



Technical data

Wing span:	2150 mm
Lenght:	1150 mm
Weight:	1120 g – 1860 g
Wing area:	42 dm ²
Wing loading:	27 g/dm ² – 44 g/dm ²
EI. Motor/ no. of cells:	„600“ / 7-8 cells
Controls:	Elevator, rudder, motor

Introduction

Congratulations on buying your **Palio-pro**. Since most of the building work has already been done you'll invest just a small amount of time in building and you'll enjoy getting in the air quickly. As a glider this is an excellent thermic model with high efficiency characteristics and as an electric powered model (optional) it is at the level of the best competitors in its category.

Your **Palio-pro** flies well with a direct drive electric motor and standard 7 cell power pack. However with a gear drive unit and higher output 8 cell pack its best flight characteristics may be reached. Its excellent Astra® epoxy fuselage is a great investment for a durable, robust and light fuselage. Enjoy it!

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 **Palio-pro**:

- 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?

Your **Palio-pro** 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 3 to 5. For the electric powered version disregard steps 1 and 2.

Assembly:

1. (Glider only) Glue (Epoxy) the towing hook supports [DC-1] together. Next glue towing hook supports in place inside the fuselage [1] about 330 mm from the nose.
2. (Glider only) With a drilling machine and a 2 mm bit, drill a hole in the middle of the fuselage bottom at about 360 mm from the nose. Screw the tow hook [B2-5] to the fuselage.
3. (Electro glider only) 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.
4. (Electro glider only) Glue (Epoxy) together the two motor formers [DC-2]
5. (Electro glider only) With a 3 mm bit drill the two holes for the motor fastening screws[B2-6]. Fasten the electric motor to the formers [DC-2] with the two screws[B2-6]. 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.
6. Glue (Epoxy) in place the brass tube [B2-1] inserting it first over the wing joiner [B1-5] 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.
7. Check also that the brass tube [B2-1] is flush with the outer surface on both sides of the fuselage. If necessary, use a sanding block, to remove any tubing.
8. Assemble (Epoxy, CA) the plywood cradle made of the parts [DC-3], [DC-4], [DC-5] and [DC-6].
9. With a 2 mm bit drill the holes for the servo and switch mounting screws.
- 10 - Insert the assembled cradle into the fuselage and glue (Epoxy) it in position about 130 mm from the fuselage nose.
11. With a 3 mm bit carefully drill the exit holes for the rudder and elevator's linkage.
12. Cut two slots on the vertical fin for the rudder's hinges [B2-13]. Check the position with the rudder's pre-cut slots.
13. Glue (Epoxy, CA) the rudder's hinges [B2-13] to the fin and to the rudder [3]. Check that the rudder's movement is free and that the rudder and fin are not glued together.

14. Glue (Epoxy) the tailplane steel joiner [B2-14] into the fuselage's fin. Check that it is perpendicular both to the fin and to the length of the fuselage.

15. 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 [B2-15] and insert also the connecting rod [B2-2] into their holes. Fasten the connecting rod [B2-2] to the connector [B2-15] with the screw [B2-11].

16. Glue (CA, Epoxy) the connector [B2-15] 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.

17. When the glue has cured it is possible to release the connecting rod loosening the screw [B2-11].

18. Insert the auxiliary tailplane connecting rod [B2-2] into the hole of the right tailplane [4] and glue (Epoxy) it in place leaving outside about 50 mm. Fit the elevator control horn [B2-7] into the holes in the elevator by punching the film over the holes and inserting the control horn [B2-7] into the holes. Fasten the control horn with two nuts [B2-8].

19. Insert the rudder outer tubing [B1-3] and the elevator outer tubing [B1-4] into the exit holes of the fuselage and carefully glue (Epoxy) it in place leaving a couple of cm extending from the fuselage.

20. Fit the rudder control horn [B2-7] into the holes in the rudder [3] by punching the film over the holes and inserting the control horn [B2-7] into the holes. Fasten the control horn with two nuts [B2-8].

21. Fasten the servos on their support with their screws (not supplied)

22. Note that the pushrods cross inside the fuselage to give a straight pushrod run. Switch on the radio and position both the servos at their centre positions. Insert the rudder and elevator pushrods [B1-1], [B1-2] in the plastic tubes [B1-3], [B1-4]. Insert the Z bent ends of the pushrods into the servo arms. Fit the servo arms to the servos ensuring they are centred correctly.

23. Glue (Epoxy) the plastic tubes holders [B2-4] to the fuselage sides and next glue (Epoxy) the plastic tubes [B1-3] and [B1-4] to the groove in the holders and to the slots in the former [DC-5].

24. Attach the kwick link [B2-10] to the middle hole in the rudder control horn [B2-7]. Insert the end of the pushrod into the threaded adapter [B2-9] and check the length of the pushrod [B1-1] keeping both the rudder and the servo centered. If necessary, shorten the pushrod [B1-1].

25. When the pushrod [B1-1] is the correct length, glue (Epoxy) or solder the pushrod [B1-1] into the threaded adapter [B2-9]. To improve the join, use pliers to kink the end of the pushrod to fit tightly in the adapter.

26. Complete the elevator with the fuselage and repeat the point 24 – 25 to install the linkage.

27. The inner and outer wing panels [2] are covered together. With a knife carefully cut away the covering film over the gap between the two wing panels, on the upper side of the wing only. Remove the excess film and the triangular packing strip that you'll find inside the slot. Do not cut the film on the bottom of the wing.

28. Carefully apply some glue (Epoxy) in the slot between the two wing panels. Put the wing flat over a desk and raise the tip of the outer panel about 110 mm. Check to ensure the two panels fit together without any large gaps at the joint.

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

30. Take the brass wing fastening insert [B2-12] and screw temporary inside it the screw [B2-17]. Put some amount of epoxy in the outer surface of the insert [B2-12] 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 [B2-17] by unscrewing it.

31. Using the sanding block round the edges on the both sides of the steel wing joiner [B1-5]. See the drawing.

32. Using the sanding block round one of each wing dowels [B2-3]. Attach the the wing dowels to the wing, next attach the wing to the fuselage using the wing joiner [B1-5] and check the correct position of the wood wing dowels [B2-3]. Now carrefully glue (Epoxy) the wing dowels [B2-3] in the holes on the both wings [2]. Check the correct position of the wings.

33. Attach the wings to the fuselage and check the alignment. Fasten the steel wing joiner with screws [B2-11] using the special allen wrench [B2-16].

34. With scissors, trim the canopy [5] 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.

35. Secure the canopy [5] with masking tape to the fuselage. Drill two 1.5 mm holes at about 4 mm from the canopy rim forward and rearward. With the sharp kniwe cut out two slots into the canopy [5] in order to extract the canopy by just pushing on it. This will allow the canopy to be removed without unscrewing the fastening screws[B2-8]

36. 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.

37. When connecting electronic equipment, follow the instructions supplied.

38. 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.

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

40. 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.

