



# MARKSMen

Mid Atlantic Radio Kontrol Society (MARKS)

AMA Club Number 333

[www.marksrc.com](http://www.marksrc.com)



February 2022

Volume 28 Issue 2

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**Mid-Atlantic Radio Kontrol  
Society  
MARKSMen**

The MARKSMEN is published monthly by the Mid Atlantic Radio Kontrol Society and posted on the MARKS Web Site. Newsletter submissions should be sent via email to David Hess ([marksrc.sec@gmail.com](mailto:marksrc.sec@gmail.com))

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MARKS is AMA Charter Club #333.

MARKS maintains a flying field located at:  
Waybright Field  
1918 Saint Lukes Road  
Salisbury, MD 21804

On the cover: The shade structure damage at Waybright Field.

## Upcoming Events

### February Membership Meeting

February 22 @ 7:00 pm – 8:30 pm

### March Membership Meeting

March 29 @ 7:00 pm – 8:30 pm

### Membership Dues

April 1, but please pay as soon as possible

For more information visit <https://marksrc.com/events>

# Wanted !!

With the destruction of the shade structure, MARKS is asking to get the dues paid as soon as possible.

Individual Membership	\$100
Family Membership	\$50
Vacation Membership	\$50
Associate Membership	\$40
Youth Membership	\$50

Wally Makuchal issued a President's Challenge, asking members to donate \$25 to help rebuild the shade structure.

The preferred method of payment is to send money via PayPal at:

**<https://marksrc.com/paypal>**

## All Season Flyer for 2022

With the flier list being relocated due to the wind damage, the current list is not available for publication this month.

## Meeting Minutes for January 25, 2022

- MARKS January 2022 membership meeting
- SRS UAS Facility @ Salisbury Airport
- 11 members present
- The meeting was called to order at 7:00 pm by President Wally Makuchal.
- The October minutes were read and accepted.
- The November Executive Committee minutes were read and accepted.
- The treasurer report was presented and accepted.
- It was determined that Wally had completed action from October to send a formal thanks to SRS. Wally has agreed to complete this task.
- It was reported that the land owner has changed for the field across the bridge. This will need to be modified on the AMA charter papers.

### Membership committee report:

- Rick reported that he will be moving, and a replacement for the membership committee chairman needs to be named.

### Field report:

- The shade structure was destroyed in a recent wind storm.
- No field expenses were incurred this month.
- Cajé is taking over the duties of the munchie fund.

### Old Business:

- All season flier patches were handed out.
- The sheet for the all-season flier has been moved to the shed.
- The changes to the Bylaws were voted in.

### New Business:

- It was voted to hold a Vintage Fun Fly in October 2022.
- Rick presented research into a replacement shade structure for the field. Much discussion ensued. Actions assigned were:
  - Wally is to file for AMA Site Improvement funds.
  - Wally is to file for AMA Disaster Relief funds.
  - Jim is to work with Bill to extend the lease period, to give a more favorable review by the AMA.
  - John is going to send email for President's challenge.
- Scott Richards and Jason Taylor were nominated for the position of president. All other positions to stay as they are currently.
- Meeting was adjourned at 8:18 pm.

## Marks Club Special Emergency Request

Greetings and Happy New Year to all MARKS Members,

As you may already know by now, a recent wind storm blew down the shelter at Waybright Field. It was destroyed beyond repair. At our club meeting last Tuesday, the attending members voted to seek its replacement. However since it was uninsured, the Club will have to pay for its replacement. In consideration of that, I am asking all members to please pay your annual dues as soon as possible, so that we can have the new shelter erected by the time the Spring flying weather arrives.

David Hess our Club Secretary has redesigned the MARKS website and has made it very easy to pay your dues using the Pay Pal link on the site. Using Pay Pal for your dues insures that your money will not get lost in the mail, that we have an accurate record of who has paid, you get an immediate confirmation/receipt for your payment, and the Treasurer does not have to handle the cash and make in-person deposits to the bank. So please, if you can, use Pay Pal for your dues payment. Thank you.

The Club is also pursuing AMA grants to help with the cost of the new shelter, but if we are successful, they will only cover several hundred dollars of the estimated cost of \$3600. And if the Club is granted the money we may not receive it for many months. So Wally Makuchal has issued a President's Challenge to all members to donate at least \$25 to help get the shelter up. Again, David Hess has made it easy to donate using the link on the MARKS web site.

