

Sunshine Modellbau Germany

Building Instructions

Me 163 M 1:3,5

Dear customer,

Thank you for choosing our kit of the Me-163B. We ask you to read the instruction once in advance before building this kit in order to avoid mistakes. Make sure that you identify which photos accompany which step of the build before you start. Please keep in mind that this is a model airplane suited for turbines of up to 16 Kg of thrust. Please beware that all parts used in the construction of this kit have to be strong and large enough. Sunshine Modell is making an effort to keep the kit as light as possible while not making any compromises regarding the stability of the airplane. In order to keep the assembly of the components as straightforward as possible we deliver all GRP parts with a clear coat instead of a colored gel coat. This way you have the opportunity to check all fits and glue-joints. The wings are preassembled except for the rudder assembly, the slats and servo-trays.

Construction section:

**Wings, fuselage, RC
equipment and turbine
install**

Our Me-163 comes with the original s-shaped airfoil design used by Mr. Alexander Lippisch. The model aircraft possesses excellent slow-flight characteristics and does not tend to stall. The function of the different control surfaces has to be maintained as described in this manual as the airfoil design differs from other airplanes and kits. The ailerons serve as ailerons and elevators in typical delta style. The inner control surfaces, called Flettner Flaps, are to be set slightly up for takeoff and landing. The deflection should be at around 5 to 6mm up. It is necessary to test the function of the Flettner Flaps in mid air in order to get a good feeling for how they work and what they do and to learn at what speed to deploy the flaps before your first landing approach with deployed Flettners. The airplane will climb in case it is still too fast for Flettners but at the correct speed it will simply continue to fly straight and you can initiate your approach. The rate of glide is excellent and the airplane will fly stable and true with deployed Flettner flaps, even at slower speeds. Without deployed Flettner flaps and in zero or low wind conditions it will be difficult to maintain a controlled approach. Since the Me-163 has a wide speed range it is up to the pilot to get familiar with the flaps and what they do at what speed. Again, do so before you come in for your first landing.

Should you experience any problems during the build or flight of your Me163, please feel free to contact Vogelsang Aeroscale. They will, together with us, assist you.

The
Sunshine Modellbau Team

The Wings:

Attach the ailerons to the wings. Incorporated into the ailerons you will find three brackets that will accept the 6mm carbon rod which is being used as a hinge rod. These brackets house bearings that guarantee the tight and friction free operation of the hinge rod.

Image 1



Just like the original our ailerons are designed to be detachable. Start with cutting off the middle extension between the flaps and ailerons at 90 mm deep. OR you can fabricate a much nicer looking and more functional access panel. For that option please check a few pages further down. The control surfaces being detachable makes it easier to apply the paintjob later on, as well.

Image 2



Image 4



Image 3

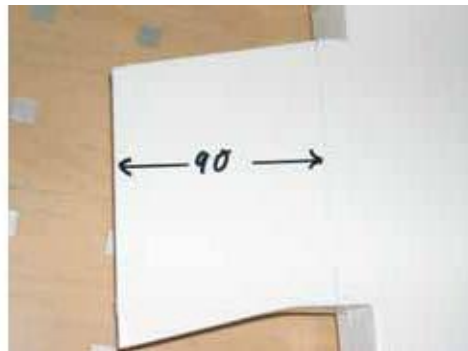


Image 5



The detached part will later on be glued back into place in order to cover the hinge points. Again, installing an access panel is the preferred but more elaborate option.

Now you have to cut away at the top and bottom of the Flettner flap section in order to make the Flettner Flaps fit. Draw a line 5mm deep from end to end of the flap section, see photo 9 for reference. Now cut off as shown in photo 7.

Image 6 Image 7



Image 8 Image 9



Next up are the ailerons. Open up a square notch as shown in photo 11 in order to house the outer hinge bracket for the ailerons. Use the ailerons as a template to locate the exact position of the bracket. Everything done right you will find a pre-installed box inside the wing that will house the hinge bracket. Slightly undersize the hole at first and then slowly widen it in order to guarantee a tight fit of the hinge bracket inside the box.

Image 11

Bild 10



Bild 11



**Use the aileron itself in order to double-check the exact location of the bracket.
Shorten the hinge-bracket if needed to accomplish a gap between wing and aileron of
around 2 to 2.5mm.**

Image 12

Bild 12



Image 13

Bild 13



Image 14

Image 15



Now position the inner hinge-brackets for the ailerons, again using the ailerons themselves as guides to verify position and gap, drill the holes for the hinge rod through the brackets and glue them into place. You will need to assemble the complete unit and let it cure in the right position in order to achieve this. Check photo 20 below first for numbers and advice.

