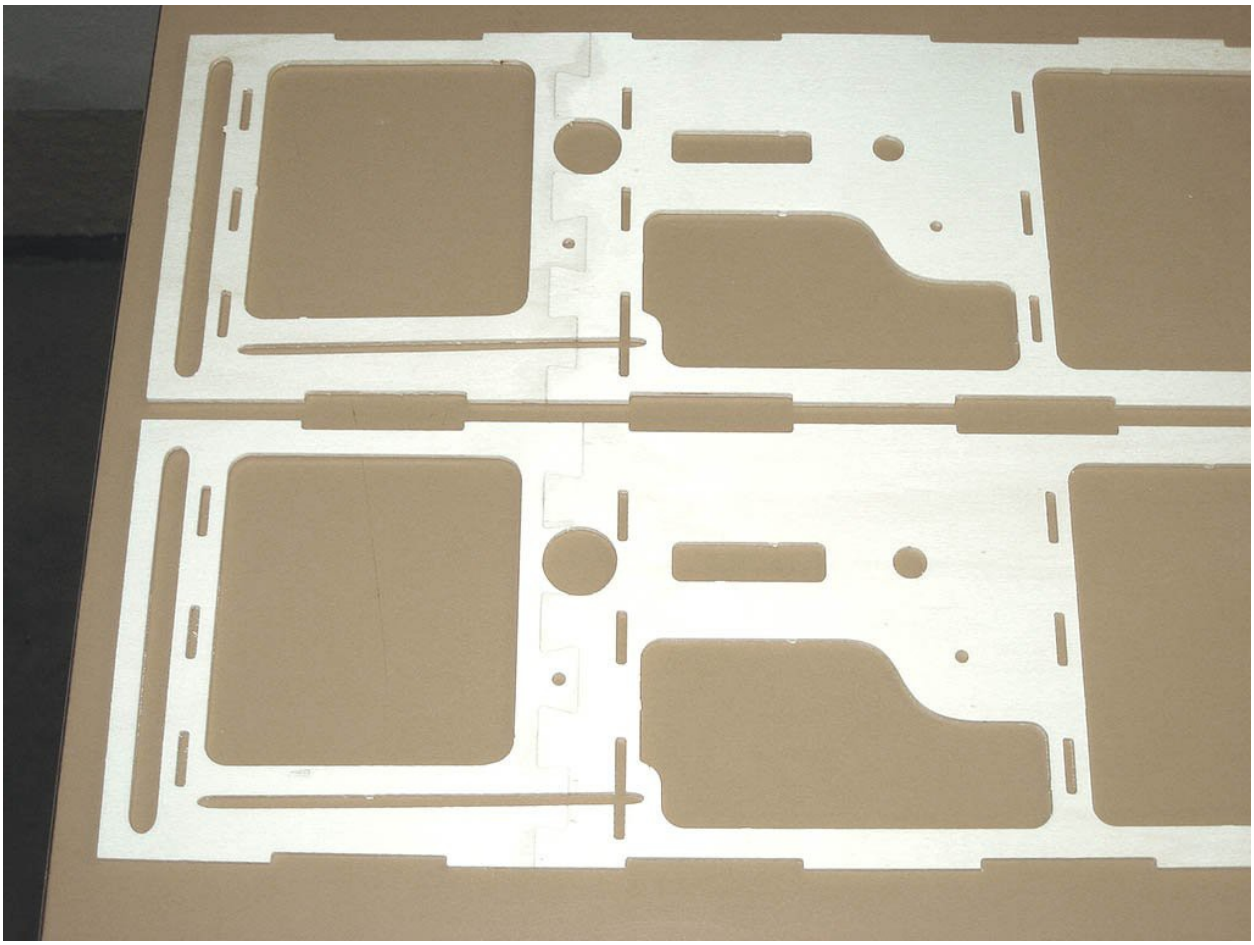
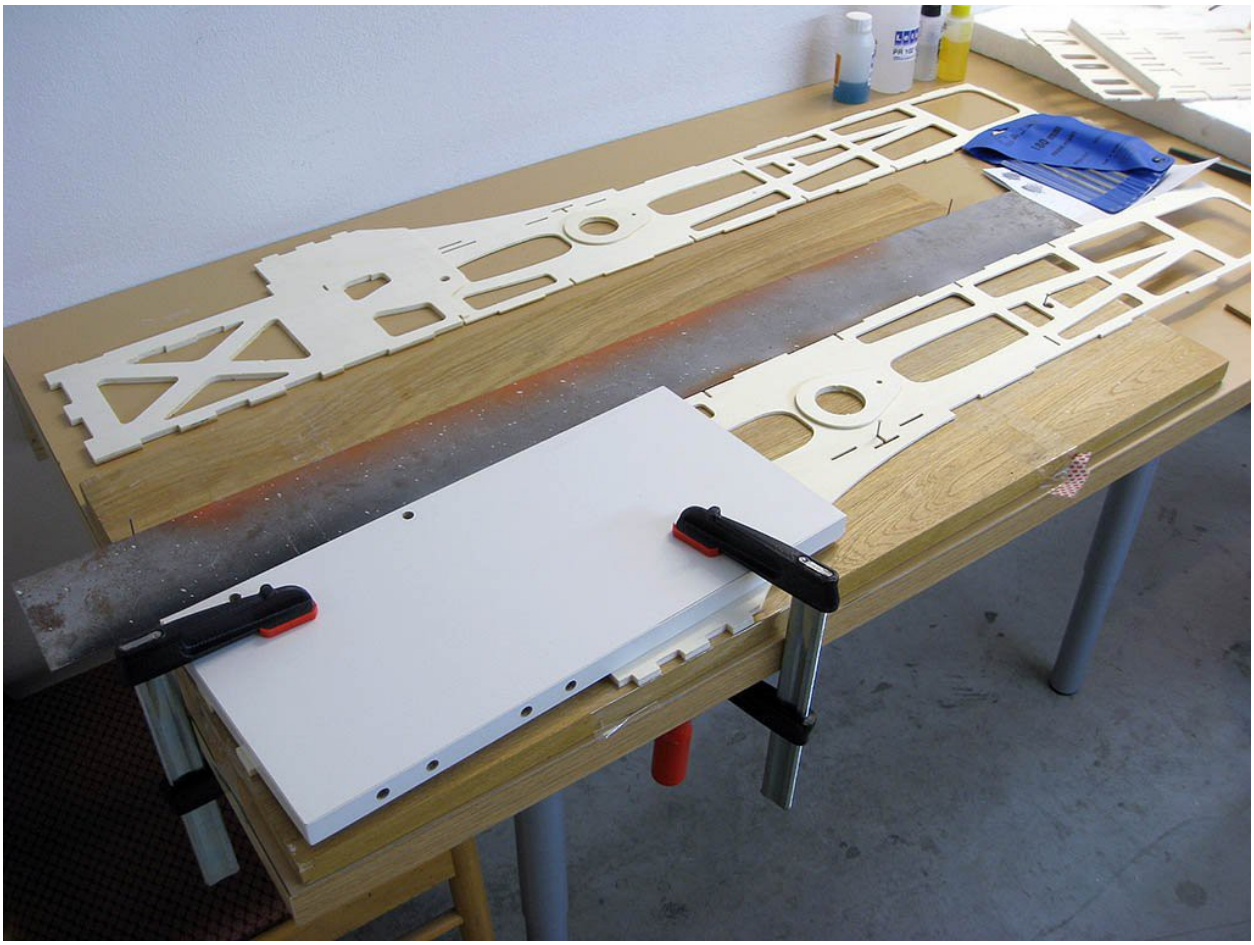
# Fuselage



Parts are now milled on 1000 x 500 mm boards, so there are plenty of parts that are larger than this size. In addition, some parts are doubled and may have stiffeners. Before gluing the fuselage it is necessary to glue all necessary parts from the cut-outs first. Prior to this, it is necessary to prepare the cut-outs for gluing, that is, remove the locks after milling and clean the corners of the interlocking cut-outs. This will give quite a lot of work, it has to be taken into account. In the picture, the rear fuselage sides are glued from two parts, the divide is chosen so that the strength of the glued joint is not problematic and the parts could not be glued incorrectly. It is glued with PerfectG dispersion adhesive and then sanded.

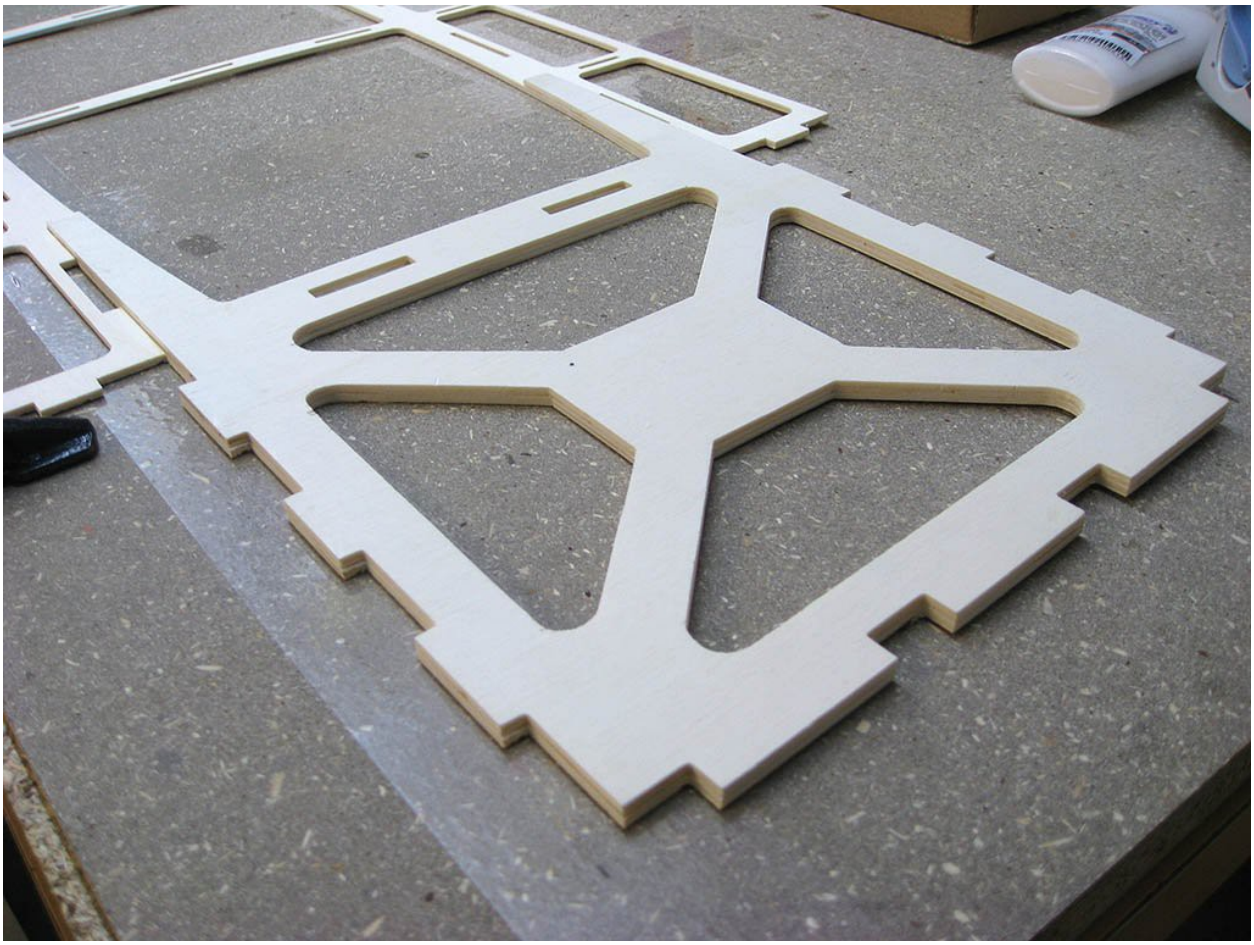
Here is the detail for gluing the upper part of the fuselage, which consists of a total of three parts, glued again with PerfectG.

As with the original version, I use Letoxit for gluing parts with large surface area together and use adhesive tape as separation. It is sufficient to glue only in the place where Letoxit can leak, i.e. from below. On the parts I put flat boards, which pull the pullers to the table or load something really heavy. In order to prevent parts from slipping after loading, Letoxit is omitted at several bonding points and replaced with CA glue, which ensures immediate attachment. When gluing it should be noted that there is no second attempt, as soon as CA grabs, so it is final, it is necessary to position the parts together gradually and accurately. CA must not combine with Letoxit, the adhesives immediately react and form hard lumps, making parts unreliable.



The sidewalls are very stressed at the engine box, so they are not glued with dispersion adhesive as in other parts. The sidewall at this critical point consists of three parts that I glued at the same time. In addition, it is necessary to check that the part is glued straight. A flat board is used for this, separated by tape at the bonding point. The plate has a sheet of straight cut sheet, which ensures a completely straight edge of the glued sidewall. Dry parts are assembled and secured by nails, so that the parts go back together for subsequent gluing. First, the base of the sidewall is glued from two interlocking parts for 30 minutes with epoxy (BSI) and immediately Letoxit is applied to stick the reinforcement - doubling the front part of the sidewall. Later, only the dispersion glue doubling in the place of the wing tube, in the place of the wing safety tubes and from the other side of the side is glued an auxiliary rib for gluing the wing shaft in the fuselage. The picture is glued and the second side glued side.

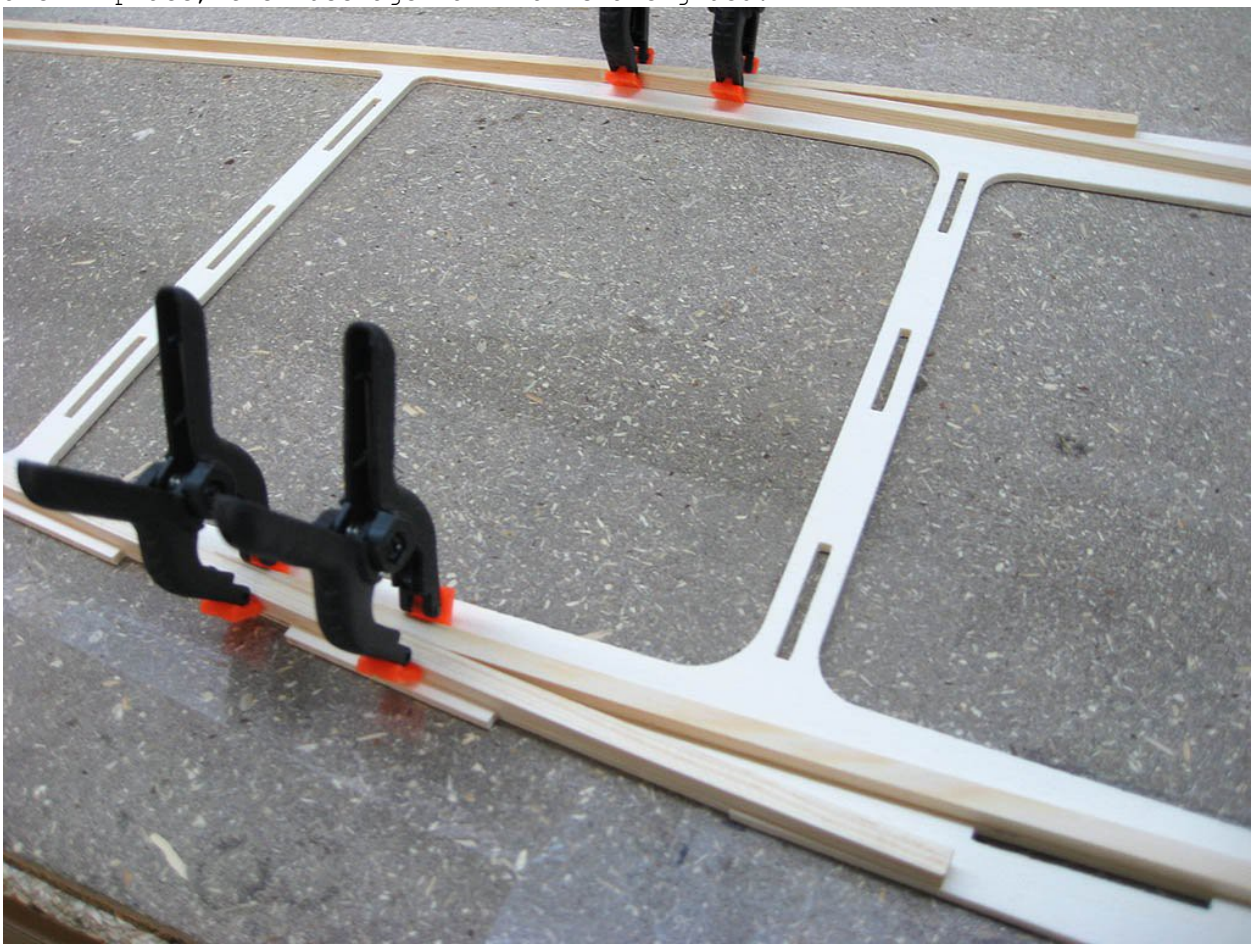
Glue the hull on a straight DTD board 18 x 600 x 2440 mm from the supermarket. The board is in turn not separated by adhesive tape at the point where the hull can be glued.



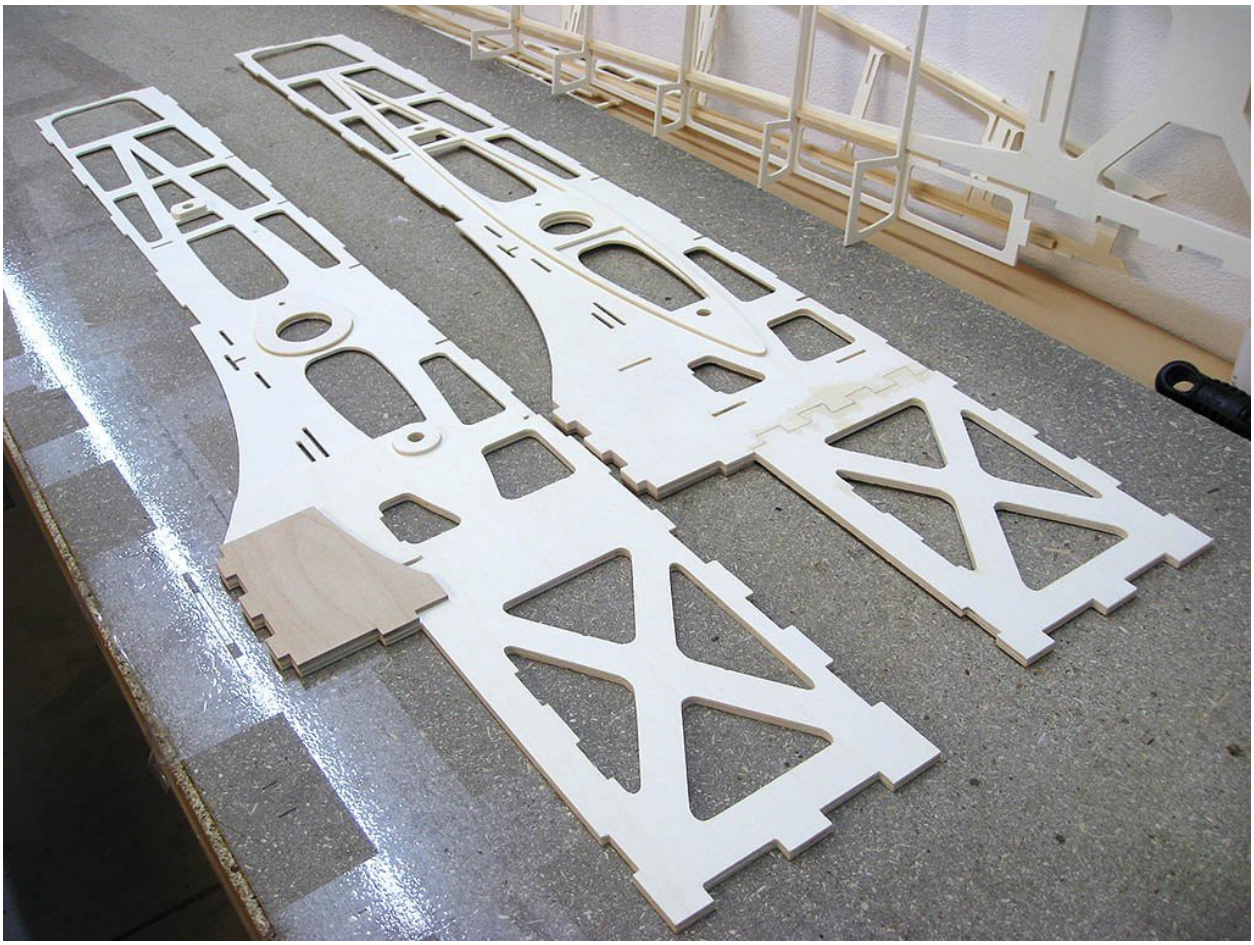
The reinforcement of the upper part of the motorbox is glued in the usual way with Letoxit.

On the upper part of the first strips glued to the rear and then the front, which increases the stiffness of the hull. The change is that it is glued in advance and also overlapping to the original version. Strips are placed further away from the inner edge of the upper part of the fuselage, and after applying the tips his hat to his place. Less adhesive will leak out to the site of future side glueing. If something spills, the need to wipe something,

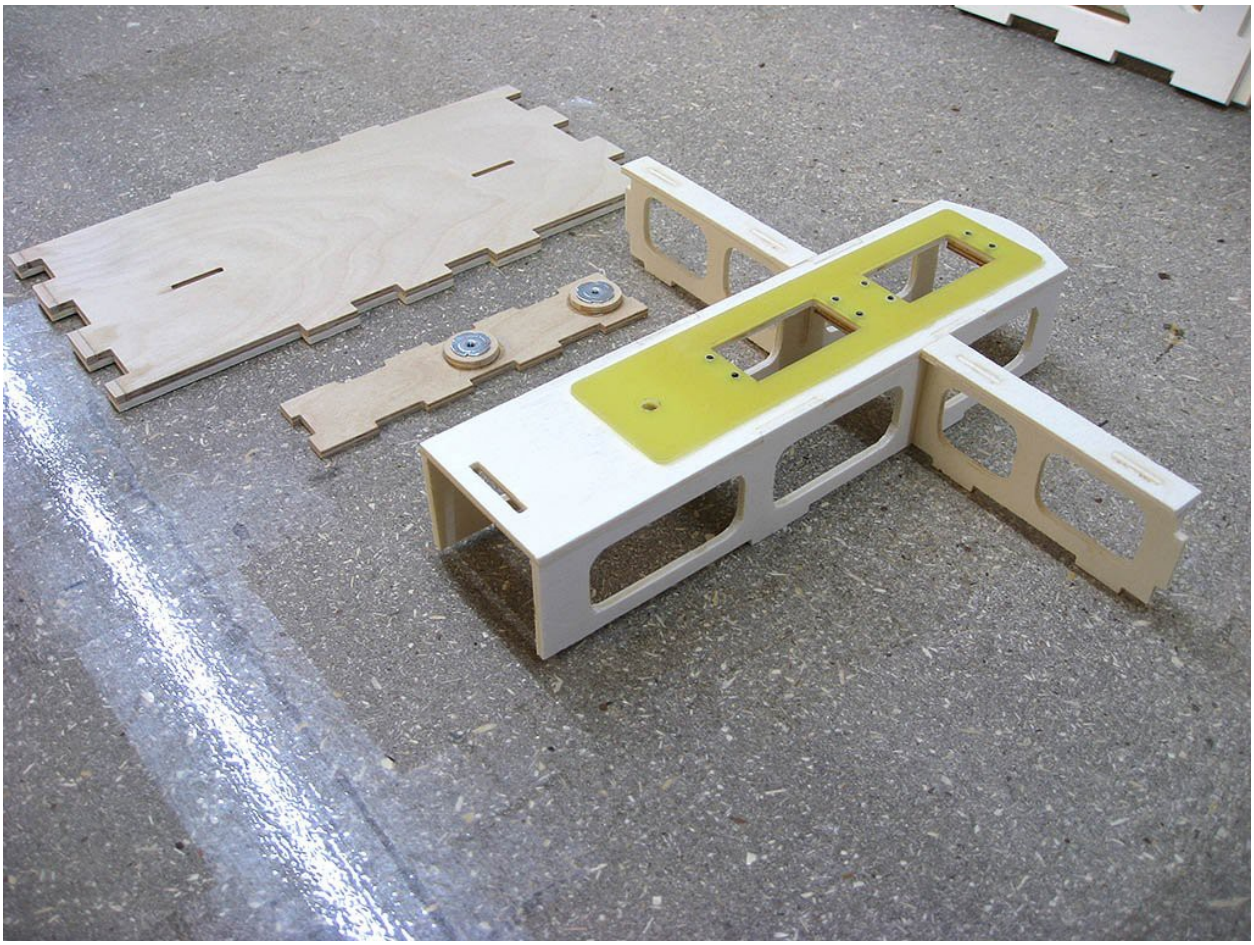
I use spruce skewed prism 3 x 3 mm, which cleans corners well. Once the bars are in place, the fuselage half-walls are glued.



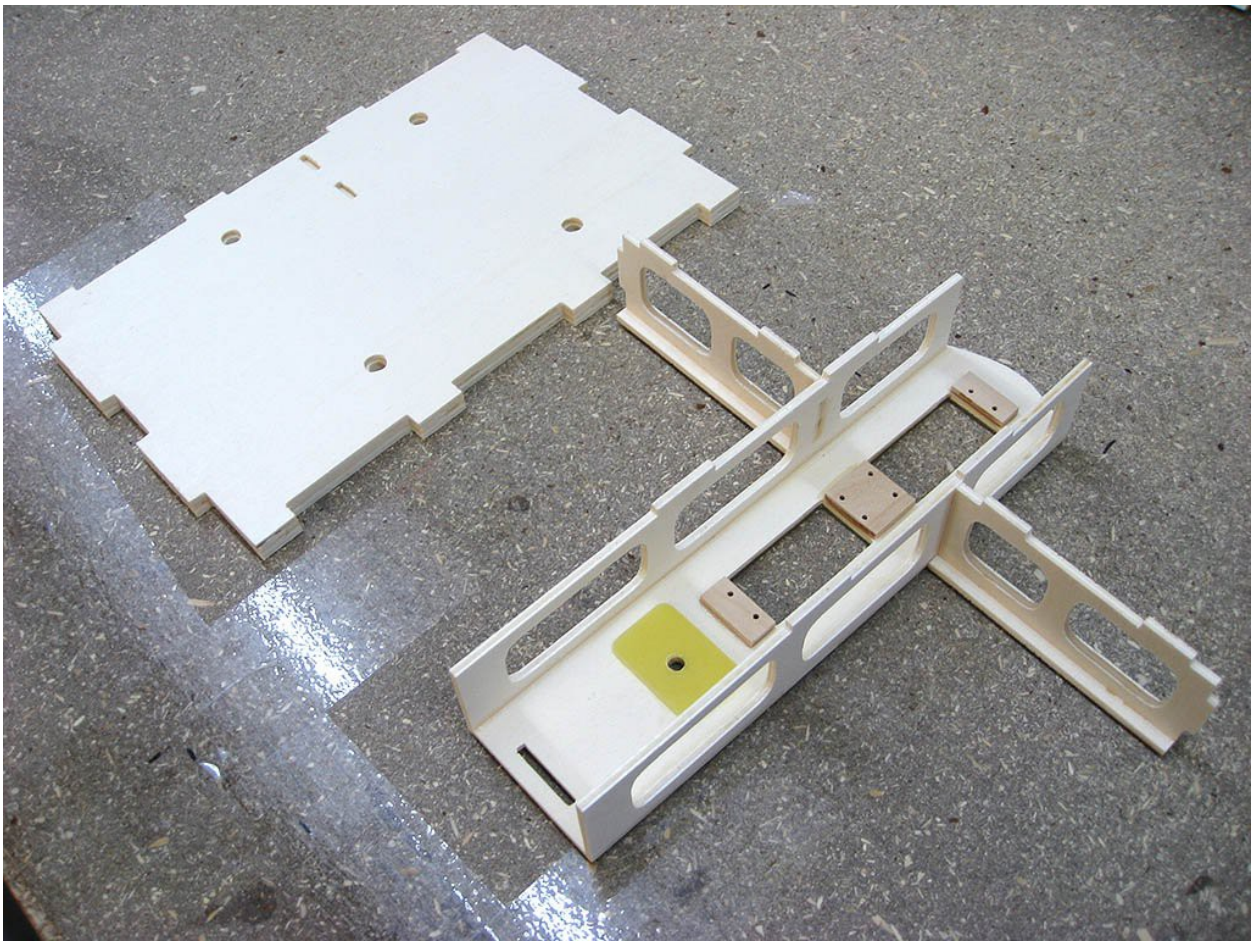
Compared to the original version, the strips are glued with an overlap, which is adapted to the bulkhead of the fuselage, which is glued to this place. The original guide rails without overlap was the site of the fuselage quarry. In addition to the overhangs of the rails, the upper part of the fuselage and both front sidewalls were reinforced at this point. On the strips glued in front of the fuselage, it is necessary to bevel before gluing. The moldings are also glued to the bottom of the fuselage, but here only glued in the back.



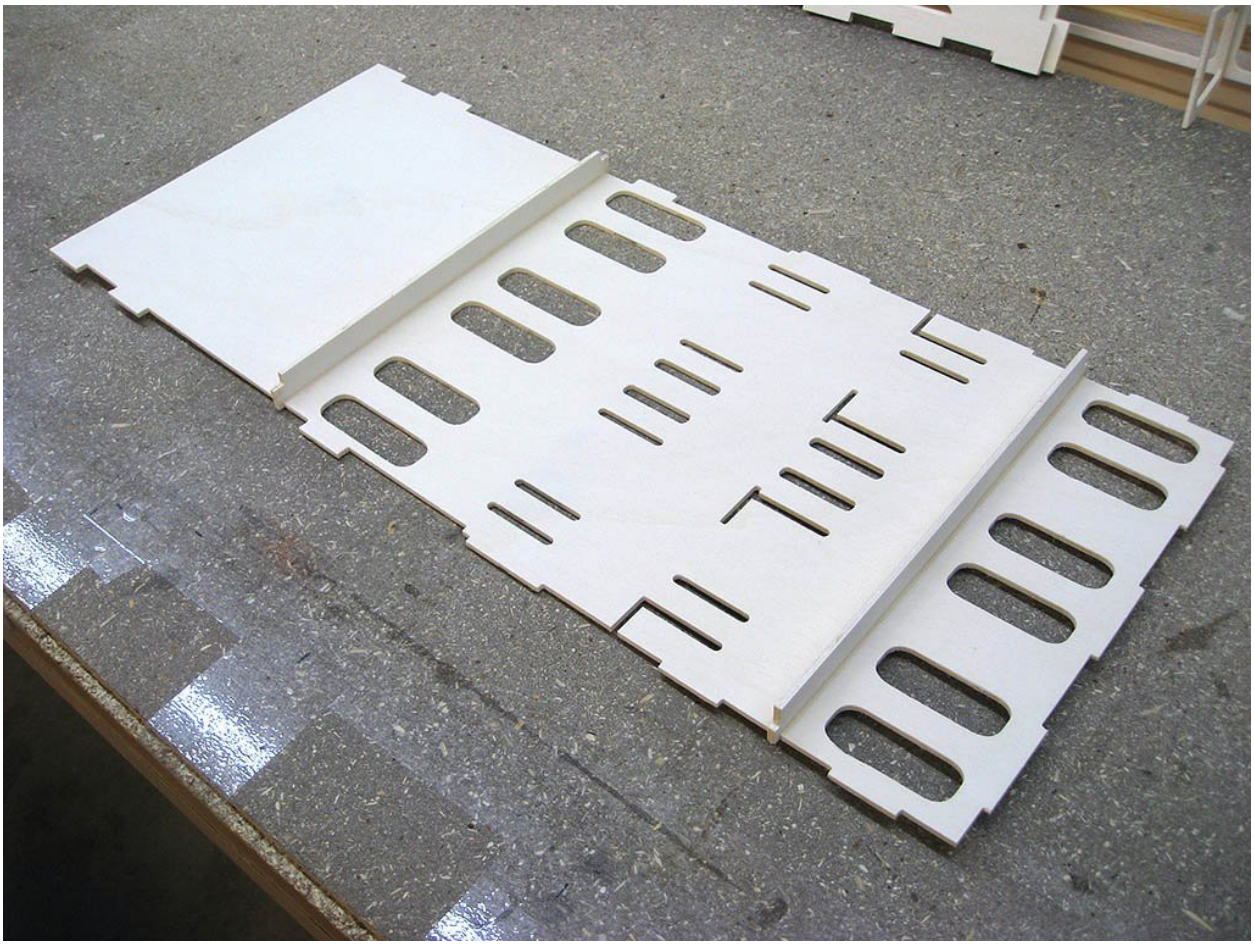
The photo shows the gluing of the sidewall from two parts. The sidewall is further reinforced by doubling in the front and triple-ply plywood in place of the undercarriage plate. Further doubling is at the wing of the wing, tripling at the wing of the wing. On the other side of the side there is a profile for gluing the wing shaft.



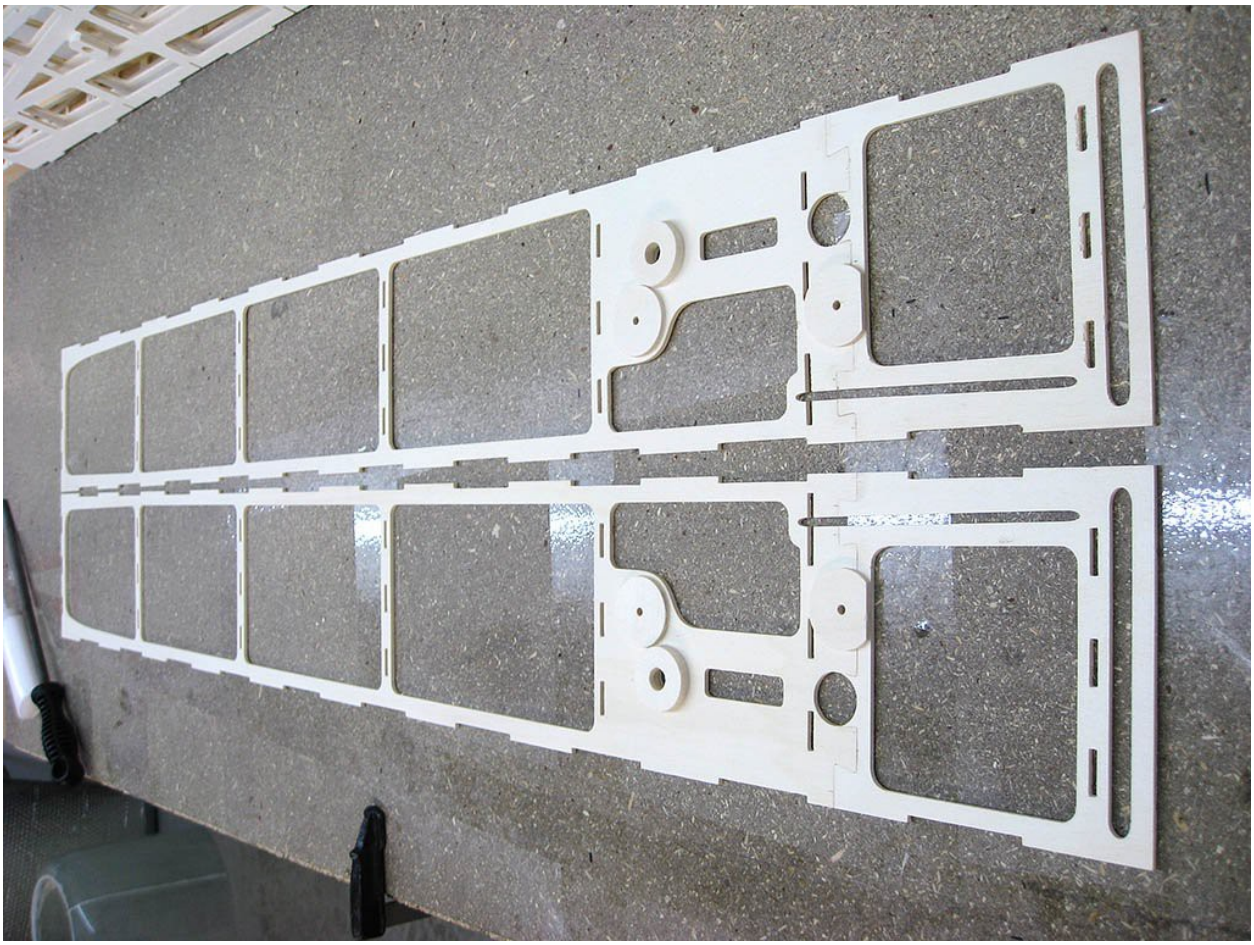
The undercarriage plate is glued from poplar and aviation plywood, the spur board is newly made of aviation plywood including reinforcements for jam nuts. The servo and rocker arm for the SOP is now taller and the side arms are glued as part of it. At the place of the servo and the rocker arm, the house is reinforced with glass fiber, which greatly increases its strength. The house is glued with Perfect G and fiberglass reinforcements for 30 minutes with epoxy.



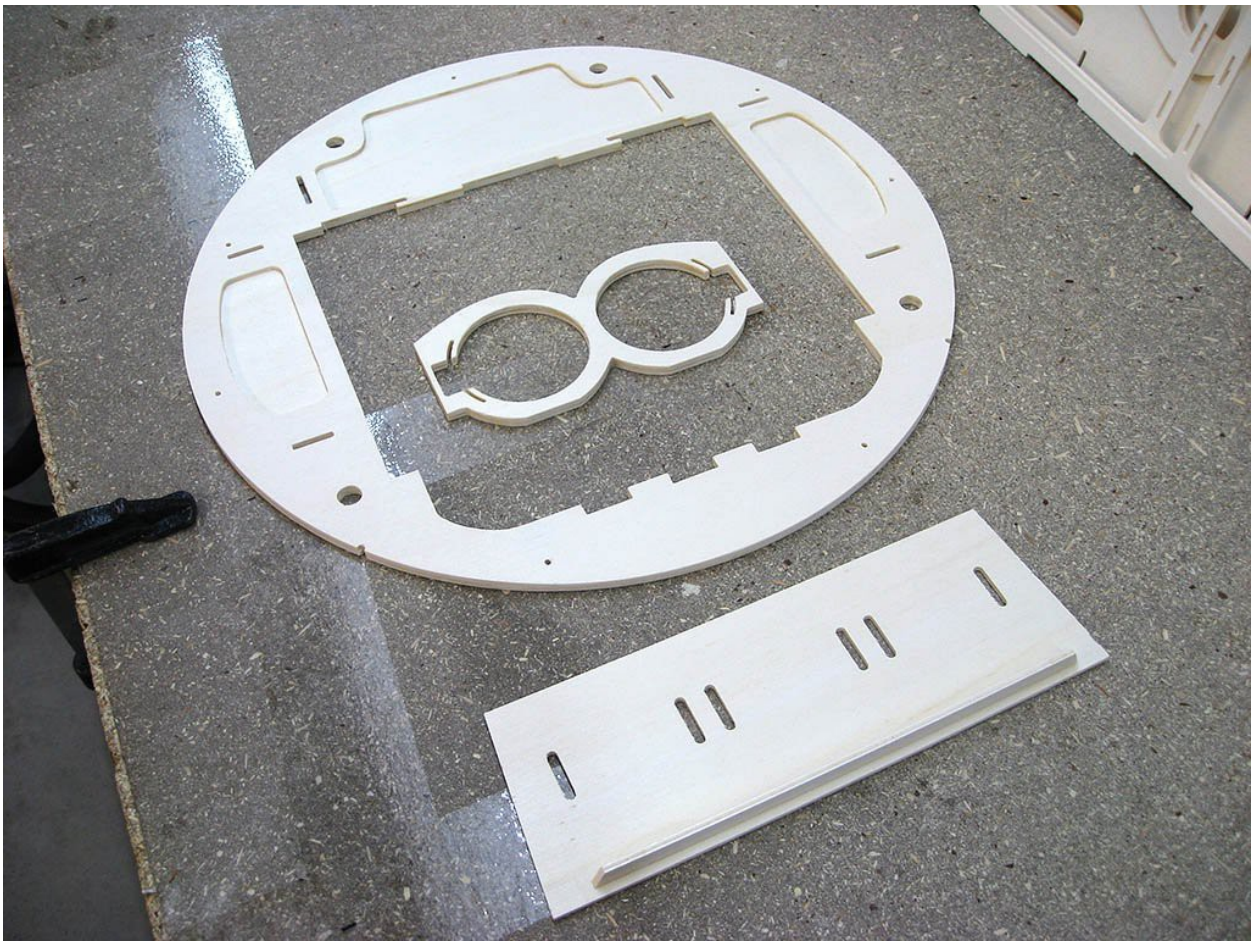
On the other side are glued plywood from aircraft plywood for servos screws and glued another reinforcement of glass fiber for the bolt and rocker arm. The front panel of the motorbox is newly made entirely of poplar plywood, with Letoxit glued from 3 layers. Dents are not a problem if distances or pads of sufficient diameter are used and the jam nuts are on sufficiently large plywood plywood.



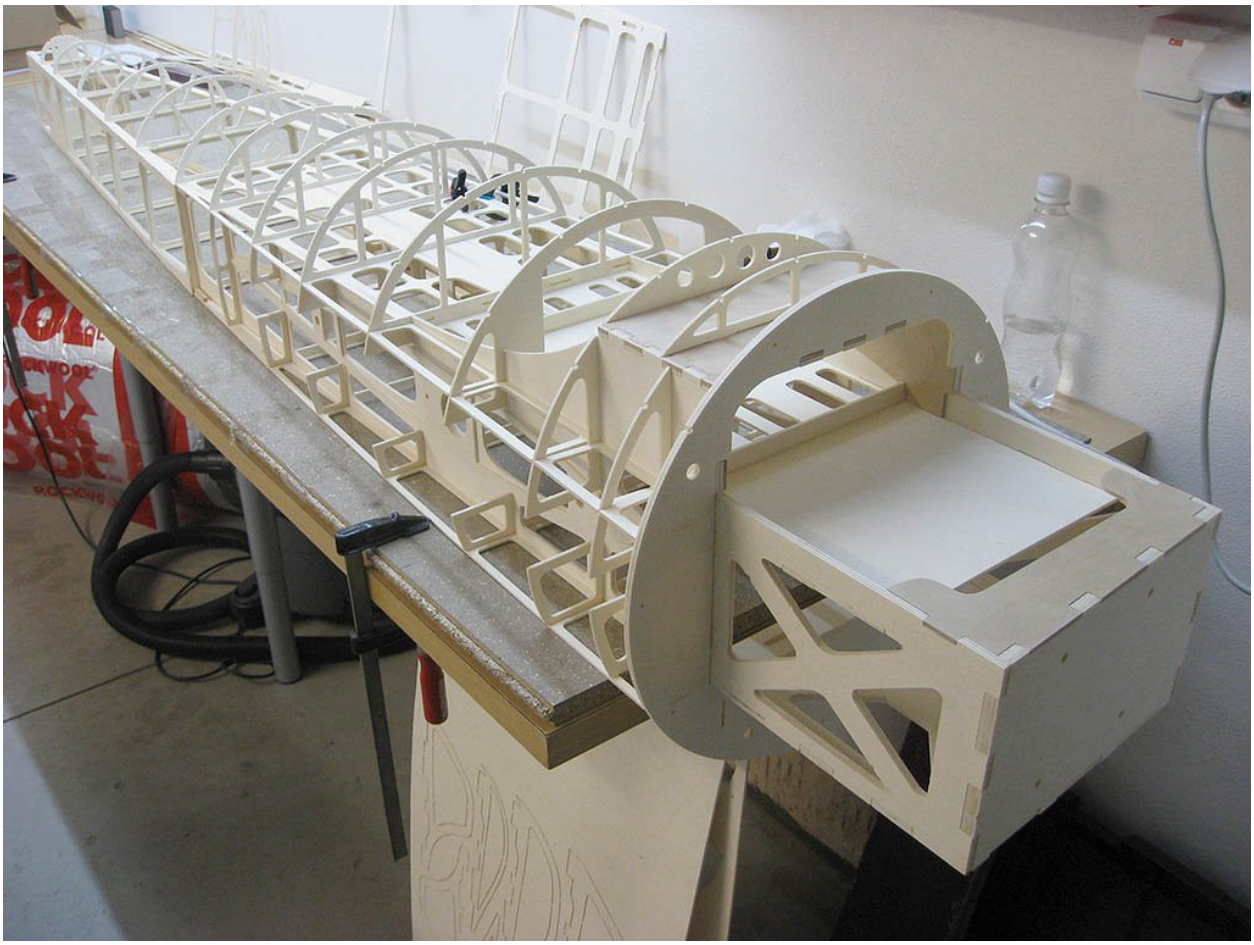
In version 2, the front part of the fuselage floor is completely redesigned, including the corresponding sidewall section, and is simpler and more dimensioned. The preparation of this part of the floor is glued by two transverse stiffeners, one longer and one shorter. Standard angular tanks are mounted on this floor using Velcro fasteners through the pre-prepared holes. At the rear, there is a place for mounting the pump of the smoking mixture under the wing of the wing, essentially at the center of gravity of the model. There are no glued plywood screws yet.



