



*Da Dings*



102" WING SPAN

FOCKE WULF 190-D9



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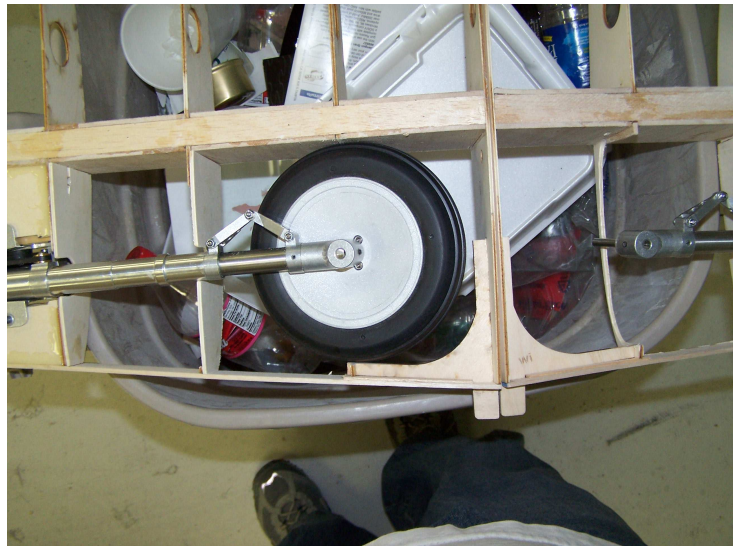
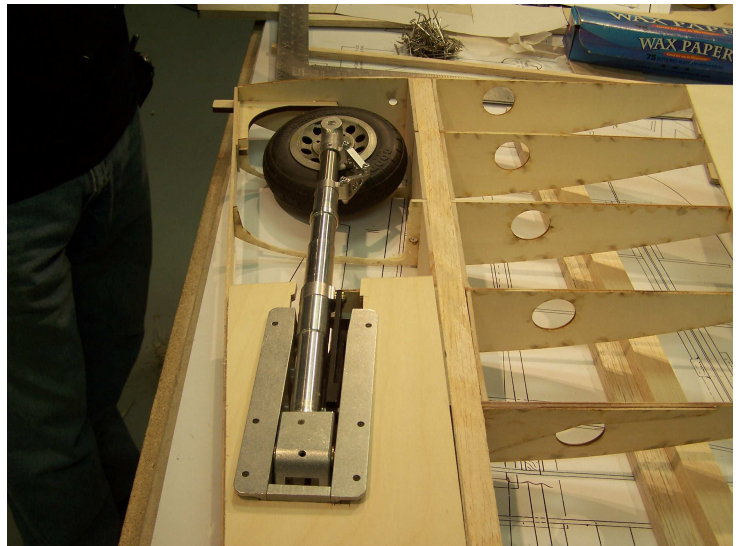
