Montana 500 Newsletter

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Montana Cross Country T Assn.
1004 Sioux Road
Helena, MT 59602

www.montana500.org

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Membership dues $10.00 Touring class: $25.00
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FROM THE EDITORS DESK

Howdy,
I offer my apologies or the lateness of this newsletter! Time seems to have got away from me this spring. Hope everyone weathered the winter OK. Personally, I love the snow, and it felt really nice to have a real winter! I have started my garden though, so I am looking toward spring now. I took Tweetybird's frame and undergarments to the powdercoaters, and they are back and we finished putting her together last week. I don't know if she will go any faster, but her undergarments are sure shinny. The weather is such that I am thinking a lot about driving my T instead of the modern car. Tweety gets better gas mileage than the PU also. That's a big plus!
You all should be working on your T's also. Only 3 weeks until the race. So get them out, tune um up and we will see ya on the 15th of June.
Nan

About the cover:
Dan De Leon and Chuck Harrison await the signal to flag out.

FYI

2008 DUES ARE DUE!!!! CHECK YOUR ADDRESS LABEL. IF IT DOESN'T SAY 2008, YOUR DUES ARE PAST DUE. PLEASE REMIT TO:

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PRESIDENTS MESSAGE

I am definitely ready for some warm weather! After spending most of the day digging out from the worst snow storm to hit our area in the last 15 years or so, I thought it was about time to write a little note to you all for this edition of the news letter. I can honestly tell you that spending all that time shoveling and snow blowing gives one the chance to do a lot of thinking. Most of what was going thru my mind should stay right where it is but, occasionally a decent thought staggers in there as well. Stuff like: I need to send Nan a thank you note for the beautiful blanket she gave me for being the secretary of the other club while she was President. No, that's still about winter. How about sunny warm days, top down (or not), day two of the Montana 500, the car is humming, you're still in first place, life is good. Man, it doesn't get any better than that! So there it is: Those are the kind of thoughts that get you through the snowy, wintry days. I hope everyone has such nice thoughts to sustain them through the doldrums of winter. I also hope everyone is looking forward to June as much as I am? There is still time left to get your car in shape for Thompson Falls. See you in a few months. Man, my back is sore! Hutch

IN MEMORIAM

Our condolences go out to the family of Bill Brandon and Ray Habel. Bill passed away in Febuary and Ray in May. Our thoughts are with their families during this time of loss.

2008 Montana 500 Information

The Montana 500 will be run from June 16-18th and will held in Thompson Fall in 2008. Check in will be June 15th. Base hotel will be:

Rimrock Lodge
4946 Montana Highway 200
Thompson Falls, MT
(406) 827-3536
Email: TFL3536@Blackfoot.net

We have a block of rooms secured, but they will not last forever, so it is recommended that you book your room early. There also a very nice RV hook-up area for those who wish to bring RV's.

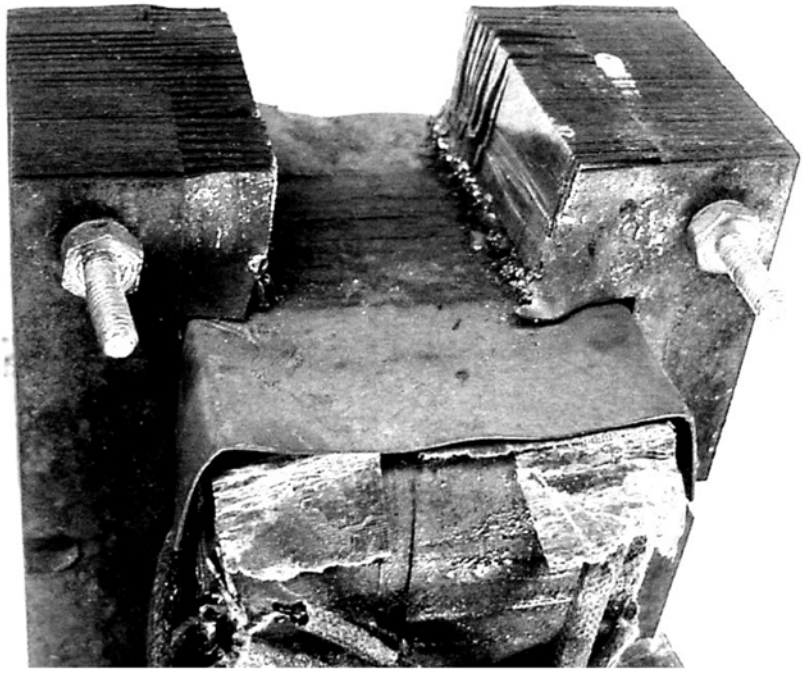
Directions: Rimrock Lodge is located one mile west of Thompson Falls on Montana Hiway 200, next to the bridge over the Clark Fork river.

