Zenith Aircraft

CH 801

The Zenith Aircraft STOL CH 801 is designed as a SUV (Sports Utility Vehicle) aircraft. While it may not be pretty or fast, it was designed from the beginning with utility features in mind. Mainly, that means the ability to start and land on very short fields with payloads up to 450kg combined with easy construction and maintenance.

The CH 801 is based on the successful CH 701 from 1986 and shares its basic capabilities and features, while having seats for four instead of two people, greater dimensions and a higher speed.

Like its predecessor, the CH 801 was designed as a kit, which makes it very affordable. One can either order a complete kit, that features all the parts or a basic kit, which features only those parts, that a homebuilder can't construct at home, such as the cowling, the engine and all the equipment.

Inspite of it's simple structure that allows the CH 801 to be build by aviation enthusiasts at their homes, it was still designed as a rugged and sturdy plane, allowing it to land even on unprepared landing strips, which makes it a true sports utility aircraft, that can land almost anywhere: From gravel strips to soccer fields, to the beach or a glacier.

This is owed to a number of features, such as the special high-lift wing with fixed slats, a flaperon (which combines aileron and flaps into one) and inverted horizontal stabilizers. It's large wheels and fixed landing gear allow landing on rough terrain.

Another special aspect of the CH 801 as of other kitplanes is its "Open Design", that allows builders to modify parts where they see fit. The most important aspect here is that the CH 801 was designed to work with a number of different engines, even though the standard engine for the CH 801 is the Lycoming 360 4-cylinder engine.

The CH 801 can be equipped with amphibian floats, which are available from a sub-company of Zenith, Zenair floats. The floats are available as complete floats or as a kit for builders. These floats increase the versatility of the CH 801 even more.

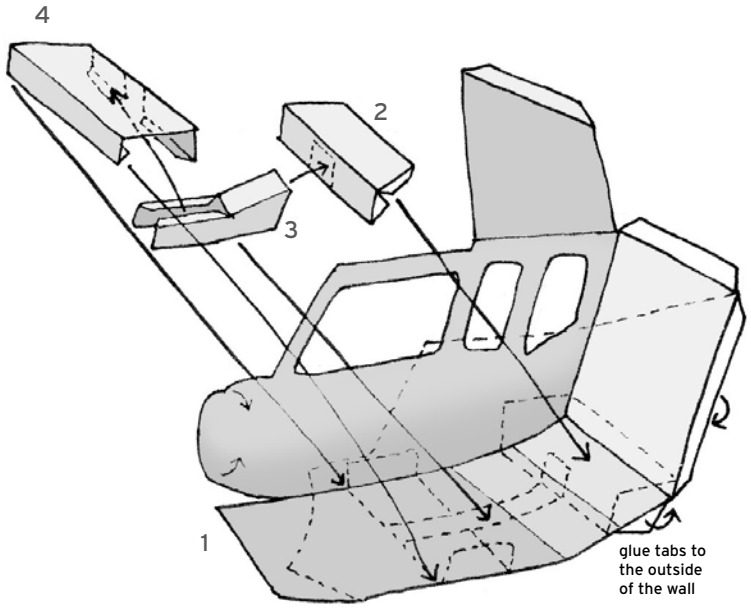
Its ability to land in many different places, even where space is scarce and the ground is rocky, in combination with a payload that is higher than that of typical "Funplanes" and the low cost in purchase and maintenance make the CH 801 a perfect bushplane.

The CH 801 can be found in all kinds of remote areas in the bushplane role, flying for small companies or charity organisations. The aircraft being a kit is very helpful, because it not only allows the plane to be assembled on location, but also allows the operator to easily make repairs when needed, without having to return to the factory.

Medicine On The Move is currently building a CH 801 in Ghana to be used for bringing much needed medicals and supplies to remote areas that are hard to be reached on the ground.

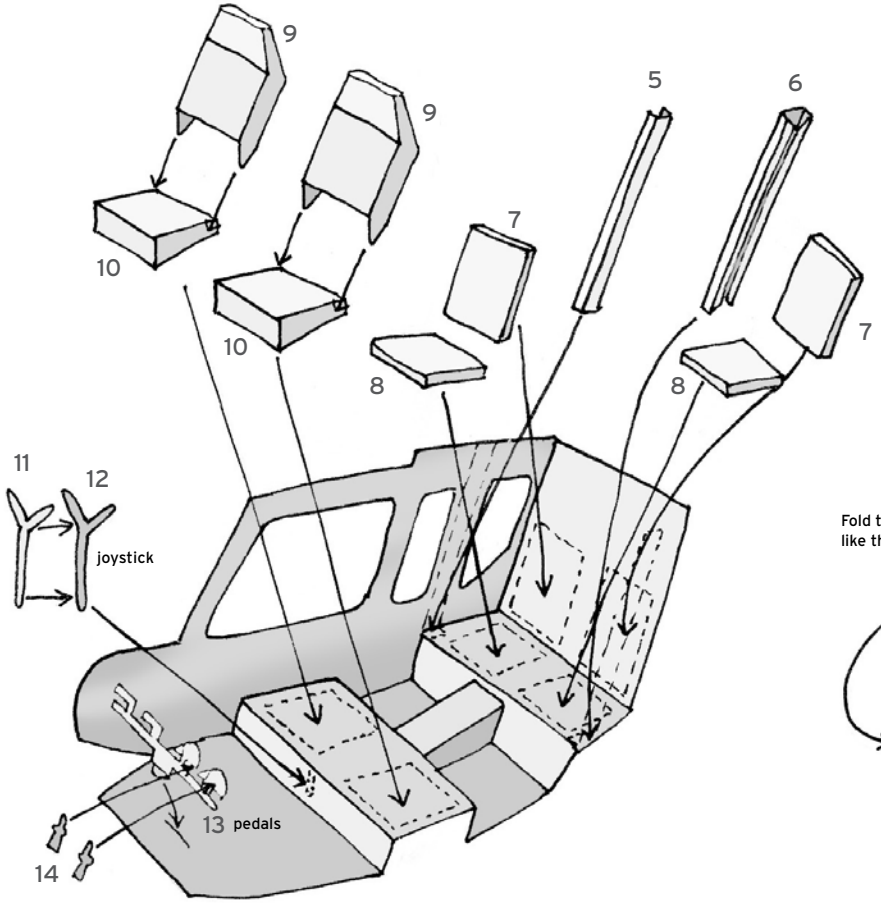
These are the instructions for the 1:33-version. Make sure you have the right model plans.

1. If you don't build the cabin, jump to 6
Build the cabin walls, then glue in the main structures

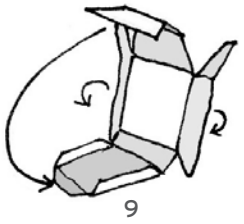


port wall not shown for better view

2. Install the seats, fuselage spars and control equipment

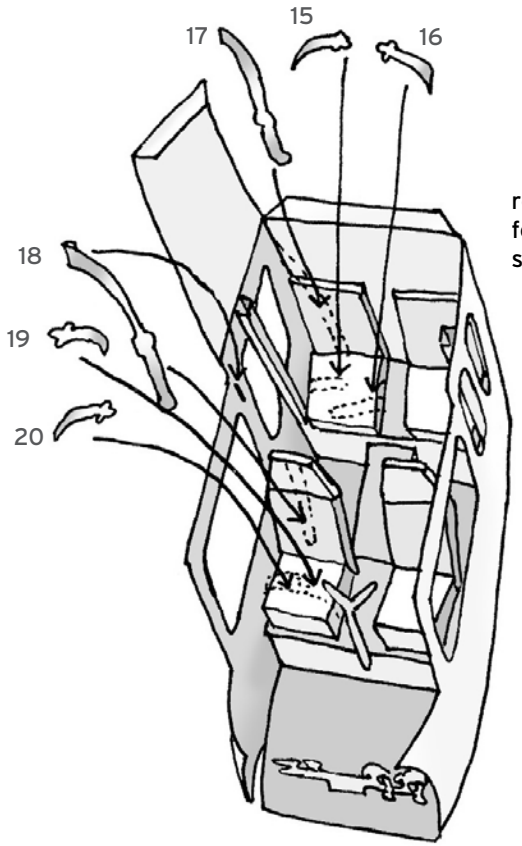


Fold the front seats
like this:



port wall not shown for better view

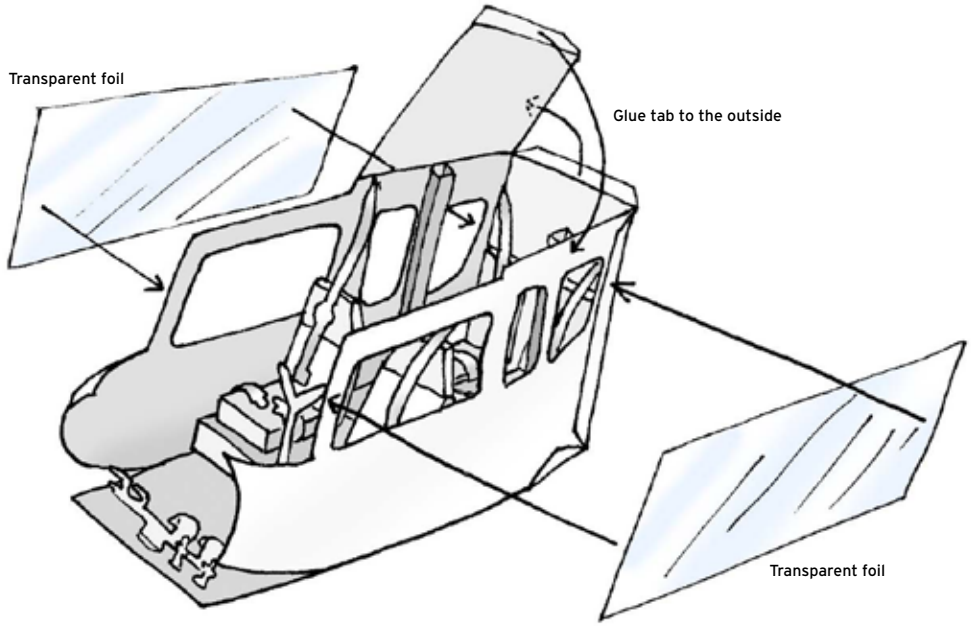
3. Install the seatbelts



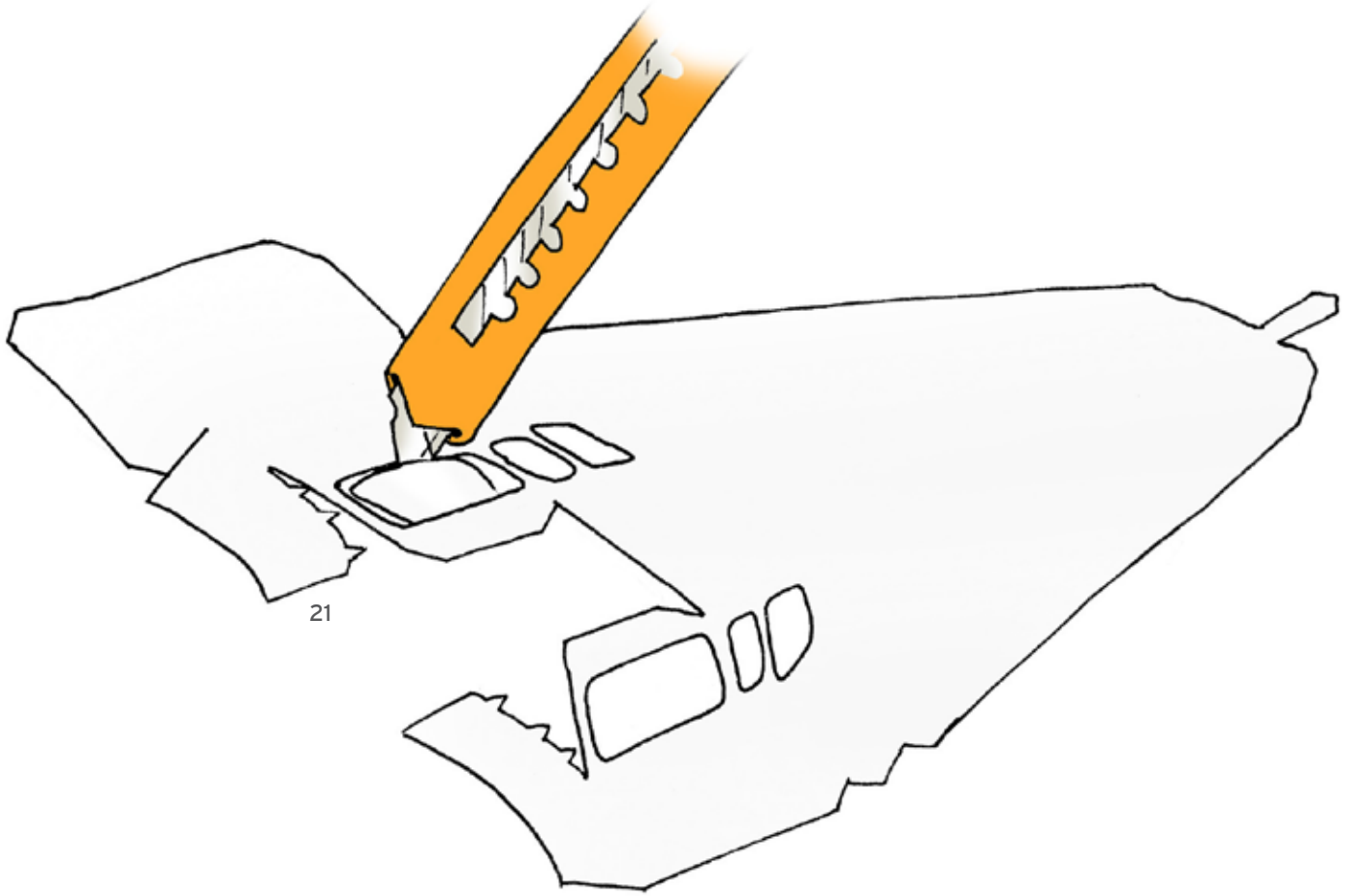
2x

repeat for port side

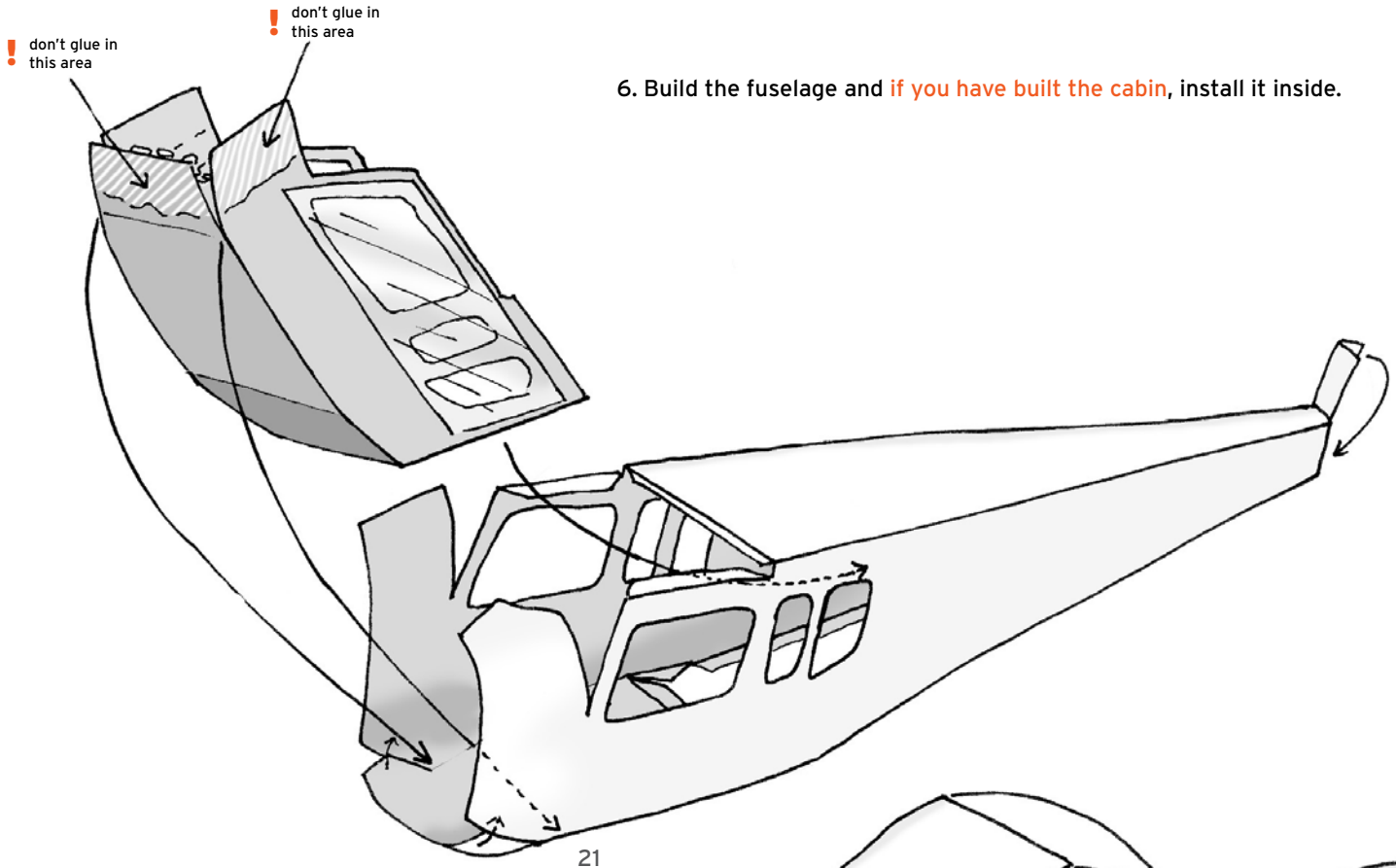
4. Close the cabin roof and glue transparent foil on the windows



