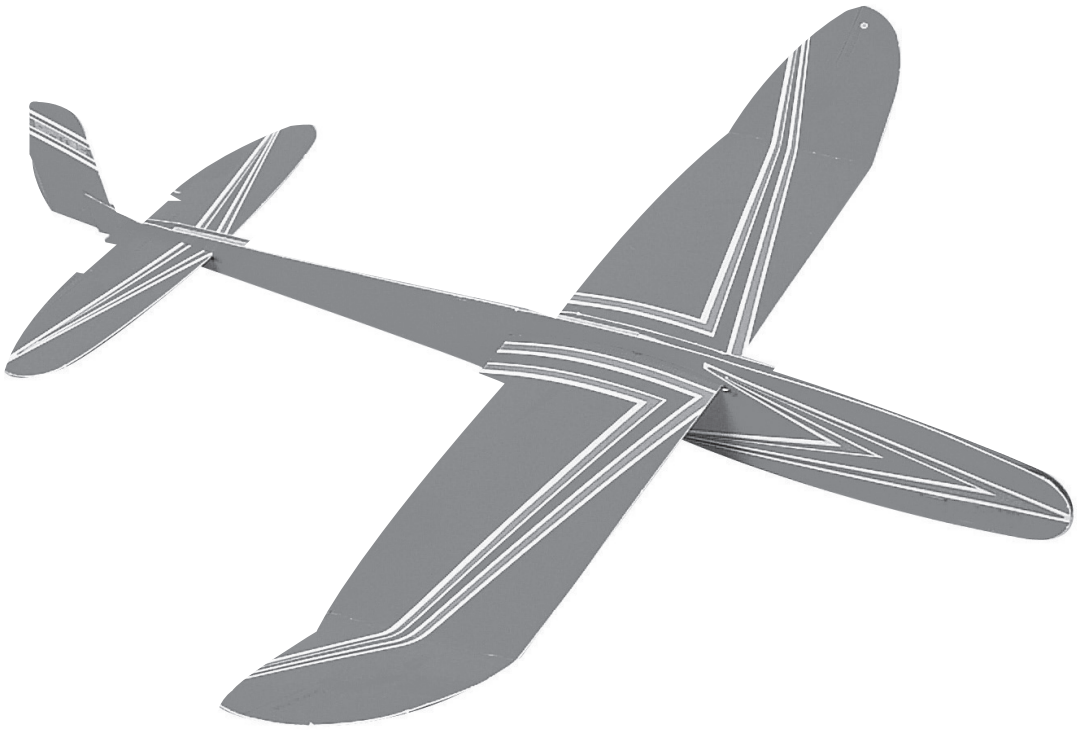
OPITEC

Hobbyfix

102.076

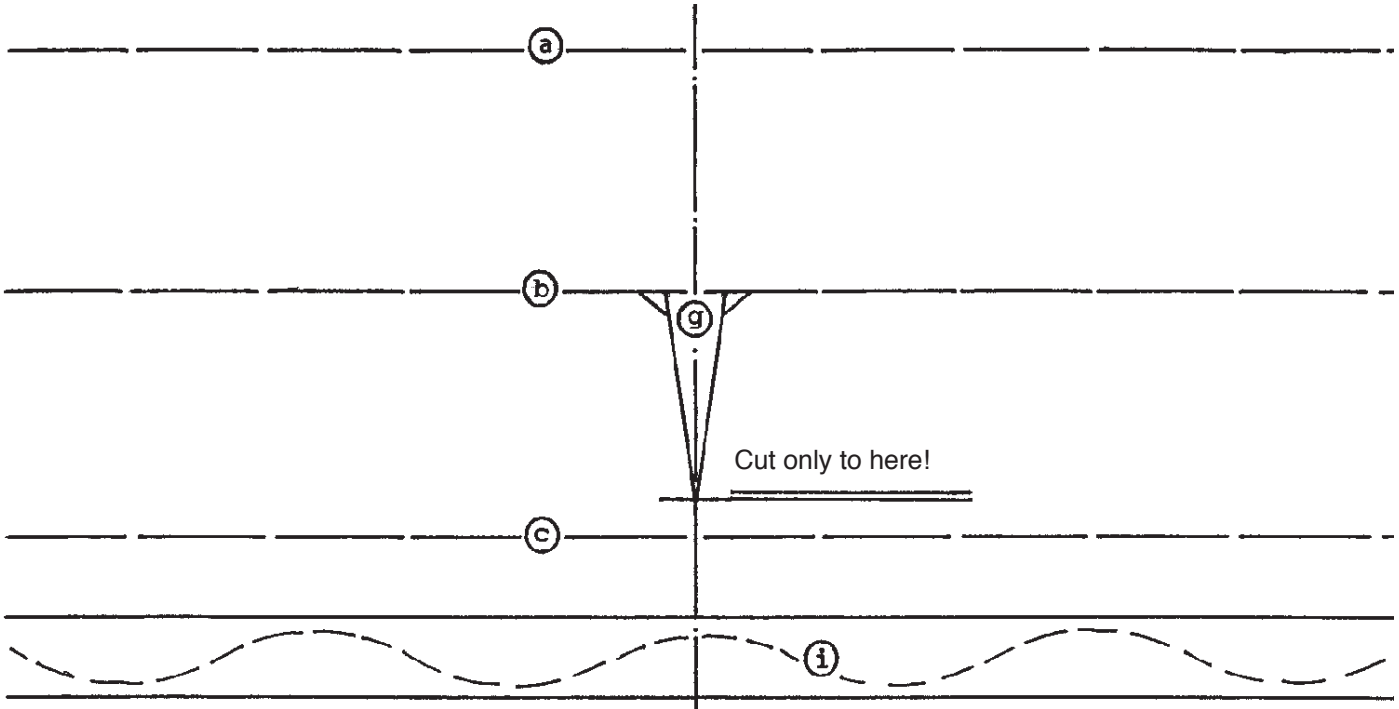
Mini - Holli



Please Note

The OPITEC range of projects is not intended as play toys for young children.They are teaching aids for young people learning the skills of Craft, Design and Technolo- gy.These projects should only be undertaken and tested with the guidance of a fully qualified adult. The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Dan- ger of suffocation!

Aufbauanleitung für Helling (= bedruckter Karton, einzeln bei den Rechnungsunterlagen beigelegt!)



Making the jigs for constructing the Mini Holli.
(First make the jigs then the model)

You will need the following tools:- a steel rule, scissors and craft a knife.

