

# **SINGLE PLACE ASSEMBLY PROCEDURES**

The following is a brief description of the assembly process. This text is designed to give you the order in which the aircraft should be assembled. It will also call out important notes and help clear up complicated areas of the instructional drawings. This text is designed to supplement the drawings.

First, place the fuselage in an upside down position. This is best accomplished by supporting the fuselage at the engine mounts and nose. The fuselage should be stable, as it will be drilled into during the assembly process.

Next, locate the belly skin instructions, drawing numbers B92-INS-0249 and B92-INS-0250. At this time you will want to fit the skins to the fuselage and drill all the necessary mounting holes. Once the skins are completely fitted to the fuselage, remove them and deburr all the drilled holes. At this point the fuselage should be cleaned and degreased for painting. The fuselage must be degreased as a light coat of oil may have been applied to prevent rusting. Do not permanently install the skins until the entire fuselage interior has been built, as the skins will become an obstacle for later assemblies.

The next step is to install the nose fork and steering arm. Locate drawing number B92-INS-0176. An important point that may be highlighted on the drawing is drilling through the steering arm and nose fork at a 45-degree angle. Also, ensure that the nose fork and steering arm ride on the nylon bushings and do not ride on any other metal surface. This prevents excessive wear on the parts.

Install the brake shoe assembly to the spindle assembly. Drawing number B92-INS-0178 explains this. Drawing number B92-INS-0179 may provide a useful reference and will be used for installing the gear legs. There is a very important sentence buried within the notes section that states, "Insert the bolts from the brake shoe side". This prevents the brake drum (installed later) from riding on the bolts. Once the brake shoes are installed, the gear legs can be bolted onto the fuselage. Ensure that there is exactly 12 inches between the spindle assembly and the main gear tube. A small difference between the gear legs will become large at the wingtips of the aircraft. Care must also be taken when sighting through the axles, as the gear legs must be aligned with each other. If you do not feel comfortable with the sighting method, the standard "Plumb Bob" method may be used. Also, note the crossing patterns of the bolts are not 90 degrees to one another. Finally, install the wheels to the gear legs and nose fork. Refer to drawing numbers B92-INS-0331 and B92-INS-0332 for this procedure.

The fuselage should remain in its upside down position for the next few steps. This keeps assemblies at an easier level to work at. Note, the drawings are in their right side up position.



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Locate drawing number B92-INS-0177, rudder pedal assembly instructions. Rudder pedal assembly in straight forward while allowing for steering ratio adjustments and pedal positioning for shorter and taller pilots. A few points to call out, pedals and pedal stand must be reamed to 1/2 inch, the push/pull rods may need to be trimmed depending on the location the pedals are mounted to the pedal stand and each end of the push/pull rods must be tapped 1/4-28.

Next, install the control stick assembly using drawing number B92-INS-0180. The torque tube should ride on the nylon bushings only and not any metal surfaces. The control mixer and control stick mount should both be mounted flush with the ends of the torque tube. The torque tube retainer should sandwich the nylon bushing between the control stick mount. To prevent push/pull tube interference, use only the specified rivets and do not rivet through the top or bottom of the torque tube.

The next step is rather simple—installing the nylon main control guide to the main gear tube weldment and installing the forward control guide to the cable guide bracket that is welded to the seat frame. Refer to drawing number B92-INS-0196 for details.

Refer to drawing number B92-INS-0182. For bonding purposes, sand the inside surface of the forward and aft sockets. This is completed while the fuselage is upside down to provide easy access to the sockets. Do not permanently install the tail boom at this point.

Next, place fuselage in its upright position for the installation of the tail boom, vertical and strake assemblies. Locate drawing numbers B92-INS-0182 and B92-INS-0183 for details. First install and align the tail boom. During this process make sure the fuselage remains level. All lubricant must be removed from the tail boom and both sockets before bonding. Next, install the vertical and strake. Note that the strake is only riveted to a height of 15 inches above the tail boom.

The next step is to route the rudder cables through the fuselage. Drawing number B92-INS-0190 will be used for actual cable routing and B92-INS-0191 will be used for mounting the rudder cable to the rudder control arm. At this point, do not mount the rudder control arm to the rudder or the opposite end of the rudder cables to the rudder pedals.

Construction of the stabilator is the next step. You will need to locate drawing number B92-INS-0184 for this process. Even though the stabilator leading edge had been factory assembled, the rivet line that runs down the spar centerline must be installed. Follow the dimensions so that the rivets will clear the spar lightening holes. Also note the gussets placed at the center rib and spar. The bottom gusset should be radiused as shown. This provides clearance for the anti-servo push/pull rod. After completion of the stabilator, the anti-servo tab should be temporarily installed, using drawing number B92-INS-0188.