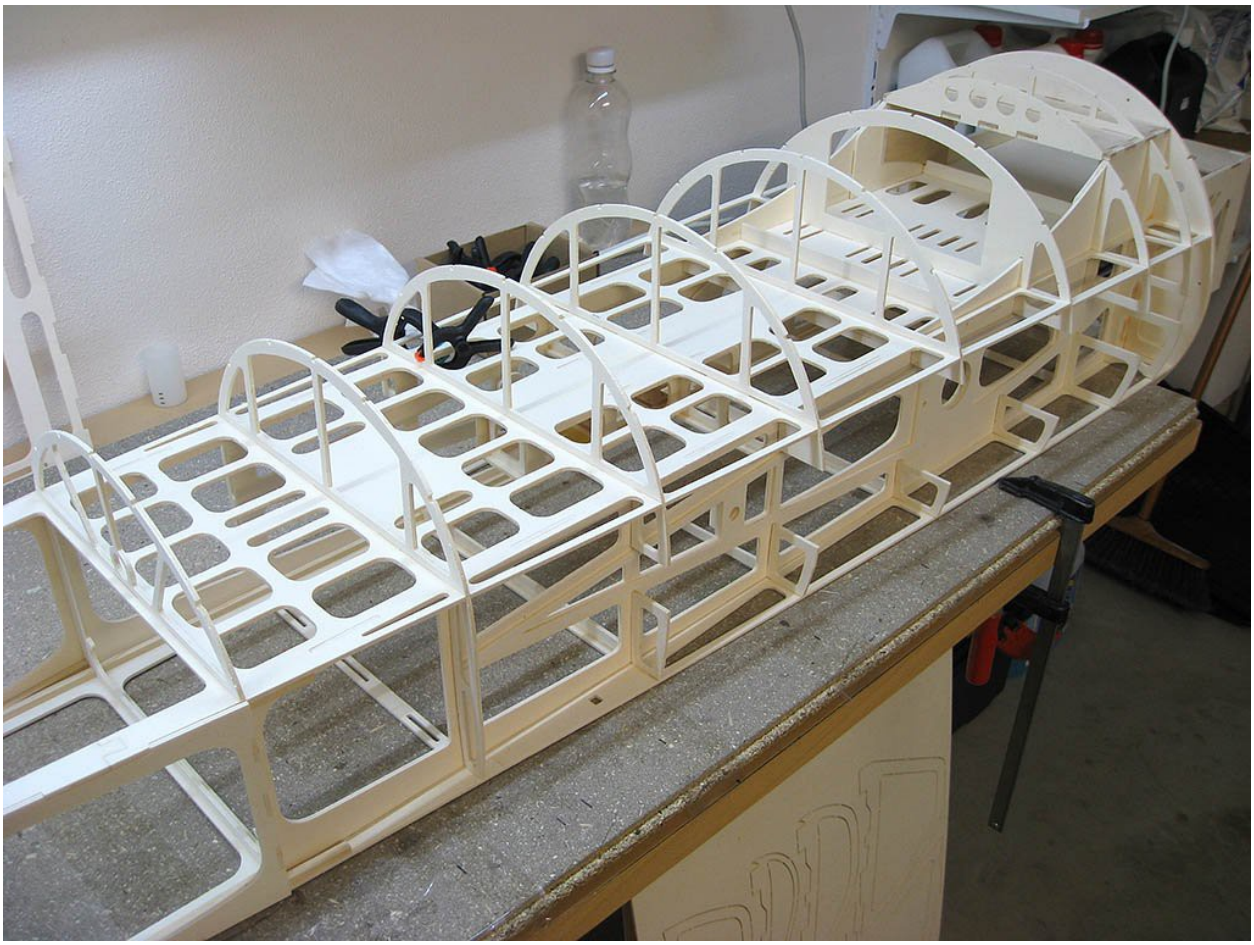
In the case of the rear side panels, besides gluing them together, only the reinforcement for the locking nuts of the GTC and the reinforcement for the safety pipe of the GTC are necessary. This pipe is not perpendicular to the sidewall, it is parallel to the GTC main pipe. When gluing it is then advisable to use the tube for their correct alignment.



These parts are not immediately necessary for bonding the fuselage, but I did their preparation together with other parts. The main partition for fixing the hull and the tuned bracket are glued again with Letoxit. The battery plate for fastening with Velcro is only transverse reinforced.

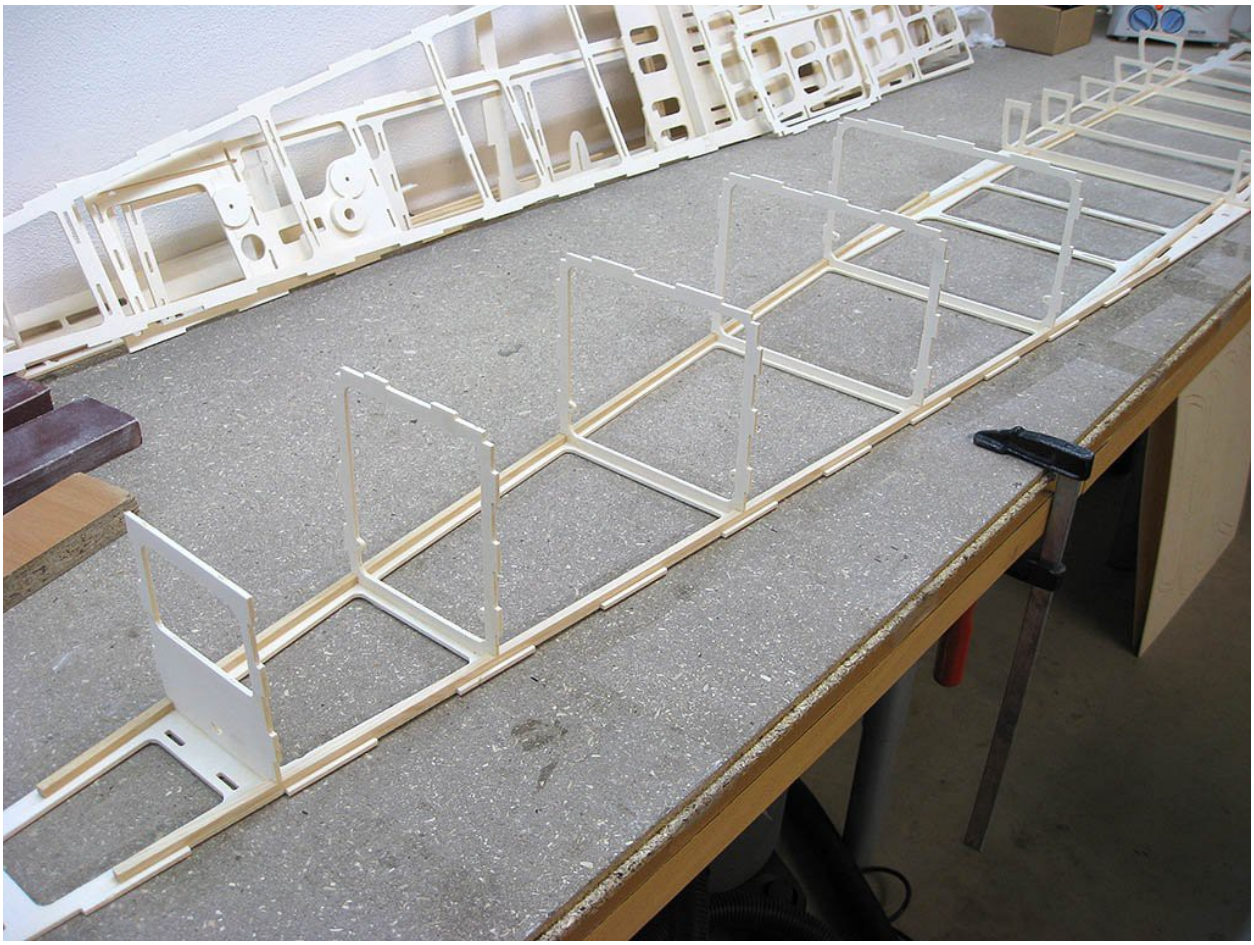


Before bonding, it is necessary to fold the hull for the test to verify that all parts are in order and fit together. The fuselage cutouts are inspected and repaired, except for fine tuning of some latches with a needle file, it is not necessary to reach the cutouts except for the overall grinding. The exception is the engine plate, which must be slightly sagged at an offset of 3 degrees to fit exactly.

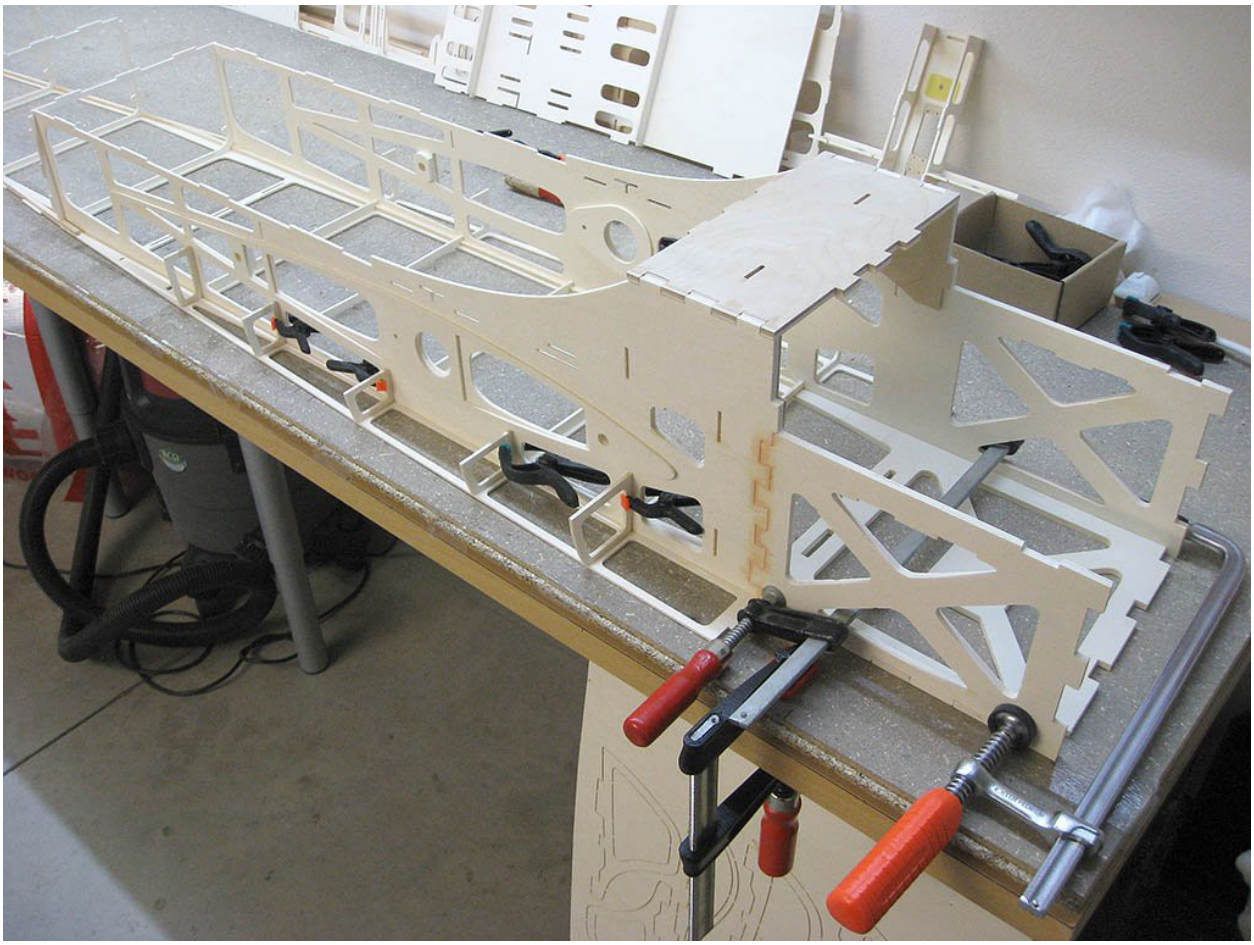


Wooden lego ...

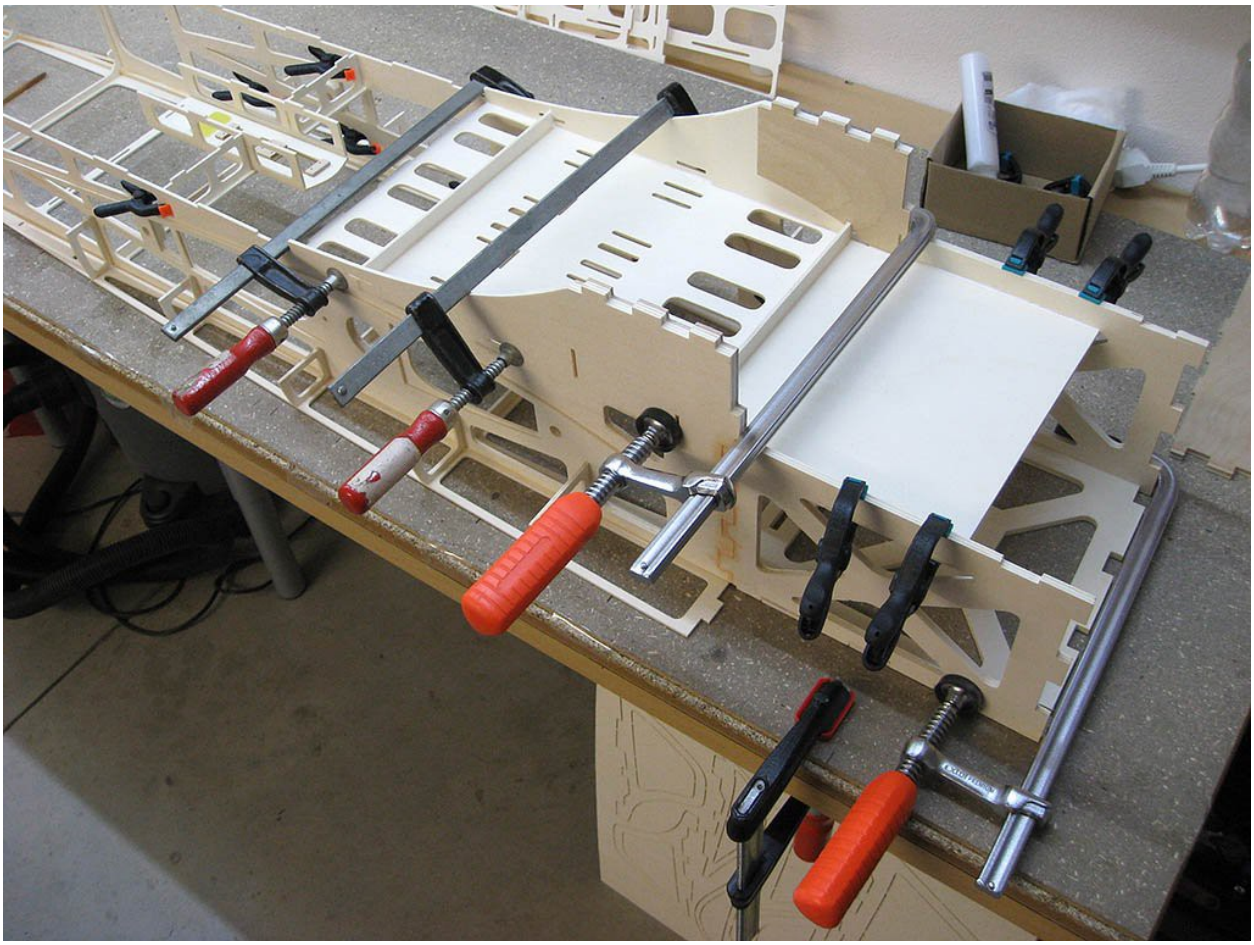
Missing the main tail rudder, which is the last hull bulkhead and support for the spur. These parts are glued additionally, but before the rear side panels are sealed. They stick as the last crucial part of the fuselage.



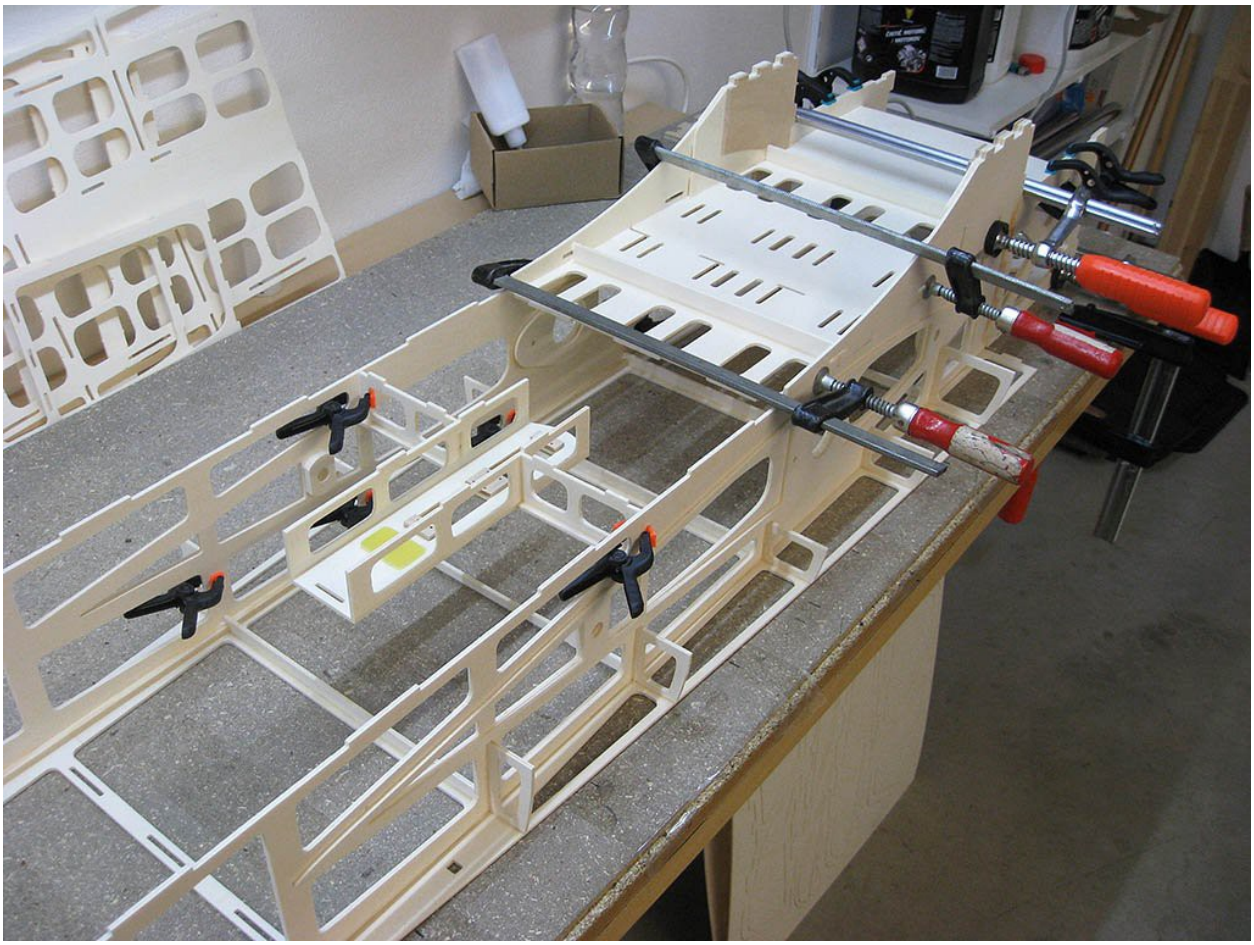
There is nothing to add here, the bulkheads simply stick and there is no harm to burden them with something. The parts must always be pushed together so that they are fully engaged. Unless otherwise stated, PerfectG dispersion is used.



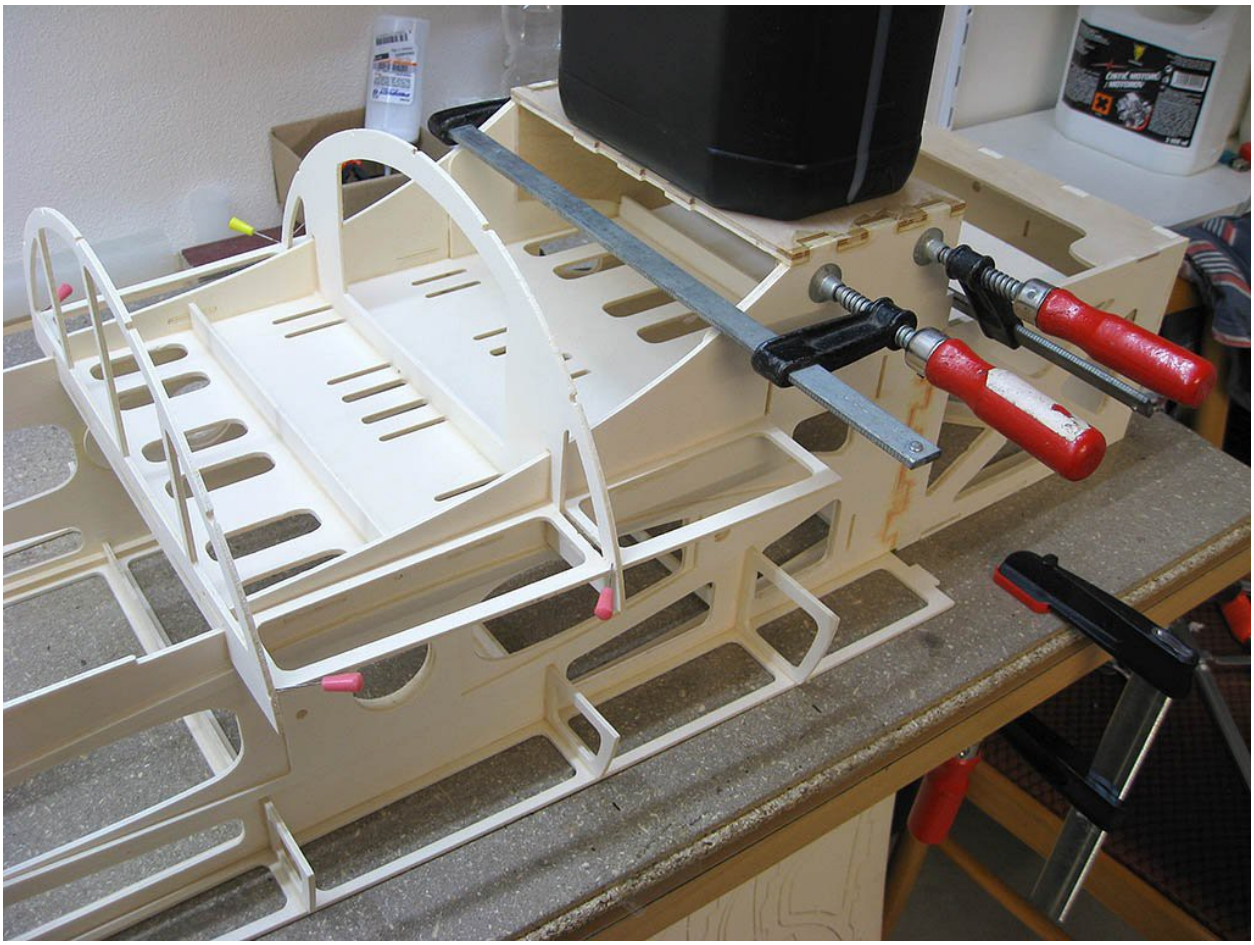
This is the first pretty critical point. It glues a lot at once, so it wants to go fast so the glue doesn't stick too soon. Time is for gluing only one sidewall, the other just keeps the shape together with the undercarriage plate. It is a good idea to test in advance without glue the places that need to be pressed with a pin or a puller, there is no time for gluing to experiment. In addition to perfectly fitting the side rails and half-baffles, the sidewall must be properly pushed from the top to make it fully seat. Finally, the motorbox will download, you need to use enough glue and save it well. The tape on the table separates, so it does not stick anywhere. After the adhesive has dried, it is possible to glue the other side plate in the same way.



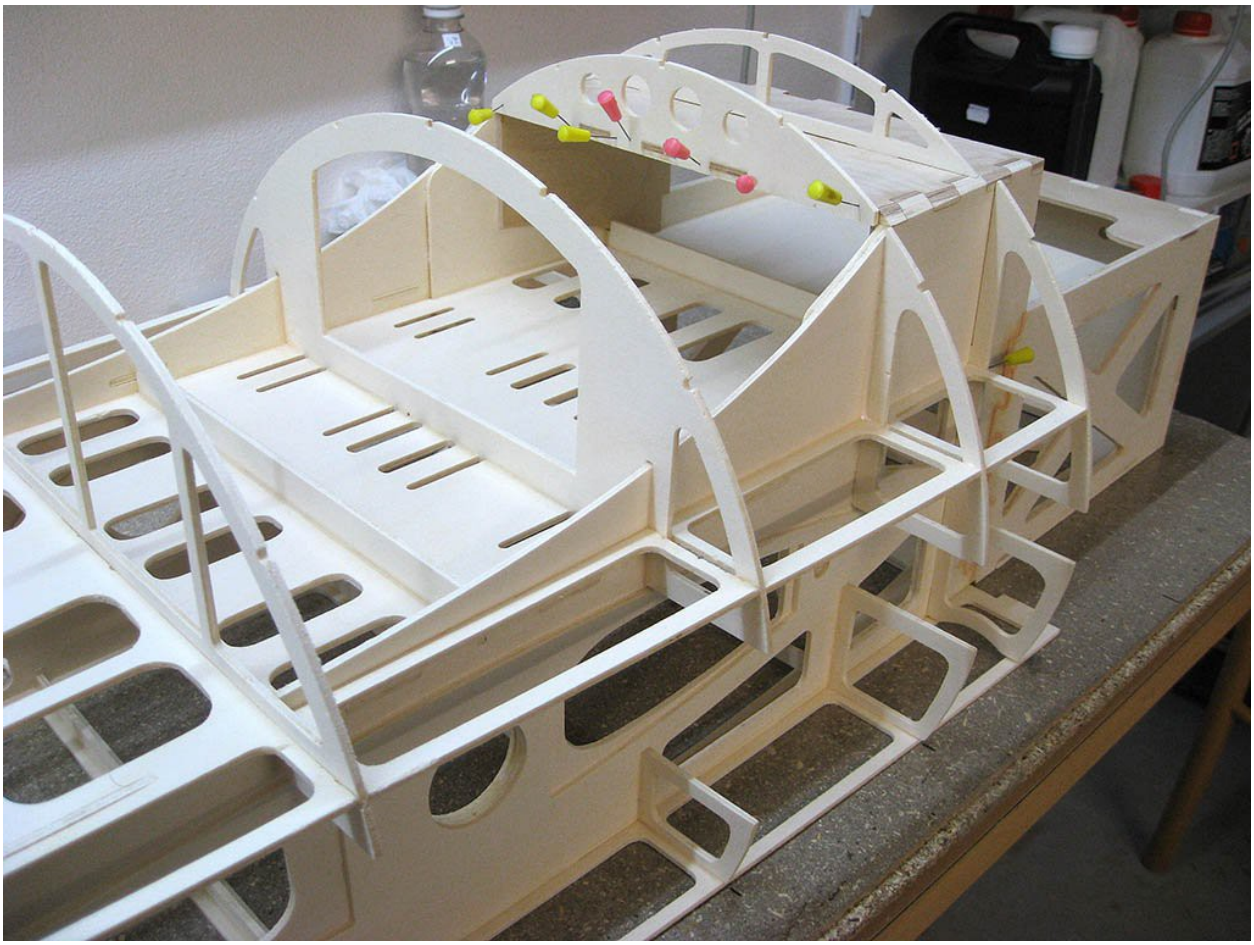
The plate above the exhausts may stick before the other sidewall completely solidifies. Again, a lot of joints are glued, it is necessary to proceed quickly. The adhesive is applied only to the side walls on all contact surfaces and to the latches, which are enough. The side plates are then pulled apart and the plate is slid into place. Apply glue to all corners so that this other key part holds well.



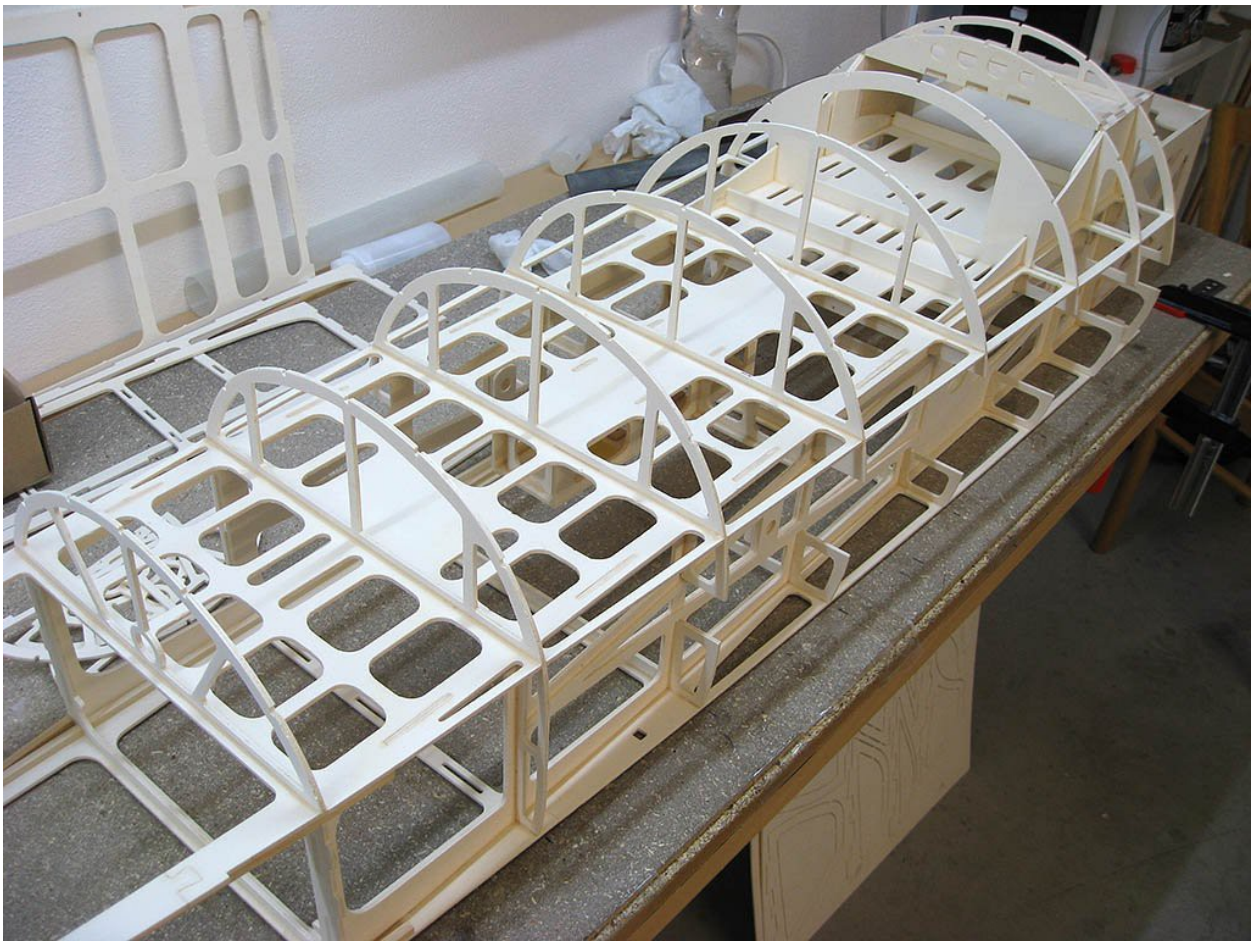
The house adds extra strength in the middle of the fuselage. It sticks again after the side walls are sneered. It goes well even if the plate above the exhausts is tightened with clamps.



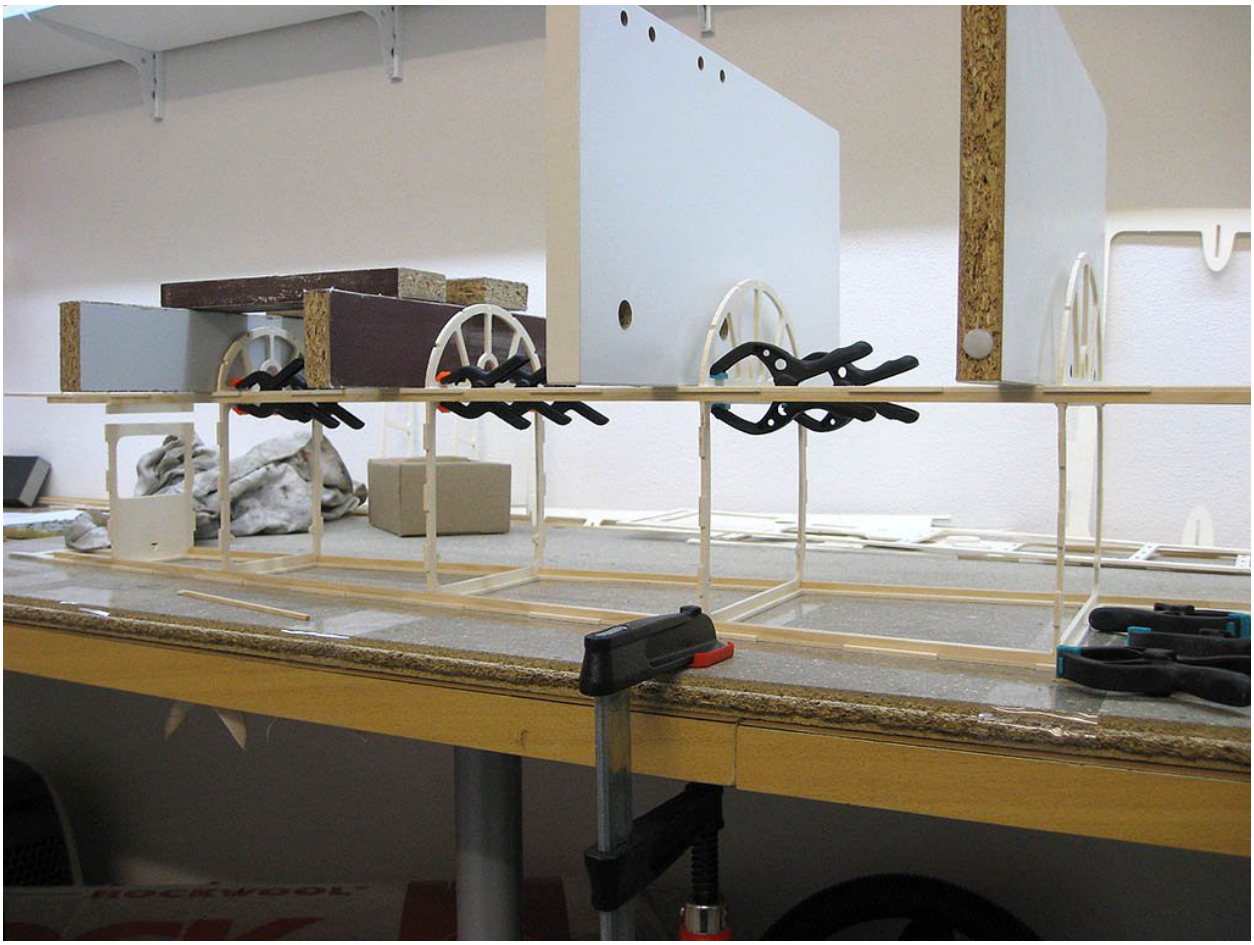
Transition half-wall is glued to the end of the plate above the exhausts. Later, the lower part (floor) of the fuselage is glued into it from the other side. At the same time, it is possible to stick a half-partition, which in case of using classic mufflers serves for their attachment. There are planned tuned dampers, so the half-wall is through. It is also possible to glue the undercarriage plate, which is glued for 30 minutes with epoxy. Once again, the adhesive must be thoroughly applied, loaded and clamped. Once the semi-bulkheads have solidified, they can stick to the sides of the liner to guide the later balsa hull cover, there are guide grooves for the liners in the side, but they are glued butt to the ribs, in this case it is quite enough.



After the epoxy has dried, the undercarriage plate is sanded according to the parts of the rounded bulkheads so that it does not protrude through the bulkhead ring. The sanding rate is the largest at the rear, the board is unground at the front. After salvation, two partial bulkheads are glued to the undercarriage plate, a total of four partial bulkheads to the sidewalls, and finally an inlay is glued between them. I have forgotten the latches on this pad, it is sticky. The last double partition that holds the cowling is glued as the very last vital part of the hull.

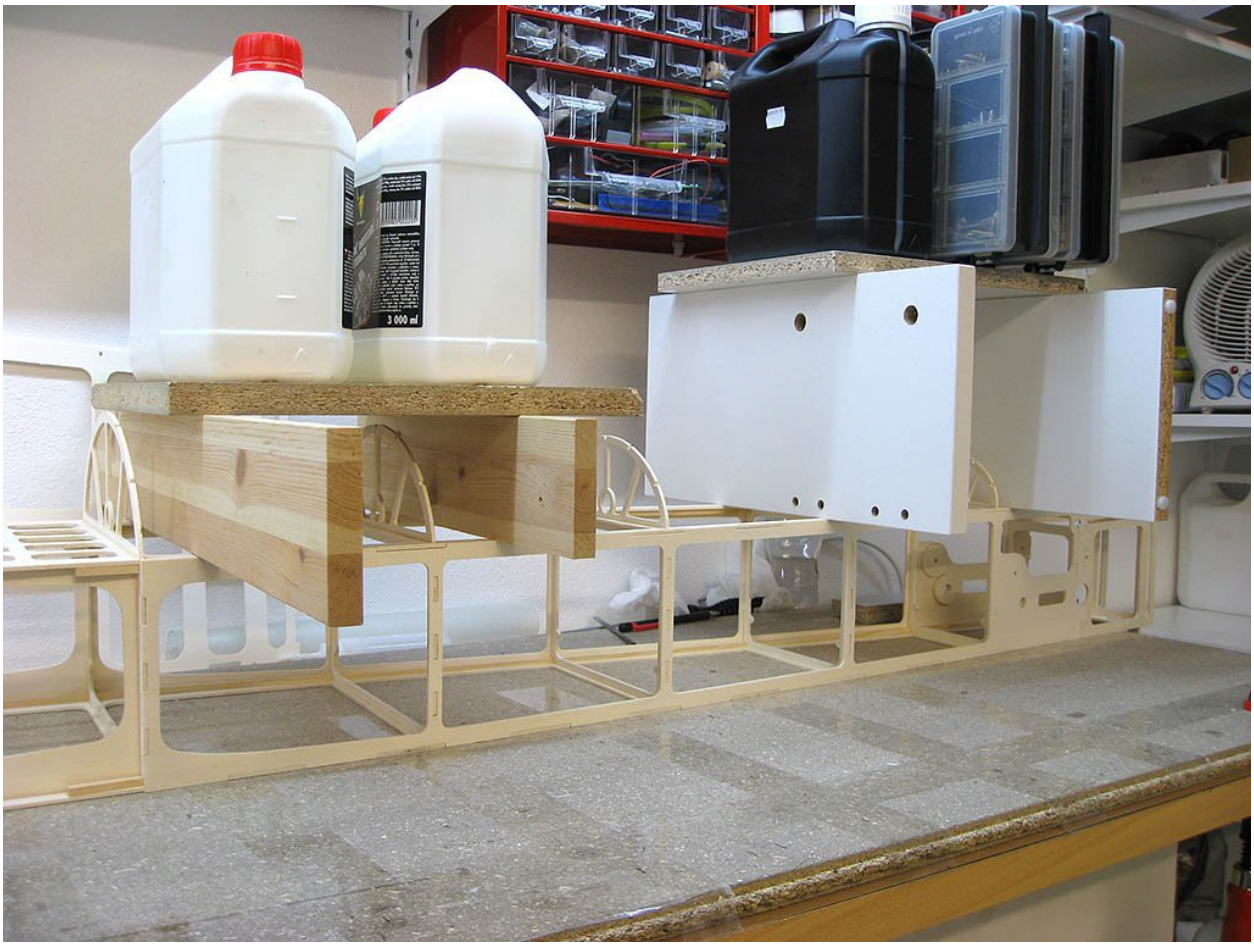


Another not very easy stage, this gluing will give almost an hour. He puts the most time to apply the glue to the joints and to all the corners, and these are blessed here. Some of the corners are inside the hull, some outside, with the hull rotating to get everywhere. To begin with, apply adhesive to the contact surfaces of the side walls, the first square partition, the transition partition (between the floor and the plate above the exhaust) and the rudder servo house. The floor is slid at an angle into the transition partition and only then slid onto the side walls, the square partition and the house into the latches. The floor must be pressed firmly so that it is fully seated in all places. Subsequently, all corners are filled with glue. Subsequently, in places outside the half-wall, the floor is grabbed with a few pins to make sure that everything fits everywhere. Before the glue starts to solidify, the half-baffles are gradually glued, after inserting the partition with the applied glue, the corners are filled and the pins are tightened again. The first half-baffle retracts to the shoulders of the rudder servo house, the other is at the same time bracing the rudder shack, retracts to the floor, the next half-baffle fits into the upper fuselage and retracts to both the sides and the floor. In the free space of the floor it is good to load it even more so that the fuselage rests on the table. When it's done, it looks like the picture. This part of the structure is now very strong thanks to the multiple interconnections.

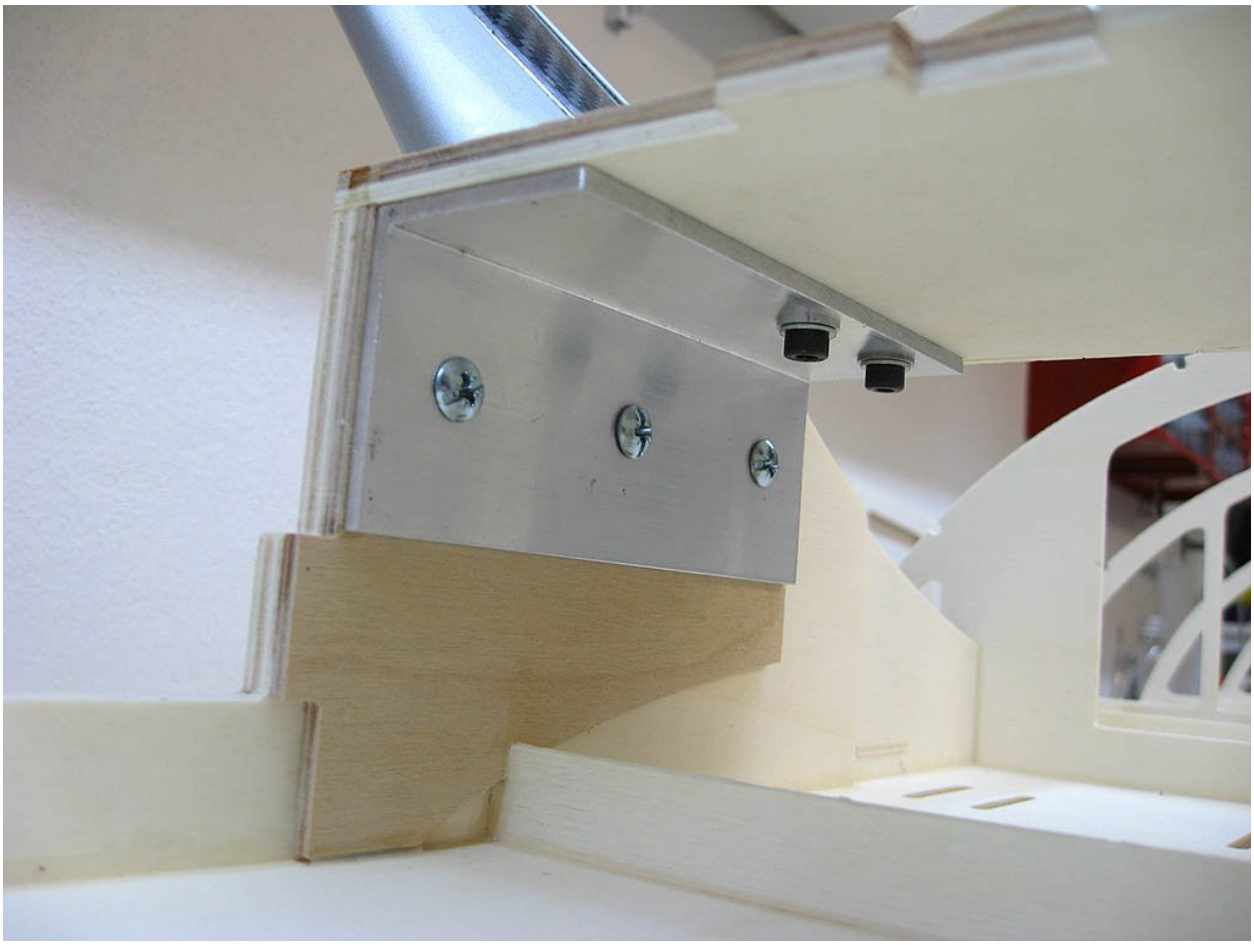


When the glue has dried after gluing the front of the floor, the back of the floor is glued together with the half-baffles. This goes fast. In the photo you can see how the pins pull the bulkheads together and the pieces of laminate, and here the grinding plates in some places burden the structure to lie on the table.

