

## Technical data

Wing span:	2050 mm
Length:	1137 mm
Weight:	1300 g – 1800 g
Wing area:	35 dm <sup>2</sup>
Wing loading:	37 g/dm <sup>2</sup> – 51 g/dm <sup>2</sup>
El. Motor	"600" - 7/8 cells 2.000 mAh or Mutron S89ATR600.20.10 - 10 cells 4/5 1650 mAh
Controls:	Elevator, rudder, ailerons, (motor)

## Introduction

Congratulations on buying your **Aquila speed**. Slope soaring is a very special way of flying R/C models. Given a good slope and a proficient glider, hours of exciting flying is assured. Even if not for everybody and definitely not for beginners, slope soaring means the possibility to perform true aerobatics without the annoying noise of the conventional engines. Your **Aquila speed**, with its carefully studied aerodynamic design thanks to its special elliptical wing will offer you a superior class approach to this flying activity. Since a slope is mandatory for slope soaring and not always available for people living in flat areas, we have also supplied the possibility to fly your **Aquila speed** electric. Its excellent Astra© epoxy fuselage is really designed "around" the electronic devices of the radio control offering the best aerodynamic efficiency.

## Before starting construction

Carefully study the exploded view as well as the building sketches; read and understand the step by step instructions before beginning construction, it is time well spent. First, examine the kit to ensure nothing is missing. Using the illustrations mark each wood part with its corresponding number. Remove each die cut part and sand it carefully.

Although the assembly of the model is not complicated, it is important to carefully study the assembly instructions and think over each step thoroughly

## Equipment needed

Here's all you need to build your **Aquila speed**:

- Modeling knife
- Scissors
- Sanding block and coarse, medium and fine sandpaper
- Square
- Drill and a 1.5, 2 and 3 mm bit
- Masking tape
- Solder
- 5 minute Epoxy Glue and/or Cyanoacrylate
- Hobby saw

## Glider or Electro Glider?

**Aquila speed** is a very versatile model. It can be successfully flown as a tow line glider or as an electric motor glider.



If you are building the tow line version disregard steps 5 to 7. For the electric powered version disregard steps 1 to 4.

## Assembly:

**1. Only for the glider version.** Glue (Epoxy) the towing hook supports [DC-9] together. Next glue towing hook supports in place inside the fuselage [1] about 265 mm from the nose.

**2. Only for the glider version.** With a drilling machine and a 1,5 mm bit, drill a hole in the middle of the fuselage bottom at about 280 - 285 mm from the nose. Screw the tow hook [B1-6] to the fuselage.

**3. Only for the glider version.** Take from Die Cut sheet the motor former [DC-1] and instead of removing the wood in correspondence of the motor shaft hole, leave it and fill with epoxy the gap of the die cut gluing them also together. Sand slightly the glued formers in order to fit well the inside of the fuselage [1] and glue (Epoxy) them in place.

**4. Only for the motor-glider version.** Drill a 3 mm hole in the nose of the fuselage [1] to pour the ballast (not supplied) inside the nose of the fuselage.

**5. Only for the motor-glider version.** Following the cut line on the fuselage nose, remove the nose with a hand saw. It is better to leave some material and remove it afterward with a sanding block.

**6. Only for the motor-glider version.** Glue (Epoxy) together the two motor formers [DC-1]. With a 3 mm bit drill the two holes for the motor fastening screws [B1-21]. Fasten the electric motor to the formers [DC-1] with the two screws [B1-21]. Check the motor matches the center hole. Glue (Epoxy) the motor support in place inside the fuselage nose. Check that the motor matches the spinner and that the alignment of the motor shaft is precise.

**7. Only for the motor-glider version.** If you want to use a more powerful motor it would be convenient to make two cooling holes on the front part of the fuselage. As a suggestion, you can follow the diagram. The hole on the right side is about 12 mm more backward than the hole on the left side.

**8.** With a 2 mm bit drill the holes in the servo tray [DC-6] for the servo screws.

**9.** Here you can have an idea of the inner structure of the battery and servos support, together with the formers and the jig to locate the position of the battery support.

**10.** Glue (Epoxy, CA) together the battery support former

[DC-3] with the battery support [DC-2]. Glue in position the battery support assembly inside the fuselage and, with the help of the jig [DC-8] glue it in position. The end of the battery support is about 470 mm from the nose of the fuselage.

**11.** Glue (Epoxy, CA) together the servo's cradle support [DC-4] with the fuselage former [DC-5]. Insert the assembly into the fuselage and glue (Epoxy) in position.

**12.** With a 3 mm bit carefully drill the exit holes for the rudder and elevator's linkage.

**13.** Insert the elevator and rudder outer tubing [B2-1], [B2-2] into the exit holes of the fuselage and carefully glue (Epoxy) it in place leaving a couple of cm extending from the fuselage.

**14.** Glue (Epoxy) together the two tailplane connecting rod support [DC-7]. With a 3 mm bit drill a hole in the middle of the tailplane connecting rod support [DC-7]. Glue (Epoxy) the rod support [DC-7] inside the fuselage fin checking that the hole is matching with the fin hole into which will be inserted and glued in position the tailplane steel rod [B1-20] checking that it is perpendicular both to the fin and both to the length of the fuselage.

**15.** Check that the fin's balsa trailing edge [B1-9] is matching the fin's slot and glue (Epoxy) it in place. When the resin has cured, sand it flush to the fuselage's fin.

**16.** With a sharpen balsa cutter cut on the fin the two slots for the rudder's hinges [B1-5]. Check the position with the rudder's pre-cut slots.

**17.** Glue (Epoxy) in place the two rudder's hinges [B1-5] checking that the rudder's movement is free and no glue is jamming the rudder [3] and the fin.

**18.** Install the nylon horn [B1-3] into the rudder [3] fastening it by means of the horn nuts [B1-4].

**19.** Fasten the servos on their support [DC-6] with their screws (not supplied).

**20.** Through the canopy's opening insert the pushrods [B2-1] and [B2-2] in the plastic tube. Fasten the "Z" end into the servo arms and, by means of the transmitter center the servo in the neutral position.

**21.** Screw the snap-link [B1-13] into the threaten coupler [B1-14] and connect it to the rudder's control horn [B1-3] inserting the pushrod coming out from the fuselage [B2-1] into the hole of the threaten coupler [B1-14].

**22.** With the servo centered check that the rudder is centered and solder or glue (Epoxy) the threaten coupler [B1-14] to the rudder pushrod [B2-1].

**23.** Glue (Epoxy) the plastic tubes holders [B1-17] to the fuselage sides and next glue (Epoxy) the plastic tubes [B2-1] and [B2-2] to the groove in the holders and to the slots in the former [DC-3].

**24.** With a sharpen balsa cutter cut out the covering film over the hole of the left horizontal tailplane [4]. Insert into the hole of the tailplane [4] the fastening connector [B1-8] and insert also the connecting rod [B1-1] into their holes.

**25.** When the connecting rod [B1-1] is fastened to the connector [B1-8] with the help of the Allen screw [B1-7], glue the connector to the tailplane. Take care to avoid that some glue is also gluing the connecting rod. Glue has to be put only on the connector's sides and very sparingly.

**26.** When the glue has cured it is possible to release the connecting rod loosening the screw [B1-7].

**27.** Glue now the connecting rod [B1-1] to the right tailplane [5]. The exceeding part has to be about 60 mm. Install the nylon horn [B1-3] into the right tailplane [5] fastening it by means of the horn nuts [B1-4]

**28.** Complete the elevator with the fuselage and repeat the point 21 – 22 to install the linkage.

**29.** Glue (Epoxy) in place the brass tube [B1-18] inserting it first over the wing joiner [B2-3] and then inserting both of them into the fuselage's holes. Looking at the fuselage from the front, check the alignment of the wing joiner rod which has to be perpendicular to the fin. Check also that the brass tube [B1-18] is flush with the outer surface on both sides of the fuselage. If necessary, use a sanding block, to remove any tubing.

**30.** Using the sanding block round one of each wing dowels [B1-19]. Attach the wing dowels to the wing, next attach the wing to the fuselage using the wing joiner [B2-3] and check the correct position of the wood wing dowels [B1-19]. Now carefully glue (Epoxy) the wing dowels [B1-19] in the holes on the both wings [2]. Check the correct position of the wings.

