

# Podium Newsletter

January 2012



## Welcome to the Podium Club!

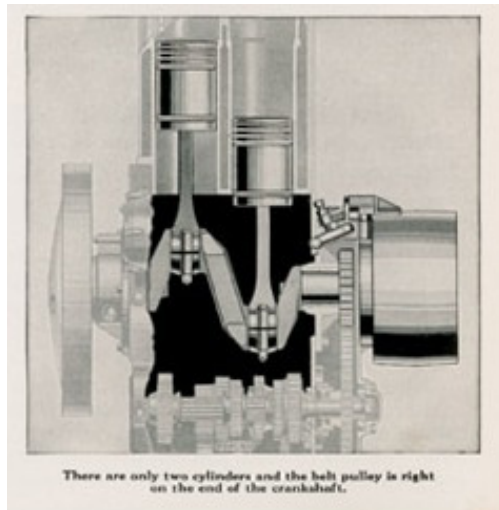
The information found at [www.antiquetractorpullguide.com](http://www.antiquetractorpullguide.com) is like no other information out there. The tips, tricks and secrets of successful tractor pulling are designed to improve your performance at the next tractor pull, while having more fun at the same time.

## The Plight of Deere

What happened to the Deeres? In recent years there has been a seeming decline in the number of old John Deere tractors competing in antique pulling. Even at the Tunica Southern Nationals there were several Deere tractors, but not too many that pulled in lighter classes or faster speed limit classes. So what's going on?

There are a few factors affecting how Deere stacks up against the competition. Let's look at the engine first. The simple, rugged two-cylinder engine that was designed in the early part of the 20<sup>th</sup> century worked well to do....work. The ability to do work is also called Torque, which is exactly why the two-cylinder engine was popular. It was built as a high torque, reliable engine.

The firing order in a two-cylinder Deere engine is interesting, to say the least. On a horizontal Waterloo built engine, the left cylinder is known as the #1 cylinder. It fires first, followed by the #2 cylinder 180 degrees later (when one piston is down the other is up). The engine then coasts 540 degrees before another power stroke. The result is that "putt, putt" sound that all old tractor buffs love to hear. That putt, putt sound is actually two power strokes close together that sound like one. The overall uneven firing order creates the sound. The characteristic of the engine is a high torque, long stroke, low rpm engine that was built to do the work. So what about on the pulling track?



Typical Deere 2cyl engine

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## The Plight of Deere (cont)

On four-stroke engines, each cylinder is fired once for every two revolutions of the crankshaft. This means that on a 8-cylinder engine there will be four normal firing pulses per revolution of the crankshaft; a 6-cylinder engine will have three normal firing pulses per revolution of the crankshaft, a 4-cylinder engine will have two normal firing pulses per revolution of the crankshaft, and a two-cylinder will only have one. Normal firing frequency = number of cylinders / 2. No wonder a six cylinder Oliver pulls so well!

The Deere two-cylinder engine fires both cylinders quickly on the first revolution of the crankshaft, which means it coasts for a turn and a half before firing again. With this uneven firing order, there is really only an average of a half a pulse per revolution. The result is a simple, rugged, low rpm, high torque type engine.

On a pulling tractor, RPM is generally your friend. Horsepower and Torque are related through rpm:

$$\text{Horsepower} = \frac{\text{Torque} \times \text{RPM}}{5252}$$

Because of Deere's engine design, they ran at slow engine RPM, for example 975 rpm under load for a John Deere A. Because of the low rated RPM, Deere tractors aren't allowed much more by tractor pulling rules.



Since Horsepower is related to RPM, it becomes very difficult to build a slow turning Deere engine into a high HP engine. When limited by RPM, there is no choice but to build a High Torque engine, capitalizing on the basic design with a longer stroke.

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## The Plight of Deere (cont)

With a slow RPM engine, gearing is much faster than other higher revving brands. This means that the overall gear reduction is less on a John Deere G than a Farmall M. In order for a G to compete at all, even in 1<sup>st</sup> gear, it often takes engine modifications for tractor pulling.

The real reason why Deere tractors are seldom seen in fast speed classes is due to the basic high torque engine design. The good news is that *it can be done*, but it takes an enormous amount of cubic inches to do so compared to other brands. Two-cylinder Deere tractors make excellent 3-5mph pullers, and tend to favor heavier classes where high torque and the uneven firing order is easier to hook up to the ground. On the Saturday at the Tunica Southern Nationals the Deere's seem to come out of the woodwork for the heavy classes.

### The New Age of Deere – going to extremes

One of the most exciting tractor pulling websites to visit is [www.extremetractorparts.com](http://www.extremetractorparts.com). Ray Castner, the owner of Extreme Tractor Parts has taken John Deere two-cylinder tractors to the next level. His full service machine shop not only creates the ultimate power up kits for Deere, but he is able to create pistons and other internal components for all makes using the latest in computer technology. From brand new replacement blocks to sleeves, pistons, rods, camshafts, and even cylinder heads, Ray has the latest, greatest and “extreme” for all Deere enthusiasts. If you’re at all interested in pulling Deere or need custom built engine components built for your other color tractor, Ray is a guy you must talk to.



