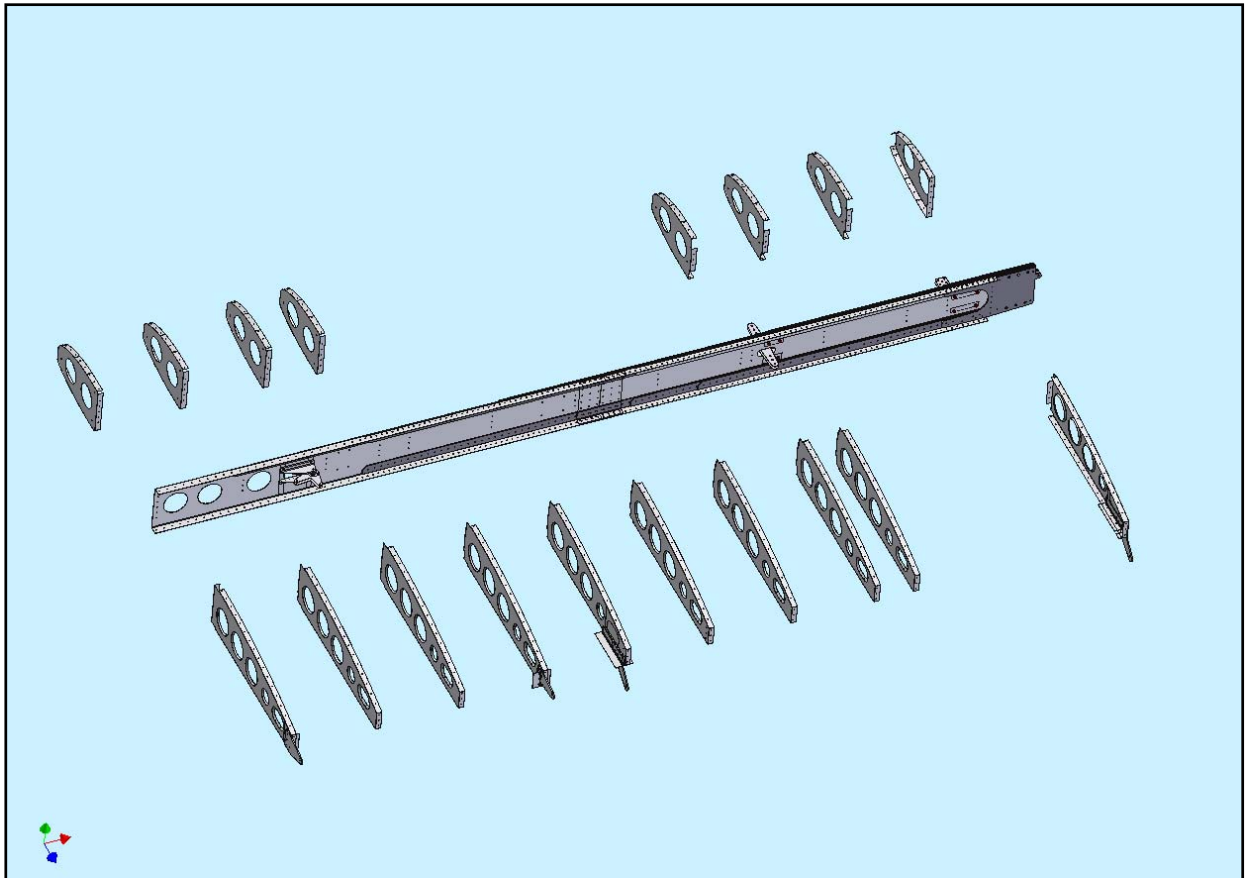
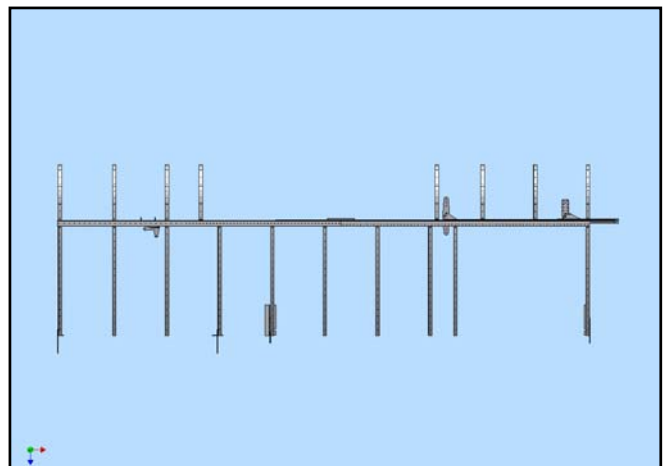
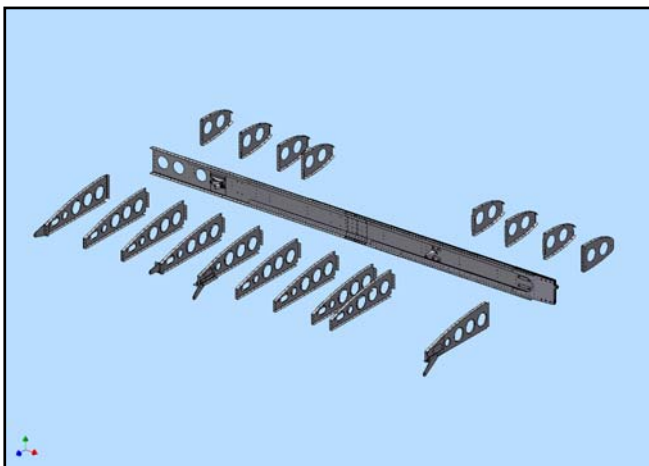


FITTING THE RIBS TO THE SPAR

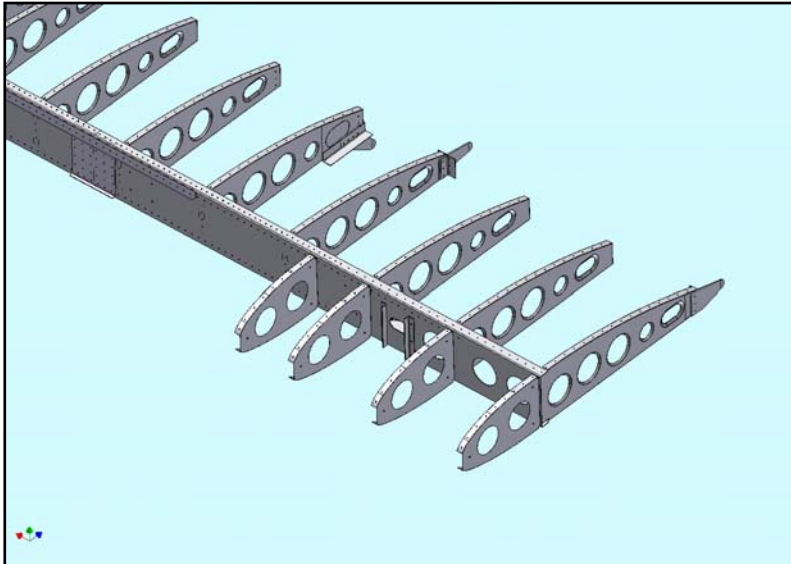
Make a simple template for the holes that attach the rib flanges to the spar web. BE CAREFUL HERE and do NOT set yourself up to drill holes into the reinforcing bars of the spar! The rib flanges attach to the web of the spar only. In some cases, a reinforcing bar may be hidden on the far side of the spar, so be SURE your template works for all ribs.



Fitting the ribs to the Spar



If you do drill a hole into the reinforcing bar, you have compromised the strength of the spar to an unknown extent, and there may be no practical repair.



