Building a dihedral wing for the Big Ugly Hell On Rails

All 4mm Coroplast used in wing construction

Wing Span- 60"
Wing Chord- 14"

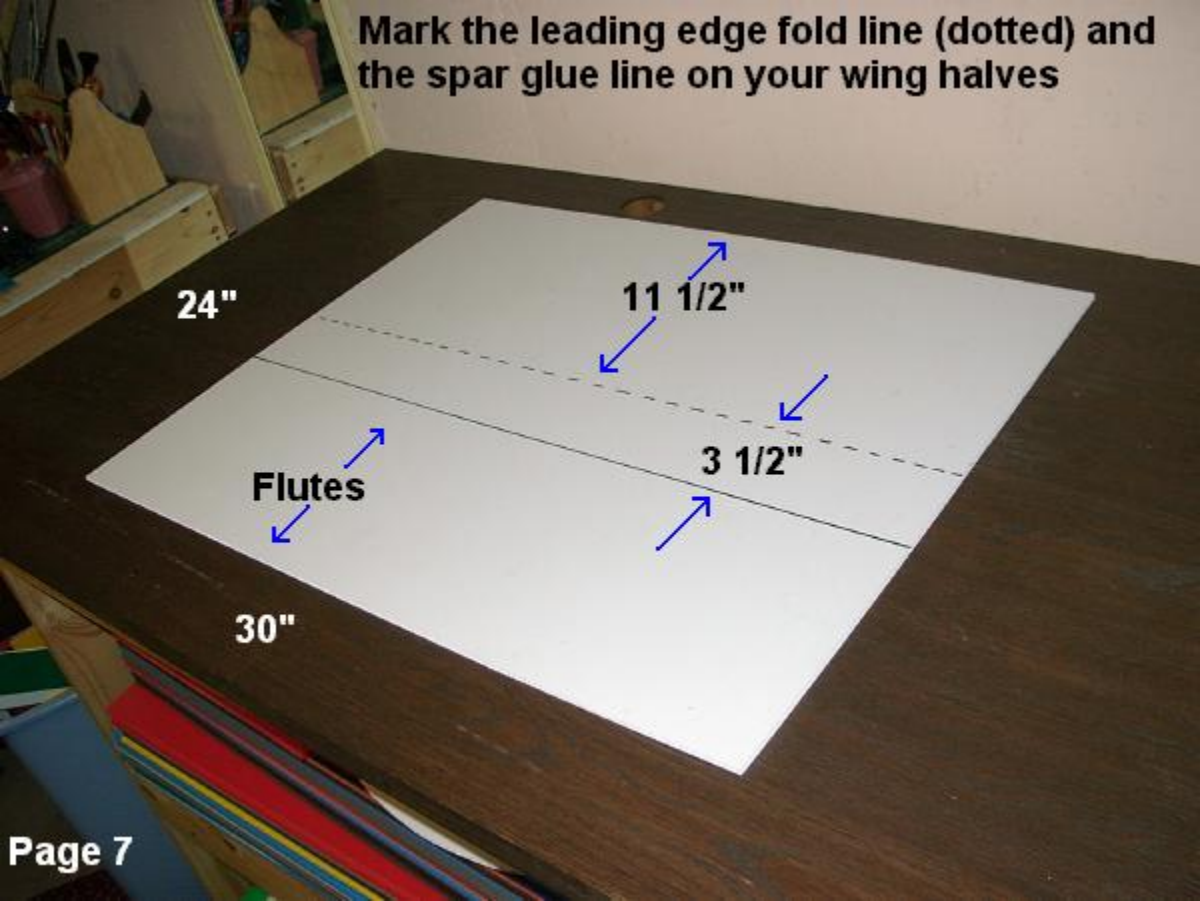
Adding 5" of dihedral to the Big Ugly Hell On Rails wing will give it the self righting charicteristics of a good trainer. With a wing loading of 15.9 oz./sq. ft. the prototype rivals any trainer on the market for slow and forgiving flight charicteristics!