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 complete 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 than 8 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:

- A SPEED „600“ electric motor with spinner and folding propeller, S8025s 25A speed controller
- 2 standard servos
- Batteries 1200 - 3000 mAh, 7-8 cells,
- Battery charger
- RC system, minimum 2/3 channels

Bag B1

No.	Description	Qty
B1-1	Rudder pushrod	1
B1-2	Elevator pushrod	1
B1-3	Rudder plastic tube	1
B1-4	Elevator plastic tube	1
B1-5	Steel wing joiner	1

Bag B2

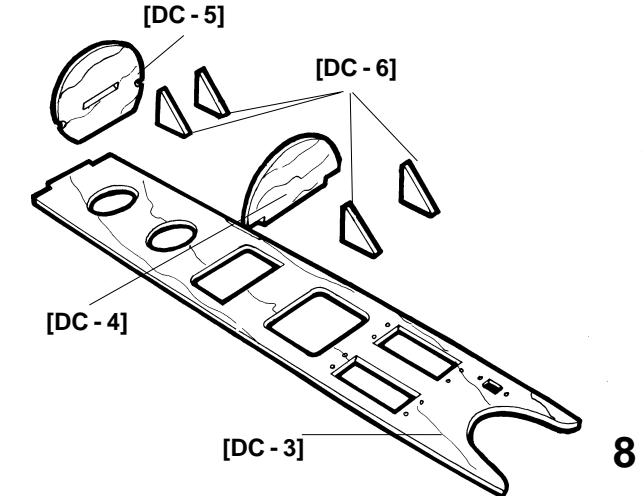
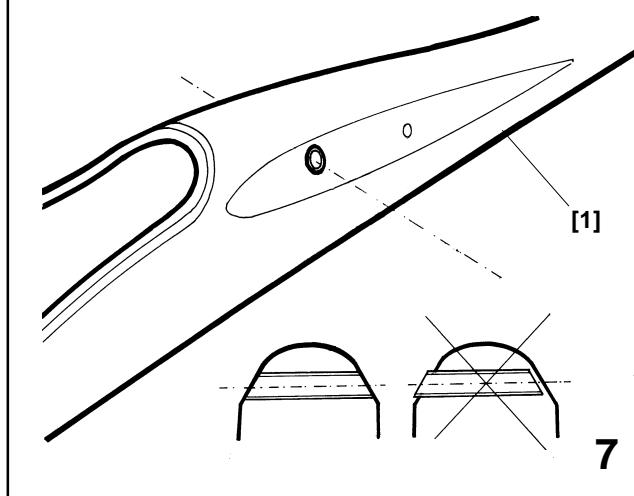
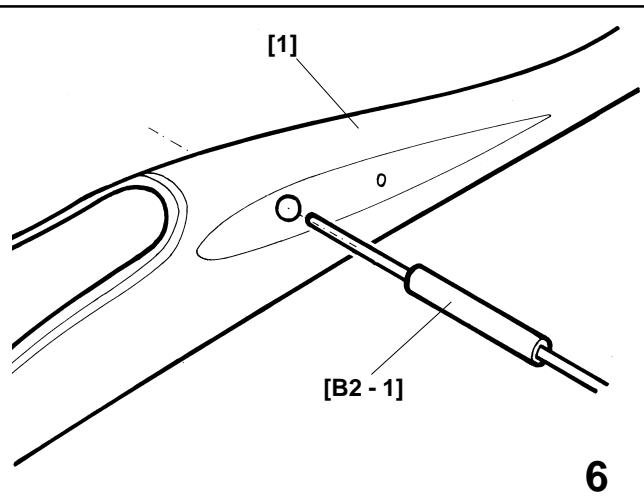
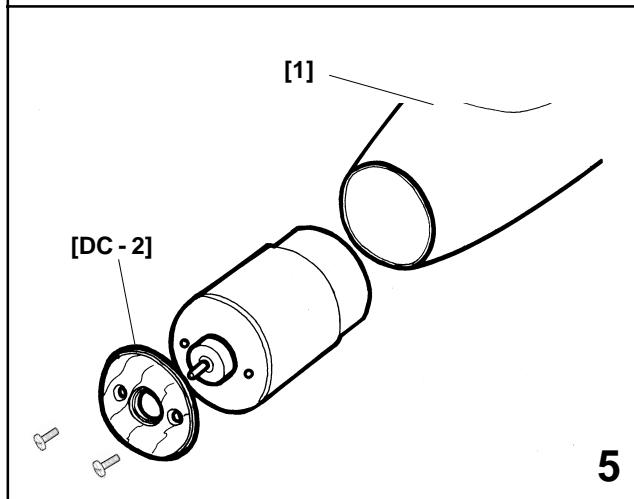
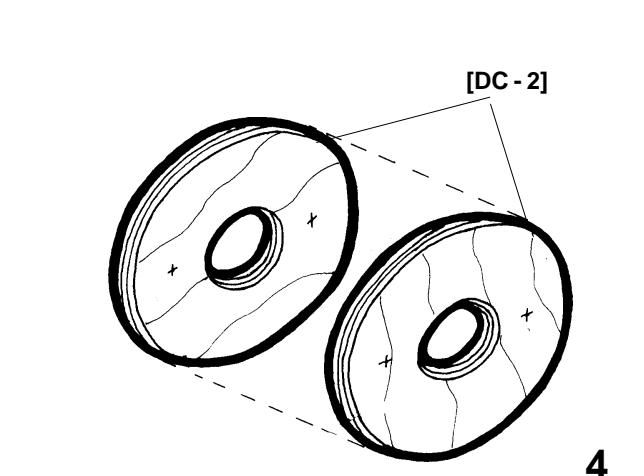
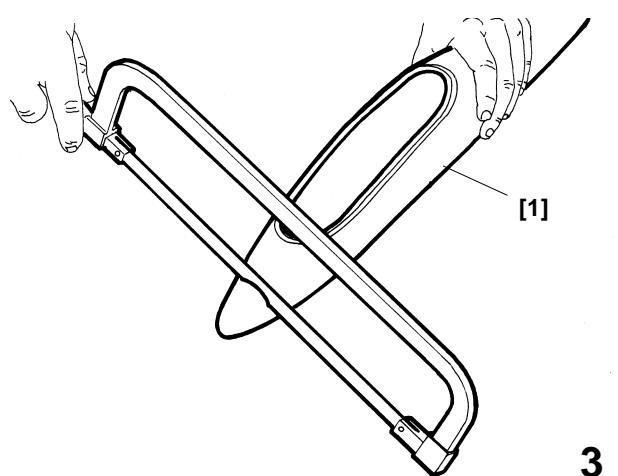
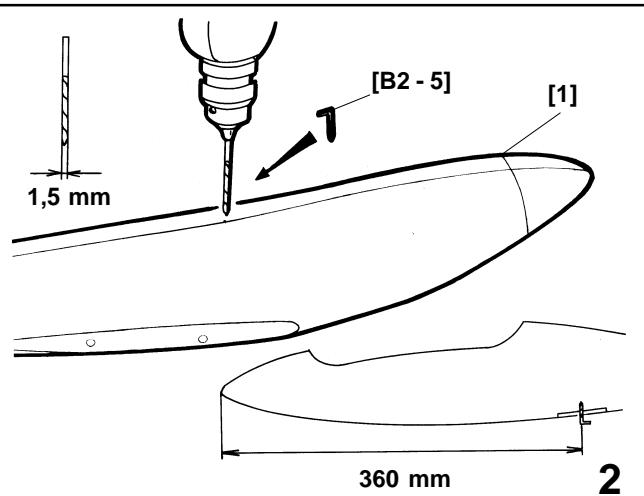
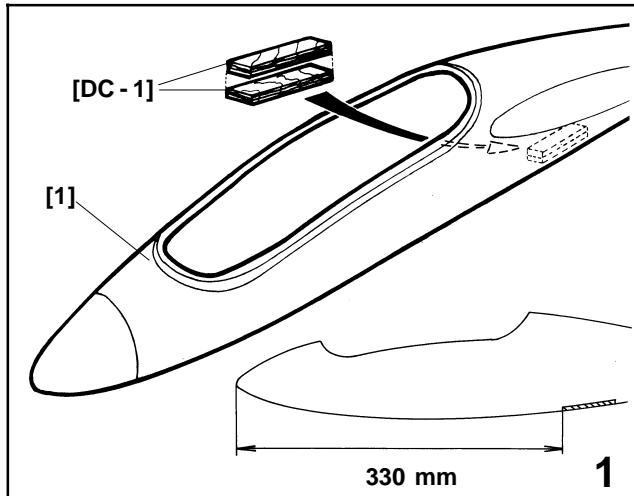
No.	Description	Qty
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B2-2	Tailplane Auxiliary Rod	1
B2-3	Wood wing dowel	2
B2-4	Linkage holder	2
B2-5	Tow hook	1
B2-6	Motor screw	2
B2-7	Control horn	2
B2-8	Control horn nuts	4
B2-9	Linkage threaded adapter	2
B2-10	Kwick link	2
B2-11	Allen screw	3
B2-12	Tailplane fastener insert	1
B2-13	Nylon hinge	2
B2-14	Tailplane main rod	1
B2-15	Wing fastener insert	2
B2-16	Special allen wrench	1
B2-17	Temporary screw	2