When you are convinced that the template is correct, drill these holes in the main rib flanges, but delay drilling the holes through the spar web until both the leading edge and main ribs are in place.

Take the leading edge ribs 2 – 3 – 4 – 6 – 12 – 14 – 16 – 18 (see DWG. FASE 3 – STEP 3), mark the center of the lips with a felt-tip pen; position them on the spar starting from the root with the shortest rib, centering its breadth on the spar and the margin on the existing holes of the spar.

While the ribs are in place, drill the forward flanges to the spar web.

Make a drilling to 2,5 mm on the forward flanges of the same rib.

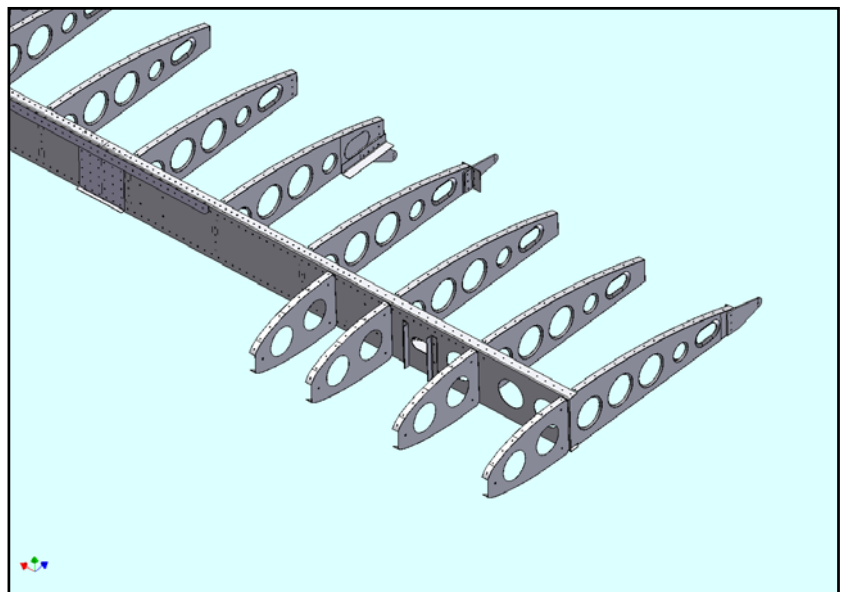
Take the MAIN ribs 1-5 – 7 – 8 – 9 – 10 – 11 – 13 – 15 – 17, mark the center of the lips with a felt-tip pen.

Be careful to put the correct rib in each rib station. Double check the part numbers, the notches that fit around the spar flange strips, and the orientation of the flanges.

Position them on the spar starting from the root with the ribs 1 & 3 (Rib with the Flap hinge installed, lips outboard, continue with nose ribs 3 & 4, continue positioning the 5 & 6 ribs - centering its breadth on the spar and the margin on the existing holes of the spar.

Make a drilling to 2,5 mm on the lip of the same rib. You must trim the rib lip in order not to interfere with the shims of the spar.

Go ahead following the drawing for the positions.



Note: be sure the ribs **N° 1** (SL201100-03-00 Short) and **N° 10** (SL201100-03-02-00) (Flaps connections) and Ribs **N° 11** and **N°17** (SL201100-04-00) (Ailerons connections) are in the right positions

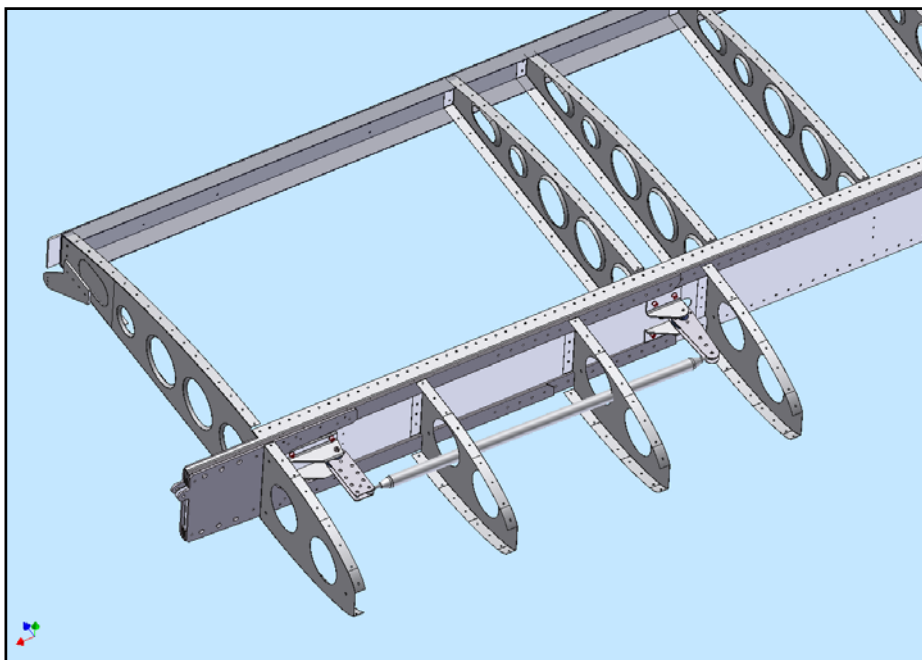
NOTE: Control the exact position of the Leading edge Tank before riveting the nose ribs.

Reassemble the nose ribs with the other ribs after having drilled them.

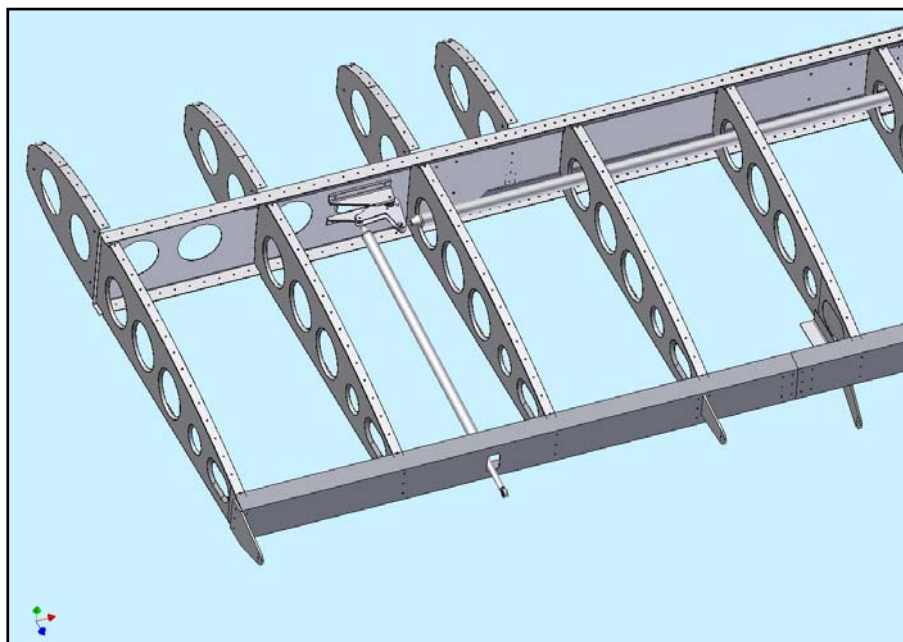
BE CAREFUL: this is a very simple operation but it must be done with the utmost care; the good result of the assembly depends on it.

Widen the holes to 3,2 mm, strip after having marked the positions, deburr and rivet with AVEX1661-0410, except the first rib that must be riveted with AN470AD5.

