

Chain Driven Post Driver

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Aim of the Project

My aims for this project are to design and fabricate a strong, efficient post driver that will make driving posts into the ground easier and quicker while trying to keep the build cost down without sacrificing strength or durability.

Background

- Fence posts are used to keep livestock in a field or pasture.
- Fence posts need to be able to withstand the elements and the varying forces put on them by either livestock or the tension of the wire.
- This means the post need to be driven far enough into the ground to anchor them in place.
- A post driver makes erecting a fence easier and more efficient.

Objectives

- To research how post drivers operate and what mechanisms are used.
- To keep the cost of the project down but not sacrifice structural integrity.
- To design and create a model of the post driver using SolidWorks.
- To Manufacture an efficient, strong and reliable post driver.

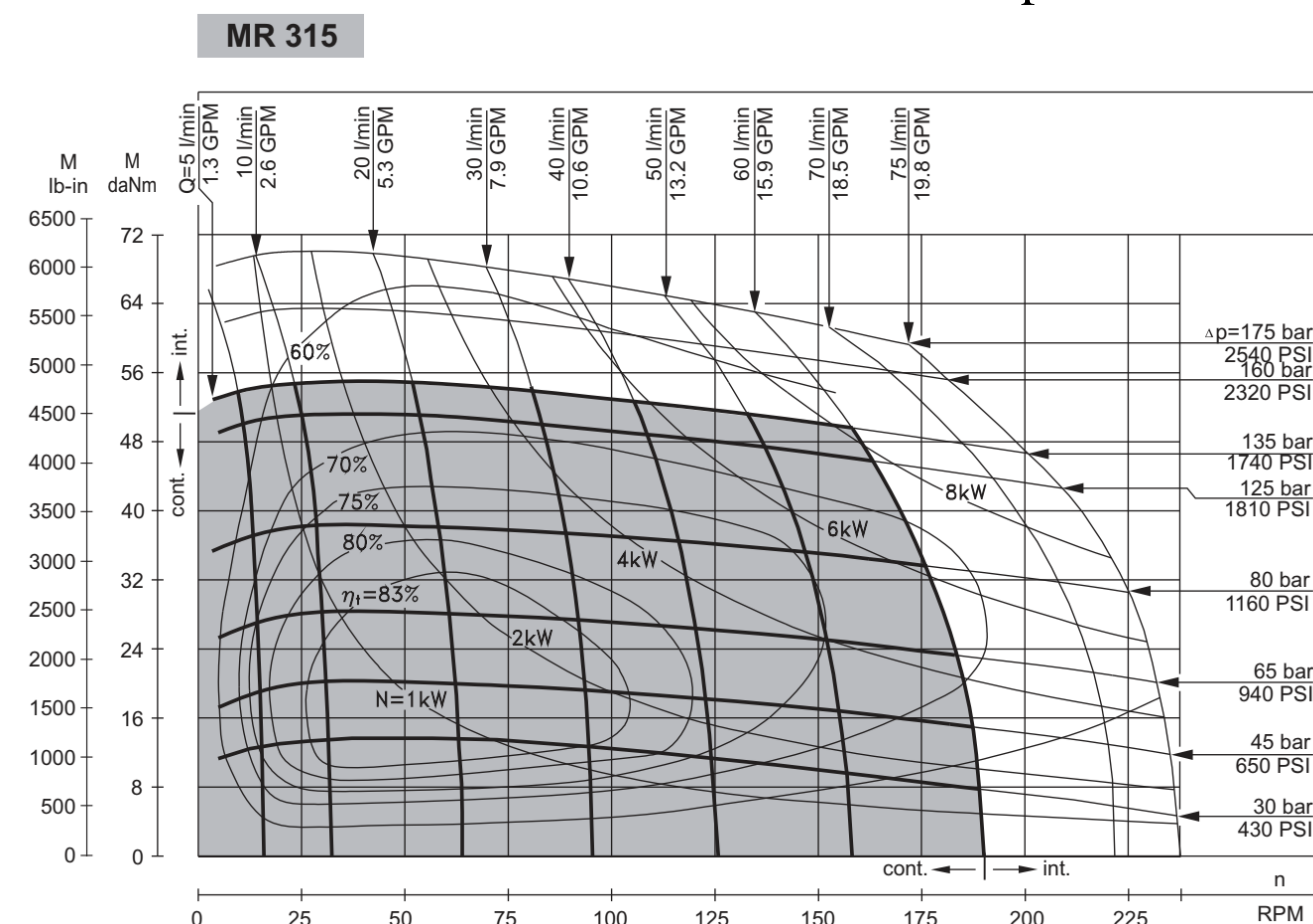
Research & Calculations

- Calculating the motor size - $400\text{kg} \times 9.8 = 3920\text{N}$.
- Torque required to lift weight - $0.082 \times 3920 = 321\text{Nm}$.