**31.** With a sharp blade cut off the film over the holes for the fastening screws, on the top of the wings [2].

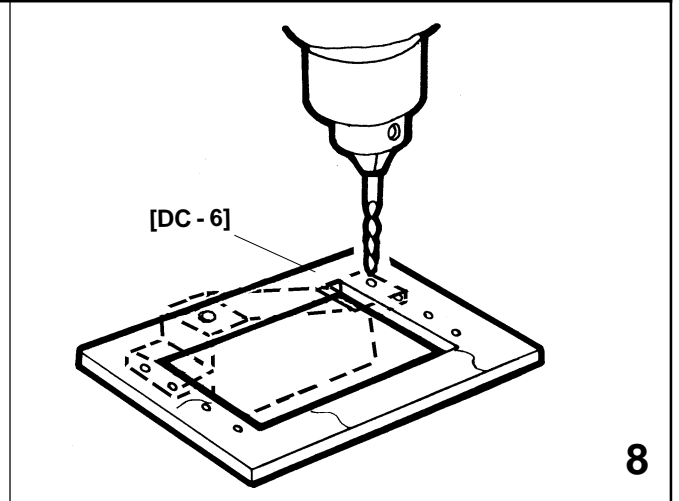
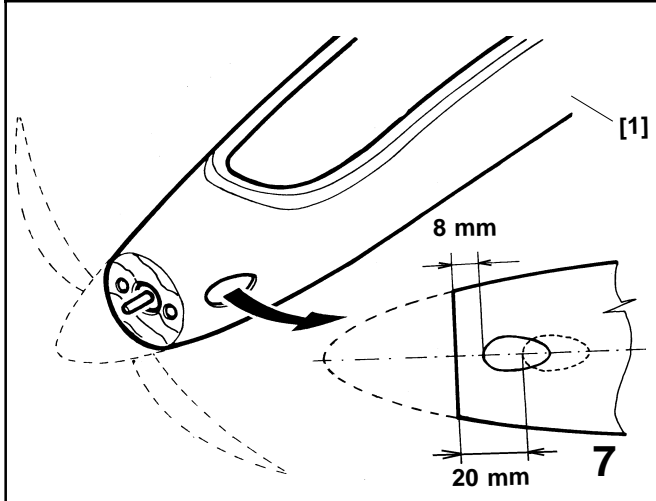
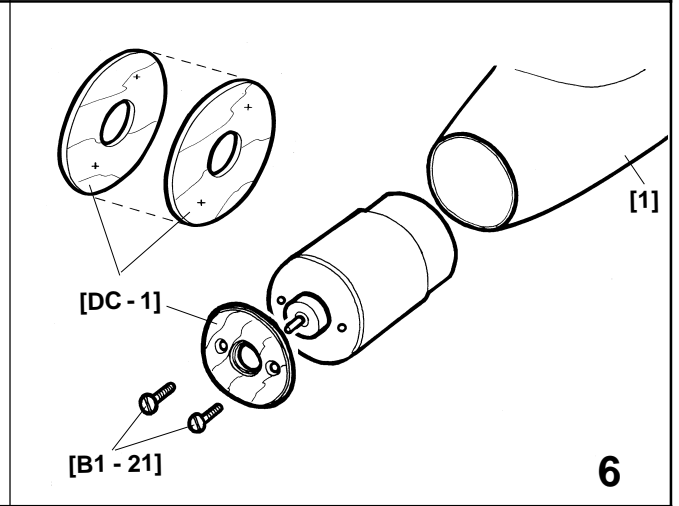
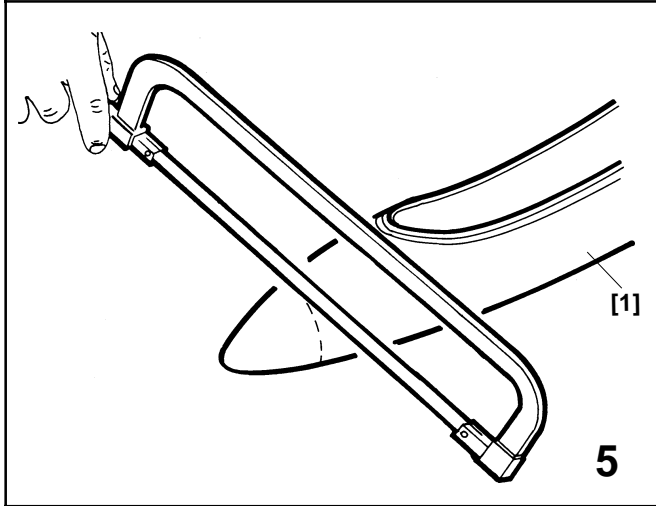
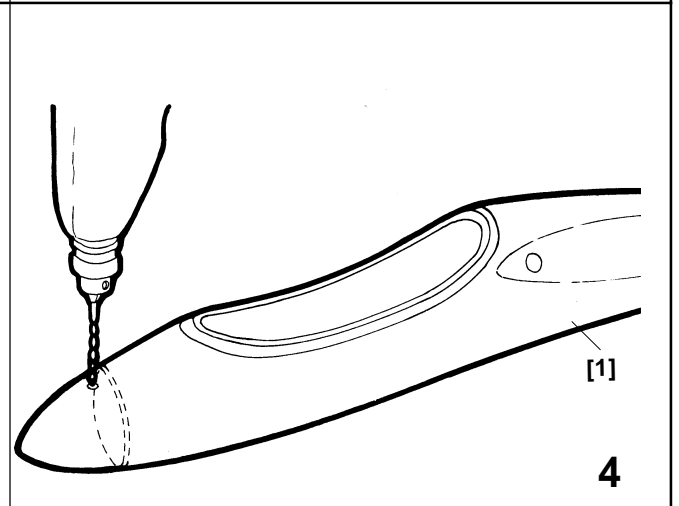
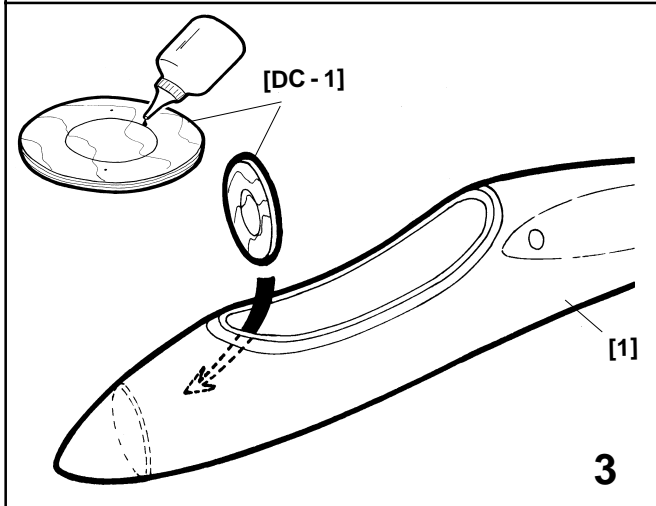
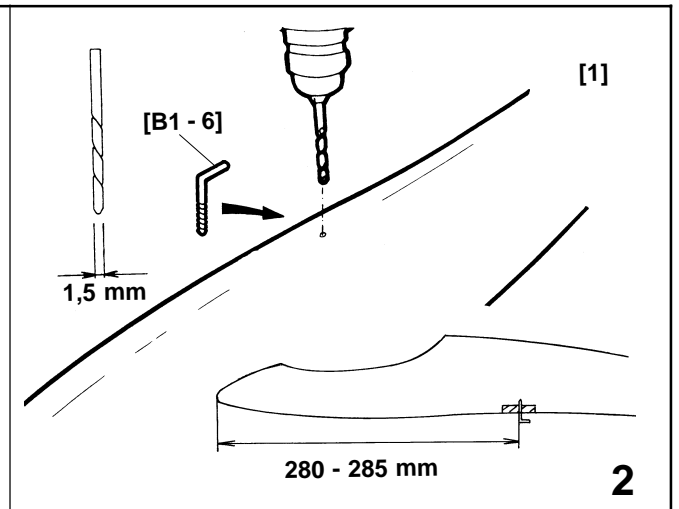
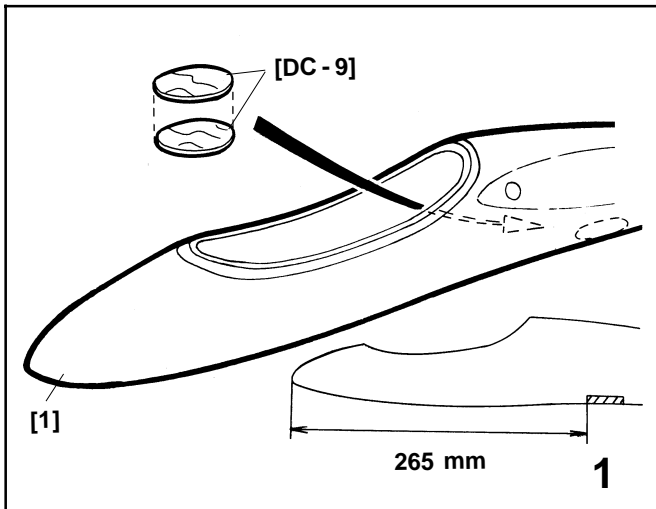
**32.** Take the brass wing fastening insert [B1-12] and screw temporary inside it the screw [B1-11]. Put some amount of epoxy in the outer surface of the insert [B1-12] and inside the wing's hole. Using a screwdriver gently screw the assembly into the wing. Allow the resin to cure and then remove the screw [B1-11] by unscrewing it.