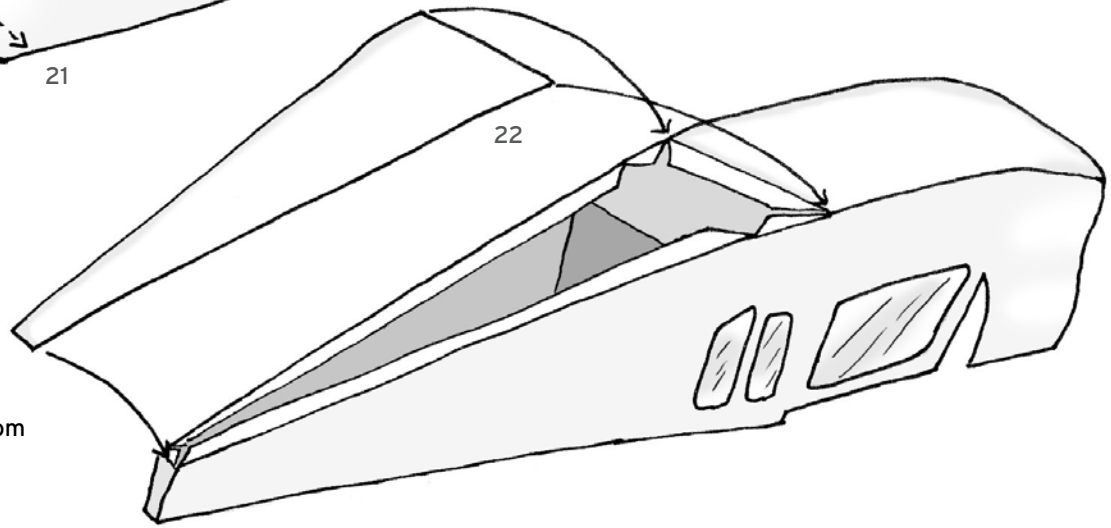
5. Cut out the windows in the main fuselage (21)



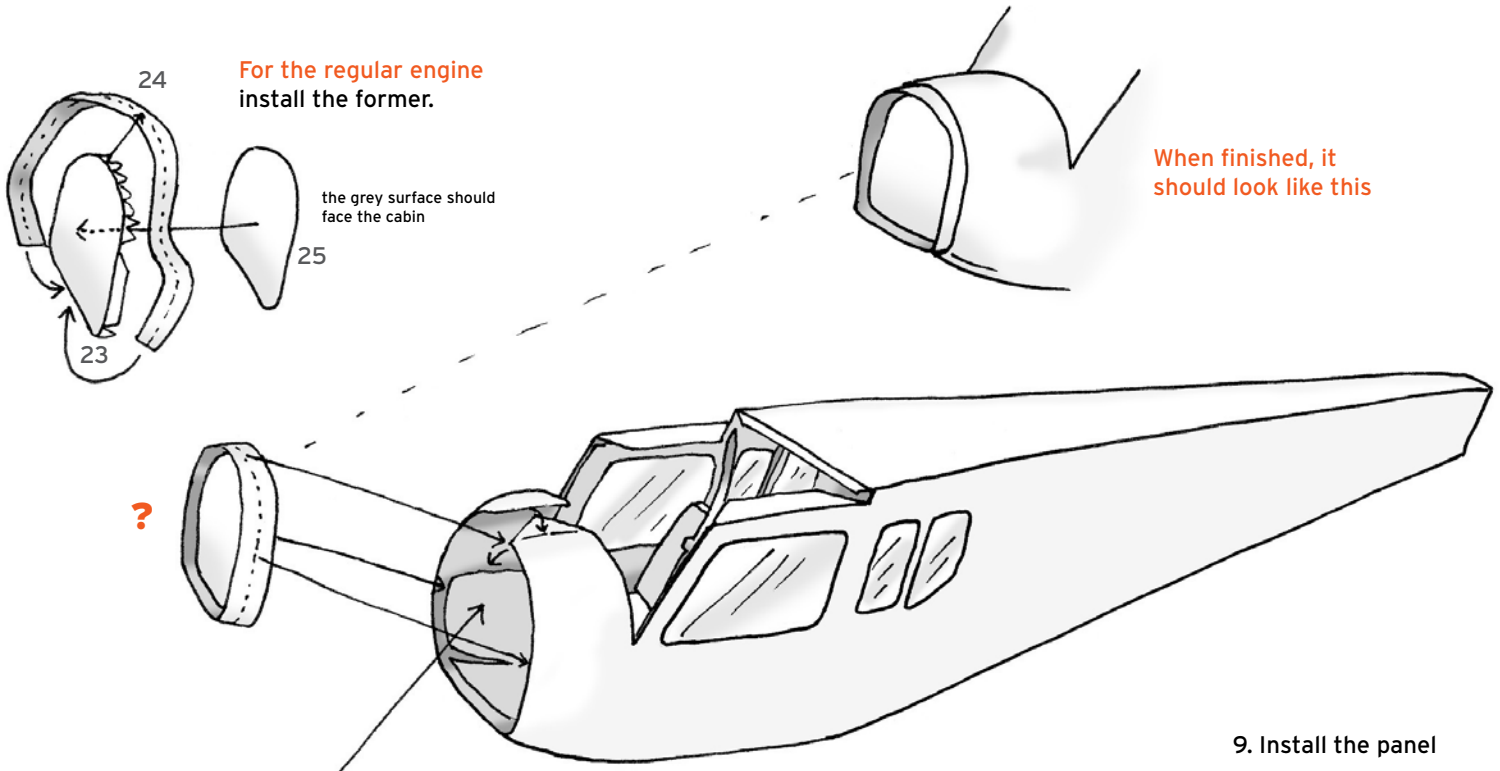
6. Build the fuselage and if you have built the cabin, install it inside.

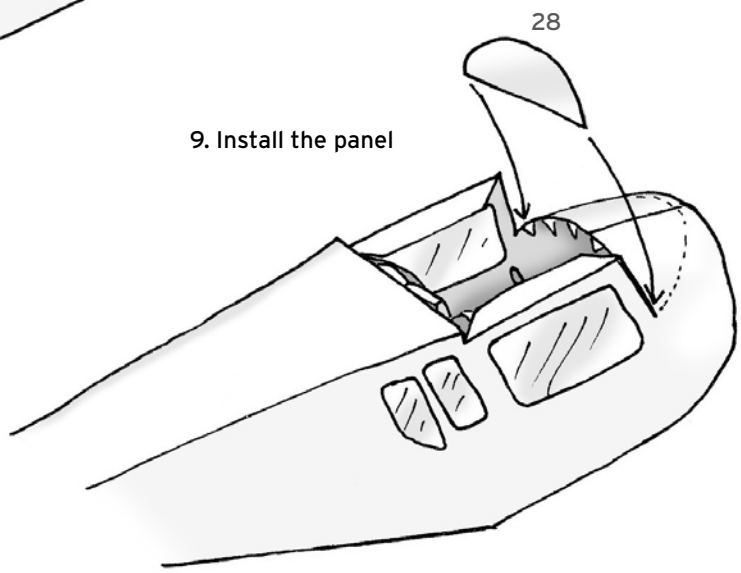


7. Install the fuselage bottom



8. Install the firewall according to how you want to build the engine



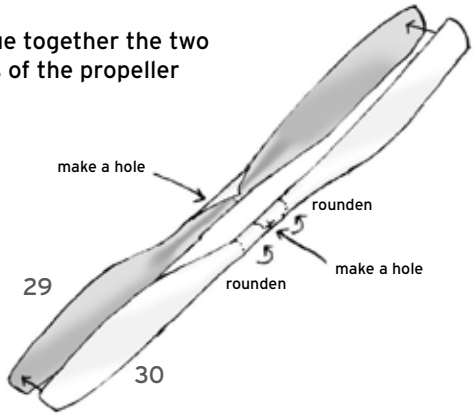


9. Install the panel

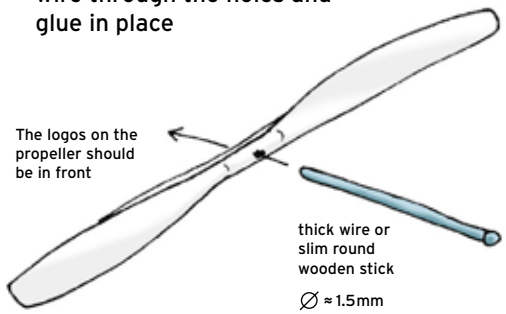
If you are building the regular engine, jump to 30

! The detailed engine is not on the standard sheets. Make sure you have the detailed engine sheet

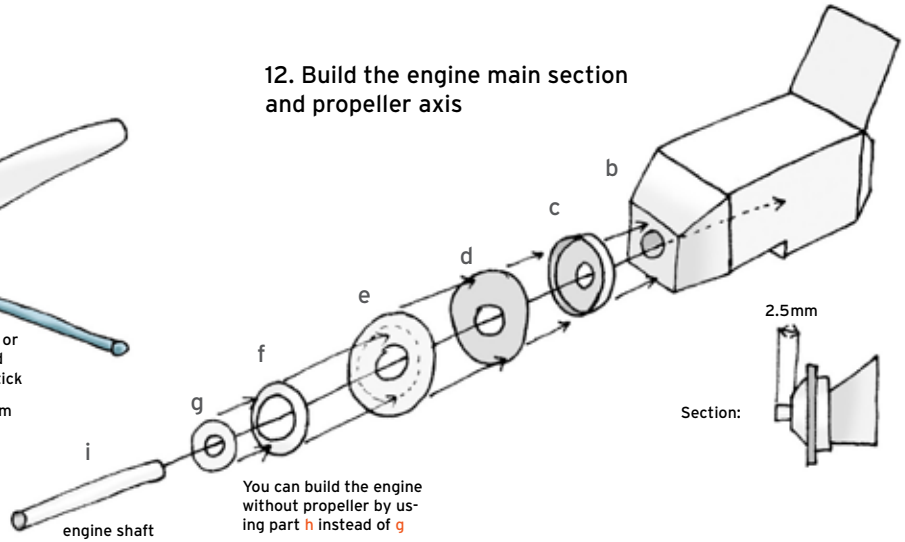
10. Glue together the two halves of the propeller



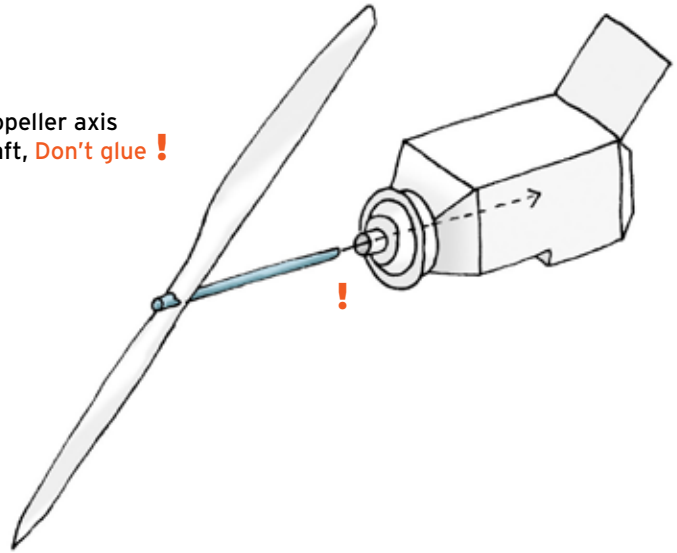
11. Push a slim round stick or wire through the holes and glue in place



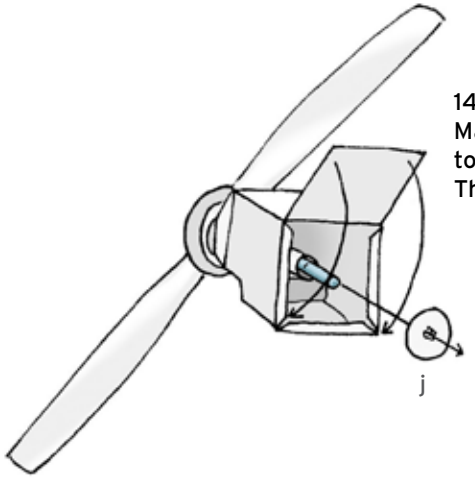
12. Build the engine main section and propeller axis



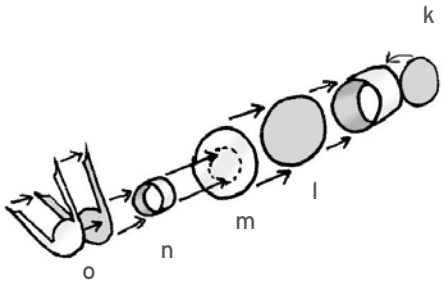
13. Push the propeller axis through the shaft, Don't glue !



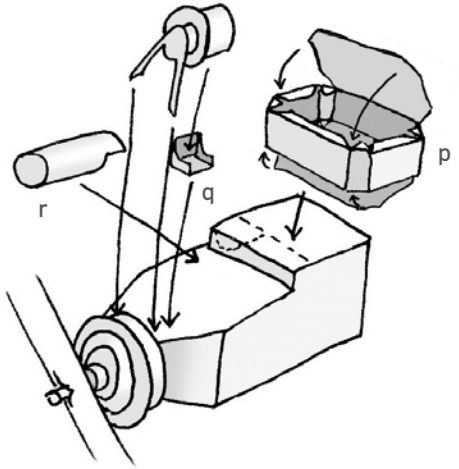
14. Glue the shaft hub to the end. Make sure no glue gets between toothpick and shaft.
Then glue the rear side shut.



15. Build the propulsion unit

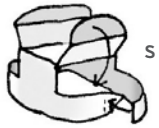


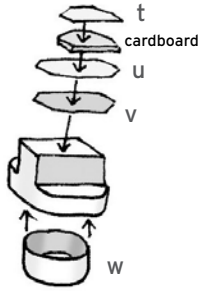
16. Add the lower parts



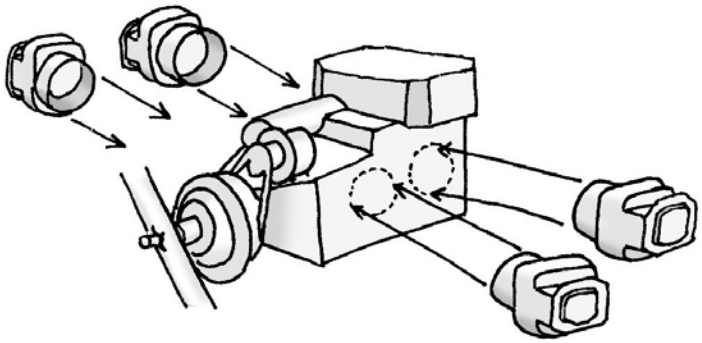
17. Build the cylinders.
Use cardboard to thicken part t

4x

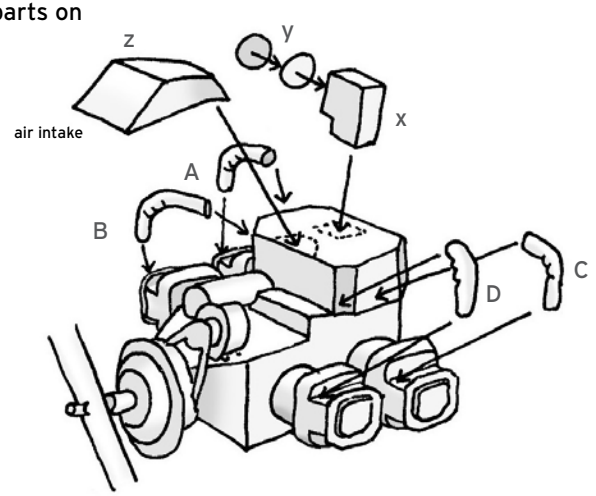




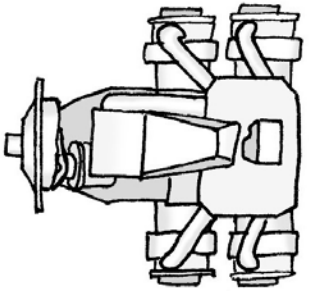
18. Install the cylinders. The up arrows on the cylinders and on part b show where is the top



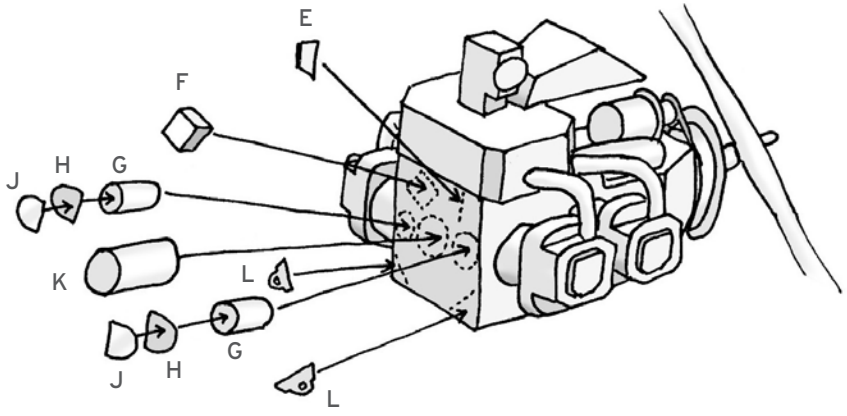
19. Install more parts on the lower side



