

Cut nose cap wrap along this line. Apply wrap so that seam is on top centerline of nosecone and the grey glare panel is on the centerline of the cockpit canopy.

Apply thruster (right) to the top centerline of the nose cap center over seam

8

### GENERAL INSTRUCTIONS

Most individual skin sections are accompanied by a red number which indicates the order to which they are applied to the model parts. It is suggested that you make copies of each sheet of skins so that you have these instructions and their associated instructions during building and application.

### GENERAL SKIN APPLICATION

Aligning the skin sections for their application is easy...even for the body tubes. You don't have to worry about marking or measuring to get things right. Don't over think things!

In general, you the skin section out as close to the printed edge as possible...right ON the edge is what you are shooting for. Use a METAL straight edge to cut along straight edges. Cut VERY SLOWLY when cutting curves. I highly recommend some kind of magnifying aid, even if you have perfect vision.

After the skin section is cut out, decide which edge you will be adhering to the model (or model part) first. Carefully peel back the printed vinyl surface from the backing enough so that you can expose and cut away about a 1" or so of the backing and cut away about a 1/4" (it doesn't have to be exact) strip of the backing. Flip the skin section over and replace the 1/4" section you just cut away, being sure the shiny "no stick" surface of the 1/4" strip goes back against the adhesive surface of the skin. In general, the edge from which you need to remove the 1/4" backing is indicated next to the appropriate skin section.

To apply the skin section, with the backing still in place, carefully position the section in place. Hold it securely in place with one hand and lift the edge of the skin that you cut the 1/4" strip of backing in the step above, peel the 1/4" section away (without disturbing the position of the skin) and adhere the exposed adhesive on the back of the skin to the model surface. Release the skin you were holding with your other hand and lift it so that you can start removing the remaining backing. Run your finger back and forth with moderate pressure to the top of the skin, gradually working from the initially applied edge (where the 1/4" strip was removed) until the entire skin section is adhered in place. The adhesive generally will not easily entrap air to form a "blister" under the skin. If you do end up with such a blister, simply prick it at one edge of the blister with the point of a #11 blade and "roll" the air out of the blister toward the pricked hole. If you just break through the surface of the skin with the #11 blade the hole will not be visible.

### SKINNING THE BODY TUBE

Applying the skin to the body tubes is surprisingly easy. Prepare the skin backing as explained above. Carefully wrap the skin around the body tube starting with the rearmost body tube skin first. EXACTLY align with the rear of the body tube and make sure the forward edges of the skin exactly match where they come together. Tightly holding the skin to the body tube with one hand, lift the edge with the 1/4" backing strip and remove the strip. Carefully burnish the exposed adhesive to the body tube without moving the skin. Once the 1/4" strip is adhered in place you may release the rest of the skin and lift it to start removing the backing nearest the 1/4" area that is stuck to the body tube. Run your finger back and forth along the length of the skin while removing the backing. Continue all the way around the tube. There will be a very slight overlap of the skin edges.

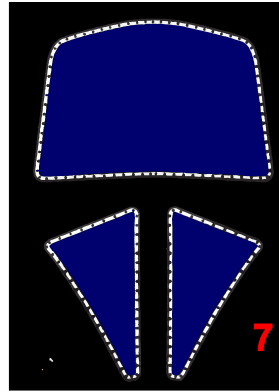
### NOSECONE PREP

Using a knife blade, scrape the mold line that runs along the top and bottom of the nosecone so that it smooth. It is recommended that the "gun ports" be filled with model putty and then sand flush with the surrounding nosecone surface. Paint the entire nosecone black.

Note that the nosecone wrap is two forward pieces and one aft piece.

Piece 4 is applied first. Wrap it tightly around the nosecone so that the red line within the "Linear Charge" band aligns EXACTLY with the groove in the nosecone. The seam runs along the top centerline of the cockpit. Once aligned and holding the wrap in place with one hand, carefully lift the edge with the 1/4" backing cut and remove the 1/4" backing strip and firmly stick the skin adhesive to the nosecone. Double check the wrap positioning and then swing the wrap away from the nosecone and carefully remove the backing as you adhere the skin wrap around the nosecone. There is a "valley" to either side of the cockpit canopy...be sure to adhere the skin down in this valley. The two ends of the "Linear Charge" band should perfectly align when you are done. Carefully cut the blue areas away to either side of the canopy. The recessed canopy line should just be exposed evenly on both sides of the canopy.

Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using



7

Forward edge

Forward edge

6



Remove 1/4" backing from this edge after cutting out skin

Position aft nosecone wrap so seam is on the BOTTOM (aligned with the white mark on the forward nose wrap. It should also overhang the shoulder by about 1/16". When the forward and aft nose wraps are in place, there will be a gap (about 3/8") between them where the nosecone transitions from cone to cylinder. The black painted underlying nosecone camouflages this gap and eliminates the need to match and "shrink" the skins to fit the junction.

