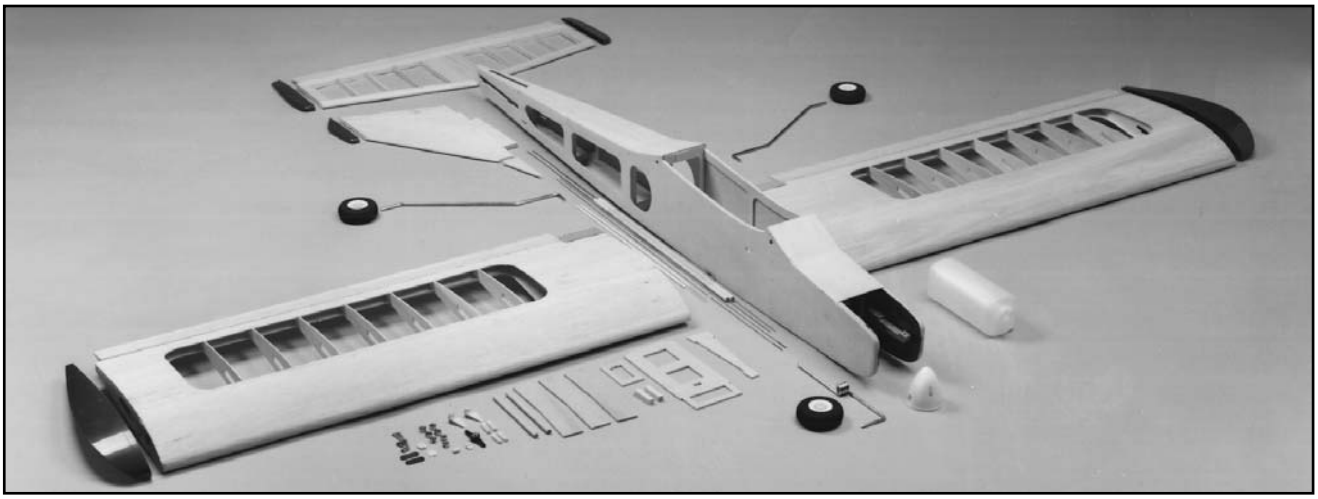
READ THIS FIRST!

RTC - READY TO COVER SERIES COVERING GUIDE



Congratulations on your choice of an RTC model aircraft. This kit allows you the flexibility to choose the trim scheme you want without having to build a wood structure. Using this guide and some patience, you can have a personalized airplane in just a fraction of the time it would take to build a complete kit.

We will cover the entire airplane first using this guide and then complete the building using the assembly manual included separately. Please read through this guide and the assembly manual to familiarize yourself with the kit. Once you are ready, clear off a spot on your table, grab a cup of your favorite beverage and jump right in.

BEFORE STARTING

There are a few essential items that you must have in order to cover an airplane using modern covering films. These films shrink, stretch and have heat activated adhesive on one side that will only activate with the use of special tools. The bare essential items you will need are as follows:

1. Two rolls of your favorite covering film.
2. Hobby knife with *several* sharp (new) #11 blades.
3. Top Flite® sealing iron – used for adhering the covering and shrinking it tight.

Hobby knife & #11 Blades

Top Flite Sealing Iron (TOPR2100)

A few additional tools that are not essential but will help make your life easier are as follows:

1. Top Flite® "heat gun" – used to apply heat to the covering allowing it to shrink or stretch over open areas and around corners.
2. Top Flite® Hot Sock™ – a soft cover for your sealing iron. This "sock" prevents the film from being scratched by the iron.
3. Top Flite® SmartCut™ Trim Tool – great for making accurate cuts around corners and edges.
4. Self-healing mat – used to protect your table from cuts and dings from your hobby knife.

Top Flite Heat Gun (TOPR2000)

SmartCut Trim Tool (TOPR2400)

A WORD ABOUT COVERINGS

Today's coverings are easier to use than ever. The films are designed to shrink, stretch and stick with the simple addition of heat. There are several brands and styles of covering but we found that MonoKote® covering films have the best appearance, variety of colors and durability. Coverings usually come in six foot rolls. This RTC airplane kit will require two rolls. Try to pick high contrasting colors so that your model is easily seen in the sky. Making your model look nice with these coverings is easy and we will show you all the tricks of the trade to make your airplane look super.

COVERING HINTS

Here are some guidelines to remember while covering your model. These are techniques and "Expert Tips" that we use in our shop to make the task easy and enjoyable with superior results. Step-by-step instructions for each part of the model are covered later in this guide.

1. Cover your sealing iron with a Top Flite Hot Sock. The Hot Sock will prevent the sealing iron from scratching the covering so you end up with a superior finish.

2. Use a heat setting of about 275°F to 320°F. This is about 3/4 to 7/8 of the way to the high setting for most irons. If you use a Hot Sock, you will need to increase the temperature to almost full. An accurate temperature reading is not needed. If the covering is not sticking as fast as you like, just turn up the iron until you find a setting that works well for you.