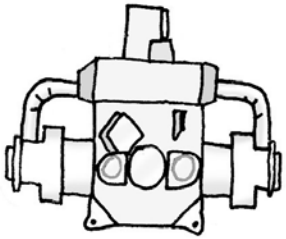
When finished, it should look like this



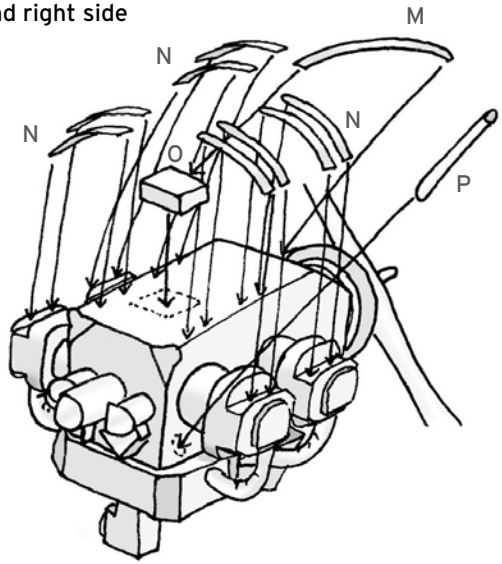
20. Install parts on the back side



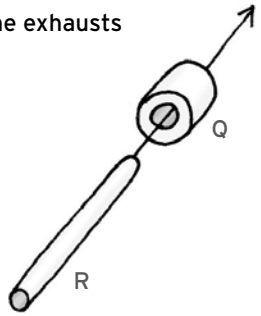
When finished, it should look like this



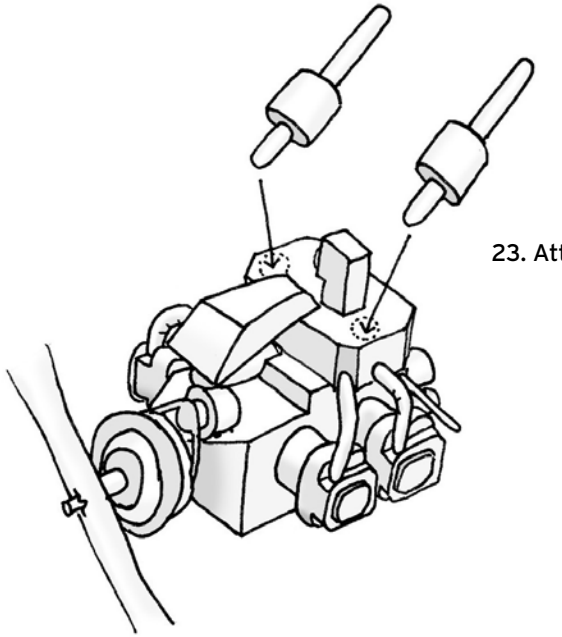
21. Install parts on the top and right side



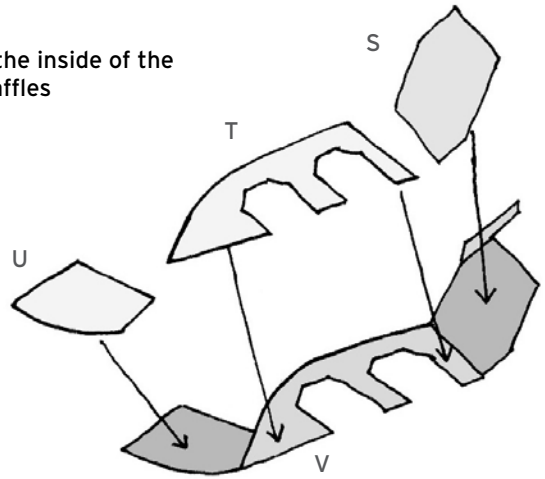
22. Build the exhausts



23. Attach the exhausts

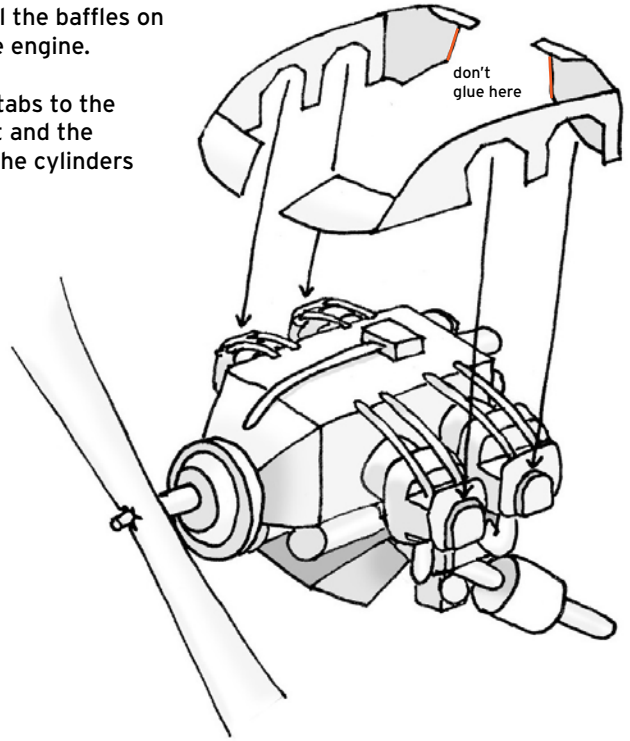


24. Glue the inside of the engine baffles

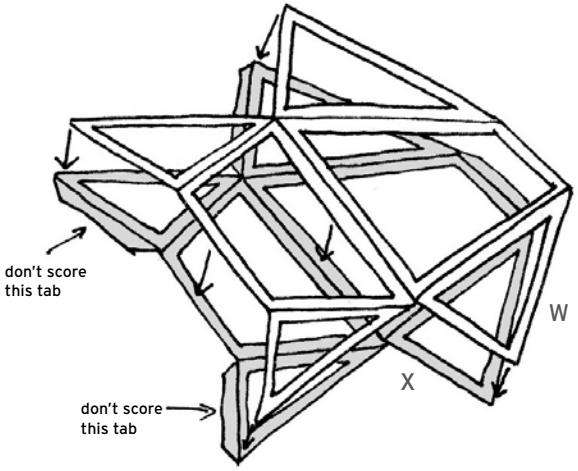


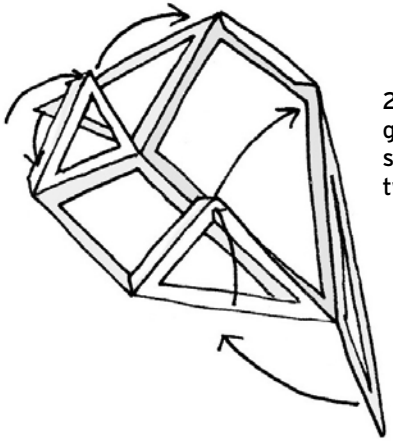
25. Install the baffles on top of the engine.

Glue the tabs to the main part and the holes to the cylinders

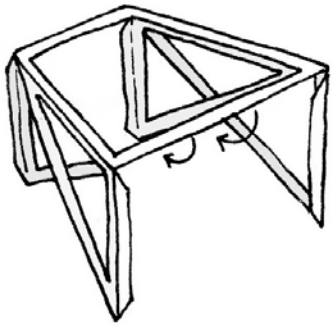


26. Glue together the sides of the engine mount

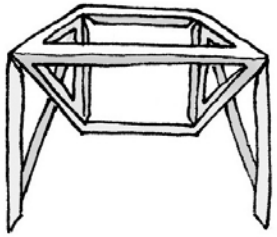




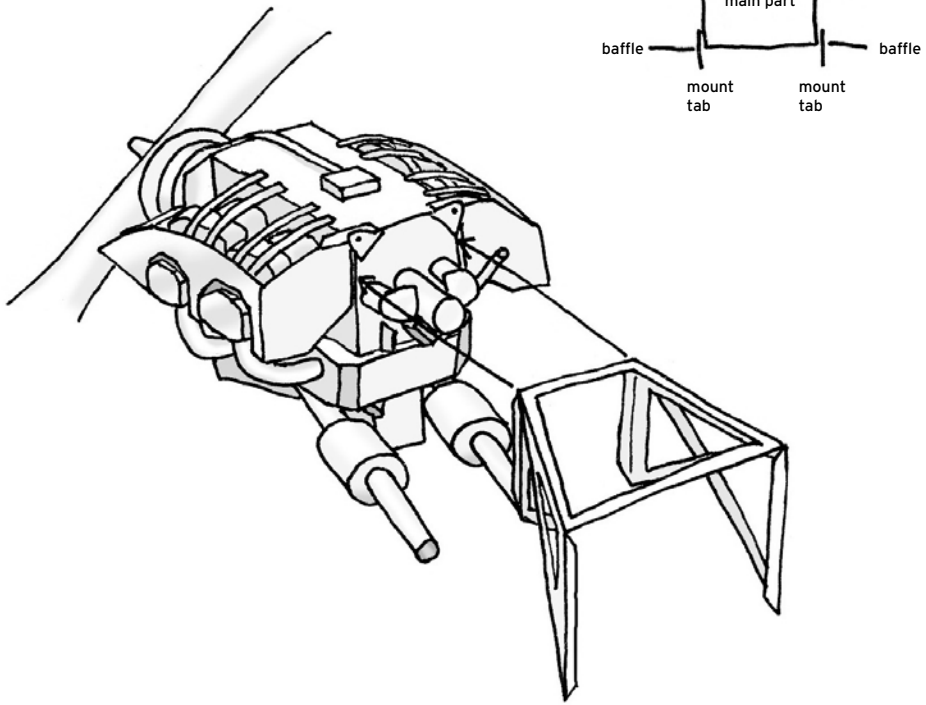
27. Fold the mount and glue the inner part inside, so that the sides become two crossing triangles



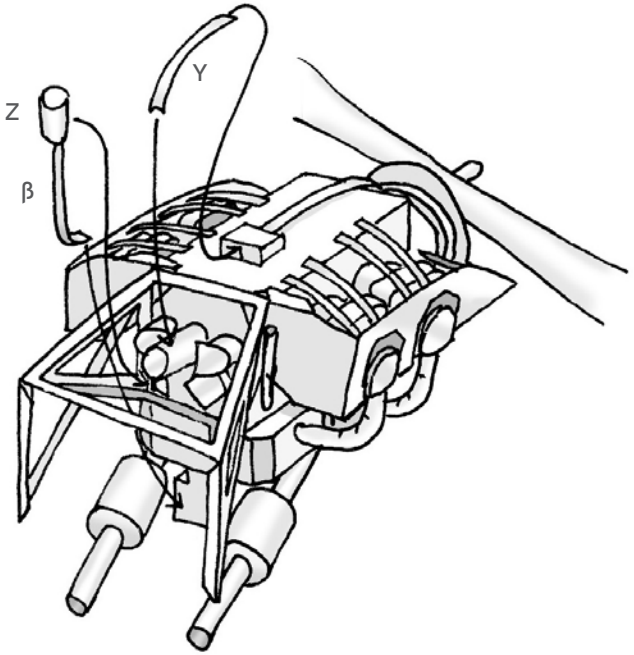
When finished, it should look like this



28. Glue the mount to the backside of the engine, under the slits left between baffles and main part

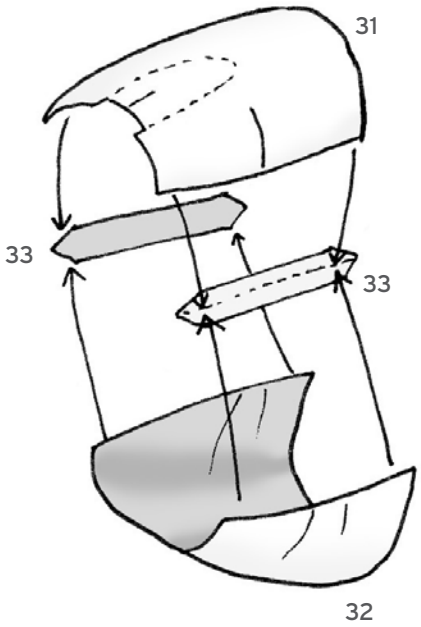


29. Install the last details on the top and back.

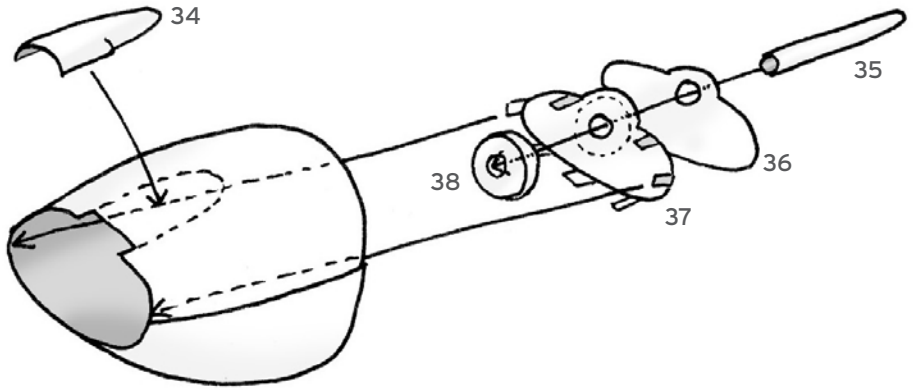


The detailed engine is finished,
jump to 38

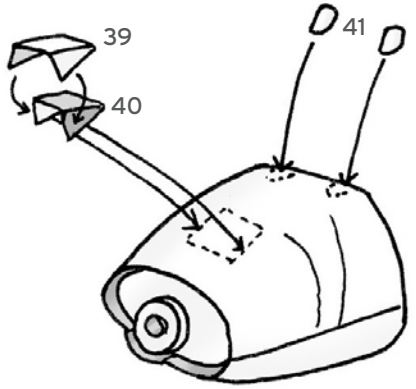
30. Glue together the upper and lower half of the cowling, using the glue strips



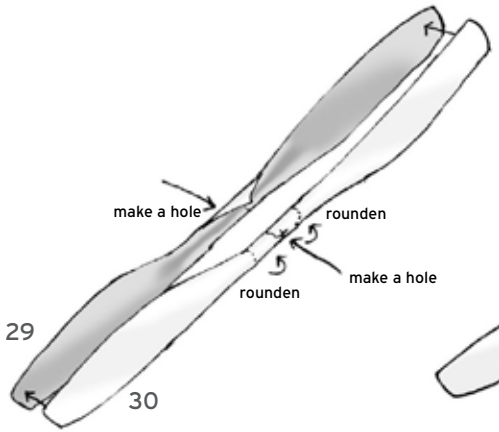
31. Attach the upper fairing. Then build in the engine plate and engine shaft. The front end of the engine shaft should be flush with the front end of part 38 .



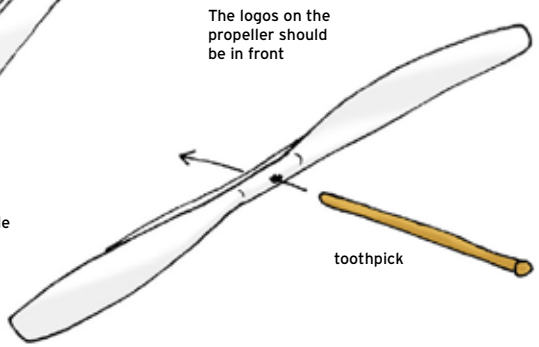
32. Attach the Air scoop and exhausts



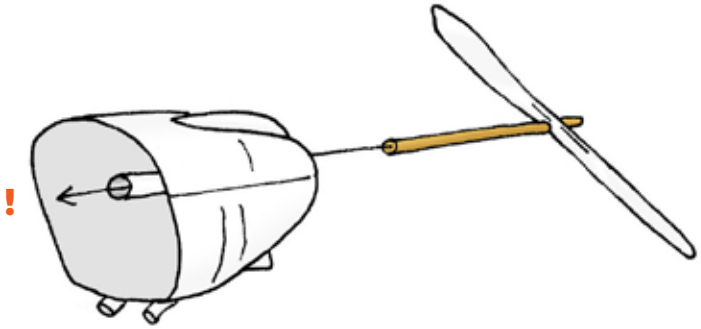
33. Glue together the two halves of the propeller



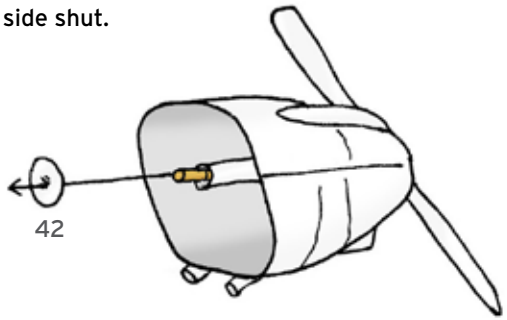
34. Push a toothpick through the holes and glue in place



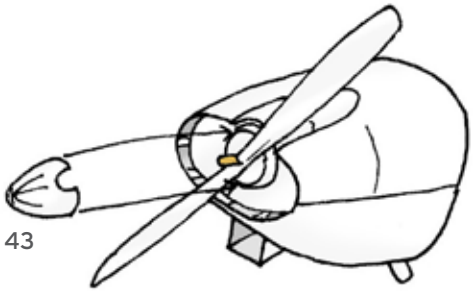
35. Push the propeller axis through the shaft, Don't glue !