Remove 1/4" backing from this edge after cutting out skin

4

Cut blue area away for cockpit after applying to nosecone

RESCUE

Pilot Rank and Name

RESCUE

Cut blue area away for cockpit after applying to nosecone



Caution: Linear Charge

Caution: Linear Charge

Caution: Linear Charge



Apply this body tube wrap last **3**

Forward edge of body tube

45

UNITED STATES AIR FORCE

45

UNITED STATES AIR FORCE

APU CONN.



APU CONN.



Leading Edge "Cuffs". Center on leading edge of wing after applying top and bottom wing skins if desired

Remove 1/4" backing from this edge after cutting out skin ▲

▲ Apply this edge to body tube first ▲

Cut this area away and remove to expose body tube. Air Scoop glues here.

Wing Root: After applying skin and protective clear coat Cut Away to expose body tube



# RI-27845



# RI-27845

Wing Root: After applying skin and protective clear coat Cut Away this area to expose body tube

Cut this area away and remove to expose body tube. Air Scoop glues here.

## 2 Apply this body tube wrap second

Remove 1/4" backing from this edge after cutting out skin    Align longitudinal seams of body tube wraps 1, 2 and 3.

Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using

**Tip: Body Tube Wrap** - After applying first wrap you may want to use a black Sharpie pen or other marker to fill about a 1/16" band of black onto the body tube along the forward edge of the wrap before applying the second wrap. This will hide the lighter color of the body tube if you have a slight gap between. Do the same before the application of the final body tube wrap.

**Clear Coating:** After testing and using many brands of clear coatings, I recommend **ACE Premium Enamel Clear Gloss**. Most importantly, it seems to have little or no detrimental effects to the vinyl material used for the skins. I have found other types of clear spray can cause the vinyl to "swell" very slightly. In most cases this swelling is invisible but may appear as slight "puckering along seams, particularly along the longitudinal body tube seams, if you have trimmed them to a tight butt fit. If you leave a small gap (half millimeter or so). If you do leave a gap on butt seams where the underlying color shows through, simply run the tip of a black Sharpie along the gap and it will all but disappear.

Acrylic clear coatings such as Future/Pledge floor polish can be applied in several light coats. It will not affect the vinyl skin as it is water based. Future/Pledge is very easily brushed on with a high quality 1" foam brush or an airbrush if you have one.



Stabilizer Top Right

Root Edge



Anti Glare panel centers over nosecap seam on top centerline in front of canopy

Cut this grey area away and remove to expose body tube after applying skin to body tube. It will be covered by the lower air scoop

Dorsal Fin Root: After applying skin and applying protective clear coat cut way this strip to Expose Body Tube

Wing Root: After applying skin and protective clear coat Cut Away this area to expose body tube



Rudder Root: After applying skin and protective clear coat cut away to Expose Body Tube

Wing Root: After applying skin and protective clear coat Cut Away this area to expose body tube

Cut this grey area away and remove to expose body tube after applying skin to body tube. It will be covered by the lower air scoop

Dorsal Fin Root: After applying skin and protective clear coat cut way this strip to Expose Body Tube

Paint the visible portion of the inner body tube black before installing engine mount

#### Cutting the Aft End of Body

After the aft skin section is applied to the body tube, use a very sharp #11 knife to cut along the curved edge of the Indigo skin pattern. Do this in several passes. Don't try to cut all the way through the tube in one pass. Once you have cut away the angled section at the rear of the body tube, sand away any imperfections along the cut edge. You might want to wick in CA glue along the edge, taking care not to get it on the skin, to harden and stiffen the paper

Loading edge "Cuff" strips. Center over leading edges of Rudder and Stabilizers if desired.

#### Building and Wrapping the Body

Join the body tube sections using the coupler provided in the kit. Examine the joint. If it is uneven or has anything that projects, it will be visible through the skin. Sand or otherwise remove such imperfections with fine sandpaper. Typically this will "fuzz" the surface a bit so I recommend one coat of primer or **Rustoleum Painter's Touch 2X Clear** over the sanded area and then sand smooth after drying.

Cut out this entire rectangular area of the skin INCLUDING THE WHITE AREA with these instructions. Do not cut along the curved area. The entire rectangular skin is applied to the rear of the body tube and adhered in place (see General Instructions on Sheet 1 for applying skins).

Apply the middle and forward skin sections to the body tube and apply a single "wet" coat of clear spray such as Blair 500 Digi-Finish. This will protect the wrap while you complete construction of the Ragnarok.

#### Heatproofing

After you have installed the engine mount, build up about a 1/32" thick coating of epoxy inside the body tube aft of the engine mount to protect it from the heating effects of the engine during flight.

