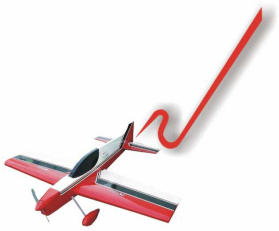
Morris HOBBIES



Instruction Manual

After the success of the ***BalsaNOVA .40*** shown below,

the next logical step was to scale it up…to an 80"IMAA Legal Version!

BalsaNOVA 1.20 ARF

The popularity of .90 to 1.60 engines dictated the size of our new scaled-up bird.
The hope was to find a size that would fly well on these
engine sizes, yet be affordable and fit into an average vehicle.
Enter…the BalsaNOVA 1.20 ARF with 80" (IMAA-legal) Wingspan.

BalsaNOVA 1.20 ARF

We started with a clean sheet of paper when we designed this one to make it lighter and fly even better. This version is built using laser cut parts and light ply sides. The fuselage is built on a flat surface (no jig is needed) and interlocks together when the components are completed. The fuselage practically floats off the workbench when it is completed! This model is designed for modelers who enjoy reaping the benefits of a light, strong and straight airframe.

Important Notes

The engine range is quite flexible on the BalsaNOVA 1.20. At the low end, a strong .60 2-stroke would fly it if it is built lightly. At the high end, a 1.20-1.35 2-stroke or 1.6 Gas are all a good choice - as long as the throttle is used judiciously. The best choice is the Mark 1.35 engine with the sport muffler or a 1.20-1.60 sized 4-stroke. One of your considerations should be the size of the engine mount and whether or not it will fit under the balsa cowling. Some of the larger mounts will not. The supplied mounts work well, also the Dave Brown 120FS mount fits well.

You will notice that the BalsaNOVA 1.20 is not designed to conceal the muffler like the BalsaNOVA .40. With the wide variety of engines available (both 2-stroke and 4-stroke) the 1.20 can handle, we decided to let the muffler just "hang out in the breeze" on this one.

The radio requirement is for the basic four channels, with a couple of considerations; the ailerons require one higher torque standard servo in each wing panel. The elevators halves use two standard servos (one on each half). The rudder should use one hi-torque servo. No computer mixing is required.

The BalsaNOVA 1.20 ARF includes premium hardware that will work well if the kit is built and flown toward the low end of the weight scale...say 9 to 11 pounds. If you plan to use the BalsaNOVA 1.20 like a tank, and hang a fire breathing ThunderSnort GX26 Gas Engine on the front, then consider increasing the torque of your servos and add tail bracing wires, Dubro makes a nice 4:40 tail brace kit. You should also consider upgrading other items more befitting a giant scale model.

Warning

The BalsaNOVA 1.20 was designed to fly best at moderate speeds. As with most R/C models, excessive speed (i.e.; full power in a steep dive) may result in fatal flutter. Enjoy flying your BalsaNOVA 1.20 and trying exciting maneuvers, just remember to **USE THE THROTTLE**.

Before Construction Carefully remove each part from the packing configuration. Don't grab and squeeze and tug and pull, it all comes out of the box in a nice and easy order and all will be in perfect shape! Take your time and remove each piece one at a time.

Building Notes

The belly pan (the area attached to the bottom of the removable wing) is attached to the bottom of wing **after** you run the servo leads and join (glue) the wing together.

Since most of the hard work has been done, you'll find the BalsaNOVA 1.20 ARF it is very easy to assembly and finish. Take your time and use some of your favorite building and gluing methods. We try to make it easy, be sure to glue everything that needs gluing, and don't rush anything.

Due to many requests, we've begun including recommendations or personal preferences for various products. Statements like *This writer likes...* are only provided to give recommendations for products that we have personally used and like. Many other fine products are available, with the best source of information being your local hobby dealer.

The only adhesives needed are thin and medium cyanoacrylates (CA) and a little epoxy. Thin Epoxy is required for fuelproofing). Plan on 1 ounce of medium or thin CA.