36. Glue the shaft hub to the end. Make sure no glue gets between toothpick and shaft.
Then glue the rear side shut.

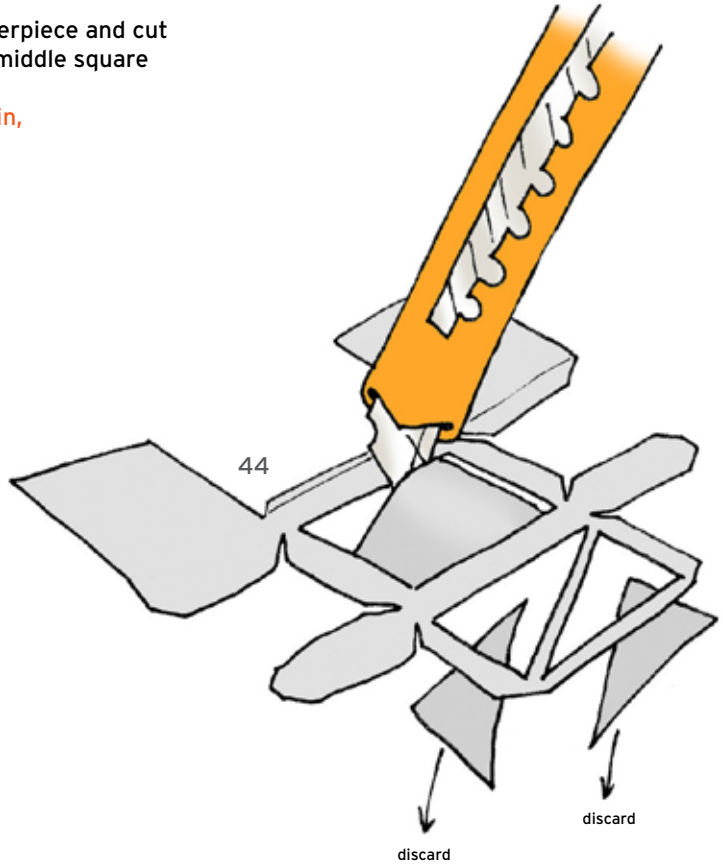


37. Build the spinner on and glue it to the propeller



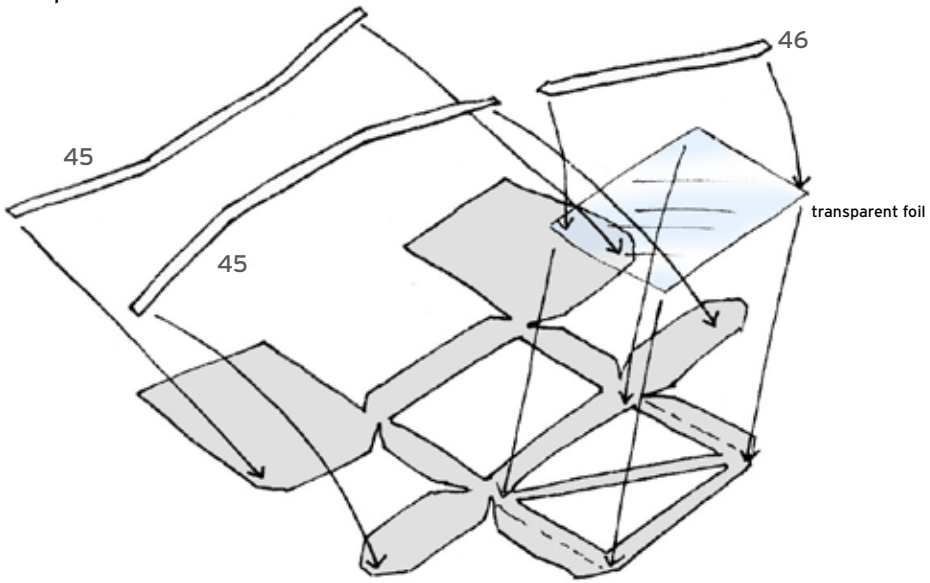
38. Cut out the wing centerpiece and cut out the windows and the middle square

If you didn't build the cabin, you can ignore this step.

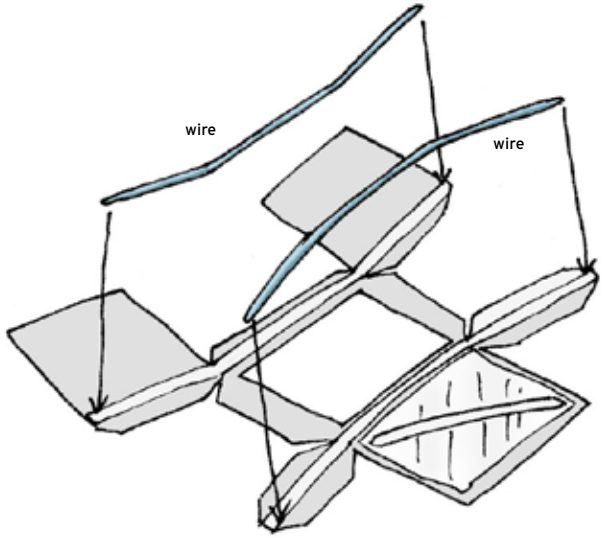


39. Glue the strengtheners on the wing centerpiece after glueing transparent foil on

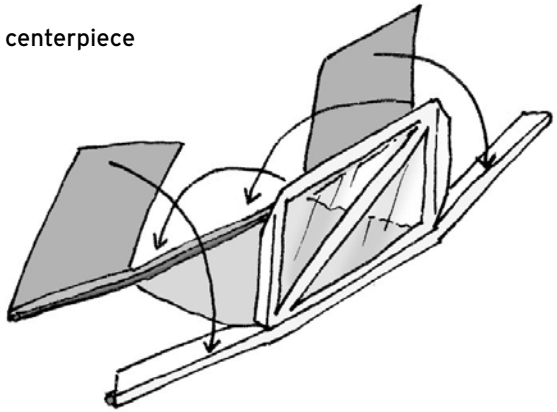
If you didn't build the cabin, you can ignore 46 and the foil



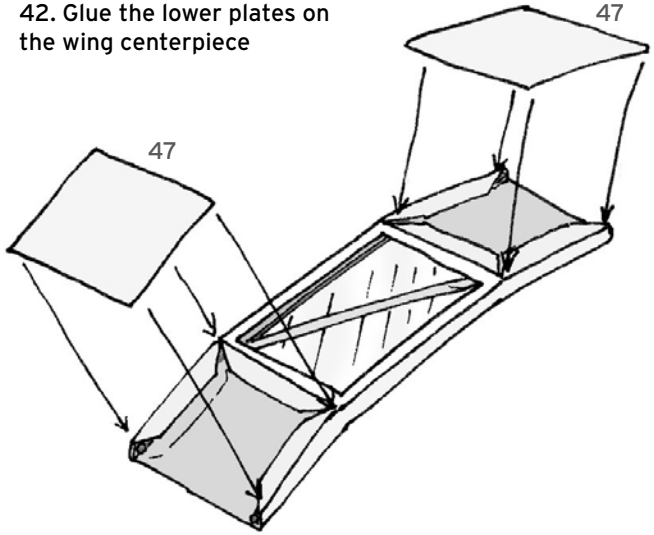
40. Form two wires to the shape of the strengtheners and glue them on the sides



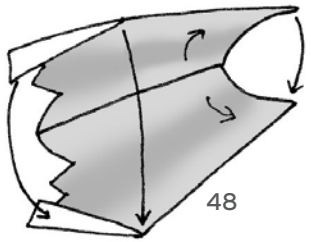
41. Fold and glue the wing centerpiece



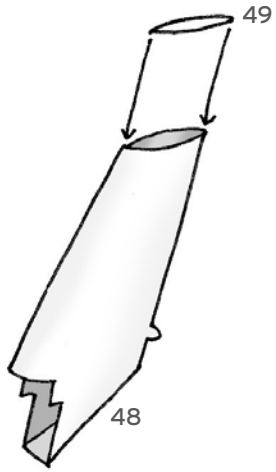
42. Glue the lower plates on the wing centerpiece

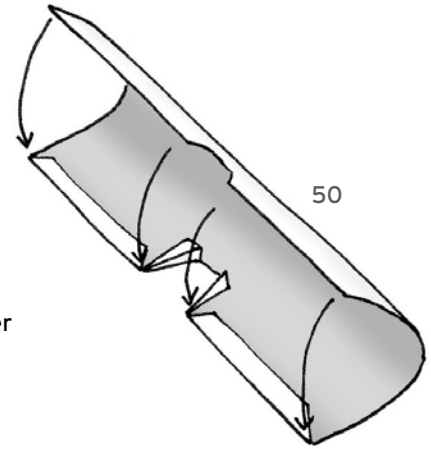


43. Rounden and glue together the tail

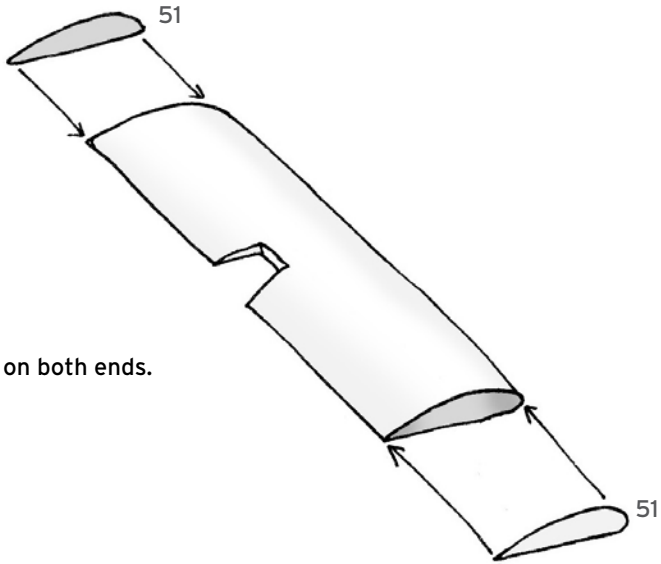


43. Glue the tailtop on its top



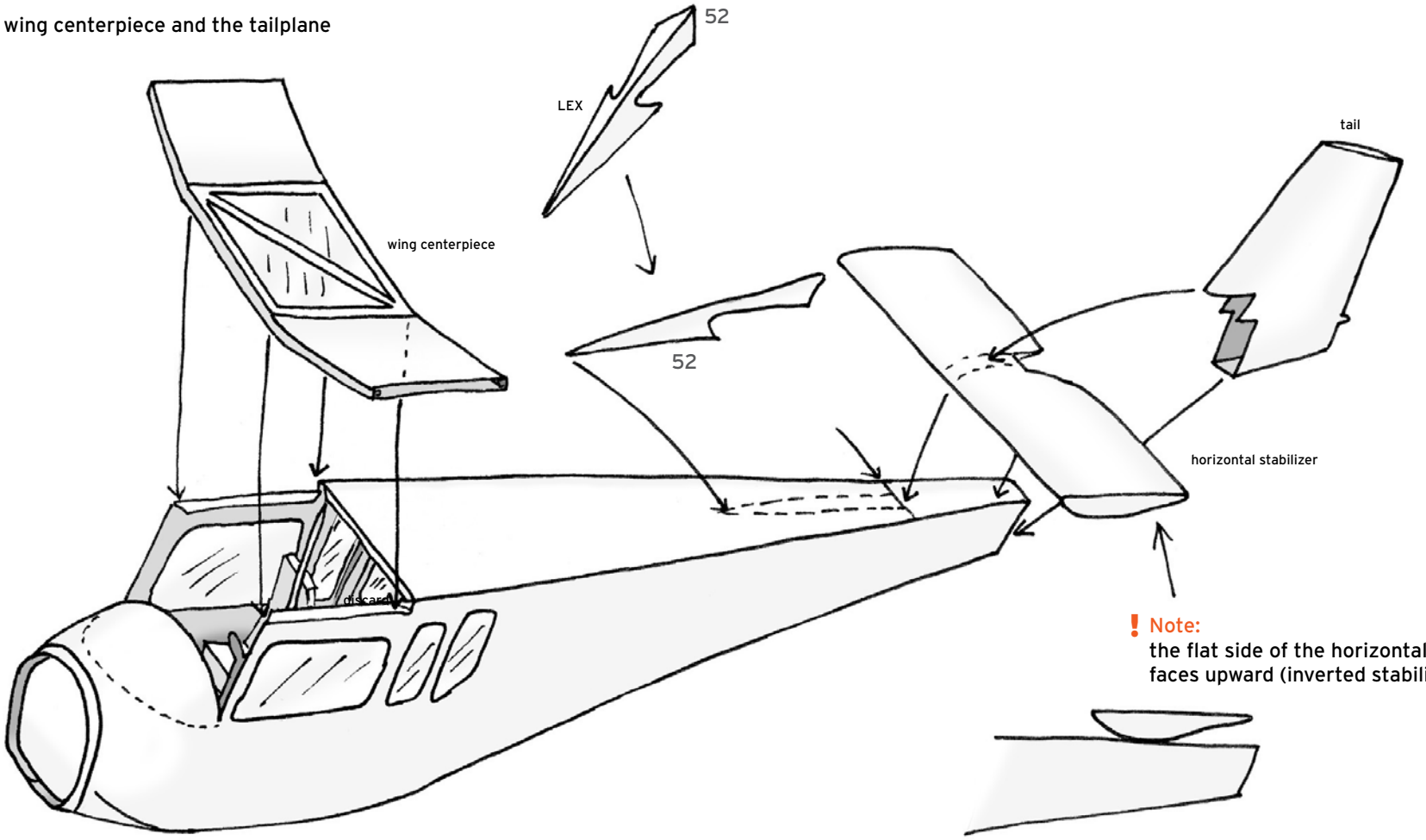


44. Rounden and glue together the horizontal stabilizer



45. Glue the tips on both ends.

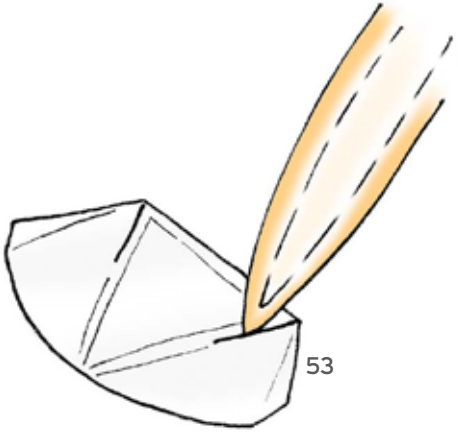
46. Install the wing centerpiece and the tailplane

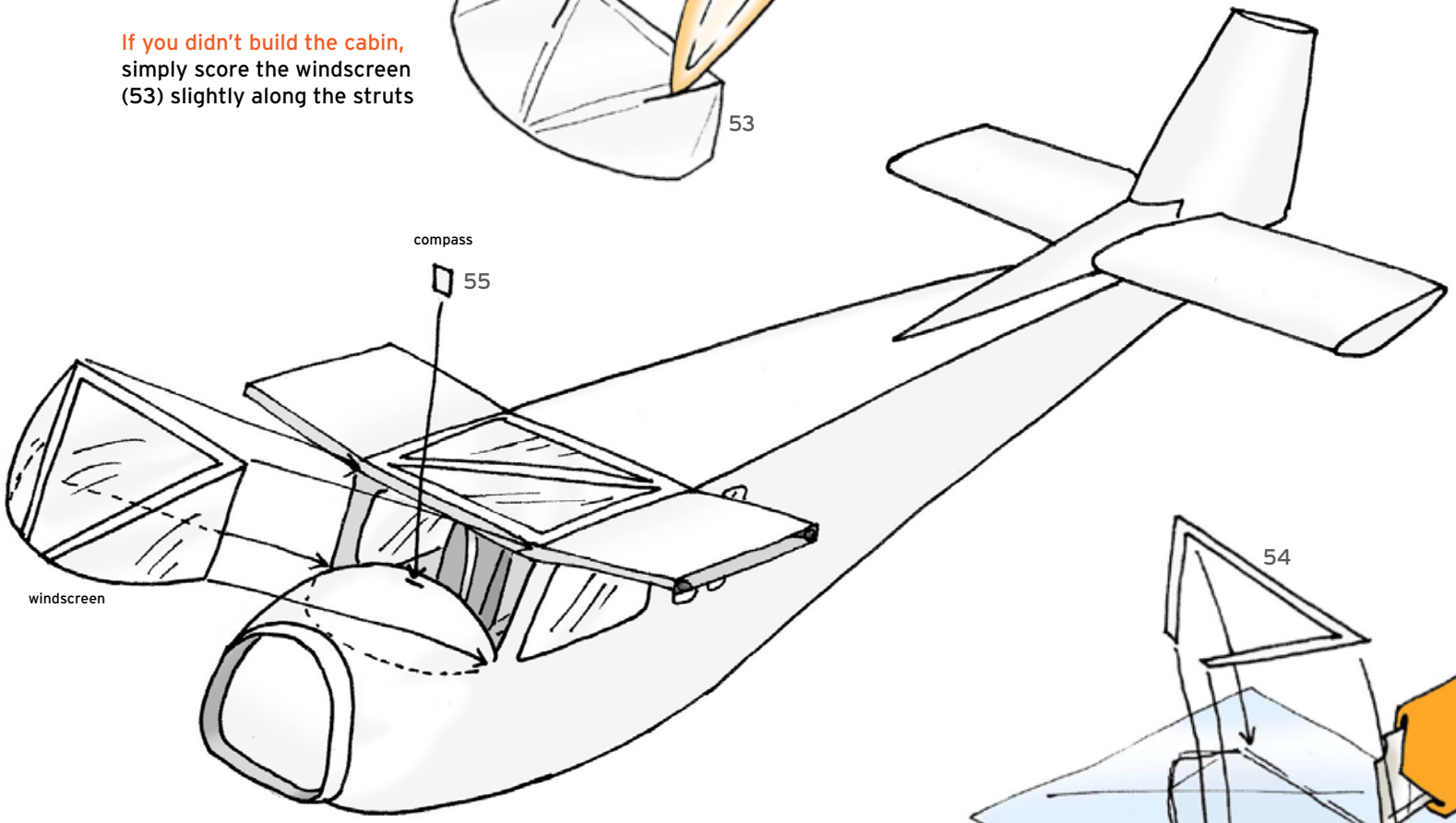


! Note:
the flat side of the horizontal stabilizer faces upward (inverted stabilizer)