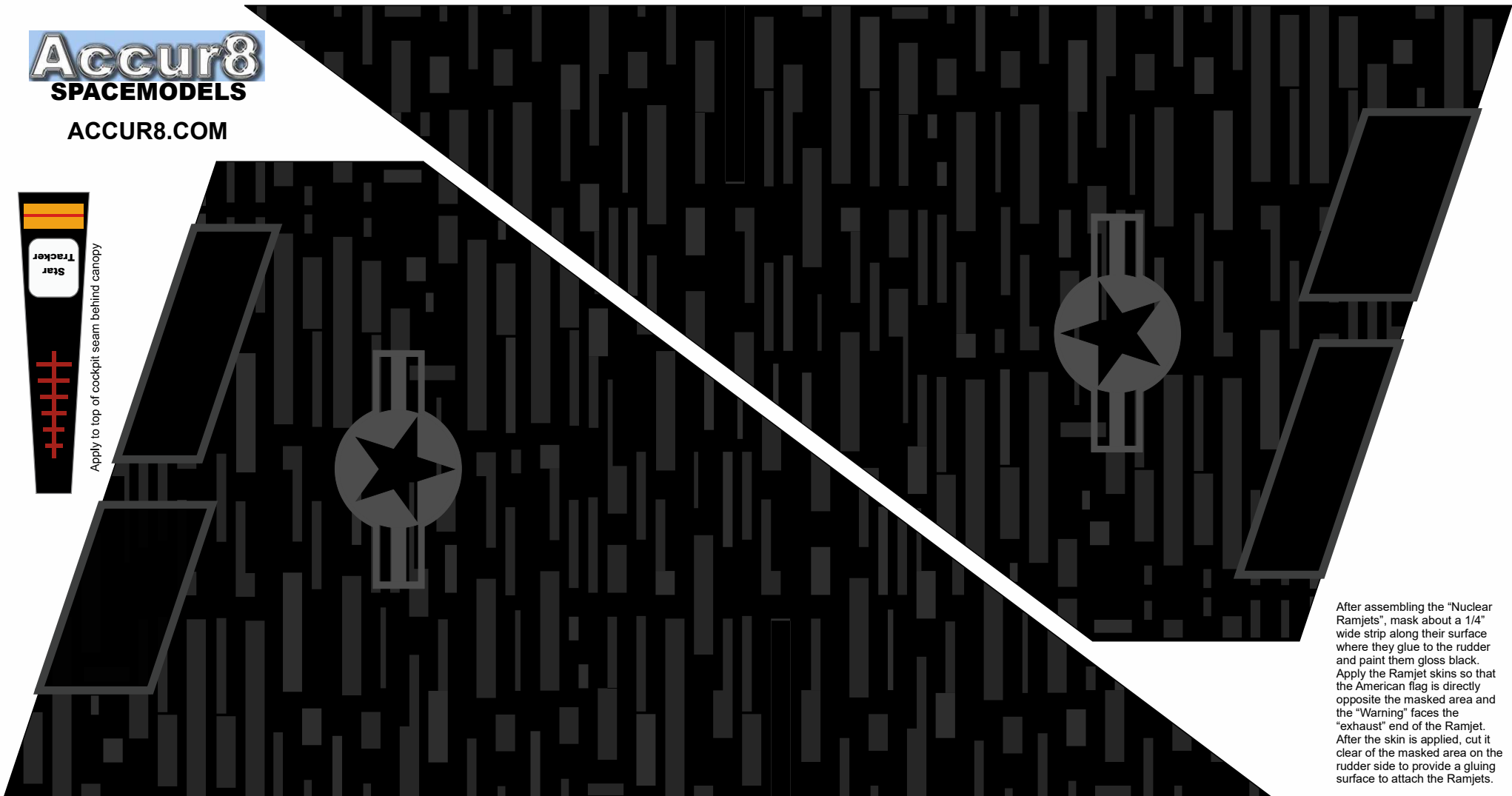
Alternatively, you can glue a layer of Nomex cloth to the inner surface to protect from heat.

Rear edge of body tube

Rear edge of body tube

Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using





After assembling the "Nuclear Ramjets", mask about a 1/4" wide strip along their surface where they glue to the rudder and paint them gloss black. Apply the Ramjet skins so that the American flag is directly opposite the masked area and the "Warning" faces the "exhaust" end of the Ramjet. After the skin is applied, cut it clear of the masked area on the rudder side to provide a gluing surface to attach the Ramjets.

**Skinning the Wings and Other Wood Surfaces** Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using

Trace the patterns for cutting the wood surfaces from 1/8" thick 4"x24" using the accompanying templates cut and sand all edges for all parts square and straight. Using a sanding block with Coarse (120 grit or coarser) sandpaper, round the leading edges and taper the trailing edges to a fine edge. The wing tips are square edged. The lower rudder tip and leading edge are rounded and the trailing edge sanded to a fine edge.