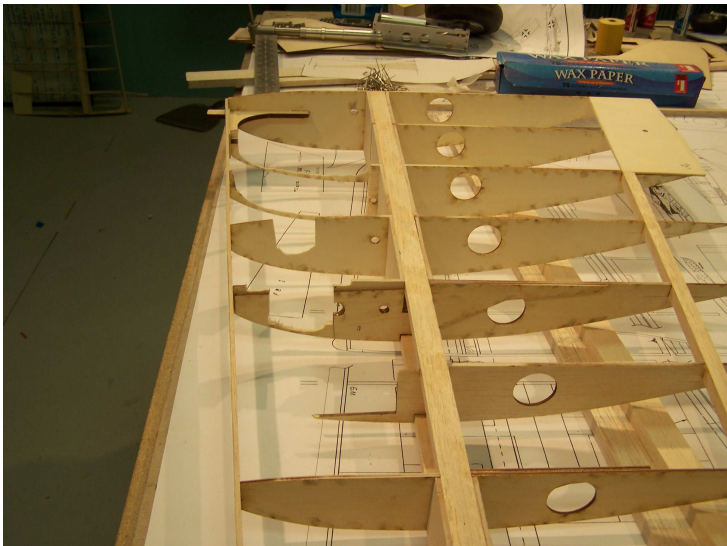
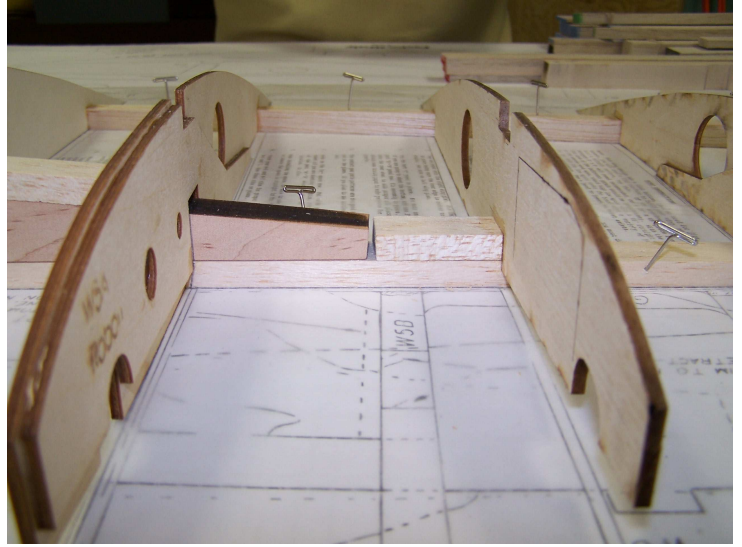
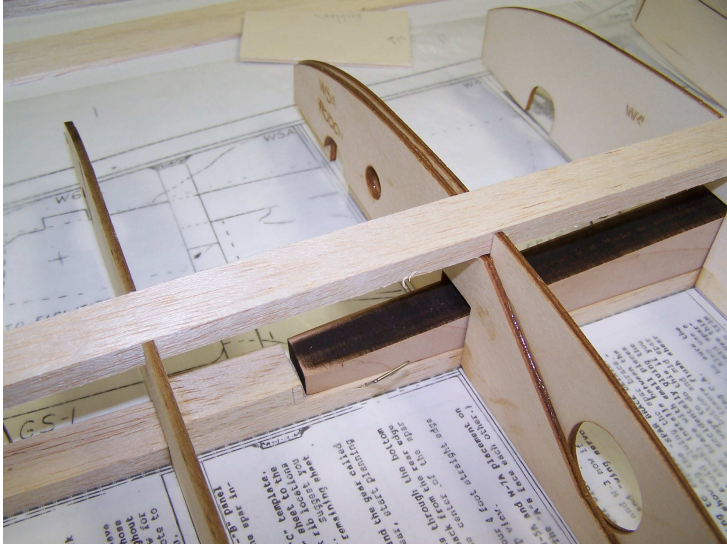
## **Meister Scale FW 190 A & D9 Sierra Retract Modification Instructions**