1. Score the card on the lines marked a,b,c,d,e and f with the back of the knife blade so that it will bend easily, use a steel rule to ensure that the lines are straight.

2. Bend the card on the lines b and e through 180 degrees down and back on itself. (see diagram 1)

3. Remove the shapes marked g and h and finally snip the corners with scissors as shown in diagram 2.

4. Open the card back to its original flat state.

5. Now bend the card on the lines a and f through 180 degrees under and back on itself.

6.Then bend the card on the lines b and e through 180 degrees upwards and back on itself.(see diagram 3)

7. Flatten the card out once again.

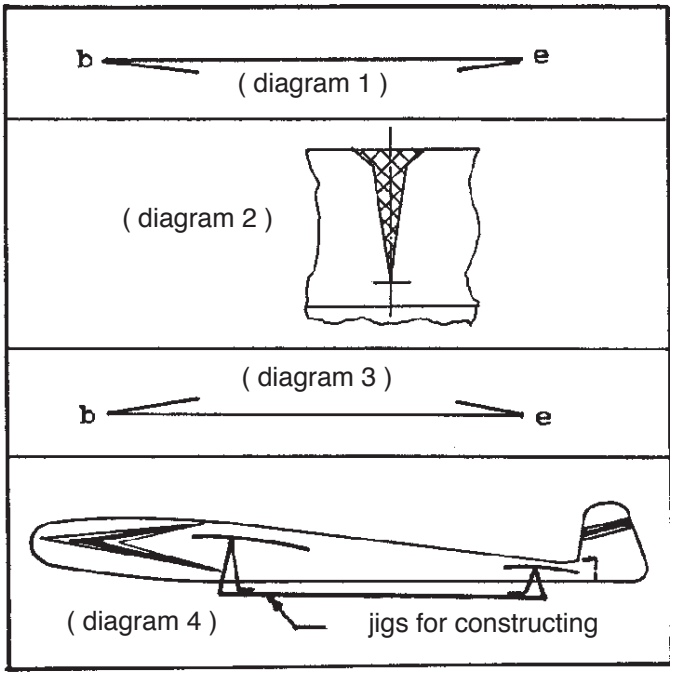
8.Now bend the card on the lines c and d through 180 degrees upwards and back on itself.