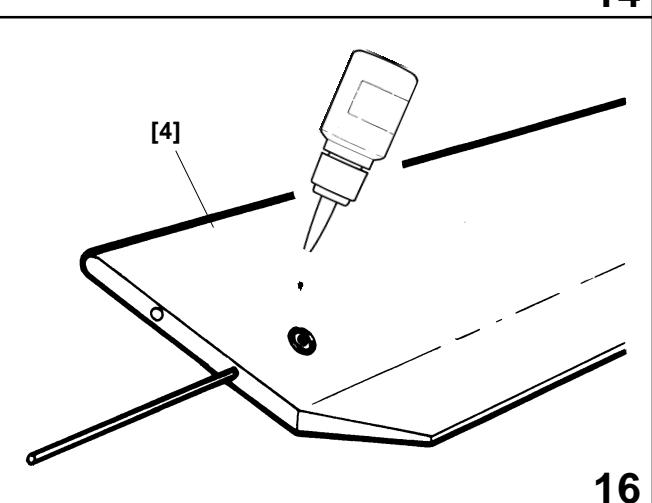
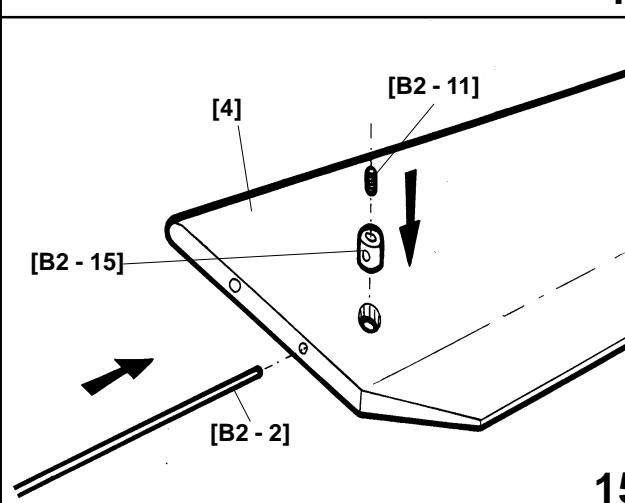
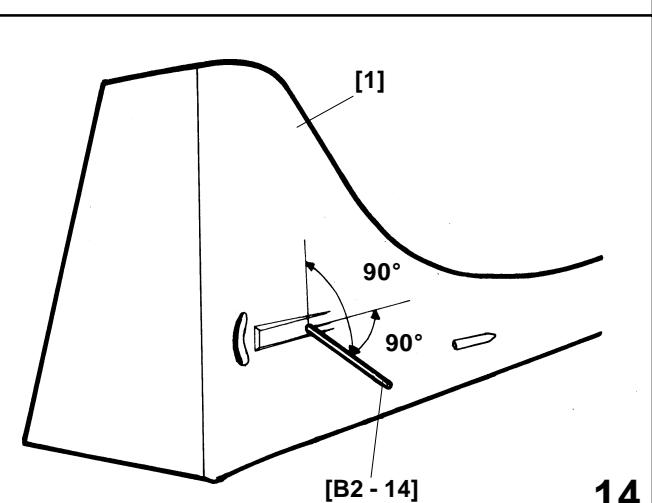
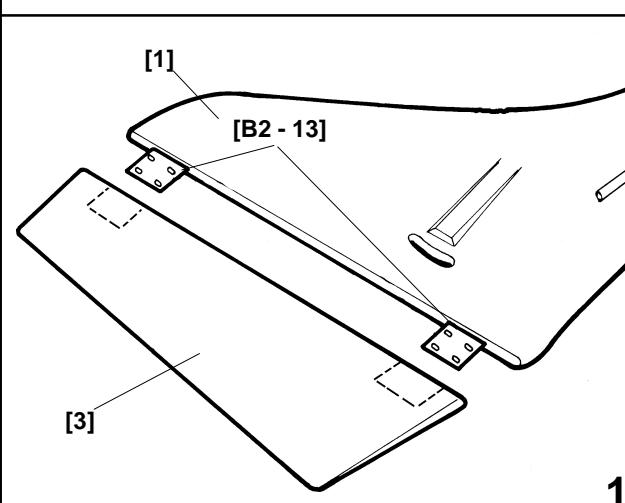
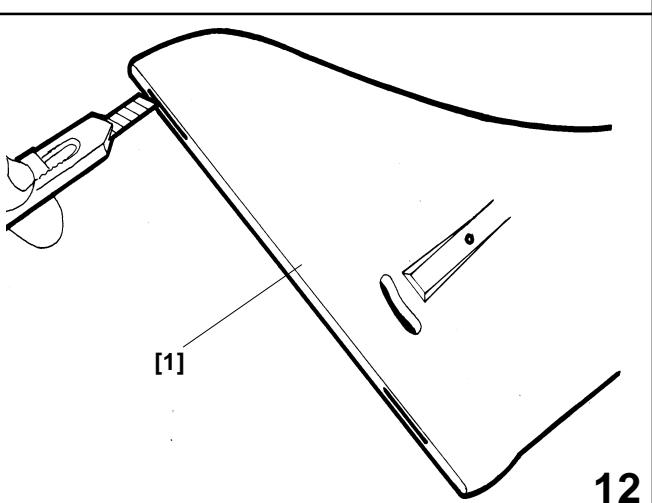
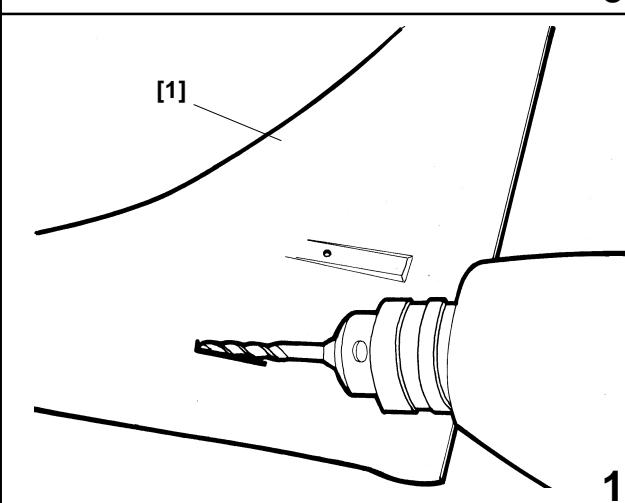
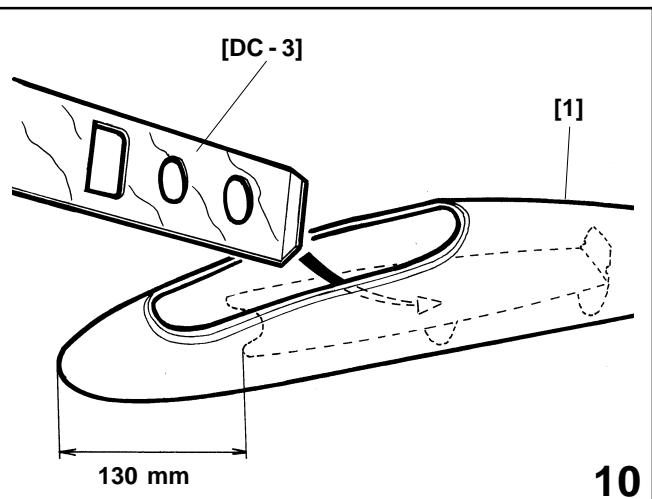
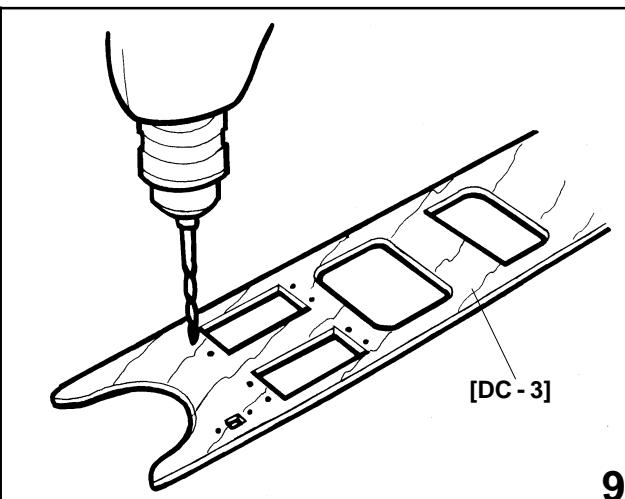
Die cut DC1