NOTE: Locating the vertical holes of 1st main rib and 17th main rib a given distance from either end of the spars should provide correct spanwise positioning.



However, any slight difference in spar length would offset this, so the spanwise distance between holes on the main and rear spars must be accurately measured to assure that they are equal.

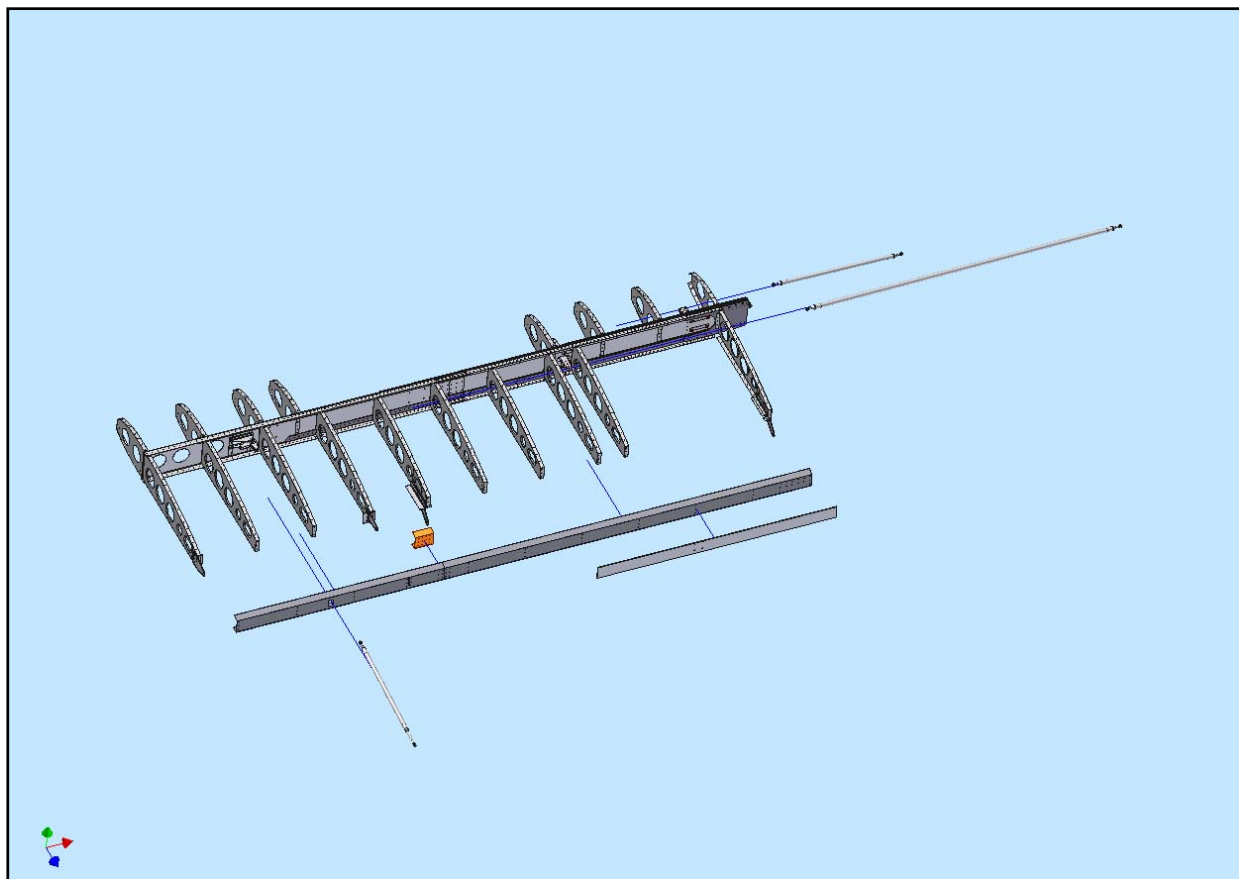


The crosswise location from the top edge of the spars is also very important. Practically any light string, heavy thread, or fish line can be used for the plumb line, and large bolts, etc. can be used for the weights.

When the rear spar is located and clamped in place, any accidental shifting during construction can be immediately detected by the position of the plumb lines.

REAR SPAR

The rear spars are simple "C" section channels with reinforcing where they join the fuselage, and where the main retractable gear attach. Information on the rear spar is found on DWG F4-S4, DWG F6-1 - S6-1 – DWG F6-2 – S6



Rear Spar Assembly

NOTE: the spar channel is **NOT symmetrical**; the **top and bottom flanges** are at different angles **TOP IS 110 ° BOTTOM IS 90°**.

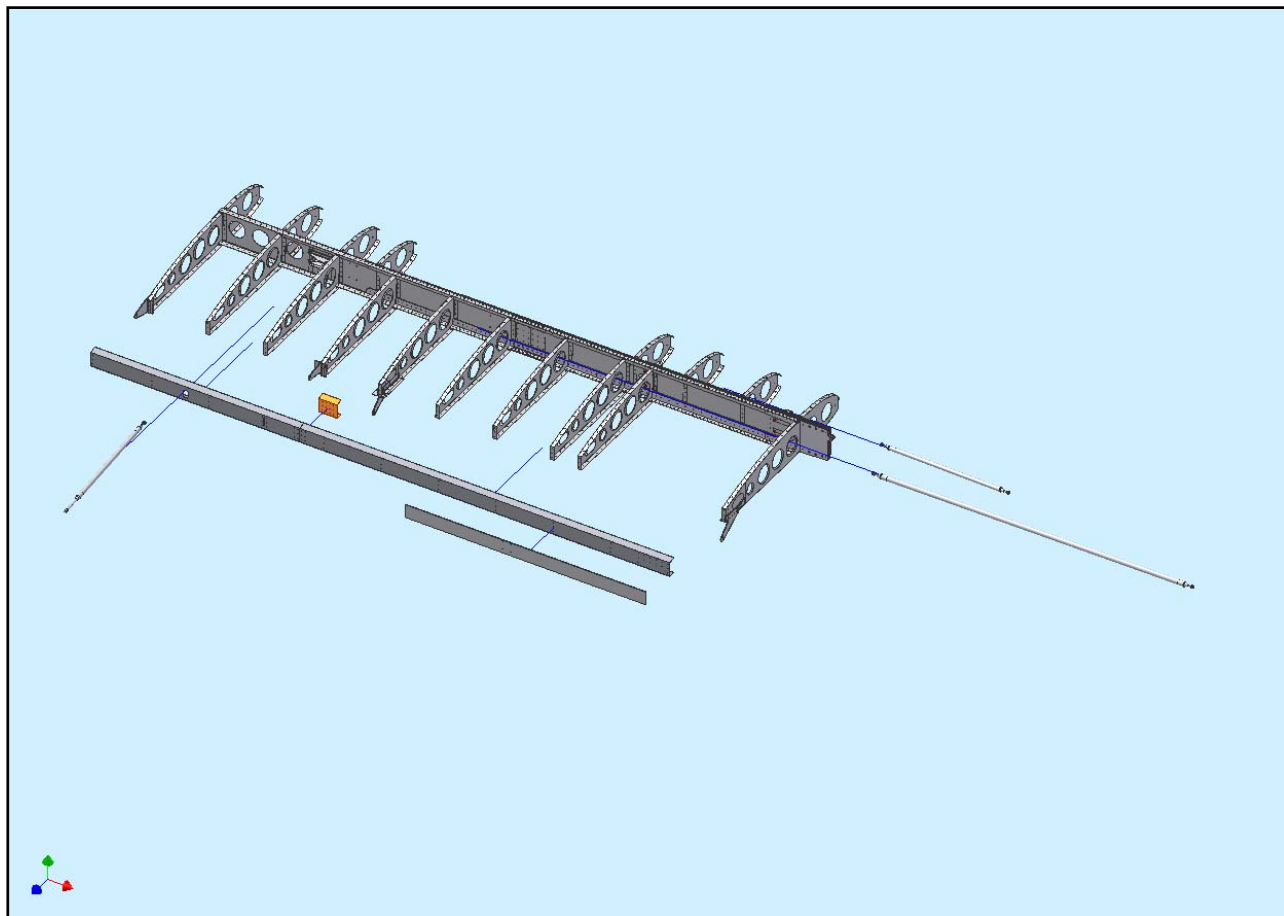
Begin by smoothing the edges of the SL200000-58-01 inboard rear spar channel, and SL200000-59-01 outboard rear spar channel. This can be done on the Scotchbrite wheel, or with a sanding block and wet-and-dry sandpaper.