The servo boxes are built into the wing. The boxes are designed for standard size servos (i.e.: Hitec 425, Futaba S148s). If need be, alter the boxes as necessary to fit your particular servos. The only radio-related components that need to be installed prior to completion of the model are the wing servos. You'll "fish" your wing servo wire leads and tape them in place at the exit holes on the top of the wing before you join the wing halves.

All other components (pushrods, pull-pull cables, etc.) may be installed after the wing joining procedure and fuel proofing. (see Radio Installation).

Items Needed to Complete

Quantity	Item
1	4 (or greater) Channel Radio with 3 standard servos and 3 Hi-torque servos, or 4 standard servos and 2 Hi-torque servo.
2	"Y" harness (1 if using computer radio)
1	.90 to 1.60 2 or 4-stroke engine and muffler
1 Ounce	Thin C/A, 15 minute epoxy
1	Propeller
12"	Medium Fuel Line

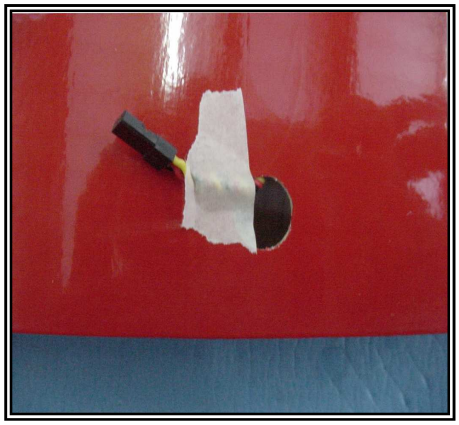
Construction

Read each step in this manual completely before accomplishing the particular task. Check each item off before proceeding to the next.

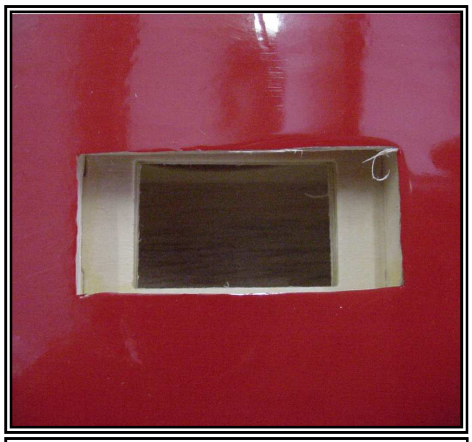
WING ASSEMBLY

Before you join the wing you must install the wing servos and wire leads.

The first simple task is to install the wing servos in each wing panel and run the servo wires to their exit points near the (root) center of the wing. The exit holes are located on the **top** side of both wing panels. Once located, use a #11 blade installed on your hobby knife - cut open and trim the covering to expose the holes. The servo leads for the ailerons will pass through these holes. You will tape them in place once you install the servos and feed the wire through prior to joining the wing.



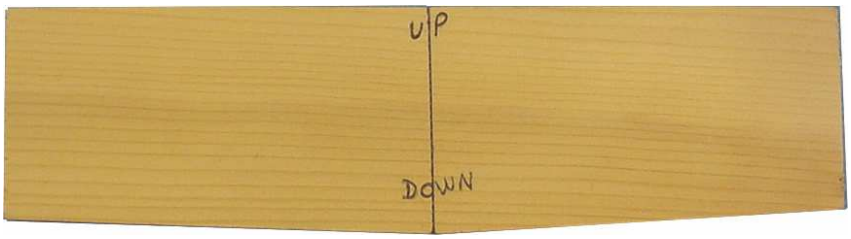
Next, locate and then cut/trim open the covering to expose the servo opening on the **bottom** side of each wing panel. Finish the covering in place with your covering iron. Leave a little excess covering so you can wrap the covering edges down into the servo bay.