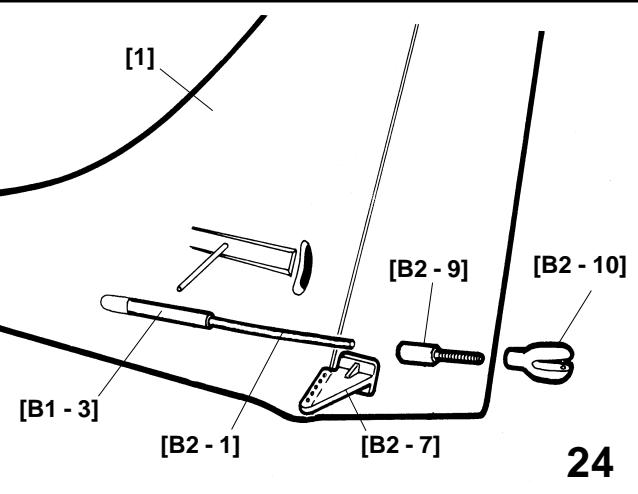
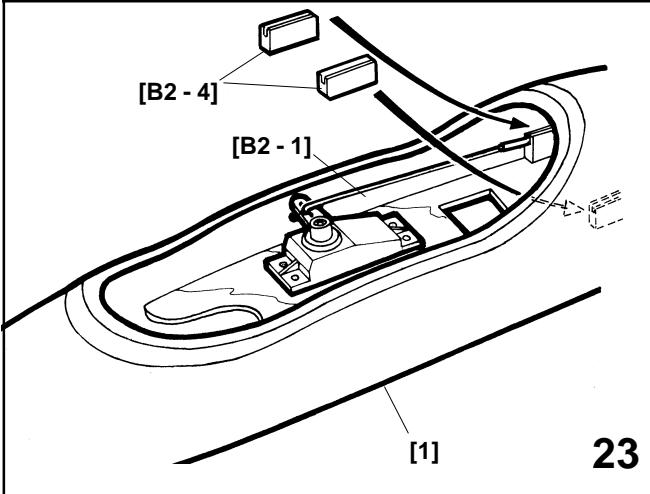
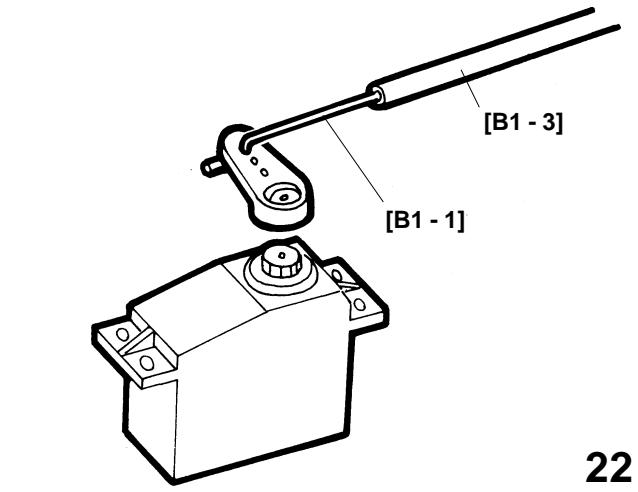
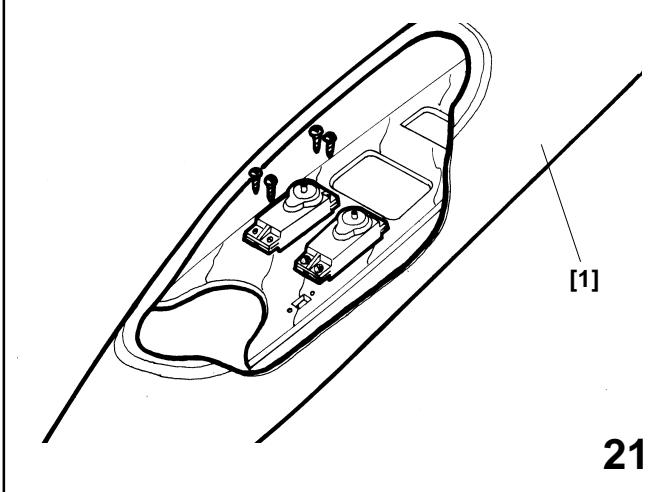
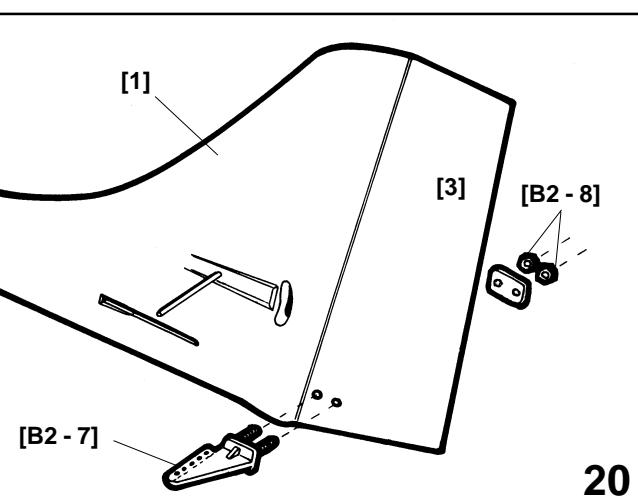
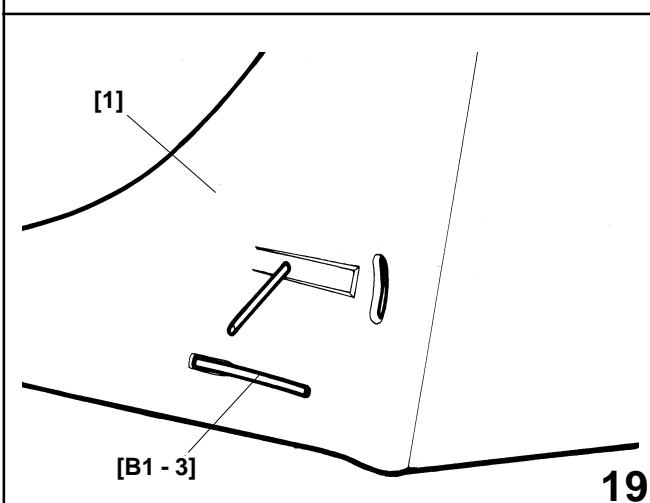
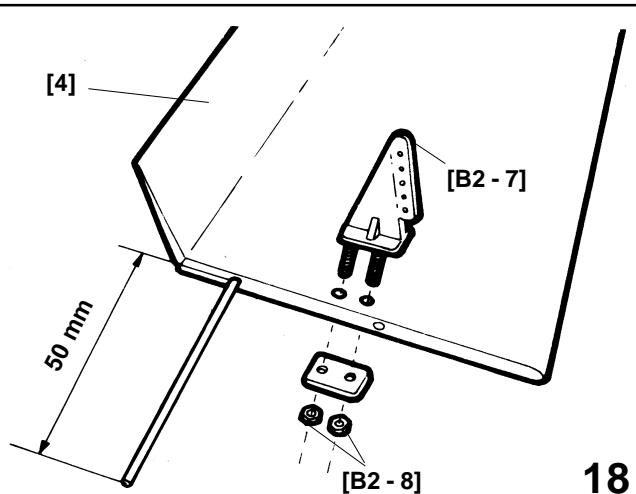
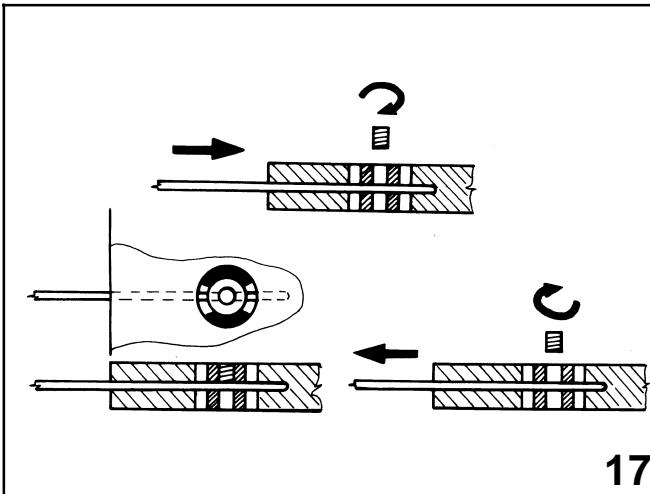
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DC-2	Electric Motor Former	2
DC-3	Servo Support	1
DC-4	Servo Support Forward Former	1
DC-5	Servo Support Rearward Former	1
DC-6	Former Triangular Support	4

