

Bore & Stroke: 4.39" x 5.125"

Displacement: 465 cubic inches

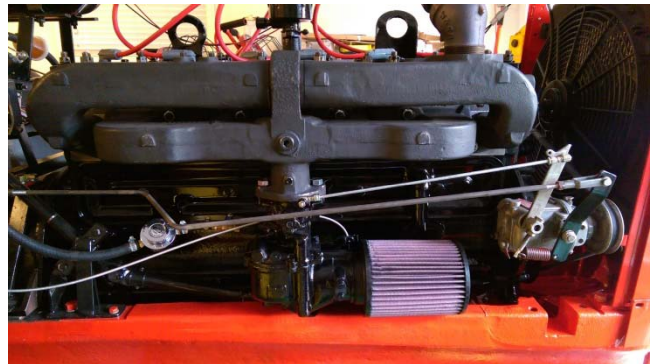
Horsepower: 150hp @ 2500 rpm

Weight: 3700# without driver

Rear tires: 18.4-38 General

Front tires: 5.50-15

Transmission Speeds: 4



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101 Senior finishing touches (cont)

Component List

Shown below is a list of aftermarket components used on this build that may be helpful when planning another build in the future.

Ignition: MSD 6AL box

Distributor: Pertronix 1561 Ignitor (6 cyl Autolite)

Coil: NAPA IC14

Spark Plug Wires: MSD Helicore 8.5mm, Kit 31239

Spark Plugs: Autolite 3116

Air Filter: K&N RU-2820

Carburetor: 1-7/8" Zenith (Mack Truck)

Starter: Denso 18198

Oil Filter Base: Perma-Cool 1791

Oil Filter: NAPA 1515

Fuel Tank: 8"x16", 3.5 gallon stainless

Fuel Pump: Facet Cube 41501

Fuel Pressure Regulator: Mr. Gasket 9710

Alternator: Mini Denso 3-wire, 70 amp

Electric Water Pump: Zeke's Engineering ZP-20

Electric Fan: 16", 2500 cfm

Radiator: Aluminum, '32 Ford Low Boy Rat Rod

Rear Wheel Centers: **CAP Bros. Motorsports** (www.9bolthubs.com)



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101 Senior finishing touches (cont)

Final Thoughts

This project started with the arrival of the original tractor on March 25th, 2012. It has been an over 3-1/2 year project to complete one of the most complex builds I have ever attempted. Both engine and tractor were completely torn down to nothing and rebuilt from scratch with one goal in mind – a strong 6 & 8 mph pulling tractor. At times it was frustrating, overwhelming and costly but after persevering to see the project through, it was well worth it. The final words of advice are this – beginning a project is easy, doing the work is challenging, **but the drive to finish is the toughest part**. Stephen Covey said, “Begin with the end in mind” and I always keep the end result in mind to fuel motivation. If a guy who works full time, has two little kids, goes to school for an MBA, and writes technical newsletters has enough gumption left over to build something great to have fun with...I sincerely hope you can find a little motivation too.



No joke! The same day the 101 Senior was brought home, a 4 leaf clover was found in the back yard.



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Coming up...

- NW Fall National Pull
- Massey 101 First Hook
- Learning the Hard Way
- And more...

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.

NW Fall National Newsletter available soon!



Stay tuned...it runs, drives and yes...it pulls.