Using Thin CA glue, saturate all root edges. Basswood has an advantageous characteristic in that it "wicks" Thin CA deeply into its grain before the glue hardens. This very significantly strengthens the wood along this edge (sort of like a wood/resin composite) and makes for a very strong bond when gluing the wings and rudder to the body and when joining the stab/rudder pieces together.

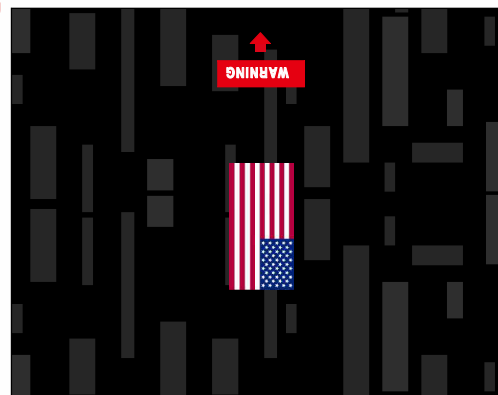
After all surfaces are sanded to shape, sand and seal them with a coat or two of sealer followed by a coat of Gloss Black Paint. You don't need to fill all the wood grain...the skin will hide the grain. What you want is a good gloss surface for the skin to adhere to. Be sure all leading, trailing and tip edges of the parts have a good black finish as the edges are not skinned.

Cut and trim the skins so that about 1/8" of the leading edges are exposed. The skins should be flush with the root edges of the wings and rudders. Make the skin flush with the trailing edges of all parts (they can be about 1/32" short of the trailing edges and look fine). The skin should extend lush to the wing tips and to within 1/16" to 1/8" of the lower rudder tips.

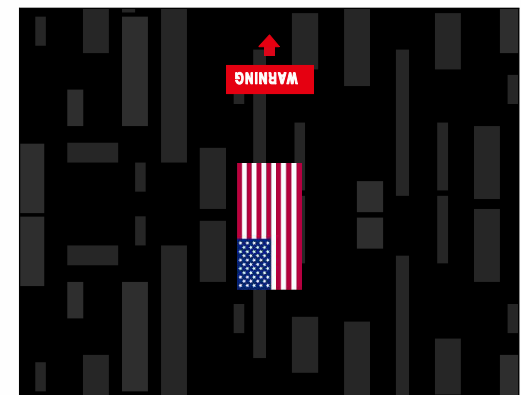
Finally, sand all the root edges of the wings and rudders. This will remove any paint on those edges and exposed the CA-saturated wood so that you will get a good bond to the body.

**Alternative "Sand and Seal" method**

I have discovered that Rustoleum Painter's Touch 2X Ultracover Gloss Clear Spray (what a mouthful) is an excellent balsa and basswood filler. This is true only of the CLEAR. Apply a couple of heavy coats, especially the first coat, allowing about 15 minutes between the coats. Within about an hour of applying the last coat, you can sand the surface smooth with a good medium grit (about 180 to 220) OPEN COAT sandpaper. Yes, it sands quite well and does fill the surface. Once sanded, apply a coat of Gloss Black and let dry. If you have any "zits" on the painted surface, carefully sand them away. Any raised surface imperfections will LOOK LIKE MOUNTAINS if you apply the skin over them!



**Nuclear Ramjet wraps**



**Sheet 5**

### Applying Skins to Wings and Rudders

Apply the skins to the wings and lower rudder fins before assembling to model. The wings and fins should be sealed following the suggestions on Sheet 1 (or your favorite method for sealing wood) and then sprayed with a couple of coats of Gloss Black paint. Pay special attention to the leading, trailing and tip edges as they will be exposed after the skins are applied.

Pre-fit and trim the skins before removing backing so that about 1/16" to 1/8" of the leading edges are exposed and the skin is flush with the trailing edge. It is easier to position the skins so that there is a very light overhang of skin along the root edge which is trimmed flush after the skin is applied.

Once the skin is trimmed and you are holding it firmly in position, remove about 1/4" of backing along root edge (you should pre-cut the backing and replace it in advance) and adhere the skin along this edge. Once satisfied with positioning, lift of the remaining skin and remove the backing from under the skin while adhering it to the surface with sweeping motions of your finger until the backing is completely removed and the skin is adhered all the way to the tip and leading and trailing edges. The skins DO NOT wrap around any edges but are either flush (tip, root, trailing edge) or end slightly short (leading edge).