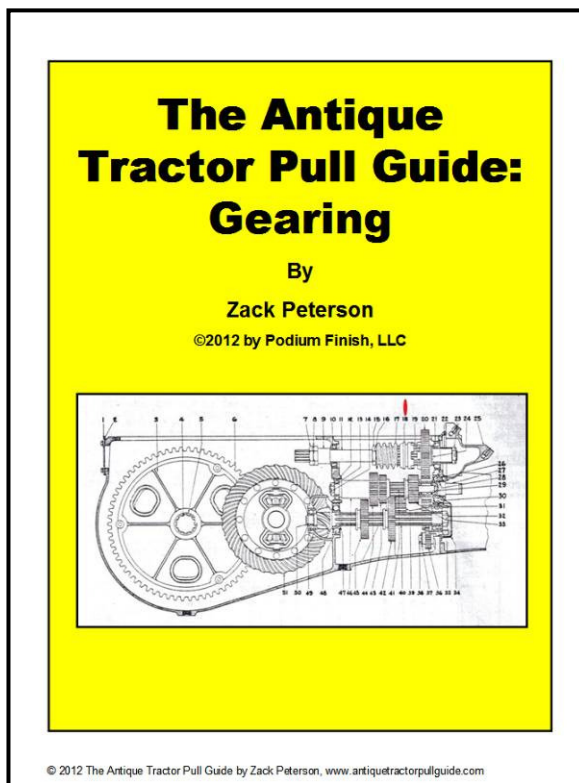
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## Available March 2012

### The Antique Tractor Pull Guide: Gearing

- Gear fundamentals, engineering principles and how transmissions work.
- Discussion of transmissions and how gearing affects tractor pulling.
- Transmission maps showing actual tooth counts for common antique pulling tractors.
- Gearing variations and how ground speed is affected.
- Inside auxiliary transmissions – M&W, Sherman, and more.
- How to calculate gear reduction, changes to gearing and custom gearing.
- A MUST for anyone who is serious about tractor pulling!



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## Antique Deere – The Exception

The vertical Dubuque built Deere tractors such as the M, 40, 420, and 430 shared the same basic two-cylinder engine design with uneven firing order. They had a shorter stroke engine and were run at higher rpm. To those who love the sound of a smooth running engine, the sound of a Dubuque two-cylinder likely makes you cringe. One interesting thing Deere did toward the end of the Two-Cylinder Era was to offer a diesel version of the 430 tractor, but not with a Deere engine. Instead, and likely because most of engineering was working on the New Generation series, they adapted a General Motors 2-53 two cycle, two-cylinder engine into a 430 chassis and called it the model 435.



The two cycle engine design allowed a similarly configured engine to fire every revolution of the crankshaft, producing smooth, high rpm power. The engine proved a little too much for the drive train and there were transmission

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## Antique Deere – The Exception (cont)

problems that were reported. With only a two year production run (1959-1960), about 4500 tractors were produced. These tractors are less common and are somewhat of a collector's item, but they are fairly popular as pulling tractors. The key is in the engine. Because there is smooth power available in a small package, these tractors can be stripped as light as a 3500lb class and be pumped up to put out some big horsepower numbers. In fact, one of the hottest light pulling tractors in the country is a 435 John Deere owned by Vic Simpson from Barnhill, IL.



Racketty Boom owned by Vic Simpson

There is no mistaking the high revving sound of a “Detroit” diesel engine. Since they fire every revolution, they often sound like they rev a lot higher than they actually do. Also, their power is all in the high end, characteristic of most two cycle engines, which means if a heavy load is applied and the engine bogs down, it's usually finished. Vic's tractor is a case study in how pulling is done. A strong 4mph modified puller, it runs right around 4mph at

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## Antique Deere – The Exception (cont)

full throttle. Vic relies on the recipe of weight balance, tires, and so on to “put on a clinic” at most pulls. He won the 4mph modified class at Tunica at 3500lbs.



Rear end of Racketty Boom, simplicity is key



Other John Deere 435 pulling tractors

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## Winter projects

This year was to be an upgrade year, rather than a “build another puller” year. Originally the plan was to put 38in tires on the Massey Harris Mustang, bumping up the ground speed a bit and making the tractor even more potent than it already is. However, this past year a 2500lb class was added at many pulls in the area, and the Mustang is too heavy for those classes. Also, as time goes on and more pulling tractors are built, the creative juices are always flowing. Wouldn't it be neat to have a tractor that would pull 2500lbs *and* the heavier classes the Mustang was already competing in?

Ever have that feeling that sometimes projects find you?

Below is a picture of a recently acquired Allis Chalmers C. Stay tuned folks, it's time for a stroker project!





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## Winter projects (cont)

I pulled an Allis Chalmers CA for many years in the 3000lb class. It was an excellent puller on hard tracks in low gear with its stock engine, but lacked the ground speed for soft tracks. The gearing in a C is very different and could work well for pulling. In building a strong 6mph puller, this project will also include some special interesting twists that you won't want to miss. The next issue of the Podium Newsletter will contain more details of the build.

Also this year will be another project – an engine transplant for a Massey Harris 101 Senior. Going bigger with Continental power!

For now, let's revisit the past few projects. Whew! They sure are nice when they're done!



1949 MM ZA before



1949 MM ZA after



1953 MH Mustang before



1953 MH Mustang before

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## Winter projects (cont)



1938 MH 101 Twin Power before



1938 MH 101 Twin Power after



The Allis Chalmers CA from years past. Could AC get the job done again?

# Podium Newsletter



Coming next month...

- Creative juices – how to get your V8 for the day
- Motivation for the cold months
- Project updates
- And more...

**February issue will be available 2/22/12**

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](mailto:zack@antiquetractorpullguide.com).

**The X  
Factor**