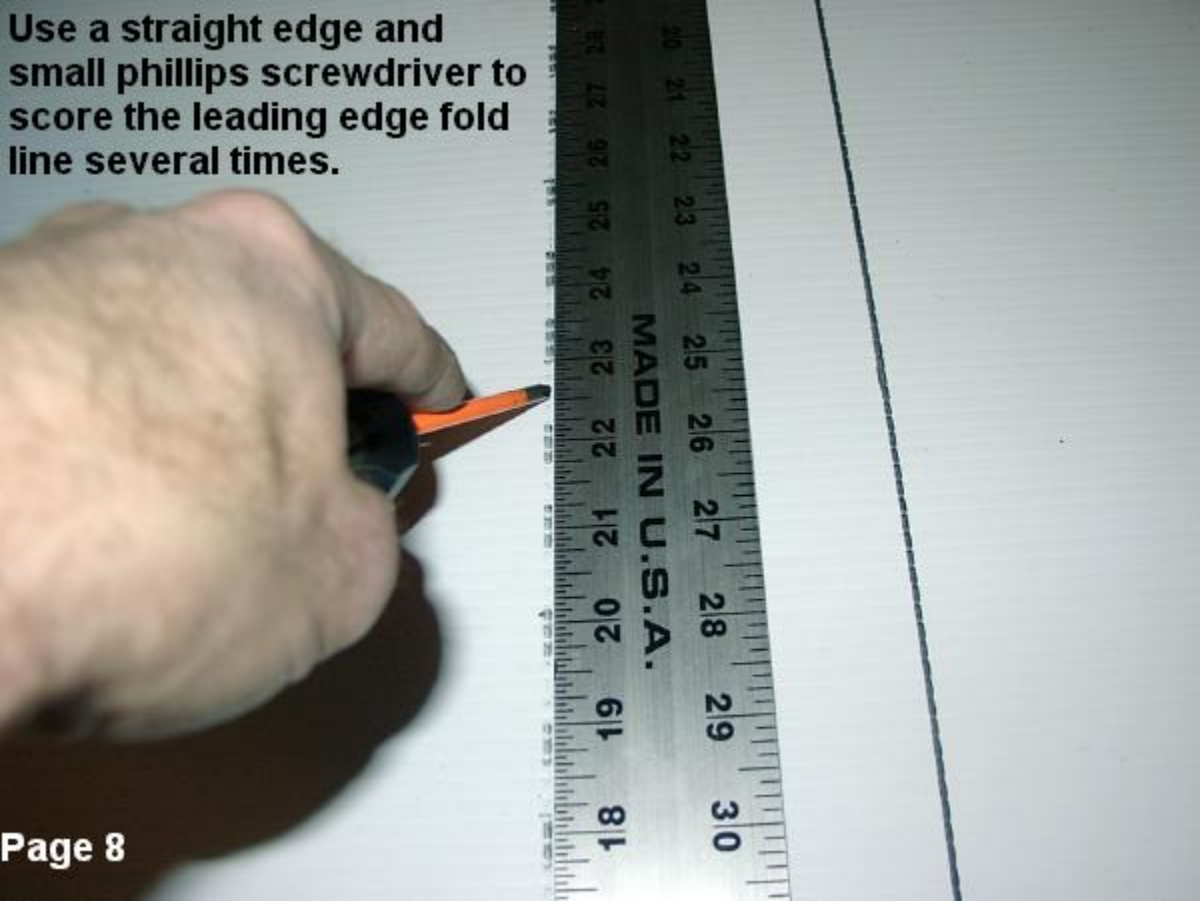
Here are the parts to build your wing:
two 24" x 30" wing halves
two 3" x 28" ailerons
one 4" x 24" wing wrap
two Standard yardsticks

Glue the two ysrdsticks together making sure that each side is 30" from the middle to each end (60" total wing span). With one yardstick along the edge of the table, raise the other yardstick 5" as shown by the yellow ruler at the end of the table. Try not to glue the yardsticks to the table like I did.