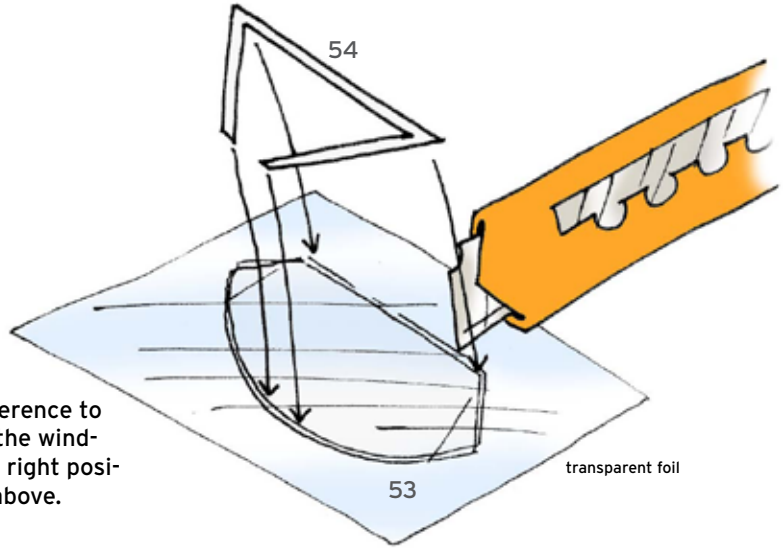
47. Install the windscreen

If you didn't build the cabin,
simply score the windscreen (53) slightly along the struts

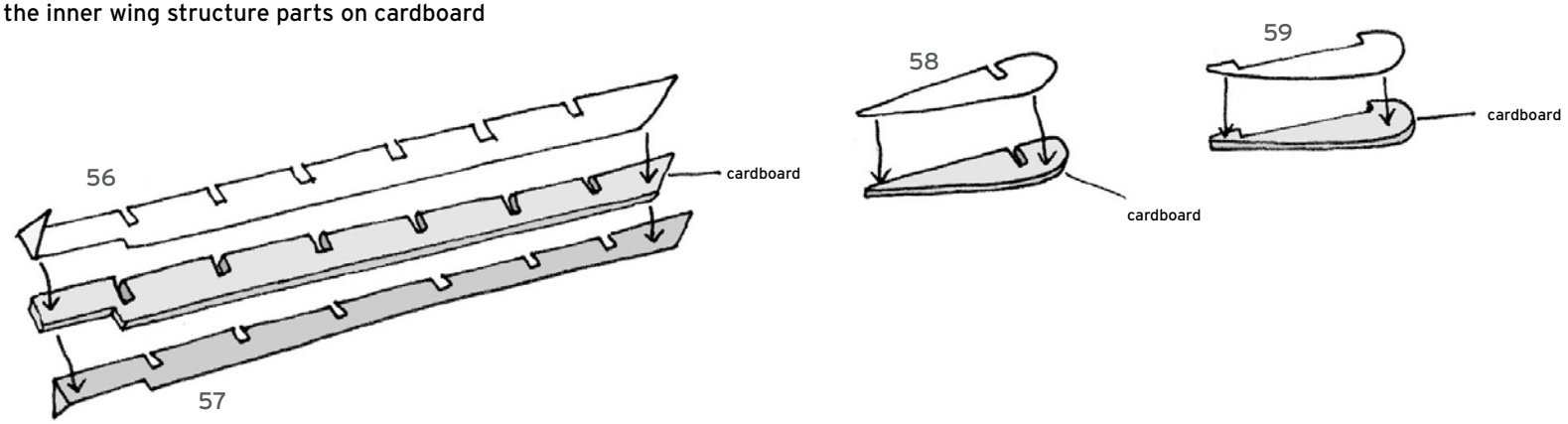




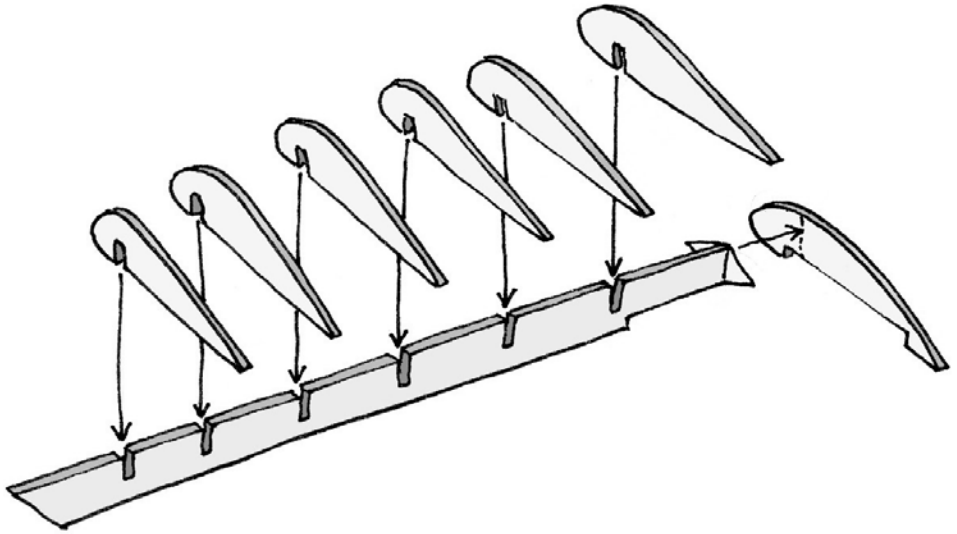
If you did build the cabin,
use the windscreen (53) as a reference to cut a transparent part and glue the windscreen struts (54) on that in the right position. Then score the window as above.



48. Glue the inner wing structure parts on cardboard

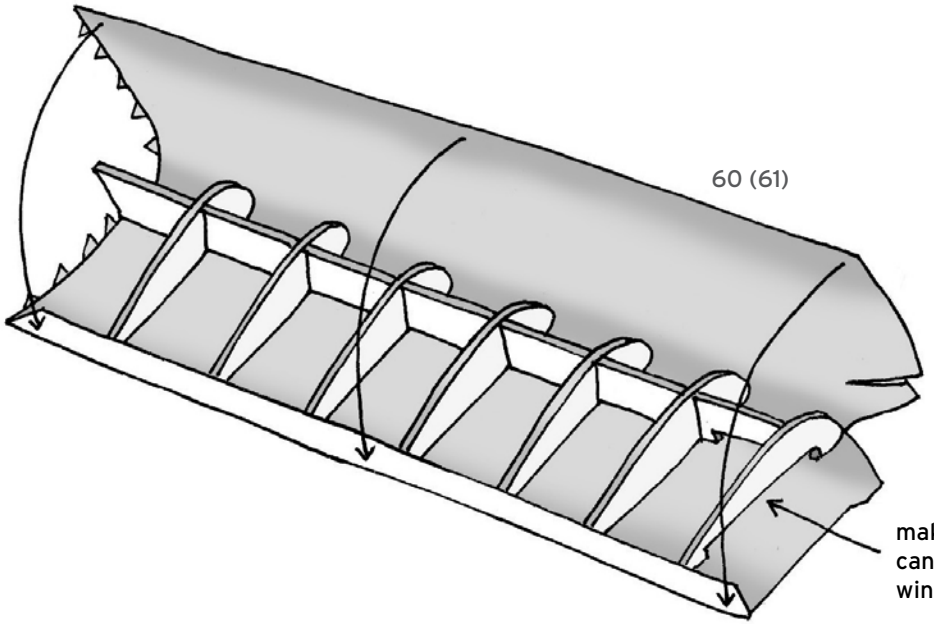


49. Glue the inner wing structure together

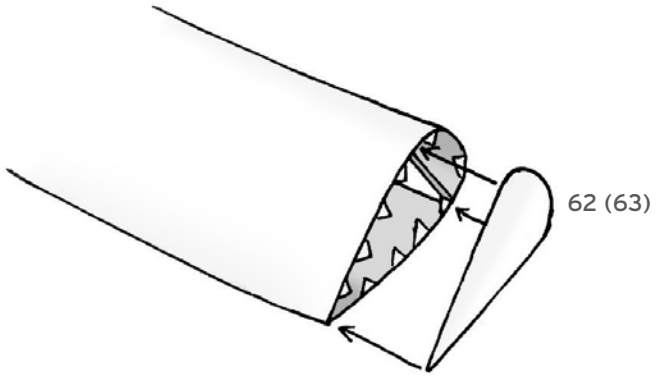


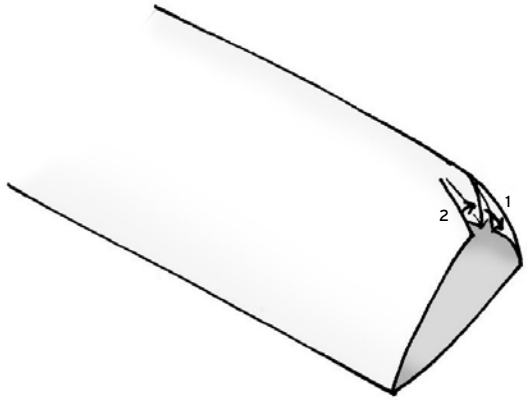
50. Glue the inner structure into the wing and then glue the wing together

Even numbers are port side
uneven numbers (in brackets)
are starboard side

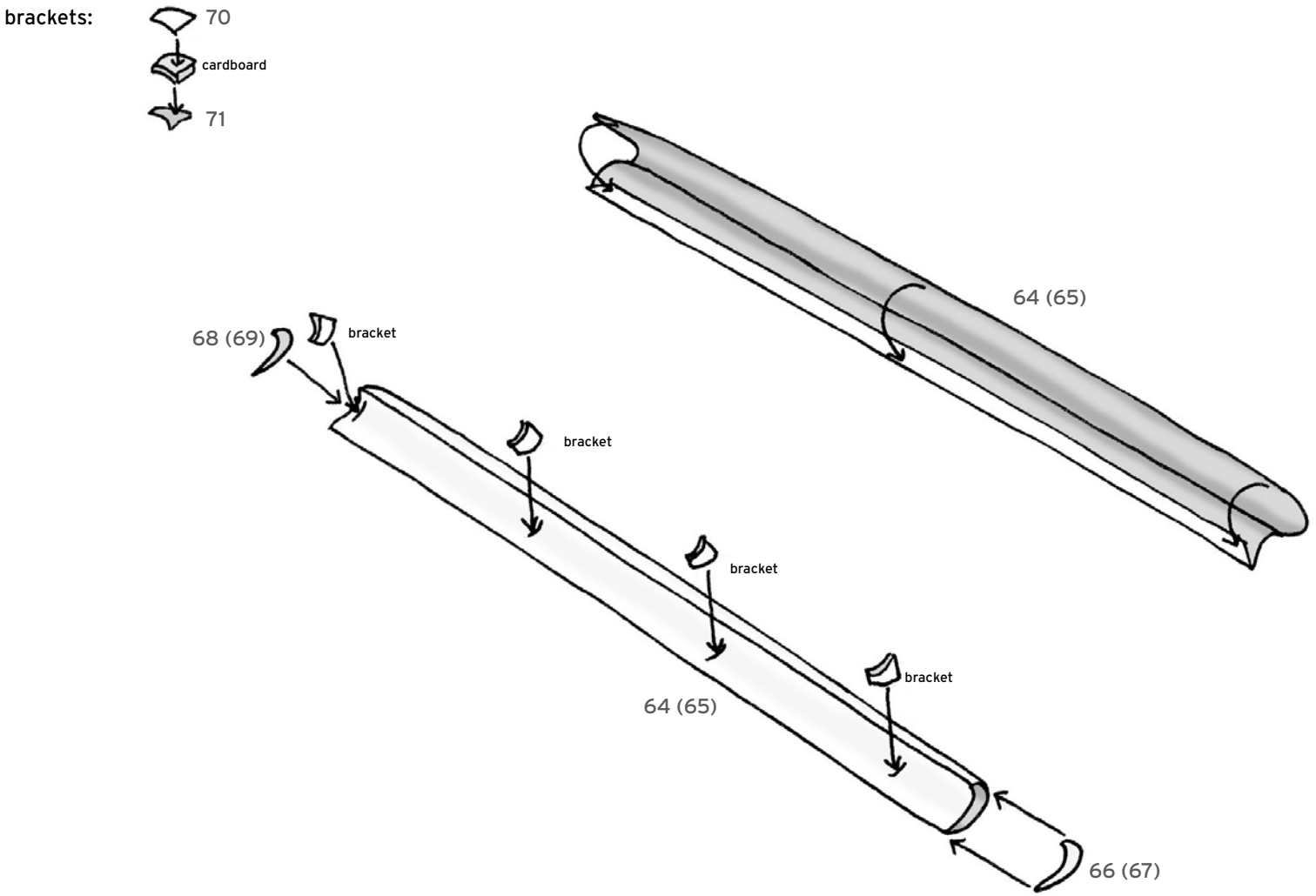


51. Glue the wingtip on the edge and glue the overlaps on the wingroot side

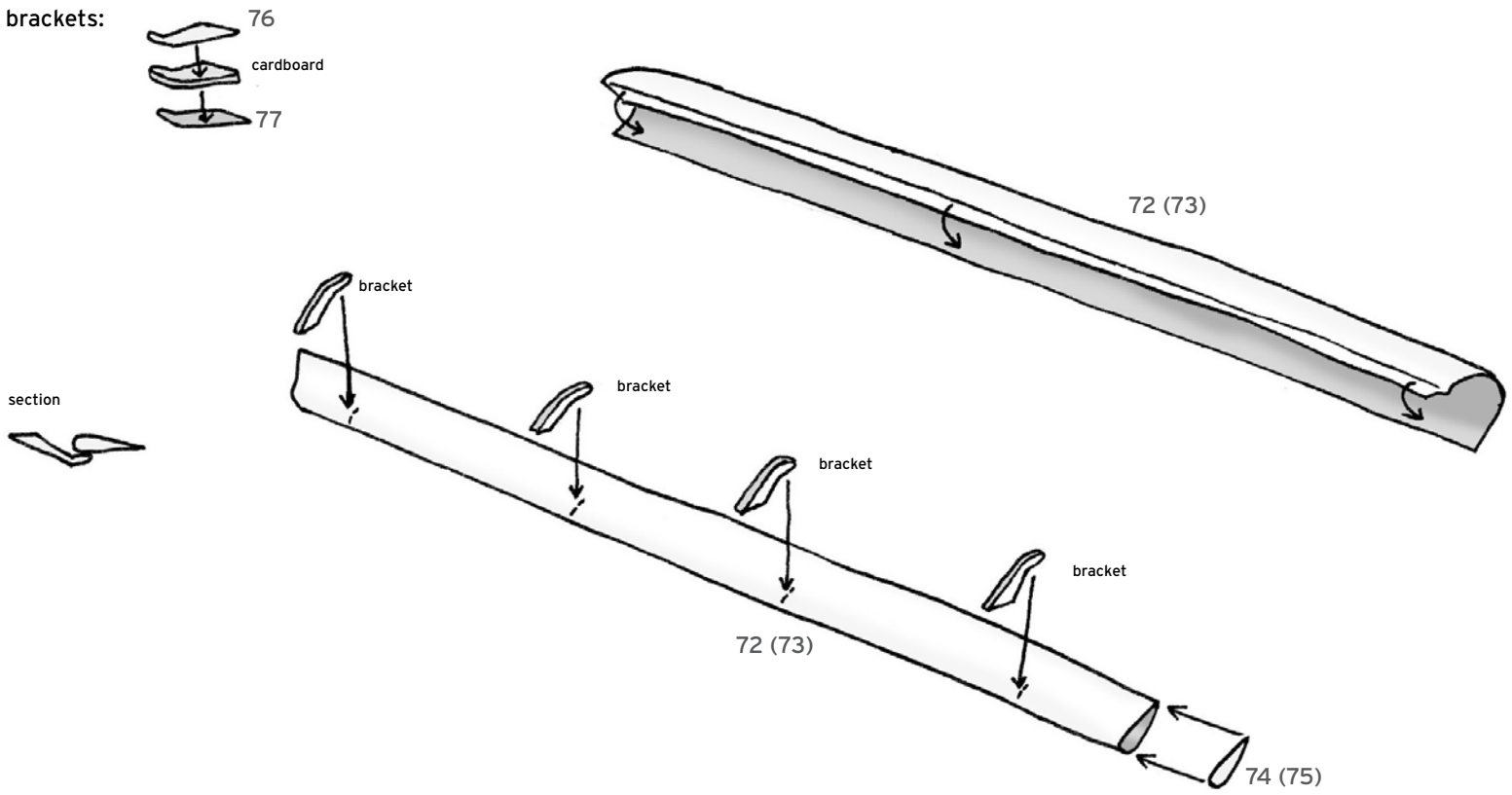




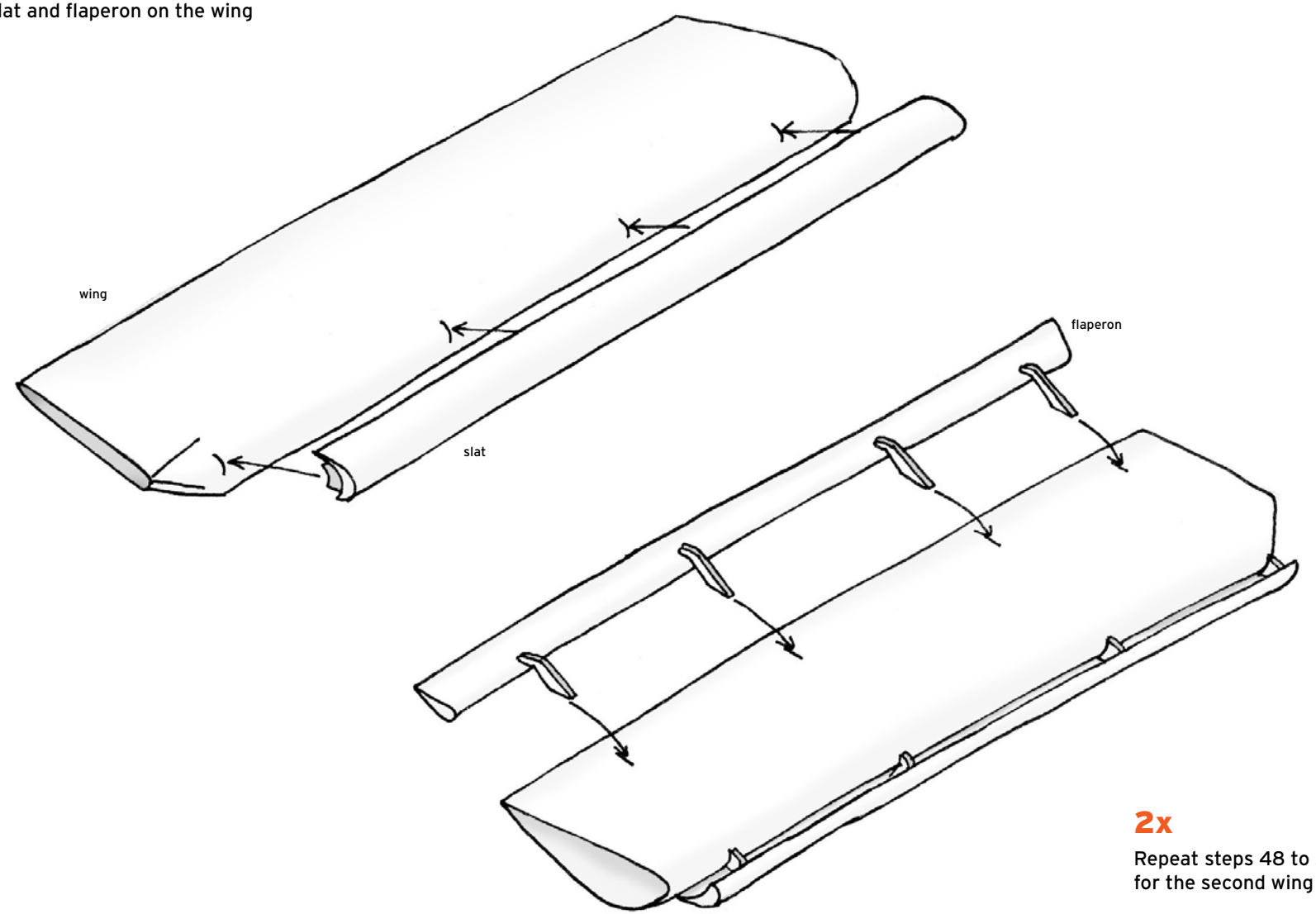
51. Construction of the slat. Enforce the brackets with cardboard