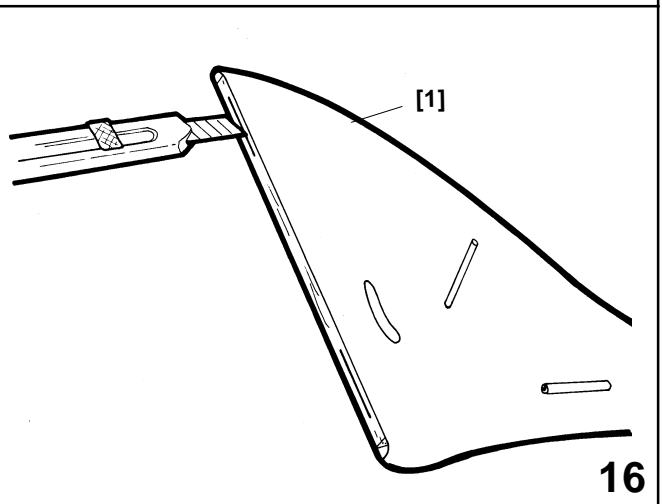
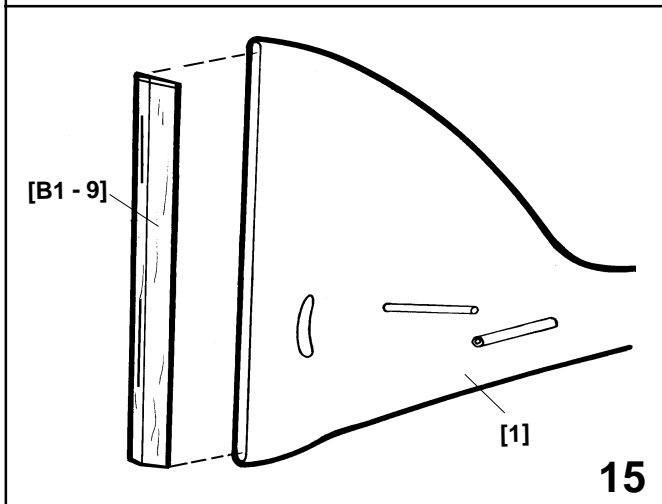
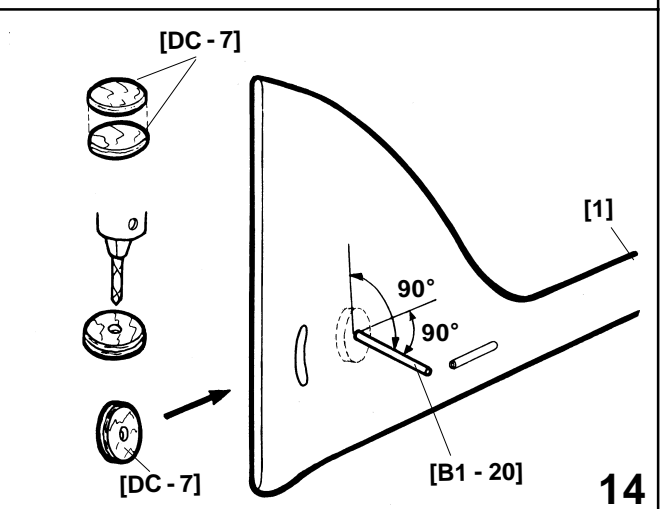
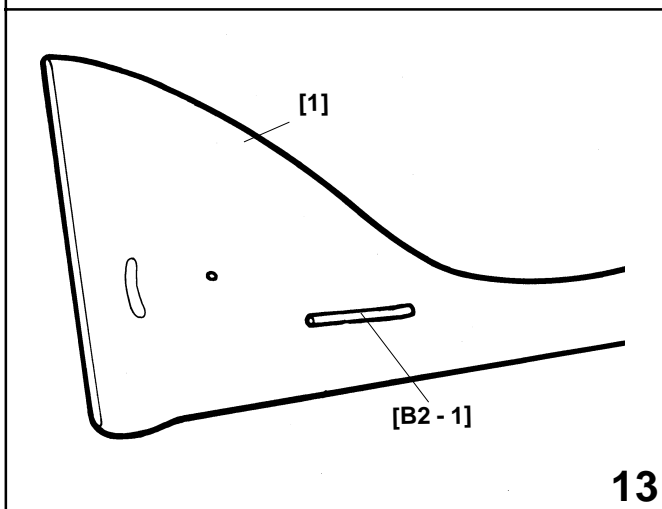
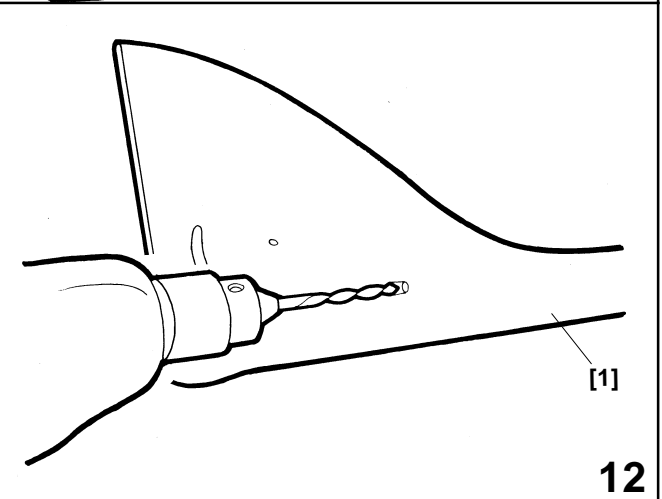
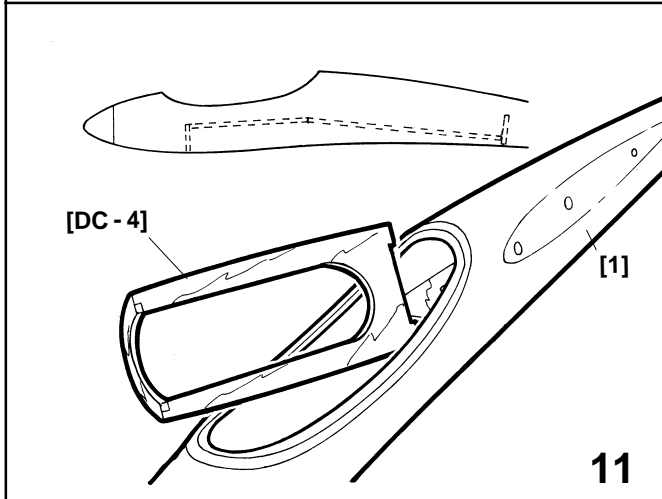
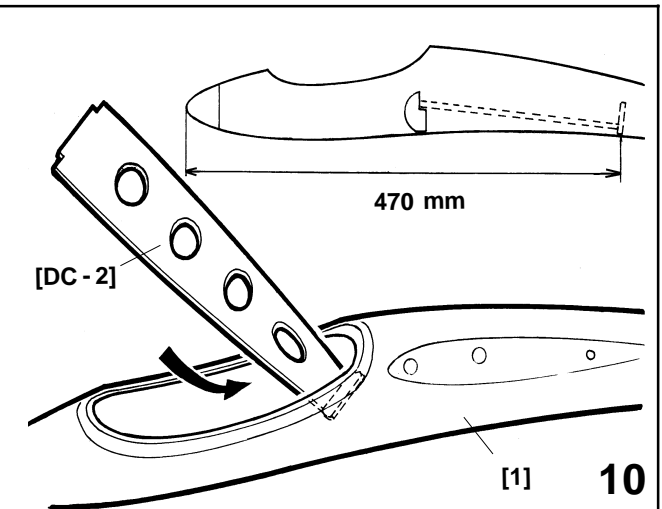
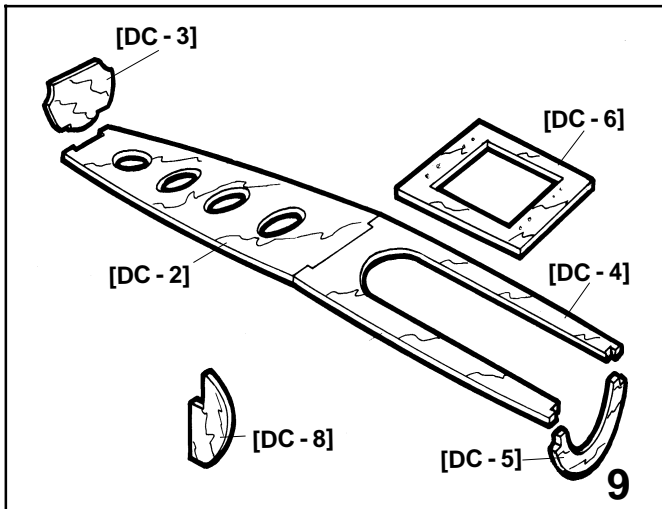
**33.** Attach the wings to the fuselage and check the alignment. Fasten the steel wing joiner with screws [B1-7] using the special allen wrench [B1-10].