Image 16

Bild 16



Image 17

Bild 17



Bild 18

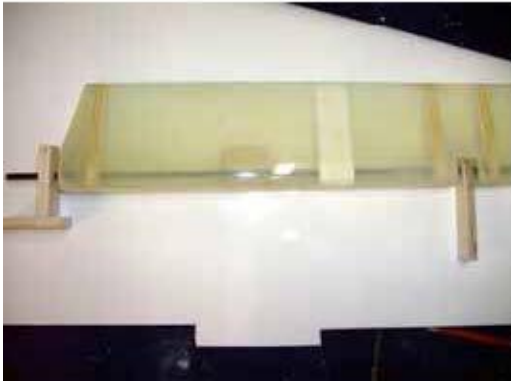
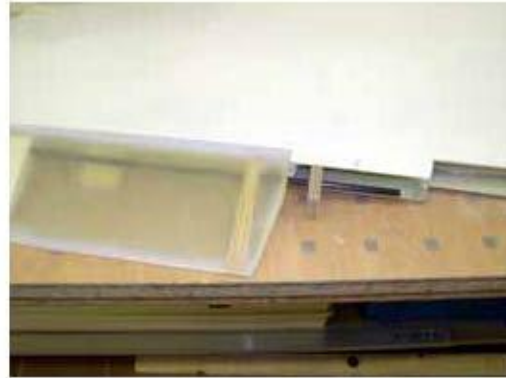


Bild 19



Drill the hinge-bracket hole according to the photo, 6mm in diameter, 36 mm back from the front-plate.

Image 20 Image 21

Bild 20



Bild 21



Image 22 Image 23



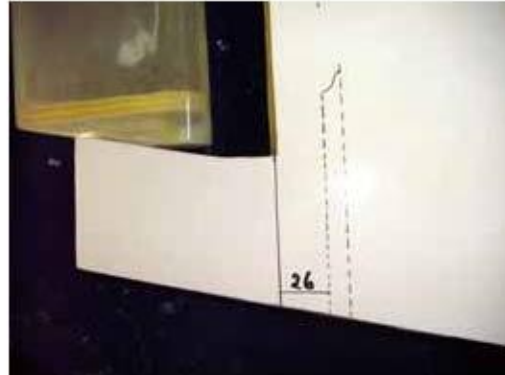
Now you can glue the aileron hinge-brackets in place. Call us before assembly in case there are any questions! Again, make sure to accomplish a gap between the wing and aileron of 2 to 2.5 mm. You can shim a strip of 2mm balsa to align the aileron. Furthermore, lay a flat bar or construction level spanning ailerons and wings to ensure that the ailerons are level with the surface of the wing and are not installed aslant.

The install of the Flettner flaps basically repeats the steps taken before for the aileron install. Drill an 8mm hole through the root rib in the extension of the Flettner hinge-rod line. This serves as an access hole only for the carbon rod, the hinge-brackets themselves will serve as hinge points later on as shown below, last photo on this page. Again, use the flaps themselves as guides.

Bild 24



Bild 25



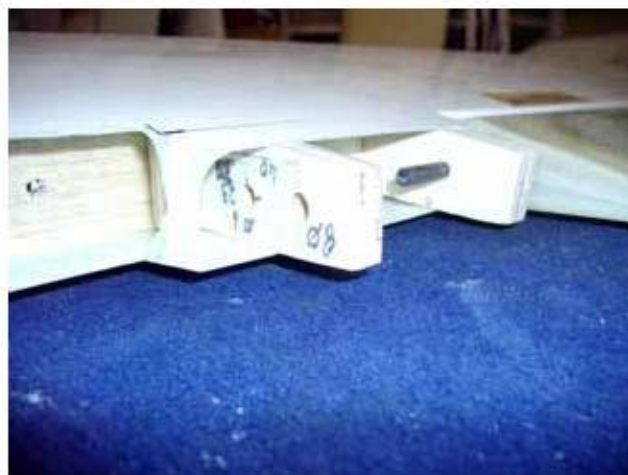
Now let us have a look at the other end of the flap, the hinge bracket at the center section. I will try to put the concept into words, in case of any questions, please call!

Image 26 Image 28

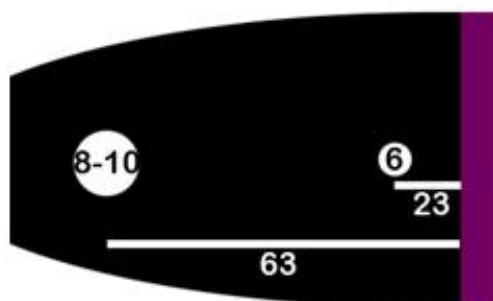
Bild 26



Bild 28



The center Flettner hinge bracket has two holes. One is located 23mm back from the front plate and is 6mm in diameter in order to house the Flettner hinge rod itself, the other one is 63 mm back from the front plate and 8mm in diameter and allows you to slide through the aileron's hinge-rod in case you want to remove or install the ailerons. Photo 28 shows (vaguely) both holes.



Once everything fits and works to your satisfaction glue the hinge-brackets in place. Again, lay a flat bar or construction level spanning both flaps and wings to ensure that the Flettner's are level with the surface of the wing and are not installed aslant.

IMPORTANT:

Before you use any glue apply mold release or some other separating agent to the carbon fiber rods in order to keep them from getting glued stuck. This could otherwise ruin all the progress made to this point and damage vital parts!

The following two photos show dimensions of the alternative access hatch for the middle section.

Bild 30



Bild 31



The now cut off lid can later on be screwed on top the hinge brackets which are underneath. You can furthermore glue a frame in place surrounding the hole from underneath in order to further support the lid.

