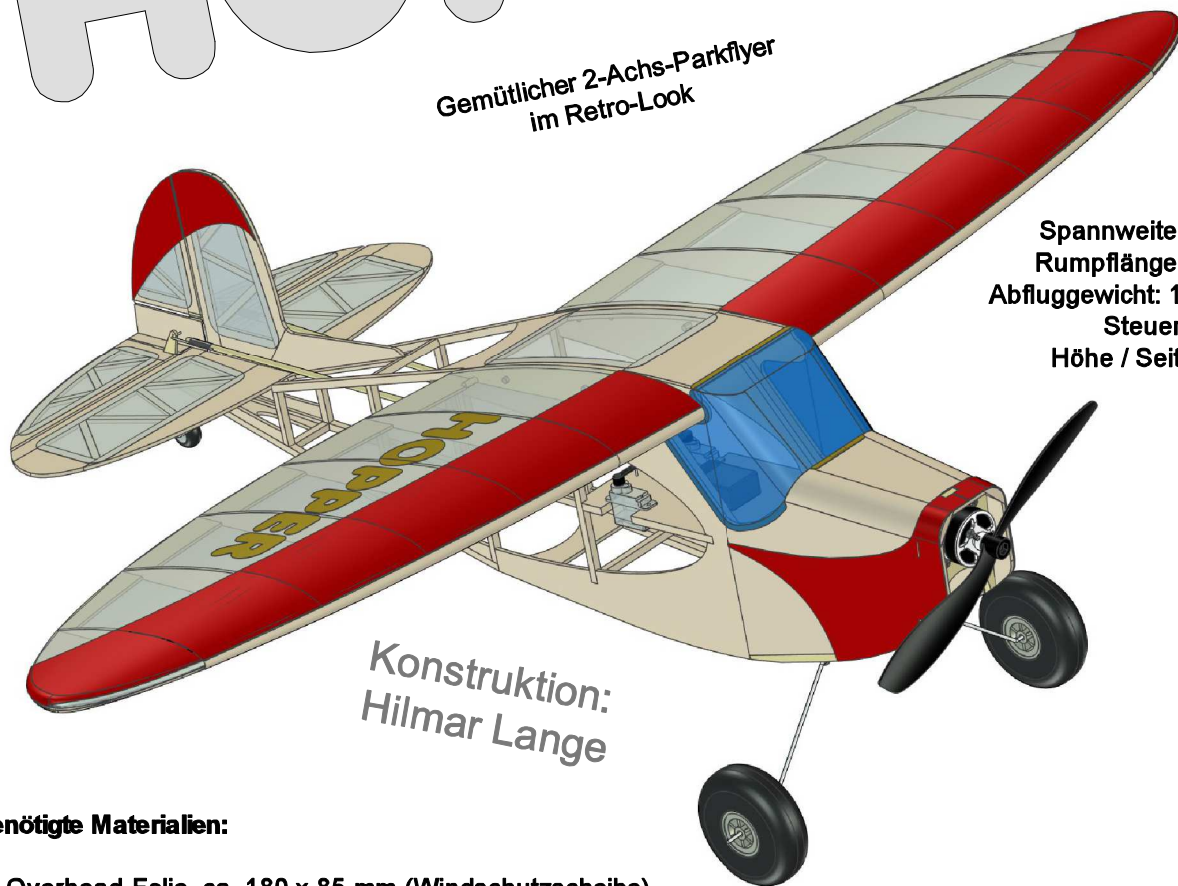


# HOPPER

Gemütlicher 2-Achs-Parkflyer  
im Retro-Look



Spannweite: 792 mm  
Rumpflänge: 572 mm  
Abfluggewicht: 170-190 g  
Steuerung über  
Höhe / Seite / Motor

Konstruktion:  
Hilmar Lange

## Benötigte Materialien:

- 1x Overhead-Folie, ca. 180 x 85 mm (Windschutzscheibe)
- 6x weiches Vlies-Scharnier (2x Seitenrudder, 4x Höhenrudder)
- 1x Messingdraht Ø 1,5 mm / Länge 40 mm (Höhenruderverbinder)
- 8x Neodym-Magnet: Ø 3 mm x 6 mm (Flügelarretierung)
- 1x Messingrohr Ø 4 mm x Ø 3,1 mm / Länge 71,5 mm (Flügelsteckung im Rumpf)
- 2x Messingrohr Ø 4 mm x Ø 3,1 mm / Länge 62 mm (Flügelsteckung in den Tragflächen)
- 1x CFK-Rundstab Ø 3 mm / Länge 195 mm (Flügelverbinder)
- ABS-Rohr Ø 2 mm x Ø 1,0 mm / Länge 50 mm + Länge 42 mm (Heckfahrwerks-Führung)
- Stahldraht Ø 0,8 mm / Länge 125 mm (Heckfahrwerksdraht)
- Stahldraht Ø 0,8 mm / Länge 188 mm (4x 47 mm für L-förmige Anlenkungsdrähte)
- 4x Blechschraube 2,9 x 6,5 für Fahrwerksdraht-Befestigung
- Stahldraht Ø 1,5 mm / Länge 330 mm (inklusive etwas Übermaß für Fahrwerksdraht)
- etwas Klettband für Akku-Befestigung
- ORALIGHT Bügelfolie (Vorschlag: transparent und rot, jeweils 0,5 m)
- ORASTICK Bügelfolie für den Schriftzug (Vorschlag: orange)

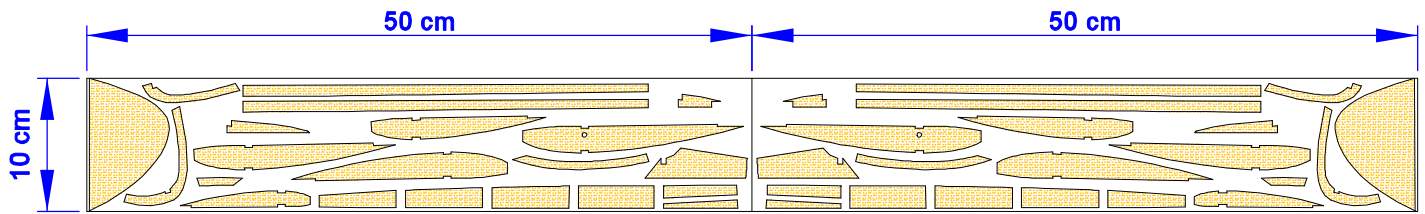
sowie Holz gemäß Auflistung auf Seite 2

## RC-Komponenten und Teile:

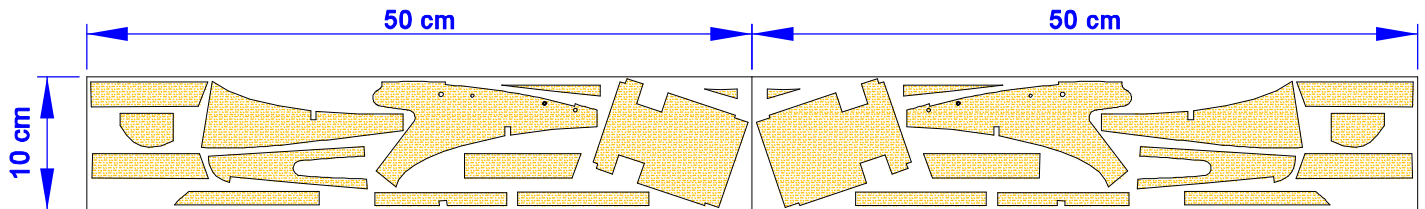
- 2 Servos à 4,8 g, z.B. Hitec HS-40
- BL-Motor, 15 g / 2202-32 / 2300 KV
- Regler 12 Ampere
- Propeller 8x4" Slowfly (alles zusammen auch erhältlich als Antriebssset "Crack Wing" / RC-Factory)
- Empfänger mit mindestens 3 Kanälen
- 2S LiPo 300 mAh - 3S LiPo 450 mAh
- Haupträder Ø 60 mm: Aero-Naut #735333
- 1 Heckrad, Ø ca. 15-17 mm



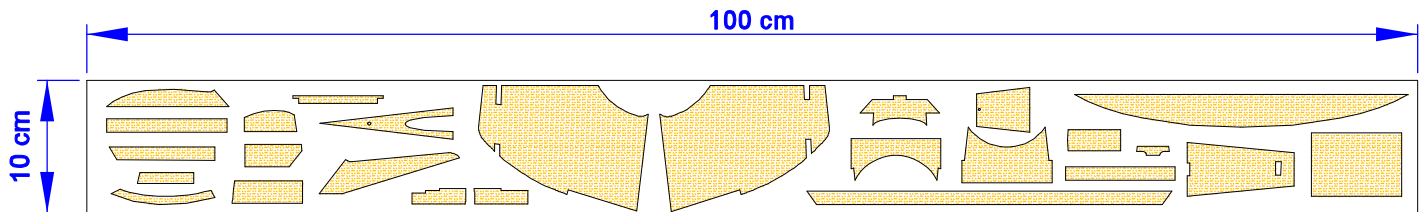
Holzbedarf bei platzsparender Teile-Anordnung:



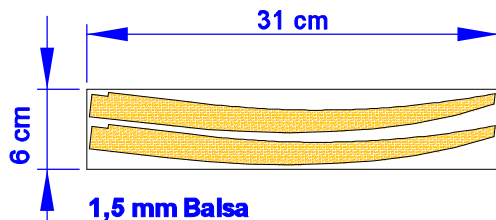
1 Brettchen 2 mm Balsa (mittelhart / ca. 20 g pro Brettchen)  
Tipp: die Bauteile sind zur Hälfte spiegelbildlich angeordnet.



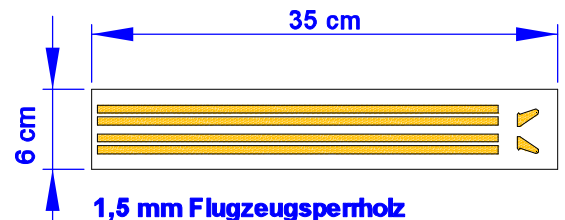
1 Brettchen 2 mm Balsa (mittelhart / ca. 20 g pro Brettchen)  
Tipp: die Bauteile sind zur Hälfte spiegelbildlich angeordnet.



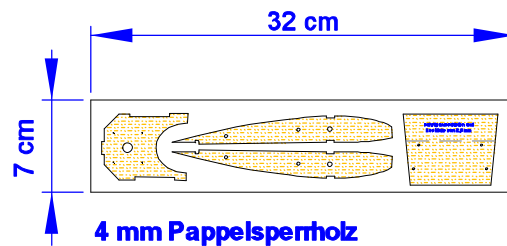
1 Brettchen 2 mm Balsa (mittelhart / ca. 20 g pro Brettchen)



1,5 mm Balsa  
(hart / ca. 40 g pro 1-m-Brettchen)



1,5 mm Flugzeugsperrholz



4 mm Pappelsperholz



□ 4x4 mm Balsaholzleisten, ca. 2 m



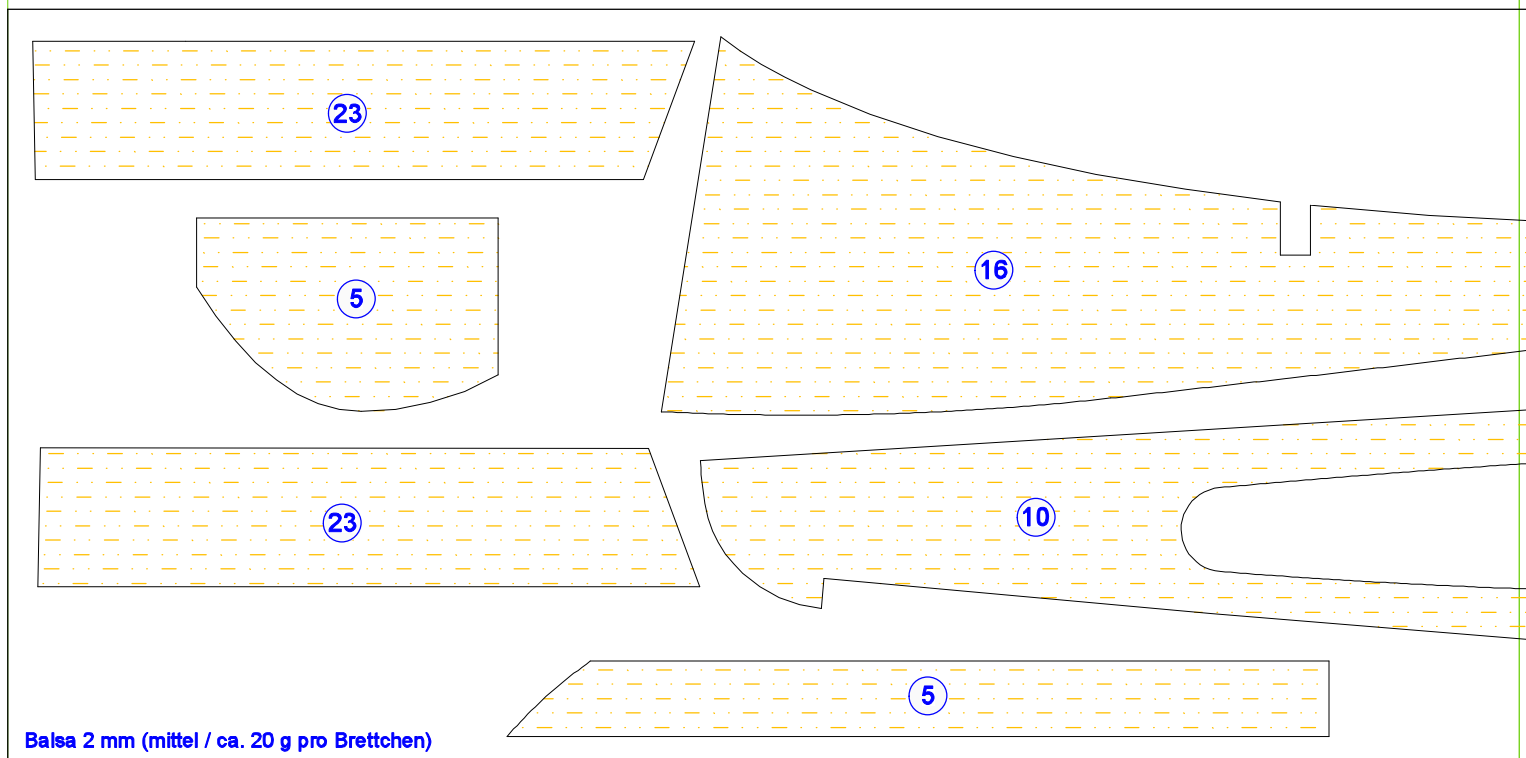
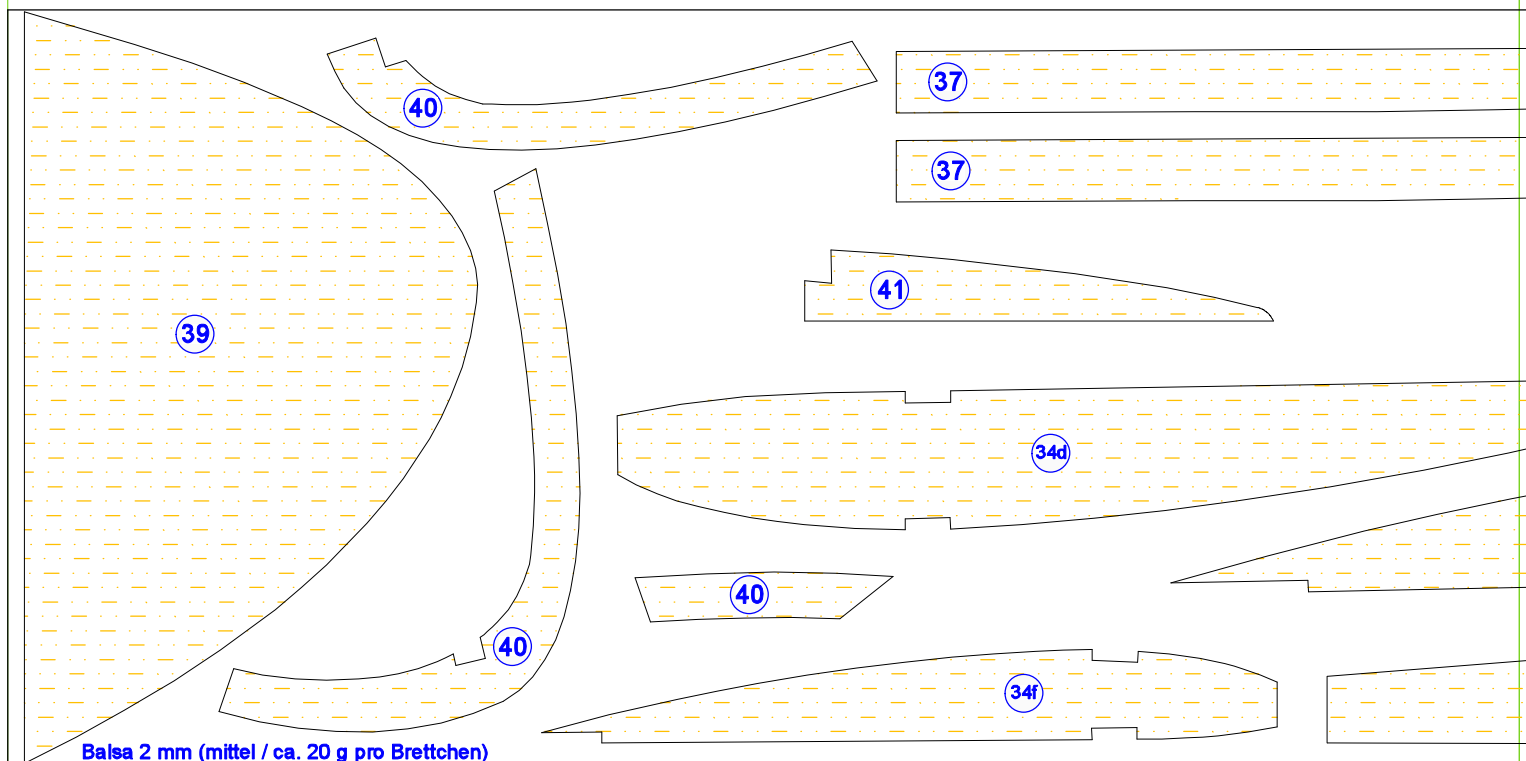
2x4 mm Balsaholzleisten, ca. 1 m

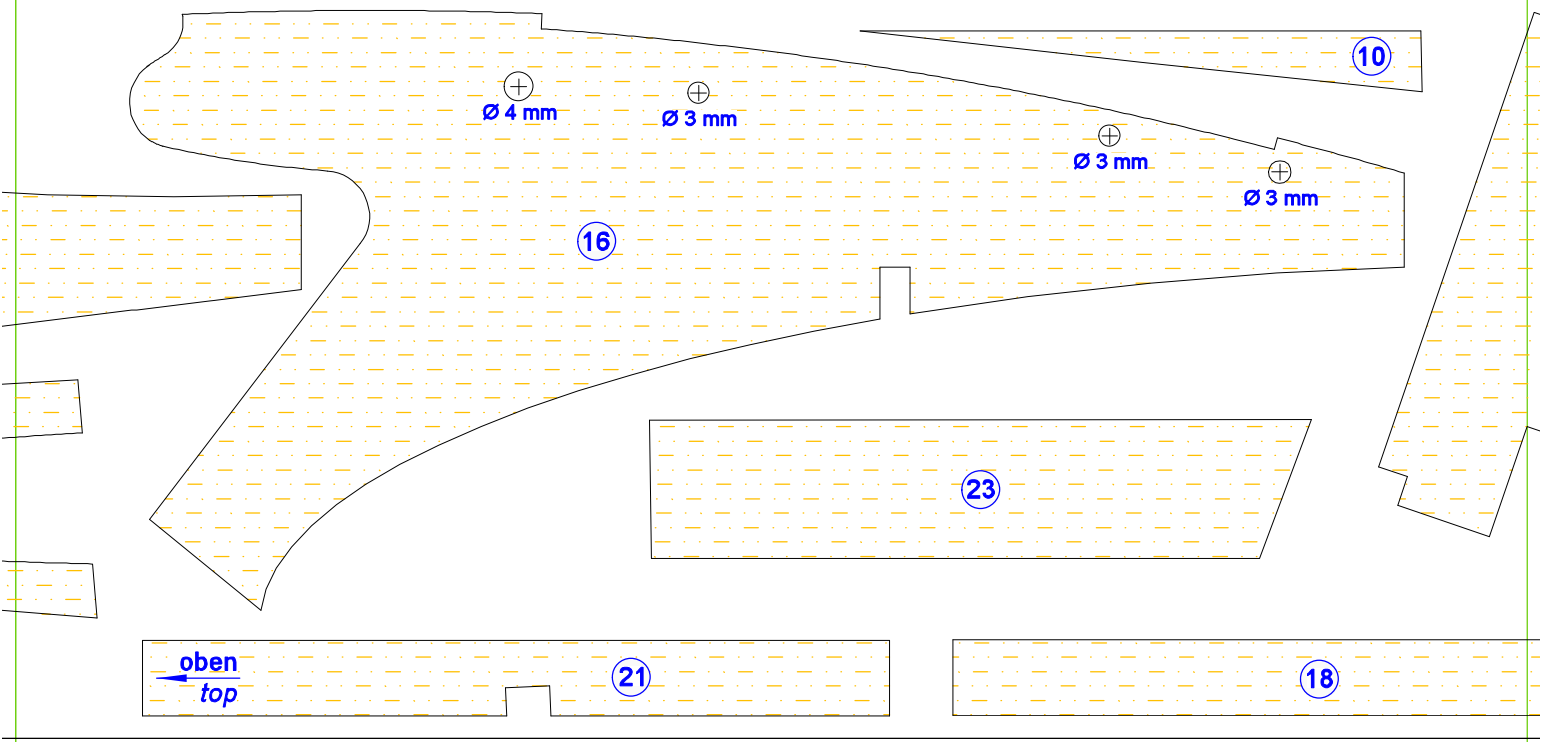
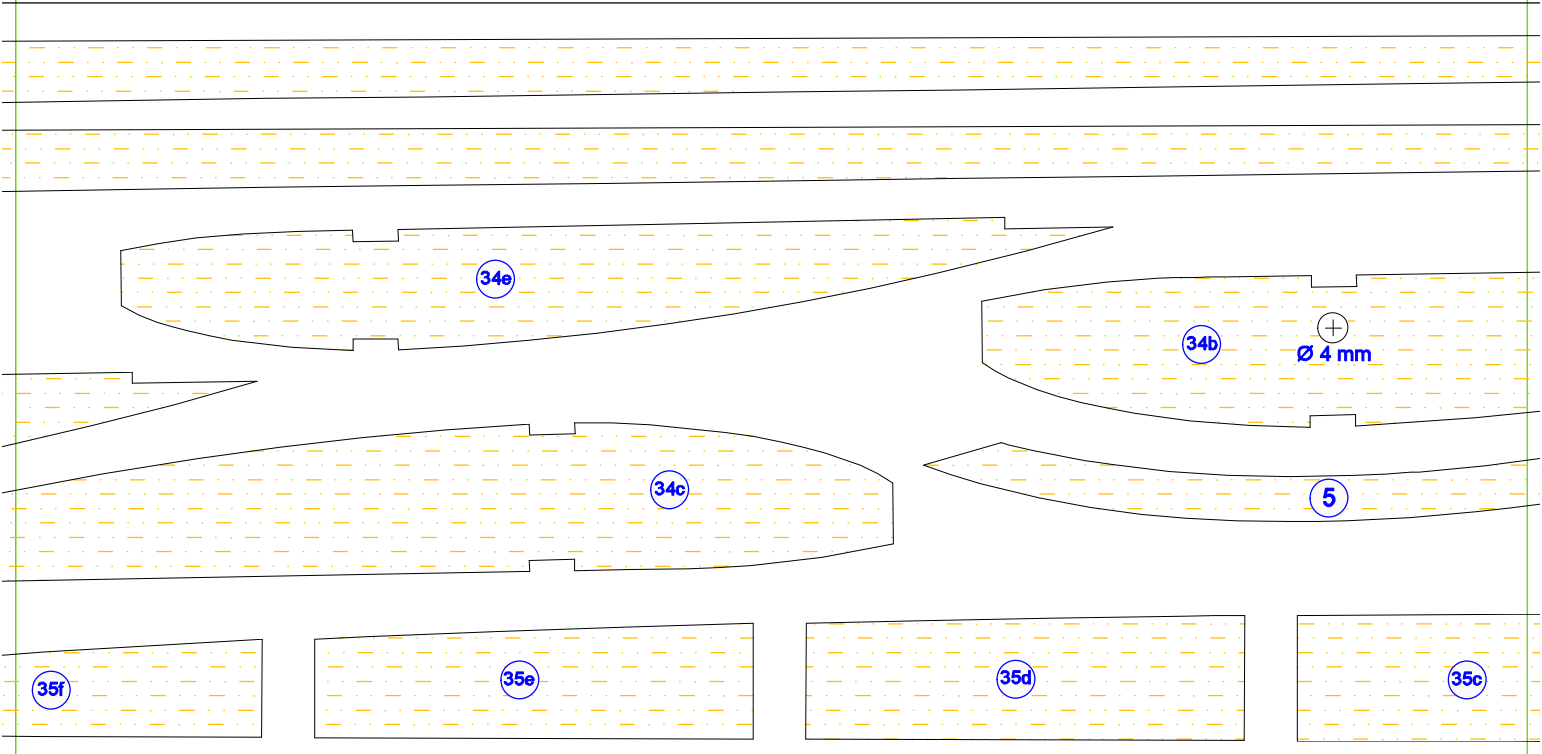