Measure and cut to length the SL200000-58-01 and SL200000-59-01. smooth the edges, position and Cleco the SL200000-06-01 "C" connection channel, (let a gap $\pm 0,5$ mm between the inboard and outboard rear spar channel).

Drill, deburr and rivet with AN470 AD4-5.

Take the SL200000-37-22 Rear spar reinforcement and connection to the fuselage.

Begin by clamping the SL200000-37-22 reinforcement to the spar as shown on DWG Fase 4 – Step 4. Place it 25 mm out board the Rib n° 1. Make sure you have them clamped to the aft side of the spar. Drill and cleco it to the SL200000-58-01 spar channel. Drill only the holes shown on DWG; Don't drill at the moment the holes of the landing gear support.



Rear Spar ASSEMBLY

Clamp the SL200000-37-22 to the spar channel. Double check all the necessary dimensions and alignments and finish the drilling to full size.

Deburr, prime and rivet the rear

Put the structure on two wooden boards placed on two trestles in the flight direction; place the rear spar (DWG FASE 4 STEP 4), with control the right position and alignment of the structure.

Mark the holes (Detail B) for the aileron bracket , drill 4 mm and with a flat file enlarge the hole to the correct dimension DONT FORGET TO ROUND THE CORNERS.

Don't Forget to install the 2 angles Item 2 & 4 DWG FASE 3-3 Step 3-3 ,

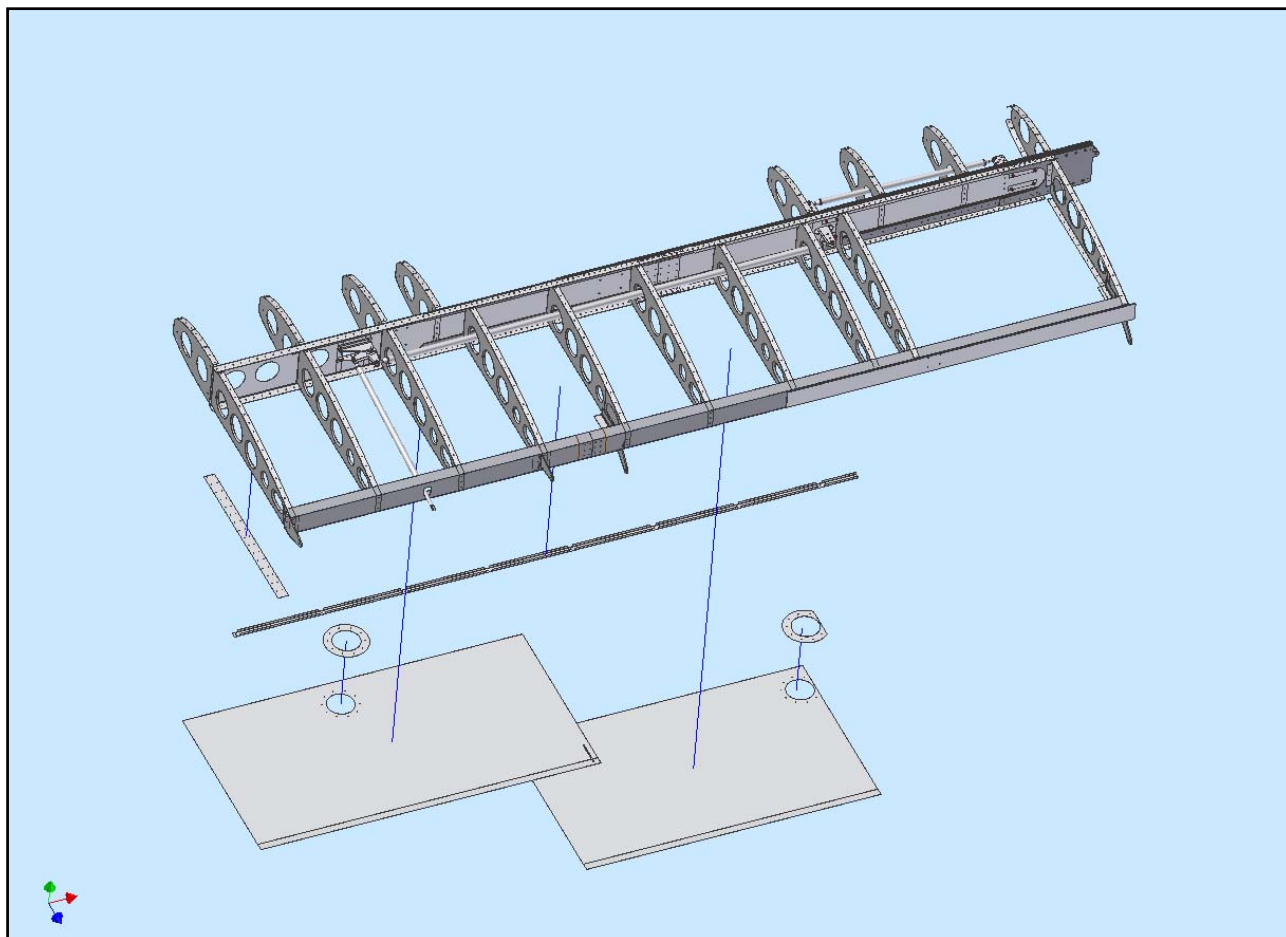
Take the stringer SL200000-18-01 (See DWG FASE 5 – STEP 5 Part 1), place it in the seats of the rib after having adjusted the lips interfering with the ribs.

Tighten it with adhesive tape so as to hold the structure together.

Spanwise and crosswise level of the rear spar are determined by the wing ribs, and no measuring or adjustment is necessary. However, spanwise and crosswise vertical alignment with the main spar is of primary importance. The mean chord line of the wing (centerline shown on the wing rib drawings) is the vertical.

The best method of doing this is to drill holes in the spar webs and install plumb lines. Exact location of these holes is very important, so they should be checked and double checked before being drilled.

FITTING THE UNDERSIDE SKINS:



Fitting the Underside Skins

Place the OUTBOARD underside skin Item 4 (SL200000-13-01) DWG FASE 5 – STEP 5 and let stick to the rear part of the rear spar contoured with the rib N° 17.

Lock with clamps to the back lips of the ribs, **taking care to check the parallelism and the verticality between ribs and spar.**

Start the drilling to 2,5 mm from the ribs towards the skin, starting from the central rib and from the trailing edge towards the spar.

Tack the holes alternatively, put a piece of wood on the opposite side of drill outlet.

Make the same with the Central underside skin Item 6 (SL200000-73-22).

Don't Install now the INBOARD SL200000-74-22 underside skin . Must be installed after you have installed the retractable main gear and checked it.