Poor Man's Magnet Charger

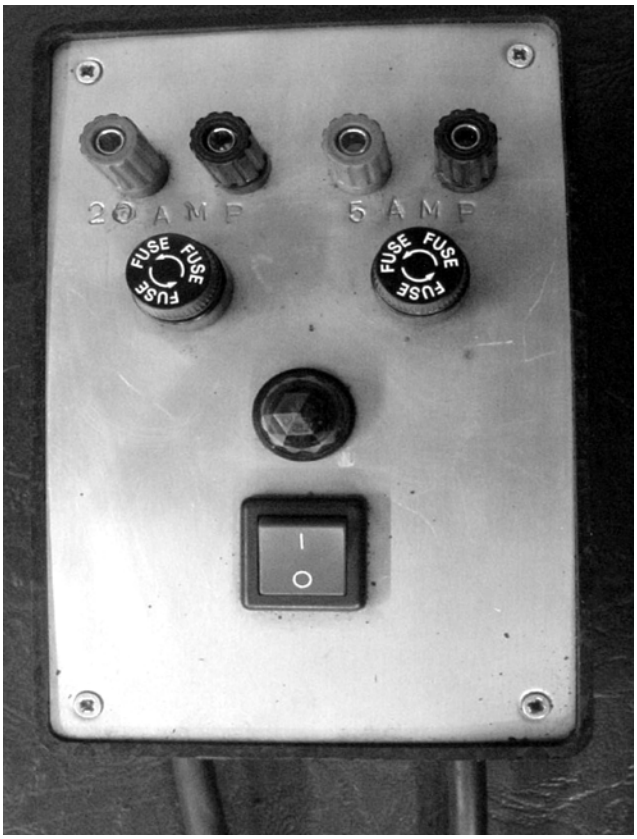
Many of the readers of this article have likely charged their model T magnets in one way or another. One common way is to use the magneto field coil to charge the entire magnet set at once. This can be done with the magnets in the car. If you desire the ability to charge the flywheel magnets individually it can be accomplished with parts salvaged or purchased cheaply.

What you need:

Transformer – the one I used was from an old television set. I think a microwave oven transformer would work well. They are easily obtained. The bigger, the better.
Bridge rectifier – buy the highest amperage rated one for



at least 120 volts that you can get. Radio Shack Part no. 276-1181 is 6 amp 200 volt unit, which should be adequate, although bigger and better ones are available on E-Bay.

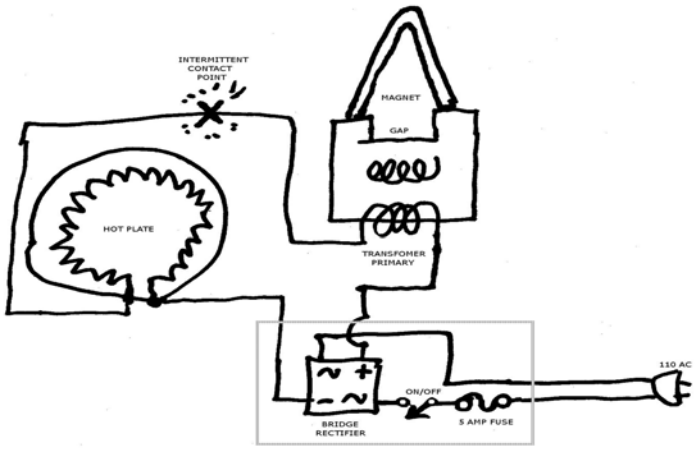


5 amp fuse and holder.
Switch
Power cord
Hot plate.

There are essentially three parts to this set-up. One: the electromagnet, Two: the rectifier and Three: the current limiter.
We will use the 110-volt primary windings of the transformer to make our magnet. The 110-volt primary windings are the ones that the power cable originally attached to. A transformer does not make a good electromagnet without being modified. You will need to cut a notch out of the transformer to make a north and south pole. (see picture) I just hacked it out with a hacksaw. The electromagnet needs to have a steady north and south pole. If the electromagnet were powered by house current the north and south poles would be alternating sixty times per second. To make the poles constant requires direct current. This is done with a rectifier. On the schematic there is a box drawn around the rectifier section of the circuit. I mounted my rectifier into a hobby box from Radio Shack. (see picture) My rectifier is actually two rectifiers in one. For this project we only need one. The DC coming out of this circuit is substantial, so care should be taken when working around it. It is around 90 volts and the amperage is limited by the size of the rectifier and fuse.

The amount of magnetism produced by an electromagnet is a function of current and the number of turns of wire. This is known as “amp-turns”. To a certain degree it is also affected by how well the wire is wound onto the iron transformer core. This is called the “Q” factor. “Q” stands for quality. There are many turns of wire in a transformer such as we are using for our charger. This is good and bad. It is good because more turns mean more magnetism. It is bad because it is

harder to shove current through small wire and current is half of the amp-turn picture. As it turns out we have plenty of current to fill our transformer core. At a certain current level the transformer core will become saturated with magnetism. When the current reaches this level, any added current will be wasted and dissipated as heat. A direct connection from the rectifier to the electromagnet would likely exceed this current level so the current is passed through a hot plate, or some other resistive load to limit the current through the windings of the transformer. The hot plate I used was about 1000 watts.