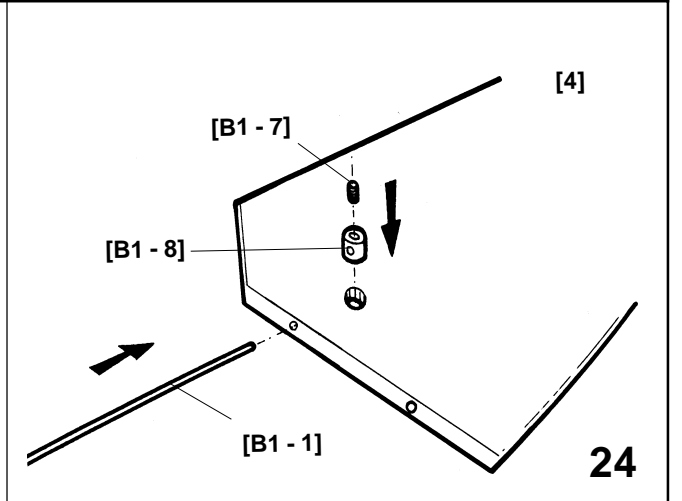
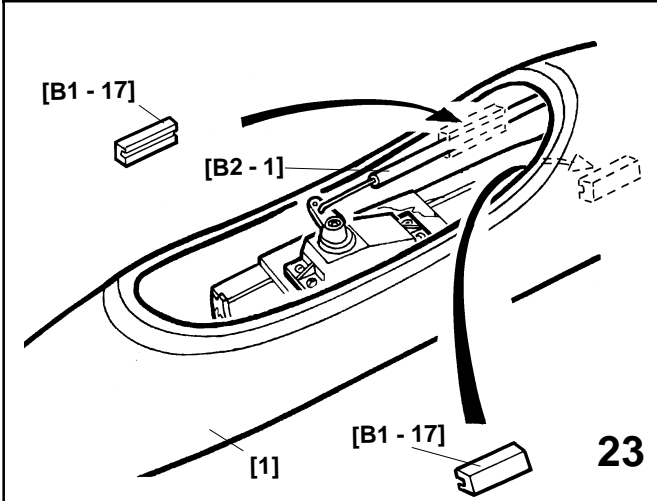
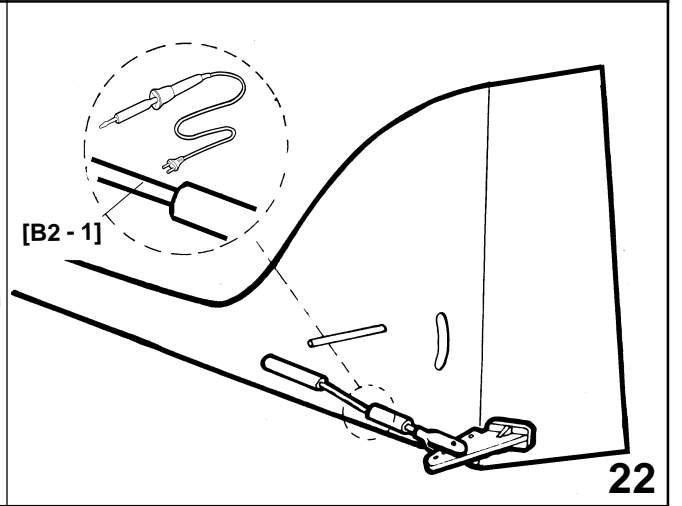
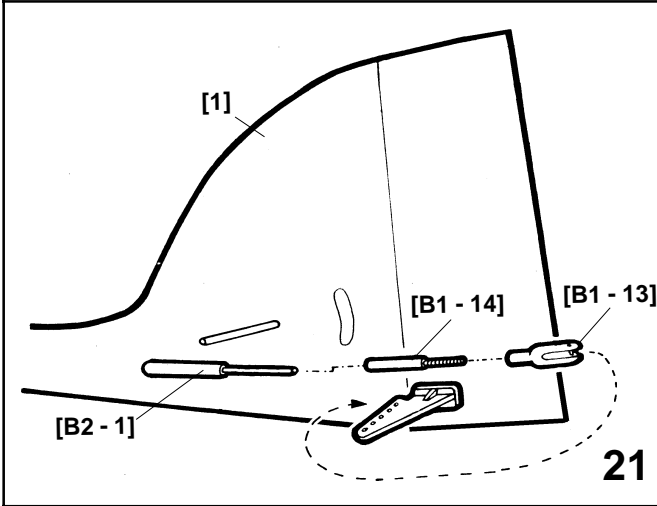
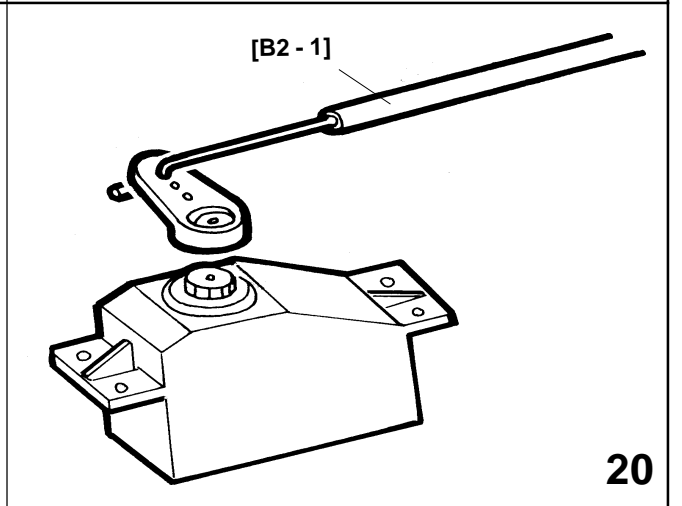
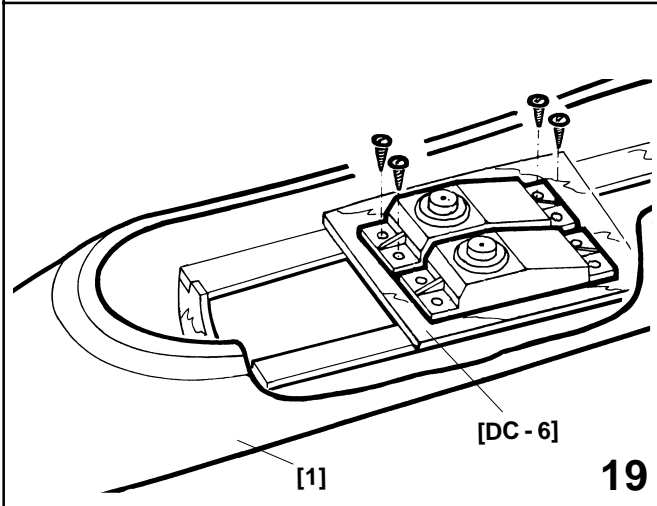
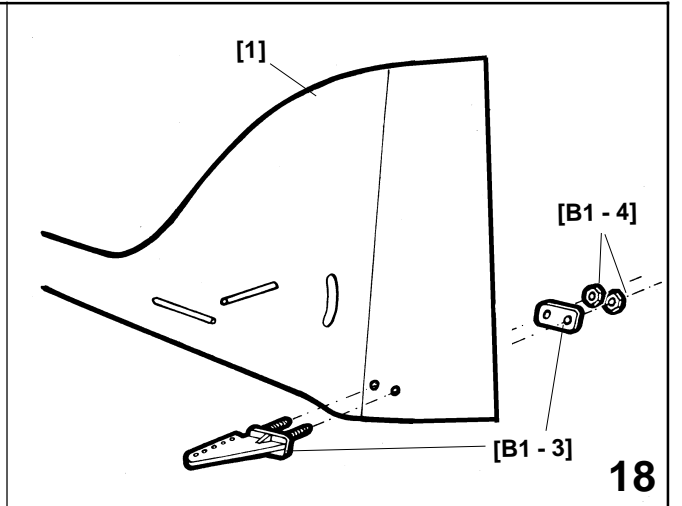
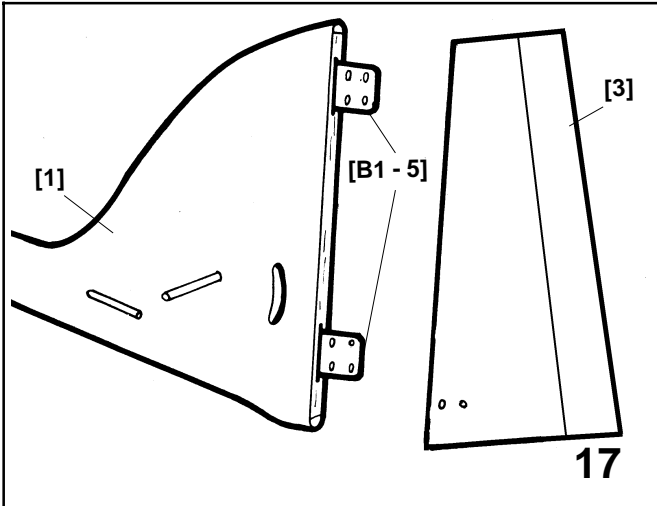
**34.** Remove the tips of the nylon control horns [B1-3] according the sketch. Insert the aileron control horns [B1-3] into the pre-drilled holes and glue (Epoxy) them in place.