∅ 3 mm Buchenrundstab, ca. 1 m

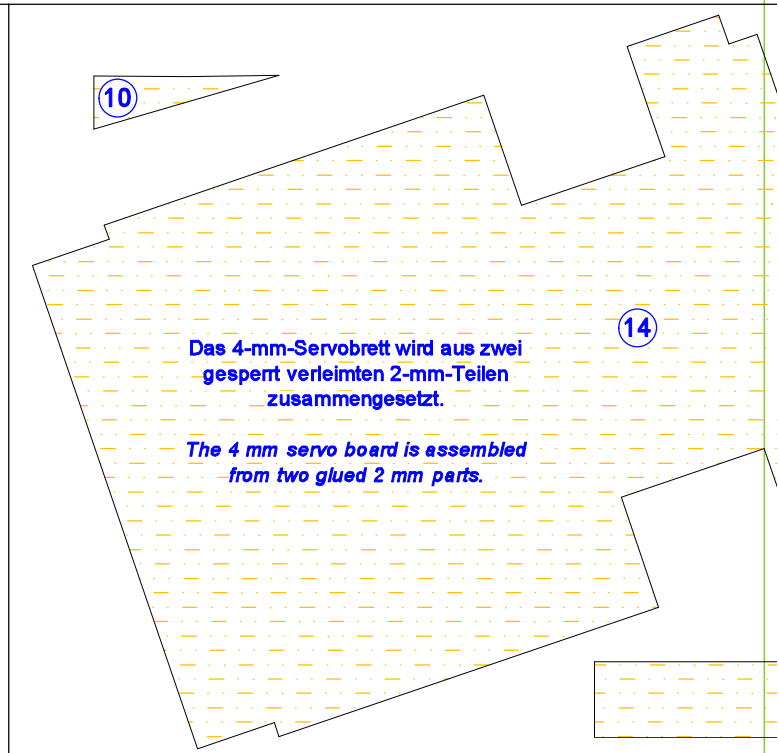
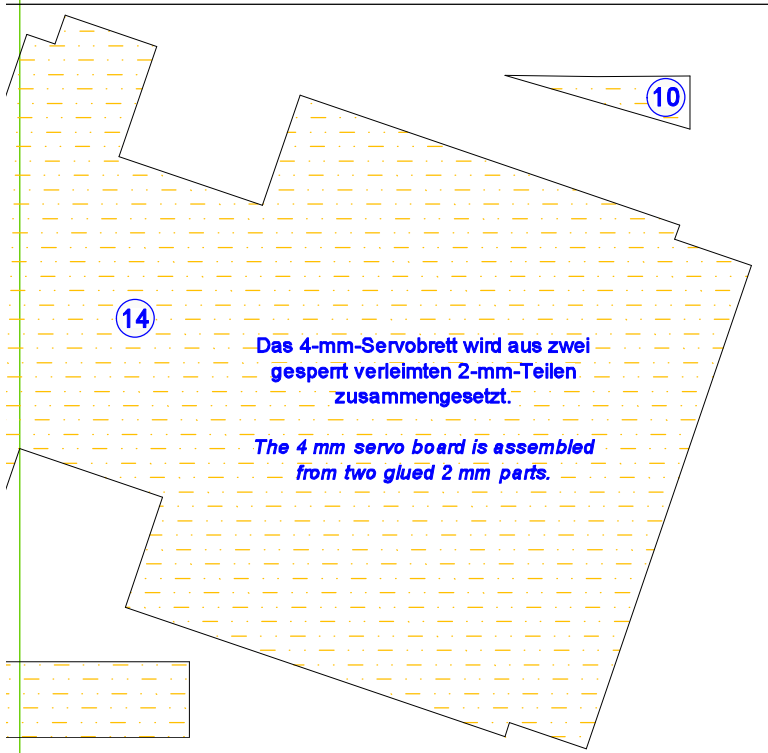
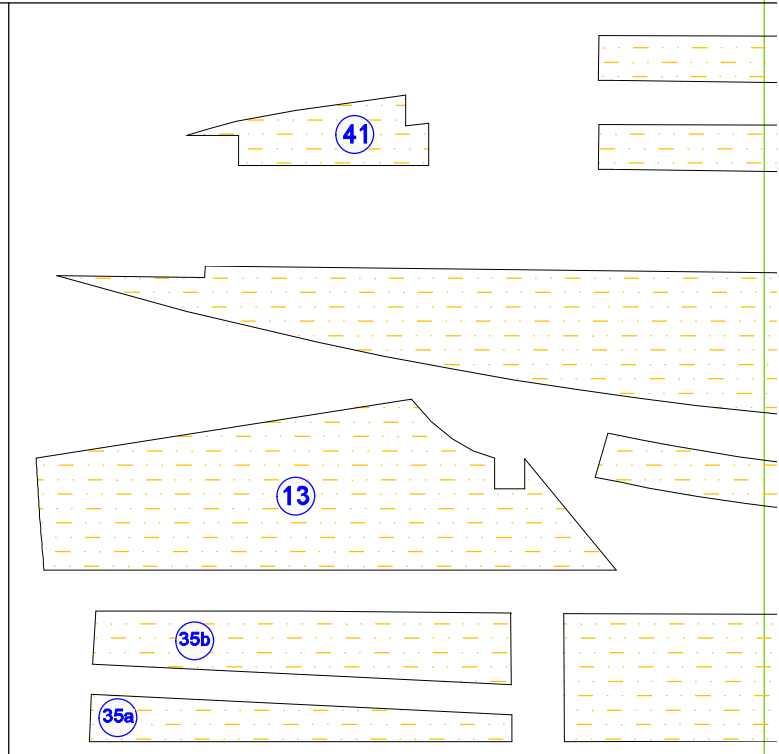
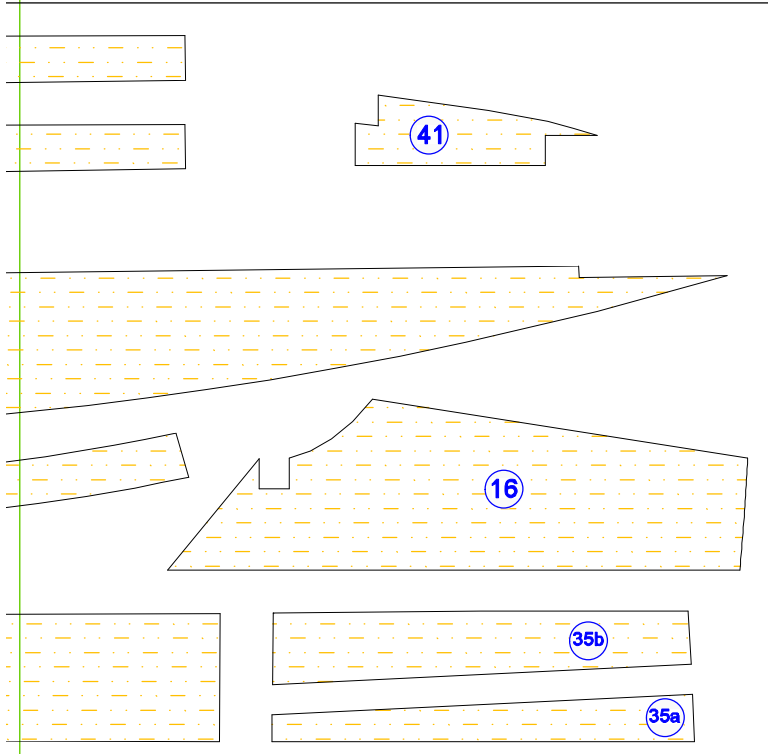
Jedes Bauteil besitzt eine Nummer, die dem dazugehörigen Baustufenfoto entspricht. Am Besten sortieren Sie die Teile nach dem Aussägen zu ihrer passenden Bauplanseite.

Each part has a number that corresponds to its construction stage picture. It is best to sort the parts after sawing them out to their matching page of the plan.





oben  
top



⊕  
Ø 4 mm

34b

34e

5

34c

35c

35d

35e

35f

10

⊕  
Ø 3 mm

⊕  
Ø 3 mm

⊕  
Ø 3 mm

⊕  
Ø 4 mm

13

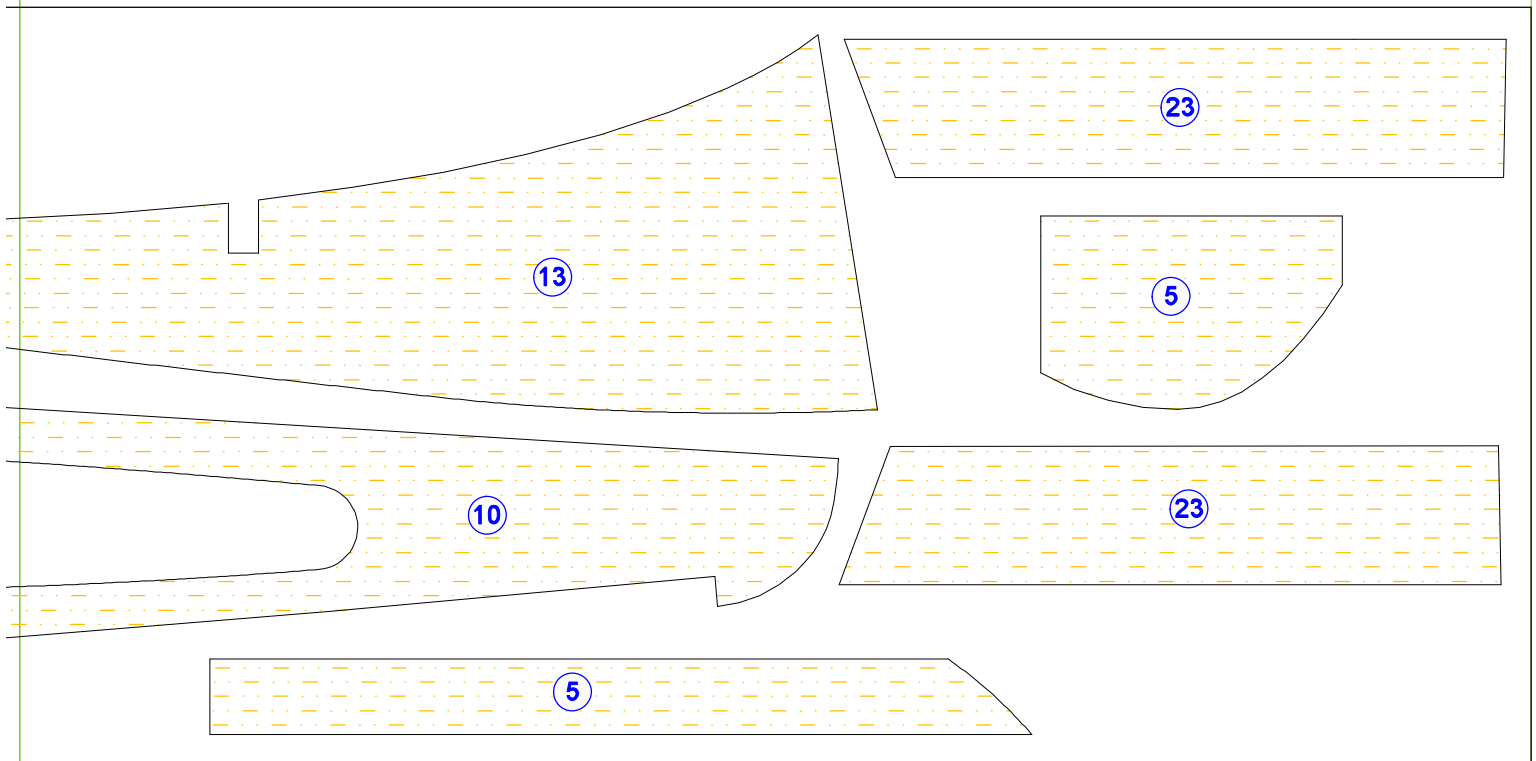
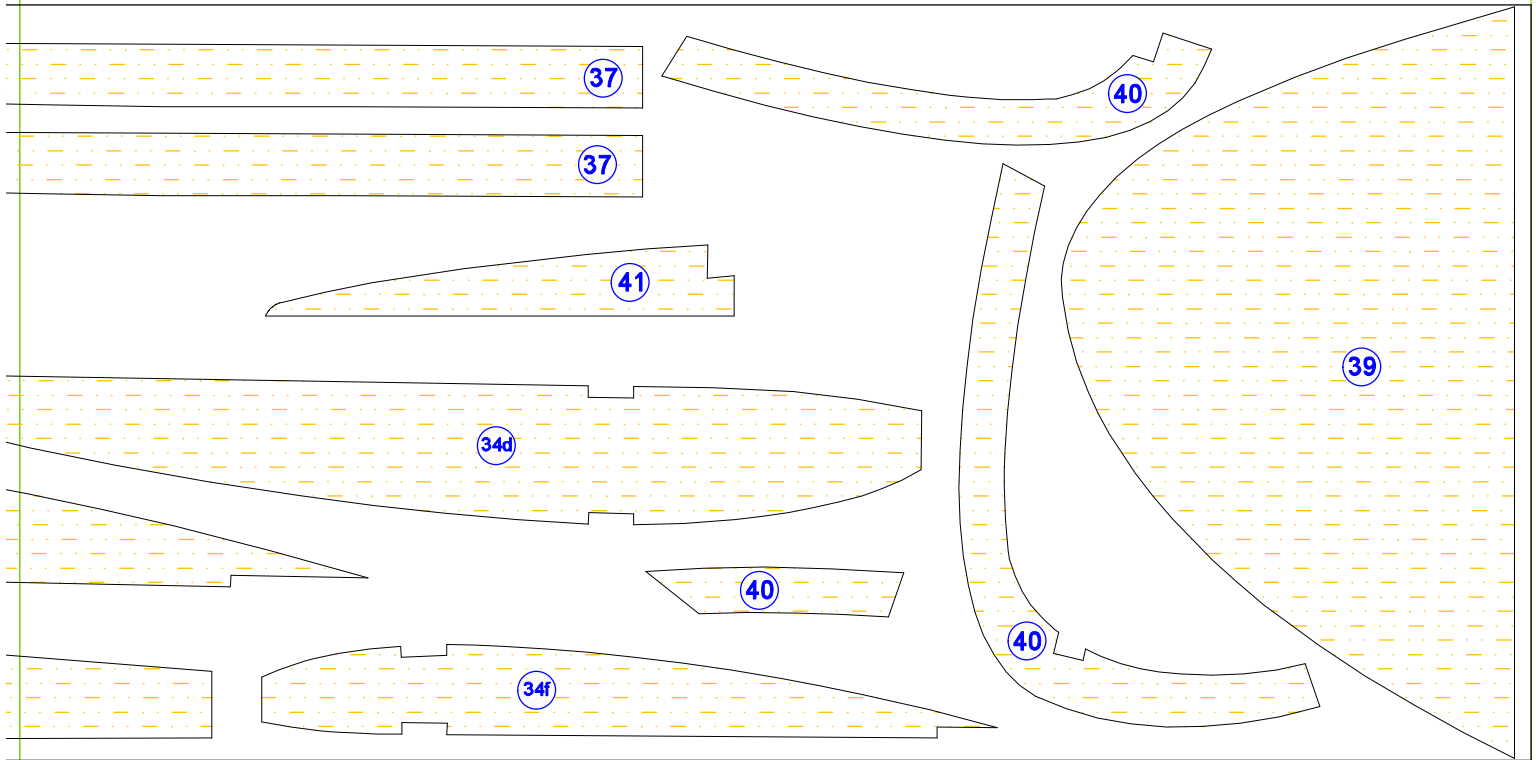
23

18

21

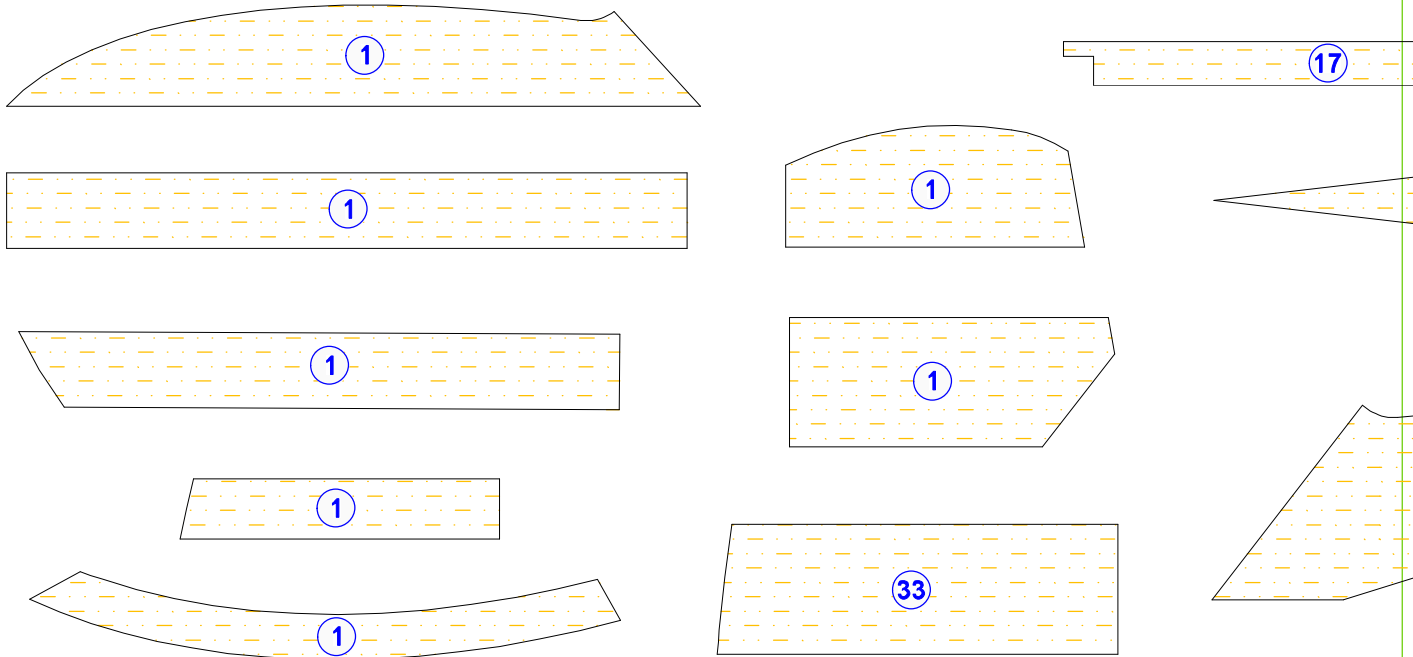
oben  
top





Jedes Bauteil besitzt eine Nummer, die dem dazugehörigen Baustufenfoto entspricht. Am Besten sortieren Sie die Teile nach dem Aussägen zu ihrer passenden Bauplanseite.

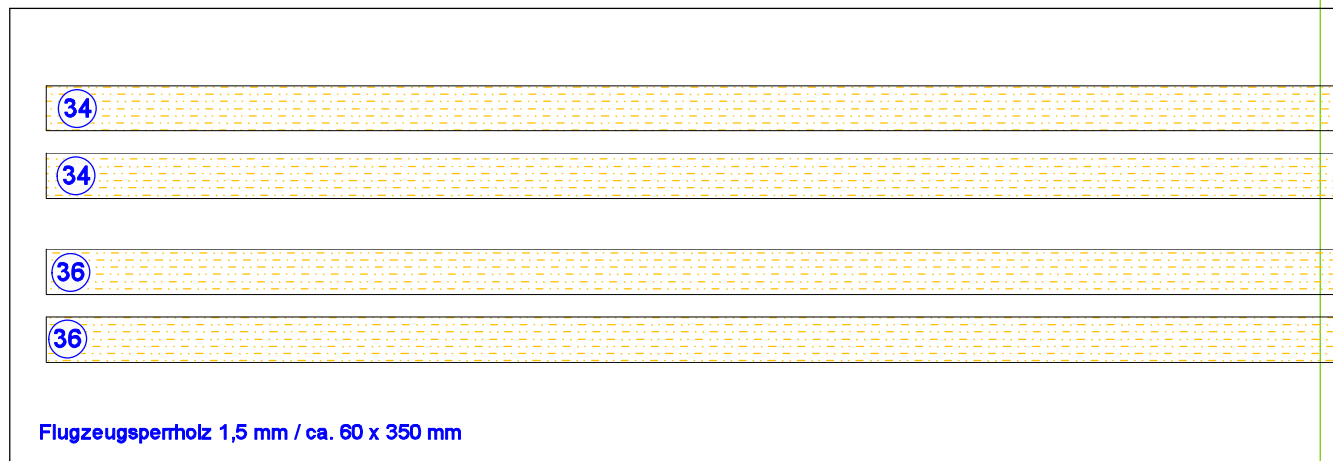
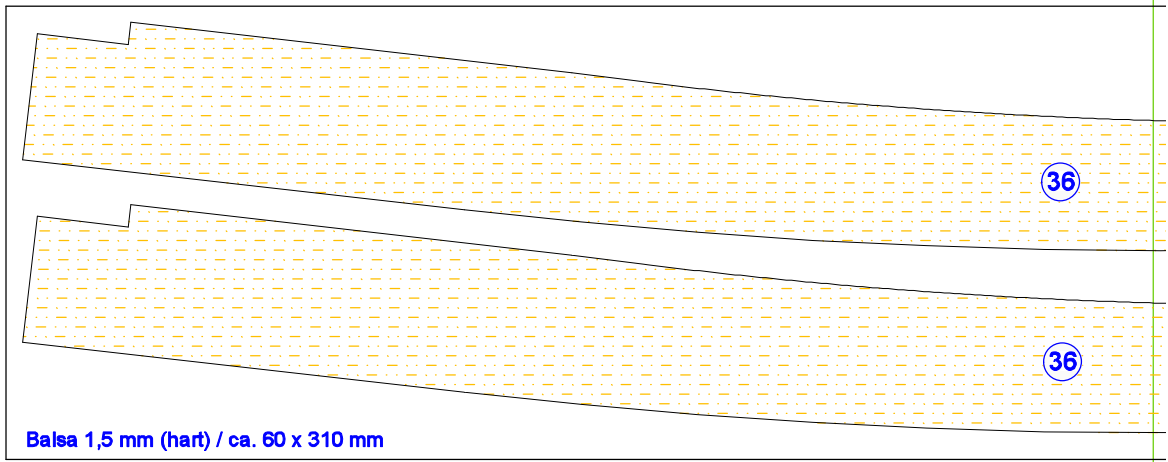
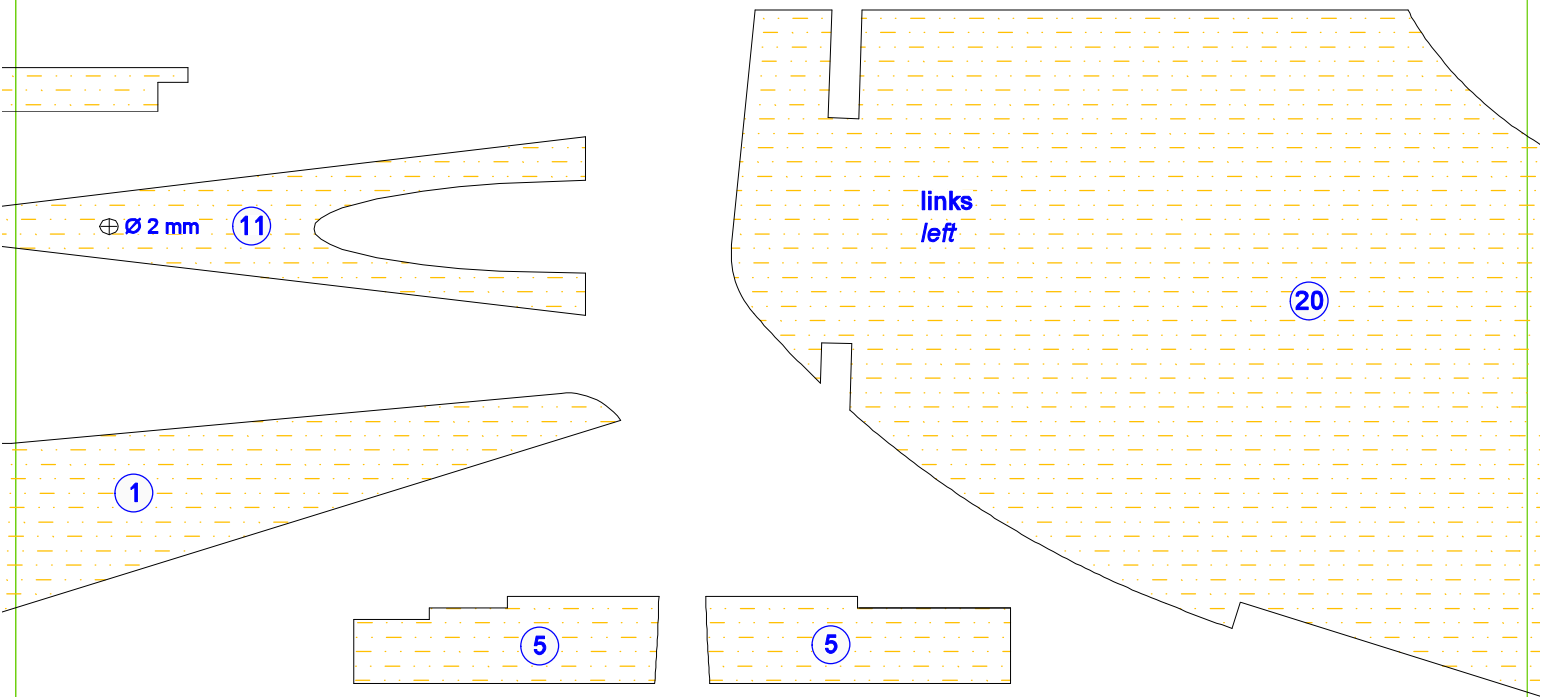
Each part has a number that corresponds to its construction stage picture. It is best to sort the parts after sawing them out to their matching page of the plan.

