

Storm 300 Special

Assembly Instructions



SG Aviation

SG Aviation



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STORM 300 S - 280 G - STORM CENTURY - STORM 04

ASSEMBLY - MOVIES

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1. Wing Assembly



2. Flap Assembly



3. Aileron Assembly



4. Console Assembly



5. Stabilizer Assembly



6. Stabilizer Trim Assembly



7. Leading Edge TANK: FUEL LINE

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Introduction

This handbook is addressed to those who are starting to build a wonderful advanced aircraft such as the STORM 300 by SG AVIATION with care and determination, and wish to do it to the best of their ability.

Follow these simple suggestions that will help you during your work.

We are sure you will reach your goal.



Figure 1: Storm 300 Special: quick de luxe kit.

How to use this handbook

This handbook has been conceived for an on-line consultation.

All you need in order to read it is a PC and the freeware Acrobat Reader. You can download Acrobat Reader from Internet, or also find in some games

and software CD-ROMs you can buy at newspaper vendor, enclosed to books and magazines.

The cross-references text structure has been created in order to facilitate to the maximum your consultation while you are mounting your Storm 300. Therefore you can easily jump from a point to the other of the handbook by using the index on the left. Try to left-click on the text: you will open the related chapter or paragraph.

An other way to move across the document is left-clicking on red boxed words or numbers. The red boxed text indicates a cross-reference.

Afterward, if you have watched a drawing or a picture and you need to move backward to the previous reference point, then mouse-click on the navigation black arrows on Acrobat Reader tool bar.

Don't forget you can read the handbook by simply turning the pages too!

If you want to print the entire handbook, you ought to know that the document is onside (single page). Just like a book with written pages followed by blank ones every two. Therefore don't expect left and right pages, nor different headers or footers.

It can finally happen that the photos are not so clear for being interpreted correctly. For this reason you will find a separate directory on the same CD-ROM containing all the handbook images.

Images, photos and drawings are sorted into further subdirectories according to handbook chapters and paragraphs order.

In this way you can better watch them with a browser, or print to magnify some detail.

Enjoy your work!



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Chapter 1

Before starting

Tools you need

1. Wooden trestles, wooden boards two to four meters long with a 10×10 cm section
2. Series of vices with a protected blocking surface
3. Air or electric drill with a size $\varnothing$ 1 to 13 spindle
4. Helicoidal drills for light alloy $\varnothing$ 2.5 – 3.2 – 4.0 – 4.8 – 5.8 – 7.8 – 9.7
5. $\varnothing$ 5 H7 – 6 H7 – 10 H7 reamers
6. Clecos fasteners $\varnothing$ 2.5 – 3.2 – 4.0, number 30 per size.
7. Pliers for cleco fasteners
8. Pneumatic riveting hammer, riveting dowel
9. Series of roundhead snaps, type AN470AD4 and AN470AD5
10. Series of combined wrenches, sizes 8 mm, 10 mm, 13 mm, 17 mm
11. Series of Allen wrenches, sizes 4 mm, 5 mm, 6 mm, 8 mm, 10 mm
12. Series of files, middle and soft cut, half-round, round, flat
13. Cutting pliers, series of screwdrivers
14. Rule, gauge, level, compass, marking punch, 90° square, pencil

15. Manual and/or pneumatic riveting machine
16. Shears for metal cutting, right and left
17. Spray gun

How to protect from accidents

Accident prevention: the following materials are necessary in order to be protected from any accidents.

- HANDS: use light leather gloves when handling the parts.
- EYES: use transparent protective glasses when drilling.
- EARS: use anti-noise ear plugs when riveting.

**CAUTION: TOO MUCH CONFIDENCE
IS OFTEN RESPONSIBLE FOR MANY ACCIDENTS.**

Chapter 2

Working tips

Drilling

Before drilling you must check:

1. That the parts are correctly positioned and fixed to each other; that the parts do not interfere with each other, and that sharp edges are trimmed. The drilling must start from the center outwards to grant a good sticking of the sheet with the contact surface.
2. That the drill is of the requested diameter.
3. That the drill has a 90° angle with the surface to be drilled. Fit a rubber dowel on the drill to protect the sheet from being cut by the spindle; with a wooden dowel contrast the coming out of the drill to avoid shifting and an excessive buckling of the sheets.
4. Tack the hole before you go ahead with the following ones (one fastener every two free holes); check that the sheet has no buckling.
5. The margin of the hole from the edge must be twice the final diameter. For instance: diameter 4 mm, distance from the edge 8 mm.

When performing reamed drillings, the revolutions of the drill must be reduced to a minimum with the lowest feed, the positions will be held by bolts of lower diameter.

For instance: final reamed hole 10 mm H7: you must start from a 6 mm hole in which you will install the bolts to tighten the parts.

You must then proceed to widen it to 8 mm and then to 9,7 mm, taking care to keep the 90° angle with the surface with the aid of a square.

Never operate the drill intermittently and be careful when the drill comes out, it could get stuck and cause a kick to your wrists. You better make the drilling machine feed only a little and use a drill with a shear angle of 135°-140°.

The reaming must be done with a low revolutions number, about 350-400 rpm, the minimum steady feeding can be refrigerated with water.

Once you have tightened with size 10 bolts, you must remove the size 6 bolts and proceed the same way.

To remove the burr from the holes you should use a soft file and abrasive paper.

**CAUTION: DO NOT USE DRILLS
BECAUSE THEY COULD CAUSE CUTS THAT MAY
PRODUCE CRACKS.**

The hole spacing varies from 25 mm to 45 mm.

Clinching of the rivets

It is a delicate operation, but do not be afraid, you must only remember the following rules.

Before clinching directly on the part, make some exercise with the person who will help you keep the dowel on the opposite side.

Place the snap on the moulded rivet head making sure it is the requested one. Keep the 90° angle with the surface; avoid to press too much, you must only hold the snap steady on the rivet head.

On the opposite side your partner must keep the dowel surface parallel to the wall and make sure that the dowel does not strike stringers or lips that could be deformed during the clinching.

For no reason shall he take away or move the dowel while you are shooting the rivet.

The dimensions of a good clinching are:

Projection of the rivet fit in the hole must be 1.5× the diameter. For instance: with a Ø 4 mm the projection must be 6 mm, for thin sheets it can also be 1.2× the diameter.

Breadth of the clinched rivet head. For instance: with a $\varnothing$ 4 mm rivet, the head breadth must be 6 mm.

Height of the clinched rivet head. For instance: with a $\varnothing$ 4 mm rivet, the head height must be 2 mm.

Pneumatic or manual riveting

If a pneumatic riveting is used, it is a good rule to use a bag to collect the rivet shanks (some are already equipped with it).

Insert the rivets in the holes beside the fasteners and rivet starting from the center to the sheet edges in order to obtain a good sticking of the sheets; remove the fasteners and complete the riveting.

Take care of the rivet grip; for instance: Avex 16610410, where 04 stands for the diameter equivalent to 4/32 inch (= 3,2 mm), while 10 stands for the grip.

See table below:

Rivet $\varnothing$ 3,2	Grip		Rivet $\varnothing$ 4,0	Grip	
	from	to		from	to
Avex 16 610410	0,8 mm	4,3 mm	Avex 16 610510	0,8 mm	4,7 mm
Avex 16 610414	4,0 mm	7,9 mm	Avex 16 610512	1,2 mm	6,3 mm

Bolts installation

During the installation of the bolts the following rule must be complied with: insert the bolt top-down and backwards.

The non-threaded part of the bolt must be equal or 0,5 mm longer than the pack to be tightened. You must put a washer under the bolt head and two washers before the nut.

Where possible, hold the bolt head and screw the nut; once in touch, give one fourth turn to obtain the right calibration.

Sheet cutting

Mark the sheet in a visible way; when you are sure, start cutting the sheet without ever closing the shears completely, as they could break the sheet edge.

Keep 0,2/0,3 mm off the marking, then you will finish with file and abrasive paper.

Painting of the parts

After having done the drilling of the specified assemblies, it is advisable to paint the parts with protective primer to prevent the inner sheets from corrosion.

General instructions of the drawing

In the instructions, the aircraft is always shown seen from behind; you must therefore consider right and left looking from this position.

The X axes cut the fuselage into segments parallel to the firewall; the Y axis divides the fuselage in half, and Y0 will be the center.

The right ones are positive, the left ones negative; the Z axis divides the fuselage into segments parallel to the ground and Z0 will be the one passing along the two side angles; the upward Z will be positive, the downward Z will be negative.

We are sure you now have enough information to complete your Storm assemblage. Enjoy your work!

Chapter 3

Fuselage

Floor assembly 1st section ST1031

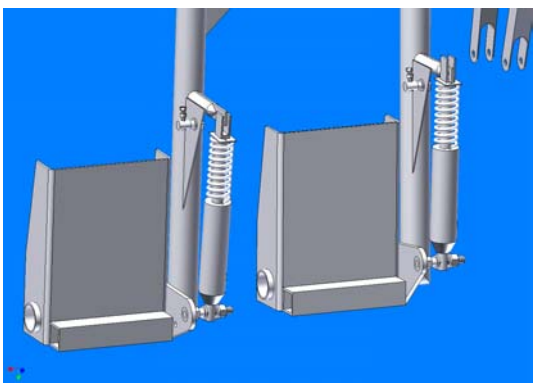
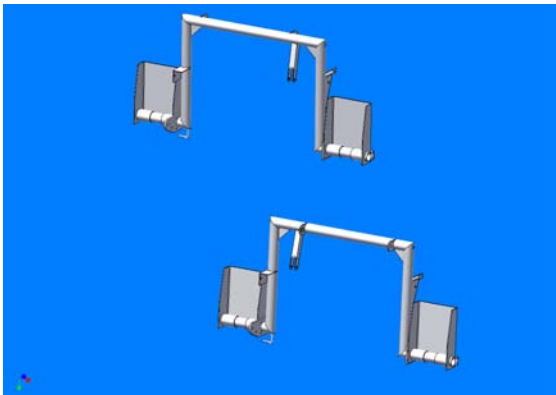
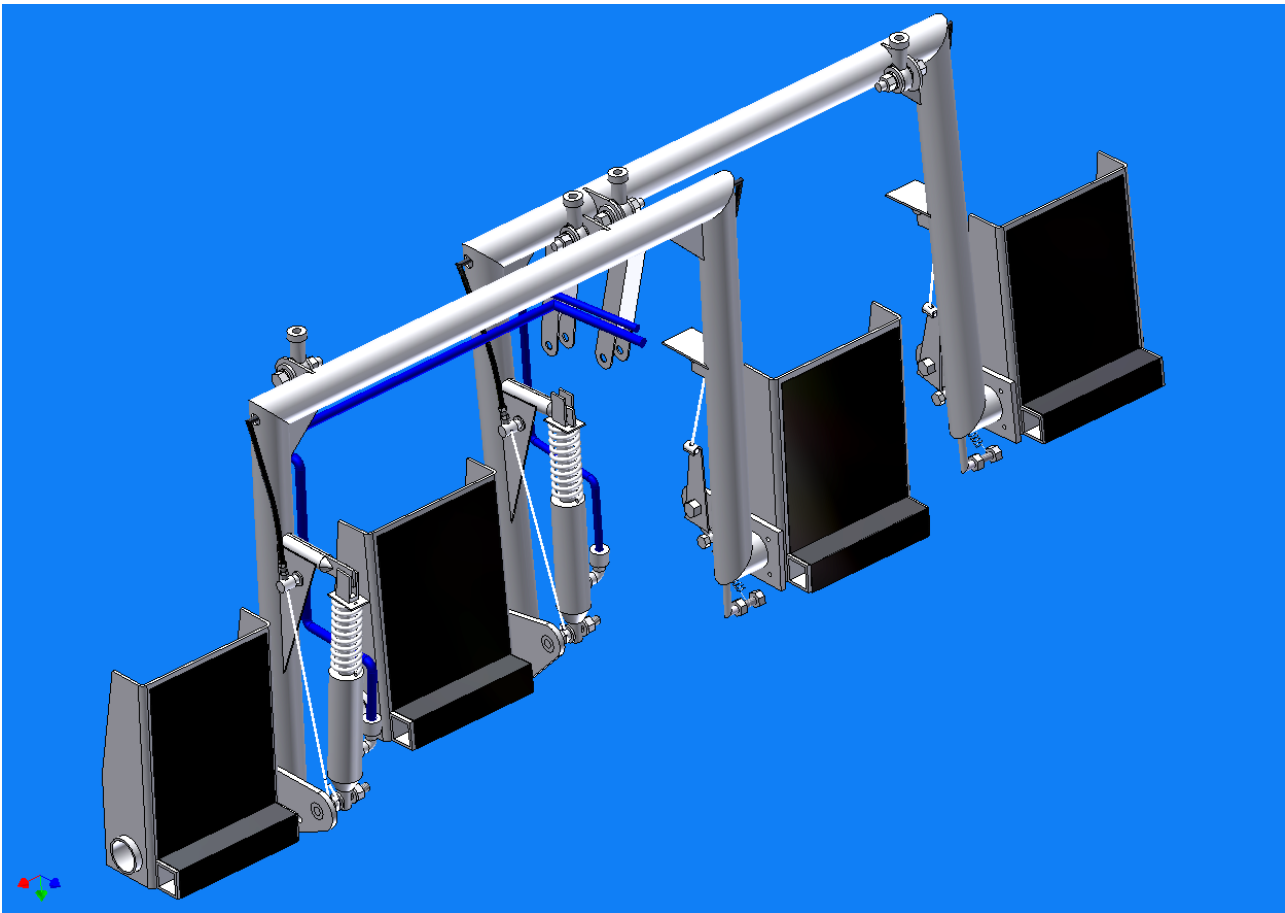
Place the two floors STAB311-009 right/left parallel to each other with a gap of 1 mm; take the joint strip STAB311-010 and place it on the two floors so as to join them; make sure that the bends match, make some position holes and tack the way you know.

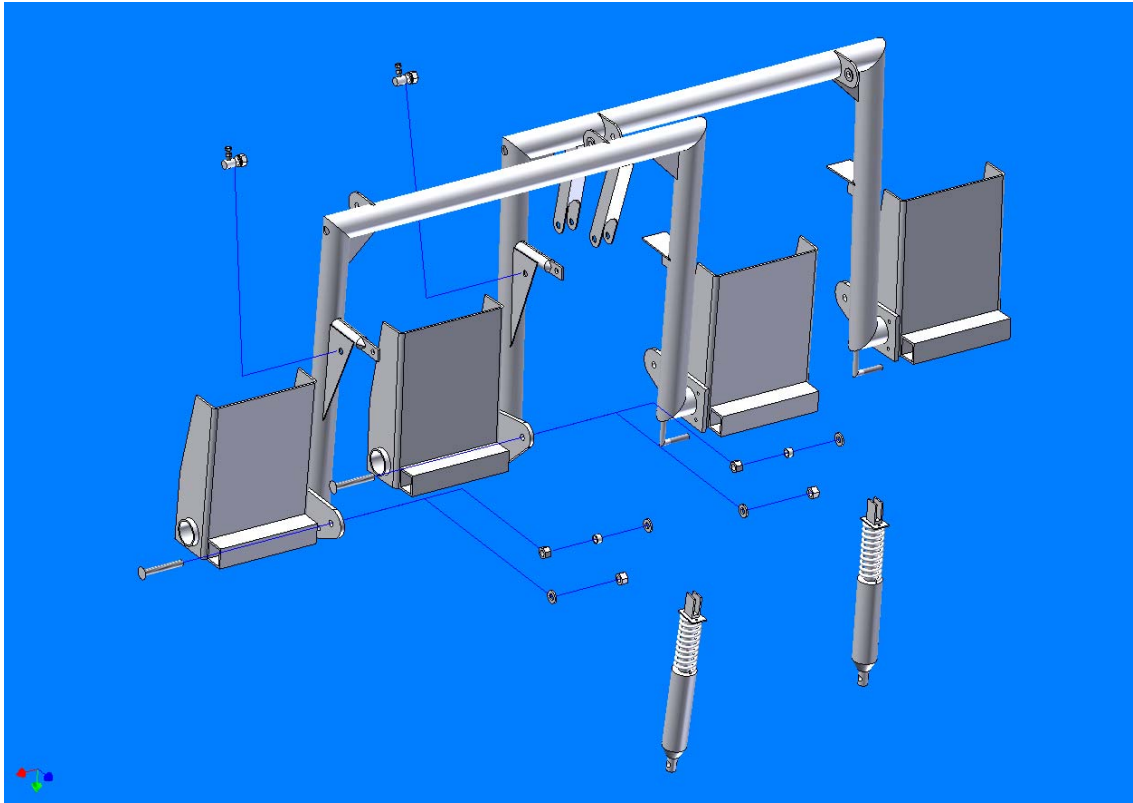
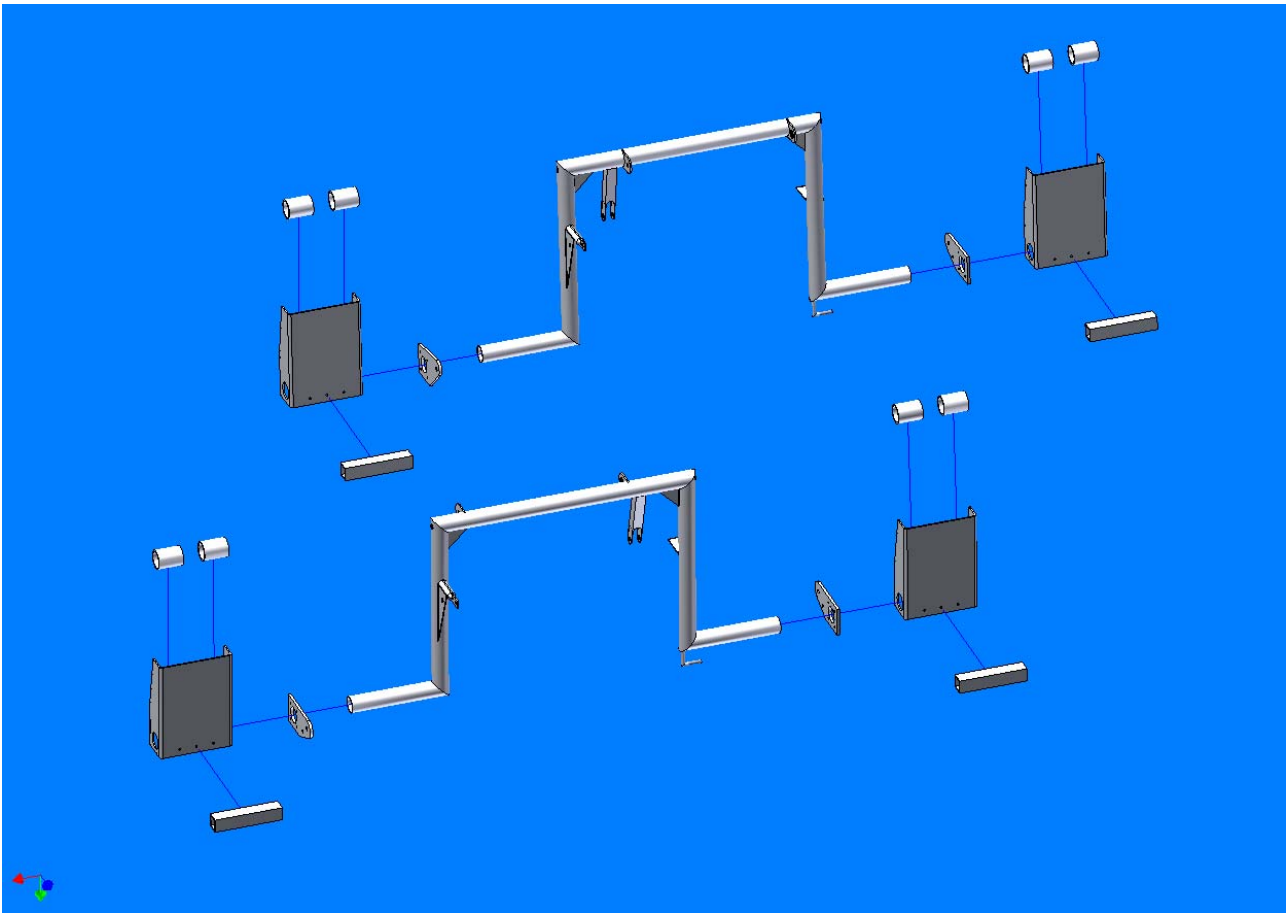
Take the two side strips STAB311-011 left/right and place them on the floor making always match the 2,5 mm tacked bends.

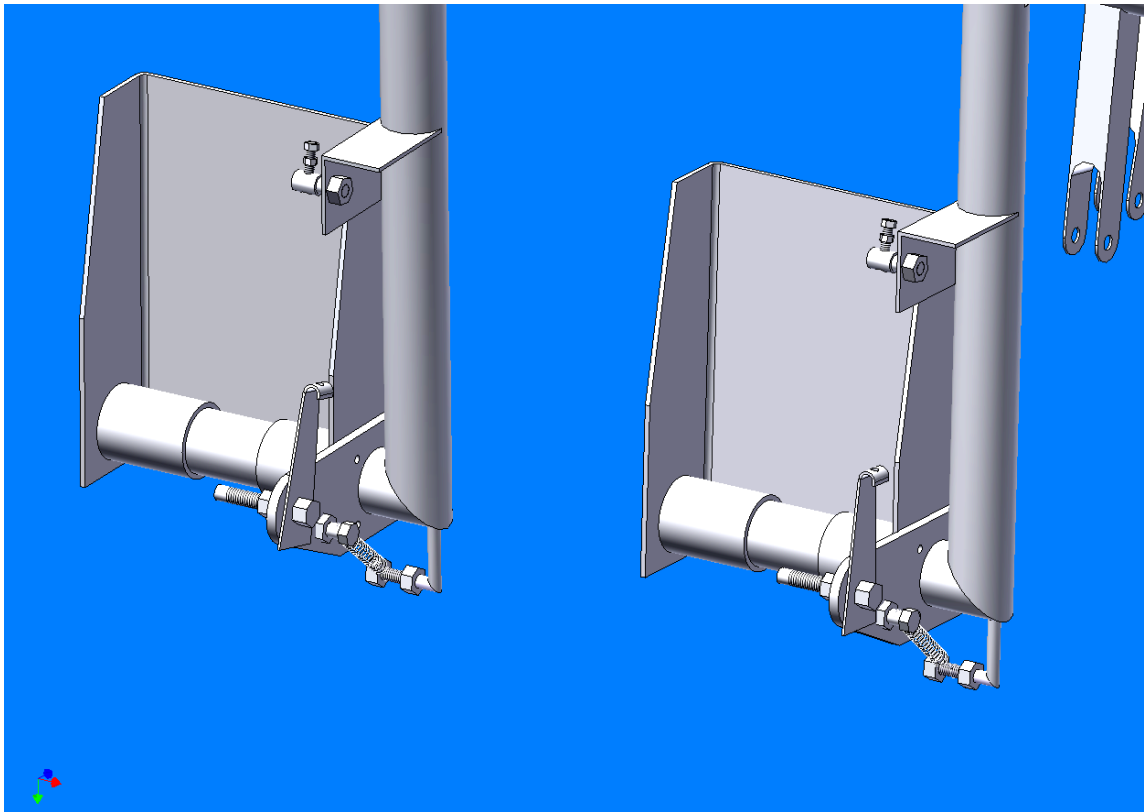
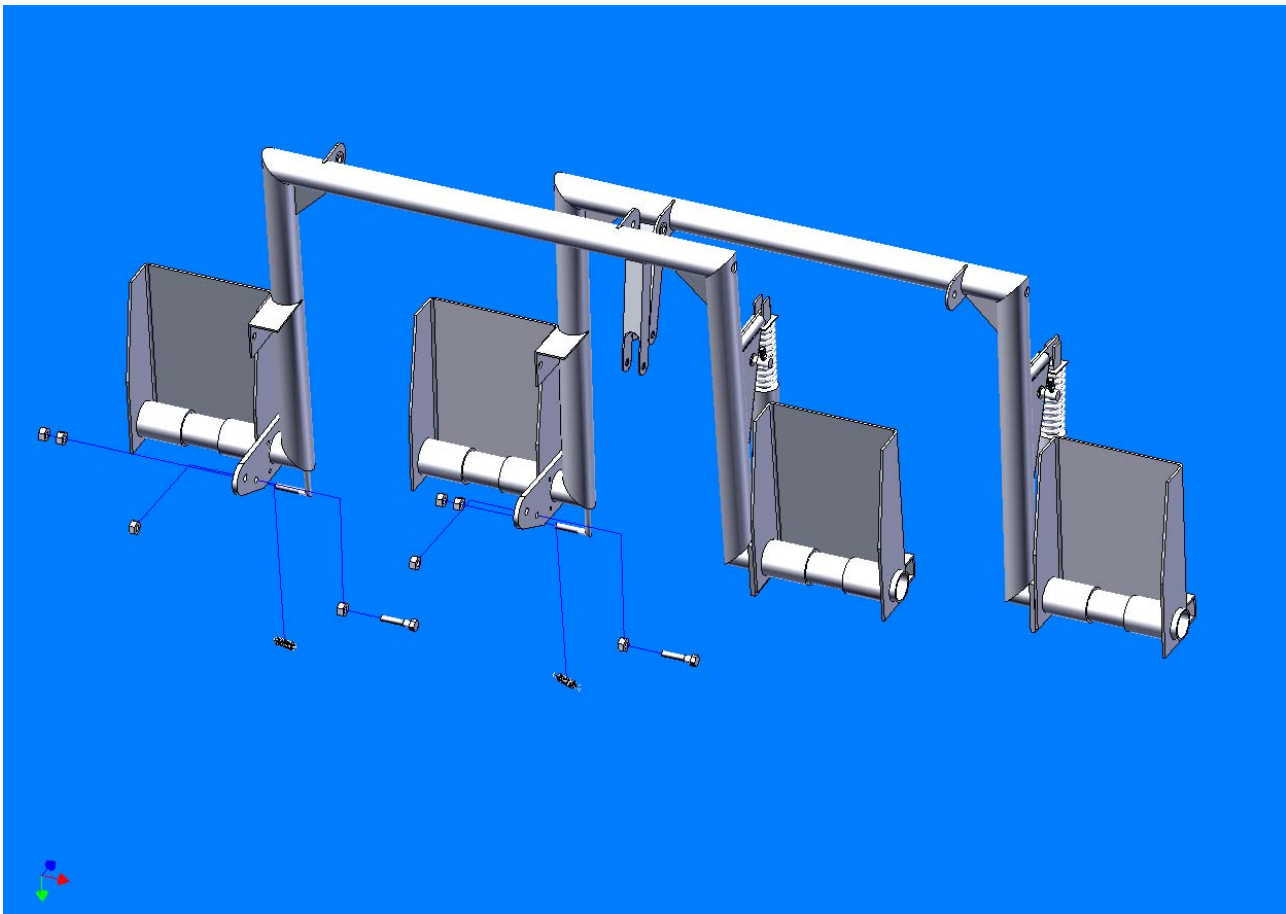
Drill all the strip holes to $\varnothing$ 3,2 mm; do not drill the floor edges, make the slots for the legs as shown in the drawing, strip, clean, deburr and paint the parts in touch.

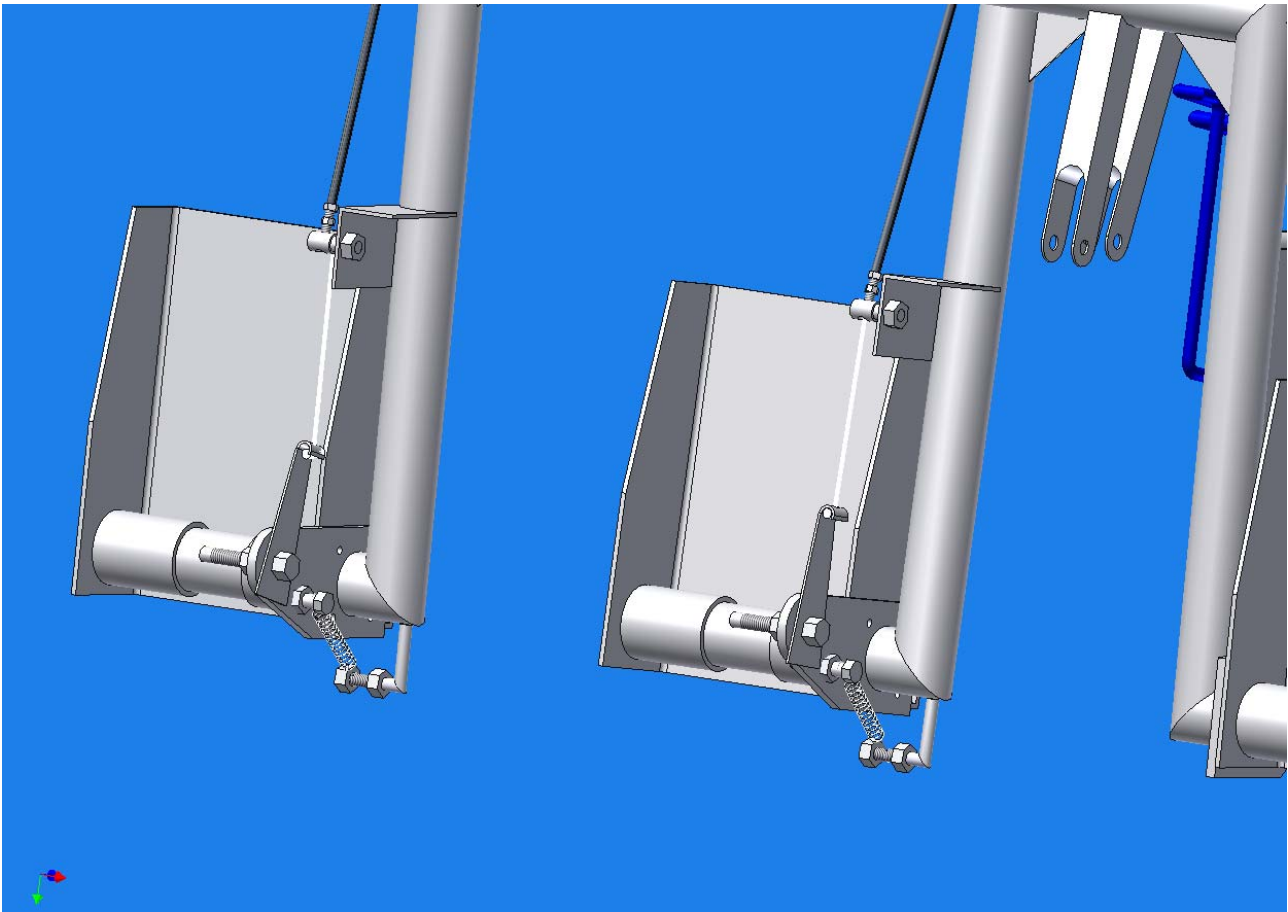
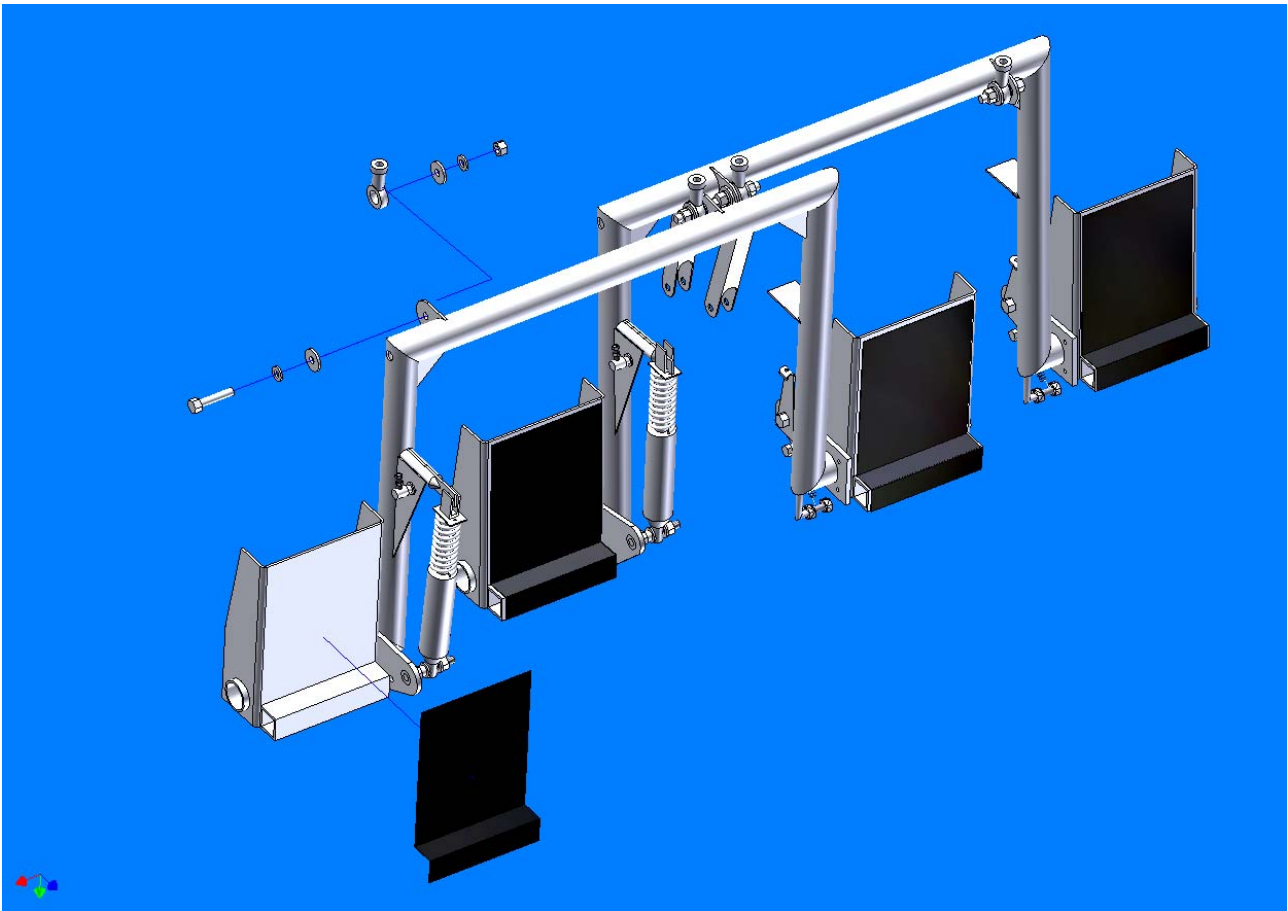
Reassemble, tack and rivet them as shown in the drawing, countersink the two central rows of the fore part 290 mm long for AN426AD4 and rivet.

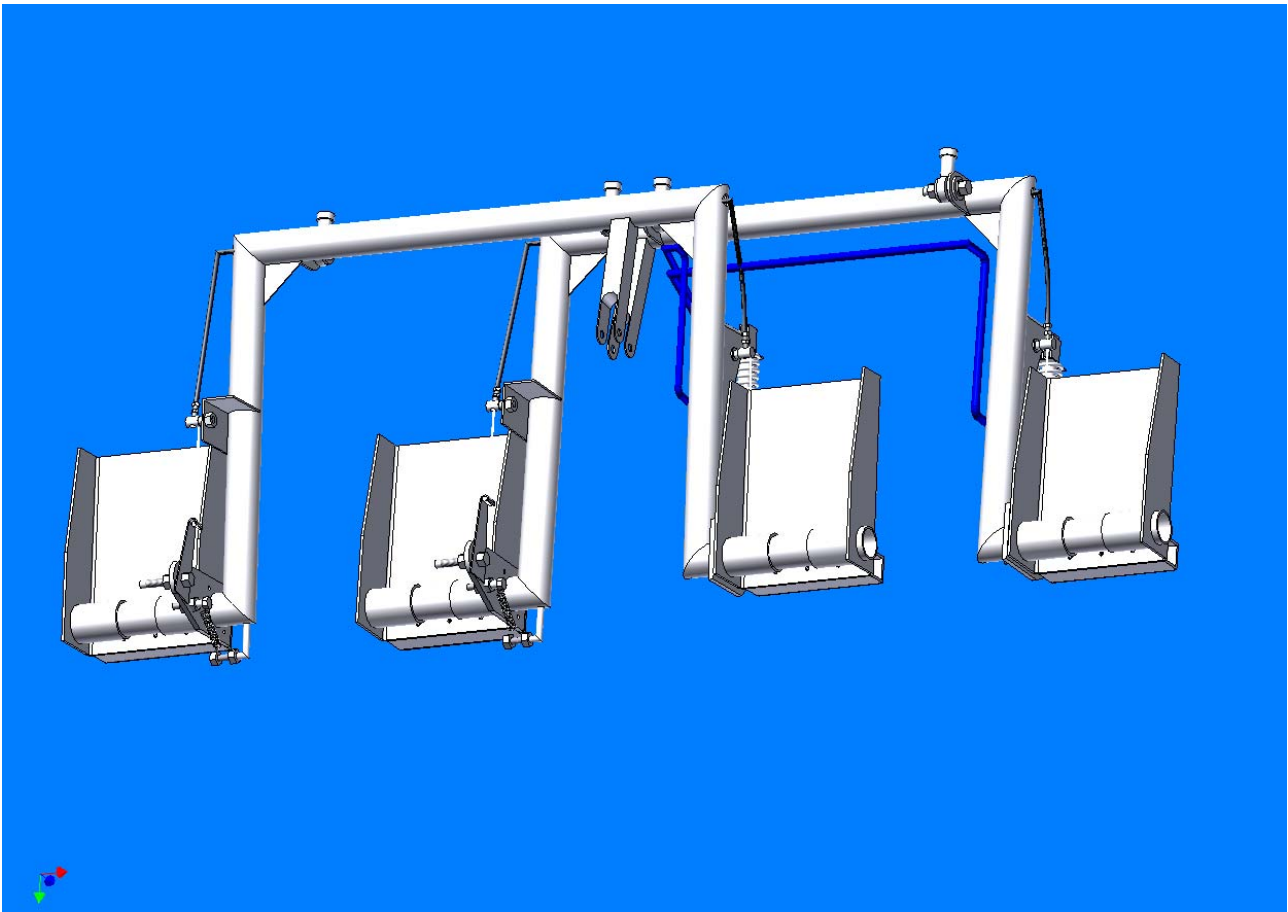
Rudder Pedals











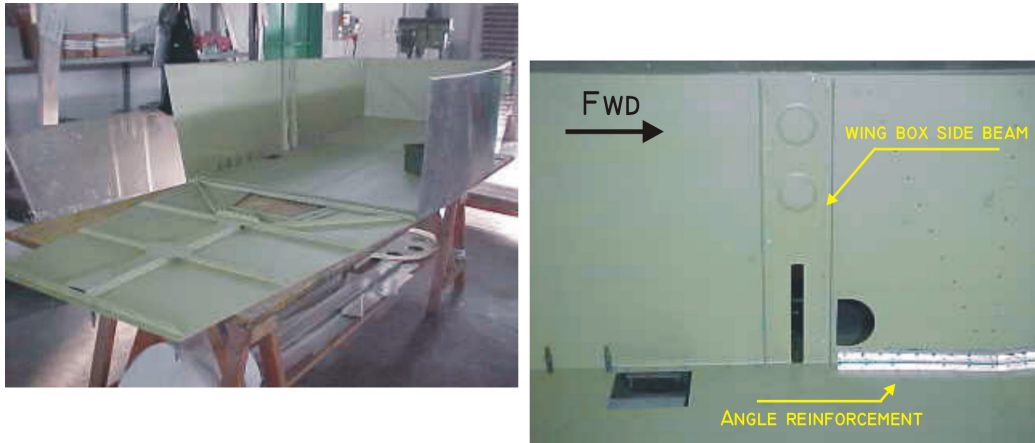


Figure 3.1: Fuselage 1st section ST1031: on trestles (left) and side view (right).

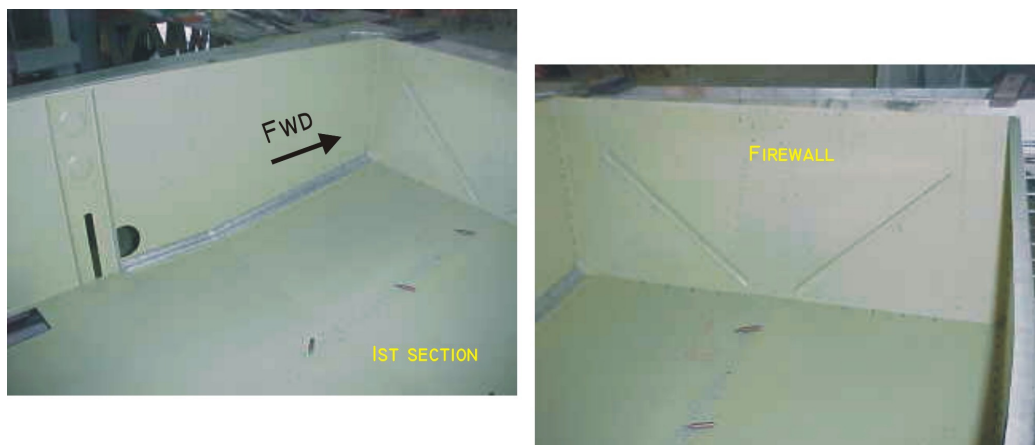


Figure 3.2: Fuselage 1st section ST1031: side view (left) and firewall (right).

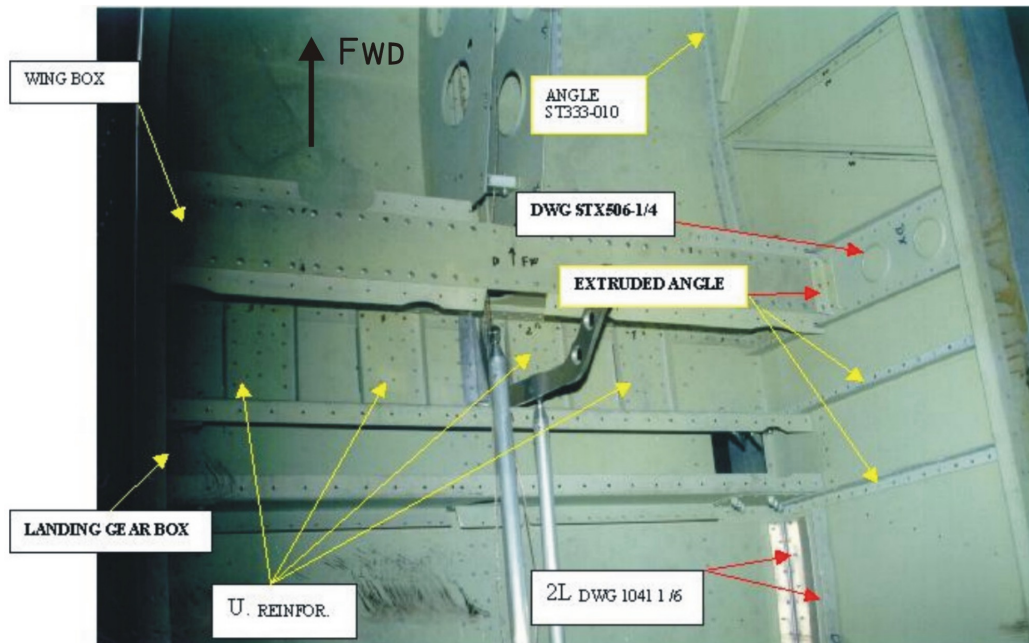


Figure 3.3: Fuselage 1st section ST1031.

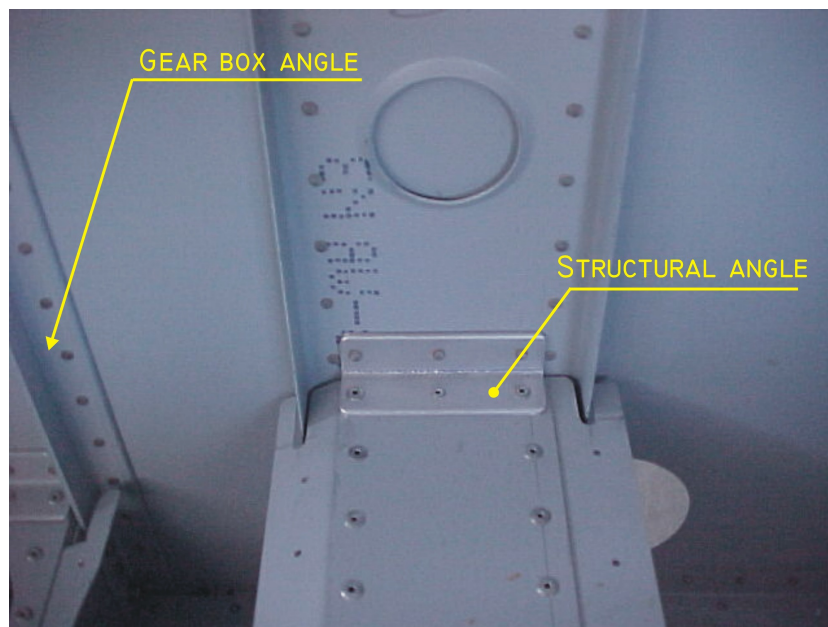


Figure 3.4: Fuselage 1st section ST1031. Wing box: focusing on landing gear box angle and structural angle.

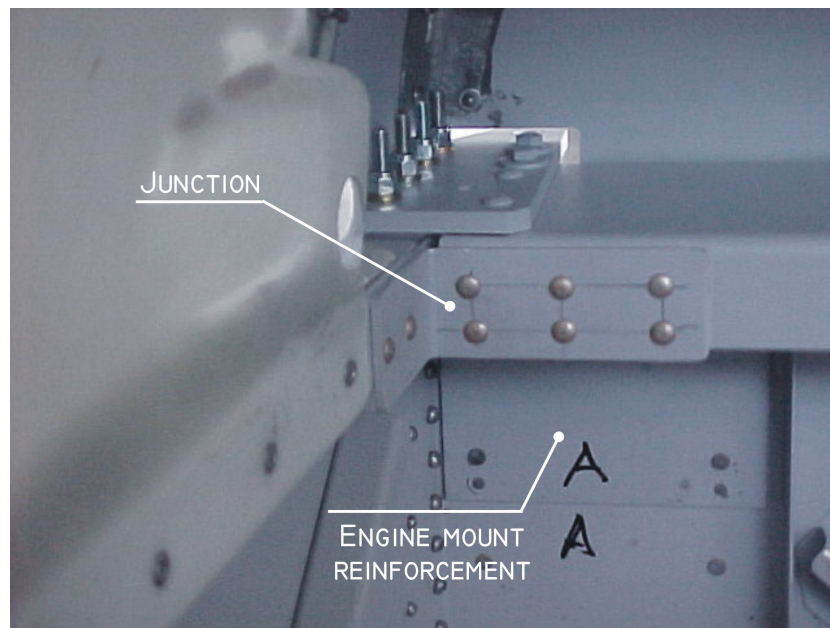


Figure 3.5: Fuselage pedal beam.

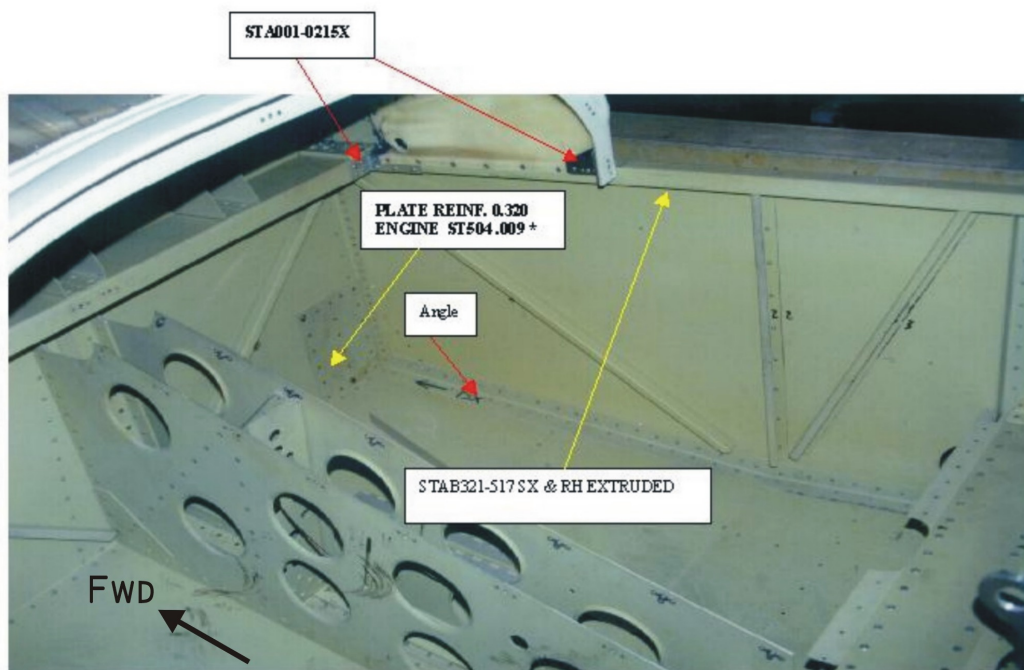


Figure 3.6: Fuselage 1st section ST1031: note red arrows.

Sides assembly 1st section ST1031

Locate the sides STAB321-022 right/left, the two angles STAB321-517 right/left and the shims STAB321-517-1.

Lock them with clamps and drill as shown in the drawing; tack, drill to the final diameter, countersink where requested, strip, clean, deburr and paint the parts in touch.

Reassemble all the parts with fasteners and make the final riveting; make the 6 mm hole to install the unibal for the canopy rotation. Respect the drawing dimensions.



Figure 3.7: External view of the fuselage, 1st section. It is easy to recognize the console, the wing box and the landing gear box.

Landing gear beam ST507 construction



Figure 3.8: Main landing gear box: detail of landing gear beam.

Put the floor on wooden beams that you will lock steadily by positioning them just after the slot for the gear struts.

Take the two beams ST507-026 and place one of them in the fore part centering it on the floor and following the drawing dimensions; it should stick out about 1 mm off the slot.

Make a tacking drill on the floor so as to make it steady; take the two

struts and, inserting a shim of 0,5 mm per side, use them to obtain the right distance between the beams; tack the rear beam to the floor.

Now you must put the struts in the right position, 45° outwards and at a distance from the center equal to the height. You can use wooden boards to do this, a level for projection and distance, and a 45° square for the inclination.

Once you are sure of the position (check the drawing), tighten the struts to the beams with clamps, take the angles ST507-281/282/283/284 and place the upper ones after having drilled to Ø 2,5 mm the two inner holes of the three. You must take care to place them as much as possible outwards, because the third hole must take the side angle as well.

Now drill the two holes through the upper angles to the beams and tack them 4 mm, remove the beams from the floor and, with the aid of the strut, locate the angles with three holes; drill the fore and the rear beams to 4 mm and tack them with the struts inserted and the beam upside-down and level.

On wooden boards, make the legs stick out at the same height and drill the four locking holes to Ø 6 mm, the way you already know (90° to the surface, with a starting Ø 4 mm, widen it to Ø 5,8 mm and ream to Ø 6 mm).

Mark the angles in order not to confuse them, strip and deburr the holes and reposition them on the struts installing the TEI6X45 bolts; take the beams and place the four gusset plates opposite to the angles, drill the angle holes and tack them with clecos; mark and drill the 3,2 mm holes and rivet with AN470AD4-6.

Reposition the struts with their angles and enlarge the 4 mm angle holes one by one to 6 mm through the beams; strip, deburr and install the TEI6X35 bolts between beams and angles (insert the bolts from the angles towards the beams).

Reposition the landing gear beam on the floor into the holes tacking with clecos (Note: it is necessary to remove one strut).

Rear wing beam ST198 construction

Take the ST198-009 beam and the four ST198-010 gusset plates, locate them as shown in the drawing and mark them, drill to $\varnothing 3,2$ mm and install AN470AD4-8 rivets; now mark the $\varnothing 6$ mm hole according to the dimensions shown in the drawing in order to assemble the ST200-301 rear wing plate.

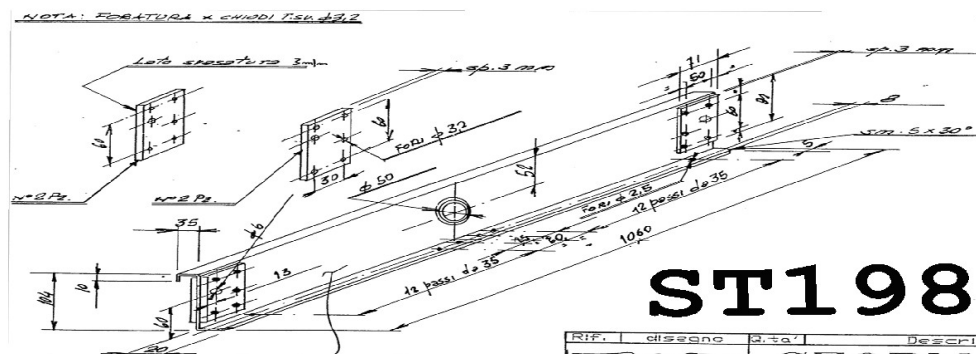


Figure 3.9: Rear wing beam ST198 drawing.



Figure 3.10: Fuselage rear beam.

Wing beam ST506 construction

Take a ST506-017 beam; the drilled lip is the lower one. Take two shims ST506-018 (the upper side ones are wider) and ST506-019 (underside) and trim the edge lengthwise with a 3 mm radius, to allow a good sticking to the beam.

Now place the upper side shim with its radius towards the top face of the beam angle (without holes); do the same operation on the underside (beam lip drilled) and insert a second shim without radius on each side.

Mark the drilling as shown in the drawing, tighten the shims to the beam with clamps and start drilling to $\varnothing 3,2$ mm, making sure to keep the 90° angle to the plane; widen some of the holes and tighten with screws in order to have everything locked. Complete the drilling to $\varnothing 4$ mm, countersink the first two holes on each side on the beam side for AN426AD5-9 rivets; remove everything, clean, deburr the holes, reassemble everything locking with 4 mm screws, insert the AN470AD5-9 rivets on the beam side, put some transparent adhesive tape to avoid that the vibrations let them out.

With the help of your partner you are ready to clinch the rivets the way you were taught; tighten the beam to a clamp making sure to put some wood into the jaw. Do so as to make all rivet heads uniform.



Figure 3.11: Detail of an angle on fuselage.

Notice, should you spoil a rivet, you can replace it in the following way: take a drill with a lower diameter, in this specific case 3,2 mm, drill the pre-formed head to a depth slightly higher than the beam surface. With the aid of a punch make the head come off and now, with punch and hammer beat the rivet shank out and, while you are doing this, your partner will hold the blow positioning the dowel near the formed rivet head. If it has difficulty to come out, deepen the drilling, making sure you keep the center of the rivet.

Complete the second beam in the same way; now you choose which of the two is the fore beam and install two threaded anchor nuts OLIV6MA on each support ST506-025 with AN426AD3 rivets.

Install the two green polythene supports on the control stick and put the whole on the fore beam, being sure to center and to keep the supports in touch with the lower shims. Drill four holes to 3,2 mm dia. on each lip and rivet the supports to the beam with AN470AD4-6 rivets.

You must now install the four angles ST506-020: these must stick about 1 mm out of the beam and, with the help of a square, they must be at a perfect 90° angle to the beam. Make the Ø 3,2 mm holes, countersink for AN426AD4-6 rivets and rivet the way you already know.

Make the beam surface perfectly smooth, because the spar will be inserted in this area.

ST201/202 spars construction

Put the left spar ST201-049 on two trestles, mark the upper side (it is the one where the Ø 6 mm hole is nearer); fit the angle -051 after having trimmed it so as to have a good sticking to the inside of the spar.

Start lining up the Ø 6 mm hole side of the spar. Now locate the upper side shims -052, -053, tighten them in a safe way with clamps; do the same on the underside, trim the -046 then locate -045, -044.

Drill to Ø 3,2 mm through the pilot holes of the spar and tack with clecos. Make sure you are drilling perpendicularly to the surface and hold the parts steady.

Now position the two plates -043 It is a delicate operation.

Place the external one inserting a 6 mm bolt in the hole and make sure that the two Ø 4 mm holes match with the spar holes.

Insert two screws to tighten the plate, drill the external plate through the spar and position the inside one. It will need a slight adaptation.

Then, with the same Ø 6 mm and Ø 4 mm holes tighten the whole and drill to Ø 4 mm, with the exception of the rib holes that must remain Ø 3,2 mm.

Now take the external spar -050 left, fit it so as to form the spar as shown in the drawing, leave 1 mm gap between the two spars; make sure that they are lined up well, lock with clamps, drill and tack.

Locate the joint -048 and -054, mark its twelve Ø 3,2 mm holes.

Remove all the parts, taking care to mark the positions, deburr all the holes with care, trim the edges, (paint the parts), reassemble the parts inserting some rivets in the holes, so as to grant their position, tack with Ø 4 mm clecos.

Lock the spar in flight position so that the riveting vibrations do not displace it.

Now start riveting the way you know, doing the tacking riveting first, then rivet everything.

The rivet must be inserted from the spar towards the shim. Take care of the clinching, it must be uniform and well done, the spar is very important.

You must now trim the spar head following the plates as a profile, you must make four holes with double countersinking as shown in the drawing, trim and smooth the edges.

The construction of the spars can be done contemporarily, the operations are the same.

Drilling of spars and wing beam

Take the fore wing beam, mark the six Ø 6 mm holes on each side, verify the exact position and drill the way you know.

It is very important to be at a 90° angle; now with the aid of a board and of clamps, you must tighten the beam and the two spars as shown in the drawing.

After having locked everything in the right position, put it on plane (as if the aircraft would fly 90° to the ground).

Start drilling with a drill press or an electric drill with a Ø 6 mm drill, lubricate with water during the drilling.

Proceed this way: make the two external holes diagonally to the two parts, insert four 6 mm bolts to lock the pack to be drilled in a safer way.

Now drill all the holes to Ø 6 mm, then Ø 8 mm, then Ø 9,5-9,7 mm; with a low revolutions number (350-500 rpm) you must now ream to Ø 10H7.

Remember to use sharp drills, do not feed too much during the drilling, and always lubricate. If you are drilling manually, you better let a friend help you to make sure you are working perpendicularly.

Install four 10 mm bolts and remove the four 6 mm, complete the way you know.

Construction of the console ST505

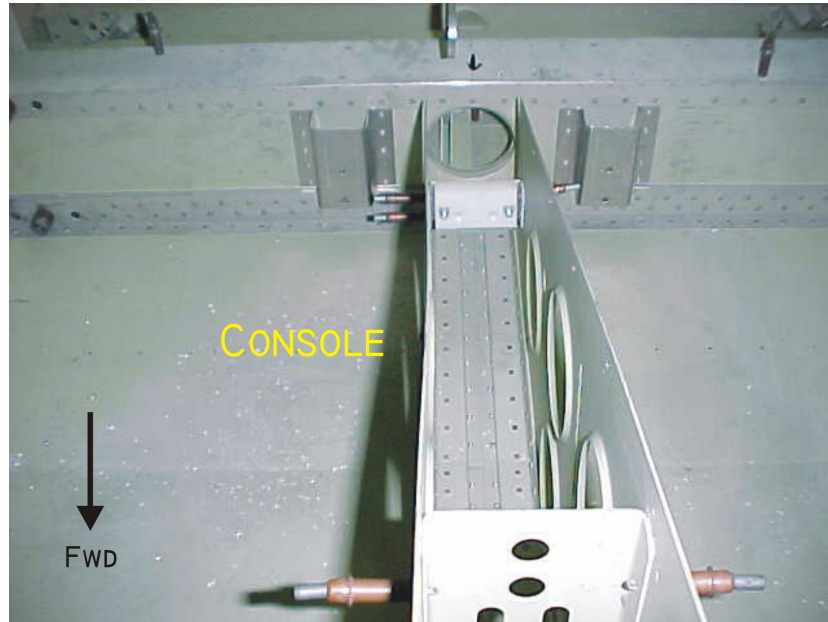


Figure 3.12: Console ST505.

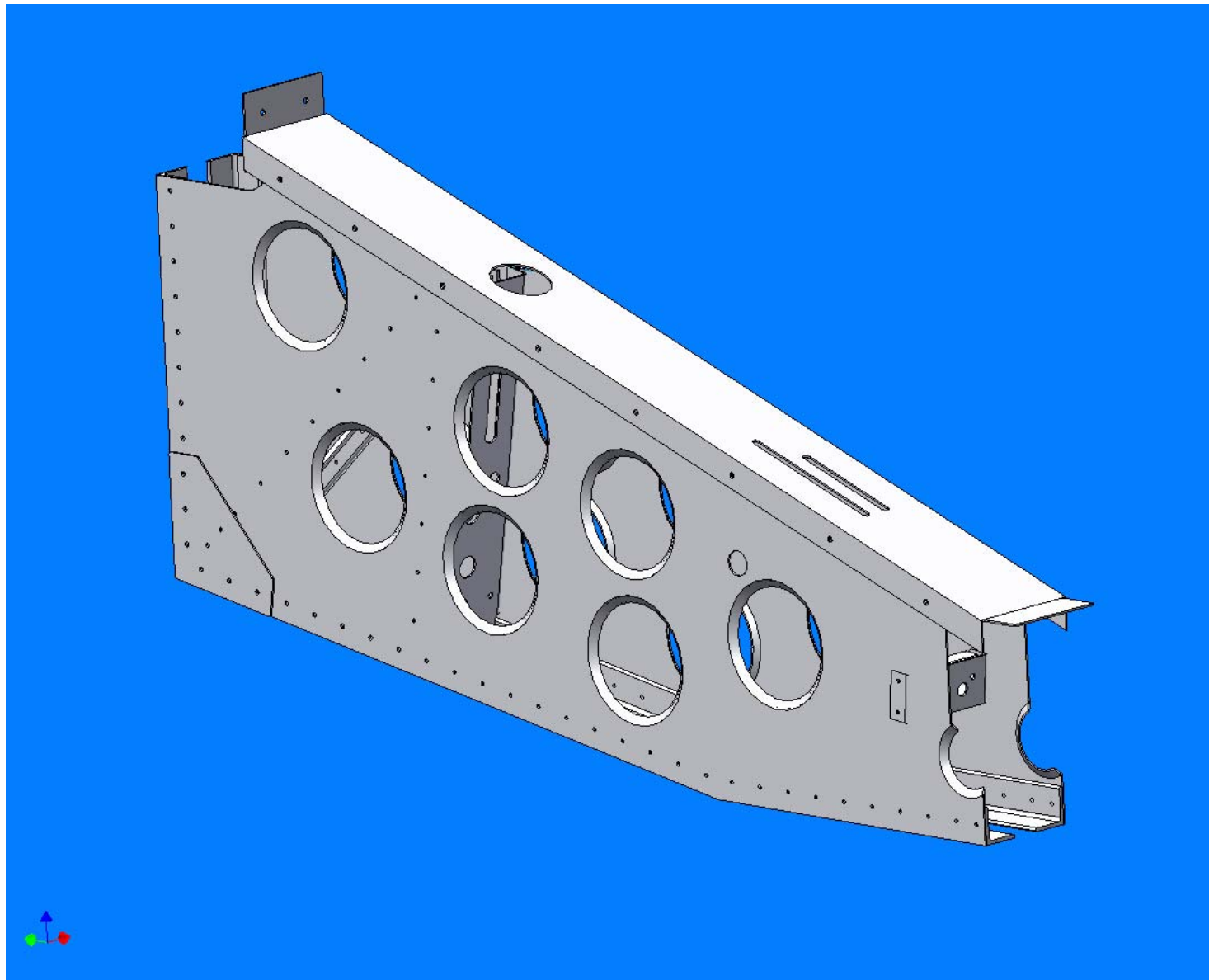
Put the already assembled forward floor on two wooden boards positioned along the center line and lock them with clamps; with two other shorter boards try to keep the floor into the right inclination (see sides); it will allow you to locate the console correctly.

Take the two ST505-080 left/right angles and fit them as shown in the drawing; you will have to respect the breadth, the parallelism, and the floor angle.

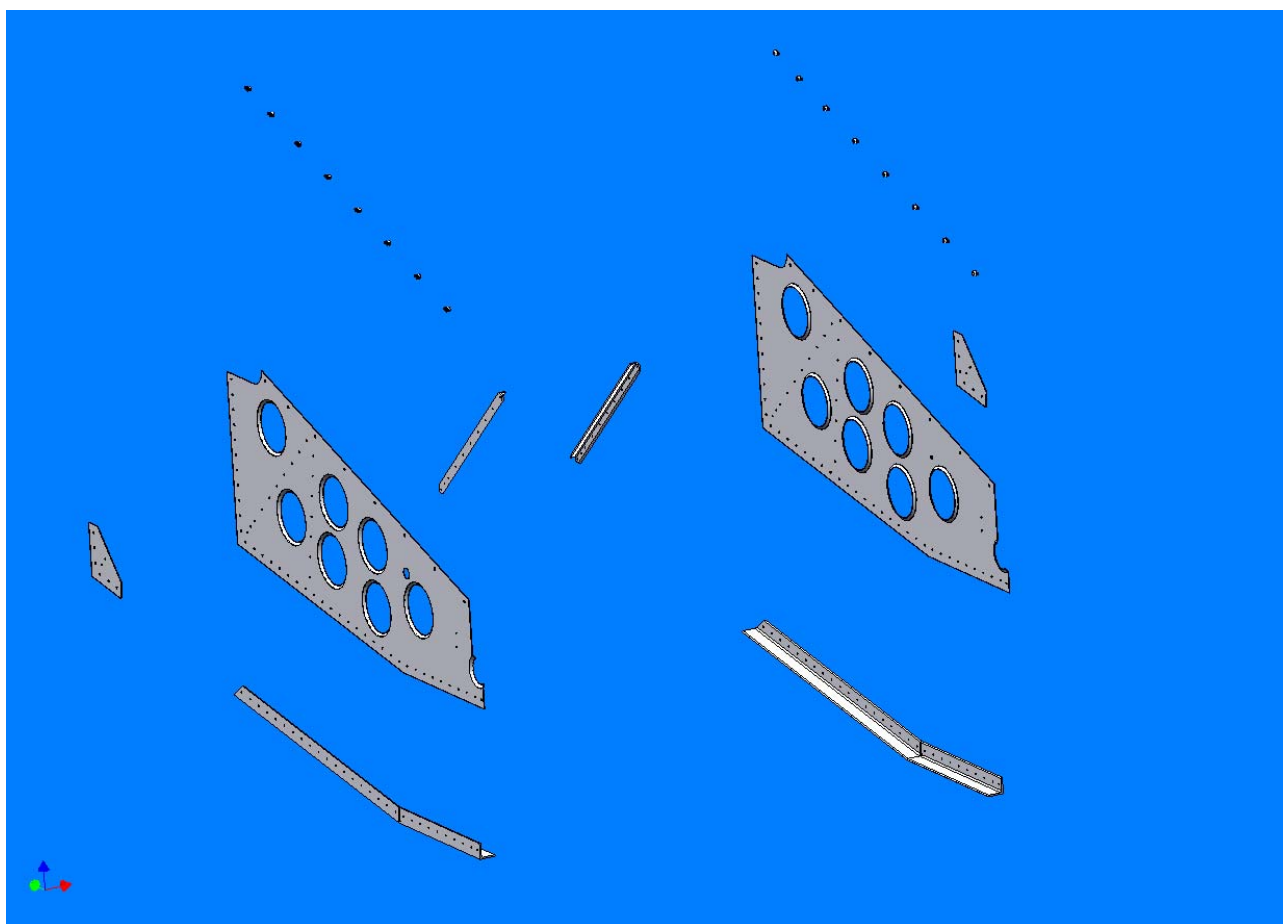
Once you have locked and verified the position, you can drill through the floor and tack.

Now you can take the two sides ST505-081 left/right and fit them on the angles as shown in the drawing; make sure you leave about 1,5 mm gap to the floor. On the fore side you must have a 90° angle to the horizontal plane and a gap of 1,5 mm more backwards from the end of the floor. Lock and drill the angles through the sides, tack.

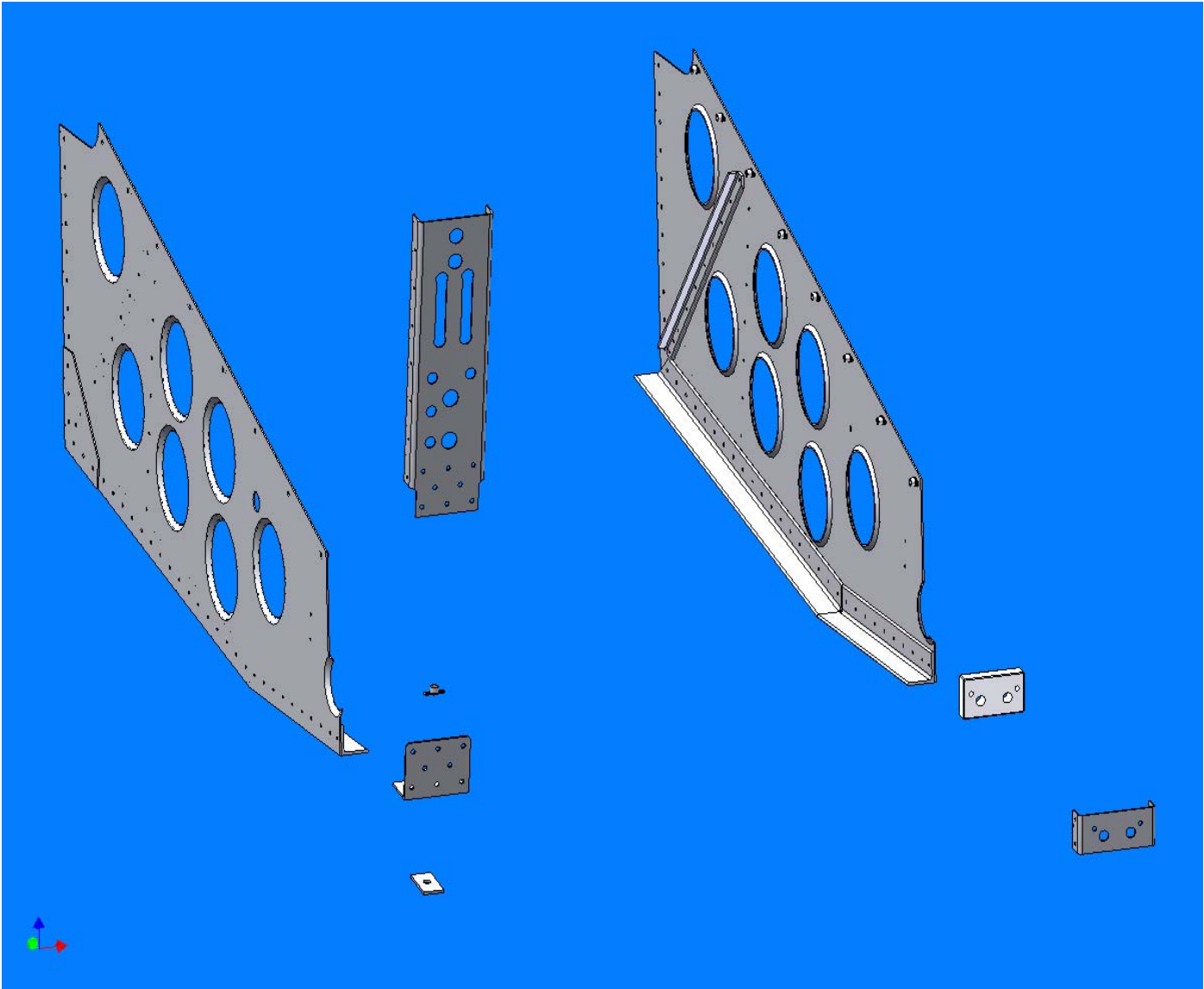
Now take the central rib ST505-821 you have used as a spacer between the walls and, after having marked the lips center with a felt-tip pen, fit it into position as shown in the drawing. Verify the position of the slots, keep a 2 mm gap from the angles, lock and drill, then tack.



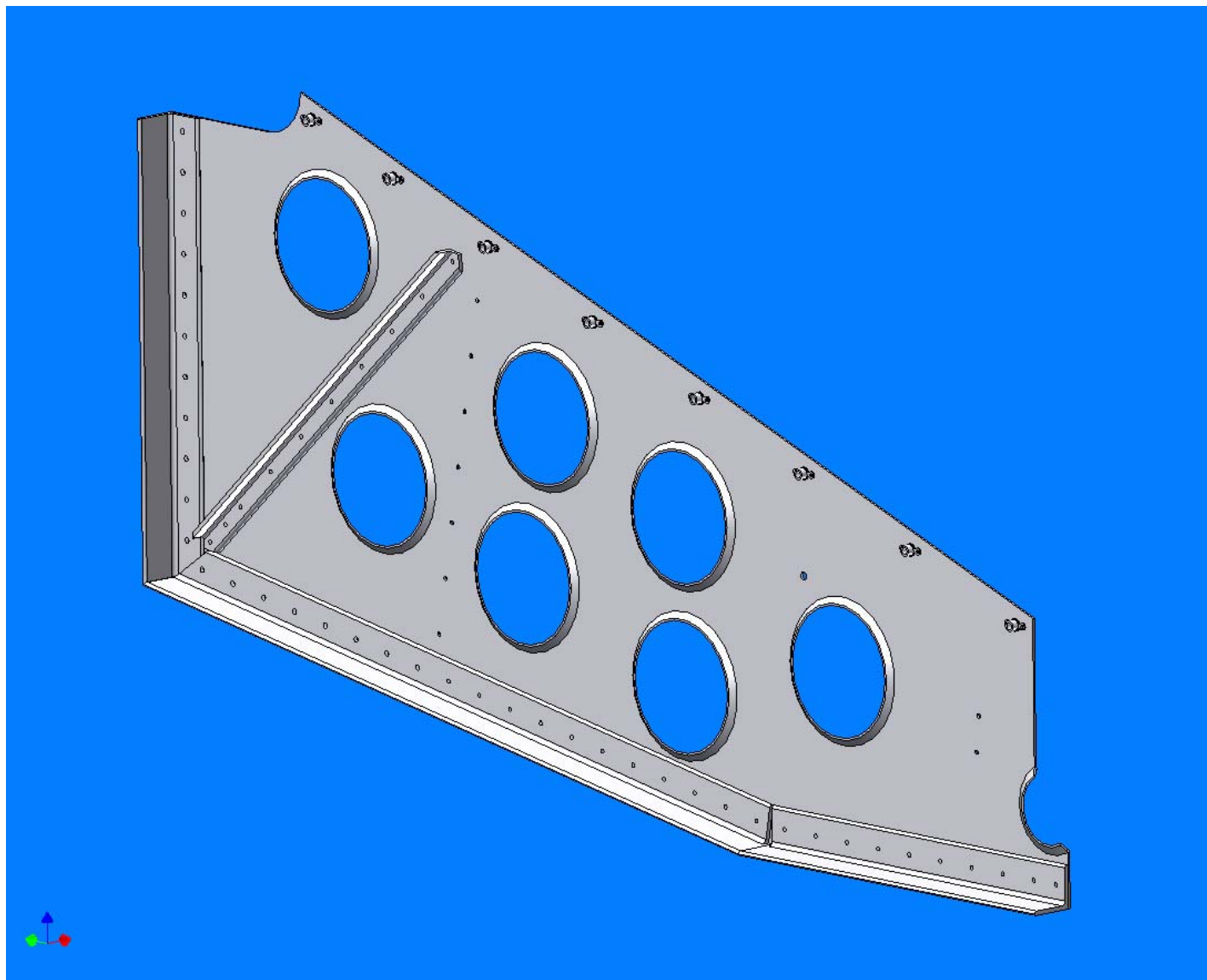
Assembled Console



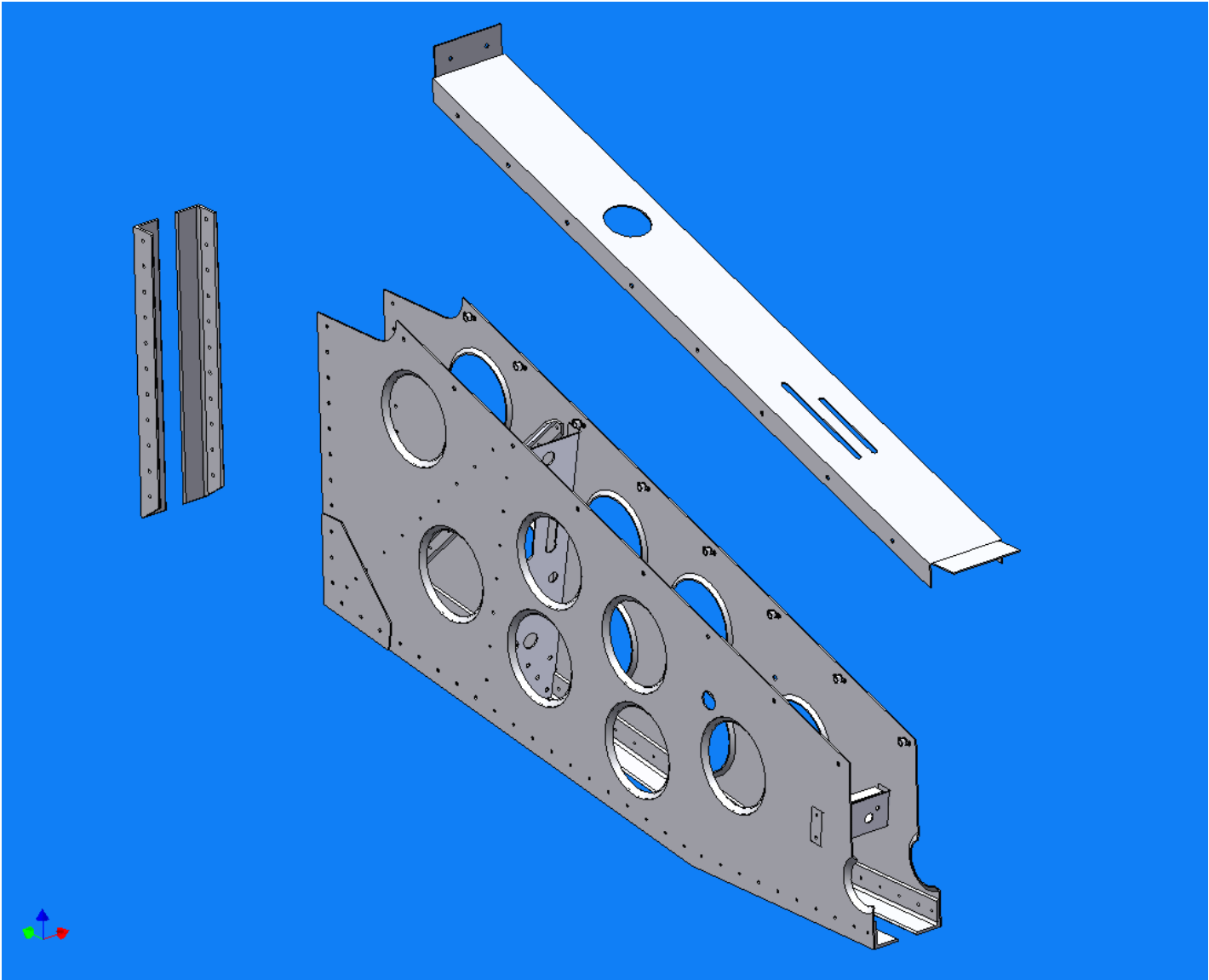
1. Install the lower angles and rivet with AN 470 – AD (see DWG)
2. Install the FRONT angles and rivet with AN 470 – AD (see DWG)
3. Install the RH & LH Plate and rivet with AN 470 –AD (see DWG)



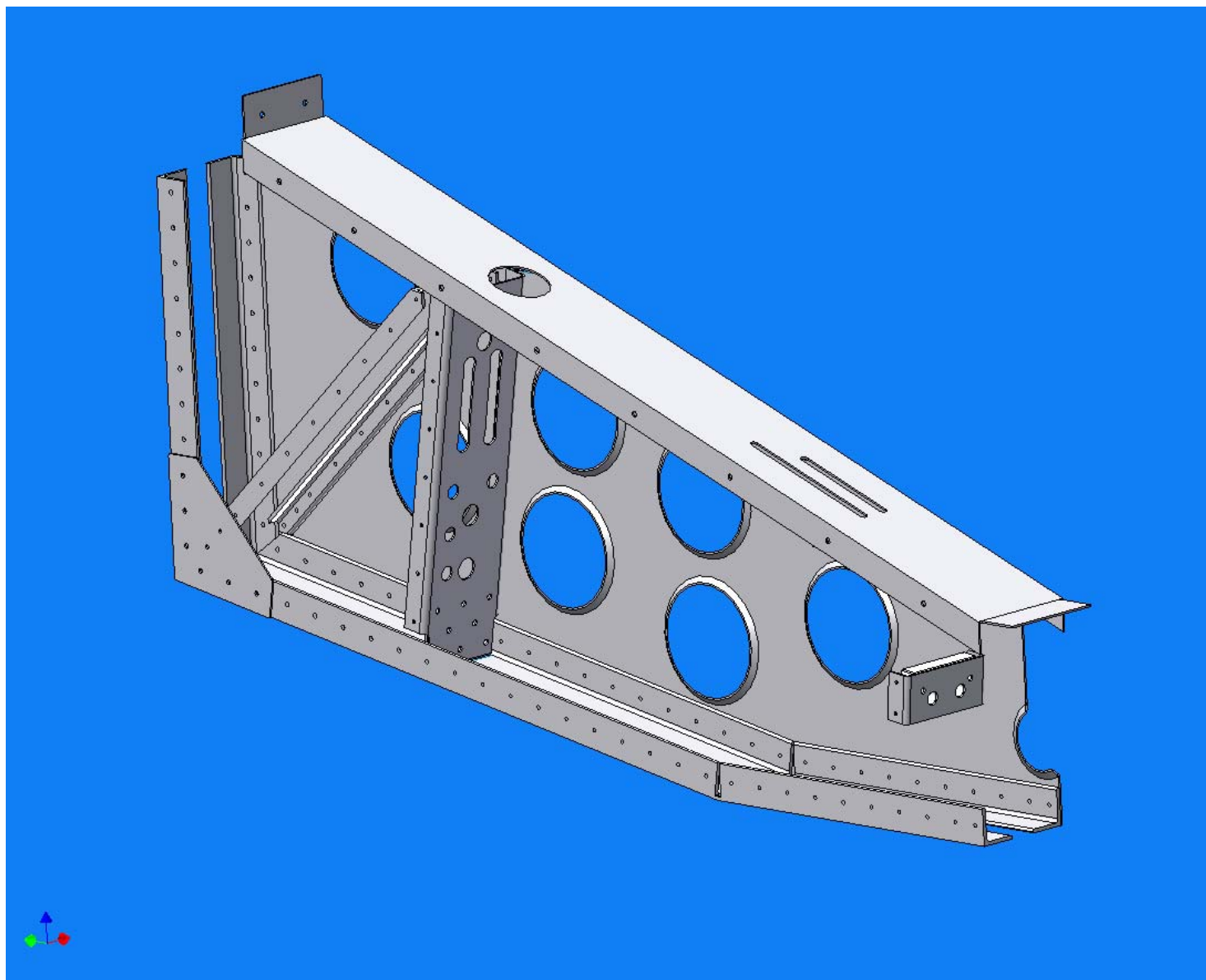
Step 2



RH side Console with Aluminium Angles Rivetted
Note the Anchor Nuts in the Upper side



Step 3



Console with all parts installed

Take the two fore angles ST505-050 left and right, and locate them on the walls as shown in the drawing, taking care to put them at 90° to the floor and sticking 2 mm out of the sides that you have previously positioned 1,5 mm from the floor edge; lock and drill the angles through the sides and tack.

Take the angle ST505-822 and the shim ST505-823, rivet it to the center of the angle with two Ø 2,5 mm rivets on the opposite ends of the shim; their shim must be countersunk.

Now place the angle with its shim downwards between the two angles fixed to the floor and the upper side sticking to the central rib; drill and tack it. You can remove a complete side taking away the clecos between floor and angles.

Now you must fit the gusset plates ST505-015 and the two angles ST505-118 on each side; drill and tack.

Now you can complete the drilling to the final diameter as shown in the drawing; strip, deburr and reassemble inserting the rivets into the holes. To be more accurate, rivet to the bench the two sides complete with their angles and gusset plates, reposition on the floor and tack; rivet the central rib to one side only.

Take the bracket ST505-119-001 and ST505-119-002, drill as shown in the drawing and install the two 5×30 bolts with washers and nuts; position them as shown in the drawing. There are two Ø 2,5 mm holes on the sides, drill on the edge and rivet only one side; this will allow you to rivet more easily one side of the console to the floor.

You will fit the cap ST505-112 and the relative Ø 5 mm anchor nuts later on.

Front floor and beams assembly

Locate them the same way as you did for the console and with the same tacking, starting from the wing beam ST506 positioned as shown in the drawing instructions and at a distance equal to the spar shim ST201/ST202, locked and centered on the floor. Drill the floor through the same beam, starting from the center to the sides, tack each two $\varnothing 2,5$ mm holes. Follow the same procedure for the rear beam ST198.

Now widen the holes between the beams ST506, ST507, ST198, console ST505 to the final diameter as shown in the drawing.

Fit the plate ST504-514-001. It must be centered on the joint strip of the floors, and the $\varnothing 6$ mm hole will have to be centered on the angle ST505-822 and on the shim ST505-823 of the central rib of the console.

Drill and lock with a $\varnothing 6$ mm bolt, drill from the floor towards the plate, countersink the plate for AN426AD5 on the sides taking the console angles.

Widen the back hole to $\varnothing 8$ mm and drill the two front holes to $\varnothing 6$ mm in order to install the front strut.

Locate the flap stick STX4-011 after having assembled it with the two angles ST4-011-002 right/left as shown in the drawing and having put the shim ST4-011-003 on the floor between the wing beam and the landing gear beam.

Drill on the floor with $\varnothing 4$ mm holes.

Strip everything, deburr, clean and paint (and/or put some mastic). Tack by inserting some rivets for the centering, start riveting from the center to



Figure 3.13: Fuselage floor.

the sides; you can position the floor rotated 90° in order to make the riveting more easily. Leave three or four unriveted holes from the edge of the beams.

Now you must fit some side stiffeners; let us start with the wing beam T506. Take the stiffeners STAB321-020, fit them as shown in the drawing and install two countersunk rivets of $\varnothing$ 2,5 mm between each stiffening and the angles ST506-020. Drill the $\varnothing$ 2,5 mm holes from the stiffeners towards the angles.

Take the angles ST507-025 left/right and locate them as shown in the drawing on the landing gear beam ST507. They must stick about 1 mm out of the beam. Lock and drill the $\varnothing$ 6 mm hole of the bolt connecting the upper angles of the gear struts, fix them with bolts as shown in the drawing.

You can fit the two ST507-033 angles on the rear angles ST507-025 right/left after having installed the two 6 mm anchor nuts for the anchoring of the belts with 5 mm bolts, washer and nut.



Figure 3.14: Rear fuselage inside seen from front side.

Firewall ST504

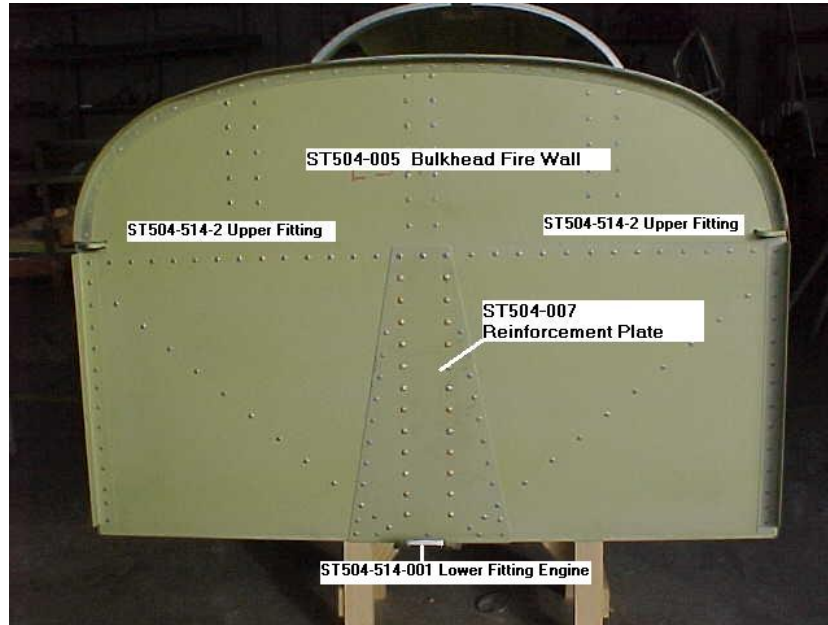


Figure 3.15: Firewall ST504.

Locate the firewall frame ST504-005 and the external stiffeners ST504-007 previously tacked on the frame, by inserting the lower lips between the support plate of the engine and the floors.

Insert the two stiffeners STAB321-032 left/right as shown in the drawing, insert the two assembled sides STAB321-022 right/left with the lower lips between floors and side strips. The fore part of the sides is inside the firewall frame.

During this operation you must be very careful for possible interferences or shrinking.

Make sure that the firewall is centered as to the floors and that it is at 90° to the ground, that the two walls are in the correct position as to the frame, and lock with clamps. Make sure that everything is in the correct position.

Holding the sides so that they stick well to the wing beam, drill two holes on the front, two on the back, two on the left and two on the right of the lower side lip, holding the opposite side where the drill comes out, and tack.

Holding the lot the same way, drill near the landing gear beam; drill the sides through the Ø 2,5 mm pilot holes of the stiffeners STAB321-020 and

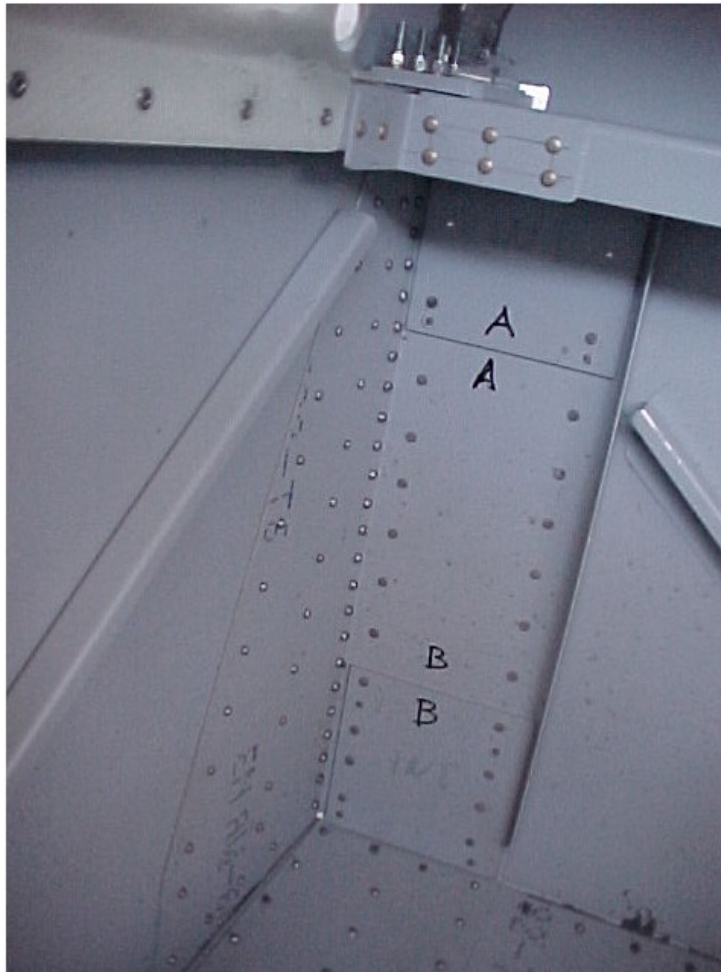


Figure 3.16: Focusing on firewall reinforcement.

the angles ST507-025 left/right starting from the bottom upwards.

BE CAREFUL: when doing this operation, keep the sides sticking to the stiffeners at 90° to the floor because you are giving the correct width to you aircraft.

Continue to drill the lower lip of the sides through the floor from the wing beam towards the firewall and lock with Ø 2,5 mm clecos.

Drill the front part of the side from the bottom upwards through the firewall holes. Locate the rudder pedals beam that will lean on the side angles; put the front lip in touch with the firewall frame, drill the beam from the firewall and tack with Ø 2,5 mm clecos.

Take the upper engine fittings and position them as shown in the drawing,



Figure 3.17: External view of 1st section and firewall.

drill to $\varnothing$ 5 mm for 5x30 bolts and AN470AD5 rivets. To keep the correct spacing between the centers of the fittings, use a drilled angle with two 6 mm holes, 880 mm spacing of the centers, 20 mm from the edge so as to be able to lock the two fittings in the right position, tighten with bolts.

Fit the upper central squares ST504-012 left/right and the four side ones ST504-009 left/right, drill them on the beam with three 4 mm dia. holes AN470AD5, except the three $\varnothing$ 6 mm holes for the installation of the rudder pedals.

Remove the complete firewall, fit the two typical stringers as shown in the drawing, drill to 3,2 mm.

Remove everything, deburr, clean and paint the inner parts.

Rivet the squares on the beam and the fittings with AN470AD5.

With AVEX1661-0410, rivet the fore stiffening, the squares, the stringers and the beam to the frame.

Reposition the assembly, insert some rivets in the holes in order to obtain the correct position; tack, rivet the frame to the console angles with AN470AD5-8 rivets.

Rivet the floor with AVEX1661-0410. Fit the two external angles ST504-052 left/right; they must be positioned 1,5 mm more inside than the frame, corresponding to the thickness of the engine cowling.

Drill, deburr and rivet with AVEX1661-0410 rivets.



Figure 3.18: An image of fuselage composite.

Drilling of the sides and completion of the 1st section

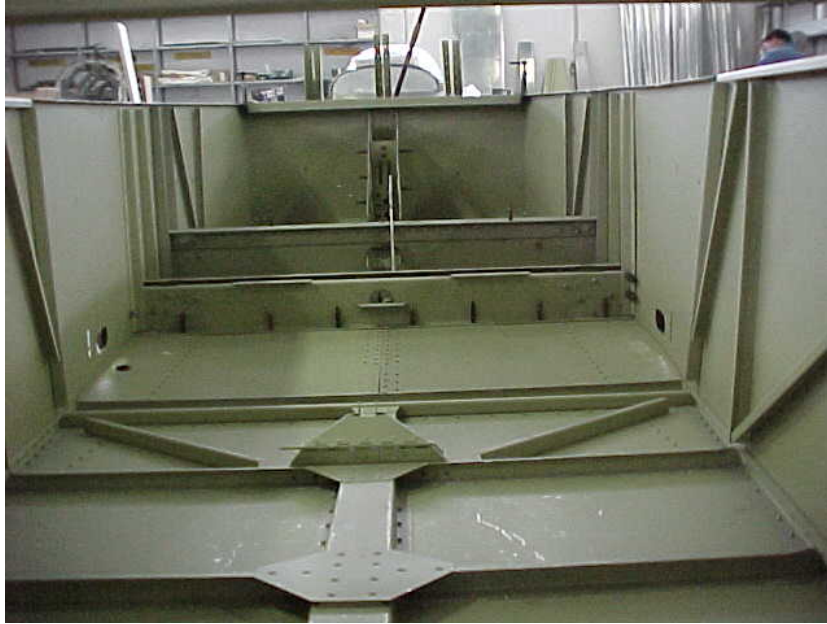


Figure 3.19: Fuselage 1st and 2nd section.

Put the flap stick with the three polythene supports as shown in the drawing.

BE CAREFUL: it must be parallel to the rear wing beam and centered.

Position the three ST4-010-099, the stick with the green polythene supports, the three ST4-010-066, lock in this position on the floor.

Check and drill the floor through the supports to $\varnothing$ 6 mm. Tighten with 6 mm bolts, place the two previously drilled side stiffeners STAB321-032 left/right on the floor, mark the 2,5 mm outlet hole for ST508-011 for the flaps movement.

Drill the hole, insert ST508-011 in the hole and in the stick, making it project about 25 mm out of the stiffening. While keeping the stick in touch with the rear beam, drill a $\varnothing$ 5 mm hole sloping 75° to the floor from the back to the front. This will avoid that during rotation the bolt limits the movement.

Strip, clean and tighten with the final bolts as shown in the drawing.

BE CAREFUL: put some grease inside the polythene supports and check the free movement of the stick.

With the removed sides and the two wing slot stiffenings STAB321-020 and STAB321-032 left/right, make the slot for the fore and for the rear beam and a $\varnothing$ 25 mm hole, taking care to smooth the edges. Paint the inside of the sides and the inner parts. Reposition the sides as you already know, with $\varnothing$ 5 mm bolts tighten the upper engine fittings and the sides; insert some rivets to give the right position, tack starting from the floor upwards.

Rivet as shown in the drawing, the same way you have already tacked.

BE CAREFUL: the sheet is thin, you must neither let the snap nor the dowel jump, but I know you are experts.

You almost have completed the first section.



Figure 3.20: Fuselage view from the 1st section.

Building of supports ST666

Take the omega beam ST666-051 and place the angle with the slot ST666-052 on the straight side, put the shim ST666-053 underneath, drill three $\varnothing$ 4 mm holes.

Take the tank width and the rubber thickness and repeat the same operation on the opposite side and for the other beam.

Deburr, clean, paint and rivet with AN470AD5-8; on the straight side, opposite to the angle, fit a typical stringer with AVEX1661-0410 rivets on each beam lip. This assembly must be installed between the support on the landing gear beam ST507-032 and the rear wing beam leaning forward.

Check the position in the drawing and rivet with two AVEX1661-0512 rivets on each lip. Install the stick AST1001-20-440 with its terminals and the unibals and fit it between the flap stick and the torsion control stick with 6x35 bolts, washers and $\varnothing$ 6 mm nuts.

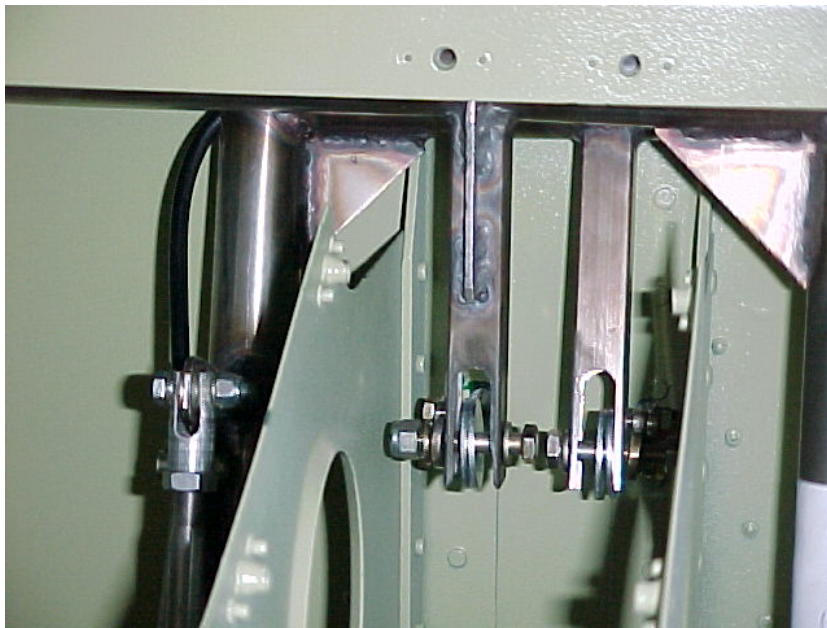


Figure 3.21: Nose wheel pedals in close-up.

Completing the beams and their fittings

Put the two squares ST198-008 left/right on the rear wing beam, drill and rivet with AVEX1661-0410 rivets between sides and beam. Take care of the beam position, it must be at 90° to the floor and lined up with the side slot; if necessary you must adjust it.

Locate the landing gear beam strip ST507-031 on the beam; place the angles ST333-010 in the fore part between beam and strip.

Drill all the holes through the strip to Ø 4 mm, position the two angles ST507-029; drill the sides and the strip with four holes on each side, respectively Ø 3,2 mm and Ø 4 mm.

Fit the strip ST506-024 after having inserted the spar as thickness, and insert the four angles ST333-010 turned downwards between beam and strip; drill to Ø 4 mm, deburr, clean and rivet with AVEX1661-0512.

Position the two angles ST506-028, drill three holes on sides and strip, respectively 3,2 and 4 mm.

Rivet to the sides with AN470AD4 and rivet the strip with AVEX1661-0512.

Place now the covering of the console ST505-112 with a lip in touch with the rudder pedals beam and the other lip on the wing beam, make two Ø 5 mm holes on each lip. You must fit Ø 5 mm anchor nuts on the beams, drill the console sides to the same diameter and fit the same anchor nuts with countersunk rivets AN426AD3. Finally tighten with 5×10 screws.

Locate the fore crankcase STX333-005, drill it to the floor to Ø 3,2 mm, apply two segments of typical fitting stringer on the side and on the console, drill, deburr and rivet the whole with AVEX1661-0410.

Locate the fore crankcases ST333-001/002 and the rear ones ST333-003/004, drill to the angles ST333-010 that you have already fitted on the beams Ø 3,2 mm holes, leaving them tacked.

ST508 construction



Figure 3.22: Fuselage seats tube attachment.

Take the central back and stiffen it with the typical stringer to the central drillings and with the 40 mm wide "U" stringer to the side drillings, sticking 20 mm out for the fitting. Drill to $\varnothing$ 3,2 mm, deburr and rivet with AVEX1661-0410.

Take the luggage compartment support and stiffen it with the typical stringer and the 180° angle ST508-031.

Install the two $\varnothing$ 6 mm anchor nuts for the belts, drill to $\varnothing$ 3,2 mm, deburr and rivet with AVEX1661-0410.

Now position the central back at the center, the flap stick must have a gap of 1,5 mm from the compartment edge; insert the lower lip under the landing gear strip in order to drill it.

Position the luggage platform STX508-033 and, once you have checked the exact position, drill it on the supports STAB321-031 left/right already riveted to the side angles.

Take the two side backs ST508-322/323 and fit them with the lower lip under the strip, center everything and drill from the landing gear strip. Take care not to displace the lip.

Let the back lip over the strip, tack everything to $\varnothing$ 4 mm with clecos.

Now you can drill the angle ST508-031 to $\varnothing$ 3,2 mm, you can put the two typical stringers on the sides supporting the two side backs, rivet to the walls with AVEX1661-0410.

Set the drilled assembly aside to install it later on.