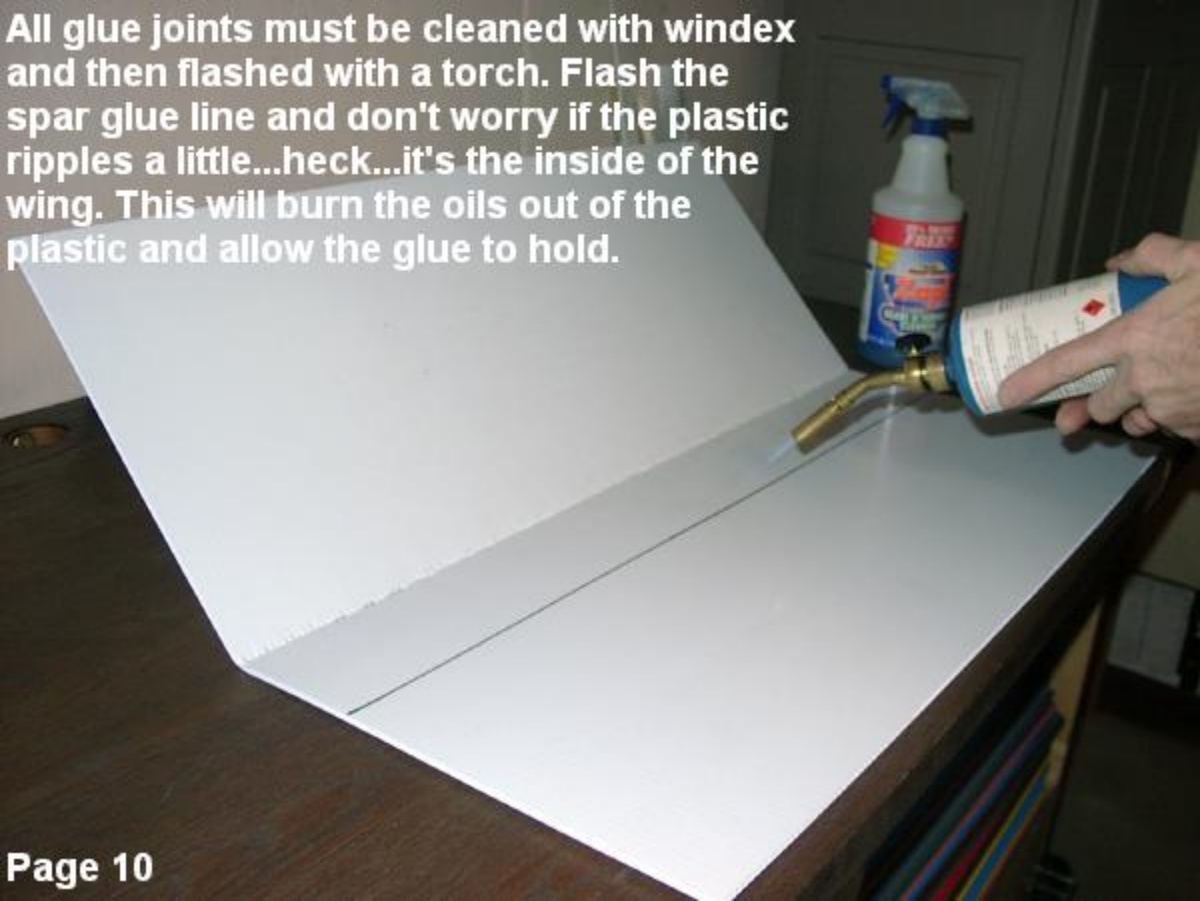

Trim off the ends of the yardsticks as shown

Take the pieces you trimmed off from the bottom, flip them over and glue in place as shown, to give the spar center section extra strength.

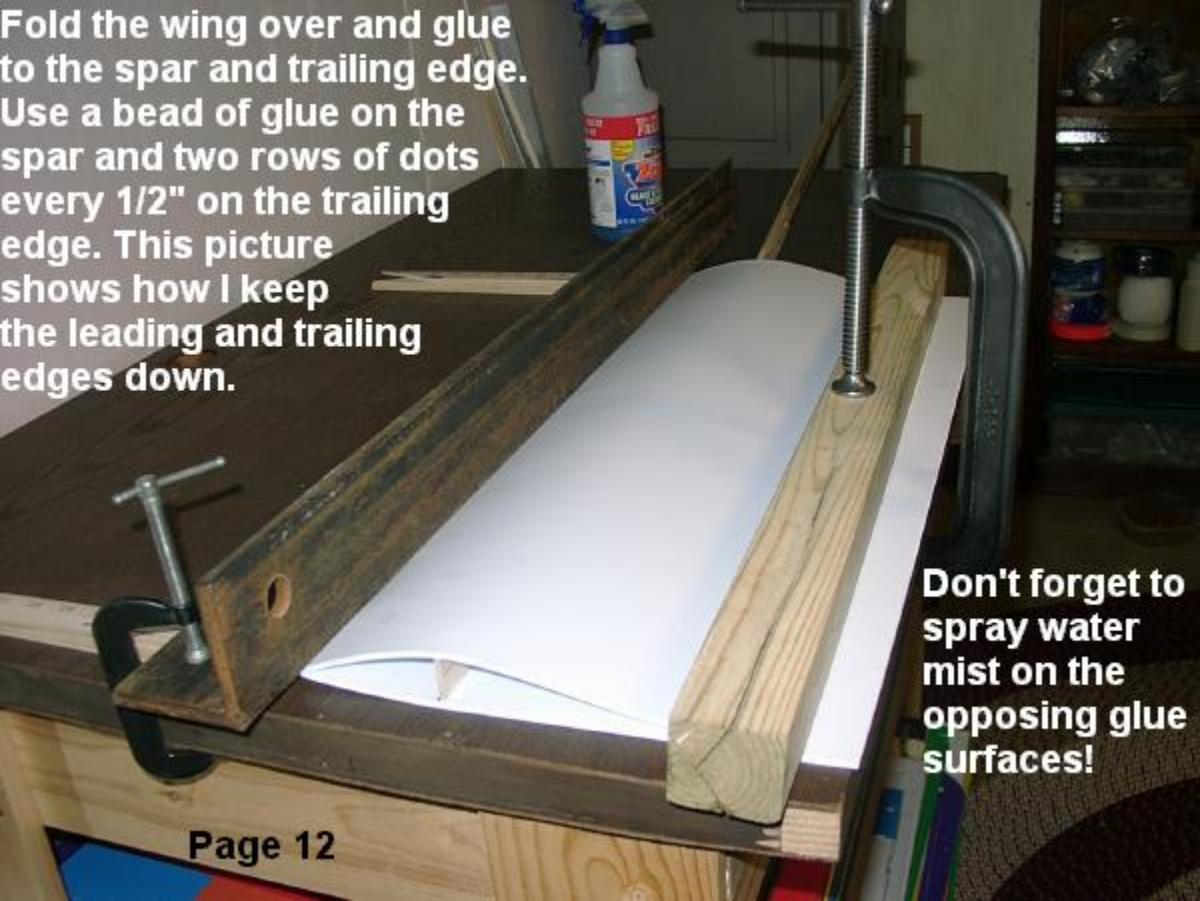

Mark the leading edge fold line (dotted) and the spar glue line on your wing halves
24"
11 1/2"
3 1/2"
Flutes
30"


Use a straight edge and small phillips screwdriver to score the leading edge fold line several times.
MADE IN U.S.A.