Back to the hinge rod. Once you are ready for final assembly please secure the whole setup using 6mm collars with set-screw to keep the hinge rods from sliding out of position. If you look at the two rod extensions inside the center section between aileron and flap you will see that the simple use of one collar for each rod will secure enough to keep the hinge-rods from travelling sideways.

In case you do experience slight sideways-slackness of the control surfaces please use the 4 plastic spacers included with the kits. Cut them to size in order to align the control surfaces accordingly.

Earlier we had to cut away openings on the wings, left and right of the ailerons and flaps, in order to install the hinge-brackets. If you now find these openings unsightly you can close them up using 1mm plywood.

The slats: Sand them to size and close the open sides with thin balsa in order to increase the bonding-surface used to glue them in place later on. It is important to fabricate 4 supports that prop up the slats on top of the wing. The supports should be made of 3-5mm balsa wood and should be shaped accordingly in order to accommodate the wing and slat contour.

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Important!!!!

Do not glue the slats in place until after the paintjob is finished. Otherwise you will have blind spots, making an immaculate paintjob difficult.

Servo and linkage install are up to your preference. Please call Vogelsang Aeroscale for further advice in case you plan to “go fast”.

Last step is to cut out the ABS parts and to glue them in place.

The Fuselage:

You start with cutting the necessary cutouts on the fuselage. Being the back of the fuselage's access hatch, the side windows and...

Image 40 Image 41

Bild 40

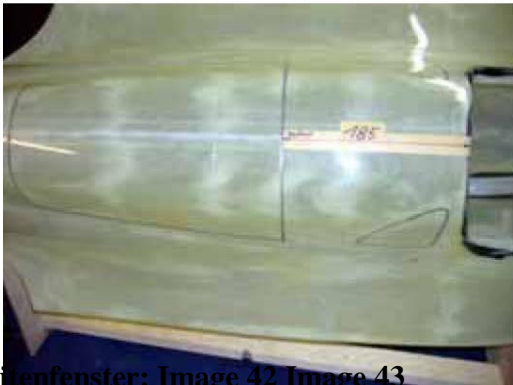


Bild 41



Seitenfenster: Image 42 Image 43



the Air intakes underneath.



Bild 46



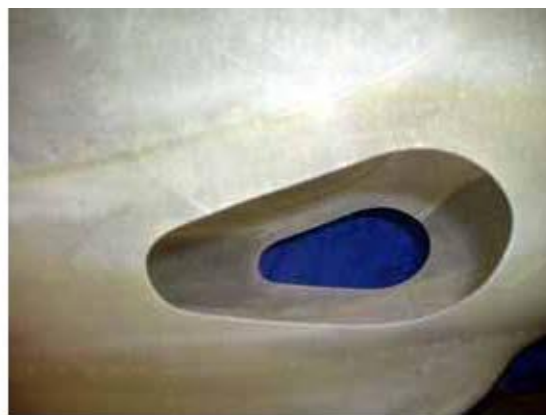
Bild 47



Bild 48



Bild 49



Please sand the edges smooth using sand paper in order to minimize injuries due to cuts.

Back of the fuselage:



Bild 52



Bild 53



Now drill the hole in the nose...DO NO GLUE A DOWEL IN PLACE YET.



Tailwheel: The optional tailwheel is essential if you opt to launch self-propelled and not on a bungee. Otherwise the airplane is difficult to direct on takeoff. The steerable tailwheel should be the first item you install on your Me-163.

Bild 56

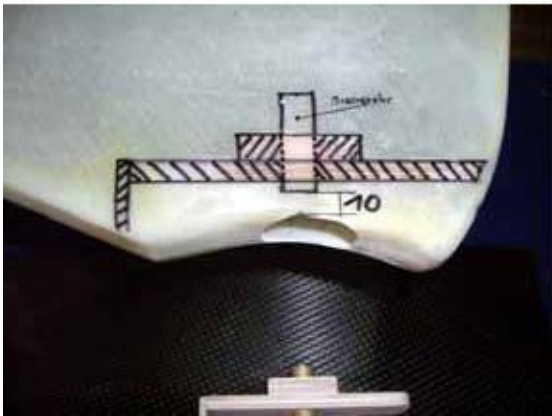


Bild 57

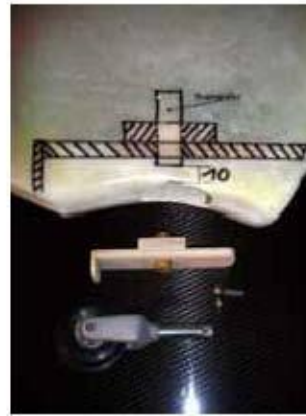


Image 58 Image 59



Bild 60



Bild 61

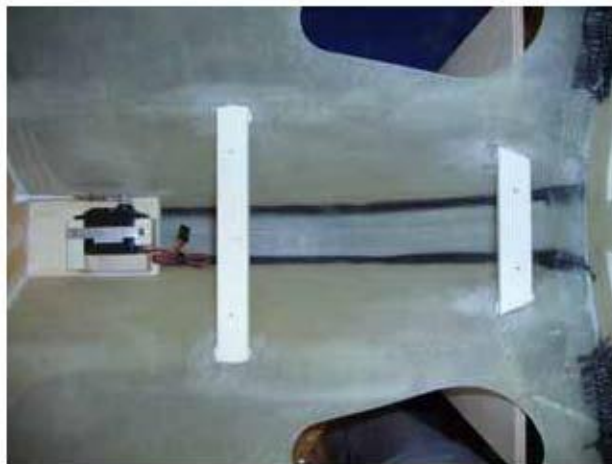


The opening for the linkage next to the tailwheel will be covered by a faceplate. The outer sleeve of the push-pull rod will be held in place by the formers. We recommend a pushrod of at least 2 mm made of carbon fiber. The servo for the tailwheel can be easily installed in front of the dolly assembly. Double-Check location before install!