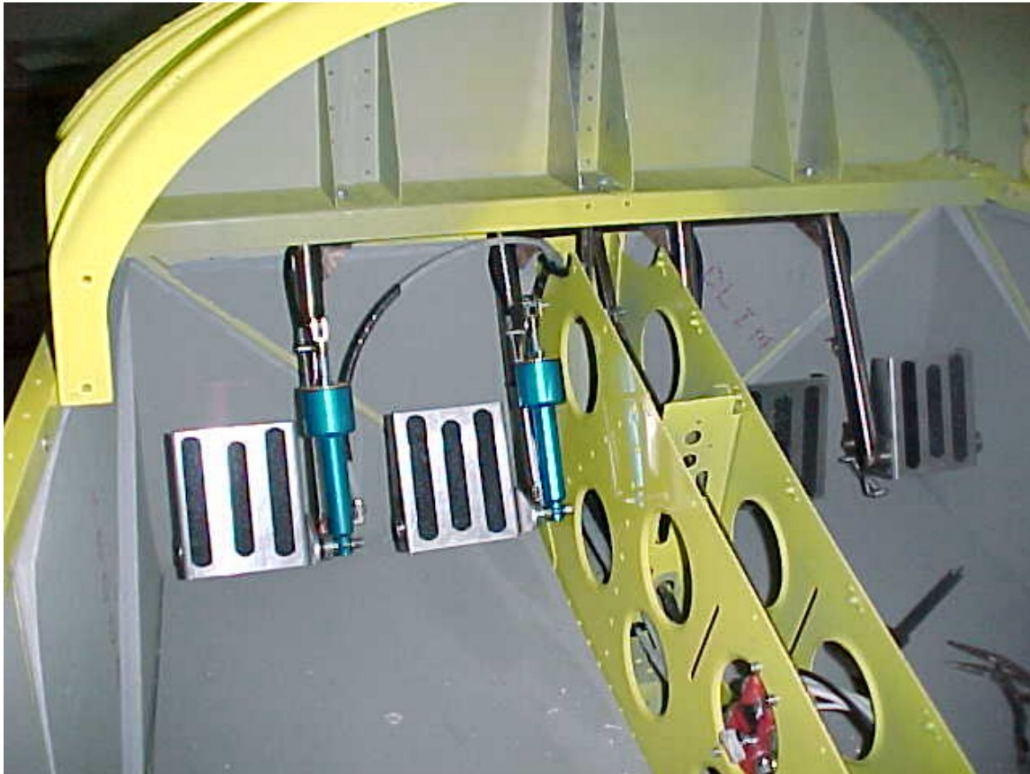


Figure 3.23: Complete pedal system.

Building the ST4-010 flap box

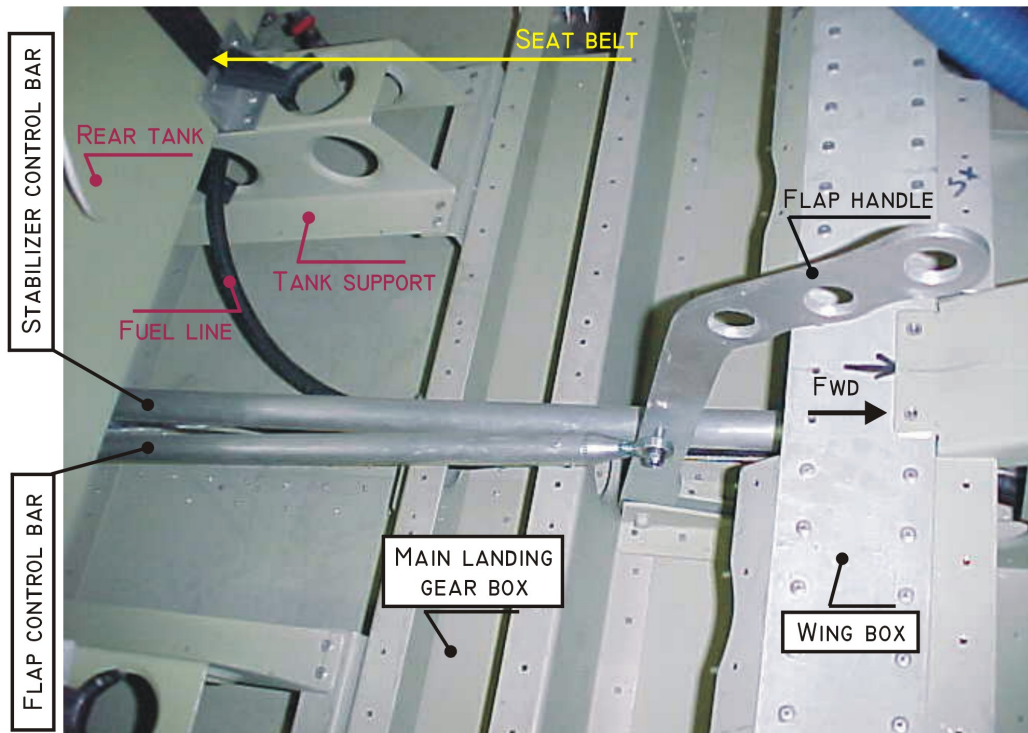


Figure 3.24: Main landing gear box and wing box.

Take the cap ST4-010-004, fit the lip on the wing beam and, keeping the slot leftward in touch with the flap stick, make three 2,5 mm holes on the strip and beam. Pull the stick completely backwards so as to have the slot parallel.

Locate the two sides ST4-010-005 left/right: they must be in touch with the back beam and the crankcase.

Drill to $\varnothing$ 4 mm on the beam and to $\varnothing$ 3,2 mm on the back and on the crankcase. Fit the cap in the right position and drill the sides to 3,2 mm and the square ST4-010-001.

Position the stick stop ST4-010-006 with the stick ahead and in the remotest possible position, drill to $\varnothing$ 4 mm.

Strip, deburr, clean and paint, rivet the stop with AN470AD5-10, rivet with AVEX1661-0410 and fit the 6 mm anchor nut for the belts.

Reposition and rivet with AVEX1661-0512 on the beams and with AVEX1661-0410 on the back.

Fitting the front instrument panel

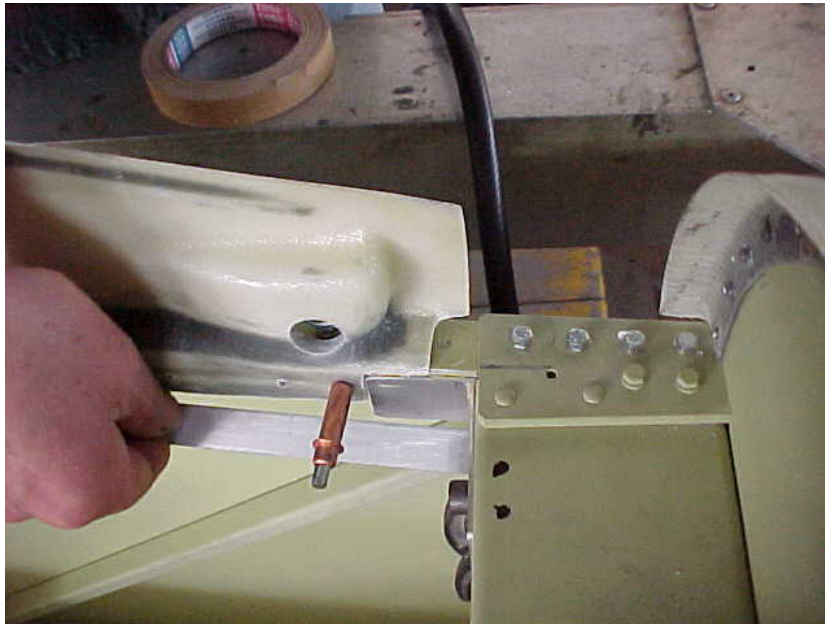


Figure 3.25: Angle reinforcement.

Take the two resin angles ST504-010/011, fit them on the firewall in such a way that the external one is 1 mm lower than the inner one. Drill the inner first, then the other. Tack with 2,5 clecos.

Position the resin instrument panel STA001-003 as shown in the drawing, adjust the unibal area on the wall, fit the squares inside the instrument panel STA001-021 left/right, drill on the angle.

BE CAREFUL: you could drill the side during this operation.

Use a drill stop, tack with $\varnothing$ 3,2 mm clecos. Position the sheet STA001-002 starting from the center to the sides; take care of the margins on the resin.

Once the sheet is drilled, check if you must do any adjustment, mark it and do it as soon as you remove the sheet. Deburr, clean, mix some araldite AV144-2 HV997 needed to join up all the resin and the aluminium parts before riveting with AVEX1661-0412, except the sheet sides STAA001-002 that are countersunk for AVEX1604-0412 rivets. Clean the resin excess with water while it is still not polymerized.

Now position the instrument panel and drill the $\varnothing$ 5 mm holes on the resin to install the 5 mm anchor nuts.

With the instrument panel set, install the support ST505-099 that will be riveted on the console covering and will have two 5 mm anchor nuts on the instrument panel side.

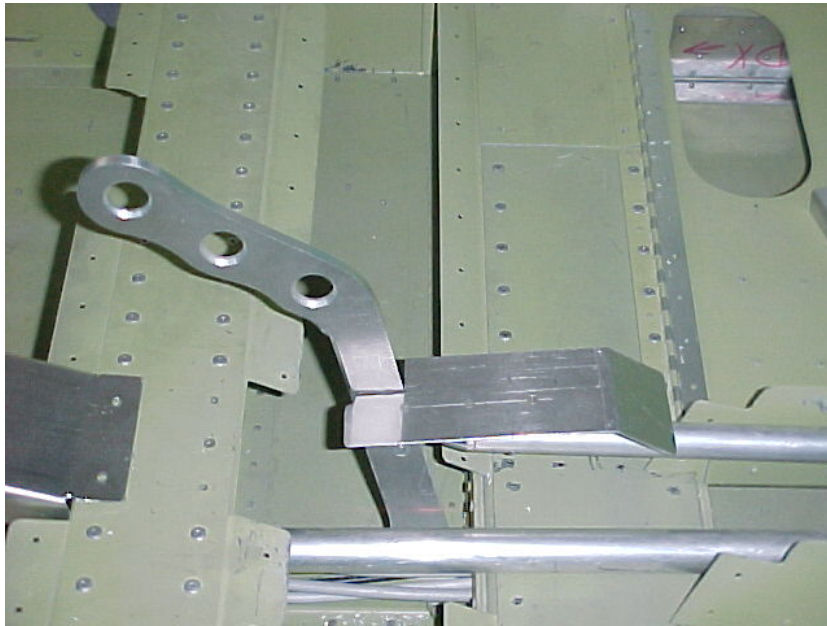


Figure 3.26: Another image of the flap handle.

Construction of the 2nd section ST1002

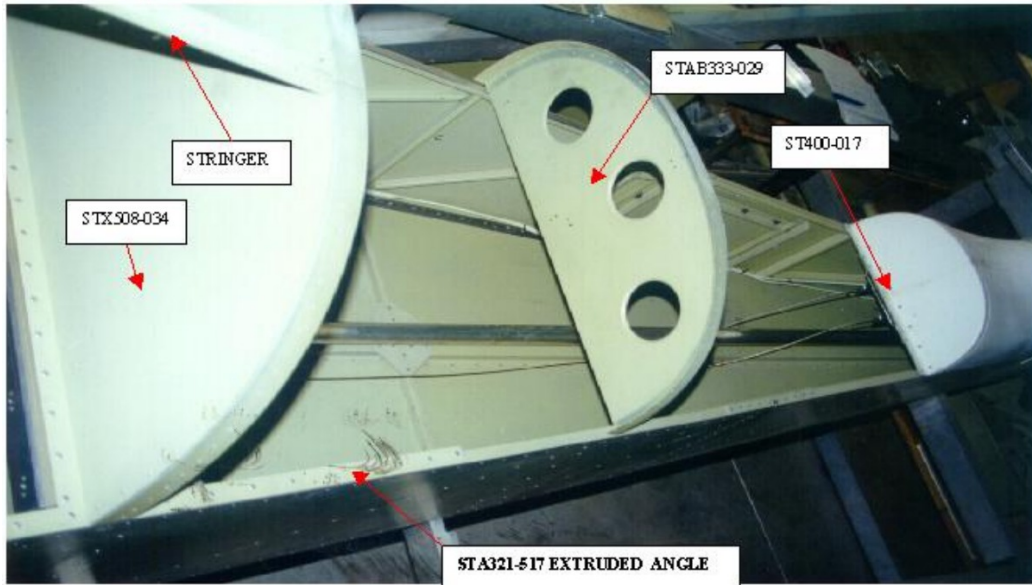


Figure 3.27: Fuselage 2nd section ST1002.

Take the bottom STAB333-027, place it on two 3500 mm long wooden boards; take the bottoms STAB312-013 left/right and lay the left one on top of the right one, and the two lower ones about 20 mm on top of the -027. Make sure that the front breadth is the same as the breadth of the 1st section bottom, on the rear side.

Drill to $\varnothing$ 2,5 mm and tack, take the stiffening STAB333-044 and position it as shown in the drawing; make the pilot holes and tack to the bottom.

Position the rib STAB333-098 centered on the sides as to the bottom and with the $\varnothing$ 6 mm hole made from -044 on the bottom -027 with the rib -098 drilled; take the omega STAB333-028 and, starting 2 mm from the rib lip -098, in central position, drill the floor through the omega pilot holes.

Position all the typical stiffening stringers as shown in the drawing, drill them and tack them to the bottom; place the omega -028BIS, position the stiffenings starting from the fore side ST701-006-2, STAB312-312 in two positions.

Place the stiffening STAB312-030 centered with the lip in touch with the stringer. Drill $\varnothing$ 3,2 mm holes on the stringer, rivet with AVEX1661-0412, install the leverage ST200CA3 and drill five 4 mm staggered holes in parallel rows on each side of it and tack.

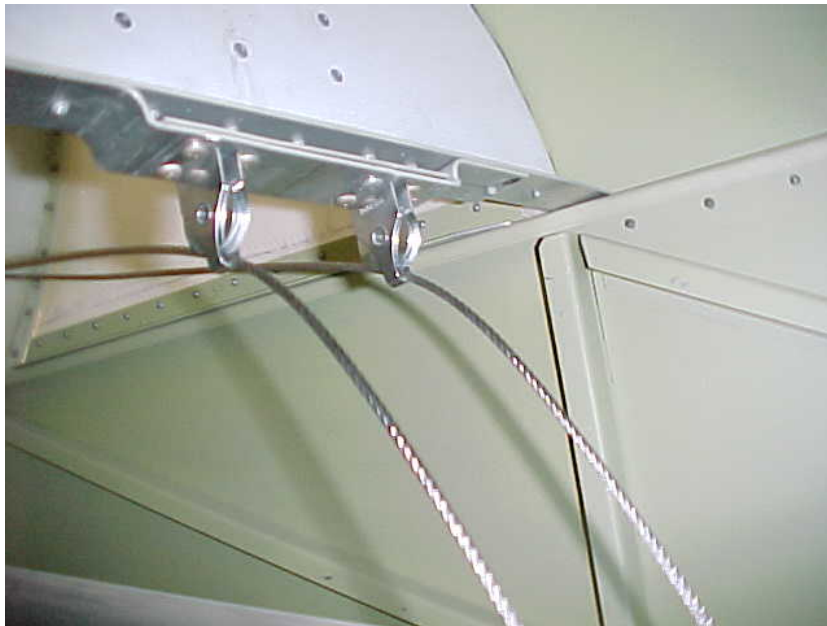


Figure 3.28: Fuselage 3rd section: rudder cable pulley detail.

Place the external stiffenings STAB333-053 and ST400-933, drill and tack.

Place the angle STAB333-045 inside the rib -098, drill everything to Ø 3,2 mm; drill the three 6 mm holes as well, in order to install the tail skid. Strip, deburr, clean and paint.

Reassemble everything with Ø 3,2 mm clecos and rivet with AVEX1661-0412 from the bottom inwards, place the three 6 mm anchor nuts; drill towards the bottom the two holes for each anchor nut to Ø 3,2 mm and countersink the stiffening ST400-933.

Rivet with AN426AD4-10. All the holes on the lower part, where the tail skid must be fitted, must be countersunk and riveted with AVEX1604-0412.

Take the sides STAB322-023 left/right and STAB333-026 left/right, place the stiffening stringers leaving 22 mm free space on the lower part to fit the bottoms. The stringers can be drilled and riveted after the parts have been deburred and painted.

Now you can place the rib ST400-043 after having assembled it with ST400-015, ST400-016, ST400-012, ST400-121, and AN470AD4 rivets, except the -012 that must be countersunk and riveted with AN426AD4, centering it on the bottom and to the lip of the STAB333-044; lock it with clamps.

Position the upper sides STAB333-026 left/right, cut the upper lips of

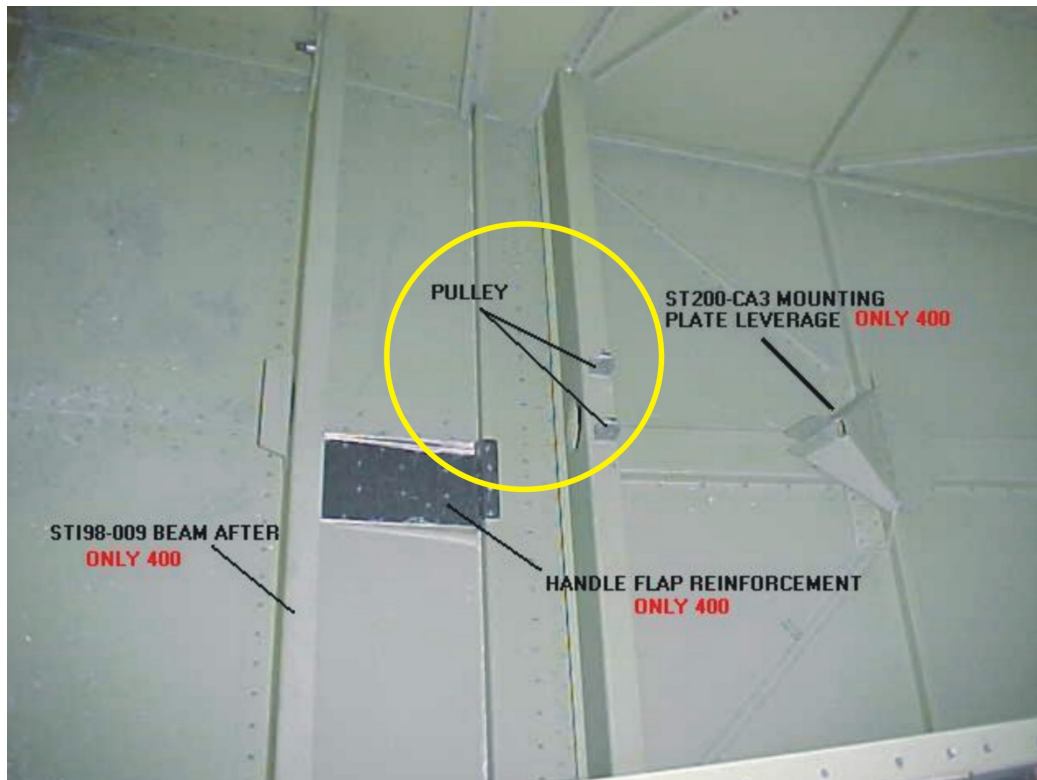


Figure 3.29: Rear beam. Detail of pulley.

the sides interfering with the rib, lock the sides to the bottom and to the rib with clamps.

Consider that there will be a 30° angle between the bottom and the rib.

Make sure that everything is positioned in the correct way and start drilling tacking with $\varnothing 2,5$ mm cecos starting from side and bottom, then the ribs ST400-043 and STAB333-098; from the bottom drill now the lower side lip, drill the rib with the STAB333-044 lip.

The whole final drilling is to $\varnothing 3.2$ mm; the rib -043 will have to be riveted with AN470AD4-5, while the remaining parts will be riveted with AVEX1661-0410. Always deburr the holes, clean and paint the parts.

Position the two sides 023 left/right, tack them to the position holes between the sides, fit the two joints STAB333-052 on the upper part and follow the same procedure as the previous ones.

Remark: the angle between the bottom and the sides is 90° , therefore try to lock the sides in the right position and to fit the fairlead support that you will already have assembled as shown in the drawing (ST701-006, ST701-

006-1 and ST701-006-2) with two $\varnothing$ 5 mm bolts and the relative washers and nuts.

Rivet with AVEX1661-0410 the two -006-2 after having taken the distance between the stringers installed on the side just next to the central leverage; the dimension from the bottom to the center of the holes is 180 mm.

Rivet on the stringers, this will help you keep the sides in front. Following the drawing, position now the two angles STAB333-051 left/right keeping them on the inside of the sides of the same thickness as ST400-017 and rivet to the sides with AVEX1661-0410 rivets. Place the fairing ST400-017, drill it on the angles with a margin of 13 mm from the edge and a hole spacing of about 30 mm. Place the angle ST701-007 and the support ST701-007-1, drill to $\varnothing$ 3,2; drill the support with two $\varnothing$ 5 mm holes as shown in the drawing.

Place the two sheets ST400-009 contoured with the rib -043 and 20 mm on the side; tighten them with clamps to the rib, place the two stiffenings per side ST400-070 and -071 and lock everything; mark the holes on sheet and rib. Starting 10 mm after the stiffenings with a pitch of 50 mm and a margin of 8 mm from the edge, drill and tack to 3,2 mm.

Take the two fittings ST400-014, locate them as shown in the drawing with the two angles ST400-013, drill the rib -043 through the angles and rivet the angles with AN470AD4-6. Make the three 5 mm dia. holes on each side and lock with TE5 mm bolts with relative nuts and washers.

Take now the rib ST400-069 and place it contoured with the sheet at a distance of 2 mm from the sides; lock it with some countersunk rivets so as to keep it in position.

Position the squares ST400-069-001 and drill to $\varnothing$ 3,2 mm as shown in the drawing between rib and side; place the two inner angles ST400-148, drill and tack. Set the top ST400-006, taking care of the height from the center of the position hole of the rudder and of the top itself. Lock with some clamps. Take the sheet ST400-010.

CAUTION, it is a delicate operation: with a pencil mark the aircraft center on the two resin parts -017 and -006 with a 10 mm margin from the edge. The two existing $\varnothing$ 2,5 mm holes on the sheet must match with the marked ones, trig the sheet under the stiffenings -070 and tack the central hole. Check the hole on the top -006 and tack with $\varnothing$ 2,5 mm clecos. With the help of belts to hold the sheet tightened, trace and drill one hole after the other on the right as well as on the left of the existing tacked hole.

Complete the side drilling corresponding to the center of the rib -069; tack and complete the drilling on the stiffenings -071 and -070. Take care of the margins that must be respected for the inner parts and that you must always check before drilling.

Take the rib STAB333-030 and the resin stringer STAB333-033, couple

them as shown in the drawing and drill to $\varnothing$ 3,2 mm; tack, position the rib on the side as shown in the drawing, drill to the side to $\varnothing$ 3,2 mm and tack.

Mark the center on the resin ST400-017 and on the stringer STAB333-033, take the skin A004-007 and through the two existing central holes position it with the help of belts to hold it tightened.

Drill the side of the resin -017 and lock the fore rib side with clamps. Mark the hole line on the side 10 mm under the bending, mark the holes with an equal spacing of 45-50 mm from each other, drill and tack to $\varnothing$ 3,2 mm.

Strip everything after having marked possible trimmings or adjustments to be done; make these trimmings right now, deburr the holes, clean the surfaces and paint the inner parts.

Now you can start riveting the skins ST400-009 and the rib -043, the rib -069 with -069-001 to the sides from behind; lock the fittings -014 with the stiffenings -070 and -071 with the sheets -006 and the inner stiffenings -0148.

Before riveting the resin parts, you must mix araldite AV144-2 and HV997 as specified on the packing; smear all the parts in touch with the resin part, tack 100% with 3,2 mm clecos, remove the coming out resin part with a water soaked rag.

Rivet the resin part -017 with the angle ST701-007, tighten the fairlead ST701-007-1 with $\varnothing$ 5 mm bolts and relative nuts and washers; rivet the resin part to the angles STAB333-051.

Rivet the sheet A004-007 to the side after having smeared the araldite in the areas in touch with the resin and after having assembled the rib STAB333-030 and 033.

Let the electric cables of the stroboscope and of the rear trim, and the steel cable for the rudder control through, by making two $\varnothing$ 25 mm holes on the resin -017 as shown in the drawing.

Now you can position the skin ST400-010 and tack it after having smeared it with araldite; now you can rivet all the parts between each sheet, and leave them tacked 100%. The resin ones must be riveted after 24 hours, when the resin will have been polymerized; this avoids possible buckling of the external surfaces. Use AVEX1661-0410 and 0412 rivets, depending on the thickness of the resin; if the grip is close to the maximum, the longer one should be preferred.

Fit the STAB312-012 as shown in the drawing, and the typical 40 mm channel around the lower door opening so as to be in the middle; drill it and rivet it to the bottom with AVEX1661-0410. Fit the door in the opening with a 1 mm gap and make the drilling to install the 5 mm anchor nuts on the channel, drill the door to 5 mm.

Locate and drill the hinge STAB312-015 between the door -014 and the

joint -012; drill and rivet with AVEX1661-0410.



Figure 3.30: Flap control leverage.

Assembling the 1st and the 2nd section ST1000



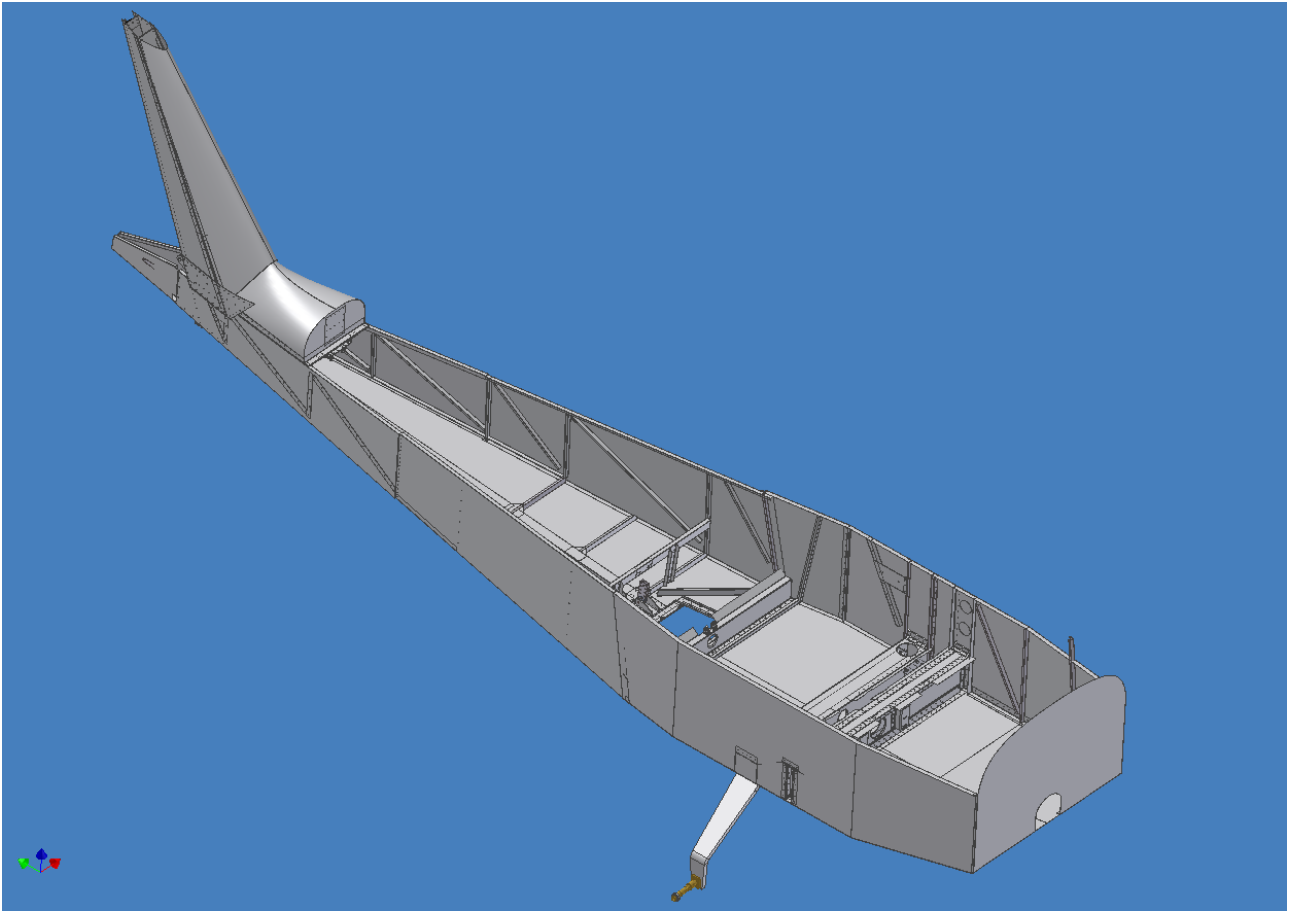
Figure 3.31: Fuselage 3rd section: stabilizer control bar and rudder cable.

Put the 1st section in plane on two trestles about 600 mm high from the floor, fit the 2nd section with care. The fuselage angles STAB321-517 right/left must lean on the sides of the 2nd section that overlap 20 mm inside the 1st section sides. Lock the angles to the sides with clamps.

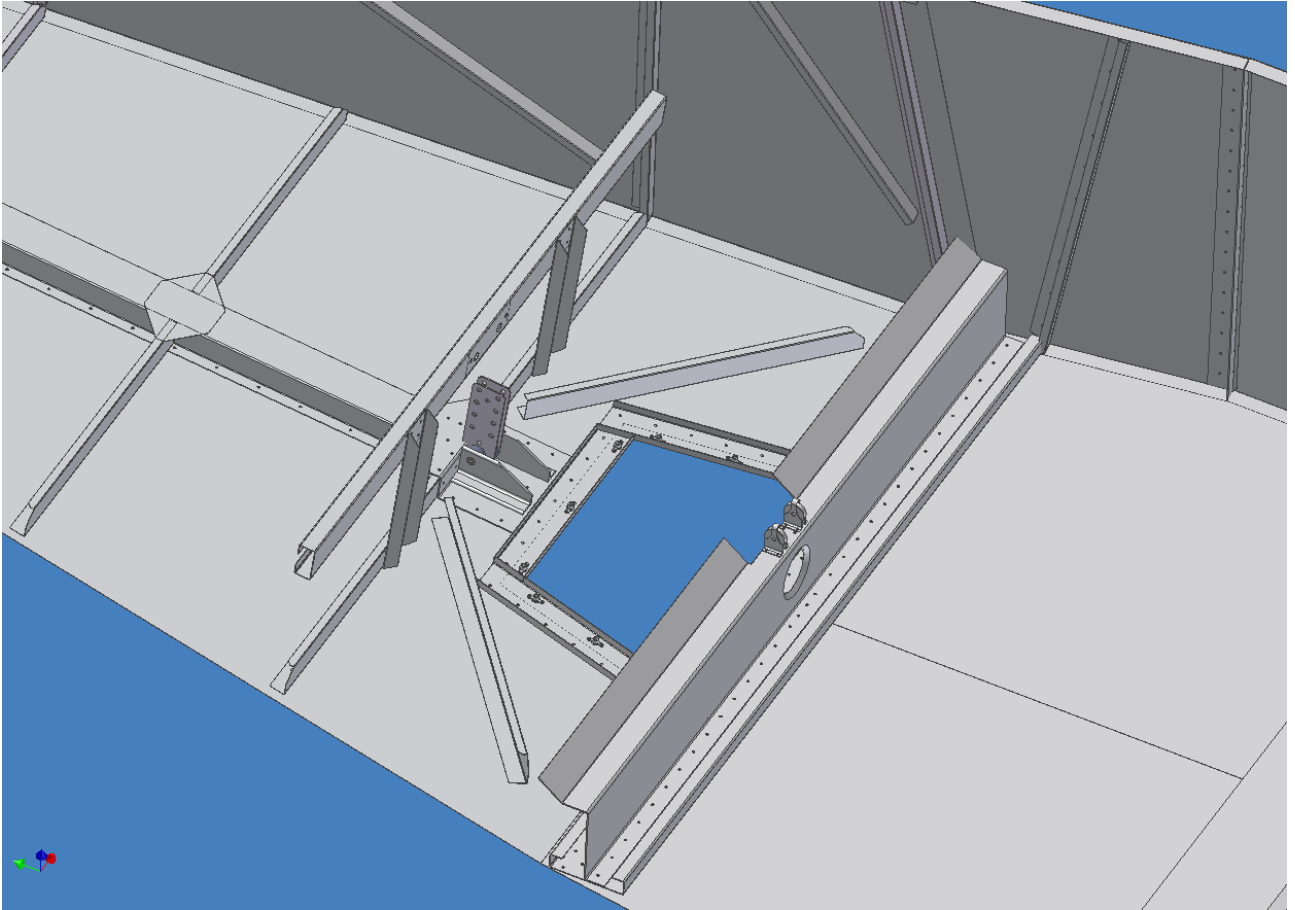
Put a trestle under the rear part and, with the help of shims under the trestles, level the whole fuselage. Check with the level over the angles. Make sure that there is a 1 mm gap between the two bottoms and install the joint STAB312-012. Tack, and drill the joint through the pilot holes of the bottoms; now drill the sides from the bottom upwards and tack with Ø 2,5 clevos.

Remark: you must place a typical stringer along the joint drilling as shown in the drawing.

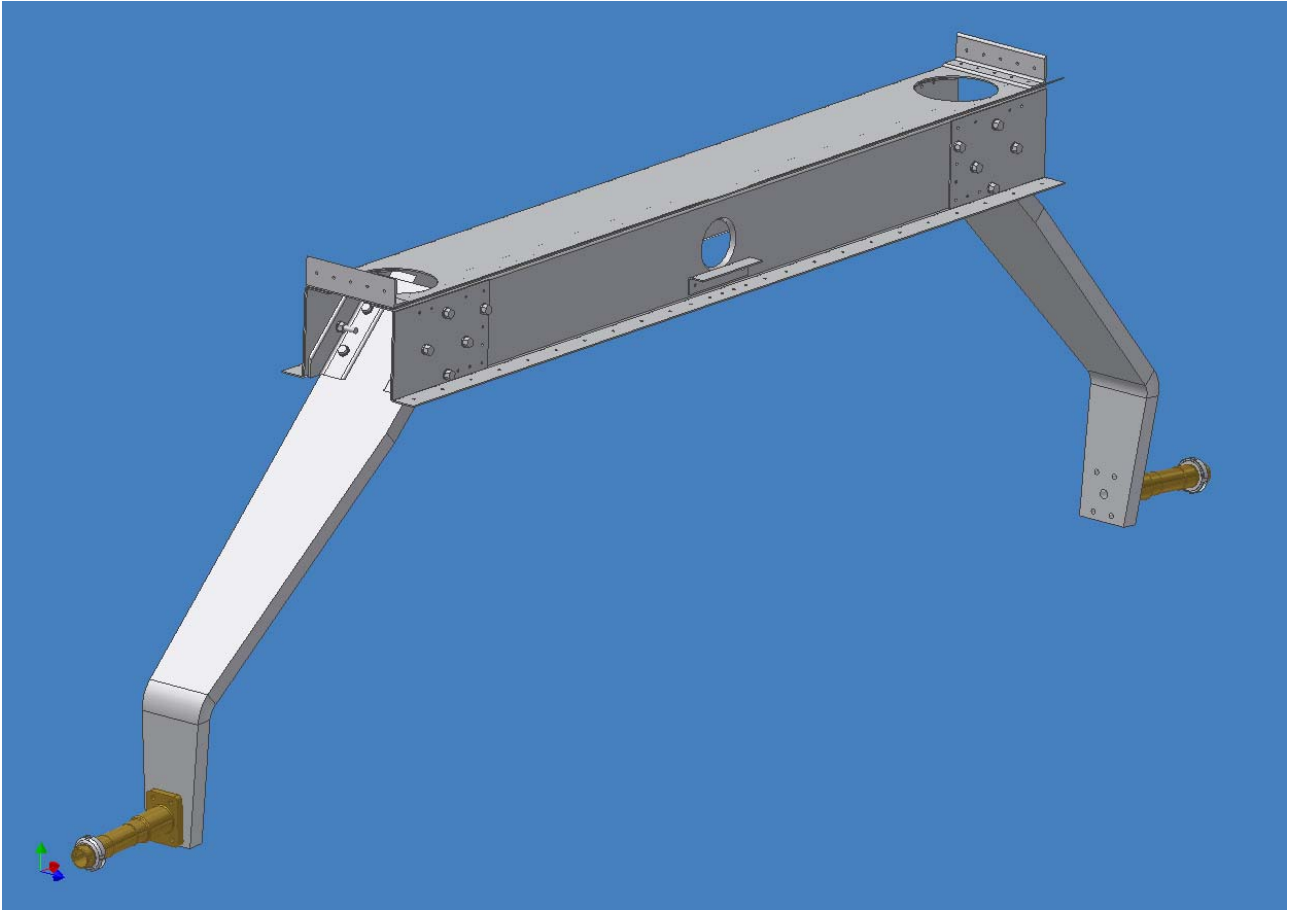
Drill the 2nd section sides through the angle -517 as shown in the drawing. Drill to Ø 3,2 and deburr; clean, rivet with AVEX1661-0410 and 0412 - depending on the thickness to be tightened (see GRIP tables) - in the same direction as the drilling. Fold the two lower lips of the 1st section sides with the help of a rubber mallet and a wooden dowel in the inner part. Drill to 3,2 mm, deburr and rivet.



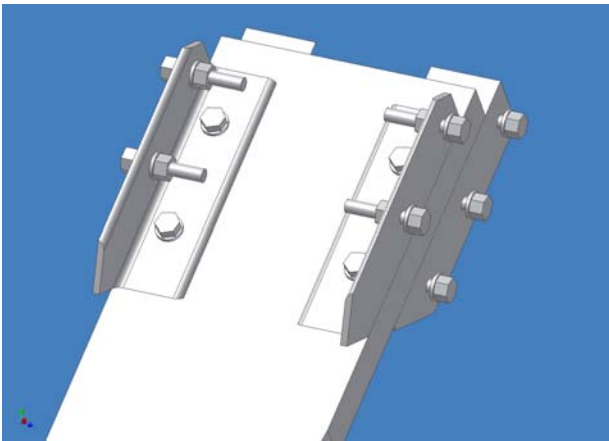
Fuselage



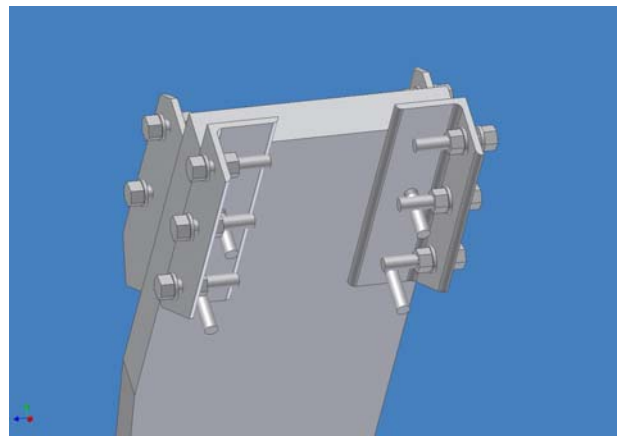
Inspection Door



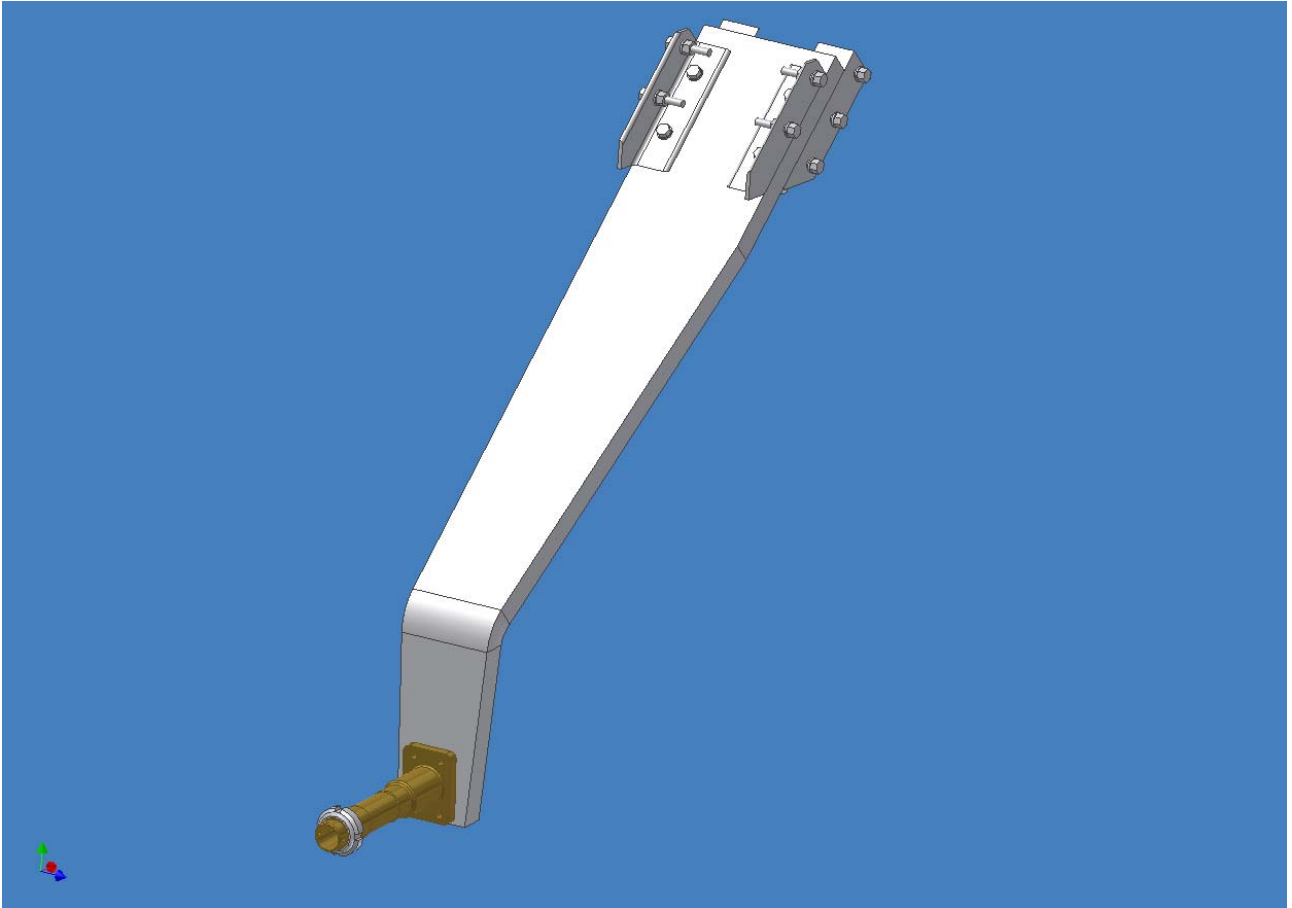
Main Landing Gear Beam Assembly



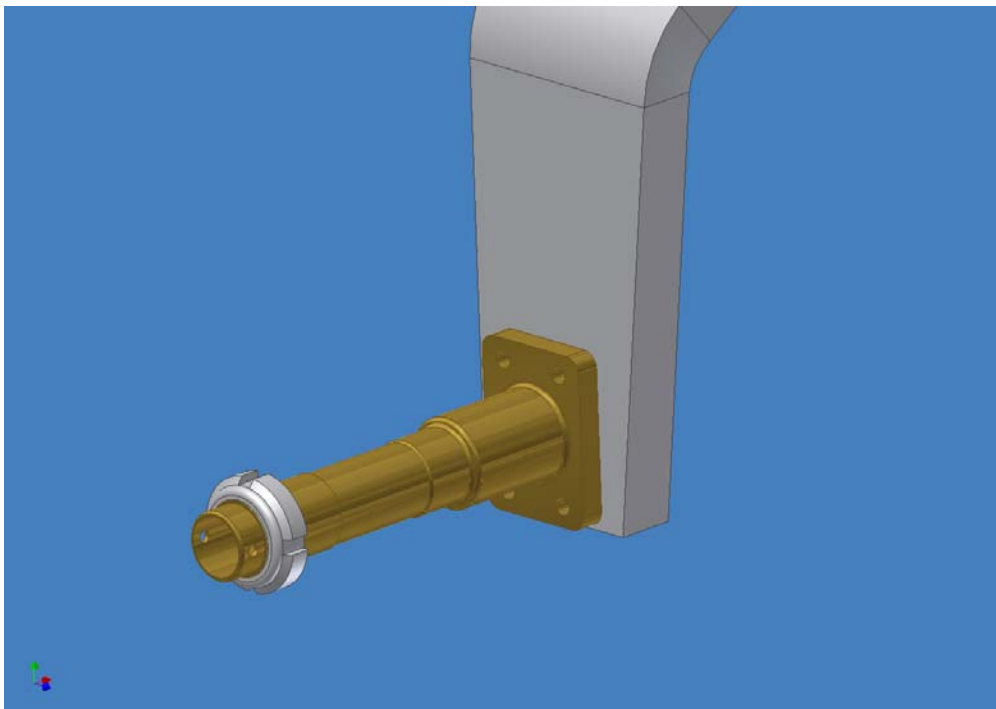
Spring Connection Front



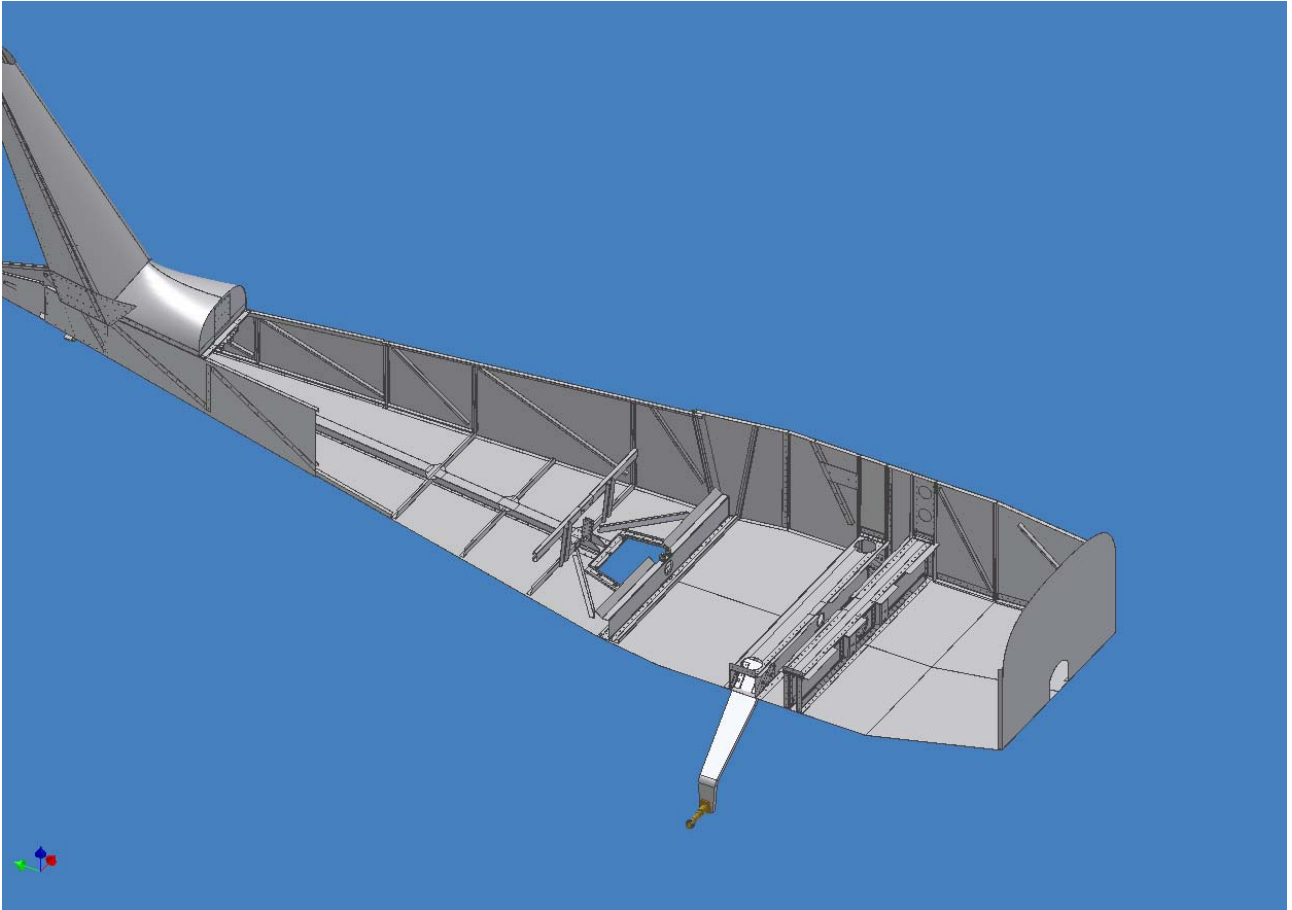
Spring Connection Rear



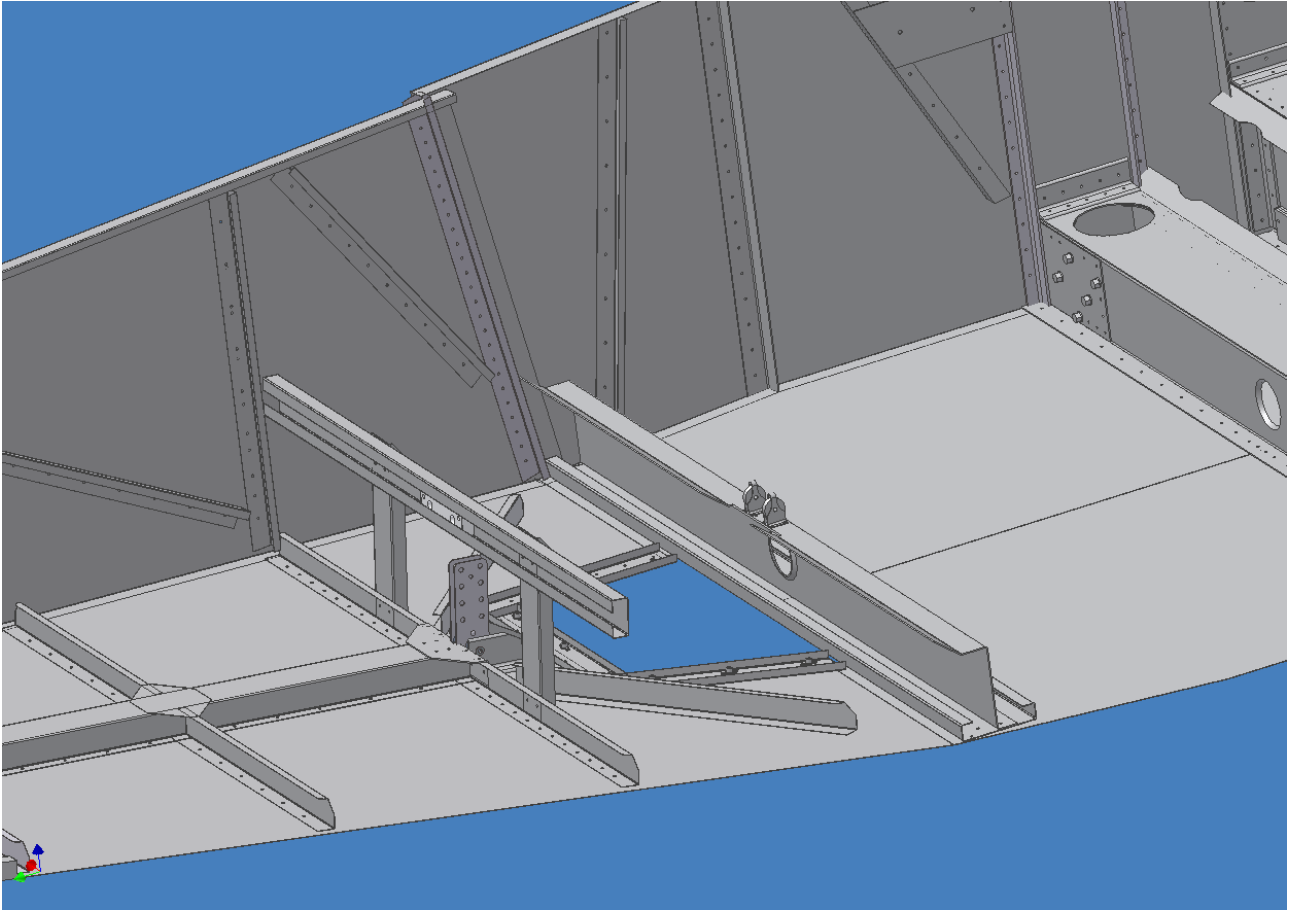
LH Main Landing Gear Spring



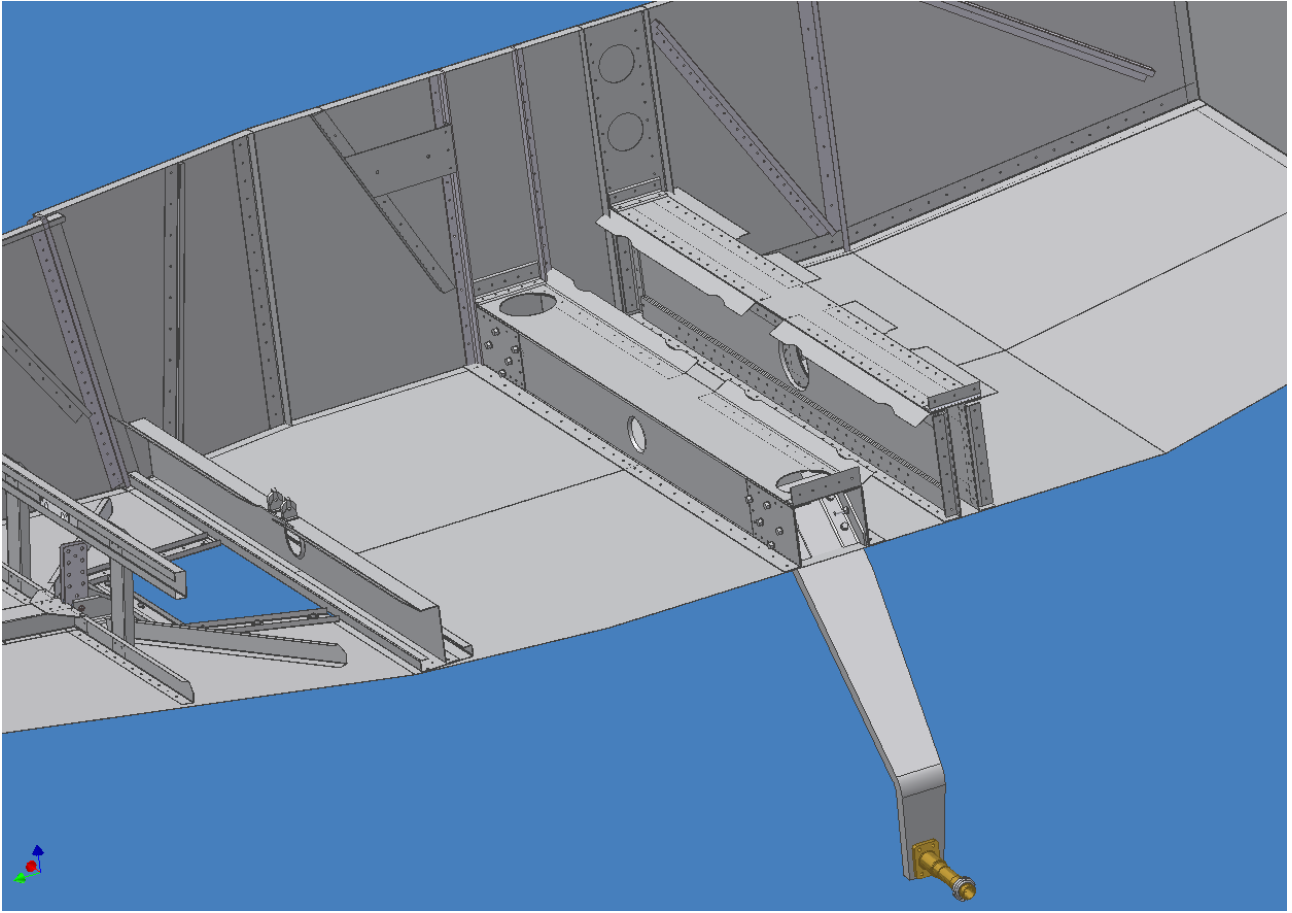
Wheel Axle



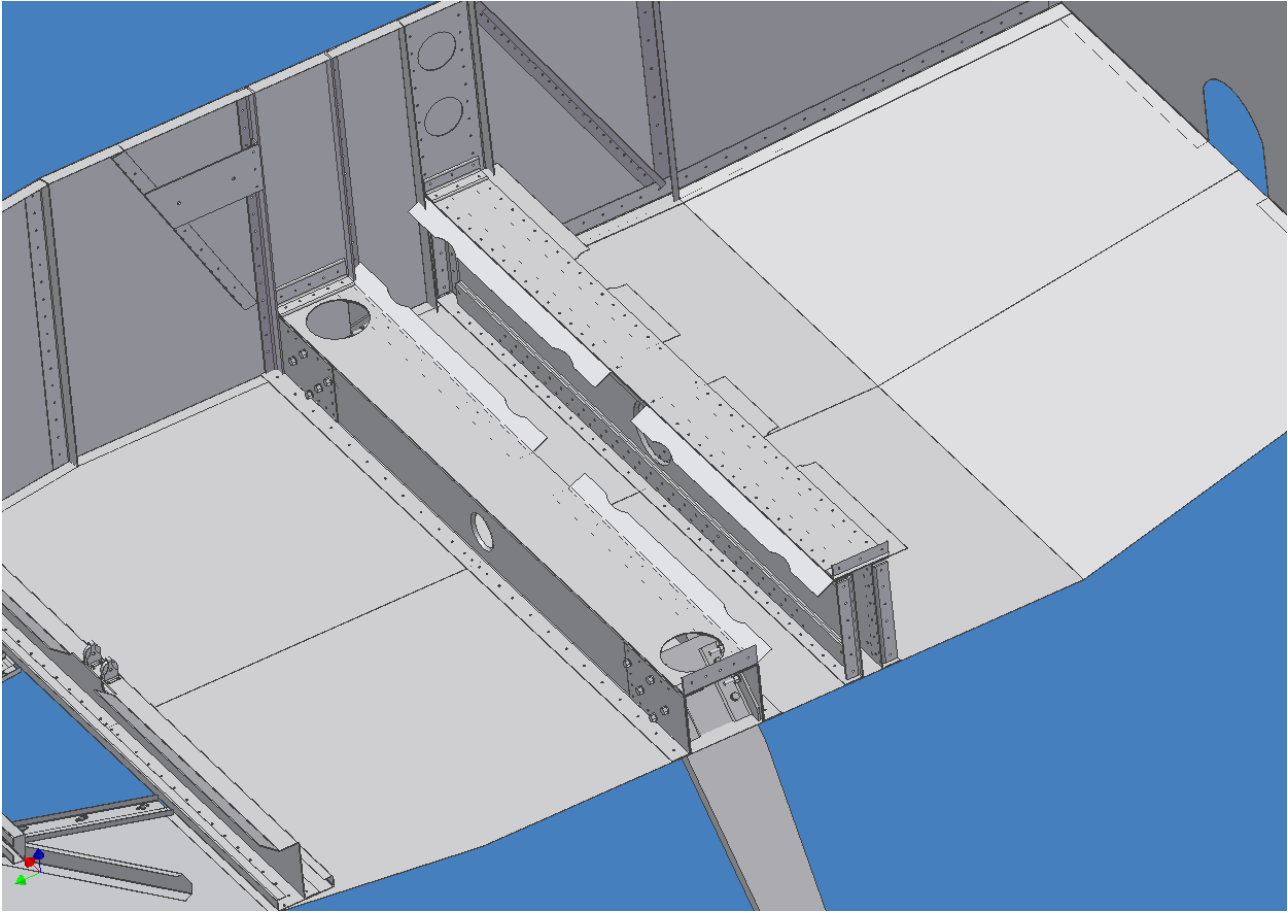
Fuselage



1st and 2nd Fuselage Section



Fuselage 1rd and 2nd Section



Wing Beam and Landing Gear Beam



Figure 3.32: Fuselage 3rd section viewed from the 1st one.

Take the rib STX508-034 and the resin angle STX508-035, position the latter contoured with the rib as shown in the drawing, drill and tack it; place the typical stringers and drill the whole to $\varnothing 3,2$ mm. Deburr, clean, paint and rivet with AVEX1661-0410 after having smeared with araldite AV144-2 and HV997 the surfaces in touch with the resin part.

Fit the just assembled rib as shown in the drawing and lock it with a clamp centered as to the angles; mark the center with a felt-tip pen on the resin angle -035 and the sheet already assembled on the 2nd section.

Take the skin AX003-006 and, after having marked the center, position it on the ribs and tack through the two central holes.

With the help of belts, hold it tight on the structure and, after having

marked the holes on the rear rib with a 35-40 mm spacing, and a margin from the edge of 9-10 mm, drill and tack it coming down along the sides. A few position holes are enough on the front rib; make the same marking as the rear skin on the side, drill the rear rib and the sides to $\varnothing 3,2$ mm, mark where you must trim.

Strip and trim, locate the aerial stiffening A003-061 and the four 5 mm anchor nuts, fit the tank cap on the right side A003-007 in the marked position, rivet with AVEX1661-0410, clean and paint the inside; smear the araldite on the resin angle, reassemble the sheet and rivet the rib on the fuselage angles with AVEX1661-0410 and with -0412.

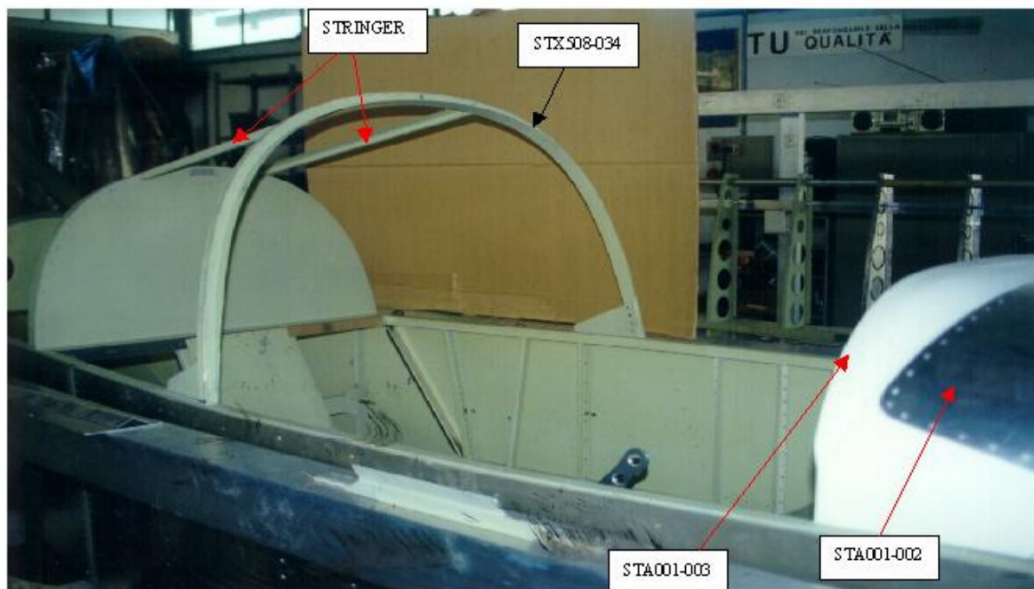


Figure 3.33: Fuselage 1st section ST1031.

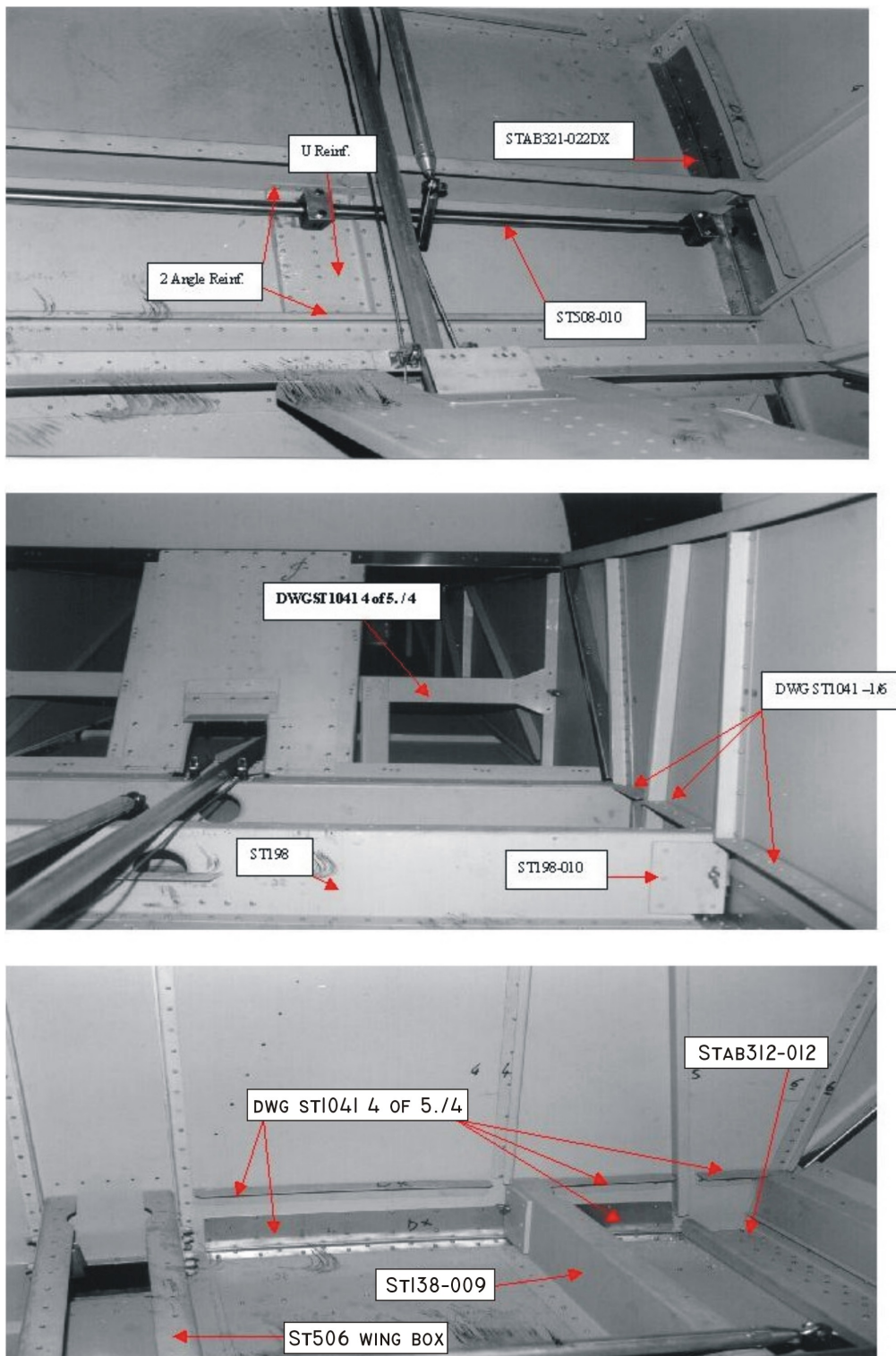


Figure 3.34: Fuselage construction details.

Chapter 4

Tank *VERSION STORM 280 G and 300 S*

Tank installation

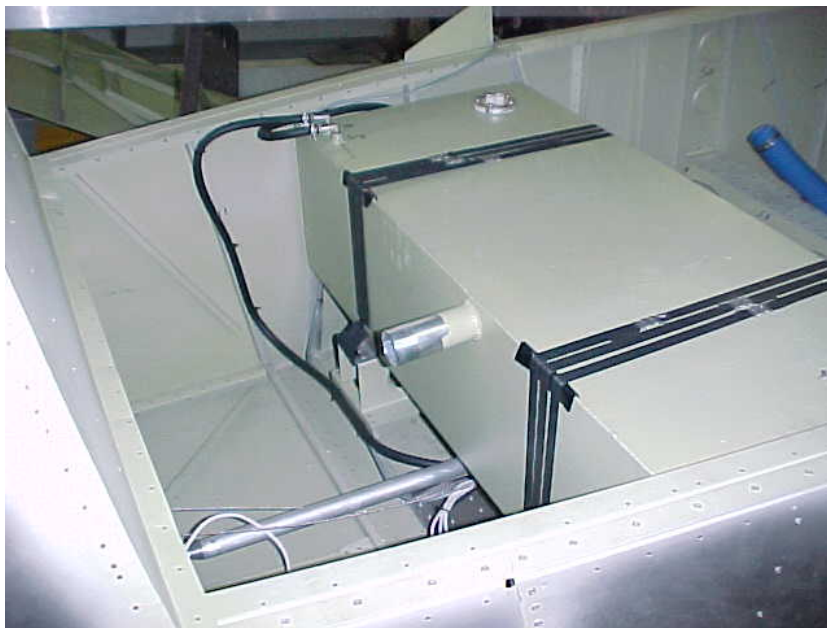


Figure 4.1: Rear tank STX300.

Position the previously assembled luggage platform ST508. Fit it and drill it to $\varnothing$ 3,2 mm on the rib lip. Strip, clean the inside of the platform, touch up with paint, install the $\varnothing$ 25 mm stabilizer control bar and bolt as shown in the drawing.

Tighten the electric cables of trim and stroboscope, tighten the aerial to the structure with clamps; install the fuel pipe and lock it with metal clamps to the cap.

Prepare the tank with capacitance fuel probe, cocks, feed pipes and drainage. Make sure that everything has been installed correctly (it is a good rule to make sure that there are no dripping).

Lay the tank on the support after having put some rubber on the bearings and, with the help of belts, tighten the tank to the structure.

Connect the fuel pipe, put all the pipes in the right position, letting them through the hole of the landing gear beam, of the wing beam, of the console and of the firewall.

Tighten with clamps making sure that there are no bending or interferences. Make sure that there are no foreign stuffs and that everything is assembled in the right way. . . Done? Well, now you can close, install the back, the luggage platform STX508; tack with clecos, rivet with AVEX1661-0410, -0512; take care that the rivet shanks do not fall inside.

Protect the openings with tape to avoid that something accidentally falls inside during the following operations.

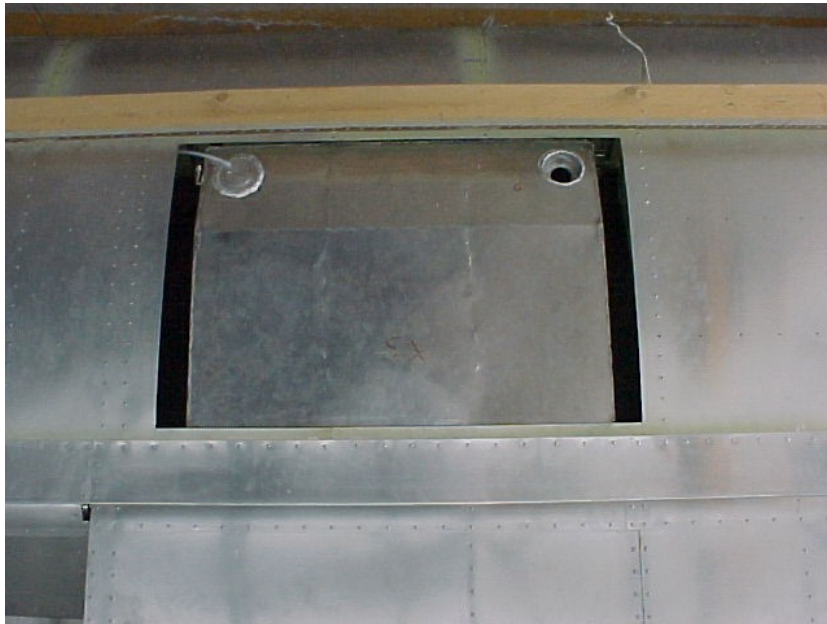


Figure 4.2: Wing tank upper view.



Figure 4.3: Wing tank 1.



Figure 4.4: Wing tank 2.



Figure 4.5: Wing tank reinforcement 1.



Figure 4.6: Wing tank reinforcement 2.



Figure 4.7: Wing tank reinforcement 3.



Figure 4.8: Wing tank reinforcement 4.



Figure 4.9: Wing tank reinforcement 5.

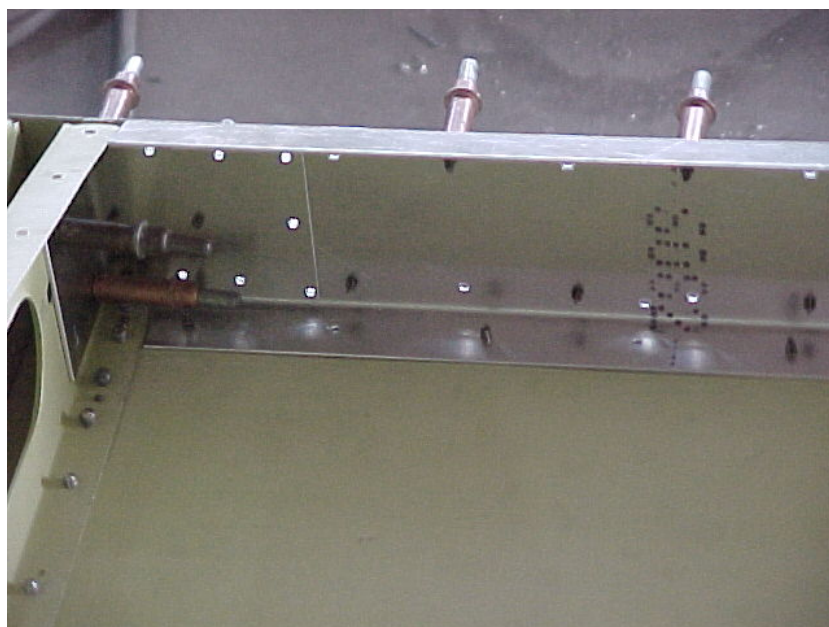


Figure 4.10: Wing tank reinforcement 6.

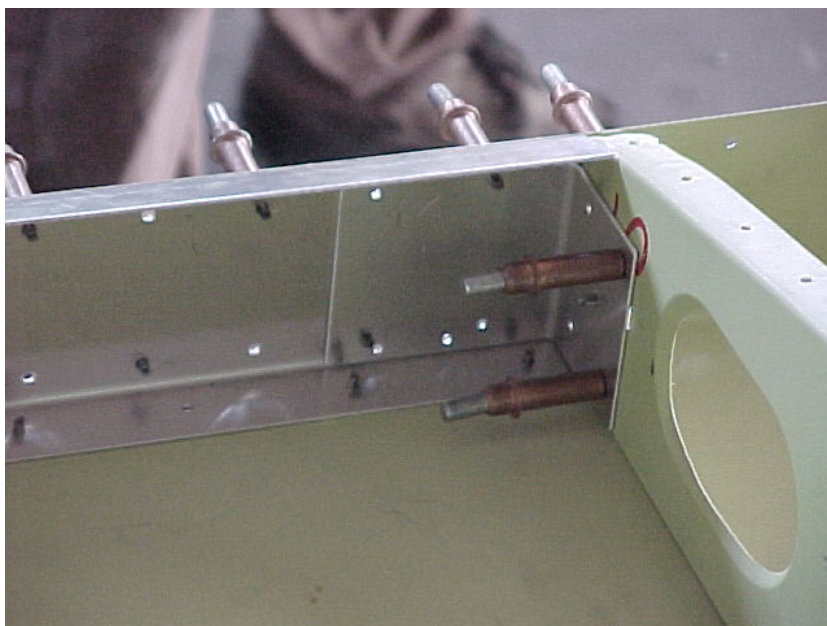


Figure 4.11: Wing tank reinforcement 7.



Figure 4.12: Wing tank support 1.

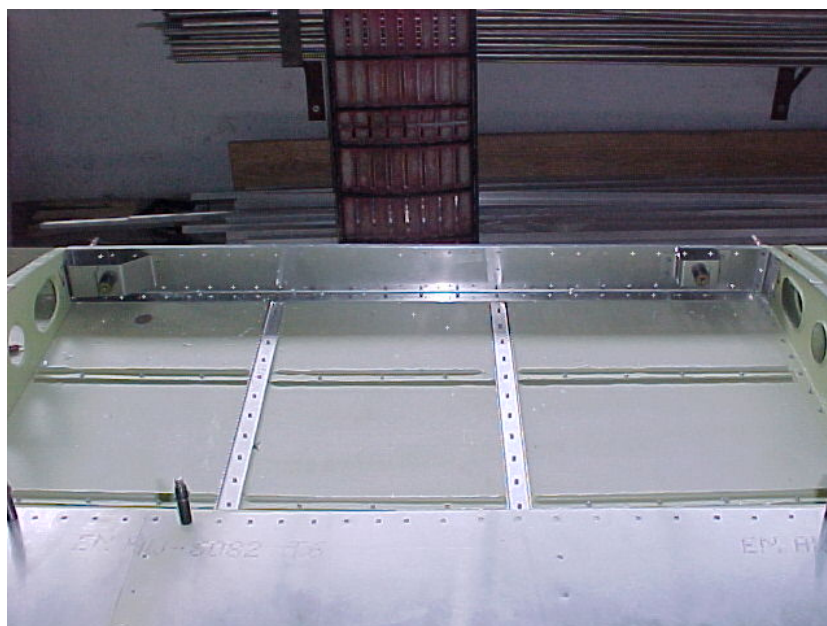


Figure 4.13: Wing tank support 2.

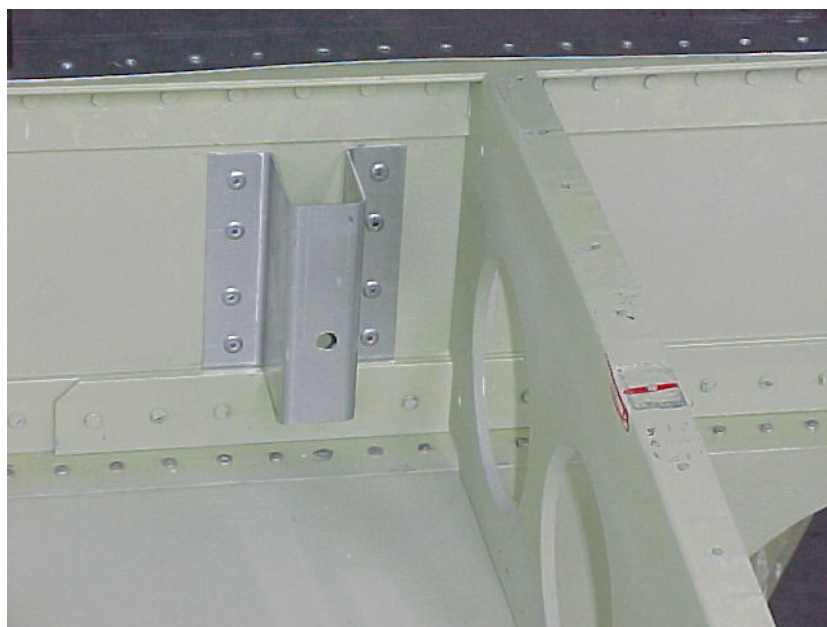


Figure 4.14: Wing tank support 3.

Wet tank



Figure 4.15: Wet tank 1.

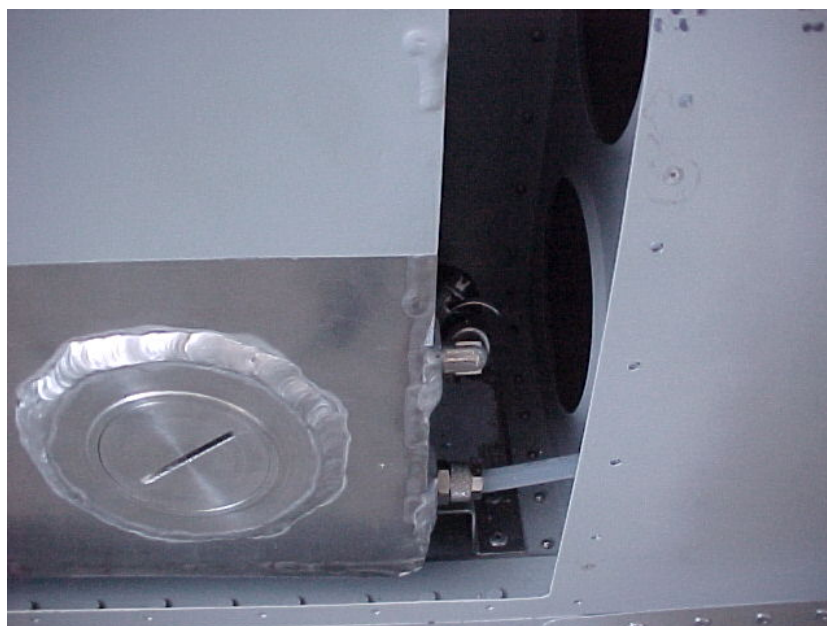


Figure 4.16: Wet tank 2.



Figure 4.17: Wet tank 3.



Figure 4.18: Wet tank 4.



Figure 4.19: Wet tank 5.



Figure 4.20: Wet tank 6.



Figure 4.21: Wet tank 7.



Figure 4.22: Six images of wet tank.

Welded tank

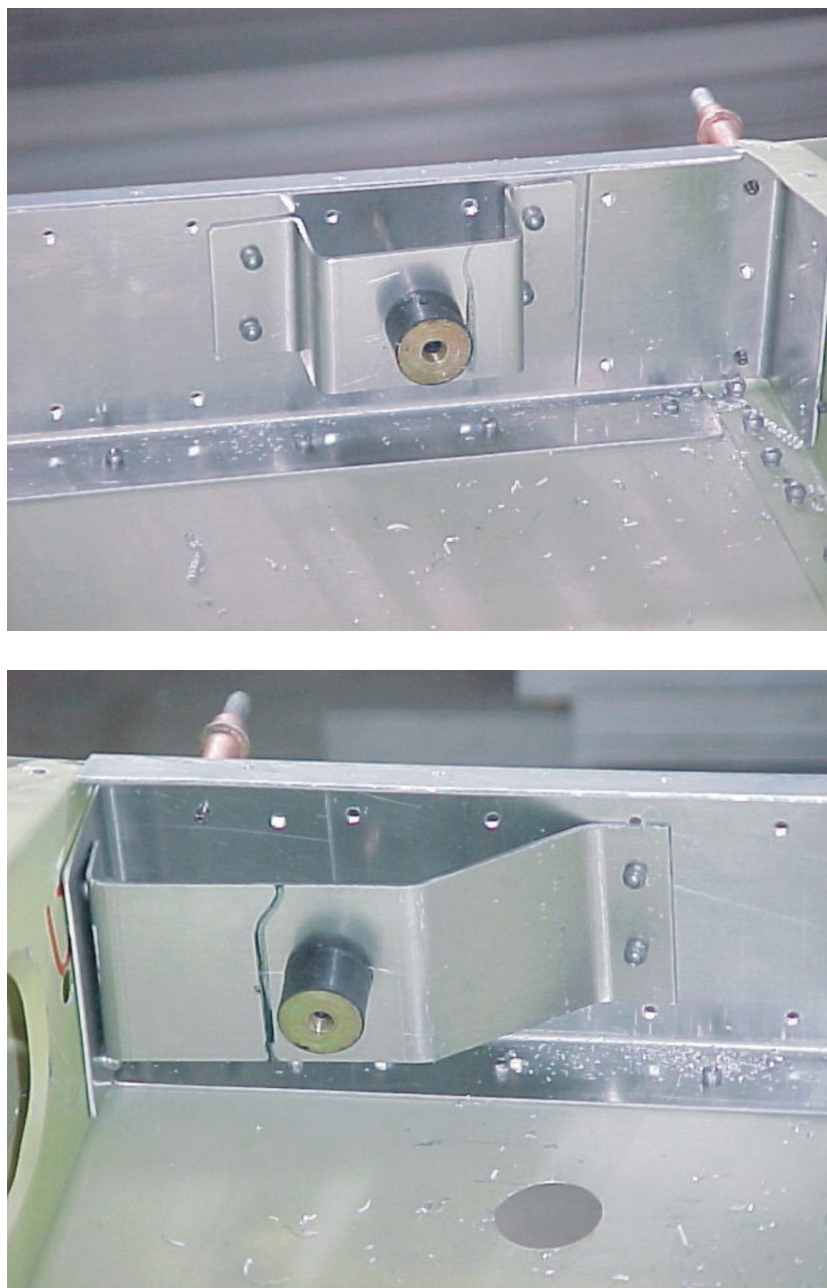
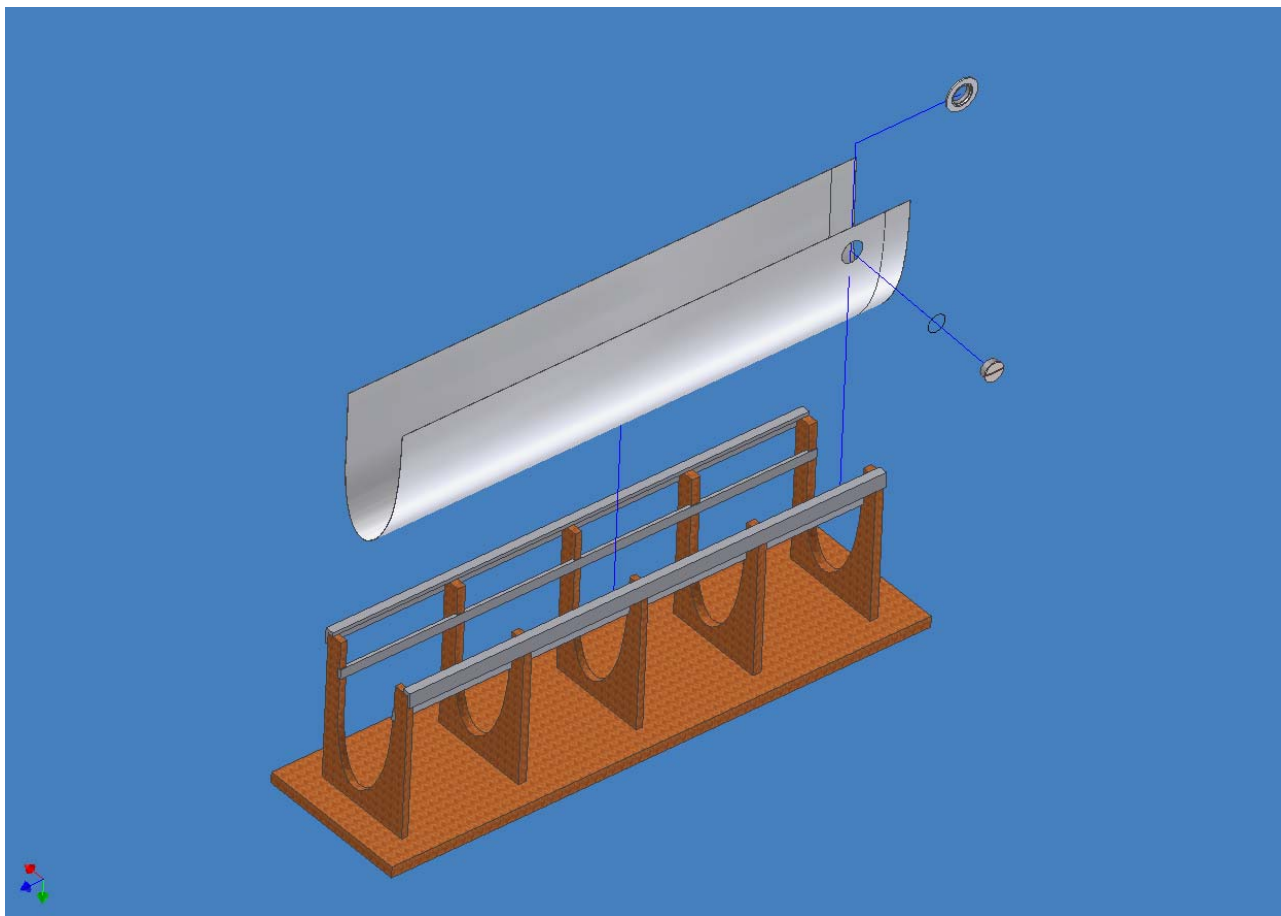
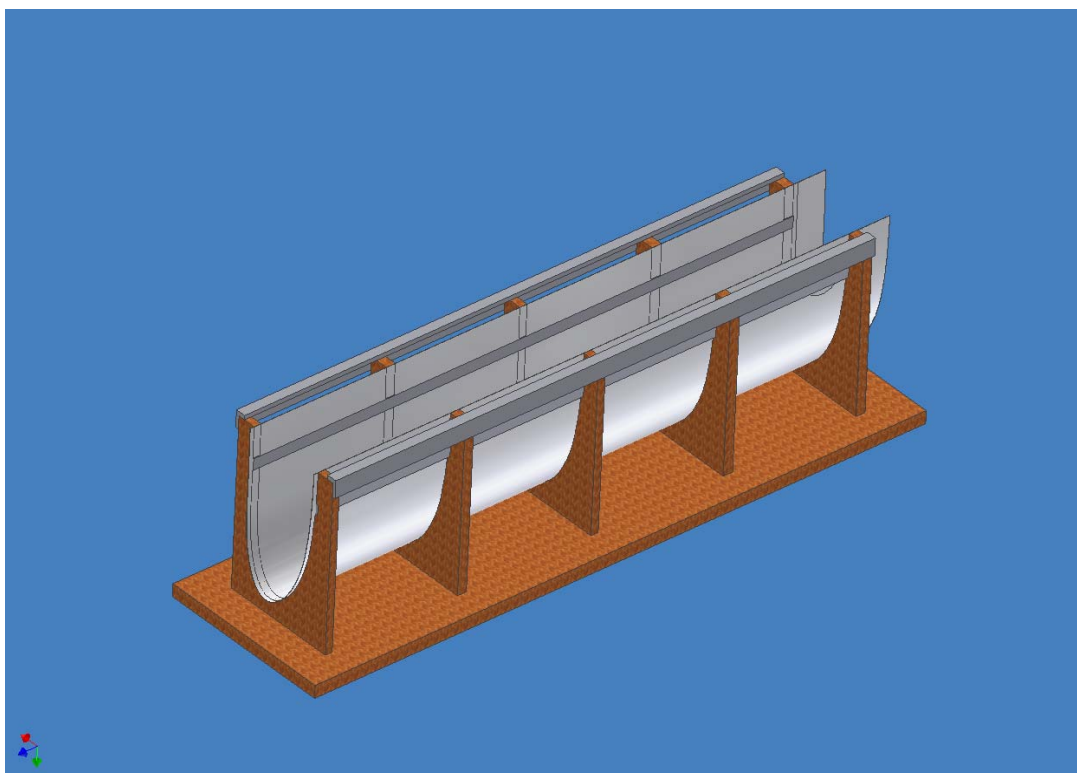
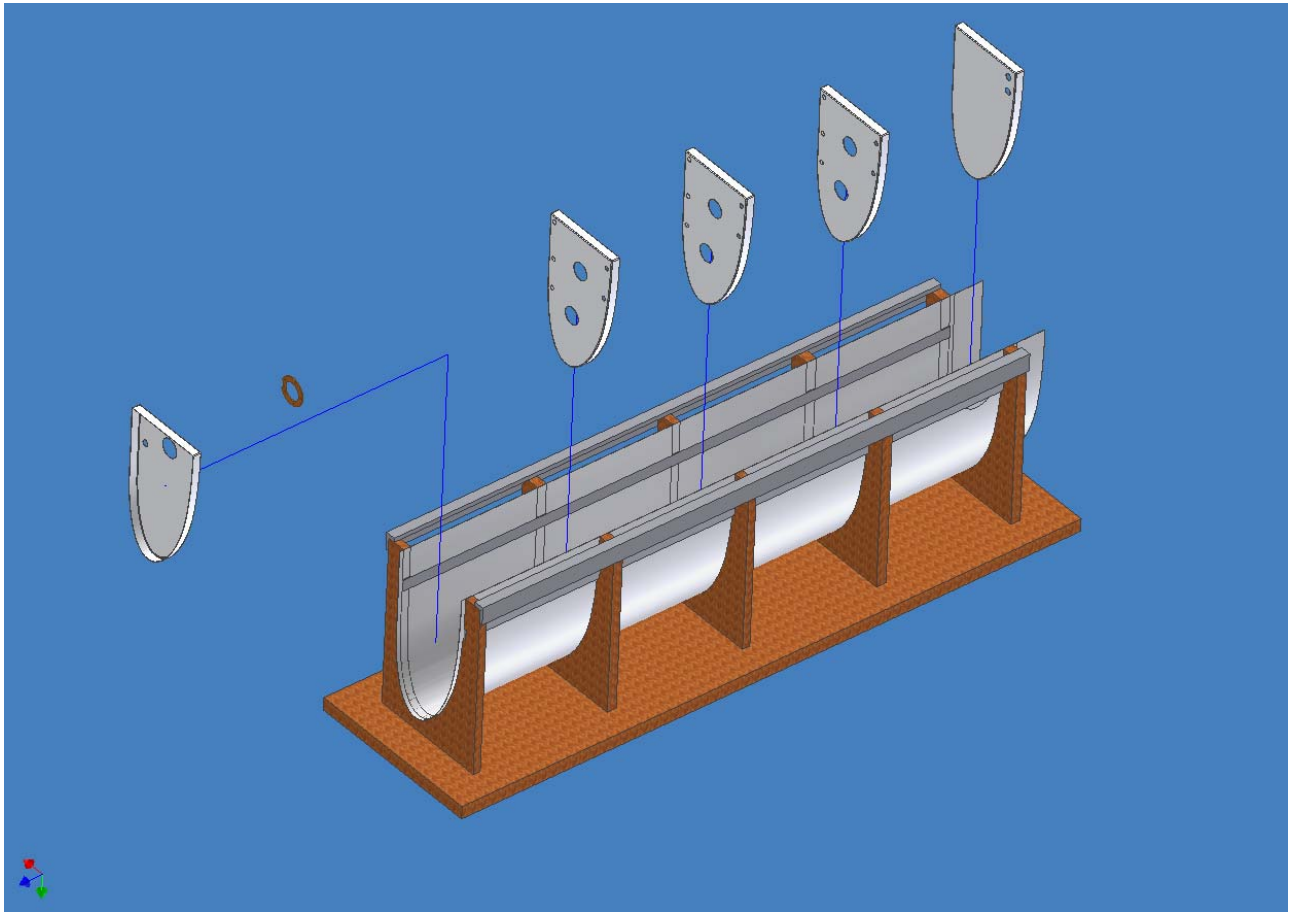


Figure 4.23: Welded tank details.

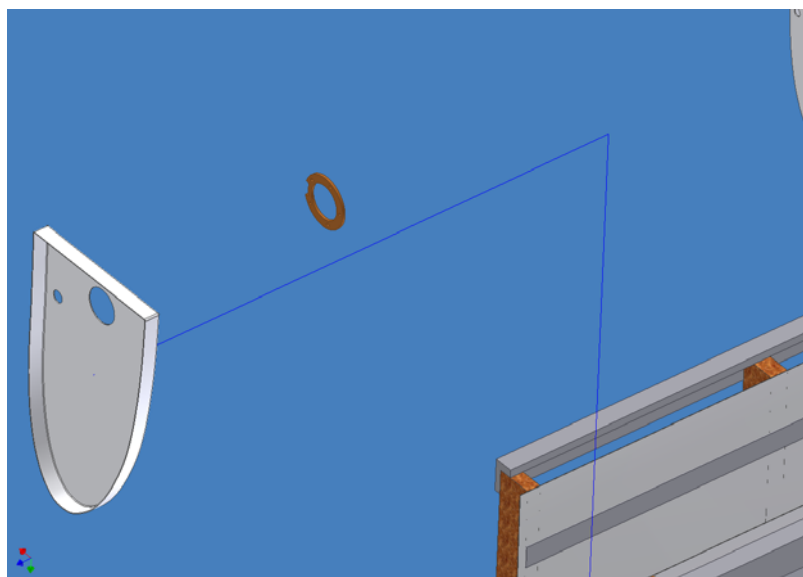


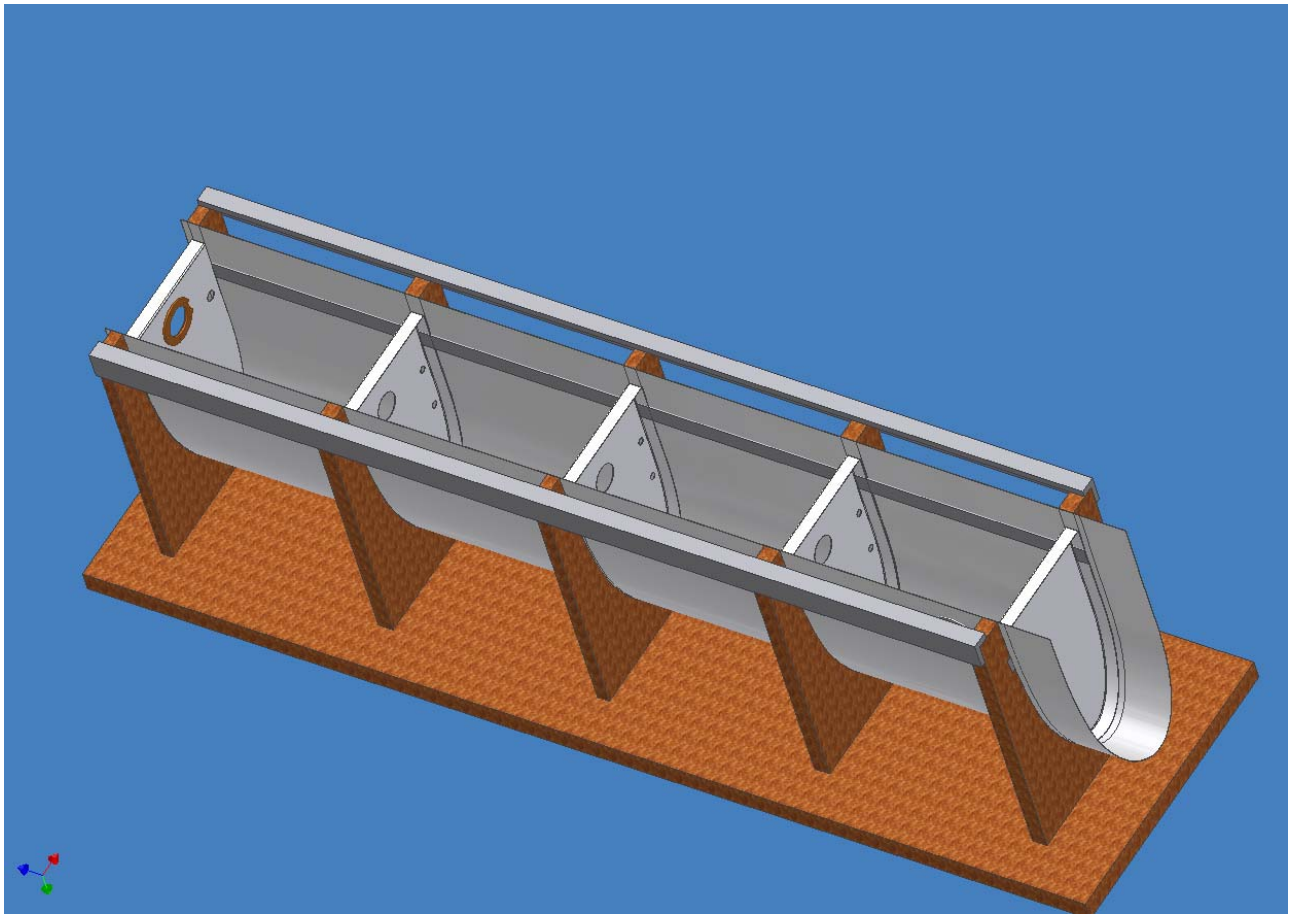
1. Make a Wood Jig: Dimensions are shown in DWG N° 2



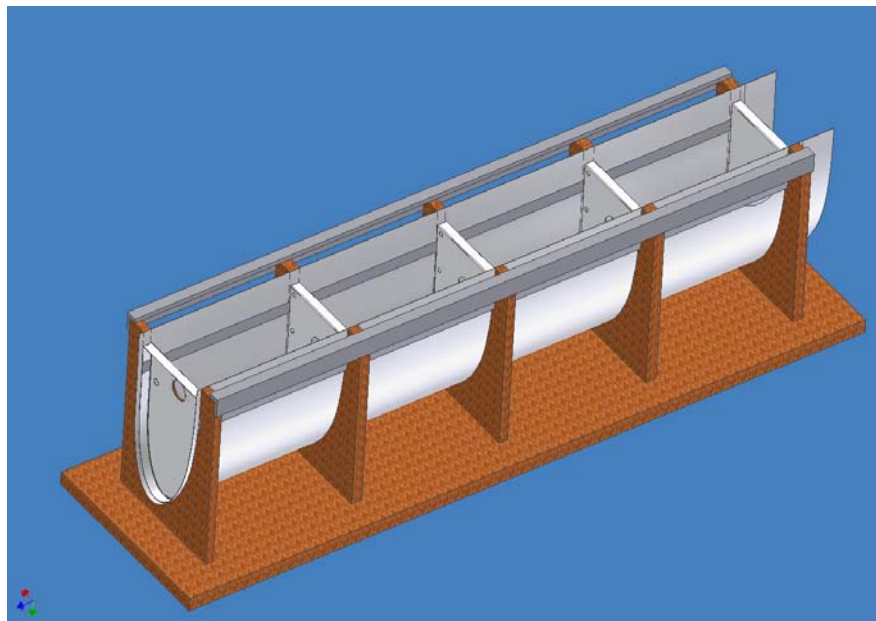


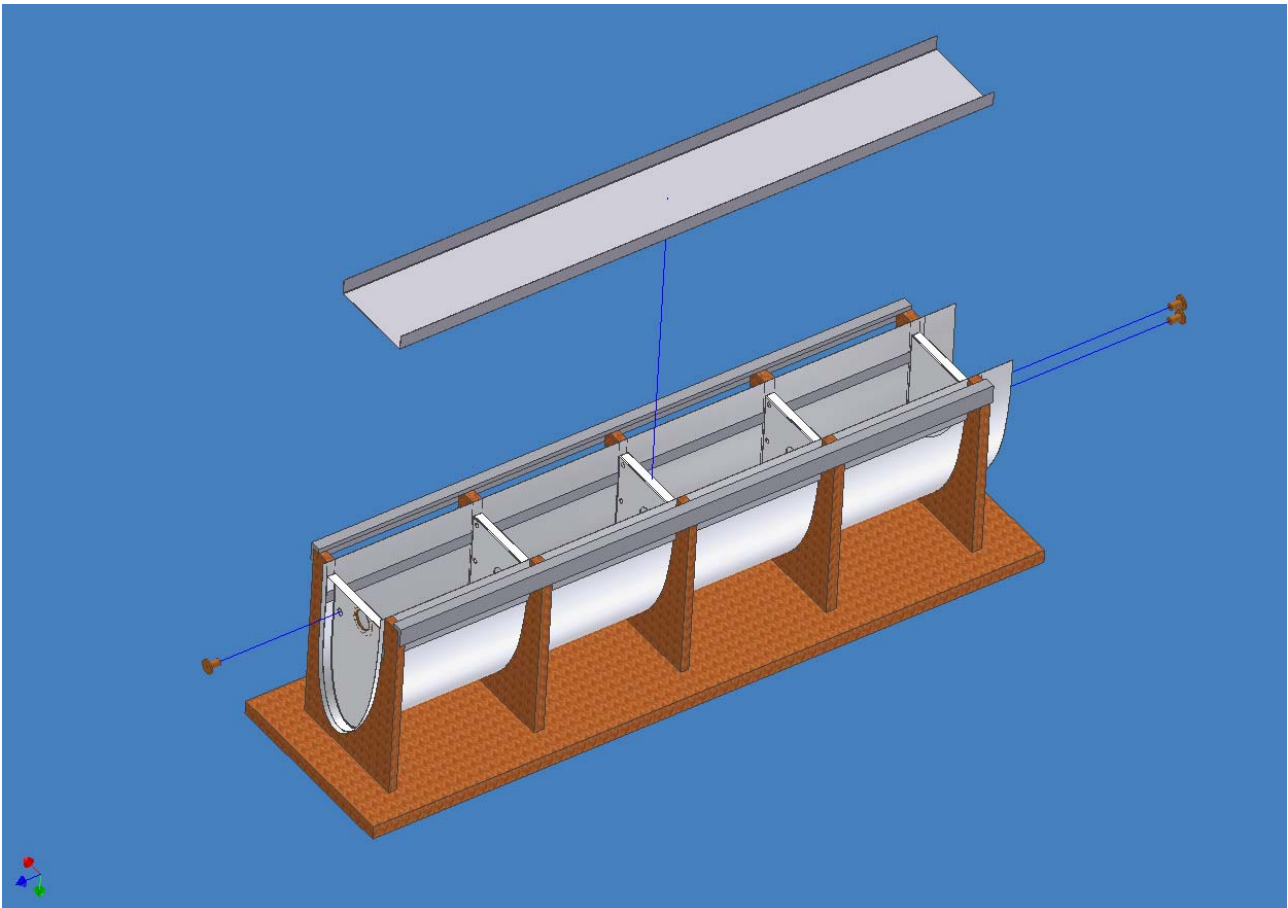
2. Make Holes on each Rib as shown in DWG
3. mark the positions of the Ribs in the Leading Edge skin
4. Sand and degrease Ribs and Bonding zone of Leading Edge skin



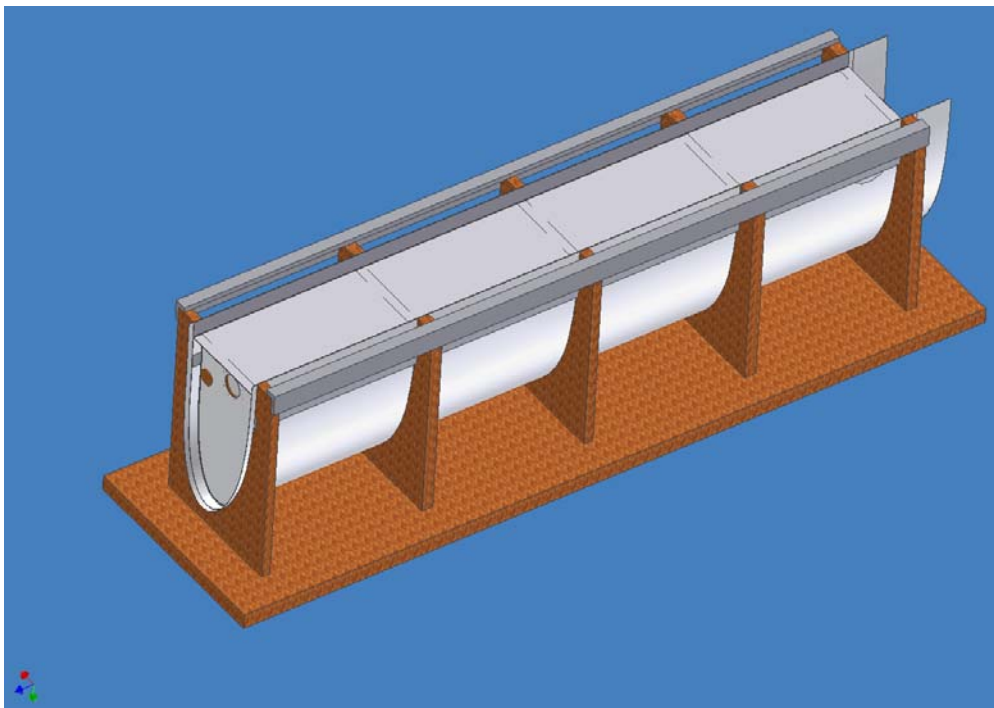


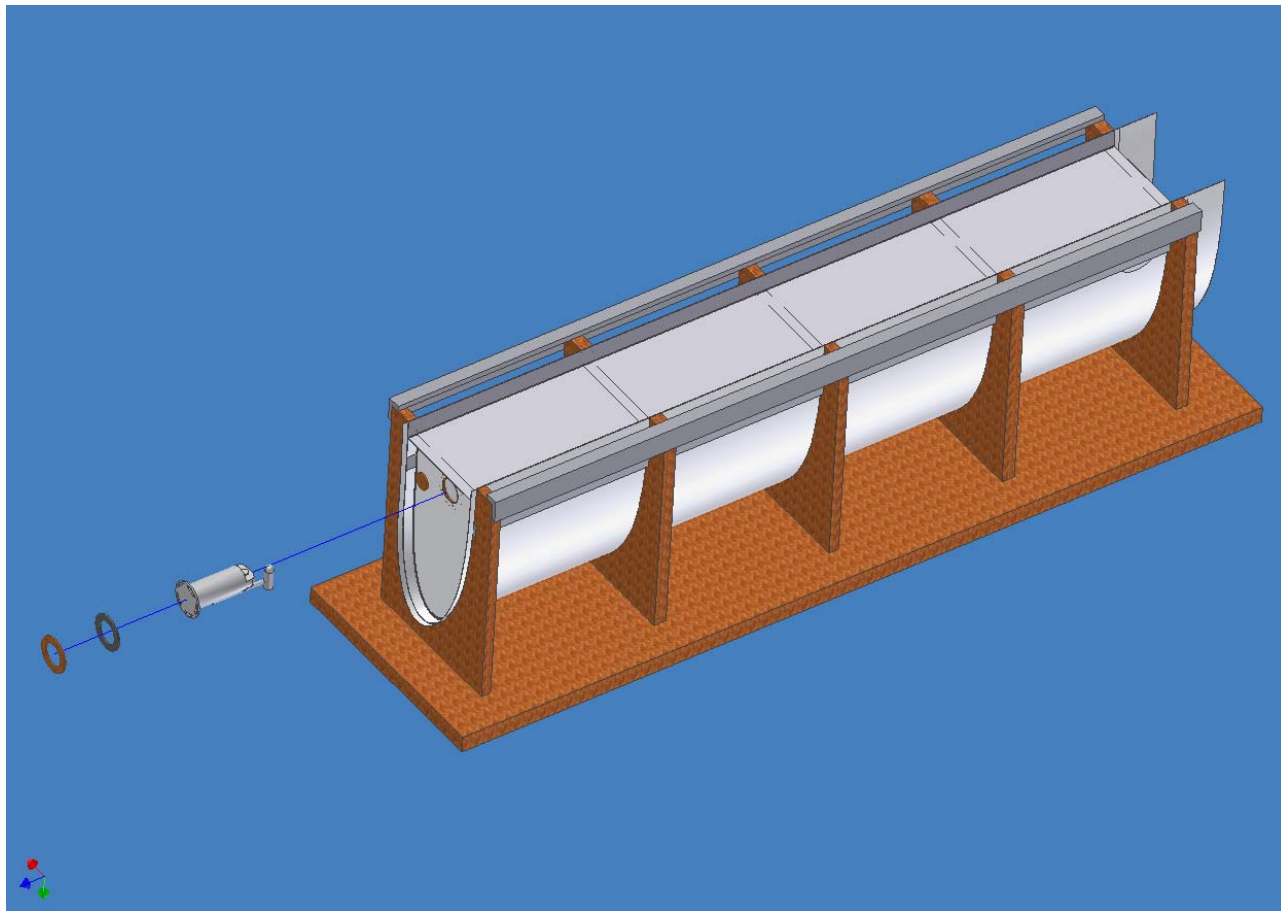
5. Install and Bond with ADEKIT 140, fuel level gauge / Fuel lines and Fuel Cap.
6. Bond Ribs to Leading Edge Skin with ADEKIT 140 : verify the exact position of Ribs





7. Drill together 1/8 (3,2 mm) – Spacing 40 mm - Tank Beam and Leading Edge Skin – Deburr. Fix with Clecos.
8. Wait 2 hours, when the glue isn't completely hard, Rivet together Tank Beam and Leading Edge Skin.