Now “fish” your wing servo wire leads in place using a piece of music wire. Tape the servo connector in place at the exit holes top of the wing before you join the wing halves.

Install a servo in each wing panel with the output spline away from the wing root (center).

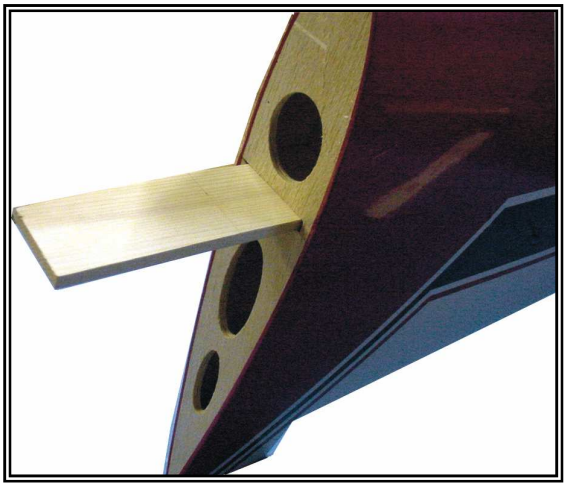
Locate the 2” x 8”x 1/4” ply wing joiner and mark top, bottom, and center.



Test fit the piece in each wing panel. Sand the surfaces of the joiner ply piece if the fit is too tight.

Mix up some 15-minute epoxy and spread on one half of the joiner ply piece as well as the receiving hole in the corresponding wing panel.

Use some acetone or alcohol on a rag to clean off all excess epoxy and allow this assembly to dry. Do this cleaning step in a well-ventilated area. Let this set-up and once “dry” move to the next step

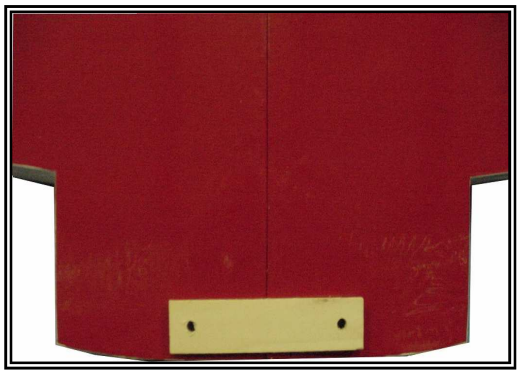


Test fit, and be sure everything fits and aligns nicely. When satisfied, mix up another batch of 15-minute epoxy and coat the exposed ply joiner and the receiver hole in the wing panel. Push both wing panels together and wipe off any excess epoxy that oozes out.

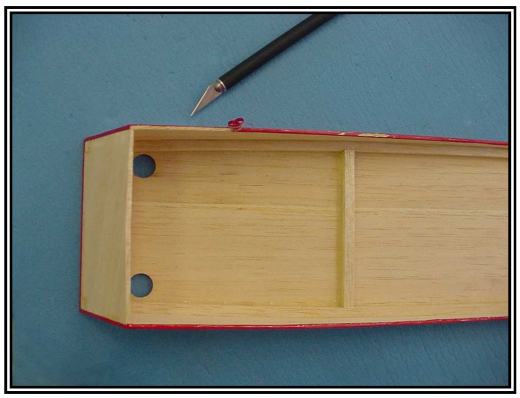
Use “T” pins and/or tape to hold the leading and trailing edges in perfect alignment. Since the root ribs are aligned at the correct angle the dihedral angle is automatically set correctly. By maintaining a tight gap on the top and bottom surfaces, the amount of C/A glue required to adhere the root ribs together will be kept to a minimum.

NOTE: The next set of steps about the Belly Pan is for TEST FITTING ONLY. NO GLUE - UNTIL WE TELL YOU!

Locate the ¾”x1/8”x3-1/2” ply piece with the 5/32” holes in either end. Test fit this piece on the **bottom** of the wing where the wing bolts will pass through. The covering will be trimmed later.