Written update 1/01/08 by: John Monaghan for Meister Scale Models.

This is a very simple process to do all the parts that are set to help you achieve a more scale aircraft and have a more reliable landing gear. Utilizing your standard set of plans, all you have to do is swap out the parts. The parts are what make the change of the location of the gear due to the longer length of the struts in the Sierra Retracts as opposed to the original designed retract installation. The process is as follows:

You change out ribs W2, W3, W4, W5, W5A, W6, W7A and the gear plate. The new gear plate is extended from W7A to W4 utilizing a bigger surface for the larger retract mount frame. In doing this process, you no longer use the hardwood  $\frac{1}{2}$ " x  $\frac{1}{2}$ " rails that go from leading edge to the main spar. You will use a  $\frac{1}{4}$ " x  $\frac{1}{2}$ " piece of hardwood for blind nuts on the top side of the gear plate. You will no longer use the  $\frac{1}{8}$ " balsa sub leading edge. This will be replaced with  $\frac{1}{8}$ " aircraft ply recommended from wing rib W1 to W8. You need to use  $\frac{1}{8}$ " plywood sheer webs on the leading edge side of the main spar from W1 through W7A. The correct gear plate angle is set in the doublers and the ribs. When installing the retract to the gear plate, you will need to use button head style machine screws and the best for this is 8/32. You may need to shim the retract on the plate towards the tip and this will help the retract in the closed position so that the wheel will sit deeper in the wheel well. Don't worry if the wheel sits down a little in the closed position. Due to moving the gear in one rib space, the wheel is now in the belly pan section of the wing closest to the root rib so you will have plenty of clearance. As for the forward angle in the gear down position, this has been set in the parts so the angle should be correct. On the prototype both Sierra's 6" wheel and the Glennis 5-1/2" scale wheels were tried. The Glennis 5-1/2" wheel fit the best out of the two and is more scale, but the choice is yours. After all is installed, you will need to use some  $\frac{1}{8}$ " Balsa to fill in the bottom of the ribs on W5 and W6. In order for the sheeting to be outlined around the retracts, it might also be helpful to add some Balsa in between the same ribs. On the prototype wing, the balsa was notched so that it sat on top of the retract mounting flange, but it is your choice to do so in case you would ever need to remove the gear. You will need to lengthen the upper part of the gear door for the installation of the gear door. This is done by taking the standard size gear door that may come as a cut part in your kit, and measure in at the top  $1\frac{1}{4}$ " and cut and splice a piece of ply to lengthen the door to the proper fit.

We hope that this will help you in achieving a simple and less stressful installation.





### **GENERAL TIPS**

1. Because most balsa sheet wood has a bow shape by nature, it is necessary to straighten at least one edge before applying the fuselage F-S templates.
2. It is necessary for the FS-1A, FS-1B and FS-2B be cut accurately, including the notch in FS-2B. Be sure the alignment mark is placed properly on the FS-2B. Double check the 1/8" x 1/2" notch locations on the FS-1As.
3. When cutting out the B.H.s, check the notches for proper depth, etc. now. Saves a lot of fuss when installing the stringers.
4. The best control system to use is the Duo Bro "Laser Rod" system. They do not change length in the weather. We have used this system in all of our designs and assure you it is the best. Phone for proof. If you prefer hidden controls for "Scale," have at it.
5. We provided some of the necessities for a scale cockpit interior, which are optional items. The hood and headrest are easy to make and add a lot of appearance.

### **FUSE INSTRUCTIONS**

#### **B-1**

1. Build the B-1 (See Templates).
2. Install 3/4" triangle stock to B-1. Use a straight edge to insure a straight line. Lay aside.

### **FUSE SIDES**

1. Be sure the FS-1A, 1B and 1C are cut accurately. Double check the notches in the FS-1A. Important.
2. Assemble the FS-1A, 1B and 1C using a four foot straight edge along the bottom of these parts.
3. Next install the FS-2A, FS-2B and FS-2C to the assembly, noting the alignment marks.
4. When finished, sand the assembly and decide which surface you want to face outward. Mark it outside.

5. The second side is built on top of the first, using wax paper to avoid gluing together. It is very important that both sides are identical (even if they are not perfect).
6. Mark the second side outside and now install the 1/32" ply doublers (over all splices) on the inside side of each side. Go slow.

### **B-1 TO SIDES**

1. The tabs on the B-1 and the notches in the sides must be in the called for positions. Double check now.
2. Pin one side to the B-1. Be sure the B-1 and side are touching a flat surface. Glue.
3. Double check that the bottom edge of the side is flush with the bottom of the B-1. Proceed with the other side. (Got big, didn't it?)

### **INSTALLING THE BULKHEAD TO B-1**

1. Using the angle support (A.S.), install the F-4 B.H. and the F-8 B.H. Be sure the F-8 is 90° to surface in the rear view.
2. Loosely install F-5, 6 and 7. Eyeball from the rear to determine if they are in alignment with F-4 and F-8. Adjust the bottom edges to help their alignment. Do not glue yet.
3. Install the F-8A between the F-7 and F-8. If F-7 looks to be in line between F-8 and F-4, tack glue in place. Install control systems now!
4. Repeat with the F-7A and F-6 B.H. When satisfied with the alignment, glue all. Did you install the controls yet?
5. Locate the cockpit deck and temporarily install atop of F-4, 5 and 6. Glue the F-5 B.H. to the sides and remove the cockpit deck.
6. Install 4-36" long stringers to the B.H.s F-4 through F-8. Note: The top stringers go 4" past F-7. Glue the top stringers to the B.H.s only. The bottom stringers and fuse sides between F-4 and F-8 are now all glued. Hope your control system is in place.