Flip the wing half over and fold the
leading edge over the
side of a table

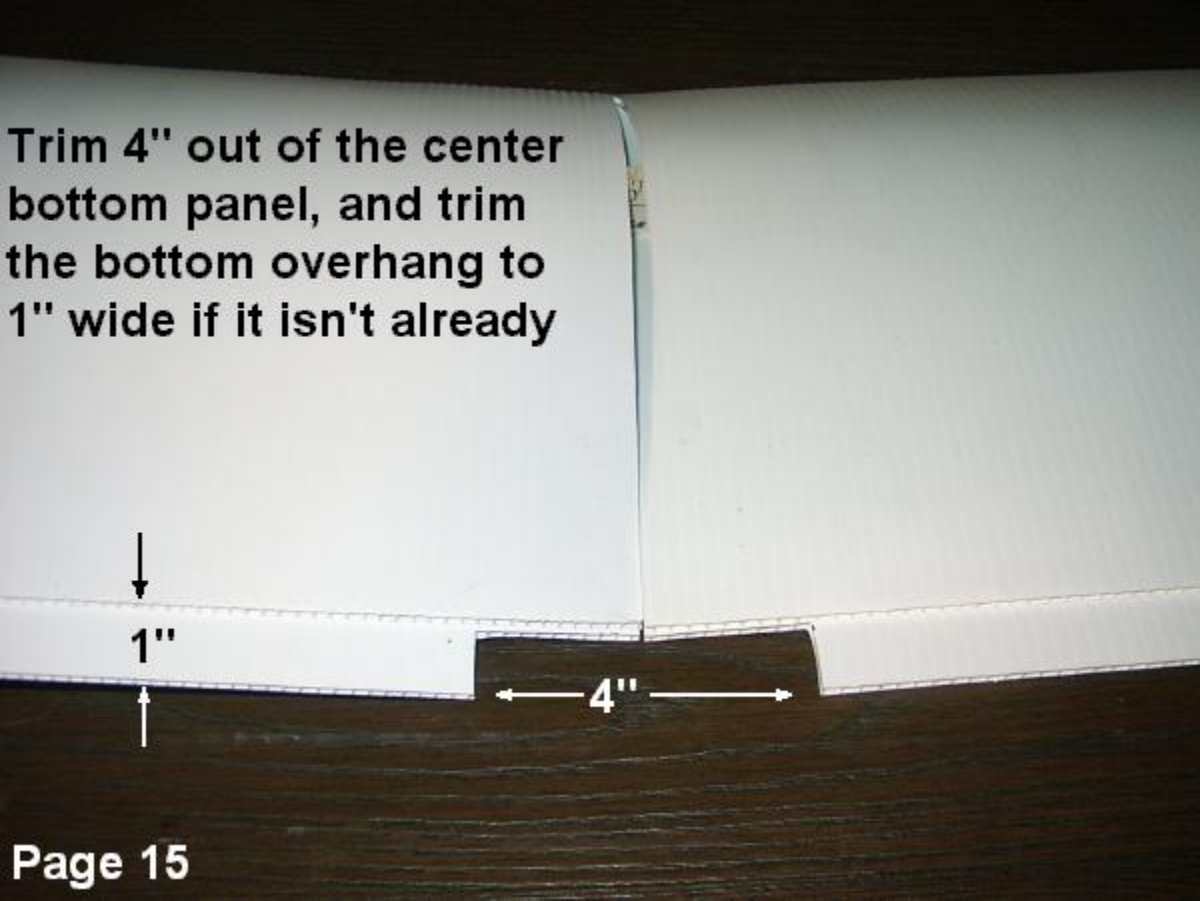

All glue joints must be cleaned with windex and then flashed with a torch. Flash the spar glue line and don't worry if the plastic ripples a little...heck...it's the inside of the wing. This will burn the oils out of the plastic and allow the glue to hold.