Thank you and best wishes to all,

John Haffner  
MARKS Treasurer.

The following article is By Mike Buzzeo, reprinted with special permission of RCUniverse.com.

[http://www.rcuniverse.com/magazine/article\\_display.cfm?article\\_id=1180](http://www.rcuniverse.com/magazine/article_display.cfm?article_id=1180)



## Introduction

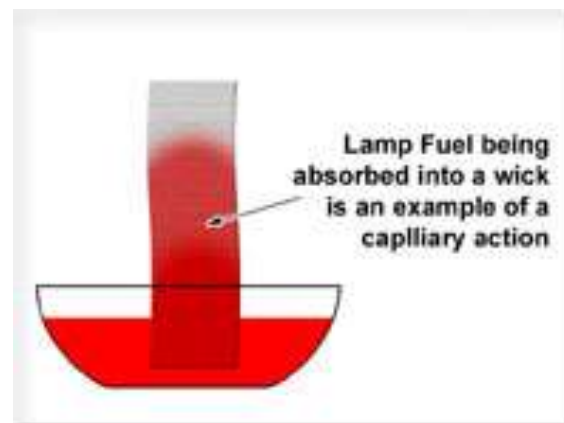
The very first "How-To" article I did for RCUniverse was on installing CA Hinges. The article was very helpful to many people, but while it showed the proper way to install them, it fell short of explaining what not to do and why. Therefore, we are going to go a little more in-depth this time and explain the do's and don'ts, the why's and why-not's and hopefully give you a better understanding of just what's going on inside that simple, yet complicated little device. Before we even start there are two things you need to know. These two things are written in stone and nothing on earth will ever change them. They are:

- CA hinges are designed for use with THIN CA glue. No other type of glue should be used - ever!
- Thin CA glue works on a "Capillary" principle.

## What is a capillary principle?

A capillary principle is the ability of a fluid to travel through a porous material. The best way to describe this is to think of the wick in a kerosene lamp. If you dip the bottom of the wick in the kerosene, the liquid will travel through the wick even if it has to defy gravity to do so. It is for this reason that the movement of liquid through a porous surface is also known as "wicking" - a term I will refer to a lot in this article. This all boils down to the fact that for the glue to work properly, it needs a porous surface.

Anything with small pores is a good candidate for Thin CA glue. Items like wood, paper and ceramics are great choices. Unfortunately, so are skin and clothing, so be careful! Now, you may wonder how things like glass can also be held with CA glue. The answer to this is that even a glass surface has tiny imperfections, which the CA can grab on to, but a wood-to-glass glue joint will be nowhere as strong as a wood-to-wood joint.

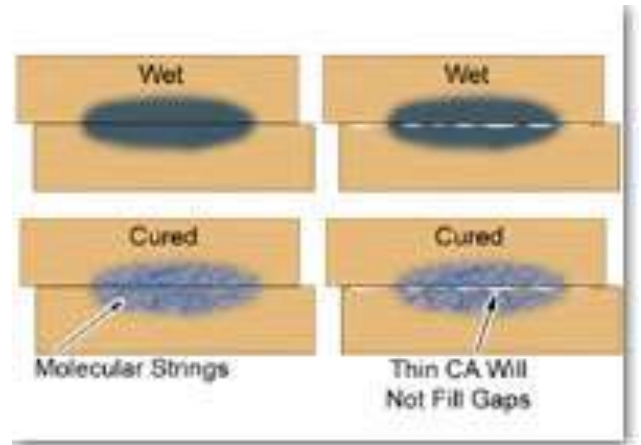


## Here's why

When two pieces of wood are joined together and Thin CA is applied, the first thing that happens is the CA seeps or "wicks" into the seam. From there (or at the same time) it soaks the surrounding wood. As it cures, the molecules form strings that bond the two areas together. The longer these strings are, the better the bond will be.

However, Thin CA has no gap-filling ability, so if the joined surfaces have any voids the glue will not adhere to those areas. Therefore, the hinge slots need to be snug. They don't need to be so tight that you have a difficult time getting the hinges in, but you should be able to feel some friction as you slide them in.

