

## Voltage Regulator Polarization

> I'm going to go out on a limb here and quote a piece of Dr. Vern's  
> Polarization 101 course.

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> Repolarization is merely changing the residual  
> magnetism with a quick burst of current from a  
> jumper wire.

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> But before I tell you how to polarize the  
> generator, it is important to know what type it  
> is. Since your jeep has been converted to  
> positive ground, I wonder if the stock generator  
> was retained. Perhaps the original generator  
> died, and a used replacement was swapped in using  
> whatever was handy. It could have come from a  
> positive ground Ford car or truck. Ford used  
> positive ground sometime until the mid 50's or  
> so. (I'm guessing on the date) I'm not sure,  
> but think the mounting brackets are the same.  
> There were other brands that used positive  
> ground, including many British vehicles. The  
> person doing the swap didn't know it was possible  
> to repolarize the generator (or didn't care), so  
> he converted the whole vehicle to positive  
> ground.

>  
> Now when I say you need to know what type of  
> generator it is, I don't mean whether it was  
> originally positive or negative ground. What is  
> important is knowing the arrangement of the field  
> coil wiring so that you can know how to polarize  
> it. All of the generator manufacturers made two  
> types, with the field either internally or  
> externally grounded. This is a bit confusing, as  
> neither type operates any better than the other.  
> However, it is also critical that the voltage  
> regulator be the matching type.

>  
> The stock generator used by Willys was the "A"  
> type, with an externally grounded field coil.  
> Remember, I don't know if your generator is the  
> stock unit or not, and have good reason to  
> suspect it is not. The other type, a "B" type,  
> has an internally grounded field coil and uses a  
> different method for polarization.

>  
> Cross referencing the part number on the  
> generator may not mean anything, as it could have  
> been converted from an A to B type, or visa  
> versa. With an ohmmeter, it is easy to determine  
> whether you have an A or B type generator:

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>  
> First disconnect the battery. Disconnect the

> field connection on the generator. (It is the  
> smaller of the two insulated terminals) Remove  
> the cover over the generator brushes for access.  
> Zero out your trusty ohmmeter and connect it  
> between the field terminal (on the generator) and  
> the generator frame. You should see maybe 3 or 4  
> ohms, which is the field coil. Now pull back on  
> one of the brushes, it doesn't matter which one,  
> so that it doesn't touch the commutator. You can  
> usually see the heavy flexible copper wire used  
> on them. If your meter still reads the same, you  
> have a "B" circuit. If you lose that continuity,  
> you have an "A" circuit just like one on my CJ2A.

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> It is very important that you take the couple of  
> minutes to determine whether you have an A or B  
> type generator before proceeding. The above test  
> with an ohmmeter will only take a few minutes.  
> Hook the battery up again for the generator  
> polarization.

>  
> Here is what an old textbook of mine has to say  
> about polarizing the "A" type circuit: "With all  
> the leads connected, momentarily connect a jumper  
> wire between the ARM and BAT terminals of the  
> regulator." You could also accomplish the exact  
> same thing by momentarily connecting a jumper  
> between the battery's (+) post and the armature  
> connection right on the generator. This beats  
> trying to read those terminal labels buried at  
> the bottom of the regulator. Make the final  
> connection at the generator so the spark is away  
> from any explosive hydrogen gas vented by the  
> battery. Naturally don't do this in the presence  
> of any gasoline vapors, either.

>  
> The B circuit is polarized just a bit  
> differently. Remove the Field ("F") wire from  
> the regulator. Momentarily touch the "F" wire to  
> the battery ("B") terminal on the regulator.  
> Reconnect the "F" wire to the regulator.

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> Please note that the Willys service manual has a  
> mistake in it, where it shows the regulator  
> terminals. I have details here:

> <http://www.vernco.com/id344.htm>

>  
> That's it, your generator is now repolarized to  
> use as negative ground. There is one more thing  
> to consider about the generator system, and this  
> is the voltage regulator. All of the online  
> references have told me that a regulator is the  
> same whether used on positive or negative ground,  
> but I found a contradiction in an old textbook.  
> Due to the way that contact points erode due to

> the direction of current flow, different  
> materials are used to equalize the wear and/or  
> transfer of material. The only adverse effects  
> from reversed polarity on a regulator is  
> accelerated wear on the contacts. It is very  
> possible you have a negative ground regulator  
> already. I don't know how to determine which is  
> which anyway. Perhaps it is marked for polarity,  
> or the part number can be cross referenced.  
> Personally, I'd suggest keeping the existing  
> regulator as it would probably work fine for a  
> long time. Should it ever fail, specify a  
> negative ground when you get a replacement.

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> Credit is due Dr. Vern for this data.

>  
> Wes K

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