### Leading Edge "Cuffs"

Several 1/2" wide black strips have been provided on Sheets 2 and 4 that can be used to

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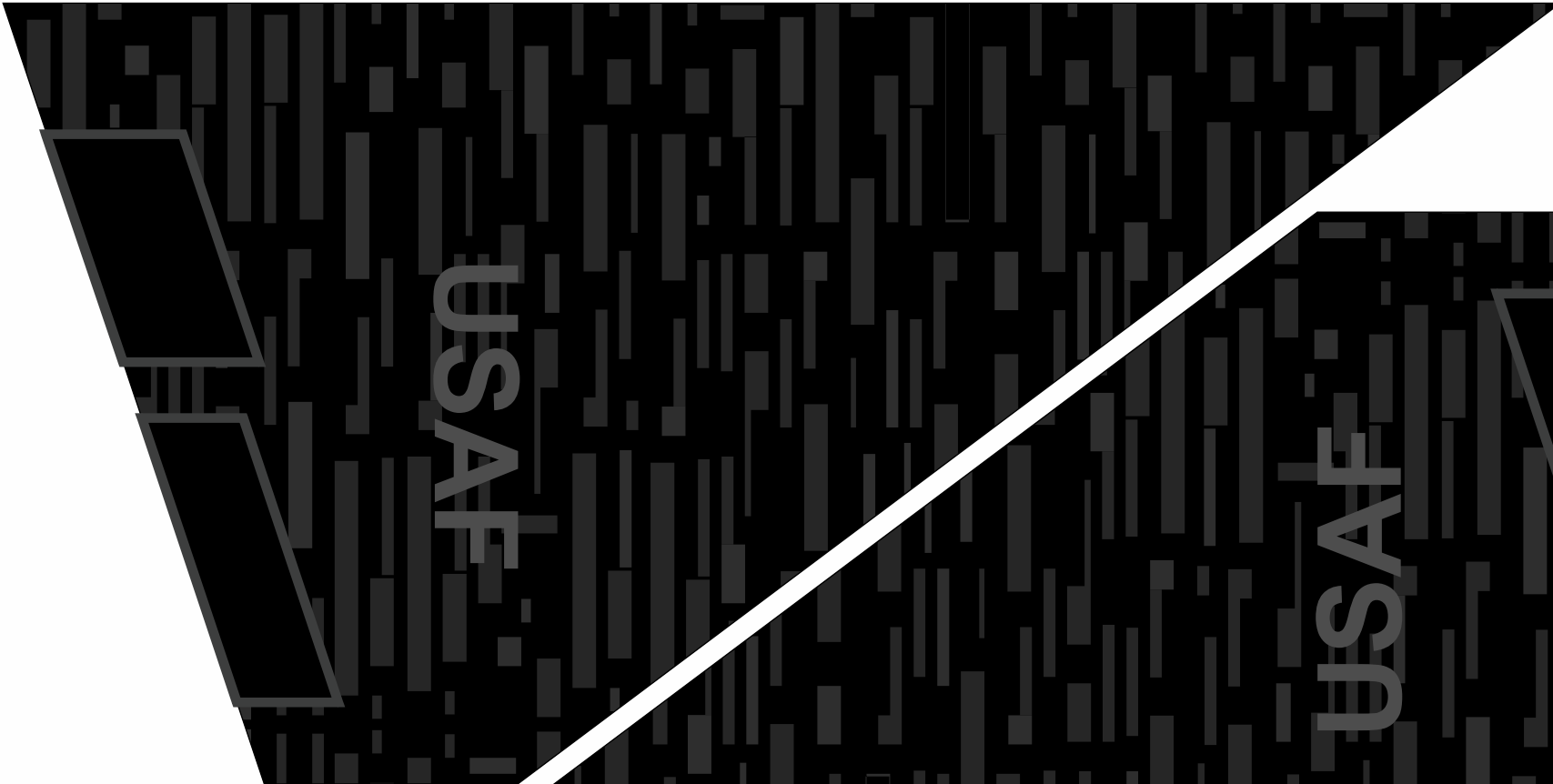
**Air Scoop Rudder inside right**



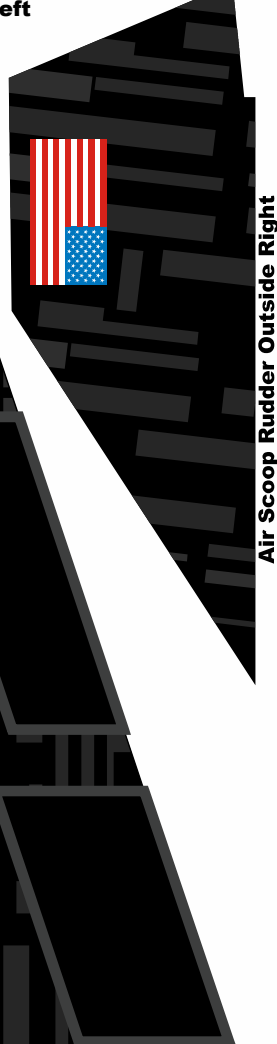
**Air Scoop Rudder Inside Left**



**Air Scoop Rudder Outside Left**



**Air Scoop Rudder Outside Right**



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**Sheet 6**

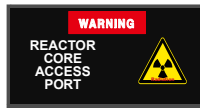
**Twilight Ragnarok Orbital Interceptor**