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Now install the stabilator mount ring. Refer to drawing number B92-INS-0185. Once again, ensure the fuselage remains level for this procedure. Also, double-check the stabilator's level and alignment before drilling. At this time, permanently install the stabilator mount ring, but not the stabilator, as it will be removed later to gain access to the tail boom interior.

The anti-servo control system is installed next. Drawing numbers B92-INS-0181 and B92-INS-0186 will be needed. Most of the parts that mount in the tail boom are factory assembled to the trim torque tube. Slide the trim torque tube into the rear of the tail boom and out the front through the main control guide and into the fuselage. Position the components in the tail boom as shown in drawing number B92-INS-0181. Next, mount the trimwheel to the seat frame as detailed in drawing number B92-INS-0186. Once everything is in proper position, it may then be permanently installed. The trim torque tube should run under the rudder control arm.

The tail wheel should be mounted next. This is a simple procedure. Refer to drawing number B92-INS-0195.

Locate drawing numbers B92-INS-0189 and B92-INS-0190. Mount the brake pedals to the rudder pedals, making sure they will clear all obstacles such as the rudder pedals and fuselage frame. When "sandwiching" the brake pedals between two rivets, ensure the pedals swing easily, but do not slide side to side. Next, route the brake cable sheathing as illustrated in drawing number B92-INS-0190. Insert the brake cable through the sheathing and mount the cable as described in drawing number B92-INS-0189.

The rudder cables should be completed using drawing numbers B92-INS-0190, B92-INS-0191 and B92-INS-0194. First, temporarily install the rudder. The rudder cables should already be routed through the tail boom. Make sure they did not tangle with the trim torque tube. Route the cables through the fuselage, installing the turnbuckles and finally mounting the cables to the rudder pedal via the rudder pedal tang. Note that the rudder pedals and rudder should be in neutral position during the assembly process.

Route stabilator control cables next, referring to drawing numbers B92-INS-0190 and B92-INS-0260. Route cables through tail boom so that they do not ride on any other metal surfaces (other cables, rudder control arm, etc.). Next, mount one end of the cables to the stabilator. Temporarily mount the stabilator to the stabilator mount ring, install turnbuckles and finally mount cables to elevator driver. Ensure the cables are set to neutral position as described in the drawing and then check for full stabilator deflection. If full deflection is not achieved, adjust cables while continuing to keep them in neutral position, until full deflection is reached.



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While the stabilator is mounted to the tail ring, install the anti-servo push/pull rod. Refer to drawing number B92-INS-0187. The push/pull rod should run inline with the tail boom. Position the anti-servo control horn accordingly. The forward most rivet hole of the control horn receives a larger rivet than the other three. Now that the anti-servo push/pull rod is installed, position the stabilator to its full upward deflection. On the center rib, mark the position that the push/pull rod would exit the stabilator. The rib should be marked on its top and bottom side. Repeat for the stabilator's full downward deflection. These marks will be used later so that a slot can be cut into the fabric covering.

Install the fuel tank mount next using drawing number B92-INS-0252. The fuel tank mount should not extend beyond the indicated fuselage tube, as it would interfere with the jump seat option or any covering that may be constructed to give the fuselage a finished look.

The flap detent strip may be installed at this time. Refer to drawing number B92-INS-0237. This is a very simple procedure.

Installation of the instrument panel and hood is next. Refer to drawing number B92-INS-0266 for installation instructions. When laying out the instruments onto the instrument panel, use extra care to prevent the instruments from colliding with any of the fuselage tubes. The instrument panel may be as tall as needed, but ensure the pilot's legs will comfortably fit under the panel. Do not permanently install the instrument panel at this time; access to the rear of the panel is need for wiring purposes.

For wiring, temporarily mount the engine to the fuselage referencing drawing number B92-INS-0256. The muffler does not need to be installed at this time. Using drawing number B92-INS-0197, install the throttle handle and throttle cable. Note, the throttle cable is sheathed from the cable's stops to the engine. Also, note that the engine will have to be removed later for fabric covering purposes.

There are three different wiring diagrams included with the instruction book. Drawing number B92-DT-0366 is for Rotax 503 engines with electric start and wiring for strobe and navigational lights. B92-DT-0248 is for Rotax 503 engines without electric start. Drawing number B92-DT-0251 is a diagram of the mag switches pinout and switch condition of each key position. All of the wiring diagrams and information contained on the diagrams may not apply to each aircraft, as it depends on which options have been ordered. Install the electrical connectors provided in the kit, near the engine and outside the aircraft. This makes engine removal much easier. The brown ground wire attached to the engine must be removed and replaced with an 8-gauge wire. This is especially true for electric start engines as the amperage capacity of the thinner brown wire is not adequate for the amount of current required. Extra aluminum sheet metal has been provided so that a plate may be fabricated to mount the electrical terminal



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block, regulator rectifier and Hobbs meter. This plate best fits in the upper left corner of the fuselage down tube and the cross tube just below the aft left wing fitting. Two studs have been welded into the fuselage frame for grounding purposes. One stud is located near the instrument panel and the other is located in the aft fuselage area. It is important to identify all wires at this time; this will prevent future confusion and will be a valuable tool in troubleshooting.