Bild 62



Bild 63



Now we continue with the install of the other components inside the fuselage. First you should install the ring-former in the back of the fuselage. Check photos 66 and 68a for reference. You can drill holes into it to bring the weight down, but do so with caution. Make sure that the rudder stays straight and true! Secure it using CA and then fixate with Epoxy.

Bild 66



Bild 68a



Image 67



Top Lid: Build up a frame and construct as shown.

Bild 68

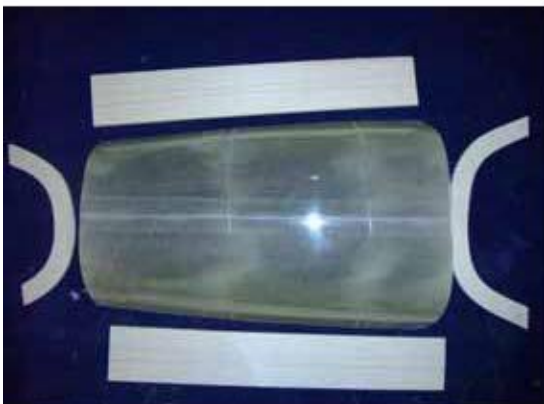
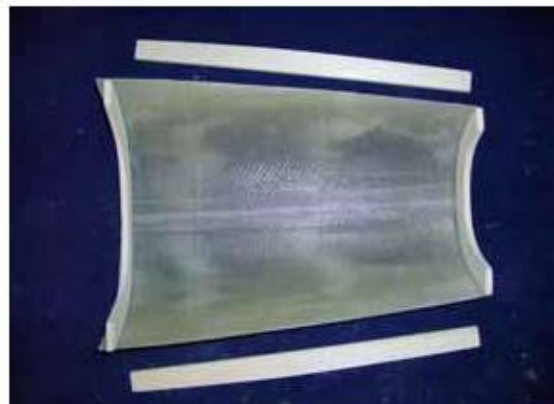


Bild 69



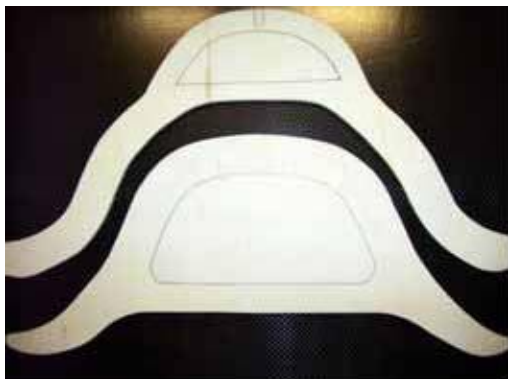
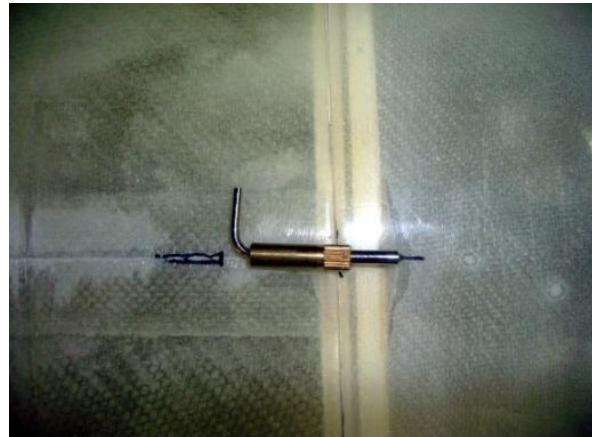