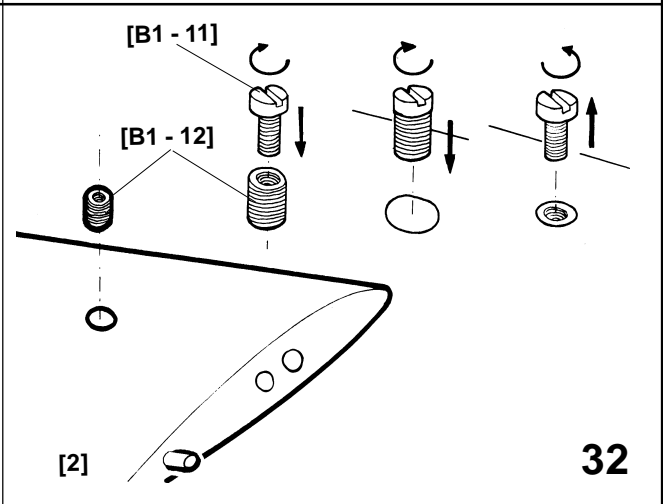
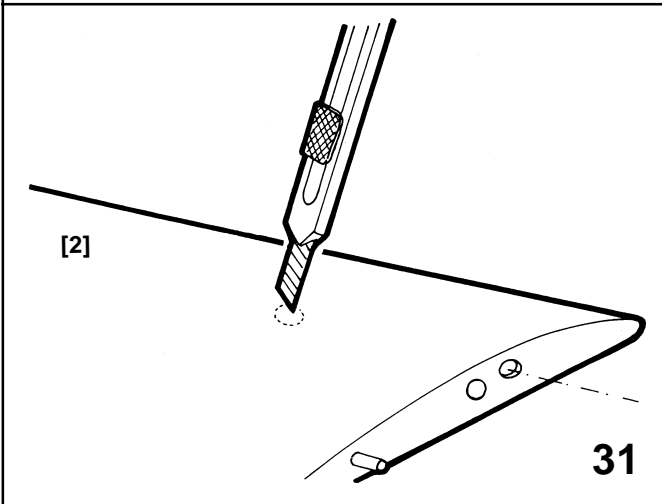
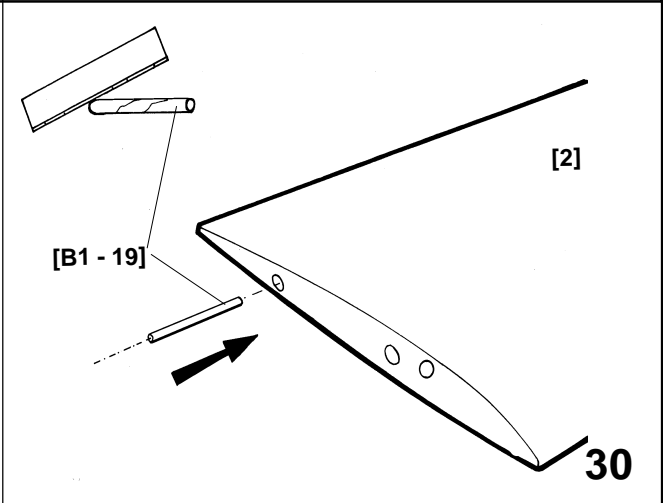
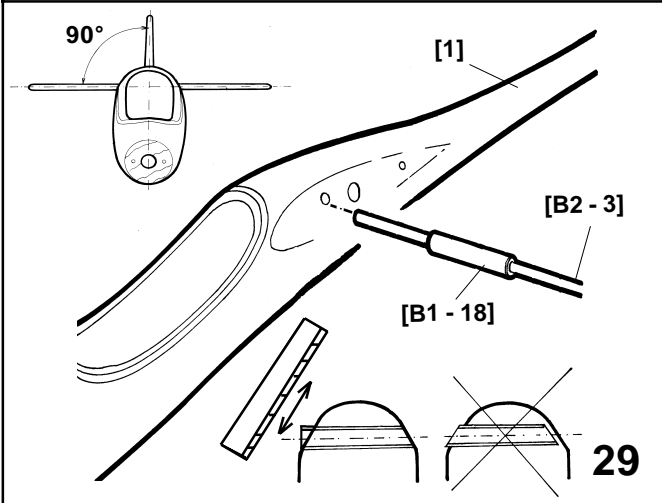
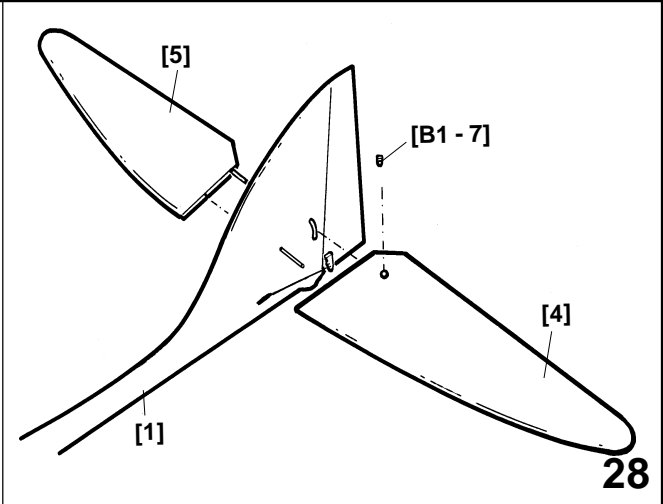
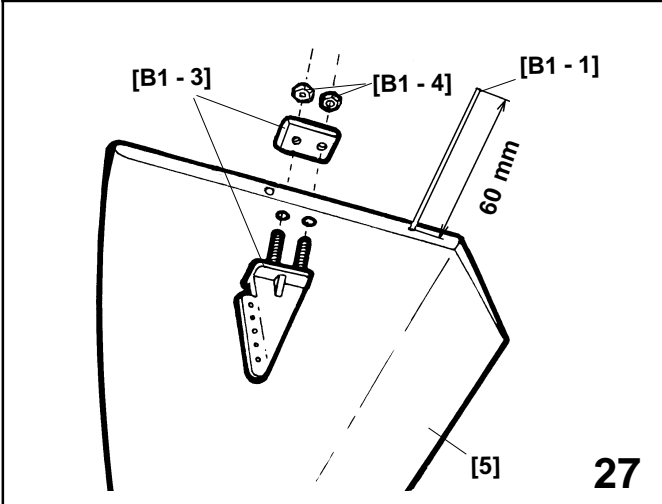
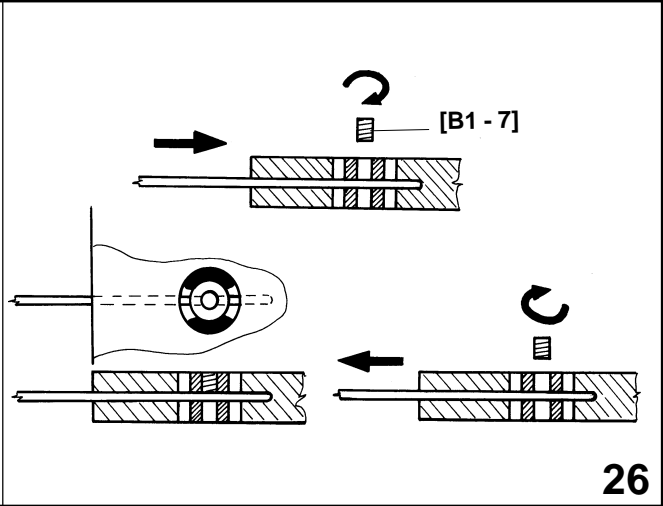
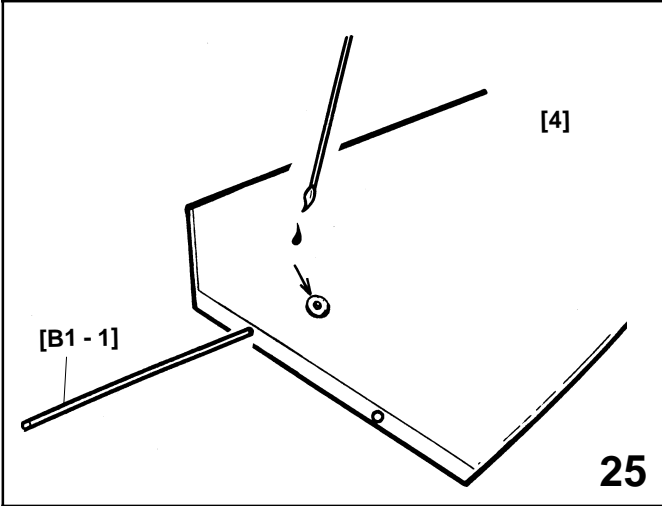
**35.** Aileron servos needs a special long cable to connect with the receiver. The cable is passing through the wing. The aileron servo is fastened to the servo support by means of a good bi-adhesive tape (not supplied)

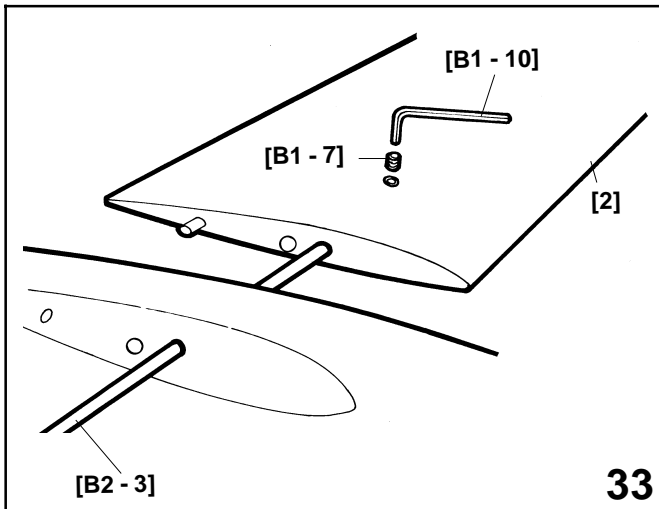
**36.** Insert the "Z" bended connecting rod [B1-15] into the servo arm. With the Tx on, center the servo and scotch it to the servo support. Now screw the snap link [B1-13] to the rod [B1-15] until it looks that when connected also to the aileron control horn [B1-13] the aileron is in the neutral position. Minor adjustment may be done screwing and unscrewing the snap link over the rod.