9. Drill 1/8 (3,2 mm) – Spacing 70 mm external Ribs and Leading edge skin – Fix with Celcos.
10. Drill 1/8 (3,2 mm) – Spacing 40 mm, Tank Beam and the two external Ribs.
11. Seal outside Rivets and the two external Tank Ribs with ADEKIT 140.
12. After 72 hours at 25° C. Check your tank with Gasoline.

Sealing riveted aluminium fuel tanks

In the following review you will find these topics:

- Sealant, gloves, cleaning and degreasing materials, mixing and application tools
- Fuel tanks sealant
- How to prepare a tank surface
- Sealant application
- How to guard against pin leaks
- How to check tanks for leaks
- Supply sources for fuel tank sealants

Sealing Riveted Aluminum Fuel Tanks

Riveted fuel tanks? Why would anyone want to build a riveted fuel tank. Aren't welded aluminum tanks better?

In my estimation . . . yes, but sometimes we are given no choice in the matter.

A prudent builder will always try to build according to the plans, and if the designer recommends riveted fuel tanks, the builder can correctly assume that there is a good reason for it.

Here is one good reason. Any aircraft featuring a "wet" metal wing, or an integral fuel supply, will most likely utilize a portion of its riveted structure for this purpose. In order for the riveted wing structure to contain fuel without leaking, it must be properly sealed. Sealing an integral wing tank area by welding is out of the question. Welding the thin aluminum skin would undoubtedly result in buckled surface areas and possibly a warped wing section as well. To cosmetically correct such buckled and warped welded surfaces could entail a lot of "body work" and filling — so much so that you might find yourself entertaining thoughts of cornering the "BONDO" market.

You may recall that the airfoil contour of a wing is most critical, aerodynamically, in the forward first third of its chord . . . particularly along the upper wing surface. The essential aerodynamically correct shape can be accurately maintained in this area with a riveted installation, but not with a welded integral aluminum tank.

Of course, welded aluminum tanks can be — and are — used in wings, but they have to be made removable or be overlaid with a separate external skin to achieve a smooth airfoil. This requirement naturally complicates the structure and adds weight. So, if your design calls for integral wing tanks, stick with the plans and make the riveted and sealed structure as recommended.

Properly sealed riveted fuel tanks are really not as difficult to construct as most builders anticipate . . . besides, they will provide you with the lightest fuel supply installation possible — and that's good.

GETTING READY

The Sealant — The most essential item is, of course the sealant. It should be the one recommended by the

designer, or at least be one of the approved types commonly used by the aviation industry. This is no place for impulsive experimentation.

Be advised that there is a very definite shelf life for these sealant compounds. In general, they should be used within the time limit specified on the dated container — generally, 6 to 9 months, depending on that particular product. So, unless you are positive that you will be ready to use the sealant soon after you get it, defer ordering it until you really need it.

Gloves — You will need surgical type rubber gloves. Polyethylene gloves may be obtained at some drug stores. Some types of "rubber gloves" dissolve when exposed to solvents (like MEK) for any period of time and may be more trouble than they are worth. Perhaps your doctor or dentist can help you obtain some if you live in a small community. The gloves are essential and will help keep your hands reasonably clean. They will also prevent the inadvertent contamination of the cleaned metal components from "greasy fingerprints" (until, that is, they ultimately develop holes in their finger tips). Tank sealants do not stick reliably to oil contaminated surfaces. You may, therefore, have to put on a new pair of gloves each time you prepare a fresh batch of sealant. Anyhow, the gloves soon become so sticky that they pick up or mess up everything touched. I ruined at least six pairs while sealing two fuel tanks. Gloves, notwithstanding, your hands will become "permanently" coated with that sticky, messy black sealant. It adheres to everything that touches it . . . and your hands are no exception. All attempts to wash the stuff off with solvents and exotic soaps will fail. Only time will gradually return your pinkies to their normal appearance.

Take heart! There is a preventative option you can take to insure clean hands after the job is completed. The product is called, "Invisible Gloves #1211. It is hypo-allergenic pomade.

Put a dab on your hands and rub it in thoroughly. It will dry completely in a minute or so. As you work and your hands get contaminated, wipe them with a clean cotton rag. After the job is over, wipe off the excess crud; wash your hands with your regular soap and warm water and lo and behold . . . clean hands. Believe me.

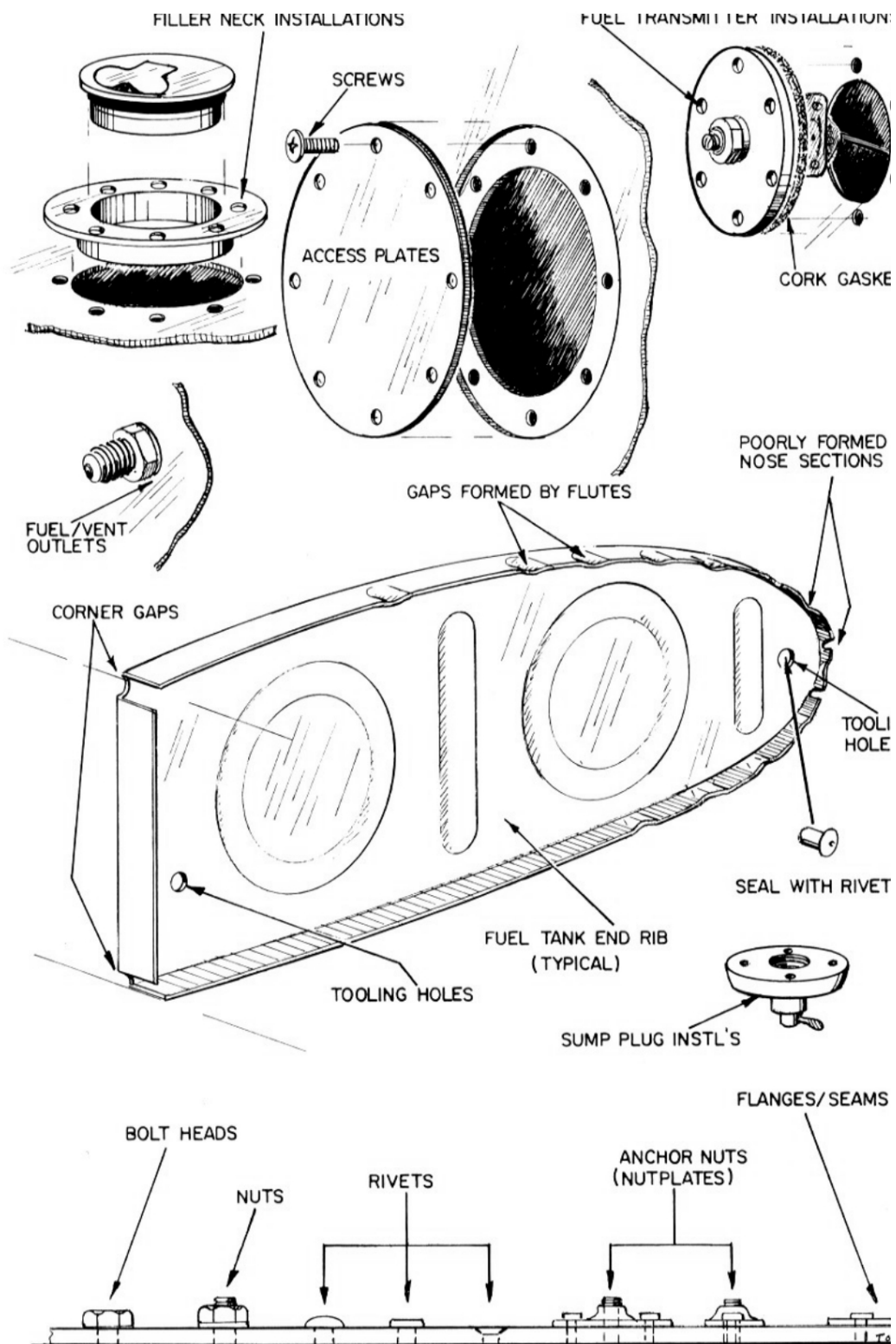
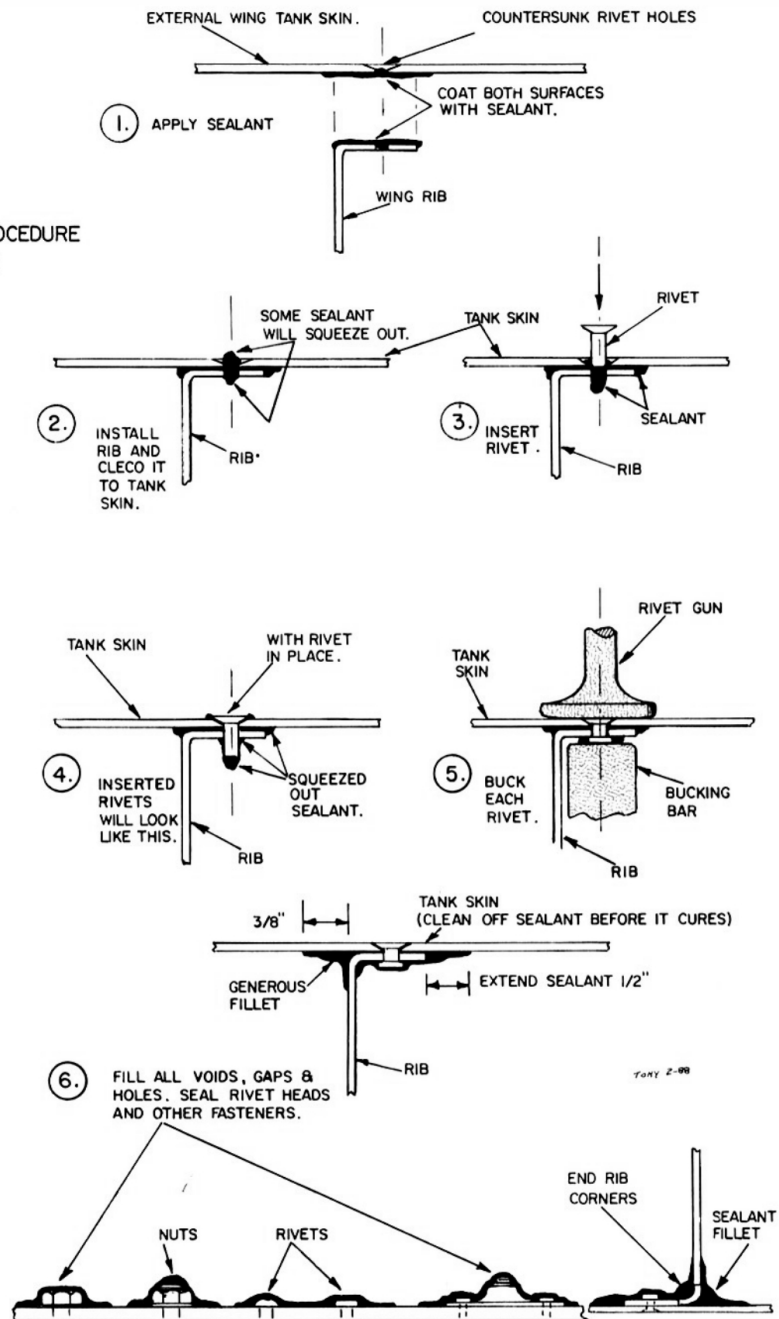


FIGURE I.
SG AVIATION

POTENTIAL LEAK SOURCES

(IN RIVETED ALUMINUM FUEL TANKS)

FIGURE 2.
FUEL TANK SEALING PROCEDURE
(RIVETED TANKS)



The address: Sun Magic International, P.O. Box 634681, Margate, Florida 33063-7629.

Cleaning and Degreasing Materials — Add to your need list a couple of “SCOTCH BRITE” pads, and a plentiful supply of solvents. (Methyl Ethyl Ketone MEK, Toluene, Acetone, Lacquer Thinner, etc.). Use one of the solvents recommended for the type sealant you will be using. When no particular solvent is recommended, I use MEK. Also handy is a good supply of cheese cloth or clean rags. Ban all paper towels from your work area while working with tank sealants. The paper towels will shred and stick to your gloves, tools, work, everything and, in general, will make one of those legendary “tar and feather” orgies look like a white gloves affair by comparison.

Mixing and Application Tools — Most fuel tank sealants are rather thick and require the use of a stout spatula for mixing and spreading the sealant. You might get by using popsicle sticks or tongue depressors, but I find that a couple of hand made aluminum spatulas are better. They won't break and are easier to clean and reuse. Make the metal strips about 1/2" wide and approximately 6" long. Use 2024 T3 aluminum and very slightly round all edges. A couple of aluminum strips with rounded ends will be useful later for forming fillets with the sealant.

Don't use the same spatula to dish out the accelerator and the base compound . . . at least not before cleaning it. If you aren't careful you will contaminate your supply and set off the activation process in both containers.

Other Needs — A rivet gun and bucking bar, naturally. But, also, plenty of Clecos. I would suggest you keep a coffee can, half full of solvent, handy into which you can plunk the contaminated Clecos as you remove them during the riveting process. You can do this without slowing down your work. Later, at a more convenient time, you can finish cleaning the Clecos.

Note: If you forget to clean your Clecos before the sealant cures, or epoxy, or anything else hardens on them, scorch the tips of the Clecos with a bunsen torch. Do not heat the metal too much or it will lose its temper (chuckle). Work the Cleco with Cleco pliers and brush off the residue with a wire brush or a card file. When cleaning solvents fail, try the scorch method . . . it always works.

And last but not the least important is a scale capable of weighing small amounts. I use a small Japanese household scale that is calibrated in grams.

Measure the sealant by weight not by volume because it is so sticky and the accelerator portion is so small that measuring its volume would require very careful formulation.

ABOUT FUEL TANK SEALANTS

Fuel tank sealants have been around a long time and are used extensively in military and commercial

aircraft for sealing fuel cells, pressurized compartments, doors and for a variety of purposes. However, it was not until the highly exploited tiny BD-5 came along that many homebuilders first learned about a remarkable sealant called “PRO-SEAL,” and about riveted integral fuel tanks in general.

The fuel tank sealants most used are typically two-part, polysulfide, liquid polymer compounds which cure at room temperatures to a resilient rubber-like substance having excellent adhesion qualities. These sealants adhere tenaciously to aluminum, magnesium, titanium, steel and a variety of other materials. They also remain outstandingly resistant to aviation gasoline, jet fuel, petroleum based oils, and hydraulic fluids — and still remain effective during temperature extremes of minus 65 degrees F. to plus 275 degrees F. (that's probably well within the range of temperatures maintained in your workshop).

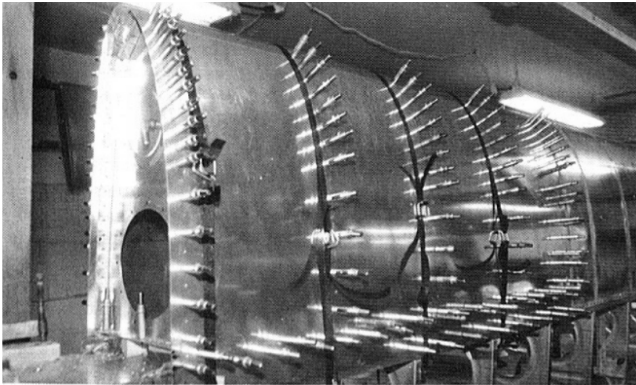
Pre-measured tank sealants may be obtained in two-part cartridges for use with an extrusion gun or for hand extrusion. These simplify the mixing and application of the sealant. However, the cartridge kits are more expensive and can be wasteful for smaller jobs as the sealant, once mixed, must be used within the specified minimum application life . . . this could be as little as 1/2 hour, depending upon the sealant used.

Sealants are formulated for brush application or for filleting. For example, PRC-1422 Class B (manufactured by Products Research and Chemical Corp.) is a non-brushable filleting compound type of sealant with the consistency of thick paste. PRC-1422 Class A is a thin brushable sealant. The number following the PRC number is the working life of the sealant. That is, PRC-1422 B1/2 has a minimum application life of 1/2 hour while PRC-1422 B4 would have a working life of about 4 hours. I think that either the PRC-1422 A2 or B2 is just about right for us with their 2 hour minimum application life. If you intend to use only one type of sealant, you might prefer to use the brushable type as it is easier to apply to the facing surfaces of the ribs and skins, and still get a fairly respectable fillet build-up where needed. It will not do as good a job where gaps and voids must be sealed over. Still, although thinner than the PRC-1422 B, the PRC-1422 A sealant, once applied to rivet heads or fasteners, will not drip or flow from vertical surfaces either.

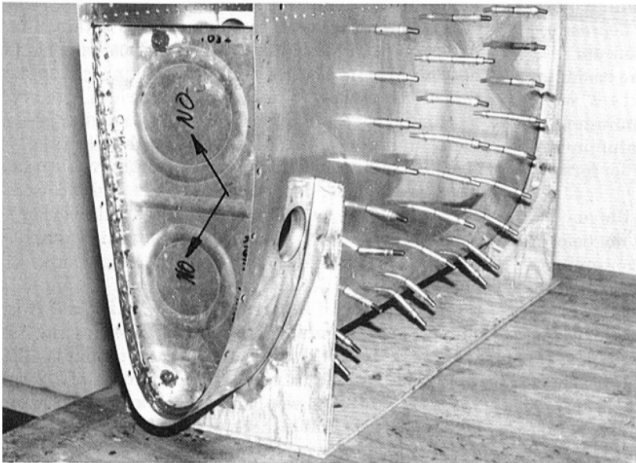
PREPARING THE TANK SURFACES

The areas of the ribs and skins that will be in contact with each other (faying surfaces) can be lightly scuffed with SCOTCH BRITE pads and cleaned thoroughly with an oil-free solvent to dissolve any surface oil or wax. (Do not use those “bargain priced” reclaimed solvents for this purpose.)

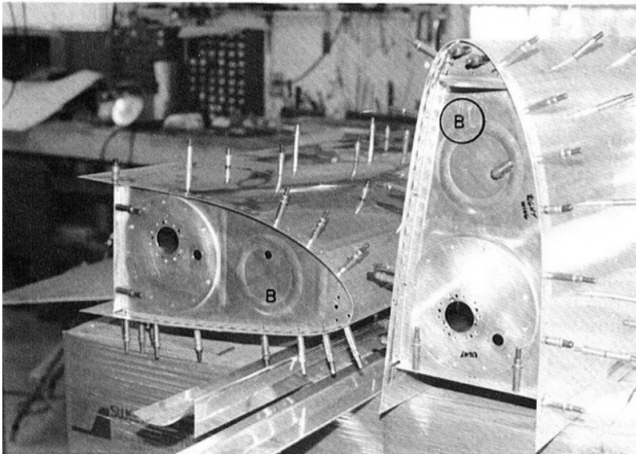
The recommended cleaning procedure is to wash one small area at a time, drying it with a clean cloth before the solvent evaporates. This procedure will pre-



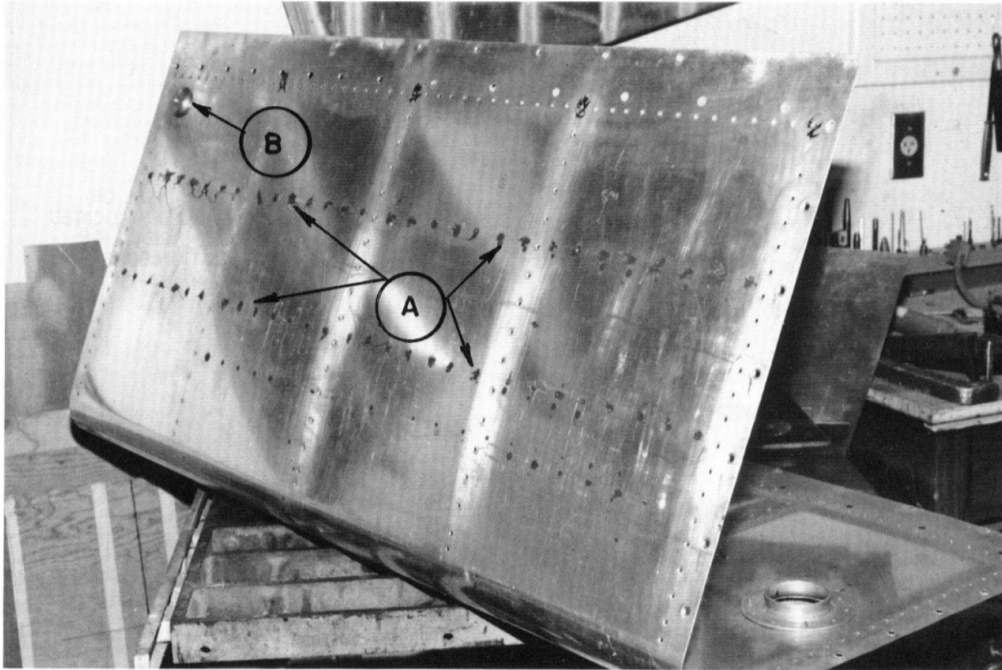
In the foreground you can see one of the two RV-4's wing tanks being assembled as an integral portion of the basic wing structure. The unique feature of the design is that the wing tanks can be removed for final sealing and riveting.



The tank has been removed from the wing jig for final assembly. The end ribs have already been sealed and riveted using a rivet squeezer. Note the "No No" markings on the embossed rings... didn't want to goof by cutting them out as lightening holes. That simple stand is an excellent aid for single handed riveting.



This is an inboard view of both tanks showing the access plates for the fuel pick-up and the fuel sender units. Visible, too, are the vent outlets (B).



The internal stiffeners (A) and the sump drain plug (B) on the bottom skins have already been sealed and riveted. Note that the sealant was squeezed out at each rivet location. The excess sealant must be removed from the skin before it cures and hardens.

vent the resettling of the loosened surface wax or oil. Another precaution . . . resist wetting your cleaning cloth by holding it to the solvent can opening and tilting the can to wet it. Do that a few times and you will have contaminated the entire contents with that "dirty" cleaning rag.

I know it is hard to remember, and awkward to do, but always pour the solvent onto the cleaning rag. And, along the same vein, do not use commercial cleaning rags or any cloths that might have wax, oil or soap residue in them.

After the metal surfaces have been cleaned, take care that you do not handle them with your bare hands.

SEALANT APPLICATION

Apply the sealant with a stiff short bristled brush or with one of the aluminum spatulas described earlier. A thin, even coating, approximately 1/32" thick, should be applied to each of the faying surfaces. This double coating will almost guarantee that the fuel will not "wick" along any of the seams and exit at some distance from the place (rivet, fastener or gap) where the leak originated. Do not apply thick coatings. In applications like wing tanks, a thick sealant layer makes riveting more difficult and may even alter the profile fit of the

wing tank to the wing, causing a slight mismatch.

Join the two parts and install Clecos in every other rivet hole following the basic sequence detailed in Figure 2.

Later, after all the rivets have been bucked, go back and coat each rivet and fastener with the sealant so that none of the rivet metal shows. Using a small stiff brush, coat all the rivets, nuts and bolts with sealant by working the brush in a circular action to deposit an even coating of sealant over each fastener.

After this has been done use your spatula or extrusion gun with a 1/8" or slightly larger nozzle opening to form generous fillets along the edges of all seams and in all corners. Pack the sealant firmly in place being careful to work out air pockets.

Next, and this is very important, use a small inspection mirror to examine behind each rivet and fastener to see that it is completely coated with sealant. Any leak which may develop can only originate at a poorly sealed rivet, fastener or gap. See Figure 1 for examples of potential leak sources. The aluminum tank skin itself cannot leak — so why coat the entire inside of the tank? It only adds weight. Put the sealant where it is needed only, otherwise you will use much more sealant than expected. You should be able to seal two 15 gallon

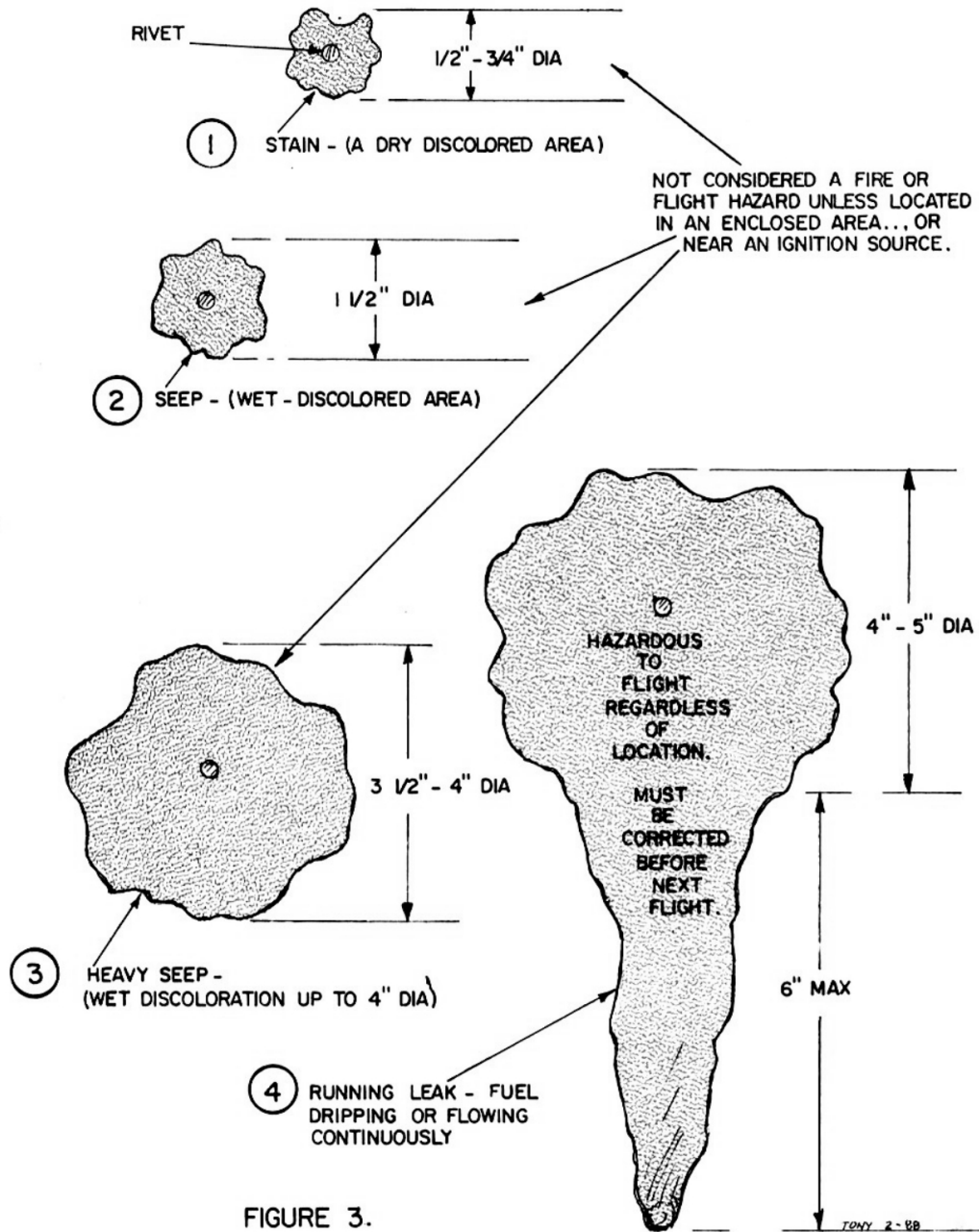


FIGURE 3.
HOW BAD A LEAK?
(LEAK CLASSIFICATION GUIDE)



Here is the extent of the laboratory equipment used. A small Japanese household scale calibrated in grams, a small plastic container and two spatulas. One for dishing out the sealing compound and the other for the accelerator. Only small 100 gram batches were mixed at one time.

wing tanks with one quart of sealant.

NOTE: You must remember to protect your vent line opening to keep it from becoming blocked with sealant. Also, take special care that the finger screen (fuel pick up), the fuel sender float and mechanism, and the quick drain outlet don't become "glued up" with sealant, and inoperative. It is just as important to remember to remove the protective covers from the vents, finger screens, and drains after the sealing and riveting is completed — but before the tank is closed.

Just one more time. Go back and examine the sealant areas to see that you have obtained a completely bubble-free continuous coating of sealant. Sometimes an occasional bubble will surface an hour or so after you have completed your work. Repair such spots by adding a little dab of sealant.

GUARDING AGAINST PIN LEAKS

Sometimes, no matter how thoroughly you think your sealing job has been, a pesky pin hole leak will show up when you test the tanks. Many builders, to guard against this possibility, will apply a protective coating over the sealant.

The manufacturer of the popular PRC 1422 sealant (Products Research and Chemical Corp.) recommends the application of a brush coating of PR-1005L if a top-coating is desired.

Many builders prefer to flush their tanks with a sloshing compound to help insure that all pin holes are sealed. Just as effective a way would be to simply brush the sloshing compound over all the fasteners and joints before sealing the tank. If you prefer the fill and slosh method be careful that you don't plug up your vent line, fuel pick up, fuel sender and sump drain with the stuff. At least three brush coats (or poured sloshings) is recommended. Allow sufficient time between treatments for the sloshing compound to dry.

If you intend to use automotive fuel with the risk that sometimes, you might unknowingly get fuel with aromatic additives, you might be interested in sloshing your tanks with the relatively new sloshing compounds put out by Randolph Products especially for this purpose. I have not seen any test results nor have I had any input from builders regarding its effectiveness so all I can report is that the new sloshing compound is white in color.

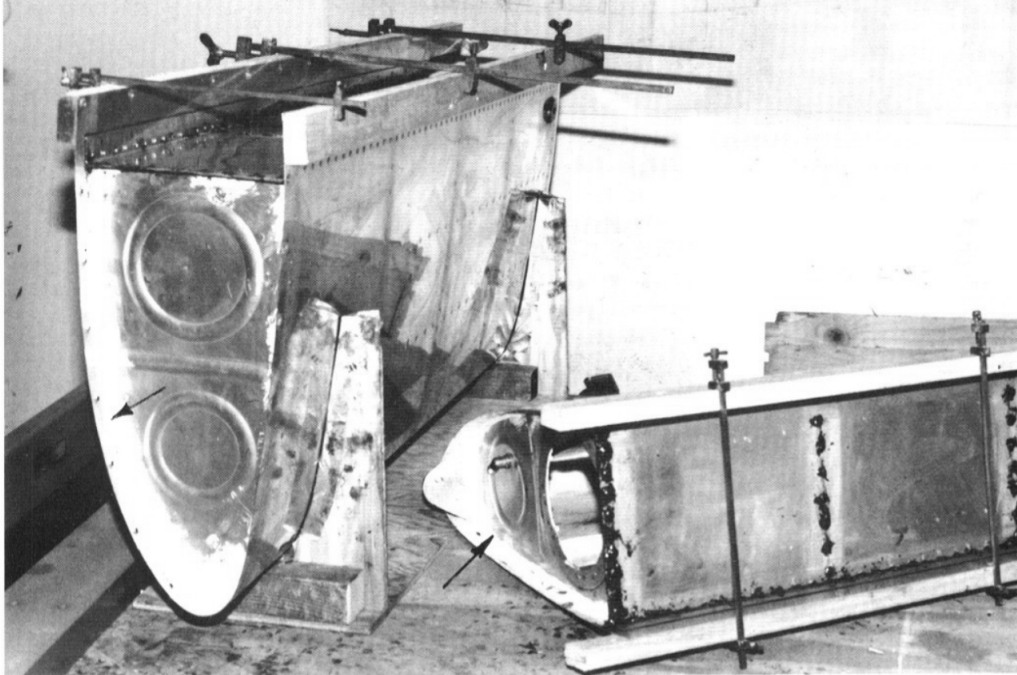
Now, if you are positive that your tank is completely sealed internally, you can, with confidence, install the access plates and covers — after coating them and the fasteners with sealant . . . otherwise simply install them temporarily without sealant until after the leak test.

CHECKING THE TANKS FOR LEAKS

A safe way to check for leaks is with air pressure and soapy water.

Some builders check their tanks by putting fuel or water in them. I don't feel comfortable with either method. The preferred method, I believe, is to check for leaks with air pressure and soapy water. The method is simple to use and is quite effective. There is still another method . . . one I like best, now. It is the one where an ordinary balloon is fitted to any tank inlet or outlet, then, the tank is pressurized until the balloon expands to about 10". The air pressure is shut off and, if the next day the balloon is still inflated — you have a tank that doesn't leak. To pressurize the tank use an air hose, and a bicycle valve stem connected to one of the tank outlets.

First, install the non-vented filler cap or tape over the opening to seal it. Near the bottom of the tank you will have a fuel outlet fitting, a vent line connection and a drain plug. You can use any two of these openings for checking the tank.



You can see how messy the sealant process can become from the appearance of the bench and the stand. Those white areas along the tank rib edges are the new automotive fuel resistant Sloshing Compound put out by Randolph. The small bar clamps are used to insure a tight even seam along the aft fuel tank bulkhead while the sealant is curing.

Next, connect a low pressure gage to one of the openings. It should be capable of indicating as little as 2 or 3 psi.

Then press the end of an air nozzle to the vent line outlet and fill the tank with air until the pressure on the gage reads 2 psi . . . certainly no more than 2-1/2 psi or the tank could puff up ominously and perhaps become permanently distorted. When the 2 psi pressure is reached, take the air nozzle away from the opening and slip a previously prepared wood plug into the fitting or otherwise cap it. (Naturally, if you did not use the sump drain outlet for checking the tank, it should be sealed by installing a quick drain valve or taping it over.)

To check the tank for leaks, brush soapy water over all the rows of rivets, along the tank ends, around the filler neck, drain sump and around the fuel transmitter

access plate.

Oh yes, a leak, if there is one, will most probably show up as perky little bubbles at some rivet location. Pin hole leaks are sealed from the inside with additional sealant applied at their source. Be sure to let out the air, wipe the tank dry and clean the area with MEK before applying more sealant. That should do it. Now you can reinstall the access plates permanently.

SUPPLY SOURCES FOR FUEL TANK SEALANTS

Source for all types of sealants/cartridges: Products Research and Chemical Corp., Marketing Services Dept., 5430 San Fernando Rd., PO Box 1800, Glendale, CA 91209, phone 818/240-2060.

Source for two part sealant cartridges: Sealpak Co., Inc., 2614 S. Hoover, Wichita, KS 67215, phone 316/942-6211.

Chapter 5

Canopy

Closing of the windows external covering



Figure 5.1: Canopy external covering.

Take the arc STA001-008, place it as shown in the drawing, leaned 10° backwards; mark and trim the exceeding part, tighten the arc to the two squares STA001-012/013; drill to $\varnothing 3,2$ mm.

Strip, place the ledge strip STA001-010 lined on the back and drill to $\varnothing 3,2$ mm with a 40 cm hole spacing. Start drilling to 20 mm from the center of the arc. Deburr, clean and rivet with AVEX1661-0410; mark and make a 6 mm hole in the center of the arc to let the closing through.

Reassemble everything and rivet to the squares.



Figure 5.2: Canopy external covering.

Locate the four angles AX002-053 as shown in the drawing, at an equal distance from the center; place the typical stringers, drill, deburr and rivet with AVEX1661-0410. Make sure that the external profile of the arc and the 2nd section skin are level.

Now place the skin AX002-005 taking care to center it with the center of the aircraft and with the window openings; measure the distance between the inside of the arc and the 2nd section rib.

Mark the drilling so as to be in section to the arc and to the rib; drill starting from the center coming down towards the sides, alternating one drill on the arc and one on the rear rib. Tack with clecos, mark the drilling on the sides the same way as the previous skins.

Mark the part to be trimmed, strip, trim, deburr, clean and paint the inside.

Prepare the necessary quantity of araldite to be smeared on the outside of the arc (in order to improve the contact and the skin finishing) and on the rear outside of the rib.

Tack 100% of the holes with Ø 3,2 mm clecos and clean the excess of araldite with a water soaked rag.

After 24 hours, when the araldite is polymerized, take the clecos off and rivet with AVEX1661-0410.

Cut the window openings and finish the edges accurately.

Mark the handle slot as shown in the drawing, position the outside coaming DET2-056 and the inside coaming DET2-057 and the DET2 closing, drill the coamings to Ø 3,2 mm and the six handle holes to 4 mm dia., deburr

and rivet with AVEX1661-0410 and -0512.

Preparing canopy and windshields STXA991



Figure 5.3: A canopy assembling phase.



Figure 5.4: A canopy assembling phase.

Take the two canopy posts STXA991-041 and -042 and assemble the front wedge STXA991-035 riveting them with three AN426AD5-16 rivets each, countersinking on both sides.

Position them on the rotation hole and along the fuselage inserting a 3 mm shim between the two.

Fit the arc STXA991-061 in touch with the one already installed on the fuselage, trim the two heads lined with the posts.

Drill the two stiffenings STXA991-011 to $\varnothing$ 3,2 mm, deburr and rivet with AVEX1661-0410; lay the front pipe STXA991-021 on the seat of the instrument panel resin at a 3 mm distance from the fore part and touching the low part. If necessary, you should calibrate the pipe; the more it sticks to the resin, the better the result is.

Line up with the posts, lock and fit the two squares STXA991-038 drilling with four AVEX1661-0410 each; repeat the same operation for the squares STXA991-039.

Position the two front stiffenings STXA991-051, drill to $\varnothing$ 3,2 mm between pipe and post, deburr, clean and rivet with AVEX1661-0410.

Mark the arc center where the closing pin goes in; strip and drill to $\varnothing$ 6 mm, place the handle STXA991-031 and rivet from the inside of the arc.

Put the structure on trestles and lay the nylon STXA991-099 on it, lock with some clamps once you obtain the best shaping.

With a felt-tip pen, mark where you must trim the outside of the structure; with a lapper and a special disk for plastic or marble start contouring by following the marking. **Protect your eyes, nose and mouth with glasses and a faceplate.**

Reassemble the structure on the cell and lay the nylon on it. Make sure that the front pipe and the back arc are in the right position, make some tacking holes.

CAUTION:
THE DRILL MUST HAVE A VERY STRAIGHT ANGLE
135-140° AND AN ALMOST NULL RAKE.
THE DRILLING MACHINE MUST BE OPERATED
BEFORE TOUCHING THE NYLON WITH A HIGH
ROTATION NUMBER AND WITH A LOW FEEDING.

Place the two side strips STXA991-014, mark the drilling with a 80 mm hole spacing and centered with the underlying structure; drill and tack to $\varnothing$ 3,2 mm.

Lay the rear strip STXA991-013 on the nylon and drill starting from the upper center and coming down along the sides.

Place the fore strip STXA991-051 after having put the front garnish strip, making it follow the front cowling profile inside its seat.

Mark the center of the pipe and drill as you did for the rear arc with a

50 mm hole spacing. Mark, trim, smooth and adjust the strips the best way you can.

Now strip everything; you can make everything ready for the final painting.

Widen the 3,2 mm holes of the nylon to Ø 8,4 mm so that the rivet expansion does not work on the nylon sheets.

Take the two side windows, warm them with a hairdryer and try to cut them fit for their seat; protect them with rags and prepare the wooden saddle to keep their shape; the temperature must be 80-100° and indirect. It is a long operation but, if you do it with care and patience, you will obtain excellent results.

They must be kept in shape for at least one day with the painted coamings AX002-005-1.

Place the nylon centered on the sheet and reproduce on it the two central holes that are already on the coaming. **Remember all the given suggestions.**

Now with the help of your friend who will hold the nylon and push it outwards, start drilling one hole after the other on nylon and coaming, tacking with clecos and making sure that no buckling are produced on the sheet.

Now strip everything, widen the holes on the nylon the same way you did for the canopy.

After having painted the cell into the final colour, you can rivet the two side windows and the canopy. Smear a transparent silicone layer on the inside of the sheet, around the window openings and in the coaming part in touch with the nylon; remove the protective film from the surface to be riveted.

Tack all the holes with 3,2 mm clecos so as to obtain a complete sticking, remove one cleco after the other and rivet with AVEX1661-0410 starting from the center and following the same sequence of the drilling. Clean the exceeding silicone with alcohol.

Follow the same procedure for the canopy.

Smear a uniform silicone layer on the structure; position the nylon and tack some holes to keep it steady.

Put a uniform and continuous layer on the inside of the strips; starting from the central side, lay the strips in the same way as the drilling, tack the holes 100% and rivet with AVEX1661-0410.

Fill the inner parts of the fore part of the structure with silicone, so as to obtain a good sealing.

Try the openings and the closings more than once so as to adjust and remove profiles and interferences.

Chapter 6

Tail

Locating tail cone and trim system



Figure 6.1: Trim tab system.

We will start now to assemble the leverage ST400-018.

Take the bearing support ST200CA1-007 and the two plates ST400-018-002, fit them as shown in the drawing and drill the four holes to $\varnothing 3,2$ mm. Use two 6 mm bolts to keep the leverage holes aligned and, if possible, drill

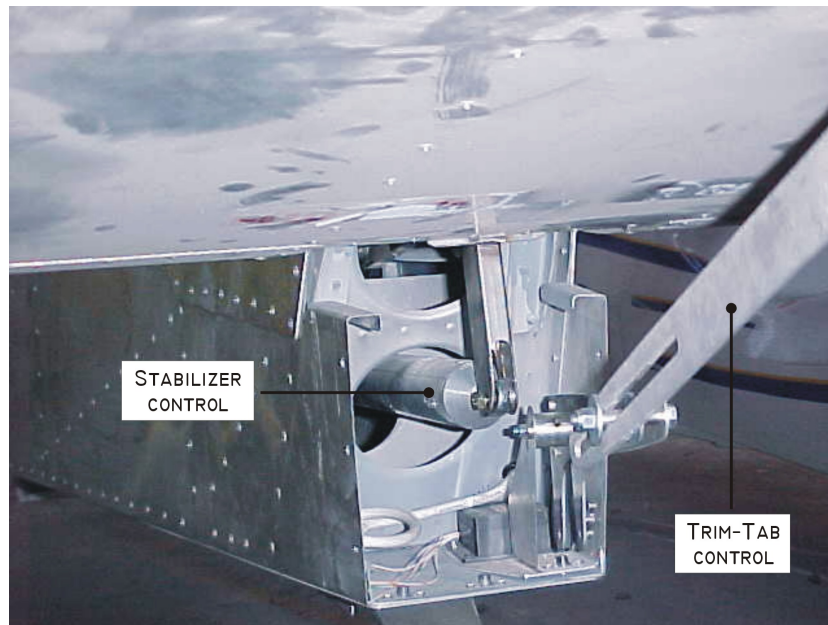


Figure 6.2: Detail of stabilizer and trim-tab control.

with a pillar drill in order to be perpendicular to the surface.

Deburr and put the four AN470AD4-12 rivets, clinch with a hammer and a flat punch, with the snap in the clamp.

Take the stiffening ST400-018-003 and the “U” ST400-018-002, position them as shown in the drawing and rivet them together with three countersunk rivets AN426AD3-5; fit the 5×70 bolt, the washers and the 5 mm nut and check the correct assembly.

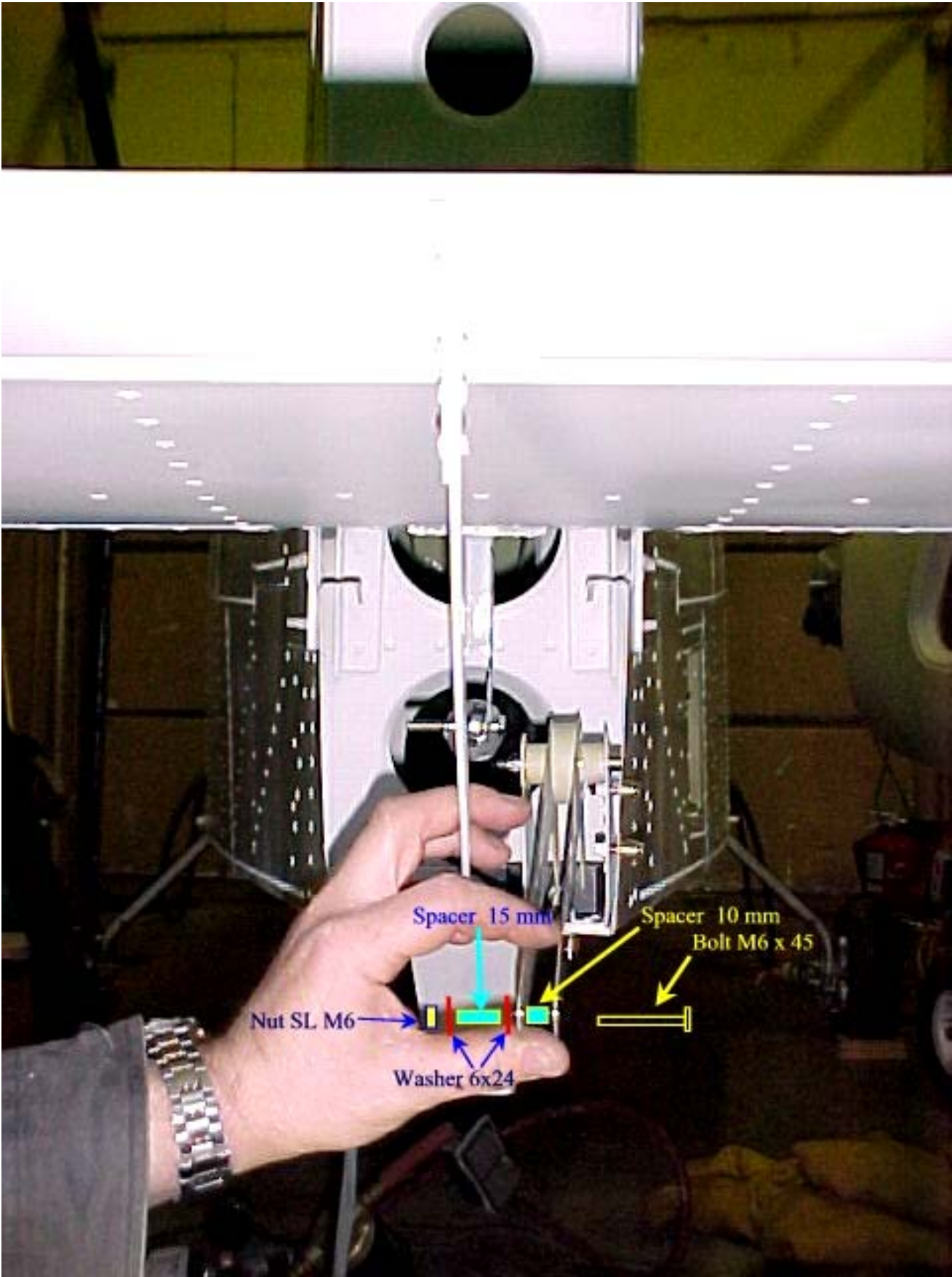
Now place the leverage on the right side, leaned on the bottom and to the side with the bolt head lined with the side end; drill the bottom hole and the two holes on the right side to $\varnothing$ 4 mm, mark the other two $\varnothing$ 2,5 mm holes on the bottom.

Remove the leverage and fit the tail cone STAB333-099 triggering it outside the fuselage and overlapping it 20 mm.

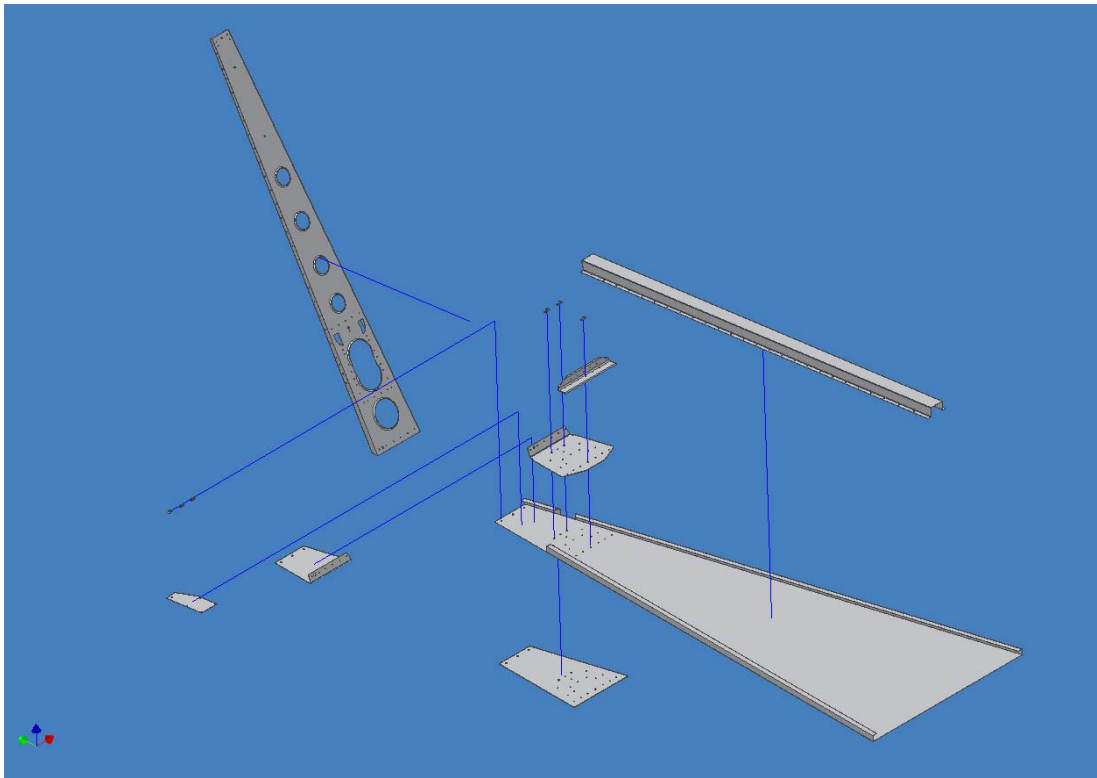
Mark the bottom holes on the tail cone and tack.

Drill the two 4 mm holes on the right side, mark another hole in a higher position with a 10 mm margin from the edge, and report the same marking on the left side; drill and widen to 5 mm.

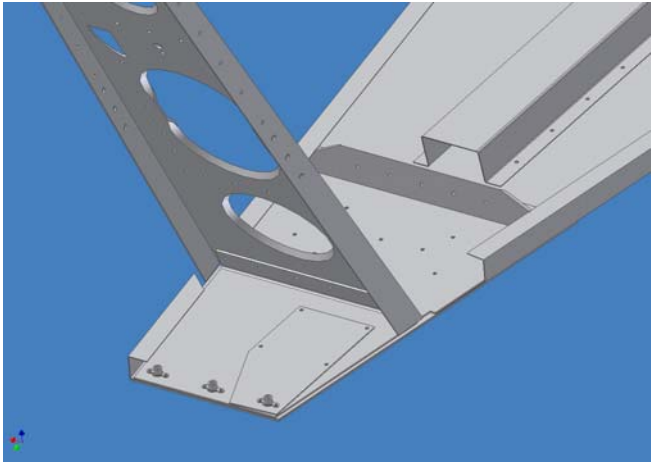
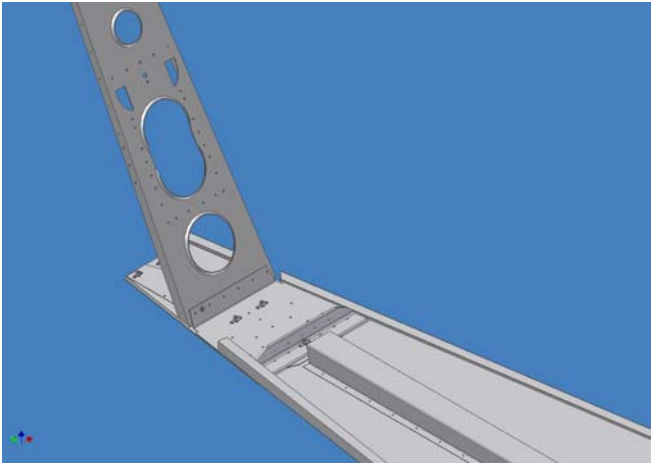
Fit the 5 mm anchor nuts in the following way: three on the leverage after having widened the holes to $\varnothing$ 5,2 mm, countersink and rivet with AN426AD3-5; two must be fitted in the same way in the inside of the bottom;



Trim Tab Leverage



Fin Assembly

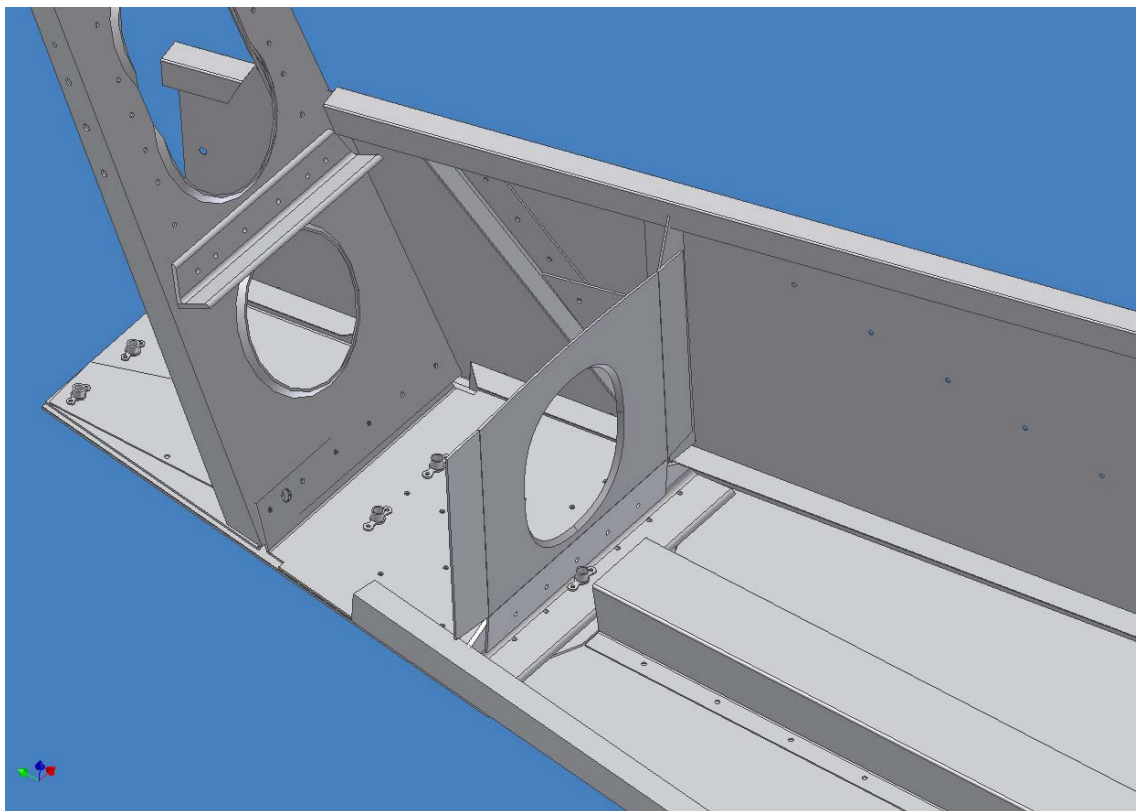


three 5 mm anchor nuts on the left inner side of the tail cone and one in the right side.

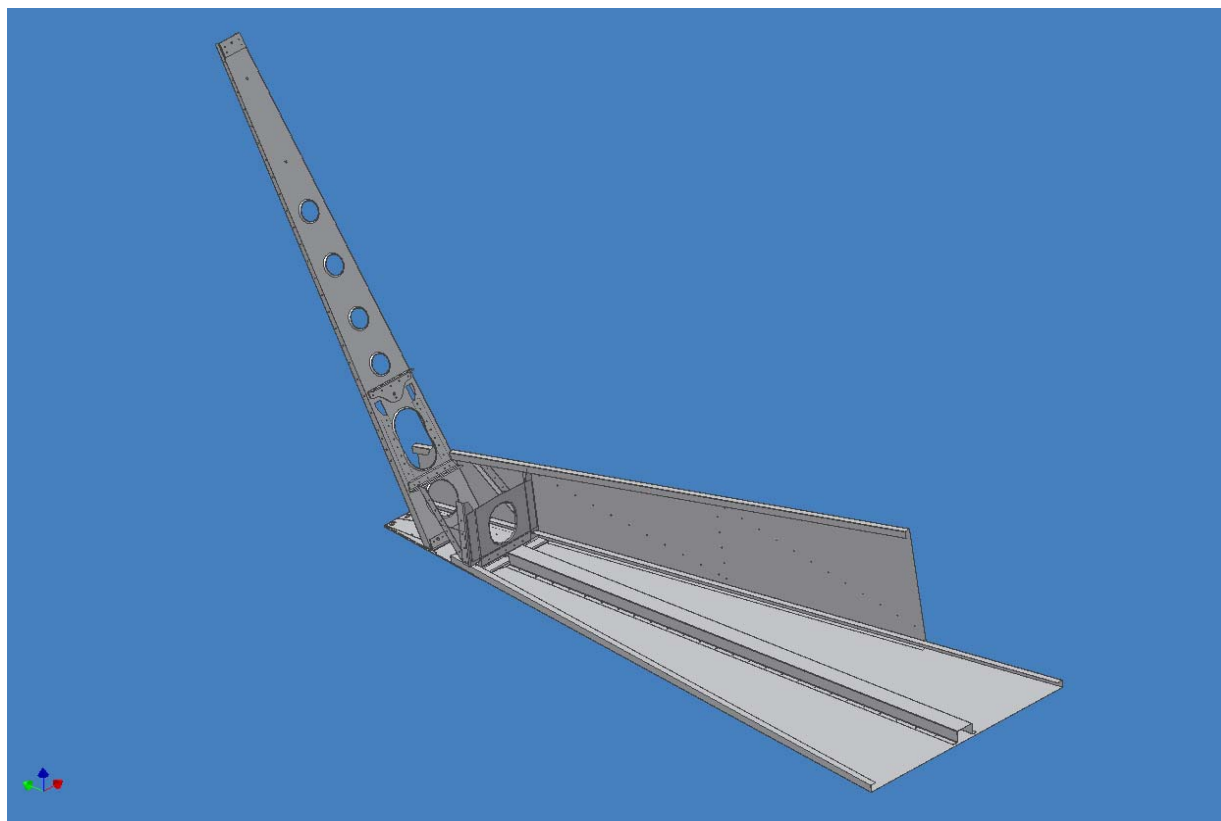
Now position the tail cone sides in the inner side of the bottom; put some 5×10 roundheaded screws on the outside.

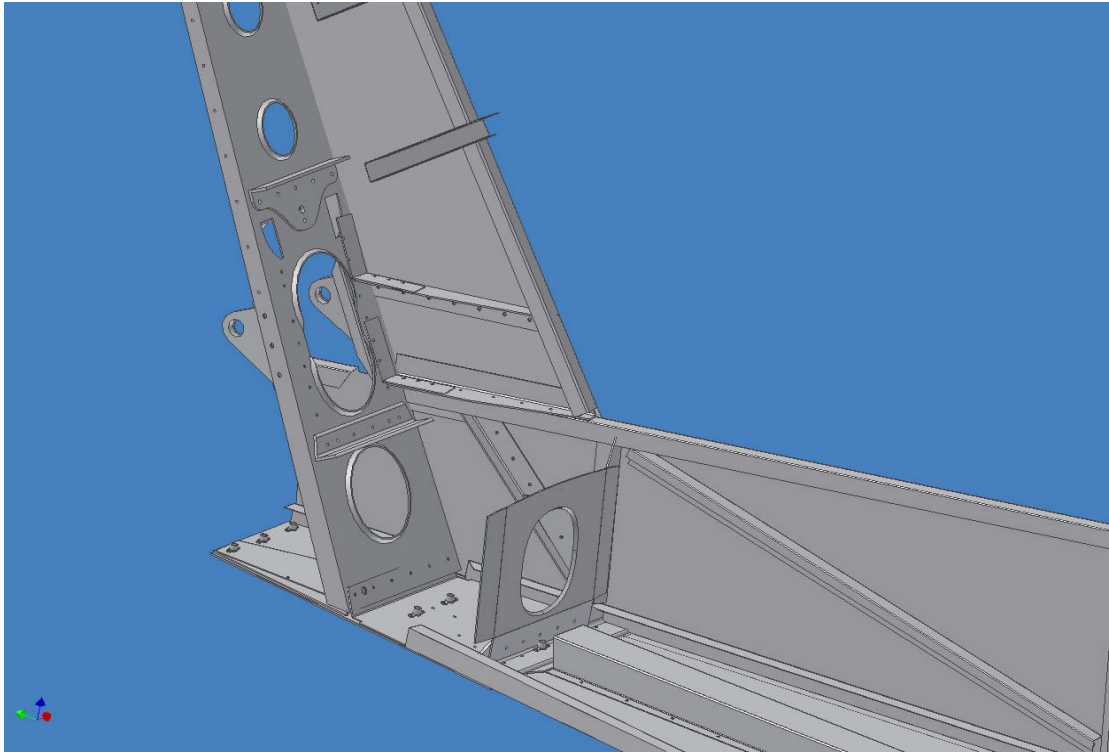
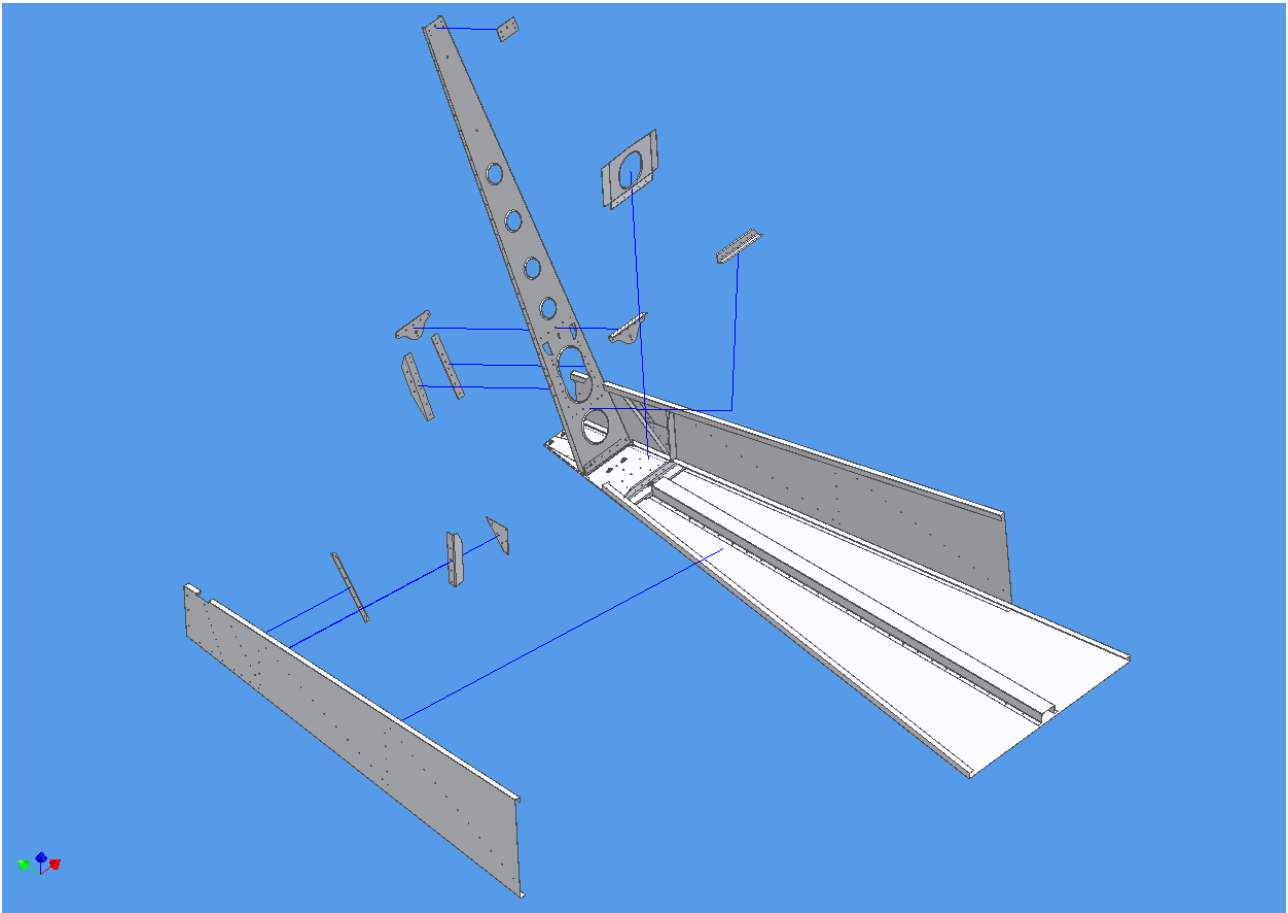


Figure 6.3: Image of vertical tail.

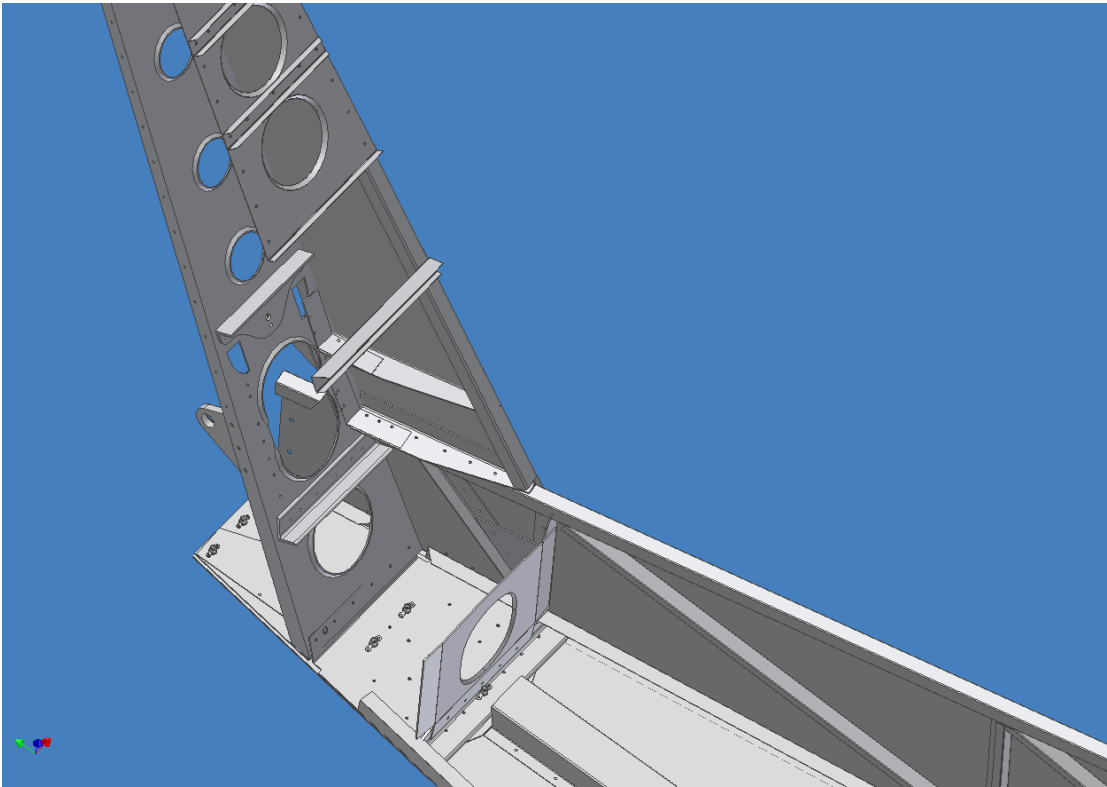
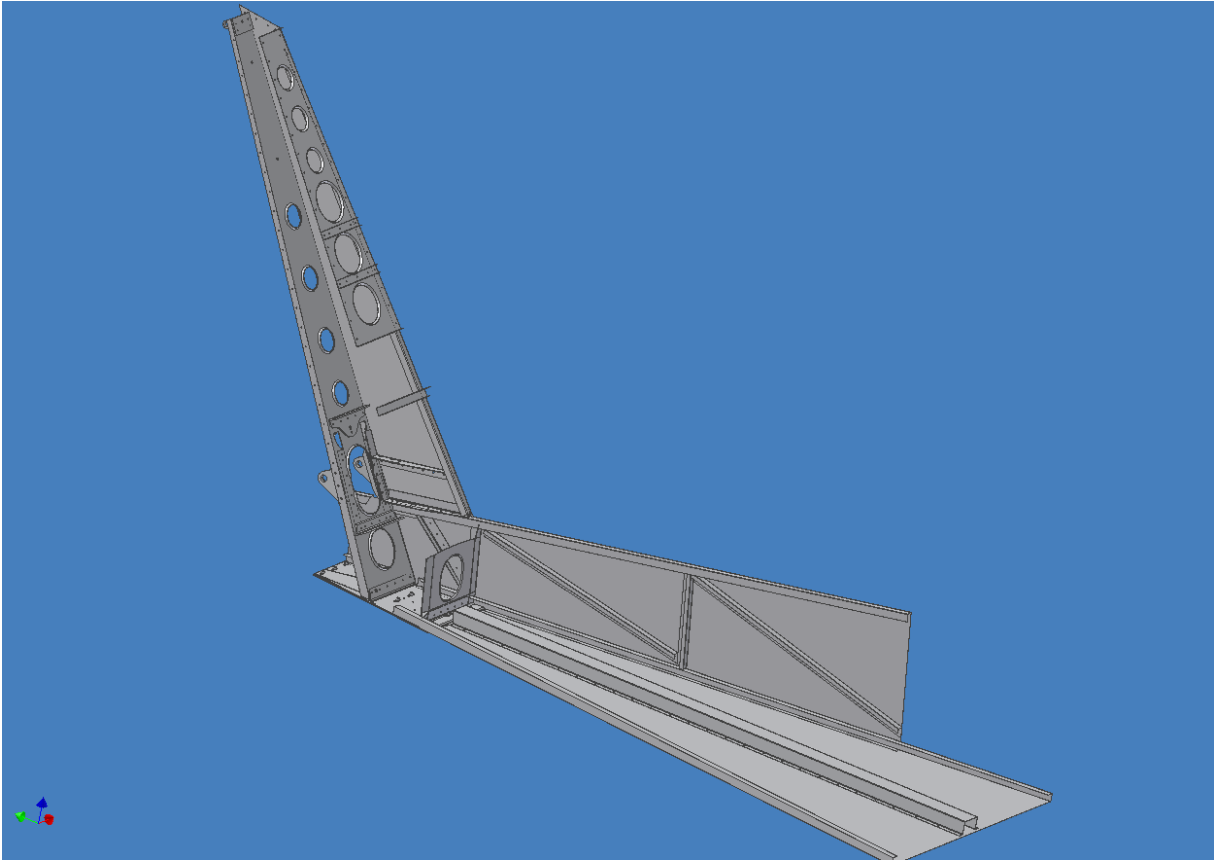


Fin Assembly

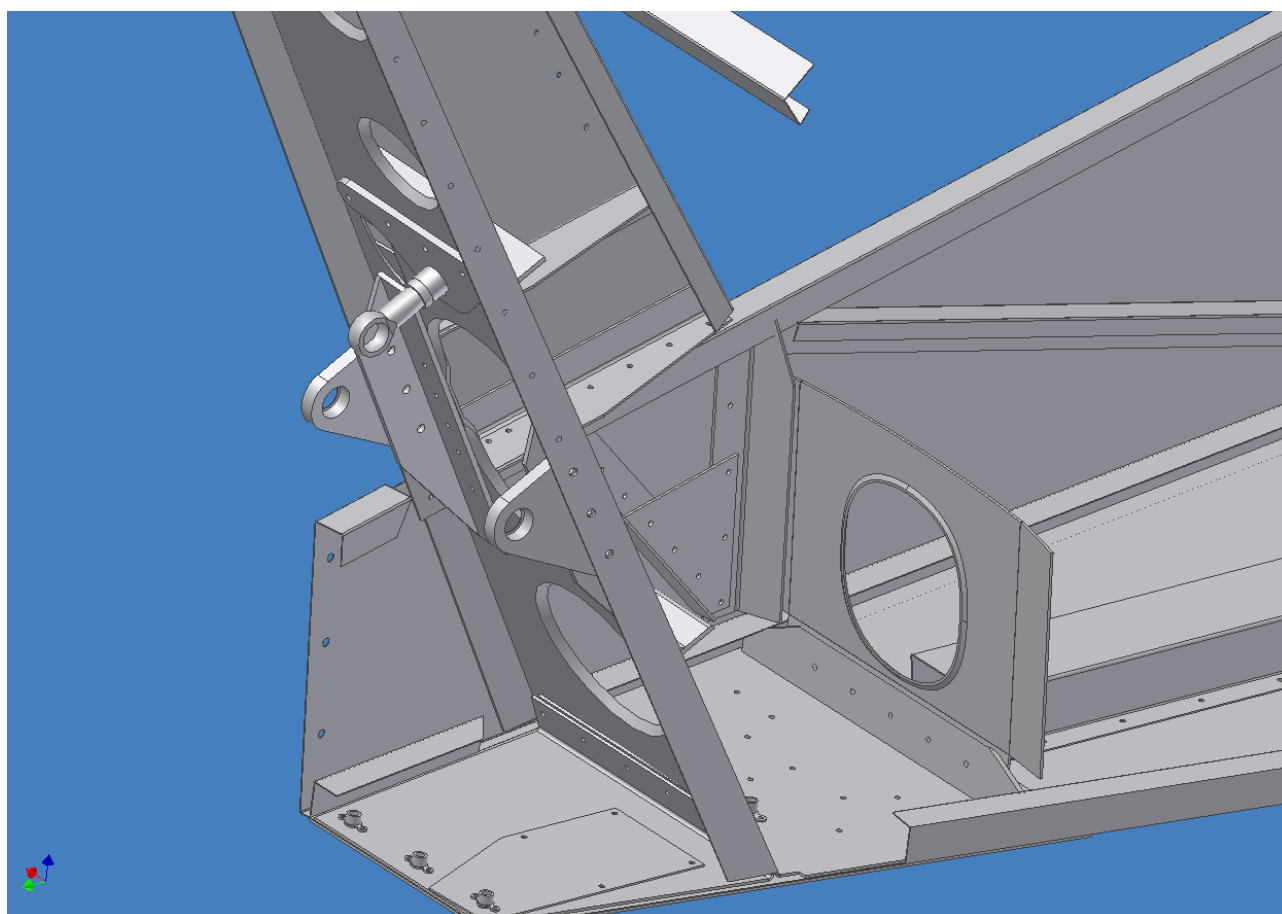
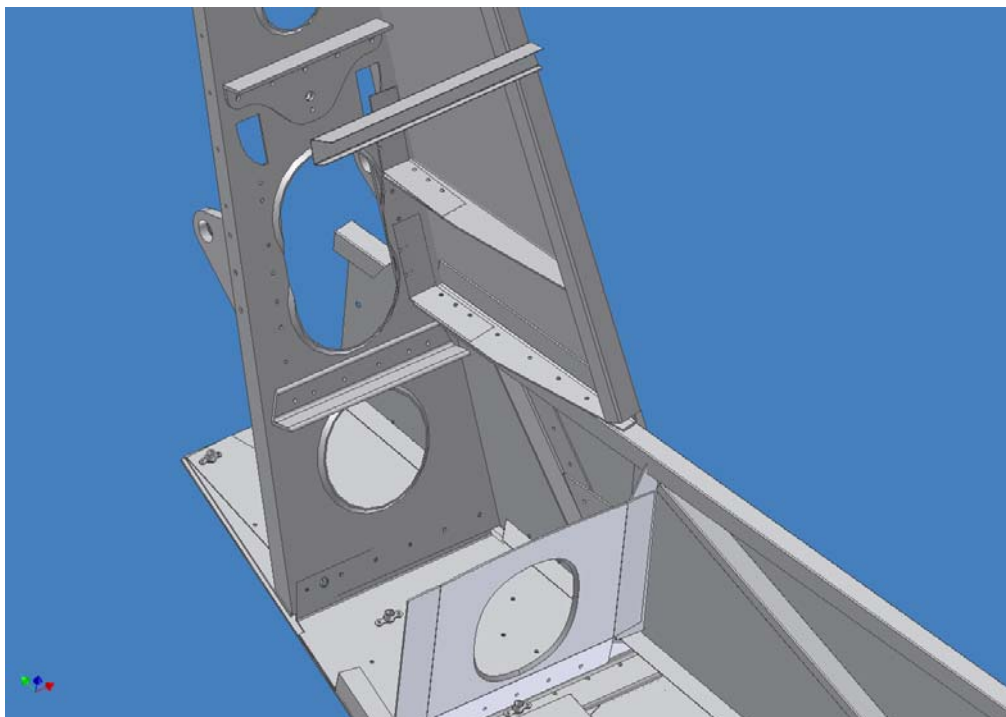




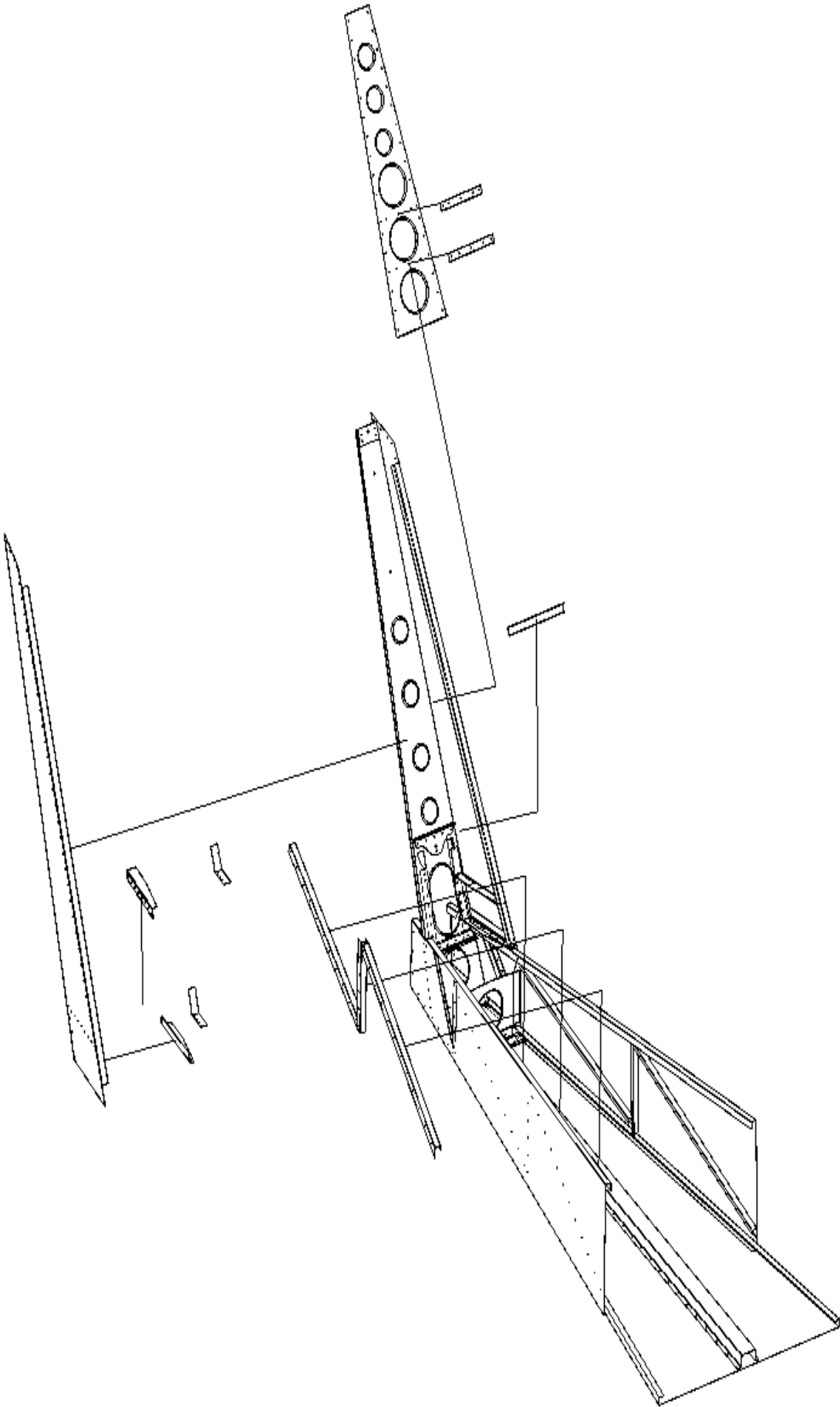
Fin Assembly

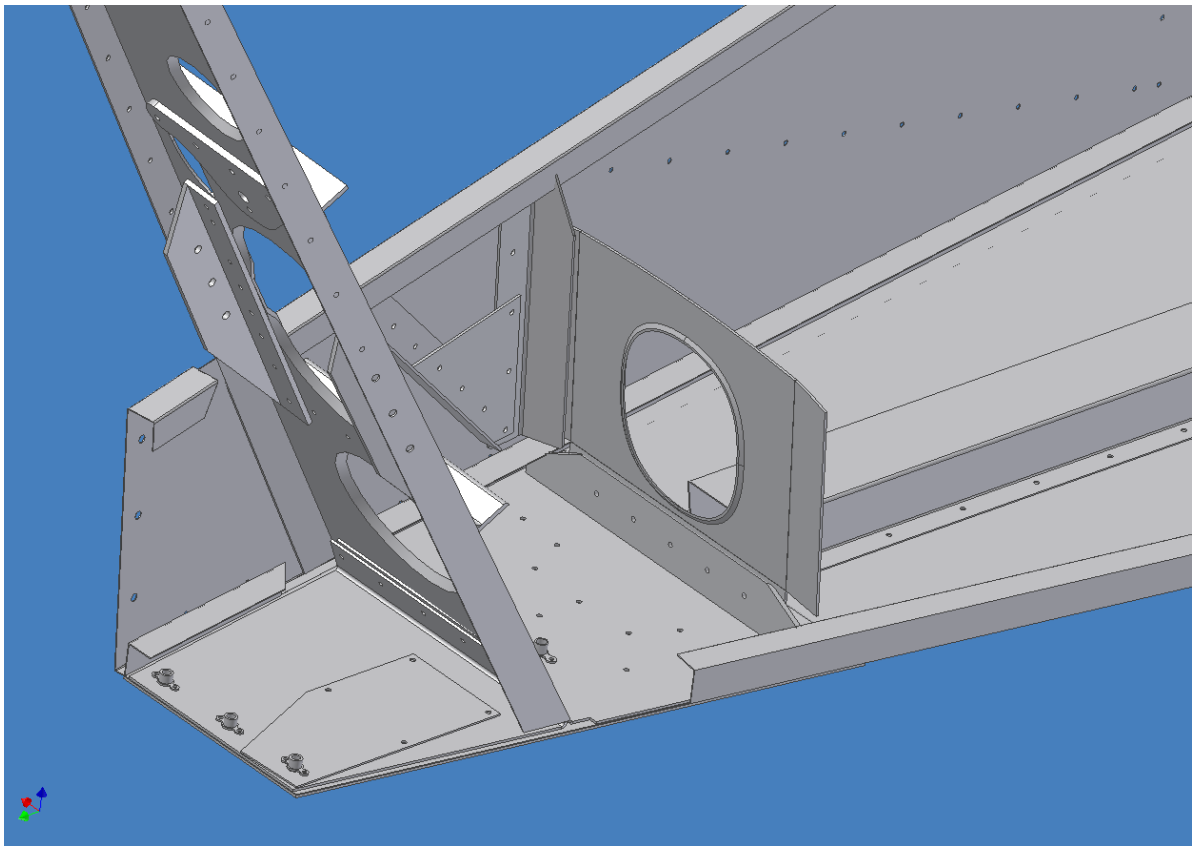


Fin Assembly

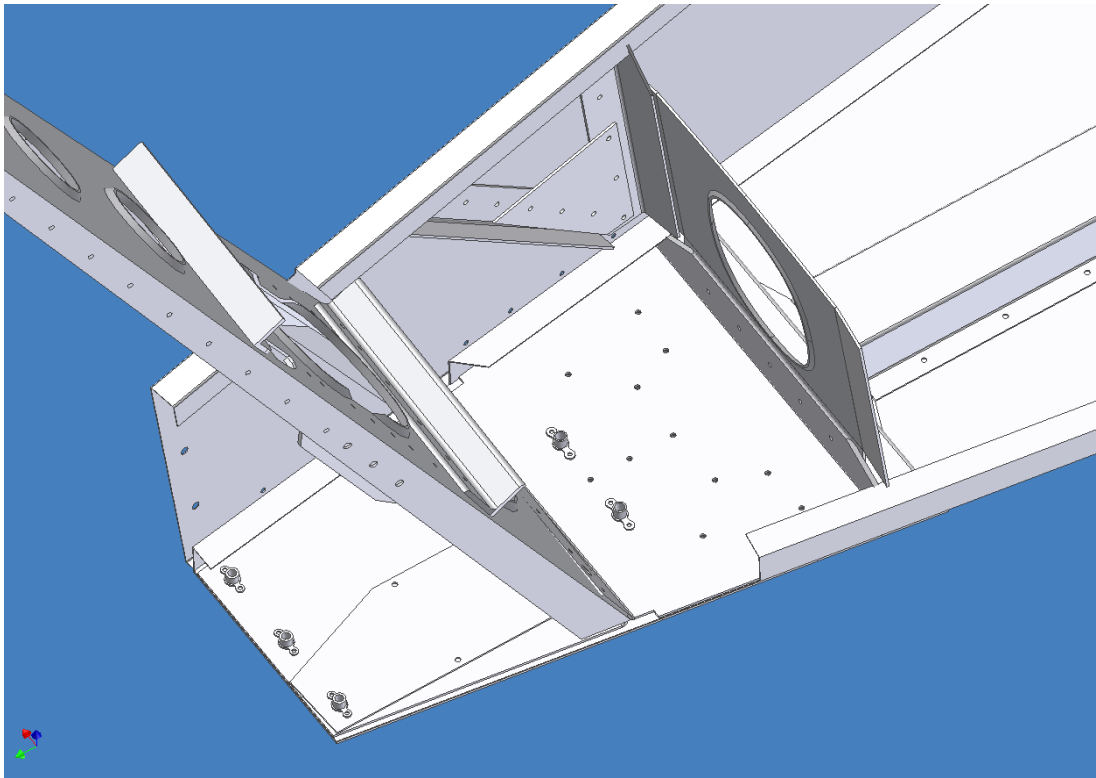


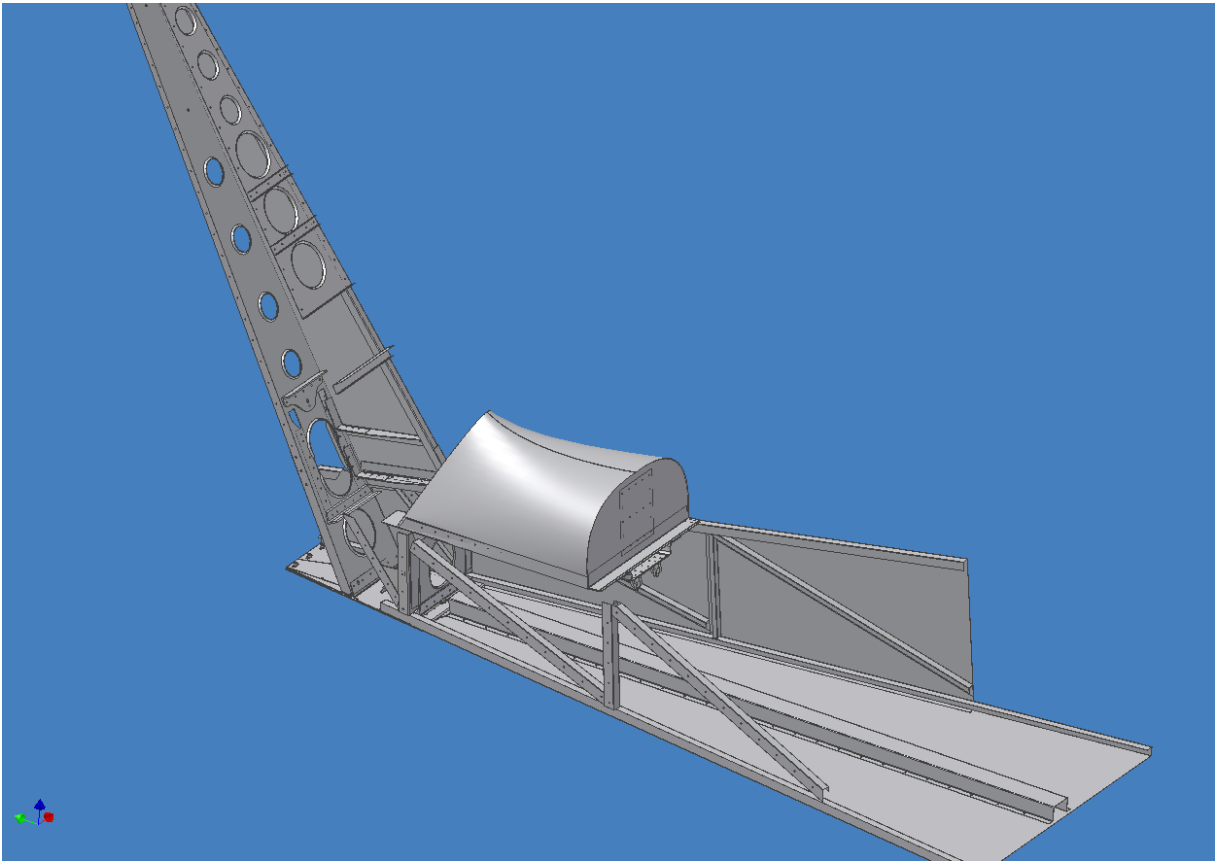
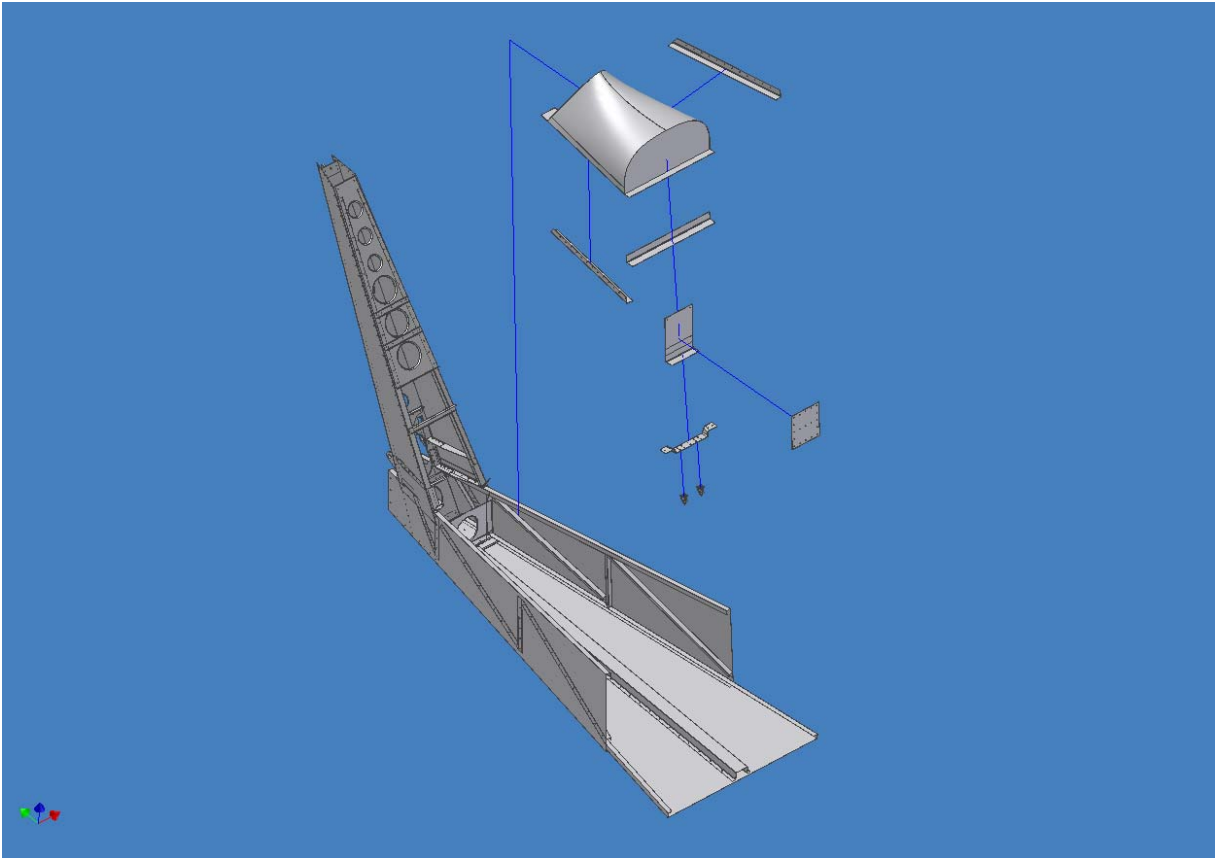
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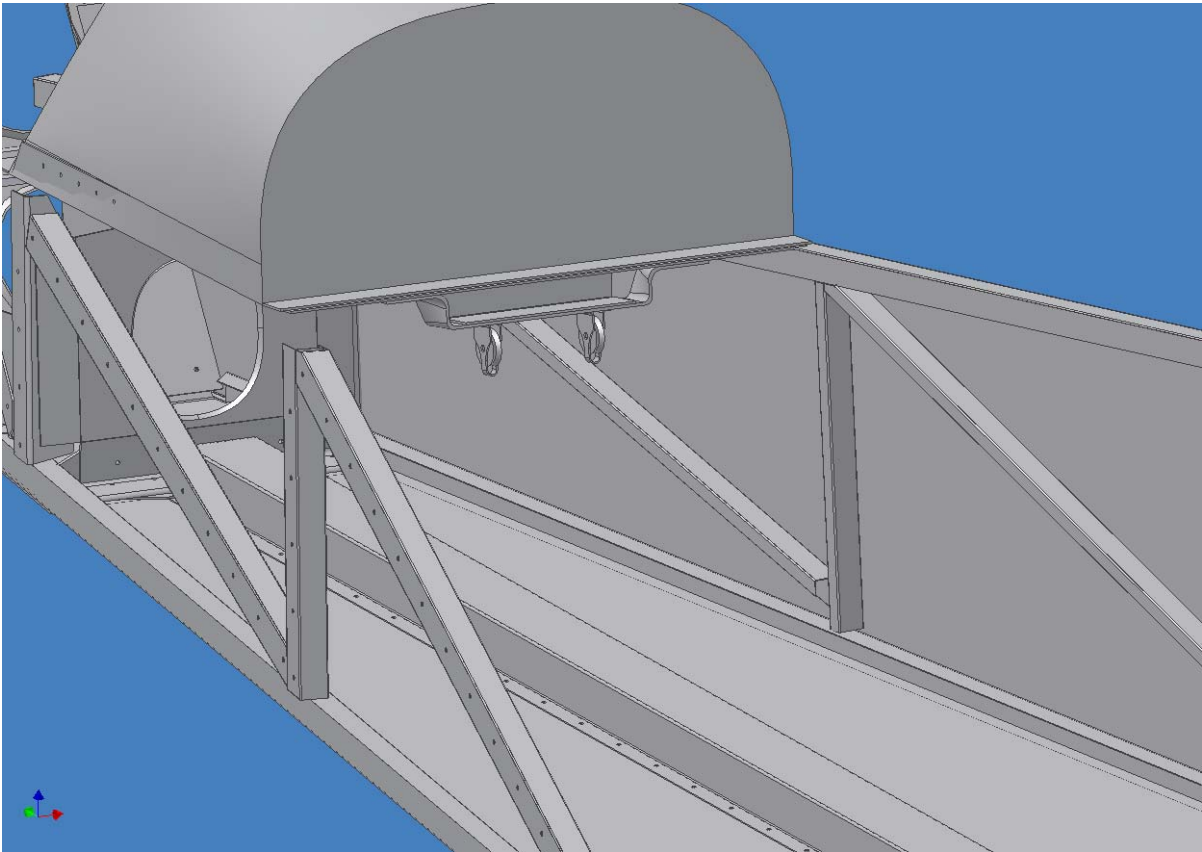
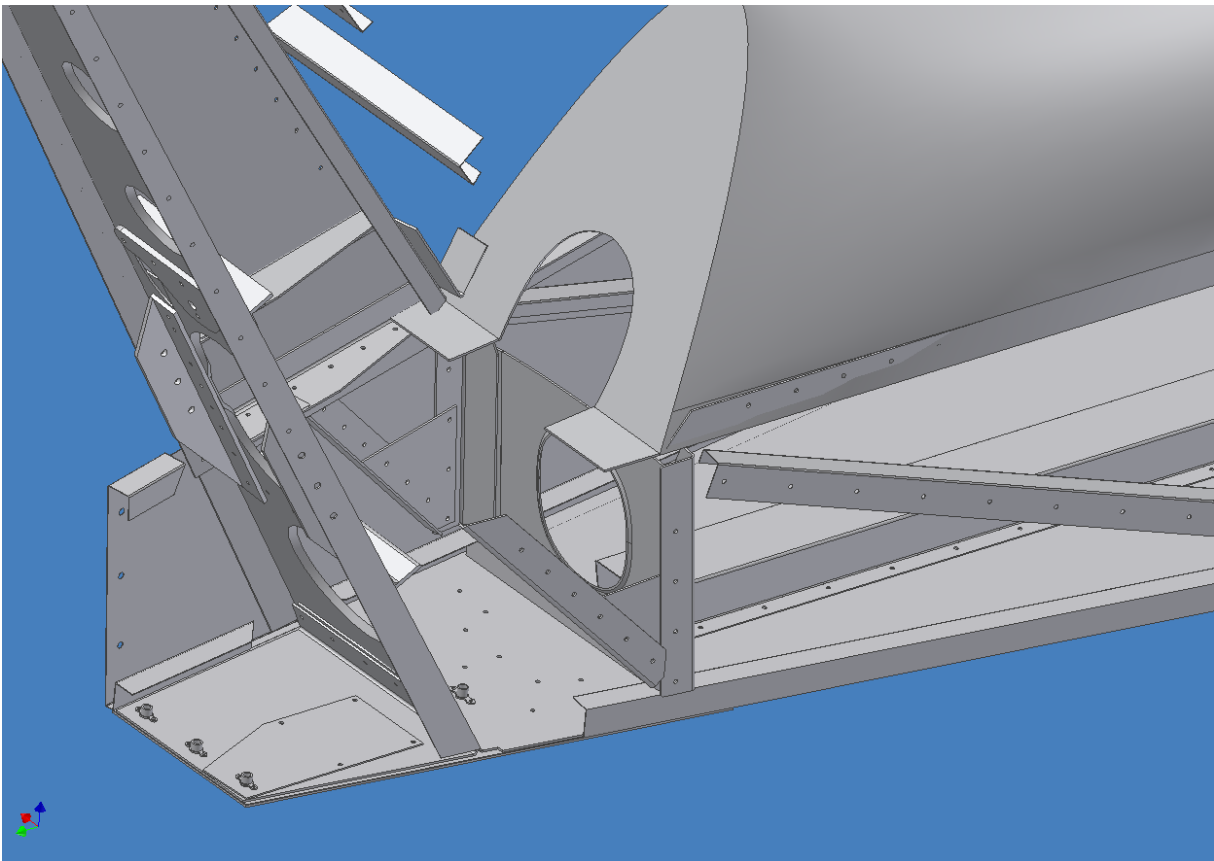