3. Initially use very light pressure with the iron (the weight of the iron is plenty) until the covering is positioned in place and all the wrinkles are stretched out. Then go over the surface two or three more times. Each time move a little slower and apply a little more pressure. This technique allows any wrinkles to smooth out ***before*** the glue firmly adheres to the wood.

4. Do not attempt to "press out" any wrinkles. This may result in a crease. Gently rub the wrinkle with light pressure until it finally shrinks away.

5. When covering areas that involve sharp junctions cut narrow strips (3/8" to 1/2" wide) and apply them in the corners before covering the major surfaces. The larger pieces will overlap and capture these smaller pieces.

6. It is common to see models at the flying field that have wrinkles and sags. This is primarily the result of poor technique when the covering is applied. You can practically eliminate future wrinkles by stretching the covering in place before tacking it down to the surface.

7. Hobby blades tend to dull quickly which make cutting accurate lines difficult. Replace your blades often.

MAKE YOUR PLANE INTERESTING

The flexibility of today's covering films is limitless. You're trim scheme is only limited by your imagination. Below are a few neat tips to help "jazz" up an ordinary model easily and quickly.

SMART STRIPE TOOL

Top Flite models offers a neat little tool called the Top Flite® SmartStripe™ (TOPR2420).
This tool allows you to cut perfectly straight stripes of any width.

COVERING OVER COVERING

Many modelers have trouble applying stripes without bubbles. In reality it is nearly impossible to eliminate them entirely, but by using one of these tricks, you can greatly reduce them.

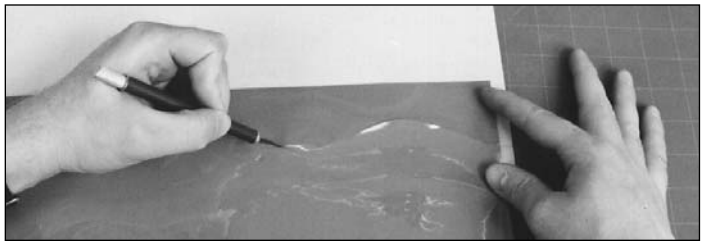
1. Use a household window cleaner to wet the surface where the stripe will be applied. Next, lay down the stripe and squeeze out all the air and cleaner using a soft paper towel, then use your sealing iron at a slightly lower temperature to stick down the covering. Work your iron slowly starting at one end.

2. Use Top Flite's Trim Solvent™. This liquid will activate the glue on most covering films without heat. Simply rub a **very small** amount onto the surface where the stripe will be placed. Apply the stripe just like a decal. Start at one end and work it down toward the other end.

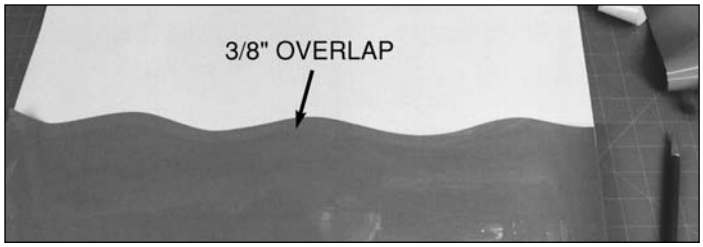
MAKING TWO COLOR FILM

A simple and quick way of jazzing up a trim scheme is to make a two color piece of film ***before*** putting it on the plane. Follow these steps:

1. Cut out two pieces of covering and overlap them on the edge that you want the colors to meet.



2. Working on a self-healing mat, cut your desired pattern into the covering where the two pieces overlap. Make sure you are cutting through both pieces of film. Discard the scraps.



3. Now remove the backing from the **top color only** and place it over the bottom color so it overlaps about 3/8". **Note:** Darker colors should always overlap light colors.

4. Use your sealing iron to join the two pieces together. Work slowly with light iron pressure, concentrating the iron contact on the overlap only.

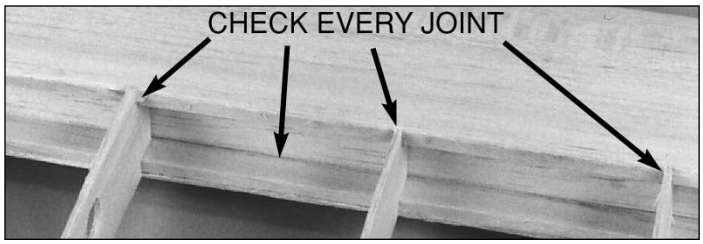
5. Finally, remove the backing from the bottom color and apply the covering as if it was one sheet.

MONOKOTE TRIM SHEETS

MonoKote trim sheets are basically pressure sensitive film that will stretch and shrink just like MonoKote covering films. Trim sheets make small stripes and decorations easy. Simply cut out the design you want and apply it to the covering like a decal.