Another thing that makes this glue different than most is that these molecular strings start to form immediately, therefore the best bond is achieved by mating the two surfaces first and then adding the glue. Adding glue first and then mating the two surfaces may create a bond, but it will not be very strong - and once an area has been saturated with thin CA, and the CA has cured, the pores have now been sealed, so you can not use thin CA in that area again. (Note: since there will be surface irregularities, you MIGHT get a bond between two previously glued areas, but it will be a surface bond only and it will not be very strong)



So, to recap this section we now know that:

- Thin CA is the only glue to use on CA hinges.
- The surfaces being glued must be porous (I.E., not previously glued).
- The two surfaces to be glued must be mated first before the glue is applied.

## The Slots

Note: For the remainder of this article, we will assume that we are hinging an elevator to a stab.

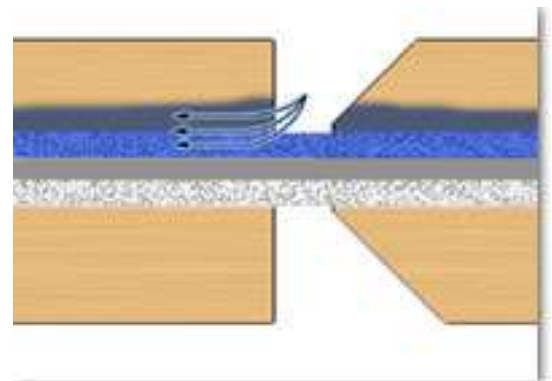
If you are building an ARF, the hinge slots are probably pre-cut, but if you need to cut them yourself, there are various tools available. Something to be careful of should you choose to use a commercial slot cutter is that some of them are designed to cut thick slots for nylon hinges and will cut a slot that is too loose for a CA hinge. Most of us use a hobby knife with a #11 blade, but the best tool that I have found for this is the Great Planes Slot Machine. Many modelers will agree that this is one of the best tools to ever infiltrate this hobby. Even if you only fly ARF's this can be a very useful tool to have, as many times a pre-cut slot is too tight or not deep enough. It's a tool you won't use often, but when you need it, it's worth its weight in gold!

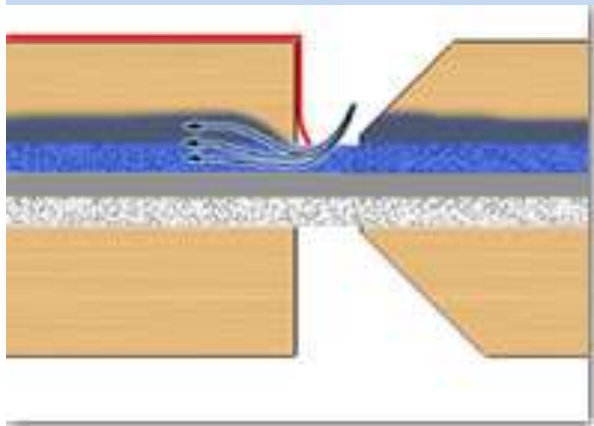
Once you have cut the slot, or if they are pre-cut, little or no preparation is needed, but you should always check the slots for certain conditions. Remember that your main goal here is to allow Thin CA glue to seep into the area between the hinge and the gap. If you've ever gotten in between your fingers, you know that there is little you can do to keep it OUT of a tight area! Nevertheless, it's always good to check.



## So, what are you looking for?

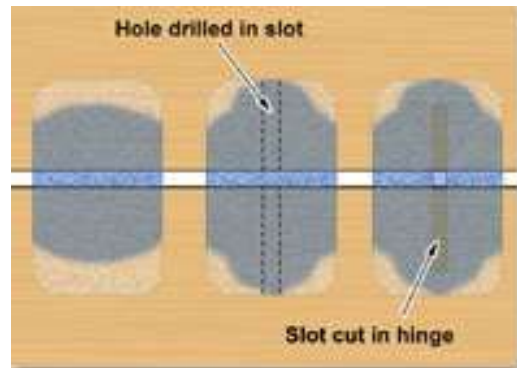
Think of the hinge area as a 3-lane highway for CA glue. The fibrous coating on the hinge is one lane, the seam between the hinge and the wood is the second and the porous balsa is the third. If any of these lanes are blocked, it's like having a traffic jam. The glue will still eventually get through, but this stuff sets quickly, so the faster it reaches the target, the better.