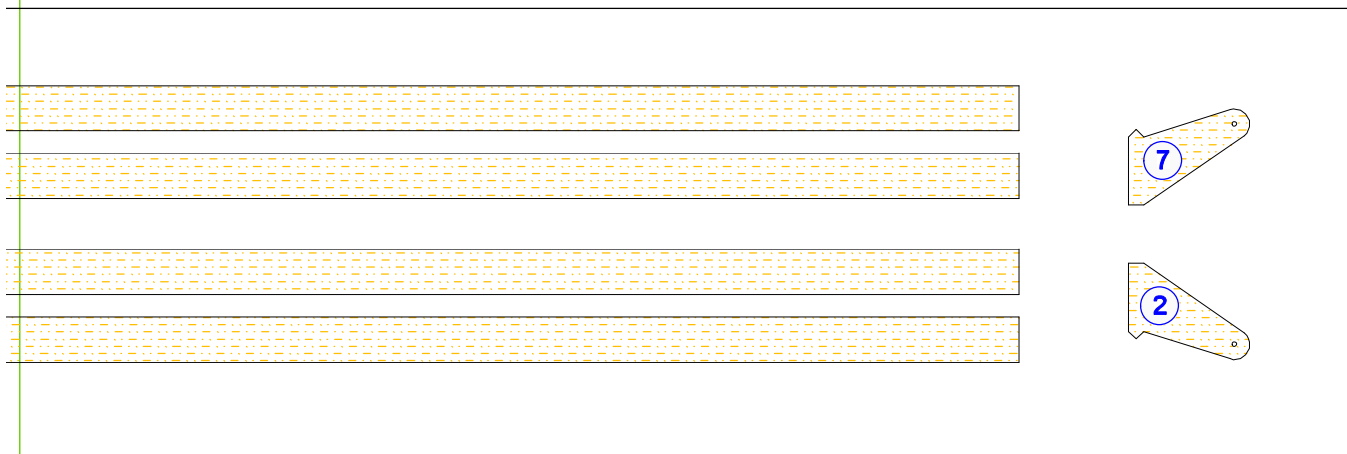
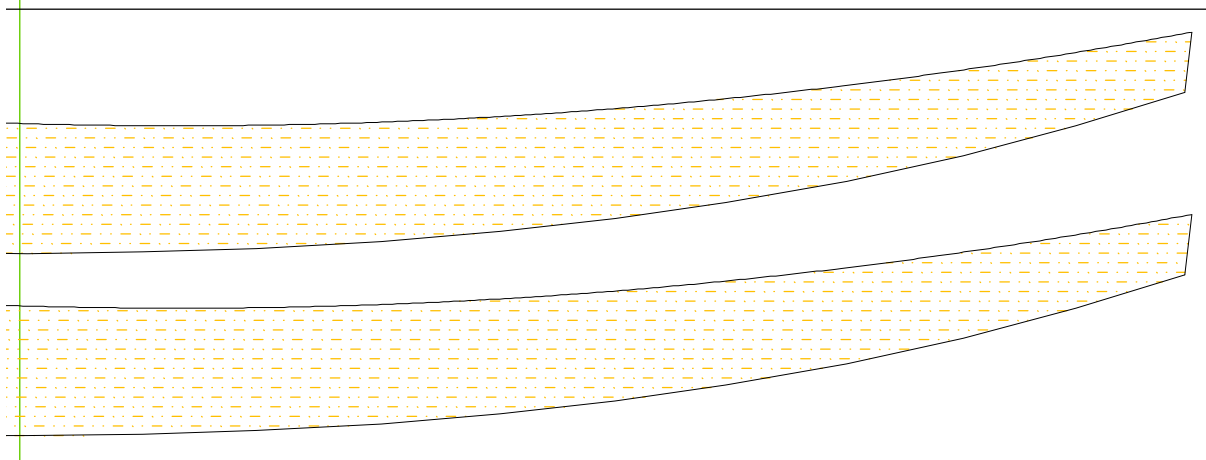
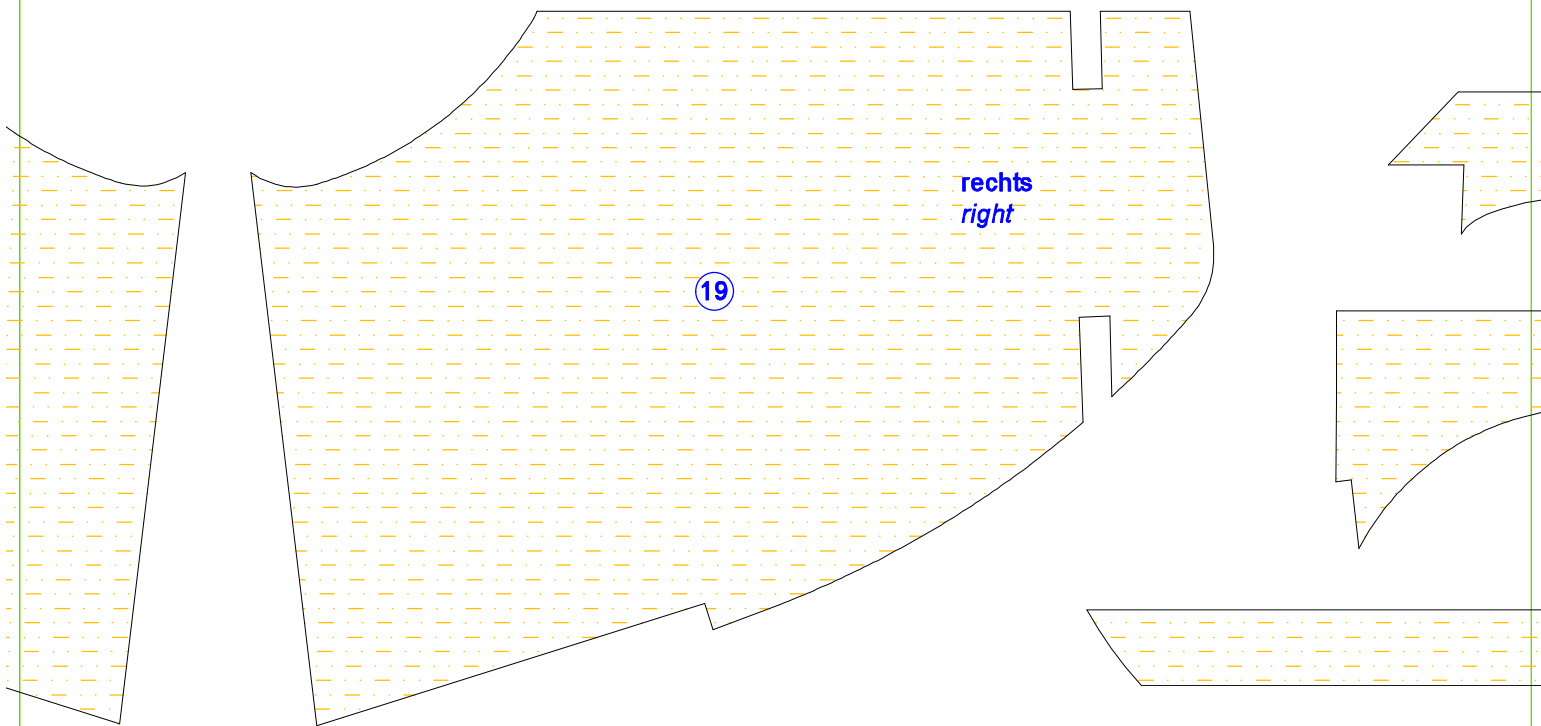


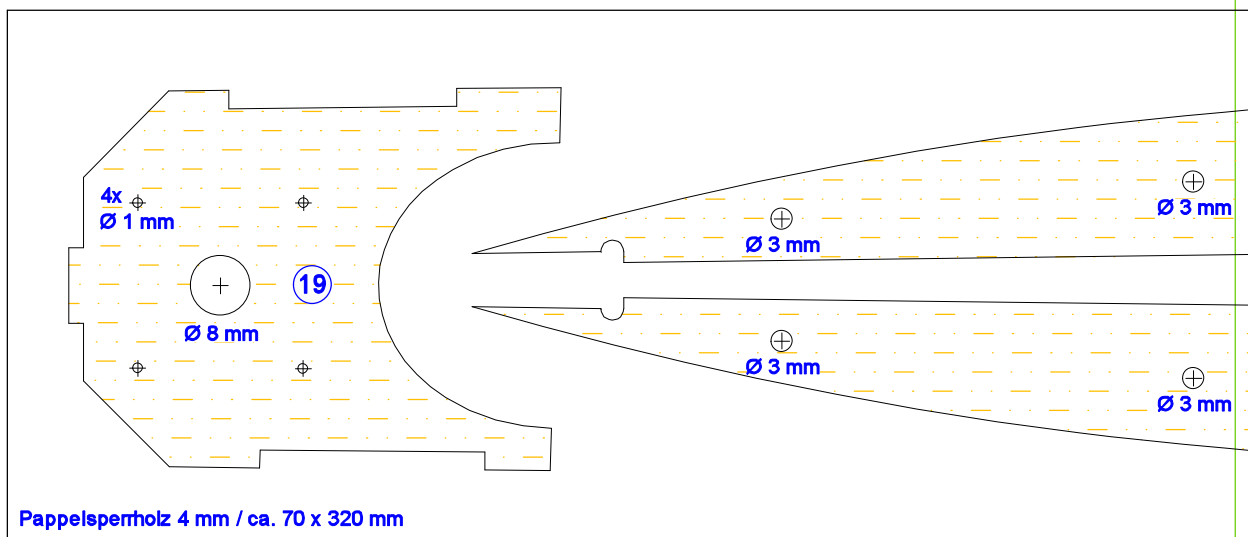
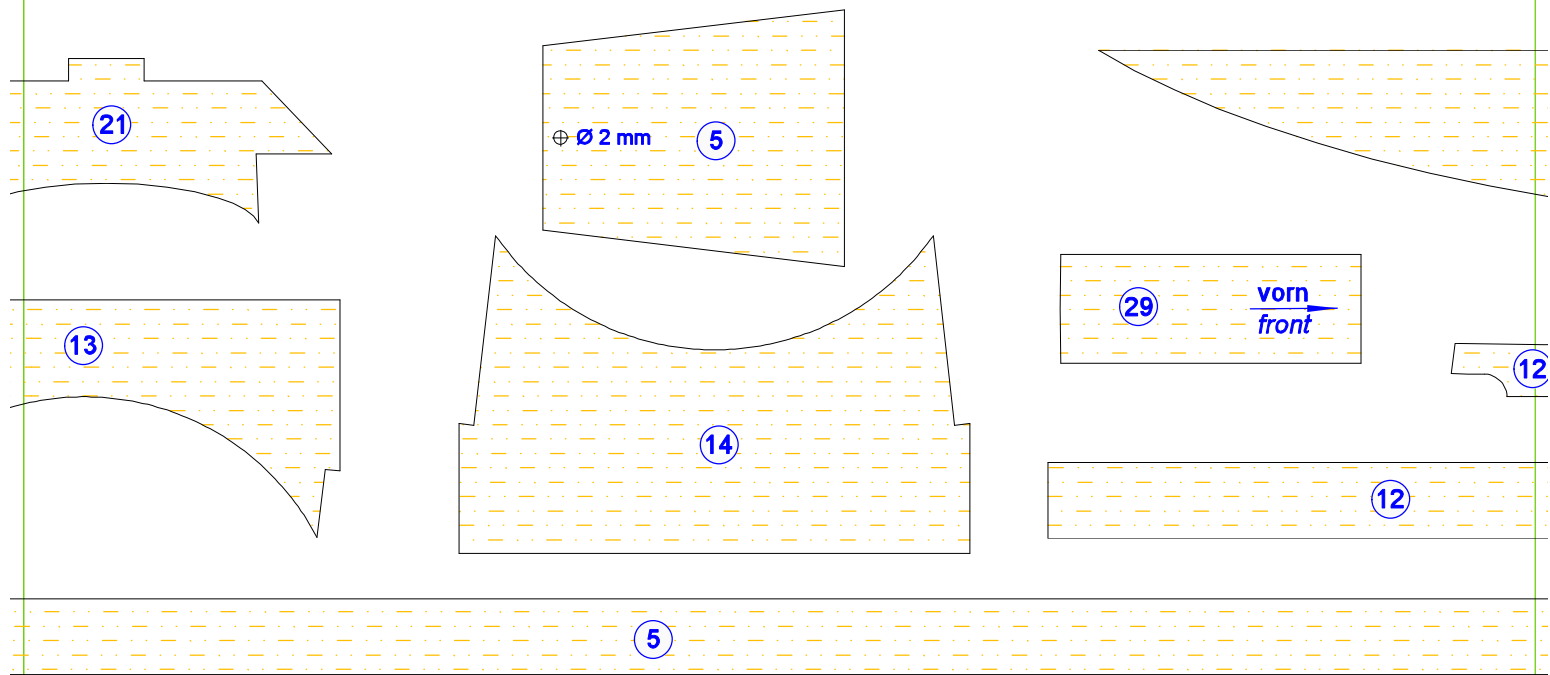
Balsa 2 mm (mittel / ca. 20 g pro Brettchen)



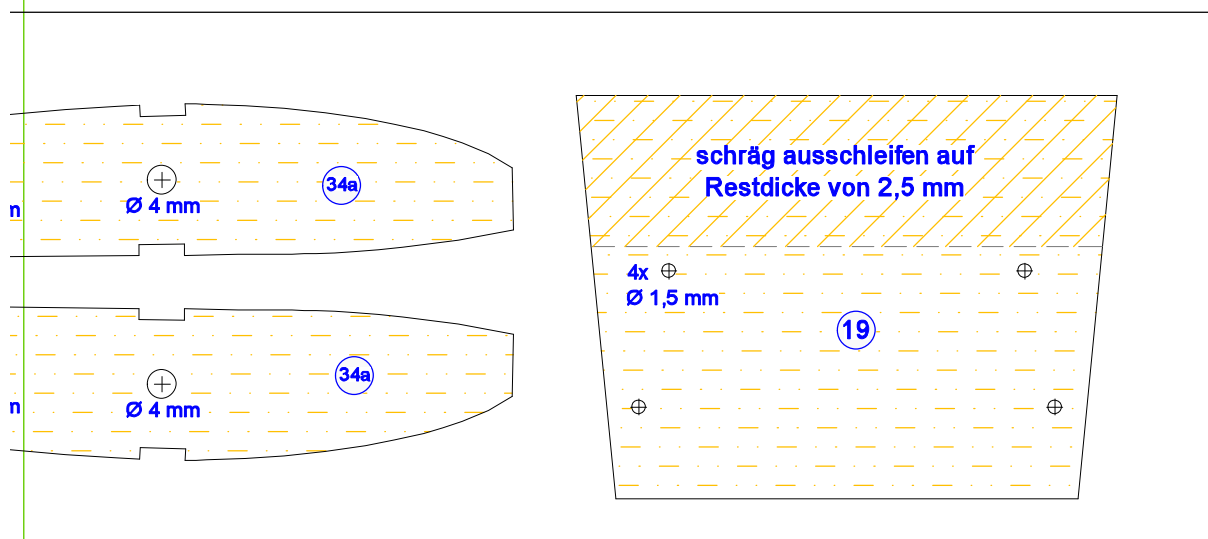
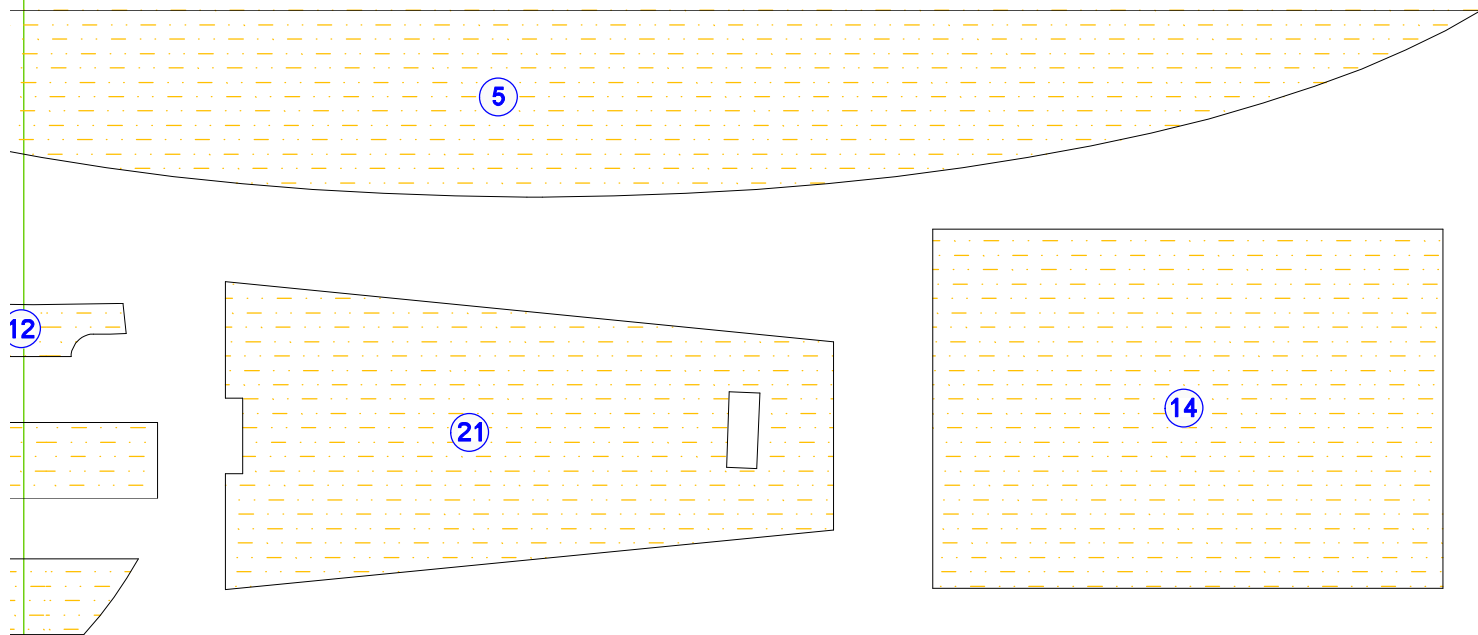






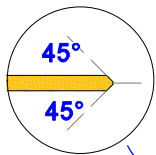
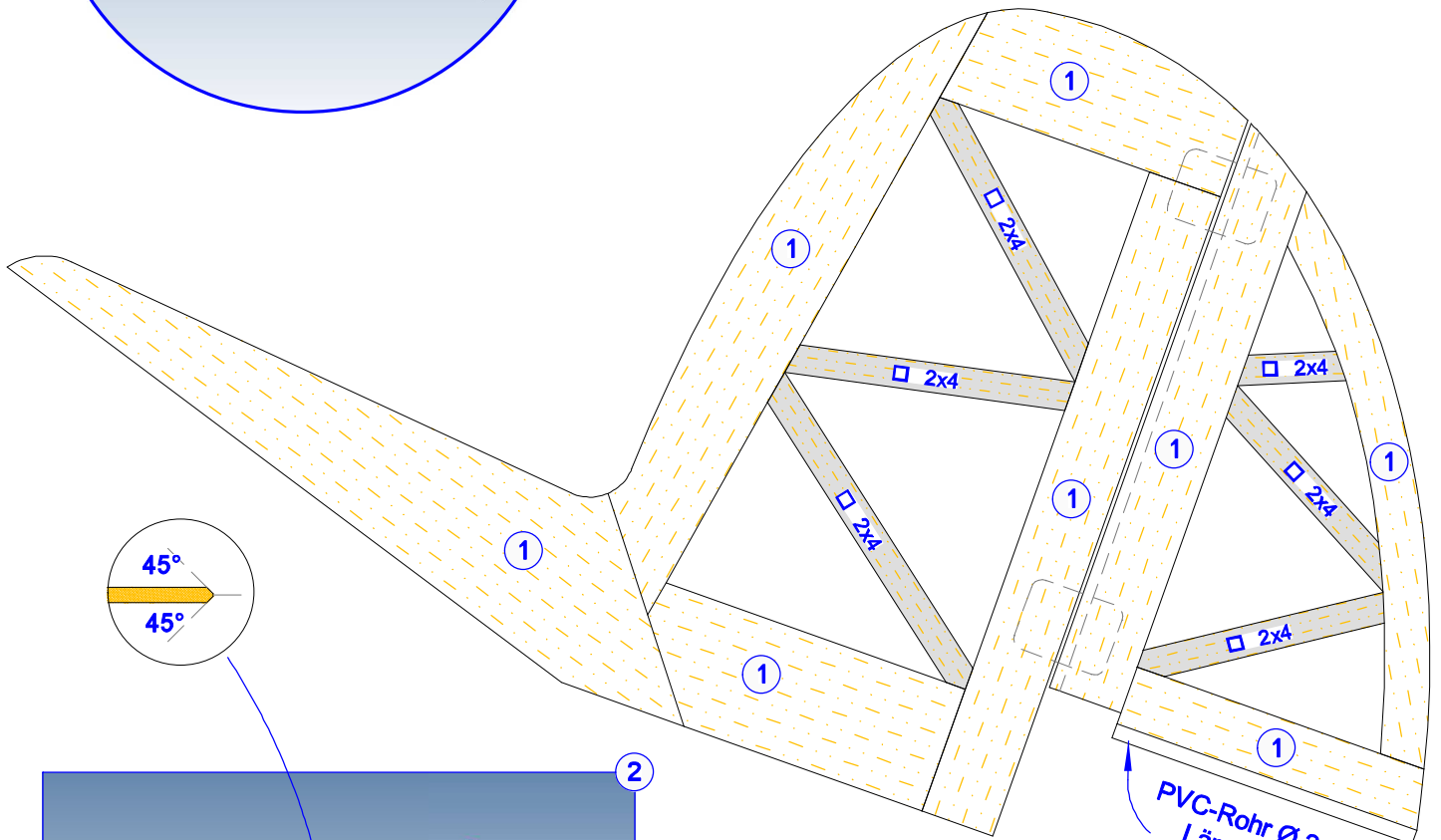
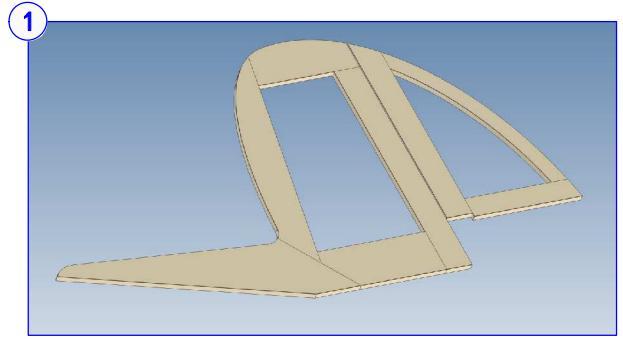
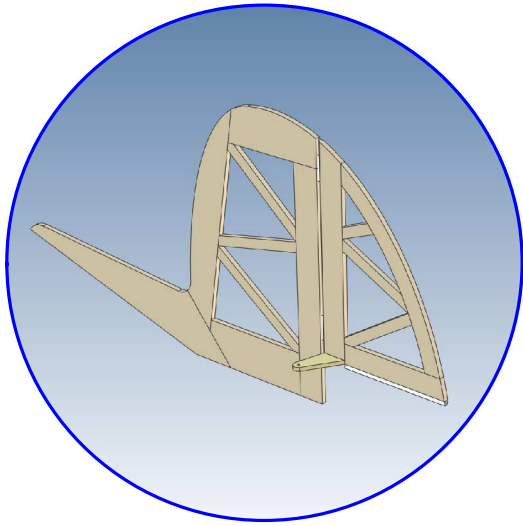