## INSTALL NOSE ASSEMBLY TO FUSE SIDES

1. With the fuselage on its side, lay the nose assembly in place. Tack glue the area at F-1 and F-2, being sure the tabs are in place.
2. Roll over and repeat tack gluing.
3. Set upright and check assembly for alignment. Finish gluing. Note: The jig does not meet with F-4 on purpose.
4. Select very stiff stringers for all nose section needs. Install now. Note: All stringers are 36" long and splice together between F-3 and F-4.
5. Install 1/8" x 1/4" piece of balsa scrap between the nose stringers midway between F-1 and F-2. This will help keep the stringers straight when sheeted.
6. Do not install lower nose F.B. plank until told. Note: All fuse plank extends past the F-1 firewall at least 1-1/4". All stringers are cut flush to F-1.
7. When all nose section planks have been installed, make up 1/16" x 3" x 1-1/4" wide balsa strips. These are laid to the inside of the 1-1/4" fuse plank that overhangs the F-1 firewall. This creates a 5/16" thick skin in front of the F-1 firewall. You may add a second layer if you wish. Makes for a strong skin and allows a nice radius to be sanded in for scale looks. See side view. These strips create a gauge to sand the excess planks to.
8. The remaining planks, except for lower nose planks, may be installed now. Suggest you use two layers of soft 1/16" sheet when planking between F-7 and F-8C. Install wing saddle doublers now.
9. When you are ready to install the wing a notch for the wing tongue is provided in F-2. This notch will have to be trimmed to allow the wing to seat properly. The optional wing fillet is installed at this time.
10. After wing installation is complete, install the WTD to front of F-2 and down against the wing tongue. Now you can complete the bottom planking. (Do not install tail feather until wing is installed.)
11. Install your tailwheel now.

## **HORIZONTAL STAB**

1. Glue the S-2A in place.
2. Make up the S-2C's and S-2D's. Glue to S-2 1/8" from ends. (Do both sides of stab.)
3. Glue the ribs R-1 and R-5 in place being sure they are 90° to surface in both directions.
4. Install both S-1's. Install balance of ribs and the S-2B and R-6's.
5. Install 1" wide glass tape to center section after 1/8" sheet is installed.

## **VERTICAL FIN**

Note: Use the stab illustration to guide you through the fin assembly. It is important that F-7 and F-10 are exactly square (90 degrees) to the F-2 side and end view.

1. Center the F-2 to an 18" line drawn on your work surface. Glue the F-2H to F-2 (see side view on Sheet 1 of blueprints). Pin F-2 securely to surface!
2. Glue the F-90 degree part to F-2 1/8" from top end and on center.
3. Glue the hinge blocks in place (see side view).
4. Install ribs F-7 and F-10 to the F-2. Use a 90° brace at F-10 to insure 90° angle. Check this from two directions as shown on stab illustration. Pin in place before gluing.
5. It is important that part F-1A remains straight during installation to the front of the ribs. Suggest you tack glue a piece of 1/8" x 1" x 10" balsa on edge to the F-1A before installing.
6. It is important that part F-1A remains straight during installation to the front of the ribs. Suggest you tack glue a piece of 1/8" x 1" x 10" balsa on edge to the F-1A before installing.
7. Pin F-1A to F-7 and F-10. Lay assembly on side view of fin. It should match. Adjust if needed. Sand front of F-7 and F-10 to match F-1A before gluing. Install F-8 and F-9.
8. The fin 1/8" sheeting outline is provided to insure proper fit of fin to the fuselage. The bottom edge of the sheet install to the F-2 exactly 9-13/16" from the top end of F-2. Put this mark on F-2 both side edges.
9. The rudder assembly is simple and shown on your side view Sheet 1

## WING INSTRUCTIONS

Note: This wing design has a flat bottom, thus no need for jigs, etc. However, you will need a flat surface to build your wing.