LETS GET STARTED

BEFORE OPENING THE ROLLS OF COVERING, CHECK THE STRUCTURE



Carefully examine the structure for any loose glue joints. Use a small amount of thin or medium CA glue to repair any questionable joints. When gluing the parts on the wings, fin or stab, hold them flat on a piece of wax paper against your work surface before gluing. This will ensure that the structure will remain straight, and the wax paper will prevent the glue from getting on your nice table.

REPAIRING SURFACE "DINGS" AND FINAL SANDING

Many surface blemishes on a framed model are caused by bumps and balsa chips on the work surface. This type of ding is best repaired by applying a drop or two of window cleaner or tap water to the blemish, then running a hot sealing iron over the spot to expand the wood fibers. After the surface has dried, sand the expanded area smooth. If there are any scuffs or dings that are too deep for this technique, fill with a light-weight balsa filler such as Hobbico HobbyLite™ filler (HCAR3401). After the filler has hardened (about 45 minutes) sand the entire structure with progressively finer grades of sandpaper, starting with 150-grit and ending with 320-grit. Be careful not to sand too much, this could weaken the structure. Only sand enough to make it smooth.

After you are completely satisfied with the sanding job, wipe the structure until it is completely free of dust. A Top Flite MonoKote Tack Cloth™ (TOPR2185) works great for picking up the fine dust imbedded in the grain. Finally, set the parts aside and thoroughly clean your work surface to remove any remaining dust.

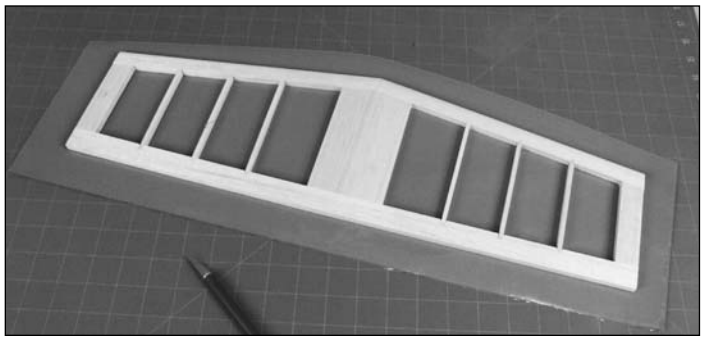
GET READY TO COVER

If you have a Hot Sock, install it on the shoe of your cool iron now. After it is in place, cut off the excess string ends and put a tiny drop of glue onto the knot to secure it. Now your iron is ready. Plug it in and adjust the temperature setting to 3/4 to 7/8 of the way to the high setting. Most irons come with a small stand. This will keep the iron off the table while you are not using it.

We always like to start out covering the small parts first. However, read through the entire section to familiarize yourself with all the techniques before beginning.

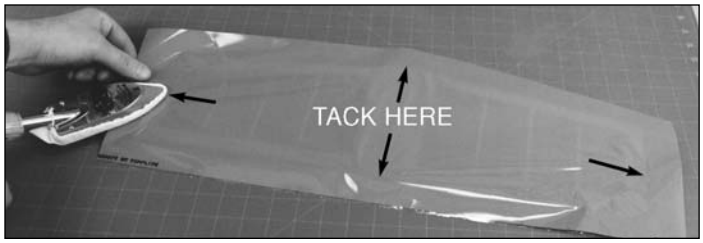
COVERING THE STAB

The stabilizer on this RTC airplane is what's commonly referred to as a built-up, open structure. The techniques described apply to nearly all open structures including larger parts like wing panels.



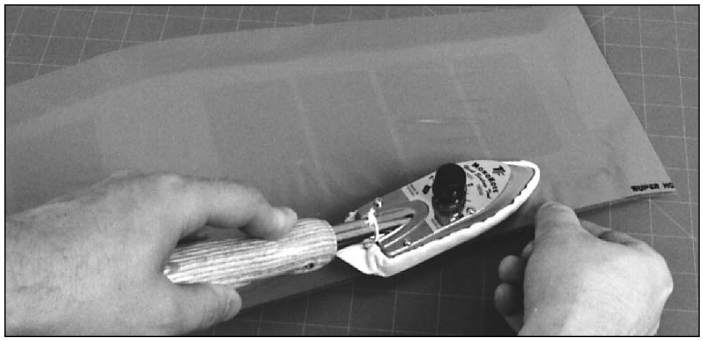
1. Unroll about one foot of covering from the roll. Remove the elevator from the stab and place the stab onto the covering. Cut out a piece of film that is approximately 1" larger than the stab on all sides. We like using a hobby knife with a self-healing mat for this, but scissors work equally well.

2. Remove the clear backing from the piece of covering to expose the adhesive side. An easy trick for doing this is to use a hobby knife to carefully stick the backing and pull it free. Don't forget which side is which as it's difficult to tell once the backing is off (however, the adhesive side is generally less shiny).