Bild 73



Bild 74



Bild 75



Bild 76



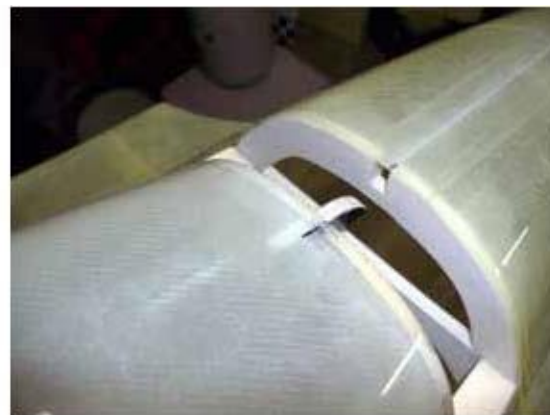
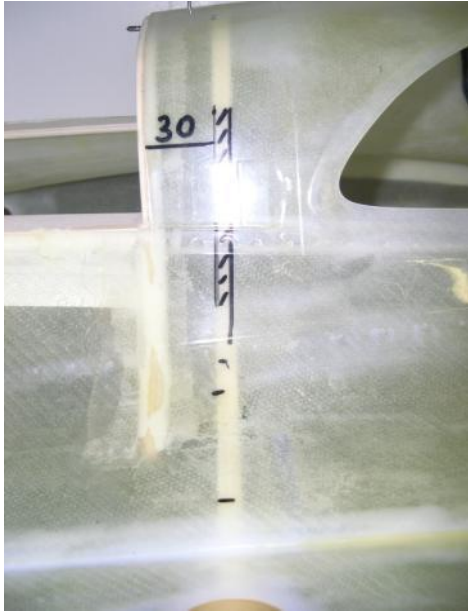


Bild 80 a

Bild 80 b

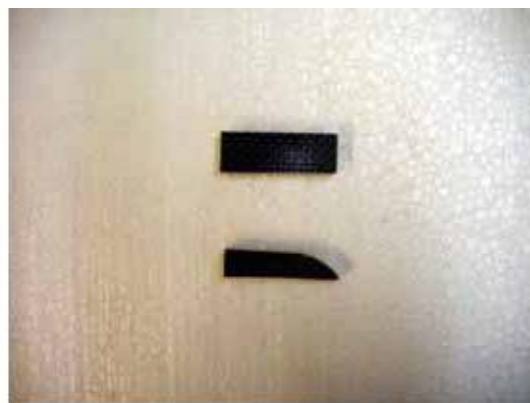


Bild 82

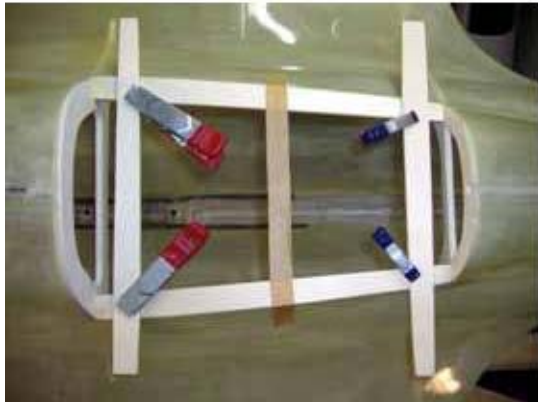


Bild 81



Construction of the Servo and Gear tray.

Bild 90

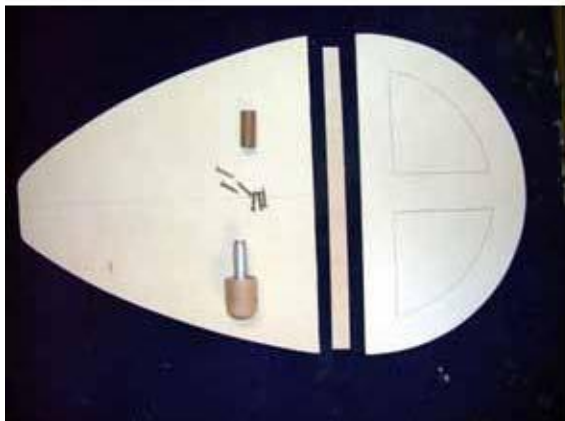
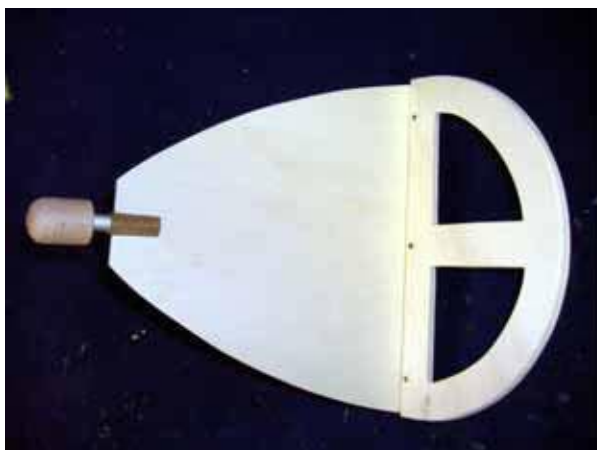
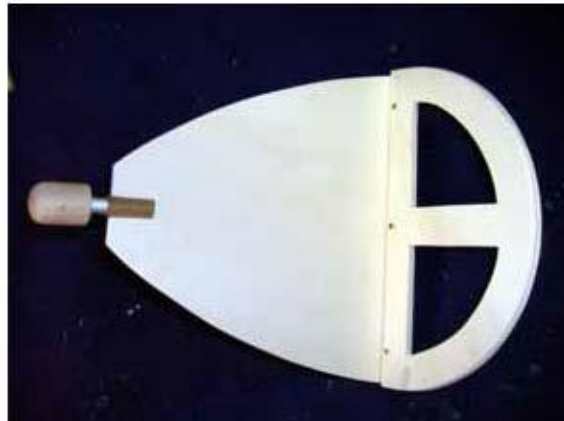


Bild 91



Position and Dimensions according to the photos

Bild 92



Bild 95



Bild 93



Bild 94



Image 96 Image 96 a



Use the 10mm hole in the nose as a mount for the dowl.