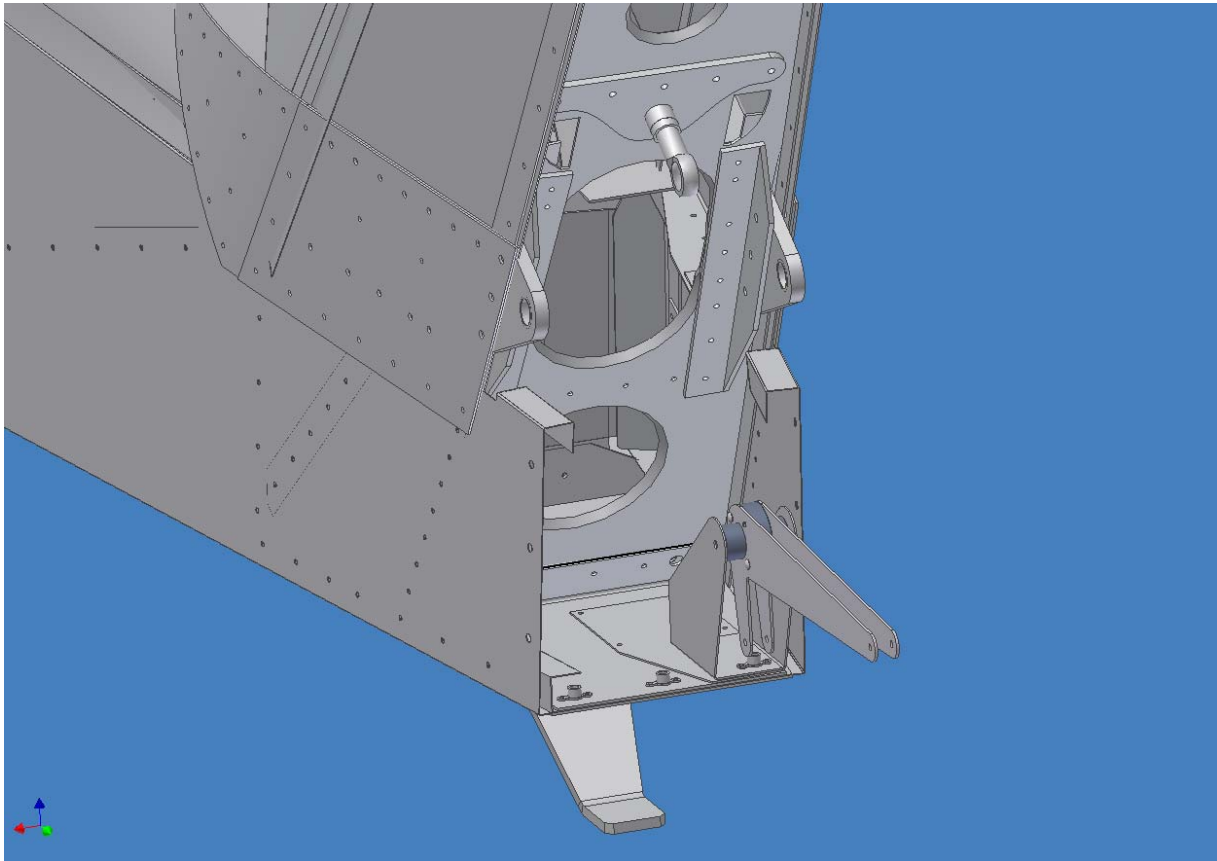
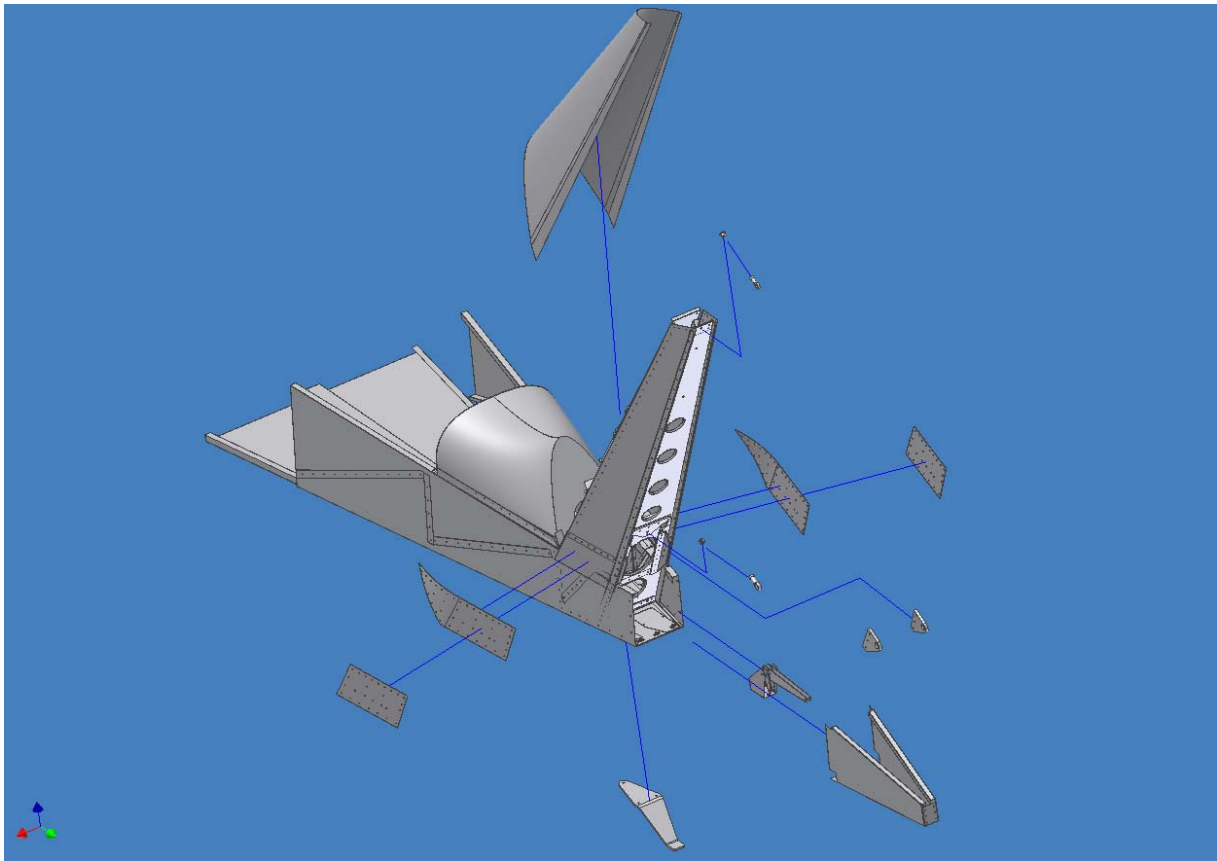


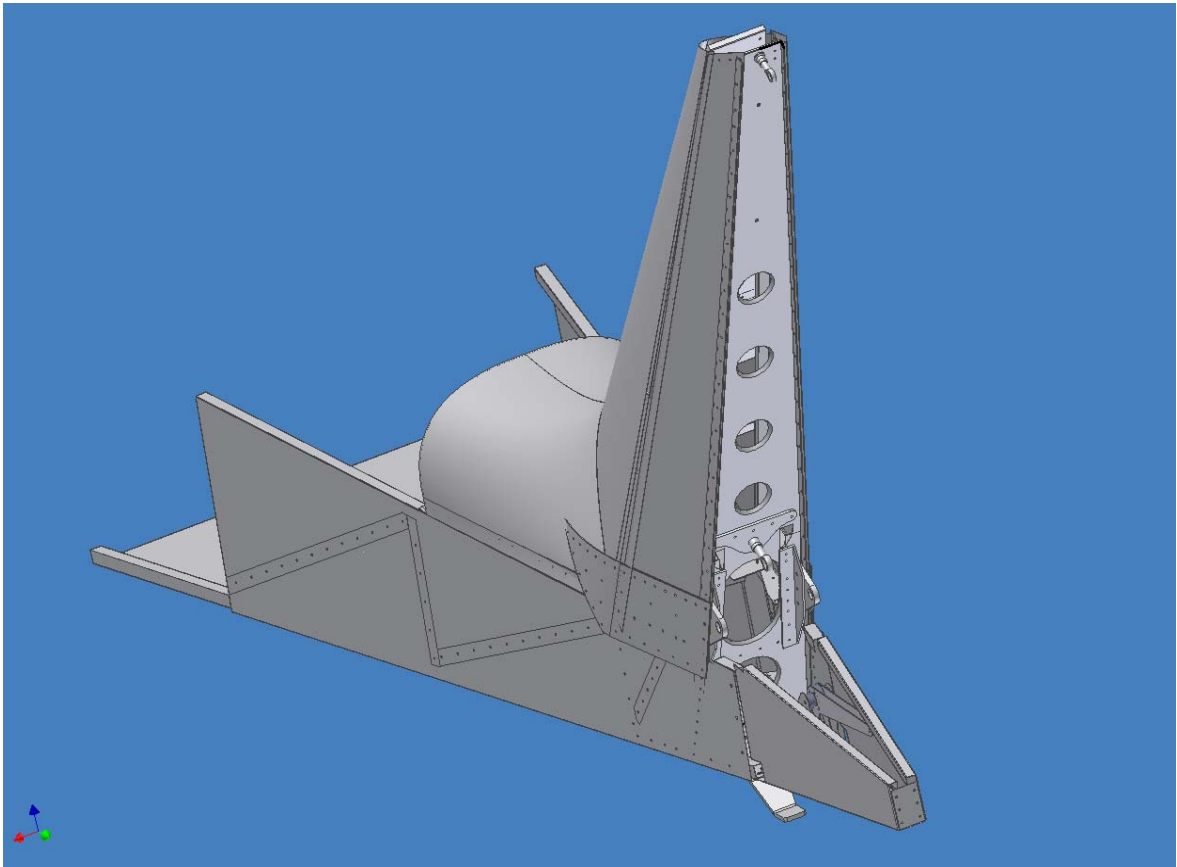
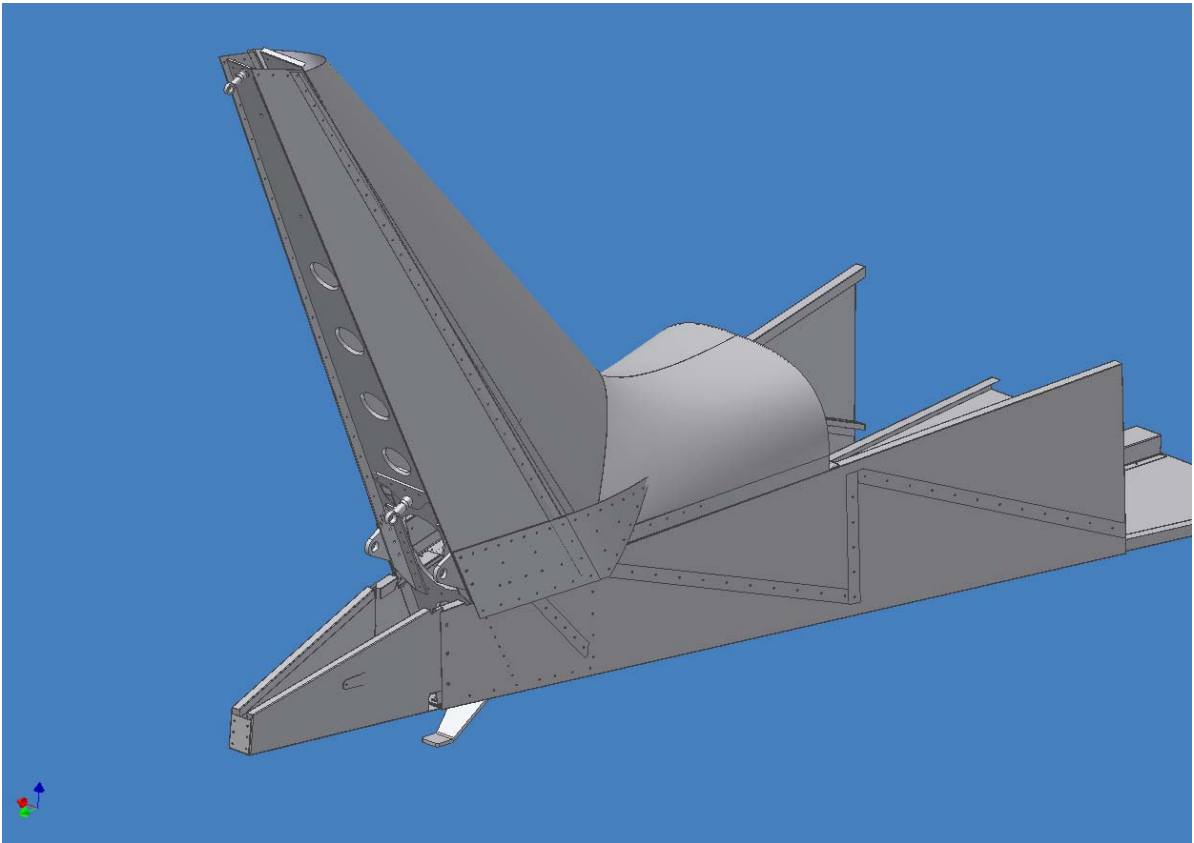
Fin Assembly

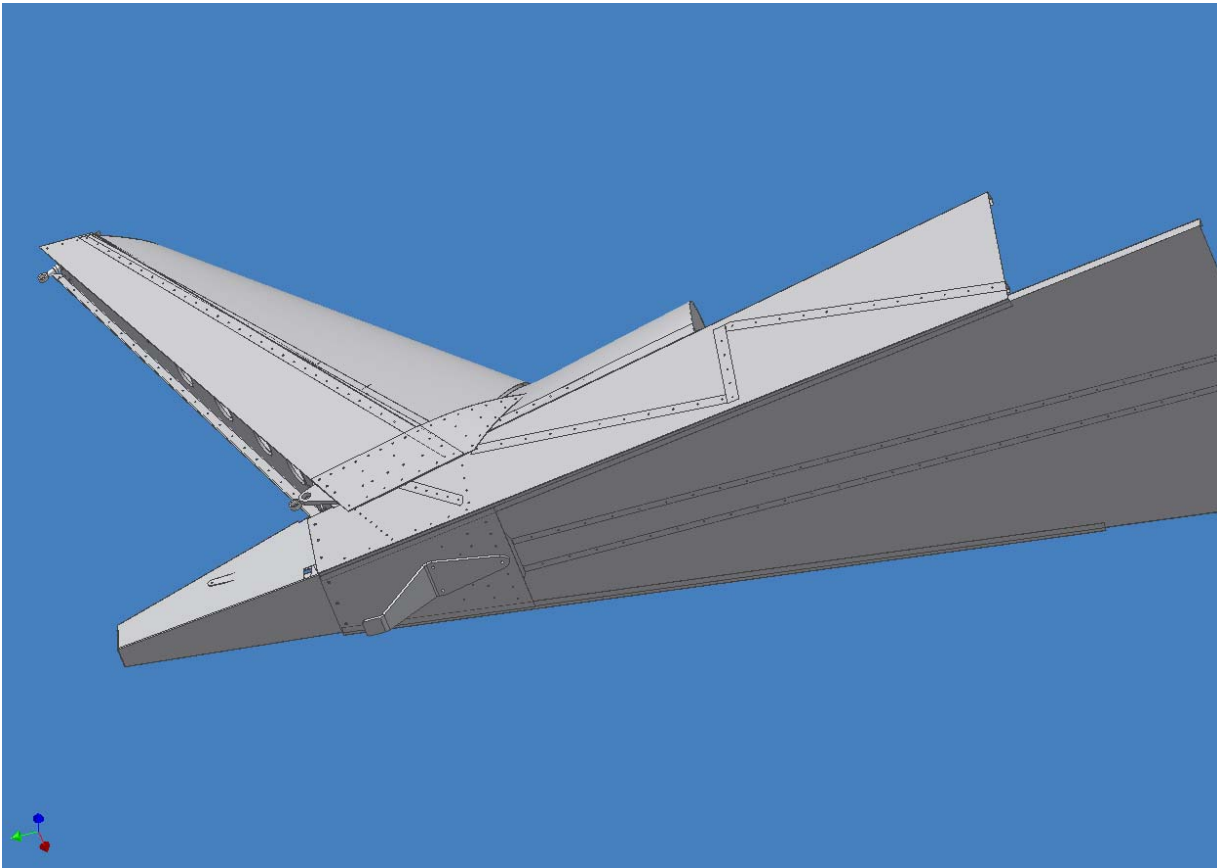
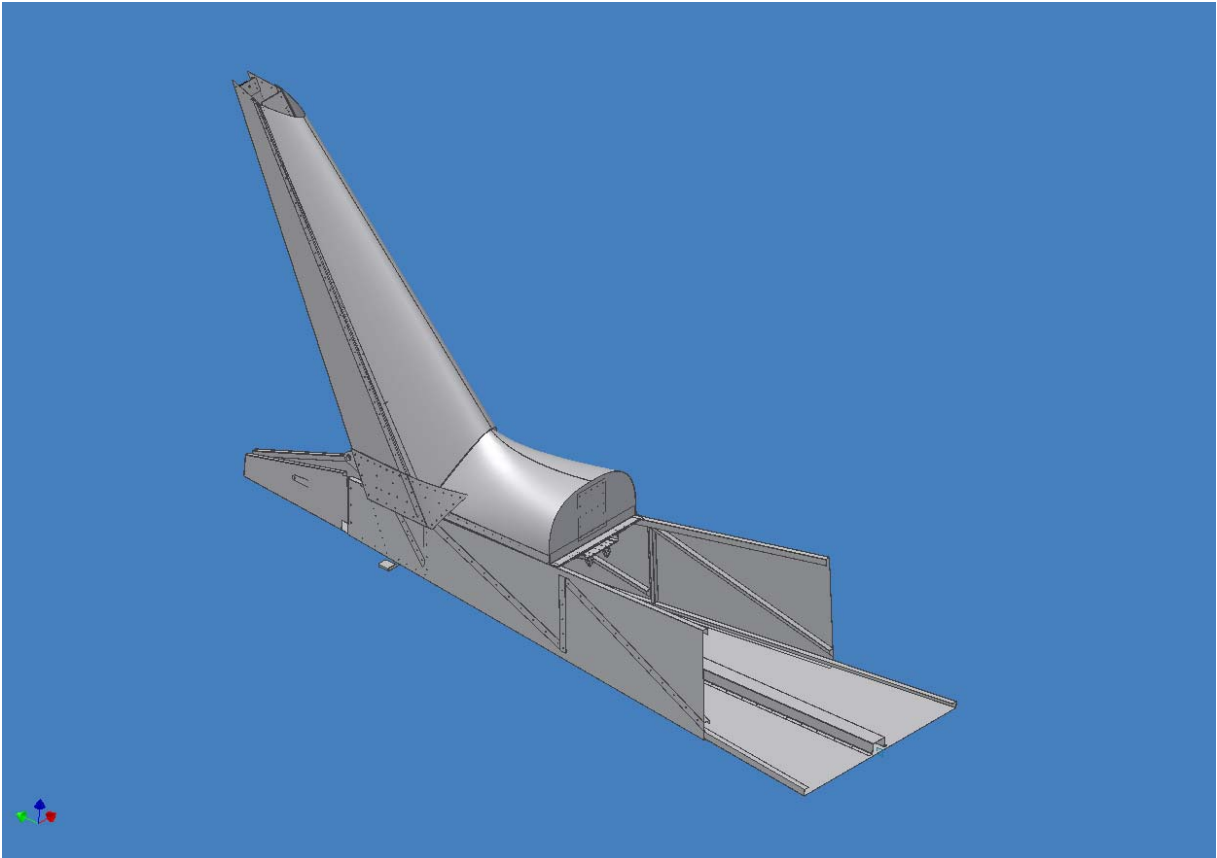


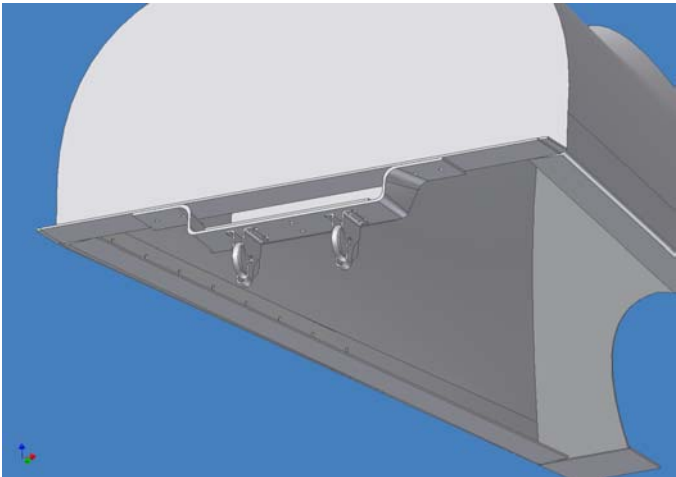
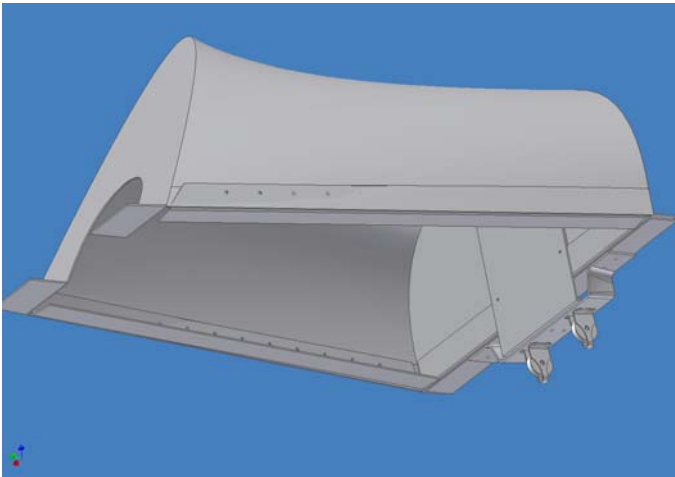
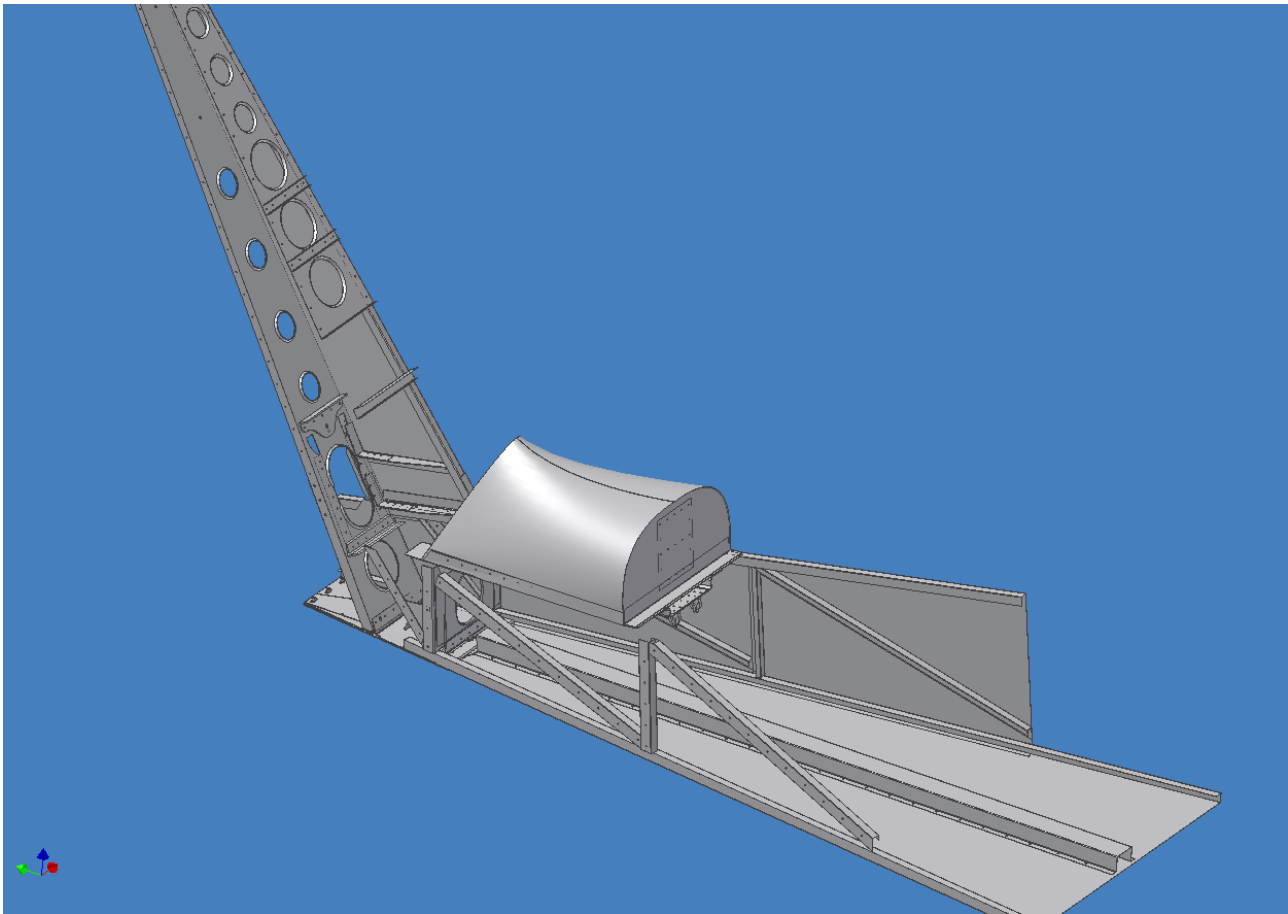












ST3000 rudder assembly

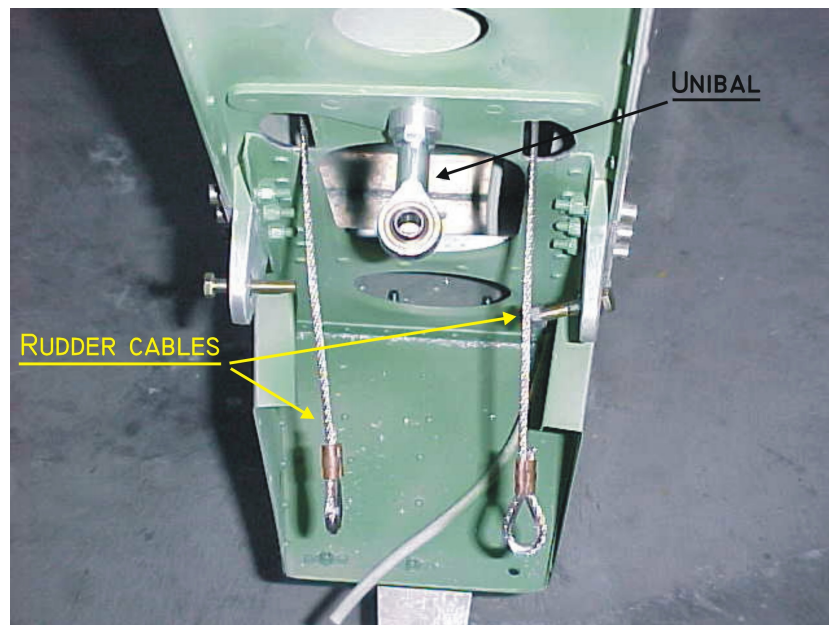


Figure 6.4: Rudder cable and unibal.

Install the two rudder rotation bearings on the rear fin rib as shown in the drawing.

These will be your reference marks for the rudder construction.

Take the two resin ribs ST3000-004 and -007, mark the hole for the rotation pins and drill to 4 mm.

Now take the resin rib -004 and place the stiffening -015, drill 3,2 mm on the four angles; fit the 6 mm anchor nut after having widened to 6 mm the rotation hole.

Drill the side holes to 3,2 mm, countersink the resin rib with care, smear araldite or silicone between the stiffening -015 and the resin rib; put AVEX1661-0412 rivets on the stiffening angle, and AVEX1604-0414 rivets on the anchor nut.

Take the resin rib -007, position the two side fittings -010, drill the hole for the controls to 6 mm, and to 3,2 mm the eight holes for AN426AD4-8 rivets.

Countersink the control plates.

Position the stiffening -016 and fit the three 6 mm anchor nuts as you did for the other rib.

Install the two pins -005 and -006 respectively on the upper and on the lower part.

Place the two ribs on the hinge points of the fin (put a couple of space washers on the lower pin). With the help of two wooden lists 20×20 lapping the two ribs, lock them with clamps on the lists. **Make sure that they are well positioned.**

Now take the trailing edge -003, trig it and mark it so as to trim it (about 20 mm overlapping). Trim it, mark the holes with a spacing of 30 mm, 10 mm from the resin edge and 8 mm from the sheet, drill and tack with clecos.

Proceed the same way for the side sheets -008 and -009, then -001 and -002, make them trig well to the ribs; remove the lists to fit the last two sheets that you will drill as far as you can. Strip, deburr, clean and trim where necessary, smear araldite or silicone between resin and sheet, rivet with AVEX1661-0410 the -003, -008 and -009.

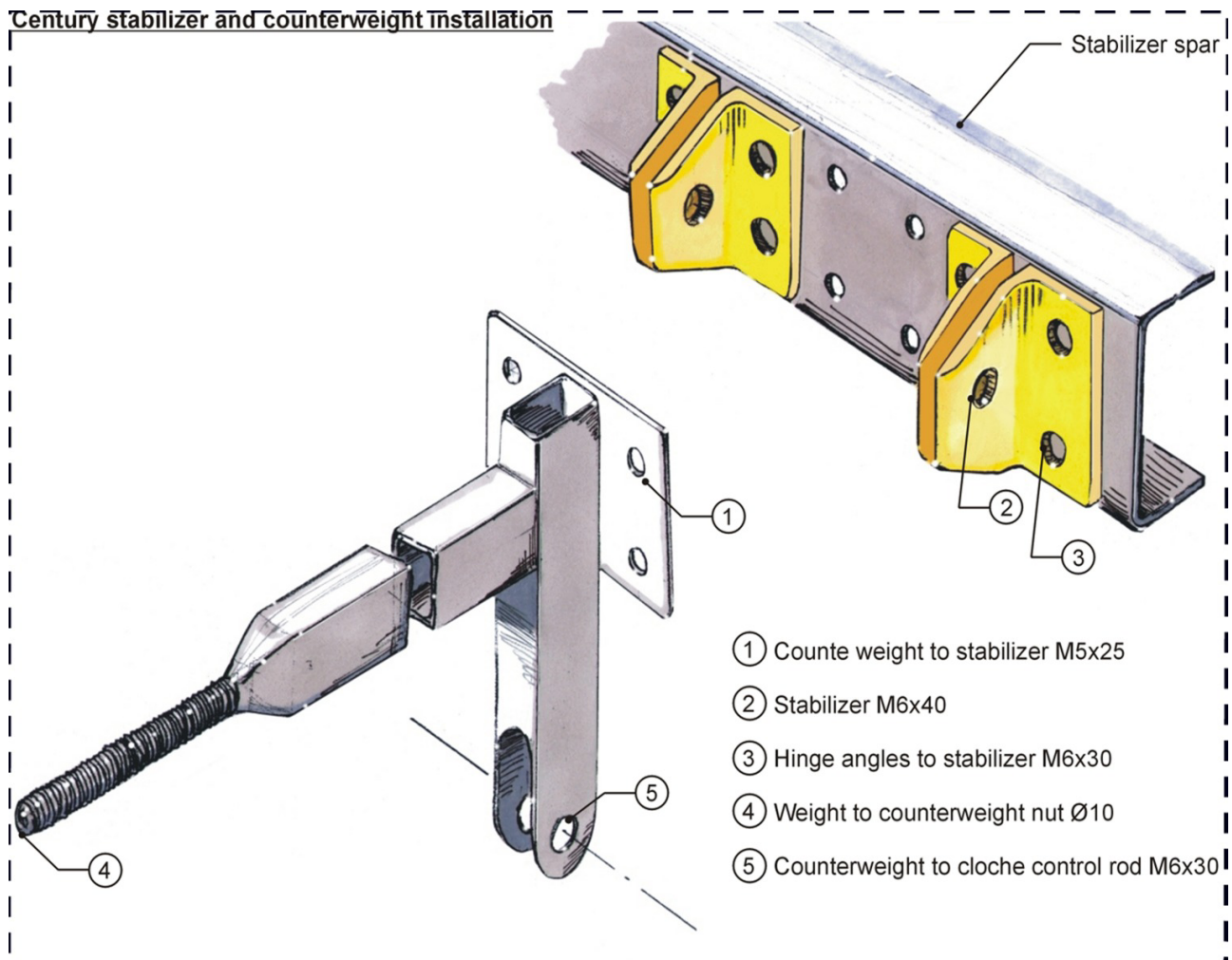
Reposition the two sheets -001 and -002, remove the rudder and complete the front drilling that you were not able to do before; mark the possible trimmings. Strip, deburr, clean and smear araldite or silicone between resin and sheet.

Rivet -001 and -002 with AVEX1661-0410.

BE CAREFUL: if you are using silicone, avoid to make it come out on the outside, you could have problems when painting.



Figure 6.5: Vertical tail focused on fuselage end.



Counterweight and Fuselage Connection

ST5000 Stabilizer assembly

Put the spar ST5001 on two trestles and, after having marked the center line for the ribs ST5000-002/-003/-004, place the beaks -002 of the edge with the two ones without clews at the center; drill to Ø 2,5 mm after you have centered them to the spar in its breadth and to the lip center.

Rotate the spar and do the same operation with ribs -003 and -004; bend the back lip of the central ribs with pliers in a uniform way after having marked the dimensions as shown in the drawing.

Tack the ribs to the spar and drill to Ø 3,2 mm; strip and deburr, rivet with AVEX 1661-0410 and -0412 in the area with the greatest thickness (see grip table).

Center the central sheet ST5000-006 between the central ribs -004 and the -003 ribs, make the drilling on the lip center of the ribs starting from the lip towards the spar.

Tack, place the squares ST5000-019 and drill on the ribs -003; rivet with AVEX1661-0410.

Position the other sheet -006 and repeat the same drilling and tacking.

Now take the two sheets ST5000-007 and trig them on the ribs -003; take two straight wooden boards to avoid twists and place them near the bending of the central sheets and lock them with two clamps. Make sure that the dimension of the trim opening corresponds to the drawing and start drilling the three ribs per side from the edge towards the spar, after you have locked them equally spaced, inserting wooden spacers between them so as to keep them in the right position while drilling.

Put the stabilizer in plane on two wooden boards so as to have the leading edge area free; lock the ribs with wooden spacers.

BE CAREFUL: the two central ribs without hole must be positioned about 10 mm more towards the edge.

Position the edge on both sides, make sure it is well fitted, lock the ends with clamps; start drilling from the edge towards the spar after having marked the drilling.

Drill the spar that will definitively lock the assembly at the end.

To mark the drilling on the center of rib lips, put some signs on the sheet to enable you to trace from the outside on the Y axis; the external ribs can be used to transfer the measures following the X axis; the drilling pitch is 30-35 mm.

Before you strip, position the three plus three side straps needed to place the two resin tips ST5000-008; they must be positioned with care and could need a slight adjustment. Strip after having marked the parts to be trimmed; deburr the holes and trim, clean the parts, paint the inside.

Reassemble, following the same sequence as for the drilling, tack and make sure that everything is positioned correctly.

Start riveting with AVEX 1661-0410 following the same sequence as for the drilling, smear some silicone inside the resin tip before you rivet it on the straps.

Trim the opening of the central leading edge so that the external dimension is 20 mm wider than the dimension near the spar, in order to avoid interferences during the fin excursion (about 5 mm minimum gap during the excursion).

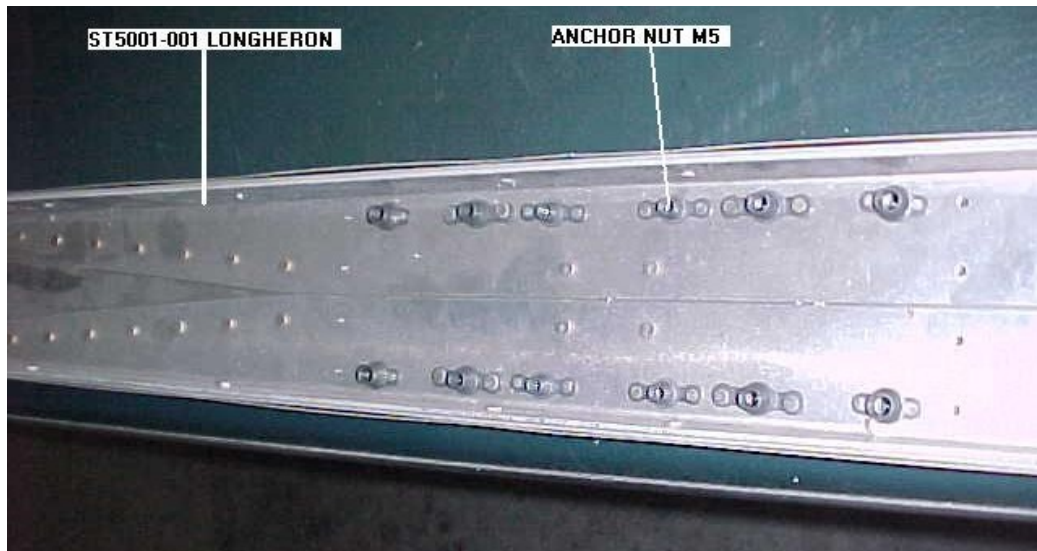
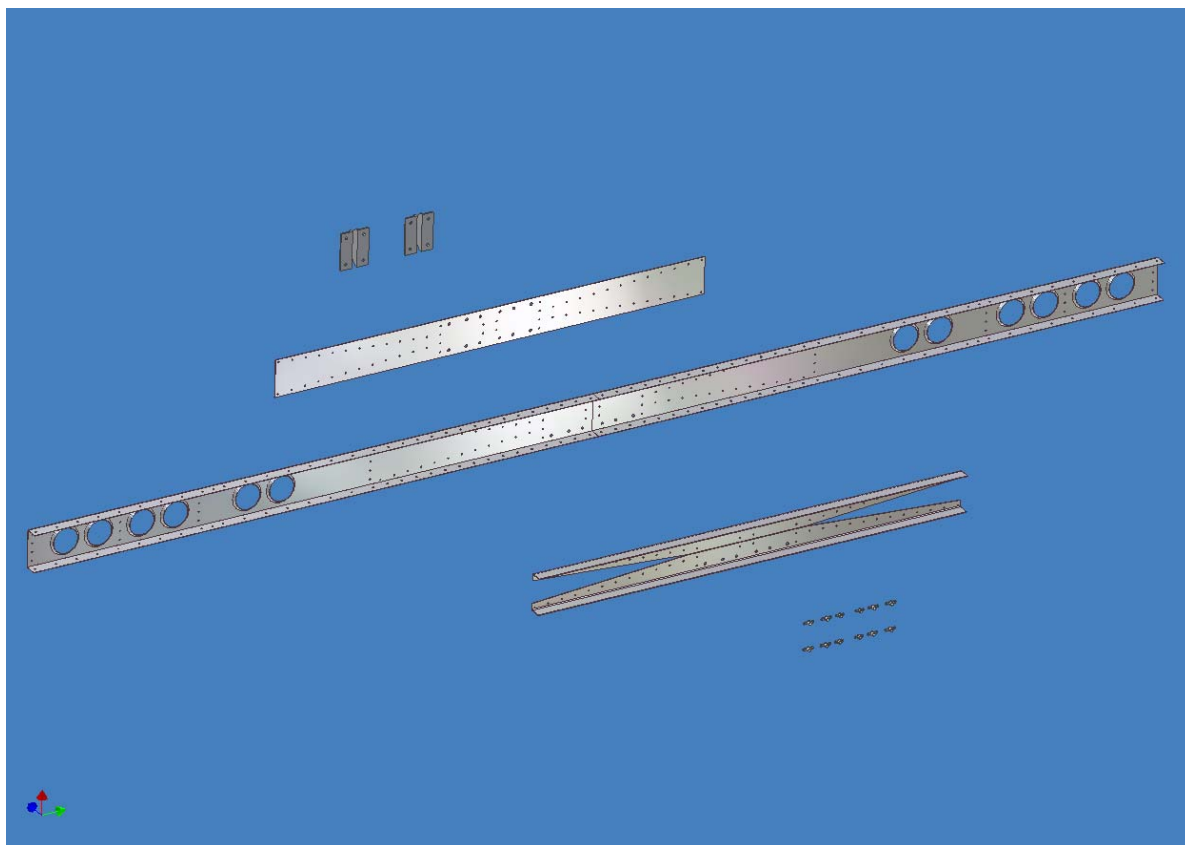
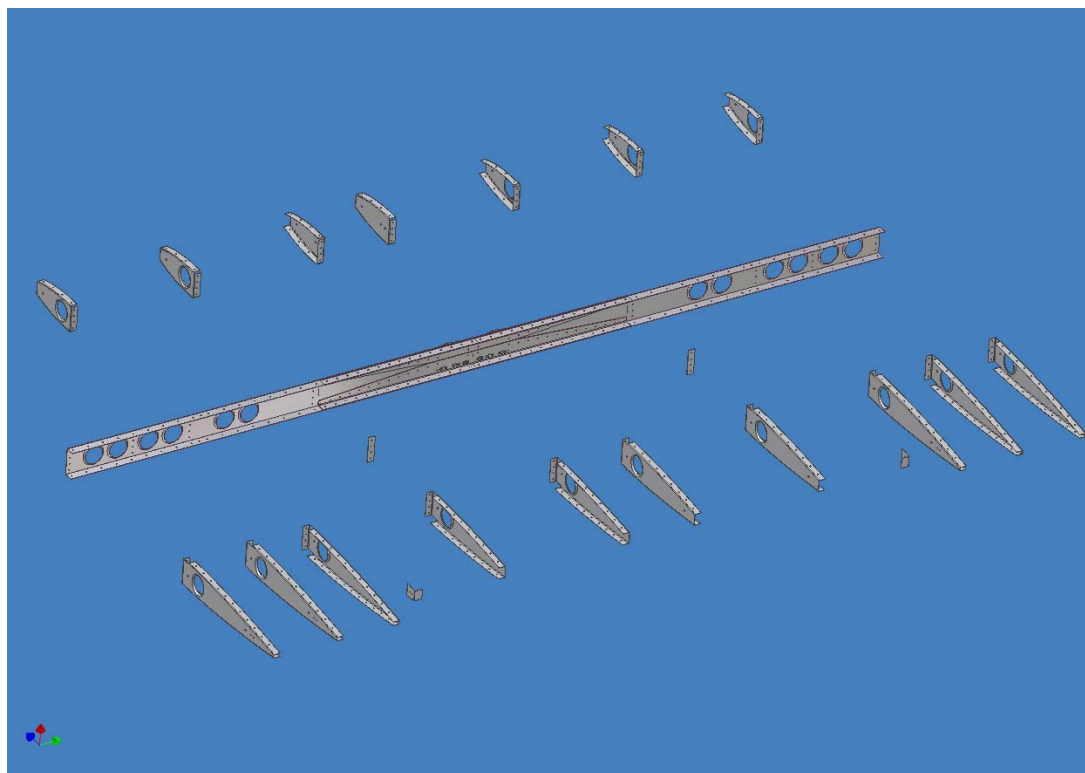


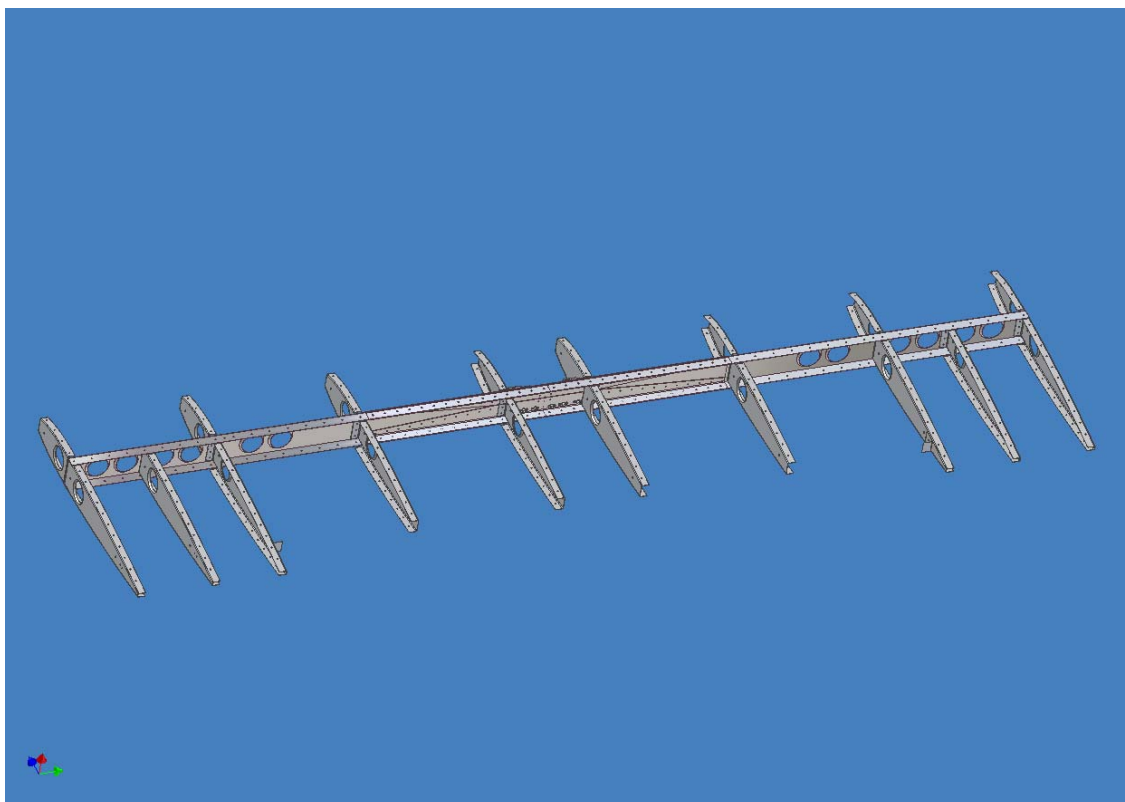
Figure 6.6: Stabilizer spar.



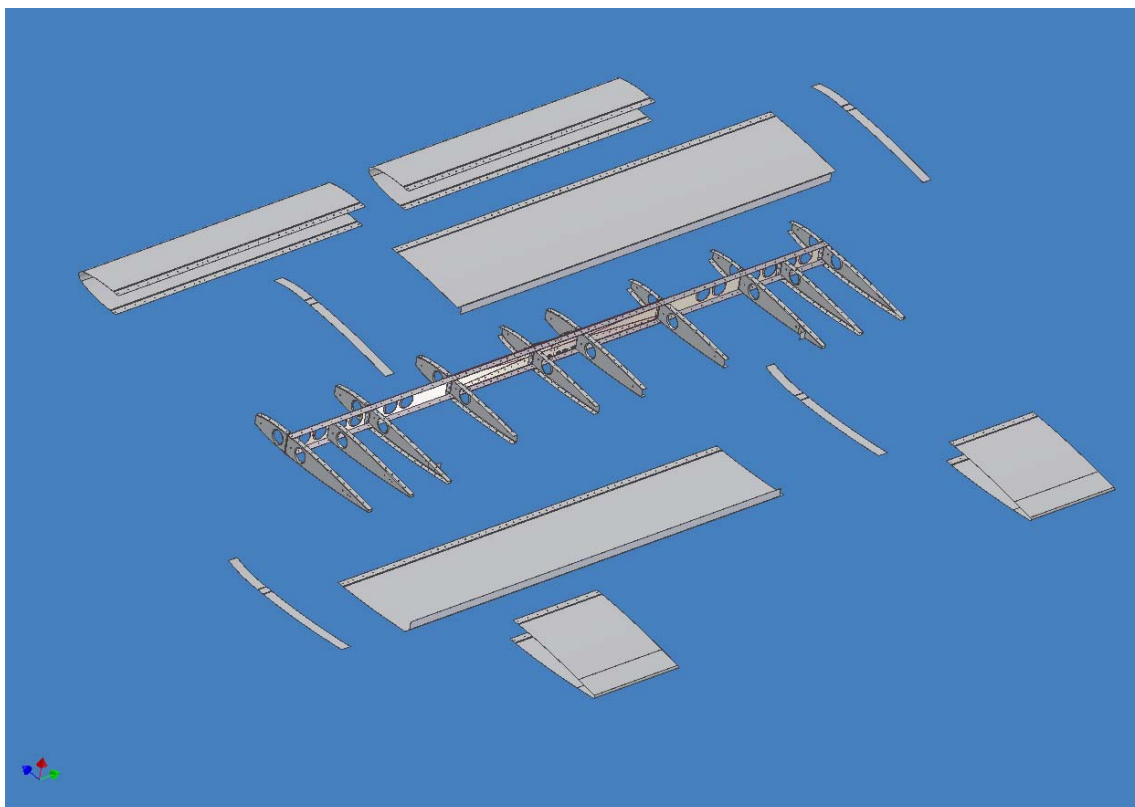
Stabilizer Spar Assembly



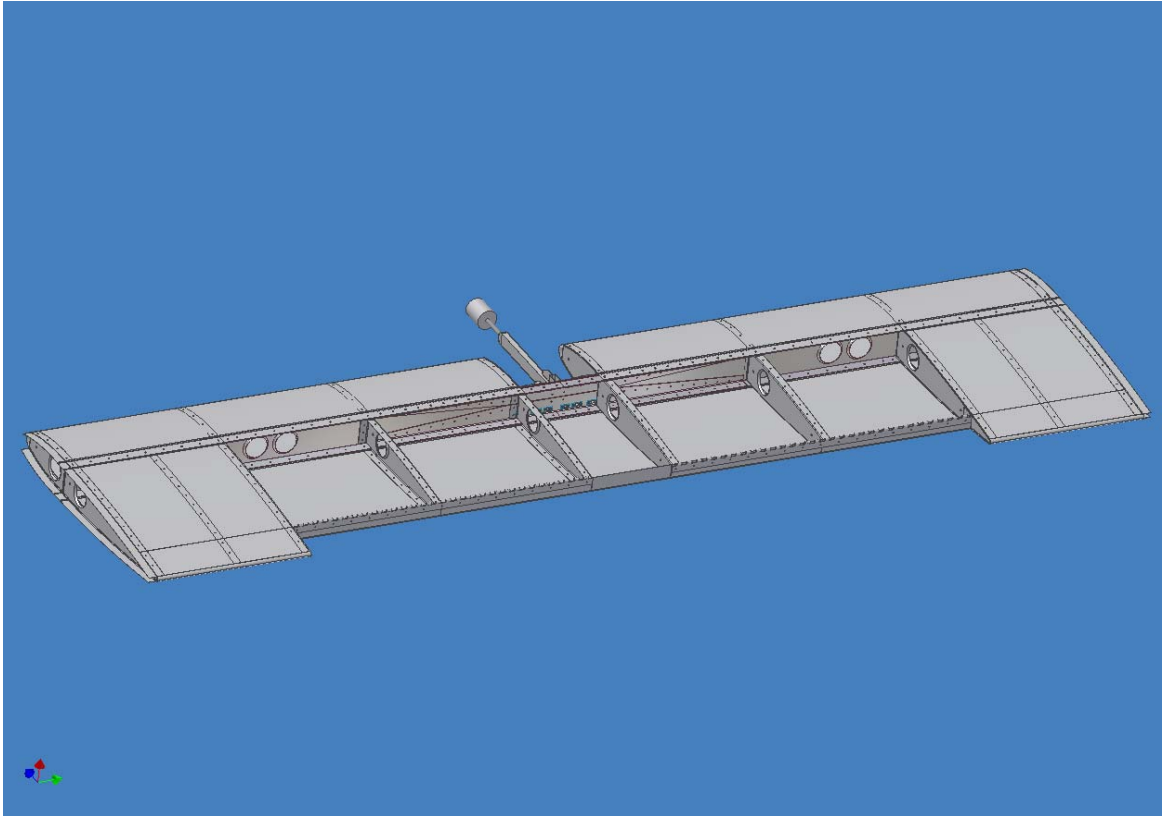
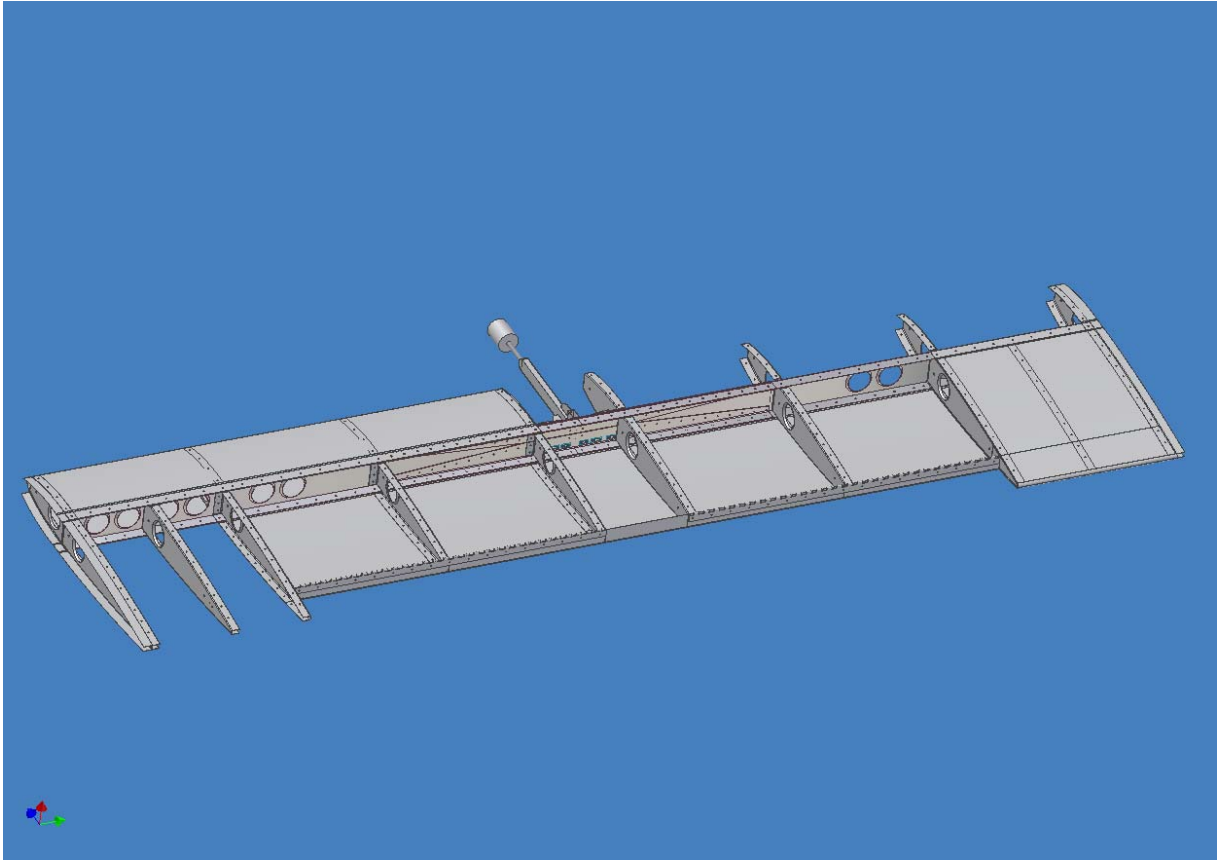
Stabilizer Ribs Assembly



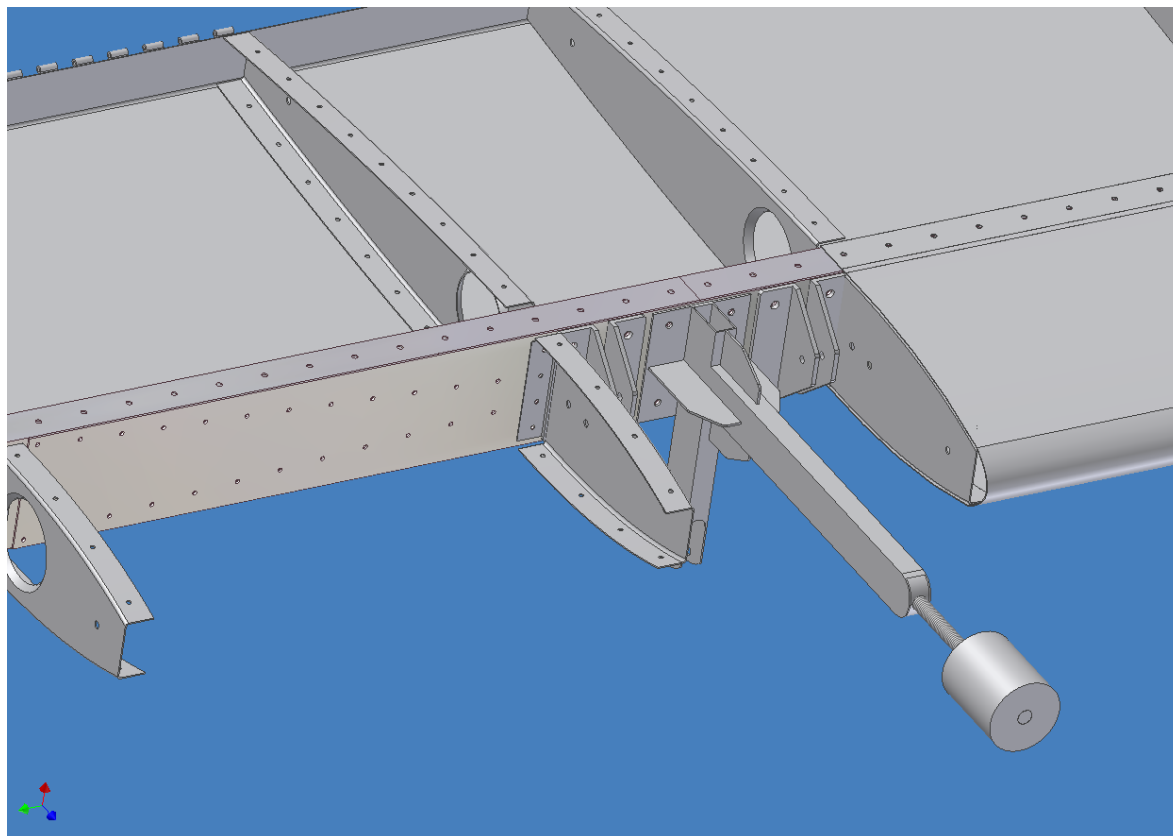
Ribs Assembly



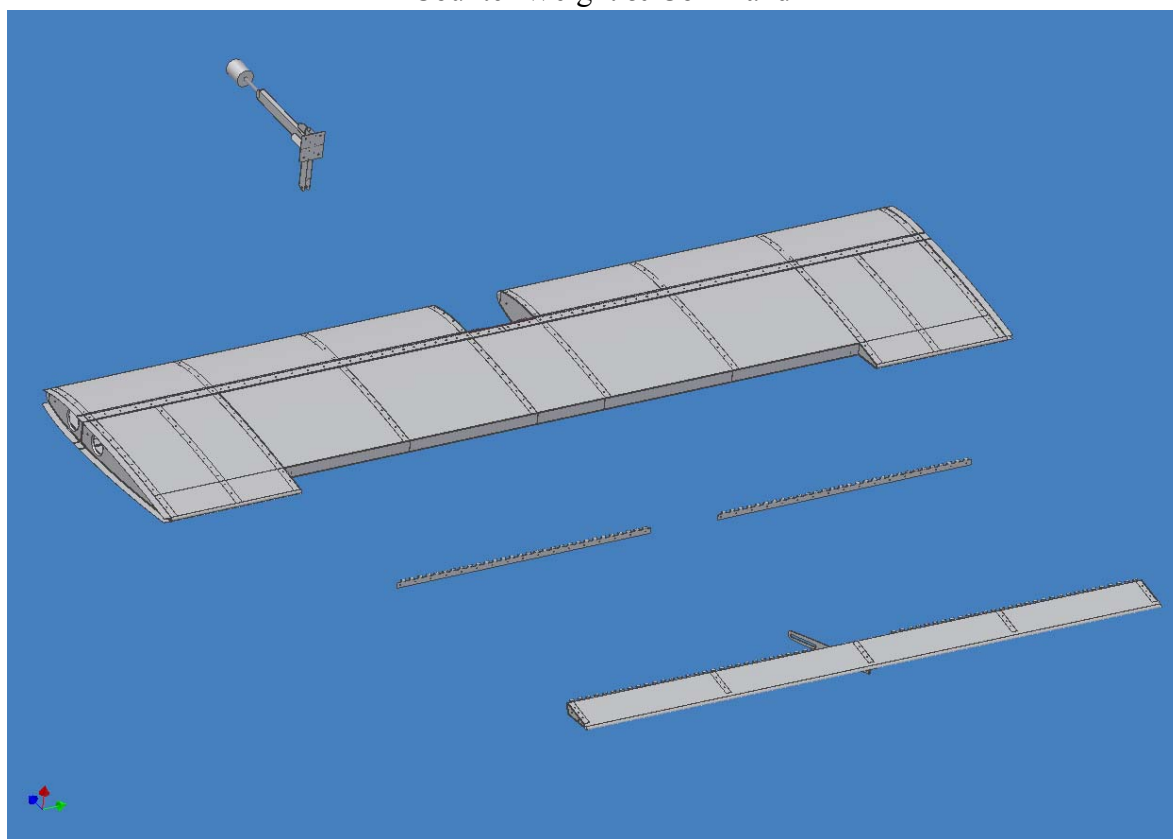
Stabilizer Assembly



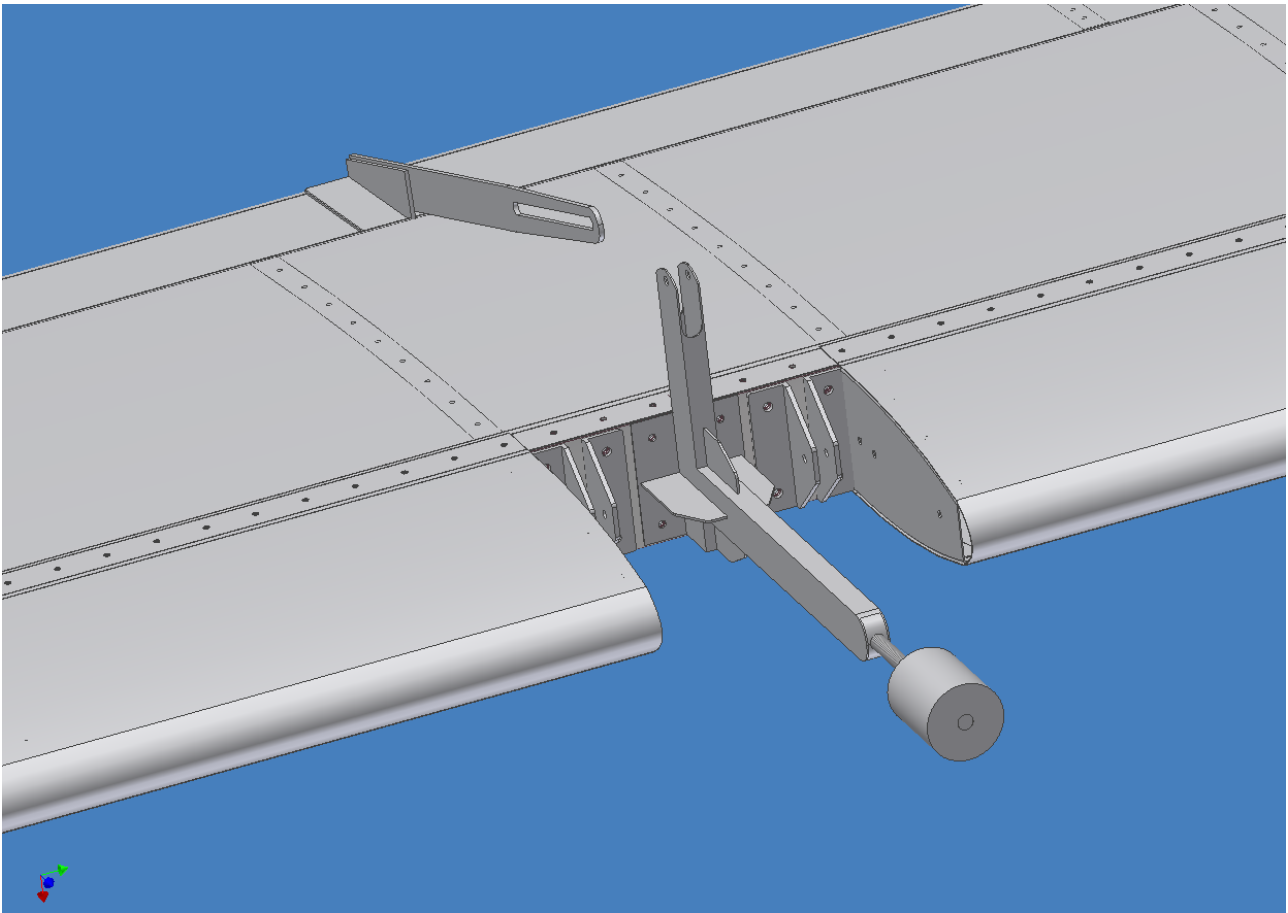
Skin Assembly



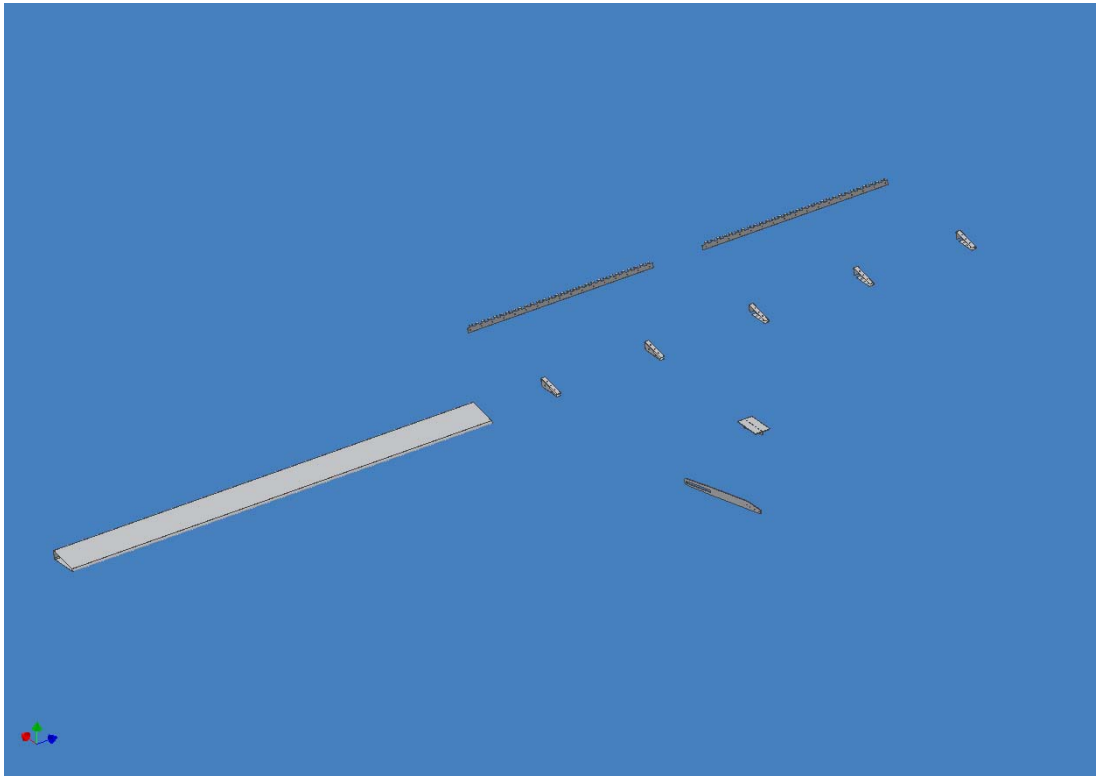
Counter Weight & Command



Trim Tab Assembly – Counterweight



Lower Wiev



Trim Assembly

ST5001 Stabilizer spar

Put the two ST5001-001 beams on a table with clues at their ends and the lips upwards.

Take the two inner stiffenings ST5001-012 and center them inside the spar, tighten them safely with clamps; place the stiffening ST5001-011 in the center as well, turn the spar with its lips downwards and drill through the holes on the spar, leaving the 2,5 mm rib holes and the four central ones.

Tack, leaving the space to position the second stiffening ST5001-011 that you have drilled with the inner one; tack and drill to $\varnothing$ 3,2 mm. Strip, deburr, clean and paint.

Reassemble everything and rivet with AN470AD4-, rivet the four central holes with AN426AD3-7 rivets after having countersunk.

Now you must mark the spar center, place the counterweight support and make the four 5 mm holes to fit the 5 mm anchor nuts with AN426AD3-8.

Take the hinge angles ST5000-014 after having taken the real external width of the two fittings at the back of the fin, and having added 3 mm for the washer space.

Place the external angles, positioning them parallel to each other and with an equally distant hinge hole center (with the help of square and gauge).

Drill to $\varnothing$ 6 mm and tighten with temporary bolts; add the thickness of the bearings and the washer space (13 mm); with the help of a 6 mm bolt, position the inner angles and drill to 6 mm.

Fit eight 6 mm anchor nuts and drill to 3,2 mm for AN426AD4-8 rivets.

Install the angles definitively with 6 mm bolts and the counterweight support with 5 mm bolts; this will allow you to obtain a safe tightening.



Figure 6.7: Stabilizer spar reinforcement.

ST5010 Trim

Take the sheet ST5010-010, mark the drilling of the ribs -028 right and left as shown in the drawing; fit them inside the sheets, drill them after having marked the lip center and tack. Strip, deburr and clean.

Reassemble, tack, rivet the ribs with AVEX1661-0410, except the lower part of the central rib.

Place the hinge -033 with its rotation center upwards, center it with the help of a ruler to line it up with the trim.

Drill to $\varnothing$ 3,2 mm after having locked the trim between two wooden boards to avoid possible twists and tack. Strip, deburr, clean, reassemble and rivet the hinge with AVEX1661-0410 rivets.

Position the control stick ST5010-019 with its two squares -027, drill three 3,2 mm holes, deburr and rivet with AN470AD4-8.

Place this assembly on the low side of the trim following the dimensions of the drawing and square it (with the help of a 90° square), drill to $\varnothing$ 3,2 mm; one lip of the square -027 matches with the lip of the inner rib -028.

Rivet with AVEX1661-0410.

Put the trim assembly on the stabilizer opening, center it (about 3 mm gap per side) and line it up with the upper part; drill the hinge to $\varnothing$ 3,2 mm, tack, deburr and rivet with AVEX1661-0410.

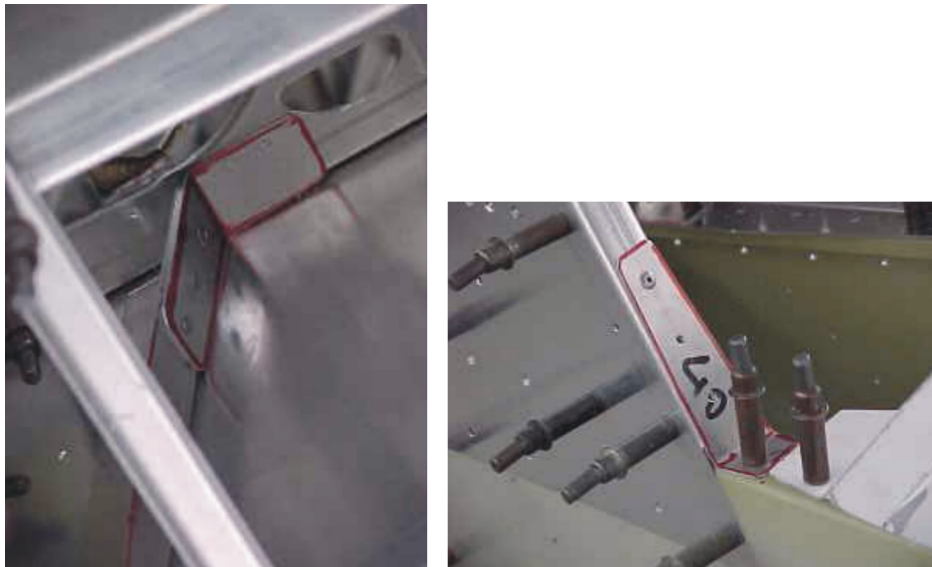


Figure 6.8: Two shots of tail in close-up.

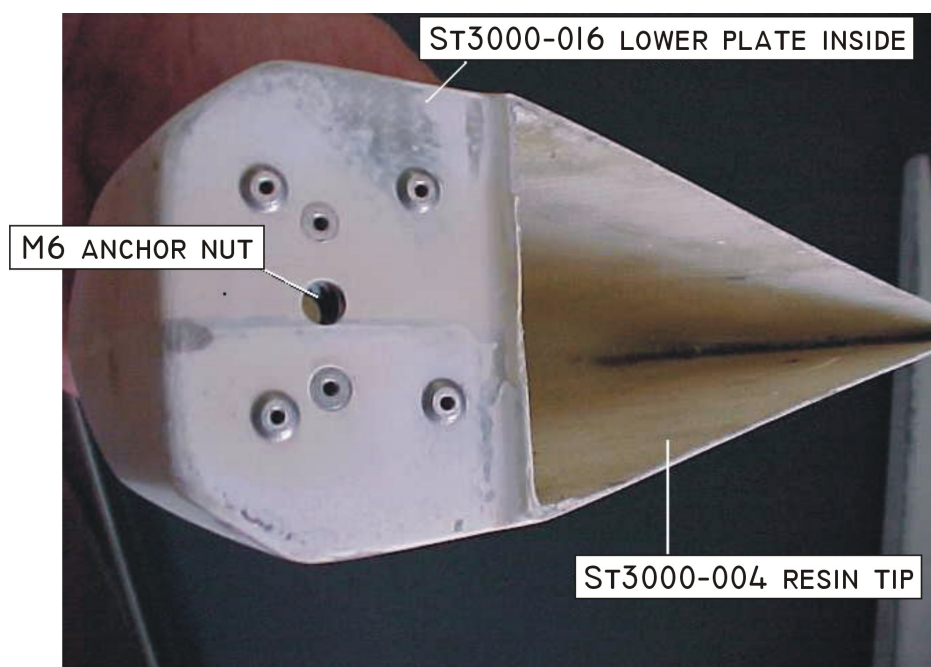


Figure 6.9: Upper rudder composite tip.



Figure 6.10: Lower rudder composite tip.

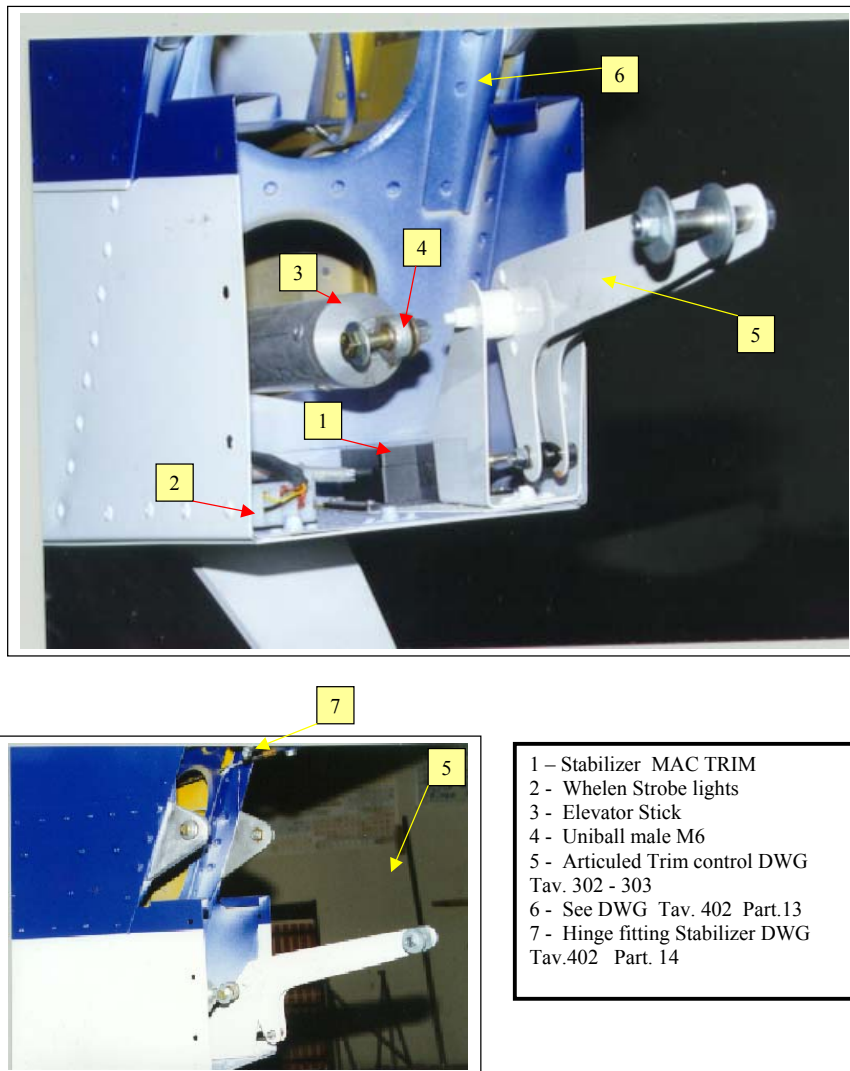


Figure 6.11: Particulars of trim system and fuselage's end.

Chapter 7

Wing

ST7001/2 Flap assembly

*WING STORM 300
series from 1998 to 2003*

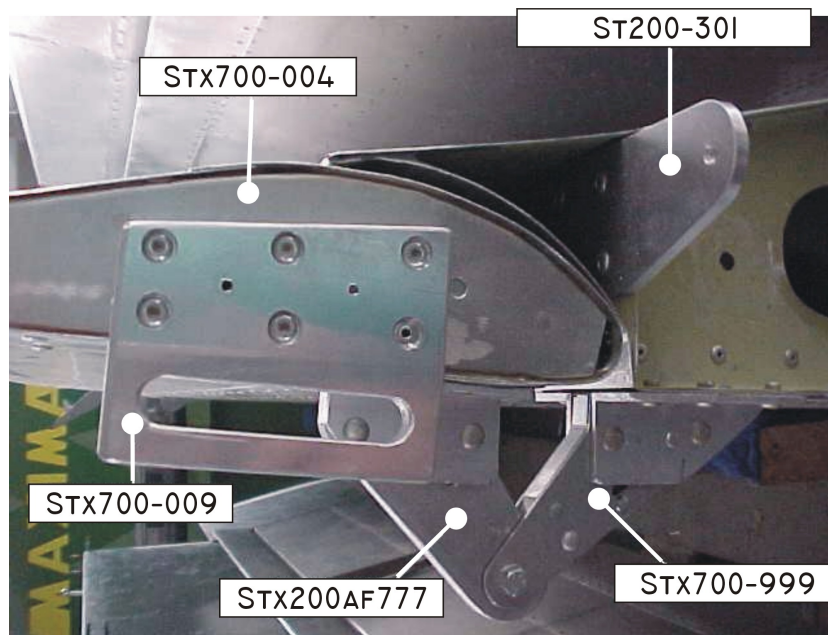
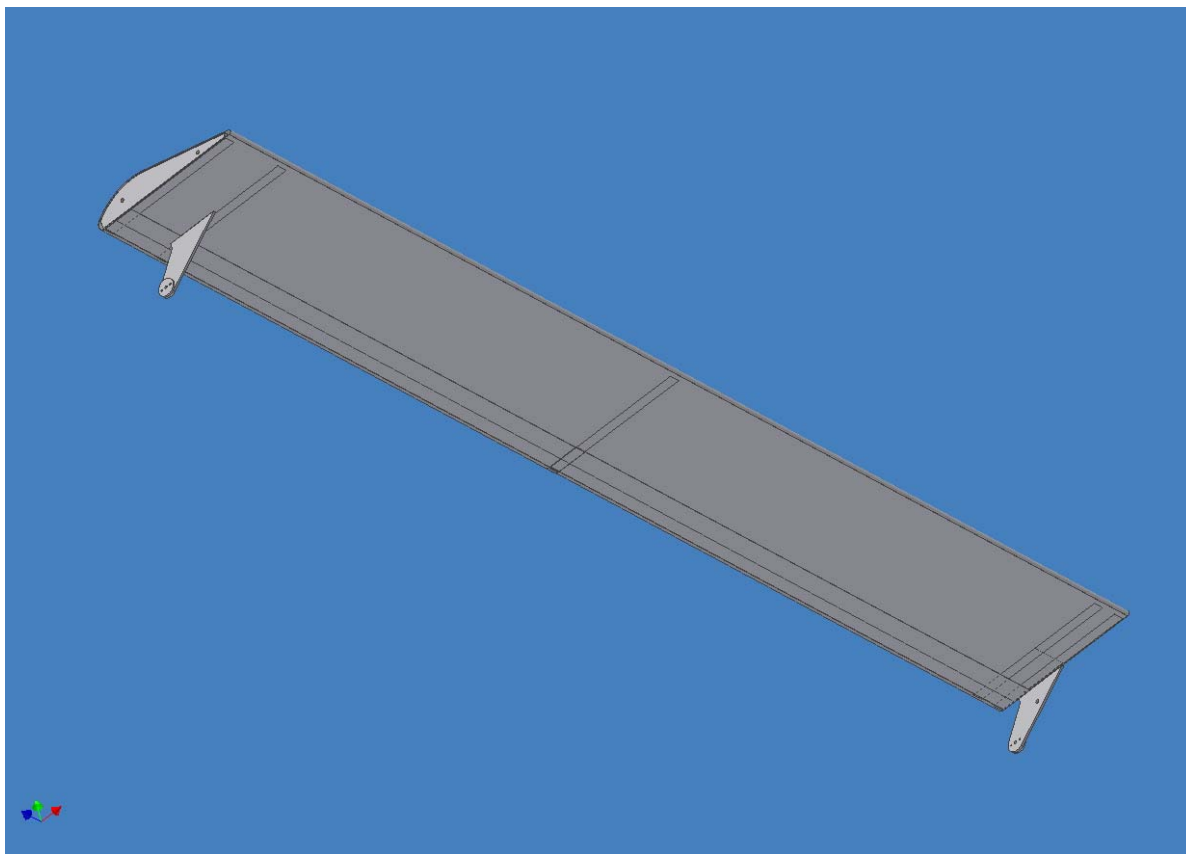
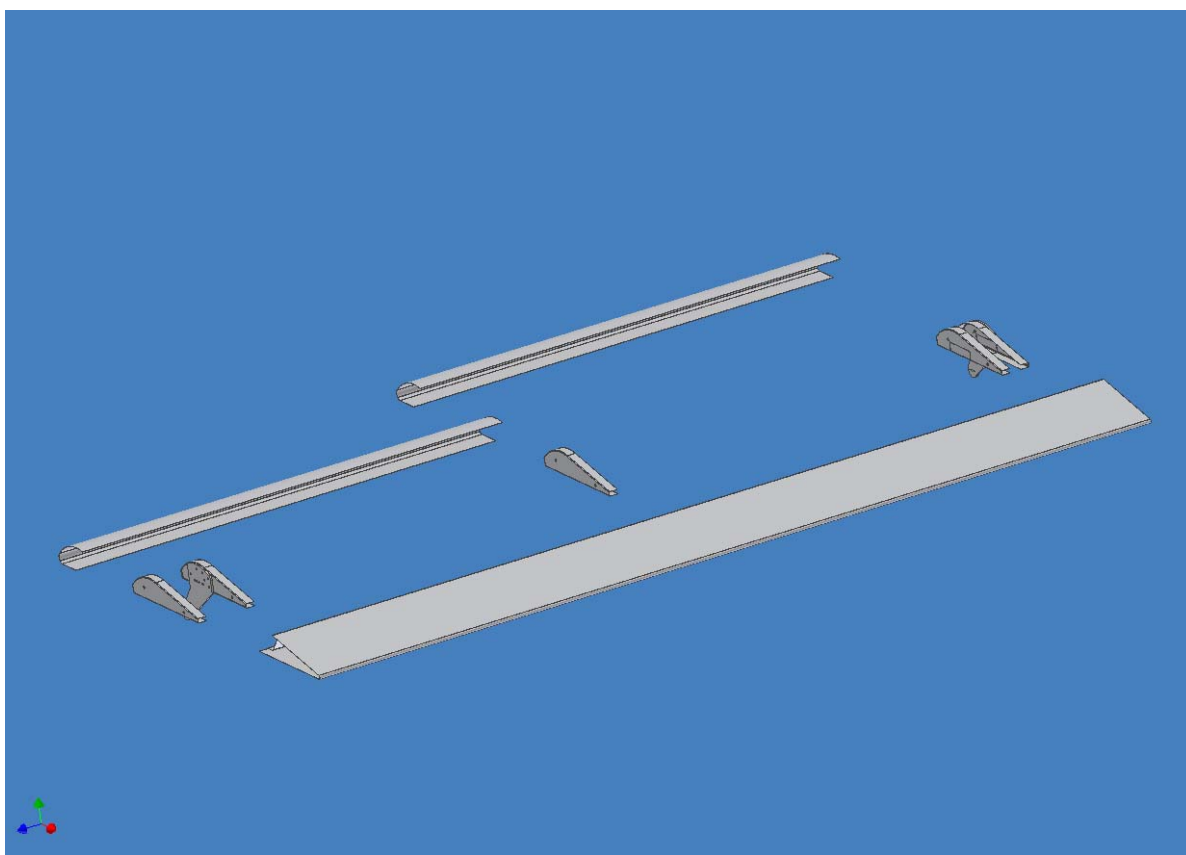
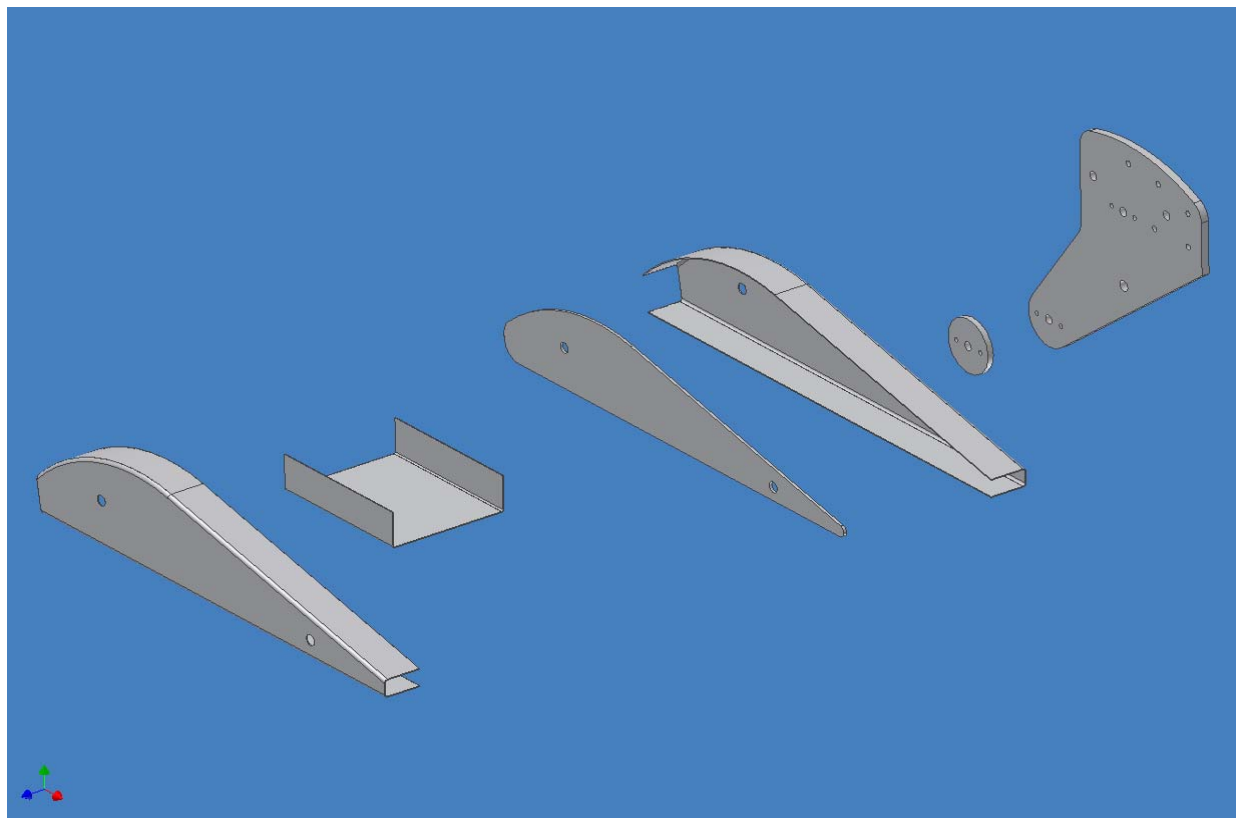


Figure 7.1: Focusing on (see counterclockwise): STX700-004 rib, ST200-301 rear connector plate, STX700-999 flap connector assembly, STX200AF777 flap connector, STX700-009 slotted hole plate command.

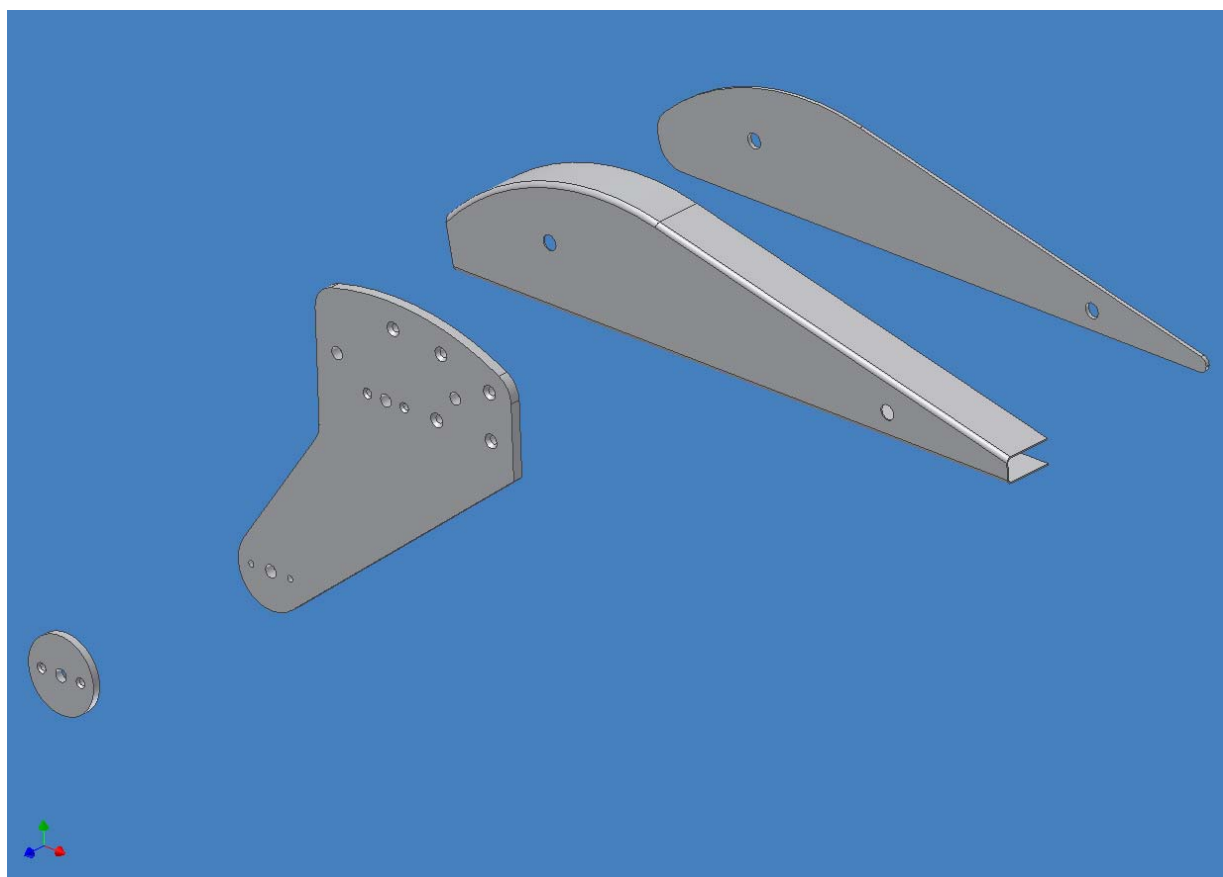


Flap assembled





Flap : Ribs & Hinge Side Fuselage



Flap Hinge & Rib Side Aileron



Figure 7.2: Flap breakdown (up) and flap hinge (down).

Place the sheet STX700-002 on a perfectly plane table; mark a 65 mm opening on the two heads, trim the inside.

Mark the sheet center and make a 24 mm opening.

Take the ribs STX700-004/-003, assemble the inner rib (nearer to the fuselage) as shown in the drawing, the inner stiffening -005 and the control slots; drill and rivet.

Position the ribs as shown in the drawing, make the drilling on the top with a 25 mm spacing, tack.

Do the same operation on the bottom side leaving the connection area free. Deburr, clean and rivet with AVEX1661-0410.

Position the edge -001 triggering it and, overlapping it on the center, make sure that the width is constant.

With the help of wooden lists that can be fixed to the table, you can use it for the aileron assembly as well.

Mark and drill the upper side to $\varnothing 3,2$ mm with a 40 mm spacing and a 10 mm margin, tack and rotate the flap; drill the lower side the same way leaving the connection area free from drillings. Strip, deburr, clean and rivet with AVEX1661-0410.

The same procedure must be followed for the opposite flap; take care of the rib with the control slot.

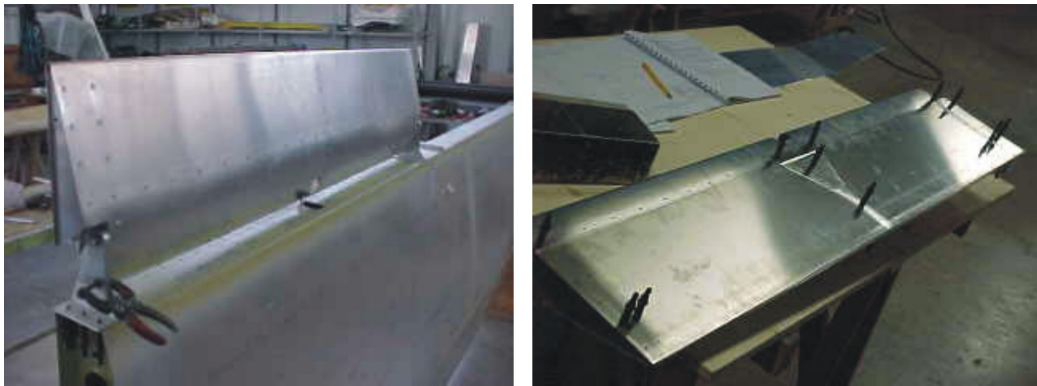


Figure 7.3: Two shots of aileron assemblage.

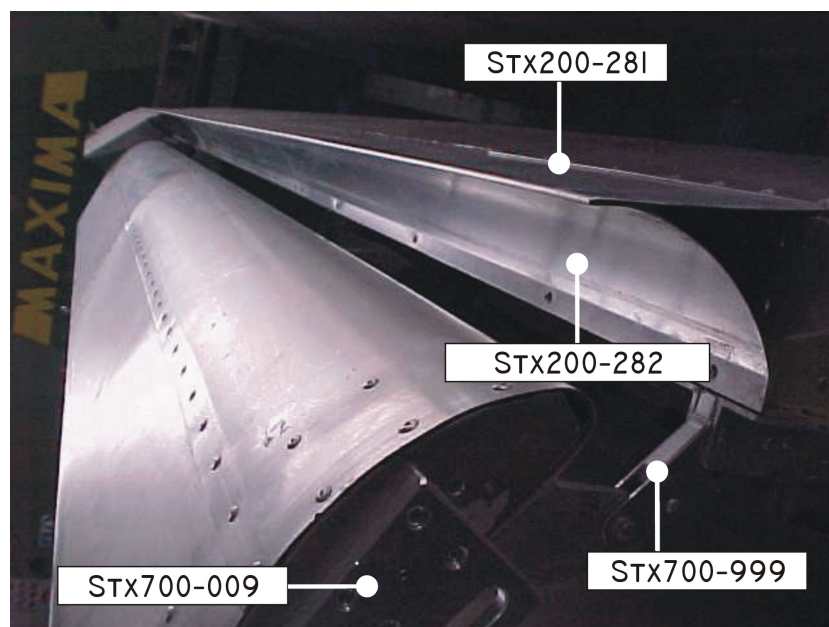


Figure 7.4: Focusing on: STX200-281 flap fairing outside, STX200-282 flap fairing inside, STX700-009 slotted hole plate command, STX700-999 flap connector assembly.



Figure 7.5: Flaps control leverage.

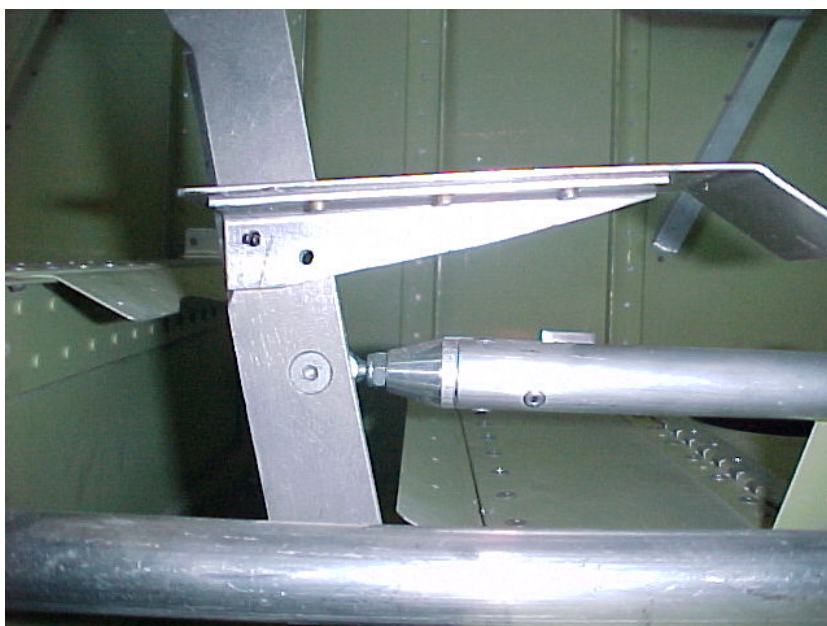


Figure 7.6: Flap handle in close-up.



Figure 7.7: Flap system.

ST8001/2 Aileron assembly

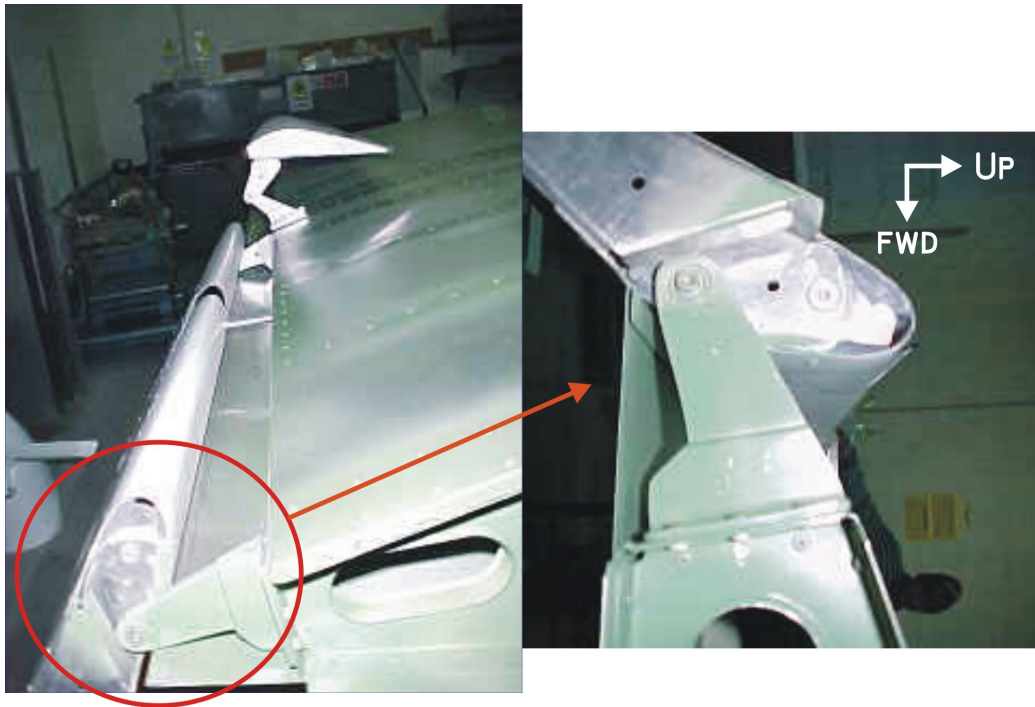


Figure 7.8: Aileron (left) and aileron hinge detail (right).