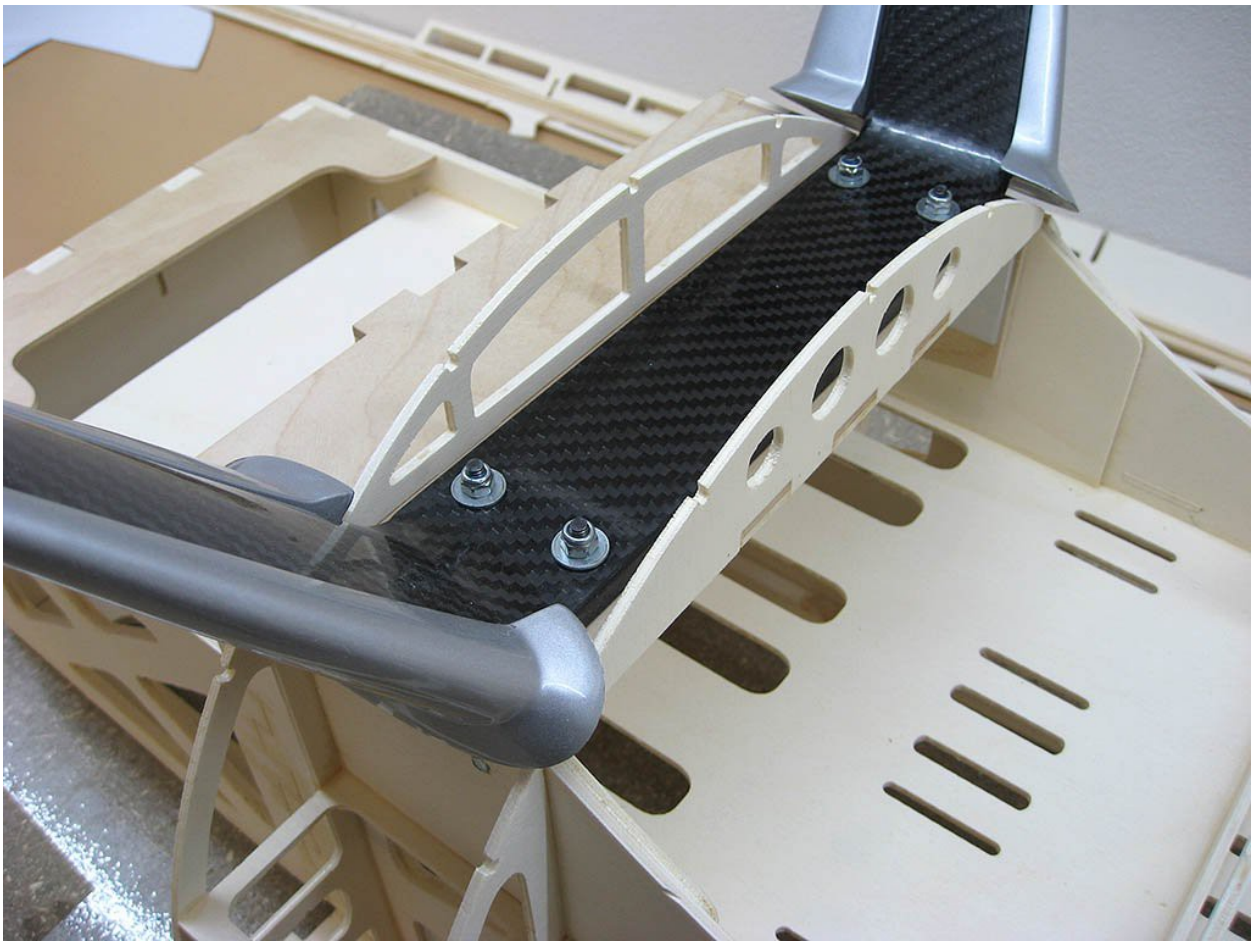
From now on, the hull must be put so that the web extends beyond the edge of the table and be careful that there is ...



I dried in advance how to load the structure to confidently fit on the mat and then the rear fuselage was straight. A total of about 12 kg is loaded there. I recommend gluing the sidewalls gradually, first one is glued and the other just keeps the shape, then the other glue. There are a lot of contact pads and apart from loading it is good to pull the pins after filling the corners of the joint.



Here it is done just like the original version. Three furniture screws with small thread pitch, chassis is caught by nuts. The screws are screwed on and locked with Loctite in the M4 fixing nuts after coating. This has worked great and there is no reason to change it. This arrangement then allows assembly and disassembly of the chassis only with the socket wrench on the chassis side.

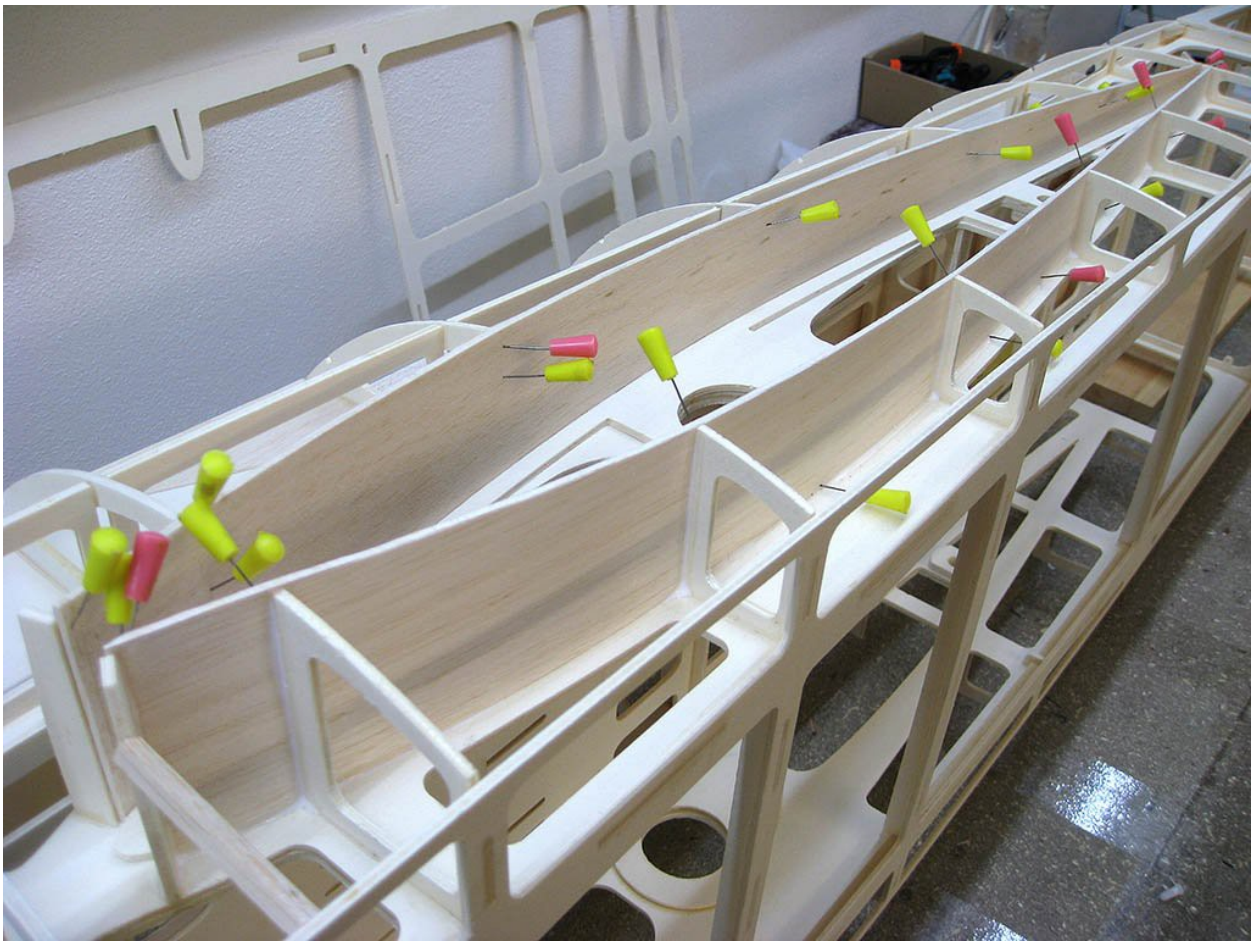


And this is how it looks from the chassis side.

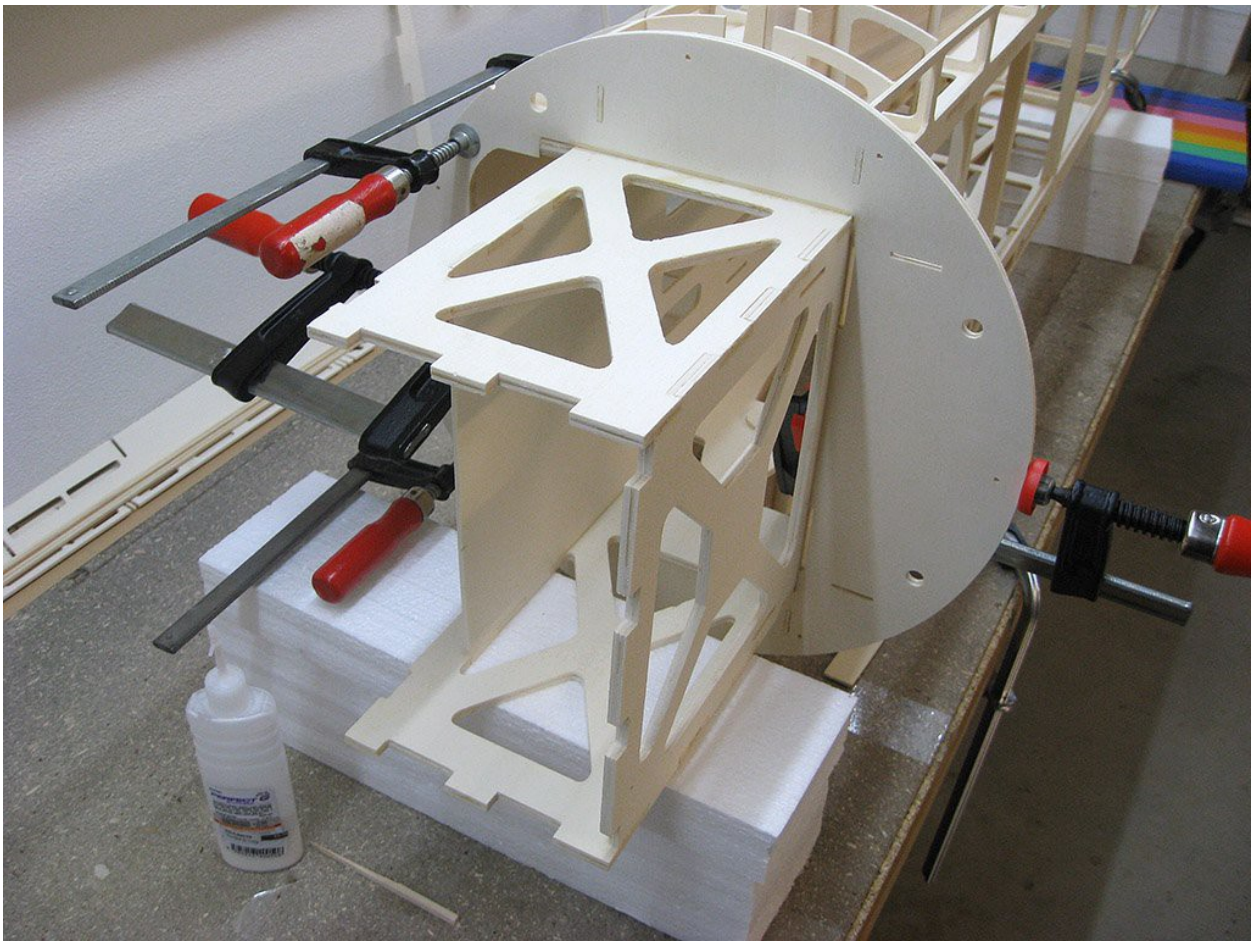
Just motivational photo ...

First, an auxiliary half-partition made of 2 mm balsa board is glued butt, after drying it is ground to the shape of other half-walls. Then the board of maximum height is glued inside the future tunnel to the half-baffles. It glues with the middle CA gradually from the first bulkhead, always checking whether the board is resting on the bottom and then presses. Before gluing the floor of the shaft, the plywood of 3 mm aviation plywood is glued for future attachment of the smoke mixture pump.

The floor is glued gradually from two boards of 2 mm balsa. One board is adjusted to the width between the sidewall and the tunnel struts. It is glued by dispersion to the bulkheads, then the pins are precisely positioned on the sides and gently shed through the thin CA. The second board is wider by the width of the struts and has notches at the struts. The dispersion is again placed on the partitions and also on the edge of the opposite board. The cutting board must be fitted so that it fits beautifully everywhere, the cutting boards are set against each other before the dispersion solidifies, they stick to the side and the back board as well as the first cutting board, ie thin CA. Finally, the tunnel must be closed in front to prevent heat from entering the hull. The balsa cuts complement the shape to the future coating.

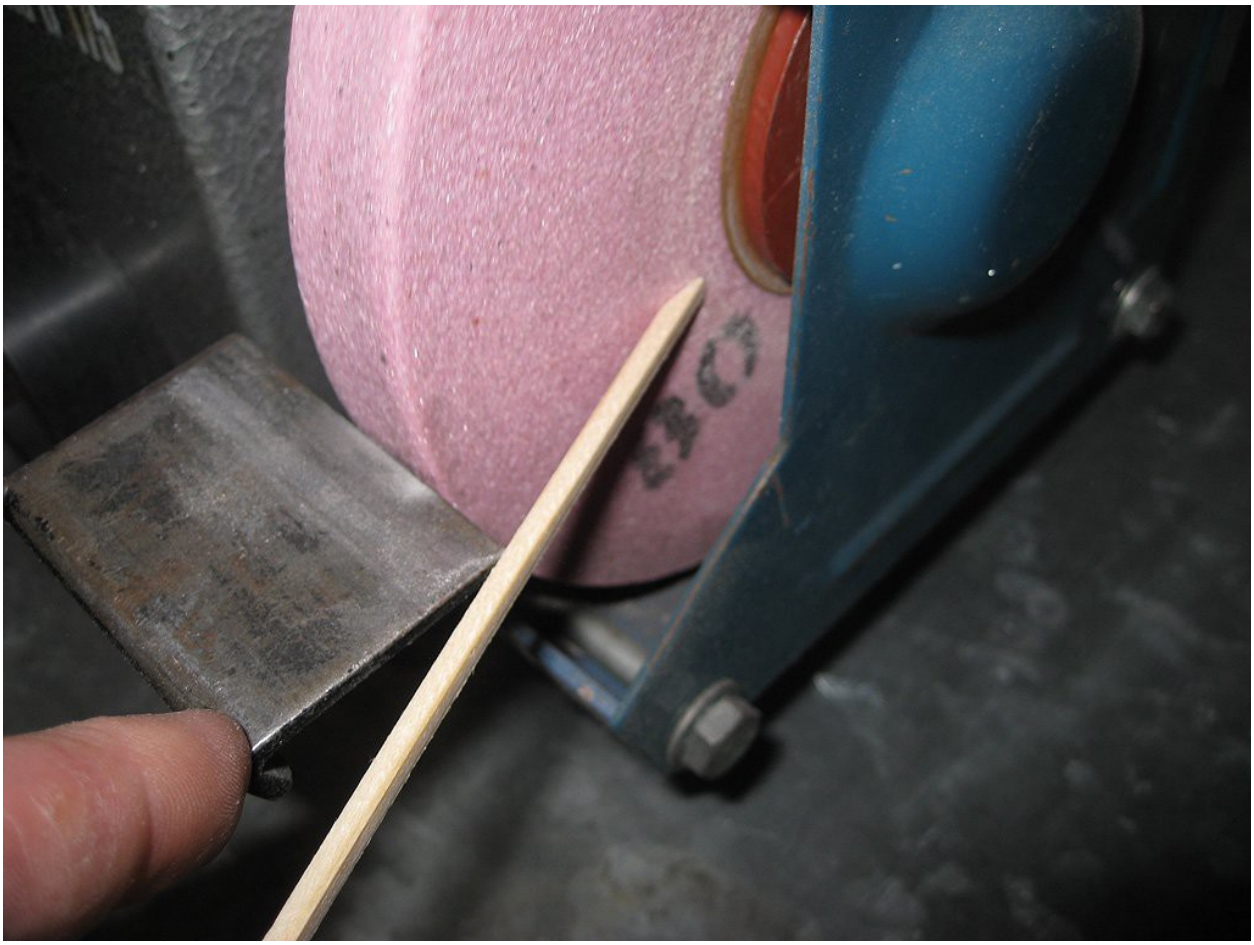


There is nothing new to the original version. First the board struts are glued at the place of the rounding in the front part of the profile, leaving a 2 mm gap. Subsequently, the cutting boards of the shafts are cut with minimal overlap and fitting with the bulkheads. And then it gets stuck with a dispersion ... this fun, during which both shafts are created, takes about 2 hours to say.

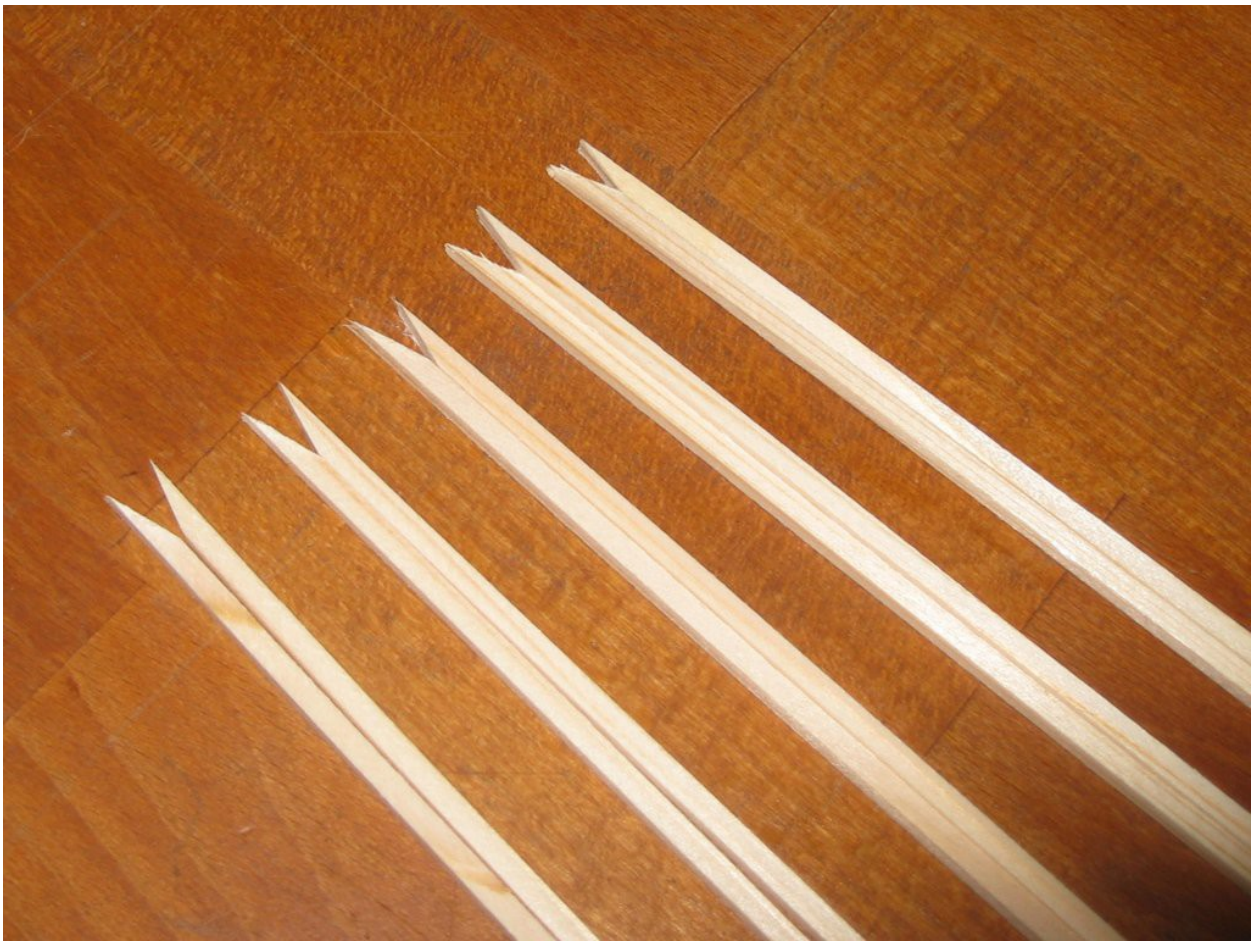


For this it is necessary to prepare the pads on which the entire next procedure of bonding the hull will be laid. I cut them out of 100 and 40 mm PS, a total of three washers. First, small inserts are glued to the bulkhead at the sides towards the tail, which then glues the whole to the sides and to the next fuselage bulkhead. After the inserts have faded, it is necessary to apply enough glue to the fuselage at the bonding point, the front bulkhead keeps the shape of the motorbox and thus the entire fuselage in the front part. The bulkhead is slid onto the motorbox and then sloped at the top of the fuselage at the same time as the top of the motorbox is squeezed into place. On the other hand, it is only then pressed onto the undercarriage plate. When the corners are sufficiently filled with glue, the pullers pull first the top of the motorbox to the bulkhead, then to both side panels and finally to the undercarriage plate. At the same time, two struts can be glued between the top of the motorbox and the bulkhead, so far I have not glued them to not bind the pads on which the fuselage now lies.

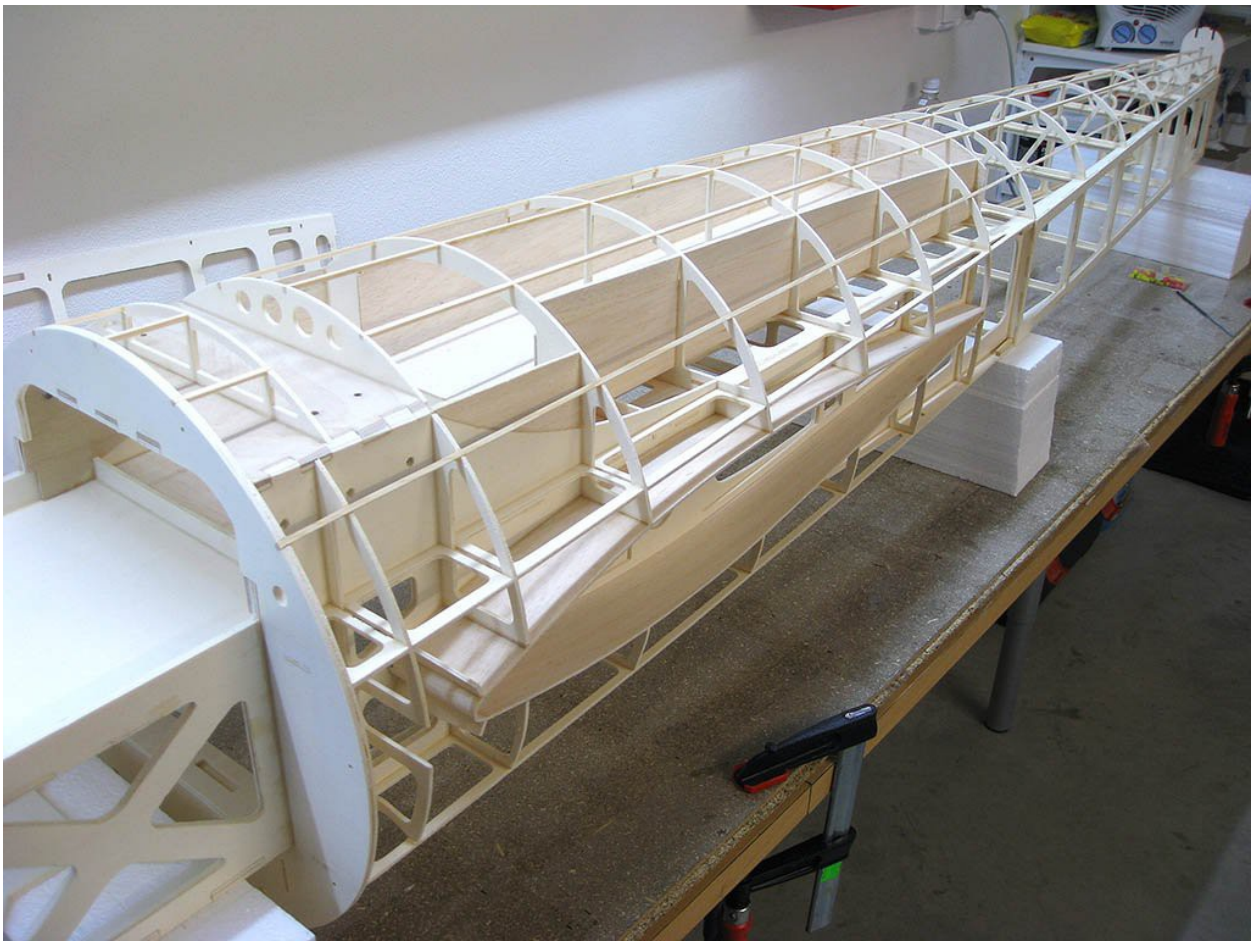
The balsa strip is soaked in water; At the same time I closed the plate above the exhausts with a balsa board.



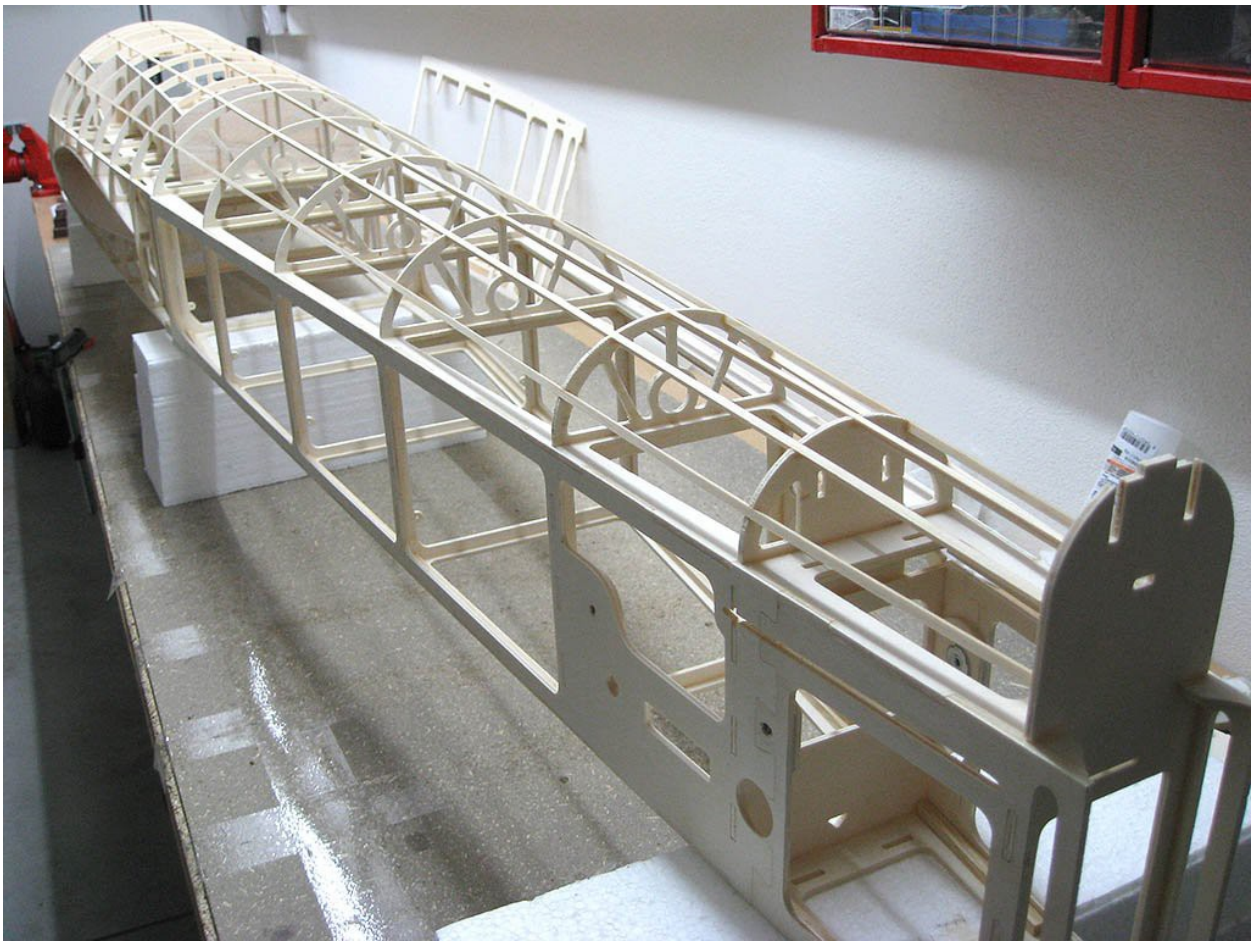
Spruce rails 3x3 mm are first glued in two pieces to cover the entire length of the fuselage, usually 1 m long rails are supplied. I use a grinder and grind as close to the center as possible to get a sharp angle. It is very easy and it is not good to push.



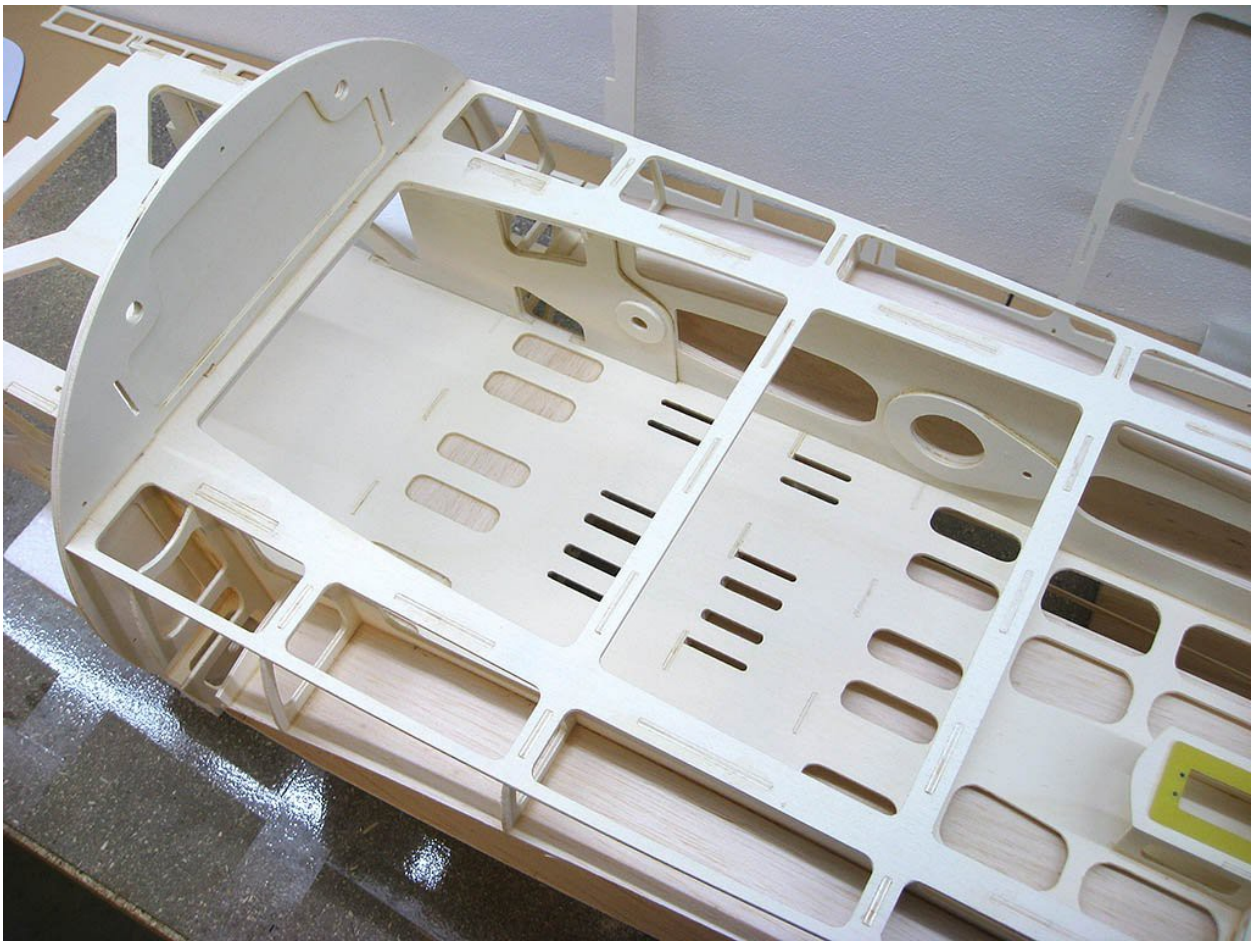
The prepared strips are glued in a separated vise. One bar is fixed to the vice in advance and the other is pressed to the side. The result is a straight and firmly glued bar.



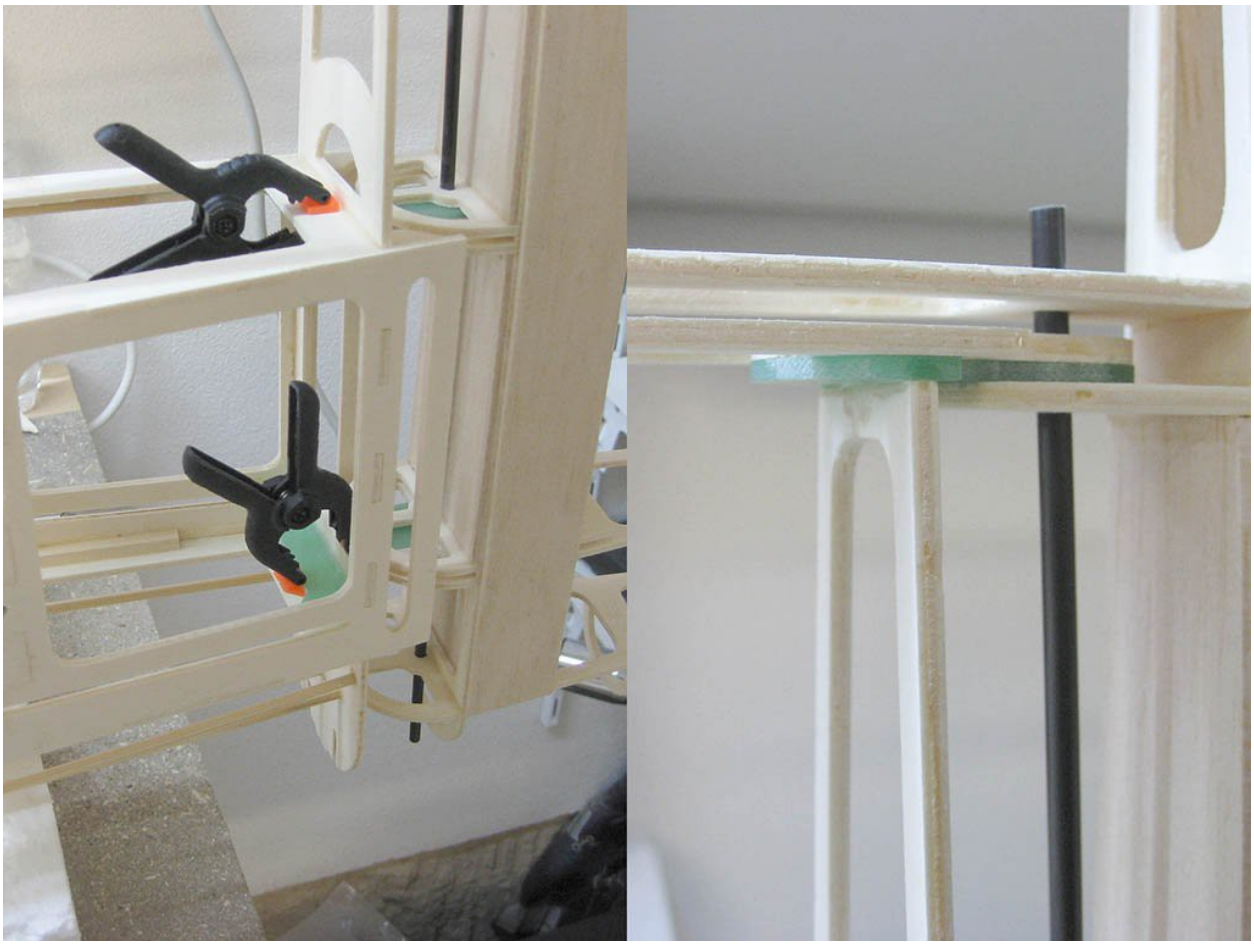
Check the continuity of the baffles before the slats are glued to ensure that the future balsa cover is in contact with the baffles at all points. Simultaneously with this inspection, the wing shafts are also ground into bulkheads. The grooves for the slats must also be polished after sanding. The strips are glued with a dispersion.



In version 2 there are reinforced sidewalls, it is completely flat and solid surface for holding the tanks, which later only lean against the casing of the wing tube behind the wing tube, space is reserved for the pump. The rudder servo house is raised due to the lowered elevator position and hence the cable slots to the rudder lever. The following lightweight part of the floor is used for direct mounting of the distribution board through small gutters (still to be glued) and a space with two narrower relief holes is reserved for mounting the receiver upright for better cooling. Thus, there is no need to make any additional adjustments for the installation. And that's fine.

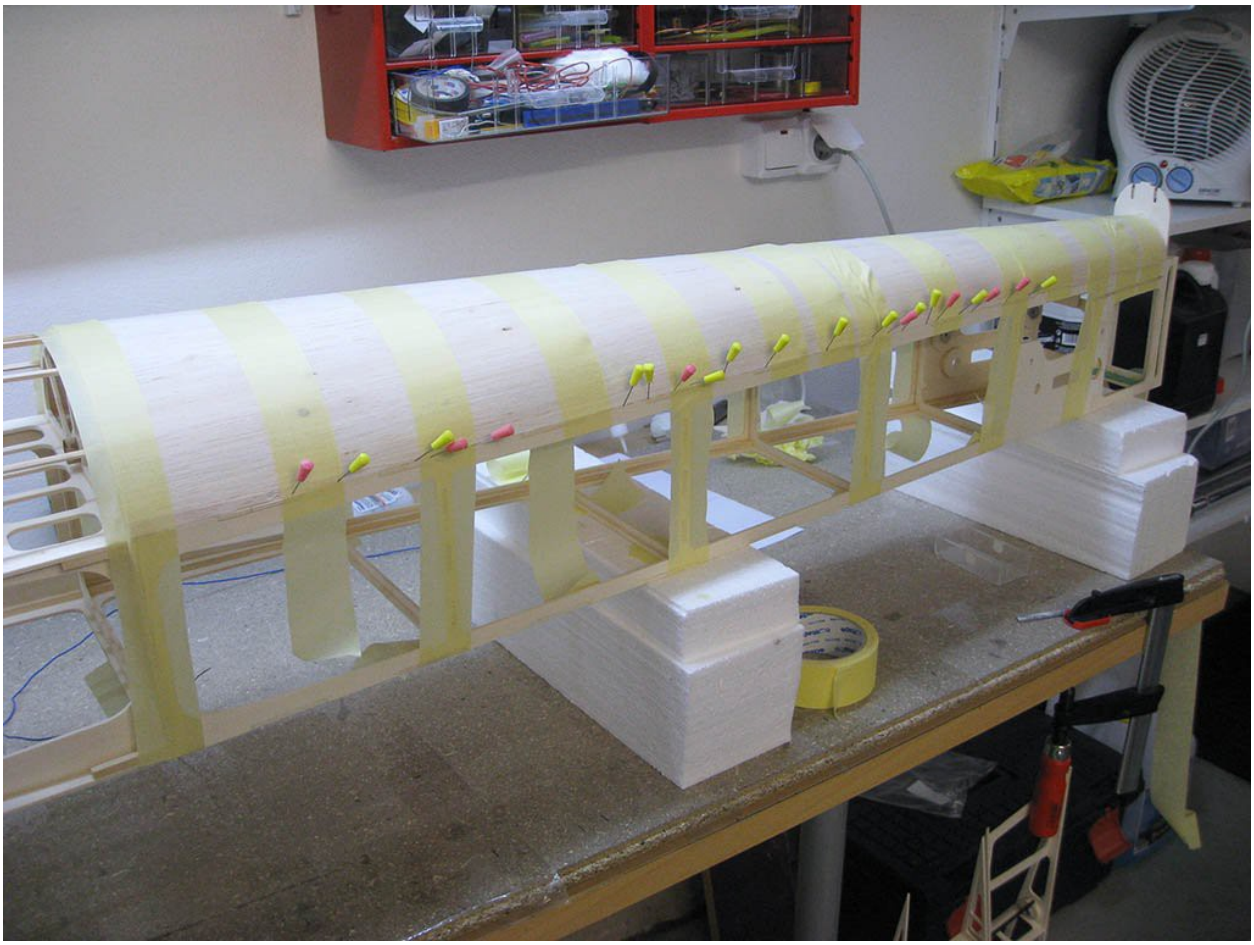


These relief holes must be closed for internal combustion engines to prevent heat from the engine and dampers entering the fuselage. Blinded with a balsa plate. This part is already solid, at the end will be saturated with Letoxit to be resistant to petrol. Compared to the original version, there are also auxiliary partitions at the location of future refueling valves. First, the valve will be better supported, but mainly the original version here had problems with the torso stress in torsion, failed and cracked cover.



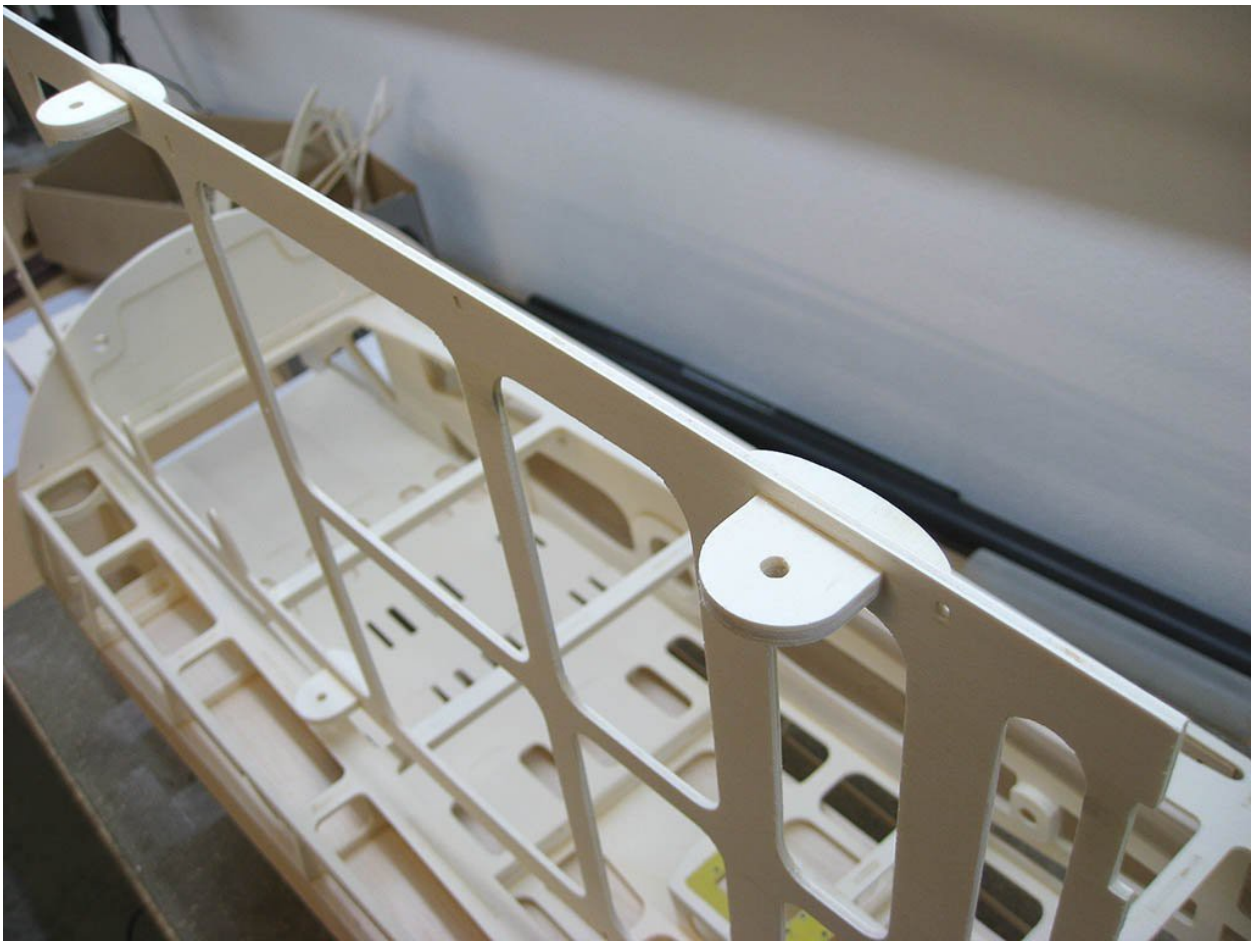
Before coating the rear fuselage, it is advisable to glue the rudder hinges as long as there is good access. The lower two hinges are similar, the shorter one is up. However, both are longer than they would fit into the closed groove between the corresponding items. In the web it is necessary to make a longitudinal hole between the items, I did it with a standard Proxon milling machine with a truncated cone-shaped head, it went without a problem, then the needle file is inserted. Before gluing the hinges, it is good to dry again, whether the rudder fits into place and the tail fin stays straight, it does not bend when the hinges are in place, at the same time the rudder should be as far back as possible. It can be a problem, it can interfere with glue from the previous gluing of the fuselage, it is necessary to clean the corners so that the hinges exactly fit the tail fin. After fitting, all 3 hinges are glued at the same time with epoxy for 30 min. After application of the glue and filling the corners, the rudder is inserted and the guide tube is pulled to ensure the correct position of the hinges. In the photo on the left are two lower hinges, on the right is the third at the top of the fin, the ribs of the fin are not glued yet, just keep the shape.