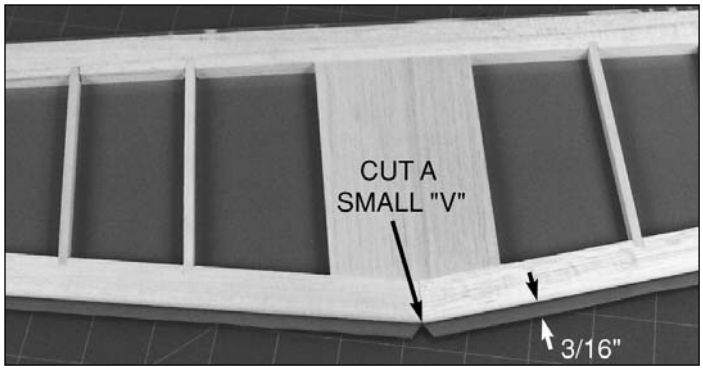
3. Place the stab flat on the table. Center the covering over the stab with the adhesive side against the wood. Now, using your iron, "spot tack" the *centers* of the leading and trailing edges and then the *centers* of the tips as shown. As you do this **stretch** out the wrinkles so the covering will lay out smooth.

4. Pull the covering so it's smooth and spot tack the four corners. Remember, do not iron down wrinkles or creases.

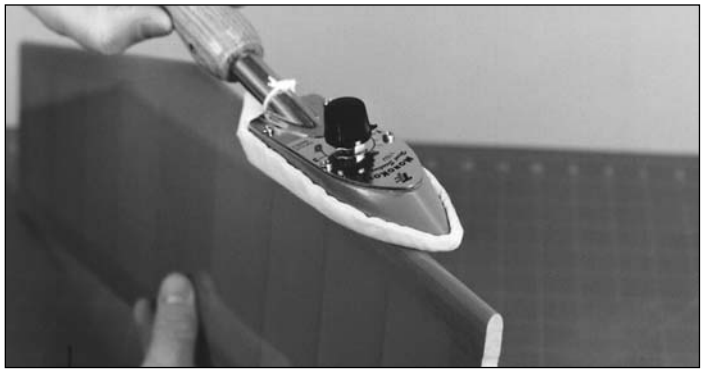


5. Once you are satisfied that the covering looks tight, begin to tack down all the way around the edge. Pull the covering as needed to keep it tight and smooth.

6. With very **light** pressure, tack the middle section to the wood. (Do not do the edges yet.) Continue to work the iron over the surface until the covering is wrinkle free. Finally, go back over the surface one more time with increased pressure and slower action. This will completely activate the adhesive for a permanent bond. **Lightly** move the iron over the open areas to tighten the film.



7. Turn the stab over and trim off the excess covering so that there is only about 3/16" remaining past the leading and trailing edges. The tips can be trimmed even with the wood since plastic stab and wing tips will be put on later. The Top Flite SmartCut Trim Tool is excellent for this task. This tool is basically a guide for the knife blade and easily produces straight accurate cuts. Cut a small "V" as shown at the center of the leading edge.



8. Using the sealing iron, work the covering around the leading and trailing edges using a rolling action. Start at the center and work your way to the tips. Again, use very light pressure until all the wrinkles are smoothed out and the covering begins to stick to the wood. Then go back over the edges again with more pressure to fully activate the adhesive.

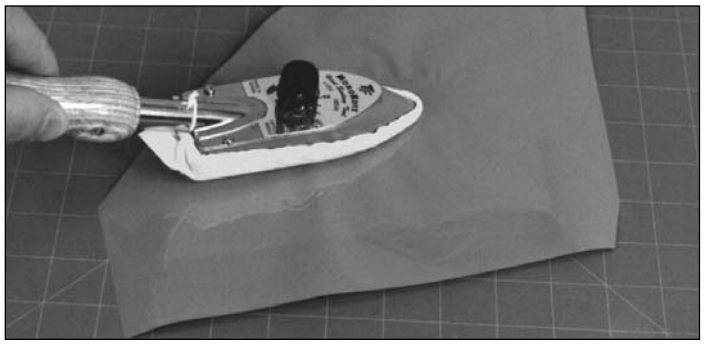
9. Repeat steps 1 through 8 for the other side of the stab.

Note: When assembling your model, be sure the seams are on the bottom of the stab. This will prevent oil collection and looks more professional.

COVERING THE FIN

The fin is a solid structure. Because of its size, it can be covered slightly differently than open structures. However, larger solid structures such as the fuselage, are covered nearly the same as open-structures.

1. Lay the fin on the covering and trim a piece of covering with a 1" overlap around all the edges as you did with the stab.

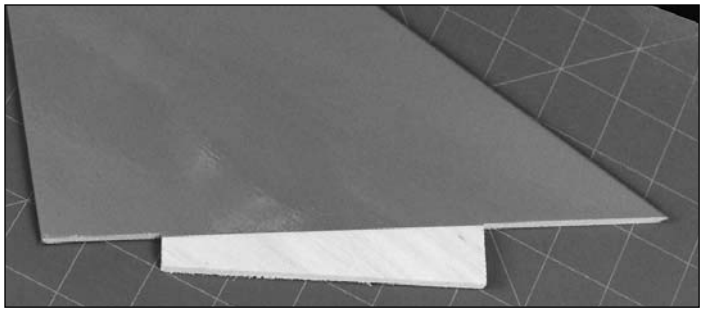


2. Remove the backing, then center the covering on the surface. Next, using light pressure with the iron, spot tack the very center of the fin. Work the iron from the center out towards the edges using light pressure. Stretch the film toward the edges as you proceed. Once the covering is down and smooth, go back over the surface once more with increased pressure and slower action.

