

# Applying the Accur8 Skin Kit To Your Interceptor-E

Most model rockets are painted and decaled after their construction is complete. The best application of the Interceptor-E Chameleon Skin Kit requires that you apply the various elements of the skin as the model is built, though the enterprising modeler can apply the skin to an already-assembled model...perhaps a newly-constructed model or one that you finished years ago and want to give it a “rebirth” (I will leave that up to the modeler). These instructions assume that you are applying the Chameleon Skin Kit to your Interceptor-E as you build the model.

There are also helpful instructions specific to the various skin sections printed directly on the Chameleon Skin Kit sheets. It is recommended that you cut out the various skin sections only as needed...don't cut them all out at once as it will separate them from the adjoining handy directions and make them more prone to damage or loss. Keep the envelope that the skins were shipped in as a means of storing the skin sheets as portions of skins are cut from them.

## General Information

The base material used for the printed skin is a vinyl formulation. It is very thin and will very tightly conform corners and simple bends. It is not designed to be a highly shrinkable or “stretchy” material and therefore don't expect it to adhere perfectly to compound curves...but the Interceptor has only one very short compound curve and I will explain options for working with it when we get to skinning the nosecone.

The adhesive on the back of the vinyl is a “permanent” adhesive when applied to a slick, clean surface. However, it can be removed without too much difficulty within the first few minutes of application allowing for repositioning of the skin sections if needed. It will become more and more “permanent” with time and after a few hours it will be impossible to remove without seriously deforming or destroying the skin.

## Recommended Tools and Supplies

No special tools are required to apply the Skin Kit nor are any special skills beyond the recommended skill level of the kit (Skill Level 3). However, a few little extras, including the willingness to work slowly and carefully will lead to an “outstanding” finished model. Here are a list of tools and supplies in addition to those recommended in the Estes Interceptor-E kit instructions that are recommended to achieve a superior Chameleon Skin application.

**Clear Spray** – Recommended for initial light coating of skins before handling or applying. After testing a variety of sprays, I can recommend one of three

- 1) ACE Premium Enamel Clear Gloss- Store branded and available through ACE Hardware stores. Very similar to Krylon but seems to apply a bit heavier without running. I have not experienced any yellowing when using the ACE Product. Dry to the touch in about 10 minutes. This is the clear Spray that I recommend.
- 2) Krylon Crystal Clear Gloss– Dries extremely quickly though when applied in multiple or heavy coats has a tendency to yellow just a bit. Dry to the touch in about 10 minutes.

- 3) Rustoleum Crystal Clear Enamel – Applies the thickest of the three and I have experienced no yellowing. However, it is slower drying and dries to the touch in about 30 minutes.

**Clear Final Finish** – Pledge Floor Polish (formerly Future Floor Polish) from Johnson and Johnson. Results in a very hard and durable final finish to the model. Can be brushed on with little waste and very good results using a foam brush. Very economical...a single 27 ounce bottle which will cover DOZENS of models costs about \$10. I DO NOT recommend applying Pledge directly to the Chameleon Skin Kit but apply a single light to medium coat of one of the recommended Clear Sprays first and then finish the model with 4-5 coats of Pledge.

Though I have a preference for several coats of Pledge, you can opt to use your favorite clear coating based on your experience or preference. I like Pledge because it dries very hard and imperfections can be easily dry sanded.

**Sanding Sealer** – Balsa filler or Balsa Sanding Sealer. To seal all wood surfaces before application of paint. I have discovered that a good substitute for traditional Sanding Sealer is latex house trim paint. The stuff is quite thick and will seal balsa in a single coat. You can sometimes obtain “sample” sizes of two to four ounces at many hardware and home improvement stores for a very low cost. The main downside is that it can take a few days to full harden so that (if required) it can be sanded.

**White or Black Spray Paint** – Any good brand of glossy spray enamel to provide a good surface for the Chameleon Skin to bond to.

**White or Black Touch-Up Paint** – If you have a steady hand, just a small bottle of white or black paint (to match white or Twilight Chameleon Skin) and a small paint brush will do. Rather than using bottled paint, I have discovered that fine point paint pens such as the Testor’s Paint Pen or the Sharpie Paint Pen (not Sharpie Markers) are perfect for final touch up, especially the white paint pens. I prefer the Sharpie because it seems to have a freer flowing tip that is less prone to dry-out and the density of the white paint is very good.