Image 97

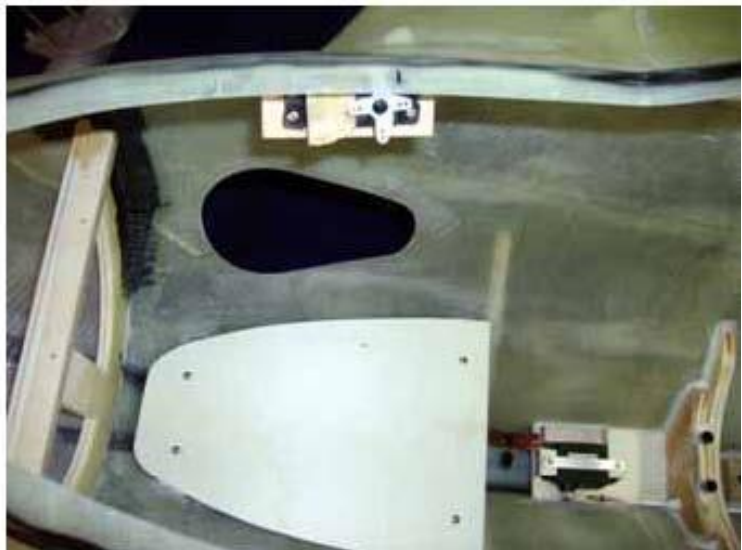


Front supports and tray:

Bild 98



Bild 99



Canopy frame and internals:

Bild 102

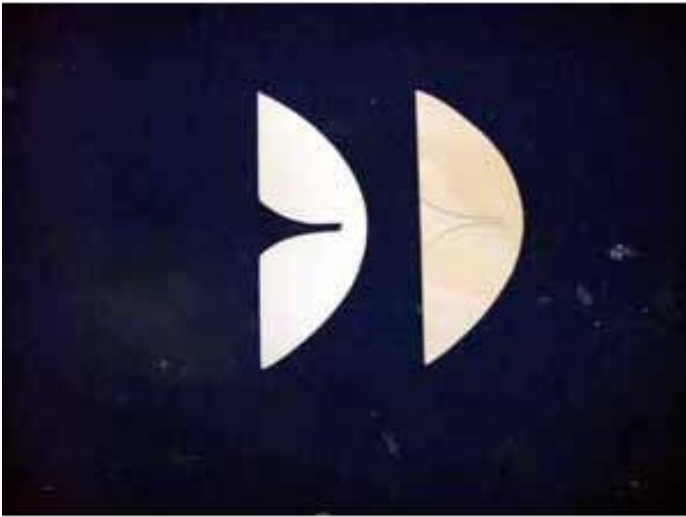


Bild 102a



Bild 103 a



Bild 103 b



Finish and sand the canopy frame and glue the canopy into place. It is important to finish the locking mechanism before you glue the canopy into place on top of the canopy frame. In the front of the cockpit, where the slotted former is located, you place a screw into the canopy frame. This screw will act as a stud to secure the canopy in the front (photo 102a). In the back you glue the piece of plywood into place according to photo 103 and 103b. Then position the sliding lock according to photo 103a.

Bild 104

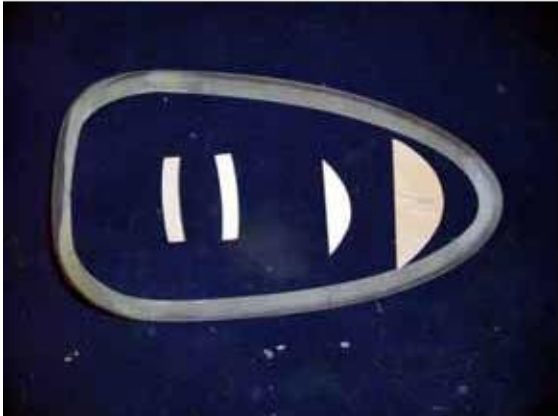


Bild 105



Glue the canopy into place and leave an overhang of 2mm.
Bild 106

Bild 106 a



Bild 106 b



Bild 106 c



Before you apply glue sand the bonding surfaces to remove mold release and oils.

Bild 107



Bild 107 a



Dolly release mechanism:

The dolly can be secured by using an additional servo, if preferred.

That ensures a controlled jettison of the dolly after takeoff.

The assembly resembles a glider-tow mechanism.

Bild 108

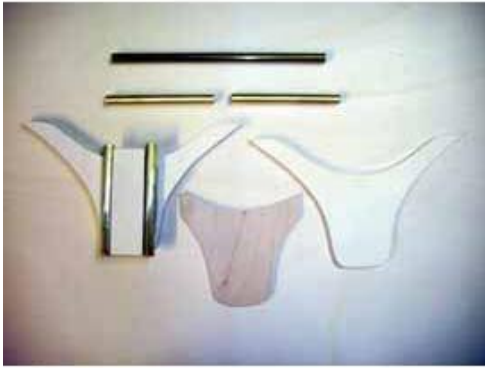


Bild 108 a



Place the Dolly 50mm in front of the CG, NOT 65mm as shown on the out-of-date photo!!