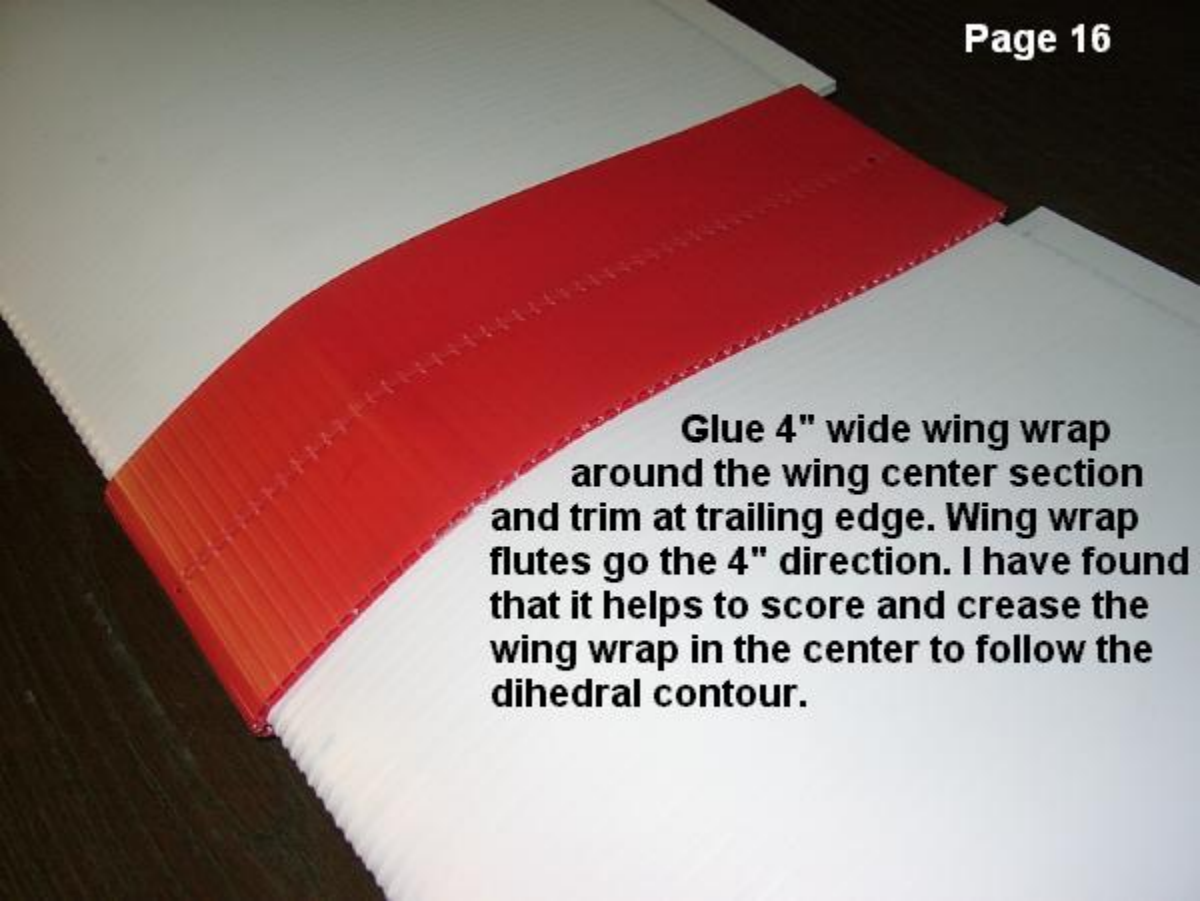

Use a bead of medium CA on the spar and spray a very light water mist on the Coroplast and glue the spar in place as shown. Then clean and flash where the trailing edges will meet and where the top panel will meet the spar


Fold the wing over and glue to the spar and trailing edge. Use a bead of glue on the spar and two rows of dots every 1/2" on the trailing edge. This picture shows how I keep the leading and trailing edges down.
Don't forget to spray water mist on the opposing glue surfaces!

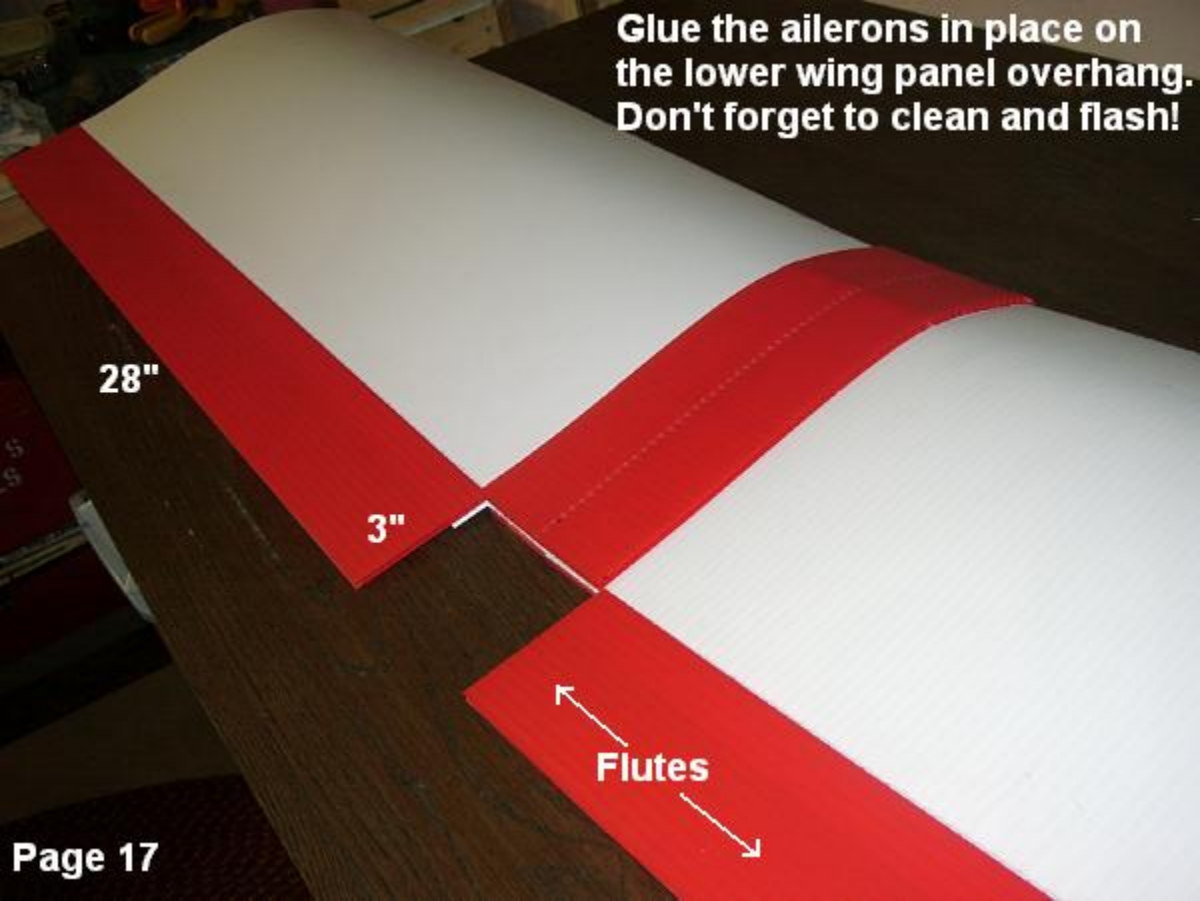

Follow the same prosess for
the other wing half. You will
have to trim the center top panel
where they meet, but you don't have to
make it pretty because it will be covered
by the wing wrap later


