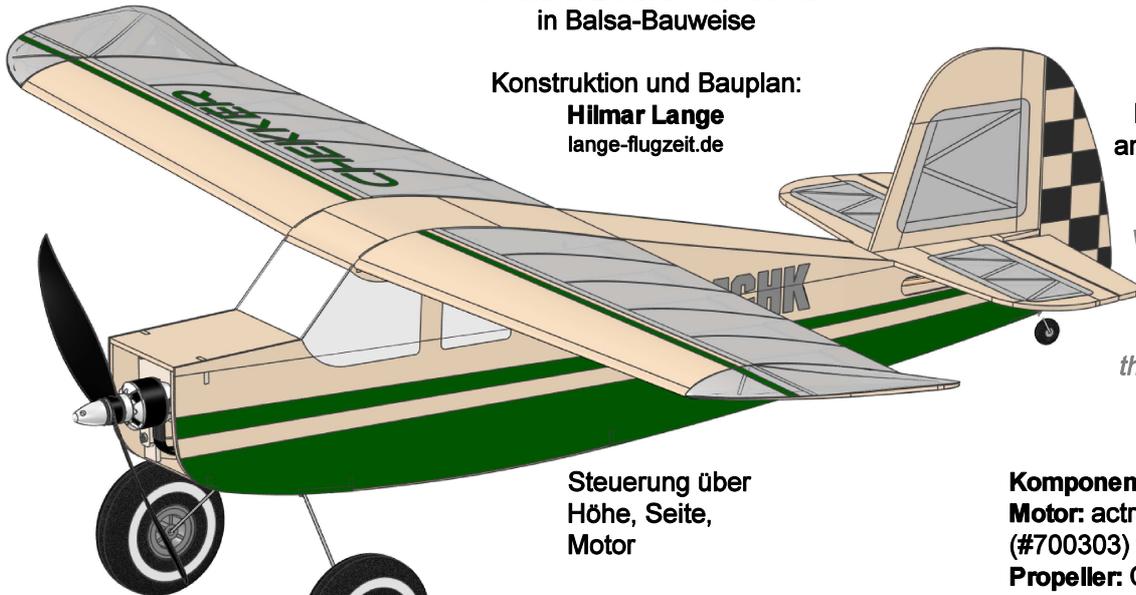


CHEKKER

ein kleiner 2-Achs-Hochdecker
in Balsa-Bauweise



Konstruktion und Bauplan:

Hilmar Lange
lange-flugzeit.de

Betrachten Sie die Baustufenbilder auch am Handy / Tablet, um sie stark vergrößert sehen zu können.
View the construction stage images on your mobile phone/tablet to see them greatly enlarged.

20
cm

Steuerung über
Höhe, Seite,
Motor

Komponenten von Aeronaut.de

Motor: actro-n 28-3-1300
(#700303)

Propeller: CAM Carbon Light
9x6" (#7216/17)

Regler: actrocon 30 A
(#7003/32)

2x Servo 10g: AN-12-MGBBA
(#7003/74)

Räder:
Leichtrad 80/24 mm (#735338)
20 mm Leichtrad am Heck
35319

Spannweite: 73 cm
Rumpflänge: 66 cm
Flächeninhalt: 10,2 dm²
Abfluggewicht: 390-450 g
Flächenbelastung: 39-44 g/dm²

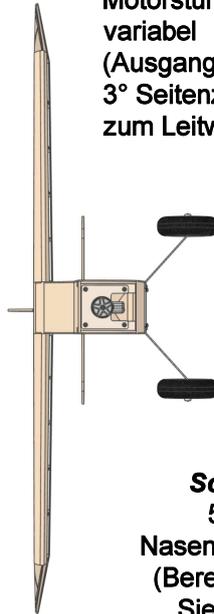
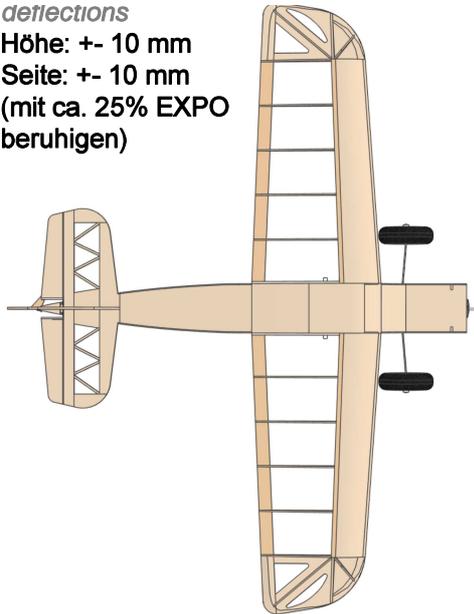
Flügelprofil: Clark Y mod. (11%)
V-Form: 0°

Motorsturz und Seitenzug:
variabel
(Ausgangswert: 7° Sturz
3° Seitenzug, in Bezug
zum Leitwerk)



deflections

Höhe: +/- 10 mm
Seite: +/- 10 mm
(mit ca. 25% EXPO
beruhigen)



Schwerpunkt COG
59 mm hinter der
Nasenleiste am Rumpf
(Bereich: 57 - 61 mm)
Siehe Seiten 14+15



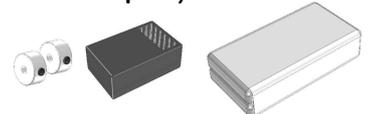
sowie:

1,5 mm Stellringe zur
Rad-Befestigung,

4-Kanal-Empfänger.

Akku: 2S oder 3S 800-1000
mAh LiPo

(Vollgasstrom 2S: 14 Ampere /
3S: 19 Ampere)



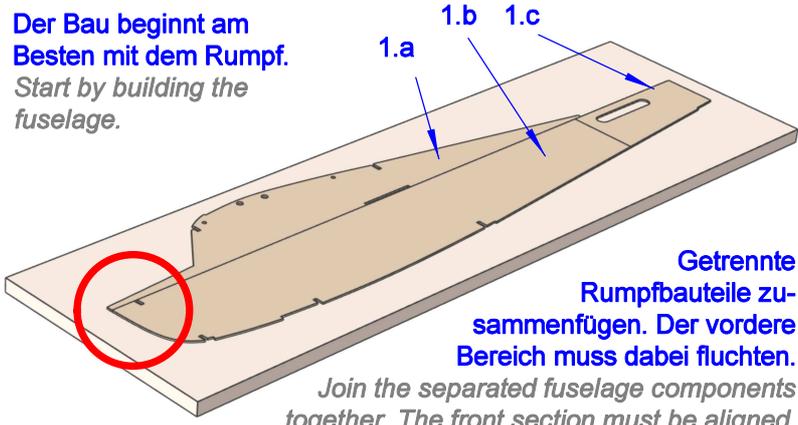
Materialbedarf:

1mm Balsa - 1 Brettchen (S.17+18)
1,5 mm Balsa - 3 Brettchen (S. 19-23)
2 mm Balsa - 1/2 Brettchen (S. 25)
3 mm Balsa - 3 Brettchen (S. 27-31)
3 mm Pappelsperholz - ca. 300 x 100 mm (S. 32)
1 mm Birkensperholz - 90 x 200 mm
sowie 280 x 90 mm (S.33+34)

4x Neodym-Stabmagnet Ø 5 mm / L = 8 mm (S. 11+19)
8x Neodym-Zylindermagnet Ø 3 mm / L = 3 mm (Abb. 22+24)
Aluminium- oder Messingrohr L = 170 mm (70 + 50 + 50)
außen Ø 5 mm / innen Ø 4 mm
0,8 mm Federstahldraht / ca. 70 cm
3 mm Rundholz / L=746 mm (280 + 310 +78 +78) (S. 5+6)
1,5 mm Messingdraht / ca. 15 cm (Abb. 28+31)
1,5 mm Federstahldraht / 346 mm (S. 7)
4 mm CFK-Rundstab / 196 mm (S.11)
8 Blechschrauben 2,9 x 9,5 mm (Abb. 25+27)
4 Gummitüllen (Abb. 25)

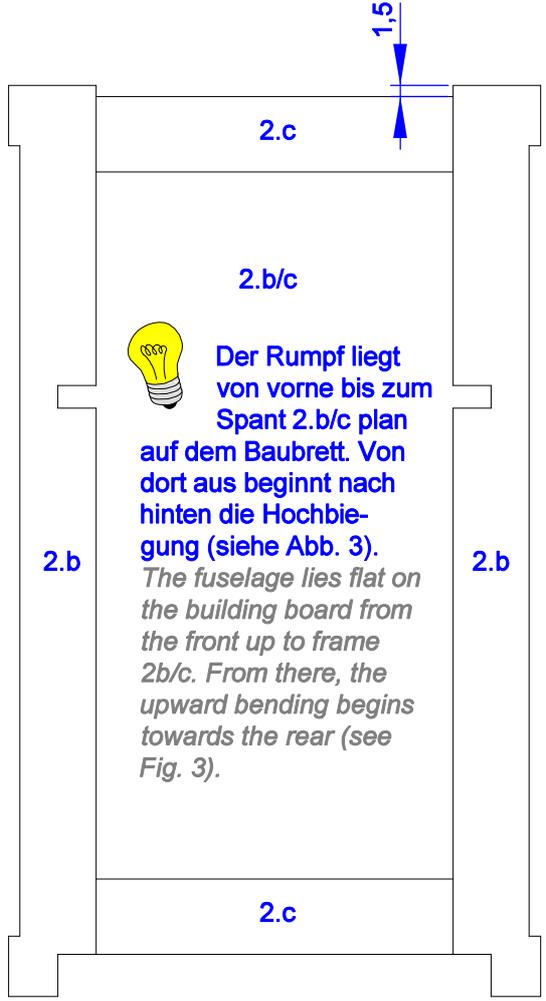
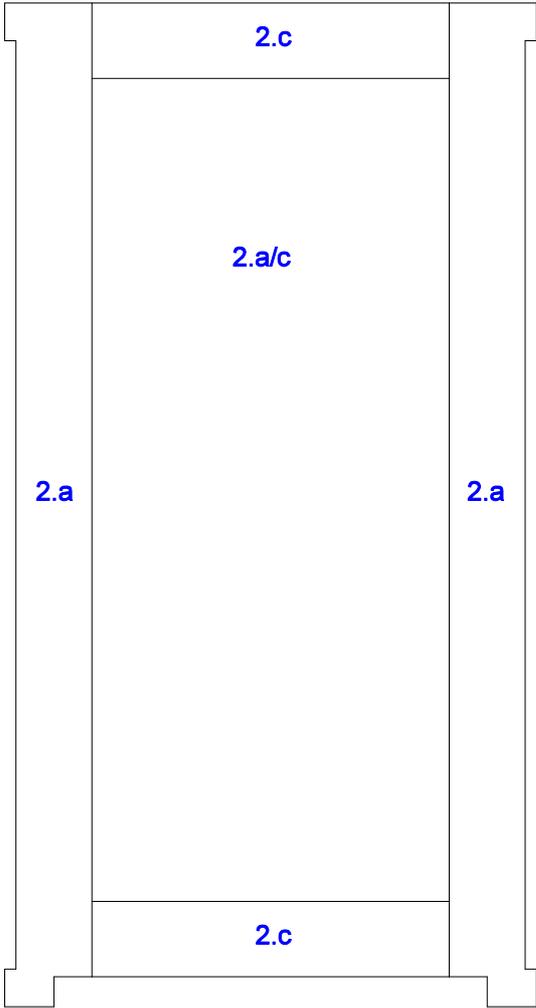
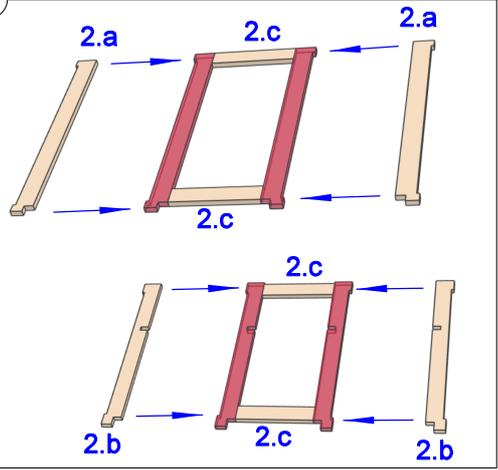
1

Der Bau beginnt am Besten mit dem Rumpf.
Start by building the fuselage.



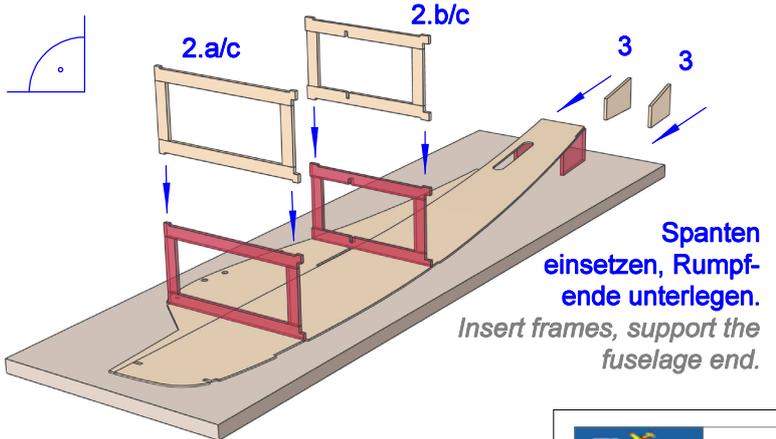
Getrennte Rumpfbauteile zusammefügen. Der vordere Bereich muss dabei fluchten.
Join the separated fuselage components together. The front section must be aligned.

2



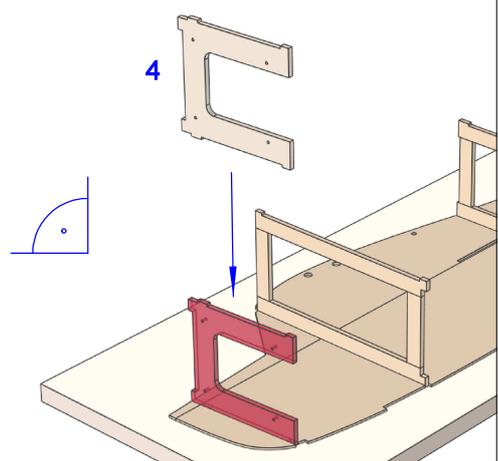
Der Rumpf liegt von vorne bis zum Spant 2.b/c plan auf dem Baubrett. Von dort aus beginnt nach hinten die Hochbiegung (siehe Abb. 3).
The fuselage lies flat on the building board from the front up to frame 2b/c. From there, the upward bending begins towards the rear (see Fig. 3).

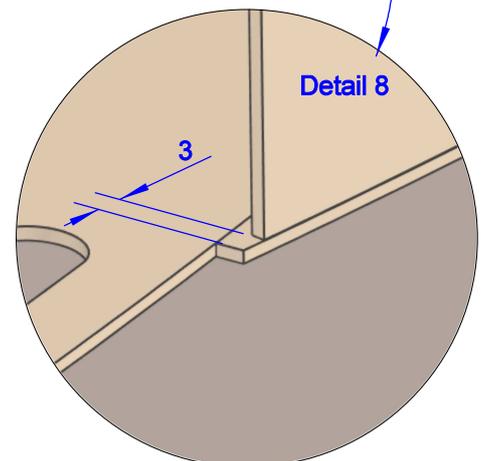
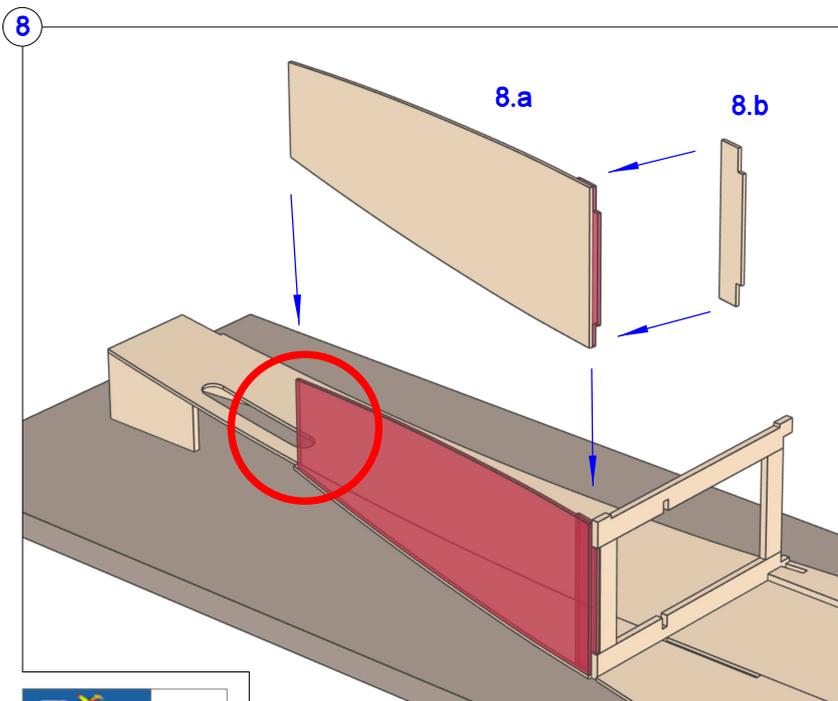
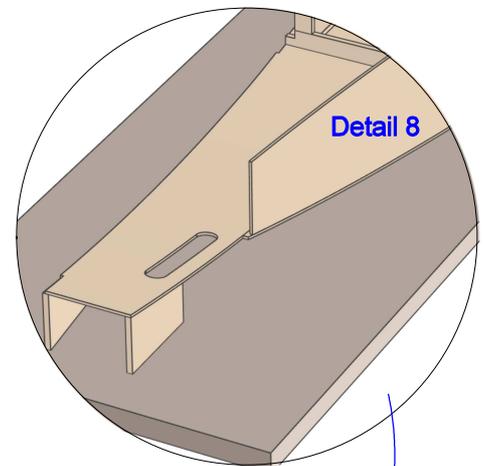
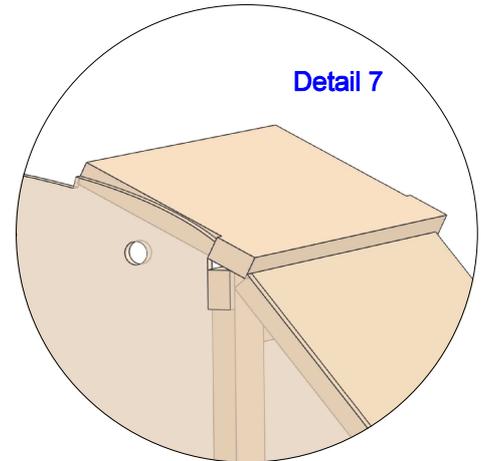
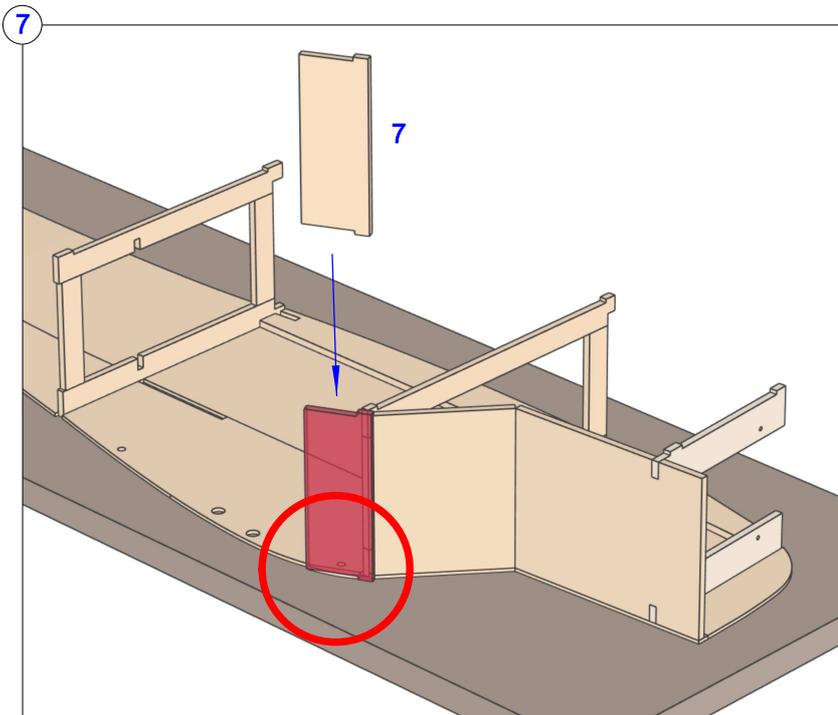
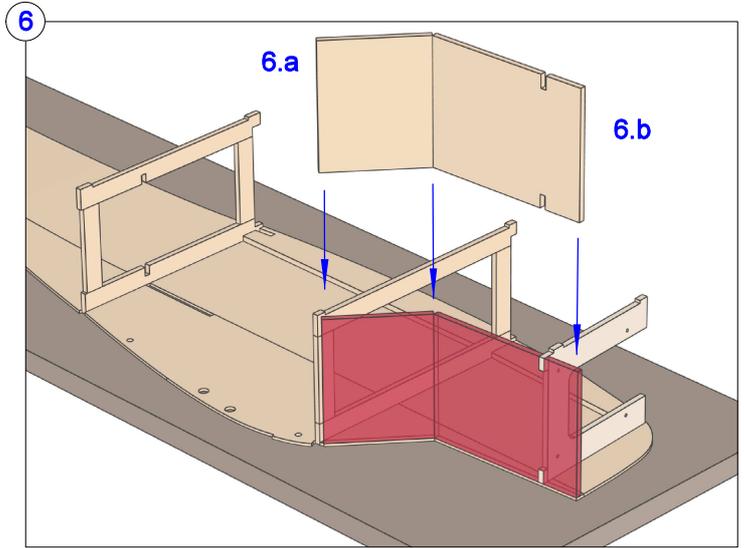
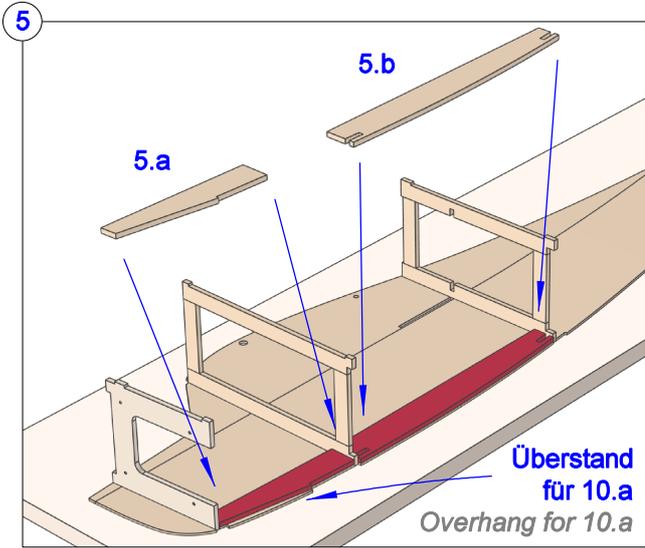
3