You may elect to cap strip or totally sheet the wing. You must decide now. The prototype model had a cap strip bottom and a sheeted top wing. Weight is not a consideration. Ease of building is.

1. Make up the 4 "A"- "B" sheet panels, pick the best sides and mark "out" on them. Remember, you need two top and two bottom.
2. Repeat above for the 4 "C" sheet panels. Note: You should have a 4-foot straight edge to use in trimming the bows from those sheets that are not straight. Most patterns supplied throughout these plans are either 2-7/8" wide or 3-7/8" wide to allow for trimming. Be sure to keep the sheets straight. Write a note to yourself and pin it in a prominent place to help remind you.
3. Lay wax paper onto the right wing plan. Pin the part "A"- "B" panel in place being sure the rear edge is center to where the spar installs. See note on left wing plan.
4. Pin the Part "C" panel in place. See Note on Part "C" template. If you are going to sheet the bottom, add one 3" or 4" sheet to the part "A"- "B" panel now. Pin assembly in place. Mark rib locations onto the rear sheet to aide proper rib placement. Suggest you obtain some tracing paper to make patterns for the remaining sheet panels.
5. The retract gear parts patterns are designed around the gear called out on the plans. If you plan to use another gear, start planning now.
6. Make up the four spars now. Put guide pins through the bottom sheet (if you are sheeting the bottom) 3/8" back from the rear edge of the part "A"- "B" which locates on the center of the spar location. Go slow.
7. When installing the spars, be sure top use your 4-foot straight edge to insure the spare is straight in the top view.
8. Check your W-5 and W-7 ribs for proper W-5A and W-7A placement on W-5 and 7. See these ribs on plans. (The "A"s face each other.)
9. Check all notches in your ribs for proper width and depth.
10. Install the bottom sheet between W-1 and W-3 now if cap striping the bottom. Install all cap strips and "wing servo template." Mark rib location on bottom sheet.
11. Install ribs W-2 through W-13. Fit the 1/8" x 1" ply servo rails and glue in place.



12. Decide now if you want the wing to separate for transport and storage. See front view drawing showing the "SPAR BRACE DETAIL." If you want separation, be sure to avoid gluing the spar brace. Note: The "mid spar" (from 3/8" x 3/4" stock) installs between the ribs and is held in place over the spar brace with small pieces of balsa. This method helps protect from accidentally gluing the "spar brace" to the ribs. There are other ways to do this if you think about it. Important Note: The top, bottom and mid spar material all must be the same exact width to insure flush shear webb contact when gluing in place with gap filling C.A.
13. When tack gluing the "mid spar" pieces to the ribs, be sure the "spar brace" is centered to the center of the wing. Also use a square against the bottom spar when positioning the "mid spar" parts. These parts must be exactly above the bottom spar. Use this method when installing the top spar also. You might have to trim a few of the top rib notches.
14. The W-1 must be kept flat (or straight) during installation at the angle shown on the "spar brace." Tack glue a straight piece of 1/8" scrap balsa on edge to this rib.
15. Make an angle brace to insure the proper W-1 angle when in place. See lines on "Spar Brace."
16. The top and bottom spars butt against W-1. Use your straight edge against the top spar when installing. Again, use your square to insure the top spar locates exactly above the lower spar.
17. Install shear webbs now, W-1 through W-5 and W-7 through W-13 to both sides of spars. The remaining shear webbs are a special shape and of 1/8" plywood.
18. Use your 48" straight edge to check for high spots at the front of the ribs before installing the L.E.-2.
19. Make up the L.E.-2s (two pieces if you like). Install. Angle sand top and bottom edge of the L.E.-2 to confirm to the rib angle. When the wing sheet is glued down it will fit flush with the L.E.-2.
20. Install the aileron header AIL-1 right on the aileron cut line in Part "C". Use pins as a guide.
21. Put a piece of 1/32" ply (spacer) next to AIL-1 when installing AIL-2 part. Install aileron ribs. Note: The full size F.W. had fabric covered ailerons. See four view supplied for details if you want scale ailerons.
22. Install the top Part "C" now.
23. Install all retract parts and the retracts now. See Retract Instructions.
24. Finish gluing the bottom A.B. Sheet.