52. Construction of the flaperon. Enforce the brackets with cardboard



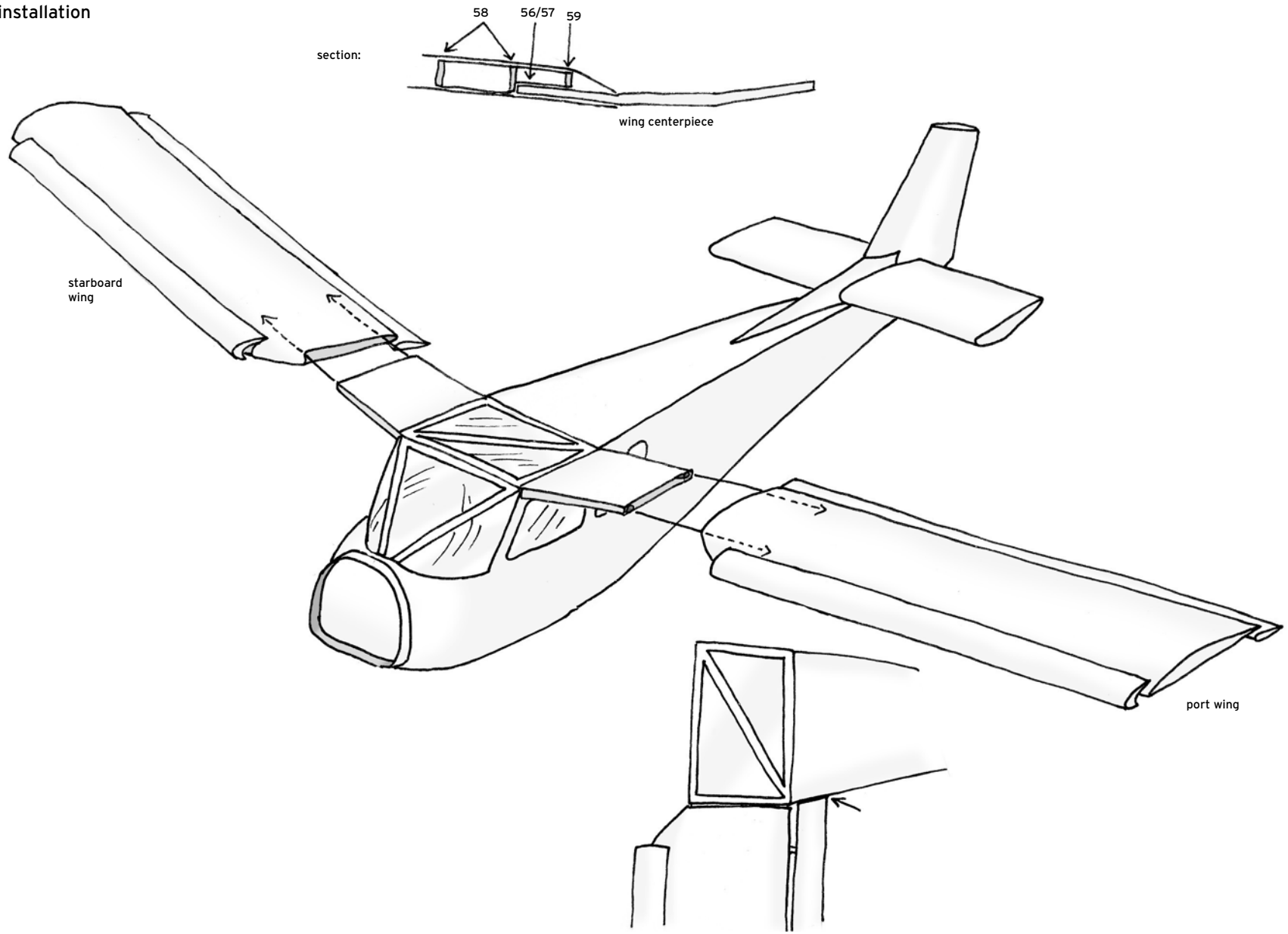
53. Install slat and flaperon on the wing

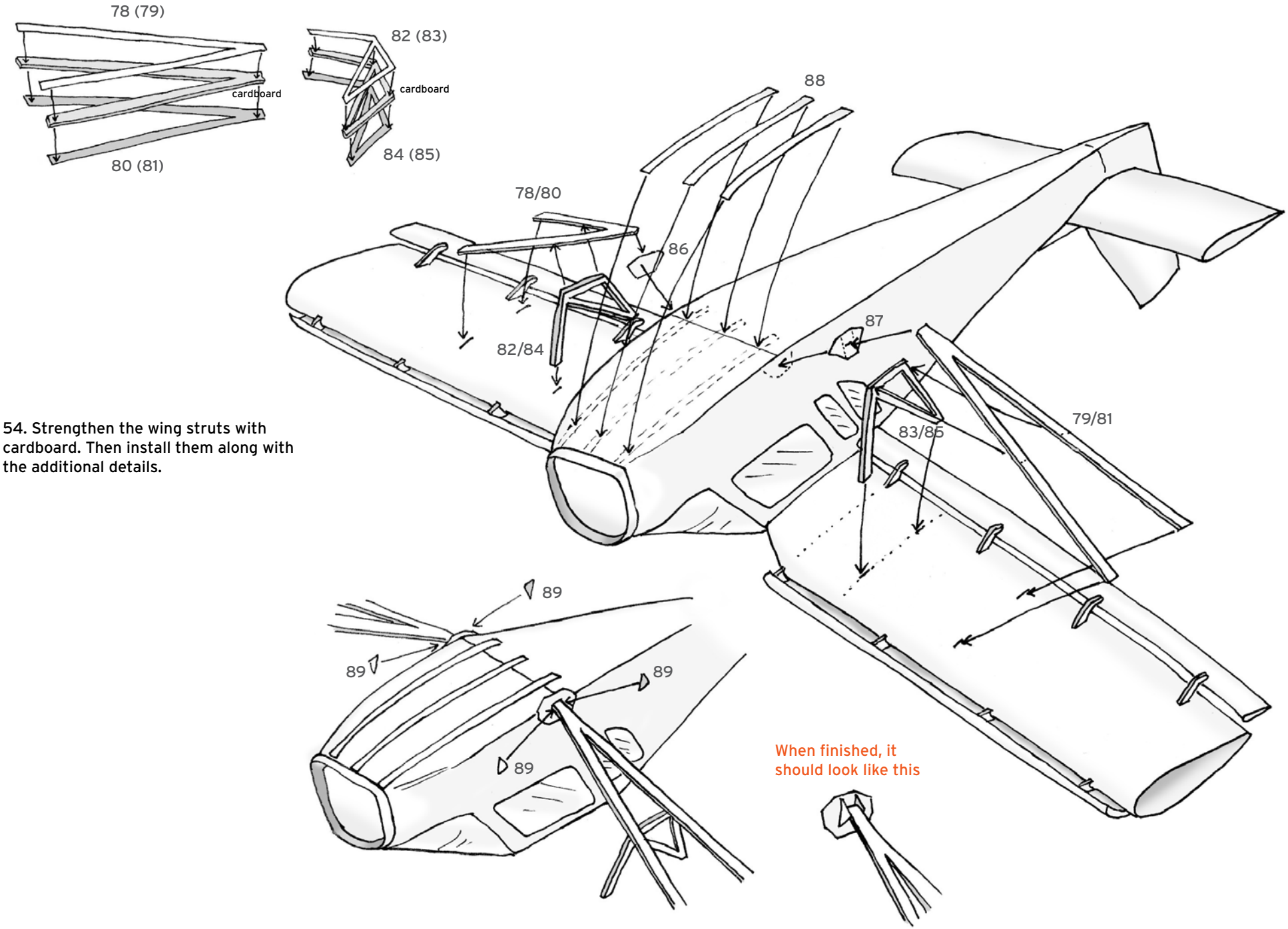


2x

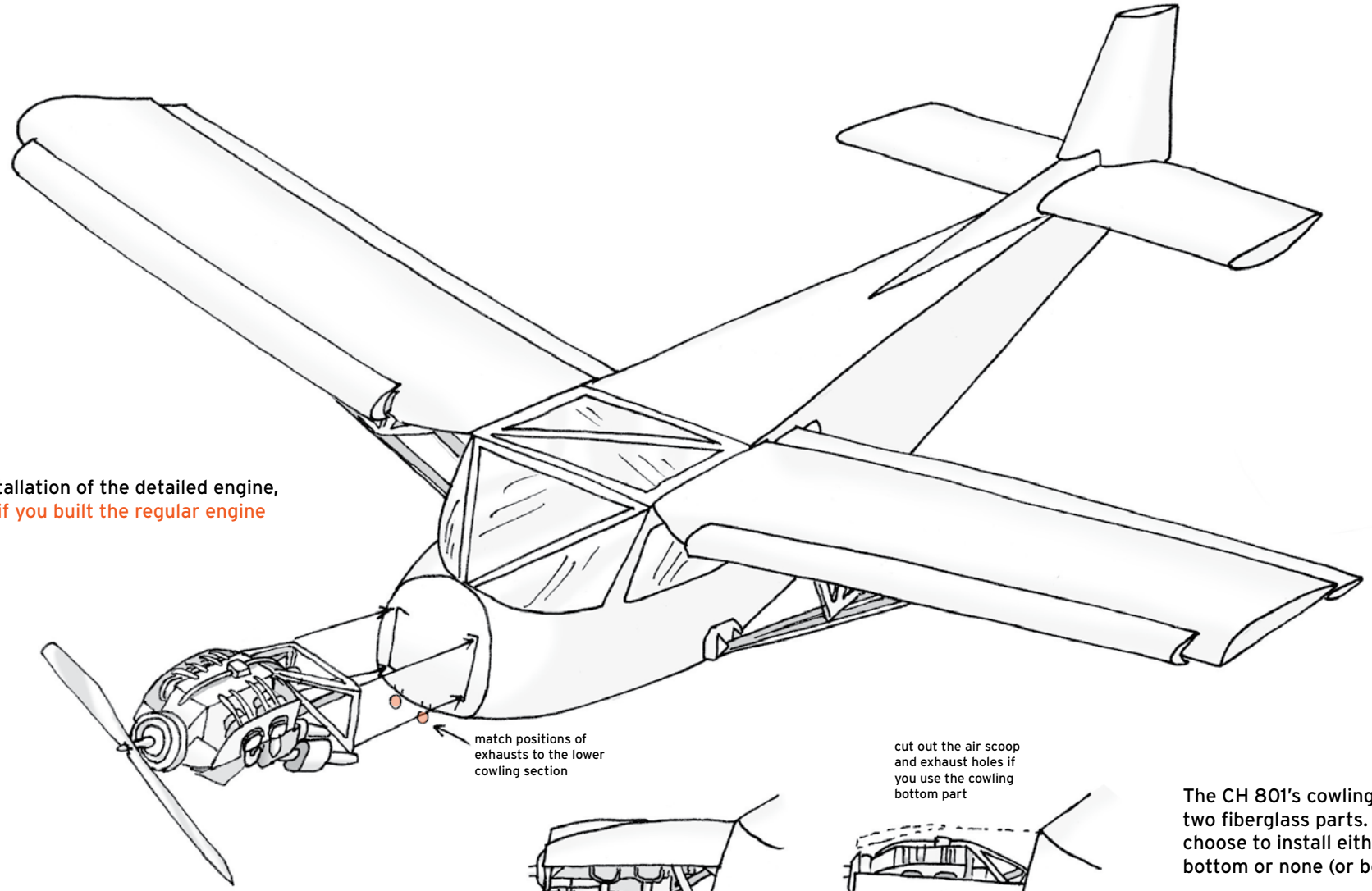
Repeat steps 48 to 53
for the second wing

54. wing installation





54. Strengthen the wing struts with cardboard. Then install them along with the additional details.



55. Installation of the detailed engine,
ignore if you built the regular engine

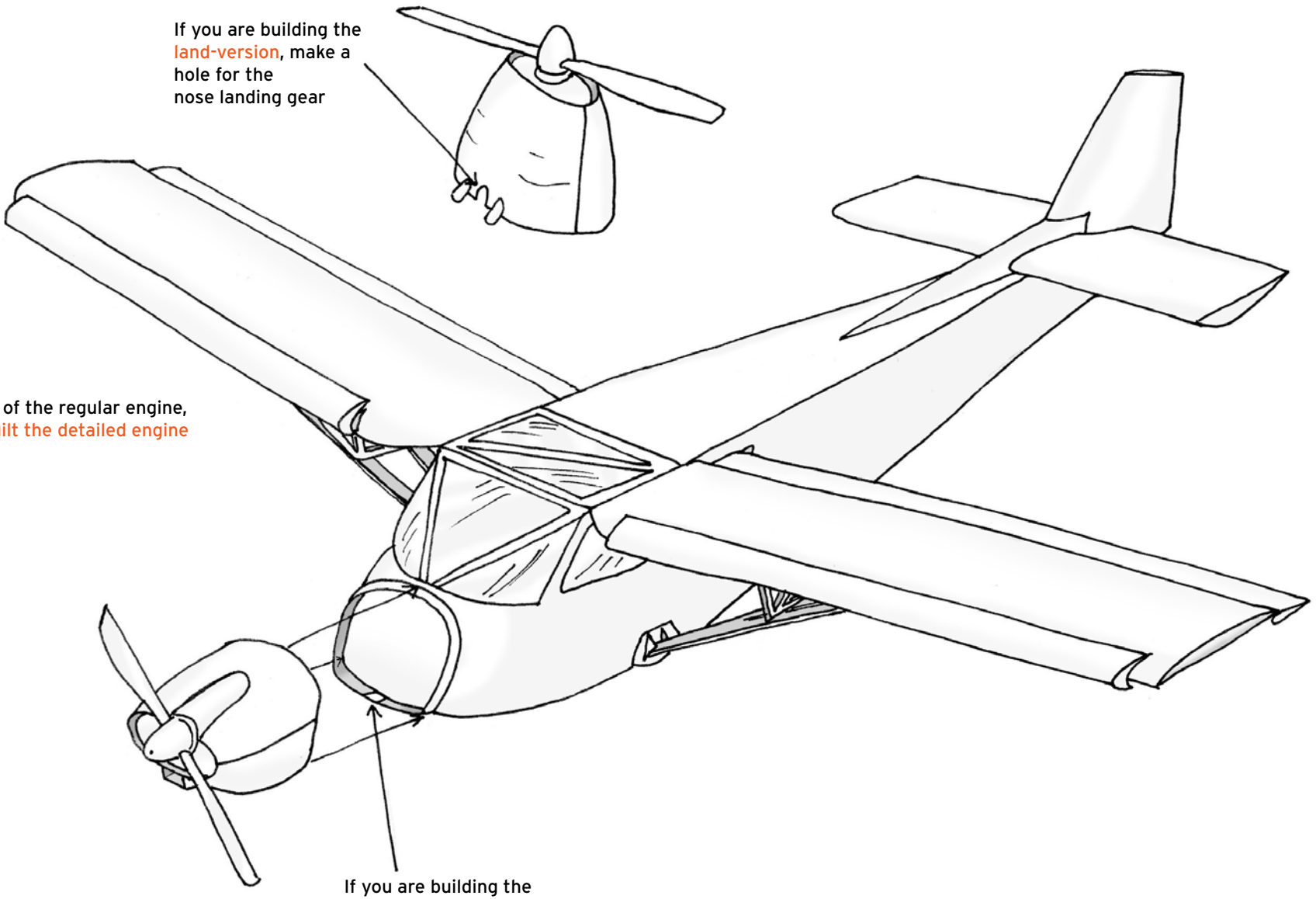
cowling top only (31,34)

cut out the air scoop
and exhaust holes if
you use the cowling
bottom part

cowling bottom only (32)

The CH 801's cowling consists of two fiberglass parts. You can choose to install either the top or bottom or none (or both)

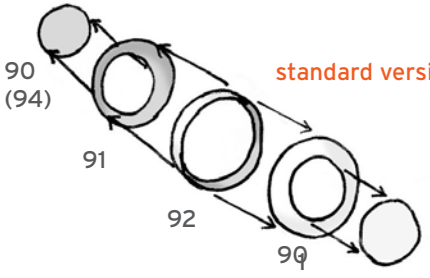
The unpainted inside of the cowling parts is white, so there is no need for an inner wall.