3. Turn the fin over and trim off the excess covering so there is only 3/16" remaining past the edges. The top and bottom edge can be trimmed flush with the wood.

4. Iron the covering around the edges using a rolling action.

5. Repeat steps 1 through 4 for the other side.



6. Using a straightedge, trim and remove the covering from the fin "tab" as shown. This tab will be glued into the fuselage during assembly. **Only cut into the covering, not into the wood. Cutting into the wood will seriously weaken the fin.**

Congratulations!!! You have now successfully covered both the stab and the fin. Isn't this fun?

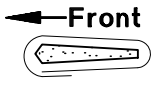
COVERING THE CONTROL SURFACES

The control surfaces (elevator, rudder and ailerons) are all covered using the same technique. The only difference is that the ailerons are longer.

1. With the hinges temporarily installed in the control surfaces, use a felt tip pen and mark on the covering where the hinge slots are located. This will make it easier to locate them later. Once marked remove the hinges.

2. Lay the rudder onto the film and cut a piece that is three times the width of the rudder with an extra 1/2" on the ends. We will cover both sides of the surface with just one piece of film.

3. We cover the surface so the overlapping seam will be facing the rear of the plane once it is installed.



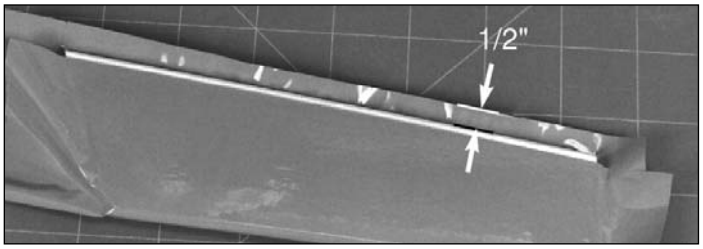
NOTE: Cover the elevator and the ailerons so that the seam will be facing the bottom of the airplane when installed. Be careful when doing this because there is a **right** and a **left** aileron.

4. Remove the backing and line up one edge of the film with the leading edge of the rudder. Spot tack, using a light touch, the center and the ends while pulling the covering film smooth. Tack down the entire edge, again using a light touch with the iron.

5. Working from the center, lightly tack the film onto the surface and work your way to the ends until the side is completely adhered.

6. Pick up the rudder and work the covering around the trailing edge slowly. Patience here will be rewarded with a nice looking surface without wrinkles or creases.

7. Continue to work the film around to the other side. Then, starting at center, work the film down as you did with the first side.



8. Using a straightedge, trim the remaining covering so that only 1/2" protrudes in front of the leading edge (5/8" for the ailerons).

9. Work the covering around the leading edge with a light touch of the iron.

10. Trim the ends so there is a 3/16" overhang at the top and bottom.

11. Make a few relief cuts so that the covering will lay smoothly around the corners, then completely iron down one side.

12. Trim the other side as needed so it overlaps the first side. Make more relief cuts as necessary to get the covering to lay down flat.

13. Repeat step 11 and 12 for the other end.

14. Go back over the entire surface with increased iron pressure and slower action to fully activate the adhesive. Spend extra time on the ends so they are secure.

15. Now, go back to step 1 of this section and repeat these steps for the elevator and the two ailerons.
Okay! – On to the big stuff.

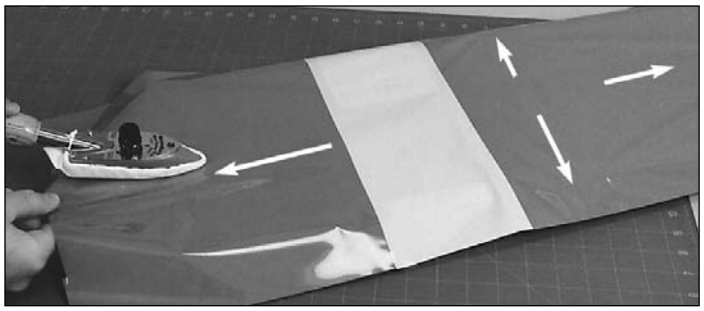
COVERING THE WING PANELS

The wing panels are considered open structures and are covered in the same way as the stabilizer. They're just bigger. Follow these steps for success.