**#11 Type Knife Blade** – Required to precisely cut out the various Chameleon Skin Elements. I have discovered that the Testor’s #11 blades (black, heat treated) will hold their point and sharp edges better than just about any other blade you can get.

**Metal Straight Edge** – To serve as a precision cutting guide.

**Magnifying Aid** – the greatest precision in cutting and trimming the skin is achieved with a magnifying aid such as magnifying glasses (Strong 2.0 readers are a good start) or a magnifying visor. Micro-Mark ([www.micromark.com](http://www.micromark.com)) is a good source or you can find them very economically at your local Harbor Freight, Northern Tools, or discount tool store. The markings and cutting guidelines printed on the Skin Kit are very thin and light. Use of a magnifier will greatly aid in seeing these guidelines.

**Covering/Sealing Iron** – Though not required, superior results in covering the nosecone can be achieved by the use of a sealing iron such as used for applying coverings to model airplanes. You can also use a clothes iron. Though the vinyl used for the Chameleon Skin Kit is not specifically designed for heat shrinking and sealing, the very slight amount of shrinking needed of the nosecone is possible with the Chameleon Skin Kit vinyl.

## Preparing the Skins

Apply a very light coat of clear spray to each of the skin sheets and set aside to dry. This initial clear coating seals the surface of the skins and will enable you to more easily clean the skins as you work with them. It also increases the resistance of the skins to damage and scratching as well as giving a good surface for the final clear coating of the finished model.

### Model Assembly and Skinning

When working with the skins it is essential that you keep your tools, work surface and especially your hands and fingers as clean as possible. Any dirt or grime will really show up on the White Chameleon Skins and any loose particles will permanently stick to the exposed adhesive skin on the back of the vinyl.

In general, start by following the Estes instructions. You will not need the Body Tube Marking Guide as the Chameleon Skin Kit provides for the location of all fins, wings, and launch lugs.

Proceed with Steps 1, 3, 4 and 5 of the Estes Instructions (step 2 is the marking of the body tubes which is not required).

The body tube skins are applied in four sections starting at the rear of the body tube and working forward. Each of the body tube skin sections are numbered with a red 1, 2, 3 and 4. The body tube skins are slightly longer by about 1/32" than required to completely wrap around the tube. You can cut them a little short and hide the resulting seam/gap by using appropriate touch up paint or you can overlap the seam. If you are a skilled modeler, you can apply the skin with the overlap and then trim the overlap away (using a straight edge and VERY SHARP pointed knife) with a resulting almost invisible butt-joint seam on the bottom centerline of the body tube.

Precision cutting of the skins, particularly for the body tube, is required. Don't try to free-hand cut and make sure you cut on or very slightly inside of the light guidelines around the perimeter of each skin section. There are usually tick marks outside of the skin area to act as additional cutting guides.

#### Body Skin #1

Cut the aftmost body tube skin (red 1) from Sheet 4, carefully cutting around the protruding outline of the red "Warning" label on one edge. Peel back the vinyl skin from the edge of the skin opposite the Warning label by about an inch and cut away about a 1/4" wide strip of the backing. Place the skin printed side down on your work surface and replace the 1/4" wide backing strip making sure the slick side is against the skin adhesive.

Wrap the skin and backing around the aft end of the body tube making sure that the areas of the skin marked "Rudder Fin: Cut Away" align with the rudder fin slots in the body tube. Also perfectly align the front and rear edges of the wrap. Hold the wrap tightly around the body tube. It may take a couple of tries to get the "dry fit" of the wrap exactly right. PATIENCE and PRECISION IS IMPORTANT!

Once the skin is perfectly dry fitted, while tightly holding the skin in place, carefully raise the edge of the skin from which you cut the 1/4" backing and peel the backing away. VERY CAREFULLY but lightly stick the skin to the body tube along this 1/4" area starting in the middle of the edge and working to the ends. You can carefully remove and reposition the skin at this point if you need to. Once this 1/4" area is properly positioned and stuck into place, release the skin with your hand and swing it out so that you can begin removing the remainder of the backing while you carefully adhere the rest of the skin, working around the body tube from the initial 1/4" wide application area until the ends meet. Avoid any air pockets or wrinkles (wrinkles are a sure sign that the skin will not perfectly align).