Take the two head ribs STX700-003/-004, position the plates -007 as shown in the drawing, drill and tack them with AN426AD4-8 countersunk on the plate; fit the $\varnothing$ 5 mm anchor nut for the rotation and rivet it with AN426AD3-10.

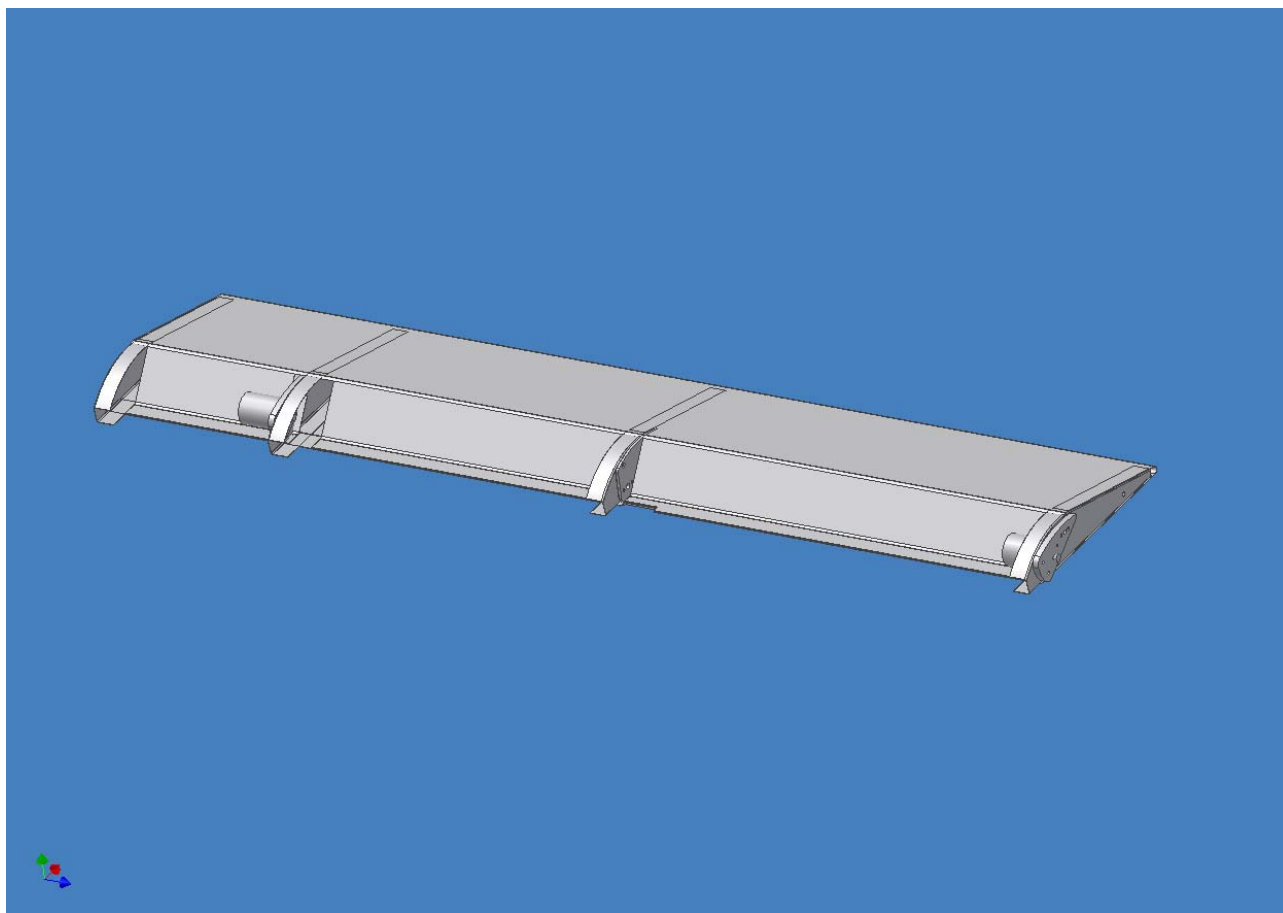
Do this operation for the four ribs so as to make sure that the rotation center is the same for each rib.

Make the countersinking for the 5×70 bolt that will tighten the 250 grams lead -008 of the rib.

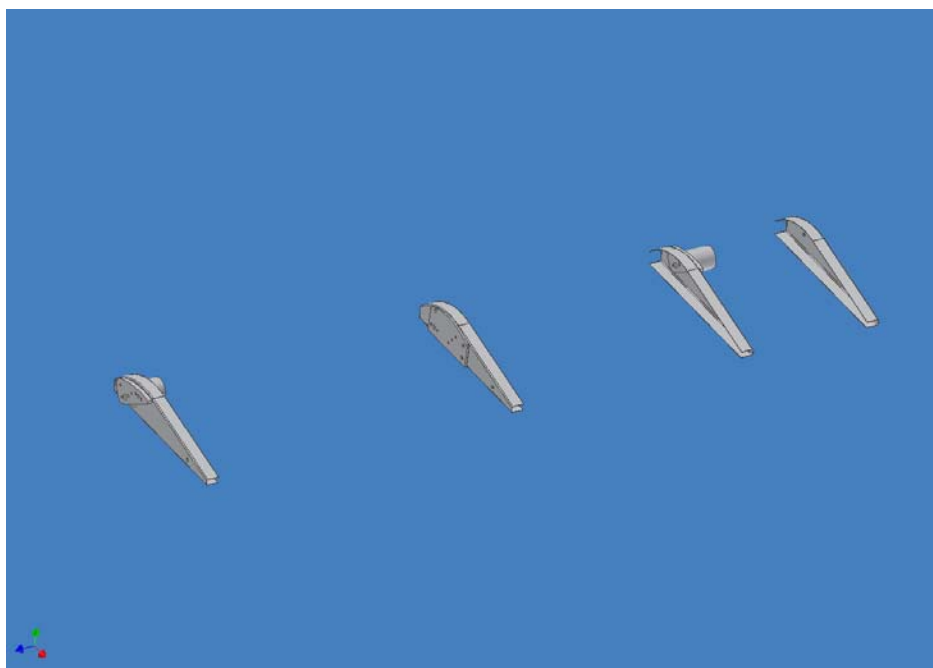
Now take the control rib, stiffen it with the plates -005, fit the 6 mm anchor nut for the control in the inner part.

Take the sheet and, once you have determined which is the right or the left aileron, mark the openings and the control rib opening as shown in the drawing.

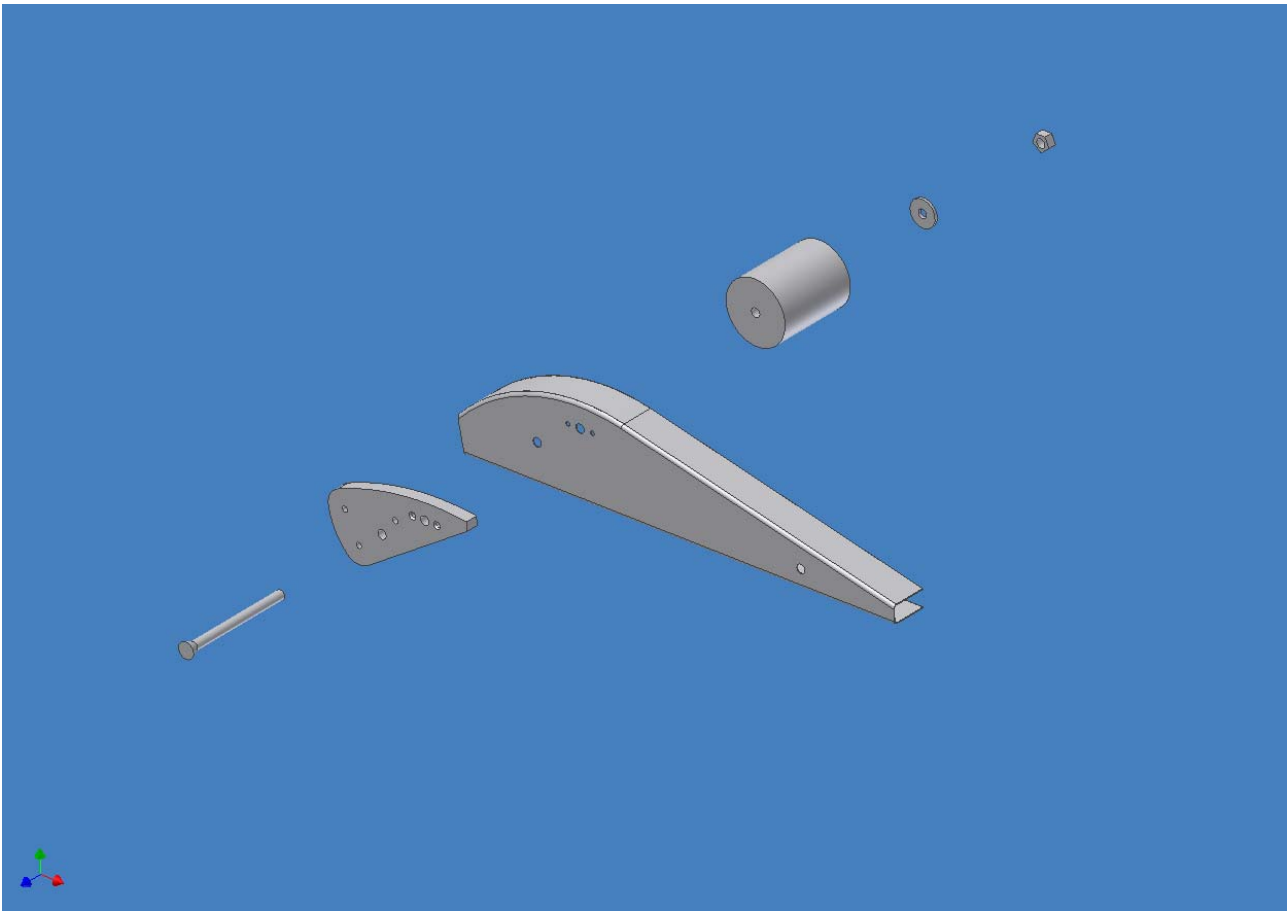
Position the ribs as shown in the drawing, mark and drill to $\varnothing$ 3,2 mm, tack, rotate and drill the lower part fitting the stiffening -111.



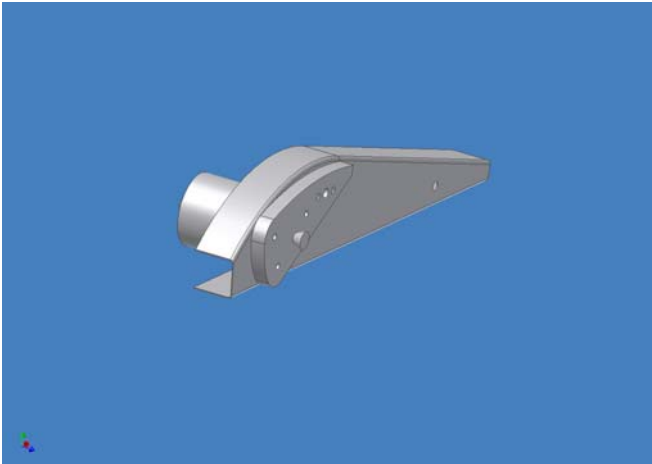
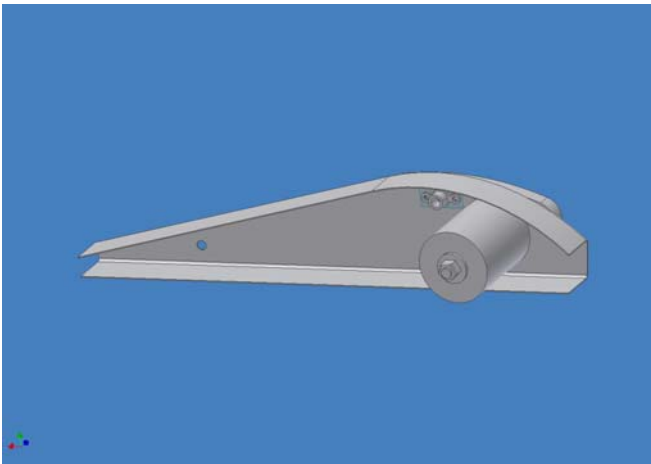
Aileron Assembly

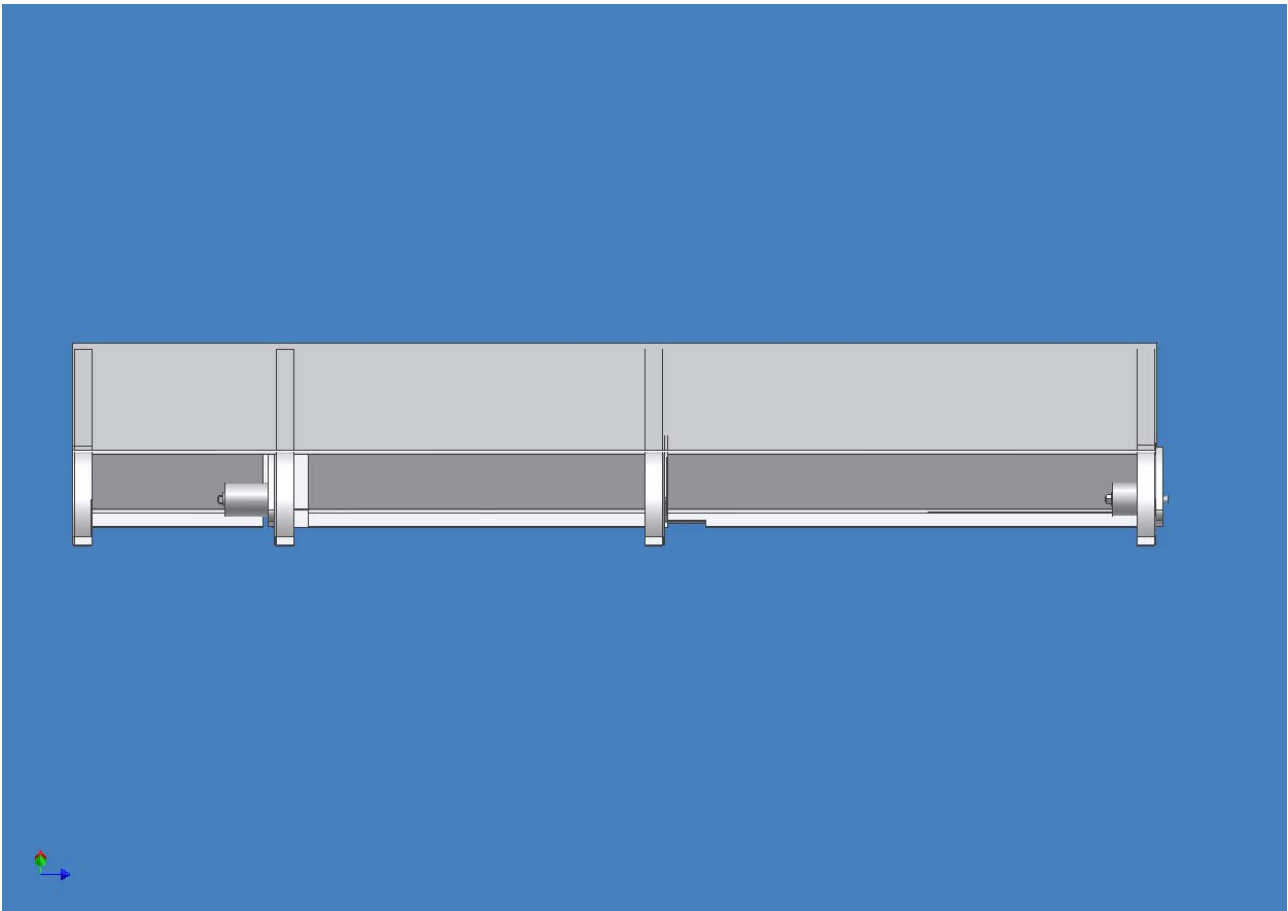


Aileron Ribs

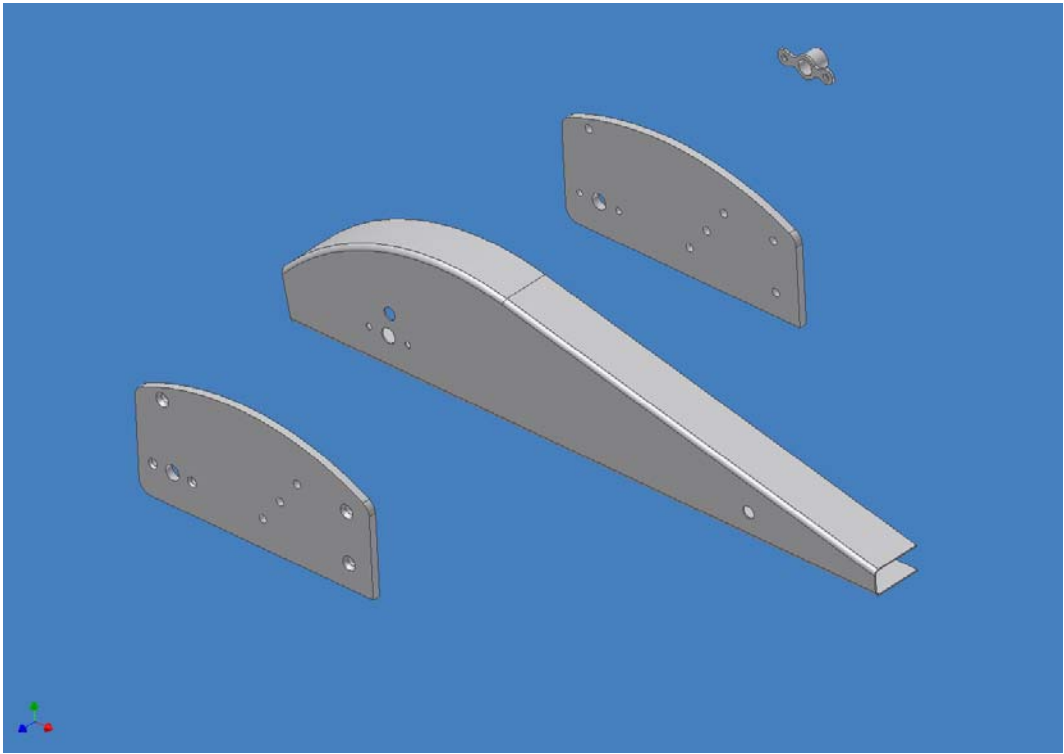


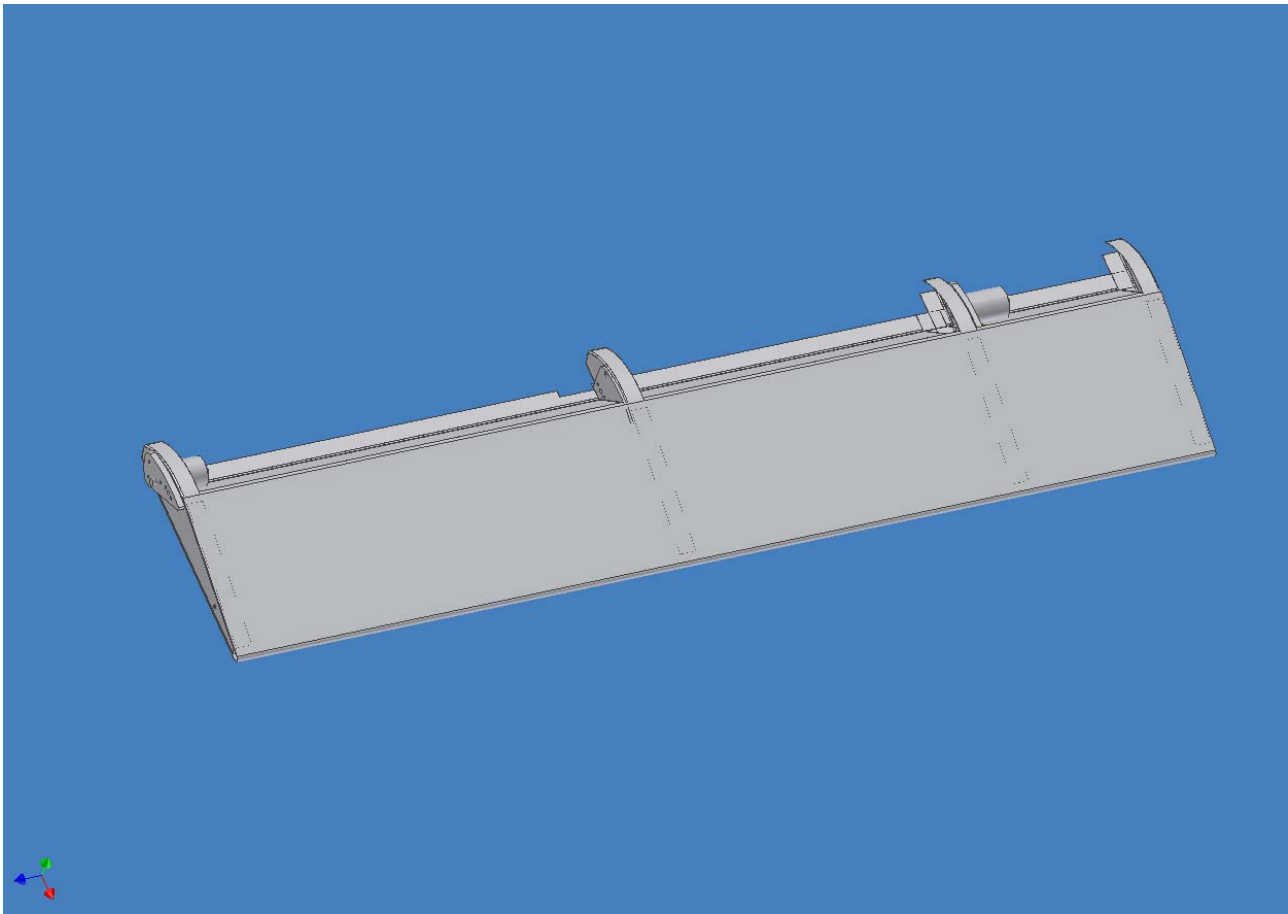
Counterweight Assembly external Rib



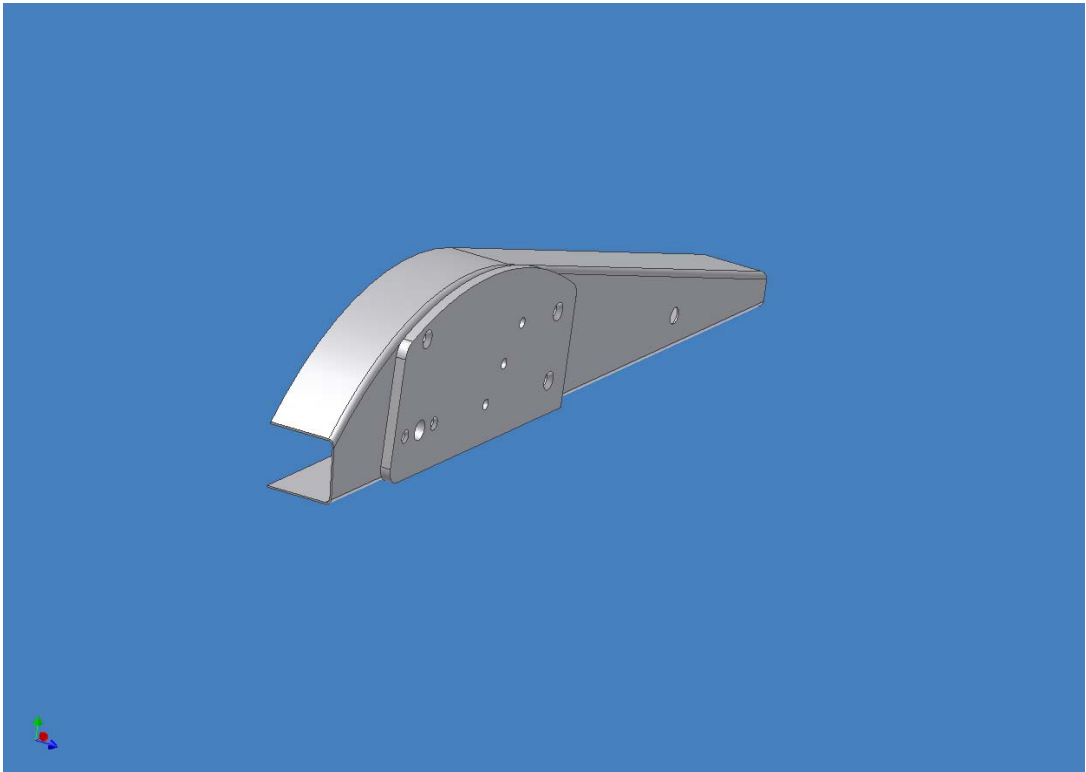


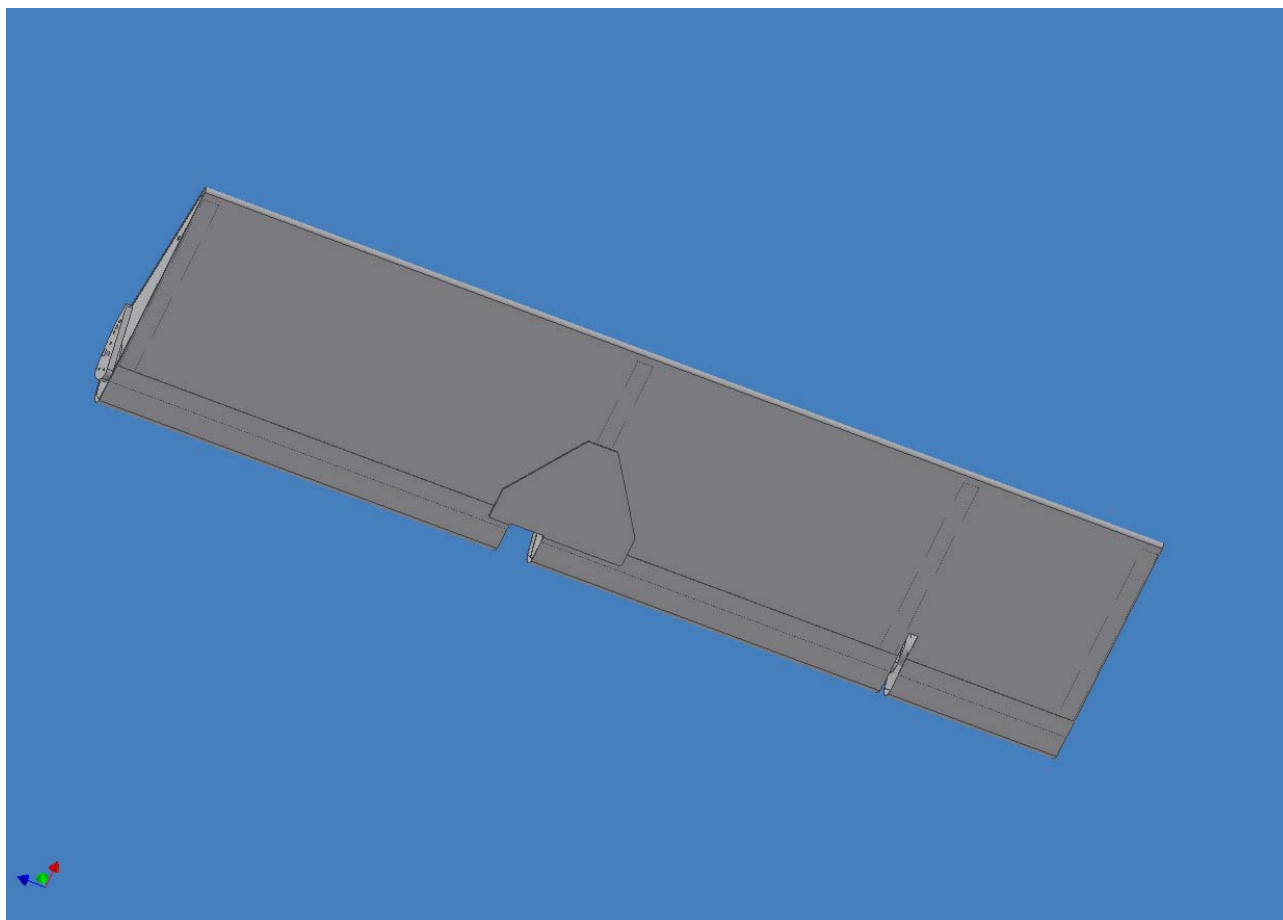
Central Rib : Aileron Ctrl Rod Connection





Aileron Ctrl Rod Rib Connection





Aileron Bottom view



Figure 7.9: Aileron side wing tip.

Mark the inclination of the central spar on the control rib, remove it and fit the two squares -020 riveting them between the same and the rib.

Reposition it and drill two holes per side between the sheet spar and the squares, rivet with AVEX1661-0410, deburr, clean and rivet everything with AVEX1661-0410.

Locate the edge -001, without making the slot for the control bar yet, trig it well, you are using the table used for the flaps.

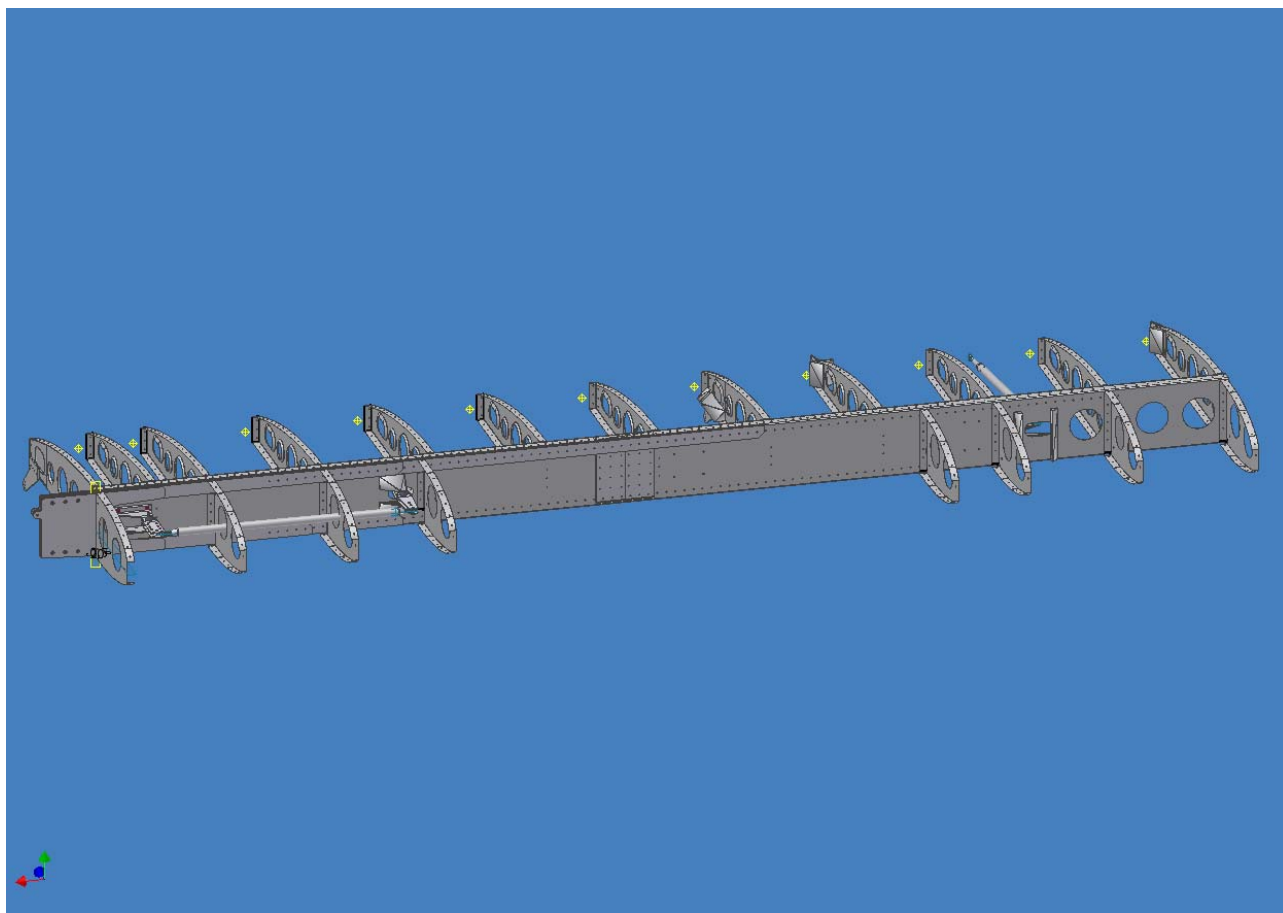
Drill after having marked the holes as shown in the drawing, mark the control slot, remove and trim the slot, lock the leads to the ribs, tighten the 5×70 countersunk bolt.

Reassemble and rivet everything with AVEX1661-0410 and with -0412 on the stiffening area.

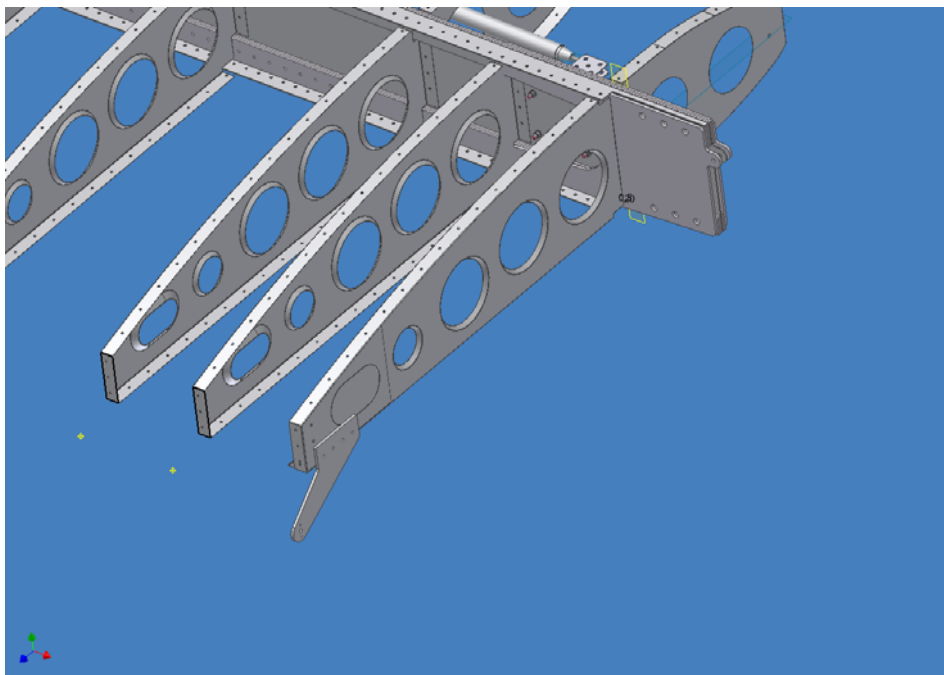
Place the two head ribs contoured with the sheet, mark the holes with a 40 mm spacing and 10 mm margin, drill, deburr and rivet with AVEX1661-0410.

The same procedure must be followed to assemble the other aileron.

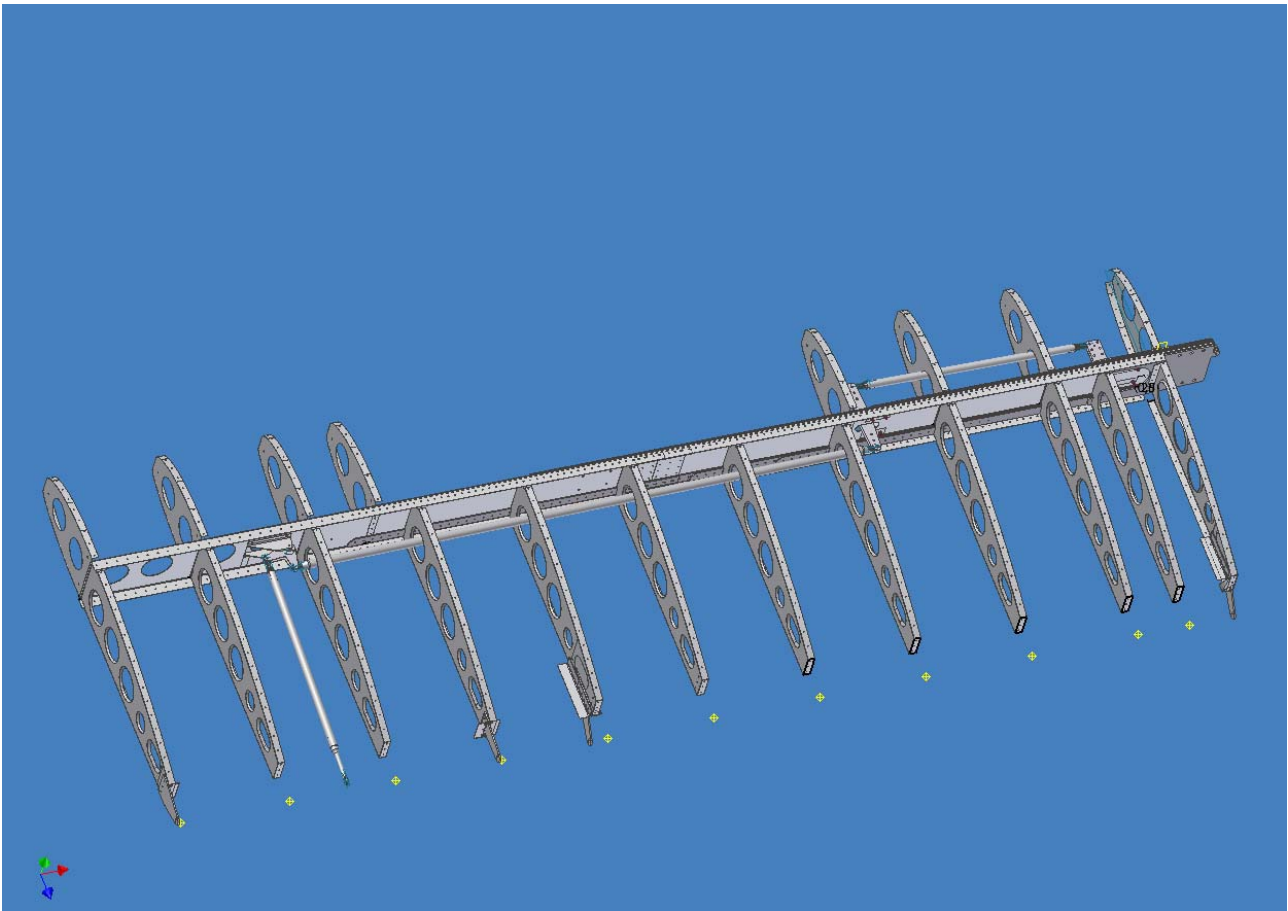
Remark: before installing the ribs with anchor nuts, make sure that the bolts are tightened to avoid unpleasant effects.



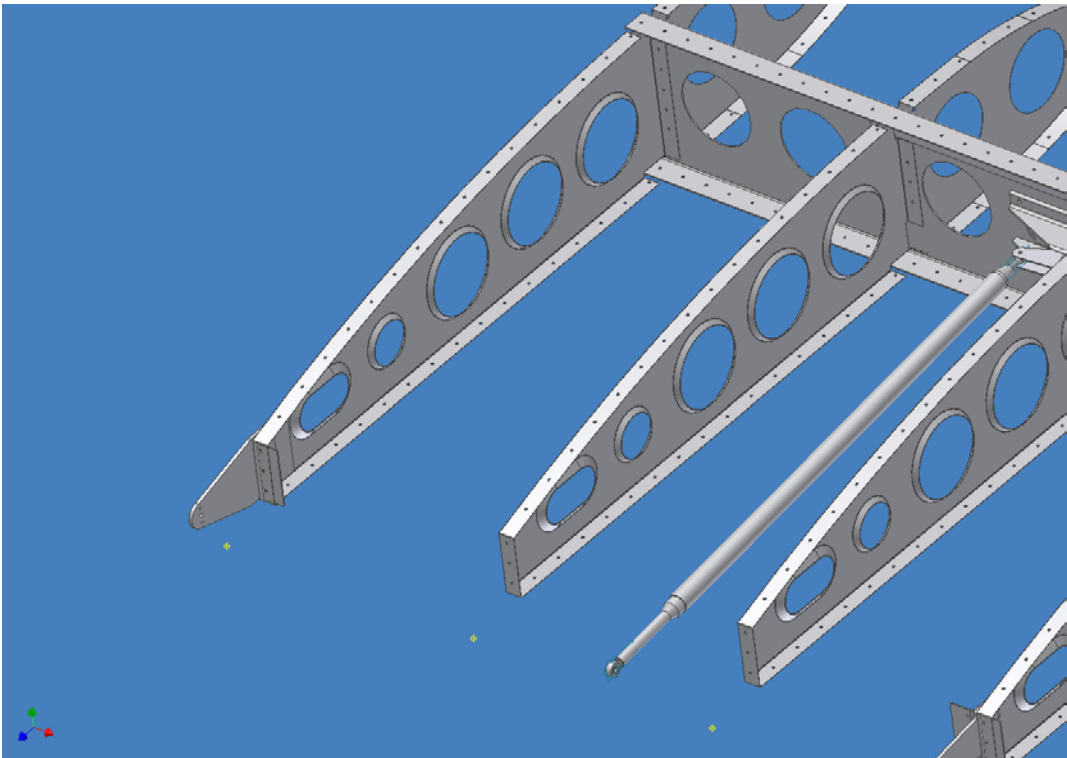
Wing Assembly: Control Rods



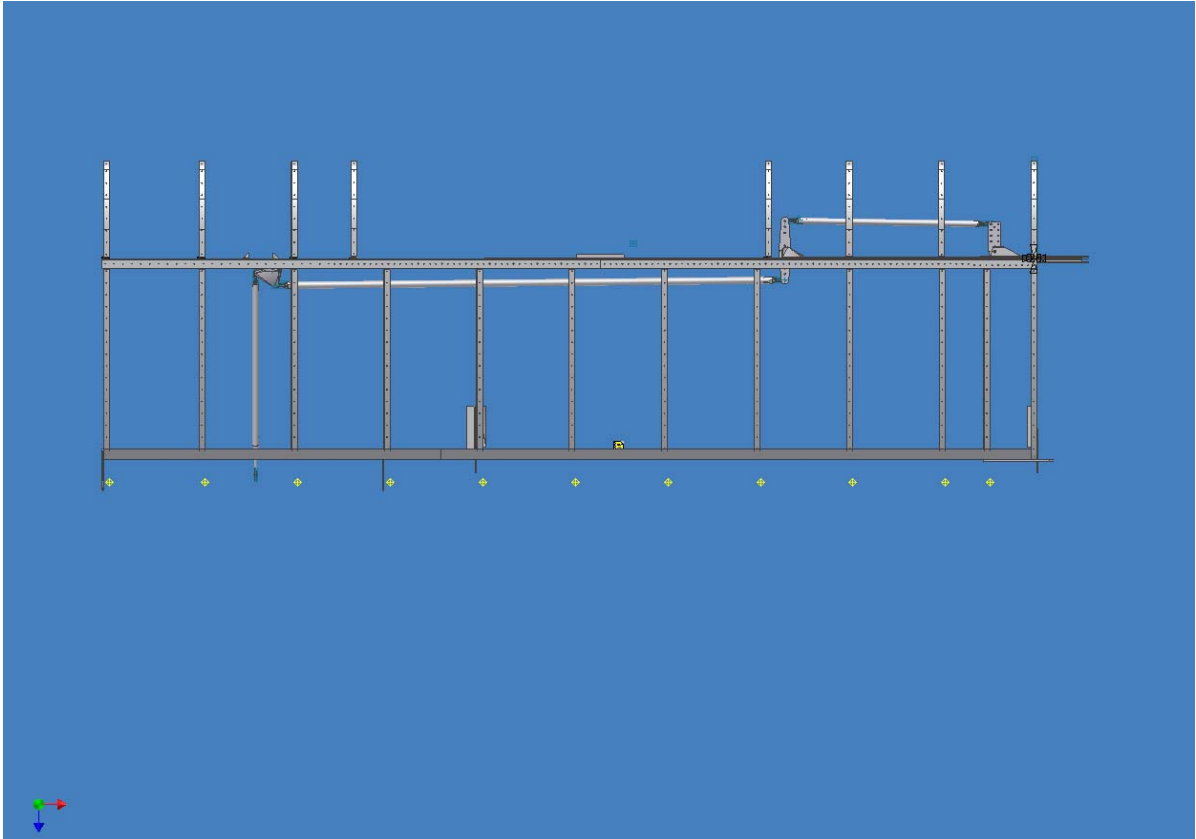
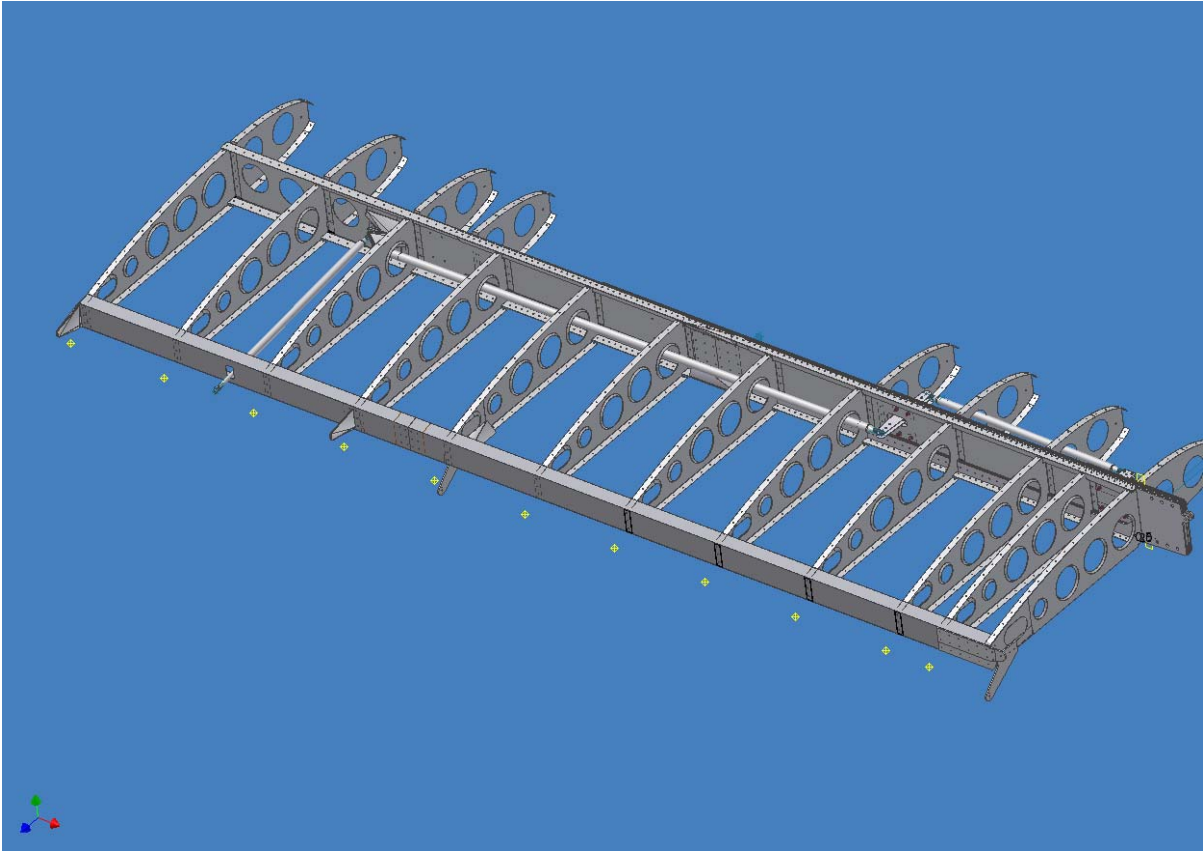
Rib Flap Connection



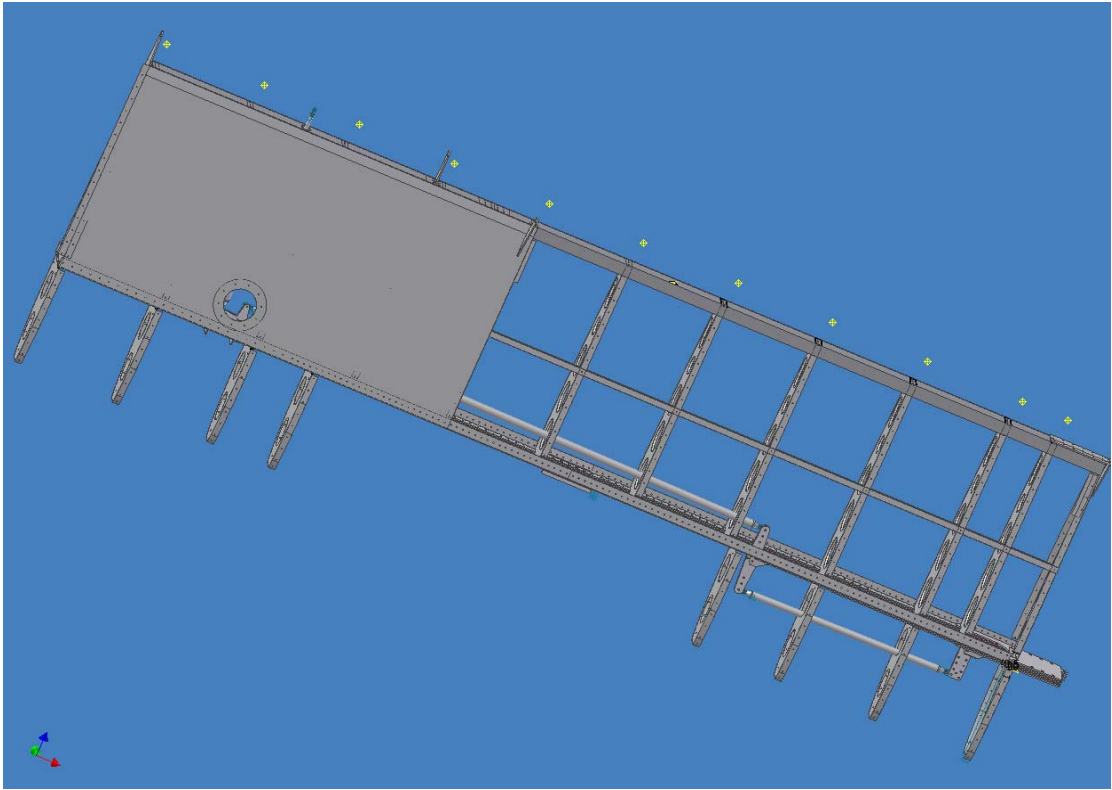
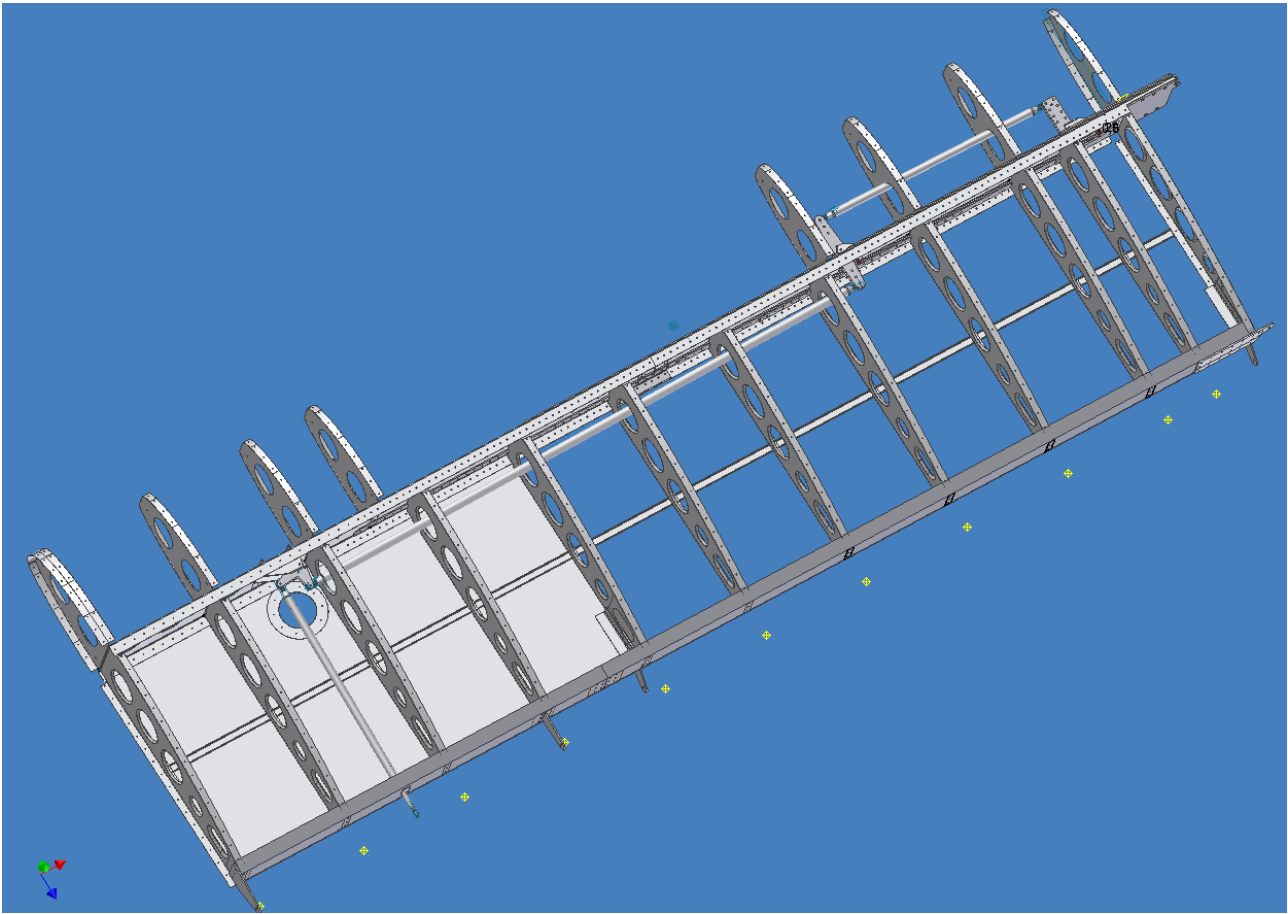
Ribs Assembly



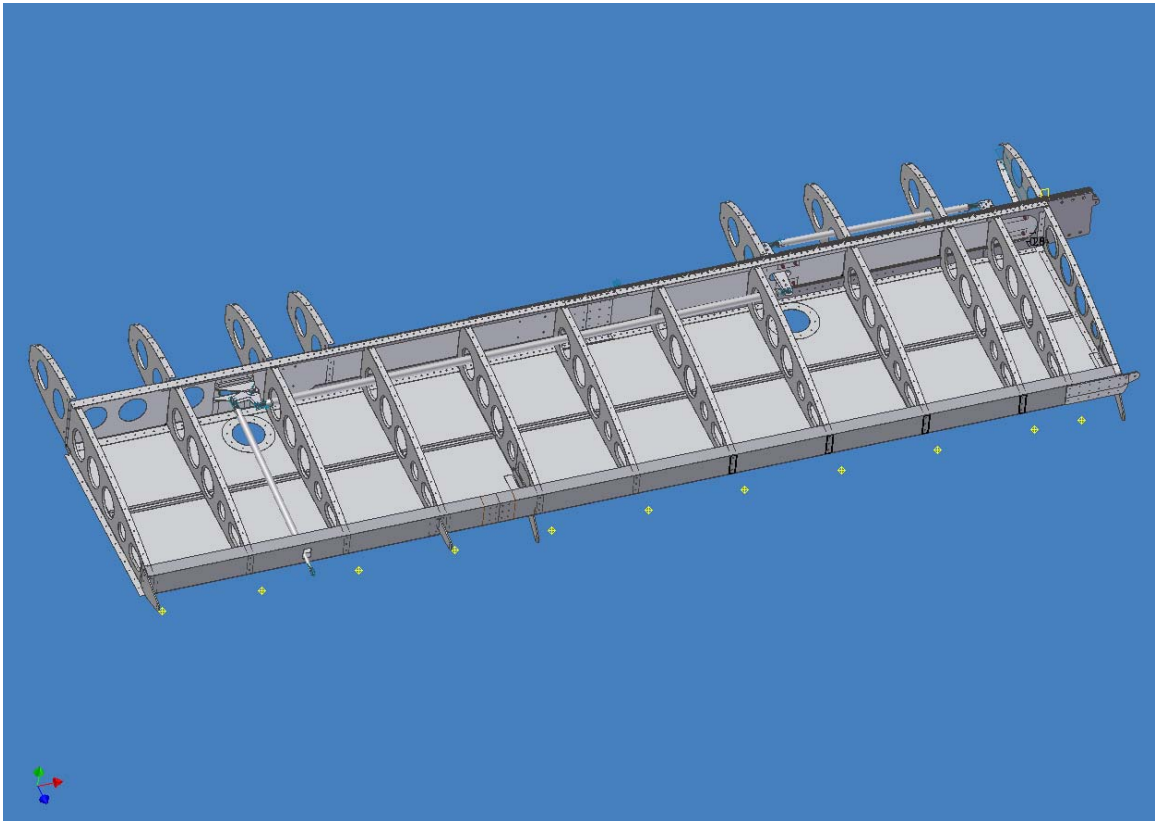
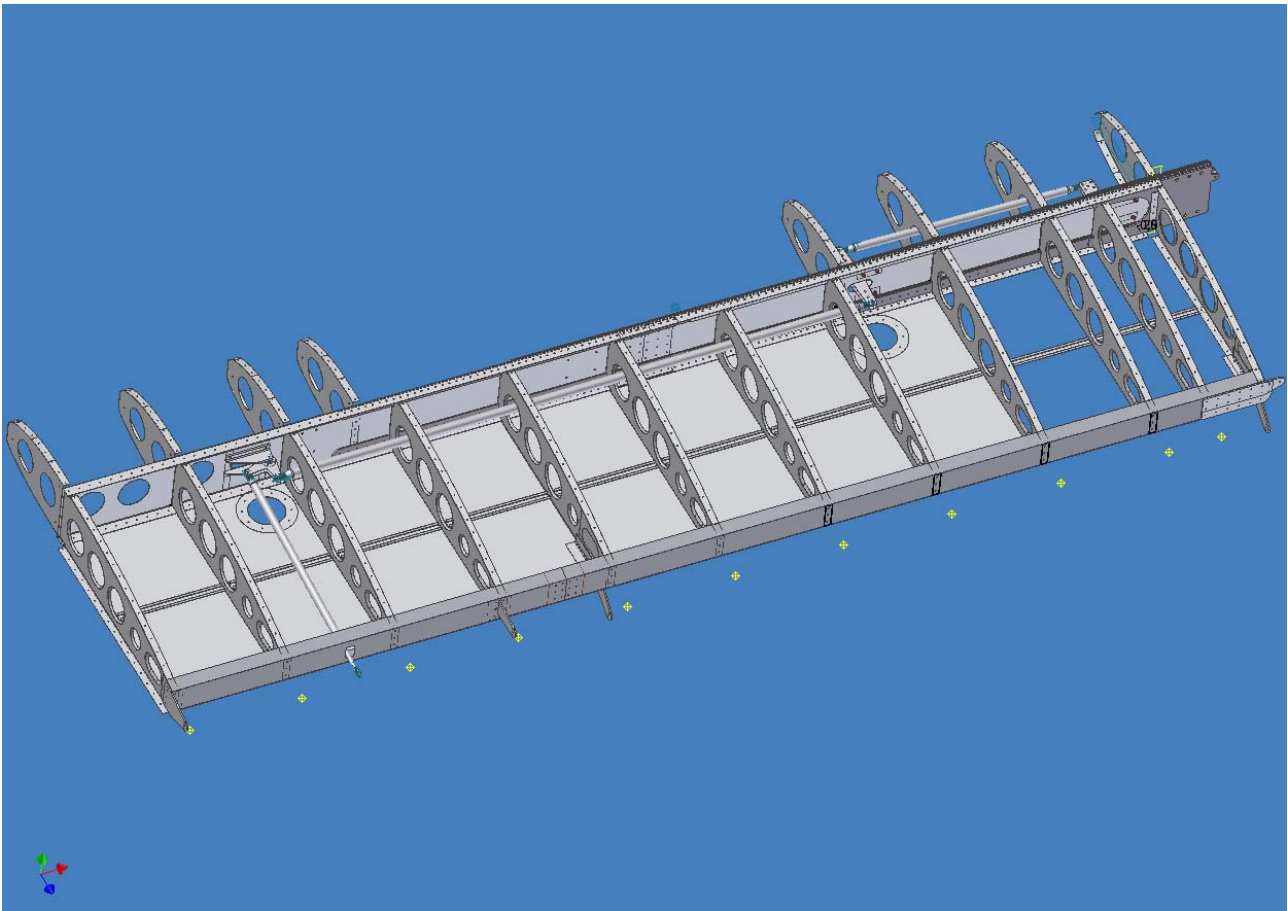
Aileron Ribs Connection



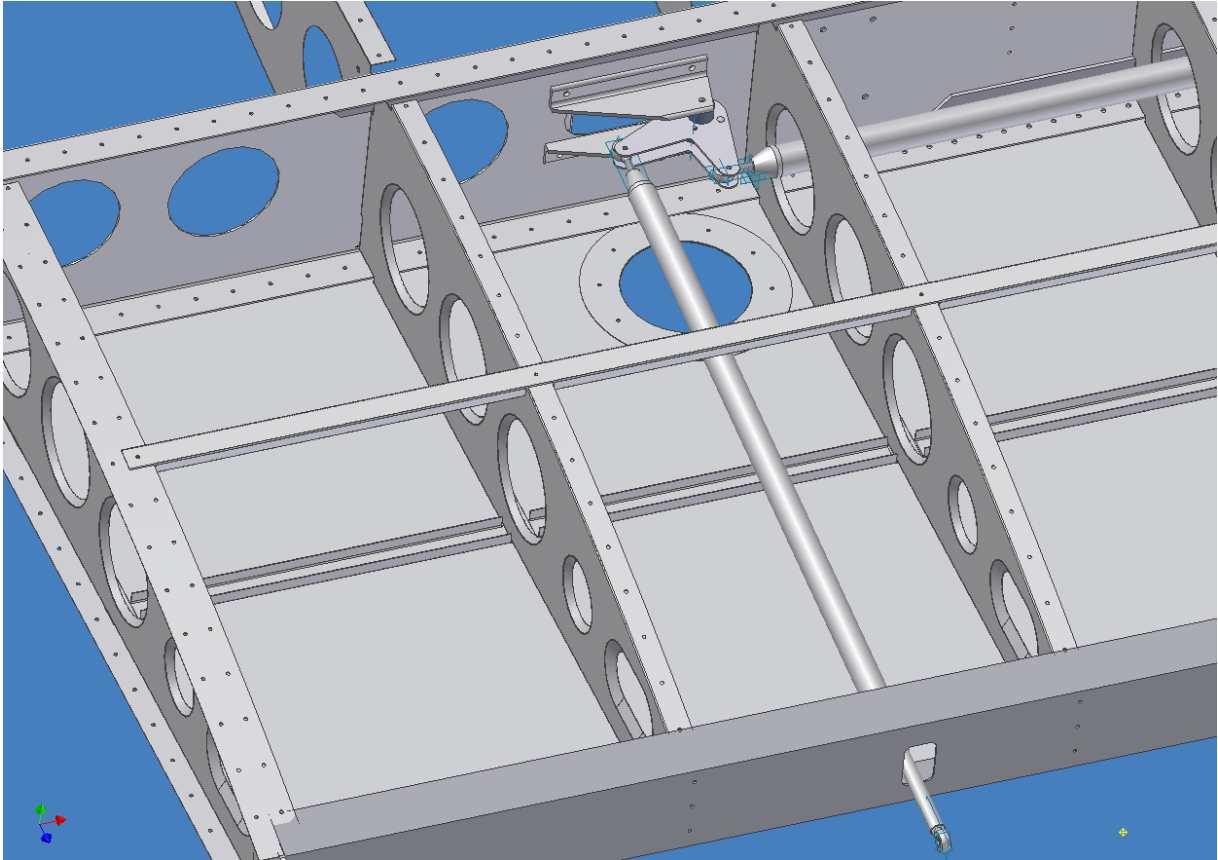
Wing Ribs Assembly



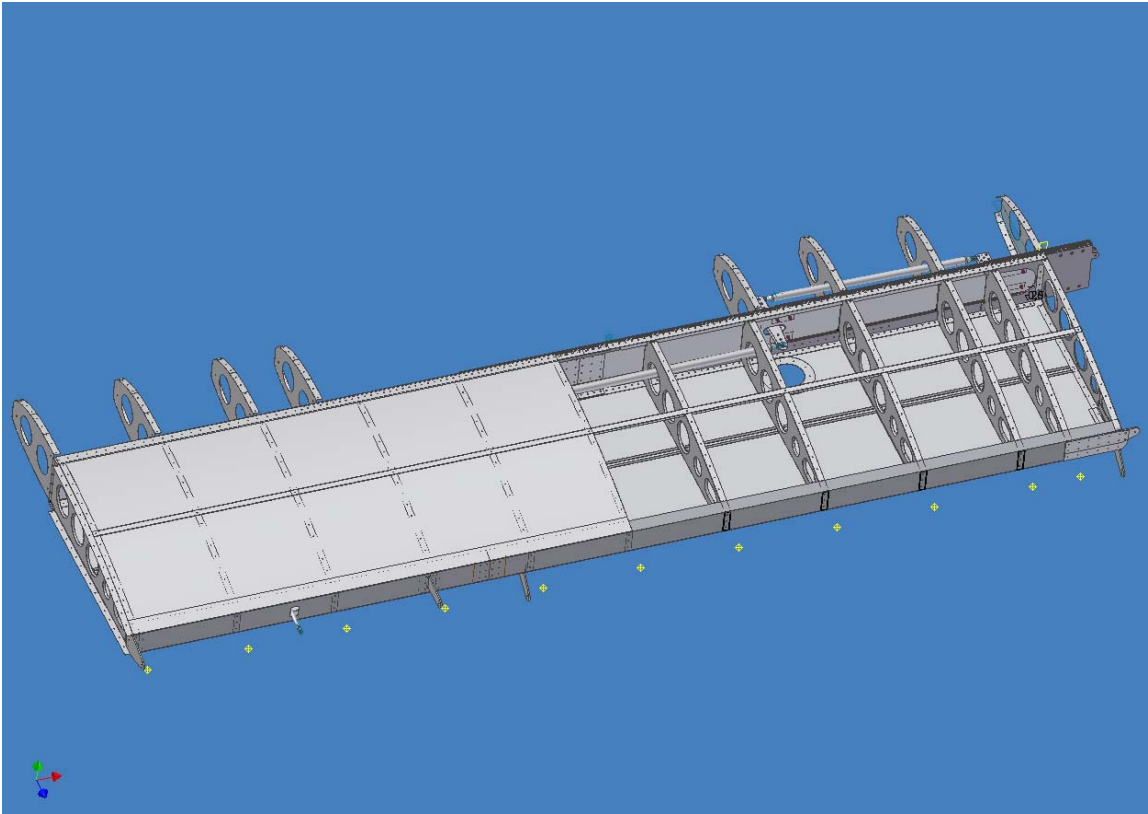
Wing Assembly



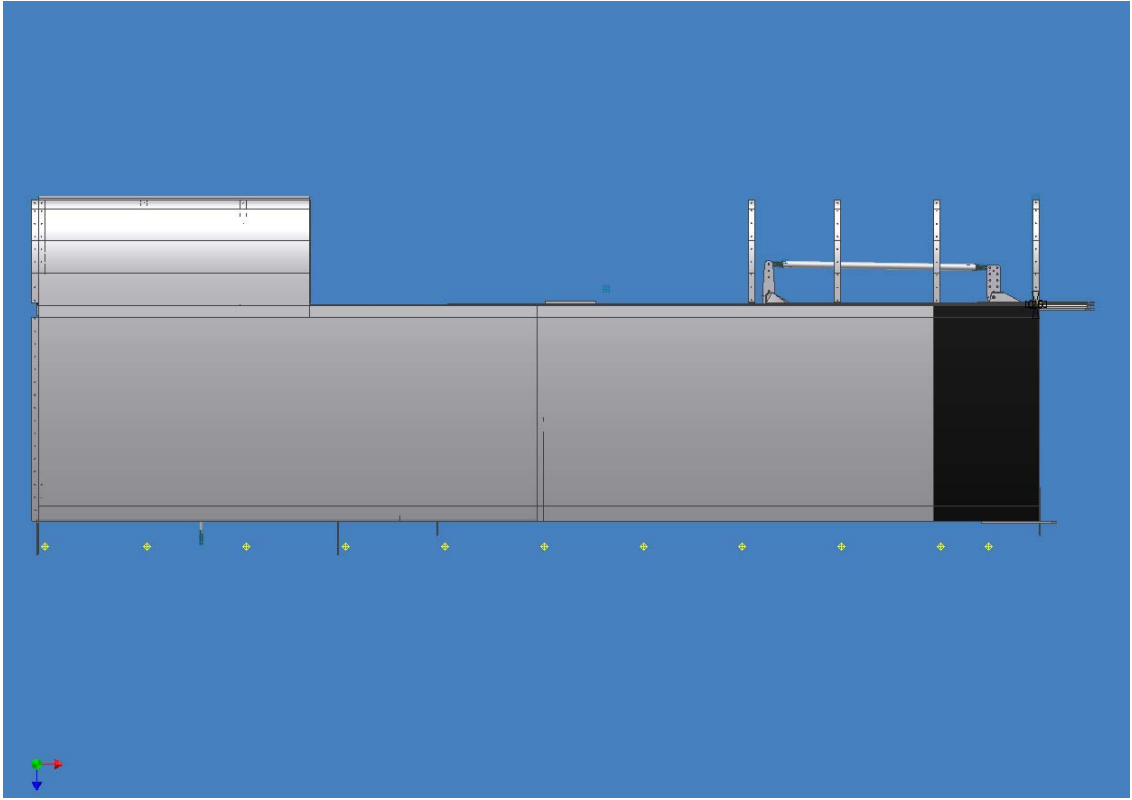
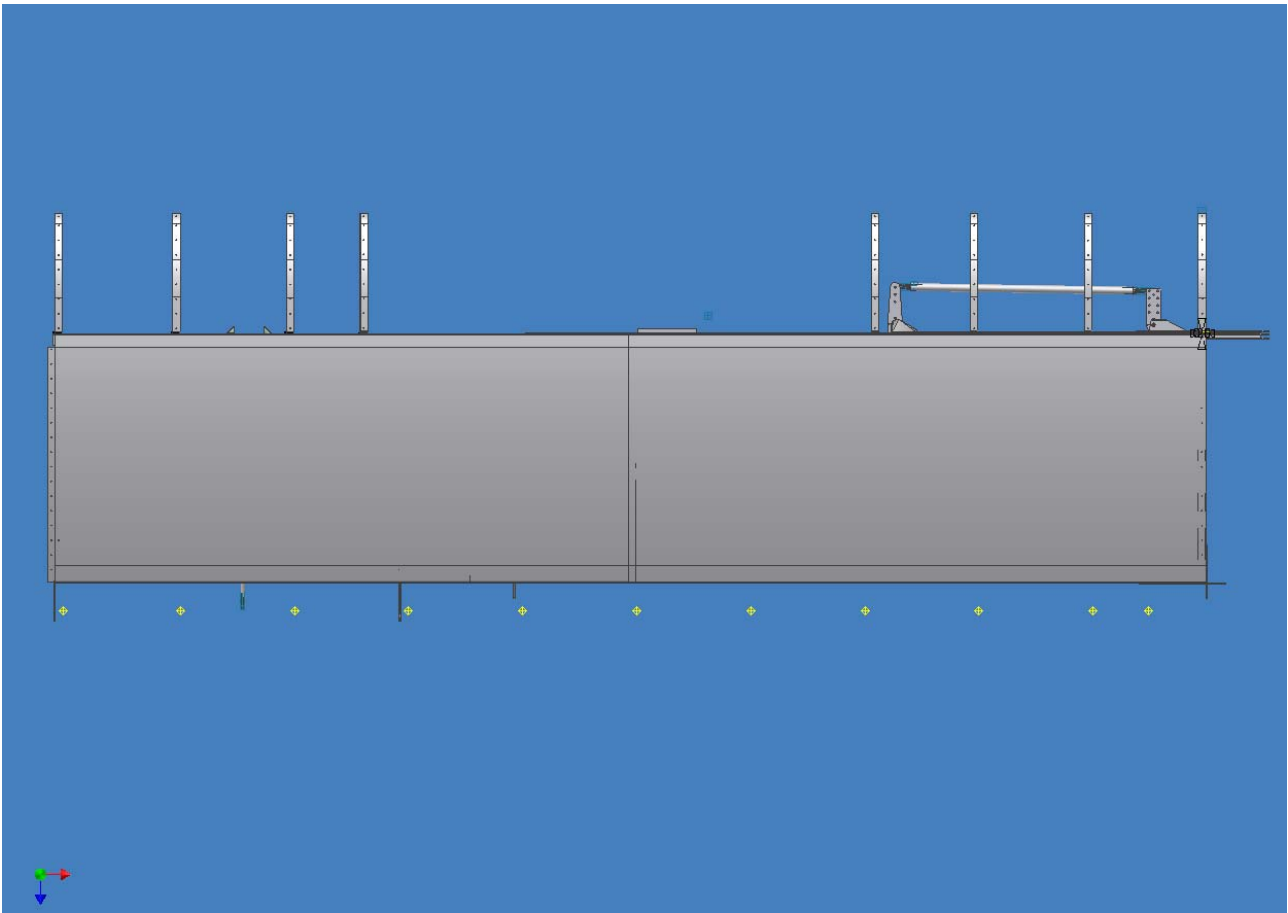
Wing Assembly



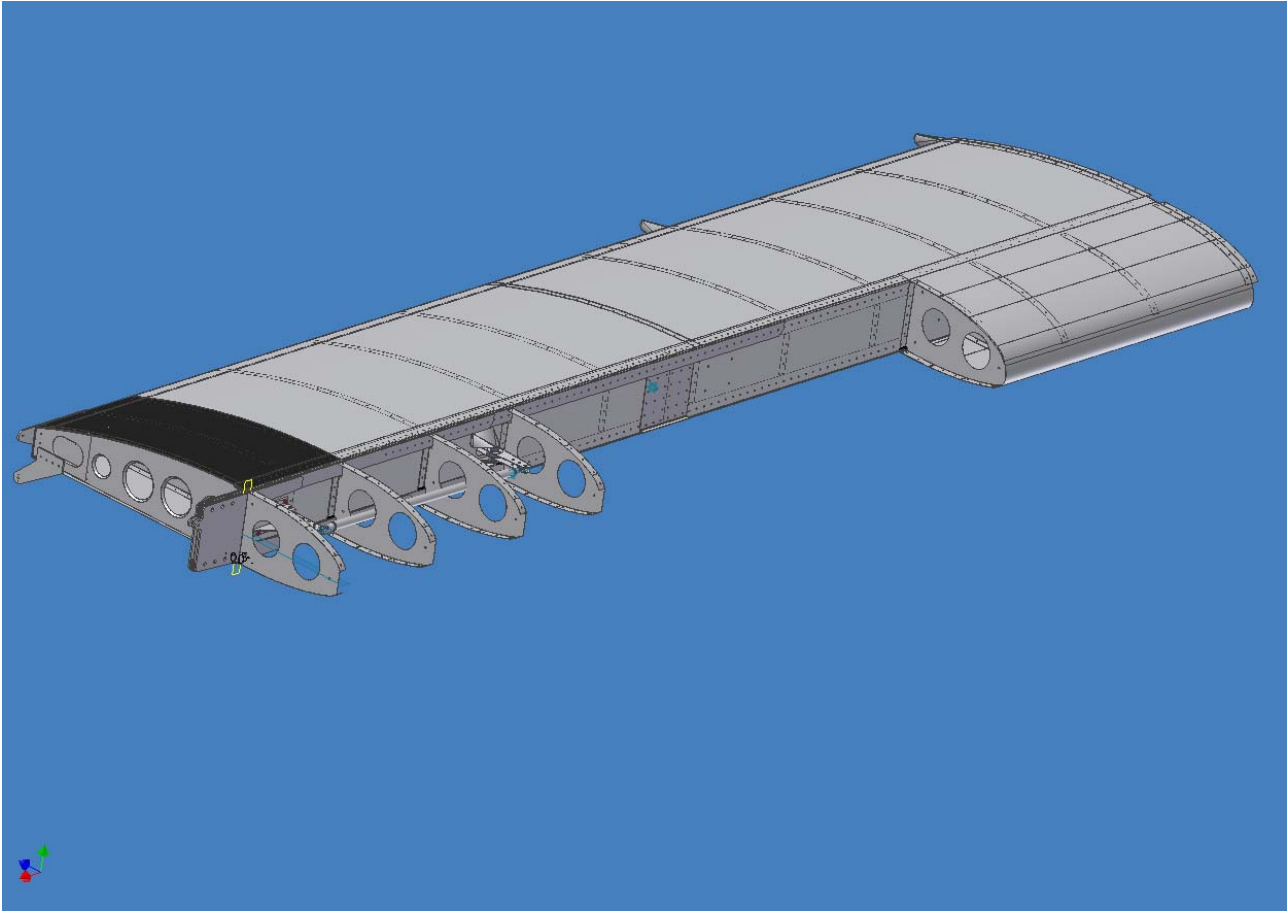
Aileron Control



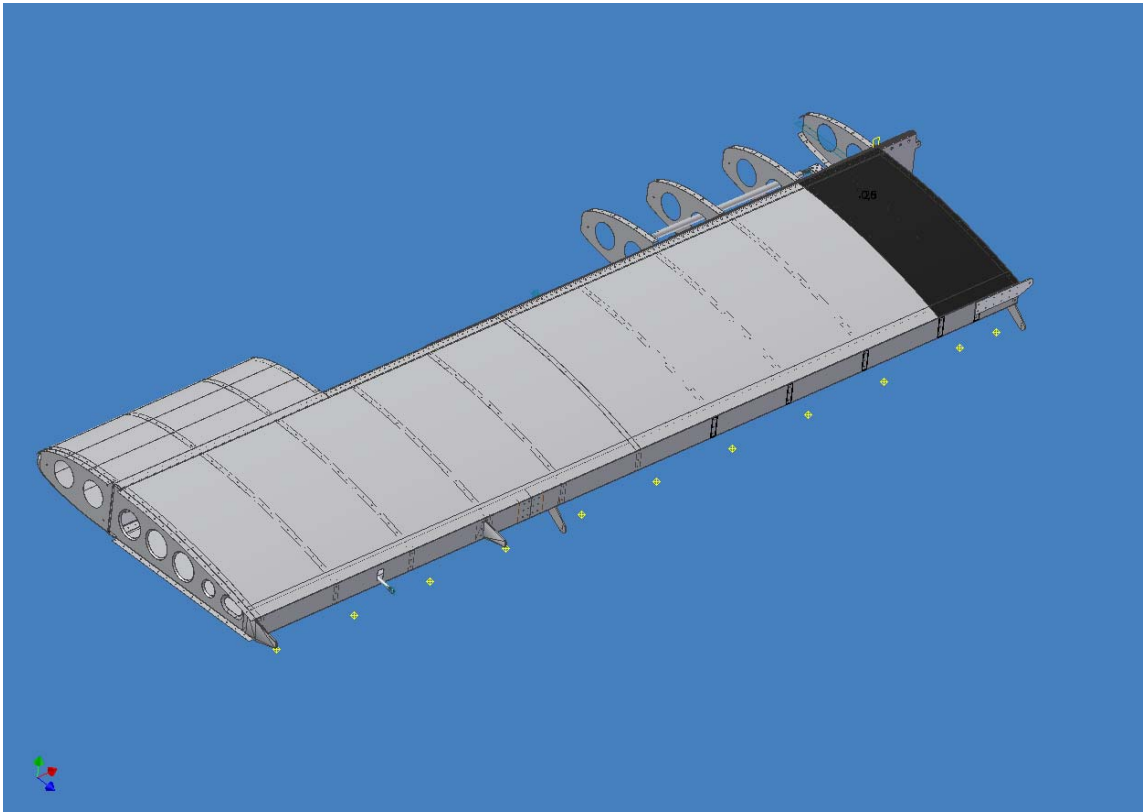
Covering Upper Skin

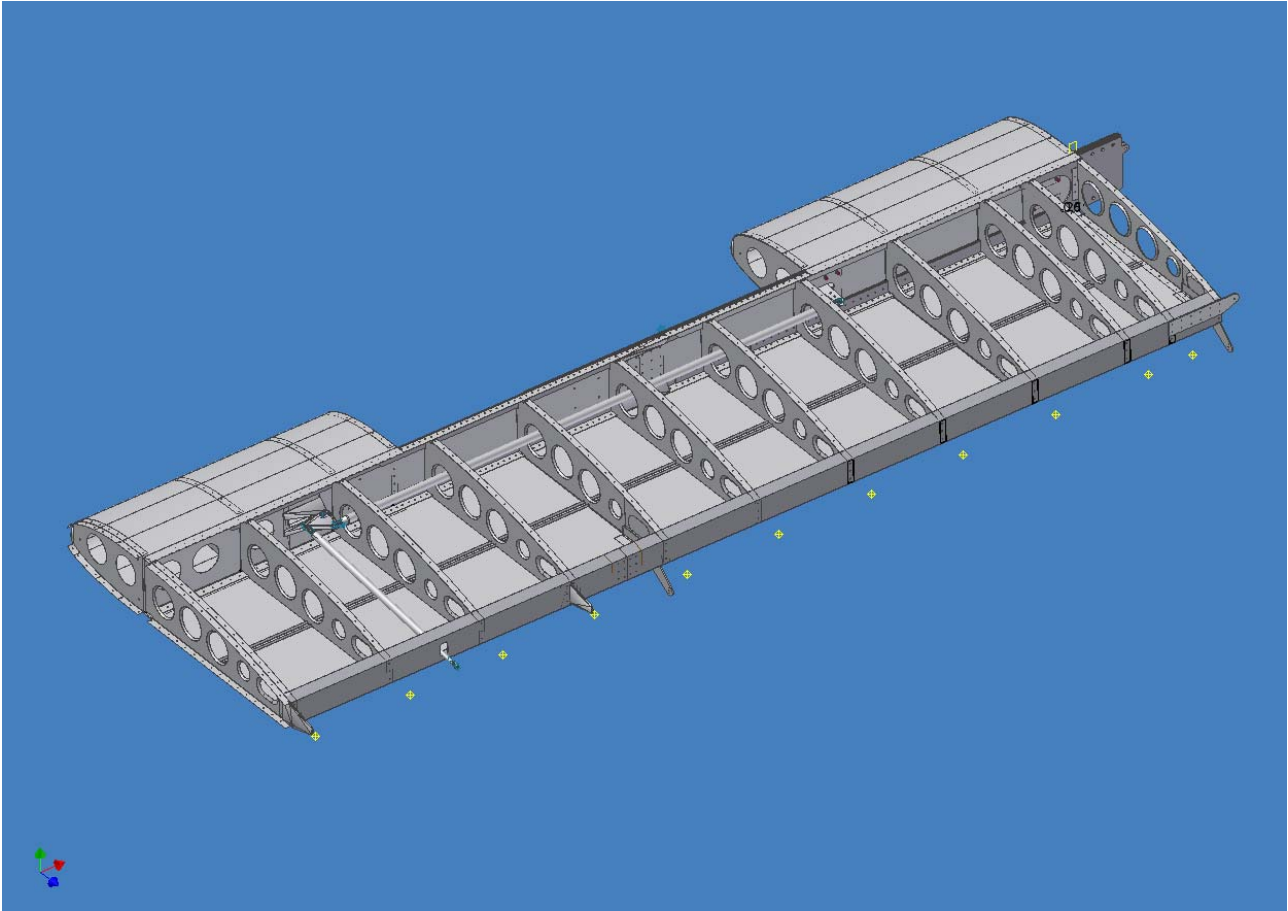


Wing Assembly: Leading edge skin

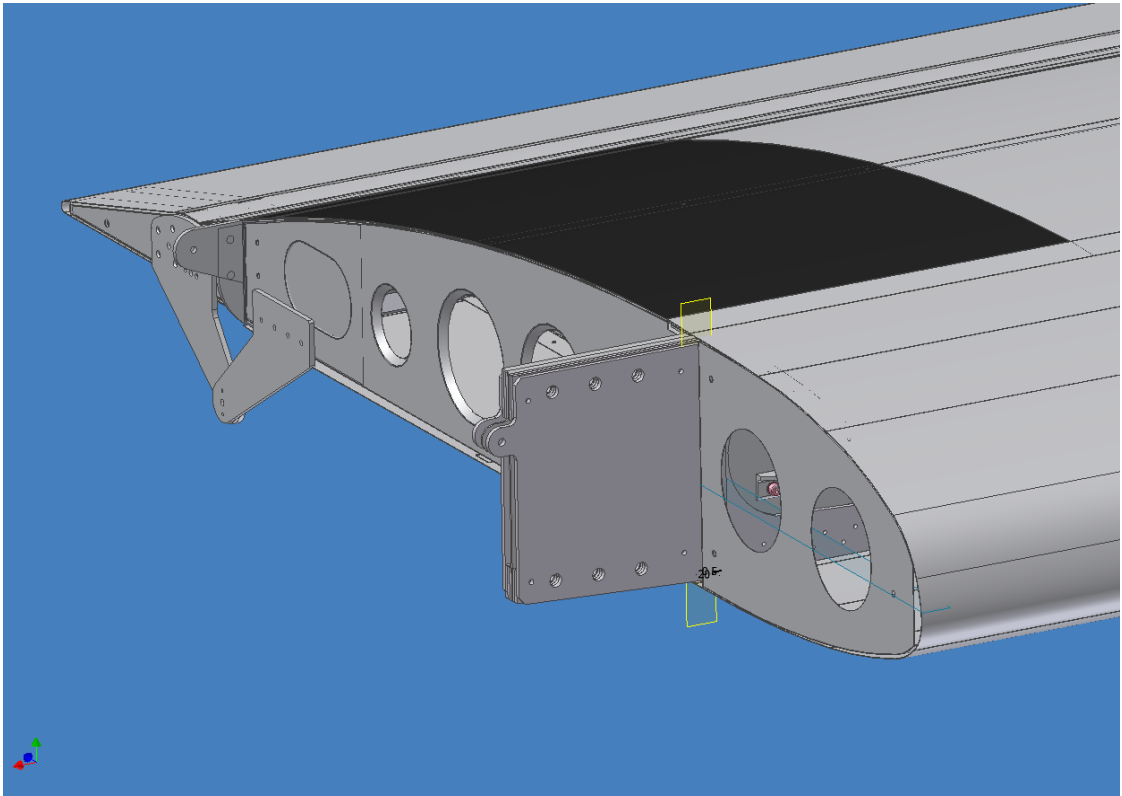


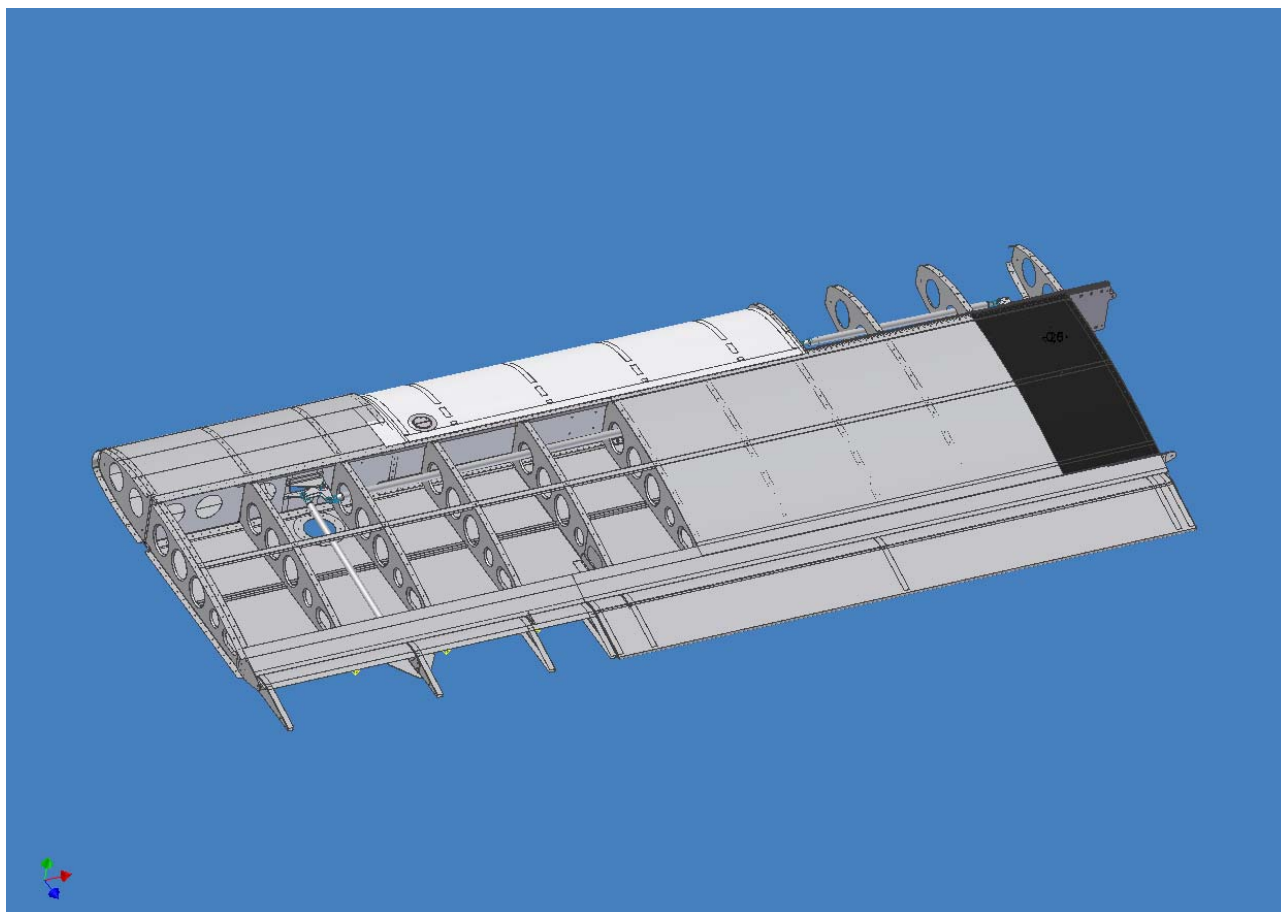
Wing Assembly: Leading edge skin



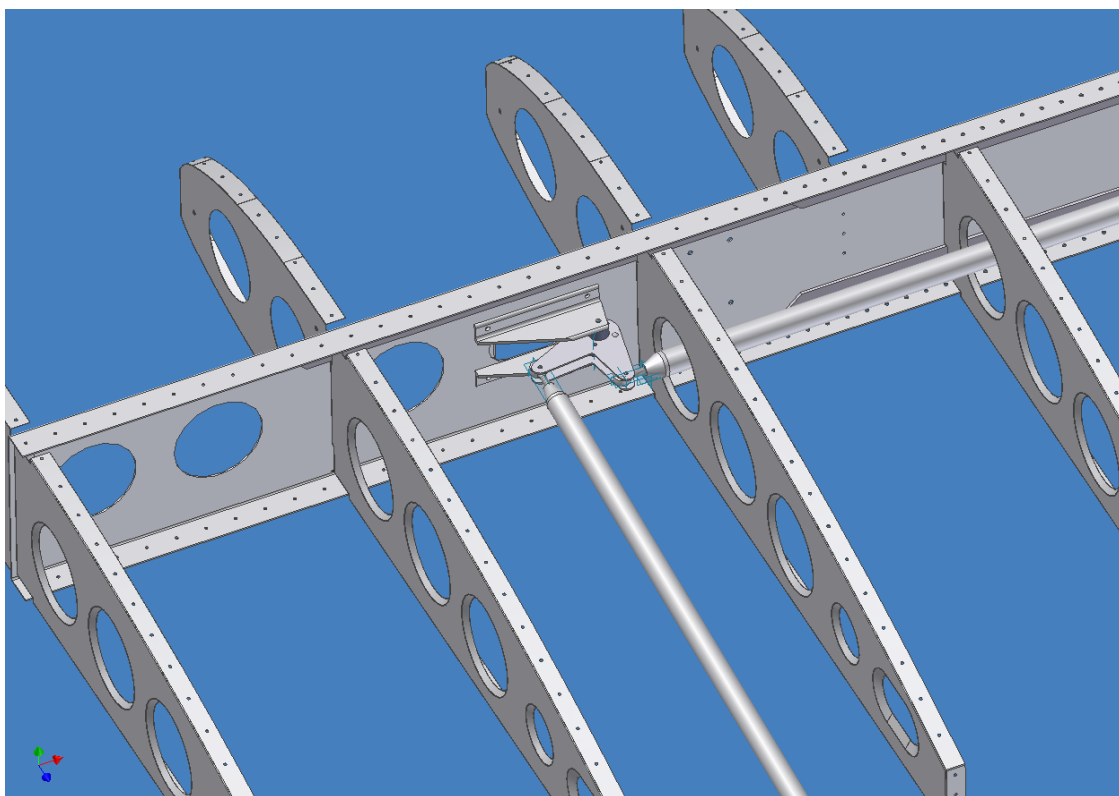


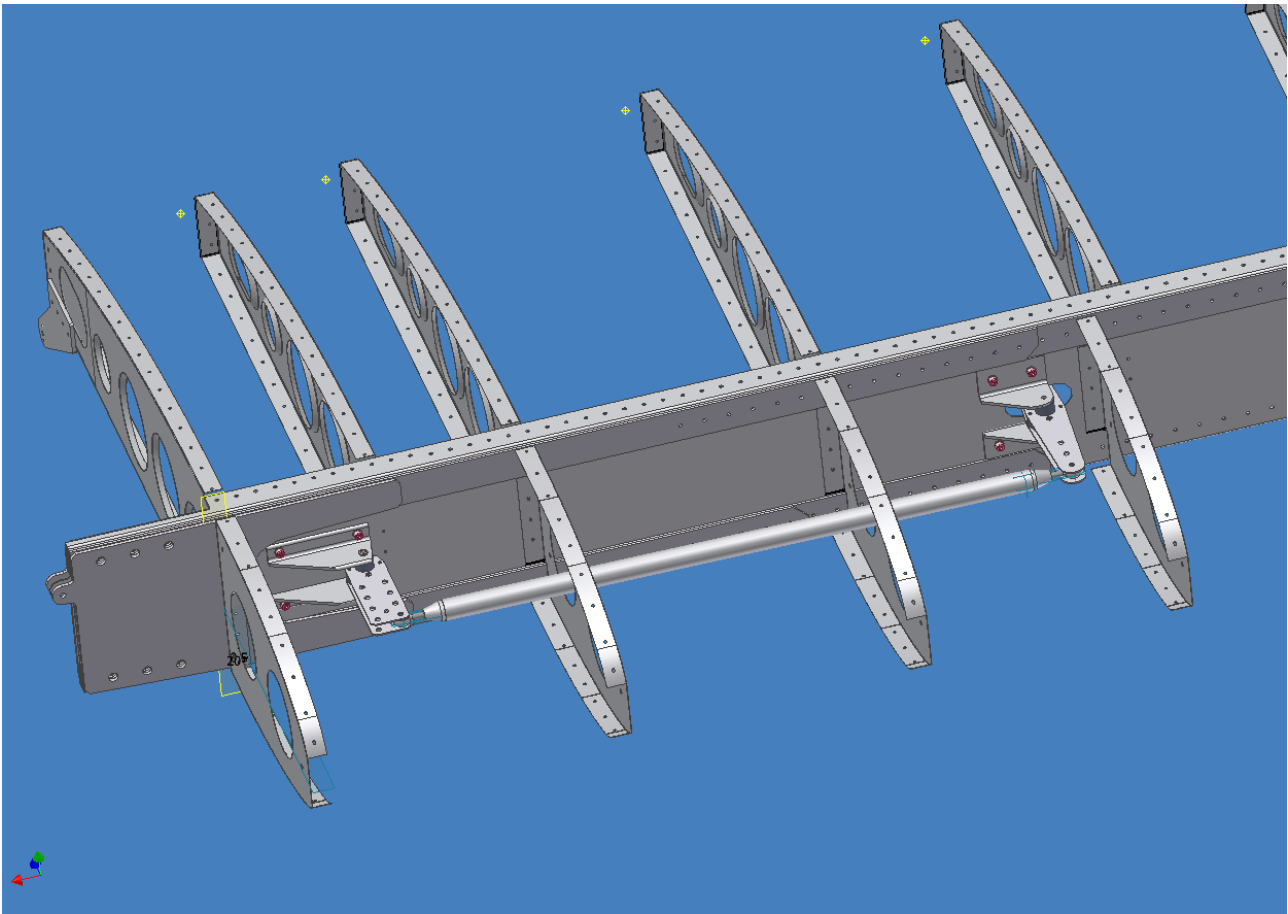
Wing Assembly:



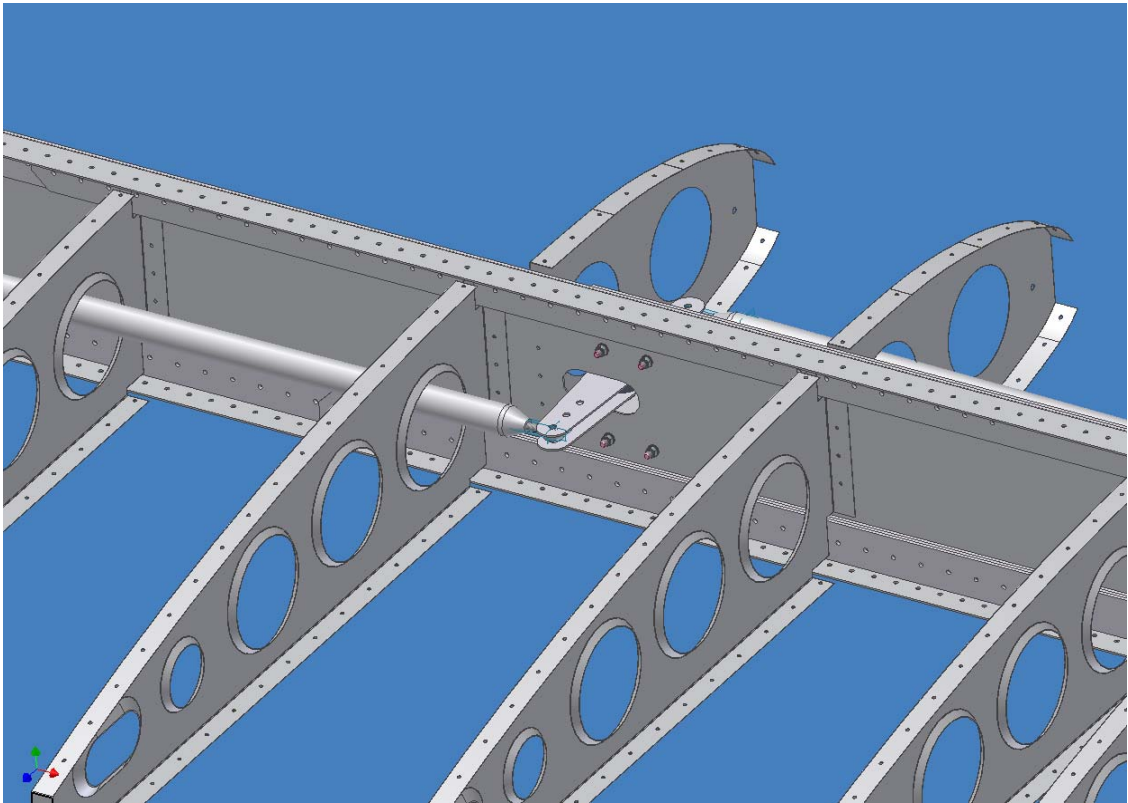


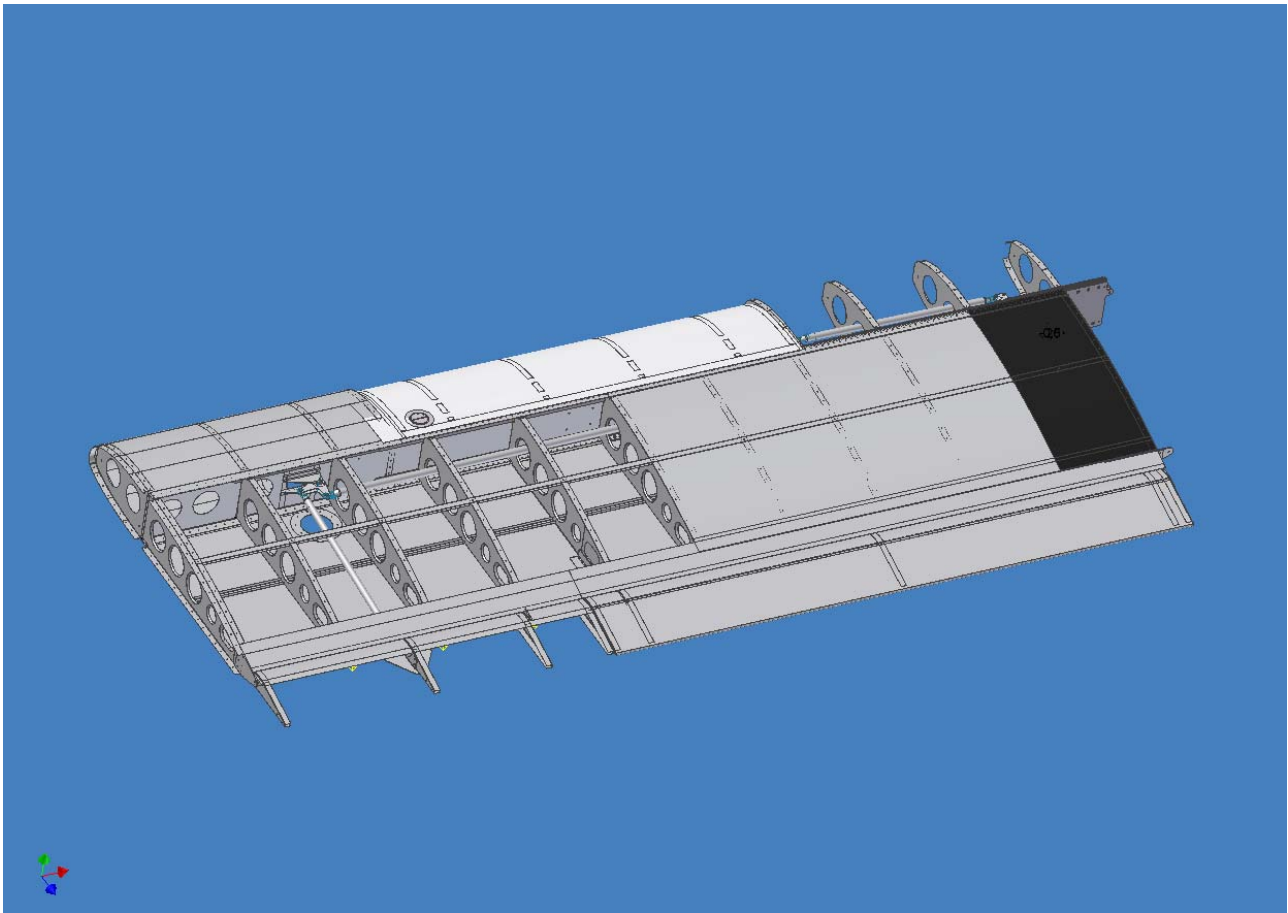
Wing Assembly:



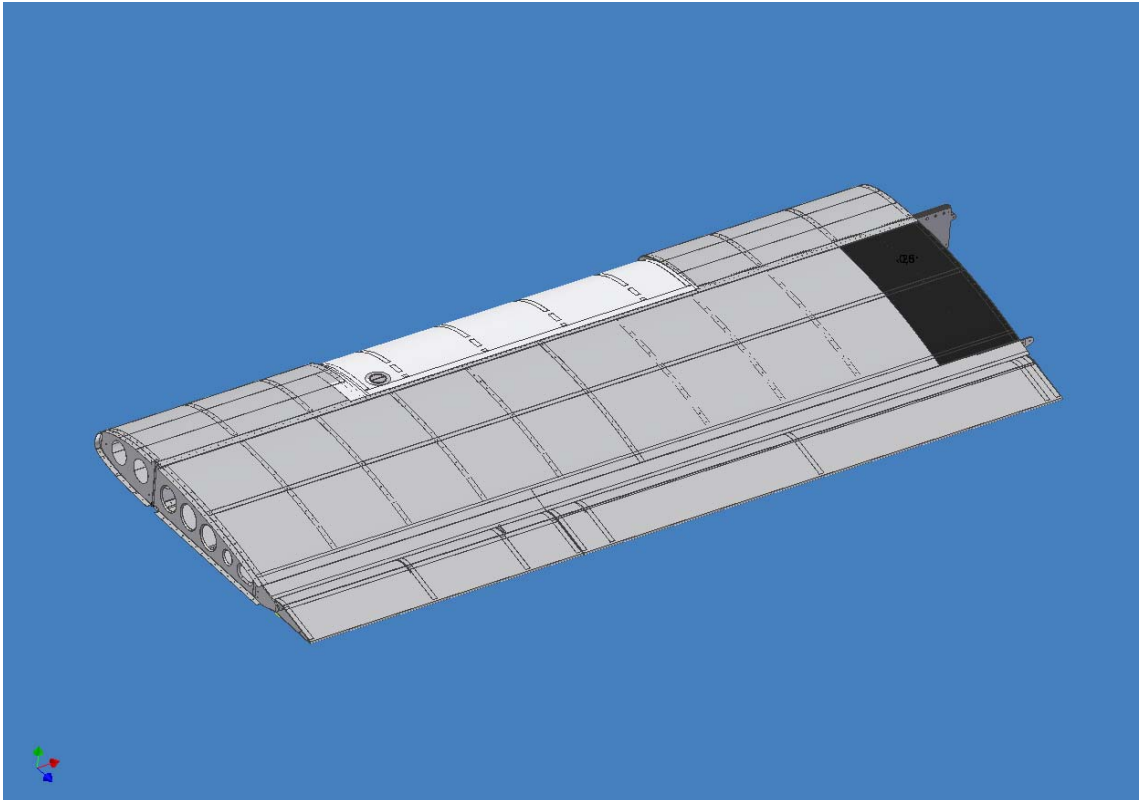


Wing Assembly: Control Rods





Wing Assembly: Tank



Complete wing

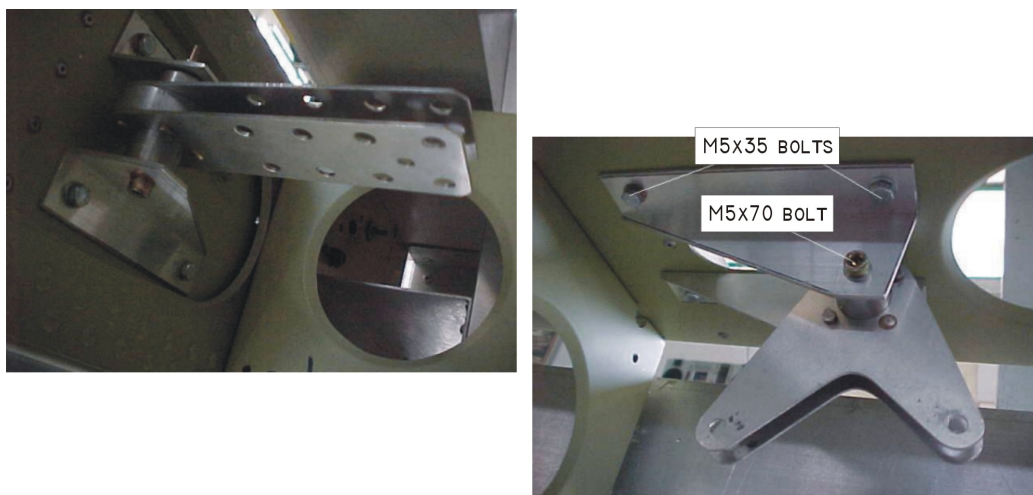


Figure 7.10: Aileron 180° lever assembly (left) and external view of aileron 75° lever assembly on wing spar (right).