The "X" on the schematic denotes a break point in the circuit where the DC to the transformer is made and broken. To charge a magnet does not require a steady shot of current. Brief pulses are better as they will tend to hammer the magnetic "domains" into alignment. A momentary contact switch would work well for this, although I just sparked the two wires together.

Traditionally if a model T magnet is able to pick up a cast iron T piston which weighs about two pounds, it is said to be sufficiently charged. A typical model T magnet will do this if it has around 650 gauss of magnetism. This varies some from magnet to magnet. This charger setup should charge a T magnet into the 800 or 900 gauss range. I will present a separate article on how to make a gauss meter.

A Poor Man's Gauss Meter

When rebuilding a model T flywheel, it is usually a good idea to recharge the magnets. The procedure to ascertain the strength of the individual magnets usually involves picking up a piece of iron with said magnet. It is possible for a weaker magnet to pick up more weight than a stronger magnet under certain circumstances. If you desire a way to find out the comparative strength of each magnet a gauss-meter would come in handy. It is fairly easy and inexpensive to make an uncalibrated electronic gauss-meter. The poor man's gauss-meter uses a hall-effect sensor. A hall-effect sensor detects changes in magnetic flux in real time. Although this meter will not be calibrated, it will be close and certainly will make accurate comparisons between different magnets.

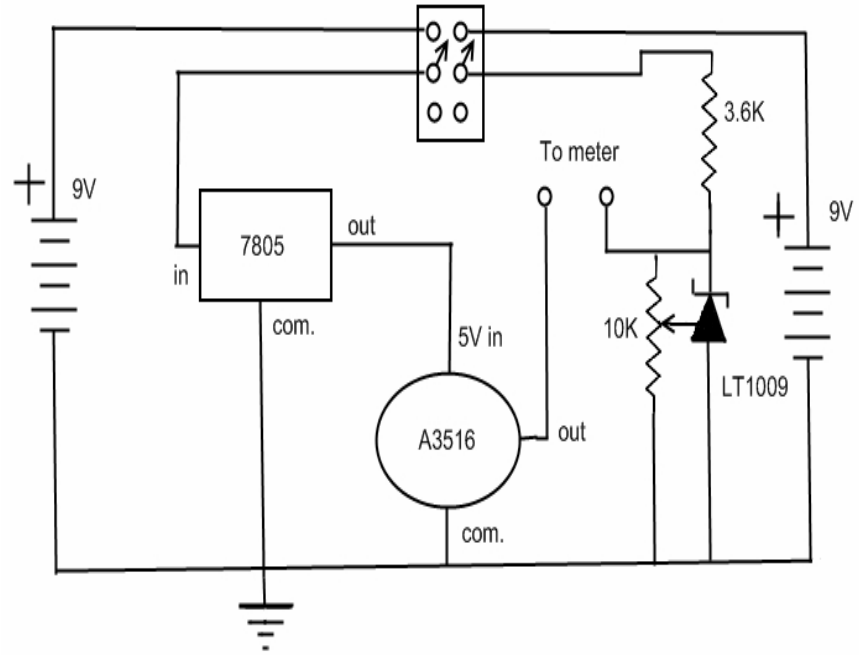
Parts needed:

- 2ea. - 9 volt batteries
- 2ea. - 9 volt battery clips
- 7805 voltage regulator (5 volt)
  A3516LUA hall-effect sensor (this is an uncalibrated unit. Calibrated units are available, but they are more expensive)
- LT1009 adjustable voltage regulator (2.5 volts)
- 3.6K resistor
- 10K potentiometer
- Project box
- DPDT switch
- Volt meter

The circuit is very simple. I just bread boarded the one I built and stuffed it into a project box from Radio Shack. It consists of two parts. The left half is the hall-effect circuit. The hall-effect unit (A3516) takes the 5 volts from the 7805 regulator and splits it into two. With no magnetism present the A3516 will output 2.5 volts. Magnetism present will make it either read higher of lower than 2.5 volts depending on whether or not it is a north or south pole. The right hand half of the circuit is a 2.5 volts biasing circuit to offset the 2.5 volts from the hall-effect circuit. The potential between the output of the hall-effect circuit and the biasing circuit will be zero (more or less) with no magnetism present. The 10K potentiometer will trim the offsetting voltage for an exact zero reading. A volt meter is then used to read the gauss readings directly. A reading of 2.5 volts on the volt meter equals 2500 gauss (more or less). As mentioned earlier the A3516 is not calibrated so the measurement is

not 100% accurate. I don't know how accurate it is, but for my purposes it doesn't matter as I am just looking for a quantitative comparison between two magnets. I mounted the A3516 into a tube and encased it with epoxy, then attached it to the project box. Either flat side of the A3516 is sensitive to magnetism.

This gauss meter is sensitive enough that it will act as a compass. The meter will read slightly positive or negative depending on which way you are facing. It is sensitive enough to read the magnetism of the flywheel magnets through the hogshead, which might come in handy if you are charging magnets in the car. I want to thank Rick Hoadley who gave me the idea for this project. If anyone wants to take a crack at this I can help you get the solid state devices and answer questions.




Hall effect sensor