9. Flatten the card again.

10. On the part marked i, spread a thin wavy line of universal glue.(see diagram)

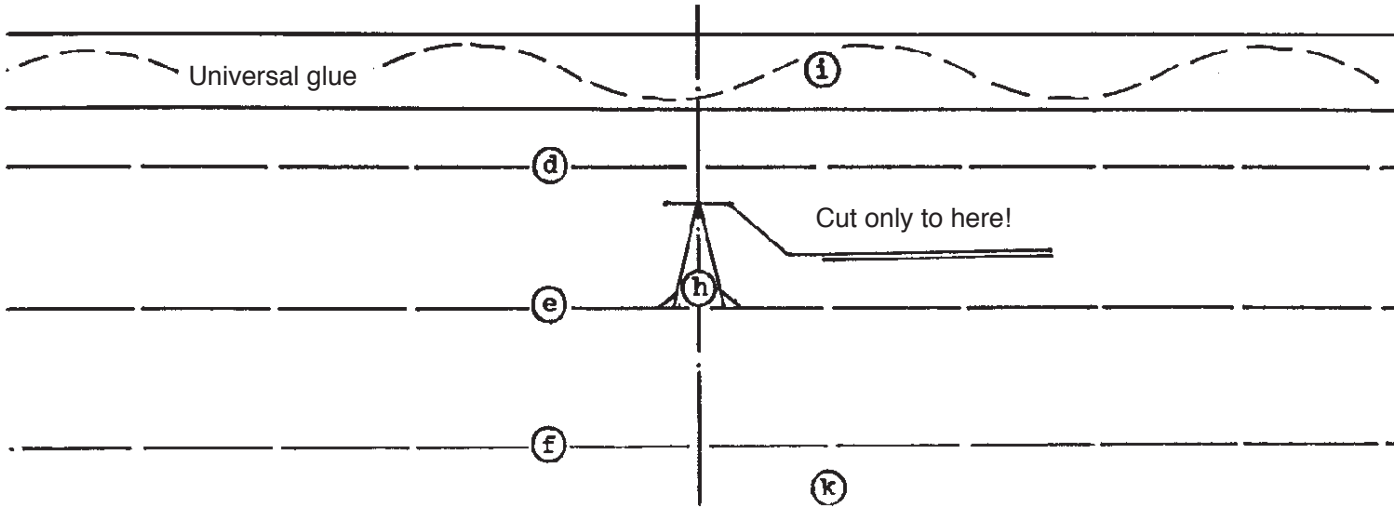
11. Stick the part marked k onto the glued area marked i. The jig is now complete.

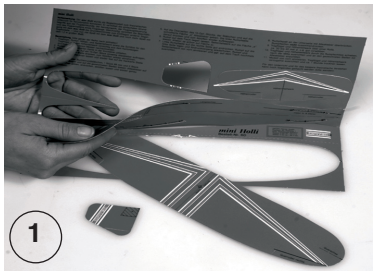
After wings and tailplane have been added to the model, it can be placed on the jig to dry. This will en sure all parts, wing and tailplane are in line. You may need to weigh the model down with something like a biro so that it does not move about whilst drying. Leave for half an hour so the glue will set.(see diagram 4)



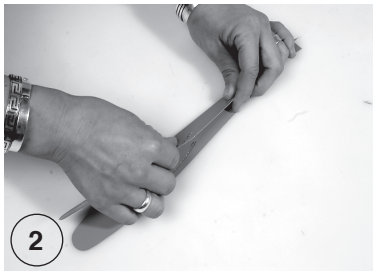
When gluing the small dowels in the body of the plane it is essential that the slits for the wings and the tail plane are left free.

