

# WING ASSEMBLY 20'

A VERY IMPORTANT NOTE found on many wing drawings states “Do not drill any unspecified holes into spar”. This is extremely important as any extra holes may, under extreme conditions, WEAKEN THE SPAR. Note; refer to drawing number B96-INS-0780 for further details on drilling the spar.

First, place the wing D-cell in the foam stands provided with the kit. This will provide a stable support for wing construction. The perspective of most side views is from the bottom side of the wing (mounted to the fuselage). All top views are looking down onto the wing with the wing bottom (when mounted to the fuselage) toward the bottom of the page. As a result, to keep the drawing in perspective, build the wing from the bottom side. The quickest way to determine this is by examining the position of the wing fittings, as the wing fittings will stick out the bottom of the wing.

The first parts mounted to the wing D-cell are the 7-inch hat sections. Refer to drawing number B93-INS-0335 for details. On the side view of the drawing these parts resemble an upside down “V”. The hat sections are dimensioned to their centerlines. The hat sections may be permanently installed at this time. Two different types of rivets are used to mount the hat sections.

Also found on drawing number B93-INS-0335 is the rib layout. There are four different ribs that get mounted to the D-cell. There should be 14 long ribs with 2 lightening holes, 2 shorter ribs and 2 different long ribs with 1 lightening hole. The 14 ribs are mounted to the wing with the flat side toward the right and the flanged side toward the left. These ribs are dimensioned to their centers. The flat side and flanges of the shorter ribs are positioned the same as the longer ribs. One of the shorter ribs mounts at the D-cell center and the other mounts flush with the left wing fitting. The final two long ribs mount 15 inches from the D-cell center. These two ribs are dimensioned to their inside edge and are positioned so their flat surface is toward the center of the wing. The two ribs form the wing box section. There is a right and left rib. If they are mounted on the correct side, their trailing edge should match the other long ribs. Do not permanently install the ribs at this time. Use clecos to hold everything in place and check for square and proper fit.

At this point the flap and aileron torque tubes should be inserted into the wing, including the nylon bushings for the flap torque tube. Refer to drawing numbers B92-INS-0326 and B92-INS-0337. Do not permanently install the torque tubes at this time.

The rear spar should be mounted next. Refer to drawing number B93-INS-0338 for this procedure. It is very important that the ribs remain perpendicular to the D-cell spar during this process. The rear spar comes in two 96-inch sections and must be trimmed to fit. Next, install the intermediate spar, keeping everything square. Now install the hat sections to both sides of the wing. They come in 48-inch lengths and must be combined and trimmed to fit. Once again, keep everything square. Finally, install the flap and aileron hinge doublers under the rear spar. Please note which surfaces of the



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hat sections and spars are riveted. Any surface that comes in contact with the wing skin should not be riveted, as the wing skin will not lay flat when installed. At this time only rivet the rear spar, intermediate spar and hat sections. The ribs should still be clecoed.

Referring to drawing number B92-INS-0340, check the wings washout. If the washout is not at the angle and tolerances specified, shim the ribs until they are reached. After the washout is set, the ribs may be riveted into place. The ribs are riveted with two types of rivets.

Install the intermediate spar webs. Drawing number B92-INS-0199 describes this process. Ensure the 1 5/8 hole is drilled in the proper location. The intermediate spar webs may be permanently installed.

Refer back to drawing number B92-INS-0337 for installation of the aileron control system. Please ensure each aileron driver is installed in its proper position. Stands may be constructed to aid in this. Also make sure the torque tubes form a straight line with each other, as illustrated in the drawing. The aileron controls may be permanently installed at this time.

Permanently install the flap control system next. Drawing number B92-INS-0326 explains the procedures. Take time to ensure the flap drivers are installed correctly. Note which direction they point in relation to the top and bottom of the wing. Ensure that all moving parts ride on the nylon bushings and not any metal surfaces.

Refer back to drawing number B93-INS-0338 and install the flap mount hat section. Do not rivet to any surfaces that come in contact with the skin.

Check the washout. If it is still set, the skinning process can begin. If not, adjust the wing until the proper washout is set. Refer to drawing number B93-INS-0341 for the wing skin installation. Take time to ensure each skin is laying flat and is tight against the wing structure. This will help prevent any "oil canning" effect with the skins. The washout must be checked frequently during the skinning process. Once the skins are installed, the washout cannot be adjusted. After all the skins have been fitted, remove and prep them for bonding. If needed, run wiring for navigation and strobe lights through the wing. The channel formed by the hat section on the top surface of the wing is the best for running wing tip wiring. Skins may be permanently installed with rivets and Uralane 8089 at this time. The inspection holes may now be drilled into the wing skin. Refer to drawing number B92-INS-0154 for their locations. The inspection holes allow for access to the control systems. The holes are only drilled thru the bottom wing skin. Inspection hole covers are provided.

Mount hinges and counterweight to the ailerons referring to drawing number B92-INS-0258. Mount hinges to the flaps using drawing number B92-INS-0259. When mounting the hinges, ensure they are flush with the surface of the ailerons or flaps as illustrated in the upper right corner of both drawings.



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Mount the aileron on the wing such that the counterweight is 1/8 of an inch from the wing tip as shown in drawing number B92-INS-0262. Install push/pull rod so both aileron and aileron drivers are in the neutral position.

Referring to drawing number B92-INS-0263, mount flaps to the wing, making sure the bolt on the aileron control horn will clear the flaps as the aileron is operated. With flap push/pull rods installed, the flaps and flap drivers should be in the neutral position.

Once the ailerons and flaps have been installed, the flap handle may be mounted. Refer to drawing number B92-INS-0242 for details. When first examined, this appears to be fairly complicated setup. Therefore, a sketch of completed flap handle system is located in the bottom left hand corner of the page.

Referring to drawing number B92-INS-0264, install the wingtip ribs. After the wingtip ribs have been installed, mount the wingtips to the wing. The wingtips will have to be trimmed to allow the aileron and counterweight to move. The wingtips may be painted. Do not allow acetone, paint, paint thinner or lacquer thinner to come in contact with the wing's D-cell. The D-cell contains a foam core and would be damaged by those materials. Note; navigational and strobe lights must be installed before permanently installing the wingtips.

The wing is now ready to be mounted to the fuselage.