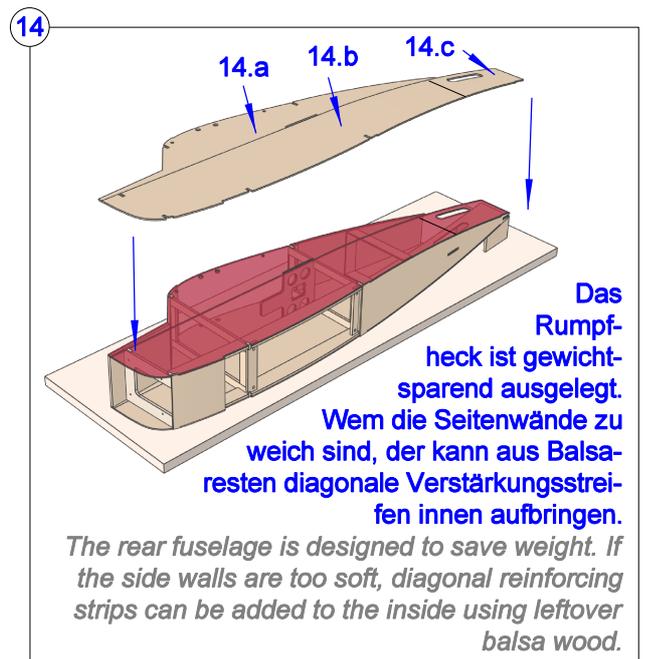
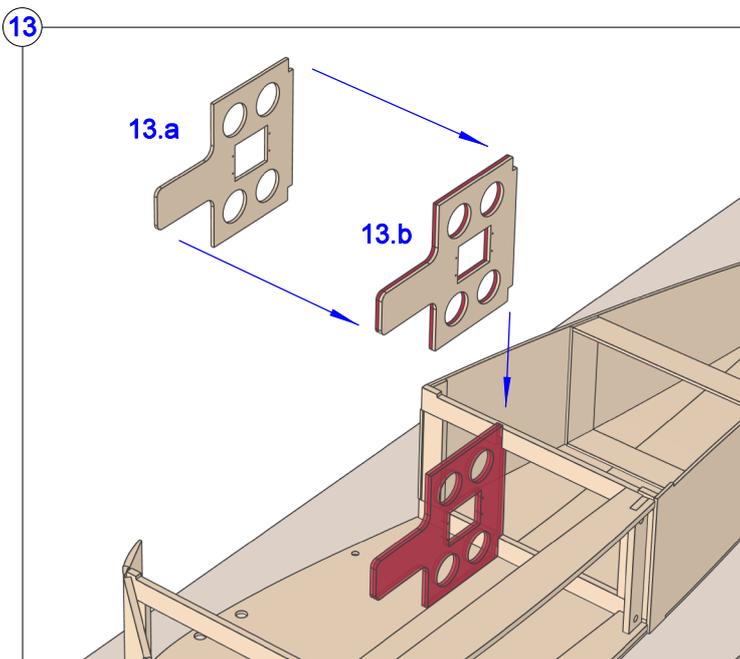
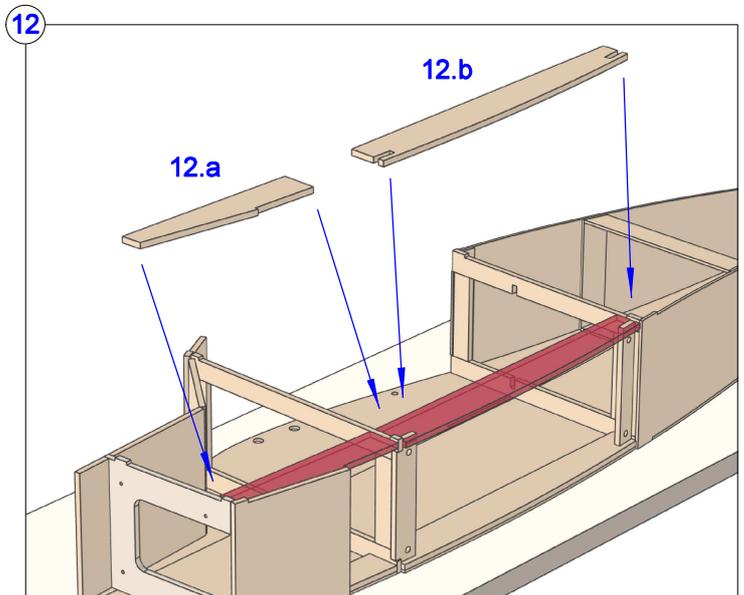
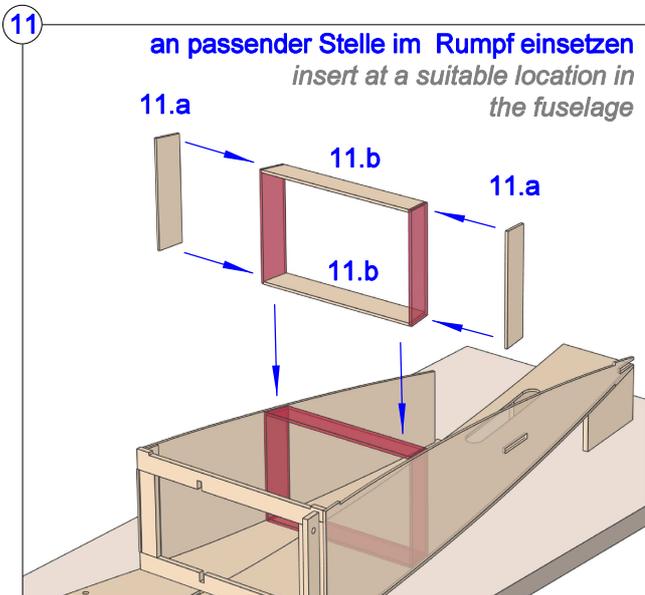
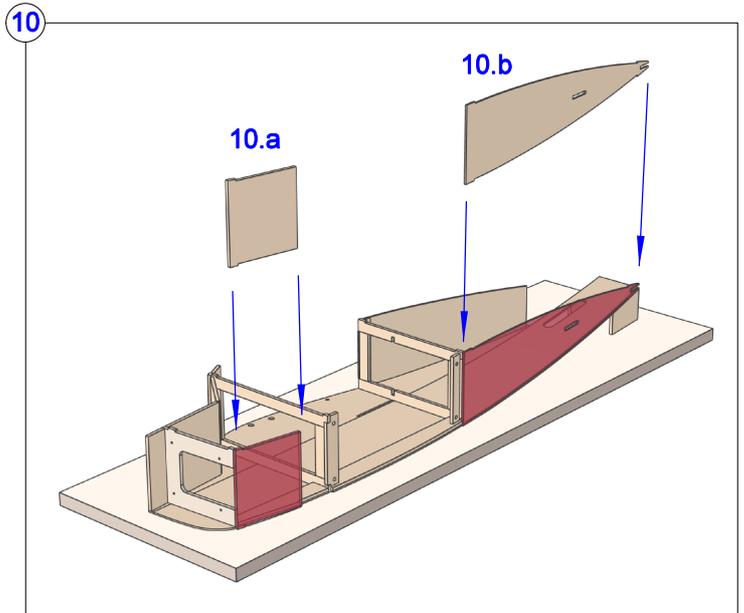
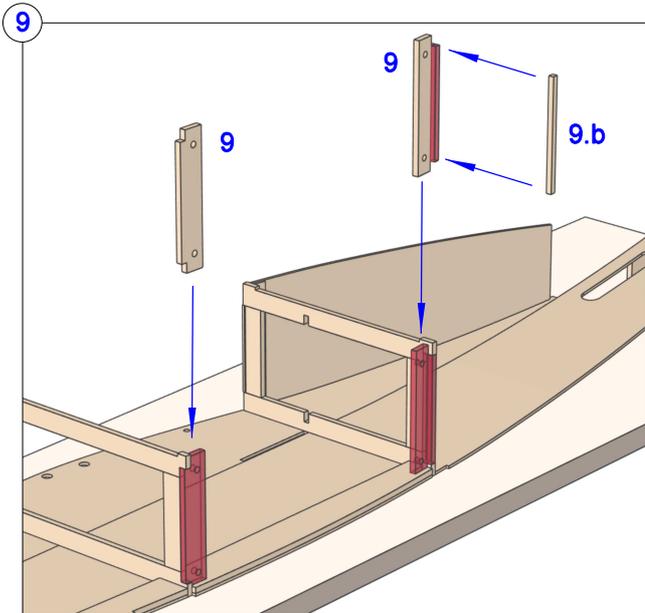


Spanten einsetzen, Rumpfeinde unterlegen.
Insert frames, support the fuselage end.

4



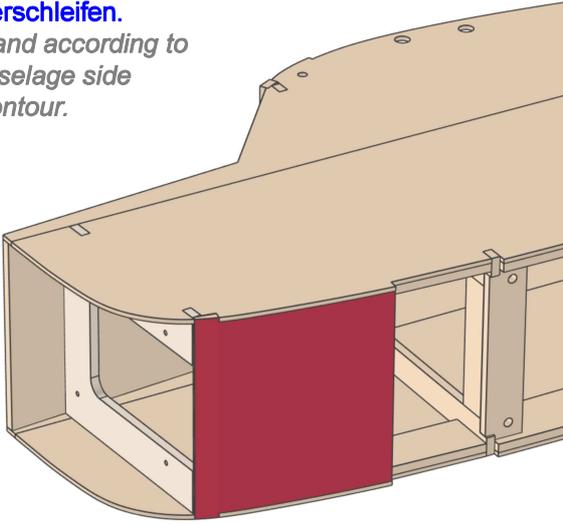




15

Zur Kontur der Rumpfsseitenwand
verschleifen.

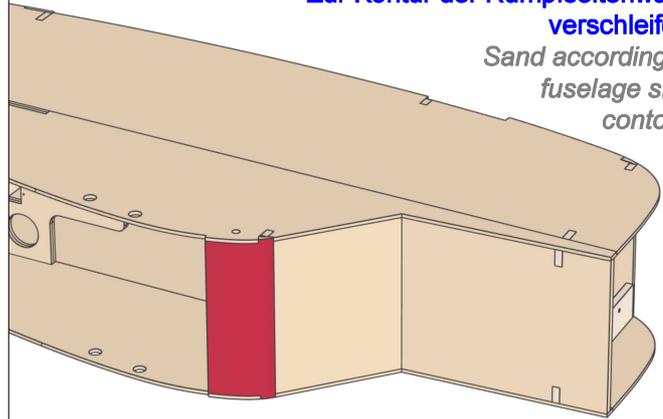
Sand according to
fuselage side
contour.



16

Zur Kontur der Rumpfsseitenwand
verschleifen.

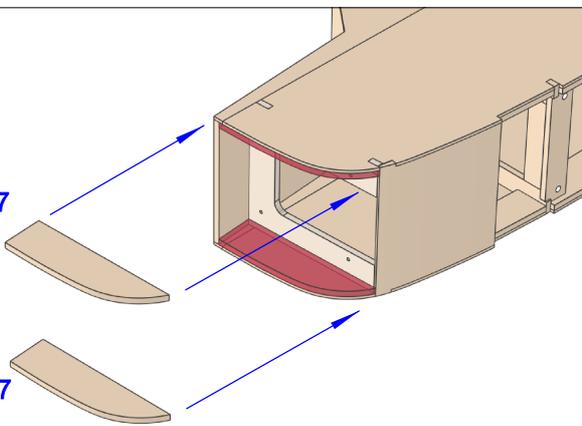
Sand according to
fuselage side
contour.



17

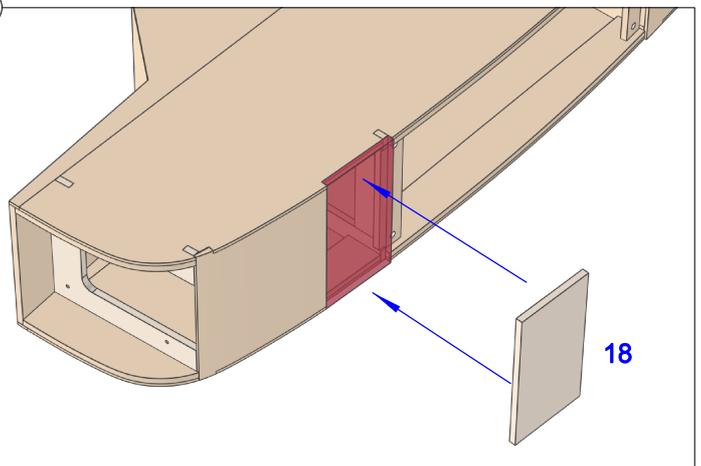
17

17



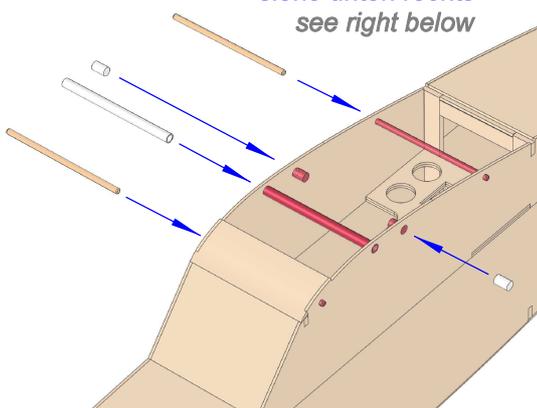
18

18



19

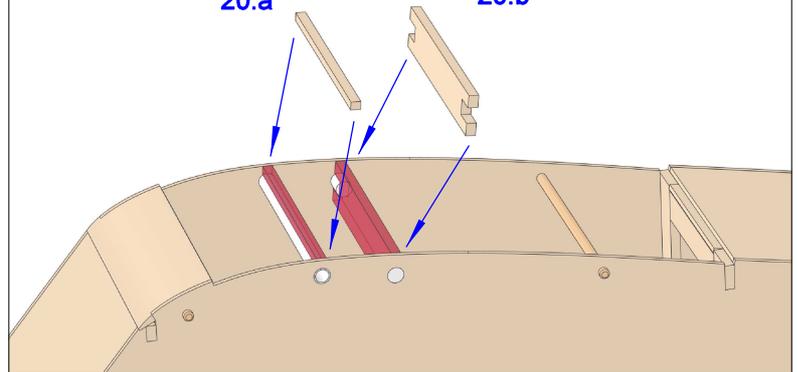
siehe unten rechts
see right below



20

20.a

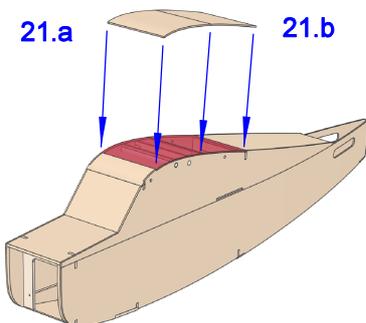
20.b



21

21.a

21.b



1x



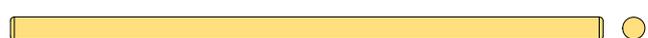
Aluminium- oder Messingrohr
L=70 mm / außen Ø 5 mm / innen Ø 4 mm