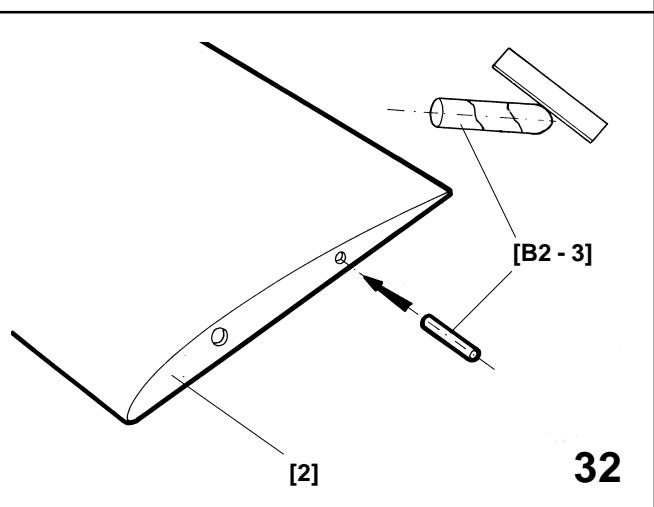
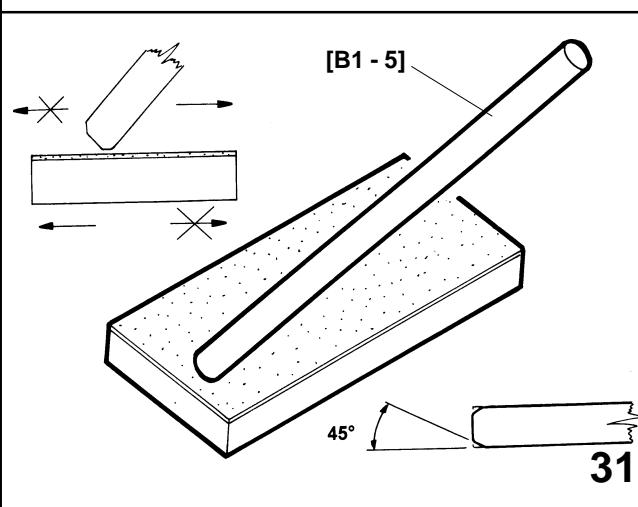
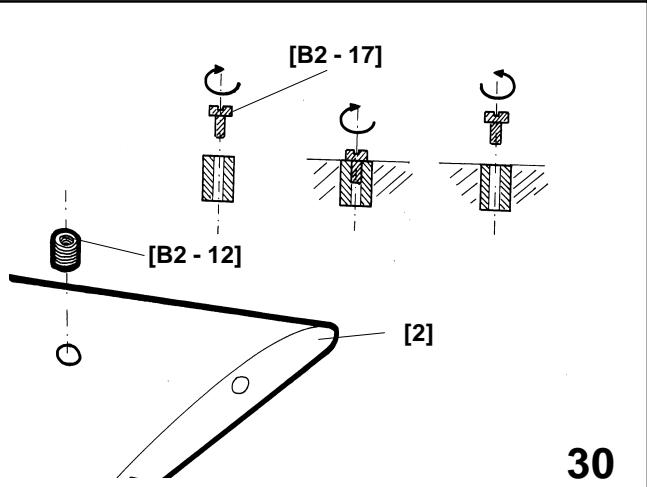
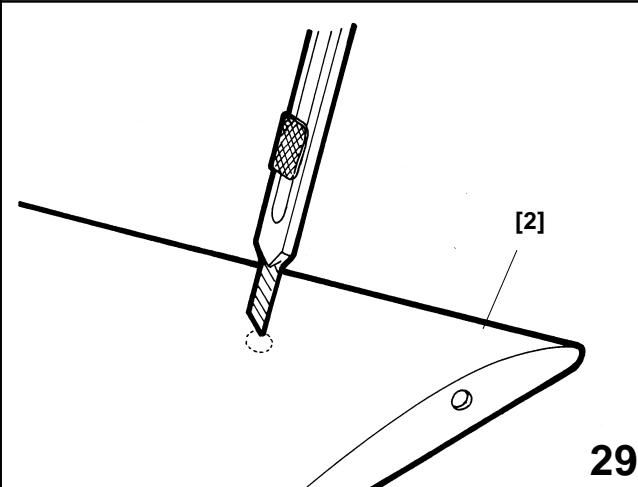
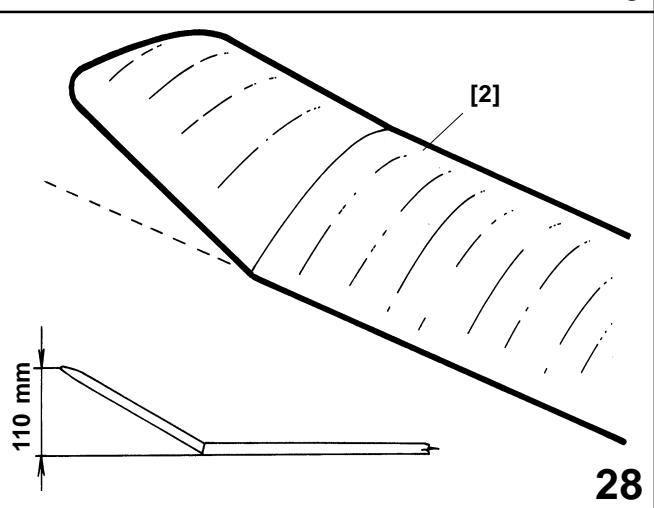
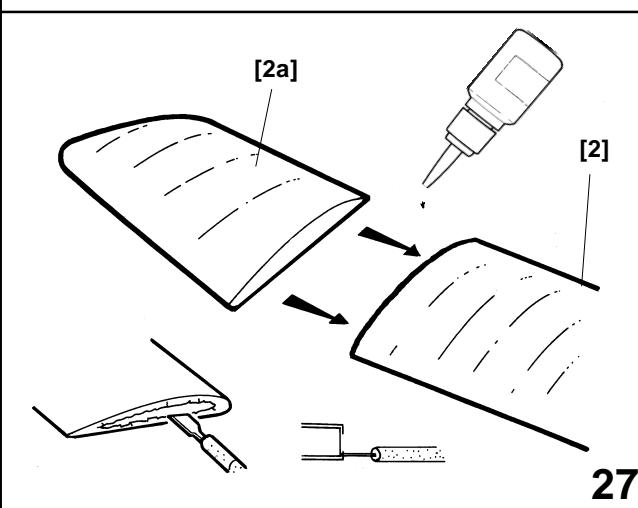
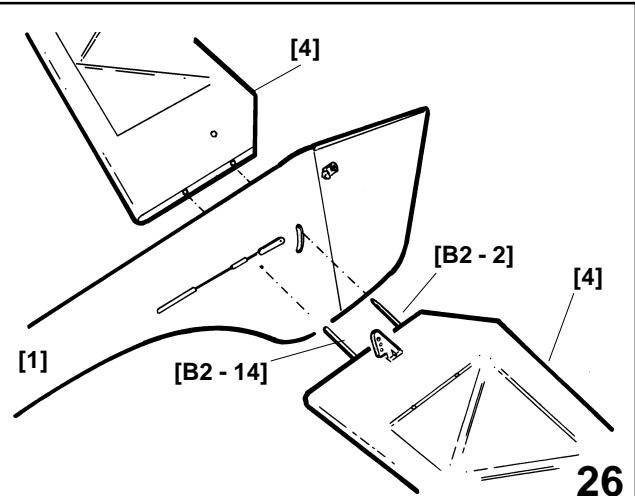