The lengths of the arc at the beginning and end of the coating are measured, covering from the fuselage end to the bulkhead with the last hole for the paper tube. Leave at least a 5 mm margin on each side. Of the three balsa boards, the middle CA glue is glued over the paper tape. For a more comfortable work, it is a good idea to moisten the cover in advance and attach it to the structure with tape. The next day the cover will have its shape and will be easier to fit with the structure. Salvation is a bit tedious work here, but without it, it is possible to check the traction on each rib, the covering must rest and rest on the sidewalls at the same time. After salvation, the coating is abraded so that it ends approximately halfway through the last half-wall with the opening for the pipe. Adhesives need to apply a large amount, as seen in the photo, the adhesive slows down slowly, here the time is really needed, and also fill any gaps.

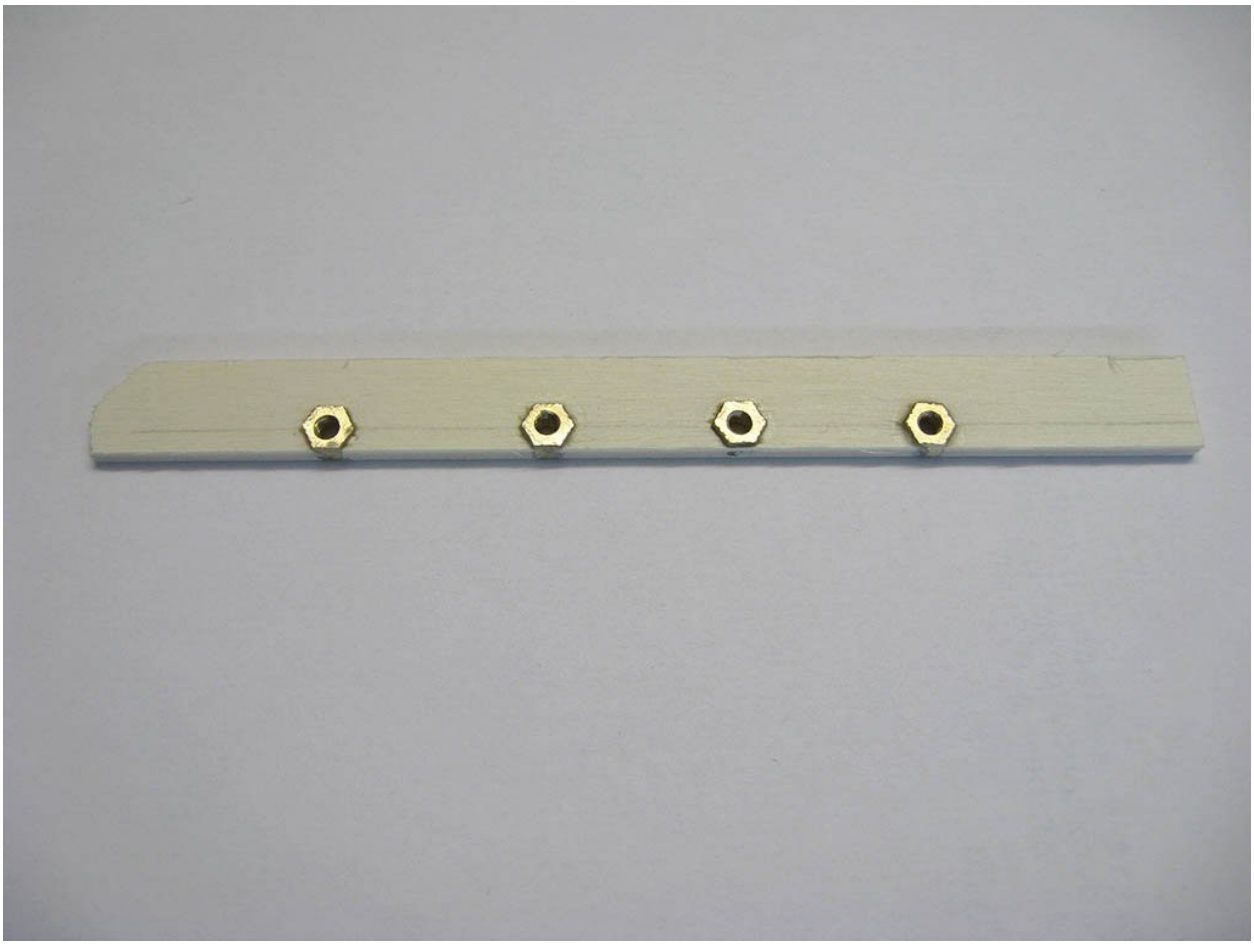


The cover is placed in place and attracted to the structure from the end of the hull towards the center of the hull with adhesive tape. I recommend to prepare the bands of the correct length in advance and stick them on the edge of the table, there is no time to spare. First, the coating is attached at the bulkheads, then at the necessary points between the bulkheads, and finally, the coating is attached at the required points by pins to prevent it from driveaway.

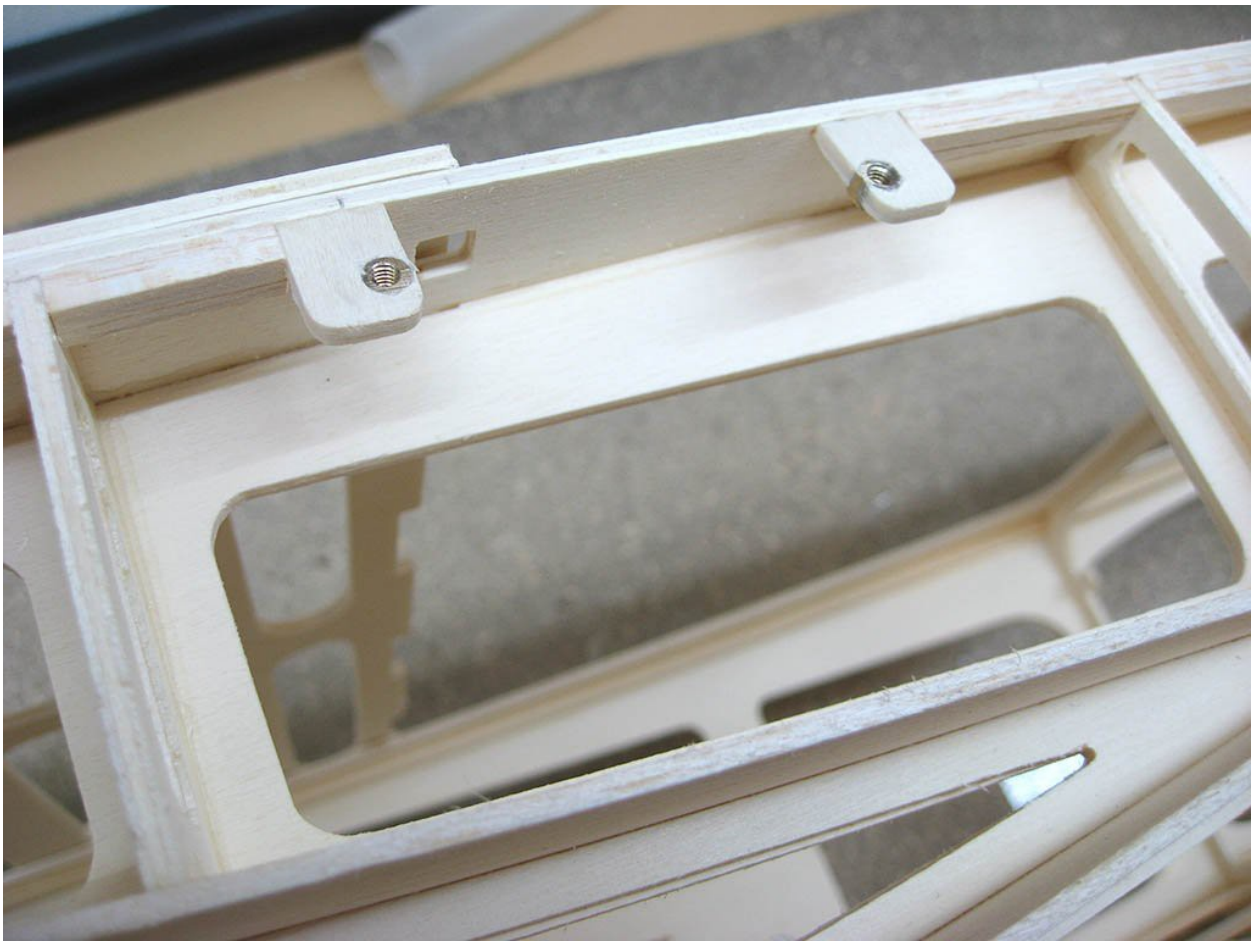
In the sealed cover, a hole is cut between the tail fin and the last fuselage bulkhead of a width corresponding to the notches to support the spur plate. Subsequently, both supports are sealed, in front of the other support perpendicular to them. The pre-prepared spur plate with the already embedded locking nuts is then glued onto all three supports and the tail fin. Everything must fit together without gaps. After drying, the spur elongation of the board is glued from the balsa piece in its plane to approximately twice its original length towards the front. In the picture is the spur in place.



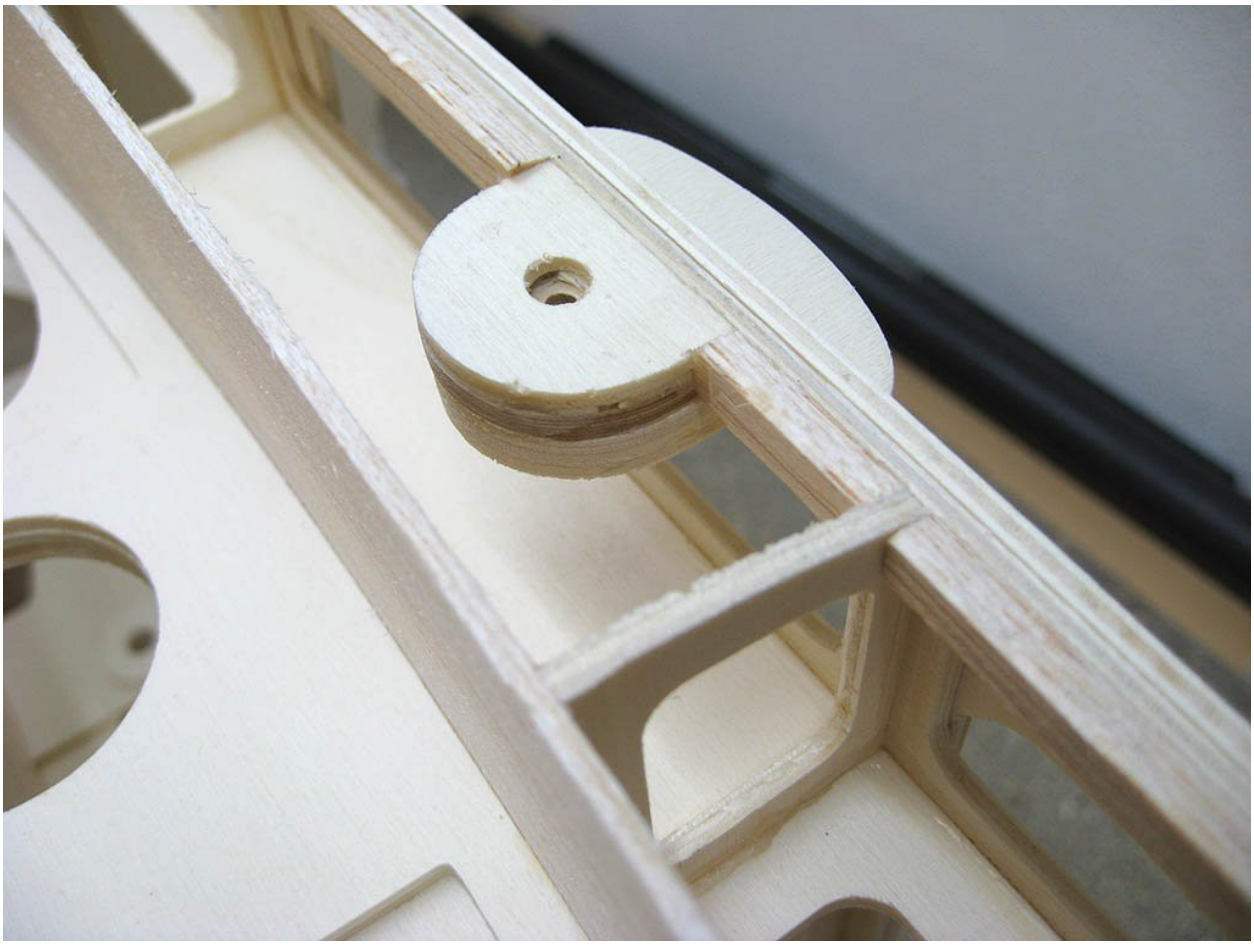
Before coating the hull with balsa, it is necessary to finish a few things first. And as we know, trivia is the worst, it takes a lot of time. Some details can be done later, but after experience this is the best time for the most comfortable work. One of the details is to prepare the recesses for the screws that will hold the top cover of the cab. Before this can be solved, it is necessary to first attach the handles to the base of the top cover. The handles are glued from two pieces so that they have a total thickness of 6 mm. After sticking the handle, the base fits with the fuselage in the front so that it can slide into the holes relatively freely and without play.



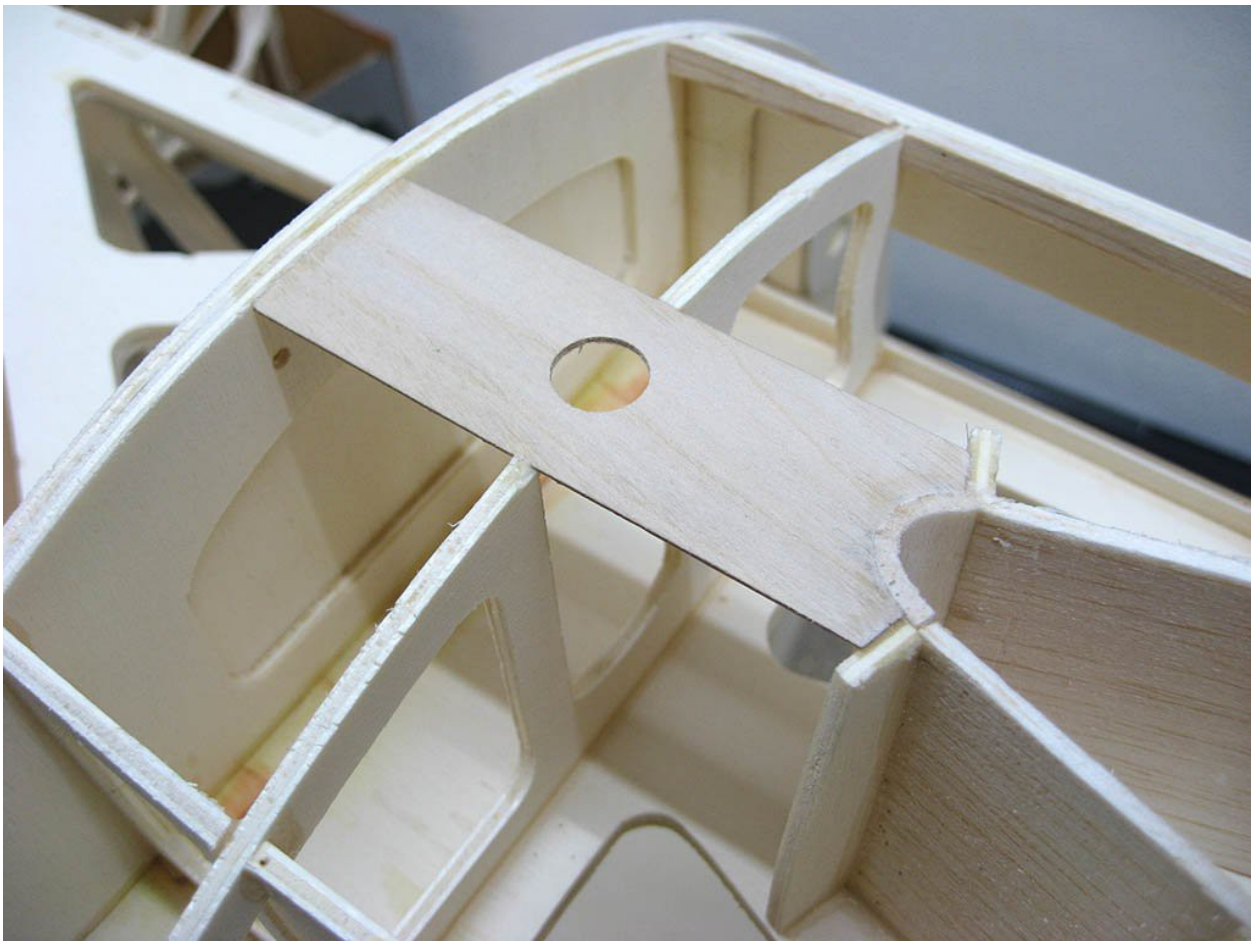
This depends on the switches used. In any case, the handle should be as small as possible and at the same time sufficiently sized, the balsa coating is very soft. I use my own switches that are fastened with M3 countersunk screws. It is also possible to proceed in different ways. Holes of 5 mm diameter are drilled into the piece of hollyhock in sufficient distance from each other. All common nuts are large for this purpose, I use cross-cut M3 spacers that are smaller than a standard nut. The 3 mm high spacer is screwed onto the screw and pressed carefully into the holes in the hollyhock. The pressed spacers are then dropped with a thin CA. After drying, the poplar is cut to the edges of the spacers. The photo shows the condition after cutting off. Subsequently, this holly poplar strip is made into 4 holders for 2 switches. A bevel is made at the grip edge to provide the necessary grip angle to touch the future balsa coating.



They are not perpendicular to the upper fuselage plate, they follow the future cover. A 5x5 mm balsa prism is attached to the fuselage top plate everywhere except for the switch, which allows for greater contact with the fuselage top plate in the future. The prism is ground along with the top plate into the fuselage profile. The brackets are glued with middle CA and prisms of dispersions



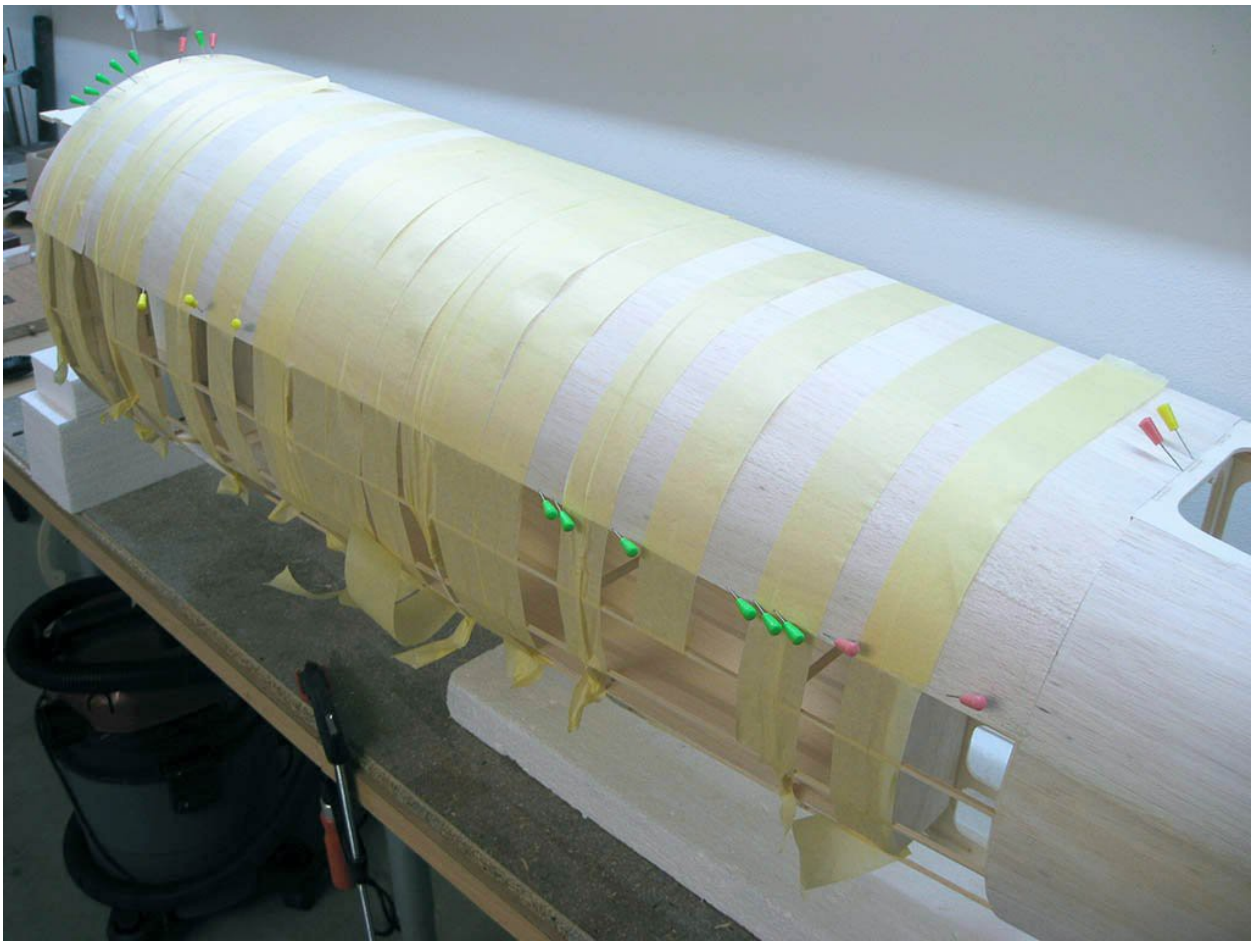
First, the semi-finished products are glued to the cuts of poplar and birch plywood, the shape of which corresponds exactly to the part of the grip under the base. The base of the upper fuselage canopy with pasted handles can be put on the fuselage. Opposite the lower part of the handle, the semi-finished products are sealed with recesses to the top of the fuselage plate (be careful not to the handle) and to the 5x5 mm balsa prism, which is visible in the photo. After removing the base from the other side of the recesses are poured sparse CA at the hull plate. Subsequently, a piece of balsa with an opening like in the hollyhock is glued to the recess from the outside, an additional piece of balsa fills the shape into the fuselage profile (not shown in the picture). After coating, the file is then ground with a nail file at a given point in the coating. The head of the bolt passes through all layers up to a piece of birch plywood with a hole of 3 mm, on which the bolt with a cylindrical head M3 will lean against which it pulls the handle of the upper fuselage cover.



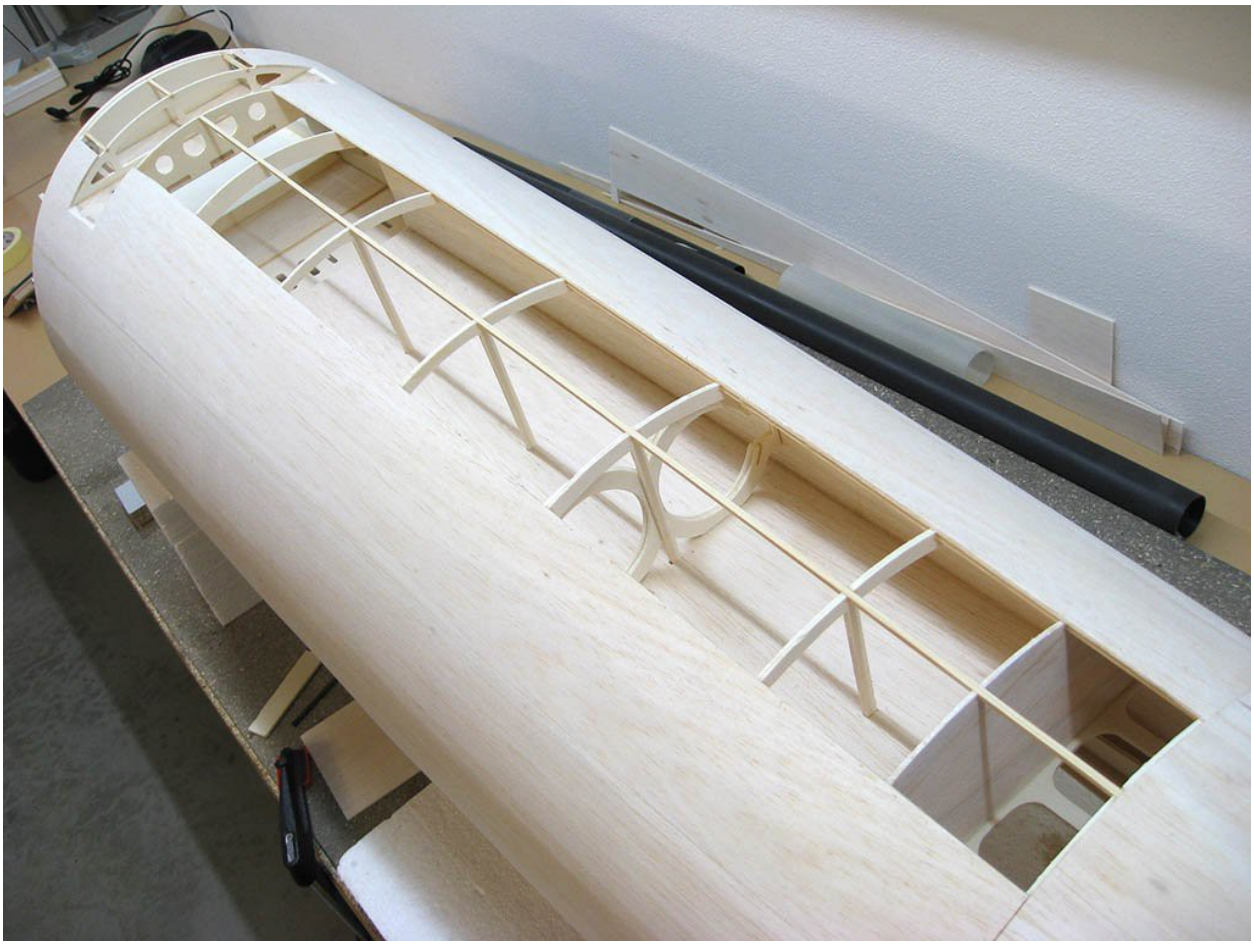
The reinforcement is made of 0.8 mm plywood with a width of 26 mm. After cutting out the necessary shape with the hole for the valve, the whole piece is soaked and bent into the shape of the fuselage profile and then sealed, thin CA is enough.

Before the start of the coating, it is good to glue the top cover of the cab to follow the uncoated hull. It sticks to the fuselage separated by a thin food foil. First, all half-walls are glued. The semi-bulkhead in the cockpit cabin will stick with the slope. It is necessary to ensure that the base of the cover fits perfectly on the fuselage in all places, so it is necessary to attach it to the fuselage by pins or pins before the half-baffles are glued. After the semi-bulkheads have dried, the fuselage must be checked with the cover and must be connected to each other. Both the upper part of the hull and the base of the cover, it is necessary to grind into the subsequent shape, which is visible in the photo. As soon as everything is saved, the 3x3 rails are glued into the troughs, now they are separated by foil at the place of gluing the rails. The front bulkhead must fit perfectly against the main bulkhead. The photo also shows a piece of glued and sanded balsa block, which fills the space between the future coating and the recess of the bolt of hollyhock.

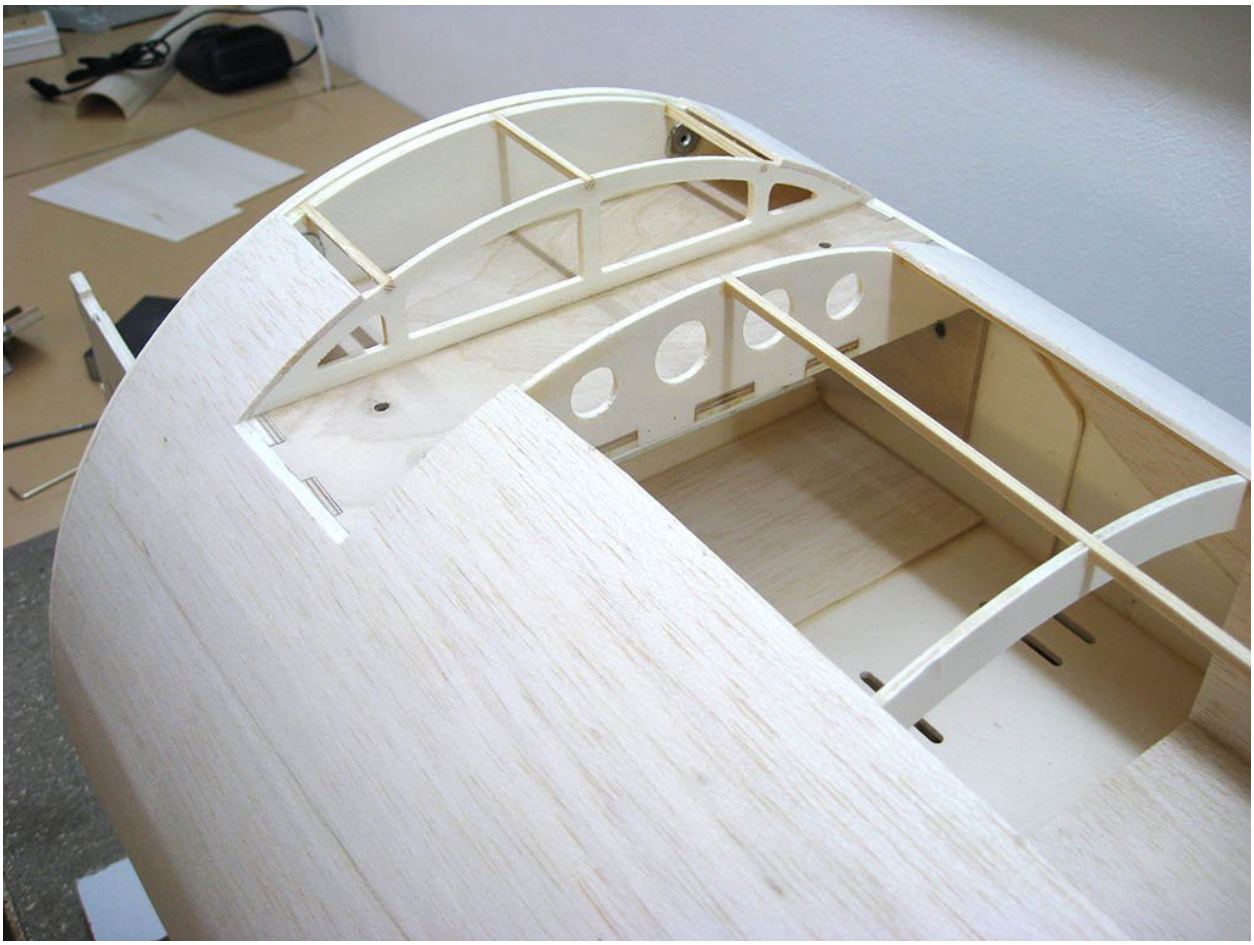
The covers are for left and right side, each is glued from three balsa boards thickness. 2 mm. In the photo you can see the covering of the cover on the flat rear part of the fuselage with a jump to tie the back fuselage cover. The cover must be carefully fitted to allow subsequent bonding to proceed smoothly. The cover is shortened at the bottom to the spruce rail above the exhaust shaft. In the front part, on the contrary, a little missing, but it is not necessary to solve, the cover in this part is then finished to the construction.



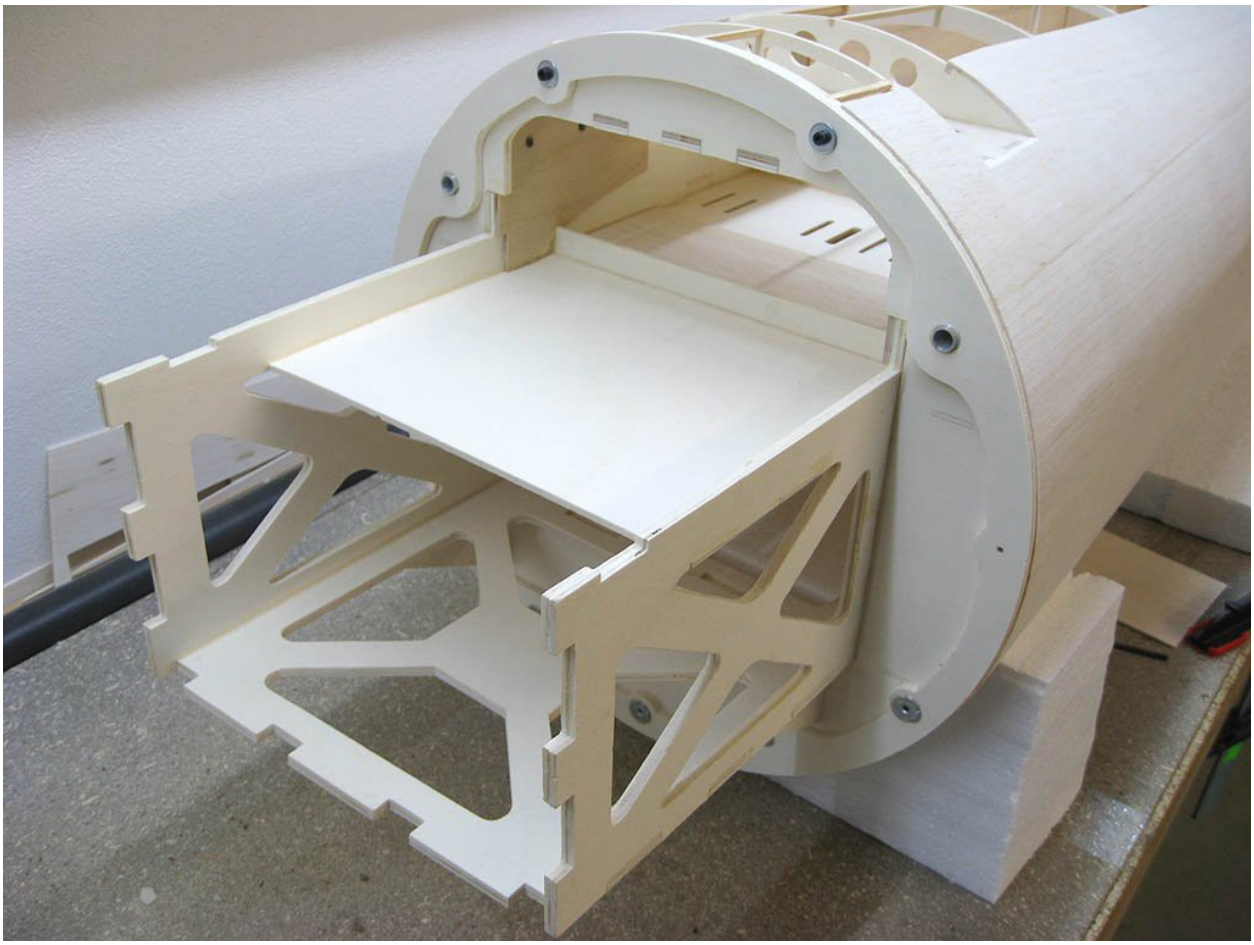
Glues the same as the original version. First, the cover is glued in the width corresponding to the post-glued balsa strip up to the upper edge of the fuselage by the middle CA, be careful, there is only one attempt. Once the glue has dried, a belt about 5 cm from the top of the fuselage is moistened and the cover is bent up to allow the glue to be applied to all parts of the structure. Enough glue has to be applied, pulling the cover will take quite a bit of time, so it is necessary to delay its drying. The strips of paper ribbon, which are prepared in advance, pull the cover from the center towards its edges. The fuselage is curved, it may not work for the first time, then there is one more attempt to correct it, and later the adhesive dries. It is necessary to check whether the cover really fits everywhere, locally helped by pins. In the front part it is necessary to cut the cover in the place of the landing gear shaft, so that the cover fits well on the main bulkhead fuselage.



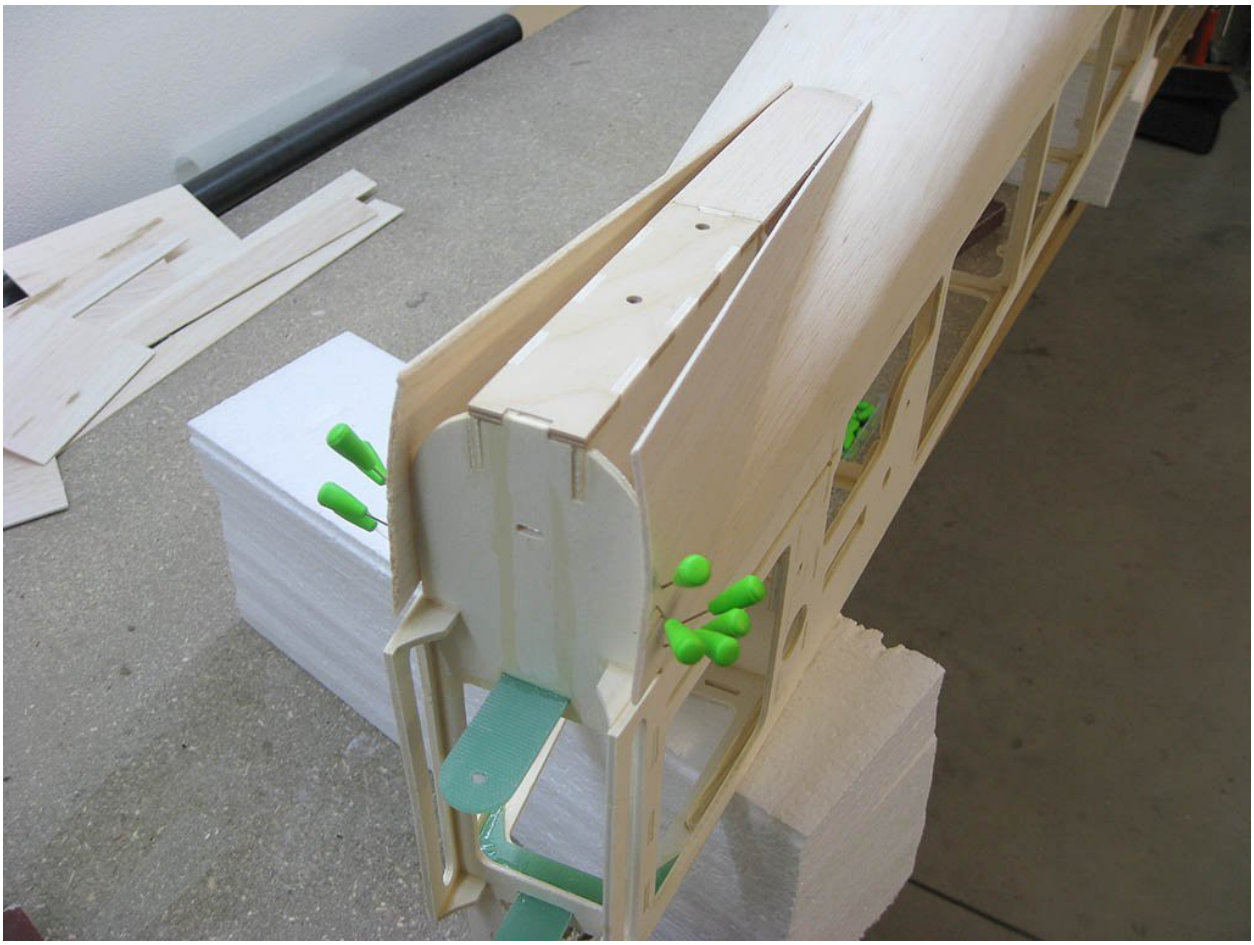
The cover has to be inserted in several places. It is advisable to align it longitudinally with the bar if it exceeds it. Subsequently, the cover on the undercarriage shaft is inserted. There is no need to stick pieces of cover in front of the undercarriage shaft and piece after the exhaust shaft. The test is inserted into the shaft holder tuned shock absorbers, sitting exactly in place, will stick later.



First, it is necessary to glue the M3 locking nuts from the inside into the main fuselage bulkhead. They will no longer be accessible after the cover is applied. Before sealing the mothers it is necessary to check the frame of the hull with the main bulkhead of the fuselage, the frame should evenly overlap the main bulkhead by 1 mm. In order to save the frame, it is necessary to cut and paste into the frame four guide tubes of 10 mm diameter and 15 mm length.



If the check fit could be completed, it is also necessary to put the jam nuts on the top of the frame. There are a total of three jamming nuts and are from the other side than the previous two at the bottom of the frame. The tubes overlap the frame by 7 mm and 2 mm for glue towards the hull. Tubes and nuts are glued with epoxy.



The 2 mm balsa remains are cut on both sides of the support. It is necessary to sculpt, nothing is straight, moreover the contact surfaces must be beveled. The coating is first applied by dispersion down to the existing fuselage cover and down to the straight part of the tail fin. I did not try to completely save the cover down, after sticking this will additionally be completed. Once the glue has dried, the covers will be folded towards the support and attached with pins. I glued to the partitions with dispersion, then with middle CA, I did not want to wait for the glue to dry.

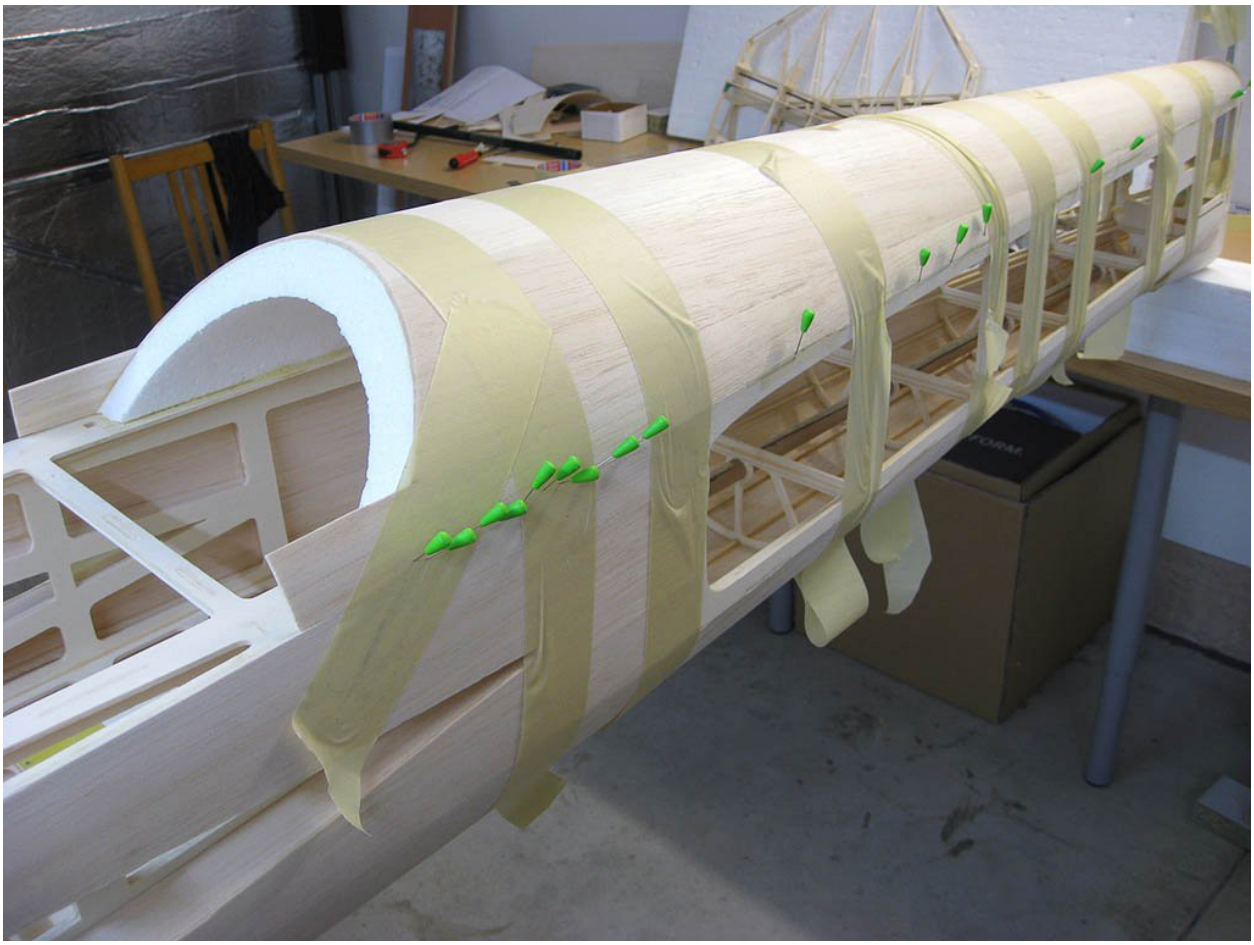
After gluing the covers, their connection to the fuselage is gently cemented. It is necessary to finish the hull down to the level of construction from hollyhock. I extended the straight part with a medium balsa thickness of 3 mm. I rounded the round part with 2 mm balsa with transverse years. This part is glued with middle CA, before gluing it is necessary to save balsa pieces and moisten them so that they do not crack when bent. When the rudder is finished, there will be a notch in this section so that the rudder will fit into it.

The polystyrene cut of the back of the fuselage must first be glued from its parts. I recommend gluing the parts with UHU-porem, it is fast and clean gluing, of course it is also possible to glue with dispersion, but it dries longer. Before gluing it is necessary to check the angle of the contact surfaces of the individual parts so that the back is flat in both planes after gluing. The same must be done with the outside and inside of the negative cutout so that they are both straight. After gluing the back, it is advisable to trim it in the front part. It is cut in a plane that is perpendicular to the back axis and inclined backwards by 90 mm relative to the original perpendicular cut. The overall length is adjusted rather by shortening the back to fit all necessary parts that will be in front of the back. There are square holes in the construction at the beginning of the back. In this opening comes the arch of the rear part of the cabin. 3 mm and behind the front back cover thickness. 2mm. The arch of the rear of the cabin must be fitted with the arch of the front of the cabin, which will later stick to the structure of the upper fuselage cover.