When finished with this section, the red “Warning” label will overlap the seam.

### **Body Skin #2**

The second section of body tube skin is on Sheet #3. Cut it out as you did with Skin #1. Again, there is a “Warning” label on one edge to pay attention to. On the edge opposite the Warning label, remove and replace about ¼” of the backing. Dry fit the skin section to the body tube. Align the seam of this skin section with the seam of the first section. You want to butt the rear edge of this section (the red “Turbine Plane” band) against the forward edge of the rear skin. Once you are satisfied with the positioning, adhere the skin to the tube as for Skin #1

### **Body Skin #3 and #4**

Follow the application instructions as for the skins above. Skin #3 is on Sheet #2 and Skin #4 is on Sheet #4. Be sure to observe which edges are the front and rear edges. When all of the body tube skins are applied, there will be one continuous aligned seam from front to rear. Also, the areas of the #1 and #2 skin sections marked “Cut Away” for the rudders and wings will align.

You may want to apply a coat of clear to the entire body at this point to protect it

### **Preparing For Wing, Fin and Rudder Attachment**

You need to remove the skin from the areas to which the wings, rudders and lower fins will attach. Carefully cut about 1/32” to 1/16” outside the grey areas marked “...Cut Away” (the extra 1/32” to 1/16” allows for fillets) and remove the skins from these areas). Don’t cut away the extra 1/32” to 1/16” from the areas marked “Cut Away: Lower Fins.

### **The Sub Fins (bottom fins)**

Follow Step #6 of the Estes Instructions to assemble the Sub Fins. Cut out and apply the skins for the sub fins from Sheet 6. Fold the skins along their centerline, peel away the backing and, centering the long leading edge of the fin along the fold, adhere the surface with the tabs at the forward and trailing edge tabs first. Fold the tabs over the edges holding them tightly against the forward and trailing edges.

Adhere the inside surface of the skin, folding it tightly over the leading edge and covering the tabs.

Trim the excess root edge material away and glue the sub fin to the model aligning the red stripe on the fin with the red “Turbine Plane” stripe on the body tube. These fins do not require a fillet for strength as they have such a long root edge with respect to their span.

### **The Wings**

Assemble the Wings according to Step #7 of the Estes instructions. However, DO NOT glue the four wing supports to the top and bottom of the wings.

Apply a coat or two of sealer to the wing surfaces, sanding between coats to remove any high spots. You don’t have to eliminate wood grain...you are just trying to give a surface that paint won’t soak into.

Apply a coat or two of white or black (depending on White or Twilight skin kit) to the tops, bottoms, and trailing and leading edges of the wings. This will provide the surface for the best adhesion of the wing skins. The skins WILL NOT ADHERE TO BARE WOOD.

Follow Step #8 of the Estes instructions to attach the wings to the body tube. Other than along the fillet area, try not to get the glue/epoxy used to attach the wings on the skin of the body tube.

Once the wings are attached, you are ready to begin skinning them.

The top and bottom of each wing is covered with one continuous skin as are the wing chines (the forward extension along the body). This results in a very smooth and rounded leading and trailing edge.

Carefully cut out the wing skin for the appropriate wing from the skin sheet (Sheet 5 or 6). Once cut out, handle and manipulate the wing skin very carefully because even though it is very tough against puncture, it can tear easily at the cutout where the fold around the leading edge is located. To protect against tearing, I apply a strip of blue painter's tape or masking tape over the leading edge fold line. Once the skin has been applied to the wing, carefully remove the tape.

There is excess skin material along the root edge that can serve to bridge the fillet between the wing and body. A thin grey line along the root edge of skin indicates where it should be folded to match where the joint of the wing to the body tube is located.

***TIP:** Though best appearance results when using this excess skin material at the root to bridge fillets (recommended only for very experienced modelers), it is MUCH EASIER to NOT use the excess to bridge the fillet. Instead, trim the skin so that it ends exactly along the root edge. Prior to applying the skin, paint the fillet using the Paint Pen (or touch up paint) to color the very narrow exposed portion of fillet. When you apply the skin, you will barely noticed (only on close examination!) that the Chameleon pattern is not covering the very narrow fillet.*

You will apply the skin starting on the bottom of the wing first. This is the surface of the skin which has the landing gear door (marked with "Caution – Door"). Start by carefully folding the bottom skin against the top skin along the leading edge. Make a sharp crease along the leading edge. Peel away the skin of the bottom surface of the wing skin so that you can cut the backing along the crease. Replace the backing. Peel way the bottom wing skin from the trailing edge by about 1" and cut away about ¼" of the backing and replace the backing.