2x



Neodym-Stabmagnet
L = 8 mm / Ø 5 mm

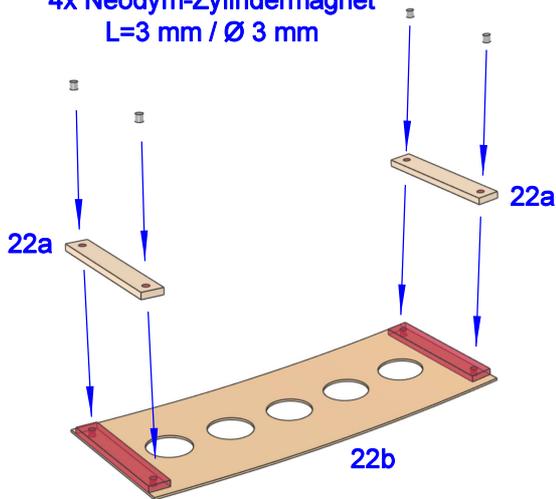
2x



Rundholzstab (Torsionsstifte stehen seitlich
um 4 mm heraus) / L=78 mm / Ø 3 mm

22

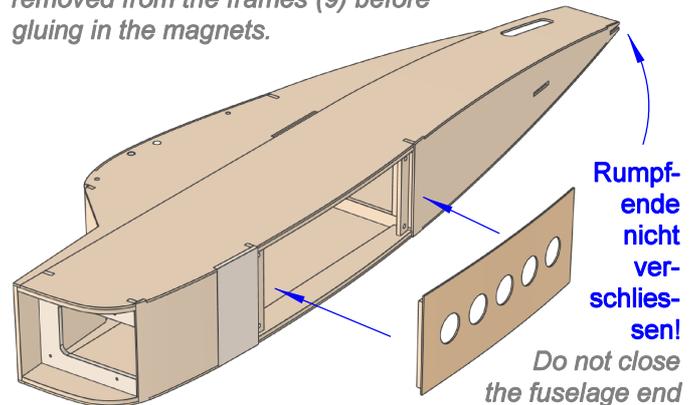
4x Neodym-Zylindermagnet
L=3 mm / Ø 3 mm



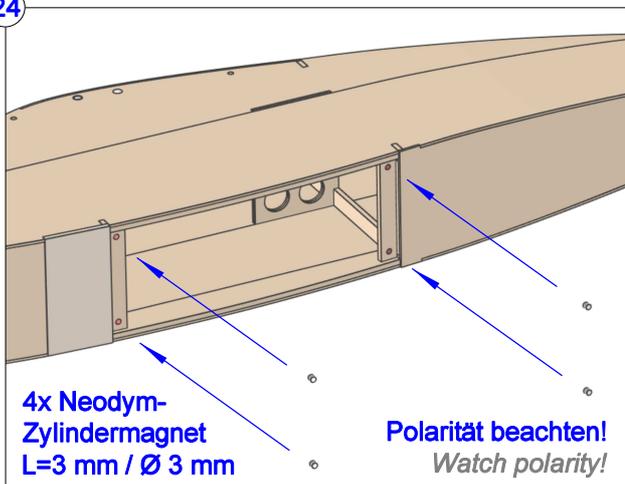
23

Bodenklappe einpassen. Falls nötig, kann vor dem Einkleben der Magnete jetzt noch Material an den Spanten (9) abgetragen werden.

Fit the bottom hatch. If necessary, material can be removed from the frames (9) before gluing in the magnets.



24

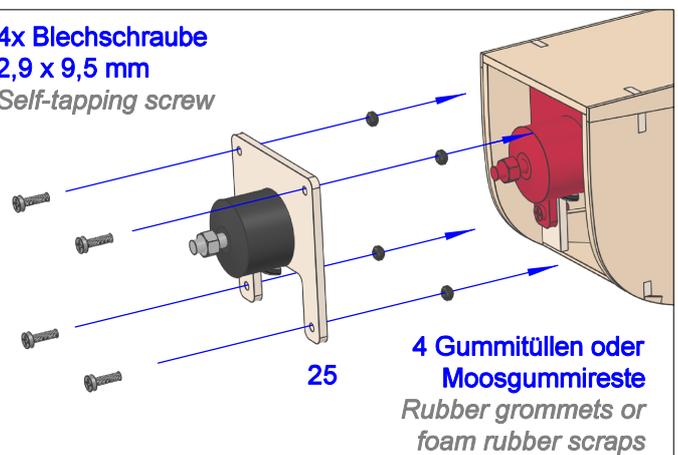


4x Neodym-Zylindermagnet
L=3 mm / Ø 3 mm

Polarität beachten!
Watch polarity!

25

4x Blechschraube
2,9 x 9,5 mm
Self-tapping screw

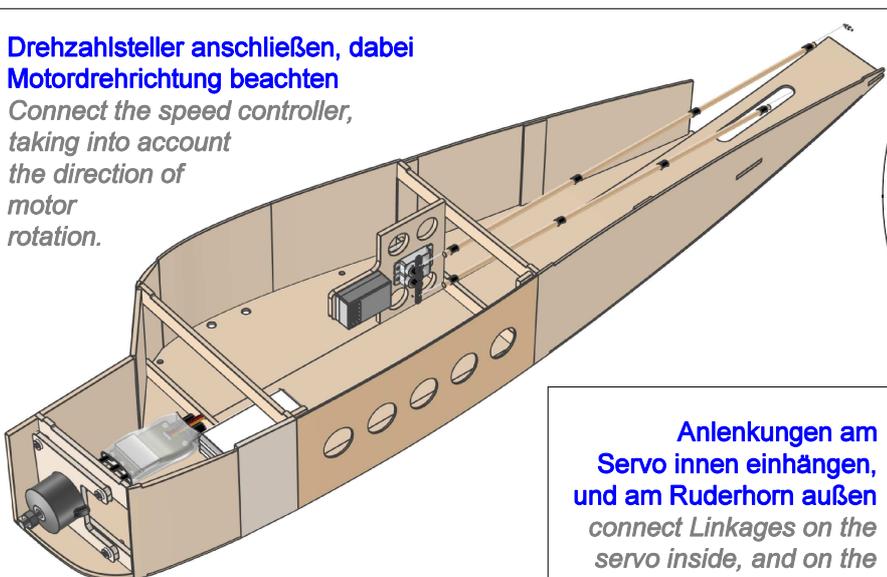


4 Gummitüllen oder
Moosgummireste
Rubber grommets or
foam rubber scraps

26

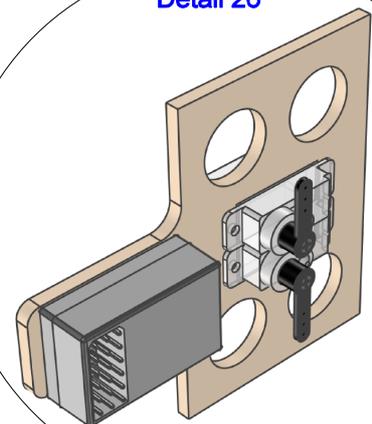
Drehzahlsteller anschließen, dabei
Motordrehrichtung beachten

Connect the speed controller,
taking into account
the direction of
motor
rotation.



Anlenkungen am
Servo innen einhängen,
und am Ruderhorn außen
connect Linkages on the
servo inside, and on the
rudder horn outside

Detail 26

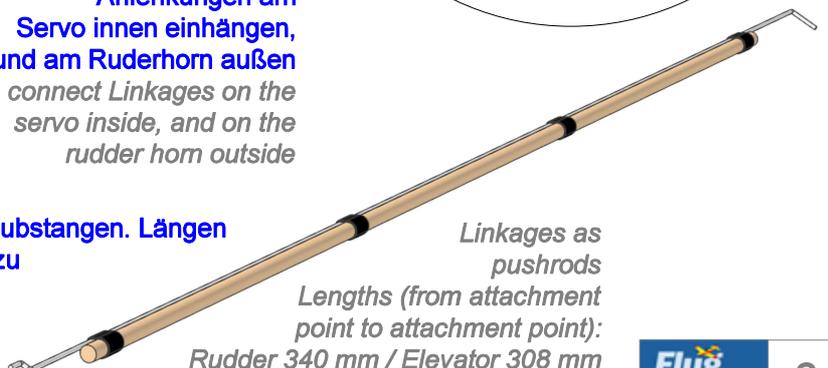


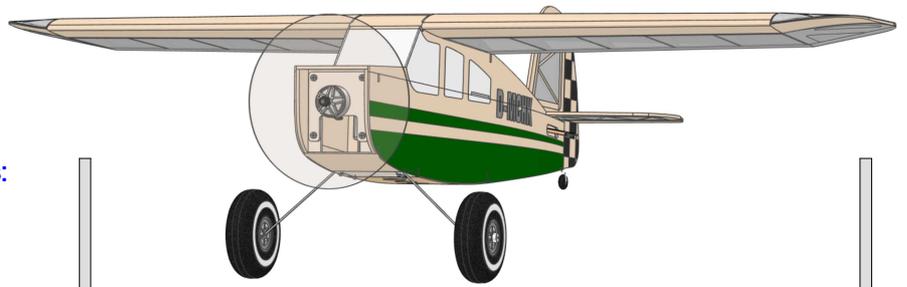
Der Akku wird im Rumpf
zwischen Schaumstoff
eingeklemmt

The battery is wedged
between pieces of foam
inside the fuselage.

Anlenkungen als Schubstangen. Längen
(von Einhängepunkt zu
Einhängepunkt):
Seitenruder 340 mm
Höhenruder 308 mm

Linkages as
pushrods
Lengths (from attachment
point to attachment point):
Rudder 340 mm / Elevator 308 mm





Gesamtlänge des Fahrwerksdrahtes:
346 mm

Knick-Distanzen antragen bei:

Total length of landing gear wire:
346 mm

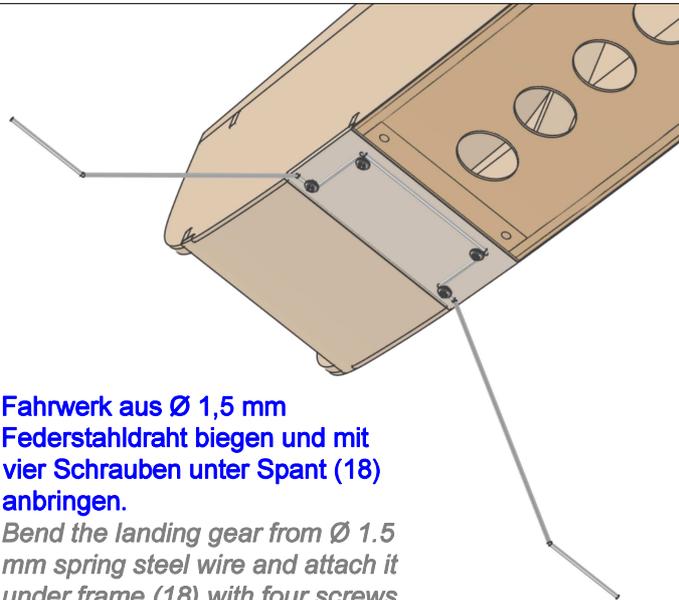
Apply bend marks at:

$30^{*)} + 85 + 8 + 25 + 50 + 25 + 8 + 85 + 30^{*)}$

***)30 mm je
nach Felgenbreite
according to rim width**

Hauptfahrwerk:
80 mm Schaumstoff-Leichträder
Heckrad:
15-20 mm Schaumstoff-Leichtrad
*landing gear: 80 mm foam
lightweight wheels
tailwheel:
15-20 mm*

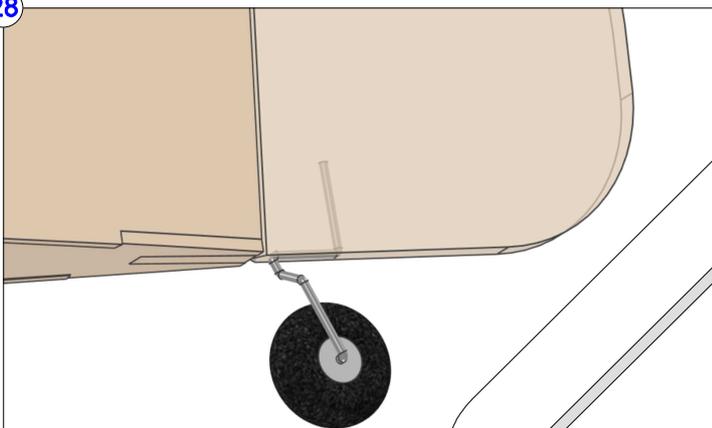
27



**Fahrwerk aus \varnothing 1,5 mm
Federstahldraht biegen und mit
vier Schrauben unter Spant (18)
anbringen.**

*Bend the landing gear from \varnothing 1.5
mm spring steel wire and attach it
under frame (18) with four screws.*

28



**Heckrad mit \varnothing 1,5 mm Messing-
draht unter dem Seitenruder
anbringen.**

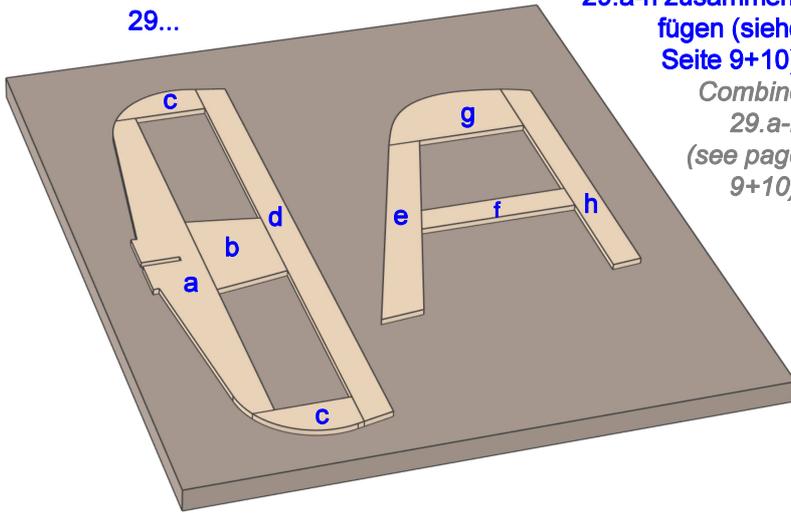
*Add the tail wheel with \varnothing 1,5 mm
brass wire under the rudder.*



**Der Fahrwerksdraht
ist mit 1,5 mm auf der
weichen Seite ausgelegt,
und 1,5 mm Federstahl ist zu-
dem angenehm einfach zu biegen.
Wer ein härteres Fahrwerk bevorzugt,
kann hier auf 2 mm Draht ausweichen.**
*The landing gear wire is designed with a
1.5 mm diameter on the softer side, and
1.5 mm spring steel is very easy to bend.
Those who prefer a stiffer landing gear
can switch to 2 mm wire.*

29

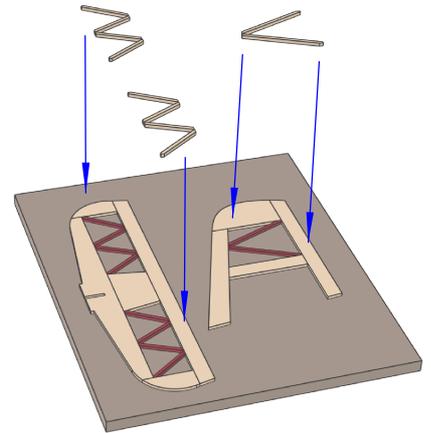
29...



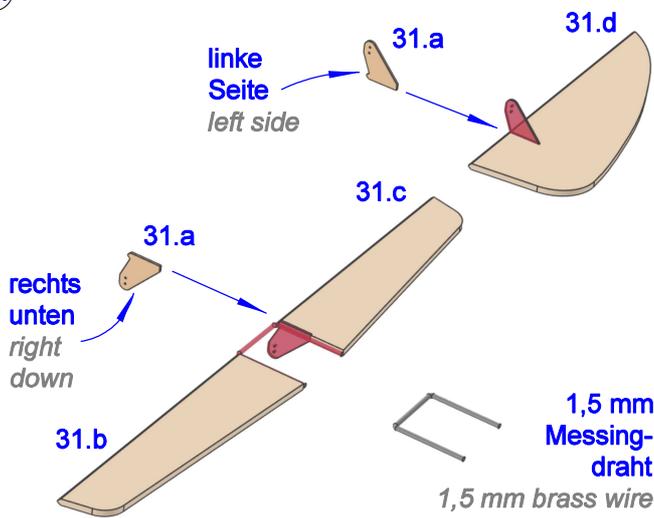
29.a-h zusammenfügen (siehe Seite 9+10).
Combine 29.a-h (see page 9+10).

30

Balsareste 3 x 3 mm
Balsa scraps 3 x 3 mm



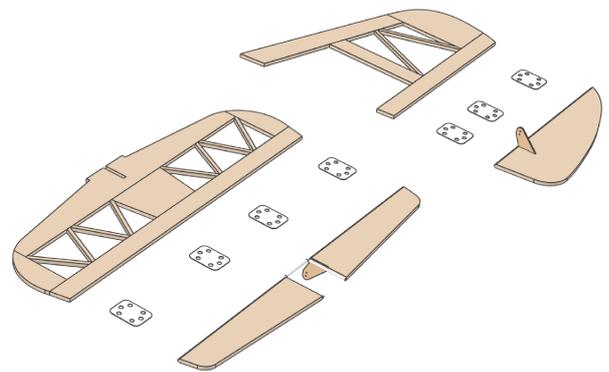
31



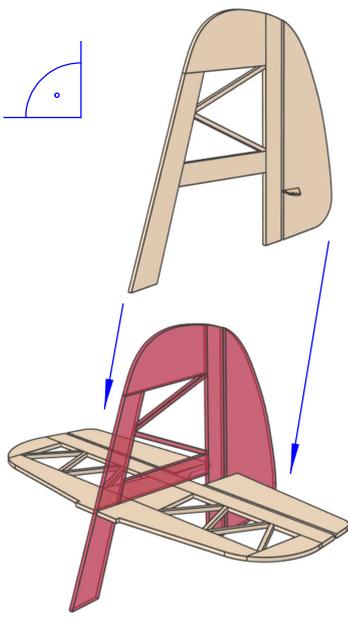
1,5 mm
Messingdraht
1,5 mm brass wire

32

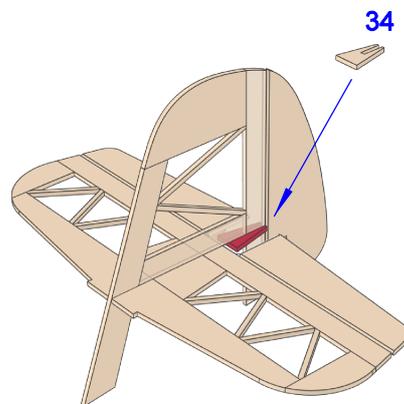
Weiche Vliesscharniere
soft CA hinges



33

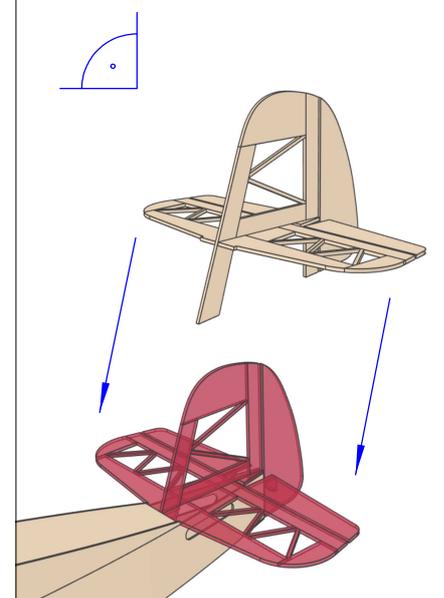


34



Teil 34 ist nach HINTEN bündig und lässt einen Spalt zum Höhenruder!
Part 34 is flush with the BACK and leaves a gap to the elevator!