Pappelsperholz 4 mm / ca. 70 x 320 mm

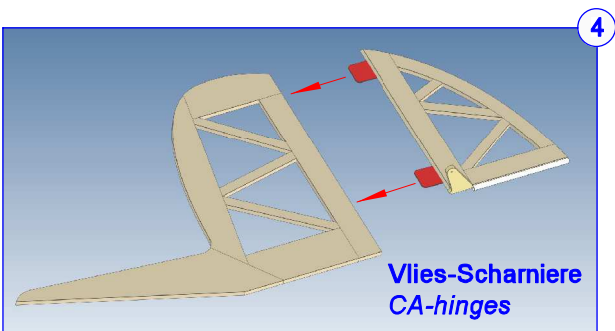
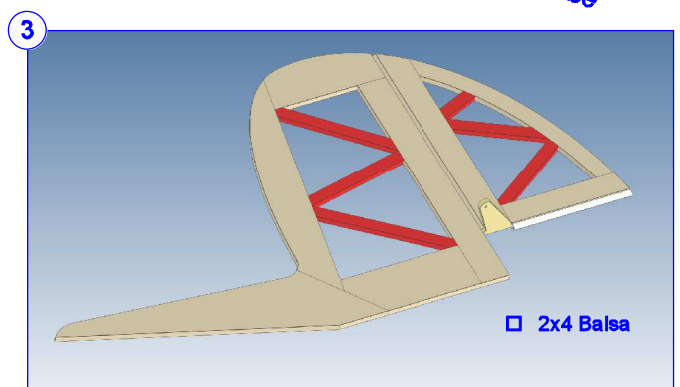
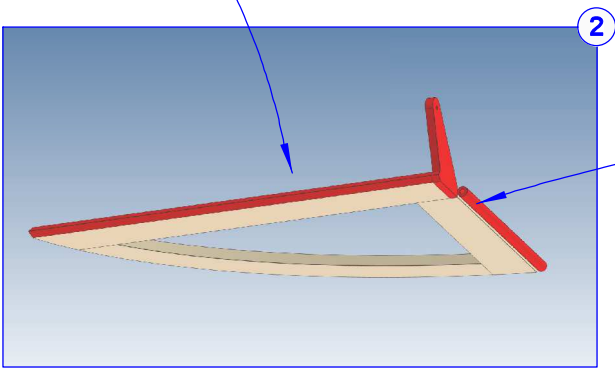


Setzen Sie die vier Bohrungen in Bauteil (19) erst **nach** dem Biegen des Fahrwerksdrahtes (S. 30/31), damit Sie sie genau in die Eckpunkte des Drahtes bohren können.

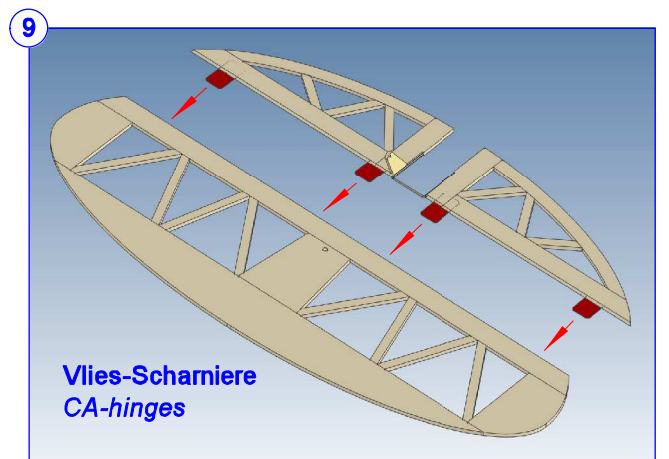
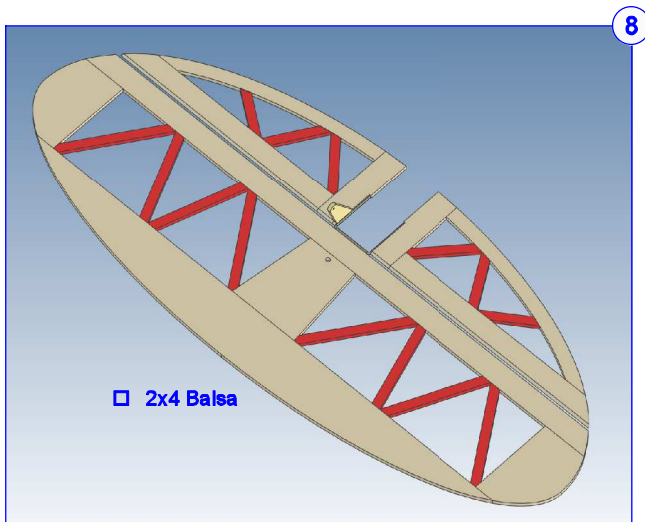
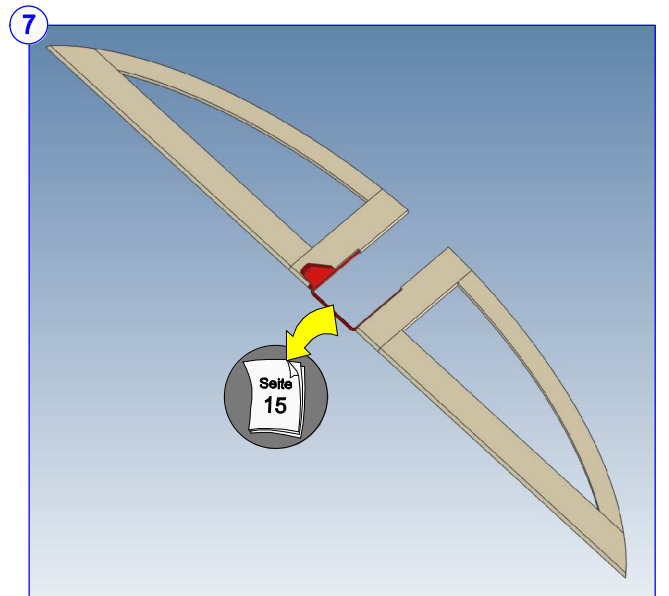
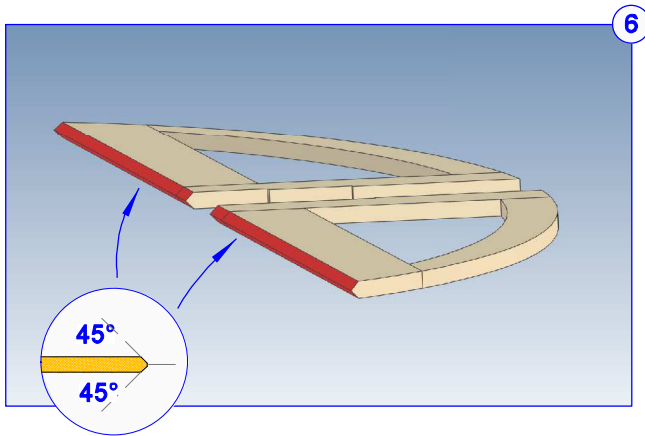
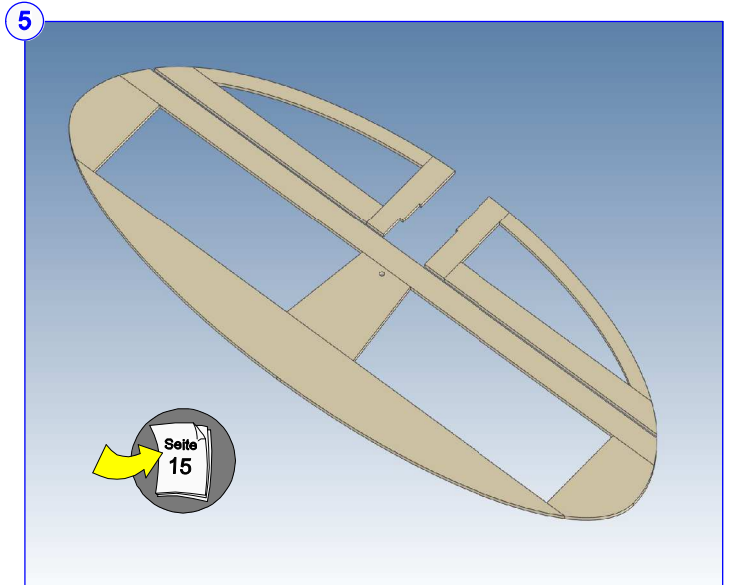
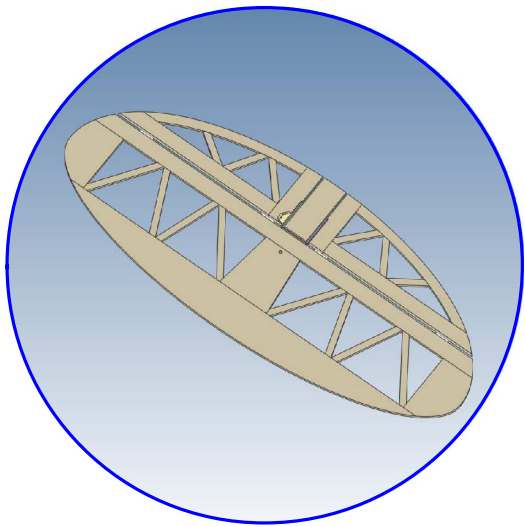
*Place the four holes in part (19) **after** you have bent the gear wire (page 30-31) so that you can drill them exactly into the corner points of the wire.*

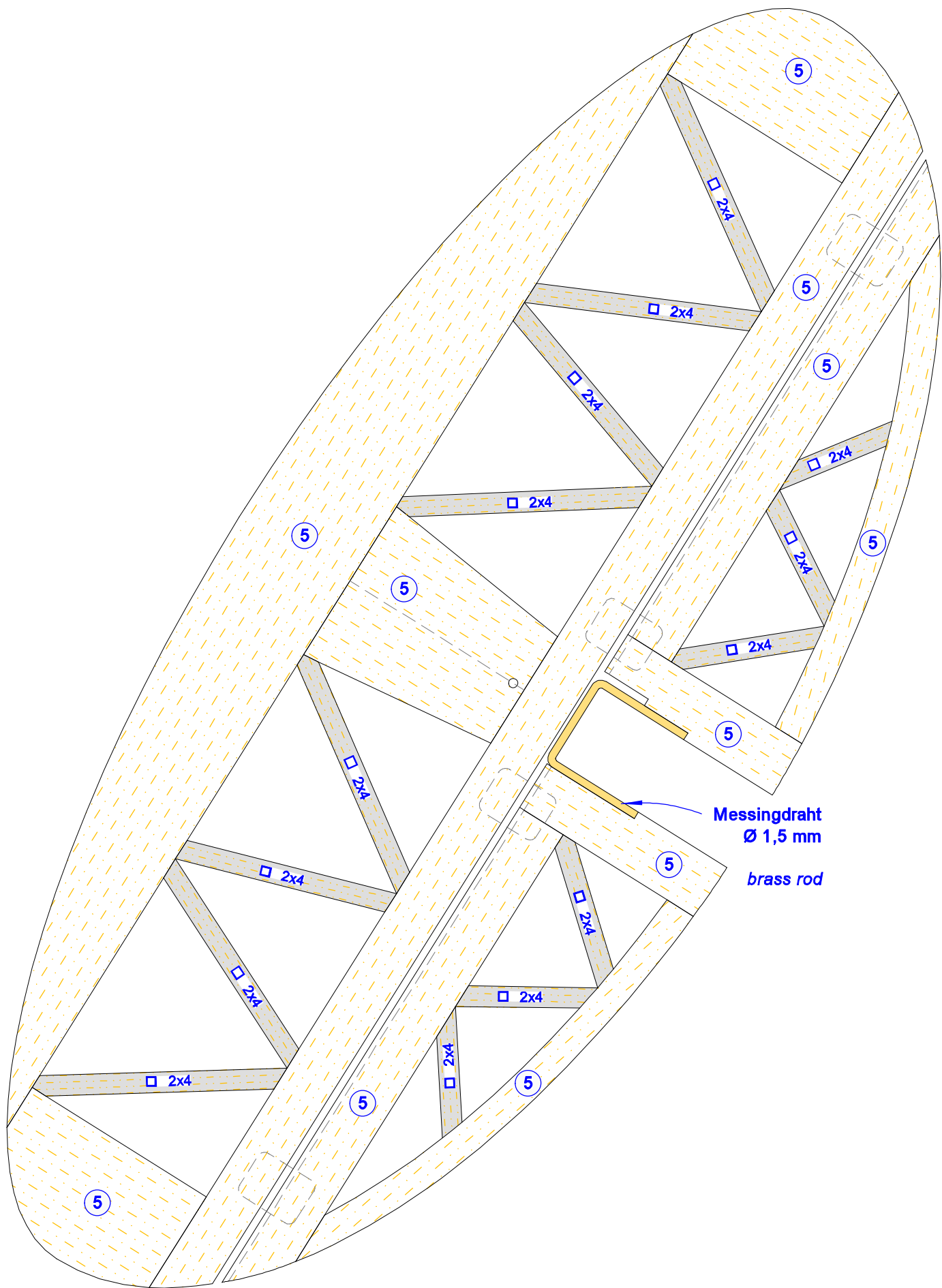


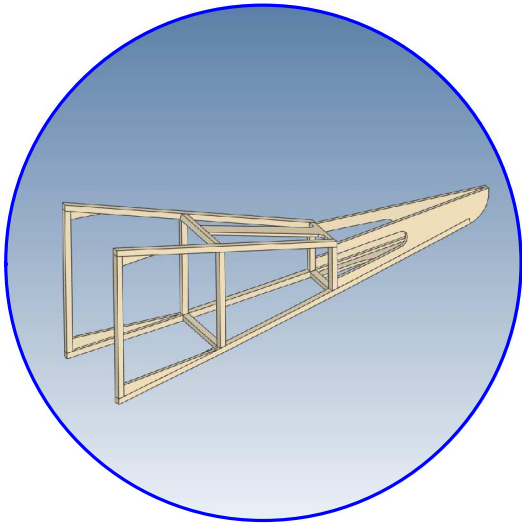
PVC-Rohr Ø 2 mm /  
Länge 42 mm /  
(innen-Ø 1 mm)  
PVC-tube



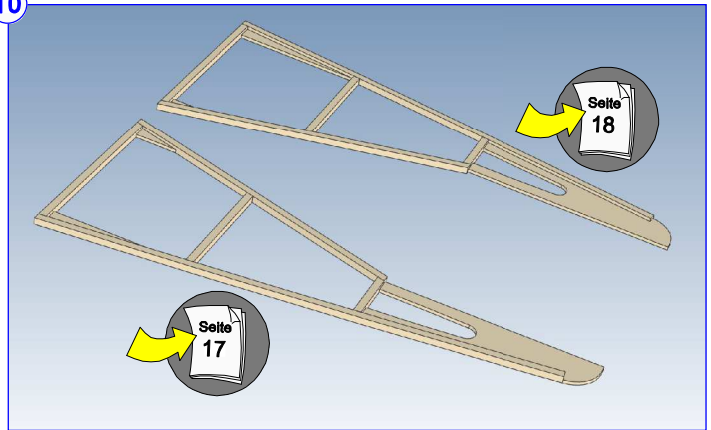
Vlies-Scharniere  
CA-hinges



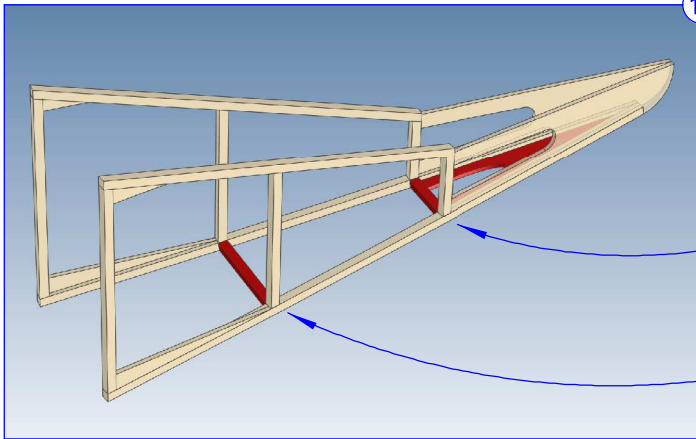




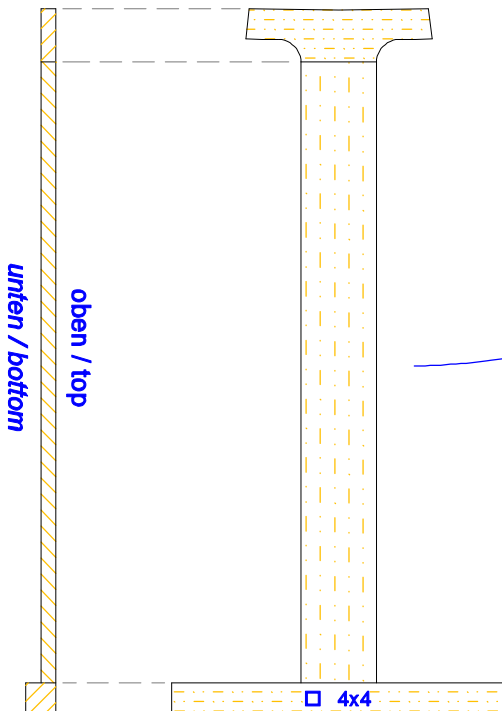
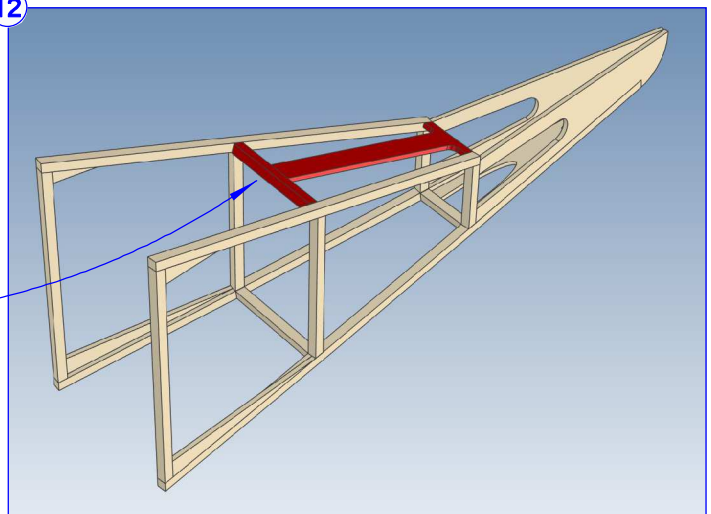
10