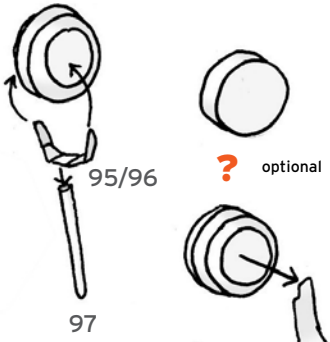
56. Installation of the regular engine, ignore if you built the detailed engine

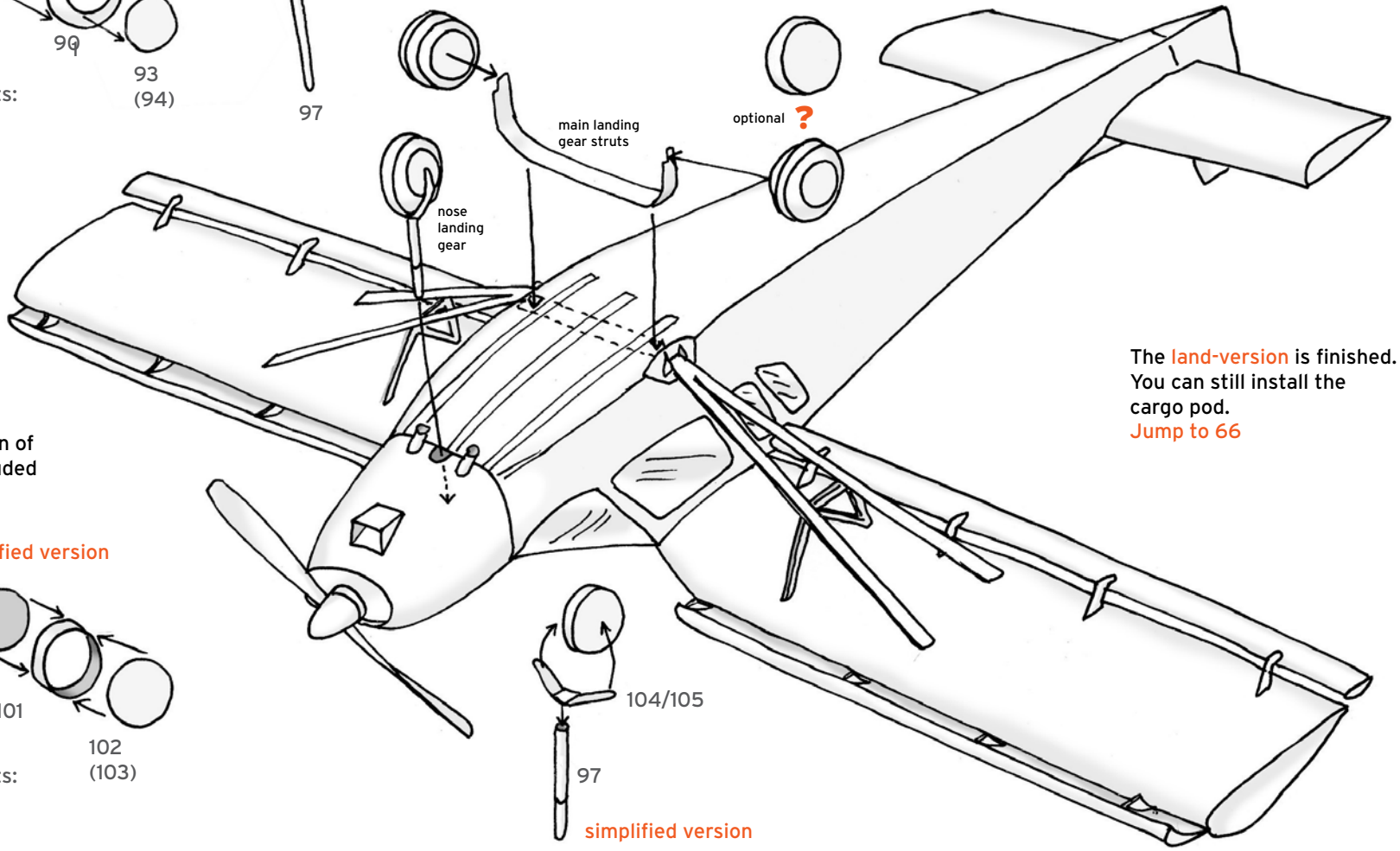
57. Installation of landing gear on the land-version

Glue a wire between the two main landing gear struts, then bend it according to the reference on page 2. The little arrow on 98 indicates where is the front.



Numbers in brackets: Nose landing gear





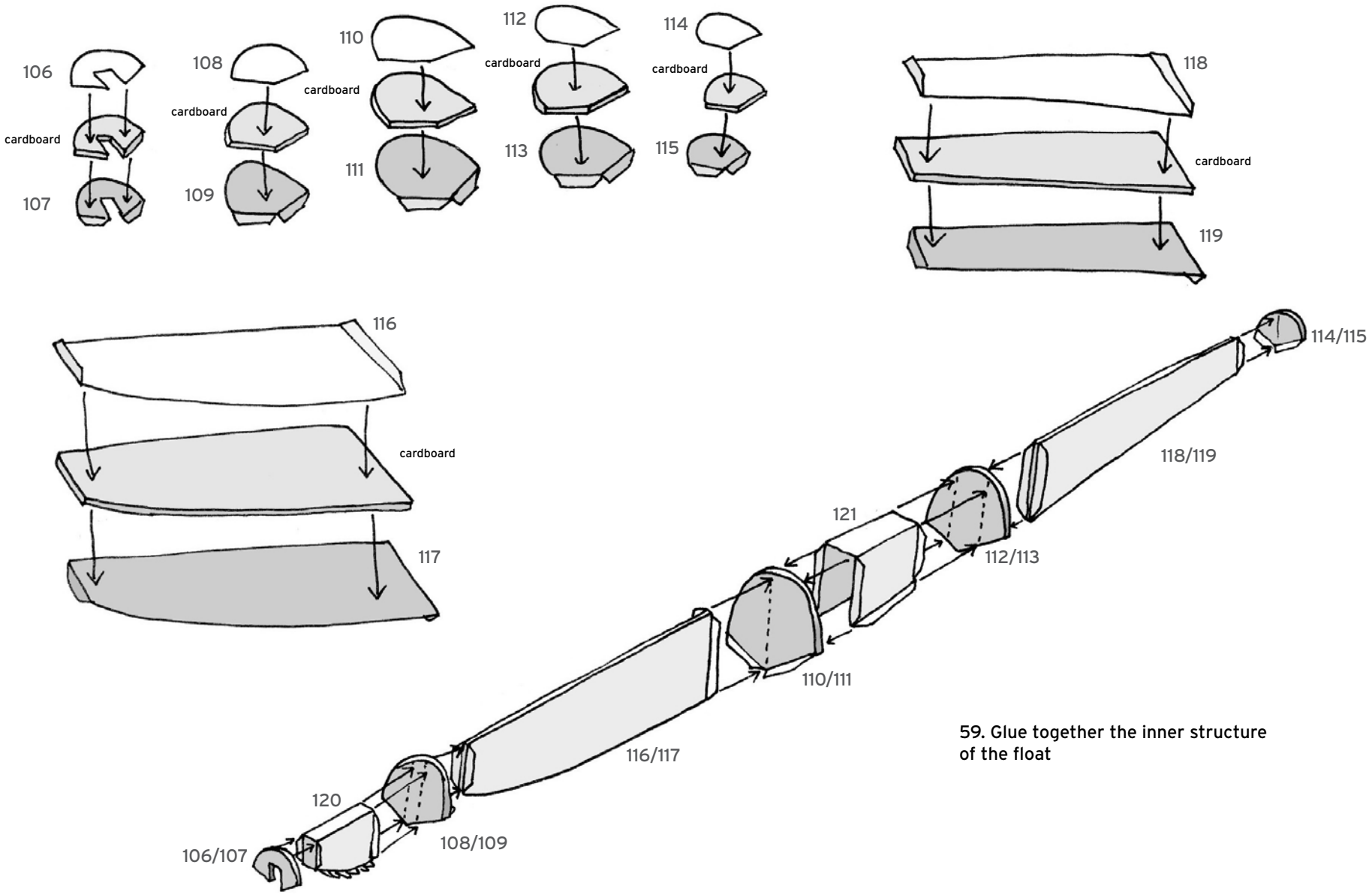
The land-version is finished. You can still install the cargo pod.
Jump to 66

A simplfied version of the wheels is included

Numbers in brackets: Nose landing gear

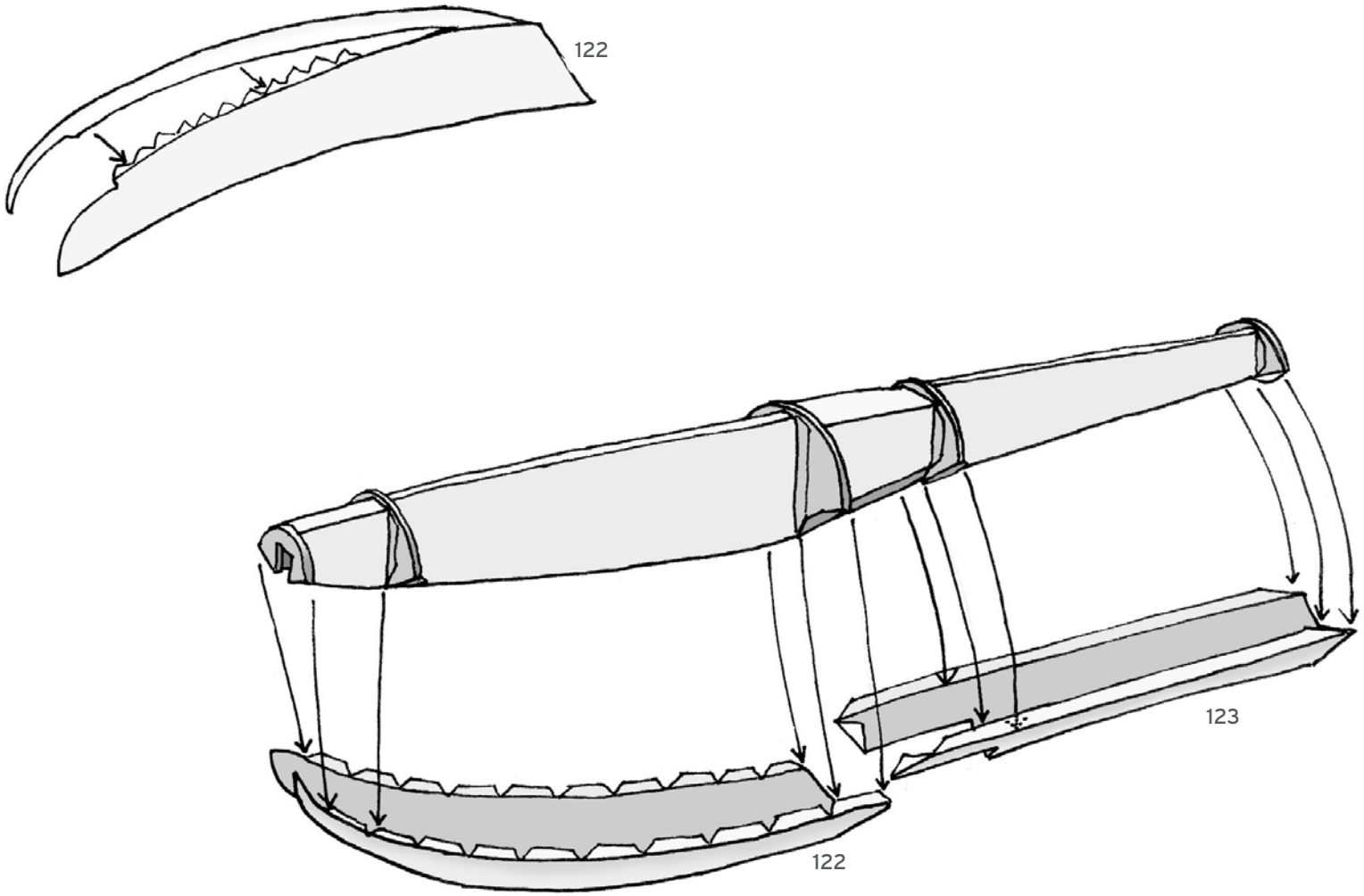
Amphibian version

58. Strenghten the Float bulkheads with cardboard

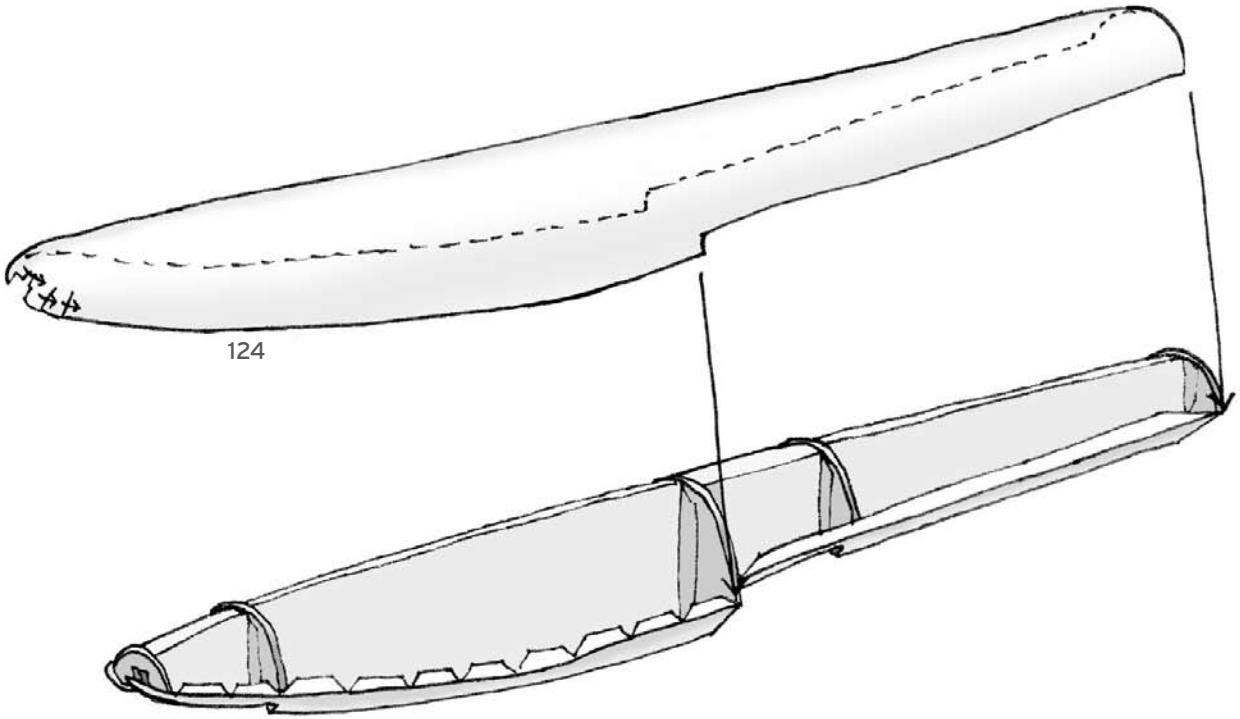


59. Glue together the inner structure of the float

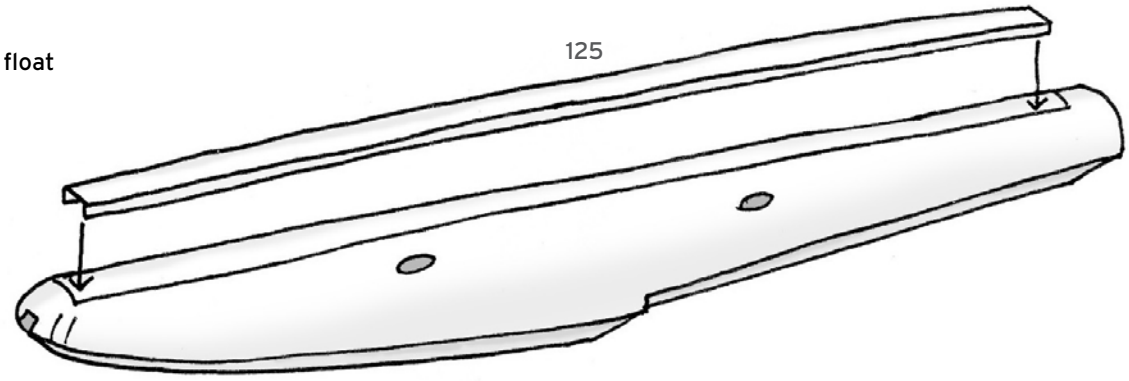
60. Build the keel and glue the inner structure on it.