Perform a dry fit of the bottom portion of the wing skin by slipping the leading edge notch (the blue area marked on the skin as "Cut Blue Area Away" over the wing chine at the leading edge of the wing. Be very careful not to tear the leading edge of the skin.

Align the outline of the landing gear door on the wing skin to the outline of the landing gear door on the body tube. You also want the line along the root edge of the skin to fall exactly over the wing body joint. Once satisfied with this positioning, carefully lift the bottom trailing edge of the skin and remove the ¼" strip of backing and adhere the skin to the wing (note that the bottom skin does not extend all the way back to the wing trailing edge). Again, when you are satisfied with positioning, very carefully peel the backing away from the bottom wing skin and adhere the skin to the wing, avoiding air bubbles or wrinkles. You will likely have to swing the top surface of the skin back over to the bottom of the wing to do this. Be careful not to tear the covering along the leading edge.

***TIP:** If you encounter bubbles under the skin at any point, you can make a tiny prick at the edge of the bubble with the point of your knife and carefully squeeze the air out of the bubble while sticking it to the surface.*

Swing the top surface of the skin over the wing for a dry fit. Make sure the skin is tight against the leading edge. The control surface printed on the top wing skin will extend well beyond the trailing edge (it will wrapped over the trailing edge and adhered to the bottom of the wing). Once satisfied with positioning, remove the backing from the top skin section and adhere the skin to the wing.

Finally, fold the control surface under the wing along the trailing edge and adhere to the bottom of the wing.

If you happen to tear the skin along the leading edge, simply cut the skin along the centerline of the leading edge fold so that you completely separate the top skin from the bottom skin. Finish the positioning and application of the skins. Once the top and bottom skins are applied, trim the leading edge skin back about 1/8" from leading edge of the top and bottom skins. Then cut a 1/2" to 5/8" wide strip of scrap skin material long enough to cover the leading edge. Fold this along the middle, remove the backing, and then apply over the wing leading edge, covering the top and bottom skins equally. This results in an ideal simulated leading edge cuff. Creative modelers may want to paint this cuff black or grey to simulate a "carbon-carbon" leading edge. Even mistakes can be made into diamonds!

Repeat the above skinning process for the remaining wing.

### **Wing Chines**

If you "made it through" the wings then the wing chines will be easy. I won't go through all the "dry fit" instructions. Before removing the backing, crease the chine skin along the leading edge centerline. Trim any excess root edge skin material away as desired. Apply the top of the chine skin first...it's the part of the skin with "Caution Pressure Vent" graphic as well as a tab at its forward end. Trim and align the rear edge of the chine to match the top wing skin where it crosses the chine. Fold the tab under the forward edge of the chine and trim away excess. Finally, fold the bottom chine skin under to the bottom surface of the chine making sure it stays tight against the leading edge.

Repeat for the remaining chine.

### **Wing Supports**

There are four wing support pieces that strengthen the wings. These appear to be primarily to protect the wings against breakage during recovery as I have always built my Interceptors without them and have had no breakage (or any flight problems) so long as I use a parachute larger than is provided with the kit (In my opinion, the kit parachute is WAY too small for ANY flying).

If you do decide to use the wing supports, there are skin sections provided for them.

Modify the length of the fin supports by cutting off their rear edge perpendicular to the sides of the support so that their overall length is 2 5/8" (the rear edge has a smaller angle than the forward edge of the support).

Bevel the forward and rear edges of the support and round the top edges as shown in the instructions. Cut out the skins for each of the supports. Apply the skins to the supports so that the skin wraps under the long edges of the support. Do not wrap the skin under the forward and rear edges of the supports. Note that there are different wraps for the top right, top left, bottom right and bottom left wing supports.