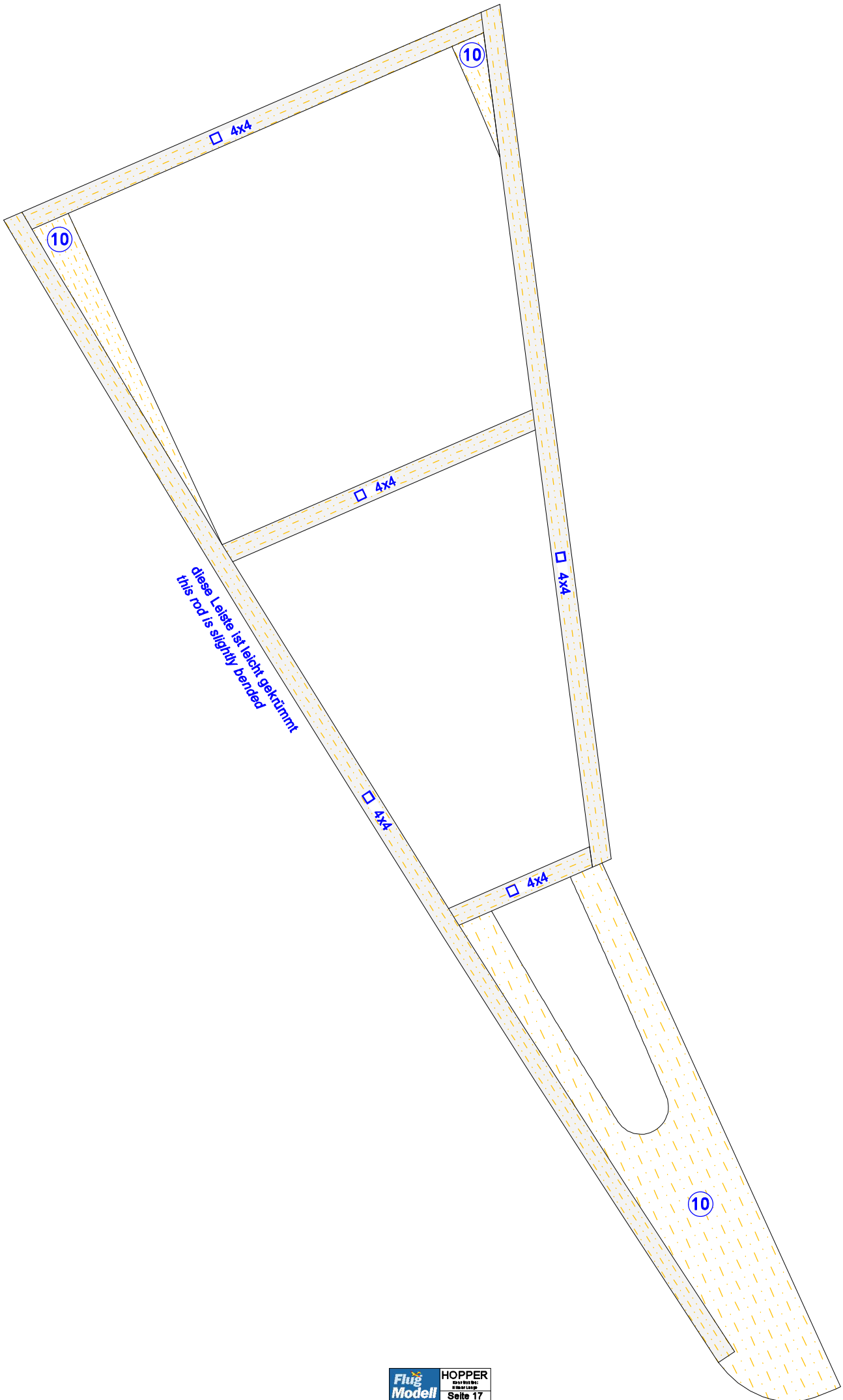
11



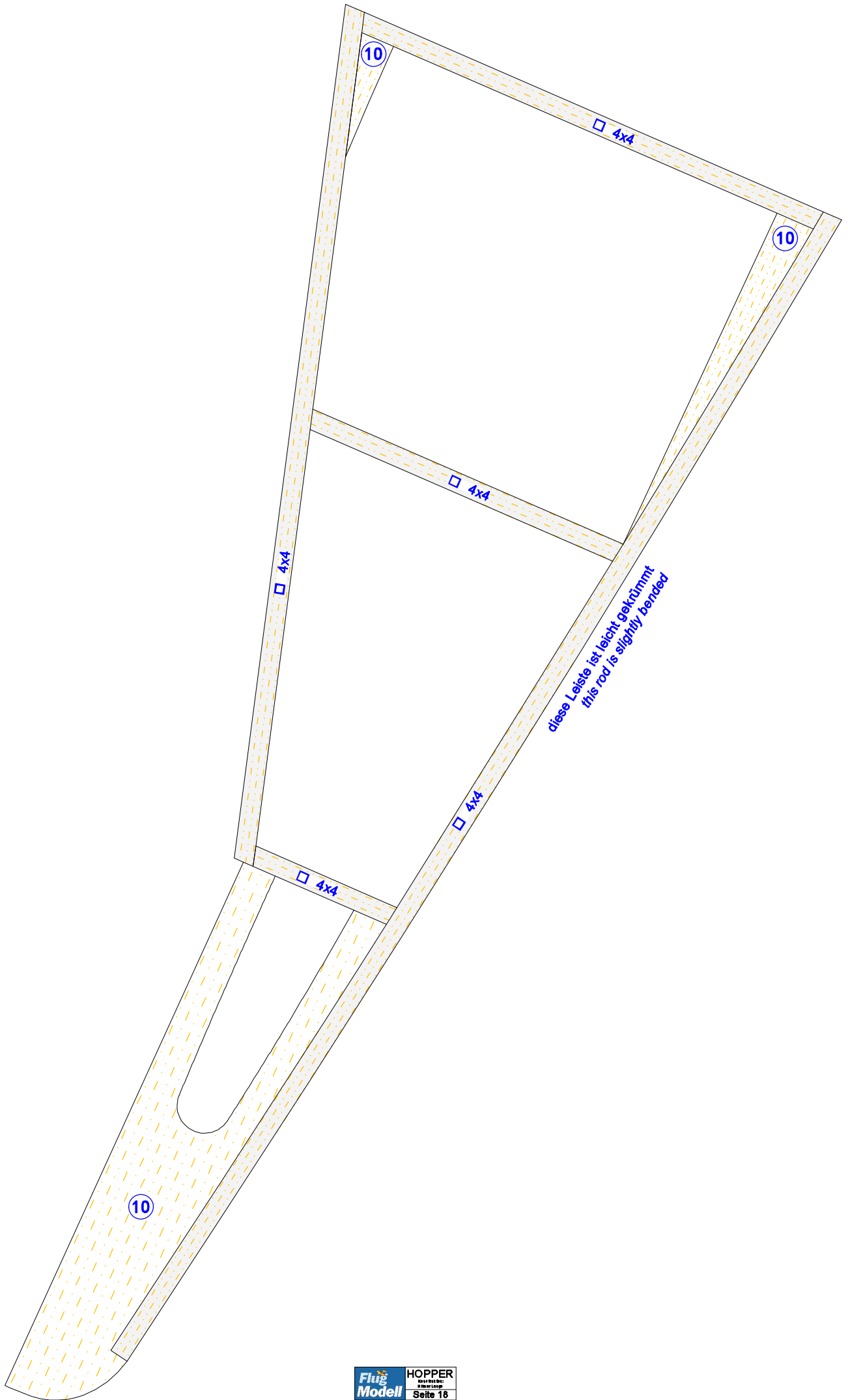
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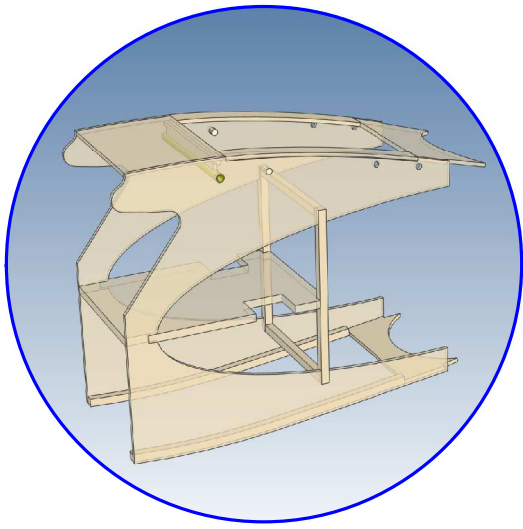




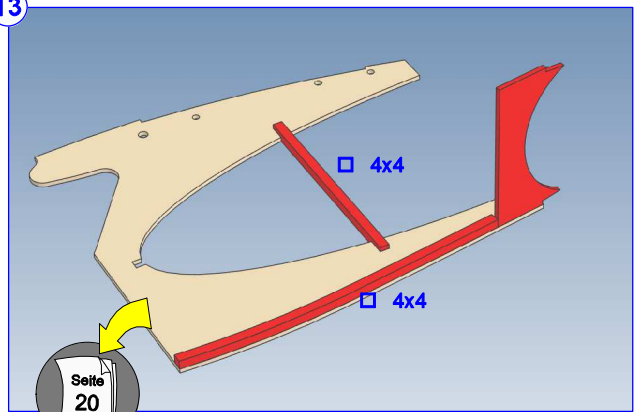


diese Leiste ist leicht gekrümmt  
this rod is slightly bended

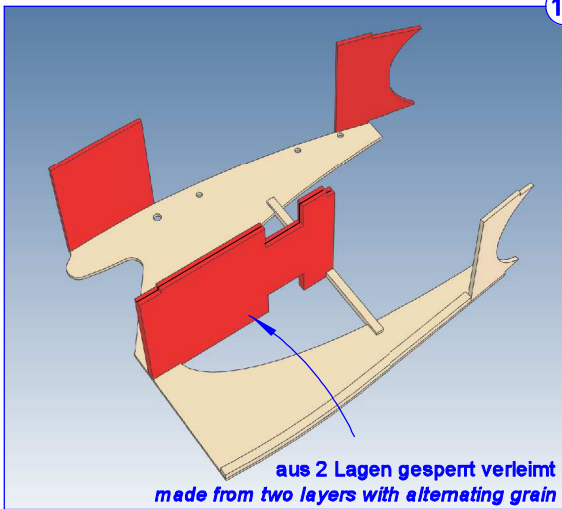




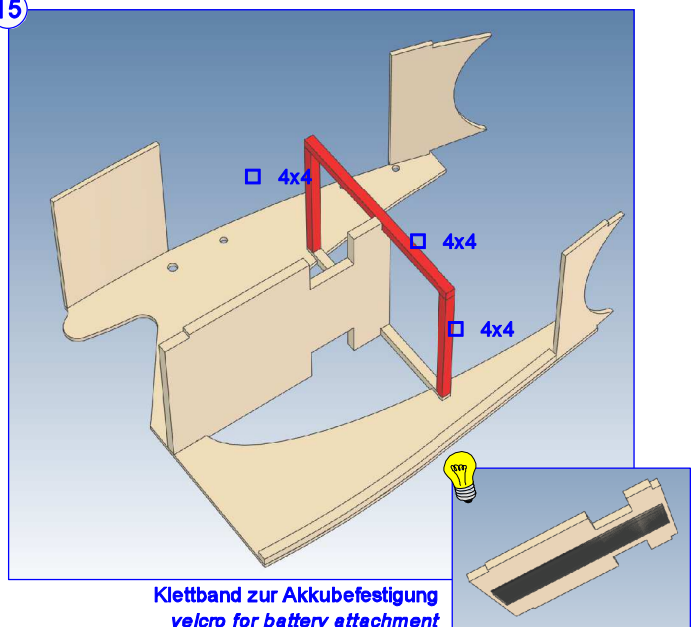
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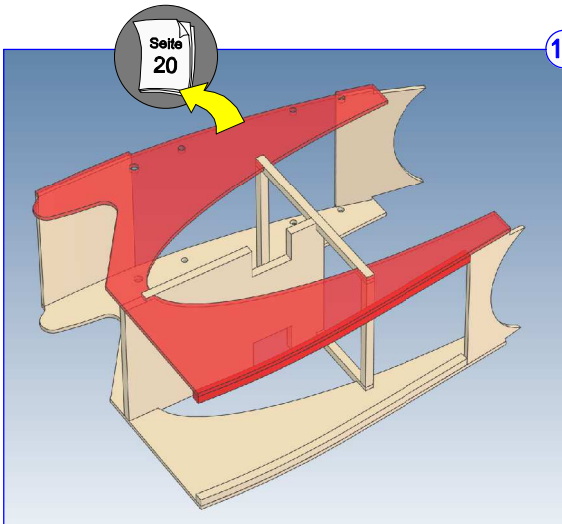
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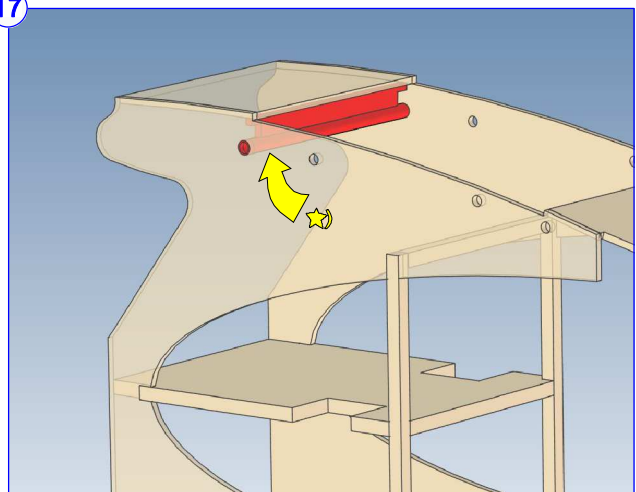
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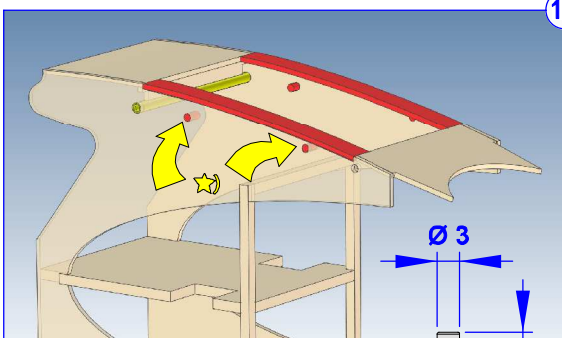
16



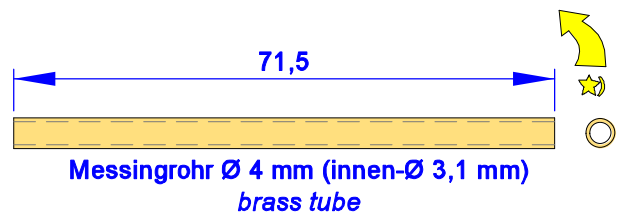
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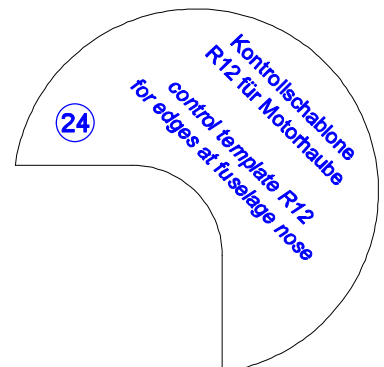
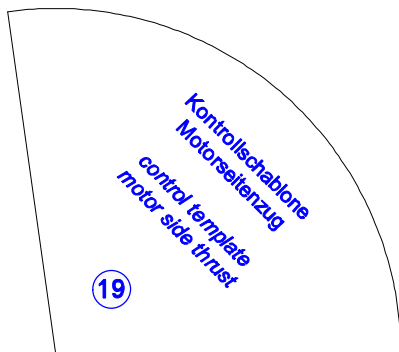
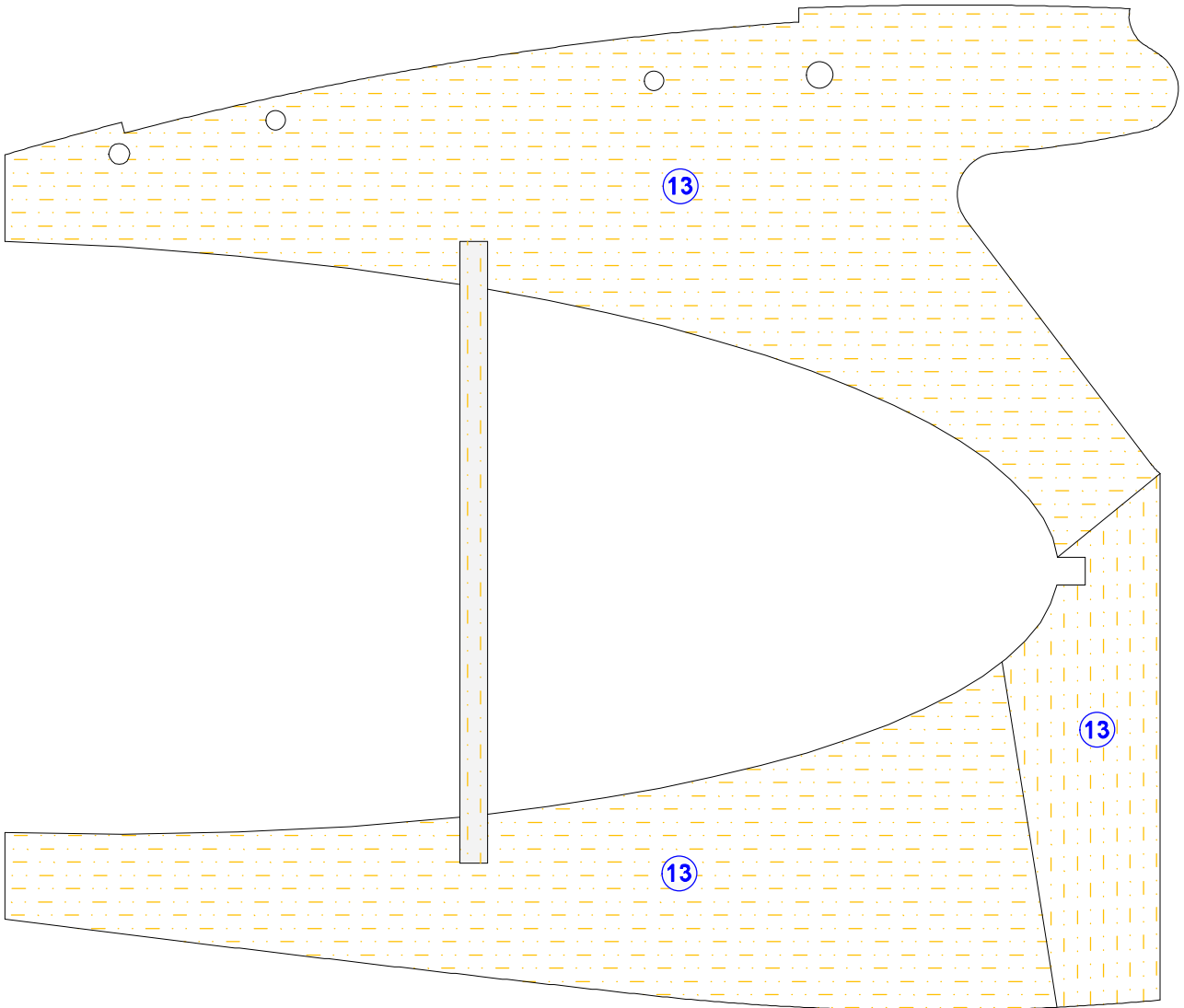
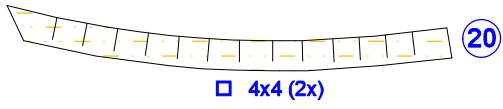
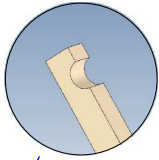


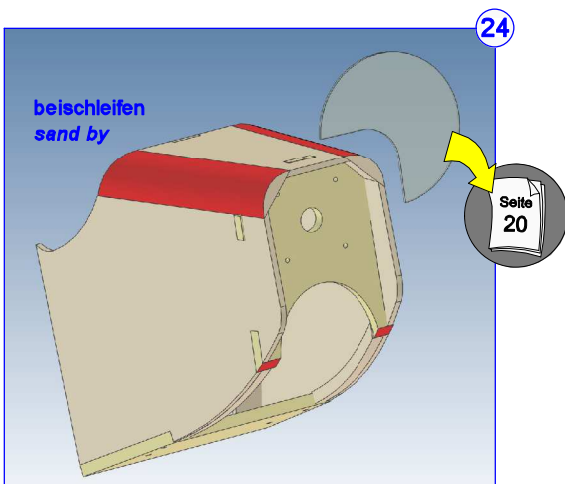
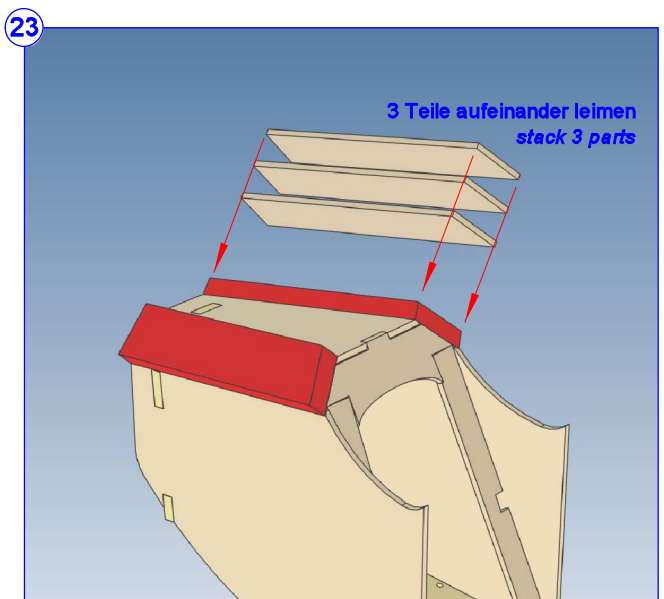
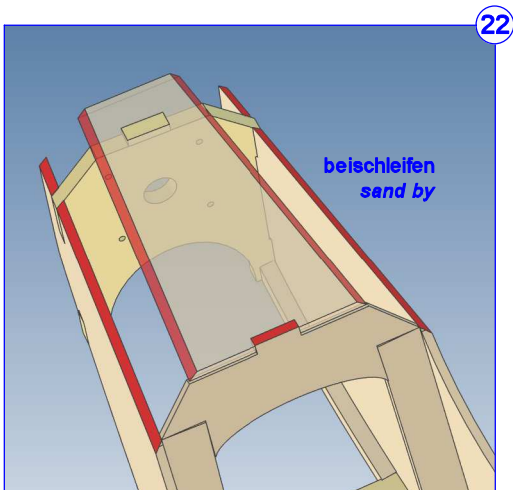
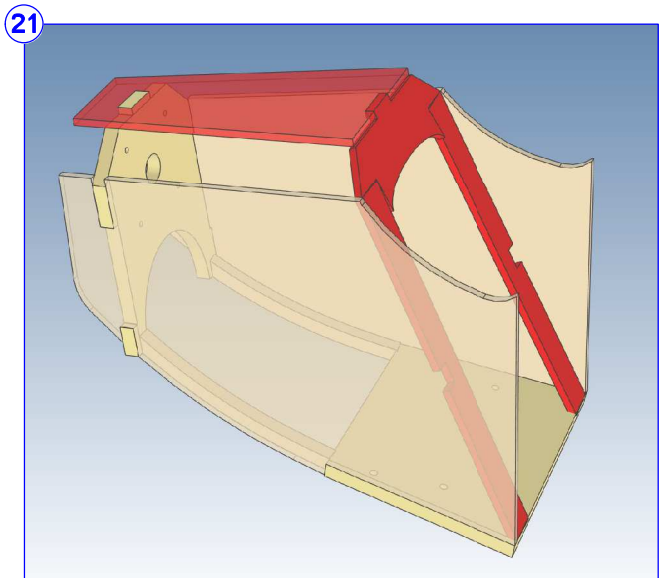
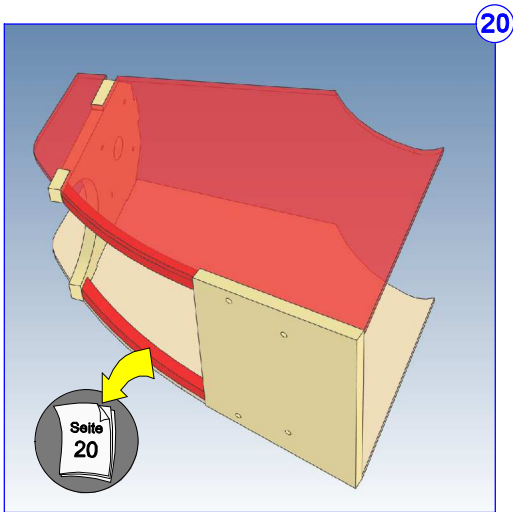
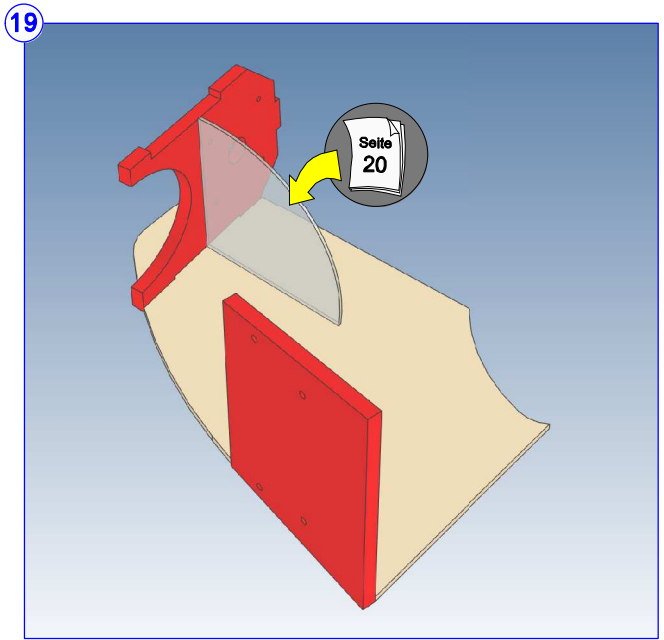
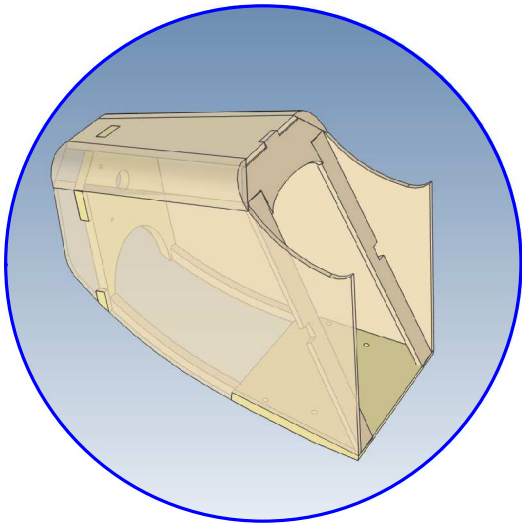
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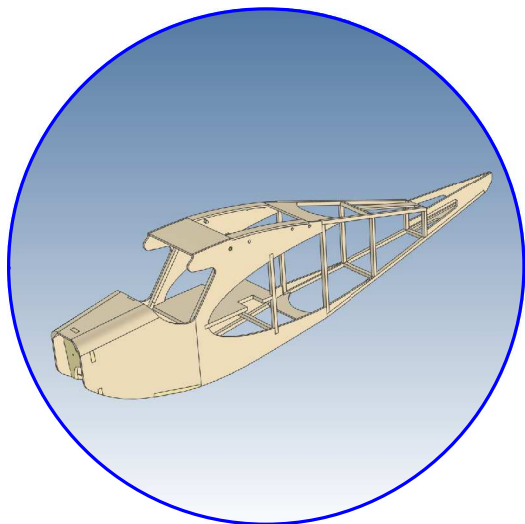