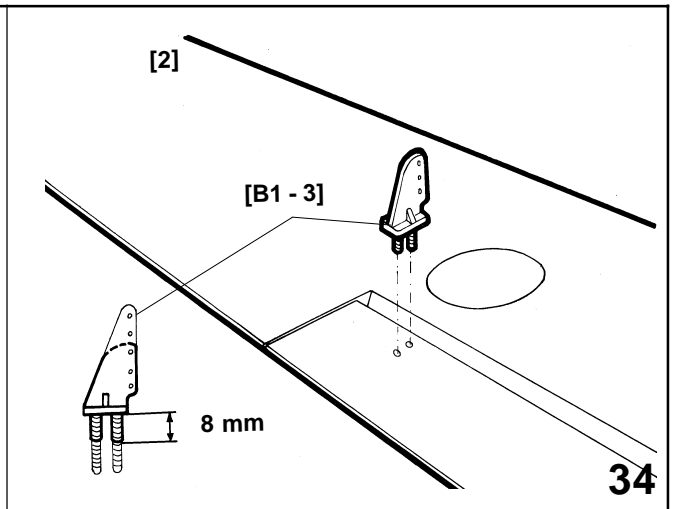




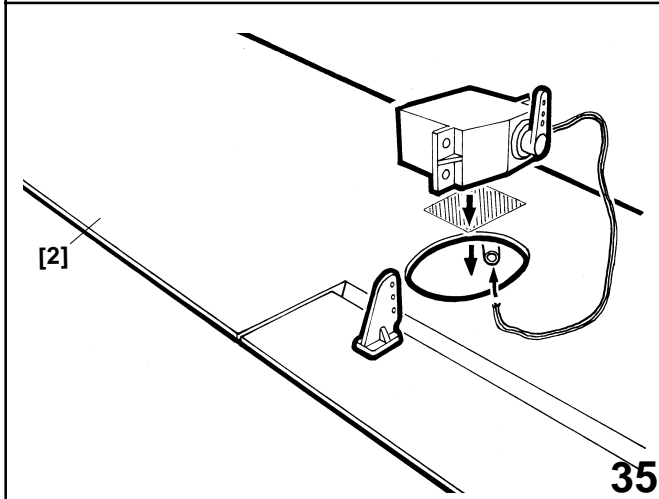




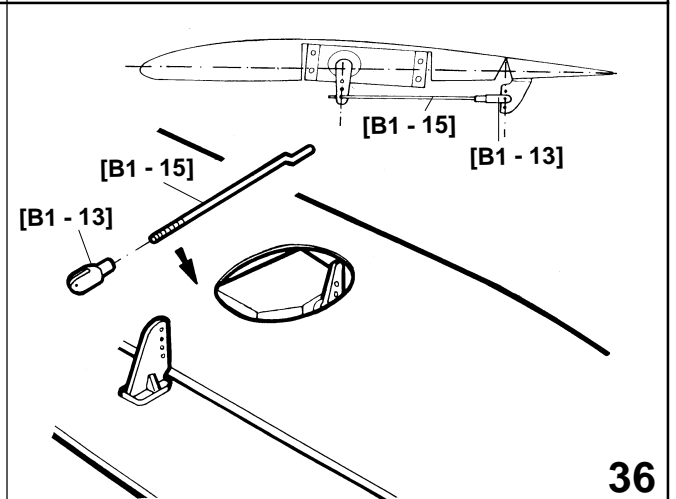
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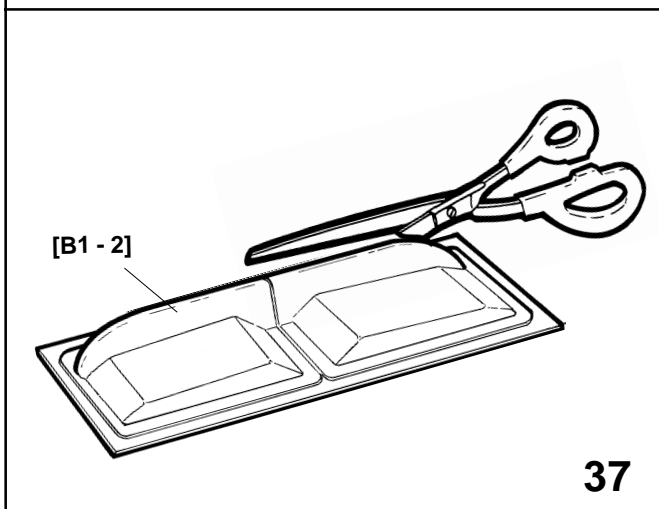
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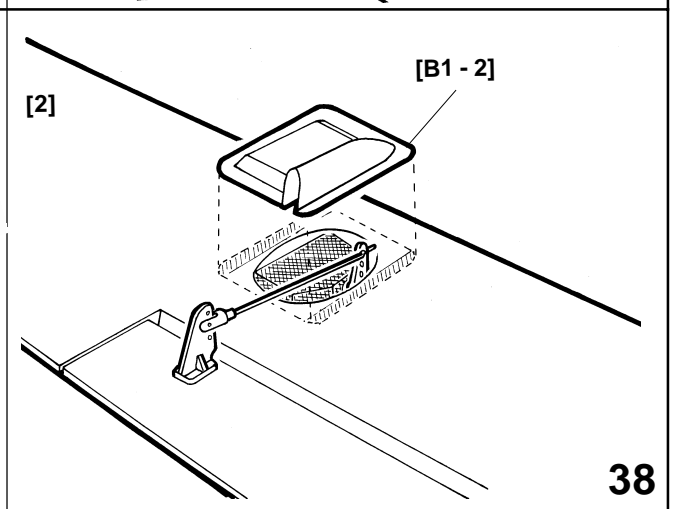
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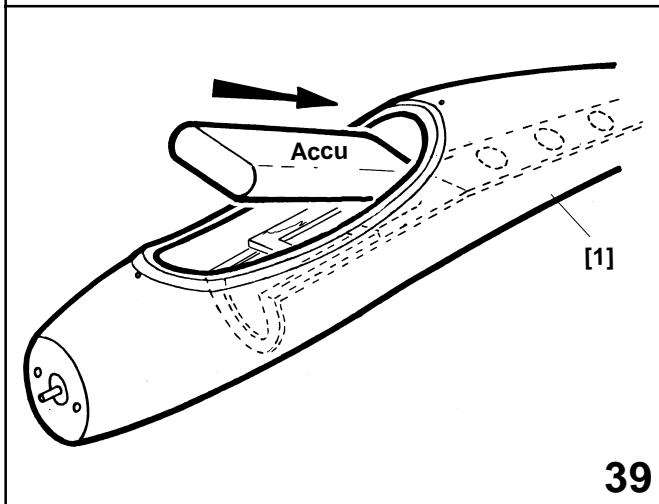
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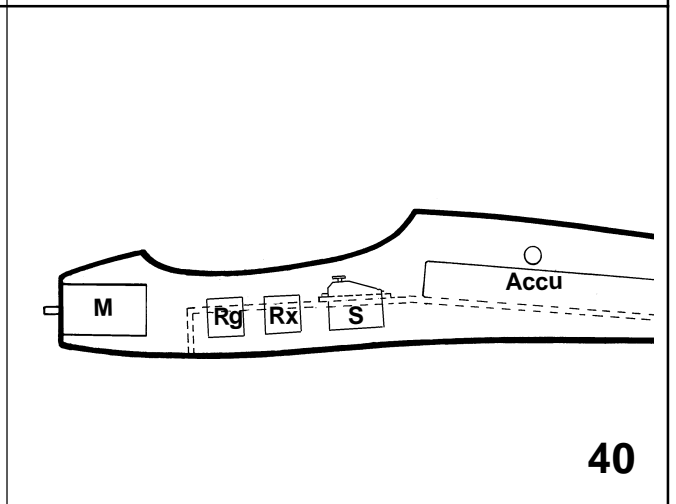
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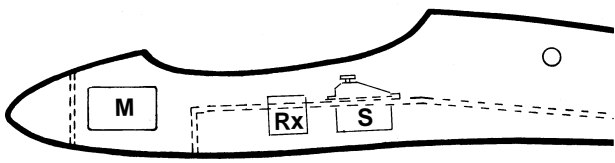
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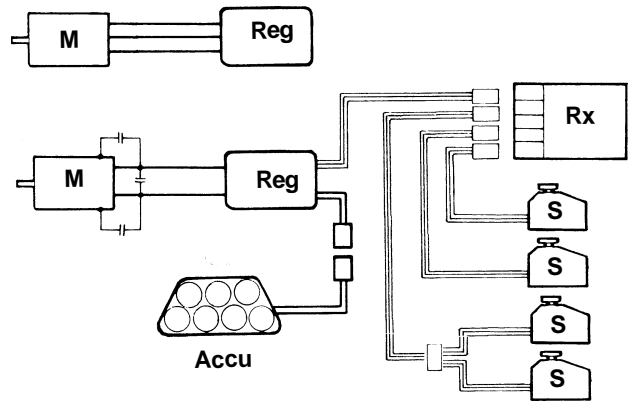