One of the first things you'll want to do is to see if the covering is in the way. The covering will do little to prevent the CA from wicking, but you also don't want tiny slivers of covering interfering with the hinge line. This is especially true once they get hardened in place with glue! You also don't want any loose covering to overlap the hinge. This will hinder the glue from reaching the seam between the hinge and the wood (You have blocked two of your three lanes). So, if there are any stray pieces of covering, trim them off. You don't need to over-do it, just be sure the area is free of any obvious obstructions.

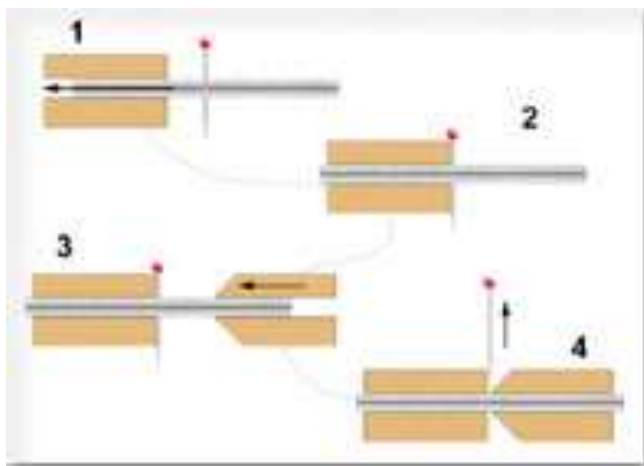
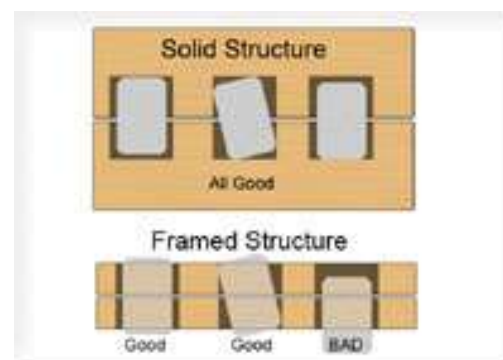
The next thing to consider is the fit of the hinge and the density of the wood. If the hinge is tight, and the wood is dense, you may want to drill a hole along the center of the slot to channel the CA deeply into the wood (this is like adding an express lane to your highway) Some CA hinges have a slot cut in them for this very purpose. If the hinges you are using have a slot cut out of the center, you do not need to drill a hole. Similarly, if the hinge fit is good (Snug without being too tight) and the wood is not excessively dense, you do not have to drill a hole. If you're uncertain, drill the hole - it never hurts.



## Installing The Hinges

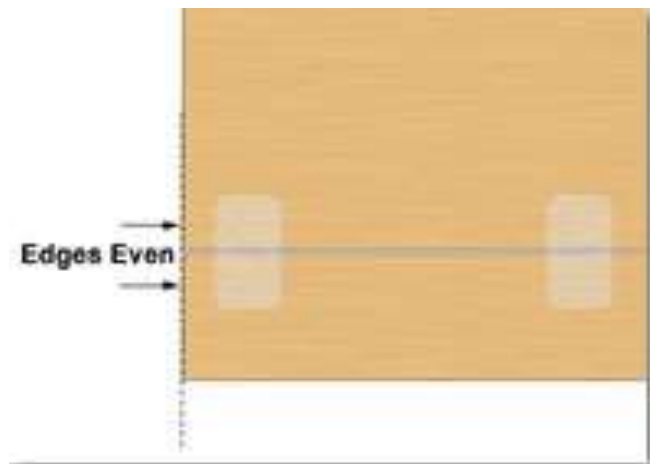
CA hinges give you a lot of leeway when it comes to inserting them. They do not need to be perfectly straight, or perfectly centered - as in the game of Horseshoes, "close" is close enough. The most important thing is that they are relatively centered along the hinge line. Nylon hinges with a pin at the hinge line will automatically center themselves since the hinge pin won't go into the slot, but a CA hinge has no such self-centering device.

If the item you are hinging is a solid surface, and your slots are cut just a little deeper than half the length of the hinges, the depth of the slots will keep the hinges centered. On the other hand, if you are installing hinges in a built-up surface, where the slots go completely through the trailing edge of the stab or the leading edge of the elevator, you will want to insure that the hinges will not go too deep into one side or the other. The best way to accomplish this is to insert a pin through the center of the hinge to act as a stop that will prevent the hinge from going too far into either side.