Selecting hydraulic motor:

Operating pressure: 150 – 170 Bar.

Flow in L/minute: 16-20L/min at 800-1000 Rpm

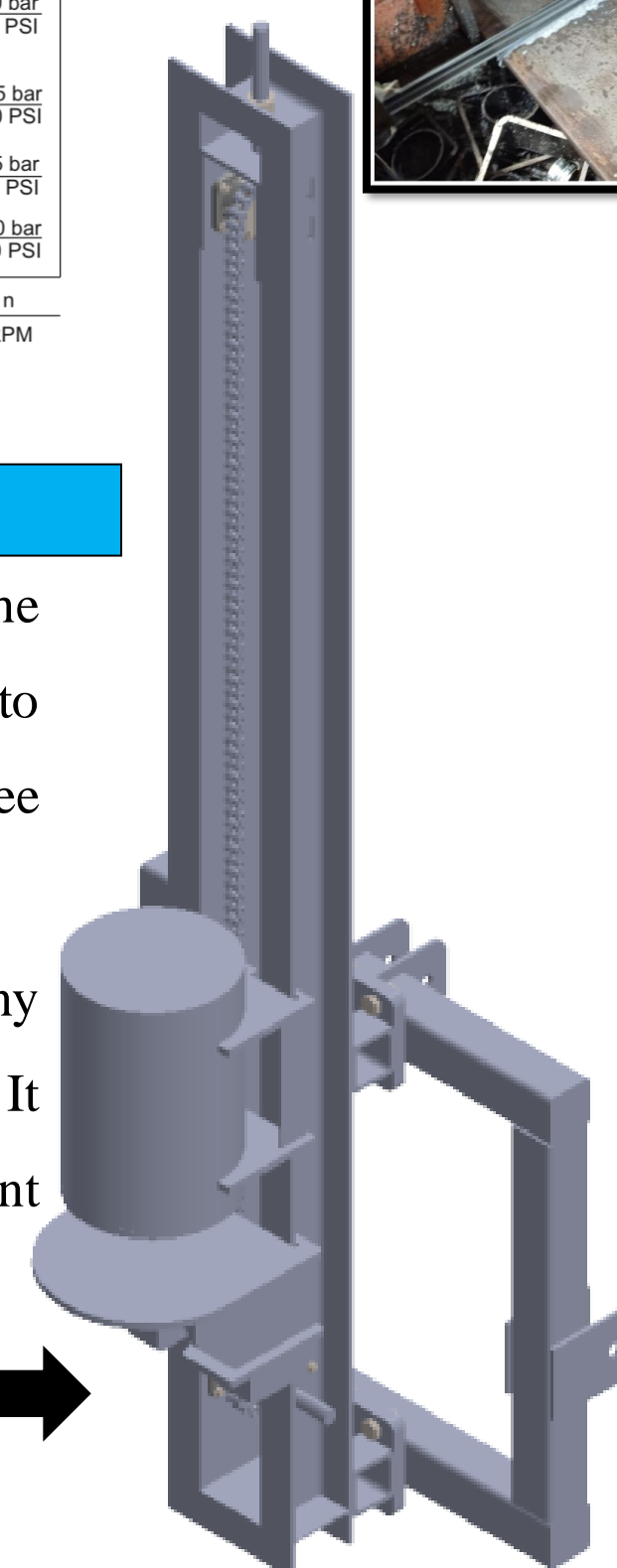


Hydraulic motor data sheet

Design

- The post driver will use a hydraulic motor driving the chain around two sprockets with a catch on the chain to pick up the weight, then trip at the top allowing it to free fall and impact the post.
- This design should reduce the heating of the oil and any cavitation that may have occurred with other designs. It will also allow a wide range of tractors with different specifications to be able to use it.

Solidworks model of the post driver



Progress & Future work

Progress so far : 3 point link attachment welded, main mast welded, tensioner welded. Bearings, sprockets and chain purchased.

Future work : Weld weight together, weld on attachment brackets, attach main mast to 3 point linkage, slide on weight and bolt bearing housings on.



Work done so far on the post driver

Challenges

The bandsaw not cutting straight when cutting 45-degree angles for the C Channel.

Availability of MIG welders.

Pieces warping from the heat of welding.

Handling long pieces of steel.

Conclusion

In conclusion the project has gone well and the research and design I have done shows that it can be made to a satisfactory standard for a relatively low cost compared to post drivers on the market today. I am on track to finish the post driver in one – two weeks.