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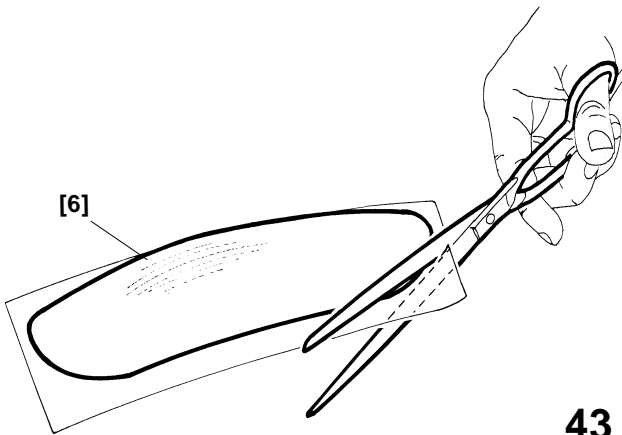
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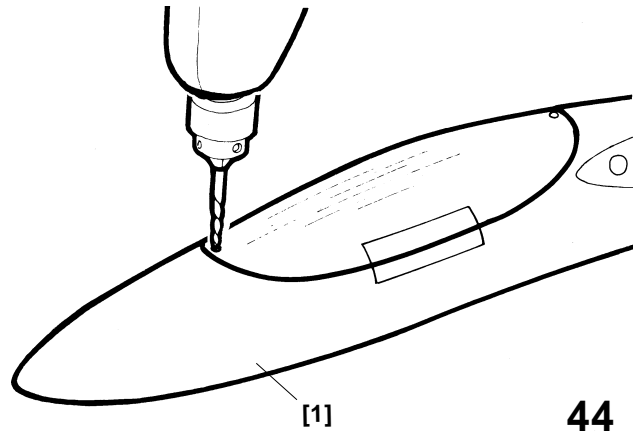
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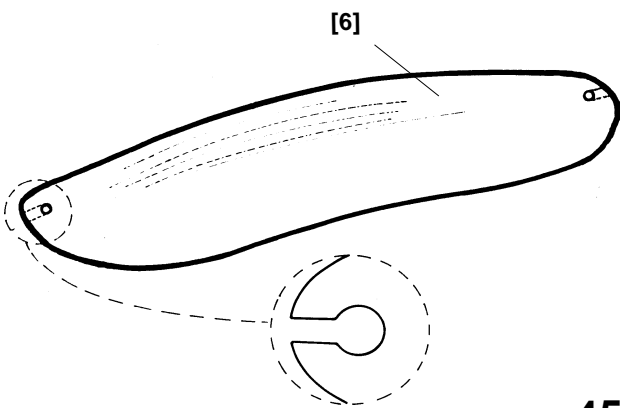
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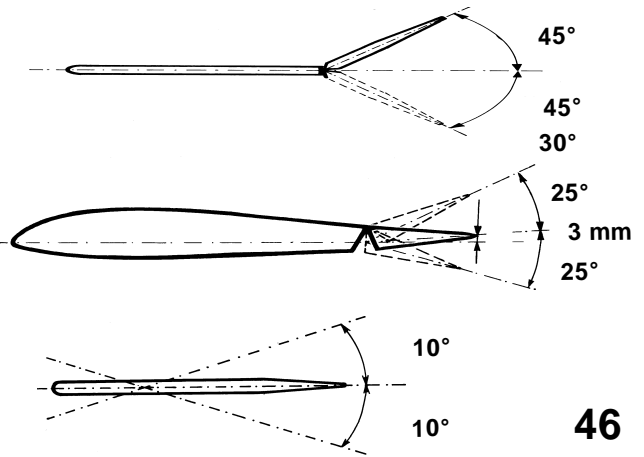
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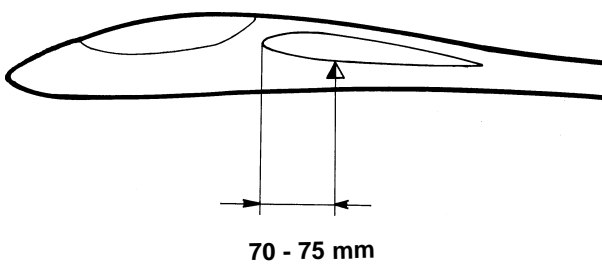
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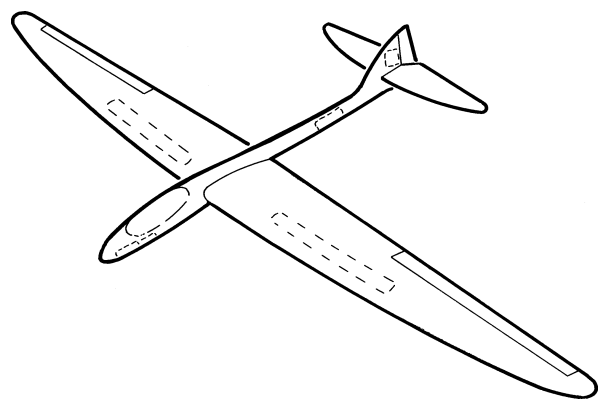
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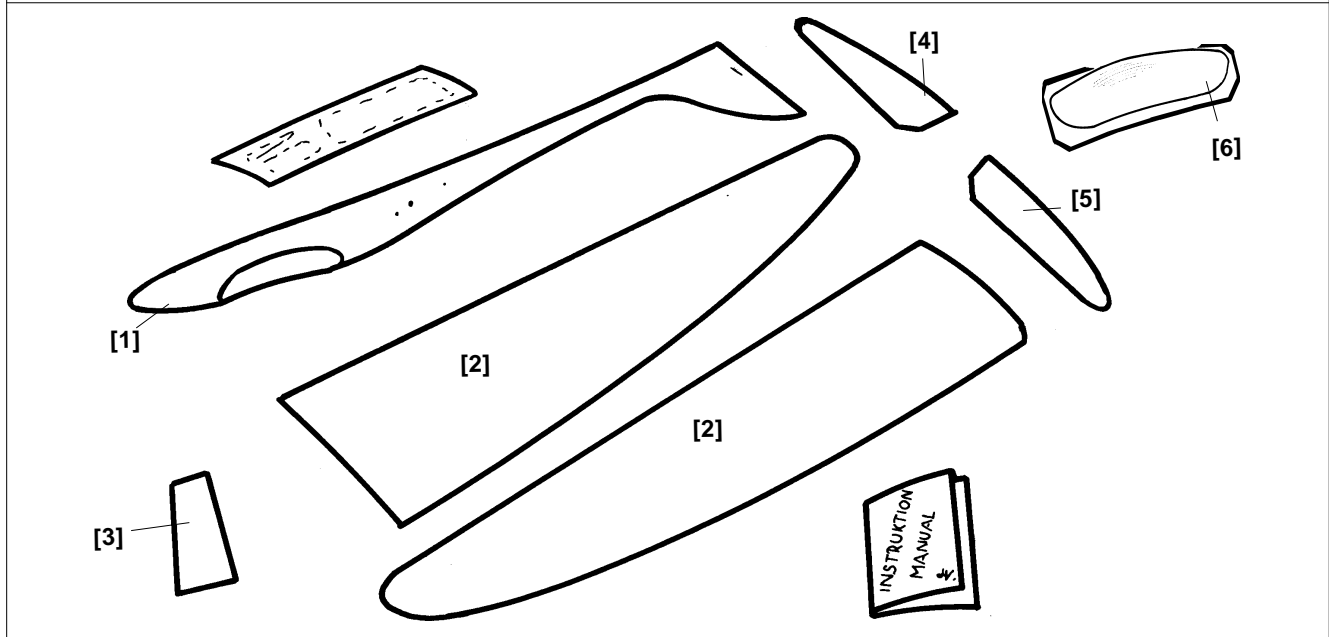
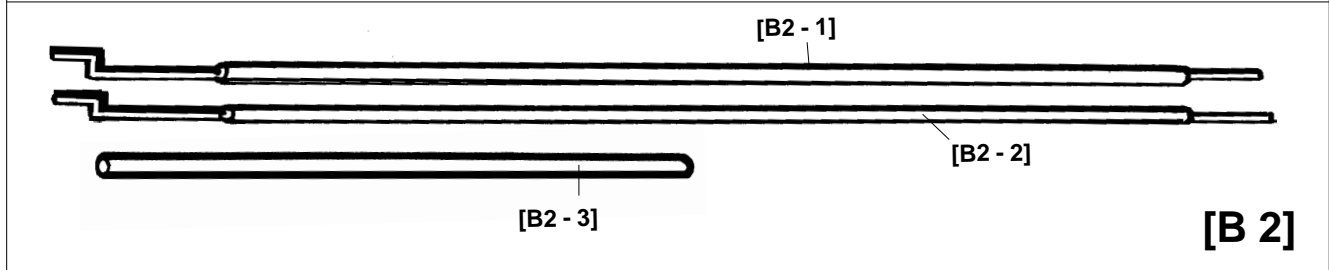
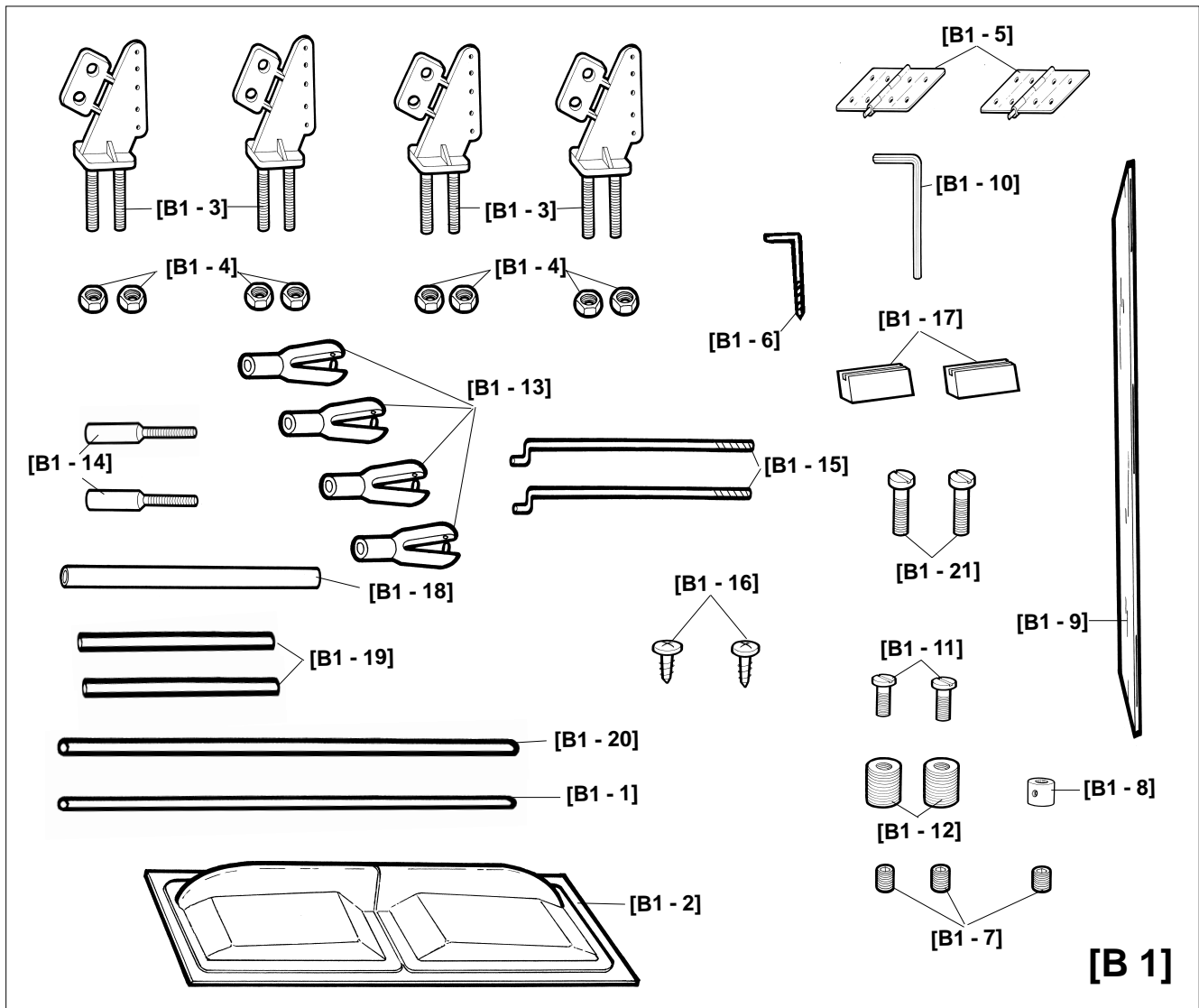