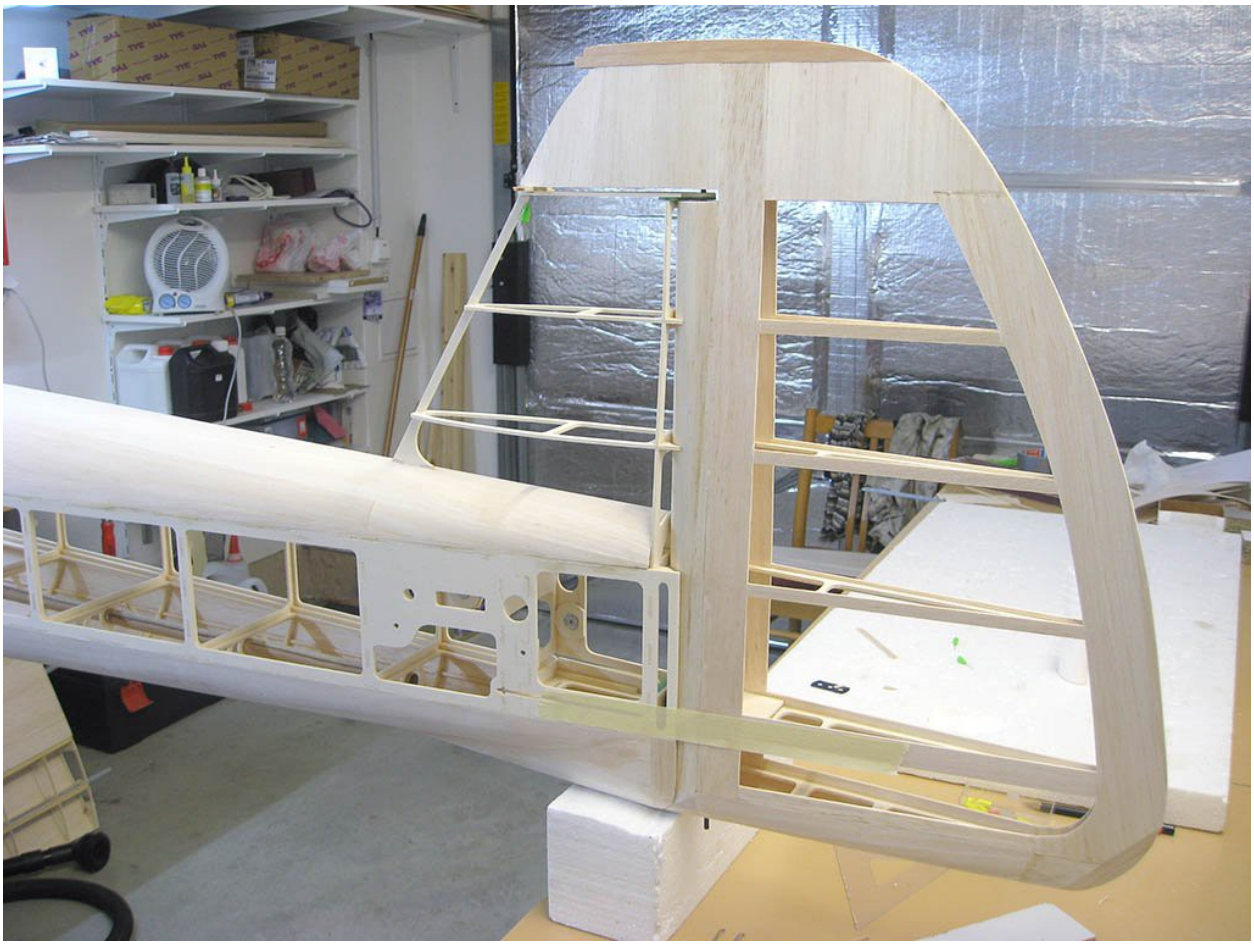
On the photo you can see the prepared balsa plate of the cover, the cut out of the back and the outer negative of the back, there is still no internal negative, everything is ready to overtake the cover. Preparing the cover sheet gave me about an hour and twenty minutes. It is glued from 4 boards 2x10x100 mm super lightweight balsa. The three boards are first extended to 125 cm using parts of the fourth, then the extended boards are glued together so that the extensions are on the bench. The side boards are then cut diagonally, rotated 180 degrees and glued back. The oblique cut should be made so that at the narrower end the overall sheet width is 130 mm, the wider then somehow comes out, but it must be wider than 420 mm. Of course, it is always glued over paper tape.

As always, I do not recommend gluing unprotected covers, so pre-bond before bonding. The plate is moistened with a sprayer, water is not saved mainly at the narrower end. I always run my hand over wet balsa several times, so the water gets in faster. Within about 5 minutes, the balsa is completely compliant, inserted into the external negative and pressed into the shape by hand. If balsa is super light, it's easy. Subsequently, the cut-out, the internal negative and the whole are loaded to keep the coating in place during drying. In the back half of the back I injected pins with the head into the negative, the heads ensure the perpendicular overlap of the plate on the negative. This ensures the necessary radius of binding the back to the fuselage.

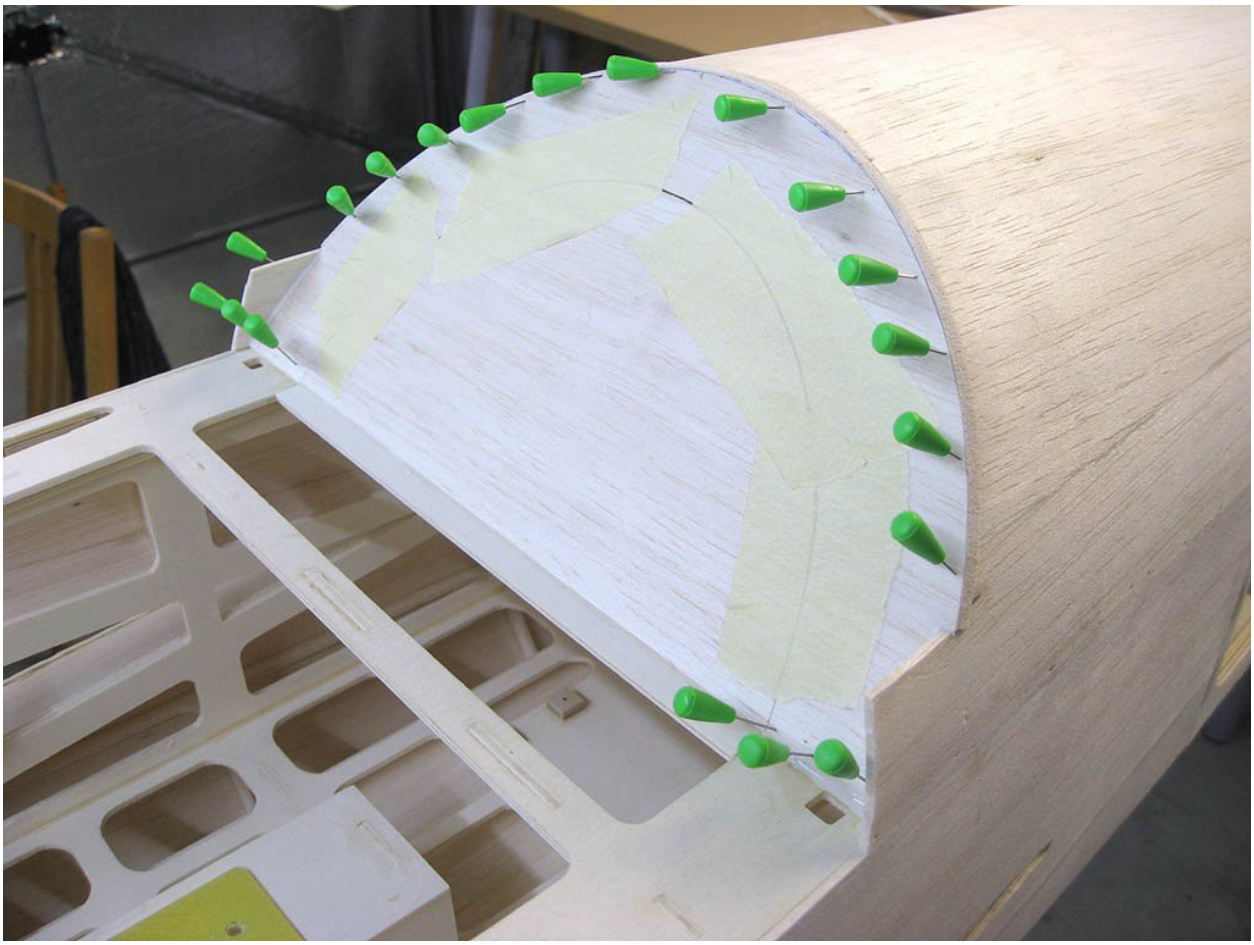
It is possible to glue the fuselage back sandwich after bending the cover. First, the external and internal negative is separated by a thin "sticky" foil for meat. Then, the interior of the pre-coated coating is re-moistened with a sprayer to allow the adhesive to foam well through the sandwich. Then, with Purex Standard, apply a PS fuselage cutout (not to use Rapid). Only the thinnest possible layer is necessary, so it is necessary to work with a trowel. 0.4 mm. The entire back will fall less than 50 g, the smallest standard package. Subsequently, the cover is inserted into the external negative, the PS cut-out and the internal negative are inserted into it and the whole is sufficiently loaded. Again, I used pins that ensure the necessary angle of the coating even outside the external negative. Care should be taken to ensure that there is sufficient cover for the cover to attach to the top fuselage cover. There is a result in the photo that is perfect.



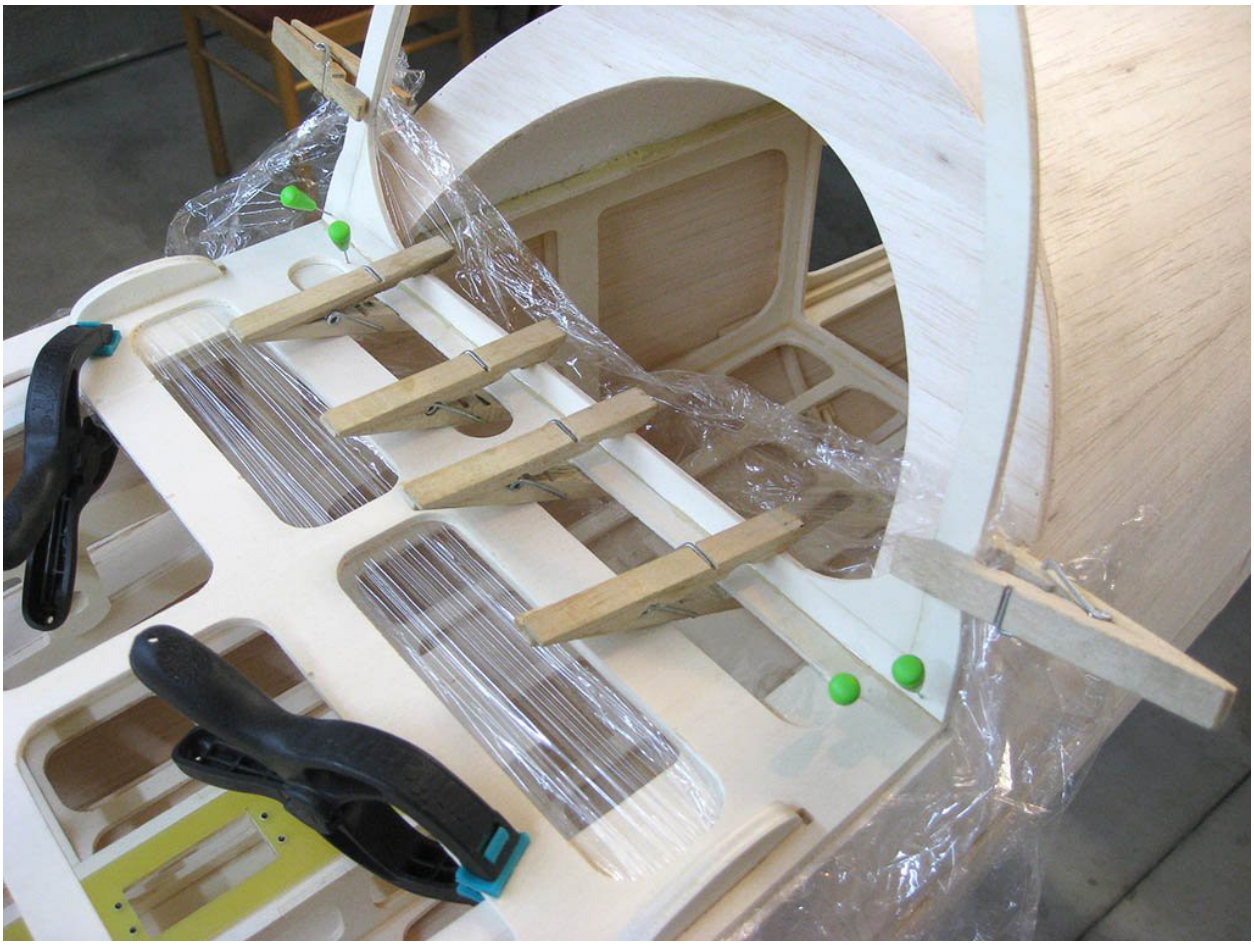
The sandwich is first trimmed to the PS level, except for the lower part of the front, where the overlap is left (see photo). The PS cutout has a straight edge from the side, while the fuselage has a step angle change at the transition bulkhead. So the sandwich slightly overhangs the front of the hull. Thus, the sandwich is sharpened from the bottom of the transition gradually and slowly towards the front. At the beginning of the sandwich it is necessary to grind approximately 1 mm. After salvation, the sandwich can be easily run into place. The sandwich is glued to the hull again with Purex Standard, it takes enough time to set it up and fuse with the hull. The necessary number of adhesive tapes are prepared in front to push the sandwich against the hull, the pins only serve to correct the exact position. After setting up, it is a good idea to come back in about 45 minutes and wipe off any excess or foamed glue, no need to grind it.



This is quite an exacting job of precision. The prerequisite for this action is a straight rudder. Before gluing the fin, it is first necessary to fit the rudder into the hinges and pass the carbon tube, ensuring that the rudder is in place. Subsequently, the rudder settles in neutral. To do this, use tape glued from both sides to the rudder and fuselage. The rudder is set up with a longer straight object, I use a long steel ruler, the torso narrows exactly to the rudder narrower, so it is enough to attach the edge of the ruler with each side and it must be a completely straight transition on both sides. Subsequently, all fins of the fin are glued. After drying, the upper rib exactly matches the counterweight of the rudder, both on the gap and on the neutral and the other ribs are aligned, usually after a while twisting ribs sit. Subsequently, a hole is made on the back of the fuselage at the point of connection of the front web. The center can be found, for example, by gluing the tape perpendicular to the fuselage axis at the location of the future opening, the position of the tape is marked on the fuselage and on the tape the places where the spine ends on the fuselage structure. The tape is peeled off, centered between the marks, glued back to its original position, and a hole can be made. Once the hole is finished, the alignment of the counterweight and the fin is last checked, both of which must be perpendicular to the horizontal plane of the hull when viewed from the front. And then it gets stuck.

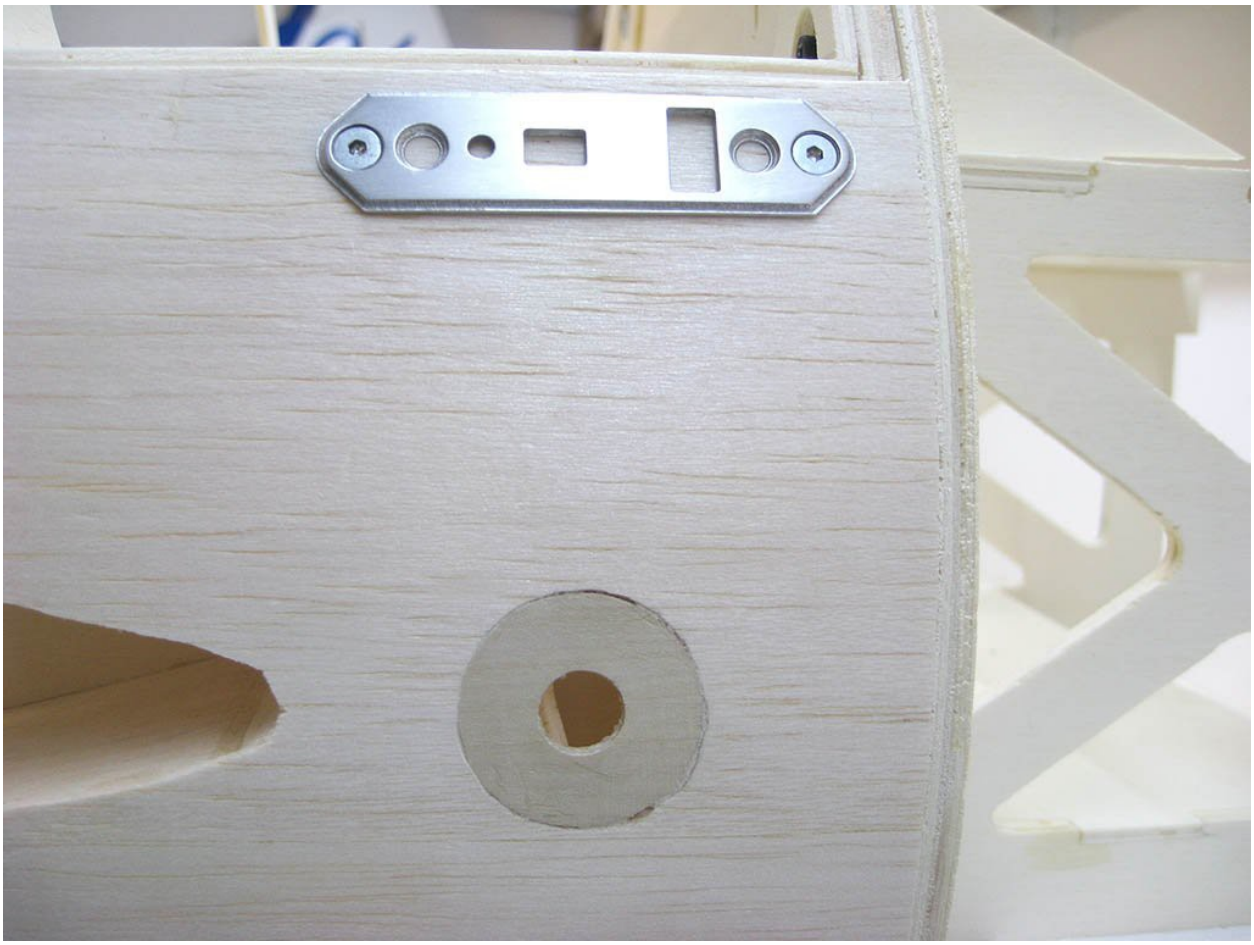


Compared to the original version, which after closing the back could not comfortably get into the fuselage, I made a small change here. The part for closing the back was glued from two layers of 2 mm balsa, glued by middle CA with years perpendicular to each other, then the part will be relatively strong and light. According to the template, the part is then cut to the required shape with the appropriate overlap, because the top and bottom are bevels. Subsequently, it is necessary to fit the part with the fuselage. Then, a thickening of the poplar plywood, th. 3 mm and a width of 13 mm, which exactly fits the hull. Then an arc is cut at a distance of 35 mm from the future edge of the closure and at the same time following the reinforcement. The arc is visible in the photo. After cutting, the parts are glued together by tape and the whole is glued to the back. Before coating these parts, small neodymium magnets are glued to the edges where necessary, holding the parts with sufficient force together and easily separating from each other.



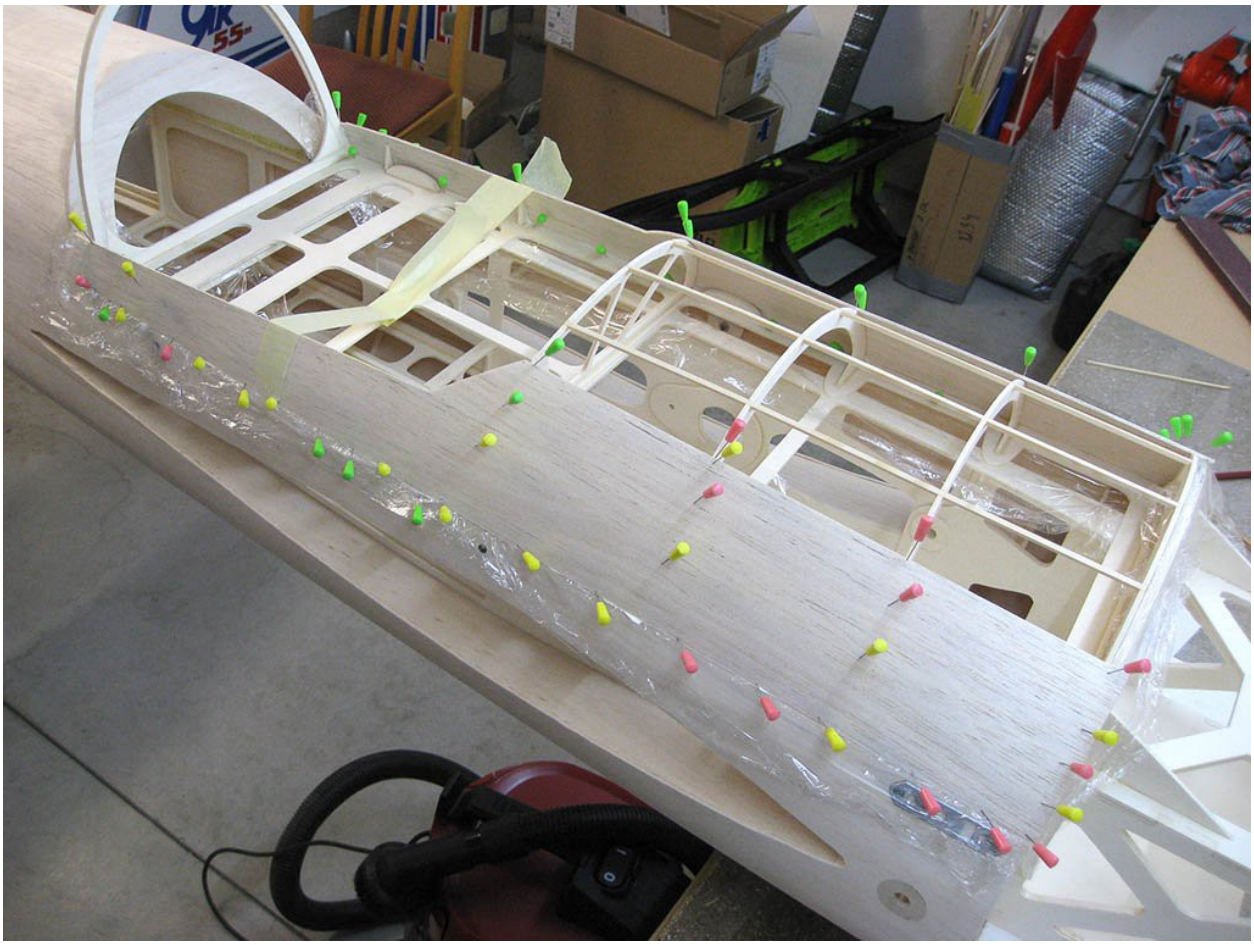
Most of the time it will save and prepare for bonding. First, it is advisable to make a template for the correct angle of inclination of both arches. Insert the arch, which is glued to the fuselage, its position at version 2 is fully rear of the prepared holes in the fuselage. The arc is set to the correct slope and, according to him, the overhanging back of the fuselage is trimmed. Meanwhile, the arch to the hull does not stick. Subsequently, the base of the fuselage top cover must be fitted with its arch. It is necessary to grind the bevel in the latches in the base, which corresponds to the angle of the arcs, or further grind if the base was longer. Subsequently, the fuselage and the rear arch are separated by foil and the base is attached so that it fits perfectly against the fuselage. The arc is glued to the base of the canopy with epoxy and pins and pins are attached, again everything has to fit into place.

Before pulling the top fuselage cover, it is necessary to finish its fitting to the fuselage first. The M3 fastening nuts are glued into the canisters with an opening. Since everything needed to be prepared before coating the hull, all you need to do is to make a hole in the cover and plywood. Instead of a hole looking for a pin, it must hit the center of the thread on the other side. Then, only the hole is enlarged with a round file as soon as the screw is in the thread, tightened, making a mark for grinding the head hole. I grinded the hole with Proxon with a grinding cylinder with a diameter of 3 mm, trouble-free work; The result is great, the overlap sits in place and the screw is recessed and the M3 is so small that it is really overlooked and that was the goal.

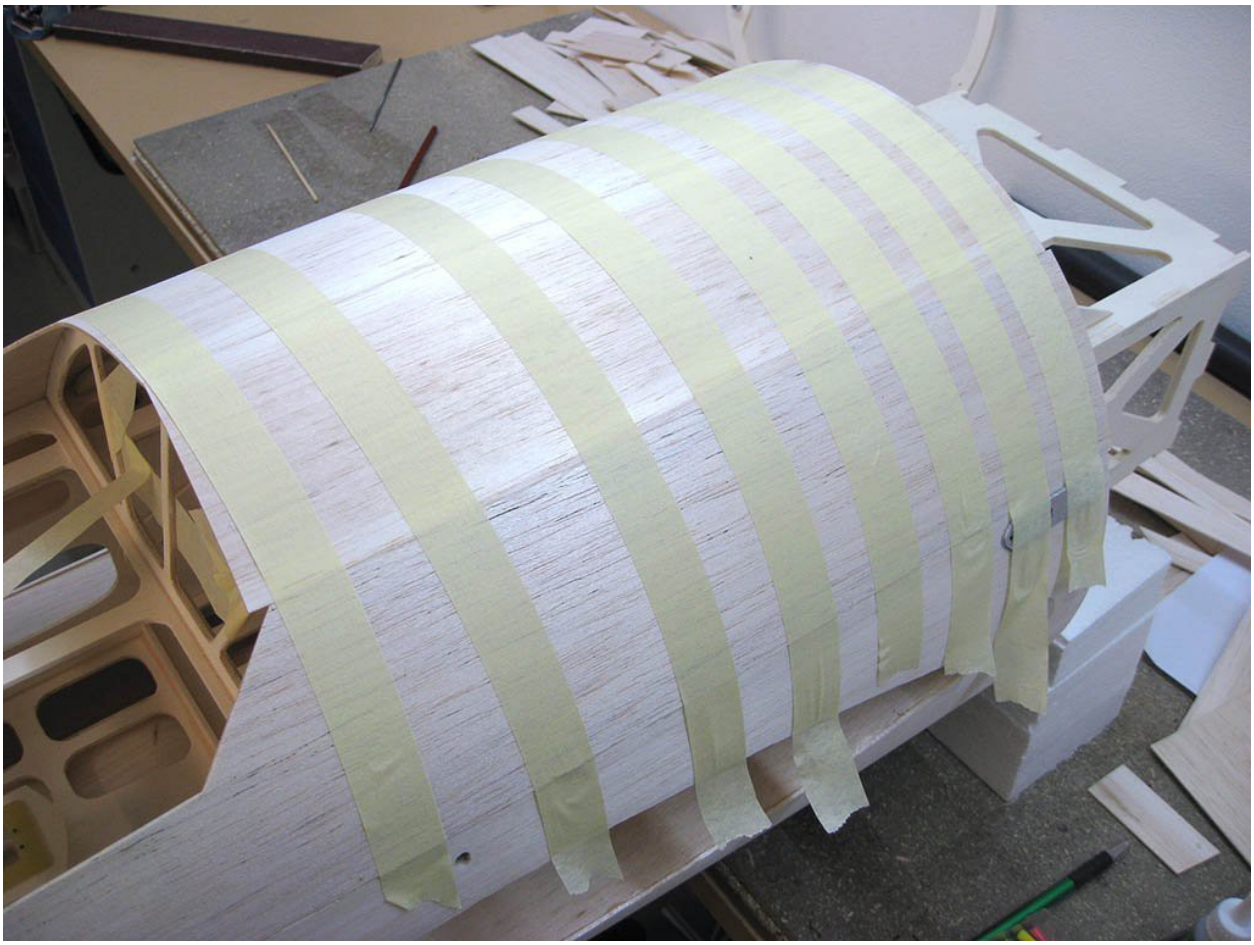


At the same time, I made holes for the screws of the two switch covers and reinforced the hole for the fuel and smoke valves. The balsa cover is already reinforced from inside the fuselage, the ring on the other side reinforces the soft cover to prevent the valve nut from squeezing into the cover. The ring is cut from aviation plywood thickness. 0.8 mm, which is moistened before bonding and bends in the hand to the radius of the fuselage. The coating is gently milled and the pre-stretched strip is sealed with a dispersion.

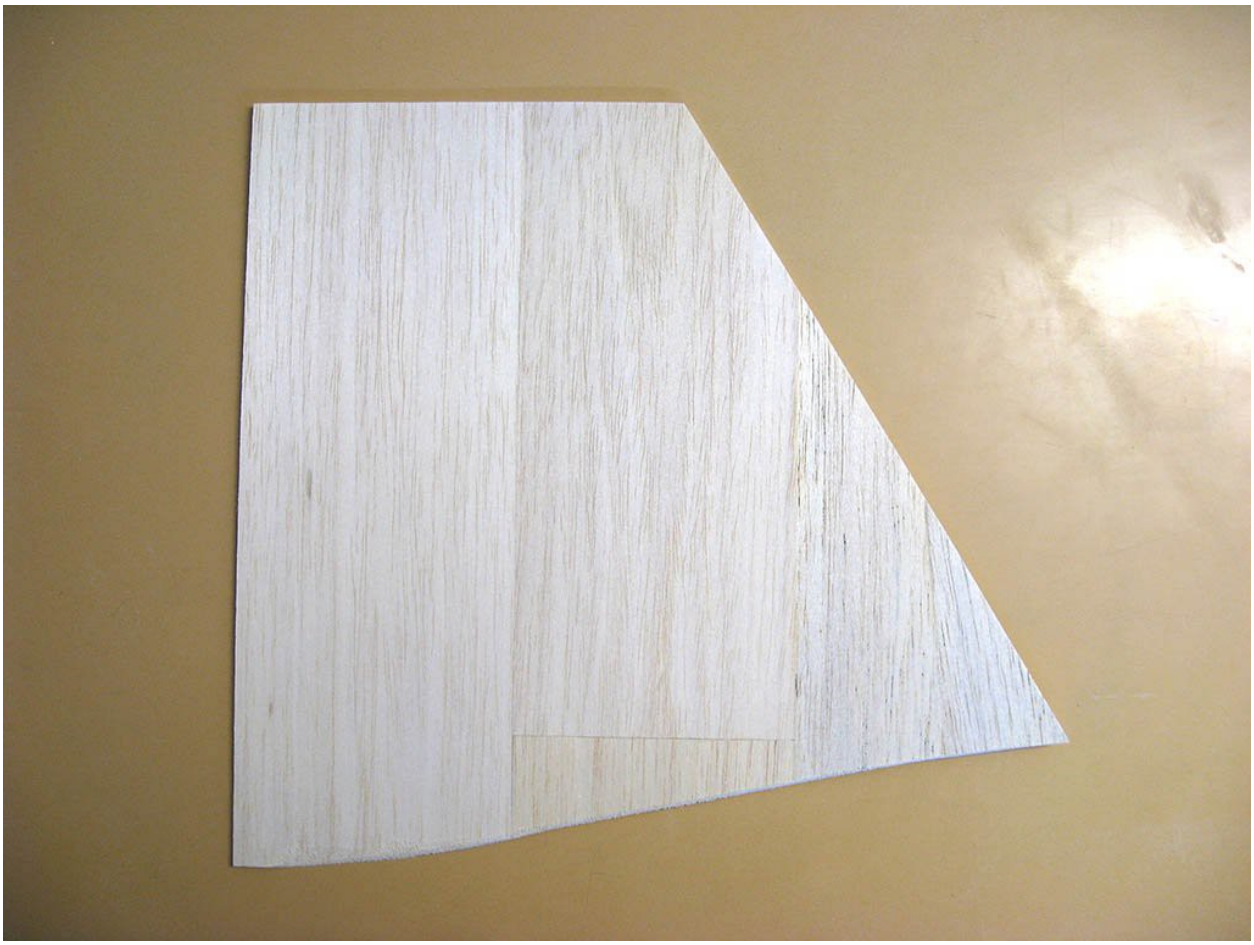
There are a few things you need to do before you cover this cover. The epoxide is glued to the two front struts above the motorbox, which holds the main bulkhead fuselage in its upper part. Finally, the back arch is glued to the fuselage and fits precisely with the arch already sealed in the fuselage cover. Check again how the cover structure fits into place. There should be a minimum gap between the arches at the rear and at the same time the cover structure should be easy to slide out of the hull. It is good to grind the construction into the required bevel on the edges, if it has not already happened, so that the future cover of the th. 2 mm. Then, a thin foil is placed on the bonding sites, and the cover structure is placed thereon. The pins are fastened to the fuselage so that they fit perfectly everywhere. The pin insertion angle should be selected so that they can be pulled out well later. Then the screws are tightened into the housing structure, everything should fit together without any problem.



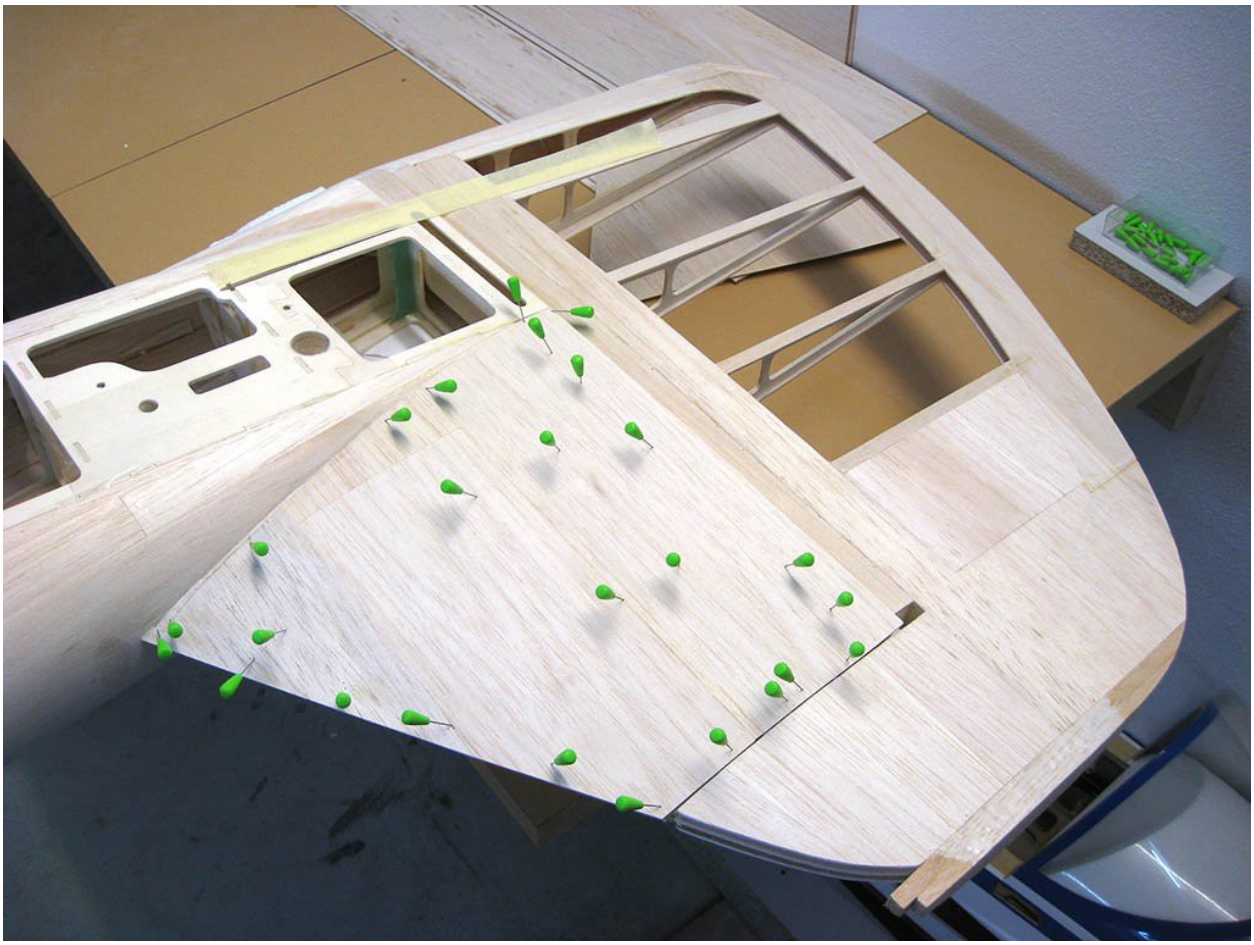
This phase is particularly difficult to save the coating before gluing. I chose a simpler procedure than the original version. The firmer balsa board is cut to the required length and a cut-out is made at the cab to allow it to twist as needed. The lower part of the board is fitted with the hull and at the same time the necessary bevel is sharpened to minimize the gap between the cover and the hull. Finally, the board in the back fits to cover the back arch of the fuselage. The final trim of the cab hole will only be made later when the hull cover is completely covered. After the dispersion adhesive has been applied, the pins are fastened in place.



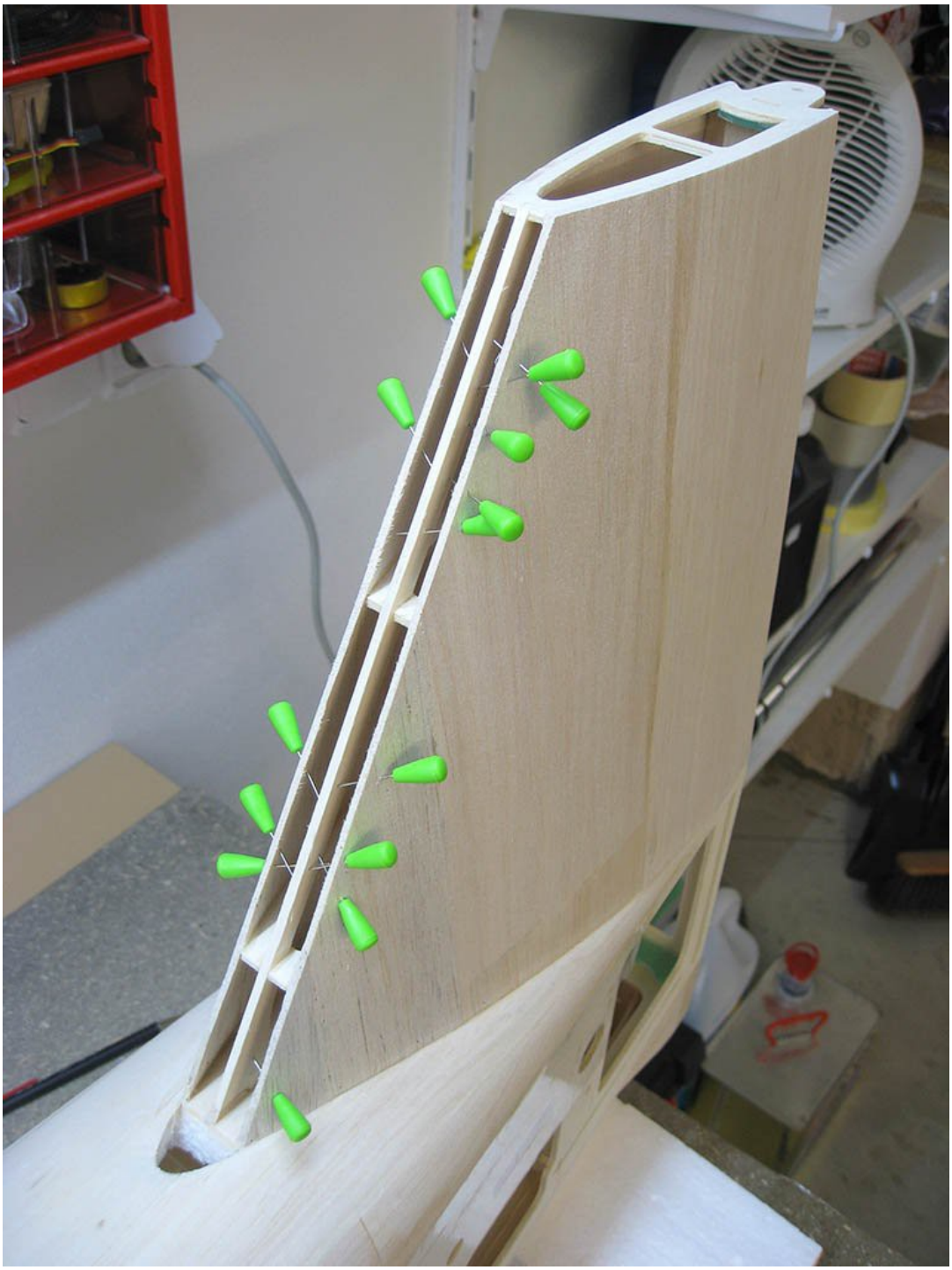
The missing wedge cover of the fuselage cover must be saved in advance. Saving the cover in the arch is a bit more difficult. Between sanding it is always necessary to really press the cover sufficiently into place for the width of the cover to be correct. Usually it is not possible to press the cover perfectly, so it is usually wider. It is therefore advisable to dry before bonding and try to glue the cover by tape to make sure it fits. Since the cover is wedge-shaped, a slight correction can be made by sliding it. Once the cover fits as it should, the main partition is separated and the cover is glued. The adhesive is only applied to the lower edge of the transition edge so that the adhesive does not flow to the outer surface, then it would be badly ground. It is necessary to fix the tape not only in the place of the partitions, but also between them, so that there is no jump at the place of gluing.



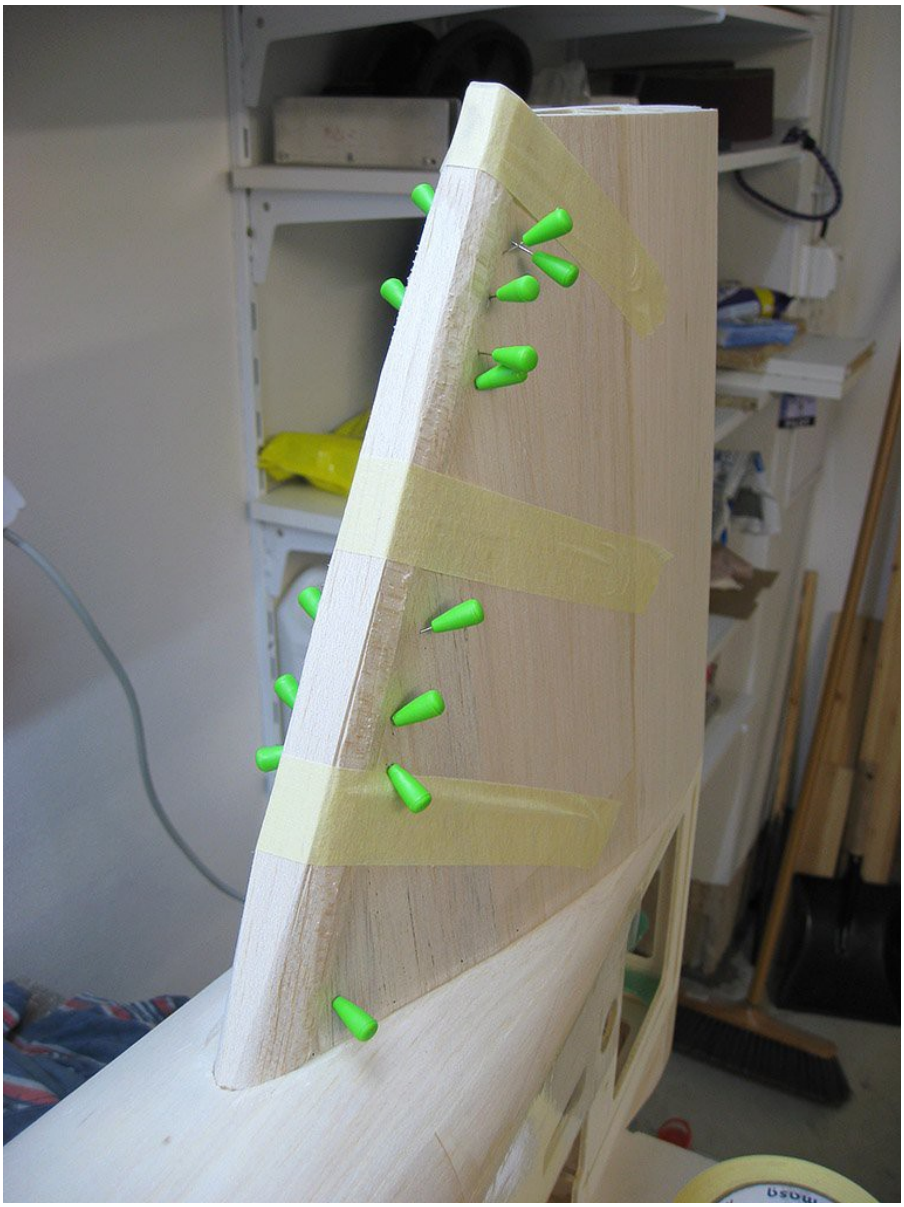
It can be roughly cut using a paper template. The photo shows the curvature of the lower edge in the shape of the letter S and at the same time the bevel, which covers the back of the fuselage. It starts with a cut-out according to the template with the necessary margin. Then the truss construction is pinned to the counterweight of the rudder, which is fixed in neutral. If everything is as it should, the construction of the fin is perpendicular to the axis of the stabilizer and wings, and at the same time follows the line of the rudder counterweight. Subsequently, the coating by gradual grinding of the coating fits exactly on the construction of the fin and the back of the fuselage.