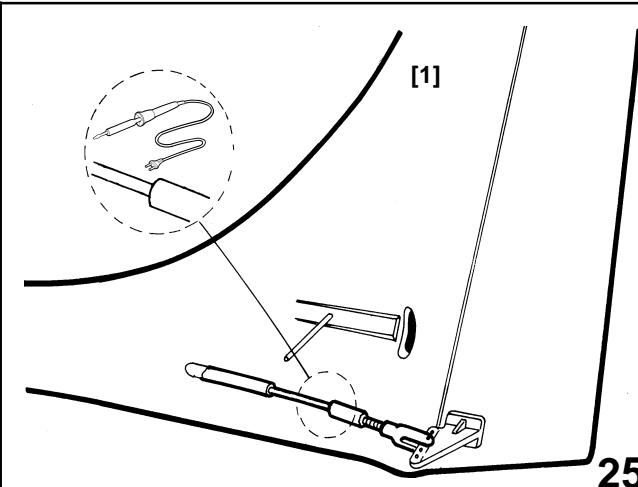
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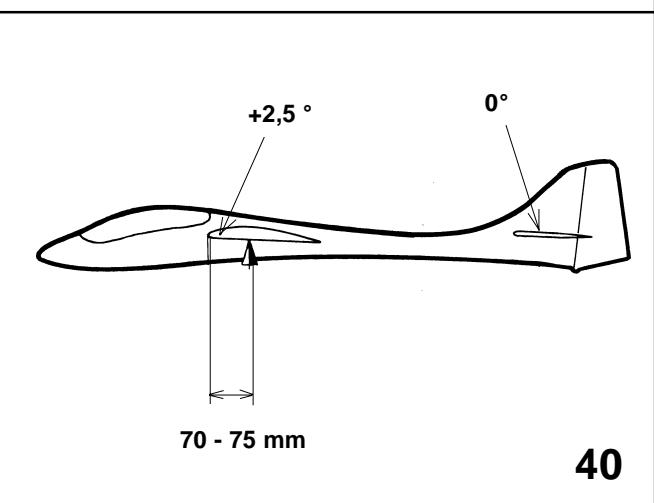
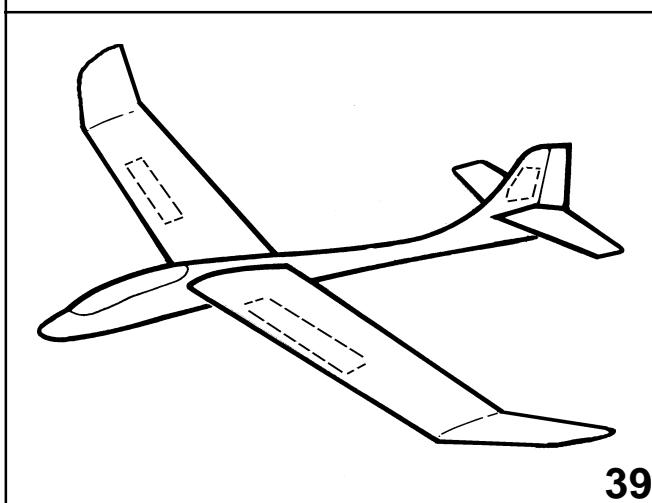
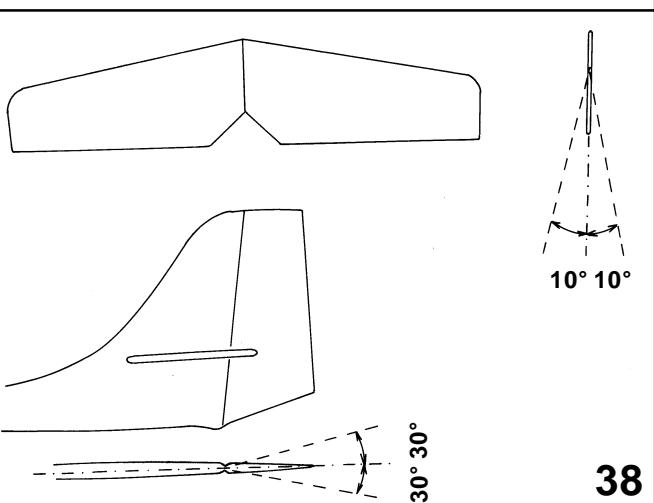
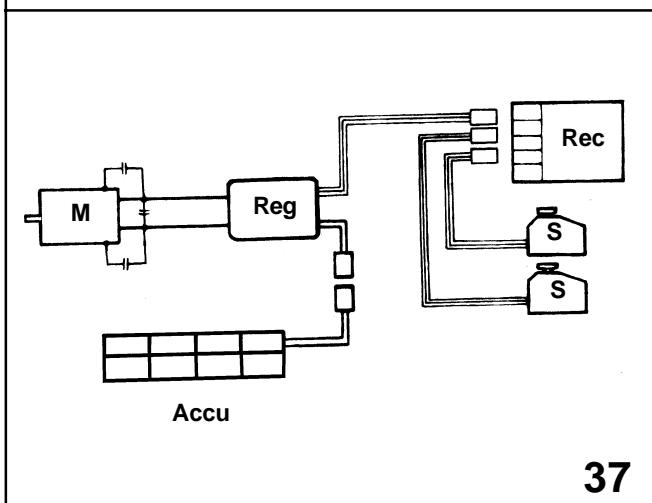
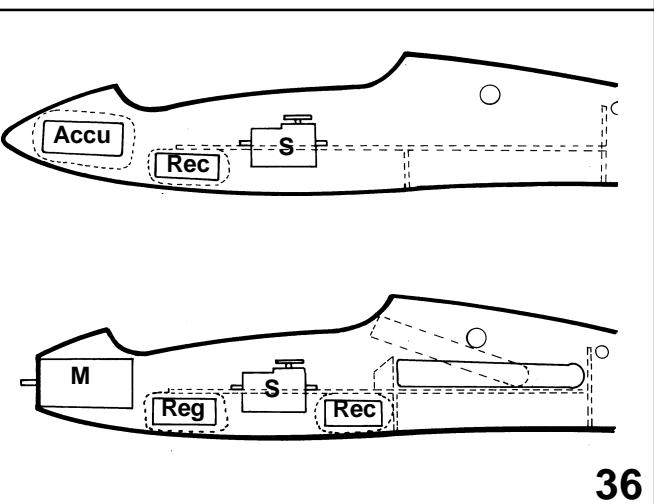