4x Neodym-Magnet

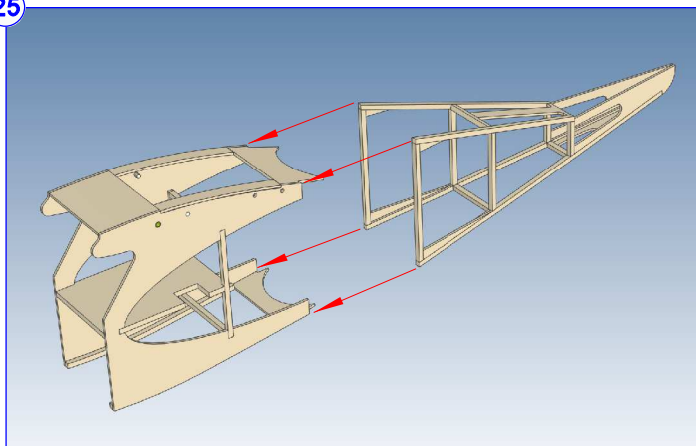




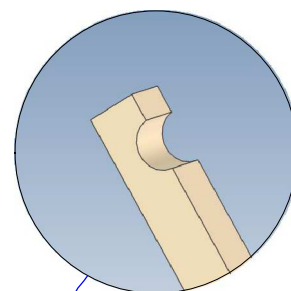
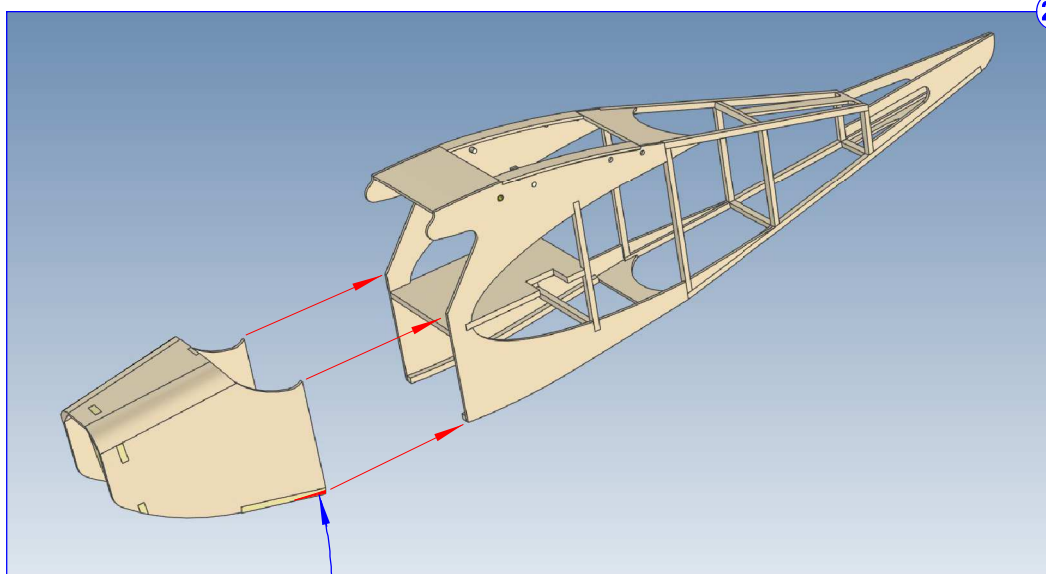




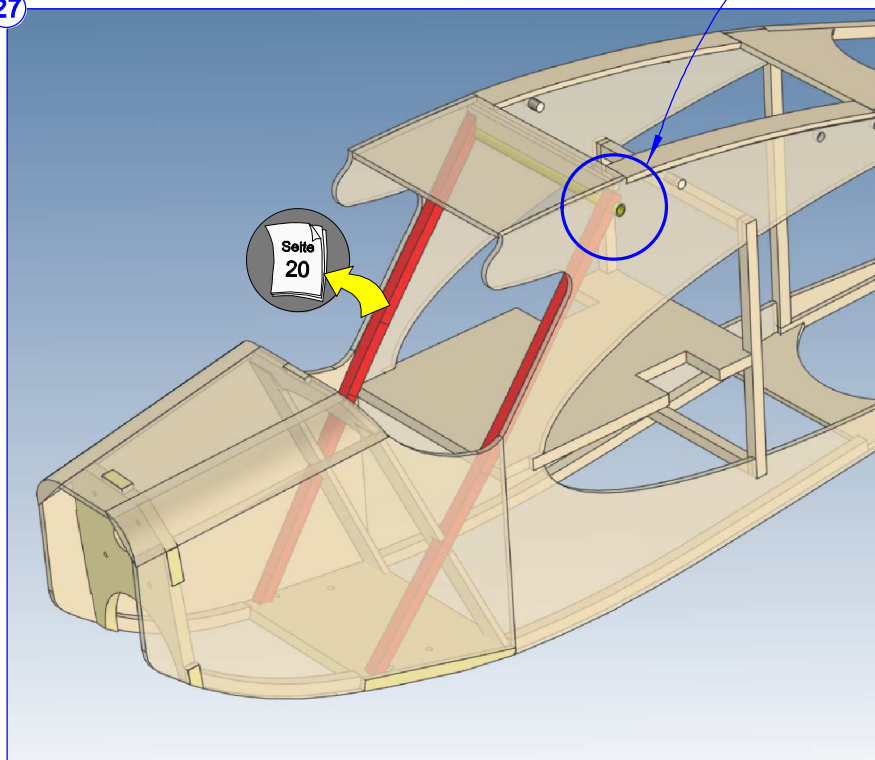
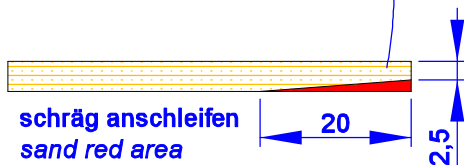
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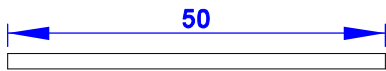
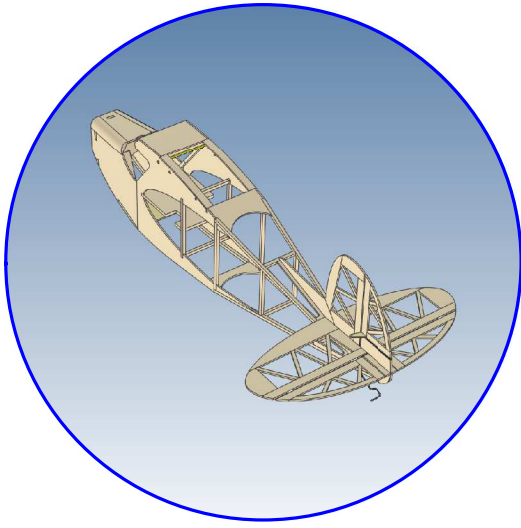


26

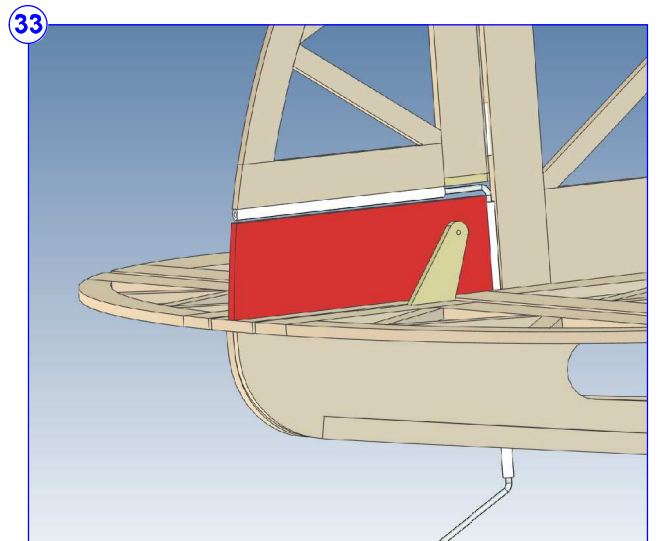
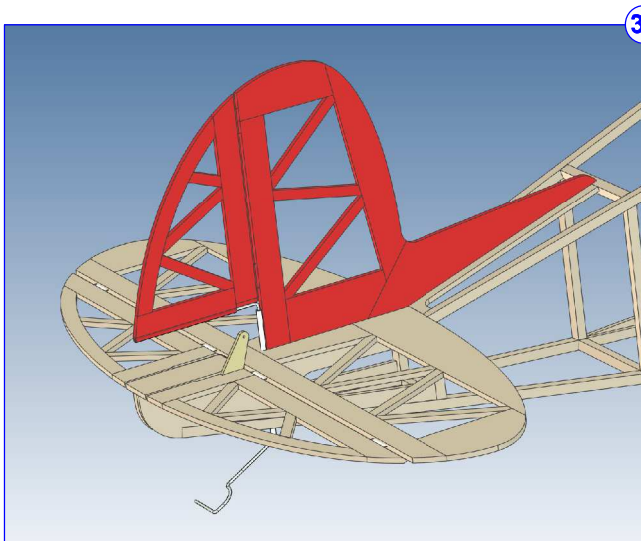
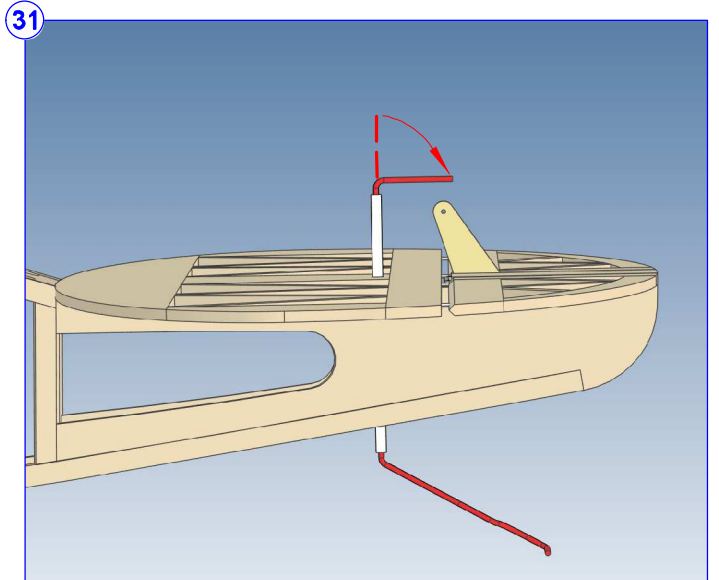
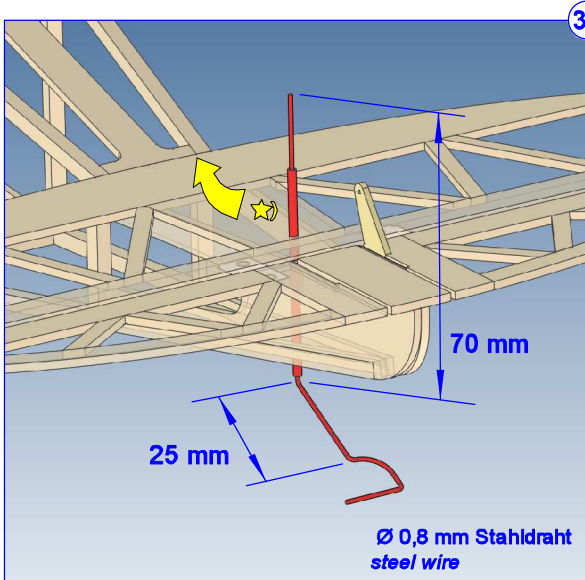
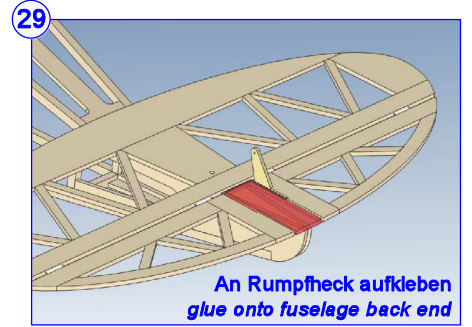
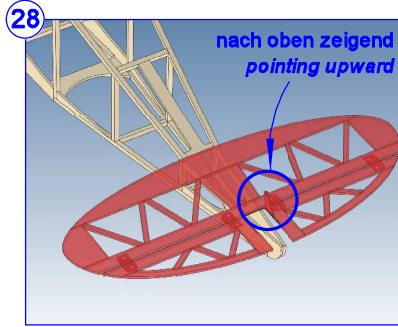


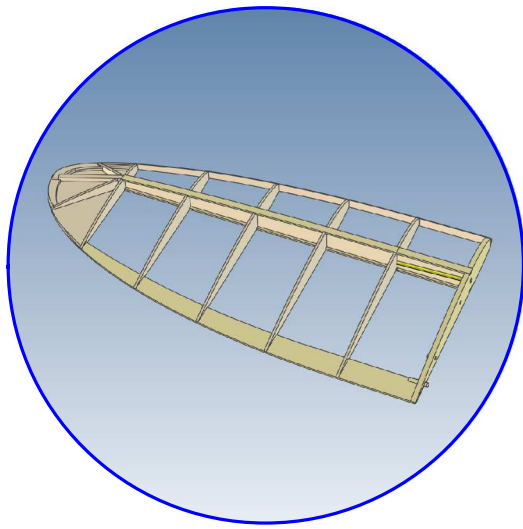
27



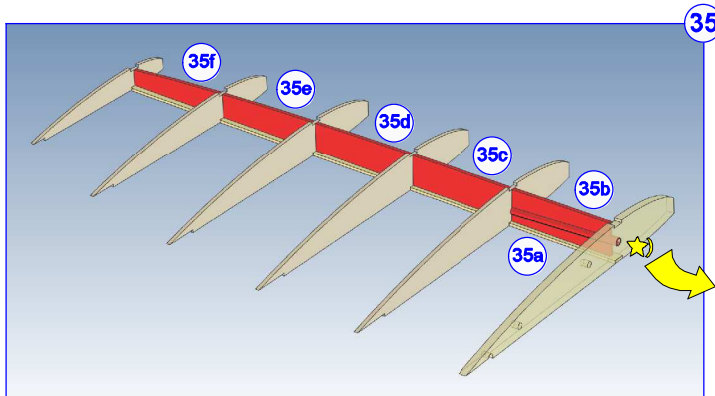
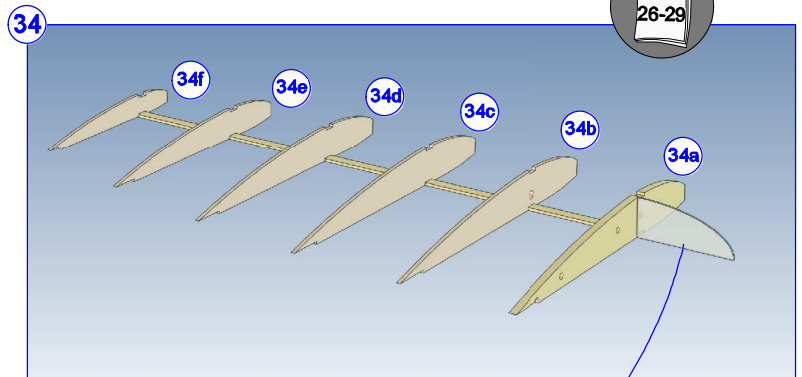


ABS-Rohr Ø 2 mm  
ABS-tube

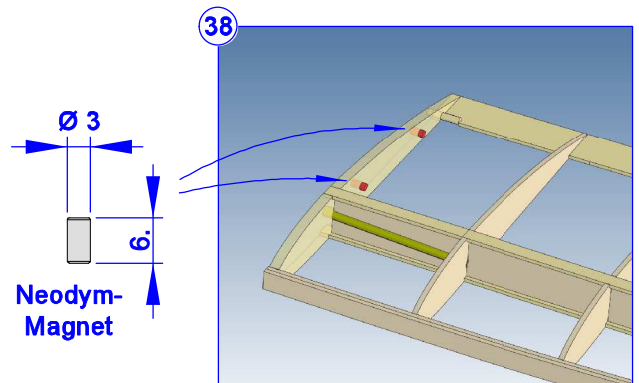
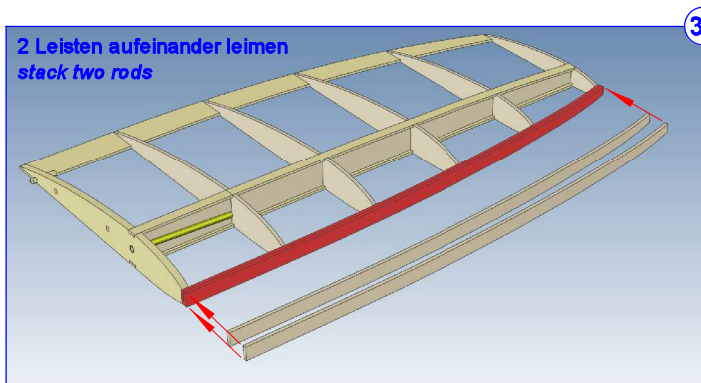
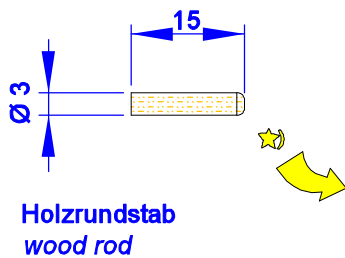
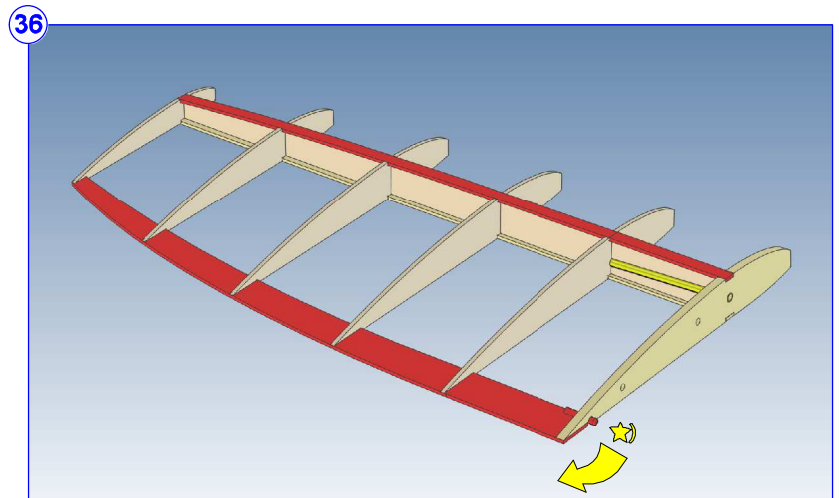
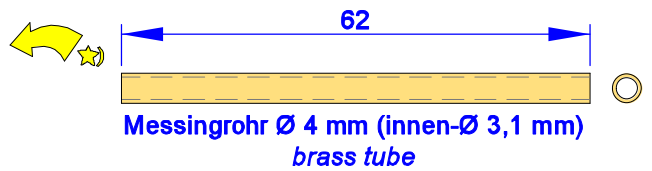




Seiten  
26-29



Kontrollschablone 3°  
für Wurzelrippe  
angle template for root rib

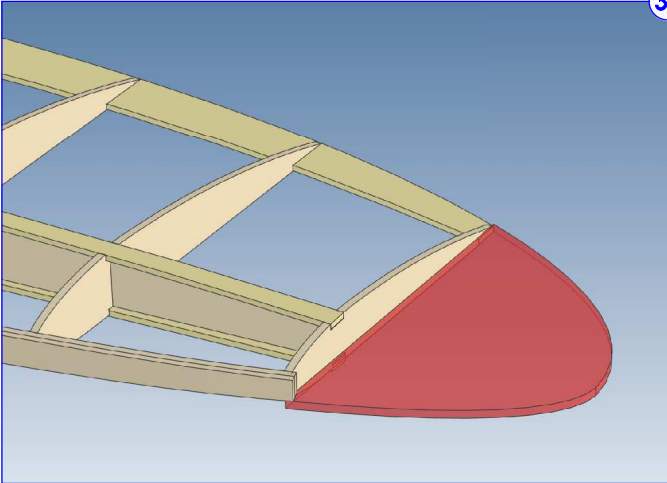


Polarität passend zum Rumpf  
beachten!

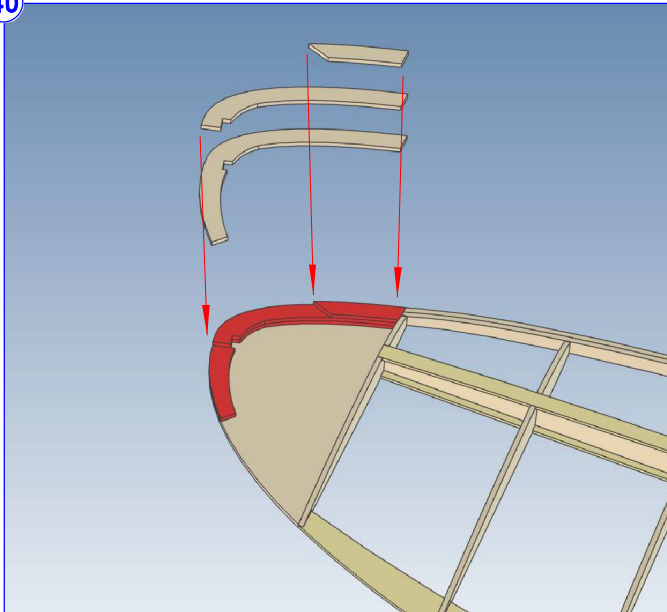
polarity must match the fuselage  
magnets!