If the cover is well fitted, this is relatively easy to bond. When fixing the cover with pins it is necessary to watch to avoid distortion of the fin frame. At the same time, it is necessary to properly attach the cover to the back of the fuselage to maintain the profile of the fin.



After the coating is applied, the coating is incorporated. First, cut and sand the cover on the upper side to the level of the rib. Further, on the leading side, it is cut and ground to the plane of the beam on which the ribs are. On the back side, the upholstery is ground down to the fuselage structure and up to the rib overhang. The grinding is carried out in a slight arc, the grinding is checked when the rudder is inserted, a uniform gap should be created to allow the full deflection of the rudder. In the fuselage is made a hole according to the profile of the fin. Where there are no ribs under the skin, the skin is likely to stand. Several pins set the cover flat.



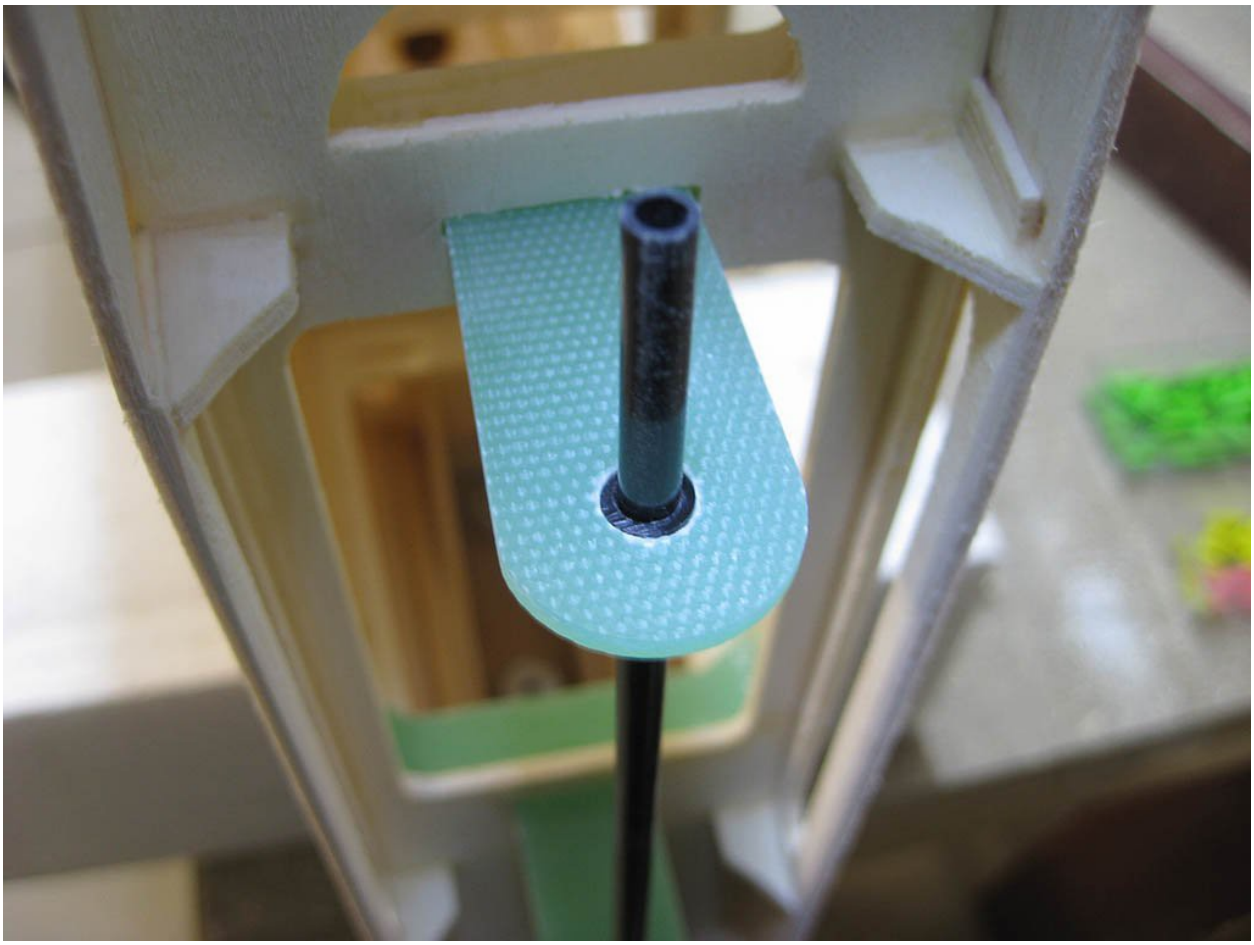
After the coating is applied, the coating is incorporated. First, cut and sand the cover on the upper side to the level of the rib. Further, on the leading side, it is cut and ground to the plane of the beam on which the ribs are. On the back side, the upholstery will be ground down to the fuselage structure and up to the rib overhang. The grinding is carried out in a slight arc, the grinding is checked when the rudder is inserted, a uniform gap should be created to allow the full deflection of the rudder. In the fuselage is made a hole according to the profile of the fin. Where there are no ribs under the skin, the skin is likely to stand. Several pins set the cover in the plane. From the balsa board is cut a block (18 mm down, 12 mm above) on the leading edge and is worked mainly on the back edge, which lies on the covers. At the same time, it is finally machined to the profile width. At the bottom, the log is adjusted to the final profile so that the log can be inserted into the prepared hole in the back of the fuselage. They are glued to the construction and the coating by dispersion, to the back by purex.

After the adhesive has dried, the leading edge is generally ground into a profile.

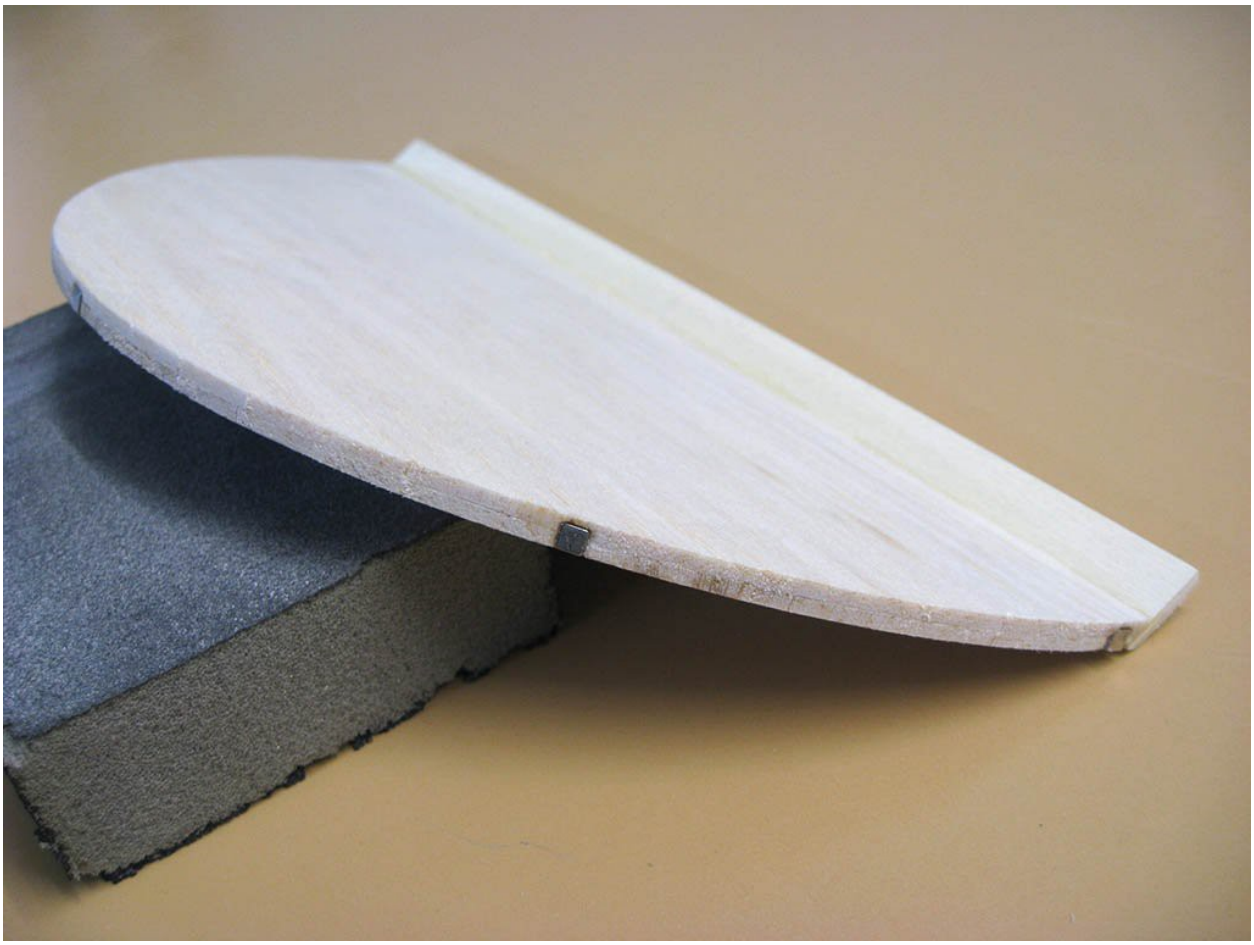
The canopy is fastened to the hull by screws. The collars fit the two arches together so that they are at the correct angle to the torso. If the arcs do not fit precisely, they will sharpen higher to lower. After salvation, separation is inserted between the arcs, here the durofol thickness. 0.4 mm. Separation ensures that the arcs do not stick to each other during the bonding of their coating. Everything is again secured by pegs.

The cover is glued from strips of medium balsa thickness. 2 mm with years across. The arc fits with the hull cover coating and is glued with the dispersion so that the divide between the arches, which is now durofol, passes through the center of the glued tape.

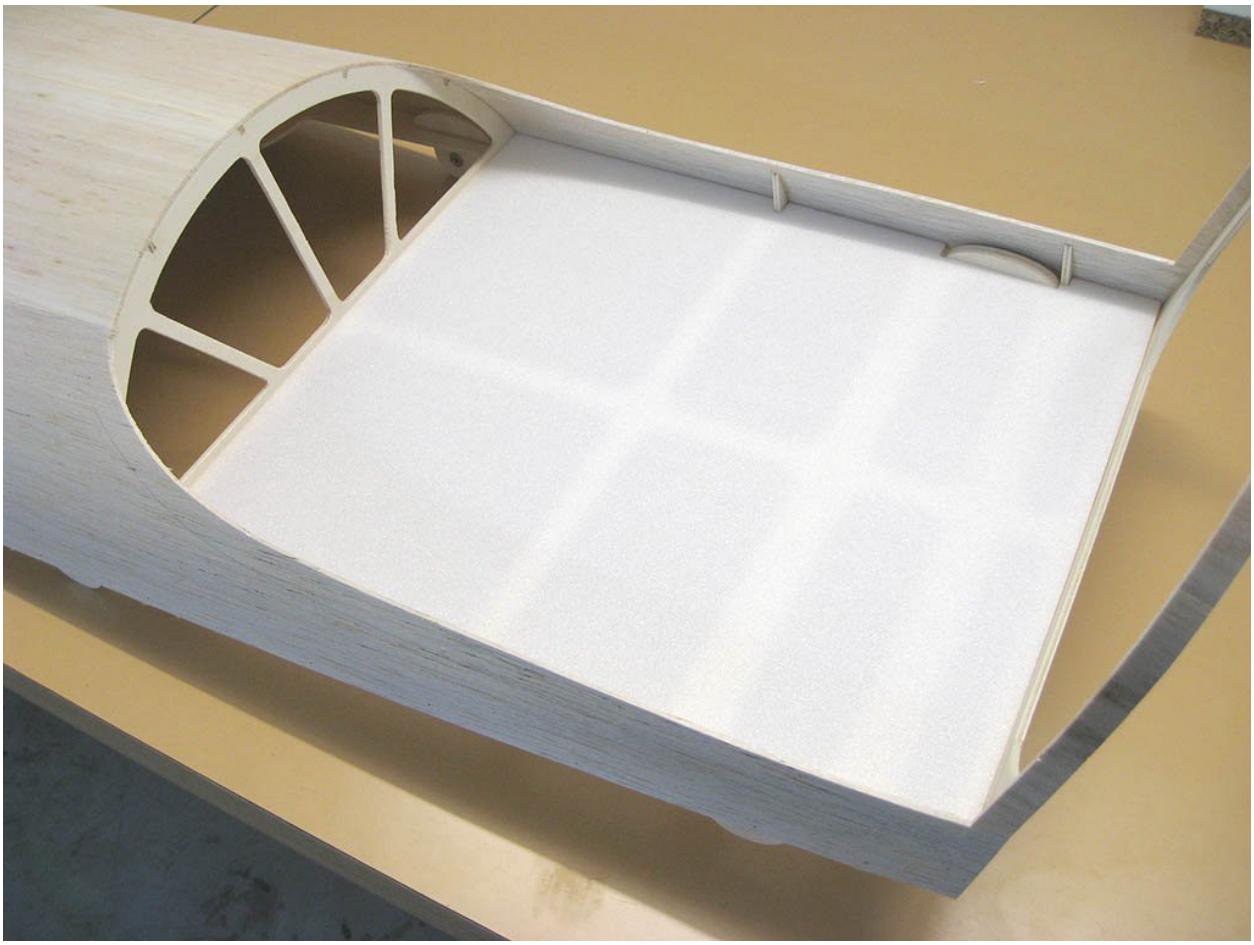
This activity takes a bit of patience, rather slowly and gradually than cutting it too much. The canopy must fit with the upper fuselage cover and, above all, with both arches. The canopy, which is basically cut in its front and back (with larger office scissors), is put in place, the sides of the canopy being left overlapping. First, the arc must be saved, which must fit perfectly over its entire surface, if there is a gap, it must be filled with balsa. Once the arc has been saved, a line marker is drawn on the sides of the canopy and cut to the final shape. Then the final cut twist is drawn with a pencil on the hull, so that its position is clear. According to the outline of the canopy, the hole in the hull cover is adjusted with a margin of about 10 mm at the points where it will touch almost or completely across the surface.



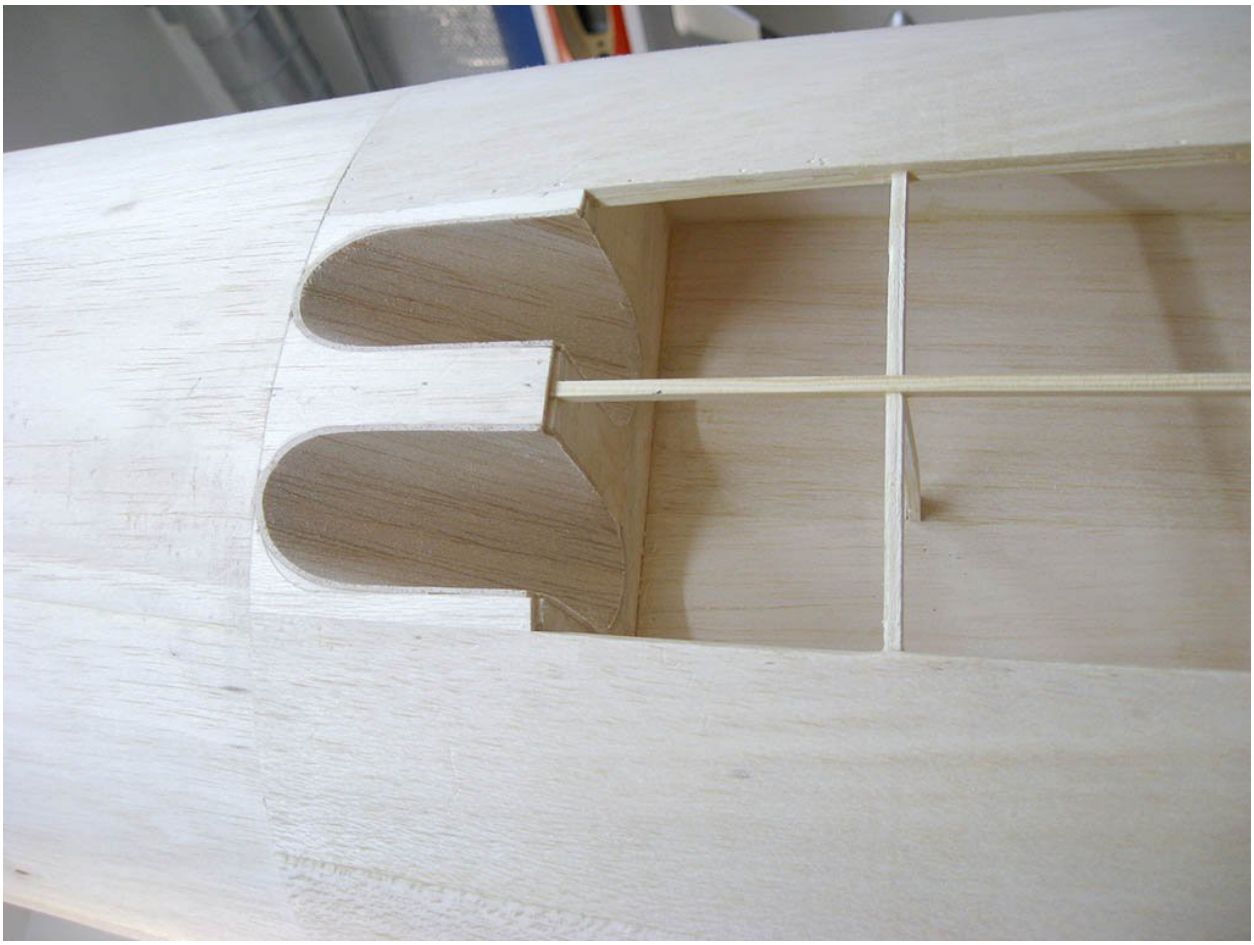
The photo is a hinge adjustment in the fin, so I recommend doing it everywhere. In the original version I used a brass guide tube, which was rotated in a hinge of glass fiber. This solution is not completely bad at the core, significant will not arise even after two seasons of intense flying, but some will arise. With the transition to carbon tubes, it can be assumed that the service life would be considerably shorter, the surface of the carbon tube is relatively brittle and easy to rub. After careful consideration, I put all pipes in nylon liners because of their self-lubricating properties and minimal abrasion. I was looking for a simple, laborious and repeatable way to get these inserts. The inserts are cut with a nylon tube knife used in pressure systems, the tube having an outer diameter of 6 and an inner diameter of 4 mm. It is not always easy to find at suppliers, but it is possible, PA6 and PA12 are available. Attention, most supply PU tubes, but it has different properties. The meter of such a hose is around 12 CZK and lasts really long. Hinges are drilled to holes with a diameter of 6 mm, the hose is recommended to drill to 4.3 mm. The insert is simply cut from the hose and inserted into the hole in the hinge, it is not necessary to glue it, it is held in place by the construction of the movable surface, only with a cut overlap to the thickness of the hinge. In addition, if necessary, these inserts can be replaced quickly and easily with new inserts on all surfaces.



The cover was previously glued from balsa planks thick. 2 mm with perpendicular summers. I got 3x3x0.8 mm neodymium magnets. I made troughs with Proxon, in which I gently drenched the magnets with thin CA. A total of 5 magnet pairs are used to attach the cover. In the same place, the magnets stick in the same arc in the same way, paying attention to the orientation of the magnets. After coating, the magnets will be held not only by the adhesive but also by the overlapping coating.



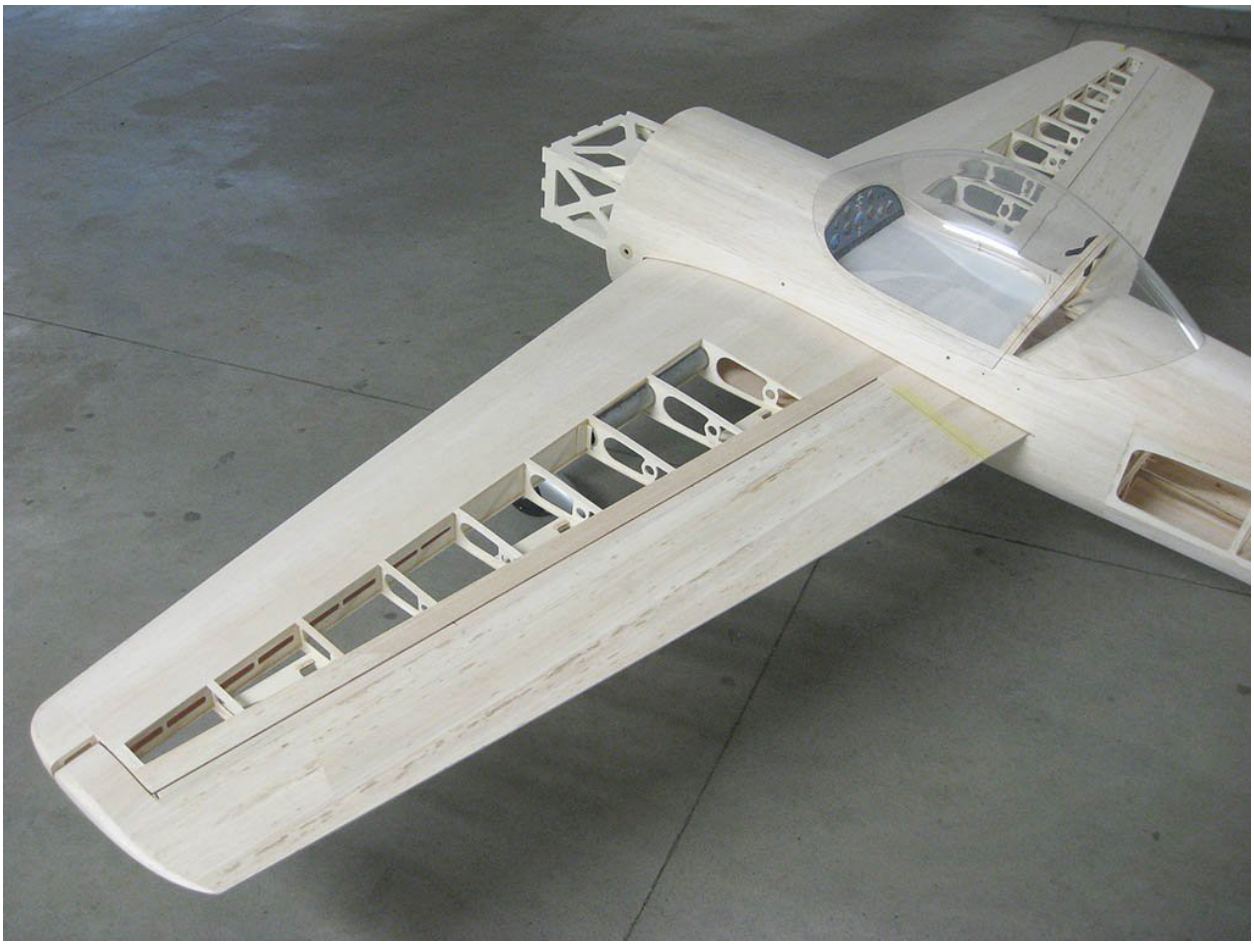
The floor of the cabin is cut according to a paper template from the depr. 3 mm. The interior of the cabin is sprayed with alcohol paint after gluing the UhuPor floor. But this is done only after the overall fine grinding of the entire hull.



If MTW Re2 dampers with a knee length of 400 mm are used, the damping shaft must be slightly extended. According to the template, holes are cut into the upholstery and additional balsa partitions closing the original shaft. The width of the holes after gluing should be 30 mm at a distance of 20 mm from each other, so that they should be 32 mm wide before bonding. The holes are beveled and glued into the plates of medium balsa thickness. 1 mm. After trimming, two grooves will be created, which will allow the outlet of the silencers out of the fuselage. With a little more careful work, this is relatively easy.

Although it is still not decided what the engine will be and therefore what the shock absorbers, I decided to make it at least in this part of the universal. The bracket is ready for tuned shock absorbers for 100-class engine class, using a tuned silencer diameter of 55 mm. The bracket had previously been glued with two-part letoxite perpendicular to each other for years. After the holes and edges have been ground, the bracket is glued into the shaft and secured with pieces of poplar plywood to distribute the forces over a larger surface of the shaft. When inserting and ejecting the shock absorbers, the bracket is fully stressed. The silicone hose is longitudinally cut and it is done. The holder is designed so that the air that the muffler tunes can still flow around it. Tuned muffler too hot does not work!

First, it is necessary to set all moving surfaces to neutral and fix them, the fuselage is also attached stabilizers with elevator. Subsequently, the wings must be inserted into the shafts on the pipe with the sleeve, usually it is necessary to slightly grind the shafts, as well as grind the leading edge at the wing root in a plan perpendicular to the root rib of about 25 mm. Now the model is finally assembled and you can see some differences from the original version. At first glance, the counterweights of the ailerons are visible, the rudder is considerably larger and longer in its lower half. Stabilizer with elevator is lower, stabilizer is narrower and shallower and the whole is moved forward. The result should be more dexterity of the model.

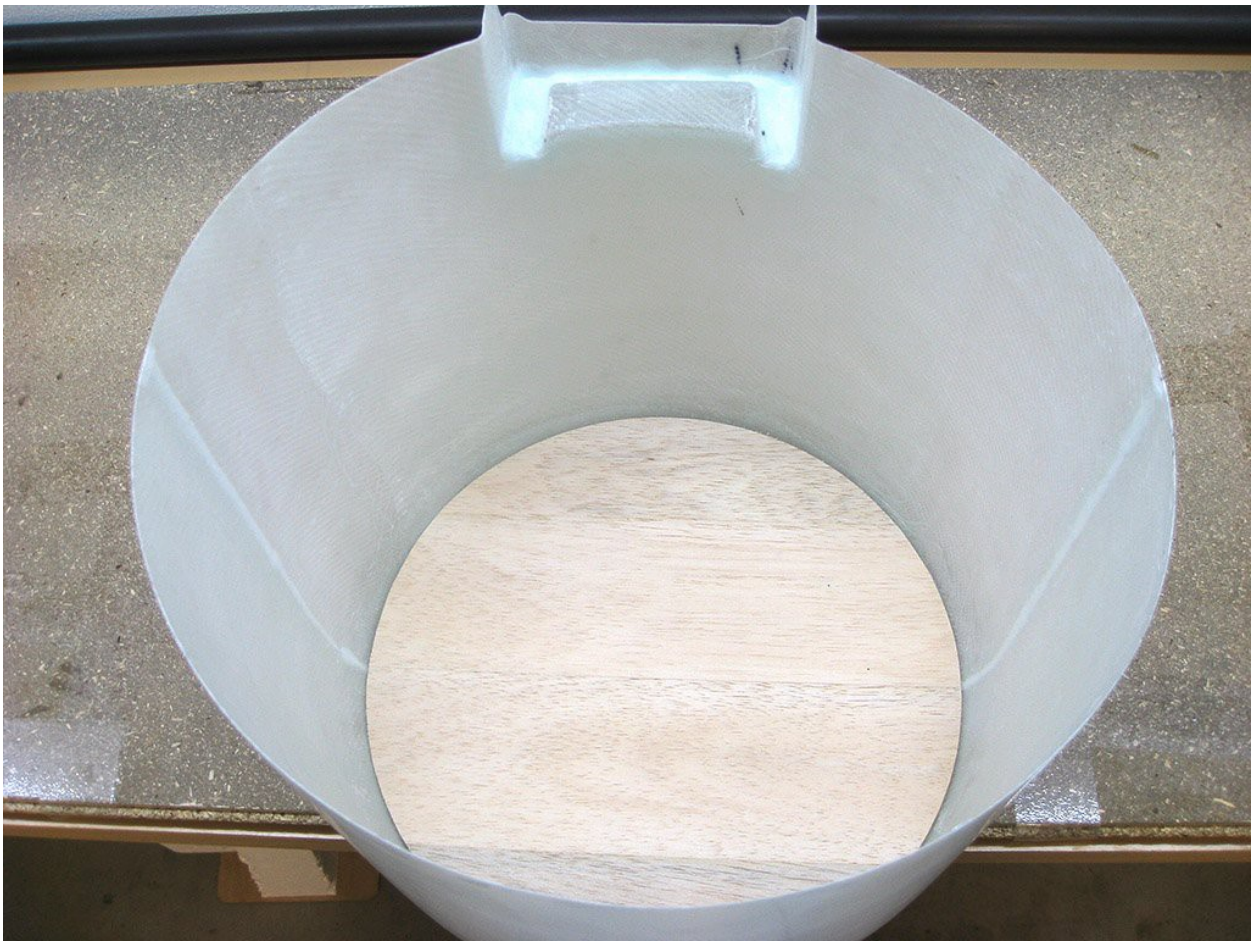


This is one of the most important parts of the building where it can go bad. Once the model has been built, angles and lengths can be checked. Check the perpendicularity of the fin with the rudder to the stabilizer with elevator. There is not much to do with the fin and the rudder, it should be checked when gluing the fin. The stabilizer tube housing shall be temporarily lined in the vertical plane so that the stabilizer with the elevator is perpendicular to the rudder. Subsequently, it is checked whether the stabilizer with the elevator is parallel to the wing tube. Then the wings are pushed in and fixed and a subsequent check is made for parallelism with the wings already pushed. In case of deficiencies, the pipe must be re-lined and re-inspected. After checking perpendicularity and parallelism, the distance between the wing halves and the elevator halves is checked. Any difference is minimized by lining the pipes in the horizontal plane and by sagging the wing or elevator root.

Once the position of the sleeves is known, the sleeves can be glued into the hull with epoxy. There are several ways to do it again. The inserts are only inserted into the gap so far to the construction by thin CA. Cases do not recommend gluing separately, especially if they are light and therefore very flexible. The adhesive may cause deformation during solidification and the tube then goes into the sleeve very tightly. So I stick the sleeve with the pipe as a whole. To prevent the pipe from sticking to the sleeve during its bonding to the structure, it must be somehow separated. I do it with adhesive tape, as shown in the photo. The whole is then inserted into the lined structure and sufficient epoxy is applied everywhere by gradual displacement and rotation. A little epoxy may overflow, the tape should work. I glue for 30 minutes with epoxy, after about an hour and a half I look at it, the case should already be wilted, the tube in the case turn and remove the tape. It is possible that something will flow into the mini joint until the epoxy is completely hard, it can be easily washed with alcohol. There was something on the pipe, so I mistaken it and then put it back in the case so that everything could solidify in place. I glued the stabilizer case only after gluing the wing case. I did not insert the stabilizer housing, I found the correct position by tilting and then tightening the screws. I separated the stabilizers with transparent adhesive tape in the place of the pipe. The already inserted sleeve is applied epoxy and again by turning and sliding fills the gap in the structure. The overflowing adhesive is wiped with alcohol and the stabilizer is fixed in the correct, pre-tested position parallel to the wings slid onto the tube. Again, after about an hour and a half, the stabilizers are removed from the adhesive tape after a small snap

of adhesive. The overflowing adhesive and the tube are cleaned with alcohol and the tube is pushed back into the housing.

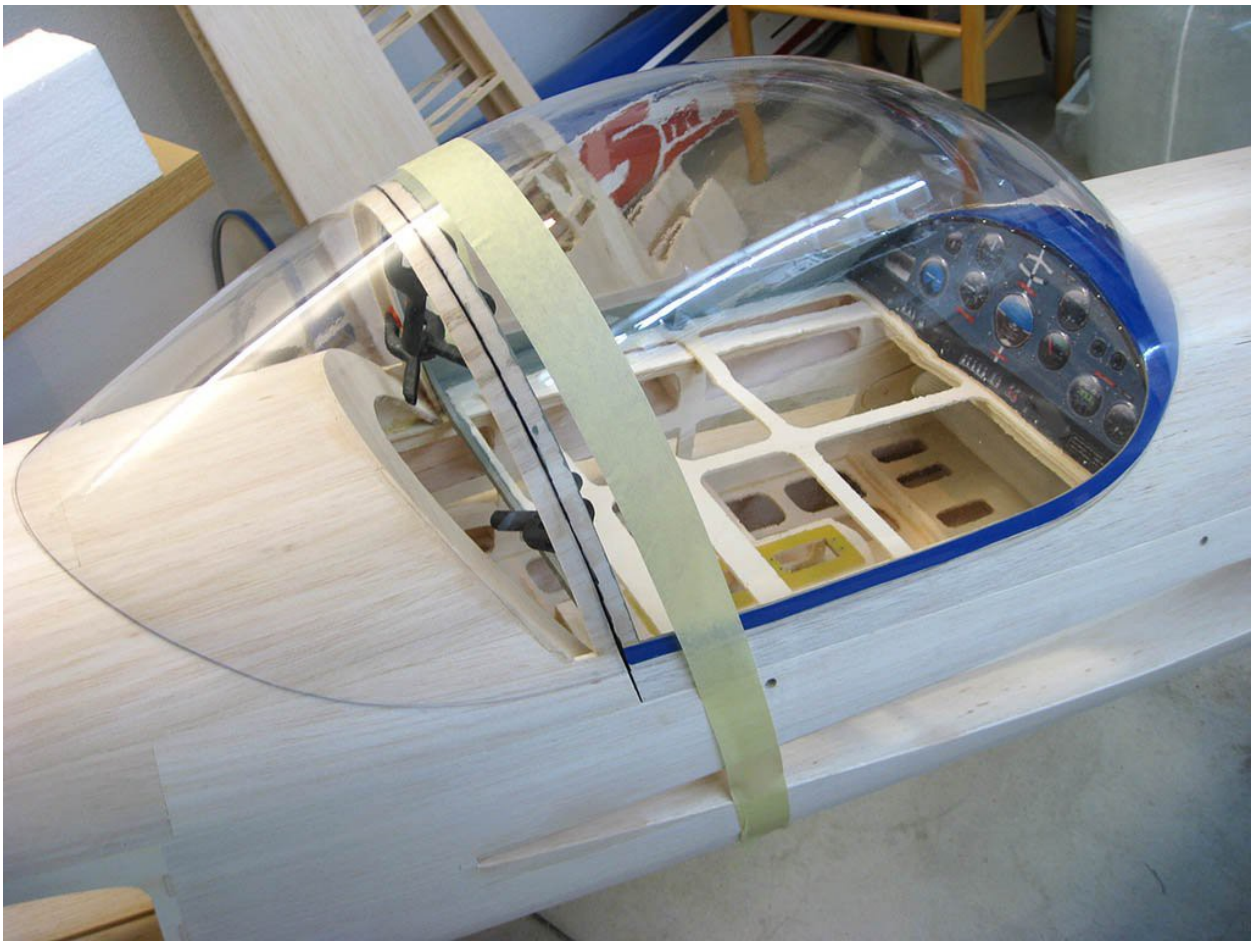
It is not usually necessary to sand the frame of the cowling, the thickness of the cowling should match and create a completely smooth transition to the hull. The frame is screwed on the hull into place. So the Cowling fits mainly on the lateral alignment, the region of the cowling gradually grinds up until it fits precisely into its place without gaps around the perimeter of the cowling. Once the cowling is sealed, the inside of the cowling is abraded from an edge of about 25 mm to allow the cowling to be glued to the frame and then laminated. Cowling is then glued in place around the perimeter with adhesive tape, internally pierced in several places with a middle CA and allowed to dry partially. No sparse CA is used, it would curl and stick everything together. In places near the oil cooler, the original cowling does not usually fit, it is not necessary to solve it.



Since it is not yet clear which engine I will use, the internal deflector cannot be fully completed. Before gluing the frame, it is advisable to make the deflector base, which is glued from balsa boards thickness. 2 mm. The base fits with the cowling so that it is at a depth of 315 mm from the edge of the cowling. The base is removed and finished when the engine is clear. Its diameter is larger than the inner diameter of the frame, so it is preferable to do the fitting before gluing the frame.

Cowling with the scorched frame is removed from the hull before the glue dries completely. Even so, the frame should be held so that it does not move with careful handling. The parts of the hollow that do not reach the frame around the radiator are glued with epoxy and stripped to the frame. After drying and cleaning, a tape is applied to the frame to ensure that the letoxite does not leak when laminating the frame from inside the frame. Along the perimeter, the frame is laminated with canvas tapes about 25 mm wide.

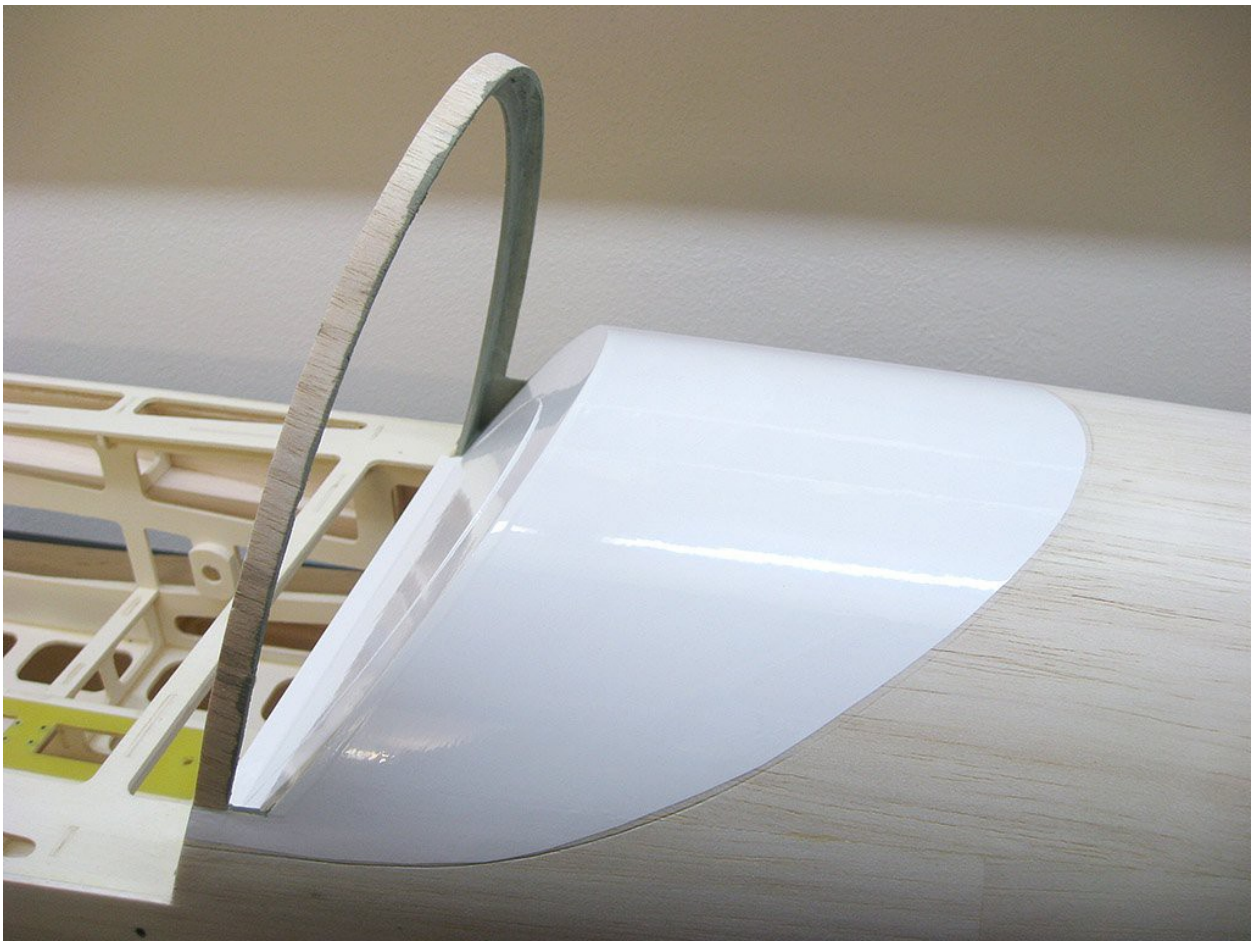

The deck is printed on a color printer and laminated. On the deck comes a plastic overlap, which improves her realism a little. The canopy was shaped by Martin Kříž.



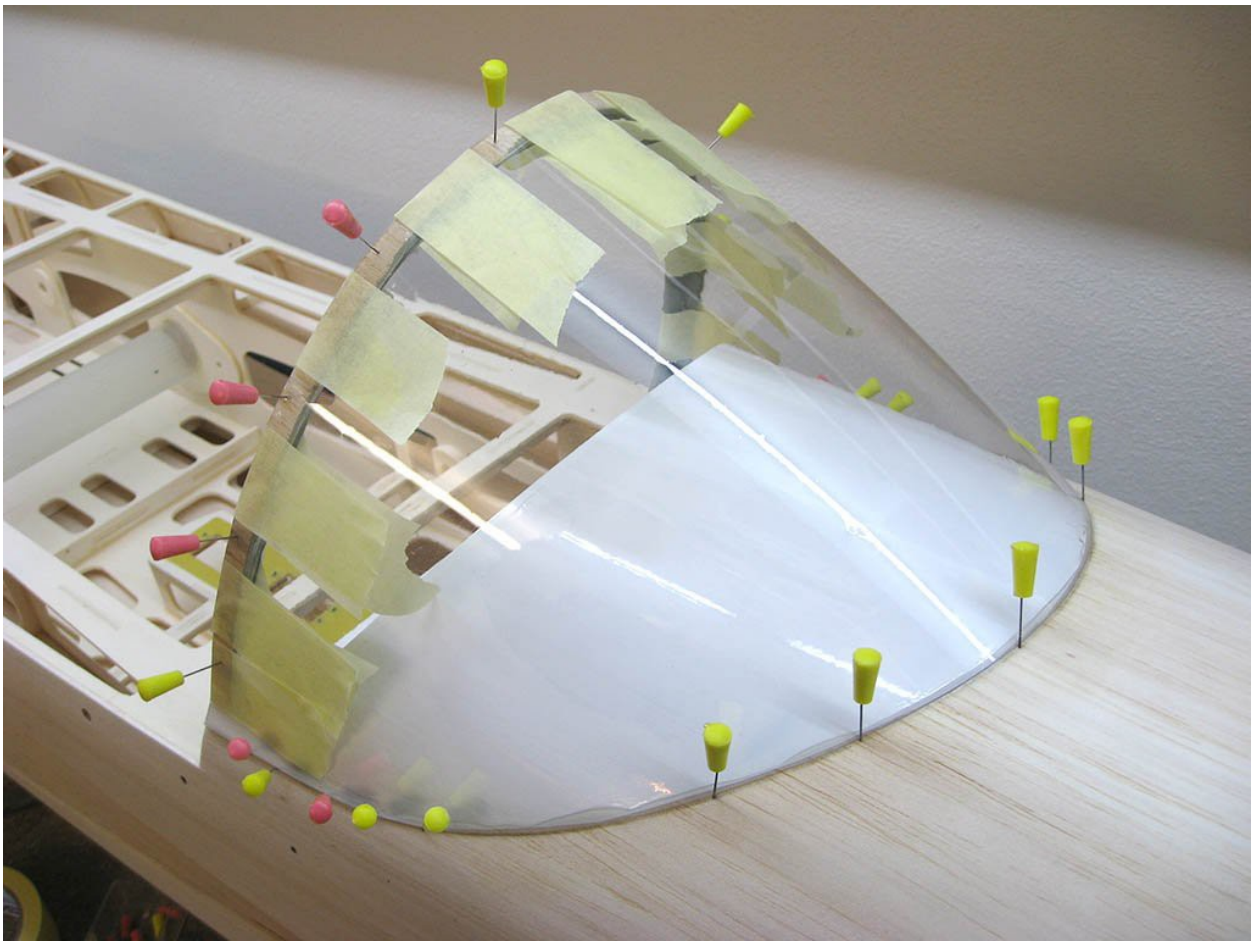
After several days of final grinding, cementing, grinding, cementing and grinding of all parts of the model, I cleaned up the mess that I do not like and continue with something productive. Part of this grinding was also to create a sufficient and even gap between the hull and its top cover to fit both covers into the gap. I pulled the inside of the top fuselage cover that would be in the cabin, along the edge of the canopy. Subsequently, I painted a gray spirit with a brush inside the cabin, where it could be worse or inefficiently get a spray gun, the construction under the floor does not need to be painted, will not be seen. The top fuselage cover is then screwed into place on the fuselage, the canopy is placed in place and the tape is tightened. The overlap must fit precisely everywhere, especially on both arches. Pencil mark the position of the cabin on the hull and its cover, with a marker mark the divide between the arches. The cover is then removed, cut with scissors and cleaned to a straight cut.

The construction is laminated print and its cover is attached with normal pins, on the other side is a safety drop CA. The base of the deprone is sprayed in a cool place outside the cover with alcohol paint and after drying the paint is glued into place. It can be glued with hollow or epoxy.