Questions? Need Help? Contact [johnpursley@accur8.com](mailto:johnpursley@accur8.com)

Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using



Spray light coat of clear (such as Blair 500 Digi-Finish) to sheet before using

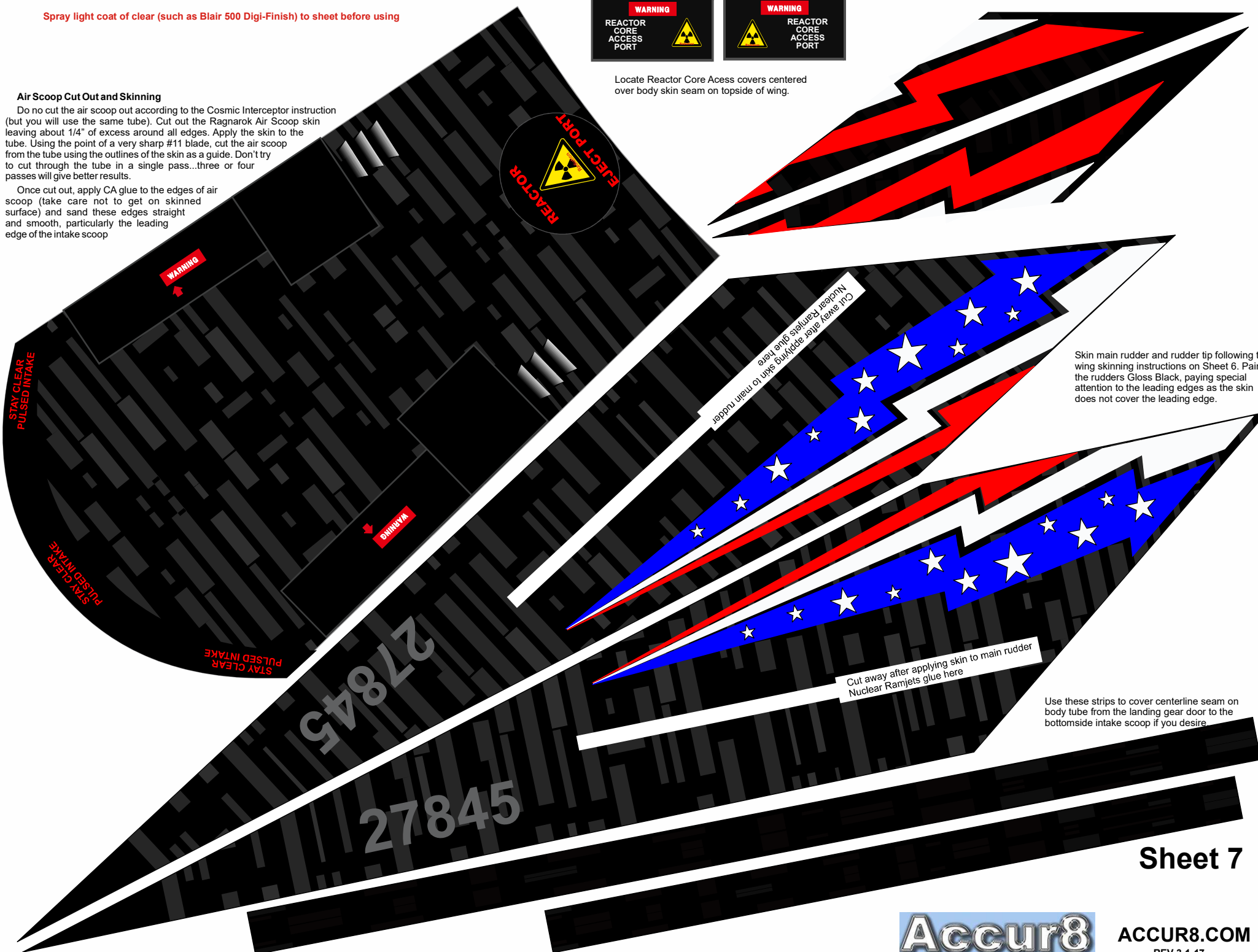


Locate Reactor Core Access covers centered over body skin seam on topside of wing.

### Air Scoop Cut Out and Skinning

Do not cut the air scoop out according to the Cosmic Interceptor instruction (but you will use the same tube). Cut out the Ragnarok Air Scoop skin leaving about 1/4" of excess around all edges. Apply the skin to the tube. Using the point of a very sharp #11 blade, cut the air scoop from the tube using the outlines of the skin as a guide. Don't try to cut through the tube in a single pass...three or four passes will give better results.