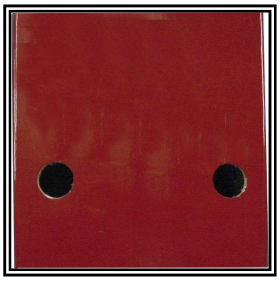


Now prepare the belly pan by trimming the covering as shown. This will soon become part of the wing. Trim the covering from the base of the belly pan so glue has a place to wick into for a permanent installation. The belly pan will glue in place onto the wing bottom.

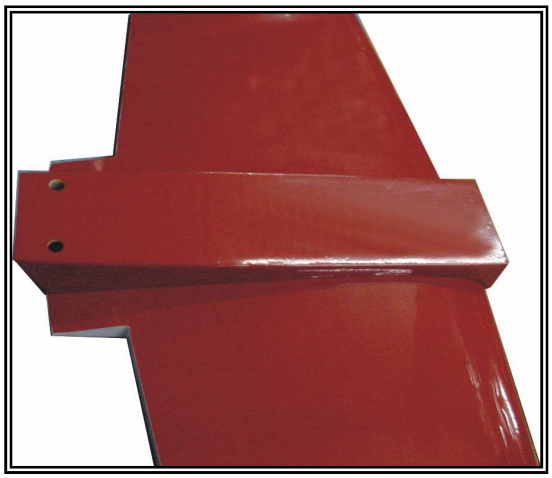


Trim the Belly Pan covering where the wing bolts will pass through.

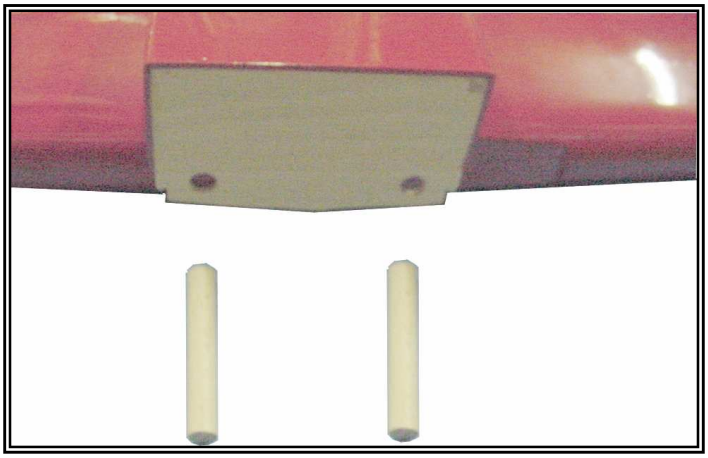
Later we will glue round guide tubes in place.



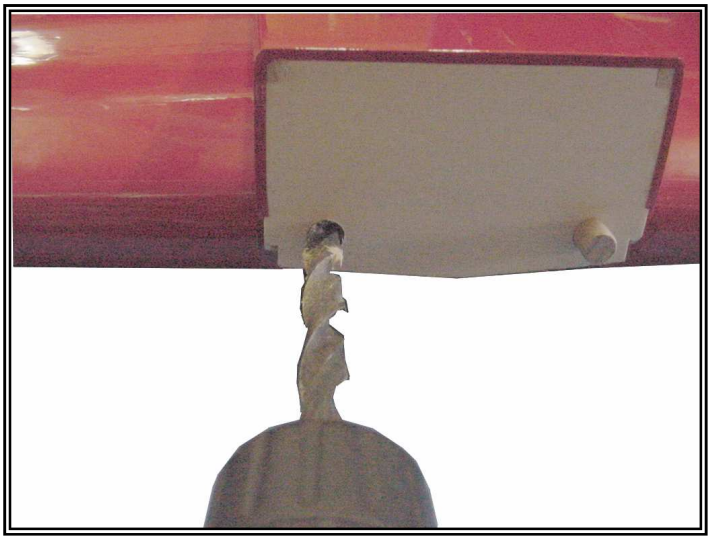
Test fit the wing assembly and the belly pan into the wing saddle of the fuselage.