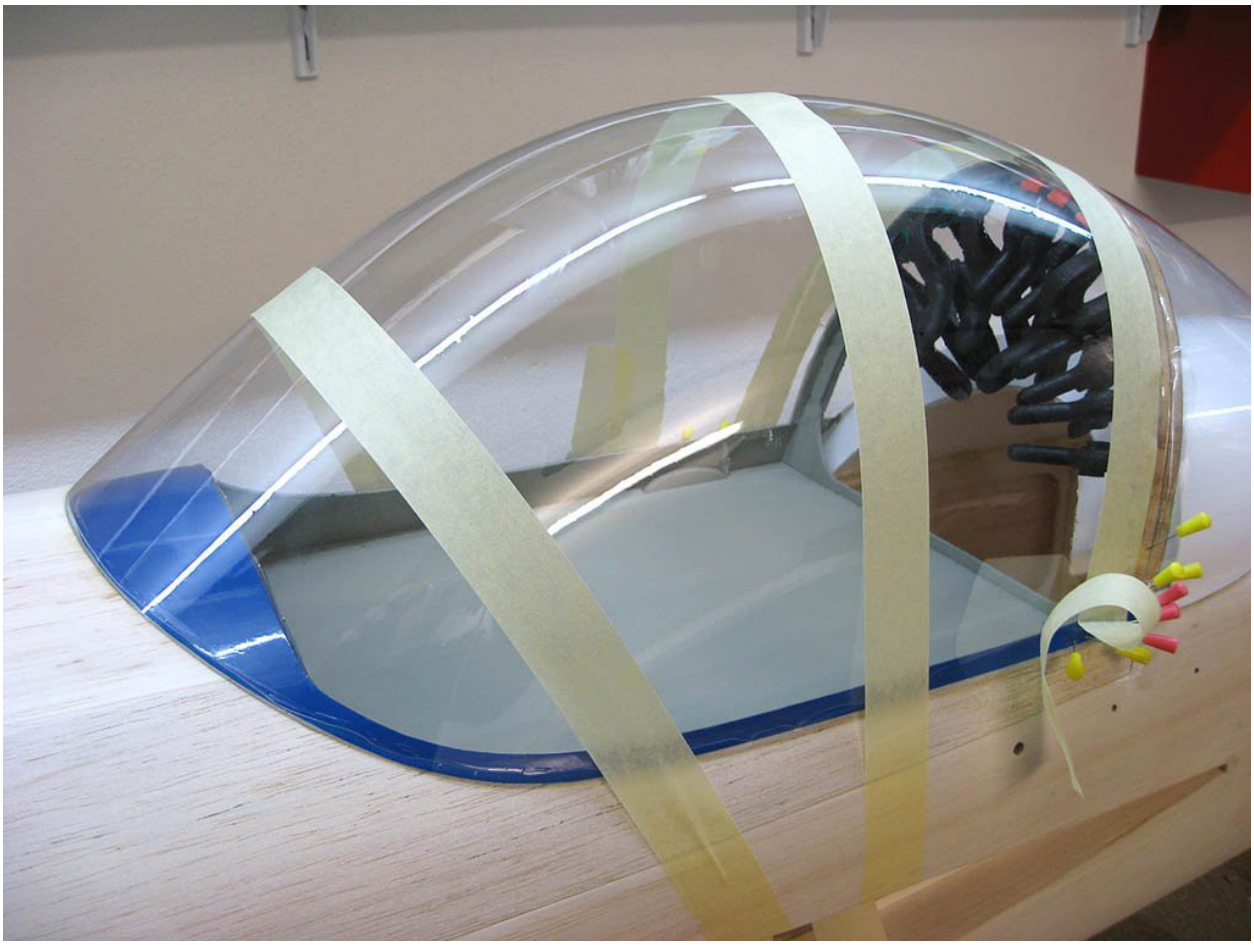

The interior of the cabin is coated, everything is prepared for the final sealing of the molding of the cabin.



There is not much to write here, the part of the fuselage inside the cabin is covered and also the removable cover for access to the back of the cabin, which holds the magnets.



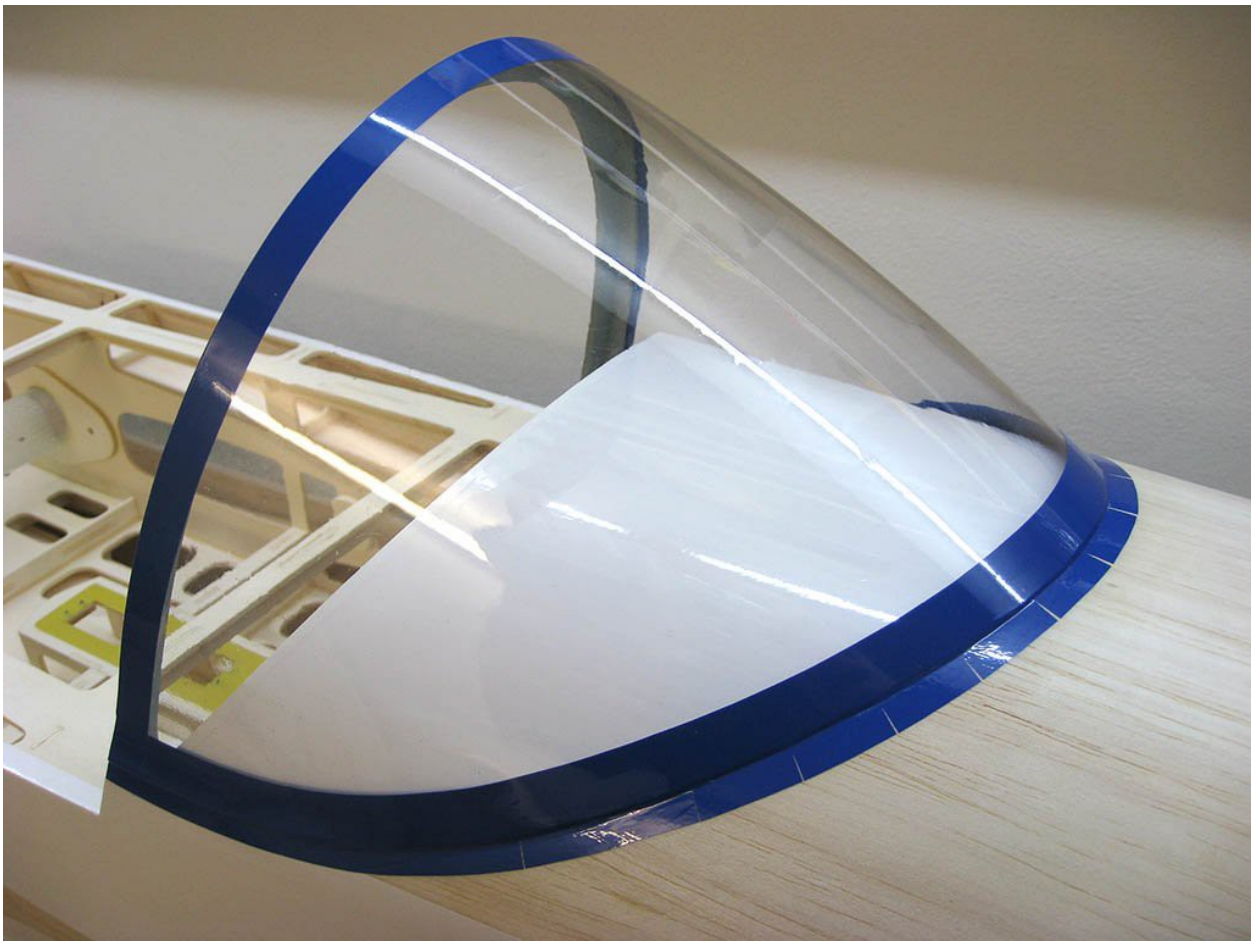
After checking the fitting of the front and rear part of the canopy on both arches, it is possible to start gluing them. First the back is glued. In the original version I used double-sided adhesive tape. It works quite well, but summer temperatures, along with vibration, can cause the adhesive to "flow" on the tape, so the arc shifts slightly. In version 2 I used gluing around the perimeter. The best solution is to use glue on the cab. I had no time to get glue, I glued 30 min. epoxide. Before bonding, the contact surface is sanded with emery, otherwise the adhesive will not hold. Assuming that everything is saved, the glue is placed in place after the adhesive has been applied and aligned with the edge of the arc. Spilled adhesive is wiped with alcohol and the overlap is fixed in place with tape. Finally, pins are used which are injected through the canopy into an arc at the points where the canopy does not lie completely. In the lower part, the pins are then placed only on the edge of the canopy, ensuring that the canopy is fully in place again. Finally, any overflowing adhesive is wiped off.



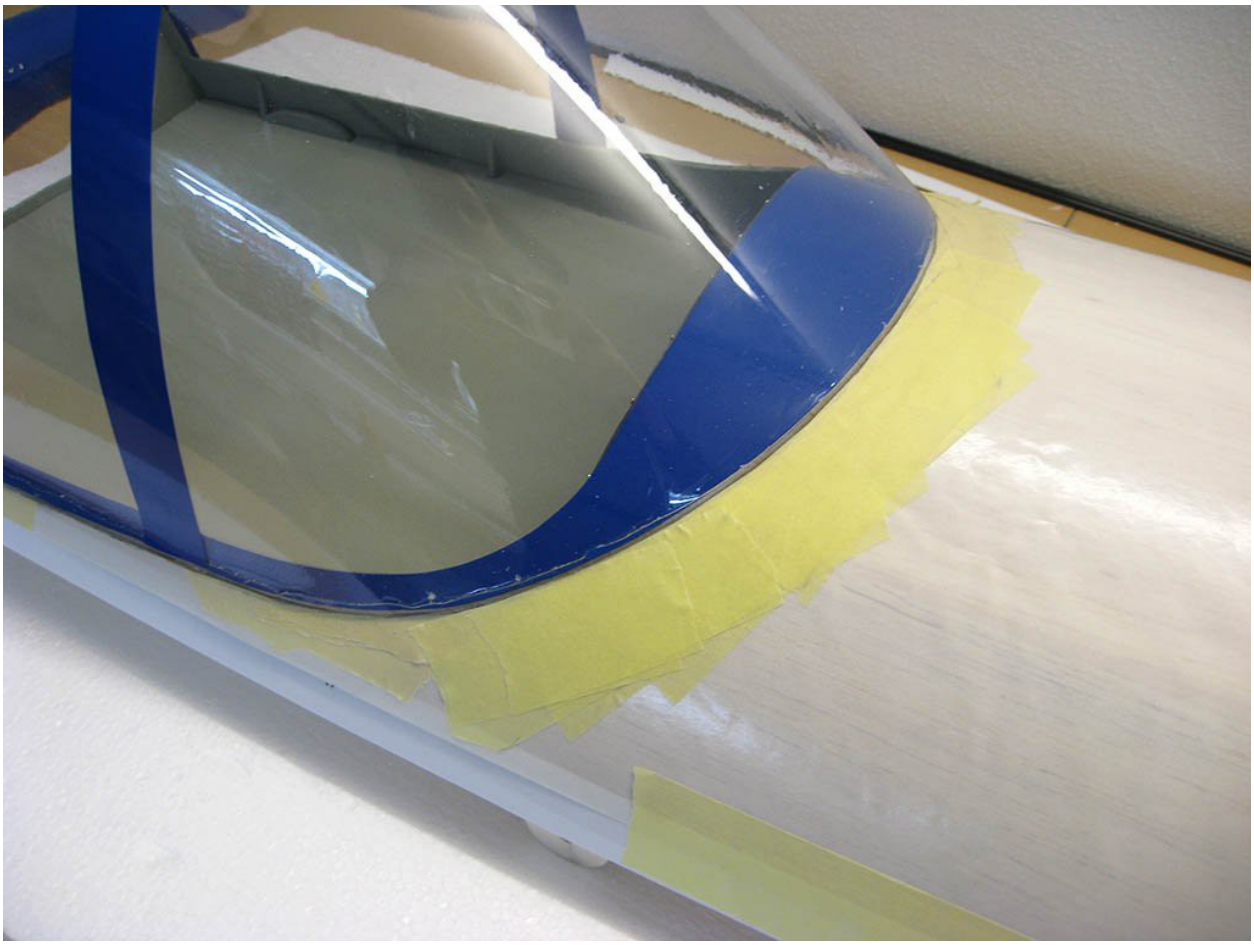
First, the upper torso cover on its arch at the back is separated by transparent adhesive tape so that everything does not stick together. After cleaning the contact surface of the rear arch, put the upper fuselage cover and screw on. Then, the pin arches are pressed together with the durofol liner that was previously used in gluing the arch. The procedure is the same as for the rear part of the canopy. The cover is now fixed in place by tape to the fuselage in several places, the rest is again tacked pins.


So I began to coat the hull. It is going well. First, the lightest shade is made, so white.

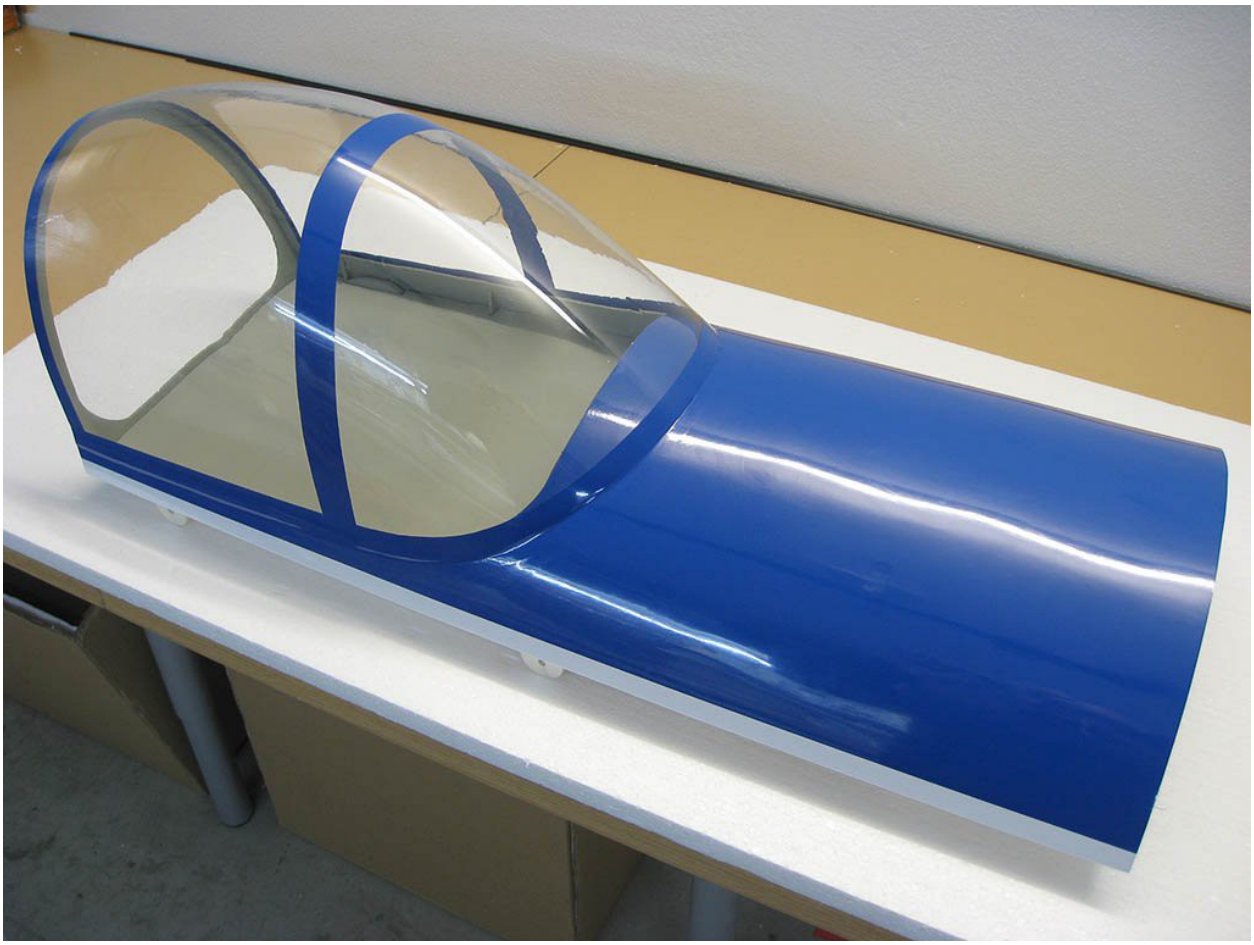
Ironing an oracover on a cab molding is a pretty cool thing if the templates are correct. Also important is the correct temperature of only 150 degrees Celsius and especially ironing with sleeve.



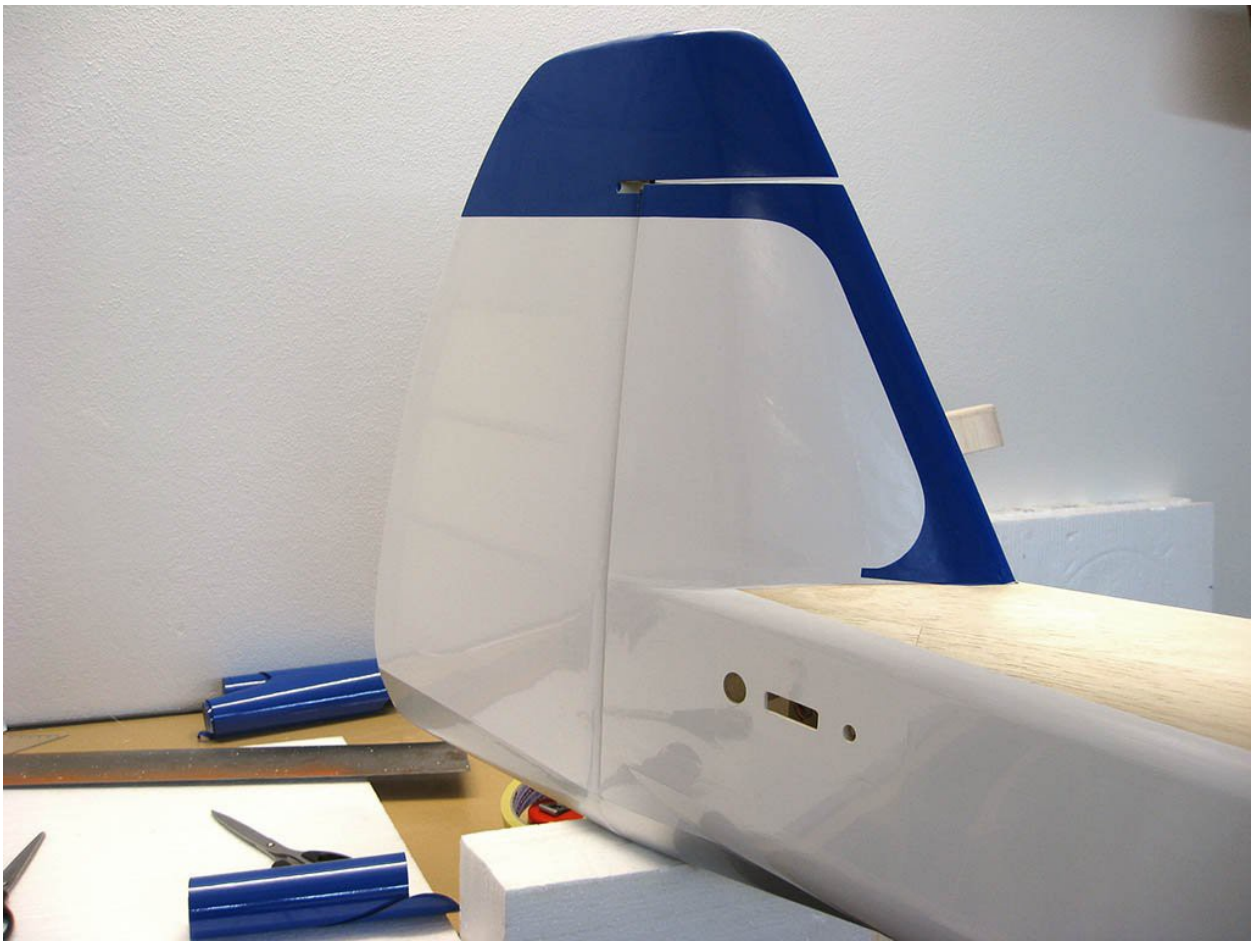
As usual, this issue requires an accurate template. Once the cover is properly prepared, it goes well.



The stencil needs to be made of some translucent paper, visible below the stencil. It is practically impossible to catch more complicated shapes the first time when a piece is missing somewhere, add tape and then redraw it, including the tape.



This coating is quite demanding, finishing the coating before ironing ensures a perfect result, and finishing cannot be done without some patience. It remains to put the pilot in place and finish the near-dummy ventilation openings in front.



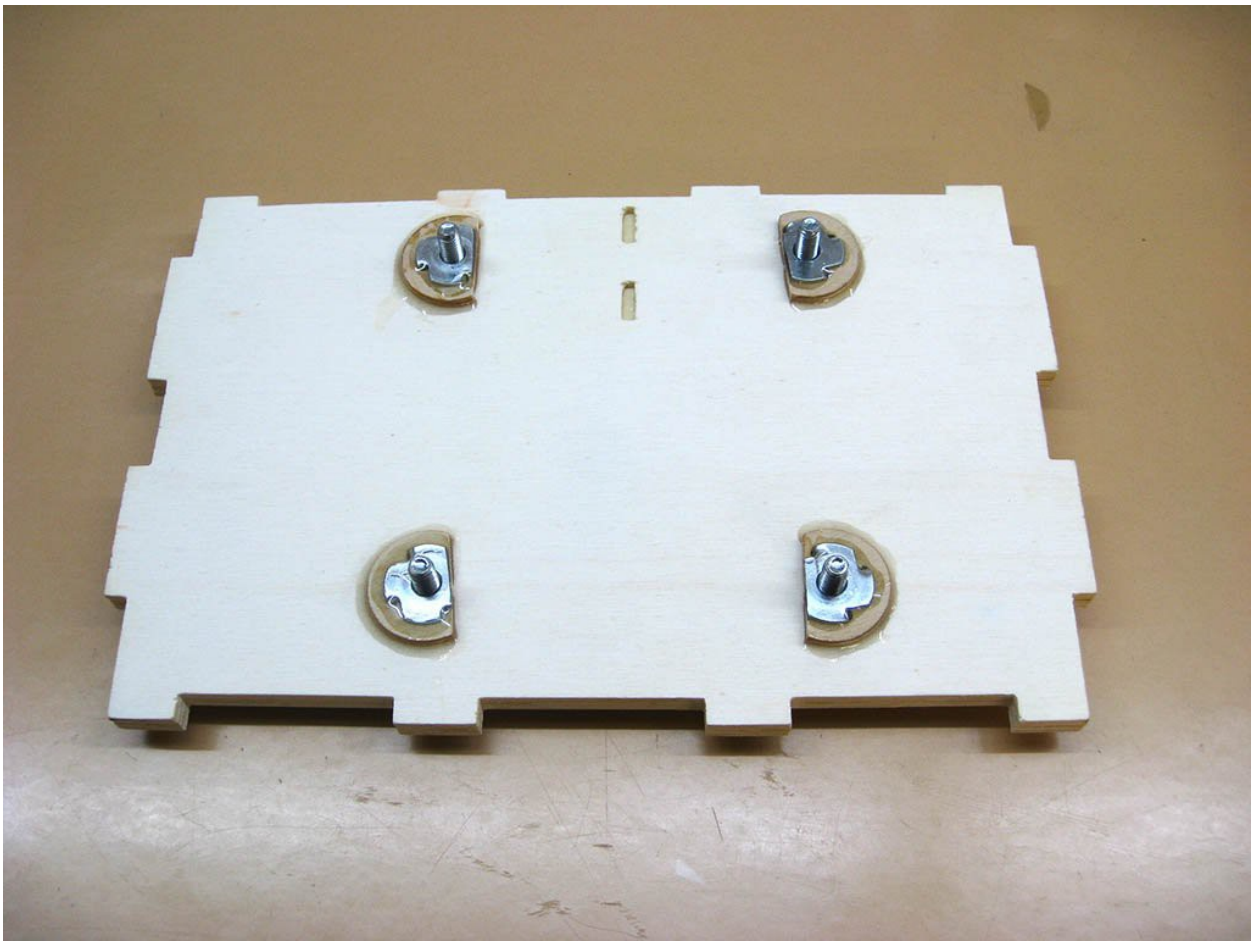
It is coated with silver bottom and truss covered. Both are for a few hours, most of the time they give templates.


As it comes to completion, it becomes more entertaining, it starts to look a bit ...

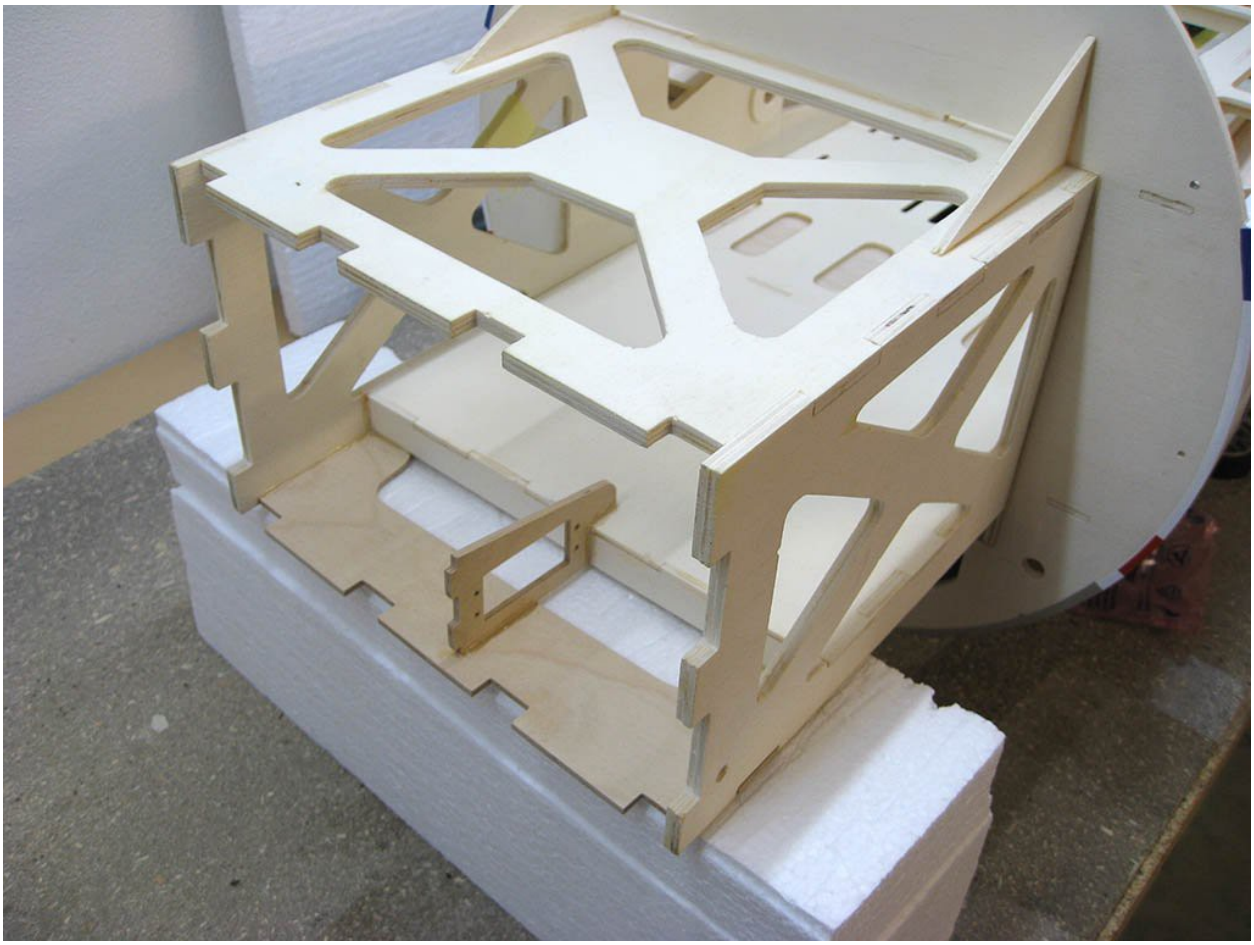
I thank Mr. Kaplan for making the pilot. Dimensions are 22 x 20 cm, a relatively large bust. Weight 114g. I didn't even notice that my beards were already gray.


I've finished the hull coating, it's going slowly, not so much time.

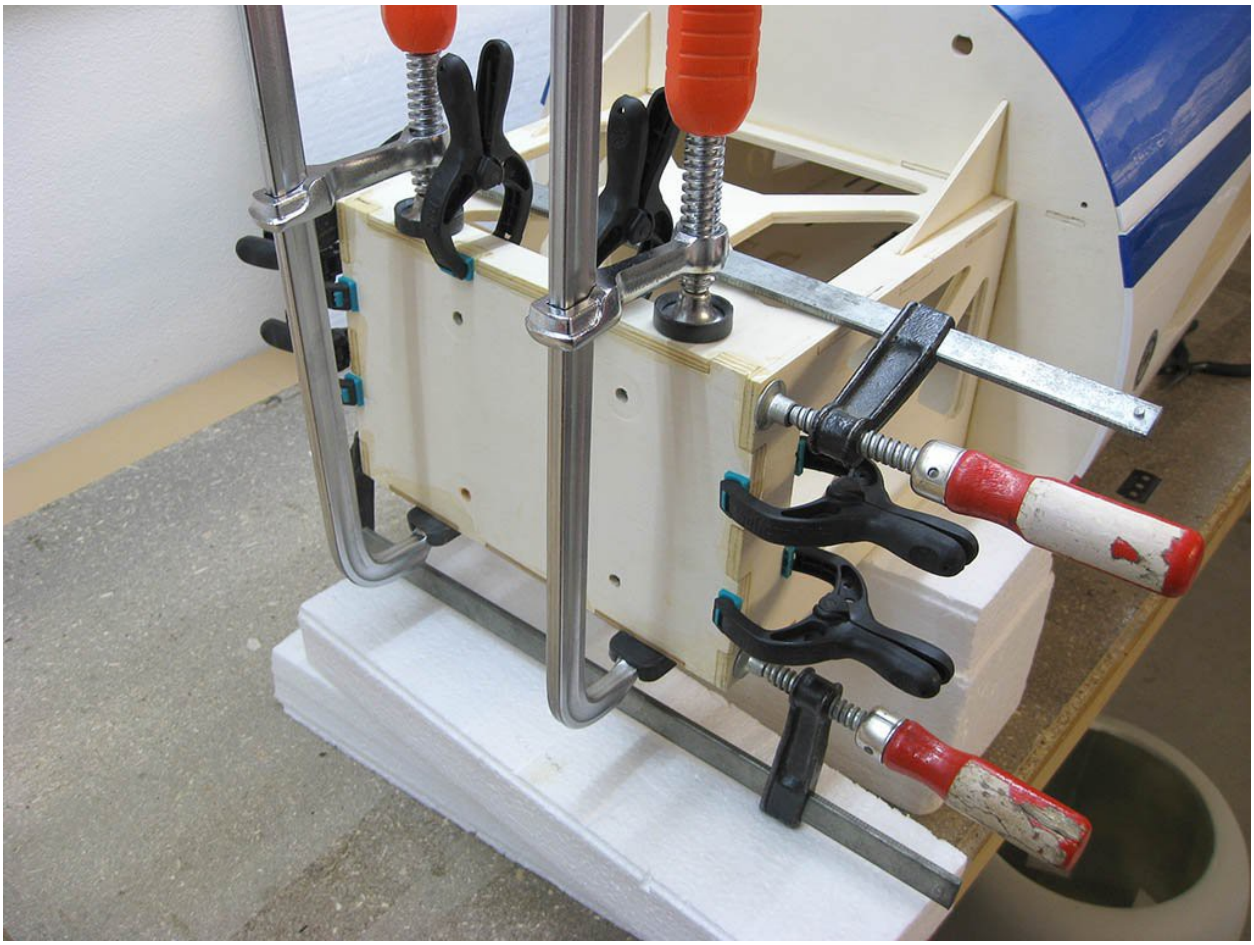

I glued stickers from car foil. It remains to close the exhaust ducts and the hull at this bottom. Pilot is in place.



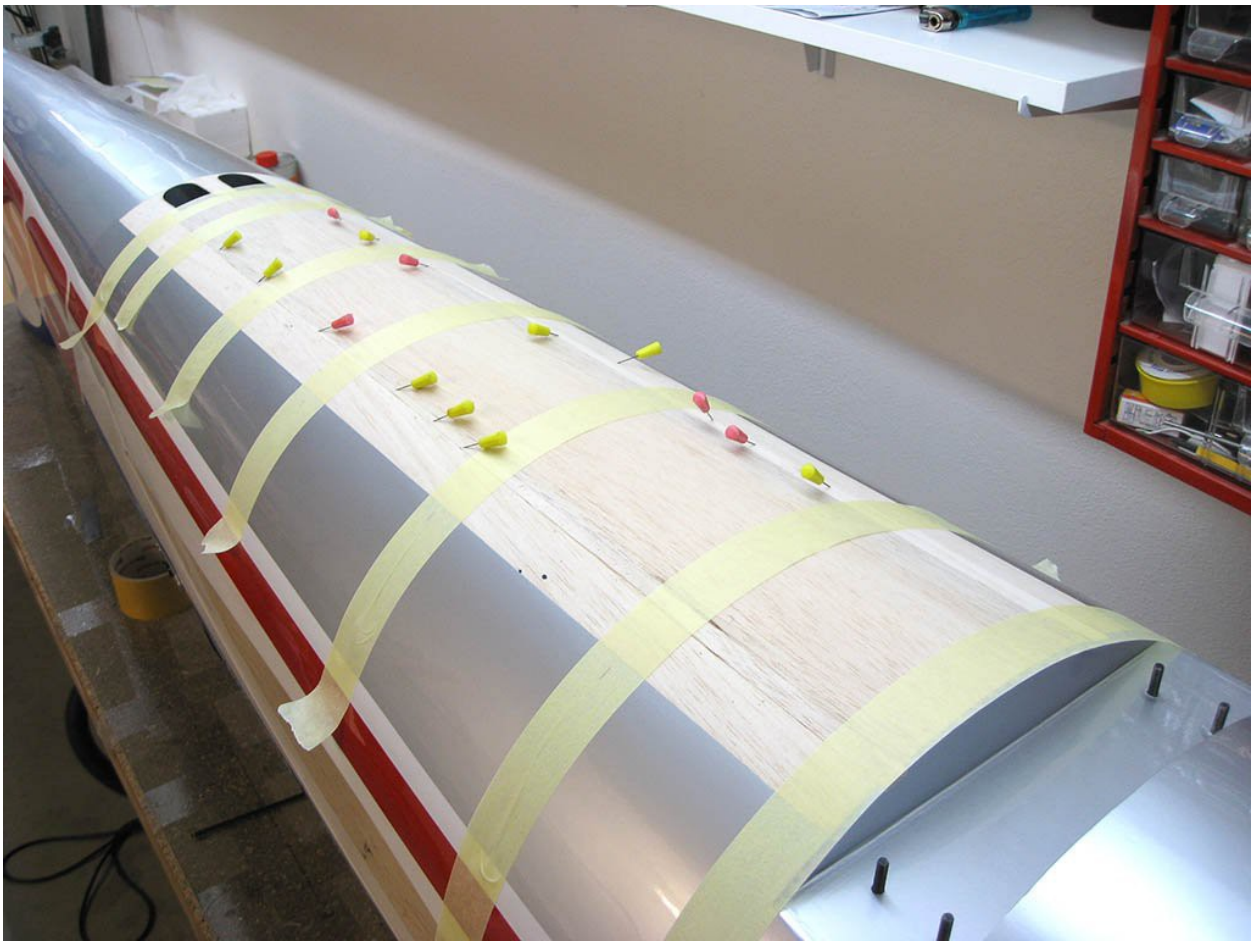
Finally, I get to glue the motor plate. Plywood from aviation plywood I trimmed, over time maybe use another engine with a smaller pitch, so let there be room for future fittings. I cut off the mother too. Everything is glued for 30min epoxy.



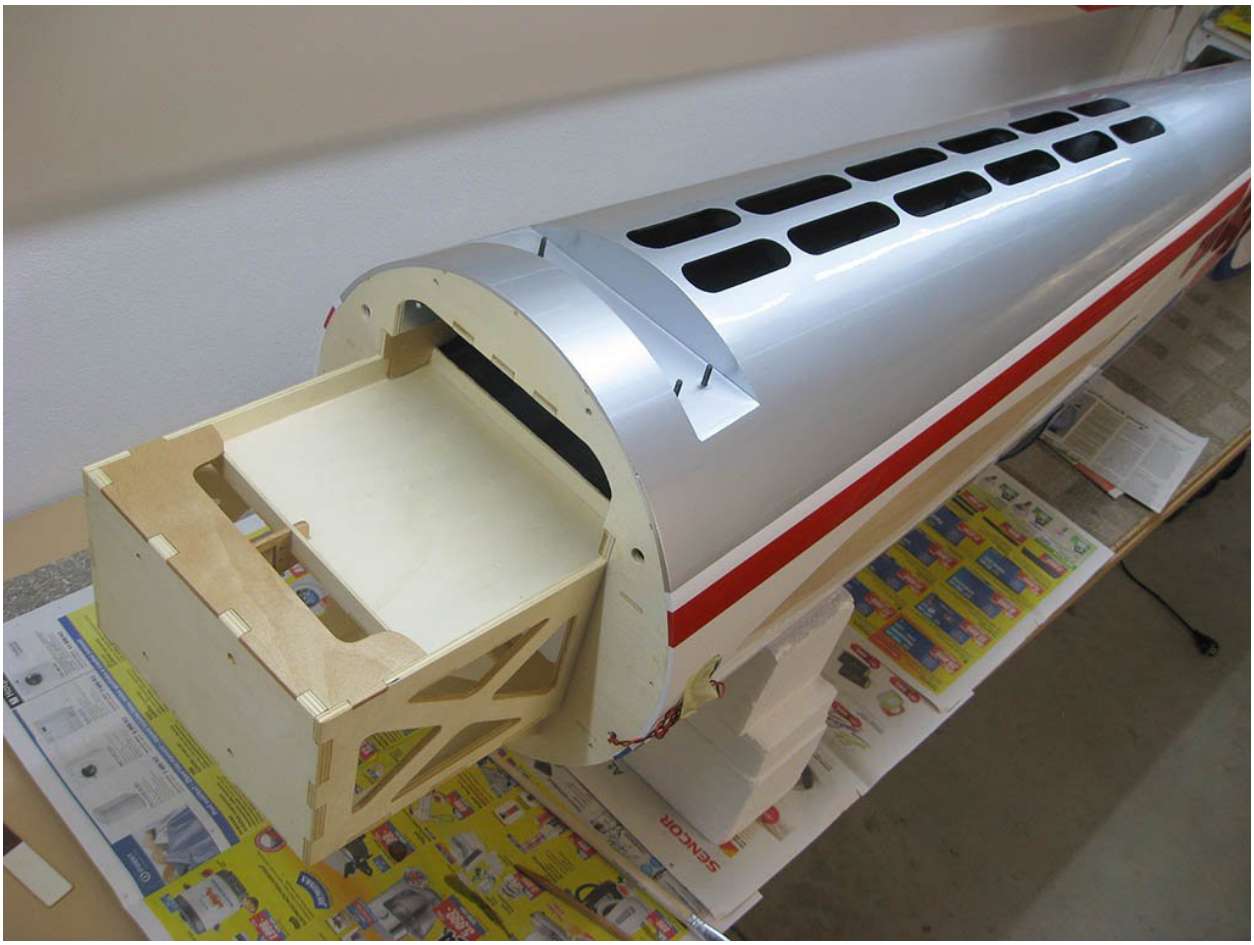
First I glued the lower part of the motorbox and the gas servo holder with epoxy. After considering, I also glued a partition of poplar plywood, which is tied to the floor of the motor box and also to the gas servo holder. Almost nothing weighs and the result is concrete. Now just stick the motor board.



He must hold this. I glue 30min epoxy and need to use enough glue, fill all corners and properly withdraw.



Before closing the exhaust shaft, I wiped it all with black alcohol. Subsequently, we aligned the edge of the existing upholstery and prepared a balsa board that fits exactly into the gap. It is glued by dispersion. After drying everything is resurfaced so that there are no visible transitions.




The coating at this point is then completed. Using the template I made from durofol, future holes for the exhaust shaft ventilation are drawn in the right places. The rear openings are seamlessly connected to the previously performed shaft extension using two grooves. Then it is necessary to paint the entire motorbox and the floor up to the casing of the wing tube. I paint with letoxit diluted alcohol. It is lacquered twice, the first layer soaks, then resurfaces, the second layer makes a smooth, molten surface resistant to petrol, which can be cleaned well.

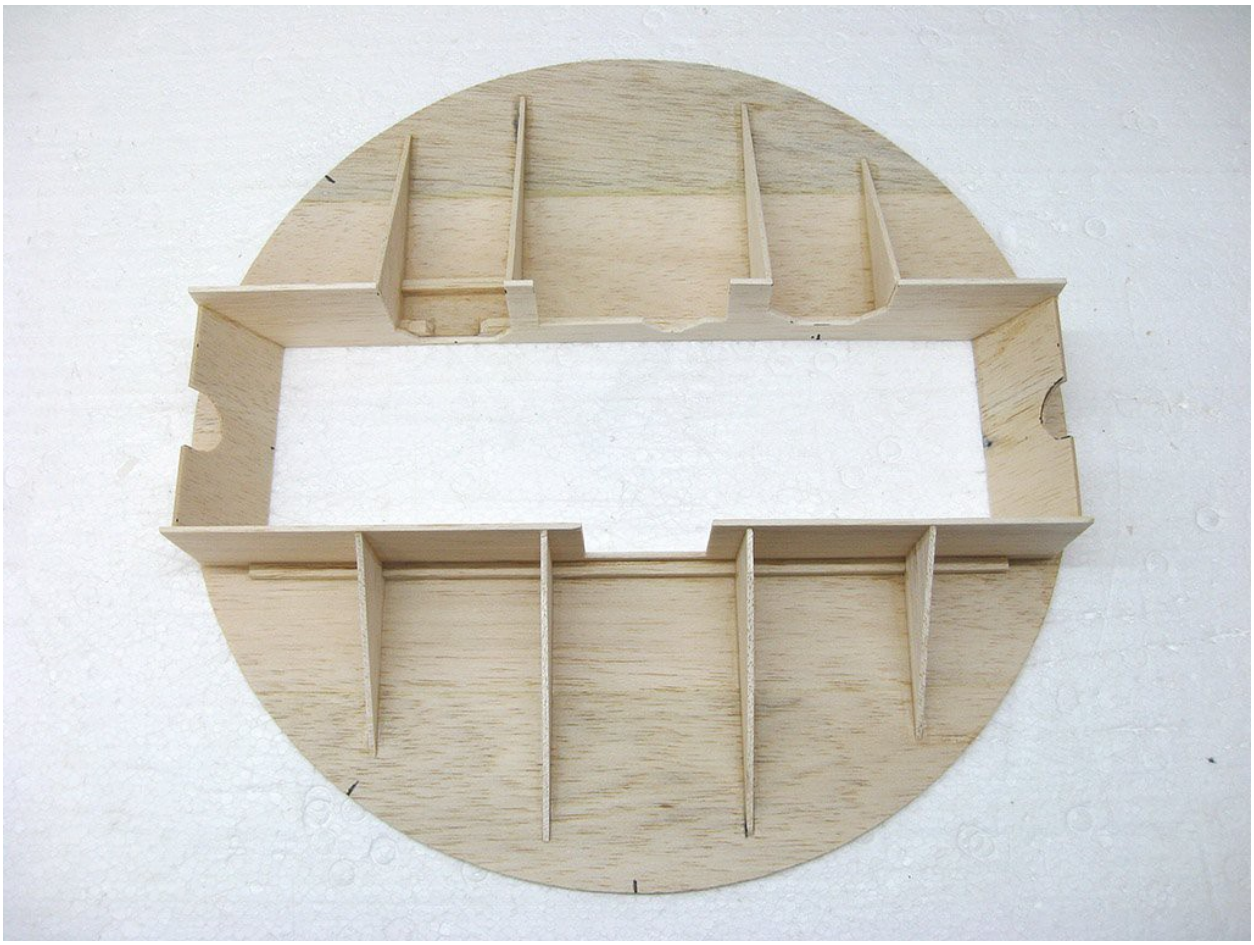
Well, this is a psychic thing. How far one wants to go, so long it will take. Simply, if it had a really perfect surface, it would still take a long time. Even so, I did it for several days. I hate this job, who ever did, well knows why. So finally ground under water, 2K filler, now go base, oracover and stickers.

It is such crap, but it gives relatively enough time to look good and keep the distance of future lanes. I use 3M masking tape. Subsequently, areas that are not sprayed are masked. First, the lightest shade is sprayed, so white.

I stayed here a lot, originally my tried and tested Mobihel shop in Brno failed to mix the right shades to match Oracover's colors. After a lot of disappointment, regrinding, mixing of bases, wasting a lot of time, I sprayed the base and made quite complicated mixes to be able to do it the next time. The bases are matt, after the design and spraying of clarlak is finished, of course it will be shiny.