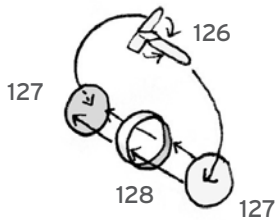
61. Sufficiently rounden the hull and glue it on the float

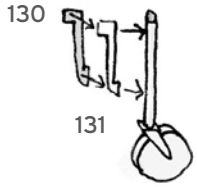


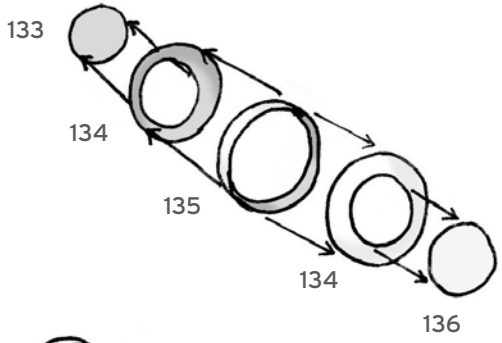
62. Glue the rails to the top of the float

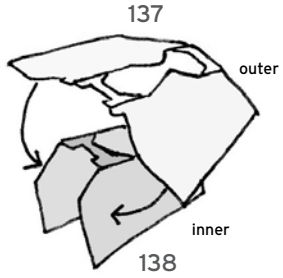


63. Landing gear down. For landing gear up, ignore this



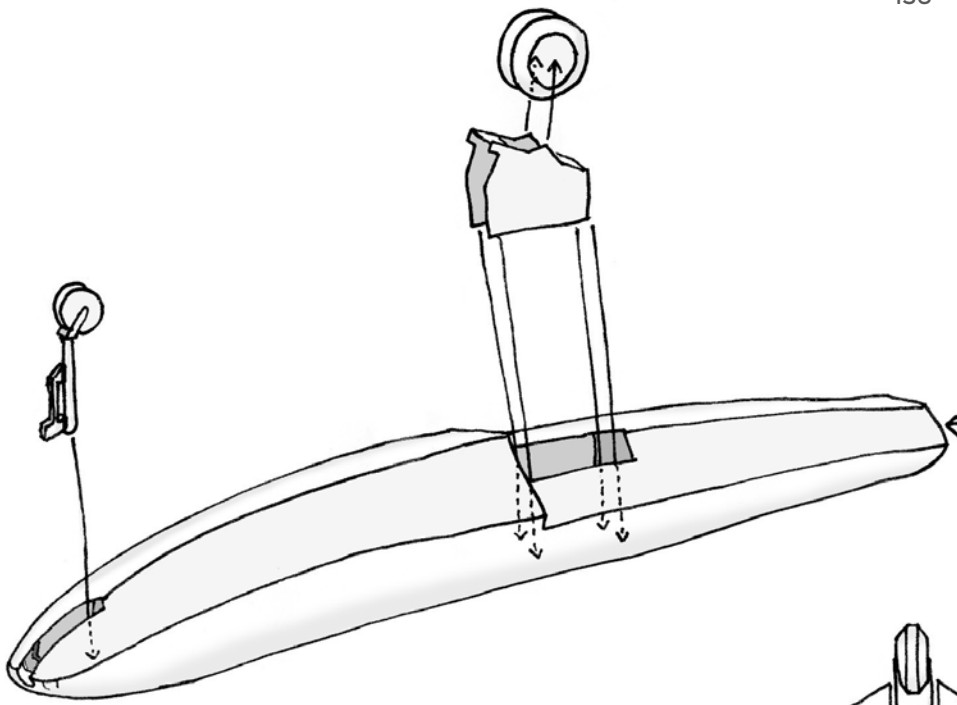


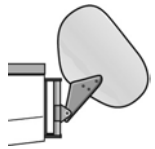


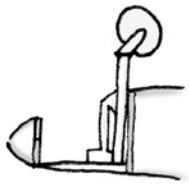


For a more realistic Landing gear, the dark grey area on parts 137 & 138 can be cut out, but it reduces stability.

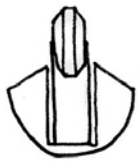
The same applies to 142



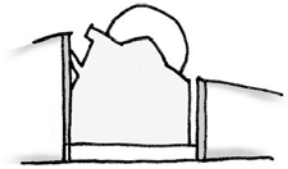




the strut is glued to the rear wheel well wall

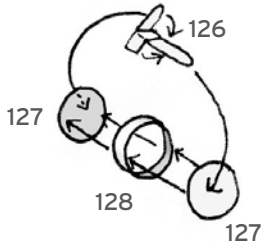


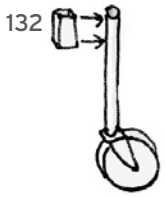
the landing gear is aligned centered

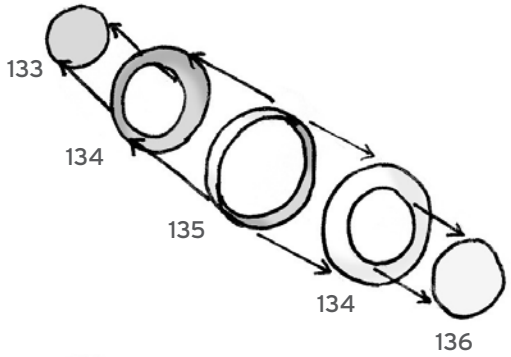


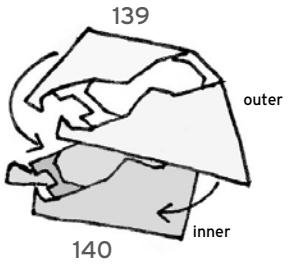
the front edge should touch the front wall

64. Landing gear up. For landing gear down, ignore this



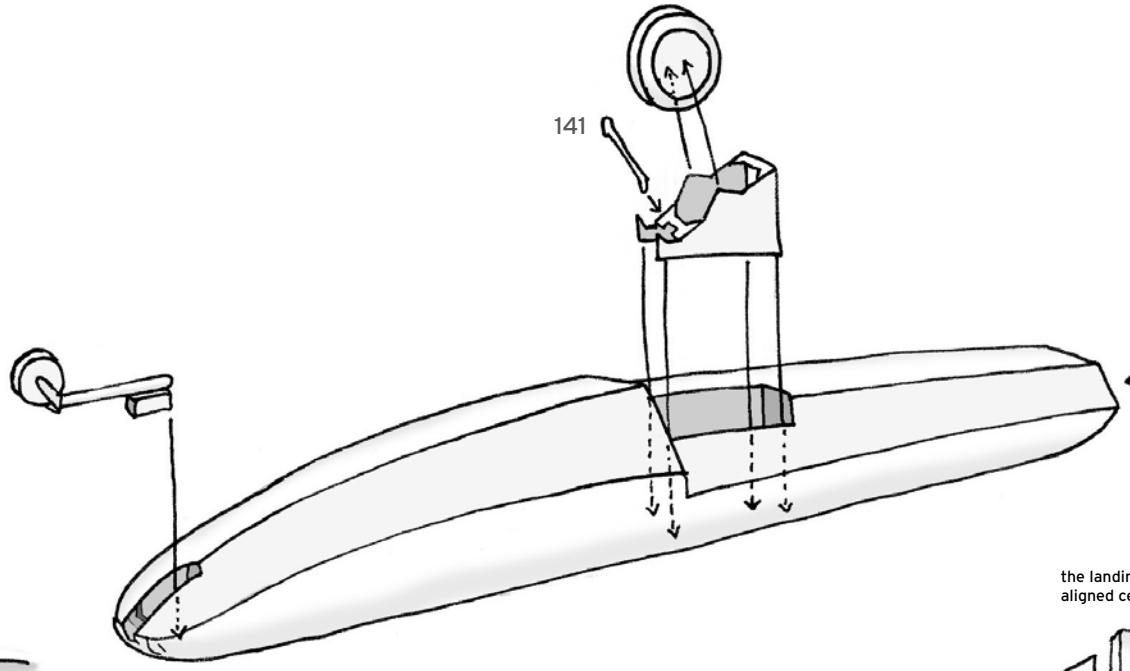


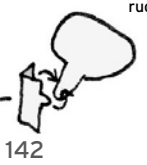


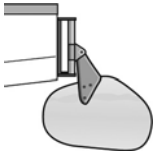


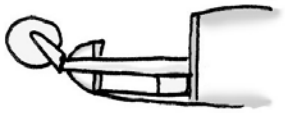
For a more realistic Landing gear, the dark grey area on parts 139 & 140 can be cut out, but it reduces stability.

The same applies to 142









132 should be glued on the floor, the wheel hangs out in the front

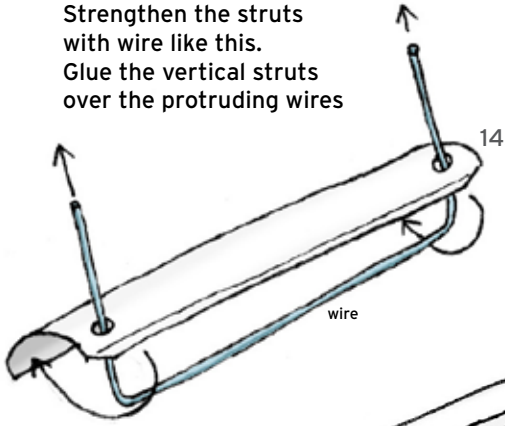
the landing gear is aligned centered

the hydraulic arm is beside on the left (port) side

the hydraulic arm should touch the front wall

2x Repeat steps 58 to 64
for the second float

Strengthen the struts
with wire like this.
Glue the vertical struts
over the protruding wires

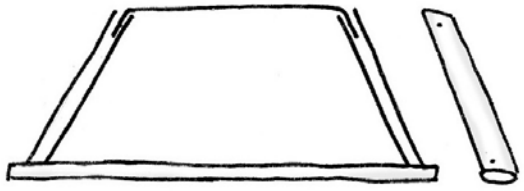


63. Float struts

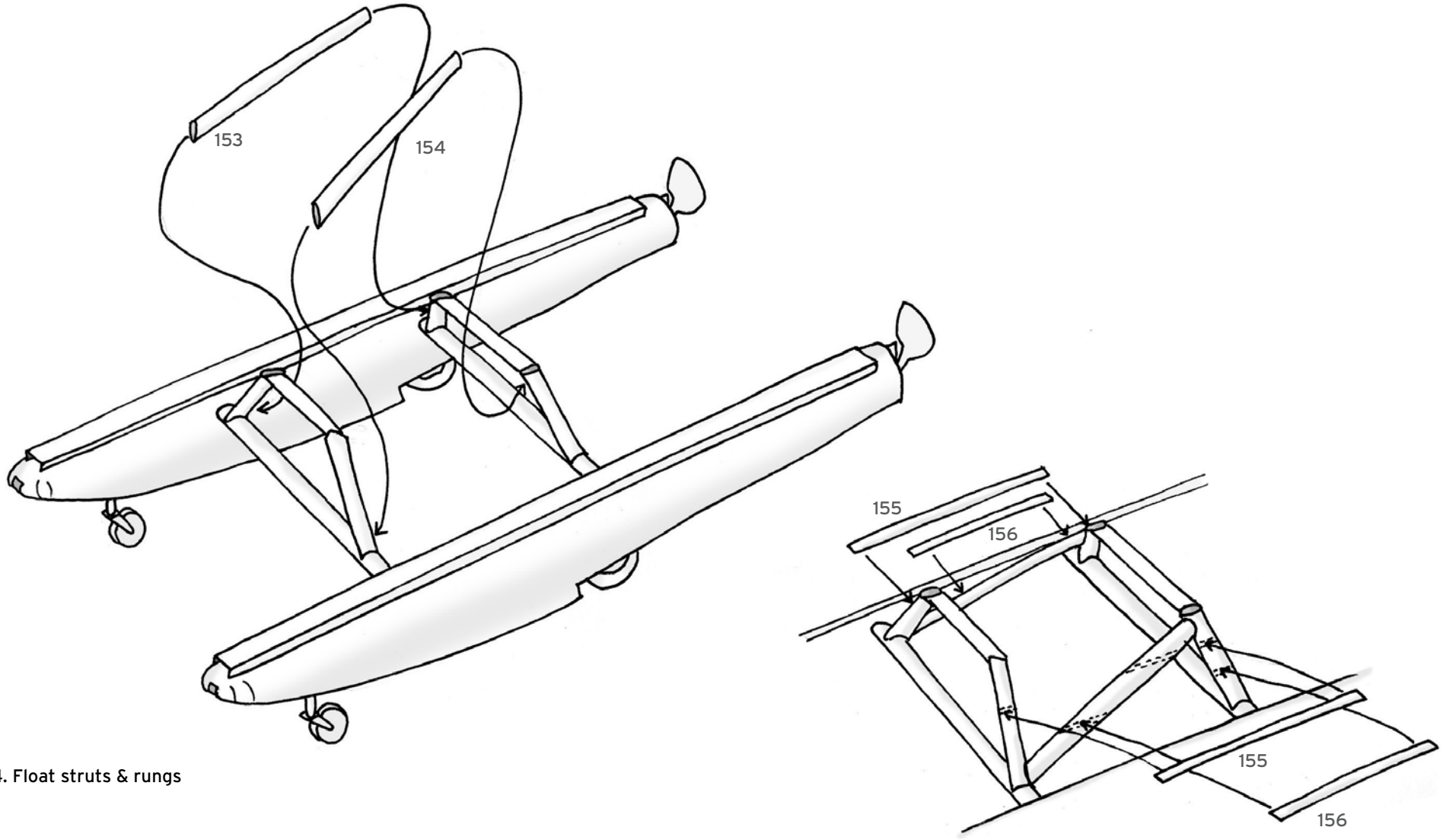
Section of forward struts

note the position of 151's glue tabs!

note the position of 152's glue tabs!

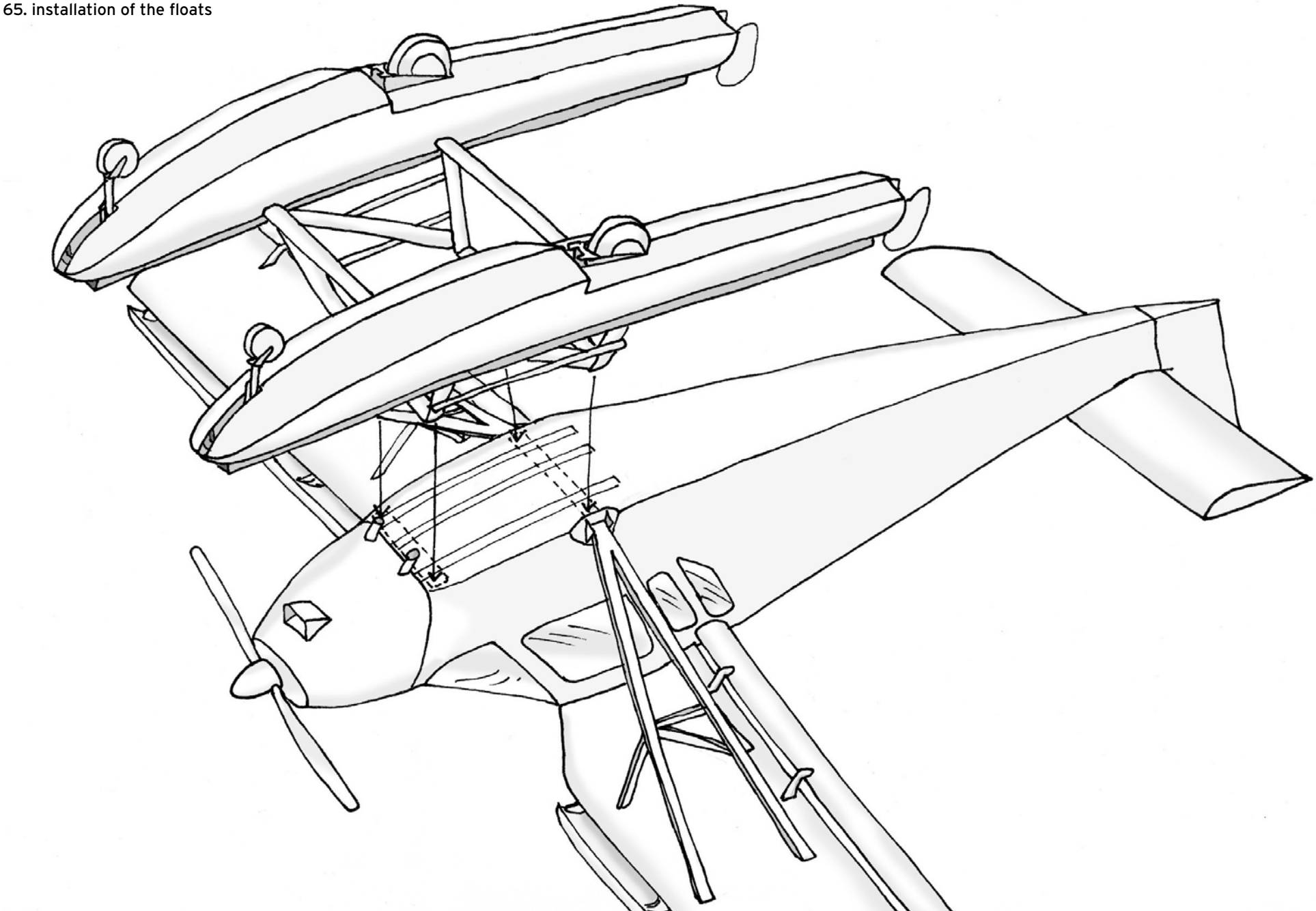


section of rear struts



64. Float struts & rungs

65. installation of the floats



66. cargo pods (optional)

For the land-version,
you need to cut a hole in
the cargo pods, so they fit
over the landing gear struts