You will notice that there is a very light rectangle on the tops and bottoms of each wing where the supports are located. Cut the skin away just inside of the lines of the rectangles. Glue the proper support in each location, matching the edges of the lettering or insignia graphics for good alignment. The slight excess of skin covering on the front and rear edges of the supports adhere to the wing surfaces.

### **Rudders**

Follow Step #9 of the Estes instructions to assemble and prepare the fins. Do not use the Fin Support pieces...they really aren't needed (I have flown several Interceptors without these pieces many times without problem...I suspect they were included in the kit to "match" the supports on the wings).

Follow Step #10 of the Estes instructions to attach and fillet the rudder fins

By now you should have a handle on the skinning process. Cut out the “outboard” rudder fin skins (they are the ones with the leading and trailing edge tabs and the “tail number”). Do a dry fit of the skin, aligning the tip edge of the skin (blue) with the edge of the rudder tip. Fold along the trailing and leading edges. Cut away about 1/2” of the backing from the tip edge and apply the skin to the fin. Remove the remainder of the backing and adhere the skin to the fin, wrapping the leading and trailing edge tabs tightly over the edges. Trim excess tab material away (particularly along the short fin chine) as needed.

Cut out the “inboard” rudder skins (bearing USAF...and they don’t have tabs at the leading and trailing edges. Dry fit and trim them so that they are about 1/16” to 3/32” short of the leading and trailing edges (again, with the blue edge aligning with the rudder tip). Remove backing and adhere the skin to the fin, covering the wrap-around tabs. Trim root edge as need to cover fillet.

### **Antennas**

There are two wraps provided for the antennas. There is a left and right skin wrap. The yellow rectangles on each wrap are located to the rear of the aft portion of the antenna with the red band locating just aft of the forward edge of the aft portion of the antenna. When assembled on the rudder tips, the yellow rectangles face outward.

### **The Launch Lugs**

Flip the model over and cut away squares of the skin material on the bottom centerline material that match the “footprint” of the launch lugs in the positions given in Step #11 of the Estes Instructions.

### **The Nose Cone**

This is perhaps the one area that will make or break your whole skinning process and requires a skill that many model rocketeers have not had to use before. Work slowly and carefully and you will end up with good results. I have included an extra skin sheet with the nosecone skins (and an extra rudder skin) in case you don’t get things right the first time.

Scrape or sand away any projecting seam along the top and bottom centerline of the nosecone. Paint the nosecone in the base color for to match the appropriate skin kit. Let dry completely...usually at least a day (if you have to pull the skin off and “start over” you don’t want partially dried paint to come off with it).

### **Forward Nosecone Skinning**

Cut out the nosecone skin for the conical forward section. Remove and replace a 3/8” strip of the backing along one long edge of the skin. Cut away the blue areas for the canopy. Perform a dry fit on the nosecone, aligning the “Linear Charge” line with the groove molded in to the nosecone that runs all the way around the nosecone just aft of the cockpit. Center the seam of the skin exactly along the top centerline of the nosecone. Make sure the ends of the “Linear Charge” line and the rear edge of the skin match exactly. You can also use the molded in grooves around the cockpit canopy as alignment guides along the cockpit cutout portion of the skin.

Lift the edge of the skin with the 3/8” backing cut away and remove the backing. Lightly adhere the exposed adhesive to the nosecone and again check alignments. When satisfied with positioning. Swing the skin out and remove the backing as you carefully adhere the skin, working all the way around the nose until the centerline edges meet. Be sure that you adhere the skin to the depression formed by joint between the raised portion of the cockpit and the nosecone. If you “bridge” this area (that is, you do not stick the skin into the depression) an air pocket will be present and it will be nearly impossible to get the skin to “stretch” down into the depression and stick in place) DO NOT firmly adhere the rear

edge of the skin to the nosecone just yet. This is a compound curve that requires a bit of finesse to get right.