25. Install top sheet from center of spar back to Part "C." Use your tracing paper to get the shapes of the tapered sheets. This is optional. You may elect to cap strip top and bottom as shown on plans. Weight is not a consideration. Install the top "A"- "B" panel, the L.E.-1 and the tip. A razor plain is a very handy tool at this point.

### **RETRACT INSTRUCTIONS**

The wing was designed around our Fun Trax and the Robart Number 145 Retract Head and Robart Strut Number 155 "Straight Oleo Strut." The F.W. Strut is 77 degrees to the bottom of the wing when down. The axle is 94 degrees to the strut. Strut length is 14" from axle to strut end. Note: The following is done before bottom sheet is glued to the 1/8" leading edge and before top sheet is installed. We now carry Sierra retracts as they are the most scale and robust of any gear. There is an updated gear plate included with the kit. There is also an update in moving the gear one rib closer inwards to accommodate the retract in its scale location.

1. The part G.S.-1 installs against the bottom of the W-5A and W-7A ribs creating the retract angle. Do this now.
2. To install the retract head, clearance for the inboard mounting flange must be made by removing 3/8" of the bottom wing sheet where the mounting flange touches this sheet when attempting the head installation. See note on plans.
3. Install the W-5B and W-7B. It will be necessary to trim to angle the notch in W-5B for retract clearance when installing. Note: Remember that the top sheet might interfere with your retract when installing. Pin a piece of scrap across ribs W-5 and W-6. Try installing retract head. If a problem exists, trim the areas needed.
4. Use 6-32 bling nuts and bolts to mount the retracts.
5. When satisfied with the installation, finish gluing the bottom sheet to the 1/8" L.E.-2.
6. Install top sheet, L.E.-1 and tip now.

### **STRUT DOORS**

In full scale there is an upper and lower door. The lower door is attached to the strut part that moves up and down and the upper door attaches to the main strut.

## **MARKINGS**

Make all markings from pressure sensitive vinyl available from vinyl sign companies. Patterns for the early black and white markings are provided in order to cover all possible choices of schemas, early and late styles. See details on templates.

1. If using early style markings, the crosses are cut from black vinyl at the extreme borders of the templates. Then cut the white L-shaped vinyl parts. Install the black part using detergent and water. Squeegee the liquid from under the vinyl. Now remove part of the backing paper from the white vinyl "L's" and position to the cross. Press exposed vinyl sticky area down. Now remove balance of backing and press in place.

The swastika is made from white vinyl then the inside black part is cut and installed to the white in the same manner. Or you could put the black swastika onto uncut white vinyl then cut the white border. ENJOY!

## **SUGGESTED COVERING AND PAINTING SYSTEMS**

1. Clear Monokote with automotive primer (lacquer base) and any lacquer base colors. This is the lightest system available.
2. Super Coverite and lacquer colors.
3. Fiberglass Cloth and Polyester Resin on the fuselage and Clear Monokote or Super Coverite on the flying parts. Again using lacquer paints. Note: We assume you will be using a gas engine.

## **CONTROL THROW SET UP**

1. Ailerons 1" up and 1" down.
2. Elevators 1" up and 1" down.
3. Rudder 2" each way.
4. Throttle must be set to a low idle to allow the model to fly slowly enough to land.  
Note: The above can be changed to individual taste after initial flights.

## **FLYING**

The 190 has the same "Fun Scale" characteristics as its predecessors. Very slow take off and landing capabilities so do not use much throttle on first take offs, if you want realism. The 190 is very acrobatic if set up for it, so help yourself.