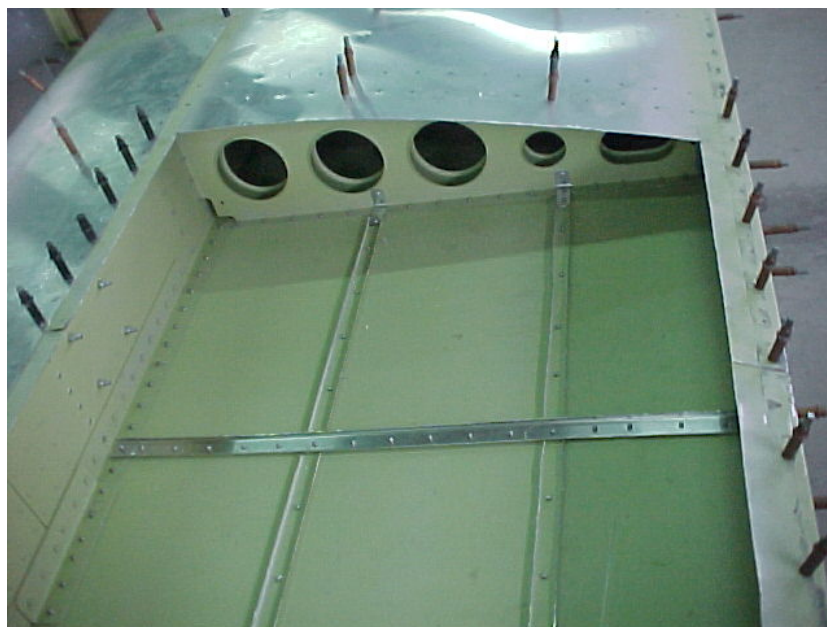


Figure 7.11: Upper skin cutting: image of step three.



Figure 7.12: Six shots of aileron assemblage.

ST2001/2 Half-wing assembly



Figure 7.13: Hole for the aileron reinforcement rod. Such reinforcement is found to the inside of the wing rear spar ST200-012 element.

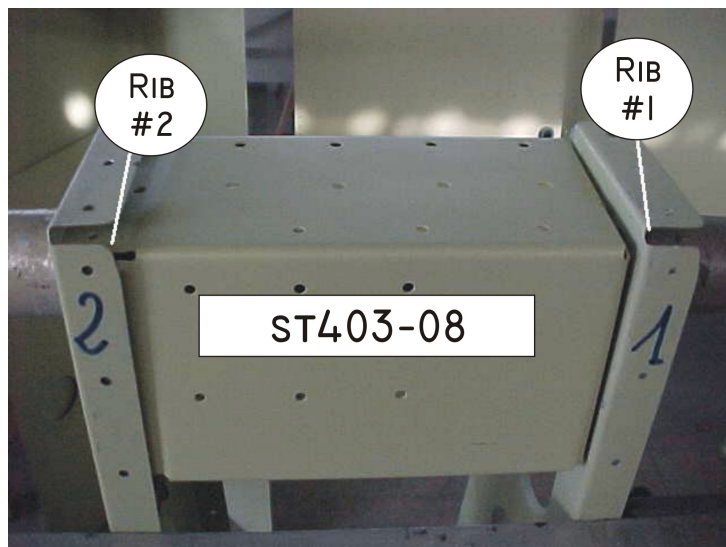


Figure 7.14: Inner flap reinforcement ST403-08, between ribs number 1 & 2.

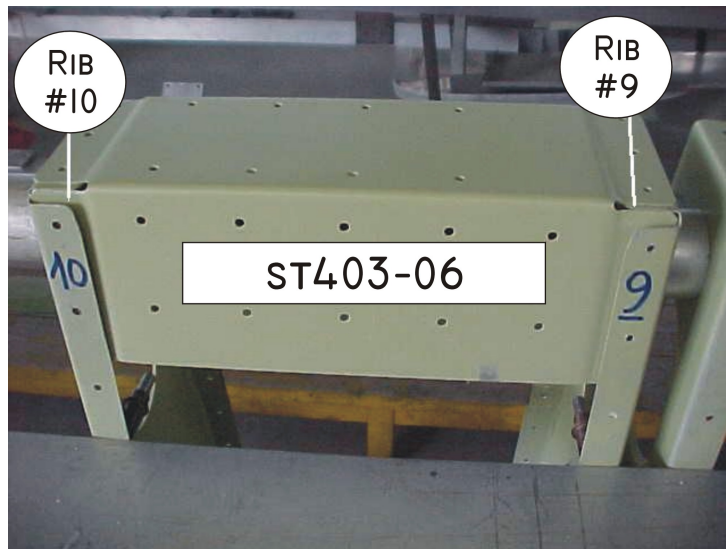


Figure 7.15: Inner aileron-flap reinforcement ST403-06, between ribs number 9 & 10.

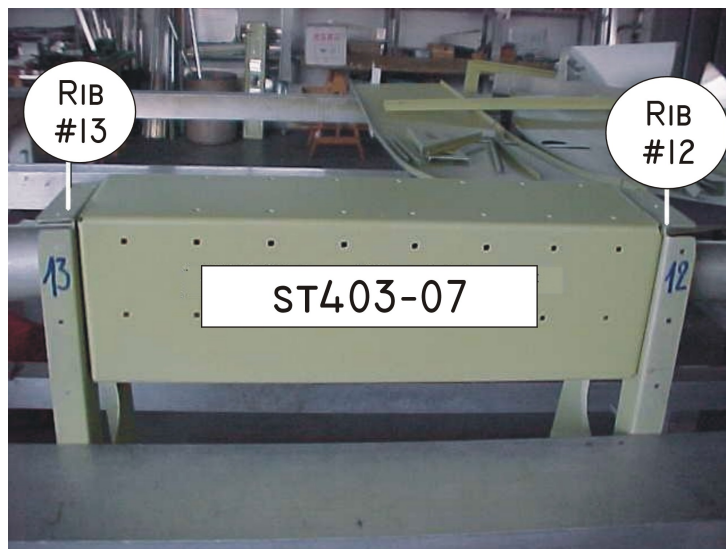


Figure 7.16: Inner aileron reinforcement ST403-07, between ribs number 11 & 12.

Put the two spars ST201 and ST202 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 leverage ST200CA2 and posi-

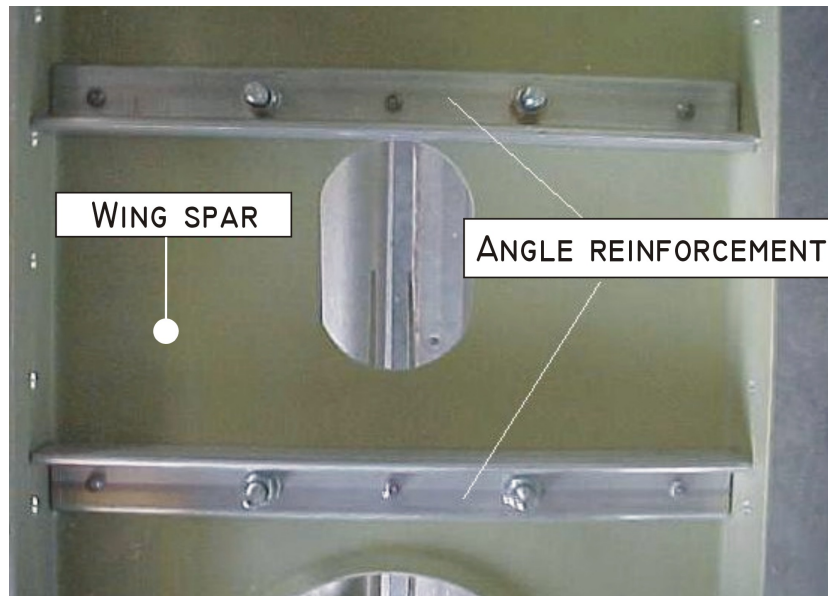


Figure 7.17: Wing spar: angle reinforcement of the aileron control rod number 2.

tion it referring to the four existing holes on the spar.

Drill parallel with a 10 mm margin on the angle.

Starting from the axis of rotation, place the other leverages ST200CA2 and ST200CA1 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 $\varnothing$ 5 mm and insert the 5×20 bolts of the leverages towards the spar; lock and check the correct installation.

Take the nose ribs ST200-101 and 102, 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.

Make a drilling to $\varnothing$ 2,5 mm on the lip of the same rib.

Take the ribs ST200-122 and 122, 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.

Make a drilling to $\varnothing$ 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.

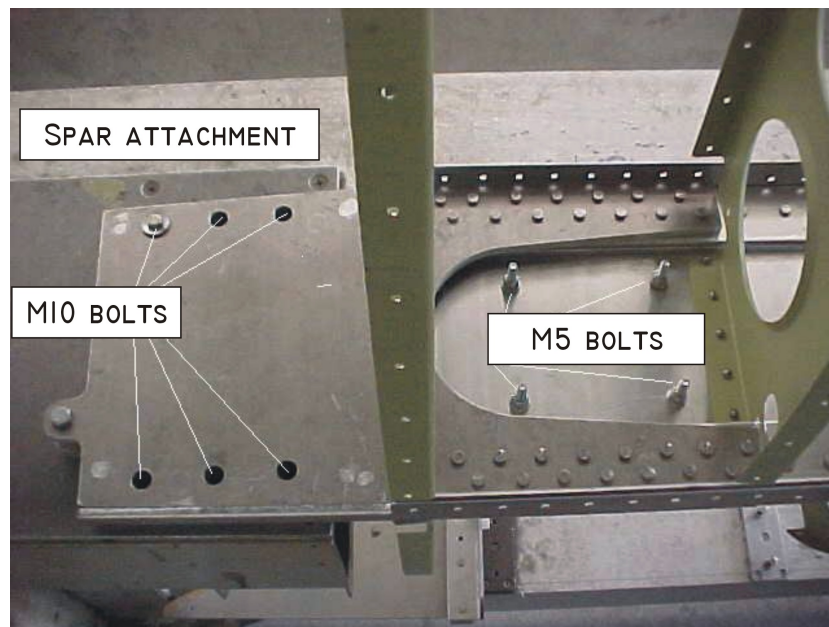


Figure 7.18: Wing spar 1st section. Note M10 and M5 bolts: the latter fix 1st leverage.

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 $\varnothing 3,2$ mm, strip after having marked the positions, deburr and rivet with AVEX1661-0410, except the first rib that must be riveted with AN470AD5-16.

Put the structure on two wooden boards placed on two trestles in the flight direction; take the stringer STX200-599, 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.

Place the 1270 mm long underside skin ST200-008 and let it stick to the rear part of the ribs contoured with the 1st rib.

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.

Position the other 1890 mm long skin ST200-010 lined up with the exter-

nal rib and inserted under the skin -008; follow the same procedure as for the foregoing one. Widen all the holes to $\varnothing$ 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.

Place the inner stiffenings ST403 between the first two ribs on the root side, riveting to the skin on the underside after having marked the area where the flap fitting will be positioned.

Place the stiffening ST200-012 as shown in the drawing, rivet it to the underside skin, mark the hole for the push-pull rod and go ahead as shown in the drawing.

Mark the dimensions of the center of the rib lips, 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).

Place the external upper side skin ST200-007 lined up with the external rib and sticking on the back side; lock with clamps, mark the drilling and the areas not to be drilled, where you will position the aileron fittings.

Check the perfect marking more than once before you start drilling to $\varnothing$ 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 lip warps.

Tack carefully as you did for the underside, position the other skin -007 and do the same operations.

Widen the holes to $\varnothing$ 3,2 mm (do not make the drilling on the plate side -301 and on the lower side of the trailing edge, where you will fit the crankcase -282).

Now you must position the edges: 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.

Take the two side edges ST200-005, 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).



Figure 7.19: A clear scene of wing box assembling.

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 $\varnothing 2,5$ mm, tack, place the central edge -006 and go ahead the same way to drill the skin; tack.

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.

Now start drilling the upper and the lower side of the spar to $\varnothing 3,2$ mm, widen to $\varnothing 4$ 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 $\varnothing 100$ mm holes on the

edges for the openings where you will fit - in the inner part - the stiffenings STX200-001 and rivet them with eight AVEX1661-0410 each.

Locate the pilot foot stiffening STX200-011 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 -599; 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 6×35 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.

The dimension of the two Ø 20 mm push-pull rods between the two unibols must be exactly the same.

The dimension between the head of the rear wing spar and the unibal center must be 65 mm.

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 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 straps STX200-002 to connect the resin tips, rivet with AVEX1661-0410.

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

Fit the flap side inner crankcases STX200-282 by inserting them inside the upper crankcase lip 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.

Install the fastening angle ST200-199 on the underside with AVEX1661-0516 rivets.

ST2000 wing-flap-ailerons assembly

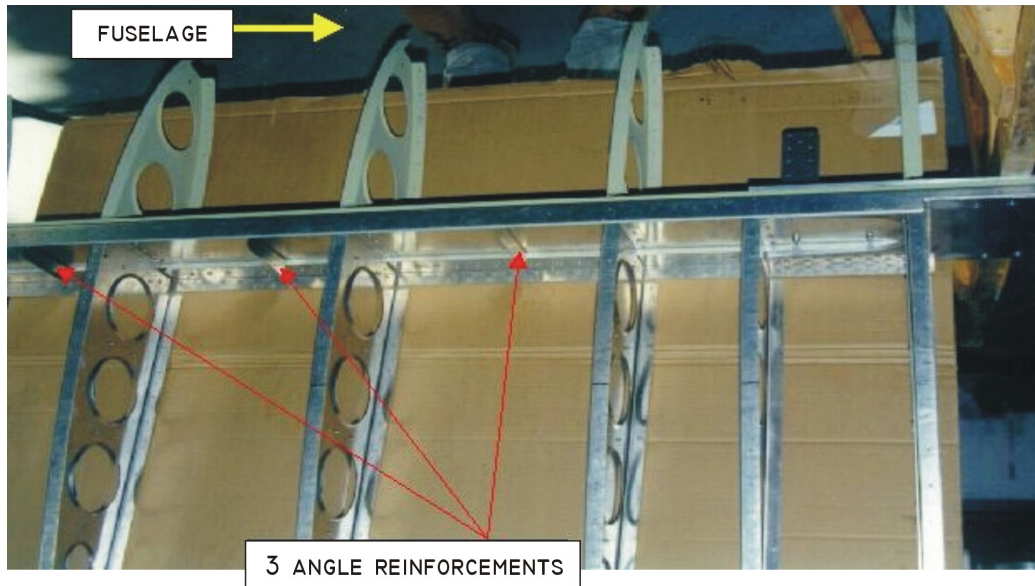


Figure 7.20: Wing construction 1. The three angle reinforcements are in the tank zone.

Put the half-wing level on three trestles and proceed in the following way: place the two external trestles so as to lay the wing level, then add the third one and, using spacers, push it in touch with the aileron area.

Take the aileron and, after having positioned the two fittings STX200AA888 with two 5 mm bolts and two spacers, push it against the half-wing inserting the two stiffenings ST800-333.

Line it up with the external rib and level on the trestles, hold the two fittings level and make the drilling to $\varnothing$ 4 mm as shown in the drawing (four holes on each winglet with a 10 mm margin).

Rivet with AVEX1661-0516.

Position the flap at a 5 mm distance from the aileron and lined up with the trailing edge; help yourself with a nylon thread (remember to fit the rib with its inner stiffening towards the fuselage).

Place the fittings STX200AF777 and STX700-999 coupled with a 5 mm bolt lined up with the rear wing edge inserting the stiffening STX700-111 under the fitting STX200AF777.

Drill three 4 mm holes on each winglet and tack.

Make the fitting STX700-999 rotate until it lies down on the underside of

the flap and make the same drilling to $\varnothing$ 4 mm; deburr the holes and rivet with AVEX1661-0516.

These operations must be repeated for the positioning of the other half-wing. It is very important that the dimensions are exactly the same.

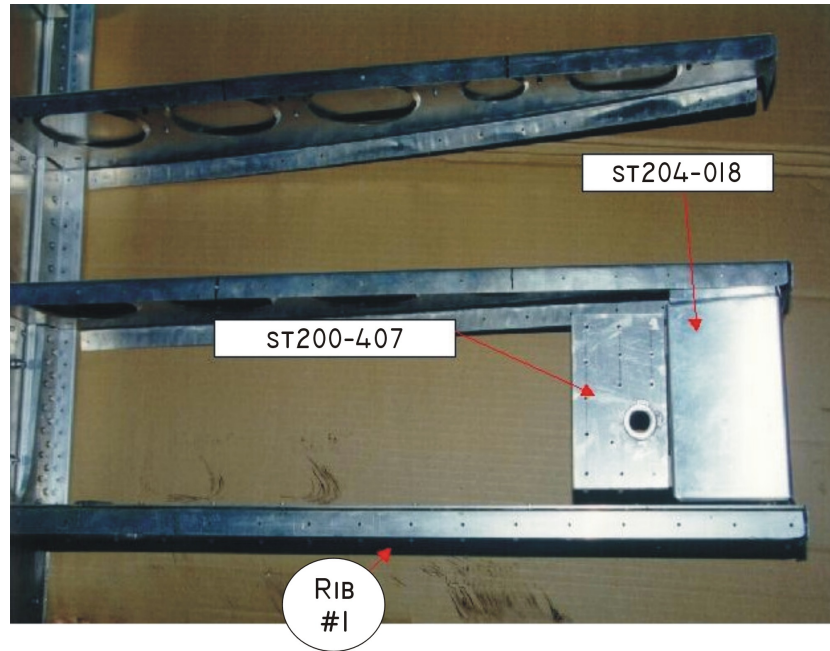


Figure 7.21: Wing construction 2. See the ST204-018 flap reinforcement and the ST200-407 fuel drain plate.



Figure 7.22: Assembled wing box.

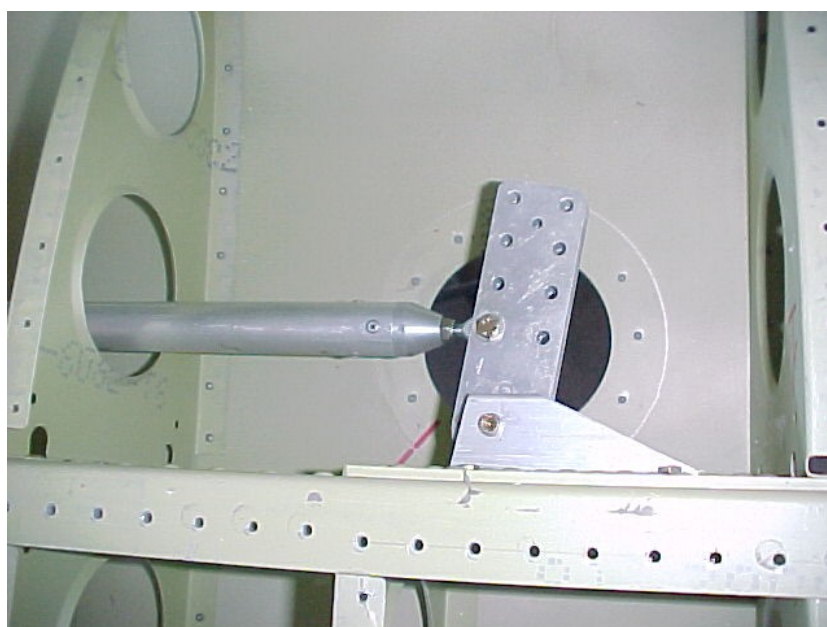


Figure 7.23: 180° bell crank.



Figure 7.24: Aileron trim in three shots.



Figure 7.25: aileron control detail.

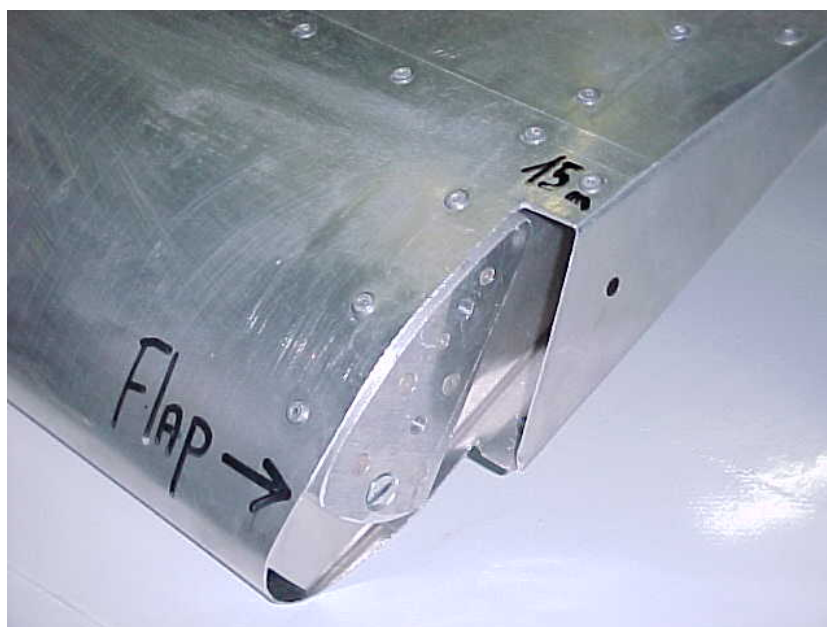


Figure 7.26: View of aileron (flap side).



*FUEL LINES INSTALL
Attachment*

Chapter 8

Engine

Rotax 912UL, 912S2 (100HP), 914T (115HP)

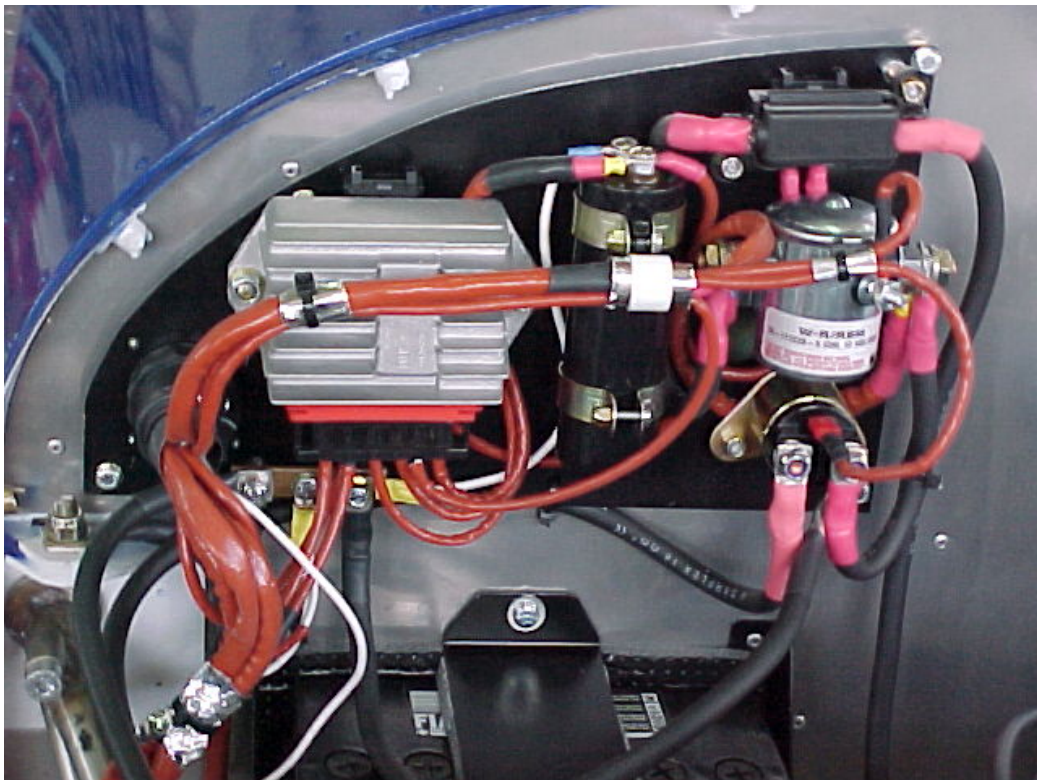
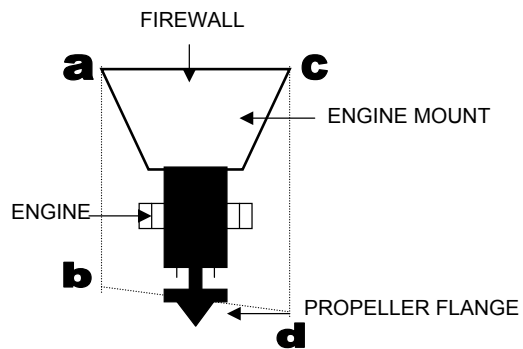
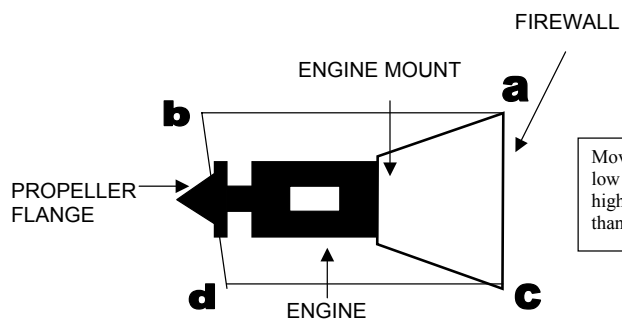


Figure 8.1: Rotax 914T installation.

**ASSEMBLY INSTRUCTION ENGINE:
ROTAX 912 UL - 912 S2 100 HP – 914 Turbo 115 hp**



Put a straight stroke on the propeller flange so that the **AB** measure be under 22mm (.87 inches) than **CD** measure.



Move the engine towards the low so that the **AB** measure be higher 20mm (.78 inches) than **CD** measure.



Figure 8.2: Rotax 914T installation 1.

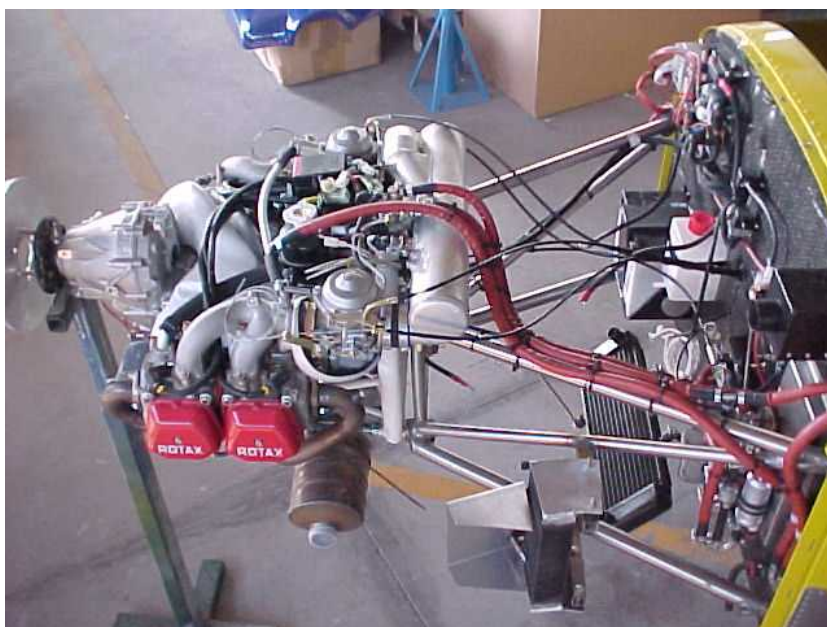


Figure 8.3: Rotax 914T installation 2.



Figure 8.4: Rotax 914T installation 3.

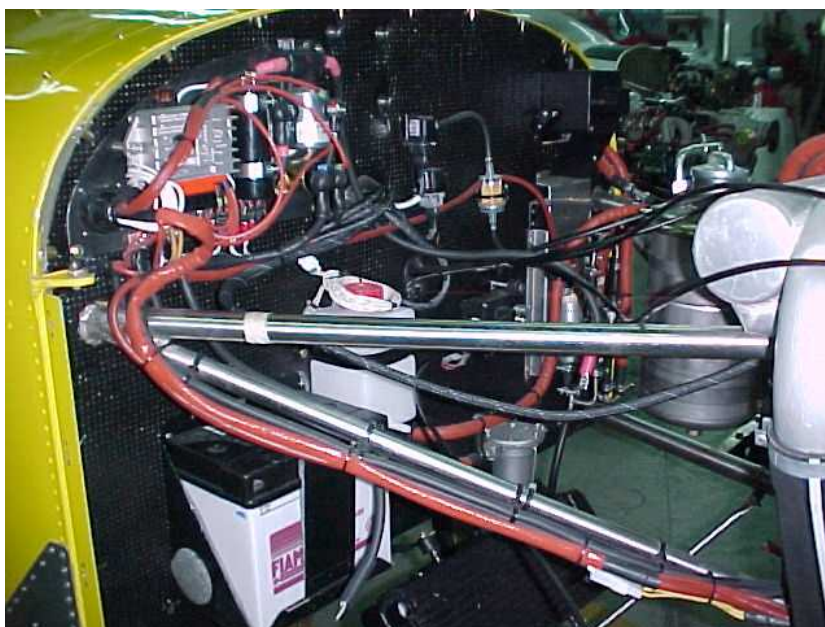


Figure 8.5: Rotax 914T installation 4.



Figure 8.6: Oil radiator.

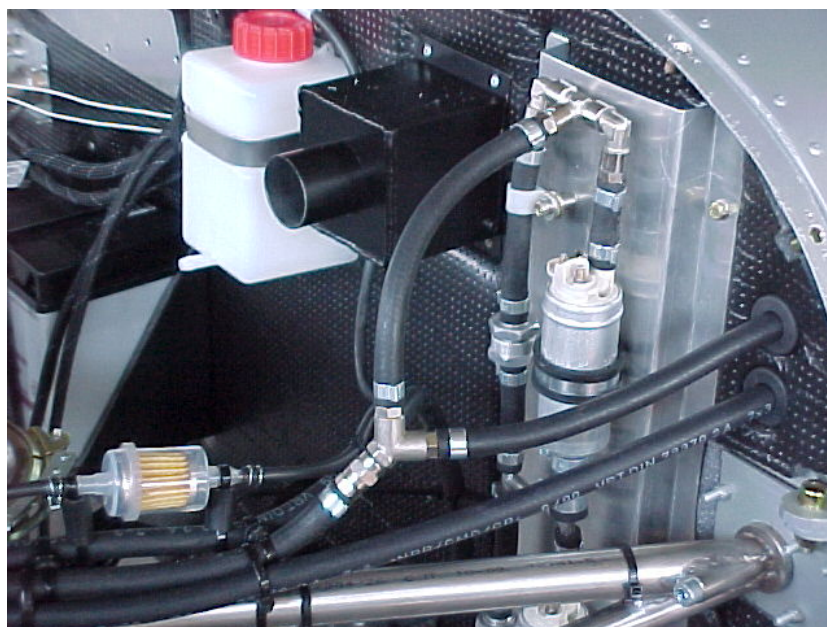


Figure 8.7: Turbo installation 1.

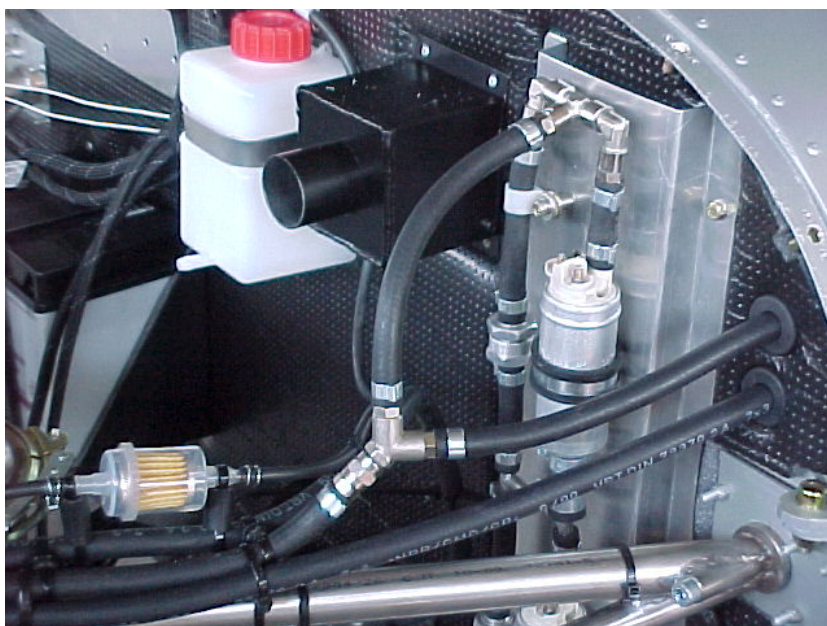


Figure 8.8: Turbo installation 2.

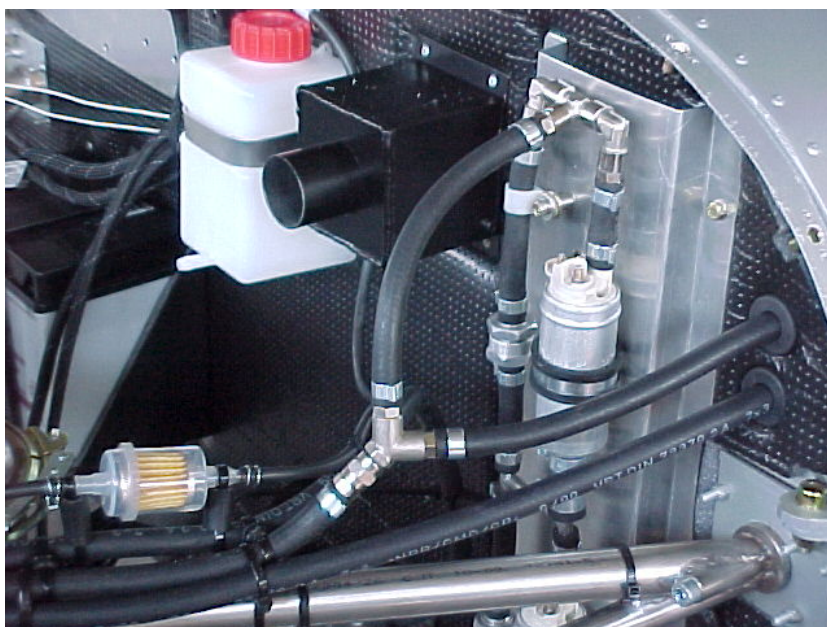
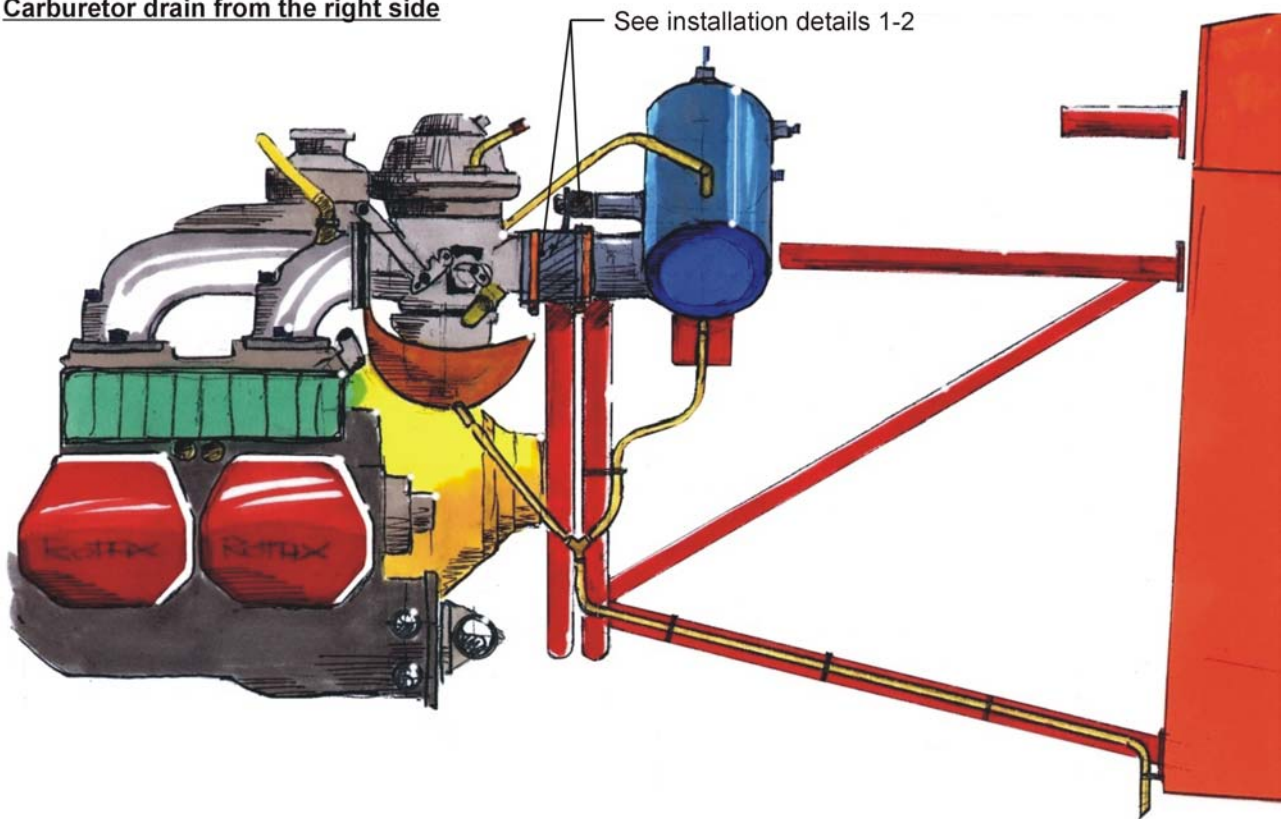
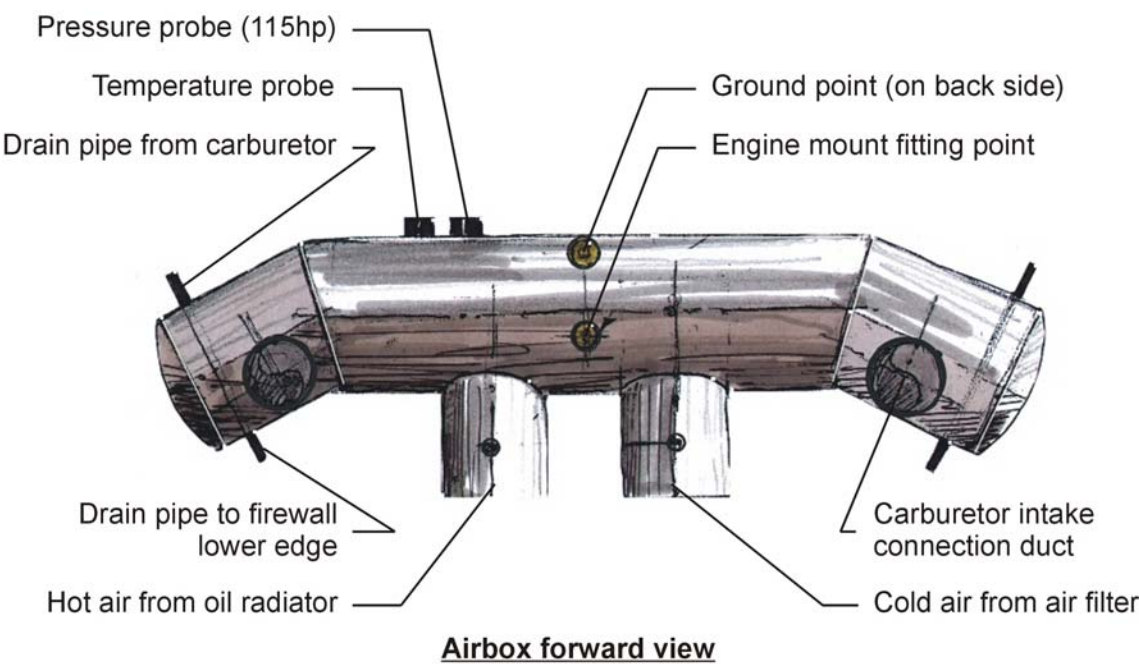


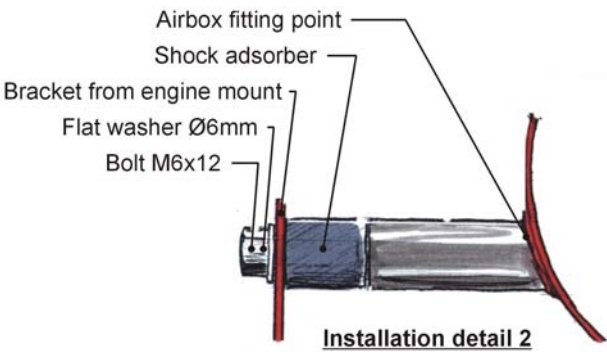
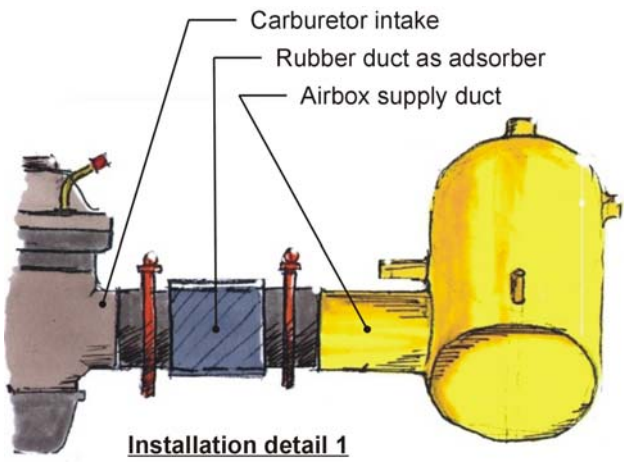
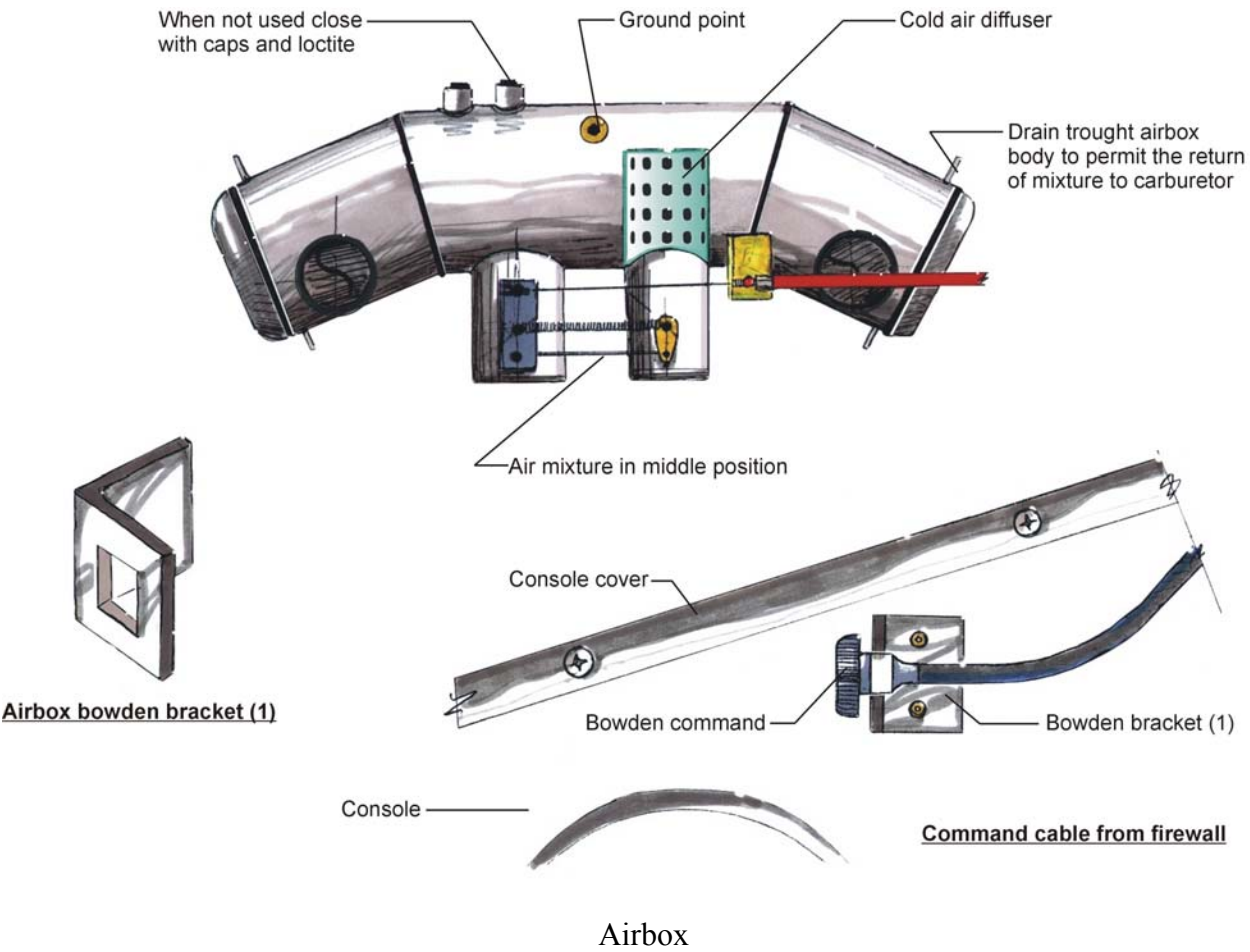
Figure 8.9: Turbo installation 3.

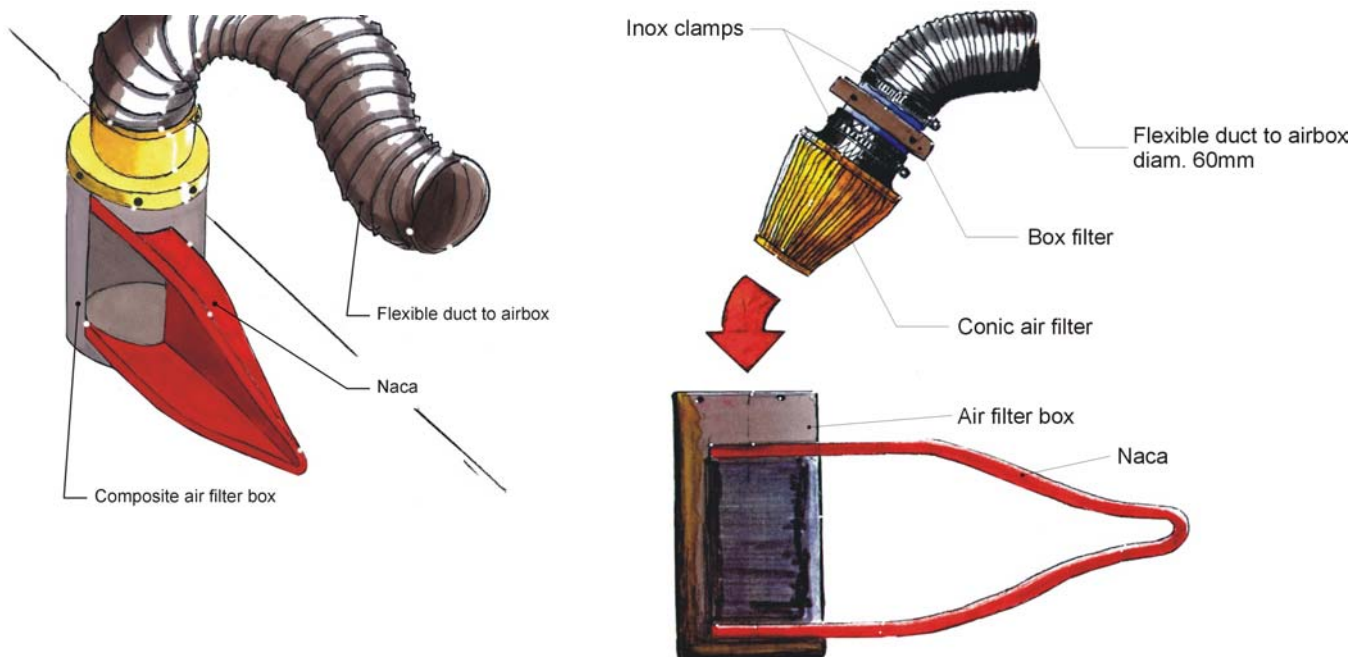
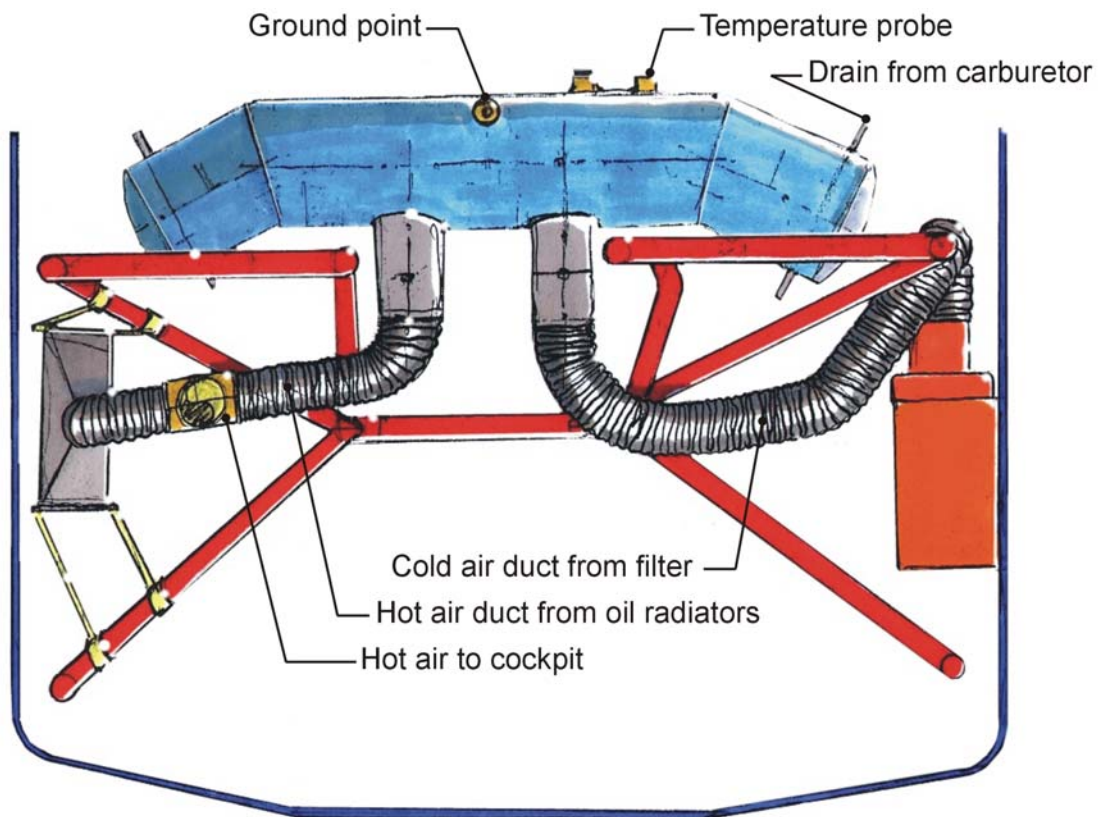
Carburetor drain from the right side



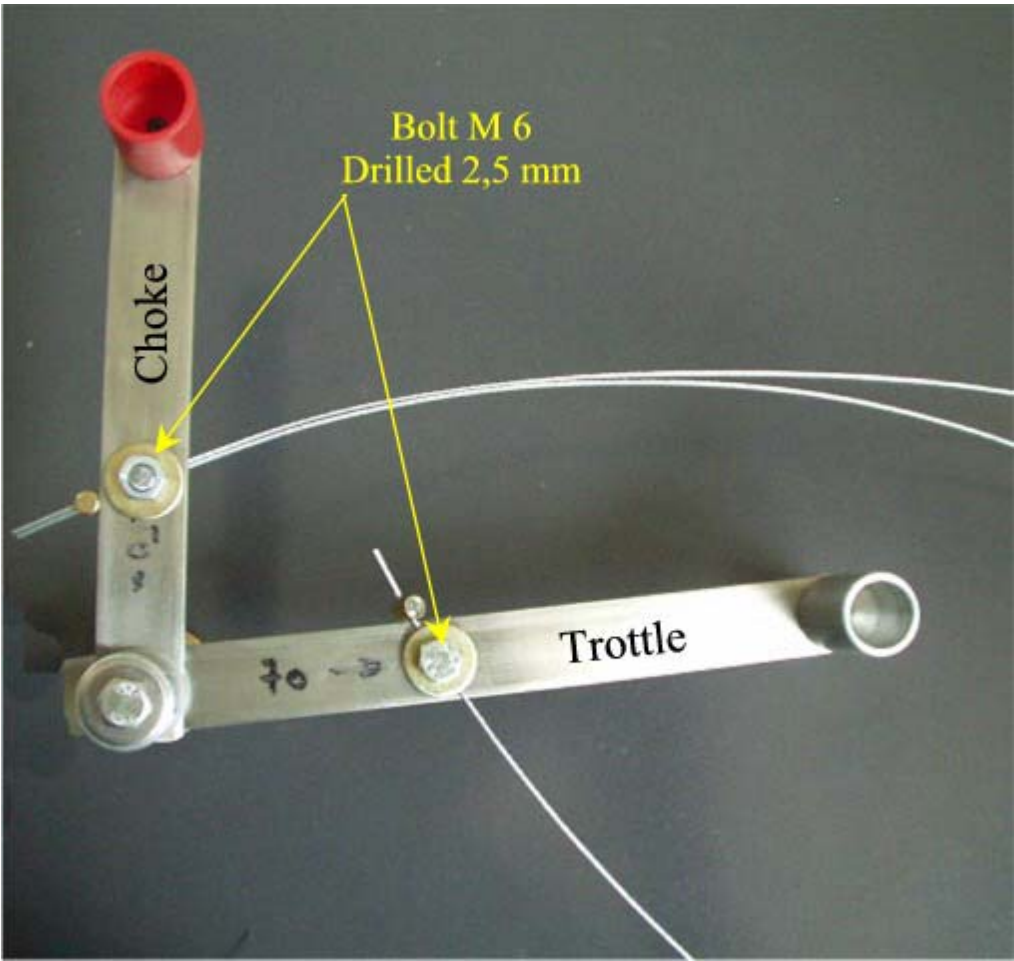
Engine installation with airbox



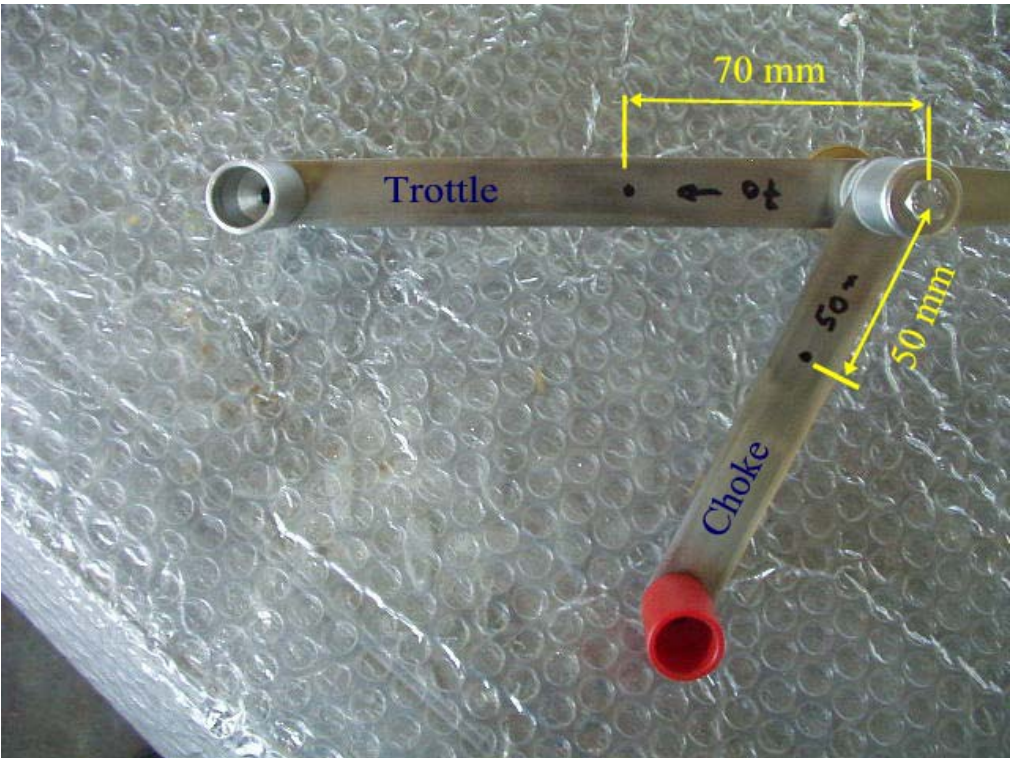


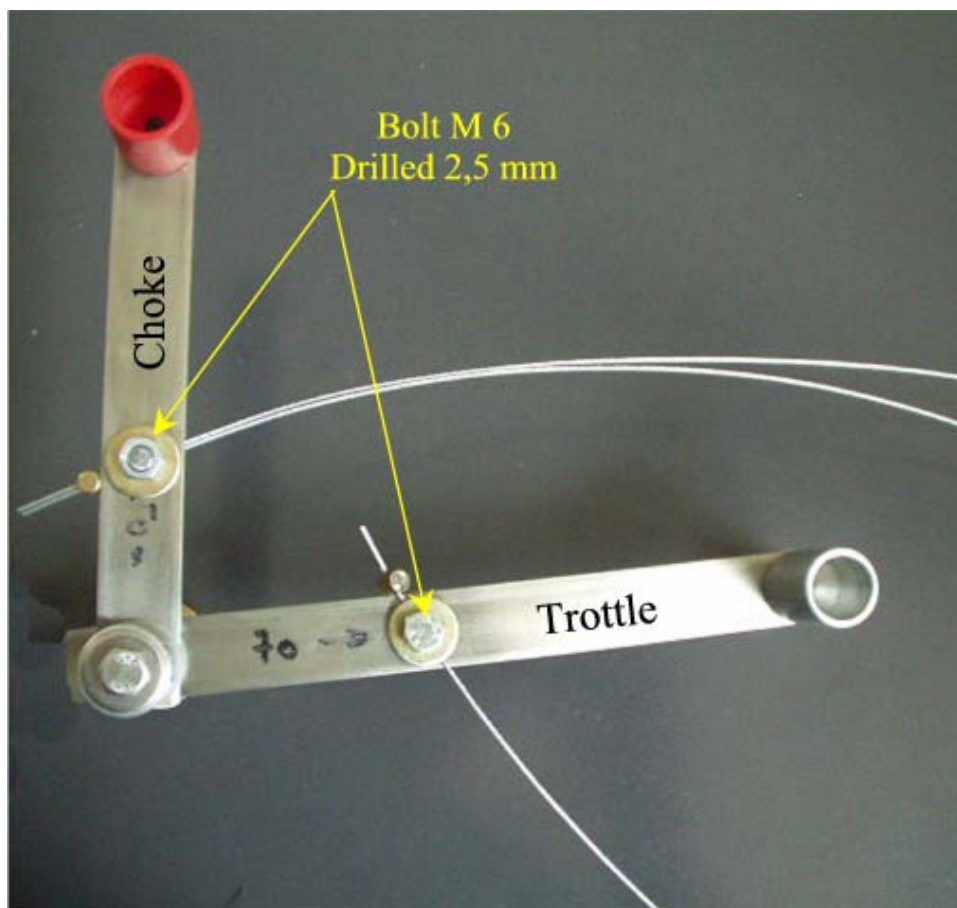


Air Filter installed in the LH Cowling side

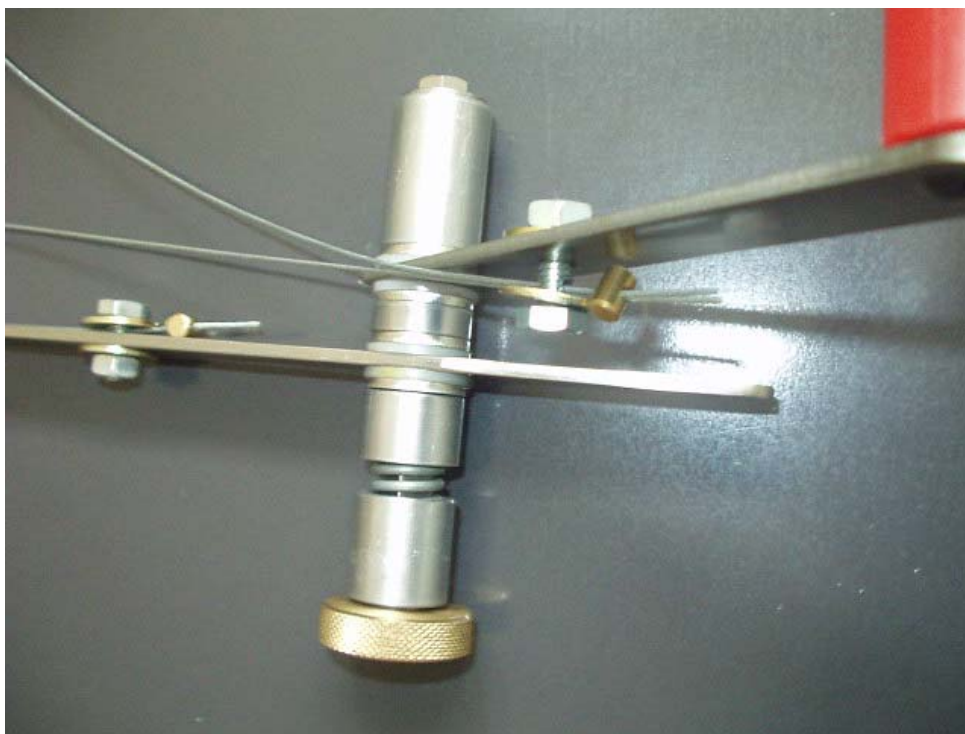


TROTTLE ASSEMBLY FOR ROTAX ENGINES





Carburetors cables installation



View Cables installation

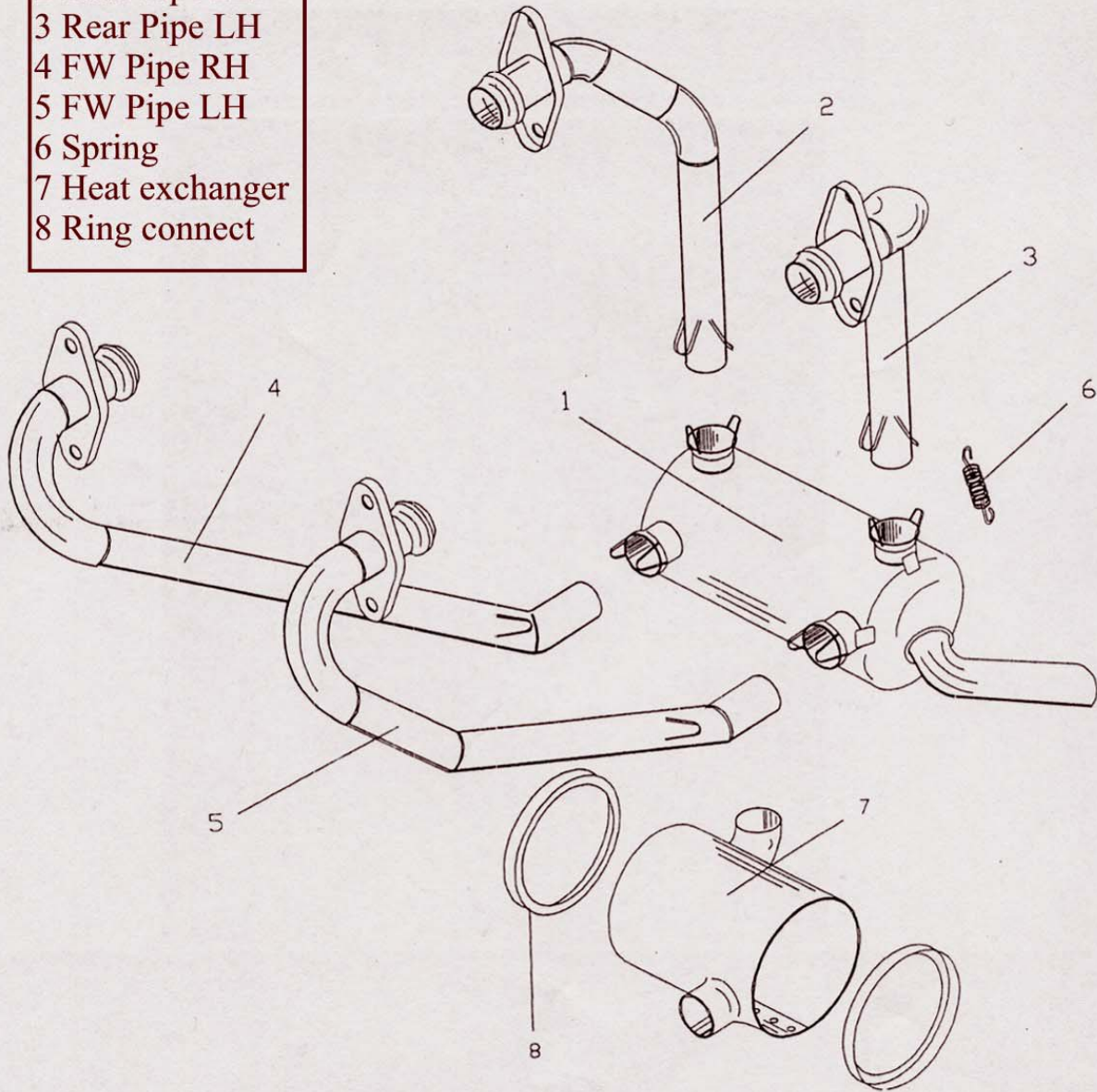


Industria Aeronautica Italiana

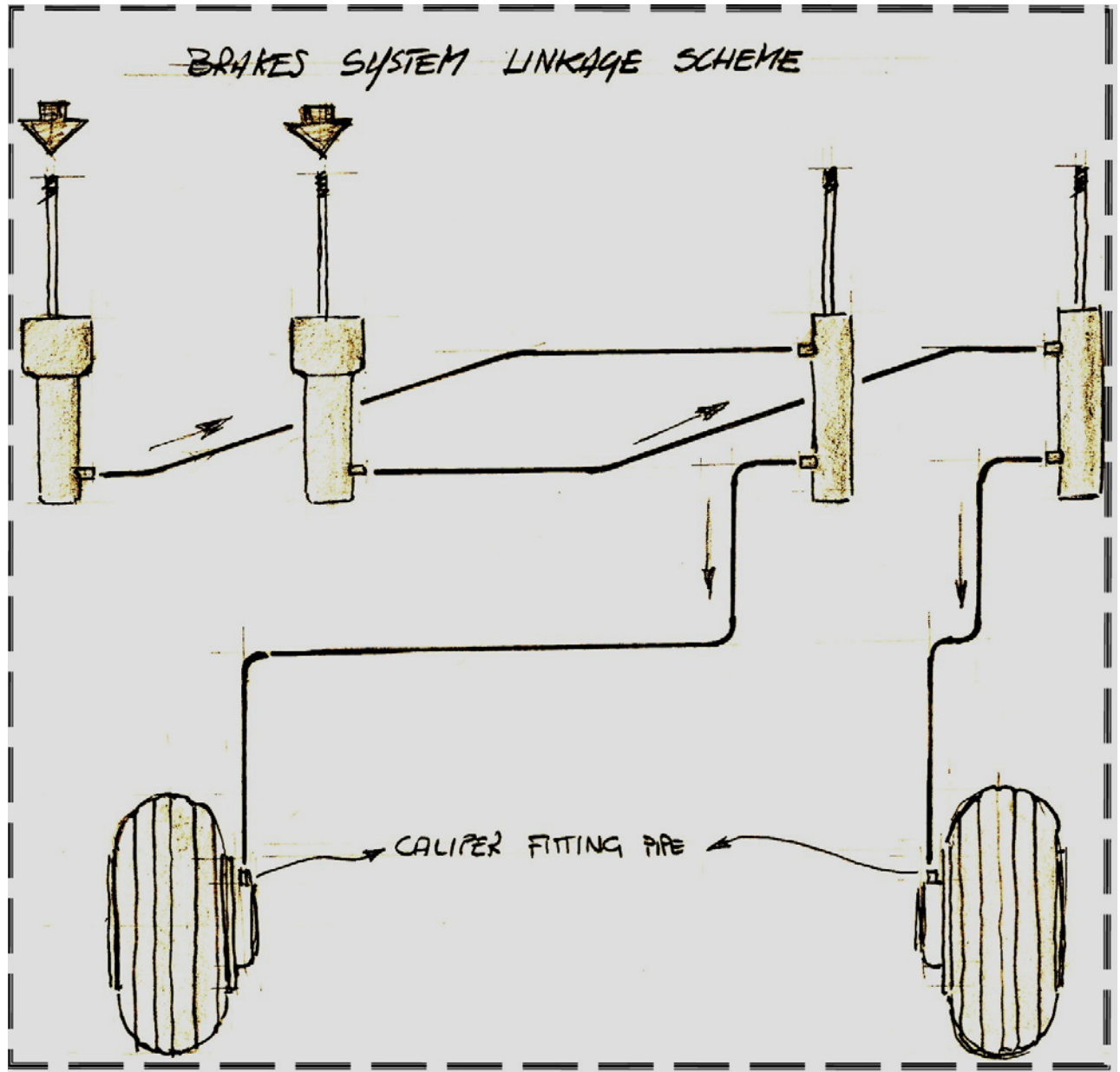
S.G. Aviation s.r.l.

N° DWG	P/N	DESCRIPTION	Q.ty	NOTE
WATER COOLING INSTALLATION				
1	RX 12-W80-1	Water line - rubber Tubing	1	
2	RX 12-W80-2	Water Tubing	1	
3	RX 12-W80-3	Connection tube	1	
4	RX 12-W80-4	Water Pump connection	1	
5	RX 12-W80-5	Rubber Tubing	1	
6	RX 12-W80-6	Tube Connection	1	
7	RX 12-W80-7	Water Rubber tubing	1	
8	RX 12-W80-8	Hose Clamps	8	
9	RX 12-W80-9	Hose Clamps	2	
10	RX 12-W80-10	Radiator bracket	2	
11	RX 12-W80-11	Water tank bracket	1	
12	RX 12-W80-12	Water tank	1	
13	RX 12-W80-13	Connection tube to engine	1	
14	RX 12-W80-14	Hose Clamps	2	
15	UNI 5739	Bolt M6 cr 8.8 L = 25 mm	4	
16	UNI 6592	Washer d = 6 mm	4	
17	UNI 5737	Bolt M4 L = 12 mm	2	
18	UNI 7473	s.Nut M4	2	
19				
20				
21				
22				
23				
24				
25				

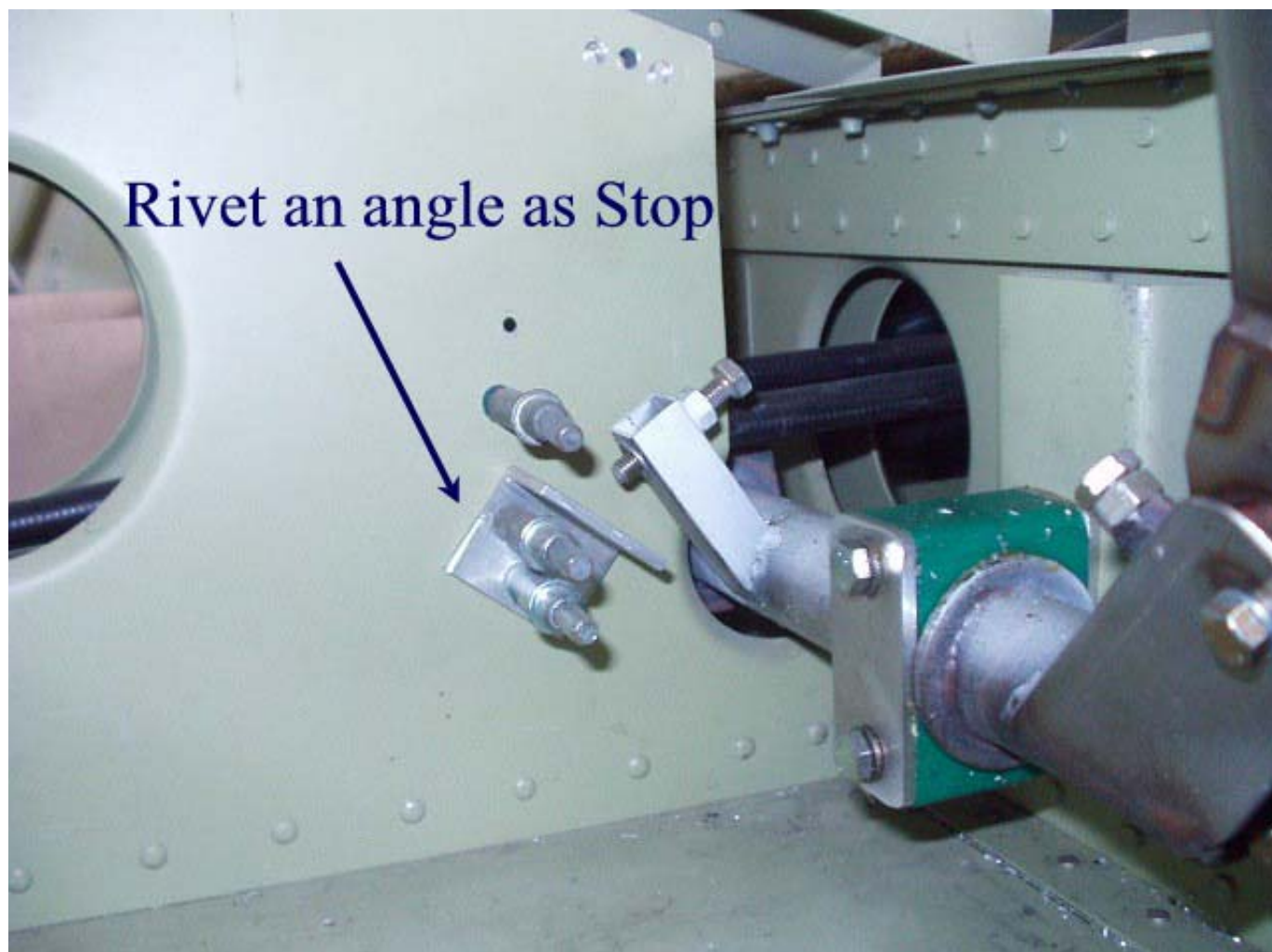
- 1 Exhaust
- 2 Rear Pipe RH
- 3 Rear Pipe LH
- 4 FW Pipe RH
- 5 FW Pipe LH
- 6 Spring
- 7 Heat exchanger
- 8 Ring connect



Rotax 912 Exhaust



NOTE: Use only AEROSHELL BRAKE FLUID Specification MIL – H – 5606G



Control Stick STOP

Chapter 9

Options

Introduction

Next sections include operating limitations and instrument markings necessary for the safe operation of the airplane, its engine, standard system and standard equipment.



Figure 9.1: Instrument panel: image 1.

Airspeed limitation

Airspeed limitation and their operational significance are shown in the following table:

	SPEED	Km/h	REMARKS
VNE	never exceed speed	270	do NOT exceed this speed in any operation
VNO	maximum structural cruising speed	250	do NOT exceed this speed except in smooth air, and then only with caution
VA	maneuvering speed	200	do NOT make full or abrupt control moments above this speed
VFE	max flap and L.G.	120	do NOT exceed this speed with flaps and L.G. down
VLE	extended speed	120	do NOT exceed this speed with flaps and L.G. down

Airspeed indicator markings

Airspeed indicator markings and their color code significance are shown in the following table:

MARKING	Km/h	MEANING
white arc	65 - 120	full flap operating range
green arc	90 - 230	normal operating range
yellow arc	230 - 270	operation must be conducted with caution
red line	270	max speed all operations

Power plant limitations

Engine operation limits for takeoff and continuous operation:

Maximum power	95 HP
Maximum engine speed	5500 rpm
Maximum oil temperature	110°
Maximum oil pressure	6 bar
Minimum oil pressure	3 bar

Detailed operating information shall be found in the Engine Manufacturer Manual.

Power plant instrument markings

Power plant instrument markings and their color code significance are shown in the following table:

INSTRUMENT	RED LINE min limit	GREEN ARC normal operating	RED LINE max limit
Tachometer	not indicated	1500 - 5500 rpm	5800 rpm
Oil temp	not indicated	50°C - 120°C	130° - 140°C
Oil pressure	2 bar	2 - 7 bar	7 - 10 bar
Water temp	not indicated	50°C - 120°C	120° - 140°C
Fuel pressure	0,2 bar	0,2 - 0,5 bar	0,5 bar



Figure 9.2: Instrument panel: image 2.

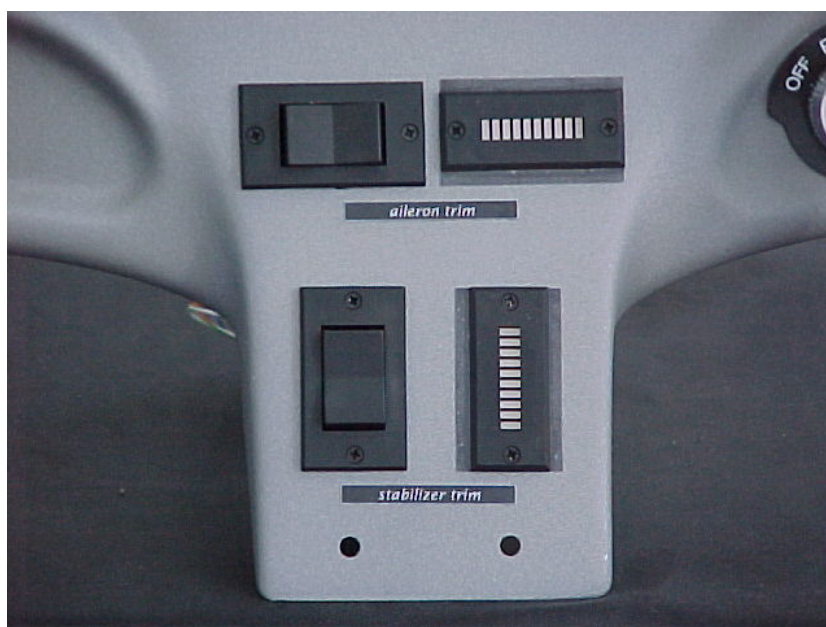
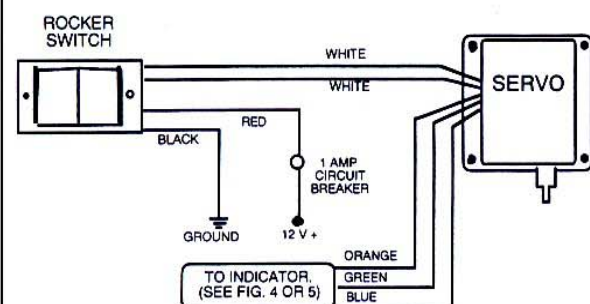
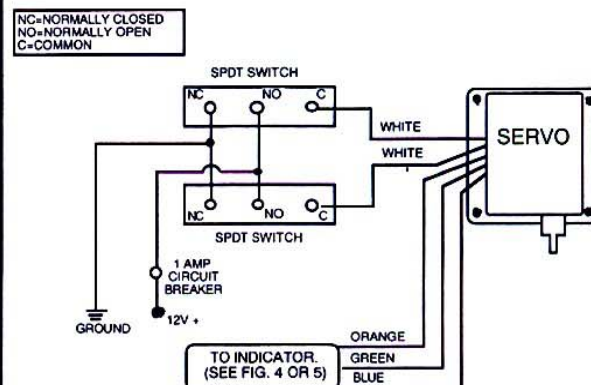
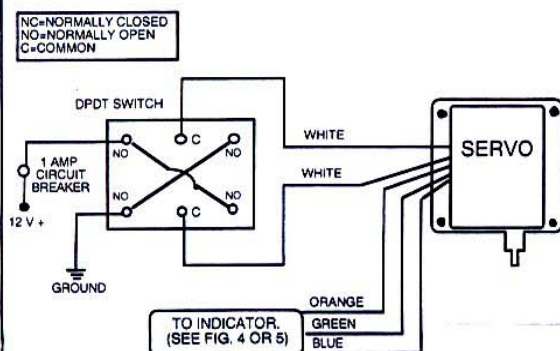
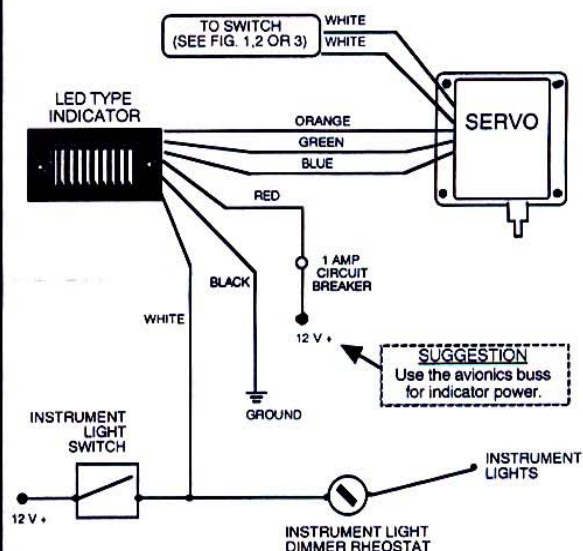
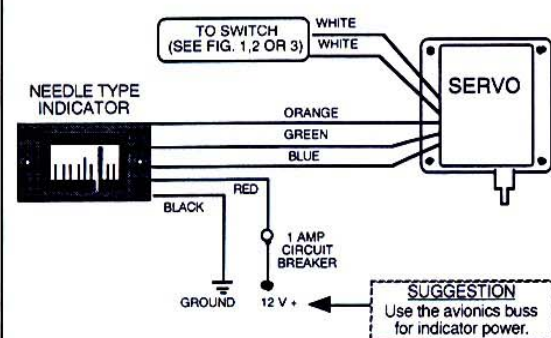


Figure 9.3: Instrument panel: image 3.

FIGURE 1 RAY ALLEN ROCKER SWITCH**FIGURE 2 TWO SPDT PUSHBUTTON SWITCHES****FIGURE 3 DPDT SWITCH****FIGURE 4 LED TYPE POSITION INDICATOR****FIGURE 5 NEEDLE TYPE POSITION INDICATOR**

For more information on other products the
Ray Allen Company manufactures,
download our brochure at:

www.rayallencompany.com

CAUTION!

Ray Allen Company, Inc. does not recommend that servos be installed in an aircraft to operate any apparatus or control surface that, if failure were to occur, could result in mechanical damage or control malfunction. When a servo is installed in an aircraft, all weight and balance, including that of the control surface, will be affected. Servos should not be installed unless you have full knowledge of the effects of this change on weight and balance or flight characteristics.

WARRANTY INFORMATION

All Ray Allen Company, Inc. products are warranted for one year from date of purchase. If you should have problems within that period, return the product to Ray Allen. We will repair it at no cost to you if it is determined that the failure occurred through normal use and not due to abusive treatment or faulty electrical wiring.



Figure 9.4: Instrument panel: image 4.



Figure 9.5: Instrument panel: image 5.



Figure 9.6: Instrument panel: image 6.

Anchor nuts



Figure 9.7: Anchor nuts 1.

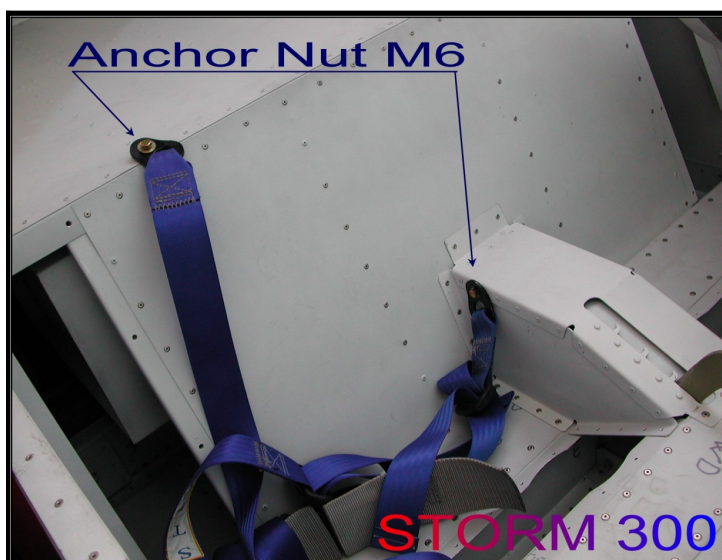
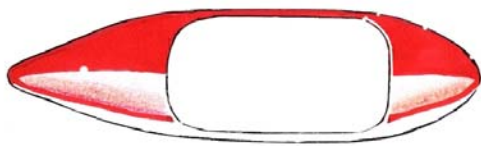
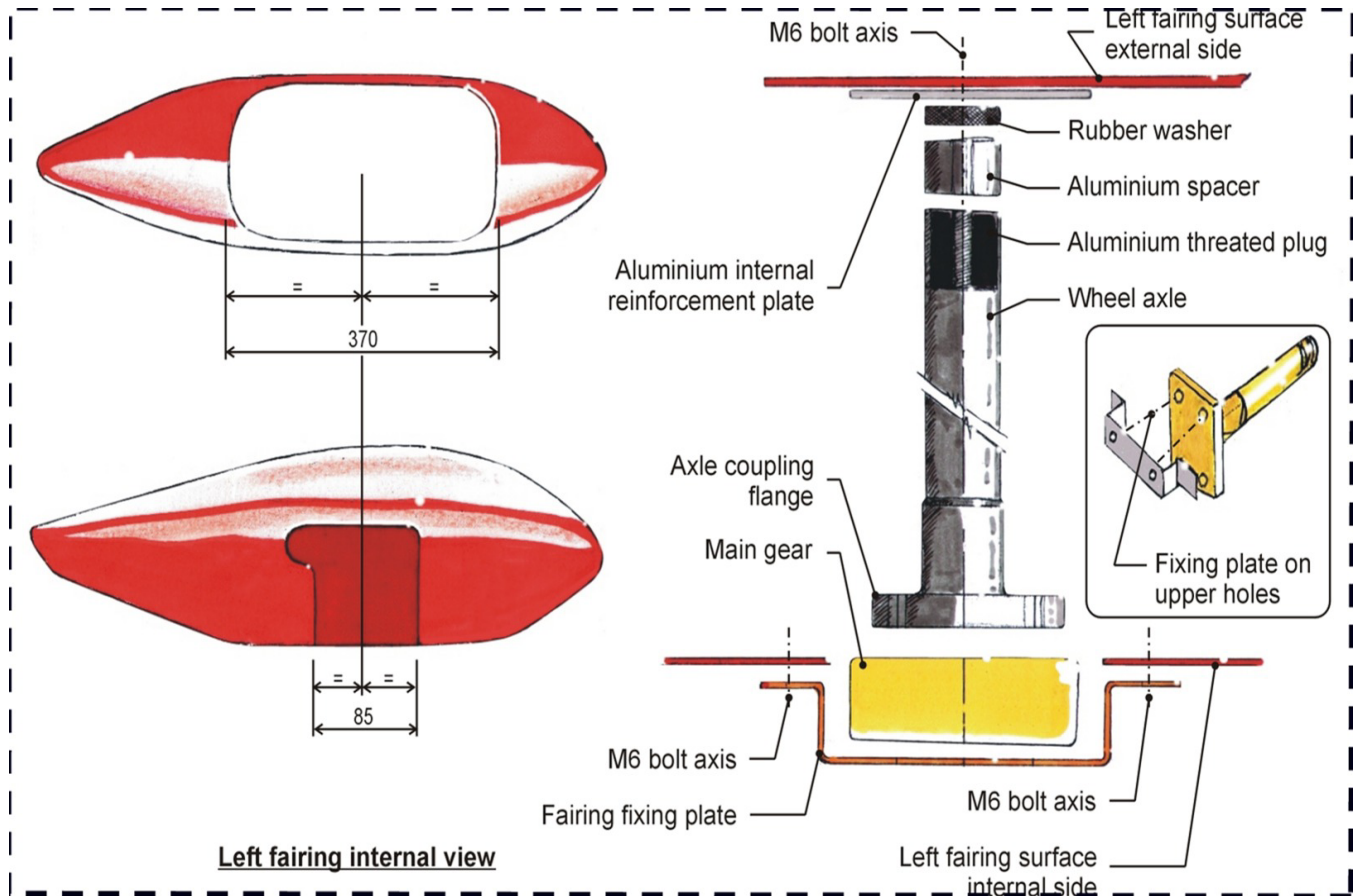


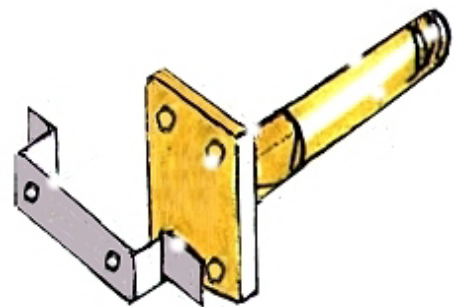
Figure 9.8: Anchor nuts 2.

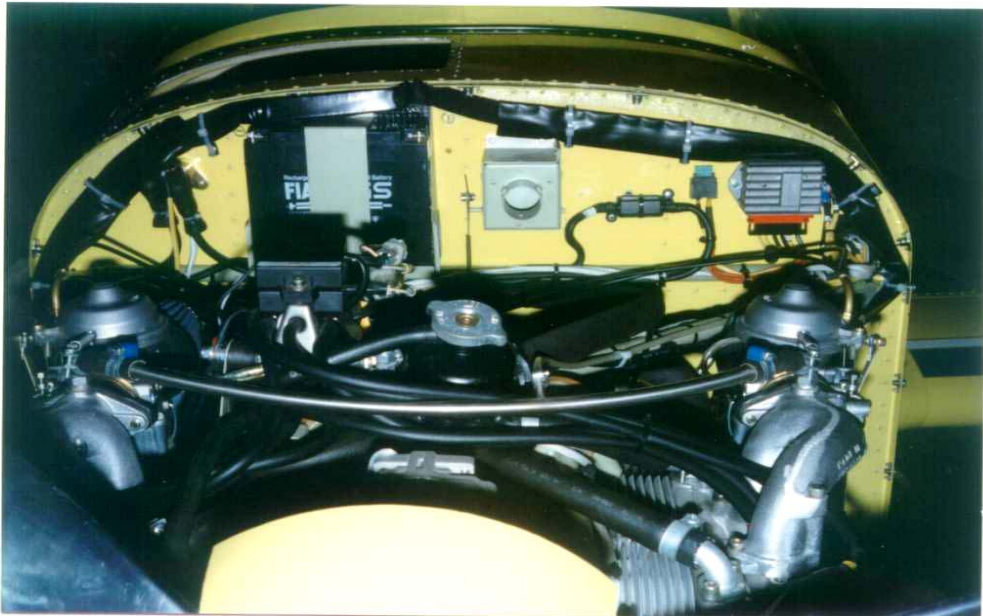
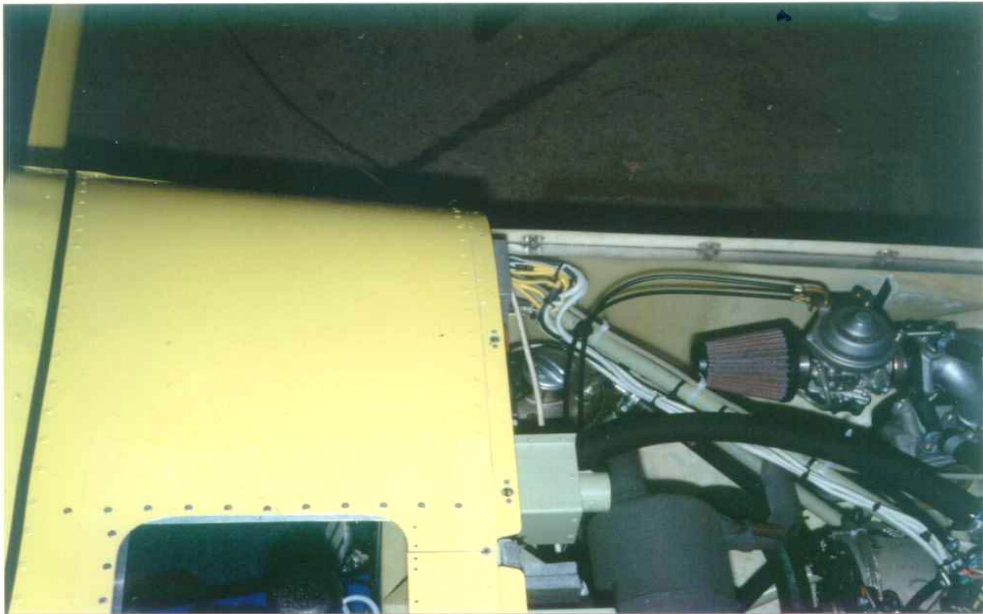


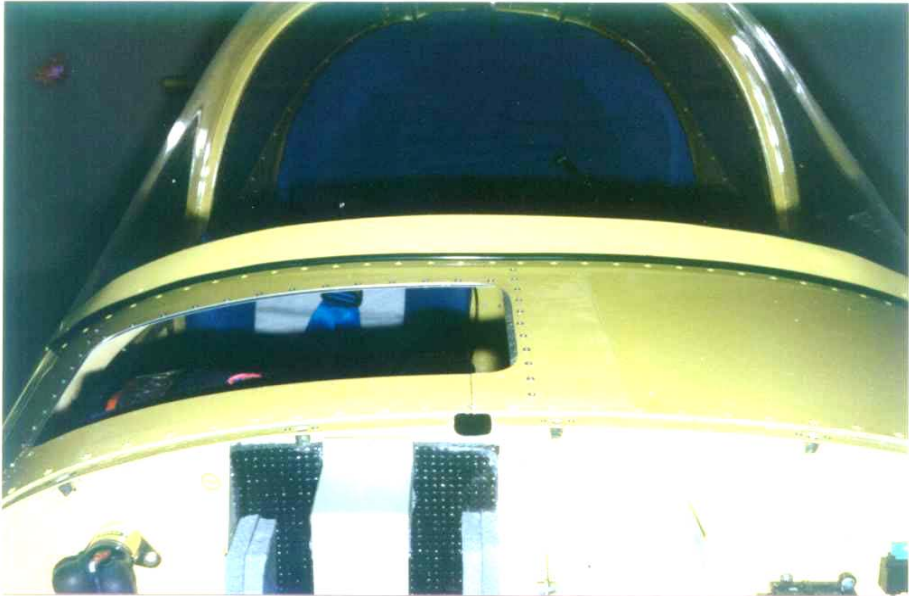
Figure 9.9: Anchor nuts 3.