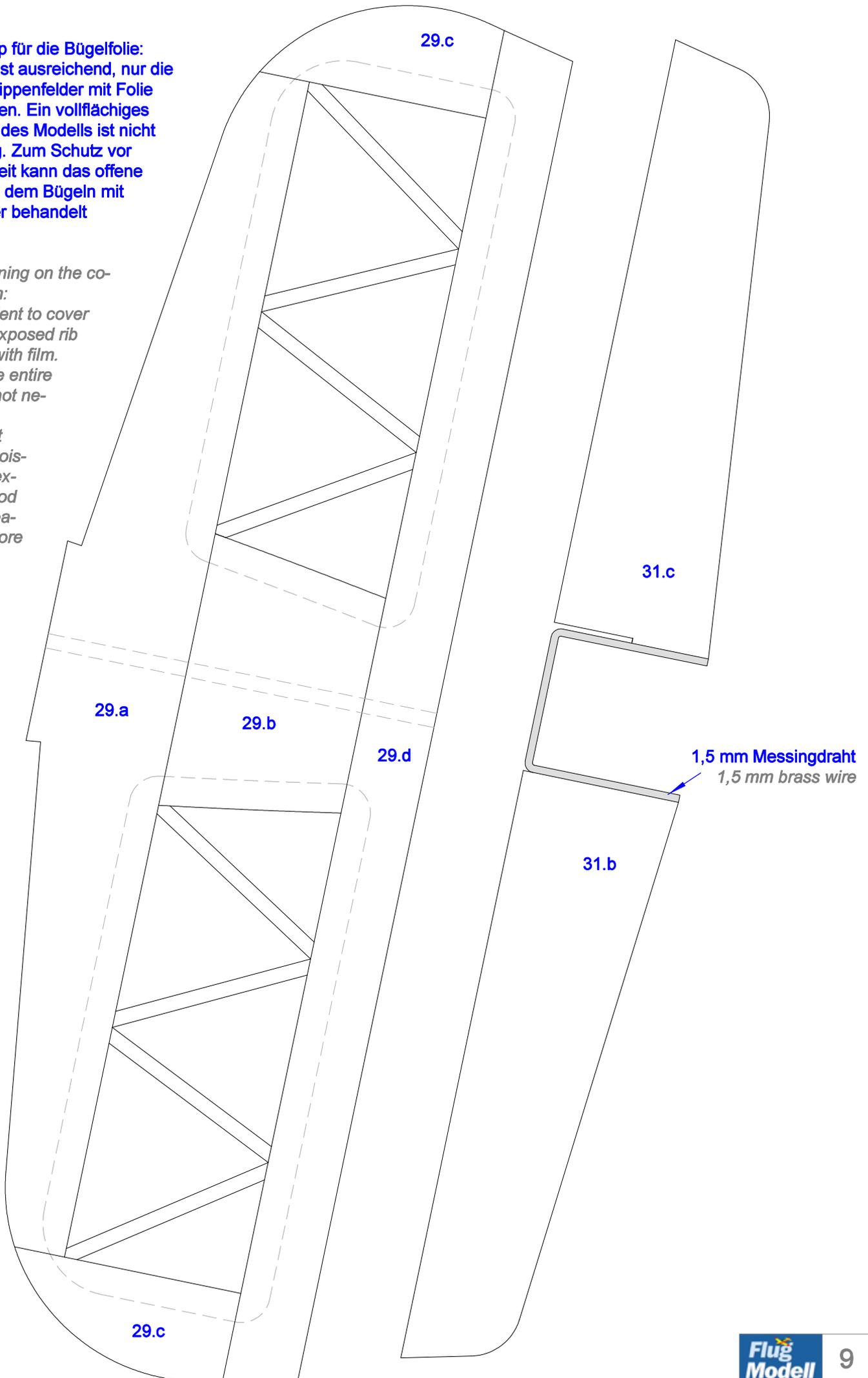
35

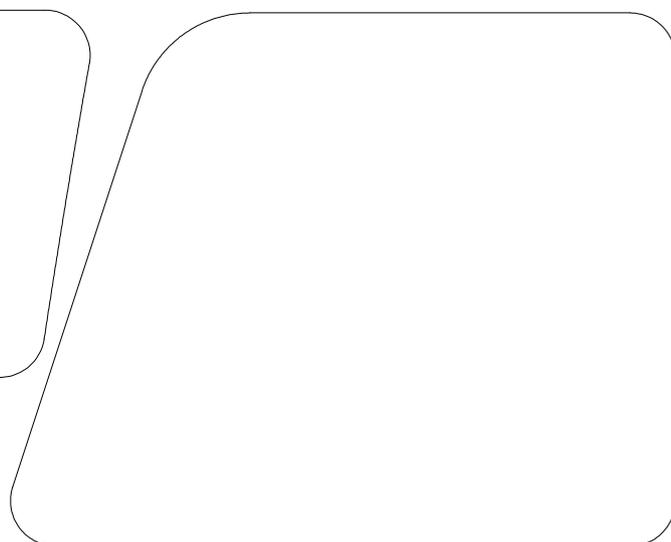
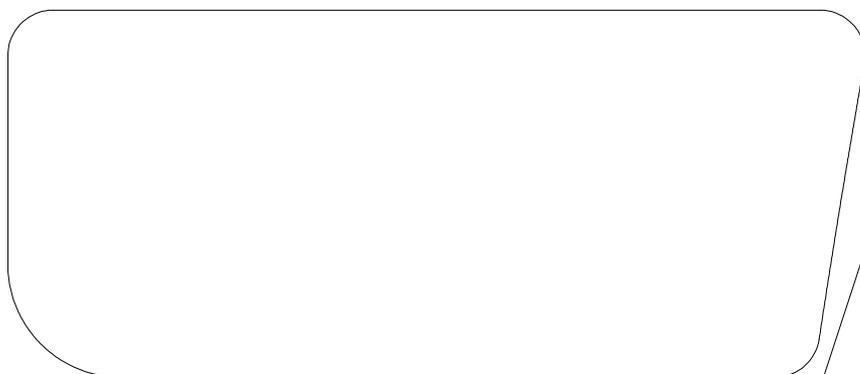
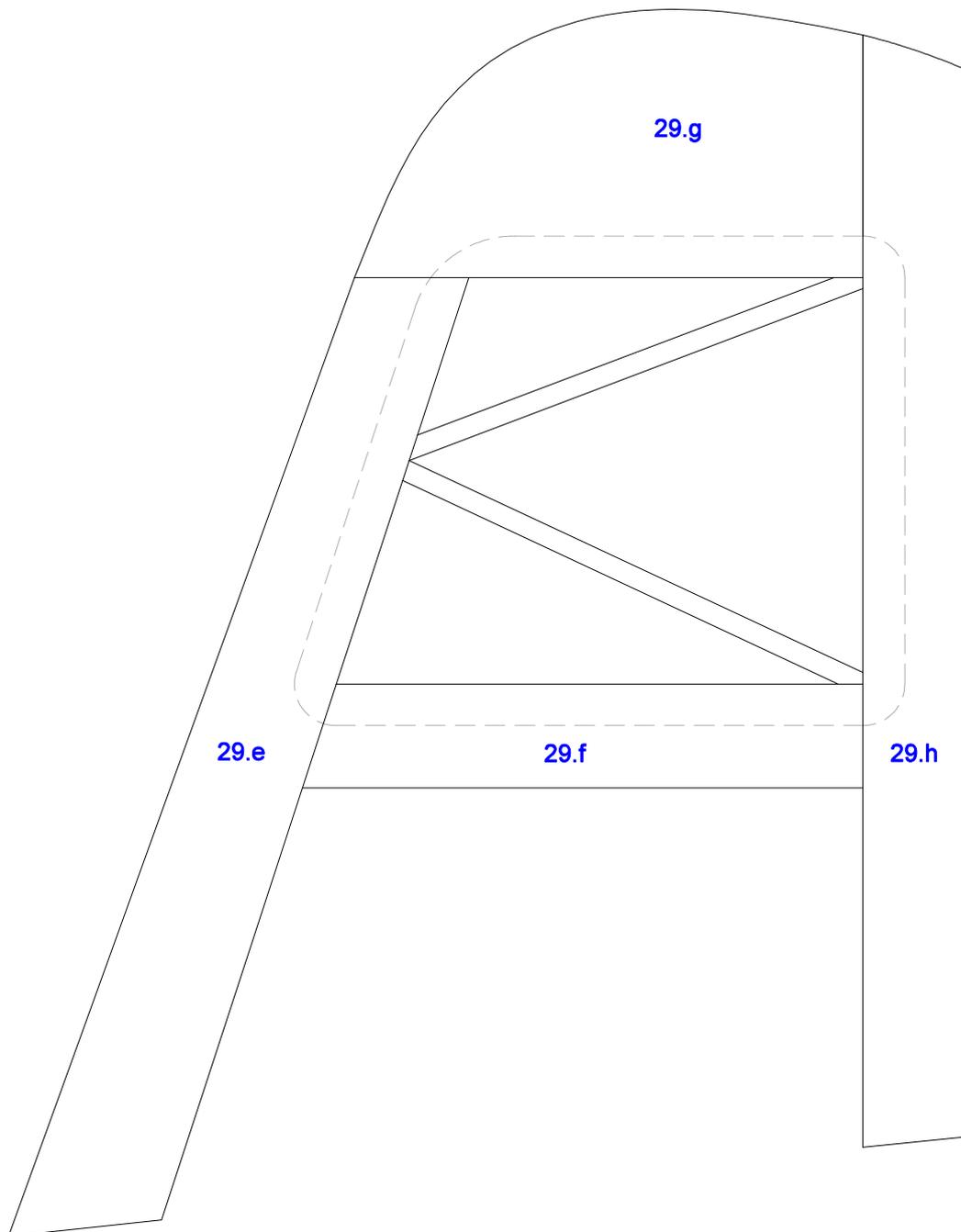




Tipp für die Bügelfolie:
es ist ausreichend, nur die
offenen Rippenfelder mit Folie
abzudecken. Ein vollflächiges
Bebügeln des Modells ist nicht
notwendig. Zum Schutz vor
Feuchtigkeit kann das offene
Holz nach dem Bügeln mit
Porenfüller behandelt
werden.

*Tip for ironing on the co-
vering film:
It is sufficient to cover
only the exposed rib
sections with film.
Ironing the entire
model is not ne-
cessary.
To protect
against mois-
ture, the ex-
posed wood
can be trea-
ted with pore
filler after
ironing.*



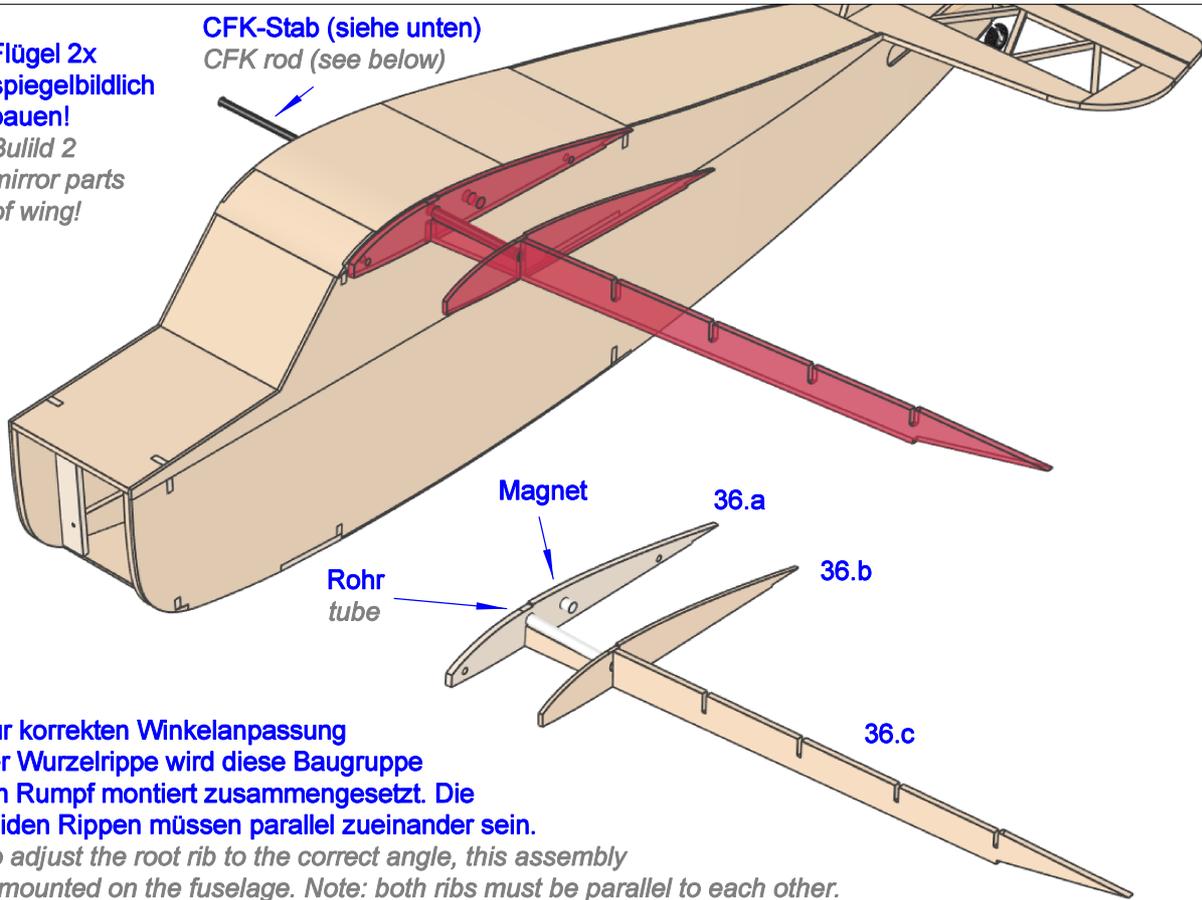


Schneidschablonen für Leitwerksfolie
Cutting templates for tailplane film

36

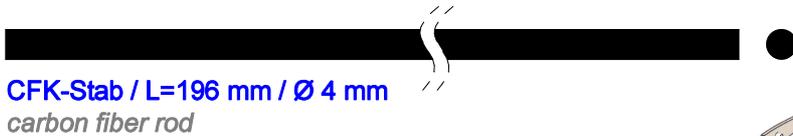
Flügel 2x
spiegelbildlich
bauen!
Build 2
mirror parts
of wing!

CFK-Stab (siehe unten)
CFK rod (see below)



Zur korrekten Winkelanpassung
der Wurzelrippe wird diese Baugruppe
am Rumpf montiert zusammengesetzt. Die
beiden Rippen müssen parallel zueinander sein.
To adjust the root rib to the correct angle,
this assembly
is mounted on the fuselage. Note: both ribs must be parallel to each other.

1x



CFK-Stab / L=196 mm / Ø 4 mm
carbon fiber rod

2x

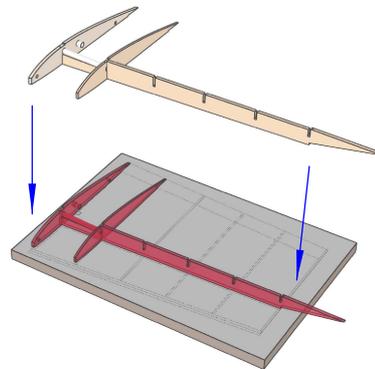


Aluminium- oder Messingrohr
L=63 mm / außen Ø 5 mm / innen Ø 4 mm

2x

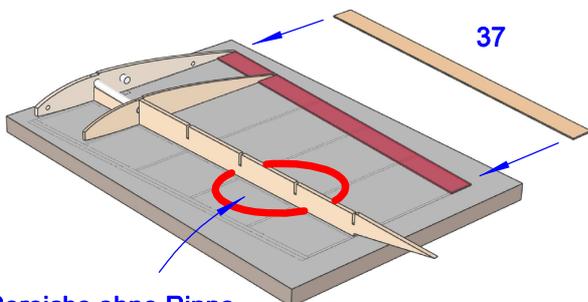


Neodym-Zylindermagnet
L=8 mm / Ø 5 mm



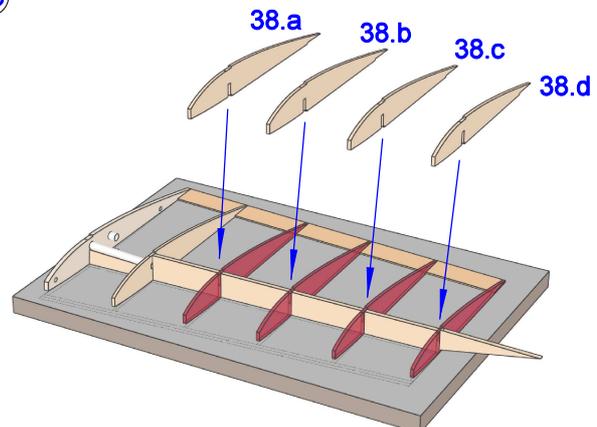
Ab jetzt auf dem
Bauplan Ausdruck
weiter
arbeiten (siehe
Seiten 14-16).
Continue
working on the
printed building
plan from now
on (see pages
14-16).