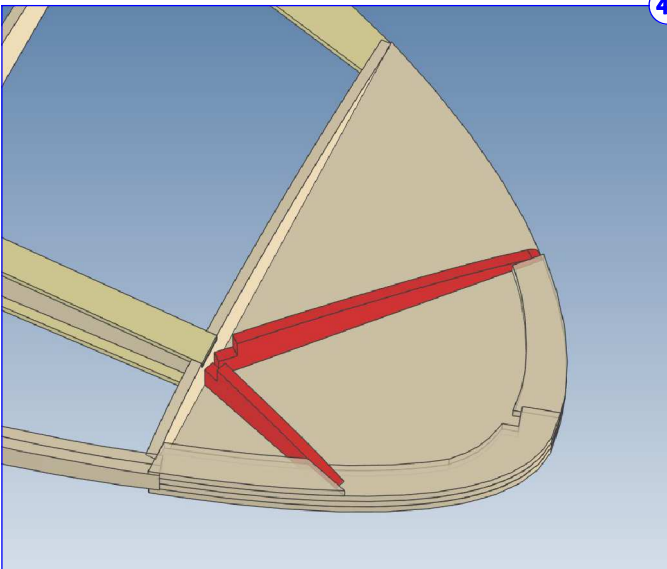
39



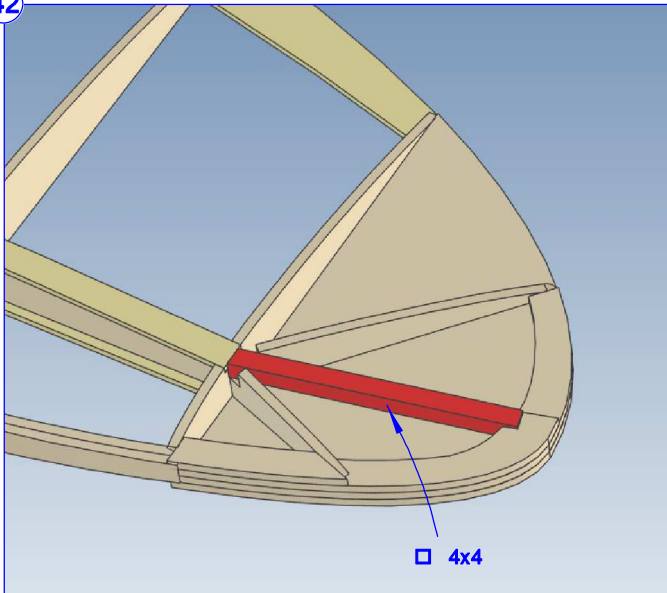
40



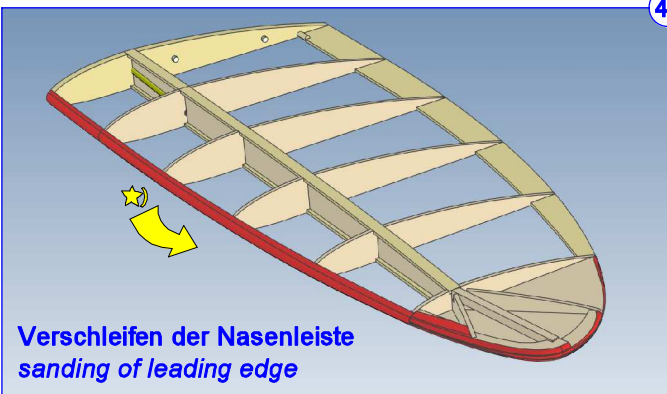
41



42



43



Verschleifen der Nasenleiste  
sanding of leading edge

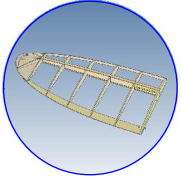


@ Rippe c



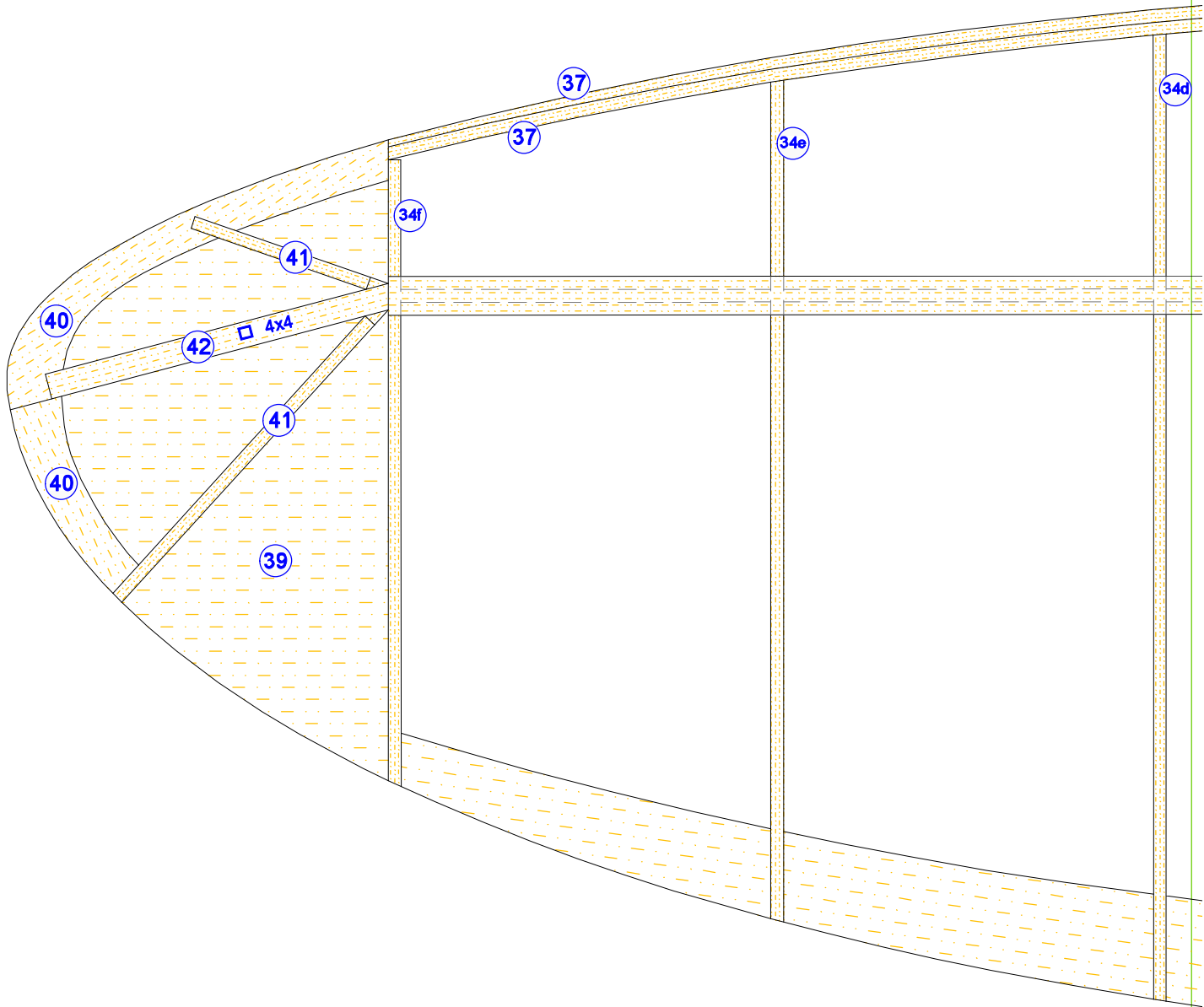
Nasenleisten-  
Kontrollschablone

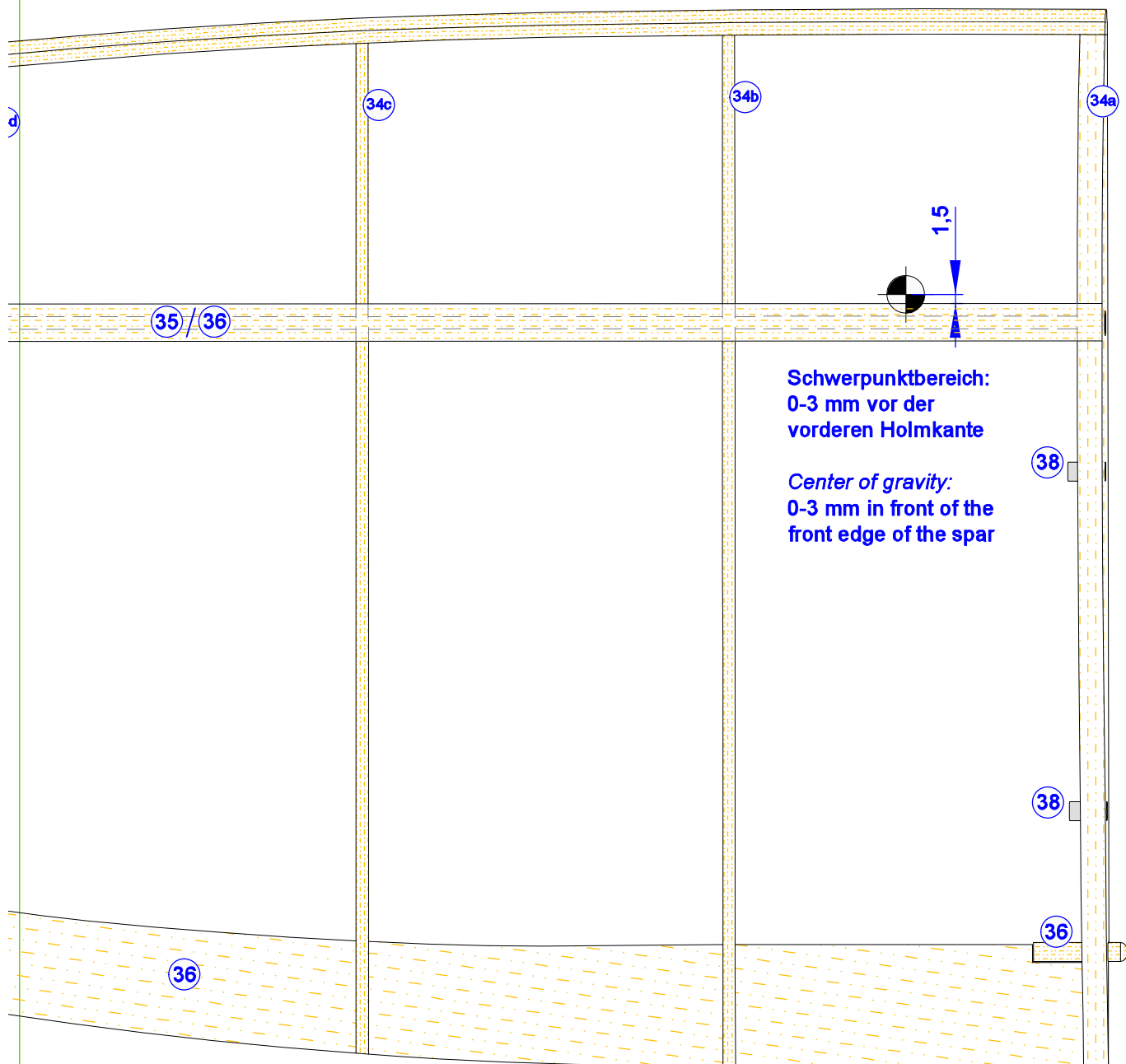
check leading  
edge contour  
with template

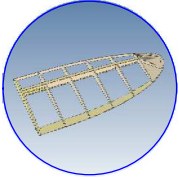


## Hilfsdarstellung für den Bau der linken Flügelhälfte

Control drawing for the left wing assembly

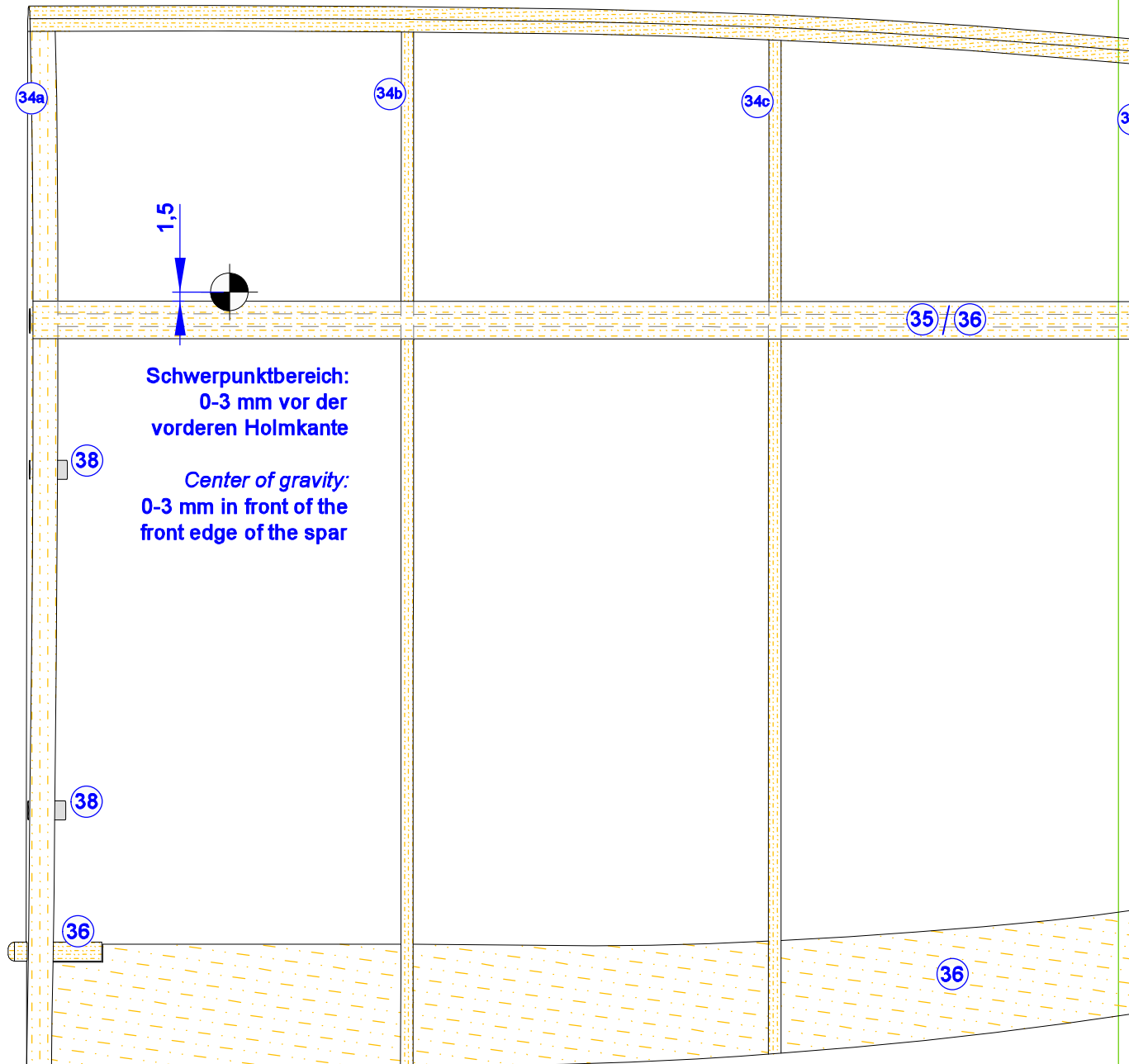


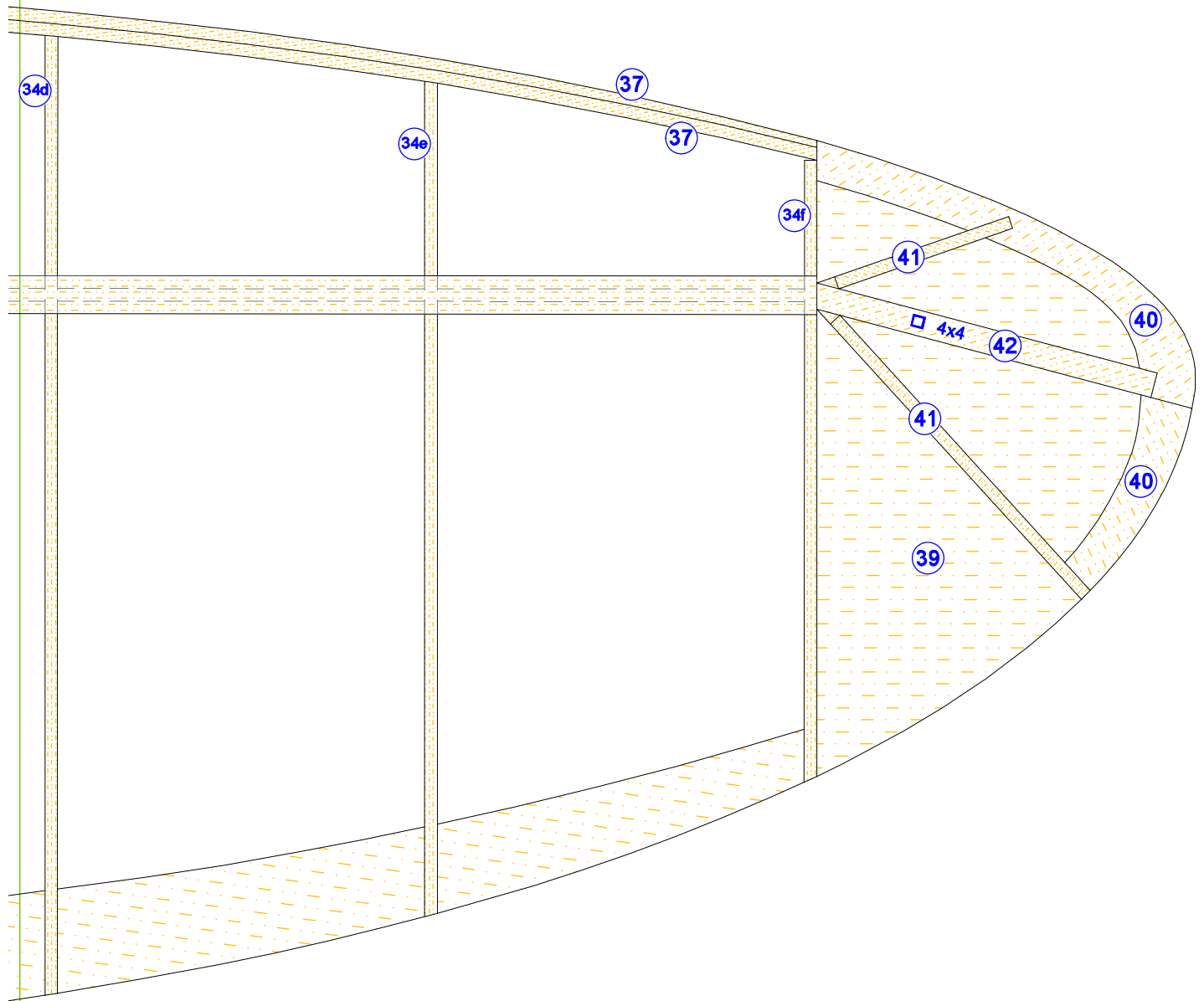


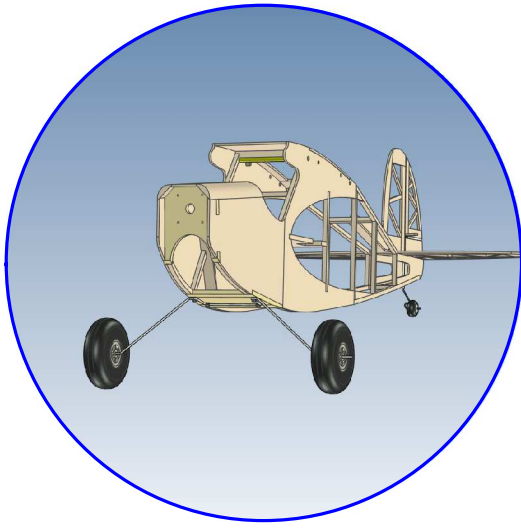


## Hilfsdarstellung für den Bau der rechten Flügelhälfte

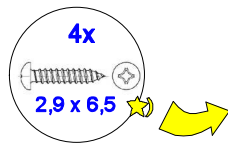
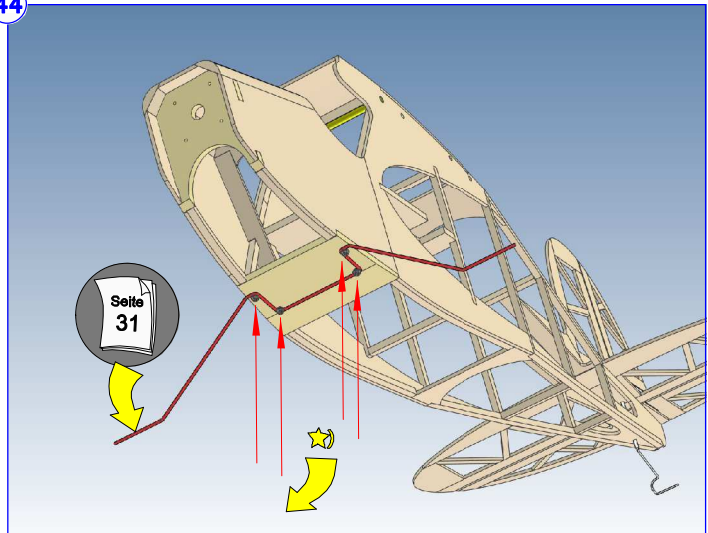
Control drawing for the right wing assembly







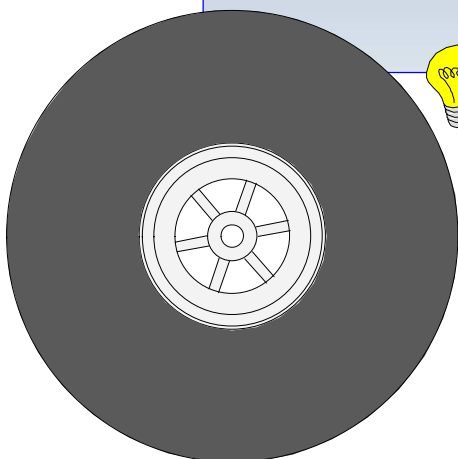
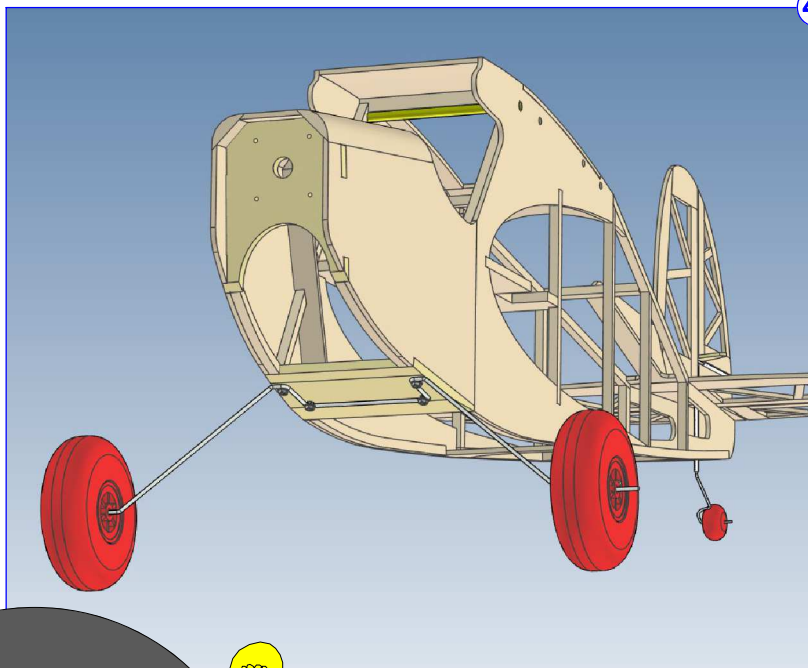
44



Drehen Sie die Schrauben gerade so weit fest, dass sich das Fahrwerk von Hand entnehmen und wieder einsetzen lässt.

*Tighten the screws just enough to hold the gear wire in place. You can now take it off and put it back on without using tools.*

45

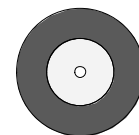


2x Leichttrad 60/20 mm (14g)  
Aero-Naut Art.-Nr.: 735333



Achsdurchmesser  
mit mehreren Lagen  
Schrumpfschlauch  
aufdicken

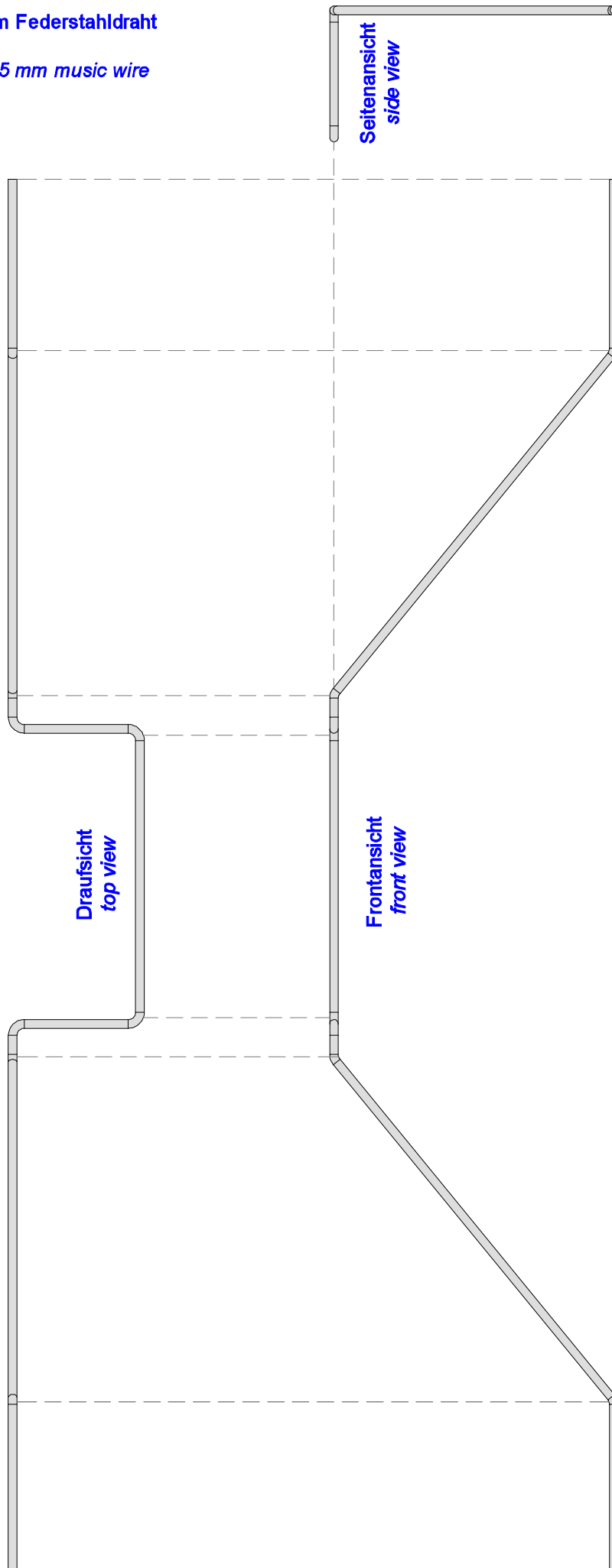
*fit axle diameter  
with several layers  
of shrinking tube*