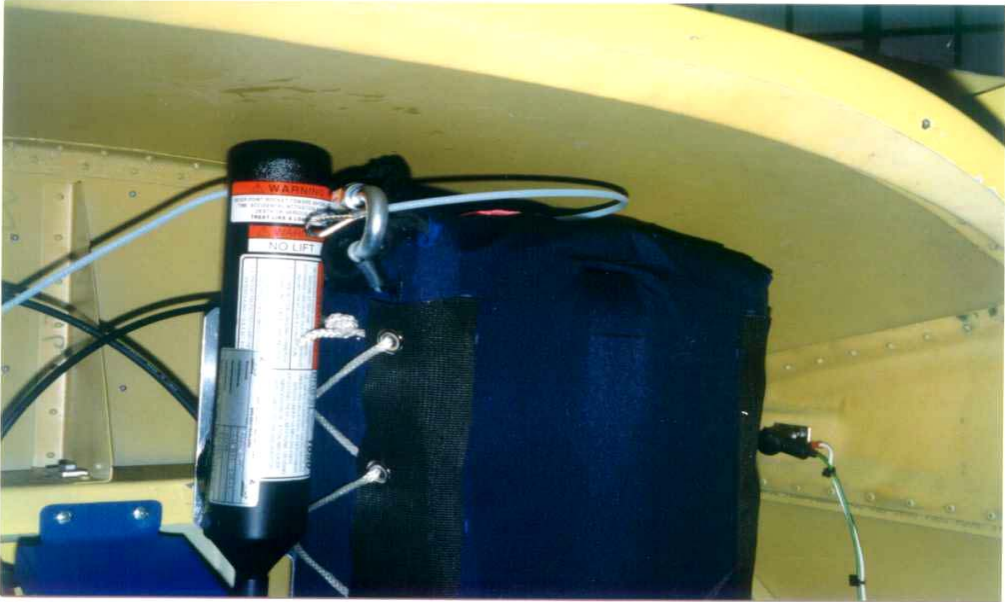
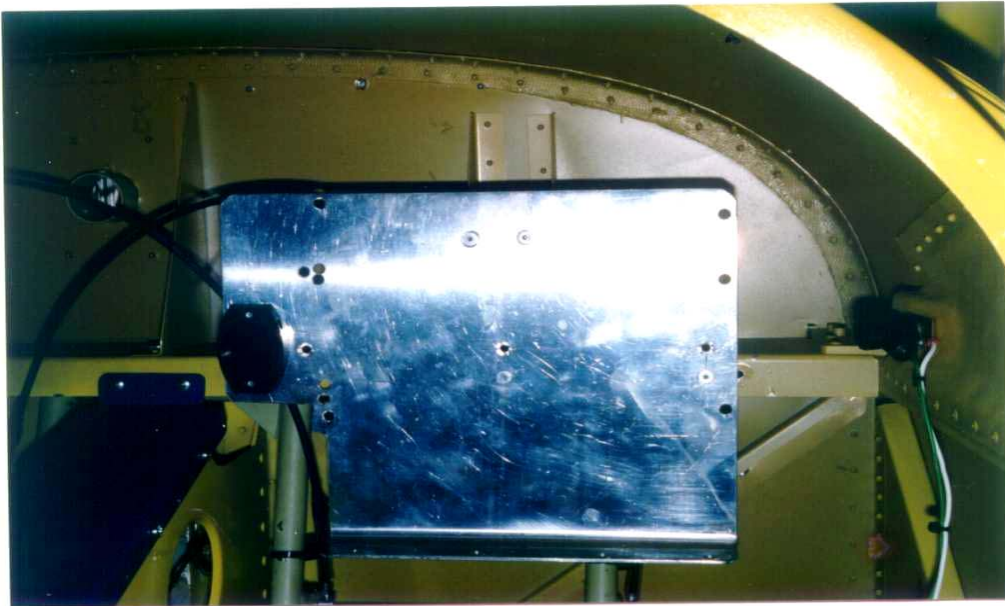


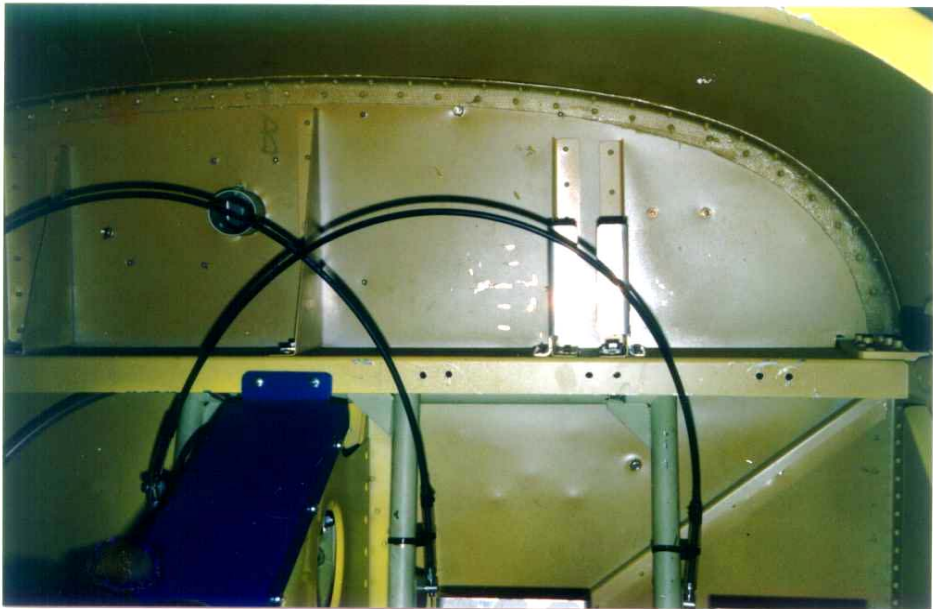
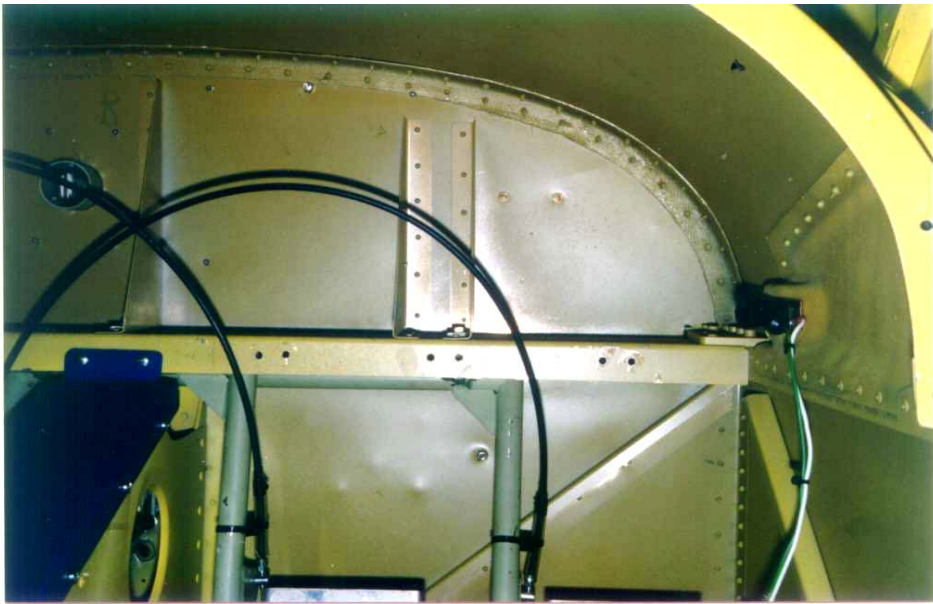
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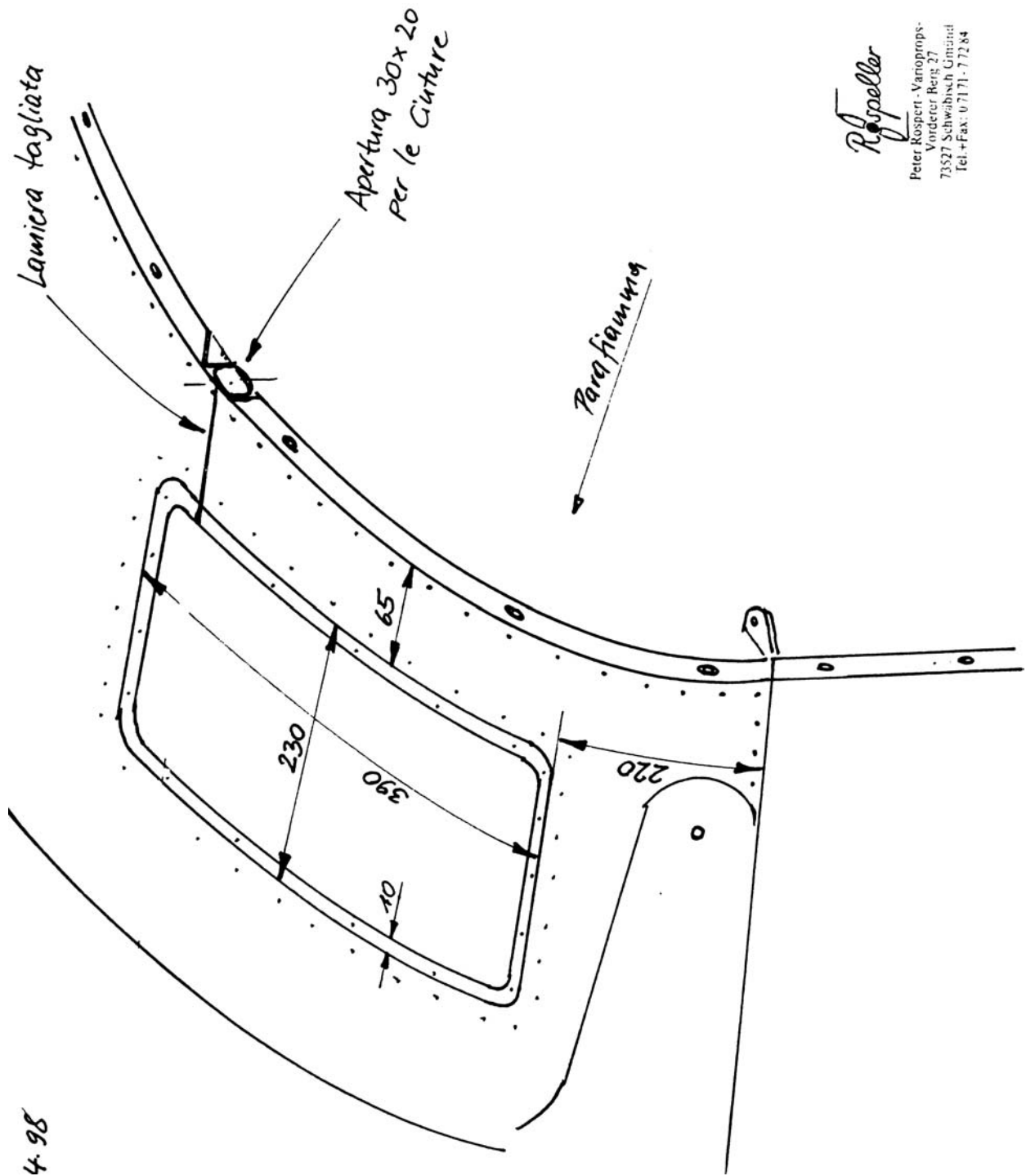






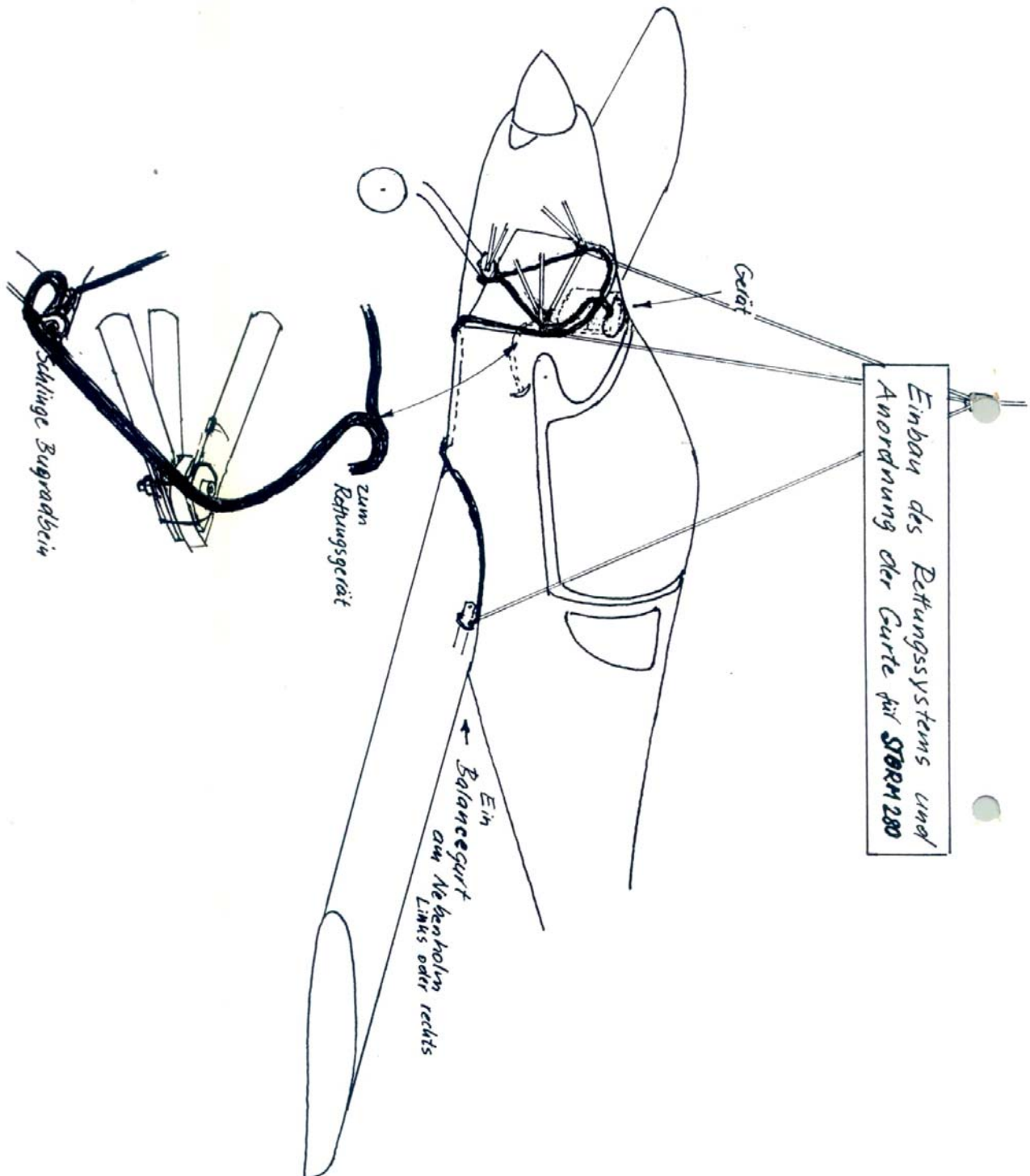


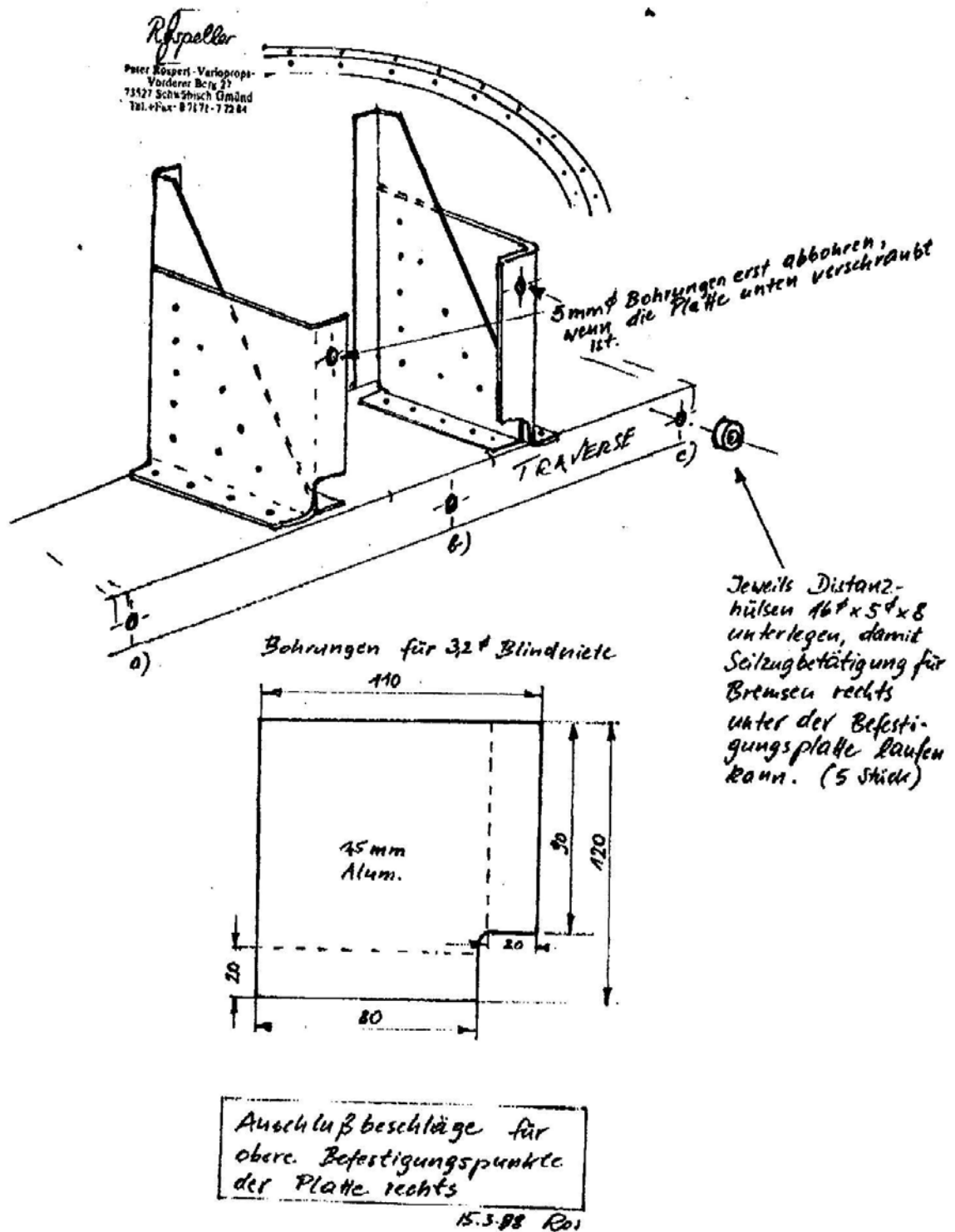




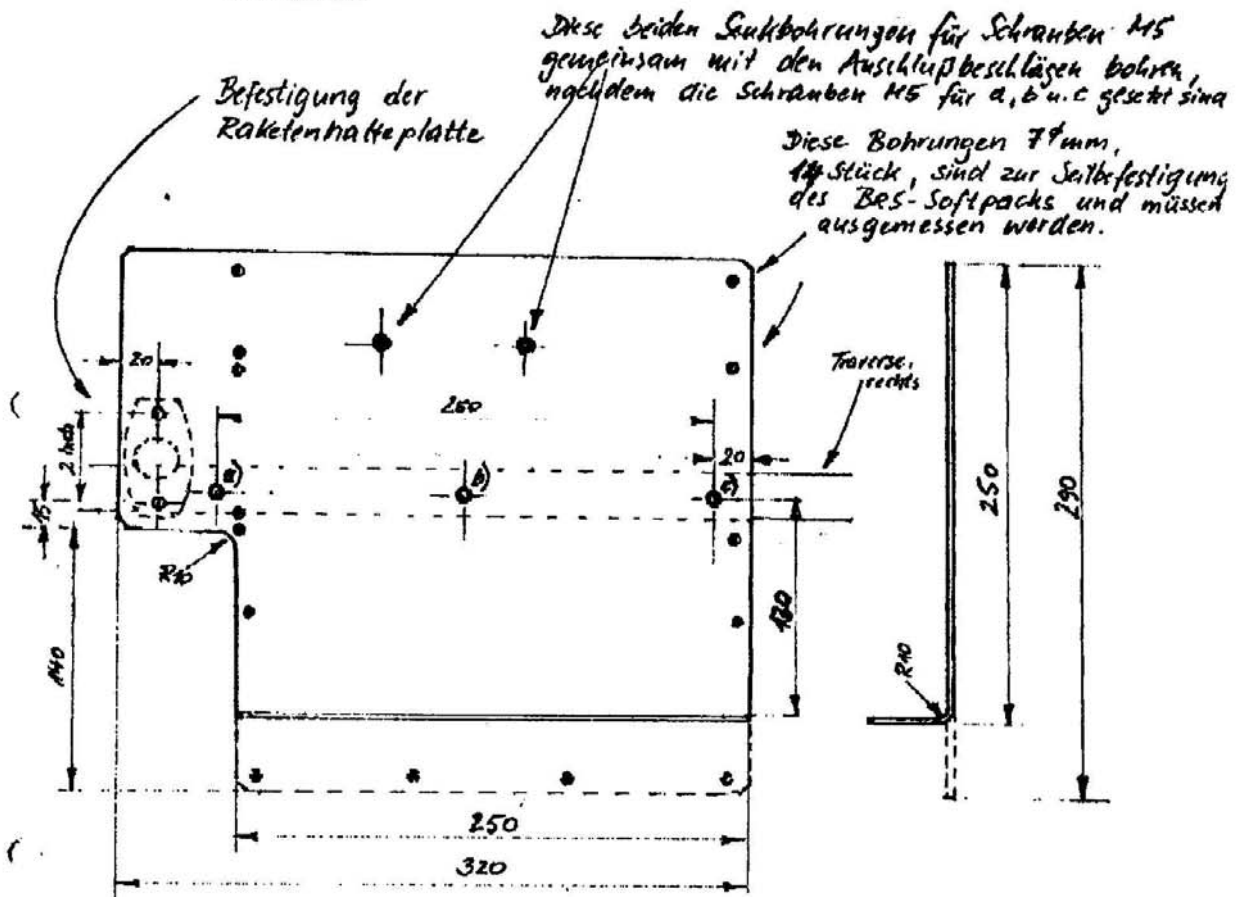
Röppeler

Peter Rösper - Varioprops-
Vorderer Berg 27
73527 Schwabisch Gmünd
Tel. + Fax: 0 71 71 - 7 72 8 4





Röspeller
 Peter Röspert - Varioprops
 Vorderer Berg 27
 73527 Schwäbisch Gmünd
 Tel.+Fax: 071 71-72204



Böhrungen a, b, c für M5 Schrauben mit Senkkopf zur Befestigung an der Traverse (ausenken)
Jeweils eine Distanzhülse, Alu, 16x8x8 unterlegen.
3 Senkschrauben M5, 20 lang und selbstsch. Muttern, 4 Scheiben

Befestigungsplatte, Alum. 2,5mm
für Soft pack BR5-5-UL
im STORM 280

15.3.98 Rn,

Appendix A

Drawings

1. *Three views of Storm 300*, see page 137.
2. *Datum location and balance*, see page 138.
3. *Landing gear box 1*, see page 139.
4. *Landing gear box 2*, see page 140.
5. *Landing gear box 3, connection to fuselage*, see page 141.
6. *Nose landing gear*, see page 142.
7. *Outer skin 3rd phase*, see page 143.
8. *Luggage bay*, see page 144.
9. *Fuselage console assembly*, see page 145.
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19. *Fuselage end assembly*, see page 155.
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22. *Wing box 3*, see page 158
23. *Wing box 4*, see page 159.
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25. *Lower wing panels assemblage*, see page 161.
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27. *Wing general assembly*, see page 163.
28. *Aileron assembly*, see page 164.
29. *Aileron control system*, see page 165.
30. *Flaps general assembly*, see page 166.
31. *Flaps and ailerons registering*, see page 167.
32. *Wing, rear spar*, see page 168.
33. *Flap control position*, see page 169.
34. *General installation of aileron controls*, see page 170.
35. *Fuselage rear tank type*, see page 171.
36. *Wing tank 1*, see page 172.
37. *Wing tank 2, general assembly*, see page 173.

- 38. *Wing tank 3, dimension options*, see page 174.
- 39. *Vertical tail general assemblage*, see page 175.
- 40. *Fin assemblage 1*, see page 176.
- 41. *Fin assemblage 2*, see page 177.
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- 45. *Rudder 2, assemblage*, see page 181.
- 46. *Rudder 3, assemblage*, see page 182.
- 47. *Rudder 4, details*, see page 183.
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- 55. *Stabilizer 4, panels assemblage 5th phase*, see page 191.
- 56. *Stabilizer 5, spar and ribs assembly*, see page 192.
- 57. *Trim tab assemblage*, see page 193.

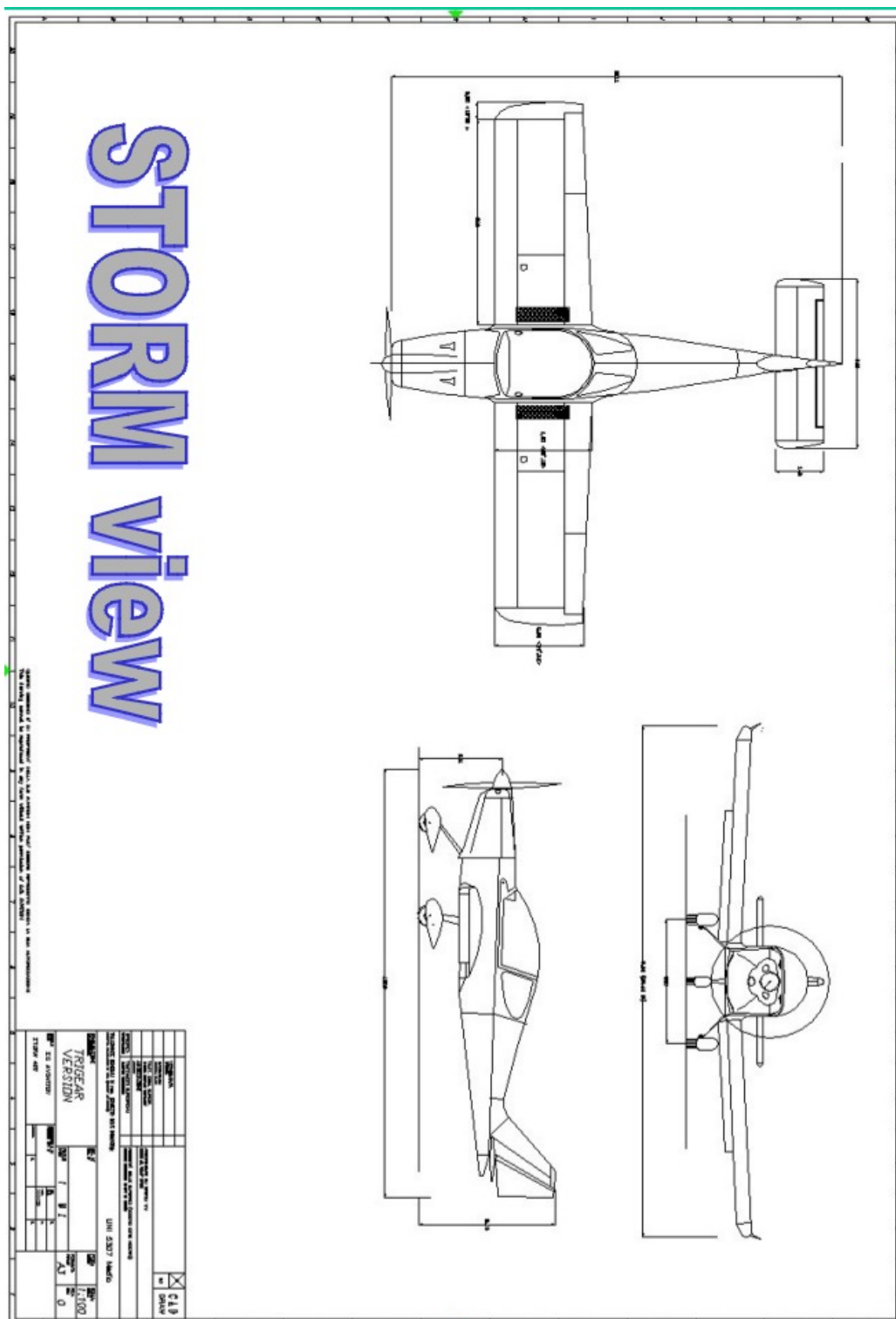


Figure A.1: Three views of Storm 300.

SG AVIATION

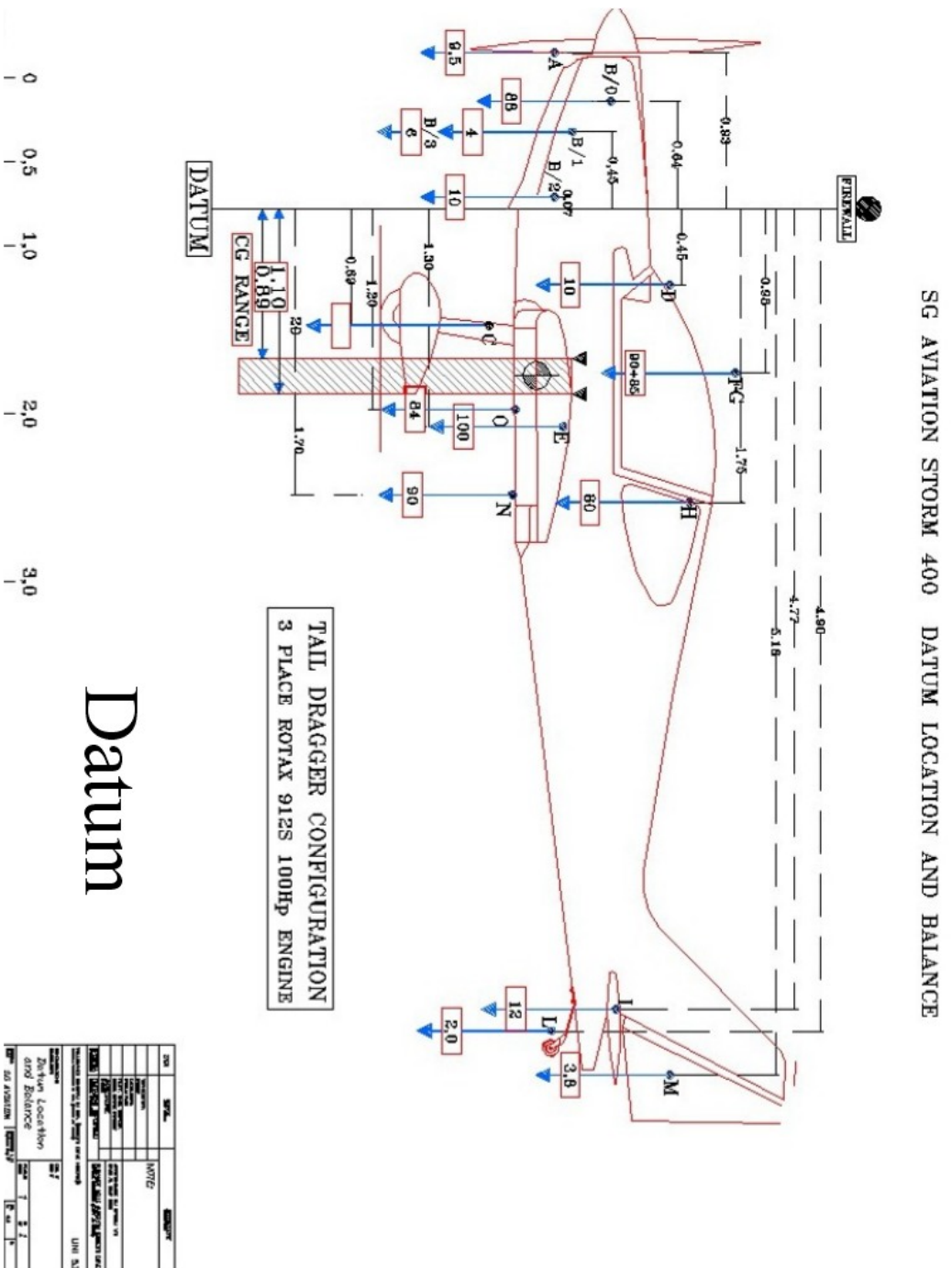


Figure A.2: Storm 400 datum location and balance. Tail dragger configuration, places for 3 people, 100Hp Rotax 512s engine.



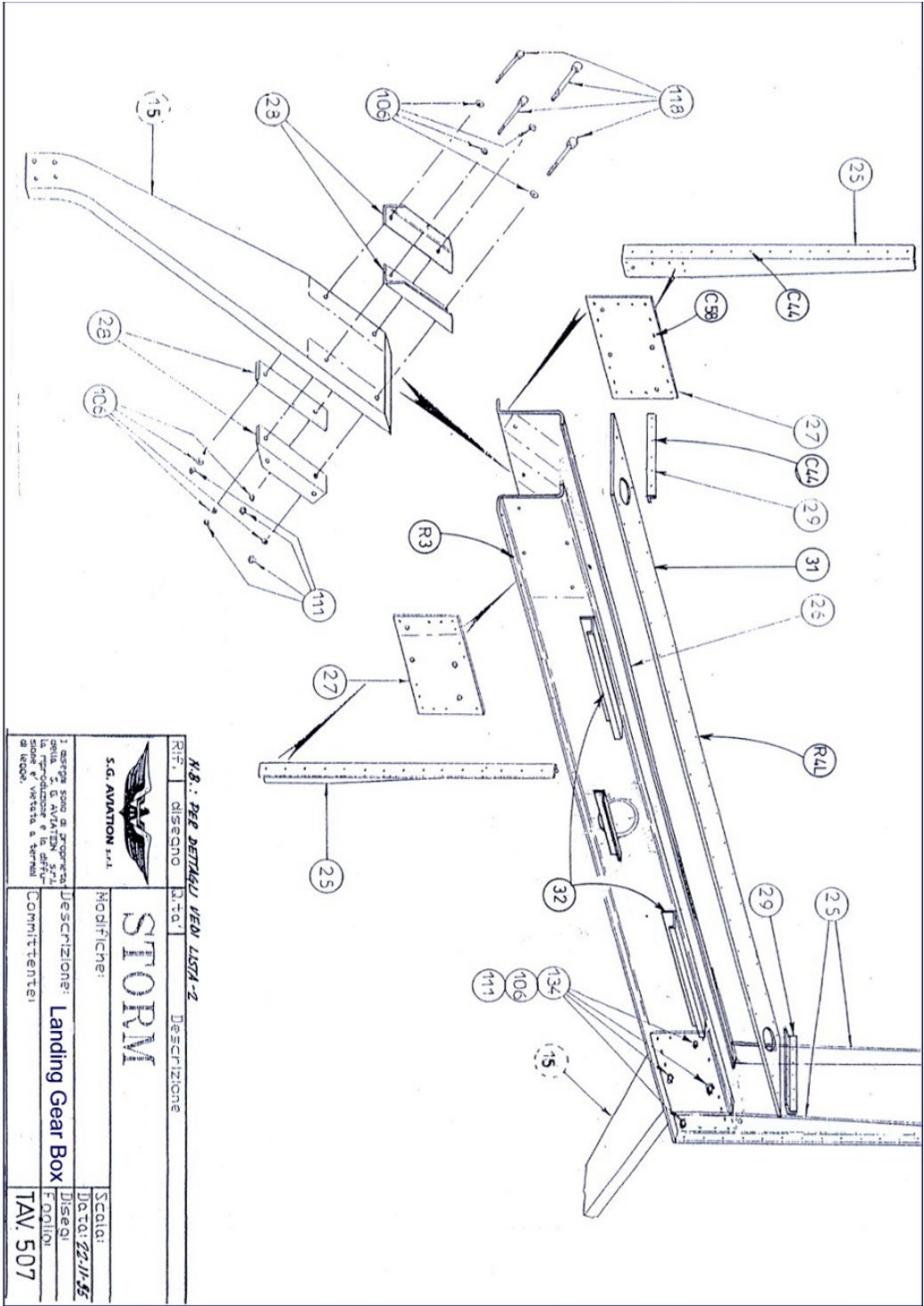


Figure A.4: Landing gear box 2.

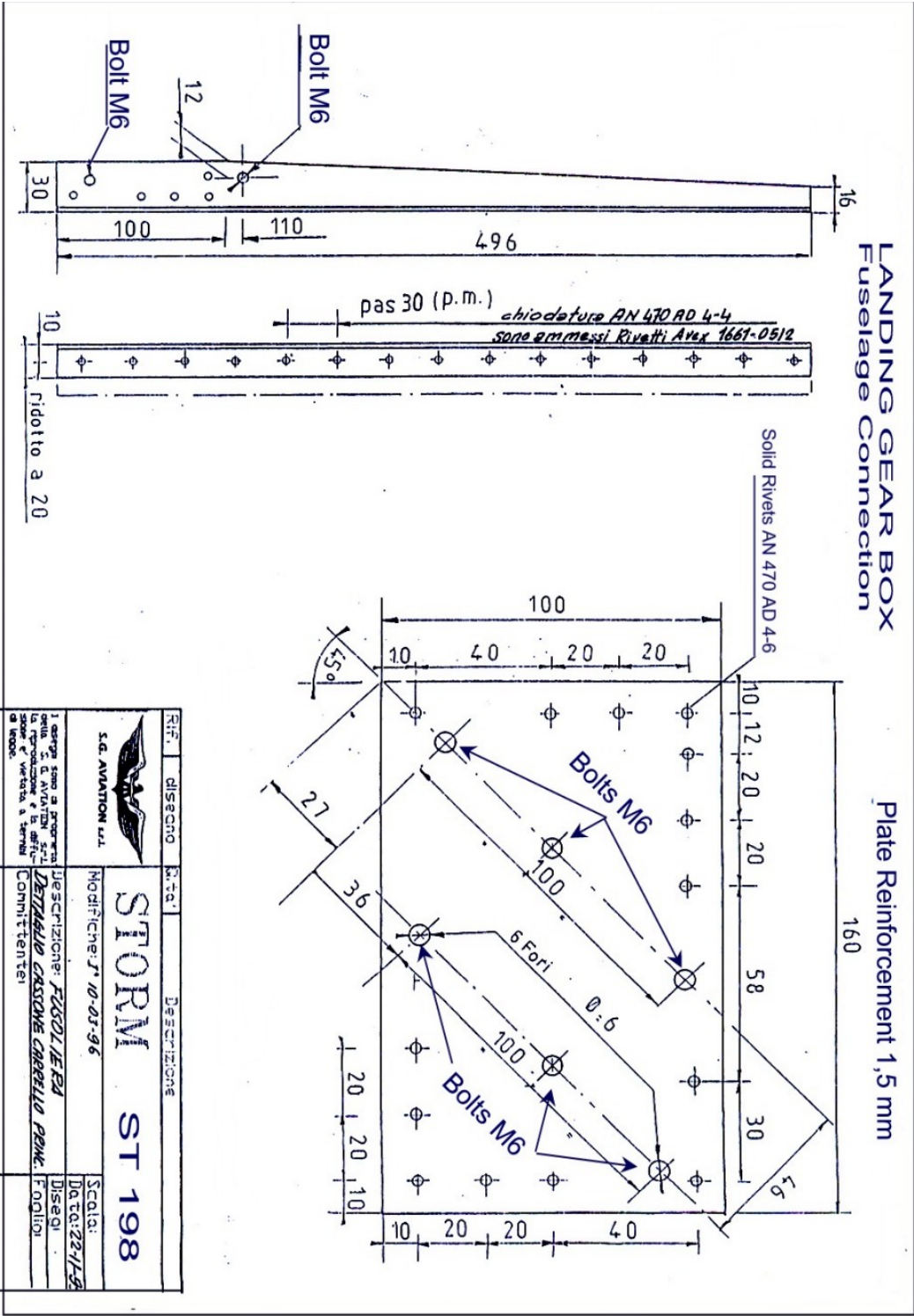
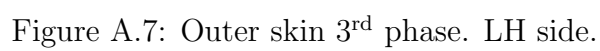


Figure A.5: Landing gear box 3, connection to fuselage.





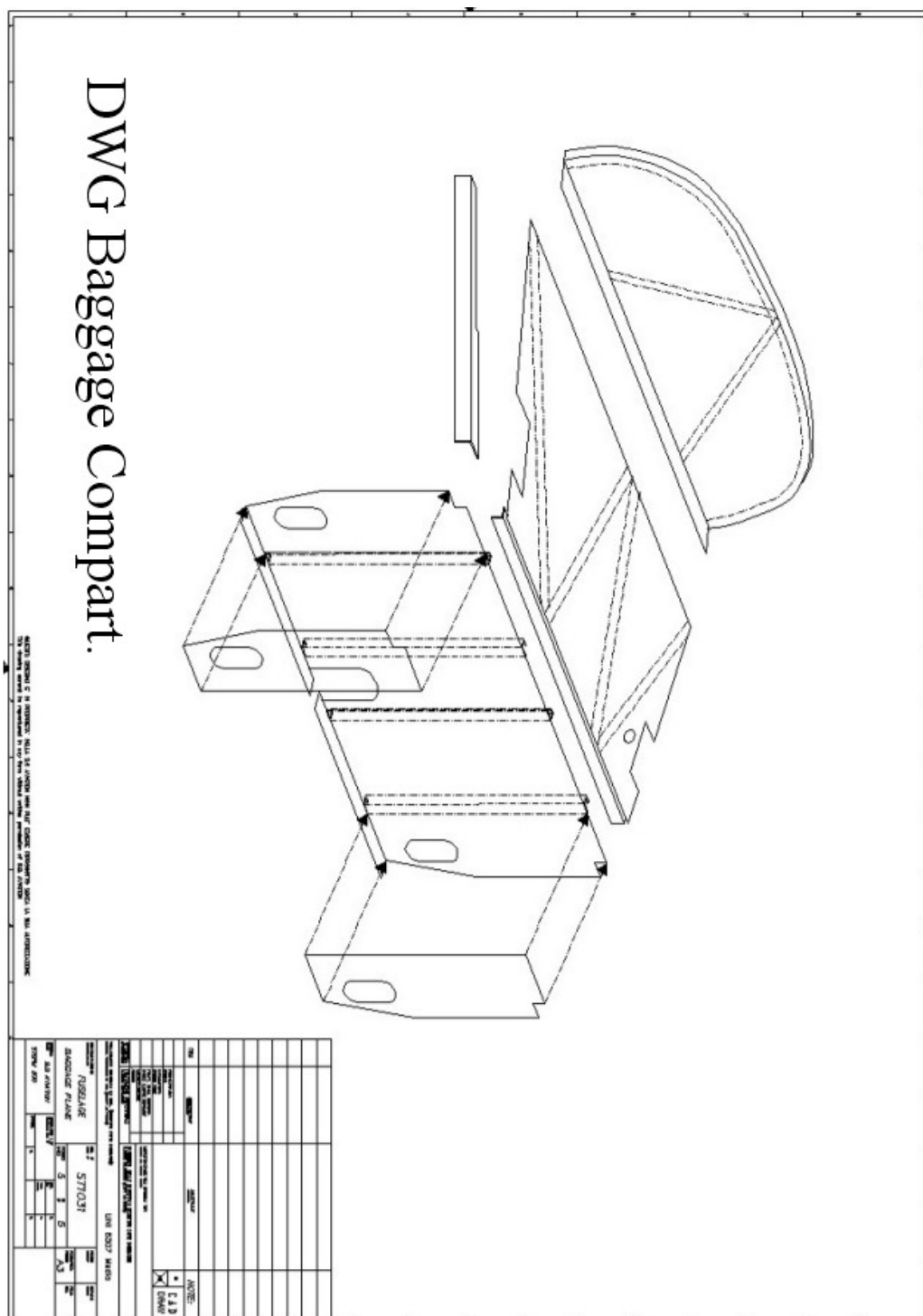


Figure A.8: Fuselage, luggage bay.

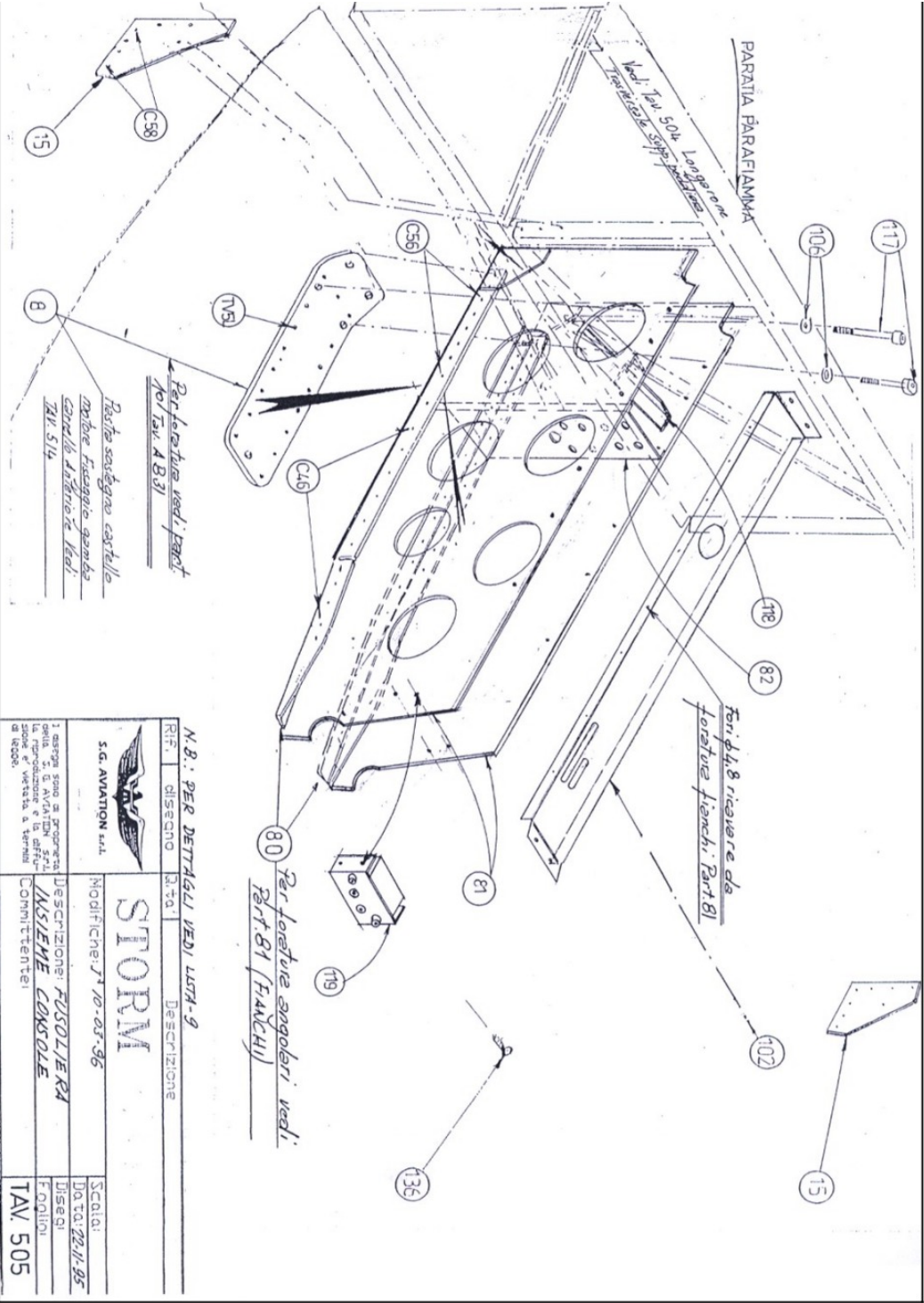


Figure A.9: Fuselage console assembly.

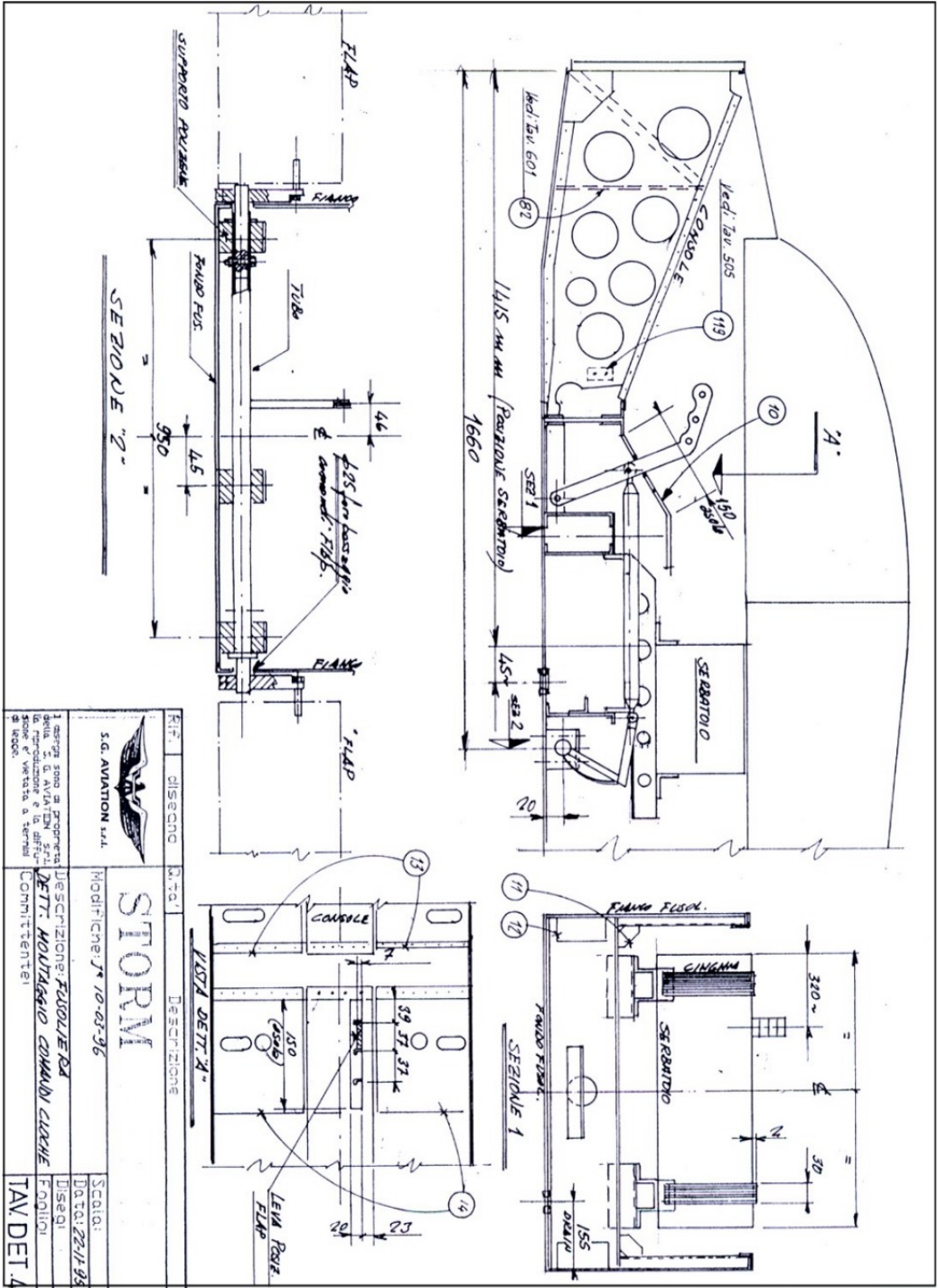


Figure A.10: Fuselage, control stick assemblage details.



Figure A.11: Wing box assemblage, control stick support.

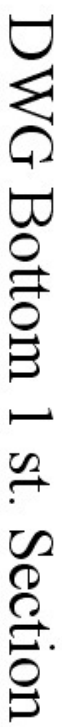


Figure A.12: Bottom front fuselage skin, 1st section.

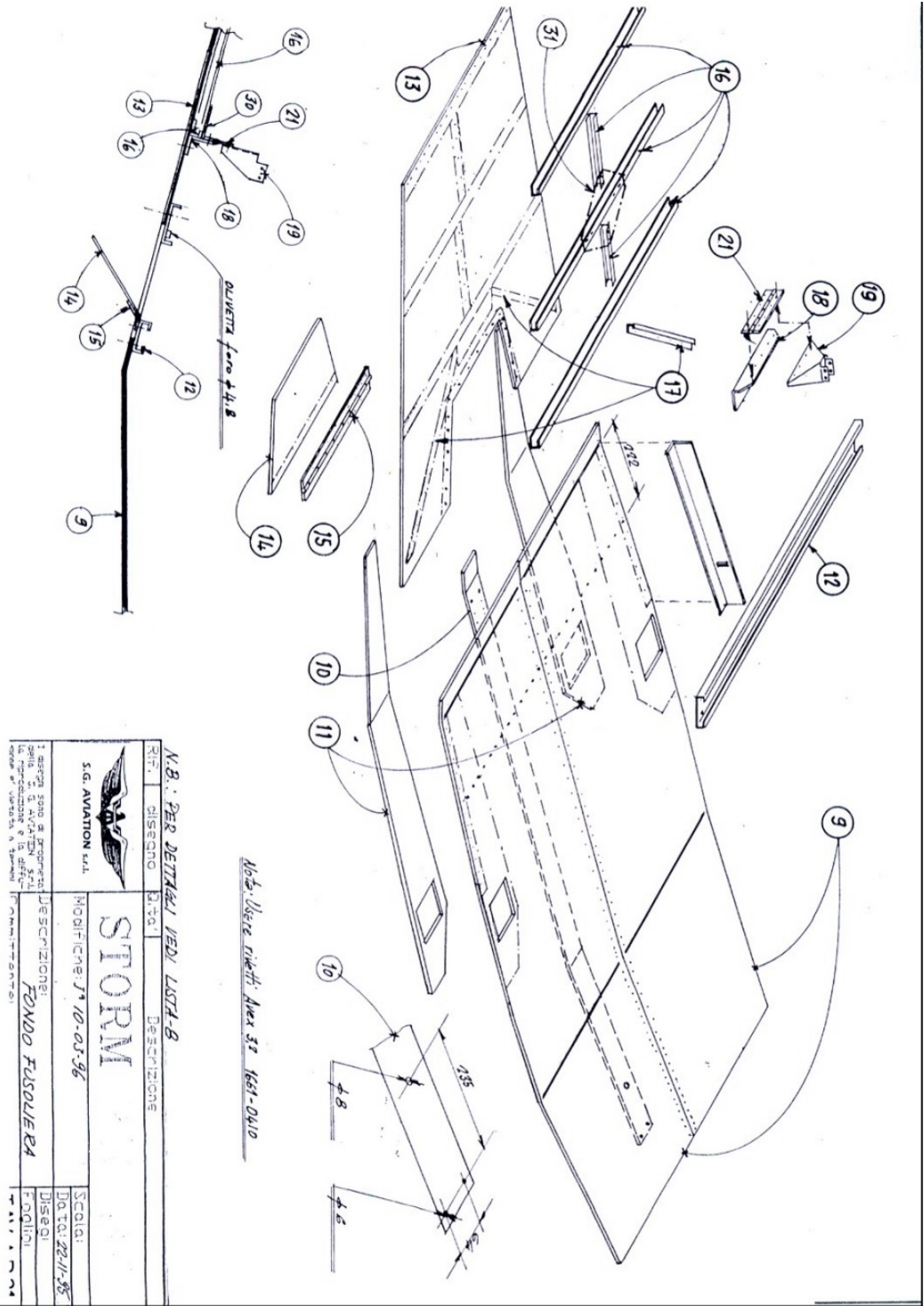
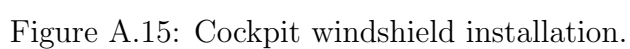
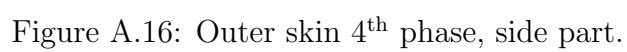


Figure A.13: Fuselage bottom.







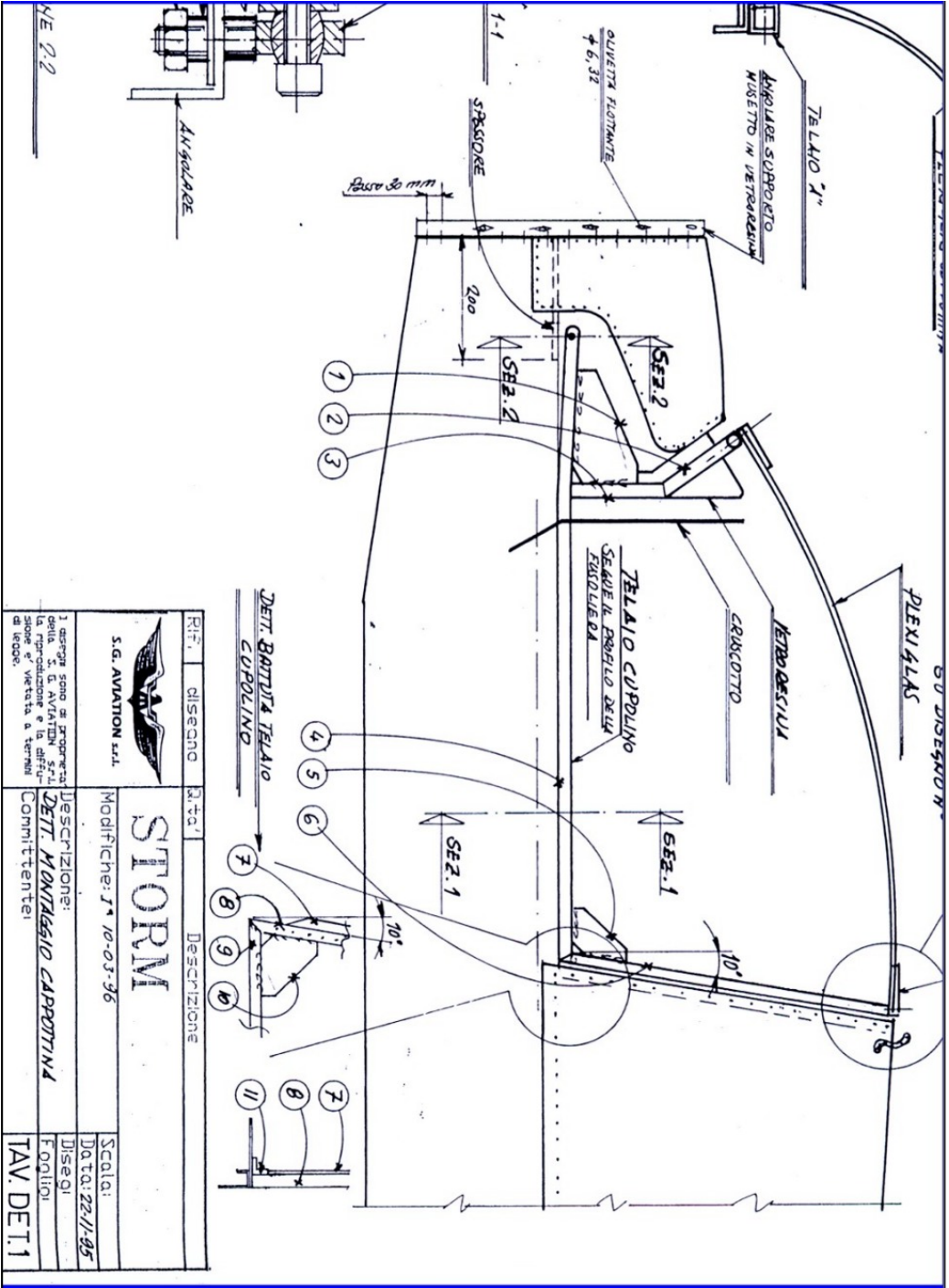


Figure A.17: Canopy assembly details.

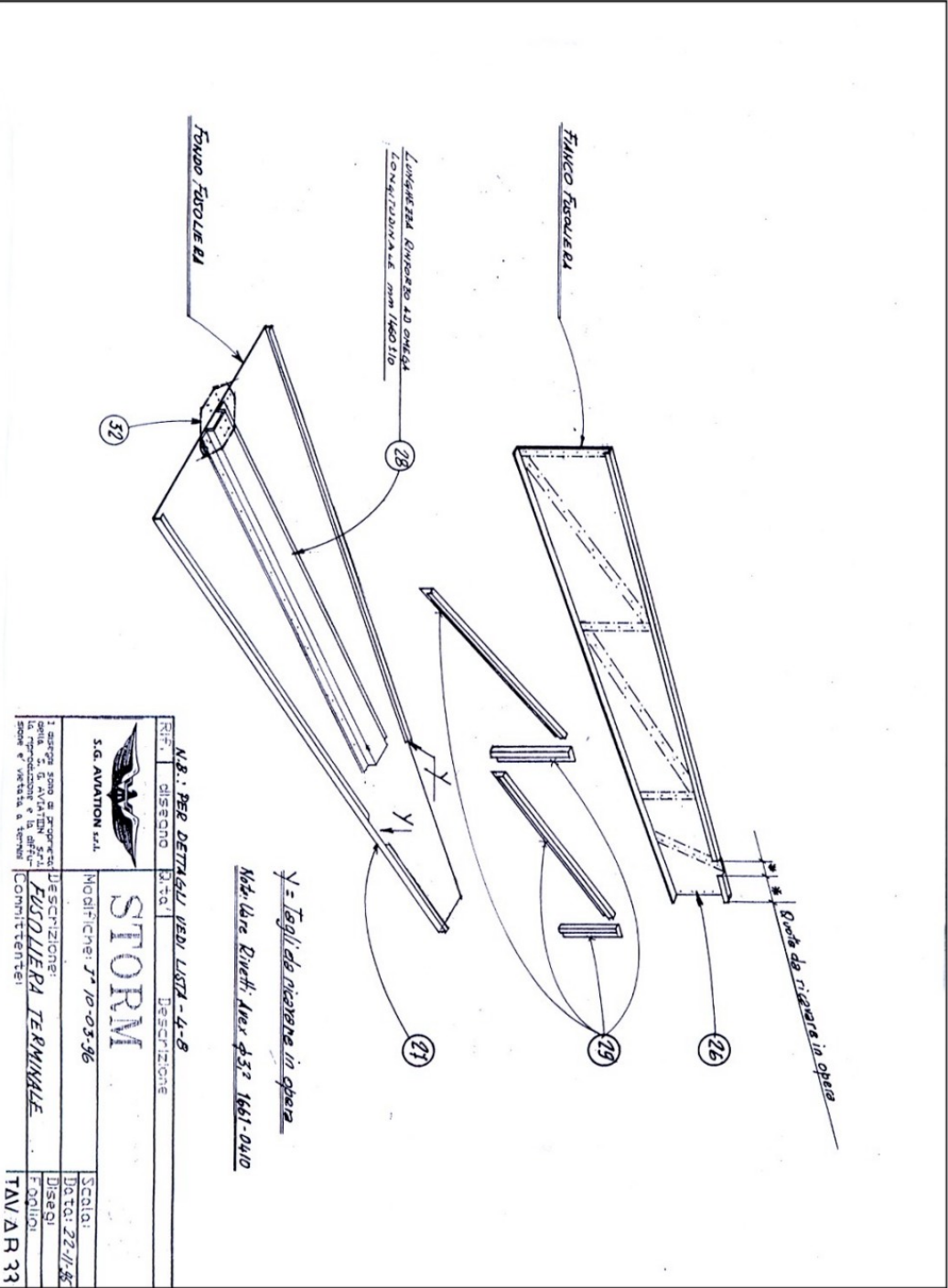


Figure A.18: Fuselage end.

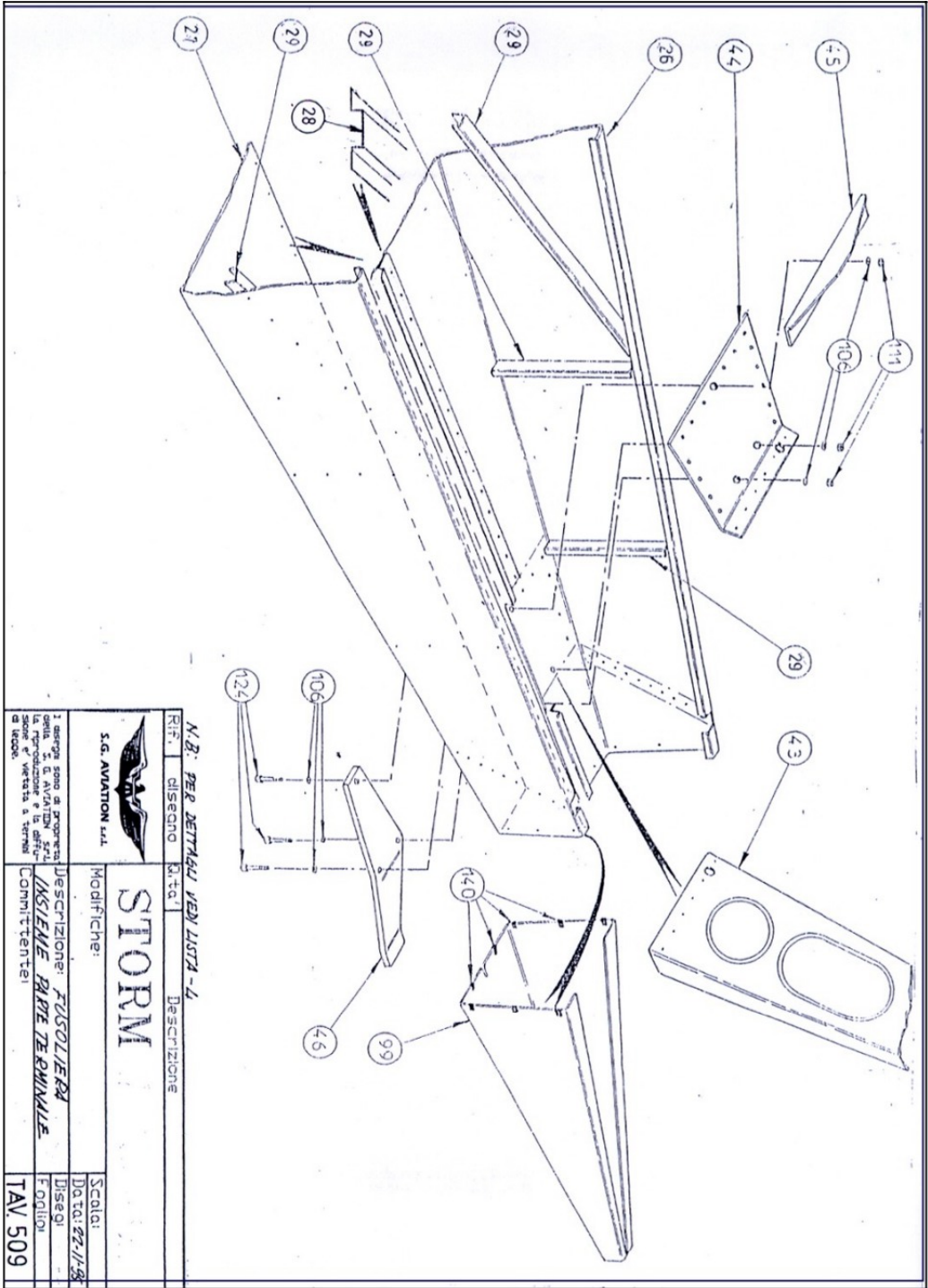


Figure A.19: Fuselage end assembly.

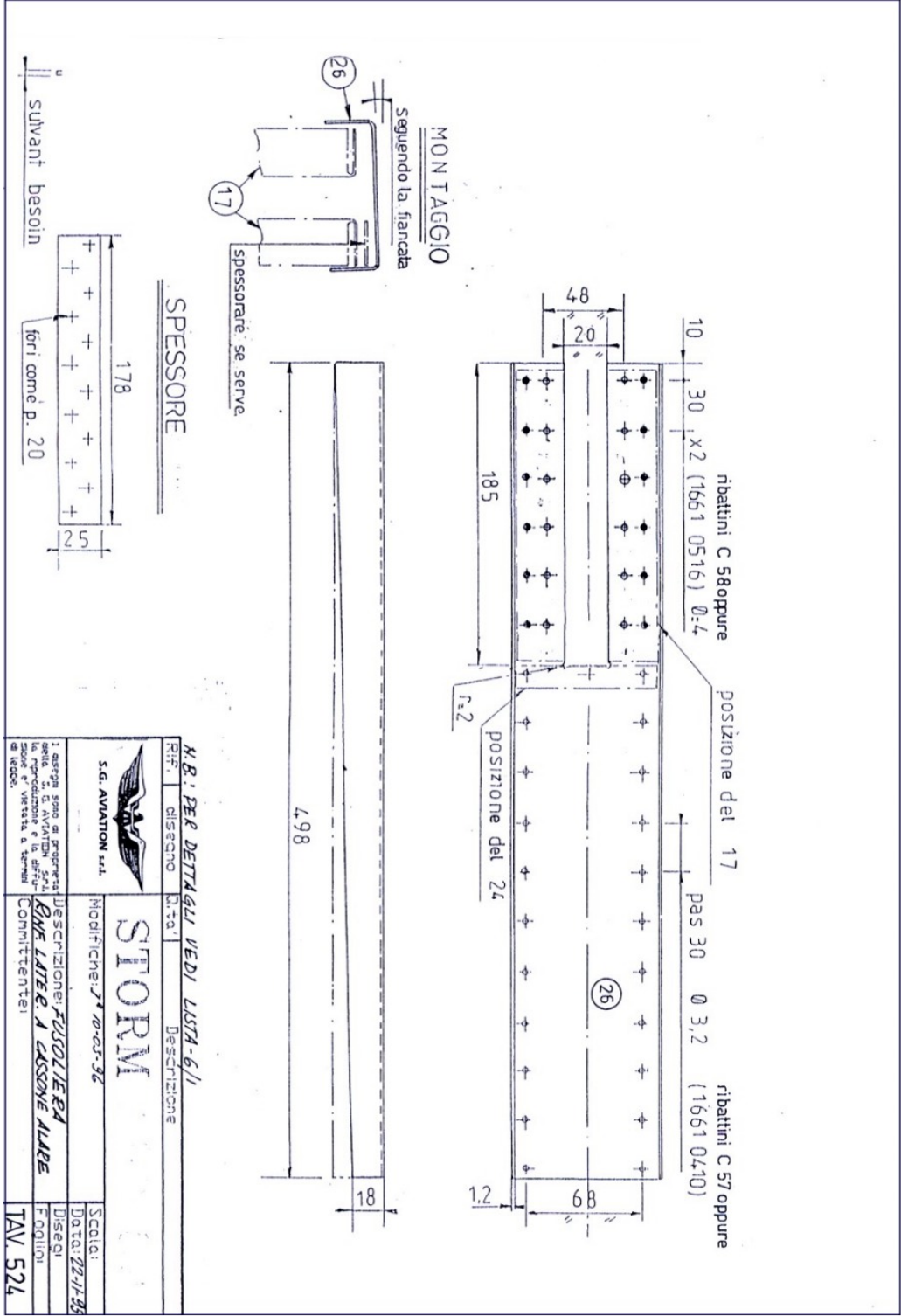


Figure A.20: Wing box 1, side reinforcement.
SG AVIATION

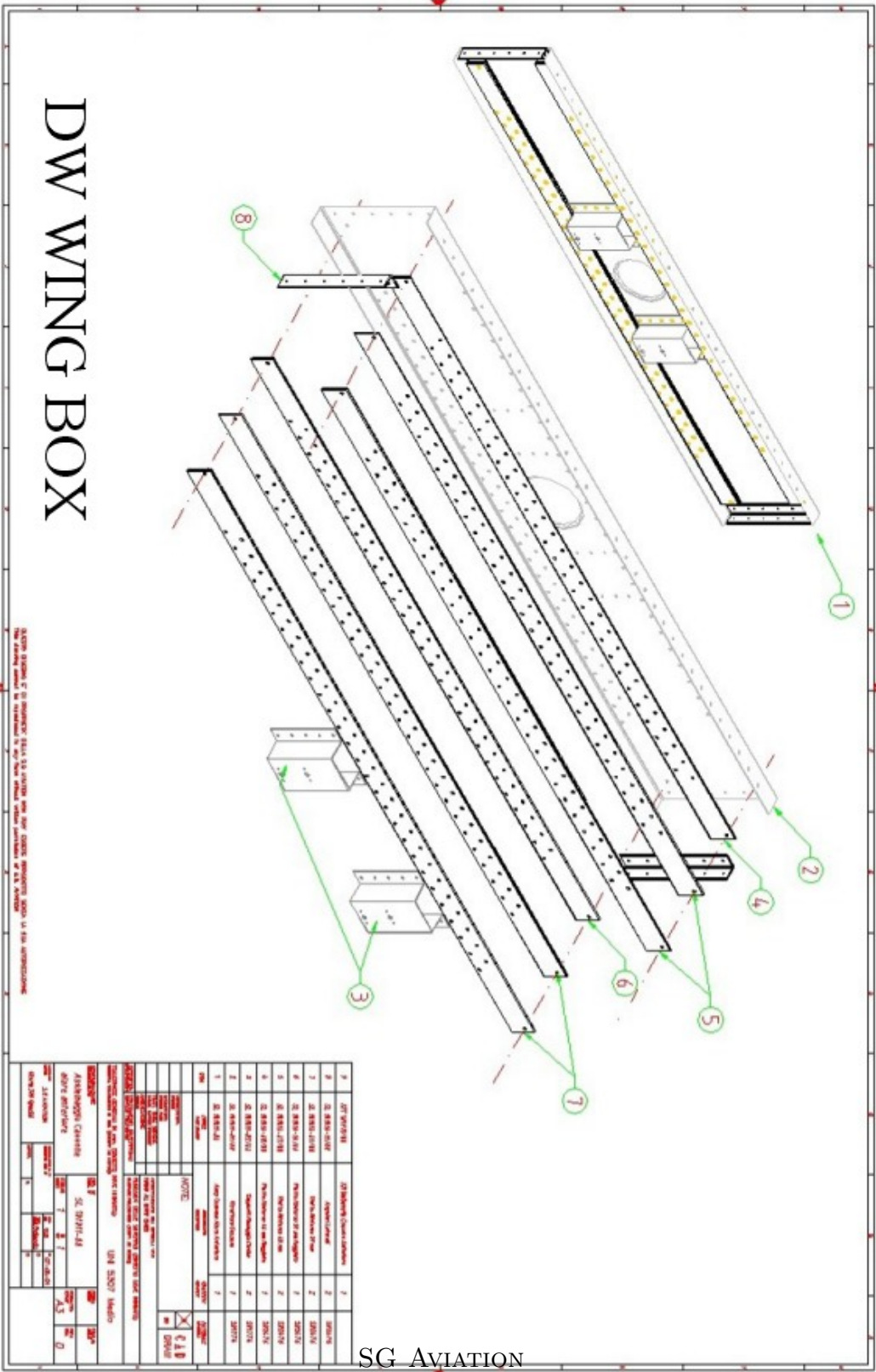


Figure A.21: Wing box 2, fore section.

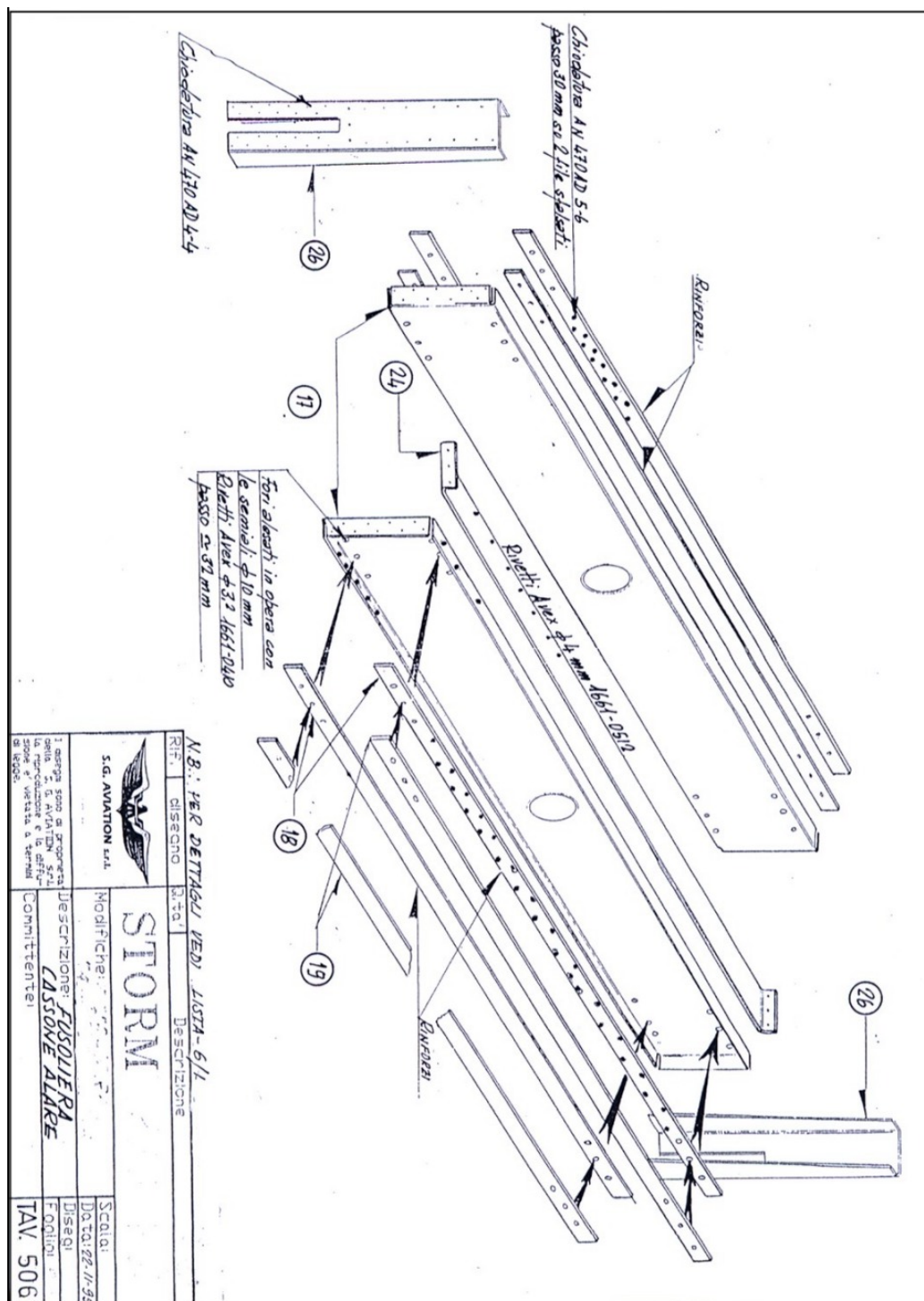
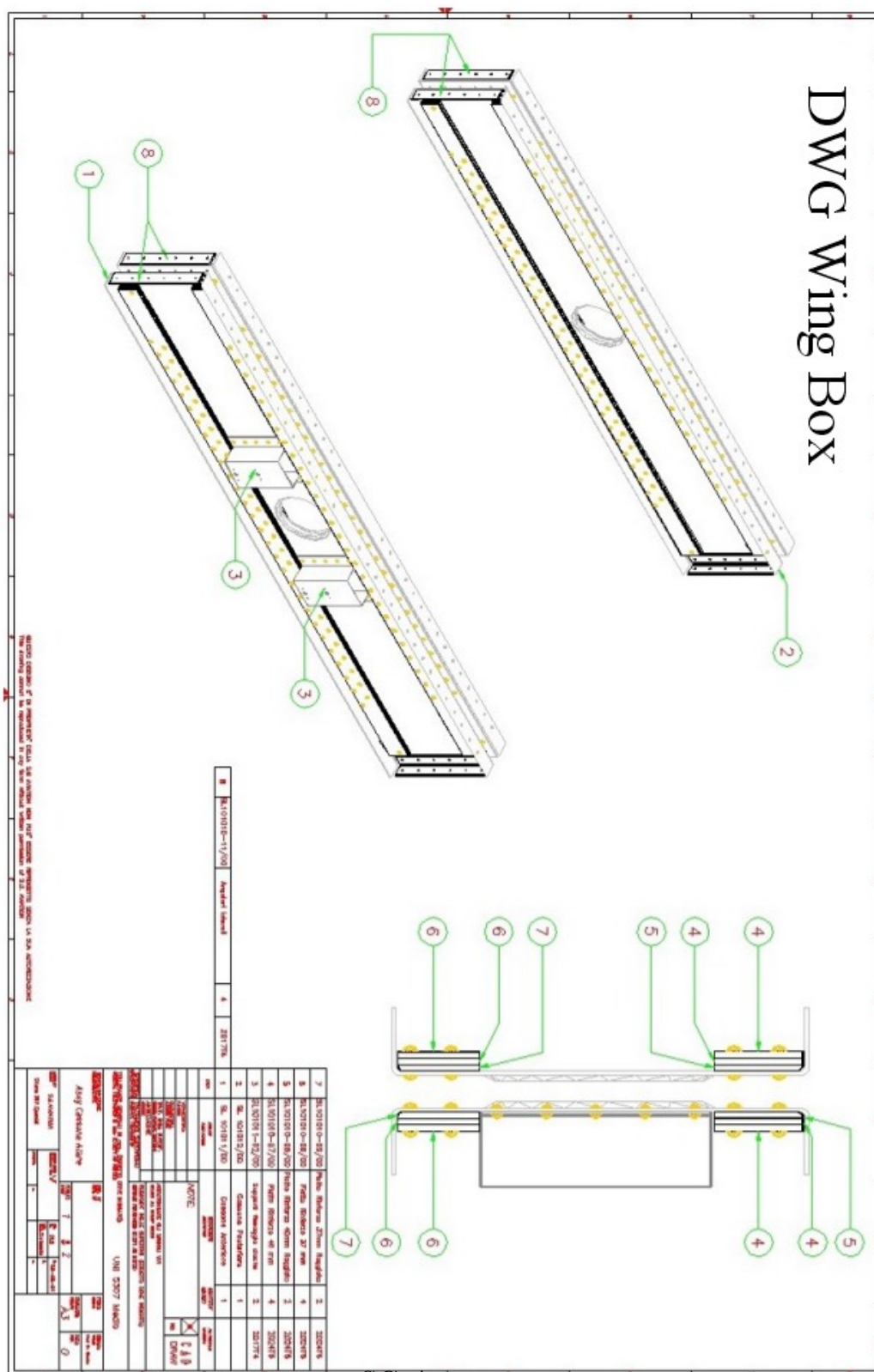


Figure A.22: Wing box 3.



SG AVIATION
Figure A.23: Wing box 4.

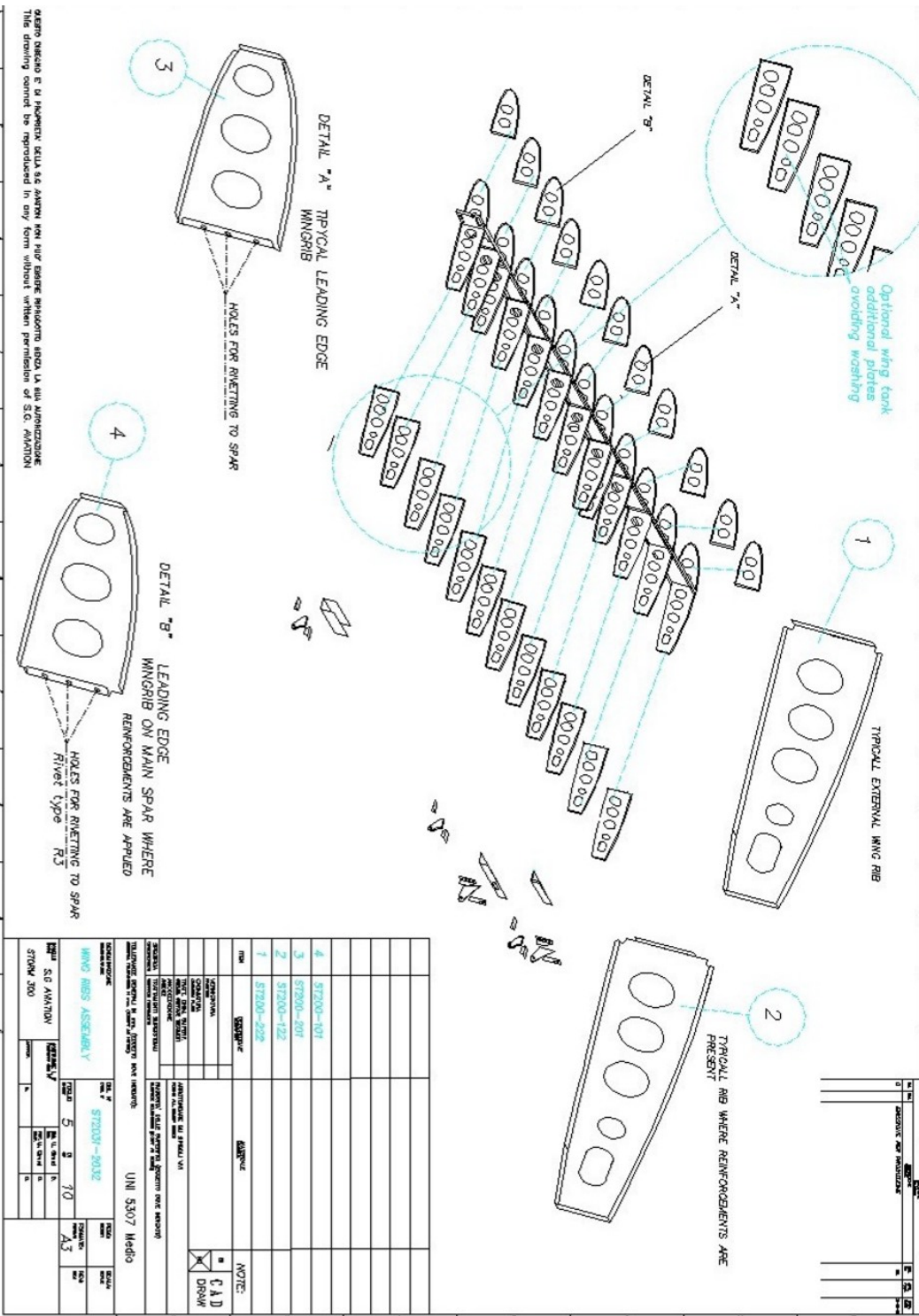


Figure A.24: Wing ribs assembly.











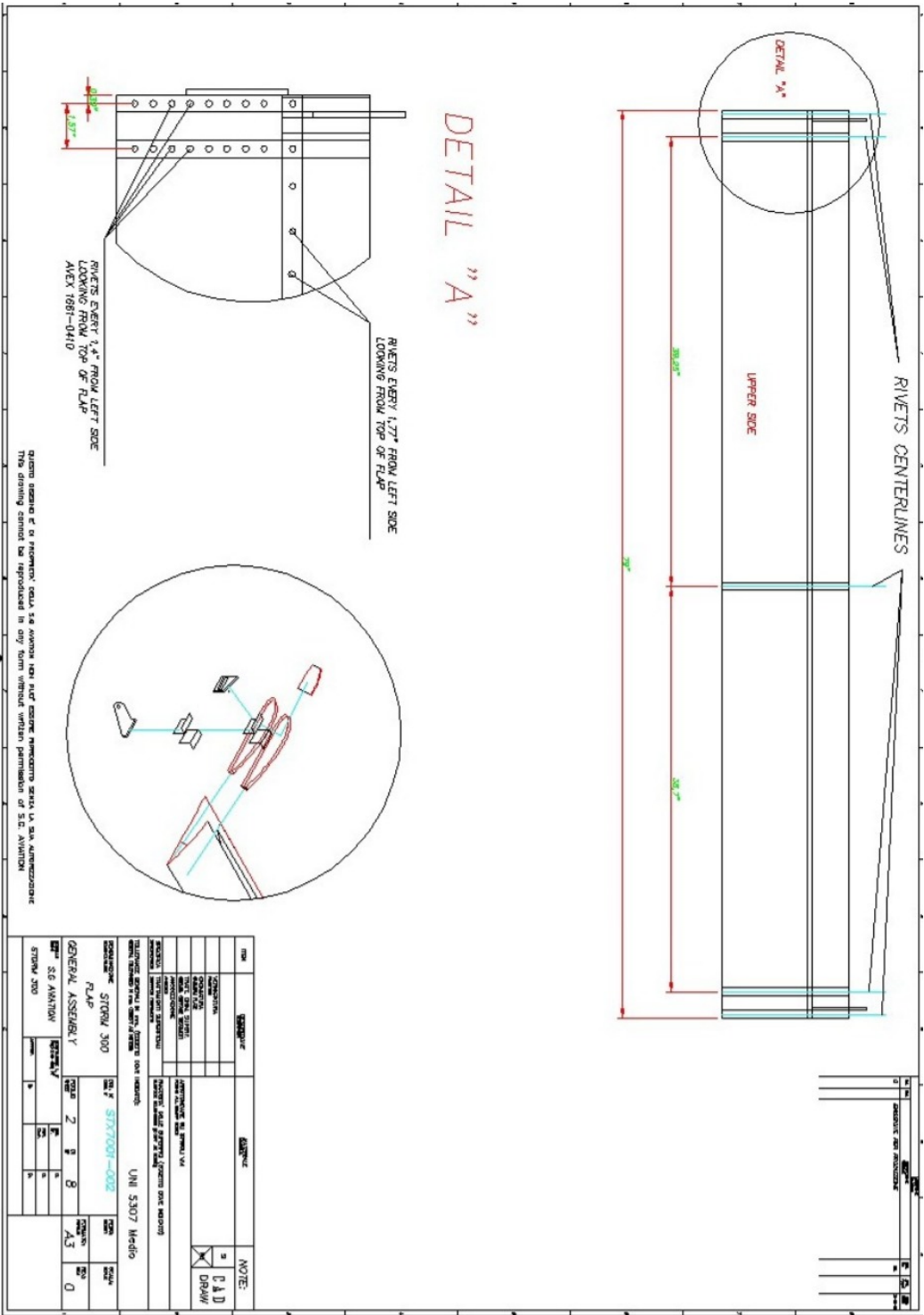


Figure A.30: Flaps general assembly.



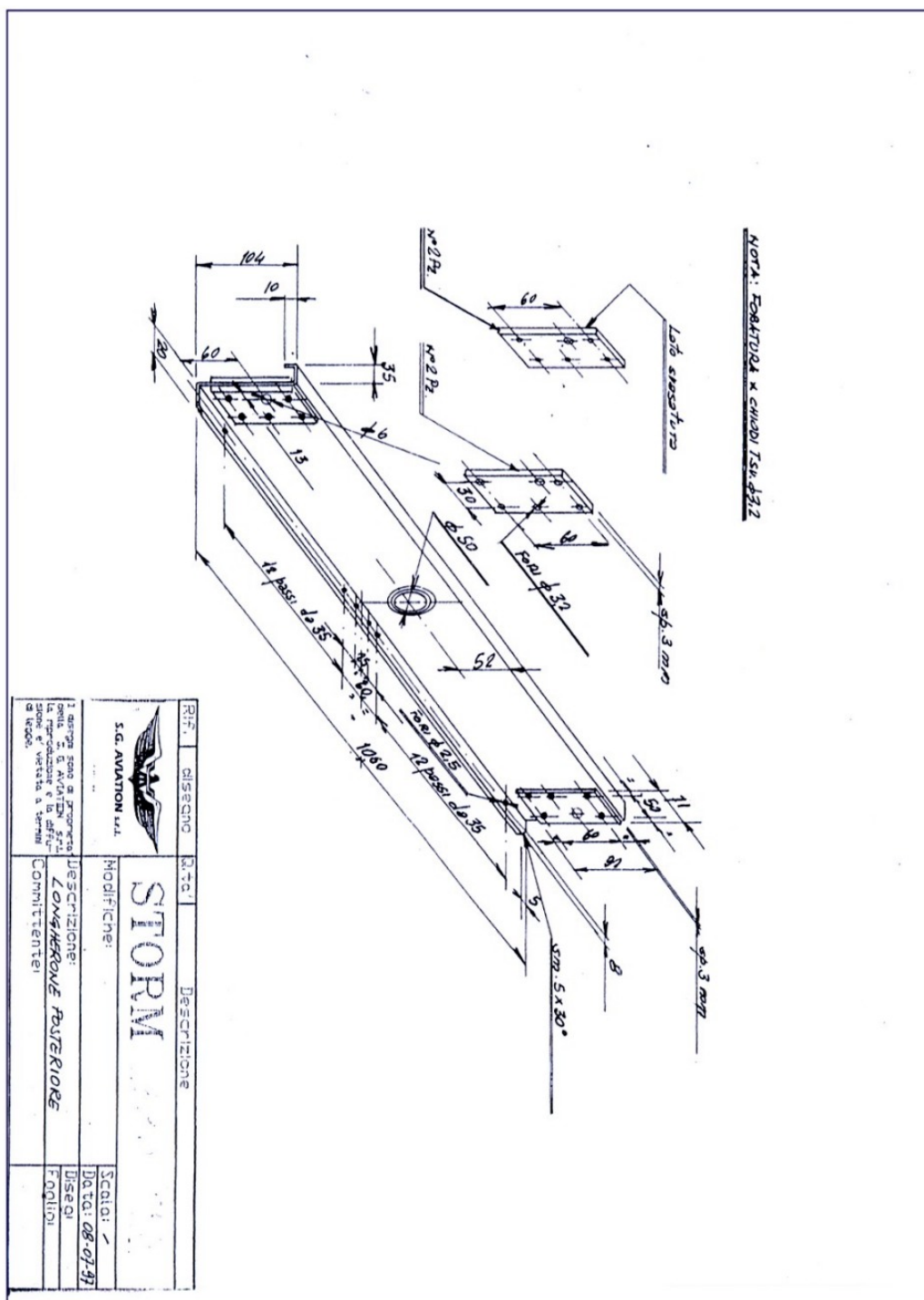


Figure A.32: Wing, Rear spar.

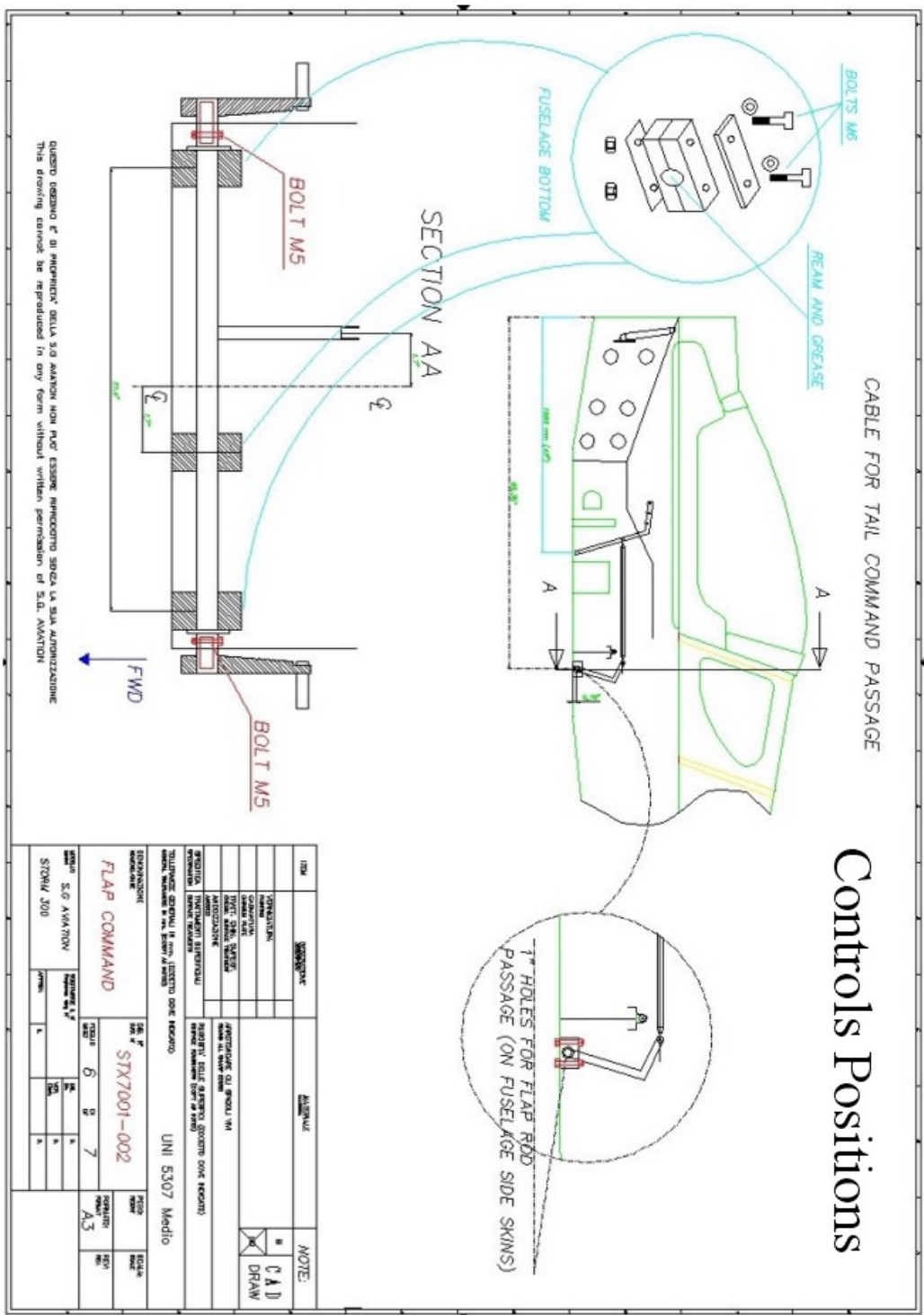


Figure A.33: Flap control position.

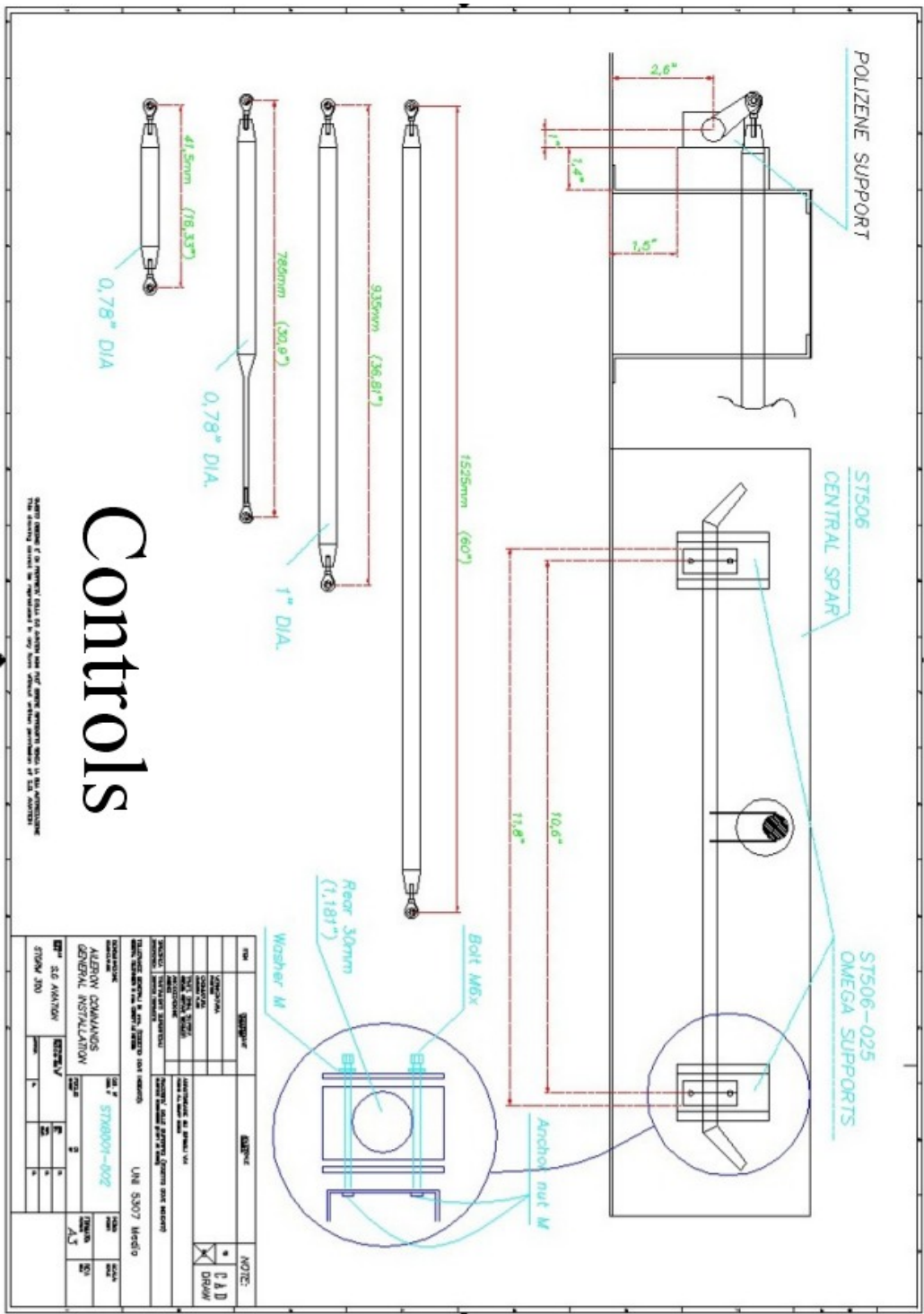


Figure A.34: General installation of aileron controls.



SG AVIATION

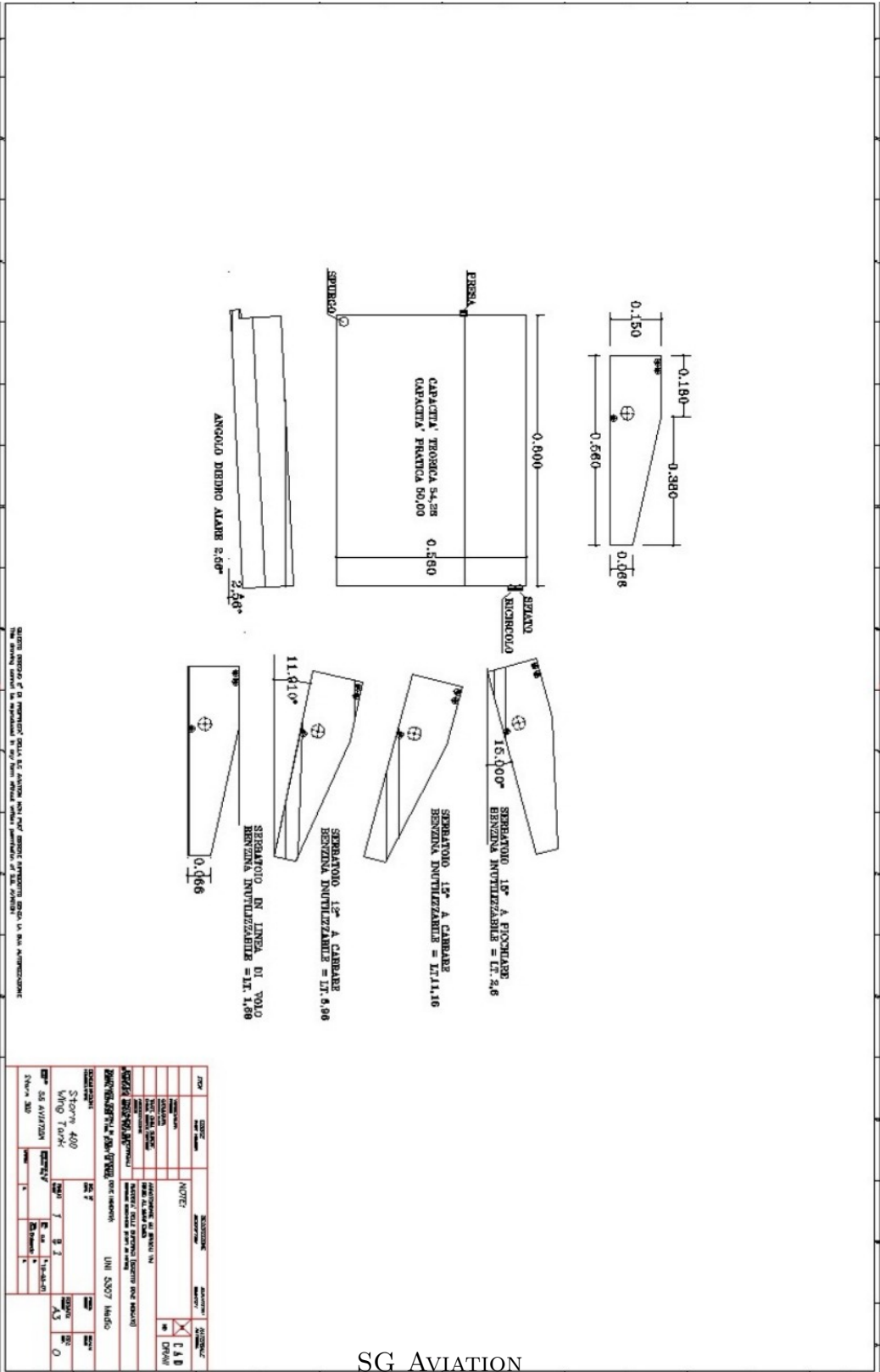


Figure A.36: Wing tank 1.

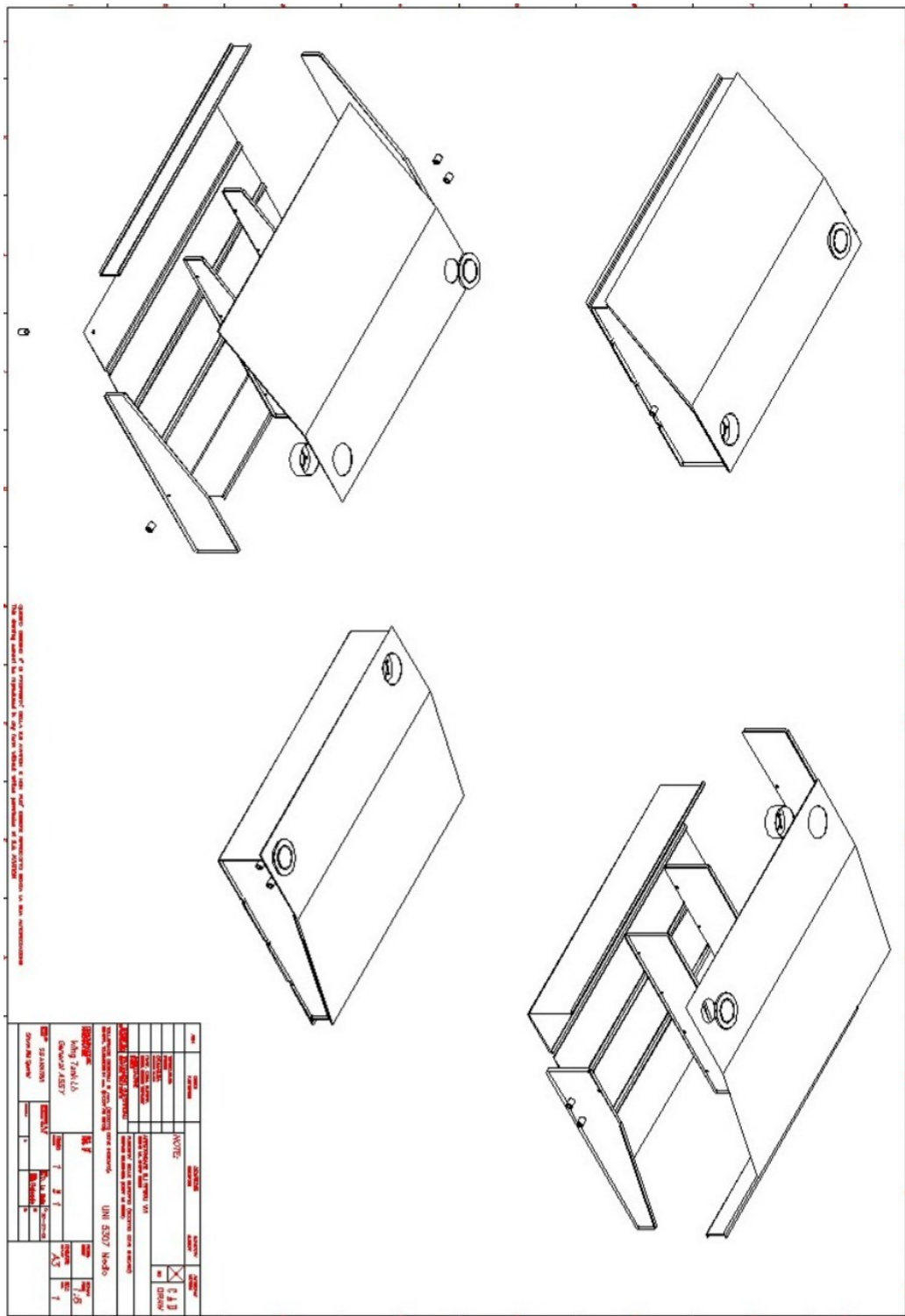


Figure A.37: Wing tank 2, LH general assembly.