Once cut out, apply CA glue to the edges of air scoop (take care not to get on skinned surface) and sand these edges straight and smooth, particularly the leading edge of the intake scoop



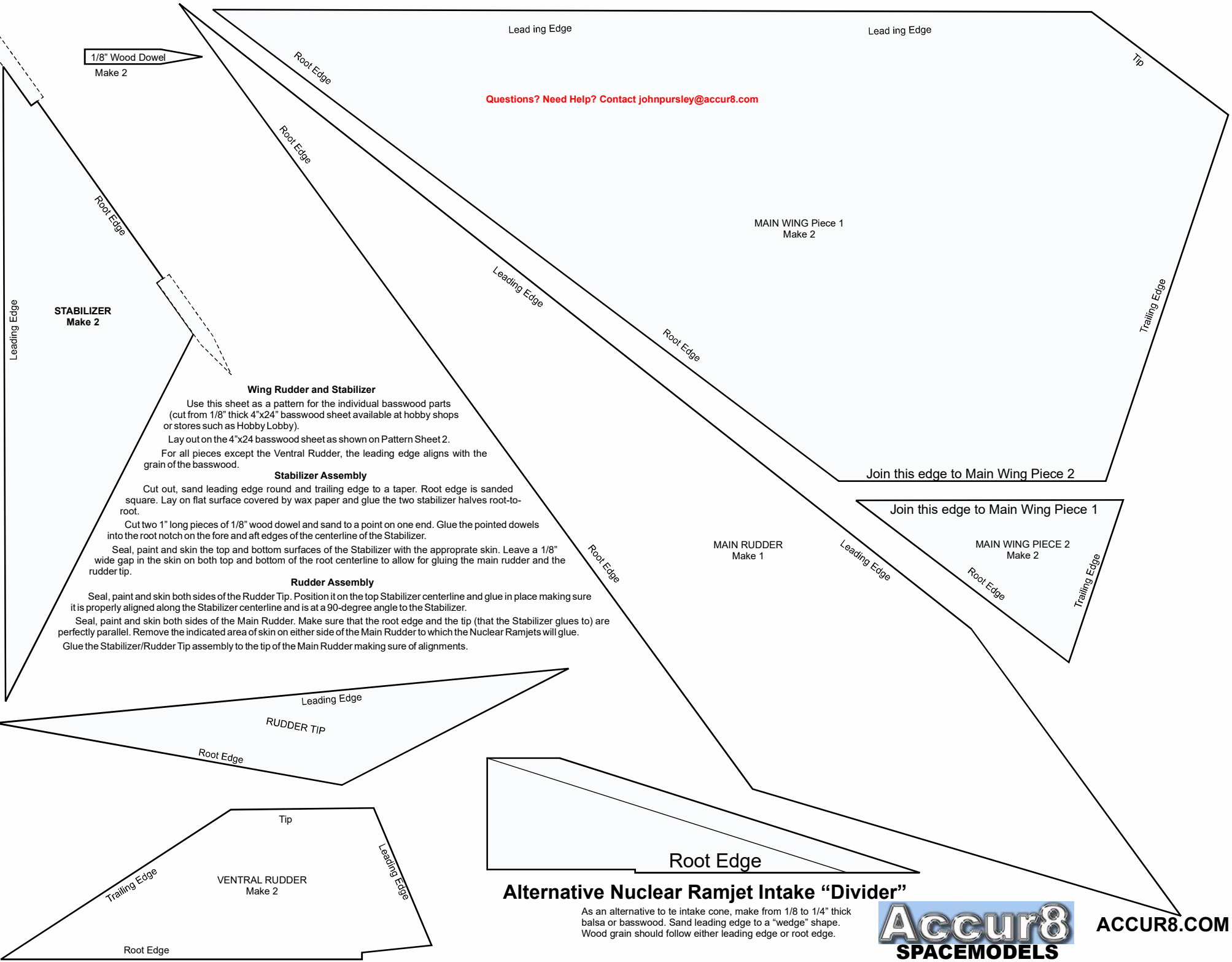
Skin main rudder and rudder tip following the wing skinning instructions on Sheet 6. Paint the rudders Gloss Black, paying special attention to the leading edges as the skin does not cover the leading edge.

Cut away after applying skin to main rudder Nuclear Ramjets glue here

Use these strips to cover centerline seam on body tube from the landing gear door to the bottomside intake scoop if you desire

1/8" Wood Dowel  
Make 2

Questions? Need Help? Contact [johnpursley@accur8.com](mailto:johnpursley@accur8.com)



**STABILIZER**  
Make 2

MAIN WING Piece 1  
Make 2

MAIN RUDDER  
Make 1

MAIN WING PIECE 2  
Make 2

VENTRAL RUDDER  
Make 2

**Alternative Nuclear Ramjet Intake "Divider"**

As an alternative to the intake cone, make from 1/8 to 1/4" thick balsa or basswood. Sand leading edge to a "wedge" shape. Wood grain should follow either leading edge or root edge.