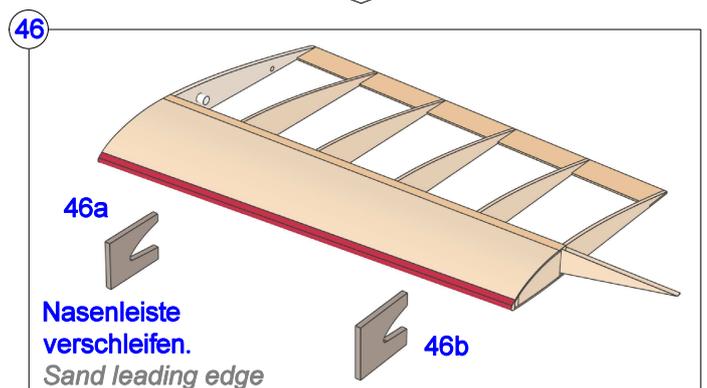
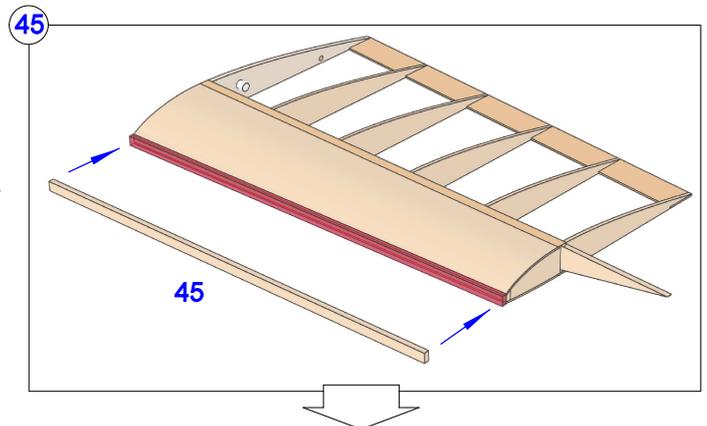
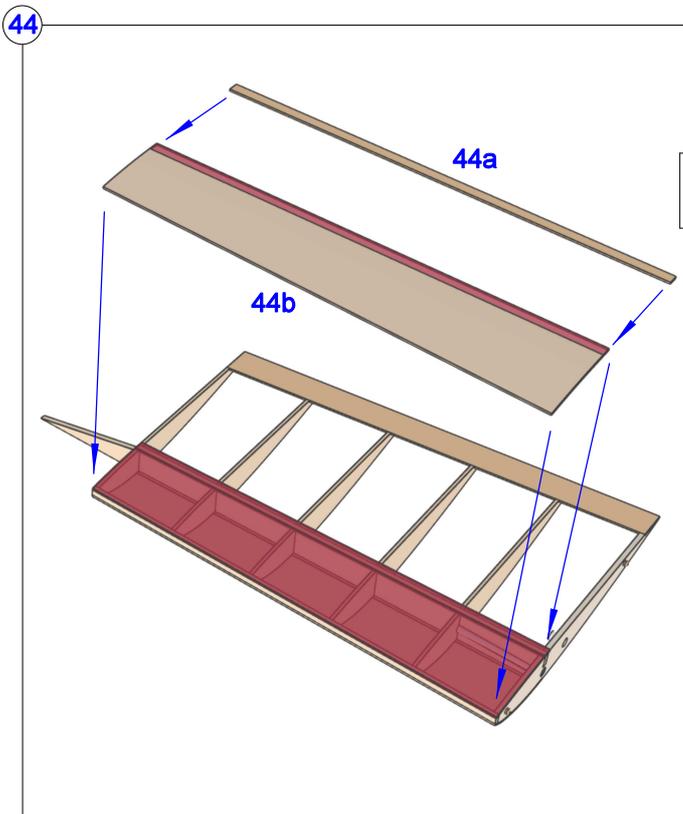
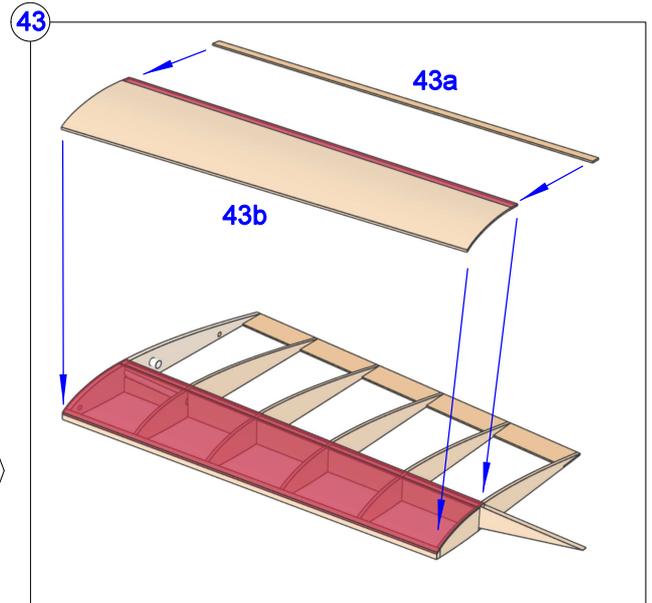
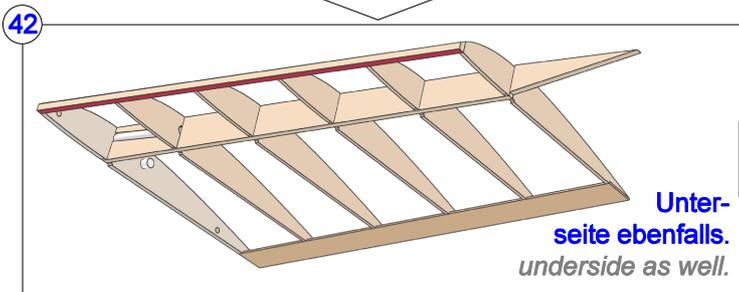
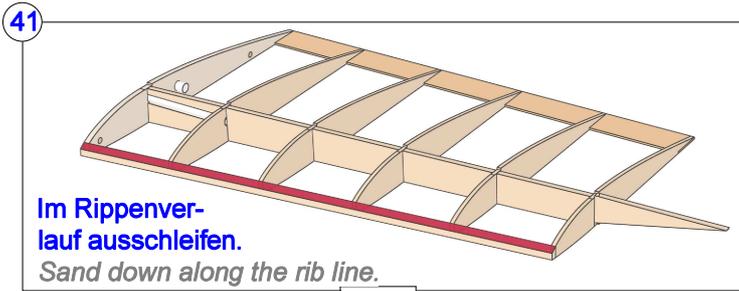
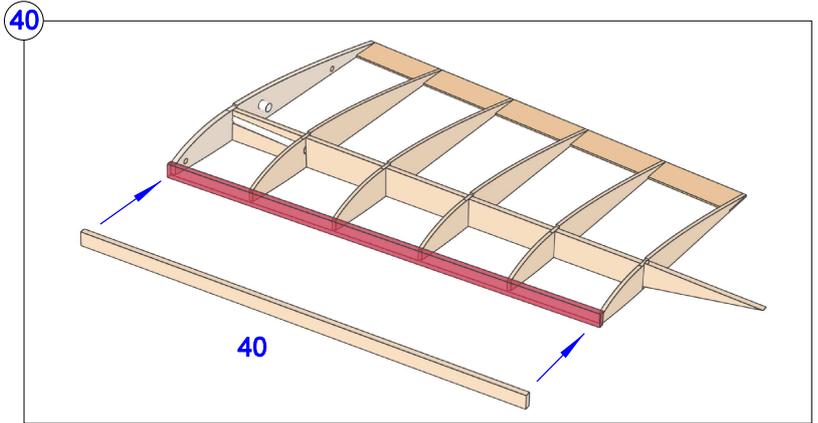
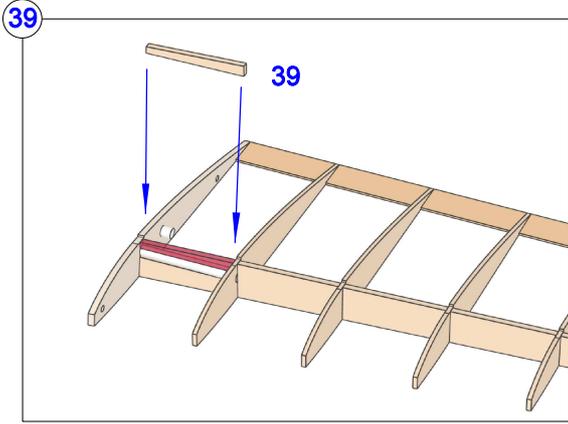
37



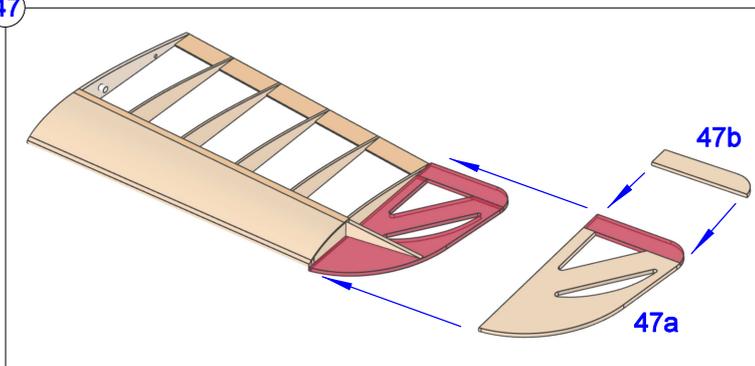
Bereiche ohne Rippe
mit 1 mm Sperrholzrest unterlegen.
Place 1 mm of scrap plywood
underneath areas without ribs.

38

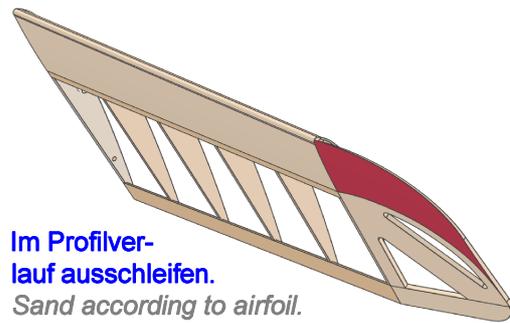




47

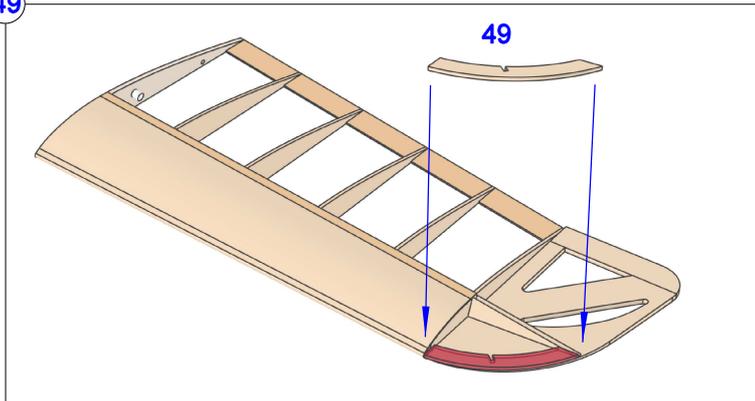


48

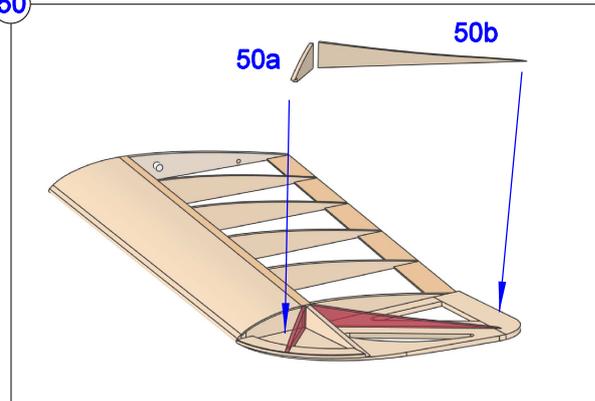


Im Profilverlauf ausschleifen.
Sand according to airfoil.

49

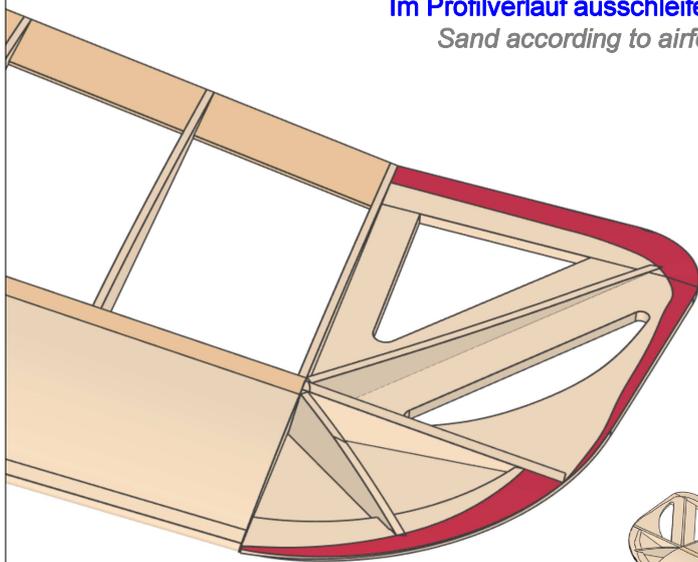


50



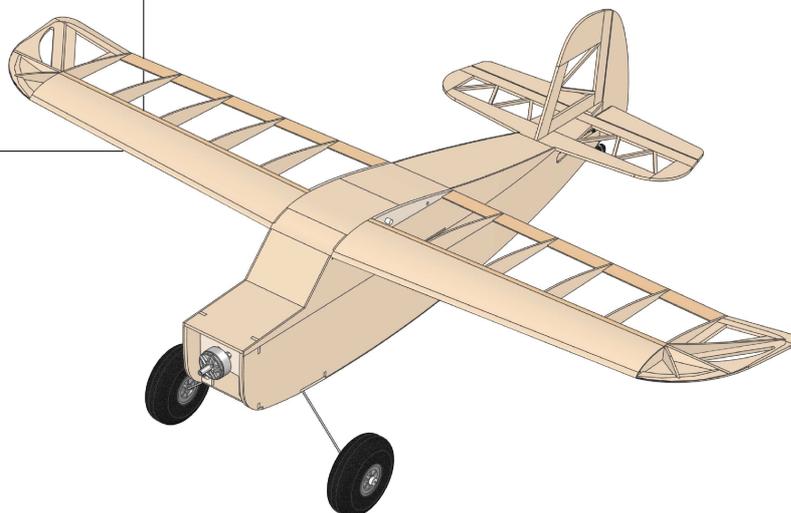
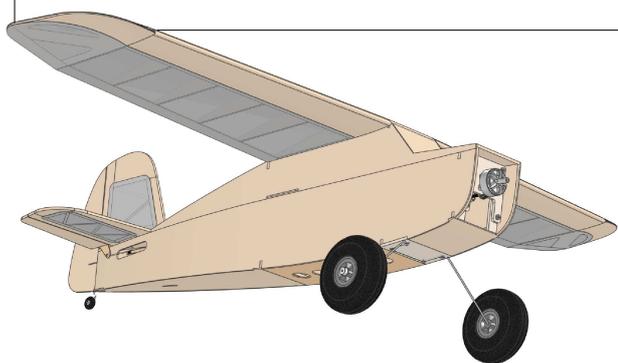
51

Im Profilverlauf ausschleifen.
Sand according to airfoil.



Rohbaufertig!
Zum Bespannen eignet sich leichte Bügelfolie (Oralight). Um Gewicht und Arbeit zu sparen, werden nur offene Bereiche mit ca. 6 mm Überstand mit der Folie verschlossen.

*The basic structure is ready!
Lightweight iron-on film (Oralight) is suitable for covering. To save weight and labor, only open areas are covered with the film, leaving an overlap of approximately 6 mm.*





Seiten 14+15+16:

Ausdrucken, zusammenfügen und auf ein ebenes Baubrett aufziehen.

Print and assemble these pages out and place them on a flat building board.

38.d

38.c

38.b

38.a





36.b

36.a



45

40

59



Beim Tragflächenbau unbedingt darauf achten, dass keiner der Flügel verzogen ist. Jede Flügelhälfte muss ohne zu kipeln auf dem Baubrett liegen können.

Eventuelle Korrekturen können durch Anfeuchten und Nachbügeln der Beplankung erfolgen. Dabei wird die Feuchtigkeit bei ca. 180°C zum Verdampfen gebracht, wobei das Holz vorübergehend biegsam wird.

Auch nach dem Bebügeln muss erneut auf Verzug kontrolliert werden. Liegt der Flügel kippelnd auf, dann muss durch sanftes Überbiegen und Nachbügeln der Folie Abhilfe geschaffen werden.

Ein verzogener Flügel lässt sich bei einem Zweiachsmodell nicht wegtrimmen!

When building the wings, it is essential to ensure that none of the wing halves are warped. Each wing half must lie flat on the building board without wobbling.

Any necessary corrections can be made by dampening and ironing the covering. The moisture will evaporate at approximately 180°C, temporarily making the wood pliable.

Even after ironing, the wing must be checked again for warping. If the wing wobbles, it must be corrected by gently bending it and ironing the covering again.

A warped wing cannot be trimmed out on a rudder-elevator airplane!

36.a

36.b



45

40

59

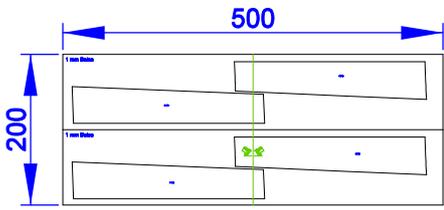


38.a

38.b

38.c

38.d



Seiten 17+18:
1 Brettchen 1 mm Balsa
halbiert zu 2 Stück à 100 mm x 500 mm

1 mm Balsa

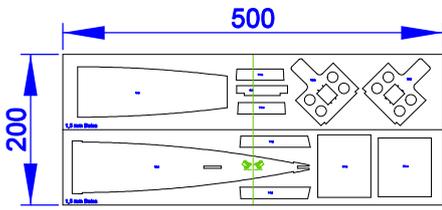
1 mm Balsa

44.b



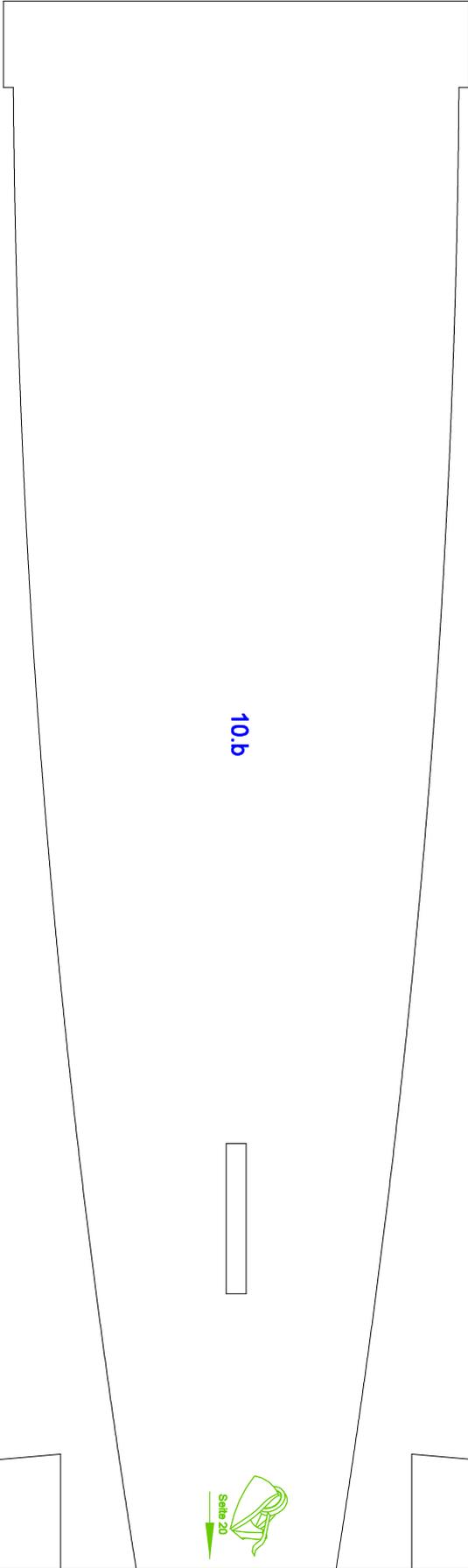
43.b

43.b

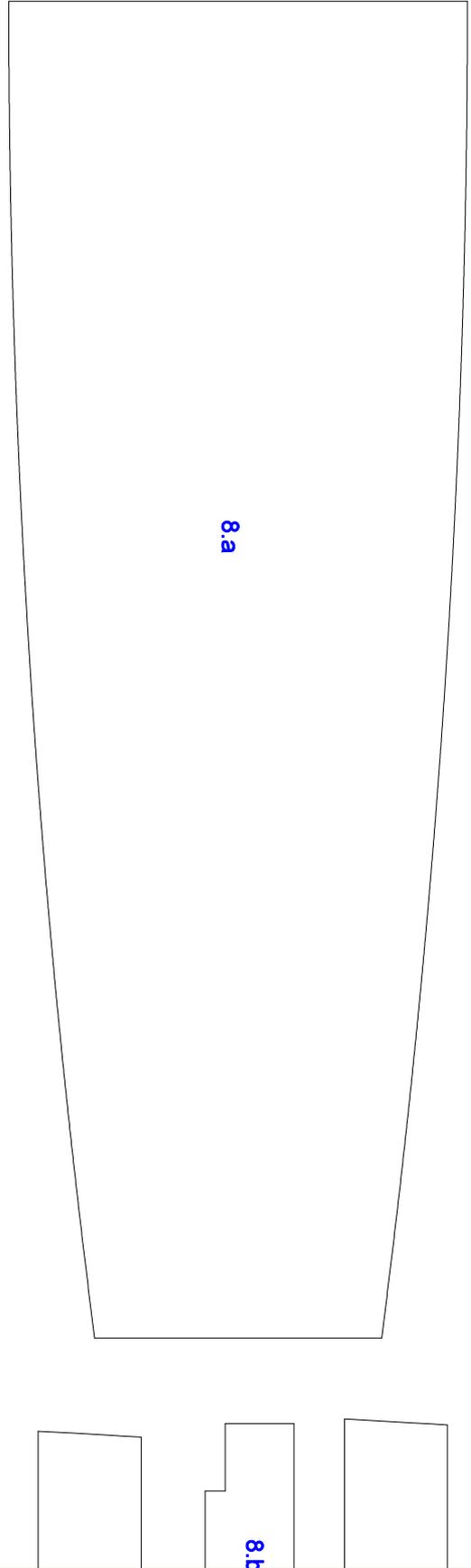


Seiten 19+20:
1 Brettchen 1,5 mm Balsa
halbiert zu 2 Stück à 100 mm x 500 mm

1,5 mm Balsa



1,5 mm Balsa



11.a

11.a

13.a

blau gestrichelt:
Aussparungen für
Servos Aeronaut AN-12
*blue hatched cutouts
suitable for 10-g
servos*

schwarz dar-
gestellte Ausspa-
rungen passend zu
Servo Hitec HS-40.
*black cutouts
suitable for
servo
Hitec
HS-40.*