SG AVIATION



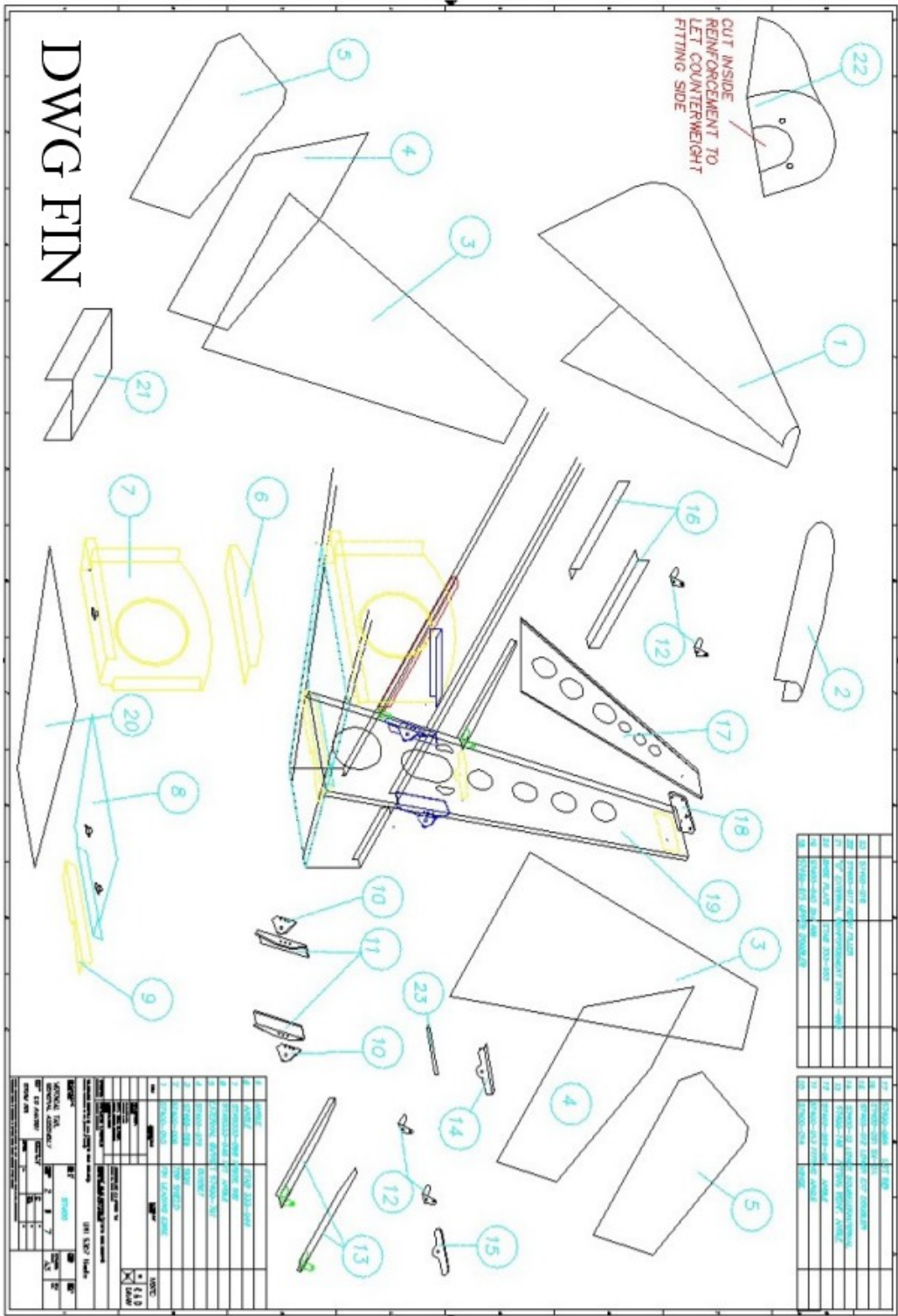
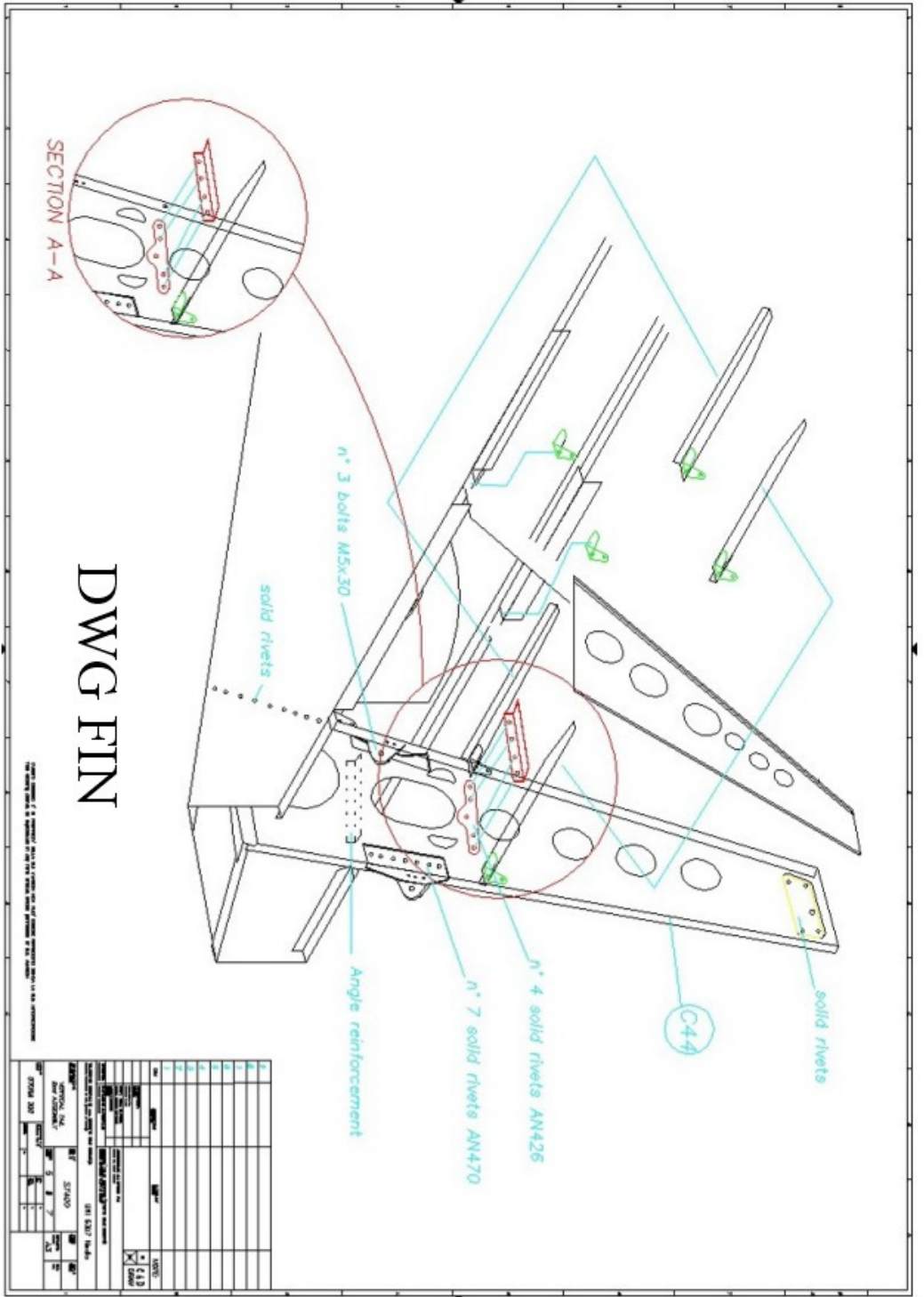


Figure A.39: Vertical tail general assemblage.
SG AVIATION



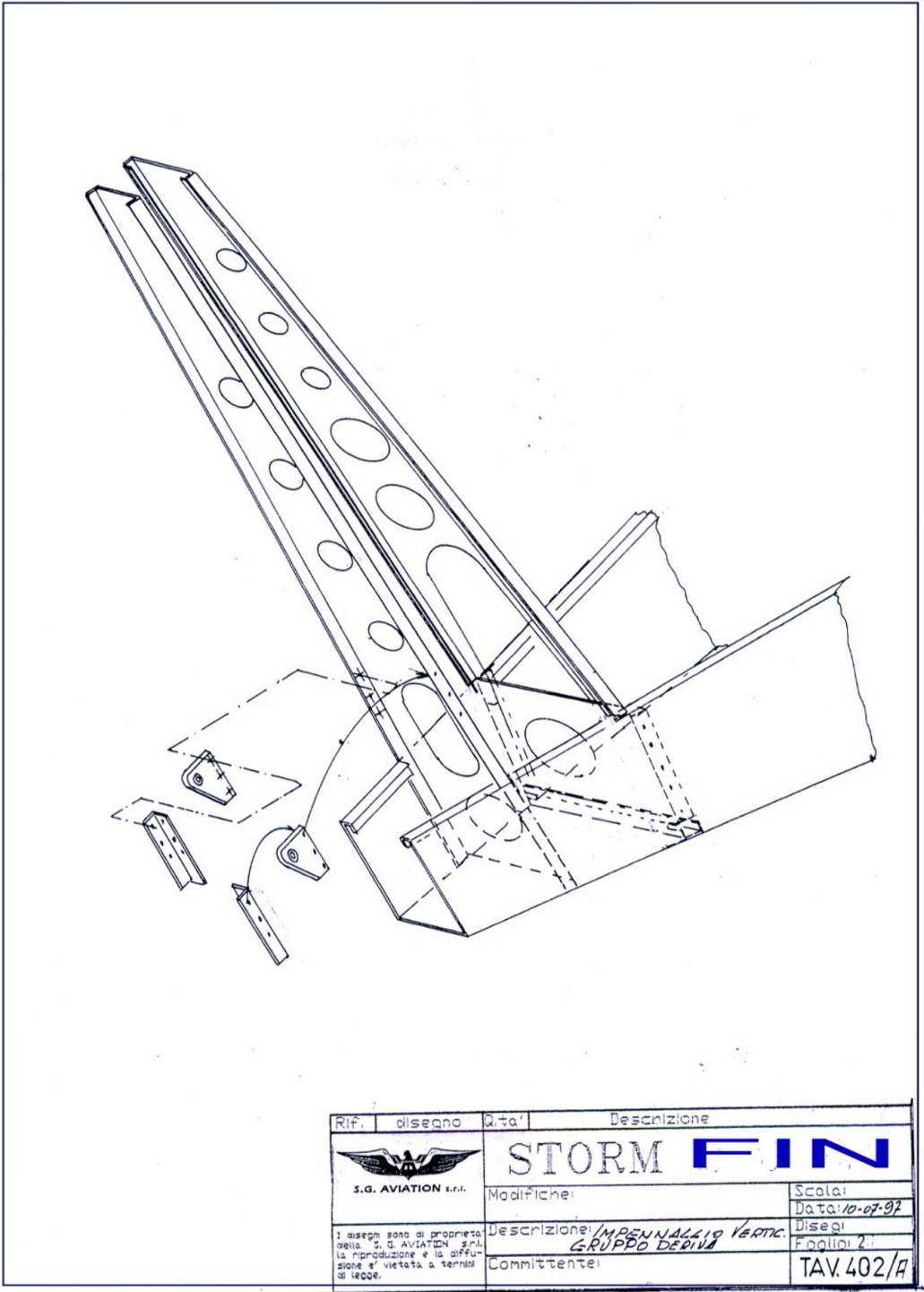


Figure A.41: Fin assemblage 2.

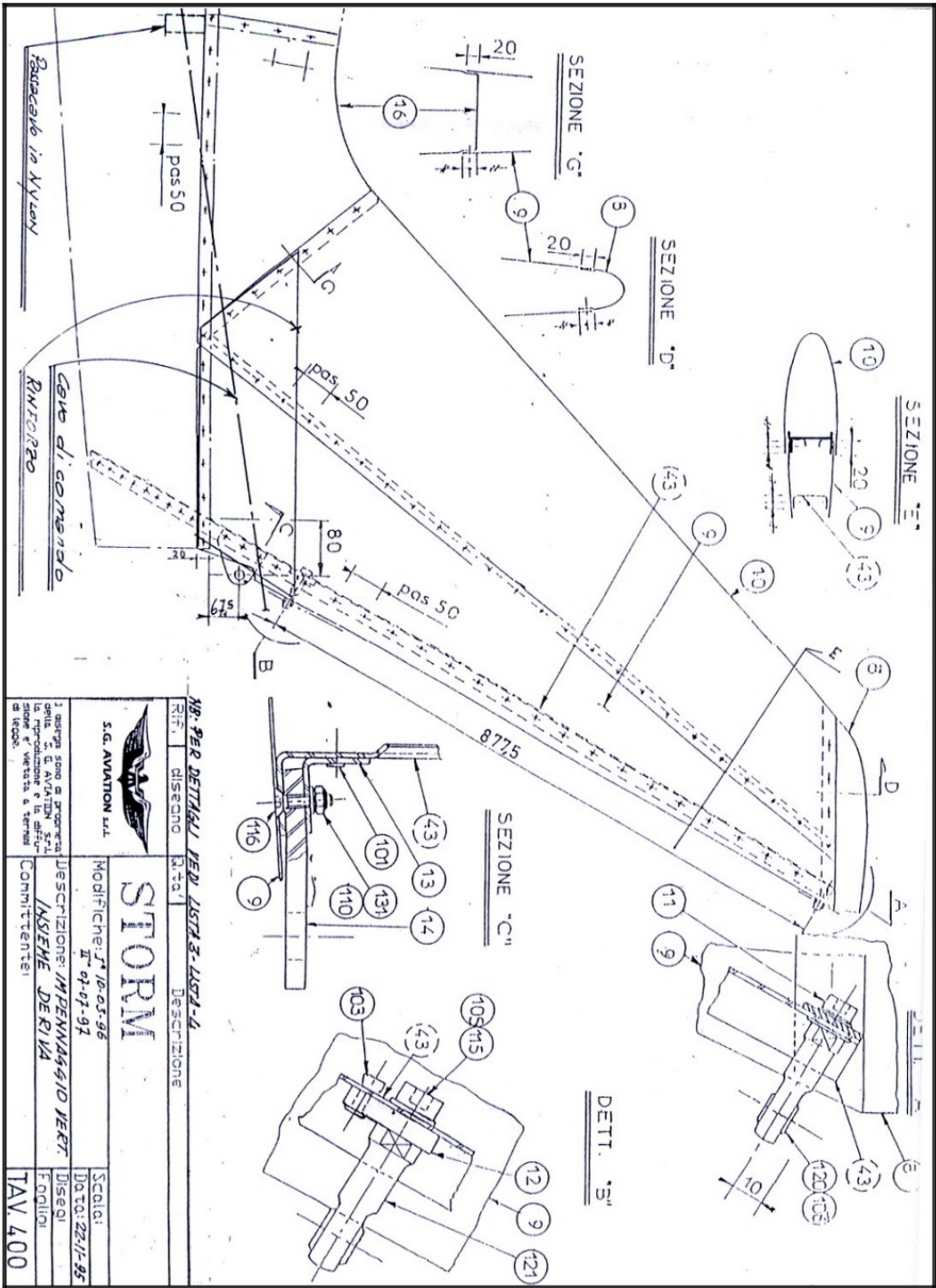


Figure A.42: Fin assemblage 3.

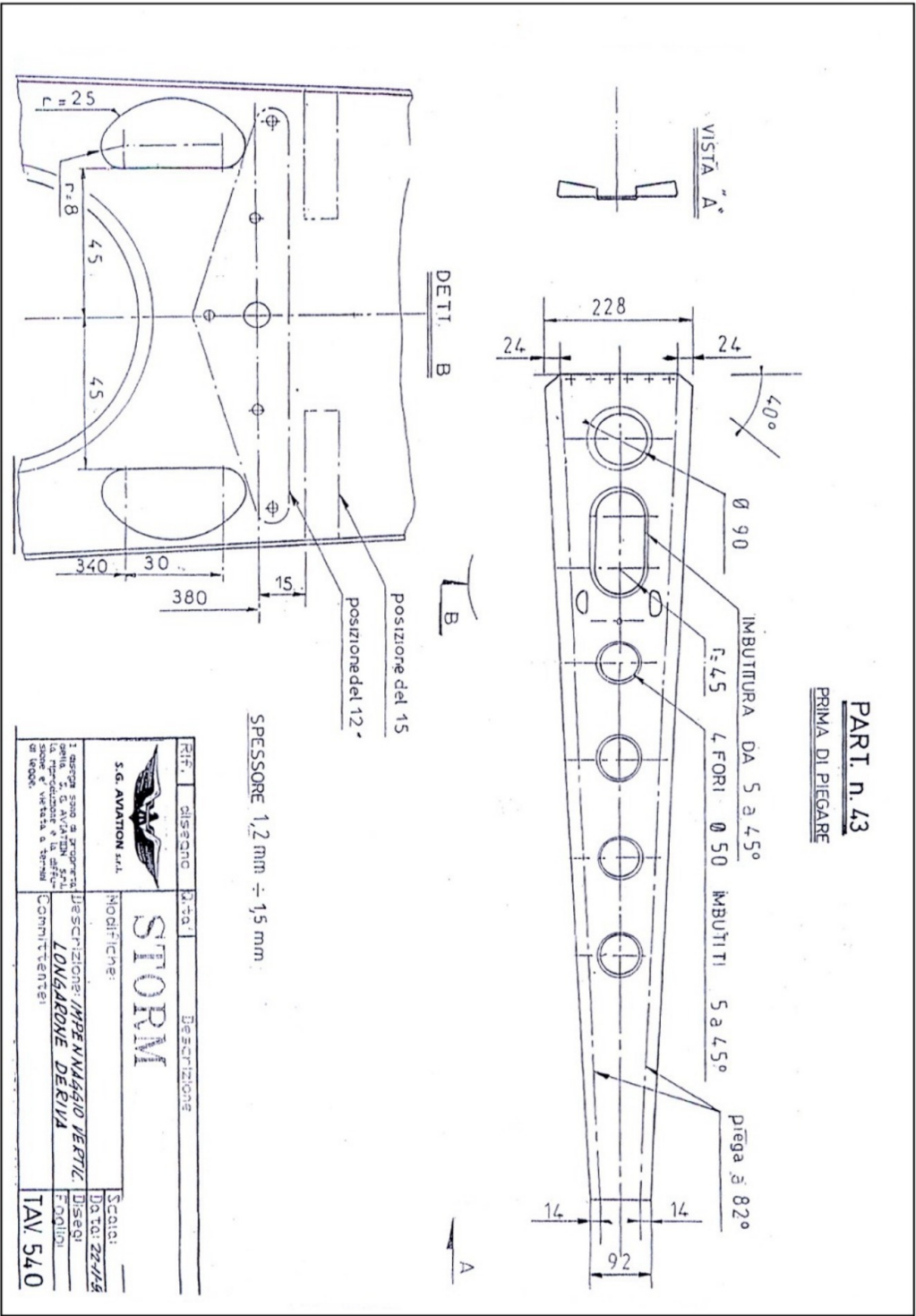
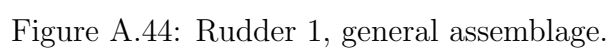


Figure A.43: Fin spar.





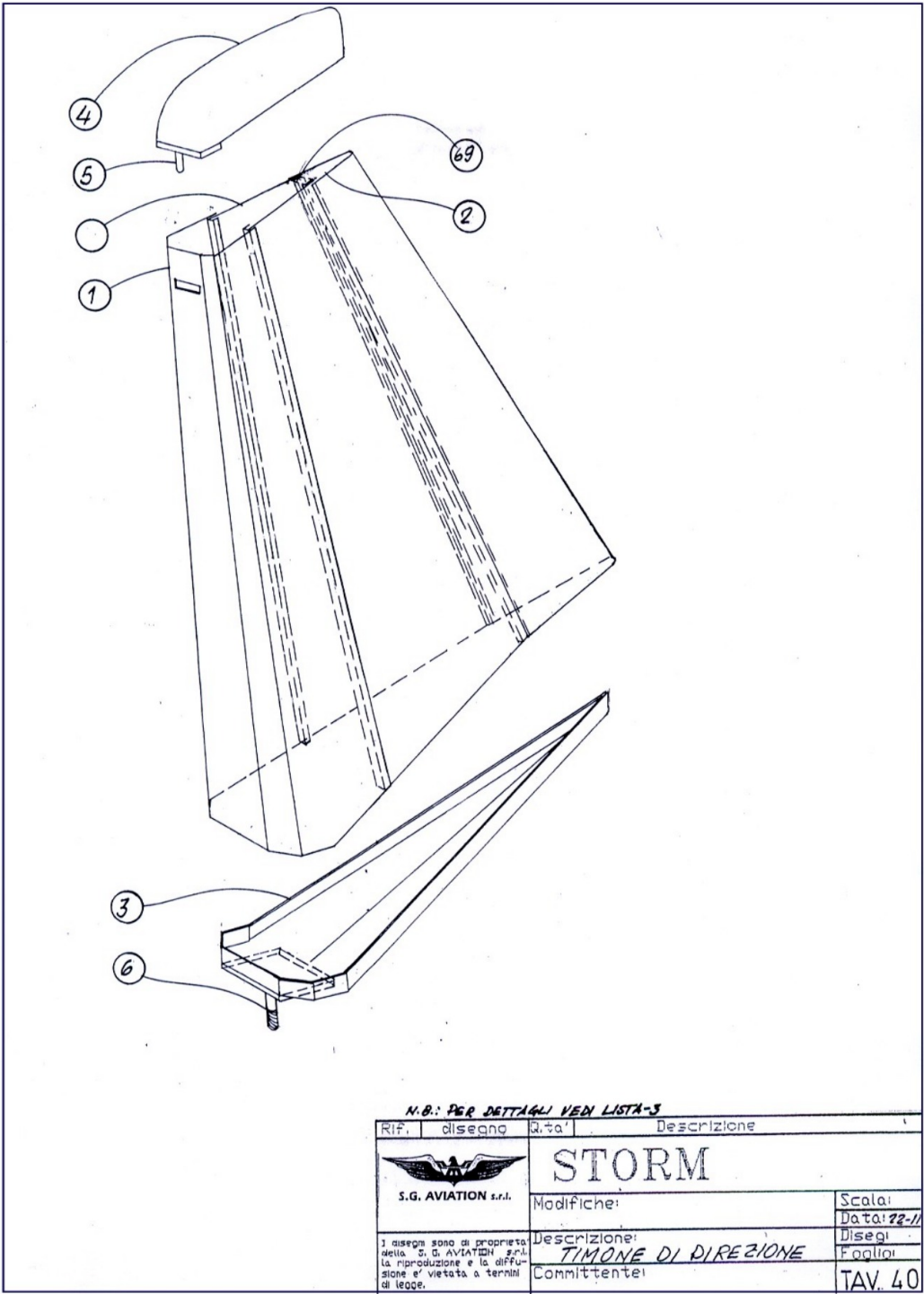


Figure A.46: Rudder 3, assemblage.

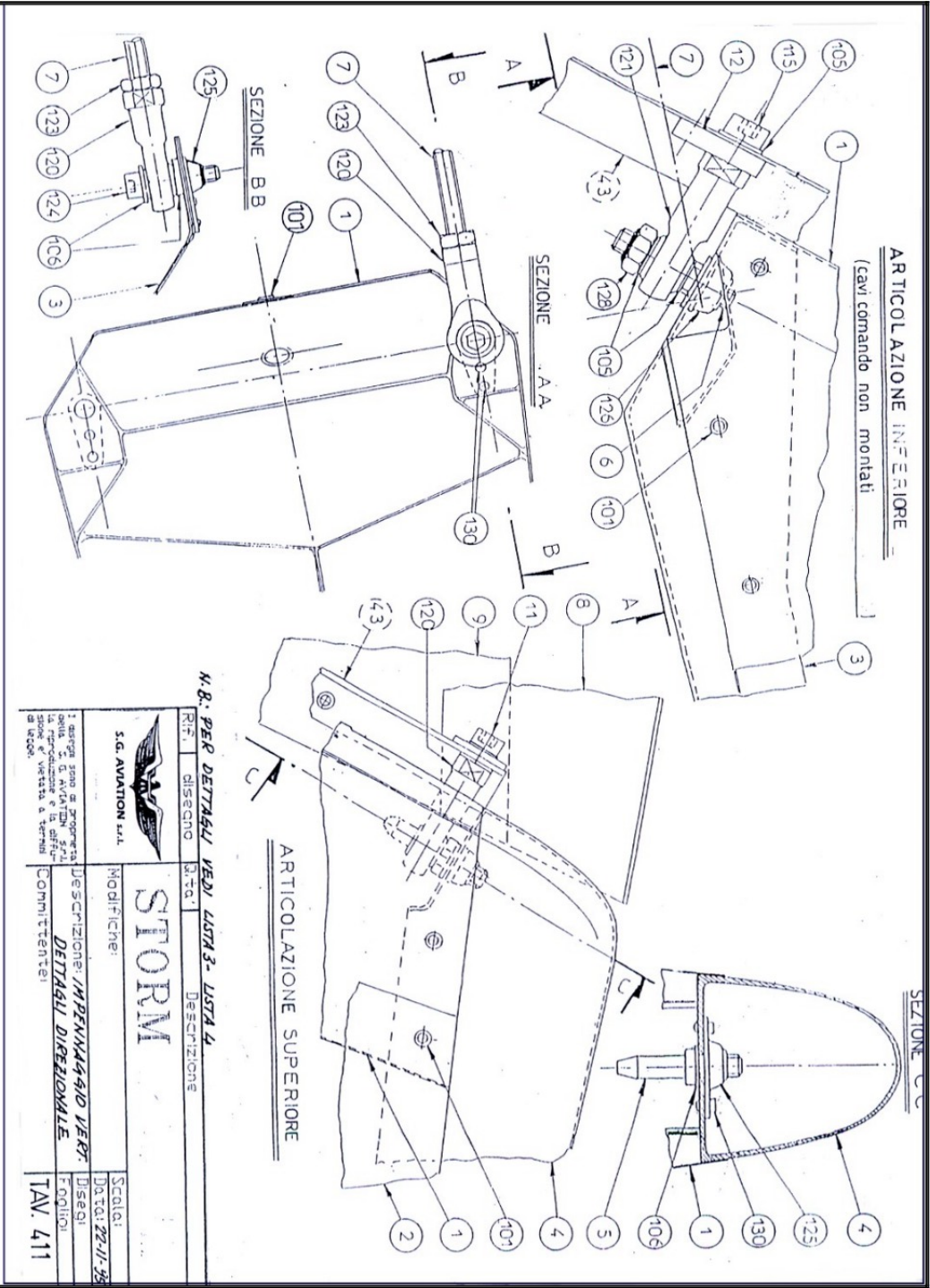


Figure A.47: Rudder 4, details.



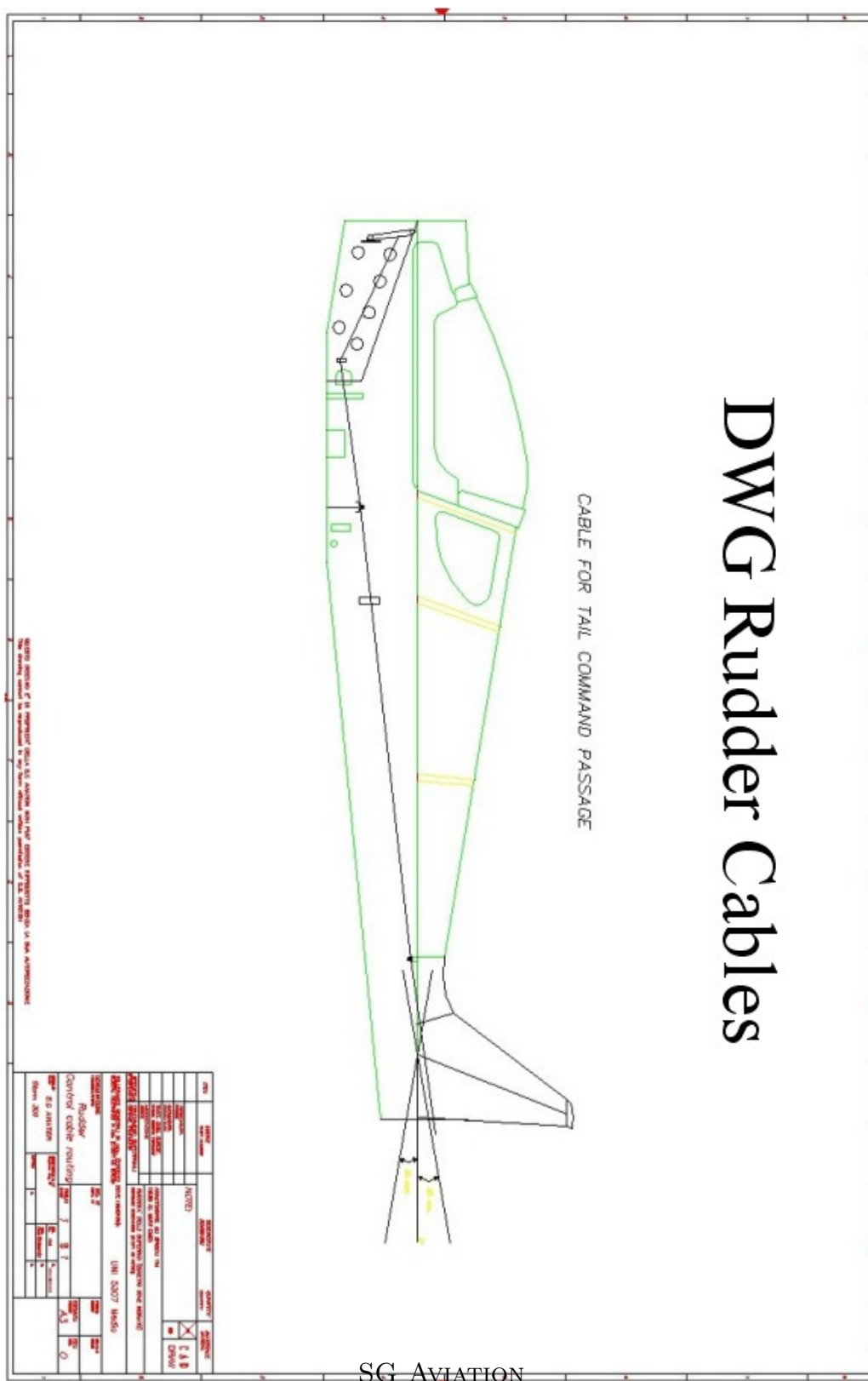


Figure A.49: Rudder 6, control cable routing.

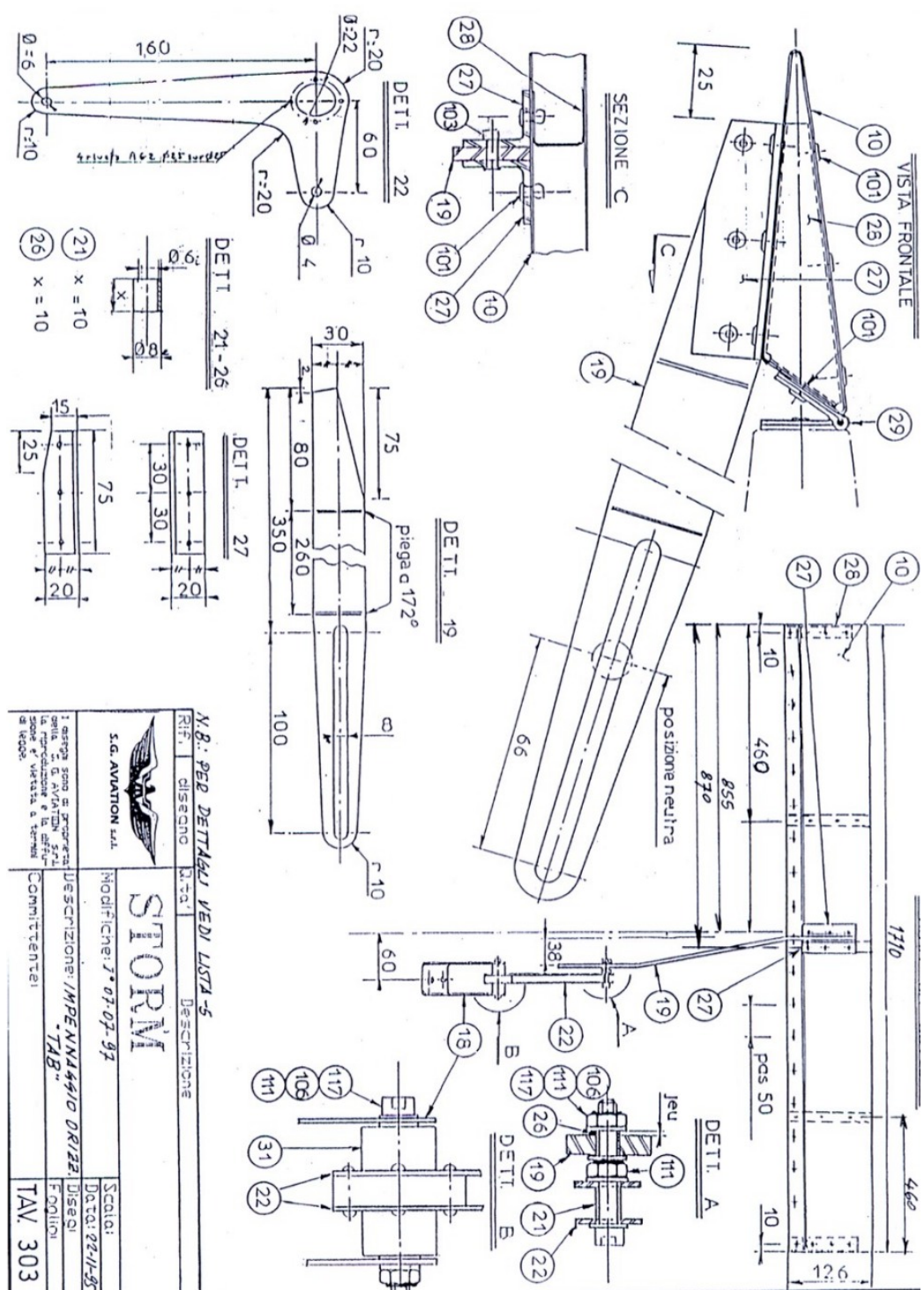


Figure A.50: Horizontal tail tab.

SG AVIATION

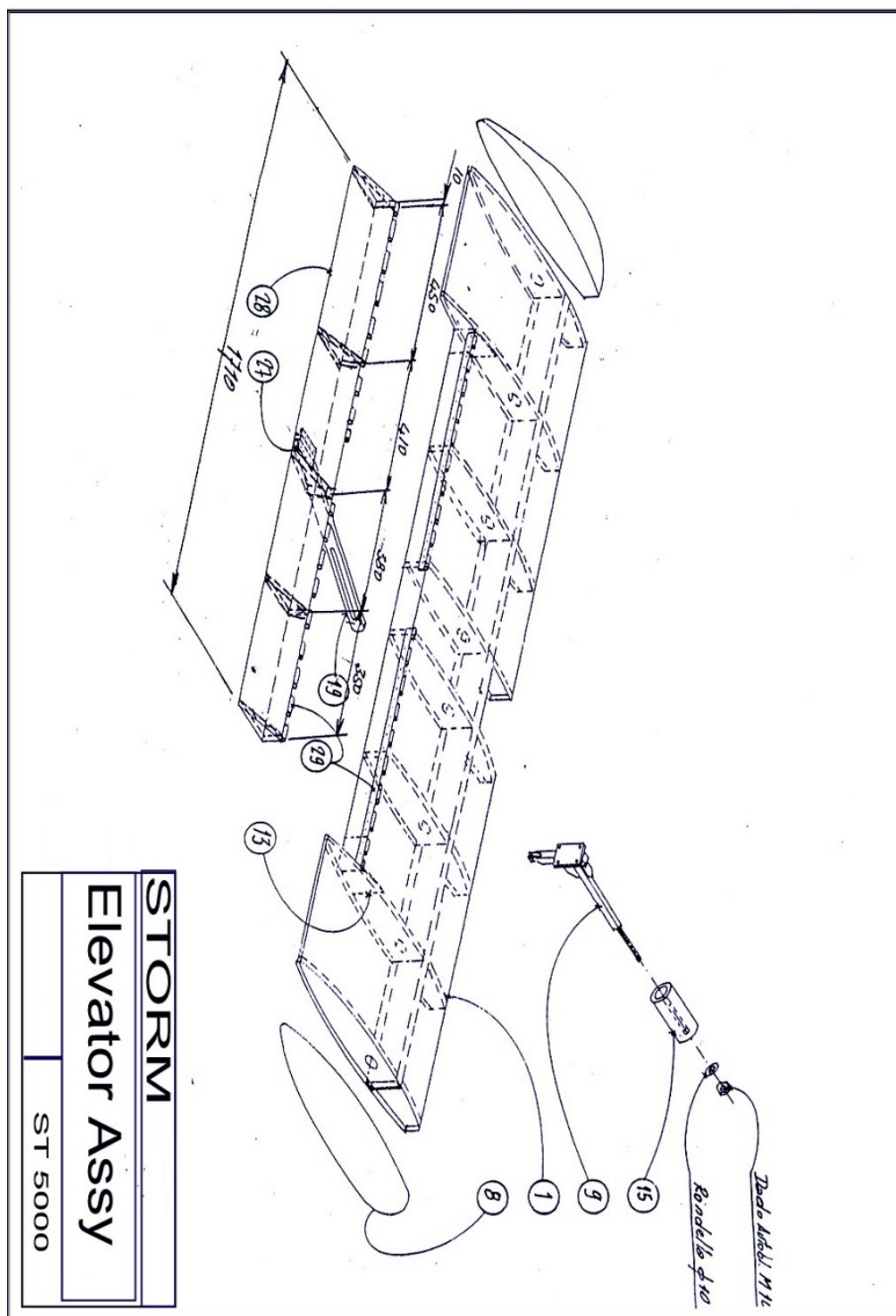


Figure A.51: Elevator assembly.

SG AVIATION



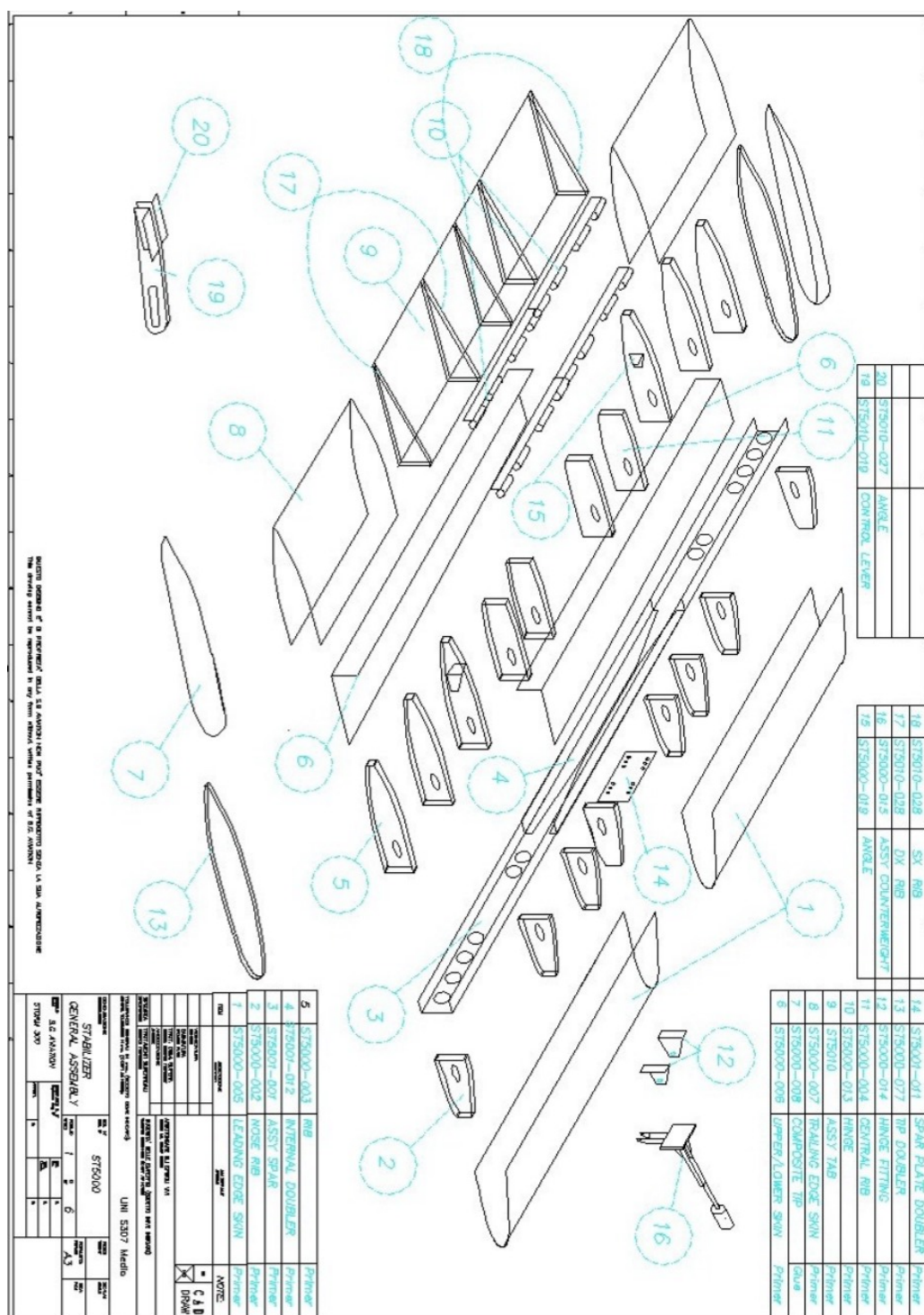


Figure A.53: Stabilizer 2, general assembly.

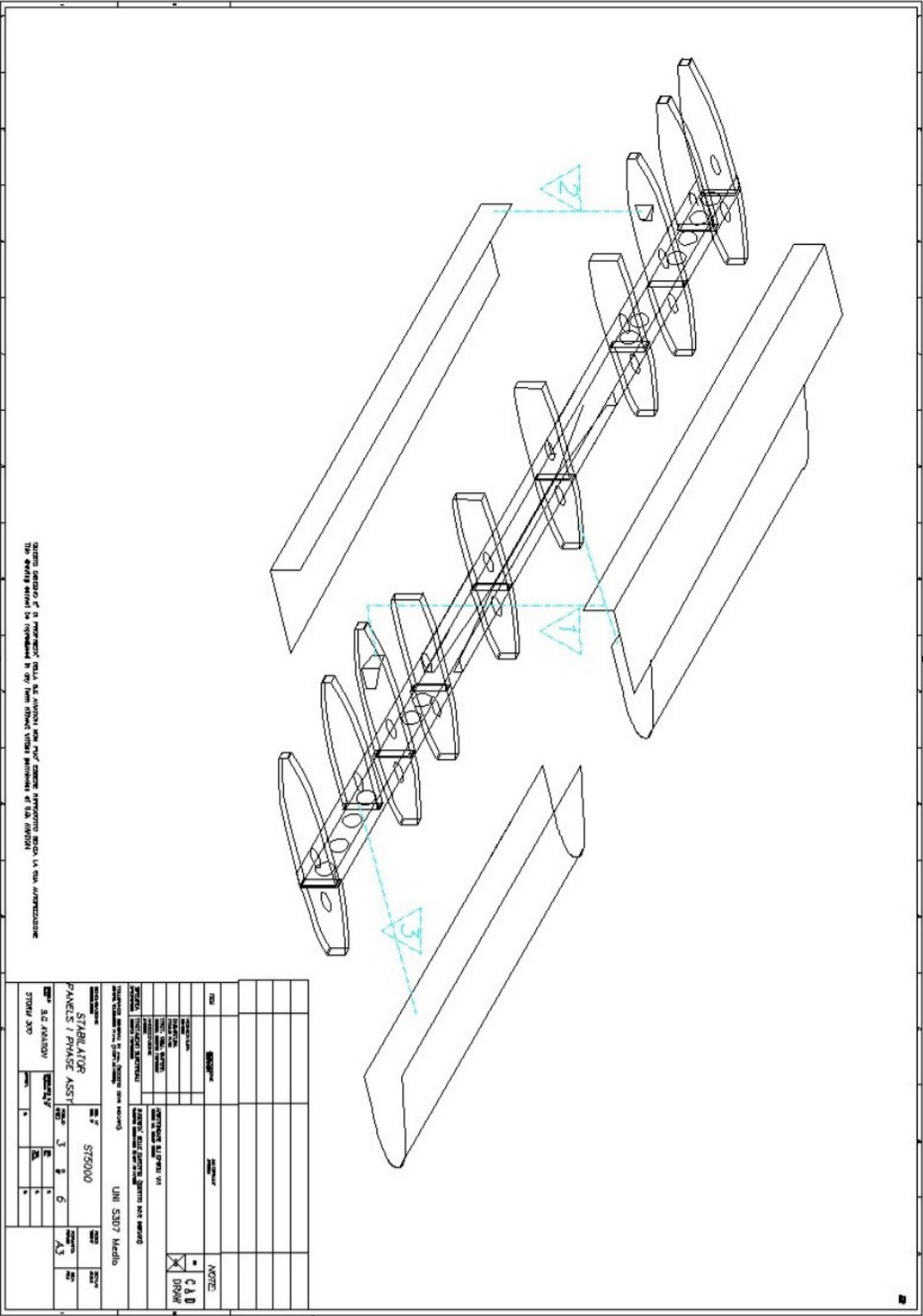


Figure A.54: Stabilizer 3, panels assemblage 1st phase.

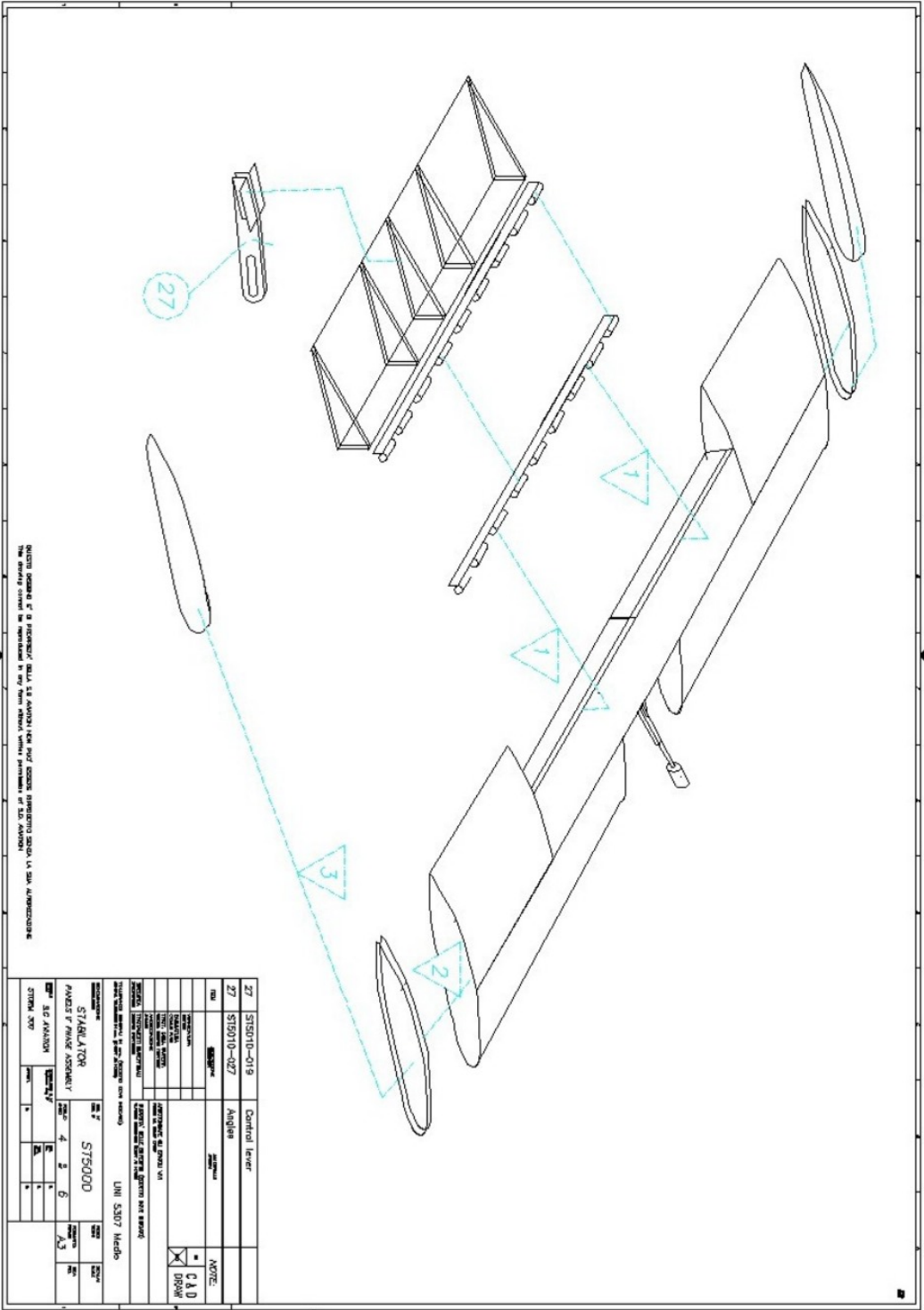


Figure A.55: Stabilizer 4, panels assemblage 5th phase.

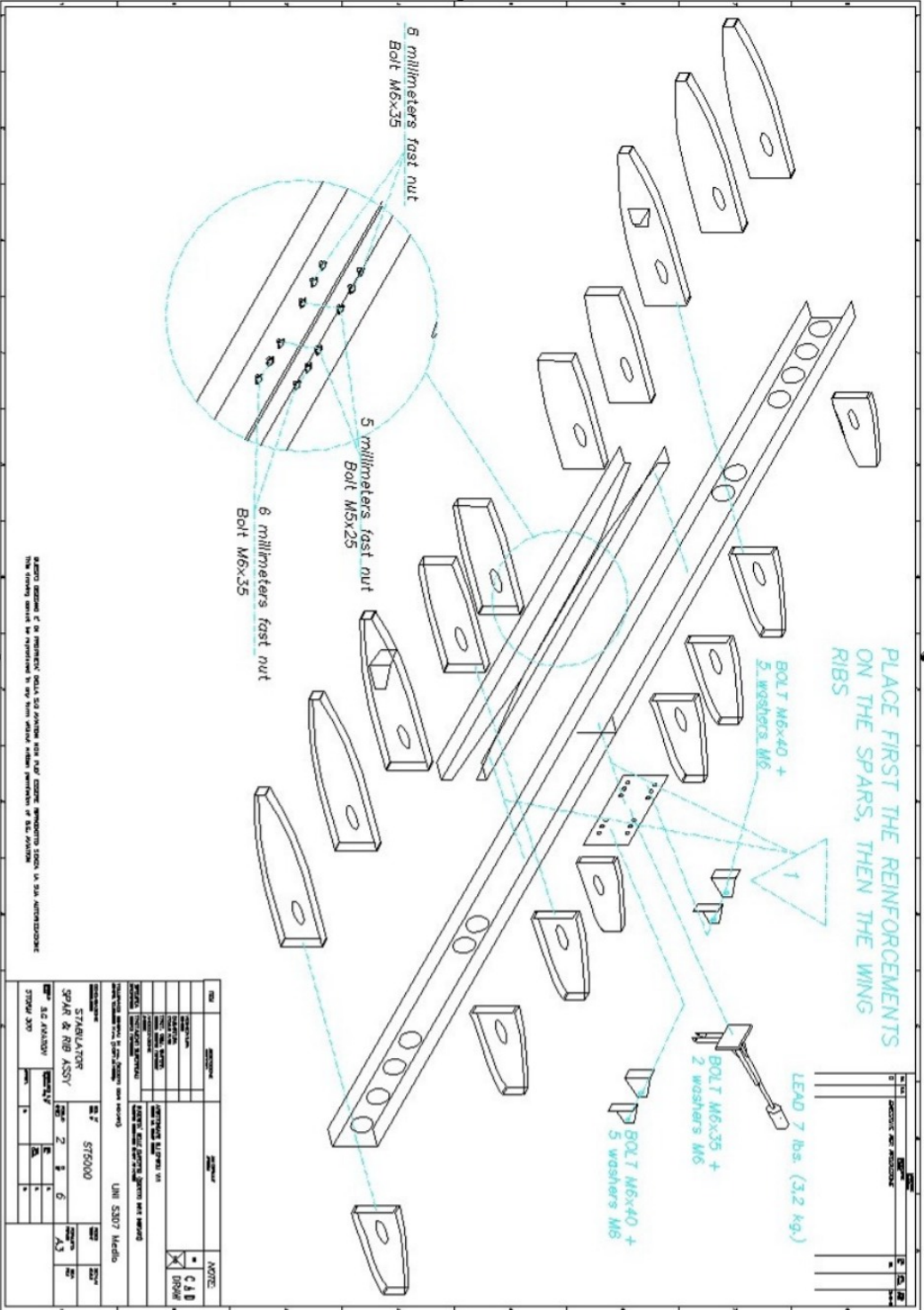


Figure A.56: Stabilizer 5, spar and ribs assembly.

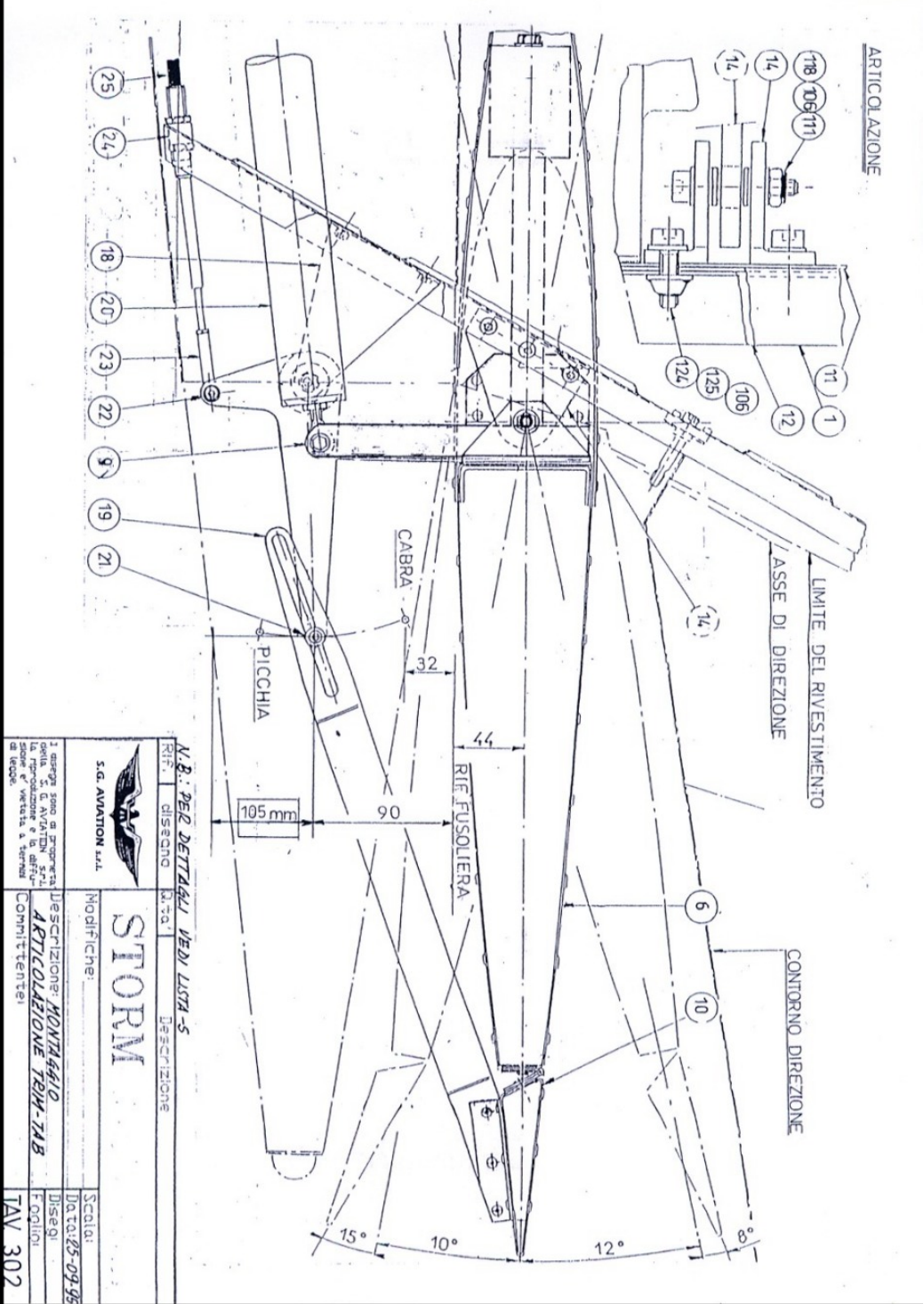


Figure A.57: Trim tab assemblage.

Appendix B

Kit description

- Storm 300 Special, Full Assembly, see page 195.
- ST201 Kit, see page 196.
- ST202 Kit, see page 196.
- ST300 Kit, Junctions & Leverages Assembly, see pages 197 and 198.
- ST506 Kit, see page 196.
- ST1030 Kit, see pages 199 and 200.
- ST1031 Kit, see pages 201, 202, 203 and 204.
- ST1032 Kit, see pages 205, 206 and 207.
- ST2030 Kit, see pages 208 and 209.
- ST3000 Kit, see page 210.
- ST5000 Kit, see page 211.
- ST7000 Kit, see page 212.
- ST8000 Kit, see page 212.

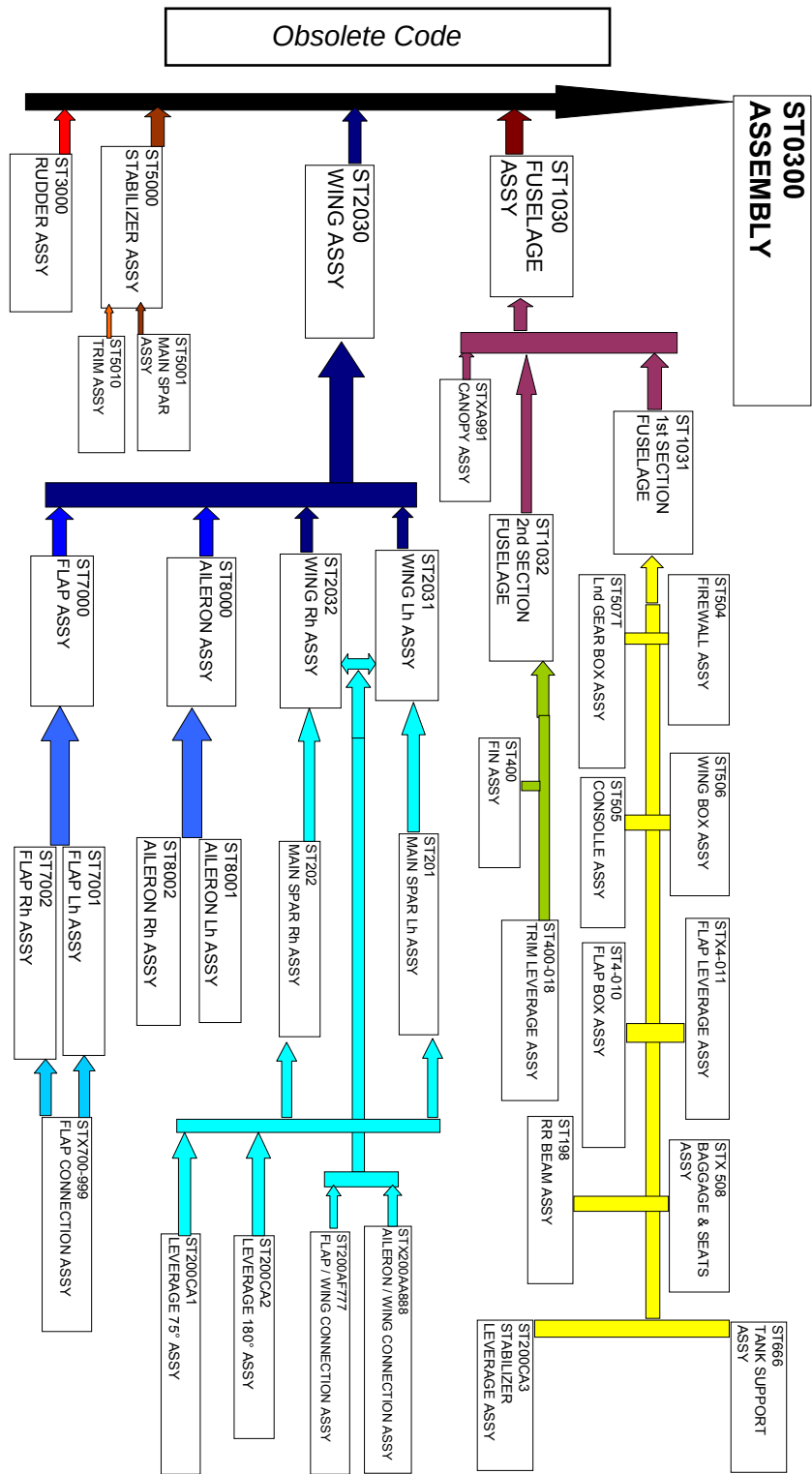


Figure B.1: Storm 300 Special - Full assembly.

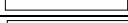
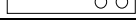
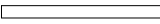
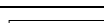
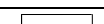
new ST201/202 & ST506					Obsolete Code			
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST201/202	WING MAIN SPAR LH	NR	1*1	FANTA				
ST201-043	DOUBLER FITTING	NR	4	K-3B				
ST201-048	JOINT PLATE	NR	2	K-3F				
ST201-049DX	INBOARD LONGHERON RH	NR	1	K-J				
ST201-049SX	INBOARD LONGHERON LH	NR	1	K-J				
ST201-050DX	OUTBOARD LONGHERON RH	NR	1	K-J				
ST201-050SX	OUTBOARD LONGHERON LH	NR	1	K-J				
ST201-075	LOWER SHORT THICKNESS	NR	2					
ST201-100	LOWER & UPPER THICKNESS	NR	4					
ST201-125	LOWER THICKNESS	NR	2					
ST201-150	LOWER & UPPER THICKNESS	NR	4					
ST201-200	UPPER THICKNESS	NR	2					
ST201-250	UPPER & LOWER WITH RADIUS THICK	NR	4					
ST201-314	UPPER THICKNESS WITH RADIUS	NR	2					
STX201-057	SLOTTED HOLE ANGLE	NR	4	K-2E				
AN426AD5-22	**RIVET CSK DIA 4	NR	8					
AN470AD4-4	**RIVET DIA3,2	NR	40					
AN470AD5-10	**RIVET DIA 4	NR	60					
AN470AD5-11	**RIVET DIA 4	NR	40					
AN470AD5-12	**RIVET DIA 4	NR	5					
AN470AD5-14	**RIVET DIA 4	NR	100					
AN470AD5-22	**RIVET DIA 4	NR	60					
AN470AD5-5	**RIVET DIA 4	NR	20					
AN470AD5-6	**RIVET DIA 4	NR	100					
AN470AD5-8	**RIVET DIA 4	NR	50					
AN470AD5-9	**RIVET DIA 4	NR	240					
		NR						
ST506	ASSY WING BEAM	NR	1	FANTA				
ST506-017	WING BEAM	NR	2	X-Y				
ST506-018	UPPER TICKNESS	NR	4	J-1F				
ST506-019	LOWER TICKNESS	NR	4	J-1F				
ST506-020	ANGLE	NR	4	K-4D				
ST506-025	BRACKET CLOCHE	NR	2	K-2B				
OLIV6MA	**NUT PLATE 6MA	NR	4					
AN426AD3-6	** RIVET CSK DIA. 2,5	NR	8					
AN426AD4-6	** RIVET CSK DIA. 3,2	NR	20					
AN426AD5-9	** RIVET CSK DIA. 4	NR	16					
AN470AD4-8	** RIVET DIA. 3,2	NR	12					
AN470AD5-9	** RIVET DIA. 4	NR	212					

Figure B.2: ST201/ST202/ST506 Kits.

junctions & leverages assembly - ST300 kit

CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST200CA3KITK	FUCOLAGE LEVER. 180° KIT	NR	1	K-4C				
AN470AD4-12	** RIVET DIA. 3,2	NR	4					
DADOA5MA	** SELF-LOCKING NUT 5MA	NR	1					
RONDDIA5	** WASHER DIA. 5	NR	4					
ST200CA1-007	* LEVERAGE JOINT	NR	1					
ST200CA2-006	MOUNTING PLATE LEVERAGE 180°	NR	2	K-4C				
ST200CA3-001	SUPPORT ANGLE	NR	1	K-4C				
ST200CA3-002	SUPPORT ANGLE	NR	1	K-4C				
VITETEISX70	** BOLT H.H.R 5X70	NR	1					
ST200CA1KITK	LEVER AILERON 75° KIT	NR	2	K-4C				
AN470AD4-12	** RIVET DIA. 3,2	NR	4					
DADOA5MA	** SELF-LOCKING NUT 5MA	NR	1					
RONDDIA5	** WASHER DIA. 5	NR	4					
ST200CA1-003	SUPPORT ANGLE	NR	1	K-4C				
ST200CA1-004	SUPPORT ANGLE	NR	1	K-4C				
ST200CA1-005	MOUNTING PLATE LEVERAGE 75°	NR	2	K-4C				
ST200CA1-007	* LEVERAGE JOINT	NR	1					
VITETEISX70	** BOLT H.H.R 5X70	NR	1					
ST200CA2KITK	LEVER AILERON 180° KIT	NR	4	K-4C				
AN470AD4-12	** RIVET DIA. 3,2	NR	4					
DADOA5MA	** SELF-LOCKING NUT 5MA	NR	1					
RONDDIA5	** WASHER DIA. 5	NR	4					
ST200CA1-007	* LEVERAGE JOINT	NR	1					
ST200CA2-001	SUPPORT ANGLE	NR	1	K-4C				
ST200CA2-002	SUPPORT ANGLE	NR	1	K-4C				
ST200CA2-006	MOUNTING PLATE LEVERAGE 180°	NR	2	K-4C				
VITETEISX70	** BOLT H.H.R 5X70	NR	1					
STX200AA888KITK	AILERON CONNECTOR KIT	NR	4	K-4E				
AN426AD5-12	** RIVET CSK DIA. 4,0	NR	3					
STX200AA888-001	ANGLE	NR	2					
STX200AA888-002	* HINGE PLATE	NR	1					
ST200AF777KITK	FLAP CONNECTOR KIT	NR	4	K-4E				
AN426AD4-12	** RIVET CSK DIA. 3,2	NR	5					
AN470AD5-14	** RIVET DIA. 4	NR	3					
ST200AF777-001	ANGLE	NR	2					
ST200AF777-002	*THICKNES	NR	1					
ST200AF777-003	HINGE PLATE	NR	2	K-3C				

Figure B.3: ST300 Kit - Junctions & Leverages Assembly - 1/2

junctions & leverages assembly - ST300 kit

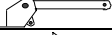
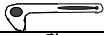
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
STX700-999KITK	FLAP CONNECTOR KIT	NR	4	K-4E				
AN426AD5-12	** RIVET CSK DIA. 4,0	NR	3					
STX700-999-001	* ATTACCO	NR	1					
STX700-999-010	ANGOLARE	NR	2	K-4D				
ST400-018KITK	TRIM BELL CRANK LEVER KIT	NR	1	K-4C				
AN426AD3-6	** RIVET CSK DIA. 2,5	NR	9					
AN470AD4-12	** RIVET DIA. 3,2	NR	4					
DADOA5MA	** SELF-LOCKING NUT 5MA	NR	1					
OLIV5MA	** NUT PLATE 5MA	NR	3					
RONDDIA5	** WASHER DIA. 5	NR	4					
ST200CA1-007	* LEVERAGE JOINT	NR	1					
ST400-018-001	BELL CRANK	NR	2	K-3C				
ST400-018-002	" U "	NR	1	K-3C				
ST400-018-003	DOUBLER	NR	1	K-3C				
VITETE15X70	** BOLT H.H.R 5X70	NR	1					

Figure B.4: ST300 Kit - Junctions & Leverages Assembly - 2/2.

KIT ST1030

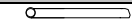
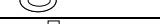
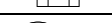
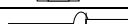
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST1030	ASSY FUSOLAGE	NR	1	FANTA				
AST1001-20-499	ROD DIA. 20 FLAPS LVERAGE	NR	1	K-2F				
AST1001-25-1260	ROD DIA. 25 CLOCHE LEVERAGE	NR	1	K-2F				
AX002-005	SKIN UPPER 2nd	NR	1	PED-1				
AX002-005-001	DOUBLER	NR	2	X-3D				
AX002-053	ANGLE 90°	NR	4	K-4B				
DET2-056	EXT. DOUBLER LOCKING	NR	1	K-3E				
DET2-057	INT. DOUBLER LOCKING	NR	1	K-4C				
STAB312-141	STRINGER Mt. 0,5	NR	3	J-1C				
STAB321-016	STRINGER 2,0 mt	NR	18	SOPP-KJ				
STAB333-099	TAILCONE	NR	1	J-3C				
ST508-010	*FLAP TORQUE TUBE	NR	1					
ST508-011	*TERMINAL TORQUE TUBE	NR	2					
SUPPOLIZENED20	**PLASTIC SUPPORT DIA20	NR	3					
TERMDIA20	*ROD TERMINAL DIA.20	NR	2					
TERMDIA25	*ROD TERMINAL DIA.25	NR	2					
DET2	*HANDLE LOCKING	NR	1					
UNIBOL-M6	**UNIBOL MALE 6MA	NR	6					
ROND DIA5	**WASHER DIA 5	NR	8					
VITE TEI5X	**BOLT H.H.5X35	NR	4					
VITE TP 5X10	**SCREEW 5X10	NR	9					
DADO A5 MA	**SELF LOCKING NUT 5MA	NR	4					
ROND DIA6	**WASHER DIA 6	NR	40					
VITE TE6X35	**BOLT H.H.6X35	NR	4					
VITE TEI6X45	**BOLT H.H.R.6X45	NR	8					
VITE TEI6X60	**BOLT H.H.R.6X60	NR	6					
DADO A6 MA	**SELF LOCKING NUT 6MA	NR	26					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	500					
AVEX1661-0412	**RIVET DIA 3,2 SHORT GRIP	NR						
AVEX1661-0510	**RIVET DIA 4 SHORT GRIP	NR						
AVEX1661-0512	**RIVET DIA 4 MEDIUM GRIP	NR						
AVEX1604-0412	**RIVET CSK DIA 3,2 SHORT GRIP	NR						
ARALDITE	**AV144-2ARALD/HV997 INDUR.	NR	AR					
AN470AD4-	** RIVET DIA. 3,2	NR						
AN426AD3-	** RIVET CSK DIA. 3,2	NR						
OLIV5MA	**NUT PLATE 5MA	NR	9					
OLIV6MA	**NUT PLATE 6MA	NR	4					

Figure B.5: ST1030 Kit - 1/2.

KIT ST1030

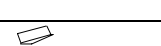
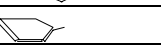
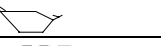
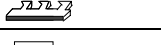
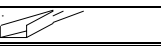
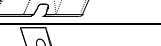
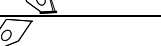
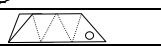
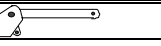
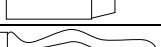
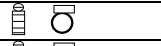
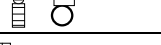
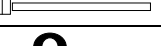
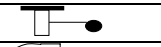
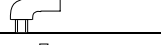
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST4-010	FLAP LEVER BOX	NR	1	FANTA				
ST4-010-001	ANGLE	NR	1	K-4B				
ST4-010-004	COVER	NR	1	K-3C				
ST4-010-005DX	SKIN RH	NR	1	K-3C				
ST4-010-005SX	SKIN LH	NR	1	K-3C				
ST4-010-006	STOP LEVER	NR	1	K-3B				
ST4-010-066	PLATE TORQUE TUBE	NR	6	K-4B				
ST4-010-067	ANGLE	NR	1	K-4D				
ST4-010-068	COVER	NR	1	K-4D				
ST4-010-099	REINF. TORSION ROD	NR	3	K-4D				
STX508	ASSY BACK BULKHEAD	NR	1	FANTA				
ST508-031	ANGLE 180°	NR	1	J-2D				
ST508-321	CENTRAL BACK	NR	1	J-4E				
ST508-322	BACK RH	NR	1	K-2B				
ST508-323	BACK LH	NR	1	K-2C				
STX508-033	BAGGAGE PLANE	NR	1	PED-1				
ST400-018KITK	TRIM BELL CRANK LEVER KIT	NR	1	K-4C				
ST6666	ASSY TANK	NR	1					
ST6666-1	*WELDED TANK	NR	1					
CINGHIA	** FUEL TANK BELT	NR	4					
CORRUGATO	** FUEL FLEXIBLE PIPE 800 mm.	NR	1					
DRENAGGIO	** DUMP DRAIN HOSE 500 mm.	NR	1					
FASCETTA10-20	** HOSE CLAMP DIA 10-20	NR	4					
FASCETTA40-60	** HOSE CLAMP DIA 40-60	NR	2					
FASCETTAPLAS	** CABLE STRAP	NR	10					
GOMMINO DIA22	**GOMMINO PASSACAVO DIA 22	NR	4					
FILO	** ELECTRIC WIRE 4000 mm.	NR	2					
RUBINETTO	** FUEL COCK	NR	3					
TELEVEL	** FUEL LEVEL	NR	1					
RACCORDO 90°	**ANGLE PIPE	NR	2					
INNESTO TUBO	**RIGID PIPE	NR	4					
TUBOALIMENT	** FUEL LINE 4000 mm.	NR	2					

Figure B.6: ST1030 Kit - 2/2.

ST1031KIT

CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST1031	1th SECTION FUSOLAGE	NR	1	FANTA				
ST198-008DX	ANGLE RH 85°	NR	1	K-4D				
ST198-008SX	ANGLE LH 85°	NR	1	K-4D				
ST333-010	FORWARD ANGLE FAIRING	NR	6	J-3D				
ST504-514-001	LOWER FITTING ENGINE	NR	1	K-3B				
ST504-999	SKIN ANGLE	NR	2	K-4C				
ST507-025DX	ANGLE RH	NR	2	K-2C				
ST507-025SX	ANGLE LH	NR	2	K-2C				
ST507-029	ANGLE	NR	2	K-4C				
ST507-031	DOUBLER BEAM UNDERCARRIAGE	NR	1	X-4D				
ST507-032	TANK BRACKET	NR	2	K-4E				
ST507-033	ANGLE BELT	NR	2	K-4B				
STA001-002	1th UPPER SKIN	NR	1	J-4C				
STA001-008	STOP CANOPY	NR	2	X-3D				
STA001-010	STOP CANOPY SKIN	NR	1	SOPP-XY				
STA001-012	REINFORCEMENT ANGLE RH	NR	1	K-4C				
STA001-013	REINFORCEMENT ANGLE LH	NR	1	K-4C				
STA001-021DX	ANGLE RH	NR	1	K-4B				
STA001-021SX	ANGLE LH	NR	1	K-4B				
STAB311-009DX	1th SECTION FLOOR RH	NR	1	PED-1				
STAB311-009SX	1th SECTION FLOOR LH	NR	1	PED-1				
STAB311-010	SKIN JOINT	NR	1	SOPP-XY				
STAB311-011DX	DOUBLER SIDE RH	NR	1	SOPP-XY				
STAB311-011SX	DOUBLER SIDE LH	NR	1	SOPP-XY				
STAB321-020	HOLE WING REINFORCEMENT	NR	2	J-1C				
STAB321-022DX	1th SECTION OUTER SKIN RH	NR	1	PED-1				
STAB321-022SX	1th SECTION OUTER SKIN LH	NR	1	PED-1				
STAB321-031DX	SUPPORT BAGGAGE ANGLE RH	NR	1	J-4C				
STAB321-031SX	SUPPORT BAGGAGE ANGLE LH	NR	1	J-4C				
STAB321-032DX	AFTER DOUBLER HOLE WING RH	NR	1	J-2C				
STAB321-032SX	AFTER DOUBLER HOLE WING LH	NR	1	J-2C				
STAB321-517-1	THICKNESS 3 MM.	NR	2	K-4D				
STAB321-517DX	FUSOLAGE ANGLE RH	NR	1	X-Y				
STAB321-517SX	FUSOLAGE ANGLE LH	NR	1	X-Y				
STDET5-002	PLATE 3 mm. CLOCHE	NR	2	K-4B				
STX333-001	UNDERCARRIAGE FAIRING LH	NR	1	J-4D				
STX333-002	UNDERCARRIAGE FAIRING RG	NR	1	J-4D				

Figure B.7: ST1031 Kit - 1/4.

ST1031KIT

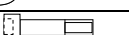
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STX333-003	AFTER FAIRING	LH	1	J-4D				
STX333-004	AFTER FAIRING RH	NR	1	J-4D				
STX333-005	FORWARD FAIRING	NR	2	J-4D				
AN470AD4-4	** RIVET DIA. 3,2	NR	290					
AN470AD4-5	** RIVET DIA. 3,2	NR	120					
AN470AD4-6	** RIVET DIA. 3,2	NR	180					
AN426AD3-6	** RIVET CSK DIA. 3,2	NR	76					
AN426AD5-10	** RIVET CSK DIA. 4	NR	44					
AN426AD5-12	** RIVET CSK DIA. 4	NR	2					
AN426AD4-6	** RIVET CSK DIA. 3,2	NR	48					
AN426AD4-4	** RIVET CSK DIA. 3,2	NR	24					
AN470AD4-8	** RIVET DIA. 3,2	NR	156					
AN470AD5-10	** RIVET DIA. 4	NR	12					
AN470AD5-6	** RIVET DIA. 4	NR	12					
AN470AD5-8	** RIVET DIA. 4	NR	4					
AN470AD5-9	** RIVET DIA. 4	NR	24					
UNIBOL-M6	**UNIBOL MALE 6MA	NR	2					
ROND DIA5	**WASHER DIA 5	NR	32					
VITE TEI5X35	**BOLT H.H.R. 5X35	NR	10					
DADO A5 MA	**SELF LOCKING NUT 5MA	NR	16					
ROND DIA6	**WASHER DIA 6	NR	56					
VITE TEI5X30	**BOLT H.H.R. 5X30	NR	2					
DADO A6 MA	**SELF LOCKING NUT 6MA	NR	29					
VITE TEI6X35	**BOLT H.H.R. 6X35	NR	25					
VITE TEI5X25	**BOLT H.H.R. 5X25	NR	4					
VITE TP 5X10	**SCREW 5X10	NR	26					
OLIV5MA	**NUT PLATE 5MA	NR	33					
OLIV6MA	**NUT PLATE 6MA	NR	2					
OLIV8MA	**NUT PLATE 8MA	NR	1					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	1500					
AVEX1661-0412	**RIVET DIA 3,2 MEDIUM GRIP	NR	150					
AVEX1661-0512	**RIVET DIA 4 MEDIUM GRIP	NR	90					
AVEX1661-0510	**RIVET DIA 4 SHORT GRIP	NR	270					
AVEX1604-0412	**RIVET CSK DIA 3,2 SHORT GRIP	NR	160					
ST504-010	*EXTERNAL RESIN ANGLE	NR	1					
ST504-011	*INTERNAL RESIN ANGLE	NR	1					
STA001-003	RESIN INSTRUMENT PANEL	NR	1					

Figure B.8: ST1031 Kit - 2/4.

ST1031KIT

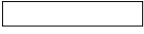
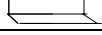
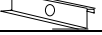
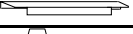
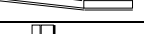
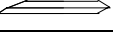
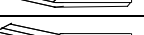
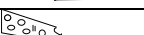
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST506-024	DOUBLER WING BEAM	NR	1					
ST506-028	ANGLE	NR	2					
ARALDITE	**AV144-2ARALD/HV997 INDUR.	NR	AR					
ST198	ASSY BEAM AFTER	NR	1	FANTA				
ST198-009	BEAM AFTER	NR	1	J-1E				
ST198-010	THICKNESS	NR	4	K-4E				
AN470AD4-8	** RIVET DIA. 3,2	NR	8					
ST504	ASSY FIREPROOF BULKHEAD	NR	1	FANTA				
ST504-005	BULKHEAD	NR	1	J-3A				
ST504-006	BEAM RUDDER PEDALS	NR	1	J-1E				
ST504-007	REINFORCEMENT PLATE	NR	1	J-3D				
ST504-009DX	ANGLE RH	NR	2	K-4E				
ST504-009SX	ANGLE LH	NR	2	K-4E				
ST504-012DX	HIGH AGLE RH	NR	1	K-4E				
ST504-012SX	HIGH ANGLE LH	NR	1	K-4E				
ST504-052DX	EXTERNAL ANGLE RH	NR	1	J-2C				
ST504-052SX	EXTERNAL ANGLE LH	NR	1	J-2C				
ST504-514-002	UPPER FITTING	NR	2	K-4C				
AN470AD5-6	** RIVET DIA. 4	NR	12					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	156					
ST504-053	REINFORCEMENT PLATE	NR	8					
ST504-054	REINFORCEMENT FWD ANGLE	NR	1					
ST504-055	REINFORCEMENT LATERAL ANGLE	NR	2					
ST504-213	REINFORCEMENT INTERNAL LH	NR	1					
ST504-214	REINFORCEMENT INTERNAL RH	NR	1					
ST505	CONSOLLE	NR	1	FANTA				
ST505-015	GUSSET	NR	2	K-4B				
ST505-050DX	FWD ANGLE RH	NR	1	K-2B				
ST505-050SX	FWD ANGLE LH	NR	1	K-2B				
ST505-080DX	LOWER ANGLE RH	NR	1	J-2F				
ST505-080SX	LOWER ANGLE LH	NR	1	J-2F				
ST505-081DX	WEB RH	NR	1	J-3E				
ST505-081SX	WEB LH	NR	1	J-3F				
ST505-099	SUPPORT INSTRUMENT PANEL	NR	1	K-3E				
ST505-112	COVER	NR	1	J-1E				

Figure B.9: ST1031 Kit - 3/4.

ST1031KIT

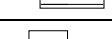
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST505-118	INTERNAL ANGLE	NR	2	K-3D				
ST505-119-001	BRACKET CABLE ANGLE	NR	1	K-4B				
ST505-119-002	BRACKET CABLE IN PVC	NR	1	K-4C				
ST505-821	INTERNAL RIB	NR	1	K-3E				
ST505-822	INTERNAL ANGLE	NR	1	K-4B				
ST505-823	THICKNESS	NR	1	K-4C				
AN426AD3-6	** RIVET CSK DIA. 2,5	NR	40					
AN470AD4-6	** RIVET DIA. 3,2	NR	70					
AN470AD5-6	** RIVET DIA. 4	NR	42					
AN470AD5-8	** RIVET DIA. 4	NR	14					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	44					
ST507T	ASSY UNDERCARRIAGE BEAM	NR	1	FANTA				
ST507-026	AFTER UNDERCARRIAGE BEAM	NR	2	J-1D				
ST507-027	GUSSET	NR	4	K-4D				
ST507-281	ANGLE DWG 1	NR	2	K-4B				
ST507-282	ANGLE DWG 2	NR	2	K-4B				
ST507-283	ANGLE DWG 3	NR	2	K-4D				
ST507-284	ANGLE DWG 4	NR	2	K-4D				
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	4					
AN470AD4-6	** RIVET DIA. 3,2	NR	30					
STX4-011KITK	FLAP LEVER KIT	NR	1					
ST4-011-001	FLAP COMMAND LEVER	NR	1	K-3C				
ST4-011-002DX	ANGLE RH	NR	1	K-4D				
ST4-011-002SX	ANGLE LH	NR	1	K-4D				
STX4-011-003	SHIM 1,5 mm.	NR	1	K-4B				
ST666	ASSY TANK ATTACHMENT	NR	2	FANTA				
ST666-051	HAT SECTION SKIN	NR	2	J-4F				
ST666-052	SLOTTED HOLE ANGLE	NR	4	K-4D				
ST666-053	THICKNESS	NR	4	K-4B				
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	8					
AN470AD5-8	** RIVET DIA. 3,2	NR	16					
ST666-055	**RUBBER SEAL MM3	NR	4					
BOSTIK	**BOSTIK	NR	AR					
ST506	ASSY WING BEAM	NR	1	FANTA				

Figure B.10: ST1031 Kit - 4/4.

ST1032KIT

CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST1032	2nd SECTION FUSOLAGE	NR	1	FANTA				
A003-061	GUSSET ANTENNA	NR	1	K-4B				
A004-007	4th SKIN UPPER	NR	1	PED-1				
AX003-006	SKIN UPPER 3rd	NR	1	PED-1				
ST400-933	REAR REINFORCEMENT	NR	1	K-3E				
ST701-006	CABLE COMMAND BRACKET	NR	1	J-2D				
ST701-006-1	BRACKET PVC	NR	1	K-4C				
ST701-006-2	GUSSET	NR	3	K-4C				
ST701-007	CABLE COMM. BRACKET ANGLE	NR	1	J-3D				
ST701-007-1	BRACKET PVC	NR	1	K-4C				
ST701-008DX	REINFORCEMENT SQUARE	NR	1	K-3F				
ST701-008SX	REINFORCEMENT SQUARE	NR	1	K-3F				
STAB312-012	JOINT	NR	1	J-2D				
STAB312-013DX	2nd SECTION FLOOR RH	NR	1	J-4A				
STAB312-013SX	2nd SECTION FLOOR LH	NR	1	J-4A				
STAB312-014	DOOR	NR	1	J-2D				
STAB312-030	REINFORCEMENT ANGLE	NR	1	K-4C				
STAB312-312	GUSSET	NR	2	K-4C				
STAB322-023DX	2nd SECTION OUTER SKIN RH	NR	1	K-4A				
STAB322-023SX	2nd SECTION OUTER SKIN LH	NR	1	K-4A				
STAB333-026DX	3th SECTION OUTER SKIN RH	NR	1	X-4A				
STAB333-026SX	3th SECTION OUTER SKIN LH	NR	1	X-4A				
STAB333-027	3th SECTION LOWER SKIN	NR	1	SOPP-KJ				
STAB333-028	HAT SECTION SKIN	NR	1	SOPP-KJ				
STAB333-028BIS	HAT SECTION SKIN JOINT	NR	1	K-2E				
STAB333-030	3th SECTION UPPER FRAME	NR	1	J-4F				
STAB333-044	INSIDE REINFORCEMENT 30°	NR	1	K-3C				
STAB333-045	INTERNAL ANGLE	NR	1	K-4E				
STAB333-051DX	RESIN FILLER SUPPORT ANGLE RH	NR	1	J-3D				
STAB333-051SX	RESIN FILLER SUPPORT ANGLE LH	NR	1	J-3D				
STAB333-052	2nd/3th SECTION STRINGER JOINT	NR	2	K-4D				
STAB333-053	EXTERNAL REINFORCEMENT	NR	1	J-3D				
STAB333-098	INSIDE RIB	NR	1	K-3F				

Figure B.11: ST1032 Kit - 1/3.

ST1032KIT

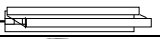
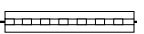
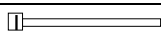
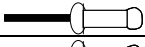
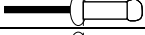
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
STAB312-141	STRINGER Mt. 0,5	NR	3	J-1C				
STX508-034	2nd UPPER RIB	NR	1	K-3A				
ARALDITE	**AV144-2ARALD/HV997 INDUR.	NR	AR					
A003-007	*FILLER CAP	NR	1					
STAB312-015	**HINGE	NR	1					
STAB333-033	*RESIN UP FRAMESTRING	NR	1					
STX508-035	*RESIN 2nd UPRIB STRING	NR	1					
	**CAVO TRIM	mt	7					
	**CAVO STROBO	mt	7					
	**CAVO ANTENNA	mt	5					
	**CAVO ACCIAIO TIMONE DIR	mt	10					
	**FASCETTA STRINGICAVO	NR	20					
	**GOMMINO PASSACAVO DIA15	NR	1					
OLIV4MA	**NUT PLATE 4MA	NR	4					
OLIV5MA	**NUT PLATE 5MA	NR	11					
OLIV6MA	**NUT PLATE 6MA	NR	3					
ROND DIA5	**WASHER DIA 5	NR	20					
DADO A5 MA	**SELF LOCKING NUT 5MA	NR	10					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	1200					
AVEX1661-0412	**RIVET DIA 3,2 MEDIUM GRIP	NR	60					
AVEX1661-0512	**RIVET DIA 4 MEDIUM GRIP	NR	30					
VITE TEI5X35	**BOLT H.H.R.5X35	NR	6					
VITE TEI5X30	**BOLT H.H.R.5X30	NR	2					
VITE TEI5X40	**BOLT H.H.R.5X40	NR	2					
VITE TP 5X10	**SCREEW 5X10	NR	7					
AN426AD3-10	** RIVET CSK DIA. 2,5	NR	6					
AN426AD4-12	** RIVET CSK DIA. 3,2	NR	18					
AN426AD3-6	** RIVET CSK DIA. 2,5	NR	32					
AN470AD4-6	** RIVET DIA. 3,2	NR	80					
AN470AD4-10	** RIVET DIA. 3,2	NR	30					
ST200CA3KITK	FUCOLAGE LEVER. 180° KIT	NR	1	K-4C				
ST400	FIN	NR	1	FANTA				
ST400-009	SKIN	NR	2	X-4D				
ST400-010	FIN LEADING EDGE	NR	1	PED-1				
ST400-012	LOWER DOUBLER	NR	1	K-4B				
ST400-013	FITTING ANGLE	NR	2	K-3E				

Figure B.12: ST1032 Kit - 2/3.

ST1032KIT

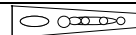
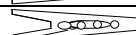
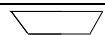
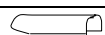
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST400-015	UPPER DOUBLER	NR	1	K-4B				
ST400-016	ANGLE	NR	1	K-4B				
ST400-043	2nd RIB FIN	NR	1	J-2E				
ST400-069	1st RIB FIN	NR	1	J-2E				
ST400-069-001	ANGLE	NR	4	K-4B				
ST400-070	GUSSET	NR	2	K-3D				
ST400-071	EXTERNAL GUSSET	NR	2	K-3D				
ST400-121	REINFORCEMENT ANGLE	NR	1	K-4B				
ST400-148	FITTING REINFORCEMENT ANGLE	NR	2	K-4D				
ST400-006	*TOP SHILD	NR	1					
ST400-014	*HINGE FITTING	NR	2					
ST400-017	*RESIN FILLER	NR	1					
ST400-072	TOP RIB	NR	1					
ST541-046	PATTINO DI CODA	NR	1					

Figure B.13: ST1032 Kit - 3/3.

ST2030KIT

CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST2030	WING ASSY	NR	1	FANTA				
ST2031/2032	ASSY WING LH	NR	1*1	FANTA				
ST200-005	LEADING EGDE SHORT	NR	4	SOPP-XY				
ST200-006	LEADING EDGE LONG	NR	2	SOPP-XY				
ST200-007	OUTBOARD UPPER SKIN	NR	4	PED-1				
ST200-008	INBOARD LOWER SKIN	NR	2	PED-1				
ST200-010	OUTBOARD LOWER SKIN	NR	2	PED-1				
ST200-011	FEET PILOT DOUBLER	NR	2	X-3B				
ST200-012	HOLE ROD DOUBLER	NR	2	K-2D				
ST200-101	NOSE RIB LH	NR	11	X-3B				
ST200-122	RIB LH	NR	14	X-3B				
ST200-199	WIND ANGLE	NR	2	K-4B				
ST200-201	NOSE RIB RH	NR	11	X-3B				
ST200-222	RIB RH	NR	14	X-3B				
ST200-301	REAR CONNECTOR PLATE	NR	2	K-4E				
ST200-690	AILERON ROD DIA. 20	NR	2	K-2F				
ST403SX-DX	INTERNAL REINFORCEMENT	NR	2+2	K-3D				
ST800-333	RENFORCING FITTING AILERON	NR	4	K-3B				
STX200-001	ACCESS PANEL	NR	6	K-3C				
STX200-002	STRIP TIP	NR	6	J-4C				
STX200-1440	AILERON CONTROL ROD DIA. 25	NR	2	X-Y				
STX200-281	FLAP CARTER	NR	2	SOPP-KJ				
STX200-291	AILERON CARTER	NR	2	SOPP-KJ				
STX200-599	STRINGER "U"	NR	8	SOPP-KJ				
STX200-882	AILERON ROD DIA. 25	NR	2	K-2F				
STX700-111	REINFORCEMENT	NR	4	K-3E				
ST200-380	* PITOT PIPE	NR	1					
TERMDIA20	*ROD TERMINAL DIA.20	NR	2					
TERMDIA25	*ROD TERMINAL DIA.25	NR	8					
TERMDIA20	*LONG ROD TERMINAL DIA.20	NR	2					
STX200-282	*CARTER TRAEING EDGE	NR	4					
TUBO PLASTICA	**TUBO DIA10MM PITOT	MT	6					
FASCETTE DIA 10-1	**FASCETTE DIA10-19	NR	2					
AN470AD5-22	**RIVET DIA 4	NR	10					
AN470AD5-8	**RIVET DIA 4	NR	40					
DADO A6 MA	**SELF LOCKING NUT 6MA	NR	22					
AVEX1661-0410	RIVET DIA 3,2 SHORT GRIP	NR	2300					

Figure B.14: ST2030 Kit - 1/2.

ST2030KIT

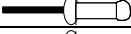
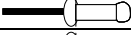
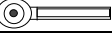
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
AVEX1661-0412	RIVET DIA 3,2 MEDIUM GRIP	NR	200					
AVEX1661-0512	**RIVET DIA 4 MEDIUM GRIP	NR	420					
AVEX1661-0514	**RIVET DIA 4 LONG GRIP	NR	60					
ROND DIA6	**WASHER DIA 6	NR	46					
VITE TE6X35	**BOLT H.H. 6X35	NR	12					
UNIBOL-M6	**UNIBOL MALE 6MA	NR	12					
ROND DIA5	**WASHER DIA 5	NR	76					
VITE TE15X25	**BOLT H.H.R. 5X25	NR	24					
DADO A5 MA	**SELF LOCKING NUT 5MA	NR	28					
VITE TE15X35	**BOLT H.H.R. 5X35	NR	8					
ST200CA1KITK	LEVER AILERON 75° KIT	NR	2	K-4C				
ST200CA2KITK	LEVER AILERON 180° KIT	NR	4	K-4C				
ST201/202	WING MAIN SPAR LH	NR	1*1	FANTA				

Figure B.15: ST2030 Kit - 2/2.

ST3000 KIT

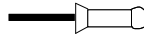
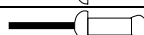
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST3000	RUDDER ASSY	NR	1	FANTA				
ST3000-001	FORWARD SKIN LH	NR	1	X-2B				
ST3000-002	FORWARD SKIN RH	NR	1	X-2B				
ST3000-003	TRAILING EDGE	NR	1	X-2D				
ST3000-008	CENT. SKIN RH	NR	1	X-2D				
ST3000-009	CENT. SKIN LH	NR	1	X-2D				
ST3000-010	COMMAND FITTING CABLE	NR	2	K-4D				
ST3000-015	UPPER PLATE	NR	1	K-4B				
ST3000-016	LOWER PLATE	NR	1	K-4B				
ST3000-004	*RESIN TIP	NR	1					
ST3000-005	*HINGE PIN UPPER	NR	1					
ST3000-006	*HINGE PIN LOWER	NR	1					
ST3000-007	*INTERNAL RESIN RIB	NR	1					
ST3000-011	*BUSHING	NR	2					
AN426AD4-8	**RIVET CSK DIA 3,2	NR	8					
AVEX1604-0412	**RIVET CSK DIA 3,2 SHORT GRIP	NR	6					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	120					
AVEX1661-0412	**RIVET DIA 3,2 MEDIUM GRIP	NR	16					
OLIV6MA	**NUT PLATE 6MA	NR	4					
ARALDITE	**AV144-2ARALD/HV997 INDUR.	NR	AR					

Figure B.16: ST3000 Kit.

ST5000 KIT

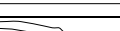
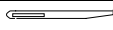
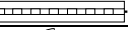
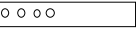
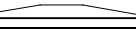
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
ST5000	ASSY ELEVATOR	NR	1	FANTA				
ST5000-002	NOSE RIB	NR	8	K-2D				
ST5000-003	RIB	NR	6	J-2C				
ST5000-004	CENTRAL RIB	NR	4	K-2D				
ST5000-005	LEADING EDGE	NR	2	SOPP-XY				
ST5000-006	UPPER/LOWER CENTRAL SKIN	NR	2	J-3B				
ST5000-007	TRAILING EDGE SKIN	NR	2	J-1C				
ST5000-019	ANGLE	NR	2	K-4B				
ST5000-077	DOUBLER	NR	6	J-1F				
ST5000-008	*RESIN TIP	NR	2					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	340					
AVEX1661-0510	**RIVET DIA 4,0 SHORT GRIP	NR	40					
ST5000-015	*ASSY COUNTERWEIGHT	NR	1					
ST5010	ASSY TAB	NR	1	FANTA				
ST5010-010	SKIN	NR	1	SOPP-KJ				
ST5010-019	CONTROL LEVER	NR	1	K-3D				
ST5010-027	ANGLE	NR	2	K-4B				
ST5010-028DX	RIB RH	NR	3	K-4B				
ST5010-028SX	RIB LH	NR	2	K-4B				
ST5000-033	**HINGE	NR	1					
AN470AD4-8	**RIVET DIA 3,2	NR	4					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	100					
ST5001	ASSY LONGHERON	NR	1	FANTA				
ST5001-001	LONGHERON	NR	2	J-4B				
ST5001-011	DOUBLER	NR	2	K-2C				
ST5001-012	INTERNAL DOUBLER	NR	2	J-3C				
AN426AD3-8	**RIVET CSK DIA 2,5	NR	24					
AN470AD 4-5	**RIVET DIA 3,2	NR	50					
OLIV5MA	**NUT PLATE 5MA	NR	4					
OLIV6MA	**NUT PLATE 6MA	NR	8					
ST5000-014	HINGE FITTING	NR	4	K-3B				
ROND DIA6	**WASHER DIA 6	NR	8					
VITE TEI 6X35	**BOLT H.H.R. 6x35	NR	8					

Figure B.17: ST5000 Kit.

ST7000 & 8000 KIT

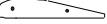
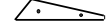
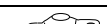
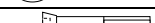
CODE	DESCRIPTION	UM	Q.TY	LOCATION	SKETCH	kit	kit	kit
STX7000	FLAP ASSY RH E LH	NR	1	FANTA				
STX7001/7002	FLAP ASSY LH/RH	NR	1*1	FANTA				
STX700-002	SKIN TRAILING EDGE	NR	2	X-1A				
STX700-003	RIB LH	NR	5	K-2F				
STX700-004	RIB RH	NR	5	K-2F				
STX700-005	VENTRAL REINFORCEMENT	NR	2	K-3F				
STX700-111	REINFORCEMENT	NR	4	K-3E				
STX700-333	REINFORCEMENT	NR	4	K-3F				
AN426AD3-4	**RIVET CSK DIA. 2,5	NR	40					
AVEX1661-0410	*RIVET DIA 3,2 SHORT GRIP	NR	360					
AVEX1661-0412	*RIVET DIA 3,2 MEDIUM GRIP	NR	20					
AVEX1661-0512	*RIVET DIA 4 MEDIUM GRIP	NR	36					
STX700-001	*LEADING EDGE LENGHT	NR	2					
STX700-009	*COMMAND SLOTTED HOLE PLATE	NR	2					
STX700-011	*LEADING EDGE	NR	2					
STX700-999KITK	FLAP CONNECTOR KIT	NR	4	K-4E				
STX8000	AILERON ASSY RH E LH	NR	1	FANTA				
STX8001/8002	AILERON ASSY LH/RH	NR	1*1	FANTA				
STX700-003	RIB LH	NR	3	K-2F				
STX700-004	RIB RH	NR	3	K-2F				
STX800-002	SKIN TRAILING EDGE	NR	2	K-2A				
STX800-005	COMMAND PLATE	NR	4	K-3F				
STX800-007	HINGE PLATE	NR	4	K-3F				
STX800-015	TERMINAL RIB LH	NR	2	K-2D				
STX800-016	TERMINAL RIB RH	NR	2	K-2D				
STX800-020	ANGLE	NR	4	K-4B				
STX800-111	REIFORCING	NR	2	K-4F				
STX800-008	*WEIGHT gr 220	NR	4					
AN426AD3-10	**RIVET CSK DIA. 2,5	NR	12					
AN426AD3-4	**RIVET CSK DIA. 2,5	NR	12					
AN426AD4-8	**RIVET CSK DIA. 3,2	NR	24					
AVEX1661-0410	**RIVET DIA 3,2 SHORT GRIP	NR	260					
AVEX1661-0412	**RIVET DIA 3,2 MEDIUM GRIP	NR	42					
DADOA5MA	**SELF LOCKING NUT 5MA	NR	4					
OLIV5MA	**NUT PLATE 5MA	NR	4					
OLIV6MA	**NUT PLATE 6MA	NR	2					
ROND DIA5	**WASHER DIA 5	NR	4					
VITE TPS	**SCREW CHHR 5X50	NR	4					
STX700-001	*LEADING EDGE LENGHT	NR	2					

Figure B.18: ST7000 & ST8000 Kits.

Appendix C

Glossary

Araldite: a kind of glue.

Cleco: tool simulating the tightness of a rivet in the hole.

Drilling pitch: distance from the center of consecutive holes.

Gap free space between two parts.

Grip: thickness of a rivet that can be tightened.

Margin: distance from the edge to the hole center, 2 dia. formula, e.g. with a 4 mm hole the distance will be 8 mm.

Step: plane difference between two planes.

To clinch: see *to rivet*.

To countersink: to make the seat for the head of fitting parts, such as rivets, screws, etc.

To deburr: to remove the burr from the holes after having drilled.

To rivet: to cold-head a rivet through vibration or pressing down.

To tack: to insert alternatively a cleco in the hole to assemble the parts.

To trim: to remove the edges from the sheets.

Unibal: bearing rod end, male or female threaded shank.