

Re: starter solenoid pull in voltage

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2006-09/msg05388.html>

- *From:* Jamie <jamie_kallpa_not_valid_after_kallpa_@xxxxxxxxxxx>
 - *Date:* Sat, 23 Sep 2006 12:35:09 -0700
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service@xxxxxxxxxxxxxxxxxxx wrote:

John Popelish wrote:

service@xxxxxxxxxxxxxxxxxxx wrote:

Thanks for your reply John,

The reason I asked is I did a study with 2000pcs of 12V starter solenoid. 1000pcs has pull in voltage of 4.5V and the other 1000pcs has 6V. Both batch went through 420A in rush for 1ms.

A few of the 4.5V got stuck while none of the 6V got stuck.

I was thinking may be increasing the pull in voltage will increase the in rush current that that starter solenoid can withstand.

A few out of 2000 is a pretty small sample. I can't imagine the mechanism that would couple pull in voltage and sticking, unless it is the return spring force (lower for the lower pull in voltage units, if everything else is similar). That spring force is what breaks the contacts apart after they spot weld.

The 4.5V and 6V lots are identical starter solenoid with the exception of the stated pull in voltage. I think the manufacturer adjusted the weight of the plunger to get the different pull in voltage. This has the same effect as changing the spring force, correct?

So what you're saying is that the reason the 6V lot did not have any sticks was because it has a higher spring force(due to lower plunger

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weight, everything else being equal) thus a higher force to break the contacts?

Thanks again for your inputs.

[AdvanceAgent #367924]

Games I am currently playing:

<http://uc.gamestotal.com/?in=367924>

the reason the 4.5 are getting stuck is because there is insufficient impact created from the velocity generated from the coil to clamp the contacts together soon enough before the induction of the motor (starter) can cause damage to the contacts and thus weld them.

a Peak and Hold driver circuit most likely could work here, the same theory as used in fuel injectors for the same reason to prevent sticking of the mechanism in response. because you also have to worry about the initial force required to get the core moving.

we have some special motor started relays at work that have dual coils in them that use a low level AUX contact mounted on the body. the idea is when the relay is in the OFF state, both coils are connected., when the core reaches almost to the close point the AUX contacts open one coil. this gives us a low but effective holding current. when making contactors to be compact, its important to think about these things. they also make electronic Peak and Hold types.

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Real Programmers Do things like this.
http://webpages.charter.net/jamie_5

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