Just push a pin through each of the hinges, install them into the stab until the pin meets the trailing edge and then install the elevator. Once you have the two pieces in place, pull the pins out. (Note: If your hinges are the type with a slot cut in the center, you can just move the pin to one side. If you're the meticulous type, add a pin to both sides of the slot).

This is a good time to be sure that the elevator is lined up with the end of the stab. Alternatively, if this were an aileron that fits between a wingtip and a section of trailing edge at the root of the wing; adjust it so you have an equal gap on both the inboard and outboard side.



## Now we are ready to seal the deal.

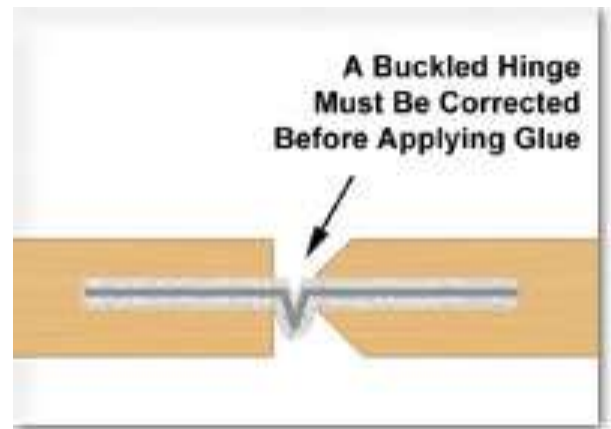
In a way, "sealing the deal" is a very good description of the gluing process. Once the glue is added, it's all over - there is no "undoing" a CA hinge and you only have one chance to get it right. So let's do a quick review of what we have so far.

- The stab and elevator are temporarily joined with the hinges.
- The slots are good and all of the hinges are in place.
- The hinges are relatively straight and centered and there are no stray pieces of covering, wood or any other debris in the hinge line.

But don't add the glue yet! There are still two more things to do.

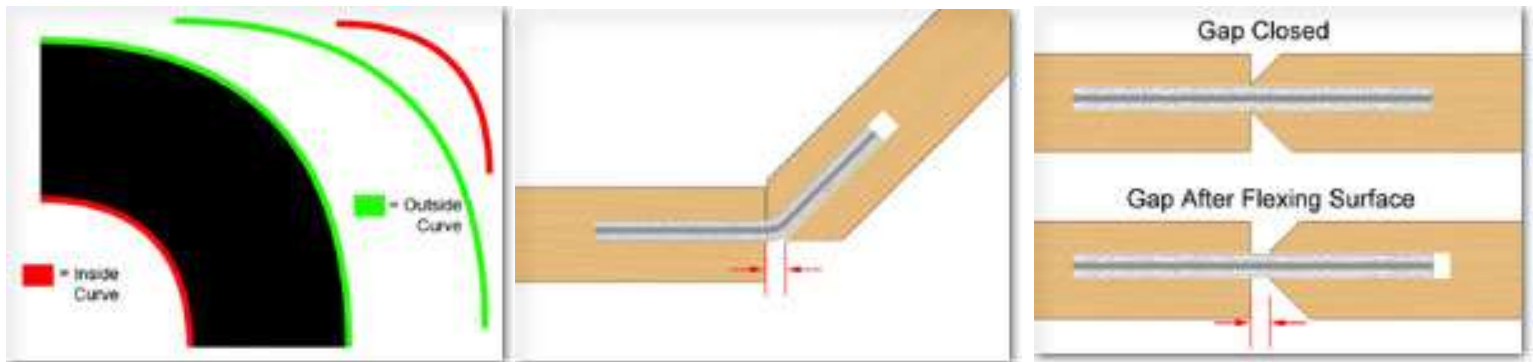
First, push the elevator and stab together to close the gap (this will be reopened later) and check that no hinge has buckled. Sometimes if one hinge is too tight, or if its slot is not deep enough, it can buckle at the hinge line and the other hinges will hold it like that.

If a hinge has buckled, remove the elevator and check that the slots are deep enough or not too tight. You may need to replace the buckled hinge, but if you can get it back into the slot without buckling, you should be okay. If all hinges look good, it's time to move on to the next step.



## Flexing the control surface

With everything in place, you must now flex the control surface (in both directions) slightly more than it will move in flight. While every element of installing CA hinges is important, omitting this step is probably the leading factor in hinge failure. To understand why, let's look at some simple physics.