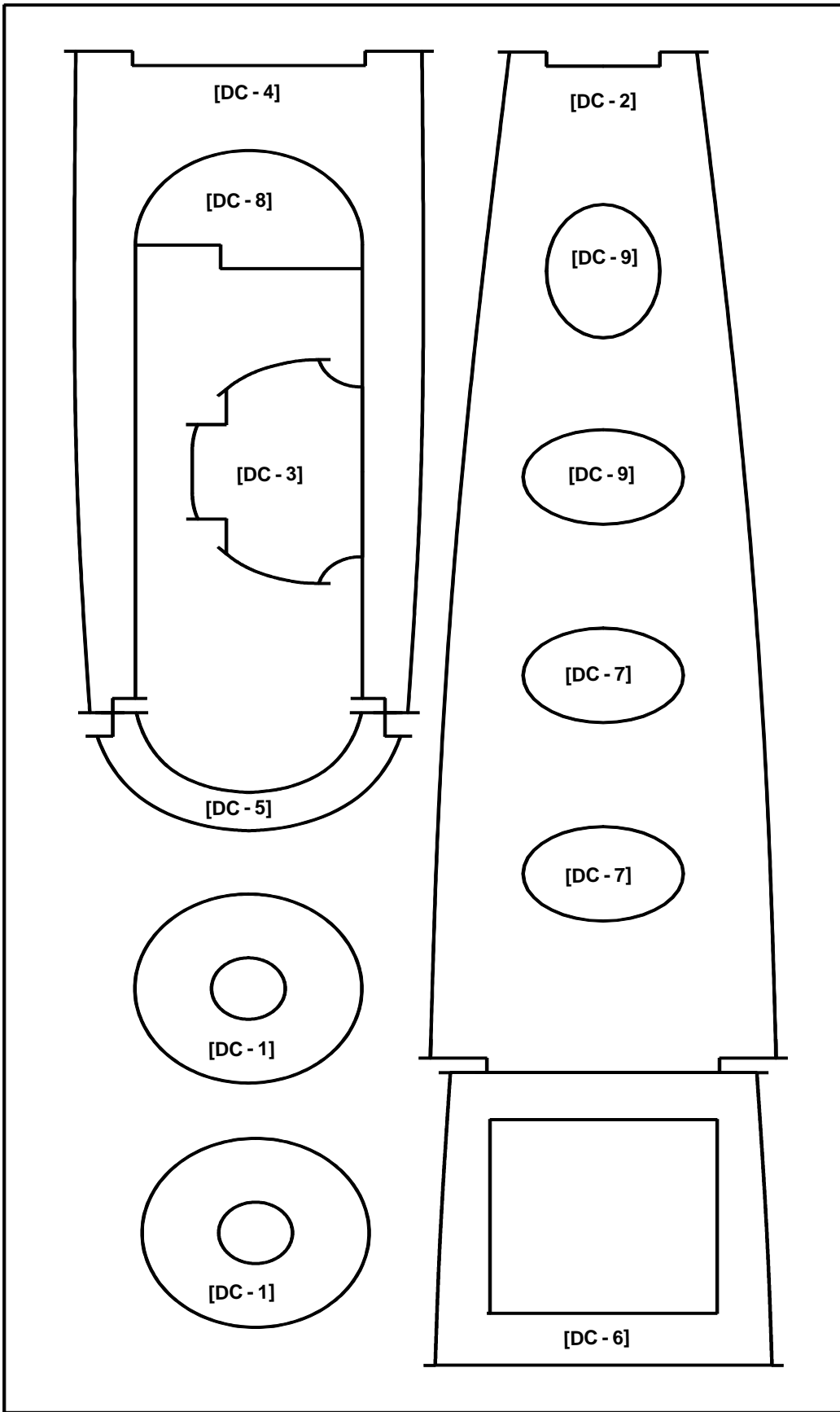
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**37.** Cut out the servo covers from the moulding [B1-2]. Sand the edges.

**38.** Place servo covers over the servos. With a good bi-adhesive tape secure them to the wing checking that the pushrod is moving freely under them.

**39.** The motor battery may be slipped into its place through the canopy opening.

**40.** Only for the motor-glider version. Refer to the drawing for a recommended arrangement of equipment. You may lead the receiver aerial out either from the top of fuselage behind the canopy to the fin.

**41.** Only for the glider version. Refer to the drawing for a recommended arrangement of equipment. You may lead the receiver aerial out either from the top of fuselage behind the canopy to the fin.

**42.** When connecting electronic equipment, follow the instructions supplied.

**43.** With scissors, trim the canopy [6] along the outer line, keeping a safety margin of about 1 or 2 mm. Sand the edges of the canopy to fit the canopy to the fuselage.

**44.** Secure the canopy [6] with masking tape to the fuselage. Drill two 1.5 mm holes at about 4 mm from the canopy rim forward and rearward.

**45.** With the sharp knife cut out two slots into the canopy [6] in order to extract the canopy by just pushing on it. This will allow the canopy to be removed without unscrewing the fastening screws [B1-16]

**46.** Use the details shown check the throw and direction of the control surfaces. If necessary, change the position of control rods on the servo control horns or control surface horns.

**47.** Check the centre of gravity (CG) position with batteries in place. It should lie 70 - 75 mm back from the wing leading edge. For first flights it is recommended that the balance point be at the forward position. Once the motor, speed controller and receiver are installed, the battery pack can be attached to the battery mounting plate using hook and loop tape or similar. The battery pack can still be moved forward or back on the battery mounting plate to allow minor changes of the balance point. Add ballast to balance the model if necessary.

**48.** If you have not applied all decals during the assembly, now is the right moment to do so.

## Flying the model.

The initial flights should take place in a complete calm or in a very light breeze. Long grass is an advantage. Check the model (wings, tail surfaces etc.), CG position, throw and sense of deflection of the control surfaces and for smooth operation of the motor / gearbox. Launch the model horizontally or into a slight climb into wind, with the motor

running at full power. Allow the model to climb to a safe height, reduce the throttle slightly and trim the model. Check the response of the model to the control inputs. If your model does not handle correctly, switch off the motor and land. If you are a novice, ask a more experienced modeller for assistance.

We wish you many successful flights and happy landings.

## Warning!

This aircraft is designed to give you many enjoyable flights, however if you exceed the specifications of the aircraft by using a more powerful electric motor or more cells you may compromise the structural integrity of the aircraft. Keep in mind that good sense is always necessary for safe modeling and safe flying.

## The following parts are necessary to finish the model but are not included in the kit:

-SPEED „600“ with spinner and folding propeller, S8025s 25A speed controller and a 7/8 cells 2-3000 mAh battery pack

or, for the state of the art electric flight:

- **Mutron S89ATR600.20.10** with spinner and folding propeller 9"x 6" or 10"x"6, S88P25s 25A speed controller and a 10 cells 2/3 SC 1200 mAh battery pack

- 2 standard servos
- 2 mini servos
- 2 extension leads
- Battery charger
- RC system, minimum 4 channels

## Content of the kit

No.	Description	Qty
1	Fuselage	1
2	Wing	2
3	Rudder	1
4	Left tailplane	2
5	Right tailplane	2
6	Canopy	1
	Bag B1	1
	Bag B2	1
	Die cut DC1	1
	Instruction manual	1
	Decal sheet	1

**Bag B1**

<u>No.</u>	<u>Description</u>	<u>Qty</u>
B1-1	Tailplane connecting rod	1
B1-2	Servo cover	1
B1-3	Control horn	4
B1-4	Control horn nuts	8
B1-5	Nylon hinge	2
B1-6	Tow hook	1
B1-7	Allen screw	3
B1-8	Tailplane fastener insert	1
B1-9	Fin trailing edge	1
B1-10	Special allen wrench	1
B1-11	Temporary screw	2
B1-12	Wing fastener insert	2
B1-13	Snap link	4
B1-14	Linkage adapter	2
B1-15	Aileron pushrod	2
B1-16	Canopy screw	2
B1-17	Pushrod wood support	2
B1-18	Brass tube	1
B1-19	Wing dowel	2
B1-20	Tailplane main rod	1
B1-21	Motor screw	2

**Bag B2**

<u>No.</u>	<u>Description</u>	<u>Qty</u>
B2-1	Rudder pushrod	1
B2-2	Elevator pushrod	1
B2-3	Steel wing joiner	1

**Die cut DC1**

<u>No.</u>	<u>Description</u>	<u>Qty</u>
DC-1	Electric motor former	2
DC-2	Battery support	1
DC-3	Battery support former	1
DC-4	Servo cradle bearing	1
DC-5	Fuselage former	1
DC-6	Servo cradle	1
DC-7	Tailplane rod support	1
DC-8	Battery support reference jig	1
DC-9	Tow hook support	2



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