13.b

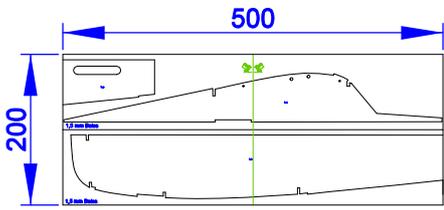


11.b

11.b

21.b

21.a



Seiten 21+22:
1 Brettchen 1,5 mm Balsa
halbiert zu 2 Stück à 100 mm x 500 mm

1,5 mm Balsa

1,5 mm Balsa

1.c

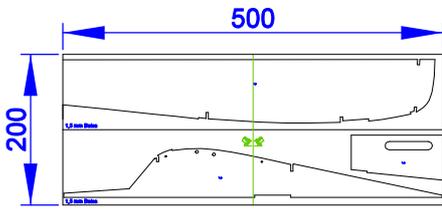
1.b

Ø 3



1.a





Seiten 23+24:
2 Brettchen 1,5 mm Balsa
halbiert zu 2 Stück à 100 mm x 500 mm

1,5 mm Balsa

1,5 mm Balsa

14.a

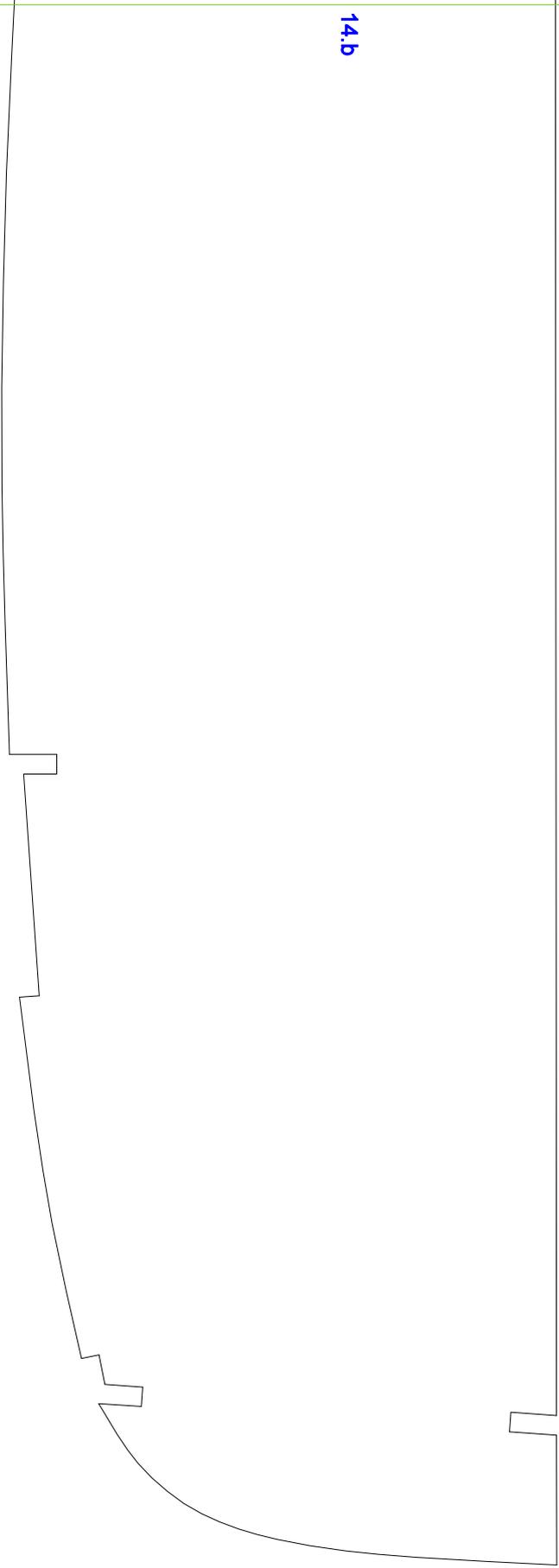
Ø 3

Ø 5

Ø 5

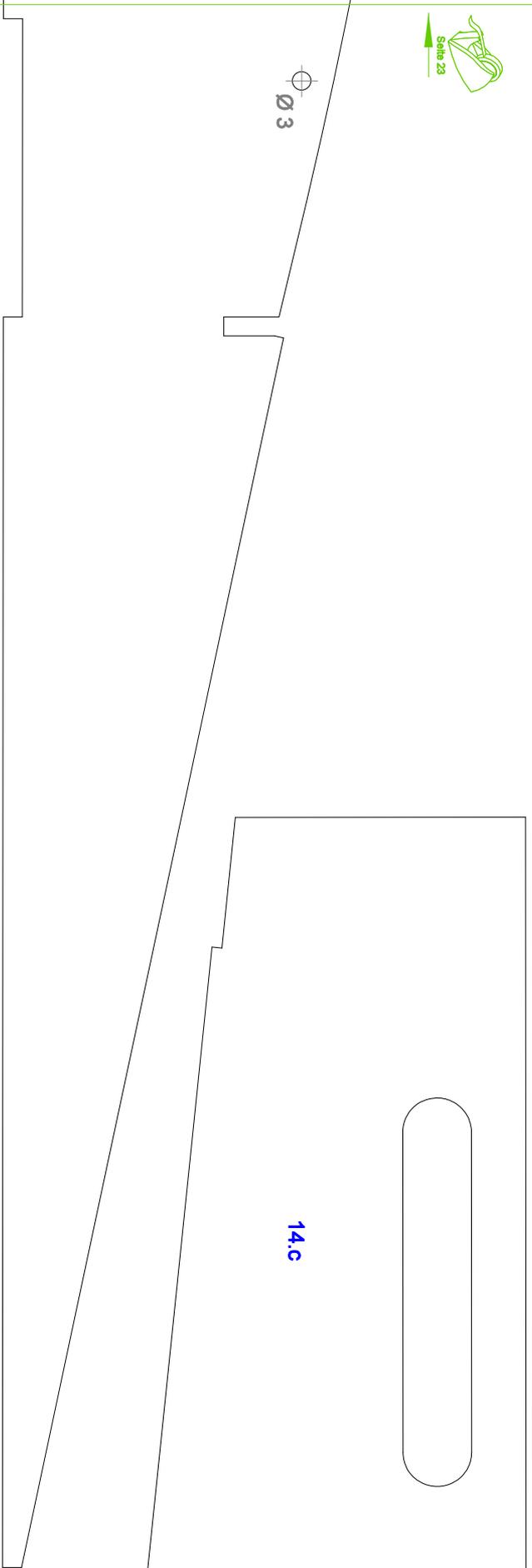


14.b



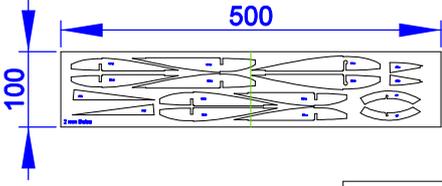
∅ 3

14.c

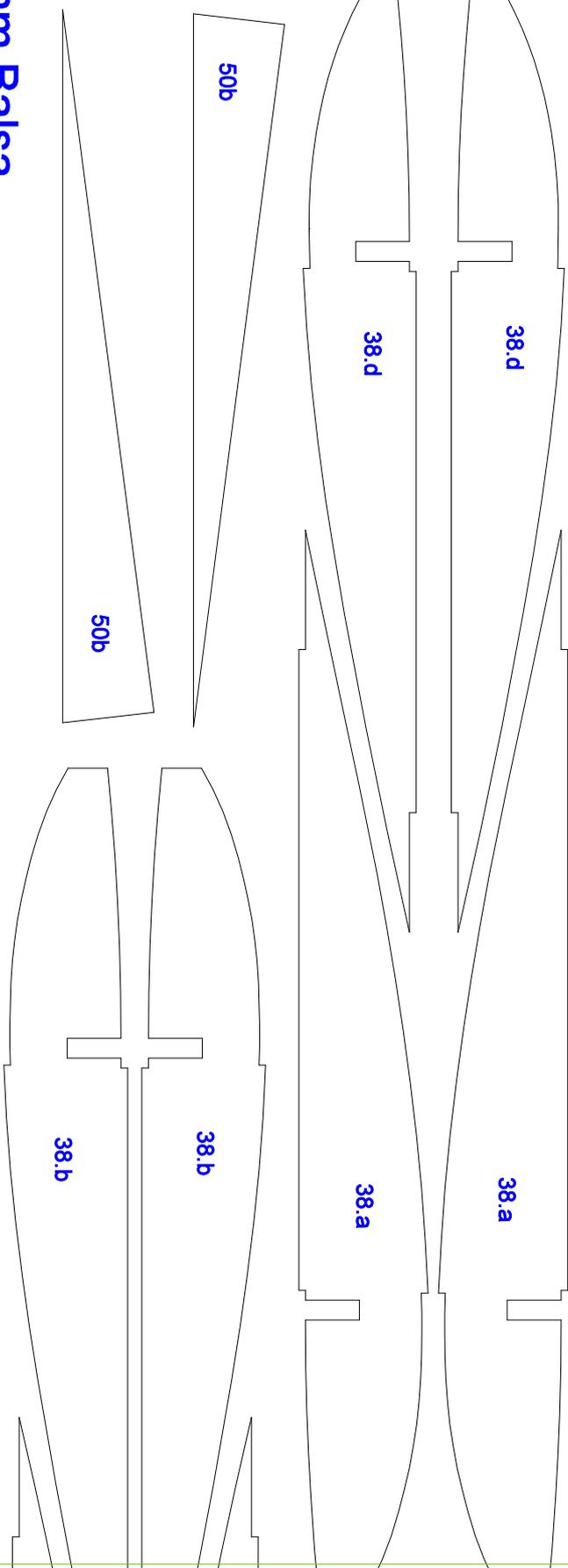


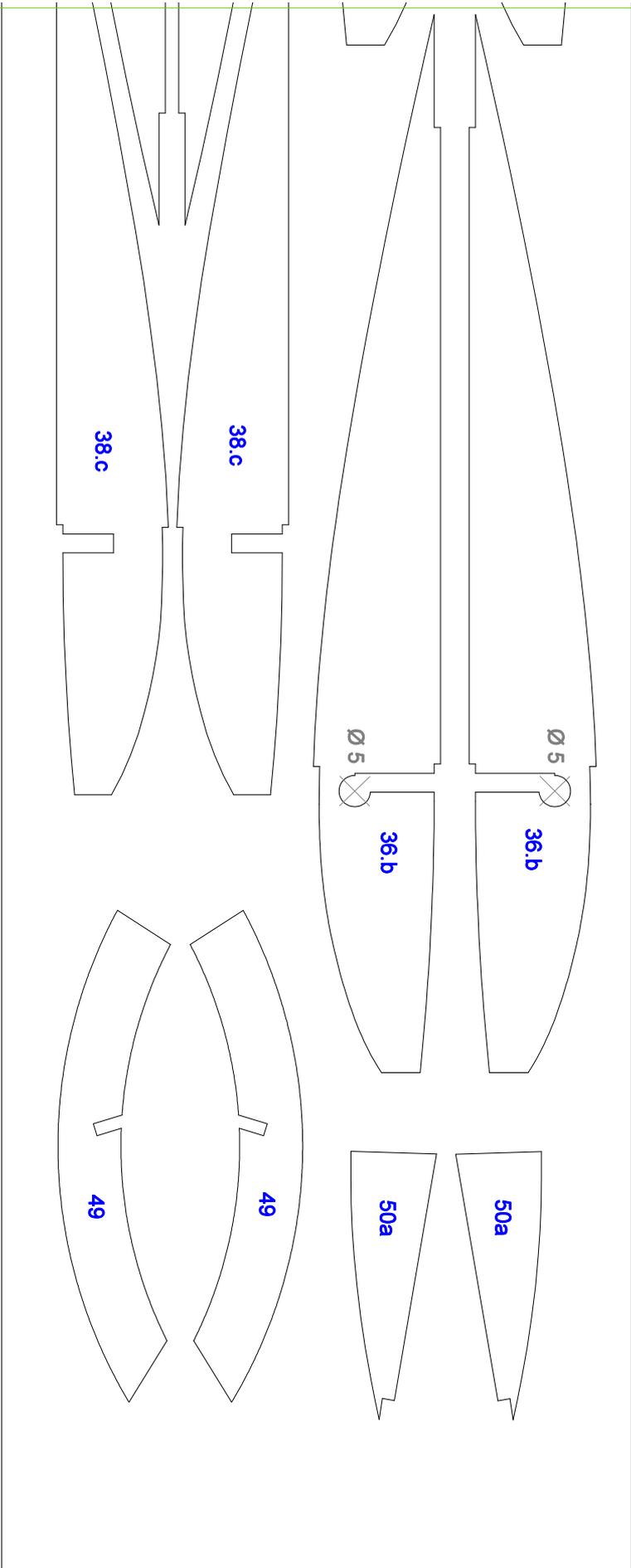


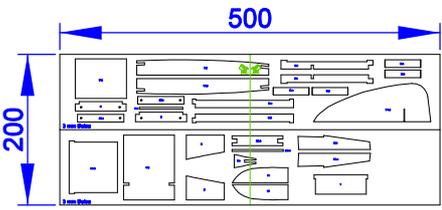
Seiten 25+26:
1/2 Brettchen 2 mm Balsa
100 mm x 500 mm



2 mm Balsa

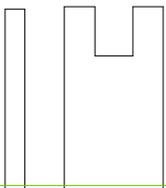
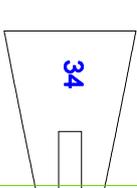
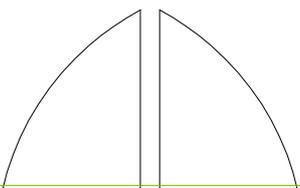
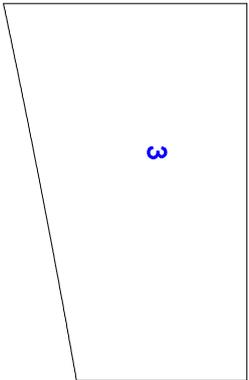
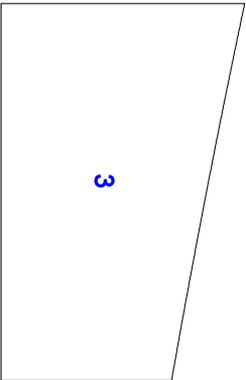
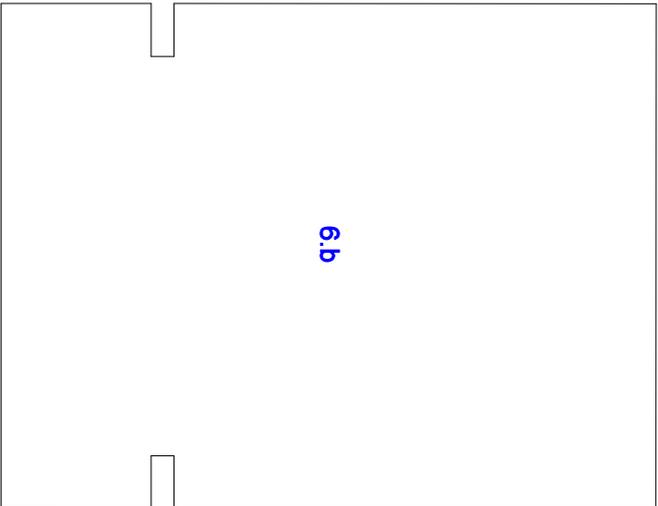
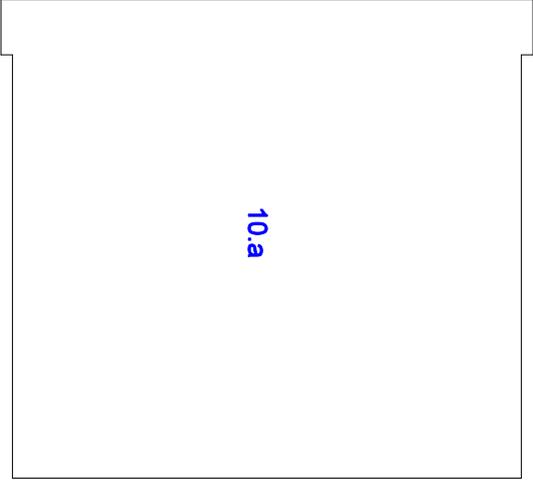