Glue this half just like you did the first half.
Zap!
Page 14

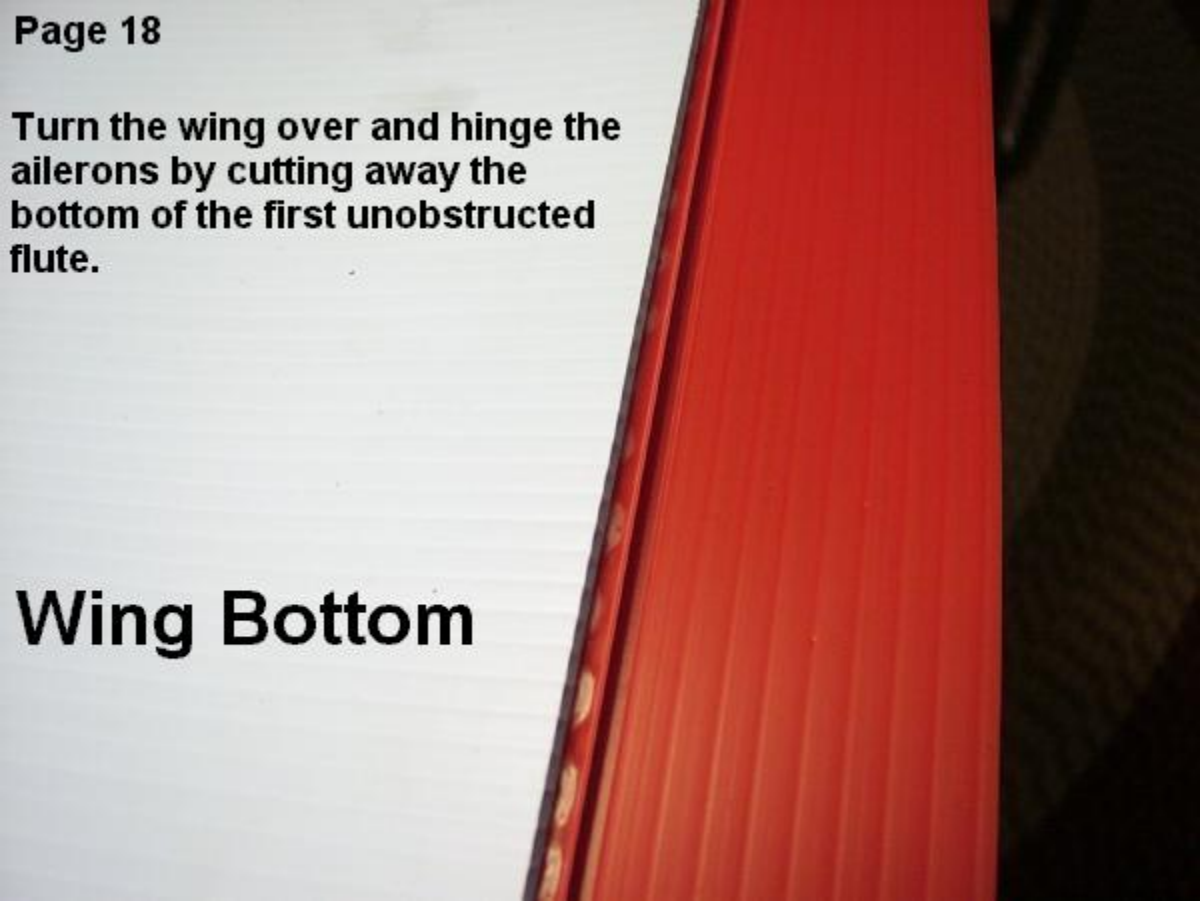

Trim 4" out of the center bottom panel, and trim the bottom overhang to 1" wide if it isn't already
1"
4"