As stated above, the trickiest part is to properly adhere the skin to the bend where the cockpit joins the cone of the nose. Just be sure to stick the covering into this area first on each as you work around the nose. If for some reason you don't get the skin properly applied in this area, you can simply skip covering the small canopy portion with the Chameleon skin and leave it bare. It will look just fine. Alternatively, you can slice through the skin in a straight line along the "low point" and stick the skin to the nosecone on either side of the slice. You will end up with a very slight gap where you sliced but 90% of people looking at the model will never notice. A final method that I have used is to use a sealing iron used for applying model airplane coverings. Set the iron to medium heat and gently use the edge of the iron to press the skin into the cockpit valley. Do not "slide" the sealing iron over the skin...just press with the edge for 2-3 seconds, repeating until the skin sticks in place. What is happening is that you are briefly heating the skin and "stretching" it down into contact. Bear in mind that both the vinyl covering and the plastic nosecone are both plastic and will deform undesirably (or even melt) if you apply too much heat.

You will notice that the conical skin does not seat down against the curve where the conical section of the nosecone meets the cylindrical section. You have three choices here:

- 1) Cut the area of the skin "short" of the curve where the conical portion meets the cylindrical portion of the nosecone and the problem of making the compound curve is eliminated. There are two very faint lines printed on the conical skin near the rear edge. If you trim the conical skin away along one of these lines, it will seat neatly on the conical portion of the nose. The downside is that you will end up with about a 3/8" gap in the Chameleon pattern on the nosecone. While this sounds "bad" the results are actually quite good. Most will not notice the absence of the pattern in this area...or you can give an "engineering reason" for not having the pattern in this area such as, "there is a scanning sensor in this area that is not compatible with the Chameleon Skin" or some such other sci-fi explanation <G>.
- 2) Remove a series of small pie-shaped wedges centering on each wrinkle so that the skin will generally lie flat on the compound curve. I have gotten generally "okay" results using this method and if you take your time and are willing to make quite a number of tiny pie-cuts you will be rewarded with a presentable result.
- 3) Or you can "heat shrink" the covering to conform to the compound curve. Though the vinyl is not designed to be heat-shrinkable, it can be forced to shrink just enough to (in most cases) conform to the curved joint between the conical section and the cylindrical section. Using a model covering sealing iron (or even a clothes iron) set to medium heat, you can "roll" (not slide) the iron over the excess areas until they shrink and lie flat on the nosecone. The trick is to do this about 2 to 3 seconds at a time on each needed area until the area is completely "shrunk" and adheres to the nose. If you hold the iron to the surface any longer, you run the risk of heating and distorting the plastic nosecone beneath the skin. You may end up with almost microscopic "tight wrinkles" in the skin but these are fairly easy to "hide" under several coats of clear.

Once you have the forward part of the nosecone "skinned", go back and trim the seam along the top centerline of the cockpit so that it forms a nice butt-joint. Trim away excess around the "windscreen" areas of the cockpit canopy and trim the small area ahead of the cockpit so that you have a clean "butt joint" there.

### **Rear Nosecone Skinning**

Cut out the aft nosecone skin. Remove 1/4" of the backing from one centerline edge and replace. Do a dry fit of this skin to the cylindrical portion of the nosecone, precisely butting the forward edge of this skin



to the rear edge of the conical skin. Also, the centerline seam of this skin is exactly 180-degrees around the nosecone from the seam of the conical skin. There is a tick mark on the conical skin to align the rear nosecone skin seam with.

Once you are satisfied with all alignments, adhere this portion of the nosecone skin.

### **Finishing Up the Nosecone**

You may notice that some small portions of the nosecone skin don't want to "stay stuck" down along some seams. I have discovered that if I carefully "wrap" a ¼" wide rubber shock cord around the nosecone over these areas and letting set for a day, the adhesive will stick and cure and remain permanent. Just be sure to moderately stretch the shock cord and make sure it lies flat as you wrap it. Secure in place with tape.

Once you are satisfied with the nosecone covering, apply several coats of clear to seal things down. Use the kit cockpit canopy decals and apply a couple of coats of clear to seal and protect it.

### **Completing the Model**

Use the Estes instructions to complete the construction of your Interceptor and to fly it. I do recommend that you use a parachute larger than the 24" unit included in the kit...it's simply too small. A 30" parachute will have about 1 ½ times the area while a 36" (recommended) has over 2 times the area of a 24" 'chute.

### **If You Have Problems**

If you have problems covering the body tube or the nosecone, contact me at [johnpursley@accur8.com](mailto:johnpursley@accur8.com). We can arrange to send your nosecone and/or body tube to me and I can cover them for you at a nominal charge. You may also contact me at that email address for advice on any other problems you may encounter.