Widen all the holes to 3,2 mm, mark the skin lined up with the fore part of the spar, strip, trim, deburr the holes and clean the parts.

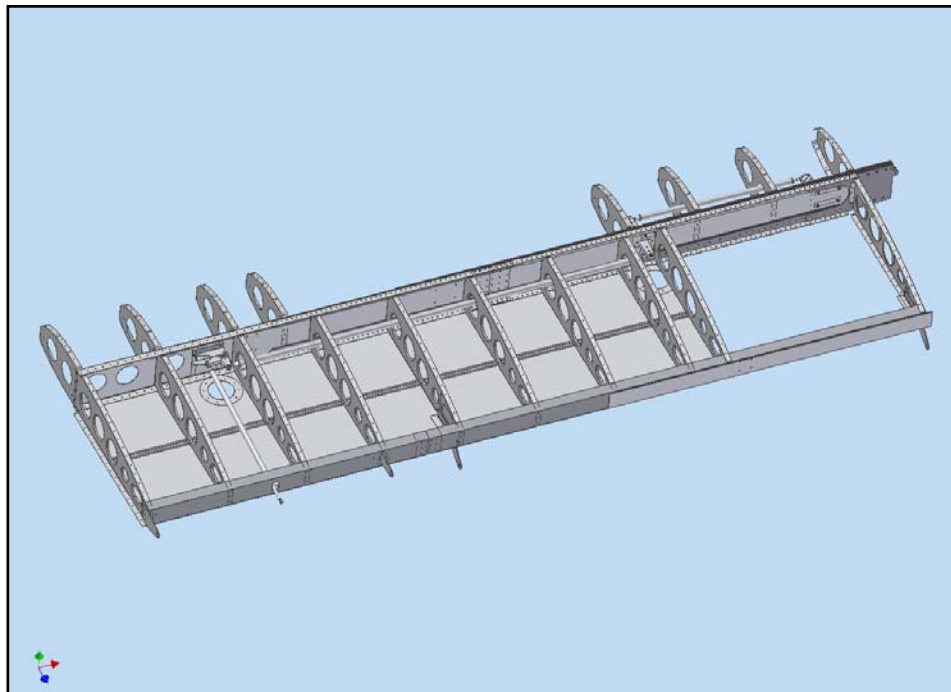
Paint the structure, the inside of the skins and the inner parts (except leverages and sticks).

Reposition the skins on the structure and tack, rivet the skin to the ribs with AVEX1661-0410 in the same direction as the drilling.

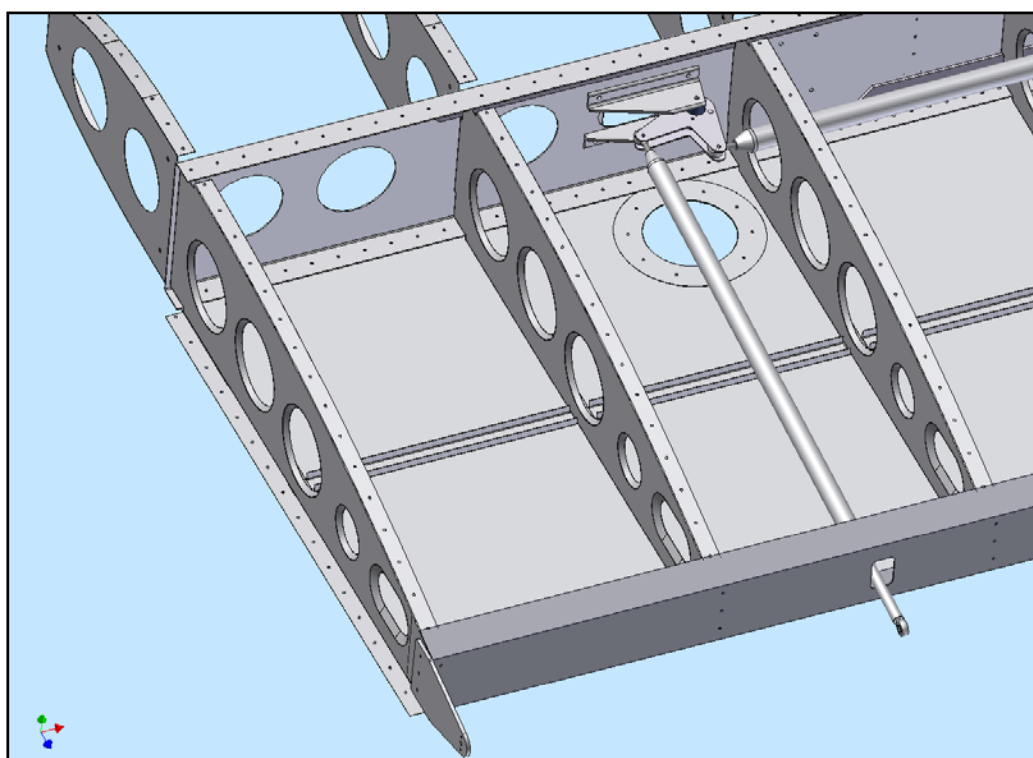
Don't forget to install Item 2 (DWG FASE 5 STEP 5) (wing tip connection) between the last outboard rib and the underside skin . Let it come out from the rib 20 mm.

NOTE: Don't rivet now Rib N° 5 underside and LW skin hold with Clecocs.

Mark the dimensions of the center of the rib flanges, in order to follow them once you have located the skins (mark the centers on the spar and on the underside skin with a felt-tip pen, in order to transfer them on the upper side sheet with the help of a square).



Remember to locate and drill inspection holes and locate and drill holes for the pitot tube.



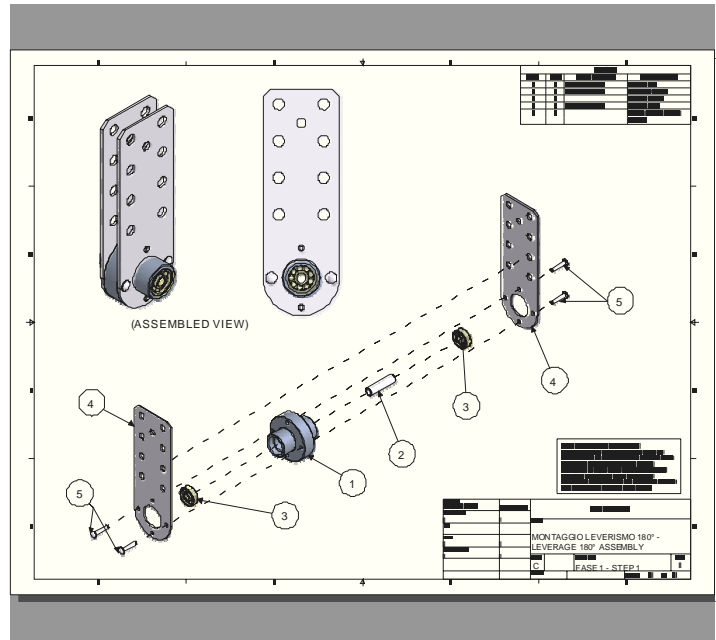
FABRICATING THE BELLCRANKS AND PUSHRODS

Assemble the wing bellcrank (DWG Fase 1) and install it in the wing..