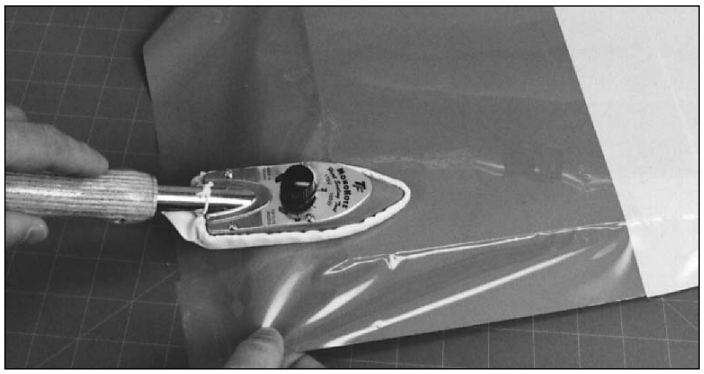
1. Before beginning, temporarily install the hinges **(without glue)** into the slots in both wing panels. Hold the ailerons in position and mark the hinge slot locations onto the ailerons with a felt tip-pen. This will make it easier to find the hinge slots later. Remove the hinges and set them aside.

2. Carefully cut out a piece of film so it's about 1" larger on all sides.

NOTE: Cover the Bottom surface of the wing first. This way the overlapping seam will be underneath the wing and less visible.

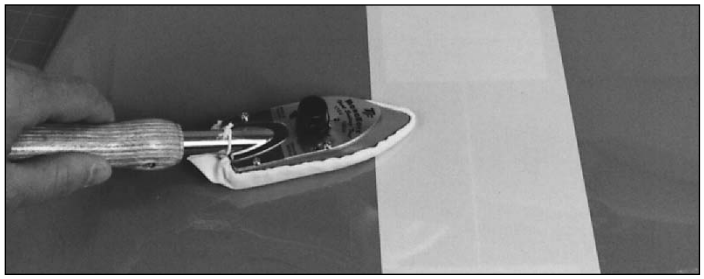


3. Center the covering on the wing panel. Starting at the center of the leading edge, spot tack the covering while pulling smooth. Next spot tack the center of the trailing edge and the centers of both ends.



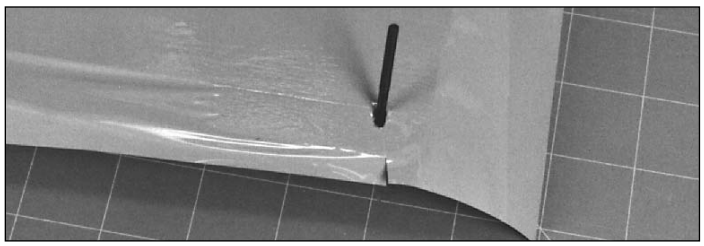
4. Pull the four corners smooth and spot tack them in place.

5. Once you are satisfied that the covering is nice and smooth, begin to tack down the entire perimeter of the wing panel. Pull the covering as needed to remove wrinkles.



6. Without using any pressure, work the iron across the surface so that any wrinkles will shrink out before the covering begins to stick to the wood. Go over the entire surface several times to make sure it's smooth.

7. Iron the surface one more time using increased pressure and slower action.



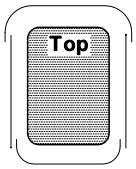
8. Cut a slit around the aileron torque rod. Iron down the flaps around the rod.

9. Turn the wing over and trim off the excess covering so there is only 1/2" remaining past the the leading edge and 1/4" past the trailing edge. Trim the covering flush with the edges on the wing tip and root.

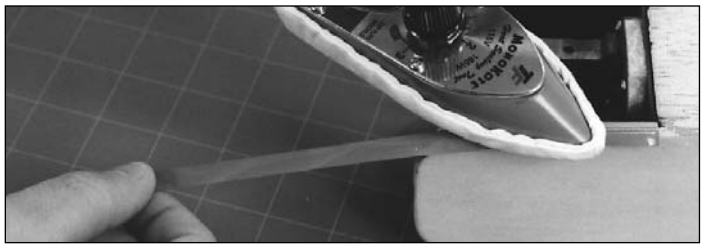
10. Work the covering around the leading and trailing edges using a rolling action with your iron. Always start from center and work your way toward the ends.

11. Repeat steps 2-9 for the top surface, then cover the other wing panel.

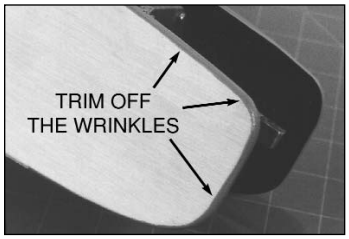
COVERING THE FUSELAGE



When covering the fuselage you should work from the bottom up. Start by covering the bottom surface, next the sides and finally the top.

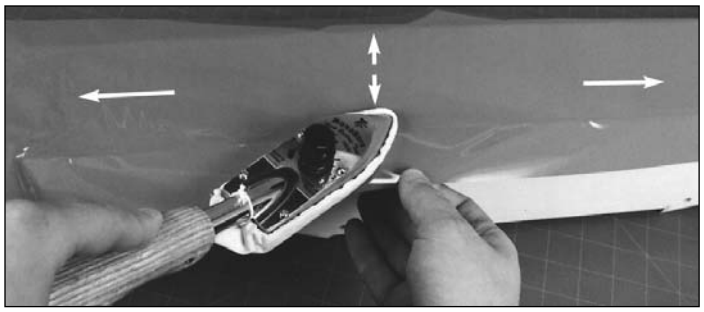


1. Cut two strips of covering 5/16" wide by the distance it takes to go around the nose of the plane. Using the sealing iron attach these strips to the nose with about 1/16" protruding over the outside edges.