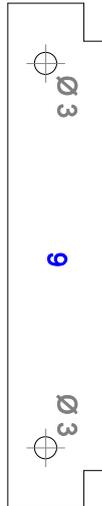
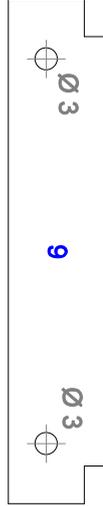
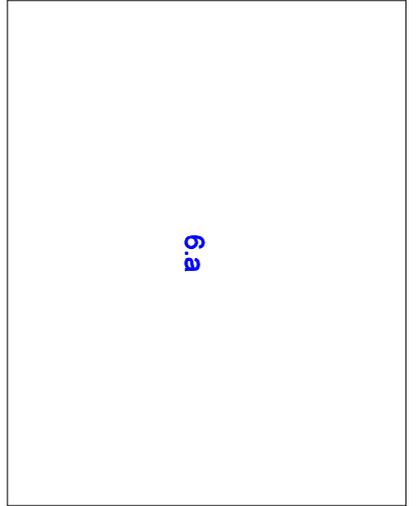


Seiten 27+28:
1 Brettchen 3 mm Balsa
halbiert zu 2 Stück à 100 mm x 500 mm

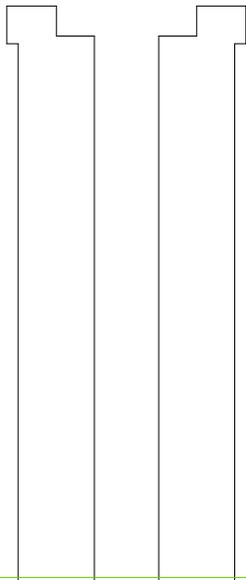
3 mm Balsa

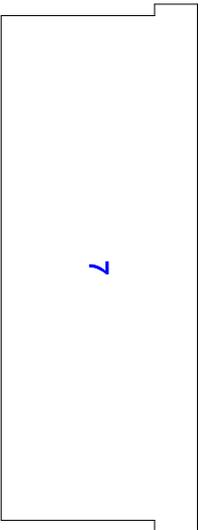
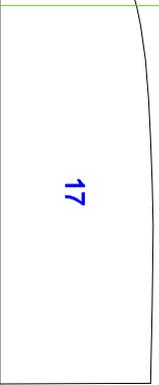
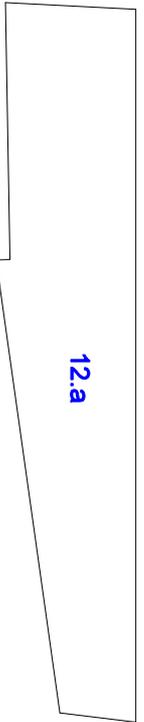
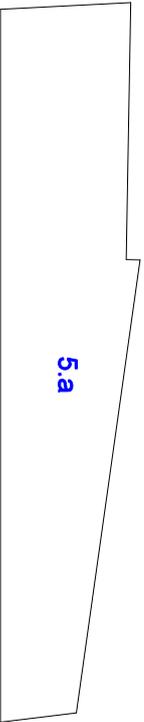
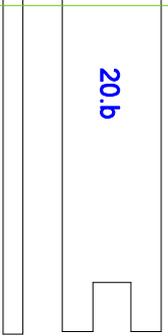
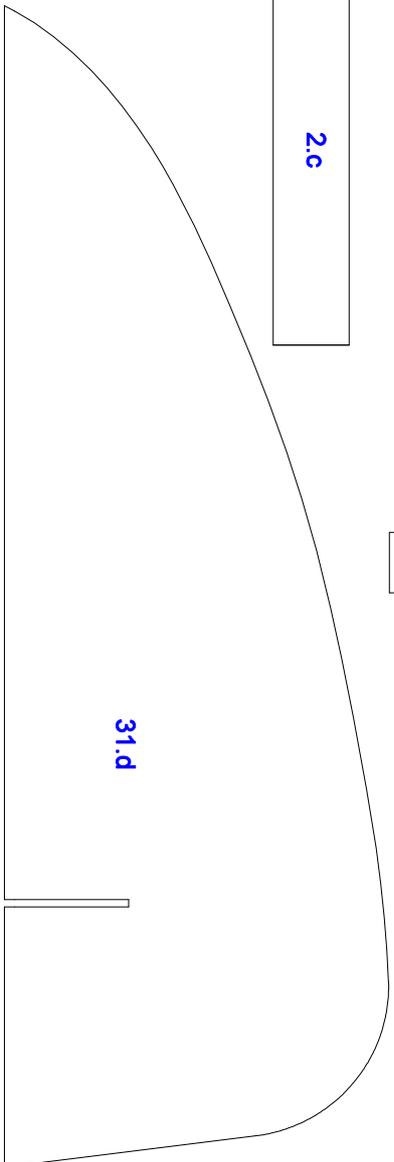
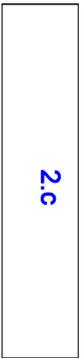
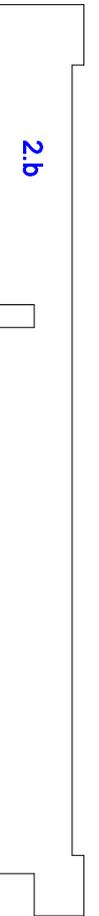


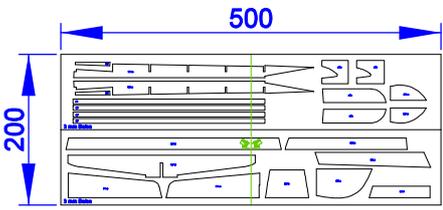
3 mm Balsa



9.b

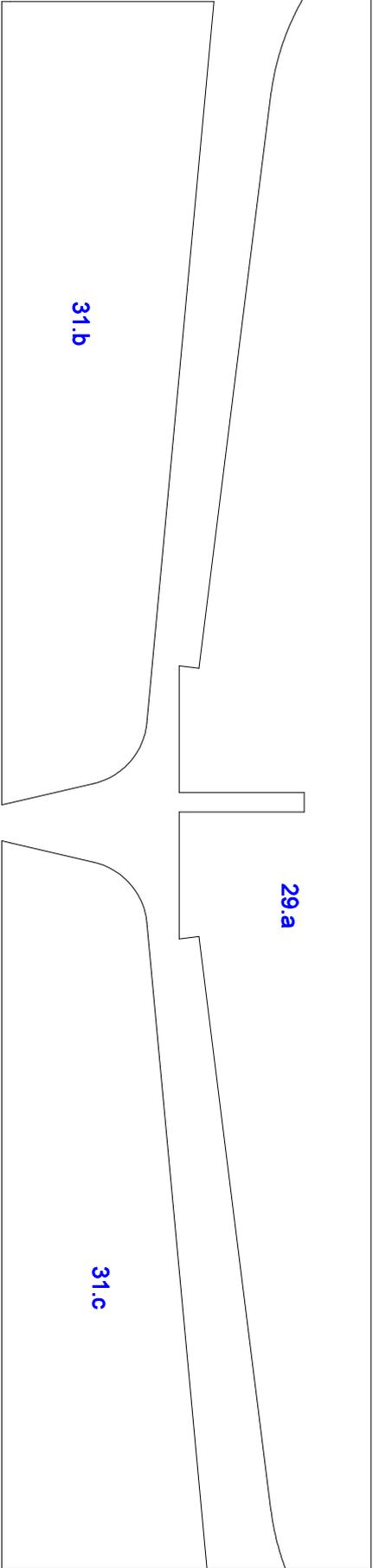




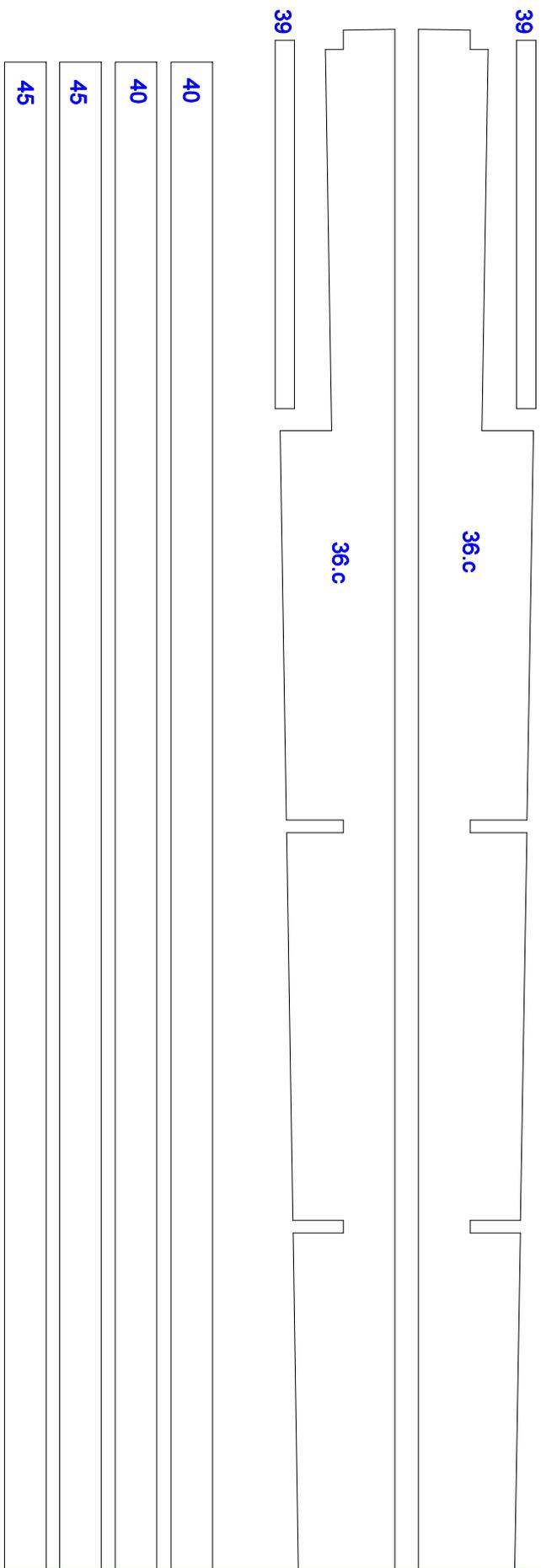
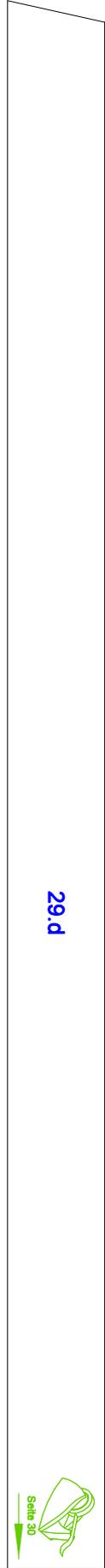


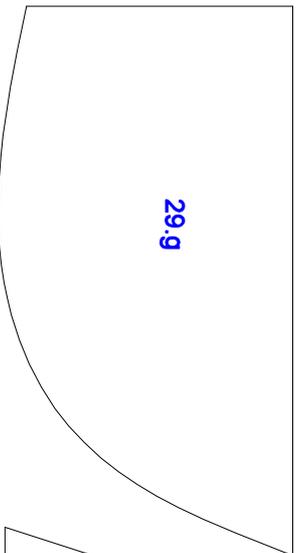
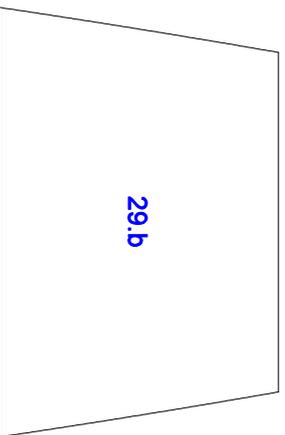
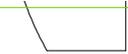
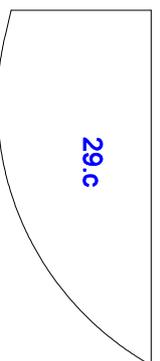
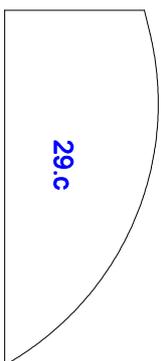
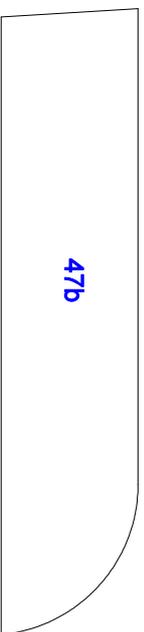
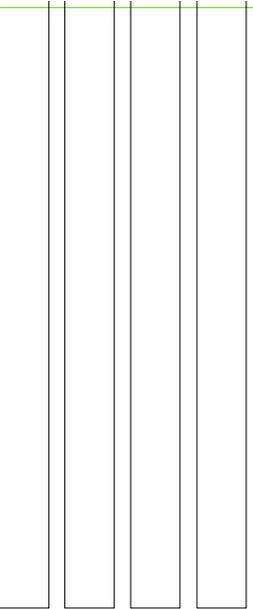
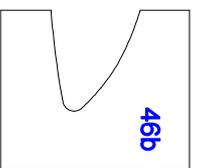
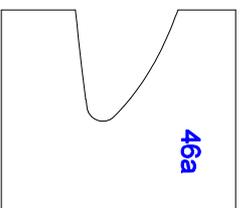
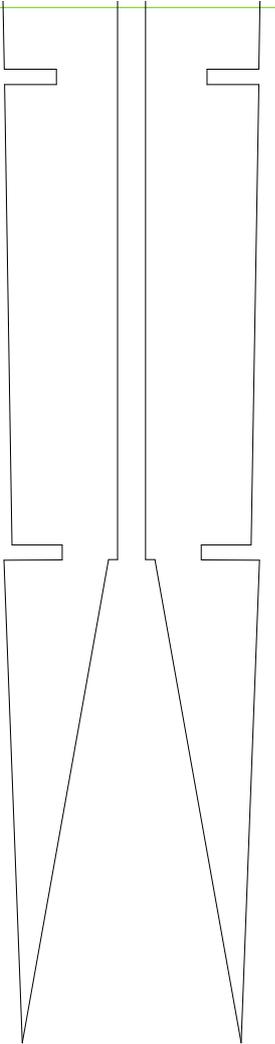
Seiten 29+30:
 1 Brettchen 3 mm Balsa
 halbiert zu 2 Stück à 100 mm x 500 mm

3 mm Balsa



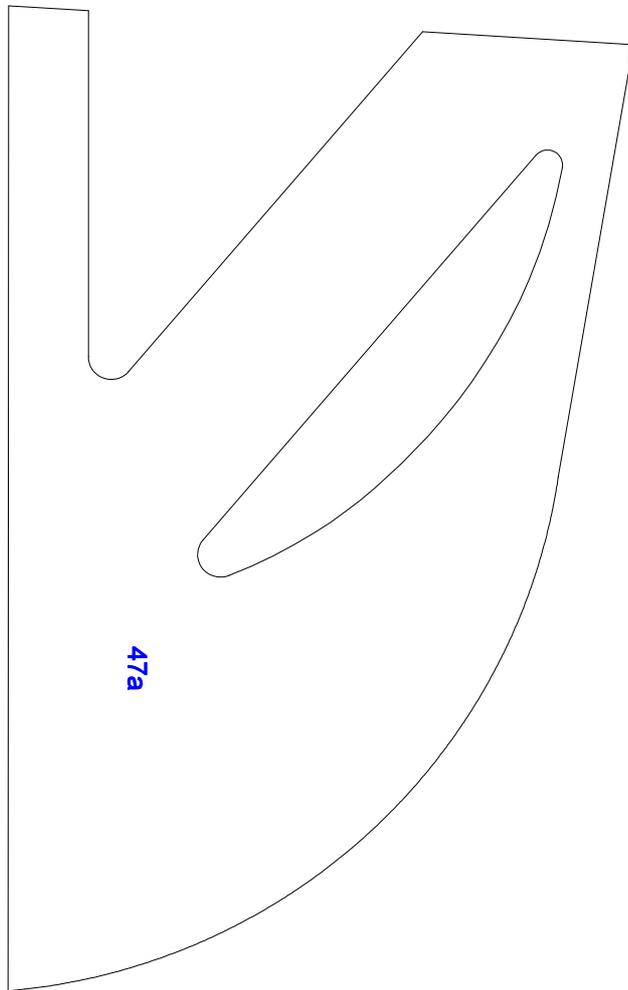
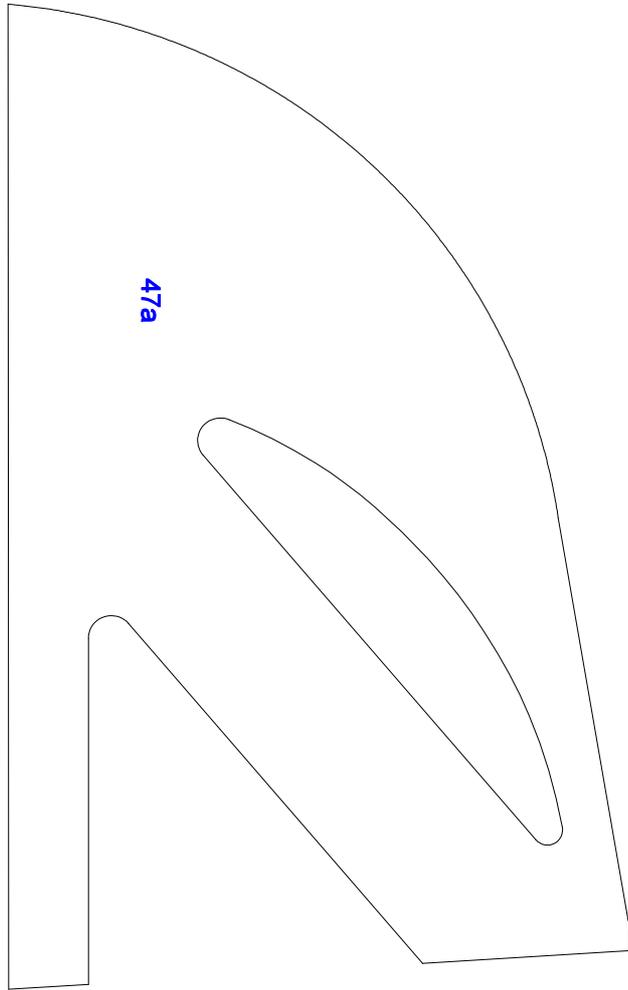
3 mm Balsa