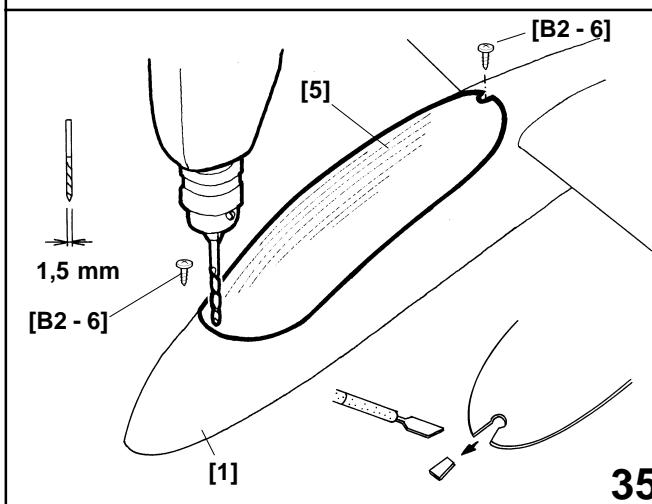
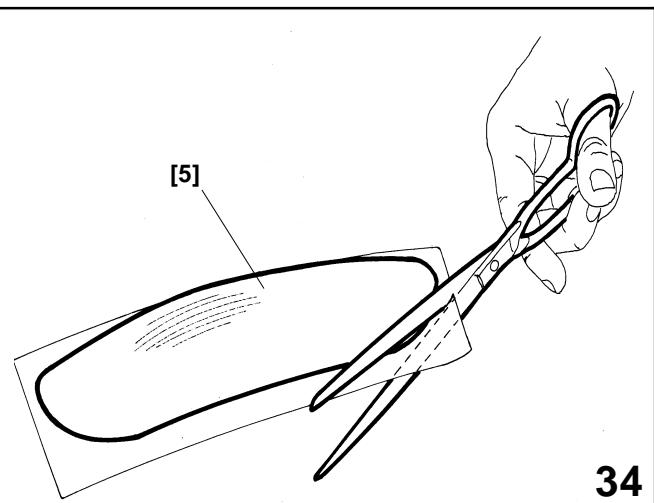
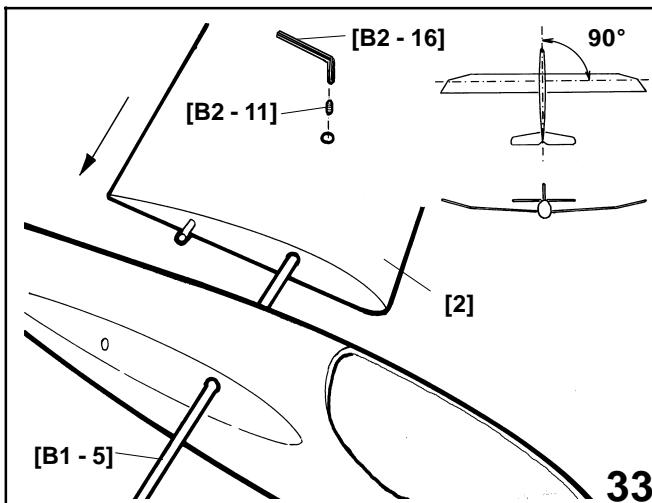
No.	Description	Qty
1	Fuselage	1
2	Wing	2
3	Rudder	1
4	Tailplane	2
5	Canopy	1
	Bag B1	1
	Bag B2	1
	Die cut DC1	1
	Instruction manual	1
	Decal sheet	1