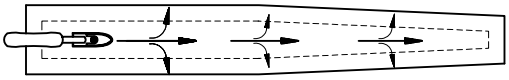


2. Roll the edges around to the side with the iron and trim off the wrinkles. The side pieces will overlap these edges later.

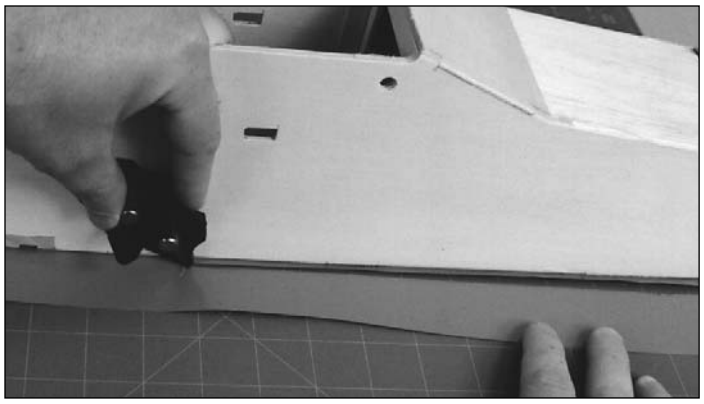
3. Cut a piece of film that is 1" larger than the bottom of the fuselage. Remove the backing and center it on the surface.



4. Covering the fuselage is not much different than covering a wing panel. The only trick is **not** to tack the **entire** edge until you are finished as this will allow areas for air to escape. Tack down the centers of the four sides and then the corners like you did with the wing panel. Next, instead of sealing the entire edge, just spot tack every couple of inches while pulling the covering smooth.



5. Start at one end and work the covering down using a light touch to eliminate wrinkles. As you go along, iron down the center first and work the the air out the sides. Once the covering is smooth, go over the surface once more with more pressure to fully activate the adhesive.



6. Turn the fuselage over and trim off the excess covering so there is only about 1/8" remaining past the edges. The SmartCut trim tool is great for making accurate cuts like these. The guide on this tool will space the blade away from the fuselage exactly 1/8".

7. Use your sealing iron to roll the covering around the corners starting at center.

8. Repeat steps 3 through 7 for the sides and top.

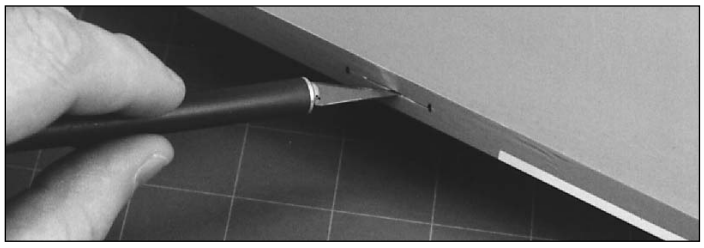
Congratulations! You have completed the basic covering of your airplane. Go back and add those nifty stripes and any other neat little designs using the techniques you have just learned.

INSTALLING THE CONTROL SURFACES

Now is a good time to permanently install the ailerons, rudder, and elevator.

NOTE: The hinge material supplied in this kit consists of a 3-layer lamination of mylar and polyester. It is specially made for the purpose of hinging model airplane control surfaces. Properly installed, this type of hinge provides the best combination of strength, durability and ease of installation.

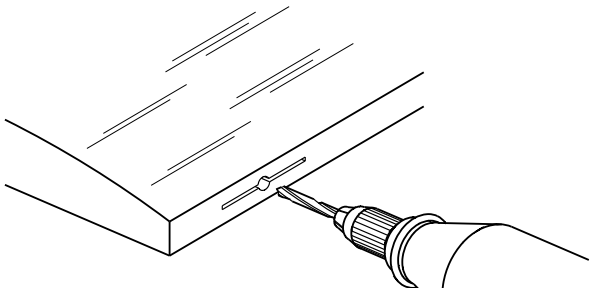
The most common mistake made by modelers when installing this type of hinge is not applying a sufficient amount of glue to fully secure the hinge over its entire surface area. This results in hinges that are only "tack glued" approximately 1/8" to 1/4" into the hinge slots. The following technique has been developed to help ensure thorough and secure gluing.