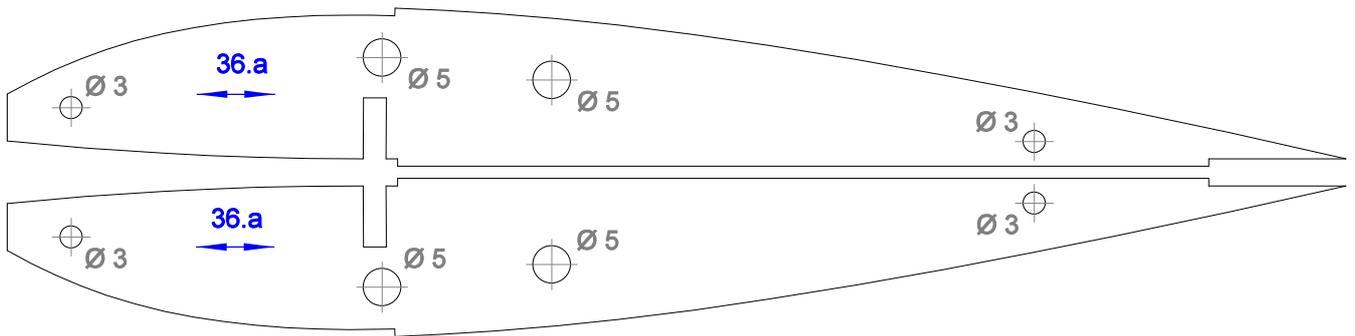
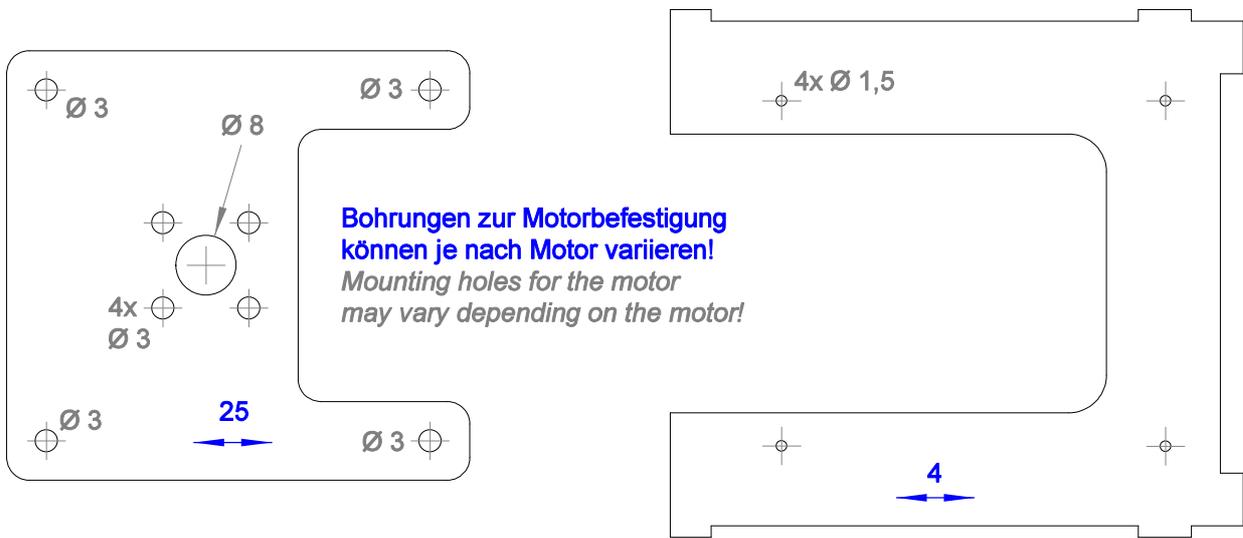


1 Brettchen 3 mm Balsa
100 mm x 280 mm

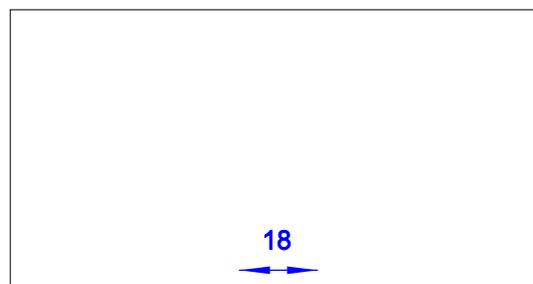
3 mm Balsa



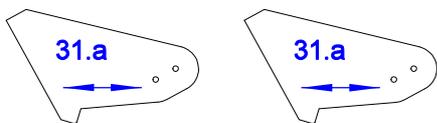
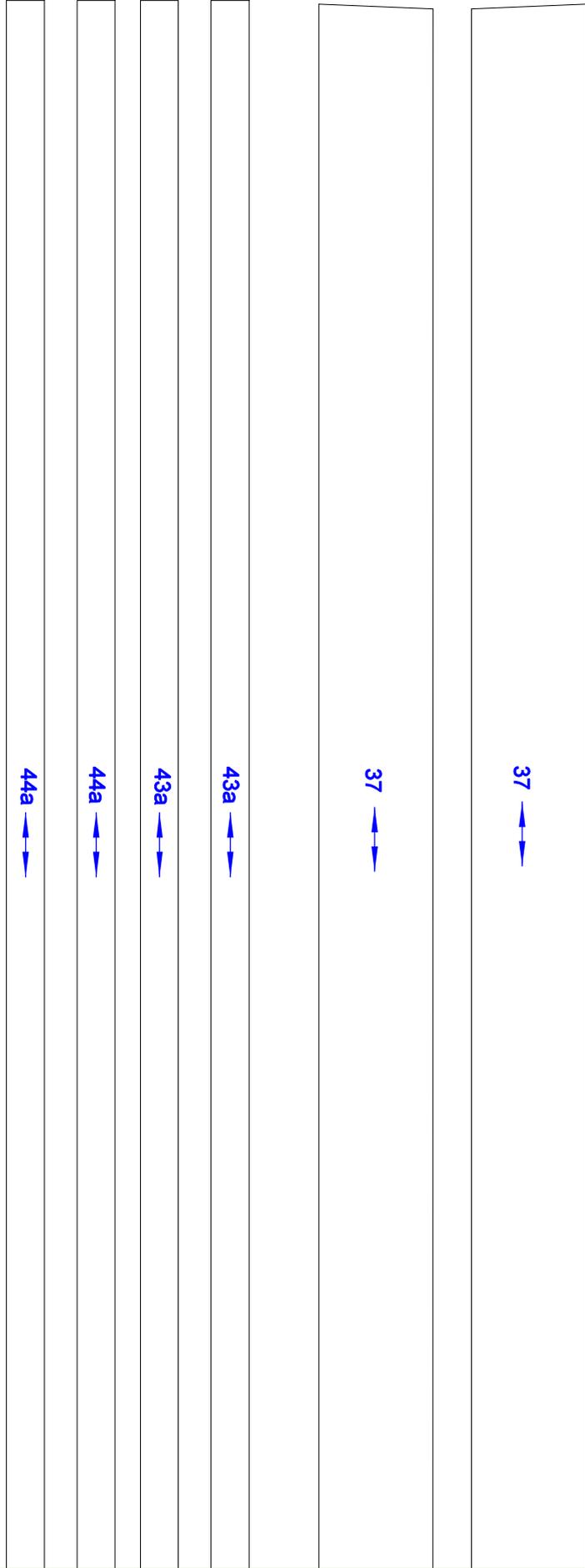
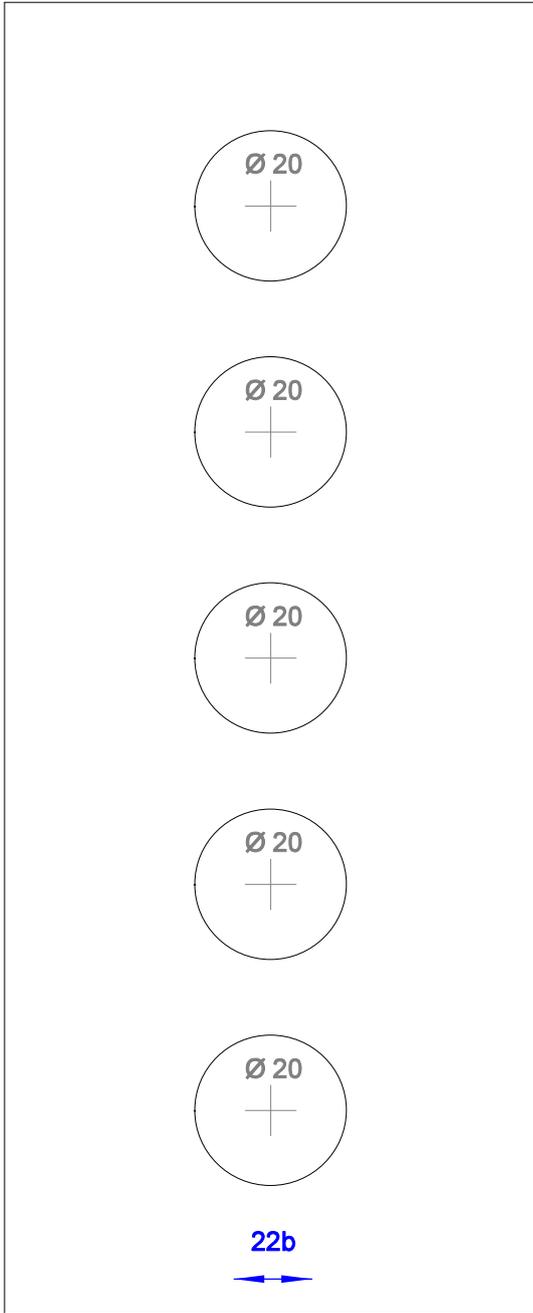
3mm Pappelspertholz \longleftrightarrow
 1 mm poplar plywood



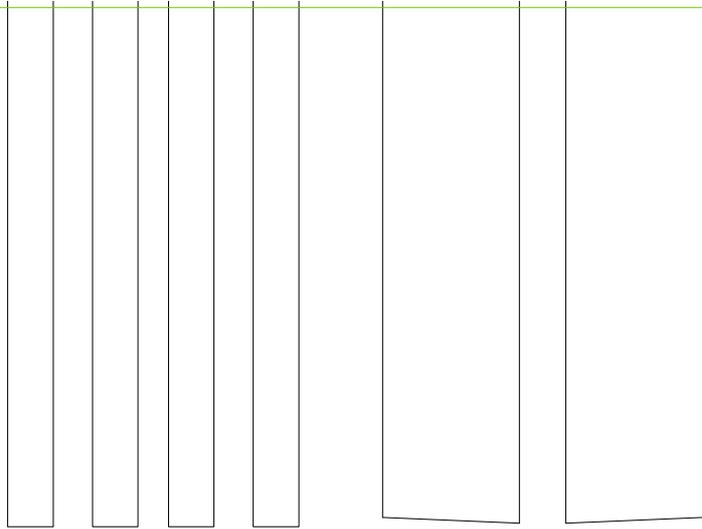
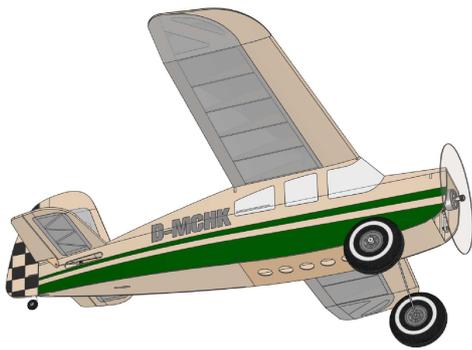
Bohrungen gemeinsam mit 1.a / 14. a bohren
Drill holes together with 1.a / 14.a



1mm Birkensperholz
1 mm birch plywood



Bohrungen Ø 0,8 mm
passend für
Anlenkungsdraht
Holes Ø 0.8 mm suitable for
linkage wire



Tipps zum Einfiegen:

Tips for flying in:

Heben Sie beim Erstflug rasch ab und fliegen Sie auf Sicherheitshöhe. Dort wird das Modell sogleich bei Halbgas (so viel, wie zum Halten der Höhe benötigt wird) auf sauberen Geradeausflug getrimmt.

Die geringen Ruderausschläge (Höhe sowie Seite 10 mm mit ca. 25% EXPO) sind absolut ausreichend für wendiges Fliegen! CHEKKER ist sehr eigenstabil, kehrt bei Loslassen der Knüppel sogleich in die Normalfluglage zurück und leitet eine Kurve somit selbsttätig aus. Das bedeutet, dass man ihn am Schönsten fliegt, wenn man nur wenig steuert und weiträumig fliegt.

Dennoch ist er kunstflugtauglich und kann Rollen, Loopings und Turns fliegen.

Mit dem genannten Ruderausschlag am Höhenruder ist kein Strömungsabriss zu provozieren, das Modell bleibt stets kontrollierbar. Erst wenn man einen Seitenruder-Vollausschlag dazu gibt, macht CHEKKER eine gerissene Rolle.

For the maiden flight, take off quickly and fly to a safe altitude. There, immediately trim the model for straight and level flight at half throttle (just enough to maintain altitude).

The small deflections (elevator and rudder 10 mm with approximately 25% expo) are perfectly adequate for agile flying! CHEKKER is very stable, immediately returning to normal flight attitude when the sticks are released, so it's automatically exiting turns. This means it flies best with minimal control input and wide, soft turns.

Nevertheless, CHEKKER is aerobatic and can perform rolls, loops, and turns.

With full elevator deflection, a stall cannot be induced; the airplane remains controllable at all times. Only when full rudder deflection is applied additionally, CHEKKER will perform a snap roll.

Alternatives Antriebssetup:

Alternative drive setup:

Eine superleichte Antriebsvariante basiert auf der Verwendung eines kleinen Racecopter-Motors samt passendem Propeller. Die Leistung ermöglicht senkrecht Steigen und zieht an 2S 20 Ampere Vollgasstrom.

Der Vorteil eines leichten Modells (ca. 390 g) liegt in der langsamen Landegeschwindigkeit und im leichtfüßigen Handling.

Der Akku muss dann ganz nach vorne und kann dazu in der Rumpfschnauze zwischen zwei Schaumstoffstücke eingeklemmt werden.

A super-lightweight propulsion option is based on the use of a small racing copter motor and a matching propeller. This power allows for vertical climbs and draws 20 amps of full throttle current on a 2S battery.

The advantage of a lightweight model (approx. 390 g) lies in its slow landing speed and agile handling.

The battery must then be moved all the way to the front and can be wedged between two pieces of foam in the nose of the fuselage.

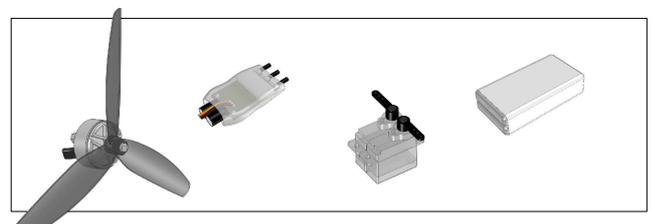
BL-Motor mit nur 36 g Gewicht

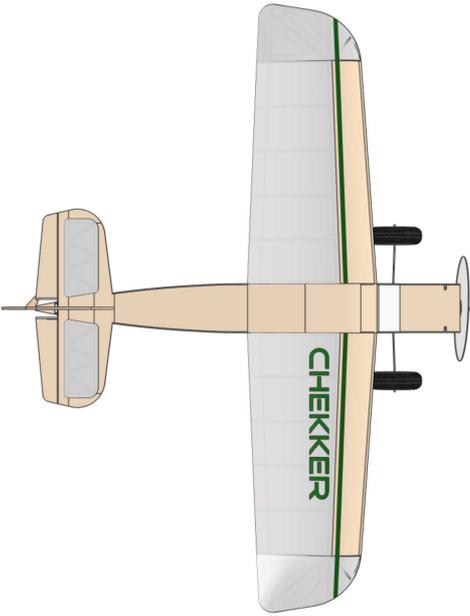
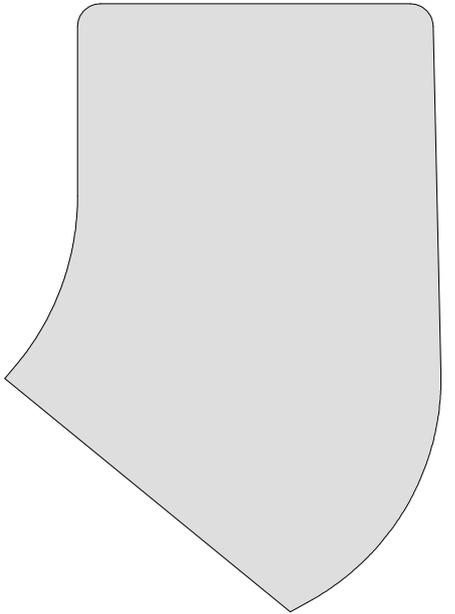
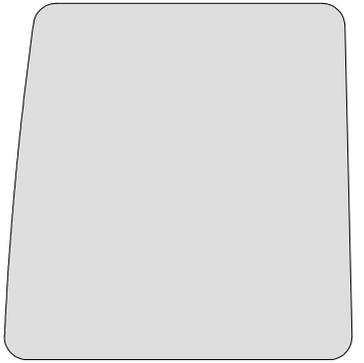
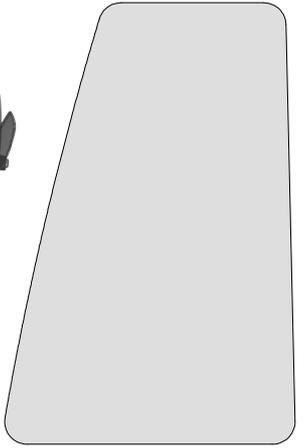
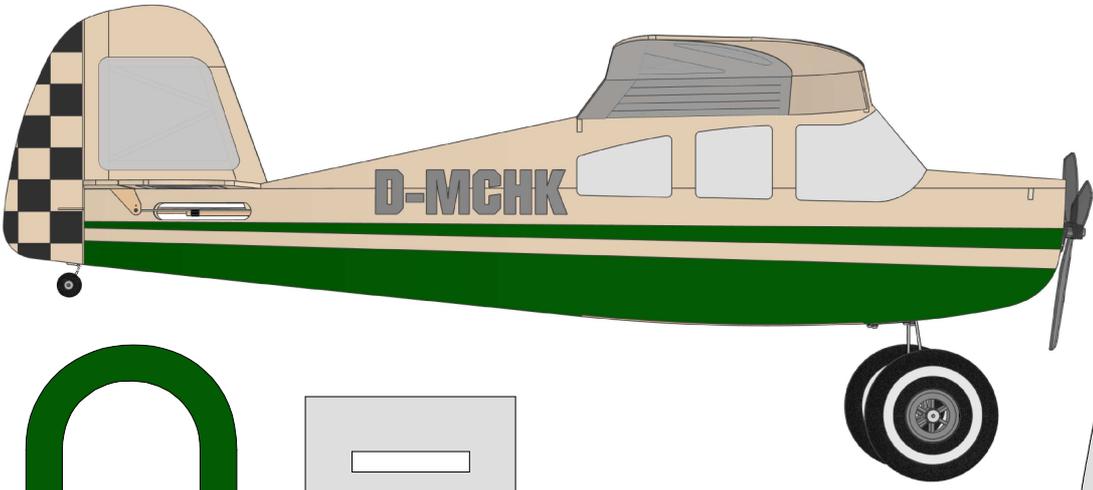
z. B. T-Motor Velox V3.0 V2207 2550KV 4S FPV Racing Motor / 36 g / Bezug: n-factory.de

Propeller HQ Prop D6x4.5X3 Cinewhoop Prop Light Grey / Bezug: n-factory.de

Drehzahlsteller: Aeronaut actrocon 30 (30-40 A / 20 g) / #7003-32

LiPo: 2S 800 mAh, z. B. SLS Quantum 40/80C
2x **Servo** 4,8 g / Hitec HS-40 / Multiplex #112040





D-MCHK

CHECKER