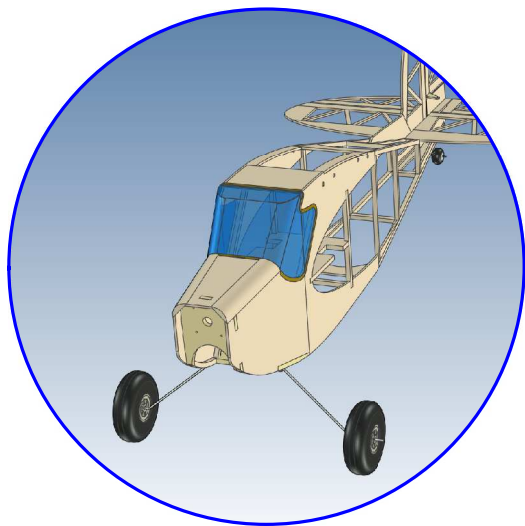


Leichttrad  
Ø 15 - 17 mm

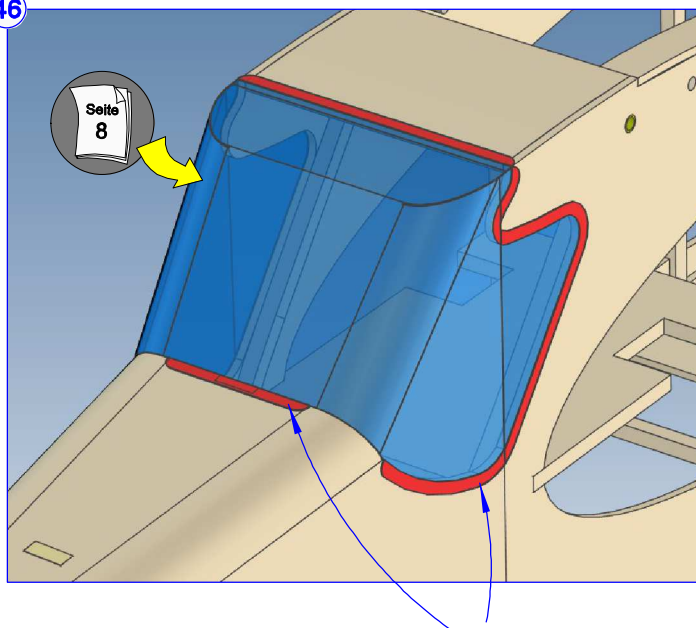
**Hauptfahrwerk aus 1,5 mm Federstahldraht**

*landing gear, bent from 1,5 mm music wire*





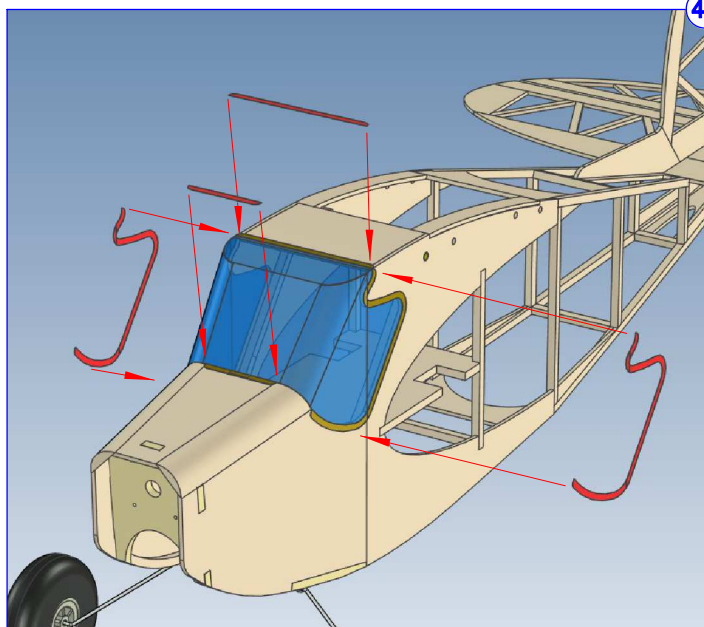
46



Verglasung am roten Bereich  
mit Kontakkleber ankleben

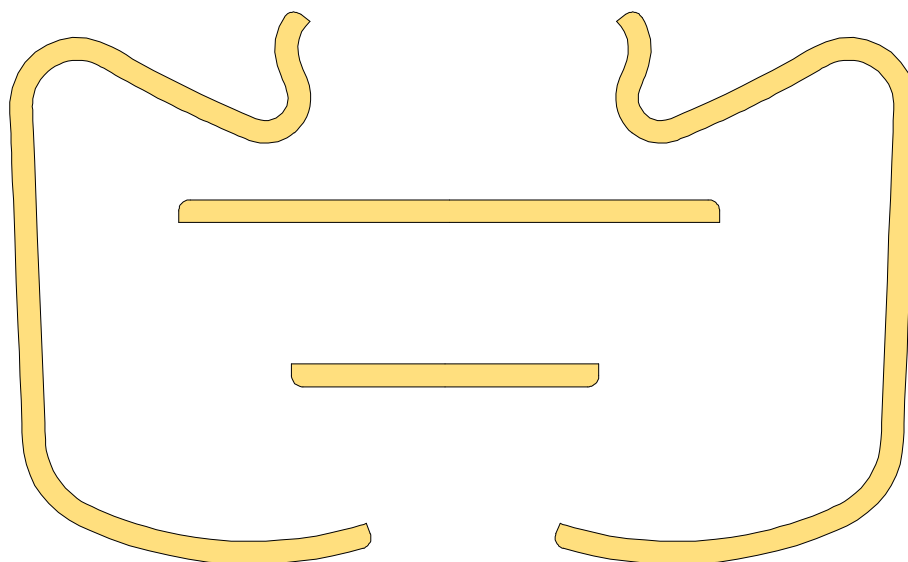
*install window with contact  
glue onto red area*

47

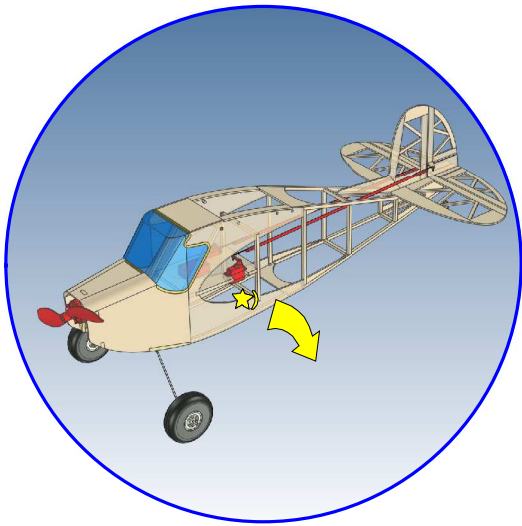


Kaschieren der Klebeflächen  
mit Bügel- oder Klebefolie

*Cover the visible glue areas  
with colored film*

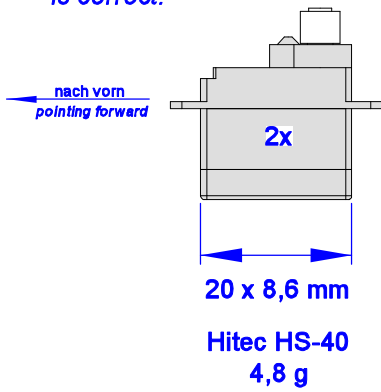






Einbauichtung der Servos  
beachten, damit die Gestängelänge  
stimmt

*note the installation direction of the  
servos so that the length of the rods  
is correct.*



Sekundenkleber und  
Schrumpfschlauch  
CA + shrink tube

nach  
oben gebogen  
bent upwards

Holzrundstab Ø 3 mm  
wood rod

CFK-Stab oder Rohr, Ø 3 mm,  
als Flügelverbinder  
connect wings to fuselage with  
CFK-rod or tube, Ø 3 mm

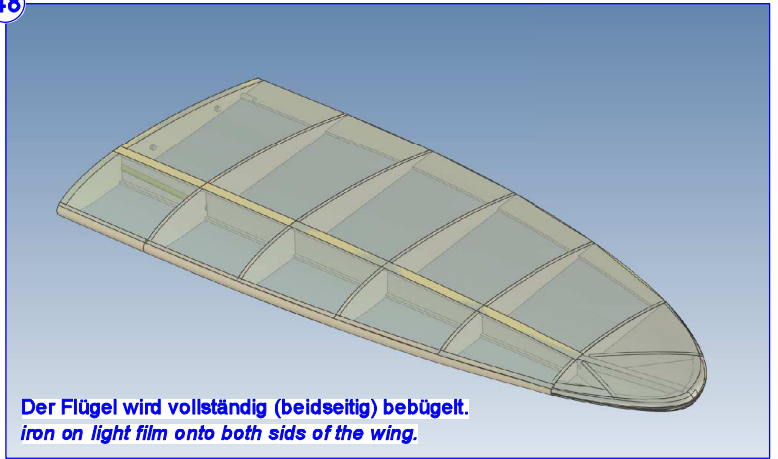


Ein Tropfen UHU por  
hindert die Gestänge  
daran, aus den  
Anlenkungen zu rutschen.

*A drop of contact glue  
prevents the rods from  
slipping out of the horns.*



48



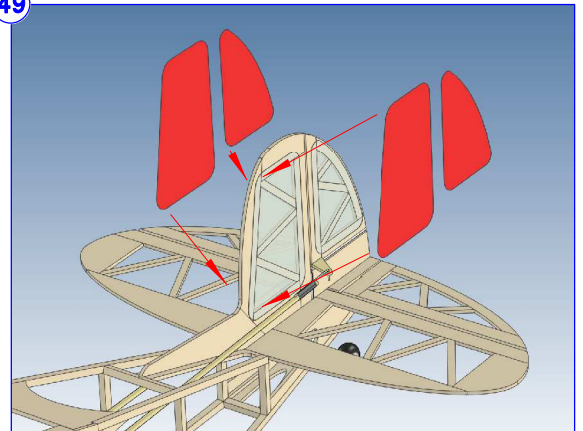
Der Flügel wird vollständig (beidseitig) bebügelt.  
*iron on light film onto both sides of the wing.*



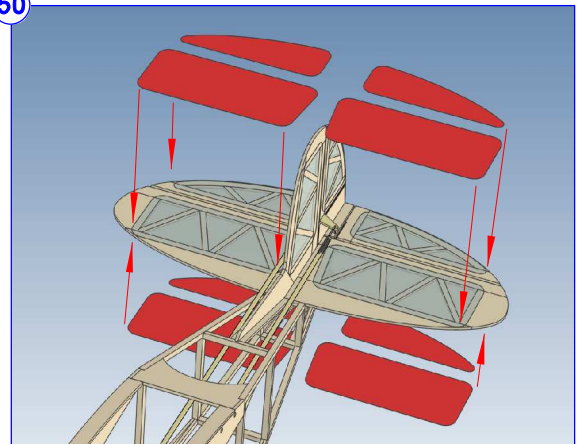
Oralight:  
 iron on  
 at 145°C

Der Rumpf wird nur an den gezeigten Stellen mit  
 Bügelfolie (ORALIGHT) bezogen.  
*The fuselage is only ironed-on in the places shown.*

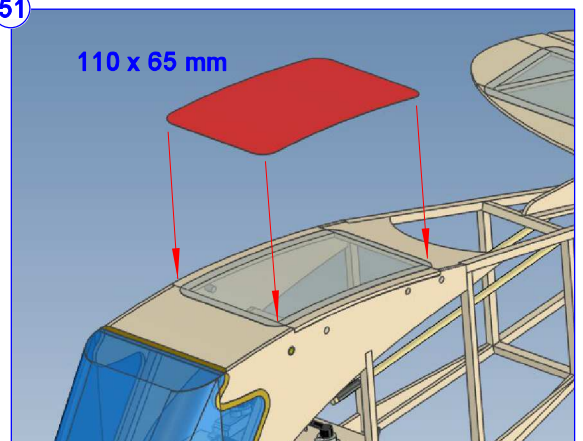
49



50



51



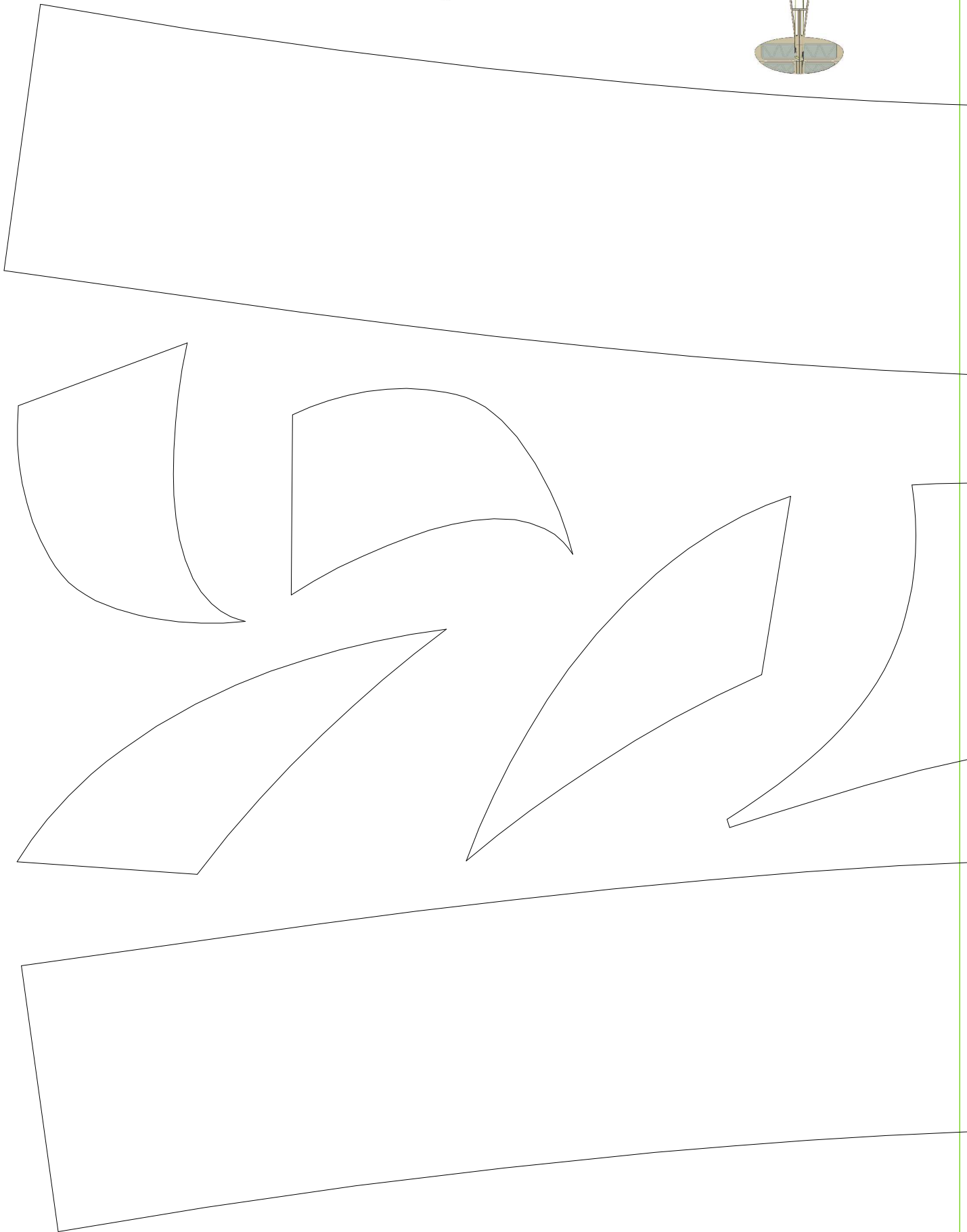
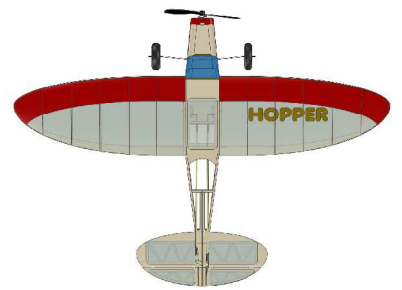
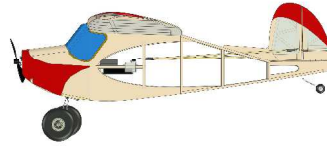
Bügelfolie für  
 Rippenfeld  
 Seitenflosse  
 2x

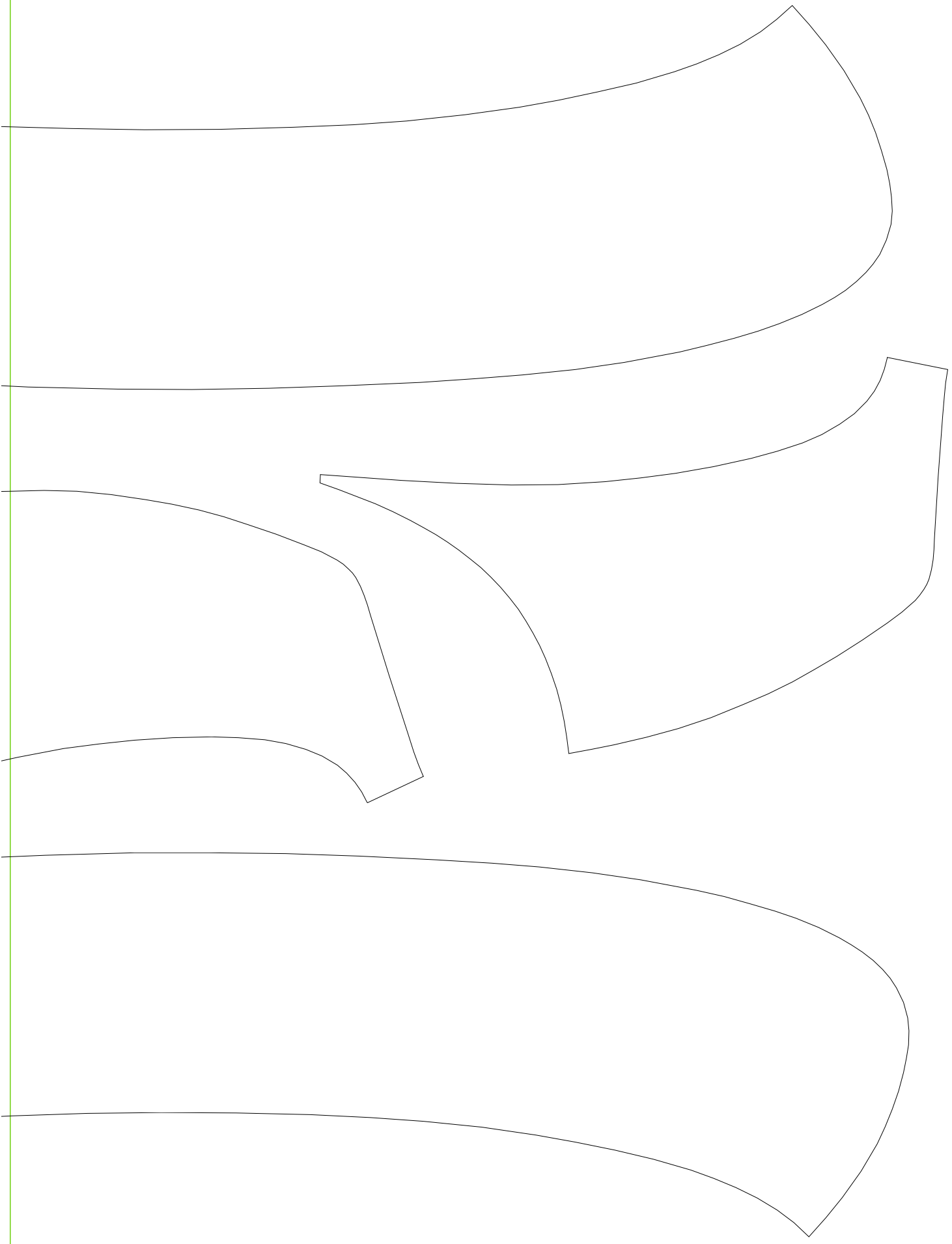
Bügelfolie für  
 Rippenfeld  
 Seitenruder  
 2x

Bügelfolie für  
 Rippenfeld  
 Höhenruder  
 4x

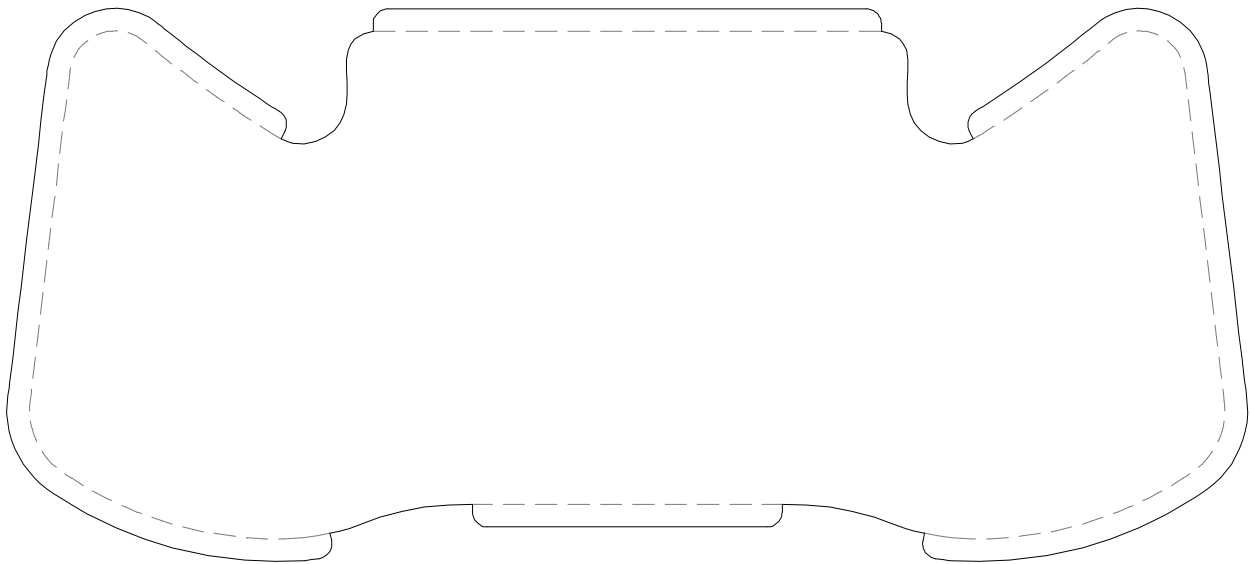
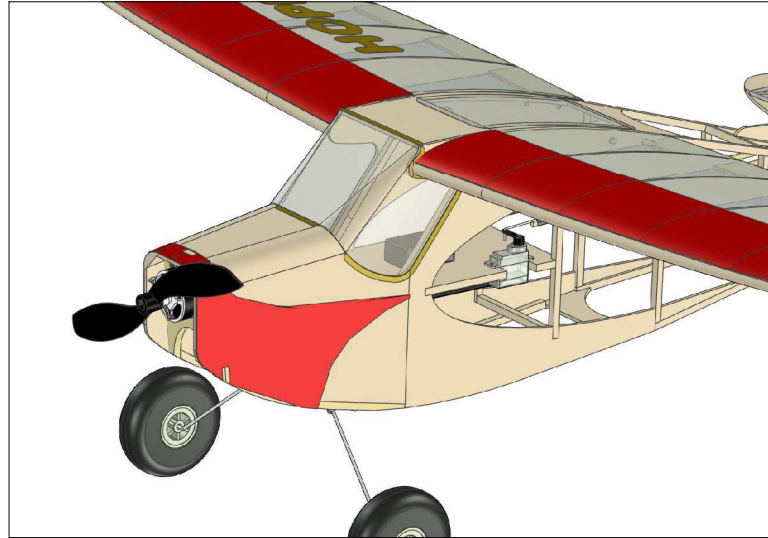
Bügelfolie für  
 Rippenfeld  
 Höhenflosse  
 4x

**Designvorschlag:**  
Schneidkonturen der roten Dekor-Elemente  
*cutting contours of the red decals*





# alternative Kabinenverglasung



## Hinweise vor dem Einfliegen:

*Things to check  
before you fly:*



Justieren Sie den Schwerpunkt auf 1,5 mm vor der Holm-Vorderkante durch passende Positionierung des Akkus. Bei Verwendung der vorgeschlagenen Komponenten liegt der Akku auf dem Fahrwerksspannt, bei stärkerem (schwereren) Motor hängt er unter dem Servobrett.

*Balance the center of gravity 1,5 mm ahead of the front edge of the spar. Therefore the battery can be placed either on the landing gear plate or hanging under the servo-board, using velcro tape.*



**Wichtiger Hinweis:**  
prüfen Sie sorgfältig, dass beide Flügelhälften auf dem ebenen Baubrett aufliegen ohne zu kippen. Eventuelle Verzüge müssen sprichwörtlich ausgebügelt werden, sonst lässt sich das Modell nicht steuern!

Beruhigen Sie die genannten Maximalausschläge mit 30% EXPO.  
HOPPER fliegt weich gesteuert mit nur etwa 5 mm Ruderausschlag.

*Important:*  
*check both wing halves thoroughly for being even and plane at their bottom surface. The slightest twist will cause problems in steering control!*

*Calm down the maximum deflections mentioned with 30% EXPO. HOPPER flies smoothly with only about 5 mm rudder deflection.*