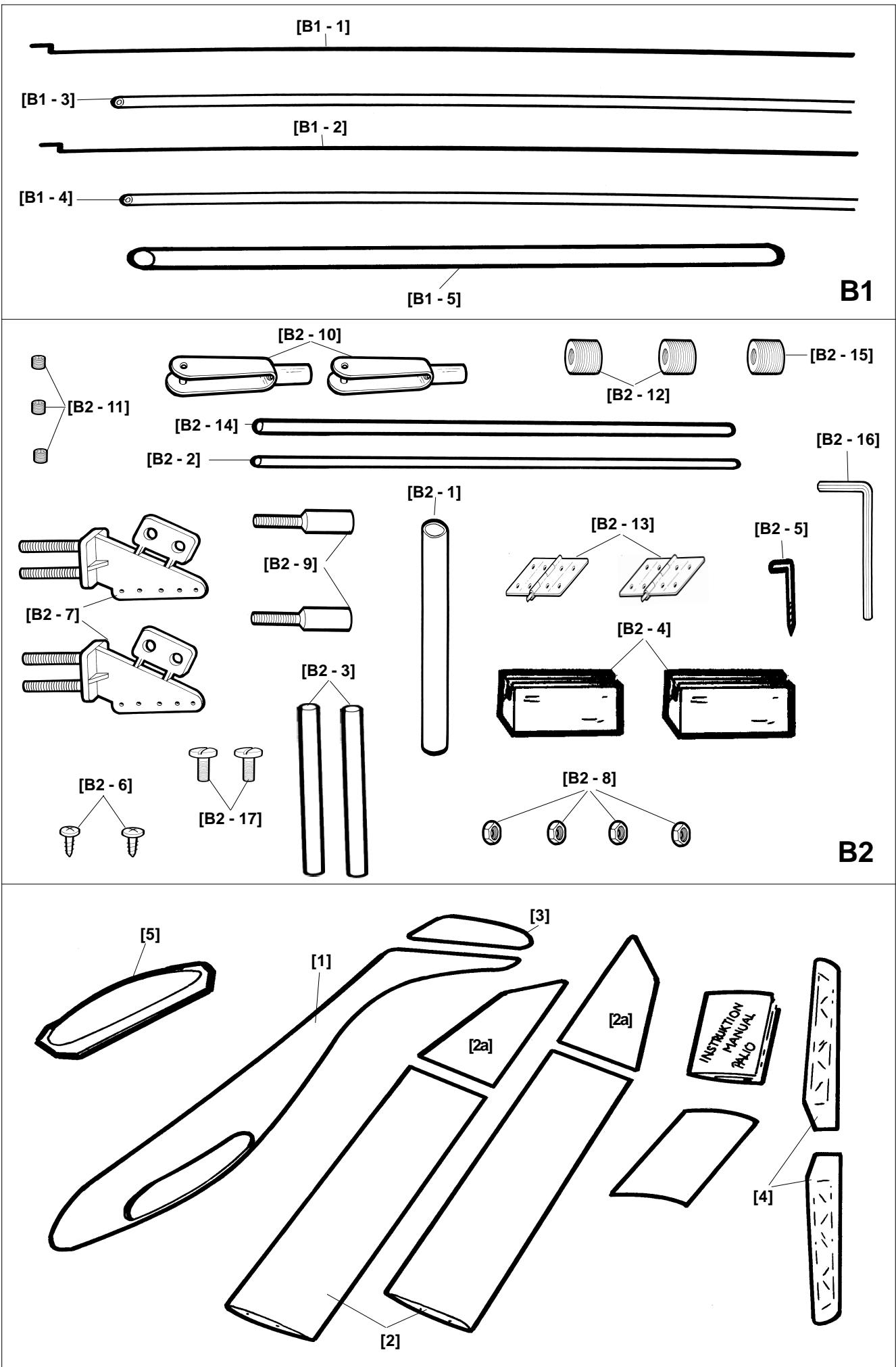


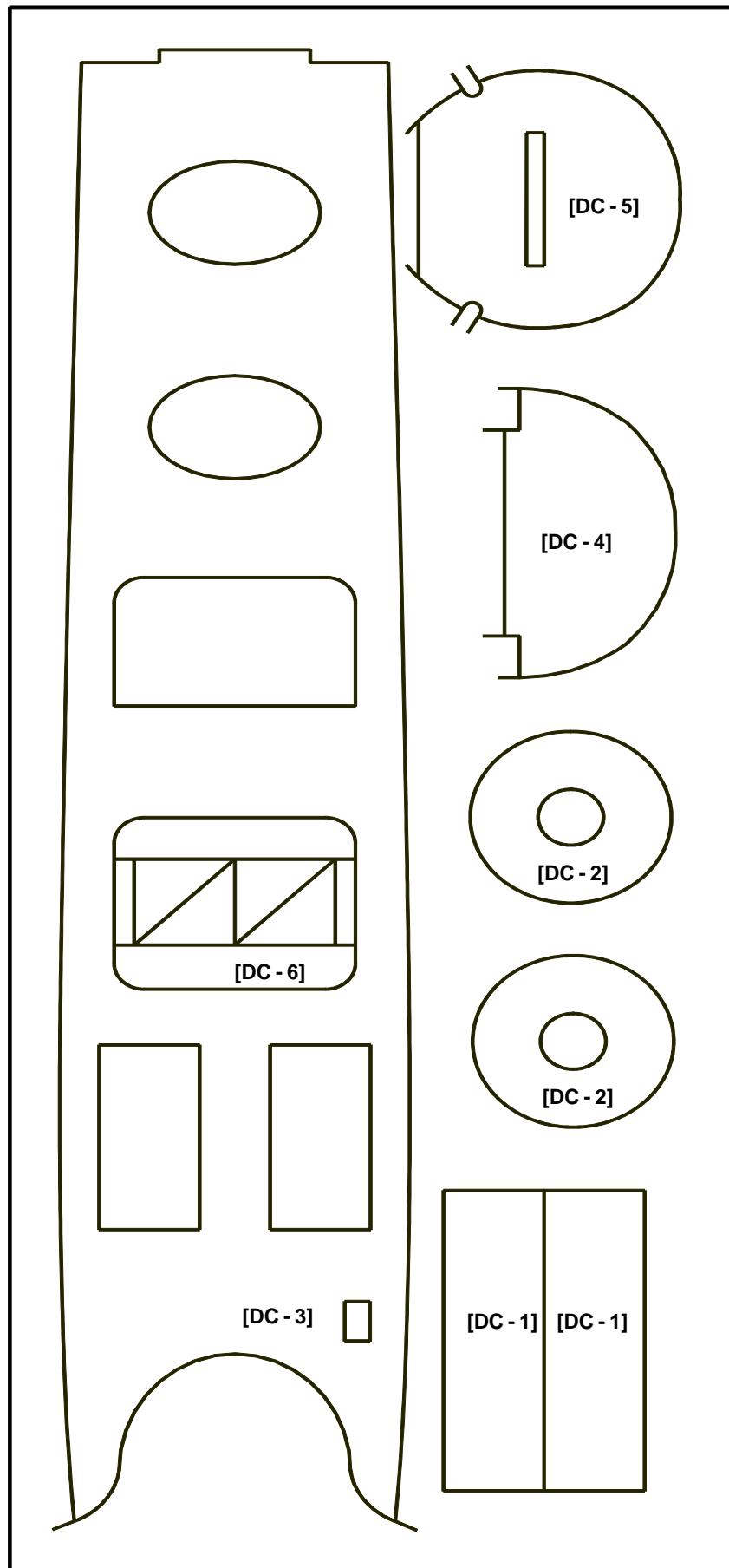












DC



Scorpio s.r.l.
C.P. 750 - 38100 Trento
ITALY
Tel. +39 0461-823099
e-mail: sales@scorpio.it