The belly skins may now be permanently installed. Once again, use drawing numbers B92-INS-0249 and B92-INS-0250. Only the pre-drilled mounting holes should be riveted. Do not rivet the nose area or above the longeron tubes. The forward skin should overlap the aft skin.

Next, install the nose cone and pitot tube. Refer to drawing number B92-INS-0269. When cutting out the slot on the bottom of the nose cone, ensure that it is along the inner edge of the fuselage tubes. To protect the pitot tube from inadvertent damage, do not allow it to extend beyond the front edge of the nose cone. The nose cone may be permanently installed at this time. The nose cone should overlap the forward belly skin.

Installation of the left window is the next step. Use drawing number B92-INS-0313 for this procedure. The notes on the drawing are the steps for installing the window. Please read and follow them carefully. The better the window is clamped to the fuselage, the closer to actual shape it will be. This will make the assembly process much easier. Do not drill near the wing fittings. This may degrade the structural integrity of the aircraft and eventually cause failure. The Lexan strip that runs down the forward down tube serves as a spacer for the front door. Do not permanently install the window at this time.

Next, install the upper right window and moldings. Refer to drawing number B92-INS-0315 for details. This window and molding installation should be much easier than the left window. Once again, take time to install them correctly and follow the steps in the drawing. Do not permanently mount the windows at this time.

Locate drawing number B92-INS-0317 for the installation of the front door. Follow the steps outlined in the drawing. For the best appearance, ensure the door skin is aligned with the belly skin on the opposite side of the aircraft. The 1/4-inch gap between the doorframe and fuselage frame is to prevent the door from catching on the fuselage during use. Removing the left window at the time of the door window installation allows clamping of the door window to the fuselage down tube. The hinge should overlap the door window. Do not permanently install the door skin or window at this time.

The rear door should be installed next using drawing number B92-INS-0319. As with the front door, there must be a 1/4-inch gap between the two frames. Again, follow the steps in the drawing. Also, notice the hinge mounting detail in the lower left corner of the drawing. Do not permanently install the door at this time.



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Next, prepare the aircraft for painting. First remove the windows, doors, stabilator, rudder and engine. At this time apply the stits material to the rudder, stabilator and the aft portion of the fuselage. Use drawing number B92-INS-0312 for the layout of the covering fabric. Refer to the stits manual provided for actual covering procedure. After the fabric has been installed, the aircraft rudder, stabilator, door skins and window moldings may then be painted. Do not get any acetone, paint or paint thinner on any plastic, foam, or other synthetic parts as it will destroy those materials.

After the aircraft has been painted, the rudder, stabilator, engine, windows and doors may be permanently installed. Make sure flap detent is mounted before installing the left window. Refer back to the appropriate drawings for details. The windows may be sealed with silicone to prevent any water leakage.

Also, upon final assembly of the windows, the wing gap seal must be installed. Refer to drawing number B92-INS-0320 for details.

After the doors have been permanently installed, the door latches may then be installed. Refer to drawing number B92-INS-0241 for the front door latch and drawing number B92-INS-0243 for the rear door latch. The heads of the rivets that mount on the fuselage exterior (for the rear door latch) may be painted before installation or touched up after installation.

Install the cable tunnel next. Use drawing number B92-INS-0322. The narrow end of the cable tunnel should mount flush against the landing gear truss.

If applicable, install the pulley and guides for the pull start rope. Refer to drawing number B93-INS-0333. At this point, only mount the push/pull tube to the control mixer.

The wing may now be mounted to the fuselage. If the wing has not been assembled, please turn to that section of the manual. See drawing number B92-INS-0321 for wing mounting details. It is normal to have some play between the two pairs of forward wing fittings. Do not over tighten the nuts and bolts causing the wing fittings to bend. Next mount the rear wing fittings to the wing. Now that the wing has been mounted, the aluminum gap seal may be installed. Refer to drawing number B92-INS-0322. Be sure to only rivet the gap seal to the wing. The main aileron push/pull tube may now be mounted to the aileron torque tube drivers. Refer to drawing B92-INS0333. Ailerons and control stick must be kept in neutral position.