1. Using a hobby knife, cut a small slit in the covering to expose each hinge slot in the stab, fin and ailerons.

2. Hold the control surfaces in position to find the hinge slots in the rudder, elevator and wing.

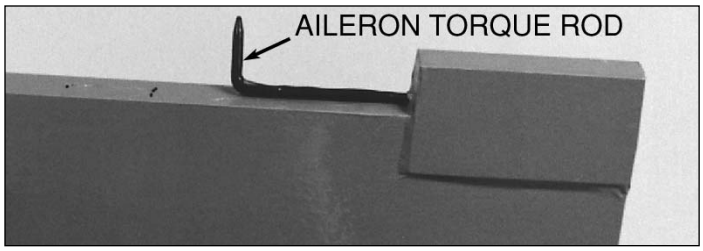
3. Using a hobby knife, cut small slots in the covering to expose each of the remaining hinge slots.



4. Drill a 3/32" hole, 1/2" deep, in the center of each hinge slot. Drilling the hole will twist some of the wood fibers into the slot, making it difficult to insert the hinge, so you should insert a hobby knife blade and work it back and forth a few times to clean out the slot.

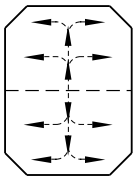
5. Trial fit the hinges into the slots and install the control surface to verify the fit and operation.

6. **Note:** Do **Not** apply any glue in this step. Verify the left-right positioning of the control surface, and push the control surface toward the wing until the hinge gap is 1/32" or less. It is best to leave a very slight hinge gap, rather than closing it up tight, to help prevent the CA from wicking along the hinge line. Remove the ailerons from the wing panels.



7. Before installing the aileron hinges, you need to mix up a small amount of 30-minute epoxy and lightly coat the aileron torque rods (not the hinges). Also pack some epoxy into the torque rod holes and slots in each aileron. Insert the hinges into the aileron. Then, insert the aileron torque rod into the epoxy filled hole as you fit the aileron into position. Wipe off any epoxy that oozes out with a paper towel. Set the wing aside until the epoxy cures.

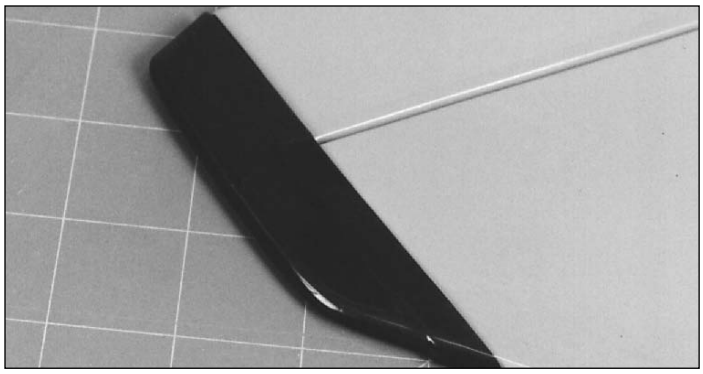
THE CA WICKS
ALONG THE "TUNNELS"
TO THE ENTIRE
HINGE SURFACE



8. Apply 6 drops of thin CA adhesive to both sides of each hinge, allowing a few seconds between drops for the CA to wick into the slot. Note that the small “tunnels” you created by drilling the 3/32" holes allow the CA to freely travel into the entire surface of the hinge, producing an extremely secure bond.

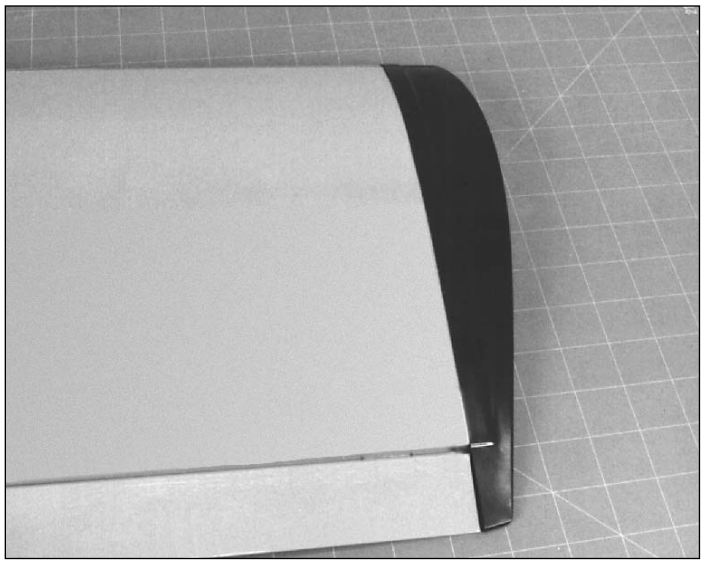
INSTALLING THE WING TIPS

The last thing you need to do is to attach the wing tips.



1. Using medium CA glue, apply a thin bead along the very edge of the fin. It does not take much glue here so be careful. Install the tip so that the rudder will still operate without binding. Hold or tape the edges of the tip against the fin until the glue cures.

2. Install the stab tips using a thin bead of medium CA. Be sure the elevator does not bind.



3. Install the wing tips using a thin bead of medium CA. Again make sure the ailerons do not bind.

Yahoo!!! *You are finally ready to move on to the assembly manual to finish your model. Have fun and happy flying.*

Please note, if you have any problems at all, feel free to give us a call at (217)398-8970.