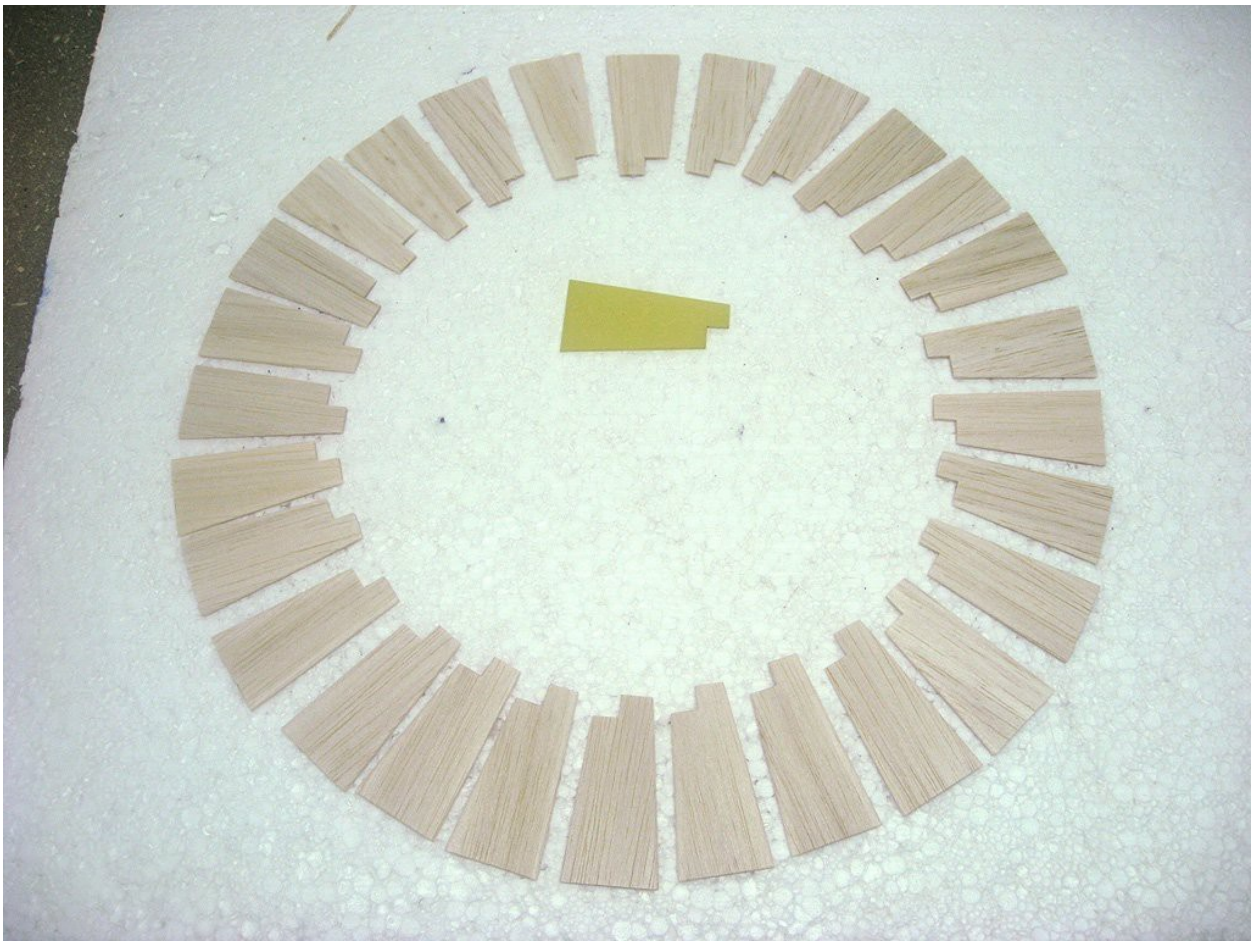
The exterior of the cowling is finished, except for the final clarlable spray. The star and red stripes through the ventilation holes are made of car foil, the upper and lower stripes of blue and red are oracover ironed on a base. When ironing it is necessary to monitor the temperature to 150 degrees Celsius and it is very easy.


Cowling spraying is complete. Now it is necessary to finish the deflectors, the outer deflector is finished and settled outer frame. It is screwed into small beech blocks glued from the inside to the hollow. So far only the base of the deflector is saved. The canopy was still added ventilation covers, but are not functional, it is an effort to get closer to the origina

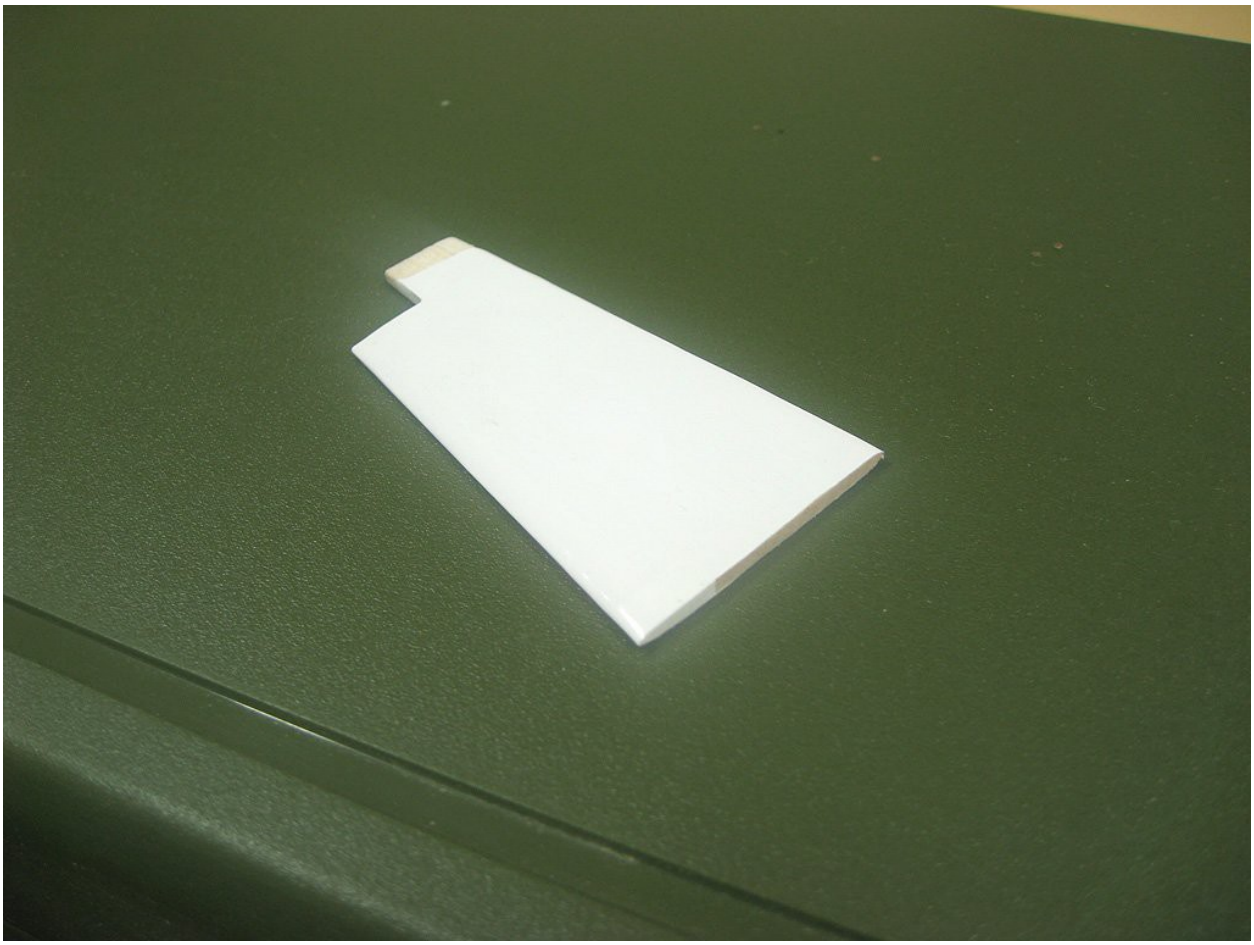


The inner deflector is glued from 2 mm balsa remains and a 5x5 mm corner balsal reinforcement. First cut the hole in the base, which must be fitted with the engine, then glue the corner stiffeners and perpendicular planks, which will keep the air flow as long as possible along the rollers, and at the same time also slanted boards over the cylinder heads. Then the notches for the individual protruding parts of the engine and the knees of the shock absorbers are gradually cut. Finally, perpendicular struts are glued to simultaneously support the entire base. When it comes to salvation, it is put on and off many times; With a little dexterity and enough sparse CA it is about 1 hour of work.

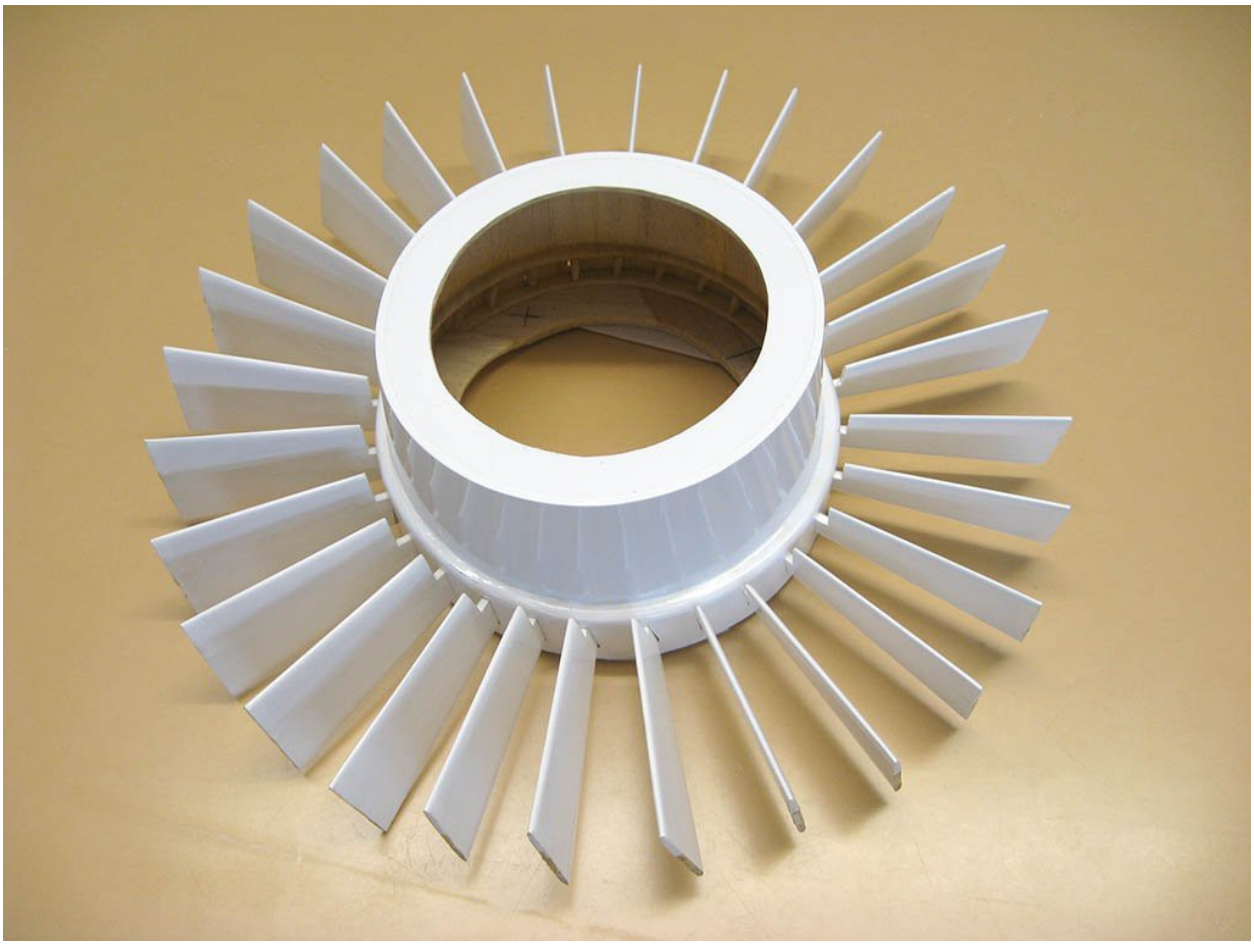
The inner deflector is laminated with strips of canvas from the inside to the floor, laminated with Letoxit. The engine print on the photoplotter is laminated into foil and subsequently glued to the deflector base using UHU spray adhesive.



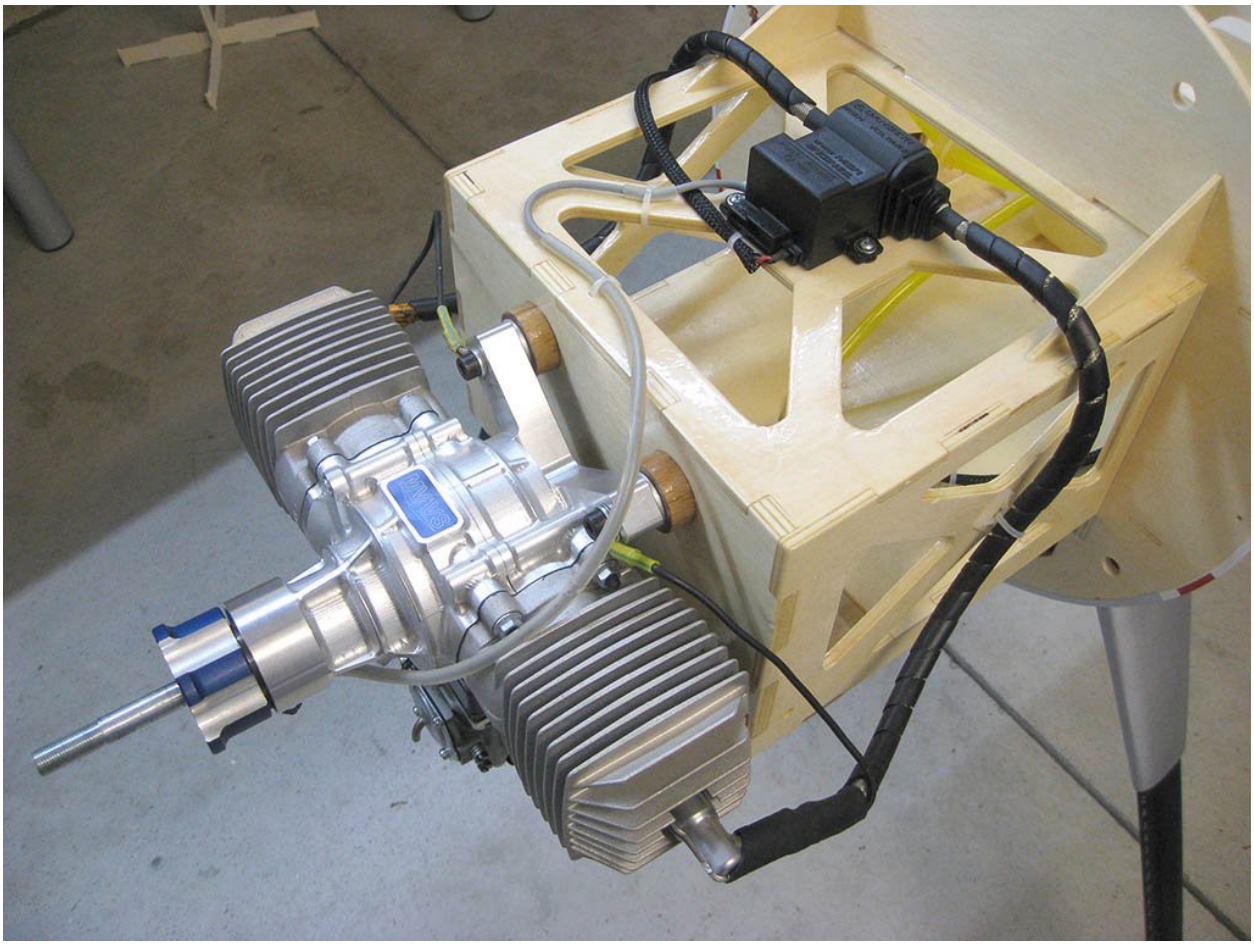
Individual blinds are cut from light balsa of 2 mm thickness and are ground to the profile on the leading and trailing edge. A total of 28 turning blinds are used on a real aircraft. In the middle is a template of fiberglass, which significantly speeds up the cutting of blinds.



The blind is covered with oracover. I chose the oracover cover after various laboratory work with cementing, spraying or with completely different materials and laminating. Simply the simplest, fastest, good looking and lightweight is this solution. It takes me about 7 minutes to cover one blind with oracover. So in total it's been for quite a long time ...

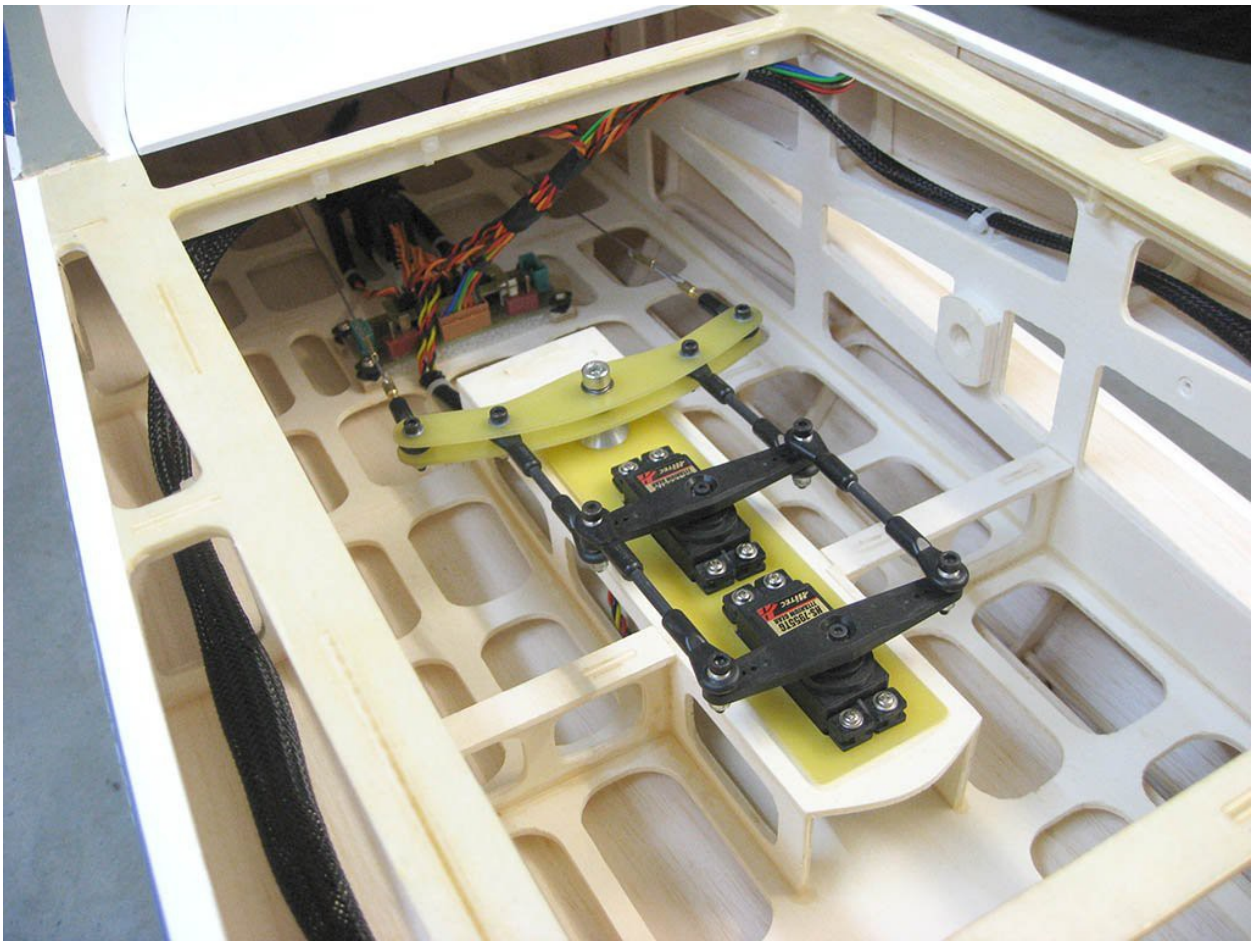


The outer deflector is only about getting closer to the original. It is made entirely of balsa thickness. 2 mm. Three circles are cut from the balsa, anterior, middle and posterior, anterior diameter 4 mm smaller than the cone base diameter, anterior and posterior diameter of the same but slightly larger diameter than the anterior circle diameter. Subsequently, the rings are joined by balsa strips with transverse summers to form the entire central part of the deflector. Finally, the inner hole for the motor shaft passage is cut in all circles. After coating this section, the holes are cut into which the individual louvers of the deflector are inserted.



Since I did not install smoking this time, the whole installation is easier. I didn't even install the light, I just installed the really necessary things. The engine is classic on beech logs, the speed sensor inlet is in a silicone hose, probably did not break through. All the cabling in the second version I put in braids or plastic twist.

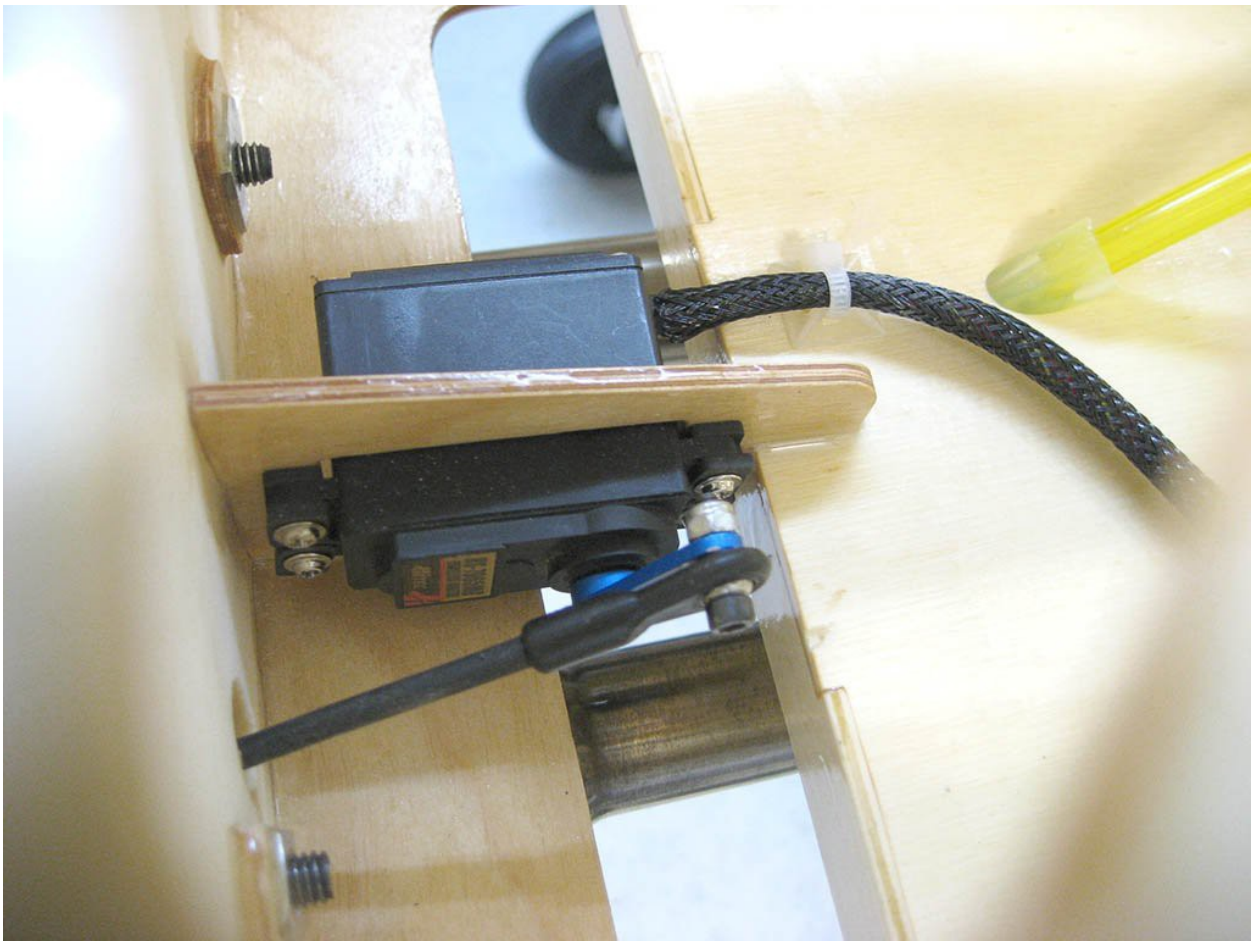
I still use Dubro tanks, modified to three-valve, plus I do not use the original plastic through-plug cap and its counterpart, but my own duralumin. The plastic will not last a season of flying, bursting, and then sucking into the fake air, pretty dangerous and insidious. Taking it around and around, it is quite a mockery, from the original packaging of the tank can only directly use its body. I personally do not recommend a two-valve solution. The petrol stopper must be rolled over, other things are easy to throw. The overflow and pumping pipe (valve) is of brass tube with a diameter of 4 mm, the main suction is of brass tube with a diameter of at least 5 mm. This also applies to hoses, a standard 3 x 6 mm tygon hose is sufficient for pumping and overflow, the Sullivan suction hose with an inner diameter of 4 x 7 mm. A self-adhesive foam rubber is adhered to the tank where it touches the base and the sleeve of the tube. The tank itself is simply caught by dryers through openings in the floor. The overflow hose must have a loop beyond the rear bottom of the tank. Since there is no smoking tank, installation is simple. I use the proven MPJet valve as an external fuel valve.



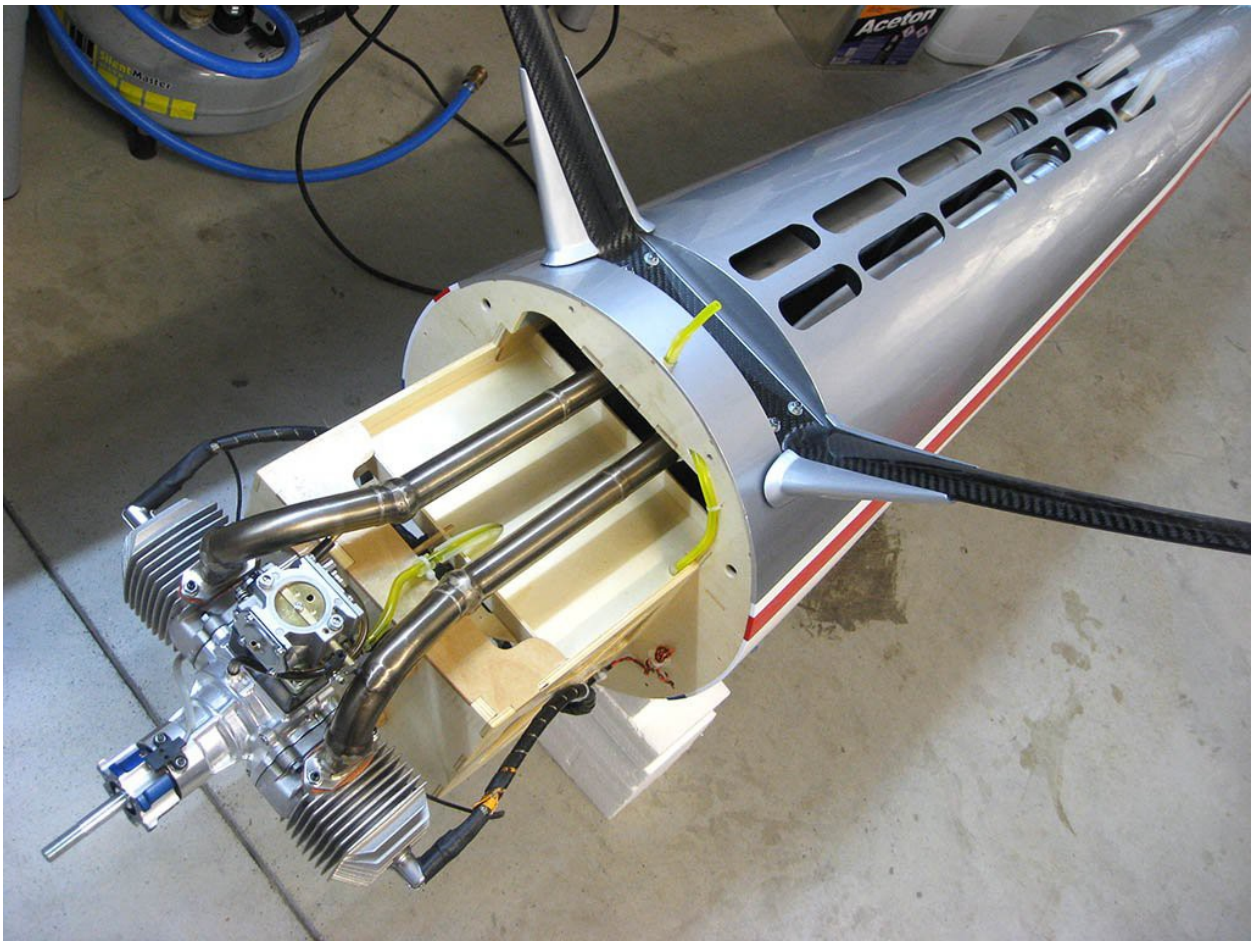
It's basically done, but not all batteries are in place yet. I use my distribution board with two circuits, the set is only transferred from the original version, were replaced only frequently disconnected connectors, so MPX connectors on the wings and servo connectors on the stabilizers. I used braids for all servocables, I fix the braids to the construction using originally self-adhesive fixtures. Their use is conditioned by throwing away their non-adhesive self-adhesive layer and attaching the bracket directly to the structure with CA glue. Part of the wiring are brought servocables from both stabilizers separately, led through a paper tube, the rest in the sheath. It is always advisable to grab the braid just before its end and to burn it before using it to prevent it from fraying. The rudder servos are connected directly to the manifold. An external double switch with a quick-charging connector is connected to the distribution board via a multi-core cable. The remaining servo cabling leads to the nose. There is an extension to the gas servo, an extension to the electronic ignition switch, an extension to the control of the smoking pump and an extension of its power supply (over time I will put the pump there). I only use servo connectors with fuse protection. I took the rudder arm from the original version, it worked great.

Finally, knees and shock absorbers arrived. In total, it cost slightly 11000, - CZK including transport and crack transfer. But I have to say that it is just a wonderful piece of work. It is lightweight, the shape of the knee simply adapts to the current installation in the joints and then solder silver solder. The knee length for MVVS116 and MTW Re2 is extended to 400 mm. Then the engine has optimal running. I have already verified this in advance with borrowed shock absorbers and an extended original knee MVVS. The forum is that a 400 mm MTW elbow weighs the same as a 150 mm MVVS elbow

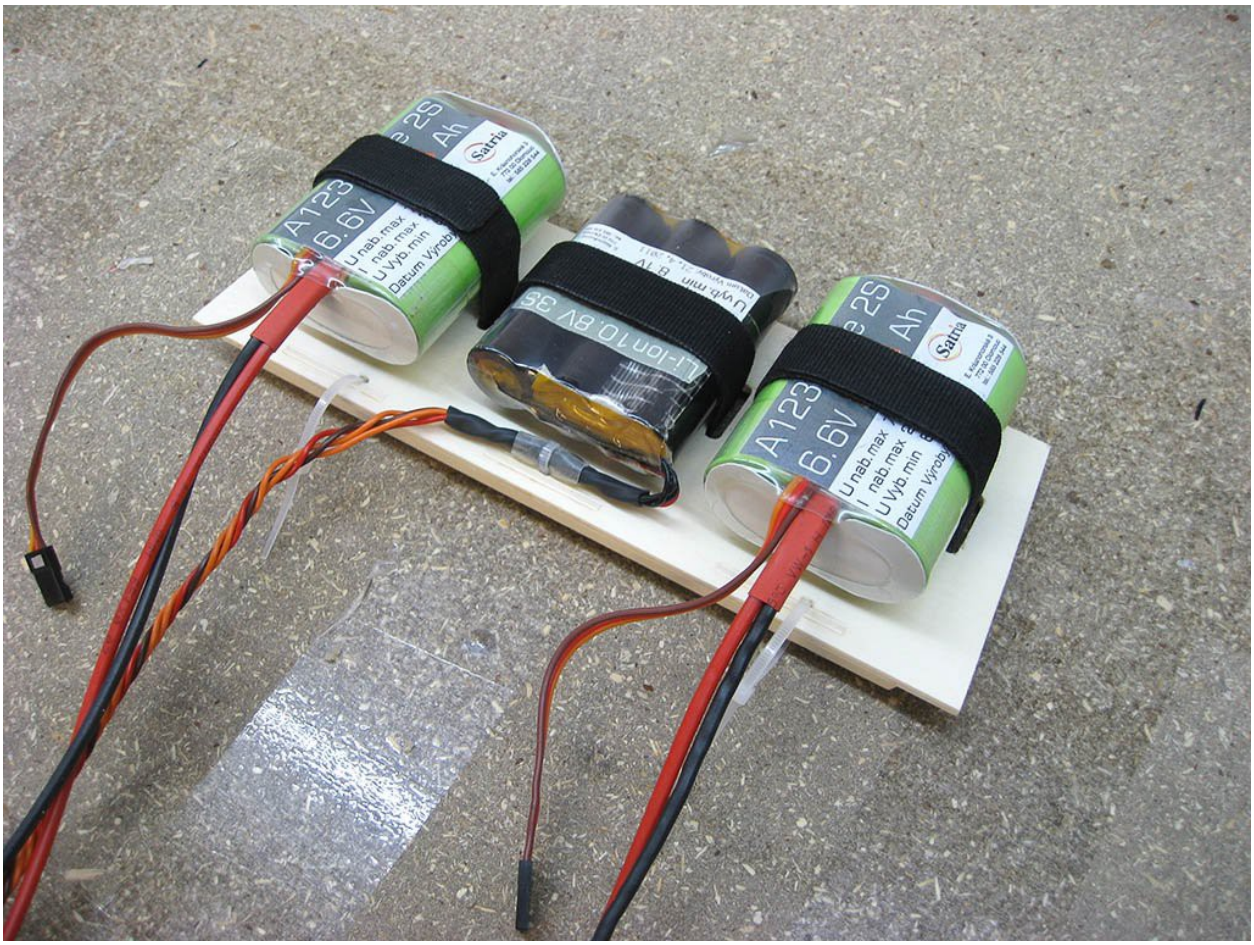
Again beautiful work, the weight of one damper is approximately 260 g. The damper has a faster expansion than the damper mvvs. The result is a slightly lower maximum power but a significantly more favorable torque curve. Last but not least, the installation of MTW equipment saves about 400 g. And that's enough.



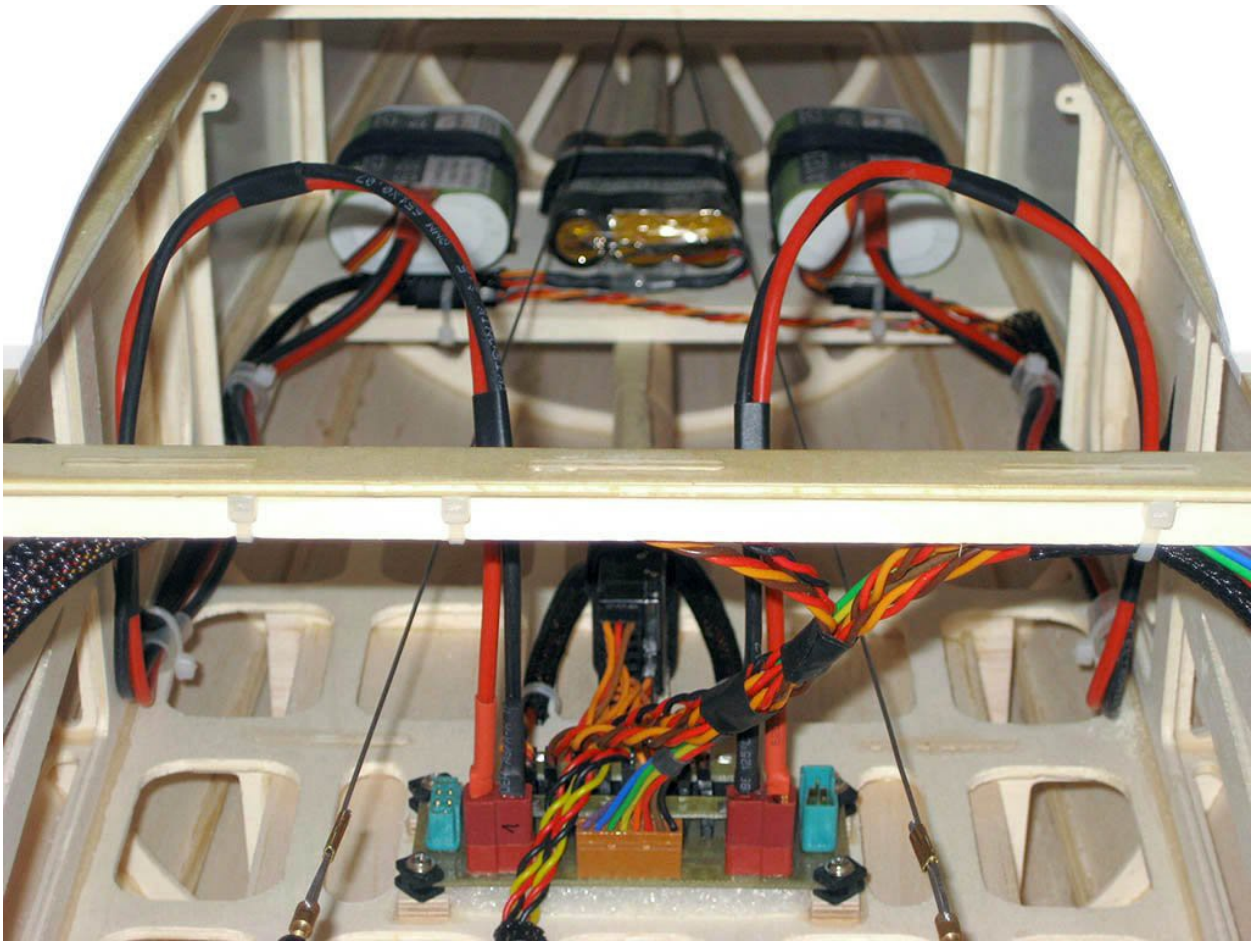
It's unusually behind the engine. It is nicely tidy, protected and the rod is defacto the shortest possible. Again, this solution worked well with the original version, there is no reason to change.



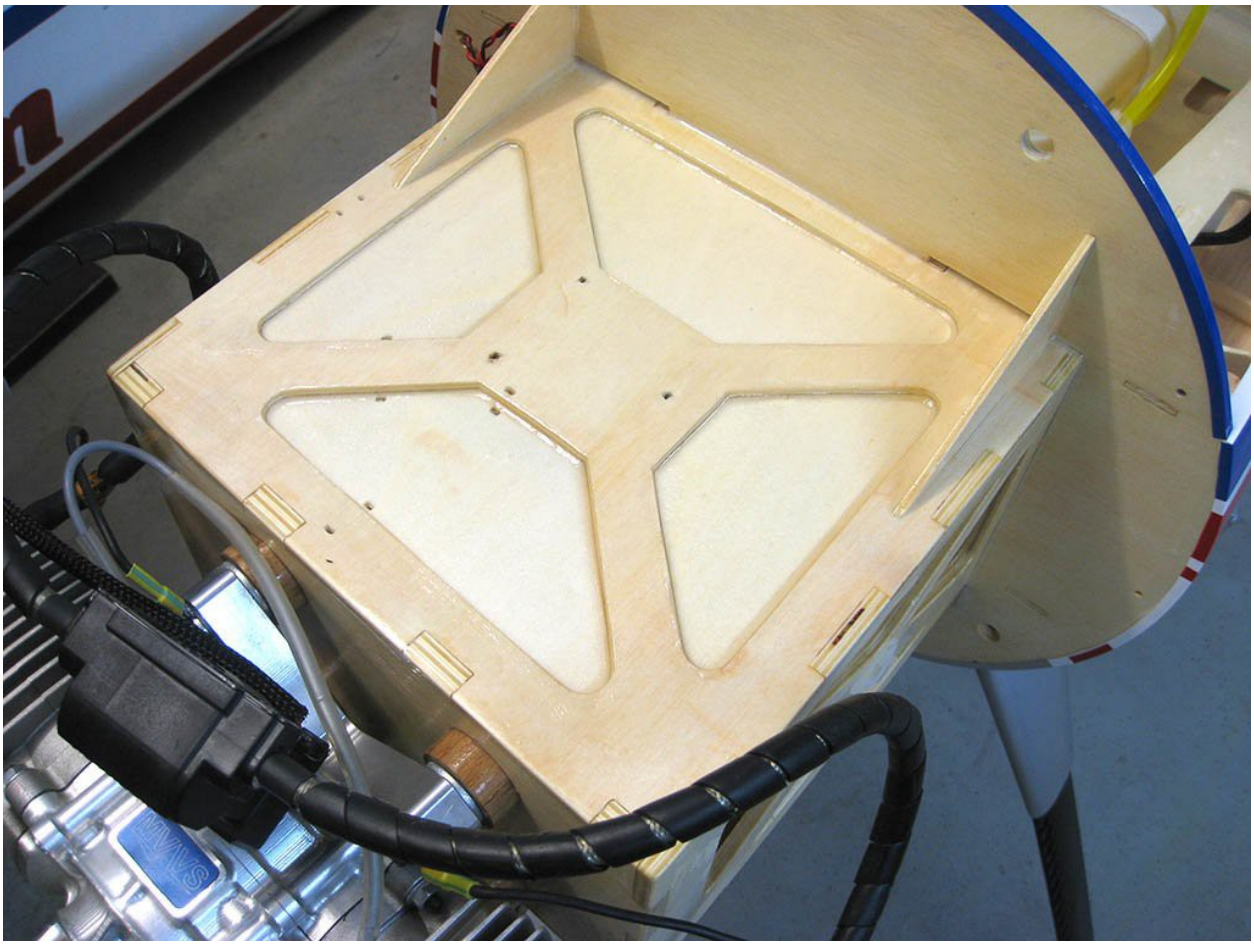

Here again nothing has changed from the original version. I didn't even change the original knee seals to the engine. It is a combination of classic gaskets with COPPER XST high temperature silicone sealant. Since I use it, I have not had the slightest problem with leakage. The engine intake hose passes through the floor and may be close to the knees. I made a grommet from a piece of silicone hose, as well as a sleeve to attach it to the structure. Again, one of the most insidious things is a worn hose and suction of false air into the engine when the model is 10 cm above the ground and the tail down…




Well, here it is again as usual. Servos are powered from two sets of 2sA123, a long-term proven, functional and reliable solution. It is charged through service cables with a current of up to 4 A. The ignition for MVVS engines must be 3s, in this case Lion Samsung, again a reliable and proven solution.



So all batteries are in place and cabling is loose. Everything is prepared for the first start of the engine.



After several engine starts, checking the entire model and equipment, I decided to additionally reinforce the top of the motorbox. The reinforcement of the lower part of the motorbox to the original version causes excessive resonance of the motorbox outside the axis of the propeller rotation. I filled the original relief holes with poplar plywood of thickness. 3 mm. Inside the motorbox, I added a perpendicular web of the same hollyhock 20 mm high to eliminate the resonance of this part of the motorbox where the ignition is on. The strength of the top and bottom of the motorbox is now comparable, the resonances are considerably lower.


Since the center of gravity was already solved in the original version, no correction was necessary. With the current deployment of equipment, the center of gravity is at the center of the wing tube. I leave it on the flight, then see you. The second pair of shoes is not ready yet, so I have them in stock. The chassis is otherwise completed. I switched to shafts from 12.9 bolts. I wonder how it works. The original shafts were made with counter-screws at their ends, now I used the screw as is delimited on the other side. Kavan SuperLight Scale AirWheels Treaded with 5 inch diameter I fitted bearings with a spacer. The sliding bearing that I have used up to now is such a farther system, it will last the flying season, it busts, it raches, it collapses and it is a replacement. I put the bearings with the flask into the tail wheel. Running is great, but it will certainly have to land on the grass, I know it, it goes crazy ...


It's over. During the two starts I learned quite a lot. The center of gravity at the center of the pipe is perfect for 3D, the back flight is in this setting without any interference with the elevator without falling. Wings one tap to trim, elevator two taps to pull. Ascending and descending verticals in both orientations are almost perfect now. You have to fine-tune the knife flights and differentiate the ailerons so that the twists are completely in line. Essentially, the precision of acrobatics doesn't have a negative effect on version 2, it still goes perfectly neutral like any good 55. For 3D features, version 2 is a completely different plane, I'm totally excited. The rudder's authority has improved significantly, which was not exactly optimal for the original version. Reducing and shifting the stabilizer significantly increased the maneuverability of the model in this plane. The model is able to make tight waterfall, knife corkscrews are much more tightened with slower descent, pop-top and similar turns are more tightened, faster, simply better. The counterweights on the wings are recognizable at speed, the twists are faster, sharper even with the original servos, which was the goal. It is an absolutely trouble-free era in dragging, and the counterbalances did not do any harm. Mixes for knife flight correction are slightly smaller than the original version. A mix of R -> E and R -> A is required.


After the flight, the misalignment seemed to be fine, so I finished the outer deflector. The self-adhesive velcro is glued to both the central part of the deflector and the outer deflector at the point of contact. The central part of the deflector is then slipped onto the motor shaft and the cone base and cone are further placed on it. Subsequently, the center part of the deflector is seated by means of a Velcro fastener in place and sessadiated with the base of the cone, then its place is secured with paper tape. After the central part of the deflector is in place, the individual ribs of the deflector begin to stick together. First, the rib is inserted into the appropriate opening in the central part and glues only to the outer deflector frame. This will allow for possible lateral offset corrections. In the original version I glued CA, now I glued with epoxy, CA over time becomes brittle and glued joint crack. In this way, the construction of the model is essentially finished. Three times hooray ...


Here is the photo in the same place as the previous photo v2. At first glance there are no differences, but only at first glance ... at second glance, the tail must be completely different ...