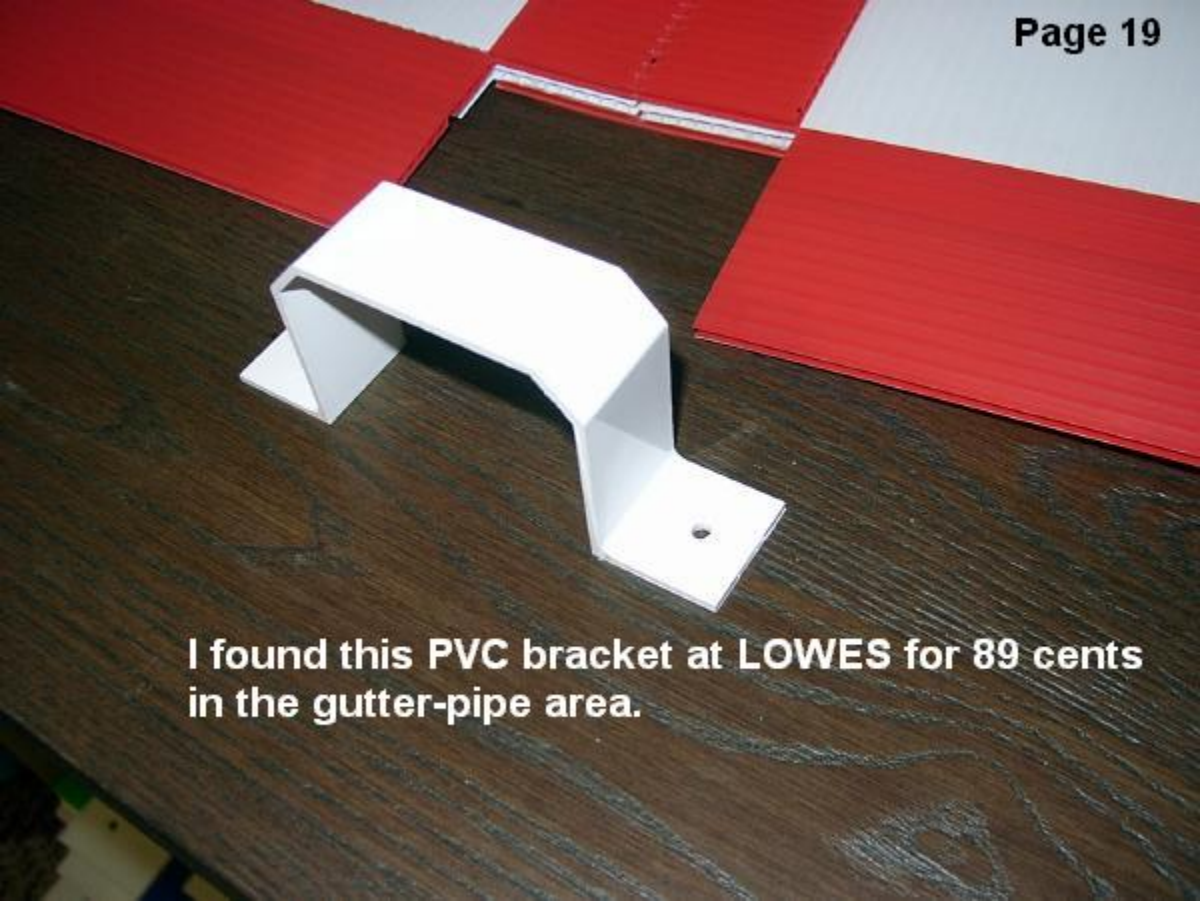


Glue 4" wide wing wrap around the wing center section and trim at trailing edge. Wing wrap flutes go the 4" direction. I have found that it helps to score and crease the wing wrap in the center to follow the dihedral contour.