On any given curve, the outside of the curve is longer than the inside. When you flex the control surface, the hinge will pull out of the slot slightly to allow for this difference. When you return the surface to neutral, there will be a slight gap. **DO NOT RE-CLOSE THE GAP!**

In the past few years a misconception has arisen, that having a gap in a hinge line is on a par with having an alligator in your bathtub. It's true that you want to avoid having an excessive gap, and if you fly precision aerobatics you may want to seal any gaps, but for the most part, having a small gap is not even going to be noticeable - let alone do any harm.

Another misconception is that gaps cause flutter. This is another whole article in itself, but for the sake of this writing, just accept the fact that gaps are the cause of flutter about as much as my dog is responsible for WWII.

In fact, many of today's extreme fliers prefer to LEAVE a gap because it makes a screaming noise when they do radi-cal maneuvers (Hey, whatever blows your skirt up).

Getting back to our CA hinges, if you do not allow this gap to be there, every time the control surface is deflected it will pull and stretch the hinge. This will eventually over stress the hinge and cause it to fail.

## Finally, we add the glue!

Ok, the hinges are in place, the control surface is centered and it has been flexed so that there is a small gap, birds are singing and all is right with the world - it's time to add the glue!

The only thing left to check is the glue itself. Is it fresh, or is it an open bottle that's been lying around your shop for a few months? If you're not sure, test it on a few pieces of scrap; otherwise, you're good to go.

Flex the control surface downward to expose the tops of the hinges and apply 4 to 5 drops of Thin CA to each hinge. Immediately flip the airplane over and apply 4 to 5 drops to the other side. Put the airplane down and walk away. Leave it alone for a minute or two and then you can check it. If all went well, the hinge will be perfect. You can flex it at this point, but I wouldn't do any real pulling on it for a few more minutes.



At this point if you have any areas where excess glue has run along the covering, you can remove it with some acetone on a paper towel. Acetone will not hurt iron-on covering (if you covered it with something other than an iron-on covering, or if the area is painted, skip the acetone). After a few hours, you may see a white film around the gluing area. Again, a little acetone will wipe this right off.



One more thing... Do not add anymore glue to the hinge after the initial application! The area is sealed now. No more glue will be able to go anywhere that will do any good and since it can't get in there, it will usually run along the seam and across the covering, or drip through to your clothes.

You will find that after a few hours, the hinges will stiffen up a bit. Don't let this worry you. It's perfectly normal and they will loosen up in time - after a while, the flexing will cause the hardened fibers in the gap to crack and flake off and the stiffness will go away. Some people are concerned that this stiffness puts added strain on the servo. To them I say, "Gimme a break!" This stiffness is nothing compared to the pressure that the air will put on that elevator at 60mph! And if your servos are that weak, buy some that were made within the last century you cheapskate! (Ok, rant over)

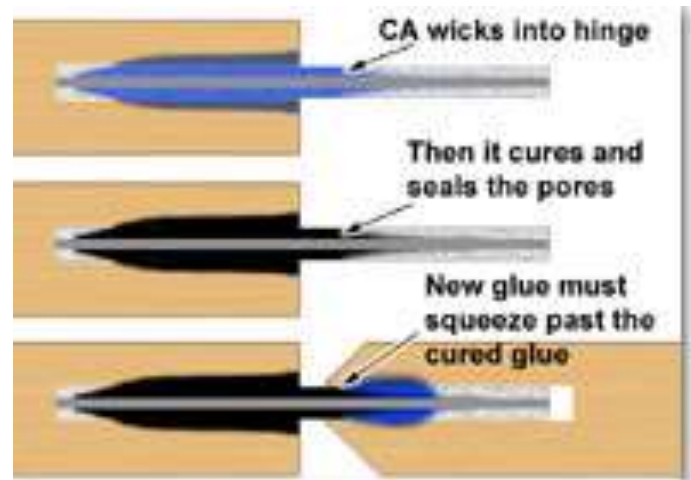
At this point, your hinge installation is done - but I'm not. Now that I have told you what to do, I want to tell you what NOT to do.

Even though the steps I have listed are all you need to do for a successful installation, many people have their own little tricks they like to do when installing CA hinges. Some are ok, but many others can be detrimental.