## **REMOVAL, ASSEMBLY AND INSTALLING THE WHITE PLASTIC PARTS**

1. A small pair of tin snips is an excellent choice for accurate and easy cutting along the separation lines. A razor saw is good for straight cuts.
2. The air scoop halves can be taped together for gluing. Use thick C.A. on the inside. Use kicker to speed setting. Note: The front ring has an arrow that must match the arrow on the main body.
3. When ready to install the several plastic parts to the fuselage, tape the parts in place. Use thick C.A. to glue. **DO NOT** use kicker as it will attack the plastic. **BELIEVE!**
4. A small fillet of Bondo filler putty around the air scoop and chin cowl will create a nice appearance as well as increased attachment of the parts.

## **CANOPY**

1. When canopy has been fitted and When canopy has been fitted and exactly in place on the fuselage, install some pins next to the front windshield, along the bottom of the sides and at the rear to facilitate exact location when gluing the canopy down. Note: Recommend five-minute epoxy or R/C 56 glues. Do Not Use C.A.

## **ENGINE**

The prototype used the Quadra Q69 for the following reasons:

1. Has rear exhaust.
2. Has good factory muffler.
3. Fits inside conveniently.
4. Is 4 cu. in.

## **SPINNER/ASSEMBLY INSTRUCTION**

Note: It is important that the back plate skirt matches even with the spinner skirt.

1. Using a #10 or 12 x 1-1/4" wood screw, secure the back plate to your workbench (skirt down).
2. Cut your prop blade exits in the spinner.
3. There should be four holes for 4" x 40" x 1/4" bolts spaced between the cut-outs to secure the spinner to the back plate. Place these holes 3/8" up from spinner skirt bottom. Tap 4-40 threads through the spinner and back plate.
4. Use Loc Tite when installing the 4-40 screws.

**MEISTER SCRATCH BUILD 100" FW 190-D9**  
**WOOD LIST**

**STAB BALS:**

- 8 - 1/8" X 3" X 36" MED-SOFT BALS SHEETING
- 2 - 3/8" X 4" X 36" MED-SOFT L.E., ELEV. & RUD HEADER (R-2)
- 1 - 1" X 3" X 36" (S-3, E-4, R-3, R-4)
- 1 - 1" X 3" X 12" (F-1)
- 1 - 1-1/2" X 3" X 6" (F-3)
- 1 - 3/8" X 3/4" X 36 L.E. & HORIZONTAL STAB

**FUSEELAGE BALS:**

- 20 - 1/8" X 3" X 36" (FS-2A, 2-B, 3-A, 3-B, 3-D)
- 6 - 1/8" X 4" X 36" (FS-1A, FS-1B, FS-1C & BOTTOM SHEET)
- 16 - 1/4" X 3/8" X 36" STRINGERS
- 2 - 1/2" TRIANGLE STOCK FOR (B-1)
- 3 - 1/2" X 2 X 36" (B-1)
- 1 - 1" X 2 X 36" (SHAPE BLOCKS)

**FUSELAGE PLYWOOD:**

- 1 - 1/32" X 6" X 36" (WING FILLET)
- 2 - 1/8" X 12" X 48" LITE PLY
- 1 - 1/4" X 12" X 24" AIRCRAFT PLY
- 1 - 1/2" X 1" X 9" PINE (WING BOLT BLOCK)

**WING BALS:**

- 10 - 1/8" X 1/2" X 36" MED CAP STRIPS
- 10 - 1/8" X 3" X 36" MED SHEETING
- 18 - 1/8" X 4" X 36" MED (PARTS A, B & C)
- 4 - 1/4" X 3" X 36" (AL-2 & AL-2)
- 2 - 3/8" X 3/8" X 36" MED (OUTBOARD SPARS)
- 4 - 3/8" X 3/4" X 36" HARD (INBOARD SPARS)
- 3 - 1/2" X 3" X 36" (LEADING EDGE 1)
- 2 - 2" x 4" x 12" WING & AILERON TIP BLOCK

**WING PLYWOOD:**

- 1 - 1/16" X 12" X 24" (GEAR DOORS)
- 1 - 1/8" X 12" X 24" LITE PLY ( RIBS & SERVO RAILS)
- 1 - 1/4" X 6" X 24" AIRCRAFT PLY (GEAR PLATE)