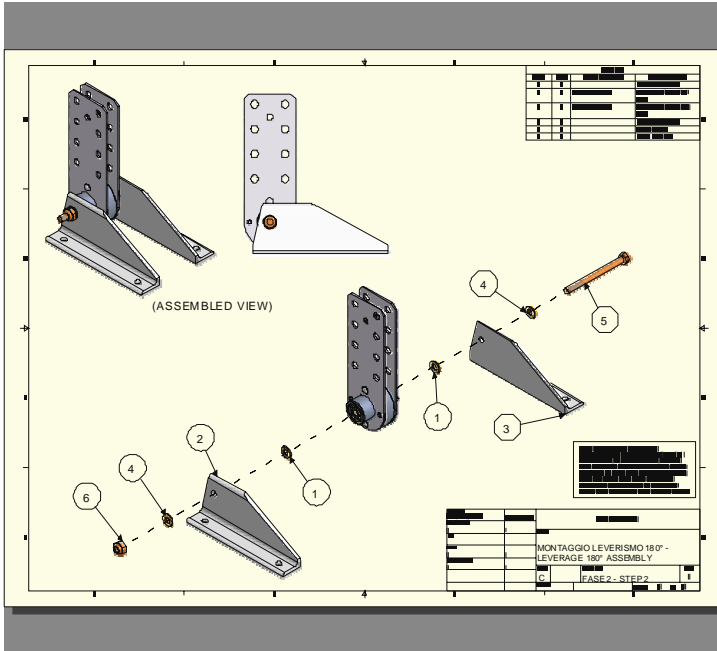
Double check that you have installed the bellcrank correctly. The arms are NOT equal lengths. A hole must be cut in the rear spar (DWG F.5-1 Step 5-1) for the Aluminium pushrod that runs between the bellcrank and the aileron to pass through. This will be enlarged to final size a little later, when the aileron is mounted to the wing.

The pushrod is fabricated as shown on DWG Leverage 180° - 360 ° 75 °. The pushrod can be trimmed and adjusted to exact length during final assembly.

Put the Main Spar Assembled on two trestles with their lips downwards; find the underside and make them match (remember that all the leverage nuts must be in front); take the first inboard leverage SL200050/00 (180°) NUMBER 7 on DWG Fase 1 and position it referring to the four existing holes on the spar.



DWG Fase 1 Step 1 Leverage 180°



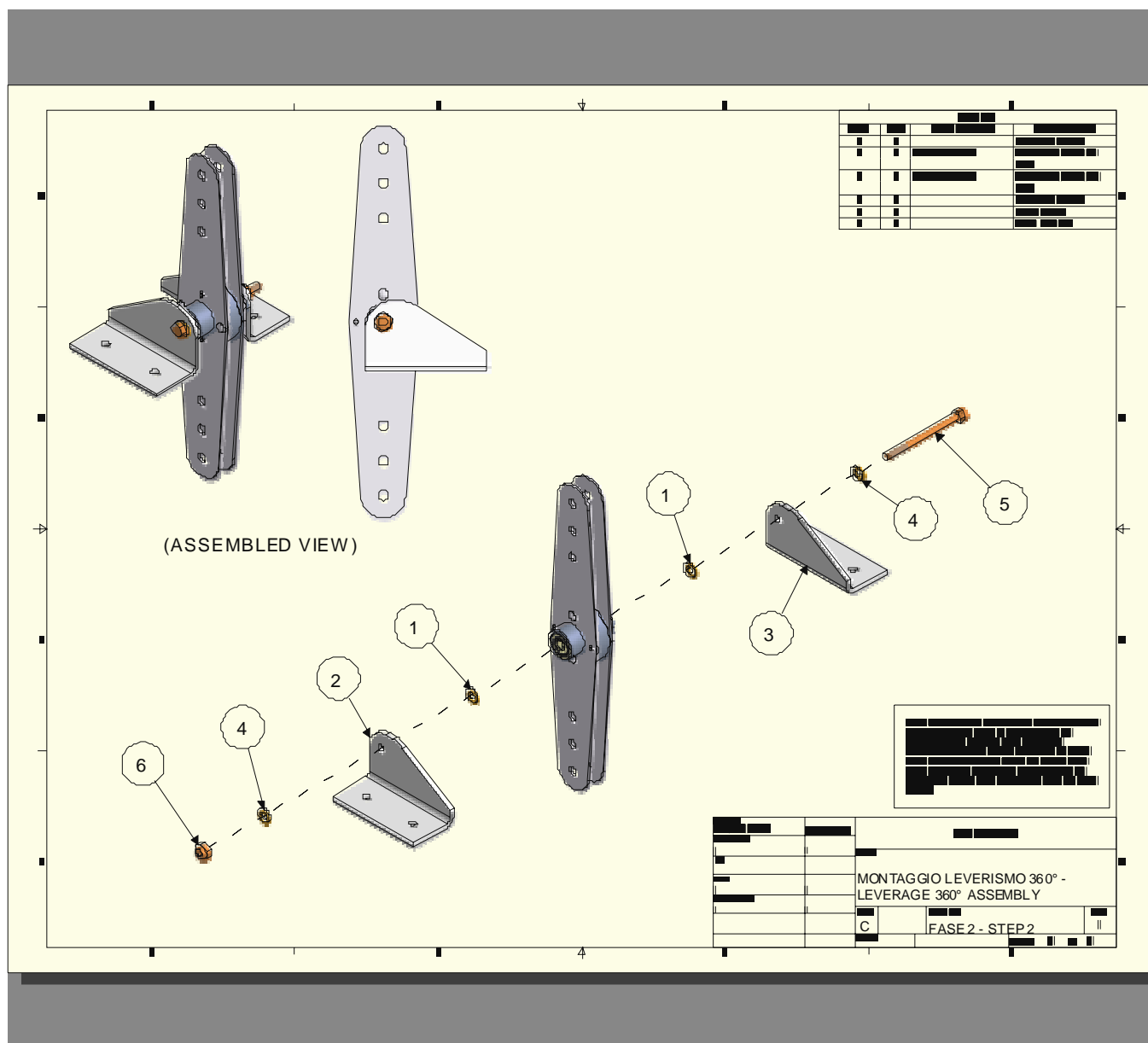
Leverage 180° Step 2

Drill parallel with a 10 mm margin on the angle.