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## Ragnarok General Assembly Instructions

I will assume that you are a modeler with a few more "advanced" kits and models under your belt so I won't go into great detail...just some things that are very general, some things that aren't obvious, and perhaps a tip or two.

### Body Tube

Read over the various instructions on the printed skin sheets and skin the body tube starting at the rear and working forward. Cut the "sausage" cut at the rear of the body tube using the outline on the skin as a guide. Using thin CA, reinforce the cut edges of the tube (take care not to get on the skin) and sand the cut edges smooth. Paint the exposed inner surface of the "sausage" cut area with black paint.

Cut away the indicated areas of the skin marked on the body tube for the placement of the wings and rudder assembly.

### Nosecone

I recommend you fill at least the "gun ports" with putty and sand smooth (projectile guns on an orbital vehicle don't make sense in the age of light and particle beam weapons...firing guns would be like putting on the brakes in space!) You can fill and sand all the panel lines if you like. However, DON'T fill the recessed groove that runs all the way around the nosecone just aft of the cockpit...it's used for alignment when applying the nosecone skin.

Paint the nosecone Gloss Black.

Follow the instructions on Sheet 1 for skinning the Nosecone.

### Wing, Fins and Other Wood Parts

Cut out and assemble the wings. Fill and smooth them (instructions on skin sheets) and apply the skins.

Fill and smooth the rudder and stabilizer parts.

Assemble the stabilizer on a flat surface, joining along the root and install the pointed dowels at the joint on the forward and leading edges. Scrape away any paint or filler along an 1/8" wide strip of the root edge (remove an 1/8" wide strip of skin first) where the stab pieces come together. You want to expose the underlying wood. Do this to the top and bottom of the stab.

Skin the rudder tip and glue it along the top centerline of the stab. The leading and trailing edges of the tip match up with the leading and trailing centerline edges of the stab. Make sure the tip is perpendicular to the stab.

Skin the main rudder. Glue the stab/tip assembly to the rudder tip so that the stab is perpendicular to the rudder. The leading and trailing edges of the rudder match up with the leading and trailing centerline edges of the stab.

Glue one wing to the body so that it goes straight away from the body tube and allow to dry. Glue the second wing to the body and position the body and wings on a flat surface so that both wing tips rest on the surface and allow to dry. The area cut away for the wings properly aligns and positions the wings on the body. There is no need to measure or mark.

Glue the Rudder assembly to the top of the body using the cut away area for positioning and alignment. The trailing edge of the rudder is flush with the end of the body. With the body resting on a flat surface (wing tips touching) the rudder assembly is positioned so that it points straight up from the body. Allow to dry.

### Nuclear Ramjets

Cut the yellow engine positioning tube into two 1.75" lengths from the Cosmo kit (see instructions of skin/pattern sheets). Install either a basswood intake divider or intake cone (your choice) Paint the assembly black and skin with the "nuclear ramjet" skins Glue a finished ramjet to either side of the rudder using the ramjet cut away area on either side of the rudder for positioning and alignment Solid gluing of the ramjet assemblies is important as it significantly strengthens the rudder.

### Air Scoop

Following the instructions on the skin sheets, apply the wrap to the tubing from the Cosmic Interceptor that is for the air scoop. Don't use the pattern in the Cosmo kit. Once you have applied the skin, cut the tubing around the outline of the air scoop skin. Apply CA glue to the leading edge of the scoop and sand the edges smooth. You should paint the inside of the scoop black but leave about a 1/8" strip unpainted along the inside side edges to glue the scoop to the model.

Position and glue the scoop in the underside of body/wing joint using the markings on the fuselage skin as a positioning guide.

Glue the sub rudder into place.

### Engine Mount

Assemble the engine mount according to the Estes instruction. However, before assembling the "radiator fins" to the mount, cut away the projecting tips as shown on the pattern sheet. Paint the exposed (finned) portion of the engine mount black or dark grey. Test fit the mount into the rear of the body tube so that it slides in smoothly. Glue it into place so that it slides all the way forward against the main body tubing coupler inside the body.

Coat the visible interior portion of the "sausage cut" with about a 1/32" layer of epoxy to protect it from the heat of the motor during operation

### Launch Lugs

Skin and glue one each of the launch lugs at the underside wing/body joint on positioning one at the leading opening of the air scoop and one at the trailing edge of the air scoop.

Fly the Ragnarok with a D13-3 or E12-4. It will also fly well with an E9-4 but calm day and straight up launch is definitely recommended.

Pointed dowel glued into centerline notch at each end of stabilizer join (root) edge