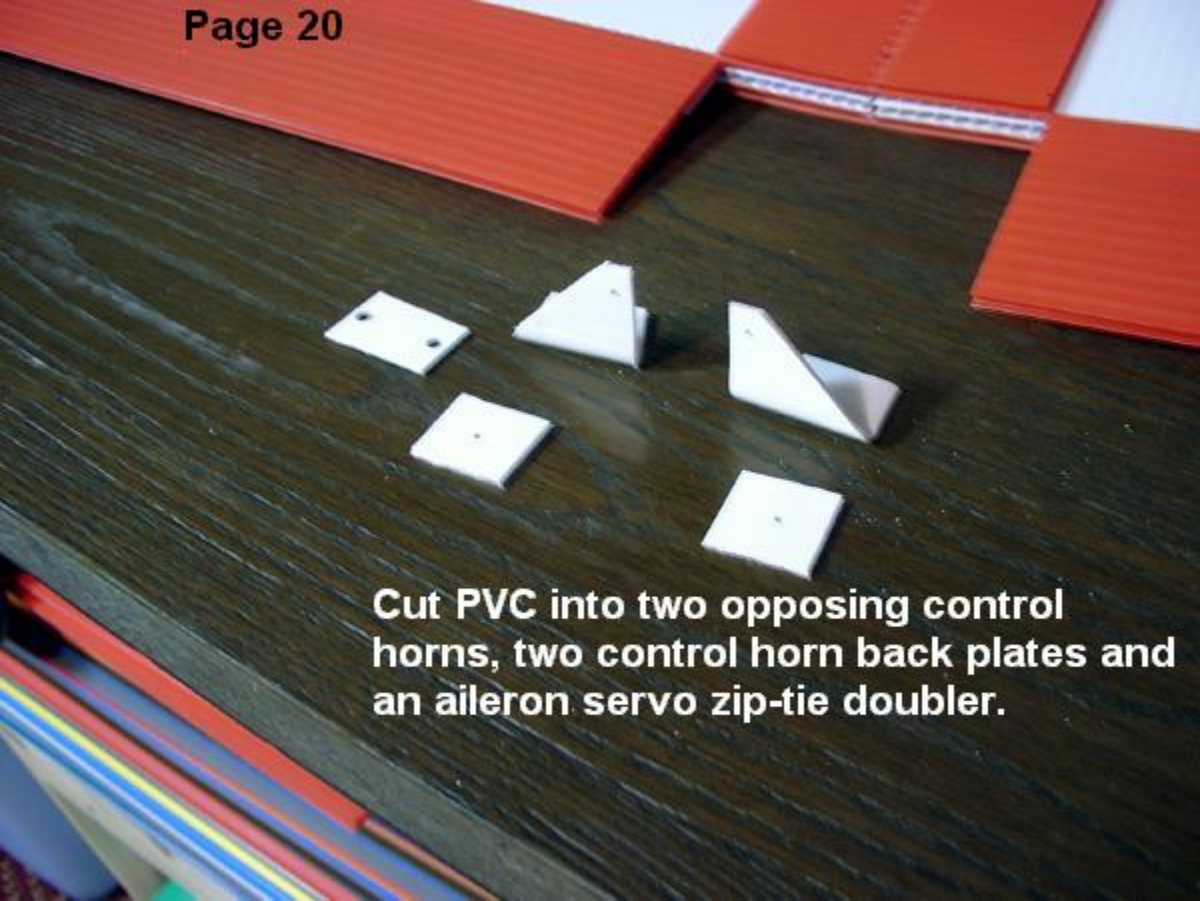

Glue the ailerons in place on the lower wing panel overhang. Don't forget to clean and flash!
28"
3"
Flutes

Turn the wing over and hinge the ailerons by cutting away the bottom of the first unobstructed flute.

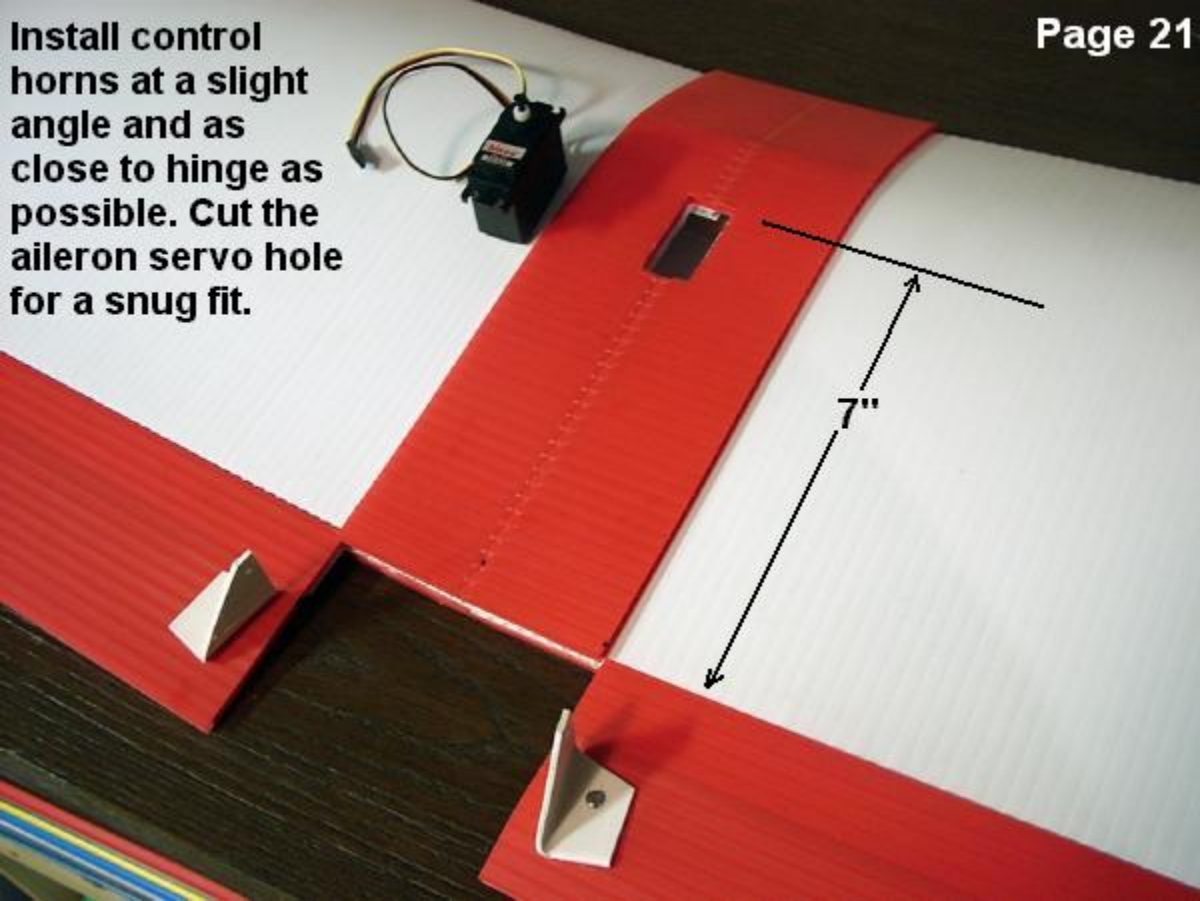




I found this PVC bracket at LOWES for 89 cents in the gutter-pipe area.



Cut PVC into two opposing control horns, two control horn back plates and an aileron servo zip-tie doubler.


Install control horns at a slight angle and as close to hinge as possible. Cut the aileron servo hole for a snug fit.
7"

Drill two zip-tie holes directly below the aileron servo hole, in the bottom of the wing and cut a small hole rear of the servo hole for the aileron servo lead.

Wing Bottom


Install the aileron servo and secure with a Zip-tie through the bottom of the wing using the zip-tie doubler
Wing Bottom


Shove coat hanger pieces in leading and trailing edge flutes of the wing wrap for rubber band protection
Rigg ailerons for 3/4" travel each way (1 1/2" total)
Your ailerons must be parallel to the fuselage for neutral when the wing is strapped on
Now...GO FLYING!!!