Use the enclosed disc as trimming weight



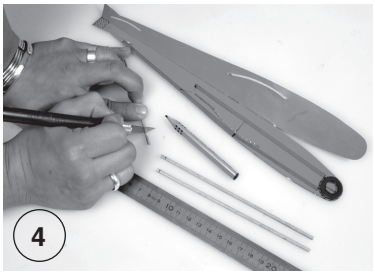


1) Press out the pre-cut parts

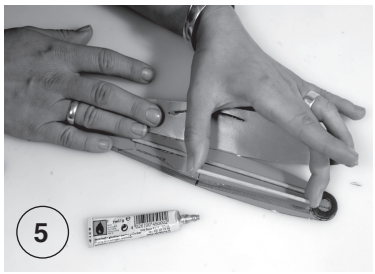


2) Fold the fuselage along the middle line

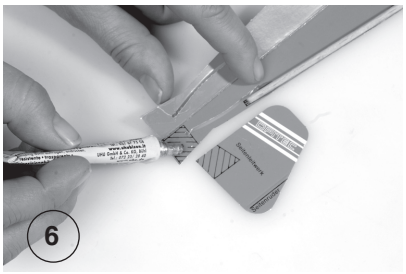
3) Glue the washer in the nose



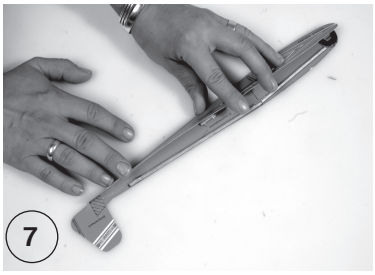
4) Cut the dowel with a craft knife into 1 x 88mm and 2x 145mm



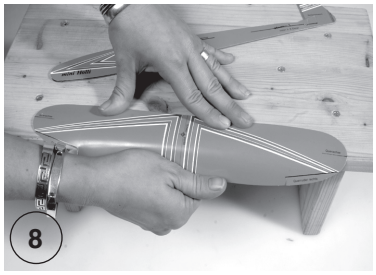
5) Glue the dowels in the marked places



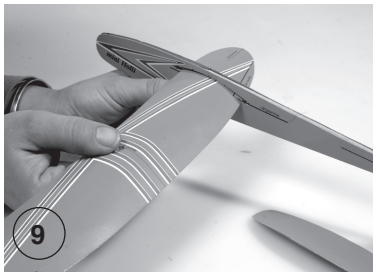
6) Glue the tail fin in position



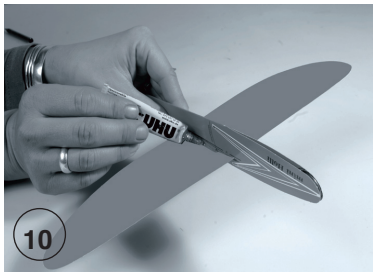
7) Apply the glue as shown and fold the fuselage together



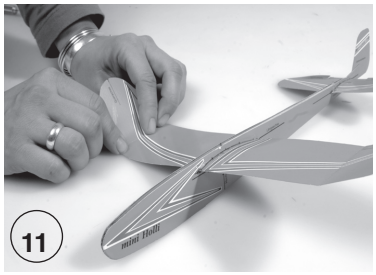
8) Now bend the wings and tail-plane into a rounded shape over a table edge



9) Insert the rounded tailplane in the pre cut slot



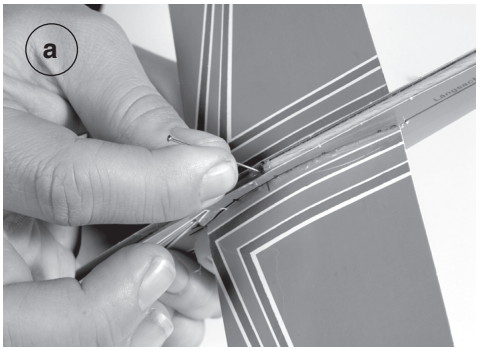
10) Glue the wings, tailplane in place and leave to dry