Test fit the belly pan and locate the the two 3/8”x2-1/2” wing dowels.



Using a 3/8” drill bit - drill the dowel holes into the wings leading edge. You will need ½” dowel showing (exposed) for the saddle fit. Don’t glue anything yet!



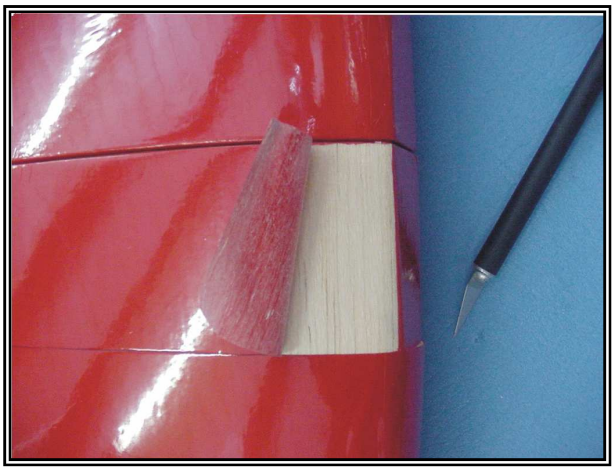
Fit, sand and round if necessary the wing dowels for a nice snug, but smooth fit.

Remove the belly pan and get the wing ready for a test fit and alignment into the fuse.

Lay the wing into the fuse and align the belly pan with the fuse and the wing. When satisfied with the wing fit and belly pan alignment, trace the belly pan outline onto the wing covering.

Double check your marks and be sure the belly pan is located just right for a nice looking fit. *No glue yet!*

Now trim the covering from the wing. Use a sharp knife and try not to cut into the balsa sheeting. This is where you will glue and permanently attach the belly pan later.



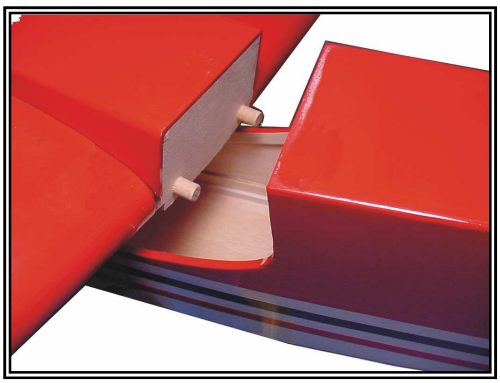
OK, now you can finally get the glue!
Carefully align the wing bolt holddown plate onto the botton of the wing and when satisfied glue it in place using CA Glue.

When satisfied with wing placement and proper dowel alignment and fit, epoxy both wing dowels into place. Without the belly pan, you should have 5/8” dowel exposed.

After the front wing dowels are glued in place and the glue has set up, test fit the position of the wing in the saddle. Secure it in place with the supplied 1-1/8” stainless wing bolts and verify a correct fit.

The clearance gap in the front is correct - this clearance is for the belly pan. After you are satisfied with wing alignment then remove the wing and prepare for the belly pan installation.

Slide the belly pan over the dowels and onto the wing. Hold it in place while once again you bolt the wing (with the not yet glued belly pan) into the fuse.



Once again, bolt the wing in place and carefully align the belly pan for a perfect fit!

When satisfied, drop a few drops of CA along the edge of the belly pan to secure it in place. Don't get nuts with the glue here, a few drops for now - just to hold it in place. After it sets up you will then remove the wing from the fuse and glue the entire perimeter of the belly pan down onto the wing for a permanent installation to the wing.

Glue in the supplied ½"x2-1/4" fiberglass guide tubes that connect the belly pan and bottom surface of the wing. These fiberglass tubes will ease installing the wing bolts during field assembly.

Next….Aileron installation…