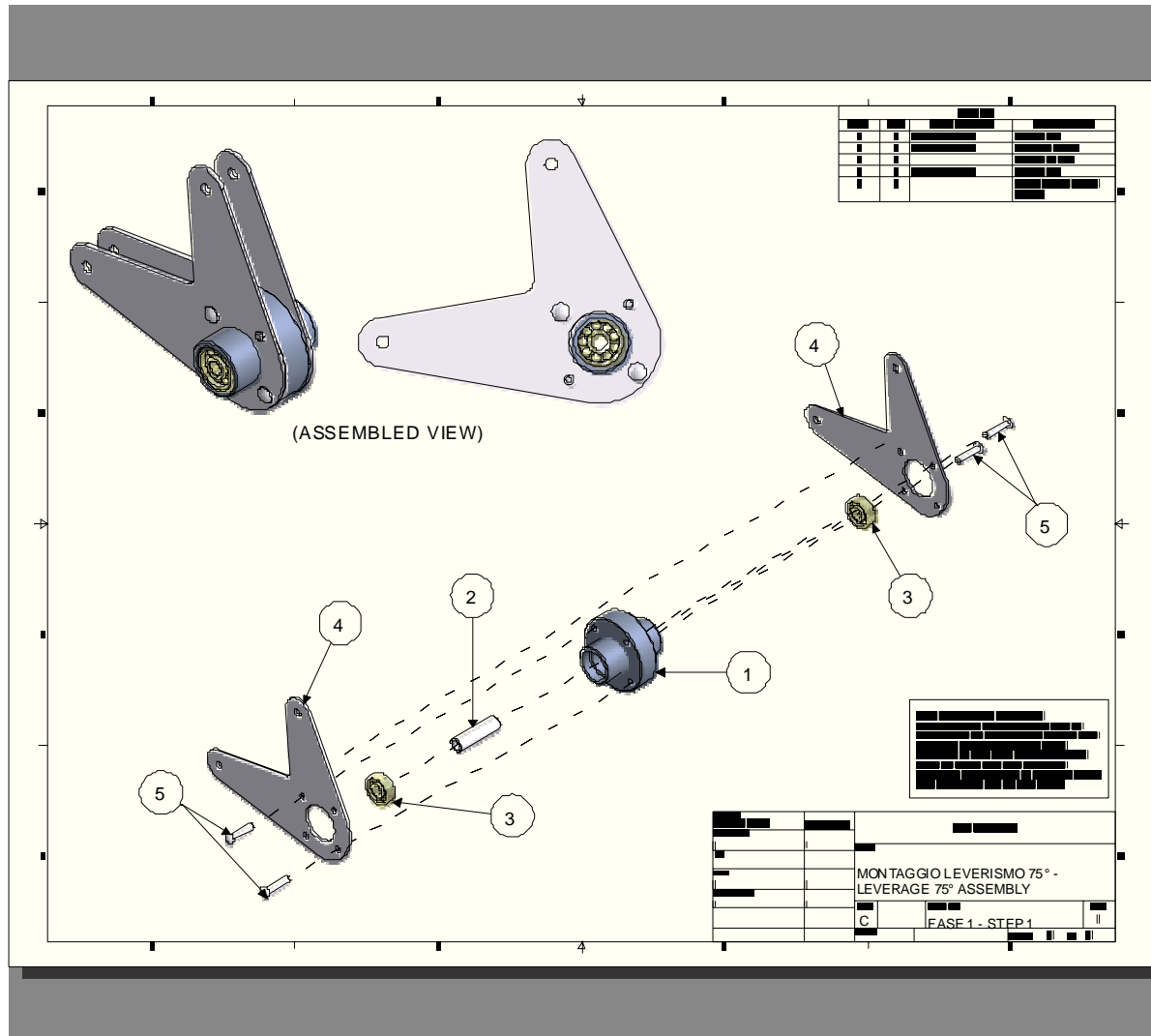
Starting from the axis of rotation, place the 2nd leverage SL200080/00 (360°) NUMBER 6 on DWG , and the 3rd leverage SL200040/00 (75°) NUMBER 4 on DWG by following the dimensions shown in the drawing. It is very important that the distance of the leverages from the right and the left spar be equal.

Drill to 5 mm and insert the 5 20 bolts of the leverages towards the spar; lock and check the correct installation.

Note: The leverages supports (Angles) SL200000-48/00 number 5 on DWG must be installed in the front side of the Main Spar (FW). These angles are very important to prevent aileron flutter, be sure you don't have any flexion of the web of the main spar in the bellcranks zone.



Leverage 360° Step 2



Leverage 75° Step 1

FITTING THE UPPERSIDE SKINS: DWG F 6- Step 6

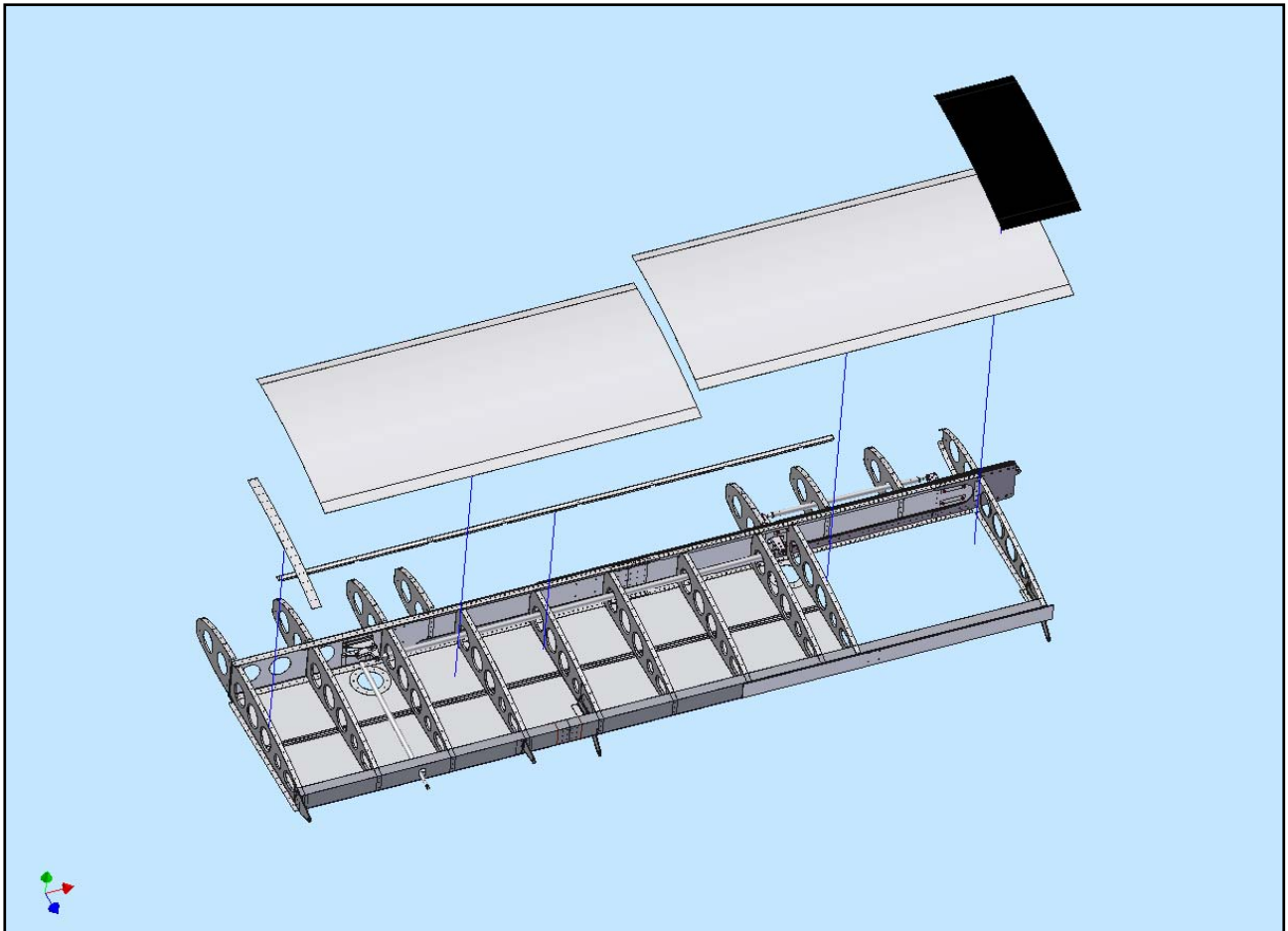
Place the outboard upper side skin SL200000-14-01 (The outboard and the inboard skins have the same dimensions 1580 mm x 680 mm) lined up with the external rib and rear spar back side; lock with clamps.

Check the perfect marking more than once before you start drilling to 2,5 mm, starting from the trailing edge of the upper side towards the spar.

BE CAREFUL: when drilling use a sharp drill to avoid scratches on the outside. Do not push to avoid that the rib flange warps.

Tack carefully as you did for the underside, position the Inboard Upper skin –007, Cleco the WingWalk SL200000-15-01 and do the same operations.

Don't forget to install the upper and lower lap joint for the wing tip SL200000-01-00 .



Fitting the Upperside Skins

Widen the holes to 3,2 mm . HOLD with Clecos.