Bild 108 b

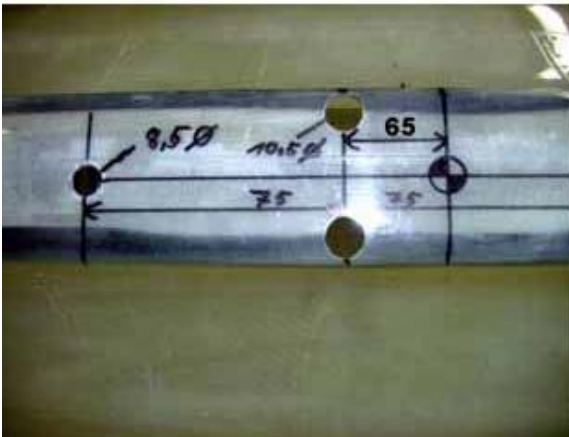
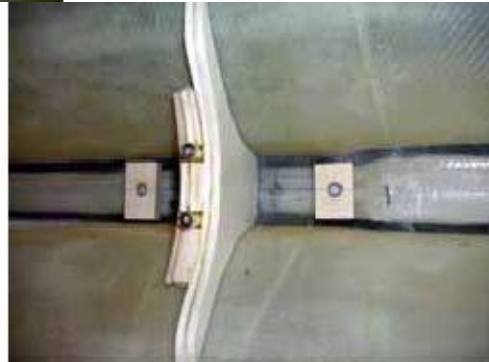


Bild 108 c



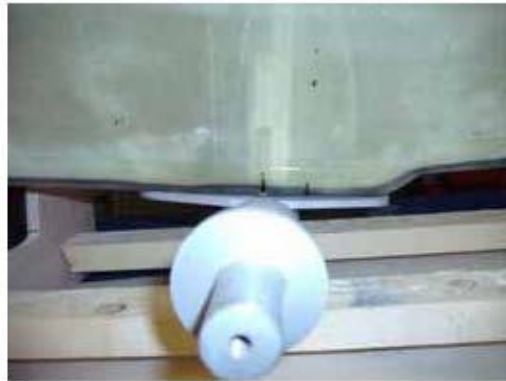
It is

very important to line up the dolly with the center line of the airplane.

Bild 109 a



Bild 109 b



Rudder Install:

Bild 111

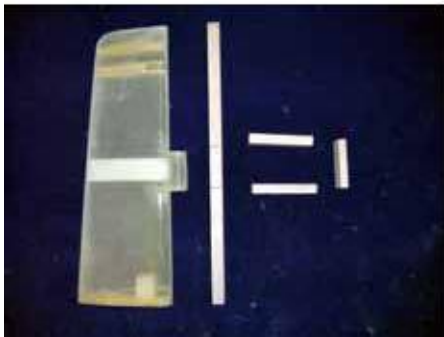


Bild 111 a



Drill a hole into one end of the 6mm Carbon rod and insert a pieces of threaded rod. This enables you to simple screw the carbon rod in place later on (using a blindnut as a counterpart), making the rudder detachable.

Bild 111 b

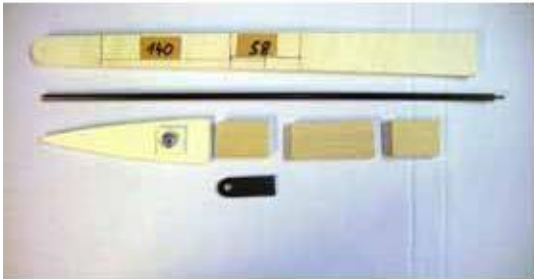


Bild 111 c

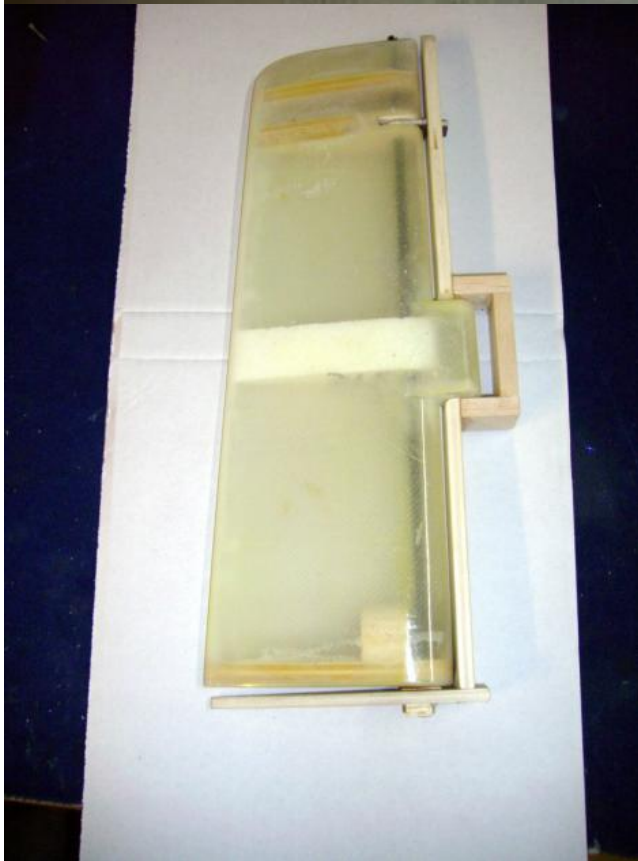


Bild 112 b



Bild 112 c





If you like “going fast”, please contact [Vogelsang Aeroscale](#) for further ideas regarding the rudder.