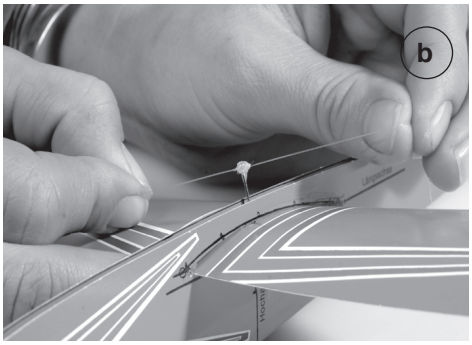
11)Fold the wing tips up as shown

To understand the theory of flight you can carry out the following tests

Insert a pin in the middle of each wing tip end. Hold the model by these pins and you can see how the planes reacts up and down.

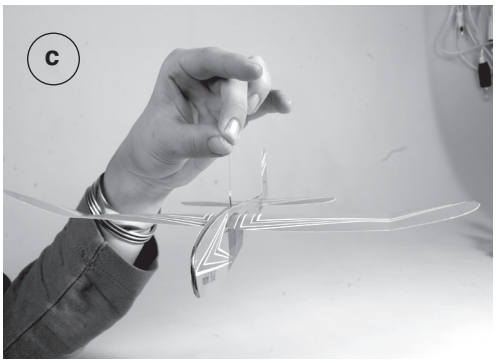


Then insert a pin (Photo a) where the two dowels meet then tie on a piece of thread 10cm
(Photo b)



Hold the Plane by the thread (Photo c) This is the Cof G centre of gravity . When held by the thread the nose of the plane should dip slightly down . This will indicate the flight path

Merke:
Die Schwerkraft “S” zieht das Modell im Schwerpunkt nach unten! Der Auftrieb “A” zieht das Modell im Auftriebsmittelpunkt nach oben! Dadurch entsteht die nach unten geneigte Gleitflugbahn, auf der das Modell, wie eine Kugel auf einem, schräggestellten Brett, zu Boden gleitet.



By adding a paper clips to the tail you can make the tail end heavier this will cause the flight of the plane to loose speed and stall . (like trying to make a marble roll uphill)
Adding the extra weight to the front will make the model dive. A well trimmed model should glide for 15metres

Flying the mini Holli in a circle
To this tie 2metre of strong thread on the left hand wing tip

Normal flight
Fold the flaps up 1/2mm and bend the tail fin rudder 1mm to the right . Stretch your arm out and swing the plane into a circular flight path and the model should fly in a level path

Up and down flight
Bend the wing flaps down about 1mm . The plane will now fly in an up and down pattern

Varying flight patterns Move flaps 1/2mm at time

1. **tailplane bend flaps equally !**
   Bend up – model will be slower
   Bend down – model flies quicker
2. **Tail fin**
   Bend to the right = Flight to right
   Bend to the left = Flight to the left
3. **Wing flaps**
   Bend right flap up the left flap down
   Bend left flap up and right flap down
4. **Curved flight to the right**
   Tail fin right, wing flap right up left hand down and tailplane a litte up
5. **Curved flight to the left**
   Tail fin to the left, wings left up right down tailplane as above
6. **Banking flight**
   Wing flaps and tail plane against each other. Bank to the right, tail fin to right tail plane a little up
   Bank to the right like a curve to the right , tailplane like a left curve
7. Fly the Mini Holli in a wide open space in no or light wind conditions
8. To start the flight hold the Cente of Gravity between finger and thumb and then launch with a gentle forward thrust
9. If the plane dives – try launching it faster and bend tail flaps up 1- 2mm
10. If the model flies sideways
11. Bend the wing flaps down on the on the side of the curve
12. Now experiment with all the combinations so far
13. Try further experiments by adding weight to the tail
14. Try further experiments by adding paper clip weights to the nose of the plane
15. Check where the Centre of Gravity is or has is altered ?

A further possibility for long stable free flights **:**

Bend the wing tips up 20mm . Lightly score a line on each side first before
using a sharp table to fold the wing tips. This should help the model should now fly in a stable pattern