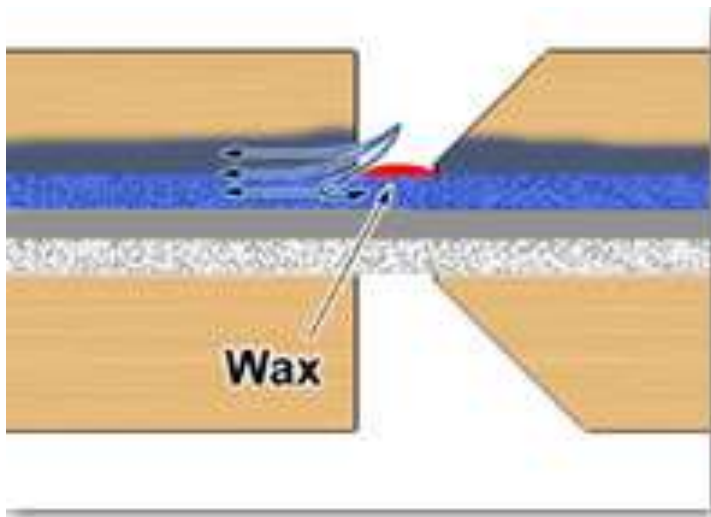
## Things you should not do and why

**Do not use anything but fresh THIN CA glue.** Thin CA glue will wick its way into both the porous surface of the hinge and the porous wood surrounding it. No other glue will wick completely through to the inner plastic core of the hinge. This can result in the plastic core breaking loose from the fibrous outer layer. This can also happen if the Thin CA has thickened with time, which is why you want to be sure that the glue is fresh.

**Do not glue the hinge into one side (like the stab) and then add the elevator and glue it on separately.** When you do this, (no matter how careful you are) some of the CA will wick its way up the exposed portion of the hinge. Now that portion of the fiber coating is sealed and no longer porous. What this means is that when you in-stall the elevator and add more glue, the glue has to seep PAST this area instead of THROUGH it. You have lost the fastest lane of your 3-lane highway. Granted, some glue will still reach its mark, especially if you have drilled a wicking hole, but two things are wrong with this picture: First, you are not getting the best bond, and second, it is so easy to do correctly in one step that it puzzles me why anyone would do it incorrectly in two steps.







**Finally, do not draw a line on the hinge with a crayon along the hinge line.** The prevailing theory here is that doing this prevents CA from wicking into the hinge line area thereby preventing it from getting stiff. Balderdash!

First of all, this area will receive the most direct amount of glue. The glue will find its way in there - It won't get there easily, but it will get there. Speaking of not getting there easily, guess where else the wax will hinder the flow of glue - You guessed it, the opening of the slot!

Look at the illustration at left. While thin CA has incredible wicking power, you also want to make this task as easy as possible. With no wax, it can easily flow through the hinge fibers, the seam and the wood. But if the hinge surface is coated with wax, the glue must travel OVER the fibers instead of through them. So in effect, you have hindered the glue's travel to the place you want it to go in order to avoid having it go to an area that it's going to get to anyway. When you look at it that way, it really doesn't make much sense.

Now that you now understand the very complex things that are going on "behind the scenes" of these simple little hinges, I have put together a little video that demonstrates just how simple they are to use.

Before you watch the video, I want to clarify a few things. I intentionally did not remove any covering around the slots, but there WAS no excess covering in the slot area. I also did not drill a wicking hole, but this was nice, clean, soft balsa, so I had no doubt that I would get good penetration. I just wanted to show that there is a lot you can get away with as long as the most basic things are covered.

Those things are:

- The surfaces being glued must be porous (I.E., not previously glued).
- The hinges must be inserted in BOTH sides and centered before the glue is applied.
- The surface must be flexed more than it will move in flight to provide the hinge with enough of a gap to flex.
- Fresh, THIN CA is the only glue to use on CA hinges.

Now watch the video to see how easy it is!

## Installing CA Hinges

[http://rcuvideos.s3.amazonaws.com/rcuvideos/magazine/reviews/1180/CA\\_Hinges.wmv](http://rcuvideos.s3.amazonaws.com/rcuvideos/magazine/reviews/1180/CA_Hinges.wmv)

Download and Watch in Windows Media Player here (21.4 MB)

Well, that's about all there is to say. If you're still uncomfortable about CA Hinges, try it yourself. Just get a few pieces of scrap wood and hinge them together just like I did in the video and see for yourself how easy it is to install CA hing-es!