Wings :

Now it is time to install the wingformers and parts needed for wing-installation. Take the wingformer and fit it to the fuselage. Slide the Aluminum tube in place and install the wings. If needed sand and fit the wingroots and the fuselage (photo 114a). Now drill a hole from inside the fuselage through the root and through the wing and install the bolt that locks down the wings. Make sure that everything is aligned perfectly using a incidence meter. Once the wings are calibrated the former can be CA'd into place, the wings can be pulled off and the former now be fixated by using epoxy.

Bild 114



Image 114 Image 114a

Bild 114a



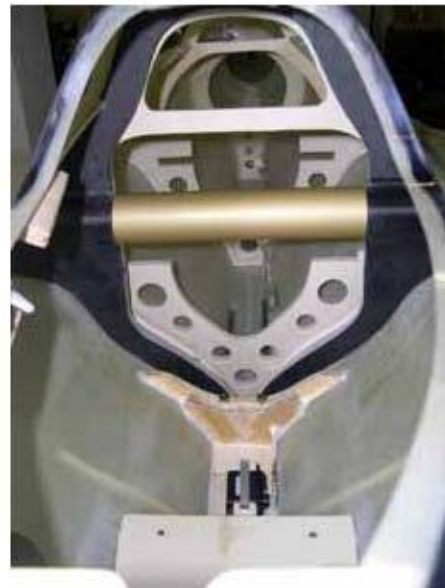
Image 114 b



Bild 114 c



Bild 115



Once the wingformer has cured glue the two wooden root-formers into place as shown in 115a and 116a.

Image 115 a Image 116

Bild 115 a



Bild 116



Image 116 a

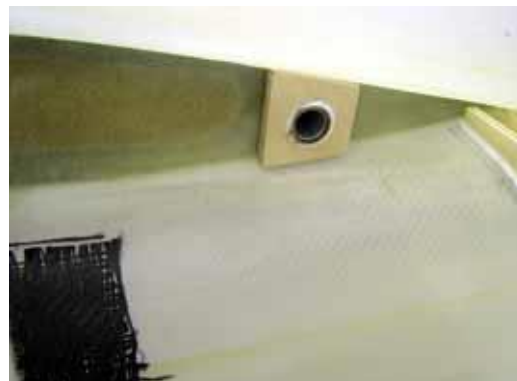


Image 119 b Image 119 c

Now install the turbine bracket. This bracket offers you many options when it comes to turbine size and position. Make sure to have as little weight as possible behind the CG in order to avoid unnecessary trim-ballast in the front later on.

Image 117 Image 117 a

Bild 117



Bild 117 a



Image 118 Image 118 a



Bild 119



Bild 119 a



Bild 119 b

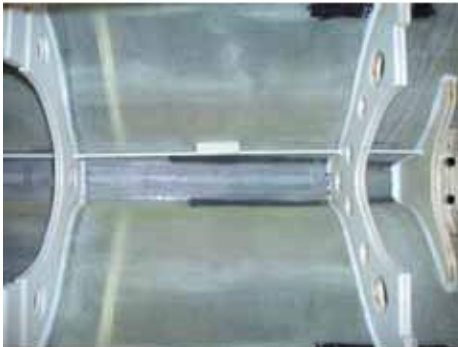


Bild 119 c

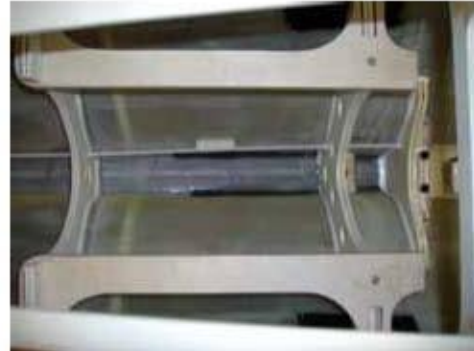


Bild 120 a

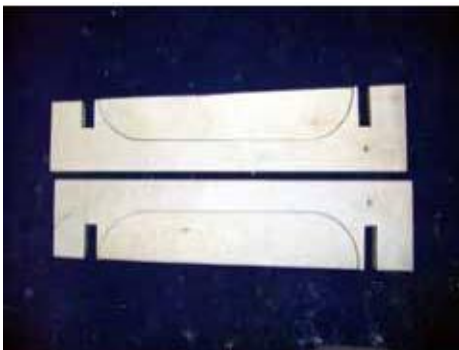


Bild 102 b



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Bild 121



Bild 122



**The CG of the Me-163B 1:3.5 scale is at 285mm at the root.
Please maiden the plane slightly nose-heavy. With this airfoil there is not much room for error. Again, please call Vogelsang Aeroscale at 919-533-6275 with any questions you might have.**

Enjoy your model!

The Sunshine Team