Verify again the parallelism of the structure and control the wing haven't any twist.

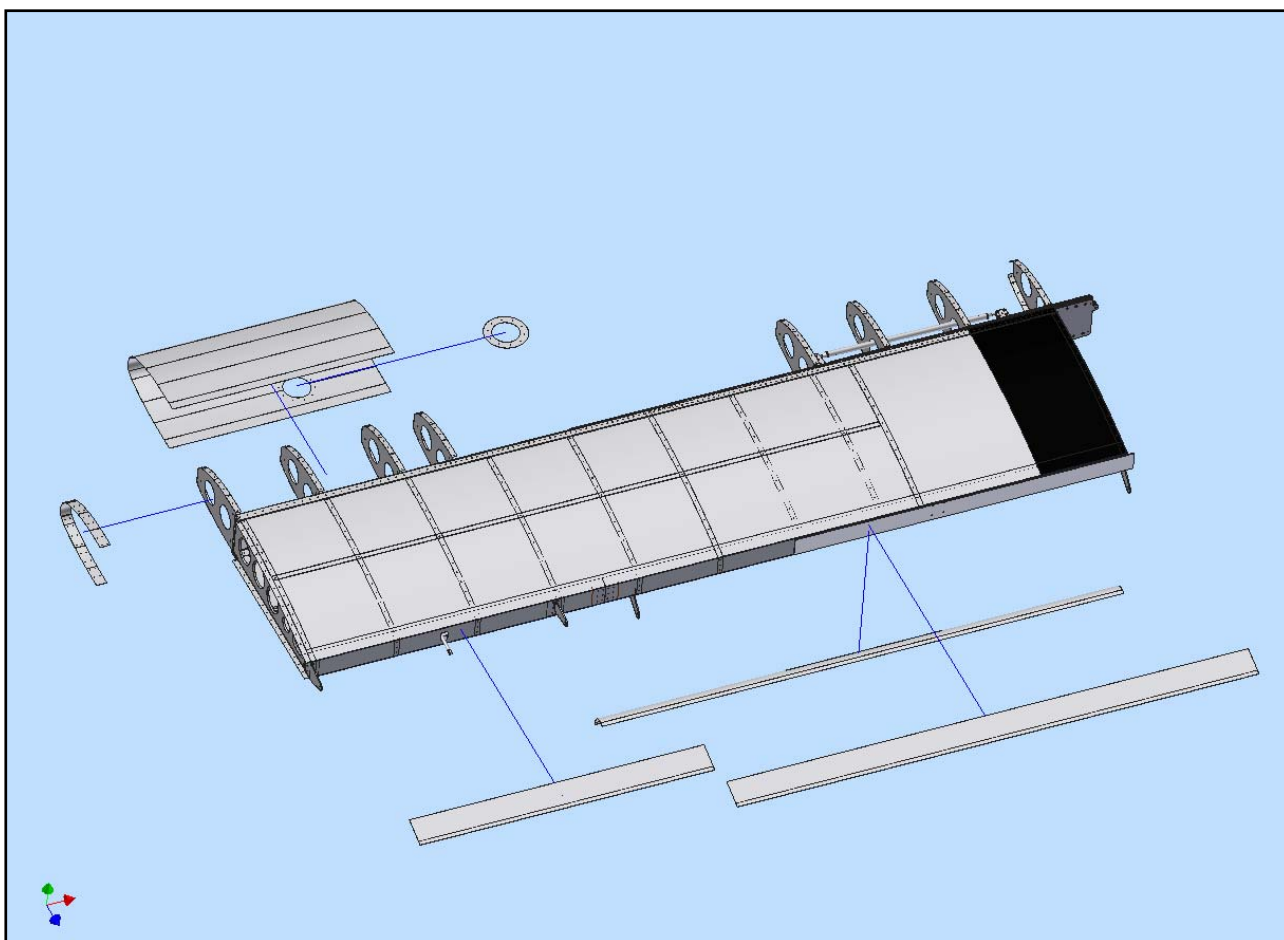
FITTING THE LEADING EDGE SKINS (DWG Fase 7 – Step 7)

The leading edge wing tank must be installed when the wings are complete.

Now you must position the Leading edges skins:

mark the upper side laying them on a table and making their edges match; they must have the same camber.

The longer side is the upper one, mark the camber center so as to see it when you position them.



Fitting the Leading Edge Skins and the Aileron and Flap Fairing

Take the outboard and the inboard Leading edges skins SL200000-17-01 and 16-01, trig them on the central ribs and lock the underside with clamps; make sure that the camber center has the same distance from your workbench (if you centered them you should not have any problem).

Leave the upper side open, and drill the underside from the ribs towards the skin starting from the edge towards the spar (with the same care you had for the other drillings).

Tack the holes alternatively, drill the first hole of the upper side and mark the lip center on the upper side, so as to be able to make the drilling without seeing the lips.

Lock the skin with belts to hold the whole wing section tight; drill to 2,5 mm, tack with clecos.

Now you must drill the spar: this is a very delicate operation. Mark the drilling as shown in the drawing, taking care of the sections and of the drilling pitches.

Check more than once the marking and the position of the half-wing that will have to be leaned on two boards and level to avoid twists.

WARNING: Before starting to drill the upper and lower caps of the main spar, mark the drilling **line** along the spar and rivet spacing : **YOU MUST ABSOLUTELY AVOID TO RAG THE SPAR STIFFENINGS.**

If you do drill a hole into the reinforcing bar, you have compromised the strength of the spar to an unknown extent, and there may be no practical repair.

Now start drilling the upper and the lower side of the spar to 3,2 mm, widen to 4 mm.

Make sure you did not skip any drilling, mark the trimmings, the radius and the positions of the inspection openings on the underside of the leading edges.

Strip, clean and deburr the holes; drill the 100 mm holes on the edges for inspection where you will fit - in the inner part - the stiffenings SL200000-07-00 and rivet them with eight AVEX1661-0410 each.

Locate the WingWalk stiffening SL200000.15-01 (DWG.F6-Step6) on the root side of the upper skin and drill it through the skin.

Position the upper skins on which you have already riveted the stringer SL200000-18-1; tack and start riveting with AVEX1661-0410 in the same sequence as the drilling.

Now you must fit the aileron push-pull rods that must be locked with 6x35 bolts, washers and nuts as shown in the drawing.

The adjustment of the rods is very important, you must therefore observe the following: fit the rods parallel to the spar in order that the leverages are at 90° to the spar, and that the rods are of the same length, measured at the center of the unibal hole.

You must fit on the right half-wing the Pitot tube with its plastic pipe that must be tightened to the ribs with clamps. Make sure that everything is well positioned and locked, place the Leading edges, tack and start riveting with AVEX1661-0410 with the same sequence as the drilling.

Rivet the spar with AVEX1661-0512/-0514, depending on the thickness to be tightened (see grip table).

Now fit the lap joint wing tip SL200000-01-00 to connect the composite wing tips, rivet with AVEX1661-0410. (DWG Fase 7 – Step 7)

Position the two crankcases, flap and aileron checking the projection dimension in the drawing; rivet with AVEX1661-0410.

Fit the flap side inner crankcases SL200000-25-01 by inserting them inside the upper crankcase flange SL 200000 –22-01 that you will rivet with 6 equally spaced rivets AN426AD3-5 so as to keep it tightened.

Mark on underside the drilling needed to lock the upper and underside skins as well, rivet with AVEX1661-0410 **ONLY the outboard end leading edge skin, Clecoes the inboard end leading edge skin, You must install before the main retractable gear.**