

# **Pilatus B-4**

## **Procedures for safe assembly and dis-assembly of the glider**

(Trailer 6)

# Pilatus B-4

## Procedures for safely removing the various components from the trailer, and for assembly of the glider

### **Initial Preparation:**

Pick a location with sufficient room behind the trailer. As each wing stores in the trailer on the opposite side from its location on the glider, the fuselage must be positioned well back from the trailer to provide the necessary maneuvering room for the wings while being extracted and installed.

If practical, leave the trailer hitched to the "prime mover" during the entire extraction process, as this will provide good stability. If for some reason this is not practical, then chock both trailer wheels securely.

Open front door, and remove all ancillary items as may be found inside (tow bar, wing wheel, wing stands, tie down equipment, etc.). If these items are left inside, they may tend to "slide down" as the trailer body is tipped. The spare tire and items in the box need not be removed, as these items are "captured."

Untie the rope securing the fuselage dolly forward.

Remove the lower pin securing the trailer bed tilting mechanism immediately below and behind the scissor jack that tilts the trailer box. A hammer and a brass drift punch will be found in the box on the floor in the front of the trailer. Use these tools to remove the pin – ***do not hammer directly on the pin with the hammer – always use the brass drift punch!*** Use the crank also found in that box to tilt the trailer bed until the rear of the bed is firmly on the ground.

Remove rear door of the trailer and store along the right side of the trailer. (Suggest the door be "leaned" on the fender on that side, and not "leaned" against the side of the trailer itself, as this is likely to "scratch the paint.") ***Caution: During door removal, tip the top of the door out a bit and disconnect the wiring plugs to be found immediately behind the left side of the door at about mid-level.***

Remove the plywood loading ramp to be found on the floor immediately inside, and position this ramp with the metal tabs over the two small metal posts in the back sill of the trailer bed.

### **Extraction of the tail-plane trolley:**

Remove the pip pin from the lateral sway brace located on the top center of the trolley frame. (Immediately store the pip pin back in either piece of hardware – don't "carry it away.")

Remove the wing nut from the threaded post found protruding through the aluminum angle on the right end of the red painted trolley base. (Immediately "capture" this wing nut with the clip found on the short chain located adjacent – don't "carry this away" either.)

Position a person inside to stabilize the front of the trolley as it is removed, and to ***closely monitor the clearance between the nine inch "spike" protruding from the bottom of the horizontal stabilizer and the vertical tail-plane. It may be necessary to "tip" the trolley a bit towards the right side of the trailer as the "spike" moves past the vertical fin and rudder! Important, so watch this one closely!*** Extract the tail-plane trolley, and maneuver to position directly alongside the left side of the trailer, such that the carabiner on the lanyard on the center top of the trolley may be hooked into the tab with the hole in it on this side of the trailer.

### **Extraction of the fuselage and preparation for assembly:**

Remove the tie-down rope or strap from around the tail boom: lift the tail out of the tail wheel holder, and pull the fuselage on its dolly back and out of the trailer. Position far enough away such as to provide "maneuvering room" for the wings as they are removed from the trailer.

Remove the canopy and turtle deck cover, and position in a safe place well away from the "working area" (suggest alongside the right side of the trailer).

Clean up the wing attach fittings on the fuselage to remove old grease and collected "road dirt." And (and getting just bit ahead here), clean those same fittings on the wing spars.

Clean, and lightly grease the assembly pins (white lithium Lubriplate), and have "ready to hand" for glider assembly (suggest on a towel in the pilot's seat).

Lift the tail boom as necessary to be able to extend the main wheel to the "down locked" position (harder to do later with the wing weight on the glider).

### **Extraction of the wings, and assembly onto the fuselage:**

Have two wing stands appropriately ready to position under the tips as the wings are positioned to assemble on the glider.

Position a person inside the trailer alongside the wing tip roller support dolly to closely monitor this support (and assist if necessary) as each wing is extracted from the trailer. ***What is this person watching out for? Three things: First, that the dolly follows the wing as it is extracted (that is, that the wing does not "slip" in the dolly). Second, that the dolly does not tilt while transiting the metal seam plates between the guide rails that may tend to "trip up" the wheels under the dolly. And lastly, that the dolly wheel remains within the "white marked" rail guides as the wing comes out.*** Note that there is a necessary interruption in these guide rails to permit passage of the fuselage dolly wheels. Thus, the **white marked** wing tip dolly guide rails are in two sections: forward and aft.

One "big strong guy" (or possibly two), lift the wing root out of the cradles on the floor and bring inward alongside the cradles and begin to extract the wing. **(It will likely be necessary to rotate the wing inward a bit while lifting out of the cradles to provide the necessary clearance between the trailing edge and the inner roof surface).** As each wing is extracted, **closely monitor this clearance. Bringing the wing root inward toward the trailer centerline will improve the clearance.**

With the wing fully extracted, swing the tip 90° and walk to position at the appropriate side of the glider.

Bring the wing inward to "mate" the lower fitting on the main spar with the fitting on the fuselage, and insert the pin. The drag spar fitting should also mate at this time, and the pin for that fitting may also be inserted at that time, or left for later insertion.

Position a wing stand under the tip appropriately adjusted to keep the tip elevated to a near final position. Keep a person in attendance on the wing tip as the other wing is extracted, positioned, and "pinned" into the fuselage.

Remove and position the second wing in like fashion stand. Position stand under the tip.

With a person now on each wing tip, "coach" the raising of each tip as necessary to bring the upper pin hole on each main spar into proper alignment with the top center fixture hole in the fuselage. Visual alignment is pretty easy and straight forward. **Use the white plastic "pop cycle stick" to achieve final alignment - when this assembly tool easily slides through the hole, and while holding the wingtips steady, remove "pop cycle" and insert the large, T-handled pin.**

Install the drag spar pins (if not already installed) and then insert safety clips in all pins.

Remove the wing tip dollies and aileron locks from each wing.

Rig the ailerons and spoilers with the hardware that is attached by lanyard. **It would be a good idea to have several sets of "eyeballs" involved during this process, as once the turtle deck is installed, one can no longer visually inspect these fittings.**

### **Installation of the horizontal tail-plane.**

Remove the installation pin (installed on the "T-Handle" tool) from its storage position on the aft frame of the tail-plane trolley. Clean this pin, as well as the two bushings in the top of the vertical fin, and lightly grease the pin.

Unship the tail-plane trolley from the side of the fuselage and roll rearward to allow extraction of the tail-plane. Carry the tail plane around and lower the "spike" down into the vertical fin. Note: It may require a bit of "wiggling" to get the pin on the lower end of the spike into its socket down inside the vertical fin.

Insert the greased pin fully, and unscrew the "T-Handle" installation tool from the pin. Return this tool to storage on the tail-plane trolley (either into the clip, or into the vertical PCV pipe).

Connect the elevator pushrod with the built in "spring loaded) pin, and add the backup safety clip through the hole in the primary pin.

**Reaffirm that all wing attach pins, and control system pins are in place and properly safetied, and then perform a positive control check.**

Install the turtle deck and safety devices (rubber "latch" center top, and safety clips through the latches on the forward end. Note: Installation of this turtle deck is probably the most awkward part of the whole assembly process. At least two people required, and three is better. Biggest challenge seems to be proper alignment of the "overlapping" sheet metal panels at the forward end of the turtle deck.

Install the canopy.

Tape turtle deck and wing roots.

Move all items (tail-plane trolley, wing tip trollies, aileron locks, fuselage trolley, and loading ramp) back into the trailer, and reinstall rear door.

Return the trailer bed to its normal position, and reinstall the pin that holds it in this position.